Exceptional Events Demonstration for Ozone Exceedances

Northern California

July-August 2018 Wildfire Events

September 17, 2021

Contents

Acronyms

amsl	Above Mean Sea Level
AOD	Aerosol Optical Depth
APCD	Air Pollution Control District
AQMD	Air Quality Management District
AQS ID	U.S. EPA Air Quality System Identification
BLM	Bureau of Land Management
CAA	Clean Air Act
CalFire	California Department of Forestry and Fire Protection
CARB	California Air Resources Board
CBSA	Census Core-based Statistical Area
CFR	Code of Federal Regulations
CMAQ	Community Multiscale Air Quality
CMAS	Community Modeling and Analysis System
CO	Carbon Monoxide
DV	Design Value
EER	Exceptional Events Rule
EKA	NWS Eureka Forecast Office
F	Fahrenheit
FCCS	Fuel Characteristic Classification System
FEMA	Federal Emergency Management Agency
FEPS	Fire Emissions Production Simulator
FR	Federal Register
FRAP	Fire and Resource Assessment Program
GIS	Geographic Information System
HMS	(NOAA) Hazard and Mapping System
HYSPLIT	Hybrid Single Particle Lagrangian Integrated Trajectory
ISU	Iowa State University

m	meters
mb	millibars
MODIS	Moderate Resolution Imaging Spectroradiometer
mph	miles per hour
MSA	Metropolitan Statistical Area
NAAPS	Navy Aerosol Analysis and Prediction System
NAAQS	National Ambient Air Quality Standard(s)
NASA	National Aeronautics and Space Administration
NCAR	National Center for Atmospheric Research
NIFC	National Interagency Fire Center
NO	Nitrogen Oxide
NO_2	Nitrogen Dioxide
NOAA	National Oceanic and Atmospheric Administration
NOx	Oxides of Nitrogen
NPP	National Polar-orbiting Partnership
NPS	National Park Service
NWCC	Northwest Interagency Coordination Center
NWS	National Weather Service
O_3	Ozone
PM	Particulate Matter
PM_{10}	Particulate Matter less than or equal to 10 microns in aerodynamic diameter
$PM_{2.5}$	Particulate Matter less than or equal to 2.5 microns in aerodynamic diameter
POC	Parameter Occurrence Code
ppm	parts per million
PQAO	Primary Quality Assurance Organization
PST	Pacific Standard Time
Q/D	Emissions divided by Distance
ROG	Reactive Organic Gas, used interchangeably with Volatile Organic Compound (VOC) in this report

SF2	SmartFire2
SIP	State Implementation Plan
SMOKE	Sparse Matrix Operator Kernel Emissions
SPECIATE	U.S. EPA repository of organic gas and particulate matter speciation emission source profiles
SSEC	Space Science and Engineering Center
STO	NWS Sacramento Forecast Office
UNC	University of North Carolina
U.S. EPA	United States Environmental Protection Agency
USDA	United States Department of Agriculture
UTC	Coordinated Universal Time
UWM	University of Wisconsin, Madison
VOC	Volatile Organic Compound
WRCC	Western Regional Climate Center

Overview/Introduction

During the summer of 2018, extreme fuel conditions in California created an extreme fire season. Almost all of Northern California and large portions of Southern California were affected (Figure 1-1), with smoke and haze lingering for weeks. As expected, numerous monitoring sites recorded elevated particulate matter (PM) concentration levels, with many days above the National Ambient Air Quality Standards (NAAQS) for both $PM_{2.5}$ and PM_{10}. Ozone concentrations were also impacted, with levels above and beyond that normally seen during the summer high ozone season.

Figure 1-1: NASA/NOAA Suomi NPP satellite image - August 7, 2018[1]

[1] *NASA Worldview*, accessed 6/18/21

I. NAAQS and Attainment Status

To protect public health and the environment, U.S. Environmental Protection Agency (U.S. EPA) has set a NAAQS (or standard) for ozone (O_3) that specifies the maximum allowed concentration to be present in outdoor ambient air. The national ozone standard, first being set in 1979, has been periodically reviewed and revised, resulting in stricter standards set at lower and lower concentrations. Areas determined not to meet these standards are considered nonattainment areas. An 8-hour ozone standard was initially promulgated in 1997, and further revised in 2008, and 2015 as noted in Table 1-1. Due to its high population, urban density, and unique geography, California is home to a significant number of ozone nonattainment areas.

Table 1-1: 8-Hour Ozone NAAQS

Final Rule/Decision	Level (ppm – parts per million)
1997	0.08
2008	0.075
2015	0.070

The entirety of Calaveras County, the Chico MSA in Butte County, the Sutter Buttes in Sutter County, the entirety of Tuolumne County, and the Tuscan Buttes in Tehama County were all designated as Marginal nonattainment areas for the 2015 Ozone NAAQS. The western portion of Nevada County was designated as a Serious nonattainment area for the 2008 Ozone NAAQS. The impacted site(s) and upcoming regulatory determination(s) are indicated in Table 1-2.

Table 1-2: Ozone nonattainment areas in Northern California with upcoming regulatory determinations

Nonattainment Area	Ozone NAAQS	Classification	Regulatory Determination	Impacted Site	AQS ID
Calaveras County	2015	Marginal	Attainment	San Andreas	06-009-0001
Chico (Butte County)	2015	Marginal	Attainment	Paradise-4405 Airport Road	06-007-0007
Sutter Buttes	2015	Marginal	Attainment	Sutter Buttes	06-101-0004
Tuolumne County	2015	Marginal	Attainment	Sonora	06-109-0005
Tuscan Buttes	2015	Marginal	Attainment	Tuscan Buttes	06-103-0004
Western Nevada County	2008	Serious	Attainment	Grass Valley-Litton Building	06-057-0005

II. Clean Air Act and Exceptional Event Rule Requirements

The Clean Air Act (CAA)[2] defines an exceptional event as:

1. The event affected air quality;
2. The event was not reasonably controllable or preventable;
3. The event was caused by human activity that is unlikely to recur at a particular location or was a natural event; and
4. There exists a clear causal relationship between the specific event and the monitored exceedance.

On October 3, 2016, the EPA finalized revisions to the "Treatment of Data Influenced by Exceptional Events",[3] also known as the Exceptional Events Rule (EER). These regulations govern exclusion of event-influenced air quality data from certain regulatory determinations of the U.S. EPA Administrator under the CAA Regulatory determinations applicable under the revised EER which are:

- An action to designate or redesignate an area as attainment, unclassifiable/attainment, nonattainment, or unclassifiable for a particular NAAQS;
- The assignment or re-assignment of a classification category to a nonattainment area;
- A determination regarding whether a nonattainment area has attained a NAAQS by its CAA deadline, including a "clean data determination";
- A determination that an area has data for the specific NAAQS that qualify the area for an attainment date extension under the CAA provisions;
- A finding of SIP inadequacy leading to a SIP call; and
- Other actions on a case-by-case basis.

U.S. EPA regulations[4] state that exceptional events demonstrations must address and include the following elements:

1. A narrative conceptual model;
2. A demonstration that the event was both not reasonably controllable and not reasonably preventable;
3. A demonstration that the event was a human activity unlikely to recur at a particular location or was a natural event; and
4. A demonstration that the event affected air quality in such a way that there exists a clear causal relationship between the specific event and the monitored exceedance.

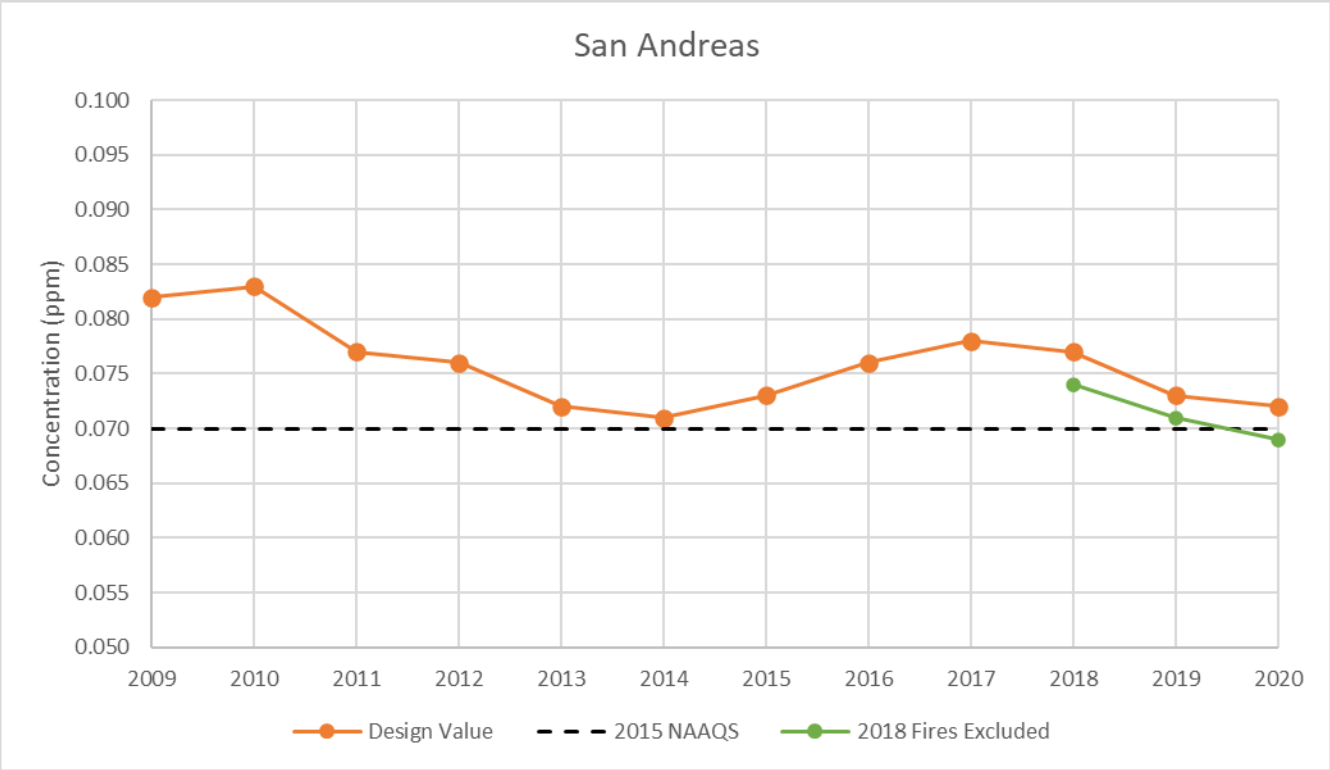
III. Actions Requested

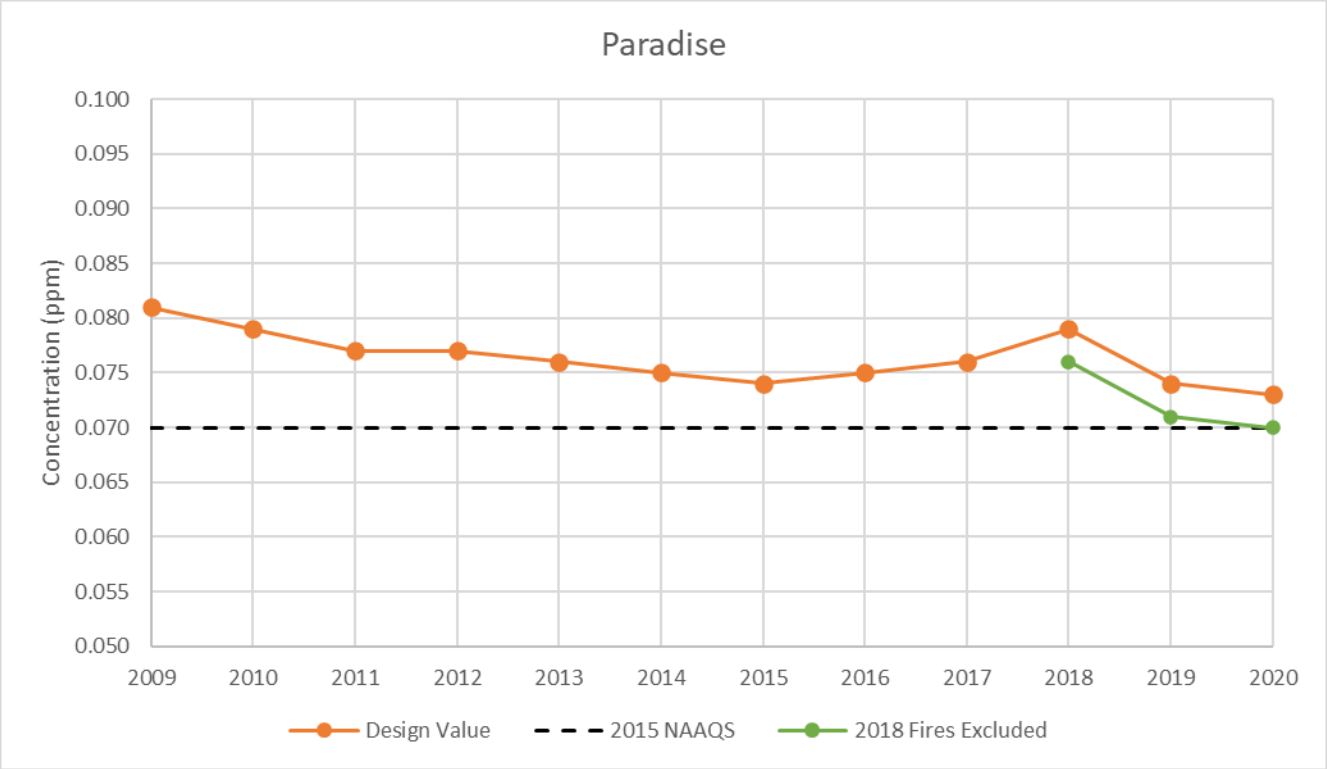
Although a significant number of ozone nonattainment areas were impacted by the historic 2018 wildfires, not all areas have upcoming regulatory determinations applicable under the

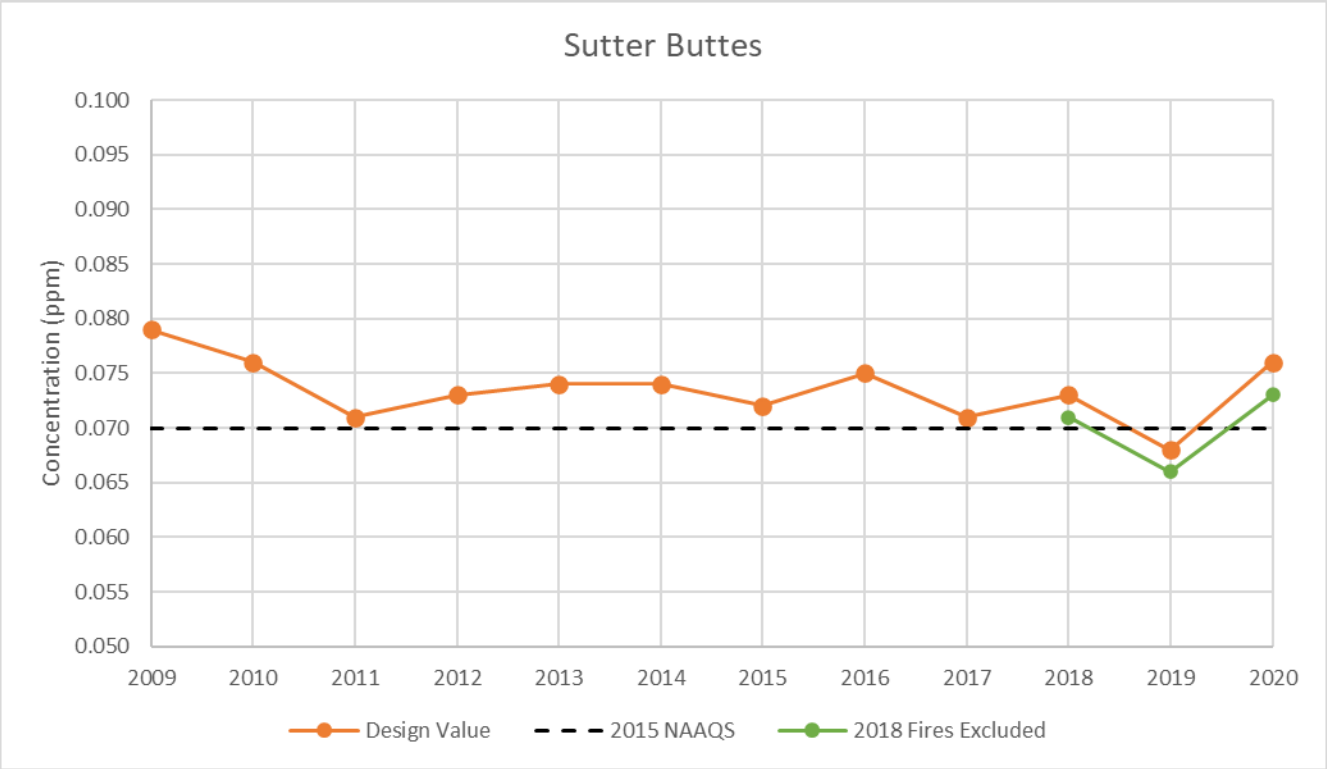
[2] CAA Section 319(b)
[3] 81 FR 68216
[4] 40 CFR 50.14(c)(3)(iv)

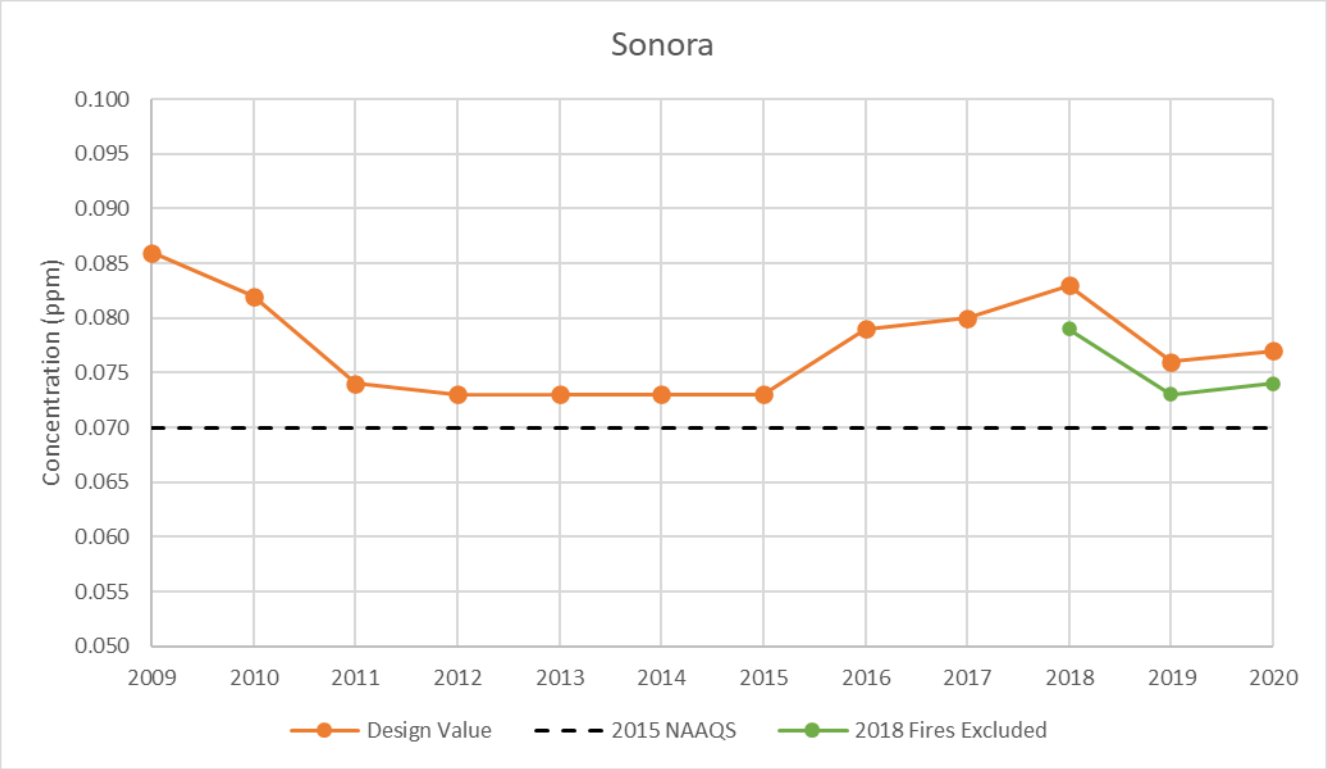
revised EER. The California Air Resources Board (CARB) is submitting this Exceptional Event demonstration to U.S. EPA for days in the summer of 2018 that impacted the entirety of the ozone nonattainment areas of Calaveras County, the Chico MSA in Butte County, the Sutter Buttes in Sutter County, Tuolumne County, the Tuscan Buttes in Tehama County, and the Western Portion of Nevada County. These days, along with impacted days in 2020 to be addressed in a separate document, will affect the upcoming attainment year determinations for the pertinent 2008 and 2015 ozone NAAQS for areas which have otherwise met the level of the standards (Figure 1-2, Table 1-3). The specific exceedances of the standards requested for concurrence at the San Andreas (Calaveras County), Paradise (Chico MSA/Butte County), Sutter Buttes, Sonora (Tuolumne County), Tuscan Buttes, and Grass Valley (Western Part of Nevada County) monitors are listed in Table 1-4.

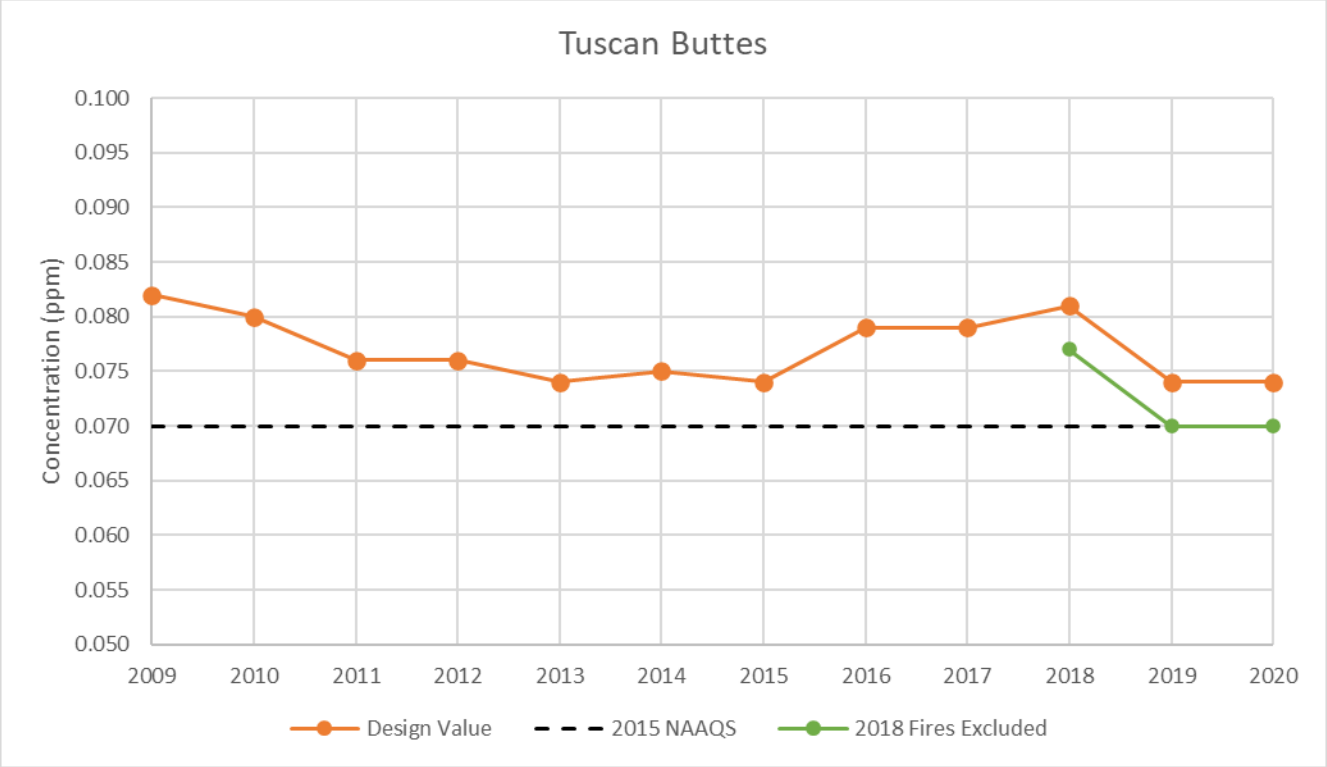
Figure 1-2: 8-hour ozone design values at San Andreas, Paradise, Sutter Buttes, Sonora, Tuscan Buttes, and Grass Valley




Paradise
0.100
0.095
0.090
0.085
0.080
0.075
0.070
0.065
0.060
0.055
0.050
Concentration (ppm)
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
Design Value
2015 NAAQS
2018 Fires Excluded


Sutter Buttes
0.100
0.095
0.090
0.085
0.080
0.075
0.070
0.065
0.060
0.055
0.050
Concentration (ppm)
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
Design Value
2015 NAAQS
2018 Fires Excluded


Sonora
0.100
0.095
0.090
0.085
0.080
0.075
0.070
0.065
0.060
0.055
0.050
Concentration (ppm)
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
Design Value
2015 NAAQS
2018 Fires Excluded


Tuscan Buttes
0.100
0.095
0.090
0.085
0.080
0.075
0.070
0.065
0.060
0.055
0.050
Concentration (ppm)
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
Design Value
2015 NAAQS
2018 Fires Excluded

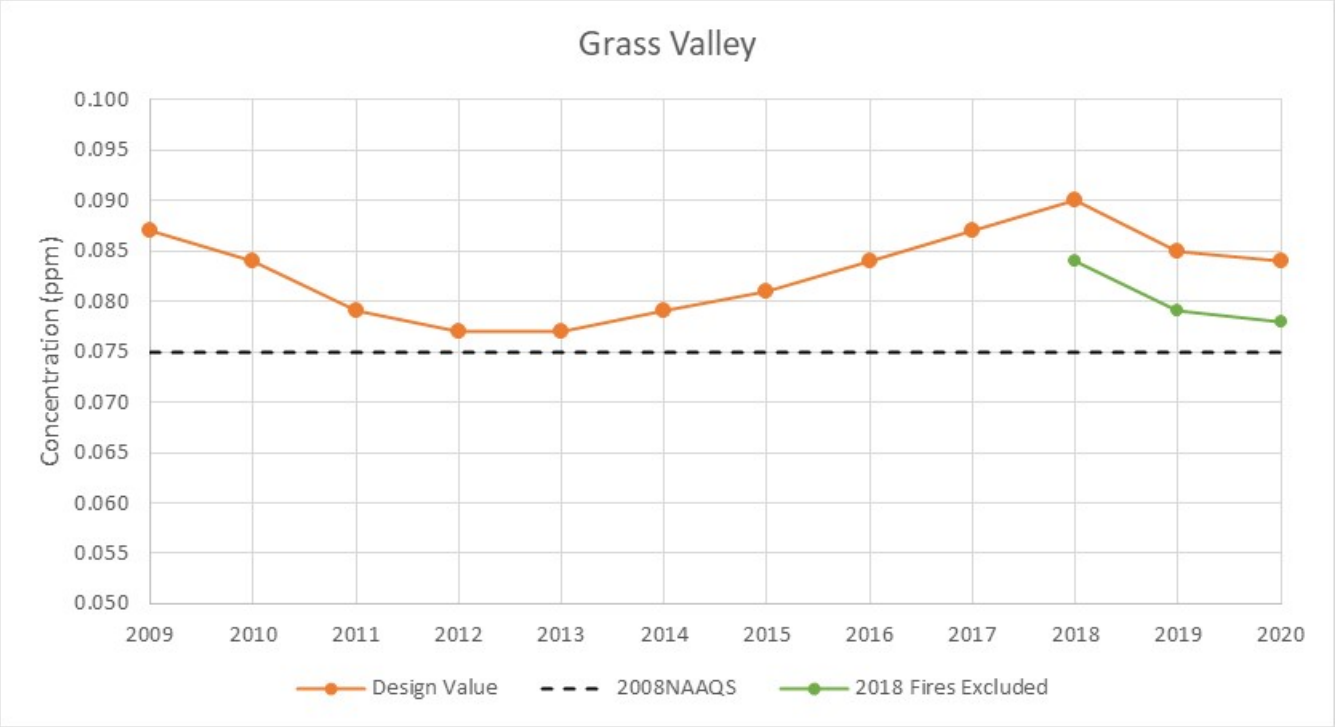


Table 1-3: 8-hour ozone design values with and without U.S. EPA concurrence (2018 events only)

Design Value Without Concurrence

Site	2018	2019	2020
San Andreas	0.077	0.073	0.072
Paradise	0.079	0.074	0.073
Sutter Buttes	0.073	0.068*	0.076
Sonora	0.083	0.076	0.077
Tuscan Buttes	0.081	0.074	0.074
Grass Valley[#]	0.090	0.085	0.084

Design Value With Concurrence

Site	2018	2019	2020
San Andreas	0.074	0.071	0.069
Paradise	0.076	0.071	0.070
Sutter Buttes	0.071	0.066*	0.073
Sonora	0.079	0.073	0.074
Tuscan Buttes	0.077	0.070	0.070
Grass Valley[#]	0.084	0.079	0.078

[#] 8-hour design value for 2008 (0.075 ppm) NAAQS
* Invalid design value due to insufficient data in 2017

Table 1-4: Summary of 2018 8-Hour ozone exceedances influenced by wildland fires

Air District	Monitoring Site	AQS ID	POC	Date	8-Hour Concentration
Calaveras	San Andreas	06-009-0001	1	7/28/2018	0.071
Calaveras	San Andreas	06-009-0001	1	7/30/2018	0.077
Calaveras	San Andreas	06-009-0001	1	7/31/2018	0.086
Calaveras	San Andreas	06-009-0001	1	8/2/2018	0.074
Calaveras	San Andreas	06-009-0001	1	8/5/2018	0.078
Calaveras	San Andreas	06-009-0001	1	8/8/2018	0.071
Calaveras	San Andreas	06-009-0001	1	8/9/2018	0.081
Calaveras	San Andreas	06-009-0001	1	8/10/2018	0.076
Butte	Paradise	06-007-0007	1	7/26/2018	0.075
Butte	Paradise	06-007-0007	1	7/27/2018	0.080
Butte	Paradise	06-007-0007	1	7/28/2018	0.079
Butte	Paradise	06-007-0007	1	7/30/2018	0.074
Butte	Paradise	06-007-0007	1	7/31/2018	0.086
Butte	Paradise	06-007-0007	1	8/1/2018	0.098
Butte	Paradise	06-007-0007	1	8/2/2018	0.081
Butte	Paradise	06-007-0007	1	8/7/2018	0.078
Butte	Paradise	06-007-0007	1	8/8/2018	0.076
Butte	Paradise	06-007-0007	1	8/9/2018	0.088
Butte	Paradise	06-007-0007	1	8/10/2018	0.084
Feather River	Sutter Buttes	06-101-0004	1	7/28/2018	0.080
Feather River	Sutter Buttes	06-101-0004	1	7/29/2018	0.075
Feather River	Sutter Buttes	06-101-0004	1	7/30/2018	0.083
Feather River	Sutter Buttes	06-101-0004	1	7/31/2018	0.082
Feather River	Sutter Buttes	06-101-0004	1	8/1/2018	0.082
Feather River	Sutter Buttes	06-101-0004	1	8/3/2018	0.074
Feather River	Sutter Buttes	06-101-0004	1	8/7/2018	0.075
Feather River	Sutter Buttes	06-101-0004	1	8/9/2018	0.079
Feather River	Sutter Buttes	06-101-0004	1	8/10/2018	0.077
Tuolumne	Sonora	06-109-0005	1	7/28/2018	0.079
Tuolumne	Sonora	06-109-0005	1	7/29/2018	0.079
Tuolumne	Sonora	06-109-0005	1	7/30/2018	0.076
Tuolumne	Sonora	06-109-0005	1	7/31/2018	0.078
Tuolumne	Sonora	06-109-0005	1	8/2/2018	0.078
Tuolumne	Sonora	06-109-0005	1	8/4/2018	0.074
Tuolumne	Sonora	06-109-0005	1	8/5/2018	0.084
Tuolumne	Sonora	06-109-0005	1	8/6/2018	0.080
Tuolumne	Sonora	06-109-0005	1	8/8/2018	0.087
Tuolumne	Sonora	06-109-0005	1	8/9/2018	0.074

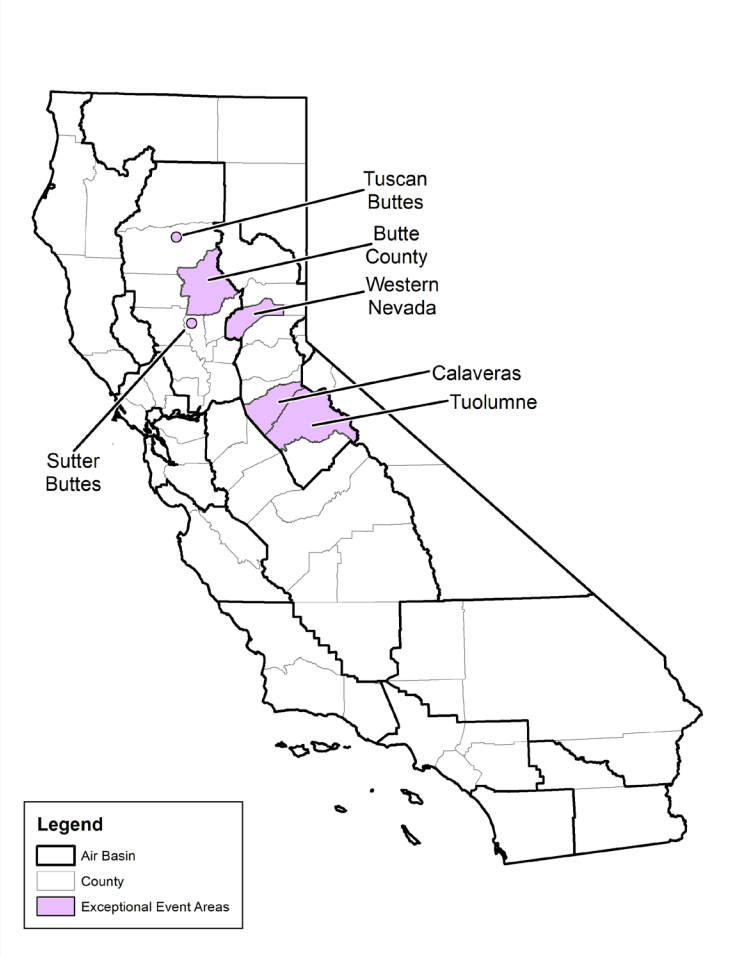
Air District	Monitoring Site	AQS ID	POC	Date	8-Hour Concentration
Tuolumne	Sonora	06-109-0005	1	8/10/2018	0.079
Tehama	Tuscan Buttes	06-103-0004	1	7/27/2018	0.076
Tehama	Tuscan Buttes	06-103-0004	1	7/31/2018	0.081
Tehama	Tuscan Buttes	06-103-0004	1	8/1/2018	0.082
Tehama	Tuscan Buttes	06-103-0004	1	8/2/2018	0.073
Tehama	Tuscan Buttes	06-103-0004	1	8/3/2018	0.077
Tehama	Tuscan Buttes	06-103-0004	1	8/7/2018	0.071
Tehama	Tuscan Buttes	06-103-0004	1	8/8/2018	0.078
Tehama	Tuscan Buttes	06-103-0004	1	8/9/2018	0.087
Tehama	Tuscan Buttes	06-103-0004	1	8/10/2018	0.085
Northern Sierra	Grass Valley	06-057-0005	1	7/26/2018	0.083
Northern Sierra	Grass Valley	06-057-0005	1	7/27/2018	0.082
Northern Sierra	Grass Valley	06-057-0005	1	7/28/2018	0.078
Northern Sierra	Grass Valley	06-057-0005	1	7/29/2018	0.078
Northern Sierra	Grass Valley	06-057-0005	1	7/31/2018	0.101
Northern Sierra	Grass Valley	06-057-0005	1	8/1/2018	0.098
Northern Sierra	Grass Valley	06-057-0005	1	8/2/2018	0.101
Northern Sierra	Grass Valley	06-057-0005	1	8/7/2018	0.084
Northern Sierra	Grass Valley	06-057-0005	1	8/8/2018	0.095
Northern Sierra	Grass Valley	06-057-0005	1	8/9/2018	0.093
Northern Sierra	Grass Valley	06-057-0005	1	8/10/2018	0.086

Background

California is divided geographically into air basins to manage the air resources of the State on a regional basis. An air basin generally has similar meteorological and geographic conditions throughout. The State is currently divided into 15 air basins, and further subdivided into 35 local air pollution control districts (APCD(s) or district(s)) or air quality management districts (AQMD(s) or district(s)).

Almost the entire State of California was impacted by wildfires from July to September of 2018. It is estimated that over 39 percent of the population of the State experienced one or more days impacted by smoke from these fires.

Figure 2-1: Map of nonattainment areas with exceptional events addressed in this document



I. Regional Descriptions

This demonstration covers nonattainment areas in two of these air basins, the Sacramento Valley and the Mountain Counties.

The Sacramento Valley Air Basin is bounded on the north and west by the Coastal Mountain Range, on the east by the southern portion of the Cascade Mountain Range, and the northern portion of the Sierra Nevada Mountains. These mountain ranges reach heights in excess of 6,000 feet above mean sea level, with individual peaks rising much higher. The mountains provide a substantial barrier to both locally created pollution and the pollution that has been transported northward on prevailing winds. The air basin is shaped like an elongated bowl.

The Mountain Counties Air Basin lies along the northern Sierra Nevada mountain range, close to or contiguous with the Nevada border, and covers an area of roughly 11,000 square miles. Elevations range from several hundred feet in the foothills to over 10,000 feet above mean sea level along portions of the Sierra crest. Topography is highly variable, including rugged mountain peaks and valleys with extreme slopes and differences in altitude in the Sierras, as well as rolling foothills to the west. The general climate of the MCAB varies considerably with elevation and proximity to the Sierra range. Regional wind flows are affected by the mountains and hills, which direct surface air flows, cause shallow vertical mixing, and create areas of high pollutant concentrations by hindering dispersion.

A. Calaveras County (San Andreas)

The Calaveras County APCD is the local air district for Calaveras County. The county is situated in the foothills and mountains of the Sierra Nevada mountain range on the eastern side of California. Elevations range from about 200 feet (61 meters) above mean sea level in the west to over 8,000 feet (2,400 meters) in the east. It is bordered on the north by Amador County and on the south by Tuolumne County, both in the Mountain Counties Air Basin, on the east by Mono and Alpine Counties in the Great Basin Valleys Air Basin, and on the west by San Joaquin and Stanislaus Counties in the San Joaquin Valley Air Basin (Figure 2-1).

The 2019 population estimate for Calaveras County is 45,905, with most of the population residing below 5,000 feet and near the main transportation corridors for CA-26, CA-49, and CA-4. There are no major population centers and the county is described as rural. The county seat is in the unincorporated town of San Andreas, with a population of less than 3,000. The only incorporated town in the county is Angel's Camp, which has a population of approximately 4,000.

Evaluation of meteorological data helps to assess the fate and transport of emissions contributing to ozone concentrations and to identify areas potentially contributing to the monitored violations. Evaluation is necessary in order to determine how meteorological conditions, including, but not limited to, weather, transport patterns, and stagnation conditions, could affect the fate and transport of ozone and precursor emissions from sources in the area.

The annual average wind speed is 18 mph in Calaveras County. Windspeeds are typically higher over the mountain peaks and passes. Calaveras normally experiences a diurnal wind pattern with daytime providing upslope winds in conjunction with prevailing westerly winds, and downslope winds overnight.

North-south air flow between Calaveras County and neighboring regions is possible with few barriers to this transport pattern due to weak topographic relief in the western parts of these areas. Air flow in the west-east direction is relatively unimpeded along the area's river canyons, which extend well east into the interior of the county. CA-26 and CA-4 parallel these river canyons. Eastward transport of pollutants from the more urbanized areas to the west, such as the Sacramento Metro and northern San Joaquin Valley areas, is thus possible during conditions of upslope flow. Neighboring San Joaquin and Sacramento valleys can have temperature inversions from 2,000 to 2,500 feet (600 to 750 meters) above the valley floor to as high as 5,000 feet (1,500 meters). Pollutants produced in the Sacramento and northern San Joaquin Valley and trapped under this inversion can reach fairly high into the mountain counties, or be advected there by daytime upslope flows. Previous assessments of transport by CARB have found a strong potential for pollutant transport from the Sacramento and San Joaquin valleys up into the mountain counties[5].

Conversely, westward transport of locally-generated pollution is possible during nighttime downslope flow. Nighttime drainage flows reverse this, so some of this pollution, in combination with pollution generated in the mountain counties themselves, could be transported back into the valleys, with the potential for some carryover into subsequent days.

Precipitation in Calaveras County can vary widely depending on elevation and topography[6]. The historical mean precipitation is 34 inches and the historical mean temperature is 57.6F. The mean temperature from 2010-2020 was 59.1F. The mean temperature range from 2010-2020 is 46.4F – 71.7F. However, the extreme temperature variation can be from above 110F in the low lying western region to subzero temperatures on the mountaintops in winter. The wet season runs from November through April with almost all precipitation falling during those months. The remaining months receive almost no precipitation. Calaveras County receives very little snowfall below 1,000 ft. elevation. Up to 7,000 feet, snow collects intermittently, and higher elevations remain snowcapped most of the wet season.[7]

The only official monitor in the county is located in the Town of San Andreas. Calaveras County was designated as a Marginal ozone nonattainment area in 2017 for the 2015 NAAQS based on data collected from the San Andreas monitor.

B. Chico / Butte County (Paradise)

The Butte County AQMD is the local air district for Butte County. The county is located in the northeastern portion of the Sacramento Valley Air Basin (Figure 2-1), which is bordered on the north and west by the Coastal Mountain Range and on the east by the southern portion of the Cascade Mountain Range and the northern portion of the Sierra Nevada Mountains.

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[5] Second Triennial Review of the Assessment of the Impacts of Transported Pollutants on Ozone Concentrations in California. (November 1996) *https://ww2.arb.ca.gov/sites/default/files/barcu/regact/transpol/isor.pdf*

[6] NOAA National Centers for Environmental Information, *Climate at a Glance: County Time Series*, published August 2021, retrieved on August 9, 2021

[7] California Intended Area Designations for the 2015 Ozone National Ambient Air Quality Standards Technical Support Document (TSD). *https://www.epa.gov/sites/default/files/2017-12/documents/ca_120d_tsd_combined_final.pdf* Pg 44-58

These mountain ranges reach heights in excess of 6000 feet in elevation, with individual peaks rising higher. This provides a substantial physical barrier to both locally created pollution and the pollution that has been transported northward on prevailing winds from the metropolitan areas to the south. Butte County itself is bordered by Tehama County to the north, Glenn County to the west, and Sutter and Yuba Counties to the south, all in the Sacramento Valley Air Basin with Plumas County, in the Mountain Counties Air Basin, bordering Butte County to the east (Figure 2-1).

The majority of county residents work and reside on the Sacramento Valley floor below 500 feet in elevation. Outside of the municipalities of Chico, Oroville, Gridley and Biggs, land use on the Sacramento Valley floor is primarily agricultural, with the northeastern half of Butte County made up of forested foothill and mountainous terrain. The Town of Paradise and the community of Magalia are the largest population centers in the foothills with smaller rural communities existing on the various ridges. The Paradise - Airport ozone monitoring station is located at an elevation of 1,276 feet in a rural area just south of the Town of Paradise.

Butte County experiences a Mediterranean climate with hot, sunny summers and cool, wet winters. Precipitation amounts during the rainy season increase with elevation. Temperatures generally decrease with elevation; however, the Sacramento Valley floor often experiences temperature inversions during stable conditions.

Ozone pollution can impact Butte County between the months of May and October, peaking during mid-summer. The lightly-populated foothill regions of Butte County experience higher concentrations of ozone compared to more populated areas on the Sacramento Valley floor. This is evident by comparing the Chico ozone monitoring site, which has continuously attained the 2008 and 2015 Ozone NAAQS, with the foothills site at Paradise. Although the Paradise–Airport site attained the 2008 ozone NAAQS by the July 2015 attainment deadline, U.S. EPA found that it did not meet the 2015 ozone NAAQS. In April 2018, U.S. EPA designated the entire county of Butte (named the Chico (Butte County), CA Nonattainment Area) as a Marginal nonattainment area for the 2015 ozone NAAQS.

Wildfires in and around Butte County contribute to elevated concentrations of both particulate matter and ozone. The risk of wildfire impacts peak during the dry season between June and November. Butte County experienced Very Unhealthy and Hazardous AQI conditions in both 2018 and 2020 due to wildfire impacts.

C. Sutter Buttes / Sutter County / Feather River AQMD

The Feather River AQMD (FRAQMD) includes both Sutter and Yuba counties and is located in the Sacramento Valley Air Basin. The FRAQMD is bordered by Butte County to the north, Colusa and Yolo Counties to the west, and Sacramento and a portion of Placer County to the south, all in the Sacramento Valley Air Basin. The FRAQMD is bordered to the east by the Mountain Counties Air Basin, specifically Sierra and Nevada Counties (Figure 2-1).

Although part of the FRAQMD is at elevations higher than 1,000 feet above sea level, the vast majority of its populace lives and works below that elevation. The four incorporated cities of Marysville (population just over 12,000), Wheatland (population just above 3,000),

Yuba City (population approximately 65,000), and Live Oak (population of about 8,000) are located on the valley floor between 59-92 feet elevation.

Summers are typically dry and warm. Most of the precipitation occurs during the winter months from December to March with an average rainfall of 21 inches. Average summer temperatures range from an average high of 93F to an average low of 60F. Average winter temperatures range from an average high of 57F to an average low of 39F[8].

The Sutter Buttes ozone monitor was established in 1993 and is located on the top of South Buttes in the Sutter Buttes Mountain Range, a circular complex of eroded volcanic lava domes which rise to a maximum elevation of 2,115 feet and cover a roughly circular area about 11 miles in diameter.[9] The surrounding area is a broad, flat agricultural plain at elevation 65 feet, over 2000 feet lower than the monitor.

The Sutter Buttes monitor was placed to detect pollutant transport at high elevations and measured ozone levels aloft that exceed the standard. The U.S. EPA designated the Sutter Buttes mountain top area as a nonattainment area for the 8-hour ozone standard, separate from the rest of FRAQMD as the other air quality monitor intended to measure population exposure in Sutter and Yuba Counties is located in Yuba City at a considerably lower elevation of 60 feet. This monitor showed attainment of the 8-hour ozone standard. The limited nonattainment area was not intended to be subject to control requirements, with a regional modeling demonstration showing that this elevated site would attain the standard as a result of upwind controls and the comprehensive statewide program.

South Sutter County is designated as a Moderate nonattainment area for the 2015 Ozone NAAQS and is part of the Sacramento Metro Ozone Nonattainment Area. This nonattainment area has requested to be bumped up to Serious nonattainment and the request is pending final U.S. EPA action[10]. The Sutter Buttes is designated as a Marginal nonattainment area for the 2015 Ozone NAAQS. The remainder of Sutter County and all of Yuba County is in attainment for the ozone NAAQS.

D. Tuolumne County (Sonora)

The Tuolumne County APCD includes all of Tuolumne County, located along the western slope of the central Sierra Nevada mountain range. The county is bordered on the north by Calaveras and Alpine Counties, on the east by Mono County, on the south by Mariposa and Merced Counties, and on the west by Stanislaus County (Figure 2-1). Tuolumne County is one of seven air pollution control districts that make up the MCAB. According to the U.S. Census Bureau Tuolumne County comprises 2,274 square miles with approximately 75 percent of

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[8] Climate data obtained from https://wrcc.dri.edu/ covering 1981-2010 measurements from the Marysville station.

[9] U.S. EPA, HYPERLINK *https://www.epa.gov/sites/default/files/2017-12/documents/ca_120d_tsd_combined_final.pdf California Intended Area Designations for the 2015 Ozone National Ambient Air Quality Standards Technical Support Document (TSD),* p.290, last accessed 8/31/21

[10] *https://www.fraqmd.org/federal-air-quality-plans*

land under the jurisdiction of government agencies, most of that land being in the Stanislaus National Forest and Yosemite National Park.

Tuolumne County has a population of approximately 55,000 people with the City of Sonora being the only incorporated city with a population of almost 5,000. The unincorporated county is predominantly rural with dispersed small-town communities primarily located on three State highways (Highways 49, 120, and 108). The county ranges in elevation from 200 to 13,000 feet and is home to the two highest mountain passes through the Sierra Nevada, Tioga pass (9,945 feet) and Sonora Pass (9,628 feet)

The general climate of Tuolumne County varies with elevation but is considered a Mediterranean climate with dry summers and mild or cool winters. The local terrain creates a wide range of temperatures, rainfall, and localized winds. Predominate surface winds during ozone season (Summer through early Fall) are westerly, with occasional northerly or southerly variations. Like most foothill counties, Tuolumne County experiences up-slope winds during the day and down-slope winds at night, a diurnal trend typically seen during the Spring, Summer, and Fall months, which can affect pollutant transport. Temperature inversions also play a critical role in preventing dispersion of smoke and other air pollutants.

Tuolumne County is a Marginal nonattainment area for the 2015 Ozone NAAQS. In 2001, CARB identified several counties in the Mountain Counties Air Basin impacted by significant ozone transport from upwind urban areas[11]. This led to a classification of these counties, including Tuolumne County, as being nonattainment due to "overwhelming transport". The upwind areas that have been established as contributing to Tuolumne County's violations are the San Joaquin Valley, San Francisco Bay Area, and the Broader Sacramento Area. To date, this classification has not changed. Tuolumne County's one ozone monitor is located in Sonora.

E. Tuscan Buttes / Tehama County

Tehama County APCD is comprised of the entirety of Tehama County and is located in the north central portion of California. It is bounded by the counties of Trinity and Mendocino, in the North Coast Air Basin, Shasta, Butte, Glenn Counties in the Sacramento Valley Air Basin, and Plumas County in the Mountain Counties Air Basin (Figure 2-1).

Tehama, along with Butte, Colusa, Glenn, Shasta, Sutter, and Yuba counties make up the northern portion of the Sacramento Valley Air Basin and are bounded on the north and west by the Coastal Mountain Range and on the east by the southern portion of the Cascade Mountain Range and the northern portion of the Sierra Nevada Mountains. These mountain ranges reach heights in excess of 6,000 feet above mean sea level, with individual peaks rising much higher. The mountains provide a substantial barrier to both locally created pollution and the pollution that has been transported northward on prevailing winds from the Broader Sacramento Area. The northern portion of the Air Basin is shaped like an elongated

[11] *https://ww2.arb.ca.gov/our-work/programs/resource-center/technical-assistance/air-quality-and-emissions-data/ozone*

bowl, with temperature inversion layers that can act as a lid, allowing air pollution to rise to unhealthy levels.

The two largest population centers are Red Bluff in central Tehama County and Corning approximately twenty miles to the south of Red Bluff. The 2010 population of Tehama County was 63,487. Approximately 22 percent of the County's residents live in Red Bluff and approximately 12 percent live in Corning. Both cities are positioned on Interstate-5 which runs north-south through the approximate center of the county. Although a significant area of the region is at elevations higher than 1,000 feet, most of the populace live and work on the valley floor. The climate throughout the area is similar, especially in regard to the valley floor, with typically dry and warm summers and the majority of precipitation occurring during the winter months from December to March.

Tehama County is currently unclassified/attainment for all NAAQS except for ozone in the Tuscan Buttes area. The Tuscan Buttes area is nonattainment and limited to the portion of the Tuscan Buttes above 1,800 feet, significantly higher in elevation than the surrounding area. The Tuscan Buttes was sited to study high-elevation transport of pollutants from upwind urban areas in the upper-Sacramento Valley. There is a lack of emissions sources as well as population in the Tuscan Buttes nonattainment area.

F. Western Part of Nevada County (Grass Valley) / Northern Sierra AQMD

The Northern Sierra AQMD includes the California counties of Nevada, Sierra, and Plumas. Nevada County spans the Sierra Nevada mountain range and is bordered on the north by Sierra County and the south by Placer County, in the MCAB. To the east is the State of Nevada and to the west is the Feather River AQMD in the Sacramento Valley Air Basin.

Nevada County has a population of approximately 100,000 with more than 80 percent of the population and emissions in the western, nonattainment portion. The largest town in the nonattainment area is Grass Valley, with an estimated population of 12,817 as of 2019[12].

The predominant wind direction in western Nevada County, especially during the summer months, is from southwest to northeast. This pattern is conducive to the transport of pollutants from the Bay Area and the Sacramento Area into Nevada County. On most summer mornings the "delta breeze" moves from the Carquinez Strait northeast towards Sacramento and then veers northward and continues into the northern Sacramento Valley and into the foothills of the northern Sierra Nevada, including Western Nevada County. High ozone days are typically associated with light to moderate winds blowing from the direction of Sacramento. In the absence of a significant weather system affecting the area, summertime winds in Nevada County typically flow up-slope in the daytime and down-slope at night (referred to as a diurnal flow pattern).

[12] *https://www.census.gov/quickfacts/grassvalleycitycalifornia* , last accessed on 8/27/21

Most ozone exceedances happen on hot, dry, clear afternoons and evenings. High summer temperatures and low relative humidity play a big role in ozone formation. Sunlight is another factor, with exceedance days being relatively concentrated in the long, clear days of June through August. The combination of a hot, dry summer and little to no cloud cover favors photochemical ozone formation. As a result of conditions encouraging ozone formation and the transport of both ozone and ozone precursors from upwind metropolitan areas, ozone concentrations tend to be the highest in July and August. The monthly average of ozone concentrations at the Grass Valley[13] air monitoring site gradually rise from the beginning of the year toward the summer where levels peak in July and August when temperatures are usually the hottest, then decline during the fall.

The Western Part of Nevada County Nonattainment Area is located in northern California's Sierra Nevada foothills. Although the nonattainment area is relatively small (802.41 square miles), it rises from near 300 feet above mean sea level in the west to over 9,000 feet above mean sea level near the eastern boundary. The eastern boundary is a line running north/south that more or less follows rugged mountain tops that form the "Sierra Crest." The line crosses Interstate-80 slightly east of the town of Soda Springs. The nonattainment area is bordered on the north by the Middle Yuba River and is bisected by the South Yuba River. Most of the southern border is defined by the Bear River. The massive scenic canyons created by these rivers run predominantly east/west and are more than 2,000 feet deep in some places.

II. Overview of Monitoring Network

The CARB Primary Quality Assurance Organization (PQAO) is comprised of 32 of the 35 air districts in California. The three remaining districts, the Bay Area Air Quality Management District (AQMD), San Diego County Air Pollution Control District (APCD), and South Coast AQMD, represent their own PQAOs.

California's ambient air monitoring network includes over 250 sites and more than 700 monitors, making it one of the most extensive in the world. Many regions in California are characterized by complex terrain, variable meteorological conditions, and diverse emission sources. A large monitoring network is critical for assessing the State's progress in meeting clean air objectives, understanding spatial and temporal variation in air pollutants, and evaluating pollutant exposure. Monitors are operated by CARB, local air districts, and other entities including the National Park Service, private contractors, and tribal authorities.

In the Sacramento Valley Air Basin, there are three nonattainment areas covered by this demonstration (Figure 2-2, Table 2-2). The Tuscan Buttes in Tehama County and the Sutter Buttes in Sutter County both have one ozone monitor. Butte County has two monitors, the design value site at Paradise-Airport Road, and an additional monitor at Chico-East.

[13] Data obtained from Northern Sierra AQMD maintained Ozone monitoring site at 200 Litton Drive in Grass Valley

The Mountain Counties Air Basin has three nonattainment areas covered by this demonstration (Figure 2-2, Table 2-1). The Western Part of Nevada County has one ozone monitor at Grass Valley, Calaveras County has one ozone monitor at San Andreas, and Tuolumne County has one ozone monitor at Sonora.

Figure 2-2: Ozone and $PM_{2.5}$ monitoring in Sacramento Valley and Mountain County Air Basins

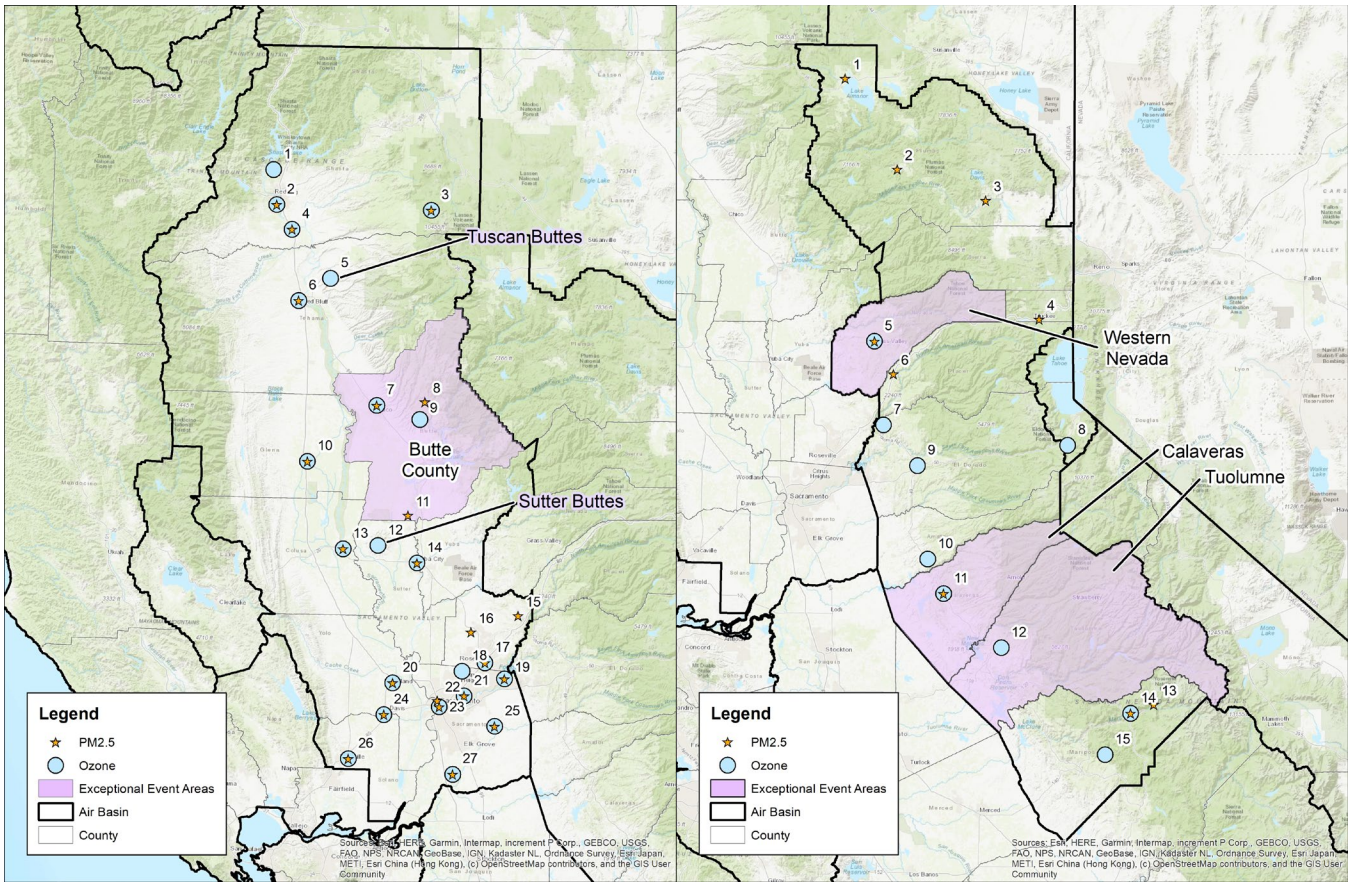


Table 2-1: Monitoring sites in Sacramento Valley and Mountain County Air Basins

Number	Monitoring Site	Ozone	PM2.5
1	Shasta Lake-Lake Blvd	X	
2	Redding-Health Dept	X	X
3	Lassen Volcanic Natl Park-Manzanita Lake	X	X
4	Anderson-North St	X	X
5	Tuscan Buttes	X	
6	Red Bluff-Walnut St	X	X
7	Chico-East Ave	X	X
8	Paradise-Theater		X
9	Paradise-Airport Rd	X	
10	Willows-N Colusa St	X	X
11	Gridley-Cowee Ave		X
12	Sutter Buttes	X	
13	Colusa-Sunrise Blvd	X	X
14	Yuba City-Almond St	X	X
15	Auburn-Atwood Ave		X
16	Lincoln-Moore Rd		X
17	Roseville-N Sunrise Blvd	X	X
18	North Highlands-Blackfoot Way	X	
19	Folsom-Natoma St	X	X
20	Woodland-Gibson Rd	X	X
21	Sacramento-Del Paso Manor	X	X
22	Sacramento-Bercut Dr		X
23	Sacramento-T St	X	X
24	Davis-UCD Campus	X	X
25	Sloughhouse	X	X
26	Vacaville-Ulatis Dr	X	X
27	Elk Grove-Bruceville Rd	X	X

Number	Monitoring Site	Ozone	PM2.5
1	Chester-1st Ave		X
2	Quincy-N Church St		X
3	Portola-Gulling St		X
4	Truckee-Fire Station		X
5	Grass Valley-Litton Building	X	X
6	Colfax-City Hall		X
7	Cool-Highway 193	X	
8	Echo Summit	X	
9	Placerville-Gold Nugget Way	X	
10	Jackson-Clinton Rd	X	
11	San Andreas-Gold Strike Rd	X	X
12	Sonora-Barretta St	X	
13	Yosemite Village-Visitor Center		X
14	Yosemite-Turtleback Dome	X	X
15	Jerseydale-6440 Jerseydale	X	

The ambient air monitoring networks in these areas meet the minimum monitoring requirements for all criteria pollutants pursuant to Title 40, Part 58 of the Code of Federal Regulations (CFR), Appendix D. The monitoring network in each area is reviewed annually to fulfill the requirements defined in 40 CFR 58.10 to ensure the networks meet the monitoring objectives defined in 40 CFR 58, Appendix D. Data was collected and quality assured as per 40 CFR 58 and submitted to the Air Quality System (AQS).

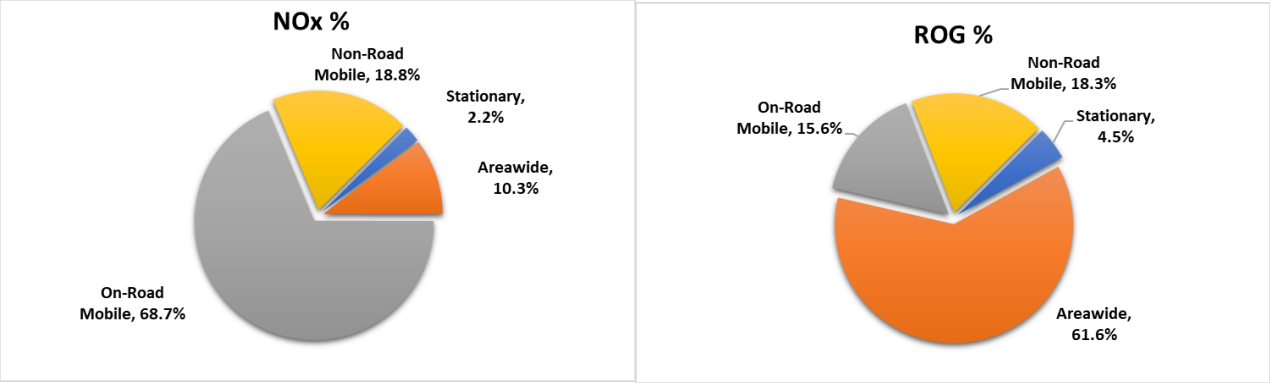
III. Characteristics of Non-Event O_3 Formation

Ground-level ozone is formed by chemical reactions between oxides of nitrogen (NOx) and volatile organic compounds (ROG or VOC) in the presence of heat and sunlight. Further discussion is separated by area.

A. Calaveras County (San Andreas)

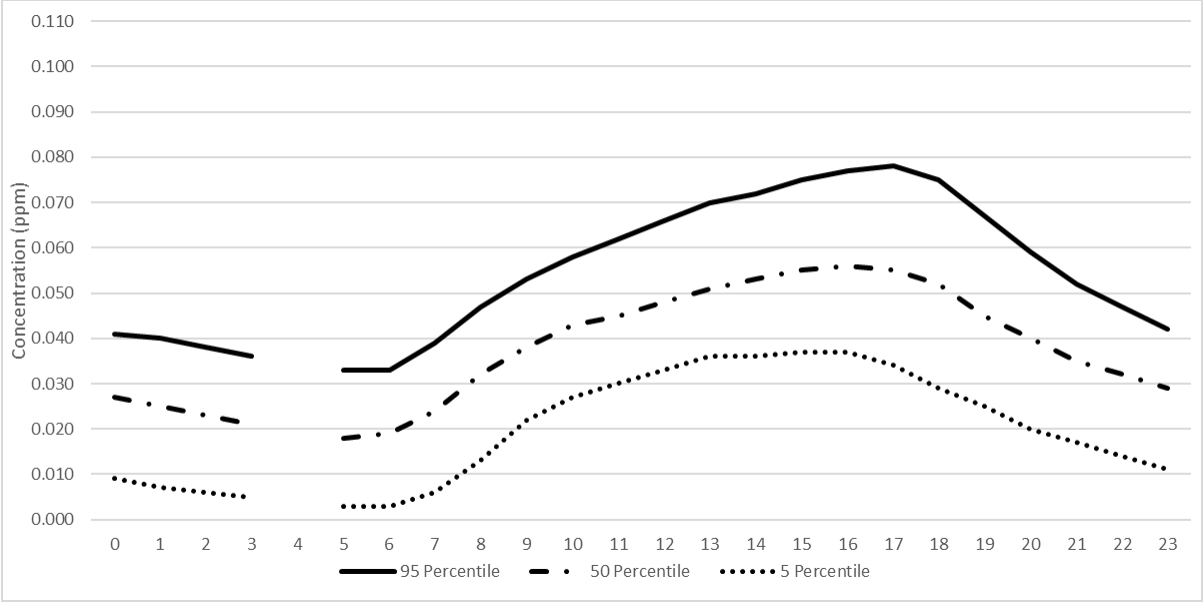
On-road mobile source category is the largest source of anthropogenic (human-caused) NOx ozone precursors in Calaveras County, while areawide sources are the largest category of anthropogenic ROG emissions.

Figure 2-3: Calaveras County anthropogenic daily summer 2018 NOx and ROG emissions estimates[14]



The highest ozone values occur from April through October, with exceedances during the remainder of the year extremely rare. Ozone concentrations at San Andreas typically peak in the late afternoon (Figure 2-4) and are lowest in the early morning. Daily calibration checks frequently occurred during this low concentration time period in 2013-2017, so data for hour 4 was excluded from the calculation of percentiles.

Figure 2-4: Typical April-October 1-hour ozone diurnal pattern at San Andreas (2013-2017)

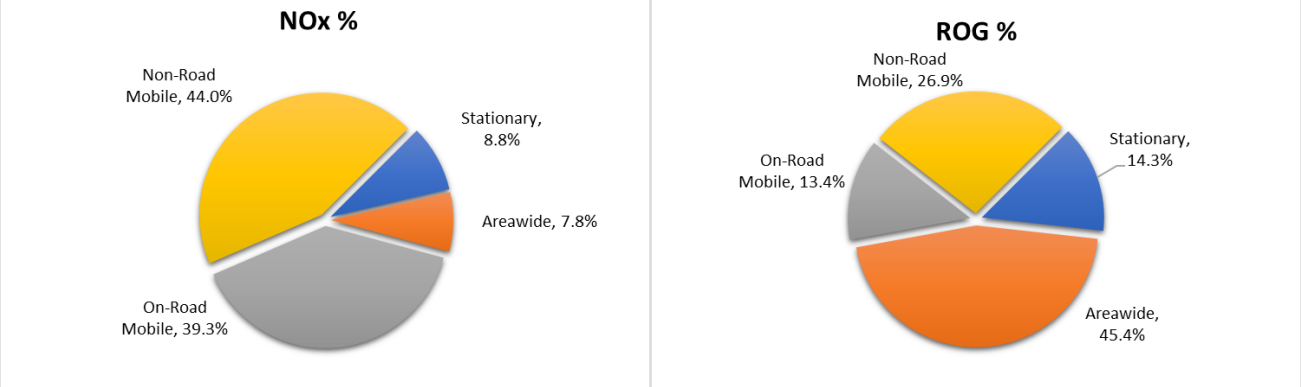


[14] 2019 Ozone SIP-baseline-EI Tool Ver 1.02 (accessed 6/29/2021): *CEPAM: External Adjustment Reporting Tool*

B. Chico / Butte County (Paradise)

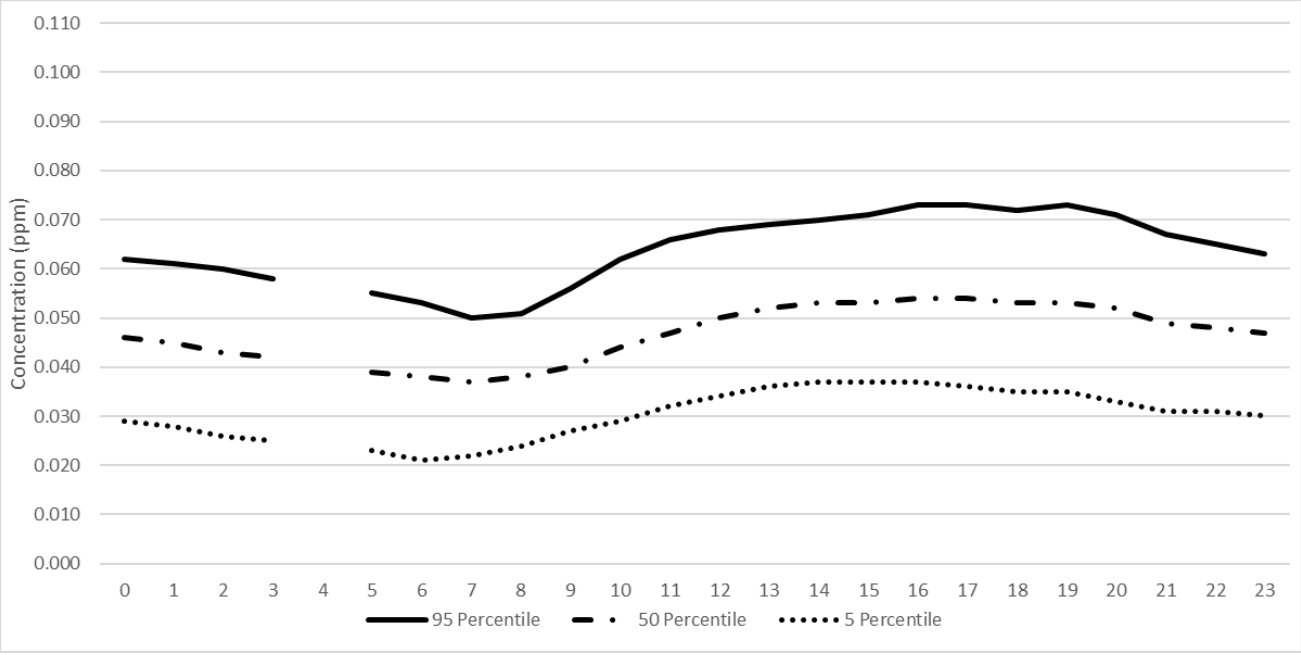
The non-road mobile source category is the largest contributor to anthropogenic NOx ozone precursors in the Chico area (Figure 2-5), followed closely by the on-road mobile source category. The areawide source category is the largest category of anthropogenic ROG emissions.

Figure 2-5: Butte County anthropogenic daily summer 2018 NOx and ROG emissions estimates[14]



The highest ozone values occur from April through October, with exceedances during the remainder of the year extremely rare. Ozone concentrations at Paradise typically peak in the late afternoon (Figure 2-6) and are lowest in the mid-morning. Daily calibration checks frequently occurred in the early morning in 2013-2017, so data for hour 4 was excluded from the calculation of percentiles.

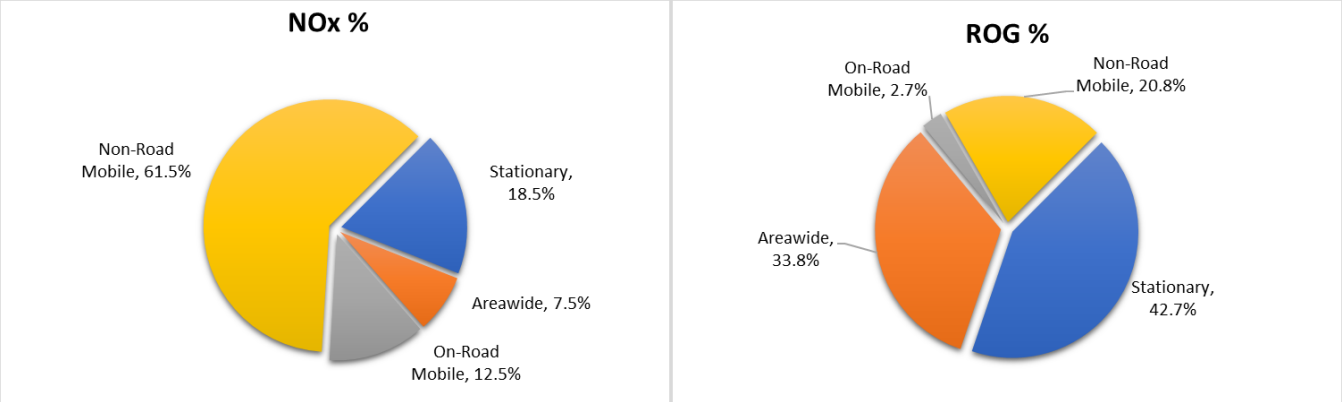
Figure 2-6: Typical April-October 1-hour ozone diurnal pattern at Paradise (2013-2017)



C. Sutter Buttes / Sutter County / Feather River AQMD

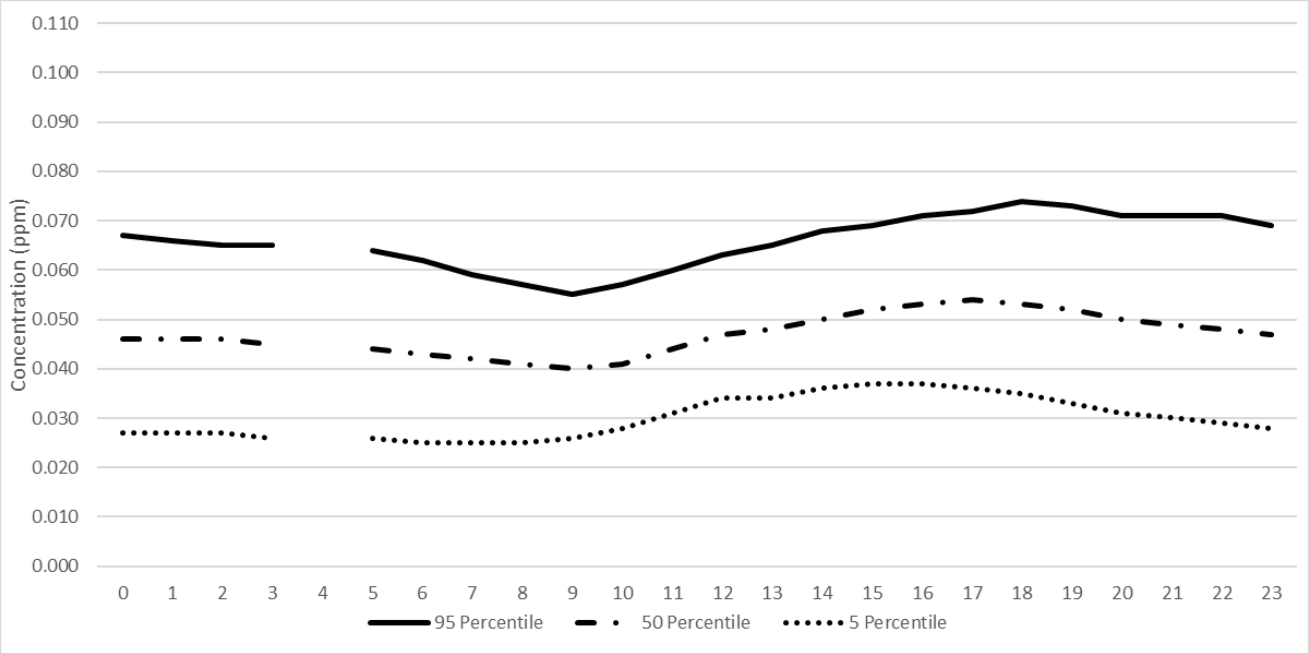
The non-road mobile source category is the largest source of anthropogenic NOx ozone precursors in Sutter County (Figure 2-7). The stationary source category is the largest category of anthropogenic ROG emissions.

Figure 2-7: Sutter County anthropogenic daily summer 2018 NOx and ROG emissions estimates[14]



The highest ozone values occur from April through October, with exceedances during the remainder of the year extremely rare. Ozone concentrations at the Sutter Buttes typically peak in the late afternoon to early evening (Figure 2-8) and are lowest in the late morning. Daily calibration checks frequently occurred during the early morning in 2013-2017, so data for hour 4 was excluded from the calculation of percentiles.

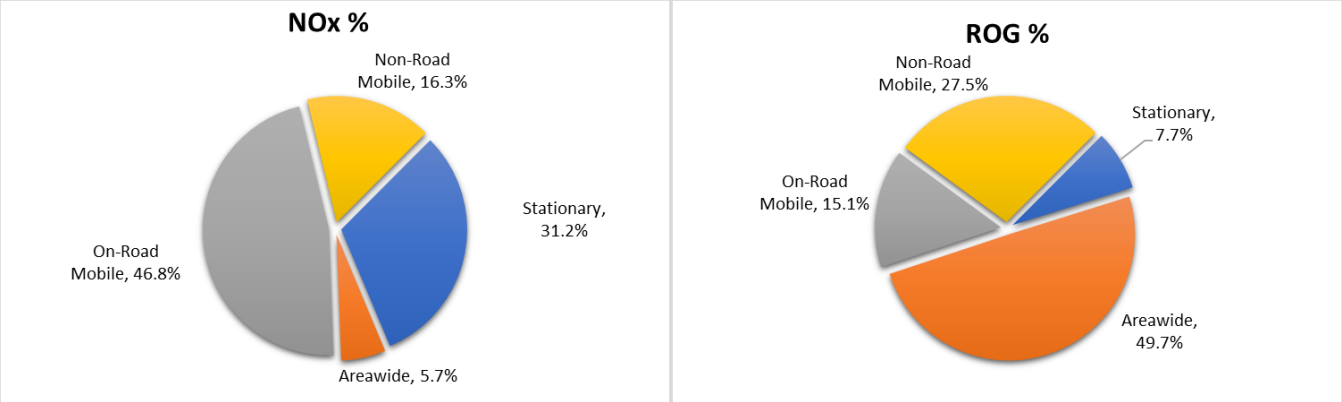
Figure 2-8: Typical April-October 1-hour ozone diurnal pattern at Sutter Buttes (2013-2017)



D. Tuolumne County (Sonora)

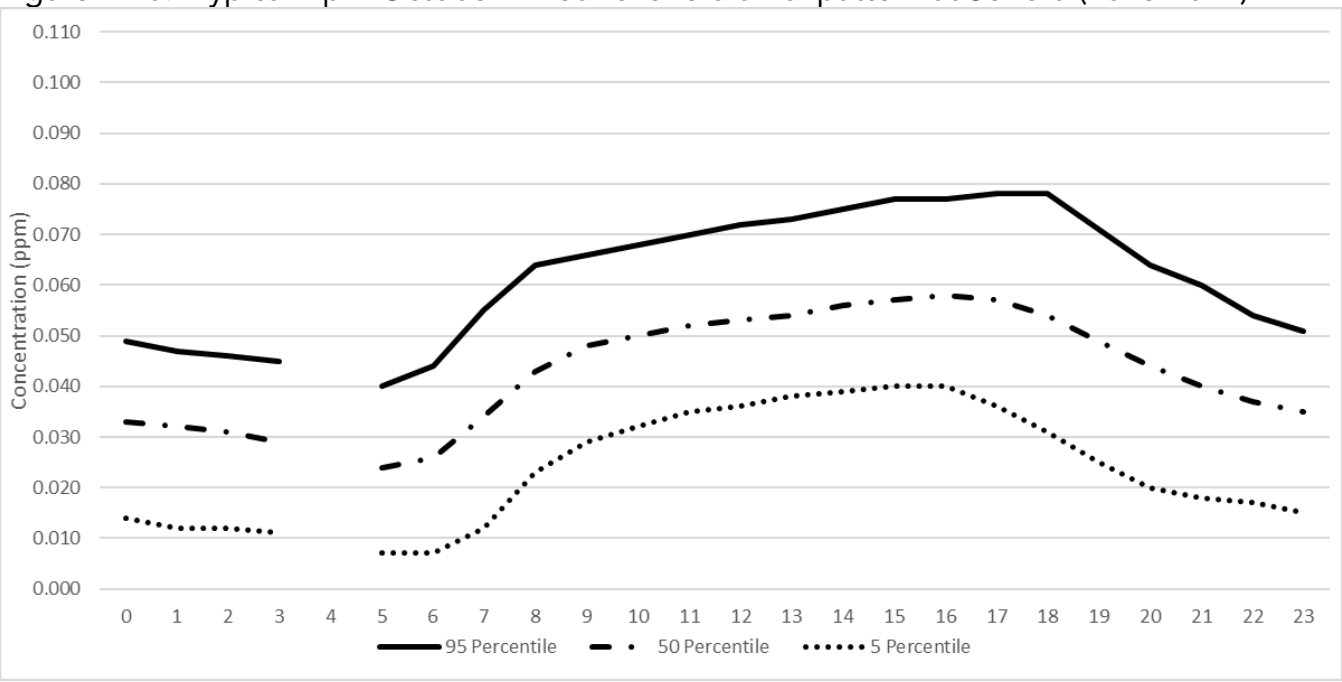
The on-road mobile source category is the largest source of anthropogenic NOx ozone precursors in Tuolumne County (Figure 2-9). Areawide sources are the largest category of anthropogenic ROG emissions.

Figure 2-9: Tuolumne County anthropogenic daily summer 2018 NOx and ROG emissions estimates[14]



The highest ozone values occur from April through October, with exceedances during the remainder of the year extremely rare. Ozone concentrations at Sonora typically peak in the late afternoon (Figure 2-10) and are lowest in the early morning. Daily calibration checks frequently occurred during the lower concentration time period in 2013-2017, so data for hour 4 was excluded from the calculation of percentiles.

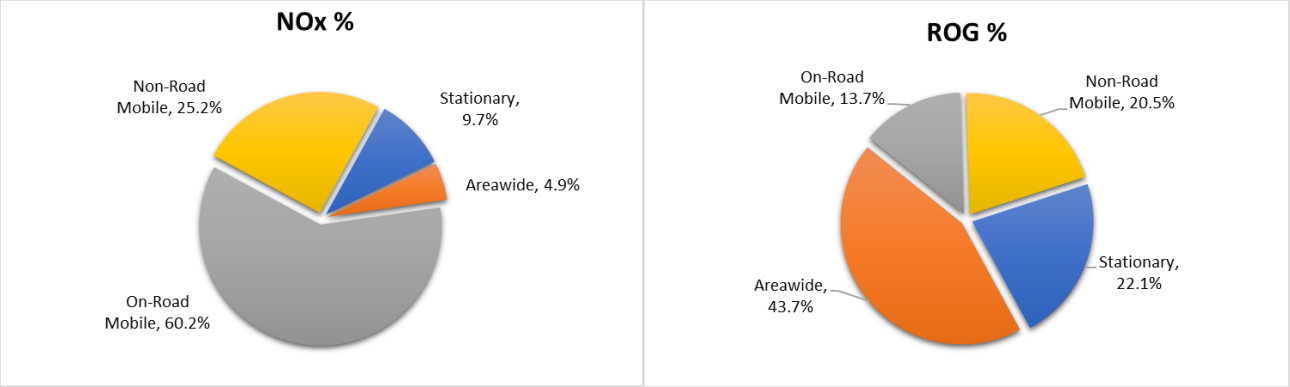
Figure 2-10: Typical April-October 1-hour ozone diurnal pattern at Sonora (2013-2017)



E. Tuscan Buttes / Tehama County

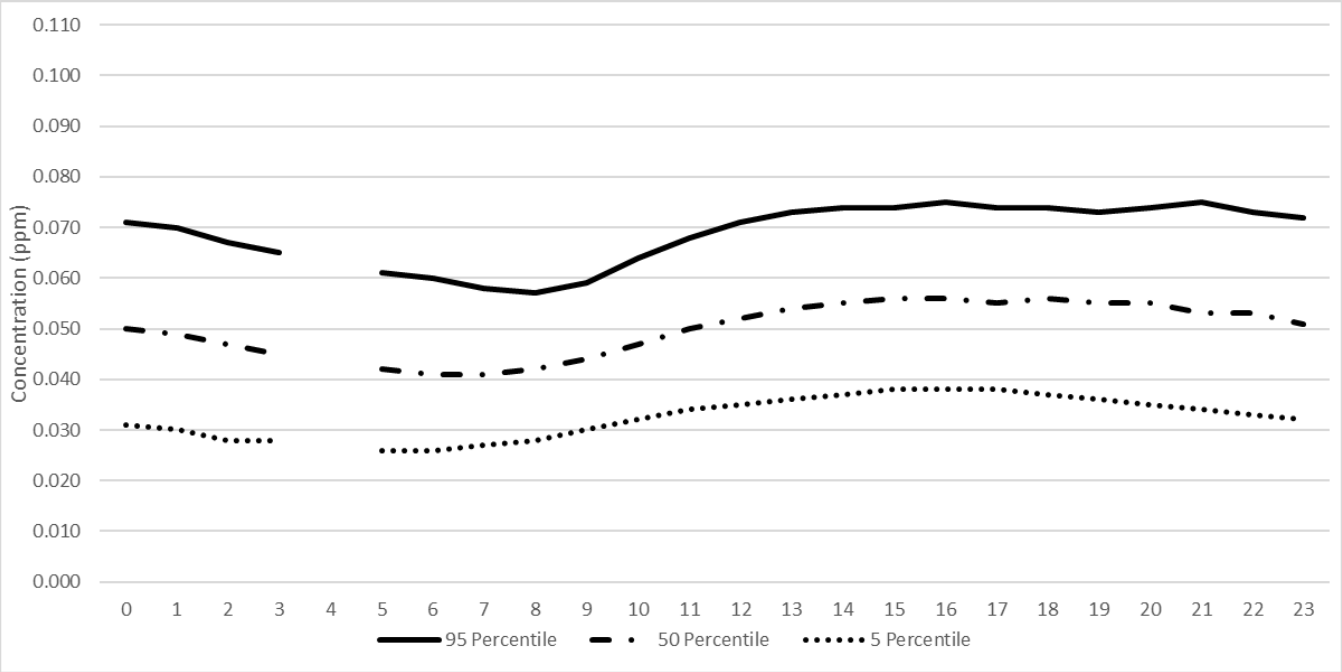
On-road mobile source category is the largest source of anthropogenic NOx ozone precursors in Tehama County (Figure 2-11). Areawide sources are the largest category of anthropogenic ROG emissions.

Figure 2-11: Tehama County anthropogenic daily summer 2018 NOx and ROG emissions estimates[14]



The highest ozone values occur from April through October, with exceedances during the remainder of the year extremely rare. Ozone concentrations at the Tuscan Buttes typically peak in the late afternoon into the evening (Figure 2-12) and are lowest in the morning. Daily calibration checks frequently occurred during the early morning in 2013-2017, so data for hour 4 was excluded from the calculation of percentiles.

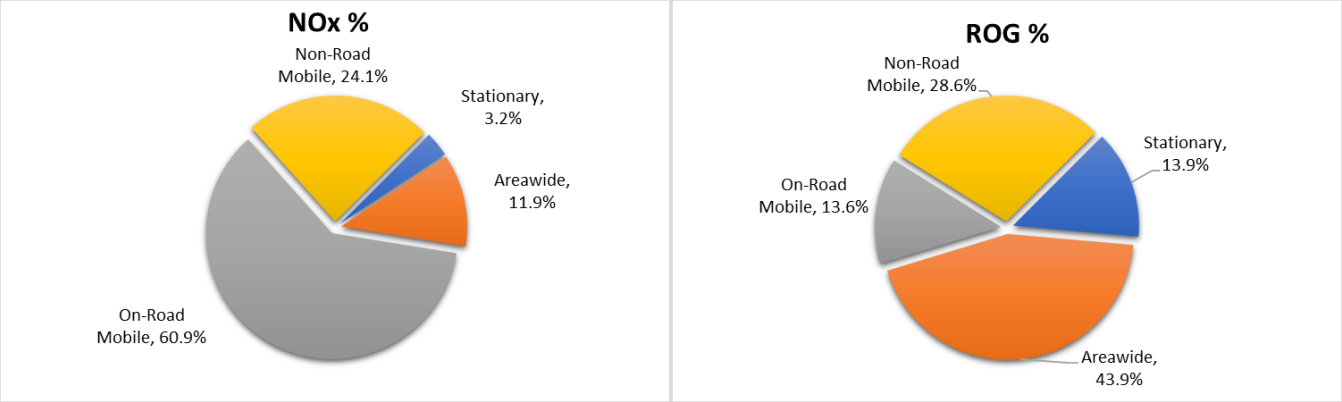
Figure 2-12: Typical April-October 1-hour ozone diurnal pattern at Tuscan Buttes (2013-2017)



F. Western Part of Nevada County (Grass Valley) / Northern Sierra AQMD

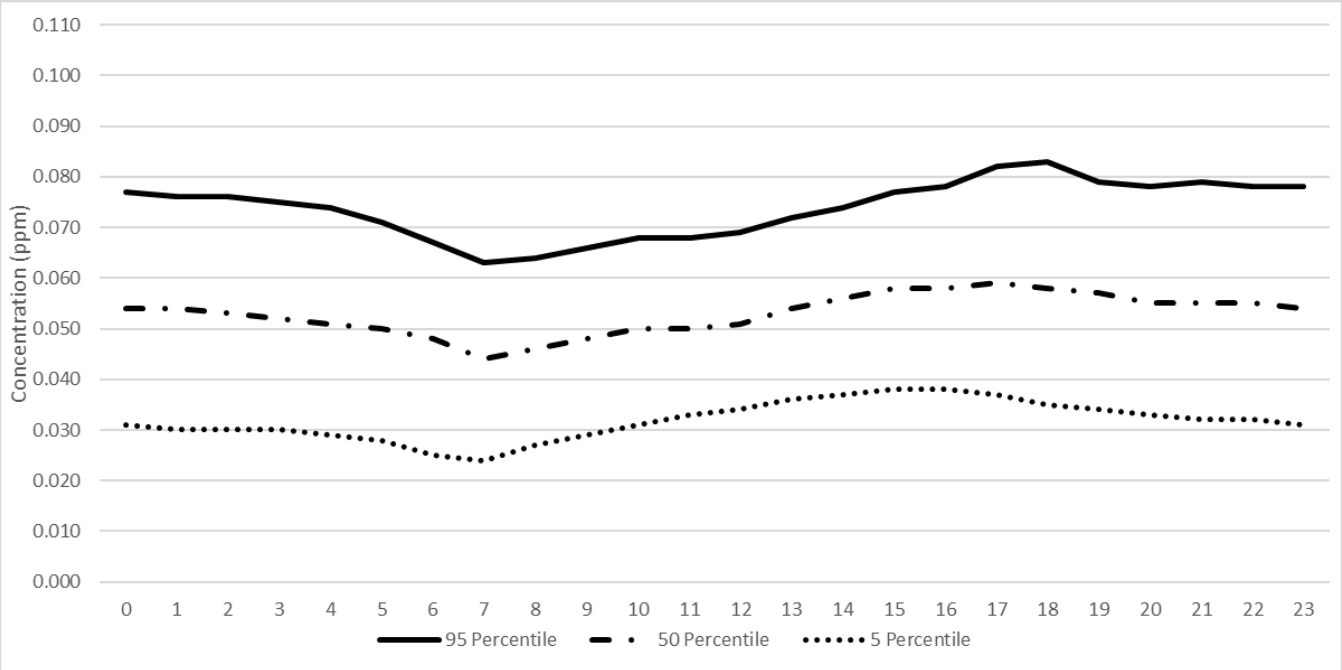
The on-road mobile source category is the largest source of anthropogenic NOx ozone precursors in Nevada County (Figure 2-13). Areawide sources are the largest category of anthropogenic ROG emissions.

Figure 2-13: Western Part of Nevada County anthropogenic daily summer 2018 NOx and ROG emissions estimates[14]



The highest ozone values occur from April through October, with exceedances during the remainder of the year extremely rare. Ozone concentrations are typically low early morning, peaking during late afternoon into early evening hours (Figure 2-14).

Figure 2-14: Typical April-October 1-hour ozone diurnal pattern at Grass Valley (2013-2017)



IV. Characteristics of Event O_3 Formation

Although wildfires occur in California every year, the number of wildfires and the amount of acreage burned has increased substantially, from an average of less than 5,000 fires burning 200,000 acres,[15] to a record 7,948 incidents and 1,975,086 acres burned in 2018.[16] The impact of these wildfires on air quality has been dramatic. Smoke from large fires has caused extreme concentrations of PM and ozone, especially in the western United States.[17] Wildfires generate large amount of ozone precursors including NOx and ROG which can contribute to elevated ozone levels in California. However, there are large variations in the amount of emissions (depending on the fuel type and combustion temperature), plume heights, smoke density, and meteorological conditions during different wildfires, and all these factors can significantly impact subsequent ozone production.[18] In addition, the amount of ozone within a smoke plume also varies with distance from the fire.[19] Due to the titration by NO from fire emissions and the blocking of sunlight by PM emissions, which hinders photochemical reactions, ozone concentrations near active fires are sometimes even lower relative to baseline concentrations. As the ozone precursors transport downwind along with the other air pollutants such as PM, ozone is produced within the smoke plume which could result in ozone exceedances at the surface in downwind areas. Research studies found that distant wildfires can raise ground-level ozone concentrations to unhealthy levels even at large distances from the fire location.[20]

[15] CalFire, *2017 Statistics and Events (5 year average)*, last accessed 8/20/21
[16] California Department of Forestry and Fire Protection (CalFire); https://www.fire.ca.gov/incidents/2018/
[17] Gong et al., 2017; Laing and Jaffe, 2019; Mass and Ovens, 2019; Jaffe et al., 2020
[18] Jaffe and Wigder, 2012; Faloona et al., 2020
[19] Faloona et al., 2020
[20] Pfister et al., 2008

Narrative Conceptual Model – July 26-August 10, 2018

The Narrative Conceptual Model describes the events causing the exceedances or violations seen at the monitor and includes a discussion of how the events led to concentrations above the NAAQS during the period July 26 to August 10, 2018.

I. Wildfire Information

2018 was an extreme year for wildfires, with numerous wildfires active during the time of the exceedances discussed in this demonstration (Figure 3-1, Table 3-1); although not all wildfires impacted each monitor on any given day. Changing meteorological conditions brought smoke from distant fires at the Oregon/California border down the coast or over the Klamath Mountains into central California on some days, while others saw greater influence from wildfires in the northern portion of the State or from those east in the Sierra Nevada Mountains. All these fires contributed to the accumulating smoke layers that overlayed California, making identification of the impact of just one particular wildfire difficult. The majority of these fires, and all of the large megafires, occurred on wildland or in the urban/wildland interface.

Figure 3-1: Impacted monitoring sites and active major wildfires, July 26-August 10, 2018

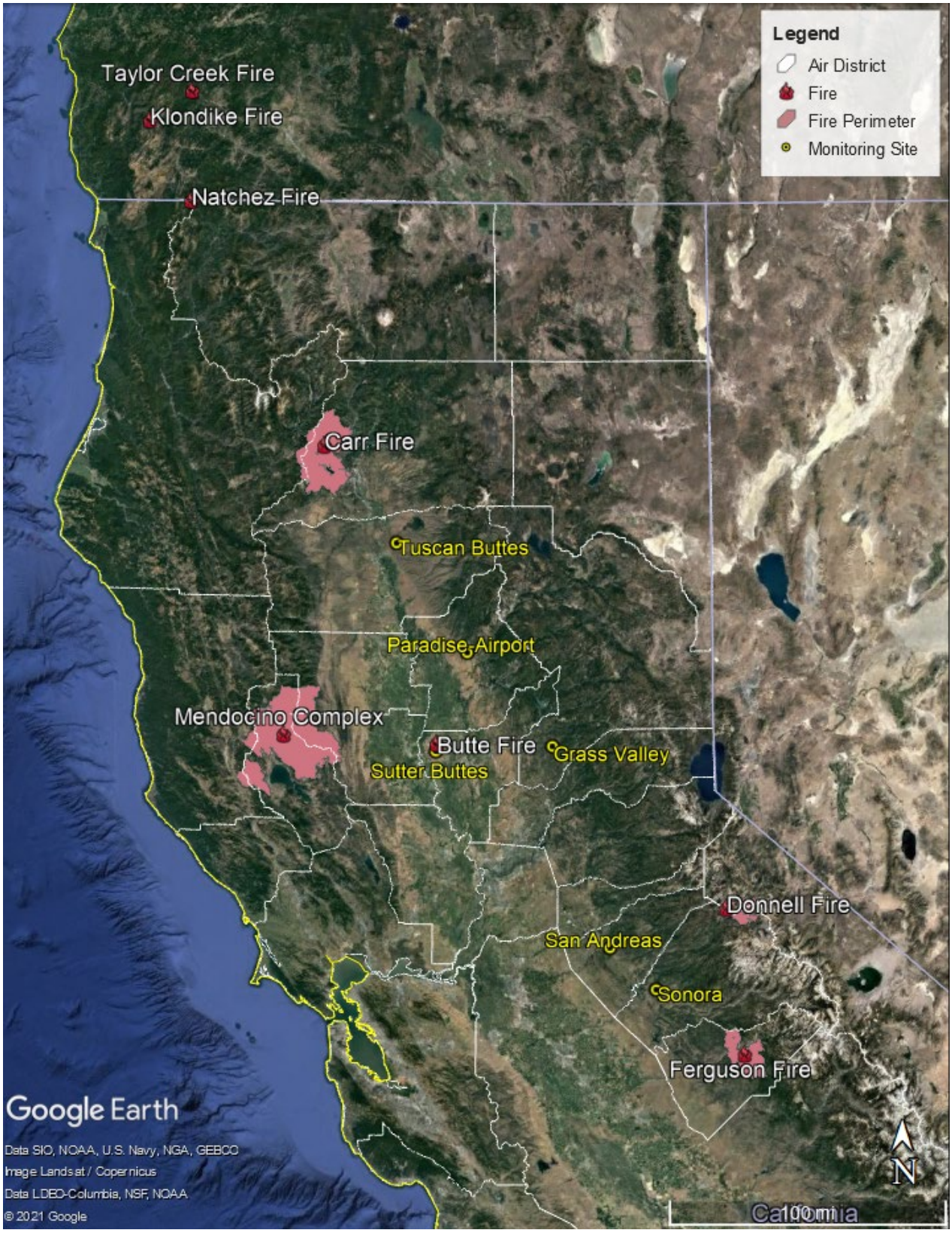


Table 3-1: Major wildfires active during July 26-August 10, 2018 event[21]

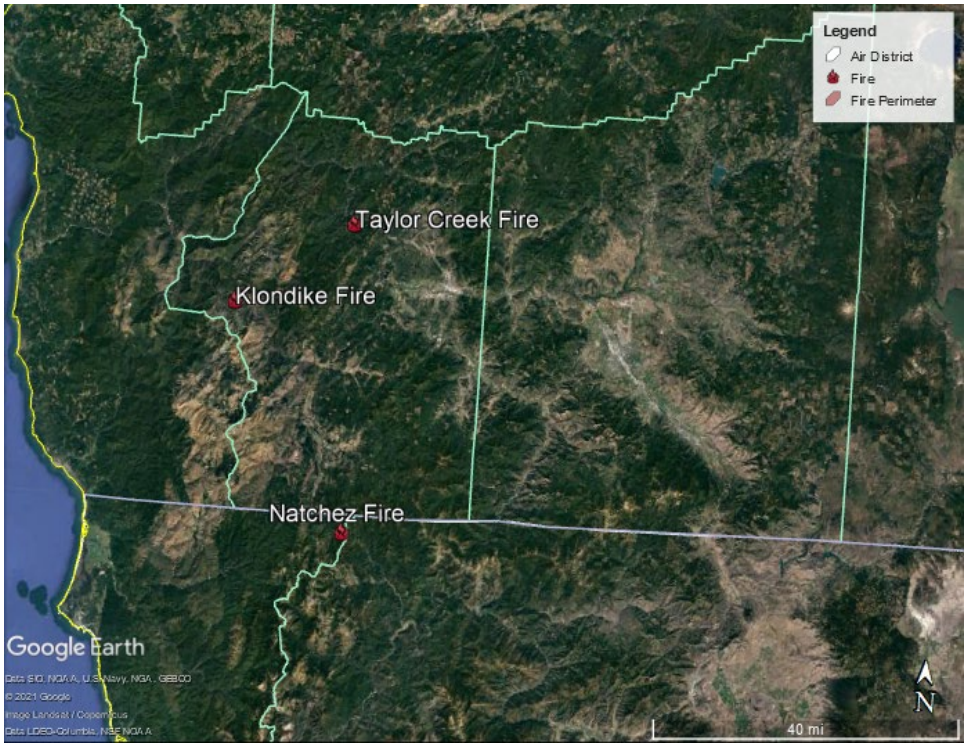
Fire	Start	Containment	Latitude	Longitude	Total Acres
Ferguson	7/13/18	11/28/18	37.655	-119.886	96,901
Natchez	7/15/18	1/4/19	41.951	-123.546	38,134
Klondike	7/16/18	11/28/18	42.369	-123.86	175,528
Taylor Creek	7/16/18	10/11/18	42.528	-123.571	52,389
Carr	7/23/18	8/30/18	40.654	-122.624	229,651
Mendocino Complex (Ranch)	7/27/18	9/19/18	39.243	-123.103	410,203
Mendocino Complex (River)	7/27/18	8/10/18	39.047	-123.120	48,920
Butte	7/31/18	8/2/18	39.186	-121.793	1,200
Donnell	8/1/18	1/4/19	38.349	-119.929	36,450

[21] CalFire 2018 Wildfire Activity Statistics. Accessed 6/7/2021. *https://www.fire.ca.gov/media/11146/2018_redbook_final.pdf*
Rogue River-Siskiyou National Forest, accessed 6/7/2021.
https://www.fs.usda.gov/detail/rogue-siskiyou/news-events/?cid=FSEPRD604472

The Klondike/Taylor Creek wildfire (Figure 3-2) was originally two separate wildfires: Taylor Creek Fire and Klondike Fire[22]. These fires began during a lightning strike on July 15, 2018, and actively burned in the Rogue River-Siskiyou National Forest, although the Taylor Creek fire started on Bureau of Land Management (BLM) land in the Oregon Department of Forestry's protection area.[23] The wildfires eventually merged and burned 228,000 acres before full containment on November 28, 2018.[24]

The Natchez wildfire, just south of the Oregon border, was also ignited by lightning on July 15, 2018 in the Rogue River-Siskiyou National Forest. The fire consumed 38,134 acres in portions of Siskiyou and Del Norte Counties at a fairly consistent pace (Table 3-3) and was finally contained on October 30, 2018.

Figure 3-2: Klondike, Taylor Creek, and Natchez Fires



[22] United States Forest Service, accessed 6/7/2021. https://www.fs.usda.gov/detail/rogue-siskiyou/news-events/?cid=FSEPRD604472

[23] Alaska Incident Management Team, *2018 Taylor Creek Klondike Fires Summary*

[24] 2018_NWCC_Annual_Fire_Report_FINAL.pdf/2018_NWCC_Annual_Fire_Report_FINAL.pdf, p.20

Tables 3-2: Klondike (left) and Taylor Creek (right) fire daily acreage

Date	Daily Acreage	Total Acreage
7/26/2018	4,382	24,735
7/27/2018	3,661	28,397
7/28/2018	5,345	33,742
7/29/2018	2,186	35,928
7/30/2018	6,909	42,837
7/31/2018	4,679	47,516
8/1/2018	2,061	49,577
8/2/2018	7,476	57,053
8/3/2018	5,352	62,405
8/4/2018	4,474	66,879
8/5/2018	3,802	70,682
8/6/2018	3,439	74,121
8/7/2018	1,906	76,027
8/8/2018	1,906	77,932
8/9/2018	3,813	81,745
8/10/2018	1,658	83,403

Date	Daily Acreage	Total Acreage
7/26/2018	3,360	16,453
7/27/2018	3,661	20,115
7/28/2018	2,633	22,747
7/29/2018	2,185	24,932
7/30/2018	1,983	26,915
7/31/2018	2,587	29,503
8/1/2018	1,965	31,468
8/2/2018	1,996	33,464
8/3/2018	2,937	36,401
8/4/2018	1,994	38,395
8/5/2018	1,405	39,800
8/6/2018	1,299	41,099
8/7/2018	875	41,973
8/8/2018	1,022	42,996
8/9/2018	392	43,387
8/10/2018	1,668	45,055

Table 3-3: Natchez Fire daily acreage

Date	Daily Acreage	Total Acres
7/26/2018	246	2,979
7/27/2018	782	3,762
7/28/2018	833	4,595
7/29/2018	752	5,346
7/30/2018	819	6,166
7/31/2018	778	6,943
8/1/2018	696	7,639
8/2/2018	737	8,376
8/3/2018	1026	9,402
8/4/2018	381	9,784
8/5/2018	450	10,233
8/6/2018	555	10,788
8/7/2018	474	11,262
8/8/2018	255	11,517
8/9/2018	291	11,808
8/10/2018	633	12,441

The Carr wildfire (Figure 3-3) was ignited by a vehicle on July 23, 2018 in the Whiskeytown-Shasta Trinity National Recreation Area in Shasta County. The fire rapidly spread, eventually burning 229,651 acres, killing three firefighters and five civilians, and destroying 1,614 buildings before full containment was achieved on August 30, 2018. This was the second largest fire by acreage in 2018.

Figure 3-3: Carr Fire

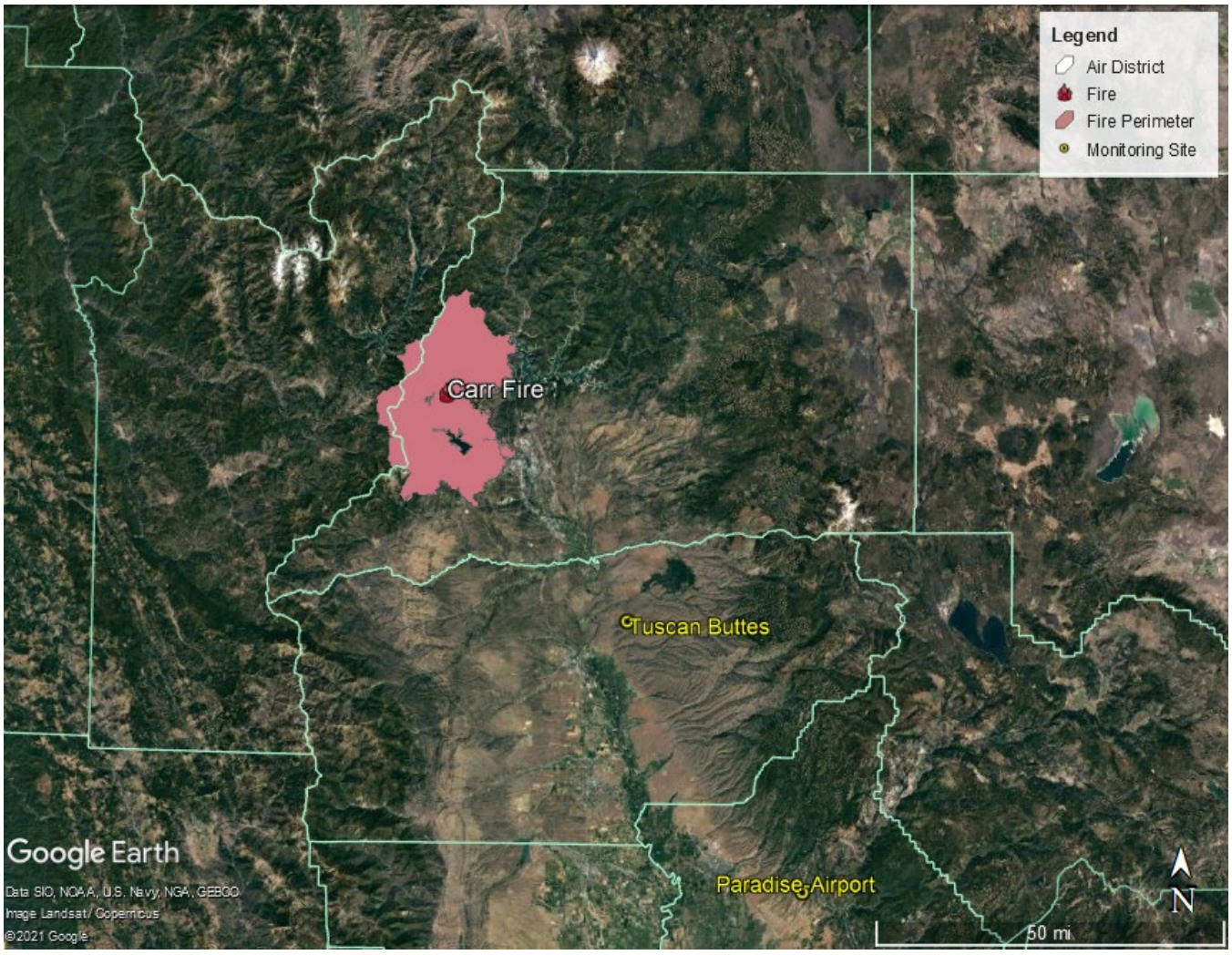


Table 3-4: Carr Fire Daily Acreage

Date	Daily Acreage	Total Acres
7/26/2018	36,686	44,275
7/27/2018	36,623	80,898
7/28/2018	11,161	92,059
7/29/2018	8,662	100,721
7/30/2018	15,102	115,823
7/31/2018	6,715	122,538
8/1/2018	6,715	129,253
8/2/2018	6,825	136,078
8/3/2018	7,408	143,486
8/4/2018	7,408	150,894
8/5/2018	13,969	164,863
8/6/2018	4,642	169,505
8/7/2018	4,011	173,516
8/8/2018	4,386	177,902
8/9/2018	4,386	182,288
8/10/2018	4,639	186,927

The Mendocino Complex wildfire (Figure 3-4) was the collective name for two large wildfires, the Ranch Fire and the River Fire, which started on July 27, 2018 in the Mendocino National Forest. The Ranch Fire, caused by human activities, destroyed 246 structures, killed one firefighter, and eventually burned 410,203 acres within portions of Colusa, Glenn, Lake, and Mendocino Counties before complete containment on August 17, 2018. The River Fire, with an undetermined cause of ignition, destroyed 35 structures and burned 48,920 acres in Colusa, Lake, and Mendocino Counties before containment on September 27, 2018. As of 2018, the Mendocino Complex fire was the largest wildfire to have occurred in California's recorded history with a combined 459,123 burned acres.

Figure 3-4: Mendocino Complex (Ranch and River Fires)

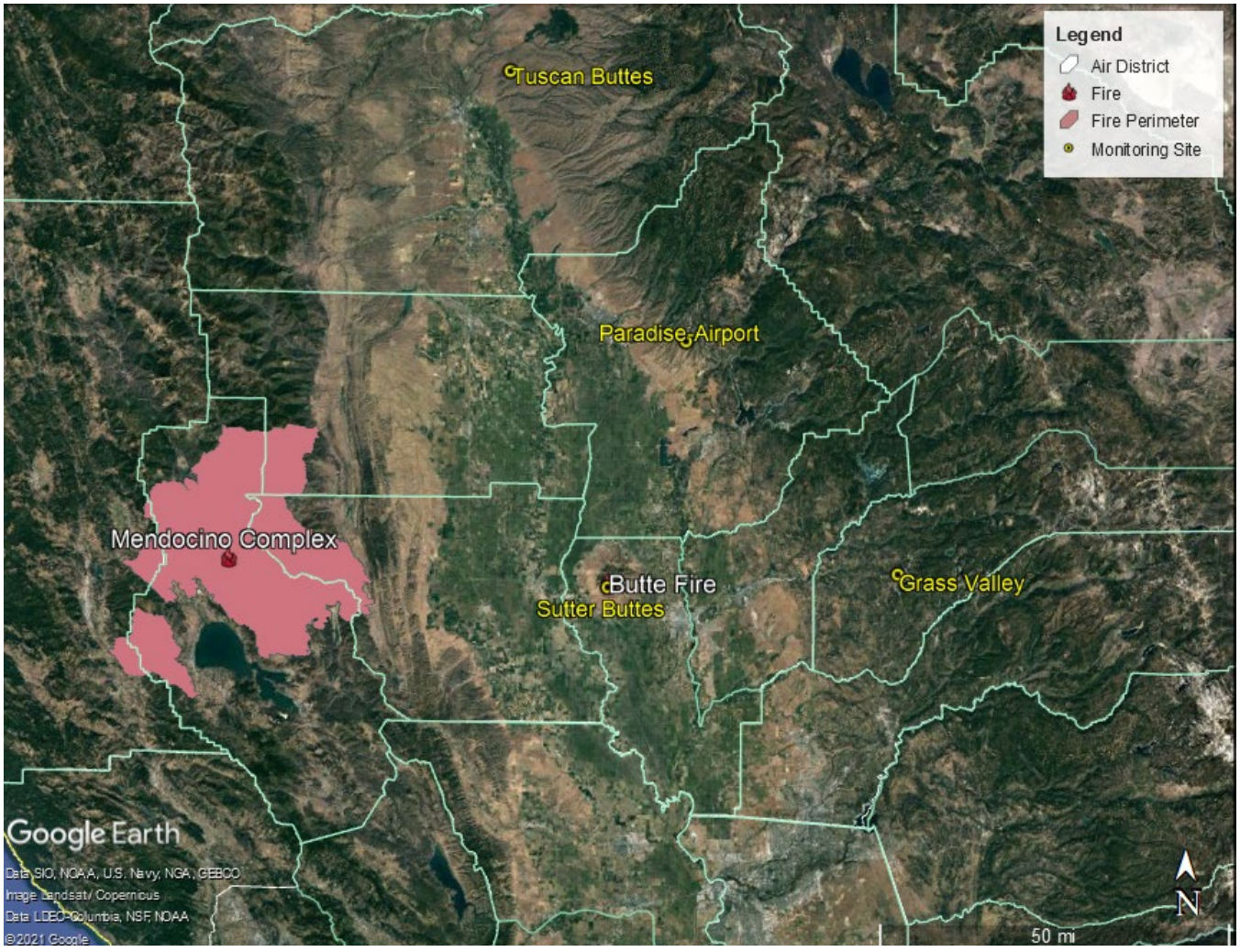


Table 3-5: Mendocino Complex (River/Ranch) Fire daily acreage, July 26-August 10, 2018

Date	Daily Acreage	Total Acreage
7/26/2018	5,688	5,688
7/27/2018	4,166	9,855
7/28/2018	4,166	14,021
7/29/2018	9,352	23,372
7/30/2018	6,018	29,390
7/31/2018	3,915	33,305
8/1/2018	3,915	37,220
8/2/2018	3,952	41,172
8/3/2018	3,168	44,340
8/4/2018	1,699	46,039
8/5/2018	1,387	47,426
8/6/2018	746	48,173
8/7/2018	746	48,919
8/8/2018	1	48,920
8/9/2018	-	-
8/10/2018	-	-

Date	Daily Acreage	Total Acreage
7/26/2018	-	-
7/27/2018	2,913	2,913
7/28/2018	13,372	16,284
7/29/2018	20,640	36,924
7/30/2018	11,205	48,129
7/31/2018	14,273	62,403
8/1/2018	14,273	76,676
8/2/2018	33,003	109,679
8/3/2018	46,015	155,694
8/4/2018	50,752	206,446
8/5/2018	17,860	224,307
8/6/2018	16,677	240,984
8/7/2018	8,509	249,493
8/8/2018	6,245	255,738
8/9/2018	4,503	260,241

The Donnell wildfire (Figure 3-5) was ignited in the Carson Iceburg Wilderness area in the Stanislaus National Forest on August 1, 2018. The fire, cause unknown, destroyed 135 buildings and consumed 36,450 acres in Tuolumne County before containment on October 31, 2018.

The Ferguson wildfire (Figure 3-5), cause unknown, was ignited on July 13, 2018 in the Sierra National Forest in Mariposa County. The fire burned 96,901 acres, destroyed 11 structures, and killed two firefighters prior to containment on August 22, 2018. This was the fifth largest wildfire by acreage in 2018.

Figure 3-5: Donnell and Ferguson Fires

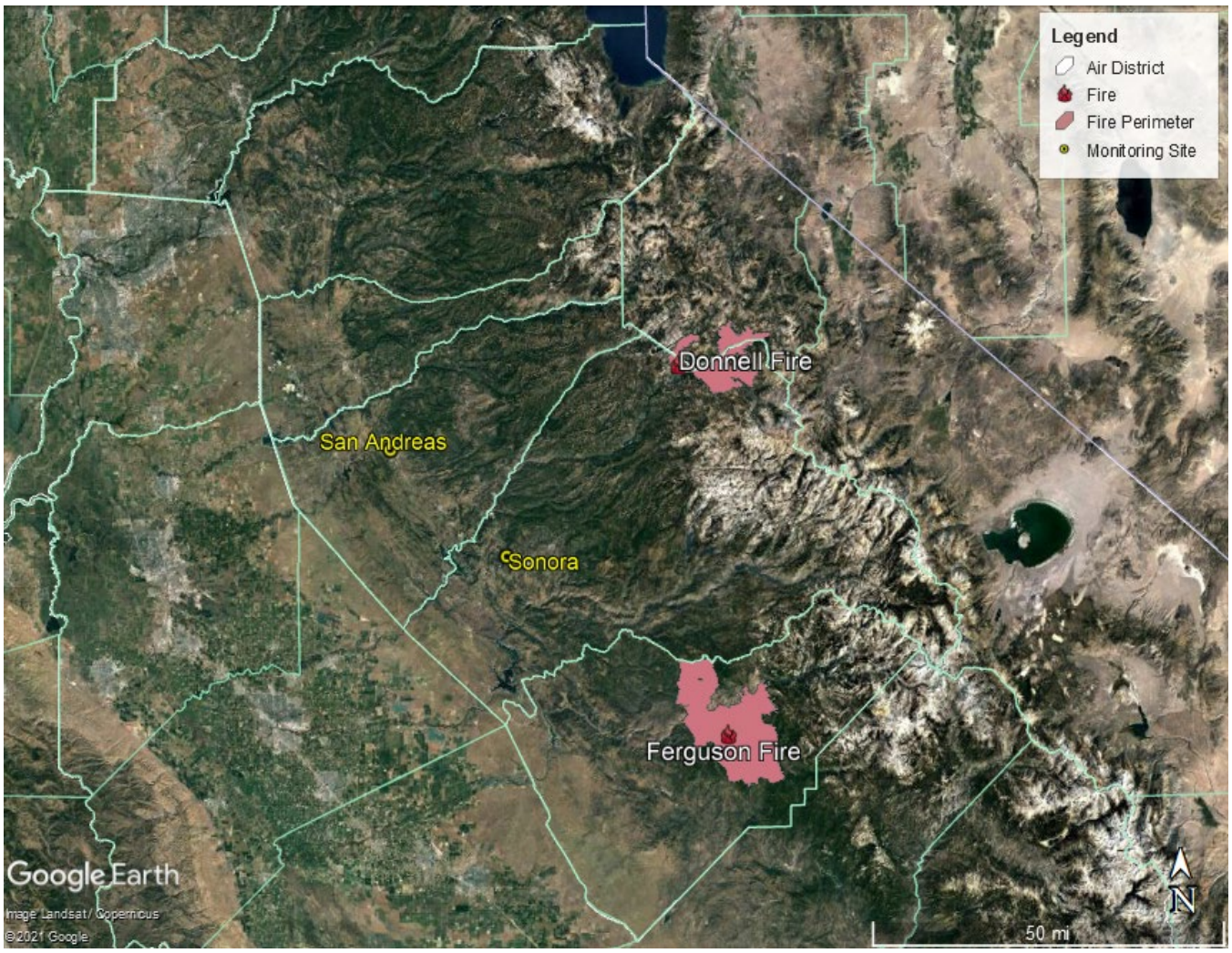


Table 3-6: Donnell Fire daily acreage

Date	Daily Acreage	Total Acres
8/1/2018	136	136
8/2/2018	136	272
8/3/2018	1,426	1,698
8/4/2018	4,048	5,746
8/5/2018	5,342	11,088
8/6/2018	3,291	14,379
8/7/2018	3,291	17,670
8/8/2018	3,386	21,056
8/9/2018	2,693	23,750
8/10/2018	3,038	26,787

Table 3-7: Ferguson Fire daily acreage

Date	Daily Acreage	Total Acres
7/26/2018	2,526	46,000
7/27/2018	3,671	49,671
7/28/2018	3,229	52,900
7/29/2018	3,626	56,526
7/30/2018	1,175	57,701
7/31/2018	4,256	61,956
8/1/2018	6,575	68,531
8/2/2018	4,809	73,340
8/3/2018	7,171	80,511
8/4/2018	8,857	89,368
8/5/2018	3,991	93,359
8/6/2018	812	94,171
8/7/2018	322	94,493
8/8/2018	152	94,645
8/9/2018	227	94,873
8/10/2018	303	95,176

The Butte Fire (Figure 3-6), cause unknown, ignited on July 31, 2018 in grasslands on the summit of the Sutter Buttes very close to the monitor. The fire, which consumed approximately 1,200 acres, was contained on August 2nd.

Figure 3-6: Butte Fire

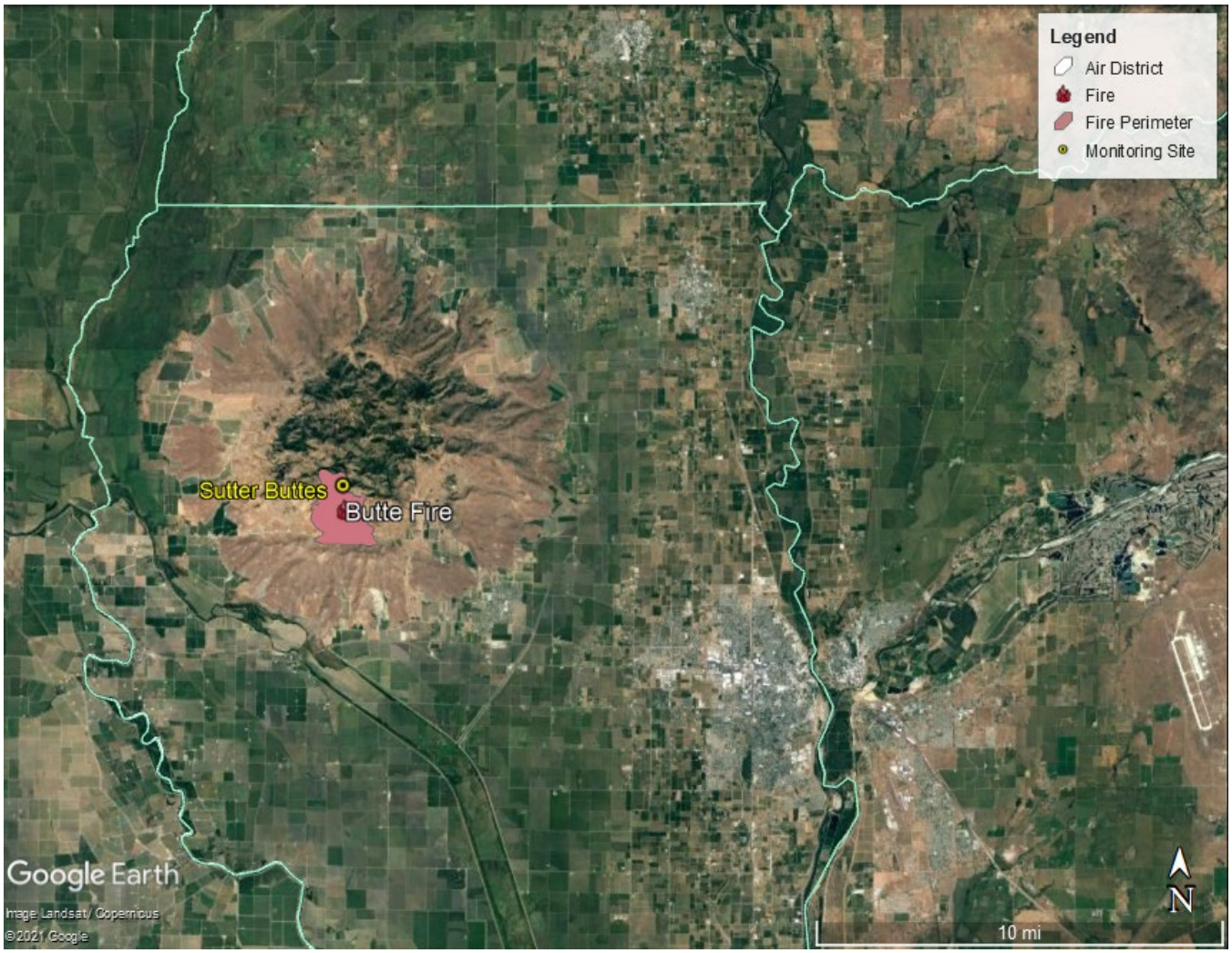


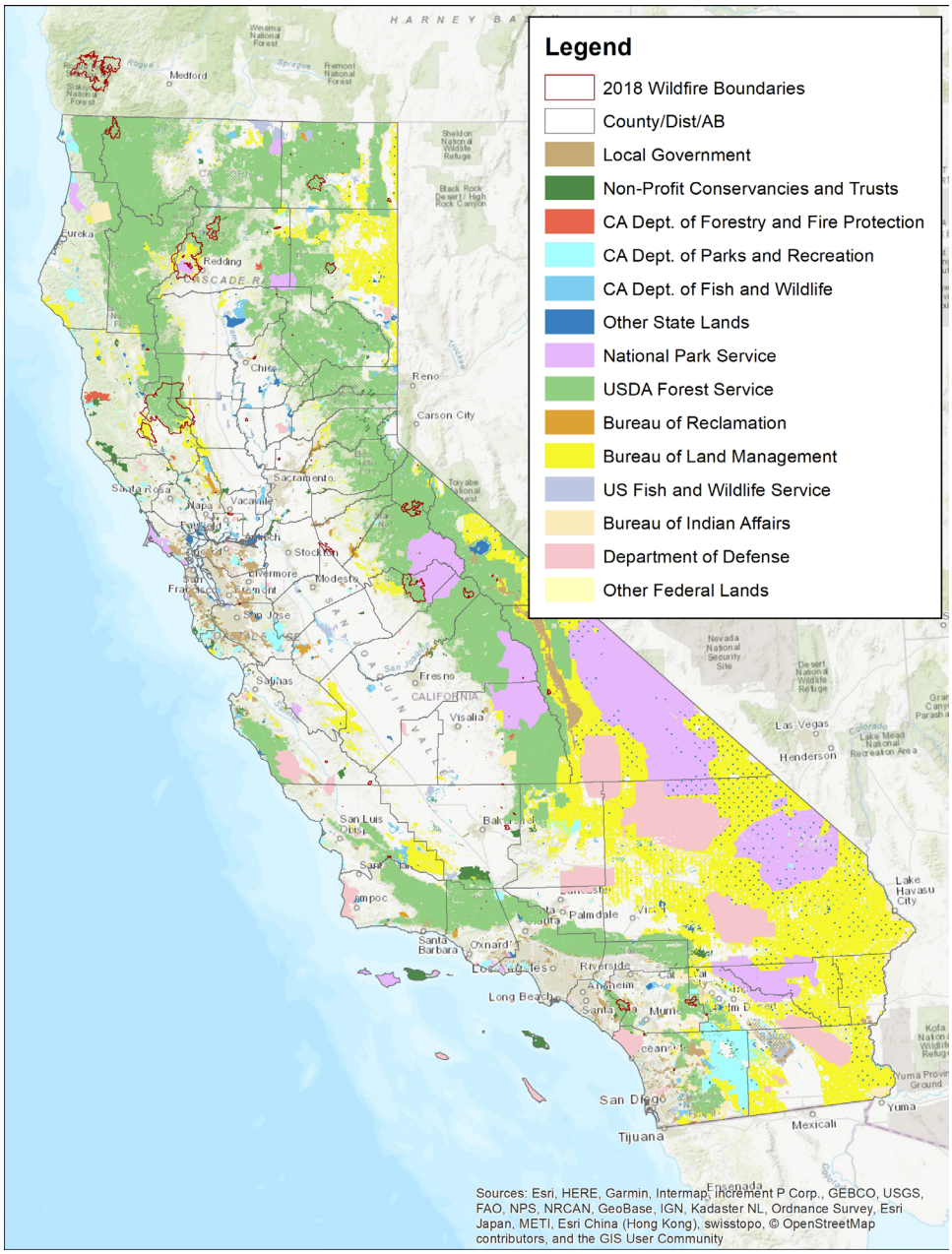
Table 3-8: Butte Fire Daily Acreage

Date	Daily Acreage	Total Acreage
7/31/2018	800	800
8/1/2018	280	1,080
8/2/2018	120	1,200

These fires occurred in areas that meet the definition of wildland which is "an area in which human activity and development is essentially non-existent, except for roads, railroads, power lines, and similar transportation facilities. Structures, if any, are widely scattered." Wildlands can include forestland, shrubland, grassland, and wetlands and includes lands that are predominantly wildland, such as land in the wildland-urban interface, as specified in the

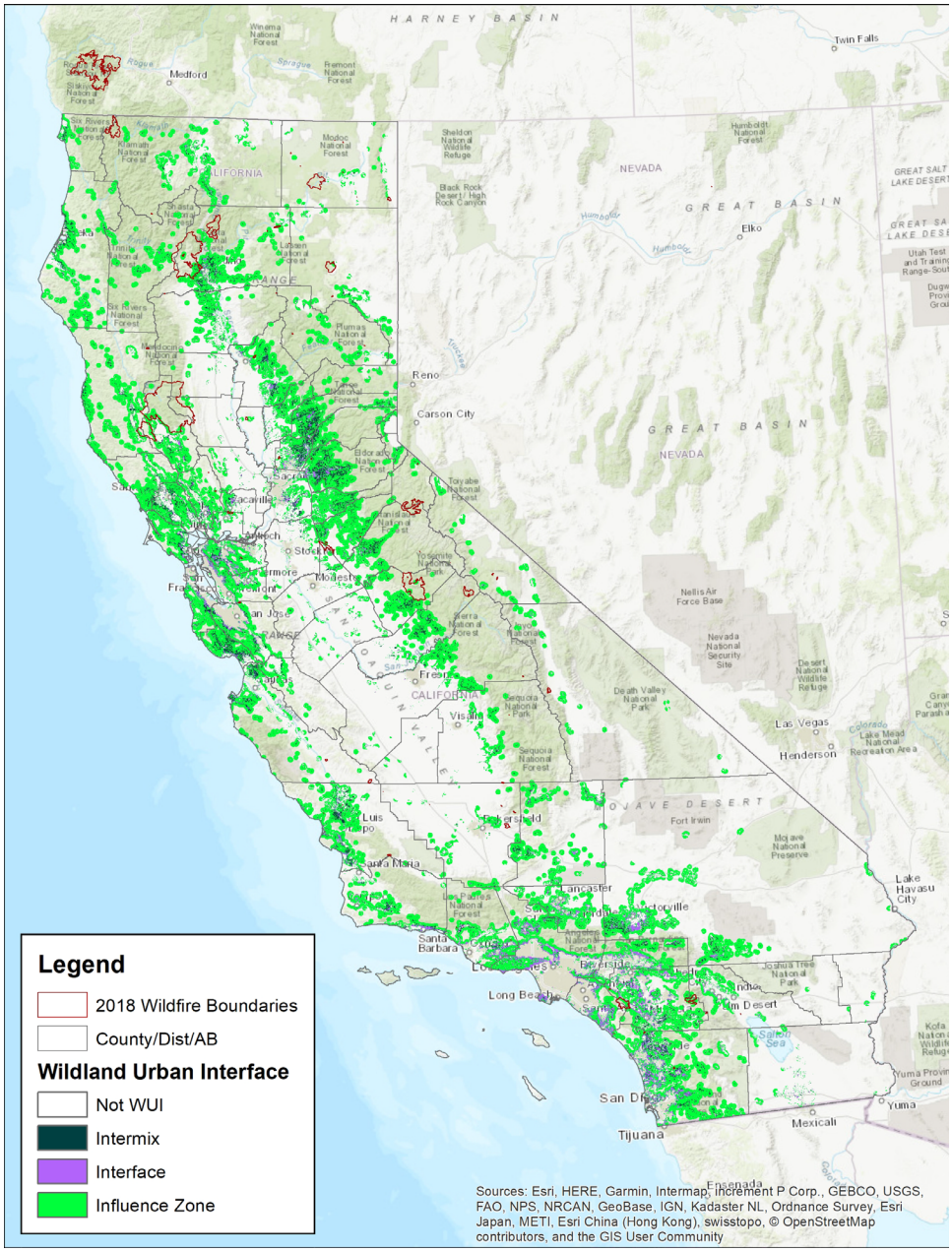
preamble of the Exceptional Events Rule.[25] Figures 3-7 and 3-8 indicate these areas with the fire perimeters outlined in red.

Figure 3-7: California land ownership map with 2018 wildfire boundaries (red)



[25] 81 FR 68248

Figure 3-8: Wildland-urban interface map with 2018 wildfire boundaries (red)



II. Summary of Event

A series of large wildfires were ignited across California from mid-July to August 2018. The majority of these fires occurred in the northern portion of the state, including the Carr Fire, which burned 230,000 acres and resulted in eight fatalities, and the Mendocino Complex

Fire, which burned over 450,000 acres with one fatality. On August 4, 2018, a national disaster was declared in Northern California, due to the extensive wildfires burning there.[26]

The following section provides evidence of the impact of these exceptional events on the San Andreas, Paradise, Sutter Buttes, Sonora, Tuscan Buttes, and Grass Valley ozone monitors in California from July 26 to August 10, 2018. Presented as phases of the event, the evidence shows the source wildfires that collectively contributed emissions impacting these sites in the Sacramento Valley and Mountain County Air Basins.

NOAA's HYSPLIT[27] model was used to determine simple back-trajectories showing the path that an air parcel took for a specified period of time (here, 36 hours), starting at each monitor at times of peak concentrations on each day. Three height levels (red: 100 meters (m); blue: 500m; green: 1000m) were used to indicate transport near the surface and in the upper atmosphere.

The HYSPLIT model was also used to indicate how emissions from the wildfires were transported toward the monitor (forward trajectory). Trajectories in this section are shown from the fire(s) estimated to have the highest contribution. The trajectories were initiated from each major fire at 12z (04PST). These model runs provide insight into the most likely center path a parcel of air (and smoke) from each fire would take in the 36 hours after the 12z start time. This provides a simplified understanding of smoke transport from a fire across the region, connecting these wildfires with smoke seen in satellite imagery, and indicating potential correlations at a site through analysis of parcel transport timing and backwards trajectories when they overlap. These forward trajectories, overlaid on satellite images from the MODIS[28] Aqua or Terra platforms using Google Earth, provide a visual analysis of the smoke emitting from the fires and impacting the monitors.

Google Earth was used as a platform to combine the HYSPLIT back-trajectories and the NOAA Hazard and Mapping System (HMS) Fire and Smoke Product[29] smoke layers and fire locations. The back-trajectories for each monitor shown in the following sections traced back from the time of the maximum ozone concentration in the exceeding 8-hour period. Since different monitors will have maximum concentrations at different times, a table of the monitoring sites presented in the back-trajectory figures is included, indicating in both PST and UTC, the hours each trajectory began. Back-trajectories from the hour of the maximum ozone concentration in the exceeding 8-hour period for all exceptional event dates that are requested in this document are included in Appendix IV.

The HYSPLIT trajectory model results, as well as MODIS satellite layers, and HMS smoke plume analyses, show impacts from the wildfires at the Oregon/California border as well as the larger California wildfires dispersed throughout the northern and central portions of the State. Although the model results can show potential influence from specific fires, they do

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[26] FEMA, *California Wildfires and High Winds, DR-4382-CA*

[27] HYbrid Single Particle Lagrangian Integrated Trajectory (HYSPLIT)

[28] UWM, SSEC, *MODIS Today*, last accessed 7/29/21

[29] *https://www.ssd.noaa.gov/PS/FIRE/smoke.html*

not always show the cumulative effect of continuing wildfire emissions that impacted California in late July and early August.

A. July 26-29, 2018

A strong 500 mb high pressure ridge across northern California (Figure 3-9) initially provided for hot, near record high temperatures across the northern Sacramento Valley. This high pressure ridge shifted slowly to the south then strengthened while moving further east during the first few days of this event, allowing for an on-shore breeze to channel through the Carquinez Strait along the Sacramento and San Joaquin Rivers (delta breeze) into the Sacramento area providing for slightly cooler temperatures. Concurrently, dense wildfire smoke from the Carr, Ferguson, and Mendocino Complex (which began on July 27th) fires spread across the Sacramento Valley and into portions of the Sierra Nevada foothills as seen in Figure 3-10. This smoke limited daytime solar heating in these areas, leading to slightly lower temperatures from reduced solar heating across large portions of the impacted Sacramento Valley and Sierra Nevada Mountains. This decreased solar heating should have led to decreased ozone production at the ground under normal circumstances. However, these wildfires also produced significant ozone precursor emissions leading to elevated ozone concentrations where dispersion and downwind transport were favorable. Mountain thunderstorms were not expected across the areas due to a lack of moisture and unfavorable dynamics.

Figure 3-9: Meteorological conditions on July 26, 2018[30]

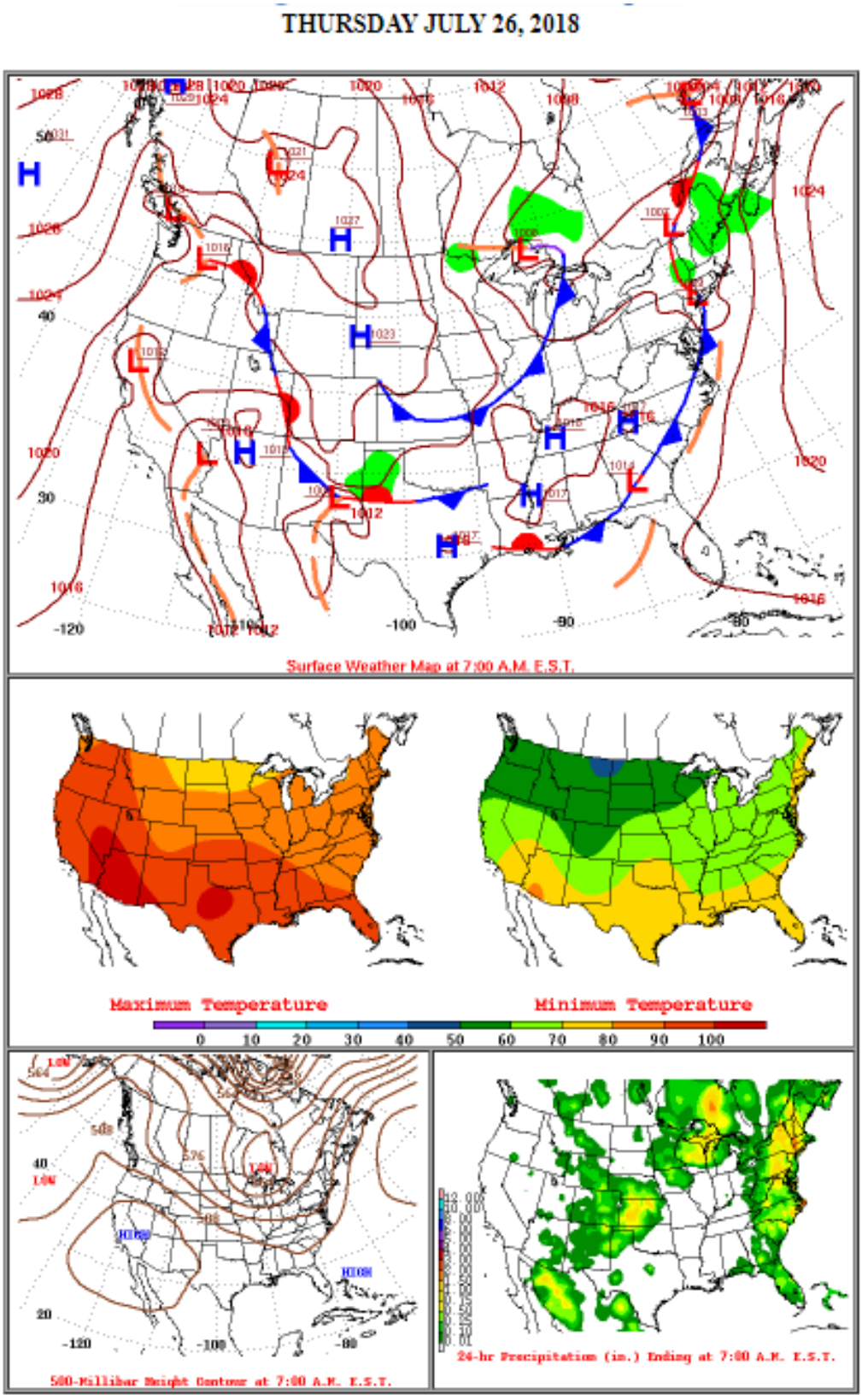
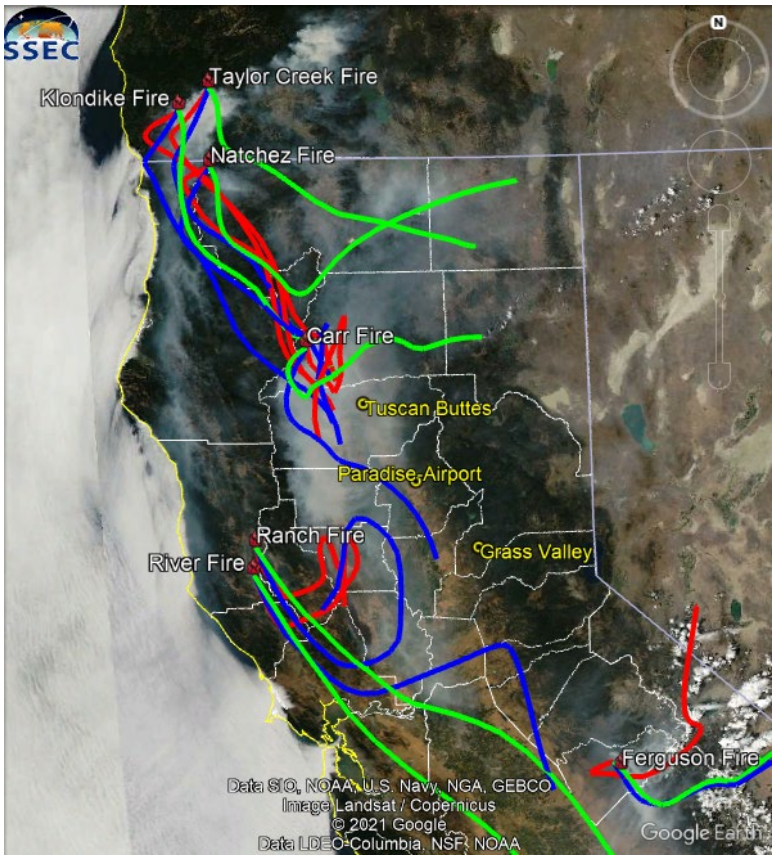


Figure 3-10: Forward trajectories 12z (4am PST) from fires (MODIS Aqua satellite image, July 27, 2018)



Thick smoke covered most of Northern California, as shown in Figure 3-10 above as well as the HMS smoke layers in Figure 3-11 below. Back-trajectories, beginning at the time of the maximum concentrations for the exceeding 8-hour period for each site on July 27, are overlaid on this smoke layer. The surface trajectories (red, 100m), as well as those higher in the atmosphere and more indicative of transport (blue, 500m; green, 1000m), were influenced by the wildfire emissions. Table 3-9 indicates the time of the start of the back-trajectory for each site.

Figure 3-11: July 27, 2018 Back trajectories from exceeding monitors at time of maximum ozone concentration with HMS smoke layers

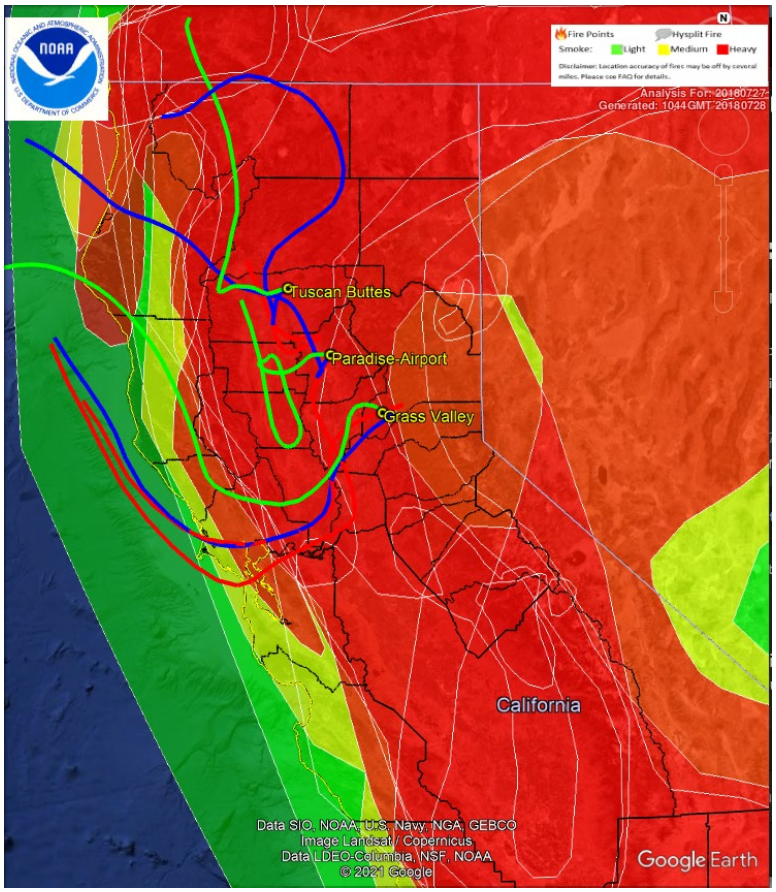


Table 3-9: Exceeding monitoring sites and times of maximum ozone concentrations

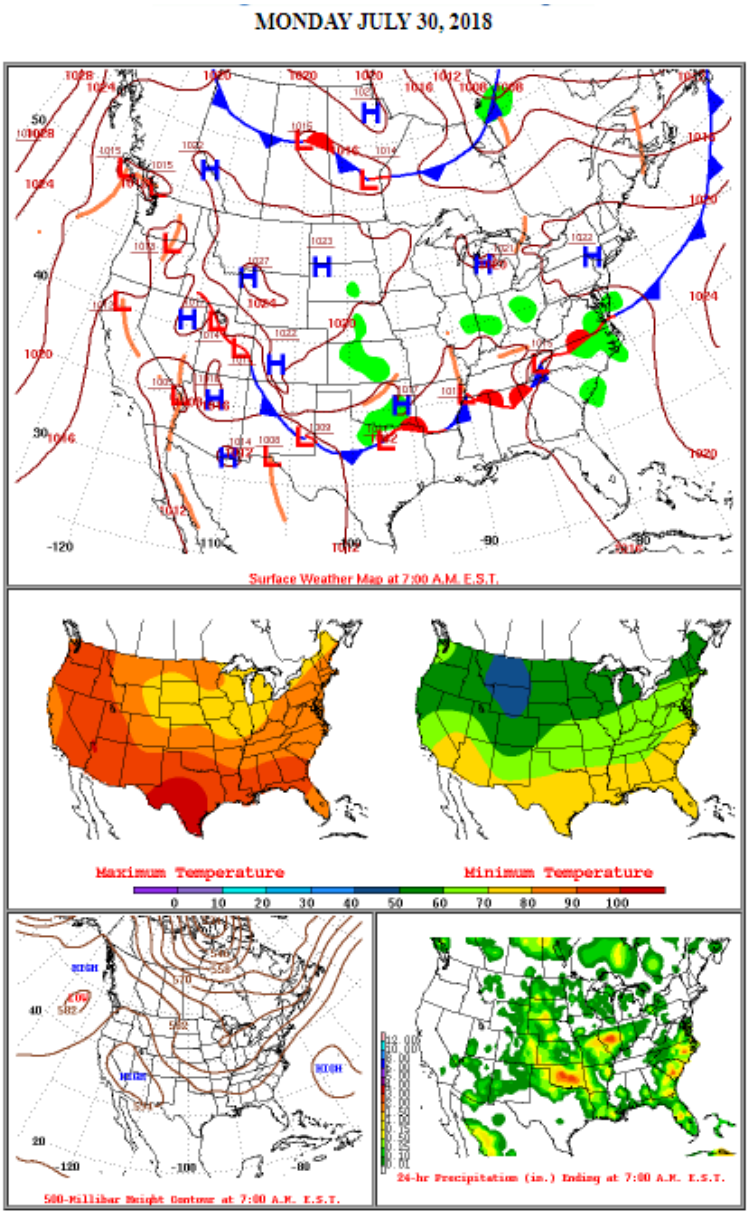
Site	Date (PST)	Max Hour (PST)	Date (UTC)	Max Hour (UTC)
Grass Valley	7/27/2018	1	7/27/2018	9
Paradise	7/27/2018	17	7/28/2018	1
Tuscan Buttes	7/27/2018	18	7/28/2018	2

B. July 30-31, 2018

A trough started to move toward the Pacific Northwest region (Figure 3-12), slowly pushing the upper level ridge further south and east while weather conditions continued to provide for hot, above average temperatures and stagnant conditions conducive to ozone production. Complicating the situation, widespread smoke continued across the Sacramento Valley and into the mountains (Figure 3-13), which limited heating in many areas but also provided ample ozone precursors, contributing to elevated ozone concentrations across

much of the region. The delta breeze provided cleaner, cooler marine air mixing into the Sacramento area, particularly during the evening and overnight hours. The Butte Fire ignited along the Sutter Buttes during the afternoon of July 31, with emissions directly impacting concentrations at the Sutter Buttes until containment was finally achieved on August 2. Limited monsoonal moisture led to isolated thunderstorms over portions of the Sierra Nevada Mountains during this period, but did not ignite any of the wildfires of primary concern in this demonstration.

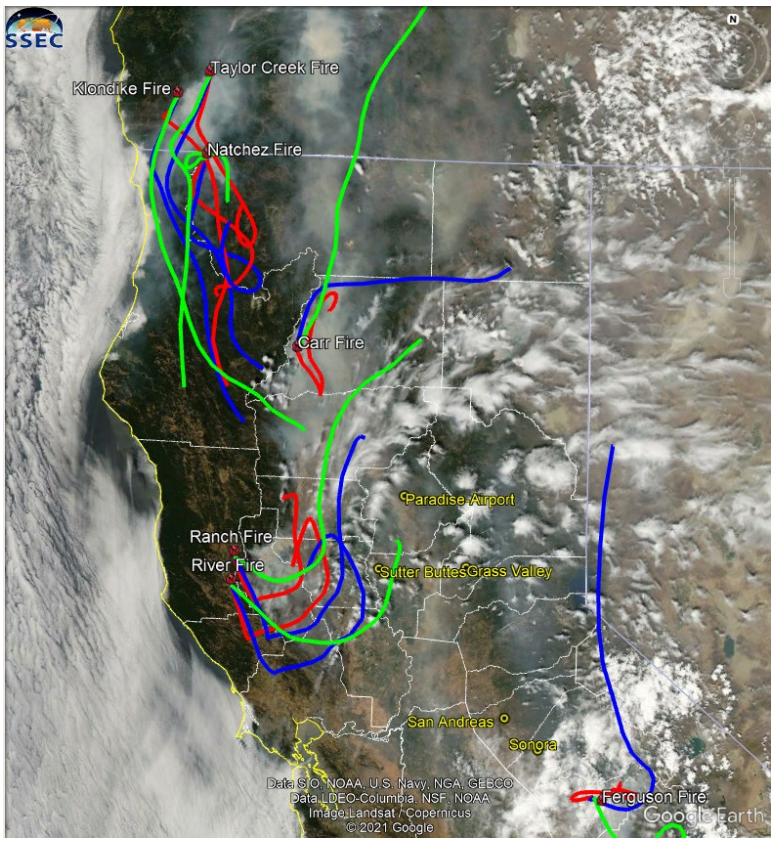
Figure 3-12: Meteorological conditions on July 30, 2018[31]



[31] https://www.wpc.ncep.noaa.gov/dailywxmap/index.html

Continued thick smoke covered the northern portion of the State. The fires at the Oregon border were a contributing factor, with emissions from the Mendocino Complex adding to the smoke impacting the Sacramento Valley and the Mountain Counties (Figure 3-13).

Figure 3-13: Forward trajectories 12z (4am PST) from fires (MODIS Aqua satellite image, July 30, 2018)



The back-trajectories for July 30, shown in Figure 3-14, are overlaid on the July 30 HMS smoke layer, and again indicate that the surface trajectories (red, 100m), as well as those indicative of transport (blue, 500m; green, 1000m), were influenced by the wildfire emissions. Table 3-10 indicates the time of the start of the back-trajectory for each site.

Figure 3-14: July 30, 2018 Back trajectories from exceeding monitors at time of maximum ozone concentration with HMS smoke layers

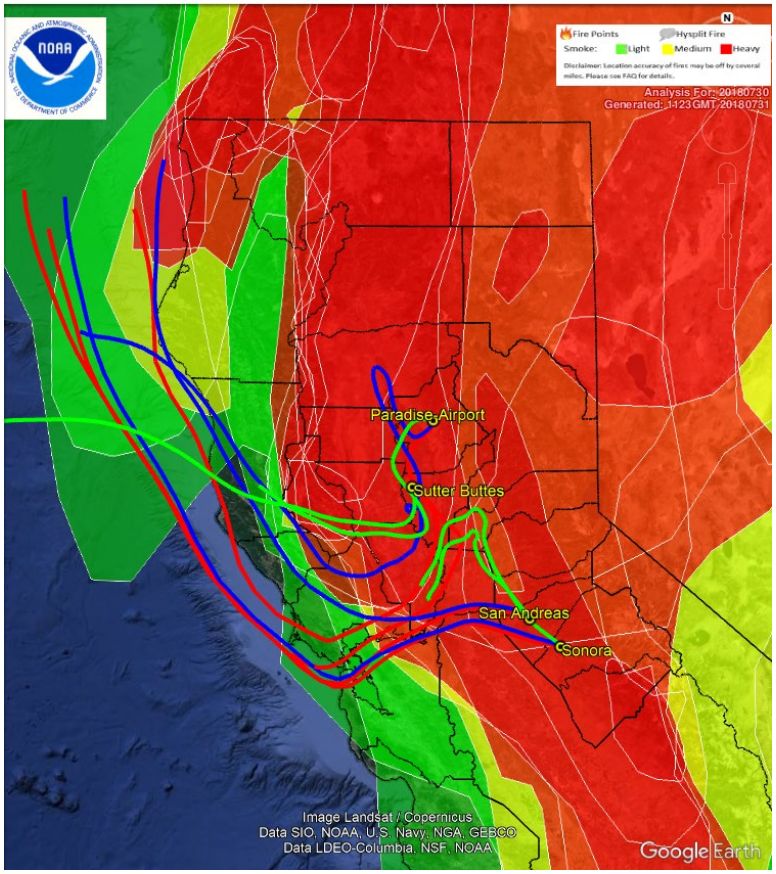


Table 3-10: Exceeding monitoring sites and times of maximum ozone concentrations

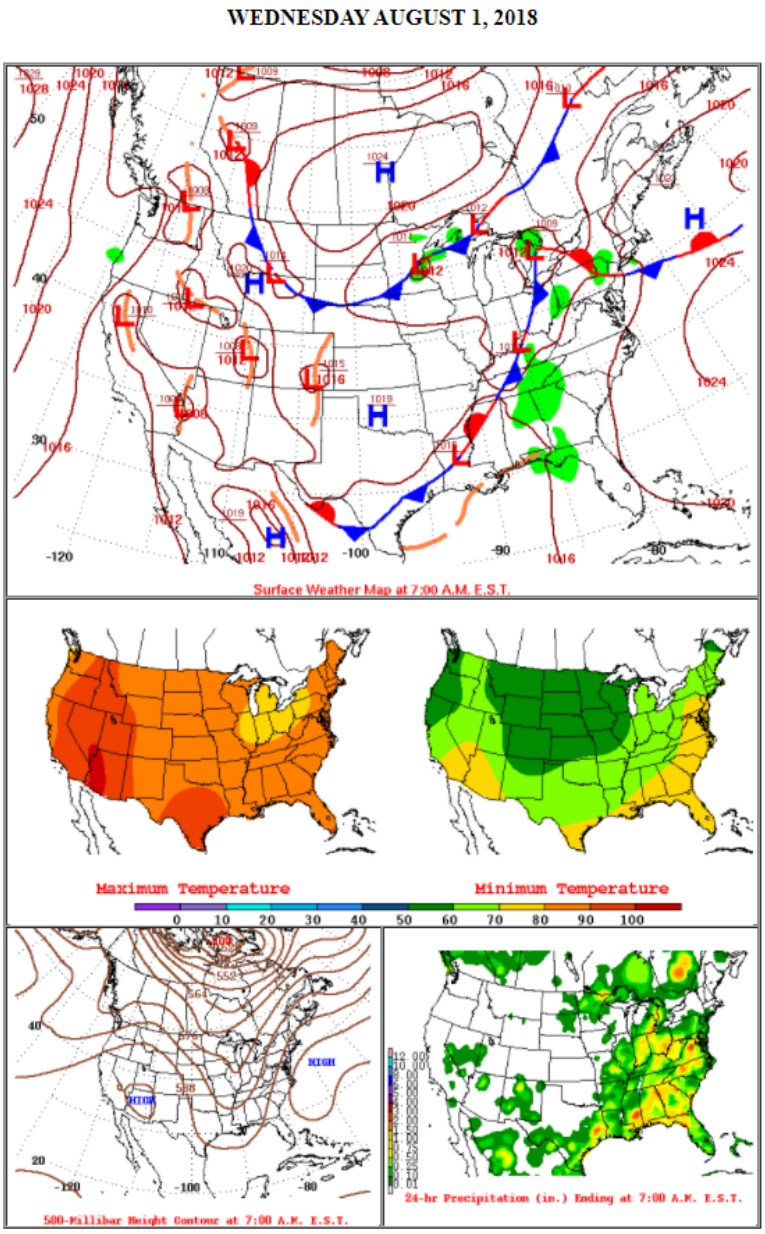
Site	Date (PST)	Max Hour (PST)	Date (UTC)	Max Hour (UTC)
Paradise	7/30/2018	17	7/31/2018	1
San Andreas	7/30/2018	16	7/31/2018	0
Sutter Buttes	7/30/2018	23	7/31/2018	7
Sonora	7/30/2018	17	7/31/2018	1

C. August 1-2, 2018

An upper level trough moved into the Pacific Northwest while weakening the influence of the ridge, which enhanced onshore flow and cooler temperatures in northern and central California (Figure 3-15). Dry conditions and periods of strong winds produced increased fire

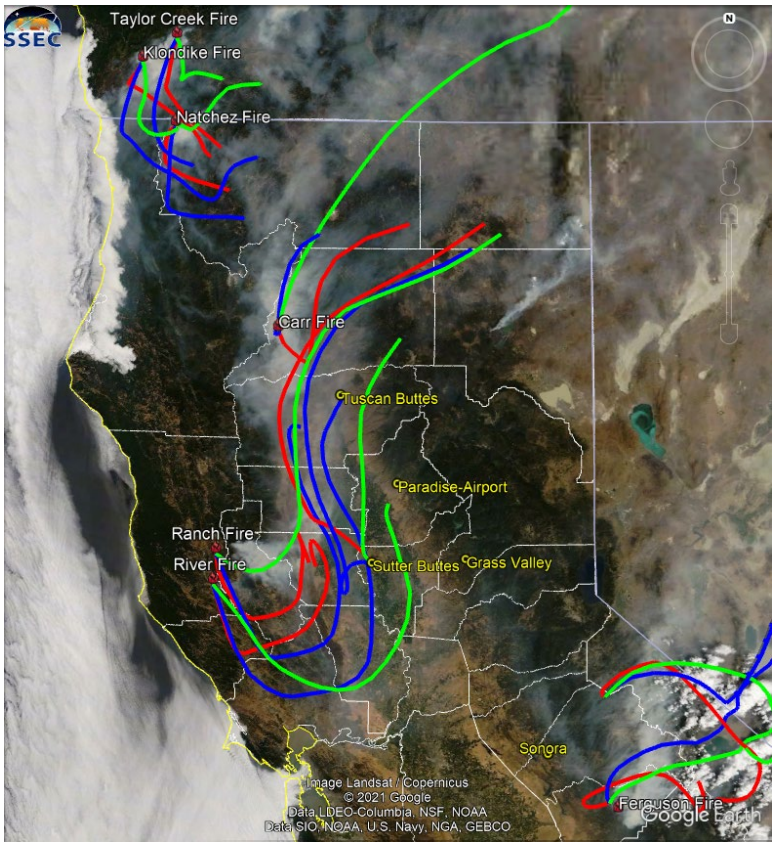
activity, increasing emissions from the Carr, Mendocino Complex, Ferguson, and the newly ignited Donnell fires. These emissions were transported and dispersed across much of the Sacramento Valley and Mountain County Air Basins as seen in Figure 3-16. A strong overnight delta breeze helped lessen smoke in much of the Sacramento metropolitan area.

Figure 3-15: Meteorological conditions on August 1, 2018[32]



[32] https://www.wpc.ncep.noaa.gov/dailywxmap/index.html

Figure 3-16: Forward trajectories 12z (4am PST) from fires (MODIS Terra satellite image, August 1, 2018)



The thickest areas of smoke had decreased by August 1, although smoke still covered most of the northern portion of the State. The 36-hour back-trajectories for August 1, shown in Figure 3-17, overlaid on the August 1 HMS smoke layer, again indicate that the surface trajectories (red, 100m), as well as those indicative of transport (blue, 500m; green, 1000m), were influenced by the wildfire emissions, particularly from the Mendocino Complex. In particular, both Tuscan Buttes and the Paradise trajectories transected heavy smoke before impacting the monitors. Table 3-11 indicates the time of the start of the back-trajectory for each site.

Figure 3-17: August 1, 2018 Back trajectories from exceeding monitors at time of maximum ozone concentration with HMS smoke layers

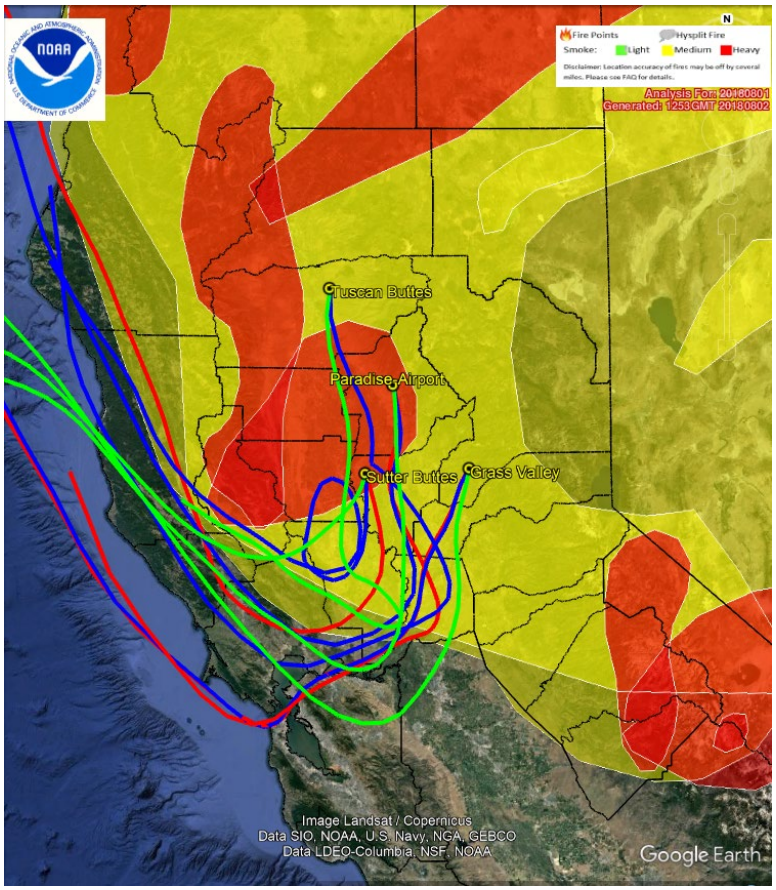


Table 3-11: Exceeding monitoring sites and times of maximum ozone concentrations

Site	Date (PST)	Max Hour (PST)	Date (UTC)	Max Hour (UTC)
Grass Valley	8/1/2018	18	8/2/2018	2
Paradise	8/1/2018	18	8/2/2018	2
Sutter Buttes	8/1/2018	18	8/2/2018	2
Tuscan Buttes	8/1/2018	20	8/2/2018	4

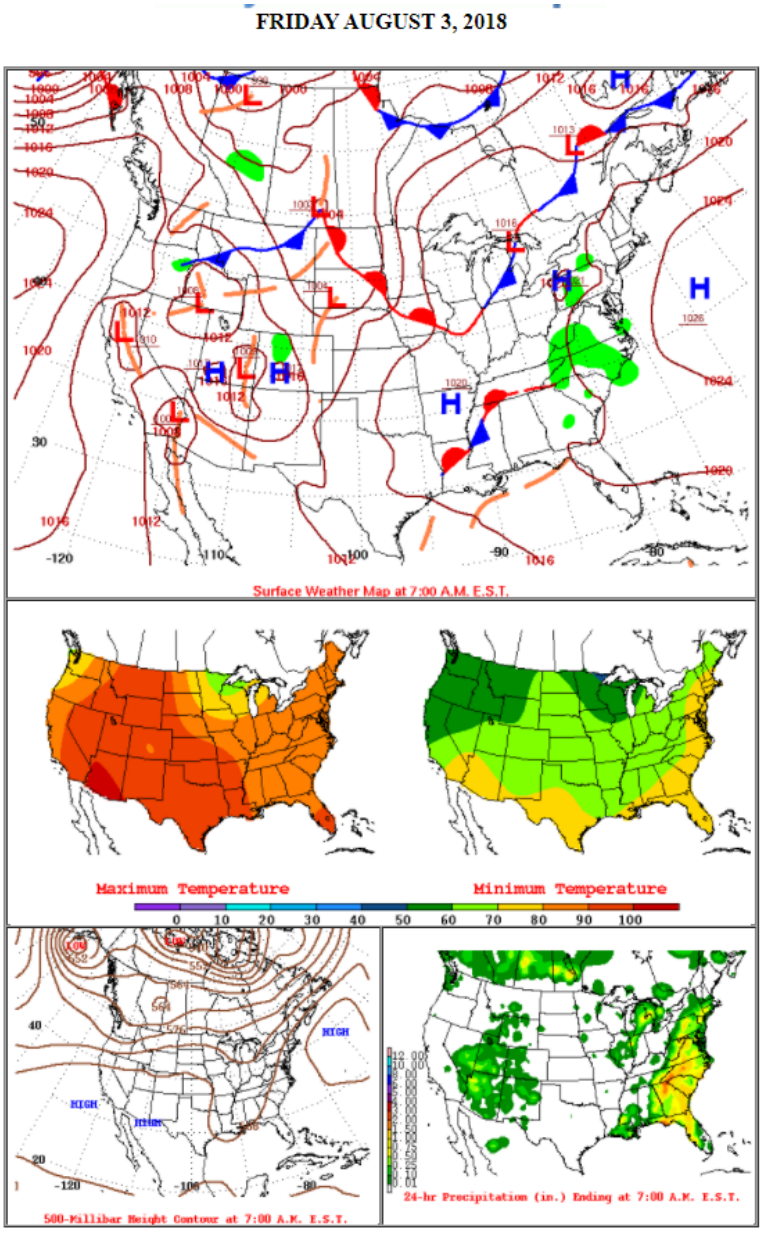
D. August 3-5, 2018

A series of shortwave troughs moved across northern California allowing temperatures to generally cool to near-normal (Figure 3-18) while providing dry, windy conditions that enhanced wildfires and spread smoky emissions across northern and central California.

Smoke from the Mendocino Complex fire blanketed the central and southern Sacramento Valley and the northern Sierra Nevada Mountains (Figure 3-19), with reports by NWS (Appendix III) and news agencies[33] of falling ash as far away as Rancho Cordova (eastern suburb of Sacramento) at least 70 miles downwind. The delta breeze reduced smoke in some portions of the Sacramento Valley and the northwestern portion of the San Joaquin Valley during August 4, but smoke from the Mendocino Complex largely overwhelmed the greater Sacramento region and northern Mountain Counties during August 3 and August 5. Ferguson and Donnell wildfires were very active during this period, with heavy smoke dispersing across the Sierra Nevada Mountains and foothills impacting the mountain counties, with elevated winds blowing smoke northeastward into the State of Nevada.

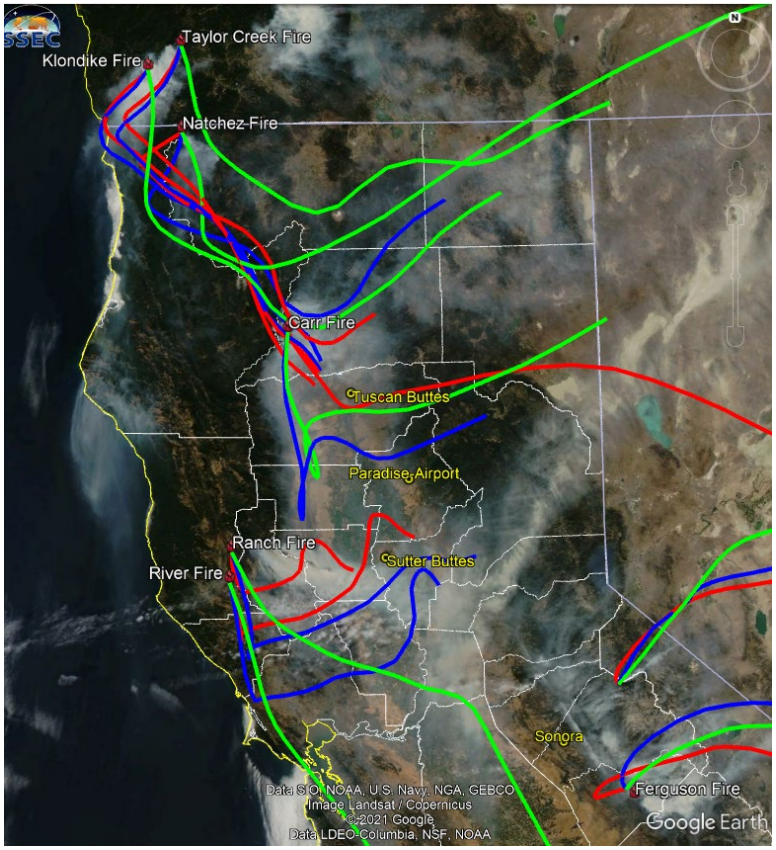
[33] KCRA, *Wildfire ash seen across Sacramento area*, August 4, 2018, last accessed 9/1/21; Twitter, Derek Schnell, KCRA (@DerekKCRA), *"It's raining ash..."*, August 4, 2018, last accessed 9/1/21

Figure 3-18: Meteorological conditions on August 3, 2018[34]



[34] https://www.wpc.ncep.noaa.gov/dailywxmap/index.html

Figure 3-19: Forward trajectories 12z (4am PST) from fires (MODIS Aqua satellite image, August 3, 2018)



The thickest areas of smoke had increased slightly from August 1. The 36-hour back-trajectories for August 3 indicate that the surface trajectories (red, 100m), as well as those indicative of transport (blue, 500m; green, 1000m), were influenced by the wildfire emissions. All sites showed back-trajectories that transected heavy smoke before impacting the monitors. Table 3-12 indicates the time of the start of the back-trajectory for each site.

