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CROCKER NUCLEAR LABORATORY
UNIVERSITY OF CALIFORNIA, DAVIS

Final Report to the
California Air Resources Board
on
Contract No. A4-124-32

PARTICULATE MONITORING FOR ACID DEPOSITION RESEARCH AT SEQUOIA NATIONAL PARK CALIFORNIA

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ABSTRACT:

In support of the acid deposition effects programs at Sequoia National Park, we have made extensive measurements of particulate matter during the summer of 1985. The objectives of this project were: (1) to characterize the particulate composition of fine particles by determining the concentration of all elements from hydrogen through lead; (2) to determine what material is available for wet and dry deposition by measuring particulate concentrations by element with detailed size and time resolution; (3) to determine how particulate concentrations vary with time as the meteorology changes; (4) to determine the extent of transport of particulate pollutants from the San Joaquin Valley by comparing elemental concentrations measured at three elevations with sufficient time resolution to look at transport; and (5) to provide convenient time plots and other visual representations of particulate concentrations to concurrent projects on the effects of wet and dry deposition and to studies dealing with meteorology and gasses. Samples were taken continuously at three elevations (2000 ft, 6400 ft, 10000 ft) in up to nine size ranges. Almost 4000 analyses were done for mass, carbon soot, hydrogen, and elemental species up through lead. The data were correlated with local and synoptic meteorology, known elemental source signatures, and wet deposition measurements made in the four major rain events during the summer of 1985. The results show that particulate matter at Sequoia NP is similar to that measured at other, non-urban sites in the Sierra Nevada range and California desert. Particles were carried into the study sites by both local, terrain effect winds coming from the central San Joaquin Valley, and by upper level synoptic flows south and east of Sequoia NP. Rainfall associated with the latter flows contributed most of the wet deposition acidic flux (H, $SO_4^{=}$, NO_3^{-}) in the study period.

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PROJECT SUMMARY

A study was made of particulate matter and meteorology at Sequoia National Park at three sites varying in elevation from the foothills to high elevations. Particles were collected by size and time continuously from mid-June to early October, and analyzed for a variety of parameters, including mass, hydrogen, carbon (soot), and all elements sodium and heavier. These data were compared to other National Park Service data taken with similar equipment at nearby regionally representative sites. A summary of the most important results and our interpretation of them includes:

1. Particulate matter concentrations are somewhat higher at Giant Forest than at the Yosemite NPS air monitoring site, which is similar in elevation, exposure, and vegetation. Both are much higher, by a factor of two or more, than Lassen NP, Lava Beds NM, and Crater Lake NP, which are all similar to each other.

2. Summer sulfur values at Sequoia NP Giant Forest site show considerable correlation with those at Yosemite over the entire summer.

Our interpretation of these data is that the factors that establish particulate sulfur values at Sequoia are relevant to large areas of the western slope of the Sierra Nevada range, and are not local in character or source.

3. Particulate matter concentrations are more highly variable in time than local (surface) meteorology.

Our interpretation of this fact is that fine particulate matter is dominated by transport and transformation factors associated with synoptic meteorology, not by local effects.

4. The fall-off of concentrations from Ash Mountain to Giant Forest is approximately 25%. Significant correlations exist in time between two sites at 2000 and 6400 ft, respectively.

5. Further reductions in concentrations occur going from Giant Forest to Emerald Lake at 9260 ft elevation, and in addition, time correlations appear to decrease by late summer.

Our interpretation is that the strong boundary layer winds that transport material from the San Joaquin Valley each afternoon result in significant dilution at the elevation of Emerald Lake.

6. Night time downflow wind usually contains more sulfur than daytime upslope winds. Night time peaks in sulfur occur at Emerald Lake and Giant Forest.

7. Statistical analysis of the Giant Forest data indicate that both urban and industrial sources exist for sulfur at the Giant Forest site.

Our interpretation of the particulate data and meteorology seem to indicate a second source of sulfur carried on the nighttime, downslope winds.

Trace element differences show elements characteristic of fuel oil combustion and, occasionally, copper smelting.

8. Potassium, a smoke tracer, reaches maxima when the wind changes direction. The short duration peaks indicate a local source.

9. Interesting patterns are seen in rainfall/ particulate comparisons, separating summer storms into catagories that vary according to synoptic meteorology. Specifically, the largest excess hydrogen ion and sulfur values in rainfall were associated with inland low pressure systems bringing air from the south and east.

The three summer storm types observed were: western synoptic, inland low pressure and northern synoptic. The first storm type, Western synoptic, is a frontal passage across the San Joaquin Valley which is high in N, Cl, Na and low in H, S. The second type, Inland low pressure, is characterized by wind from the south, east (from Bakersfield and the California/ Arizona desert) with moderate N and high S, H, Ni. The third storm type, Northern synoptic, originates from the north Pacific carrying mostly clean air with a little salt. In this type of storm the pH rises; the storm is lowest in N, S and high in H, particulate Na and Cl.

Our interpretation is that the majority of all SO_4^+, NO_3^-, and H ion flux in summer wet deposition events at Sequoia comes from thunderstorms from the Gulf of California. These air masses had heavy pollutant burdens carried with the storm from copper smelter, oil combustion, and perhaps coal combustion sources south and east of Sequoia NP including the southern San Joaquin Valley.

1.0 INTRODUCTION

Sequoia National Park is an area of unique and worldwide biological interest, spanning the full range of Sierra flora from around 2,000 ft elevation to 14,450 ft elevation. It lies to the east of the San Joaquin Valley, and is suffering from documented ozone impacts* and potential acidity problems associated with pollutants from local and regional sources. It has the most extensive acid deposition program of any site in the western United States. The 28 research projects deal primarily with wet and dry deposition effects on vegetation, soil, lakes and streams. For these reasons Sequoia is an important acid deposition monitoring site in California (Figure 1.1).

Particulate concentration data are essential for two reasons. First, they indicate the potential for dry deposition of particles. Dry deposition is a major mechanism for particle removal at Sequoia, accounting for perhaps 70 to 90% of the total deposition during the summer.

> The hot dry California summers are characteristically a time of heavy atmospheric pollutant buildup. With the absence of periodic precipitation events it is suspected that dry deposition of anthropogenic pollutants may actually form a greater precentage of total acidic deposition than that contributed by rain and snow ... State of the art studies are needed on atmospheric concentrations of particulates and gasses, deposition velocities, and, where possible, actual deposition levels. (USNPS Acid Precipitation/ Integrated Ecosystem Studies, SNP, Overview 1984).

Secondly, particulate data with sufficiently high time and size resolution can provide valuable information on wet deposition scavenging processes. What happens to the particulate levels when a front approaches? Is the air cleaned out so that the rain has little particulate material to deposit, or do the levels remain at the average value? What happens to the particles (around 0.5μm) in the region that tend to be incorporated into cloud water droplets?

The objectives formally stated in the proposal were as follows:

1. To characterize the particulate composition of fine particles by determining the concentration of all elements from hydrogen through lead.

2. To determine what material is available for wet and dry deposition by measuring particulate concentrations by element and size.

3. To determine how particulate concentrations vary with time as the meteorology changes. This will be viewed by elemental species and particle size.

4. To determine the extent of transport of particulate pollutants from the San Joaquin Valley by comparing elemental concentrations measured at three elevations with sufficient time resolution to look at transport.

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*J. Bennett, NPS, contractors workshop, Sequoia NP, 1/86.

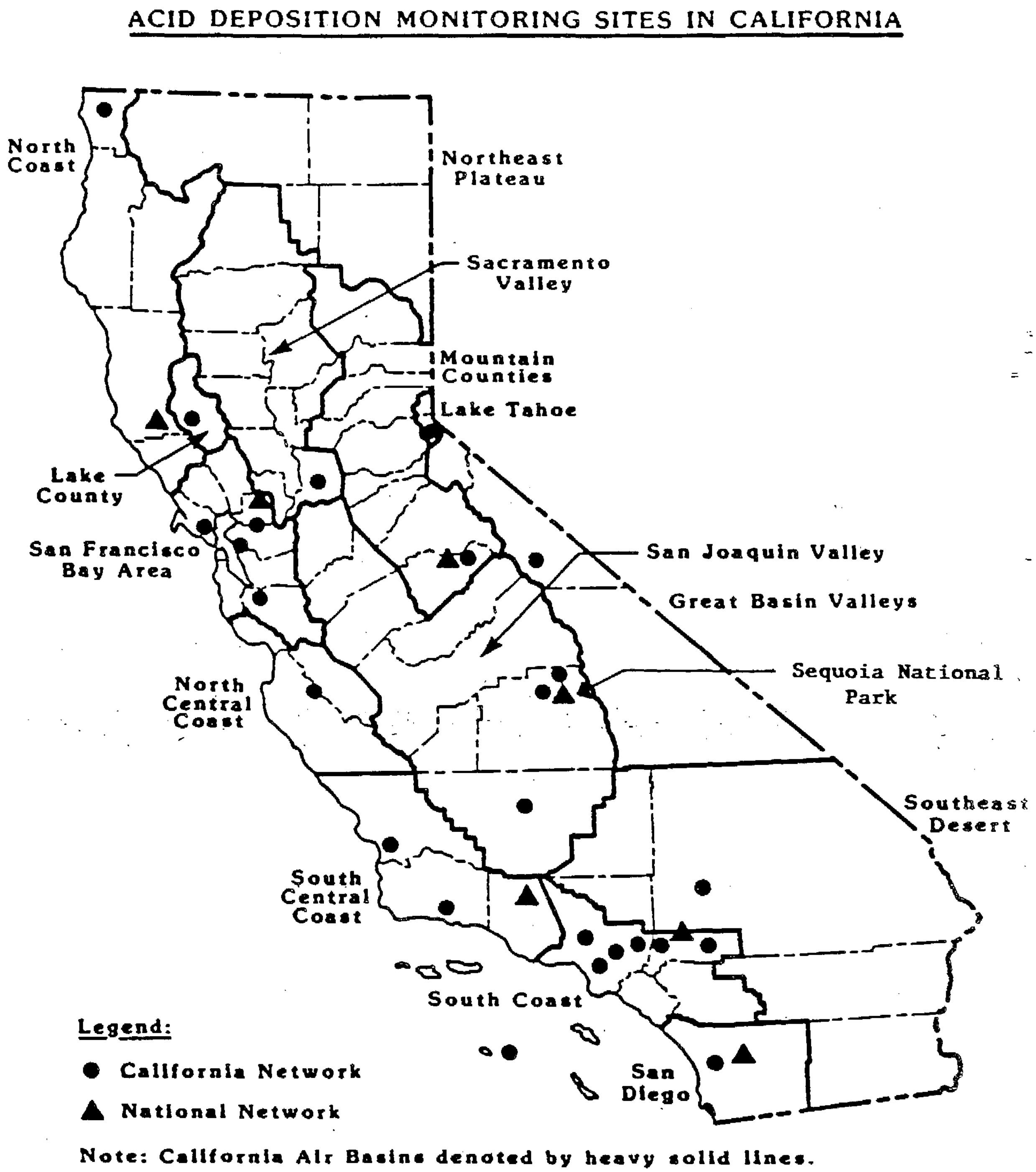


Figure 1.1 Acid deposition monitoring sites in California. (From 1948 Annual Report of ARB Acid Deposition Research and Monitoring Programs.)

5. To provide convenient time plots and other visual representations of particulate concentrations to concurrent projects on the effects of wet and dry deposition and to studies dealing with meteorology and gasses.

The present program was designed to support the concurrent studies of effects of acid deposition by providing detailed particulate data with high size and time resolution at several elevations over the entire summer. The deposition depends on the mechanism for particle removal, which is a function of particle size. Dry deposition is caused by settling of large particles and diffusion of small particles, as shown by Figure 1.2. Wet deposition is via the incorporation of intermediate sized particles into cloud water droplets. Samplers with excellent particle size resolution were used to determine the extent of each mechanism.

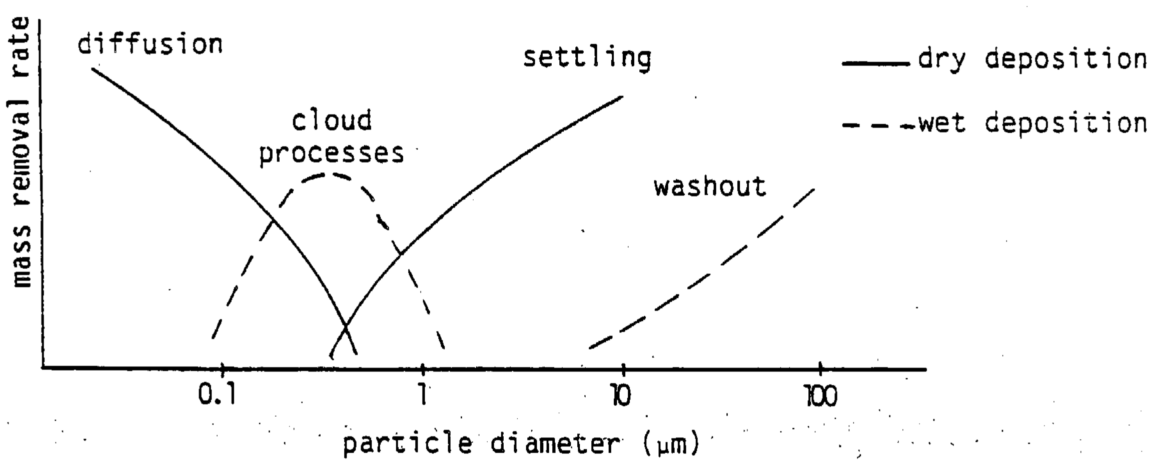


Figure 1.2 Mass removal mechanisms as a function of particle size (from P. Hobbs, 1982).

A high time resolution was used to measure concentration variations as weather fronts passed the sites. It was important to determine the change of the size profile with time, and to identify sources. During the study, strong diurnal patterns in aerosol chemistry were discovered.

Measurements were made at high, intermediate and low elevations in order to determine how far the valley pollutants rise into the mountains.

2.0 DATA COLLECTION, SAMPLE ANALYSIS, and QUALITY ASSURANCE

A summary of study activities and their full results are grouped in the Appendices, under the appropriate headings. Details of aerosol sampling, sample analysis, and quality assurance can be found in the Appendices and the relevant Air Quality Group publications listed in the bibliography.

2.1 Instrumentation

Particulate matter was collected by size and analyzed for mass and elemental composition at three sites: Ash Mountain, Giant Forest, and Emerald Lake, despite the lack of power at the latter site. Fortunately, the development of solar-powered instrumentation for our prior California Air Resources Board project, "STUDY OF PARTICLE EPISODES AT MONO LAKE" (A1-144-32) allowed us to immediately deploy a solar powered filter sampler (7-day Stacked Filter Units, or SFU) and a continuous reading sizing impactor with 8-hour time resolution (Solar Powered Aerosol Sampling Impaction, or SPASI) at both Emerald Lake and Ash Mountain.

A standard Environmental Protection Agency (EPA) — National Park Service (NPS) SFU sampler was borrowed from the NPS for service at Giant Forest. This type of sampler has been operated at 31 parks and monuments since 1979, under formal third party quality assurance protocols. This insures direct comparability of Sequoia Giant Forest data to all NPS and California sites operated by the Air Quality Group. These latter sites include Lava Beds National Monument, Lassen National Park, Yosemite National Park, Death Valley National Monument, and Joshua Tree National Monument. For quality assurance purposes, an Air Resources Board virtual impactor (VI) was also located at the Giant Forest site. Average fine mass agreed to ±10% between the VI and the SFU. A comparison of fine particulate mass collected by the SFU and other samplers in a formal study (1984) at Desert Research Institute, Reno NV in 1984 is shown in Table 2.1.

Table 2.1: Results of DRI Intercomparison of Aerosol Samplers: averages, standard deviations, and medians of fine particle concentrations over the test period. Concentrations in ($\mu g/m^3$)

Sampler	No. of Samples	Average	Standard Deviation	Median
Cyclone (Std)	23	5.9	2.5	5.5
low volume				
SFU	22	6.1	2.6	5.5
Dichotomous(VI)	21	5.7	2.4	5.4
2x4 (RESOLVE)	23	5.6	2.1	4.9
high volume				
SCISAS-I	23	5.1	2.2	4.5
SCISAS-II	22	4.9	2.1	4.3
WRAQS-11	23	4.9	2.0	4.3
WRAQS-2	23	4.8	2.0	4.3

All measurements taken with a given type of sampler were averaged to obtain the most representative measurement of that type of sampler. These within-sampler averages were used to calculate the statistics in Table 2.1.

In order to obtain high resolution data on particulate size and short time (4 hour) resolution on particulate matter vs time, a Davis Rotating-drum Universal-size-cut Monitoring (DRUM) sampler was built and deployed at Sequoia National Park. This unit has provided dramatic new insights into aerosol physics and chemistry as part of the RESOLVE and SCENES studies of the California-Arizonia deserts, and the NPS--Grand Canyon Study, delivering sensitivity to a few nanograms/m^3, accurate to better than ±10%, in 4-hour size increments and 8 analyzable size cuts, (~15 μm to 8.5; 8.5 to 4.4; 4.4 to 2.1; 2.1 to 1.15; 1.15 to 0.56; 0.56 to 0.34. The lower pressure stages had modified cut points due to the altitude, but were estimated to be 0.34 to 0.18; 0.18 to 0.10; filter. The unit operates continuously for two weeks at a time. Data from this unit were the key to unlocking the remarkable diurnal size/composition variations at Giant Forest. The DRUM unit also participated in the DRI study, with excellent agreement for elemental species such as sulfur.

2.2 Operations

Table 2.2 summarizes sample collection and analysis in this program for the period June -- October 1985.

Table 2.2: SAMPLERS AND MEASURED VARIABLES BY SITE

Site Sampler	Size Range	Time Resolution	Analyzable Samples	Samples Analyzed by Method PIXE	Mass	LIPM	PESA	FAST
Giant Forest (6400 ft)								
DRUM	9.6–15μm	4 hour	672	84	0	0	0	0
	4.8–9.6μm	4 hour	672	84	0	0	0	0
	2.4–4.8μm	4 hour	672	84	0	0	0	0
	1.2–2.4μm	4 hour	672	84	0	0	0	0
	0.6–1.2μm	4 hour	672	336	0	0	0	0
	0.10–0.6μm	4 hour	672	660	0	0	0	0
	0.088–0.10μm	4 hour	672	336	0	0	0	0
SFU	0–2.5μm	24 hour	110	110	110	110	110	24
	2.5–15μm	24 hour	110	110	110	0	0	0
VI	0–2.5μm	24 hour	81	81	81	110	0	0
	2.5–15μm	24 hour	81	81	81	0	0	0
Ash Mountain (2000 ft)								
SPASI	.25–3μm	8 hour	336	336	0	0	0	0
SFU	0–2.5μm	3 day	32	32	32	32	32	20
	2.5–15μm	3 day	32	32	32	0	0	0
Emerald Lake (9260 ft)								
SPASI	.25–3μm	8 hour	270	270	0	0	0	0
SFU	0–2.5μm	7 day	16	16	16	16	0	0
	2.5–15μm	7 day	16	16	16	0	0	0

3.0 RESULTS AND INTERPRETATION

The results from this project, including 5,700 samples and over 61,000 analyses and elemental values, will be studied for years. At this early stage, we can report a summary of the data and the most obvious interpretations, especially as they bear upon design of future investigations of deposition and ecological impact. For, while we feel we met the objectives of the particulate study, the value of this work will increase as the results of other, concurrent studies become available. We will try to put Sequoia National Park in the context of the extensive forested western slope of the Sierra Nevada range, so that the results of the Sequoia study can have relevance to the entire region. We will do this by first attempting to characterize the particulate matter by size and composition, regionally and locally, identify probable particulate sources, and to begin to associate particles with potential impacts on wet and dry deposition.

3.1 Characterization of Particles

3.1.1 Regional Patterns

Spatial. The Giant Forest (Lower Kaweah) site at Sequoia National Park can be directly compared to existing NPS sites in the western United States (Figure 3.1, 3.2), especially for those sites with similar vegetation and elevation.

These sites include:

	Elevation	Summer Sulfur Conc.
Crater Lake NP	6500 ft	194 ng/m^3
Lava Beds NM	4800 ft	191 ng/m^3
Lassen NP	5900 ft	221 ng/m^3
Yosemite NP	5300 ft*	454 ng/m^3
Sequoia NP	6400 ft	535 ng/m^3
Death Valley NM	400 ft	496 ng/m^3
Joshua Tree NM	4600 ft	563 ng/m^3

* Ridge site

(NP - National Park; NM - National Monument)

Sulfur is used as a comparison element since it is a major component in fine particulate mass, and a significant factor in acidity. It is largely generated by man's activities.

Sequoia NP does not appear dramatically different from other California sites from Yosemite southward. These sites show, however, about 2 1/2 times the sulfur of the northern three sites, which are among the cleanest in the United States. It is also clear that Sequoia sulfur levels are only about 20% of those in the eastern United States.

Further insight into particles at Sequoia can be gained by a closer look at the full elemental record of Lassen (1983) and Yosemite (1983, 1984, 1985) National Parks (Table 3.1). In all parameters, Sequoia NP has higher particulate levels than Yosemite or Lassen NP. Comparing the 1985 data for fine components (Mass, soils, sulfate, smoke, and salts), Sequoia has levels 35 ±10% higher than Yosemite. However, for nickel, the increase is 240%, while copper is only 25% as high at Sequoia as Yosemite. A 150% rise in lead

Figure 3.1 Fine mass (Dp <2.5 μm), concentrations and percent of fine mass as ammonium sulfate, soil, soot and remaining mass at NPS sites, averaged over a two year period, 1983 to 1985. These data represent samples taken over more than 80% of all hours.