Figure 3-20: August 3, 2018 Back trajectories from exceeding monitors at time of maximum ozone concentration with HMS smoke layers

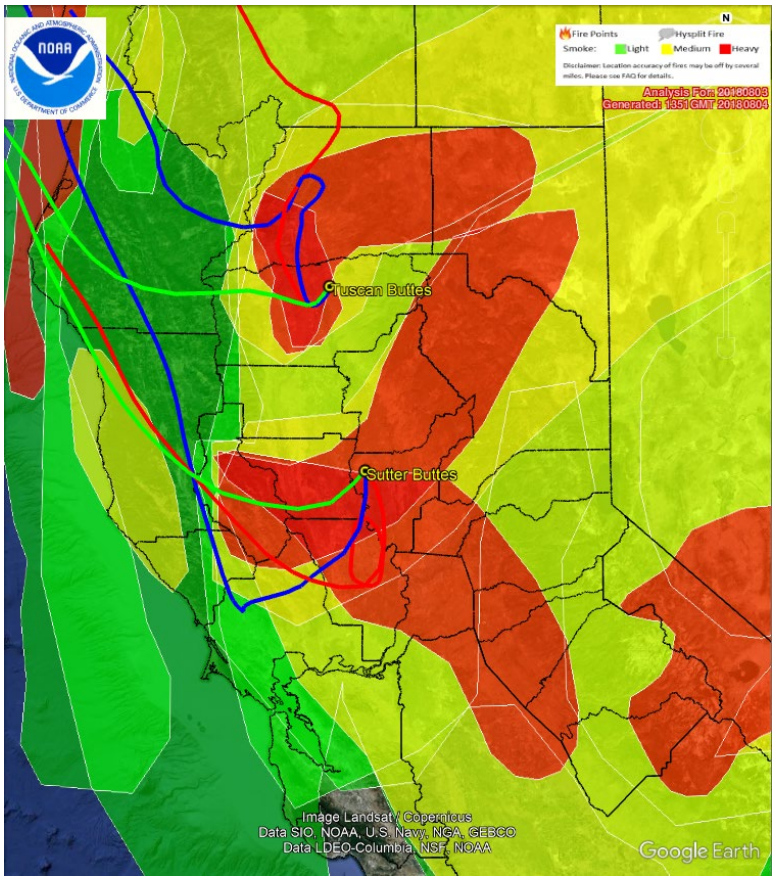


Table 3-12: Exceeding monitoring sites and times of maximum ozone concentrations

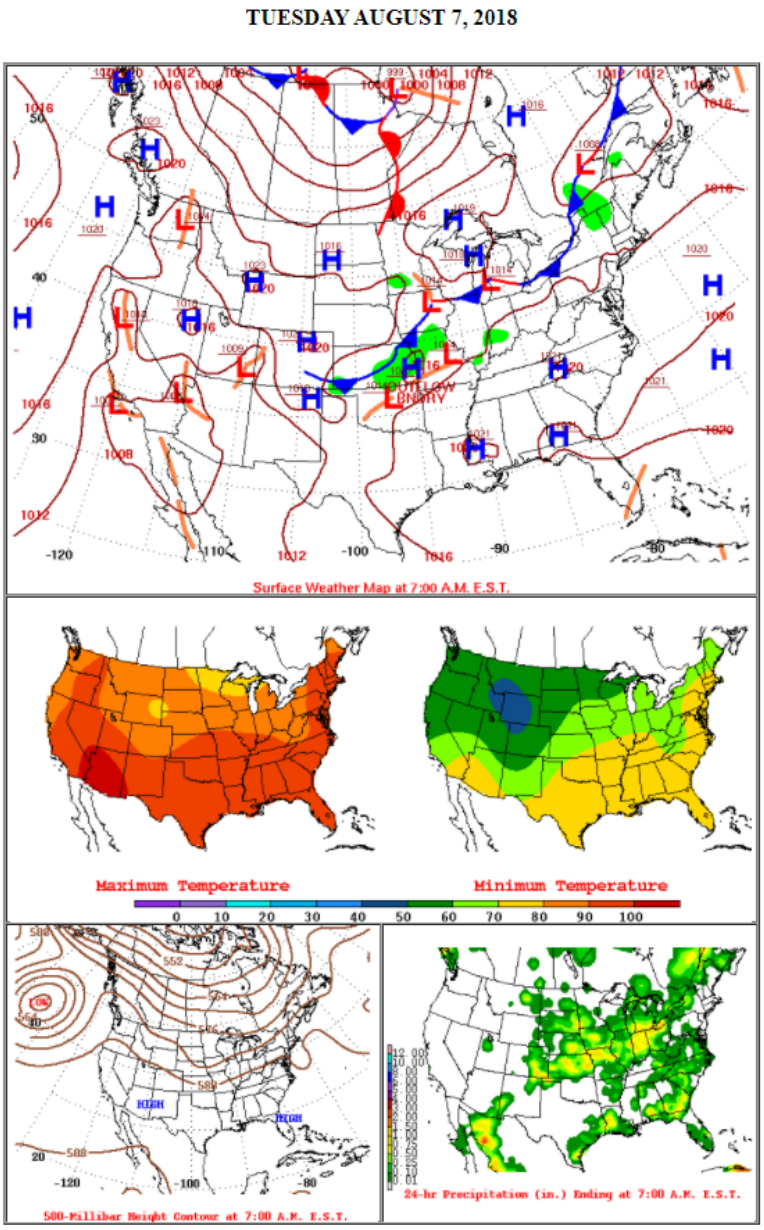
Site	Date (PST)	Max Hour (PST)	Date (UTC)	Max Hour (UTC)
Sutter Buttes	8/3/2018	21	8/4/2018	5
Tuscan Buttes	8/3/2018	16	8/4/2018	0

E. August 6-9, 2018

High pressure built back northward across northern California (Figure 3-21), bringing with it calmer winds, continued dry conditions, and hotter temperatures - except where solar heating was limited by thick, dense smoke aloft. A weak coastal-valley pressure gradient provided only for a weaker delta breeze, with less of the marine air layer advecting into the Sacramento area and leading to smoky conditions building up across the region. Stagnant conditions aloft with lighter surface winds prevailed across the Sacramento Valley and Sierra Mountain ranges contributed as well to the heavy buildup of wildfire smoke and emissions

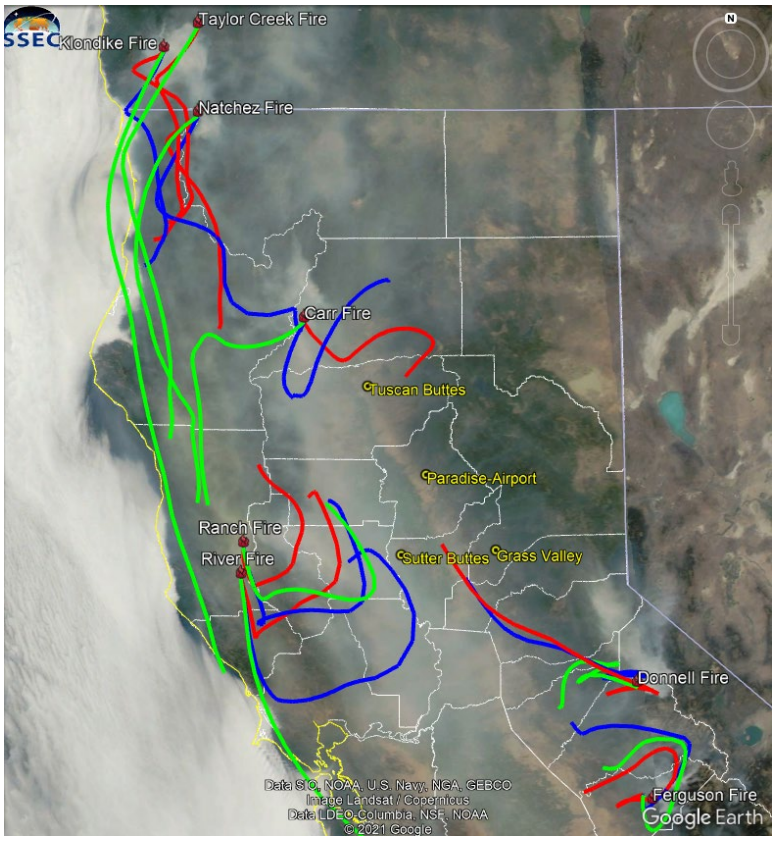
across nearly all of northern and central California (Figure 3-22). Adding to the impact from the northern fires, smoke and associated emissions from the Donnell fire drained down through the mountain valleys and into the foothills of the Stanislaus National Forest, impacting the Sonora and San Andreas monitors.

Figure 3-21: Meteorological conditions on August 7, 2018[35]



[35] https://www.wpc.ncep.noaa.gov/dailywxmap/index.html

Figure 3-22: Forward trajectories 12z (4am PST) from fires (MODIS Aqua satellite image, August 7, 2018)



The smoke over Northern California thickened from August 3, as seen in the section above, and August 7. The 36-hour back-trajectories for August 7, shown in Figure 3-23, overlaid on the August 7 HMS smoke layer, indicate that the surface trajectories (red, 100m), as well as those indicative of transport (blue, 500m; green, 1000m), were influenced by the highest concentrations of wildfire emissions as characterized by the heavy red HMS smoke layer. Table 3-13 indicates the time of the start of the back-trajectory for each site.

Figure 3-23: August 7, 2018 Back trajectories from exceeding monitors at time of maximum ozone concentration with HMS smoke layers

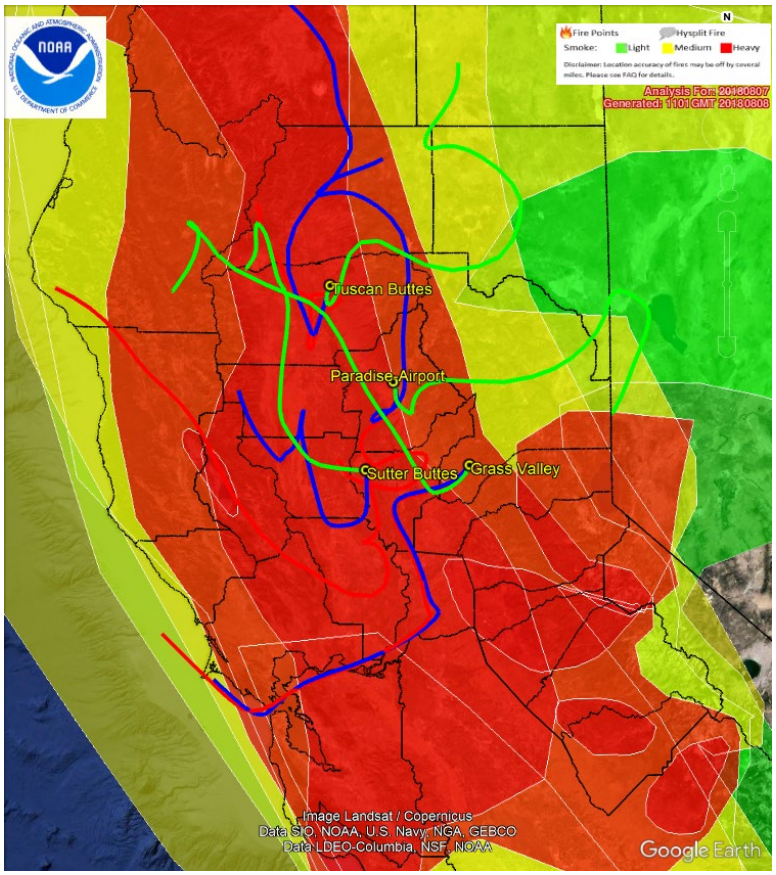


Table 3-13: Exceeding monitoring sites and times of maximum ozone concentrations

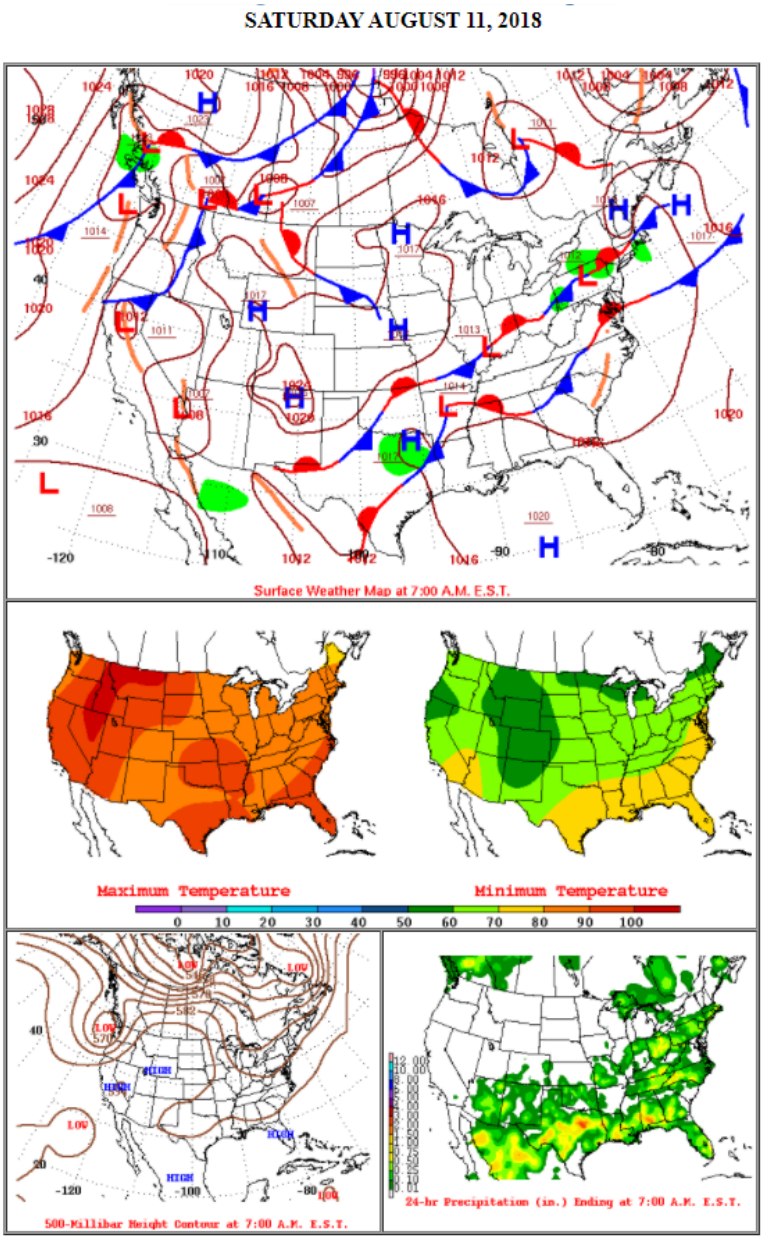
Site	Date (PST)	Max Hour (PST)	Date (UTC)	Max Hour (UTC)
Grass Valley	8/7/2018	17	8/8/2018	1
Paradise	8/7/2018	17	8/8/2018	1
Sutter Buttes	8/7/2018	18	8/8/2018	2
Tuscan Buttes	8/7/2018	16	8/8/2018	0

F. August 10-11, 2018

An approaching 500mb low off the Pacific Northwest coast (Figure 3-24) provided for increased onshore flow through the delta and across the coastal mountains. While the strong winds enhanced the Mendocino Complex and Carr wildfires, cleaner marine air was

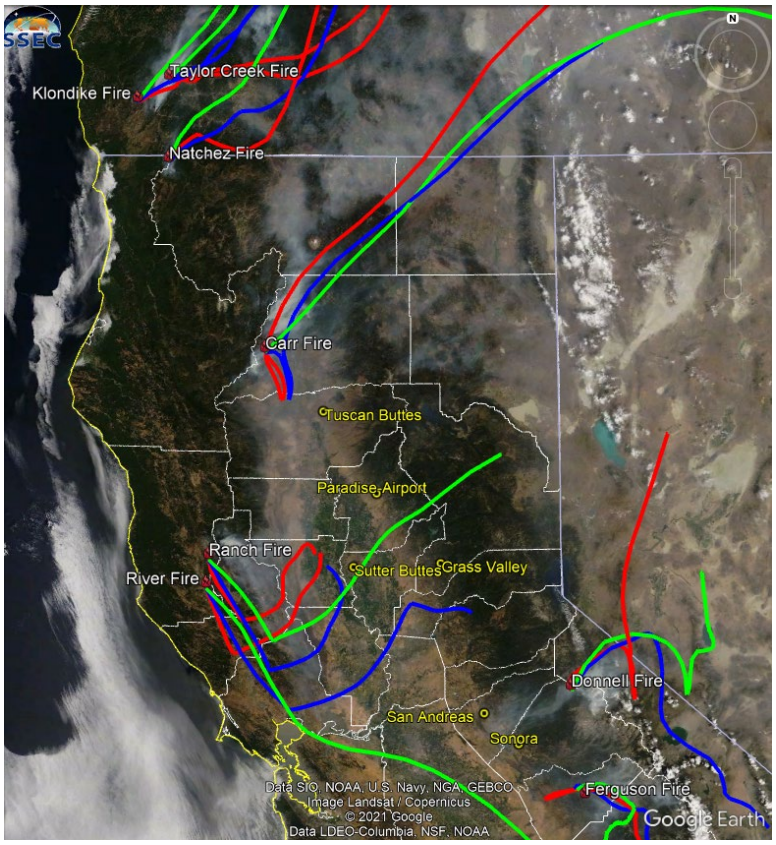
transported into the Sacramento and San Joaquin Valleys. Figure 3-25 illustrates the impact of the delta breeze on the smoke, which was pushed into the foothills and mountains to the east. Beginning the afternoon of August 10, the mixing layer grew deeper with stronger winds aloft which provided for improved mixing and ventilation during the afternoon of August 10 and into August 11. This allowed for pollution that had been trapped at the surface to clear out from the Sacramento Valley and Sierra Nevada foothills.

Figure 3-24: Meteorological conditions on August 11, 2018[36]



[36] https://www.wpc.ncep.noaa.gov/dailywxmap/index.html

Figure 3-25: Forward trajectories 12z (4am PST) from fires (MODIS Terra satellite image, August 10, 2018)



The smoke over Northern California was still evident on August 10, but the moderate and heavy layers seen in previous days was less. The 36-hour back-trajectories for August 10, shown in Figure 3-26, overlaid on the August 10 HMS smoke layer, indicate that the surface trajectories (red, 100m), as well as those indicative of transport (blue, 500m; green, 1000m), were influenced by the varying concentrations of wildfire emissions as characterized by the varying HMS smoke layers. Table 3-14 indicates the time of the start of the back-trajectory for each site.

Figure 3-26: August 10, 2018 Back trajectories from exceeding monitors at time of maximum ozone concentration with HMS smoke layers

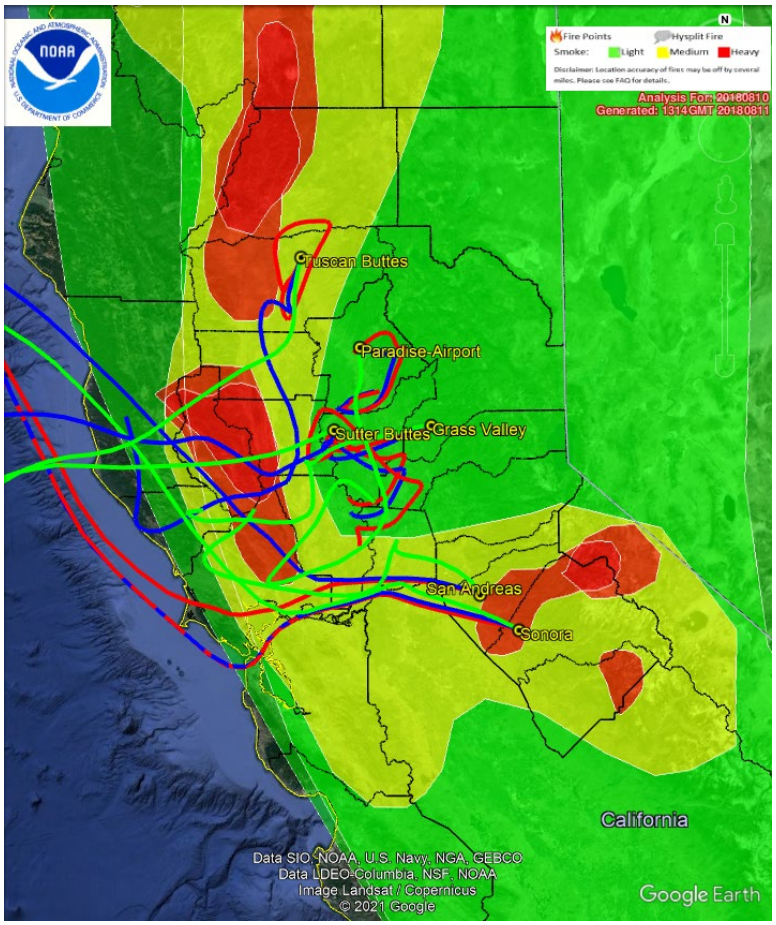


Table 3-14: Exceeding monitoring sites and times of maximum ozone concentrations

Site	Date (PST)	Max Hour (PST)	Date (UTC)	Max Hour (UTC)
Grass Valley	8/10/2018	20	8/11/2018	4
Paradise	8/10/2018	12	8/10/2018	20
San Andreas	8/10/2018	18	8/11/2018	2
Sutter Buttes	8/10/2018	17	8/11/2018	1
Sonora	8/10/2018	16	8/11/2018	0
Tuscan Buttes	8/10/2018	15	8/10/2018	23

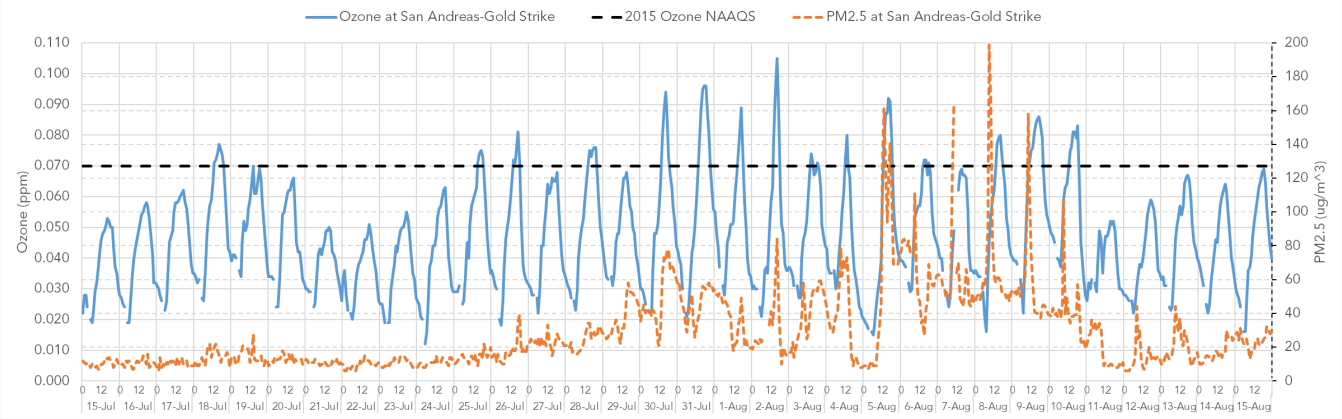
III. Event Related Concentrations and Long Term Trends

A. Calaveras County (San Andreas)

Multiple wildfires impacted the town of San Andreas on multiple days, with winds transporting wildfire smoke and ozone precursors from the Carr, Donnell, Ferguson, and Natchez wildfires, as well as the Mendocino Complex, resulting in elevated ozone concentrations at the San Andreas monitoring site. Elevated $PM_{2.5}$ concentrations recorded at San Andreas and associated timing support the presence of wildfire smoke in the town of San Andreas.

Figure 3-27 shows the ozone and $PM_{2.5}$ concentration encompassing July 15 to August 15, which includes the requested exceptional events between July 28 through August 10. The timing of relative $PM_{2.5}$ elevated concentrations show strong connections with ozone increases and prolonged elevated concentrations.

Figure 3-27: 1-hour Ozone and 1-hour $PM_{2.5}$ Concentrations



Recent trends show a general decrease in 8-hour ozone design values at the San Andreas monitoring site as shown in Figure 3-28 while the annual 4th highs (Figure 3-29) have shown relatively little change during the past ten years. The 2018 design value did not follow this trend, staying above the standard. The year-to-year variation in 4th highs is believed to be due in part by wildfire impacts during several recent years that were not pursued as exceptional events due to a lack of regulatory impact for those years. Concurrence of the requested exceptional event dates would bring the area into attainment of the 2015 ozone standard based on the adjusted 2020 design value, as originally anticipated with the historical trend line.

Figure 3-28: 8-hour Ozone Design Values with Trend at San Andreas

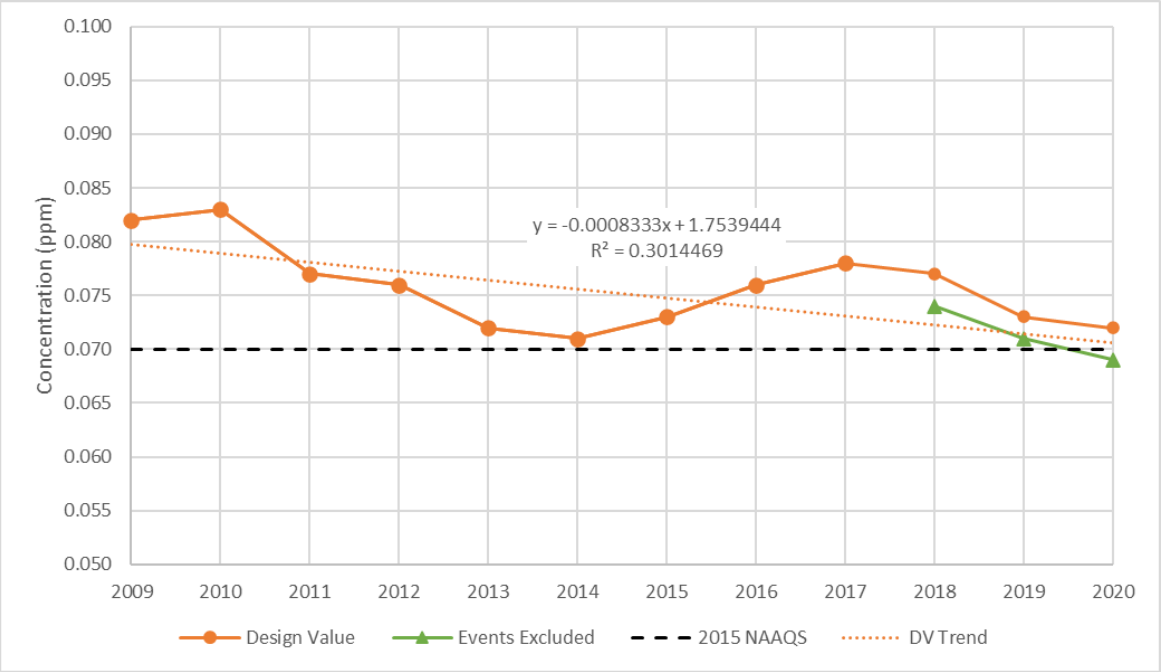
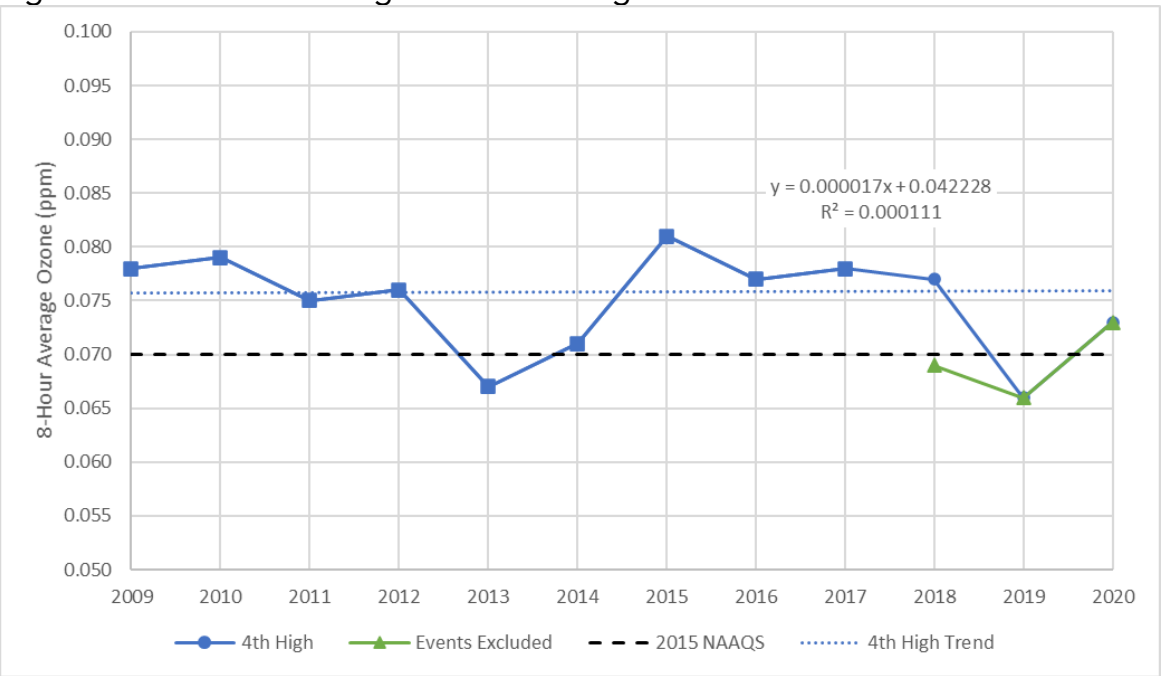


Figure 3-29: Annual 4th High 8-Hour Average Ozone with Trend at San Andreas



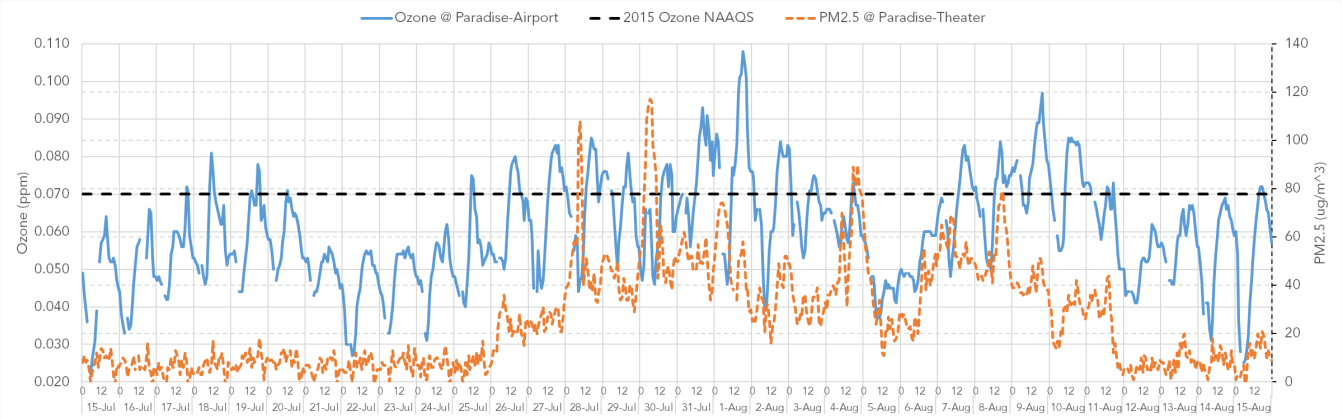
B. Chico / Butte County (Paradise)

Multiple wildfires impacted the Town of Paradise during the period of concern, where winds generally transported wildfire smoke and ozone precursors from the Ranch, River, Carr,

Donnell, Ferguson, and Natchez wildfires in California. These wildfire emissions caused elevated ozone concentrations at the Paradise-Airport site. Additionally, the smoke from the Taylor Creek and Klondike fires in Oregon was transported to the area and likely also contributed to ozone concentrations during some days. Elevated $PM_{2.5}$ monitor concentrations at the nearby Paradise-Theater site and associated timing support the presence of wildfire smoke in the Town of Paradise.

Figure 3-30 shows the ozone and $PM_{2.5}$ concentration encompassing July 15 to August 15, which includes the requested exceptional events between July 26 through August 10. The timing of relative $PM_{2.5}$ elevated concentrations show strong connections with ozone increases and prolonged elevated concentrations.

Figure 3-30: 1-hour Ozone and 1-hour $PM_{2.5}$ Concentrations



Recent trends show a general decrease in 8-hour ozone design values at the Paradise monitoring site as shown in Figure 3-31 while the annual 4th highs (Figure 3-32) have shown a gradual downwards trend during the past ten years, which is believed to be artificially higher due to wildfire impacts during several recent years. In 2019 when wildfire impact was not significant, no ozone exceedance was observed at the Paradise monitoring site. The trend fit for design values is very strong. The 2018 8-hour ozone design value did not follow this trend, being well above the standard. Concurrence of the requested exceptional event dates would bring the area into attainment of the 2015 ozone standard based on the adjusted 2020 8-hour ozone design value.

Figure 3-31: 8-hour Ozone Design Values with Trend at Paradise (Butte County)

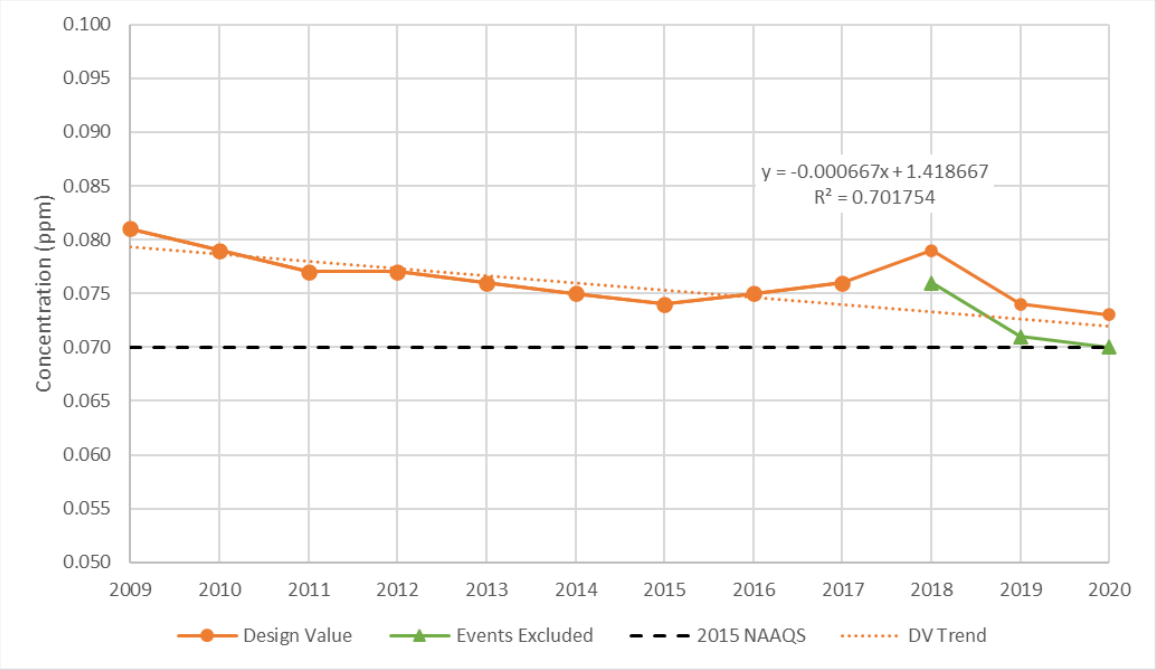
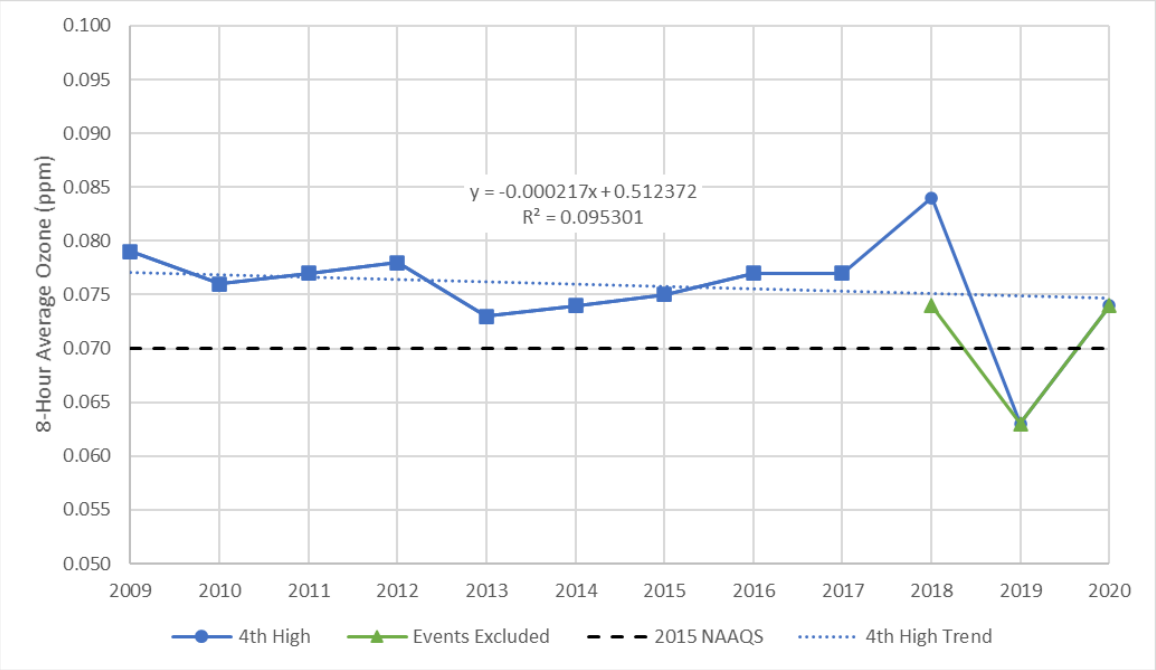


Figure 3-32: Annual 4th High 8-Hour Average Ozone with Trend at Paradise



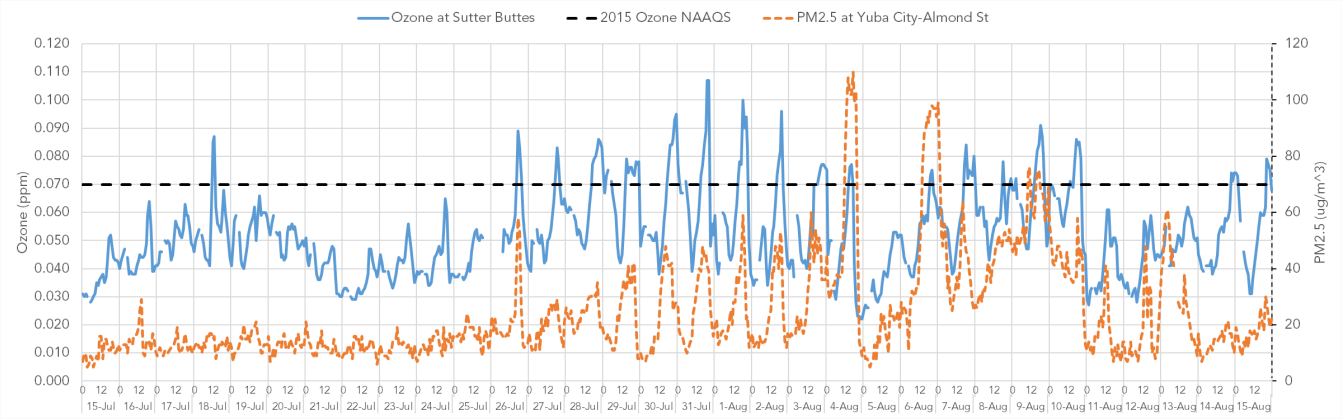
C. Sutter Buttes / Sutter County / Feather River AQMD

Multiple wildfires impacted the site of Sutter Buttes depending on the day, but generally winds transported wildfire smoke and ozone precursors from the Ranch, River, Carr, Sutter

Butte grass fire, and Donnell wildfires in California causing elevated ozone concentrations at the Sutter Buttes site. Additionally, the smoke from the Taylor Creek and Klondike fires in Oregon was transported to the area and likely also contributed to ozone concentrations during some days. Elevated $PM_{2.5}$ concentrations at the nearby Yuba City-Almond St monitoring site and associated timing support the presence of wildfire smoke at the Sutter Buttes site even with Sutter Buttes' elevation being over 2000 feet higher than the Yuba City site. Due to this difference in elevation, during many nights the $PM_{2.5}$ concentrations decrease as the polluted surface layer decouples from the surface becoming elevated when a nocturnal surface boundary layer develops along the valley floor due to the radiational cooling of the ground. When this occurs, the Sutter Buttes site continues to experience the polluted airmass while Yuba City benefits from a cleaner surface boundary layer. Then during the day the surface layer quickly becomes polluted due to the growth of the boundary layer from radiational heating, transport of wildfire smoke emissions into the area, and entrainment of emissions from elevated polluted airmasses.

Figure 3-33 shows the ozone and $PM_{2.5}$ concentration encompassing July 15 to August 15, which includes the requested exceptional events between July 28 through August 10. The timing of relative $PM_{2.5}$ elevated concentrations show strong connections with ozone increases and prolonged elevated concentrations.

Figure 3-33: 1-hour Ozone and 1-hour $PM_{2.5}$ Concentrations



Recent trends show a general decrease in 8-hour ozone design values at the Sutter Buttes monitoring site as shown in Figure 3-34. The 2018 design value did not follow this trend, staying above the standard. Annual 4th highs (Figure 3-35) have shown a slow downwards trend during the past ten years with large year-to-year variations believed to be due in part to wildfire impacts during several years that have not previously been pursued as exceptional events due to a lack of regulatory impact for those years. A caveat to the data and trends must be noted, as more than 5 months of data was invalidated during the Summer 2017 ozone season which likely led to a lower 4th high in 2017 and may have impacted the design values for 2017 and 2018. Concurrence of the requested exceptional event dates would not bring the site design value below the standard alone, but combined with concurrence of

events in 2020, will bring the area into attainment of the 2015 ozone standard, matching the historical trend line anticipated attainment year of 2020.

Figure 3-34: 8-hour Ozone Design Values with Trend at Sutter Buttes

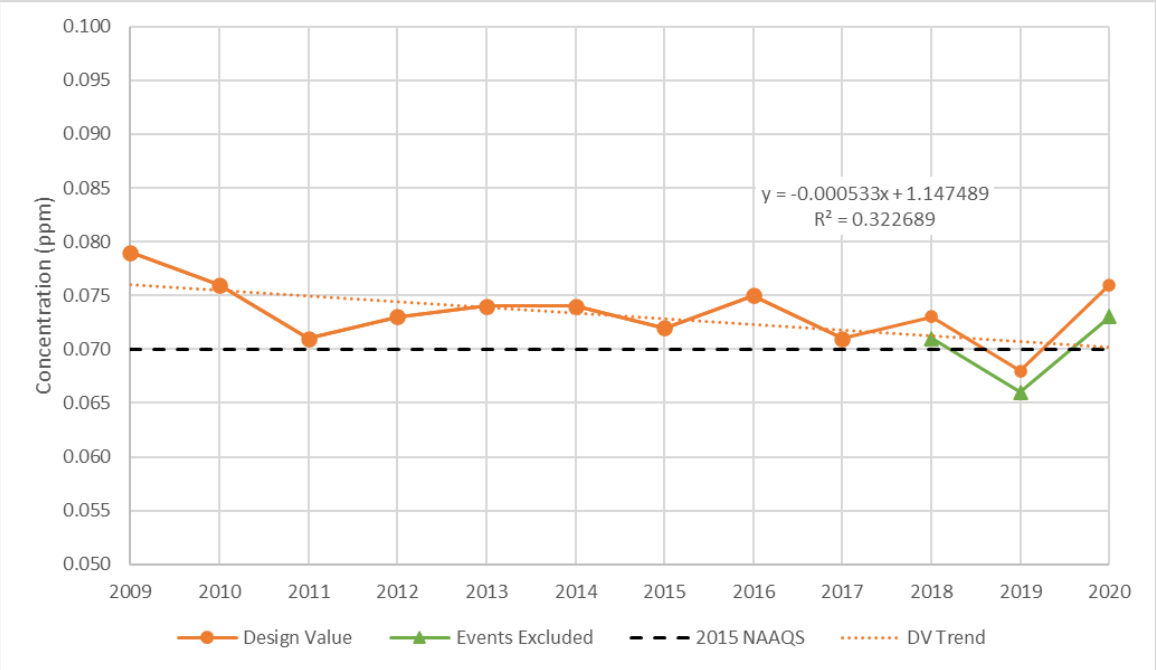
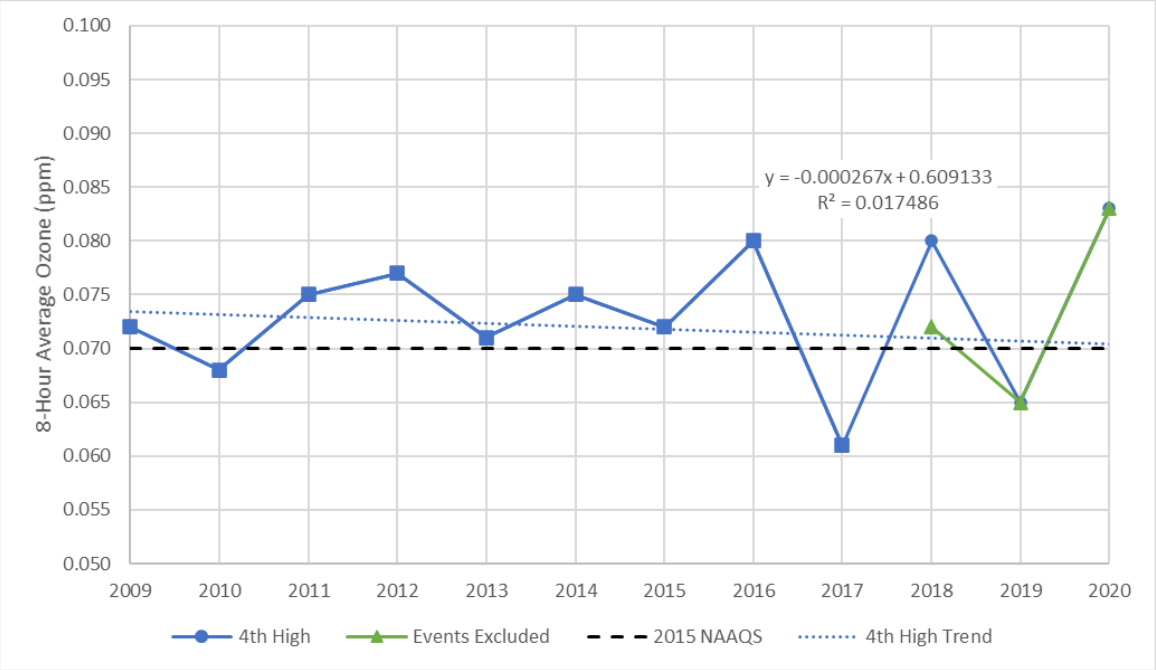


Figure 3-35: Annual 4th High 8-Hour Average Ozone with Trend at Sutter Buttes

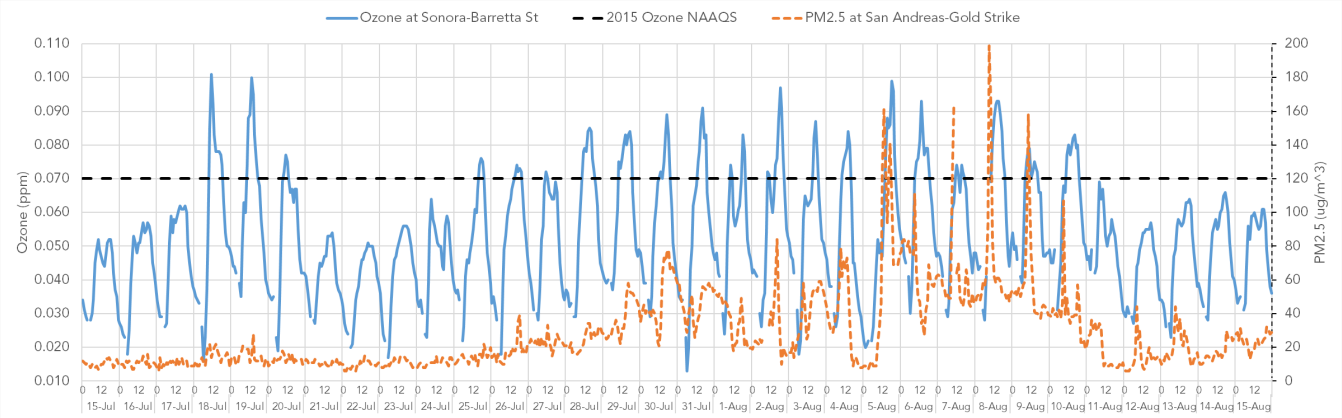


D. Tuolumne County (Sonora)

Multiple wildfires impacted the town of Sonora depending on the day, but frequently winds transported wildfire smoke and ozone precursors from the Ranch, River, Carr, Donnell, Ferguson, and Natchez wildfires in California causing elevated ozone concentrations at the Sonora-Barretta St monitoring site. Elevated $PM_{2.5}$ concentrations at the nearest $PM_{2.5}$ monitor at San Andreas-Gold Strike Rd, which is 22 miles northwest of the Sonora site, and associated timing support the presence of wildfire smoke in the nearby area which also impacted the town of Sonora.

Figure 3-36 shows the ozone and $PM_{2.5}$ concentration encompassing July 15 to August 15, which includes the requested exceptional events between July 28 through August 10. The timing of relative $PM_{2.5}$ elevated concentrations show strong connections with ozone increases and prolonged elevated concentrations.

Figure 3-36: 1-hour Ozone and 1-hour $PM_{2.5}$ Concentrations



Recent trends show a general decrease in 8-hour ozone design values at the Sonora monitoring site as shown in Figure 3-37. The 2018 design value did not follow this trend, staying above the standard. Annual 4th highs (Figure 3-38) have shown an increasing trend during the past ten years, believed to be caused by greater year-to-year variations due in large part by wildfires during several recent years. Influence from wildfires in 2016 are believed to have led to a significantly higher 2016 4th high and inflated design values for 2016-2018, but has not been pursued for exceptional events due to a lack of regulatory impact. Concurrence of the requested exceptional event dates would not bring the site design value below the standard alone, but combined with concurrence of events in 2020, will bring the area into attainment of the 2015 ozone standard.

Figure 3-37: 8-hour Ozone Design Values with Trend at Sonora (Tuolumne County)

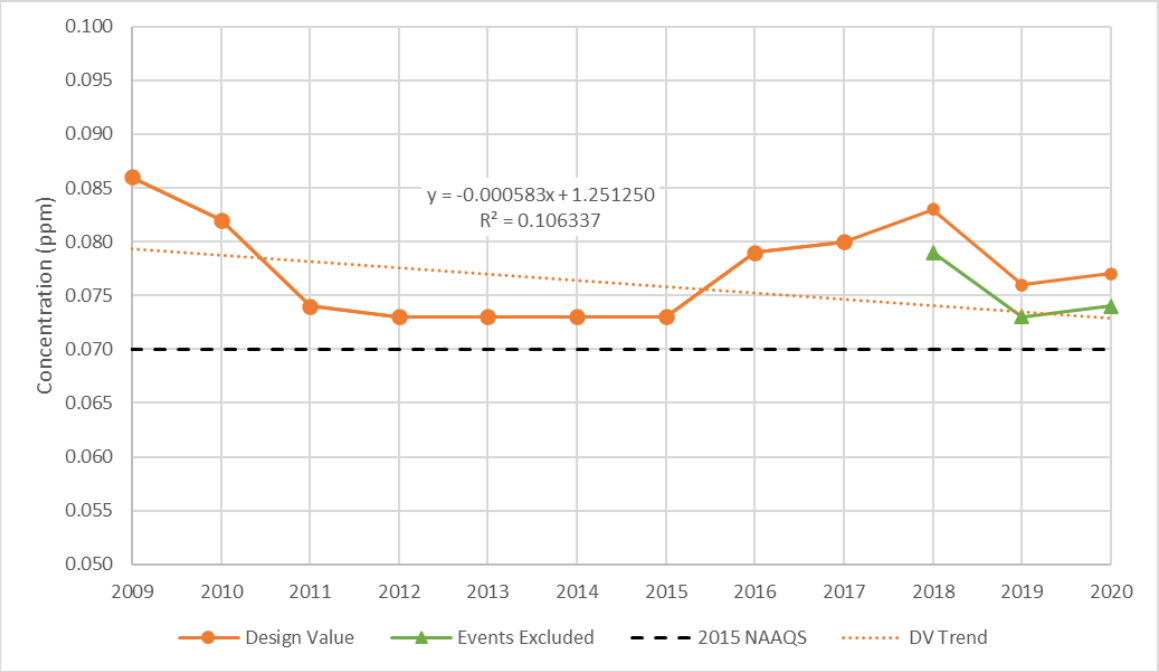
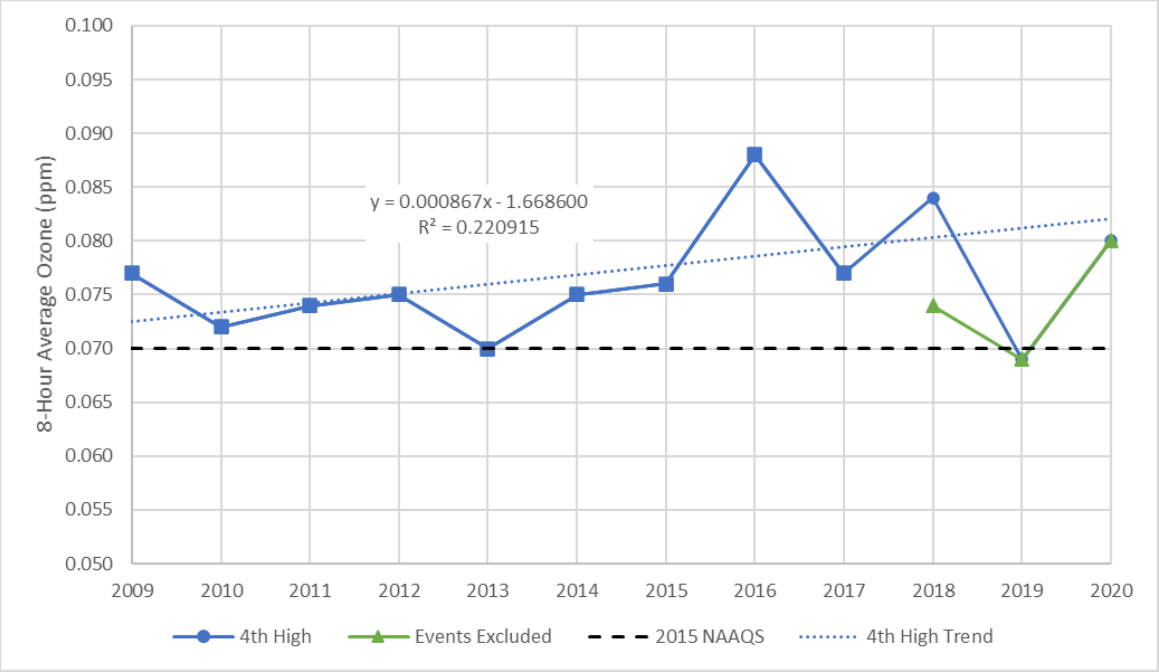


Figure 3-38: Annual 4th High 8-Hour Average Ozone with Trend at Sonora



E. Tuscan Buttes / Tehama County

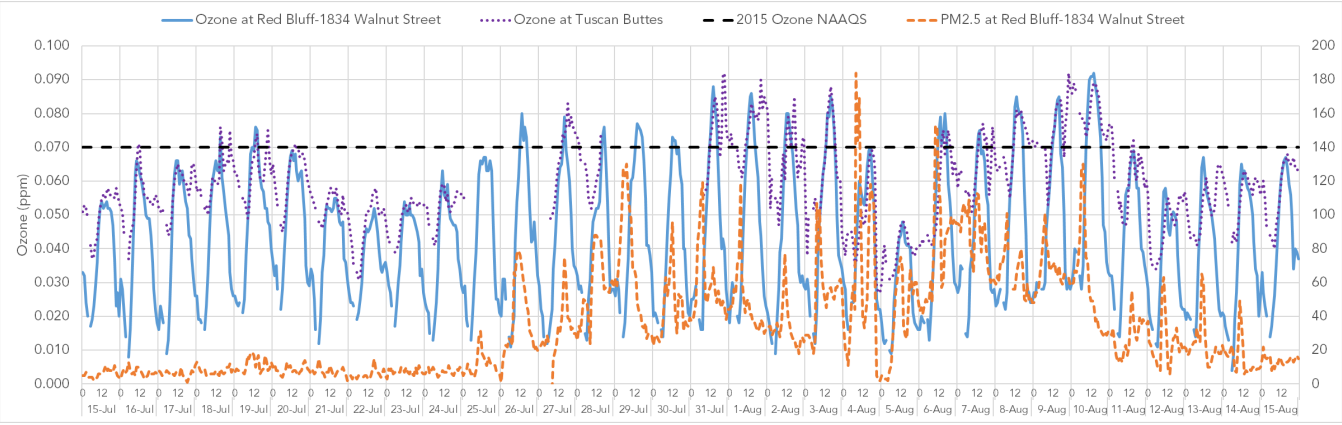
Multiple wildfires impacted the Tuscan Buttes depending on the day, when winds transported wildfire smoke and ozone precursors from the Carr, Ranch, and River wildfires in

California causing elevated ozone concentrations at the Tuscan Buttes monitoring site. Elevated ozone and $PM_{2.5}$ concentrations were also evident at the nearest $PM_{2.5}$ monitor at Red Bluff, which is 10 miles southwest of the Tuscan Buttes site, and associated timing support the presence of wildfire smoke in the nearby area which also impacted the Tuscan Buttes monitor.

During daytime hours, Tuscan Buttes and Red Bluff were both within the surface boundary layer with generally similar ozone concentrations. Typically in the evening, the boundary layer would decouple from the surface due to radiational cooling of the ground causing a nocturnal boundary layer to grow in the valley. This is represented in Figure 3-39, which shows the ozone and $PM_{2.5}$ concentration encompassing July 15 to August 15. During morning to midday hours ozone concentrations at Red Bluff and Tuscan Buttes would climb. During the evening, ozone levels would rapidly decrease at Red Bluff as the shallow, cleaner nocturnal boundary layer formed in the Sacramento Valley and existing ozone at the surface was titrated. Meanwhile, the Tuscan Buttes site remained in the more polluted residual layer aloft due to the higher elevation of the site being above the nocturnal boundary layer. This elevated airmass contained less NOx due to being disconnected from surface sources, limiting titration of ozone which led to higher ozone concentrations persisting overnight. Then again during the next morning, radiational heating of the ground would cause the surface mixing layer to grow again, mixing in the more polluted air from aloft with ozone precursors and sunlight producing fresh ozone.

Starting July 25, wildfire emissions with $PM_{2.5}$, ozone, and ozone precursors began impacting the Red Bluff and Tuscan Buttes site, as shown by increasing $PM_{2.5}$ concentrations at the Red Bluff site. During July 25 to 27 and July 31, many hours of data are missing for the Tuscan Buttes ozone monitor due to a machine malfunction, as flagged in AQS. Due to this missing data, the Red Bluff ozone concentrations are also included for comparison to help support the comparison between Red Bluff $PM_{2.5}$ data and Tuscan Buttes ozone data. For most days between July 25 to August 10, $PM_{2.5}$ and ozone concentrations at the sites peaked higher, showing strong $PM_{2.5}$ connections at the Red Bluffs site with ozone increases and prolonged elevated concentrations at the Tuscan Buttes site.

Figure 3-39: 1-hour Ozone at Red Bluff and Tuscan Buttes and 1-hour $PM_{2.5}$ Concentrations at Red Bluff



Recent trends show a general decrease in 8-hour ozone design values at the Tuscan Buttes monitoring site as shown in Figure 3-40. The 2018 design value did not follow this trend, staying above the standard. Annual 4th highs (Figure 3-41) have shown a slowly increasing trend during the past ten years, but values are believed to be significantly higher for some recent years due to significant wildfire impacts that have not been pursued as exceptional events due to a lack of regulatory impact for those years. Influence from wildfires in 2016 are believed to have led to a notably higher 2016 4th high and inflated design values for 2016-2018. Concurrence of the requested exceptional event dates would bring the area into attainment of the 2015 ozone standard based on the adjusted 2020 8-hour ozone design value.

Figure 3-40: 8-hour Ozone Design Values with Trend at Tuscan Buttes (Tehama County)

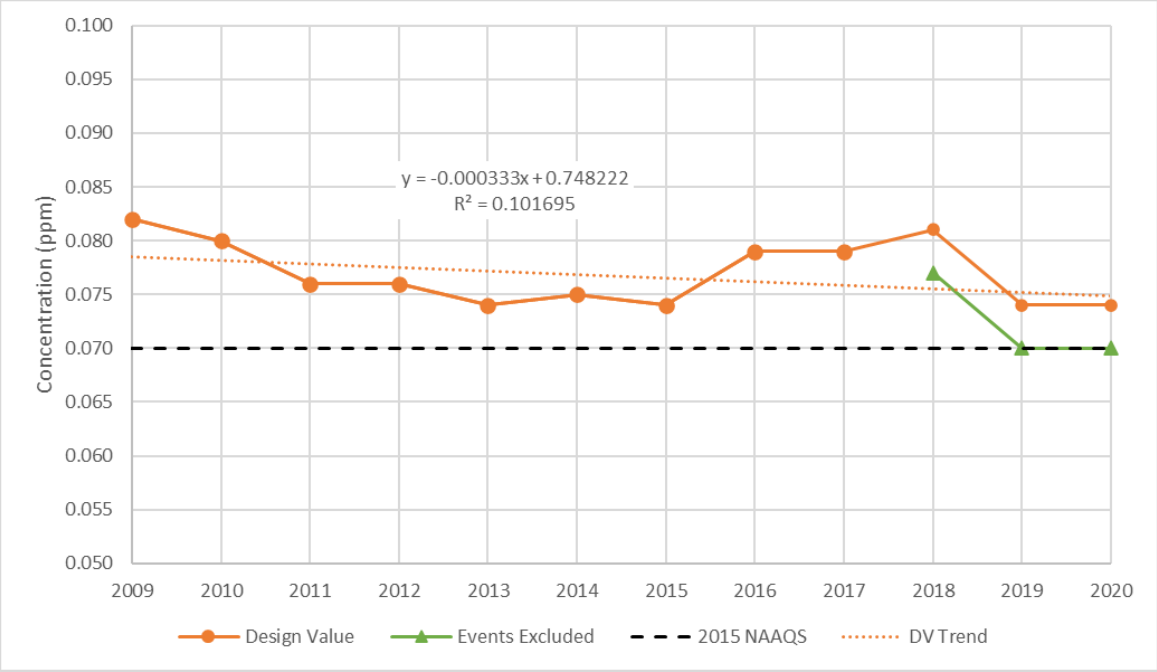
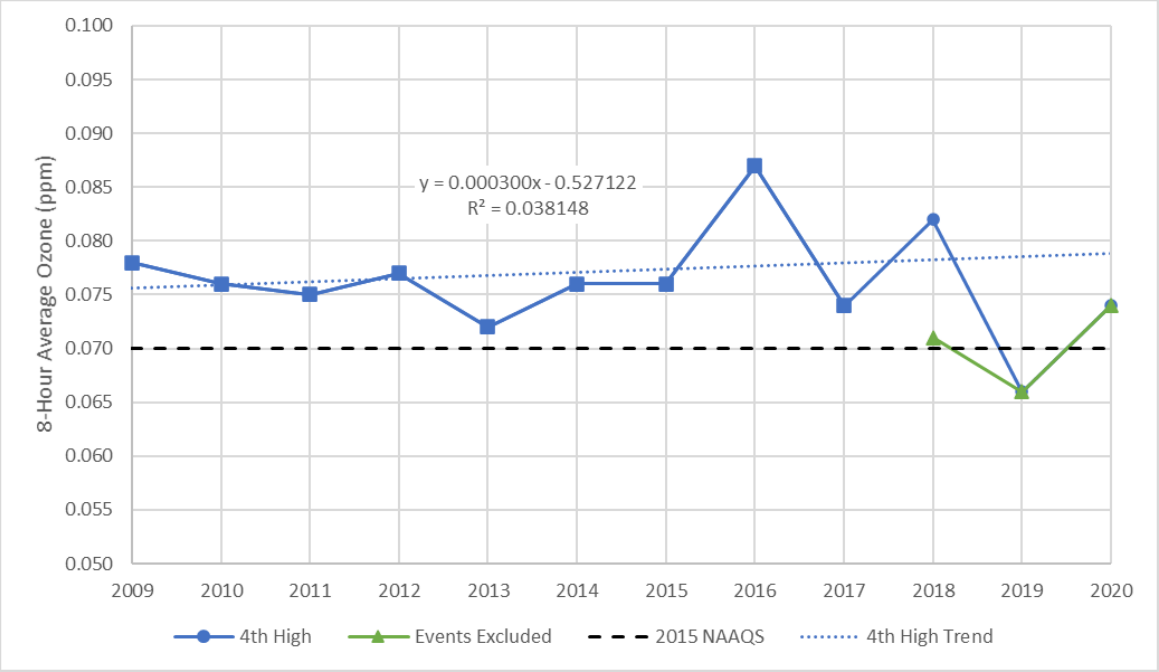


Figure 3-41: Annual 4th High 8-Hour Average Ozone with Trend at Tuscan Buttes

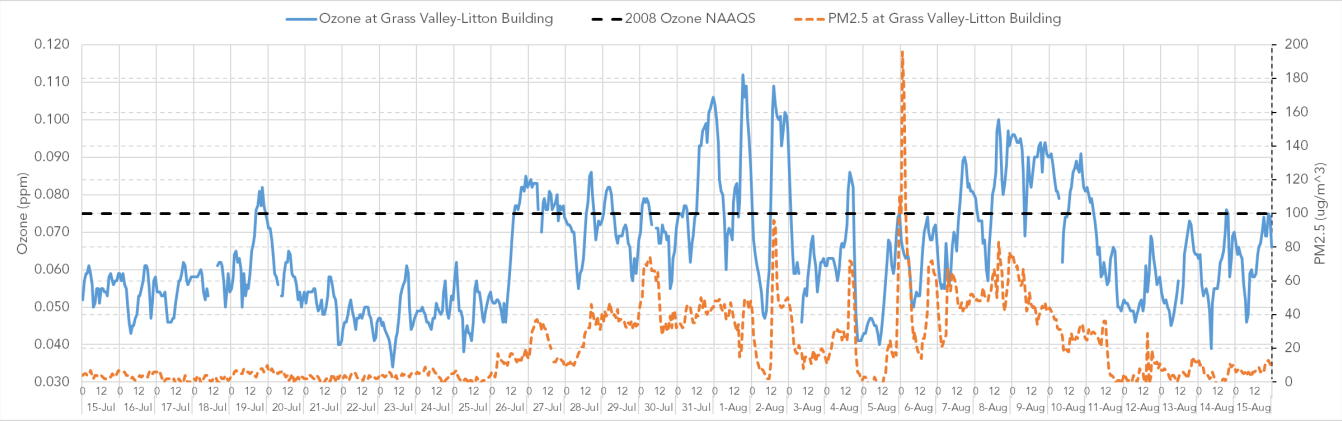


F. Western Part of Nevada County (Grass Valley) / Northern Sierra AQMD

Multiple wildfires impacted the town of Grass Valley depending on the day, but generally winds transported wildfire smoke and ozone precursors from the Ranch, River, Carr, Donnell, and Ferguson wildfires in California causing elevated ozone concentrations at the Grass Valley-Litton Building monitoring site. Elevated $PM_{2.5}$ monitor concentrations and associated timing support the presence of wildfire smoke in the town of Grass Valley.

Figure 3-42 shows the ozone and $PM_{2.5}$ concentration encompassing July 15 to August 15, which includes the requested exceptional events between July 26 through August 10. The timing of relative $PM_{2.5}$ elevated concentrations show strong connections with ozone increases and prolonged elevated concentrations.

Figure 3-42: 1-hour Ozone and 1-hour $PM_{2.5}$ Concentrations



Recent trends show an increase in 8-hour ozone design values at the Grass Valley monitoring site as shown in Figure 3-43. The 2018 8-hour ozone design value did not follow this trend, placing well above the standard. annual 4th highs (Figure 3-44) have shown a slowly increasing trend during the past ten years though concentrations are believed to have been heavily influenced by year-to-year variation likely due in part by wildfire impacts. Influence from wildfires in 2016 are believed to have led to a notably higher 2016 4th high and inflated design values for 2016-2018. Concurrence of the requested exceptional event dates would not bring the site design value below the standard alone, but combined with concurrence of events in 2020, will bring the area into attainment of the 2008 ozone standard.

Figure 3-43: 8-hour Ozone Design Values with Trend at Grass Valley (West Nevada County)

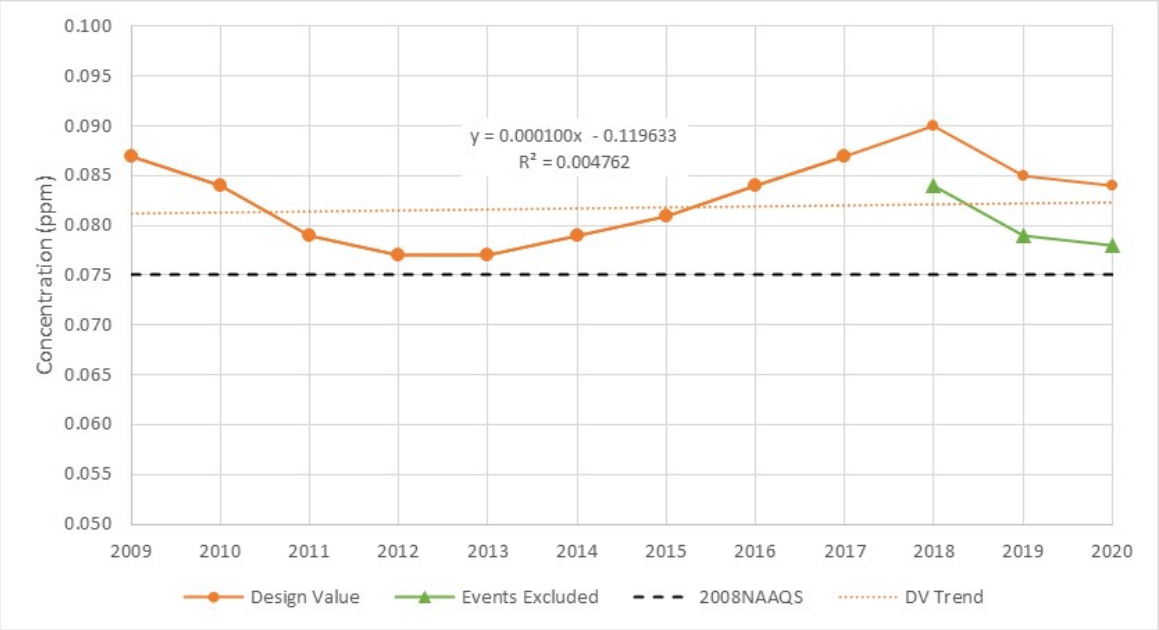
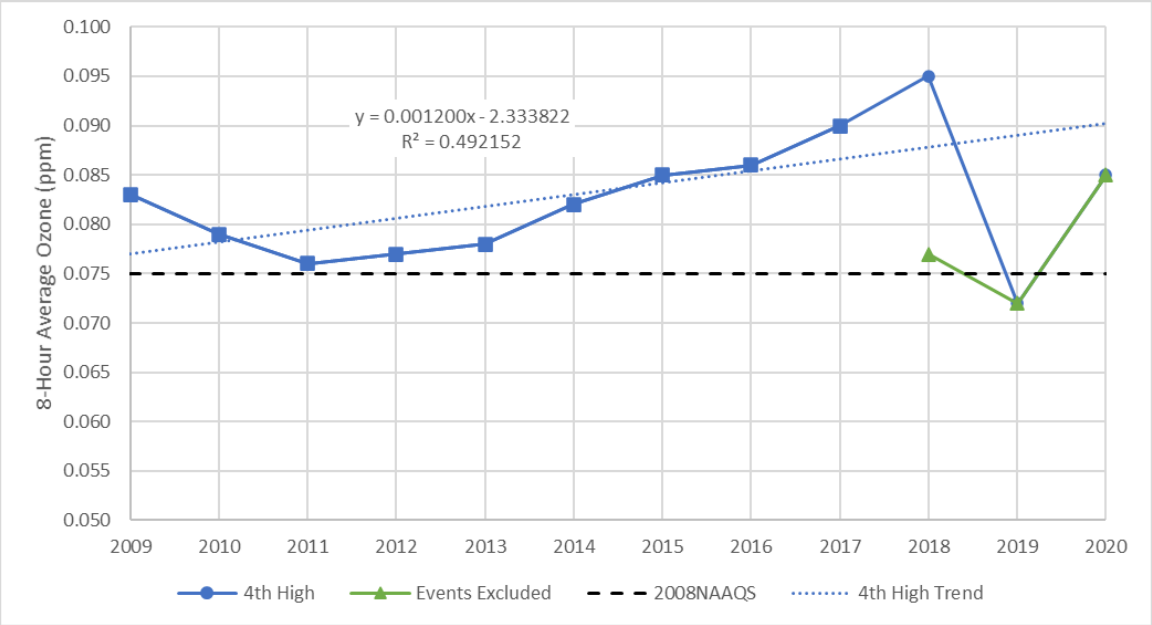


Figure 3-44: Annual 4th High 8-Hour Average Ozone with Trend at Grass Valley



IV. Meteorological Conditions

Table 3-15: Averages and Standard deviations (SD) of Temperatures on Exceptional Event Period (7/26 - 8/10), Normal (Non-Event) Days, and All Days in July and August 2018.

	Grass Valley		Paradise		San Andreas		Sonora		Sutter Buttes		Tuscan Buttes	
	Average	SD	Average	SD	Average	SD	Average	SD	Average	SD	Average	SD
July EE Days	97.0	2.3	95.7	1.9	96.3	2.2	97.2	1.6	91.7	3.3	93.4	5.0
July Normal Days	92.1	5.0	94.7	5.5	94.4	4.4	94.3	4.1	89.1	6.6	91.2	5.9
July All	93.1	5.0	94.9	5.0	94.8	4.1	94.9	3.9	89.6	6.2	91.7	5.7
August EE Days	92.0	3.0	92.0	3.9	94.0	3.0	94.2	2.7	88.2	4.0	89.1	3.7
August Normal Days	86.8	5.6	88.0	6.0	88.3	6.0	88.2	5.7	81.0	7.1	83.6	5.0
August All	88.5	5.5	89.3	5.6	90.1	5.9	90.2	5.7	83.3	7.1	85.4	5.3

Table 3-16: Averages and Standard deviations (SD) of Wind Speeds on Exceptional Event Period (7/26 - 8/10), Normal (Non-Event) Days, and All Days in July and August 2018.

	Grass Valley		Paradise		San Andreas		Sonora		Sutter Buttes		Tuscan Butte	
	Average	SD	Average	SD	Average	SD	Average	SD	Average	SD	Average	SD
July EE Days	3.05	1.12	3.39	1.37	4.55	2.51	2.70	0.75	7.77	5.01	9.19	5.87
July Normal Days	3.29	1.25	4.25	1.87	4.83	2.47	3.15	1.35	8.91	5.63	10.11	6.29
July All	3.25	1.22	4.09	1.81	4.78	2.48	3.07	1.28	8.69	5.53	9.93	6.22
August EE Days	3.26	1.22	4.03	1.87	4.27	2.65	2.89	0.99	8.28	5.59	9.35	5.41
August Normal Days	3.41	1.37	3.55	1.61	4.48	2.41	2.90	0.89	9.97	5.79	10.18	6.46
August All	3.36	1.33	3.70	1.71	4.41	2.49	2.90	0.92	9.43	5.77	9.91	6.14

Table 3-15 and Table 3-16 listed the averages and standard deviations of the temperatures and wind speeds on the exceptional event period (7/26 - 8/10), normal (non-event) days, and all days in July and August 2018 at each monitoring site. Details of the meteorological conditions on each exceptional event day are discussed in the following sections.

A. Calaveras County (San Andreas)

Table 3-17: Maximum Daily Values of Temperature and Wind Speed on Exceptional Event and Surrounding Days at San Andreas-Gold Strike Road Monitoring Site

Date	7/26	7/27	7/28*	7/29	7/30*	7/31*
1hr Ozone (ppm)	0.081	0.068	0.076	0.068	0.094	0.096
8hr Ozone (ppm)	0.068	0.063	0.071	0.061	0.077	0.086
Temperature (°F)	99.3	97.0	97.9	93.9	94.1	95.5
Wind Speed (mph)	7.7	8.5	7.6	8.3	8.3	7.1

Date	8/1	8/2*	8/3	8/4	8/5*	8/6	8/7	8/8*	8/9*	8/10*
1hr Ozone (ppm)	0.089	0.105	0.074	0.080	0.092	0.072	0.069	0.080	0.086	0.083
8hr Ozone (ppm)	0.069	0.074	0.068	0.062	0.078	0.067	0.066	0.071	0.081	0.076
Temperature (°F)	95.9	94.8	91.9	93.7	88.7	91.6	91.8	95.5	98.6	97.3
Wind Speed (mph)	8.8	8.9	7.9	8.5	7.7	7.9	8.5	7.7	8.2	8.8

* Denotes Exceptional Event Dates Requested for Data Exclusion

Maximum daily temperatures were in the 90s throughout the event and nearly reached 100°F on July 26, except August 5 when temperatures only reached the upper 80s. Maximum daily resultant wind speeds generally remained in the 7-9 mph range. Maximum ozone concentrations varied moderately with a range of 37 ppb and 25 ppb for 1-hour and 8-hour ozone, respectively.

The weather data supports that ozone directly related to wildfire smoke from the wildfires in California affected the San Andreas monitor and increased ozone concentrations. Unusual weather (other than the transport of ozone and related wildfire smoke) was not a factor contributing to the exceptional event.

B. Chico / Butte County (Paradise)

Table 3-18 Maximum Daily Values of Temperature and Wind Speed on Exceptional Event and Surrounding Days at Paradise-4405 Airport Road Monitoring Site

Date	7/26*	7/27*	7/28*	7/29	7/30*	7/31*
1hr Ozone (ppm)	0.080	0.083	0.085	0.081	0.078	0.093
8hr Ozone (ppm)	0.075	0.080	0.079	0.073	0.074	0.086
Temperature (°F)	97.9	97.2	96.8	93.9	93.4	94.8
Wind Speed (mph)	7.9	5.4	6	6.3	5.2	6.7

Date	8/1*	8/2*	8/3	8/4	8/5	8/6	8/7*	8/8*	8/9*	8/10*
1hr Ozone (ppm)	0.108	0.084	0.082	0.073	0.058	0.061	0.083	0.084	0.097	0.085
8hr Ozone (ppm)	0.098	0.081	0.071	0.066	0.048	0.064	0.078	0.076	0.088	0.084
Temperature (°F)	94.5	89.8	91.6	88.3	86.2	90.7	90.1	92.7	96.8	99.0
Wind Speed (mph)	5.8	4.6	5.8	8.9	7.9	9.3	7.1	6.7	8.4	10.4

* Denotes Exceptional Event Dates Requested for Data Exclusion

Maximum daily temperatures were in the 90s throughout most days of the event and reached the highest temperature on 8/10 (99°F), but did show a slight cooling period from August 2 through August 7 when temperatures only reached the upper 80s to around 90. Maximum daily resultant wind speeds varied across the 4-11 mph range. Maximum ozone concentrations varied significantly with a range of 50 ppb for both 1-hour and 8-hour ozone.

The weather data supports that ozone directly related to wildfire smoke from the wildfires in California and Oregon affected the Paradise monitor and increased ozone concentrations. Unusual weather (other than the transport of ozone and related wildfire smoke) was not a factor contributing to the exceptional event.

C. Sutter Buttes / Sutter County / Feather River AQMD

Table 3-19: Maximum Daily Values of Temperature and Wind Speed on Exceptional Event and Surrounding Days at Sutter Buttes Monitoring Site

Date	7/26	7/27	7/28*	7/29*	7/30*	7/31*
1hr Ozone (ppm)	0.089	0.083	0.086	0.079	0.095	0.107
8hr Ozone (ppm)	0.068	0.069	0.080	0.075	0.083	0.082
Temperature (°F)	98.1	92.1	90.5	89.8	89.2	90.5
Wind Speed (mph)	22.9	17.8	12.1	16.6	16.8	15.3

Date	8/1*	8/2	8/3*	8/4	8/5	8/6	8/7*	8/8	8/9*	8/10*
1hr Ozone (ppm)	0.100	0.096	0.077	0.077	0.053	0.075	0.084	0.078	0.091	0.086
8hr Ozone (ppm)	0.082	0.071	0.074	0.062	0.051	0.066	0.075	0.068	0.079	0.077
Temperature (°F)	88.9	87.3	87.1	84.7	83.3	89.2	84.4	87.4	92.8	96.4
Wind Speed (mph)	25.8	23.5	25.3	16.9	20.8	12	14	11.1	16.8	19.6

* Denotes Exceptional Event Dates Requested for Data Exclusion

Maximum daily temperatures were in the upper 80s to mid 90s, except for the start of the period (98°F on July 26) and end of the period (96.4°F on August 10). Maximum daily resultant wind speeds varied during this period between 11-26 mph range. Maximum ozone concentrations varied significantly with a range of 54 ppb and 32 ppb for 1-hour and 8-hour ozone, respectively.

The weather data supports that ozone directly related to wildfire smoke from the wildfires in California and Oregon affected the Sutter Buttes monitor and increased ozone concentrations. Unusual weather (other than the transport of ozone and related wildfire smoke) was not a factor contributing to the exceptional event.

D. Tuolumne County (Sonora)

Table 3-20: Maximum Daily Values of Temperature and Wind Speed on Exceptional Event and Surrounding Days Sonora-Barretta Street Monitoring Site

Date	7/26	7/27	7/28*	7/29*	7/30*	7/31*
1hr Ozone (ppm)	0.074	0.072	0.085	0.084	0.089	0.091
8hr Ozone (ppm)	0.070	0.067	0.079	0.079	0.076	0.078
Temperature (°F)	98.4	99.5	97.2	96.6	95.0	96.3
Wind Speed (mph)	5.5	3.1	4.4	3.9	3.2	4.1

Date	8/1	8/2*	8/3	8/4*	8/5*	8/6*	8/7	8/8*	8/9*	8/10*
1hr Ozone (ppm)	0.083	0.097	0.087	0.084	0.099	0.093	0.074	0.093	0.079	0.083
8hr Ozone (ppm)	0.066	0.078	0.071	0.074	0.084	0.080	0.070	0.087	0.074	0.079
Temperature (°F)	96.6	96.6	93.7	92.8	90.0	90.7	92.5	95.4	97.3	96.4
Wind Speed (mph)	3.3	3.8	3.3	4.6	5	6.6	3.6	3.6	3.2	4.3

* Denotes Exceptional Event Dates Requested for Data Exclusion

Maximum daily temperatures were all in the 90s throughout the event and reached the highest temperature on July 27 (99.5°F). The lowest max temperature was 90°F on August 5. Maximum daily resultant wind speeds generally remained light at 3-7 mph. Maximum ozone concentrations varied moderately with a range of 27 ppb and 21 ppb for 1-hour and 8-hour ozone, respectively.

The weather data supports that ozone directly related to wildfire smoke from the wildfires in California affected the Sonora monitor and increased ozone concentrations. Unusual weather (other than the transport of ozone and related wildfire smoke) was not a factor contributing to the exceptional event.

E. Tuscan Buttes / Tehama County

Table 3-21: Maximum Daily Values of Temperature and Wind Speed on Exceptional Event and Surrounding Days at Tuscan Buttes Monitoring Site

Date	7/26	7/27*	7/28	7/29	7/30	7/31*
1hr Ozone (ppm)	#	0.083#	0.074#	#	#	0.092
8hr Ozone (ppm)	#	0.076#	#	#	#	0.081
Temperature (°F)	103.5	91.6	93.0	90.5	91.0	90.9
Wind Speed (mph)	21.1	19.3	14.6	22	19.5	18.4

Date	8/1*	8/2*	8/3*	8/4	8/5	8/6	8/7*	8/8*	8/9*	8/10*
1hr Ozone (ppm)	0.090	0.085	0.088	0.069	0.048	0.075	0.077	0.081	0.092	0.089
8hr Ozone (ppm)	0.082	0.073	0.077	0.060	0.045	0.070	0.071	0.078	0.087	0.085
Temperature (°F)	89.2	88.2	88.9	88.9	81.3	93.6	86.2	88.5	92.5	93.7
Wind Speed (mph)	21.3	20.7	19.9	19.7	16.9	17.2	20.7	15.3	16.5	18.1

* Denotes Exceptional Event Dates Requested for Data Exclusion
# Denotes Missing Data Flagged for Machine Malfunction. May Have Impacted Values, if Any

Maximum daily temperatures were in the upper 80s to mid 90s throughout the event period except for the hottest day July 26 (104°F) and coolest day August 5 (81°F). Maximum daily resultant wind speeds generally remained in the 15-22 mph range. Maximum ozone concentrations for dates with enough valid data varied significantly with a range of 44 ppb and 42 ppb for 1-hour and 8-hour ozone, respectively.

The weather data supports that ozone directly related to wildfire smoke from the wildfires in California and Oregon affected the Tuscan Buttes monitor and increased ozone concentrations. Unusual weather (other than the transport of ozone and related wildfire smoke) was not a factor contributing to the exceptional event.

F. Western Part of Nevada County (Grass Valley) / Northern Sierra AQMD

Table 3-22: Maximum Daily Values of Temperature and Wind Speed on Exceptional Event and Surrounding Days at Grass Valley-Litton Building Monitoring Site

Date	7/26*	7/27*	7/28*	7/29*	7/30	7/31*
1hr Ozone (ppm)	0.085	0.084	0.086	0.082	0.079	0.106
8hr Ozone (ppm)	0.083	0.082	0.078	0.078	0.076	0.101
Temperature (°F)	100.9	97.7	97.0	94.3	95.0	97.2
Wind Speed (mph)	5.4	5.6	5.4	5.1	4.7	5.1

Date	8/1*	8/2*	8/3	8/4	8/5	8/6	8/7*	8/8*	8/9*	8/10*
1hr Ozone (ppm)	0.112	0.109	0.086	0.086	0.075	0.074	0.090	0.100	0.096	0.091
8hr Ozone (ppm)	0.098	0.101	0.066	0.075	0.067	0.070	0.084	0.095	0.093	0.086
Temperature (°F)	94.0	92.7	90.1	88.3	88.5	90.7	90.0	93.4	95.5	97.3
Wind Speed (mph)	5.8	5.6	4.7	7.2	4.9	4.5	4.7	6.5	5.6	5.4

* Denotes Exceptional Event Dates Requested for Data Exclusion

Maximum daily temperatures were mostly in the mid to upper 90s during the event and reached the highest temperature on 7/26 (101°F), but did show a slight cooling period from August 3 through August 7 when temperatures only reached the upper 80s to around 90. Maximum daily scalar mean wind speeds generally remained in the 4.5-5.5 mph range, except for August 4 when wind peaked at 7.2 mph. Maximum ozone concentrations varied considerably with a range of 51 ppb and 53 ppb for 1-hour and 8-hour ozone, respectively.

The weather data supports that ozone directly related to wildfire smoke from the wildfires in California and Oregon affected the Grass Valley monitor and increased ozone concentrations. Unusual weather (other than the transport of ozone and related wildfire smoke) was not a factor contributing to the exceptional event.

V. Air Quality/Health Advisories

Air quality alerts and advisories were issued by all of the affected districts.

Butte County AQMD maintains an active webpage[37] devoted to wildfires and their effect on air quality, and keeps the general public informed via AirNow's Enviroflash Air Quality Notification System[38] as well as maintaining an active presence on social media, such as Twitter (@bcaqmd). The Butte County AQMD issued several Joint Air Quality Advisories with the Butte County Department of Public Health, which are included in Appendix II.

Calaveras County APCD also maintains an active webpage[39] devoted to wildfire smoke information and utilizes the County emergency notification program[40] if needed. The Calaveras Office of Emergency Services provides public notification via Twitter and Facebook as well. The air quality advisories issued by the District are included in Appendix II.

The Feather River AQMD has a webpage[41] to keep the public informed of wildfire smoke and air quality impacts as well as utilizing the AirNow's Enviroflash Air Quality Notification System through their Air Quality Health Advisory webpage.[42] The District issued an air quality advisory jointly with the public health officers of both Sutter and Yuba Counties, which is included in Appendix II.

Although the Northern Sierra AQMD does not host a webpage specifically dedicated to wildfire smoke impacts, the public is kept informed via their general air quality information page[43] as well as the Greater Portola Blog.[44] Air quality advisories are prominently displayed on the District main webpage[45] and the public can request to be directly informed of any advisories through the Air Quality Health Advisory E-mail Subscription Service[46] or through social media accounts for each individual county within the air district.

Although the Tehama County APCD does not host a webpage specifically dedicated to wildfire smoke impacts, the public is kept informed via their current air quality information page[47] as well as their news and events page[48]. Air quality advisories are prominently displayed on the District main webpage[49]. Past advisories can be accessed in the web

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[37] Butte County AQMD, *Wildfires and Air Quality*, last accessed 8/27/21
[38] AirNow's Enviroflash *Air Quality Notification System*, last accessed 8/27/21
[39] Calaveras County APCD, *Wildfire Smoke Information*, last accessed 8/27/21
[40] Calaveras County OES, *Alert Emergency Notification Program*, last accessed 8/27/21
[41] Feather River AQMD, *Wildfire Smoke*, last accessed 8/27/21
[42] Feather River AQMD, *Air Quality Health Advisory*, last accessed 8/27/21
[43] Northern Sierra AQMD, *AIr Quality Information*, last accessed 8/30/21
[44] Northern Sierra AQMD, *Greater Portola Blog*, last accessed 8/30/21
[45] *Northern Sierra AQMD*, last accessed 8/30/21
[46] Northern Sierra AQMD, *Air Quality Advisory E-mail Subscription*, last accessed 8/30/21
[47] Tehama County APCD, *Air Quality Information*, last accessed 8/30/21
[48] Tehama County APCD, *News*, last accessed 8/30/21
[49] *Tehama County APCD*, last accessed 8/30/21

archive[50]. The District directly informs schools, county services and the general public of any air quality advisories via E-mail. The District also maintains both Twitter and Facebook social media accounts to keep the public informed. Copies of relevant documents are included in Appendix II.

Tuolumne County APCD maintains a webpage with the rest of the County of Tuolumne and does not have one specifically devoted to wildfire smoke. The 2018 wildfire events resulted in a document available for download from the Public Health portion of the website with smoke-related health tips.[51] The county also maintains a citizen alert notification system, through the Office of Emergency Services, to inform citizens of air quality issues in the event it becomes necessary.[52] The District released several alerts and advisories, which are included in Appendix II.

VI. Media Coverage

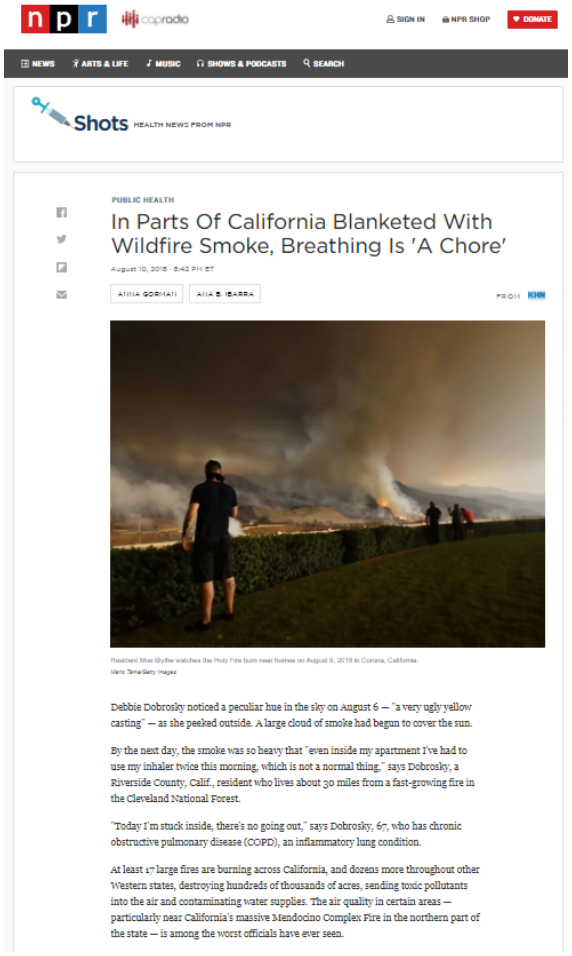
Media coverage of the wildfires that occurred throughout the State in the summer of 2018 was extensive. Subsequent coverage included the impacts of smoke in communities throughout the districts discussed in this document. Two examples are given here, one from a national news source and one from a Facebook post from an affected district. Other examples can be found in Appendix VI.

[50] Tehama County APCD, *Advisories*, last accessed 8/30/21

[51] Tuolumne County, Public Health, *Wildfire Smoke Health Tips*, last accessed 8/30/21

[52] Tuolumne County, Office of Emergency Services, *Citizen Alert Notification*, last accessed 8/30/21

Figure 3-45: Example of News Media Coverage



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In Parts Of California Blanketed With Wildfire Smoke, Breathing Is 'A Chore'

August 10, 2018 · 8:42 PM ET

ANNA GORMAN ANA B. IBARRA FROM KHN

Resident Mae Blythe watches the Holy Fire burn near homes on August 9, 2018 in Corona, California.

Mario Tama/Getty Images

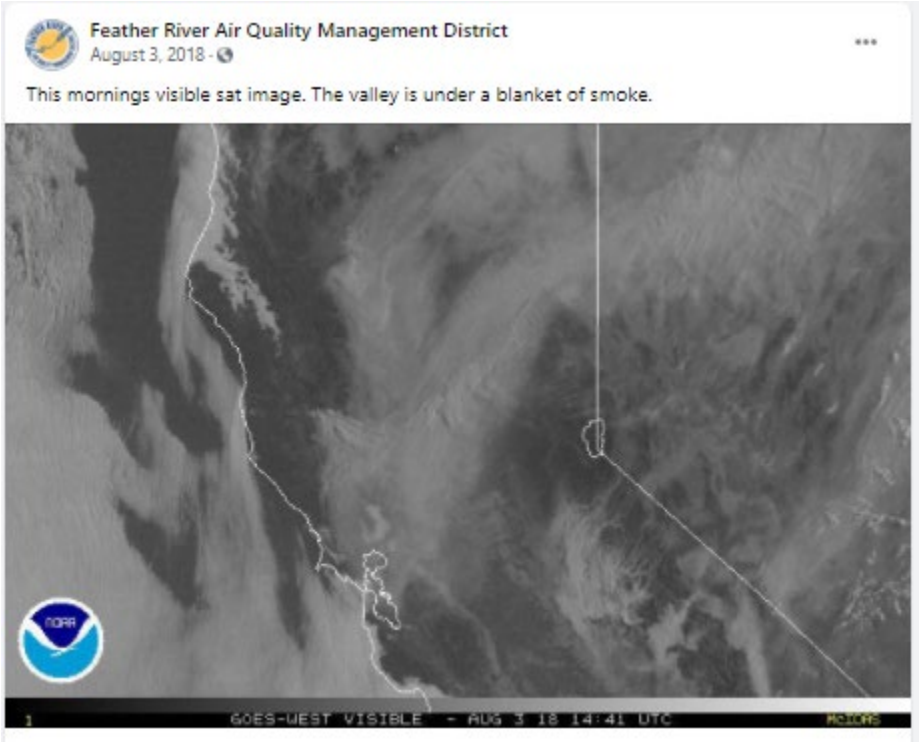
Debbie Dobrosky noticed a peculiar hue in the sky on August 6 — "a very ugly yellow casting" — as she peeked outside. A large cloud of smoke had begun to cover the sun.

By the next day, the smoke was so heavy that "even inside my apartment I've had to use my inhaler twice this morning, which is not a normal thing," says Dobrosky, a Riverside County, Calif., resident who lives about 30 miles from a fast-growing fire in the Cleveland National Forest.

"Today I'm stuck inside, there's no going out," says Dobrosky, 67, who has chronic obstructive pulmonary disease (COPD), an inflammatory lung condition.

At least 17 large fires are burning across California, and dozens more throughout other Western states, destroying hundreds of thousands of acres, sending toxic pollutants into the air and contaminating water supplies. The air quality in certain areas — particularly near California's massive Mendocino Complex Fire in the northern part of the state — is among the worst officials have ever seen.

Figure 3-46: Example of Social Media Coverage



Clear Causal Relationship

This section addresses the "clear causal relationship" criterion as per U.S. EPA's exceptional events guidance by providing 1) a comparison of the ozone data requested for exclusion with historical concentrations at the air quality monitor, 2) demonstrating that the wildfire's emissions were transported to the monitor, 3) show the emissions from the wildfire influenced the monitored concentrations, and in some cases 4) quantifying the contribution of the wildfire's emissions to the monitored ozone exceedance or violation.

For wildfire ozone events, U.S. EPA has defined a tiered approach that apply to the "clear causal relationship" criterion based on key factors and is intended to lessen the evidence required for more obvious and/or extreme events. These tiers require analyses to establish the existence of wildfire emissions, transport to the exceeding monitor, and impact at the monitor. Each tier is to be taken in order and are summarized below. Specific information that is presented to satisfy these criteria can be found in the individual tier sections.

- Tier 1: Exceedances are clearly higher than non-event related concentrations and have occurred from a fire in close proximity to the exceeding monitor during a time or place of historically low ozone concentrations;
- Tier 2: This tier is used when impacts do not qualify for Tier 1 analysis, but exceedances are higher than non-event related exceedances although may not be "clearly" higher, and large fire emissions relative to the distance of the fire to the monitor indicate a clear causal relationship; and
- Tier 3: This tier encompasses wildfires or impacts that are more complex and do not qualify for Tier 1 or Tier 2 analysis, but additional analyses submitted as part of a weight-of-evidence showing can establish a clear causal relationship.

This demonstration meets the purpose of U.S. EPA's published guidance and provides the evidence needed to concur on all requested exceptional event dates in 2018.

I. Tier 1 Key Factor Analysis

This section provides the documentation requested for a Tier 1 analysis per the *Guidance on the Preparation of Exceptional Events Demonstrations for Wildfire Events that May Influence Ozone Concentrations.*[53] The Tier 1 analysis is for wildfires that clearly influence monitored ozone exceedances or violations when they occur in an area that typically experiences lower ozone concentrations. This includes establishing the seasonality and/or distinctive level of the monitored ozone concentration as well as providing evidence that the wildfire emissions were transported to the monitors. Analyses presented in this document include 2013-2018 8-hour maximums (Figure 4-1) to show seasonality and non-event related concentrations, proximity of wildfires (Section II of the Narrative Conceptual Model chapter), and transport of

[53] U.S. EPA, *Guidance on the Preparation of Exceptional Events Demonstrations for Wildfire Events that May Influence Ozone Concentrations*, p. 13, last accessed 7/26/21

emissions from wildfires to the exceeding monitors (Section II of the Narrative Conceptual Model chapter and Section III of this chapter).

The key factor for Tier 1 requires establishing the seasonality and/or distinctive level of the monitored ozone concentration. The event-related exceedance occurs during a time of year that typically has no exceedances or is clearly distinguishable (at least 0.005 ppm higher) from non-event exceedances. Additionally, ozone impacts should be accompanied by clear evidence that the wildfire's emissions were transported to the location of the monitor.

Figures 4-1 through 4-6 show that the exceedances occurred during the time of year where ozone concentrations tend to be higher for all monitoring sites, and that these exceedances are not clearly distinguishable from non-event exceedances as defined by guidance.

The Paradise (Butte County) exceedance on August 1, 2018 of 0.098 ppm was the greatest concentration during 2013-2018, and was 5 ppb higher than the second greatest concentration on July 2, 2013 of 0.093 ppm, qualifying for a Tier 1 analysis. This exceedance will be discussed further and evidence provided as part of the Tier 2 analyses necessary for other exceptional event dates at Paradise.

While the remainder of the exceedances were high for the season at Paradise and the other exceeding sites, they do not qualify for a Tier 1 analysis.

Figure 4-1: San Andreas 8-Hour Daily Ozone Maximums by Day of the Year for 2013-2018

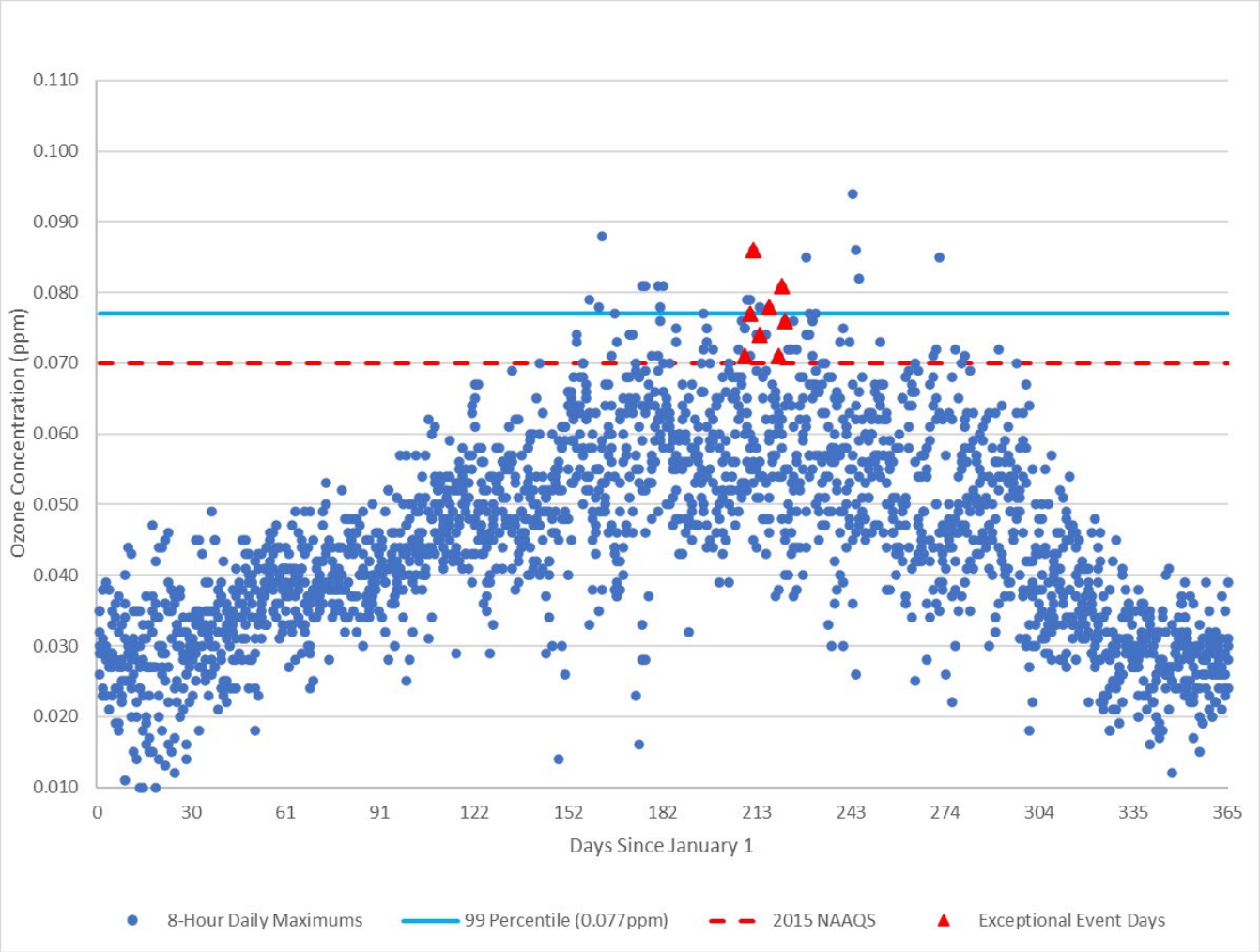


Figure 4-2: Paradise 8-Hour Daily Ozone Maximums by Day of the Year for 2013-2018

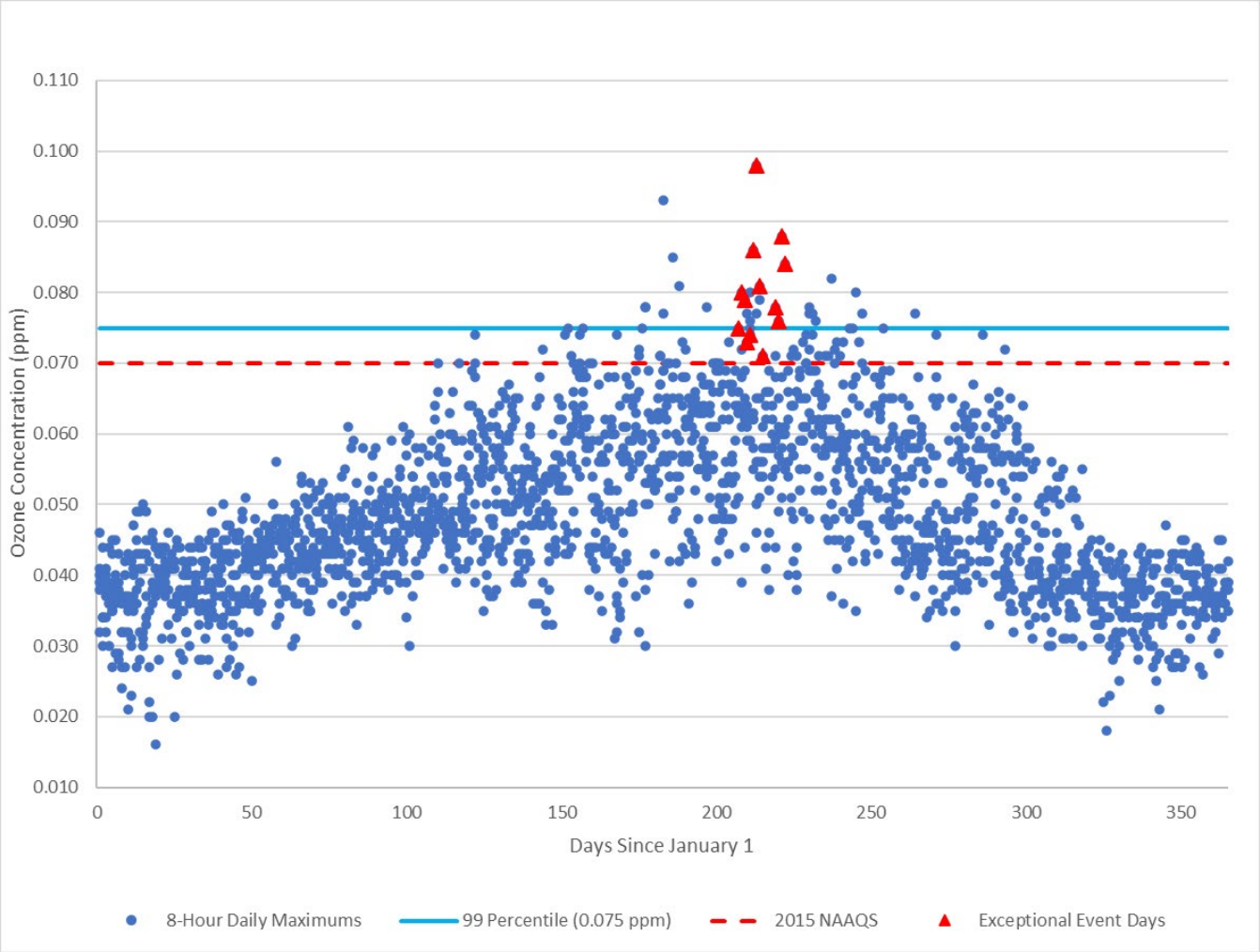


Figure 4-3: Sutter Buttes 8-Hour Daily Ozone Maximums by Day of the Year for 2013-2018

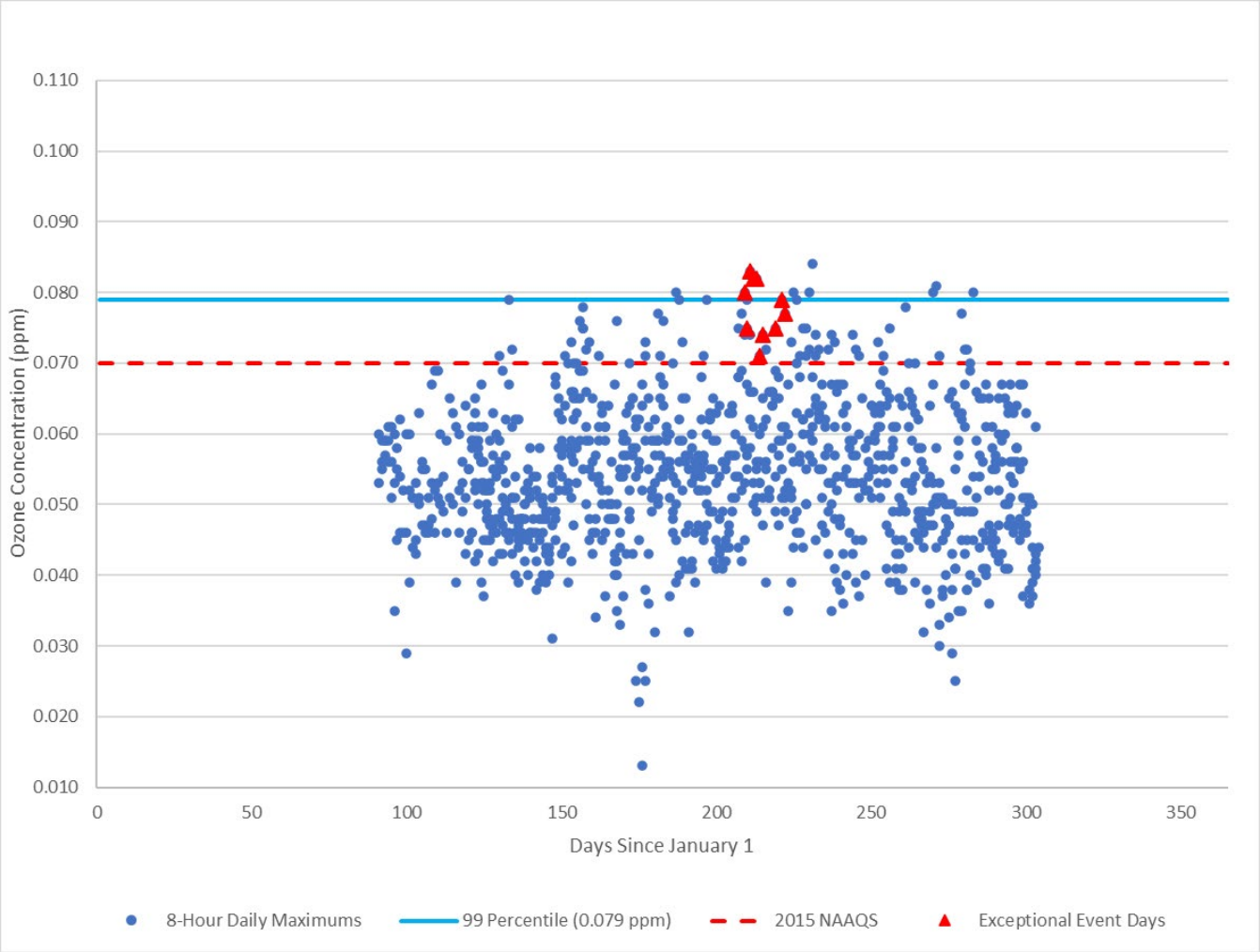


Figure 4-4: Sonora 8-Hour Daily Ozone Maximums by Day of the Year for 2013-2018

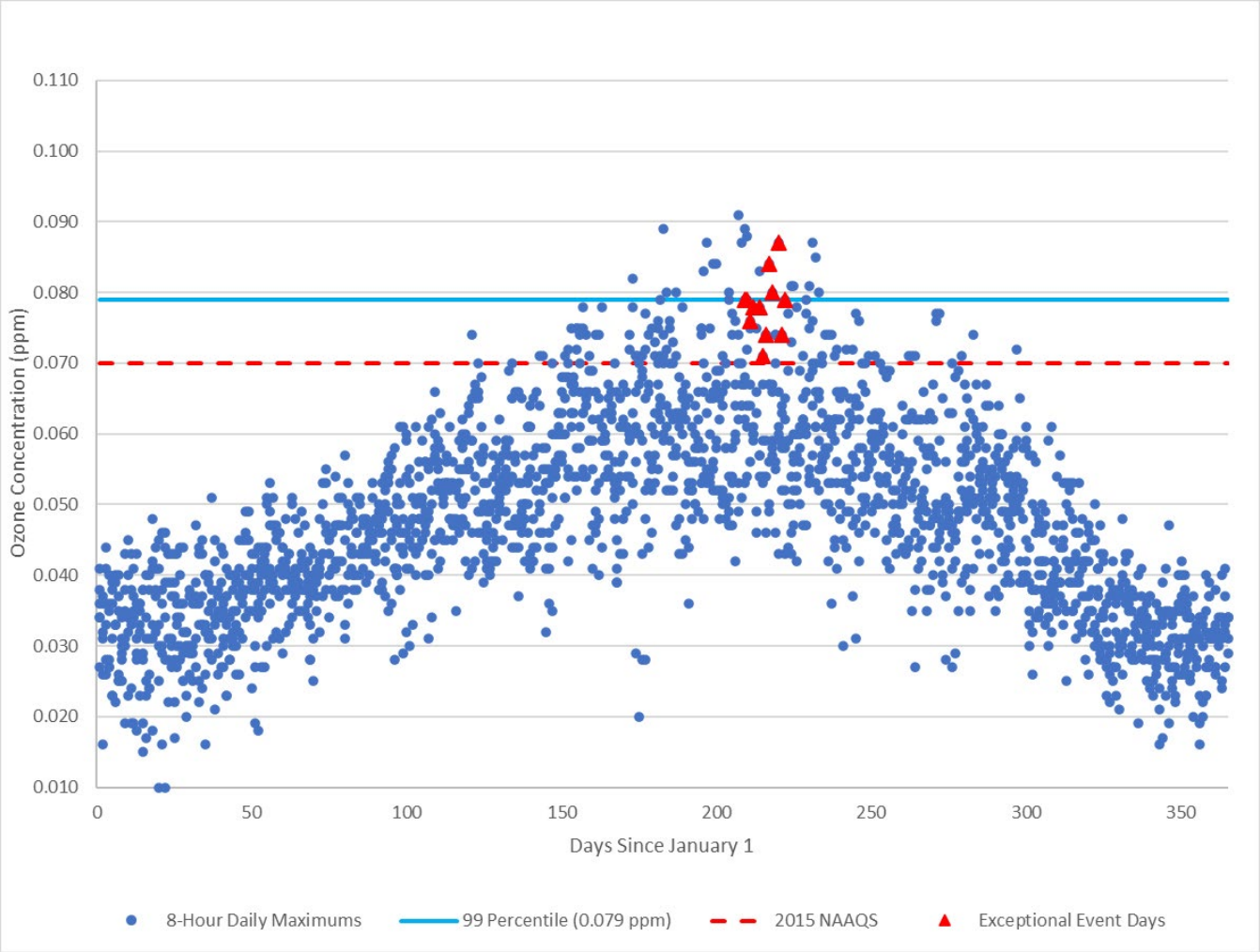


Figure 4-5: Tuscan Buttes 8-Hour Daily Ozone Maximums by Day of the Year for 2013-2018

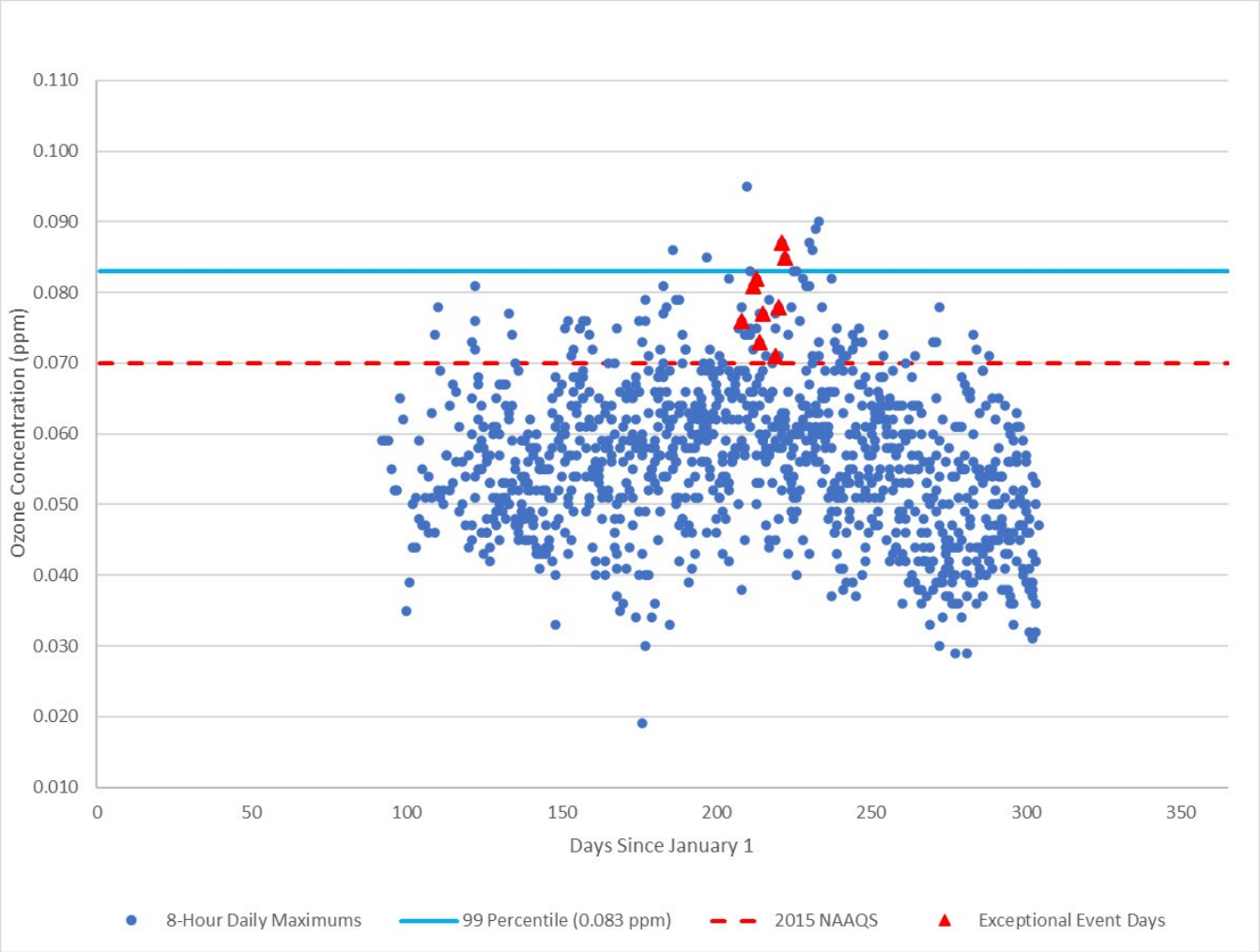
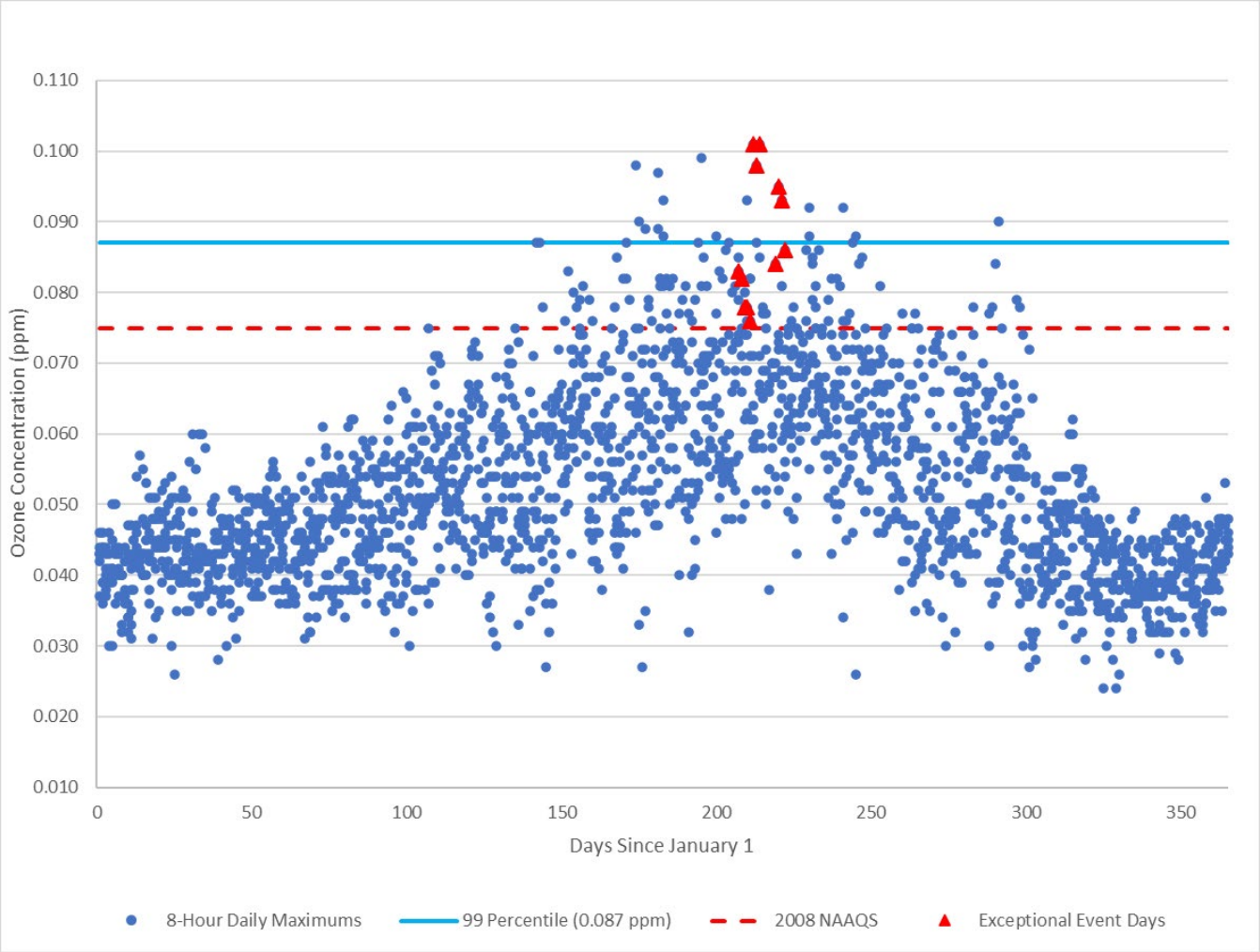


Figure 4-6: Grass Valley 8-Hour Daily Ozone Maximums by Day of the Year for 2013-2018



Although these exceedances do not qualify for Tier 1, evidence that the wildfire emissions were transported to the monitors is needed for further Tier 2 analyses. Transport evidence is provided in Section II of the Narrative Conceptual Model chapter and Section III of this chapter as part of the Tier 2 – Additional Analyses.

II. Tier 2 Key Factor Analysis

This section provides the documentation requested for a Tier 2 analysis, where ozone concentrations are not clearly higher than non-event related concentrations nor do they occur outside of the area's normal ozone season, in effect not meeting Tier 1 requirements. Tier 2 requires a demonstration that the impacts of the wildfire event on ozone are higher than a non-event related concentration and that fire emissions compared to the fire's distance from the monitor indicate a clear causal relationship. Analyses include those indicated in Section I of this chapter for Tier 1 as well as Q/D estimations, a more detailed comparison of the event-related ozone concentrations with non-event-related high ozone

concentrations, and evidence that the emissions affected the monitor. The following sections provide the documentation requested for a Tier 2 analysis per U.S. EPA guidance.[54]

> Key Factor #1 - Fire emissions and distance of fire(s) to affected monitoring site location(s), and
>
> Key Factor #2 – Comparison of the event-related ozone concentrations with non-event related high ozone concentrations.

Evidence that the fire emissions impacted the exceeding monitor are also required. This evidence is provided with satellite evidence of smoke at the monitor (Narrative Conceptual Model chapter and Section III of this chapter), graphs of nearby $PM_{2.5}$ concentrations nearby and in the same airshed (Section III of this chapter), and $PM_{2.5}$ speciation data near the wildfires impacting the monitor (Section III of this chapter), and differences in spatial and temporal patterns (Section III of this chapter).

A. Key Factor #1 (Q/D)

Key factor 1 requires determining the fire emissions (Q) and the distance (D) between the wildfires to the affected monitor. CARB staff worked with U.S. EPA staff, and provided shapefiles delineating perimeters, start dates, and end dates of all California wildfires in 2018 retrieved from the National Interagency Fire Center (NIFC). U.S. EPA modeled the wildfires and emissions, produced emissions estimates for the fires for each date, and calculated the summed aggregate of emissions divided by the distance (Q/D) for each day for each monitoring site.

1. Wildland Fire Emissions

Wildland fire emissions inside and outside the United States are estimated with the Fire Inventory from NCAR[55] for 2020. Other years (such as 2018 and 2019) are based on SmartFire2[56] (SF2) and the BlueSky[57] systems. U.S. EPA has been using the Satellite Mapping Automated Reanalysis Tool for Fire Incident Reconciliation version 2 (SmartFire2; SF2) and BlueSky Framework to estimate emissions in the United States from wildland fires since 2005. SF2 is an algorithm and database system that combines multiple sources of fire information and reconciles them into a unified GIS database. It reconciles fire data from satellite sensors and ground-based reports, thus drawing on the strengths of both data types while avoiding double-counting of fire events[58].

The BlueSky Framework estimates fuel type, fuel loading, fuel consumption, and emissions based on the location, type, and size information provided by SF2 for each wildland fire in the contiguous U.S. and Alaska. Fuel loading is based on the Fuel Characteristic Classification

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[54] Ibid, p. 15
[55] Wiedinmyer et al., 2011
[56] FireSmoke Canada, *SMARTFIRE Algorithm Description*, last accessed 7/29/21
[57] USDA Forest Service, *BlueSky Framework*, last accessed 7/29/21
[58] Larkin et al., 2020; Larkin et al., 2010

System[59] (FCCS) module and fuel consumption is based on the CONSUME[60] module. The Fire Emissions Production Simulator[61] (FEPS) in the BlueSky Framework generated emission factors for wildland fires.

Daily emissions estimates for each wildland fire are processed for input to photochemical models using the Sparse Matrix Operator Kernel Emissions[62] (SMOKE). SMOKE is used to apply a fire type-specific diurnal profile and allocates total emissions of NOx, ROG, and $PM_{2.5}$ to specific model species needed for chemical mechanisms. Speciation profiles are based on those available in the SPECIATE[63] database.

2. Q/D Estimation

One approach to provide screening level information about wildland fire emissions' impact on ozone levels is to sum NO_X and ROG emissions for each fire and divide by distance between the fire and location of interest. Q/D is calculated using wildland fire emissions input files for the Community Multiscale Air Quality (CMAQ) modeling system. Wildland fire emissions input files for CMAQ have hourly emissions for each modeled species provided in files for specific days. Each day of the year has a different CMAQ input file for wildland fire emissions. Each emissions release point on the wildland fire CMAQ input file has daily total emissions of NO, NO_2, and ROG species summed. A set of gridded receptors is developed that often matches a commonly used model domain like the 12 km contiguous U.S. domain or 4 km California domain. The distance from each wildland fire is then calculated to each gridded receptor. This process is repeated for each fire on each day specific emissions input file. The Q/D for each fire in each grid cell is kept and then summed over all fires for that day to derive a daily Q/D at each receptor location from all fires for that day. The CMAQ input files do not have names associated with each of the wildland fire emissions release points so tracking fire specific emissions with this process is not possible. It does however provide a conservative estimate of wildland fire impacts since all fires are aggregated and it is possible to window the emissions so that only a subset of the emissions input file emission release points are used as part of the Q/D calculation (e.g., a box covering just the Pacific Northwest region).

3. Q/D Method Discussion and Results

The summed aggregate Q/D approach agreed upon by CARB and U.S. EPA staff differs from the published guidance, as the guidance weighted aggregate approach can lead to days where calculations for multiple fires impacting a site can lead to aggregate Q/D values that are less than an individual fire's calculated Q/D. A summed aggregate Q/D approach is one where emissions from wildfires are divided by the distance to a monitoring site, then

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[59] USDA Forest Service, Pacific Northwest Research Station, *Fuel Characteristic Classification System*, last accessed 7/27/21
[60] USDA Forest Service, Pacific Northwest Research Station, *CONSUME*; last accessed 7/27/21
[61] USDA Forest Service, Pacific Northwest Research Station, *Fire Emission Production Simulator (FEPS)*, last accessed 7/27/21
[62] UNC, Institute for the Environment, CMAS, *Sparse Matrix Operator Kernel Emissions (SMOKE) Modeling System*, last accessed 7/29/21
[63] U.S. EPA, Air Emissions Modeling, *SPECIATE*, last accessed 7/29/21

summed together without any weighting for days when supported by indications of transport. This is a more accurate indication of when multiple wildfires impact a site.

Further improving upon the summed aggregate Q/D approach, an "Effective Q/D" was calculated to account for periods where multiple days of wildfire smoke buildup impacts the monitoring site, with a cap of three days (present day + two preceding days) in an attempt to account for emission dispersion at the site limiting perceived impact of older emissions – but could actually be longer if emissions are trapped during prolonged specialized conditions such as smoke transported downslope into a bowl valley while meteorological conditions minimize ventilation of the region for multiple days. This Effective Q/D is calculated at the site for each day leading up to and including the days of the event for screening.

For the purpose of this analysis, the "Daily Q/D" is defined as the summed aggregate emissions of California based wildfires divided by each wildfire's centroid distance to the monitoring site. The Effective Q/D is the calculated adjustment of Q/D accounting for multiple days of emissions buildup at the location, allowing for better approximation for screening emissions impacts at a site.

As seen in Table 4-1, the Effective Q/D value for San Andreas elevated for all dates being requested for exclusion and all dates exceeded the required Q/D criteria threshold value 100 except for August 10, 2018, which maintained a very high Effective Q/D of 90 with enhanced wildfire influence impacts at the site. All requested dates except August 10, 2018 qualify under the requirements for Tier 2 – Key factor #1. Additionally, enhanced wildfire impacts for August 10, 2018 are also considered qualifying due to occurring at the end of a prolonged event when wildfire emissions are decreasing but remain elevated while residual local effects continue to impact ozone concentrations at the monitor.

Table 4-1: Estimated Q/D at San Andreas

Date	Exclusion Request	Daily Q/D	Dates Included	Effective Q/D	Rationale
7/26/2018		135.85	7/26	135.85	Start of analysis - smoke transported from Sacramento Valley originating with Carr Fire.
7/27/2018		116.77	7/26-7/27	252.62	Light smoke builds up during day/evening. Mendocino Complex (Ranch and River fires) started. Transport from Sacramento Valley.
7/28/2018	Yes	92.273	7/26-7/28	344.893	Smoke built up from multiple fires. Transport from Sacramento Valley and likely Ferguson Fire.
7/29/2018		74.265	7/28-7/29	166.538	Moderate smoke from Sacramento Valley.
7/30/2018	Yes	81.932	7/28-7/30	248.47	Heavy smoke across area. Transport appears to be mainly from Mendocino Complex and dispersion from Ferguson Fire along foothills.
7/31/2018	Yes	88.455	7/30-7/31	170.387	Moderate smoke across area. Residual smoke buildup and transport from Mendocino Complex.
8/1/2018		57.156	8/1	57.156	Initially light smoke along foothills with later transport from Mendocino Complex and dispersion from nearby new Donnell Fire.
8/2/2018	Yes	57.026	8/1-8/2	114.182	Moderate to heavy smoke along foothills. Significant dispersion from Donnell and Ferguson Fires with additional transport from Mendocino Complex.
8/3/2018		67.228	8/2-8/3	124.254	Moderate to heavy smoke along portions of foothills. Significant dispersion from Donnell and Ferguson Fires with additional transport from Mendocino Complex.
8/4/2018		112.19	8/3-8/4	179.418	Moderate smoke across basin. Additional transport from Mendocino Complex.
8/5/2018	Yes	108.49	8/4-8/5	220.68	Moderate smoke with additional transport from Mendocino Complex.
8/6/2018		100.56	8/4-8/6	321.24	Heavy smoke throughout the basin. Transport from Mendocino Complex and Carr Fire with dispersion from Donnell Fire.
8/7/2018		72.521	8/5-8/7	281.571	Heavy smoke throughout the basin. Transport from Mendocino Complex and Carr Fire with dispersion from Donnell Fire.
8/8/2018	Yes	81.361	8/6-8/8	254.442	Heavy smoke across the area. Transport from Donnell Fire and Mendocino Complex.
8/9/2018	Yes	66.53	8/8-8/9	147.891	Moderate smoke along foothills with downslope dispersion from Donnell Fire.
8/10/2018	Yes	24.189	8/9-8/10	90.719	Light to moderate smoke found along foothills with downslope dispersion from Donnell Fire.

In Table 4-2, the Effective Q/D value at Paradise (Butte County) was elevated for all dates being requested for exclusion and all dates exceeded the required Q/D criteria threshold value 100 except for the last day in the event period, August 10, 2018, which maintained a high Effective Q/D of 62 with enhanced wildfire influence impacts at the site. All requested dates except August 10, 2018 qualify directly under the requirements for Tier 2 – Key factor #1. Additionally, enhanced wildfire impacts for August 10, 2018 are also considered qualifying due to occurring at the end of a prolonged event when wildfire emissions are decreasing but remain elevated while residual local effects continue to impact ozone concentrations at the monitor.

Table 4-2: Estimated Q/D at Paradise

Date	Exclusion Request	Daily Q/D	Dates Included	Effective Q/D	Rationale
7/24/2018		28.148	7/24	28.148	Wildfire smoke moved into area.
7/25/2018		54.559	7/24 - 7/25	82.707	Smoke built across northern Sacramento Valley from multiple fires.
7/26/2018	Yes	277.3	7/24 - 7/26	360.007	Dense smoke impacting region.
7/27/2018	Yes	191.41	7/25 to 7/27	523.269	Mendocino Complex (Ranch and River) and Whaleback fires ignited. Dense smoke continues building across northern Sacramento Valley.
7/28/2018	Yes	118.5	7/26 to 7/28	587.21	Dense smoke continues building across northern Sacramento Valley.
7/29/2018	Yes	99.802	7/27 to 7/29	409.712	Extremely active wildfires continue with heavy emissions build up across region
7/30/2018	Yes	101.39	7/28 to 7/30	319.692	Extremely active wildfires continue with heavy emissions build up across region
7/31/2018	Yes	98.92	7/29 to 7/31	300.112	Extremely active wildfires continue with heavy emissions build up across region
8/1/2018	Yes	51.456	7/30 to 8/1	251.766	Extremely active wildfires continue with heavy emissions build up across region
8/2/2018	Yes	52.325	7/31 to 8/2	202.701	Extremely active wildfires continue with heavy emissions build up across region
8/3/2018	Yes	50.607	8/1 to 8/3	154.388	Active wildfires continue with ample emissions built up across region.
8/4/2018		50.408	8/2 to 8/4	153.34	Active wildfires continue with ample emissions built up across region.
8/5/2018		50.567	8/3 to 8/5	151.582	Active wildfires continue with ample emissions built up across region.
8/6/2018		57.39	8/4 to 8/6	158.365	Active wildfires continue with ample emissions built up across region.
8/7/2018	Yes	46.201	8/5 to 8/7	154.158	Active wildfires continue with ample emissions built up across region. Dense smoke in nearby mountain valleys visible in satellite imagery.
8/8/2018	Yes	48.594	8/6 to 8/8	152.185	Active wildfires continue with ample emissions built up across region. Dense smoke in nearby mountain valleys visible in satellite imagery.
8/9/2018	Yes	42.5	8/7 to 8/9	137.295	Active wildfires continue with ample emissions built up across region. Dense smoke in nearby mountain valleys visible in satellite imagery.
8/10/2018	Yes	20.479	8/9 to 8/10	62.979	Prior wildfire emissions are partially cleared but ample emissions adds to the remainder with high hourly $PM_{2.5}$ readings during the afternoon at nearby Paradise-Theater site.

In Table 4-3, the Effective Q/D value at Sutter Buttes was elevated for all dates being requested for exclusion and all dates exceeded the required Q/D criteria threshold value 100 except for the last day in the event period, August 10, 2018, which had an elevated Effective Q/D of 43. All requested dates except August 10, 2018 qualify directly under the requirements for Tier 2 – Key factor #1. Additionally, enhanced wildfire impacts for August 10, 2018 are also considered qualifying due to occurring at the end of a prolonged event when wildfire emissions are decreasing but remain elevated while residual local effects continue to impact ozone concentrations at the monitor.

Table 4-3: Estimated Q/D at Sutter Buttes

Date	Exclusion Request	Daily Q/D	Dates Included	Effective Q/D	Rationale
7/26/2018		215.8	7/26	215.8	Heavy smoke from Carr fire across the Sacramento valley.
7/27/2018		152.82	7/26-7/27	368.62	Smoke across valley with transport from Carr fire. Mendocino Complex fire starts today and likely contributed overnight 7/28.
7/28/2018	Yes	101.2	7/26-7/28	469.82	Buildup with heavy smoke across the valley from Carr and Mendocino Complex fires.
7/29/2018	Yes	87.121	7/27-7/29	341.141	Smoke across the Sacramento Valley with additional transport from Mendocino Complex.
7/30/2018	Yes	122.65	7/28-7/30	310.971	Smoke across the Sacramento Valley with additional transport from Mendocino Complex.
7/31/2018	Yes	101.28	7/29-7/31	311.051	Smoke across the Sacramento Valley with additional transport from Mendocino Complex. Sutter Buttes grassfire (not included in Q/D) along western side of Sutter Buttes started about 5pm.
8/1/2018	Yes	45.519	7/31-8/1	146.799	Smoke appears to ventilate overnight due to close proximity of Sutter Buttes grassfire breaking boundary layer cap. As grassfire control is gained, ventilation is reduced and smoke from the Sacramento Valley with additional transport from Mendocino Complex builds back into area.
8/2/2018	Yes	45.963	7/31-8/2	192.762	Smoke across the Sacramento Valley with additional transport from Mendocino Complex. Sutter Buttes grassfire fully contained.
8/3/2018	Yes	45.928	8/1-8/3	137.41	Heavy smoke in Sacramento Valley with additional transport from Mendocino Complex and Carr fires.
8/4/2018		49.674	8/2-8/4	141.565	Smoke across the Sacramento Valley with very thick smoke transported from Mendocino Complex and from Carr fire.
8/5/2018		50.408	8/3-8/5	146.01	Smoke in Sacramento Valley with additional transport from Mendocino Complex and Carr fires.
8/6/2018		55.169	8/4-8/6	155.251	Heavy smoke across Sacramento Valley with smoke transported from Carr and Mendocino Complex.
8/7/2018	Yes	43.181	8/5-8/7	148.758	Heavy smoke across most of northern California with smoke transported from Carr and Mendocino Complex.
8/8/2018		45.447	8/6-8/8	143.797	Smoke across the Sacramento Valley with additional transport from Mendocino Complex. New transport from Donnell fire begins overnight 08/09.
8/9/2018	Yes	45.352	8/7-8/9	133.98	Persistent smoke across the Sacramento Valley.
8/10/2018	Yes	20.978	50% 8/9 + 8/10	43.654	Valley smoke greatly clears out. Fresh transport from Mendocino Complex.

In Table 4-4, the Effective Q/D value at Sonora was elevated for all dates being requested for exclusion and all dates exceeded the required Q/D criteria threshold value 100. All requested dates qualify under the requirements for Tier 2 – Key factor #1.

Table 4-4: Estimated Q/D at Sonora

Date	Exclusion Request	Daily Q/D	Dates Included	Effective Q/D	Rationale
7/26/2018		133.89	7/26	133.89	Dispersed smoke from nearby Ferguson fire and transport from heavy smoke in Sacramento Valley.
7/27/2018		127.8	7/26-7/27	261.69	Dispersed smoke from nearby Ferguson fire and transport from heavy smoke in Sacramento Valley. Mendocino Complex fire started today.
7/28/2018	Yes	107.7	7/26-7/28	369.39	Heavy buildup of smoke across the region with transport from Sacramento Valley.
7/29/2018	Yes	85.05	7/28-7/29	192.75	Dispersed smoke and moderate buildup from nearby Ferguson fire and transport of smoke from Sacramento Valley.
7/30/2018		99.069	7/29-7/30	184.119	Moderate to heavy smoke buildup persists across the area.
7/31/2018	Yes	104.09	7/29-7/31	288.209	Heavy buildup of smoke across the region with transport from Mendocino Complex.
8/1/2018		69.091	8/1	69.091	Smoke clears out. Minor dispersion from Ferguson fire. Transport from Mendocino Complex. Nearby Donnell fire started today.
8/2/2018	Yes	70.455	8/1-8/2	139.546	Smoke buildup along the foothills, primarily from Ferguson and Donnell fires. Transport during evening from Mendocino Complex.
8/3/2018	Yes	85.611	8/1-8/3	225.157	Smoke buildup along the foothills. Transport from Mendocino Complex.
8/4/2018	Yes	146.84	8/2-8/4	302.906	Smoke buildup along the foothills. Transport from Mendocino Complex.
8/5/2018	Yes	137.48	8/3-8/5	369.931	Smoke buildup along the foothills. Transport from Mendocino Complex.
8/6/2018	Yes	122.71	8/4-8/6	407.03	Heavy smoke across region. Additional transport from Mendocino Complex.
8/7/2018		86.999	8/5-8/7	347.189	Heavy smoke across region. Additional transport from Mendocino Complex.
8/8/2018	Yes	99.369	8/7-8/8	186.368	Moderate smoke across region. Additional transport from Sacramento Valley.
8/9/2018	Yes	75.452	8/8-8/9	174.821	Moderate smoke across region.
8/10/2018	Yes	25.552	8/9-8/10	101.004	Moderate smoke across region with long range transport from Sacramento Valley.

As seen below in Table 4-5, the Effective Q/D value at Grass Valley (Nevada County) was elevated for all dates being requested for exclusion and all dates exceeded the required Q/D criteria threshold value 100 except for the last day in the event period, August 10, 2018, which had an elevated Effective Q/D of 66. All requested dates except August 10, 2018 qualify directly under the requirements for Tier 2 – Key factor #1. Additionally, enhanced wildfire impacts for August 10, 2018 are also considered qualifying due to occurring at the end of a prolonged event when wildfire emissions are decreasing but remain elevated while residual local effects continue to impact ozone concentrations at the monitor.

Table 4-5: Estimated Q/D at Grass Valley

Date	Exclusion Request	Daily Q/D	Dates Included	Effective Q/D	Rationale
7/24/2018		28.503	7/24	28.503	Smoke transported from Ferguson fire along Sierra Mountains and Sacramento region.

Date	Exclusion Request	Daily Q/D	Dates Included	Effective Q/D	Rationale
7/25/2018		44.663	7/24-7/25	73.166	Residual smoke from Ferguson fire plus Carr fire smoke.
7/26/2018	Yes	191.91	7/24-7/26	265.076	Transport from extremely active Carr fire plus ample smoke persisting across Sacramento Valley.
7/27/2018	Yes	144.72	7/25-7/27	381.293	Ample smoke builds across Sacramento Valley plus transport from new Mendocino Complex (Ranch and River) fires.
7/28/2018	Yes	100.45	7/26-7/28	437.08	Heavy smoke across Sacramento Valley plus fresh transport from Carr and Mendocino Complex fires.
7/29/2018	Yes	81.87	7/27-7/29	327.04	Heavy smoke across Sacramento Valley plus transport from Mendocino Complex fires.
7/30/2018	Yes	83.574	7/28-7/30	265.894	Heavy smoke across Sacramento Valley plus transport from Mendocino Complex fires.
7/31/2018	Yes	90.526	7/29-7/31	255.97	Heavy smoke across Sacramento Valley plus transport from Mendocino Complex fires.
8/1/2018	Yes	49.525	7/31-8/1	140.051	Reduced residual smoke across the region. Transport from Mendocino Complex fires.
8/2/2018	Yes	45.137	7/31-8/2	185.188	Residual smoke across the region. Transport from Mendocino Complex and new Donnell (started 8/1) fires.
8/3/2018		47.527	8/1-8/3	142.189	Heavy smoke across the region plus transport from Mendocino Complex, Donnell, and Ferguson fires.
8/4/2018		57.845	8/2-8/4	150.509	Heavy smoke along the Sierra mountains with heavy smoke dispersing in the Sacramento Valley from Mendocino Complex.
8/5/2018		59.455	8/5	59.455	Majority of smoke clears the region early. Then smoke rebuilds along portions of the northern Sierra Mountains. Some transport from Mendocino Complex.
8/6/2018		63.197	8/5-8/6	122.652	Heavy smoke across the region plus transport from Carr, Mendocino Complex, Donnell, and Ferguson fires.
8/7/2018	Yes	47.859	8/5-8/7	170.511	Heavy smoke across the region plus transport from Donnell and Ferguson fires.
8/8/2018	Yes	52.062	8/6-8/8	163.118	Heavy smoke across the region plus transport from Donnell and Mendocino Complex fires.
8/9/2018	Yes	46.395	8/7-8/9	146.316	Heavy smoke across the region plus transport from Donnell and dispersion from Mendocino Complex and Carr fires.
8/10/2018	Yes	19.882	8/9-8/10	66.277	Majority of heavy smoke clears the region by late morning, with light smoke persisting and transport from Mendocino Complex fires.

B. Key Factor #2 (Event vs Non-Event Ozone Concentrations)

Key factor #2 in a Tier 2 demonstration requires a comparison of the event related ozone concentration with non-event related high ozone concentrations. Statistical analyses of the exceedances must either demonstrate that exceedance concentrations are in the 99th percentile of the 5-year distribution of ozone monitoring data, or one of the 4 highest ozone concentrations within the year.

Due to the large number of dates impacted by the multiple large wildfires burning historically large amount of acreage producing massive amounts of emissions, CARB believes it

reasonable to include all dates whereby wildfire emissions caused exceedances of the appropriate ozone NAAQS up to the adjusted 4th high, as noted in the tables below. Dates that are impacted by exceptional events should not count against the tally of "the 4 highest ozone concentrations within the year" as they were exceedances caused by contributions from wildfire emissions. This list also does not preclude the non-exceptional event requested dates from future consideration as wildfire related exceptional events, only that they are not being demonstrated as such as part of this exceptional events demonstration.

The 99th percentile value for the 5-year (2013-2017) distribution of ozone monitoring data at San Andreas is 0.077 ppm. All dates being requested for exclusion due to wildfire exceptional events are in the top 9 concentrations in 2018 and in the 97th percentile or higher for concentrations during the prior 5-year distribution of data as shown below in Table 4-6. After accounting for the exceptional event dates being requested the adjusted 4th high is 0.069 ppm, below all requested exceptional event dates. All requested dates qualify under the requirements for Tier 2 – Key factor #2.

Table 4-6: Top 20 max daily 8-hour ozone concentrations in 2018 at San Andreas

Date	8-hr Ozone	2018 Rank	5-year Percentile	Event?
7/31/2018	0.086	1	99%	EE
8/9/2018	0.081	2	99%	EE
8/5/2018	0.078	3	99%	EE
7/30/2018	0.077	4	99%	EE
8/10/2018	0.076	5	98%	EE
8/2/2018	0.074	6	98%	EE
7/18/2018	0.072	7	97%	
7/28/2018	0.071	8	97%	EE
8/8/2018	0.071	9	97%	EE
9/27/2018	0.071	10	97%	
9/21/2018	0.070	11	96%	
6/26/2018	0.069	12	96%	Adjusted 4th High
8/1/2018	0.069	13	96%	
8/20/2018	0.069	14	96%	
9/22/2018	0.069	15	96%	
6/21/2018	0.068	16	95%	
7/25/2018	0.068	17	95%	
7/26/2018	0.068	18	95%	
8/3/2018	0.068	19	95%	
8/24/2018	0.068	20	95%	

The 99th percentile value for the 5-year (2013-2017) distribution of ozone monitoring data at Paradise is 0.075 ppm. All dates being requested for exclusion due to wildfire exceptional events are in the top 14 concentrations in 2018 and in the 98th percentile or higher for

concentrations during the prior 5-year distribution of data as shown below in Table 4-7. After accounting for the exceptional event dates being requested the adjusted 4th high is 0.074 ppm, below all requested exceptional event dates. All requested dates qualify under the requirements for Tier 2 – Key factor #2.

Table 4-7: Top 20 max daily 8-hour ozone concentrations in 2018 at Paradise

Date	8-hr Ozone	2018 Rank	5-year Percentile	Event?
8/1/2018	0.098	1	99%	EE
8/9/2018	0.088	2	99%	EE
7/31/2018	0.086	3	99%	EE
8/10/2018	0.084	4	99%	EE
8/25/2018	0.082	5	99%	
8/2/2018	0.081	6	99%	EE
7/27/2018	0.080	7	99%	EE
7/28/2018	0.079	8	99%	EE
6/26/2018	0.078	9	99%	
8/7/2018	0.078	10	99%	EE
9/21/2018	0.077	11	99%	
8/8/2018	0.076	12	99%	EE
7/26/2018	0.075	13	99%	EE
7/30/2018	0.074	14	98%	EE
9/28/2018	0.074	15	98%	Adjusted 4th High
7/29/2018	0.073	16	98%	
10/20/2018	0.072	17	97%	
8/3/2018	0.071	18	97%	
8/23/2018	0.071	19	97%	
8/24/2018	0.071	20	97%	

The 99th percentile value for the 5-year (2013-2017) distribution of ozone monitoring data at Sutter Buttes is 0.079 ppm. All dates being requested for exclusion due to wildfire exceptional events are in the top 9 concentrations in 2018 and in the 96th percentile or higher for concentrations during the prior 5-year distribution of data as shown below in Table 4-8. After accounting for the exceptional event dates being requested the adjusted 4th high is 0.072 ppm, below all requested exceptional event dates. All requested dates qualify under the requirements for Tier 2 – Key factor #2.

Table 4-8: Top 20 max daily 8-hour ozone concentrations in 2018 at Sutter Buttes

Date	8-hr Ozone	2018 Rank	5-year Percentile	Event?
7/30/2018	0.083	1	99%	EE
7/31/2018	0.082	2	99%	EE
8/1/2018	0.082	3	99%	EE
7/28/2018	0.080	4	99%	EE
8/9/2018	0.079	5	99%	EE
8/10/2018	0.077	6	98%	EE
7/29/2018	0.075	7	97%	EE
8/7/2018	0.075	8	97%	EE
8/3/2018	0.074	9	96%	EE
8/25/2018	0.074	10	96%	
9/1/2018	0.074	11	96%	
6/2/2018	0.073	12	96%	
8/24/2018	0.072	13	95%	Adjusted 4th High
9/2/2018	0.072	14	95%	
6/26/2018	0.071	15	95%	
8/2/2018	0.071	16	95%	
8/15/2018	0.071	17	95%	
9/3/2018	0.071	18	95%	
6/21/2018	0.070	19	93%	
8/14/2018	0.070	20	93%	

The 99th percentile value for the 5-year (2013-2017) distribution of ozone monitoring data at Sonora is 0.079 ppm. All dates being requested for exclusion due to wildfire exceptional events are in the top 14 concentrations in 2018 and in the 97th percentile or higher for concentrations during the prior 5-year distribution of data as shown below in Table 4-9. After accounting for the exceptional event dates being requested the adjusted 4th high is 0.074 ppm, below all requested exceptional event dates. All requested dates qualify under the requirements for Tier 2 – Key factor #2.

Table 4-9: Top 20 max daily 8-hour ozone concentrations in 2018 at Sonora

Date	8-hr Ozone	2018 Rank	5-year Percentile	Event?
8/8/2018	0.087	1	99%	EE
7/18/2018	0.084	2	99%	
7/19/2018	0.084	3	99%	
8/5/2018	0.084	4	99%	EE
8/6/2018	0.08	5	99%	EE
7/28/2018	0.079	6	99%	EE
7/29/2018	0.079	7	99%	EE
8/10/2018	0.079	8	99%	EE
7/31/2018	0.078	9	98%	EE
8/2/2018	0.078	10	98%	EE
9/28/2018	0.077	11	98%	
7/30/2018	0.076	12	98%	EE
8/4/2018	0.074	13	97%	EE
8/9/2018	0.074	14	97%	EE
8/24/2018	0.074	15	97%	Adjusted 4th High
8/25/2018	0.074	16	97%	
7/2/2018	0.071	17	95%	
8/3/2018	0.071	18	95%	
8/26/2018	0.071	19	95%	
9/20/2018	0.071	20	95%	

The 99th percentile value for the 5-year (2013-2017) distribution of ozone monitoring data at Tuscan Buttes is 0.083 ppm. All dates being requested for exclusion due to wildfire exceptional events are in the top 12 concentrations in 2018 and in the 91st percentile or higher for concentrations during the prior 5-year distribution of data as shown below in Table 4-10. After accounting for the exceptional event dates being requested the adjusted 4th high is 0.071 ppm, below all requested exceptional event dates. All requested dates qualify under the requirements for Tier 2 – Key factor #2.

Table 4-10: Top 20 max daily 8-hour ozone concentrations in 2018 at Tuscan Buttes

Date	8-hr Ozone	2018 Rank	5-year Percentile	Event?
8/9/2018	0.087	1	99%	EE
8/10/2018	0.085	2	99%	EE
8/1/2018	0.082	3	98%	EE
8/25/2018	0.082	4	98%	
7/31/2018	0.081	5	98%	EE
8/8/2018	0.078	6	97%	EE
8/3/2018	0.077	7	97%	EE
6/26/2018	0.076	8	96%	
7/27/2018	0.076	9	96%	EE
8/2/2018	0.073	10	93%	EE
6/27/2018	0.071	11	91%	
8/7/2018	0.071	12	91%	EE
9/21/2018	0.071	13	91%	Adjusted 4th High
6/14/2018	0.07	14	90%	
8/6/2018	0.07	15	90%	
6/6/2018	0.069	16	89%	
7/20/2018	0.069	17	89%	
9/1/2018	0.069	18	89%	
6/3/2018	0.068	19	87%	
7/18/2018	0.068	20	87%	

The 99th percentile value for the 5-year (2013-2017) distribution of ozone monitoring data at Grass Valley is 0.087 ppm. All dates being requested for exclusion due to wildfire exceptional events are in the top 13 concentrations in 2018 and in the 96th percentile or higher for concentrations during the prior 5-year distribution of data as shown below in Table 4-11. After accounting for the exceptional event dates being requested the adjusted 4th high is 0.077 ppm, below all requested exceptional event dates. All requested dates qualify under the requirements for Tier 2 – Key factor #2.

Table 4-11: Top 20 max daily 8-hour ozone concentrations in 2018 at Grass Valley

Date	8-hr Ozone	2018 Rank	5-year Percentile	Event?
7/31/2018	0.101	1	99%	EE
8/2/2018	0.101	2	99%	EE
8/1/2018	0.098	3	99%	EE
8/8/2018	0.095	4	99%	EE
8/9/2018	0.093	5	99%	EE
8/10/2018	0.086	6	98%	EE
8/7/2018	0.084	7	98%	EE
7/26/2018	0.083	8	98%	EE
7/27/2018	0.082	9	98%	EE
8/25/2018	0.082	10	98%	
8/24/2018	0.079	11	96%	
7/28/2018	0.078	12	96%	EE
7/29/2018	0.078	13	96%	EE
7/19/2018	0.077	14	95%	
9/21/2018	0.077	15	95%	Adjusted 4th High
7/30/2018	0.076	16	95%	
8/4/2018	0.075	17	94%	
8/11/2018	0.075	18	94%	
9/20/2018	0.075	19	94%	
6/26/2018	0.072	20	91%	

III. Tier 2 - Additional Evidence

The following sections provide additional evidence as required to support a Tier 2 analysis for all requested exceptional event dates. All dates requested for exclusion qualify for Tier 2 Analysis as discussed in prior sections Tier 2 – Key Factor #1 and Tier 2 – Key Factor #2. This utilizes a "weight of evidence" approach with additional analyses to show a clear causal relationship between wildfire emissions and the ozone concentrations at the sites. Additional evidence for a Tier 2 weight of evidence requires at least one piece of additional evidence in each of the following categories:

1. Evidence that the emissions from the wildfire affected the exceeding monitor.

This requirement is met through evidence shown in Sections II and III of the Narrative Conceptual Model chapter and Section III of this chapter, and particularly in the evidence of an ozone/$PM_{2.5}$ correlation (Figures 3-27, 3-30, 3-33, 3-36, 3-39, and 3-42) and the unusual ozone diurnal patterns seen in many of the Figures 4-7 to 4-99. Social media reports of smoke in the vicinity can also be found in Appendix VI.

2. Evidence that the emissions were transported to the monitor.

This requirement is met through evidence given in the Narrative Conceptual Model chapter and this chapter using both backward trajectory analysis from the monitor as well as forward trajectory modeling from individual wildfires, satellite imagery and HMS satellite-derived smoke layers, and meteorological analyses.

3. Additional evidence that the emissions caused the exceedance by reaching the ground and affecting the monitors.

This requirement is met through the $PM_{2.5}$ analysis, biomass burning indicators, and black carbon in the following section as well as media reports of smoke at ground level.

A. 1-Hour Ozone (Diurnal Comparison)

The following figures compare the daily diurnal pattern for each exceedance day with the hourly diurnal percentiles for ozone from 2013-2017. For each site except Grass Valley (discussed in the Grass Valley section below), data is missing for the 0400 PST hour due to running daily quality check routines during the 0400-0500 PST hour. These figures show that during many of the days for each site the pattern was unusual compared to the percentiles of each site's typical diurnal pattern with unusually timed peaks or spikes. Some days were extremely high throughout the day due to the ongoing presence of wildfire emissions with ozone precursors and ozone impacting these sites. These diurnal ozone figures support that the ozone exceedance days were unusual compared to historical patterns and act as supporting evidence that wildfire emissions directly impacted ozone concentrations at each site.