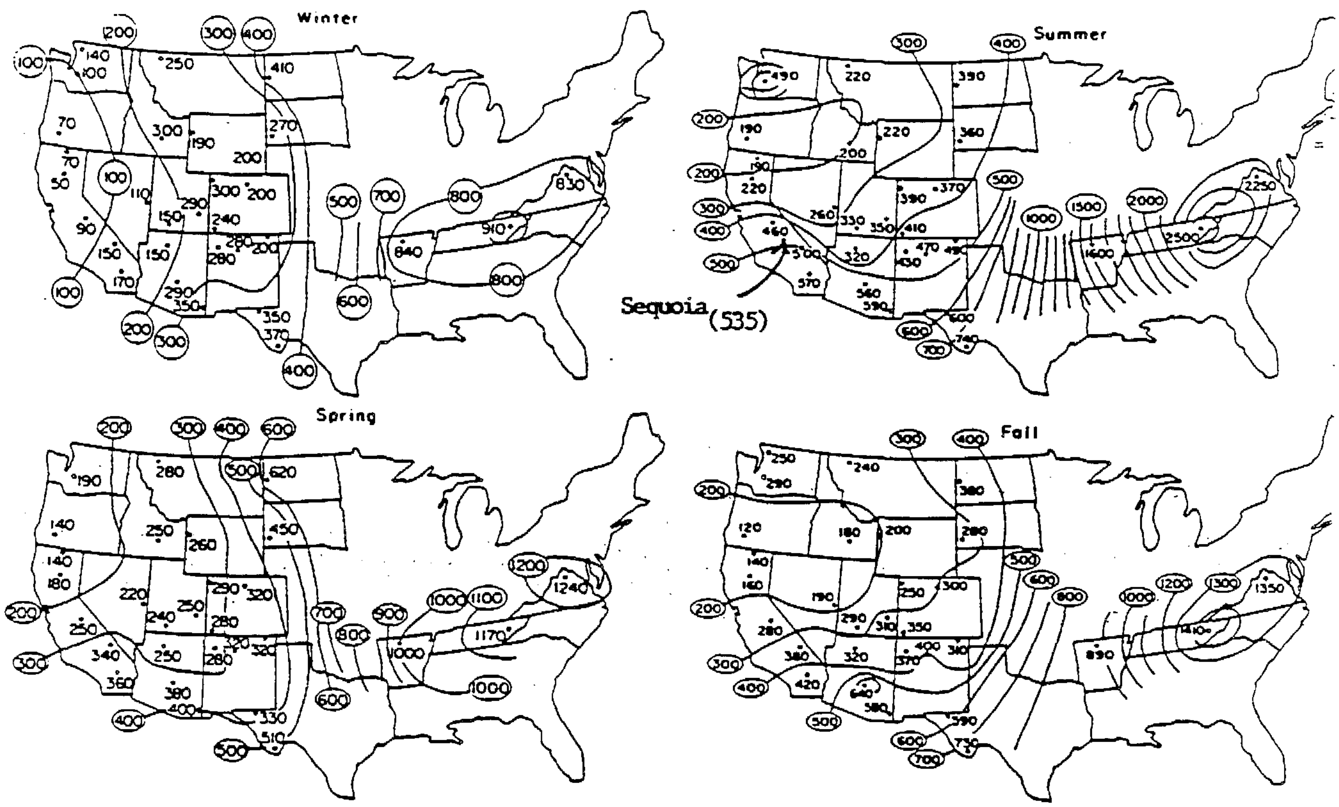


Figure 3.2 Concentration of fine sulfur at NPS sites averaged by season. Note that the value at Sequoia, summer, 1985 of 535 ng/m^3, is similar to other California Sites, supporting a regional interpretation of sulfur concentrations.

for 1985 is caused by a decline at Yosemite from prior years; a 3-year average has Yosemite 13% greater than Sequoia. For nickel, however, the 1984 value at Yosemite agreed well with the 1985 value, as in fact do all pollutants except copper, bromine, and lead. Since Ni is a major tracer of fuel oil combustion, this consistent enhancement at Sequoia leads to the interpretation that Sequoia NP receives a greater impact from fuel oil combustion than does Yosemite NP. It is not certain, however, whether this source is local. In fact, a local source was found for Ni at Lassen N.P. in 1983, due to use of fuel oil for heating near the sampling site. (Table 3.1)

Seasonal. Comparisons of particulate matter between Yosemite NP and Sequoia can be made as a function of time. Figure 3.3 shows fine sulfur values at Yosemite NP for all of 1984, with Sequoia NP 1985 data superimposed for June through October. The very low particulate sulfur levels for winter, spring, and fall may well be reflected in wet and dry deposition data, once these become available. This pattern also gives information on sulfur sources and transport. For example, photochemical conversion of SO_2 to $SO_4^{=}$ is far more rapid in summer than winter (as is NO_2 to NO_3^-), and weather patterns also are characteristic of each season.

TABLE 3.1: PARTICULATE MATTER AT CALIFORNIA NATIONAL PARKS
(all values $\mu g/m^3$, except those in parenthesis which are ng/m^3)
June, July, August

	SEQUOIA (1985)	YOSEMITE (1985)	YOSEMITE (83/84)	LASSEN (1983)	
MASS					
Coarse	12	8.9	8.6	6.1;>2.5μm	
Fine	13	9.7	7.3	3.8;<2.5μm	
TOTAL	25	18.6	15.9	9.9	
FINE COMPONENTS					
SOILS(*)	1.2	1.0	0.8	0.5	
SULFATE(**)	2.4	1.7	1.9	1.0	
Sulfur	(576)	(418)	(456)	(253)	
V	(1)	(<1)	(~1)	(2.4)	***
Ni	(2.1)	(0.5)	(0.6)	(1.5)	
H/S		——	25:1, molar		
SMOKE	3.4	2.3	1.5	0.9	
K	(169)	(116)	(77)	(44)	
AUTOMOTIVE					
Pb	(10)	(4)	(15)	(9)	
Br	(4.6)	(2)	(3.2)	(2.5)	
SALTS					
Na	(119)	(89)	(68)	(30)	
Cl	(2)	(<2)	(2)	(2)	
MISC.METALS					
Cu	(1)	(4.1)	(1.3)	(4.2)	
Zn	(5)	(5.0)	(2.6)	(3.1)	

* Al, Si, Ca, Ti, Fe + oxides
** assumes (NH4)2.SO4, (H/S 8:1)
*** S, Ni, V values may be elevated due to combustion of fuel oil at Lassen site.

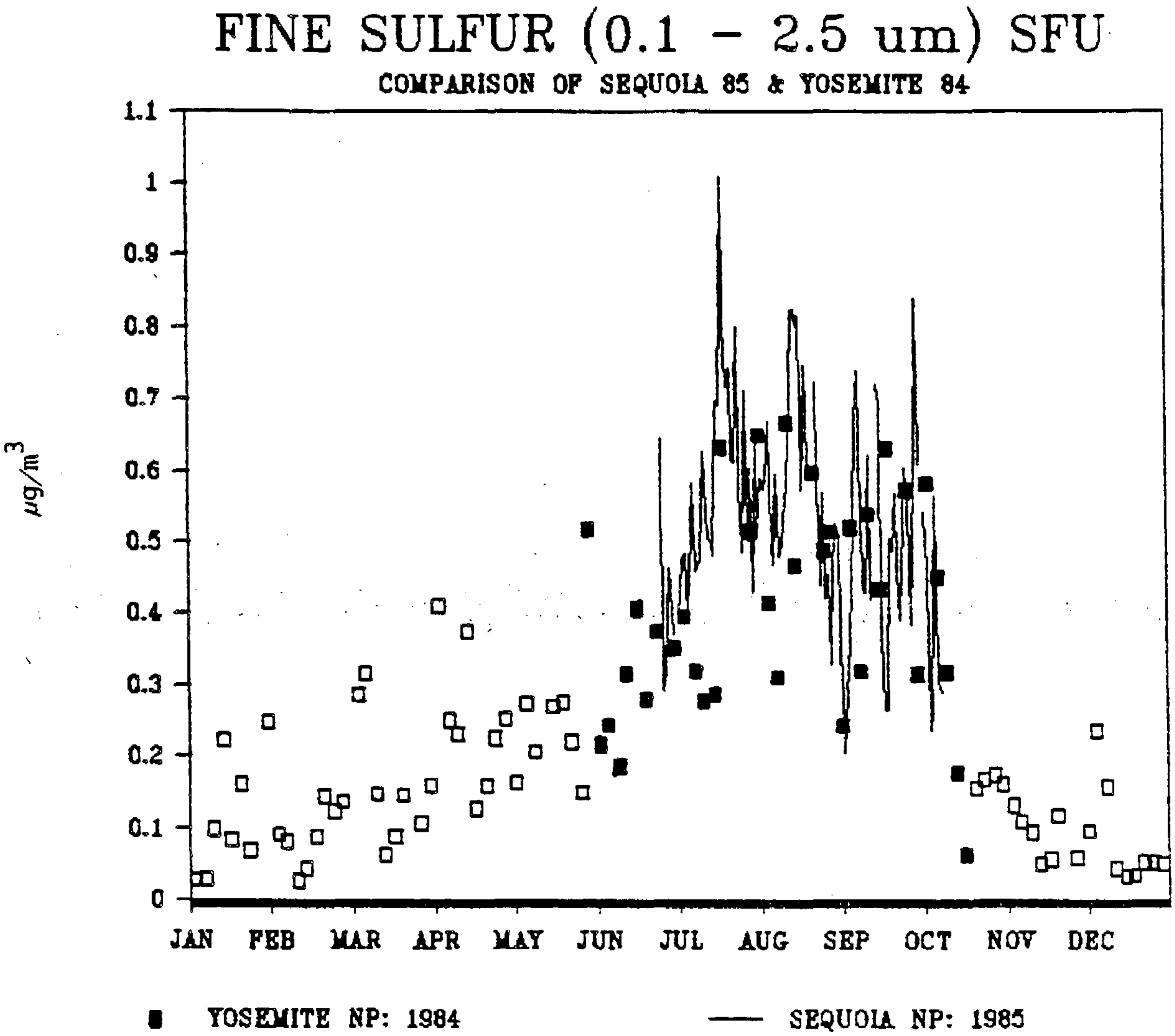


Figure 3.3 Comparison of fine sulfur at Sequoia and Yosemite

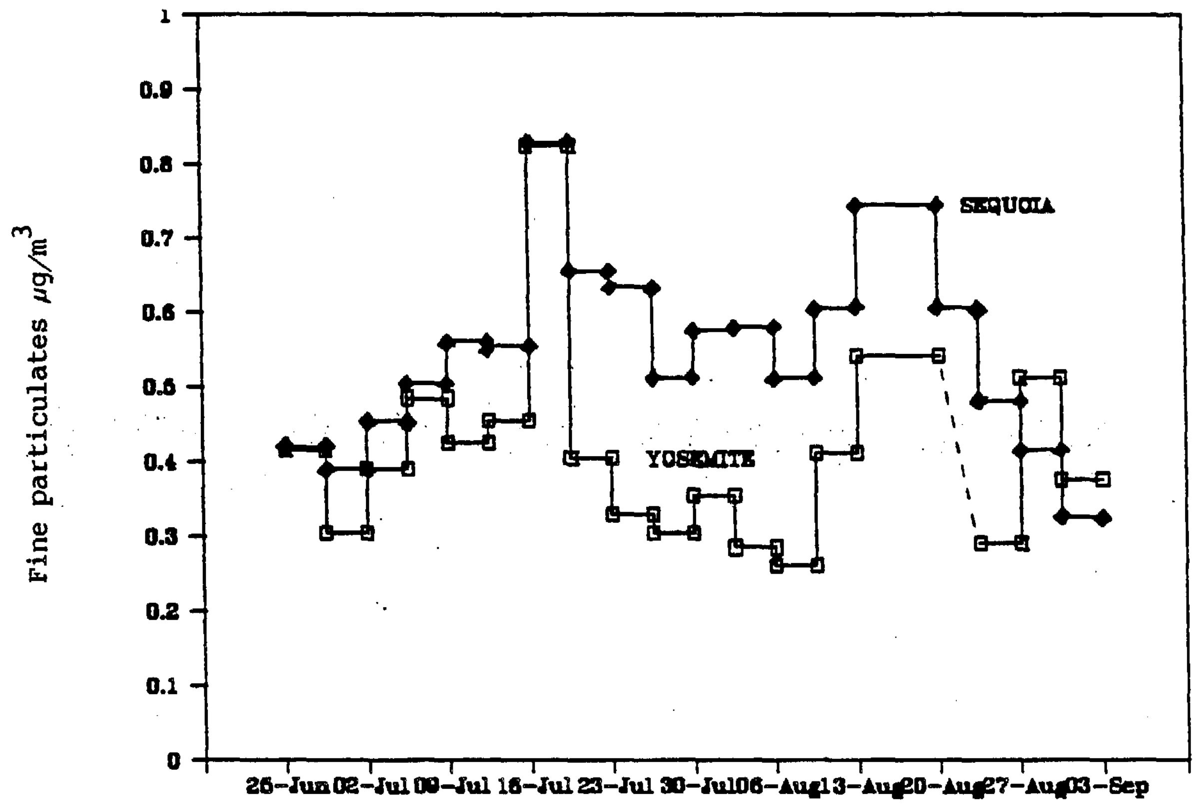


Figure 3.4 Sulfur comparison at two Sierra sites, summer 1985

A more relevant comparison of particulate sulfur at both sites in 1985 is shown in Figure 3.4. The higher levels at Sequoia are clearly evident, as is a strong correlation between the sites, at a level of 0.6 for a correlation coefficent. Clearly, whatever conditions are acting to elevate sulfur levels at Sequoia are also operating at Yosemite, but with less intensity. The levels at Sequoia average 1.3 times those at Yosemite, possibly indicating sulfur sources closer to Sequoia and most probably south of Sequoia. The slope of the sulfur regression line gives Sequoia values 1.6 times Yosemite values, showing that the highest sulfur values are expecially enhanced at Sequoia N.P.

Summary of regional information. The regional information generally supports the hypothesis that Sequoia NP is representative of large areas of the western slope of the Sierra Nevada range. Concentrations at the site reflect patterns seen over large portions of the western United States. The pollutant gradients favor dominant sulfur pollutant sources that lie south of Sequoia NP, perhaps with significant but not dominant contributions from oil combustion due to higher Ni levels. The southern San Joaquin Valley has elevated Ni values.

3.1.2 Local Patterns

Spatial and Temporal: Weekly averages versus elevation. One important method for determining particulate sources at Sequoia NP is to look at the patterns of particulate concentrations in space and time. The dramatic effect of elevation is shown in Figure 3.5, in which weekly values for fine sulfur are compared at Ash Mountain (2000 ft), Giant Forest (6400 ft) and Emerald Lake (9260 ft). Ash Mountain values are higher than or equal to Giant Forest values by about 20% and they clearly are highly correlated in time, (corr. coeff. = 0.72). Emerald Lake values are sharply lower, 44% of the Giant forest values and the high correlation in time that is present in June and July, (corr. coeff. = 0.78), has weakened by August to 0.53. Thus, while Ash Mountain and Giant Forest are closely coupled despite a 4400 ft difference in elevation, Giant Forest and Emerald Lake are partially decoupled despite a close proximity in distance and only 2860 ft elevation difference. It is remarkable that Yosemite National Park, over 90 miles distant, is better correlated with the Sequoia NP Giant Forest site than the Giant Forest site is with the Emerald Lake site, only a few miles. The key role of elevation on particulate concentrations is clear. The data also indicate that there may be more than one source for sulfur at Sequoia NP — one of which is not associated with the San Joaquin Valley as represented by the Ash Mountain site.

Spatial and Temporal: Daily variations at Giant Forest. Figures 3.6 and 3.7 show the daily values for coarse and fine mass measured at Giant Forest. Figure 3.8 shows the daily variation for fine sulfur, also at Giant Forest. While some of the major peaks and valleys seen in the sulfur distribution are also evident in the fine mass, the correlations are not strong. The sense of synoptic patterns, the strong maxima and minima correlated with weather, seen in sulfur are not as evident in fine mass. This is not totally unexpected since sulfates are only about 18% of the fine mass at Sequoia (Figure 3.8). This lack of correlation between mass and sulfur is also evident in a high hydrogen to sulfur ratio, seen at Yosemite as well as Giant Forest.

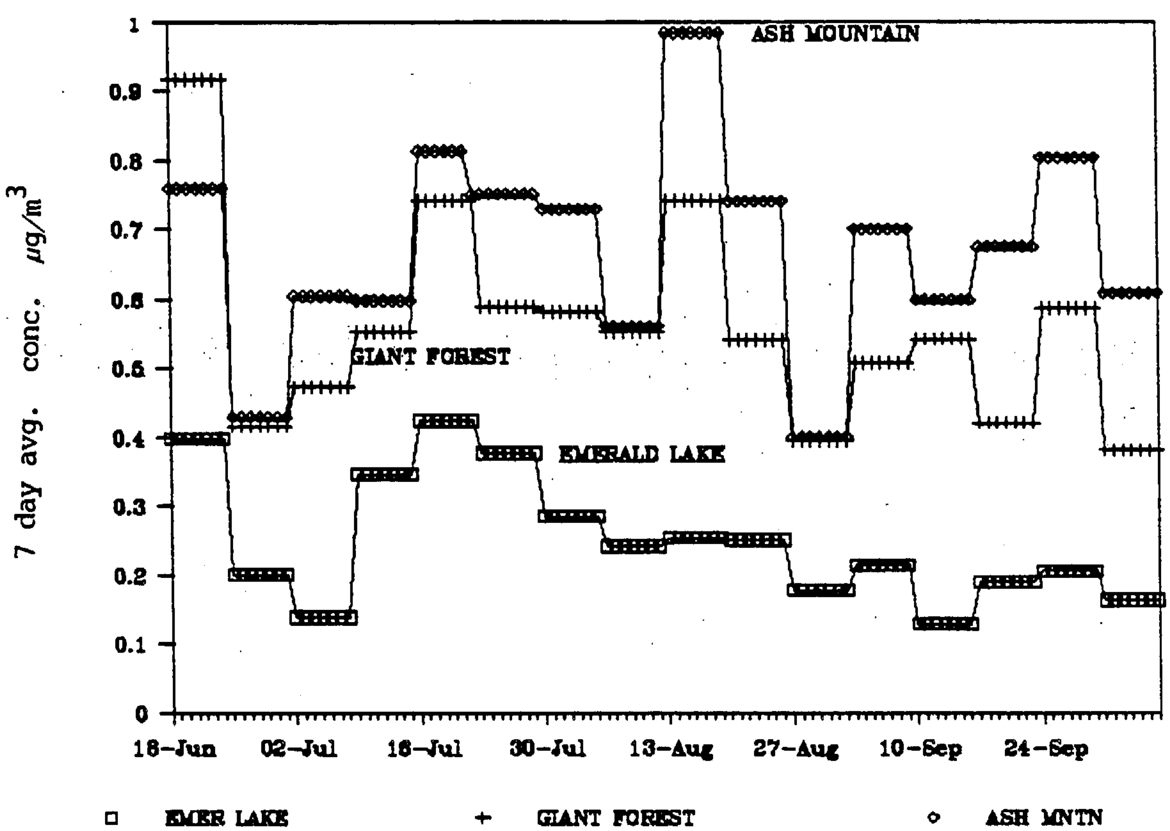


Figure 3.5 SFU fine sulfur at 3 elevations in Sequoia NP

At Yosemite, the molar ratio is 25:1. Since ammonium sulfate (the most likely chemical form) has a ratio 8:1, then a great deal of the hydrogen is not sulfur-associated but resides in nitrates and hydrocarbons, natural and anthropogenic. At Davis, a high correlation exists in NO_3^- to $SO_4^=$, with about a 3:1 ratio. If such exists at Sequoia NP, and assuming a H/N molar ratio of 4:1, one could obtain the types of molar ratios measured at Yosemite with mostly anthropogenic sulfates and nitrates and relatively little natural mass. One could not have as strong a S to N correlation as at Davis, however, or fine mass would correlate more strongly with sulfur. Again, one is lead to the conclusion that either two or more different sulfur sources or two or more different nitrate sources are operational at Sequoia NP.

A listing of all particulate data for the three major sites is included in this report as Appendix C.

3.2 Sources of Particulate Matter

3.2.1 The role of meteorology

The characterization of particulate matter at Sequoia NP by source must take into consideration the meteorological conditions that bring materials to the area. Two sources of data were available for our analysis:

1. Department of Commerce Airport data (especially Fresno)
2. Sequoia NP sites operated for this study
   (Elk Creek(June through Sept); Giant Forest(Sept))

More data are being developed by other research teams cooperating with the project, especially Prof. Myrup and Flocchini of UC Davis.

Synoptic: The Department of Commerce national data maps and the data from Fresno are most useful in terms of identifying synoptic weather patterns that influence Sequoia NP. An example is given below in Figure 3.9 thru 3.12. In Figure 3.9, one can see a shift to southerly winds on 6/23 from a stable westerly flow for the preceeding six days. In Figure 3.10, the effect on relative humidity can be seen at Elk Creek. In Figure 3.11, one can see a dramatic increase in sulfur at Ash Mountain, corresponding to southerly winds in the cold front. No such enhancement is seen in potassium in Figure 3.12, or in fine silicon. This is probably because potassium, as a smoke and fine soil tracer, and silicon, a fine soil tracer, have sources all over the San Joaquin Valley, while sulfur sources are more localized in the southern San Joaquin Valley. The effects on Giant Forest (all particles <2.5 μm) and Ash Mountain (only particles <0.25 μm Dp <2.5 μm) are shown in Figure 3.13. While these results are not directly comparable in total concentration, the effect of the cold front in first raising, then reducing sulfur concentrations is dramatic. In this and other examples, it is evident that sulfur responds most strongly to synoptic patterns, since almost all sulfur at Sequoia NP has to be transported considerable distances from major potential source areas in the Bay Area, Bakersfield area, Los Angeles area, the Mojave desert power stations, or even Arizona copper smelters.