1. San Andreas

Figure 4-7: Percentiles for seasonal 1-hour ozone for 2013-2017 compared with 7/28/2018

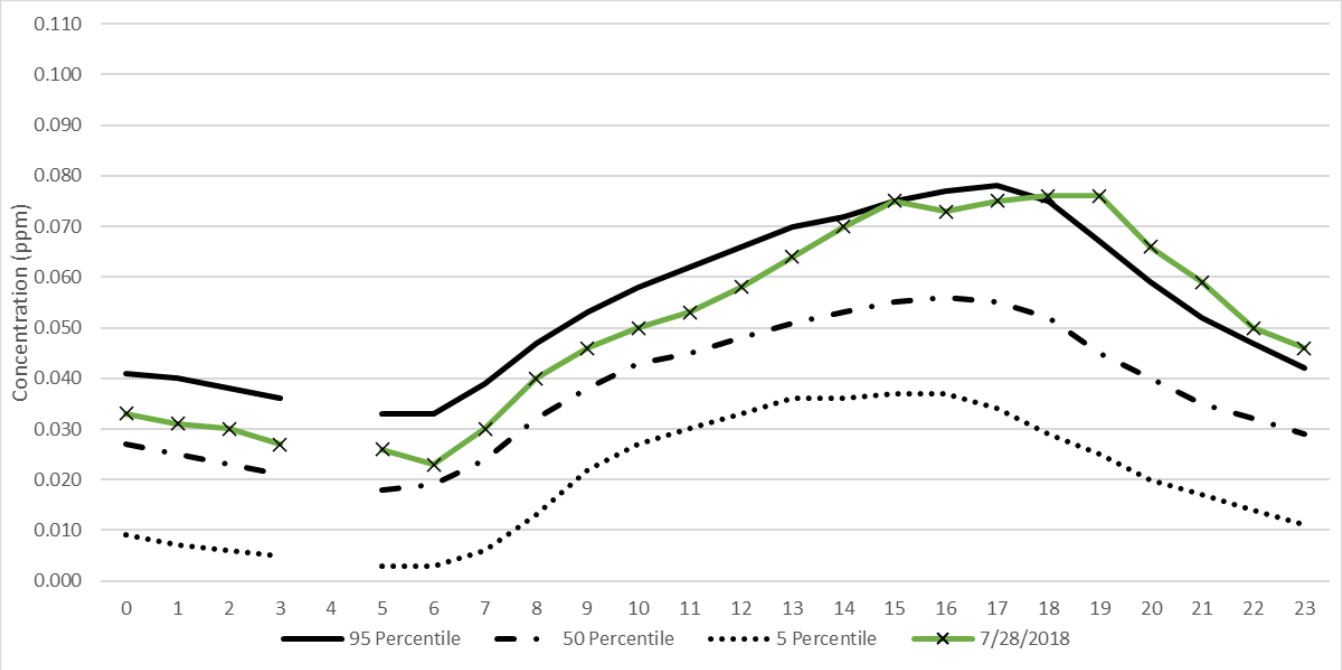


Figure 4-8: Percentiles for seasonal 1-hour ozone for 2013-2017 compared with 7/30/2018

Figure 4-9: Percentiles for seasonal 1-hour ozone for 2013-2017 compared with 7/31/2018

Figure 4-10: Percentiles for seasonal 1-hour ozone for 2013-2017 compared with 8/2/2018

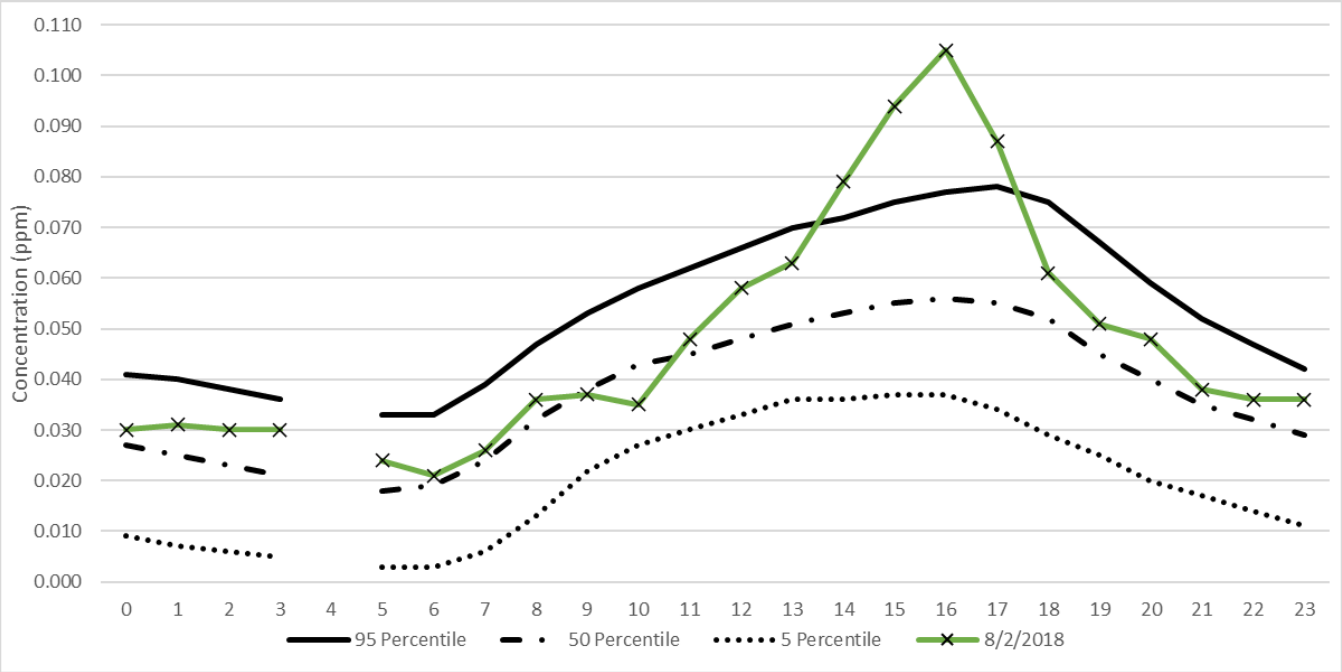


Figure 4-11: Percentiles for seasonal 1-hour ozone for 2013-2017 compared with 8/5/2018

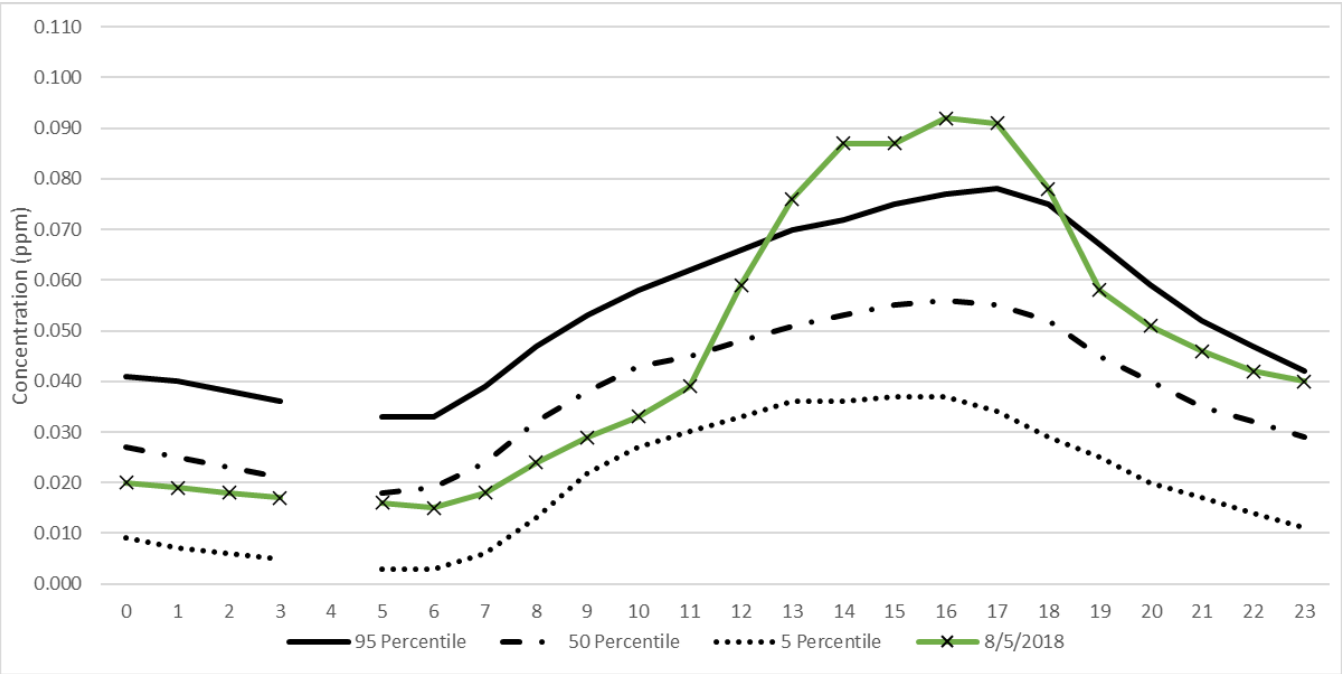


Figure 4-12: Percentiles for seasonal 1-hour ozone for 2013-2017 compared with 8/8/2018

Figure 4-13: Percentiles for seasonal 1-hour ozone for 2013-2017 compared with 8/9/2018

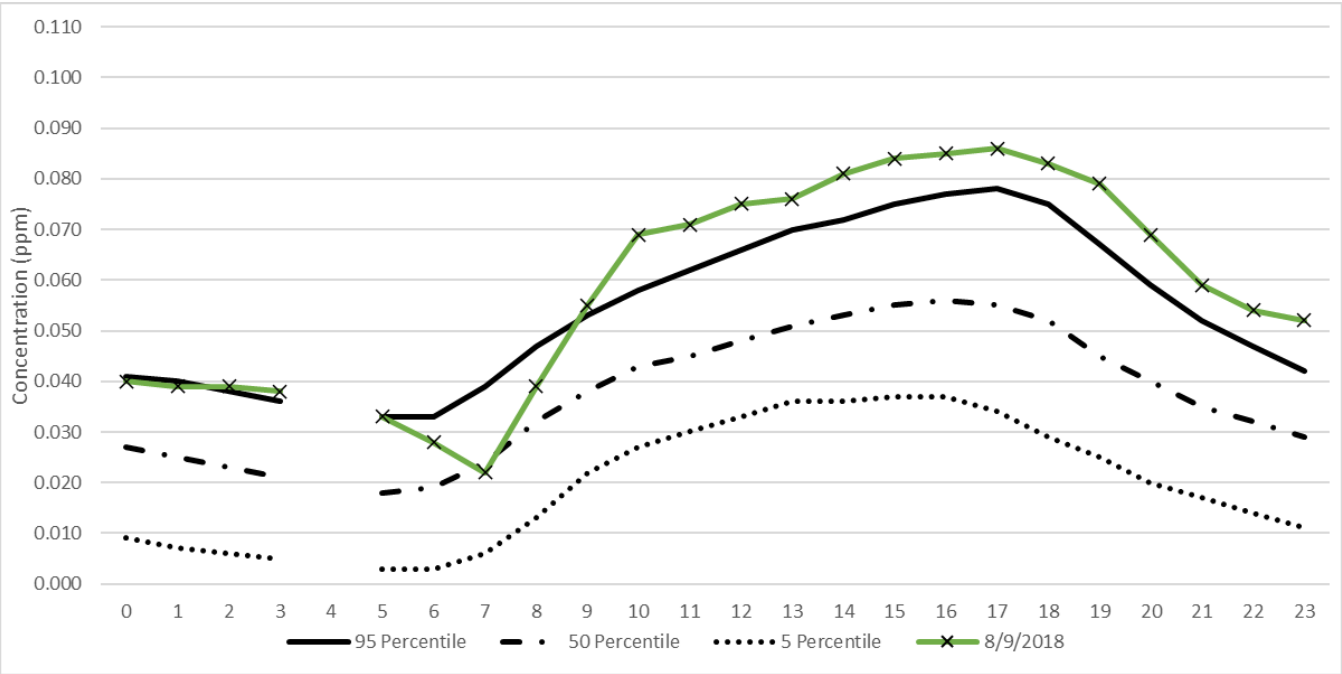


Figure 4-14: Percentiles for seasonal 1-hour ozone for 2013-2017 compared with 8/10/2018

2. Paradise

Figure 4-15: Percentiles for seasonal 1-hour ozone for 2013-2017 compared with 7/26/2018

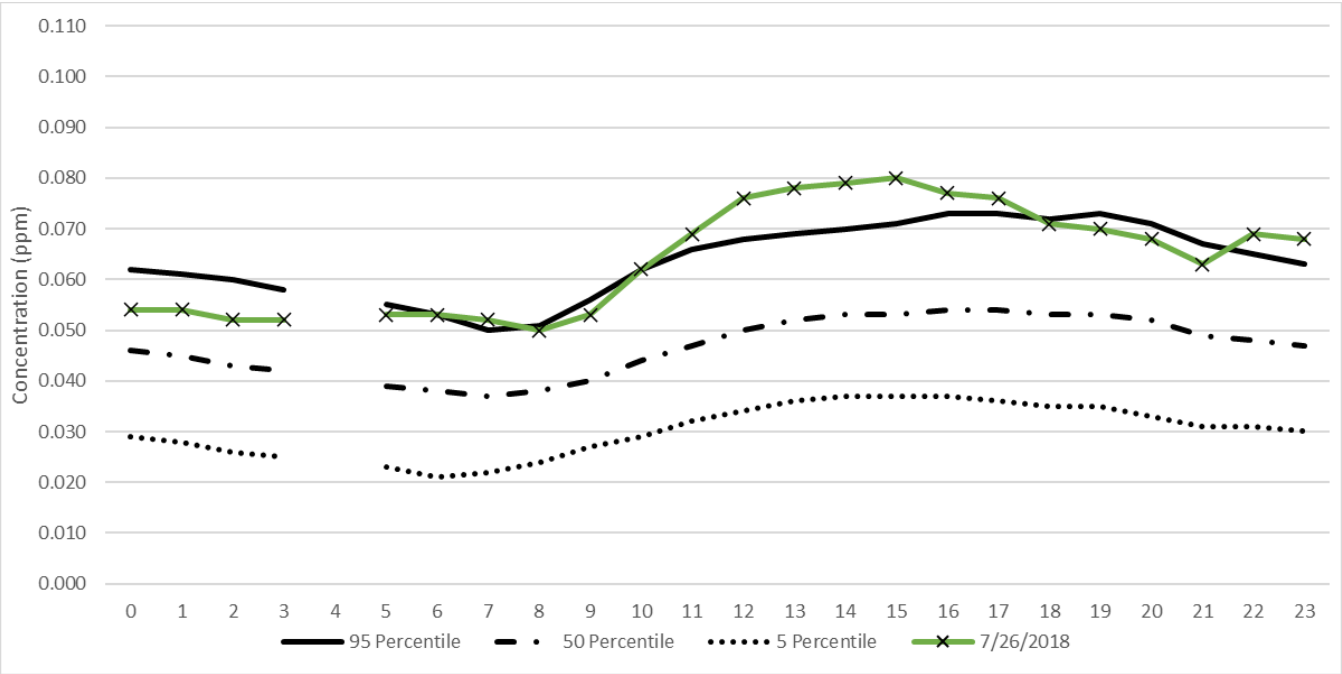


Figure 4-16: Percentiles for seasonal 1-hour ozone for 2013-2017 compared with 7/27/2018

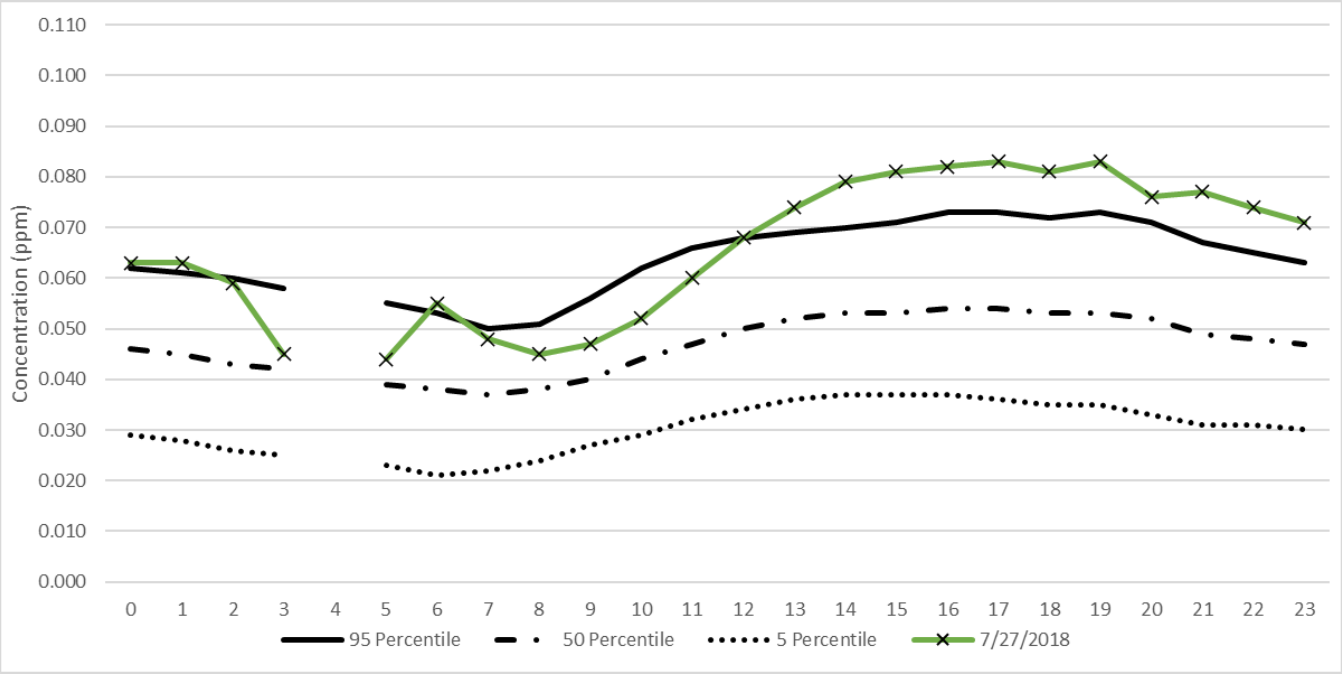


Figure 4-17: Percentiles for seasonal 1-hour ozone for 2013-2017 compared with 7/28/2018

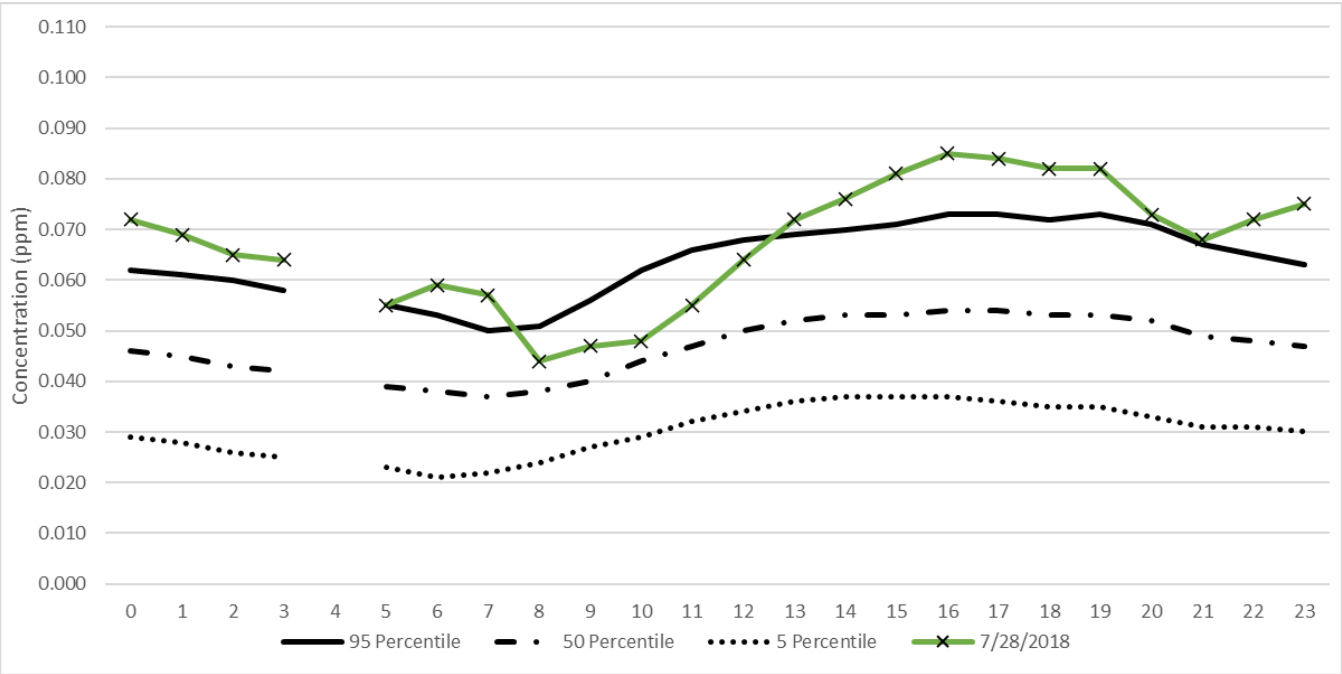


Figure 4-18: Percentiles for seasonal 1-hour ozone for 2013-2017 compared with 7/30/2018

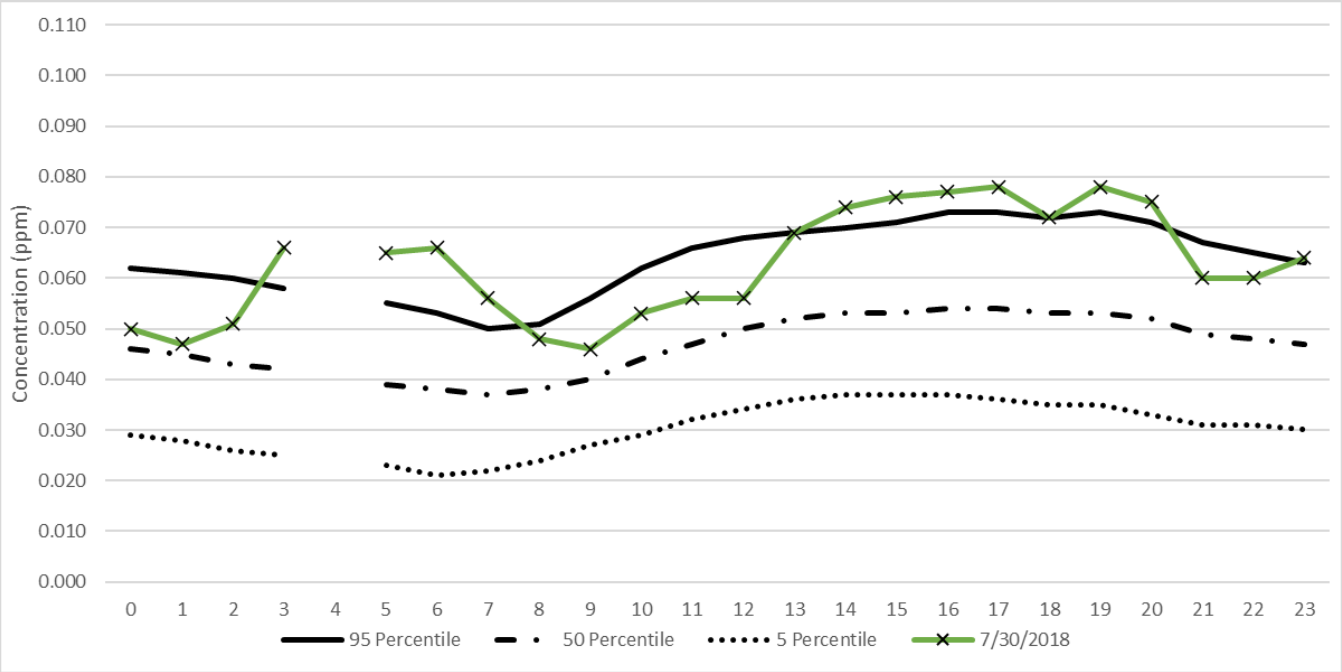


Figure 4-19: Percentiles for seasonal 1-hour ozone for 2013-2017 compared with 7/31/2018

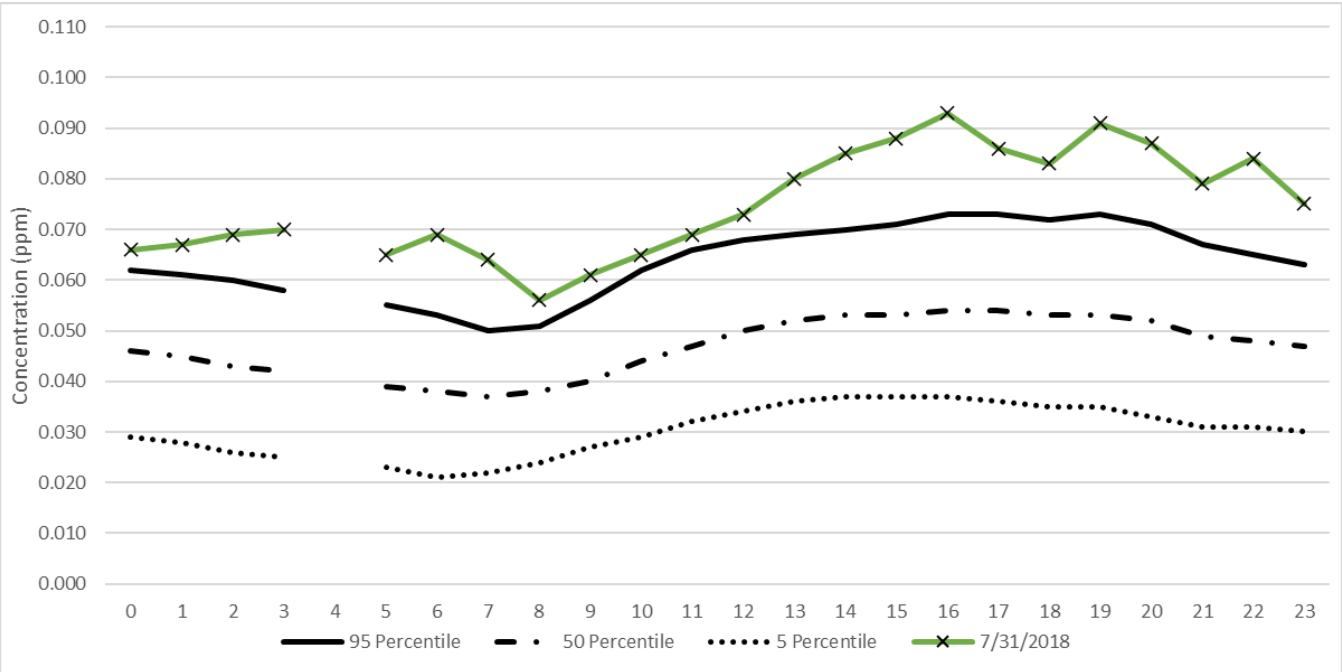


Figure 4-20: Percentiles for seasonal 1-hour ozone for 2013-2017 compared with 8/1/2018

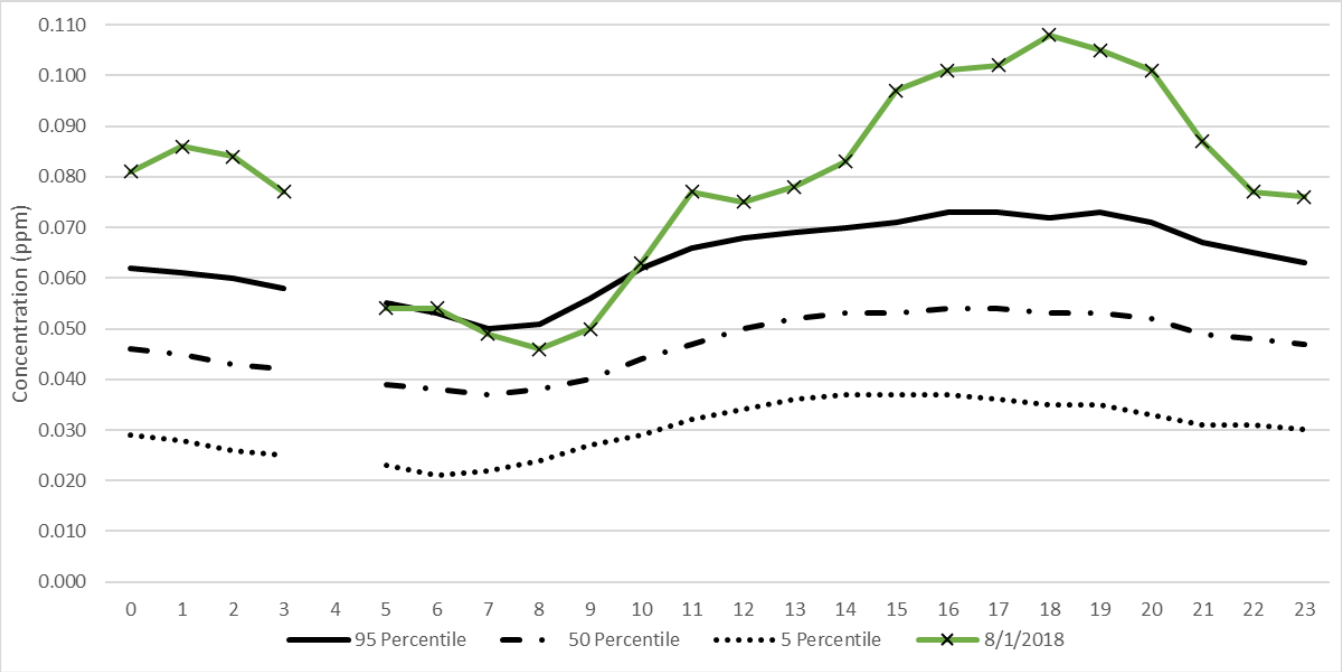


Figure 4-21: Percentiles for seasonal 1-hour ozone for 2013-2017 compared with 8/2/2018

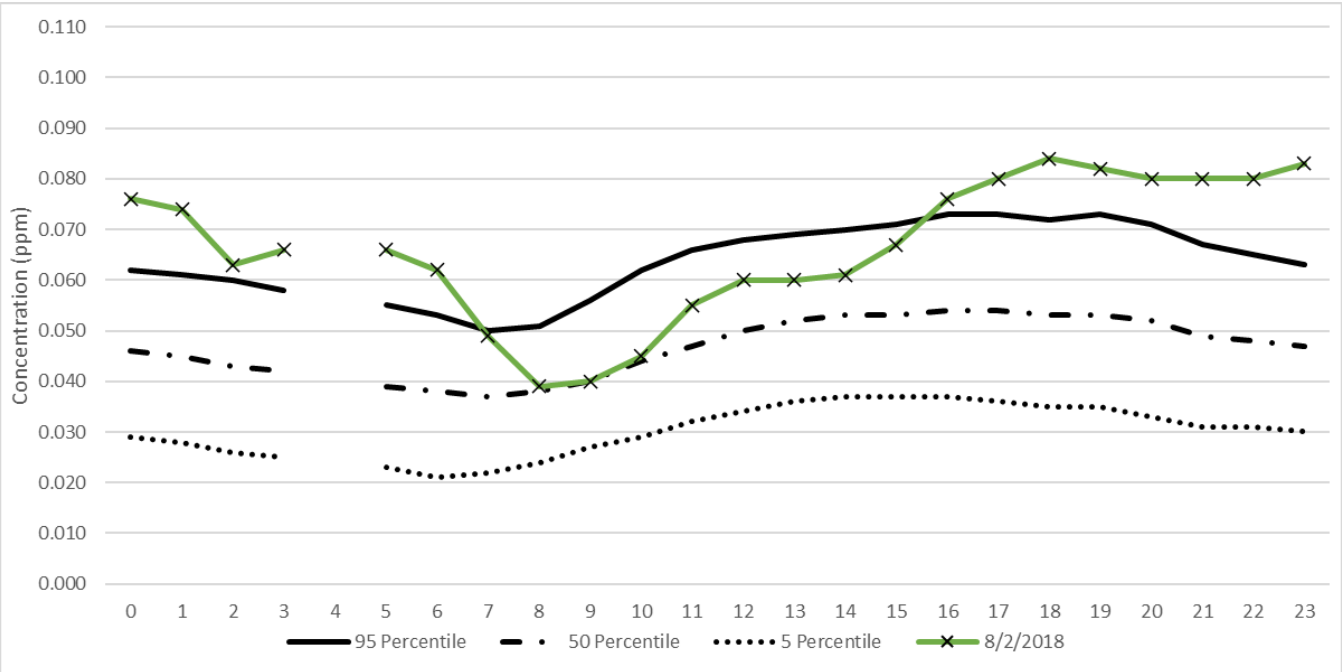


Figure 4-22: Percentiles for seasonal 1-hour ozone for 2013-2017 compared with 8/7/2018

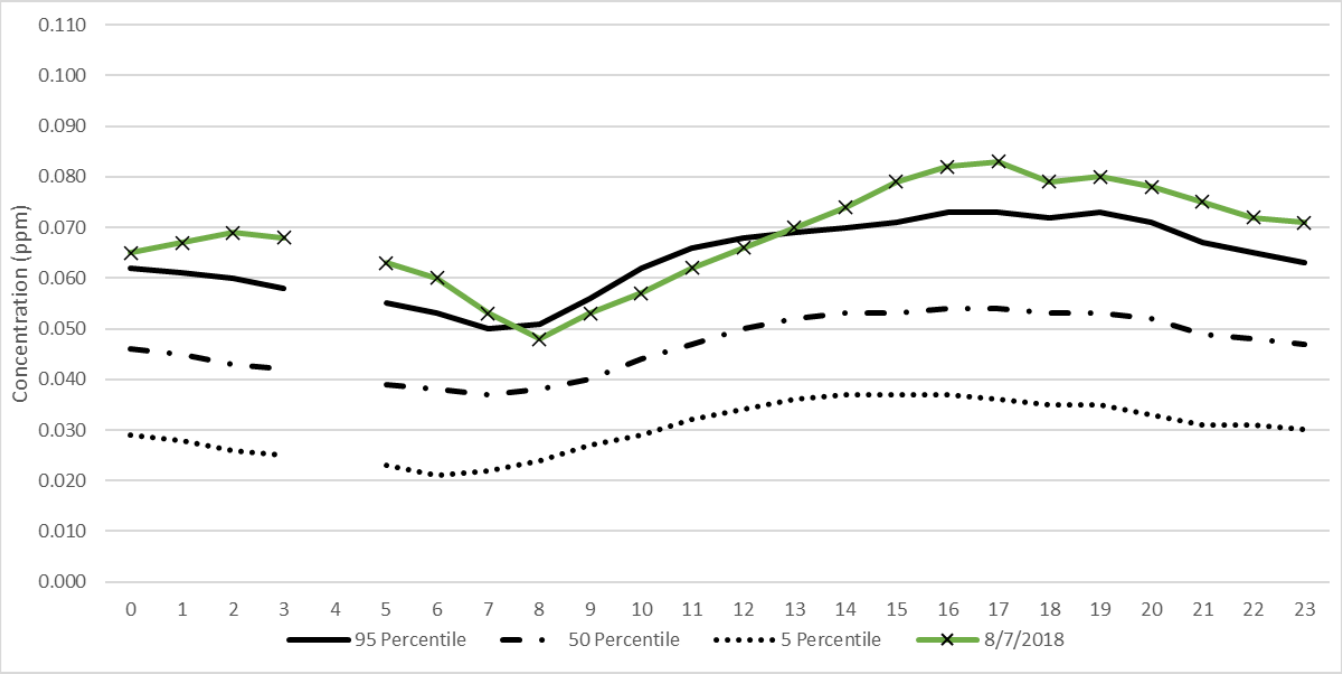


Figure 4-23: Percentiles for seasonal 1-hour ozone for 2013-2017 compared with 8/8/2018

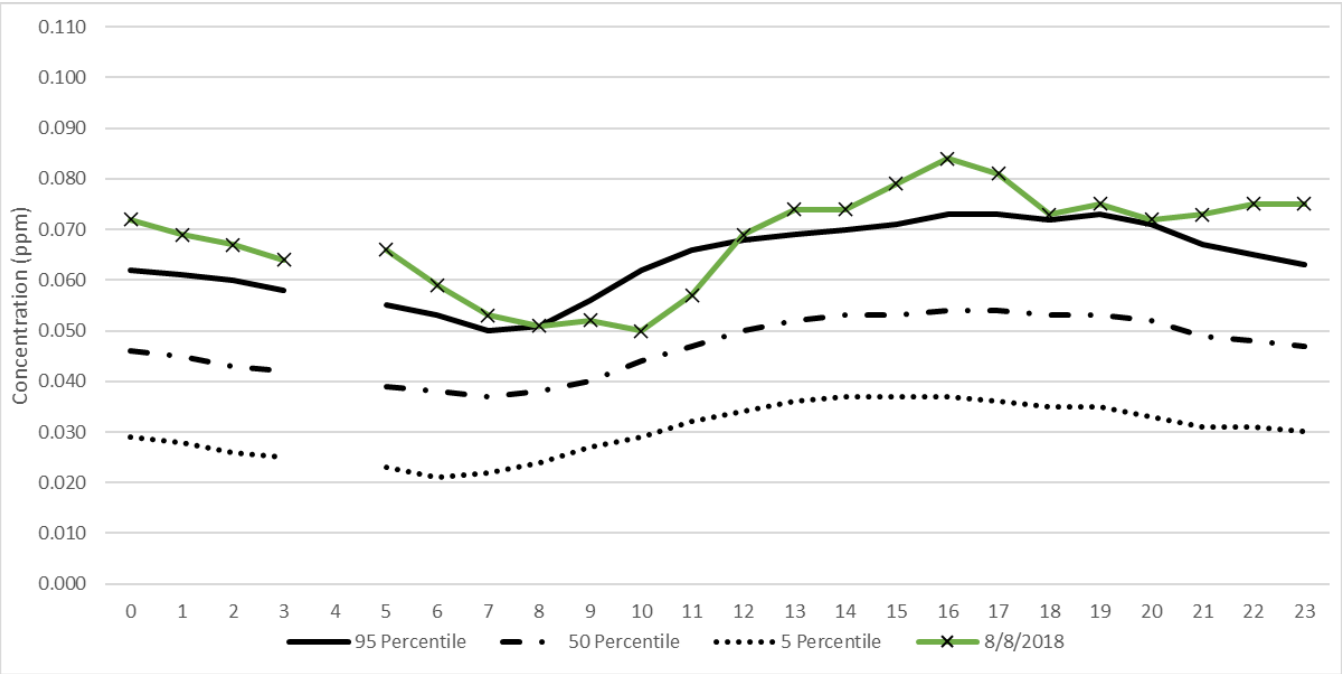


Figure 4-24: Percentiles for seasonal 1-hour ozone for 2013-2017 compared with 8/9/2018

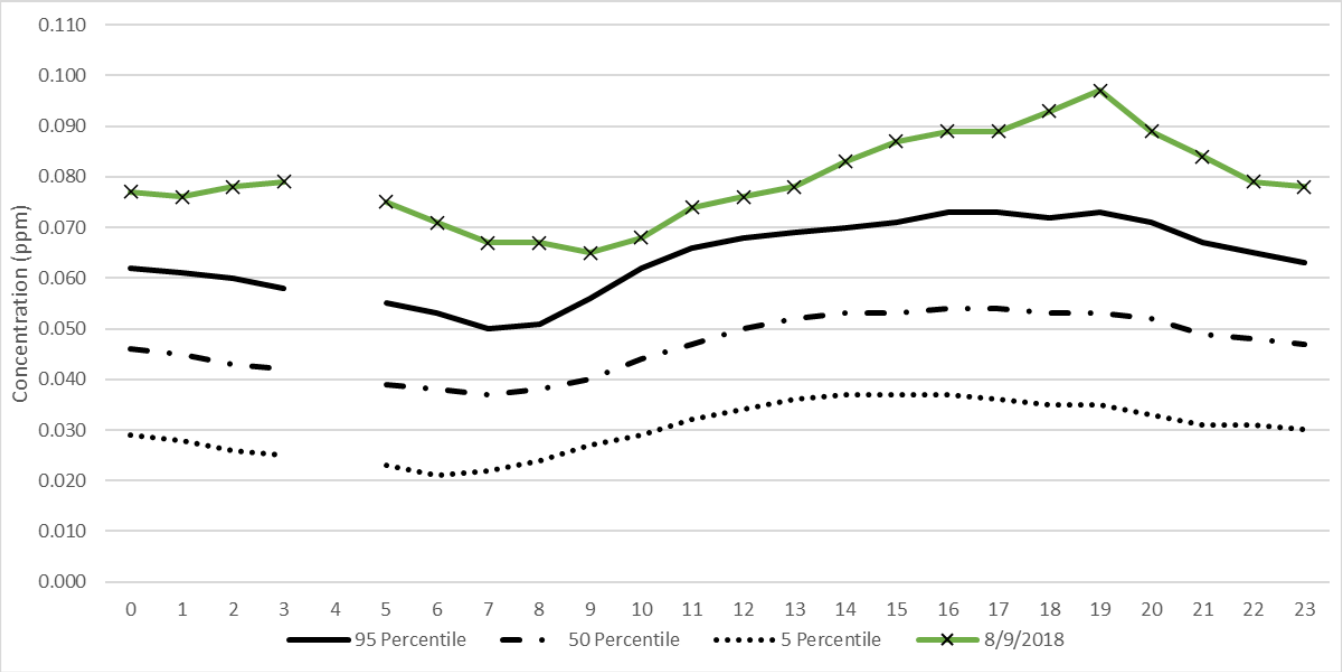
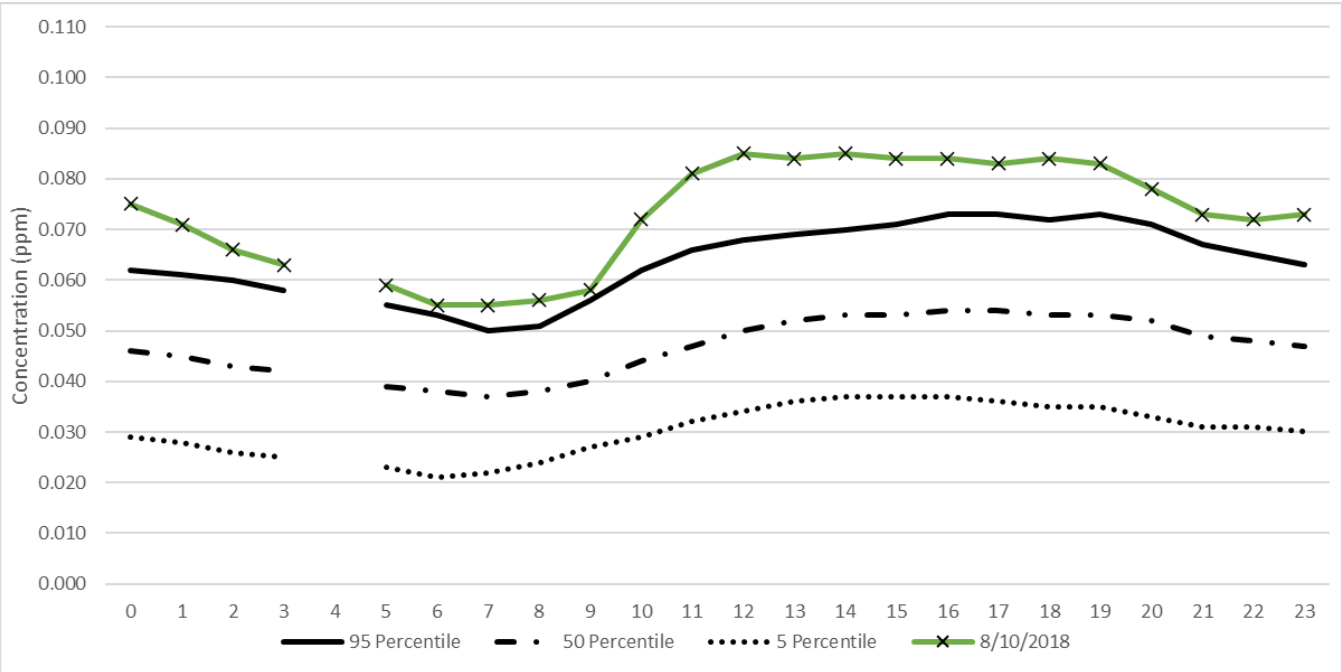


Figure 4-25: Percentiles for seasonal 1-hour ozone for 2013-2017 compared with 8/10/2018



3. Sutter Buttes

Figure 4-26: Percentiles for seasonal 1-hour ozone for 2013-2017 compared with 7/28/2018

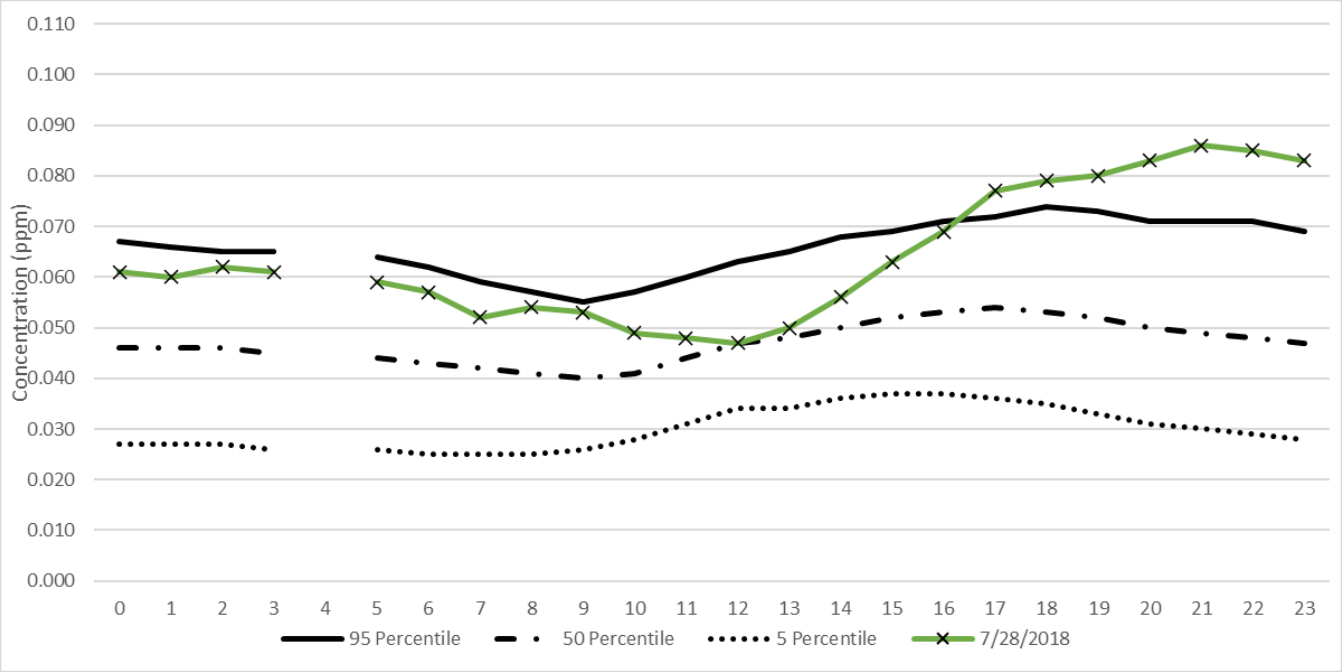


Figure 4-27: Percentiles for seasonal 1-hour ozone for 2013-2017 compared with 7/29/2018

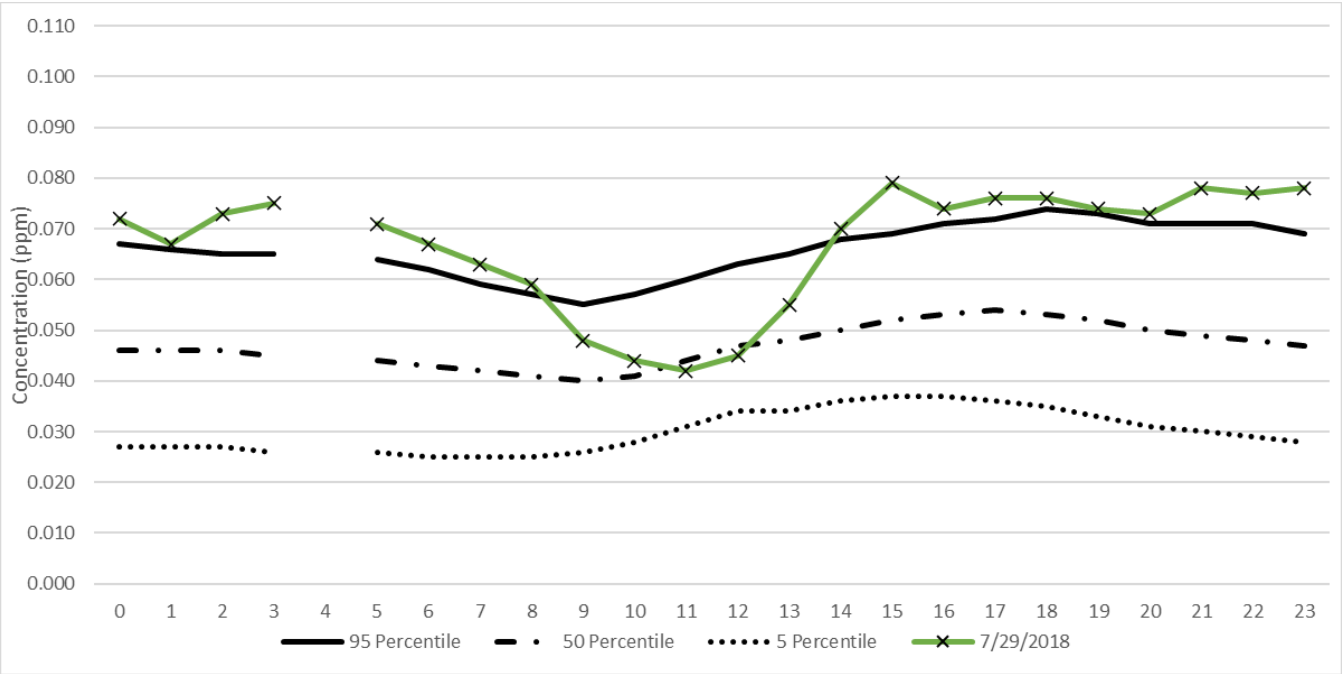


Figure 4-28: Percentiles for seasonal 1-hour ozone for 2013-2017 compared with 7/30/2018

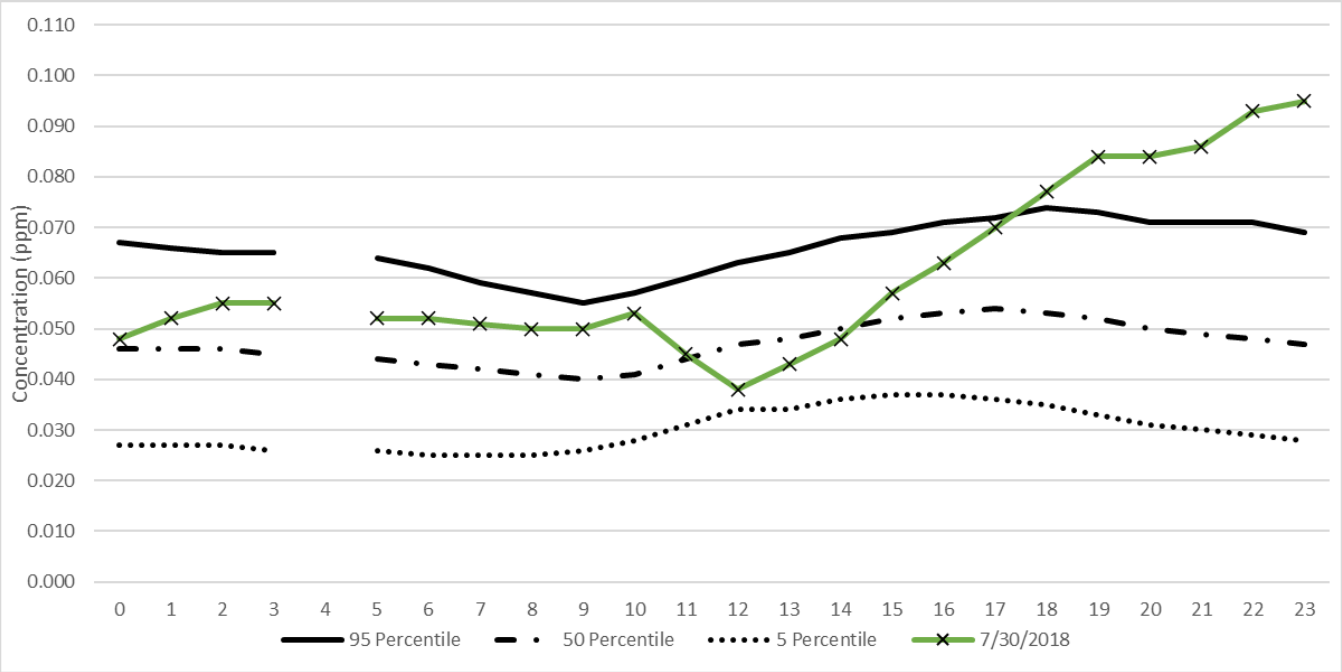


Figure 4-29: Percentiles for seasonal 1-hour ozone for 2013-2017 compared with 7/31/2018

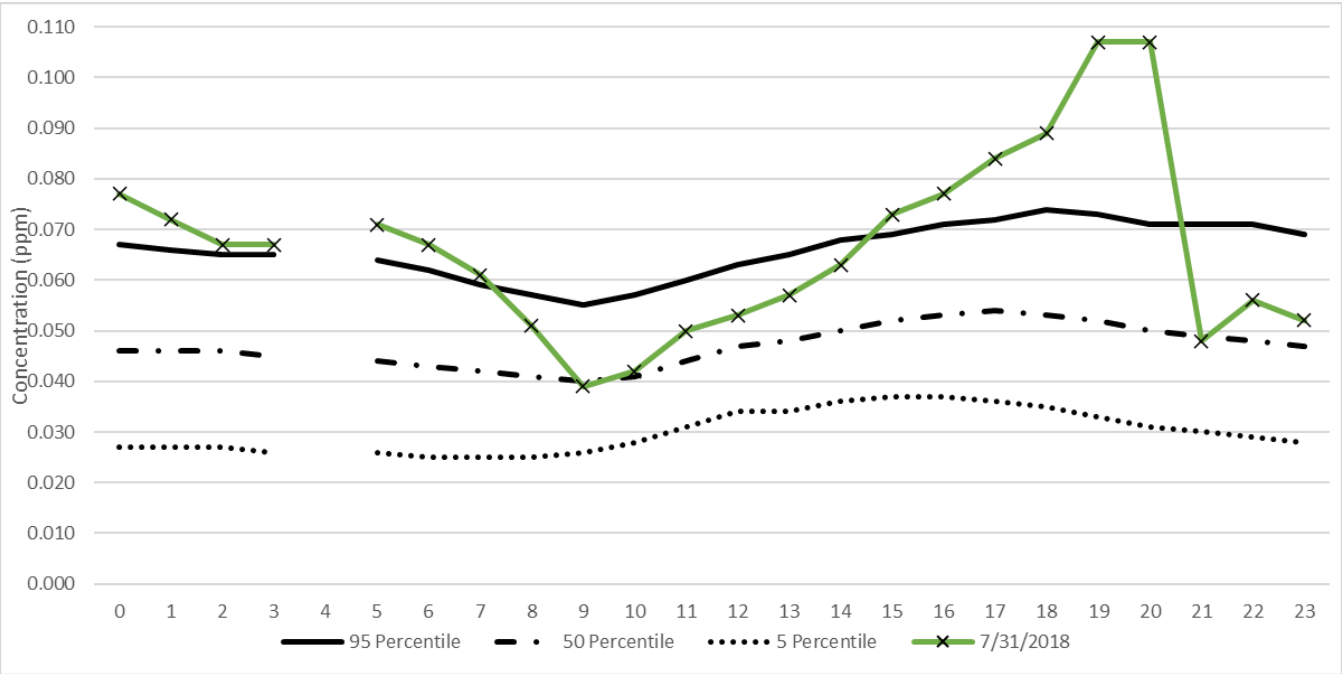


Figure 4-30: Percentiles for seasonal 1-hour ozone for 2013-2017 compared with 8/1/2018

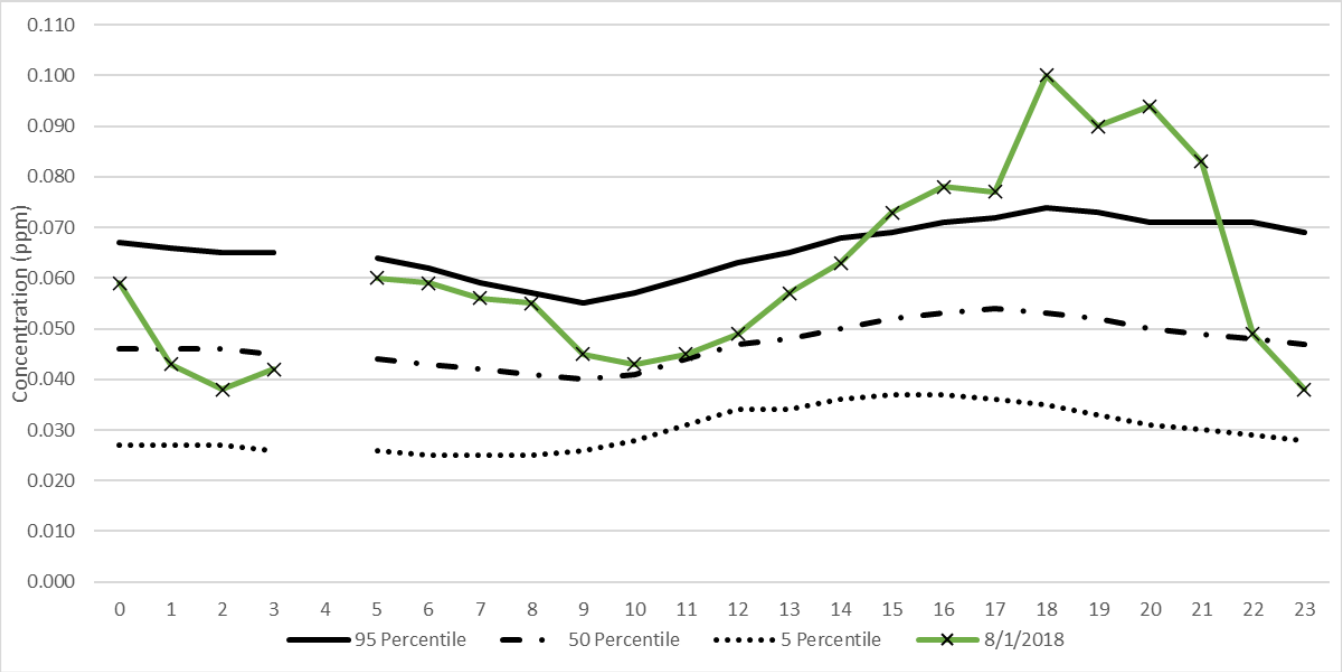


Figure 4-31: Percentiles for seasonal 1-hour ozone for 2013-2017 compared with 8/3/2018

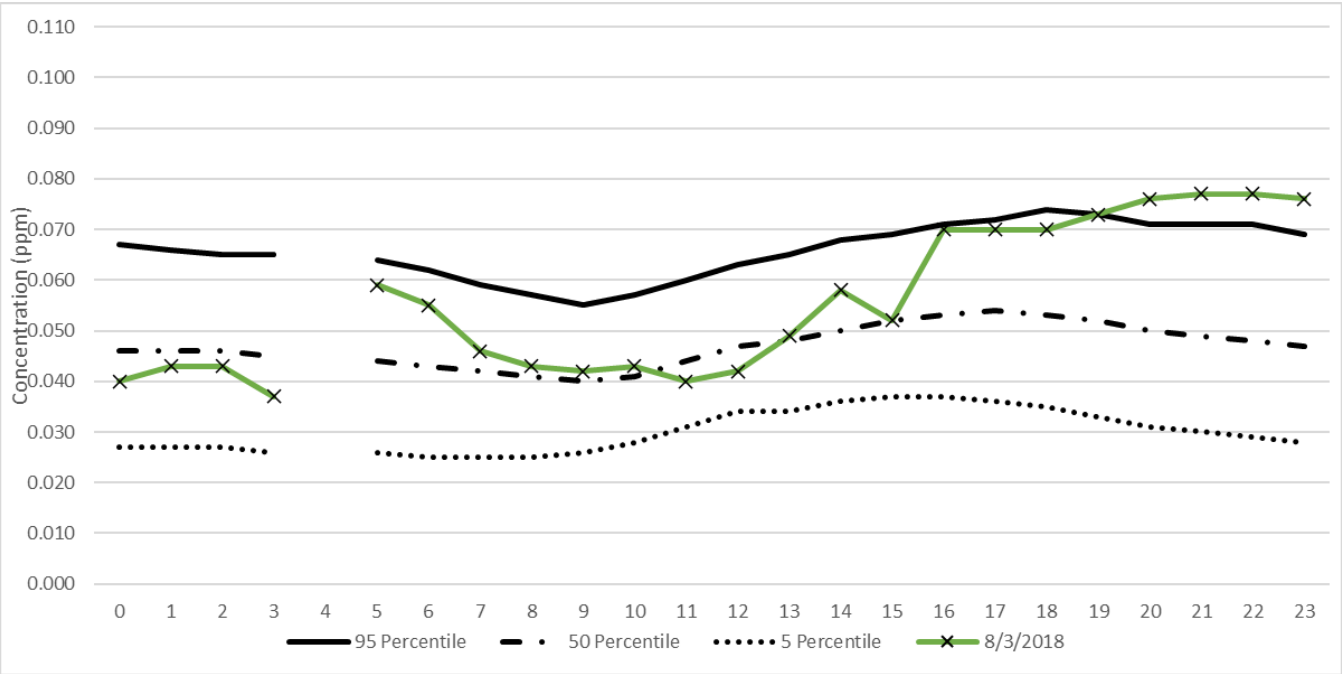


Figure 4-32: Percentiles for seasonal 1-hour ozone for 2013-2017 compared with 8/7/2018

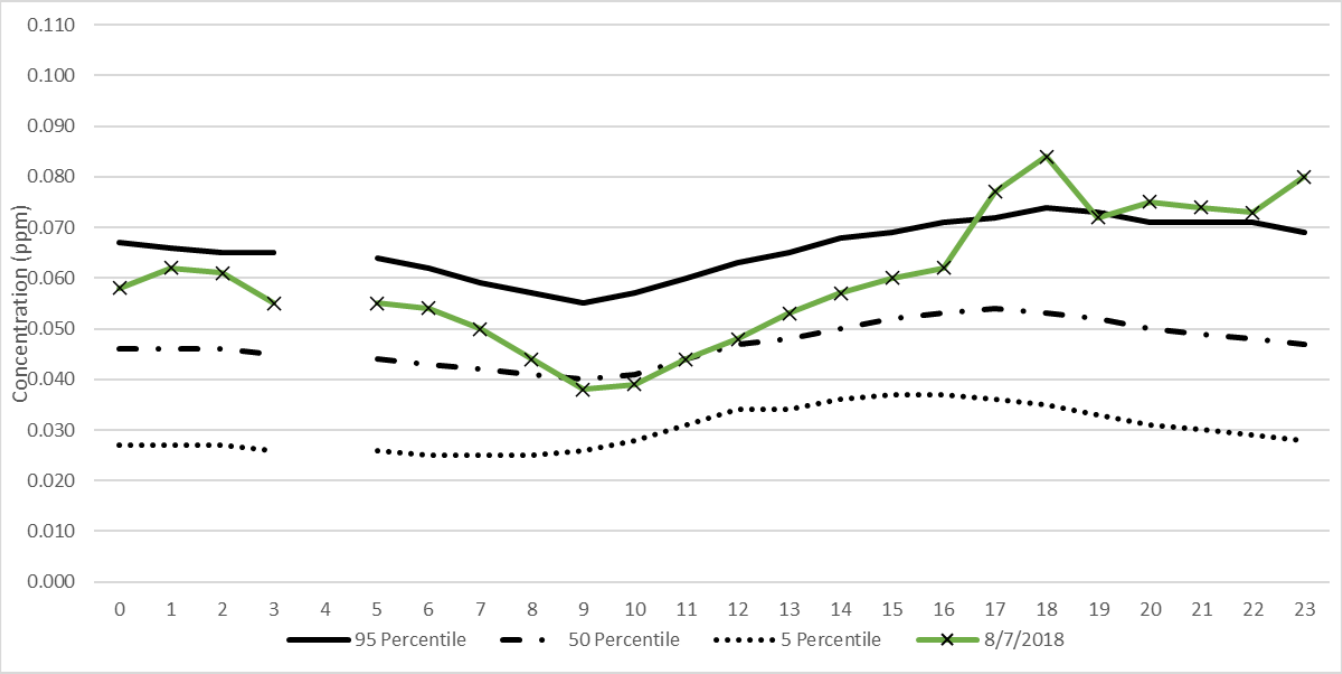


Figure 4-33: Percentiles for seasonal 1-hour ozone for 2013-2017 compared with 8/9/2018

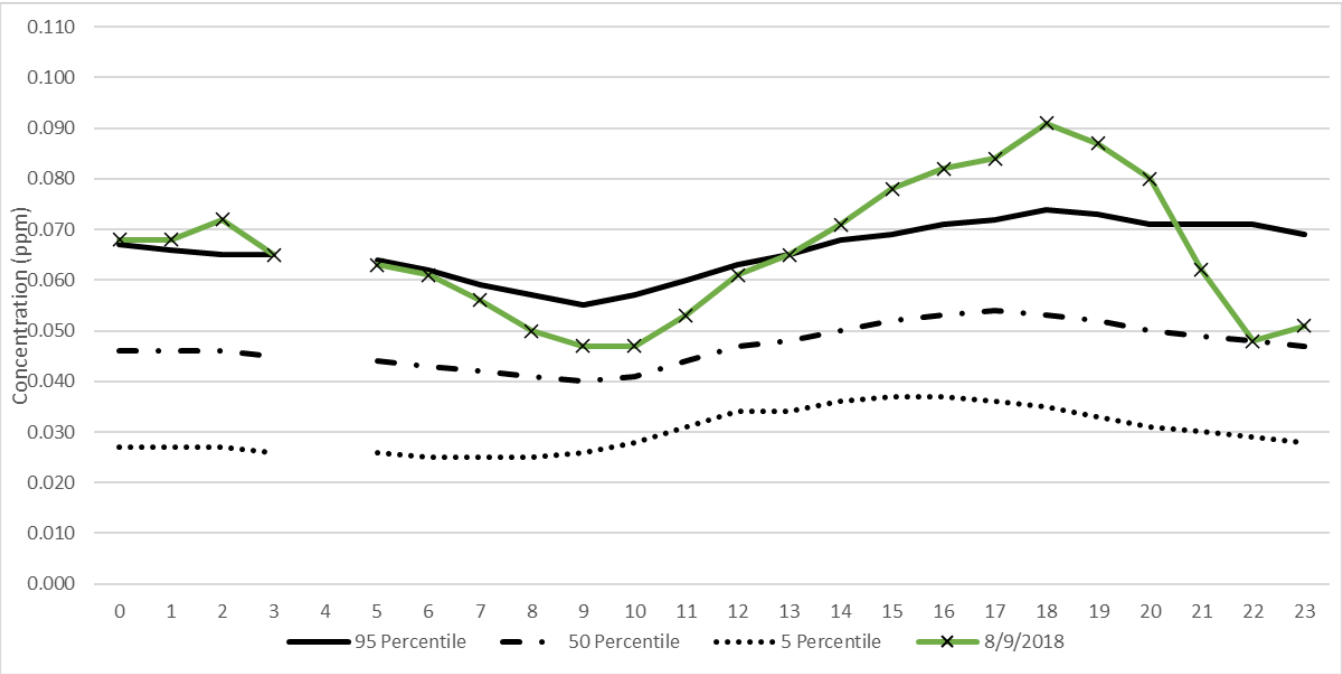
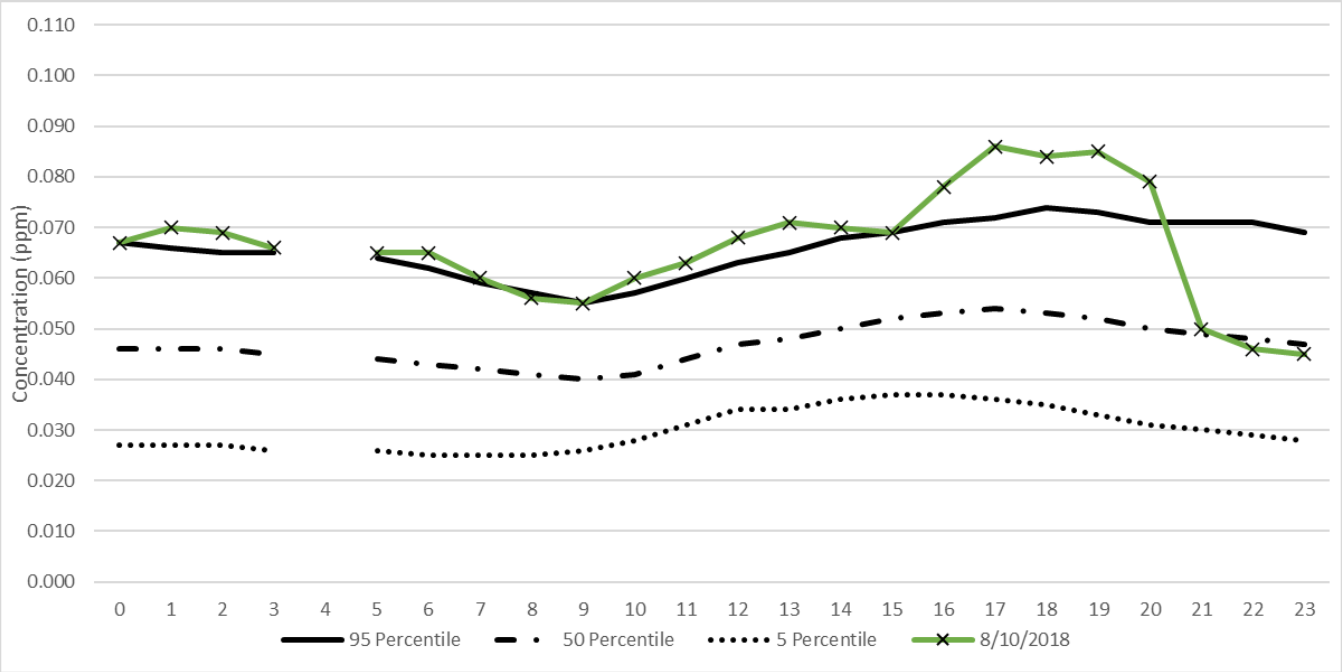


Figure 4-34: Percentiles for seasonal 1-hour ozone for 2013-2017 compared with 8/10/2018



4. Sonora

Figure 4-35: Percentiles for seasonal 1-hour ozone for 2013-2017 compared with 7/28/2018

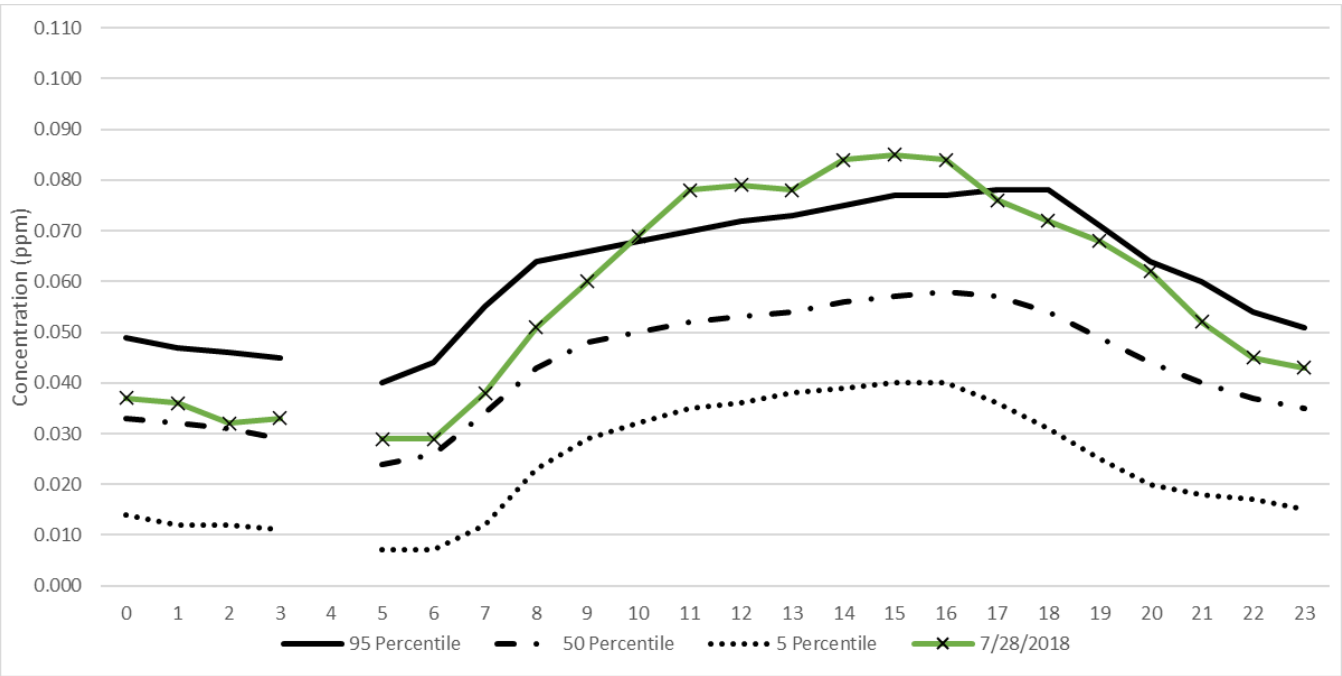


Figure 4-36: Percentiles for seasonal 1-hour ozone for 2013-2017 compared with 7/29/2018

Figure 4-37: Percentiles for seasonal 1-hour ozone for 2013-2017 compared with 7/30/2018

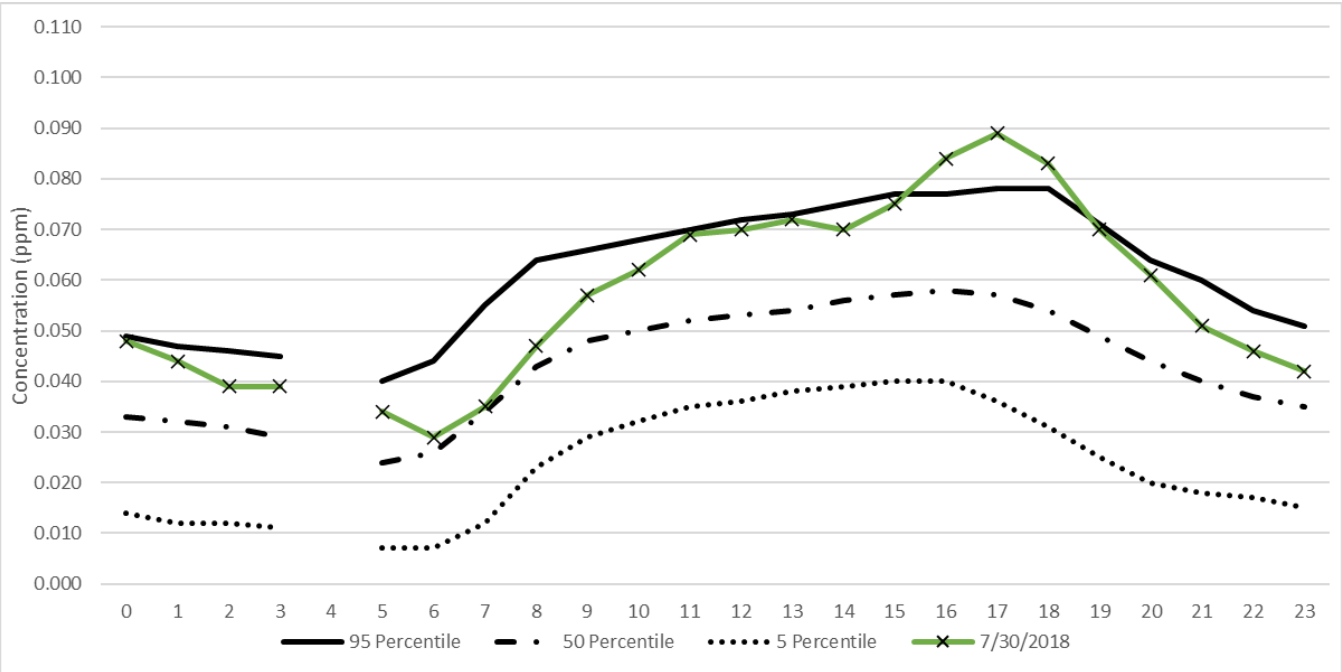


Figure 4-38: Percentiles for seasonal 1-hour ozone for 2013-2017 compared with 7/31/2018

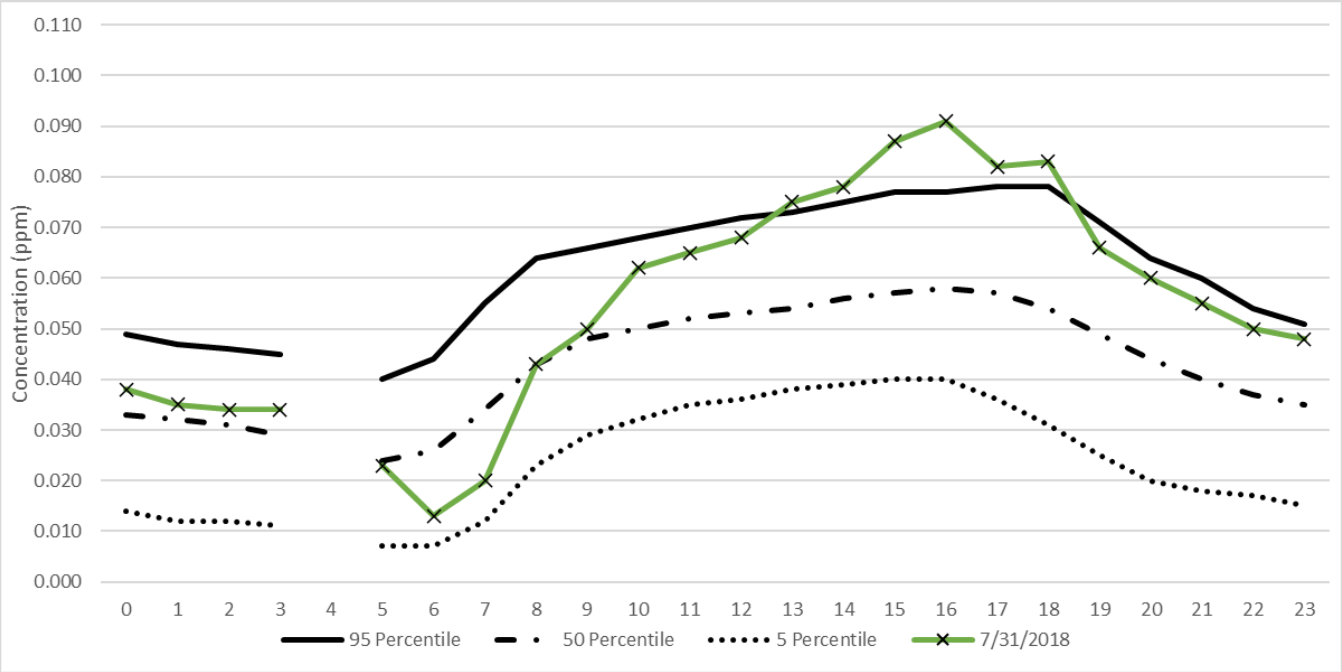


Figure 4-39: Percentiles for seasonal 1-hour ozone for 2013-2017 compared with 8/2/2018

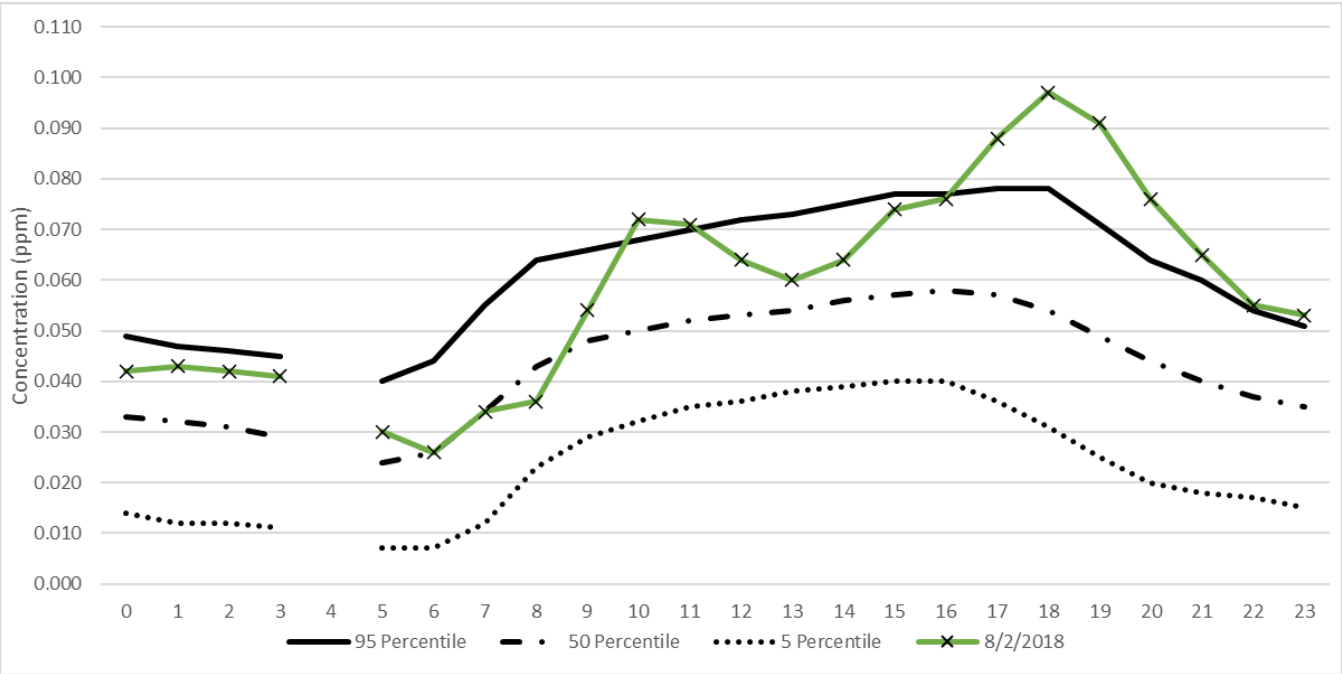


Figure 4-40: Percentiles for seasonal 1-hour ozone for 2013-2017 compared with 8/4/2018

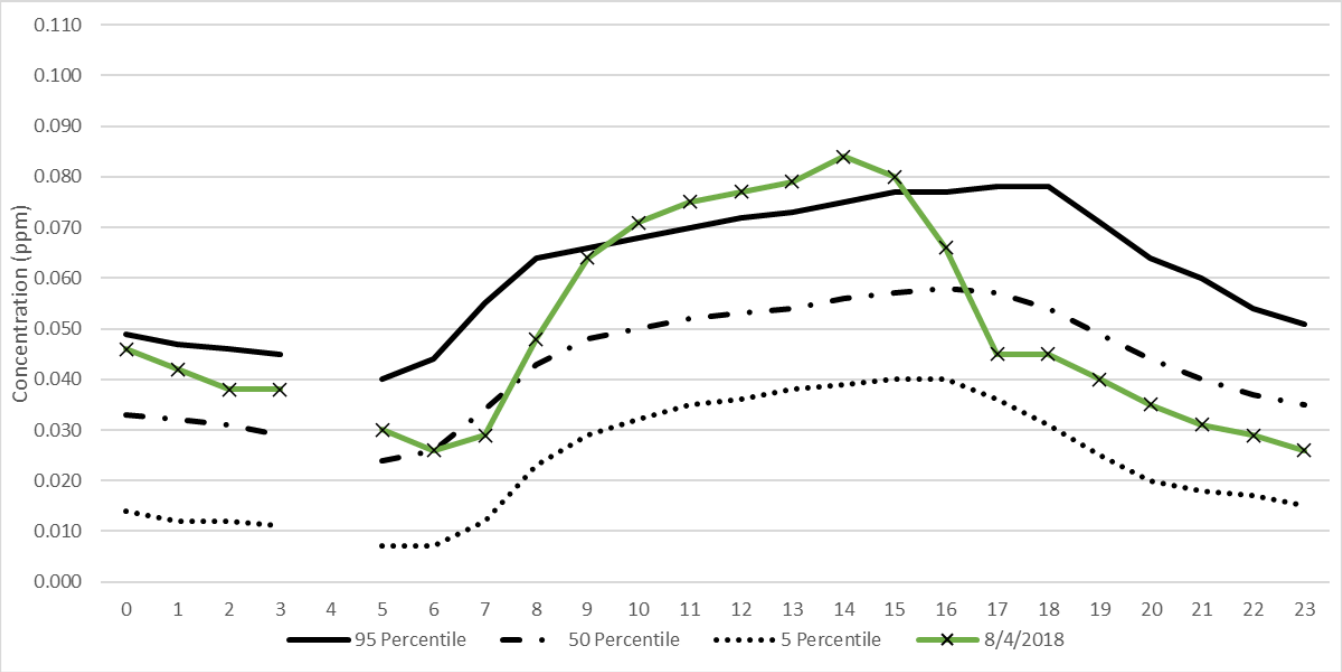


Figure 4-41: Percentiles for seasonal 1-hour ozone for 2013-2017 compared with 8/5/2018

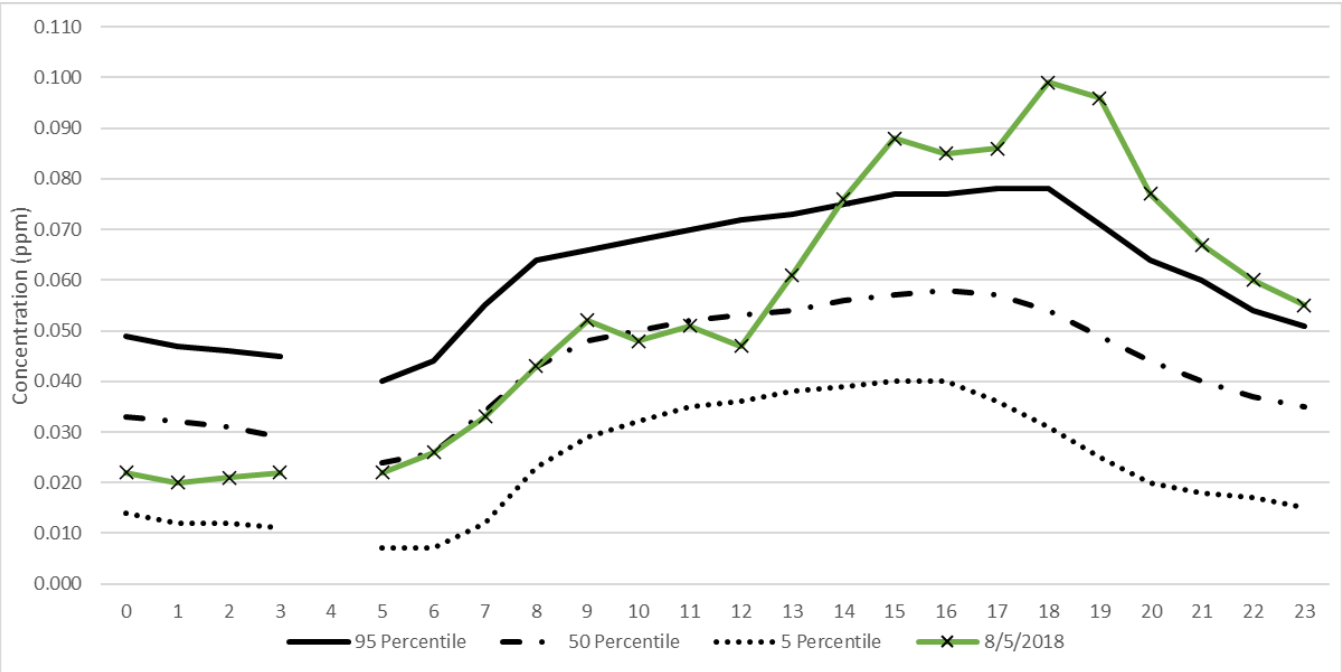


Figure 4-42: Percentiles for seasonal 1-hour ozone for 2013-2017 compared with 8/6/2018

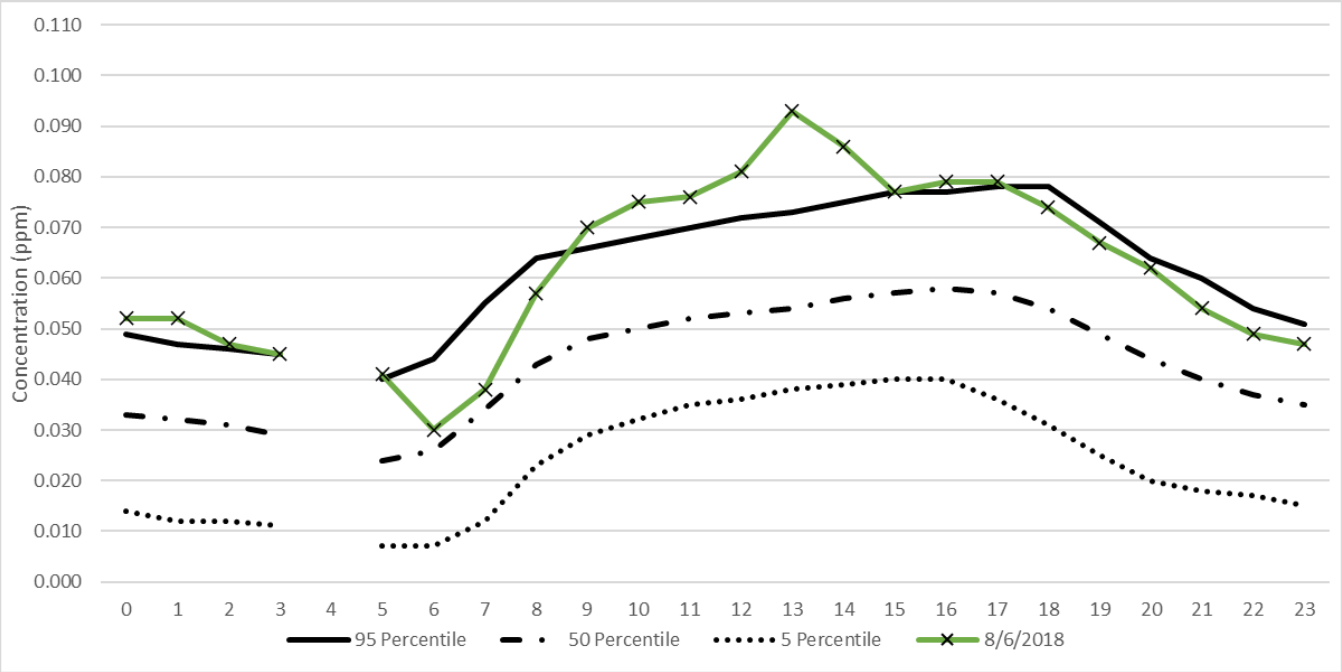


Figure 4-43: Percentiles for seasonal 1-hour ozone for 2013-2017 compared with 8/8/2018

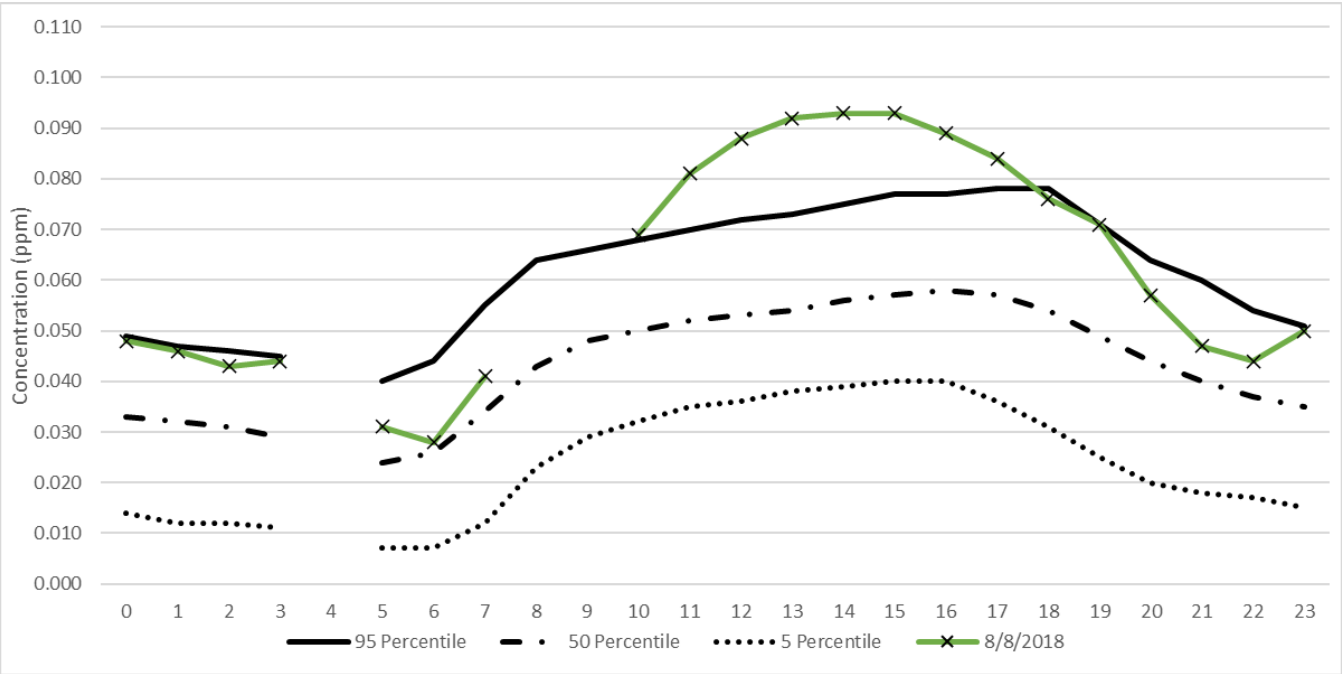


Figure 4-44: Percentiles for seasonal 1-hour ozone for 2013-2017 compared with 8/9/2018

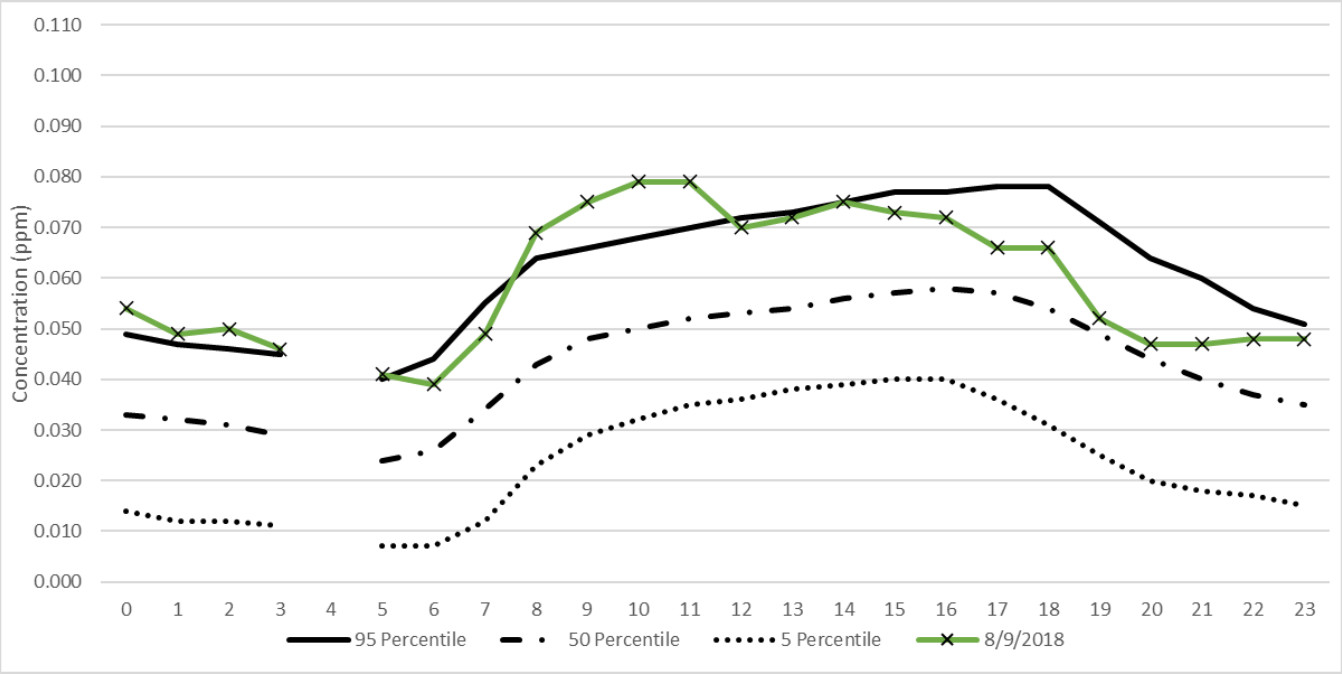
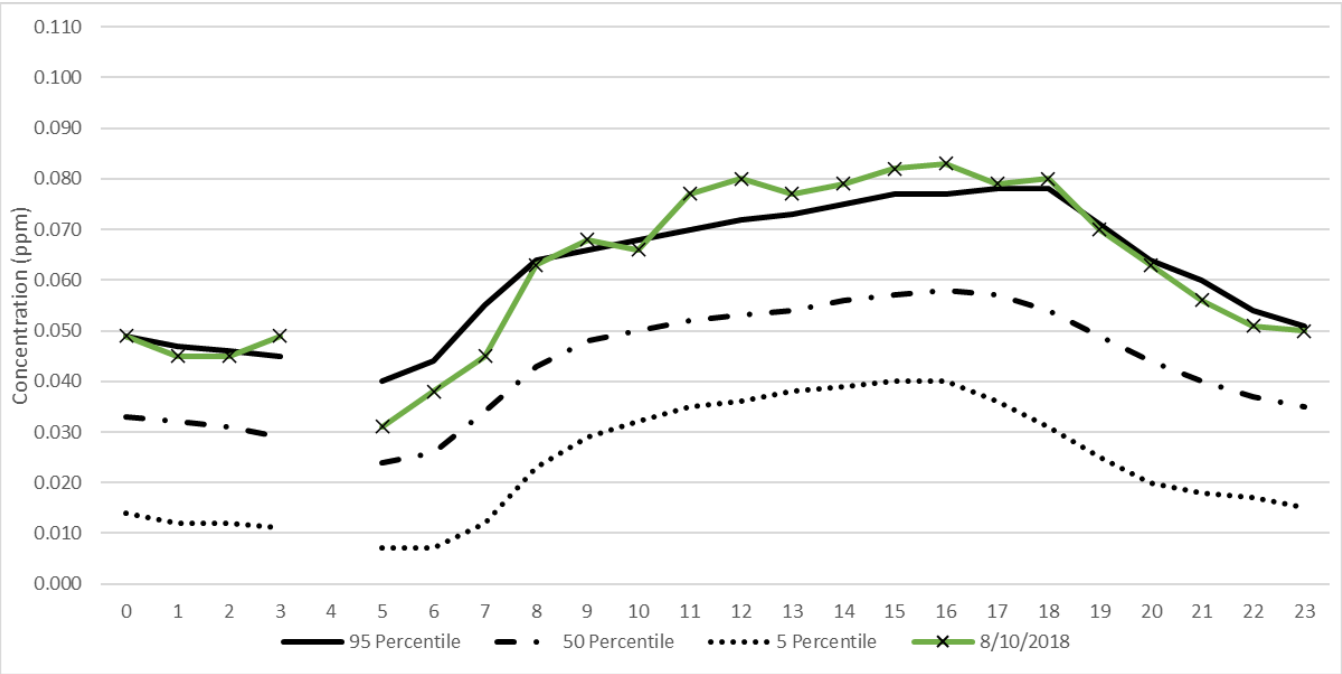


Figure 4-45: Percentiles for seasonal 1-hour ozone for 2013-2017 compared with 8/10/2018



5. Tuscan Buttes

There is no valid hourly ozone data due to a machine malfunction (AQS flagged 'AN') for the periods of July 25, 2018 0200 PST to July 27, 2018 0600 PST or July 28, 2018 1800 PST to July 31, 2018 0700 PST. Figures for exceedance days with partial data are included below but may not represent the days actual air quality well.

Figure 4-46: Percentiles for seasonal 1-hour ozone for 2013-2017 compared with 7/27/2018

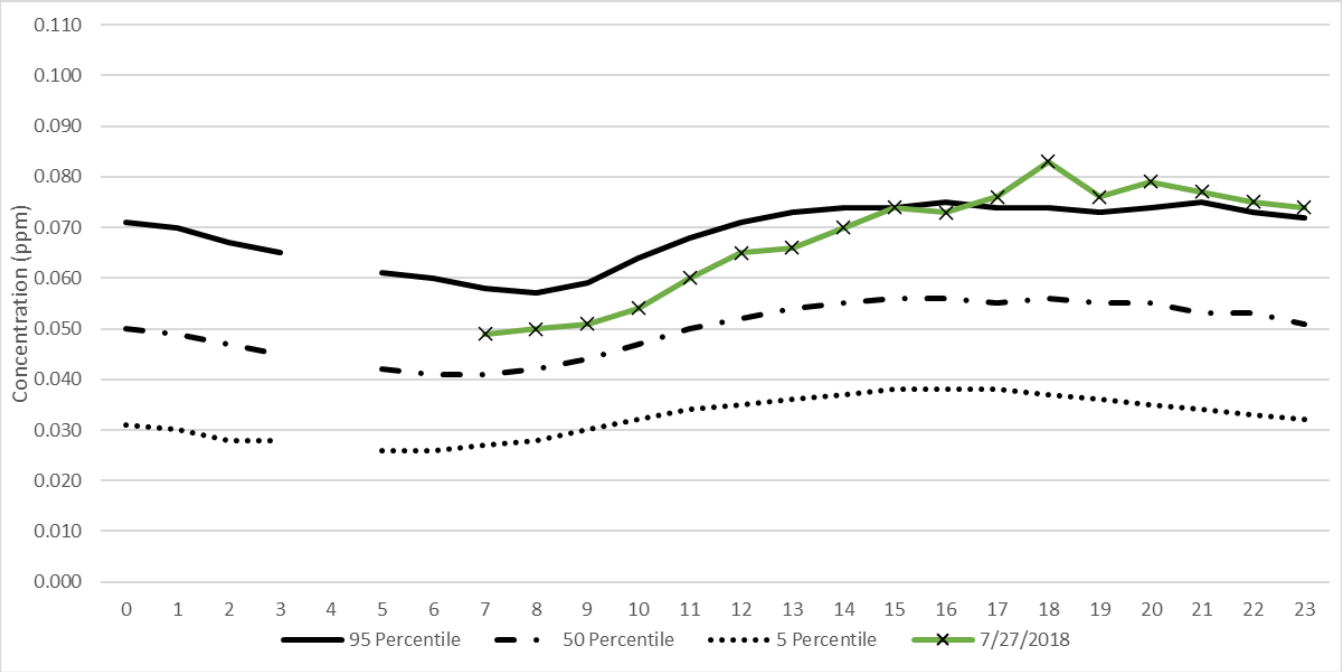


Figure 4-47: Percentiles for seasonal 1-hour ozone for 2013-2017 compared with 7/31/2018

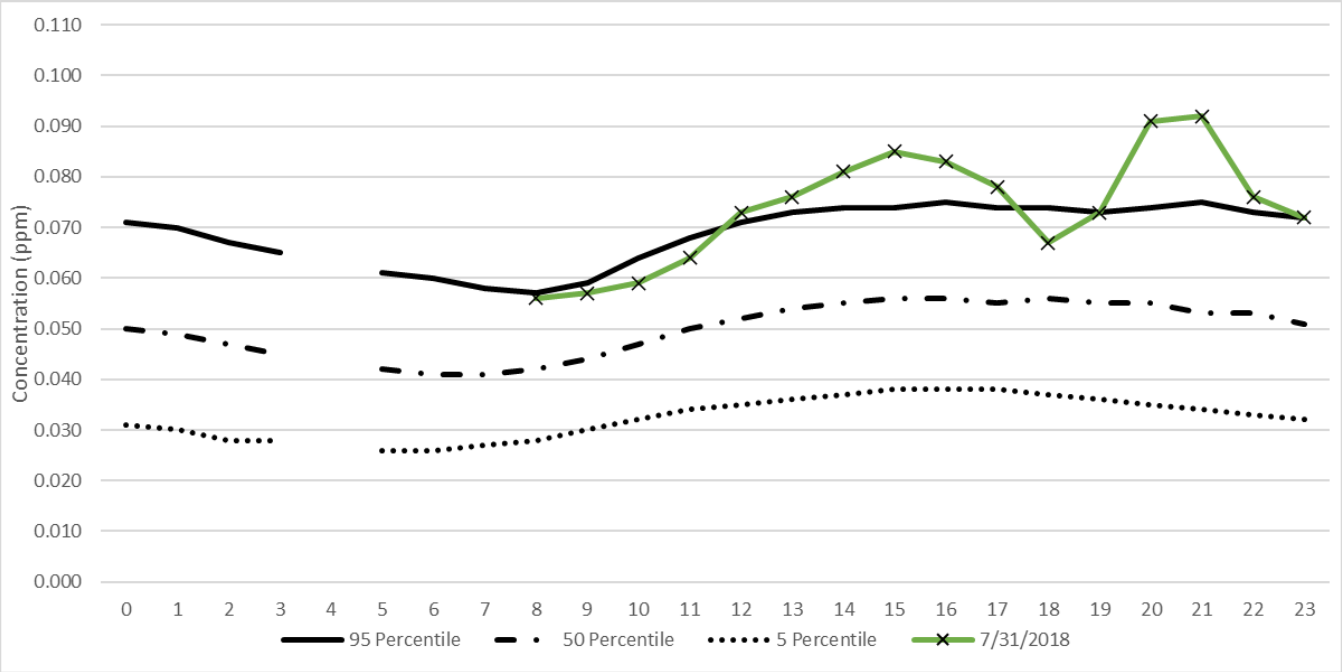


Figure 4-48: Percentiles for seasonal 1-hour ozone for 2013-2017 compared with 8/1/2018

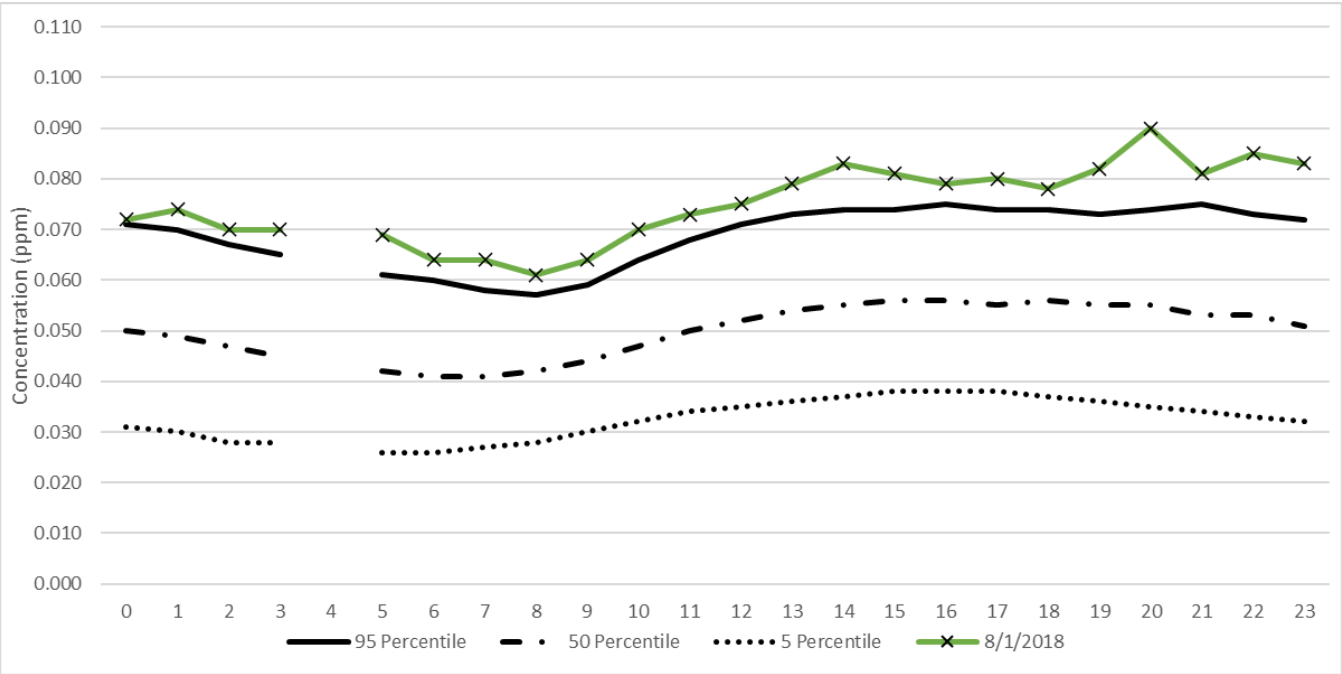


Figure 4-49: Percentiles for seasonal 1-hour ozone for 2013-2017 compared with 8/2/2018

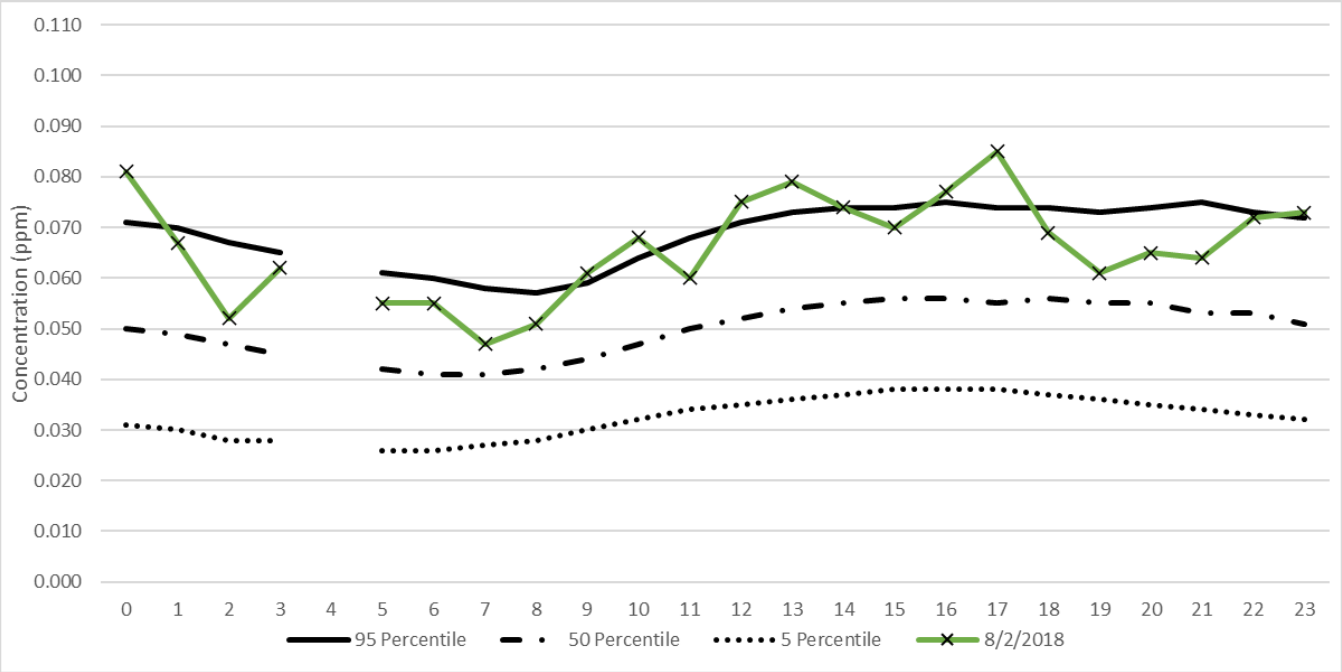


Figure 4-50: Percentiles for seasonal 1-hour ozone for 2013-2017 compared with 8/3/2018

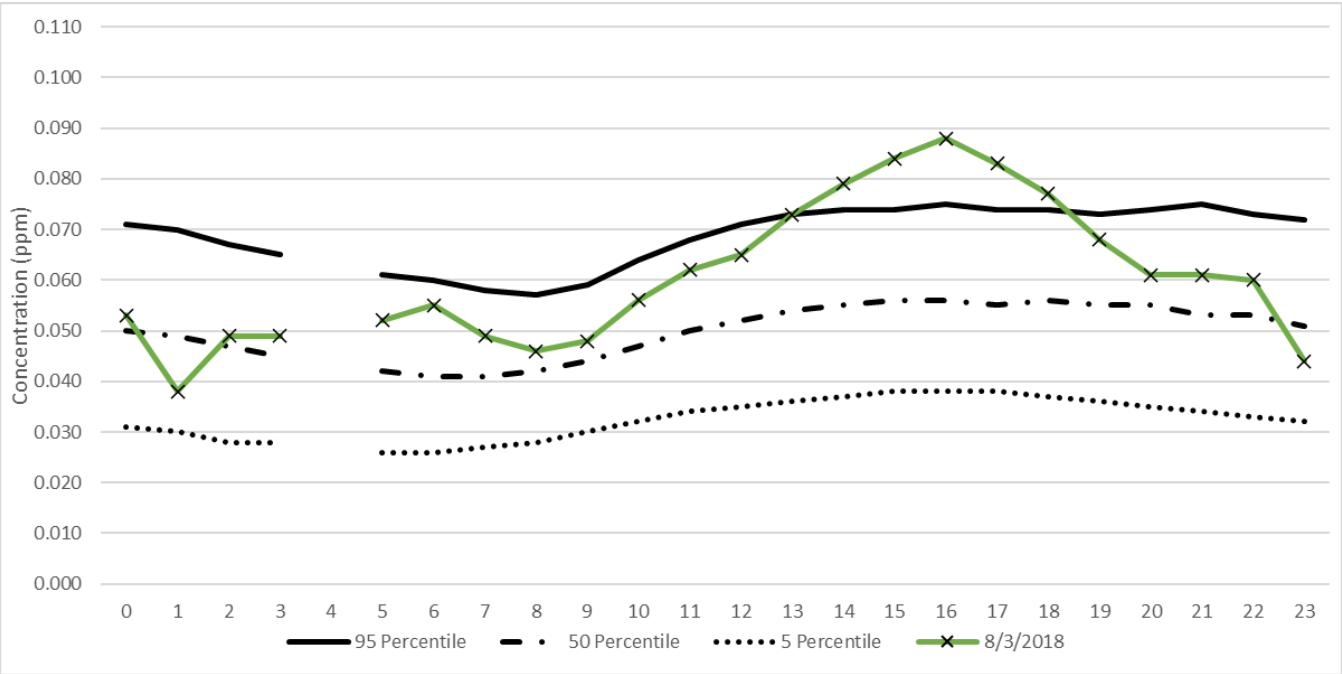


Figure 4-51: Percentiles for seasonal 1-hour ozone for 2013-2017 compared with 8/7/2018

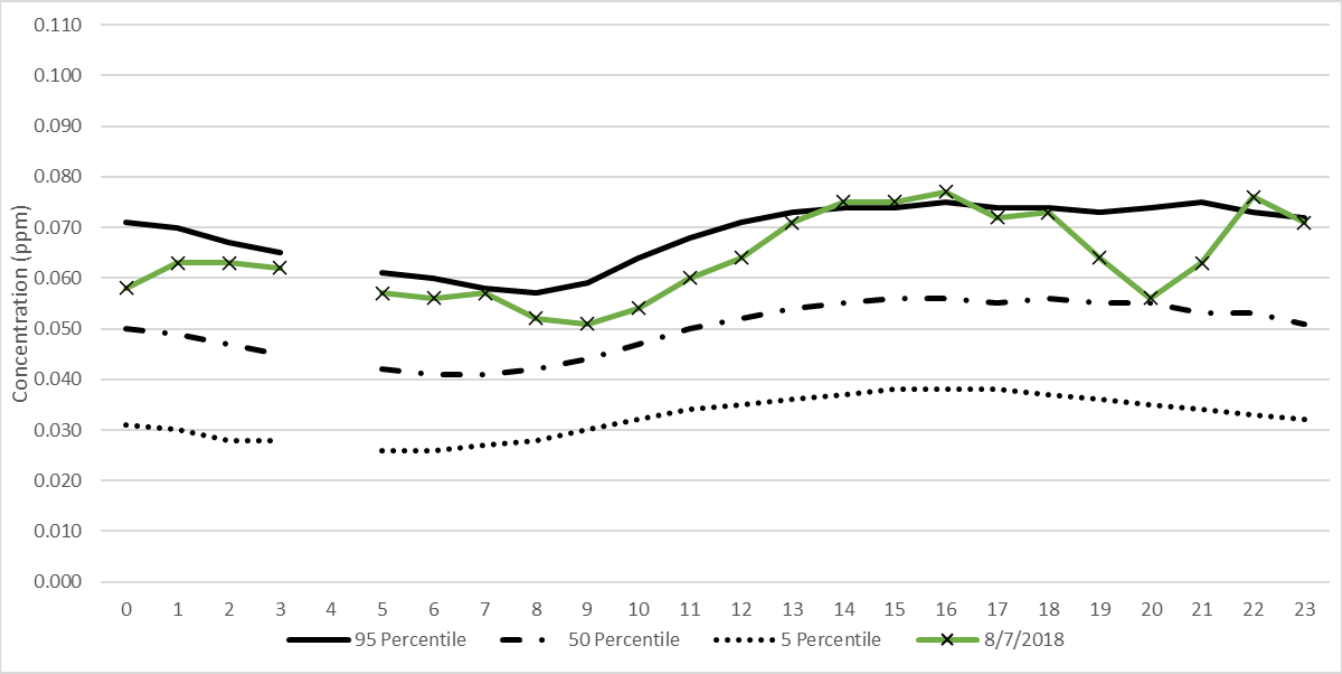


Figure 4-52: Percentiles for seasonal 1-hour ozone for 2013-2017 compared with 8/8/2018

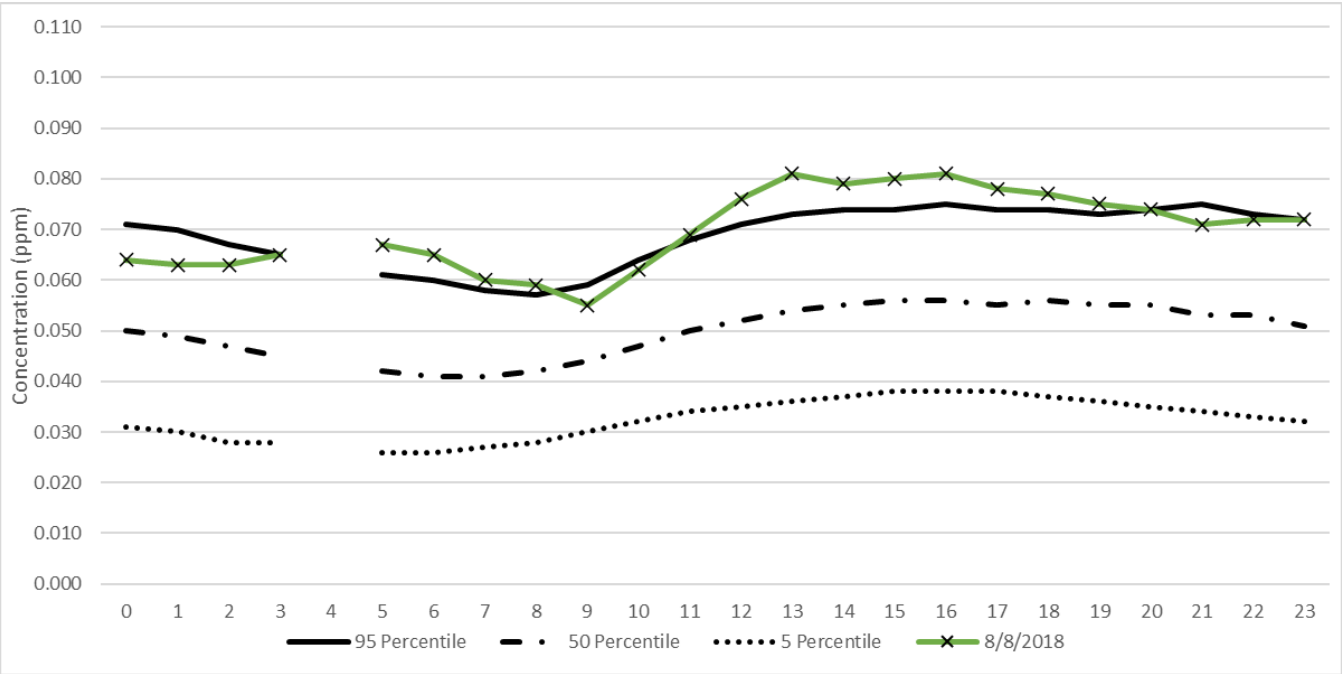


Figure 4-53: Percentiles for seasonal 1-hour ozone for 2013-2017 compared with 8/9/2018

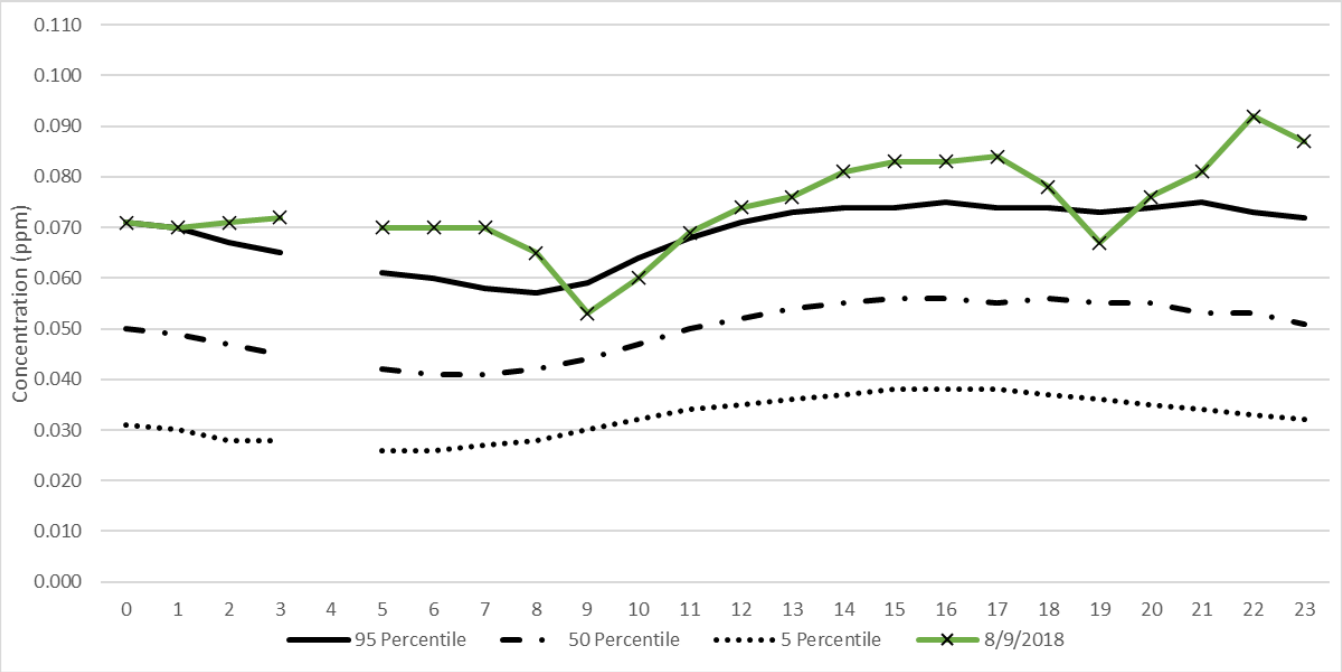
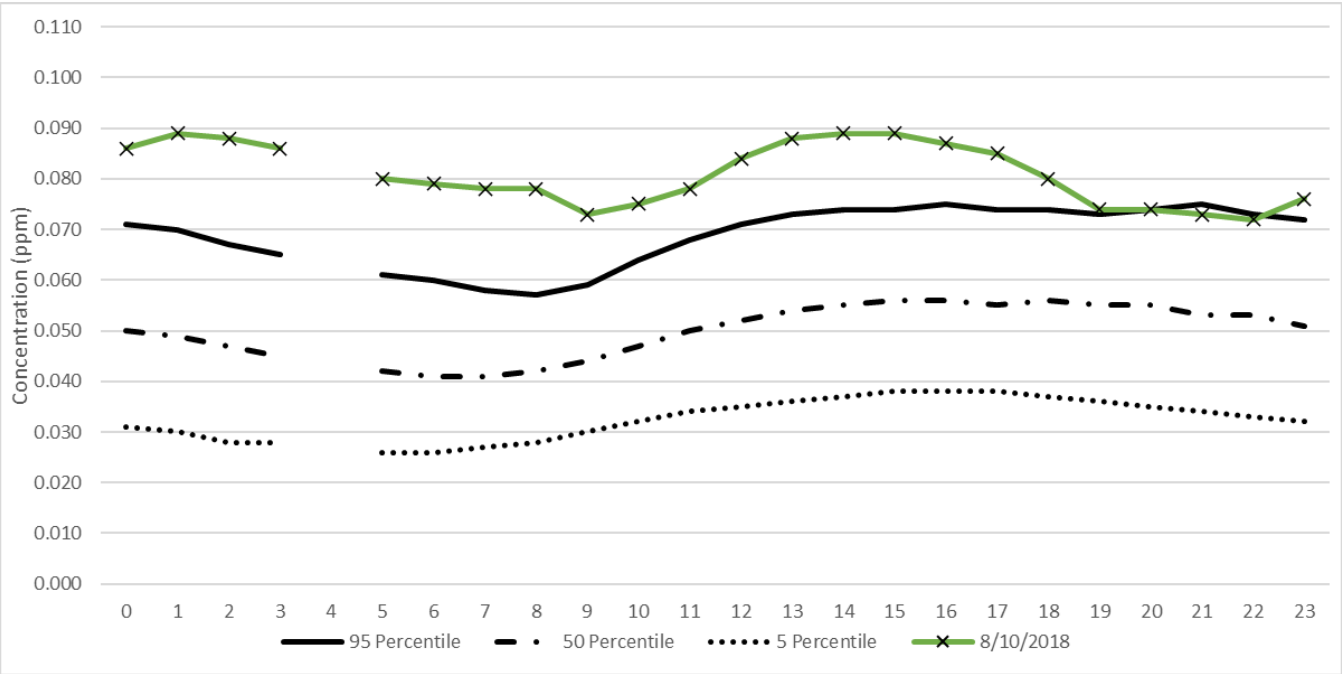


Figure 4-54: Percentiles for seasonal 1-hour ozone for 2013-2017 compared with 8/10/2018



6. Grass Valley

Unlike the other sites in this demonstration, the Grass Valley ozone monitor's daily quality check routine is able to complete fast enough that there are no missing data associated with the daily quality check routine. However, there are five missing hours of data due to equipment malfunctions, noted in AQS with the flag 'AN'. The missing hours are:

July 27, 2018 @ 0700 PST

July 30, 2018 @ 0800 to 0900 PST

August 3, 2018 @ 0700 PST

August 10, 2018 @ 1000 PST

Figure 4-55: Percentiles for seasonal 1-hour ozone for 2013-2017 compared with 7/26/2018

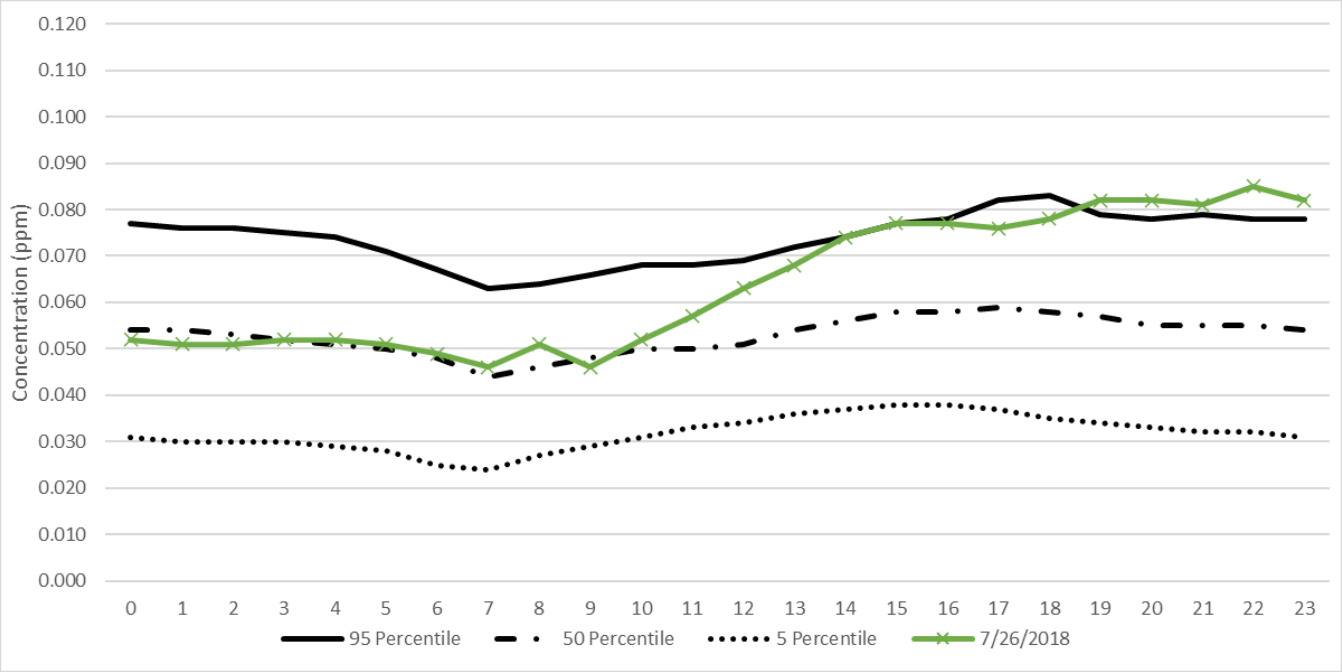


Figure 4-56: Percentiles for seasonal 1-hour ozone for 2013-2017 compared with 7/27/2018

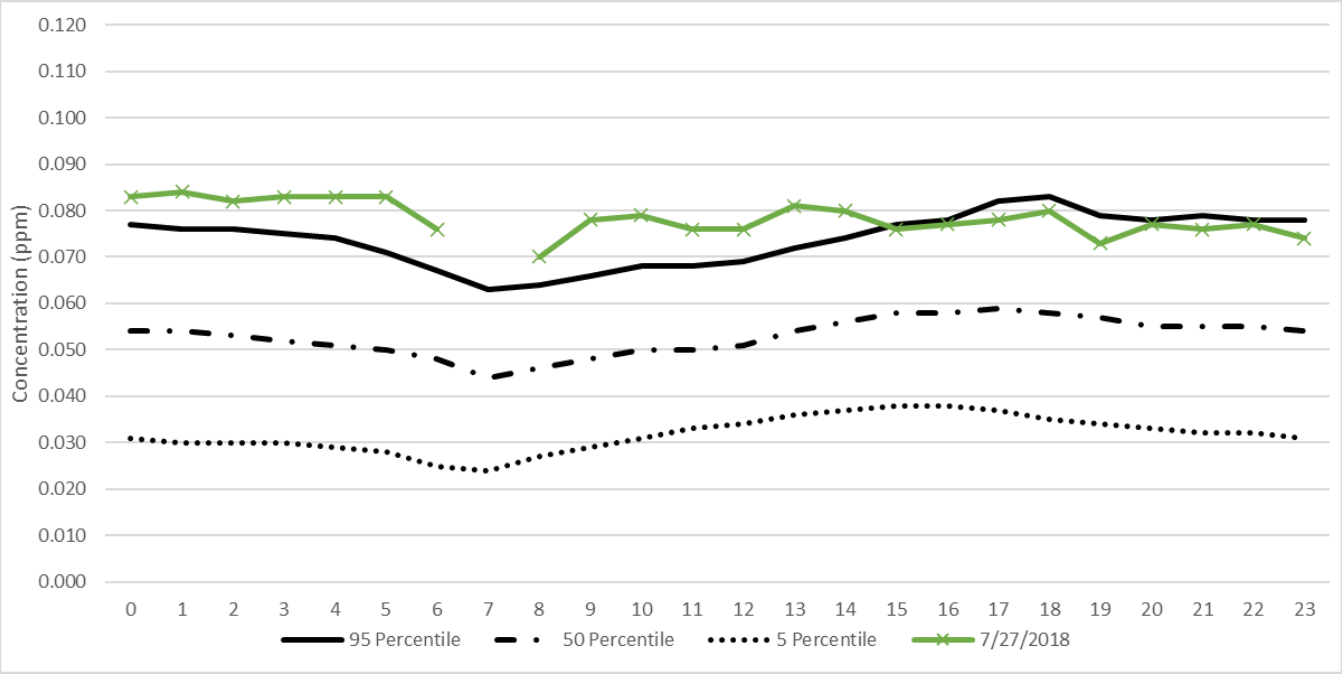


Figure 4-57: Percentiles for seasonal 1-hour ozone for 2013-2017 compared with 7/28/2018

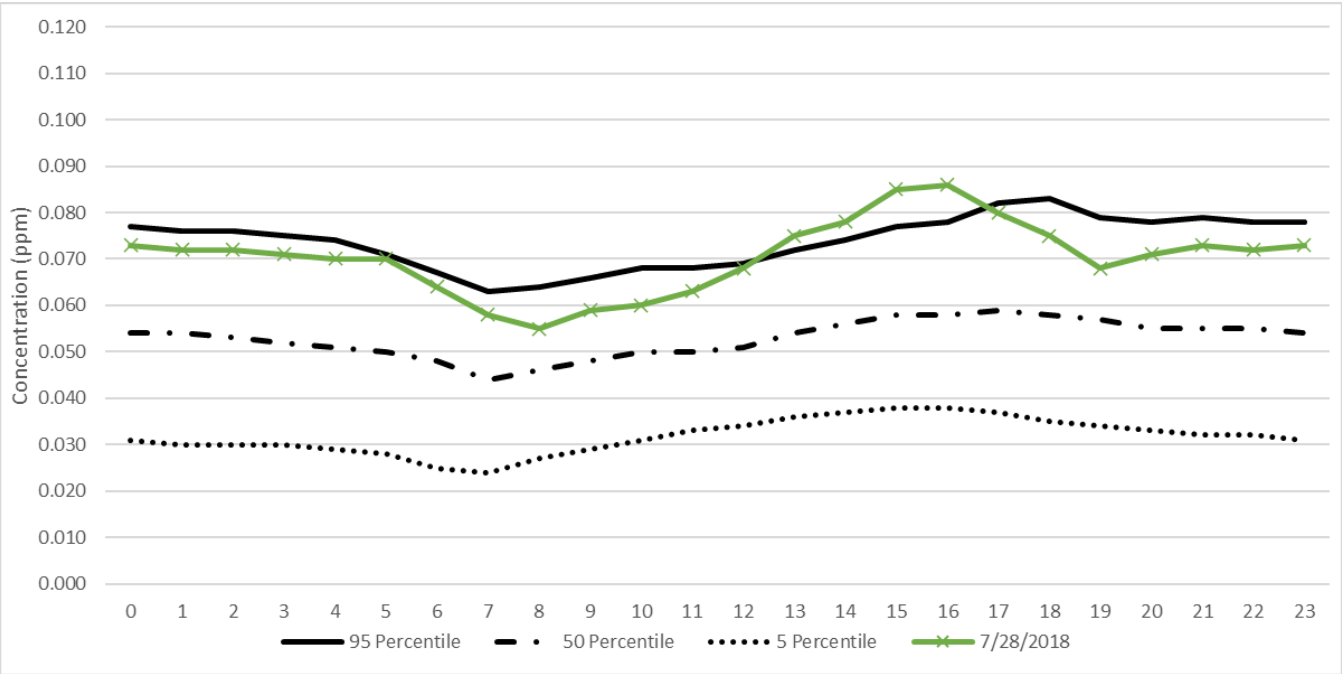


Figure 4-58: Percentiles for seasonal 1-hour ozone for 2013-2017 compared with 7/29/2018

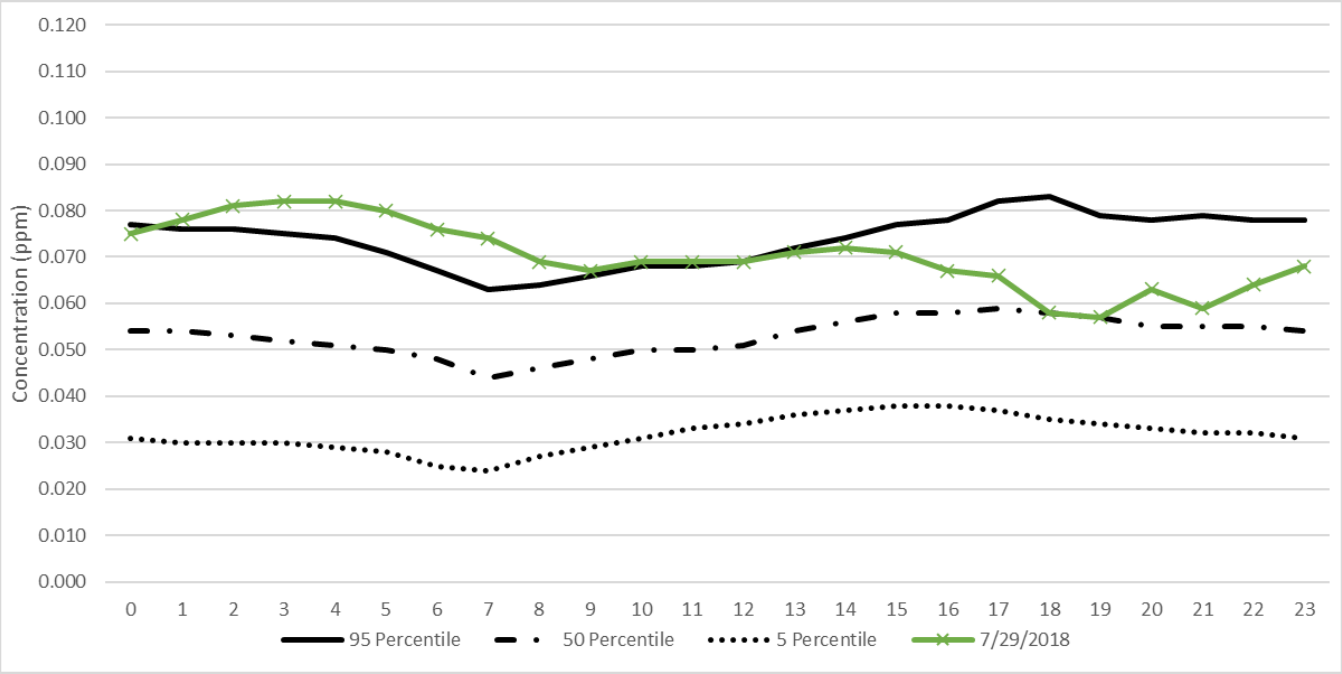


Figure 4-59: Percentiles for seasonal 1-hour ozone for 2013-2017 compared with 7/30/2018

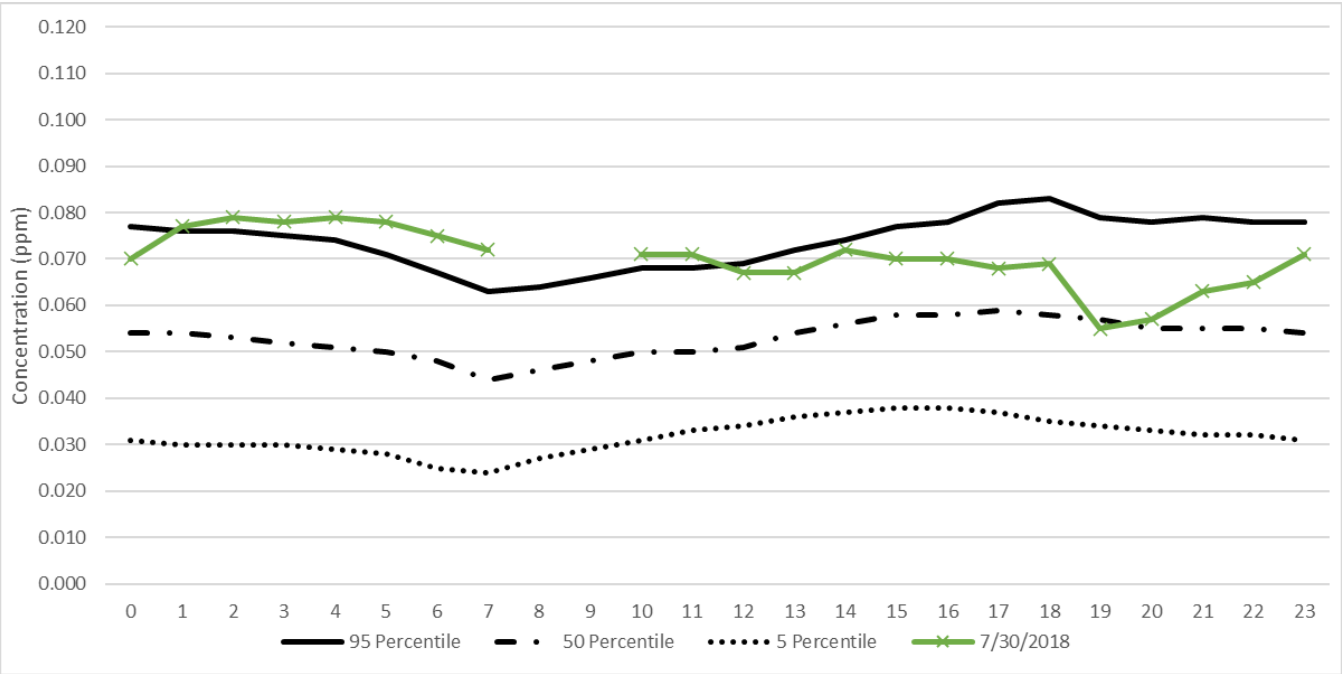


Figure 4-60: Percentiles for seasonal 1-hour ozone for 2013-2017 compared with 7/31/2018

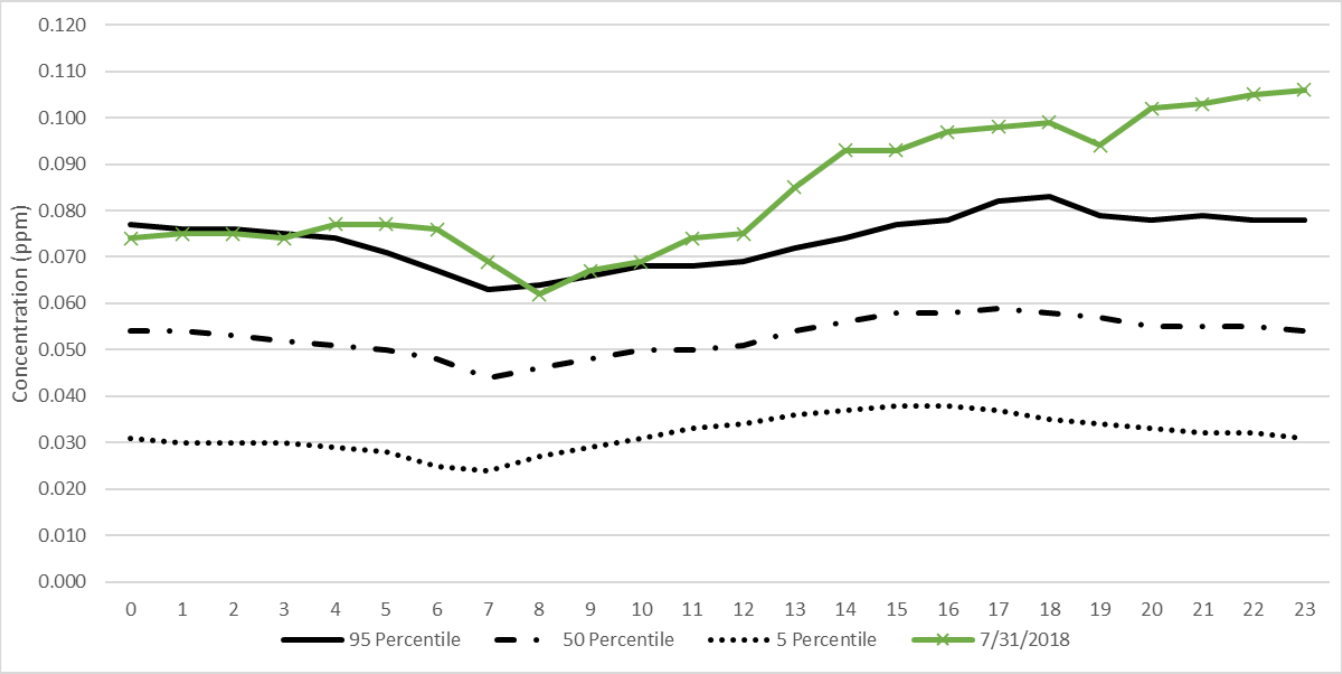


Figure 4-61: Percentiles for seasonal 1-hour ozone for 2013-2017 compared with 8/1/2018

Figure 4-62: Percentiles for seasonal 1-hour ozone for 2013-2017 compared with 8/2/2018

Figure 4-63: Percentiles for seasonal 1-hour ozone for 2013-2017 compared with 8/7/2018

Figure 4-64: Percentiles for seasonal 1-hour ozone for 2013-2017 compared with 8/8/2018

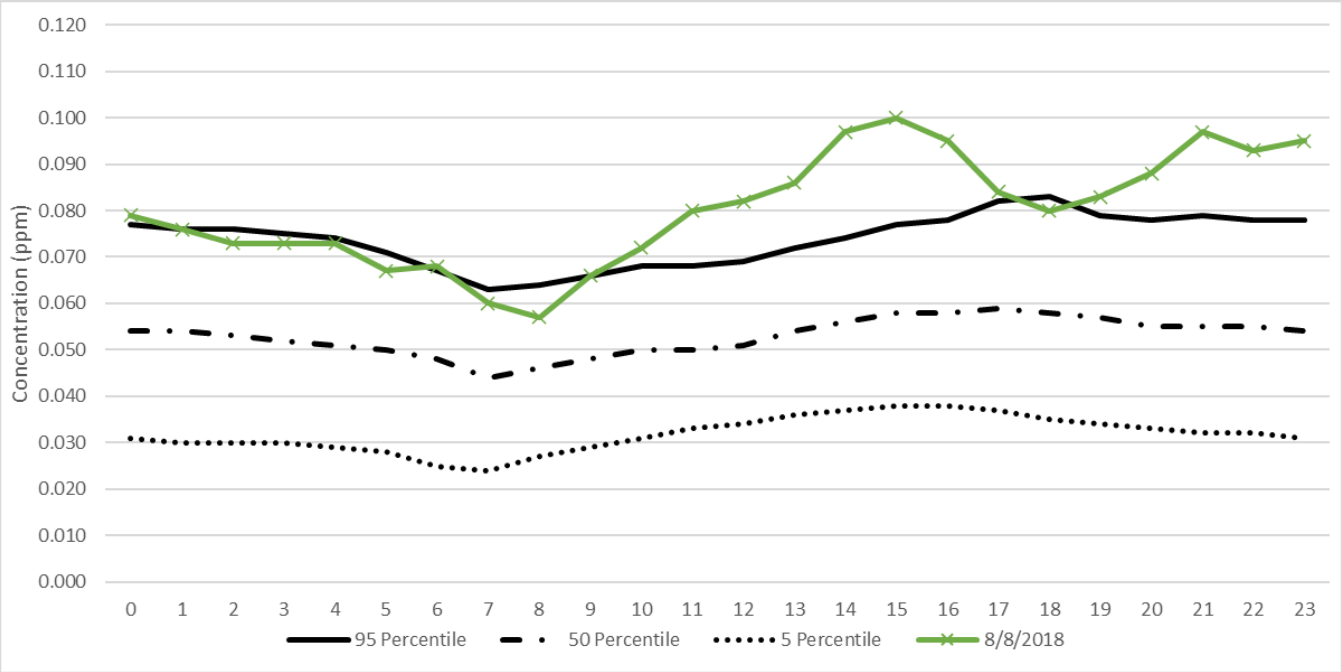


Figure 4-65: Percentiles for seasonal 1-hour ozone for 2013-2017 compared with 8/9/2018

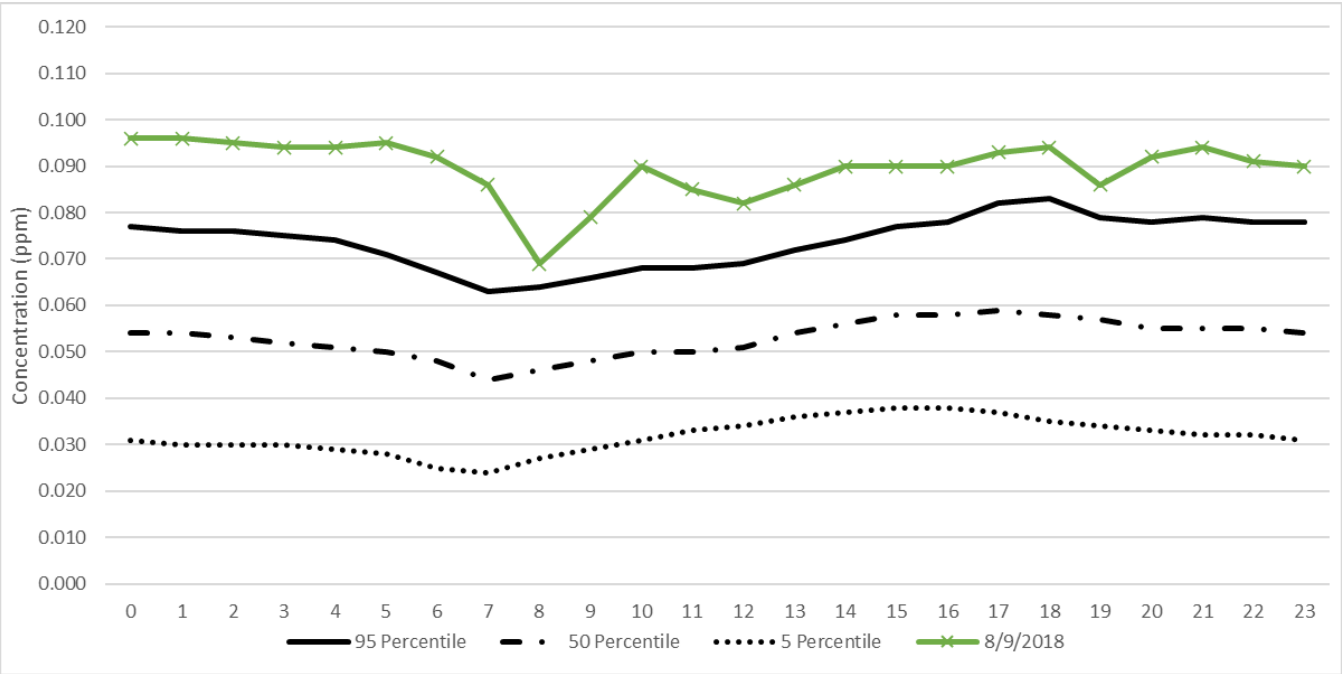
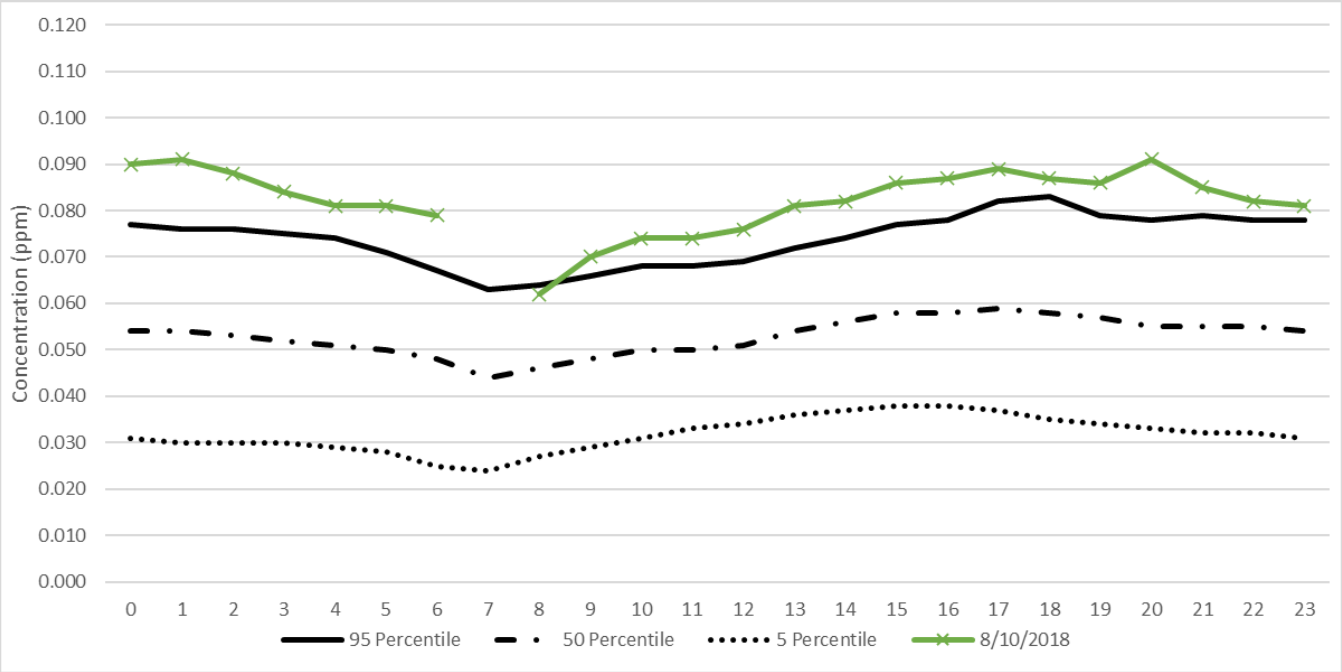


Figure 4-66: Percentiles for seasonal 1-hour ozone for 2013-2017 compared with 8/10/2018



B. $PM_{2.5}$

Evidence of ground-level impacts of smoke on the monitor can also be indicated through analysis of particulate matter (PM), as well as other speciated components.

The following figures show elevated $PM_{2.5}$ concentrations at multiple sites across northern and central California during the time of the exceptional event, which was a direct result of smoke and emissions from the wildfires in northern California and southwestern Oregon. This supports that the wildfire smoke and emissions were widespread across the region and directly impacted monitors at the surface during the period.

Figure 4-67: Daily $PM_{2.5}$ at selected sites in the Mountain Counties Air Basin

Figure 4-68: Daily $PM_{2.5}$ at selected sites in the Sacramento Valley Air Basin

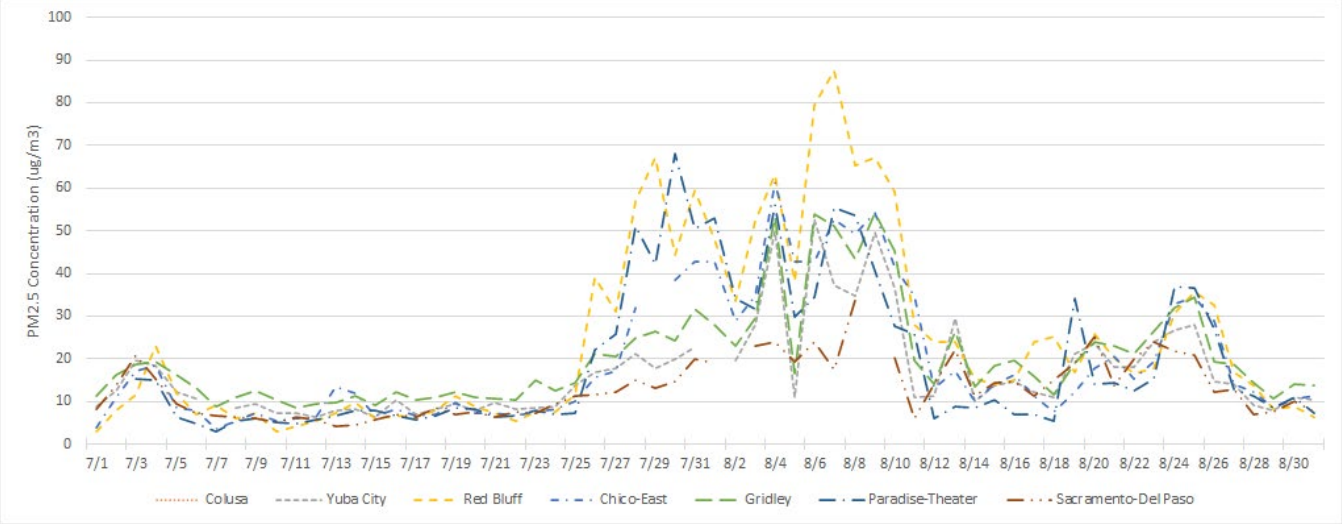
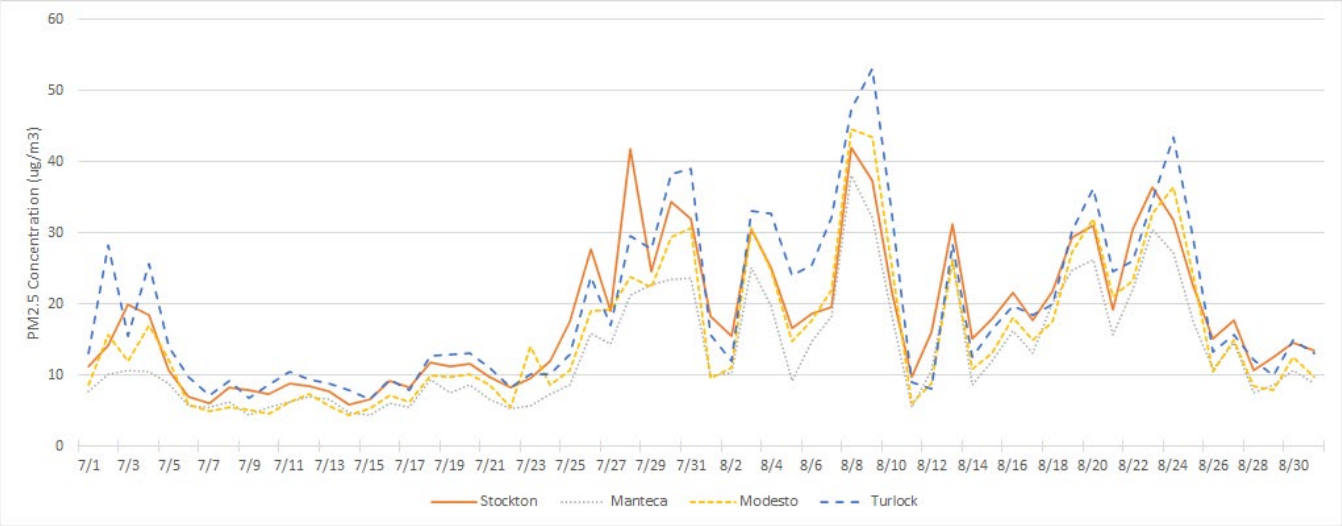


Figure 4-69: Daily $PM_{2.5}$ at selected sites in the northern San Joaquin Valley Air Basin



C. Biomass Burning Indicators

Levoglucosan , Mannosan, and Galactosan, organic compounds produced during biomass combustion, are commonly used as woodsmoke tracers. Sites with monitors that measure these compounds were placed at Portola in Plumas County in the Mountain Counties Air Basin and in Chico and Sacramento-T Street in the Sacramento Valley Air Basin, to aid in the analysis of woodstove use. Although these sites do not consistently monitor during the summer months, they did collect data when first installed in 2007 and were active in the summer of 2018. Figure 4-70 shows a clear indication of smoke in monitored areas from late July through mid August. Figure 4-71 shows a comparison between data collected during a clean period (in this case, July 1 through August 31, 2007) and the impacted period from July 1 to August 31, 2018.

Figure 4-70: Levoglucosan, Mannosan, and Galactosan levels from July 1 to August 31, 2018

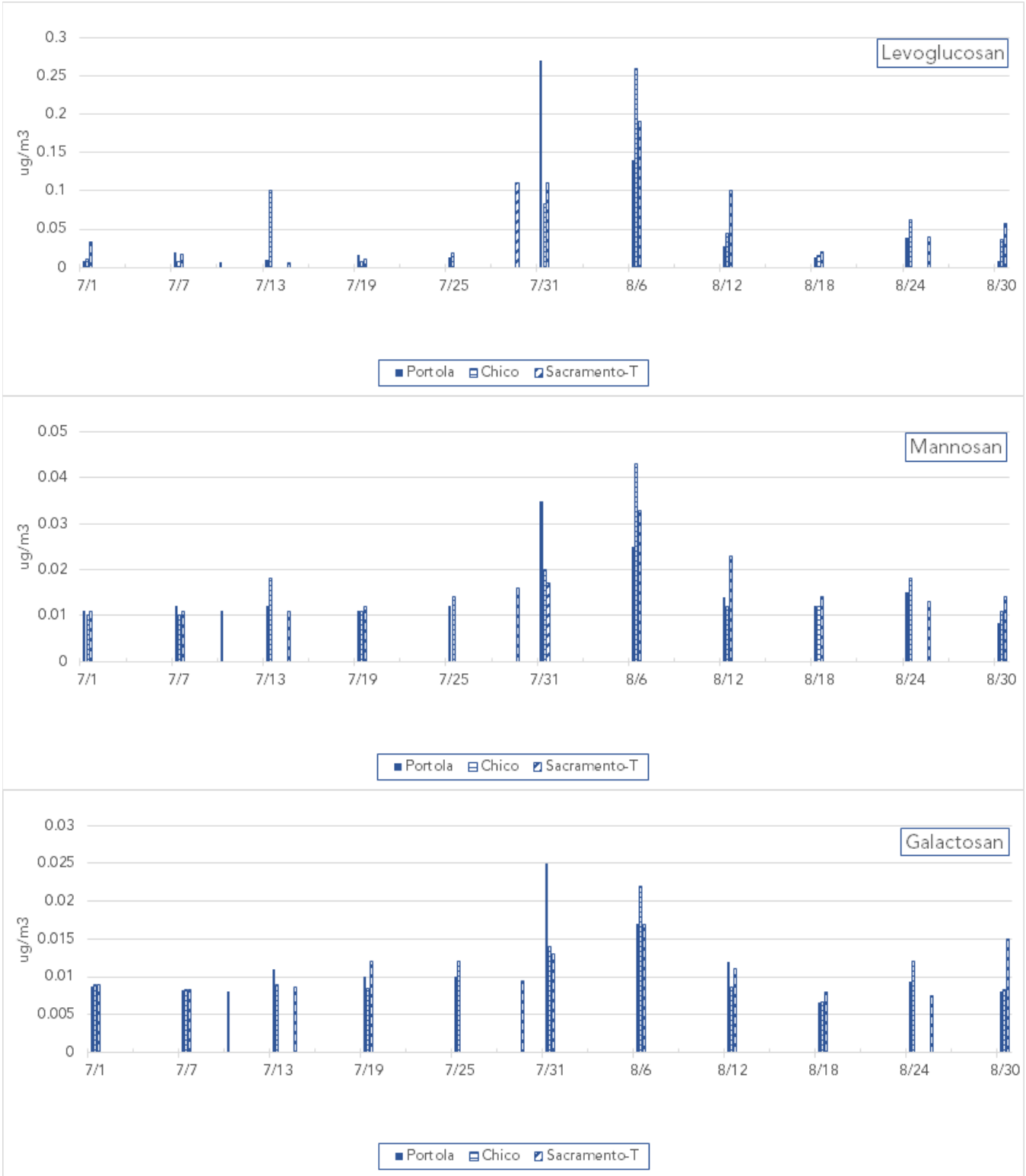
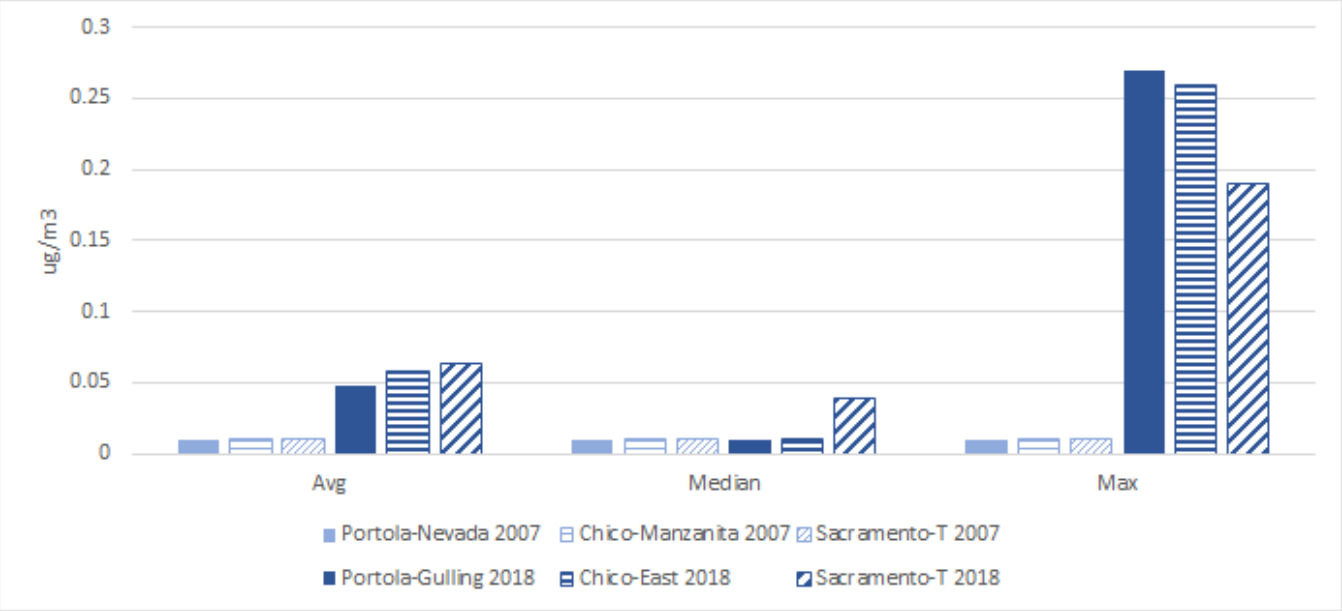


Figure 4-71: Average, Median, and Maximum Levoglucosan concentrations from July 1 to August 31 for two summers, 2007 and 2018, at selected sites



D. Black Carbon

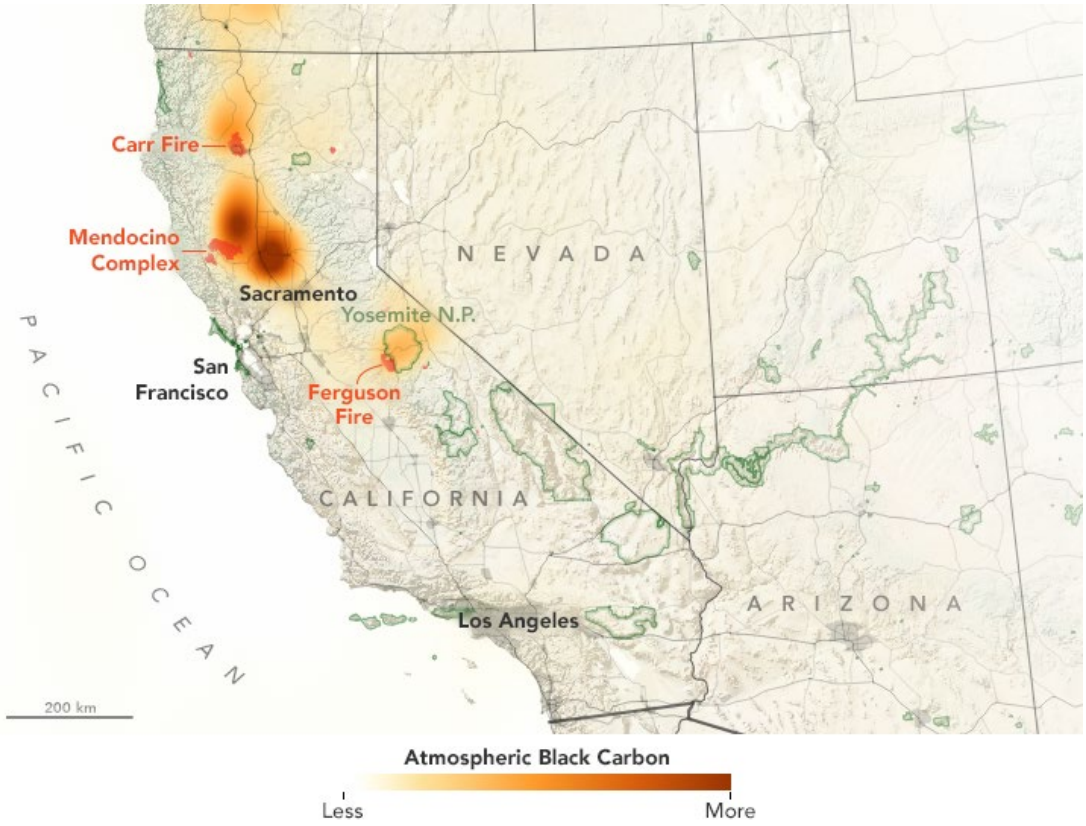
Fires that burn at relatively low temperatures and smolder in moist fuels are the most likely to produce black carbon and other toxic pollutants because they tend to burn less completely than hotter fires burning through dry fuels.

The map below (Figure 4-72) shows the plumes of black carbon associated with the Carr, Mendocino, and Ferguson fires. The map shows black carbon data from the GEOS-5 forward processing model, which assimilates information from several sources[64]. Wildfires are a major source of black carbon emissions in California, far surpassing vehicle emissions, wood stoves, industrial emissions, agricultural fires, and other sources of the pollutant[65] .

[64] Smoke Plumes Tower Over California. (August 9, 2018) Retrieved August 11, 2021 from *https://earthobservatory.nasa.gov/images/92570/smoke-plumes-tower-over-california*

[65] Proposed Short-Lived Climate Pollutant Reduction Strategy (April 2016, page 49) *https://ww2.arb.ca.gov/sites/default/files/2021-01/ProposedStrategy-April2016.pdf*

Figure 4-72: August 6, 2018 Smoke Plumes Tower Over California



E. Additional Supporting Ground-Level Evidence

1. Area Forecast Discussions

In the days prior to the smoke impacts in northern California, Area Forecast Discussions issued by the National Weather Service (NWS) Sacramento Office (STO) focused on high temperatures and the potential for thunderstorms. Although there were fires along the Oregon-California border, smoke was primarily a local impact and the Oregon fires were noted only by the Eureka (EKA) forecast office in their aviation discussions.[66] The Carr Fire started on July 23 and impacts were starting to be noted by the NWS forecasters at both the Sacramento and Eureka offices by the 25th. By July 28th, the day after the Ranch and River Fires ignited, the Sacramento office began including information about the smoke and potential smoke impacts, noting that the increased smoke would help keep daytime temperatures cooler and forecasts trickier.[67] Although the Sacramento NWS office did not issue Air Quality Alerts, it did issue Special Weather Statements, including the one seen in

[66] Iowa State University, Mesonet, *Area Forecast Discussions, AFDEKA, 309 PM PDT Fri Jul 20 2018*, last accessed 8/31/21
[67] Iowa State University, Mesonet, *Area Forecast Discussions, AFDSTO 2018-07-28 20:50 UTC*, last accessed 8/31/21

Figure 4-73, warning of dense smoke and falling ash in areas including Chico (and the Sutter Buttes) and Paradise.

A sampling of Area Forecast Discussions from the NWS Sacramento forecast office are included in Appendix III.

Figure 4-73: NWS Special Weather Statement – August 4, 2018, 14:45 PST

```
954
WWUS86 KSTO 042145
SPSSTO

Special Weather Statement
National Weather Service Sacramento CA
245 PM PDT Sat Aug 4 2018

CAZ013>016-063-064-066-068-050645-
Shasta Lake Area / Northern Shasta County-
Burney Basin / Eastern Shasta County-Northern Sacramento Valley-
Central Sacramento Valley-
Mountains Southwestern Shasta County to Northern Lake County-
Clear Lake/Southern Lake County-
Northeast Foothills/Sacramento Valley-
Western Plumas County/Lassen Park-
Including the cities of Shasta Dam, Burney, Redding, Red Bluff,
Chico, Oroville, Marysville/Yuba City, Alder Springs, Lakeport,
Paradise, Chester, and Quincy
245 PM PDT Sat Aug 4 2018

...Dense smoke and falling ash will impact northern California
valleys and foothills this afternoon and evening...

Very active fire conditions over the Mendocino Complex and Carr
fires this afternoon are resulting in large smoke plumes to
spread east over northern California. These plumes of smoke may
result in ash falling into regions that are not experiencing any
fires and further decrease air quality. If you have outdoor plans
in the northern Sacramento valley or surrounding foothills and
mountains, please monitor air quality and have an indoor
alternate.
```

2. Satellite Smoke Indications

The smoke that enhanced the ozone reaching the exceeding monitors in late July and early August 2018 was primarily from the wildfires in the northern portion of the State, along with the Donnell and Ferguson fires on the eastern side of the San Joaquin Valley. Smoke from these fires increasingly impacted the Mountain Counties, and Sacramento and San Joaquin Valleys from smoke blanketing Northern California. Several tools are available to look at smoke in the areas that impacted the monitors.

The NOAA Hazard and Mapping System (HMS) Fire and Smoke Product is an analysis of various satellite imagery to map out the scope and even to some extent thickness of smoke

layers. These products were extensively utilized in the Narrative Conceptual Model and Clear Causal Relationship chapters of this document.

NOAA Smoke Text Product[68] is a text-based analysis of satellite imagery. These products are used to give an overall view of smoke origins, current locations, and potential transport. The relevant Smoke Text Products issued from July 26 through August 10 are in Appendix V, with two examples shown here.

Figure 4-74: NOAA Smoke Text Products. July 26 and August 5, 2018

a. July 26, 2018, 20UTC (12PST)

Thursday, July 26, 2018

DESCRIPTIVE TEXT NARRATIVE FOR SMOKE/DUST OBSERVED IN SATELLITE IMAGERY
THROUGH 2000Z July 26, 2018.

NESDIS IS INVESTIGATING THE UTILITY OF THIS TEXT NARRATIVE. IF YOU FIND
THIS PRODUCT VALUABLE, PLEASE SEND AN EMAIL RESPONSE TO THE FOLLOWING
ADDRESS INDICATING HOW YOU AND/OR YOUR AGENCY USE THE INFORMATION.
THANK YOU. SEND EMAIL RESPONSES TO: SSDFireTeam@noaa.gov.

SMOKE:

Eastern Alaska/Canada/North Central US/Appalachian Region...
The enormous mass of smoke which has been present for several days
continued to be visible stretching from eastern Alaska and western
Canada eastward across virtually all of Canada to off the southern tip
of Greenland. The thinner density portion of this smoke also covered
the northern tier of the US from northern Idaho and Montana to the
Great Lakes Region with a narrow swath of thinner density smoke also
extending southward from western Pennsylvania/eastern Ohio to the southern
Appalachians. Thicker embedded areas of smoke were noted over portions of
central and western Canada. Cloudiness over some of Alaska interfered with
smoke detection in that region. The source for this smoke was believed
to be long range transport from wildfire activity over Europe and Asia
though some contribution from wildfires over Alaska and northwestern
Canada is also likely.

Western US...
The Valley Fire in southern California, Ferguson Fire in central
California, and the Carr Fire in northern California along with the
cluster of fires in southwestern Oregon were responsible for widespread
smoke coverage over much of California, the northern half of Nevada,
and the southern half of Oregon, The leading edge of the thinner density
discernible smoke in satellite imagery spread at least as far east as
southern Idaho and northern Utah. There is the possibility that it also
extended across Wyoming and Colorado to the Central Plains but detection
was difficult in satellite imagery. The thickest smoke was located
closer to the more active fires though a sizable batch of moderately
dense smoke covered a portion of California and northwestern Nevada as
well as southwestern Oregon.

[68] NOAA Hazard and Mapping System (HMS), *Fire and Smoke Text Product*, last accessed 7/29/21

b. August 5, 2018, 19UTC (11PST)

Sunday, August 5, 2018

DESCRIPTIVE TEXT NARRATIVE FOR SMOKE/DUST OBSERVED IN SATELLITE IMAGERY
THROUGH 1900Z August 5, 2018.

NESDIS IS INVESTIGATING THE UTILITY OF THIS TEXT NARRATIVE. IF YOU FIND
THIS PRODUCT VALUABLE, PLEASE SEND AN EMAIL RESPONSE TO THE FOLLOWING
ADDRESS INDICATING HOW YOU AND/OR YOUR AGENCY USE THE INFORMATION.
THANK YOU. SEND EMAIL RESPONSES TO: SSDFireTeam@noaa.gov.

SMOKE:
Canada...
Scattered fires in central and northwest British Columbia contribute
light-to-moderate density smoke to that region. Individual smoke plumes
are seen moving towards the east. A large area of high level smoke from
previous-day fires extend eastward across central-northern Alberta and
into central Saskatchewan.

Western United States....
Large wildfires continue to burn in northern California and southwest
Oregon releasing heavy density smoke plumes near the source that are
seen accumulating throughout Sacramento and northern San Joaquin valleys
as the smoke travels towards the north-northeast. Higher level smoke
is also seen covering much of northern California, southeast Oregon,
northern Nevada, southeast Idaho and southwest Montana.

F. Conclusion

In late July 2018, smoke from several large wildfires throughout northern and central California generated emissions that directly resulted in elevated concentrations at the ozone monitors in the ozone nonattainment areas of Calaveras County, the Chico MSA in Butte County, the Sutter Buttes in Sutter County, Tuolumne County, the Tuscan Buttes in Tehama County, and the Western Portion of Nevada County. Inspection of $PM_{2.5}$ concentrations, satellite-derived smoke layers, and modeled trajectories indicate pathways for the transport of smoke and associated precursors from the wildfires in northern and central California downrange and into the surface boundary layer. This supports both the transport of smoke, ozone precursors, and generated ozone that mixed down to the surface at the exceeding monitoring sites.

All requested dates for exceptional events were in the 90th percentile or higher of the prior 5-year distribution of 8-hour ozone data and fall in the adjusted top 4 rank for 2018 when excluding the requested exceptional events days. Area forecast discussions, satellite smoke products, biomass burning indicators, and black carbon all indicated periods of wildfire smoke aloft and at the surface during the requested event dates. Daily diurnal comparison graphs show many days with abnormal patterns and unusually timed peaks due to the impacts of wildfire emissions.

The comparisons and analyses provided in the Narrative Conceptual Model and Clear Causal Relationship chapters of this demonstration support our conclusion that the numerous wildfire events affected air quality in such a way that there exists a clear causal relationship between the monitoring exceedances or violations as listed in Table 1-4 and thus satisfies the clear causal relationship criteria.

Natural Event/Human Activity Unlikely to Recur

The Background and Narrative Conceptual Model chapters of this document provide evidence that the event qualifies as a "Natural Event" as defined in 40 CFR 50.1(k). The fires that impacted the exceeding ozone monitors occurred on wildlands that meet the definition in 40 CFR 50.1(n) and (o). When considering fire cause, "wildfires on wildland initiated by accident or arson are considered natural events, and on a case-by-case basis this treatment for wildfires may bear on the appropriate treatment of accidental and arson-set structural fires.[69]"

U.S. EPA generally considers the emissions of ozone precursors from wildfires on wildland to meet the regulatory definition of a natural event at 40 CFR 50.1(k), and accordingly, CARB has shown that this event is a natural event and may be considered for treatment as an exceptional event.

Not Reasonably Controllable and/or Not Reasonably Preventable

The Background and Narrative Conceptual Model chapters of this document provide evidence the wildfires impacting the ozone monitors at San Andreas in Calaveras County, BCAQMD in Butte County, Sutter Buttes in Sutter County, Sonora in Tuolumne County, Tuscan Buttes in Tehama County, and Grass Valley in Nevada County were natural events predominantly occurring on wildland in California. CARB is not aware of any evidence clearly demonstrating that prevention or control efforts beyond those actually made would have been reasonable. Therefore, emissions from the wildfires were not reasonably controllable or preventable.

Public Notification

As presented in Sections V and VI of the Narrative Conceptual Model chapter, all affected districts maintain public alert systems as well as publicly available information via their websites to keep residents informed of potential wildfire smoke impacts. Examples of the information released to the public is included in Appendix II and VI.

The CARB will hold a 30-day public comment period to solicit public input regarding this demonstration. Notification of the public comment period will be posted on the CARB website and emailed to interested stakeholders. Any comments received, and CARB's responses, will be submitted to U.S. EPA at the end of the 30-day public comment period.

[69] 81 FR 68233, Footnote 35

Summary/Conclusion

The Carr, Mendocino Complex (Ranch and River fires), Donnell, Ferguson, and Butte Fires in California were the primary focus of these retroactive analyses and discussions, with a lesser look at the additional contributions from the Natchez fire in California and the Taylor Creek and Klondike fires in Oregon. These massive fires were all active producers of vast amounts of wildfire smoke and emissions and consumed over a million acres of wildlands in California and Oregon.

During the event timeframe of July 26 to August 10, wildfires were particularly active, producing enormous amounts of wildfire smoke and emissions, including ozone precursors, which blew downwind blanketing vast portions of northern California and often settling into valleys and foothills when conditions allowed. Air quality monitors across the region showed elevated $PM_{2.5}$ throughout the Sacramento Valley and Mountain Counties Air Basins, indicating smoke impacts at the surface. Biomass burning indicators (such as Levoglucosan) and black carbon further identified the wildfires as source of the emissions impacting surface sites. Elevated ozone concentrations correlated well with the elevated $PM_{2.5}$ concentrations at collocated or nearby monitors (as available) during the event at each of the impacted sites.

This 2018 Northern California Ozone Exceptional Events Demonstration supports the criteria for an exceptional event as detailed in the 2016 Exceptional Events Rule[70] and Wildfire Ozone Guidance.[71] This documentation used the following evidence to demonstrate the exceptional event:

- Ambient air monitoring data
- HYSPLIT forward and backward trajectory analyses
- Satellite imagery and narratives
- Wildfire smoke emissions estimates
- Statistical historical concentration comparisons
- Meteorological conditions
- Air Quality District alerts and advisories
- NOAA and HMS smoke products

This Exceptional Events Demonstration clearly demonstrates justification for exclusion of data as listed in Table 1-4 due to an exceptional event under 40 CFR 50.14(c)(3)(iv). The 2018 Northern California Ozone Exceptional Events Demonstration has provided evidence that:

- Describes the events causing the exceedance and a discussion of how emissions from the event led to the exceedance at each monitor;

[70] 81 FR 68216

[71] U.S. EPA, *Final Guidance on the Preparation of Exceptional Events Demonstrations for Wildfire Events that May Influence Ozone Concentrations*, p.25, last accessed 7/29/21

- Demonstrates a clear causal relationship between the wildfire emissions and the ozone exceedances at each monitor for their respective requested dates;
- Shows that event-influenced concentrations were unusual and above normal historical concentrations;
- Demonstrates the event was neither reasonably controllable nor reasonably preventable; and
- Verifies the event was multiple wildfires, all natural events or human activity that is unlikely to recur at a particular location, all occurring predominantly on wildlands.

Table 8-1: Summary of Demonstration Criteria based on EER Requirements

Demonstration Requirement	Reference	Chapter
Narrative conceptual model	40 CFR 5.014(c)(3)(iv)(A)	3
Clear causal relationship	40 CFR 50.14(c)(3)(iv)(B)	3, 4
Historical analysis	40 CFR 50.14(c)(3)(iv)(C)	2, 3, 4
Human Activity Unlikely to Recur or Natural Event	40 CFR 50.14(c)(3)(iv)(E)	3, 4, 5
Not Reasonably Controllable and Not Reasonably Preventable	40 CFR 50.14(c)(3)(iv)(D)	3, 4, 6

Table 8-2: Summary of Procedural Criteria Based on EER Requirements

Procedural Requirement	Reference	Chapter
Prompt Public Notification	40 CFR 50.14(c)(1)(i)	3, 7, Appendix II
Initial Notification of Potential Exceptional Event Process	40 CFR 50.14(c)(2)(i)	1, Appendix I
Public opportunity to review and comment on demonstration	40 CFR 50.14(c)(3)(v)]	7

CARB recommends that U.S. EPA Region 9 concur with the 2018 Northern California Ozone Exceptional Events Demonstration and, pending the upcoming 2020 Northern California Exceptional Event Demonstration submission, exclude the requested data from comparison to the NAAQS.

References/Sources

I. References

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Appendices

I. Initial Notification and Air Quality Data

A. Calaveras County (San Andreas)

1. Ozone Initial Notification Submitted to U.S. EPA on March 15, 2021. EEPID658

EE Initial Notification Summary Information **CALAVERAS O_3**

Submitting Agency: **Calaveras County Air Pollution Control District**
Agency Contact: Doug Carson
Date Submitted: 3/12/21
Applicable NAAQS: 2015 8-Hour Ozone
Affected Regulatory Decision[1]: Attainment Designation for 2015 8-Hour Ozone
(for classification decisions, specify level of the classification with/without EE concurrence)
Area Name/Designation Status: Calaveras County / Marginal
Design Value Period (list three year period): 2018-2020
(where there are multiple relevant design value periods, summarize separately)

A) See attached spreadsheet titled "Federal Exceptional Event Initial Notification Sheet"

B) Violating Sites Information

(listing of all violating sites in the planning area, regardless of operating agency, and regardless of whether or not they are impacted by EEs)

Site/monitor (AQS ID and POC)	Design Value (without EPA concurrence on any of the events listed in attached spreadsheet)	Design Value (with EPA concurrence on all events listed in attached spreadsheet)
San Andreas – Gold Strike 060090001-1	0.072 ppm	0.067 ppm

C) Summary of Maximum Design Value (DV) Site Information (Effect of EPA Concurrence on Maximum Design Value Site Determination)

(Two highest values from Table B)

Maximum DV site (AQS ID) **without EPA concurrence** on any of the events listed in attached spreadsheet	Design Value 0.072	Design Value Site **060090001**	Comment
Maximum DV site (AQS ID) **with EPA concurrence** on all events listed in attached spreadsheet	Design Value 0.067	Design Value Site **060090001**	Comment **Site meets attainment for 2015 Ozone NAAQS**

D) List of any sites (AQS ID) within planning area with invalid design values (e.g., due to data incompleteness)

[1] designation, classification, attainment determination, attainment date extension, or finding of SIP inadequacy leading to SIP call
[2] Provide additional information for types of event described as "other"

CALAVERAS Federal Ozone NAAQS Exceptional Event Initial Notification Sheet

Event Date	Type of Event	AQS Flag	Monitor AQS ID	AQS POC	Site Name	Pollutant	Concentration	Units	Event Name
7/18/2018	Wildfire	IT	060090001	1	San Andreas - Gold Strike	Ozone-8hr	0.072	ppm	Ferguson Wildfire
7/28/2018	Wildfire	IT	060090001	1	San Andreas - Gold Strike	Ozone-8hr	0.071	ppm	Ferguson Wildfire
7/30/2018	Wildfire	IT	060090001	1	San Andreas - Gold Strike	Ozone-8hr	0.077	ppm	Ferguson Wildfire
7/31/2018	Wildfire	IT	060090001	1	San Andreas - Gold Strike	Ozone-8hr	0.086	ppm	Ferguson Wildfire
8/2/2018	Wildfire	IT	060090001	1	San Andreas - Gold Strike	Ozone-8hr	0.074	ppm	Ferguson Wildfire
8/5/2018	Wildfire	IT	060090001	1	San Andreas - Gold Strike	Ozone-8hr	0.078	ppm	Ferguson Wildfire
8/8/2018	Wildfire	IT	060090001	1	San Andreas - Gold Strike	Ozone-8hr	0.071	ppm	Ferguson Wildfire
8/9/2018	Wildfire	IT	060090001	1	San Andreas - Gold Strike	Ozone-8hr	0.081	ppm	Ferguson Wildfire
8/10/2018	Wildfire	IT	060090001	1	San Andreas - Gold Strike	Ozone-8hr	0.076	ppm	Ferguson Wildfire
8/20/2020	Wildfire	IT	060090001	1	San Andreas - Gold Strike	Ozone-8hr	0.097	ppm	Multiple Wildfires
8/23/2020	Wildfire	IT	060090001	1	San Andreas - Gold Strike	Ozone-8hr	0.078	ppm	Multiple Wildfires
8/31/2020	Wildfire	IT	060090001	1	San Andreas - Gold Strike	Ozone-8hr	0.073	ppm	Multiple Wildfires
9/30/2020	Wildfire	IT	060090001	1	San Andreas - Gold Strike	Ozone-8hr	0.075	ppm	Multiple Wildfires
10/1/2020	Wildfire	IT	060090001	1	San Andreas - Gold Strike	Ozone-8hr	0.072	ppm	Multiple Wildfires

2. Calaveras County Air Quality Data

Ozone Data is in process of being flagged with the REQEXC Code "rt-Wildfire-U.S."