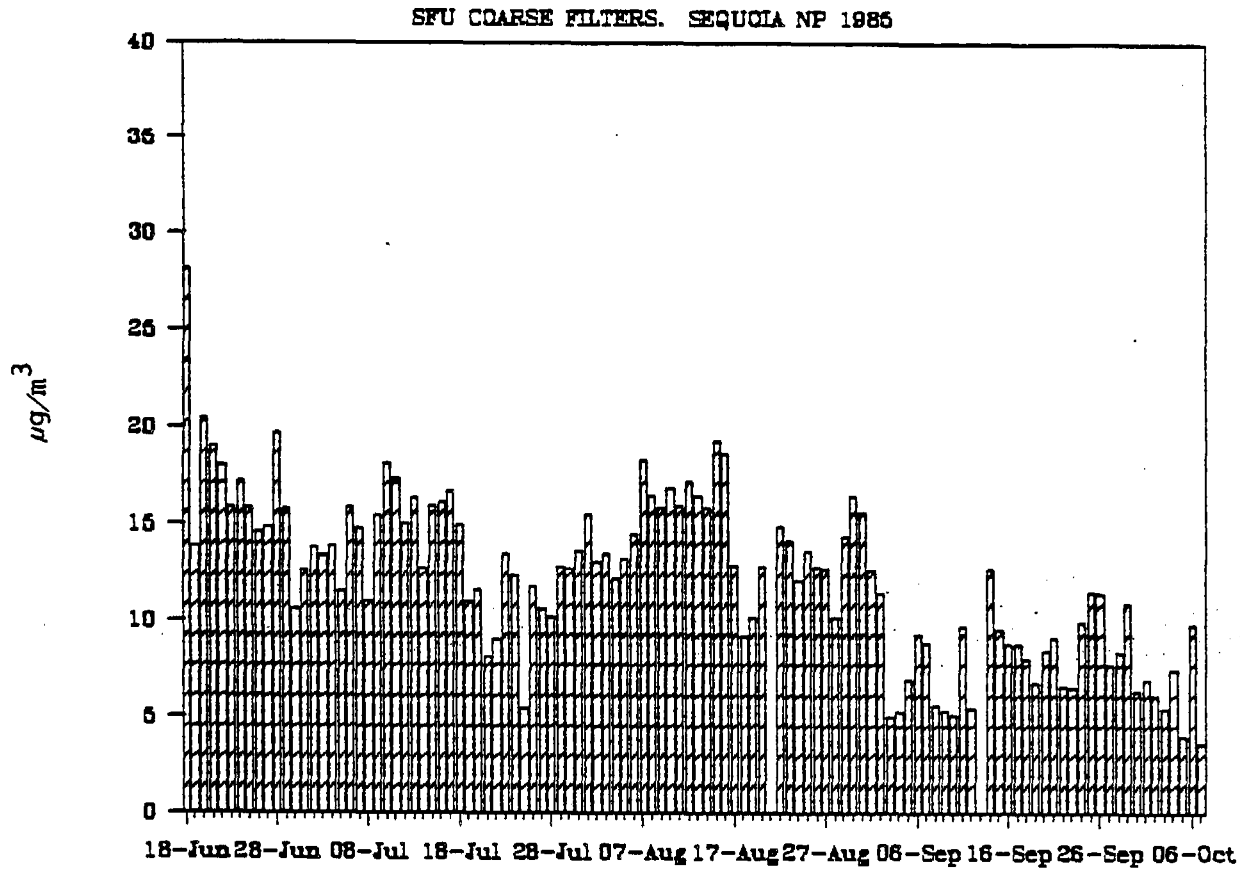


Figure 3.6 Daily coarse mass at Giant Forest

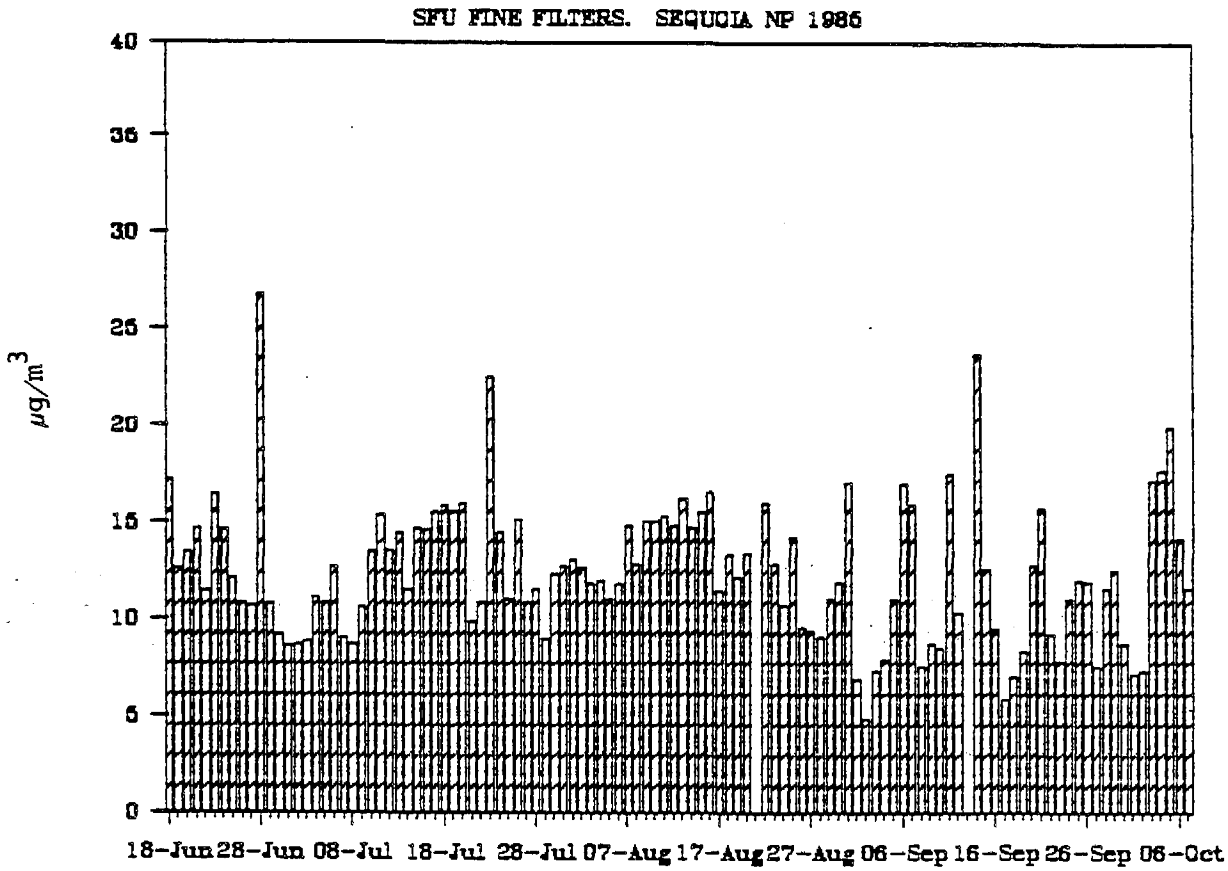
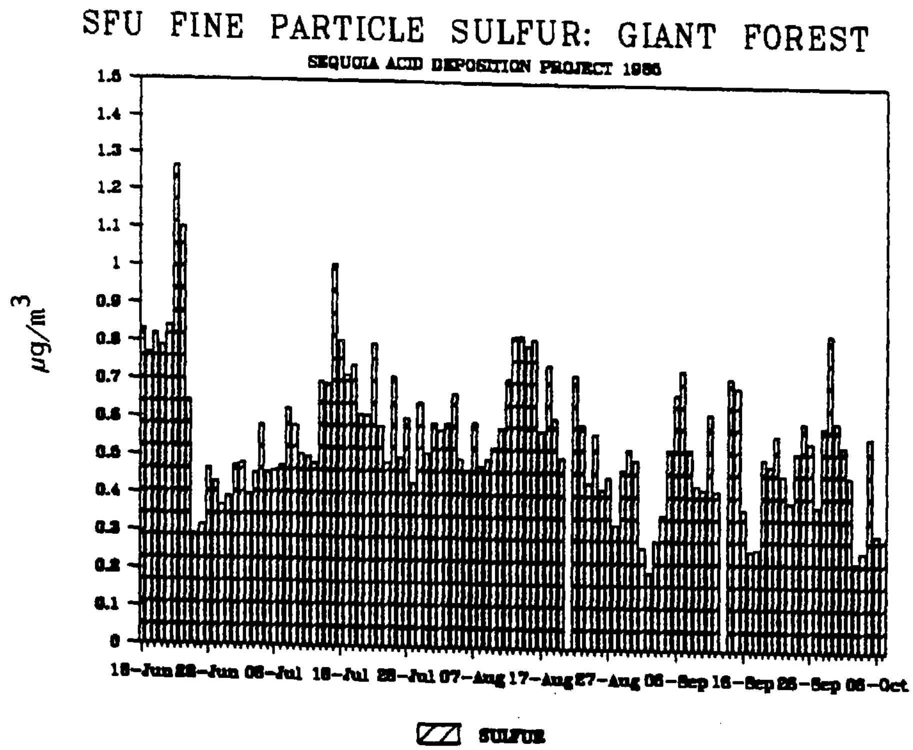


Figure 3.7 Daily fine mass at Giant Forest



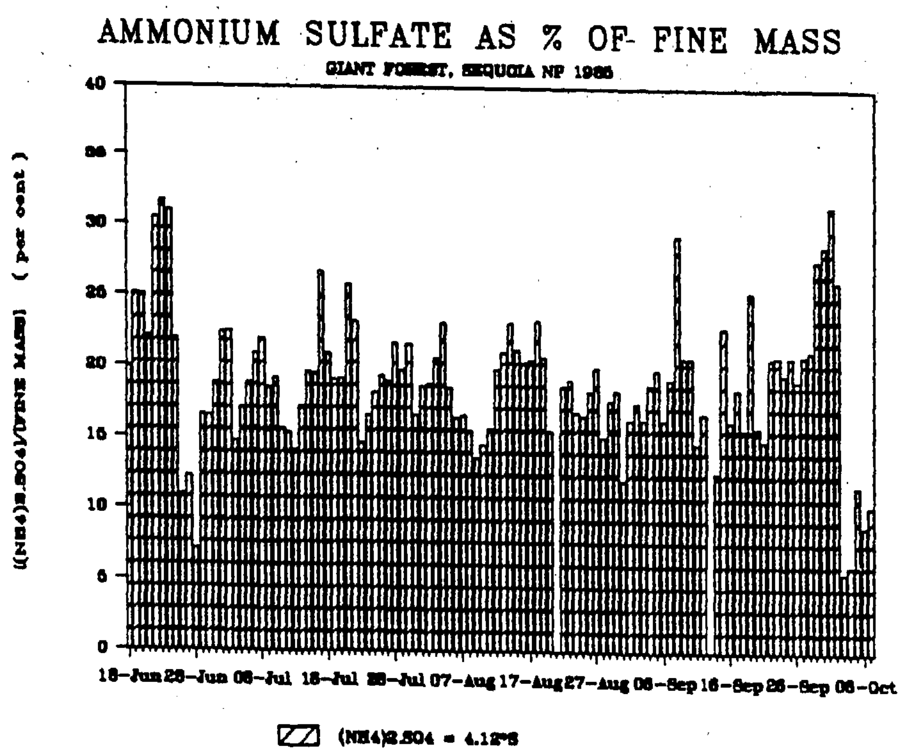


Figure 3.8 Daily fine sulfur at Giant Forest

Meteorological analyses of elevated sulfur episodes: Meteorology of June 22-28. Meteorological maps from June 22 through June 28 have been used for analyses. The charts include surface maps, 500 mb charts, the highest and lowest temperature charts, and precipitation areas. On 23 June 1985 the synoptic pattern over North America was relatively weak. On the surface, the major feature consisted of a cold front extending from Montana into northern California, and a trough from eastern Utah into southern Colorado. The trough was an extension of the surface low pressure center. There was little temperature and moisture contrast across the front in northern California. At 500 mb a mid-level jet was located in northern Oregon, Idaho and Wyoming along the northern side of the surface front. There was a well-developed northwesterly flow which induced a southward swing of the surface front. On 24 June 1985, the surface chart showed a well developed strong trough on the western part of the United States (Figure 3.14).

The advection of cool, dry air associated with strong northerly winds in the middle troposphere and the northward movement of a warm, moist air mass in the low troposphere (surface low pressure) could create favorable condition for convection thunderstorms over California. During the next few days, the previous trough moved eastward, and the strong trough over the Pacific Ocean caused vigorous southwesterly flow over the western part of California.

The effect of the passage of the cold front can be easily seen at the Ash Mountain site, since the high time resolution SPASI sampler was already installed by June 18. The cold front led to large sulfur peaks on both 6/24 and 6/25 (Figure 3.11), at midnight, clearing up during daytime hours. Since the front generated southerly winds, this indicates that relatively high sulfur concentrations can be associated with sources south of Sequoia NP, such as in the southern San Joaquin valley.

3.2.2 Local meteorology

The local meteorology is dominated by very strong and regular terrain effect winds, generated by intense summer heating and a rapid increase in elevation, west to east. The regularity of the upslope-downslope pattern is remarkable. Figure 3.15 shows the wind velocity at Giant Forest projected along an axis, the average wind direction was 289° - 109°, roughly a WNW - ESE line. This axis was the direction of average wind direction, presumably determined by local topography. The wind velocities are roughly equal at this elevation — at the lower elevation of Elk Creek, 4500 ft, the upslope winds are several times faster than downslope winds (Figure 3.16). More detail on the directions are shown in Figure 3.17 and 3.18. Here, the actual wind directions are plotted, showing that the nighttime downslope winds are somewhat more regular in direction, due to terrain dominance, than the daytime upslope winds. It is the contrast between the regular local meteorology and the variable particulate sulfur concentrations that reinforces the conclusion that some of sulfur at Sequoia NP must come from far away, beyond the local San Joaquin valley floor. Previous studies have shown very predictable summer transport of sulfur-containing air from the Bay Area into the northern and central San Joaquin Valley, and since this air is transported efficiently by terrain effect winds into Sequoia NP at least to the 6400 ft elevation of Giant Forest, then sulfur content at Giant Forest due to this source should

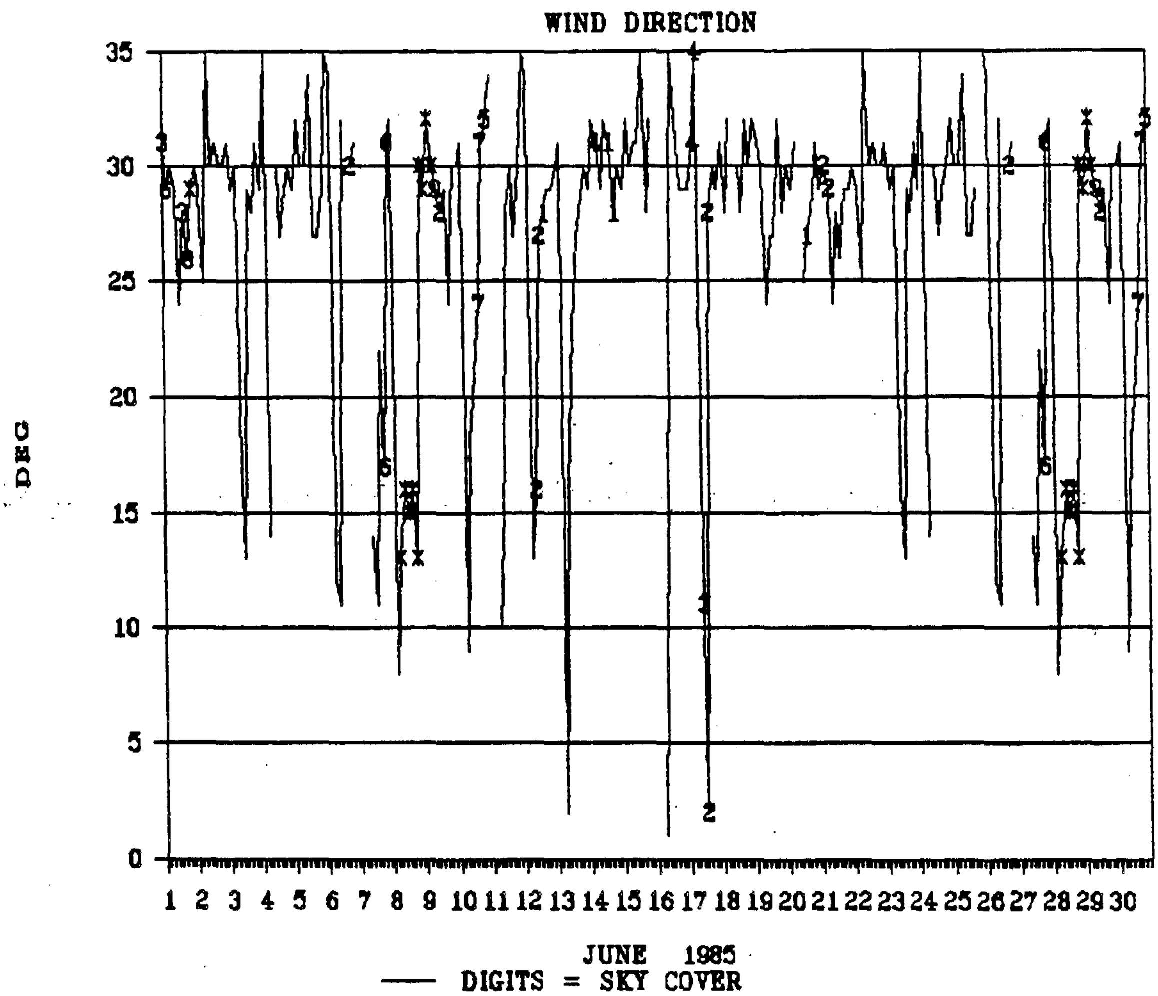


Figure 3.9 Hourly wind direction at Fresno Airport, June 1985

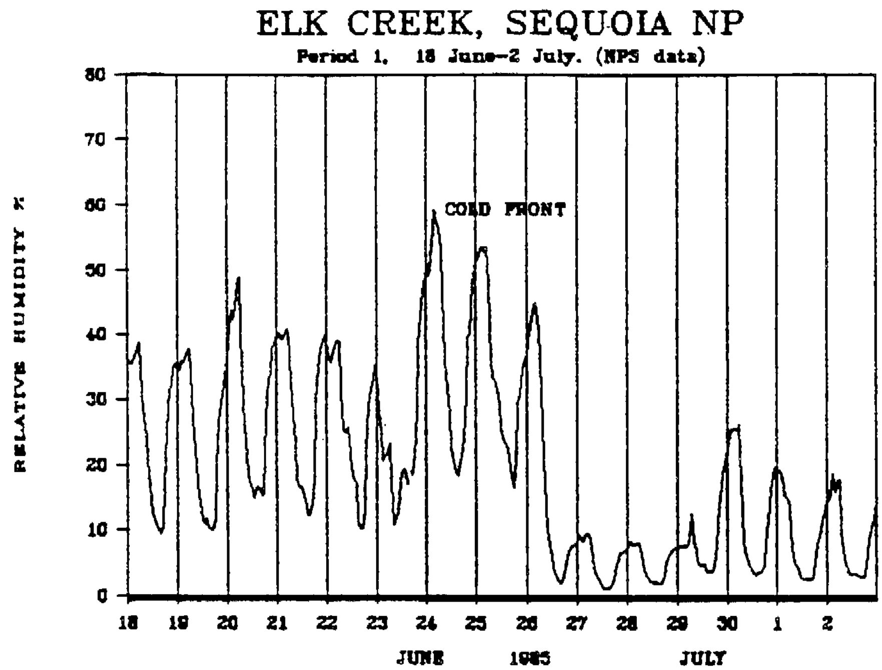


Figure 3.10 Relative humidity at Elk Creek, Sequoia NP, June 1985

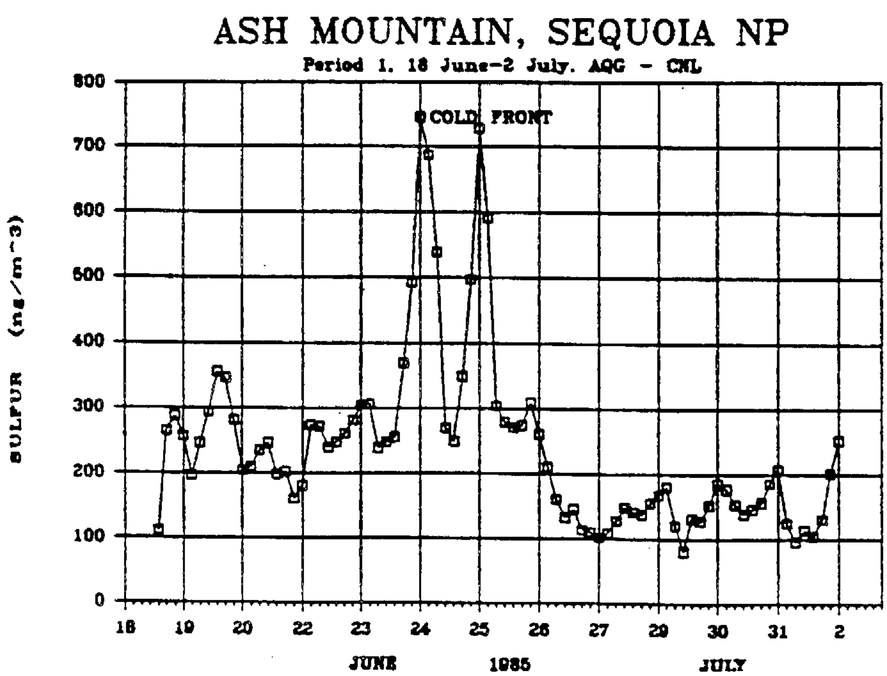
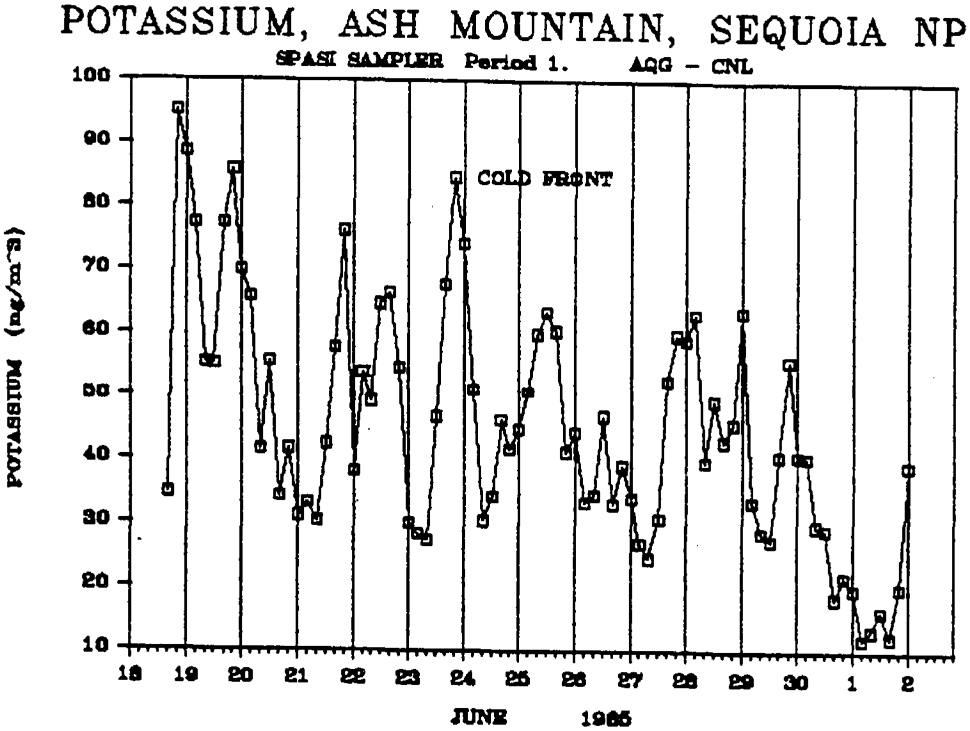


Figure 3.11 Fine sulfur at Ash Mountain, June 1985



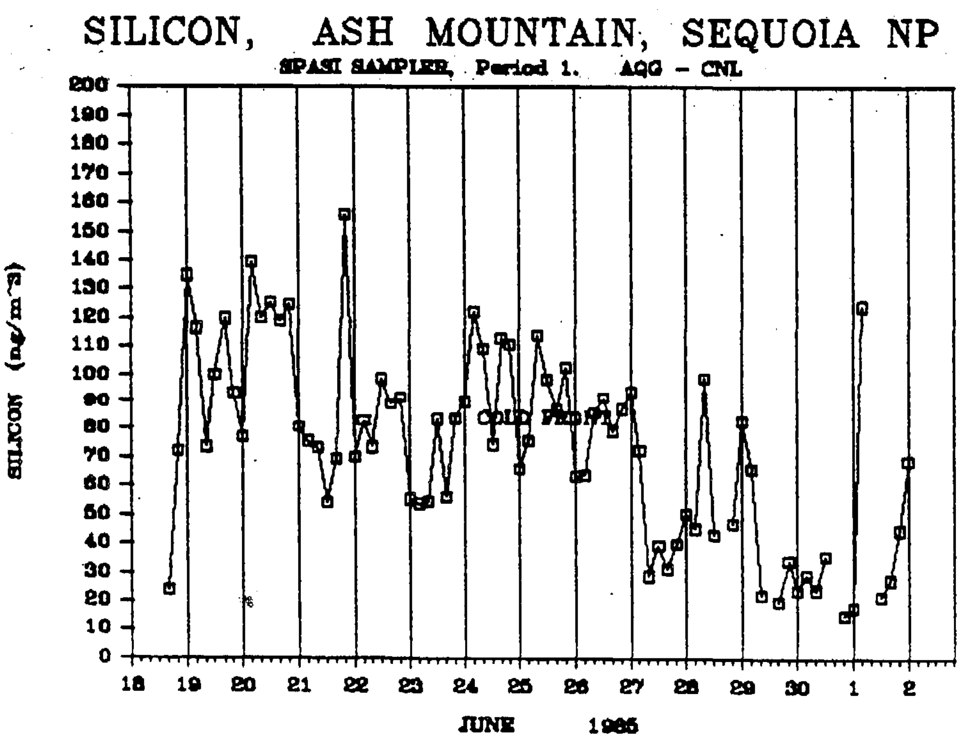


Figure 3.12 Fine potassium at Ash Mountain, June 1985 and fine silicon at Ash Mountain, June 1985.