B. Chico (Butte County)

1. Initial Ozone Initial Notification Submitted to U.S. EPA on March 15, 2021. EEPID653

EE Initial Notification Summary Information O_3

Submitting Agency: Butte County Air Quality Management District
Agency Contact: Jason Mandly, Senior Air Quality Planner - jmandly@bcaqmd.org - (530) 332-9400 x108
Date Submitted: February 1, 2021
Applicable NAAQS: 2015 8-Hour Ozone
Affected Regulatory Decision[1]: Attainment Designation for 2015 8-Hour Ozone
(for classification decisions, specify level of the classification with/without EE concurrence)
Area Name/Designation Status: Chico (Butte County), California / Marginal
Design Value Period (list three year period): 2018-2020
(where there are multiple relevant design value periods, summarize separately)

A) Information specific to each flagged site day that may be submitted to EPA in support of the affected regulatory decision listed above

Date of Event	Type of Event (high wind, volcano, wildfires/prescribed fire, other[2])	AQS Flag	Site AQS ID	Site Name	Exceedance Concentration (with units)	Notes (e.g. event name, links to other events)
7/26/2018	Wildfire	IT-Wildfire US	06-007-0007	Paradise - Airport	0.075 ppm	Impacts from Carr Fire
7/27/2018	Wildfire	IT-Wildfire US	06-007-0007	Paradise – Airport	0.08 ppm	Impacts from Carr Fire
7/28/2018	Wildfire	IT-Wildfire US	06-007-0007	Paradise – Airport	0.079 ppm	Impacts from Carr Fire
7/29/2018	Wildfire	IT-Wildfire US	06-007-0007	Paradise – Airport	0.073 ppm	Impacts from Carr Fire & Mendocino Complex Fires
7/30/2018	Wildfire	IT-Wildfire US	06-007-0007	Paradise – Airport	0.074 ppm	Impacts from Carr Fire & Mendocino Complex Fires
7/31/2018	Wildfire	IT-Wildfire US	06-007-0007	Paradise – Airport	0.086 ppm	Impacts from Carr Fire & Mendocino Complex Fires
8/1/2018	Wildfire	IT-Wildfire US	06-007-0007	Paradise – Airport	0.098 ppm	Impacts from Carr Fire & Mendocino Complex Fires
8/2/2018	Wildfire	IT-Wildfire US	06-007-0007	Paradise – Airport	0.081 ppm	Impacts from Carr Fire & Mendocino Complex Fires
8/3/2018	Wildfire	IT-Wildfire US	06-007-0007	Paradise – Airport	0.071 ppm	Impacts from Carr Fire & Mendocino Complex Fires
8/7/2018	Wildfire	IT-Wildfire US	06-007-0007	Paradise – Airport	0.078 ppm	Impacts from Carr Fire & Mendocino Complex Fires
8/8/2018	Wildfire	IT-Wildfire US	06-007-0007	Paradise – Airport	0.076 ppm	Impacts from Carr Fire & Mendocino Complex Fires
8/9/2018	Wildfire	IT-Wildfire US	06-007-0007	Paradise – Airport	0.088 ppm	Impacts from Carr Fire & Mendocino Complex Fires
8/10/2018	Wildfire	IT-Wildfire US	06-007-0007	Paradise – Airport	0.084 ppm	Impacts from Carr Fire & Mendocino Complex Fires
8/23/2018	Wildfire	IT-Wildfire US	06-007-0007	Paradise – Airport	0.071 ppm	Impacts from Mendocino Complex Fires

8/24/2018	Wildfire	IT-Wildfire US	06-007-0007	Paradise – Airport	0.071 ppm	Impacts from Mendocino Complex Fires
8/25/2018	Wildfire	IT-Wildfire US	06-007-0007	Paradise - Airport	0.082 ppm	Impacts from Mendocino Complex Fires
8/20/2020	Wildfire	IT-Wildfire US	06-007-0007	Paradise - Airport	0.076 ppm	Impacts from August Complex & North Complex Fires
8/21/2020	Wildfire	IT-Wildfire US	06-007-0007	Paradise - Airport	0.089 ppm	Impacts from August Complex & North Complex Fires
8/22/2020	Wildfire	IT-Wildfire US	06-007-0007	Paradise - Airport	0.097 ppm	Impacts from August Complex & North Complex Fires
8/23/2020	Wildfire	IT-Wildfire US	06-007-0007	Paradise - Airport	0.072 ppm	Impacts from August Complex & North Complex Fires
8/24/2020	Wildfire	IT-Wildfire US	06-007-0007	Paradise - Airport	0.073 ppm	Impacts from August Complex & North Complex Fires
8/28/2020	Wildfire	IT-Wildfire US	06-007-0007	Paradise - Airport	0.074 ppm	Impacts from August Complex & North Complex Fires
8/29/2020	Wildfire	IT-Wildfire US	06-007-0007	Paradise - Airport	0.072 ppm	Impacts from August Complex & North Complex Fires
9/12/2020	Wildfire	IT-Wildfire US	06-007-0007	Paradise - Airport	0.073 ppm	Impacts from August Complex & North Complex Fires
9/29/2020	Wildfire	IT-Wildfire US	06-007-0007	Paradise - Airport	0.072 ppm	Impacts from August Complex & North Complex Fires

B) Violating Sites Information

(listing of all violating sites in the planning area, regardless of operating agency, and regardless of whether or not they are impacted by EEs)

Site/monitor (AQS ID and POC)	Design Value (without EPA concurrence on any of the events listed in table A above)	Design Value (with EPA concurrence on all events listed in table A above)
060070007 Paradise-4405 Airport Road	0.073 ppm	0.068 ppm

[1] designation, classification, attainment determination, attainment date extension, or finding of SIP inadequacy leading to SIP call

[2] Provide additional information for types of event described as "other"

2. AQS AMP350 Data

Chico (Butte County) Ozone Data is currently flagged with the REQEXC Code "rt-Wildfire-U.S."

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
AIR QUALITY SYSTEM
RAW DATA REPORT

Sep. 10, 2021

(44201) Ozone

SITE ID: 06-007-0007 POC: 1
COUNTY: (007) Butte
CITY: (00000) Not in a city
SITE ADDRESS: 4405 AIRPORT RD-PARADISE CA
SITE COMMENTS: TRAILER LOCATED ON TAXI AREA NEAR HANGER
MONITOR COMMENTS:

STATE: (06) California
AQCR: (028) SACRAMENTO VALLEY
URBANIZED AREA: (0000) NOT IN AN URBAN AREA
LAND USE: COMMERCIAL
LOCATION SETTING: RURAL

CAS NUMBER: 10028-15-6
LATITUDE: 39.708454
LONGITUDE: -121.617309
UTM ZONE:
UTM NORTHING:
UTM EASTING:
ELEVATION-MSL: 0
PROBE HEIGHT: 2

SUPPORT AGENCY: (0145) California Air Resources Board
MONITOR TYPE: SLAMS
COLLECTION AND ANALYSIS METHOD: (087) INSTRUMENTAL ULTRA VIOLET ABSORPTI
PQAO: (0145) California Air Resources Board

REPORT FOR: JULY 2018

DURATION: 1 HOUR
UNITS: Parts per million
MIN DETECTABLE: .005

DAY	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	OBS	MAXIMUM
1	.046	.046	.046	.045	BD	.043	.041	.039	.043	.049	.053	.055	.056	.056	.052	.052	.052	.055	.057	.061	.062	.059	.054	.055	23	.062
2	.047	.034	.031	.034	BD	.027	.027	.031	.037	.044	.047	.050	.053	.057	.059	.057	.055	.060	.065	.063	.067	.074	.063	.052	23	.074
3	.049	.039	.034	.033	BD	.034	.030	.030	.032	.038	AV	.046	.053	.059	.062	.058	.067	.071	.070	.073	.082	.076	.066	.062	22	.082
4	.061	.055	.046	.034	BD	.036	.037	.039	.043	.048	.053	.054	.052	.054	.055	.055	.054	.055	.051	.048	.045	.044	.045	.046	23	.061
5	.046	.045	.044	.043	BD	.040	.037	.038	.040	.044	.046	.047	.051	.053	.057	.067	.072	.066	.066	.071	.072	.070	.067	.062	23	.072
6	.060	.060	.059	.056	BD	.051	.049	.046	.045	.046	.046	.043	.045	.044	.050	.054	.053	.049	.040	.035	.033	.034	.035	.036	23	.060
7	.036	.036	.035	.034	BD	.032	.029	.029	.029	.034	.037	.042	.043	.041	.044	.050	.056	.058	.054	.054	.052	.049	.047	.048	23	.058
8	.047	.047	.045	.043	BD	.040	.038	.037	.038	.044	.048	.052	.055	.056	.068	.066	.068	.069	.062	.062	.062	.060	.058	.059	23	.069
9	.059	.059	.059	.056	BD	.051	.050	.047	.045	.050	.054	.057	.059	.058	.059	.061	.065	.066	.064	.062	.061	.057	.056	.053	23	.066
10	.054	.054	.053	.051	BD	.047	.047	.045	.048	.051	.058	.063	.061	.060	.056	.052	.050	.049	.048	.049	.050	.047	.048	.048	23	.063
11	.047	.047	.048	.045	BD	.041	.041	.040	.043	.050	.059	.060	.063	.061	.058	.058	.060	.063	.062	.063	.064	.057	.050	.051	23	.064
12	.045	.045	.044	.043	BD	.043	.042	.041	.042	.051	.066	.072	.073	.067	.063	.062	.062	.065	.066	.068	.071	.069	.065	.059	23	.073
13	.055	.055	.056	.053	BD	.048	.045	.046	.049	.043	.043	.048	.049	.053	.058	.059	.059	.060	.056	.052	.036	.038	.042	.043	23	.060
14	.045	.044	.046	.045	BD	.036	.037	.040	.049	.056	.063	.065	.062	.060	AV	.059	AV	AV	.062	.061	.059	AV	.054	AV	18	.065
15	.049	.043	.039	.036	BD	.022	.026	.028	.031	.039	AV	.052	.057	.058	.059	.064	.059	.053	.052	.052	.053	.051	.047	.045	22	.064
16	.044	.038	.035	.033	BD	.037	.034	.035	.041	.046	.051	.056	.057	.058	AV	AV	AV	.053	.058	.066	.065	.053	.048	.048	20	.066
17	.047	.048	.047	.046	BD	.043	.042	.042	.046	.054	.056	.060	.060	.060	.059	.058	.056	.056	.061	.072	.071	.059	.056	.053	23	.072
18	.053	.052	.051	.049	BD	.051	.048	.046	.048	.057	.072	.081	.076	.071	.068	.066	.064	.062	.062	.067	.055	.051	.053	.054	23	.081
19	.054	.054	.055	.052	BD	.044	.044	.044	.049	.053	.057	.062	.069	.071	.069	.067	.067	.078	.076	.063	.064	.067	.061	.059	23	.078
20	.058	.058	.055	.050	BD	.047	.050	.051	.053	.057	.060	.068	.071	.068	.069	.066	.064	.065	.064	.062	.059	.055	.053	.053	23	.071
21	.052	.053	.051	.047	BD	.043	.044	.044	.046	.049	.052	.052	.054	.053	.052	.056	.055	.054	.052	.049	.050	.048	.045	.046	23	.056
22	.044	.039	.030	.030	BD	.030	.027	.028	.033	.040	.043	.045	.050	.052	.054	.055	.054	.054	.055	.051	.051	.049	.049	.046	23	.055
23	.044	.043	.041	.037	BD	.033	.033	.036	.040	.047	.052	.054	.054	.054	.054	.055	.053	.055	.056	.054	.053	.054	.050	.048	23	.056
24	.048	.046	.047	.044	BD	.033	.031	.036	.043	.048	.050	.054	.057	.057	.056	.053	.052	.055	.060	.062	.058	.053	.050	.048	23	.062
25	.048	.046	.045	.043	BD	.044	.041	.040	.046	.053	.062	.075	.074	.066	.064	.057	.058	.056	.051	.052	.053	.054	.057	.056	23	.075
26	.054rt	.054rt	.052rt	.052rt	BD	.053rt	.053rt	.052rt	.050rt	.053rt	.062rt	.069rt	.076rt	.078rt	.079rt	.080rt	.077rt	.076rt	.071rt	.070rt	.068rt	.063rt	.069rt	.068rt	23	.080
27	.063rt	.063rt	.059rt	.045rt	BD	.044rt	.055rt	.048rt	.045rt	.047rt	.052rt	.060rt	.068rt	.074rt	.079rt	.081rt	.082rt	.083rt	.081rt	.083rt	.076rt	.077rt	.074rt	.071rt	23	.083
28	.072rt	.069rt	.065rt	.064rt	BD	.055rt	.059rt	.057rt	.044rt	.047rt	.048rt	.055rt	.064rt	.072rt	.076rt	.081rt	.085rt	.084rt	.082rt	.082rt	.073rt	.068rt	.072rt	.075rt	23	.085
29	.076rt	.076rt	.076rt	.074rt	BD	.071rt	.070rt	.063rt	.056rt	.050rt	.057rt	.061rt	.067rt	.072rt	.072rt	.077rt	.081rt	.075rt	.070rt	.068rt	.069rt	.059rt	.056rt	.056rt	23	.081
30	.050rt	.047rt	.051rt	.066rt	BD	.065rt	.066rt	.056rt	.048rt	.046rt	.053rt	.056rt	.056rt	.069rt	.074rt	.076rt	.077rt	.078rt	.072rt	.078rt	.075rt	.060rt	.060rt	.064rt	23	.078
31	.066rt	.067rt	.069rt	.070rt	BD	.065rt	.069rt	.064rt	.056rt	.061rt	.065rt	.069rt	.073rt	.080rt	.085rt	.088rt	.093rt	.086rt	.083rt	.091rt	.087rt	.079rt	.084rt	.075rt	23	.093
NO.:	31	31	31	31		31	31	31	31	31	29	31	31	31	29	30	29	30	31	31	31	30	31	30		
MAX:	.076	.076	.076	.074		.071	.070	.064	.056	.061	.072	.081	.076	.080	.085	.088	.093	.086	.083	.091	.087	.079	.084	.075		
AVG:	.0522	.0504	.0488	.0469		.0435	.0433	.0425	.0438	.0482	.0540	.0575	.0599	.0610	.0624	.0630	.0638	.0636	.0622	.0627	.0612	.0578	.0559	.0546		

MONTHLY OBSERVATIONS: 703 MONTHLY MEAN: .0547 MONTHLY MAX: .093

Note: Qualifier codes with regional concurrence are shown in upper case, and those without regional review are shown in lower case. An asterisk ("*") indicates that the region has reviewed the value and does not concur with the qualifier.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
AIR QUALITY SYSTEM
RAW DATA REPORT

Sep. 10, 2021

(44201) Ozone

SITE ID: 06-007-0007 POC: 1
COUNTY: (007) Butte
CITY: (00000) Not in a city
SITE ADDRESS: 4405 AIRPORT RD-PARADISE CA
SITE COMMENTS: TRAILER LOCATED ON TAXI AREA NEAR HANGER
MONITOR COMMENTS:

STATE: (06) California
AQCR: (028) SACRAMENTO VALLEY
URBANIZED AREA: (0000) NOT IN AN URBAN AREA
LAND USE: COMMERCIAL
LOCATION SETTING: RURAL

CAS NUMBER: 10028-15-6
LATITUDE: 39.708454
LONGITUDE: -121.617309
UTM ZONE:
UTM NORTHING:
UTM EASTING:
ELEVATION-MSL: 0
PROBE HEIGHT: 2

SUPPORT AGENCY: (0145) California Air Resources Board
MONITOR TYPE: SLAMS
COLLECTION AND ANALYSIS METHOD: (087) INSTRUMENTAL ULTRA VIOLET ABSORPTI
PQAO: (0145) California Air Resources Board

REPORT FOR: AUGUST 2018

DURATION: 1 HOUR
UNITS: Parts per million
MIN DETECTABLE: .005

DAY	HOUR 0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	OBS	MAXIMUM
1	.081rt	.086rt	.084rt	.077rt	BD	.054rt	.054rt	.049rt	.046rt	.050rt	.063rt	.077rt	.075rt	.078rt	.083rt	.097rt	.101rt	.102rt	.108rt	.105rt	.101rt	.087rt	.077rt	.076rt	23	.108
2	.076rt	.074rt	.063rt	.066rt	BD	.066rt	.062rt	.049rt	.039rt	.040rt	.045rt	.055rt	.060rt	.060rt	.061rt	.067rt	.076rt	.080rt	.084rt	.082rt	.080rt	.080rt	.080rt	.083rt	23	.084
3	.082rt	.072rt	.059rt	.062rt	BD	.068rt	.065rt	.060rt	.056rt	.053rt	.055rt	.063rt	.067rt	.071rt	.071rt	.074rt	.075rt	.074rt	.071rt	.068rt	.067rt	.063rt	.065rt	.065rt	23	.082
4	.066	.066	.066	.065	BD	.063	.061	.059	.056	.057	.062	.064	.061	.058	.057	.061	.069	.073	.071	.067	.067	.064	.059	.059	23	.073
5	.058	.057	.055	.053	BD	.048	.048	.045	.038	.037	.037	.039	.042	.044	.047	.045	.046	.045	.045	.045	.042	.041	.046	.049	23	.058
6	.050	.049	.048	.049	BD	.049	.048	.048	.047	.044	.045	.047	.052	.054	.057	.060	.060	.060	.060	.060	.059	.059	.059	.061	23	.061
7	.065rt	.067rt	.069rt	.068rt	BD	.063rt	.060rt	.053rt	.048rt	.053rt	.057rt	.062rt	.066rt	.070rt	.074rt	.079rt	.082rt	.083rt	.079rt	.080rt	.078rt	.075rt	.072rt	.071rt	23	.083
8	.072rt	.069rt	.067rt	.064rt	BD	.066rt	.059rt	.053rt	.051rt	.052rt	.050rt	.057rt	.069rt	.074rt	.074rt	.079rt	.084rt	.081rt	.073rt	.075rt	.072rt	.073rt	.075rt	.075rt	23	.084
9	.077rt	.076rt	.078rt	.079rt	BD	.075rt	.071rt	.067rt	.067rt	.065rt	.068rt	.074rt	.076rt	.078rt	.083rt	.087rt	.089rt	.089rt	.093rt	.097rt	.089rt	.084rt	.079rt	.078rt	23	.097
10	.075rt	.071rt	.066rt	.063rt	BD	.059rt	.055rt	.055rt	.056rt	.058rt	.072rt	.081rt	.085rt	.084rt	.085rt	.084rt	.084rt	.083rt	.084rt	.083rt	.078rt	.073rt	.072rt	.073rt	23	.085
11	.073	.073	.072	.070	BD	.068	.066	.064	.062	.058	.061	.064	.067	.072	.071	.066	.066	.073	.065	.059	.054	.050	.050	.050	23	.073
12	.050	.043	.044	.044	BD	.044	.043	.041	.041	.043	.047	.052	.053	.053	.052	.052	.053	.058	.062	.061	.060	.057	.056	.056	23	.062
13	.057	.056	.054	.052	BD	.047	.047	.046	.046	.051	.057	.059	.059	.064	.066	.062	.059	.062	.067	.066	.067	.065	.060	.056	23	.067
14	.056	.052	.047	.038	BD	.041	.041	.034	.031	.036	.047	.054	.059	.063	.065	.067	.068	.069	.066	.067	.064	.063	.061	.059	23	.069
15	.060	.054	.036	.028	BD	.025	.026	.028	.032	.041	.047	.052	.058	.063	.067	.070	.072	.072	.070	.068	.066	.065	.061	.057	23	.072
16	.057	.055	.052	.050	BD	.044	.040	.040	.043	.048	.054	.058	.060	.060	.064	.061	.059	.055	.056	.063	.060	.056	.055	.056	23	.064
17	.058	.058	.056	.053	BD	.051	.049	.046	.049	.055	.066	.077	.073	.063	.055	.051	.044	.043	.043	.051	.051	.041	.041	.043	23	.077
18	.042	.041	.040	.039	BD	.038	.038	.035	.034	.035	.038	.046	.055	.052	.053	.052	.047	.043	.042	.043	.042	.043	.045	.046	23	.055
19	.047	.047	.047	.047	BD	.046	.046	.044	.042	.049	.056	.059	.059	.060	.057	.059	.060	.061	.064	.062	.059	.057	.056	.058	23	.064
20	.060	.060	.054	.057	BD	.057	.055	.053	.051	.057	.061	.060	.062	.063	.065	.066	.068	.066	.066	.068	.069	.066	.062	.061	23	.069
21	.060	.060	.054	.048	BD	.047	.042	.037	.034	.039	.047	.051	.056	.061	.066	.070	.070	.070	.067	.064	.060	.053	.051	.050	23	.070
22	.053	.054	.051	.046	BD	.041	.035	.032	.035	.040	.048	.055	.059	.060	.060	.062	.064	.063	.064	.067	.071	.067	.064	.060	23	.071
23	.061IT	.062IT	.061IT	.058IT	BD	.045IT	.046IT	.043IT	.042IT	.048IT	.054IT	.059IT	.062IT	.064IT	.068IT	.072IT	.070IT	.072IT	.071IT	.074IT	.072IT	.070IT	.067IT	.062IT	23	.074
24	.064IT	.064IT	.054IT	.050IT	BD	.048IT	.049IT	.052IT	.052IT	.051IT	.055IT	.059IT	.064IT	.066IT	.067IT	.069IT	.071IT	.072IT	.072IT	.076IT	.072IT	.068IT	.070IT	.073IT	23	.076
25	.071IT	.071IT	.063IT	.067IT	BD	.074IT	.071IT	.066IT	.060IT	.065IT	.067IT	.074IT	.077IT	.078IT	.083IT	.085IT	.085IT	.082IT	.084IT	.083IT	.080IT	.078IT	.077IT	.075IT	23	.085
26	.075IT	.076IT	.076IT	.076IT	BD	.071IT	.070IT	.063IT	.055IT	.047IT	.052IT	.060IT	.063IT	.064IT	.067IT	.071IT	.070IT	.068IT	.067IT	.066IT	.062IT	.058IT	.057IT	.058IT	23	.076
27	.059	.058	.054	.051	BD	AN	.041	.038	.036	.036	.042	.051	.053	.051	.053	.055	AN	AN	AN	AN	AN	AN	AN	AN	14	.059
28	AN	AN	.049	.048	BD	.041	.030	.025	.027	.035	.044	.050	.054	.056	.058	.062	.059	.055	.051	.054	.052	.050	.045	.043	21	.062
29	.043	.044	.044	.041	BD	.039	.035	.032	.033	.039	.043	.048	.050	.053	.055	.061	.063	.062	.057	.056	.055	.054	.054	.053	23	.063
30	.051	.048	.046	.045	BD	.043	.040	.039	.042	.046	.048	.048	.050	.053	.055	.058	.062	.060	.057	.058	.058	.058	.055	.056	23	.062
31	.056	.058	.056	.056	BD	.050	.049	.045	.045	.048	.055	.059	.062	.065	.063	.061	.059	.057	.056	.054	.054	.053	.052	.052	23	.065
NO.:	30	30	31	31		30	31	31	31	31	31	31	31	31	31	31	30	30	30	30	30	30	30	30		
MAX:	.082	.086	.084	.079		.075	.071	.067	.067	.065	.072	.081	.085	.084	.085	.097	.101	.102	.108	.105	.101	.087	.080	.083		
AVG:	.0618	.0607	.0569	.0552		.0524	.0497	.0465	.0450	.0476	.0530	.0585	.0615	.0631	.0646	.0666	.0678	.0678	.0672	.0674	.0654	.0624	.0608	.0605		

MONTHLY OBSERVATIONS: 702 MONTHLY MEAN: .0592 MONTHLY MAX: .108

Note: Qualifier codes with regional concurrence are shown in upper case, and those without regional review are shown in lower case. An asterisk ("*") indicates that the region has reviewed the value and does not concur with the qualifier.

C. Sutter Buttes

1. Ozone Initial Notification Submitted to U.S. EPA on March 22, 2021. EEPID671

EE Initial Notification Summary Information
Submitting Agency: Feather River Air Quality Management District
Agency Contact: Sondra Spaethe
Date Submitted: March 2, 2021
Applicable NAAQS: 2015 Ozone NAAQS
Affected Regulatory Decision[1]: Attainment determination
(for classification decisions, specify level of the classification with/without EE concurrence)
Area Name/Designation Status: Sutter Buttes/marginal nonattainment classification
Design Value Period (list three year period): 2018, 2019, 2020
(where there are multiple relevant design value periods, summarize separately)

A) Information specific to each flagged site day that may be submitted to EPA in support of the affected regulatory decision listed above

Date of Event	Type of Event (high wind, volcano, wildfires/prescribed fire, other[2])	AQS Flag	Site AQS ID	Site Name	Exceedance Concentration (with units)	Notes (e.g. event name, links to other events)
7/28/2018	Wildfire	IT	061010004	Sutter Buttes	0.08 ppm	Carr Fire, Shasta Co + Mendocino Complex, Lake Co
7/29/2018	Wildfire	IT	061010004	Sutter Buttes	0.075 ppm	Carr Fire, Shasta Co + Mendocino Complex, Lake Co
7/30/2018	Wildfire	IT	061010004	Sutter Buttes	0.083 ppm	Carr Fire, Shasta Co + Mendocino Complex, Lake Co
7/31/2018	Wildfire	IT	061010004	Sutter Buttes	0.082 ppm	Carr Fire, Shasta Co + Mendocino Complex, Lake Co
8/1/2018	Wildfire	IT	061010004	Sutter Buttes	0.082 ppm	Carr Fire, Shasta Co + Mendocino Complex, Lake Co
8/2/2018	Wildfire	IT	061010004	Sutter Buttes	0.071 ppm	Carr Fire, Shasta Co + Mendocino Complex, Lake Co
8/3/2018	Wildfire	IT	061010004	Sutter Buttes	0.074 ppm	Carr Fire, Shasta Co + Mendocino Complex, Lake Co
8/7/2018	Wildfire	IT	061010004	Sutter Buttes	0.075 ppm	Carr Fire, Shasta Co + Mendocino Complex, Lake Co
8/9/2018	Wildfire	IT	061010004	Sutter Buttes	0.079 ppm	Carr Fire, Shasta Co + Mendocino Complex, Lake Co
8/10/2018	Wildfire	IT	061010004	Sutter Buttes	0.077 ppm	Carr Fire, Shasta Co + Mendocino Complex, Lake Co
8/20/2020	Wildfire	IT	061010004	Sutter Buttes	0.075 ppm	August Complex, LNU, and other regional fires
8/21/2020	Wildfire	IT	061010004	Sutter Buttes	0.09 ppm	August Complex, LNU, and other regional fires
8/22/2020	Wildfire	IT	061010004	Sutter Buttes	0.089 ppm	August Complex, LNU, and other regional fires
8/23/2020	Wildfire	IT	061010004	Sutter Buttes	0.072 ppm	August Complex, LNU, and other regional fires
8/24/2020	Wildfire	IT	061010004	Sutter Buttes	0.071 ppm	August Complex, LNU, and other regional fires
8/30/2020	Wildfire	IT	061010004	Sutter Buttes	0.070 ppm	August Complex, LNU, and other regional fires
9/5/2020	Wildfire	IT	061010004	Sutter Buttes	0.074 ppm	August Complex, LNU, and other regional fires
9/13/2020	Wildfire	IT	061010004	Sutter Buttes	0.083 ppm	August Complex, North Complex, and other regional fires
9/14/2020	Wildfire	IT	061010004	Sutter Buttes	0.072 ppm	August Complex, North Complex, and other regional fires

[1] designation, classification, attainment determination, attainment date extension, or finding of SIP inadequacy leading to SIP call
[2] Provide additional information for types of event described as "other"

10/1/2020	Wildfire	IT	061010004	Sutter Buttes	0.084 ppm	August Complex, Zogg Fire, North Complex, and other regional fires

B) Violating Sites Information

(listing of all violating sites in the planning area, regardless of operating agency, and regardless of whether or not they are impacted by EEs)

Site/monitor (AQS ID and POC)	Design Value (without EPA concurrence on any of the events listed in table A above)	Design Value (with EPA concurrence on all events listed in table A above)
Sutter Buttes/061010004-1	0.076 ppm	0.068 ppm

C) Summary of Maximum Design Value (DV) Site Information (Effect of EPA Concurrence on Maximum Design Value Site Determination)

(Two highest values from Table B)

Maximum DV site (AQS ID) **without EPA concurrence** on any of the events listed in table A above	Design Value 0.076 ppm	Design Value Site **Sutter Buttes**	Comment
Maximum DV site (AQS ID) **with EPA concurrence** on all events listed in table A above	Design Value 0.068 ppm	Design Value Site **Sutter Buttes**	Comment

D) List of any sites (AQS ID) within planning area with invalid design values (e.g., due to data incompleteness)
N/A

[1] designation, classification, attainment determination, attainment date extension, or finding of SIP inadequacy leading to SIP call
[2] Provide additional information for types of event described as "other"

2. Sutter Buttes Air Quality Data

Ozone Data is in process of being flagged with the REQEXC Code "rt-Wildfire-U.S."

D. Tuolumne County

1. Ozone Initial Notification Submitted to U.S. EPA on March 22, 2021. EEPID676

EE Initial Notification Summary Information O_3

Submitting Agency: **TUOLUMNE COUNTY AIR POLLUTION CONTROL DISTRICT**
Agency Contact: **KELLE SCHROEDER, APCO**
Date Submitted: **FEBRUARY 16, 2021**
Applicable NAAQS: **2015 OZONE 8 - HOUR**
Affected Regulatory Decision[1]: **ATTAINMENT DETERMINATION**
(for classification decisions, specify level of the classification with/without EE concurrence)
Area Name/Designation Status: **TUOLUMNE COUNTY NONATTAINMENT AREA**
Design Value Period (list three year period): **2018 - 2020**
(where there are multiple relevant design value periods, summarize separately)

A) See attached spreadsheet titled "Federal Exceptional Event Initial Notification Sheet"

B) Violating Sites Information
(listing of all violating sites in the planning area, regardless of operating agency, and regardless of whether or not they are impacted by EEs)

Site/monitor (AQS ID and POC)	Design Value (without EPA concurrence on any of the events listed in attached spreadsheet)	Design Value (with EPA concurrence on all events listed in attached spreadsheet)
Sonora-Barrett Street (061090005-1)	77	69

C) Summary of Maximum Design Value (DV) Site Information (Effect of EPA Concurrence on Maximum Design Value Site Determination)
(Two highest values from Table B)

Maximum DV site (AQS ID) **without EPA concurrence** on any of the events listed in attached spreadsheet	Design Value 77	Design Value Site **Sonora - Barretta Street (061090005-1)**	Comment Site would not be in attainment. Area would be bumped up to Moderate classification.
Maximum DV site (AQS ID) **with EPA concurrence** on all events listed in attached spreadsheet	Design Value 69	Design Value Site **Sonora - Barretta Street (061090005-1)**	Comment Site and area would be in attainment.

D) List of any sites (AQS ID) within planning area with invalid design values (e.g., due to data incompleteness)

Not applicable, only one Site in Tuolumne County - Sonora-Barretta Street

[1] designation, classification, attainment determination, attainment date extension, or finding of SIP inadequacy leading to SIP call
[2] Provide additional information for types of event described as "other"

Federal Ozone NAAQS Exceptional Event Initial Notification Sheet

Tuolumne County Air Pollution Control District

Event Date	Type of Event	AQS Flag	Monitor AQS ID	AQS POC	Site Name	Pollutant	Concentration	Units	Event Name	Notes
7/18/2018	Wildfire	IT	061090005	1	Sonora-Barretta Street	Ozone-8 hr	0.084	ppm	Ferguson Wilfire	Wildfire smoke from Ferguson Wildfire impacted O3 conc.at site; https://www.fire.ca.gov/incidents/2018/;
7/19/2018	Wildfire	IT	061090005	1	Sonora-Barretta Street	Ozone-8 hr	0.084	ppm	Ferguson Wilfire	Wildfire smoke from Ferguson Wildfire impacted O3 conc.at site; https://www.fire.ca.gov/incidents/2018/;
7/28/2018	Wildfire	IT	061090005	1	Sonora-Barretta Street	Ozone-8 hr	0.079	ppm	MendocinoComplex & Donnell Wildfire	Wildfire smoke from Ferguson Wildfire impacted O3 conc.at site; https://www.fire.ca.gov/incidents/2018/;
7/29/2018	Wildfire	IT	061090005	1	Sonora-Barretta Street	Ozone-8 hr	0.079	ppm	MendocinoComplex & Donnell Wildfire	Wildfire smoke from Ferguson Wildfire impacted O3 conc.at site; https://www.fire.ca.gov/incidents/2018/;
7/30/2018	Wildfire	IT	061090005	1	Sonora-Barretta Street	Ozone-8 hr	0.076	ppm	MendocinoComplex & Donnell Wildfire	Wildfire smoke from Ferguson Wildfire impacted O3 conc.at site; https://www.fire.ca.gov/incidents/2018/;
7/31/2018	Wildfire	IT	061090005	1	Sonora-Barretta Street	Ozone-8 hr	0.078	ppm	MendocinoComplex & Donnell Wildfire	Wildfire smoke from Ferguson Wildfire impacted O3 conc.at site; https://www.fire.ca.gov/incidents/2018/;
8/2/2018	Wildfire	IT	061090005	1	Sonora-Barretta Street	Ozone-8 hr	0.078	ppm	MendocinoComplex & Donnell Wildfire	Wildfire smoke from Ferguson Wildfire impacted O3 conc.at site; https://www.fire.ca.gov/incidents/2018/;
8/3/2018	Wildfire	IT	061090005	1	Sonora-Barretta Street	Ozone-8 hr	0.071	ppm	MendocinoComplex & Donnell Wildfire	Wildfire smoke from Ferguson Wildfire impacted O3 conc.at site; https://www.fire.ca.gov/incidents/2018/;
8/4/2018	Wildfire	IT	061090005	1	Sonora-Barretta Street	Ozone-8 hr	0.074	ppm	MendocinoComplex & Donnell Wildfire	Wildfire smoke from Ferguson Wildfire impacted O3 conc.at site; https://www.fire.ca.gov/incidents/2018/;
8/5/2018	Wildfire	IT	061090005	1	Sonora-Barretta Street	Ozone-8 hr	0.084	ppm	MendocinoComplex & Donnell Wildfire	Wildfire smoke from Ferguson Wildfire impacted O3 conc.at site; https://www.fire.ca.gov/incidents/2018/;
8/6/2018	Wildfire	IT	061090005	1	Sonora-Barretta Street	Ozone-8 hr	0.080	ppm	MendocinoComplex & Donnell Wildfire	Wildfire smoke from Ferguson Wildfire impacted O3 conc.at site; https://www.fire.ca.gov/incidents/2018/;
8/8/2018	Wildfire	IT	061090005	1	Sonora-Barretta Street	Ozone-8 hr	0.087	ppm	MendocinoComplex & Donnell Wildfire	Wildfire smoke from Ferguson Wildfire impacted O3 conc.at site; https://www.fire.ca.gov/incidents/2018/;
8/9/2018	Wildfire	IT	061090005	1	Sonora-Barretta Street	Ozone-8 hr	0.074	ppm	MendocinoComplex & Donnell Wildfire	Wildfire smoke from Ferguson Wildfire impacted O3 conc.at site; https://www.fire.ca.gov/incidents/2018/;
8/10/2018	Wildfire	IT	061090005	1	Sonora-Barretta Street	Ozone-8 hr	0.079	ppm	MendocinoComplex & Donnell Wildfire	Wildfire smoke from Ferguson Wildfire impacted O3 conc.at site; https://www.fire.ca.gov/incidents/2018/;
8/24/2018	Wildfire	IT	061090005	1	Sonora-Barretta Street	Ozone-8 hr	0.074	ppm	MendocinoComplex & Donnell Wildfire	Wildfire smoke from Ferguson Wildfire impacted O3 conc.at site; https://www.fire.ca.gov/incidents/2018/;
8/25/2018	Wildfire	IT	061090005	1	Sonora-Barretta Street	Ozone-8 hr	0.074	ppm	MendocinoComplex & Donnell Wildfire	Wildfire smoke from Ferguson Wildfire impacted O3 conc.at site; https://www.fire.ca.gov/incidents/2018/;
8/20/2020	Wildfire	IT	061090005	1	Sonora-Barretta Street	Ozone-8 hr	0.081	ppm	CZU, LNU, SCU, and SQF Complex Wildfires	Wildfire smoke from multiple complex wildfires impacted O3 conc at site; https://www.fire.ca.gov/incidents/2020/
8/21/2020	Wildfire	IT	061090005	1	Sonora-Barretta Street	Ozone-8 hr	0.083	ppm	CZU, LNU, SCU, and SQF Complex Wildfires	Wildfire smoke from multiple complex wildfires impacted O3 conc at site; https://www.fire.ca.gov/incidents/2020/
8/22/2020	Wildfire	IT	061090005	1	Sonora-Barretta Street	Ozone-8 hr	0.081	ppm	CZU, LNU, SCU, and SQF Complex Wildfires	Wildfire smoke from multiple complex wildfires impacted O3 conc at site; https://www.fire.ca.gov/incidents/2020/
8/23/2020	Wildfire	IT	061090005	1	Sonora-Barretta Street	Ozone-8 hr	0.078	ppm	CZU, LNU, SCU, and SQF Complex Wildfires	Wildfire smoke from multiple complex wildfires impacted O3 conc at site; https://www.fire.ca.gov/incidents/2020/
8/24/2020	Wildfire	IT	061090005	1	Sonora-Barretta Street	Ozone-8 hr	0.080	ppm	CZU, LNU, SCU, and SQF Complex Wildfires	Wildfire smoke from multiple complex wildfires impacted O3 conc at site; https://www.fire.ca.gov/incidents/2020/

2. AQS AMP350 Data

Tuolumne County Ozone Data is currently flagged with the REQEXC Code “rt-Wildfire-U.S.”

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
AIR QUALITY SYSTEM
RAW DATA REPORT

Aug. 2, 2021

(44201) Ozone

SITE ID: 06-109-0005 POC: 1
COUNTY: (109) Tuolumne
CITY: (72674) Sonora
SITE ADDRESS: 251 S BARRETTA, SONORA, CA 95370
SITE COMMENTS: LOCATED ON DARIO CASSINA HIGH SCHOOL GROUNDS. ARB SITE NAME (NUMBER) IS SONORA-BA
MONITOR COMMENTS: DASIBI MODEL 1003AH O3 ANALYZER (UV PHOTOMETRY METHOD).

STATE: (06) California
AQCR: (031) SAN JOAQUIN VALLEY
URBANIZED AREA: (0000) NOT IN AN URBAN AREA
LAND USE: RESIDENTIAL
LOCATION SETTING: URBAN AND CENTER CITY

CAS NUMBER: 10028-15-6
LATITUDE: 37.98178
LONGITUDE: -120.378551
UTM ZONE:
UTM NORTHING:
UTM EASTING:
ELEVATION-MSL: 571
PROBE HEIGHT: 6

SUPPORT AGENCY: (0145) California Air Resources Board
MONITOR TYPE: SLAMS
COLLECTION AND ANALYSIS METHOD: (087) INSTRUMENTAL ULTRA VIOLET ABSORPTI
PQAO: (0145) California Air Resources Board

REPORT FOR: JULY 2018

DURATION: 1 HOUR
UNITS: Parts per million
MIN DETECTABLE: .005

DAY	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	OBS	MAXIMUM
1	.028	.026	.027	.027	BD	.023	.033	.039	.044	.046	.049	.054	.056	.059	.058	.063	.068	.069	.066	.062	.053	.044	.038	.036	23	.069
2	.033	.030	.033	.029	BD	.019	.032	.046	.051	.050	.053	.055	.060	.066	.068	.076	.080	.076	.073	.073	.057	.047	.042	.039	23	.080
3	.035	.035	.032	.031	BD	.022	.028	.041	.053	.061	.064	.058	.058	.057	.059	.061	.062	.065	.068	.063	.054	.044	.038	.041	23	.068
4	.041	.036	.033	.035	BD	.027	.032	.044	.050	.050	.049	.048	.050	.051	.054	.056	.055	.055	.053	.047	.040	.035	.034	.033	23	.056
5	.029	.031	.030	.028	BD	.020	.030	.044	.046	.048	.052	.051	.051	.054	.055	.056	.057	.057	.053	.042	.037	.041	.037	.034	23	.057
6	.034	.032	.034	.032	BD	.030	.022	.035	.040	.043	.048	.050	.050	.046	.046	.058	.063	.062	.061	.062	.056	.049	.045	.043	23	.063
7	.038	.034	.032	.032	BD	.027	.032	.042	.048	.045	.038	.040	.043	.046	.050	.052	.053	.051	.048	.048	.041	.033	.029	.027	23	.053
8	.025	.026	.024	.024	BD	.023	.027	.035	.044	.047	.052	.054	.054	.057	.059	.064	.063	.065	.064	.057	.050	.044	.037	.035	23	.065
9	.032	.031	.031	.031	BD	.025	.033	.044	.052	.056	.052	.054	.051	.054	.061	.061	.063	.065	.068	.071	.065	.060	.051	.049	23	.071
10	.043	.039	.036	.031	BD	.019	.026	.039	.040	.052	.053	.054	.047	.049	.053	.054	.056	.059	.055	.052	.050	.044	.038	.034	23	.059
11	.031	.029	.029	.028	BD	.022	.028	.039	.039	.047	.051	.053	.055	.056	.055	.056	.057	.058	.059	.054	.049	.041	.039	.038	23	.059
12	.035	.032	.032	.030	BD	.024	.029	.048	.051	.051	.055	.058	.054	.054	.058	.060	.059	.055	.050	.045	.038	.036	.037	.037	23	.060
13	.037	.032	.030	.033	BD	.034	.028	.025	.039	.050	.053	.051	.055	.057	.057	.058	.058	.058	.062	.061	.058	.050	.050	.046	23	.062
14	.043	.039	.035	.033	BD	.025	.030	.045	.051	.049	.050	.053	.055	.055	.056	.057	.057	.058	.059	.056	.050	.043	.041	.037	23	.059
15	.034	.031	.029	.028	BD	.028	.030	.034	.045	.049	.052	.049	.047	.045	.044	.048	.051	.052	.052	.048	.042	.037	.035	.028	23	.052
16	.027	.026	.024	.023	BD	.018	.025	.039	.048	.053	.051	.048	.051	.051	.054	.057	.054	.055	.057	.056	.053	.045	.043	.039	23	.057
17	.034	.031	.029	.029	BD	.026	.027	.036	.051	.059	.054	.058	.057	.059	.061	.062	.061	.061	.062	.060	.050	.045	.041	.038	23	.062
18	.037	.035	.034	.033	BD	.026	.016	.023	.037	.054	.085	.101	.092	.083	.078	.078	.078	.077	.074	.063	.054	.050	.050	.049	23	.101
19	.047	.044	.044	.042	BD	.039	.035	.049	.063	.060	.074	.088	.089	.100	.095	.083	.076	.070	.068	.058	.054	.048	.040	.038	23	.100
20	.036	.035	.034	.035	BD	.023	.019	.034	.056	.069	.072	.077	.075	.070	.066	.067	.063	.067	.067	.055	.046	.042	.042	.042	23	.077
21	.041	.037	.034	.029	BD	.028	.027	.034	.041	.045	.044	.045	.047	.047	.053	.053	.053	.054	.050	.043	.039	.037	.036	.034	23	.054
22	.032	.027	.025	.024	BD	.020	.021	.027	.034	.036	.038	.043	.046	.046	.048	.049	.051	.050	.050	.050	.047	.045	.041	.039	23	.051
23	.036	.028	.024	.022	BD	.017	.020	.032	.041	.046	.047	.049	.051	.053	.055	.056	.056	.056	.055	.053	.050	.045	.042	.040	23	.056
24	.034	.032	.034	.030	BD	.024	.023	.039	.055	.064	.058	.056	.053	.051	.050	.050	.044	.043	.056	.059	.057	.052	.045	.040	23	.064
25	.037	.036	.037	.034	BD	.022	.026	.041	.046	.045	.048	.051	.055	.061	.060	.067	.074	.076	.075	.071	.059	.048	.044	.039	23	.076
26	.033	.035	.032	.028	BD	.018	.018	.038	.049	.053	.059	.062	.064	.067	.069	.071	.074	.072	.073	.072	.064	.058	.053	.047	23	.074
27	.042	.039	.036	.031	BD	.030	.028	.037	.052	.056	.068	.072	.070	.066	.065	.064	.064	.069	.066	.056	.045	.039	.035	.034	23	.072
28	.037rt	.036rt	.032rt	.033rt	BD	.029rt	.029rt	.038rt	.051rt	.060rt	.069rt	.078rt	.079rt	.078rt	.084rt	.095rt	.084rt	.076rt	.072rt	.068rt	.062rt	.052rt	.045rt	.043rt	23	.085
29	.041rt	.040rt	.039rt	.040rt	BD	.039rt	.037rt	.042rt	.053rt	.061rt	.075rt	.073rt	.076rt	.080rt	.083rt	.080rt	.083rt	.084rt	.080rt	.066rt	.057rt	.049rt	.047rt	.049rt	23	.084
30	.048rt	.044rt	.039rt	.039rt	BD	.034rt	.029rt	.035rt	.047rt	.057rt	.062rt	.069rt	.070rt	.072rt	.070rt	.075rt	.084rt	.089rt	.083rt	.070rt	.061rt	.051rt	.046rt	.042rt	23	.089
31	.038rt	.035rt	.034rt	.034rt	BD	.023rt	.013rt	.020rt	.043rt	.050rt	.062rt	.065rt	.068rt	.075rt	.078rt	.087rt	.091rt	.082rt	.083rt	.066rt	.060rt	.055rt	.050rt	.048rt	23	.091
NO.:	31	31	31	31		31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31		
MAX:	.048	.044	.044	.042		.039	.037	.049	.063	.069	.085	.101	.092	.100	.095	.087	.091	.089	.083	.073	.065	.060	.053	.049		
AVG:	.0361	.0336	.0322	.0309		.0253	.0269	.0375	.0471	.0520	.0560	.0586	.0590	.0602	.0614	.0634	.0643	.0641	.0633	.0583	.0515	.0455	.0416	.0393		

MONTHLY OBSERVATIONS: 713 MONTHLY MEAN: .0482 MONTHLY MAX: .101

Note: Qualifier codes with regional concurrence are shown in upper case, and those without regional review are shown in lower case. An asterisk (**) indicates that the region has reviewed the value and does not concur with the qualifier.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
AIR QUALITY SYSTEM
RAW DATA REPORT

Aug. 2, 2021

(44201) Ozone

SITE ID: 06-109-0005 POC: 1
COUNTY: (109) Tuolumne
CITY: (72674) Sonora
SITE ADDRESS: 251 S BARRETTA, SONORA, CA 95370
SITE COMMENTS: LOCATED ON DARIO CASSINA HIGH SCHOOL GROUNDS. ARB SITE NAME (NUMBER) IS SONORA-BA
MONITOR COMMENTS: DASIBI MODEL 1003AH O3 ANALYZER (UV PHOTOMETRY METHOD).

STATE: (06) California
AQCR: (031) SAN JOAQUIN VALLEY
URBANIZED AREA: (0000) NOT IN AN URBAN AREA
LAND USE: RESIDENTIAL
LOCATION SETTING: URBAN AND CENTER CITY

CAS NUMBER: 10028-15-6
LATITUDE: 37.98178
LONGITUDE: -120.378551
UTM ZONE:
UTM NORTHING:
UTM EASTING:
ELEVATION-MSL: 571
PROBE HEIGHT: 6

SUPPORT AGENCY: (0145) California Air Resources Board
MONITOR TYPE: SLAMS
COLLECTION AND ANALYSIS METHOD: (087) INSTRUMENTAL ULTRA VIOLET ABSORPTI
PQAO: (0145) California Air Resources Board

REPORT FOR: AUGUST 2018

DURATION: 1 HOUR
UNITS: Parts per million
MIN DETECTABLE: .005

DAY	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	OBS	MAXIMUM
1	.046	.048	.042	.041	BD	.030	.024	.033	.051	.063	.074	.070	.059	.056	.058	.061	.062	.069	.083	.078	.061	.052	.048	.046	23	.083
2	.042rt	.043rt	.042rt	.041rt	BD	.030rt	.026rt	.034rt	.036rt	.054rt	.072rt	.071rt	.064rt	.060rt	.064rt	.074rt	.076rt	.088rt	.097rt	.091rt	.076rt	.065rt	.055rt	.053rt	23	.097
3	.051	.047	.046	.042	BD	.031	.018	.022	.036	.058	.065	.063	.062	.063	.064	.072	.082	.087	.077	.065	.057	.052	.051	.048	23	.087
4	.046rt	.042rt	.038rt	.038rt	BD	.030rt	.026rt	.029rt	.048rt	.064rt	.071rt	.075rt	.077rt	.079rt	.084rt	.080rt	.066rt	.045rt	.045rt	.040rt	.035rt	.031rt	.029rt	.026rt	23	.084
5	.022rt	.020rt	.021rt	.022rt	BD	.022rt	.026rt	.033rt	.043rt	.052rt	.048rt	.051rt	.047rt	.061rt	.076rt	.088rt	.085rt	.086rt	.099rt	.096rt	.077rt	.067rt	.060rt	.055rt	23	.099
6	.052rt	.052rt	.047rt	.045rt	BD	.041rt	.030rt	.038rt	.057rt	.070rt	.075rt	.076rt	.081rt	.093rt	.086rt	.077rt	.079rt	.079rt	.074rt	.067rt	.062rt	.054rt	.049rt	.047rt	23	.093
7	.048	.047	.044	.041	BD	.031	.029	.033	.050	.061	.063	.071	.074	.071	.066	.074	.072	.070	.067	.056	.051	.047	.042	.048	23	.074
8	.048rt	.046rt	.043rt	.044rt	BD	.031rt	.028rt	.041rt	BL	BL	.069rt	.081rt	.088rt	.092rt	.093rt	.093rt	.089rt	.084rt	.076rt	.071rt	.057rt	.047rt	.044rt	.050rt	21	.093
9	.054rt	.049rt	.050rt	.046rt	BD	.041rt	.039rt	.049rt	.069rt	.075rt	.079rt	.079rt	.070rt	.072rt	.075rt	.073rt	.072rt	.066rt	.066rt	.052rt	.047rt	.047rt	.048rt	.048rt	23	.079
10	.049rt	.045rt	.045rt	.049rt	BD	.031rt	.038rt	.045rt	.063rt	.068rt	.066rt	.077rt	.080rt	.077rt	.079rt	.082rt	.083rt	.079rt	.080rt	.070rt	.063rt	.056rt	.051rt	.050rt	23	.083
11	.046	.047	.043	.049	BD	.042	.044	.053	.069	.064	.067	.062	.053	.050	.053	.054	.058	.055	.053	.048	.044	.041	.036	.031	23	.069
12	.030	.029	.032	.030	BD	.029	.027	.032	.044	.045	.049	.051	.054	.054	.055	.055	.055	.057	.055	.049	.047	.044	.038	.034	23	.057
13	.034	.033	.031	.026	BD	.027	.023	.037	.047	.049	.056	.058	.057	.056	.057	.059	.063	.063	.064	.062	.054	.048	.043	.038	23	.064
14	.039	.037	.034	.032	BD	.029	.028	.041	.049	.054	.056	.058	.055	.056	.060	.061	.065	.066	.064	.060	.051	.045	.041	.040	23	.066
15	.037	.033	.034	.035	BD	.031	.033	.044	.056	.052	.059	.059	.060	.058	.056	.055	.056	.061	.061	.057	.049	.043	.038	.036	23	.061
16	.035	.034	.031	.028	BD	.022	.027	.046	.054	.050	.054	.062	.062	.061	.062	.063	.062	.064	.065	.058	.054	.046	.042	.037	23	.065
17	.037	.035	.034	.032	BD	.022	.024	.042	.054	.057	.059	.056	.059	.060	.059	.063	.062	.058	.060	.061	.058	.053	.046	.041	23	.063
18	.040	.037	.037	.035	BD	.029	.028	.040	.047	.040	.044	.051	.045	.051	.056	.055	.057	.059	.057	.055	.053	.047	.045	.037	23	.059
19	.033	.031	.030	.030	BD	.029	.029	.039	.045	.055	.068	.066	.067	.060	.062	.062	.063	.067	.060	.049	.045	.038	.040	.042	23	.068
20	.036	.036	.032	.029	BD	.020	.024	.039	.042	.047	.051	.055	.059	.061	.062	.063	.063	.063	.062	.052	.046	.041	.038	.038	23	.063
21	.040	.039	.036	.034	BD	.034	.030	.035	.052	.056	.061	.064	.064	.064	.065	.066	.065	.067	.067	.057	.049	.043	.040	.038	23	.067
22	.037	.035	.035	.033	BD	.026	.022	.042	.053	.056	.059	.061	.064	.065	.065	.063	.063	.062	.064	.056	.050	.044	.040	.038	23	.065
23	.038	.037	.035	.031	BD	.027	.023	.047	.051	.055	.057	.058	.059	.060	.060	.061	.062	.064	.067	.058	.052	.045	.042	.040	23	.067
24	.040	.037	.036	.034	BD	.023	.017	.035	.046	.053	.060	.065	.069	.073	.075	.076	.081	.081	.075	.065	.059	.052	.050	.049	23	.081
25	.049	.051	.049	.044	BD	.036	.036	.052	.062	.068	.070	.070	.072	.074	.076	.077	.077	.079	.073	.062	.053	.051	.048	.045	23	.079
26	.048	.047	.044	.044	BD	.036	.036	.046	.056	.063	.075	.073	.069	.068	.069	.072	.074	.074	.065	.054	.046	.043	.040	.043	23	.075
27	.040	.038	.036	.035	BD	.031	.028	.046	.052	.056	.058	.060	.057	.052	.047	.049	.046	.047	.045	.035	.034	.032	.030	.030	23	.060
28	.029	.028	.028	.025	BD	.017	.019	.035	.047	.048	.048	.047	.045	.046	.048	.051	.052	.051	.049	.040	.037	.034	.031	.030	23	.052
29	.027	.025	.026	.023	BD	.017	.018	.035	.042	.042	.045	.047	.050	.052	.055	.055	.055	.055	.053	.052	.047	.045	.041	.041	23	.055
30	.036	.029	.031	.032	BD	.029	.027	.030	.037	.042	.046	.049	.053	.054	.055	.055	.054	.055	.054	.048	.043	.035	.033	.028	23	.055
31	.027	.025	.023	.021	BD	.014	.016	.034	.042	.052	.053	.054	.053	.054	.055	.057	.063	.070	.074	.070	.062	.057	.056	.046	23	.074
NO.:	31	31	31	31		31	31	31	30	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31		
MAX:	.054	.052	.050	.049		.042	.044	.053	.069	.075	.079	.081	.088	.093	.093	.093	.089	.088	.099	.096	.077	.067	.060	.055		
AVG:	.0399	.0381	.0366	.0352		.0286	.0272	.0389	.0500	.0556	.0605	.0626	.0622	.0630	.0644	.0660	.0665	.0668	.0662	.0592	.0522	.0466	.0431	.0411		

MONTHLY OBSERVATIONS: 711 MONTHLY MEAN: .0509 MONTHLY MAX: .099

Note: Qualifier codes with regional concurrence are shown in upper case, and those without regional review are shown in lower case. An asterisk (**) indicates that the region has reviewed the value and does not concur with the qualifier.

E. Tuscan Buttes

1. Ozone Initial Notification Submitted to U.S. EPA on March 22, 2021. EEPID682

EE Initial Notification Summary Information O_3

Submitting Agency: Tehama APCD
Agency Contact: Peter Helldorfer
Date Submitted: 2/19/2021
Applicable NAAQS: 2015 8-Hour Ozone
Affected Regulatory Decision[1]: Attainment Determination for 2015 8-Hour Ozone
(for classification decisions, specify level of the classification with/without EE concurrence)
Area Name/Designation Status: Tehama County, California – Tuscan Buttes - Nonattainment Area
Design Value Period (list three year period): 2018-2020
(where there are multiple relevant design value periods, summarize separately)

A) See attached spreadsheet titled "Federal Exceptional Event Initial Notification Sheet 2018-2020"

B) Violating Sites Information

(listing of all violating sites in the planning area, regardless of operating agency, and regardless of whether or not they are impacted by EEs)

Site/monitor (AQS ID and POC)	Design Value (without EPA concurrence on any of the events listed in attached spreadsheet)	Design Value (with EPA concurrence on all events listed in attached spreadsheet)
Tuscan Buttes AQS: 061030004-1	74 ppb	67 ppb

C) Summary of Maximum Design Value (DV) Site Information (Effect of EPA Concurrence on Maximum Design Value Site Determination)

(Two highest values from Table B)

Maximum DV site (AQS ID) **without EPA concurrence** on any of the events listed in attached spreadsheet	Design Value 74	Design Value Site **Tuscan Buttes**	Comment
Maximum DV site (AQS ID) **with EPA concurrence** on all events listed in attached spreadsheet	Design Value 67	Design Value Site **Tuscan Buttes**	Comment **Site would meet attainment for 2015 8-Hour Ozone NAAQS**

D) List of any sites (AQS ID) within planning area with invalid design values (e.g., due to data incompleteness)

[1] designation, classification, attainment determination, attainment date extension, or finding of SIP inadequacy leading to SIP call
[2] Provide additional information for types of event described as "other"

Federal Ozone NAAQS Exceptional Event Initial Notification Sheet

Event Date	Type of Event	AQS Flag	Monitor AQS ID	AQS POC	Site Name	Pollutant	Concentration	Units	Event Name	Notes
6/26/2018	Wildfire	IT	061030004	1	Tehama County - Tuscan Buttes	Ozone-8hr	0.076	ppm	Lane Fire & Pawnee Fire	Wildfire smoke impacted ozone at site. Lane Fire: https://web.archive.org/web/20180628124756/https://cdfdata.fire.ca.gov/incidents/incidents_details_info?incident_id=2077 - Pawnee Fire: https://web.archive.org/web/20180628044300/https://cdfdata.fire.ca.gov/incidents/incidents_details_info?incident_id=2080
6/27/2018	Wildfire	IT	061030004	1	Tehama County - Tuscan Buttes	Ozone-8hr	0.071	ppm	Lane Fire & Pawnee Fire	Wildfire smoke impacted ozone at site. Lane Fire: https://web.archive.org/web/20180628124756/https://cdfdata.fire.ca.gov/incidents/incidents_details_info?incident_id=2077 - Pawnee Fire: https://web.archive.org/web/20180628044300/https://cdfdata.fire.ca.gov/incidents/incidents_details_info?incident_id=2080
7/27/2018	Wildfire	IT	061030004	1	Tehama County - Tuscan Buttes	Ozone-8hr	0.076	ppm	Carr Fire & Mendocino Complex Fire	Wildfire smoke from multiple wildfires impacted ozone at site. Carr Fire: https://fire.ca.gov/incident/?incident=240b1f55-0f4e-448d-a4ce-3ecfec7a6c9d - Mendocino Complex Fire: https://www.fire.ca.gov/incidents/2018/7/27/ranch-fire-mendocino-complex/
7/31/2018	Wildfire	IT	061030004	1	Tehama County - Tuscan Buttes	Ozone-8hr	0.081	ppm	Carr Fire & Mendocino Complex Fire	Wildfire smoke from multiple wildfires impacted ozone at site. Carr Fire: https://fire.ca.gov/incident/?incident=240b1f55-0f4e-448d-a4ce-3ecfec7a6c9d - Mendocino Complex Fire: https://www.fire.ca.gov/incidents/2018/7/27/ranch-fire-mendocino-complex/
8/1/2018	Wildfire	IT	061030004	1	Tehama County - Tuscan Buttes	Ozone-8hr	0.082	ppm	Carr Fire & Mendocino Complex Fire	Wildfire smoke from multiple wildfires impacted ozone at site. Carr Fire: https://fire.ca.gov/incident/?incident=240b1f55-0f4e-448d-a4ce-3ecfec7a6c9d - Mendocino Complex Fire: https://www.fire.ca.gov/incidents/2018/7/27/ranch-fire-mendocino-complex/
8/2/2018	Wildfire	IT	061030004	1	Tehama County - Tuscan Buttes	Ozone-8hr	0.073	ppm	Carr Fire & Mendocino Complex Fire	Wildfire smoke from multiple wildfires impacted ozone at site. Carr Fire: https://fire.ca.gov/incident/?incident=240b1f55-0f4e-448d-a4ce-3ecfec7a6c9d - Mendocino Complex Fire: https://www.fire.ca.gov/incidents/2018/7/27/ranch-fire-mendocino-complex/
8/3/2018	Wildfire	IT	061030004	1	Tehama County - Tuscan Buttes	Ozone-8hr	0.077	ppm	Carr Fire & Mendocino Complex Fire	Wildfire smoke from multiple wildfires impacted ozone at site. Carr Fire: https://fire.ca.gov/incident/?incident=240b1f55-0f4e-448d-a4ce-3ecfec7a6c9d - Mendocino Complex Fire: https://www.fire.ca.gov/incidents/2018/7/27/ranch-fire-mendocino-complex/
8/7/2018	Wildfire	IT	061030004	1	Tehama County - Tuscan Buttes	Ozone-8hr	0.071	ppm	Carr Fire & Mendocino Complex Fire	Wildfire smoke from multiple wildfires impacted ozone at site. Carr Fire: https://fire.ca.gov/incident/?incident=240b1f55-0f4e-448d-a4ce-3ecfec7a6c9d - Mendocino Complex Fire: https://www.fire.ca.gov/incidents/2018/7/27/ranch-fire-mendocino-complex/
8/8/2018	Wildfire	IT	061030004	1	Tehama County - Tuscan Buttes	Ozone-8hr	0.078	ppm	Carr Fire & Mendocino Complex Fire	Wildfire smoke from multiple wildfires impacted ozone at site. Carr Fire: https://fire.ca.gov/incident/?incident=240b1f55-0f4e-448d-a4ce-3ecfec7a6c9d - Mendocino Complex Fire: https://www.fire.ca.gov/incidents/2018/7/27/ranch-fire-mendocino-complex/
8/9/2018	Wildfire	IT	061030004	1	Tehama County - Tuscan Buttes	Ozone-8hr	0.087	ppm	Carr Fire & Mendocino Complex Fire & Hirz Fire	Wildfire smoke from multiple wildfires impacted ozone at site. Carr Fire: https://fire.ca.gov/incident/?incident=240b1f55-0f4e-448d-a4ce-3ecfec7a6c9d - Mendocino Complex Fire: https://www.fire.ca.gov/incidents/2018/7/27/ranch-fire-mendocino-complex/ - Hirz Fire: https://web.archive.org/web/20180827000953/https://inciweb.nwcg.gov/incident/6116/
8/10/2018	Wildfire	IT	061030004	1	Tehama County - Tuscan Buttes	Ozone-8hr	0.085	ppm	Carr Fire & Mendocino Complex Fire & Hirz Fire	Wildfire smoke from multiple wildfires impacted ozone at site. Carr Fire: https://fire.ca.gov/incident/?incident=240b1f55-0f4e-448d-a4ce-3ecfec7a6c9d - Mendocino Complex Fire: https://www.fire.ca.gov/incidents/2018/7/27/ranch-fire-mendocino-complex/ - Hirz Fire: https://web.archive.org/web/20180827000953/https://inciweb.nwcg.gov/incident/6116/
8/25/2018	Wildfire	IT	061030004	1	Tehama County - Tuscan Buttes	Ozone-8hr	0.082	ppm	Carr Fire & Mendocino Complex Fire & Hirz Fire	Wildfire smoke from multiple wildfires impacted ozone at site. Carr Fire: https://fire.ca.gov/incident/?incident=240b1f55-0f4e-448d-a4ce-3ecfec7a6c9d - Mendocino Complex Fire: https://www.fire.ca.gov/incidents/2018/7/27/ranch-fire-mendocino-complex/ - Hirz Fire: https://web.archive.org/web/20180827000953/https://inciweb.nwcg.gov/incident/6116/
9/21/2018	Wildfire	IT	061030004	1	Tehama County - Tuscan Buttes	Ozone-8hr	0.071	ppm	Delta Fire	Wildfire smoke impacted ozone at site. Delta Fire: https://web.archive.org/web/20181105222940/https://inciweb.nwcg.gov/incident/6191/
8/20/2020	Wildfire	IT	061030004	1	Tehama County - Tuscan Buttes	Ozone-8hr	0.074	ppm	August Complex & SCU Complex & LNU Complex & North Complex	Wildfire smoke from multiple wildfires impacted ozone at site. August Complex: https://inciweb.nwcg.gov/incident/6983/ - SCU Complex https://www.fire.ca.gov/incidents/2020/8/18/scu-lightning-complex/ - LNU Complex: https://www.fire.ca.gov/incidents/2020/8/17/lnu-lightning-complex-includes-hennessey-gamble-15-10-spanish-markley-13-4-11-16-walbridge/ - North Complex: https://inciweb.nwcg.gov/incident/6997/
8/21/2020	Wildfire	IT	061030004	1	Tehama County - Tuscan Buttes	Ozone-8hr	0.085	ppm	August Complex & SCU Complex & LNU Complex & North Complex	Wildfire smoke from multiple wildfires impacted ozone at site. August Complex: https://inciweb.nwcg.gov/incident/6983/ - SCU Complex https://www.fire.ca.gov/incidents/2020/8/18/scu-lightning-complex/ - LNU Complex: https://www.fire.ca.gov/incidents/2020/8/17/lnu-lightning-complex-includes-hennessey-gamble-15-10-spanish-markley-13-4-11-16-walbridge/ - North Complex: https://inciweb.nwcg.gov/incident/6997/
8/22/2020	Wildfire	IT	061030004	1	Tehama County - Tuscan Buttes	Ozone-8hr	0.087	ppm	August Complex & SCU Complex & LNU Complex & North Complex	Wildfire smoke from multiple wildfires impacted ozone at site. August Complex: https://inciweb.nwcg.gov/incident/6983/ - SCU Complex https://www.fire.ca.gov/incidents/2020/8/18/scu-lightning-complex/ - LNU Complex: https://www.fire.ca.gov/incidents/2020/8/17/lnu-lightning-complex-includes-hennessey-gamble-15-10-spanish-markley-13-4-11-16-walbridge/ - North Complex: https://inciweb.nwcg.gov/incident/6997/
8/24/2020	Wildfire	IT	061030004	1	Tehama County - Tuscan Buttes	Ozone-8hr	0.078	ppm	August Complex & SCU Complex & LNU Complex & North Complex	Wildfire smoke from multiple wildfires impacted ozone at site. August Complex: https://inciweb.nwcg.gov/incident/6983/ - SCU Complex https://www.fire.ca.gov/incidents/2020/8/18/scu-lightning-complex/ - LNU Complex: https://www.fire.ca.gov/incidents/2020/8/17/lnu-lightning-complex-includes-hennessey-gamble-15-10-spanish-markley-13-4-11-16-walbridge/ - North Complex: https://inciweb.nwcg.gov/incident/6997/
8/25/2020	Wildfire	IT	061030004	1	Tehama County - Tuscan Buttes	Ozone-8hr	0.072	ppm	August Complex & SCU Complex & LNU Complex & North Complex	Wildfire smoke from multiple wildfires impacted ozone at site. August Complex: https://inciweb.nwcg.gov/incident/6983/ - SCU Complex https://www.fire.ca.gov/incidents/2020/8/18/scu-lightning-complex/ - LNU Complex: https://www.fire.ca.gov/incidents/2020/8/17/lnu-lightning-complex-includes-hennessey-gamble-15-10-spanish-markley-13-4-11-16-walbridge/ - North Complex: https://inciweb.nwcg.gov/incident/6997/
8/28/2020	Wildfire	IT	061030004	1	Tehama County - Tuscan Buttes	Ozone-8hr	0.074	ppm	August Complex & SCU Complex & LNU Complex & North Complex	Wildfire smoke from multiple wildfires impacted ozone at site. August Complex: https://inciweb.nwcg.gov/incident/6983/ - SCU Complex https://www.fire.ca.gov/incidents/2020/8/18/scu-lightning-complex/ - LNU Complex: https://www.fire.ca.gov/incidents/2020/8/17/lnu-lightning-complex-includes-hennessey-gamble-15-10-spanish-markley-13-4-11-16-walbridge/ - North Complex: https://inciweb.nwcg.gov/incident/6997/
9/6/2020	Wildfire	IT	061030004	1	Tehama County - Tuscan Buttes	Ozone-8hr	0.071	ppm	August Complex & SCU Complex & LNU Complex & North Complex	Wildfire smoke from multiple wildfires impacted ozone at site. August Complex: https://inciweb.nwcg.gov/incident/6983/ - SCU Complex https://www.fire.ca.gov/incidents/2020/8/18/scu-lightning-complex/ - LNU Complex: https://www.fire.ca.gov/incidents/2020/8/17/lnu-lightning-complex-includes-hennessey-gamble-15-10-spanish-markley-13-4-11-16-walbridge/ - North Complex: https://inciweb.nwcg.gov/incident/6997/
9/14/2020	Wildfire	IT	061030004	1	Tehama County - Tuscan Buttes	Ozone-8hr	0.073	ppm	August Complex & SCU Complex & LNU Complex & North Complex	Wildfire smoke from multiple wildfires impacted ozone at site. August Complex: https://inciweb.nwcg.gov/incident/6983/ - SCU Complex https://www.fire.ca.gov/incidents/2020/8/18/scu-lightning-complex/ - LNU Complex: https://www.fire.ca.gov/incidents/2020/8/17/lnu-lightning-complex-includes-hennessey-gamble-15-10-spanish-markley-13-4-11-16-walbridge/ - North Complex: https://inciweb.nwcg.gov/incident/6997/

2. Tuscan Buttes Air Quality Data

Ozone Data is in process of being flagged with the REQEXC Code "rt-Wildfire-U.S."

F. Western Nevada County

1. Ozone Initial Notification Submitted to U.S. EPA on March 15, 2021. EEPID688

Ozone Exceptional Events, 2018-2020

EE Initial Notification Summary Information

Submitting Agency: Northern Sierra Air Quality Management District
Agency Contact: Sam Longmire
Date Submitted: 3/12/2021
Applicable NAAQS: 2008 8-Hour Ozone
Affected Regulatory Decision[1]: Attainment Determination
(for classification decisions, specify level of the classification with/without EE concurrence)
Area Name/Designation Status: Nevada County (Western Part)/Serious Nonattainment
Design Value Period (list three year period): 2018-2020
(where there are multiple relevant design value periods, summarize separately)

A) Information specific to each flagged site day that may be submitted to EPA in support of the affected regulatory decision listed above

Date of Event	Type of Event (high wind, volcano, wildfires/prescribed fire, other[2])	AQS Flag	Site AQS ID	Site Name	Exceedance Concentration (with units)	Notes (e.g. event name, links to other events)
7/26/2018	Wildfire	IT	06-057-0005	Grass Valley-Litton Building (POC 1)	83 ppb	Multiple Wildfires
7/27/2018	Wildfire	IT	06-057-0005	Grass Valley-Litton Building (POC 1)	82 ppb	Multiple Wildfires
7/28/2018	Wildfire	IT	06-057-0005	Grass Valley-Litton Building (POC 1)	78 ppb	Multiple Wildfires
7/29/2018	Wildfire	IT	06-057-0005	Grass Valley-Litton Building (POC 1)	78 ppb	Multiple Wildfires
7/31/2018	Wildfire	IT	06-057-0005	Grass Valley-Litton Building (POC 1)	101 ppb	Multiple Wildfires
8/1/2018	Wildfire	IT	06-057-0005	Grass Valley-Litton Building (POC 1)	98 ppb	Multiple Wildfires
8/2/2018	Wildfire	IT	06-057-0005	Grass Valley-Litton Building (POC 1)	101 ppb	Multiple Wildfires
8/7/2018	Wildfire	IT	06-057-0005	Grass Valley-Litton Building (POC 1)	84 ppb	Multiple Wildfires
8/8/2018	Wildfire	IT	06-057-0005	Grass Valley-Litton Building (POC 1)	95 ppb	Multiple Wildfires
8/9/2018	Wildfire	IT	06-057-0005	Grass Valley-Litton Building (POC 1)	93 ppb	Multiple Wildfires
8/20/2020	Wildfire	IT	06-057-0005	Grass Valley-Litton Building (POC 1)	122 ppb	Multiple Wildfires
8/21/2020	Wildfire	IT	06-057-0005	Grass Valley-Litton Building (POC 1)	104 ppb	Multiple Wildfires
8/24/2020	Wildfire	IT	06-057-0005	Grass Valley-Litton Building (POC 1)	78 ppb	Multiple Wildfires
8/25/2020	Wildfire	IT	06-057-0005	Grass Valley-Litton Building (POC 1)	75 ppb	Multiple Wildfires
8/26/2020	Wildfire	IT	06-057-0005	Grass Valley-Litton Building (POC 1)	76 ppb	Multiple Wildfires
8/28/2020	Wildfire	IT	06-057-0005	Grass Valley-Litton Building (POC 1)	74 ppb	Multiple Wildfires
8/29/2020	Wildfire	IT	06-057-0005	Grass Valley-Litton Building (POC 1)	80 ppb	Multiple Wildfires
9/1/2020	Wildfire	IT	06-057-0005	Grass Valley-Litton Building (POC 1)	85 ppb	Multiple Wildfires
9/5/2020	Wildfire	IT	06-057-0005	Grass Valley-Litton Building (POC 1)	78 ppb	Multiple Wildfires
9/12/2020	Wildfire	IT	06-057-0005	Grass Valley-Litton Building (POC 1)	86 ppb	Multiple Wildfires
9/13/2020	Wildfire	IT	06-057-0005	Grass Valley-Litton Building (POC 1)	81 ppb	Multiple Wildfires
9/14/2020	Wildfire	IT	06-057-0005	Grass Valley-Litton Building (POC 1)	79 ppb	Multiple Wildfires

[1] designation, classification, attainment determination, attainment date extension, or finding of SIP inadequacy leading to SIP call

[2] Provide additional information for types of event described as "other"

9/15/2020	Wildfire	IT	06-057-0005	Grass Valley-Litton Building (POC 1)	76 ppb	Multiple Wildfires
9/16/2020	Wildfire	IT	06-057-0005	Grass Valley-Litton Building (POC 1)	78 ppb	Multiple Wildfires
9/17/2020	Wildfire	IT	06-057-0005	Grass Valley-Litton Building (POC 1)	75 ppb	Multiple Wildfires
9/21/2020	Wildfire	IT	06-057-0005	Grass Valley-Litton Building (POC 1)	79 ppb	Multiple Wildfires

B) Violating Sites Information

(listing of all violating sites in the planning area, regardless of operating agency, and regardless of whether or not they are impacted by EEs)

Site/monitor (AQS ID and POC)	Design Value (without EPA concurrence on any of the events listed in table A above)	Design Value (with EPA concurrence on all events listed in table A above)
Grass Valley-Litton Building 06-057-0005-1	0.084 ppm	0.073 ppm

C) Summary of Maximum Design Value (DV) Site Information (Effect of EPA Concurrence on Maximum Design Value Site Determination)

(Two highest values from Table B)

Maximum DV site (AQS ID) **without EPA concurrence** on any of the events listed in table A above	Design Value 0.084 ppm	Design Value Site Grass Valley-Litton Building	Comment Area would be required to bump-up to Severe.
Maximum DV site (AQS ID) **with EPA concurrence** on all events listed in table A above	Design Value 0.073 ppm	Design Value Site Grass Valley-Litton Building	Comment Area would be in attainment for 2008 Ozone NAAQS.

D) List of any sites (AQS ID) within planning area with invalid design values (e.g., due to data incompleteness)

[1] designation, classification, attainment determination, attainment date extension, or finding of SIP inadequacy leading to SIP call

[2] Provide additional information for types of event described as "other"

2. AQS AMP350 Data

Western Nevada County Ozone Data is currently flagged with the REQEXC Code “rt-Wildfire-U.S.”

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
AIR QUALITY SYSTEM
RAW DATA REPORT

Sep. 9, 2021

(44201) Ozone

SITE ID: 06-057-0005 POC: 1
COUNTY: (057) Nevada
CITY: (30798) Grass Valley
SITE ADDRESS: 200 LITTON DR., GRASS VALLEY, CA
SITE COMMENTS: ARB SITE NAME (NUMBER) IS GRASS VALLEY-LITTON (2900800). STATION IS IN THE LITTO
MONITOR COMMENTS: TELEDYNE API 400E (UV PHOTOMETRY). LONG TERM OZONE MONITORING.

STATE: (06) California
AQCR: (028) SACRAMENTO VALLEY
URBANIZED AREA: (0000) NOT IN AN URBAN AREA
LAND USE: RESIDENTIAL
LOCATION SETTING: SUBURBAN

CAS NUMBER: 10028-15-6
LATITUDE: 39.2334770009
LONGITUDE: -121.055608
UTM ZONE:
UTM NORTHING:
UTM EASTING:
ELEVATION-MSL: 853
PROBE HEIGHT: 15

SUPPORT AGENCY: (0790) Northern Sierra AQMD
MONITOR TYPE: SLAMS
COLLECTION AND ANALYSIS METHOD: (087) INSTRUMENTAL ULTRA VIOLET ABSORPTI
PQAO: (0145) California Air Resources Board

REPORT FOR: JULY 2018

DURATION: 1 HOUR
UNITS: Parts per million
MIN DETECTABLE: .005

DAY	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	OBS	MAXIMUM
1	.046	.046	.046	.046	.045	.044	.042	.041	.043	.044	.044	.046	.052	.055	.057	.058	.057	.058	.058	.055	.050	.056	.056	.056	24	.058
2	.058	.055	.052	.050	.046	.044	.037	.037	.039	.039	.037	.040	.042	.044	.044	.047	.046	.053	.061	.071	.067	.066	.073	.069	24	.073
3	.063	.059	.054	.052	.047	.043	.036	.031	.036	.048	.046	.054	.054	.057	.057	.056	.051	.051	.054	.059	.056	.057	.051	.050	24	.063
4	.046	.039	.048	.051	.054	.053	.049	.054	.048	.043	.046	.045	.045	.046	.046	.048	.049	.050	.049	.047	.042	.043	.045	.037	24	.054
5	.034	.041	.044	.042	.043	.038	.036	.035	.037	.038	.041	.044	.046	.049	.051	.053	.056	.061	.058	.056	.061	.057	.057	.056	24	.061
6	.059	.057	.054	.051	.048	.046	.044	AN	.032	.030	.034	.029	.034	.038	.039	.038	.040	.043	.043	.044	.040	.042	.037	.035	23	.059
7	.036	.035	.034	.032	.032	.030	.028	.026	.027	.027	.023	.028	.032	.037	.037	.036	.037	.038	.043	.040	.041	.040	.042	.040	24	.043
8	.040	.036	.037	.038	.041	.038	.035	.037	.046	.048	.052	.050	.052	.056	.058	.061	.064	.067	.069	.066	.060	.053	.052	.050	24	.069
9	.049	.049	.052	.052	.051	.050	.047	.042	.044	.045	.047	.047	.047	.052	.053	.057	.057	.055	.053	.049	.049	.051	.049	.049	24	.057
10	.049	.050	.050	.050	.049	.048	.047	.037	.047	.049	.046	.041	.043	.046	.049	.050	.051	.052	.050	.047	.045	.047	.050	.054	24	.054
11	.055	.054	.054	.053	.048	.038	.034	.032	.044	.050	.051	.049	.047	.049	.054	.056	.054	.053	.051	.052	.052	.052	.052	.050	24	.056
12	.050	.053	.050	.046	.043	.039	.037	.033	.039	.041	.040	.044	.052	.057	.057	.058	.059	.058	.060	.064	.061	.062	.058	.053	24	.064
13	.052	.054	.056	.054	.052	.049	.041	AN	AN	.033	.040	.044	.045	.045	.049	.058	.060	.057	.054	.052	.051	.049	.050	.052	22	.060
14	.052	.051	.051	.050	.051	.048	.044	.043	.044	.044	.043	.047	.050	.052	.051	.052	.056	.055	.053	.053	.053	.050	.056	.054	24	.056
15	.052	.057	.059	.059	.061	.059	.056	.050	.051	.055	.055	.051	.055	.055	.054	.054	.053	.058	.059	.057	.056	.057	.057	.059	24	.061
16	.059	.057	.059	.056	.055	.051	.046	.043	.045	.045	.047	.048	.053	.053	.055	.057	.061	.061	.060	.055	.047	.052	.057	.058	24	.061
17	.054	.054	.054	.053	.053	.054	.049	.046	.046	.046	.047	.047	.051	.054	.057	.057	.059	.062	.061	.057	.056	.057	.058	.058	24	.062
18	.058	.058	.058	.059	.060	.059	.054	.052	.055	.053	AN	AN	AN	AN	AN	.061	.062	.062	.061	.057	.050	.055	.059	.054	19	.062
19	.055	.058	.064	.065	.062	.063	.060	.050	.059	.053	.056	.055	.059	.065	.067	.069	.076	.077	.081	.077	.082	.077	.075	.073	24	.082
20	.071	.071	.068	.063	.059	.058	.056	AN	.053	.053	.059	.062	.062	.065	.064	.059	.058	.058	.056	.052	.054	.050	.052	.054	23	.071
21	.051	.054	.054	.054	.054	.055	.055	.051	.049	.050	.052	.048	.048	.050	.053	.058	.058	.056	.053	.052	.049	.040	.040	.041	24	.058
22	.044	.046	.046	.048	.050	.052	.049	.047	.044	.047	.047	.048	.047	.048	.050	.050	.050	.048	.047	.044	.041	.042	.046	.047	24	.052
23	.047	.045	.046	.044	.043	.042	.041	.038	.034	.038	.042	.043	.047	.053	.055	.056	.057	.061	.059	.050	.044	.045	.047	.048	24	.061
24	.049	.049	.049	.050	.049	.048	.046	.046	.045	.044	.047	.047	.051	.050	.049	.048	.049	.054	.057	.049	.047	.049	.053	.052	24	.057
25	.058	.062	.056	.049	.049	.047	.038	.043	.045	.043	.043	.041	.046	.055	.057	.054	.054	.051	.047	.046	.049	.051	.053	.054	24	.062
26	.052rt	.051rt	.051rt	.052rt	.052rt	.051rt	.049rt	.046rt	.051rt	.046rt	.052rt	.057rt	.063rt	.068rt	.074rt	.077rt	.077rt	.076rt	.078rt	.082rt	.082rt	.081rt	.085rt	.082rt	24	.085
27	.083rt	.084rt	.082rt	.083rt	.083rt	.083rt	.076rt	AN	.070rt	.078rt	.079rt	.076rt	.076rt	.081rt	.080rt	.076rt	.077rt	.078rt	.080rt	.073rt	.077rt	.076rt	.077rt	.074rt	23	.084
28	.073rt	.072rt	.072rt	.071rt	.070rt	.070rt	.064rt	.058rt	.055rt	.059rt	.060rt	.063rt	.068rt	.075rt	.078rt	.085rt	.086rt	.080rt	.075rt	.068rt	.071rt	.073rt	.072rt	.073rt	24	.086
29	.075rt	.078rt	.081rt	.082rt	.082rt	.080rt	.076rt	.074rt	.069rt	.067rt	.069rt	.069rt	.069rt	.071rt	.072rt	.071rt	.067rt	.066rt	.058rt	.057rt	.063rt	.059rt	.064rt	.068rt	24	.082
30	.070rt	.077rt	.079rt	.078rt	.079rt	.078rt	.075rt	.072rt	AN	AN	.071rt	.071rt	.067rt	.067rt	.072rt	.070rt	.070rt	.068rt	.069rt	.055rt	.057rt	.063rt	.065rt	.071rt	22	.079
31	.074rt	.075rt	.075rt	.074rt	.077rt	.077rt	.076rt	.069rt	.062rt	.067rt	.069rt	.074rt	.075rt	.085rt	.093rt	.093rt	.097rt	.098rt	.099rt	.094rt	.102rt	.103rt	.105rt	.106rt	24	.106
NO.:	31	31	31	31	31	31	31	27	29	30	30	30	30	30	30	31	31	31	31	31	31	31	31	31		
MAX:	.083	.084	.082	.083	.083	.083	.076	.074	.070	.078	.079	.076	.076	.085	.093	.093	.097	.098	.099	.094	.102	.103	.105	.106		
AVG:	.0553	.0557	.0560	.0551	.0545	.0527	.0491	.0457	.0469	.0474	.0495	.0503	.0526	.0559	.0577	.0588	.0596	.0602	.0599	.0574	.0566	.0566	.0578	.0573		

MONTHLY OBSERVATIONS: 732 MONTHLY MEAN: .0546 MONTHLY MAX: .106

Note: Qualifier codes with regional concurrence are shown in upper case, and those without regional review are shown in lower case. An asterisk (***) indicates that the region has reviewed the value and does not concur with the qualifier.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
AIR QUALITY SYSTEM
RAW DATA REPORT

Sep. 9, 2021

(44201) Ozone

SITE ID: 06-057-0005 POC: 1
COUNTY: (057) Nevada
CITY: (30798) Grass Valley
SITE ADDRESS: 200 LITTON DR., GRASS VALLEY, CA
SITE COMMENTS: ARB SITE NAME (NUMBER) IS GRASS VALLEY-LITTON (2900800). STATION IS IN THE LITTON
MONITOR COMMENTS: TELEDYNE API 400E (UV PHOTOMETRY). LONG TERM OZONE MONITORING.

STATE: (06) California
AQCR: (028) SACRAMENTO VALLEY
URBANIZED AREA: (0000) NOT IN AN URBAN AREA
LAND USE: RESIDENTIAL
LOCATION SETTING: SUBURBAN

CAS NUMBER: 10028-15-6
LATITUDE: 39.2334770009
LONGITUDE: -121.055608
UTM ZONE:
UTM NORTHING:
UTM EASTING:
ELEVATION-MSL: 853
PROBE HEIGHT: 15

SUPPORT AGENCY: (0790) Northern Sierra AQMD
MONITOR TYPE: SLAMS
COLLECTION AND ANALYSIS METHOD: (087) INSTRUMENTAL ULTRA VIOLET ABSORPTI
PQAO: (0145) California Air Resources Board

REPORT FOR: AUGUST 2018

DURATION: 1 HOUR
UNITS: Parts per million
MIN DETECTABLE: .005

DAY	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	OBS	MAXIMUM
1	.104rt	.100rt	.094rt	.084rt	.081rt	.080rt	.073rt	.060rt	.069rt	.071rt	.070rt	.068rt	.078rt	.082rt	.083rt	.074rt	.078rt	.097rt	.112rt	.106rt	.109rt	.101rt	.095rt	.087rt	24	.112
2	.075rt	.068rt	.064rt	.061rt	.059rt	.057rt	.054rt	.048rt	.047rt	.049rt	.055rt	.060rt	.079rt	.103rt	.109rt	.104rt	.101rt	.100rt	.101rt	.093rt	.097rt	.102rt	.101rt	.098rt	24	.109
3	.086	.074	.064	.059	.059	.062	.059	AN	.046	.053	.055	.053	.058	.062	.067	.069	.064	.061	.054	.058	.062	.062	.063	.061	23	.086
4	.061	.063	.063	.063	.063	.062	.060	.057	.060	.066	.067	.066	.068	.072	.081	.086	.084	.082	.066	.048	.041	.041	.041	.042	24	.086
5	.043	.043	.045	.046	.047	.047	.046	.045	.045	.043	.040	.043	.046	.051	.057	.063	.068	.067	.061	.059	.061	.069	.074	.075	24	.075
6	.068	.066	.064	.063	.064	.063	.058	.050	.050	.052	.054	.053	.053	.060	.065	.070	.072	.074	.070	.068	.068	.071	.072	.069	24	.074
7	.062rt	.057rt	.055rt	.056rt	.055rt	.067rt	.060rt	.056rt	.058rt	.066rt	.070rt	.068rt	.065rt	.073rt	.078rt	.084rt	.089rt	.090rt	.088rt	.082rt	.083rt	.081rt	.081rt	.080rt	24	.090
8	.079rt	.076rt	.073rt	.073rt	.073rt	.067rt	.068rt	.060rt	.057rt	.066rt	.072rt	.080rt	.082rt	.086rt	.097rt	.100rt	.095rt	.084rt	.080rt	.083rt	.088rt	.097rt	.093rt	.095rt	24	.100
9	.096rt	.096rt	.095rt	.094rt	.094rt	.095rt	.092rt	.086rt	.069rt	.079rt	.090rt	.085rt	.082rt	.086rt	.090rt	.090rt	.090rt	.093rt	.094rt	.086rt	.092rt	.094rt	.091rt	.090rt	24	.096
10	.090rt	.091rt	.088rt	.084rt	.081rt	.081rt	.079rt	AN	.062rt	.070rt	.074rt	.074rt	.076rt	.081rt	.082rt	.086rt	.087rt	.089rt	.087rt	.086rt	.091rt	.085rt	.082rt	.081rt	23	.091
11	.082	.080	.078	.079	.076	.073	.069	.064	.066	.058	.059	.062	.059	.056	.057	.063	.064	.066	.065	.055	.050	.050	.049	.051	24	.082
12	.052	.051	.051	.050	.049	.049	.049	.046	.048	.049	.051	.052	.049	.051	.061	.054	.059	.069	.068	.063	.060	.056	.057	.058	24	.069
13	.054	.052	.051	.052	.050	.049	.045	.046	.048	.051	.054	.057	AN	.051	.056	.064	.067	.070	.073	.072	.069	.065	.064	.064	23	.073
14	.063	.064	.056	.053	.054	.055	.053	.049	.039	.051	.055	.055	.055	.057	.062	.063	.065	.070	.076	.075	.058	.063	.069	.070	24	.076
15	.067	.064	.066	.064	.063	.056	.052	.046	.048	.059	.060	.058	.058	.059	.064	.066	.067	.070	.074	.069	.069	.075	.074	.066	24	.075
16	.060	.056	.058	.057	.053	.051	.048	.042	.047	.048	.051	.055	.057	.059	.062	.063	.064	.066	.069	.058	.062	.065	.066	.064	24	.069
17	.062	.062	.062	.063	.063	.062	.059	AN	.048	.044	.049	.057	.053	.053	.053	.052	.054	.056	.058	.056	.052	.056	.058	.057	23	.063
18	.059	.057	.057	.057	.058	.057	.053	.046	.045	.044	.045	.044	.046	.047	.047	.048	.049	.050	.051	.054	.053	.052	.053	.052	24	.059
19	.048	.048	.049	.050	.049	.050	.048	.046	.045	.050	.049	.049	.054	.057	.060	.062	.063	.065	.072	.073	.082	.080	.073	.067	24	.082
20	.062	.061	.061	.062	.062	.061	.058	.051	.050	.053	.055	.057	.061	.064	.064	.066	.066	.074	.081	.074	.077	.065	.061	.061	24	.081
21	.061	.059	.058	.057	.058	.058	.058	.052	.050	.053	.059	.059	.061	.061	.063	.067	.068	.070	.066	.059	.063	.062	.061	.062	24	.070
22	.061	.060	.055	.052	.053	.053	.052	.045	.049	.055	.058	.058	.057	.061	.063	.064	.065	.066	.063	.062	.061	.062	.064	.062	24	.066
23	.060	.057	.058	.059	.059	.058	.052	.045	.053	.054	.055	.054	.055	.057	.060	.064	.069	.069	.069	.065	.065	.063	.062	.062	24	.069
24	.061	.060	.060	.065	.068	.068	.064	AN	.053	.058	.060	.060	.062	.076	.081	.080	.082	.082	.079	.075	.079	.080	.079	.076	23	.082
25	.074	.075	.076	.074	.074	.073	.071	.067	.068	.074	.081	.082	.071	.079	.079	.082	.085	.086	.083	.079	.085	.082	.081	.078	24	.086
26	.075	.072	.071	.071	.071	.072	.071	.067	.064	.071	.065	.070	.068	.067	.070	.071	.072	.072	.068	.060	.060	.059	.060	.060	24	.075
27	.059	.062	.063	.064	.062	.060	.057	.056	.053	.048	.050	.050	.049	.053	.049	.049	.052	.055	.056	.054	.050	.051	.052	.052	24	.064
28	.051	.051	.049	.047	.047	.051	.048	.039	.039	.048	.050	.050	.047	.044	.047	.047	.049	.051	.052	.049	.050	.050	.052	.052	24	.052
29	.049	.049	.047	.046	.045	.043	.044	.033	.039	.042	.046	.049	.047	.046	.048	.051	.055	.060	.057	.055	.052	.047	.044	.040	24	.060
30	.042	.036	.036	.033	.031	.027	.030	.032	.033	.038	.042	.043	.045	.048	.052	.056	.058	.058	.055	.052	.044	.044	.049	.050	24	.058
31	.049	.056	.056	.055	.056	.056	.055	AN	.041	.046	.050	.052	.054	.057	.057	.058	.059	.059	.057	.055	.057	.056	.055	.055	23	.059
NO.:	31	31	31	31	31	31	31	26	31	31	31	31	30	31	31	31	31	31	31	31	31	31	31	31		
MAX:	.104	.100	.095	.094	.094	.095	.092	.086	.069	.079	.090	.085	.082	.103	.109	.104	.101	.100	.112	.106	.109	.102	.101	.098		
AVG:	.0650	.0634	.0620	.0611	.0605	.0601	.0576	.0513	.0513	.0551	.0578	.0588	.0598	.0632	.0666	.0683	.0697	.0716	.0711	.0672	.0674	.0673	.0670	.0657		

MONTHLY OBSERVATIONS: 738 MONTHLY MEAN: .0630 MONTHLY MAX: .112

Note: Qualifier codes with regional concurrence are shown in upper case, and those without regional review are shown in lower case. An asterisk ("*") indicates that the region has reviewed the value and does not concur with the qualifier.

II. District Alerts/Advisories

A. Calaveras County (San Andreas)

Calaveras County
Air Pollution Control District
Health and Human Services Agency

Government Center, 891 Mountain Ranch Road, San Andreas, CA 95249

PRESS RELEASE

FOR IMMEDIATE RELEASE
July 18, 2018

Public Service Announcement
Wildfire Smoke

Smoke from the Ferguson Fire in Mariposa County is impacting air quality in Calaveras County. The impact varies, based on geographical location and wind direction, but has the greatest impact at this time on sensitive populations, including individuals with heart and lung disease, elderly persons, infants, children and pregnant women.

As general cautionary measures, the following measures can be taken to protect during periods of poor air quality:

- Minimize or stop outdoor activities, especially exercise
- Stay indoors with windows and doors closed as much as possible
- Do not run fans that bring smoky outdoor air inside – examples include swamp coolers, whole-house fans, and fresh air ventilation systems
- Run your air-conditioner only if it does not bring smoke in from the outdoors. Change the standard air conditioner filter to a medium or high efficiency filter. If available, use the "re-circulate" or "recycle" setting on the unit
- Do not smoke, vacuum, fry food, or do other things that will create indoor air pollution
- If you have asthma, take your medications and follow your asthma management plan

Even healthy persons can be affected by wildfire smoke. If you can see or smell smoke, take precautions. People with heart or lung disease who experience repeated coughing, shortness of breath, difficulty breathing, wheezing, chest tightness or pain should contact their doctor or clinic. "If an existing illness gets worse due to smoke exposure, seek medical help," advised Dr. Dean Kelaita, County Health Officer.

The Calaveras County Air Pollution Control District will continue monitoring the air quality in the county and will provide additional advisories as air quality conditions evolve.

For more information call the Calaveras County Air Pollution Control District at (209) 754-6399 or Calaveras County Health and Human Services at (209) 754-6460.

http://new.thepinetree.net/?p=63917

Calaveras County
Air Pollution Control District
Health and Human Services Agency

Government Center, 891 Mountain Ranch Road, San Andreas, CA 95249-909

PRESS RELEASE

FOR IMMEDIATE RELEASE
July 30, 2018

Public Service Announcement
Wildfire Smoke

Smoke from the Northern California fires continues to impact air quality in Calaveras County. The impact varies, based on geographical location and wind direction, but has the greatest impact at this time on sensitive populations, including individuals with heart and lung disease, elderly persons, infants, children and pregnant women.

Because the Calaveras County geography may entrap smoke in certain valleys and basins, the following visibility chart can be used to determine the air quality where you are. Visibility provides an excellent measure of air quality.

Air Quality Index Levels of Health Concern	Visibility in Miles	Meaning
Good	10 miles and up	Air quality is considered satisfactory, and air pollution poses little or no risk.
Moderate	6-9 miles	Air quality is acceptable; however, for some pollutants there may be a moderate health concern for a very small number of people who are unusually sensitive to air pollution.
Unhealthy for Sensitive Groups	3-5 miles	Members of sensitive groups may experience health effects. The general public is not likely to be affected.
Unhealthy	1.5-2.5 miles	Everyone may begin to experience health effects; members of sensitive groups may experience more serious health effects.
Very Unhealthy	1-1.25 miles	Health alert: everyone may experience more serious health effects.
Hazardous	0.75 mile or less	Health warnings of emergency conditions. The entire population is more likely to be affected.

To use the chart, start by identifying, on a map, certain landmarks on the horizon. Then check to see at what distance the landmarks can no longer be seen. The distance of this landmark is the "visibility in miles."

General cautionary measures, the following measures can be taken to protect during periods of poor air quality:

- Minimize or stop outdoor activities, especially exercise

- Stay indoors with windows and doors closed as much as possible
- Do not run fans that bring smoky outdoor air inside – examples include swamp coolers, whole-house fans, and fresh air ventilation systems
- Run your air-conditioner only if it does not bring smoke in from the outdoors. Change the standard air conditioner filter to a medium or high efficiency filter. If available, use the "re-circulate" or "recycle" setting on the unit
- Do not smoke, vacuum, fry food, or do other things that will create indoor air pollution
- If you have asthma, take your medications and follow your asthma management plan

Even healthy persons can be affected by wildfire smoke. If you can see or smell smoke, take precautions. People with heart or lung disease who experience repeated coughing, shortness of breath, difficulty breathing, wheezing, chest tightness or pain should contact their doctor or clinic. "If an existing illness gets worse due to smoke exposure, seek medical help," advised Dr. Dean Kelaita, County Health Officer.

The Calaveras County Air Pollution Control District will continue monitoring the air quality in the county and will provide additional advisories as air quality conditions evolve.

For more information call the Calaveras County Air Pollution Control District at (209) 754-6399 or Calaveras County Health and Human Services – Public Health Division at (209) 754-6460.

http://new.thepinetree.net/?p=64439

Calaveras County
Air Pollution Control District
Health and Human Services Agency

Government Center, 891 Mountain Ranch Road, San Andreas, CA 95249-909

PRESS RELEASE

FOR IMMEDIATE RELEASE August 3, 2018

Public Service Announcement
Wildfire Smoke Advisory in Place Until Further Notice

The Calaveras County Public Health Officer and Calaveras County Air Pollution Control District are re-issuing a joint air quality advisory to notify the public of the potential for poor air quality conditions due to smoke from fires currently burning throughout the state. This advisory will remain in place until further notice. The potential impact varies, based on geographical location and wind direction, but has the greatest impact at this time on sensitive populations, including individuals with heart and lung disease, elderly persons, infants, children and pregnant women.

As general cautionary measures, the following measures can be taken to protect during periods of poor air quality:

- Minimize or stop outdoor activities, especially exercise
- Stay indoors with windows and doors closed as much as possible
- Do not run fans that bring smoky outdoor air inside – examples include swamp coolers, whole-house fans, and fresh air ventilation systems
- Run your air-conditioner only if it does not bring smoke in from the outdoors. Change the standard air conditioner filter to a medium or high efficiency filter. If available, use the "re-circulate" or "recycle" setting on the unit
- Do not smoke, vacuum, fry food, or do other things that will create indoor air pollution
- If you have asthma, take your medications and follow your asthma management plan

Even healthy persons can be affected by wildfire smoke. If you can see or smell smoke, take precautions. People with heart or lung disease who experience repeated coughing, shortness of breath, difficulty breathing, wheezing, chest tightness or pain should contact their doctor or clinic. "If an existing illness gets worse due to smoke exposure, seek medical help," advised Dr. Dean Kelaita, County Health Officer.

The Calaveras County Air Pollution Control District will continue monitoring the air quality in the county and will provide additional advisories as air quality conditions evolve.

For more information call the Calaveras County Air Pollution Control District at (209) 754-6399 or Calaveras County Health and Human Services – Public Health Division at (209) 754-6460.

http://new.thepinetree.net/?p=64816

Calaveras County
Air Pollution Control District
Health and Human Services Agency

Government Center, 891 Mountain Ranch Road, San Andreas, CA 95249-909

PRESS RELEASE

FOR IMMEDIATE RELEASE August 9, 2018

Public Service Announcement
Wildfire Hazardous Smoke Advisory for Southeastern Calaveras County including Arnold for August 9, 2018

The Calaveras County Public Health Officer and Calaveras County Air Pollution Control District are issuing a joint air quality advisory to notify the public of the potentially hazardous air quality conditions due to smoke from fires currently burning throughout the state Although the air throughout the county is currently rated as Unhealthy, the Southeast portion of the county including Arnold and the surrounding areas have deteriorated enough to be rated as Hazardous according to the EPA rating scale. The air quality is expected to fluctuate over the next few days.

The potential impact varies, based on geographical location and wind direction, but has the greatest impact on sensitive populations, including individuals with heart and lung disease, elderly persons, infants, children and pregnant women.

As general cautionary measures, the following measures can be taken to protect during periods of poor air quality:

- Stop outdoor activities, especially exercise
- Stay indoors with windows and doors closed as much as possible
- Do not run fans that bring smoky outdoor air inside – examples include swamp coolers, whole-house fans, and fresh air ventilation systems
- Run your air-conditioner only if it does not bring smoke in from the outdoors. Change the standard air conditioner filter to a medium or high efficiency filter. If available, use the "re-circulate" or "recycle" setting on the unit
- Do not smoke, vacuum, fry food, or do other things that will create indoor air pollution
- If you have asthma, take your medications and follow your asthma management plan
- People with severe health conditions should consider leaving the area for a few days.

Even healthy persons can be affected by wildfire smoke. If you can see or smell smoke, take precautions. People with heart or lung disease who experience repeated coughing, shortness of breath, difficulty breathing, wheezing, chest tightness or pain should contact their doctor or clinic. "If an existing illness gets worse due to smoke exposure, seek medical help," advised Dr. Dean Kelaita, County Health Officer.

The Calaveras County Air Pollution Control District will continue monitoring the air quality in the county and will provide additional advisories as air quality conditions evolve.

For more information call the Calaveras County Air Pollution Control District at (209) 754-6399 or Calaveras County Health and Human Services – Public Health Division at (209) 754-6460.

http://new.thepinetree.net/?p=65170

B. Chico/Butte County (Paradise)

FOR IMMEDIATE RELEASE
July 28, 2018

A JOINT AIR QUALITY ADVISORY ISSUED BY THE
BUTTE COUNTY AIR QUALITY MANAGEMENT DISTRICT and
BUTTE COUNTY PUBLIC HEALTH DEPARTMENT

To:

Public Safety Personnel
News Media
Adjacent Air Quality Management Districts
Butte County & City Managers
Local/State Law & Fire Federal
Local Hospitals
School Officials
Sac. Valley Air Basin Coordinating Council
County Health Officer
California Air Resources Board
Environmental Protection Agency

From: W. James Wagoner, Air Pollution Control Officer
Dr. Andy Miller, MD, Health Officer

The Butte County Air Quality Management District Air Pollution Control Officer and the Butte County Public Health Officer are issuing this Air Quality Advisory to notify the public of poor air quality conditions in Butte County due to smoke from the Carr Fire in Shasta County. The amount of smoke impacting Butte County will vary throughout the day depending on wind direction, fire intensity, and temperature inversions. Air quality is expected to vary between moderate and unhealthy for sensitive groups.

The major air pollutant of concern is fine particulate matter also known as PM2.5. While all persons may experience varying degrees of symptoms, the more sensitive individuals, such as the young, the elderly, pregnant women, smokers, and those with respiratory conditions are of greatest risk for experiencing more aggravated symptoms which may include, but are not limited to coughing, watery and itchy eyes, and difficulty in breathing.

Persons experiencing questionable or severe symptoms should seek professional medical advice and treatment. The following actions are recommended as needed in areas impacted by smoke:

- Limit outdoor exertion, especially children, the elderly, and those with pre-existing respiratory conditions;
- Keep doors and windows closed as much as possible in buildings and vehicles.
- Avoid the use of non-HEPA paper face mask filters which are not capable of filtering extra fine particulates;
- Check or replace air conditioner filters. Use the air conditioner on the recirculate setting.

Questions and requests for recommendations concerning specialized outdoor events and school activities may be directed to the Butte County Air Quality Management District at **332-9400** during regular business hours.

This notification will remain in effect while the Carr Fire remains active. Outdoor residential burning is currently prohibited by CalFire. Information will be updated and posted to the District website as available at www.bcaqmd.org.

Air Quality Index (AQI): Particle Pollution and Visibility Chart

Index Values	Levels of Health Concern	Cautionary Statements	Visibility Range in Miles
0-50	Good	None	10+ miles
51-100*	Moderate	Unusually sensitive people should consider reducing prolonged or heavy exertion.	5 – 10 miles
101-150	Unhealthy for Sensitive Groups	People with heart or lung disease, older adults, and children should reduce prolonged or heavy exertion.	3 – 5 miles
151-200	Unhealthy	People with heart or lung disease, older adults, and children should avoid prolonged or heavy exertion. Everyone else should reduce prolonged or heavy exertion.	1.5 – 2.5 miles
201-300	Very Unhealthy	People with heart or lung disease, older adults, and children should avoid all physical activity outdoors. Everyone else should avoid prolonged or heavy exertion.	1 – 1.25 miles
301-500	Hazardous	People with heart or lung disease, older adults, and children should remain indoors and keep activity levels low. Everyone else should avoid all physical activity outdoors.	< 0.75 miles

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https://bcaqmd.org/wp-content/uploads/Joint-Advisory-7-28-18-Carr-Fire.pdf

FOR IMMEDIATE RELEASE
August 2, 2018

UPDATED JOINT AIR QUALITY ADVISORY ISSUED BY THE
BUTTE COUNTY AIR QUALITY MANAGEMENT DISTRICT and
BUTTE COUNTY PUBLIC HEALTH DEPARTMENT

To:

Public Safety Personnel
News Media
Adjacent Air Quality Management Districts
Butte County & City Managers
Local/State Law & Fire Federal
Local Hospitals
School Officials
Sac. Valley Air Basin Coordinating Council
County Health Officer
California Air Resources Board
Environmental Protection Agency

From: W. James Wagoner, Air Pollution Control Officer
Dr. Andy Miller, MD, Health Officer

The Butte County Air Quality Management District Air Pollution Control Officer and the Butte County Public Health Officer are issuing this updated Air Quality Advisory to notify the public of continuing poor air quality conditions in Butte County due to smoke from the Carr Fire in Shasta County and the Mendocino Complex in Mendocino and Lake Counties. Overall air quality is expected to improve into the first weekend of August due to favorable weather conditions, however wildfire smoke may continue to impact areas of Butte County while the fires remain active. The location and severity of smoke impacts will vary throughout the day depending on wind direction, fire intensity, and temperature inversions.

The major air pollutant of concern is fine particulate matter also known as PM2.5. While all persons may experience varying degrees of symptoms, the more sensitive individuals, such as the young, the elderly, pregnant women, smokers, and those with respiratory conditions are of greatest risk for experiencing more aggravated symptoms which may include, but are not limited to coughing, watery and itchy eyes, and difficulty in breathing.

Persons experiencing questionable or severe symptoms should seek professional medical advice and treatment. The following actions are recommended as needed in areas impacted by smoke:

- Limit outdoor exertion, especially children, the elderly, and those with pre-existing respiratory conditions;
- Keep doors and windows closed as much as possible in buildings and vehicles.
- Avoid the use of non-HEPA paper face mask filters which are not capable of filtering extra fine particulates;
- Check or replace air conditioner filters. Use the air conditioner on the recirculate setting.

Lean more about health safety and wildfire smoke.

Questions and requests for recommendations concerning specialized outdoor events and school activities may be directed to the Butte County Air Quality Management District at **332-9400** during regular business hours.

This notification will remain in effect while the Carr Fire and the Mendocino Complex remains active. Outdoor residential burning is currently prohibited by CalFire. Information will be updated and posted to the District website as available at www.bcaqmd.org.

Air Quality Index (AQI): Particle Pollution and Visibility Chart

Index Values	Levels of Health Concern	Cautionary Statements	Visibility Range in Miles
0-50	Good	None	10+ miles
51-100*	Moderate	Unusually sensitive people should consider reducing prolonged or heavy exertion.	5 – 10 miles
101-150	Unhealthy for Sensitive Groups	People with heart or lung disease, older adults, and children should reduce prolonged or heavy exertion.	3 – 5 miles
151-200	Unhealthy	People with heart or lung disease, older adults, and children should avoid prolonged or heavy exertion. Everyone else should reduce prolonged or heavy exertion.	1.5 – 2.5 miles
201-300	Very Unhealthy	People with heart or lung disease, older adults, and children should avoid all physical activity outdoors. Everyone else should avoid prolonged or heavy exertion.	1 – 1.25 miles
301-500	Hazardous	People with heart or lung disease, older adults, and children should remain indoors and keep activity levels low. Everyone else should avoid all physical activity outdoors.	< 0.75 miles

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https://bcaqmd.org/wp-content/uploads/Updated-Joint-Air-Quality-Advisory-8-02-18.pdf

FOR IMMEDIATE RELEASE
August 9, 2018

UPDATED JOINT AIR QUALITY ADVISORY ISSUED BY THE
BUTTE COUNTY AIR QUALITY MANAGEMENT DISTRICT and
BUTTE COUNTY PUBLIC HEALTH DEPARTMENT

To:

Public Safety Personnel
News Media
Adjacent Air Quality Management Districts
Butte County & City Managers
Local/State Law & Fire Federal
Local Hospitals
School Officials
Sac. Valley Air Basin Coordinating Council
County Health Officer
California Air Resources Board
Environmental Protection Agency

From: W. James Wagoner, Air Pollution Control Officer
Dr. Andy Miller, MD, Health Officer

The Butte County Air Quality Management District Air Pollution Control Officer and the Butte County Public Health Officer are issuing this updated Air Quality Advisory to notify the public of continuing poor air quality conditions in Butte County due to smoke from the Carr Fire in Shasta County and the Mendocino Complex in Mendocino and Lake Counties. Widespread smoke impacts are expected to continue into the weekend. With current fire activity, the Air Quality Index (AQI) is expected to range from Moderate to Unhealthy with the majority of time in the Unhealthy for Sensitive Groups range. The location and severity of smoke impacts will vary throughout the day depending on wind direction, fire intensity, and temperature inversions.

The major air pollutant of concern is fine particulate matter also known as PM2.5. While all persons may experience varying degrees of symptoms, the more sensitive individuals, such as the young, the elderly, pregnant women, smokers, and those with respiratory conditions are of greatest risk for experiencing more aggravated symptoms which may include, but are not limited to coughing, watery and itchy eyes, and difficulty in breathing.

Persons experiencing questionable or severe symptoms should seek professional medical advice and treatment. The following actions are recommended as needed in areas impacted by smoke:

- Limit outdoor exertion, especially children, the elderly, and those with pre-existing respiratory conditions;
- Keep doors and windows closed as much as possible in buildings and vehicles.
- Avoid the use of non-HEPA paper face mask filters which are not capable of filtering extra fine particulates;
- Check or replace air conditioner filters. Use the air conditioner on the recirculate setting.

Lean more about health safety and wildfire smoke.

Questions and requests for recommendations concerning specialized outdoor events and school activities may be directed to the Butte County Air Quality Management District at **332-9400** during regular business hours.

This notification will remain in effect while the Carr Fire and the Mendocino Complex remains active. Outdoor residential burning is currently prohibited by CalFire. Information will be updated and posted to the District website as available at www.bcaqmd.org.

Air Quality Index (AQI): Particle Pollution and Visibility Chart

Index Values	Levels of Health Concern	Cautionary Statements	Visibility Range in Miles
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201-300	Very Unhealthy	People with heart or lung disease, older adults, and children should avoid all physical activity outdoors. Everyone else should avoid prolonged or heavy exertion.	1 – 1.25 miles
301-500	Hazardous	People with heart or lung disease, older adults, and children should remain indoors and keep activity levels low. Everyone else should avoid all physical activity outdoors.	< 0.75 miles

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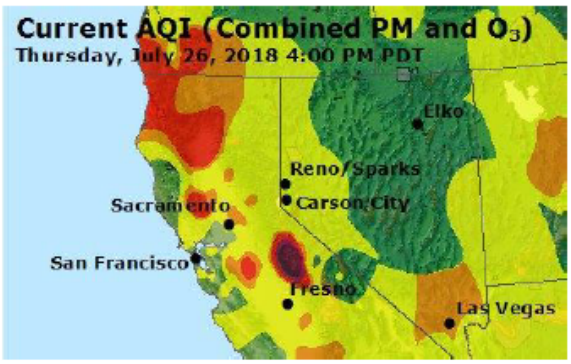
https://bcaqmd.org/wp-content/uploads/Updated-Joint-Air-Quality-Advisory-8-09-18.pdf

C. Sutter Buttes / Sutter County / Feather River AQMD

Air Quality Health Advisory

Thursday July 26, 2018

The Public Health Officers for Yuba and Sutter counties and the Feather River Air Quality Management District are issuing a joint air quality health advisory to notify the public of potentially poor air quality conditions. Wildfire smoke from the Carr fire in Shasta County and other regional wildfires is present in the Sacramento Valley. Light winds and strong inversions may cause smoke impacts to continue for several days.



"Residents with lung or heart disease, and the elderly are advised to leave areas where levels of particulate matter are high. For everyone else, when you smell smoke, or see smoke around you, you should consider staying indoors and avoiding heavy exertion," cautions Lou Anne Cummings, MD, MPH, the Sutter County Health Officer.

Smoke density can vary widely from one local area to another and also with time of day. "Air quality conditions depend on a number of factors, which include proximity to the fire, wind speed and direction, and whether inversions are present," warns Christopher D. Brown, Air Pollution Control officer.

You can check current conditions online at www.airnow.gov. Residents can also sign up for air quality forecasts and alerts at www.fraqmd.org. Residents who see or smell smoke should consider these precautionary measures:

- Healthy people should delay strenuous exercise, particularly when they can smell smoke.
- Children and elderly people should consider avoiding outdoor activities, particularly prolonged outdoor exertion. Parents of children involved in youth sports programs should consider whether their children be allowed to participate when smoke is in the air.
- People with health-related illnesses, particularly respiratory problems, should remain indoors.

- Keep windows and doors closed as much as possible. Use the recycle or recirculate mode on the air conditioner in your home or car.
- Avoid the use of non-HEPA paper face mask filters which are not capable of filtering extra fine particles. Do not rely on HEPA face mask filters to do unnecessary outdoor activities.
- Keep airways moist by drinking lots of water. Breathing through a warm, wet washcloth can also help relieve dryness, but does not filter out the hazardous smoke particles.
- Avoid the fire areas.

Wildfire smoke may contain particulate matter, ozone, carbon monoxide, and toxic air contaminants. While all persons may experience varying degrees of symptoms, more sensitive individuals, such as the young, aged and those with respiratory conditions are at greatest risk of experiencing more aggravated symptoms. Symptoms may include, but are not limited to, coughing, watery and itchy eyes, and difficulty breathing. Persons experiencing questionable or severe symptoms should seek professional medical advice and treatment. Nicole Quick, MD, MHP, the Yuba County Health Officer instructs residents to "Call your doctor if you have cough, chest pain or tightness, shortness of breath, or other concerning symptoms."

The following index may also assist in assessing the air quality based on the visibility in your area. To assess visibility:

- Face away from the sun. Determine visibility range by looking for targets that are at known distances (miles). You can use an electronic device map app or a map of the local area that has a mile scale.
- The visible range is the point where even high-contrast objects disappear.

Distance you can see	**Recommended action if you are a healthy adult, teenager, or other child**	**Recommended action if you are age 65 and over, pregnant, a young child or have asthma, respiratory illness, or lung or heart disease**
10 + miles	Watch for changing conditions and moderate outdoor activity based on personal sensitivity	
5 – 10 miles	Moderate outdoor activity	Minimize or avoid outdoor activity
Less than 5 miles	Minimize or avoid outdoor activity	Stay inside or in a location with good air quality

Some examples of local distances: From the junction of Hwy 99 and Hwy 20 to the South Butte in the Sutter Buttes is about 11 miles; from the intersection of Hwy 20 and Acacia Avenue to the South Butte is about 5.5 miles; and the distance between the 5th Street and 10th Street bridges is about 0.5 mile.

County officials will continue to monitor air quality in Sutter and Yuba County and provide updates on this advisory as needed. For current information, or to sign up for air quality alerts and forecasts, go to the Feather River Air Quality Management District website http://www.fraqmd.org/ or check the Sutter County and Sutter County Public Health Facebook pages or Yuba County website.

##

https://www.fraqmd.org/files/8cd66e355/2018+07+26+Smoke+Health+Advisory.pdf

D. Tuolumne County (Sonora)

Tuolumne County
Public Health Department

20111 Cedar Rd. North
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Fax: 209-533-7406
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Robert S. Bernstein, MD, PhD, MPH, FACPM
Health Officer

Melissa Parrish, RN, PHN, MSW
Director of Public Health Nursing

July 18, 2018

IMMEDIATE RELEASE: Tuolumne County Air Quality Health Alert

SONORA—The Ferguson Fire, located in the Merced River Canyon area of Mariposa County, is affecting air quality in many areas in Tuolumne County. Smoke accumulation has rendered air quality unhealthy for sensitive groups in some areas and unhealthy to very unhealthy in other areas for everyone (see chart below).

The following information is provided to allow you to assess the air quality in your immediate vicinity and to provide guidance for those people who live in neighborhoods affected by poor air quality.

Because the Tuolumne County geography may entrap smoke in certain valleys and basins, the following visibility chart can be used to determine the air quality where you are. Visibility provides an excellent measure of air quality.

First identify on a map certain landmarks on the horizon. Then check to see at what distance the landmarks can no longer be seen. The distance of this landmark is the "visibility in miles."

Air Quality Index Levels of Health Concern	Visibility in Miles	Meaning
Good	10 miles and up	Air quality is considered satisfactory, and air pollution poses little or no risk.
Moderate	6-9 miles	Air quality is acceptable; however, for some pollutants there may be a moderate health concern for a very small number of people who are unusually sensitive to air pollution.
Unhealthy for Sensitive Groups	3-5 miles	Members of sensitive groups may experience health effects. The general public is not likely to be affected.
Unhealthy	1.5-2.5 miles	Everyone may begin to experience health effects; members of sensitive groups may experience more serious health effects.
Very Unhealthy	1-1.25 miles	Health alert: everyone may experience more serious health effects.
Hazardous	0.75 mile or less	Health warnings of emergency conditions. The entire population is more likely to be affected.

The following guidelines can help to prevent breathing problems during times when air quality is poor due to wildfires:

1) Individuals with long term health conditions like asthma, lung or heart disease should make sure that they have a supply of medications on hand and are following their caregivers' instructions.

2) Elderly and very young children should limit their outdoor activities when local air quality is "unhealthy for sensitive groups" (visibility less than 5 miles).

3) Signs that the smoke may be bothering you include coughing, scratchy throat, irritated sinuses, shortness of breath, stinging eyes or runny nose. Sometimes symptoms may even include chest pain or headaches. Consult your caregiver for worsening symptoms.

4) If you are advised to stay indoors, keep indoor air as clean as possible. Keep windows and doors closed unless it is extremely hot outside. Run an air conditioner if you have one, but keep the fresh-air intake closed and the filter clean to prevent outdoor smoke from getting inside. If you do not have an air conditioner and it is too warm to stay inside with the windows closed, seek shelter elsewhere.

5) Consider a high-efficiency particulate air (HEPA) filter to reduce breathing problems. Room air cleaners, which utilize a HEPA filter, may reduce the number of irritating fine particles in indoor air.

6) Do not add to indoor pollution. Do not smoke because smoking puts even more pollution into the air.

The Tuolumne County Air Pollution Control District will continue to monitor air quality and will provide updates with the Public Health Department as the information becomes available.

https://www.tuolumnecounty.ca.gov/DocumentCenter/View/11086/Ferguson-Fire-Air-Pollution-Press-Release_Final_2018-07-18

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July 19, 2018

UPDATE: 7/19/2018

IMMEDIATE RELEASE: Tuolumne County Air Quality Health Alert

SONORA—The Ferguson Fire, located in the Merced River Canyon area of Mariposa County, is affecting air quality in many areas in Tuolumne County. Smoke accumulation has rendered air quality unhealthy for sensitive groups in some areas and unhealthy to very unhealthy in other areas for everyone (see chart below).

The following information is provided to allow you to assess the air quality in your immediate vicinity and to provide guidance for those people who live in neighborhoods affected by poor air quality.

Because the Tuolumne County geography may entrap smoke in certain valleys and basins, the following visibility chart can be used to determine the air quality where you are. Visibility provides an excellent measure of air quality.

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Very Unhealthy	1-1.25 miles	Health alert: everyone may experience more serious health effects.
Hazardous	0.75 mile or less	Health warnings of emergency conditions. The entire population is more likely to be affected.

The following guidelines can help to prevent breathing problems during times when air quality is poor due to wildfires:

1) Individuals with long term health conditions like asthma, lung or heart disease should make sure that they have a supply of medications on hand and are following their caregivers' instructions.

2) Elderly and very young children should limit their outdoor activities when local air quality is "unhealthy for sensitive groups" (visibility less than 5 miles).

3) Signs that the smoke may be bothering you include coughing, scratchy throat, irritated sinuses, shortness of breath, stinging eyes or runny nose. Sometimes symptoms may even include chest pain or headaches. Consult your caregiver for worsening symptoms.

4) If you are advised to stay indoors, keep indoor air as clean as possible. Keep windows and doors closed unless it is extremely hot outside. Run an air conditioner if you have one, but keep the fresh-air intake closed and the filter clean to prevent outdoor smoke from getting inside. If you do not have an air conditioner and it is too warm to stay inside with the windows closed, seek shelter elsewhere.

5) Consider a high-efficiency particulate air (HEPA) filter to reduce breathing problems. Room air cleaners, which utilize a HEPA filter, may reduce the number of irritating fine particles in indoor air.

6) Do not add to indoor pollution. Do not smoke because smoking puts even more pollution into the air.

UPDATE

For residents seeking relief from the heat and smoke, the following buildings can be used during their normal business hours for respite:

- **Tuolumne County Main Library-480 Greenley Rd. Sonora. Hours: Tuesday-Saturday 10 a.m. to 6 p.m. Phone: 533-5507**
- **Groveland Library-18990 Highway 120. Groveland. Hours: Tuesday-Thursday 1 p.m. to 6 p.m. and Friday and Saturday 10 a.m. to 2 p.m. Phone: 962-6144**
- **Tuolumne City Library-18636 Main St. Tuolumne. Hours: Tuesday-Thursday 2 p.m. to 6 p.m. and Friday and Saturday 10 a.m. to 2 p.m. Phone: 928-3612**
- **Twain Harte Library-18701 Tiffeni Dr. #1F. Twain Harte. Hours: Tuesday and Thursday 1 p.m. to 5 p.m. Wednesday, Friday and Saturday 10 a.m. to 2 p.m. Phone: 586-4501**
- **Tuolumne County Senior Center-540 Greenley Rd. Sonora. Hours: Monday – Friday 8 a.m. to 4 p.m. Phone: 533-2622**

The Tuolumne County Air Pollution Control District will continue to monitor air quality and will provide updates with the Public Health Department as the information becomes available.

https://gcsd.specialdistrict.org/files/f97750bd0/Ferguson+Fire+Air+Pollution+Press+Release_Update_2018-07-19+FINAL.pdf

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July 27, 2018

IMMEDIATE RELEASE: Tuolumne County Air Quality Advisory

SONORA—The Ferguson Fire, located in the Merced River Canyon area of Mariposa County, continues to affect air quality in many areas of Tuolumne County. Smoke accumulation is varied, rendering air quality from moderate to unhealthy for sensitive groups in some areas and unhealthy in other areas for everyone (see chart below).

The following information is provided to allow you to assess the air quality in your immediate vicinity and to provide guidance for those people who live in neighborhoods affected by poor air quality, as well as those who may be visiting or recreating in Tuolumne County.

Because the Tuolumne County geography may entrap smoke in certain valleys and basins, the following visibility chart can be used to determine the air quality where you are. Visibility provides an excellent measure of air quality.

First identify on a map certain landmarks on the horizon. Then check to see at what distance the landmarks can no longer be seen. The distance of this landmark is the "visibility in miles."

Air Quality Index Levels of Health Concern	Visibility in Miles	Meaning
Good	10 miles and up	Air quality is considered satisfactory, and air pollution poses little or no risk.
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Very Unhealthy	1-1.25 miles	Health alert: everyone may experience more serious health effects.
Hazardous	0.75 mile or less	Health warnings of emergency conditions. The entire population is more likely to be affected.

In addition, the following Wildfire Smoke Health Tips (page 3 of this document) and web links provide further information for visitors and residents who are sensitive/vulnerable because of chronic respiratory or cardio-pulmonary conditions, for first responders, and for healthcare providers:

https://www.cdc.gov/disasters/wildfires/index.html

https://www.pehsu.net/_Library/facts/PEHSU_Protecting_Children_from_Wildfire_Smoke_and_Ash_FACT_SHEET.pdf

https://www.airnow.gov/?action=airnow.local_city&zipcode=95370

The Tuolumne County Air Pollution Control District will continue to monitor air quality and will provide updates with the Public Health Department as the information becomes available.

TUOLUMNE COUNTY HEALTH DEPARTMENT

Wildfire Smoke Health Tips

As fire agencies battle wildfires, there are measures we all can take to protect our health from harmful pollutants in our air. Smoke is a respiratory irritant that can worsen conditions such as asthma, other chronic lung conditions, or heart disease. Pregnant women, children, elderly people, smokers, and people who work or exercise outdoors are at higher risk for complications from smoke exposure.

Here are some tips you can follow to protect you and your family members from unhealthful air:

Stay indoors. Remain indoors, with air conditioning on, as much as possible when air pollution levels are unhealthful. Check the local Air Quality Index (AQI) for this information. Keep the air conditioner filter clean to prevent bringing additional smoke inside. In extremely hot weather, staying inside with the windows closed, without air conditioning may be dangerous. A swamp cooler will not provide protection and will pull in the smoky air from outside. Consider seeking alternative shelters in this situation. For residents seeking relief from the smoke and/or heat, the following buildings can be used during their normal business hours for respite:

Tuolumne County Main Library - 480 Greenley Rd. Sonora. Hours: Tues-Sat 10 AM to 6 PM - 533-5507
Groveland Library - 18990 Highway 120 Groveland. Hours: Tues-Thurs 1 PM to 6 PM, Fri-Sat 10 AM to 2 PM- 962-6144
Tuolumne City Library - 18636 Main St. Tuolumne. Hours: Tues-Thurs 2 PM to 6 PM, Sat 10 AM to 2 PM- 928-3612
Twain Harte Library - 18701 Tiffeni Dr. #1F Twain Harte. Hours: Tues-Thurs 1 PM to 5 PM, Wed, Fri, Sat 10 AM to 2 PM- 586-4501
Tuolumne County Senior Center - 540 Greenely Rd. Sonora. Hours: Mon-Fri 8 AM to 4 PM- 533-2622

Reduce outdoor activity. If it looks smoky outside, it is not a good time for outdoors exercise and activity for people of any age. People with heart or lung disease should take further measures to avoid prolonged exertion and outdoor exposure. Reducing you physical activity outdoors lowers the amount of unhealthy air your body takes in.

Consult your physician. If you or a family member have heart or lung disease, if you are an older adult, or if you have children, talk with your doctor about whether and when you should leave the area. When smoke is heavy for a prolonged period of time, fine particles can build up indoors, even though you may not be able to see them. If you have asthma or other lung disease, call your doctor if your symptoms worsen.

Have a plan. Be sure to have a family emergency plan and kit with an adequate supply of food, water, medications, and necessities for at least 72 hours in the event that you need to stay home or evacuate.

Keep informed. Visit the local Air Quality Index website (see below) for updates on the air quality and air smoke monitoring. Register for the Citizen Alert emergency notification system for Tuolumne County (link below).

Use of Respirators - not "Masks". Masks, such as dust, surgical masks or wet bandanas, will not protect your lungs. If the smoke is that irritating to you, the best option is to remain indoors or temporarily relocate.
An option is a NIOSH approved disposable respirator, such as an N95. These can be beneficial to reduce particulate inhalation. People with heart or lung conditions should consult their doctor before using a respirator.

Take a break. If you can, take a break by traveling to a smoke-free area away from the wildfire, even if it is just for 3- 4 hours. This can be helpful for both your physical health, and a relief from other stressors.

More Resources:

Tuolumne County Air Quality Index Website:
https://www.tuolumnecounty.ca.gov/366/Current-Air-Quality

AirNow Website "How Smoke from Fires Can Affect Your Health"
https://www.airnow.gov/index.cfm?action=smoke.index

Tuolumne County Citizen Alert System Registration:
https://www.tuolumnecounty.ca.gov/CivicAlerts.aspx?AID=442

Ver1-2018.July

For more information contact:
Tuolumne County Public Health
20111 Cedar Road North, Sonora, CA 95370
209-533-7401 www.tuolumnecounty.ca.gov/

https://m.facebook.com/story.php?story_fbid=1725174827601669&id=804489136336914

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Immediate Updated Press Release -- July 30, 2018
Health Advisory for residents and travelers to areas affected by wildfire smoke

Wildfires continue to have variable air quality effects in parts of Tuolumne County, so the Tuolumne County Department of Public Health advises residents and visitors not to take children to areas of the county with unhealthy smoky conditions

BACKGROUND:

California is experiencing unprecedented wildfires this summer, affecting large parts of the state. Because it is summer time, many families are traveling to areas affected by the fires. Unfortunately, wildfire smoke can travel hundreds of miles and affect large geographic areas, including your area of residence, work, or travel destinations.

Wildfire smoke contains very small particulate matter – called PM2.5 – that are breathed deep into the lungs. The PM2.5 component of air pollution (e.g., from smoke) is linked to a number of health problems, including coughing, wheezing, reduced lung function, asthma attacks, heart attacks and strokes. It can have long-term health impacts. Additionally, wildfire smoke may contain unknown chemicals and particles from manmade materials that have burned (homes, cars, etc.).

Some groups of people are more sensitive to the adverse health effects of wildfire smoke. They include:

- people with cardiovascular disease (diseases of the heart and blood vessels)
- people with lung disease, including asthma and Chronic Obstructive Lung Disease
- children and teenagers
- older adults
- persons with obesity or diabetes may have increased risks
- new or expectant mothers may want to take precautions to protect the health of their babies

Children are especially at risk for adverse health effects from exposure to wildfire smoke and ash, mostly because their lungs are still growing. Children who breathe in wildfire smoke and ash can have chest pain and feel a tightness in their chest; trouble breathing; wheezing; coughing; nose, throat, and eye burning; dizziness; or other symptoms. Children with asthma, allergies, or chronic health issues may have more trouble breathing when smoke or ash is present.

Note that some areas are also affected by extreme heat and people who are not acclimated to the higher temperature, or are dehydrated, may experience additional stresses on their heart and lungs.

HOW CAN RESIDENTS & VISITORS ASSESS AIR QUALITY & HEALTH RISK?

Because the Tuolumne County geography may entrap smoke in certain valleys and basins, the following visibility chart can be used to determine the air quality where you are.

First identify on a map certain landmarks on the horizon. Then check to see at what distance the landmarks can no longer be seen. The distance of this landmark is the "visibility in miles." **Visibility in miles provides an excellent measure of air quality, and a way to evaluate the risk to your health.**

Air Quality Index Levels of Health Concern	Visibility in Miles	Meaning
Good	10 miles and up	Air quality is considered satisfactory, and air pollution poses little or no risk.
Moderate	6-9 miles	Air quality is acceptable; however, for some pollutants there may be a moderate health concern for a very small number of people who are unusually sensitive to air pollution.
Unhealthy for Sensitive Groups	3-5 miles	Members of sensitive groups may experience health effects. The general public is not likely to be affected.
Unhealthy	1.5-2.5 miles	Everyone may begin to experience health effects; members of sensitive groups may experience more serious health effects.
Very Unhealthy	1-1.25 miles	Health alert: everyone may experience more serious health effects.
Hazardous	0.75 mile or less	Health warnings of emergency conditions. The entire population is more likely to be affected.

WHAT SHOULD RESIDENTS AND VISITORS DO?

The Tuolumne County Department of Public Health recommends:

• for residents of Tuolumne County, see the Wildfire Health Tips on the next page;

• for residents and visitors, avoid traveling to areas with poor air quality due to wildfire smoke, especially if traveling with people in the sensitive groups above (to determine or monitor air quality see: https://www.airnow.gov/index.cfm?action=topics.smoke_wildfires and use the plus and minus icon to zoom to the location where you are or where you want to go with the cursor).

• if travel to an area with poor air quality is unavoidable or essential, then monitor air quality frequently and follow CDC guidelines (https://www.cdc.gov/disasters/wildfires/index.html) and EPA/PEHSU guidelines for children and other sensitive groups to reduce smoke exposure and reduce health consequences (https://www.pehsu.net/_Library/facts/PEHSU_Protecting_Children_from_Wildfire_Smoke_and_Ash_FACT_SHEET.pdf);

TUOLUMNE COUNTY HEALTH DEPARTMENT

Wildfire Smoke Health Tips

As fire agencies battle wildfires, there are measures we all can take to protect our health from harmful pollutants in our air. Smoke is a respiratory irritant that can worsen conditions such as asthma, other chronic lung conditions, or heart disease. Pregnant women, children, elderly people, smokers, and people who work or exercise outdoors are at higher risk for complications from smoke exposure.

Here are some tips you can follow to protect you and your family members from unhealthful air:

Stay indoors. Remain indoors, with air conditioning on, as much as possible when air pollution levels are unhealthful. Check the local Air Quality Index (AQI) for this information. Keep the air conditioner filter clean to prevent bringing additional smoke inside. In extremely hot weather, staying inside with the windows closed, without air conditioning may be dangerous. A swamp cooler will not provide protection and will pull in the smoky air from outside. Consider seeking alternative shelters in this situation.

Reduce outdoor activity. If it looks smoky outside, it is not a good time for outdoors exercise and activity for people of any age. People with heart or lung disease should take further measures to avoid prolonged exertion and outdoor exposure. Reducing your physical activity outdoors lowers the amount of unhealthy air your body takes in.

Consult your physician. If you or a family member have heart or lung disease, if you are an older adult, or if you have children, talk with your doctor about whether and when you should leave the area. When smoke is heavy for a prolonged period of time, fine particles can build up indoors, even though you may not be able to see them. If you have asthma or other lung disease, call your doctor if your symptoms worsen.

Have a plan. Be sure to have a family emergency plan and kit with an adequate supply of food, water, medications, and necessities for at least 72 hours in the event that you need to stay home or evacuate.

Keep informed. Visit the local Air Quality Index website (see below) for updates on the air quality and air smoke monitoring. Register for the Citizen Alert emergency notification system for Tuolumne County (link below).

Use of Respirators - not "Masks". Masks, such as dust, surgical masks or wet bandanas, will not protect your lungs. If the smoke is that irritating to you, the best option is to remain indoors or temporarily relocate. An option is a NIOSH approved disposable respirator, such as an N95. These can be beneficial to reduce particulate inhalation. People with heart or lung conditions should consult their doctor before using a respirator.

Take a break. If you can, take a break by traveling to a smoke-free area away from the wildfire, even if it is just for 3-4 hours. This can be helpful for both your physical health, and a relief from other stressors.

More Resources:

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https://www.airnow.gov/index.cfm?action=smoke.index

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https://www.tuolumnecounty.ca.gov/DocumentCenter/View/11161/Press-Release---Air-Quality-Health-Advisory-for-Tuolumne-County-2018-07-30

Tuolumne County
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Immediate Updated Press Release -- August 7, 2018

Health Advisory for residents and travelers to areas affected by wildfire smoke

Wildfires continue to variably impact air quality in Tuolumne County, so the Tuolumne County Department of Public Health advises residents and visitors not to take children to areas of the county with unhealthy smoky conditions, as well as to take precautions in school and sports settings.

BACKGROUND-CURRENT CONDITIONS:

California is experiencing unprecedented wildfires this summer, affecting large parts of the state, including the ongoing Ferguson Fire and the Donnell Fire, which is now burning in Tuolumne County east along the Highway 108 corridor above Donnell Reservoir. In addition to these local fires, we are now seeing smoke impacts in Tuolumne County from the Carr Fire near Redding and the Mendocino Complex Fire in Lake and Mendocino Counties. For the next three days, smoke conditions are expected to be impacted by a high pressure system and long daytime inversions with only short periods of clearing late in the afternoon, followed by smoke moving back into the foothill communities overnight.

As we close in on late summer, many families are still traveling to areas affected by the fires and youth are beginning their sports activities and school preparations. Unfortunately, wildfire smoke can travel hundreds of miles and affect large geographic areas, including your area of residence, work, or travel destinations.

Wildfire smoke contains very small particulate matter – called PM2.5 – that are breathed deep into the lungs. The PM2.5 component of air pollution (e.g., from smoke) is linked to a number of health problems, including coughing, wheezing, reduced lung function, asthma attacks, heart attacks and strokes. It can have long-term health impacts. Additionally, wildfire smoke may contain unknown chemicals and particles from manmade materials that have burned (homes, cars, etc.).

Some groups of people are more sensitive to the adverse health effects of wildfire smoke. They include:

- People with cardiovascular disease (diseases of the heart and blood vessels)
- People with lung disease, including asthma and Chronic Obstructive Lung Disease
- Children and teenagers
- Older adults
- Persons with obesity or diabetes may have increased risks
- New or expectant mothers may want to take precautions to protect the health of their babies

Children are especially at risk for adverse health effects from exposure to wildfire smoke and ash, mostly because their lungs are still growing. Children who breathe in wildfire smoke and ash can have chest pain and feel a tightness in their chest; trouble breathing; wheezing; coughing; nose, throat, and eye burning; dizziness; or other symptoms. Children with asthma, allergies, or chronic health issues may have more trouble breathing when smoke or ash is present.

Note that some areas are also affected by extreme heat and people who are not acclimated to the higher temperature, or are dehydrated, may experience additional stresses on their heart and lungs.

HOW CAN RESIDENTS & VISITORS ASSESS AIR QUALITY & HEALTH RISK?

Because the Tuolumne County geography may entrap smoke in certain valleys and basins, the following visibility chart can be used to determine the air quality where you are.

First identify on a map certain landmarks on the horizon. Then check to see at what distance the landmarks can no longer be seen. The distance of this landmark is the "visibility in miles." **Visibility in miles provides an excellent measure of air quality, and a way to evaluate the risk to your health**.

Air Quality Index Levels of Health Concern	Visibility in Miles	Meaning
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Very Unhealthy	1-1.25 miles	Health alert: everyone may experience more serious health effects.
Hazardous	0.75 mile or less	Health warnings of emergency conditions. The entire population is more likely to be affected.

WHAT SHOULD RESIDENTS AND VISITORS DO?

The Tuolumne County Department of Public Health recommends:

• See page five of this release for Recommendations for Schools, Sports, and Others Responsible for Children During a Wildfire Smoke Event;

• For residents of Tuolumne County, see the Wildfire Health Tips on the next page;

• For residents and visitors, avoid traveling to areas with poor air quality due to wildfire smoke, especially if traveling with people in the sensitive groups above (to determine or monitor air quality see: https://www.airnow.gov/index.cfm?action=topics.smoke_wildfires and use the plus and minus icon to zoom to the location where you are or where you want to go with the cursor).

• If travel to an area with poor air quality is unavoidable or essential, then monitor air quality frequently and follow CDC guidelines (https://www.cdc.gov/disasters/wildfires/index.html) and EPA/PEHSU guidelines for children and other sensitive groups to reduce smoke exposure and reduce health consequences (https://www.pehsu.net/_Library/facts/PEHSU_Protecting_Children_from_Wildfire_Smoke_and_Ash_FACT_SHEET.pdf);

TUOLUMNE COUNTY HEALTH DEPARTMENT

Wildfire Smoke Health Tips

As fire agencies battle wildfires, there are measures we all can take to protect our health from harmful pollutants in our air. Smoke is a respiratory irritant that can worsen conditions such as asthma, other chronic lung conditions, or heart disease. Pregnant women, children, elderly people, smokers, and people who work or exercise outdoors are at higher risk for complications from smoke exposure.

Here are some tips you can follow to protect you and your family members from unhealthful air:

Stay indoors. Remain indoors, with air conditioning on, as much as possible when air pollution levels are unhealthful. Check the local Air Quality Index (AQI) for this information. Keep the air conditioner filter clean to prevent bringing additional smoke inside. In extremely hot weather, staying inside with the windows closed, without air conditioning may be dangerous. A swamp cooler will not provide protection and will pull in the smoky air from outside. Consider seeking alternative shelters in this situation.

Reduce outdoor activity. If it looks smoky outside, it is not a good time for outdoors exercise and activity for people of any age. People with heart or lung disease should take further measures to avoid prolonged exertion and outdoor exposure. Reducing your physical activity outdoors lowers the amount of unhealthy air your body takes in.

Consult your physician. If you or a family member have heart or lung disease, if you are an older adult, or if you have children, talk with your doctor about whether and when you should leave the area. When smoke is heavy for a prolonged period of time, fine particles can build up indoors, even though you may not be able to see them. If you have asthma or other lung disease, call your doctor if your symptoms worsen.

Have a plan. Be sure to have a family emergency plan and kit with an adequate supply of food, water, medications, and necessities for at least 72 hours in the event that you need to stay home or evacuate.

Keep informed. Visit the local Air Quality Index website (see below) for updates on the air quality and air smoke monitoring. Register for the Citizen Alert emergency notification system for Tuolumne County (link below).

Use of Respirators - not "Masks". Masks, such as dust, surgical masks or wet bandanas, will not protect your lungs. If the smoke is that irritating to you, the best option is to remain indoors or temporarily relocate. An option is a NIOSH approved disposable respirator, such as an N95. These can be beneficial to reduce particulate inhalation. People with heart or lung conditions should consult their doctor before using a respirator.

Take a break. If you can, take a break by traveling to a smoke-free area away from the wildfire, even if it is just for 3-4 hours. This can be helpful for both your physical health and a relief from other stressors.

More Resources:

Tuolumne County Air Quality Index Website:
https://www.tuolumnecounty.ca.gov/366/Current-Air-Quality

AirNow Website "How Smoke from Fires Can Affect Your Health"
https://www.airnow.gov/index.cfm?action=smoke.index

Tuolumne County Citizen Alert System Registration:
https://www.tuolumnecounty.ca.gov/CivicAlerts.aspx?AID=442

For more information contact:
Tuolumne County Public Health
20111 Cedar Road North, Sonora, CA 95370
209-533-7401 www.tuolumnecounty.ca.gov/

Ver1-2018.July

Recommendations for Schools and Others Responsible for Children during a Wildfire Smoke Event

Health Recommendations for Schools, Coaches, and Event Coordinators regarding student exposure to fine particles (smoke and dust) air pollution

Air Quality Conditions

→Check current air quality first at www.airnow.gov/index.cfm?action=topics.smoke_wildfires then use this chart.

Activity	GOOD (AQI : 0-50) Visibility* 11+	MODERATE (AQI: 51-100) Visibility 6-10 miles	UNHEALTHY FOR SENSITIVE GROUPS (USG) (AQI: 101-150) Visibility 3-5 miles	UNHEALTHY (AQI: 151-200) Visibility 1.5 - 2.75	VERY UNHEALTHY / HAZARDOUS (AQI: 201-300) Visibility < 1.25
Recess (15 min)	No restrictions	No restrictions, but allow students with asthma or other respiratory problems to stay indoors	Keep children with asthma, respiratory infection, and heart or lung disease indoors. Make indoor space available for all children	Keep children indoors and activity levels light.	Keep all children indoors and activity levels light.
P.E. (1 hour)	No restrictions	Monitor children with asthma or other respiratory problems, limit their vigorous activities and increase rest periods	Limit to light outdoor activities. Allow any student to stay indoors if going outside might affect their health. Keep children with asthma, respiratory infection, and heart or lung disease indoors. Limit these children to moderate activities.	Conduct P.E. indoors. Limit children to light actitivities.	Keep all children indoors and activity levels light.
Scheduled Sporting Events & Practices	No restrictions	Monitor children with asthma or other respiratory problems, limit their vigorous activities and increase rest periods	Consider moving the event indoors. Increase rest periods and substitutions to allow for lower breathing rates. Children with asthma, respiratory infection, and heart or lung disease should play indoors.	Consider canceling, rescheduling, or relocating event to an area of good air quality, if this can be done without much transit through areas with poor air quality	Consider canceling, rescheduling, or relocating event to an area of good air quality, if this can be done without much transit through areas with poor air quality

rev 8/18

***Asthma action plans** should be followed at all times. When air quality is diminished, individuals should pay special attention to their Asthma Action Plan

→**Light activities:** walking slowly carrying school books, hanging out with friends, playing board games
→**Moderate activities:** Skateboarding, slow pitch softball, shooting basketballs
→**Vigorous activities:** Running, jogging, football, soccer, basketball, jumping rope

How to roughly estimate air quality based on visibility without an air quality monitor or airport visibility estimate:
1) Face away from the sun. **2)** Determine the limit of your visible range by looking for targets at known distances (miles).
3) Visible range is that point at which even high contrast objects totally disappear. **4)** Use the values above to determine the local AQI

Tuolumne County Public Health Department
(209) 533-7401
https://www.tuolumnecounty.ca.gov/250/Public-Health

Tuolumne County Air Pollution Control District
(209) 533-5693
www.tuolumnecounty.ca.gov/364/Air-Pollution-Control-District

Special thanks to the North Coast Unified Air Quality Management District for providing this valuable tool

https://www.tuolumnecounty.ca.gov/DocumentCenter/View/11222/Press-Release---Air-Quality-Health-Advisory-for-Tuolumne-County-2018-08-07

E. Tuscan Buttes / Tehama County

July 26, 2018 *Peter Helldorfer*

The air quality in Tehama County is in the moderate range. Conditions will most likely vary as smoke from the CARR Fire drifts over Tehama County.

Unusually sensitive people should consider limiting prolonged outdoor exertions. While all persons may experience varying degrees of symptoms, the more sensitive individuals are at greatest risk at experiencing more aggravated symptoms which may include, but are not limited to coughing, scratchy throat, watery and itchy eyes, and difficulty breathing.

Persons experiencing questionable or severe symptoms should seek professional medical advice.

Scientific studies have linked fine particulate matter (smoke) with significant health problems, including premature death, respiratory related hospital admissions, aggravated asthma, acute respiratory symptoms (including severe chest pain, gasping, and aggravated coughing) chronic bronchitis, decreased lung function, and work and school absences.

In addition, all open burning is prohibited during this period.

For further information contact Joseph H. Tona, Air Pollution Control Officer at (530) 527-3717.

Advisory, Latest News, wildfire

https://www.tehcoapcd.net/blog/2018/07/26/carr-fire-impacting-air-quality-july-26-2018/

TEHAMA COUNTY
AIR POLLUTION CONTROL DISTRICT

Home | Current Air Quality | Rules and Compliance | Permits | Grants and Incentives | News and Events | Resources

Air Quality Unhealthy For Sensitive Groups – July 26, 2018

Home / 2018 / July / 26 / Air Quality Unhealthy For Sensitive Groups – July 26, 2018

July 26, 2018 *Peter Helldorfer*

July 26, 2018-10:40am

The air quality in Tehama County is in the unhealthy range for sensitive groups. Conditions will most likely vary from unhealthy to moderate over short periods of time as smoke from the CARR Fire drifts over Tehama County.

Active children and adults, and people with respiratory disease, such as asthma, should limit prolonged outdoor exertion. The Tehama County Air Pollution Control District advises that these sensitive categories stay indoors and avoid intense physical activity in those areas where high smoke levels are visibly evident.

While all persons may experience varying degrees of symptoms, the more sensitive individuals are at greatest risk at experiencing more aggravated symptoms which may include, but are not limited to coughing, scratchy throat, watery and itchy eyes, and difficulty breathing.

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Advisory, Latest News, smoke, wildfire

https://www.tehcoapcd.net/blog/2018/07/26/air-quality-unhealthy-for-sensitive-groups-july-26-2018/

TEHAMA COUNTY
AIR POLLUTION CONTROL DISTRICT

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Air Quality Unhealthy– July 26, 2018

Home / 2018 / July / 26 / Air Quality Unhealthy– July 26, 2018

July 26, 2018 *Peter Helldorfer*

July 26, 2018 – 4:30pm

The air quality in Tehama County is in the unhealthy range. Conditions will most likely vary as smoke from the CARR Fire drifts over Tehama County.

Children, active adults, and people with respiratory disease, such as asthma, should avoid prolonged outdoor exertion; everyone else should limit prolonged outdoor exertion. While all persons may experience varying degrees of symptoms, the more sensitive individuals are at greatest risk at experiencing more aggravated symptoms which may include, but are not limited to coughing, scratchy throat, watery and itchy eyes, and difficulty breathing.

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Advisory, Latest News, smoke, wildfire

https://www.tehcoapcd.net/blog/2018/07/26/air-quality-unhealthy-july-26-2018/

TEHAMA COUNTY
AIR POLLUTION CONTROL DISTRICT

Home | Current Air Quality | Rules and Compliance | Permits | Grants and Incentives | News and Events | Resourc

CARR Fire Impacting Air Quality – Expected to Become Unhealthy

Home / 2018 / July / 27 / CARR Fire Impacting Air Quality – Expected to Become Unhealthy

July 27, 2018 *Peter Helldorfer*

July 27, 2018 – 10:00am

The air quality in Tehama County is currently in the moderate range. Air quality is expected to deteriorate to an unhealthy range as smoke from the CARR Fire drifts over Tehama County.

Children, active adults, and people with respiratory disease, such as asthma, should avoid prolonged outdoor exertion; everyone else should limit prolonged outdoor exertion. While all persons may experience varying degrees of symptoms, the more sensitive individuals are at greatest risk at experiencing more aggravated symptoms which may include, but are not limited to coughing, scratchy throat, watery and itchy eyes, and difficulty breathing.

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In addition, all open burning is prohibited during this period.

For further information contact Joseph H. Tona, Air Pollution Control Officer at (530) 527-3717.

Advisory, Latest News, wildfire

https://www.tehcoapcd.net/blog/2018/07/27/carr-fire-impacting-air-quality-expected-to-become-unhealthy/

TEHAMA COUNTY
AIR POLLUTION CONTROL DISTRICT

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CARR Fire Impacting Air Quality – May Become Very Unhealthy – July 28th & July 29th

Home / 2018 / July / 28 / CARR Fire Impacting Air Quality – May Become Very Unhealthy – July 28th & July 29th

July 28, 2018 *Peter Helldorfer*

July 28, 2018 – 4:30pm

The air quality in Tehama County is currently in the unhealthy range. Air quality may deteriorate further to a very unhealthy range this Saturday and Sunday as smoke from the CARR Fire drifts over Tehama County.

Children, active adults, and people with respiratory disease, such as asthma, should avoid outdoor exertion; everyone else should limit outdoor exertion. While all persons may experience varying degrees of symptoms, the more sensitive individuals are at greatest risk at experiencing more aggravated symptoms which may include, but are not limited to coughing, scratchy throat, watery and itchy eyes, and difficulty breathing.

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In addition, all open burning is prohibited during this period.

For further information contact Joseph H. Tona, Air Pollution Control Officer at (530) 527-3717.

Advisory, Latest News, smoke, wildfire

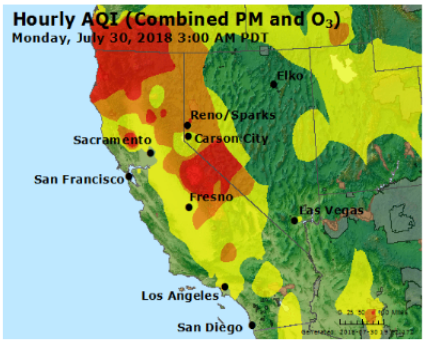
https://www.tehcoapcd.net/blog/2018/07/28/carr-fire-impacting-air-quality-may-become-very-unhealthy-july-28th-july-29th/

TEHAMA COUNTY
AIR POLLUTION CONTROL DISTRICT

Home | Current Air Quality | Rules and Compliance | Permits | Grants and Incentives

Air Quality Unhealthy– July 30, 2018

Home / 2018 / July / 30 / Air Quality Unhealthy– July 30, 2018



July 30, 2018 *TCAPCD*

The air quality in Tehama County is in the unhealthy range due to wildfire smoke from fires currently burning throughout Northern California. Tehama County residents can pick up a mask at Tehama County Air Pollution Control office at 1834 Walnut St., Tehama County Public Health in Building C at 1860 Walnut St. and Tehama County Administration at 727 Oak St., all in Red Bluff.

Children, active adults, and people with respiratory disease, such as asthma, should avoid prolonged outdoor exertion; everyone else, especially children, should limit prolonged outdoor exertion. The Tehama County Air Pollution Control District advises that these sensitive categories stay indoors and avoid intense physical activity in those areas where high smoke levels are visibly evident.

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In addition, all open burning is prohibited during this period.

For further information contact Joseph H. Tona, APCO at the Tehama County Air Pollution Control District at (530) 527-3717.

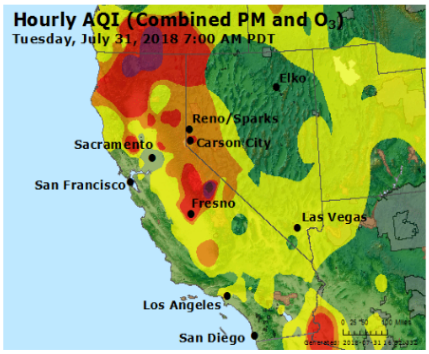
To see current conditions updated hourly please see our Current Air Quality Page here: https://www.tehcoapcd.net/current-air-quality/

Advisory, Latest News, smoke, wildfire

https://www.tehcoapcd.net/blog/2018/07/30/air-quality-unhealthy-july-30-2018/

TEHAMA COUNTY
AIR POLLUTION CONTROL DISTRICT

Air Quality Unhealthy– July 31, 2018



July 31, 2018 *TCAPCD*

The air quality in Tehama County is in the unhealthy range due to wildfire smoke from fires currently burning throughout Northern California. Tehama County residents can pick up a mask at Tehama County Air Pollution Control office at 1834 Walnut St., Tehama County Public Health in Building C at 1860 Walnut St. and Tehama County Administration at 727 Oak St., all in Red Bluff.

Children, active adults, and people with respiratory disease, such as asthma, should avoid prolonged outdoor exertion; everyone else, especially children, should limit prolonged outdoor exertion. The Tehama County Air Pollution Control District advises that these sensitive categories stay indoors and avoid intense physical activity in those areas where high smoke levels are visibly evident.

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To see current conditions updated hourly please see our Current Air Quality Page here: https://www.tehcoapcd.net/current-air-quality/

Advisory, Latest News, smoke, wildfire

https://www.tehcoapcd.net/blog/2018/07/31/air-quality-unhealthy-july-31-2018/

TEHAMA COUNTY
AIR POLLUTION CONTROL DISTRICT

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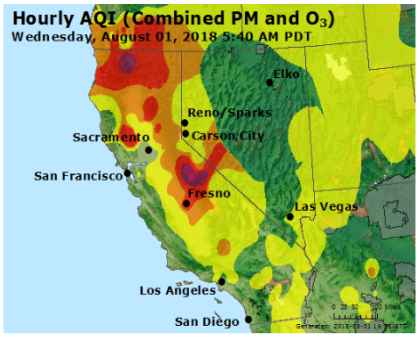
Air Quality Unhealthy– August 1, 2018

Home / 2018 / August / 1 / Air Quality Unhealthy– August 1, 2018



August 1, 2018 *TCAPCD*

The air quality in Tehama County is in the unhealthy range due to wildfire smoke from fires currently burning throughout Northern California. Tehama County residents can pick up a mask at Tehama County Air Pollution Control office at 1834 Walnut St., Tehama County Public Health in Building C at 1860 Walnut St. and Tehama County Administration at 727 Oak St., all in Red Bluff. Masks are also available at the Tehama County Health Services Agency at 275 Solano Street and Rancho Tehama Association 17605 Park Terrace Rd, both in Corning.

Children, active adults, and people with respiratory disease, such as asthma, should avoid prolonged outdoor exertion; everyone else, especially children, should limit prolonged outdoor exertion. The Tehama County Air Pollution Control District advises that these sensitive categories stay indoors and avoid intense physical activity in those areas where high smoke levels are visibly evident.

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To see current conditions updated hourly please see our Current Air Quality Page here: https://www.tehcoapcd.net/current-air-quality/

Advisory, Latest News, smoke, wildfire

https://www.tehcoapcd.net/blog/2018/08/01/air-quality-unhealthy-august-1-2018/

TEHAMA COUNTY
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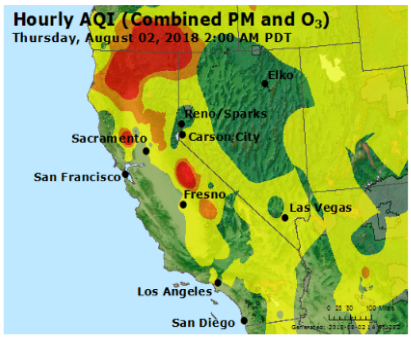
Air Quality Unhealthy for Sensitive Groups – August 2, 2018

Home / 2018 / August / 2 / Air Quality Unhealthy for Sensitive Groups – August 2, 2018



August 2, 2018 *TCAPCD*

The air quality in Tehama County is in the unhealthy for sensitive groups range. Conditions will most likely vary over short periods of time as smoke from wildland fires in the Northstate drift over Tehama County. Tehama County residents can pick up a mask at Tehama County Air Pollution Control office at 1834 Walnut St., Tehama County Public Health in Building C at 1860 Walnut St. and Tehama County Administration at 727 Oak St. in Red Bluff, Rancho Tehama Association at 17605 Park Terrace Rd, in Corning and the Cal Fire Station in Manton.

Active adults, children, and people with respiratory disease, such as asthma, should limit prolonged outdoor exertion. The Tehama County Air Pollution Control District advises that these sensitive categories stay indoors and avoid intense physical activity in those areas where high smoke levels are visibly evident.

While all persons may experience varying degrees of symptoms, more sensitive individuals are at greatest risk at experiencing more aggravated symptoms which may include, but are not limited to coughing, scratchy throat, watery and itchy eyes, and difficulty breathing.

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In addition, all open burning is prohibited during this period.

For further information contact Joseph H. Tona, APCO at the Air Pollution Control District at (530) 527-3717.

To see current conditions updated hourly please see our Current Air Quality Page here: https://www.tehcoapcd.net/current-air-quality/

Advisory, Latest News, smoke, wildfire

https://www.tehcoapcd.net/blog/2018/08/02/air-quality-unhealthy-for-sensitive-groups-august-1-2018/

TEHAMA COUNTY
AIR POLLUTION CONTROL DISTRICT

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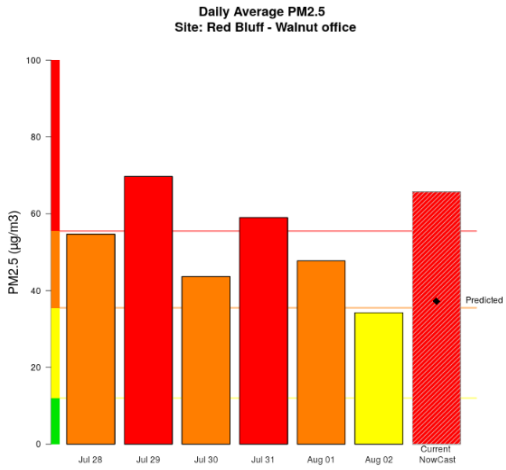
Air Quality Unhealthy– August 3, 2018

Home / 2018 / August / 3 / Air Quality Unhealthy– August 3, 2018



August 3, 2018 *TCAPCD*

The air quality in Tehama County is in the unhealthy range due to wildfire smoke from fires currently burning throughout Northern California. Tehama County residents can pick up a mask at Tehama County Air Pollution Control office at 1834 Walnut St., Tehama County Public Health in Building C at 1860 Walnut St. and Tehama County Administration at 727 Oak St. in Red Bluff, Rancho Tehama Association at 17605 Park Terrace Rd, in Corning and the Cal Fire Station in Manton.

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In addition, all open burning is prohibited during this period.

For further information contact Joseph H. Tona, APCO at the Tehama County Air Pollution Control District at (530) 527-3717.

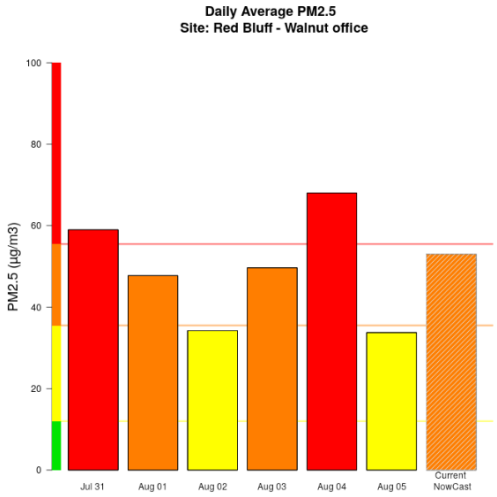
To see current conditions updated hourly please see our Current Air Quality Page here: https://www.tehcoapcd.net/current-air-quality/

Advisory, Latest News, smoke, wildfire

https://www.tehcoapcd.net/blog/2018/08/03/air-quality-unhealthy-august-3-2018/

TEHAMA COUNTY
AIR POLLUTION CONTROL DISTRICT

Air Quality Unhealthy for Sensitive Groups – August 6, 2018



August 6, 2018 *TCAPCD*

The air quality in Tehama County is in the unhealthy range for sensitive groups. Conditions will most likely vary from unhealthy to moderate over short periods of time as smoke from wildland fires in the Northstate drift over Tehama County. Tehama County residents can pick up a mask at Tehama County Air Pollution Control office at 1834 Walnut St., Tehama County Public Health in Building C at 1860 Walnut St. and Tehama County Administration at 727 Oak St. in Red Bluff, Rancho Tehama Association at 17605 Park Terrace Rd, in Corning and the Cal Fire Station in Manton.

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To see current conditions updated hourly please see our Current Air Quality Page here: https://www.tehcoapcd.net/current-air-quality/

Advisory, Latest News, smoke, wildfire

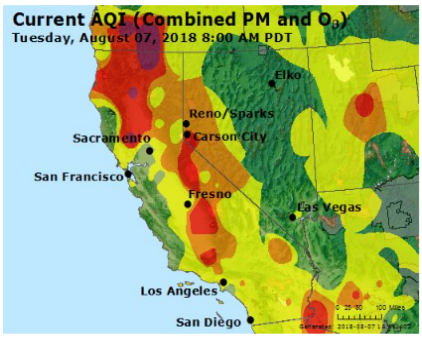
https://www.tehcoapcd.net/blog/2018/08/06/air-quality-unhealthy-for-sensitive-groups-august-6-2018/

TEHAMA COUNTY
AIR POLLUTION CONTROL DISTRICT

Home | Current Air Quality | Rules and Compliance | Permits | Grants and Incentives

Air Quality Unhealthy – August 7, 2018

Home / 2018 / August / 7 / Air Quality Unhealthy – August 7, 2018



August 7, 2018 *TCAPCD*

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To see current conditions updated hourly please see our Current Air Quality Page here: https://www.tehcoapcd.net/current-air-quality/

Advisory, Latest News, smoke, wildfire

https://www.tehcoapcd.net/blog/2018/08/07/air-quality-unhealthy-august-7-2018/

TEHAMA COUNTY
AIR POLLUTION CONTROL DISTRICT

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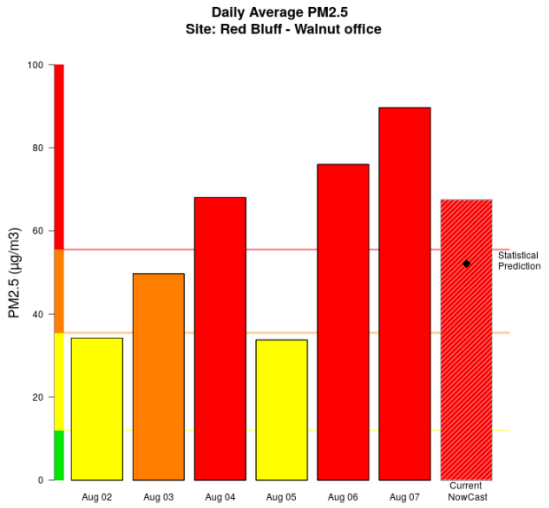
Air Quality Unhealthy – August 8, 2018

Home / 2018 / August / 8 / Air Quality Unhealthy – August 8, 2018



August 8, 2018 *TCAPCD*

The air quality in Tehama County is in the unhealthy range due to wildfire smoke from fires currently burning throughout Northern California. Tehama County residents can pick up a mask at Tehama County Air Pollution Control office at 1834 Walnut St., Tehama County Public Health in Building C at 1860 Walnut St. and Tehama County Administration at 727 Oak St. in Red Bluff, Rancho Tehama Association at 17605 Park Terrace Rd, in Corning and the Cal Fire Station in Manton.

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Scientific studies have linked fine particulate matter (smoke) with significant health problems, including premature death, respiratory related hospital admissions, aggravated asthma, acute respiratory symptoms (including severe chest pain, gasping, and aggravated coughing) chronic bronchitis, decreased lung function, and work and school absences.

In addition, all open burning is prohibited during this period.

For further information contact Joseph H. Tona, APCO at the Tehama County Air Pollution Control District at (530) 527-3717.

Advisory, Latest News, smoke, wildfire

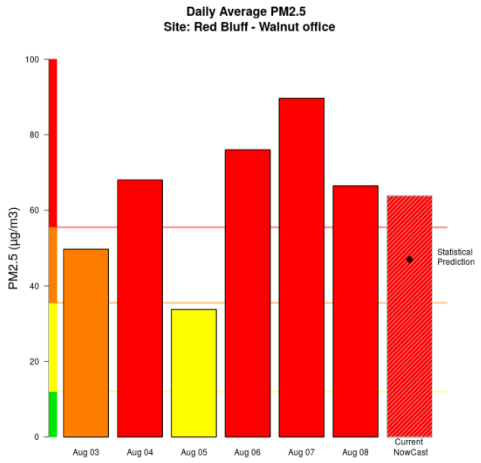
https://www.tehcoapcd.net/blog/2018/08/08/air-quality-unhealthy-august-8-2018/

TEHAMA COUNTY
AIR POLLUTION CONTROL DISTRICT

Home | Current Air Quality | Rules and Compliance | Permits | Grants and Incentives

Air Quality Unhealthy – August 9, 2018

Home / 2018 / August / 9 / Air Quality Unhealthy – August 9, 2018



August 9, 2018 *TCAPCD*

The air quality in Tehama County is in the unhealthy range for sensitive groups. Conditions will most likely vary from unhealthy to moderate over short periods of time as smoke from wildland fires in the Northstate drift over Tehama County. Tehama County residents can pick up a mask at Tehama County Air Pollution Control office at 1834 Walnut St., Tehama County Public Health in Building C at 1860 Walnut St. and Tehama County Administration at 727 Oak St. in Red Bluff, Rancho Tehama Association at 17605 Park Terrace Rd, in Corning and the Cal Fire Station in Manton.

Active children and adults, and people with respiratory disease, such as asthma, should limit prolonged outdoor exertion. The Tehama County Air Pollution Control District advises that these sensitive categories stay indoors and avoid intense physical activity in those areas where high smoke levels are visibly evident.

While all persons may experience varying degrees of symptoms, the more sensitive individuals are at greatest risk at experiencing more aggravated symptoms which may include, but are not limited to coughing, scratchy throat, watery and itchy eyes, and difficulty breathing.

Persons experiencing questionable or severe symptoms should seek professional medical advice.

Scientific studies have linked fine particulate matter (smoke) with significant health problems, including premature death, respiratory related hospital admissions, aggravated asthma, acute respiratory symptoms (including severe chest pain, gasping, and aggravated coughing) chronic bronchitis, decreased lung function, and work and school absences.

In addition, all open burning is prohibited during this period.

For further information contact Joseph H. Tona, APCO at the Air Pollution Control District at (530) 527-3717.

To see current conditions updated hourly please see our Current Air Quality Page here: https://www.tehcoapcd.net/current-air-quality/

Advisory, Latest News, smoke, wildfire

https://www.tehcoapcd.net/blog/2018/08/09/air-quality-unhealthy-august-9-2018

TEHAMA COUNTY
AIR POLLUTION CONTROL DISTRICT

Air Quality Unhealthy – August 10, 2018

August 10, 2018 *Peter Helldorfer*

The air quality in Tehama County is in the unhealthy range for sensitive groups. Conditions will most likely vary from unhealthy to moderate over short periods of time as smoke from wildland fires in the Northstate drift over Tehama County. Tehama County residents can pick up a mask at Tehama County Air Pollution Control office at 1834 Walnut St., Tehama County Public Health in Building C at 1860 Walnut St. and Tehama County Administration at 727 Oak St. in Red Bluff, Rancho Tehama Association at 17605 Park Terrace Rd, in Corning and the Cal Fire Station in Manton.

Active children and adults, and people with respiratory disease, such as asthma, should limit prolonged outdoor exertion. The Tehama County Air Pollution Control District advises that these sensitive categories stay indoors and avoid intense physical activity in those areas where high smoke levels are visibly evident.

While all persons may experience varying degrees of symptoms, the more sensitive individuals are at greatest risk at experiencing more aggravated symptoms which may include, but are not limited to coughing, scratchy throat, watery and itchy eyes, and difficulty breathing.

Persons experiencing questionable or severe symptoms should seek professional medical advice.

Scientific studies have linked fine particulate matter (smoke) with significant health problems, including premature death, respiratory related hospital admissions, aggravated asthma, acute respiratory symptoms (including severe chest pain, gasping, and aggravated coughing) chronic bronchitis, decreased lung function, and work and school absences.

In addition, all open burning is prohibited during this period.

For further information contact Joseph H. Tona, APCO at the Air Pollution Control District at (530) 527-3717.

To see current conditions updated hourly please see our Current Air Quality Page here: https://www.tehcoapcd.net/current-air-quality/

Advisory, Latest News, smoke, wildfire

https://www.tehcoapcd.net/blog/2018/08/10/air-quality-unhealthy-august-10-2018/

F. Western Part of Nevada County (Grass Valley) / Northern Sierra AQMD

AIR QUALITY HEALTH ADVISORY -- SMOKE
Friday, July 27, 2018 through Sunday July 29, 2018
Plumas, Sierra and Nevada County

The Public Health Officers for Plumas, Sierra and Nevada County and the Northern Sierra Air Quality Management District are issuing a joint Air Quality Health Advisory to notify the public of potentially poor air quality conditions through July 29 resulting from various wildfires in the area. Conditions are expected to be in the Unhealthy for Sensitive Groups to Unhealthy range. Smoke is expected to settle in low areas at night and drift across the three counties during the day, depending on wind direction and other factors.

Exposure to elevated PM2.5 (fine particulate matter in smoke) concentrations can result in eye and throat irritation, headaches, nausea, shortness of breath, congestion, coughing, impaired lung function and chest pain, especially among sensitive individuals such as the elderly, children, people with asthma, people with heart or lung conditions, pregnant women and anyone who is exercising or working hard outdoors.

If you smell or see smoke around you, the following actions are recommended:

- Minimize outdoor activities even if you are healthy;
- Stay indoors with doors and windows closed as much as possible; run the air conditioner on the "recirculate" setting if that is an option;
- People with asthma should follow their asthma management plan;
- People with heart disease, respiratory or chronic health issues should stay indoors;
- Contact your doctor if you have symptoms of cough, shortness of breath, chest pain, or severe fatigue;
- Keep airways moist and stay hydrated by drinking plenty of water;
- Avoid breathing additional smoke, such as from cigarettes or barbecues.

Near real-time air quality conditions may be found at *www.sparetheair.com* (click on "Current Conditions" on the left) or at *www.myairdistrict.com* (click on "Local Air Quality" in the lower middle portion). As you view the most recent data, take into consideration that conditions can change rapidly due to wind shifts; it is wise to monitor the smoke throughout the day and make plans accordingly.

To sign up for the Air Quality Health Advisory email list, please visit *www.myairdistrict.com*.

https://sierracountyprospect.org/2018/07/27/news-flash-friday-july-27-2018/

AIR QUALITY HEALTH ADVISORY -- SMOKE
Monday, July 30 through Thursday, August 2, 2018
Plumas, Sierra and Nevada County

The Public Health Officers for Plumas, Sierra and Nevada County and the Northern Sierra Air Quality Management District are extending a joint Air Quality Health Advisory to notify the public of potentially poor air quality conditions through August 2 resulting from various wildfires in the area. Conditions are expected to be in the Unhealthy for Sensitive Groups to Unhealthy range. Smoke is expected to settle in low areas at night and drift across the three counties during the day, depending on wind direction and other factors. Residents of western Nevada County should be advised that ozone levels are predicted to be in the Unhealthy range until August 2.

Exposure to elevated PM2.5 (fine particulate matter in smoke) concentrations can result in eye and throat irritation, headaches, nausea, shortness of breath, congestion, coughing, impaired lung function and chest pain, especially among sensitive individuals such as the elderly, children, people with asthma, people with heart or lung conditions, pregnant women and anyone who is exercising or working hard outdoors.

If you smell or see smoke around you, the following actions are recommended:

- Minimize outdoor activities even if you are healthy;
- Stay indoors with doors and windows closed as much as possible; run the air conditioner on the "recirculate" setting if that is an option;
- People with asthma should follow their asthma management plan;
- People with heart disease, respiratory or chronic health issues should stay indoors;
- Contact your doctor if you have symptoms of cough, shortness of breath, chest pain, or severe fatigue;
- Keep airways moist and stay hydrated by drinking plenty of water;
- Avoid breathing additional smoke, such as from cigarettes or barbecues.

Near real-time air quality conditions may be found at *www.spareheair.com* (click on "Current Conditions" on the left) or at *www.myairdistrict.com* (click on "Local Air Quality" in the lower middle portion). As you view the most recent data, take into consideration that conditions can change rapidly due to wind shifts; it is wise to monitor the smoke throughout the day and make plans accordingly.

To sign up for the Air Quality Health Advisory email list, please visit *www.myairdistrict.com*.

https://yubanet.com/regional/air-quality-health-advisory-for-smoke-through-thursday-aug-2/

AIR QUALITY HEALTH ADVISORY -- SMOKE
Thursday, August 2 through Monday, August 6, 2018
Plumas, Sierra and Nevada County

The Public Health Officers for Plumas, Sierra and Nevada County and the Northern Sierra Air Quality Management District are extending a joint Air Quality Health Advisory to notify the public of potentially poor air quality conditions through August 6 resulting from various wildfires. Conditions are expected to vary from Good to Unhealthy for Sensitive Groups, and possibly reach the Unhealthy range in some areas, depending on wind direction and other factors. Forecast breezy conditions could lead to increased fire activity but also periodic clearing. Ozone levels are expected to reach the Unhealthy for Sensitive Groups range in western Nevada County, especially on Thursday and Friday, exacerbating the health effects of smoke.

Exposure to elevated PM2.5 (fine particulate matter in smoke) concentrations can result in eye and throat irritation, headaches, nausea, shortness of breath, congestion, coughing, impaired lung function and chest pain, especially among sensitive individuals such as the elderly, children, people with asthma, people with heart or lung conditions, pregnant women and anyone who is exercising or working hard outdoors.

If you smell or see smoke around you, the following actions are recommended:

- Minimize outdoor activities even if you are healthy;
- Stay indoors with doors and windows closed as much as possible; run the air conditioner on the "recirculate" setting if that is an option;
- People with asthma should follow their asthma management plan;
- People with heart disease, respiratory or chronic health issues should stay indoors;
- Contact your doctor if you have symptoms of cough, shortness of breath, chest pain, or severe fatigue;
- Keep airways moist and stay hydrated by drinking plenty of water;
- Avoid breathing additional smoke, such as from cigarettes or barbecues.

Near real-time air quality conditions may be found at *www.spareheair.com* (click on "Current Conditions" on the left) or at *www.myairdistrict.com* (click on "Local Air Quality" in the lower middle portion). As you view the most recent data, take into consideration that conditions can change rapidly due to wind shifts; it is wise to monitor the smoke throughout the day and make plans accordingly.

To sign up for the Air Quality Health Advisory email list, please visit *www.myairdistrict.com*.

https://yubanet.com/regional/air-quality-advisory-for-plumas-sierra-and-nevada-county-extended-through-aug-6/

AIR QUALITY HEALTH ADVISORY -- SMOKE
Monday, August 6 through Thursday, August 9, 2018
Plumas, Sierra and Nevada County

The Public Health Officers for Plumas, Sierra and Nevada County and the Northern Sierra Air Quality Management District are extending a joint Air Quality Health Advisory to notify the public of potentially poor air quality conditions at least through Thursday resulting from various wildfires. Conditions are expected to continue to vary from Good to Unhealthy for Sensitive Groups, and possibly reach the Unhealthy range in some areas, depending on wind direction and other factors. Also, with forecast high temperatures ozone levels are expected to reach the Unhealthy for Sensitive Groups range in western Nevada County, especially in the afternoons and evenings, exacerbating the health effects of smoke.

Exposure to elevated PM2.5 (fine particulate matter in smoke) concentrations can result in eye and throat irritation, headaches, nausea, shortness of breath, congestion, coughing, impaired lung function and chest pain, especially among sensitive individuals such as the elderly, children, people with asthma, people with heart or lung conditions, pregnant women and anyone who is exercising or working hard outdoors.

If you smell or see smoke around you, the following actions are recommended:

- Minimize outdoor activities even if you are healthy;
- Stay indoors with doors and windows closed as much as possible; run the air conditioner on the “recirculate” setting if that is an option;
- People with asthma should follow their asthma management plan;
- People with heart disease, respiratory or chronic health issues should stay indoors;
- Contact your doctor if you have symptoms of cough, shortness of breath, chest pain, or severe fatigue;
- Keep airways moist and stay hydrated by drinking plenty of water;
- Avoid breathing additional smoke, such as from cigarettes or barbecues.

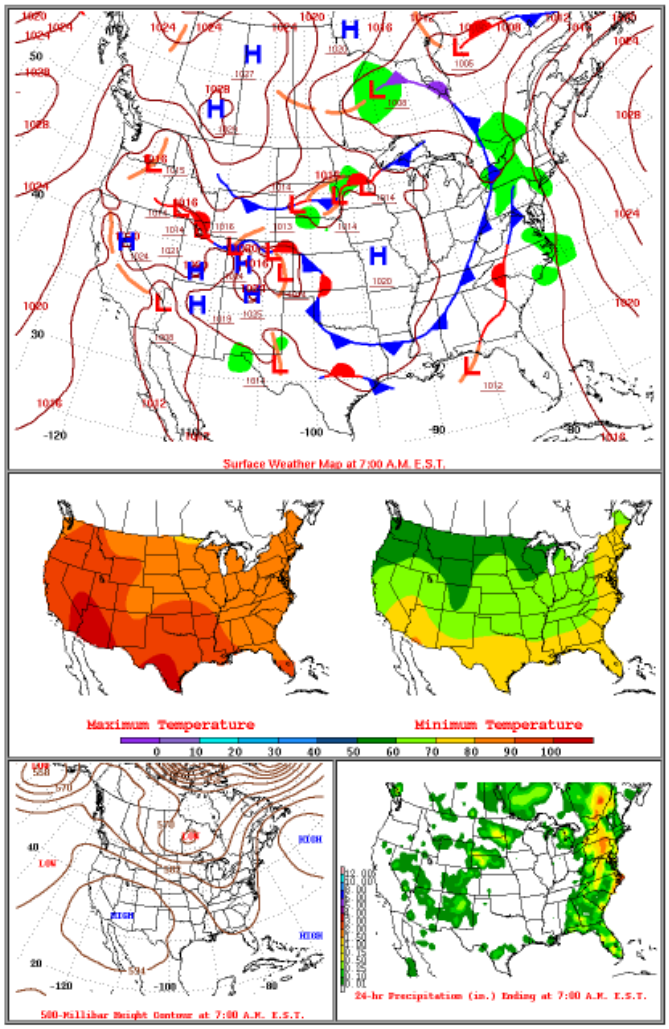
Near real-time air quality conditions may be found at *www.sparetheair.com* (click on “Current Conditions” on the left) or at *www.myairdistrict.com* (click on “Local Air Quality” in the lower middle portion). As you view the most recent data, take into consideration that conditions can change rapidly due to wind shifts; it is wise to monitor the smoke throughout the day and make plans accordingly.

To sign up for the Air Quality Health Advisory email list, please visit *www.myairdistrict.com*.

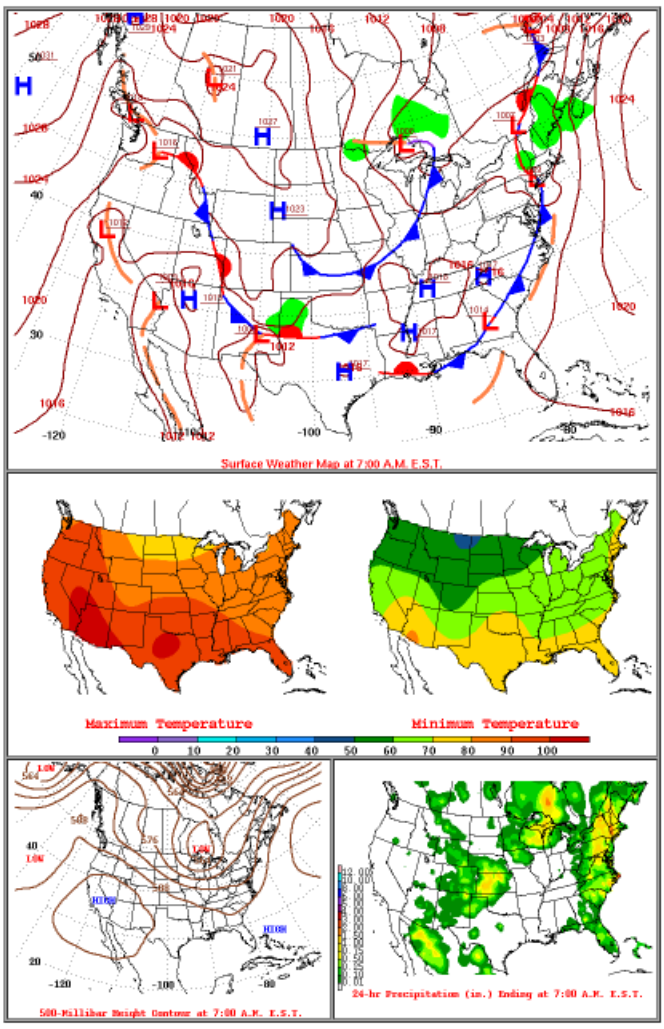
III. Meteorological Information

A. NWS Daily Maps

WEDNESDAY JULY 25, 2018



THURSDAY JULY 26, 2018



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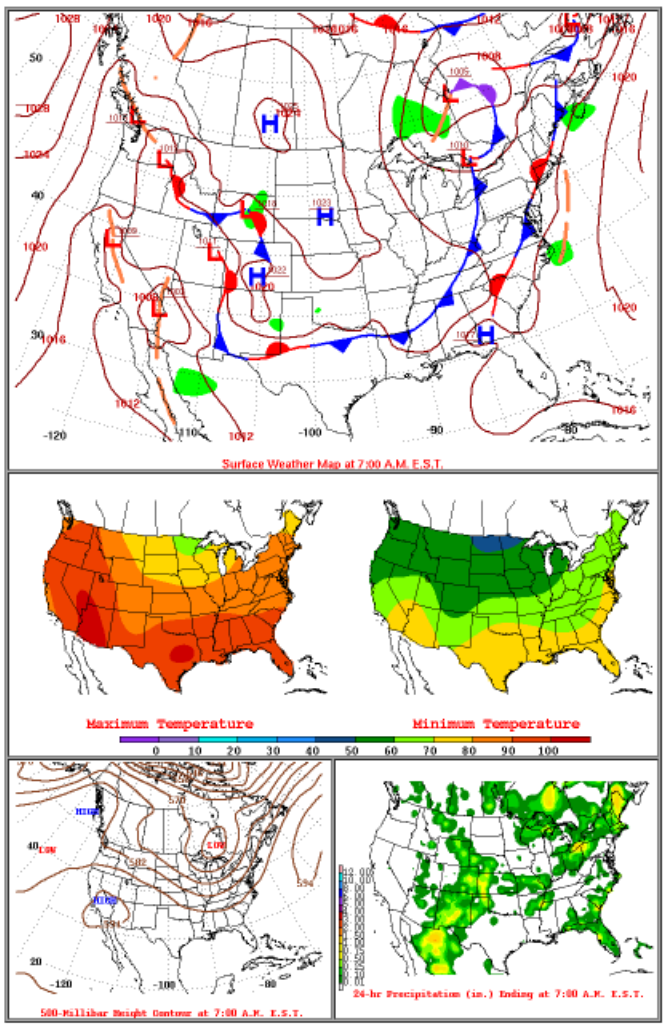
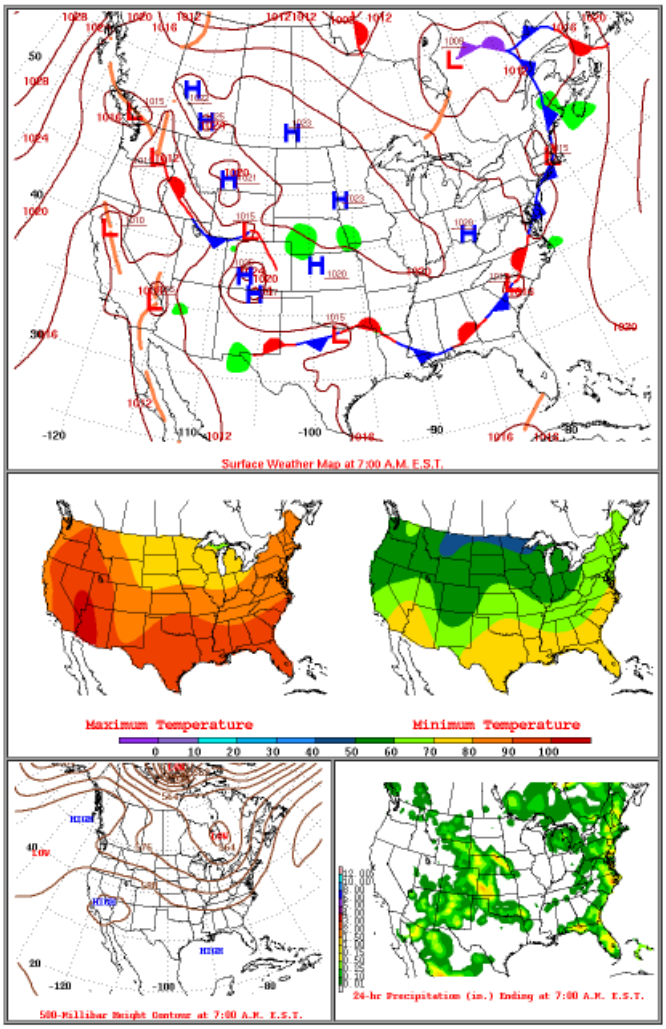


SATURDAY JULY 28, 2018



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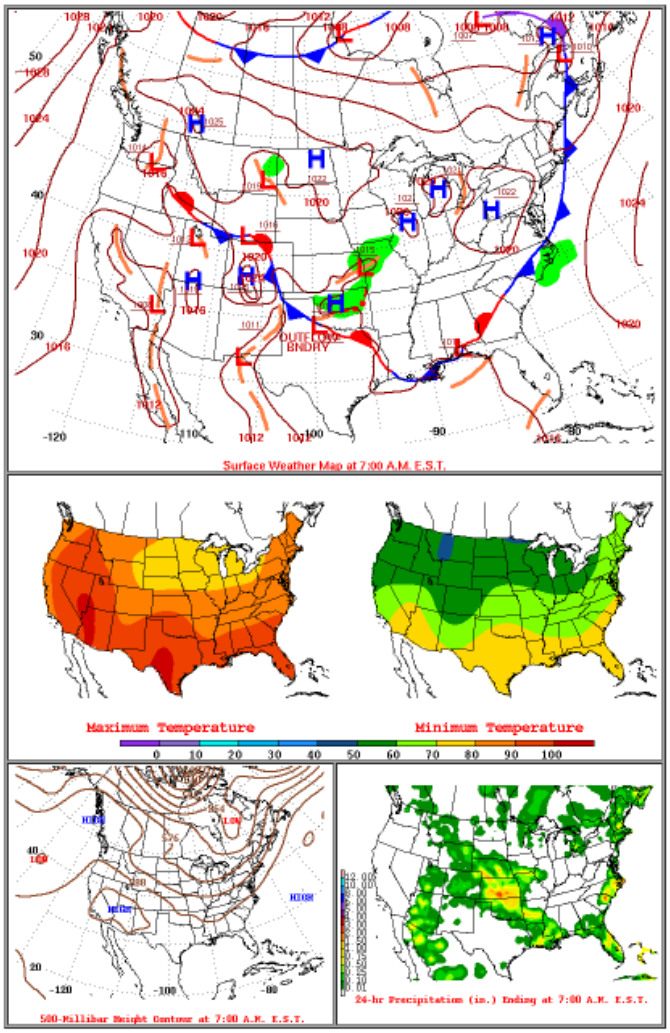

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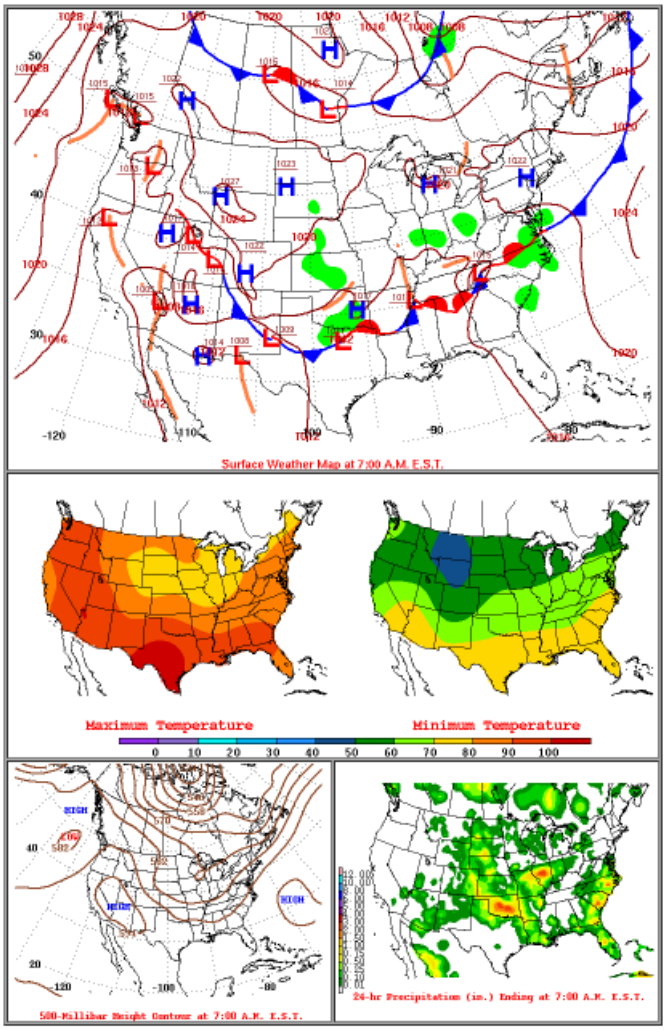
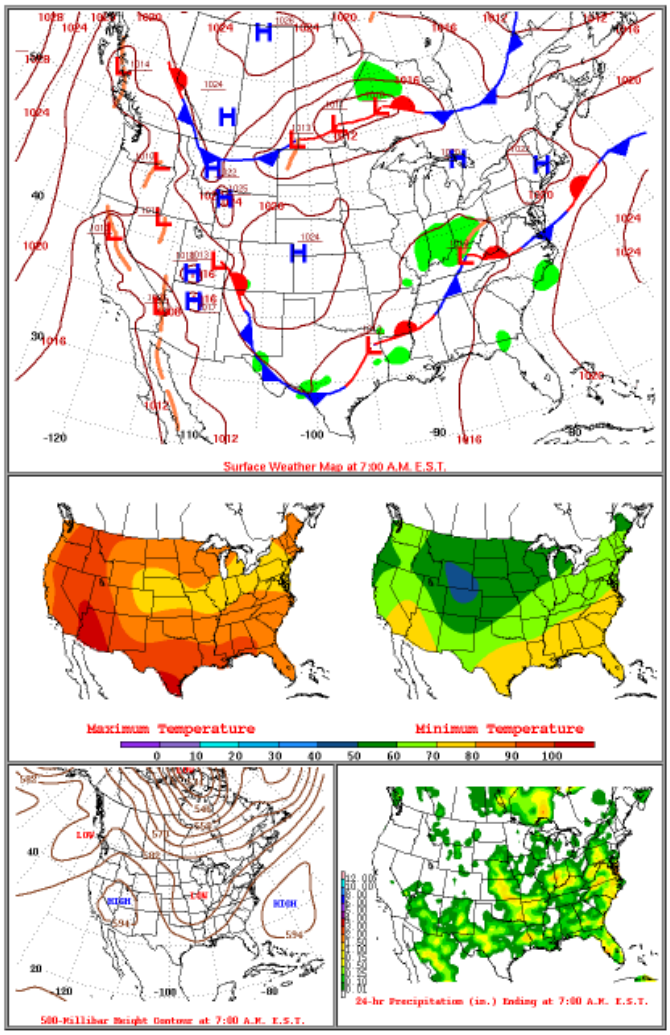
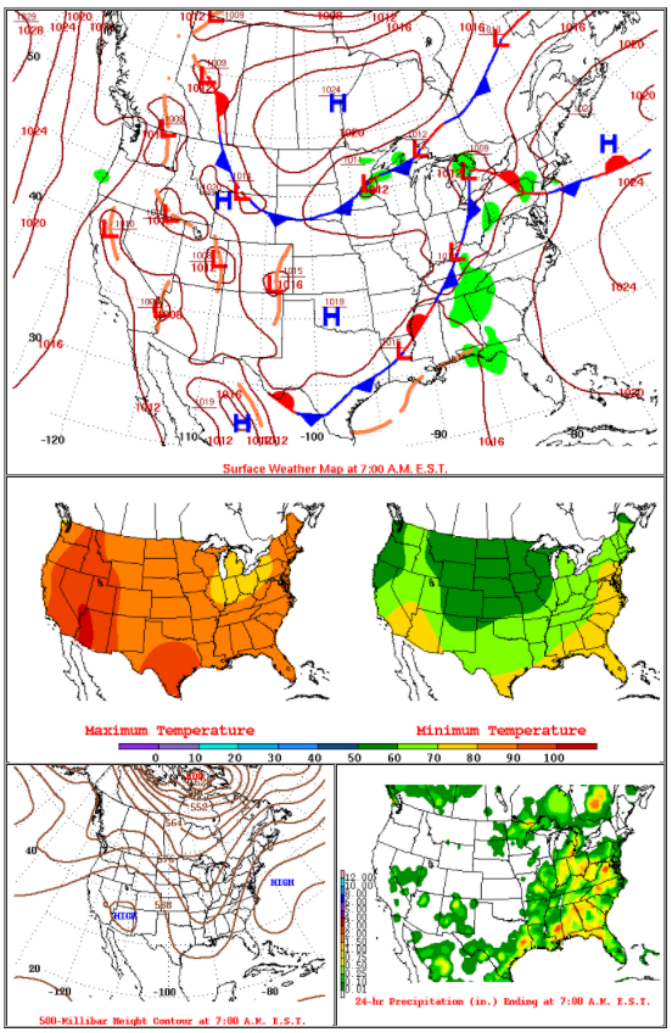


TUESDAY JULY 31, 2018



WEDNESDAY AUGUST 1, 2018



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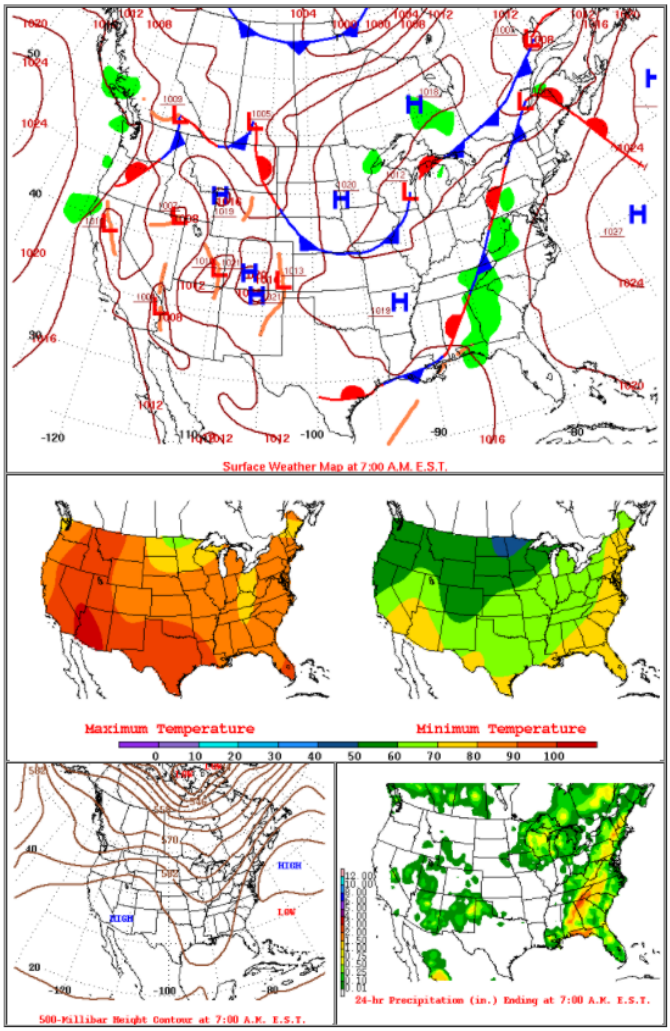

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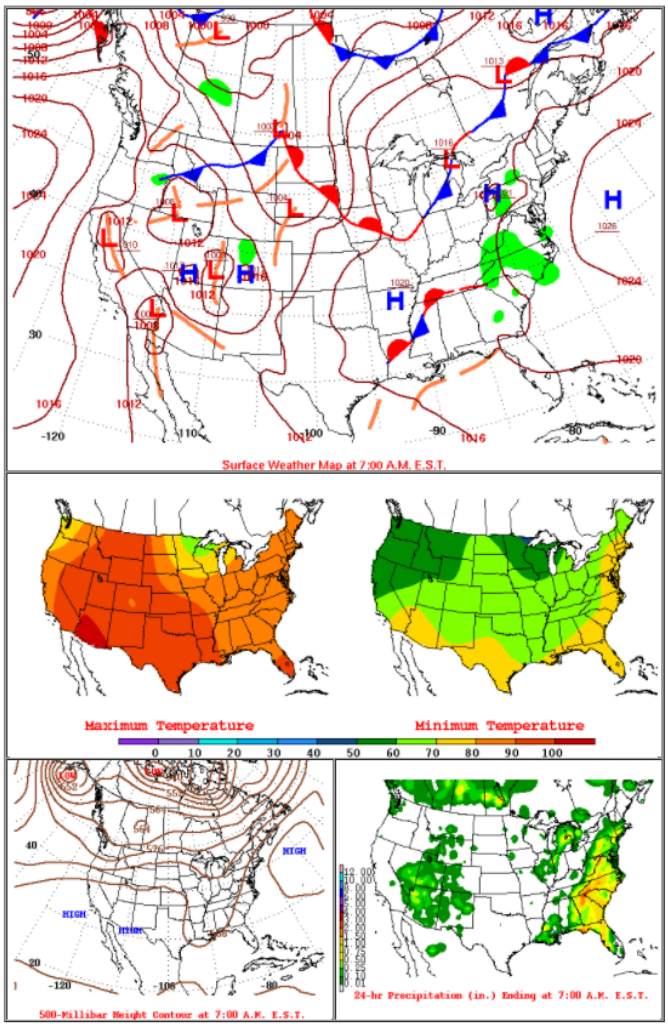
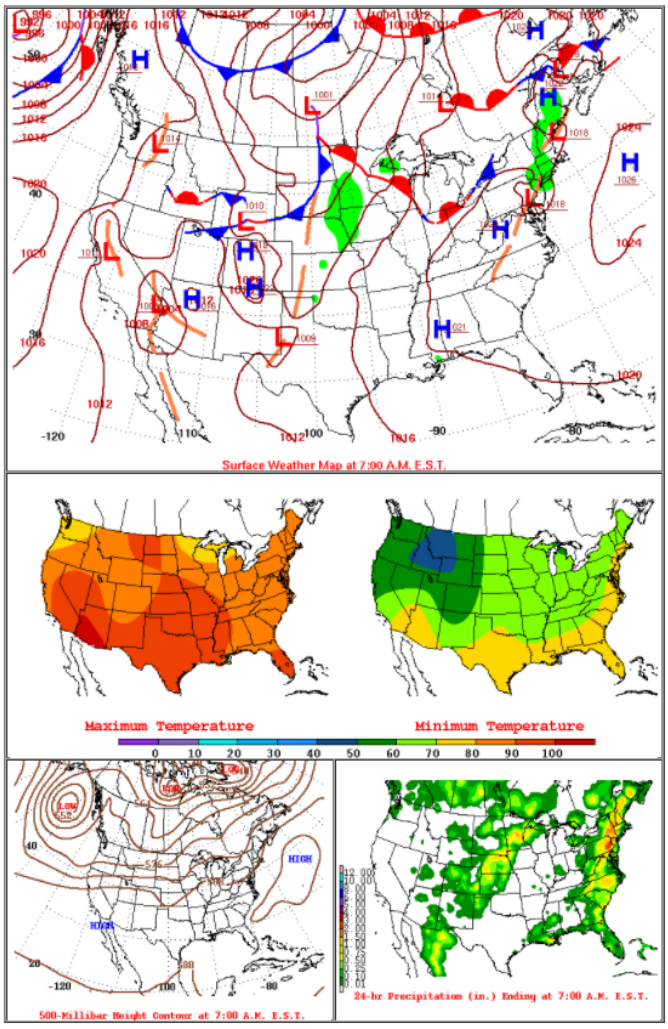


SATURDAY AUGUST 4, 2018



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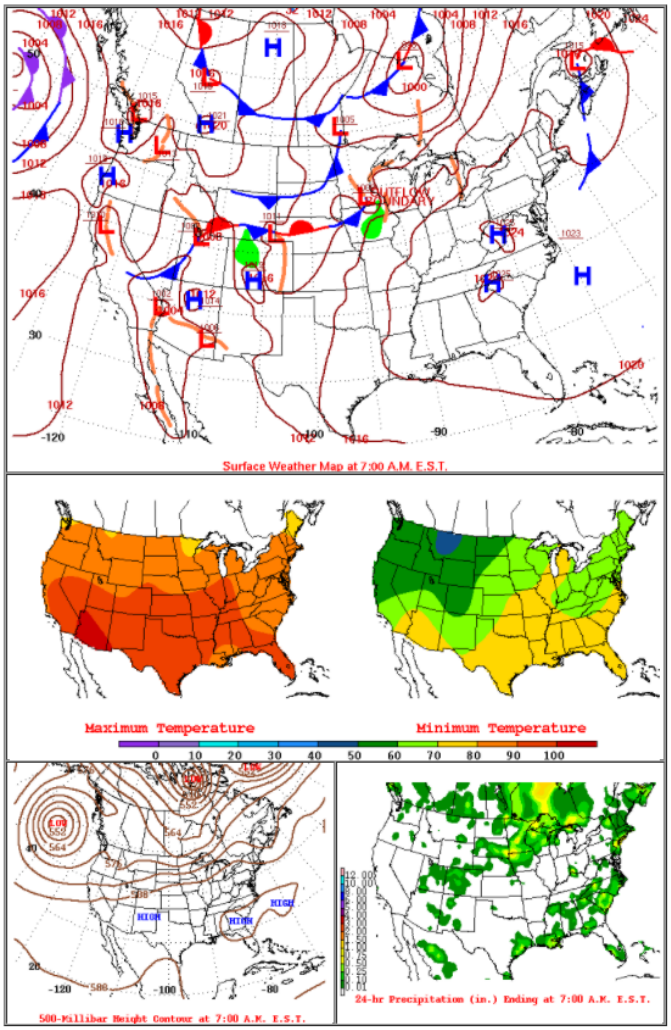
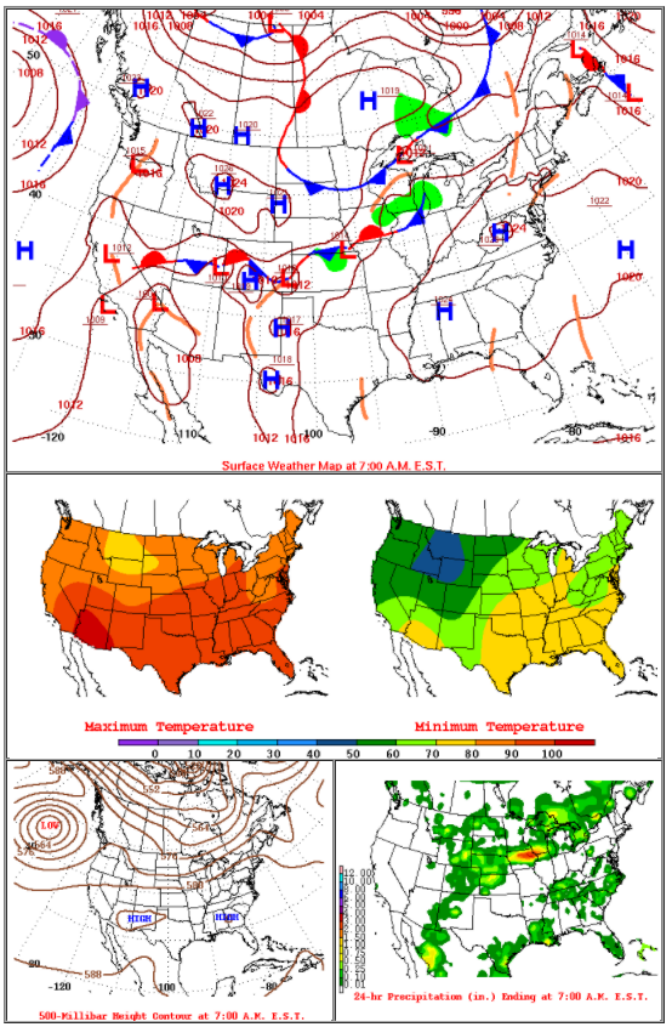
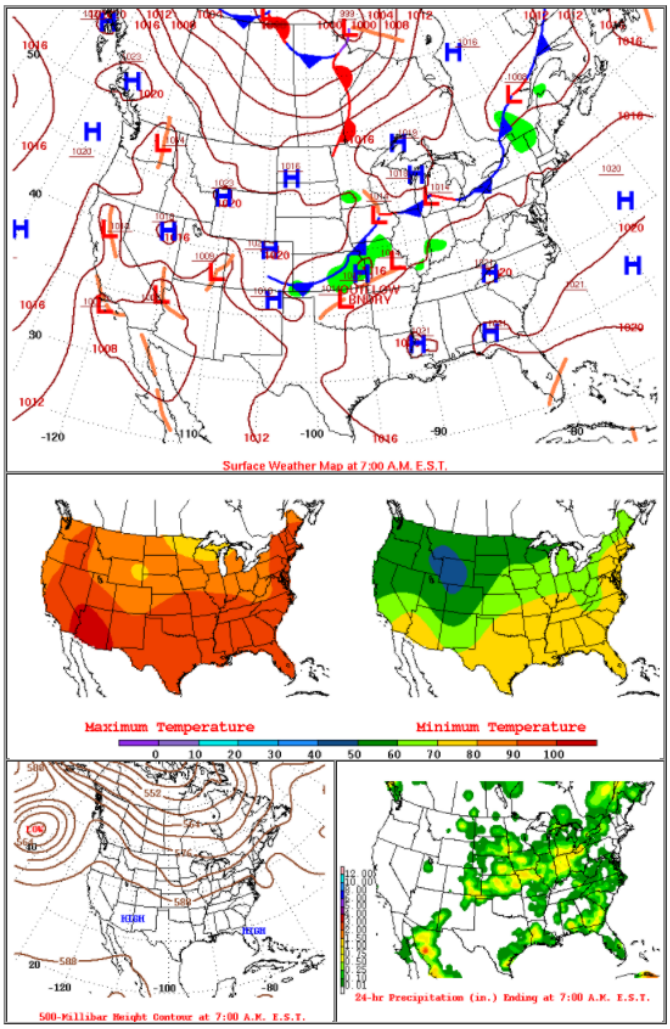


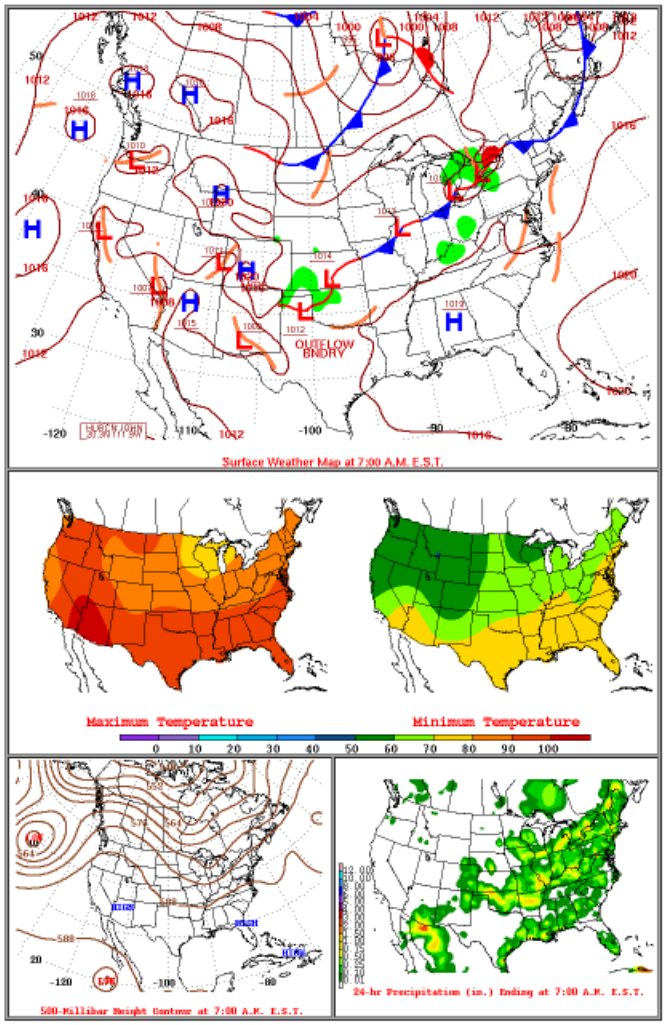
MONDAY AUGUST 6, 2018



TUESDAY AUGUST 7, 2018



WEDNESDAY AUGUST 8, 2018



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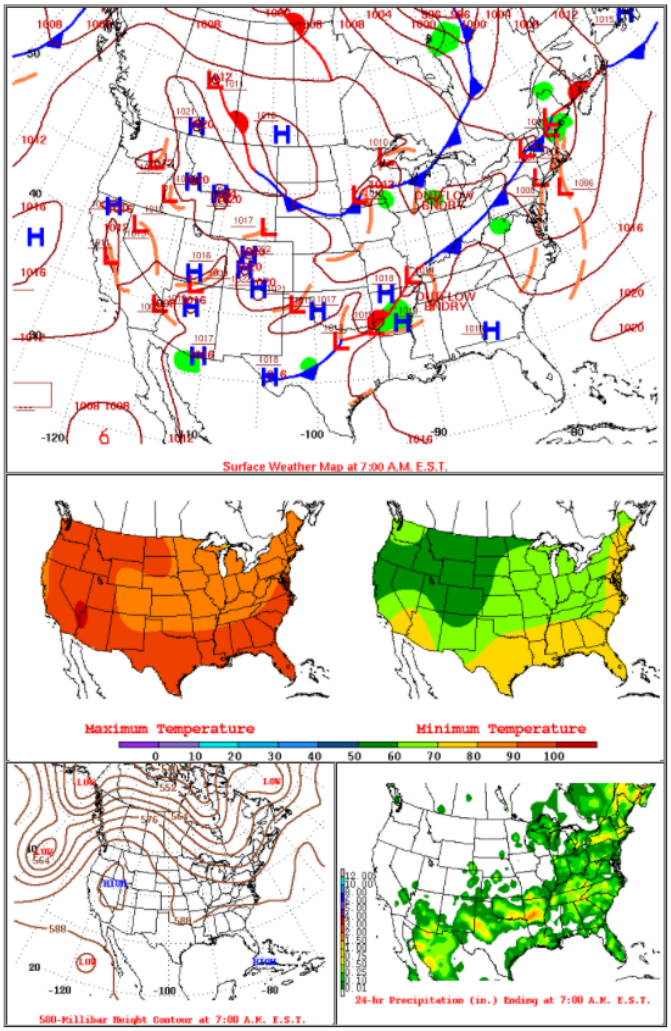

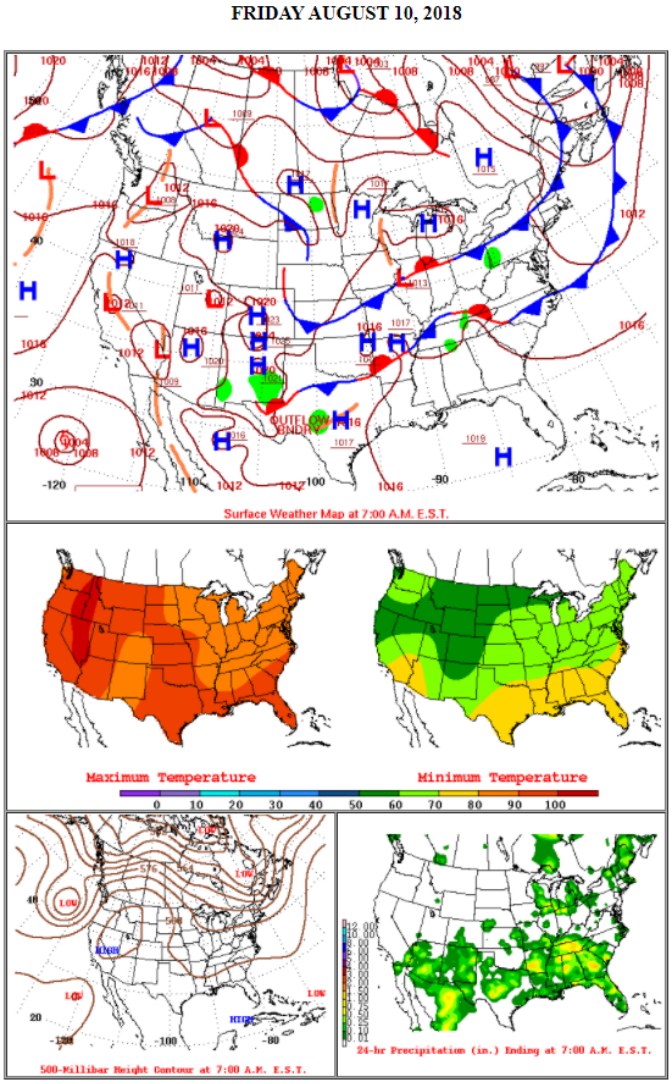

B. NWS Area Forecast Discussions

Excerpts from pertinent NWS Area Forecast Discussions are presented below, with discussions of the thunderstorms which began the wildfires, smoke impacts, and pertinent meteorological discussions highlighted. The complete AFDs can be found on the Iowa State University Mesonet site.[72]

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260 FXUS66 KSTO 251629

AFDSTO

Area Forecast Discussion

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[72] Iowa State University, Mesonet, *NWS Text Products*, last accessed 8/31/21

National Weather Service Sacramento CA

929 AM PDT Wed Jul 25 2018

.SYNOPSIS...

Hot weather today and Thursday. Heat advisory continues today through Thursday for the northern Sacramento valley and surrounding foothills and portions of the northern San Joaquin valley. A slight threat of afternoon and evening thunderstorms over the northern Sierra. Slightly cooler Friday through the middle of next week but still warmer than normal.
&&

736 FXUS66 KSTO 261054

AFDSTO

Area Forecast Discussion

National Weather Service Sacramento CA

354 AM PDT Thu Jul 26 2018

.AVIATION...

VFR conditions the next 24 hour except possible MVFR Redding are due to smoke from Carr Fire. Southwest winds 15-25 kts with gusts up to 30 kts near the Delta, elsewhere generally less than 10 kts.

607 FXUS66 KSTO 282050

AFDSTO

Area Forecast Discussion

National Weather Service Sacramento CA

150 PM PDT Sat Jul 28 2018

.SYNOPSIS...

Smoke will help to keep daytime temperatures cooler the next couple of days. Then a gradual decrease in high temperatures is expected next week but temperatures are expected to remain a little above average.

&&

.DISCUSSION (TODAY THROUGH TUESDAY)...

Smokey conditions will make for a tricky forecast the next few days especially over the north end of the valley where the smoke is thick. The smoke has been keeping temperatures down over the previous advisory area so have canceled the heat advisory. HRRR smoke plume model keeps a similar type of smoke plume through Sunday so I dont expect much change in

Sundays high temperatures over todays highs. Poor air quality can be expected the next couple of days over the north end of the valley.

Further south the Delta breeze will continue remaining weaker during the day and strengthening at night. The marine layer is at around 1500 feet deep and should not change much over the next couple of days.

&&

.AVIATION...

Widespread smoke and haze from wildfires are likely to bring localized MVFR/IFR conditions tonight through Sunday. Winds generally less than 10 kt, except gusts up to 30 kt near the Delta.

&&

.STO WATCHES/WARNINGS/ADVISORIES...

Red Flag Warning until 8 AM PDT Monday for Eastern Portion of Shasta/Trinity NF-Northern Sacramento Valley to Southern Tehama County Line Below 1000 Ft-Southeast Edge Shasta-Trinity NF and Western Portions of Tehama-Glenn Unit.

&&

$$

905 FXUS66 KSTO 292042

AFDSTO

Area Forecast Discussion

National Weather Service Sacramento CA

142 PM PDT Sun Jul 29 2018

.SYNOPSIS...

Smoke will help to keep daytime temperatures cooler the next couple of days. Then a gradual decrease in high temperatures is expected later this week but temperatures are expected to remain a little above average.

&&

.DISCUSSION (TODAY THROUGH WEDNESDAY)...

Smokey conditions continue to make for a tricky temperature forecast the next few days especially over the north end of the valley where the smoke is thick. The smoke has been keeping temperatures down again today and will likely do the same again on Monday. There is also some high clouds over the Sacramento region which is helping to keep area temperatures cooler as well. They will move to the northeast overnight and should not be a factor for tomorrows forecast.

HRRR smoke plume model keeps a similar type of smoke plume again on Monday with smoke moving into the Sacramento and San Joaquin Valleys as well as in the north. Temperatures may be slightly warmer but not much over todays highs. A lot will depend on the thickness of the smoke. Poor air quality can be expected to continue as long as the wildfires are producing an abundance of smoke. Smoky conditions may become worse Monday afternoon over Sacramento if the HRRR smoke model is correct.

The Delta breeze will continue remaining weaker during the day and strengthening at night. The marine layer is at around 1200 feet deep and should deepen slightly by Tuesday with a trough of low pressure moving closer to the Pacific Northwest coast. The Delta breeze should pick up a little Monday night and stay stronger into Wednesday to help bring a cooling trend for the valley and lower foothill elevations. Not a lot of change is expected over the higher elevations through Tuesday with only slight cooling on Wednesday.

&&

.AVIATION...

Widespread smoke and haze from wildfires will likely bring localized MVFR/IFR conditions tonight into Monday. Winds generally less than 10 kt, except gusts up to 30 kt near the Delta.

&&

.STO WATCHES/WARNINGS/ADVISORIES...

Red Flag Warning until 8 AM PDT Monday for Eastern Portion of Shasta/Trinity NF-Northern Sacramento Valley to Southern Tehama County Line Below 1000 Ft-Southeast Edge Shasta-Trinity NF and Western Portions of Tehama-Glenn Unit.

&&

$$

085 FXUS66 KSTO 301038

AFDSTO

Area Forecast Discussion

National Weather Service Sacramento CA

338 AM PDT Mon Jul 30 2018

.SYNOPSIS...

Smoke will help to keep daytime temperatures cooler the next couple of days. Then a gradual decrease in high temperatures mid week returning to near average.

&&

.DISCUSSION (TODAY THROUGH WEDNESDAY)...

The upper level ridge will slowly push east and south on Monday as a trough pushes into the PacNW. This will keep quiet weather in place with smoke being the main concern. HRRR smoke shows similar smoke conditions to what we saw on Sunday. Widespread smoke is expected throughout the valley and mountains by the afternoon. This will also make the temperature forecast quite difficult, smoke will likely hold temps down but if we see breaks in the smoke temps will warm quickly in those locations. The Delta breeze should bring some relief in the smoke to the Delta region and the Sacramento area during the evening and overnight. Models do push monsoon moisture back north starting late Monday but it remains to the east of us. This will keep the thunderstorm risk out of our area during the short term period. Zonal flow develops by mid week as the upper level ridge continues to push to the east and this should bring a slight cooling trend with highs returning to near normal although the wildfire smoke will likely continue to make for a difficult temperature forecast.

&&

.AVIATION...

Widespread smoke and haze from wildfires will likely bring localized MVFR/IFR conditions today. Winds generally less than 10 kt, except gusts up to 30 kt near the Delta.

&&

.STO WATCHES/WARNINGS/ADVISORIES...

Red Flag Warning until 8 AM PDT this morning for Eastern Portion of Shasta/Trinity NF-Northern Sacramento Valley to Southern Tehama County Line Below 1000 Ft-Southeast Edge Shasta-Trinity NF and Western Portions of Tehama-Glenn Unit.

&&

$$

508 FXUS66 KSTO 311037

AFDSTO

Area Forecast Discussion

National Weather Service Sacramento CA

337 AM PDT Tue Jul 31 2018

.SYNOPSIS...

Smoke will help to keep daytime temperatures cooler the next couple of days. Then a gradual decrease in high temperatures mid week returning to near average.

&&

.DISCUSSION (TODAY THROUGH WEDNESDAY)...

The upper level ridge will be pushing to the south and east during the short term period as a trough tracks into the PacNW. The main concern will continue to be wildfire smoke. This will make the temperature forecast difficult with wildfire smoke holding temps down but it's hard to say how much. In general we should see similar highs today as to what we saw on Monday. Smoke will be noticeable throughout the area being thickest in the north valley and Sierra. Some smoke relief is expected across the Delta influenced areas during the evening and overnight as the Delta breeze kicks in. Monsoon moisture may bring an isolated chance for a shower or t-storm by the evening in the far southeast part of the CWA but the better chances will remain south and east where the higher precipitable water values are. Zonal flow develops by late to midweek as the upper level ridge continues to push to the east, bringing a slight cooling trend with highs returning to near normal although the wildfire smoke will likely continue to make for a difficult temperature forecast. Monsoon moisture will move east with the upper level ridge and this will keep thunderstorm chances out of the forecast.

&&

.AVIATION...

Local MVFR/IFR in HZ and FU near wildfires over the next 24 hours

Cntrl Vly nxt 24 hrs fm fires. Local SW wind gusts to 25 kts

through the Delta and through W-NW oriendted canyons/ridges of Coastal Range late day and overnight.

$$

851 FXUS66 KSTO 311454

AFDSTO

Area Forecast Discussion

National Weather Service Sacramento CA

754 AM PDT Tue Jul 31 2018

.SYNOPSIS...

Smoke will help to keep daytime temperatures cooler the next couple of days. Then a gradual decrease in high temperatures mid week returning to near average.

.UPDATE...

Latest satellite and radar imagery showing light showers and a few isolated thunderstorms over the northern Sierra (mainly north of HWY 50) this morning. A few additional showers or lightning strikes are possible this morning given elevated instability. Haze and areas of smoke will continue through the day. Forecast remains on track.

&&

192 FXUS66 KSTO 030410

AFDSTO

Area Forecast Discussion

National Weather Service Sacramento CA

910 PM PDT Thu Aug 2 2018

.SYNOPSIS...

Cooling trend into Sunday then warming next week as temperatures climb well above normal. Widespread smoke from wildfires will continue.

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.DISCUSSION... Satellite imagery showing Ranch Fire intensified this afternoon, added by gusty W to NW wind, and was spreading considerable smoke, supplemented by the River Fire, into the Sacramento Valley. Meanwhile, the Carr Fire continues to spread widespread smoke over Shasta county. Onshore flow has increased this afternoon into evening as thermal troughing has deepened over the Central Valley. KSFO-KSAC surface pressure gradient is over the 3 MB and flow through the Delta has increased this evening. Upvalley southerly flow also stronger this afternoon into evening. Improved visibilities in the Sacramento Valley this evening, will decrease overnight, mainly northern half, as mixing heights lower to near ground level and boundary layer decouples.

Short wave trough moves through the PacNW tonight into Friday as surface high pressure builds into Oregon. KMFR-KRDD surface pressure gradient is trending up and expect some locally gusty northerly wind overnight into Friday morning through favorable aligned drainages in Shasta county, including Carr Fire. Delta breeze looks to remain moderate to strong overnight, then weaken some tomorrow morning.

Models show additional weaker vort maxes moving through Interior NorCal Friday followed by a stronger wave Saturday into Saturday night. Gusty wind over higher terrain is forecast, especially on Saturday with the stronger wave. Heights and thicknesses trend down Friday into Sunday over the forecast area. Slightly above normal temperatures Friday expected to cool to near to about 5 degrees below normal by Sunday. Locally gusty northerly wind will continue to be possible nights into mornings in Shasta county with onshore flow strengthening afternoons into evenings.

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.STO WATCHES/WARNINGS/ADVISORIES...

Red Flag Warning from 11 AM Friday to 11 PM PDT Saturday for Burney Basin and Northeast Plateau in Shasta County Including Northwest Lassen NF north of Lassen NP-Eastern Mendocino NF-Eastern Portion of Shasta/Trinity NF-Lake County Portion of Lake-Napa-Sonoma Unit-Northern Sacramento Valley to Southern Tehama County Line Below 1000 Ft-Northern Sierra Including Lassen NP and Plumas and Lassen NF/S West of the Sierra Crest (West of Evans Peak-Grizzly Peak-Beckworth Peak)-Northern Sierra Including the Tahoe and

ElDorado NF/S West of the Sierra Crest-Southeast Edge Shasta-Trinity NF and Western Portions of Tehama-Glenn Unit-Stanislaus NF West of the Sierra Crest.

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551 FXUS66 KSTO 031121

AFDSTO

Area Forecast Discussion

National Weather Service Sacramento CA

421 AM PDT Fri Aug 3 2018

.SYNOPSIS...

Cooling trend into Sunday then warming well above normal next week, with widespread triple digit highs in the Valley by mid week. Widespread smoke from wildfires will continue.

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.DISCUSSION... Upper level ridging over the region has flattened with a shortwave passing through the Pacific Northwest. Current temperatures are generally a few degrees cooler than this time yesterday.

Satellite infrared imagery shows the Ranch Fire portion of the Mendocino Complex has been very active overnight, with gusty north west winds. Heat signatures were most intense in the late evening and have gradually decreased through the early morning hours. The Carr Fire has also shown hot spot overnight, with gusty northwesterly winds. A Red Flag Warning continues in that area through Saturday evening. Weak disturbances move through today with a stronger shortwave on Saturday. No precipitation is expected, but winds over higher terrain and through canyons are expected to increase further, especially afternoons and evenings. Due to this, low humidity and dry fuels Red Flag Warnings take effect across the northern Coastal Range, portions of Shasta County and the Sierra.

The Delta breeze has been bringing come cooler air into influenced areas. The breeze is beginning to weaken this morning, though. High temperatures in the Delta and nearby areas may warm a little over yesterday, while the rest of the forecast area should see a little cooling. Slightly above normal high temperatures are expected this afternoon. Saturday will be a little cooler, with Sunday 5 degrees below normal by Sunday. Wildfire smoke will continue to be an issue, though the Delta breeze may bring some clearer air at times to locations near the Delta. EK

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.AVIATION...

Local MVFR/IFR in smoke and haze across interior northern CA the next 24 hours. Otherwise VFR conditions continue. Valley winds will primarily remain at 15 kt or less, except SW gusts up to 30 kt near the Delta and over higher terrain.

Dang

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.STO WATCHES/WARNINGS/ADVISORIES...

Red Flag Warning from 11 AM this morning to 11 PM PDT Saturday for Burney Basin and Northeast Plateau in Shasta County Including Northwest Lassen NF north of Lassen NP-Eastern Mendocino NF-Eastern Portion of Shasta/Trinity NF-Lake County Portion of Lake-Napa-Sonoma Unit-Northern Sacramento Valley to Southern Tehama County Line Below 1000 Ft-Northern Sierra Including Lassen NP and Plumas and Lassen NF/S West of the Sierra Crest (West of Evans Peak-Grizzly Peak-Beckworth Peak)-Northern Sierra Including the Tahoe and ElDorado NF/S West of the Sierra Crest-Southeast Edge Shasta-Trinity NF and Western Portions of Tehama-Glenn Unit-Stanislaus NF West of the Sierra Crest.

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210 FXUS66 KSTO 032126

AFDSTO

Area Forecast Discussion

National Weather Service Sacramento CA

226 PM PDT Fri Aug 3 2018

.SYNOPSIS...

Cooling trend into Sunday then warming well above normal next week, with widespread triple digit highs in the Valley by mid week. Widespread smoke from wildfires will continue.

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.DISCUSSION...

The Delta Breeze brought in some cooler and cleaner air overnight and this morning for influenced areas. However, smoke has begun to move into those areas as the Delta Breeze has diminished. This trend is expected to continue through the weekend with a heightened Delta Breeze.

Winds have begun to pick up over the mountains. Upper level flow has become zonal over the area, and weak upper level disturbances will move over the area today with a stronger shortwave Saturday. Southwest winds are expected to increase this evening into Saturday. Satellite imagery shows the Mendocino Complex is becoming more active this afternoon. A Red Flag Warning continues for the northern Coastal Range and Sierra and western Shasta

County through Saturday due to the increased winds and low relative humidity. Temperatures today are similar to yesterday across the region. Near normal temperatures are expected this weekend with temperatures in the low to mid 90s across the valley and the 70s to low 80s in the mountains. Wildfire smoke will continue to induce poor air quality across the majority of the area. Make sure to check local air quality reports before strenuous outdoor activity. HEC

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519 FXUS66 KSTO 040300

AFDSTO

Area Forecast Discussion

National Weather Service Sacramento CA

800 PM PDT Fri Aug 3 2018

.SYNOPSIS...

Cooling trend into Sunday, then warming well above normal next week, with widespread triple digit highs in the Central Valley by mid week. Smoke from wildfires will continue to impact air quality.

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.DISCUSSION... Large amounts of smoke from Ranch Fire are advecting westward across the southern half of the Sacramento Valley this evening. Meanwhile, Carr Fire spreading widespread smoke across northern portions of the CWA. Delta breeze is weaker this evening and thus visibilities are down to around 5 SM in haze and smoke around the Sacramento metro area. Guidance showing onshore flow will remain a little weaker overnight with diminished smoke dispersal in the Central Valley. Some locally gusty northerly wind possible overnight through favorable aligned drainages and canyons in Shasta county.

Short wave trough progged across the CWA tomorrow will result in some synoptic cooling with breezy conditions, especially over higher terrain. Increased wind combined with low humidity will result in areas of increased fire weather potential over Shasta county, Coastal Range, mountains of Western Plumas county, and Northern Sierra Nevada.

Additional vort maxes move through forecast area Sunday resulting in further cooling with breezy onshore wind. High temperatures Sunday expected to be near to slightly below normal with low to mid 90s in the Central Valley, and 70s to lower 90s for the mountains and foothills.

Upper ridging from the Desert SW expands over NorCal beginning Monday to start a warming trend that continues through the latter part of next week. Triple digit heat returns to portions of the Sacramento Valley by Tuesday.

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.STO WATCHES/WARNINGS/ADVISORIES...

Red Flag Warning until 11 PM PDT Saturday for Burney Basin and Northeast Plateau in Shasta County Including Northwest Lassen NF north of Lassen NP-Eastern Mendocino NF-Eastern Portion of Shasta/Trinity NF-Lake County Portion of Lake-Napa-Sonoma Unit-

Northern Sacramento Valley to Southern Tehama County Line Below 1000 Ft-Northern Sierra Including Lassen NP and Plumas and Lassen NF/S West of the Sierra Crest (West of Evans Peak-Grizzly Peak-Beckworth Peak)-Northern Sierra Including the Tahoe and ElDorado NF/S West of the Sierra Crest-Southeast Edge Shasta-

Trinity NF and Western Portions of Tehama-Glenn Unit-Stanislaus NF West of the Sierra Crest.

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954 FXUS66 KSTO 041019

AFDSTO

Area Forecast Discussion

National Weather Service Sacramento CA

319 AM PDT Sat Aug 4 2018

.SYNOPSIS...

Seasonal temperatures this weekend, then hot and dry next week, with widespread triple digit highs in the Central Valley by mid week. Smoke from wildfires will continue to impact air quality.

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.DISCUSSION... Dry southwest flow aloft prevails across interior Northern California as a shortwave trough approaches the coast. Our large wildfires continue to actively burn during the overnight hours, with GOES16 Fire Temperatures products showing hot activity around the Carr and Mendocino Complex. The Ranch Fire in the Mendocino Complex is particularly active with breezy winds and low humidity, and a large smoke plume is evident on nighttime satellite imagery. Many Valley locations are reporting a mid-level smoke deck at this hour.

The aforementioned shortwave trough will move through the region today, enhancing westerly winds especially during the afternoon hours. With continued low humidity and increasing winds particularly across the mountains, Red Flag Warnings will continue to be in effect through this evening. A secondary shortwave trough will pass through NorCal on Sunday, bringing continued breezy conditions.

Look for temperatures this weekend to be within a few degrees of normal. Highs will be in the 90s across the Valley and lower foothills, and 70s to 80s over the mountains.

The upper ridge currently over the Desert Southwest will begin to strengthen and expand northward early next week. Look for temperatures to creep upward early next week, with most Valley locations at or around 100 degrees by Tuesday.

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778 FXUS66 KSTO 042140

AFDSTO

Area Forecast Discussion

National Weather Service Sacramento CA

240 PM PDT Sat Aug 4 2018

.SYNOPSIS...

Seasonal temperatures this weekend, then hot and dry next week, with widespread triple digit highs in the Central Valley by mid week. Smoke from wildfires will continue to impact air quality.

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.DISCUSSION... A shortwave trough is moving through the northern part of the state this afternoon. Currently it is centered around along the border with Oregon and will move to the east overnight. The shortwave will increase flow through the Delta and over the coastal range and ridge of the Sierra Nevada late this afternoon and evening. This will increase the threat of fires and rapid spread. Smoke from the Mendocino complex has been spreading an abundance amount of smoke into Southern and Central Sacramento Valley. Reports of ash falling around the region continue to come into the office this afternoon with Rancho Cordova the last report and furthest from the fires so far.

331 FXUS66 KSTO 051006

AFDSTO

Area Forecast Discussion

National Weather Service Sacramento CA

306 AM PDT Sun Aug 5 2018

.SYNOPSIS...

Seasonal temperatures today, then hot and dry this week with widespread triple digit highs in the Central Valley by mid week. Smoke from wildfires will continue to impact air quality.

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.DISCUSSION... Dry southwest flow aloft persists across northern California behind yesterday's shortwave trough. Dry and gusty weather conditions yesterday created a significant amount of smoke from the Carr Fire and Mendocino Complex, with many

downstream locales reporting ashfall. Winds have since diminished a bit, and slightly less active burning is noted on GOES16 satellite imagery than last night. Even still, many Valley ASOS sites are currently reporting a midlevel smoke deck.

028 FXUS66 KSTO 052038

AFDSTO

Area Forecast Discussion

National Weather Service Sacramento CA

138 PM PDT Sun Aug 5 2018

.SYNOPSIS...

Evening breezy winds will bring more smoke to northern Sacramento valley from the Carr and Mendocino complex fires. Less winds with hot and dry conditions will return this week with widespread triple digit highs in the Central Valley by mid week. Smoke from wildfires will continue to impact air quality. Could be a slight cool down and breezy winds next weekend with the potential for another weather system passing through.

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.DISCUSSION... Another weak weather disturbance is currently moving onto the extreme northwest CA this hour. This weak disturbance will bring some breezy west winds this afternoon and may have enough instability to see some increase smoke production out of the Carr and Mendocino complex fires this afternoon and early evening. Upper level winds are much weaker than what was observed Saturday, so may not see as much clearing of the smoke through the southern Sacramento and San Joaquin valley this evening. The winds will quickly die off again this evening, so smoke will likely fill the valley by morning. Air quality should be monitored for those sensitive to the smoke tonight into the rest of the week.

457 FXUS66 KSTO 062140

AFDSTO

Area Forecast Discussion

National Weather Service Sacramento CA

240 PM PDT Mon Aug 6 2018

.SYNOPSIS...

Near normal temperatures increasing toward mid week. Onshore flow increasing Thursday through Saturday with temperatures returning to near normal. Smoke from wildfires will continue to impact the air quality.

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.DISCUSSION (Today through Thursday)...

Latest water vapor and model analysis during the early afternoon showed a well defined upper level trough off the northwest coast with a ridge of high pressure over the desert southwest. Mostly dry air continued to filter into the interior between the upper level low and upper level high. Temperatures across the area were running a little warmer than 24 hours ago with values in the low to mid 80s in the Lower San Joaquin Valley and upper 90s for the upper Sacramento Valley. Smoke from the area wildfires continue to reduce visibility across the region, with the greatest impact in the north Sacramento valley.

846 FXUS66 KSTO 071005

AFDSTO

Area Forecast Discussion

National Weather Service Sacramento CA

305 AM PDT Tue Aug 7 2018

.SYNOPSIS...

Slightly above normal temperatures through mid week with weak winds. Onshore flow increasing Thursday through Saturday with temperatures returning to near normal. Smoke from wildfires will continue to impact the air quality.

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.DISCUSSION (Today through Thursday)...

An upper level ridge will continue to build into NorCal through the mid part of the week. We will see 850 mb temps warm a few degrees compared to what we saw on Monday, this will bring afternoon highs a bit warmer running about 5 degrees above average in the valley. Smoke became quite heavy on Monday across the area and we should see similar conditions again on Tuesday especially given the weak winds at the surface and aloft. This may also hold temperatures down mainly where we see the thickest smoke. Similar temperatures are expected on Wednesday and Thursday as the ridge continues to dominate our weather. 534 FXUS66 KSTO 072224

AFDSTO

Area Forecast Discussion

National Weather Service Sacramento CA

324 PM PDT Tue Aug 7 2018

.SYNOPSIS...

Slightly above normal temperatures through the week. Onshore flow increases Thursday through Saturday with breezy winds at times. Smoke from wildfires will continue to impact the air quality.

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.DISCUSSION (Today through Friday)...

Upper ridge is currently over NorCal and will remain through Thursday. This will keep generally light terrain driven winds and warm temperatures in place. In this pattern smoke and haze will persist with no large scale wind flow to clear things out. The poorest locations for smoke will continue near the several ongoing large wildfires. A low pressure trough will approach the west coast Thursday afternoon, acting to tighten the pressure gradient along the Coastal Range and southern Cascade mountains. This will bring enhanced south winds over Shasta county including the Carr fire Thursday afternoon and gusty west winds over the Mendocino Complex. Enhanced southwest winds will also be possible over the

Sierra Friday afternoon as well, These winds may last into Saturday and have issued a Fire weather watch to cover the critical fire weather threat possible in this pattern. The Nam also shows a weak plume of monsoonal being drawn north Friday morning over the southern Coastal range including Lake county and an isolated thunderstorm may be possible.

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032 FXUS66 KSTO 081102

AFDSTO

Area Forecast Discussion

National Weather Service Sacramento CA

402 AM PDT Wed Aug 8 2018

.SYNOPSIS...

Slightly above normal temperatures through the week. Onshore flow increases Thursday through Saturday with breezy winds at times. Smoke from wildfires will continue to impact the air quality.

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.DISCUSSION... Ridge of high pressure remains in control of the region through Thursday. This will lead to dry conditions, light terrain driven winds, and warmer temperatures. However, smoke from the area wildfires could continue to make for a tricky temperature forecast, and may keep temperatures down by a few degrees.

Smoke and haze will continue to impact interior NorCal, with the latest HRRR smoke model showing similar conditions to those experienced on Tuesday. Poor air quality can be expected, especially near the several ongoing large wildfires. Make sure to check local air quality reports.

206 FXUS66 KSTO 102153

AFDSTO

Area Forecast Discussion

National Weather Service Sacramento CA

253 PM PDT Fri Aug 10 2018

.SYNOPSIS...

Near to slightly above normal temperatures through the forecast period. Onshore flow into the weekend with locally breezy wind at times. Smoke from wildfires will continue to impact air quality, especially over the Northern Sacramento Valley.

&&

DISCUSSION...

Improvement to smoke and haze is being seen over the Southern Sacramento/Nrn San Joaquin Valley via surface obs and satellite imagery this afternoon. Expect areas in the Delta and Southern Sacramento Valley to see lesser smoke over the next few days with onshore flow ongoing, areas north and east will continue to see thick haze and smoke, however. The poorest locations for smoke will continue near the several ongoing large wildfires.

C. NWS Special Weather Statement

The NWS issued a Special Weather Statement on August 4, 2018, pertinent to the discussion of wildfire smoke and impacts. Specifically, this statement was to alert the public to dense smoke and falling ash throughout the northern California area. This product can be found on the Iowa State University Mesonet site.[73]

[73] Iowa State University, Mesonet, *NWS Text Products*, last accessed 8/31/21

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954
WWUS86 KSTO 042145
SPSSTO

Special Weather Statement
National Weather Service Sacramento CA
245 PM PDT Sat Aug 4 2018

CAZ013>016-063-064-066-068-050645-
Shasta Lake Area / Northern Shasta County-
Burney Basin / Eastern Shasta County-Northern Sacramento Valley-
Central Sacramento Valley-
Mountains Southwestern Shasta County to Northern Lake County-
Clear Lake/Southern Lake County-
Northeast Foothills/Sacramento Valley-
Western Plumas County/Lassen Park-
Including the cities of Shasta Dam, Burney, Redding, Red Bluff,
Chico, Oroville, Marysville/Yuba City, Alder Springs, Lakeport,
Paradise, Chester, and Quincy
245 PM PDT Sat Aug 4 2018

...Dense smoke and falling ash will impact northern California
valleys and foothills this afternoon and evening...

Very active fire conditions over the Mendocino Complex and Carr
fires this afternoon are resulting in large smoke plumes to
spread east over northern California. These plumes of smoke may
result in ash falling into regions that are not experiencing any
fires and further decrease air quality. If you have outdoor plans
in the northern Sacramento valley or surrounding foothills and
mountains, please monitor air quality and have an indoor
alternate.
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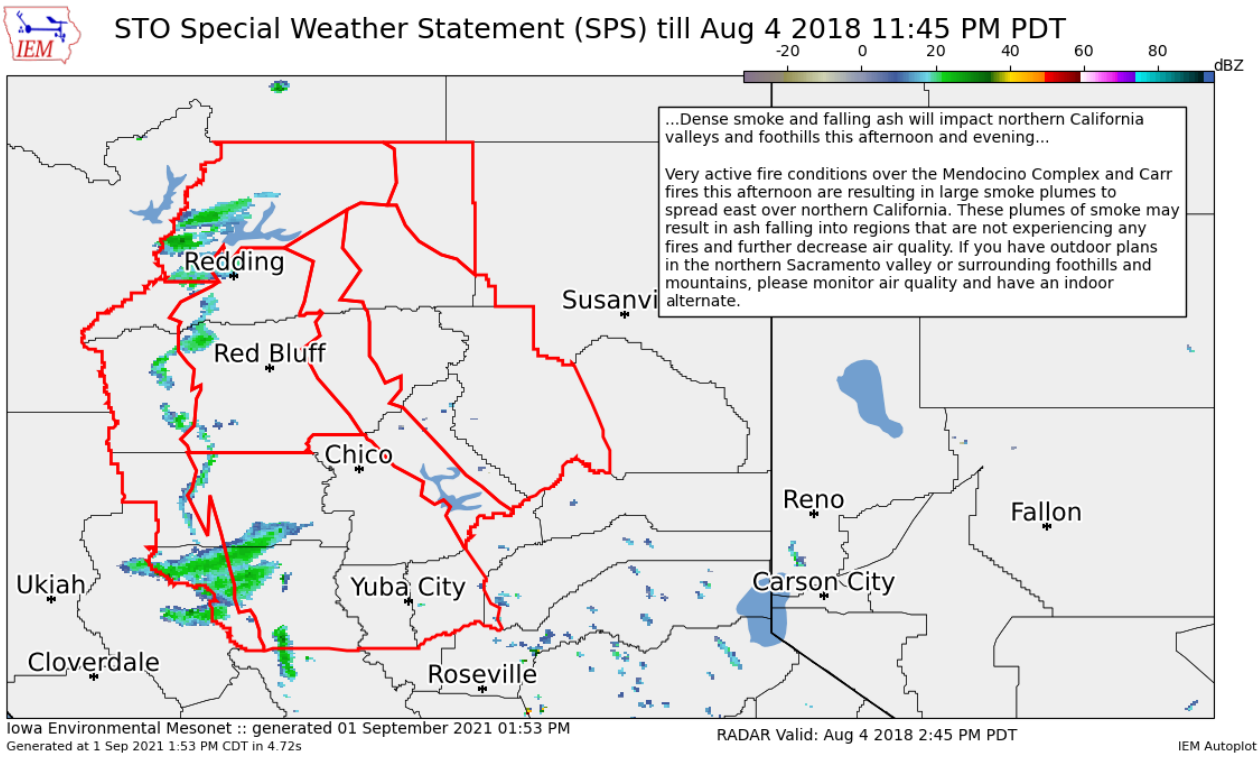

STO Special Weather Statement (SPS) till Aug 4 2018 11:45 PM PDT
-20
0
20
40
60
80
dBZ
...Dense smoke and falling ash will impact northern California valleys and foothills this afternoon and evening...
Very active fire conditions over the Mendocino Complex and Carr fires this afternoon are resulting in large smoke plumes to spread east over northern California. These plumes of smoke may result in ash falling into regions that are not experiencing any fires and further decrease air quality. If you have outdoor plans in the northern Sacramento valley or surrounding foothills and mountains, please monitor air quality and have an indoor alternate.
Redding
Susanvi
Red Bluff
Chico
Reno
Fallon
Ukiah
Yuba City
Carson City
Cloverdale
Roseville
Iowa Environmental Mesonet :: generated 01 September 2021 01:53 PM
Generated at 1 Sep 2021 1:53 PM CDT in 4.72s
RADAR Valid: Aug 4 2018 2:45 PM PDT
IEM Autoplot App #217

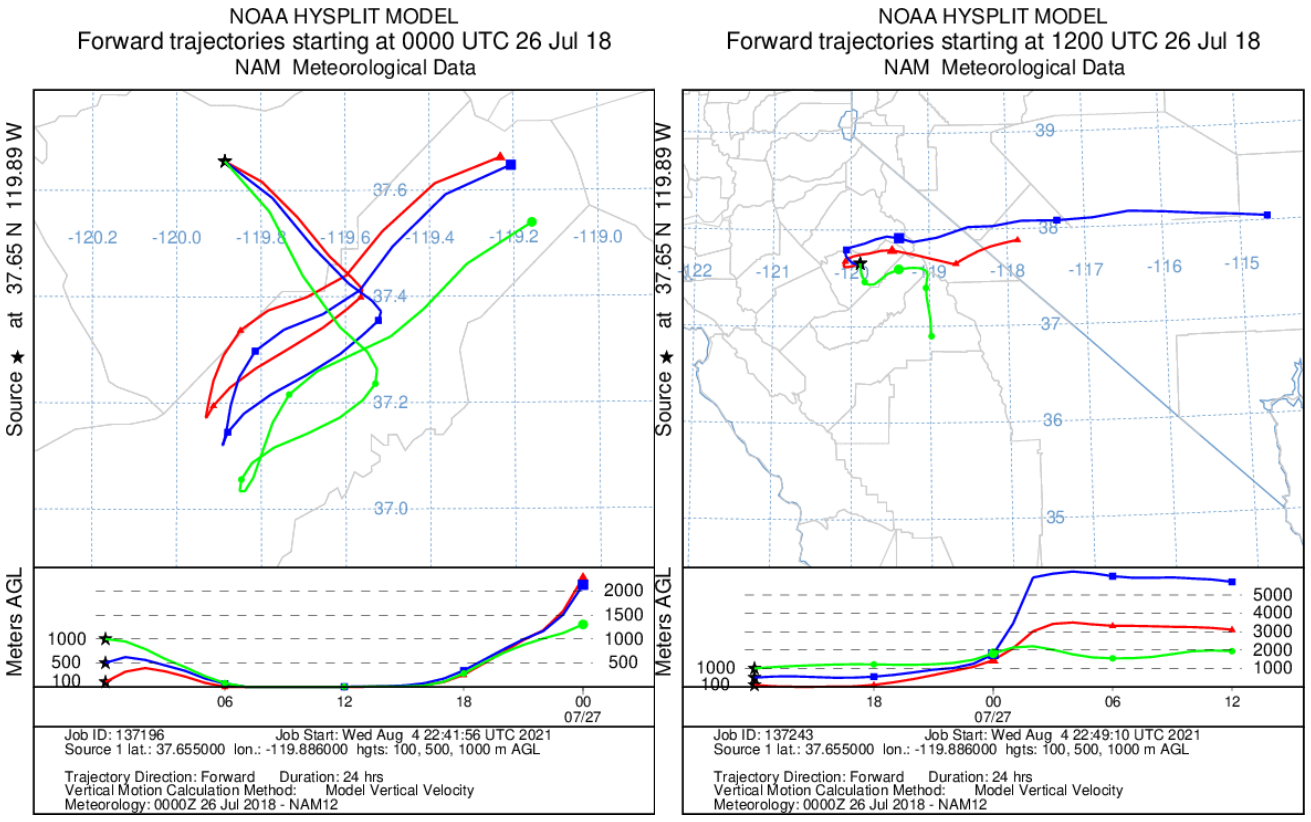
IV. Transport

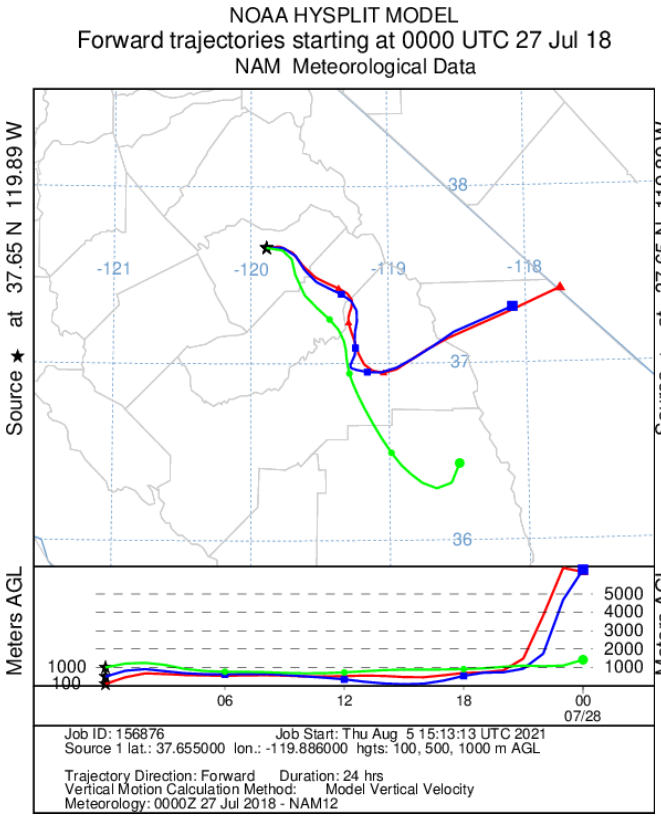
A. HYSPLIT Forward Trajectory (from Fires)

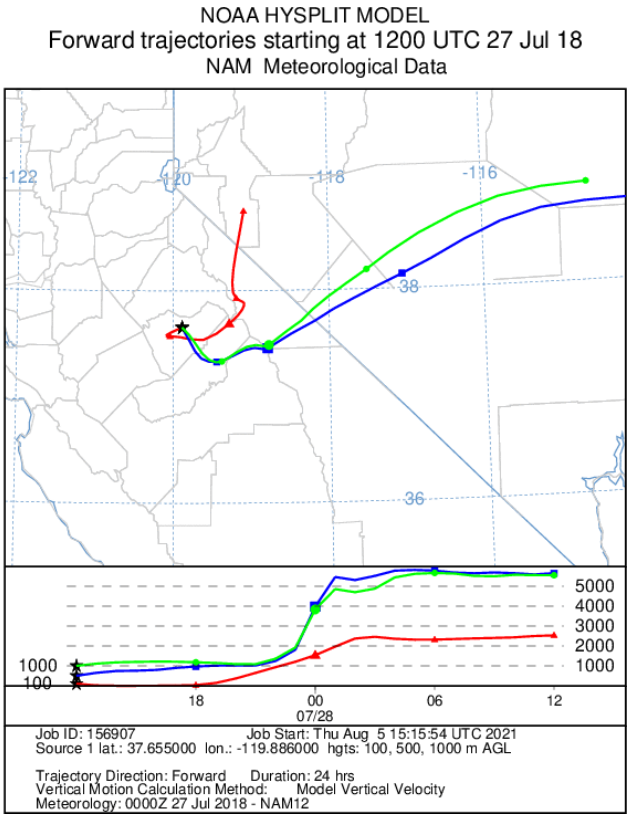
The forward trajectory tool of the HYSPLIT model was used to indicate how emissions from the wildfires were transported toward the monitors. The model was run from each major fire for 24 hours from July 26 (or the fire start date) to August 10 using two starting times: 00UTC (16PST previous day) and 12UTC (04PST same day). These model runs offer insight into the path a hypothetical parcel of smoke would take from each fire. This provides for a generalized understanding of smoke transport from a single fire across a region, connecting a specific wildfire with smoke in satellite imagery, and finding potential correlations at a site through analysis of the intersection of forward and backward trajectories.

1. Ferguson Fire

Fire	Start	Containment	Latitude	Longitude	Total Acres
Ferguson	7/13/18	11/28/18	37.655	-119.886	96,901




NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 27 Jul 18
NAM Meteorological Data
Source ★ at 37.65 N 119.89 W
Meters AGL
Job ID: 156876 Job Start: Thu Aug 5 15:13:13 UTC 2021
Source 1 lat.: 37.655000 lon.: -119.886000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 27 Jul 2018 - NAM12


NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 27 Jul 18
NAM Meteorological Data
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Meters AGL
Job ID: 156907 Job Start: Thu Aug 5 15:15:54 UTC 2021
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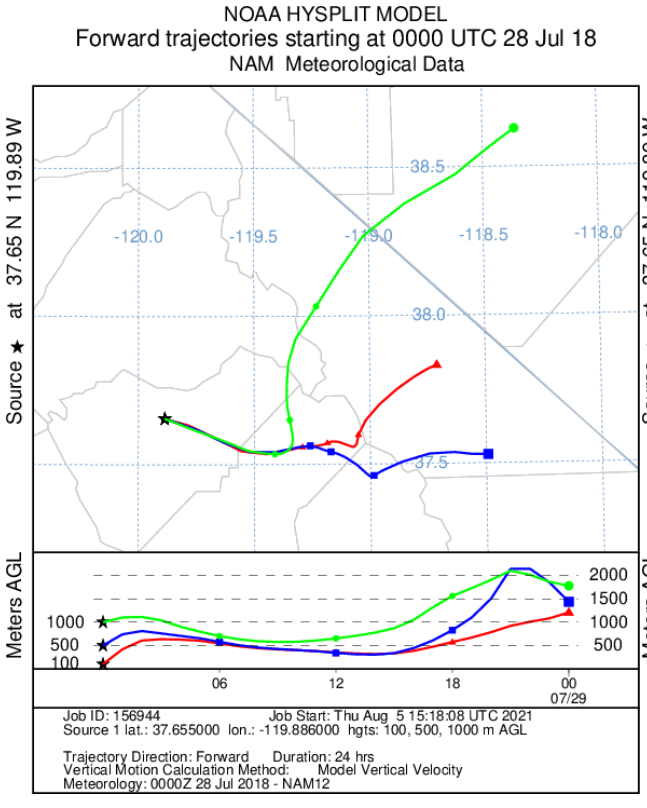
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 27 Jul 2018 - NAM12


NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 28 Jul 18
NAM Meteorological Data
Source ★ at 37.65 N 119.89 W
Meters AGL
Job ID: 156944 Job Start: Thu Aug 5 15:18:08 UTC 2021
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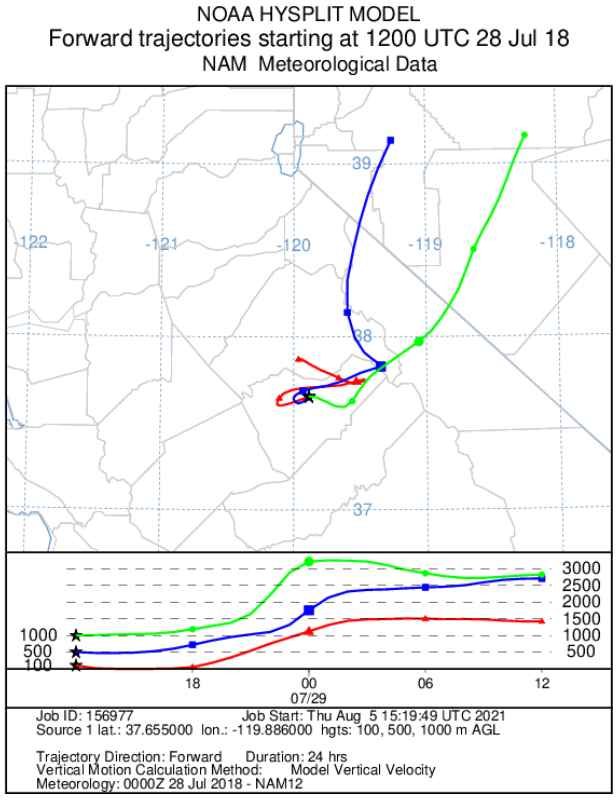
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 28 Jul 2018 - NAM12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Forward trajectories starting at 1200 UTC 28 Jul 18
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Meters AGL
Job ID: 156977 Job Start: Thu Aug 5 15:19:49 UTC 2021
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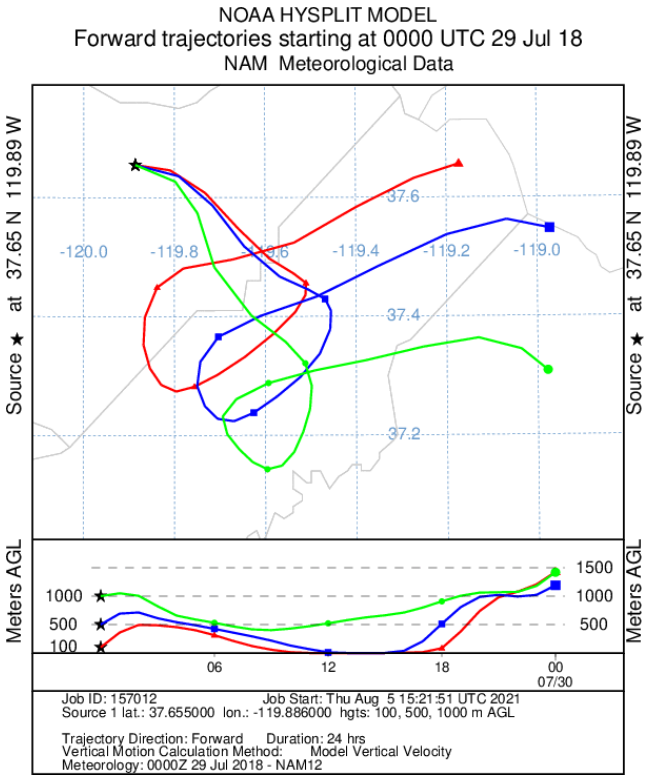
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 28 Jul 2018 - NAM12


NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 29 Jul 18
NAM Meteorological Data
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Meters AGL
Job ID: 157012 Job Start: Thu Aug 5 15:21:51 UTC 2021
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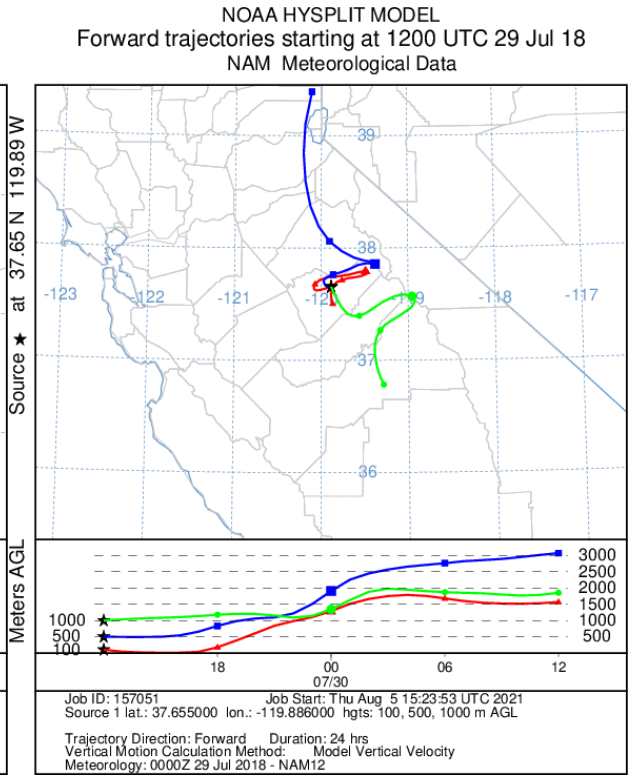
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 29 Jul 2018 - NAM12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Forward trajectories starting at 1200 UTC 29 Jul 18
NAM Meteorological Data
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Meters AGL
Job ID: 157051 Job Start: Thu Aug 5 15:23:53 UTC 2021
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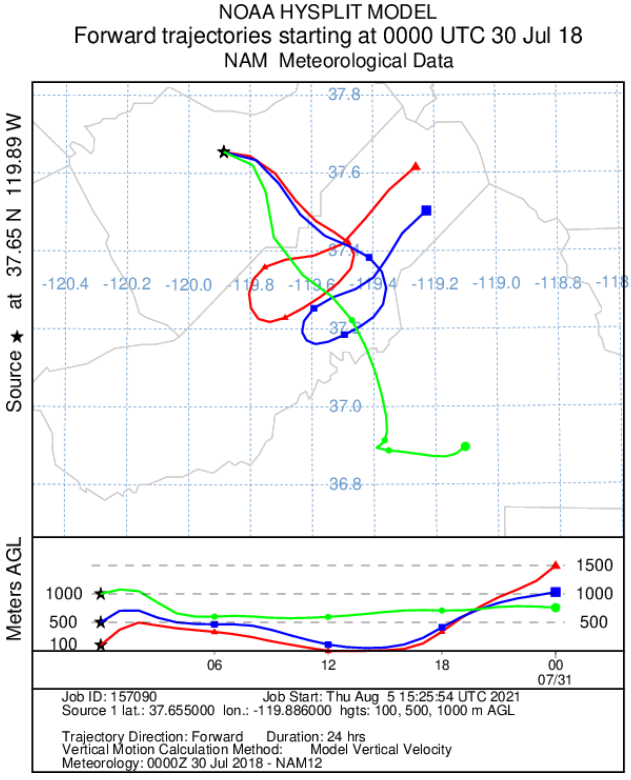
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 29 Jul 2018 - NAM12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Forward trajectories starting at 0000 UTC 30 Jul 18
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Meters AGL
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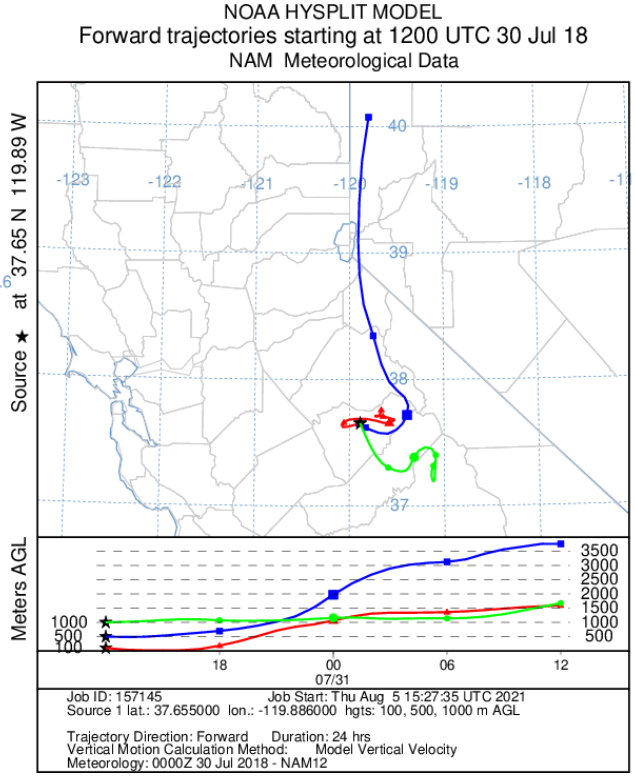
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 30 Jul 2018 - NAM12


NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 30 Jul 18
NAM Meteorological Data
Source ★ at 37.65 N 119.89 W
Meters AGL
Job ID: 157145 Job Start: Thu Aug 5 15:27:35 UTC 2021
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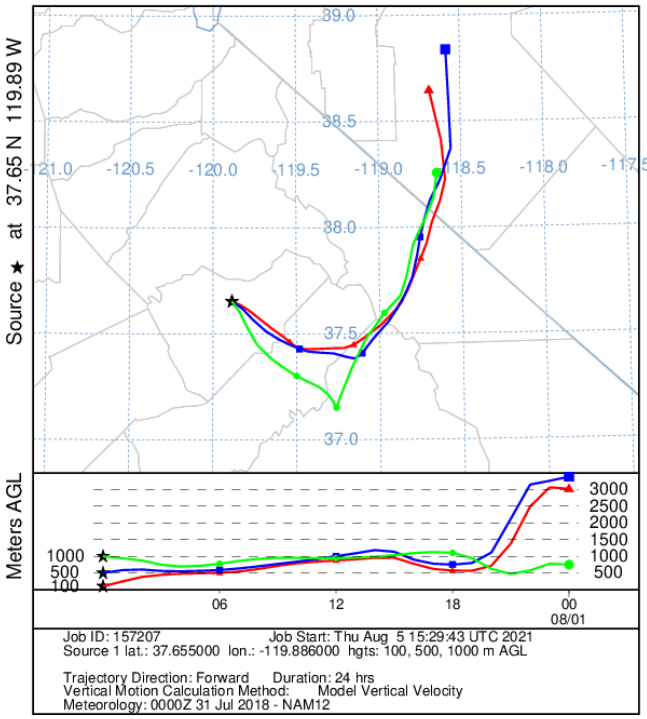
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 30 Jul 2018 - NAM12


NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 31 Jul 18
NAM Meteorological Data
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Meters AGL
Job ID: 157207 Job Start: Thu Aug 5 15:29:43 UTC 2021
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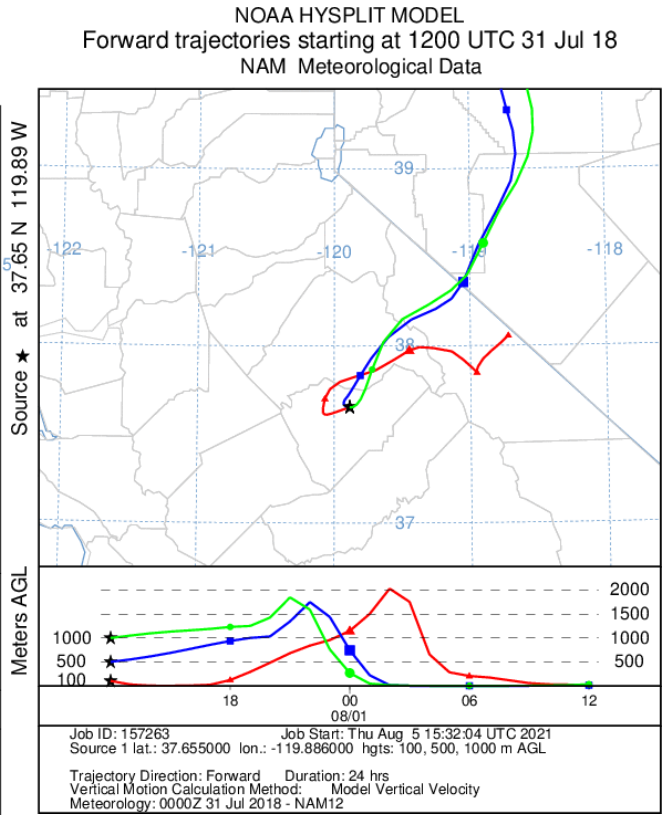
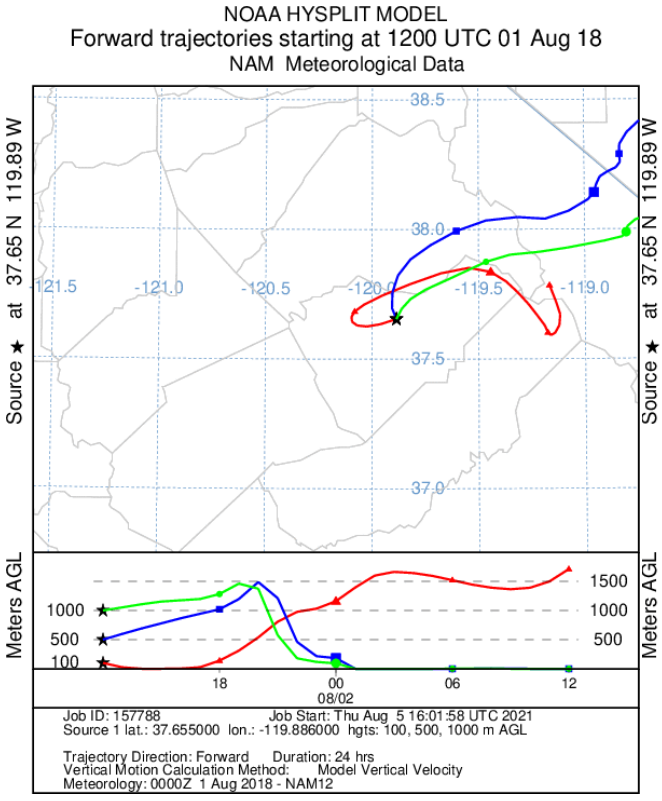
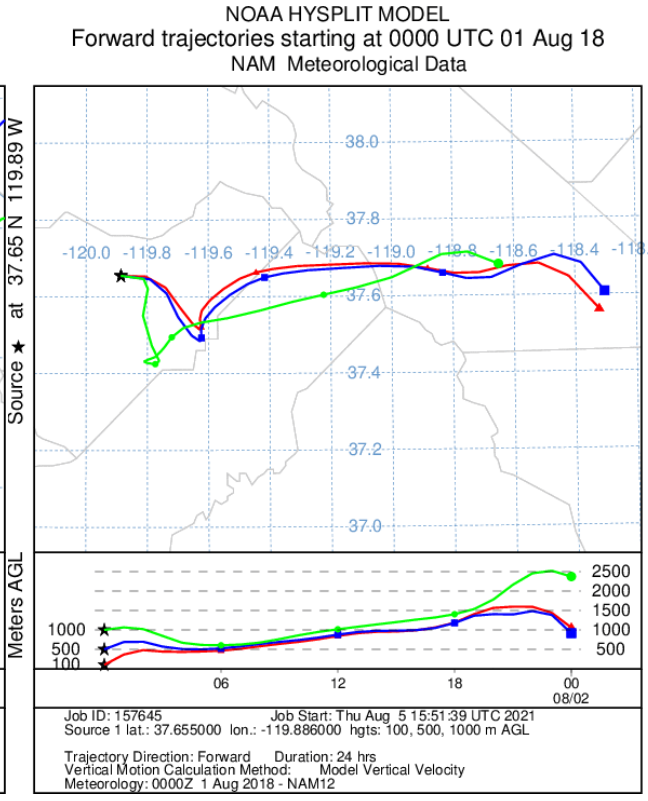
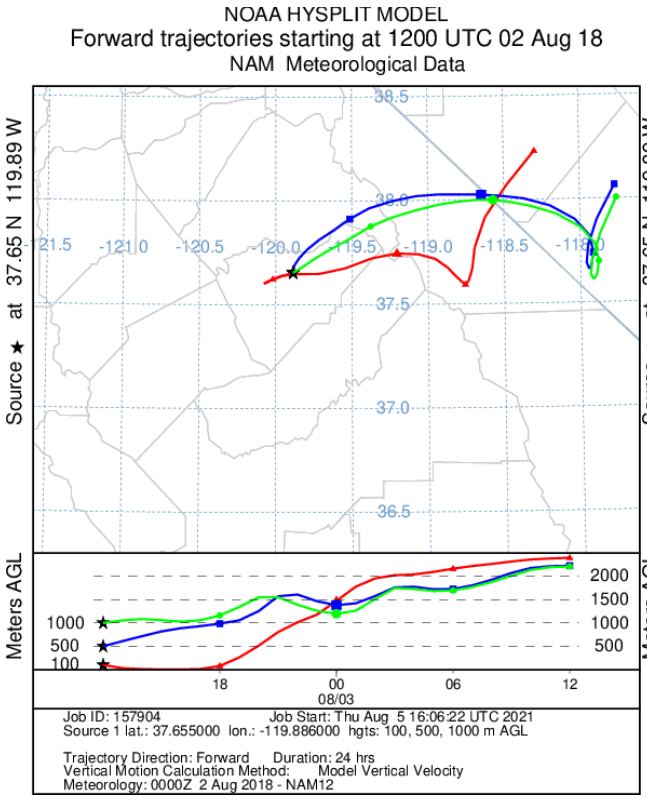
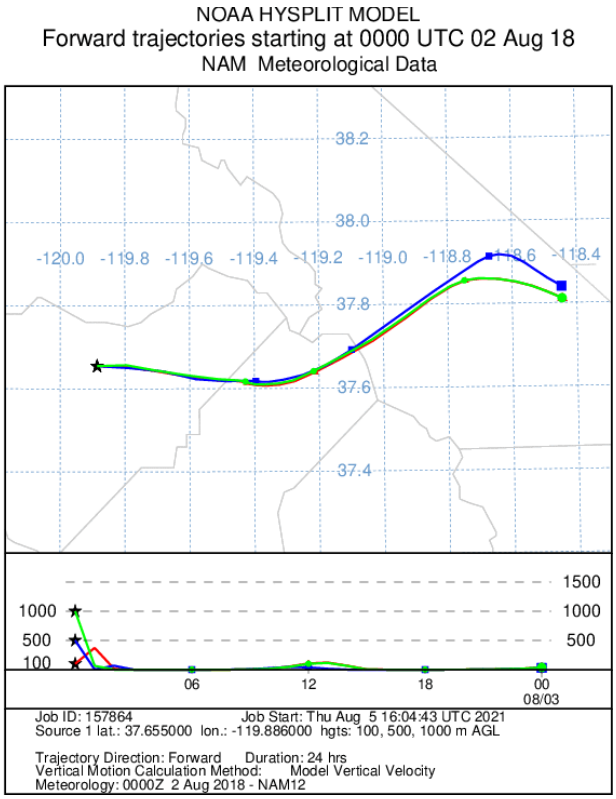
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 31 Jul 2018 - NAM12

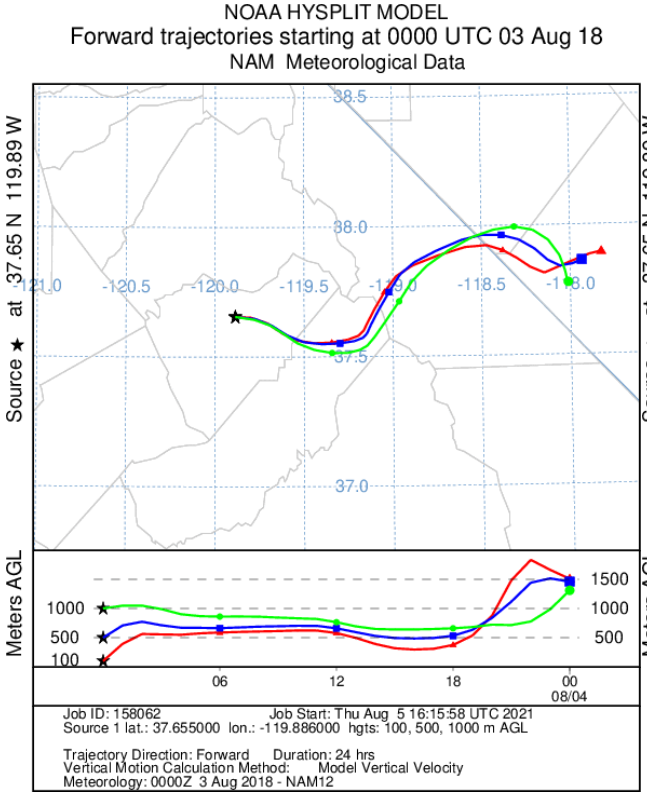

NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 31 Jul 18
NAM Meteorological Data
Source ★ at 37.65 N 119.89 W
Meters AGL
Job ID: 157263 Job Start: Thu Aug 5 15:32:04 UTC 2021
Source 1 lat.: 37.655000 lon.: -119.886000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 31 Jul 2018 - NAM12

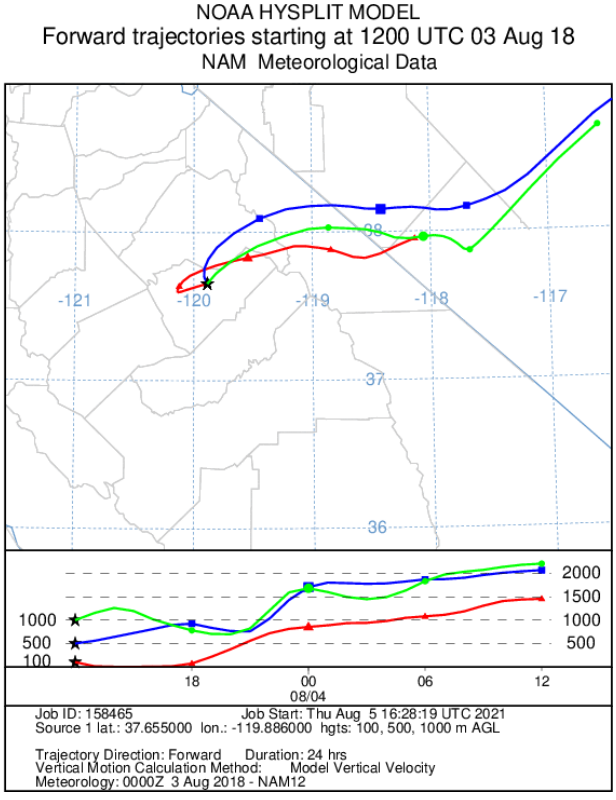

NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 01 Aug 18
NAM Meteorological Data
Source ★ at 37.65 N 119.89 W
Meters AGL
Job ID: 157788 Job Start: Thu Aug 5 16:01:58 UTC 2021
Source 1 lat.: 37.655000 lon.: -119.886000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 1 Aug 2018 - NAM12

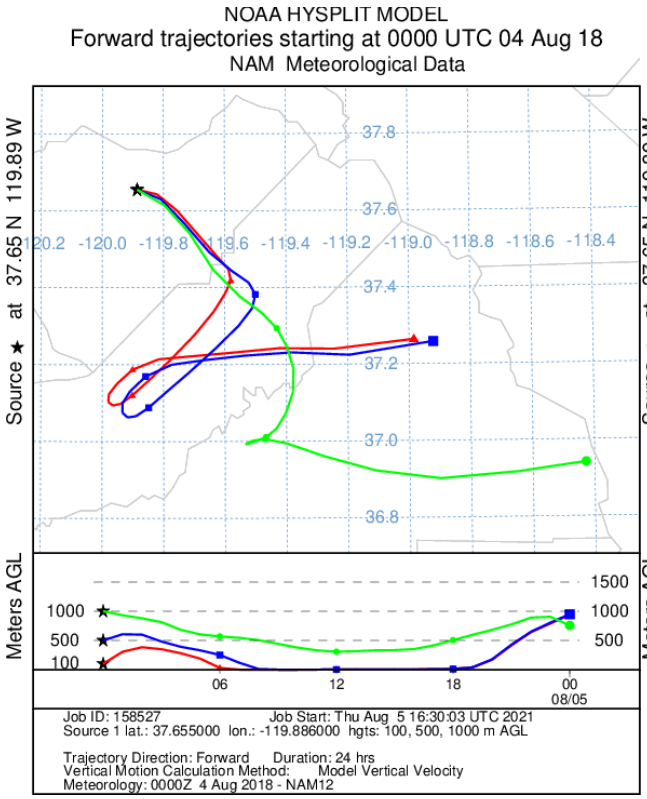

NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 01 Aug 18
NAM Meteorological Data
Source ★ at 37.65 N 119.89 W
Meters AGL
Job ID: 157645 Job Start: Thu Aug 5 15:51:39 UTC 2021
Source 1 lat.: 37.655000 lon.: -119.886000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 1 Aug 2018 - NAM12

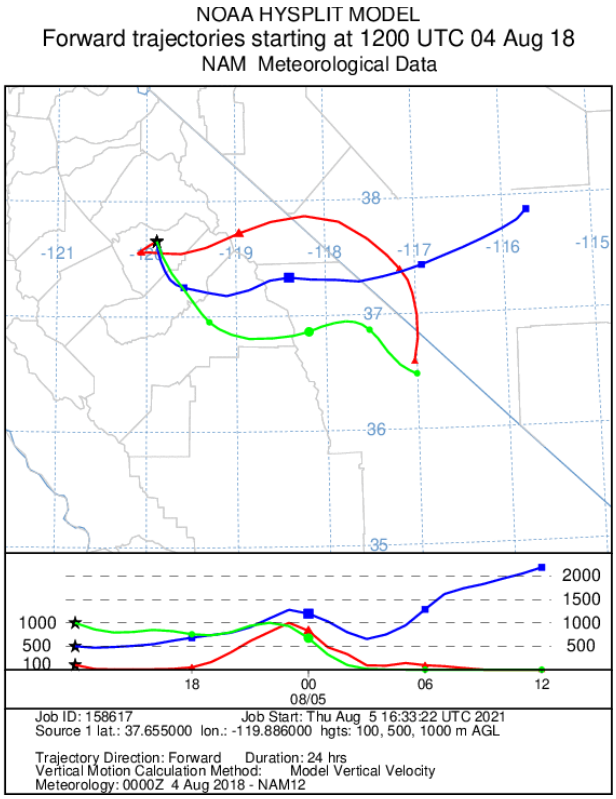

NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 02 Aug 18
NAM Meteorological Data
Source ★ at 37.65 N 119.89 W
Meters AGL
Job ID: 157904 Job Start: Thu Aug 5 16:06:22 UTC 2021
Source 1 lat.: 37.655000 lon.: -119.886000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 2 Aug 2018 - NAM12

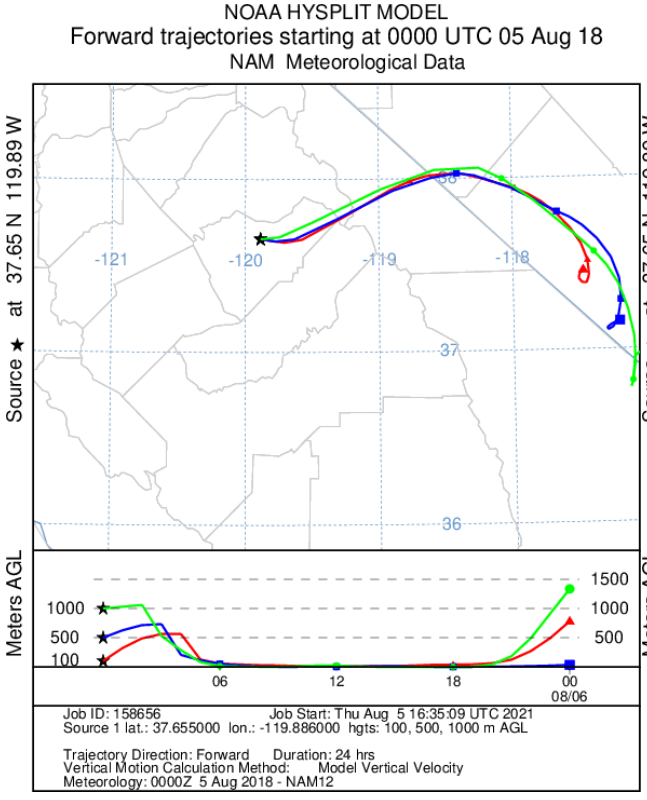

NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 02 Aug 18
NAM Meteorological Data
Source ★ at 37.65 N 119.89 W
Meters AGL
Job ID: 157864 Job Start: Thu Aug 5 16:04:43 UTC 2021
Source 1 lat.: 37.655000 lon.: -119.886000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 2 Aug 2018 - NAM12

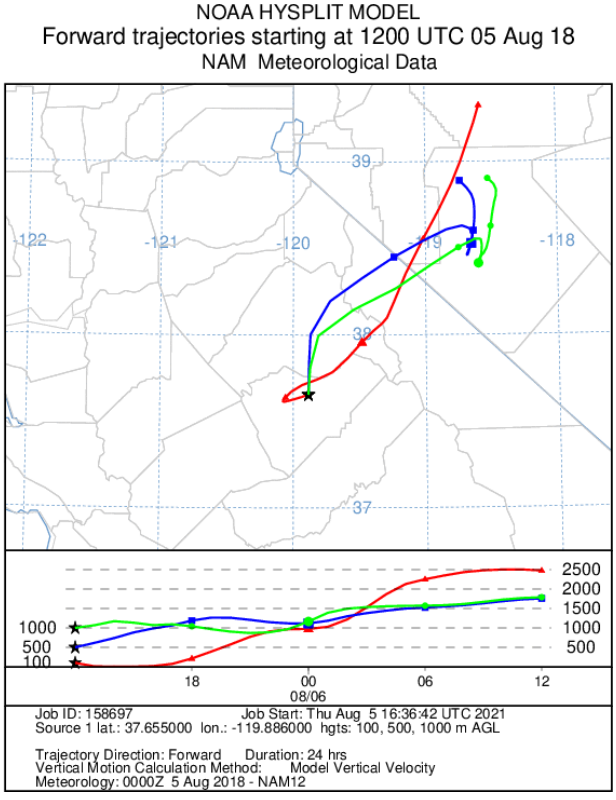

NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 03 Aug 18
NAM Meteorological Data
Source ★ at 37.65 N 119.89 W
Meters AGL
Job ID: 158062 Job Start: Thu Aug 5 16:15:58 UTC 2021
Source 1 lat.: 37.655000 lon.: -119.886000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 3 Aug 2018 - NAM12

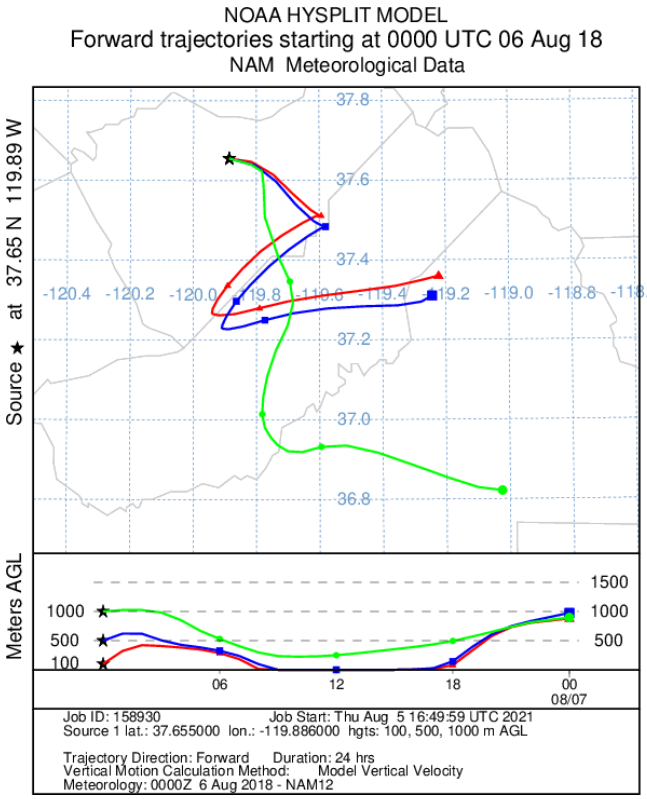

NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 03 Aug 18
NAM Meteorological Data
Source ★ at 37.65 N 119.89 W
Meters AGL
Job ID: 158465 Job Start: Thu Aug 5 16:28:19 UTC 2021
Source 1 lat.: 37.655000 lon.: -119.886000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 3 Aug 2018 - NAM12

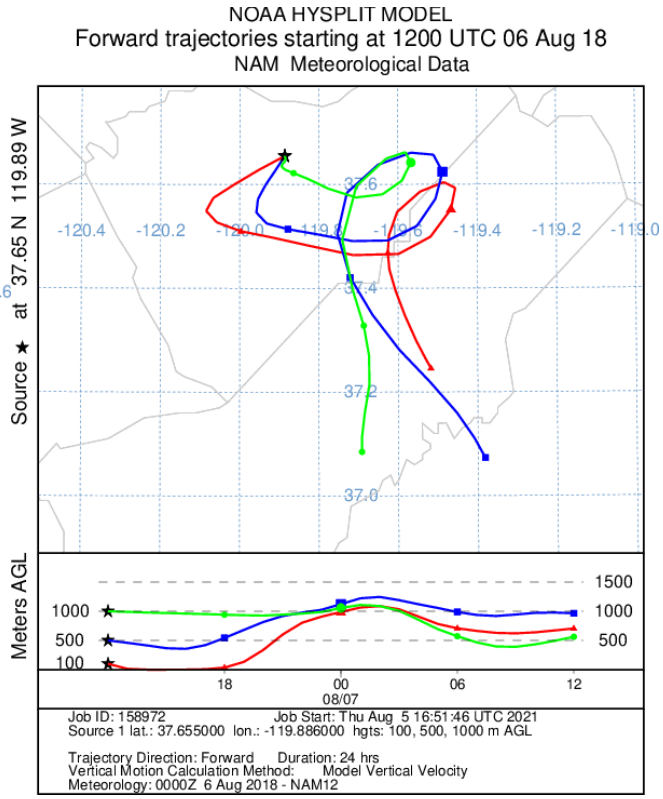

NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 04 Aug 18
NAM Meteorological Data
Source ★ at 37.65 N 119.89 W
Meters AGL
Job ID: 158527 Job Start: Thu Aug 5 16:30:03 UTC 2021
Source 1 lat.: 37.655000 lon.: -119.886000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 4 Aug 2018 - NAM12

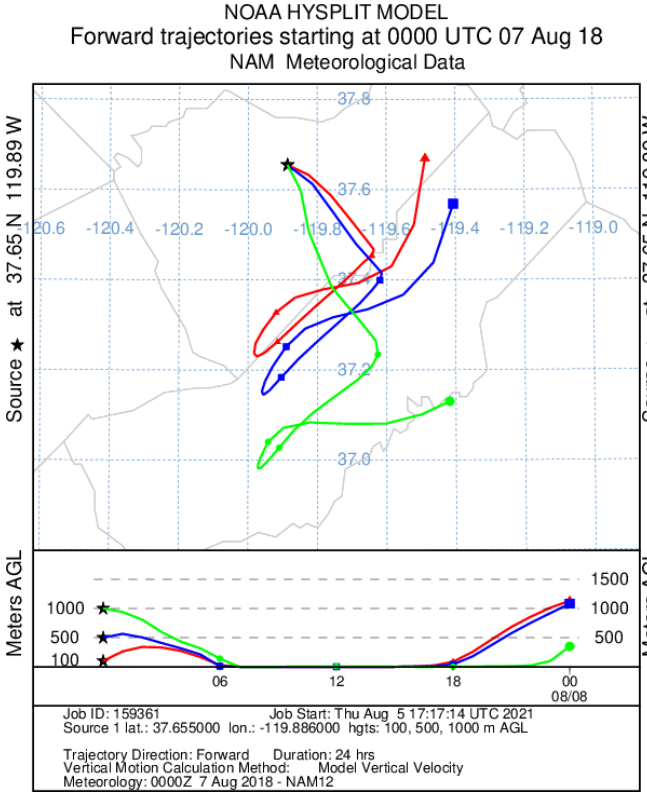

NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 04 Aug 18
NAM Meteorological Data
Source ★ at 37.65 N 119.89 W
Meters AGL
Job ID: 158617 Job Start: Thu Aug 5 16:33:22 UTC 2021
Source 1 lat.: 37.655000 lon.: -119.886000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 4 Aug 2018 - NAM12

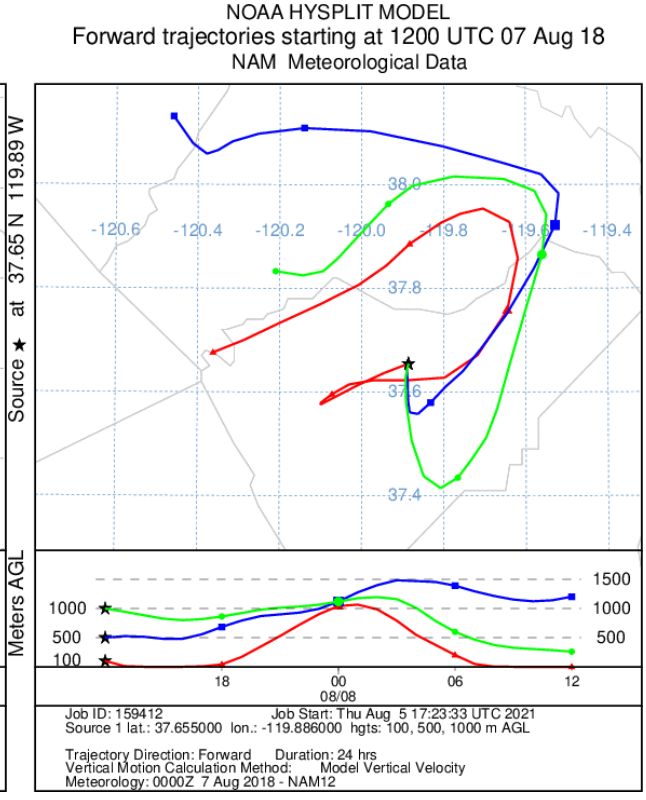

NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 05 Aug 18
NAM Meteorological Data
Source ★ at 37.65 N 119.89 W
Meters AGL
Job ID: 158656 Job Start: Thu Aug 5 16:35:09 UTC 2021
Source 1 lat.: 37.655000 lon.: -119.886000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 5 Aug 2018 - NAM12

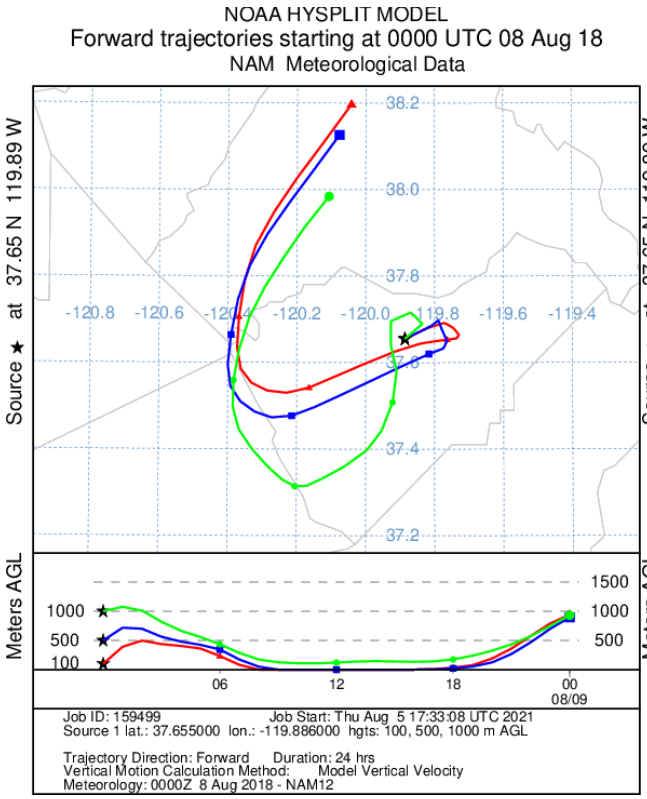

NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 05 Aug 18
NAM Meteorological Data
Source ★ at 37.65 N 119.89 W
Meters AGL
Job ID: 158697 Job Start: Thu Aug 5 16:36:42 UTC 2021
Source 1 lat.: 37.655000 lon.: -119.886000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 5 Aug 2018 - NAM12

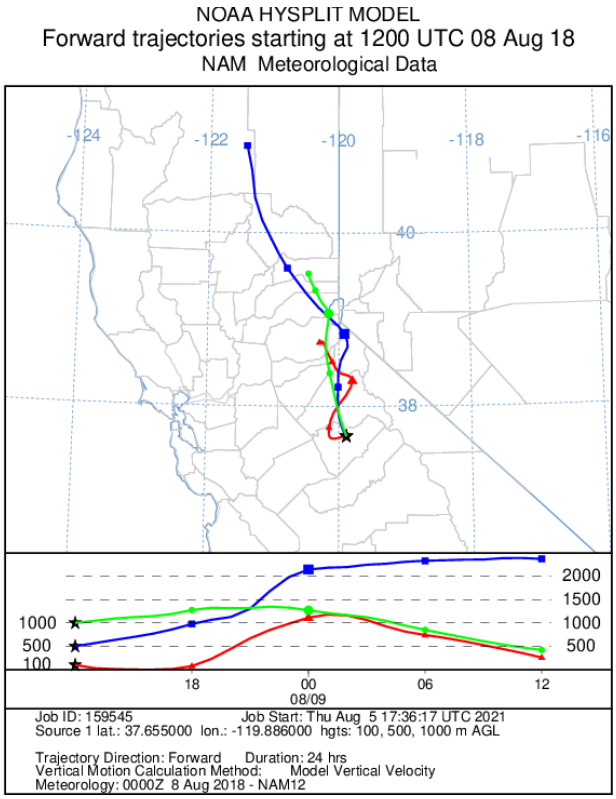

NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 06 Aug 18
NAM Meteorological Data
Source ★ at 37.65 N 119.89 W
Meters AGL
Job ID: 158930 Job Start: Thu Aug 5 16:49:59 UTC 2021
Source 1 lat.: 37.655000 lon.: -119.886000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 6 Aug 2018 - NAM12

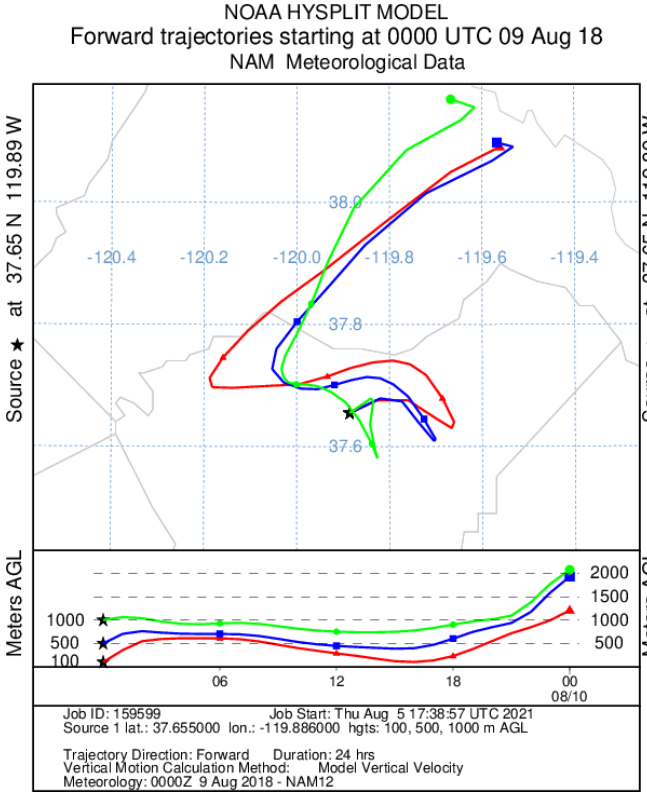

NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 06 Aug 18
NAM Meteorological Data
Source ★ at 37.65 N 119.89 W
Meters AGL
Job ID: 158972 Job Start: Thu Aug 5 16:51:46 UTC 2021
Source 1 lat.: 37.655000 lon.: -119.886000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 6 Aug 2018 - NAM12

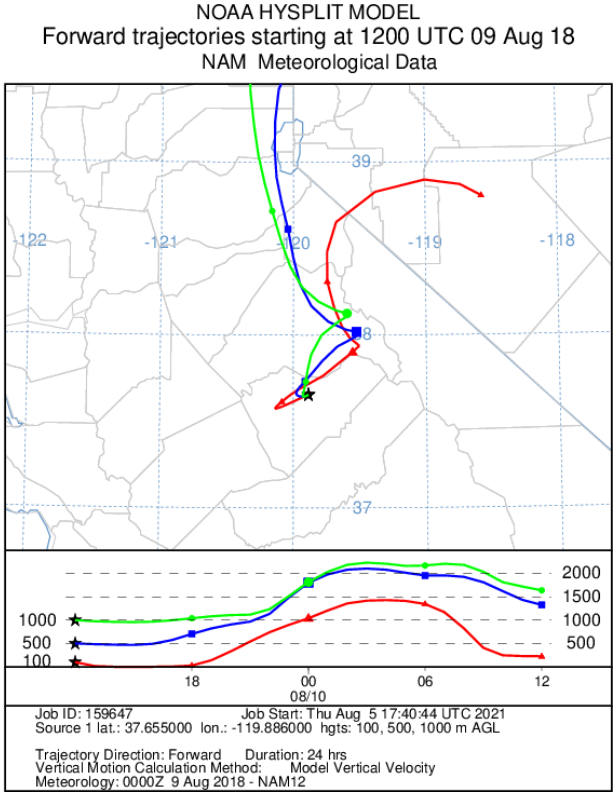

NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 07 Aug 18
NAM Meteorological Data
Source ★ at 37.65 N 119.89 W
Meters AGL
Job ID: 159361 Job Start: Thu Aug 5 17:17:14 UTC 2021
Source 1 lat.: 37.655000 lon.: -119.886000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 7 Aug 2018 - NAM12

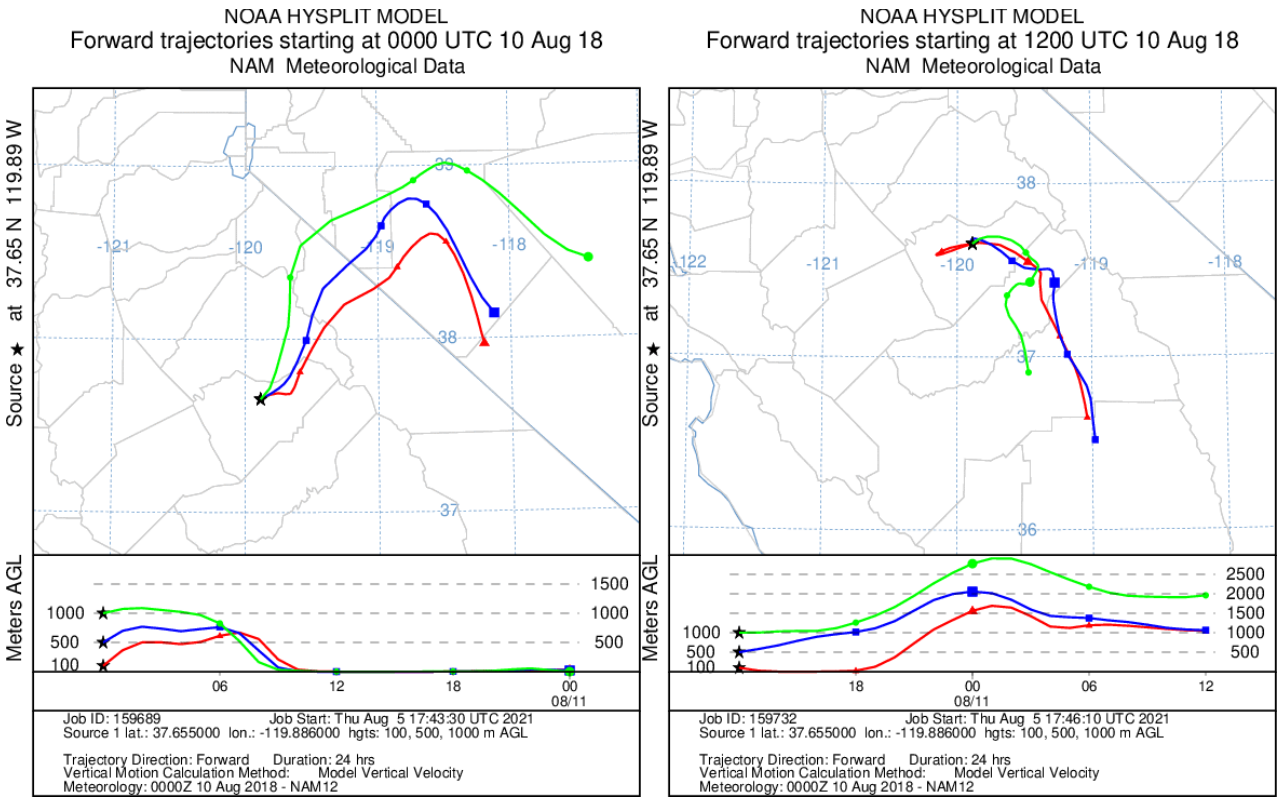

NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 07 Aug 18
NAM Meteorological Data
Source ★ at 37.65 N 119.89 W
Meters AGL
Job ID: 159412 Job Start: Thu Aug 5 17:23:33 UTC 2021
Source 1 lat.: 37.655000 lon.: -119.886000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 7 Aug 2018 - NAM12


NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 08 Aug 18
NAM Meteorological Data
Source ★ at 37.65 N 119.89 W
Meters AGL
Job ID: 159499 Job Start: Thu Aug 5 17:33:08 UTC 2021
Source 1 lat.: 37.655000 lon.: -119.886000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 8 Aug 2018 - NAM12


NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 08 Aug 18
NAM Meteorological Data
Source ★ at 37.65 N 119.89 W
Meters AGL
Job ID: 159545 Job Start: Thu Aug 5 17:36:17 UTC 2021
Source 1 lat.: 37.655000 lon.: -119.886000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 8 Aug 2018 - NAM12

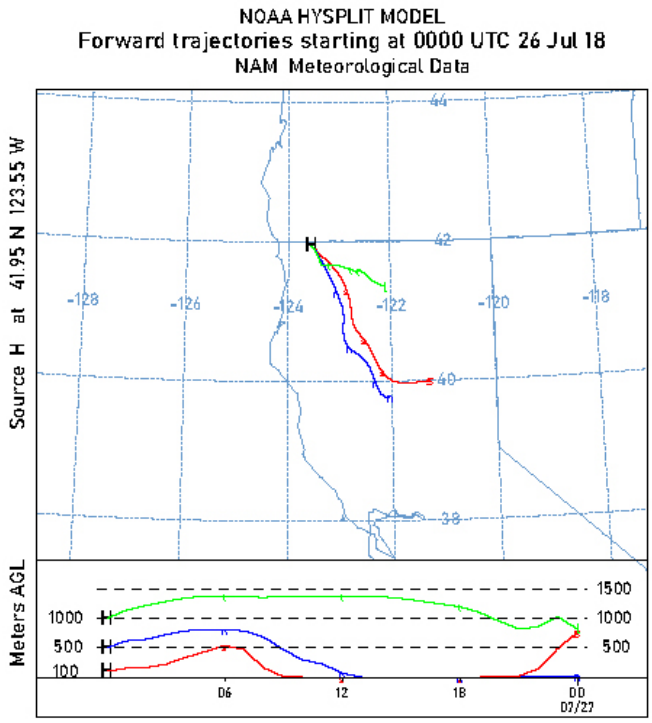

NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 09 Aug 18
NAM Meteorological Data
Source ★ at 37.65 N 119.89 W
Meters AGL
Job ID: 159599 Job Start: Thu Aug 5 17:38:57 UTC 2021
Source 1 lat.: 37.655000 lon.: -119.886000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 9 Aug 2018 - NAM12

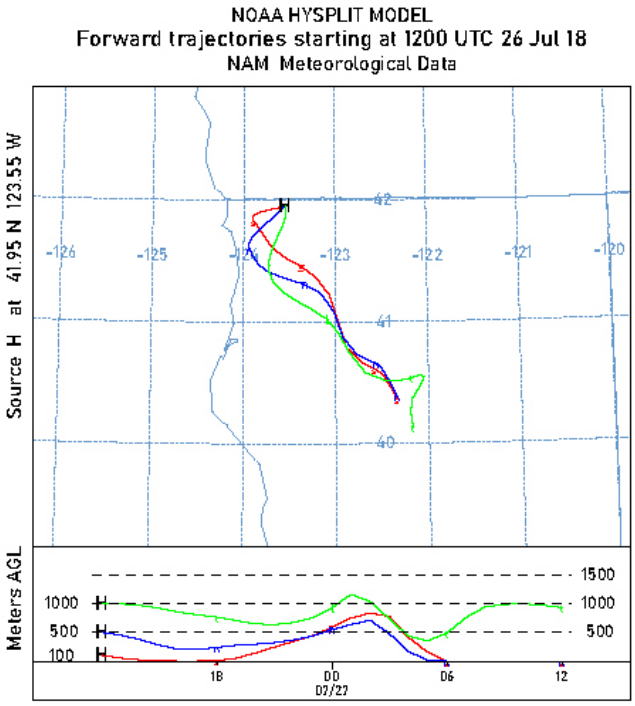

NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 09 Aug 18
NAM Meteorological Data
Source ★ at 37.65 N 119.89 W
Meters AGL
Job ID: 159647 Job Start: Thu Aug 5 17:40:44 UTC 2021
Source 1 lat.: 37.655000 lon.: -119.886000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 9 Aug 2018 - NAM12

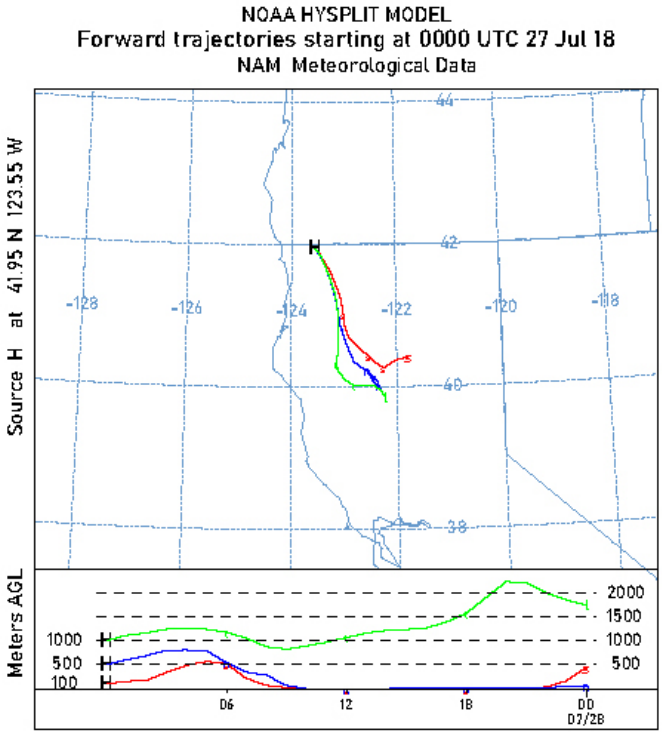


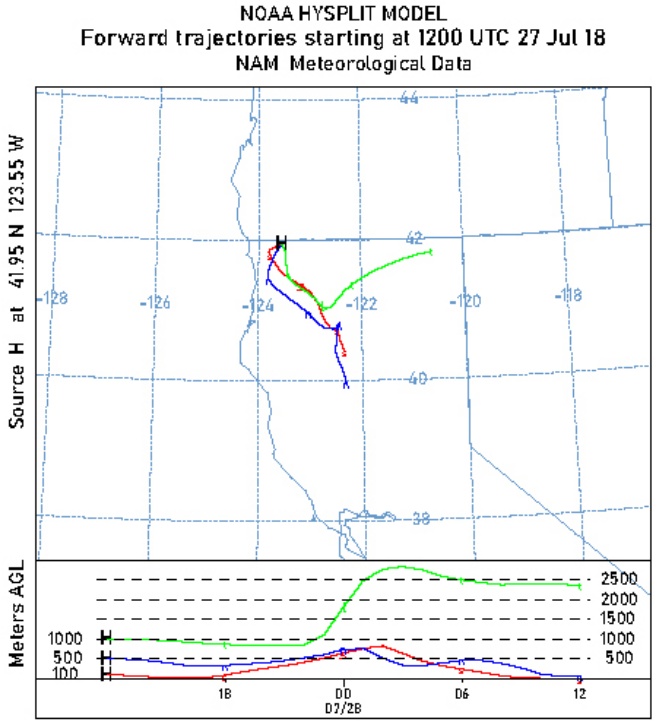
2. Natchez Fire

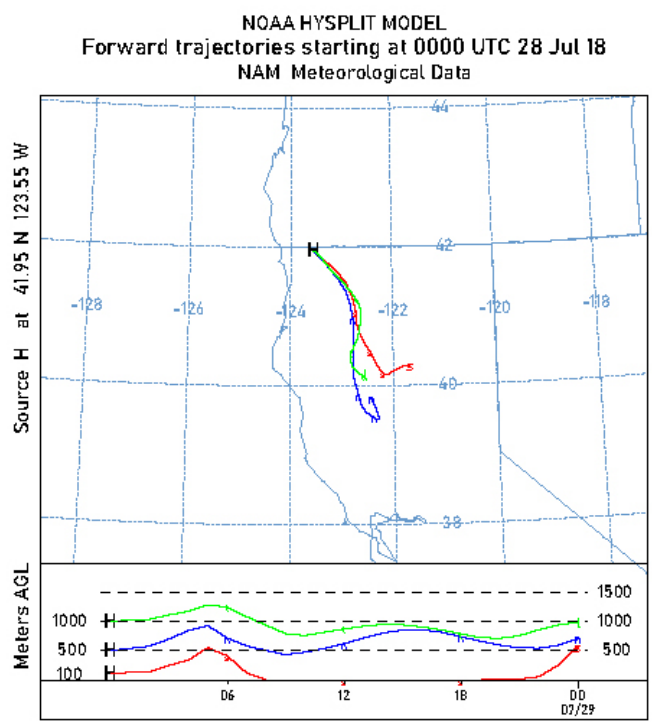
Fire	Start	Containment	Latitude	Longitude	Total Acres
Natchez	7/15/18	1/4/19	41.951	-123.546	38,134

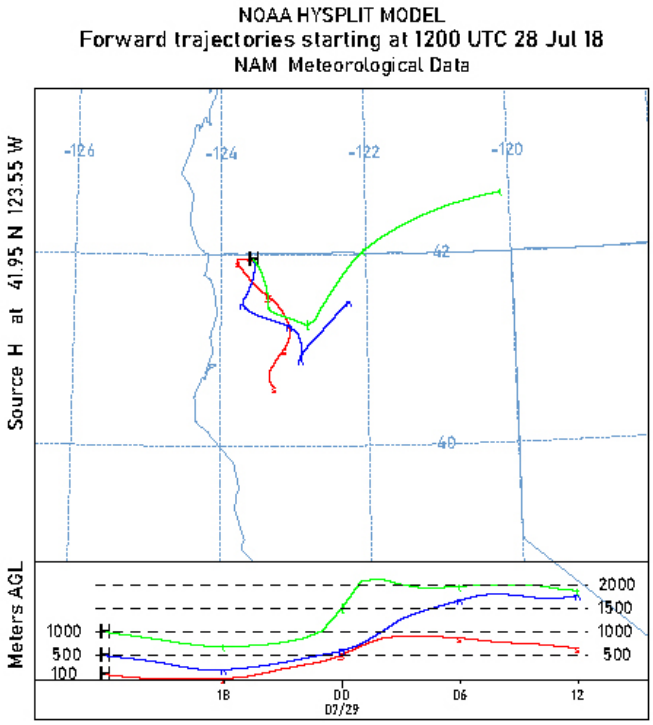

NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 26 Jul 18
NAM Meteorological Data
Source H at 41.95 N 123.55 W
Meters AGL
1500
1000
500
100
D6
12
18
DD
D7/27

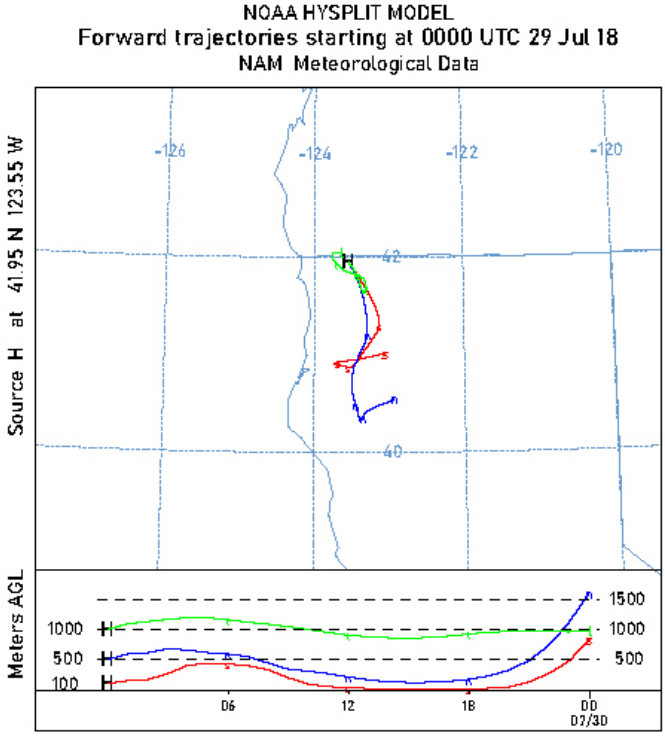

NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 26 Jul 18
NAM Meteorological Data
Source H at 41.95 N 123.55 W
Meters AGL
1500
1000
500
100
18
DD
D7/27
D6
12

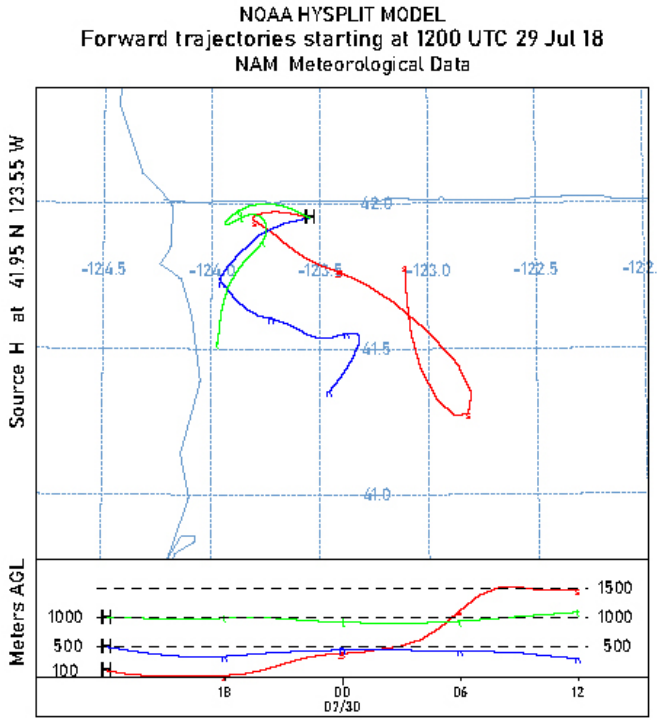

NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 27 Jul 18
NAM Meteorological Data
Source H at 41.95 N 123.55 W
Meters AGL
2000
1500
1000
500
100
D6
12
18
DD
D7/28

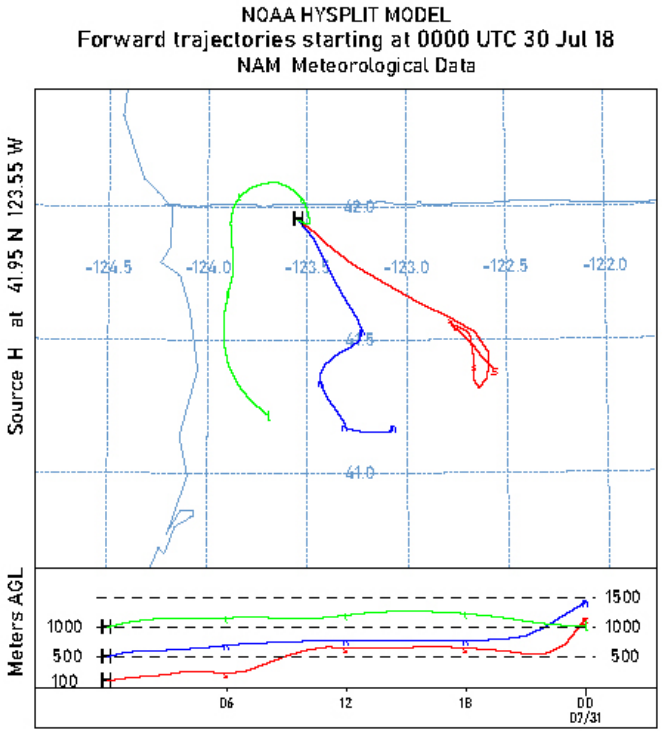

NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 27 Jul 18
NAM Meteorological Data
Source H at 41.95 N 123.55 W
Meters AGL
2500
2000
1500
1000
500
100
18
DD
D7/28
D6
12

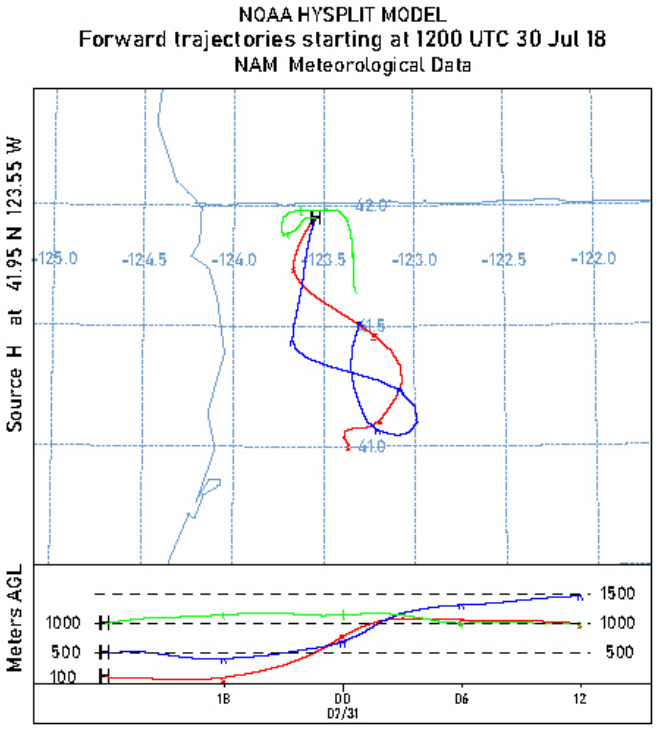

NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 28 Jul 18
NAM Meteorological Data
Source H at 41.95 N 123.55 W
Meters AGL
-128
-126
-124
-122
-120
-118
44
42
40
38
1500
1000
500
100
D6
12
18
DD
D7/29

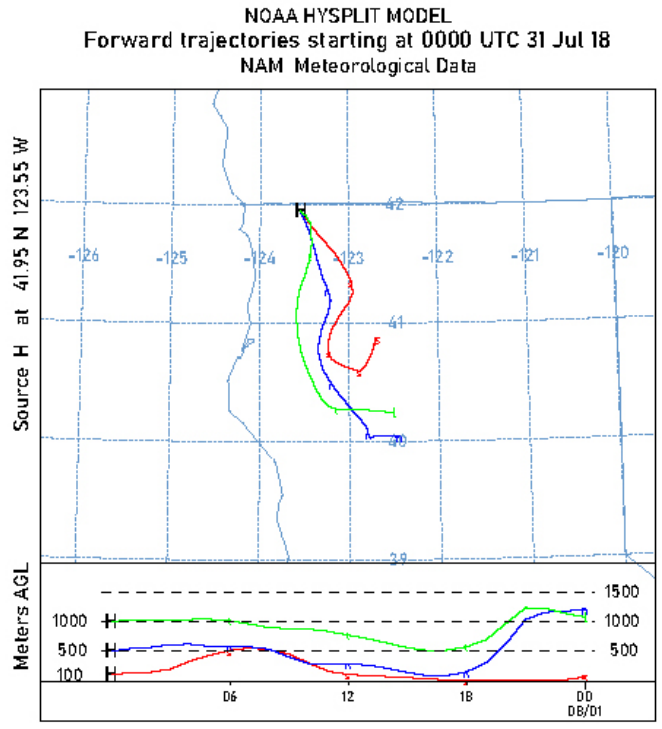

NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 28 Jul 18
NAM Meteorological Data
Source H at 41.95 N 123.55 W
Meters AGL
-126
-124
-122
-120
42
40
2000
1500
1000
500
100
18
DD
D7/29
D6
12

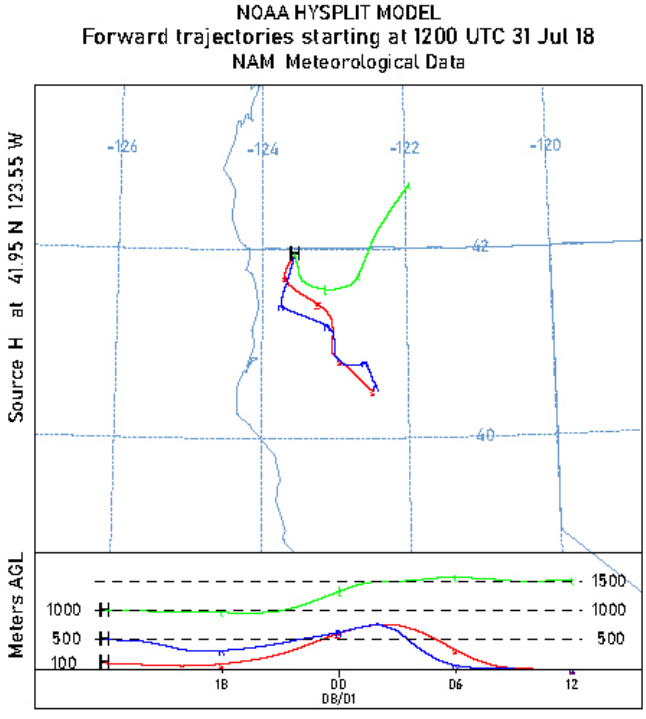

NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 29 Jul 18
NAM Meteorological Data
Source H at 41.95 N 123.55 W
Meters AGL
-126
-124
-122
-120
42
40
1500
1000
500
100
D6
12
18
DD
D7/30

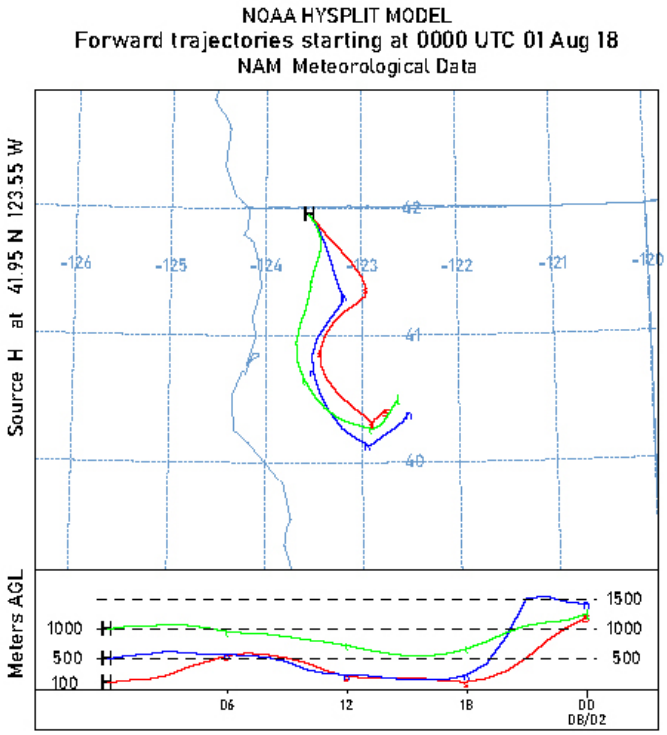

NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 29 Jul 18
NAM Meteorological Data
Source H at 41.95 N 123.55 W
Meters AGL
-124.5
-124.0
-123.5
-123.0
-122.5
42.0
41.5
41.0
1500
1000
500
100
18
DD
D7/30
D6
12

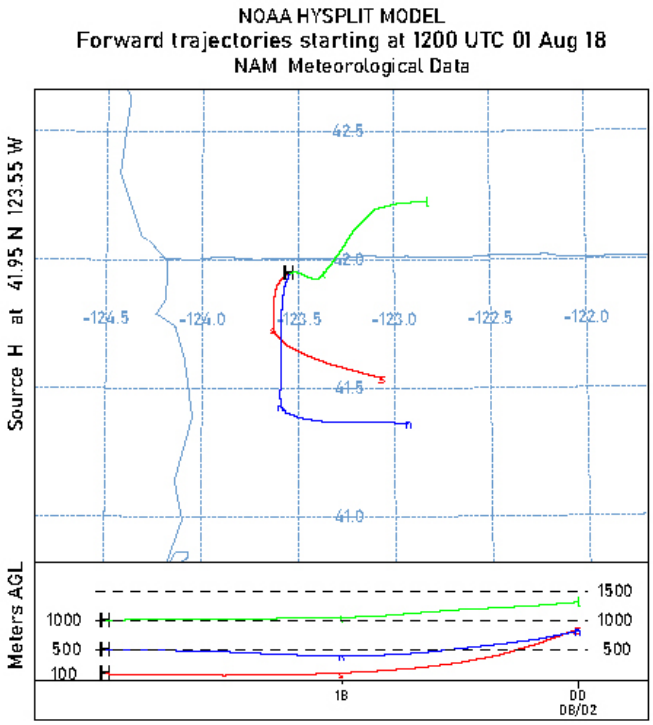

NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 30 Jul 18
NAM Meteorological Data
Source H at 41.95 N 123.55 W
Meters AGL
-124.5
-124.0
-123.5
-123.0
-122.5
-122.0
42.0
41.5
41.0
1500
1000
500
100
D6
12
18
DD
07/31


NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 30 Jul 18
NAM Meteorological Data
Source H at 41.95 N 123.55 W
Meters AGL
-125.0
-124.5
-124.0
-123.5
-123.0
-122.5
-122.0
42.0
41.5
41.0
1500
1000
500
100
18
DD
07/31
D6
12


NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 31 Jul 18
NAM Meteorological Data
Source H at 41.95 N 123.55 W
Meters AGL
-126
-125
-124
-123
-122
-121
-120
42
41
40
39
1500
1000
500
100
D6
12
18
DD
08/01


NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 31 Jul 18
NAM Meteorological Data
Source H at 41.95 N 123.55 W
Meters AGL
-126
-124
-122
-120
42
40
1500
1000
500
100
18
DD
08/01
D6
12


NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 01 Aug 18
NAM Meteorological Data
Source H at 41.95 N 123.55 W
Meters AGL
1500
1000
500
100
D6
12
18
DD
DB/D2


NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 01 Aug 18
NAM Meteorological Data
Source H at 41.95 N 123.55 W
Meters AGL
1500
1000
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100
18
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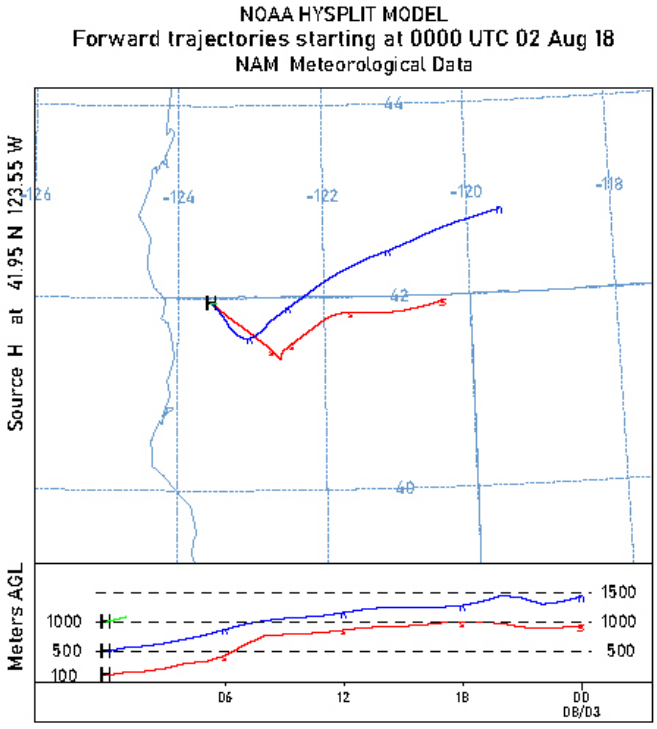
DB/D2


NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 02 Aug 18
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Meters AGL
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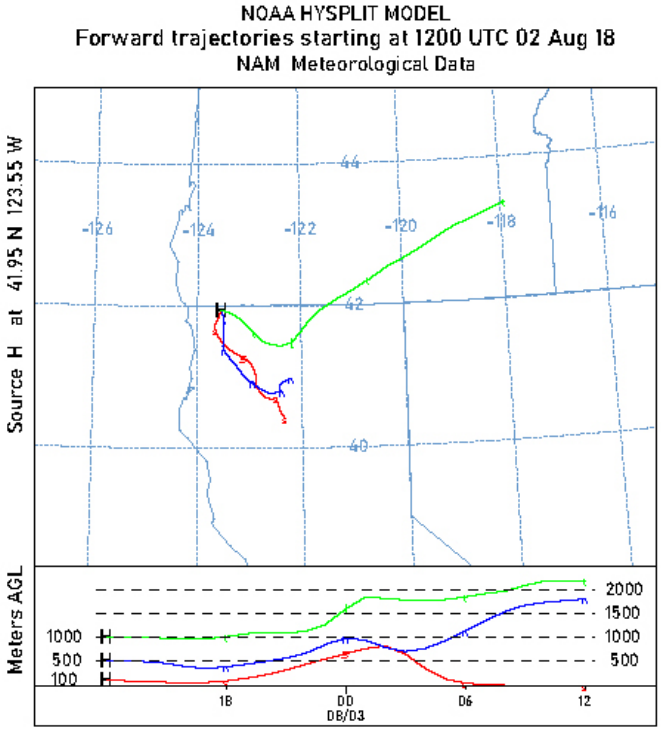
DB/D3


NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 02 Aug 18
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Meters AGL
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DD
DB/D3
D6
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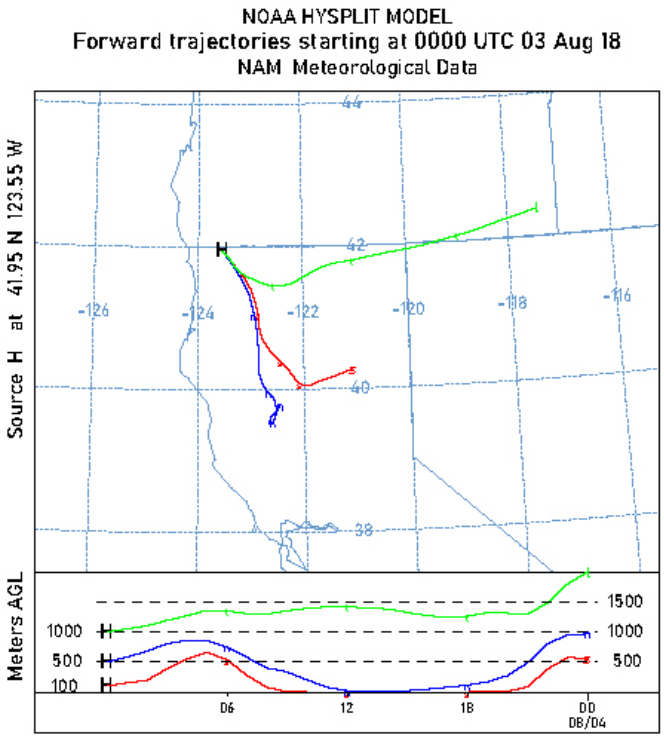
NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 03 Aug 18
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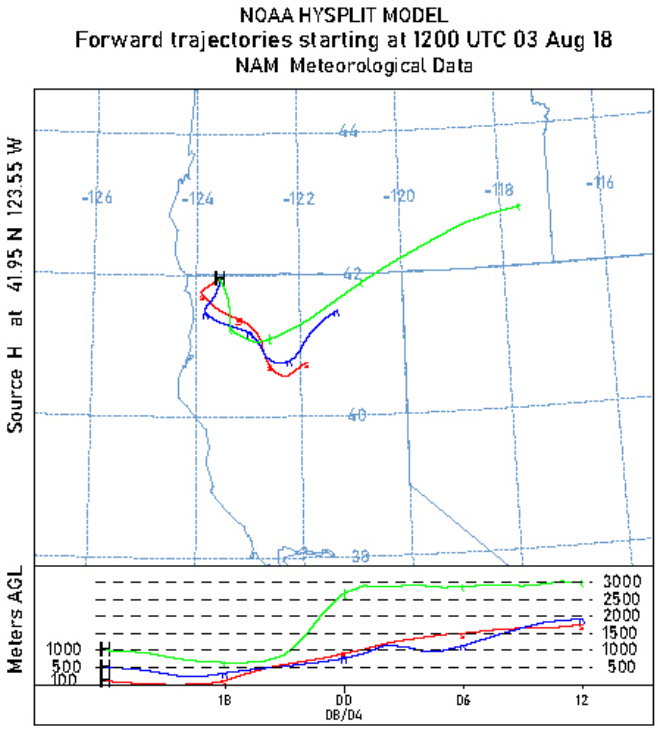
DB/D4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Forward trajectories starting at 1200 UTC 03 Aug 18
NAM Meteorological Data
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Meters AGL
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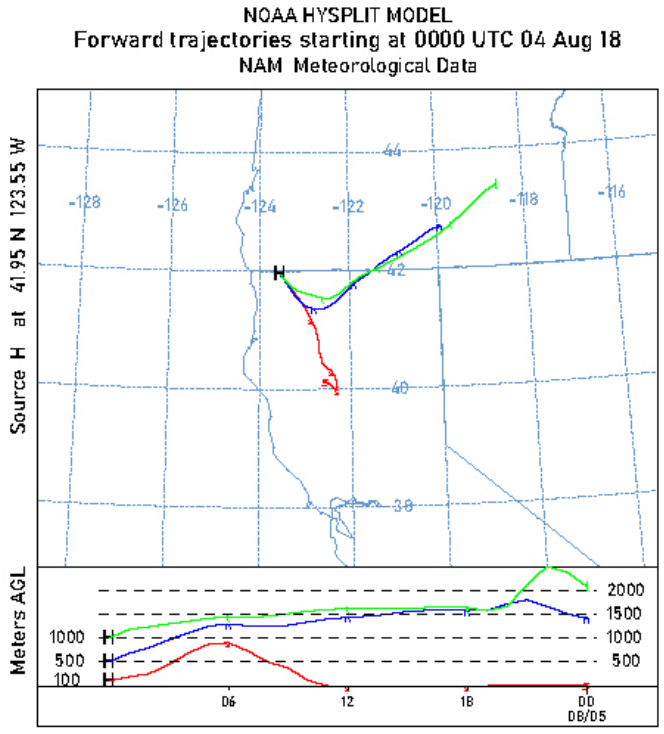
DB/D4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Forward trajectories starting at 0000 UTC 04 Aug 18
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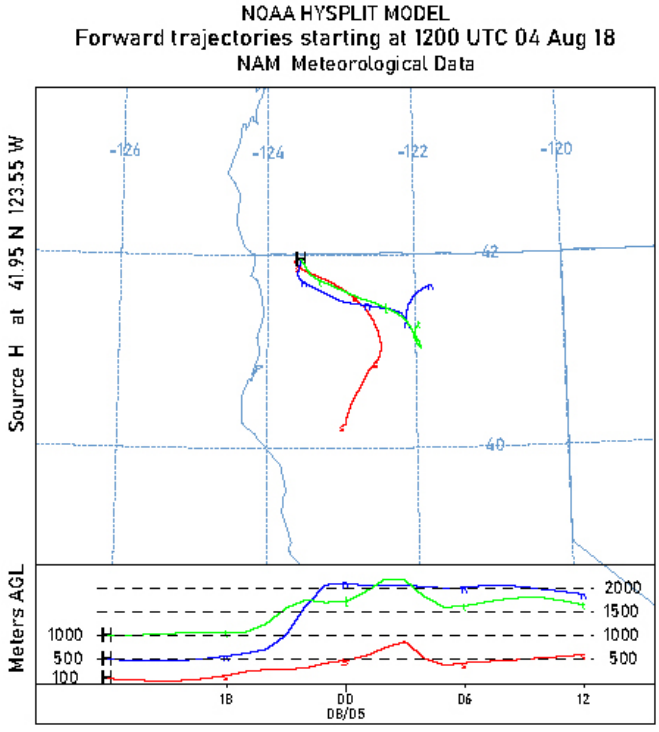
DB/D5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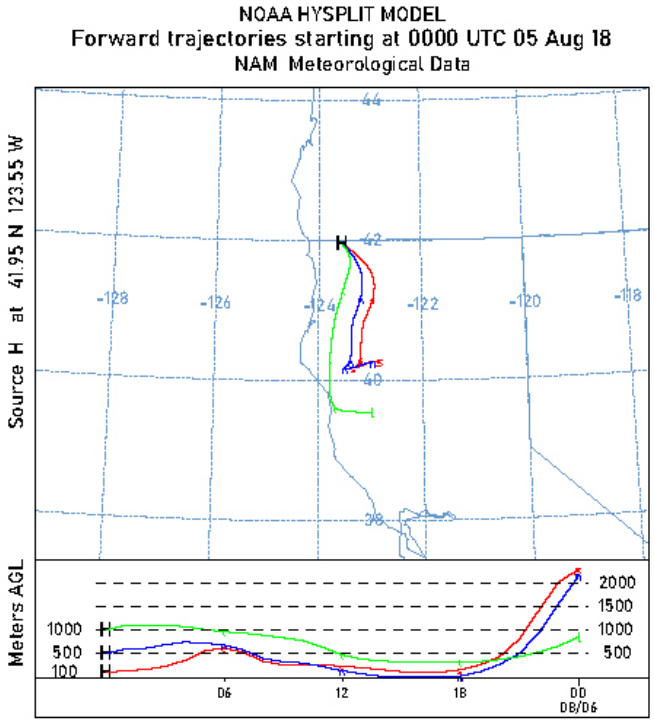
DB/D5


NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 05 Aug 18
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Meters AGL
2000
1500
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500
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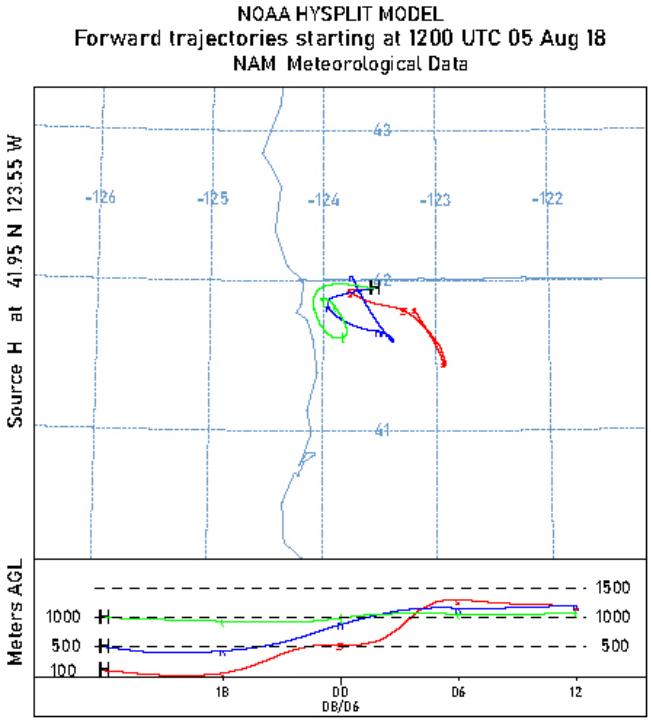
DD
DB/D6


NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 05 Aug 18
NAM Meteorological Data
Source H at 41.95 N 123.55 W
Meters AGL
1500
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500
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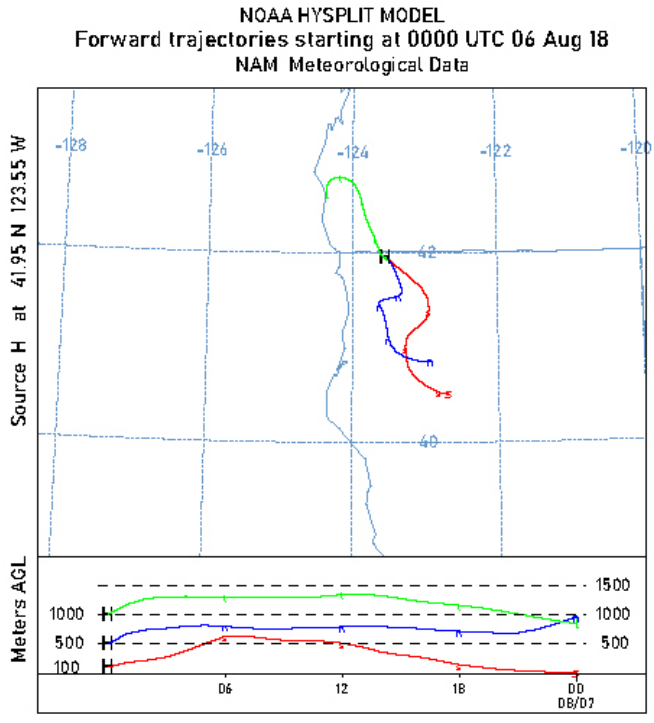
DD
DB/D6
D6
12


NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 06 Aug 18
NAM Meteorological Data
Source H at 41.95 N 123.55 W
Meters AGL
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D6
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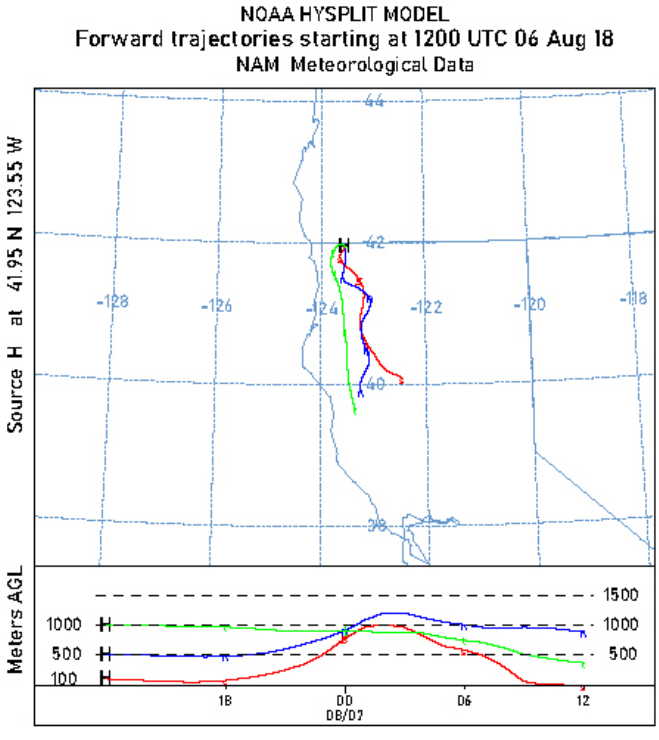
DD
DB/D7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Forward trajectories starting at 1200 UTC 06 Aug 18
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Source H at 41.95 N 123.55 W
Meters AGL
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500
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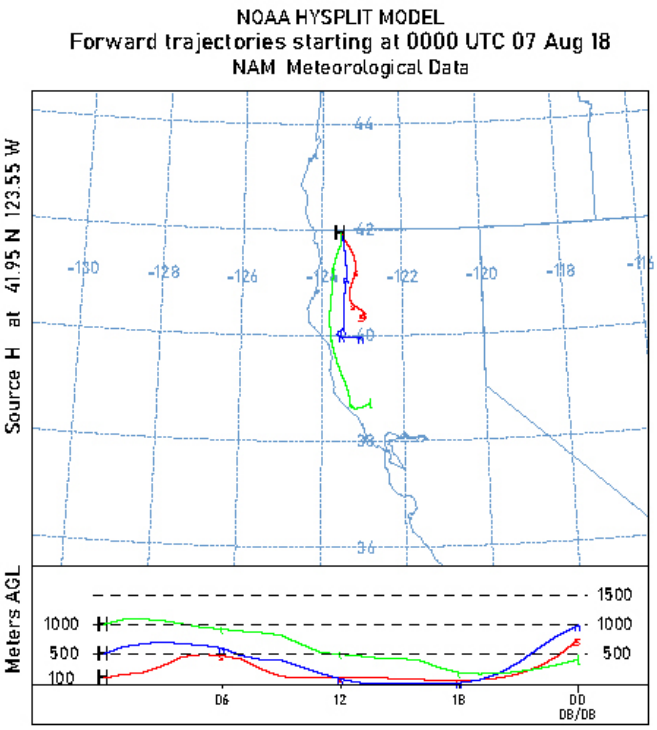
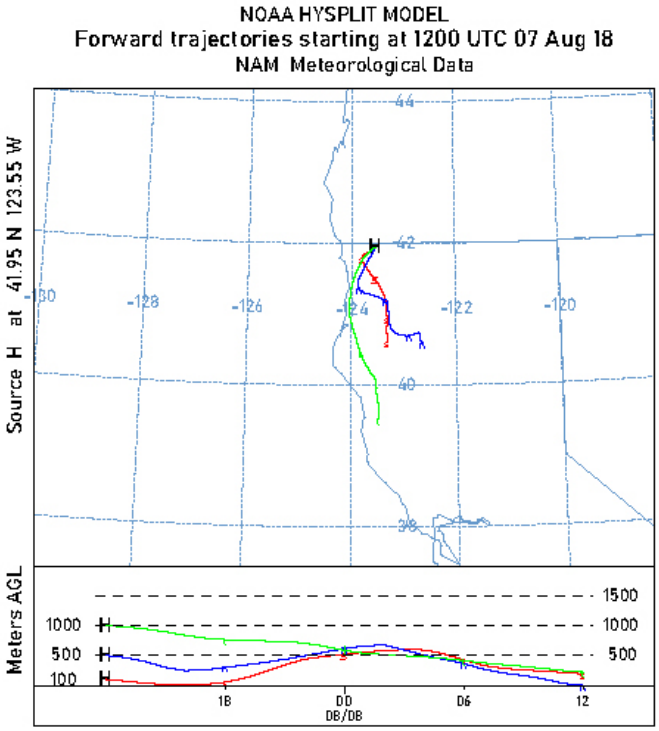
DD
DB/D7
D6
12


NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 07 Aug 18
NAM Meteorological Data
Source H at 41.95 N 123.55 W
Meters AGL
1500
1000
500
100
D6
12
18
DD
DB/DB


NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 07 Aug 18
NAM Meteorological Data
Source H at 41.95 N 123.55 W
Meters AGL
1500
1000
500
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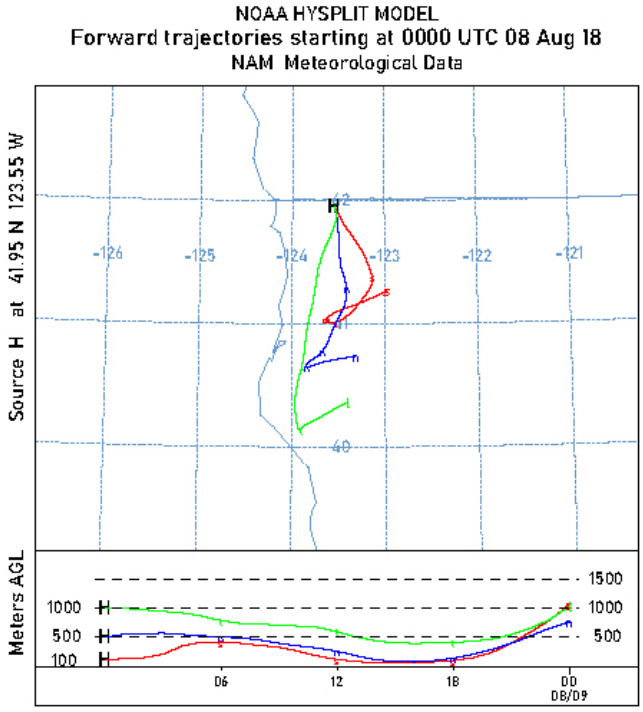
18
DD
DB/DB
D6
12


NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 08 Aug 18
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Meters AGL
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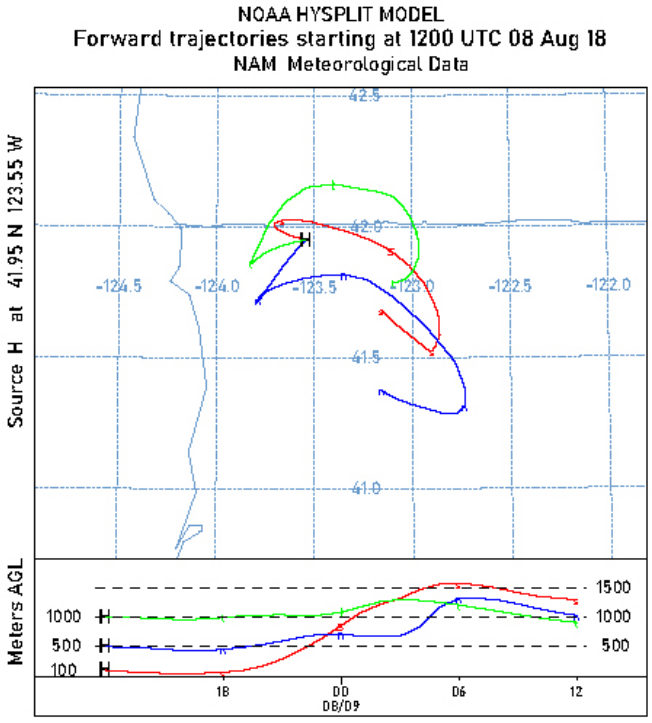
1000
500
100
D6
12
18
DD
DB/D9


NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 08 Aug 18
NAM Meteorological Data
Source H at 41.95 N 123.55 W
Meters AGL
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1000
500
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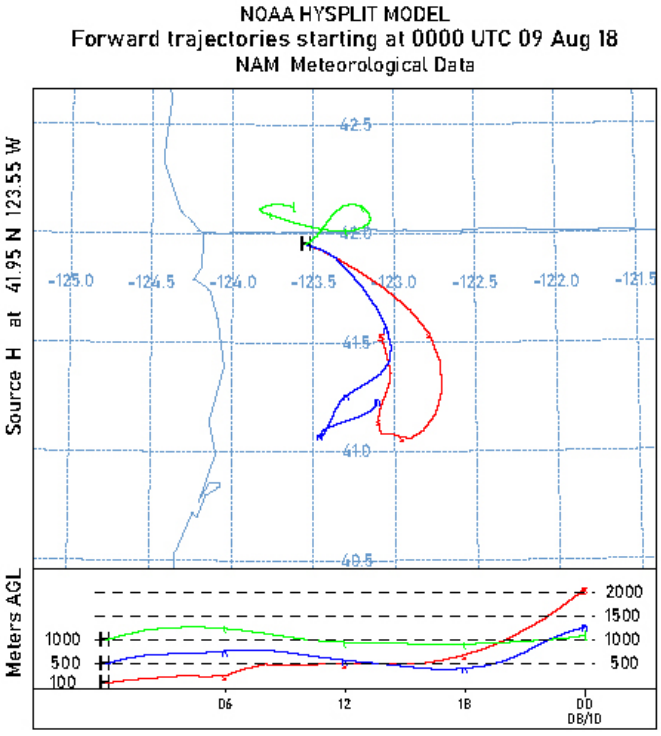
DD
DB/D9
D6
12


NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 09 Aug 18
NAM Meteorological Data
Source H at 41.95 N 123.55 W
Meters AGL
2000
1500
1000
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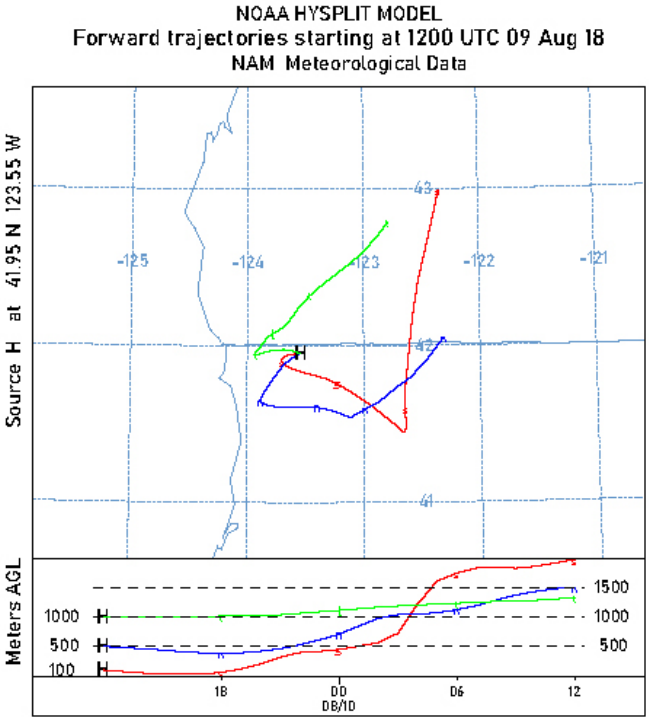
D6
12
18
DD
DB/10


NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 09 Aug 18
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Source H at 41.95 N 123.55 W
Meters AGL
1500
1000
500
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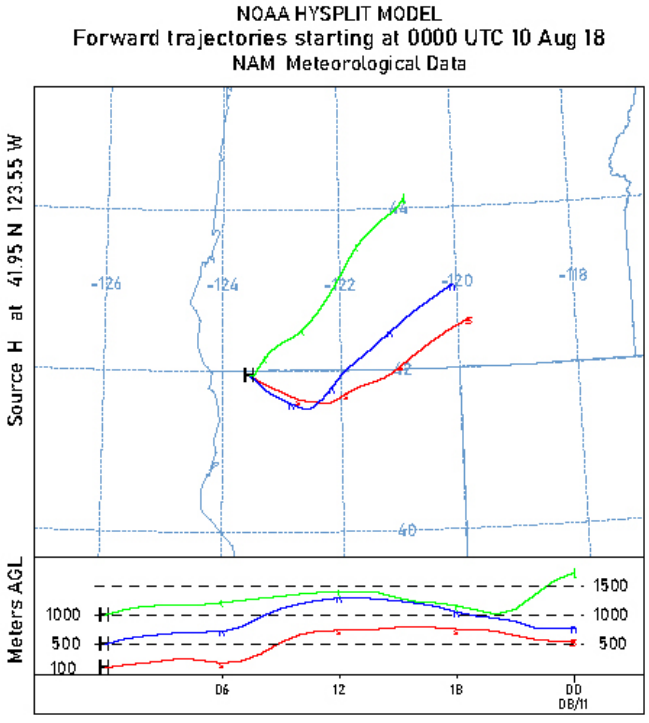
18
DD
DB/10
D6
12


NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 10 Aug 18
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Meters AGL
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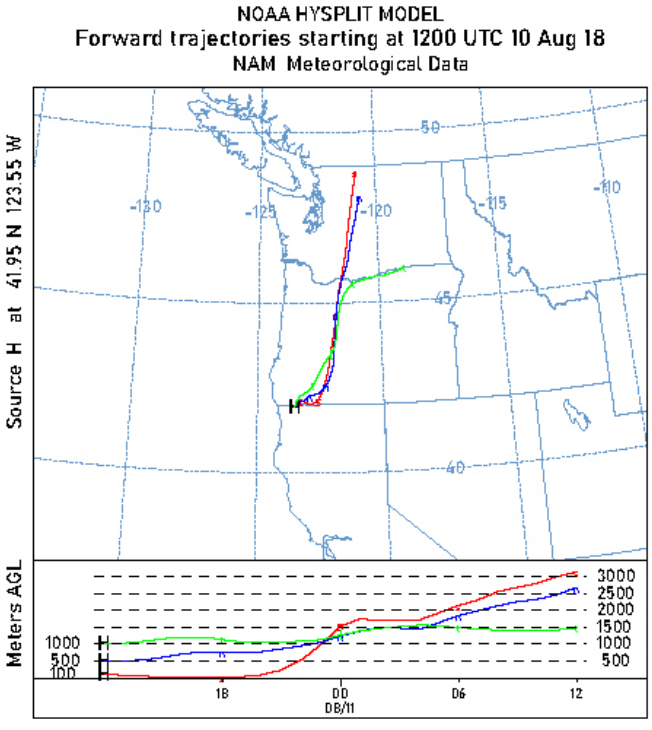
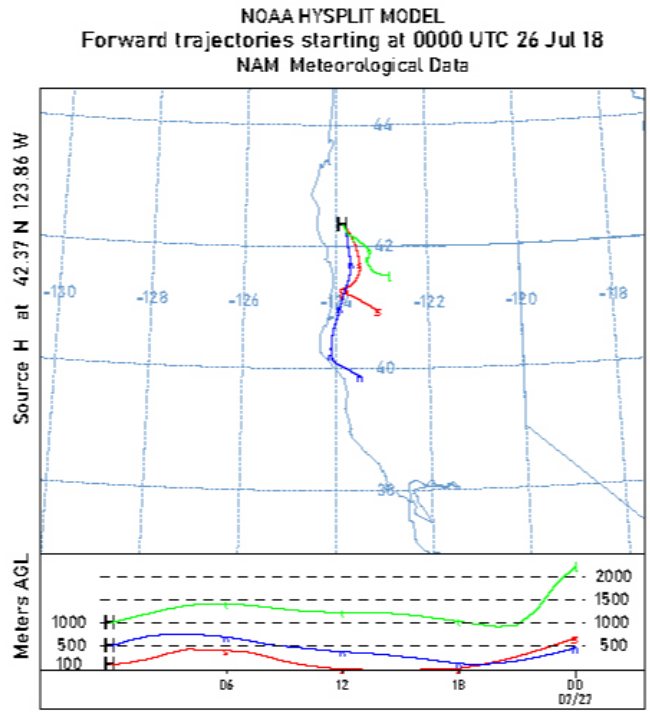
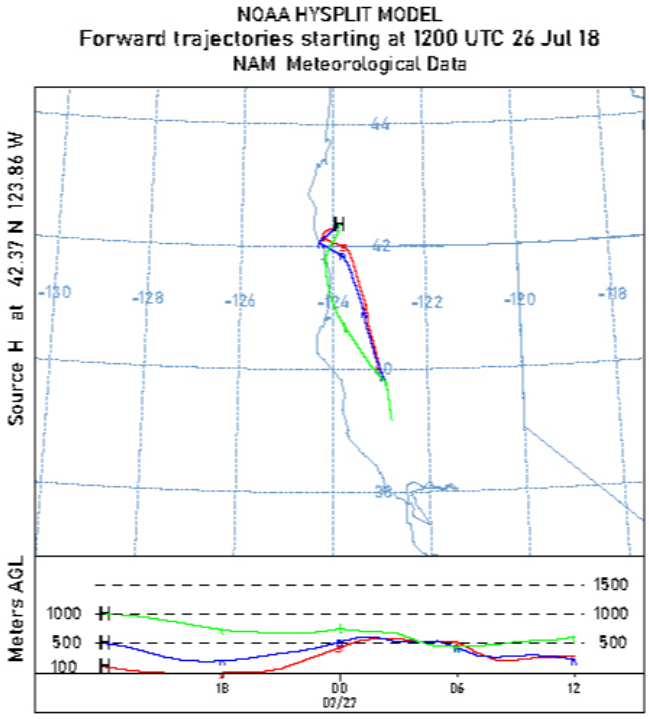
D6
12
18
DD
DB/11

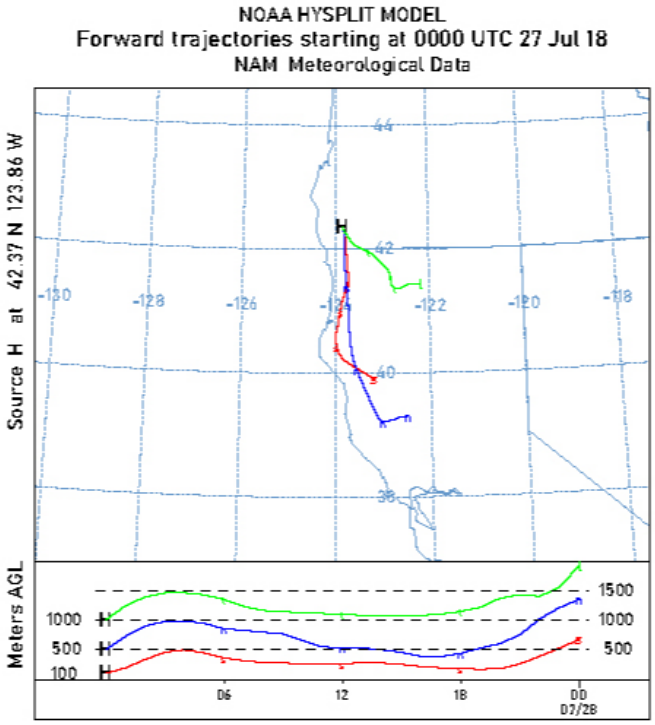

NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 10 Aug 18
NAM Meteorological Data
Source H at 41.95 N 123.55 W
Meters AGL
3000
2500
2000
1500
1000
500
100
18
DD
DB/11
D6
12

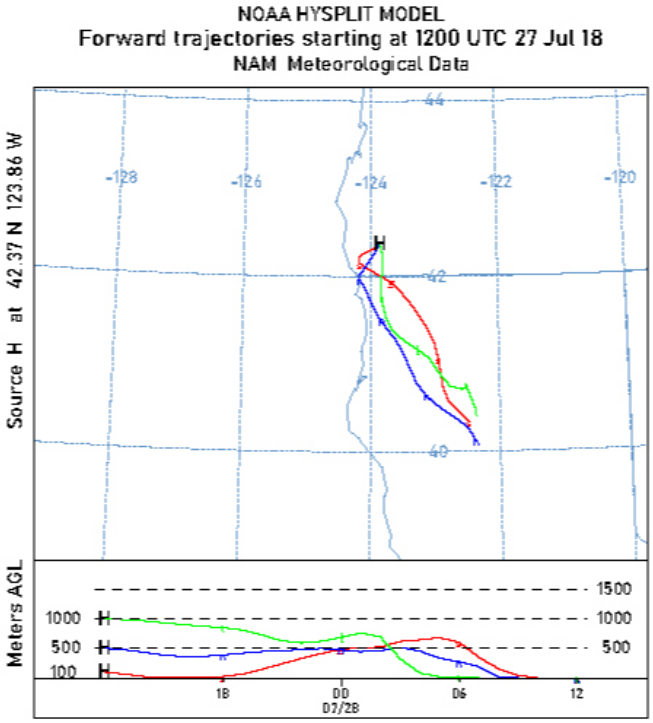
3. Klondike Fire

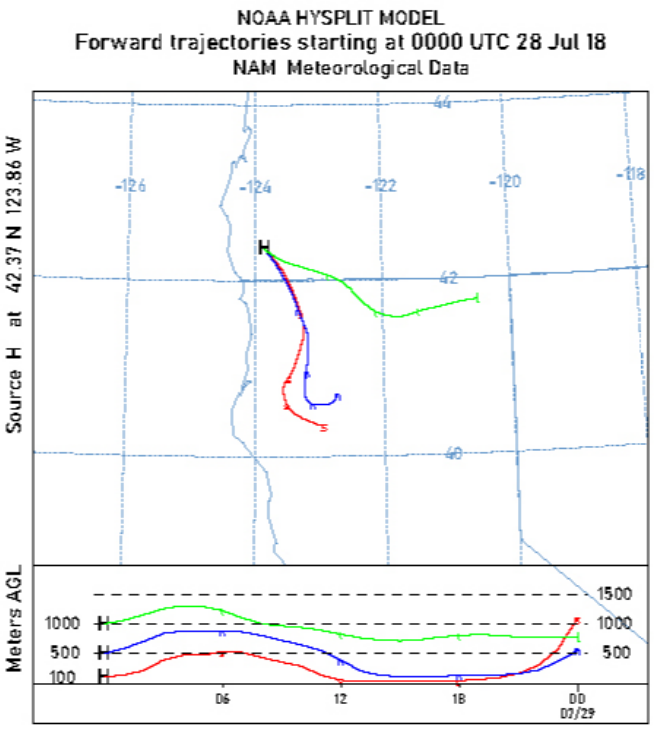
Fire	Start	Containment	Latitude	Longitude	Total Acres
Klondike	7/16/18	11/28/18	42.369	-123.86	175,528










NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 28 Jul 18
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Meters AGL
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1000
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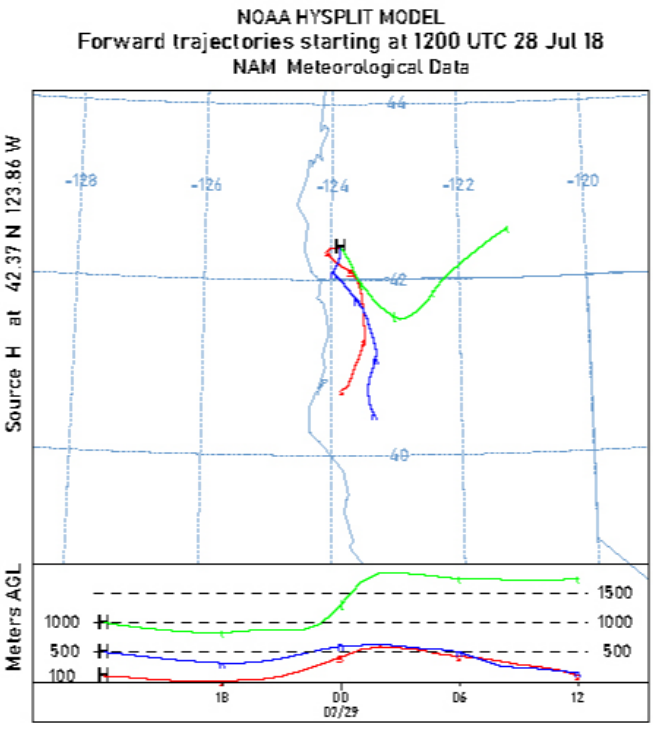
100
D6
12
18
DD
07/29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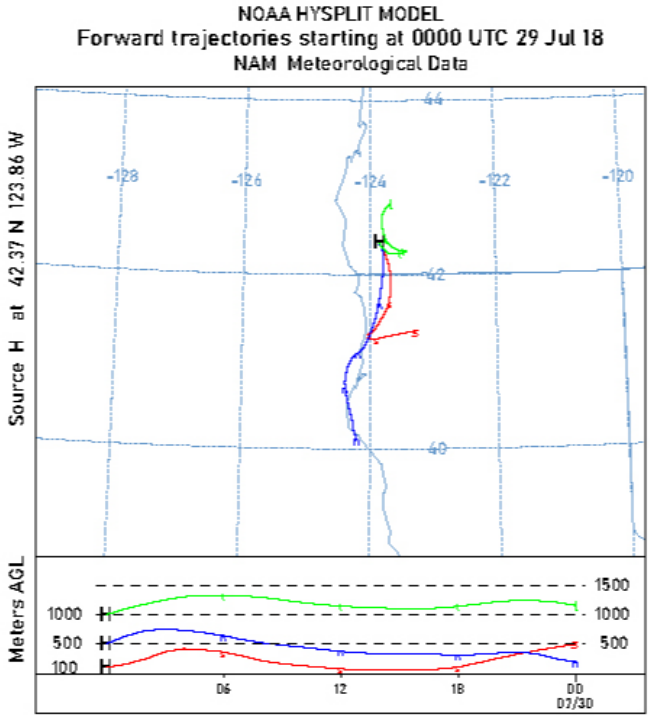
DD
07/29
D6
12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D6
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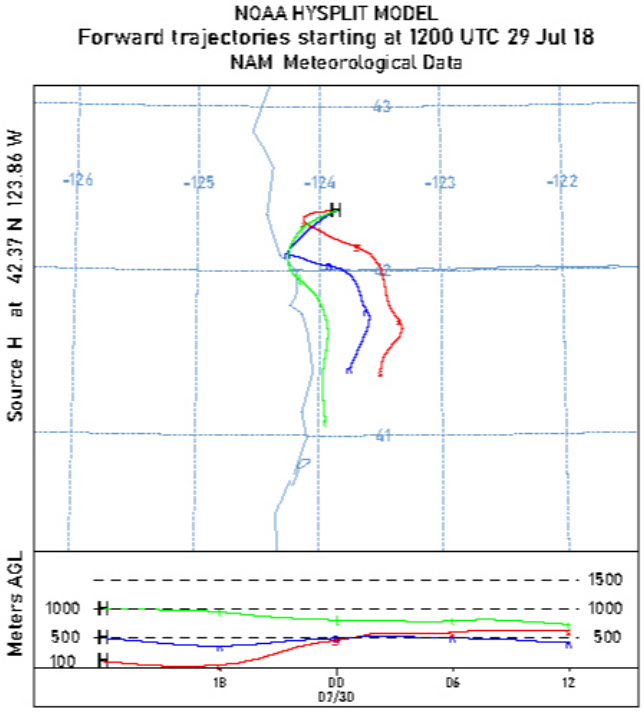
DD
07/30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Forward trajectories starting at 1200 UTC 29 Jul 18
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07/30
D6
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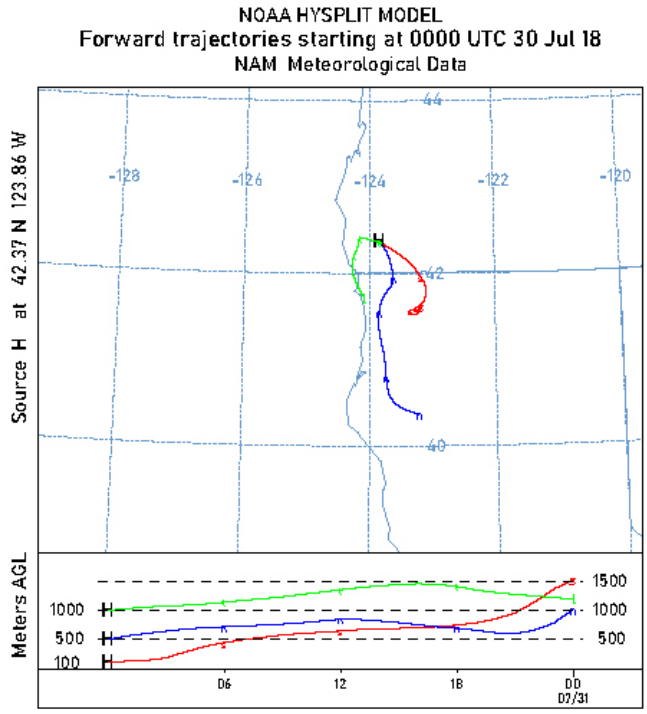
NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 30 Jul 18
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Meters AGL
1500
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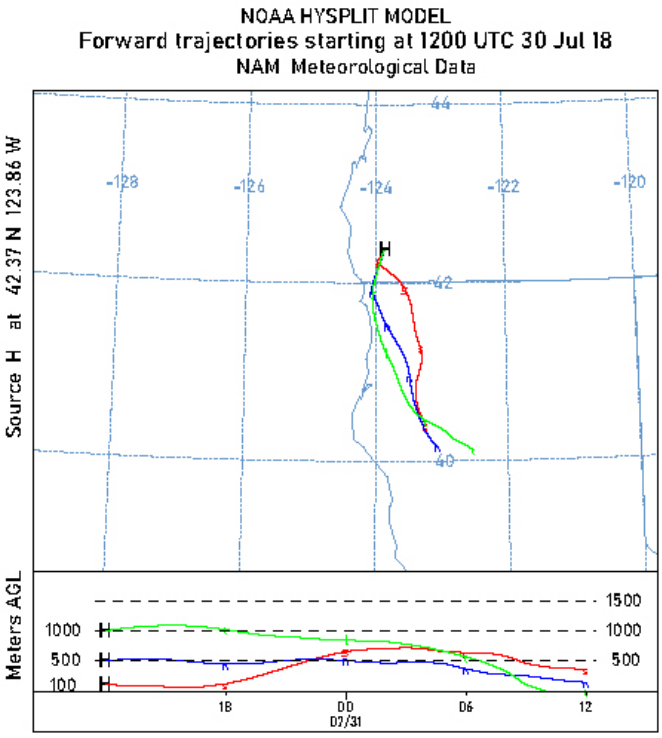
D6
12
18
DD
D7/31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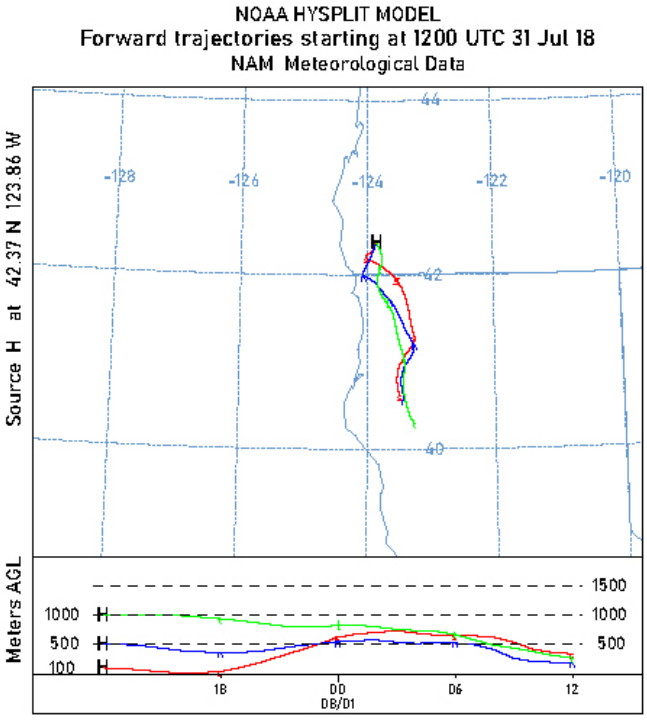
DD
D7/31
D6
12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Forward trajectories starting at 1200 UTC 31 Jul 18
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Meters AGL
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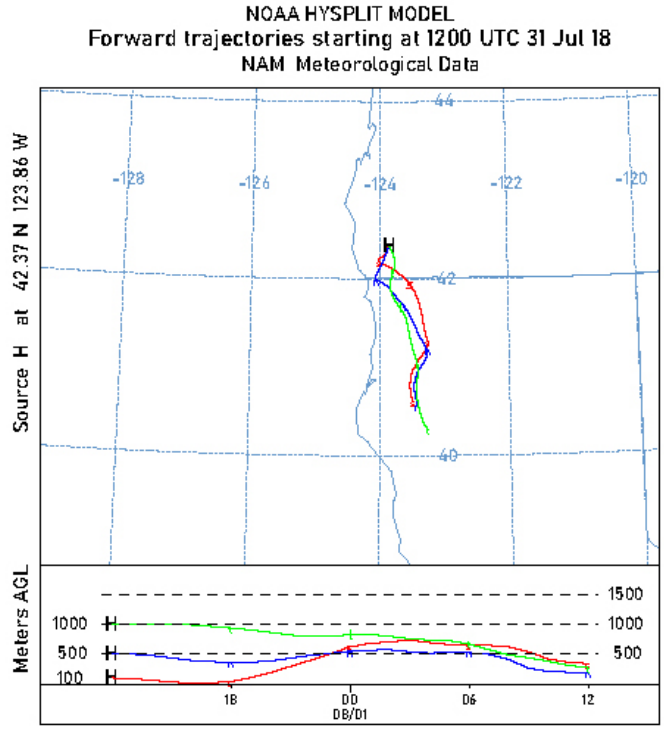
DD
D8/D1
D6
12


NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 31 Jul 18
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Meters AGL
1500
1000
500
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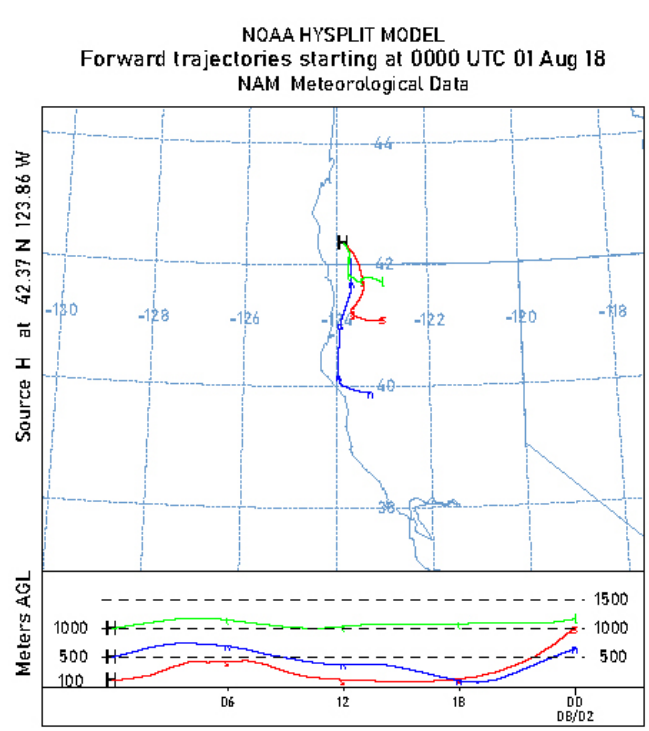
DD
D8/D1
D6
12


NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 01 Aug 18
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Meters AGL
1500
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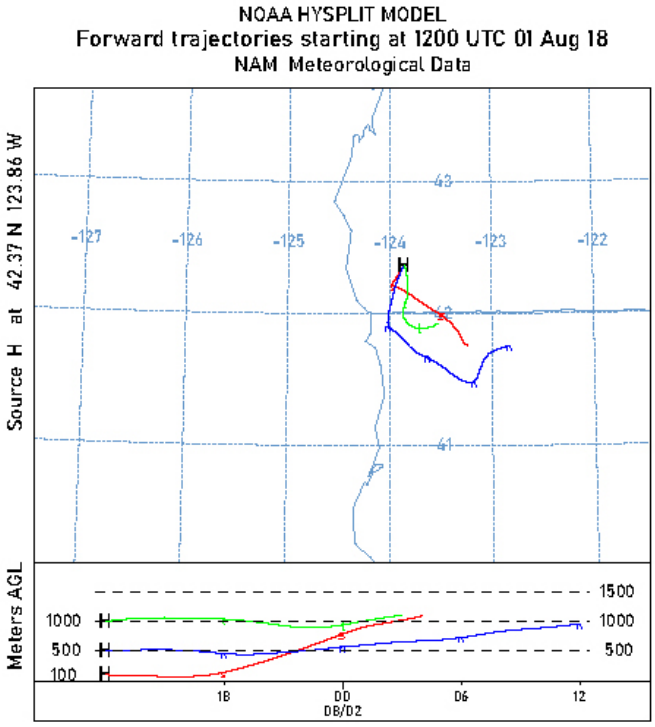
100
D6
12
18
DD
DB/D2


NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 01 Aug 18
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Meters AGL
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500
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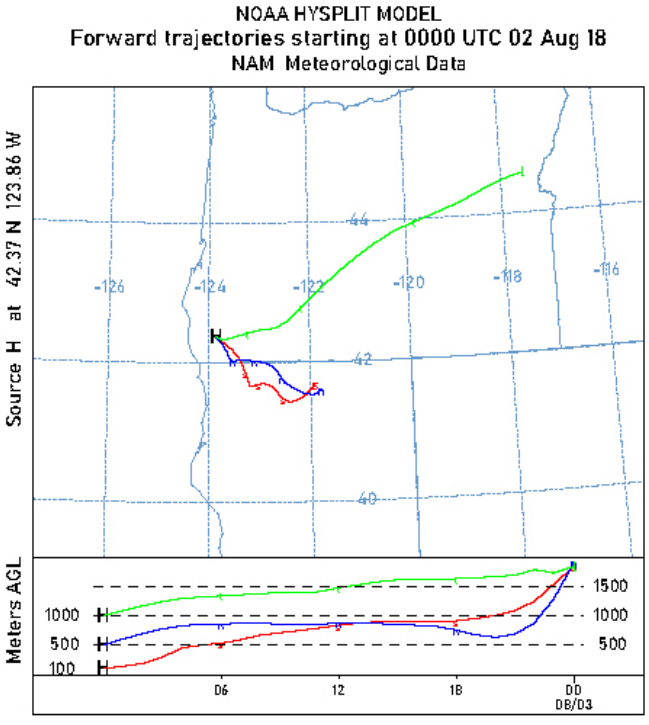
DD
DB/D2
D6
12


NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 02 Aug 18
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D6
12
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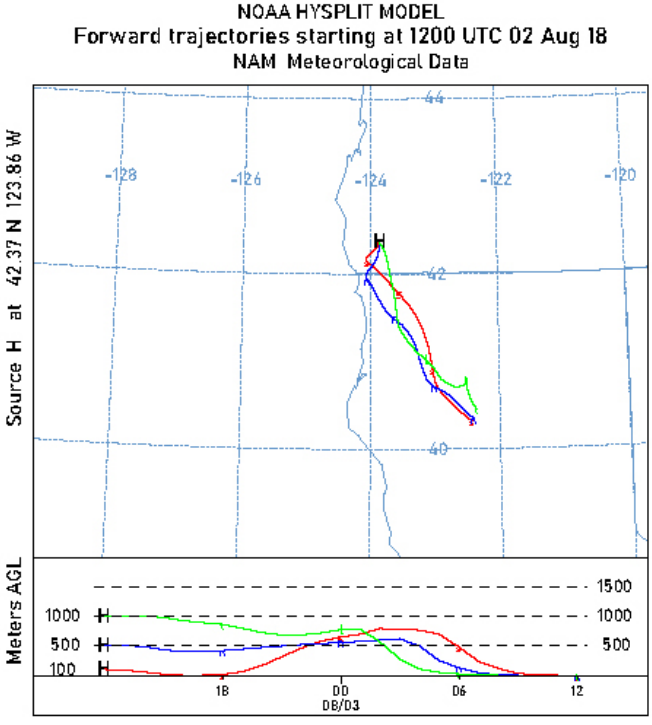
DD
DB/D3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Forward trajectories starting at 1200 UTC 02 Aug 18
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DD
DB/D3
D6
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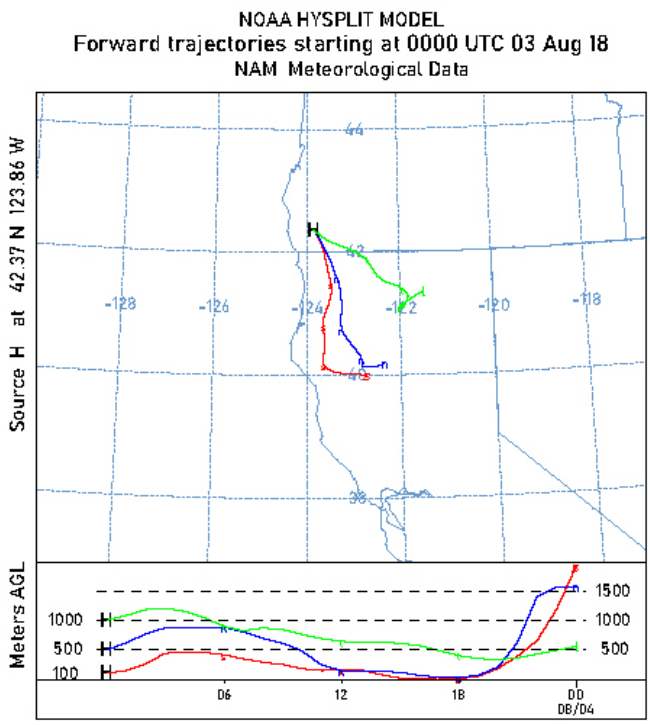
NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 03 Aug 18
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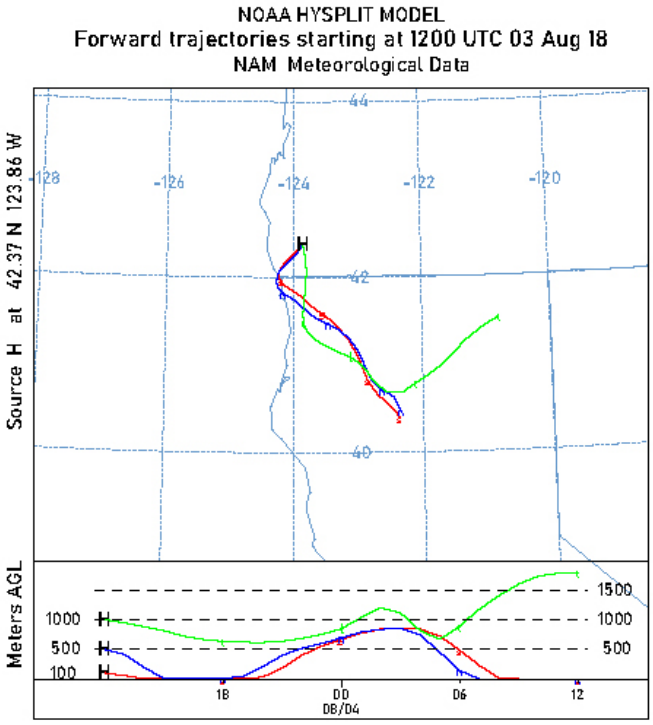
DD
DB/D4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Forward trajectories starting at 1200 UTC 03 Aug 18
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Meters AGL
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500
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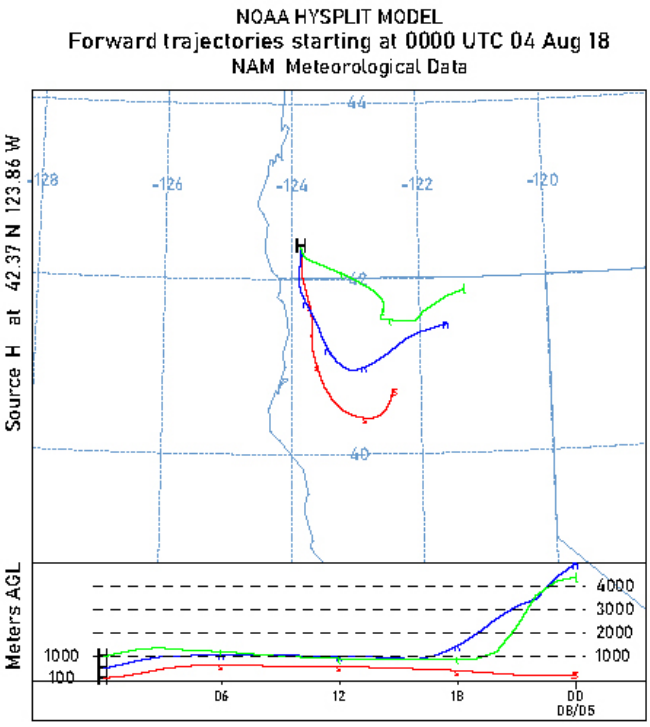
DD
DB/D4
D6
12


NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 04 Aug 18
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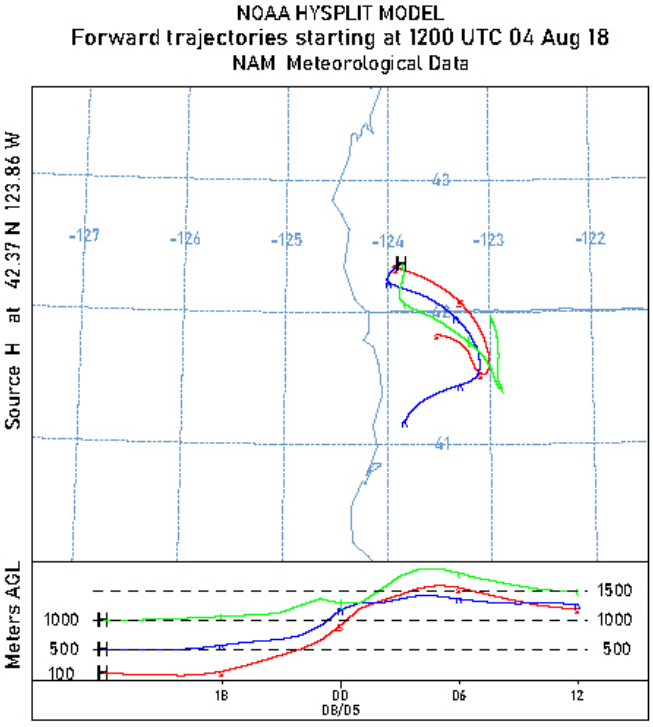
Meters AGL
4000
3000
2000
1000
100
D6
12
18
DD
DB/D5


NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 04 Aug 18
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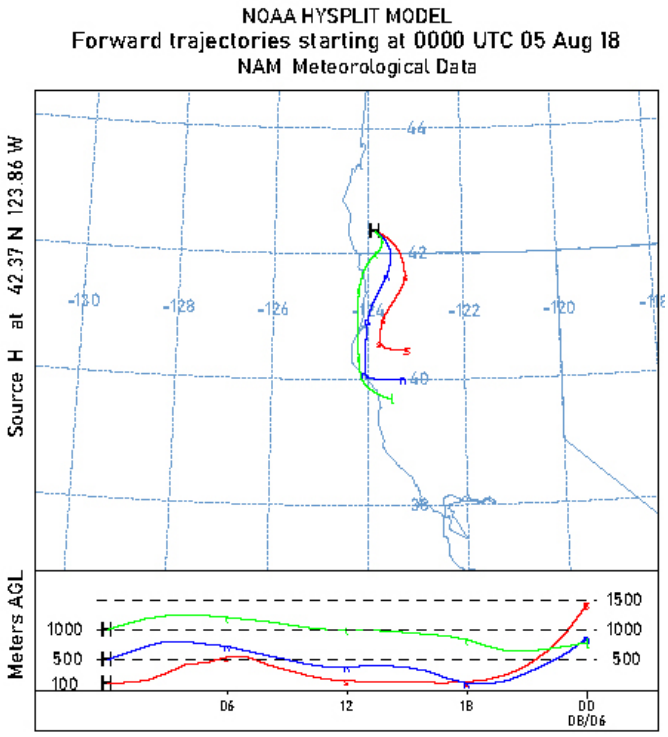
DB/D5
D6
12


NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 05 Aug 18
NAM Meteorological Data
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Meters AGL
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1000
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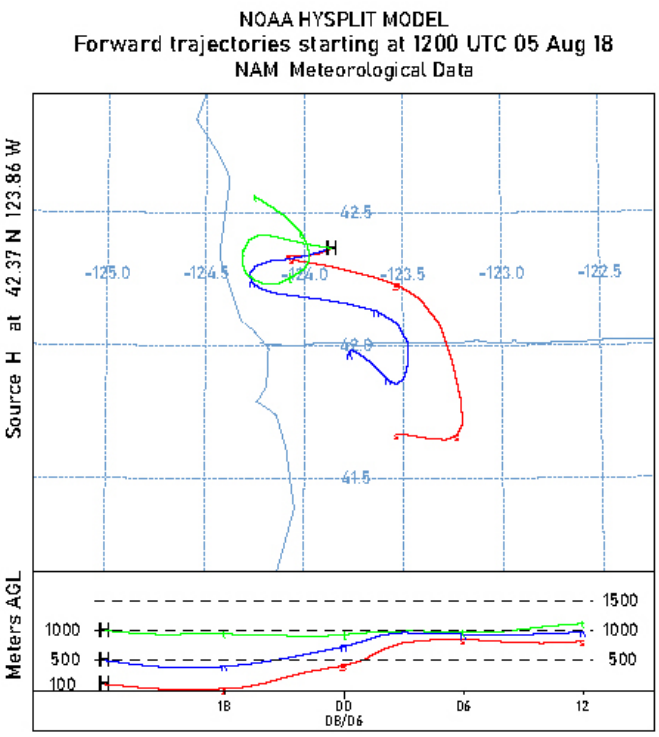
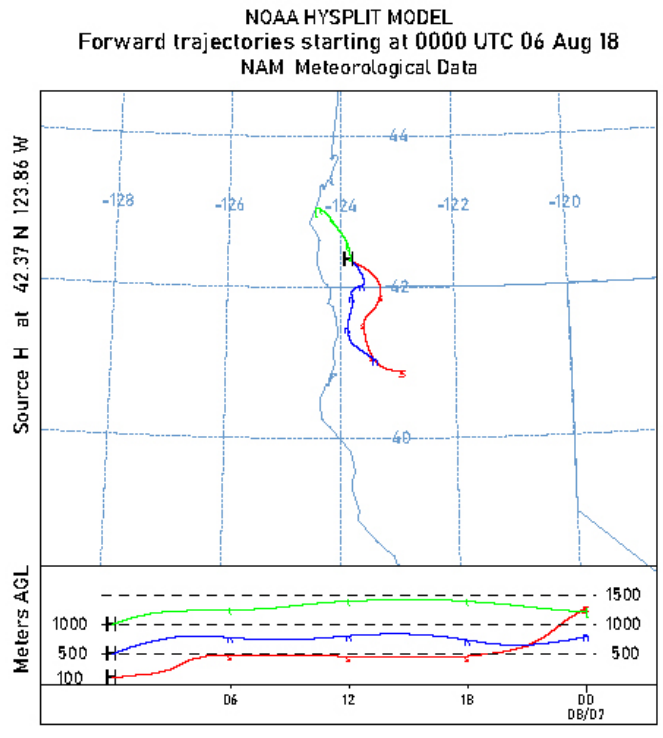
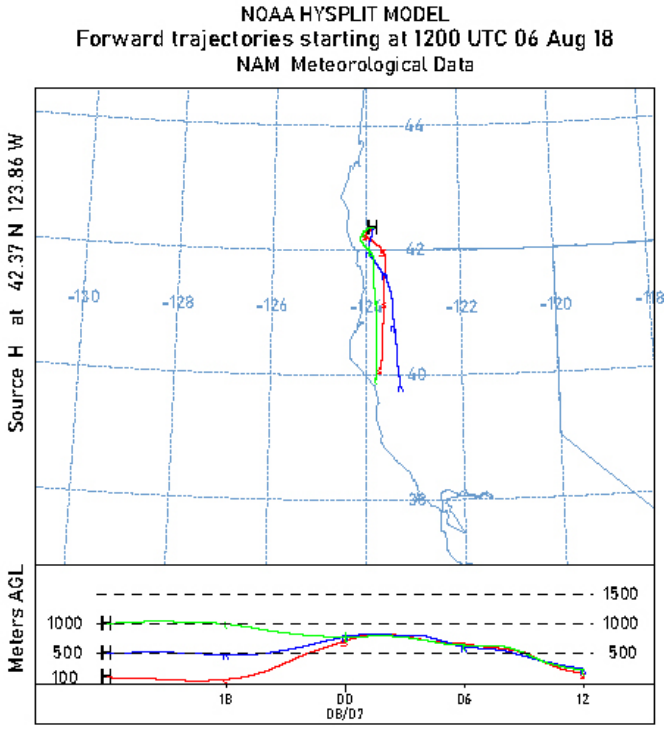
D6
12
18
DD
DB/D6


NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 05 Aug 18
NAM Meteorological Data
Source H at 42.37 N 123.86 W
Meters AGL
1500
1000
500
100
18
DD
DB/D6
D6
12


NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 06 Aug 18
NAM Meteorological Data
Source H at 42.37 N 123.86 W
Meters AGL
1500
1000
500
100
D6
12
18
DD
DB/D7


NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 06 Aug 18
NAM Meteorological Data
Source H at 42.37 N 123.86 W
Meters AGL
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500
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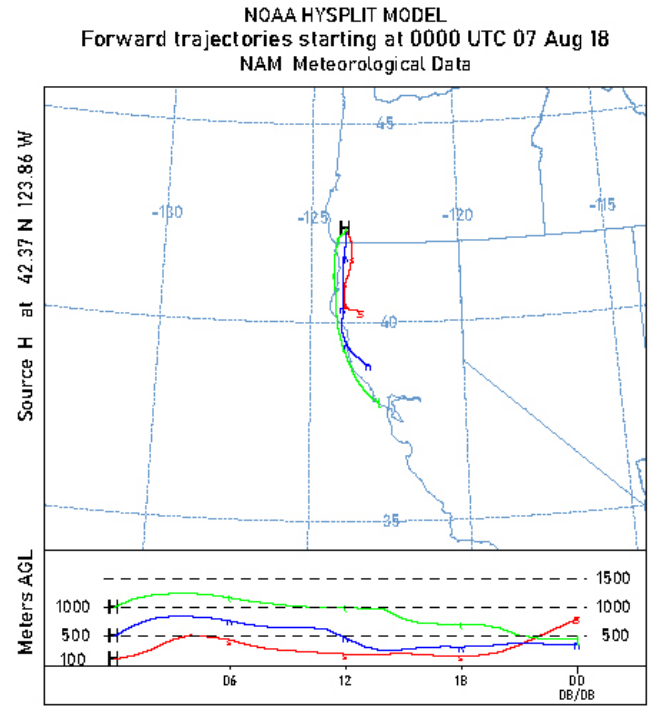
DD
DB/D7
D6
12


NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 07 Aug 18
NAM Meteorological Data
Source H at 42.37 N 123.86 W
Meters AGL
1500
1000
500
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D6
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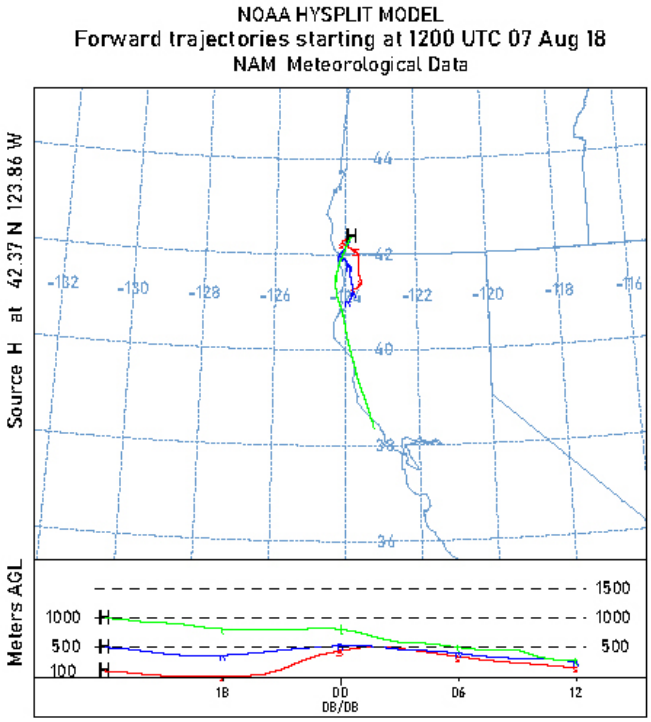
18
DD
DB/DB


NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 07 Aug 18
NAM Meteorological Data
Source H at 42.37 N 123.86 W
Meters AGL
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1000
500
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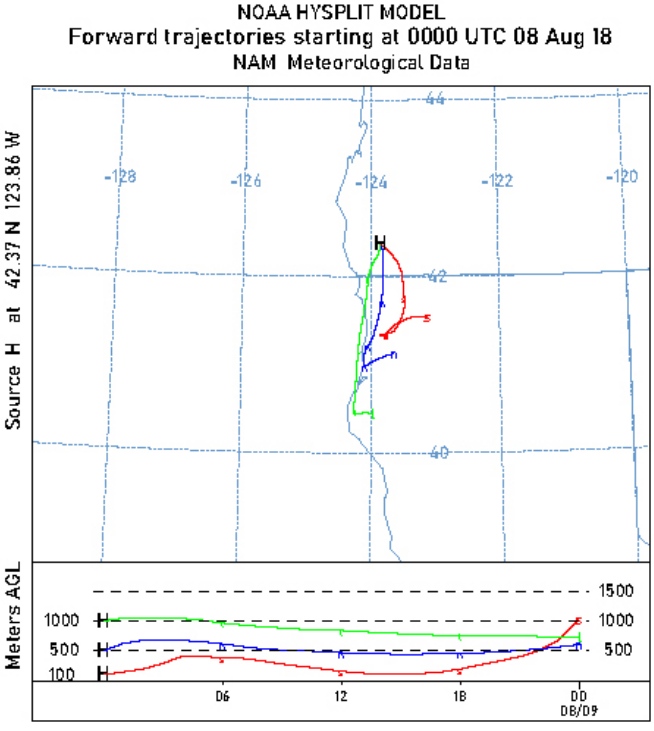
DD
DB/DB
D6
12


NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 08 Aug 18
NAM Meteorological Data
Source H at 42.37 N 123.86 W
Meters AGL
1500
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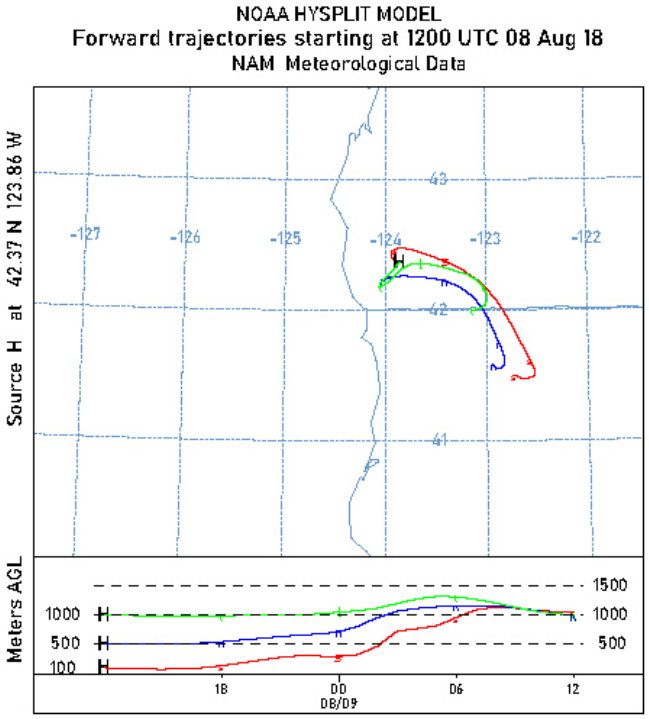
500
100
D6
12
18
DD
DB/D9


NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 08 Aug 18
NAM Meteorological Data
Source H at 42.37 N 123.86 W
Meters AGL
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1000
500
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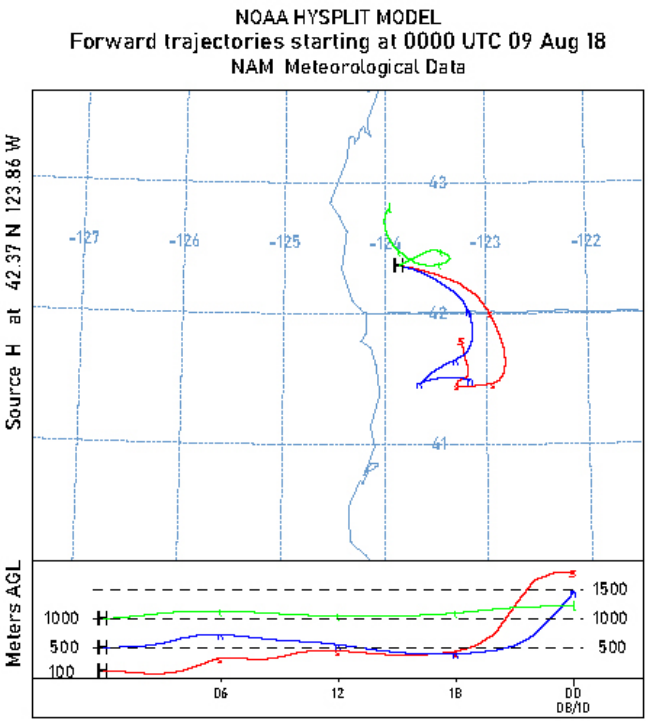
DD
DB/D9
D6
12


NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 09 Aug 18
NAM Meteorological Data
Source H at 42.37 N 123.86 W
Meters AGL
1500
1000
500
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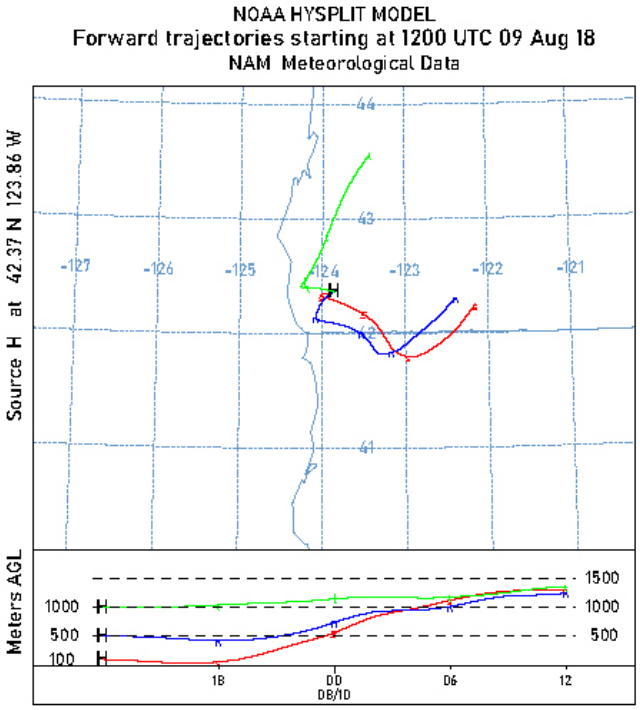
D6
12
18
DD
DB/10


NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 09 Aug 18
NAM Meteorological Data
Source H at 42.37 N 123.86 W
Meters AGL
1500
1000
500
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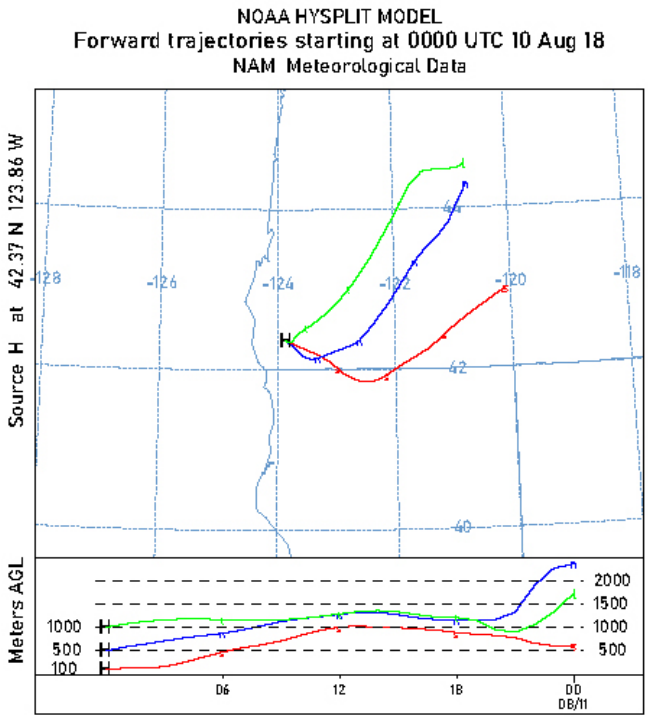
18
DD
DB/10
D6
12


NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 10 Aug 18
NAM Meteorological Data
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Meters AGL
2000
1500
1000
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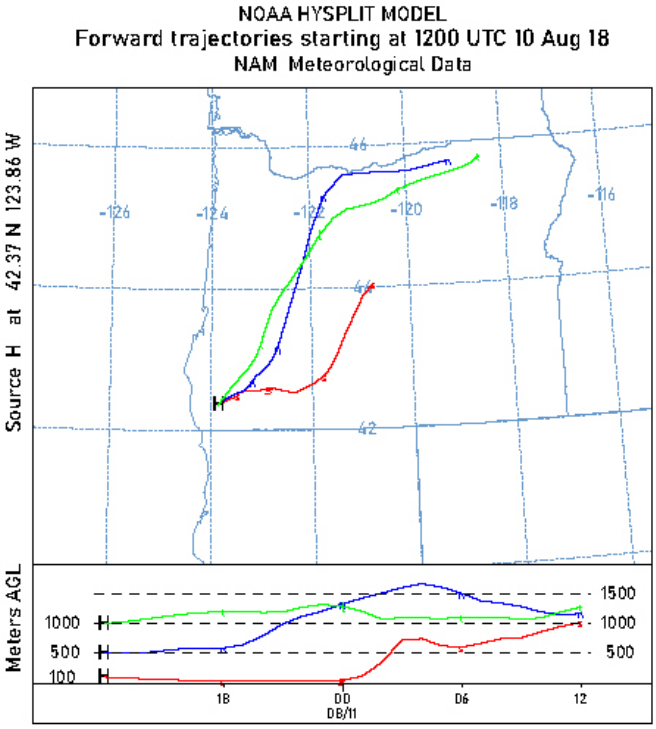
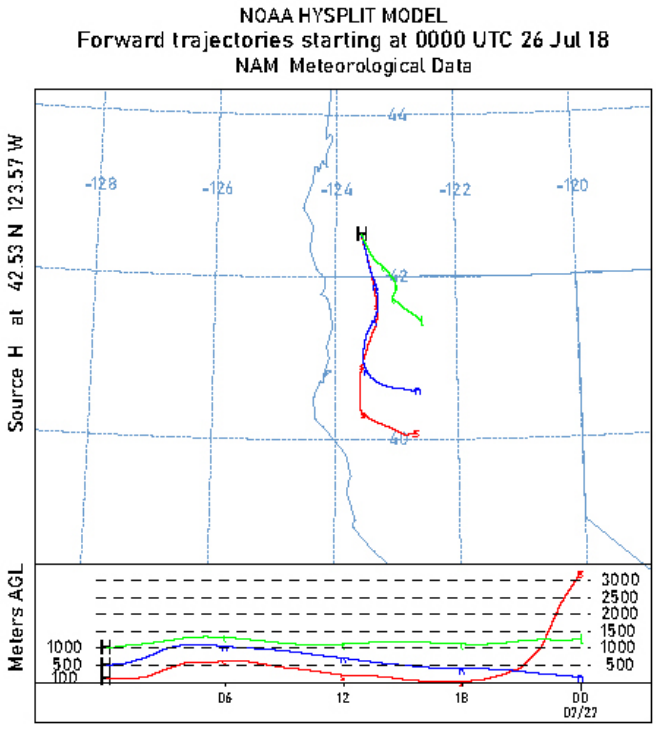
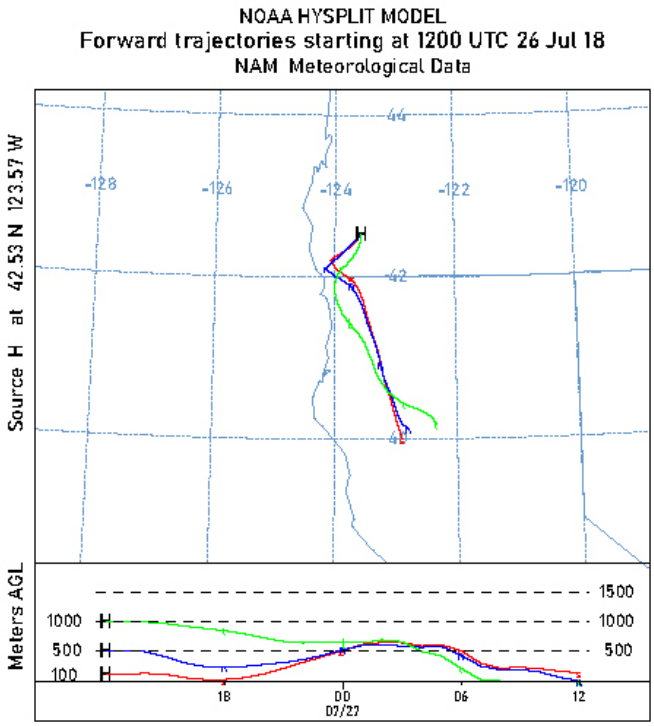
D6
12
18
DD
DB/11

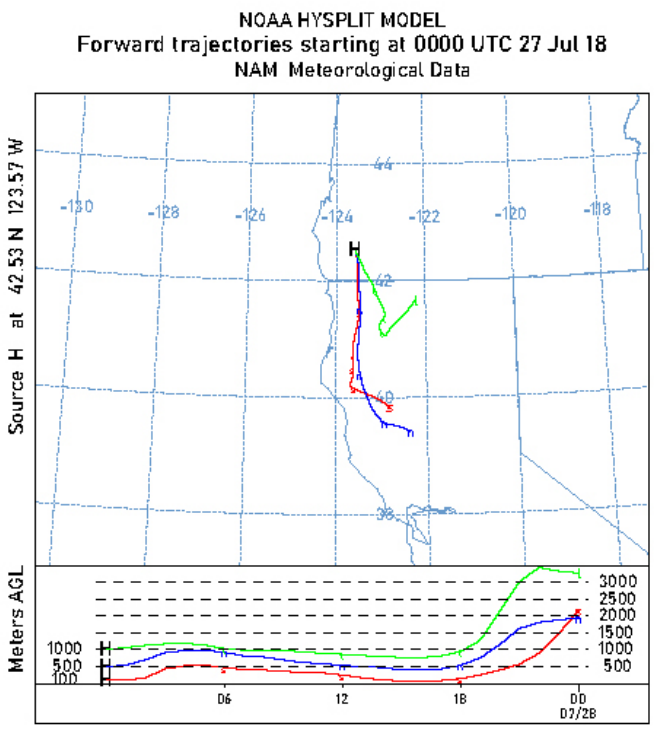

NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 10 Aug 18
NAM Meteorological Data
Source H at 42.37 N 123.86 W
Meters AGL
1500
1000
500
100
18
DD
DB/11
D6
12

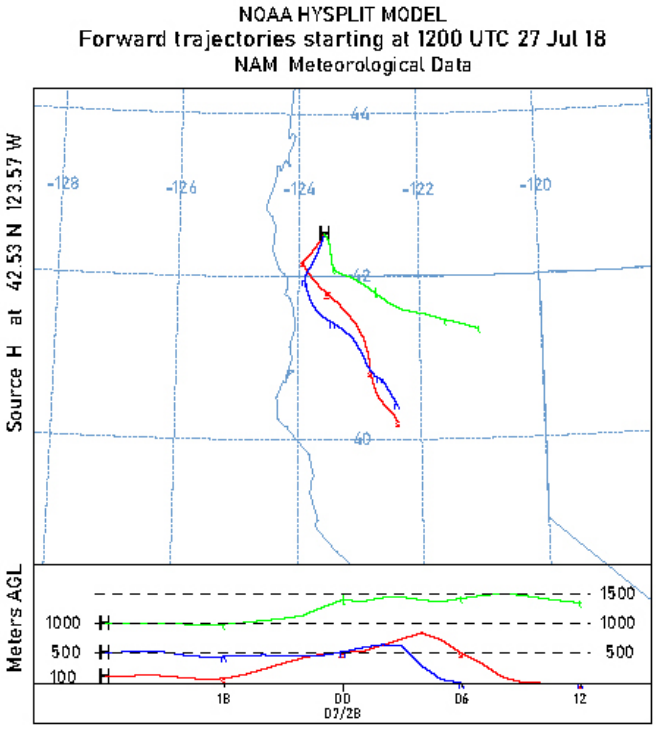
4. Taylor Creek Fire

Fire	Start	Containment	Latitude	Longitude	Total Acres
Taylor Creek	7/16/18	10/11/18	42.528	-123.571	52,389






NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 27 Jul 18
NAM Meteorological Data
Source H at 42.53 N 123.57 W
Meters AGL
3000
2500
2000
1500
1000
500
100
D6
12
18
DD
D7/28


NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 27 Jul 18
NAM Meteorological Data
Source H at 42.53 N 123.57 W
Meters AGL
1500
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500
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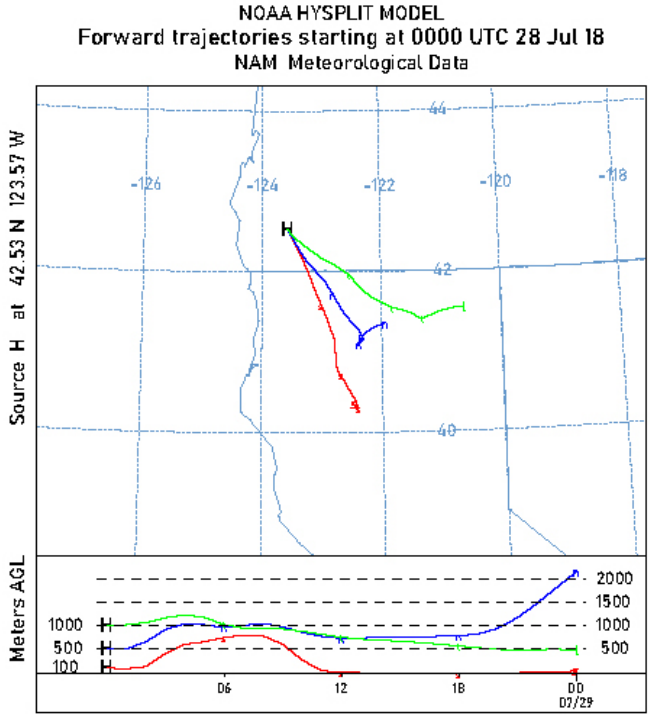
DD
D7/28
D6
12


NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 28 Jul 18
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Source H at 42.53 N 123.57 W
Meters AGL
2000
1500
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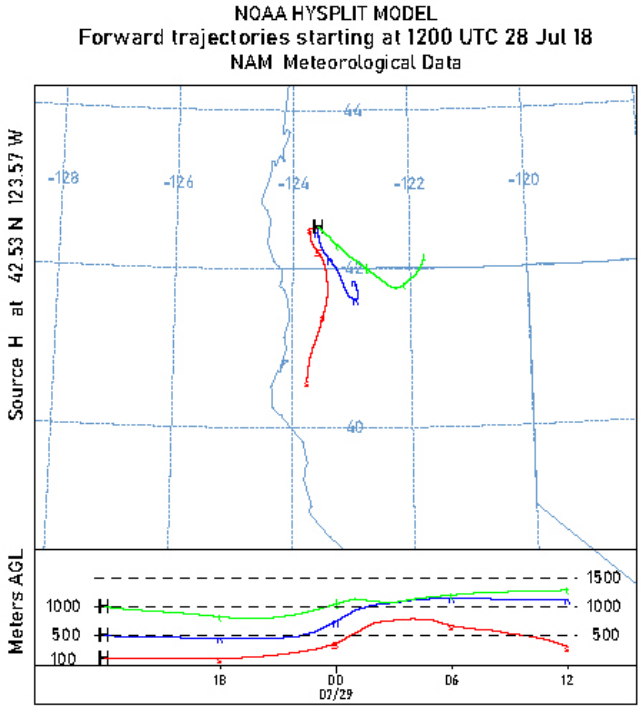
500
100
D6
12
18
DD
D7/29


NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 28 Jul 18
NAM Meteorological Data
Source H at 42.53 N 123.57 W
Meters AGL
1500
1000
500
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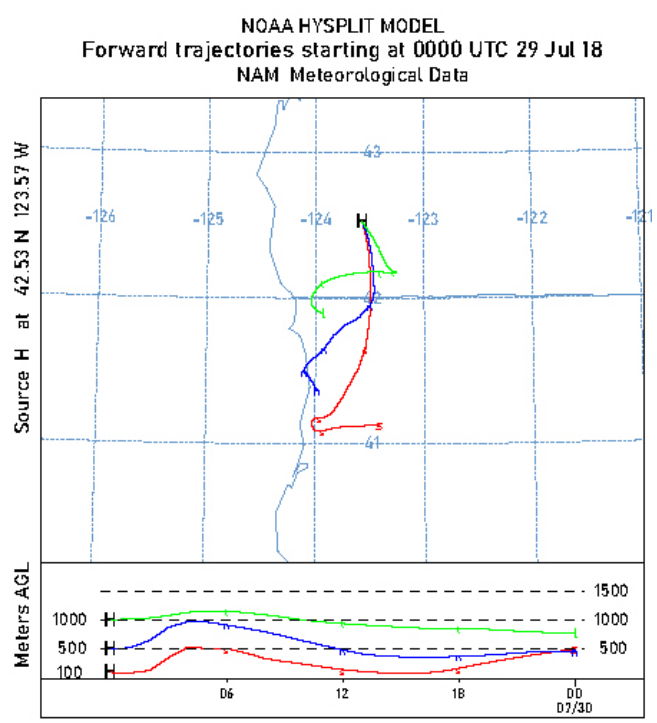
DD
D7/29
D6
12


NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 29 Jul 18
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Meters AGL
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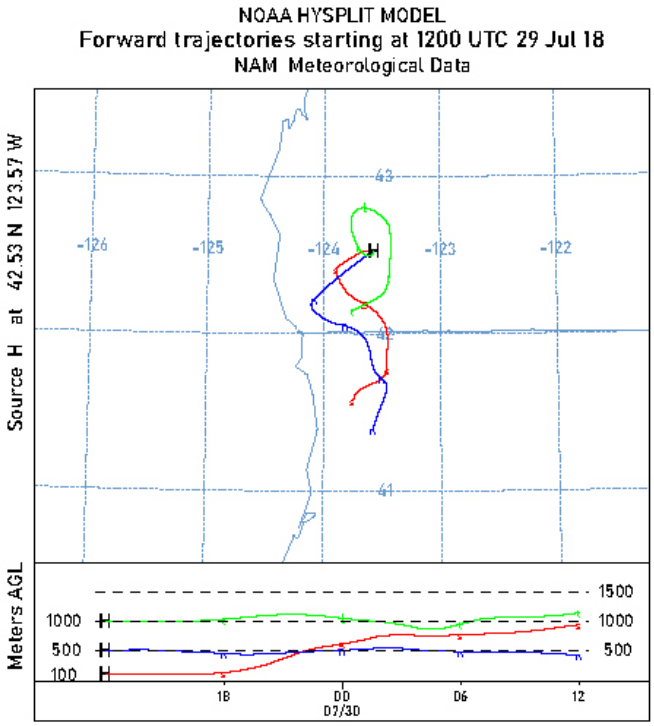
100
D6
12
18
DD
D7/30


NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 29 Jul 18
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Source H at 42.53 N 123.57 W
Meters AGL
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1000
500
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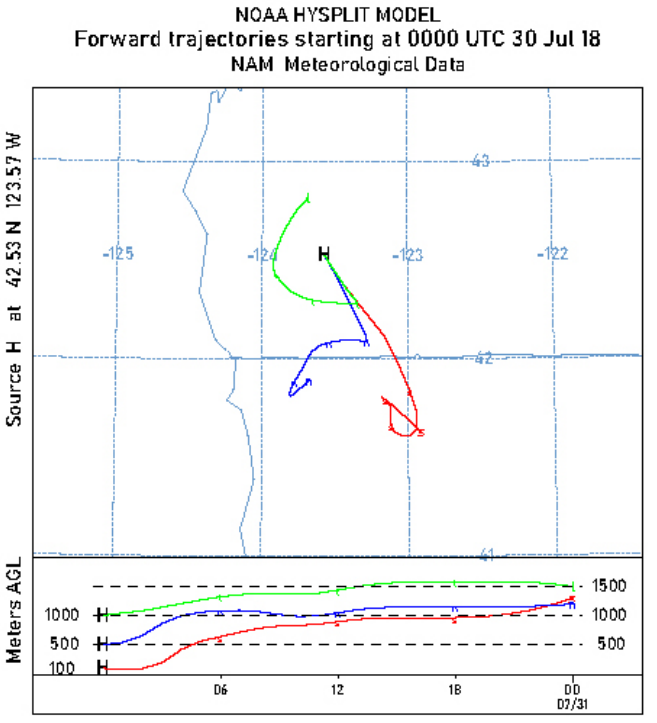
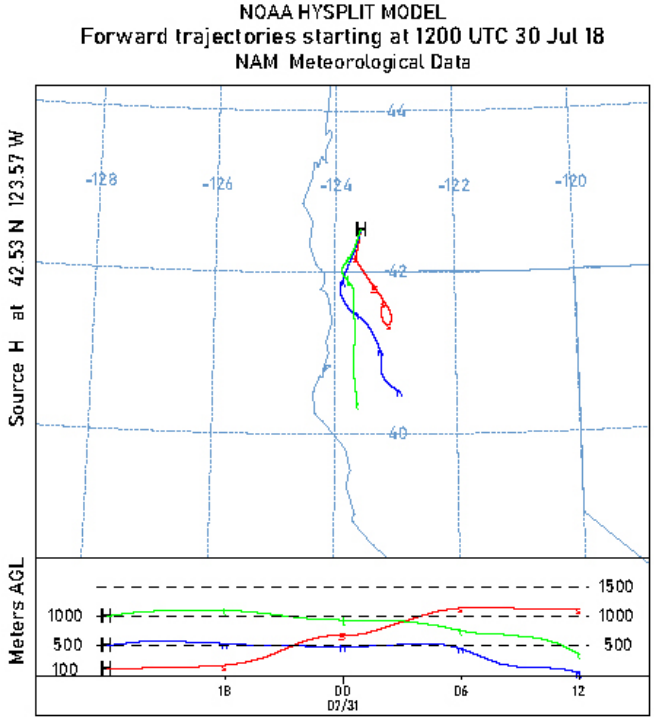
DD
D7/30
D6
12


NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 30 Jul 18
NAM Meteorological Data
Source H at 42.53 N 123.57 W
Meters AGL
1500
1000
500
100
D6
12
18
DD
D7/31


NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 30 Jul 18
NAM Meteorological Data
Source H at 42.53 N 123.57 W
Meters AGL
1500
1000
500
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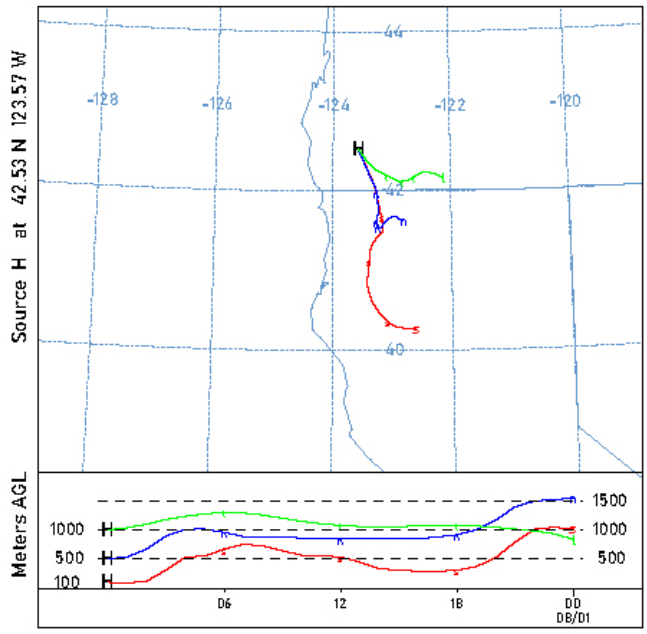
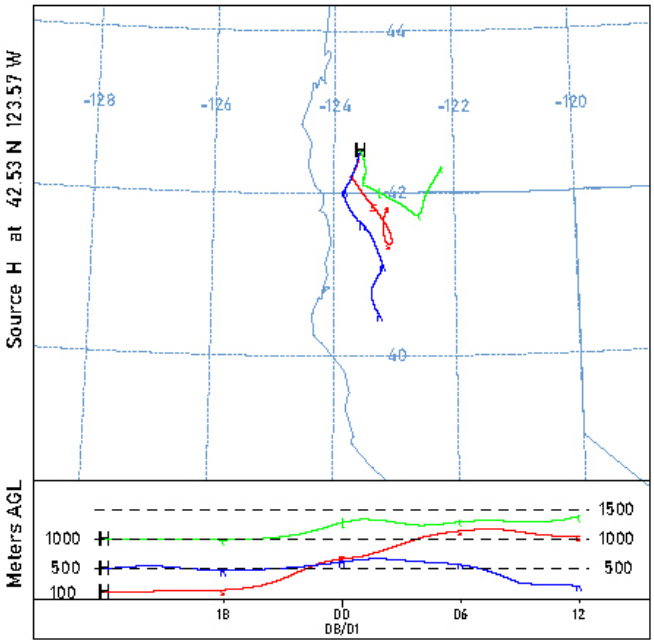
DD
D7/31
D6
12


NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 31 Jul 18
NAM Meteorological Data
Source H at 42.53 N 123.57 W
Meters AGL
1500
1000
500
100
06
12
18
DD
DB/D1


NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 31 Jul 18
NAM Meteorological Data
Source H at 42.53 N 123.57 W
Meters AGL
1500
1000
500
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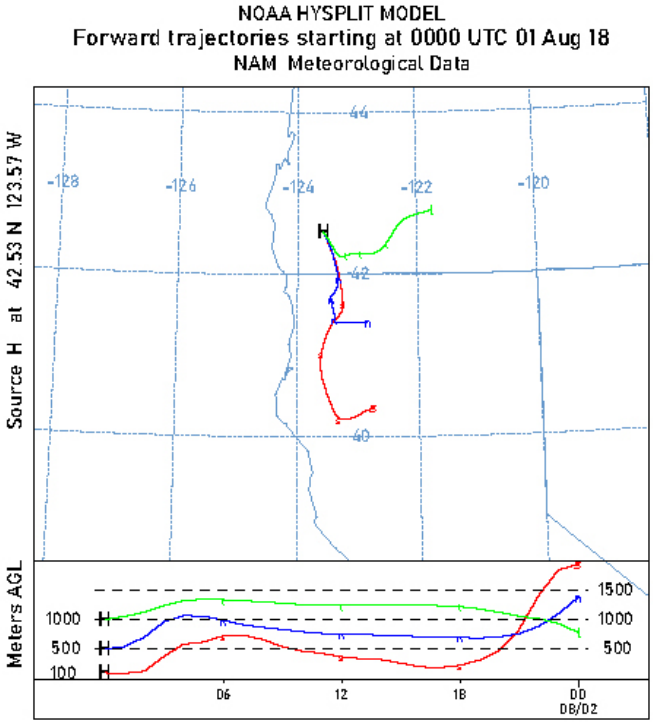
18
DD
06
12
DB/D1


NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 01 Aug 18
NAM Meteorological Data
Source H at 42.53 N 123.57 W
Meters AGL
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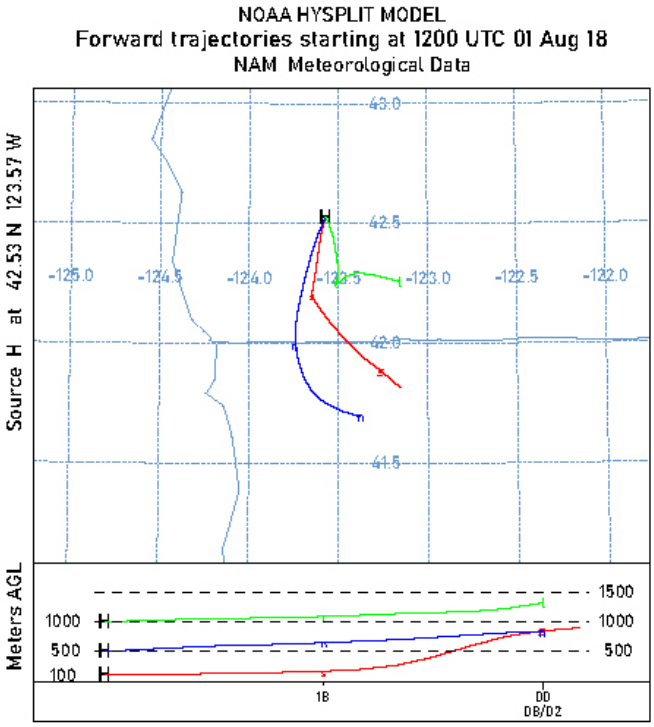
1000
500
100
06
12
18
DD
DB/D2


NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 01 Aug 18
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Meters AGL
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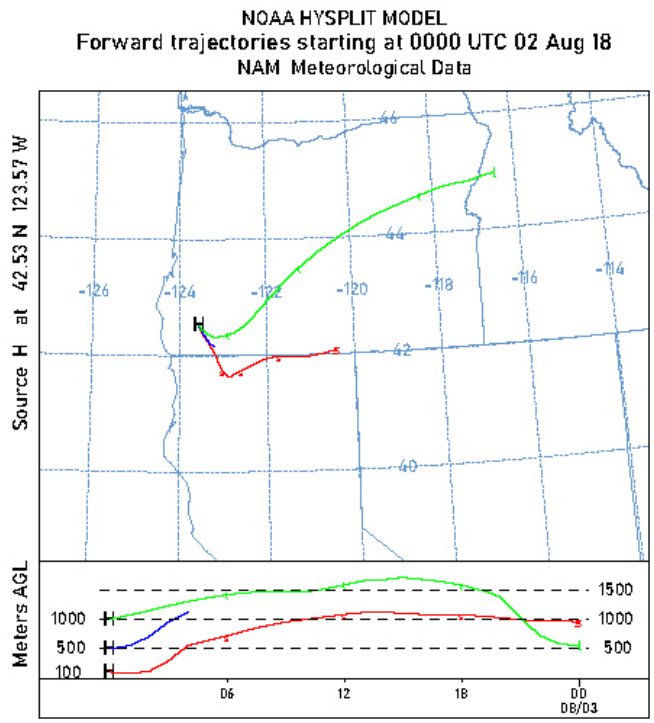
1000
500
100
18
DD
DB/D2


NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 02 Aug 18
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Meters AGL
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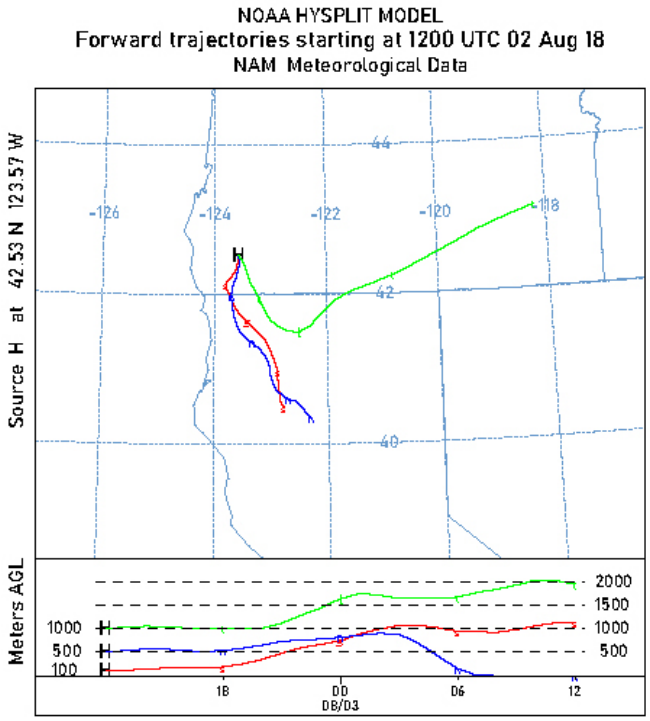
100
D6
12
18
DD
DB/D3


NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 02 Aug 18
NAM Meteorological Data
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Meters AGL
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1500
1000
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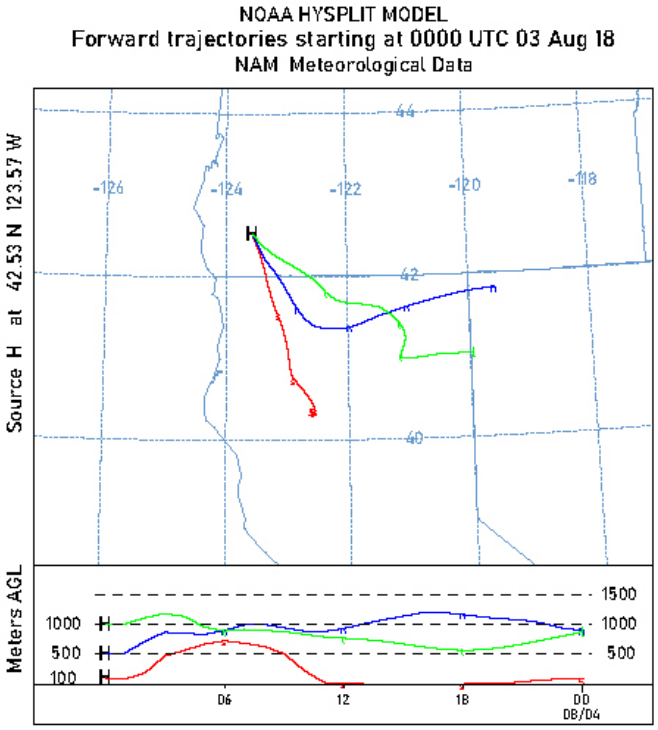
DD
DB/D3
D6
12


NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 03 Aug 18
NAM Meteorological Data
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Meters AGL
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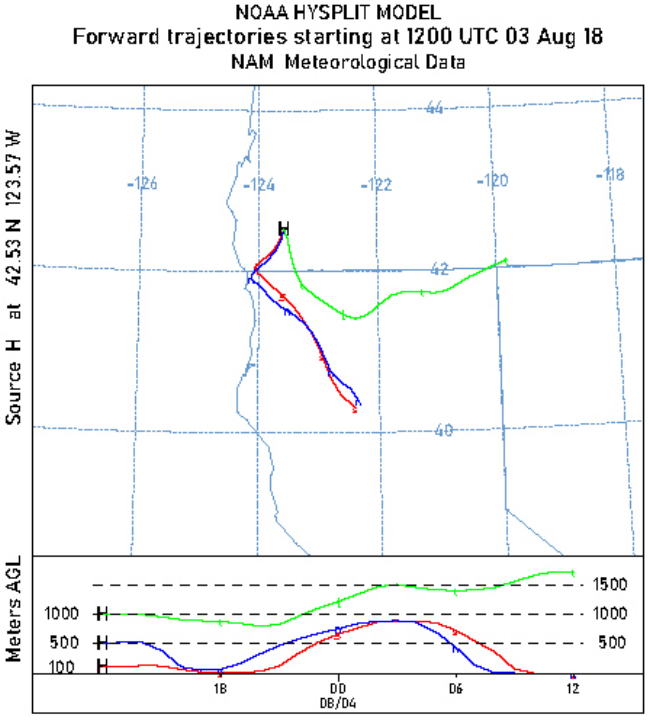
D6
12
18
DD
DB/D4


NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 03 Aug 18
NAM Meteorological Data
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Meters AGL
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1000
500
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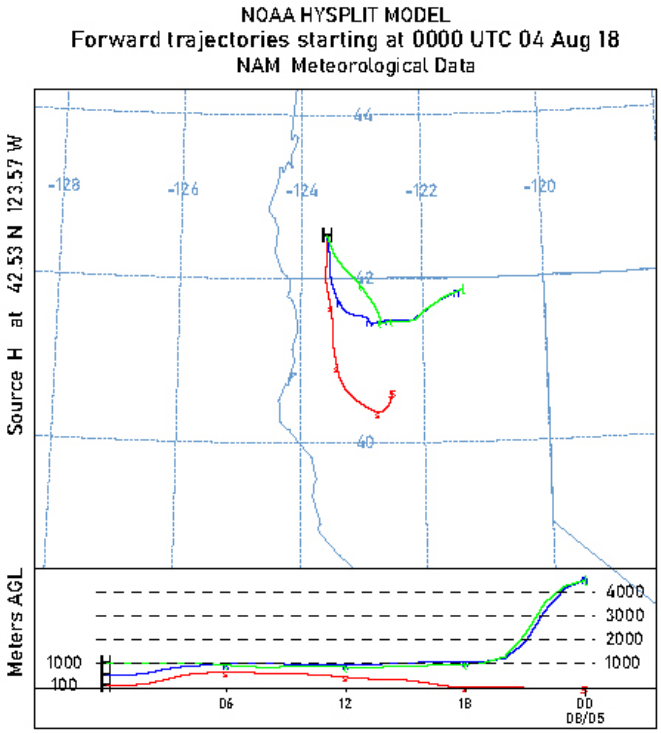
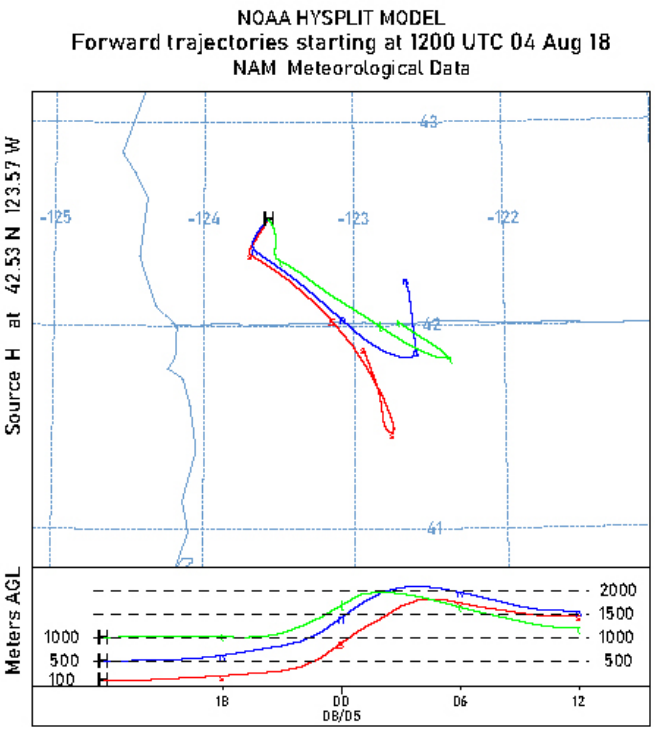
DD
DB/D4
D6
12


NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 04 Aug 18
NAM Meteorological Data
Source H at 42.53 N 123.57 W
Meters AGL
4000
3000
2000
1000
1000
100
D6
12
18
DD
DB/D5


NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 04 Aug 18
NAM Meteorological Data
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Meters AGL
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500
100
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DB/D5
D6
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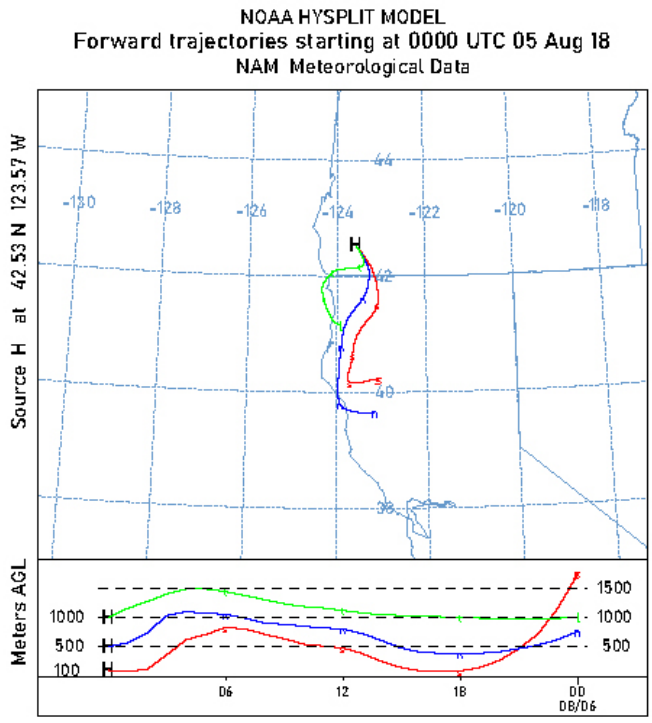
NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 05 Aug 18
NAM Meteorological Data
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Meters AGL
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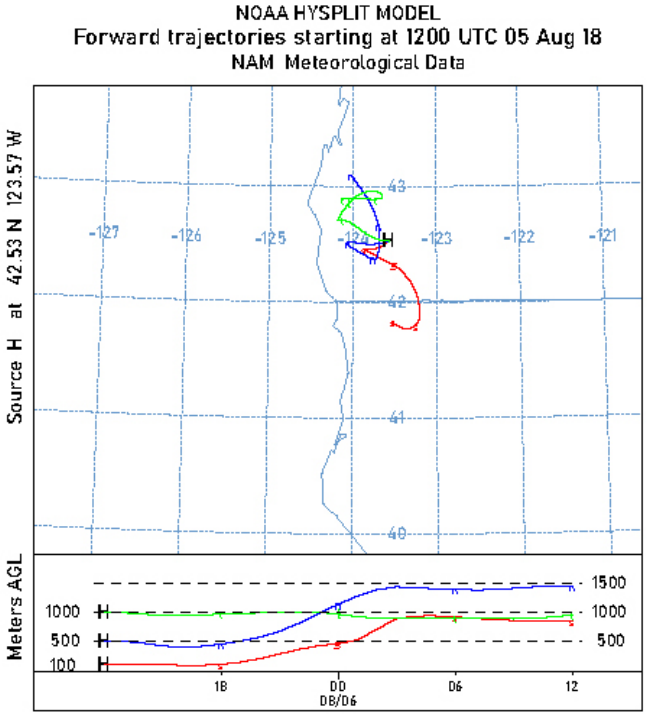
1000
500
1000
500
100
D6
12
18
DD
DB/D6


NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 05 Aug 18
NAM Meteorological Data
Source H at 42.53 N 123.57 W
Meters AGL
1500
1000
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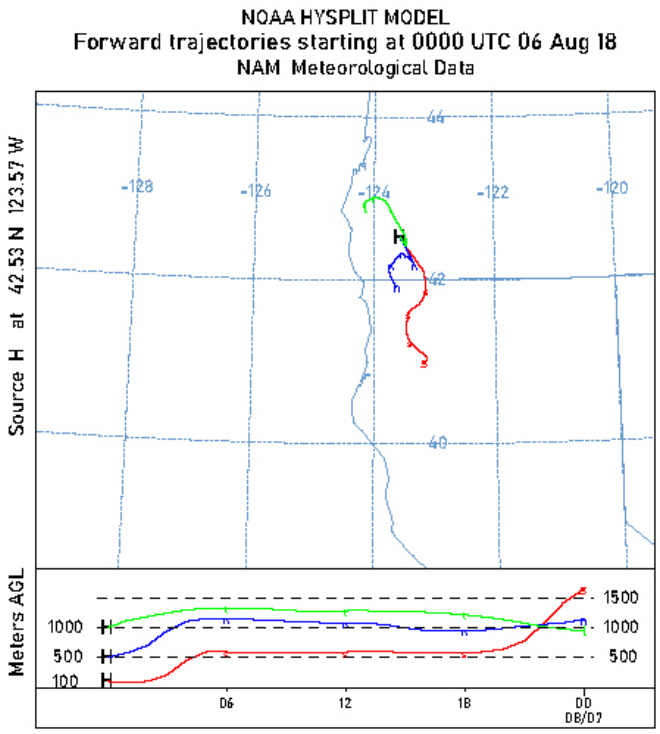
DD
DB/D6
D6
12


NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 06 Aug 18
NAM Meteorological Data
Source H at 42.53 N 123.57 W
Meters AGL
1500
1000
500
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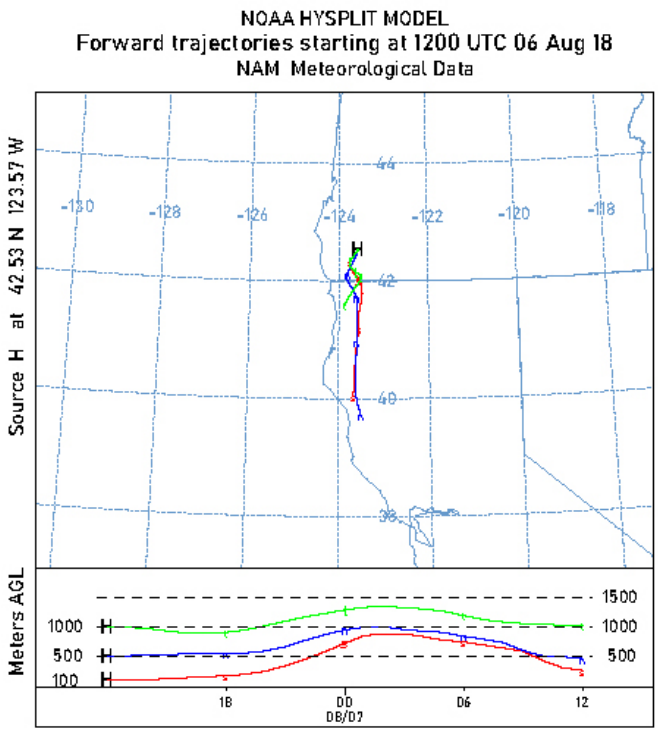
06
12
18
00
DB/07


NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 06 Aug 18
NAM Meteorological Data
Source H at 42.53 N 123.57 W
Meters AGL
1500
1000
500
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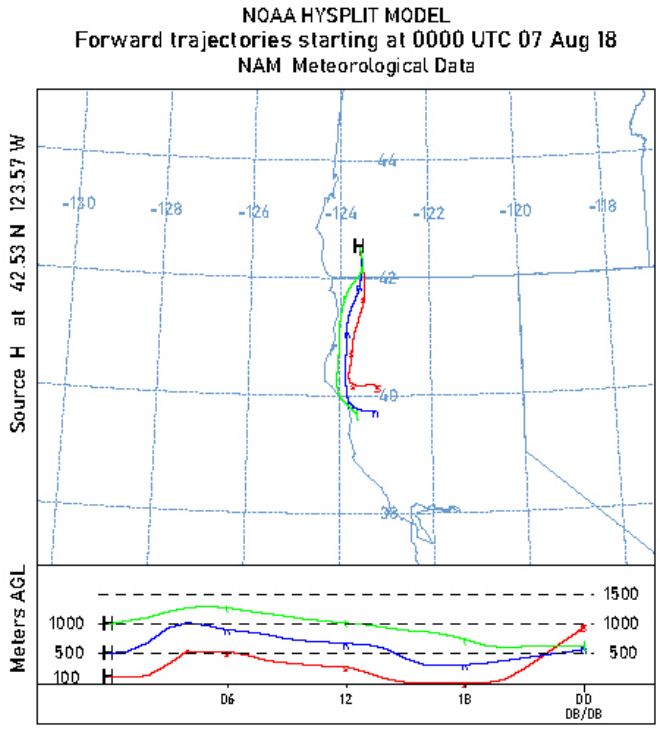
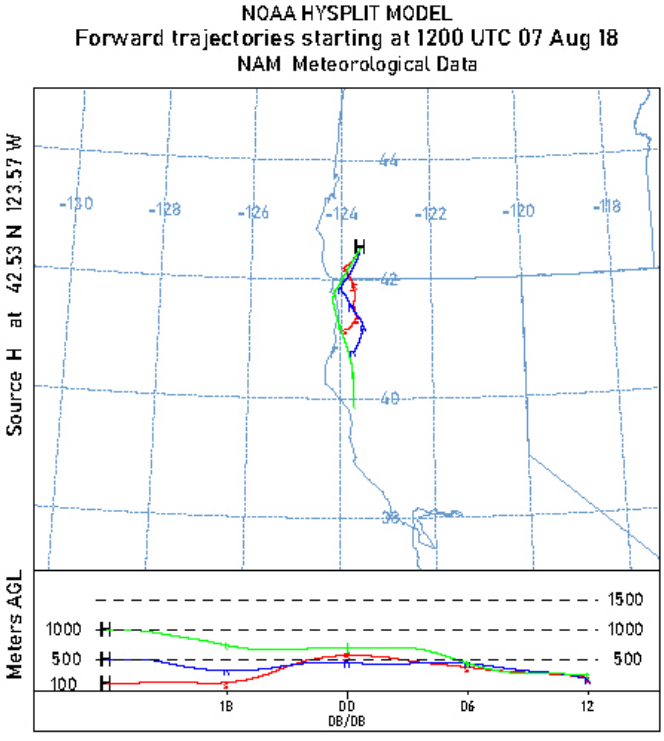
18
00
06
12
DB/07


NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 07 Aug 18
NAM Meteorological Data
Source H at 42.53 N 123.57 W
Meters AGL
1500
1000
500
100
06
12
18
00
DB/08


NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 07 Aug 18
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Source H at 42.53 N 123.57 W
Meters AGL
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1000
500
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18
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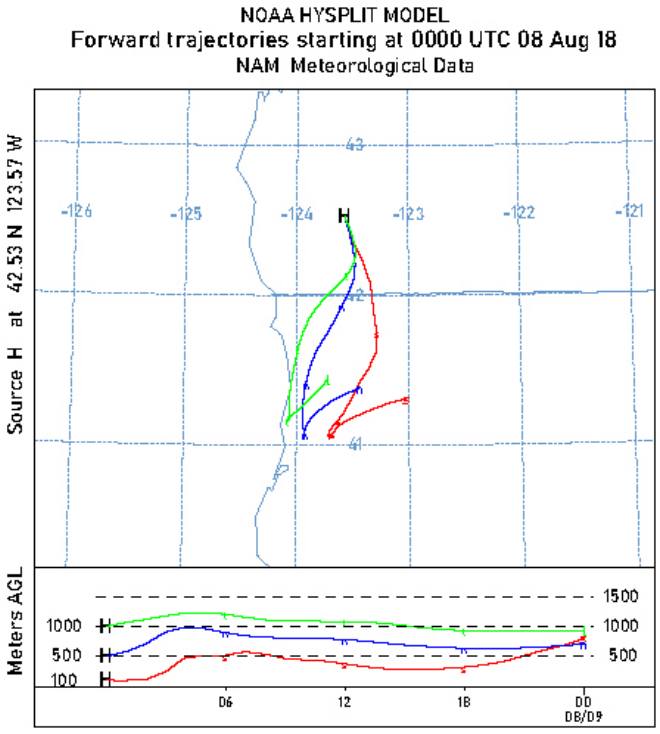
06
12
DB/08


NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 08 Aug 18
NAM Meteorological Data
Source H at 42.53 N 123.57 W
Meters AGL
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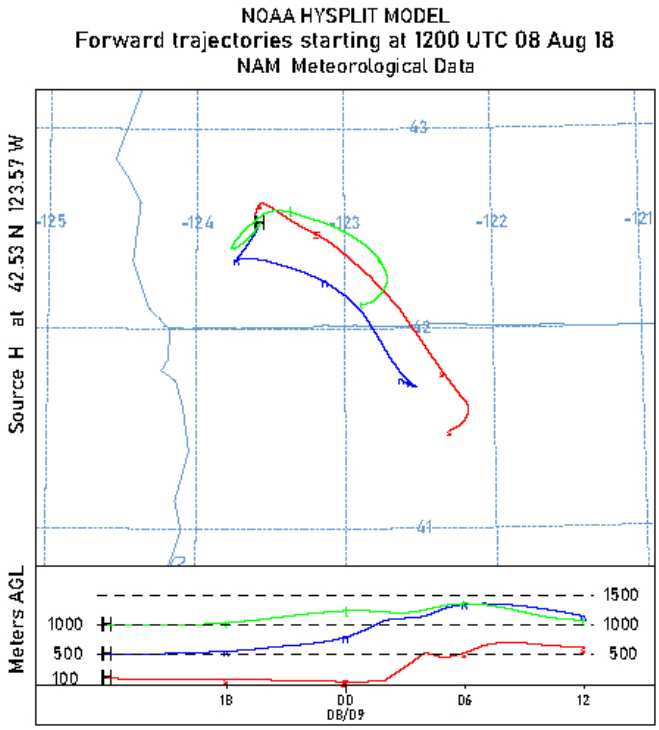
1000
500
100
D6
12
18
DD
DB/09


NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 08 Aug 18
NAM Meteorological Data
Source H at 42.53 N 123.57 W
Meters AGL
1500
1000
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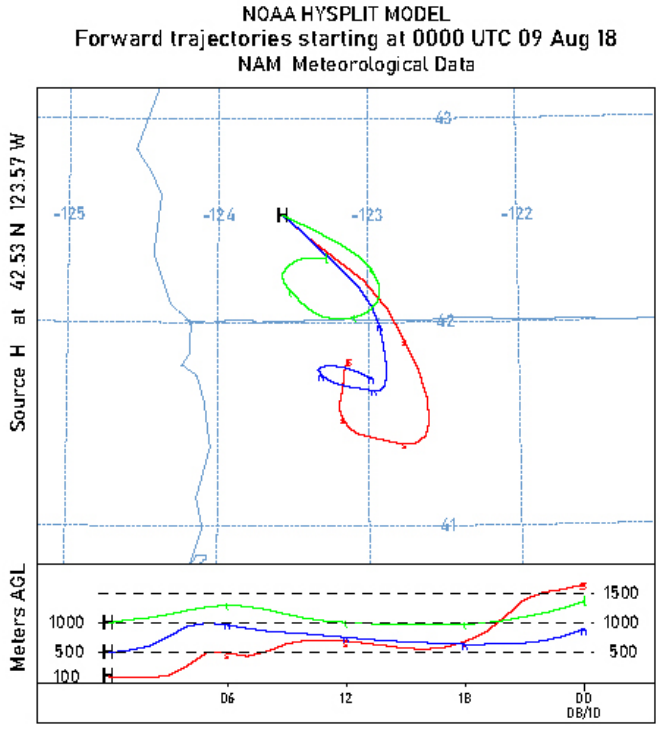
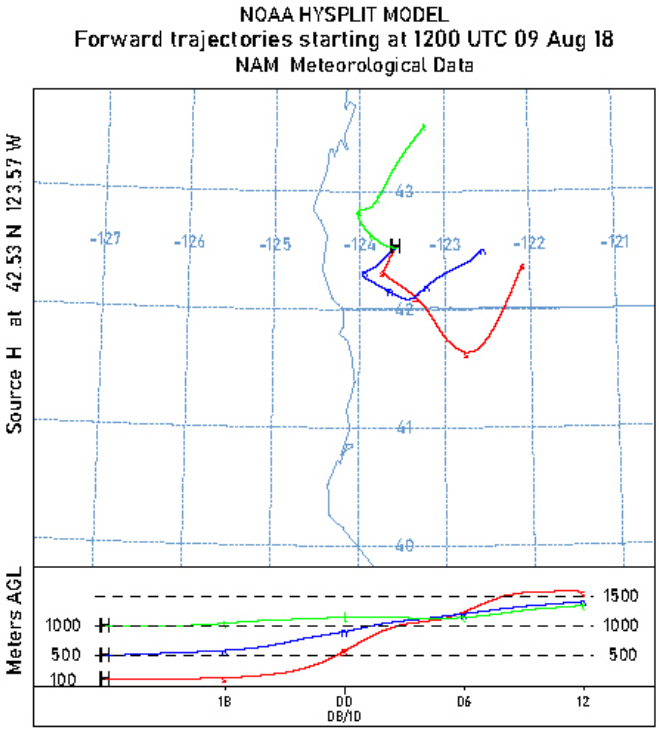
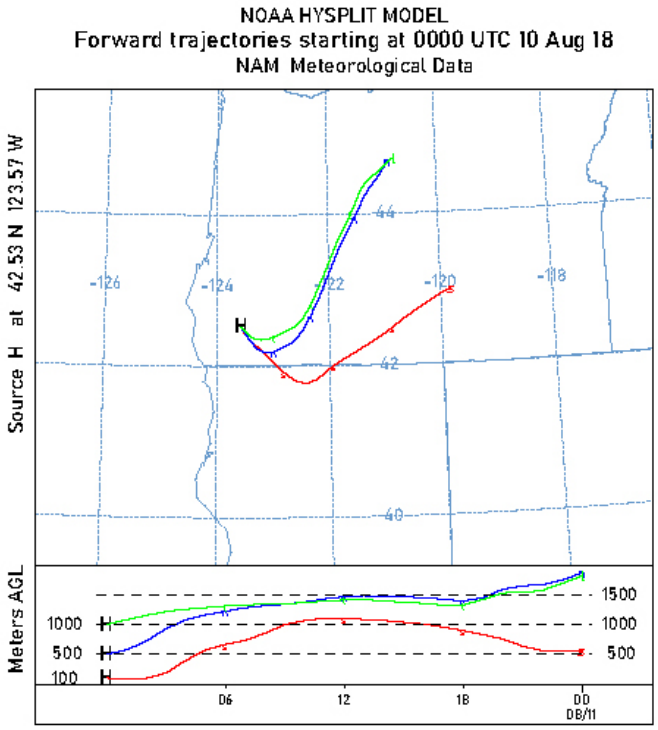
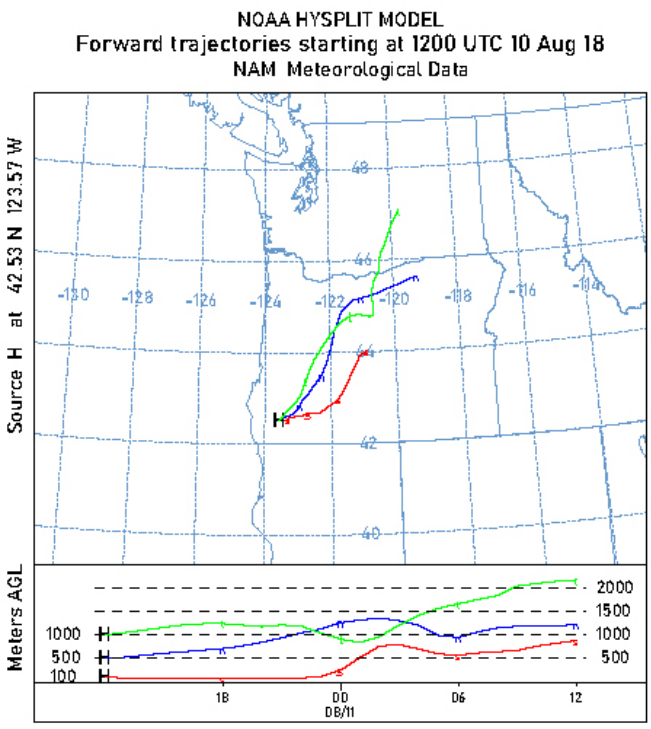
100
18
DD
DB/09
D6
12


NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 09 Aug 18
NAM Meteorological Data
Source H at 42.53 N 123.57 W
Meters AGL
1500
1000
500
100
D6
12
18
DD
DB/10

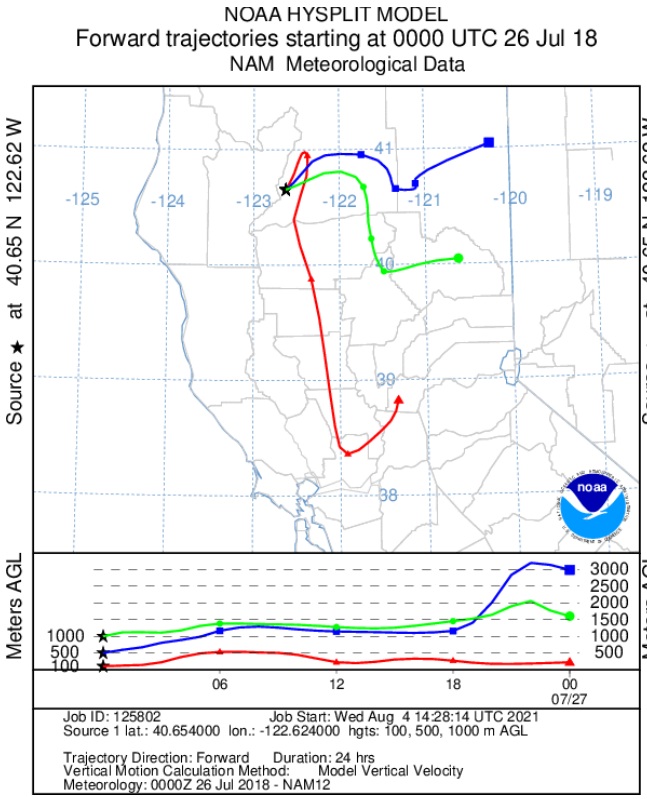

NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 09 Aug 18
NAM Meteorological Data
Source H at 42.53 N 123.57 W
Meters AGL
1500
1000
500
100
18
DD
DB/10
D6
12

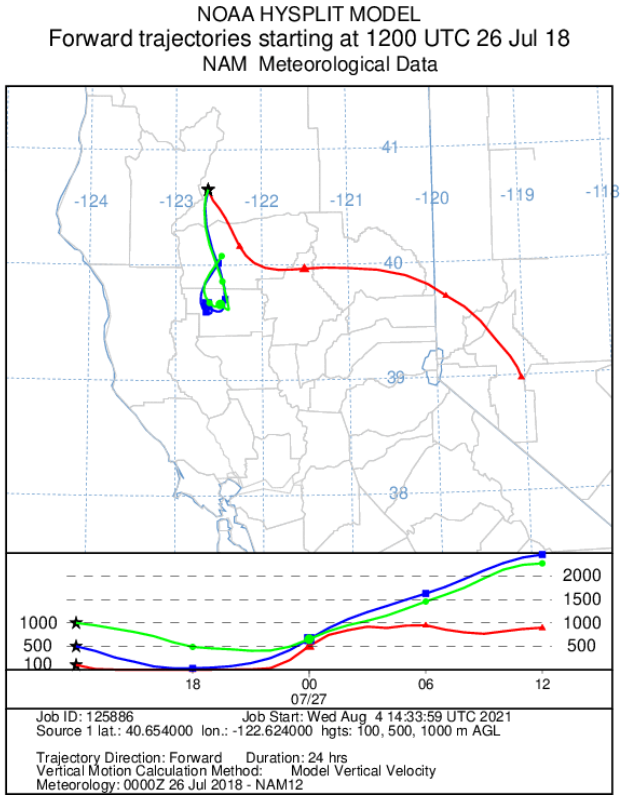


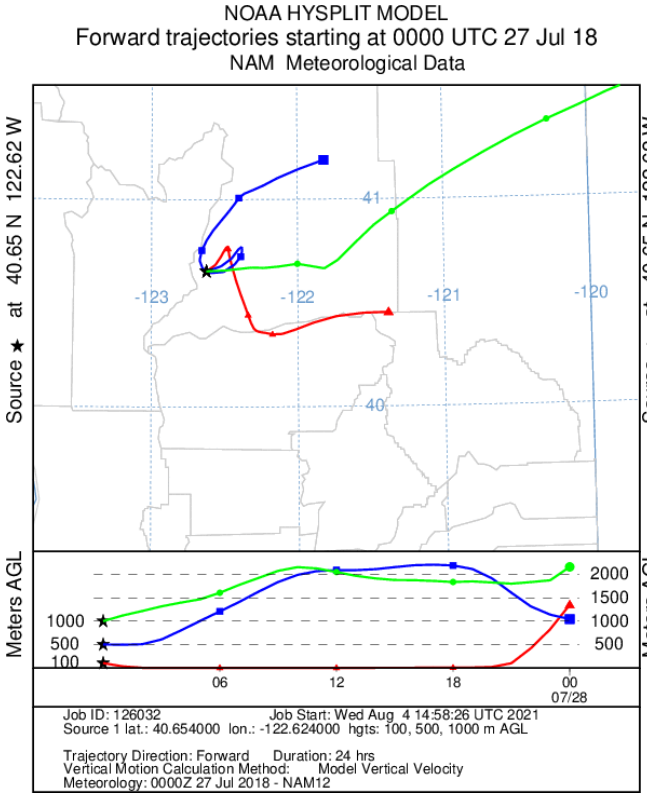


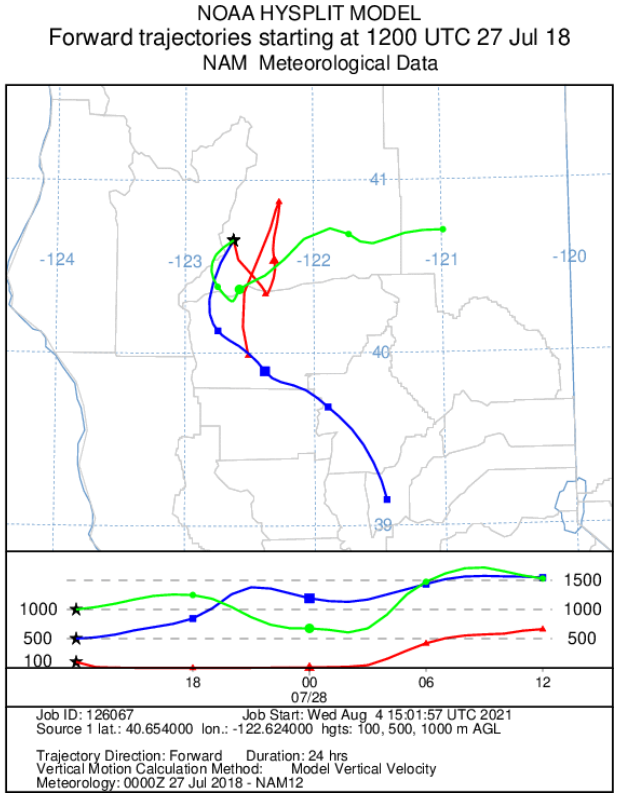
5. Carr Fire

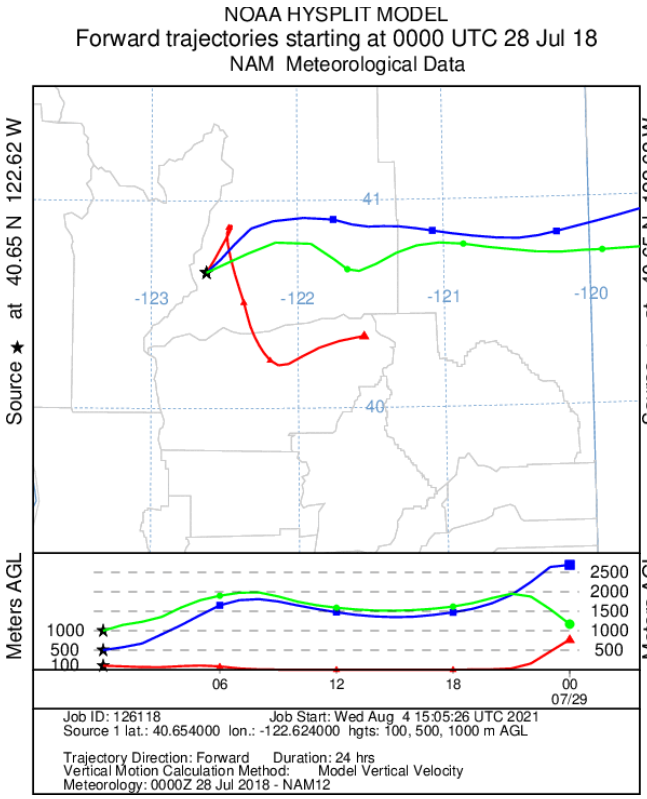
Fire	Start	Containment	Latitude	Longitude	Total Acres
Carr	7/23/18	8/30/18	40.654	-122.624	229,651

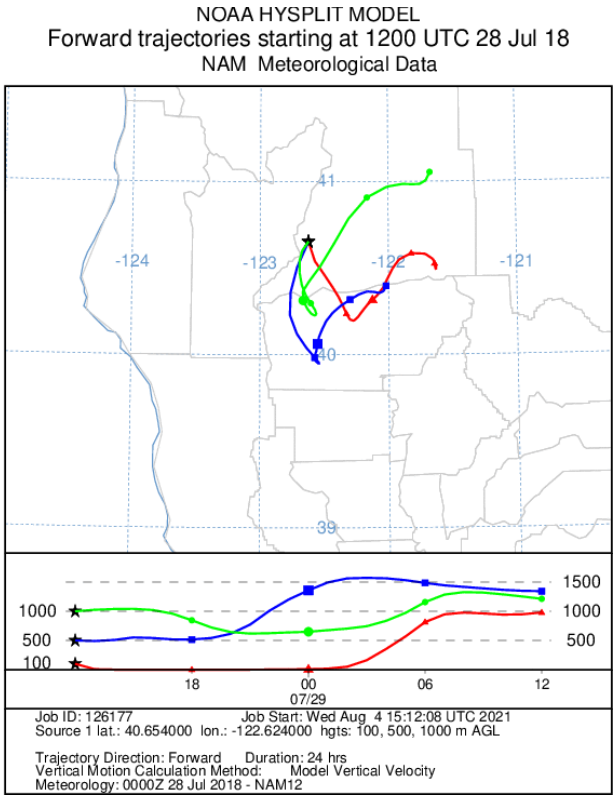

NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 26 Jul 18
NAM Meteorological Data
Source ★ at 40.65 N 122.62 W
Meters AGL
Job ID: 125802 Job Start: Wed Aug 4 14:28:14 UTC 2021
Source 1 lat.: 40.654000 lon.: -122.624000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 26 Jul 2018 - NAM12

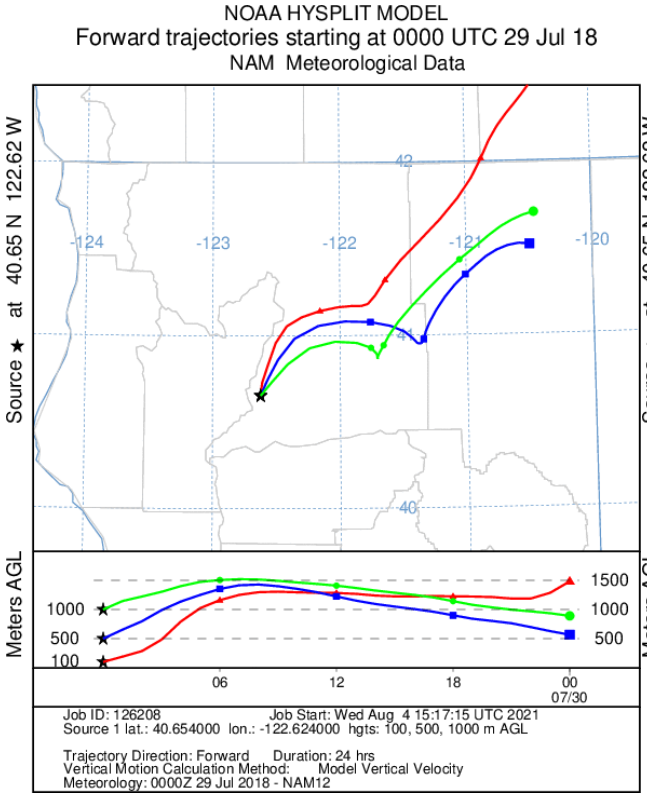

NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 26 Jul 18
NAM Meteorological Data
Source ★ at 40.65 N 122.62 W
Meters AGL
Job ID: 125886 Job Start: Wed Aug 4 14:33:59 UTC 2021
Source 1 lat.: 40.654000 lon.: -122.624000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 26 Jul 2018 - NAM12

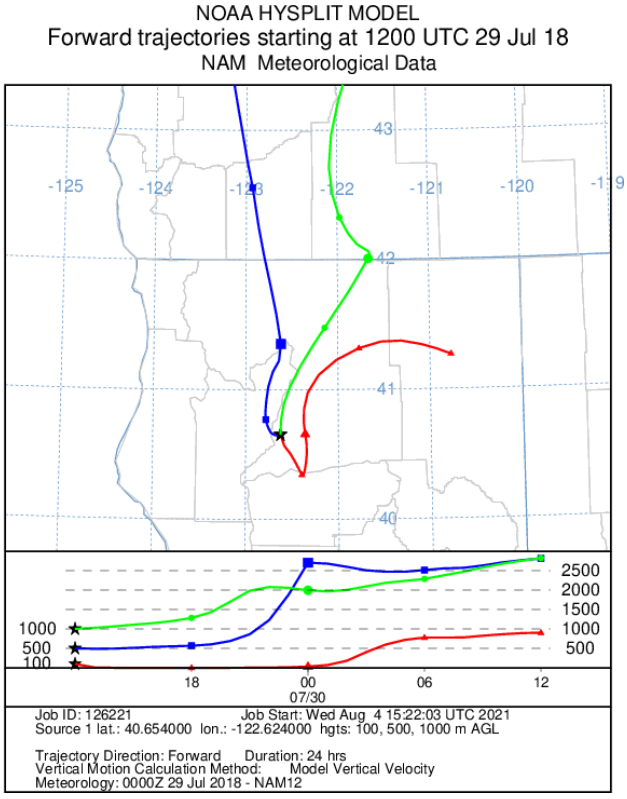

NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 27 Jul 18
NAM Meteorological Data
Source ★ at 40.65 N 122.62 W
Meters AGL
Job ID: 126032 Job Start: Wed Aug 4 14:58:26 UTC 2021
Source 1 lat.: 40.654000 lon.: -122.624000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 27 Jul 2018 - NAM12

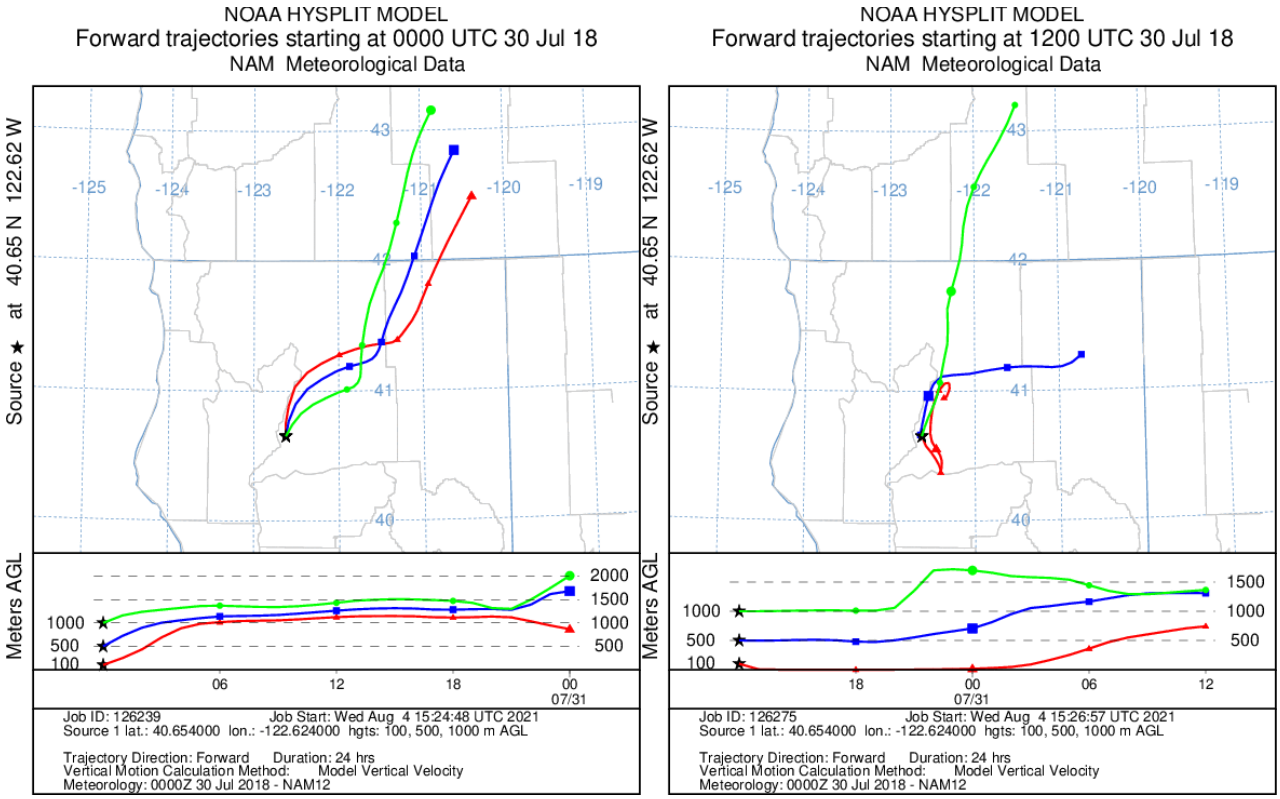

NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 27 Jul 18
NAM Meteorological Data
Source ★ at 40.65 N 122.62 W
Meters AGL
Job ID: 126067 Job Start: Wed Aug 4 15:01:57 UTC 2021
Source 1 lat.: 40.654000 lon.: -122.624000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 27 Jul 2018 - NAM12

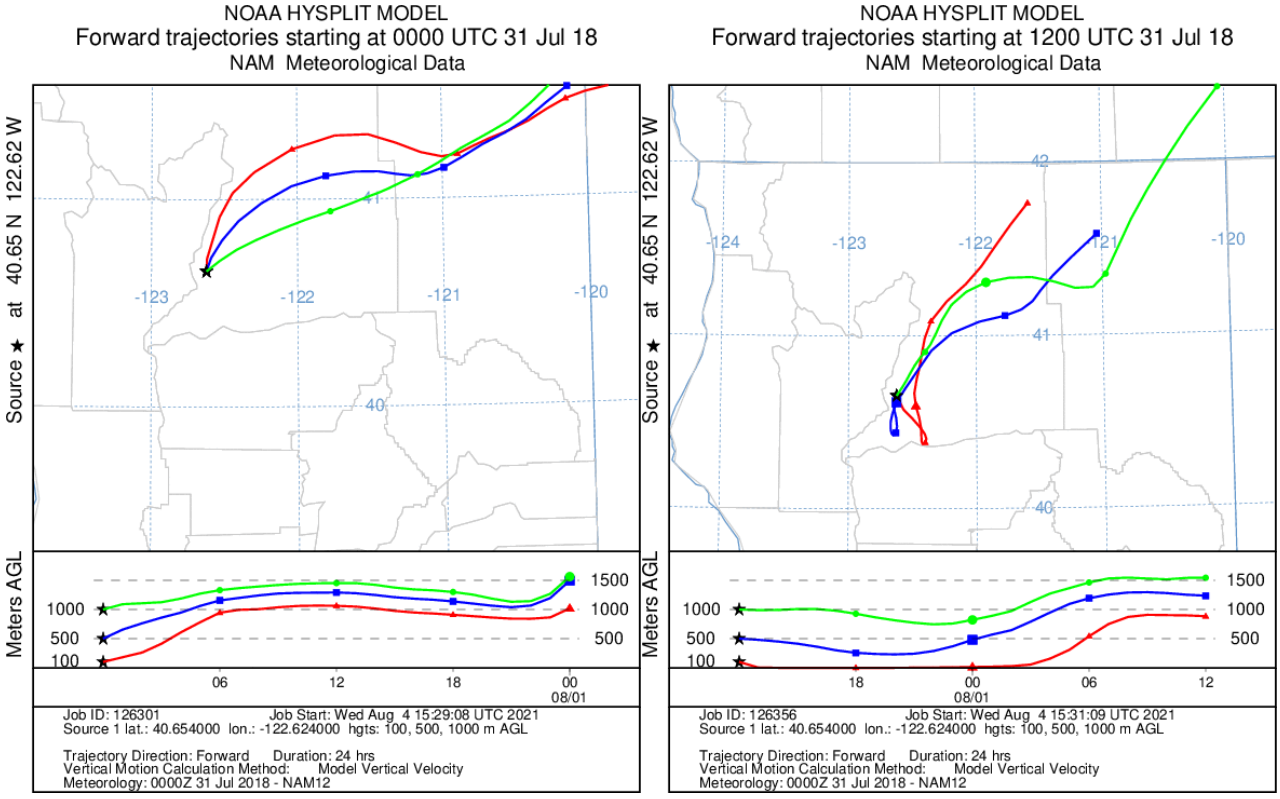

NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 28 Jul 18
NAM Meteorological Data
Source ★ at 40.65 N 122.62 W
Meters AGL
Job ID: 126118 Job Start: Wed Aug 4 15:05:26 UTC 2021
Source 1 lat.: 40.654000 lon.: -122.624000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 28 Jul 2018 - NAM12


NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 28 Jul 18
NAM Meteorological Data
Source ★ at 40.65 N 122.62 W
Meters AGL
Job ID: 126177 Job Start: Wed Aug 4 15:12:08 UTC 2021
Source 1 lat.: 40.654000 lon.: -122.624000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 28 Jul 2018 - NAM12

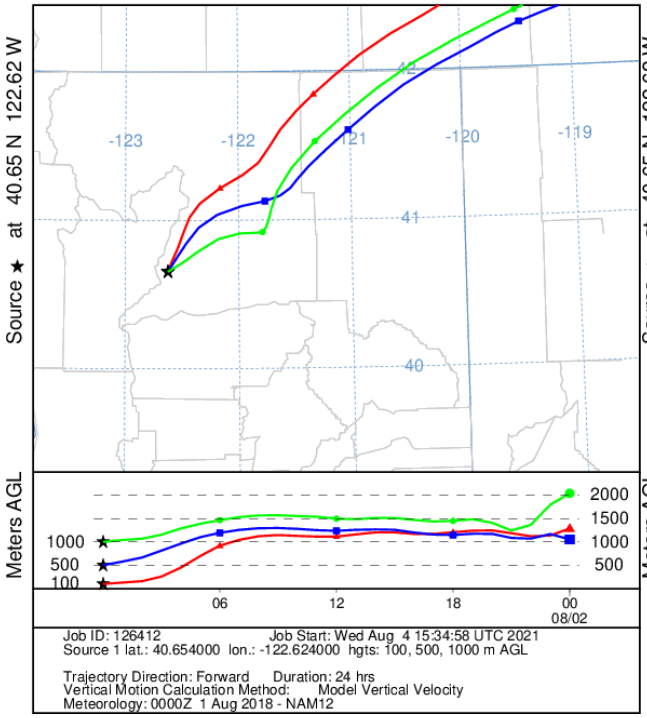

NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 29 Jul 18
NAM Meteorological Data
Source ★ at 40.65 N 122.62 W
Meters AGL
Job ID: 126208 Job Start: Wed Aug 4 15:17:15 UTC 2021
Source 1 lat.: 40.654000 lon.: -122.624000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 29 Jul 2018 - NAM12


NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 29 Jul 18
NAM Meteorological Data
Source ★ at 40.65 N 122.62 W
Meters AGL
Job ID: 126221 Job Start: Wed Aug 4 15:22:03 UTC 2021
Source 1 lat.: 40.654000 lon.: -122.624000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 29 Jul 2018 - NAM12


NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 30 Jul 18
NAM Meteorological Data
Source ★ at 40.65 N 122.62 W
Meters AGL
Job ID: 126239 Job Start: Wed Aug 4 15:24:48 UTC 2021
Source 1 lat.: 40.654000 lon.: -122.624000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 30 Jul 2018 - NAM12
NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 30 Jul 18
NAM Meteorological Data
Source ★ at 40.65 N 122.62 W
Meters AGL
Job ID: 126275 Job Start: Wed Aug 4 15:26:57 UTC 2021
Source 1 lat.: 40.654000 lon.: -122.624000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 30 Jul 2018 - NAM12


NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 31 Jul 18
NAM Meteorological Data
Source ★ at 40.65 N 122.62 W
Meters AGL
Job ID: 126301 Job Start: Wed Aug 4 15:29:08 UTC 2021
Source 1 lat.: 40.654000 lon.: -122.624000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 31 Jul 2018 - NAM12
NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 31 Jul 18
NAM Meteorological Data
Source ★ at 40.65 N 122.62 W
Meters AGL
Job ID: 126356 Job Start: Wed Aug 4 15:31:09 UTC 2021
Source 1 lat.: 40.654000 lon.: -122.624000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 31 Jul 2018 - NAM12

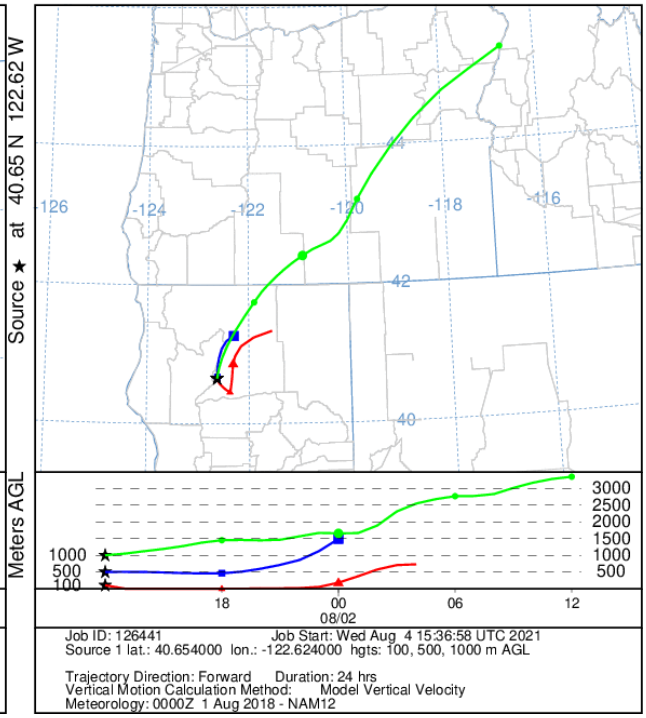
NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 01 Aug 18
NAM Meteorological Data



Job ID: 126412 Job Start: Wed Aug 4 15:34:58 UTC 2021
Source 1 lat.: 40.654000 lon.: -122.624000 hgts: 100, 500, 1000 m AGL

Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 1 Aug 2018 - NAM12

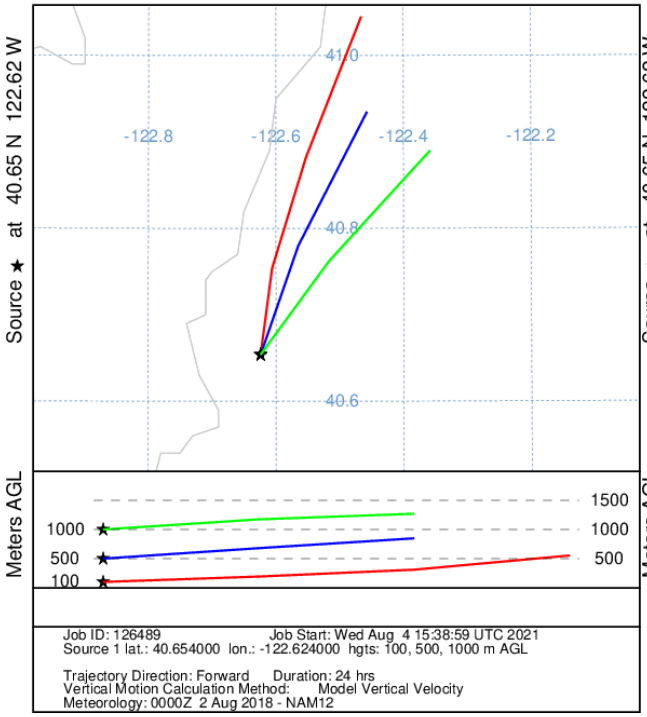
NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 01 Aug 18
NAM Meteorological Data



Job ID: 126441 Job Start: Wed Aug 4 15:36:58 UTC 2021
Source 1 lat.: 40.654000 lon.: -122.624000 hgts: 100, 500, 1000 m AGL

Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 1 Aug 2018 - NAM12

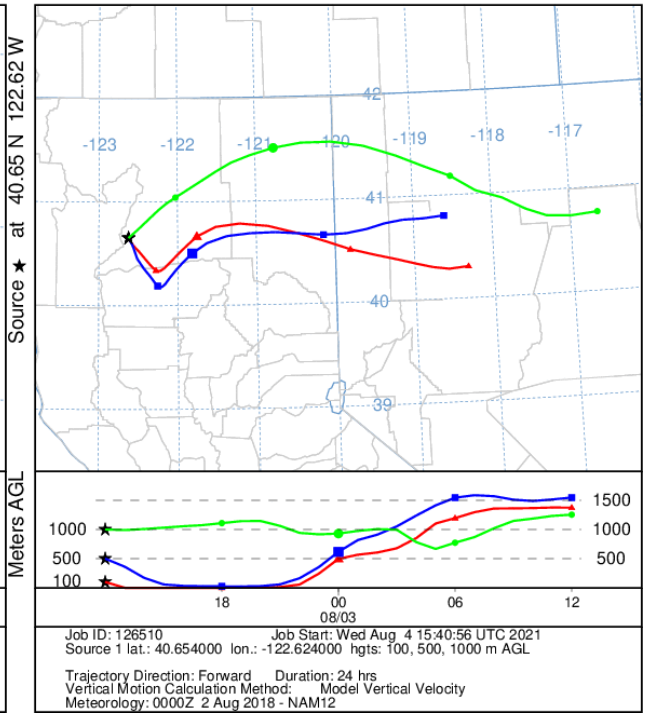
NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 02 Aug 18
NAM Meteorological Data



Job ID: 126489 Job Start: Wed Aug 4 15:38:59 UTC 2021
Source 1 lat.: 40.654000 lon.: -122.624000 hgts: 100, 500, 1000 m AGL

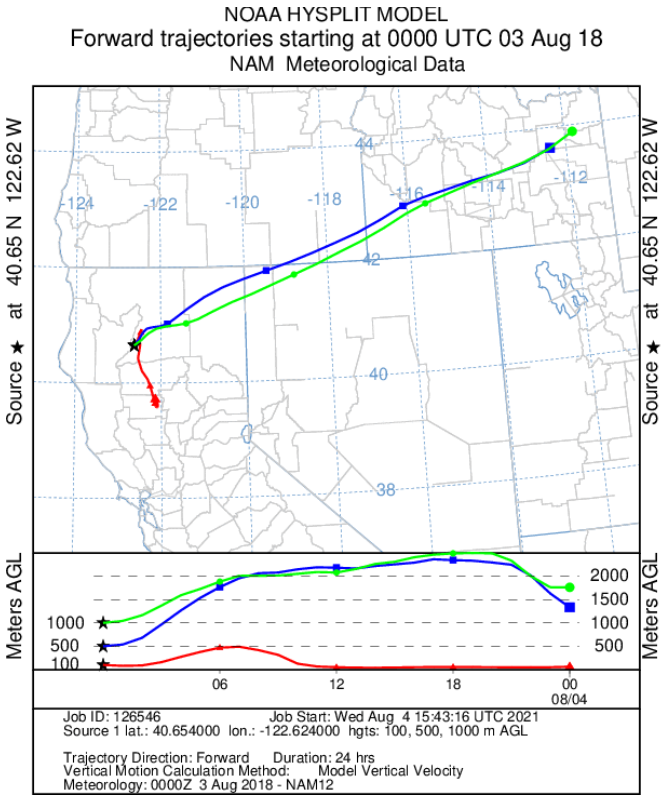
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 2 Aug 2018 - NAM12

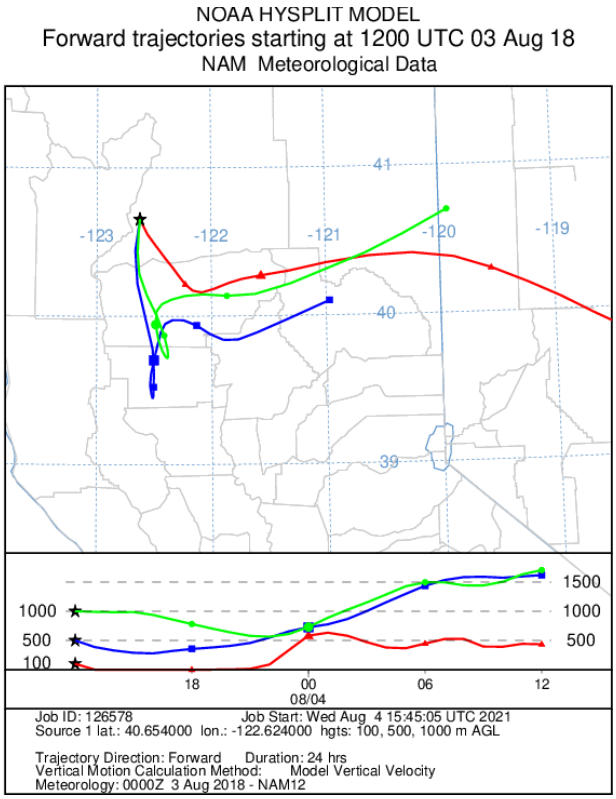
NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 02 Aug 18
NAM Meteorological Data

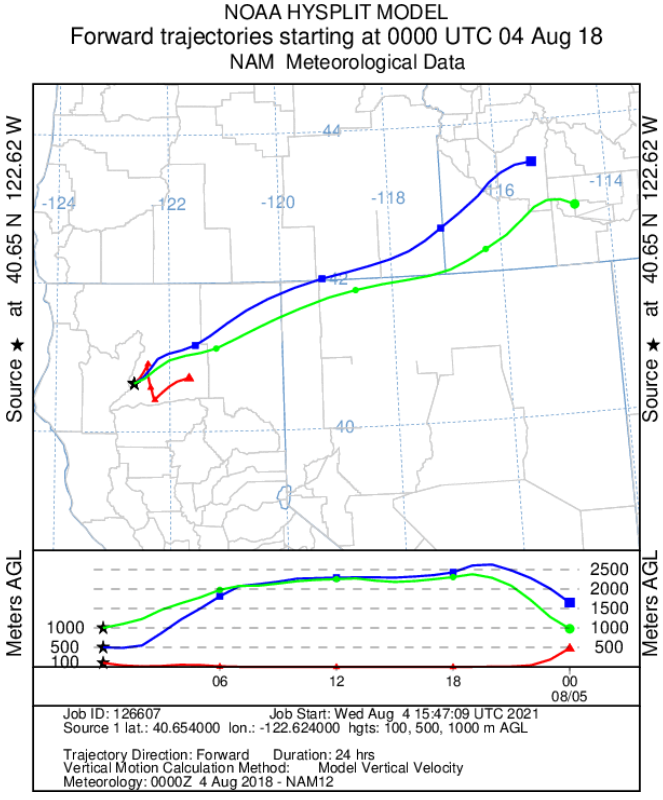


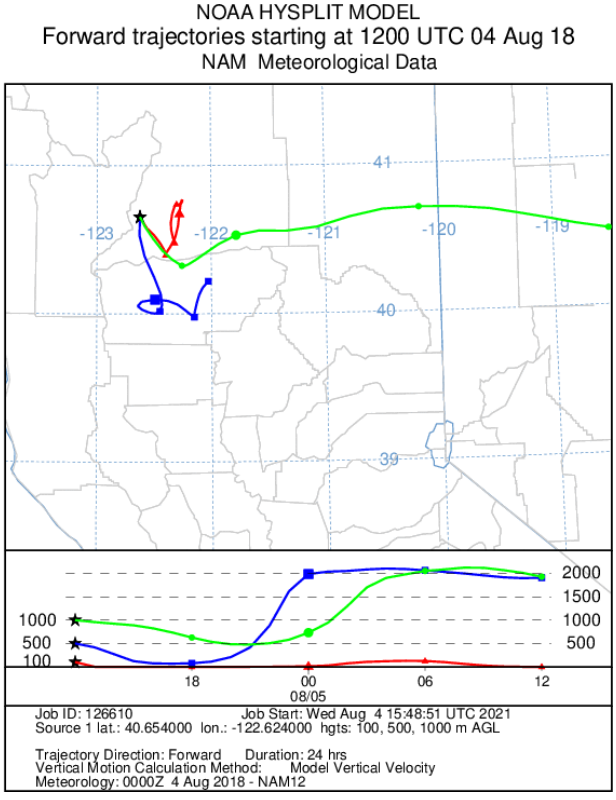
Job ID: 126510 Job Start: Wed Aug 4 15:40:56 UTC 2021
Source 1 lat.: 40.654000 lon.: -122.624000 hgts: 100, 500, 1000 m AGL

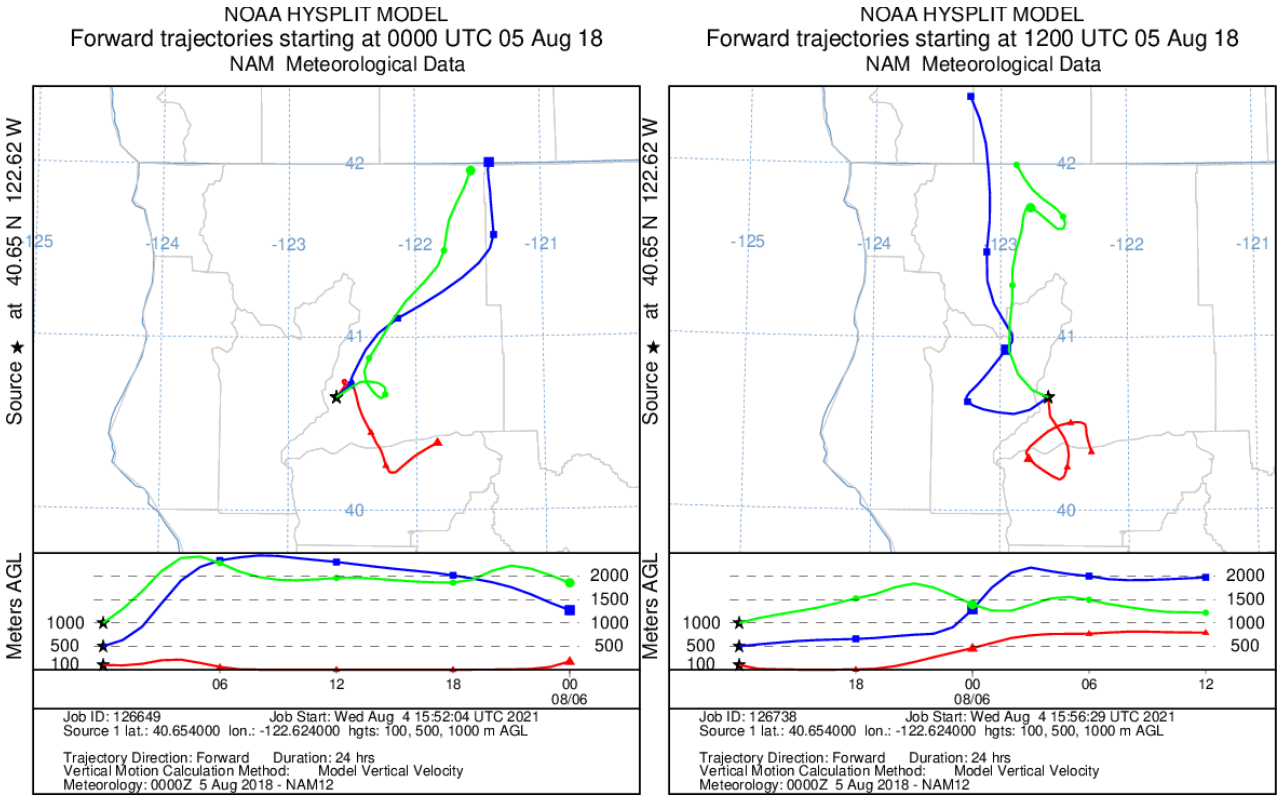
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 2 Aug 2018 - NAM12


NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 03 Aug 18
NAM Meteorological Data
Source ★ at 40.65 N 122.62 W
Meters AGL
Job ID: 126546 Job Start: Wed Aug 4 15:43:16 UTC 2021
Source 1 lat.: 40.654000 lon.: -122.624000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 3 Aug 2018 - NAM12

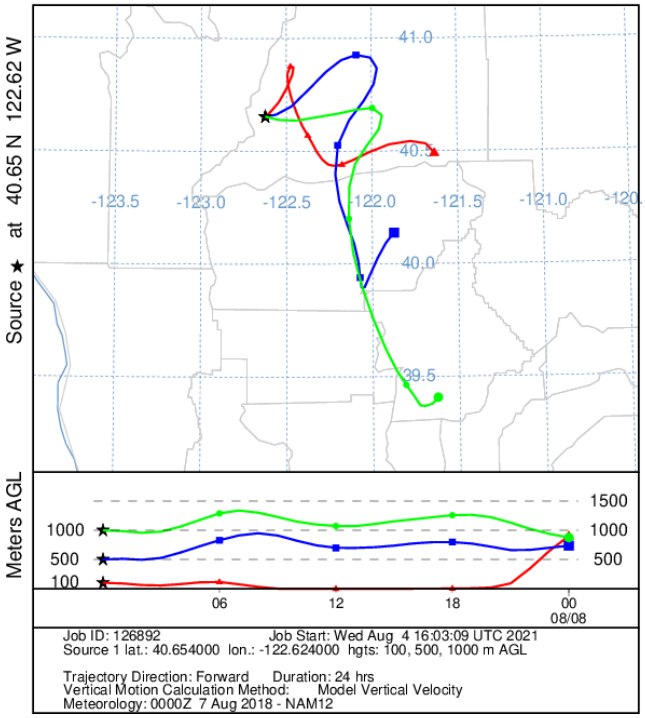

NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 03 Aug 18
NAM Meteorological Data
Source ★ at 40.65 N 122.62 W
Meters AGL
Job ID: 126578 Job Start: Wed Aug 4 15:45:05 UTC 2021
Source 1 lat.: 40.654000 lon.: -122.624000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 3 Aug 2018 - NAM12


NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 04 Aug 18
NAM Meteorological Data
Source ★ at 40.65 N 122.62 W
Meters AGL
Job ID: 126607 Job Start: Wed Aug 4 15:47:09 UTC 2021
Source 1 lat.: 40.654000 lon.: -122.624000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 4 Aug 2018 - NAM12


NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 04 Aug 18
NAM Meteorological Data
Source ★ at 40.65 N 122.62 W
Meters AGL
Job ID: 126610 Job Start: Wed Aug 4 15:48:51 UTC 2021
Source 1 lat.: 40.654000 lon.: -122.624000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 4 Aug 2018 - NAM12


NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 05 Aug 18
NAM Meteorological Data
Source ★ at 40.65 N 122.62 W
Meters AGL
Job ID: 126649 Job Start: Wed Aug 4 15:52:04 UTC 2021
Source 1 lat.: 40.654000 lon.: -122.624000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 5 Aug 2018 - NAM12
NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 05 Aug 18
NAM Meteorological Data
Source ★ at 40.65 N 122.62 W
Meters AGL
Job ID: 126738 Job Start: Wed Aug 4 15:56:29 UTC 2021
Source 1 lat.: 40.654000 lon.: -122.624000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 5 Aug 2018 - NAM12
NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 06 Aug 18
NAM Meteorological Data
Source ★ at 40.65 N 122.62 W
Meters AGL
Job ID: 126770 Job Start: Wed Aug 4 15:58:35 UTC 2021
Source 1 lat.: 40.654000 lon.: -122.624000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 6 Aug 2018 - NAM12
NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 06 Aug 18
NAM Meteorological Data
Source ★ at 40.65 N 122.62 W
Meters AGL
Job ID: 126836 Job Start: Wed Aug 4 16:01:16 UTC 2021
Source 1 lat.: 40.654000 lon.: -122.624000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 6 Aug 2018 - NAM12

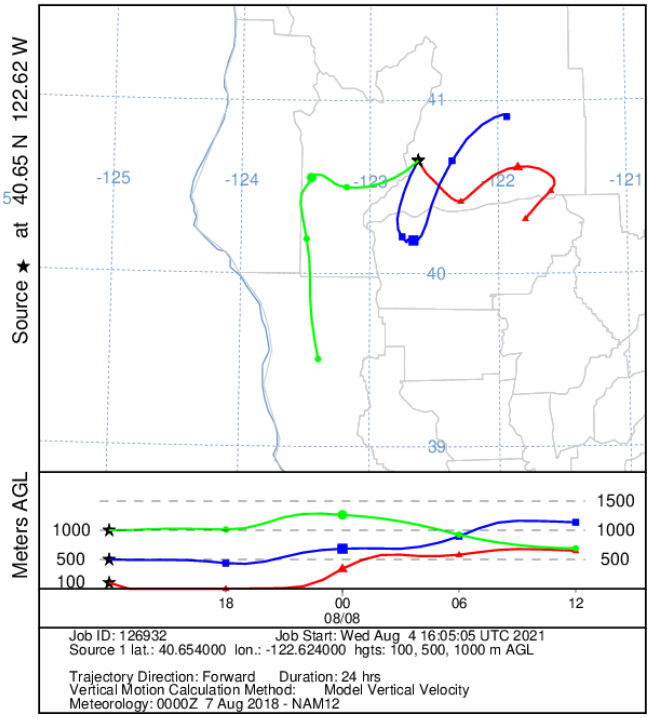
NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 07 Aug 18
NAM Meteorological Data



Job ID: 126892 Job Start: Wed Aug 4 16:03:09 UTC 2021
Source 1 lat.: 40.654000 lon.: -122.624000 hgts: 100, 500, 1000 m AGL

Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 7 Aug 2018 - NAM12

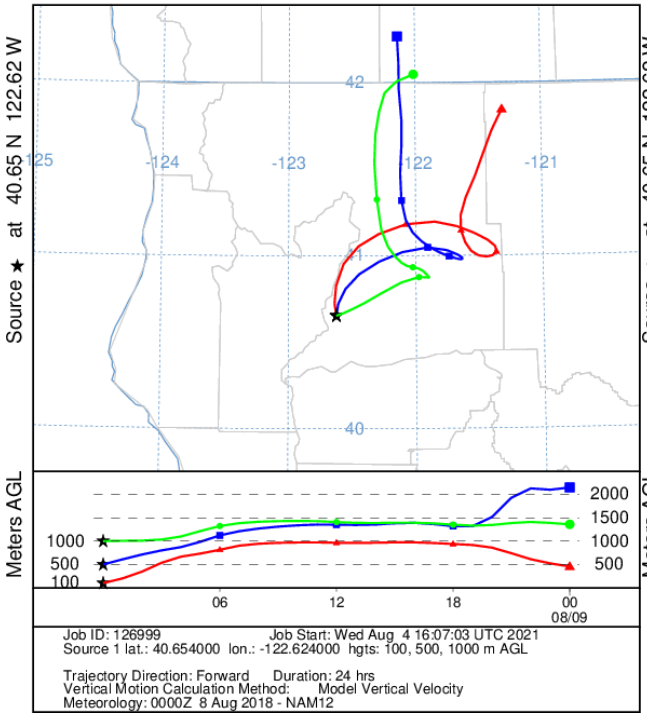
NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 07 Aug 18
NAM Meteorological Data



Job ID: 126932 Job Start: Wed Aug 4 16:05:05 UTC 2021
Source 1 lat.: 40.654000 lon.: -122.624000 hgts: 100, 500, 1000 m AGL

Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 7 Aug 2018 - NAM12

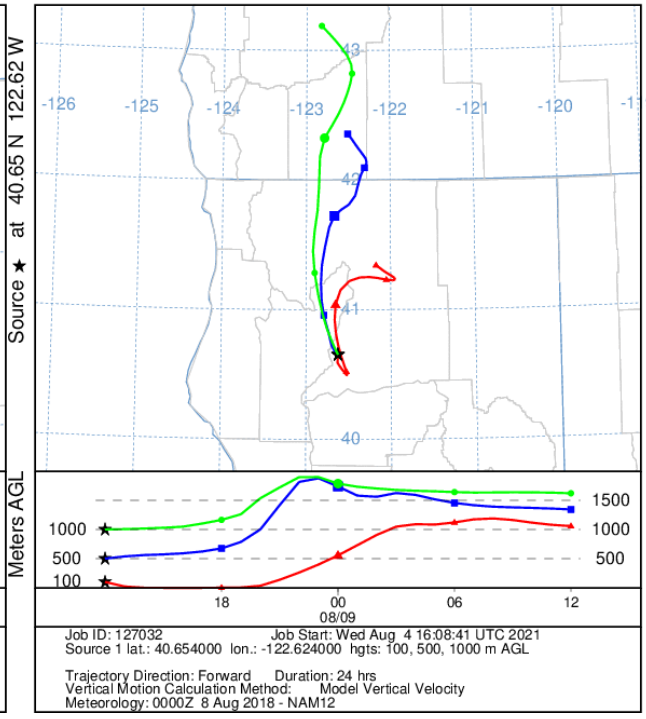
NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 08 Aug 18
NAM Meteorological Data



Job ID: 126999 Job Start: Wed Aug 4 16:07:03 UTC 2021
Source 1 lat.: 40.654000 lon.: -122.624000 hgts: 100, 500, 1000 m AGL

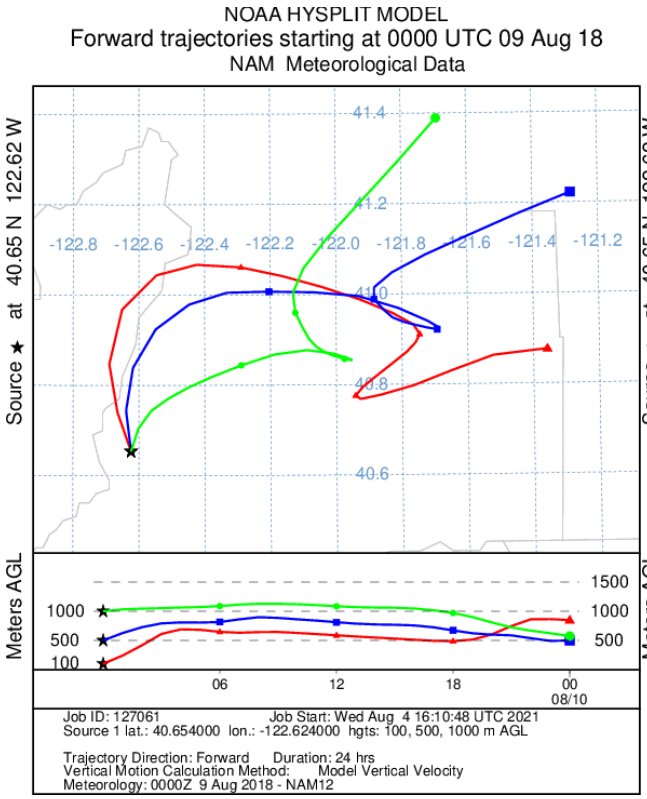
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 8 Aug 2018 - NAM12

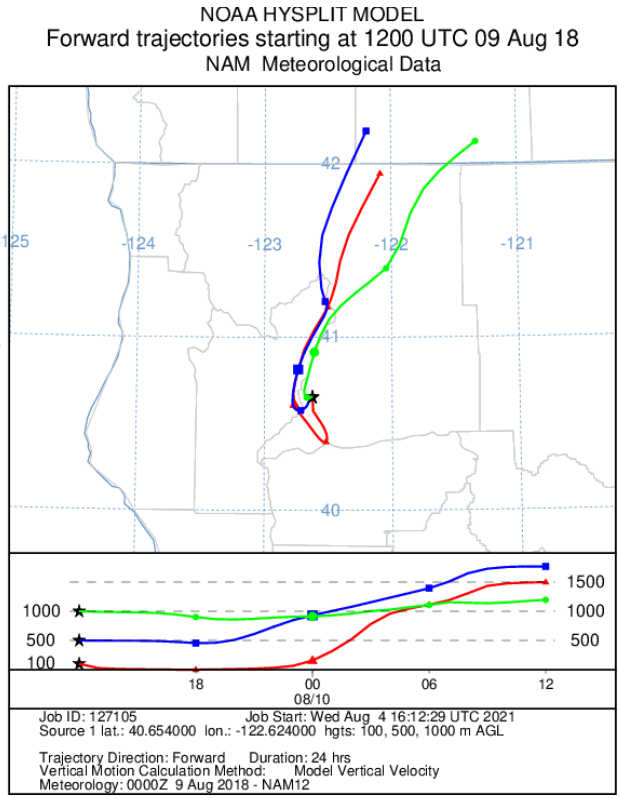
NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 08 Aug 18
NAM Meteorological Data