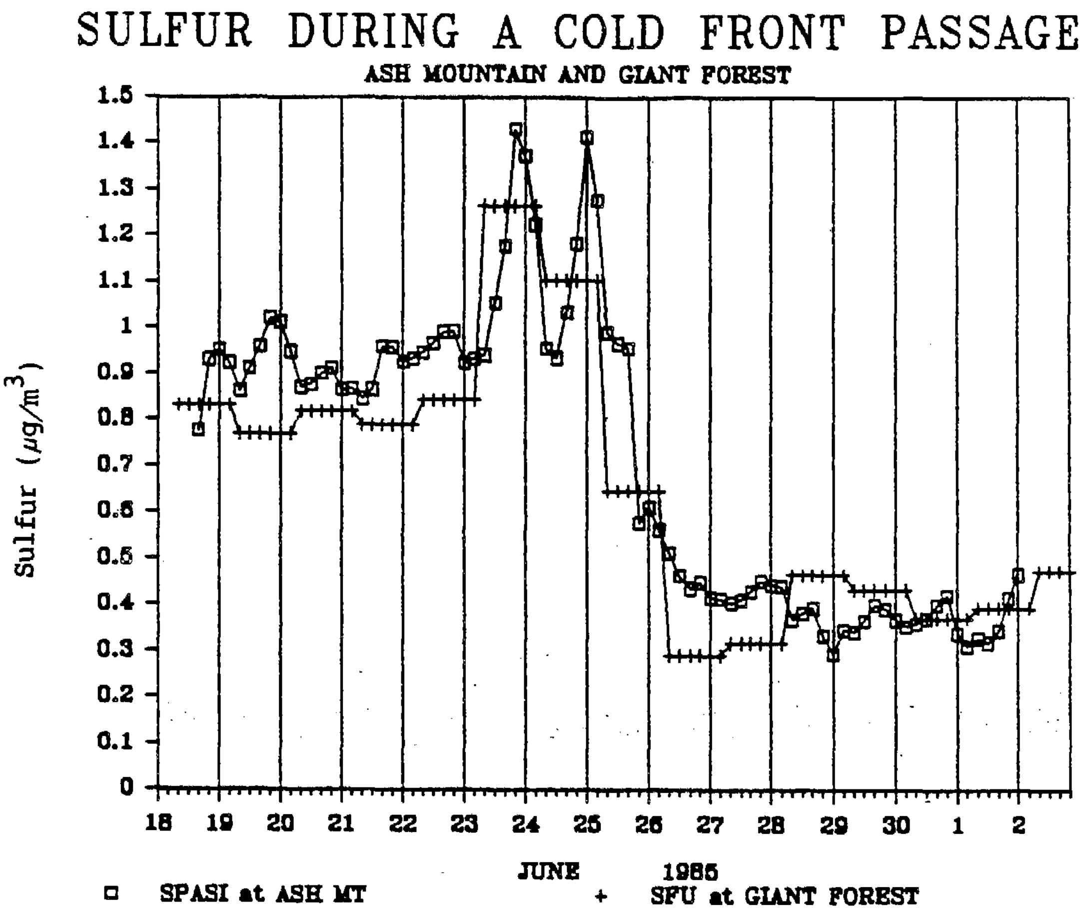
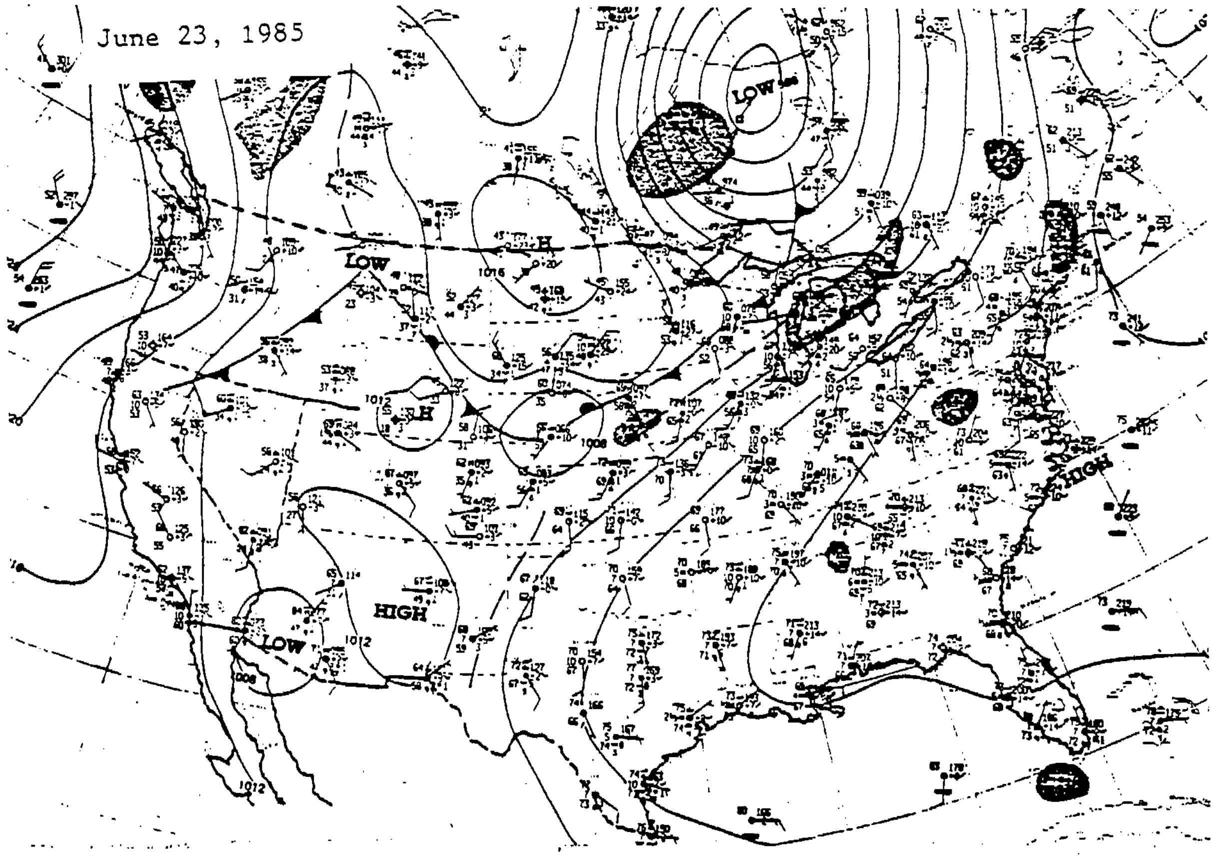


Figure 3.13 Fine sulfur at Giant Forest and Ash Mountain, June 1985. Spasi sampler results represent the sum of the DRUM stage (0.25 <d <3.0 µm) and the afterfilter (d <0.25 µm). The SFU results are for the fine filter (d<2.5 µm).



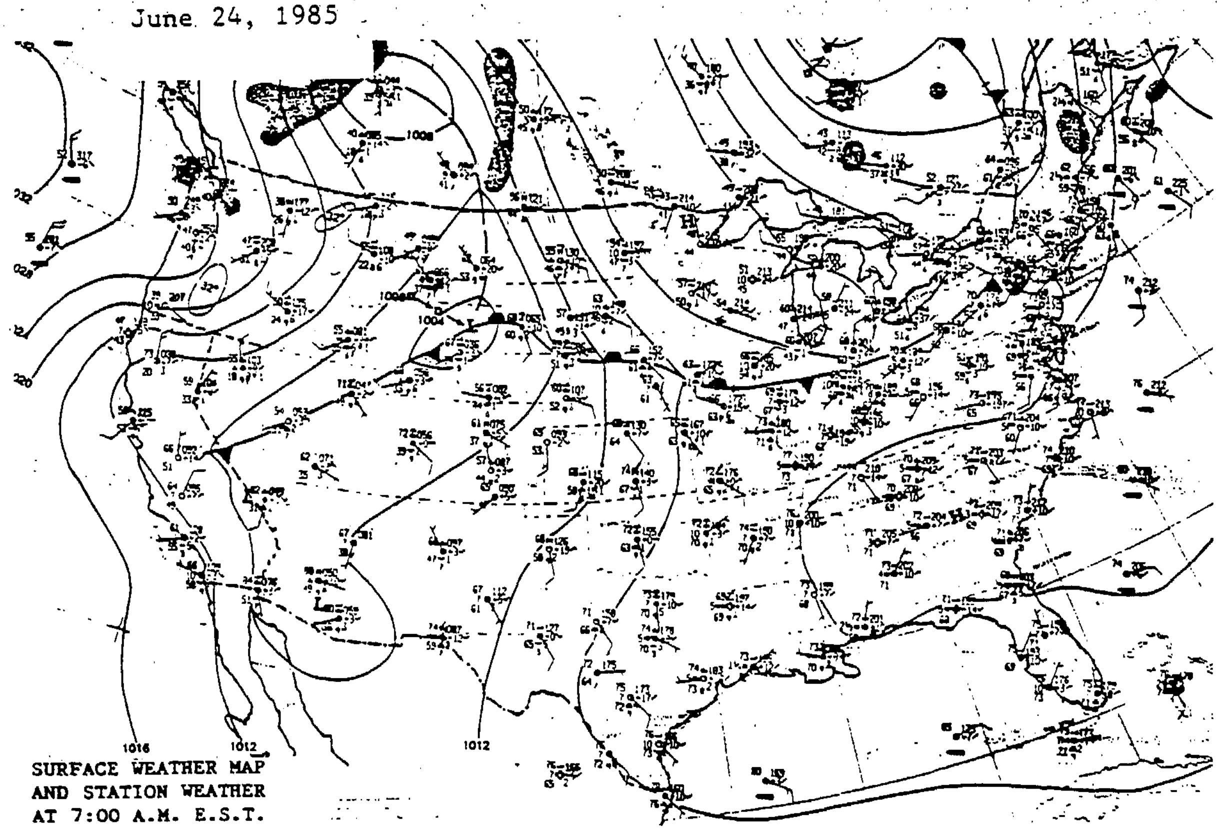


Figure 3.14 Synoptic chart for the USA, June 23-24, 1985

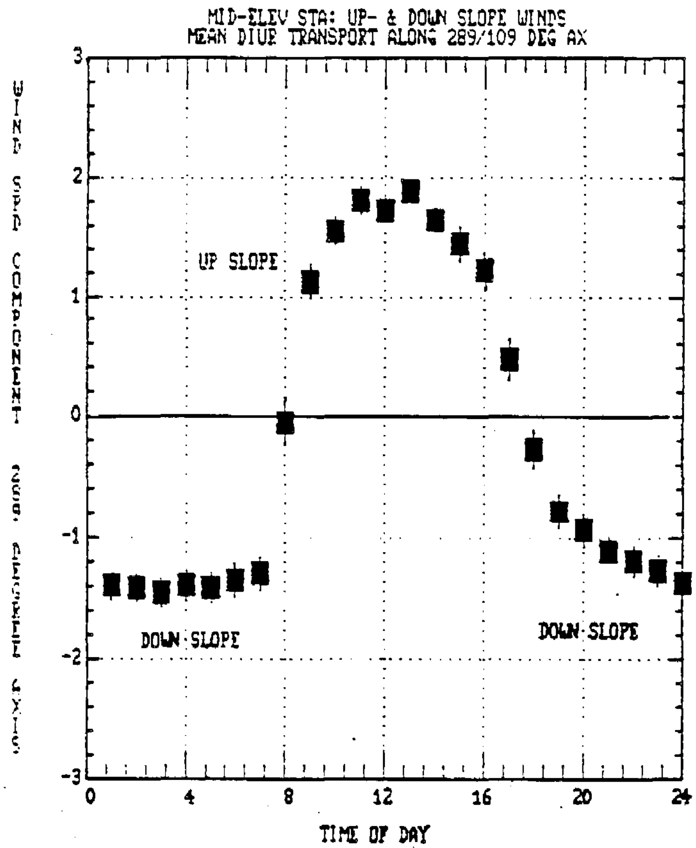


Figure 3.15 Mean diurnal wind speed at Mid-Elevation Station, Sequoia NP

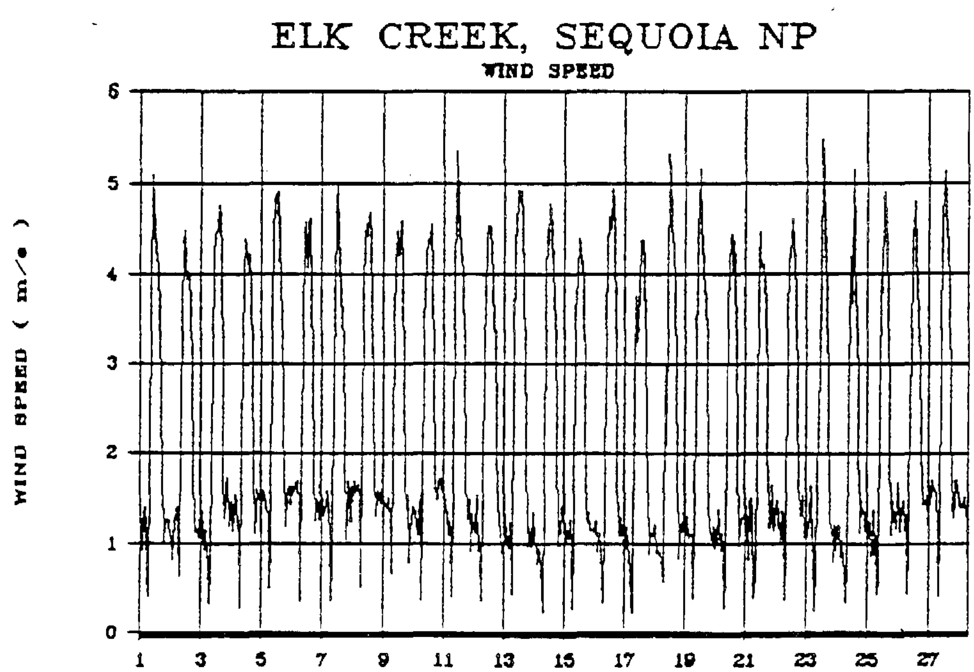


Figure 3.16 Hourly wind speeds at Elk Creek, Sequoia NP, August 1985

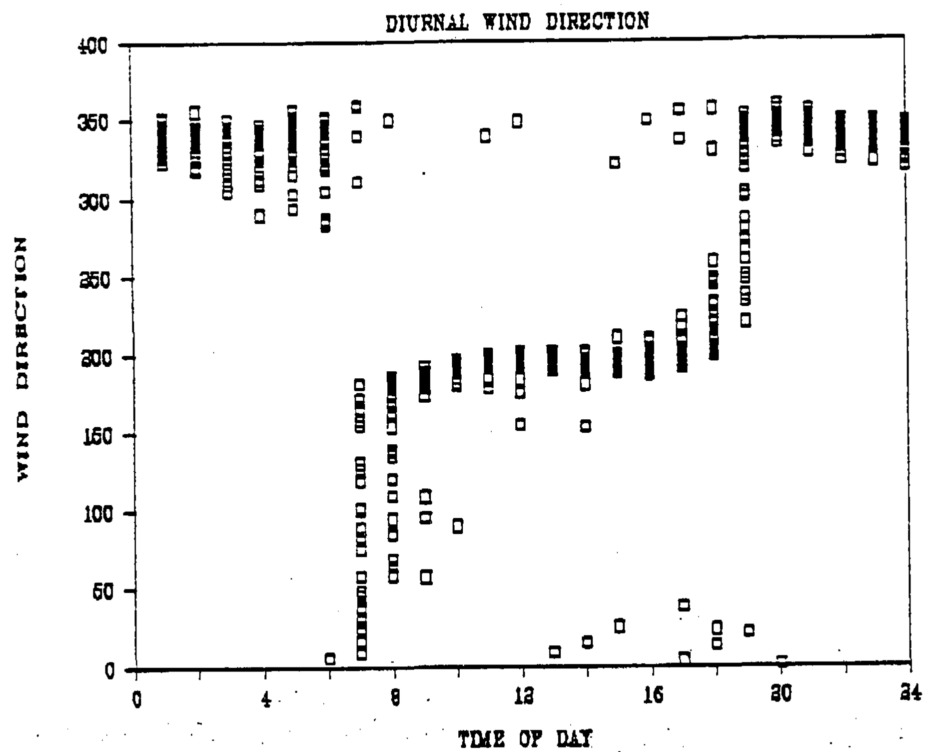


Figure 3.17 Diurnal wind directions at Elk Creek, Sequoia NP, July 1985

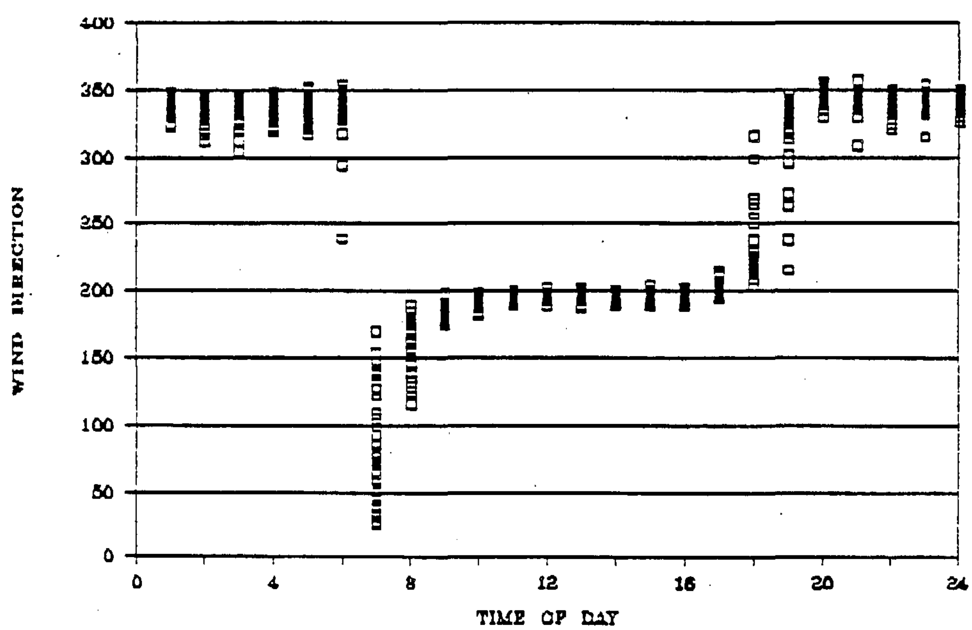


Figure 3.18 Diurnal wind directions at Elk Creek, Sequoia NP, August 1985

also be relatively constant in concentration and peak on the upslope, daytime winds.

Diurnal particulate concentration: Giant Forest. Figure 3.19 shows the diurnal sulfur concentration at Giant Forest during August—a period characterized by highly predictable local wind patterns and no precipitation. A weak cold front came through on August 16 & 17, as shown by temperature and cloud cover at Fresno (Figure 3.20). This resulted in a sharp increase in sulfur at Giant Forest in the dominant 0.15 to 0.6 μm accumulation mode (from gas to particle conversion) but not in the ultrafine particles (below 0.09 μm) often present at hot, dry sites (Figure 3.19, Figure 3.21). Ultrafine sulfur showed a sharp increase in the morning.

This sulfur episode, also seen at Yosemite NP, gave the highest sulfur values between 8 PM and 4 AM, times when the surface wind was blowing from east to west, and minimum values during daylight hours (Figure 3.19). This pattern of nighttime maxima was typical over the entire summer, and only during some rain events was the pattern reversed. Figure 3.22 shows fine sulfur and potassium for one 3 day period in late-July, early-August. This leads to the conclusion that the easterly nighttime winds were sulfur-rich in accumulation mode particles that differed in size from sulfur particles from the northern San Joaquin Valley. This pattern also brought with it the highest Ni value seen all summer (6.9 ng/m^3). The evidence thus links the second sulfur source to easterly-southerly winds with a likely fuel oil component.

Diurnal particulate cycles: Emerald Lake. The diurnal patterns of the two largest fine particle components at Emerald Lake are shown in Figure 3.23 and Figure 3.24. From the earlier diagram, Figure 3.5, it is clear that the synoptic variability at Ash Mountain and Giant Forest is weakened at Emerald Lake. The detailed record confirms this, for although a sulfur peak is seen on July 23, it only lasts for 8 hours at Emerald Lake (0000 to 0800 hours), whereas it lingered longer at Giant Forest (Figure 3.8). What takes its place is a very regular diurnal pattern, with peak sulfur values in nighttime hours, as at Giant Forest. There is a high correlation between S and K. (K is generally a smoke tracer, also occurs in soils.)

Particulate size data: Giant Forest. The data from the Giant Forest DRUM sampler provides not only high time resolution, but also 8 size cuts. Over 1,500 PIXE analyses were made, each recording the 30 most common elements heavier than sodium. A summary of this very large data set includes:

1. Coarse soil derived particles, including high potassium levels, exist in the largest size mode, 9.6 to 15 μm.

2. Sulfur was almost always the most important element heavier than sodium in size ranges less than 1.2 μm diameter. We must note that, based upon the filter data in Central Valley studies, we presume that nitrogen and other lighter elements (H, C, O) are also important, but these elements can not be seen by PIXE on the mylar DRUM substrates.

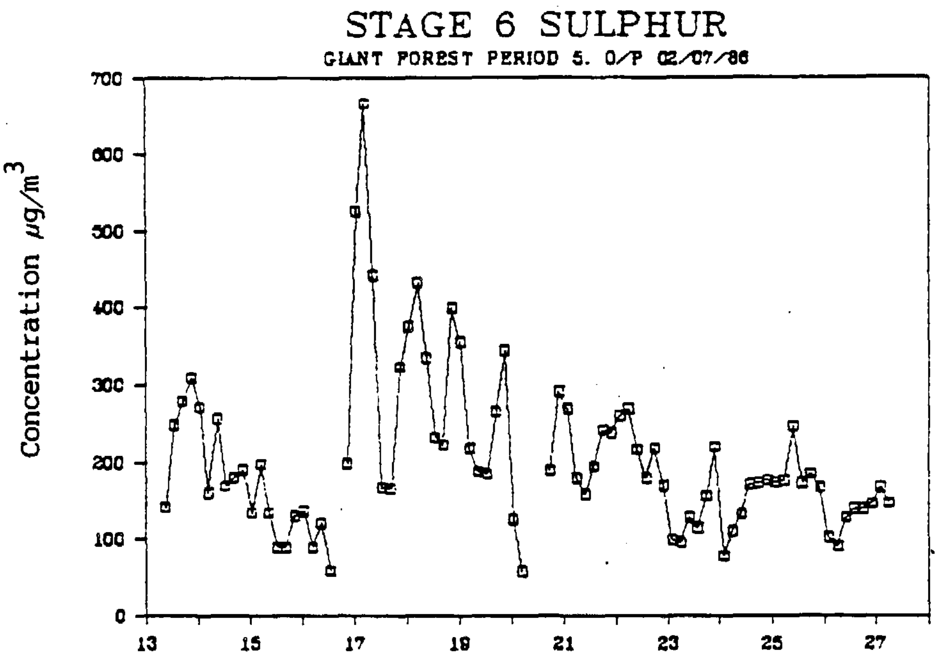


Figure 3.19 Sulfur concentrations, DRUM stage 6 (0.55 to 0.10 μm), at Giant Forest, August 1985

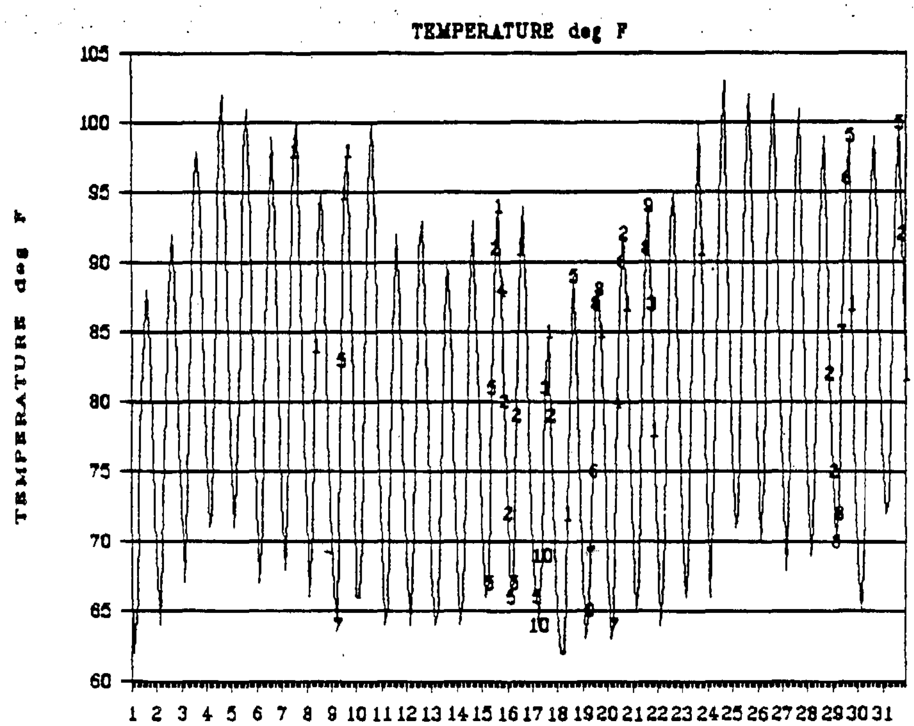


Figure 3.20 Three-hourly temperature and cloud cover at Fresno Airport, August 1986

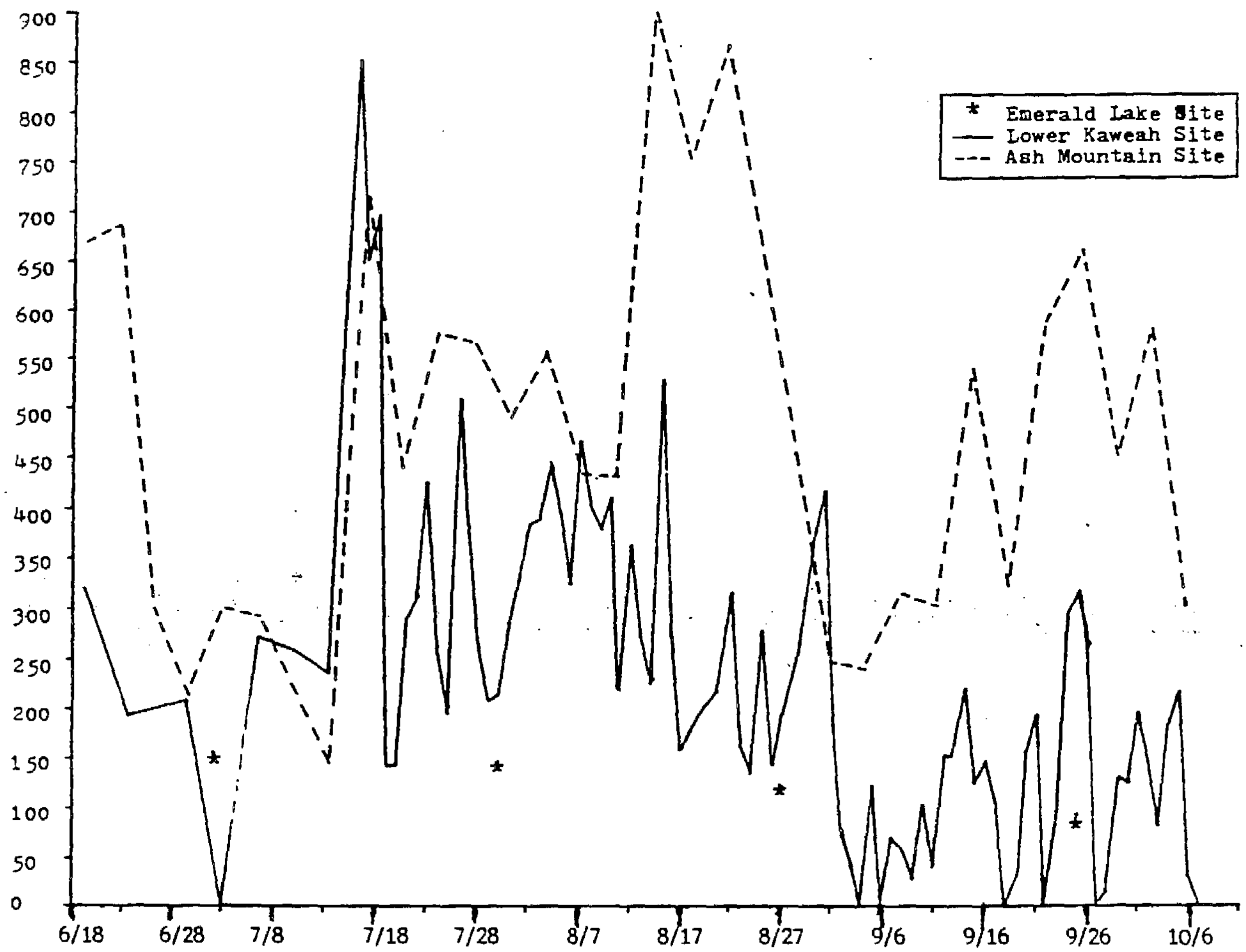


Figure 3.21 Concentration of sulfur from DRUM afterfilters, three sites

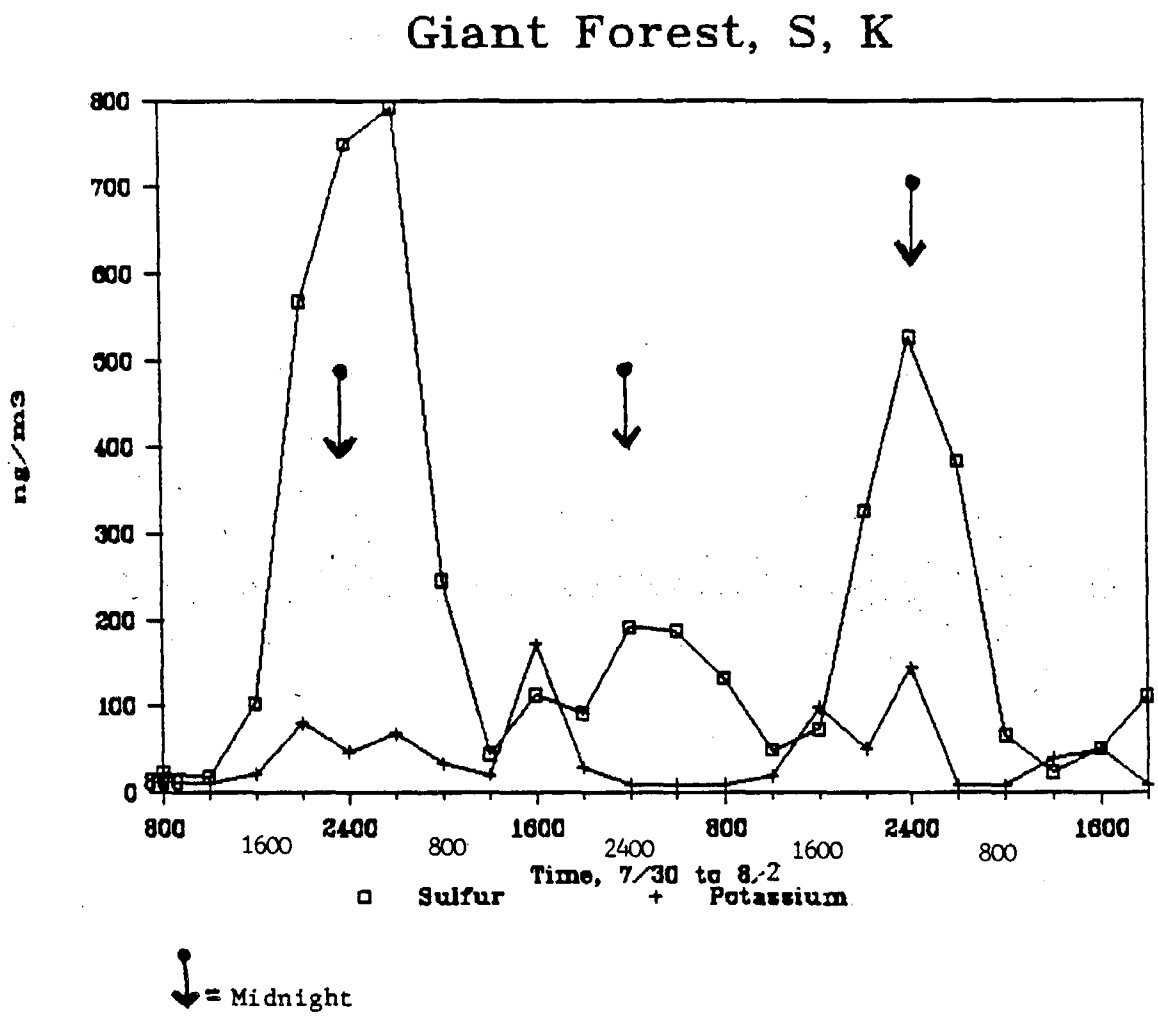


Figure 3.22 Sulfur and potassium concentrations over a three-day period, Giant Forest

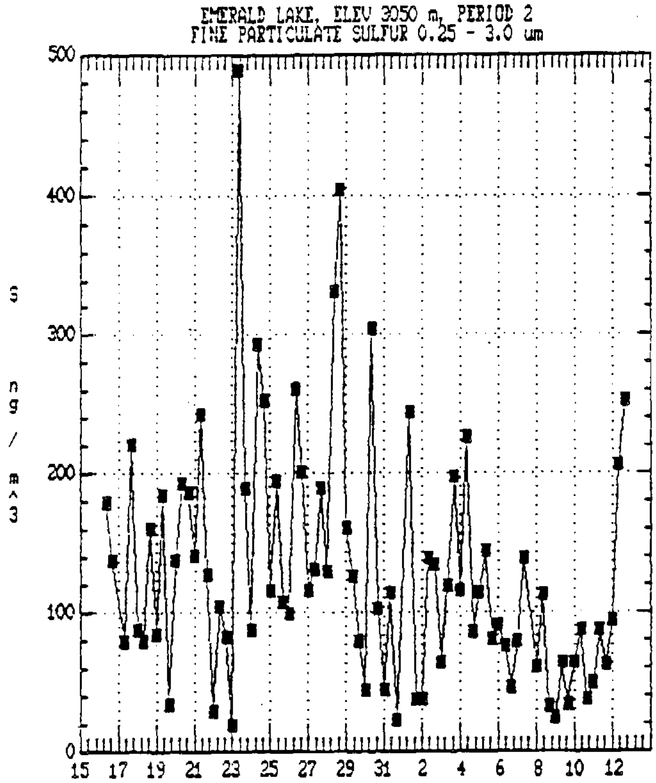


Figure 3.23 Fine particulate sulfur (SPASI) at Emerald Lake, July and August, 1985

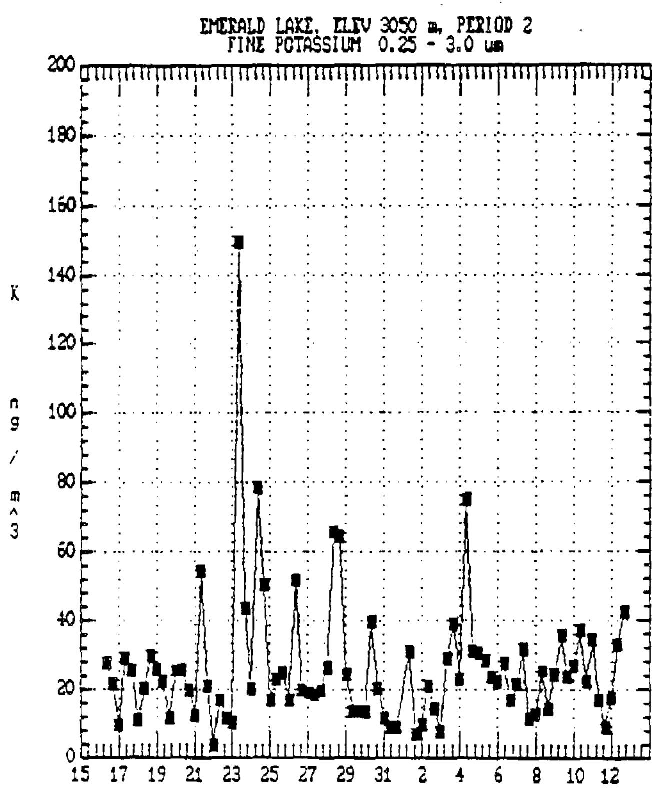


Figure 3.24 Fine potassium (SPASI) at Emerald Lake, July and August 1985

3. The sulfur size distribution was quite complex:

During storm events or the passage of moisture-laden cold fronts, particles grew in size until the mode from 0.6 to 1.15 μm dominated the mass present. The patterns of size and temporal behavior were not regular (i.e. August 1-3; August 13-20, Figure 3.25).

During stable periods characterized by the regular diurnal patterns shown in Figure 3.17 (i.e. August 3-11, in Figure 3.22 and 3.25),

i) Sulfur in the 0.56 to 1.15 μm mode tended to peak in the late afternoon and evening, 9PM (±4 hrs) over 70% of all days, although the pattern was not very regular and this component was occasionally absent.

ii) Sulfur in the main accumulation mode, 0.34 to 0.56 μm, peaked at 7AM (±2 hrs) over 90% of all days, on the nightime downslope winds (Figure 3.26a&b).

iii) Sulfur in the very fine mode, 0.10 to 0.18 μm mode, peaked very regularly at 5PM (±2 hrs) on the hot, upslope daytime winds.

Thus, there are three separate size patterns for sulfur: a bimodal very coarse plus very fine daytime, low humidity, upslope San Joaquin Valley source, and a fine monomodal accumulation mode peak, with much high concentrations, on the nighttime downslope winds. These complex size and temporal patterns strengthen our conclusion that the nightime, downslope sulfur transport has a different immediate source than the daytime upslope contribution from the San Joaquin Valley. We hypothesize that the nighttime accumulation mode peak arises from SO_2 emission plumes from the Bay Area. This transported each night from higher elevation on the cooled, subsiding downslope winds. Such a hypothesis also explains particulate profile data taken from the San Joaquin Valley floor to Mineral King and from the Sacramento Valley floor to Lake Tahoe, each of which showed a transition from mixed boundary layer aerosol at lower elevations to a rather pure sulfate aerosol above 5,000 ft. (Final Report to the California Air Resources Board on Contract No. A6-219-30 "Further Investigation of Air Quality in the Lake Tahoe Basin" March 1979).

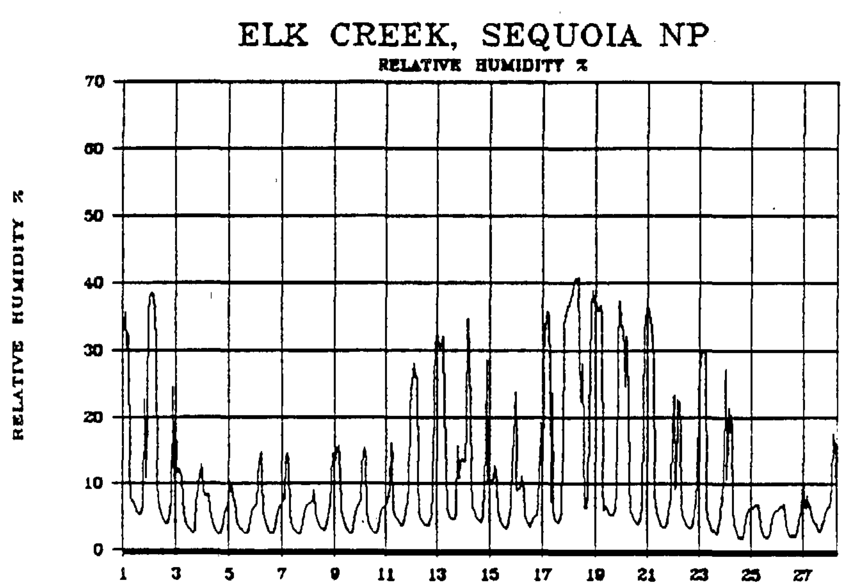
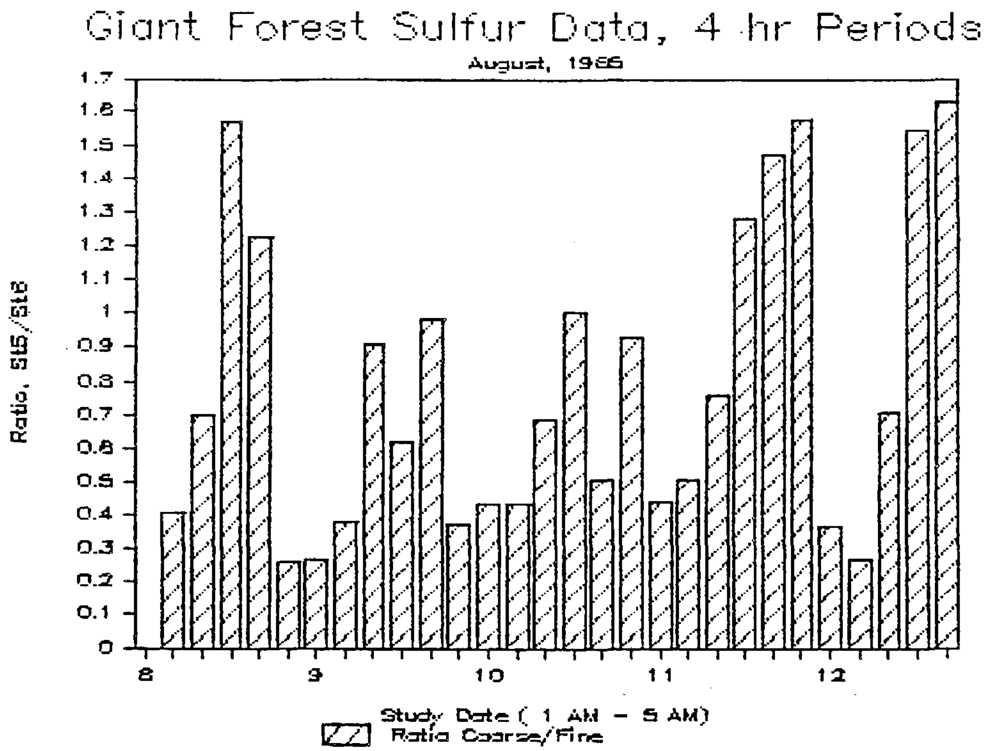


Figure 3.25 Hourly relative humidity at Elk Creek, Sequoia NP, August 1985



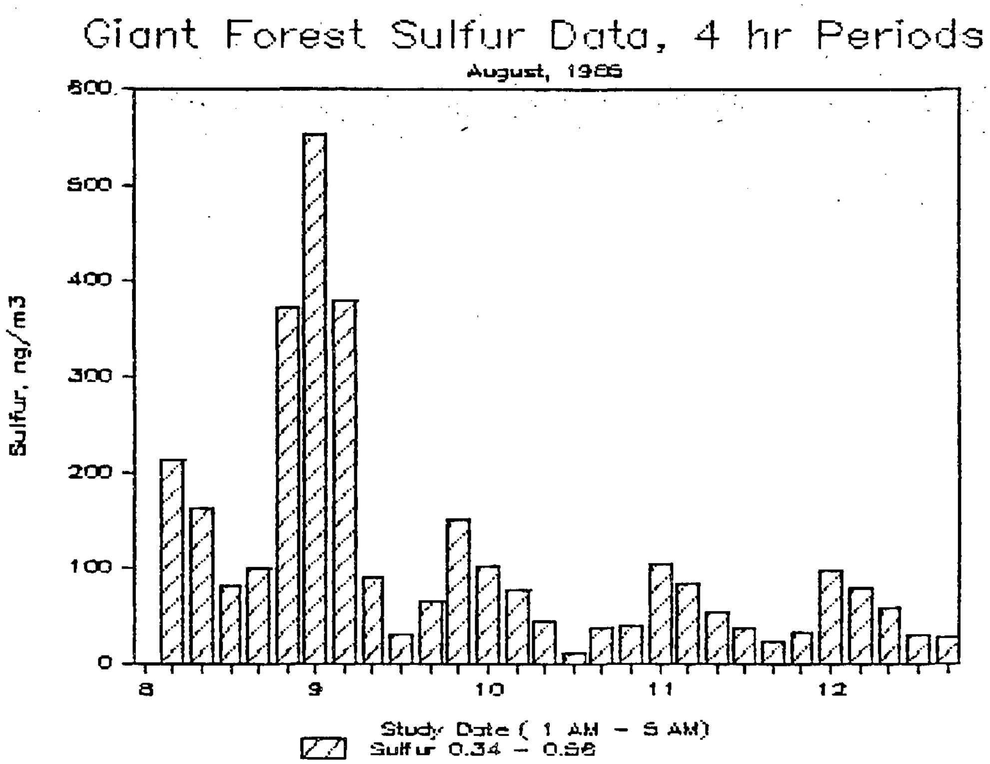


Figure 3.26a and 3.26b Giant Forest sulfur data; concentration vs time and size vs time, August 1985.

4.0 INTERPRETIVE AND STATISICAL PROCEDURES

Primary data reduction of PIXE spectra and data tabulations were performed on a PDP 15/40 computer using the code RACE. Further tabulations and graphics were performed on either an IBM PC or an AT&T 6300 using LOTUS 123. Statistical analyses of data presented in the discussion section were performed using a library of routines STATGRAPHICS on the AT&T 6300.

Factor analyses were performed using the R-factor method, with either a VARIMAX or EQUIMAX factor rotation. Normalized linear variables were calculated as inputs. The Statgraphics procedures automatically take account of missing values. Specifically, in multivariate analyses any samples with even one missing concentration (below detection limit) are omitted from the analysis. The choice of elements for various procedures must balance the need to include many varibles (elements) against the reduced number of cases available. For example, for the stacked filter unit data set at Giant Forest, 103 valid samples were obtained. On only 48 of the fine stage filters was Cu above detection limit; copper was omitted from the factor analysis.