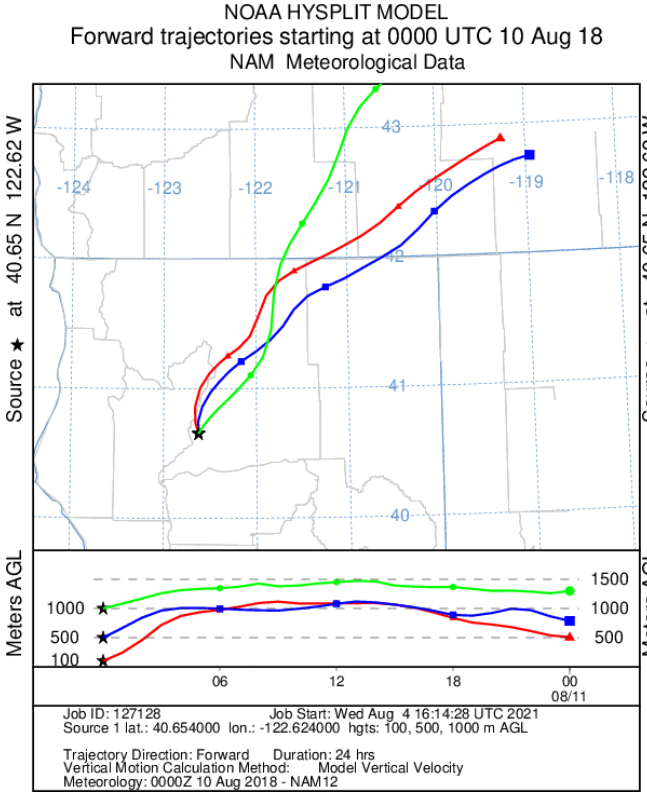


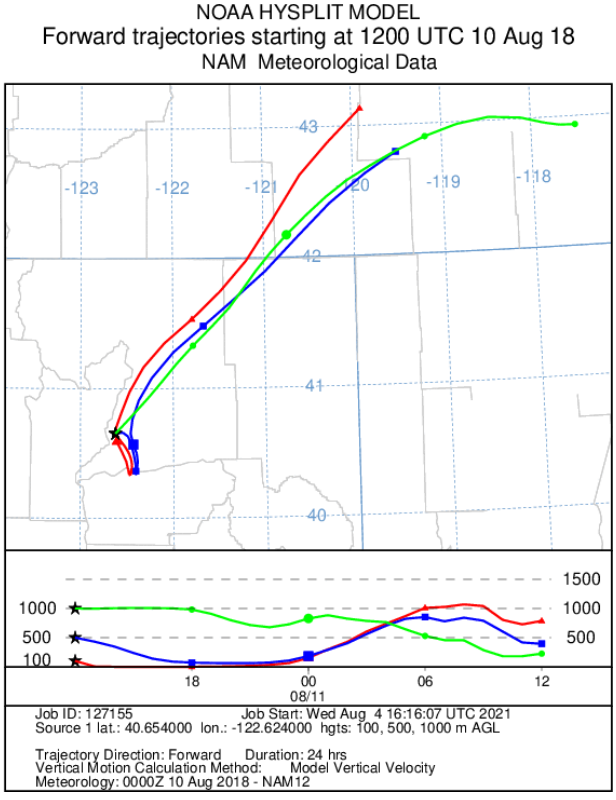
Job ID: 127032 Job Start: Wed Aug 4 16:08:41 UTC 2021
Source 1 lat.: 40.654000 lon.: -122.624000 hgts: 100, 500, 1000 m AGL

Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 8 Aug 2018 - NAM12


NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 09 Aug 18
NAM Meteorological Data
Source ★ at 40.65 N 122.62 W
Meters AGL
Job ID: 127061 Job Start: Wed Aug 4 16:10:48 UTC 2021
Source 1 lat.: 40.654000 lon.: -122.624000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 9 Aug 2018 - NAM12

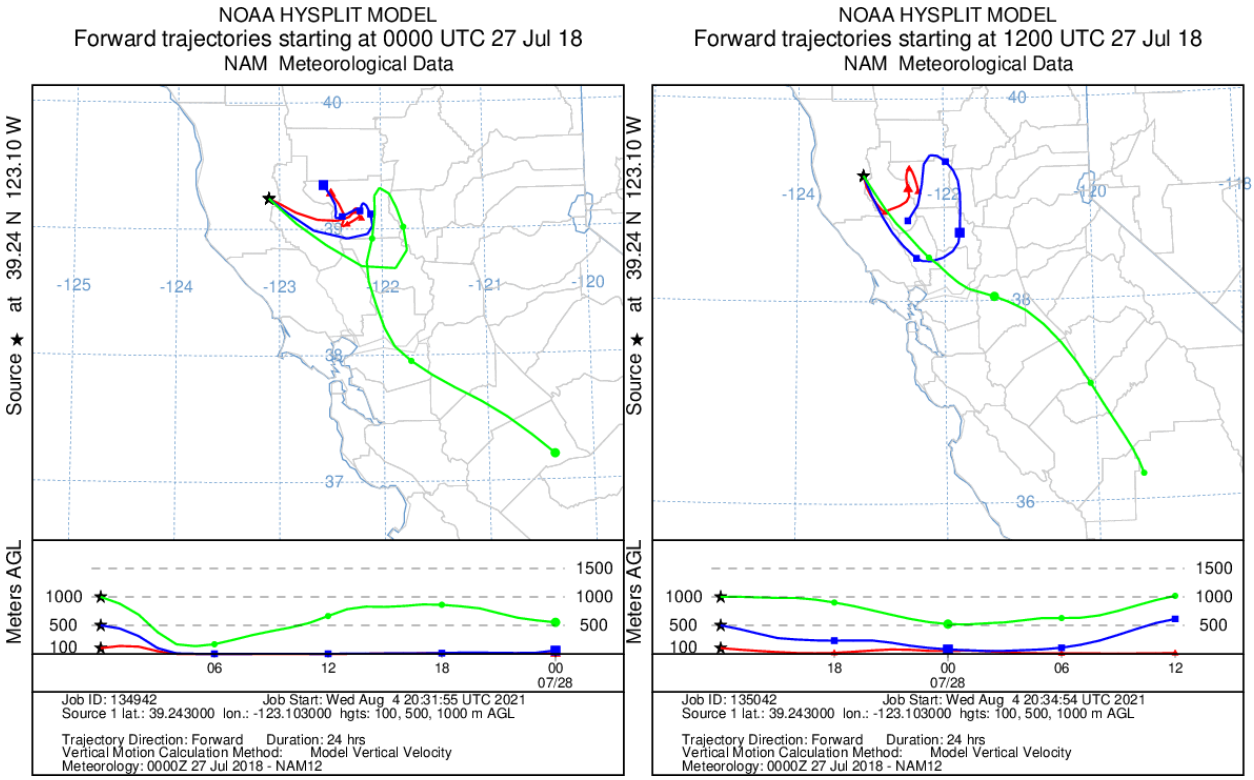

NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 09 Aug 18
NAM Meteorological Data
Source ★ at 40.65 N 122.62 W
Meters AGL
Job ID: 127105 Job Start: Wed Aug 4 16:12:29 UTC 2021
Source 1 lat.: 40.654000 lon.: -122.624000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 9 Aug 2018 - NAM12

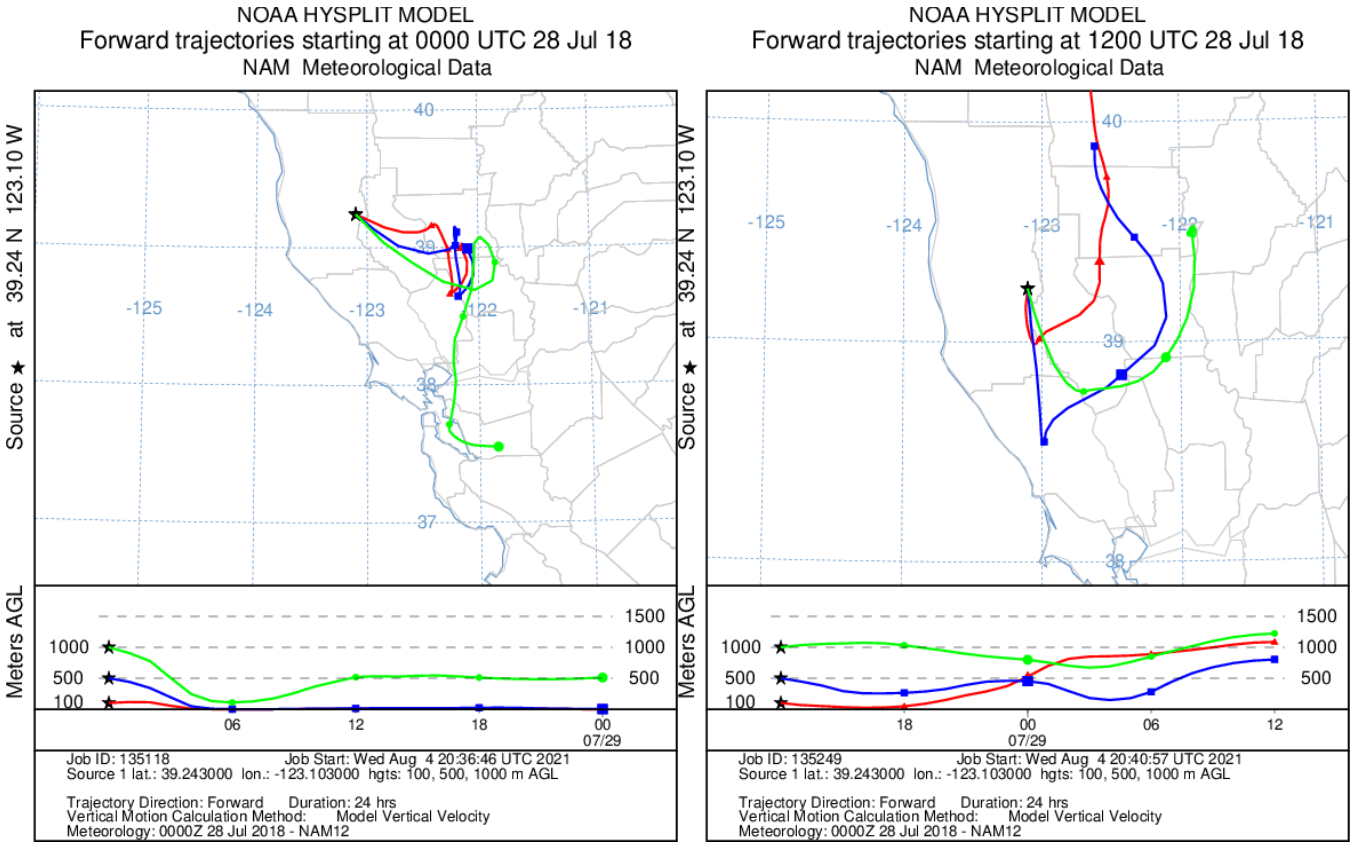

NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 10 Aug 18
NAM Meteorological Data
Source ★ at 40.65 N 122.62 W
Meters AGL
Job ID: 127128 Job Start: Wed Aug 4 16:14:28 UTC 2021
Source 1 lat.: 40.654000 lon.: -122.624000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 10 Aug 2018 - NAM12

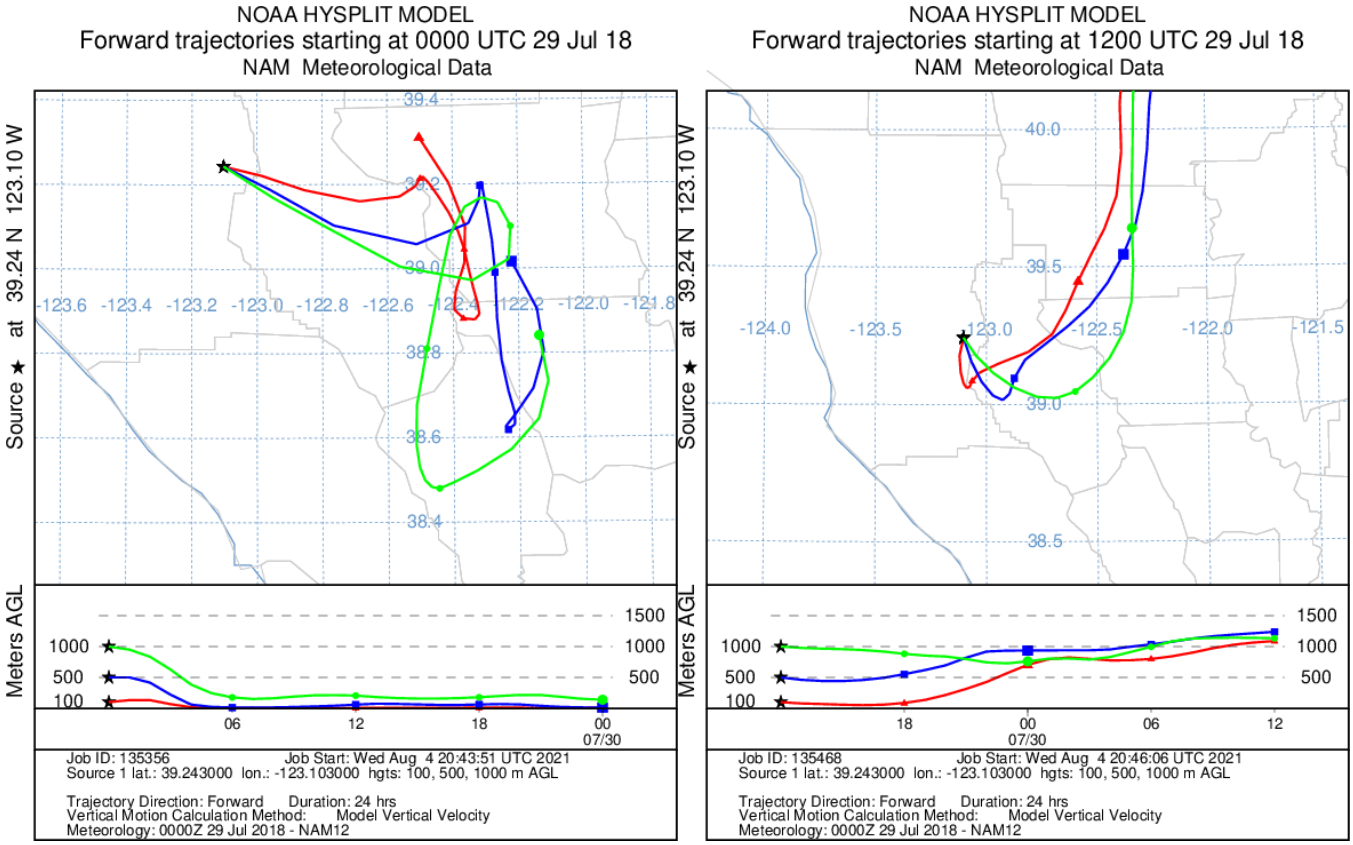

NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 10 Aug 18
NAM Meteorological Data
Source ★ at 40.65 N 122.62 W
Meters AGL
Job ID: 127155 Job Start: Wed Aug 4 16:16:07 UTC 2021
Source 1 lat.: 40.654000 lon.: -122.624000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 10 Aug 2018 - NAM12

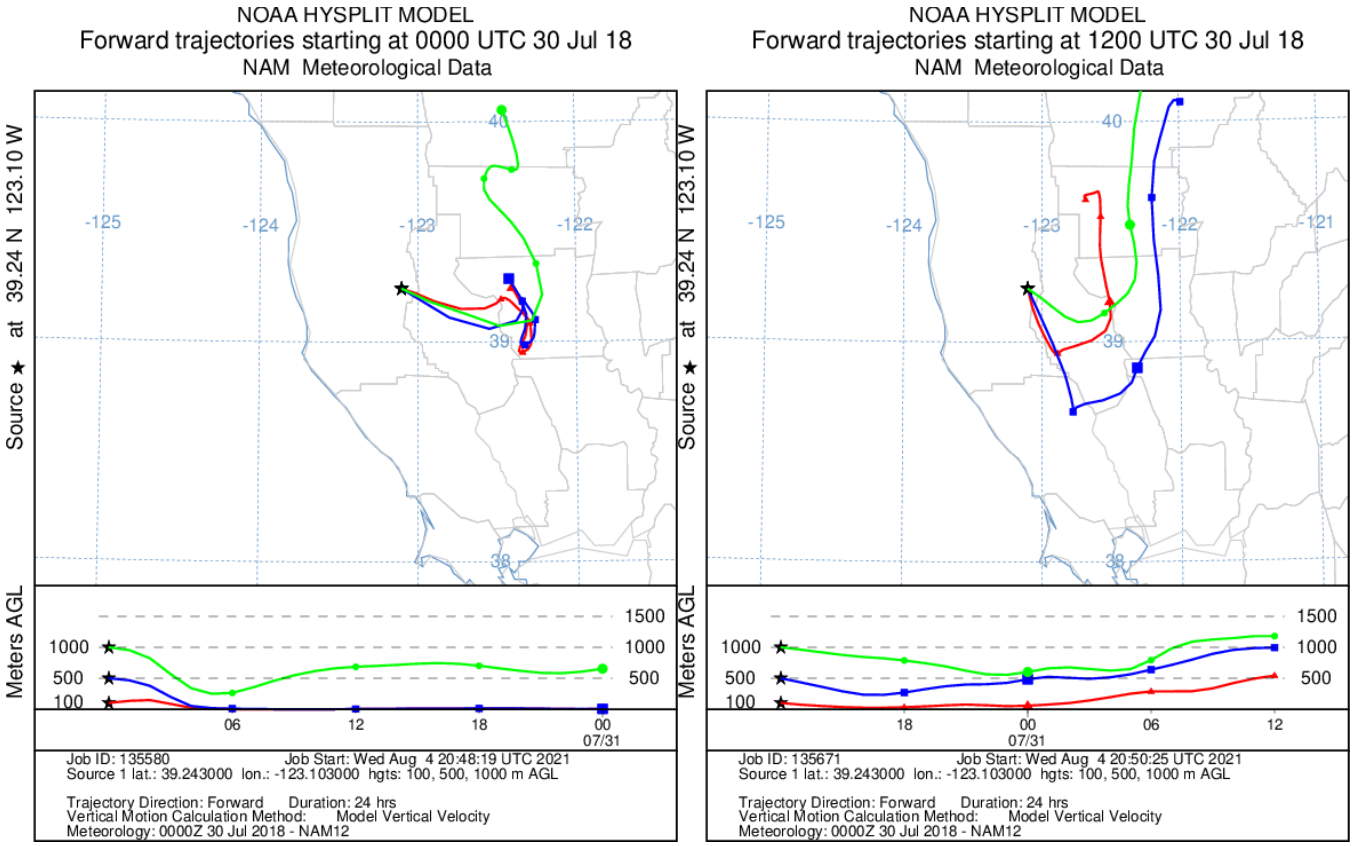
6. Ranch Fire (Mendocino)

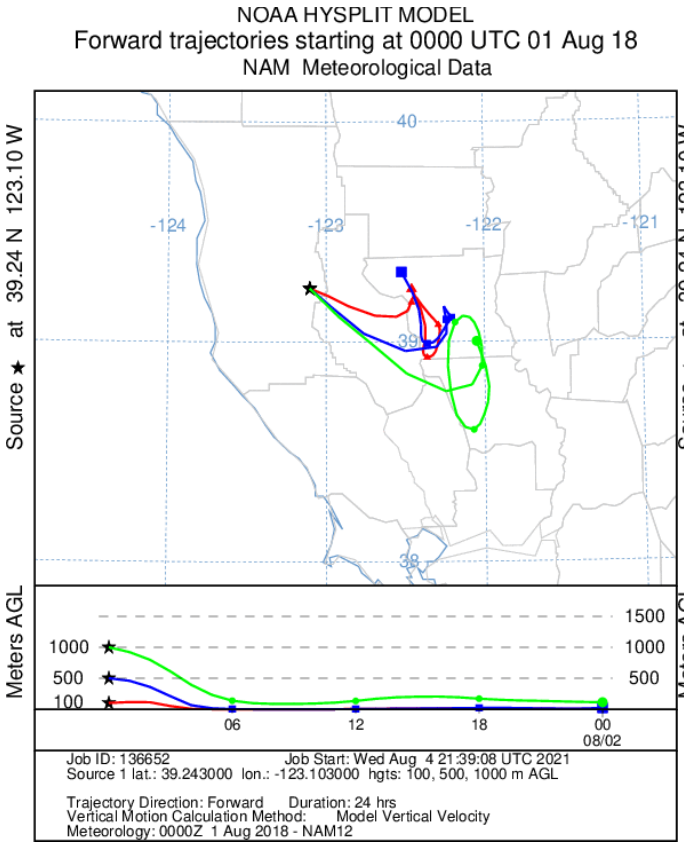
Fire	Start	Containment	Latitude	Longitude	Total Acres
Mendocino Complex (Ranch)	7/27/18	9/19/18	39.243	-123.103	410,203

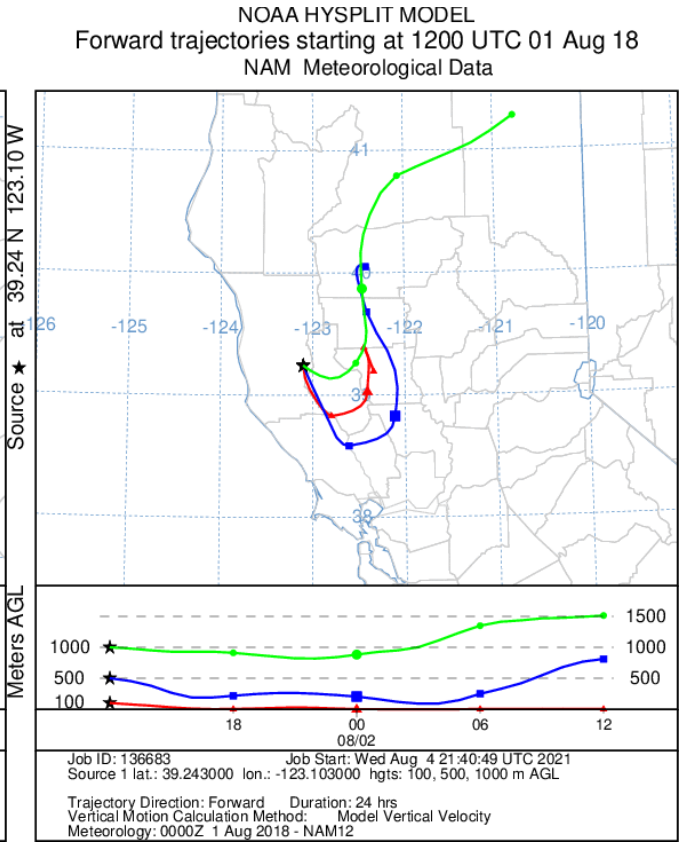


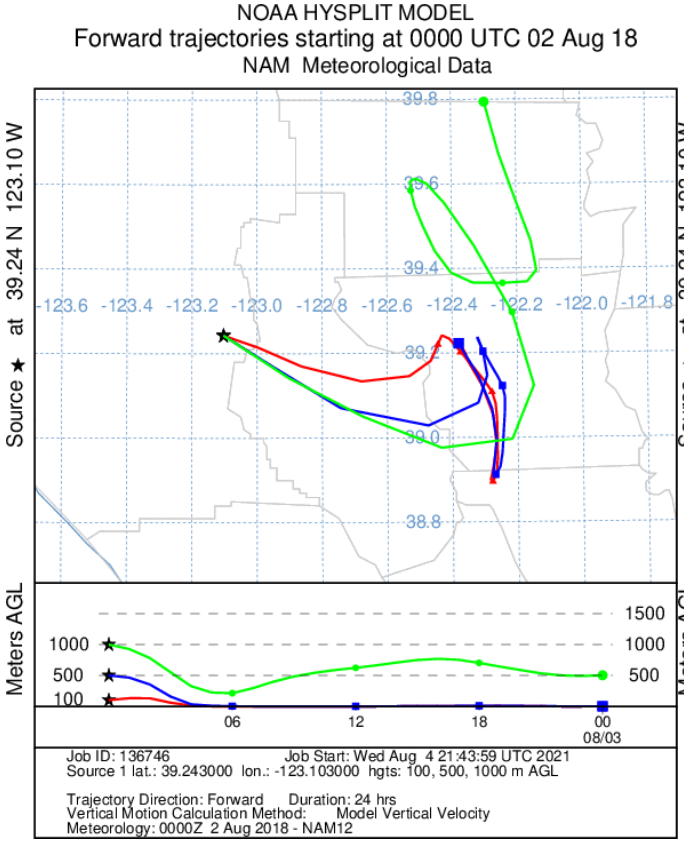

NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 28 Jul 18
NAM Meteorological Data
Source ★ at 39.24 N 123.10 W
Meters AGL
Job ID: 135118 Job Start: Wed Aug 4 20:36:46 UTC 2021
Source 1 lat.: 39.243000 lon.: -123.103000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 28 Jul 2018 - NAM12
NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 28 Jul 18
NAM Meteorological Data
Source ★ at 39.24 N 123.10 W
Meters AGL
Job ID: 135249 Job Start: Wed Aug 4 20:40:57 UTC 2021
Source 1 lat.: 39.243000 lon.: -123.103000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 28 Jul 2018 - NAM12

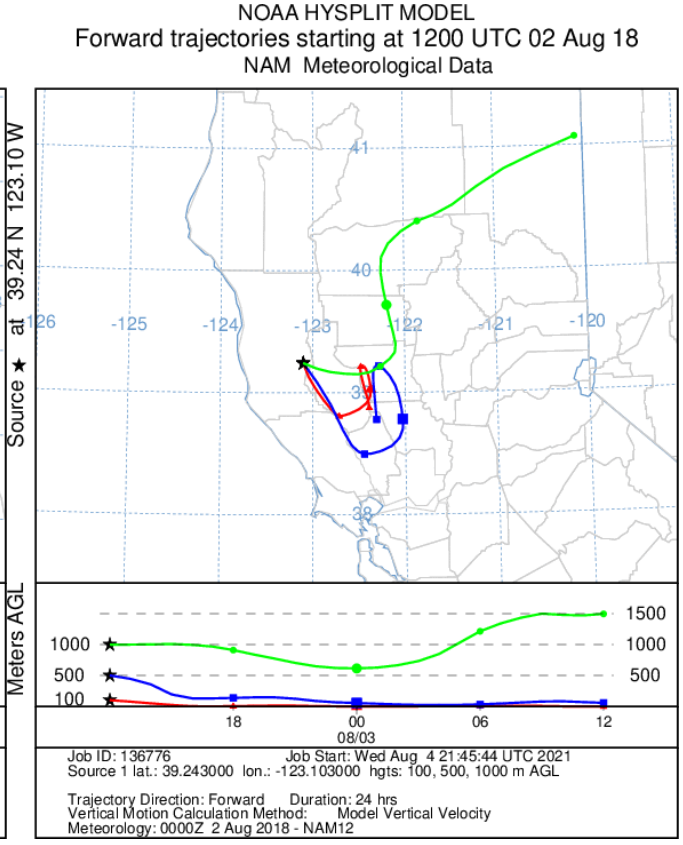

NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 29 Jul 18
NAM Meteorological Data
Source ★ at 39.24 N 123.10 W
Meters AGL
Job ID: 135356 Job Start: Wed Aug 4 20:43:51 UTC 2021
Source 1 lat.: 39.243000 lon.: -123.103000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 29 Jul 2018 - NAM12
NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 29 Jul 18
NAM Meteorological Data
Source ★ at 39.24 N 123.10 W
Meters AGL
Job ID: 135468 Job Start: Wed Aug 4 20:46:06 UTC 2021
Source 1 lat.: 39.243000 lon.: -123.103000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 29 Jul 2018 - NAM12


NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 30 Jul 18
NAM Meteorological Data
Source ★ at 39.24 N 123.10 W
Meters AGL
Job ID: 135580 Job Start: Wed Aug 4 20:48:19 UTC 2021
Source 1 lat.: 39.243000 lon.: -123.103000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 30 Jul 2018 - NAM12
NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 30 Jul 18
NAM Meteorological Data
Source ★ at 39.24 N 123.10 W
Meters AGL
Job ID: 135671 Job Start: Wed Aug 4 20:50:25 UTC 2021
Source 1 lat.: 39.243000 lon.: -123.103000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 30 Jul 2018 - NAM12
NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 31 Jul 18
NAM Meteorological Data
Source ★ at 39.24 N 123.10 W
Meters AGL
Job ID: 135733 Job Start: Wed Aug 4 20:52:16 UTC 2021
Source 1 lat.: 39.243000 lon.: -123.103000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 31 Jul 2018 - NAM12
NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 31 Jul 18
NAM Meteorological Data
Source ★ at 39.24 N 123.10 W
Meters AGL
Job ID: 135786 Job Start: Wed Aug 4 20:53:52 UTC 2021
Source 1 lat.: 39.243000 lon.: -123.103000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 31 Jul 2018 - NAM12

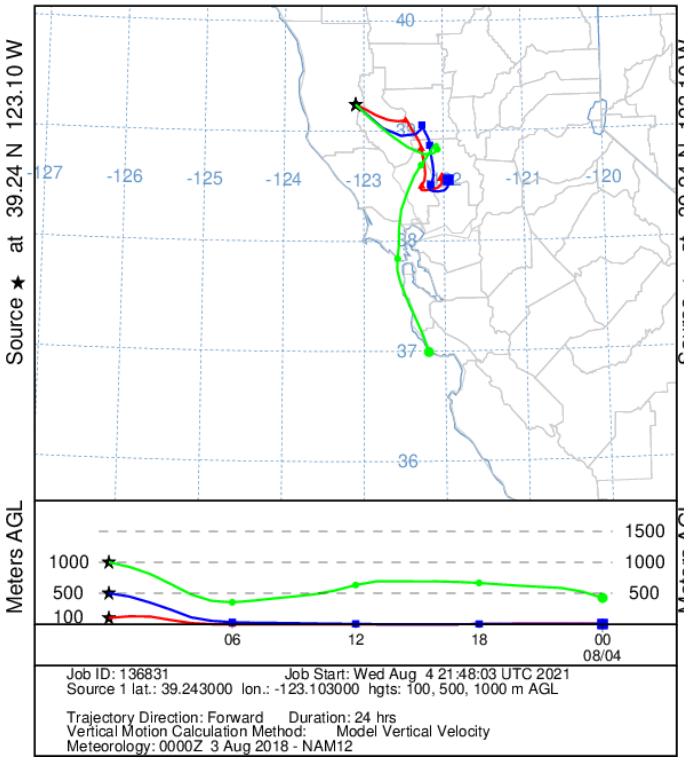

NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 01 Aug 18
NAM Meteorological Data
Source ★ at 39.24 N 123.10 W
Meters AGL
Job ID: 136652 Job Start: Wed Aug 4 21:39:08 UTC 2021
Source 1 lat.: 39.243000 lon.: -123.103000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 1 Aug 2018 - NAM12


NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 01 Aug 18
NAM Meteorological Data
Source ★ at 39.24 N 123.10 W
Meters AGL
Job ID: 136683 Job Start: Wed Aug 4 21:40:49 UTC 2021
Source 1 lat.: 39.243000 lon.: -123.103000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 1 Aug 2018 - NAM12


NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 02 Aug 18
NAM Meteorological Data
Source ★ at 39.24 N 123.10 W
Meters AGL
Job ID: 136746 Job Start: Wed Aug 4 21:43:59 UTC 2021
Source 1 lat.: 39.243000 lon.: -123.103000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 2 Aug 2018 - NAM12


NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 02 Aug 18
NAM Meteorological Data
Source ★ at 39.24 N 123.10 W
Meters AGL
Job ID: 136776 Job Start: Wed Aug 4 21:45:44 UTC 2021
Source 1 lat.: 39.243000 lon.: -123.103000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 2 Aug 2018 - NAM12

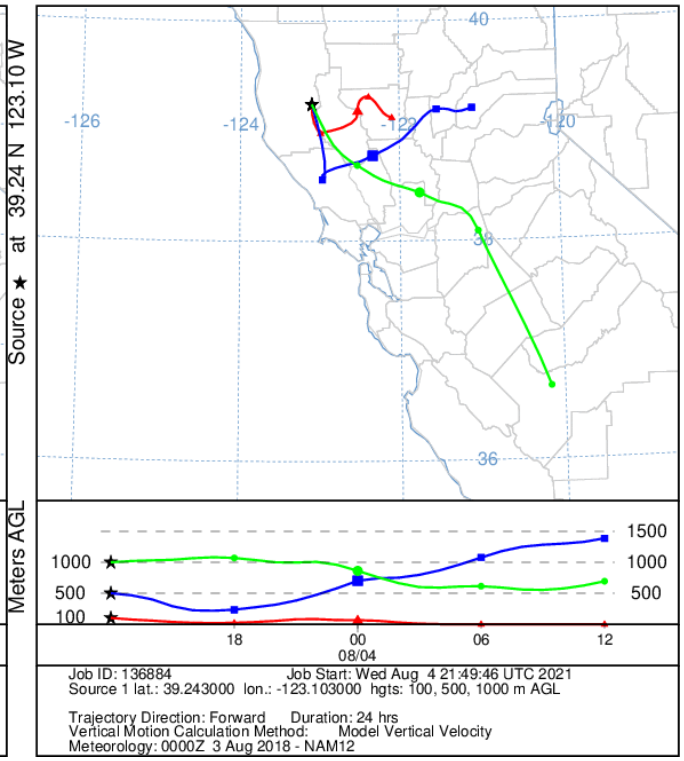
NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 03 Aug 18
NAM Meteorological Data



Job ID: 136831 Job Start: Wed Aug 4 21:48:03 UTC 2021
Source 1 lat.: 39.243000 lon.: -123.103000 hgts: 100, 500, 1000 m AGL

Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 3 Aug 2018 - NAM12

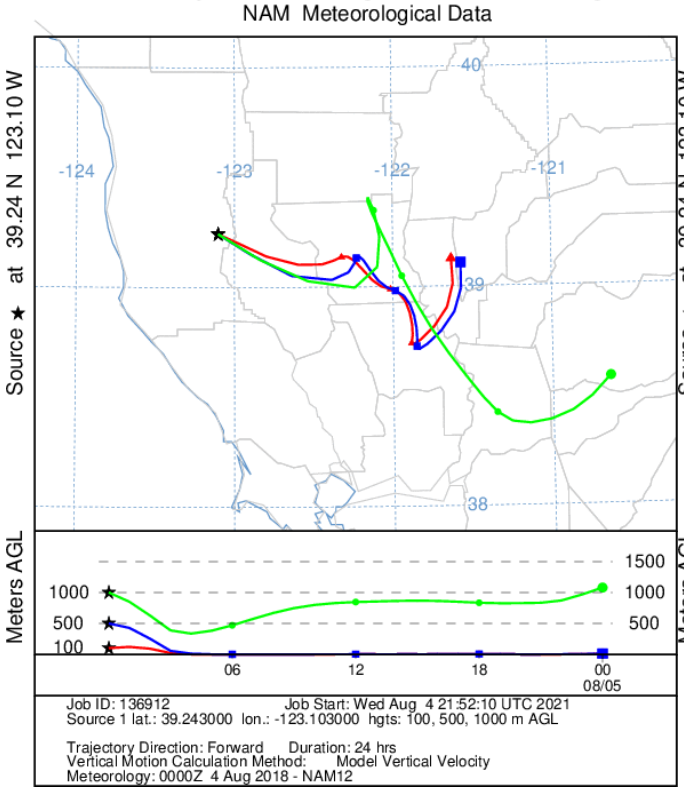
NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 03 Aug 18
NAM Meteorological Data



Job ID: 136884 Job Start: Wed Aug 4 21:49:46 UTC 2021
Source 1 lat.: 39.243000 lon.: -123.103000 hgts: 100, 500, 1000 m AGL

Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 3 Aug 2018 - NAM12

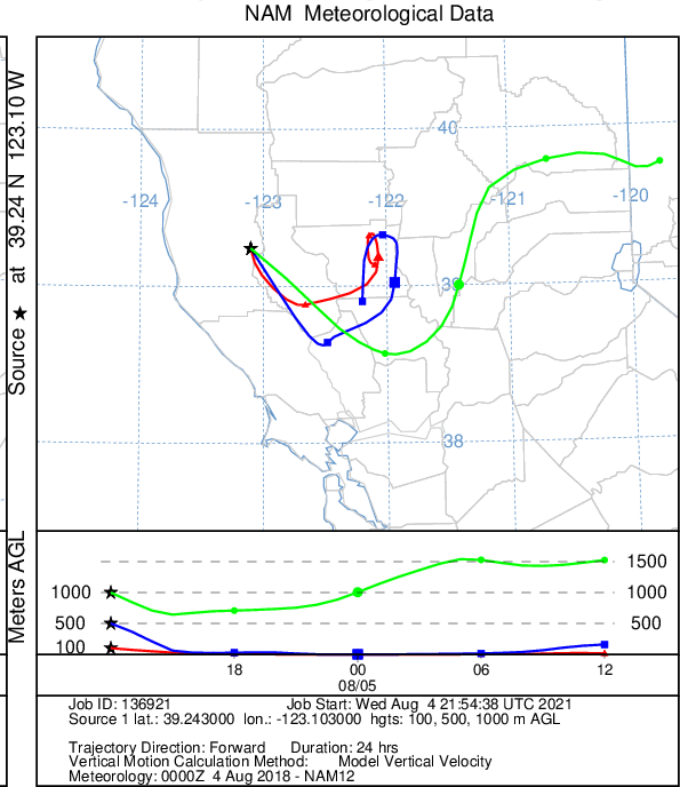
NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 04 Aug 18
NAM Meteorological Data



Job ID: 136912 Job Start: Wed Aug 4 21:52:10 UTC 2021
Source 1 lat.: 39.243000 lon.: -123.103000 hgts: 100, 500, 1000 m AGL

Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 4 Aug 2018 - NAM12

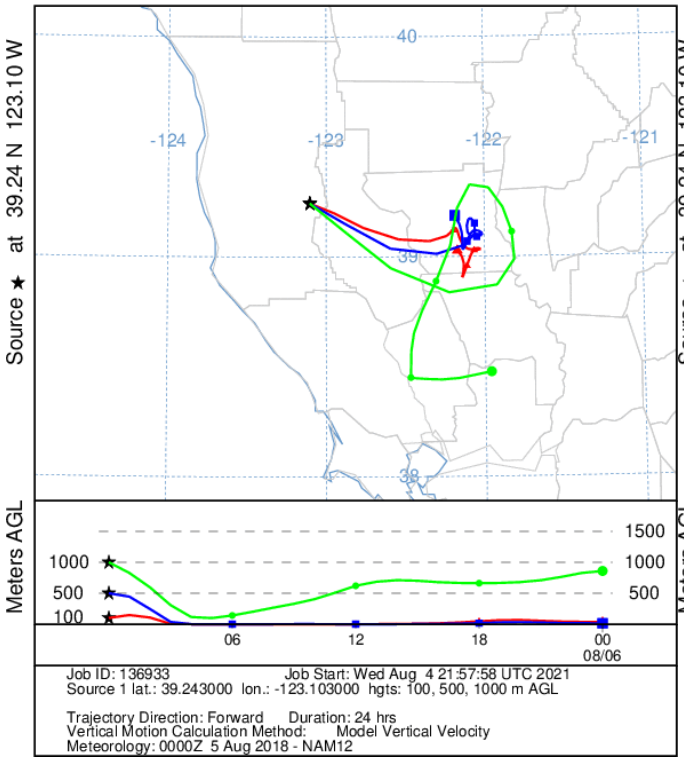
NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 04 Aug 18
NAM Meteorological Data



Job ID: 136921 Job Start: Wed Aug 4 21:54:38 UTC 2021
Source 1 lat.: 39.243000 lon.: -123.103000 hgts: 100, 500, 1000 m AGL

Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 4 Aug 2018 - NAM12

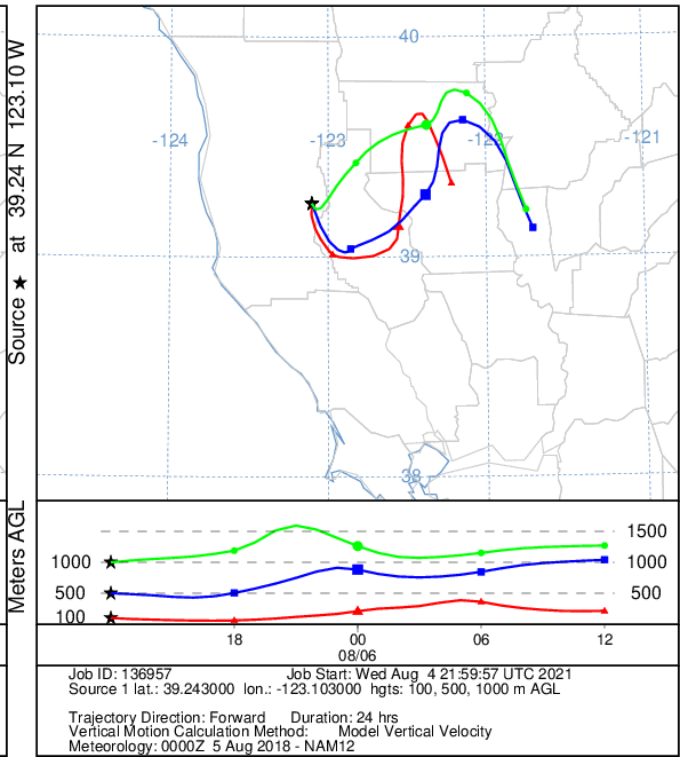
NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 05 Aug 18
NAM Meteorological Data



Job ID: 136933 Job Start: Wed Aug 4 21:57:58 UTC 2021
Source 1 lat.: 39.243000 lon.: -123.103000 hgts: 100, 500, 1000 m AGL

Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 5 Aug 2018 - NAM12

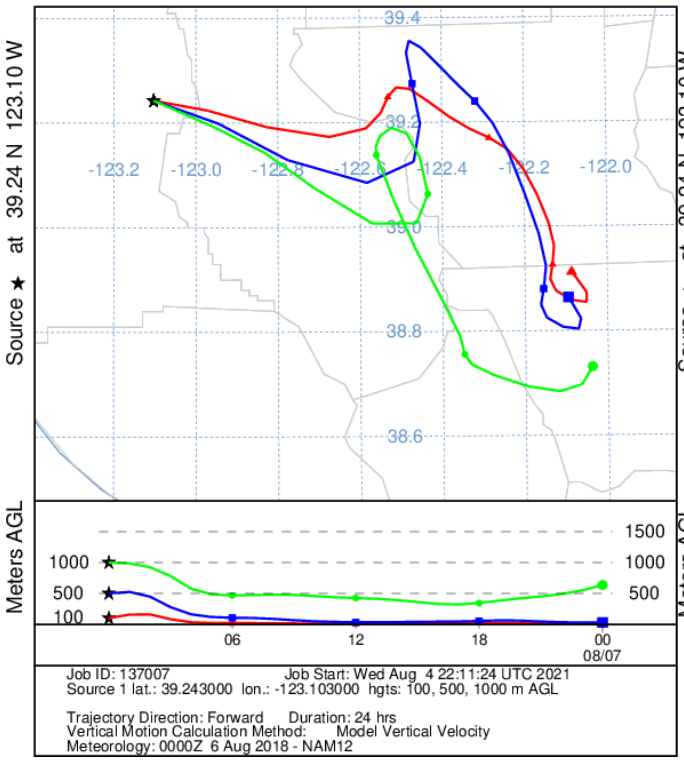
NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 05 Aug 18
NAM Meteorological Data



Job ID: 136957 Job Start: Wed Aug 4 21:59:57 UTC 2021
Source 1 lat.: 39.243000 lon.: -123.103000 hgts: 100, 500, 1000 m AGL

Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 5 Aug 2018 - NAM12

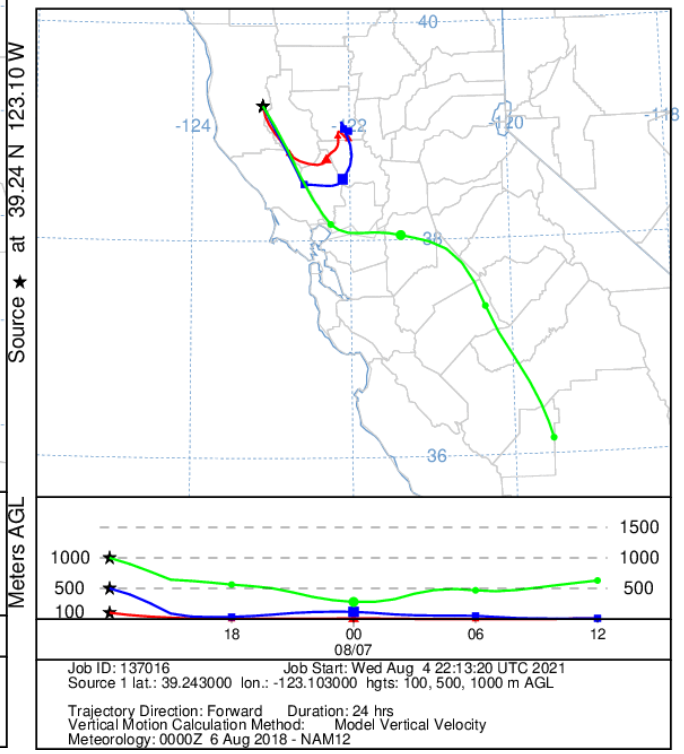
NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 06 Aug 18
NAM Meteorological Data



Job ID: 137007 Job Start: Wed Aug 4 22:11:24 UTC 2021
Source 1 lat.: 39.243000 lon.: -123.103000 hgts: 100, 500, 1000 m AGL

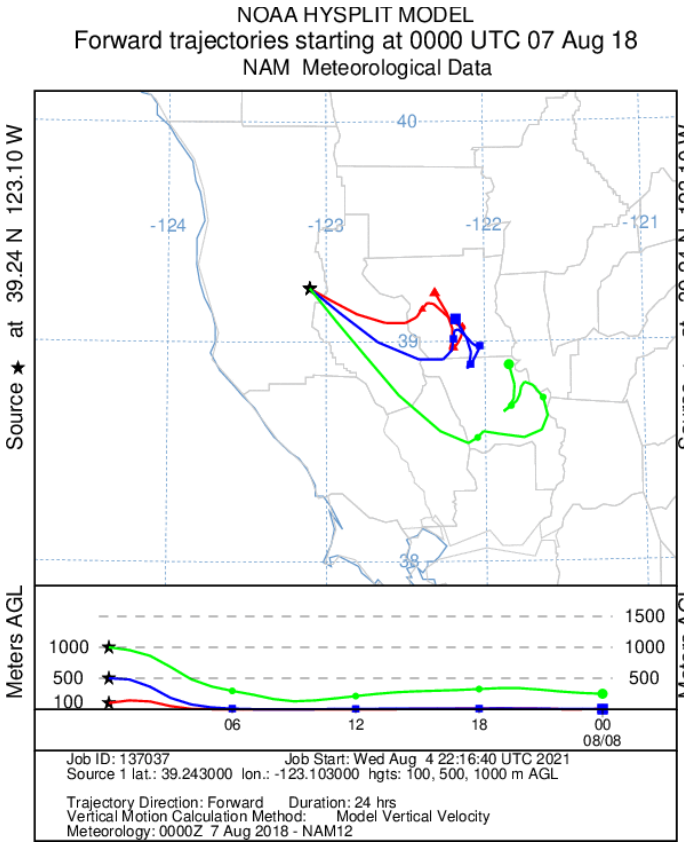
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 6 Aug 2018 - NAM12

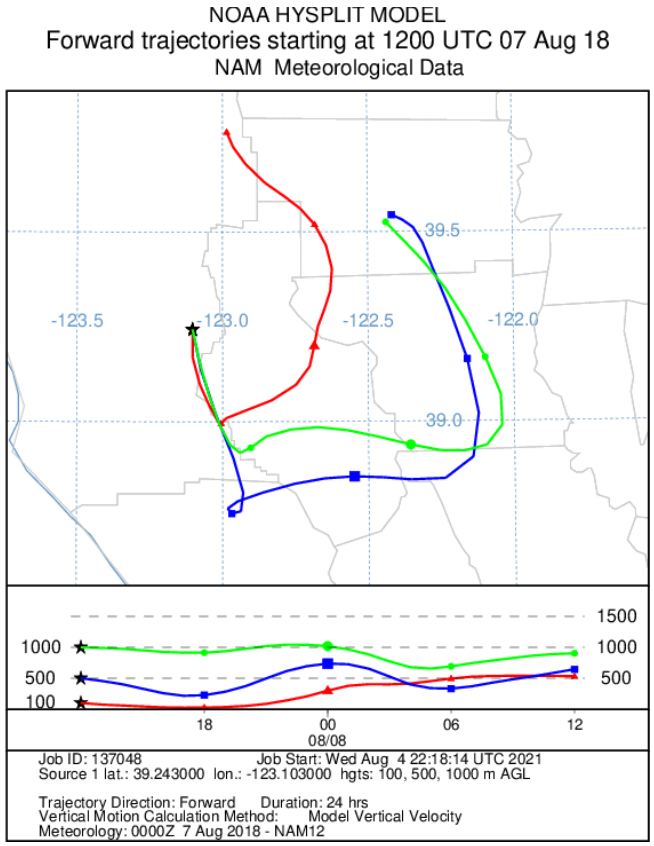
NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 06 Aug 18
NAM Meteorological Data

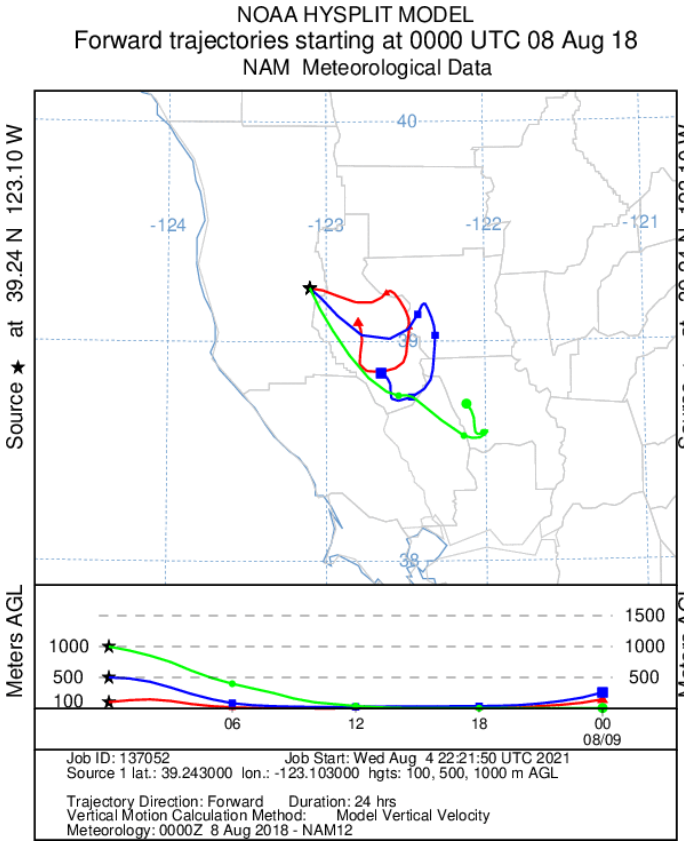


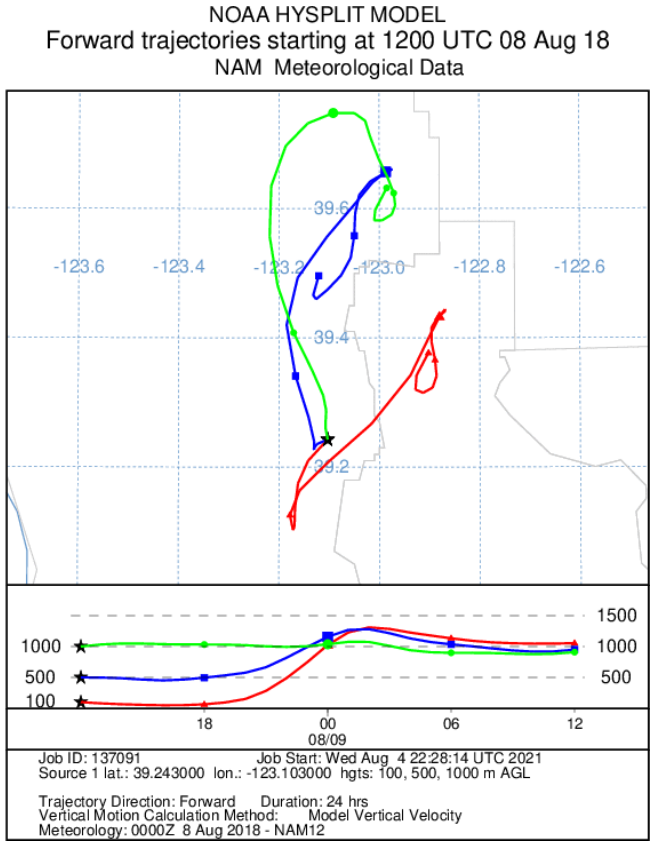
Job ID: 137016 Job Start: Wed Aug 4 22:13:20 UTC 2021
Source 1 lat.: 39.243000 lon.: -123.103000 hgts: 100, 500, 1000 m AGL

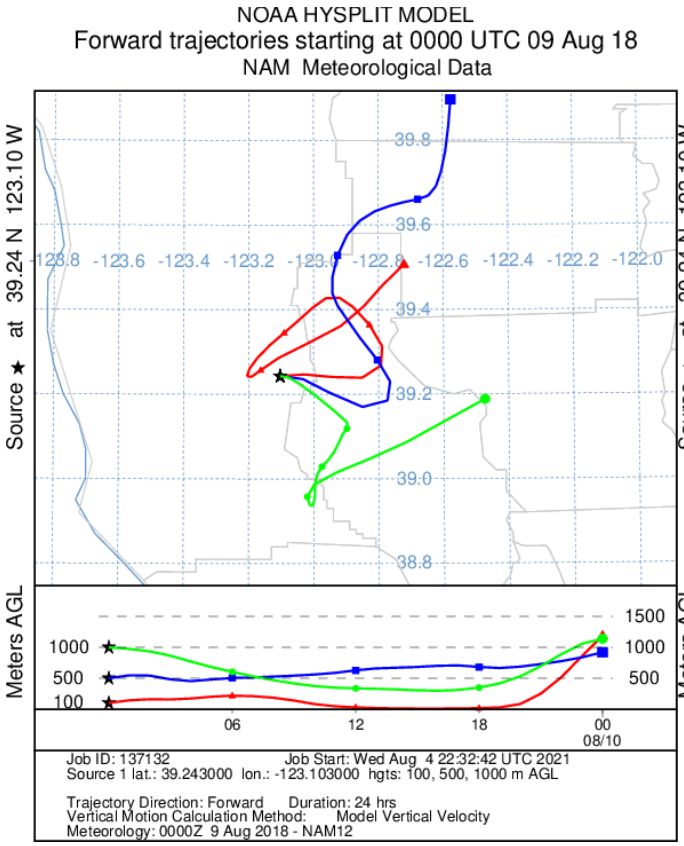
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 6 Aug 2018 - NAM12

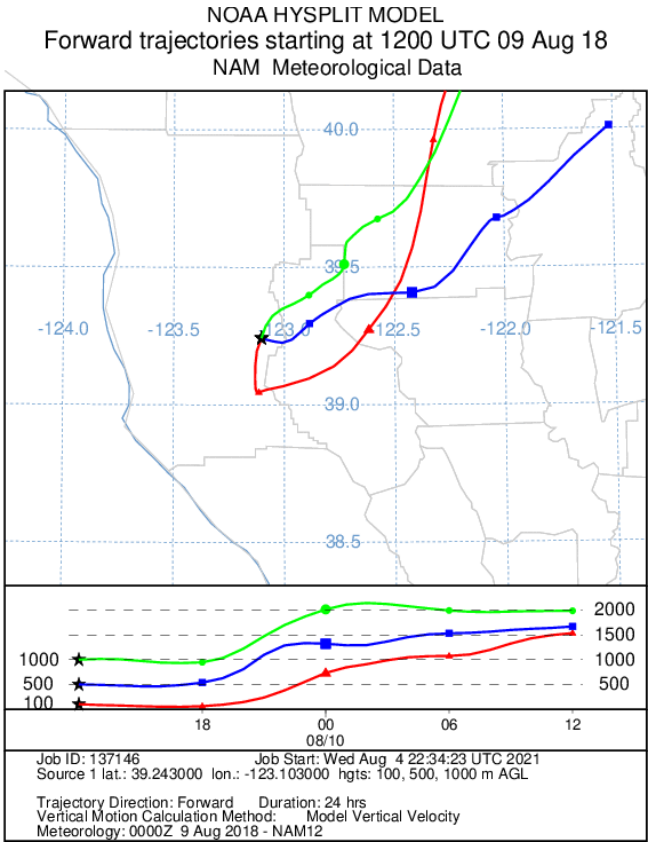

NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 07 Aug 18
NAM Meteorological Data
Source ★ at 39.24 N 123.10 W
Meters AGL
Job ID: 137037 Job Start: Wed Aug 4 22:16:40 UTC 2021
Source 1 lat.: 39.243000 lon.: -123.103000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 7 Aug 2018 - NAM12

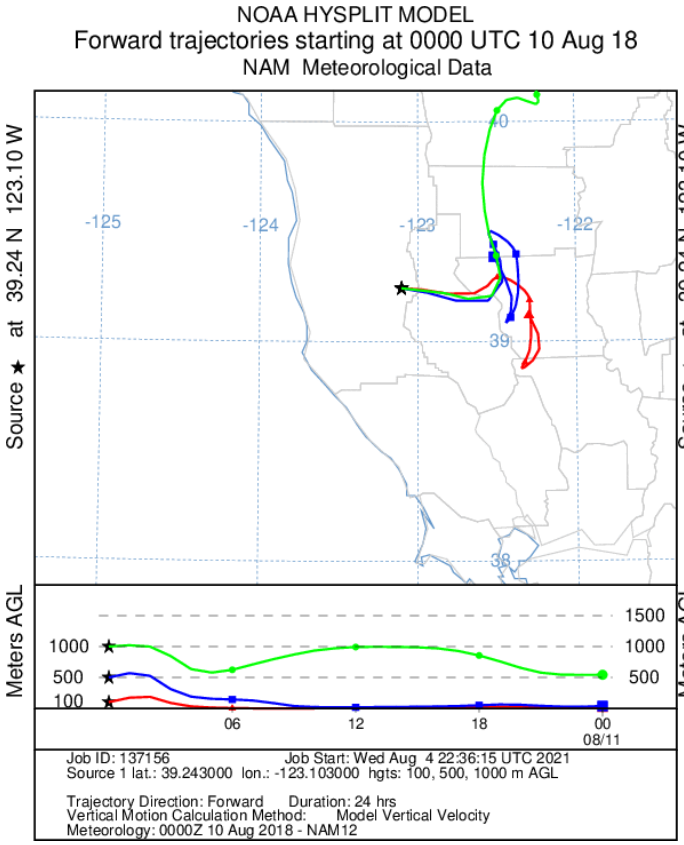

NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 07 Aug 18
NAM Meteorological Data
Source ★ at 39.24 N 123.10 W
Meters AGL
Job ID: 137048 Job Start: Wed Aug 4 22:18:14 UTC 2021
Source 1 lat.: 39.243000 lon.: -123.103000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 7 Aug 2018 - NAM12

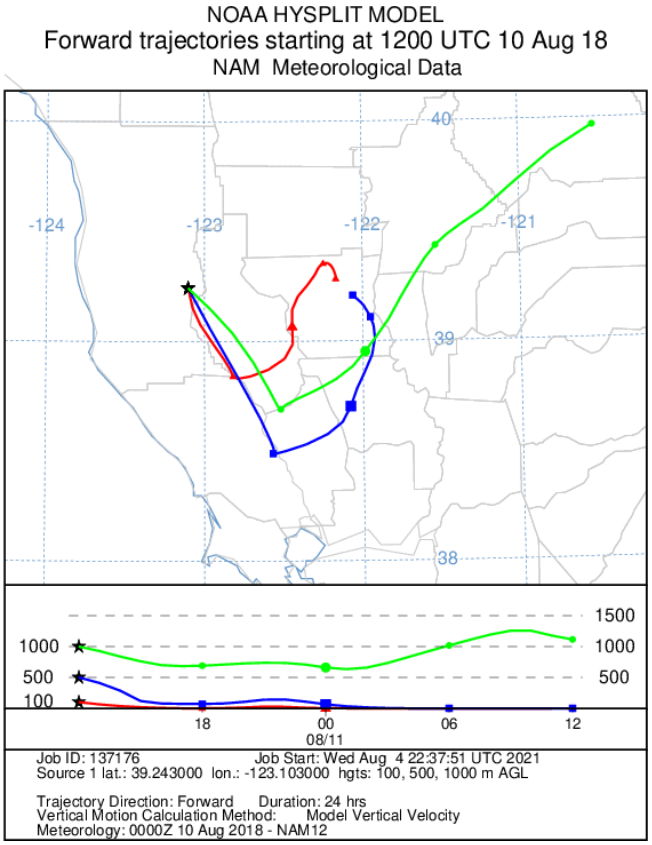

NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 08 Aug 18
NAM Meteorological Data
Source ★ at 39.24 N 123.10 W
Meters AGL
Job ID: 137052 Job Start: Wed Aug 4 22:21:50 UTC 2021
Source 1 lat.: 39.243000 lon.: -123.103000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 8 Aug 2018 - NAM12


NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 08 Aug 18
NAM Meteorological Data
Source ★ at 39.24 N 123.10 W
Meters AGL
Job ID: 137091 Job Start: Wed Aug 4 22:28:14 UTC 2021
Source 1 lat.: 39.243000 lon.: -123.103000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 8 Aug 2018 - NAM12


NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 09 Aug 18
NAM Meteorological Data
Source ★ at 39.24 N 123.10 W
Meters AGL
Job ID: 137132 Job Start: Wed Aug 4 22:32:42 UTC 2021
Source 1 lat.: 39.243000 lon.: -123.103000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 9 Aug 2018 - NAM12

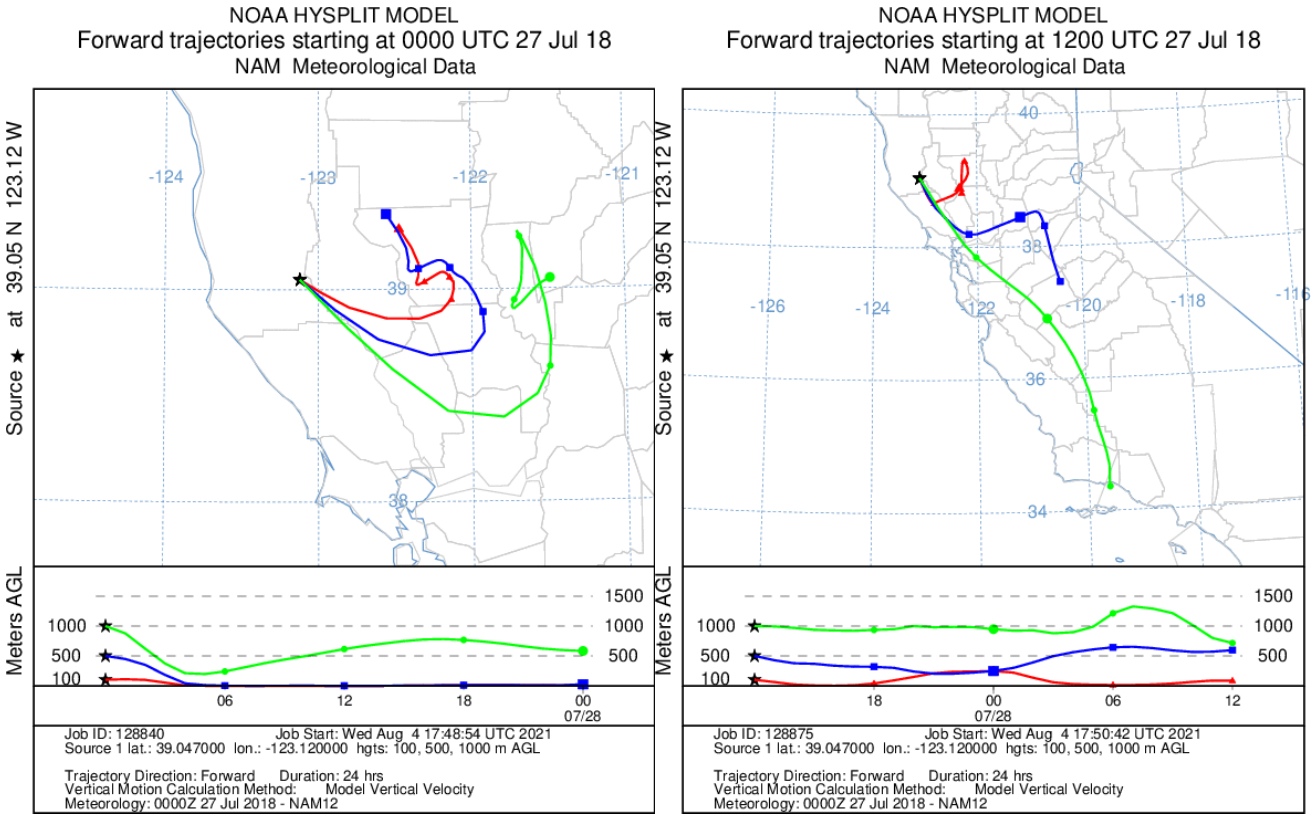

NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 09 Aug 18
NAM Meteorological Data
Source ★ at 39.24 N 123.10 W
Meters AGL
Job ID: 137146 Job Start: Wed Aug 4 22:34:23 UTC 2021
Source 1 lat.: 39.243000 lon.: -123.103000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 9 Aug 2018 - NAM12

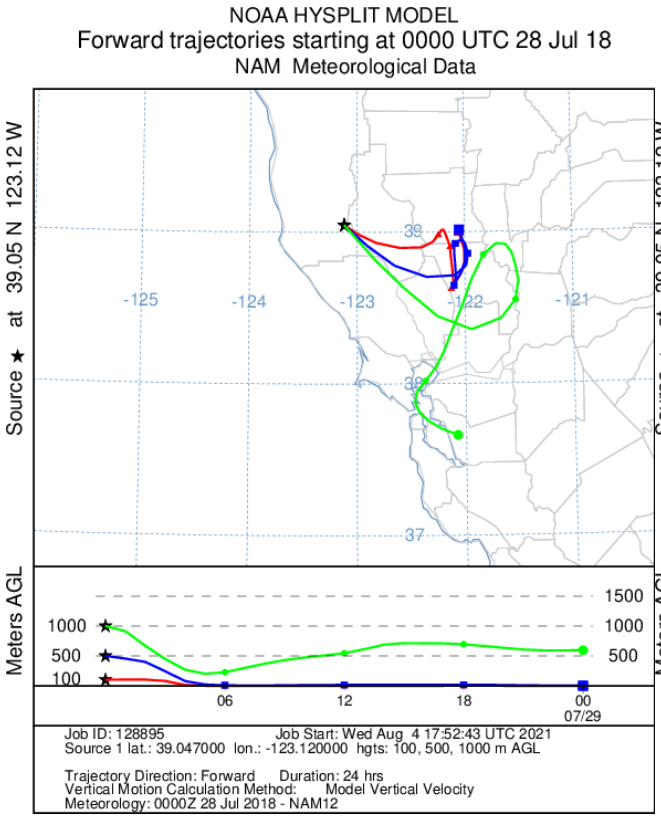

NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 10 Aug 18
NAM Meteorological Data
Source ★ at 39.24 N 123.10 W
Meters AGL
Job ID: 137156 Job Start: Wed Aug 4 22:36:15 UTC 2021
Source 1 lat.: 39.243000 lon.: -123.103000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 10 Aug 2018 - NAM12

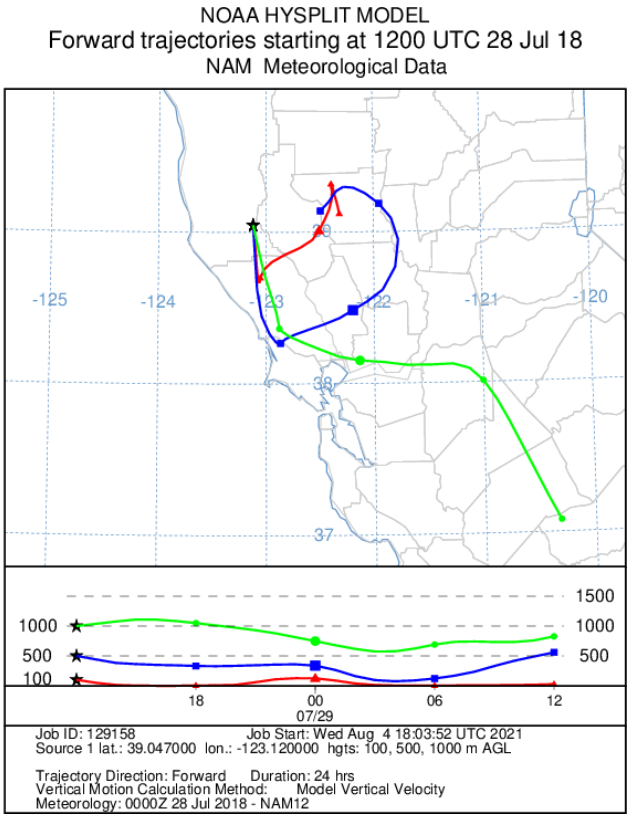

NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 10 Aug 18
NAM Meteorological Data
Source ★ at 39.24 N 123.10 W
Meters AGL
Job ID: 137176 Job Start: Wed Aug 4 22:37:51 UTC 2021
Source 1 lat.: 39.243000 lon.: -123.103000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 10 Aug 2018 - NAM12

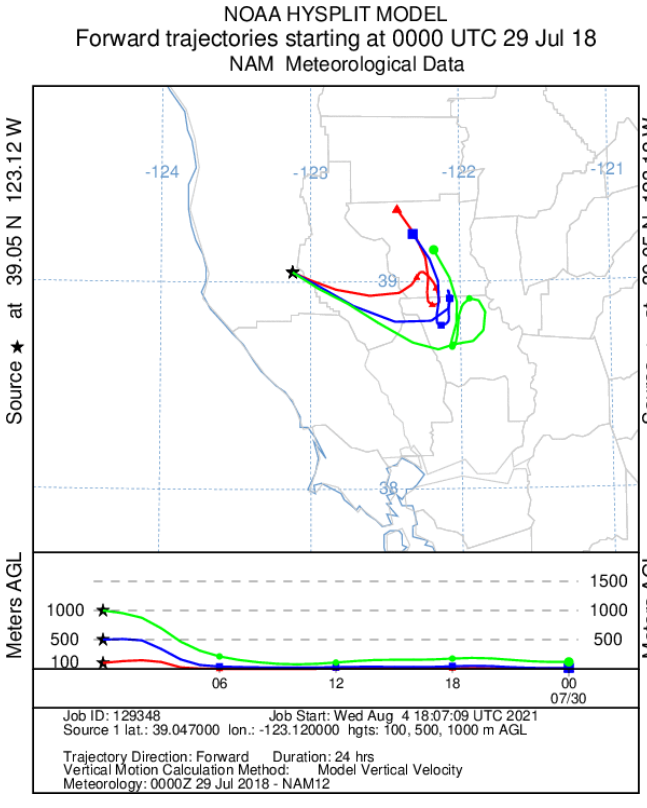
7. River Fire (Mendocino)

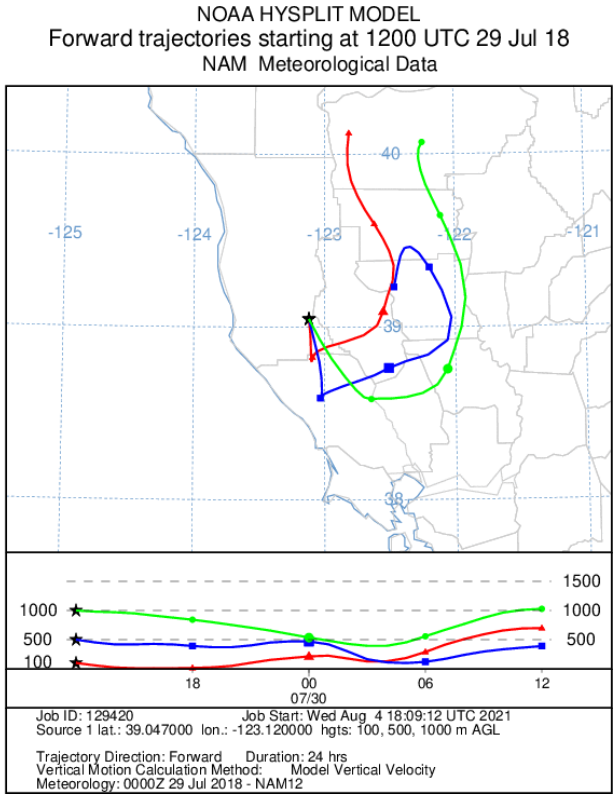
Fire	Start	Containment	Latitude	Longitude	Total Acres
Mendocino Complex (River)	7/27/18	8/10/18	39.047	-123.120	48,920

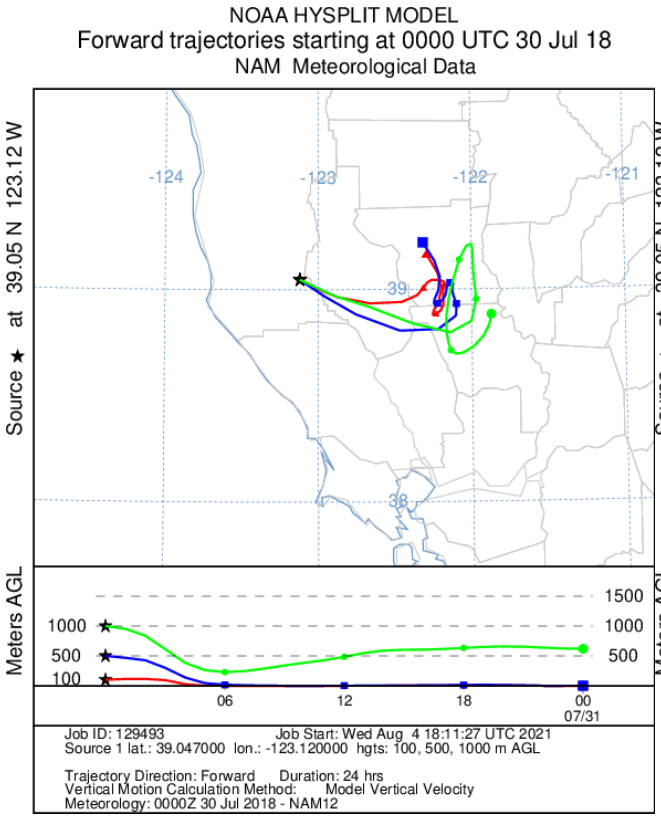


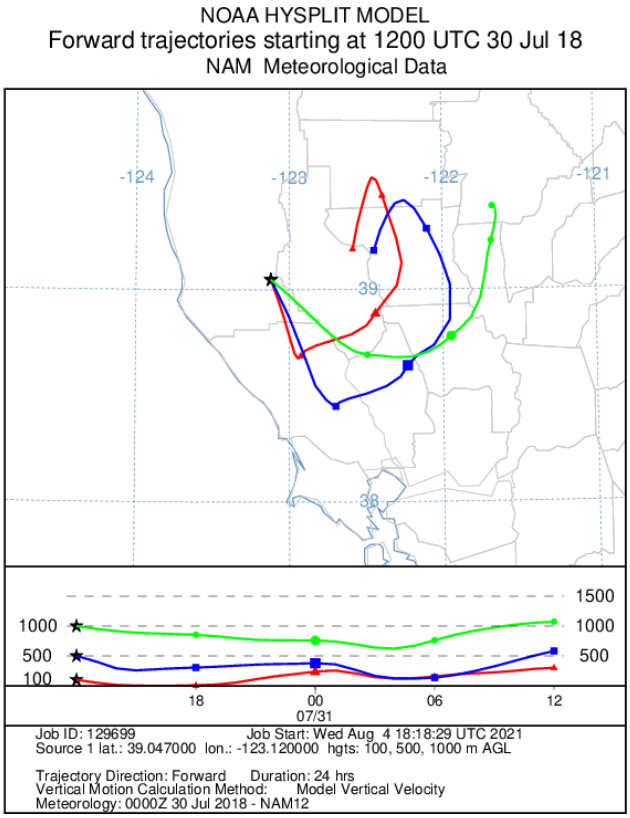

NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 28 Jul 18
NAM Meteorological Data
Source ★ at 39.05 N 123.12 W
Meters AGL
Job ID: 128895 Job Start: Wed Aug 4 17:52:43 UTC 2021
Source 1 lat.: 39.047000 lon.: -123.120000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 28 Jul 2018 - NAM12

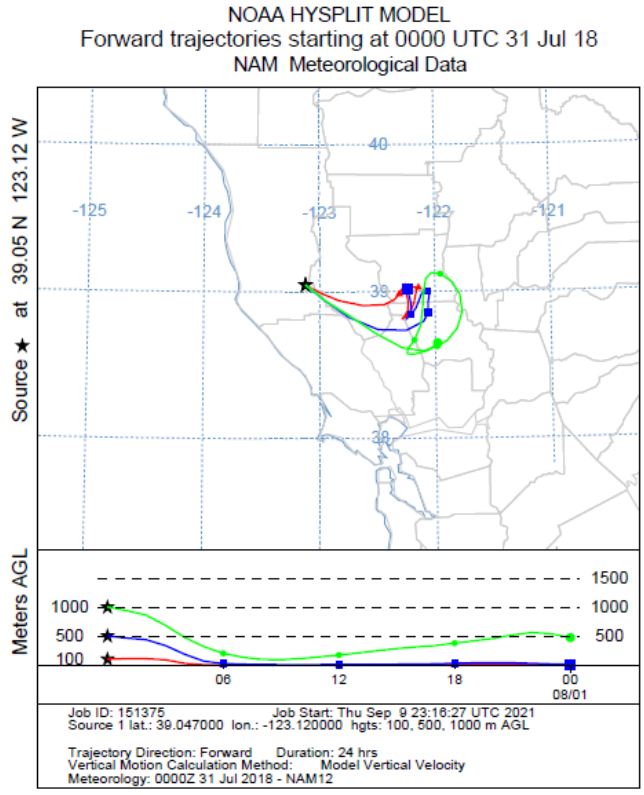

NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 28 Jul 18
NAM Meteorological Data
Source ★ at 39.05 N 123.12 W
Meters AGL
Job ID: 129158 Job Start: Wed Aug 4 18:03:52 UTC 2021
Source 1 lat.: 39.047000 lon.: -123.120000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 28 Jul 2018 - NAM12

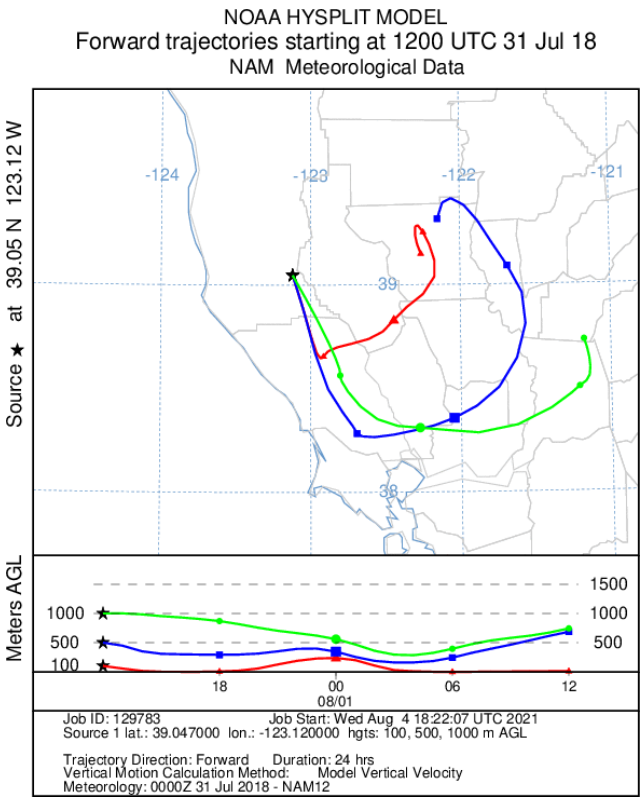

NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 29 Jul 18
NAM Meteorological Data
Source ★ at 39.05 N 123.12 W
Meters AGL
Job ID: 129348 Job Start: Wed Aug 4 18:07:09 UTC 2021
Source 1 lat.: 39.047000 lon.: -123.120000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 29 Jul 2018 - NAM12

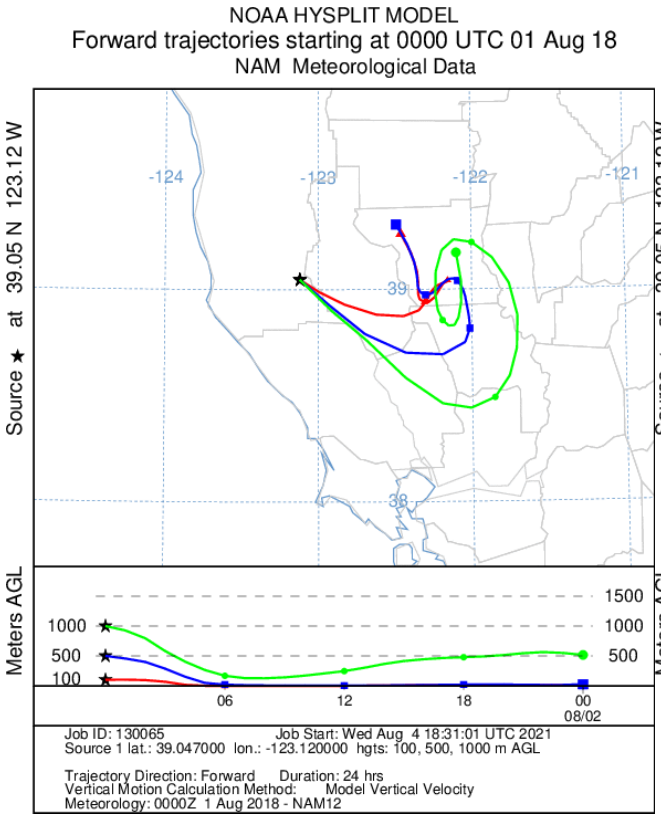

NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 29 Jul 18
NAM Meteorological Data
Source ★ at 39.05 N 123.12 W
Meters AGL
Job ID: 129420 Job Start: Wed Aug 4 18:09:12 UTC 2021
Source 1 lat.: 39.047000 lon.: -123.120000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 29 Jul 2018 - NAM12

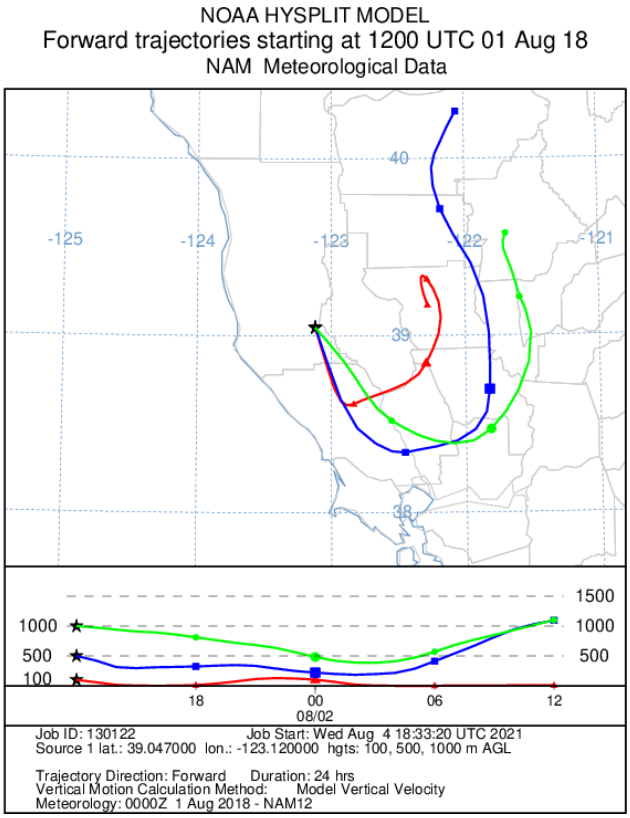

NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 30 Jul 18
NAM Meteorological Data
Source ★ at 39.05 N 123.12 W
Meters AGL
Job ID: 129493 Job Start: Wed Aug 4 18:11:27 UTC 2021
Source 1 lat.: 39.047000 lon.: -123.120000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 30 Jul 2018 - NAM12

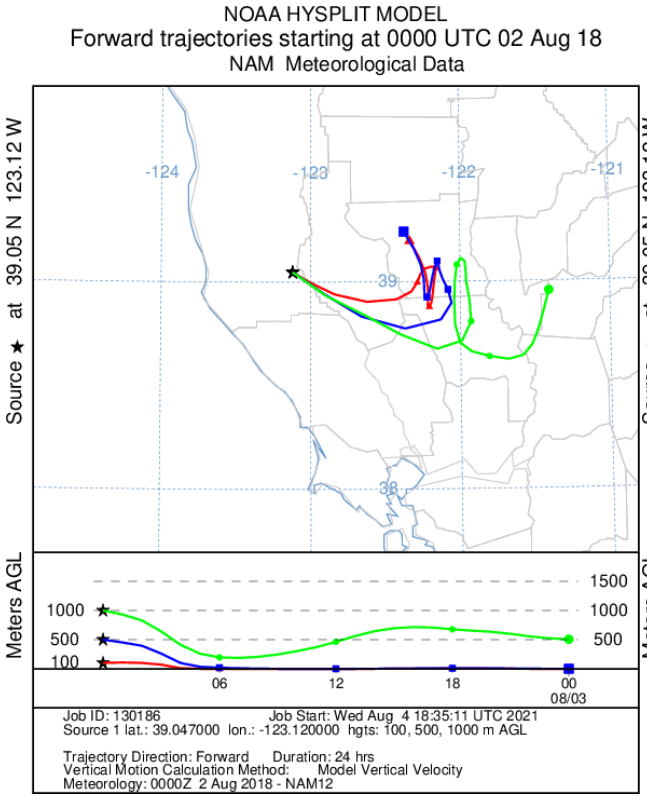

NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 30 Jul 18
NAM Meteorological Data
Source ★ at 39.05 N 123.12 W
Meters AGL
Job ID: 129699 Job Start: Wed Aug 4 18:18:29 UTC 2021
Source 1 lat.: 39.047000 lon.: -123.120000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 30 Jul 2018 - NAM12

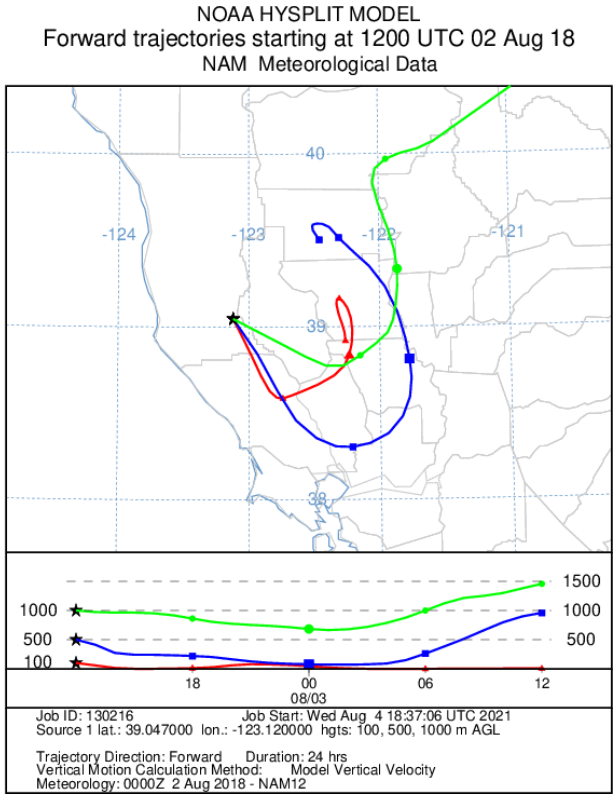

NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 31 Jul 18
NAM Meteorological Data
Source ★ at 39.05 N 123.12 W
Meters AGL
Job ID: 151375 Job Start: Thu Sep 9 23:16:27 UTC 2021
Source 1 lat.: 39.047000 lon.: -123.120000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 31 Jul 2018 - NAM12

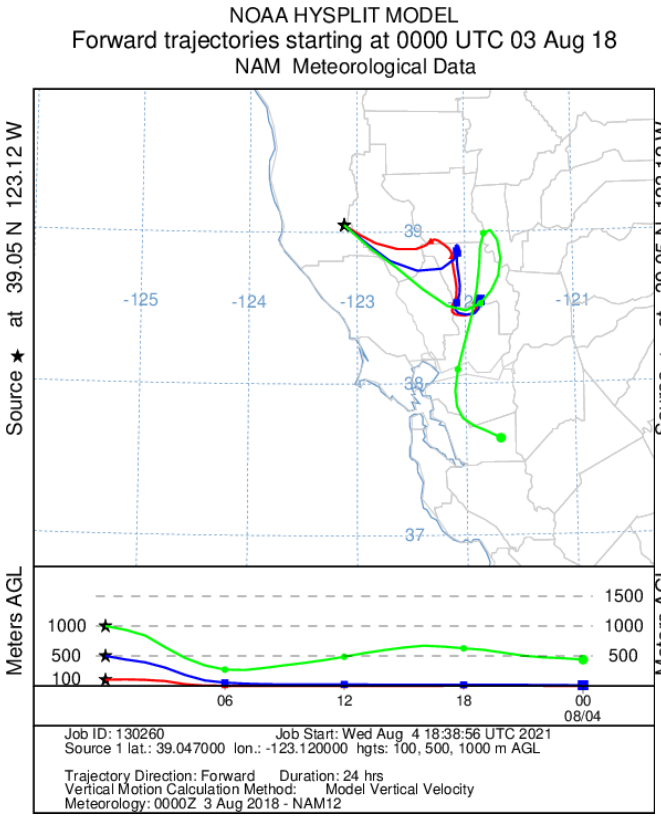

NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 31 Jul 18
NAM Meteorological Data
Source ★ at 39.05 N 123.12 W
Meters AGL
Job ID: 129783 Job Start: Wed Aug 4 18:22:07 UTC 2021
Source 1 lat.: 39.047000 lon.: -123.120000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 31 Jul 2018 - NAM12

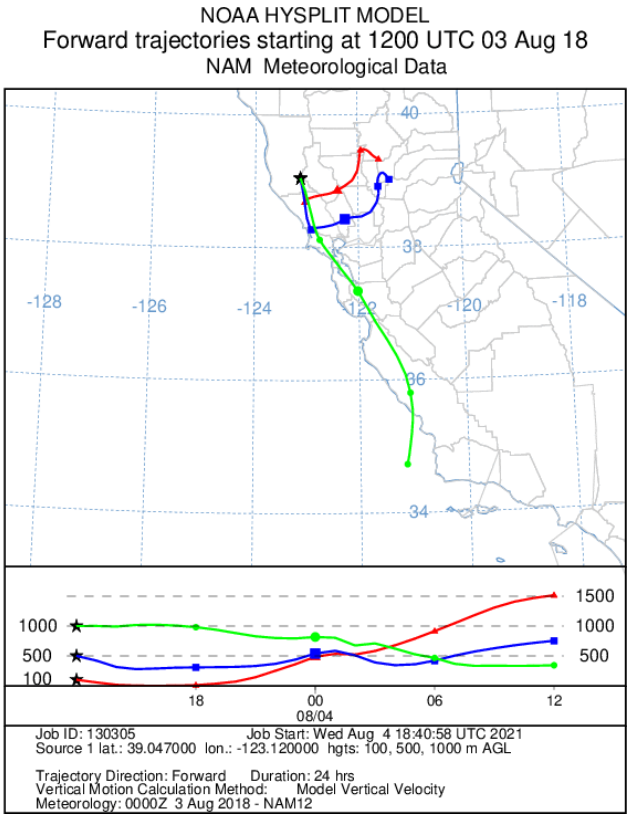

NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 01 Aug 18
NAM Meteorological Data
Source ★ at 39.05 N 123.12 W
Meters AGL
Job ID: 130065 Job Start: Wed Aug 4 18:31:01 UTC 2021
Source 1 lat.: 39.047000 lon.: -123.120000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 1 Aug 2018 - NAM12

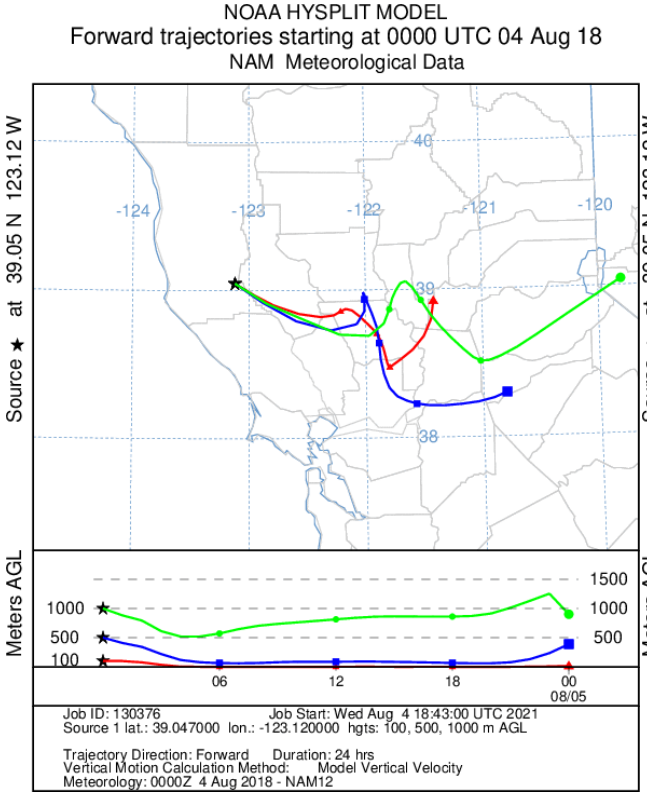

NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 01 Aug 18
NAM Meteorological Data
Source ★ at 39.05 N 123.12 W
Meters AGL
Job ID: 130122 Job Start: Wed Aug 4 18:33:20 UTC 2021
Source 1 lat.: 39.047000 lon.: -123.120000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 1 Aug 2018 - NAM12

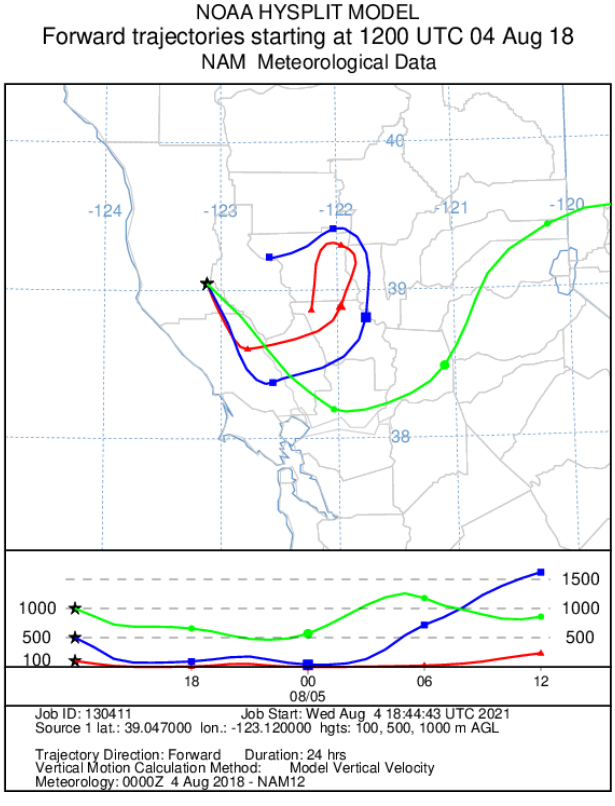

NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 02 Aug 18
NAM Meteorological Data
Source ★ at 39.05 N 123.12 W
Meters AGL
Job ID: 130186 Job Start: Wed Aug 4 18:35:11 UTC 2021
Source 1 lat.: 39.047000 lon.: -123.120000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 2 Aug 2018 - NAM12

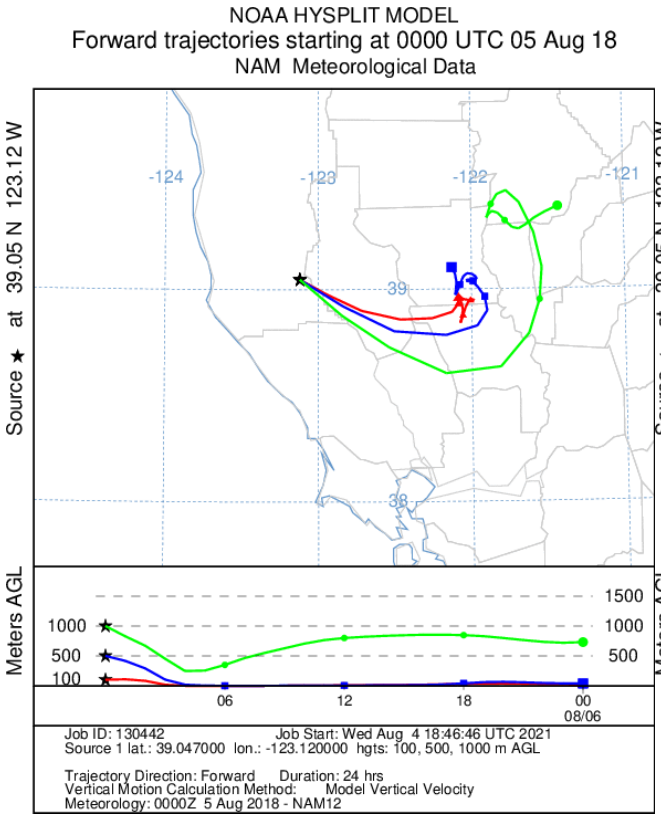

NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 02 Aug 18
NAM Meteorological Data
Source ★ at 39.05 N 123.12 W
Meters AGL
Job ID: 130216 Job Start: Wed Aug 4 18:37:06 UTC 2021
Source 1 lat.: 39.047000 lon.: -123.120000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 2 Aug 2018 - NAM12

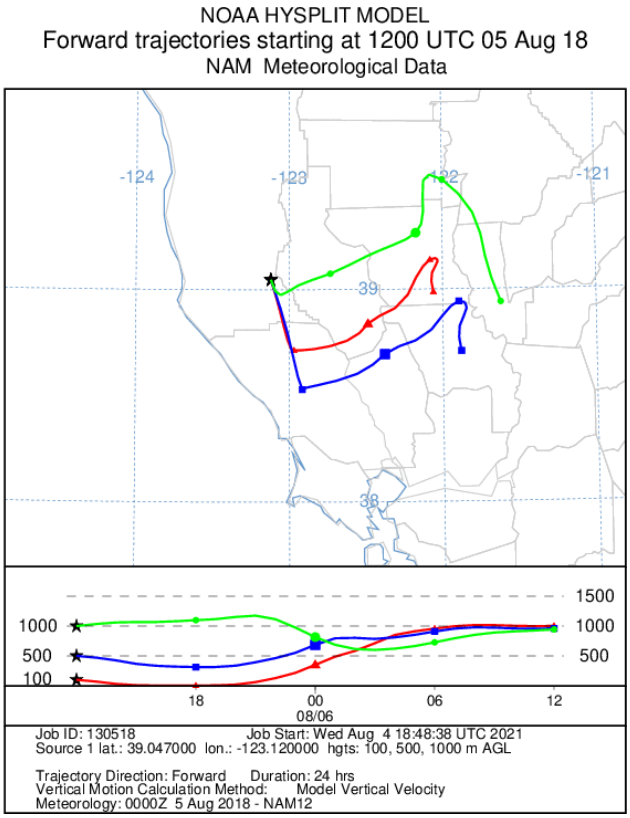

NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 03 Aug 18
NAM Meteorological Data
Source ★ at 39.05 N 123.12 W
Meters AGL
Job ID: 130260 Job Start: Wed Aug 4 18:38:56 UTC 2021
Source 1 lat.: 39.047000 lon.: -123.120000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 3 Aug 2018 - NAM12

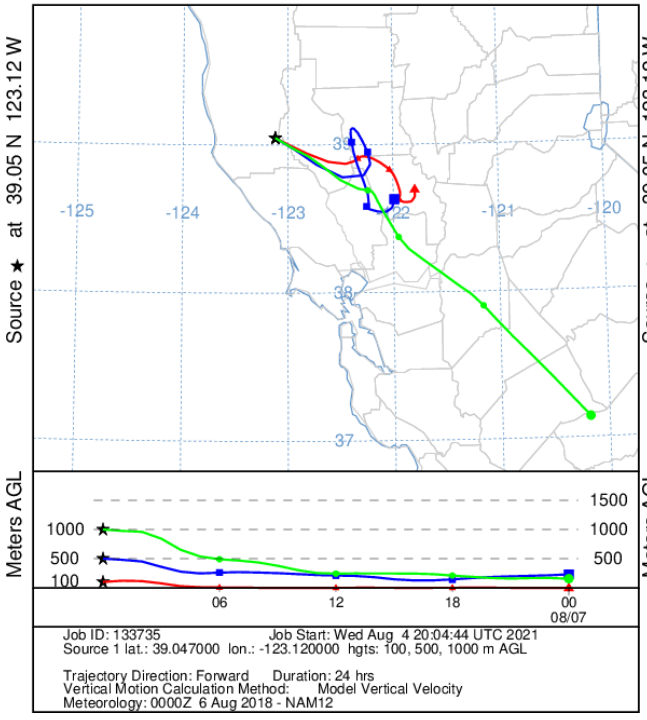

NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 03 Aug 18
NAM Meteorological Data
Source ★ at 39.05 N 123.12 W
Meters AGL
Job ID: 130305 Job Start: Wed Aug 4 18:40:58 UTC 2021
Source 1 lat.: 39.047000 lon.: -123.120000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 3 Aug 2018 - NAM12

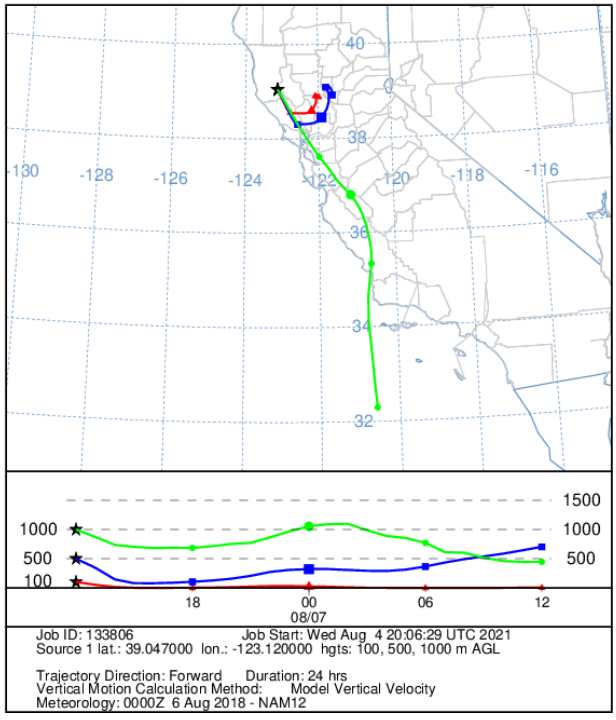

NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 04 Aug 18
NAM Meteorological Data
Source ★ at 39.05 N 123.12 W
Meters AGL
Job ID: 130376 Job Start: Wed Aug 4 18:43:00 UTC 2021
Source 1 lat.: 39.047000 lon.: -123.120000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 4 Aug 2018 - NAM12

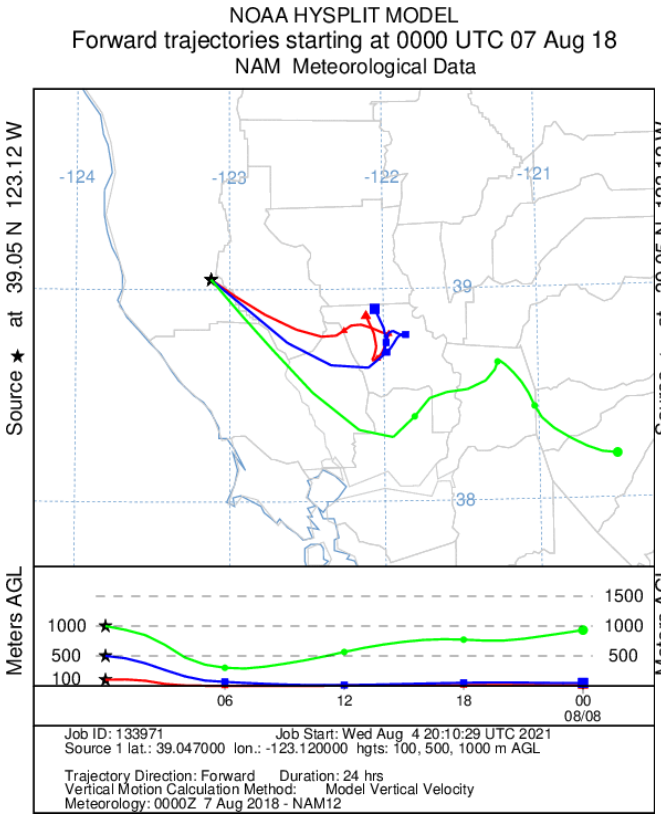

NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 04 Aug 18
NAM Meteorological Data
Source ★ at 39.05 N 123.12 W
Meters AGL
Job ID: 130411 Job Start: Wed Aug 4 18:44:43 UTC 2021
Source 1 lat.: 39.047000 lon.: -123.120000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 4 Aug 2018 - NAM12

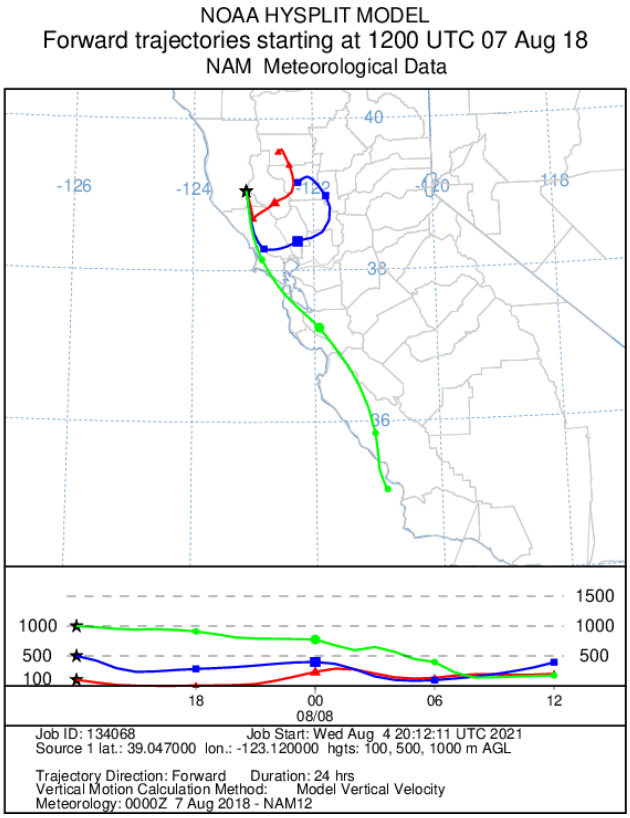

NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 05 Aug 18
NAM Meteorological Data
Source ★ at 39.05 N 123.12 W
Meters AGL
Job ID: 130442 Job Start: Wed Aug 4 18:46:46 UTC 2021
Source 1 lat.: 39.047000 lon.: -123.120000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 5 Aug 2018 - NAM12

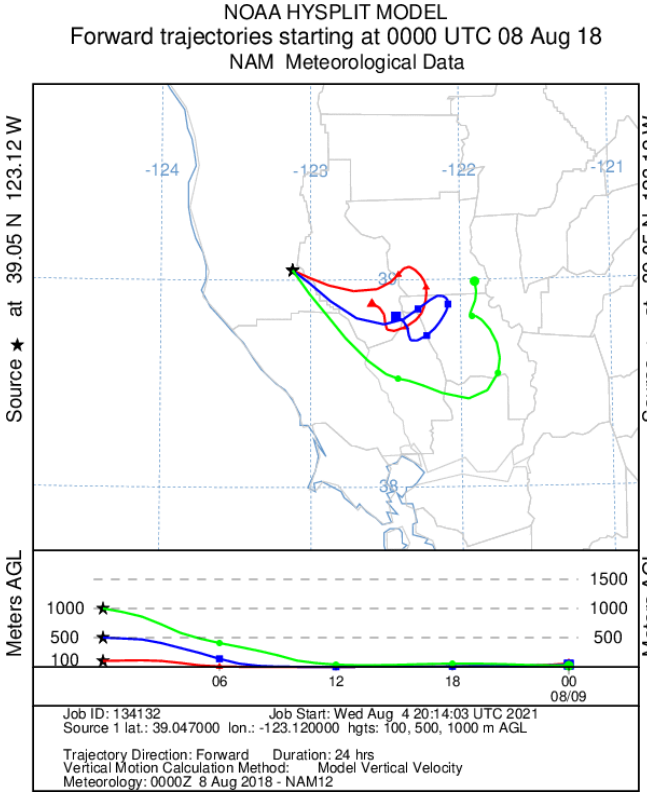

NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 05 Aug 18
NAM Meteorological Data
Source ★ at 39.05 N 123.12 W
Meters AGL
Job ID: 130518 Job Start: Wed Aug 4 18:48:38 UTC 2021
Source 1 lat.: 39.047000 lon.: -123.120000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 5 Aug 2018 - NAM12

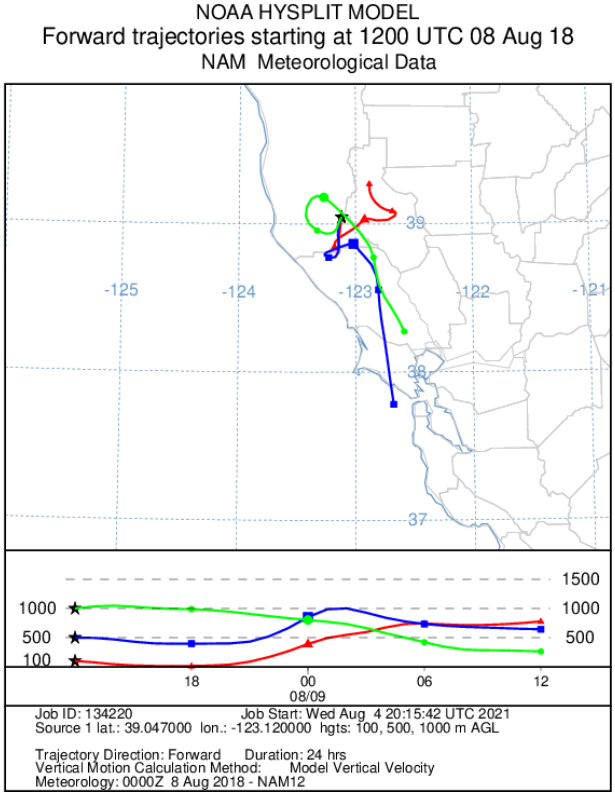

NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 06 Aug 18
NAM Meteorological Data
Source ★ at 39.05 N 123.12 W
Meters AGL
Job ID: 133735 Job Start: Wed Aug 4 20:04:44 UTC 2021
Source 1 lat.: 39.047000 lon.: -123.120000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 6 Aug 2018 - NAM12

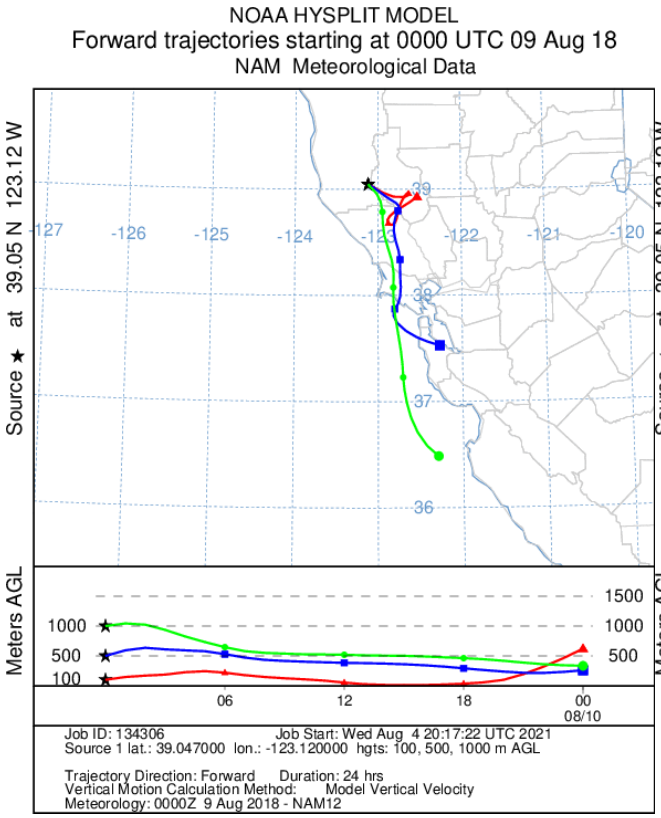

NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 06 Aug 18
NAM Meteorological Data
Source ★ at 39.05 N 123.12 W
Meters AGL
Job ID: 133806 Job Start: Wed Aug 4 20:06:29 UTC 2021
Source 1 lat.: 39.047000 lon.: -123.120000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 6 Aug 2018 - NAM12

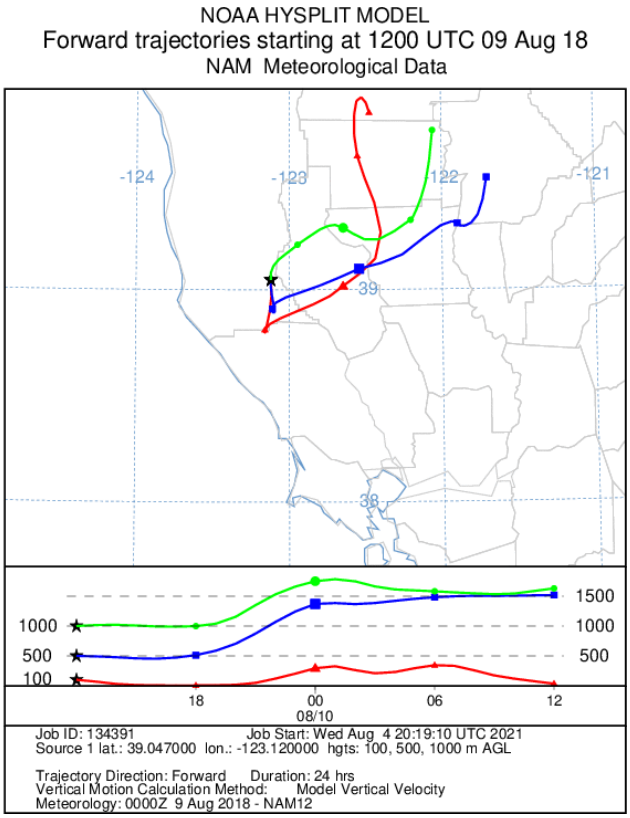

NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 07 Aug 18
NAM Meteorological Data
Source ★ at 39.05 N 123.12 W
Meters AGL
Job ID: 133971 Job Start: Wed Aug 4 20:10:29 UTC 2021
Source 1 lat.: 39.047000 lon.: -123.120000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 7 Aug 2018 - NAM12

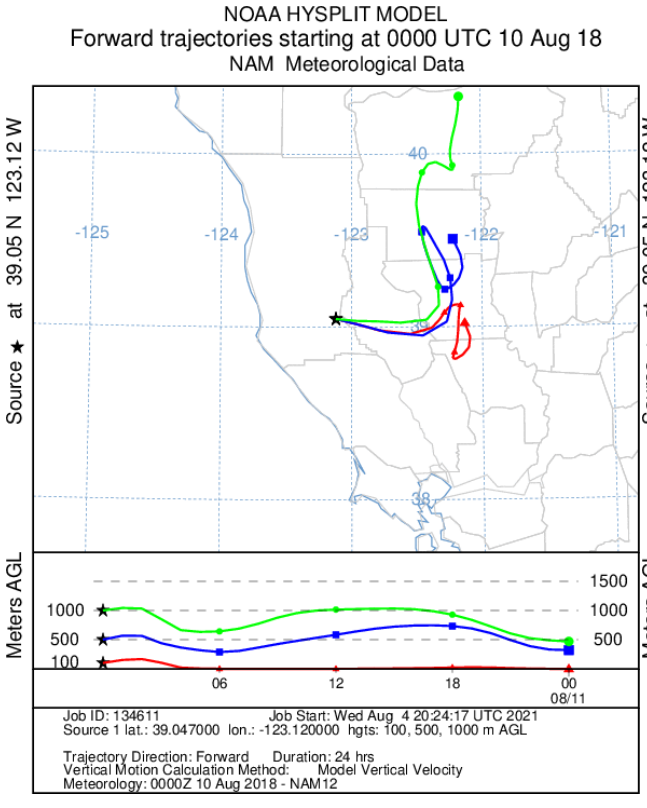

NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 07 Aug 18
NAM Meteorological Data
Source ★ at 39.05 N 123.12 W
Meters AGL
Job ID: 134068 Job Start: Wed Aug 4 20:12:11 UTC 2021
Source 1 lat.: 39.047000 lon.: -123.120000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 7 Aug 2018 - NAM12

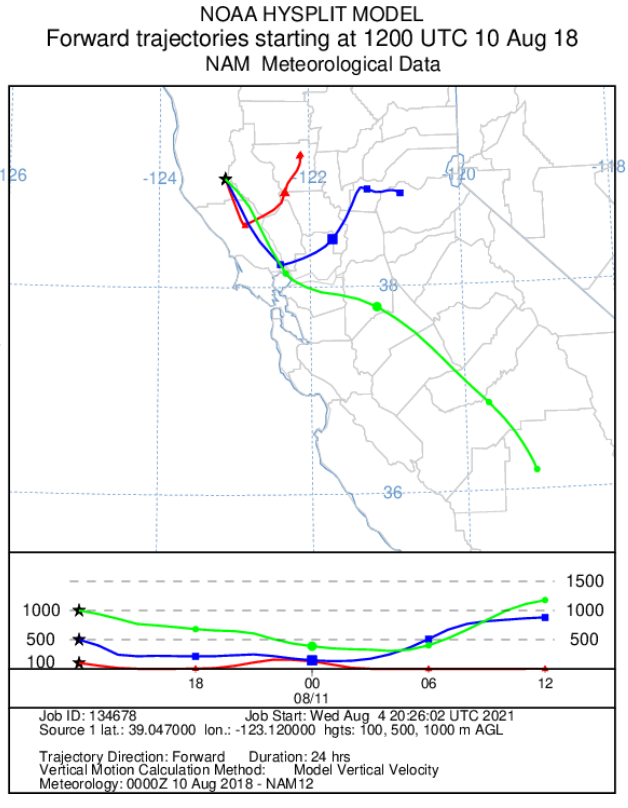

NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 08 Aug 18
NAM Meteorological Data
Source ★ at 39.05 N 123.12 W
Meters AGL
Job ID: 134132 Job Start: Wed Aug 4 20:14:03 UTC 2021
Source 1 lat.: 39.047000 lon.: -123.120000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 8 Aug 2018 - NAM12


NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 08 Aug 18
NAM Meteorological Data
Source ★ at 39.05 N 123.12 W
Meters AGL
Job ID: 134220 Job Start: Wed Aug 4 20:15:42 UTC 2021
Source 1 lat.: 39.047000 lon.: -123.120000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 8 Aug 2018 - NAM12


NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 09 Aug 18
NAM Meteorological Data
Source ★ at 39.05 N 123.12 W
Meters AGL
Job ID: 134306 Job Start: Wed Aug 4 20:17:22 UTC 2021
Source 1 lat.: 39.047000 lon.: -123.120000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 9 Aug 2018 - NAM12

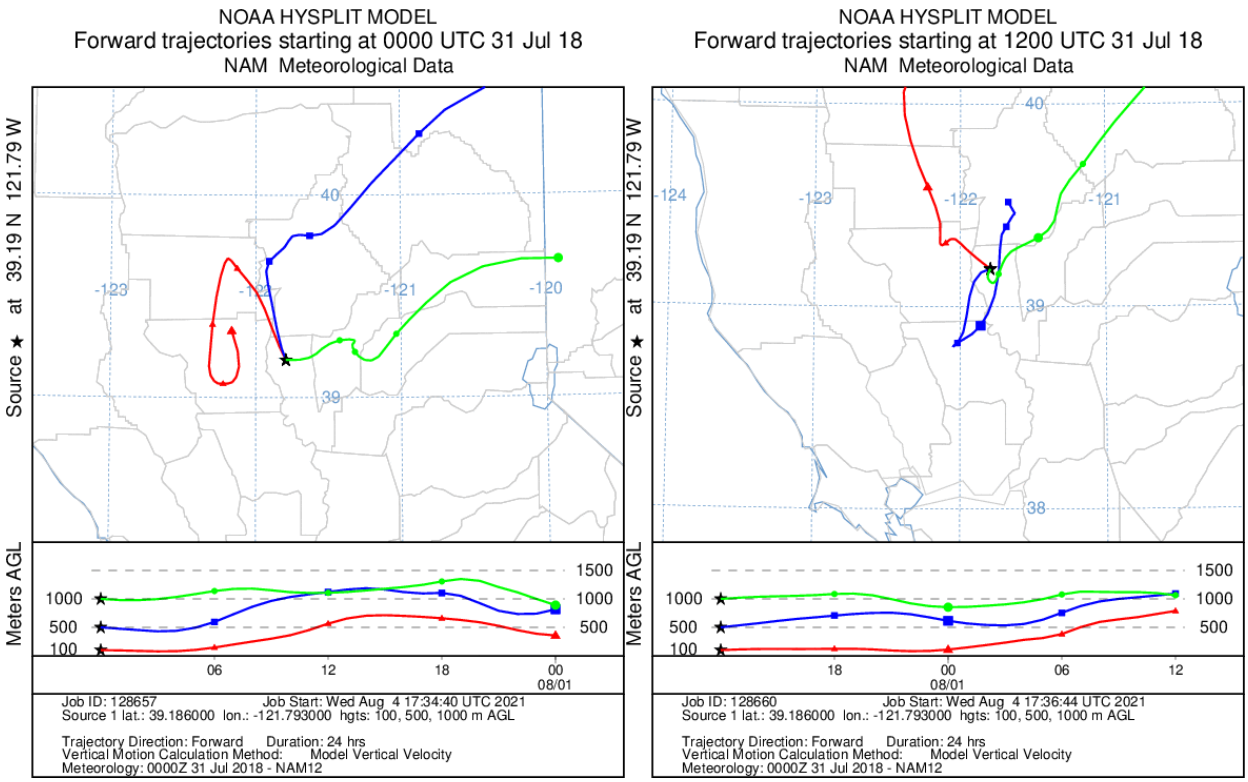

NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 09 Aug 18
NAM Meteorological Data
Source ★ at 39.05 N 123.12 W
Meters AGL
Job ID: 134391 Job Start: Wed Aug 4 20:19:10 UTC 2021
Source 1 lat.: 39.047000 lon.: -123.120000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 9 Aug 2018 - NAM12

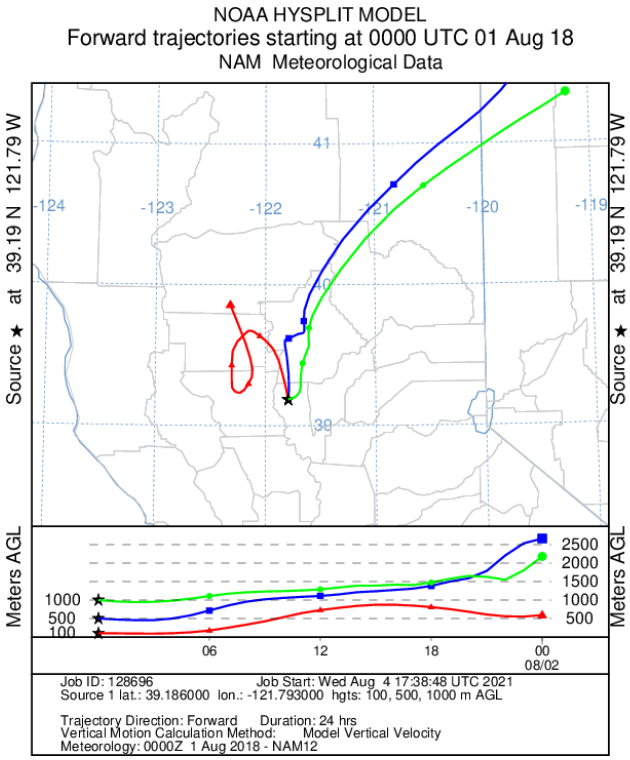

NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 10 Aug 18
NAM Meteorological Data
Source ★ at 39.05 N 123.12 W
Meters AGL
Job ID: 134611 Job Start: Wed Aug 4 20:24:17 UTC 2021
Source 1 lat.: 39.047000 lon.: -123.120000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 10 Aug 2018 - NAM12

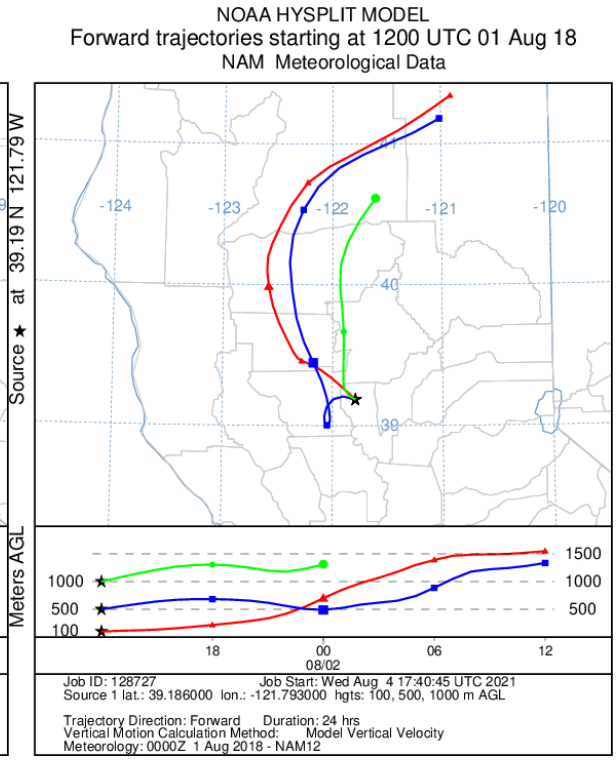

NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 10 Aug 18
NAM Meteorological Data
Source ★ at 39.05 N 123.12 W
Meters AGL
Job ID: 134678 Job Start: Wed Aug 4 20:26:02 UTC 2021
Source 1 lat.: 39.047000 lon.: -123.120000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 10 Aug 2018 - NAM12

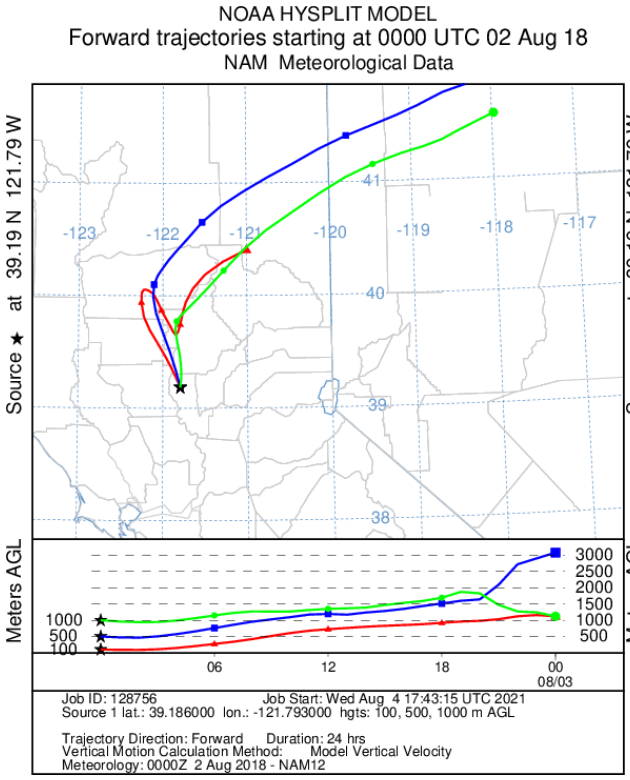
8. Butte Fire

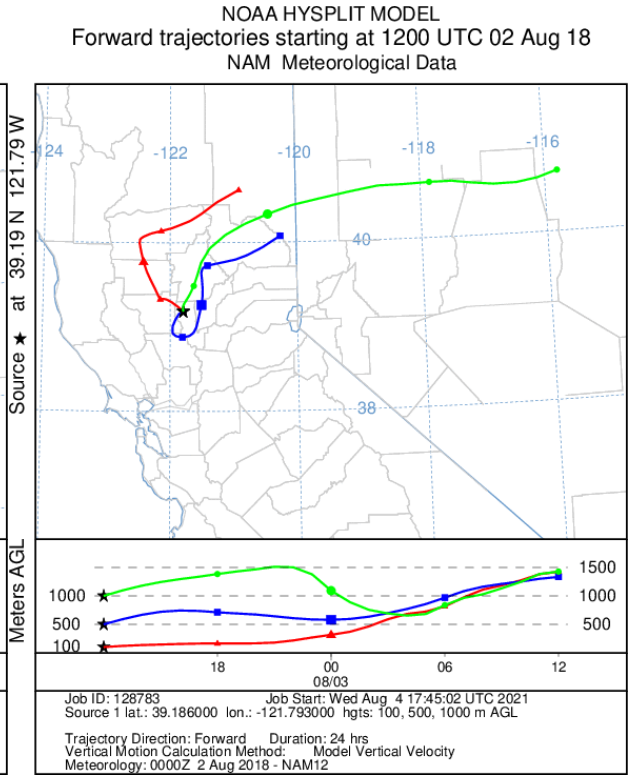
Fire	Start	Containment	Latitude	Longitude	Total Acres
Butte	7/31/18	8/2/18	39.186	-121.793	1,200




NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 01 Aug 18
NAM Meteorological Data
Source ★ at 39.19 N 121.79 W
Meters AGL
Job ID: 128696 Job Start: Wed Aug 4 17:38:48 UTC 2021
Source 1 lat.: 39.186000 lon.: -121.793000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 1 Aug 2018 - NAM12

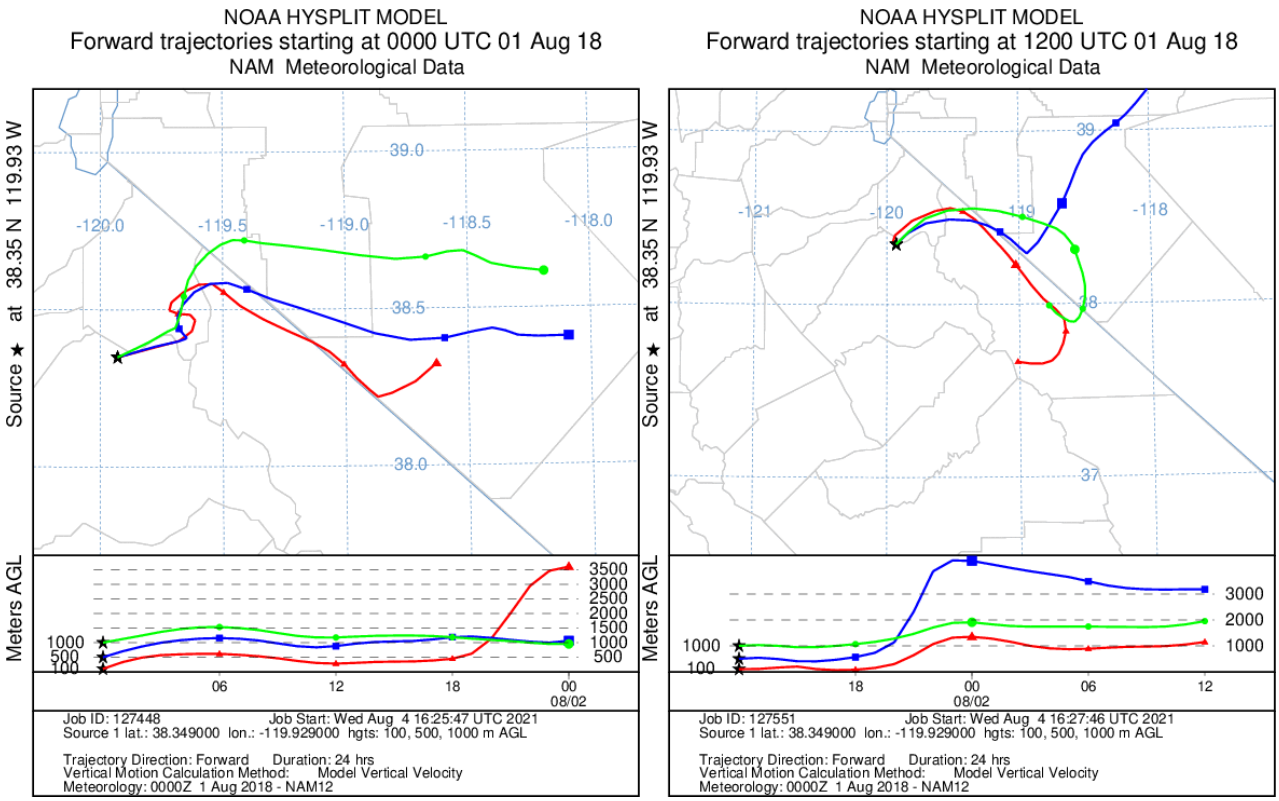

NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 01 Aug 18
NAM Meteorological Data
Source ★ at 39.19 N 121.79 W
Meters AGL
Job ID: 128727 Job Start: Wed Aug 4 17:40:45 UTC 2021
Source 1 lat.: 39.186000 lon.: -121.793000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 1 Aug 2018 - NAM12

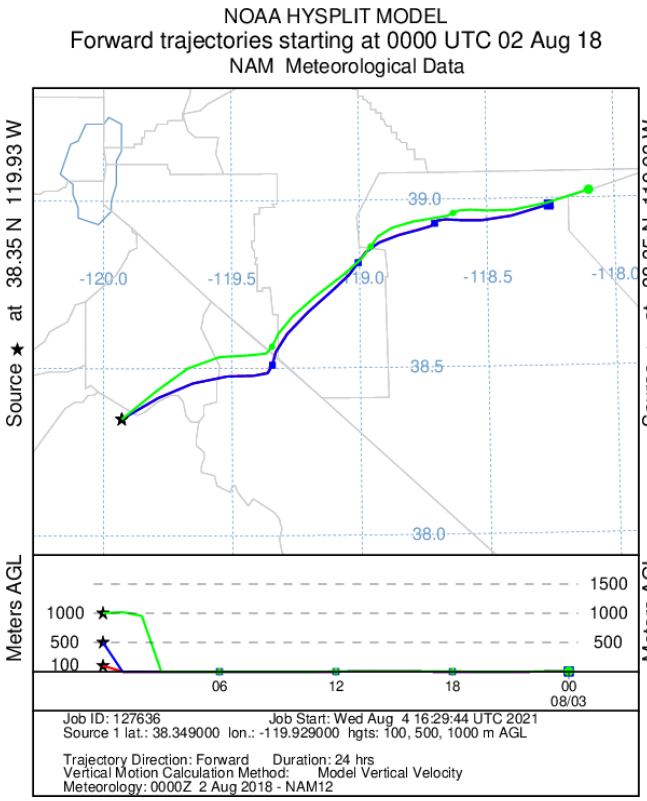

NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 02 Aug 18
NAM Meteorological Data
Source ★ at 39.19 N 121.79 W
Meters AGL
Job ID: 128756 Job Start: Wed Aug 4 17:43:15 UTC 2021
Source 1 lat.: 39.186000 lon.: -121.793000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 2 Aug 2018 - NAM12

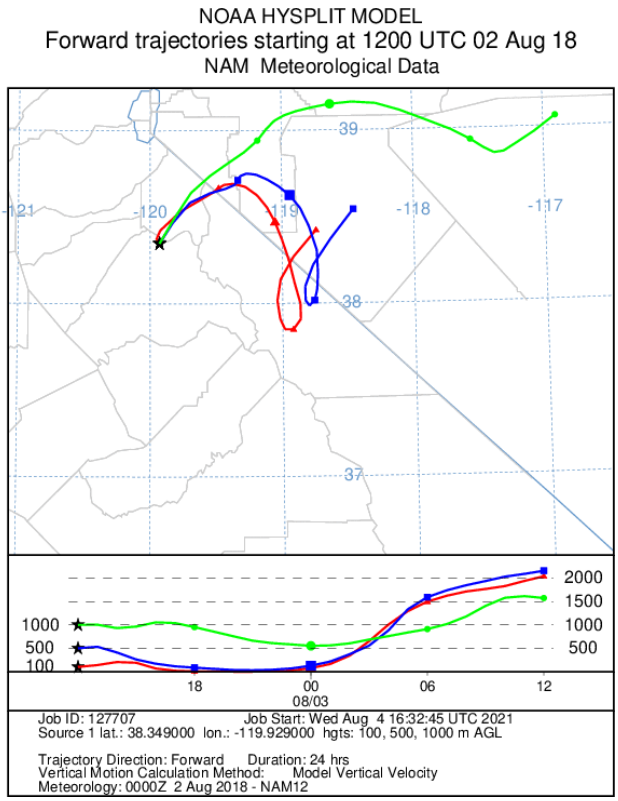

NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 02 Aug 18
NAM Meteorological Data
Source ★ at 39.19 N 121.79 W
Meters AGL
Job ID: 128783 Job Start: Wed Aug 4 17:45:02 UTC 2021
Source 1 lat.: 39.186000 lon.: -121.793000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 2 Aug 2018 - NAM12

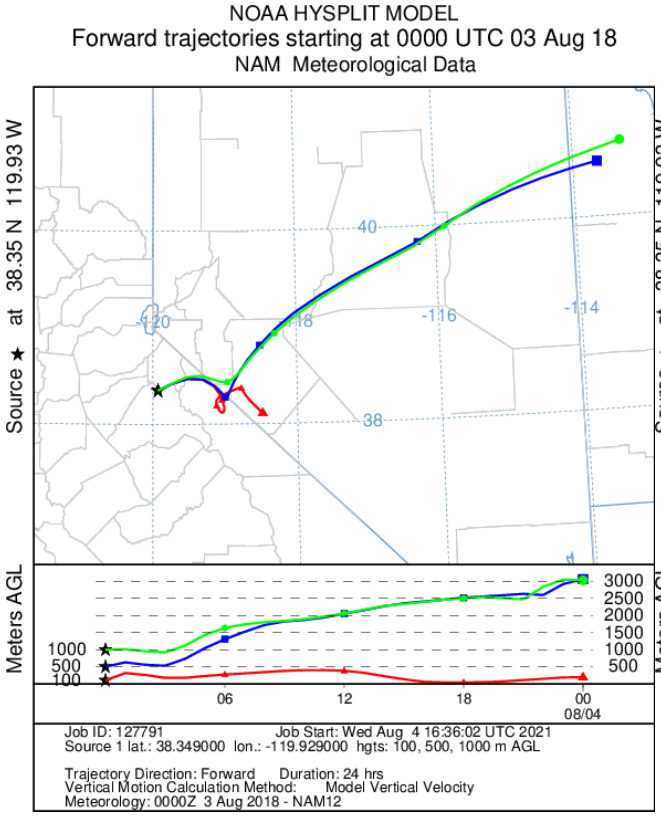
9. Donnell Fire

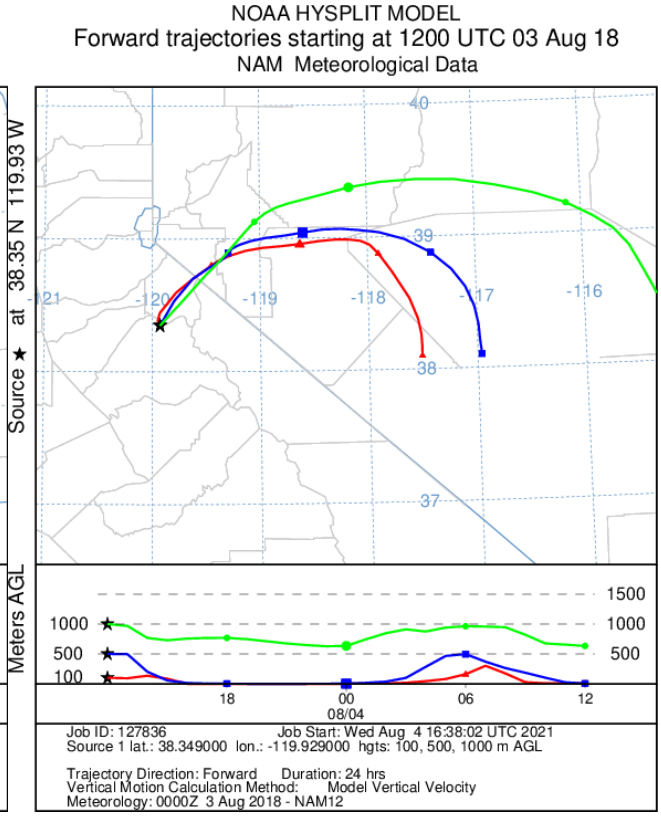
Fire	Start	Containment	Latitude	Longitude	Total Acres
Donnell	8/1/18	1/4/19	38.349	-119.929	36,450



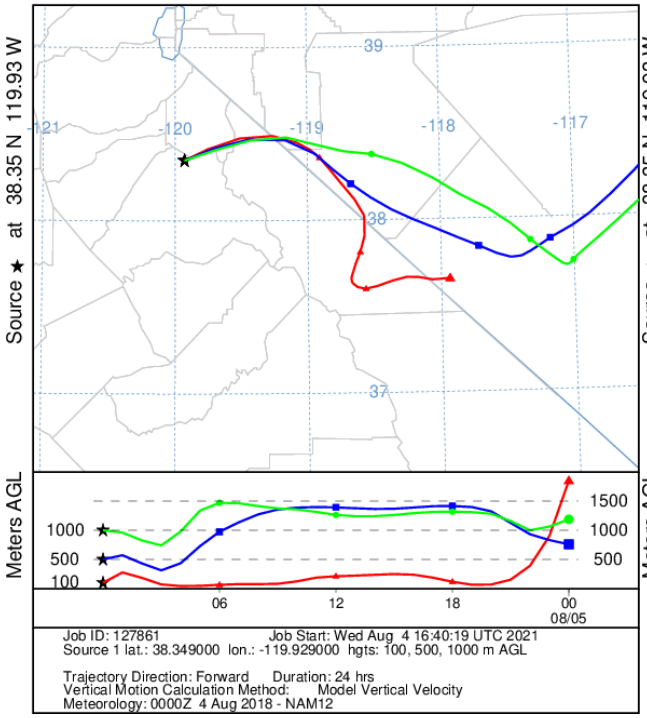

NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 02 Aug 18
NAM Meteorological Data
Source ★ at 38.35 N 119.93 W
Meters AGL
Job ID: 127636 Job Start: Wed Aug 4 16:29:44 UTC 2021
Source 1 lat.: 38.349000 lon.: -119.929000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 2 Aug 2018 - NAM12


NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 02 Aug 18
NAM Meteorological Data
Source ★ at 38.35 N 119.93 W
Meters AGL
Job ID: 127707 Job Start: Wed Aug 4 16:32:45 UTC 2021
Source 1 lat.: 38.349000 lon.: -119.929000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 2 Aug 2018 - NAM12


NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 03 Aug 18
NAM Meteorological Data
Source ★ at 38.35 N 119.93 W
Meters AGL
Job ID: 127791 Job Start: Wed Aug 4 16:36:02 UTC 2021
Source 1 lat.: 38.349000 lon.: -119.929000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 3 Aug 2018 - NAM12


NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 03 Aug 18
NAM Meteorological Data
Source ★ at 38.35 N 119.93 W
Meters AGL
Job ID: 127836 Job Start: Wed Aug 4 16:38:02 UTC 2021
Source 1 lat.: 38.349000 lon.: -119.929000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 3 Aug 2018 - NAM12

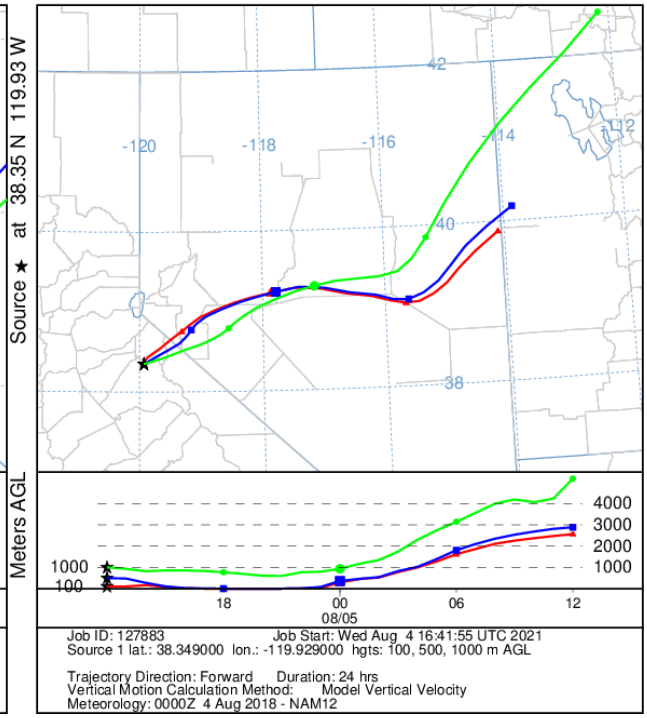
NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 04 Aug 18
NAM Meteorological Data



Job ID: 127861 Job Start: Wed Aug 4 16:40:19 UTC 2021
Source 1 lat.: 38.349000 lon.: -119.929000 hgts: 100, 500, 1000 m AGL

Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 4 Aug 2018 - NAM12

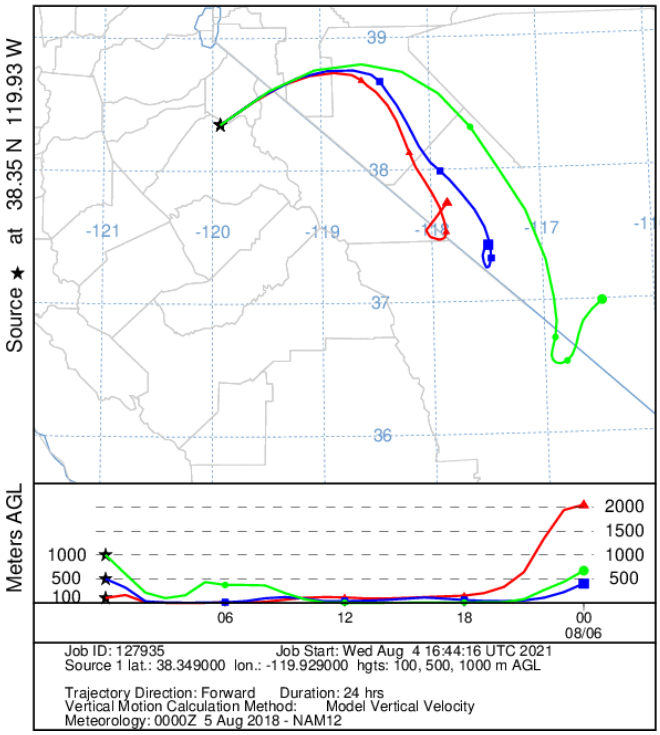
NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 04 Aug 18
NAM Meteorological Data



Job ID: 127883 Job Start: Wed Aug 4 16:41:55 UTC 2021
Source 1 lat.: 38.349000 lon.: -119.929000 hgts: 100, 500, 1000 m AGL

Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 4 Aug 2018 - NAM12

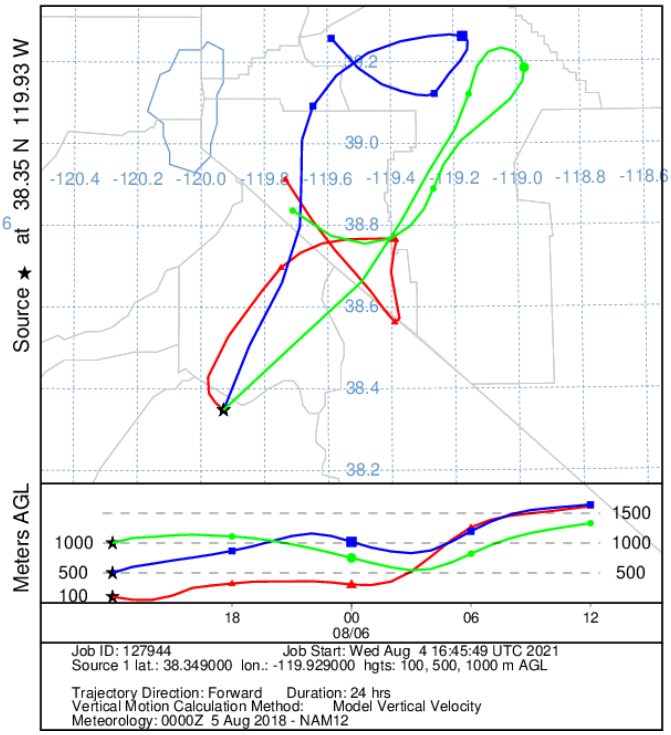
NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 05 Aug 18
NAM Meteorological Data



Job ID: 127935 Job Start: Wed Aug 4 16:44:16 UTC 2021
Source 1 lat.: 38.349000 lon.: -119.929000 hgts: 100, 500, 1000 m AGL

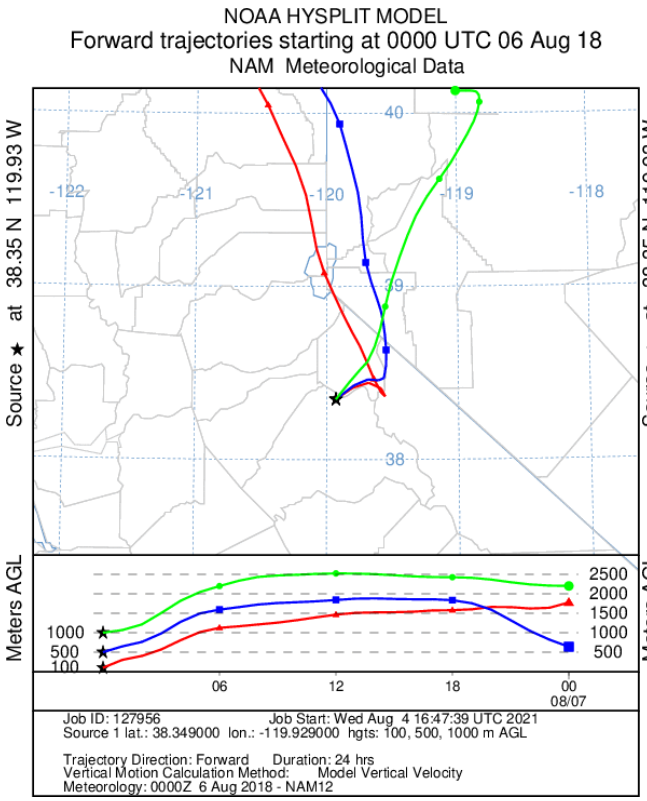
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 5 Aug 2018 - NAM12

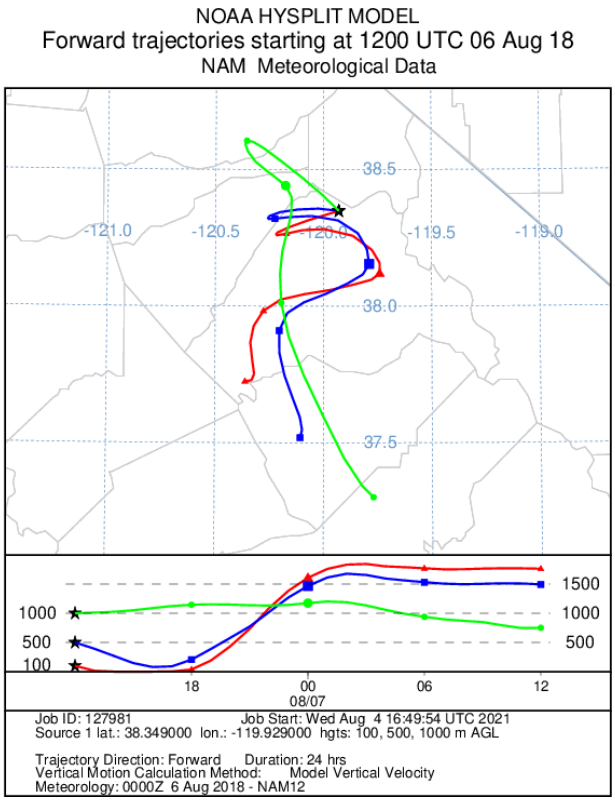
NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 05 Aug 18
NAM Meteorological Data

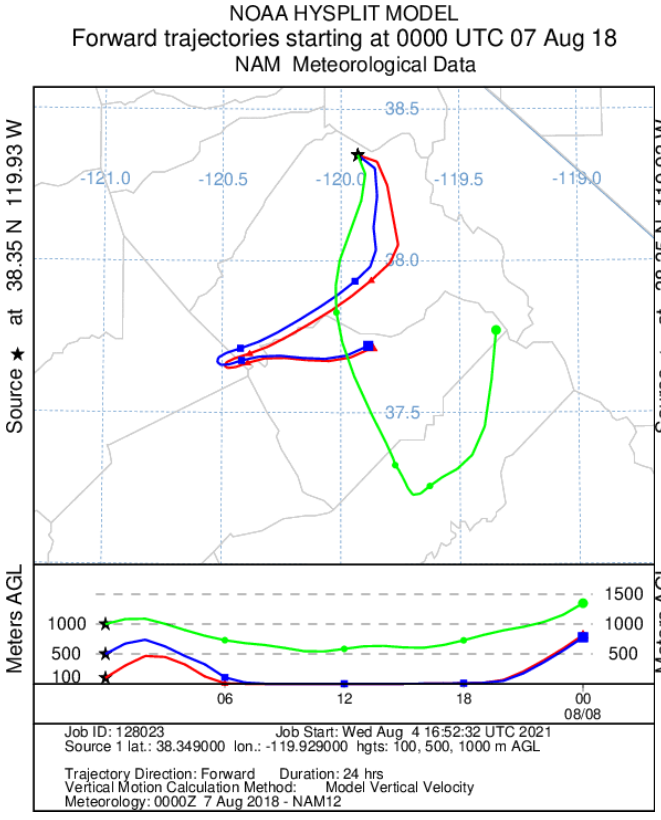


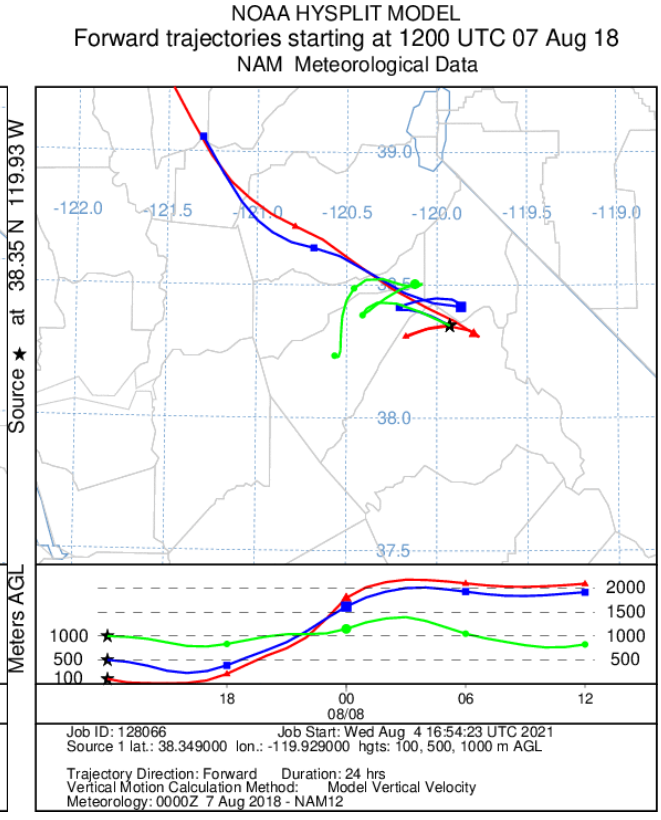
Job ID: 127944 Job Start: Wed Aug 4 16:45:49 UTC 2021
Source 1 lat.: 38.349000 lon.: -119.929000 hgts: 100, 500, 1000 m AGL

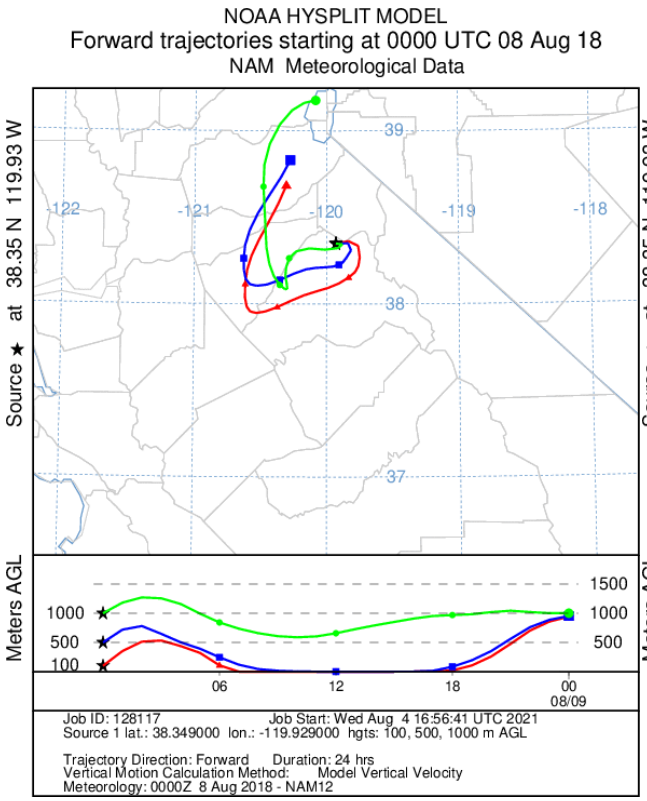
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 5 Aug 2018 - NAM12

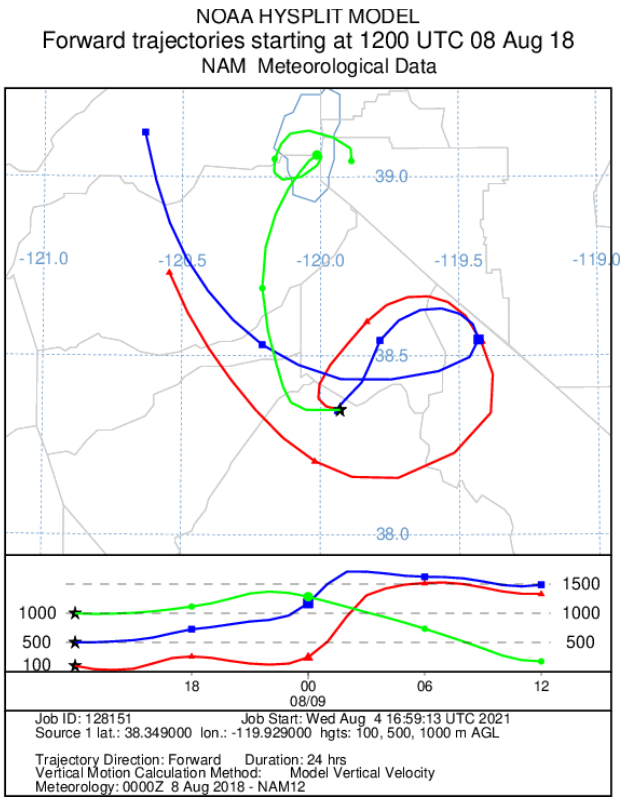

NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 06 Aug 18
NAM Meteorological Data
Source ★ at 38.35 N 119.93 W
Meters AGL
Job ID: 127956 Job Start: Wed Aug 4 16:47:39 UTC 2021
Source 1 lat.: 38.349000 lon.: -119.929000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 6 Aug 2018 - NAM12

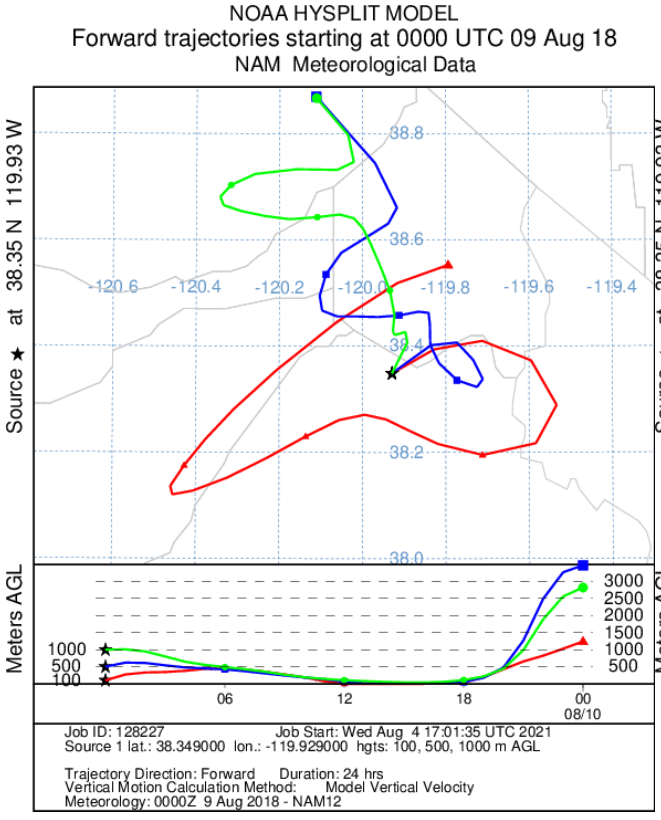

NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 06 Aug 18
NAM Meteorological Data
Source ★ at 38.35 N 119.93 W
Meters AGL
Job ID: 127981 Job Start: Wed Aug 4 16:49:54 UTC 2021
Source 1 lat.: 38.349000 lon.: -119.929000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 6 Aug 2018 - NAM12

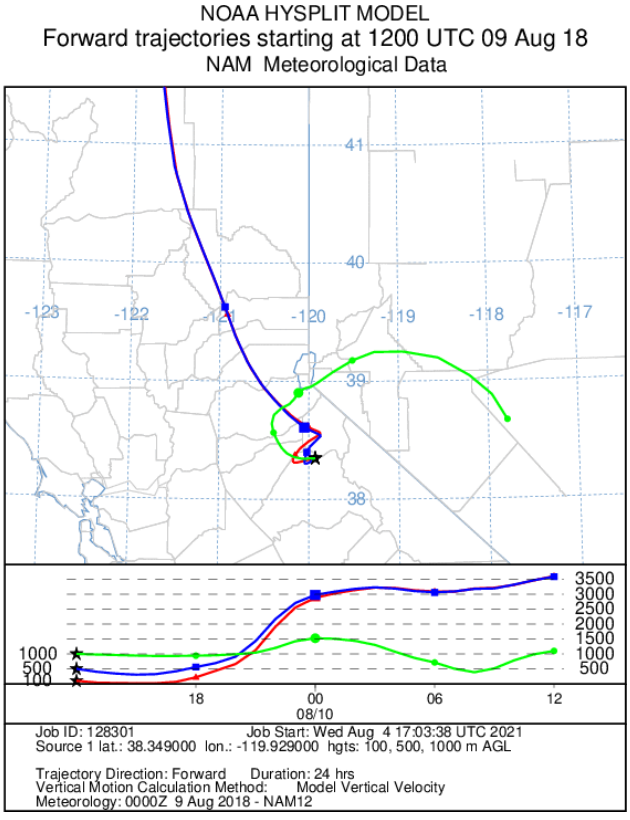

NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 07 Aug 18
NAM Meteorological Data
Source ★ at 38.35 N 119.93 W
Meters AGL
Job ID: 128023 Job Start: Wed Aug 4 16:52:32 UTC 2021
Source 1 lat.: 38.349000 lon.: -119.929000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 7 Aug 2018 - NAM12

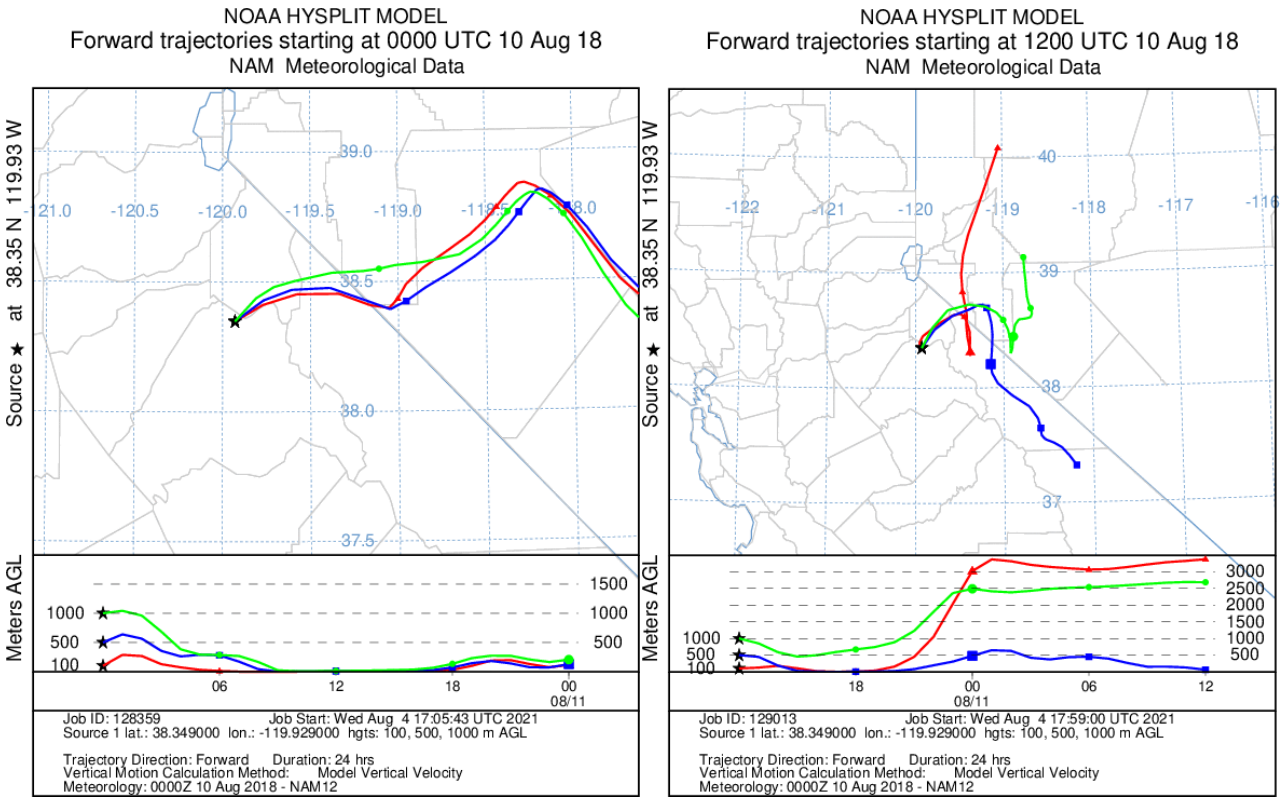

NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 07 Aug 18
NAM Meteorological Data
Source ★ at 38.35 N 119.93 W
Meters AGL
Job ID: 128066 Job Start: Wed Aug 4 16:54:23 UTC 2021
Source 1 lat.: 38.349000 lon.: -119.929000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 7 Aug 2018 - NAM12


NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 08 Aug 18
NAM Meteorological Data
Source ★ at 38.35 N 119.93 W
Meters AGL
Job ID: 128117 Job Start: Wed Aug 4 16:56:41 UTC 2021
Source 1 lat.: 38.349000 lon.: -119.929000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 8 Aug 2018 - NAM12


NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 08 Aug 18
NAM Meteorological Data
Source ★ at 38.35 N 119.93 W
Meters AGL
Job ID: 128151 Job Start: Wed Aug 4 16:59:13 UTC 2021
Source 1 lat.: 38.349000 lon.: -119.929000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 8 Aug 2018 - NAM12


NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 09 Aug 18
NAM Meteorological Data
Source ★ at 38.35 N 119.93 W
Meters AGL
Job ID: 128227 Job Start: Wed Aug 4 17:01:35 UTC 2021
Source 1 lat.: 38.349000 lon.: -119.929000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 9 Aug 2018 - NAM12


NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 09 Aug 18
NAM Meteorological Data
Source ★ at 38.35 N 119.93 W
Meters AGL
Job ID: 128301 Job Start: Wed Aug 4 17:03:38 UTC 2021
Source 1 lat.: 38.349000 lon.: -119.929000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 9 Aug 2018 - NAM12


NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 10 Aug 18
NAM Meteorological Data
Source ★ at 38.35 N 119.93 W
Meters AGL
Job ID: 128359 Job Start: Wed Aug 4 17:05:43 UTC 2021
Source 1 lat.: 38.349000 lon.: -119.929000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 10 Aug 2018 - NAM12
NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 10 Aug 18
NAM Meteorological Data
Source ★ at 38.35 N 119.93 W
Meters AGL
Job ID: 129013 Job Start: Wed Aug 4 17:59:00 UTC 2021
Source 1 lat.: 38.349000 lon.: -119.929000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 10 Aug 2018 - NAM12

B. HYSPLIT Backward Trajectory (from Monitor)

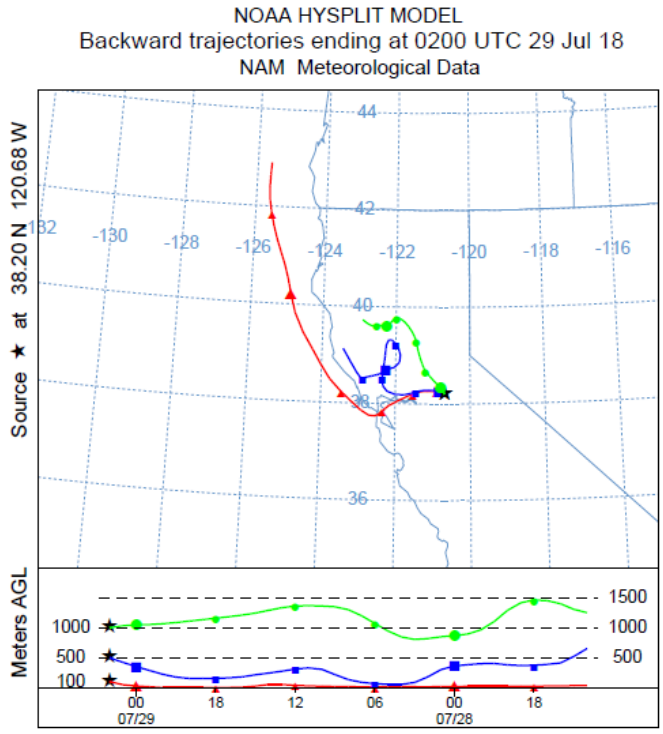
NOAA's HYSPLIT[74] model was used to determine simple back-trajectories showing the path that an air parcel took for a specified period of time (here, 36 hours) before reaching each of the exceeding monitors at the hour of maximum concentration in the exceeding 8-hour time period. Three height levels (red: 100 meters (m), blue: 500m; green: 1000m) were used to indicate transport near the surface and in the mid to upper levels of the atmosphere. Tables indicate the first hour of the exceeding 8-hour time period and the hour of the maximum concentrations within that 8-hour time period. Both PST (Pacific Standard Time) and UTC (Universal Coordinated Time) are noted.