In factor analysis, Varimax is the rotation method most regularly applied to the extracted principal components. This rotation has the effect of simplifying the column structure of the rotated factor matrix, pushing values of the factor scores towards unity or zero. The VARIMAX derived factors tend to be stable with respect to the number of factors chosen. The EQUIMAX rotation procedure takes a middle course between the Varimax and the QUARTIMAX rotation. The latter tends to optimise the ROWS of the factor matrix, tending to create single factors containing all the variance. Equimax tends to distribute the variation between the number of factors chosen. This property has been exploited in analysis of the present data set to explore the decomposition of the derived factors. By starting with two factors, one derives the major components of the aerosol. By incrementing the number of factors stepwise, the first two factors are divided into contributing components. The initial factors can be interpreted in terms of processes, in this case meteorologically dominated transport of aerosol from diverse sources into the sampling region. Subsequent factorization enables individual source

Table 4.1 Correlation matrix of elemental concentrations at Giant Forest (6-25-85 through 11-7-85). Sampler: SFU (fine stage; 0.1-2.5um); 24-hr samples

ELEMENTS	Al	Si	S	K	Ca	Ti	Mn	Fe	Ni	Zn	Br	Pb
Al	1.00	0.89	0.13	0.36	0.92	0.81	0.66	0.91	0.15	0.38	0.64	0.48
Si	0.89	1.00	0.07	0.33	0.90	0.88	0.69	0.99	0.17	0.42	0.65	0.47
S			1.00	-0.18	-0.01	-0.13	0.05	0.10	0.38	-0.02	0.34	0.47
K				1.00	0.54	0.31	0.19	0.32	0.21	0.13	0.15	0.11
Ca	0.92	0.90		0.54	1.00	0.81	0.60	0.89	0.12	0.34	0.56	0.31
Ti	0.81	0.88			0.81	1.00	0.65	0.87	0.03	0.30	0.51	0.28
Mn	0.66	0.69			0.60	0.65	1.00	0.69	-0.07	0.51	0.42	0.46
Fe	0.91	0.99			0.89	0.87	0.69	1.00	0.20	0.41	0.65	0.48
Ni									1.00	0.13	0.19	0.40
Zn							0.51			1.00	0.42	0.49
Br	0.64	0.65	0.34		0.56	0.51	0.42	0.65		0.42	1.00	0.61
Pb	0.48	0.47	0.47				0.46	0.48	0.40	0.49	0.61	1.00

Correlations between fine elemental species at Giant Forest are shown in Table 4.1. Very high correlations (>0.89) exist between silicon and other soil-derived elements (Al, Ca, Ti, and Fe). High correlations exist between Si and Mn(0.69) as expected, but a low correlation exists for K (0.33). We interpret this as evidence of fine smoke at this site, as K occurs also as a smoke tracer. The correlation of Si with Br is based on few observations, and can probably be discounted. Sulfur correlates well with nothing at all, as might be expected at a site dominated by secondary, not primary, aerosols, but the modest correlations of sulfur with Ni (0.38), Br (0.34) and Pb (0.47) are suggestive of its anthropogenic origins, including fuel oil.

Initially five factors were selected and rotated using the EQUIMAX rotation. In addition, two, three, four and six factors have been extracted to investigate how the variation separates as one examines the correlations in finer detail. The final Equimax rotated factor matrix for 5 factors is displayed in Table 4.2.

Table 4.2 Equimax rotated factor scores for Giant Forest fine SFU data

ELEMENT	FACTOR 1	FACTOR 2	FACTOR 3	FACTOR 4	FACTOR 5
Al	0.59	0.60			
Si	0.79				
S					0.67
K				0.77	
Ca	0.60	0.47		0.60	
Ti	0.75				
Mn		0.48	0.56		
Fe	0.79				
Ni					0.65
Zn			0.68		
Br			0.39		0.38
Pb			0.58		0.58

The most significant factor scores have been retained in each column.

FACTOR 1: Al, Si, Ca, Ti, Fe is derived from CRUSTAL material. Samples of local soil were collected at each of the sites, then resuspended and sampled in the laboratory. Results are presented in Table 4.3.

FACTOR 2: Al, Ca, and Mn. May be a local soil high in aluminum.

FACTOR 3: Zn, Mn, Pb and Br. Pb and Br indicate source associated with automobile traffic, and hence either a valley source or local traffic. The source of Zn and Mn is not known, although the correlation coefficients put most Mn in soil.

FACTOR 4: K and Ca. This K may be derived from wood burning, or alternatively from biogenic emissions from the forest. The association with Ca is unexpected.

FACTOR 5: S, Ni, Pb and Br. This signature is an unambiguous indicator of valley pollution, either local or in the southern San Joaquin, carrying evidence of oil burning and automotive exhaust fumes.

Silicon and potassium time plots are presented in Figures 4.1 and 4.2, as key indicator elements for Factor 1 (CRUSTAL) and Factor 4 (POTASSIUM). A similar time plot of S, as an indicator for Factor 5 (VALLEY POLLUTION) was shown earlier as Figure 3.8.

TABLE 4.3: SEQUOIA ELEMENTAL PROFILES* SFU FINE STAGE SOIL AEROSOL PROFILE %

SITE	Mg	Al	Si	K	Ca	Ti	Mn	Fe
AM1		27.8	47.6	3.6	2.4	1.4	0.24	16.6
AM2		23.8	46.7	4.0	2.9	1.3	0.37	20.1
GF1	4.1	20.3	57.1	3.9	1.5	1.1	0.05	11.6
GF2	4.8	27.0	49.7	3.3	3.4	1.0	0.27	10.3
EL1	7.0	20.4	54.2	4.2	1.0	0.9	0.20	11.8
EL2	4.5	24.8	54.7	3.6	0.8	0.8	0.24	10.4
SFU COARSE STAGE (2.5 - 15 μm), SOIL AEROSOL PROFILE %								
AM1		28.9	47.5	4.0	2.5	1.1		15.6
AM2		26.6	47.5	4.5	3.1	1.3	0.19	16.4
GF1		21.2	59.2	4.2	2.8	1.2		11.4
GF2		26.3	52.7	4.2	4.3	0.9	0.22	9.0
EL1		22.8	59.1	5.0	1.8	0.9		10.4
EL2		26.8	58.1	4.0	1.5	0.7	0.18	8.7

* Soil samples sieved and then resuspended in the laboratory as aerosols
AM=Ash Mountain; GF=Giant Forest; EL=Emerald Lake

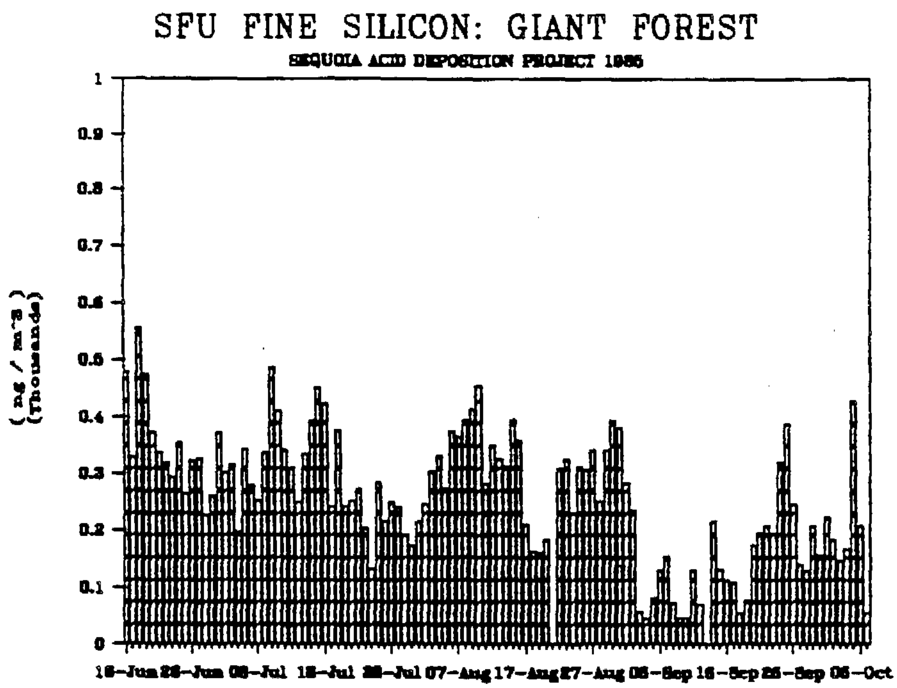


Figure 4.1 SFU fine silicon at Giant Forest, as an indicator of a CRUSTAL Factor

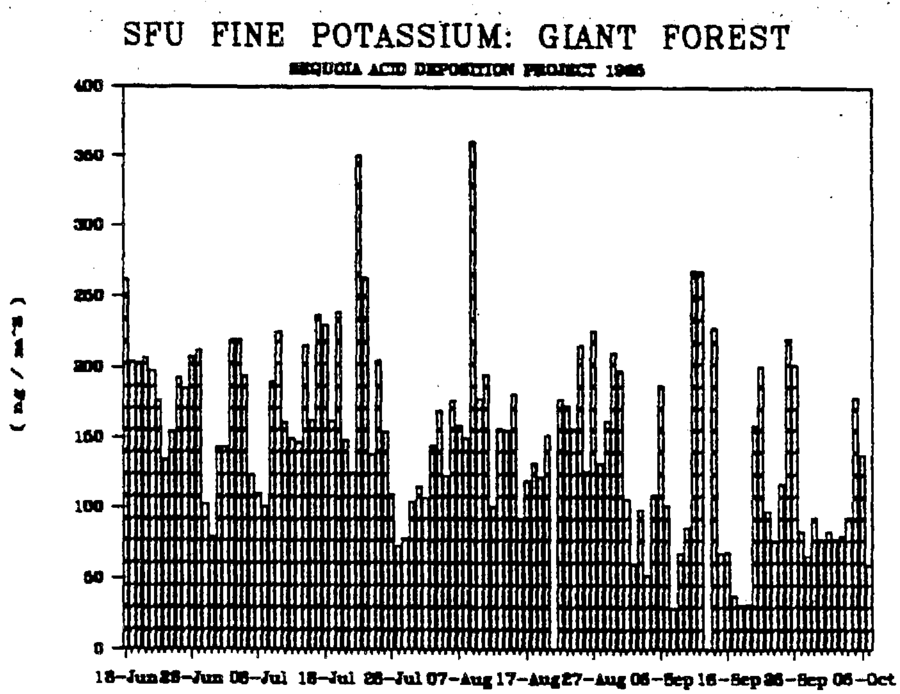


Figure 4.2 SFU fine potassium at Giant Forest, as an indicator of the POTASSIUM factor

5.0 CORRELATION OF PARTICULATE VALUES WITH WET DEPOSITION

Preliminary wet deposition data from the Sequoia study were compared to particle concentrations. While the values contained in Table 5.1 may require some modification, they give broad indications that are unlikely to change significantly. They are included in this summary since they bear directly upon the relevance of particulate data to wet deposition, and may guide future studies.

Four major rain periods occurred during the summer of 1985: July 25/26; September 4/5; September 10/11; and October 8/9; during which the pH values ranged from 4.27 to 5.44. The behavior of fine particles was highly variable, but three different patterns emerged:

1. Frontal synoptic storm: from the west (July 25,26). Generally, low fluxes of SO_4, NO_3, and hydrogen ion. Sulfur particulate values decreased in the storm, and NO_3 values were highest relative to SO_4 in the rain. The source appears to be the central San Joaquin Valley.

2. Southerly storms, often thunderstorms: associated with a low pressure in Nevada (September 4/5 and September 10/11; also see Appendix D for July 1984). In these storms, one has high fluxes of SO_4,NO_3, and H ion, and sulfur particles increased as the storm arrived (along with Ni). Clearly, the storm was carrying along within itself a considerable burden of pollutants, some as aerosol and some incorporated into rainfall. Arsenic, a virtually unique tracer of copper smelters, was seen in particles during one storm. A Gulf of California air mass appears responsible, with pollutants from Arizona, the California desert, and perhaps the southern San Joaquin Valley as shown by the Ni tracer.

3. Northerly frontal storms: (October 8/9). This was a north Pacific storm bearing mostly clean air (and a little salt). It had some intermediate level of SO_4 and NO_3, picked up perhaps across the Bay Area and northern California. The pH was the highest of all storms, 5.44 (essentially CO_2 - buffered value, thus clean). Very high hydrogen/sulfur values occurred in the rainfall, and this storm had a low NO_3 level relative to SO_4 in the rain.

Thus, should these classifications gain statistical weight as more events are studied, it is clear that the dominant $SO_4^{=}$, NO_3^{-}, and H fluxes in wet deposition come from sources south and east of Sequoia. Although the storm cells move in from the south and east, they can also entrain air from the west, too that has been transported at low elevation. This may mix sources in a single storm.

Meteorology of September 1-11 (Rainy period). During September, the western part of the United States experienced a monsoonal change in weather patterns. During this period, warm and moist air of tropical origin moved northward, and brought extensive thunderstorm activity. The precipitation charts show an increase in precipitation over California. On 1 September 1985 the synoptic pattern over California was weak. On the surface, the major feature consisted of a cold front, extending from southern Oregon into northern Kansas, and a weak trough over the eastern part of California. At 500 mb the flow was southwesterly over the northwestern part of the U.S.,

Table 5.1: GIANT FOREST RAIN EVENTS - 1985
(rain values preliminary)

	July 25/26	Sept 4/5	Sept 11	Oct 8/9
Rain(cm)	0.20(0.11)	1.29(0.09)	3.94	0.93(1.16)
pH/litre	4.85(4.27)	4.65(4.45)	4.85	4.81(5.44)
Fluxes H	28(59)	288(18)	556	144(42)
SO_4,NO_3	6.8/5.0	36.1/19.9	96.1/55/2	38.7/18.3
S(part)	decreased 800/486/712	increased 288/358/530	increased 425/623/420	decreased 566/308/290
H/S(p)	1.1/.9/1.1	.9/.7/.8	.6/1.2/.8	1.5/1.8/2.0
RAIN (ratio to SO_4)				
H	0.4%	0.8%	0.6%	3.7%
NO_3	74%	55%	57%	47%
NH_4	28%	20%	22%	16%
Cl	10%	4%	9%	7%
Na	10%	4%	9%	7%
K	20%	3%	1%	5%
Ca	1%	4%	26%	6%
Mg	1%	4%	26%	6%
PARTICLES				
Increases	Br,Cu	S,Ni	S,Ni,Zn, Br,Pb,Na Soil,(H)	Cl,(H)
Reduces	S,K,Pb	Na,soil, Zn,K,(H)	none	Na,K,soil
METEOROLOGY	Frontal, from west	Nevada Low pressure	Nevada Low pressure	Frontal, from north

() Figures in paranthesis refer to the second day of rainfall.
* Fluxes, μ equiv./m^2 per event
** ng/m^3 aerosol

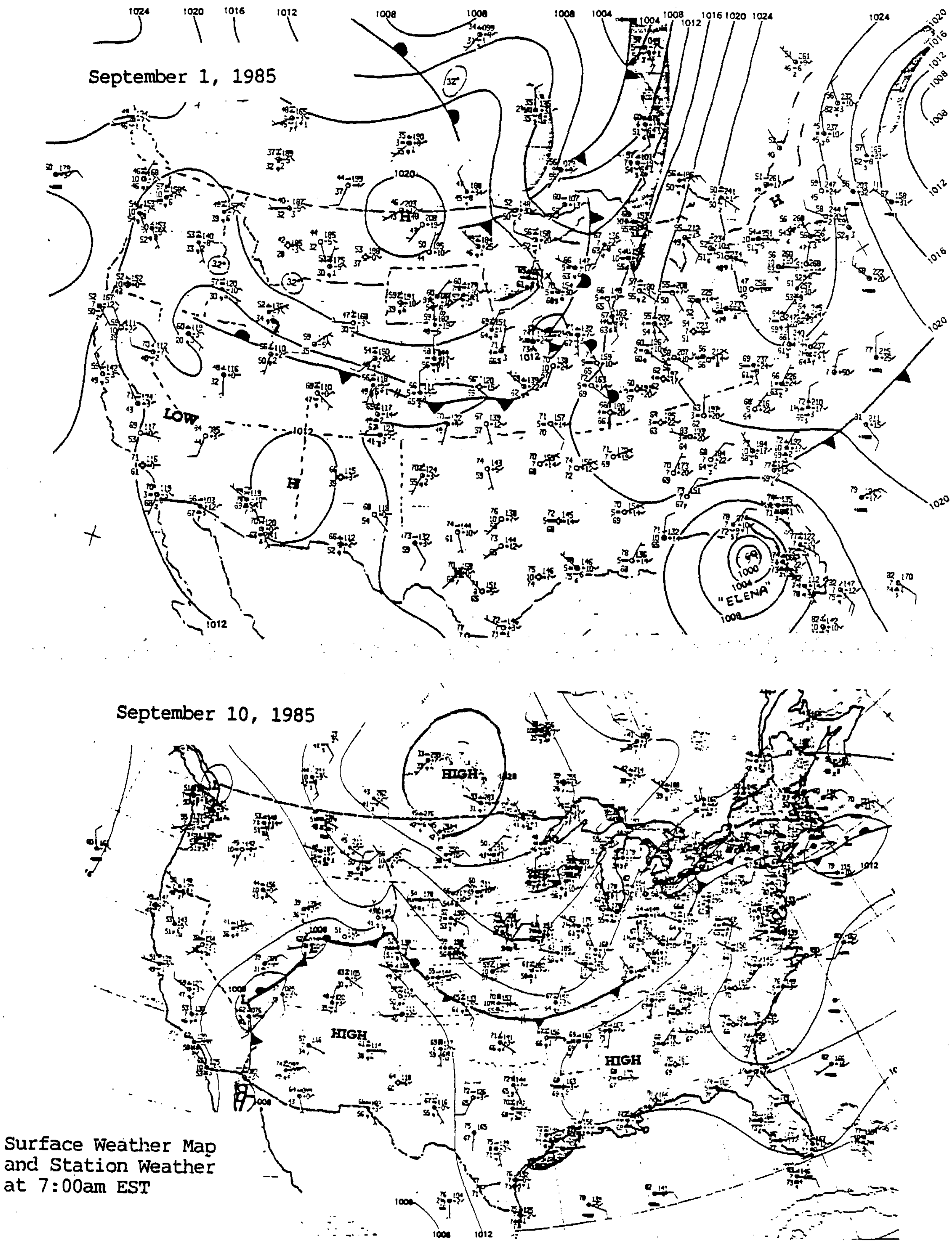


Figure 5.1 Synoptic charts for the USA, September 1 and 10, 1985

and a relatively strong trough was over the northern part of the Pacific Ocean. During the next few days, the 500 mb charts showed a strong mid-level jet stream over California. The velocity distribution about the mid-level jet had significant effects that favored vertical motion. On the surface a cold front extended from southern California into Nevada. Convective activity was expected because a low level convergence area lay underneath a region of upper divergence. The strong circulation around the 500 mb low induced a southward surge of the surface front over California. Baroclinic 500 mb flow was confined very well to the pacific southwest over the U.S. Generally, the 500 mb charts on this period provide evidence of a warm, moist airmass over California. The 500 mb winds were very strong, and directional transport was from the south-southwest. On 10 September 1985, 500 mb low was over California, and winds were southerly over the eastern part of California (Figure 5.1). Surface charts also showed a southerly flow over most of the southwest. Under these conditions, emissions from pollutant sources in Arizona, Mexico, and southern California could be transported northward within a moist airmass to the Sierra Nevada range of California.

High time resolution study of September 10th rain event. The particulate and wet deposition sulfur species during the rain event which began September 10th were associated, as seen by a sharp increase in particulate sulfur at precisely the beginning of rainfall at the Giant Forest site (Figure 5.2). This is all the more unusual because during non-rainy periods during the rest of the month, sulfur particles peaked during their usual 10 PM to 4 AM nighttime pattern, on downslope (east to west) winds. The conclusion is inescapable that this type of rain event, unlike the frontal systems, brings high particulate sulfur concentrations to Giant Forest. It must also be noted that thunderstorm rain events are much more common east of Giant Forest, even at Emerald Lake, since the Giant Forest site lies west of the "Great Western Divide" and is separated by the upper Kern River valley from the main ridge of the Sierra Nevada. Thus, we may hypothesize higher sulfur fluxes at more easterly sites, sites that possess less buffering capacity than the well forested Giant Forest area.

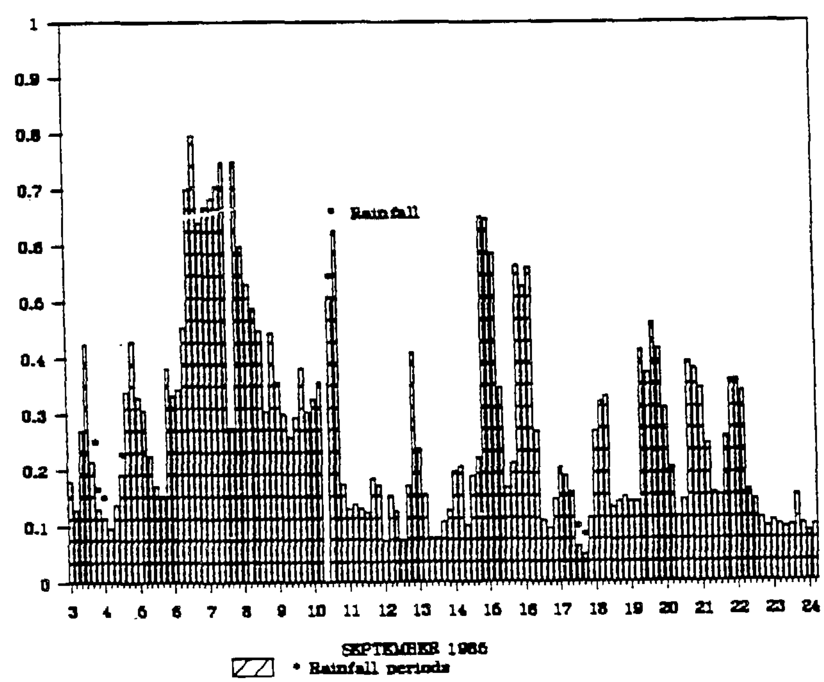


Figure 5.2 Sulfur concentrations, DRUM stage 6, at Giant Forest, 10–24 September 1985

6.0 ESTIMATION OF DRY DEPOSITION FROM PARTICULATE DATA

During the 130 days of the study period, rainfall occurred on less than 10% of all days, and often its duration was only a few hours. During one period (July 26-September 4), 38 days passed with no rainfall at Giant Forest. Thus, dry deposition was the major source of potentially acidic deposition during most of the summer. There are inherent difficulties in evaluation of dry deposition fluxes, but knowledge of particulate concentrations by size and composition are extremely helpful in firming up flux estimates.

It is also important to recall that, although particles may be depositied by dry deposition on needle and leaf surfaces, rapid cooling during evening hours may bring the foliage to the dew point. This could allow droplets of water to form on needle and leaf surfaces already coated with particles deposited over many days and even weeks, with at least the potential of extremely high acidic concentrations for hours every night. Our observations of heavy upper surface damage on Jeffery pine needles at the Giant Forest (Lower Kaweah) site, with no damage on lower surfaces despite equal numbers of stomata, could support such an interpretation, although winter needle damage due to ice also mostly affects the upper needle surface. Since essentially 100% of all Jeffery pines at this elevation show heavy damage (needle loss, tip bunching), it is essential to clarify these mechanisms as they may well modify potential damage limiting strategies of regulatory agencies. We recommend that leaf wetness probes be added to meteorological stations for future studies of acid deposition in forested areas. This will help evaluate the interaction between dry deposition and dew formation.

Table 3.1 shows that coarse (2.5 μm to 15 μm) and fine (less than 2.5 um) mass at Sequoia are approximately equal in magnitude, totaling 25 ug/m^3. Detailed analysis of the fine components gave an estimate of about 18% ammonium sulfate, and probably twice as much ammonium nitrate—based on ratios seen in Sacramento Valley and Lake Tahoe summer studies. Thus, we estimate that over 50% of all fine particulate mass is in acidic particles derived from secondary processes (SO_2 to sulfate, NO_2 to nitrate). Only 9% occurs as fine soils, a potentially buffering component, while the role of the 26% smoke in acidity is unknown.