1. Calaveras County (San Andreas)

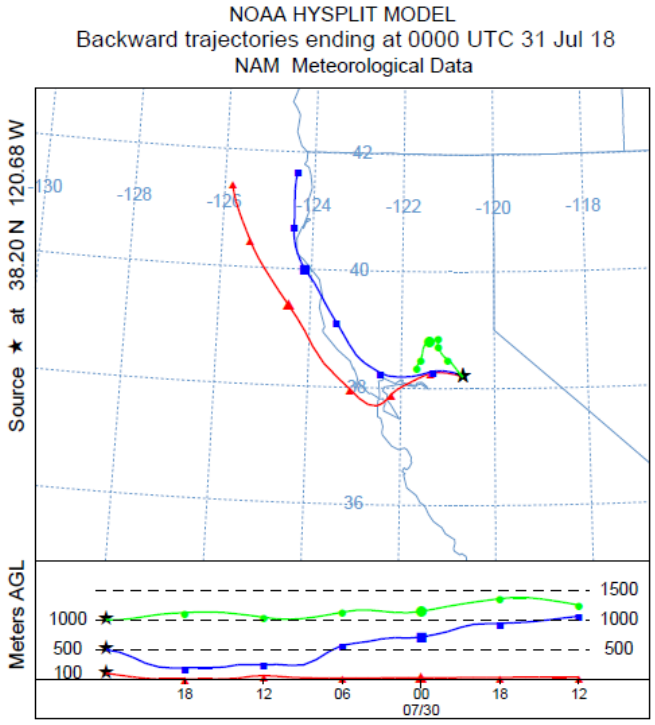
Date (PST)	First Hour (PST)	Date (PST)	Max Hour (PST)	DATE (UTC)	First Hour (UTC)	Date (UTC)	Max Hour (UTC)
7/28/2018	13	7/28/2018	18	7/28/2018	21	7/29/2018	2
7/30/2018	13	7/30/2018	16	7/30/2018	21	7/31/2018	0
7/31/2018	13	7/31/2018	17	7/31/2018	21	8/1/2018	1
8/2/2018	11	8/2/2018	16	8/2/2018	19	8/3/2018	0
8/5/2018	12	8/5/2018	16	8/5/2018	20	8/6/2018	0
8/8/2018	11	8/8/2018	16	8/8/2018	19	8/9/2018	0
8/9/2018	12	8/9/2018	17	8/9/2018	20	8/10/2018	1
8/10/2018	11	8/10/2018	18	8/10/2018	19	8/11/2018	2

[74] HYbrid Single Particle Lagrangian Integrated Trajectory (HYSPLIT)

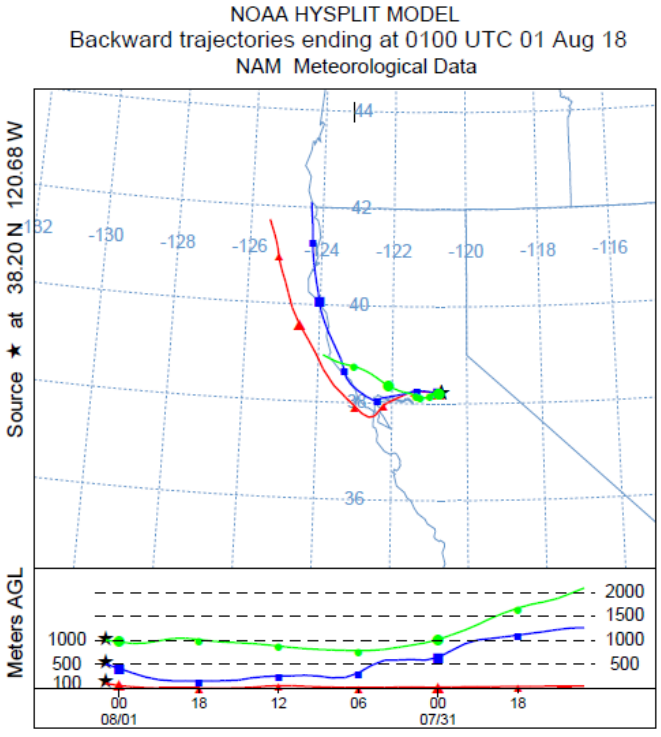
July 28, 2018 18PST (7/29/18 02UTC)



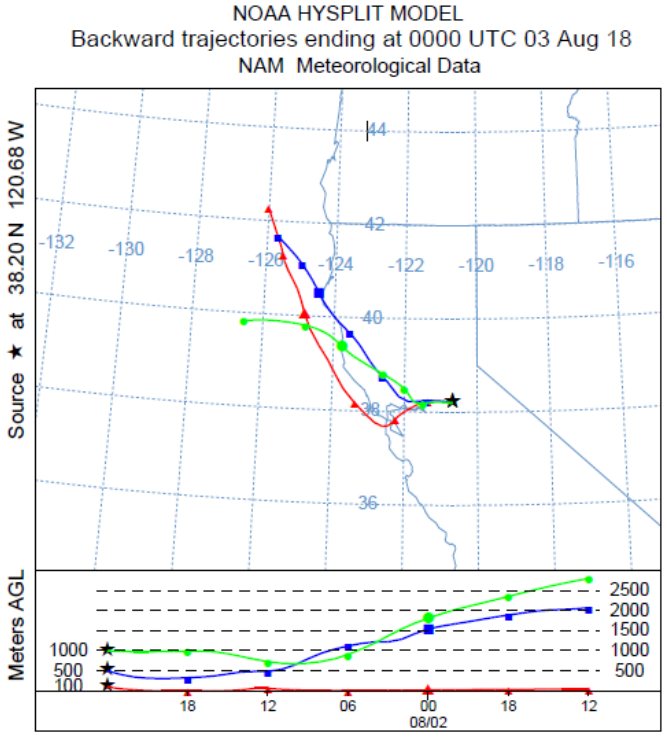
July 30, 2018 16PST (7/31/18 00UTC)



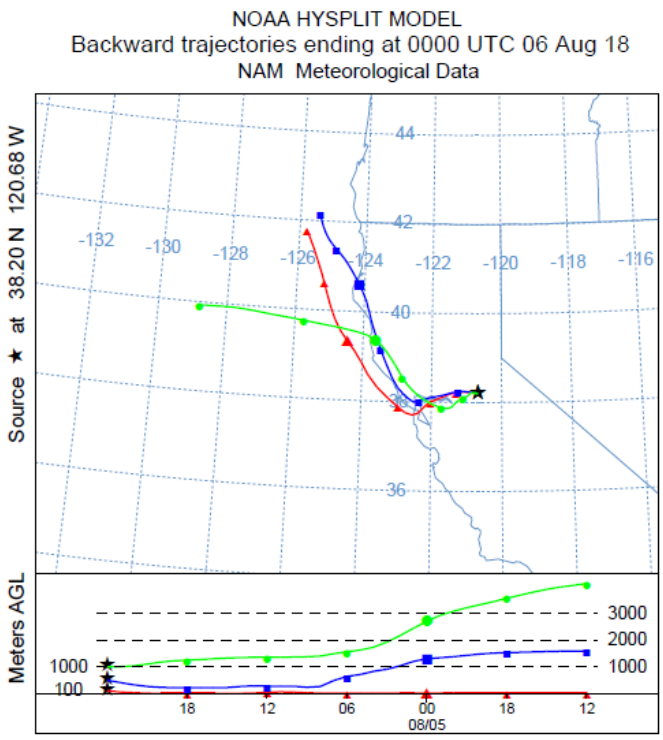
July 31, 2018 17PST (8/1/18 01UTC)



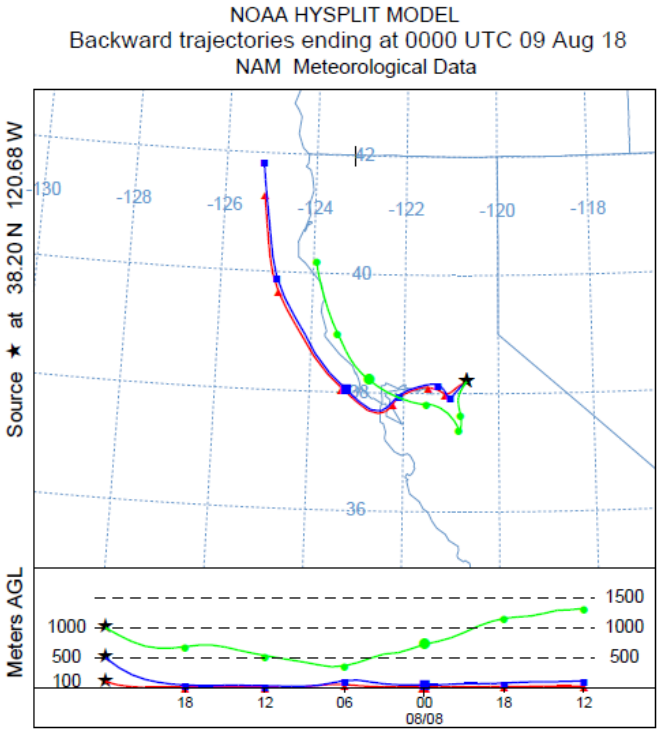
August 2, 2018 16PST (8/3/18 00UTC)



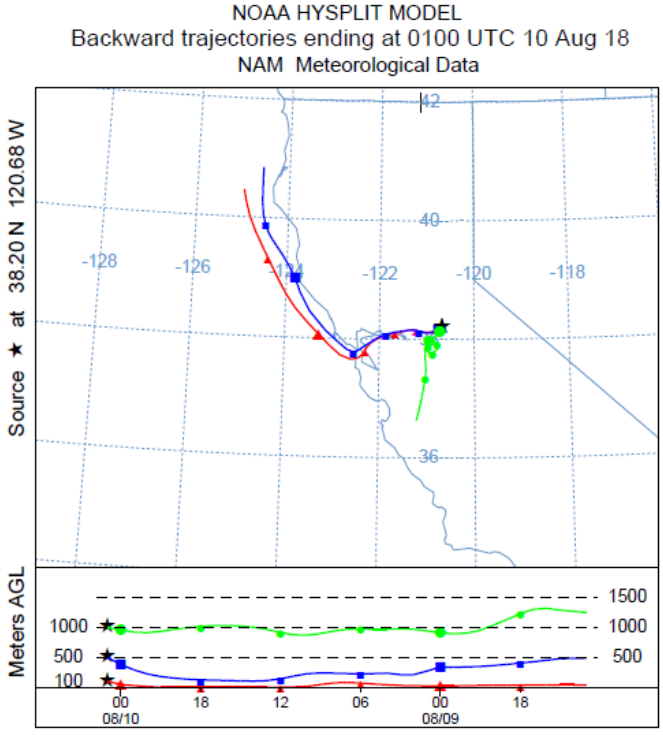
August 5, 2018 16PST (8/6/18 00UTC)



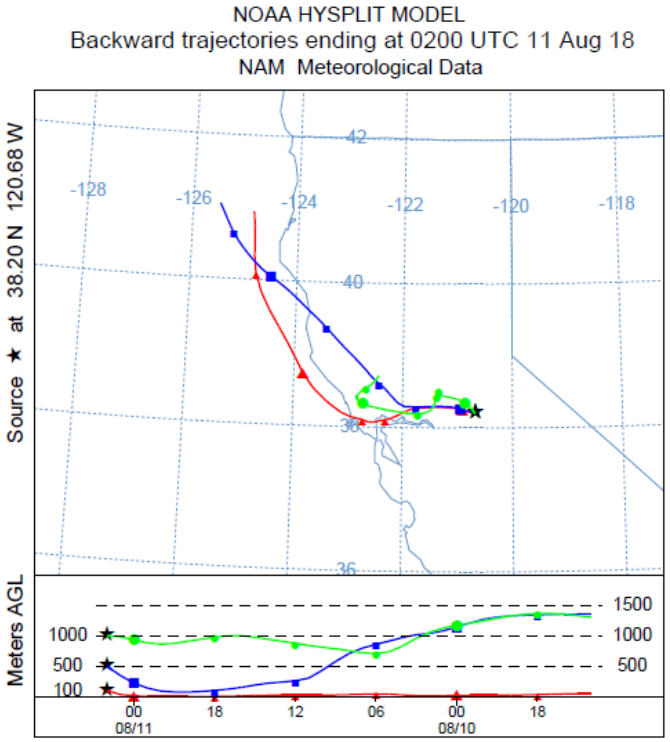
August 8, 2018 16PST (8/9/18 00UTC)



August 9, 2018 17PST (8/10/18 01UTC)



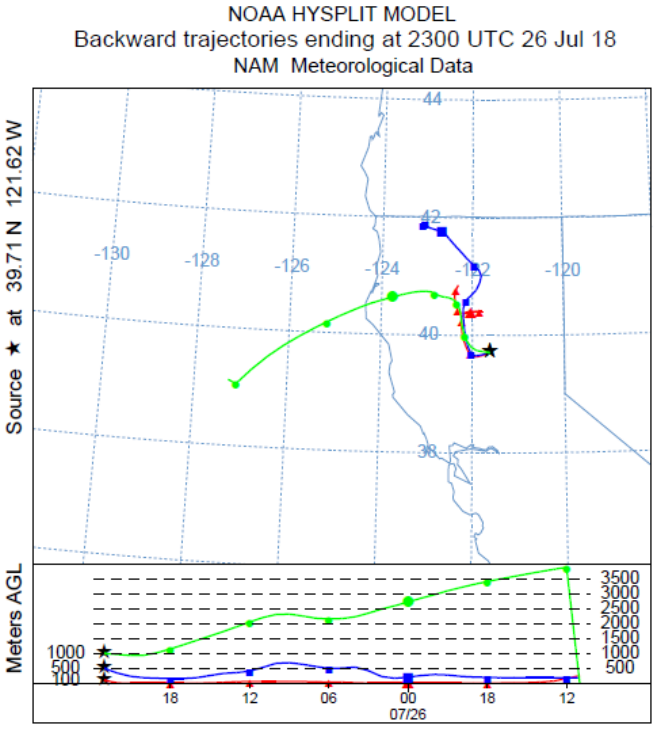
August 10, 2018 18PST (8/11/18 02UTC)



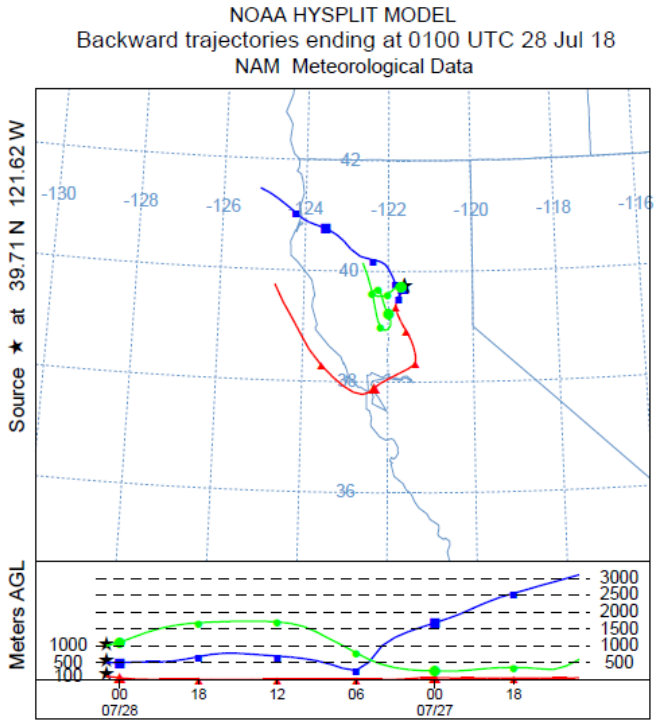
2. Chico / Butte County (Paradise)

Date (PST)	First Hour (PST)	Date (PST)	Max Hour (PST)	DATE (UTC)	First Hour (UTC)	Date (UTC)	Max Hour (UTC)
7/26/2018	11	7/26/2018	15	7/26/2018	19	7/26/2018	23
7/27/2018	14	7/27/2018	17	7/27/2018	22	7/28/2018	1
7/28/2018	13	7/28/2018	16	7/28/2018	21	7/29/2018	0
7/30/2018	13	7/30/2018	17	7/30/2018	21	7/31/2018	1
7/31/2018	13	7/31/2018	16	7/31/2018	21	8/1/2018	0
8/1/2018	14	8/1/2018	18	8/1/2018	22	8/2/2018	2
8/2/2018	17	8/2/2018	18	8/3/2018	1	8/3/2018	2
8/7/2018	13	8/7/2018	17	8/7/2018	21	8/8/2018	1
8/8/2018	12	8/8/2018	16	8/8/2018	20	8/9/2018	0
8/9/2018	13	8/9/2018	19	8/9/2018	21	8/10/2018	3
8/10/2018	12	8/10/2018	12	8/10/2018	20	8/10/2018	20

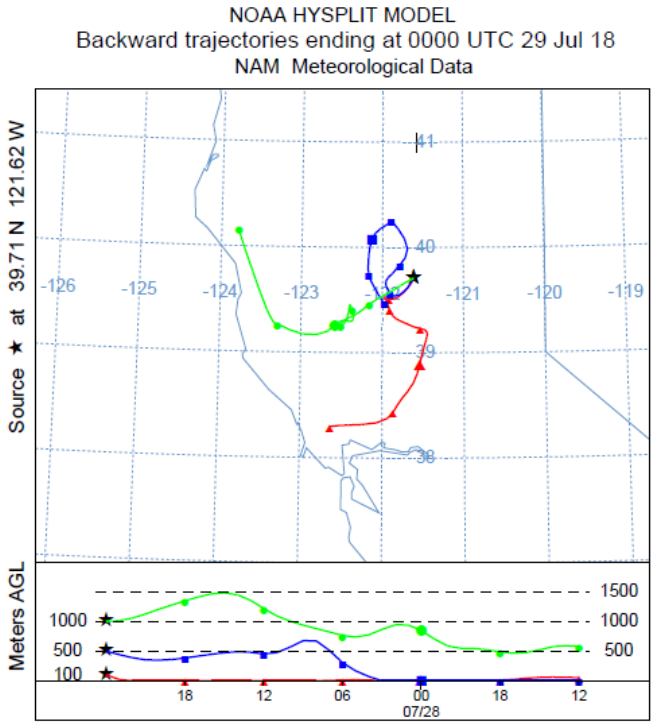
July 26, 2018 15PST (23UTC)



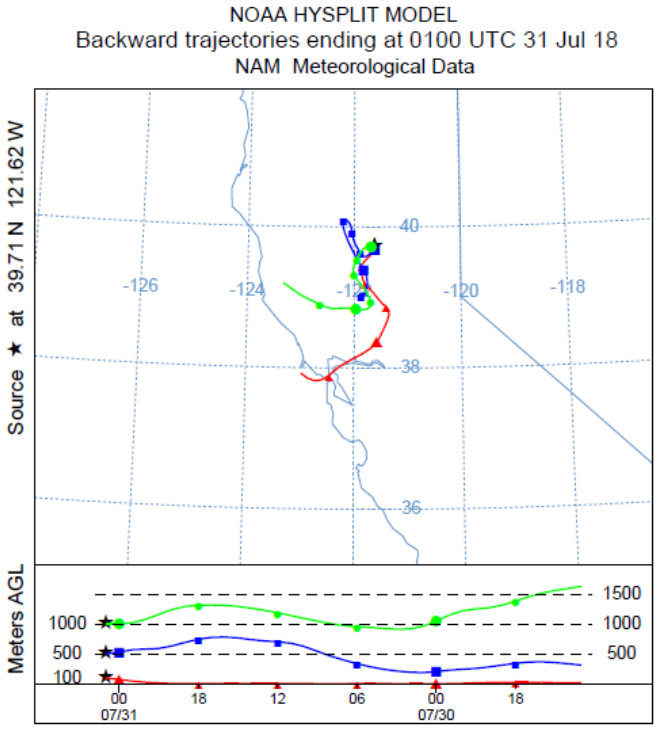
July 27, 2018 17PST (7/28/18 01UTC)



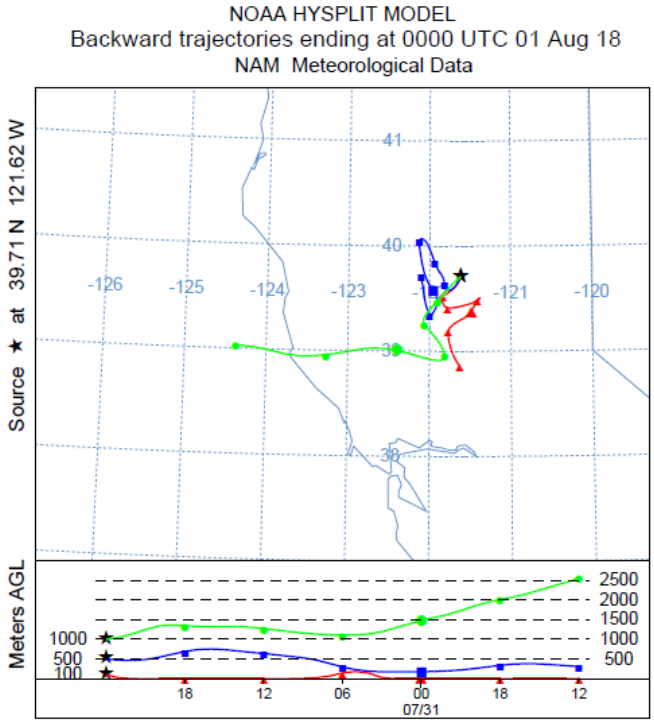
July 28, 2018 16PST (7/29/18 00UTC)



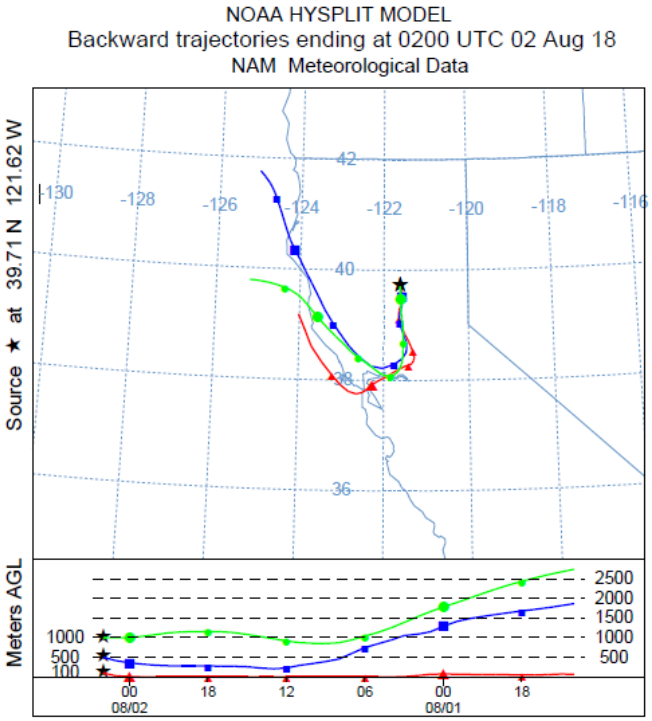
July 30, 2018 17PST (7/31/18 01UTC)



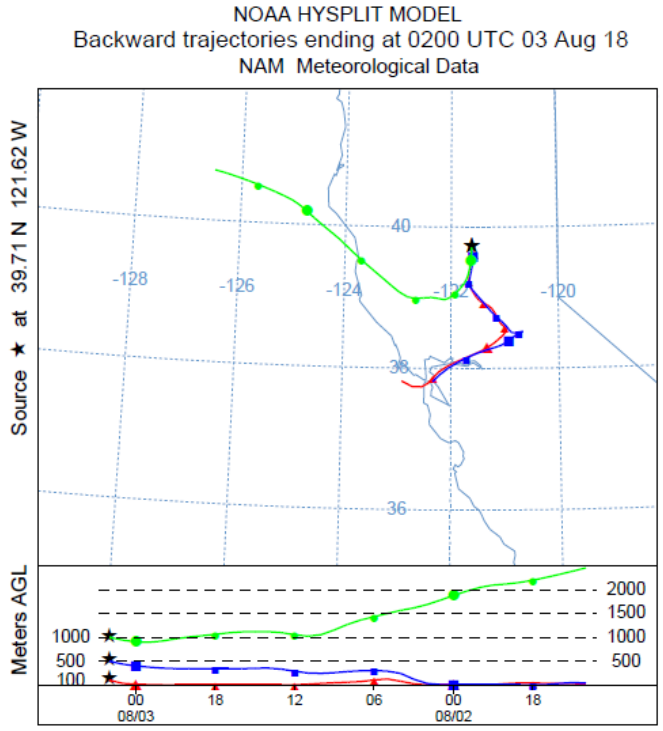
July 31, 2018 16PST (8/1/18 00UTC)



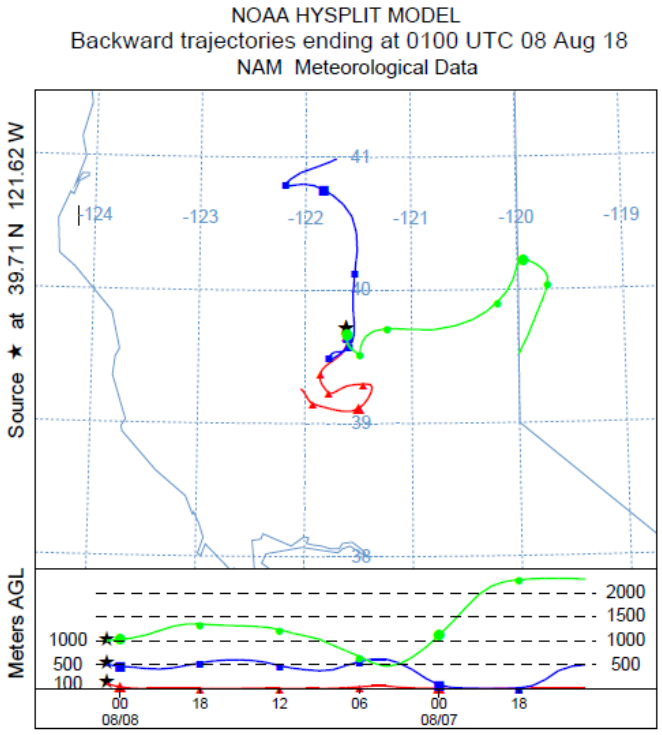
August 1, 2018 18PST (8/2/18 02UTC)



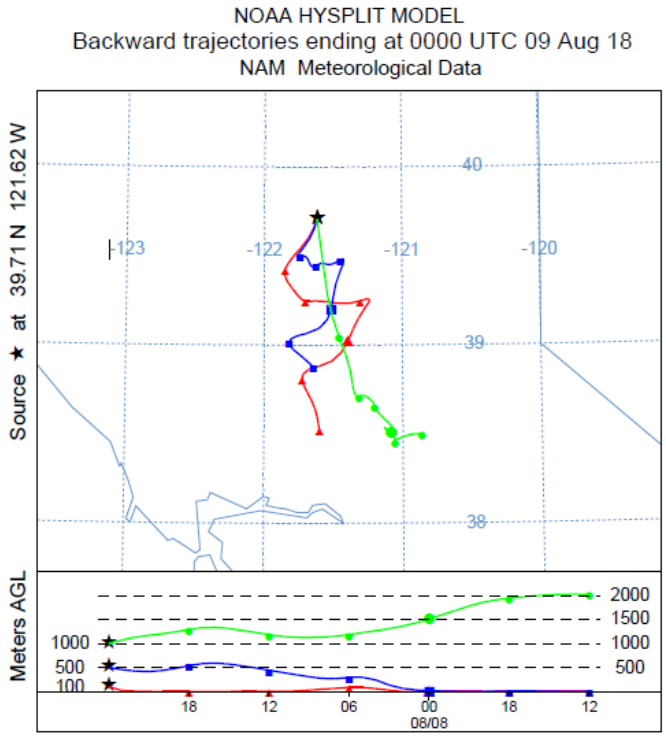
August 2, 2018 18PST (8/3/18 02UTC)



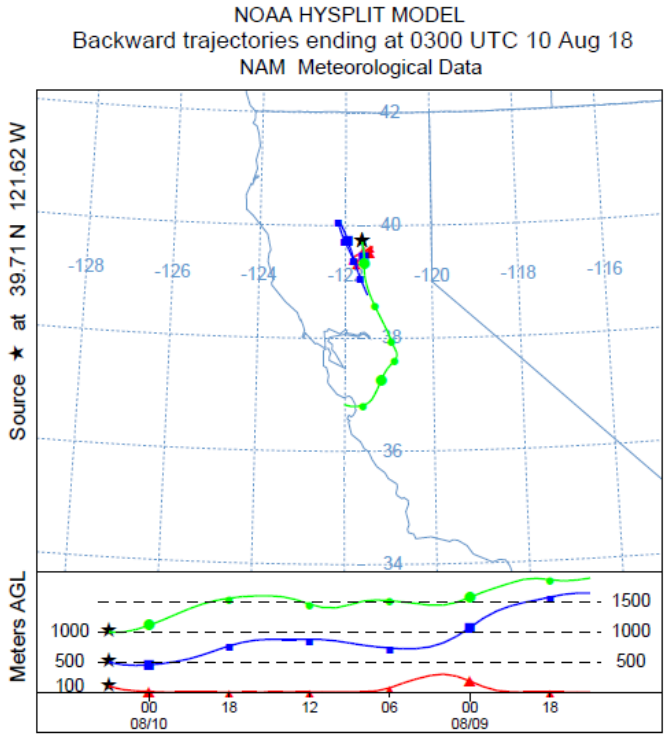
August 7, 2018 17PST (8/8/18 01UTC)



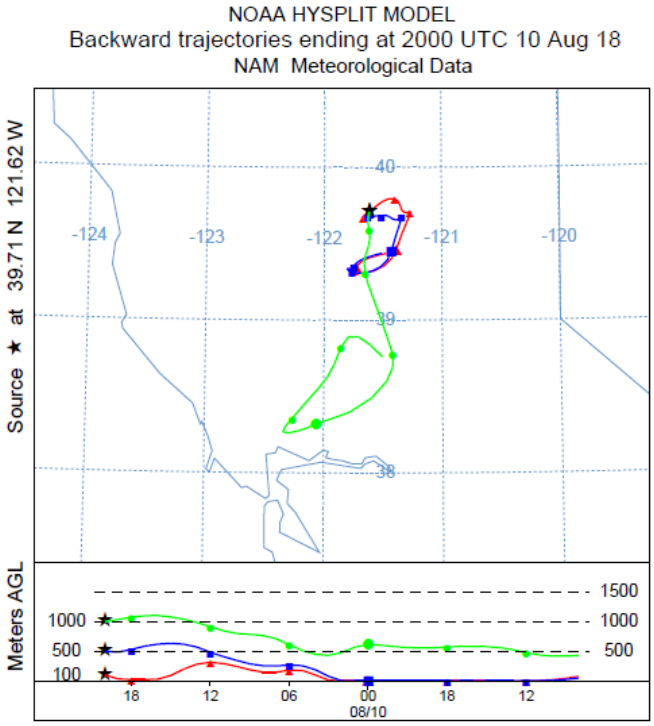
August 8, 2018 16PST (8/9/18 00UTC)



August 9, 2018 19PST (8/10/18 03UTC)



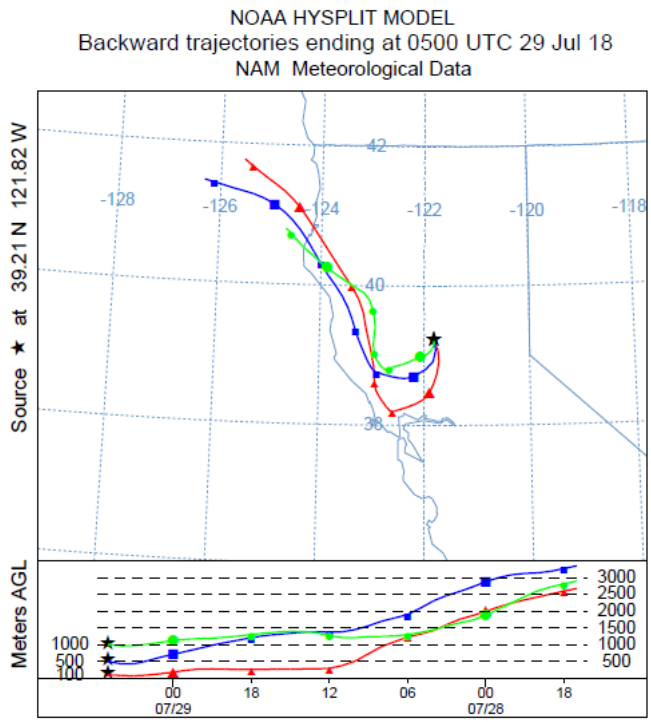
August 10, 2018 12PST (20UTC)



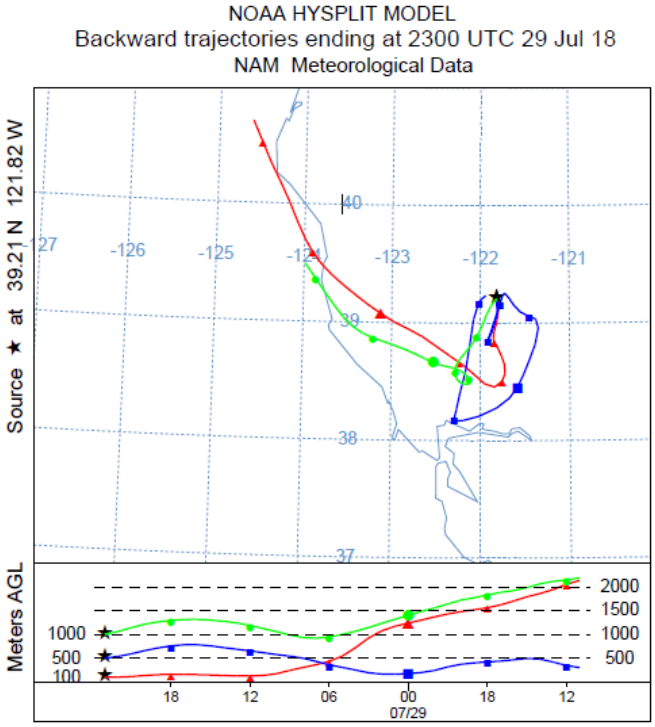
3. Sutter Buttes / Sutter County / Feather River AQMD

Date (PST)	First Hour (PST)	Date (PST)	Max Hour (PST)	DATE (UTC)	First Hour (UTC)	Date (UTC)	Max Hour (UTC)
7/28/2018	16	7/28/2018	21	7/29/2018	0	7/29/2018	5
7/29/2018	14	7/29/2018	15	7/29/2018	22	7/29/2018	23
7/30/2018	17	7/30/2018	23	7/31/2018	1	7/31/2018	7
7/31/2018	13	7/31/2018	19	7/31/2018	21	8/1/2018	3
8/1/2018	14	8/1/2018	18	8/1/2018	22	8/2/2018	2
8/3/2018	17	8/3/2018	21	8/4/2018	1	8/4/2018	5
8/7/2018	17	8/7/2018	18	8/8/2018	1	8/8/2018	2
8/9/2018	13	8/9/2018	18	8/9/2018	21	8/10/2018	2
8/10/2018	13	8/10/2018	17	8/10/2018	21	8/11/2018	1

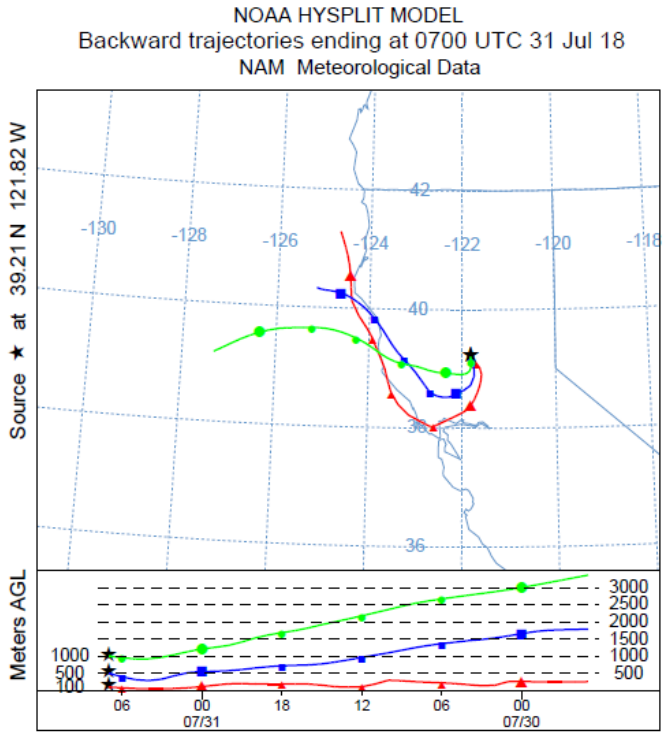
July 28, 2018 21PST (7/29/18 05UTC)



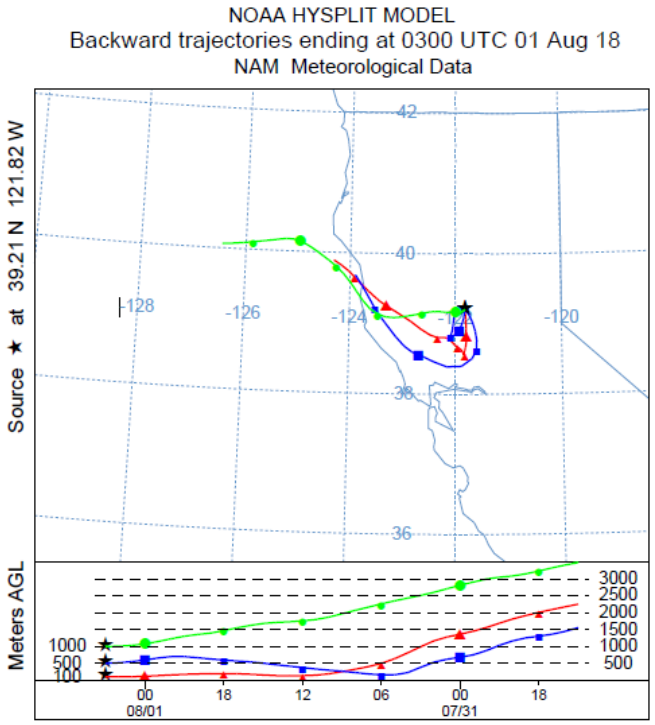
July 29, 2018 15PST (23UTC)



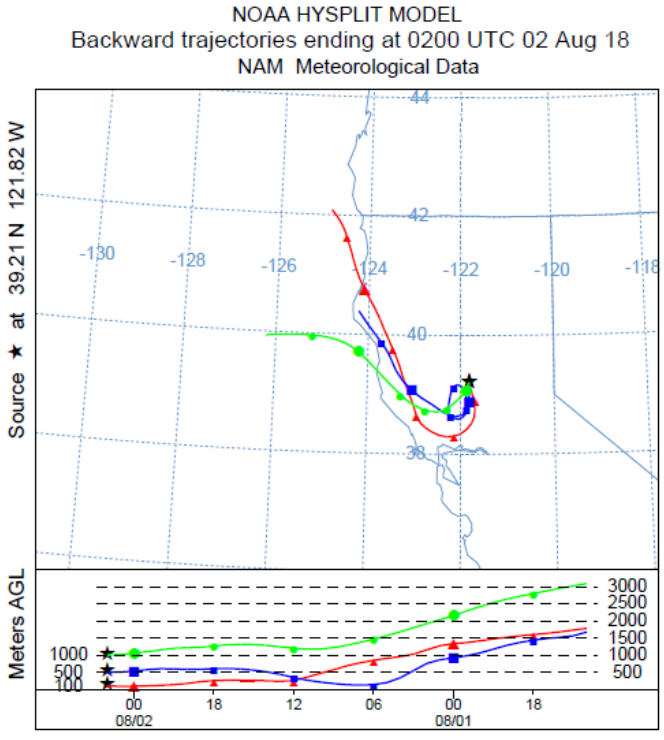
July 30, 2018 23PST (7/31/18 07UTC)



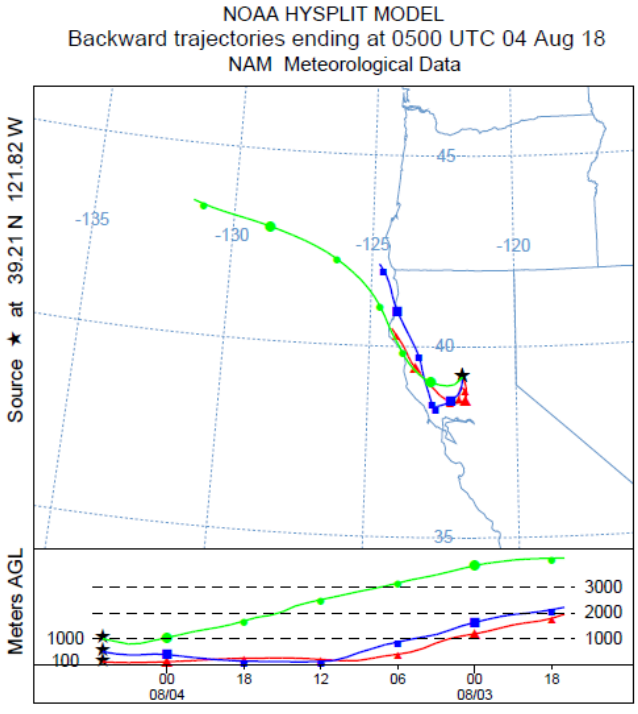
July 31, 2018 19PST (8/1/18 03UTC)



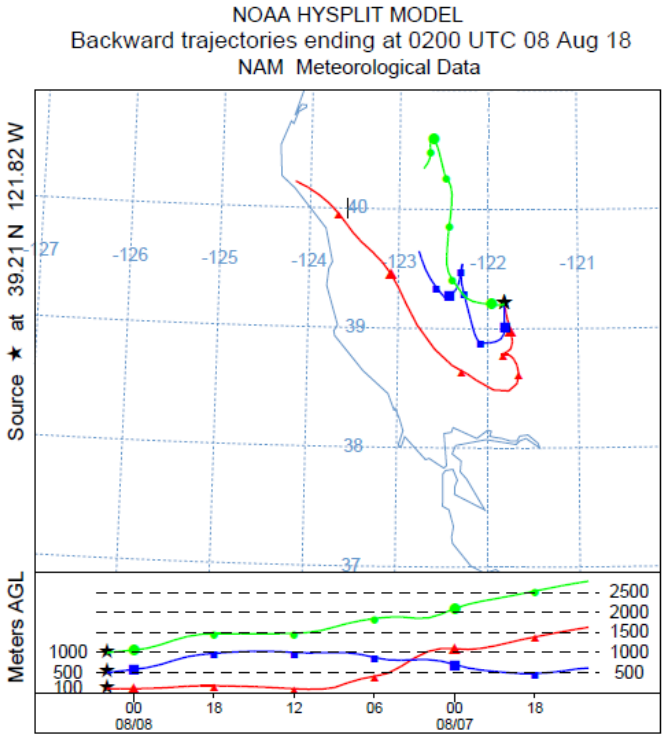
August 1, 2018 18PST (8/2/18 02UTC)



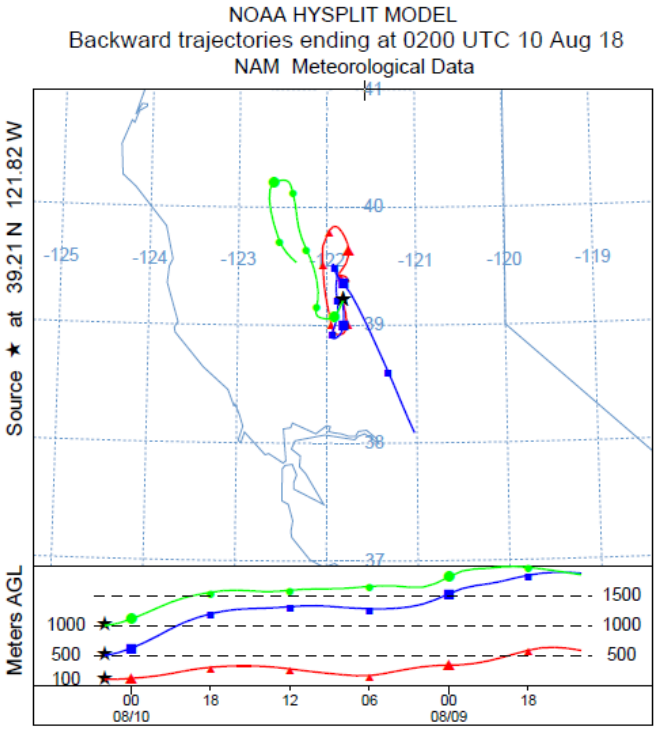
August 3, 2018 21PST (8/4/18 05UTC)



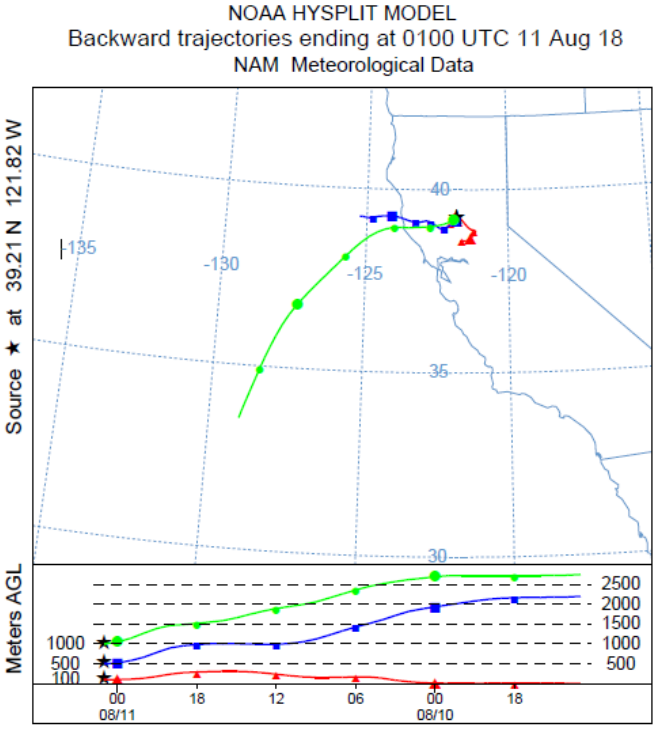
August 7, 2018 18PST (8/8/18 02UTC)



August 9, 2018 18PST (8/10/18 02UTC)



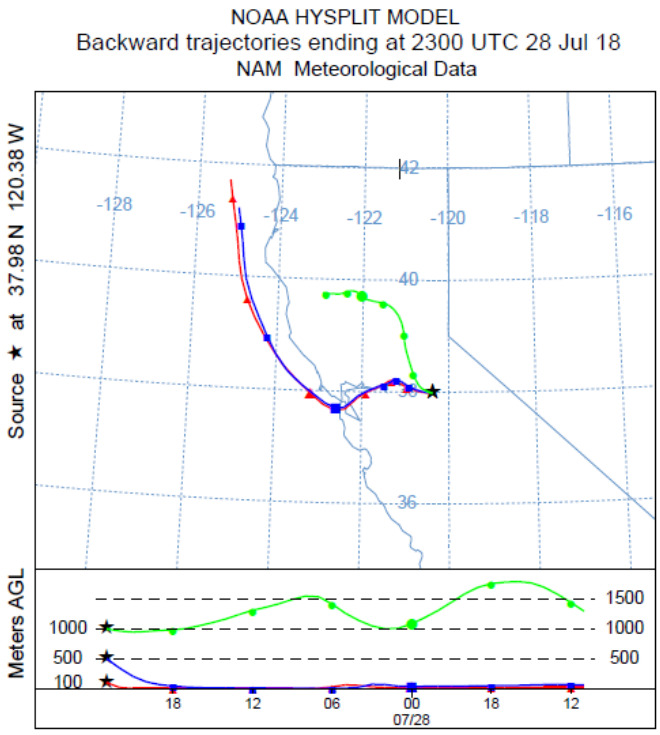
August 10, 2018 17PST (8/11/18 01UTC)



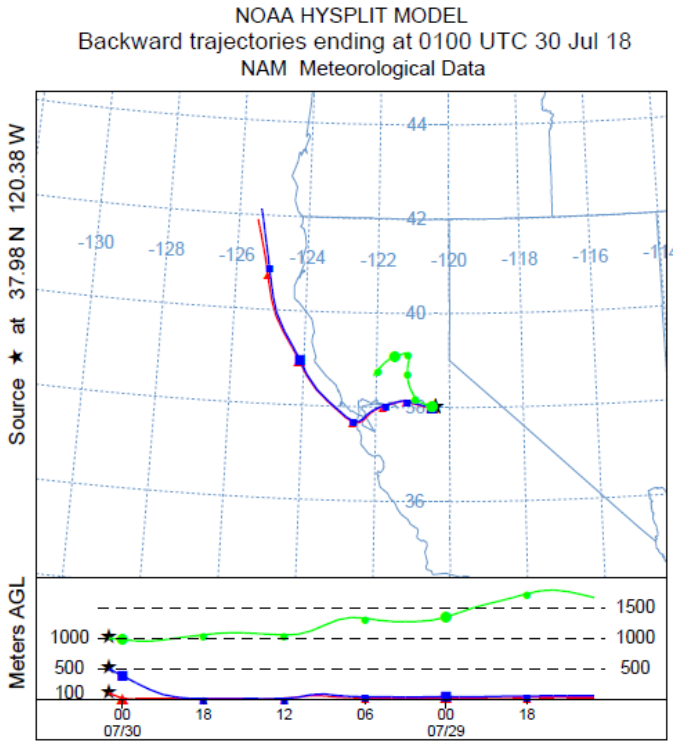
4. Tuolumne County (Sonora)

Date (PST)	First Hour (PST)	Date (PST)	Max Hour (PST)	DATE (UTC)	First Hour (UTC)	Date (UTC)	Max Hour (UTC)
7/28/2018	10	7/28/2018	15	7/28/2018	18	7/28/2018	23
7/29/2018	10	7/29/2018	17	7/29/2018	18	7/30/2018	1
7/30/2018	11	7/30/2018	17	7/30/2018	19	7/31/2018	1
7/31/2018	11	7/31/2018	16	7/31/2018	19	8/1/2018	0
8/2/2018	13	8/2/2018	18	8/2/2018	21	8/3/2018	2
8/4/2018	9	8/4/2018	14	8/4/2018	17	8/4/2018	22
8/5/2018	14	8/5/2018	18	8/5/2018	22	8/6/2018	2
8/6/2018	10	8/6/2018	13	8/6/2018	18	8/6/2018	21
8/8/2018	11	8/8/2018	14	8/8/2018	19	8/8/2018	22
8/9/2018	8	8/9/2018	10	8/9/2018	16	8/9/2018	18
8/10/2018	11	8/10/2018	16	8/10/2018	19	8/11/2018	0

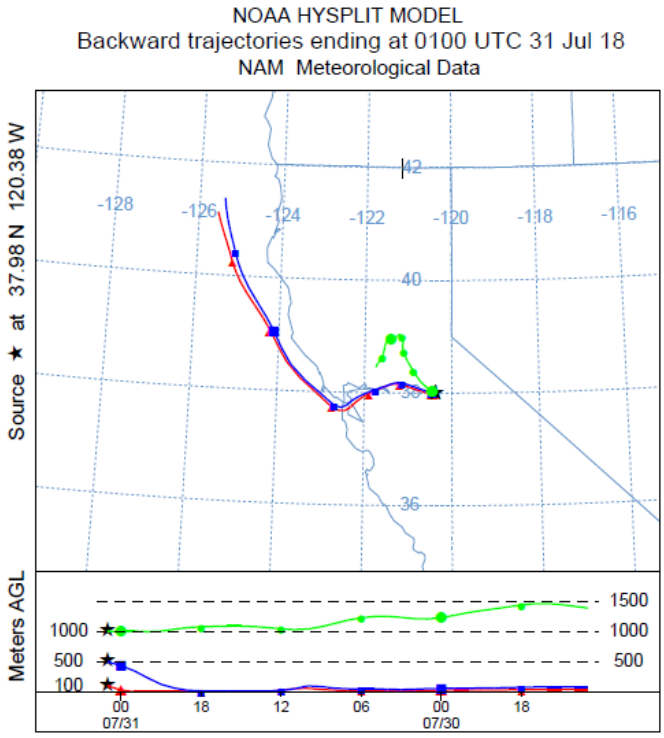
July 28, 2018 15PST (7/28/18 23UTC)



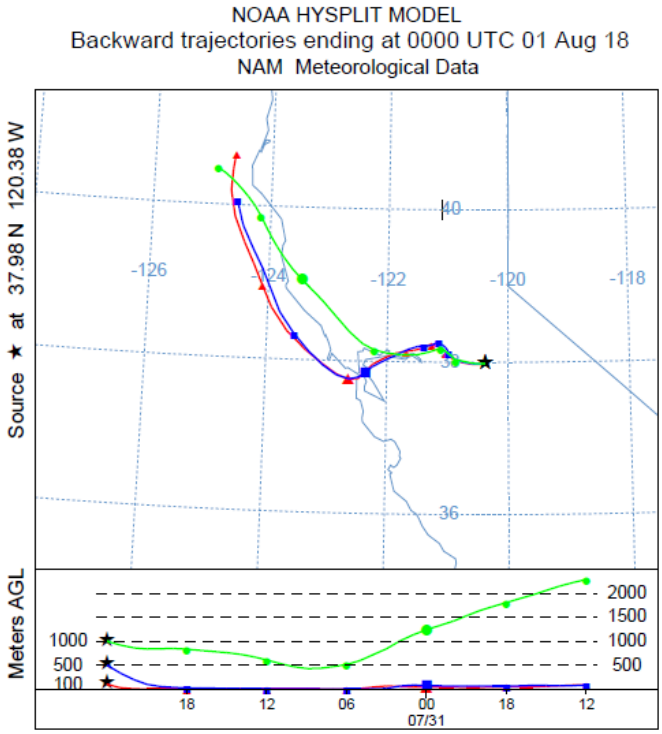
July 29, 2018 17PST (7/30/18 01UTC)



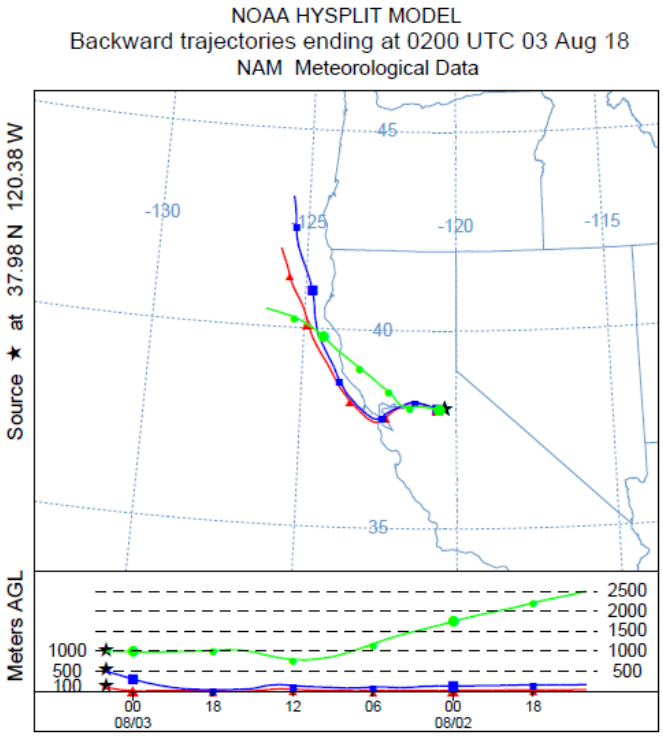
July 30, 2018 17PST (7/31/18 01UTC)



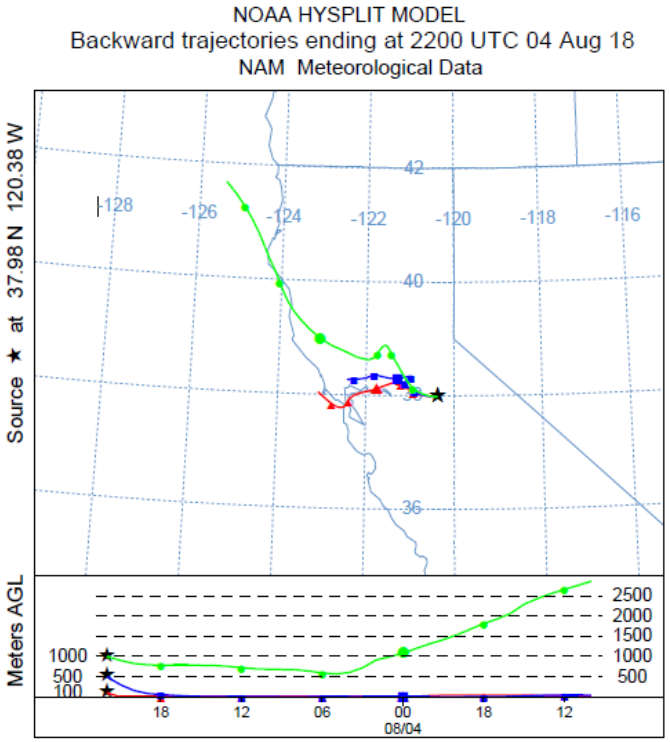
July 31, 2018 16PST (8/1/18 00UTC)



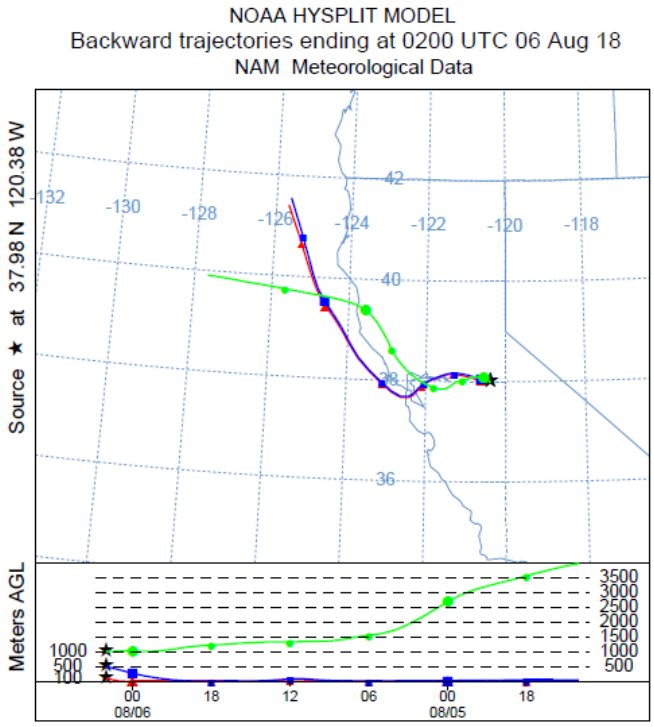
August 2, 2018 18PST (8/3/18 02UTC)



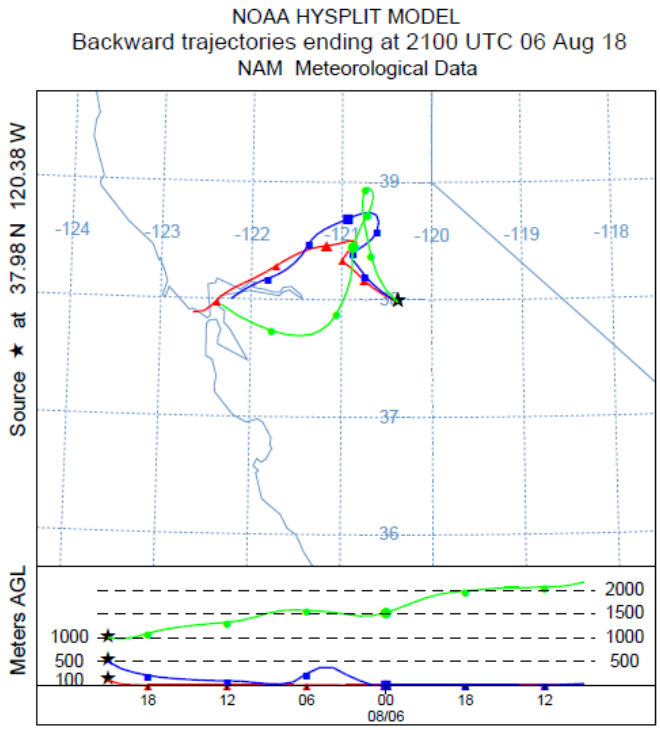
August 4, 2018 14PST (22UTC)



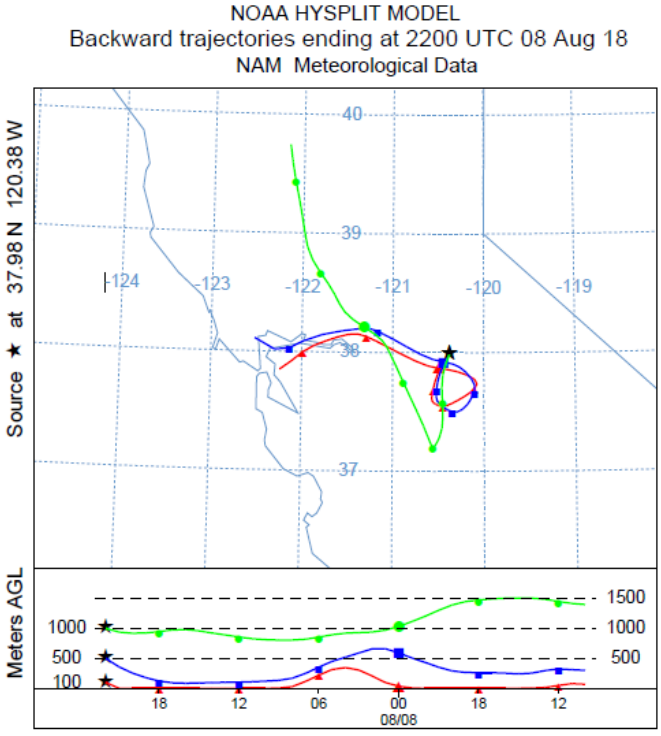
August 5, 2018 18PST (8/6/18 02UTC)



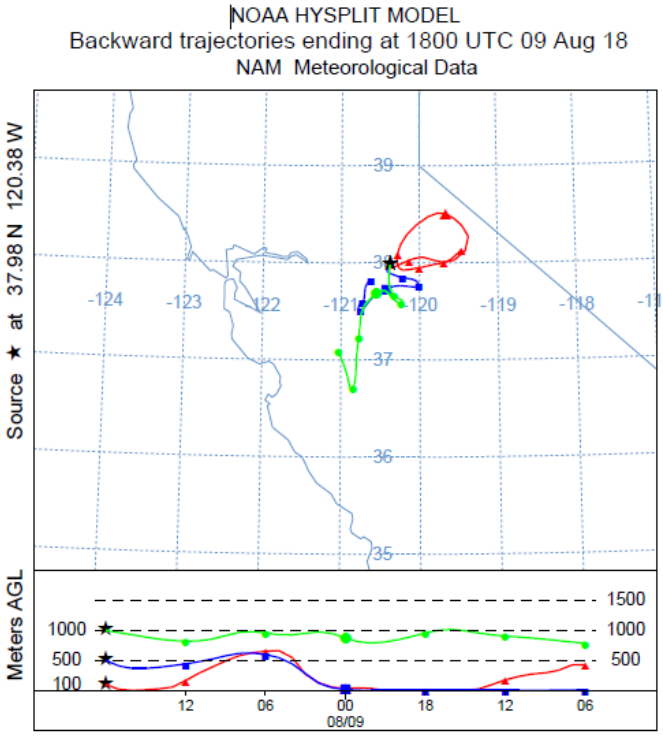
August 6, 2018 13PST (21UTC)



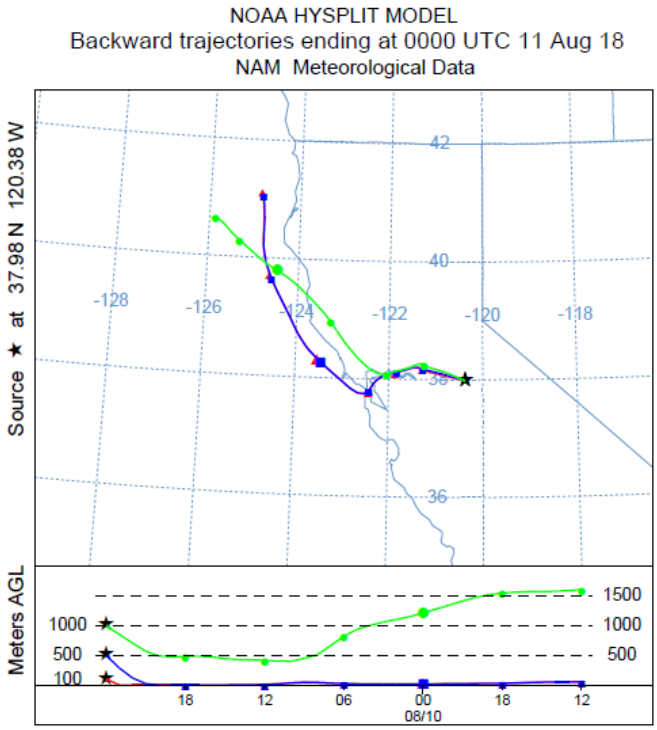
August 8, 2018 14PST (22UTC)



August 9, 2018 10PST (18UTC)



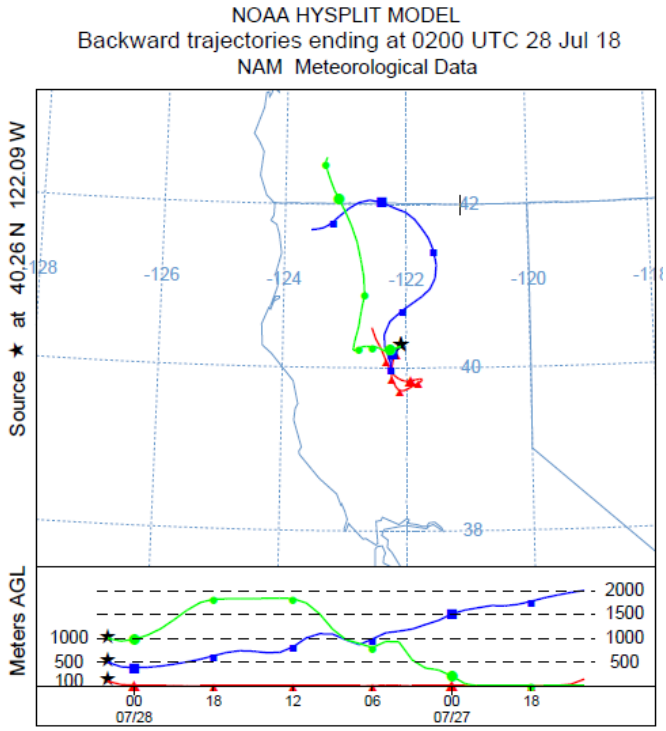
August 10, 2018 16PST (8/11/18 00UTC)



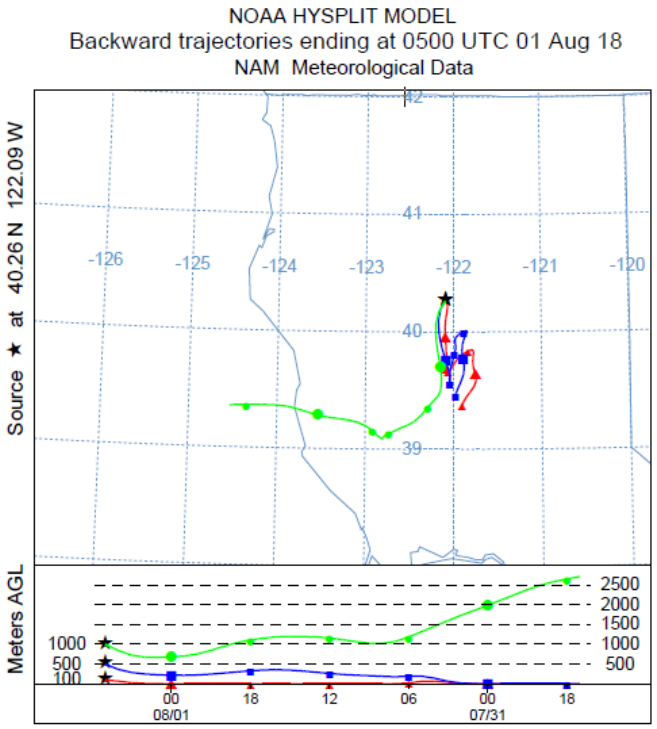
5. Tuscan Buttes / Tehama County

Date (PST)	First Hour (PST)	Date (PST)	Max Hour (PST)	DATE (UTC)	First Hour (UTC)	Date (UTC)	Max Hour (UTC)
7/27/2018	14	7/27/2018	18	7/27/2018	22	7/28/2018	2
7/31/2018	14	7/31/2018	21	7/31/2018	22	8/1/2018	5
8/1/2018	15	8/1/2018	20	8/1/2018	23	8/2/2018	4
8/2/2018	10	8/2/2018	17	8/2/2018	18	8/3/2018	1
8/3/2018	12	8/3/2018	16	8/3/2018	20	8/4/2018	0
8/7/2018	12	8/7/2018	16	8/7/2018	20	8/8/2018	0
8/8/2018	12	8/8/2018	13	8/8/2018	20	8/8/2018	21
8/9/2018	21	8/9/2018	22	8/10/2018	5	8/10/2018	6
8/10/2018	11	8/10/2018	15	8/10/2018	19	8/10/2018	23

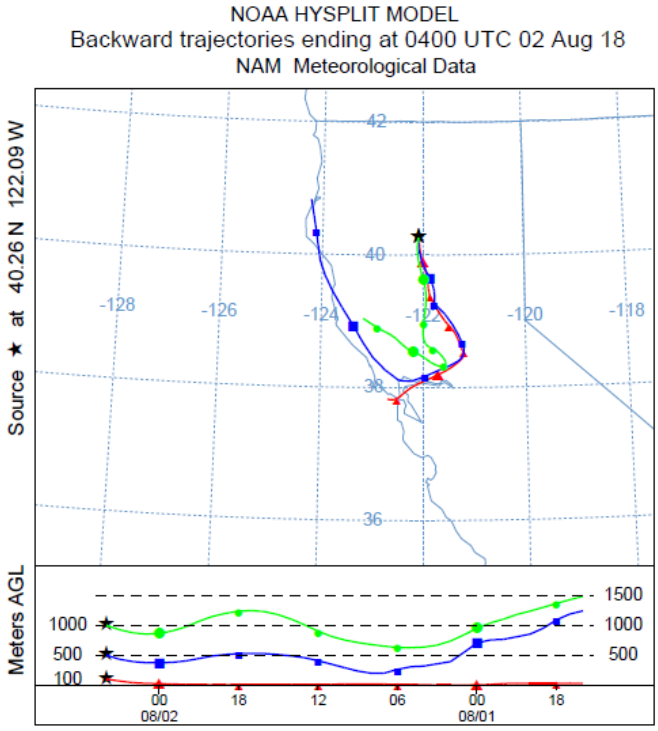
July 27, 2018 18PST (7/28/18 02UTC)



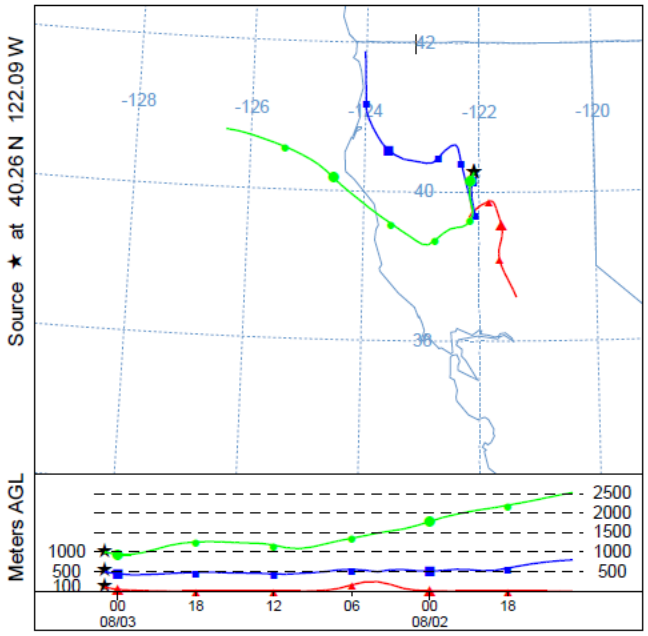
July 31, 2018 21PST (8/1/18 05UTC)



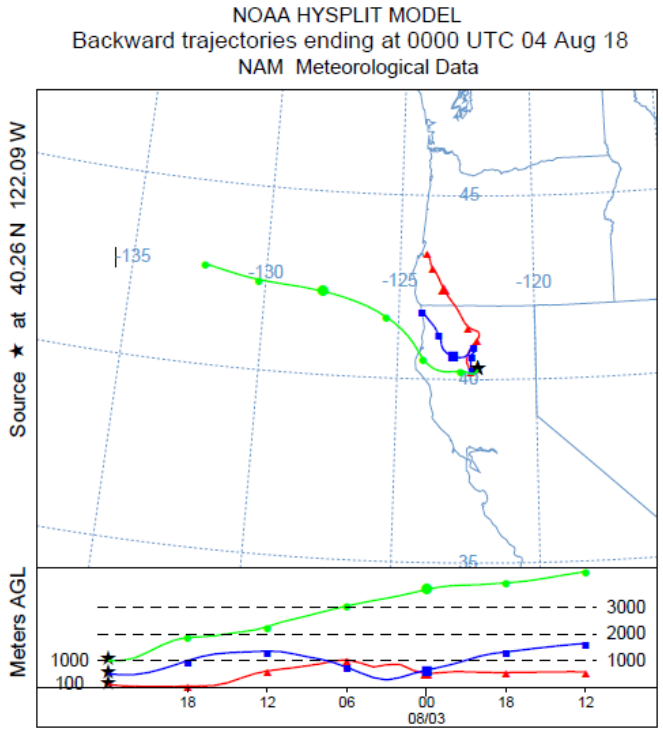
August 1, 2018 20PST (8/2/18 04UTC)



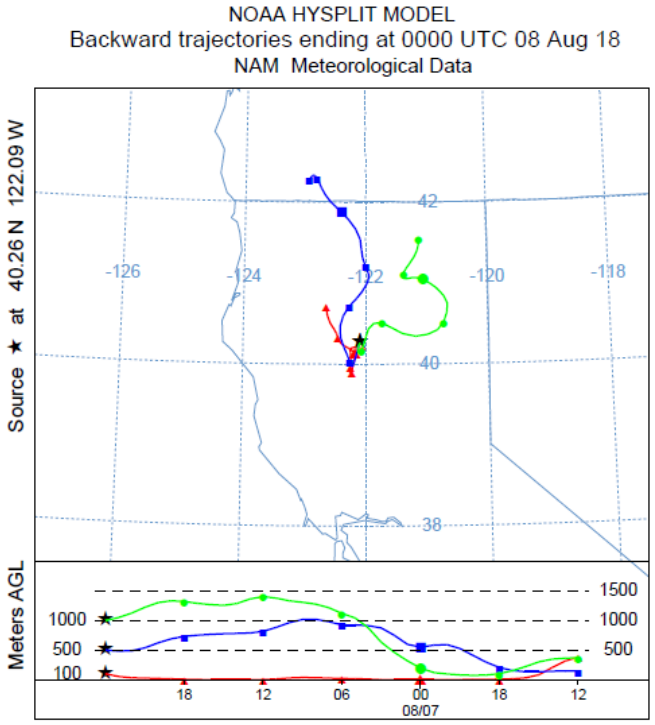
August 2, 2018 17PST (8/3/18 01UTC)



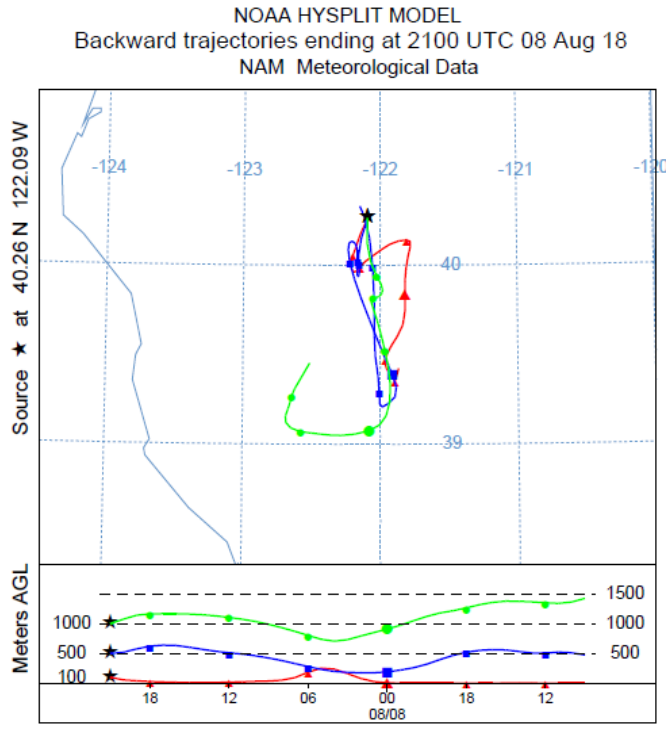
August 3, 2018 16PST (8/4/18 00UTC)



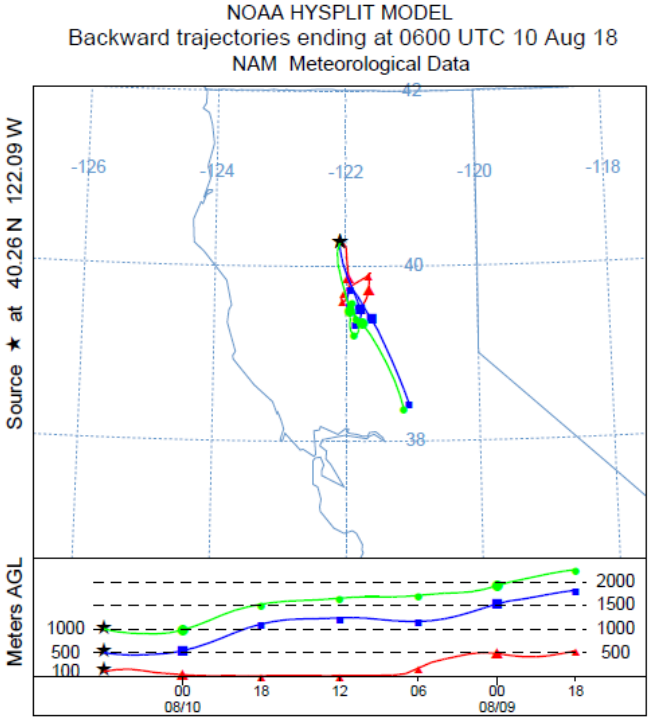
August 7, 2018 16PST (8/8/18 00UTC)



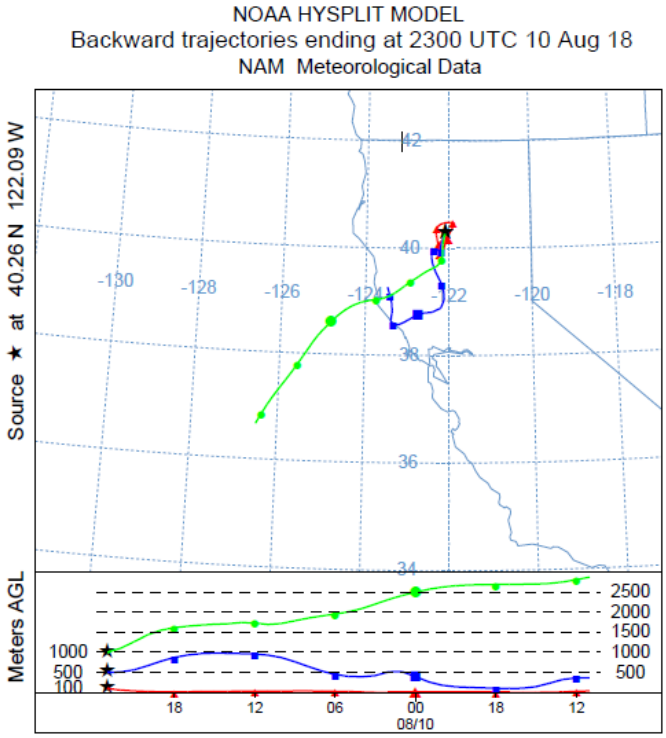
August 8, 2018 13PST (21UTC)



August 9, 2018 22PST (8/10/18 06UTC)



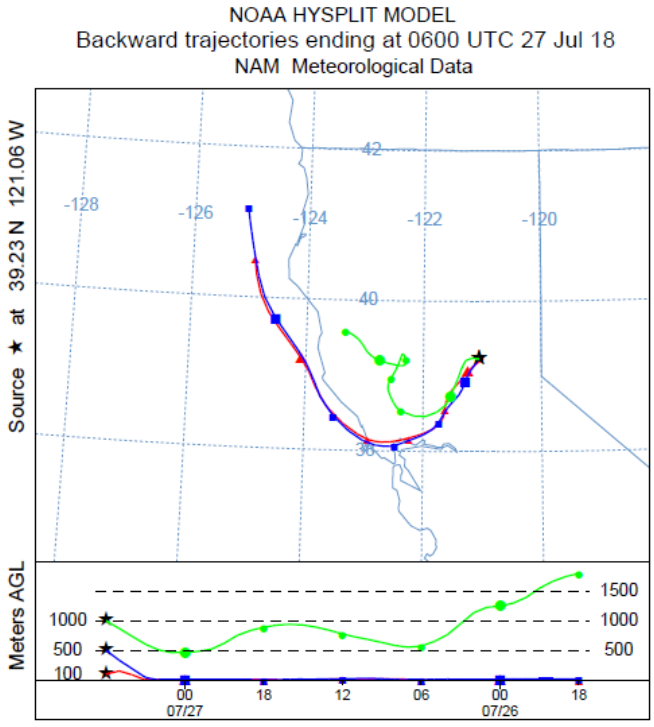
August 10, 2018 15PST (23UTC)



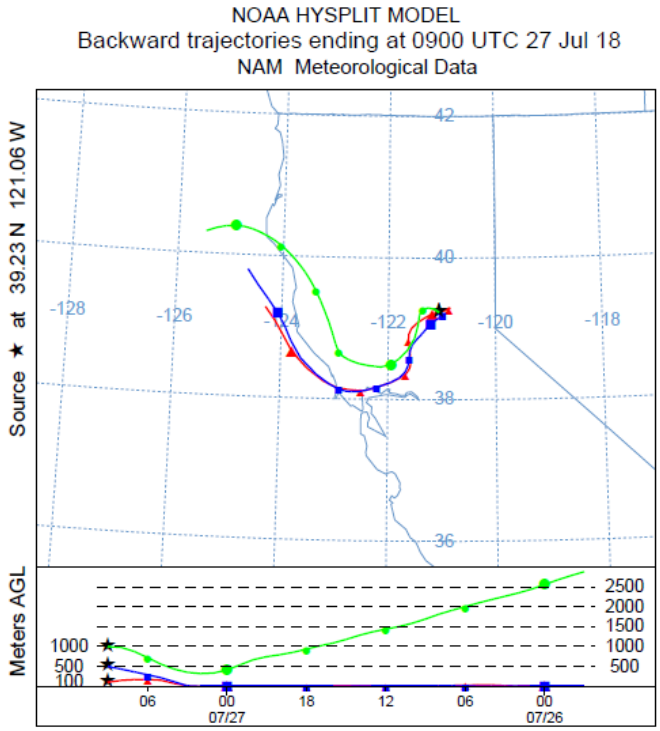
6. Western Part of Nevada County (Grass Valley) / Northern Sierra AQMD

Date (PST)	First Hour (PST)	Date (PST)	Max Hour (PST)	DATE (UTC)	First Hour (UTC)	Date (UTC)	Max Hour (UTC)
7/26/2018	22	7/26/2018	22	7/27/2018	6	7/27/2018	6
7/27/2018	0	7/27/2018	1	7/27/2018	8	7/27/2018	9
7/28/2018	23	7/29/2018	3	7/29/2018	7	7/29/2018	11
7/29/2018	0	7/29/2018	3	7/29/2018	8	7/29/2018	11
7/31/2018	17	7/31/2018	23	8/1/2018	1	8/1/2018	7
8/1/2018	16	8/1/2018	18	8/2/2018	0	8/2/2018	2
8/2/2018	13	8/2/2018	14	8/2/2018	21	8/2/2018	22
8/7/2018	14	8/7/2018	17	8/7/2018	22	8/8/2018	1
8/8/2018	21	8/8/2018	21	8/9/2018	5	8/9/2018	5
8/9/2018	0	8/9/2018	0	8/9/2018	8	8/9/2018	8
8/10/2018	13	8/10/2018	20	8/10/2018	21	8/11/2018	4

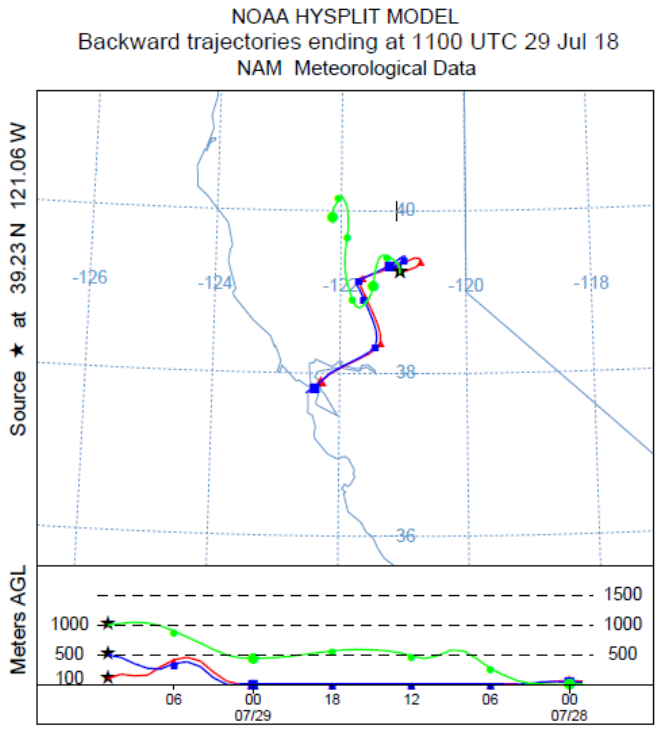
July 26, 2018 22PST (7/27/18 06UTC)



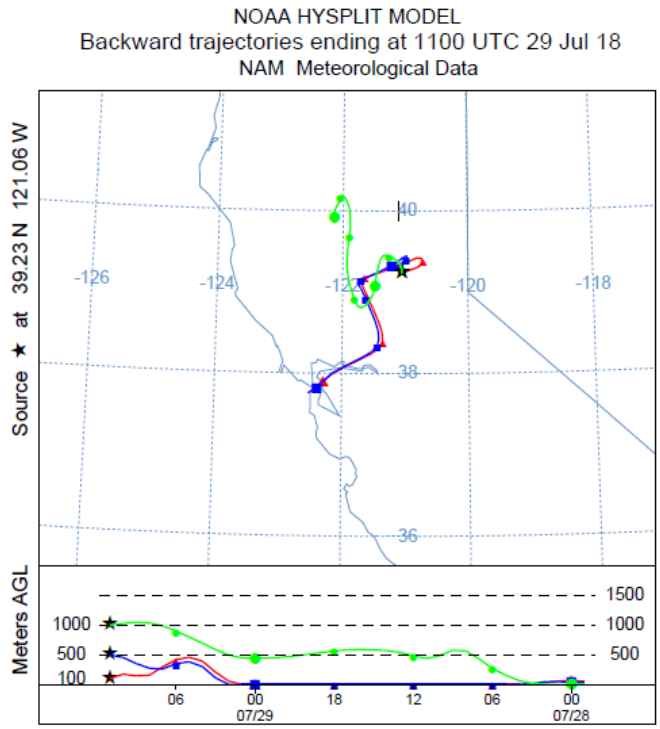
July 27, 2018 01PST (09UTC)



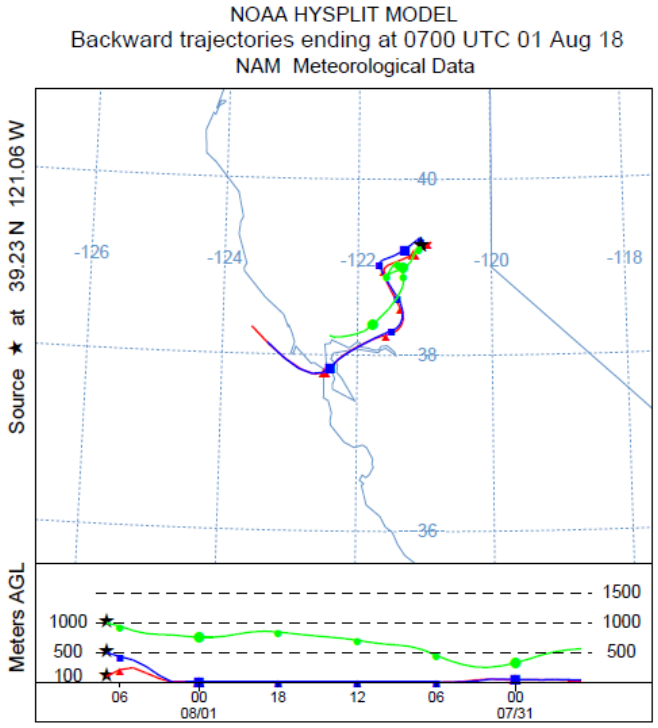
July 28, 2018 (7/29/18 03PST 11UTC) (8-hour start was 7/28/18 23PST)



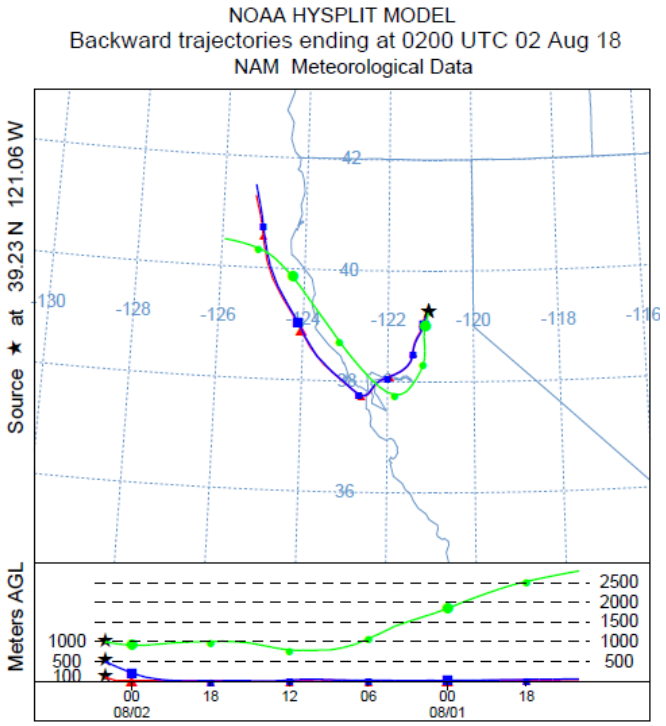
July 29, 2018 03PST (11UTC) (8-hour start was 00PST)



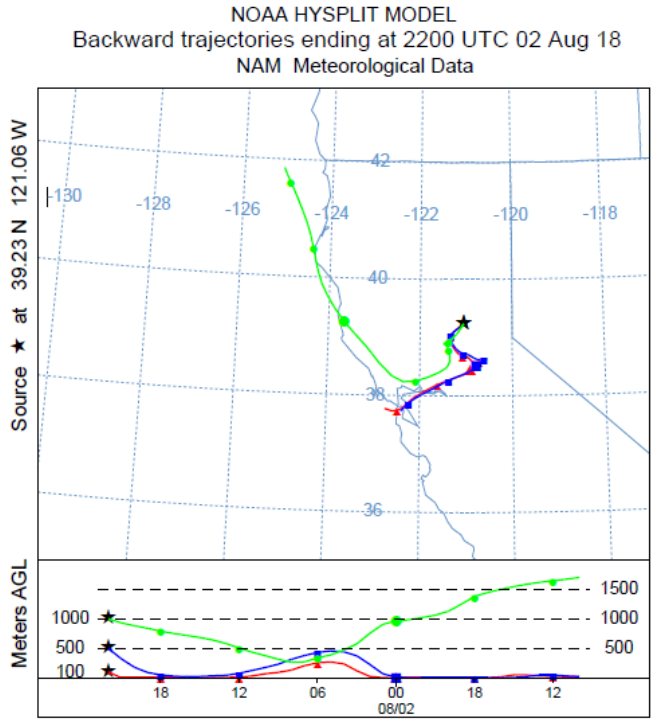
July 31, 2018 23PST (8/1/18 07UTC)



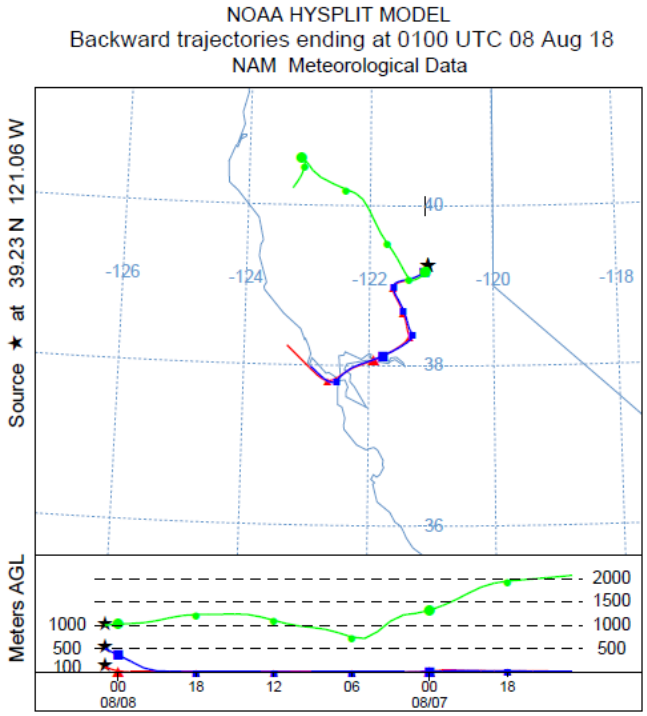
August 1, 2018 18PST (8/2/18 02UTC)



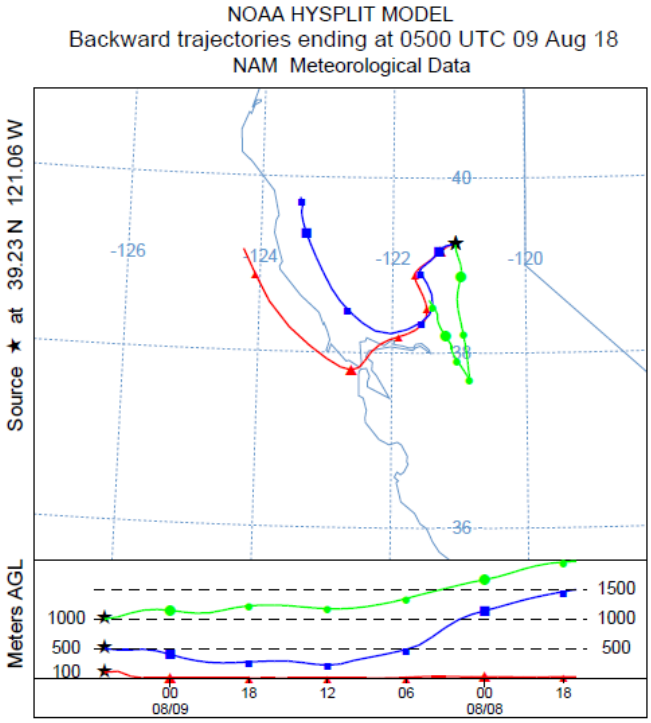
August 2, 2018 14PST (22UTC)



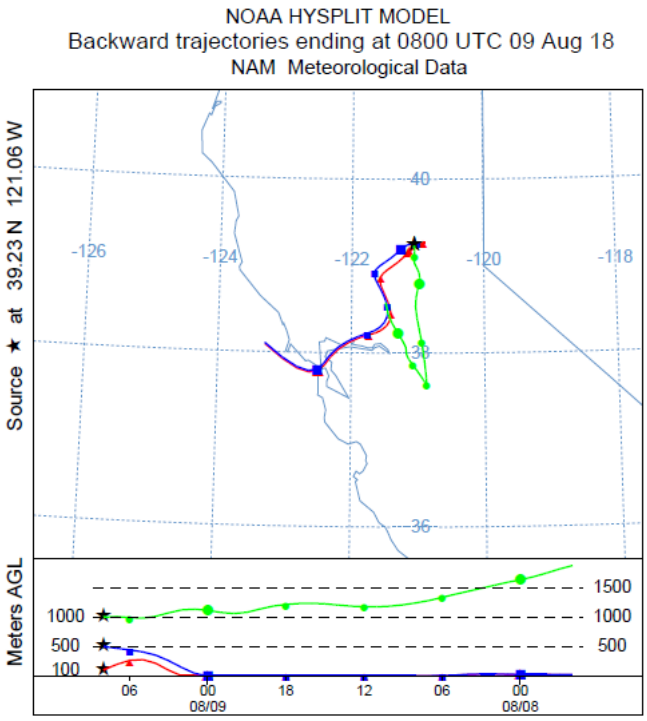
August 7, 2018 17PST (8/8/18 01UTC)



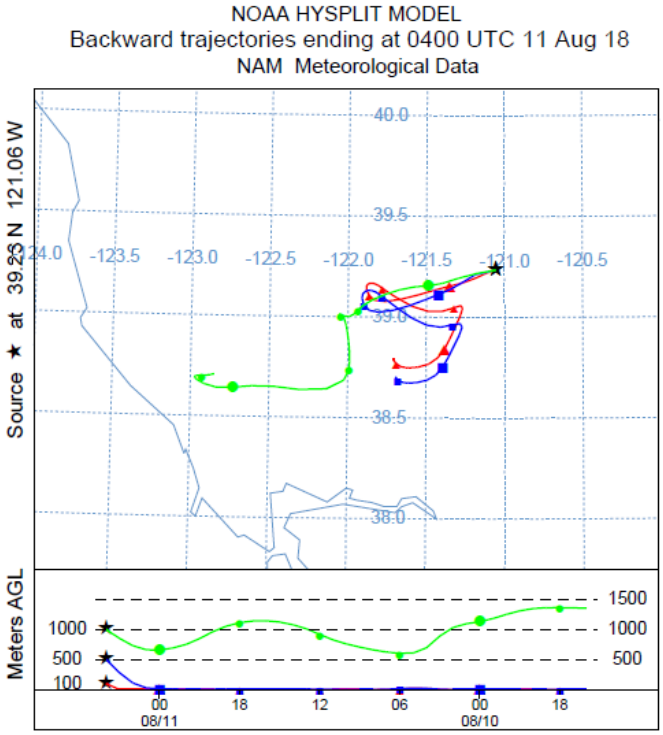
August 8, 2018 21PST (8/9/18 05UTC)



August 9, 2018 00PST (08UTC)



August 10, 2018 20PST (8/11/18 04UTC)



V. NOAA Smoke Text Products[75]

The NOAA Smoke Text Product is a text-based analysis of data from multiple satellites. These products are used to give an overall view of smoke origins, current locations, and potential transport, and can supplement information from other media. Observations are generally recorded twice each day, although not all are shown here since they do not always provide new information. The majority of these reports highlight the large amounts of smoke issued on an almost daily basis and their impacts on California and the rest of the U.S. Individual areas at the county level are not specifically noted.

Wednesday, July 25, 2018

DESCRIPTIVE TEXT NARRATIVE FOR SMOKE/DUST OBSERVED IN SATELLITE IMAGERY THROUGH 0002Z July 26, 2018.

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NESDIS IS INVESTIGATING THE UTILITY OF THIS TEXT NARRATIVE.  IF YOU FIND
THIS PRODUCT VALUABLE, PLEASE SEND AN EMAIL RESPONSE TO THE FOLLOWING
ADDRESS INDICATING HOW YOU AND/OR YOUR AGENCY USE THE INFORMATION.
THANK YOU.  SEND EMAIL RESPONSES TO: SSDFireTeam@noaa.gov.

SMOKE:
Overall Perspective...
An extremely large coverage of smoke of varying density was observed
in satellite imagery this morning across the eastern half of Alaska
and much of Canada to off the southwestern part of Greenland. The only
smoke free area may be a portion of Quebec and far southeastern Canada
though clouds were present there which limited smoke detection. The
thickest smoke of moderate to thick density was located over much
of western Canada with an eastward extension over northern Canada to
northern Manitoba and the southeast part of Nunavut and over Hudson
Bay. A narrow stripe of thicker smoke also stretched eastward across
southern Canada from southern Alberta to southern Manitoba to near the
border with North Dakota and Minnesota. The Alaska smoke and some of the
smoke over into a portion of the Yukon was likely due mostly to wildfire
activity in those regions. Farther to the east over much of Canada,
the smoke was believed to be mainly from long range transport from
fires over northern Europe/northern Asia though some of the leftover
smoke in Canada could be from wildfire activity actually occurring in
Canada. Across the US, smoke of mainly thin density covered the area
from Washington to central California and eastward from there possibly
all the way to the Appalachians. The smoke over the Western and Central
US was likely attributed to wildfire activity over the Western US. The
mass of thin to moderately dense smoke stretching from the Great Lakes
region to the Gulf Coast was more likely being transported southward
from Canada with the source potentially from wildfires in Canada and
even now possibly from the longer range transport from Europe/Asia.

More Specifically...
Western US...
Thicker smoke from the cluster of wildfires in southwestern Oregon and
northern California was noted over far northern California, southwestern
and south central Oregon. Thicker smoke from the Ferguson fire was
present over a portion of the central and southern Sierras. A swath of
thick smoke from wildfires in southwestern Idaho spread eastward to far
northwestern Utah and south central Idaho.
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[75] NOAA Hazard and Mapping System (HMS), *Fire and Smoke Text Product*, last accessed 8/31/21

Thursday, July 26, 2018

DESCRIPTIVE TEXT NARRATIVE FOR SMOKE/DUST OBSERVED IN SATELLITE IMAGERY THROUGH 0300Z July 27, 2018.

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SMOKE:
Eastern Alaska/Canada/North Central US/Appalachian Region...
The enormous mass of smoke which has been present for several days continued to be visible stretching from eastern Alaska and western Canada eastward across virtually all of Canada to off the southern tip of Greenland. The thinner density portion of this smoke also covered approximately the northern half of the US extending as far east as New York and the Middle Atlantic region. Thicker embedded areas of smoke were noted over portions of central and western Canada with some of the moderate to thick density smoke nearing the US-Canada border from northern Washington eastward to Montana. Moderately dense smoke did appear to stretch a bit farther to the south across the Dakotas and the northern half of Minnesota. Cloudiness over some of Alaska interfered with smoke detection in that region. The source for this smoke was believed to be long range transport from wildfire activity over Europe and Asia though some contribution from wildfires over Alaska and northwestern Canada is also occurring.

Western US...
The Valley Fire in southern California, Ferguson Fire in central California, and the Carr Fire in northern California along with the cluster of fires in southwestern Oregon were responsible for widespread significant density smoke coverage over much of California, northwestern Nevada, and the southern half of Oregon. The Carr Fire and the Valley in particular appeared to have major flare ups this evening resulting in extremely large and dense plumes which moved rapidly off to the northeast. The thick plume from the Valley Fire extended over southern Nevada (including Las Vegas) and northwestern Arizona. The leading portion of smoke from these fires and other wildfires burning over the Western US appeared to stretch eastward over the Rockies where it merged with the smoke described in the paragraph above.

Saturday, July 28, 2018

DESCRIPTIVE TEXT NARRATIVE FOR SMOKE/DUST OBSERVED IN SATELLITE IMAGERY THROUGH 1800Z July 28, 2018.

NESDIS IS INVESTIGATING THE UTILITY OF THIS TEXT NARRATIVE. IF YOU FIND THIS PRODUCT VALUABLE, PLEASE SEND AN EMAIL RESPONSE TO THE FOLLOWING ADDRESS INDICATING HOW YOU AND/OR YOUR AGENCY USE THE INFORMATION. THANK YOU. SEND EMAIL RESPONSES TO: SSDFireTeam@noaa.gov.

SMOKE:
Canada/North Central US/Western Great Lakes...
Scattered wildfires across much of western Canada, ranging from southern British Columbia up through northwestern Alberta and into the Yukon and Northwest Territories are producing plumes of light to very dense smoke. This is adding to a large mass of persistent smoke resulting from these and other fires in Canada, Alaska, and possibly northern Asia and Europe. This smoke stretches across most of the Canadian provinces as far as Quebec, and extends across the north-central US and Great Lakes to at least Ohio, where cloud cover prevents further analysis. The mass of smoke contains smaller areas of greater-density smoke within it, particularly over Alberta, Saskatchewan, and eastern Montana.

Western US...
Wildfires scattered across several states in the Western US were responsible for another very large area of smoke which blanketed much of the western US with smoke of varying densities ranging from light to heavy, with the smoke spreading to the east and southeast. The greatest contributors to this area are several notable fires in California, particularly the Carr and Ferguson fires, which are producing plumes of very dense smoke which cover virtually all of the northern and central sections of that state.

Sunday, July 29, 2018

DESCRIPTIVE TEXT NARRATIVE FOR SMOKE/DUST OBSERVED IN SATELLITE IMAGERY THROUGH 1800Z July 29, 2018.

NESDIS IS INVESTIGATING THE UTILITY OF THIS TEXT NARRATIVE. IF YOU FIND THIS PRODUCT VALUABLE, PLEASE SEND AN EMAIL RESPONSE TO THE FOLLOWING ADDRESS INDICATING HOW YOU AND/OR YOUR AGENCY USE THE INFORMATION. THANK YOU. SEND EMAIL RESPONSES TO: SSDFireTeam@noaa.gov.

SMOKE:
Canada/North Central US...
Scattered wildfires across much of western Canada, ranging from southern British Columbia up through northwestern Alberta and into the Yukon and Northwest Territories are producing plumes of light to very dense smoke. This is adding to a large mass of persistent smoke resulting from these and other fires in Canada, Alaska, and possibly northern Asia and Europe. This smoke stretches across the western Canadian provinces east into Manitoba, and extends southward into Montana and North Dakota. Another disconnected area of remnant smoke is drifting over eastern Canada. A fire on the northeastern shore of Lake Huron in Ontario is producing a plume of dense smoke moving east-northeastward.

Western US...
Large wildfires continue to burn in northern California, southeast Oregon, west and northeast Nevada, central-south Idaho, and southwestern Wyoming. Those wildfires were observed emitting heavy smoke plumes moving in a north-eastward direction and covering northern Sacramento Valley and northeast California, southern Oregon, and central and northern Nevada. Medium-to-light density smoke also blanketed much of the region and extended towards the east into Wyoming, Colorado, and Kansas.

Sunday, July 29, 2018

DESCRIPTIVE TEXT NARRATIVE FOR SMOKE/DUST OBSERVED IN SATELLITE IMAGERY THROUGH 0215Z July 30, 2018.

NESDIS IS INVESTIGATING THE UTILITY OF THIS TEXT NARRATIVE. IF YOU FIND THIS PRODUCT VALUABLE, PLEASE SEND AN EMAIL RESPONSE TO THE FOLLOWING ADDRESS INDICATING HOW YOU AND/OR YOUR AGENCY USE THE INFORMATION. THANK YOU. SEND EMAIL RESPONSES TO: SSDFireTeam@noaa.gov.

SMOKE:
Canada...
Wildfire activity is observed stretching from British Columbia to Ontario producing heavy density plumes near the sources along with light-density smoke aloft. The plumes are seen dispersing predominantly towards the east.

Western US...
Numerous large wildfires continue to burn in northern California, southwest Oregon, western and northeast Nevada, central-southern Idaho, southwest Wyoming, and northwest Colorado. Those areas are dominated by heavy density smoke with a easterly dispersion flow. A ~300 mile-wide section of higher level smoke is being transported eastward from the Pacific coastline, crossing the wildfire areas above and reaching northern New Mexico and Oklahoma, central-southern Kansas, and western Missouri.

Tuesday, July 31, 2018

DESCRIPTIVE TEXT NARRATIVE FOR SMOKE/DUST OBSERVED IN SATELLITE IMAGERY THROUGH 1800Z July 31, 2018.

NESDIS IS INVESTIGATING THE UTILITY OF THIS TEXT NARRATIVE. IF YOU FIND THIS PRODUCT VALUABLE, PLEASE SEND AN EMAIL RESPONSE TO THE FOLLOWING ADDRESS INDICATING HOW YOU AND/OR YOUR AGENCY USE THE INFORMATION. THANK YOU. SEND EMAIL RESPONSES TO: SSDFireTeam@noaa.gov.

SMOKE:
Alaska/Western Canada/North-central US...
Moderate-density smoke was observed from fires in central Alaska, the southern Yukon, and throughout British Columbia. This smoke was adding to large areas of remnant smoke extending eastward from there across southern Canada and Montana, the Dakotas, and Minnesota, and is moving generally eastward.

Eastern Canada...
A number of fires along the far northeastern shore of Lake Huron in Ontario were producing a large plume of heavy smoke moving east-northeastward and diffusing into light smoke over Quebec.

Western US...
Smoke from wildfires ranging from California to Colorado up to Washington and Idaho are contributing to a wide area of light smoke across much of the US west of the Great Divide. Further areas of remnant smoke from previous days' fire activity were observed over the central US as well. The most notable smoke areas are described below.

California/Oregon...A number of large wildfires in northern California and southwestern Oregon are producing large amounts of heavy smoke which blanket a region extending from San Francisco Bay to Eugene, Oregon. Moderate-density smoke extends northward to east of Mount Hood. The smoke is generally moving northward, but at a fairly slow rate.

Tuesday, July 31, 2018

DESCRIPTIVE TEXT NARRATIVE FOR SMOKE/DUST OBSERVED IN SATELLITE IMAGERY THROUGH 0230Z August 01, 2018.

NESDIS IS INVESTIGATING THE UTILITY OF THIS TEXT NARRATIVE. IF YOU FIND THIS PRODUCT VALUABLE, PLEASE SEND AN EMAIL RESPONSE TO THE FOLLOWING ADDRESS INDICATING HOW YOU AND/OR YOUR AGENCY USE THE INFORMATION. THANK YOU. SEND EMAIL RESPONSES TO: SSDFireTeam@noaa.gov.

SMOKE:
Alaska...
Wildfires in central and eastern Alaska were observed emitting moderate-density smoke dispersing towards the east and into Yukon territory.

Canada...
Wildfires were seen occurring predominantly across central-southern Yukon territory and British Columbia (except northeast sector) contributing moderate-density smoke covering much of the region with a general southeast trajectory. Higher level smoke linked to those wildfires could be seen traveling towards the southeast and across the US border extending over Montana, the Dakotas and across Minnesota, and back towards the northeast and into Ontario.

Western US...
Widespread fire activity continues across northern California and southwest Oregon producing large plumes and leading to high concentrations of smoke from the ground up. The smoke aloft is spreading towards the northeast-east following the 500mb atmospheric flow which results in a large semi-circular plume of light-to-moderate density covering much of the western states, with additional smoke injection being seen across the Utah-Colorado state border where numerous additional wildfires are burning.

Wednesday, August 01, 2018

DESCRIPTIVE TEXT NARRATIVE FOR SMOKE/DUST OBSERVED IN SATELLITE IMAGERY THROUGH 2000Z August 02, 2018.

NESDIS IS INVESTIGATING THE UTILITY OF THIS TEXT NARRATIVE. IF YOU FIND THIS PRODUCT VALUABLE, PLEASE SEND AN EMAIL RESPONSE TO THE FOLLOWING ADDRESS INDICATING HOW YOU AND/OR YOUR AGENCY USE THE INFORMATION. THANK YOU. SEND EMAIL RESPONSES TO: SSDFireTeam@noaa.gov.

SMOKE:
Canada...
Wildfires are seen burning across central-south Yukon territory, British Columbia (except northeast corner), northeast Manitoba, and north-northwest Ontario. Smoke plumes are generally moving towards the northeast with moderate-to-heavy density columns near the sources.

Western US/Great Plains...
Wildfire activity dominates most of the Western US including areas of higher concentration seen across northern California, western and northern Oregon, Washington and Idaho with smoke plumes being transported towards the northeast. Other areas of active burning were observed across northwest Nevada, northern Utah, western Colorado, and central Arizona, in addition to Oklahoma, eastern Kansas, central Missouri, northwest Arkansas and northeast Texas. A large area of higher level smoke covers the majority of the states above, extending further into Iowa and western Illinois to the east, and Montana and the Dakotas to the north. Remnant smoke from the western fires was seen lingering over the midwest this morning from Iowa down to Louisiana and as far east as Indiana.

Thursday, August 2, 2018

DESCRIPTIVE TEXT NARRATIVE FOR SMOKE/DUST OBSERVED IN SATELLITE IMAGERY THROUGH 0522Z August 3, 2018.

NESDIS IS INVESTIGATING THE UTILITY OF THIS TEXT NARRATIVE. IF YOU FIND THIS PRODUCT VALUABLE, PLEASE SEND AN EMAIL RESPONSE TO THE FOLLOWING ADDRESS INDICATING HOW YOU AND/OR YOUR AGENCY USE THE INFORMATION. THANK YOU. SEND EMAIL RESPONSES TO: SSDFireTeam@noaa.gov.

SMOKE:
Western Canada/Western and Central United States....
Wildfires continue over much of the Western United States and Western Canada. A tremendous area of light to moderate density smoke from this activity extended to as far east as the Upper Midwest to the Central Gulf Coast of the United States. The highest density smoke within this area was located from portions of the Central and Northern Plains and along the southern Provinces of Canada west towards the fire activity over Washington, Oregon, California and southern British Columbia. Another area of moderate density smoke was located over northern Alberta, southern British Columbia and the southern Yukon.

Friday, August 3, 2018

DESCRIPTIVE TEXT NARRATIVE FOR SMOKE/DUST OBSERVED IN SATELLITE IMAGERY THROUGH 0547z August 4, 2018.

NESDIS IS INVESTIGATING THE UTILITY OF THIS TEXT NARRATIVE. IF YOU FIND THIS PRODUCT VALUABLE, PLEASE SEND AN EMAIL RESPONSE TO THE FOLLOWING ADDRESS INDICATING HOW YOU AND/OR YOUR AGENCY USE THE INFORMATION. THANK YOU. SEND EMAIL RESPONSES TO: SSDFireTeam@noaa.gov.

SMOKE:
Canada/Western and Central United States....
Wildfires continue over much of the Western United States and Western Canada. A tremendous area of light to moderate density smoke from this activity extended as far east as western Quebec in Canada extending southwest to the Upper Midwest and western Gulf Coast of the United States. Within this area of smoke, a large area of moderate density smoke extended from western Ontario and the upper Midwest of the United States through most of the southern Canadian Provinces, Northern Plains, Northern and Central Rockies towards Washington, Oregon and Central California. Very dense smoke was located closer to the ongoing wildfires over California. Further north, an area of moderate to high density smoke, from fires over northern British Columbia and the Yukon, was extending from the Northwest Territories west through northern British Columbia west to the southern Yukon.

Saturday, August 4, 2018

DESCRIPTIVE TEXT NARRATIVE FOR SMOKE/DUST OBSERVED IN SATELLITE IMAGERY THROUGH 1645z August 4, 2018.

NESDIS IS INVESTIGATING THE UTILITY OF THIS TEXT NARRATIVE. IF YOU FIND THIS PRODUCT VALUABLE, PLEASE SEND AN EMAIL RESPONSE TO THE FOLLOWING ADDRESS INDICATING HOW YOU AND/OR YOUR AGENCY USE THE INFORMATION. THANK YOU. SEND EMAIL RESPONSES TO: SSDFireTeam@noaa.gov.

SMOKE:
Western US...
Wildfires in Washington, Oregon, and California continue to produce copious amounts of smoke that is traveling east to north east and then changing direction over the midwest towards the south eastern United States. Smoke from these fires has reached the Atlantic ocean. The smoke from these fires has congregated into a large mass that is blanketing the eastern US and Canada.

Sunday, August 5, 2018

DESCRIPTIVE TEXT NARRATIVE FOR SMOKE/DUST OBSERVED IN SATELLITE IMAGERY THROUGH 1900Z August 5, 2018.

NESDIS IS INVESTIGATING THE UTILITY OF THIS TEXT NARRATIVE. IF YOU FIND THIS PRODUCT VALUABLE, PLEASE SEND AN EMAIL RESPONSE TO THE FOLLOWING ADDRESS INDICATING HOW YOU AND/OR YOUR AGENCY USE THE INFORMATION. THANK YOU. SEND EMAIL RESPONSES TO: SSDFireTeam@noaa.gov.

SMOKE:
Canada...
Scattered fires in central and northwest British Columbia contribute light-to-moderate density smoke to that region. Individual smoke plumes are seen moving towards the east. A large area of high level smoke from previous-day fires extend eastward across central-northern Alberta and into central Saskatchewan.

Western United States....
Large wildfires continue to burn in northern California and southwest Oregon releasing heavy density smoke plumes near the source that are seen accumulating throughout Sacramento and northern San Joaquin valleys as the smoke travels towards the north-northeast. Higher level smoke is also seen covering much of northern California, southeast Oregon, northern Nevada, southeast Idaho and southwest Montana.

Monday, August 6, 2018

DESCRIPTIVE TEXT NARRATIVE FOR SMOKE/DUST OBSERVED IN SATELLITE IMAGERY THROUGH 1600Z August 6, 2018.

NESDIS IS INVESTIGATING THE UTILITY OF THIS TEXT NARRATIVE. IF YOU FIND THIS PRODUCT VALUABLE, PLEASE SEND AN EMAIL RESPONSE TO THE FOLLOWING ADDRESS INDICATING HOW YOU AND/OR YOUR AGENCY USE THE INFORMATION. THANK YOU. SEND EMAIL RESPONSES TO: SSDFireTeam@noaa.gov.

SMOKE:
Western and central CONUS and western Canada....
Large wildfires from central and northern California into British Columbia continue to burn, contributing to an expansive area of varying density smoke reaching from the Pacific coast eastward as far as Lake Superior and from the southwestern Northwest Territory to the Colorado River near Blythe, CA. Two large regions of moderate density were observed, one from a wildfire complex in northwest British Columbia eastward into Alberta and central Saskatchewan with the other covering much of the CONUS northwest of a line from Death Valley, CA to Duluth, MN. Residual Smoke from the west coast fires was observed over Hudson Bay this morning.

Tuesday, August 7, 2018

DESCRIPTIVE TEXT NARRATIVE FOR SMOKE/DUST OBSERVED IN SATELLITE IMAGERY THROUGH 1802Z August 7, 2018.

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NESDIS IS INVESTIGATING THE UTILITY OF THIS TEXT NARRATIVE.  IF YOU FIND
THIS PRODUCT VALUABLE, PLEASE SEND AN EMAIL RESPONSE TO THE FOLLOWING
ADDRESS INDICATING HOW YOU AND/OR YOUR AGENCY USE THE INFORMATION.
THANK YOU.  SEND EMAIL RESPONSES TO: SSDFireTeam@noaa.gov.

SMOKE:
Western and central North America....
Large wildfires from southern, central and northern California and
central Oregon into northern British Columbia continue to burn and emit
thick smoke, contributing to an expansive area of varying density smoke
reaching from the Pacific coast eastward as far as Lake Superior and
offshore west of Baja California.
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Wednesday, August 8, 2018

DESCRIPTIVE TEXT NARRATIVE FOR SMOKE/DUST OBSERVED IN SATELLITE IMAGERY THROUGH 1802Z August 8, 2018.

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NESDIS IS INVESTIGATING THE UTILITY OF THIS TEXT NARRATIVE.  IF YOU FIND
THIS PRODUCT VALUABLE, PLEASE SEND AN EMAIL RESPONSE TO THE FOLLOWING
ADDRESS INDICATING HOW YOU AND/OR YOUR AGENCY USE THE INFORMATION.
THANK YOU.  SEND EMAIL RESPONSES TO: SSDFireTeam@noaa.gov.

SMOKE:
Western and central North America....
Large wildfires throughout California, central Oregon, central Idaho
into northern British Columbia continue to burn and emit thick smoke,
contributing to an expansive area of varying density smoke reaching
from the Pacific coast eastward as far as the Great Lakes and Quebec,
Canada. The California fires are emitting medium to heavy density smoke
in all directions. Fires in Utah, Colorado, and Arizona had the smoke
shift from a southwest direction to a east southeast direction.
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Thursday, August 9, 2018

DESCRIPTIVE TEXT NARRATIVE FOR SMOKE/DUST OBSERVED IN SATELLITE IMAGERY THROUGH 0002Z August 10, 2018.

NESDIS IS INVESTIGATING THE UTILITY OF THIS TEXT NARRATIVE. IF YOU FIND THIS PRODUCT VALUABLE, PLEASE SEND AN EMAIL RESPONSE TO THE FOLLOWING ADDRESS INDICATING HOW YOU AND/OR YOUR AGENCY USE THE INFORMATION. THANK YOU. SEND EMAIL RESPONSES TO: SSDFireTeam@noaa.gov.

SMOKE:
Much of Canada and the US with the possible exception of the Southeastern US...
The ongoing significant amount of wildfire activity scattered across portions of the Western US and Western Canada continued to emit large quantities of smoke with an enormous area of varying density smoke blanketing much of the southern half of Canada though portions of northern Ontario and northern Quebec and Hudson Bay may be mainly free of smoke. The smoke also covered a good portion of the US with the possible exception of the Southeastern US from eastern Texas and eastern Oklahoma to the Carolinas, Georgia, and Florida. In greater detail, an area of thicker smoke from wildfires in Utah and western Colorado was visible spreading southward over southern Utah, southwestern Colorado, northwestern New Mexico, and northern Arizona. Thick smoke from wildfires in California, southwestern Oregon, portions of Washington state and Idaho was noted roughly across the northern half of California, much of Oregon and Washington, and up over northern Idaho and into western Montana. A large area of moderately dense to thick smoke attributed to both wildfire activity in the Western US and over Western Canada could be seen over much of British Columbia, Alberta, Saskatchewan, and far southern Ontario in Canada and stretching from Montana eastward over the Dakotas and the Great Lakes Region to northern New York in the northern US. Thinner density smoke was visible over portions of the Central and South Central US as well as the Ohio Valley Region, the Middle Atlantic Region, and the Northeast.

Friday, August 10, 2018

DESCRIPTIVE TEXT NARRATIVE FOR SMOKE/DUST OBSERVED IN SATELLITE IMAGERY THROUGH 0002Z August 11, 2018.

NESDIS IS INVESTIGATING THE UTILITY OF THIS TEXT NARRATIVE. IF YOU FIND THIS PRODUCT VALUABLE, PLEASE SEND AN EMAIL RESPONSE TO THE FOLLOWING ADDRESS INDICATING HOW YOU AND/OR YOUR AGENCY USE THE INFORMATION. THANK YOU. SEND EMAIL RESPONSES TO: SSDFireTeam@noaa.gov.

SMOKE:
Canada/North-Central US...
Smoke from numerous wildfires across Washington, Idaho, and British Columbia continues to contribute to a large area of light to moderate smoke extending across the Canadian provinces into northern Ontario and moving generally eastward, as well as extending southward into the Great Plains from the Dakotas and Minnesota down to eastern Colorado, Kansas, and northern Missouri and moving southeastward. Locally, several of the fires in British Columbia are producing plumes of thick smoke which extend north and northeastward from their parent fires.

Western US...
Wildfires in northern California, southwestern Oregon, and Utah continue to produce plumes of thick smoke, with fires in Montana, Colorado, and Arizona producing plumes of moderate smoke, in addition to other fires throughout the region producing at least light smoke. These all are contributing to a large area of remnant smoke in a roughly annular shape moving around an upper-level ridge.

VI. Media Reports

Examples of traditional news and social media accounts of wildfires and smoke impacts, arranged by type of media and date. Due to the amount of information available, not all available articles are provided.

a. News media

Wall Street Journal, Wildfire Drives Tourists from Yosemite, Takes Local Economy with it, *https://www.wsj.com/articles/wildfire-drives-tourists-from-yosemite-takes-local-economy-with-it-1532683800*, July 27, 2018, last accessed 8/30/21

SFGate, Mendocino fires combine, moving into Lake County and forcing evacuations, *https://www.sfgate.com/california-wildfires/article/Mendocino-County-Lake-County-combine-Steele-Fire-13113547.php*, July 28, 2018, last accessed 8/30/21

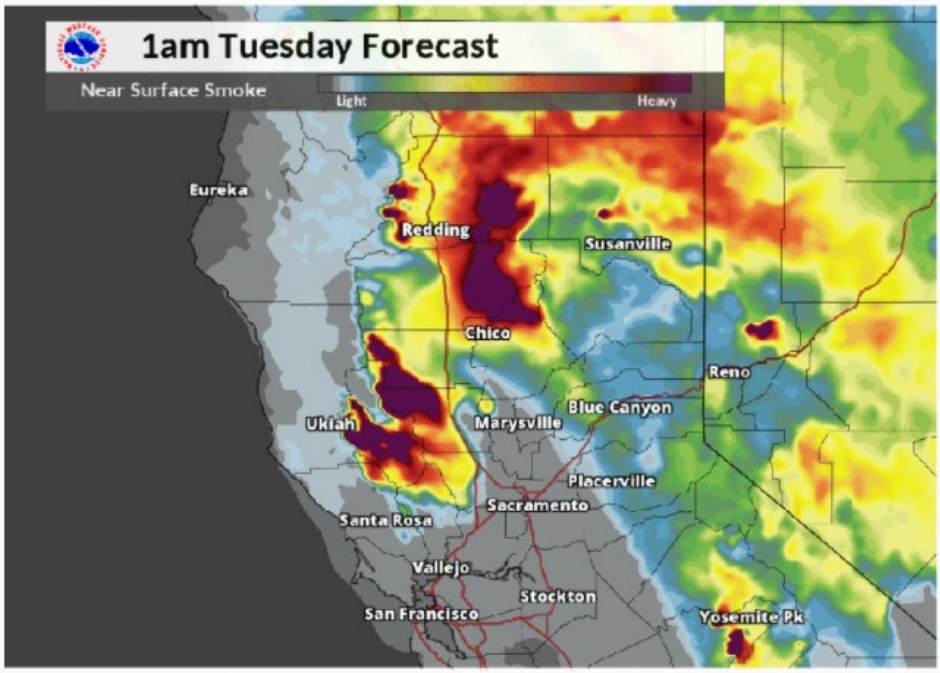
https://www.capradio.org/articles/2018/07/30/what-to-know-about-air-quality-during-fire-season/

General article regarding air quality, AQI, what to do

https://www.chicoer.com/2018/07/30/butte-county-air-quality-deteriorates-to-unhealthy-levels/

NEWS › ENVIRONMENT

Butte County air quality deteriorates to unhealthy levels



Butte County air quality deteriorates to unhealthy levels

By CHICO ENTERPRISE-RECORD |
PUBLISHED: July 30, 2018 at 12:07 p.m. | UPDATED: July 30, 2018 at 5:27 p.m.

Air quality was considered unhealthy for everyone in Paradise and the Butte County foothills Monday, and unhealthy for some on the Sacramento Valley floor, according to the Butte County Air Quality Management District.

Smoke from the Carr Fire in west of Redding and the Mendocino Complex fires northwest of Clear Lake pushed levels of pollution above federal health standards.

The type of pollution is composed of microscopic bits of ash and soot that can be inhaled deep into the lungs and cause health problems.

The city of Chico pulled the lifeguards from Sycamore Pool in Bidwell Park Monday, partly due to the bad air. A contributing factor was the string of hot days, which made a few of the lifeguards sick over the weekend, leaving depleted staffing.

The forecast for Tuesday is air dirty enough to be unhealthy for sensitive groups: children, the elderly and those with heart and lung problems.

They are advised to reduce prolonged or heavy exertion.

Mercury News, Why planes can't fight Shasta's deadly Carr Fire, *https://www.mercurynews.com/2018/07/30/why-planes-cant-fight-shastas-deadly-carr-fire/*, July 30, 2018, last accessed 8/30/21

MyMotherLode.com, Update: Ferguson Fire Nearing Tuolumne County Line, *https://www.mymotherlode.com/news/local/379475/ferguson-fire-nearing-tuolumne-county-line.html*, July 31, 2018, last accessed 8/30/21

NPR, Homes threatened by new fires in northern California, *https://www.ctvnews.ca/world/homes-threatened-by-new-fires-in-northern-california-1.4035910*, August 1, 2018, last accessed 8/30/21

Siskiyou Daily News, *Toxins fill smoky air, relief nowhere in sight*, August 2, 2018, last accessed 9/1/21

NCJ, *Wildfire Smoke Likely to Impact Air Quality*, August 2, 2018, last accessed 9/1/21

The Guardian, *Wildfire smoke: experts warn of 'serious health effects' across western US*, August 2, 2018, last accessed 9/1/21

ABC7 News, *Fire smoke impacts Bay Area, officials encourage residents to prepare*, August 3, 2018, last accessed 9/1/21

MyMotherLode.com, *Heavy Smoke Inundates Mother Lode*, August 3, 2018, last accessed 9/1/21

Heavy Smoke Inundates Mother Lode

Sponsored by:

By **B.J. Hansen** — Published **Aug 3, 2018 11:31 am** — Updated **Aug 3, 2018 11:53 am**

Smoke in Downtown Sonora

View Photos

Sonora, CA — With the Ferguson Fire burning in Mariposa County, and the Donnell Fire near Sonora Pass, residents should take precautions.

The Tuolumne County Public Health Department reports that you can gauge air quality in your specific area by identifying landmarks in the horizon and determining how far away there are.

The air quality is "good" when you can see 10-miles away, "moderate" if you can see 6-9 miles, "unhealthy for sensitive groups" if visibility is 3-5 miles, "unhealthy for everyone" in the 1.5-2.5 mile range, "very unhealthy" if visibility is 1-1.25 miles and "hazardous" if it is 0.75 miles or less.

Groups that are more sensitive to smoke include those with cardiovascular disease, asthma, youth, older adults, those with diabetes and new or expectant mothers.

Children as especially at risk as their lungs are still growing and developing. It is advised you reduce outdoor activity today and stay indoors when possible.

For the latest update on the Ferguson Fire, click here.

To read the latest on the Donnell Fire, click here.

Our Fire Information Section is under the "Community" section here, or keyword: fire
Local Burn Day information is here. If you see breaking news send us a photo at news@clarkebroadcasting.com.

Pacific Standard, California's fires are affecting cities' air quality dozens of miles away, *https://psmag.com/environment/californias-fires-are-affecting-cities-air-quality-dozens-of-miles-away*, August 3, 2018, last accessed 8/30/21

CALIFORNIA'S FIRES ARE AFFECTING CITIES' AIR QUALITY DOZENS OF MILES AWAY

One idea for a long-term fix: Communities could designate clean air centers where residents can spend time in filtered air for free.

FRANCIE DIEP · AUG 3, 2018

Fire trucks pass by approaching flames during the Carr fire near Whiskeytown, California, on July 27th, 2018.
(Photo: Josh Edelson/AFP/Getty Images)

With 18 wildfires burning across California, many Westerners are now contending with unhealthy, smoky outdoor air. Depending on wind patterns, even cities far away from a fire may be affected—on Wednesday, for example, children and older adults in Reno, Nevada, were advised not to stay outdoors for prolonged periods because of smoke brought in from fires 100 miles away or more, *USA Today* reports. A look at California's air-quality website on Thursday showed the air in large swaths in northern and central parts of the state were rated as "unhealthy" to "hazardous."

Climate change is expected to up the intensity and frequency of wildfires in the West. What does that mean for people's health in the long run? For healthy adults, it's thought that a few weeks of smoke exposure in a lifetime may not have much of an effect at all. However, a new study suggests it's possible for increasing wildfires to significantly raise the number of bad air days in one place—a scenario that shifts wildfire smoke exposure from an unlucky event that some healthy adults may experience, once in a while, without serious consequence, to a chronic problem. The study, published last month in the *Proceedings of the National Academy of Sciences*, found that there are now fewer bad days for particulate air pollution around the country because of air-pollution controls. But in the West, including parts of Oregon, California, Nevada, and Idaho, there have been more such days since 1988 because of forest fires.

It's difficult to study the long-term effects of wildfire smoke exposure, so it's not known what a smokier future means for most. However, given the known short-term effects of wildfire smoke—including more hospital visits for asthma, heart symptoms, and respiratory diseases—perhaps it's worth investing in some strategies to reduce people's smoke exposure on bad days. Last year, when the Thomas Fire blurred out the sky around *Pacific Standard*'s headquarters in Santa Barbara, California, we collected tips from experts for both individuals and city governments. For the city:

Experts encourage communities to designate "clean air centers," where people can spend time in filtered air for free. There's precedent for this: Many cities already offer air-conditioned public cooling centers, recognizing that deaths increase across cities when it's hot.

Doctors could also warn their patients when fire season is coming, making sure they have the needed medications for any lung and heart conditions. Home air filters are also a good idea.

And for those who must still live and work under smoke:

Victor Valley News Group, Smoke advisory in effect through Sunday for the Victor Valley, *https://www.vvng.com/smoke-advisory-in-effect-through-sunday-for-the-victor-valley/*, August 4, 2018, last accessed 8/30/21

NBC News, *Large portions of Yosemite National Park remain closed as heavy smoke lingers*, August 5, 2018, last accessed 8/30/21

Large portions of Yosemite National Park remain closed as heavy smoke lingers

"We were able to hike the first couple of days, and then the smoke got so intense we couldn't even sit outside," said Wendy Williams, a park visitor.

Wendy Williams, left, cut her trip short to Yosemite National Park after heavy smoke made it difficult to camp. Courtesy Wendy Williams

Aug. 5, 2018, 1:22 PM PDT / Updated Aug. 5, 2018, 1:22 PM PDT

By Kalhan Rosenblatt

Once a year for the past decade, Wendy Williams and her family have camped in California's Yosemite National Park, spending summer days taking in the natural beauty of their favorite spot: Yosemite Valley, an area that hosts many of the park's famous cliffs and waterfalls.

This year, as fires raged across the state, a large portion of Yosemite closed on July 25, along with hundreds of campsites and hotels. Most of Yosemite National Park remained closed on Sunday as officials worked to determine if wildfires burning across California would be contained enough to allow large swaths of the park to reopen Monday.

The closures forced Williams and her family, along with several others joining them, to change their plans from camping at their usual spot in the valley to booking a spot on the other end of the park in Tuolumne Meadows.

At first, the last-minute change gave Williams and her three teenage children a chance to explore a new part of the park. But by Wednesday, the thick smoke made it difficult to breathe.

The view from Wendy Williams' campsite in Yosemite National Park.
Wendy Williams

"We were able to hike the first couple of days, and then the smoke got so intense we couldn't even sit outside," Williams told NBC News. "The night before we left, we noticed could feel smoke in our throats. We went down to the river covering our faces saying, 'Why are we staying? This isn't healthy for us.'"

The natural wonders of Yosemite were not threatened by the Ferguson Fire that started on July 13 in Mariposa County, which includes parts of Yosemite National Park. But the fire was nearly 90,000 acres in size as of Sunday, according to California officials, and thick clouds of smoke have shrouded much of the park.

"We're a big camping family, and watching our favorite places have to be protected by these firefighters has been difficult to watch," Williams said.

Wawona, Mariposa Grove, Glacier Point, Yosemite Valley, Crane Flat, Big Oak Flat, Hetch Hetchy and other large portions of the park boasting some of its most spectacular wonders were closed on Sunday. All entrances and roads were also closed, with the exception of Tioga Pass and Tioga Road, according to the National Park Service.

A satellite image from what is known as the Multi-angle Imaging SpectroRadiometer (MISR) instrument on NASA's Terra satellite shows the Ferguson fire near Yosemite National Park in California's Sierra Nevada on July 29, 2018. NASA via AP file

"We weren't in any danger. We didn't want to go into any area we felt was dangerous," Williams said. "But we felt one exit out of the park was too dangerous."

The closure, Yosemite's longest in nearly two decades, has been a financial hit to the park. Summer is often the busiest time of year when travelers from across the globe flock to see the park's spectacular landscapes and groves of giant sequoia trees.

Officials estimate a financial loss of several million dollars for the park, according to the Associated Press. Its hotels and gateway communities rely on summer tourists for business.

The exact amount lost is expected to be calculated after the park reopens.

On Sunday, the Environmental Protection Agency's "Air Now" gave the park an air quality index of 157, which ranked as "unhealthy," according to the website.

Fires have ravaged California for weeks, scorching thousands of acres across the state as firefighters work to extinguish the blazes. Through last week, California fires had torched about 290,000 acres, more than double the five-year average over that same period, according to Cal Fire.

But Williams, who lives in Yorba Linda, California, said that while the fires have been heartbreaking for her and her family, they also provide an important lesson.

"The place is magical, and it does come back," Williams said. "Nature is amazing. Nature comes through after the fire, and then you see the growth will come back."

https://www.actionnewsnow.com/content/news/Unhealthy-Air-Warnings-in-Place-for-Tehama-County--490183231.html

UNHEALTHY AIR WARNINGS IN PLACE FOR TEHAMA COUNTY

The Tehama County Air Pollution Control District has advised that air in Tehama County is very unhealthy.

Posted: Aug 6, 2018 1:44 PM
Updated: Aug 7, 2018 9:59 AM
Posted By: Stephanie Schmieding

TEHAMA COUNTY, Calif. - The Tehama County Air Pollution Control district has issued an advisory for very unhealthy air quality range in Tehama County due to wildfires.

Conditions will most likely vary from unhealthy to moderate over short periods of time as smoke from wildland fires in the North state drift over Tehama County.

Residents in the area can pick up masks at the following locations:

- Tehama County Air Pollution Control office (located at 1834 Walnut Street, Red Bluff)
- Tehama County Public Health in Building C (Located at 1860 Walnut Street, Red Bluff)
- Tehama County Administration (located at 727 Oak Street, Red Bluff)
- Rancho Tehama Association (located at 17605 Park Terrace Road, Corning)
- Cal Fire Station (located at 31200 Manton Road, Manton)

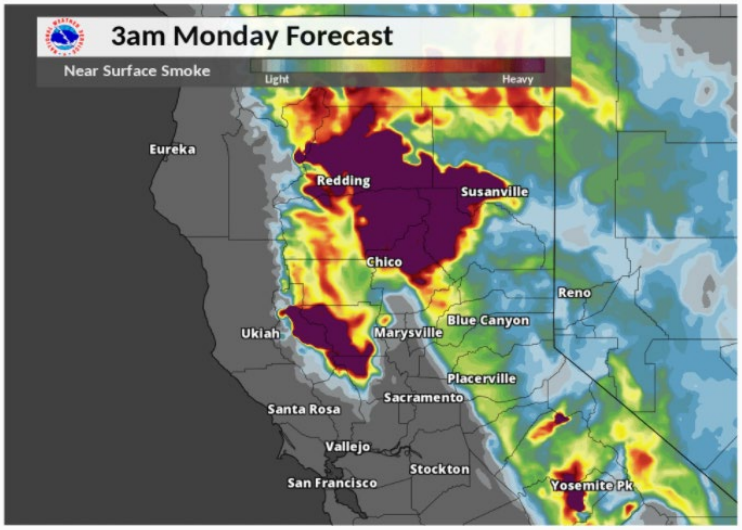
The district is advising all active children and adults, and people with respiratory disease, to stay indoors and avoid all outdoor exertion and intense physical activity.

For further information, please contact the Tehama County Air Pollution Control District at (530) 527-3717.

Chico Enterprise-Record, *Distant fires wreck local air quality*, August 5, 2018, last accessed 9/1/21

LATEST HEADLINES

Distant fires wreck local air quality



Air quality was considered unhealthy Sunday in Butte County for everyone on the Sacramento Valley floor, and unhealthy for some people in the foothills.

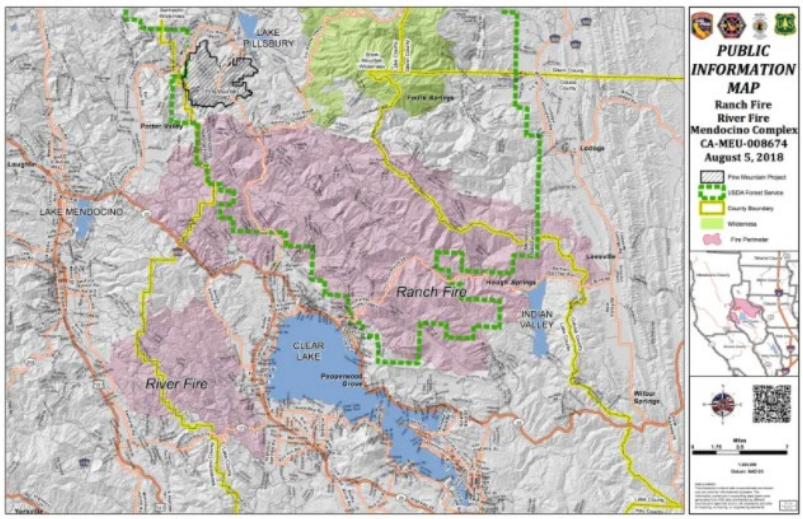
The Butte County Air Quality Management District advised everyone in the valley to reduce prolonged or heavy exertion. In the foothills the warning applied to the elderly, children, and those with existing heart of lung problems.

The problem was smoke from the wildfires burning near Clear Lake and west of Redding, with the Clear Lake fires the biggest contributor.

Not only were the fires dropping visible ash in Butte County, but microscopic bits of ash and soot were making their way here too. Those can be inhaled deep into the lungs and lodge there, causing health problems.

The federal government says levels of those "small particulates" above 35 micrograms per cubic meter of air is a health risk. Sunday in Chico the Air Quality District monitor was registering as high as 95 micrograms per cubic meter, but there was an improvement in the afternoon and the average for the day was 58.8 micrograms per cubic meter. The Paradise monitor was averaging 37.2 micrograms per cubic meter.

The fires



As of Sunday morning, The Ranch Fire north of Clear Lake had burned 207,319 acres, an increase of more than 60,000 acres since Saturday morning. The fire was 23 percent contained.

The fire has reached Indian Valley Reservoir and was burning in the Stony Creek valley.

The River Fire just west of Clear Lake was 47,663 acres and 58 percent contained. It had not been growing dramatically, and evacuation orders in Lakeport were reduced to warnings Sunday.

Between the two of those fires, 68 homes and 62 other buildings have been destroyed. Another 15,300 are threatened. There were more than 3,500 firefighters assigned to the two blazes.

The Carr Fire west of Redding was at 154,524 acres and 41 percent contained. It was up about 9,000 acres since Saturday morning.

Seven people have been killed by the fire. It has destroyed 1,080 homes and 524 other buildings and damaged another 278. It is considered a threat to 1,358 structures. More than 4,600 people are fighting the fire.

Whiskeytown National Recreation Area reported Sunday that a “recreational trailer malfunction” likely started the fire July 23 on Highway 299 inside the park.

Eleven park structures were destroyed, although the visitor center and park headquarters were saved. Oak Bottom Marina suffered significant damage.

The park and Highway 299 were still both closed.

The Whaleback Fire on the west side of Eagle Lake was 18,726 acres and 90 percent contained.

The estimate for the Eel Fire in the western Mendocino National Forest had been decreased to 972 acres. It is 50 percent contained.

The Ferguson Fire west of Yosemite National Park was at 89,633 acres, and 35 percent contained.

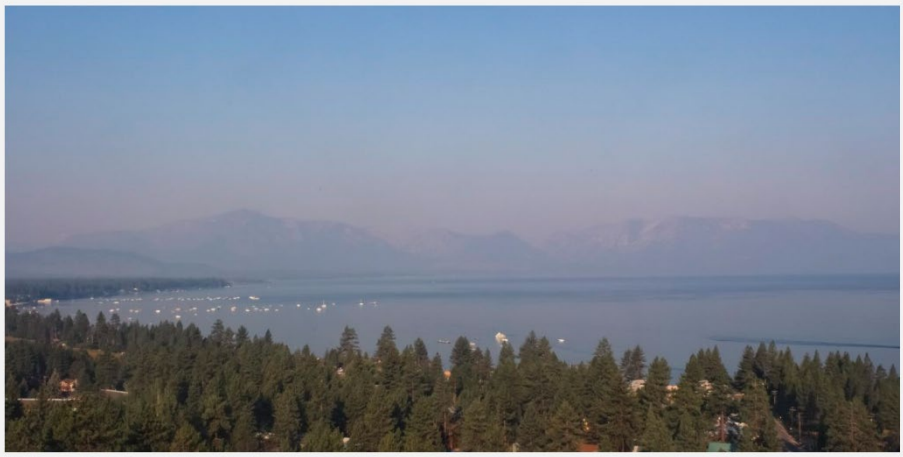
SFGate, Historic California resort burns in raging Donnell Fire north of Yosemite, *https://www.sfgate.com/california-wildfires/article/Donnell-Fire-Dardanelle-Resort-Highway-108-Sonora-13135455.php*, August 6, 2018, last accessed 8/30/21

Sierra Sun, *Smoke from California wildfires lingering in Lake Tahoe Basin*, August 7, 2018, last accessed 9/1/21

Smoke from California wildfires lingering in Lake Tahoe Basin

News FOLLOW NEWS | August 7, 2018

Staff report



The view from Stateline just before 8 a.m. Tuesday.
Courtesy Tahoe South

Unhealthy and very unhealthy air conditions could be possible on Lake Tahoe's South Shore today as wildfires continue to burn across Northern California, sending smoke across the region.

Those fires continue to bring hazy conditions and degraded air quality to northeast California, the Sierra and western Nevada, the National Weather Service warned Tuesday.

Areas at the greatest risk for unhealthy to very unhealthy air quality are Douglas, El Dorado, Lassen, Alpine and northern Mono counties.

The Mendocino Complex Fire is now largest in California's recorded history. The blaze is currently threatening 11,300 buildings and some new evacuations were ordered over the weekend as the flames spread.

Crews have made progress on the Carr Fire burning near Redding. It is about halfway contained.

Shifting winds could help clear some of the smoke in the Sierra over the next several days. A shift to a east-to-southeast direction would carry the bulk of any new smoke away from the area, the service states.

The service warns, though, that the reprieve could be short lived as westerly flow could return late in the week and for the weekend.

The region will see above-average temperatures this week. Tuesday's high temperature in South Lake Tahoe will reach 83 degrees before climbing to 86 Wednesday.

Washington Post, *Wildfire smoke is wreaking havoc on air quality in the Western U.S.*, August 7, 2018, last accessed 9/1/21

High Country News, *Where there's smoke, there's suffering*, August 7, 2018, last accessed 9/1/21

ABC30 News, Smoke from several California wildfires trapped in the Central Valley, August 8, 2018, last accessed 9/1/21

AIR QUALITY

Smoke from several California wildfires trapped in the Central Valley

Wednesday, August 8, 2018

FRESNO, Calif. (KFSN) -- For nearly a month now the Central Valley has been breathing some of the dirtiest air it has ever seen thanks to a ridge of high pressure trapping in the smoke from several wildfires.

As more wildfires break out and until current ones are extinguished this is going to be a problem.

"We're going to be adding extra particulate matter into the atmosphere being smoke, we have haze, we have high ozone level. All those things combined are creating very poor air quality," said Kevin Durfee, Meteorologist, National Weather Service Hanford.

Durfee says the smoke in the Central Valley is from a combination of the Carr and Mendocino Complex fires in Northern California and the Ferguson Fire in Mariposa County.

Most of the smoke comes into the Valley early in the morning and late at night.

"At night we can get a very right down valley wind and that can also bring that smoke down below the inversion and into the San Joaquin Valley," said Durfee. "So we're getting it basically from many different sources."

The Central Valley will have to deal with these conditions for at least another week.

Durfee says a minor cooldown could help a little this weekend but what we really need is a good soaking of rain because any type of wind might do more harm than good.

"The wind is a really critical element for fire behavior and any kind of wind even if it is a cooling wind it could cause a fire to rage out of control," said Durfee.

A minor cool down last weekend that broke the 30-day streak of triple-digit temperatures created some wind at several wildfires. That sparked new hot spots and created more smoke that settled into the Valley.

Reno Gazette-Journal, *Twitter can be useful? Science says tweets reliably track wildfire air pollution*, August 8, 2018, last accessed 9/1/21

ABC10 News, *Smoke can keep temps a bit cooler than usual*, August 8, 2018, last accessed 9/1/21

ActionNewsNow.com, *Falling ash rains toxic chemicals across north state*, August 9, 2018, last accessed 9/1/21

Chico, Calif.-- Smoke from the Carr and Mendocino Complex Fires have made it uncomfortable to be outdoors really all across the North State.

You might think respirators look a little dramatic -- but they're not!

Using one will really help you from inhaling ash particles into your lungs.

You want an N-95 or P-100 rating - a bandana or surgical mask is not going to do it right now, with all the ash in the air.

(Get one for free here).

"The main pollutant of concerns with wildfires is particulates - especially the really small ones, 2.5 microns in size or smaller - the ones that can get deep into your lungs," said Jason Mandly from the Butte County Air Quality Managment District.

People have different levels of tolerance of course, but here are some indications the smoke is getting to you - itchy eyes, coughing, shortness of breath, or difficulty breathing, wheezing.

It can be hard on your heart as well; you might experience palpitations and tightness in your chest.

Other signs are headaches and nausea, unusual fatigue or lightheadedness.

So, with air quality today at the unhealthy level, know your sensitivity and don't go out for a run, don't do heavy yard-work..

"The weather hasn't bothered me at all, I've enjoyed running outside. Other peole are outside smoking constantly and doing outside exercises so this sort of smoke shouldn't be as bad either," said Becca Barker, Chico resident.

"We still do it but it's not right for the kids, so I think if someone has protection, that's better," said Chico resident Fermin Vazquez.

And on the topic of yard-work, if you've noticed a light coating of ash across your community - it's not just messy, it's a health hazard.

We started to see it falling from the skies across the valley and foothills last weekend, and it's still happening.

Of course, we want to clean it up and keep from tracking it indoors, but the California Department of Public Health warns us to be very careful when doing so.

"As far as cleaning it, up, use a gentle sweeping action or wet cloth instead of a leaf blower- that would just make it so you or other people could breath it in," said Mandly.

The ash may contain many toxic substances, including arsenic, asbestos, lead and fine particles that can aggravate asthma and other respiratory problems.

So, a big part of protecting yourself is in keeping it out of the air - leaf blowers and sweeping may seem like a smart way to clean up, but stirring it up just means you're breathing it in.

You don't want to be touching it either - the toxic chemicals can absorb through your skin.

Your best bet is to take your shoes off before going into your house, you can even get a sticky mat to remove dust at the door.

Wash your hands and shower frequently, and wash off any toys or tools that you left outdoors, using gloves while doing it.

And if you have indoor- outdoor pets, it's time for another bath, whether they like it or not.

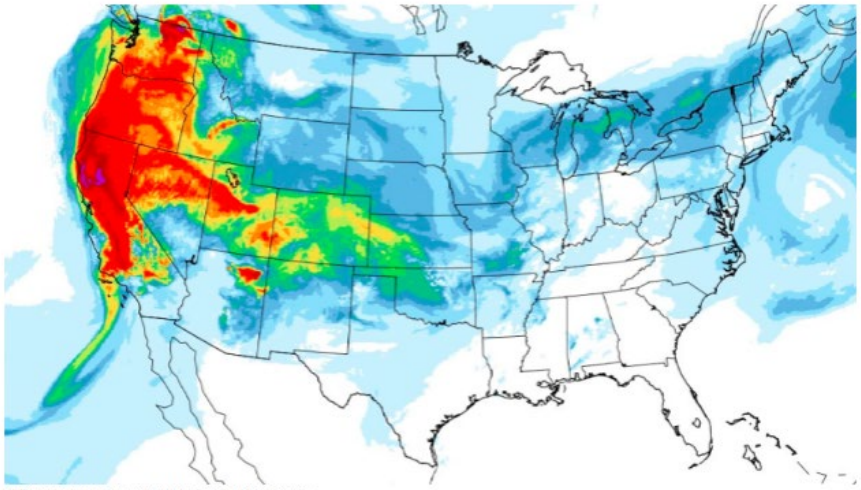
Mashable.com, *Wildfire smoke from California has reached New York City, 3,000 miles away*, August 9, 2018, last accessed 9/1/21

Climate Change

Wildfire smoke from California has reached New York City, 3,000 miles away

"I decided to go out to the coast for a couple days because it was so ridiculous."

By Mark Kaufman on August 9, 2018



Wildfire smoke concentrations on August 8. Credit: National Weather Service

Anthony Wexler, the director of the Air Quality Research Center at the University of California, Davis, packed his bags and drove his family out to the coast.

They're escaping the smoke.

Davis, California, sits amid a layer of wildfire smoke in Northern California. To the northwest, the largest fire in state history, the Mendocino Complex Fire, continues to burn. To the southeast, the Ferguson Fire has closed down smoke-choked Yosemite National Park indefinitely. And to the North, the Carr Fire, infamous for its towering fire tornado, still burns.

SEE ALSO: California just had its hottest month on record, and that means more wildfires →

The air quality in the region around the fires -- whose spread has been enhanced by extreme heat parching the land -- is some of the worst in the world.

"I decided to go out to the coast for a couple days because it was so ridiculous," Wexler said.

On Wednesday, the National Weather Service illustrated how winds have lifted bounties of smoke across the entire U.S., bringing pollution even beyond the East Coast.

That said, it's not as if these smoke particles are harmful to those on the East Coast. By the time that smoke arrives in Boston and New York, the particles have been diluted with fresh air, and certainly can't be seen, nor are concentrations unhealthy.

It's normal for pollution to waft from west to east across the country, just like pollution from China is regularly transported over the Pacific Ocean into the U.S. That's how air generally moves over the Northern Hemisphere, said Wexler. But it's much rarer for even low concentrations of smoke to find their way across the nation.

"It doesn't happen every day," Gabriele Pfister, deputy director of the National Center of Atmospheric Research's atmospheric chemistry lab, said in an interview. "But, it can happen."

"Normally, the pollution isn't so great that it's noticeable when it gets east," added Wexler.

But just how bad is the air pollution in large regions of the West?

"It's been like a reasonably decent day in Beijing," said Wexler. "That's really telling. It's really awful there."

"It's unbelievable," said Pfister.

She noted that planes flying over the area, as part of a National Science Foundation-funded wildfire study, have picked up some alarming pollution numbers.

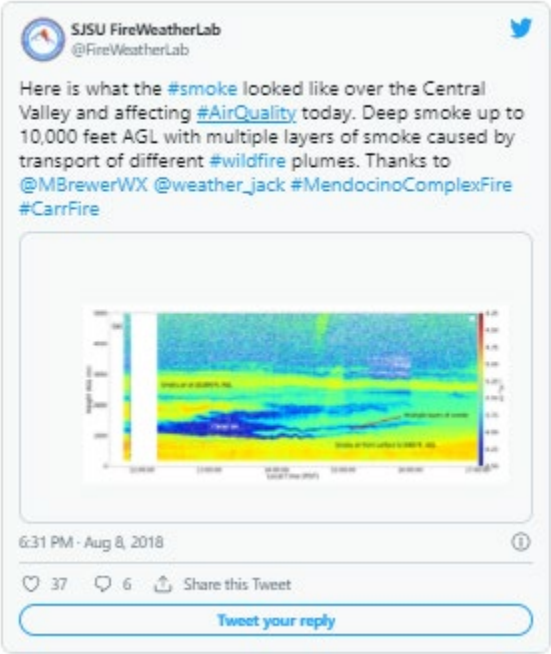
It's expected that particulate matter -- tiny fragments of pollution 30 times thinner than a human hair -- would be bad. But the flights even picked up abnormally high concentrations of carbon monoxide, an odorless gas that can be dangerous to human health in enclosed spaces, and at worse, lethal. However, some of the measured values around the fires are about 5 parts per million, or ppm, which are not considered nearly dangerous -- but it's still telling.

"These are values you don't typically find near the surface in the U.S.," said Pfister. "Maybe you'll find that if you stick your head into the exhaust of a car."

It's not carbon monoxide, however, that people in burning regions need to be concerned about. One of the main factors that's figured into air quality ratings is particulate matter.

Both U.S. government and university researchers have repeatedly shown that breathing this stuff is bad for your heart, as it accelerates plaque build-up in blood vessels.

In some areas of Oregon, the Air Quality Index currently registers as "Hazardous." In Redding, California, where a fire tornado spun for 80 minutes last week, the air quality is rated as "Unhealthy." But out near the windswept coast, like in San Francisco, the air quality is "Good."



It's likely that the West will be intermittently blanketed in unhealthy to hazardous air for months ahead, as the fire season is not nearly over.

Rains aren't expected for months, and more temperature and fire records might be broken. Many Westerners aren't near the fires themselves. But it's harder to outrun the smoke.

"In my experience, it's never been this bad," said Wexler.

Time, Inc., *Smoke From California Wildfires Is Reaching the East Coast. Here's What That Means for the Air Near You*, August 10, 2018, last accessed 8/30/21

NPR, *In Parts Of California Blanketed With Wildfire Smoke, Breathing Is 'A Chore'*, August 10, 2018, last accessed 8/30/21

b. Social media

1. District, County, State, and News Accounts

Butte County AQMD
@bcaqmd

Smoke from the #CarrFire in Shasta County may impact areas of the Northern Sacramento Valley including Butte County while it remains active. Air quality throughout Butte County is expected to remain in the Moderate range through Thursday.

3:55 PM · Jul 25, 2018 · Twitter Web Client

Calaveras OES
@CalaverasOES

It's a little smoky out there. Here's a good resource to check air quality
airnow.gov airnow.gov

11:00 AM · Jul 27, 2018 · Facebook

CAL FIRE Butte Unit/Butte County Fire Department
@CALFIRE_ButteCo

Skies are hazy in Butte County today, especially on the Ridge (Paradise/Magalia). What you're seeing is smoke drifting south from the #CarrFire. Nothing to worry about here unless you see a defined smoke column.

10:11 AM · Jul 28, 2018 · Twitter for Android

Butte County AQMD
@bcaqmd

The Butte County AQMD and the Butte County Public Health Department have issued a joint Air Quality Advisory to notify the public about smoke impacts in Butte County from the #CarrFire in Shasta County. For more info or to view the advisory, visit: bcaqmd.org.

10:34 AM · Jul 28, 2018 · Twitter Web Client

Calaveras OES
@CalaverasOES

Air quality is being affected by several large NorCal fires. For tips, visit: cdc.gov/features/wildf... cdc.gov/features/wildf...

3:36 PM · Jul 28, 2018 · Facebook

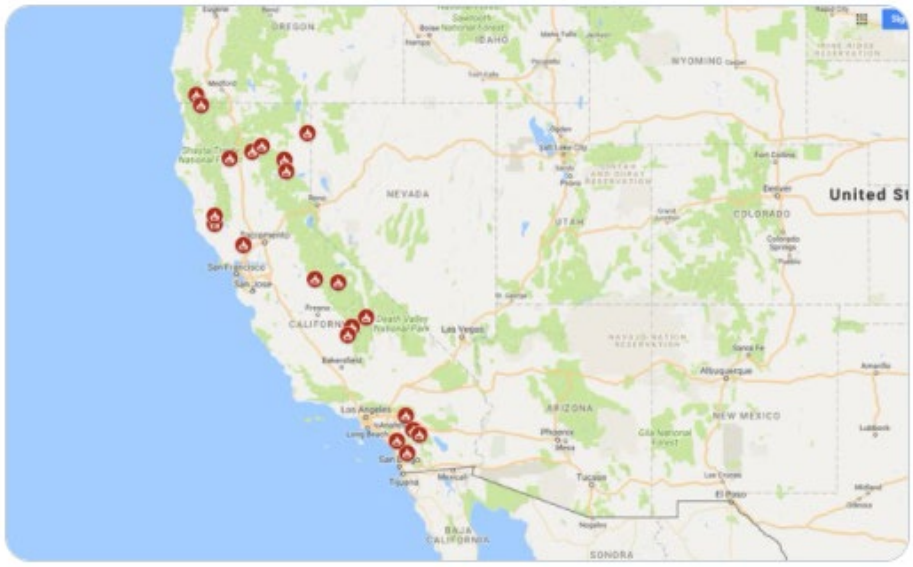
Red Bluff Daily News
@redbluffnews

Carr Fire spreads, blankets Tehama County in smoke, ash trib.al/PsJWV0h

8:07 PM · Jul 28, 2018 · SocialFlow

KTVU
@KTVU

CalFire map shows 21 active wildfires currently burning in California. Carr Fire in Shasta County is the biggest. It's burned 95,368 acres and is 17% contained



7:03 AM · Jul 30, 2018 · TweetDeck

Butte County AQMD
@bcaqmd

Air quality continues to be Unhealthy for Sensitive Groups throughout most of Butte County due regional wildfires. Take steps to reduce exposure to wildfire smoke. More info at bcaqmd.org/resources-educ... #CarrFire #Mendocinocomplex

10:13 AM · Jul 30, 2018 · Twitter Web Client

Calaveras OES
@CalaverasOES

Air Quality is being impacted by Northern California Fires. Please see press release from the Calaveras County Air Pollution Control District and Health & Human Services Agency

4:54 PM · Jul 30, 2018 · Facebook

Butte Public Health Retweeted

Butte County AQMD
@bcaqmd

@bcaqmd and @BC_PubHealth have issued an Updated Joint Air Quality Advisory due to smoke impacts from the #CarrFire and #MendocinoComplexFires. Some improvement expected but intermittent smoke impacts may continue while the fires remain active. More at bcaqmd.org.

10:34 AM · Aug 2, 2018 · Twitter Web Client

Calaveras OES
@CalaverasOES

Wildfire Smoke Advisory in Place Until Further Notice (Calaveras County Office of Emergency Services) | Nextdoor

Wildfire Smoke Advisory in Place Until Further Notice (Calav...
The Calaveras County Public Health Officer and Calaveras County Air Pollution Control District are re-issuing a joint air...
nextdoor.com

2:06 PM · Aug 3, 2018 · Facebook

Wildfire Smoke Advisory in Place Until Further Notice

Director Michelle Patterson from Calaveras County Office of Emergency Services · 3 Aug 18

The Calaveras County Public Health Officer and Calaveras County Air Pollution Control District are re-issuing a joint air quality advisory to notify the public of the potential for poor air quality conditions due to smoke from fires currently burning throughout the state. This advisory will remain in place until further notice. The potential impact varies, based on geographical location and wind direction, but has the greatest impact at this time on sensitive populations, including individuals with heart and lung disease, elderly persons, infants, children and pregnant women.

As general cautionary measures, the following measures can be taken to protect during periods of poor air quality:
• Minimize or stop outdoor activities, especially exercise
• Stay indoors with windows and doors closed as much as possible
• Do not run fans that bring smoky outdoor air inside – examples include swamp coolers, whole-house fans, and fresh air ventilation systems
• Run your air-conditioner only if it does not bring smoke in from the outdoors. Change the standard air conditioner filter to a medium or high efficiency filter. If available, use the "re-circulate" or "recycle" setting on the unit
• Do not smoke, vacuum, fry food, or do other things that will create indoor air pollution
• If you have asthma, take your medications and follow your asthma management plan

Even healthy persons can be affected by wildfire smoke. If you can see or smell smoke, take precautions. People with heart or lung disease who experience repeated coughing, shortness of breath, difficulty breathing, wheezing, chest tightness or pain should contact their doctor or clinic. "If an existing illness gets worse due to smoke exposure, seek medical help," advised Dr. Dean Kelaita, County Health Officer.

The Calaveras County Air Pollution Control District will continue monitoring the air quality in the county and will provide additional advisories as air quality conditions evolve.

For more information call the Calaveras County Air Pollution Control District at (209) 754-6399 or Calaveras County Health and Human Services – Public Health Division at (209) 754-6460.

3 Aug 18 · Subscribers of Calaveras County Office of Emergency Services in General

CAL FIRE Butte Unit/Butte County Fire Department
@CALFIRE_ButteCo

Areas of Butte County, particularly the Paradise, Upper Ridge drainage's are being impacted by drift smoke and ash from the fires in Lake and Mendocino County.

11:18 AM · Aug 4, 2018 · Twitter Web Client

Calaveras OES
@CalaverasOES

Good morning Calaveras! Skies are smoky again today. Be sure to take precautions and reduce outdoor activities as much as you can today. Today is also a good day to get prepared for the for the next emergency in Calaveras. Talk...
oes.calaverasgov.us/Notifications

11:22 AM · Aug 6, 2018 · Facebook

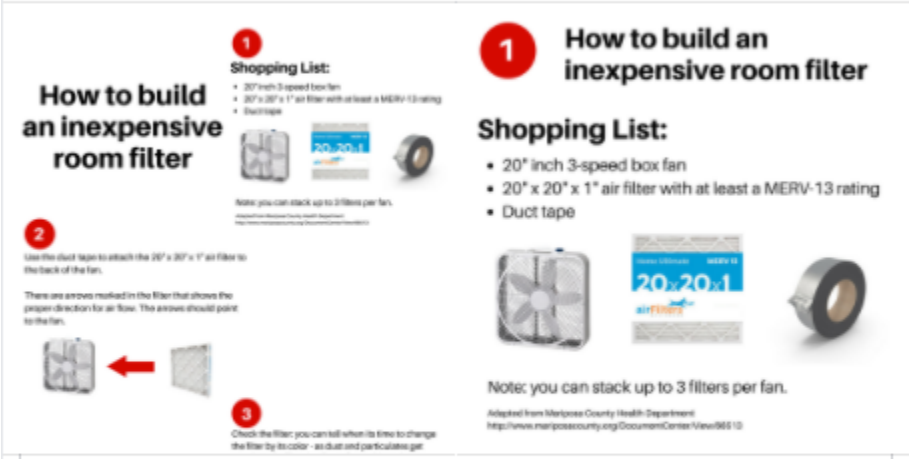
NASA Earth
@NASAEarth

Smoke Plumes Tower Over California
go.nasa.gov/2vJR47Z #NASA #California
#CaliforniaWildfires

2:31 PM · Aug 7, 2018 · Twitter Web Client

Calaveras County Office of Emergency Services
August 7, 2018 ·

This smoke has been rough! Here's something that can help!



Calaveras County Public Health Division
August 7, 2018 ·

When wildfire smoke causes unhealthy air quality, it is best to remain indoors. Have your air conditioning on as much as possible. Even with windows closed, wildfire smoke can seep into your home. You can make a do-it-yourself room filter with items from your local hardware store and use this in your home to cut down on the indoor air particulates from smoke.
Adapted from Mariposa County Health Department
www.mariposacounty.org/DocumentCenter/View/66513

Calaveras OES
@CalaverasOES

This smoke has been rough! Here's something that can help! facebook.com/story.php?stor...

6:30 PM · Aug 7, 2018 · Facebook

Calaveras OES
@CalaverasOES

The smoky skies continue to affect us locally. Please see this important information about cleaning ash. facebook.com/story.php?stor...

8:29 AM · Aug 8, 2018 · Facebook

Calaveras County Office of Emergency Services
August 8, 2018 ·

The smoky skies continue to affect us locally. Please see this important information about cleaning ash.

CDPH News Release

CALIFORNIA DEPARTMENT OF PUBLIC HEALTH

FOR IMMEDIATE RELEASE
August 7, 2018
PH18-039
CONTACT: Corey Egel | 916.440.7259 | CDPHpress@cdph.ca.gov

Cleaning Up Wildfire Ash Safely

CDPH Recommends Ways to Avoid Potential Health Hazards

SACRAMENTO - The California Department of Public Health (CDPH) is warning people to be especially careful when cleaning up ash left by wildfires. The ash may contain many toxic substances, including arsenic, asbestos, lead and fine particles that can aggravate asthma and other respiratory problems.

"It's important to limit the amount of ash that gets airborne. Leaf blowers and sweeping may seem like a smart way to clean up, but doing so can stir up ash and people may breathe it in, which is dangerous," said Dr. Karen Smith, CDPH Director and State Public Health Officer. "It's also important to avoid skin contact with ash because of the chemicals and toxins it may contain."

Symptoms that may be related to exposure to ash or soot include itchy eyes, coughing, shortness of breath, or difficulty breathing, wheezing, chest tightness or pain, palpitations, headaches and nausea, unusual fatigue or lightheadedness. CDPH recommends these tips for safely cleaning up ash:

- Never use a leaf blower, as it will spread the ash and blow it back into the air.
- Wear a close-fitting respirator rated N-95 or P-100 to block ash particles from being inhaled. Bandanas, surgical or cloth masks do not effectively block fine particles.
- Wear protective gloves, long-sleeved shirts, long pants, socks and shoes to avoid skin contact with ash.
- Remove shoes before entering your home or use "sticky mats" in entryways to remove dust and ash from your shoes. Sticky mats are sold at hardware stores.
- If you do get ash on your skin, wash it off as soon as possible.
- Do not let children play in ash and wash off toys before children play with them.
- Keep pets out of ash areas. Pets exposed to ash should be cleaned or bathed.

For more detailed information on how to safely clean up wildfire ash, visit CDPH's website.

Calaveras County Office of Emergency Services
August 9, 2018 -

Please see attached press release from Calaveras County Public Health Division and the Calaveras County Air Pollution Control District

Calaveras County
Air Pollution Control District
Health and Human Services Agency

Government Center, 891 Mountain Ranch Road, San Andreas, CA 95249-909

PRESS RELEASE

FOR IMMEDIATE RELEASE August 9, 2018

Public Service Announcement
Wildfire Hazardous Smoke Advisory for Southeastern Calaveras County including Arnold for August 9, 2018

The Calaveras County Public Health Officer and Calaveras County Air Pollution Control District are issuing a joint air quality advisory to notify the public of the potentially hazardous air quality conditions due to smoke from fires currently burning throughout the state. Although the air throughout the county is currently rated as Unhealthy, the Southeast portion of the county including Arnold and the surrounding areas have deteriorated enough to be rated as Hazardous according to the EPA rating scale. The air quality is expected to fluctuate over the next few days.

The potential impact varies, based on geographical location and wind direction, but has the greatest impact on sensitive populations, including individuals with heart and lung disease, elderly persons, infants, children and pregnant women.

As general cautionary measures, the following measures can be taken to protect during periods of poor air quality:

- Stop outdoor activities, especially exercise
- Stay indoors with windows and doors closed as much as possible
- Do not run fans that bring smoky outdoor air inside – examples include swamp coolers, whole-house fans, and fresh air ventilation systems
- Run your air-conditioner only if it does not bring smoke in from the outdoors. Change the standard air conditioner filter to a medium or high efficiency filter. If available, use the "re-circulate" or "recycle" setting on the unit
- Do not smoke, vacuum, fry food, or do other things that will create indoor air pollution
- If you have asthma, take your medications and follow your asthma management plan
- People with severe health conditions should consider leaving the area for a few days.

Even healthy persons can be affected by wildfire smoke. If you can see or smell smoke, take precautions. People with heart or lung disease who experience repeated coughing, shortness of breath, difficulty breathing, wheezing, chest tightness or pain should contact their doctor or clinic. "If an existing illness gets worse due to smoke exposure, seek medical help," advised Dr. Dean Kelaita, County Health Officer.

The Calaveras County Air Pollution Control District will continue monitoring the air quality in the county and will provide additional advisories as air quality conditions evolve.

For more information call the Calaveras County Air Pollution Control District at (209) 754-6399 or Calaveras County Health and Human Services – Public Health Division at (209) 754-6460.

Calaveras County Public Health Division
August 9, 2018 -

Wildfire Hazardous Smoke Advisory for Southeastern Calaveras County including Arnold for August 9, 2018. https://goo.gl/8TxgLQ

Calaveras County Office of Emergency Services
August 9, 2018 -

Frequently Asked Questions
Regarding Public Health and Wildfire Smoke

As California wildfire season continues, people in Calaveras County are asking about air quality.

wildfire smoke a threat to my health?
moke from wildfires is a mixture of gases and
ne particles from burning trees and other plant
aterials. It can affect your eyes, throat and
ngs, and worsen heart and lung diseases. How
uch and how long you are exposed to the
moke, your age, or preexisting conditions play
role in determining whether or not you will
perience smoke-related health problems. If
ou are having serious medical problems for any
ason, seek medical treatment immediately.

low can I tell if the smoke is affecting my
mily or me?
moke can cause coughing, scratchy throat,
ritated sinuses, shortness of breath, chest pain,
eadaches, stinging eyes and runny nose. If you
ave heart or lung disease, smoke might make
our symptoms worse.

- People who have heart disease can experience chest pain, a fast heart rate, shortness of breath and tiredness.
- Smoke can worsen symptoms for people who have lung conditions, such as respiratory allergies, asthma, and chronic obstructive pulmonary disease (COPD), in the following ways:
  - Cannot breathe normally
  - Cough with or without mucus
  - Chest discomfort
  - Wheezing and shortness of breath
- Persons who have asthma, emphysema, or other respiratory diseases should use their maintenance puffers/inhalers as directed and carry their rescue inhaler when leaving their home.
- When smoke levels are high, even healthy people may experience some of these symptoms.

How can I protect myself and my family from the harmful effects of smoke?
The best thing to do is to limit your exposure to the smoke. Ways to limit exposure to smoke include: staying indoors whenever possible, using air conditioners, using mechanical air cleaners, keeping windows closed while driving in a vehicle, and minimizing other sources of smoke such as smoking tobacco, using wood burning stoves, burning candles or incense and vacuuming. It is also important to stay hydrated by drinking plenty of water. Avoid caffeinated and sugary drinks.

What should I do if I must drive to work?
Individuals can reduce the amount of smoke particles in their vehicles by keeping the windows closed and using the air conditioner. The car's ventilation systems typically remove a portion of the particulate coming in from outside. For best results, use the re-circulate air feature found in most cars, which will help keep the pollution levels lower.

Will a wet towel or bandana provide any help?
A wet towel or bandana over your nose and mouth may provide some help, but it will be very limited. Since wet towels or bandanas may not be sealed to the face, their ability to filter very small particles is unknown. Bandanas and wet towels will likely provide little protection.

Page 1 of 3

Calaveras County Public Health Division
August 9, 2018 -

As wildfire season continues, we've received many questions about air quality. Please see our Frequently Asked Questions regarding Public Health and Wildfire Smoke: https://goo.gl/tpGPTv Note: Adapted from Amador HealthDepartment

2. Citizen Accounts

Karl Mondon
@karlmondon

The Sutter Buttes peek out from under a blanket of smoke from #MendocinoComplexFire filling the Sacramento Valley near Williams.

8:03 AM · Jul 31, 2018 · Twitter Web Client

Heather Hacking
@HeatherHacking

Nothing good to breath in at Lookout Point in Paradise, smoke-filled day

11:21 AM · Aug 3, 2018 · Twitter for iPhone

D. Wilson
@ButteWxSpotter

From .@CALFIRE_ButteCo Areas of Butte County, particularly the Paradise, Upper Ridge drainage's are being impacted by drift smoke and ash from the fires in Lake and Mendocino County.

1:38 PM · Aug 4, 2018 · Twitter Web Client

LaurieL
@LovesChloe_x100

Coming down off the ridge in Paradise, CA to Chico. Thought the smoke was another fire here locally. It's not. Smoke pouring into our area is from #MendocinoComplex

3:37 PM · Aug 4, 2018 · Twitter for iPad

c. Other Information Sources

Earth Observatory, Wildfires Blanket Western States with Smoke, *https://earthobservatory.nasa.gov/images/92517/wildfires-blanket-western-states-with-smoke*, July 31, 2018, last accessed 8/30/21

Space.com, Wildfire Smoke Blankets California in Satellite Photo, *https://www.space.com/41326-california-wildfires-smoke-satellite-photo.html*, July 31, 2018, last accessed 8/30/21

Phys.org, *Image: Smoke obscuring large portions of Northern California and Oregon*, August 3, 2018, last accessed 9/1/21

Weathernation.com, *Western Fires Causing Air Quality Concerns*, August 3, 2018, last accessed 9/1/21

Weather Underground, *Wildfire Smoke Causing Hazardous Air Quality in Western U.S.*, August 6, 2018, last accessed 8/30/21

pinpoint