Coarse particulate mass has much larger soil components, and sulfur is only a very small fraction of the mass. Thus, one would not predict major fluxes of acidity associated with these coarser particles of largely local origins and natural sources, although the concentrations are probably enhanced by man's activities via resuspension processes.

More detailed calculations of dry deposition are being made using DRUM data, and measurements of particulate mitrogen are being made by particle size. With these data, we anticipate firmer estimates of dry deposition at the Giant Forest site.

GLOSSARY OF TERMS, ABBREVIATIONS, AND SYMBOLS

Analytical Techniques

FAST = Forward Alpha Scattering Techniques (H to F)
LIPM = Laser Integrating Plate Method (C soot)
PIXE = Particle Induced X-ray Emission (Na to U)
XRF = X-Ray Fluorescence (Ca to U)

Sampler Systems

DRUM = Davis Rotating Universal-size-cut Monitoring Sampler
SFU = Stack Filter Unit
SPASI = Solar Powered Air Sampling Impactor

Other

AQG = Air Quality Group
ARB = Air Resources Board
CNL = Crocker Nuclear Laboratory
UCD = University of California, Davis
UCSB = University of California, Santa Barbara
UCR = University of California, Riverside

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APPENDICES

A. Sampling activities, summer, 1985

B. Yosemite NP; Comparison Data -- aerosols 1985

C. Aerosol Data -- Ash Mountain
-- Giant Forest
-- Emerald Lake

D. Analysis of rainfall events, summer, 1985

E. DRUM data, Giant Forest, summer, 1985

DATE	ASH MOUNTAIN SFU	ASH MOUNTAIN SPASI FINAL FILTER	ASH MOUNTAIN SPASI DRUM & COARSE FILTER	LOWER KAWEAH SFU	LOWER KAWEAH VI	LOWER KAWEAH DRUM FINAL FILTER	LOWER KAWEAH DRUMS	EMERALD LAKE MINI-SFU	EMERALD LAKE SPASI FINAL FILTER, DRUM & COARSE FILTER
6/18	x	x	x	x	a	x	x	x	k
6/19	x	x	x	x	a	x	x	x	k
6/20	x	x	x	x	a	x	x	x	k
6/21	x	x	x	x	a	b	x	x	k
6/22	x	x	x	x	a	b	x	x	k
6/23	x	x	x	x	a	b	x	x	k
6/24	x	x	x	x	a	b	x	x	k
6/25	x, j	x	x	x	a	b	x	x, i	x, i
6/26	x	x	x	x	a	b	x	x	x
6/27	x	x	x	x	a	b	x	x	x
6/28	x	x	x	x	a	x	x	x	x
6/29	x	x	x	x	a	x	x	x	x
6/30	x	x	x	x	a	x	x	x	x
7/1	x	x	x	x	a	x	x	x	x
7/2	x	x	x	x	a	x	x	x	x
7/3	x	x	x	x	a	x	x	x	x
7/4	x	x	x	x	a	x	x	x	x
7/5	x	x	x	x	a	x	x	x	x
7/6	x	x	x	x	a	x	x	x	x
7/7	x	x	x	x	a	x	x	x	x
7/8	x	x	x	x	a	x	x	x	x
7/9	x	x	x	x	x	x	x	x	x
7/10	x	x	x	x	x	x	x	x	x
7/11	x	x	x	x	x	x	x	x	x
7/12	x	x	x	x	x	x	x	x	x
7/13	x	x	x	x	x	x	x	x	x
7/14	x	x	x	x	x	x	x	x	x
7/15	x	x	x	x	x	x	x	x	x
7/16	x	x	x	x	x	x	x	x	x
7/17	x	x	x	x	x	x	x	x	x
7/18	x	x	x	x	x	x	x	x	x
7/19	x	x	x	x	x	x	x	x	x
7/20	x	x	x	x	x	x	x	x	x
7/21	x	x	x	x	x	x	x	x	x
7/22	x	x	x	x	x	x	x	x	x
7/23	x	x	x	x	x	x	x	x	x
7/24	x	x	x	x	x	x	x	x	x
7/25	c	c	c	c	c	c	c	x	x
7/26	x	x	x	x	x	x	x	x	x
7/27	x	x	x	x	x	x	x	x	x
7/28	x	x	x	x	x	x	x	x	x

(Legend at end)

Table 1: Detailed schedule of events for Sequoia field sampling(6/18/85 to 10/10/85).

DATE	ASH MOUNTAIN: SFU	ASH MOUNTAIN: SPASI FINAL FILTER	ASH MOUNTAIN: SPASI DRUM & COARSE FILTER	LOWER KAWEAH: SFU	LOWER KAWEAH: VI	LOWER KAWEAH: DRUM FINAL FILTER	LOWER KAWEAH: DRUMS	EMERALD LAKE: MINI-SFU	EMERALD LAKE: SPASI FINAL FILTER, DRUM & COARSE FILTER
7/29	x	x	x	x	x	x	x	x	x
7/30	x	x	x	x	x	x	x	x	x
7/31	x	x	x	x	x	x	x	x	x
8/1	x	x	x	x	x	x	x	x	x
8/2	x	x	x	x	x	x	x	x	x
8/3	x	x	x	x	x	x	x	x	x
8/4	x	x	x	x	x	x	x	x	x
8/5	x	x	x	x	x	x	x	x	x
8/6	x	x	x	x	x	x	x	x	x
8/7	x	x	x	x	x	x	x	x	x
8/8	x	x	x	x	x	x	x	x	x
8/9	x	x	x	x	x	x	x	x	x
8/10	x	x	x	x	x	x	x	x	x
8/11	x	x	x	x	x	x	x	x	x
8/12	x	x	x	x	x	x	x	x	x
8/13	x	x	x	x	x	x	x	x	x, j
8/14	x	x	x	x	x	x	x	x	x
8/15	x	x	x	x	x	x	x	x	x
8/16	x	x	x	x	x	x	x	x	x
8/17	x	x	x	x	x	x	x	x	x
8/18	x	x	x	x	x	x	x	x	x
8/19	x	x	x	x	x	x	x	x	x
8/20	x	x	x	x	x	x	x	x	x
8/21	x	x	x	d	e	d	d	x	x
8/22	x	x	x	d	x	d	d	x	x
8/23	x	x	x	x	x	x	x	x	x
8/24	x	x	x	x	x	x	x	x	x
8/25	x	x	x	x	x	x	x	x	x
8/26	x	x	x	x	f	x	x	x	x
8/27	x	x	x	x	f	x	x	x	x
8/28	x	x	x	x	x	g	x	x	x
8/29	x	x	x	x	x	g	x	x	x
8/30	x	x	x	x	x	x	x	x	x
8/31	x	x	x	x	x	x	x	x	x
9/1	x	x	x	x	x	x	x	x	x
9/2	x	x	x	x	x	x	x	x	x
9/3	x	x	x	x	h	x	x	x	x
9/4	x	x	x	x	h	x	x	x	x
9/5	x	x	x	x	h	x	x	x	x
9/6	x	x	x	x	h	x	x	x	x

(Legend at end)

Table 1: (continued)

DATE	ASH MOUNTAIN SFU	ASH MOUNTAIN SPASI FINAL FILTER	ASH MOUNTAIN SPASI DRUM & COARSE FILTER	LOWER KAWEAH SFU	LOWER KAWEAH VI	LOWER KAWEAH DRUM FINAL FILTER	LOWER KAWEAH DRUMS	EMERALD LAKE MINI-SFU	EMERALD LAKE SPASI FINAL FILTER, DRUM & COARSE FILTER
9/7	x	x	x	x	h	x	x	x	x
9/8	x	x	x	x	h	x	x	x	x
9/9	x	x	x	x	h	x	x	x	x
9/10	x	x	x	x	x	x	x	x	x
9/11	x	x	x	x	x	x	x	x	x
9/12	x	x	x	x	x	x	x	x	x
9/13	x	x	x	x	x	x	x	x	x
9/14	x	x	x	x	x	x	x	x	x
9/15	x	x	x	x	x	x	x	x	x
9/16	x	x	x	x	x	x	x	x	x
9/17	x	x	x	x	x	x	x	x	x
9/18	x	x	x	x	x	x	x	x	x
9/19	x	x	x	x	x	x	x	x	x
9/20	x	x	x	x	x	x	x	x	x
9/21	x	x	x	x	x	x	x	x	x
9/22	x	x	x	x	x	x	x	x	x
9/23	x	x	x	x	x	x	x	x	x
9/24	x	x	x	x	x	x	x	x	x
9/25	x	x	x	x	x	x	x	x	x
9/26	x	x	x	x	x	x	x	x	x
9/27	x	x	x	x	x	x	x	x	x
9/28	x	x	x	x	x	x	x	x	x
9/29	x	x	x	x	x	x	x	x	x
9/30	x	x	x	x	x	x	x	x	x
10/1	x	x	x	x	x	x	x	x	x
10/2	x	x	x	x	x	x	x	x	x
10/3	x	x	x	x	x	x	x	x	x
10/4	x	x	x	x	x	x	x	x	x
10/5	x	x	x	x	x	x	x	x	x
10/6	x	x	x	x	x	x	x	x	x
10/7	x	x	x	x	x	x	x	x	x
10/8	x	x	x	x	x	x	x	x	x
10/9								x	x
10/10								x	x

a lack of available electricity
b double sample due to lack of personnel
c power outage-Ash Mountain; 6.6 hours, Lower Kaweah; 7.4 hours
d power outage; 29.4 hours
e mail delay; 9.5 hours
f double sample due to mail delay
g double sample due to operator error
h mail delay-lost entire week
i elevated samplers to avoid marmot damage
j installed new pump
k drum not rotating
| filter or drum change by field operator
x sample received at UCD

Table 1: (continued)

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CROCKER NUCLEAR LABORATORY | DAVIS, CALIFORNIA 95616

DATE: May 1, 1986

TO: Lowell Ashbaugh
Chuck Unger
Eric Fujita

FROM: Tom Cahill

RE: Aerosols, Summer 1984

At your request, I have examined aerosols measured at NPS California sites at Joshua Tree NM (JT), Death Valley NM (DV), Yosemite NP (Y), and Lava Beds NM (LB). The results, shown in Table 1, appear to follow the pattern of the 9/4/85 and 9/11/85 rain events at Sequoia, in that sulfur rose during the event by (207 ± 17)% at Joshua Tree, Death Valley, and Yosemite, but only by 33% at Lava Beds, far to the north. A similar use is seen in lead (although a Pb/As mixture can not be excluded), but not in Ni, Cu, Zn. Mass shows some enhancement, and potassium rises at Yosemite but not elsewhere.

Table 1

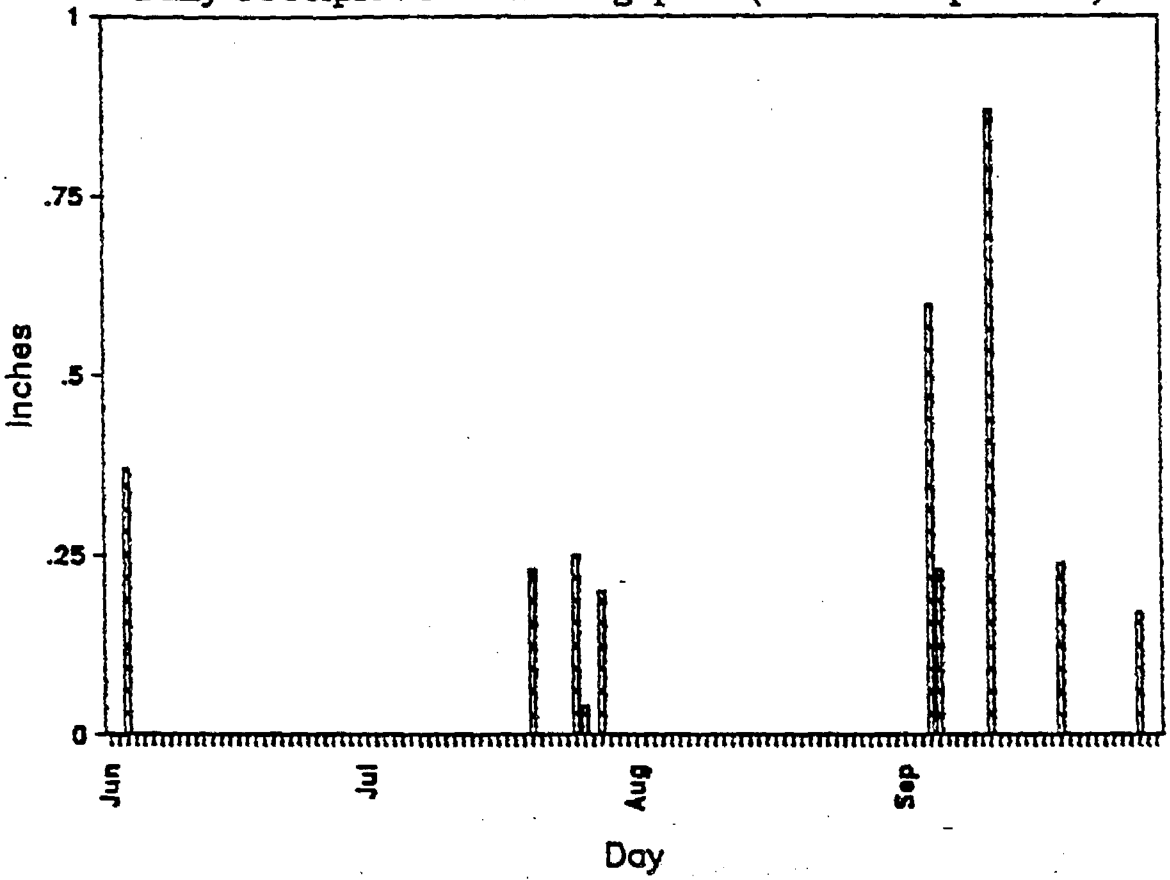
Aerosols for NPS Network, Summer 1984

		Sulfur				Potassium			
		JT	DV	Y	LB	JT	DV	Y	LB
	7/7	394	76	319	177	159	64	61	31
	7/10	537	*	277	160	117	*	85	55
	7/14	423	486	287	167	45	58	60	47
R(1)	7/17	956	619	633	222	65	64	115	62
	7/21	538	128	*	167	45	13	*	38
R(2)	7/24	*	*	*	273	*	*	*	54
	7/28	529	460	514	239	18	45	62	65

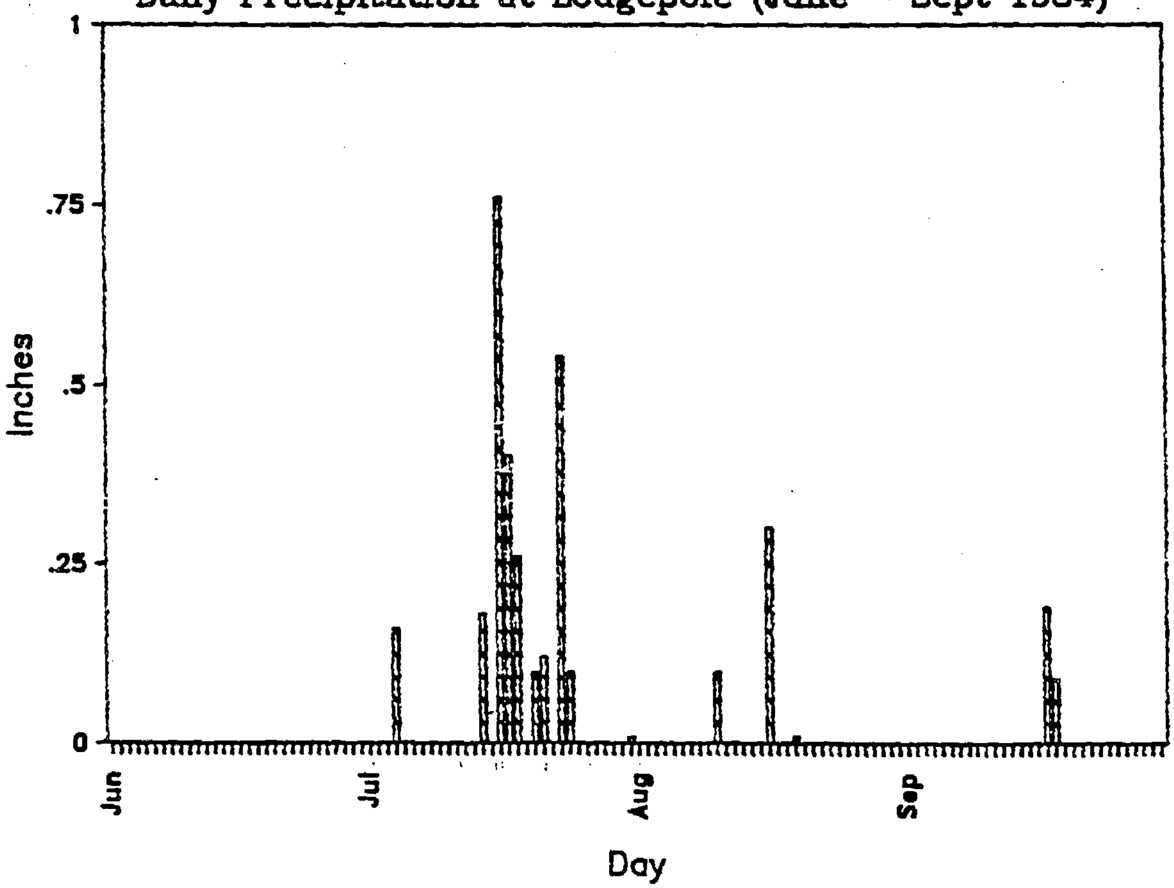
		Pb (As?)				Mass			
		JT	DV	Y	LB	JT	DV	Y	LB
	7/7	<4	<2	<4	<4	6200	2900	500	4300
	7/10	9	*	14	8	7600	*	6400	4700
	7/14	11	<4	<4	<4	3700	4600	6000	5000
R(1)	7/17	26	11	24	<4	11900	6500	8100	6300
	7/21	16	<2	*	<3	5400	1900	*	4700
R(2)	7/24	*	*	*	11	*	*	*	10300
	7/28	<3	6	12	11	5500	4900	7400	6600

R(1) , 7/17 through 7/19 , ∼1.4" rain, Lodgepole, Sequoia NP
R(2) , 7/24, 7/25 ∼0.6" rain, Lodgepole, Sequoia NP

Daily Precipitation at Lodgepole (June – Sept 1985)



Daily Precipitation at Lodgepole (June – Sept 1984)



YOSEMITE NP JUNE - AUG 1985 NPS PARTICULATE NETWORK DATE IS START OF STANDARD NETWORK PERIOD

SFU FINE STAGE (SMALLER THAN 2.5 MICRONS) 3-DAY AVERAGE CONCENTRATIONS IN NANOGRAMS/M**3

DATE	HOURS	H	ABS	NA	MG	AL	SI	S	K	CA	TI	V	CR	MN	FE	NI	CU	ZN	BR	PB	MASS
601	72	74	259	39	5*	42	107	235	25	14	2	2*	2*	2*	23	1*	1*	1*	2*	4*	2400
604	72	111	326	20	4*	34	91	180	17	14	3	1*	1*	1*	26	1*	1*	1*	1*	4	2300
608	72	170	490	39	4*	89	205	193	48	53	5	1*	1*	1	54	1*	1*	2	1*	4	4200
611	72	295	974	112	5*	295	425	394	127	121	9	1*	2*	2*	126	1*	1*	3	1*	8	9500
615	72	335	611	113	4*	218	350	421	145	78	7	1*	1*	1	102	1*	1*	3	3	8	9000
618	72	420	817	110	4*	196	372	750	205	71	7	1*	1*	1	104	1	1*	3	4	8	9900
622	72	326	724	98	5*	131	304	785	156	44	5	1*	1*	1	73	1	1*	2	4	3*	8400
625	72	222	629	273	5*	154	460	418	171	92	8	1*	1*	1	105	1*	5	6	1*	6	6700
629	72	162	465	86	4*	130	236	305	89	47	4	1*	1*	1*	58	1*	2	3	2	2*	4600
702	26	325	1123	60	10*	139	181	387	108	34	3*	3*	3*	3*	51	2*	2*	3	4	6*	7800
706	72	289	630	57	5*	142	196	487	142	39	3	1*	1*	1*	56	1*	1*	2	1*	3*	8100
709	72	433	878	51	5*	134	234	425	299	46	6	2*	2*	2*	67	1	1*	4	2*	4*	10500
713	72	443	679	67	5*	83	194	452	167	32	3	1*	1*	1*	54	1*	1*	5	3	10	10000
716	72	420	736	148	6*	194	388	825	204	56	7	2*	2*	2*	94	1*	1*	4	2*	7	10300
720	72	255	598	37	4*	84	186	405	91	17	4	1*	1*	1	47	1*	3	5	2	4	5700
723	62	218	715	32	4*	68	177	328	101	23	4	1*	1*	1*	47	1*	16	11	1*	4	5800
727	72	167	543	47	4*	51	116	303	46	17	3	1*	1*	1*	31	1*	1*	1	1*	2*	4500
730	72	175	513	82	6*	61	177	354	63	22	2	2*	2*	2*	46	1	3	4	2*	4*	5200
803	72	359	763	49	4*	83	146	285	145	24	3	1*	1*	1*	43	1*	5	6	2	6	7400
806	72	285	708	127	5*	117	147	257	64	26	3	1*	1*	1*	46	1*	1*	1	3	3*	7900
810	72	408	857	154	5*	141	216	412	77	37	4	1*	2*	2	61	1*	1*	1*	4	3*	10300
813	144	429	514	157	3*	72	162	540	70	23	2	1*	1*	1	45	1	2	3	3	3	10100
817	144	429	514	157	3*	72	162	540	70	23	2	1*	1*	1	45	1	2	3	3	3	10100
824	72	750	1128	51	5*	89	92	296	86	18	2	1*	1*	1	30	1	2	3	1*	3*	13000
827	72	2311	2701	13*	10*	116	231	520	165	32	4	3*	3*	3*	56	2*	11	10	3*	6*	39300
831	70	1306	1498	90	8*	212	270	376	125	37	6	2*	3*	3*	83	2*	49	43	3*	9	28500

SFU COARSE STAGE (2.5 TO 15 MICRONS) 3-DAY AVERAGE CONCENTRATIONS IN NANOGRAMS/M**3

DATE	HOURS	NA	MG	AL	SI	P	S	CL	K	CA	TI	V	CR	MN	FE	NI	CU	ZN	BR	PB	MASS
601	72	56*	595	40*	797	34*	38	25*	73	75	12	9*	7	9*	117	7*	6*	7	5*	10*	4100
604	72	56*	460	162	528	34*	44	25*	100	66	10*	9*	9*	9*	92	7*	6*	10	5*	11*	5600
608	72	43*	38*	105	452	26*	19*	19*	59	54	10	7*	7*	7*	131	5*	5*	9	3*	7*	5400
611	72	54*	670	628	1971	32*	38	24*	188	259	23	9*	9*	20	442	6*	6*	9	15	10*	9600
615	72	60	40*	456	1317	27*	21*	20*	146	173	32	7*	8*	12	325	5*	5*	8	5*	8*	12700
618	72	510	640	943	2593	40*	82	30*	310	288	32	11*	12*	12	514	8*	7*	12	6*	13*	12300
622	72	57	38*	378	1233	25*	30	18*	144	151	15	7*	6	7*	305	5*	4*	8	4*	7*	10400
625	72	50*	391	577	1849	31*	24*	23*	185	245	28	8*	9*	8*	395	6*	5*	8	4*	9*	12800
629	72	48*	39	283	1043	29*	22*	21*	119	159	8*	8*	8*	7	252	5*	4	7	4*	9*	7800
702	26	182*	2578	1073	2388	116*	95	85*	237	251	33*	31*	33*	32*	390	22*	20*	19	18*	33*	8800
706	72	71*	64*	1021	2270	45*	69	33*	263	372	44	12*	13*	26	456	9*	8*	16	22	13*	8500
709	72	71*	64*	1208	2273	46*	103	33*	246	318	30	12*	13*	16	473	9*	8*	14	7*	13*	9800
713	72	47	42*	331	891	29*	24	21*	101	115	12	8*	8*	11	227	6*	5*	6	5*	8*	6700
716	72	75*	67*	1274	2937	48*	161	35*	261	339	34	13*	14*	13*	546	9*	8*	6*	7*	14*	10100
720	72	69*	62*	891	1279	43*	67	32*	120	117	23	12*	13*	12*	244	8*	8*	6*	6*	13*	5000
723	62	76*	68*	734	1631	47*	87	35*	129	129	29	13*	14*	13*	324	9*	8*	6*	8*	14*	12000
727	72	68*	61*	702	1711	43*	54	32*	167	157	22	12*	12*	9	322	8*	8*	12	6*	13*	7700
730	72	59*	797	452	1569	37*	24	27*	114	128	17	10*	10*	10*	289	7*	6*	5*	5*	11*	6800
803	72	41*	36*	113	573	24*	19*	18*	60	60	10	6*	7*	7*	134	5*	4*	3*	3*	7*	6900
806	72	52*	46*	260	1047	31*	23*	23*	99	103	13	8*	9*	8	241	6*	5*	7	5*	10*	8200
810	72	71	49*	280	1143	33*	25*	24*	108	153	12	9*	9*	9*	327	6*	6*	8	6*	12*	9400
813	144	24*	58	190	732	14*	35	10*	68	78	10	4*	4*	4	174	3*	2*	3	2*	4*	6200
817	144	24*	58	190	732	14*	35	10*	68	78	10	4*	4*	4	174	3*	2*	3	2*	4*	6200
824	72	70*	710	260	1044	43*	31	32*	84	69	10	12*	12*	23	210	9*	8*	6*	7*	14*	6200
827	72	112	105*	527	1414	71*	54*	53*	154	145	20*	19*	21*	20*	299	14*	13*	23	10*	21*	13100
831	70	451	81*	1019	2609	55*	71	41*	199	245	65	15*	16*	15	562	10*	10*	39	9*	19*	18800

* MINIMUM DETECTABLE LIMIT OF ANALYSIS; ACTUAL CONCENTRATION IS LESS THAN THIS AMOUNT.

YOSEMITE NP JUNE - AUG 1985 (SUMMER) NPS PARTICULATE MONITORING NETWORK

FINE PARTICLES SMALLER THAN 2.5 MICRONS, COARSE PARTICLES BETWEEN 2.5 AND 15 MICRONS CONCENTRATIONS IN NANOGRAMS/M**3

		CASES FOUND	ARITHMETIC MEAN CONCENTRATIONS AND STANDARD DEVIATIONS JUN	JUL	AUG	SEASON	DISTRIBUTIONS OF CONCENTRATIONS MINIMUM	1/4	MEDIAN	3/4	MAXIMUM
S	FINE	26/26	409 +/- 223	441 +/- 156	403 +/- 119	418 +/- 167	180	257	389	441	825
S	COARSE	18/26	31 +/- 24	76 +/- 43	29 +/- 20	46 +/- 37	10	24	33	67	161
CU	FINE	11/26	2 +/- 1	3 +/- 5	9 +/- 16	4 +/- 10	1	1	3	10	49
CU	COARSE	1/26	INSUFFICIENT DATA								
ZN	FINE	23/26	3 +/- 1	4 +/- 3	9 +/- 14	5 +/- 8	1	3	4	9	43
ZN	COARSE	20/26	9 +/- 2	9 +/- 6	11 +/- 13	9 +/- 8	2	3	8	13	39
PB	FINE	14/26	5 +/- 3	4 +/- 3	4 +/- 2	4 +/- 3	1	2	3	5	10
PB	COARSE	0/26	INSUFFICIENT DATA								
BR	FINE	12/26	2 +/- 1	2 +/- 1	3 +/- 1	2 +/- 1	1	1	2	3	4
SI	FINE	26/26	283 +/- 133	205 +/- 75	178 +/- 57	224 +/- 102	91	116	177	216	460
SI	COARSE	26/26	1309 +/- 713	1883 +/- 633	1162 +/- 644	1463 +/- 713	452	713	1152	1631	2937
AL	FINE	26/26	143 +/- 84	106 +/- 48	113 +/- 47	121 +/- 63	34	63	84	121	295
AL	COARSE	25/26	395 +/- 292	854 +/- 326	355 +/- 295	541 +/- 374	20	260	364	734	1274
K	FINE	26/26	109 +/- 68	136 +/- 79	100 +/- 39	116 +/- 64	17	64	88	136	299
K	COARSE	26/26	147 +/- 76	182 +/- 69	105 +/- 49	146 +/- 71	59	69	106	154	310
CA	FINE	26/26	59 +/- 35	32 +/- 13	28 +/- 7	40 +/- 26	14	23	26	37	121
CA	COARSE	26/26	163 +/- 87	214 +/- 106	116 +/- 62	166 +/- 93	54	78	116	163	372
FE	FINE	26/26	75 +/- 37	55 +/- 18	51 +/- 16	61 +/- 27	23	31	46	56	126
FE	COARSE	26/26	286 +/- 151	363 +/- 110	265 +/- 137	306 +/- 135	92	151	254	324	562
TI	FINE	25/26	6 +/- 2	4 +/- 2	3 +/- 1	4 +/- 2	2	2	3	4	9
TI	COARSE	22/26	18 +/- 11	25 +/- 10	18 +/- 19	20 +/- 14	4	11	18	25	65
CL	COARSE	0/26	INSUFFICIENT DATA								
MN	FINE	10/26	1 +/- 0	1 +/- 0	1 +/- 1	1 +/- 0	1	1	1	1	2
V	FINE	0/26	INSUFFICIENT DATA								
H	FINE	26/26	235 +/- 116	303 +/- 109	785 +/- 700	428 +/- 453	74	218	383	443	2311
MASS	FINE	26/26	6300 +/- 3000	7500 +/- 2300	15800 +/-11600	9700 +/- 7800	2300	5700	8000	10300	39300
MASS	COARSE	26/26	9000 +/- 3400	8400 +/- 2100	9400 +/- 4500	8900 +/- 3300	4100	5000	7300	9400	18800
SOIL	FINE	26/26	1202 +/- 599	928 +/- 355	828 +/- 253	992 +/- 446	339	538	735	992	1975
SOIL	COARSE	26/26	4372 +/-2487	6699 +/-2280	3836 +/-2279	5012 +/-2591	1507	2370	3810	5702	10280

SOIL = SI * 2.14 + AL * 1.89 + K * 1.20 + CA * 1.40 + FE * 1.36 + TI * 1.67 (FACTORS TO INCLUDE OXIDE)

WHEN A CONCENTRATION IS LESS THAN THE MINIMUM DETECTABLE LIMIT, 1/2 OF THE LIMIT IS USED.

ASH MOUNTAIN
****
STACKED FILTER UNIT, FINE STAGE.
STATISTICS OF 3-4 DAY SAMPLES.

All concentrations in ng/m^3

	Al	Si	S	Cl	K	Ca
NUMBER ABOVE D.L	32	32	32	0	32	32
AVERAGE **	126.6	345.7	675.8		142.1	49.8
STD DEV	53.2	131.3	172.0		59.5	18.7
MAXIMUM	250.4	609.7	1076.5	DL	330.9	91.0
MINIMUM	11.8	35.0	381.4	DL	46.3	13.6
DET LIM				3.3		

	Ti	V	Cr	Mn	Fe	Ni
NUMBER ABOVE D.L	32	15		25	32	28
AVERAGE **	7.0	1.4		1.7	98.5	3.5
STD DEV	2.8	0.7		0.9	33.3	1.3
MAXIMUM	12.4	3.5	DL	4.1	156.7	7.0
MINIMUM	1.8	1.3	DL	0.6	29.8	1.8
DET LIM		1.0	1.0	1		1

	Cu	Zn	Br	Pb	Soot C	Fine mass
NUMBER ABOVE D.L	28	30	18	30	32	32
AVERAGE **	2.7	5.8	5.0	14.0	380	10670
STD DEV	1.6	2.7	3.0	5.0	110	2170
MAXIMUM	6.5	15.8	16.2	24.8	670	15610
MINIMUM	0.9	2.4	5.1	6.7	240	7390
DET LIM	1	1	1	1		

** Average calculated using (0.5*DET LIM) for missing values.

AVERAGE ELEMENTAL RATIOS (VALUES >DL ONLY)

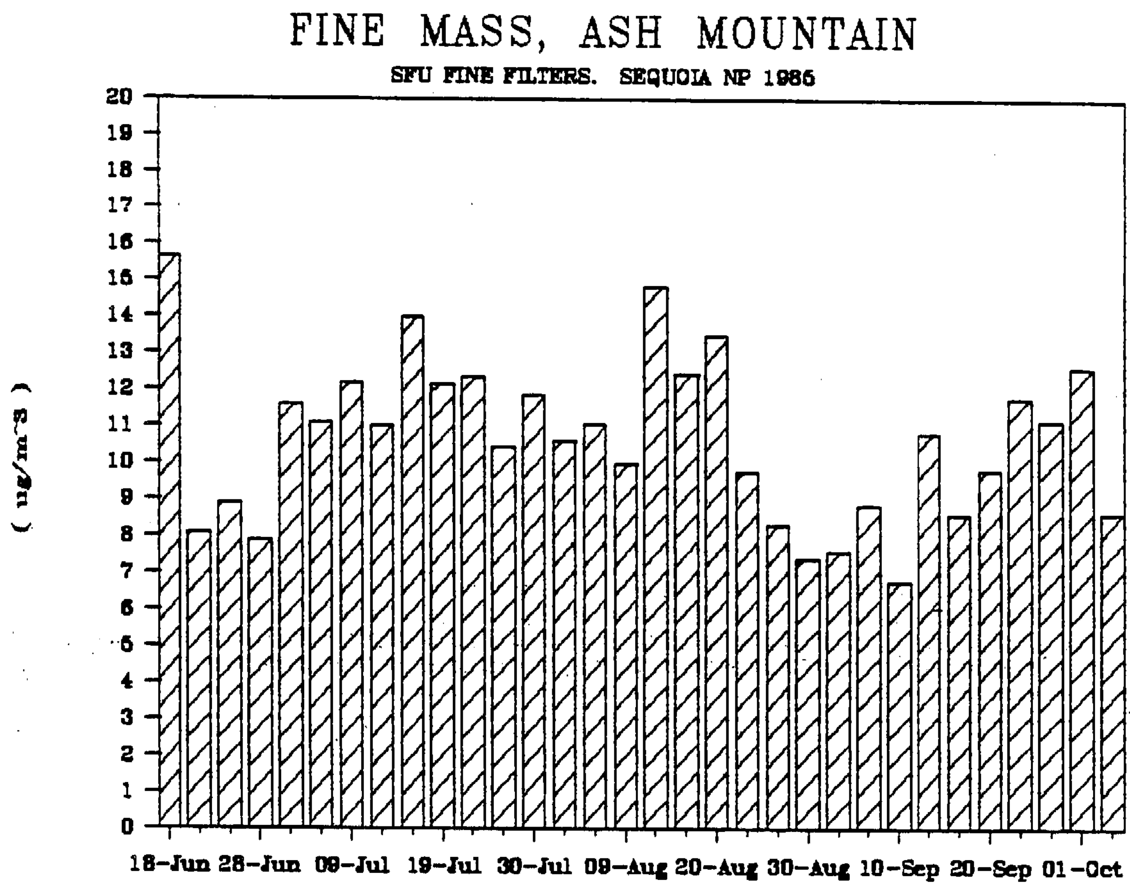
Ni/V	2.0	14 cases
Pb/Br	2.8	17 cases
K/Fe	1.5	32 cases
Zn/Cu	2.5	26 cases
S/Fine mass	6.3 %	
(NH4)2.SO4/Fine mass	26.1 %	

ASH MOUNTAIN, SEQUOIA NP, SUMMER 1985.

STACKED FILTER UNIT GRAVIMETRIC MASS AND
LIPM SOOT CARBON CONCENTRATIONS.

SAMPLE START DATE	SOOT C LIPM ** ug/m^3	SFU MASS FINE ug/m^3	SFU MASS COURSE ug/m^3	SOOT C/ FINE MASS %	FINE/ TOTAL MASS %
18-Jun	0.61	15.61	33.50	3.9	31.8
21-Jun	0.30	8.08	16.71	3.8	32.6
25-Jun	0.33	8.88	23.96	3.7	27.0
28-Jun	0.27	7.88	22.45	3.4	26.0
02-Jul	0.43	11.58	28.85	3.7	28.6
05-Jul	0.38	11.11	23.92	3.4	31.7
09-Jul	0.47	12.17	33.47	3.9	26.7
12-Jul	0.31	11.01	9.28	2.9	54.3
16-Jul	0.67	13.96	26.20	4.8	34.8
19-Jul	0.33	12.15	15.48	2.7	44.0
23-Jul	0.49	12.36	17.51	4.0	41.4
26-Jul	0.38	10.44	8.67	3.6	54.6
30-Jul	0.50	11.84	23.35	4.2	33.7
02-Aug	0.42	10.60	18.23	4.0	36.8
06-Aug	0.43	11.04	27.73	3.9	28.5
09-Aug	0.37	9.98	20.72	3.7	32.5
13-Aug	0.52	14.81	32.28	3.5	31.4
16-Aug	0.40	12.44	20.68	3.2	37.6
20-Aug	0.52	13.46	24.29	3.8	35.7
23-Aug	0.32	9.77	31.08	3.3	23.9
27-Aug	0.31	8.31	25.32	3.7	24.7
30-Aug	0.31	7.39	24.22	4.1	23.4
03-Sep	0.25	7.61	12.53	3.3	37.8
06-Sep	0.24	8.83	16.98	2.8	34.2
10-Sep	0.27	6.77	9.53	3.9	41.5
13-Sep	0.36	10.79	12.21	3.3	46.9
17-Sep	0.33	8.59	14.17	3.8	37.7
20-Sep	0.35	9.79	14.07	3.6	41.0
24-Sep	0.51	11.75	31.84	4.3	27.0
27-Sep	0.32	11.13	32.12	2.9	25.7
01-Oct	0.26	12.59	26.71	2.1	32.0
04-Oct	0.28	8.63	11.93	3.2	42.0
	----	-----	-----	----	-----
AVERAGE	0.38	10.67	21.56	3.6	34.6
STD DEV	0.11	2.17	7.57	0.5	8.0
COUNT	32	32	32	32	32

Updated April 26 1986.



FINE MASS, ASH MOUNTAIN
SFU FINE FILTERS. SEQUOIA NP 1986
(ug/m^3)
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
18-Jun
28-Jun
09-Jul
19-Jul
30-Jul
09-Aug
20-Aug
30-Aug
10-Sep
20-Sep
01-Oct

ASH MOUNTAIN PERIOD 1. DATA O/P 12/18/85

SITE ASH MOUNTAIN FILES 30101/2/3
PERIO 1 N.B. 4 HOURS SHORT=1 STEP ANAL ON12/18/85
SAMPLSPASI O/P ON 12/18/85

FRACTIONA DAY	ACTUAL HOUR	INDEX	ID	MO	DY	NOMINAL HR	DATE	AL	SI	S	K	CA	FE	CU	ZN
18.67	16	1	1	6	18	16	18-Jun		23.8	111.0	34.6	94.0	6.7	25.7	24.6
18.83	20	2	2	6	18	20	18-Jun		72.3	265.3	95.3		23.0	28.8	28.0
19.00	0	3	3	6	19	0	19-Jun	49.3	134.8	287.2	88.6	20.4	39.6	41.7	11.3
19.17	4	4	4	6	19	4	19-Jun	53.7	116.4	256.4	77.4	22.7	34.9	14.5	8.4
19.33	8	5	5	6	19	8	19-Jun	24.7	73.5	196.3	55.4	11.2	18.9	12.9	7.9
19.50	12	6	6	6	19	12	19-Jun	38.0	99.7	246.3	55.2	21.3	29.1		
19.67	16	7	7	6	19	16	19-Jun	59.5	119.7	293.8	77.4	22.5	35.1		
19.83	20	8	8	6	19	20	19-Jun	112.3	93.3	355.4	85.8	25.7	38.1		
20.00	0	9	9	6	20	0	20-Jun	41.2	76.8	345.9	70.1	21.3	31.0		
20.17	4	10	10	6	20	4	20-Jun	45.9	139.4	281.5	65.9	17.4	31.6		
20.33	8	11	11	6	20	8	20-Jun	46.6	119.9	204.2	41.5	28.4	35.9		
20.50	12	12	12	6	20	12	20-Jun	33.3	125.2	210.0	55.6	21.9	36.5		
20.67	16	13	13	6	20	16	20-Jun	74.3	119.0	234.6	34.2	28.1	41.6		
20.83	20	14	14	6	20	20	20-Jun	27.7	124.7	246.3	41.6	20.5	33.2		
21.00	0	15	15	6	21	0	21-Jun	11.9	80.9	198.4	31.1	18.9	33.3		
21.17	4	16	16	6	21	4	21-Jun	29.2	75.6	201.8	33.1	15.5	25.6		
21.33	8	17	17	6	21	8	21-Jun	19.2	73.3	160.9	30.2	20.2	27.9		
21.50	12	18	18	6	21	12	21-Jun		54.3	181.2	42.3	13.2	20.5		
21.67	16	19	19	6	21	16	21-Jun	34.3	69.6	274.0	57.9	19.3	38.2		
21.83	20	20	20	6	21	20	21-Jun	62.7	155.5	271.9	76.3	41.5	98.9		
22.00	0	21	21	6	22	0	22-Jun	23.2	70.1	240.1	38.0	7.1	47.3		
22.17	4	22	22	6	22	4	22-Jun	52.3	83.2	248.2	53.9	13.2	36.1		
22.33	8	23	23	6	22	8	22-Jun		73.5	261.0	49.2	32.0	25.8		
22.50	12	24	24	6	22	12	22-Jun		98.4	281.2	64.8	17.8	23.4		
22.67	16	25	25	6	22	16	22-Jun		89.5	305.4	66.6	12.0	32.6		
22.83	20	26	26	6	22	20	22-Jun	63.0	91.8	307.1	54.6	10.0	33.4		6.9
23.00	0	27	27	6	23	0	23-Jun	29.0	55.6	239.0	30.0	11.1	21.0		
23.17	4	28	28	6	23	4	23-Jun	26.3	53.9	248.1	28.3		17.5		
23.33	8	29	29	6	23	8	23-Jun	30.0	54.7	255.8	27.3	13.6	20.9		
23.50	12	30	30	6	23	12	23-Jun		83.8	-369.4	46.7	13.5	33.9		
23.67	16	31	31	6	23	16	23-Jun		56.3	492.8	67.8		26.9		
23.83	20	32	32	6	23	20	23-Jun	56.8	84.3	746.1	84.6	19.0	41.7		
24.00	0	33	33	6	24	0	24-Jun		90.3	688.1	74.1	33.7	34.3		
24.17	4	34	34	6	24	4	24-Jun	44.8	122.3	539.0	51.1	35.3	53.1		
24.33	8	35	35	6	24	8	24-Jun	32.0	109.1	269.7	30.4	27.9	42.1		5.6
24.50	12	36	36	6	24	12	24-Jun	35.8	74.6	249.1	34.1	22.3	28.4		
24.67	16	37	37	6	24	16	24-Jun	69.2	112.8	349.2	46.2	25.0	28.2		7.8
24.83	20	38	38	6	24	20	24-Jun	39.0	110.6	497.6	41.5	23.1	26.8	11.1	
25.00	0	39	39	6	25	0	25-Jun		66.2	728.7	44.6	14.9	20.7	17.2	8.7
25.17	4	40	40	6	25	4	25-Jun	38.3	76.1	590.5	50.8	10.6	21.1	8.5	8.1
25.33	8	41	1	6	25	8	25-Jun		114.1	304.1	59.9	26.6	27.2	21.8	
25.50	12	42	2	6	25	12	25-Jun		98.3	279.6	63.4	40.3	57.7	15.6	
25.67	16	43	3	6	25	16	25-Jun	55.0	87.3	270.6	60.4	13.5	33.0		
25.83	20	44	4	6	25	20	25-Jun		102.5	275.2	41.1		30.2	33.7	18.9
26.00	0	45	5	6	26	0	26-Jun		63.4	310.0	44.2	19.6	24.4	69.1	33.5
26.17	4	46	6	6	26	4	26-Jun	31.9	63.8	260.8	33.1	19.7	26.8	222.5	115.1
26.33	8	47	7	6	26	8	26-Jun	40.4	86.2	210.4	34.3	20.0	35.0	573.3	33.2
26.50	12	48	8	6	26	12	26-Jun	33.3	91.8	160.6	46.7	22.2	49.5	1160.9	659.4
26.67	16	49	9	6	26	16	26-Jun	40.5	79.4	133.2	32.9	10.8	48.6	1420.4	795.0
26.83	20	50	10	6	26	20	26-Jun	49.5	87.6	146.0	38.9	22.4	36.8	957.0	558.1
27.00	0	51	11	6	27	0	27-Jun	65.1	93.8	114.0	33.8	23.6	35.5	373.9	209.6
27.17	4	52	12	6	27	4	27-Jun	23.9	72.8	110.7	26.9	14.3	20.9	96.5	60.0
27.33	8	53	13	6	27	8	27-Jun	30.9	29.0	101.4	24.5	8.8	10.7	32.9	17.5
27.50	12	54	14	6	27	12	27-Jun	30.4	39.7	109.0	30.8		17.2	40.6	22.6
27.67	16	55	15	6	27	16	27-Jun		31.3	128.0	52.8	14.9	16.4	26.9	19.8
27.83	20	56	16	6	27	20	27-Jun		39.9	148.8	59.9	9.7	18.8	28.0	15.0
28.00	0	57	17	6	28	0	28-Jun		50.3	140.9	59.0	11.7	19.8	18.4	14.5
28.17	4	58	18	6	28	4	28-Jun	55.8	45.3	137.9	63.2	33.9	50.9	18.4	18.7
28.33	8	59	19	6	28	8	28-Jun	21.6	98.7	155.4	39.6	17.4	15.5	17.8	8.6
28.50	12	60	20	6	28	12	28-Jun	25.2	43.4	168.2	49.2		16.5	7.2	7.2
28.67	16	61	21	6	28	16	28-Jun			179.3	42.8	12.1	17.6		
28.83	20	62	22	6	28	20	28-Jun		47.2	120.9	45.5	58.9	17.7	6.8	6.6
29.00	0	63	23	6	29	0	29-Jun	14.5	83.3	81.0	63.8	99.9	38.8	10.6	8.8
29.17	4	64	24	6	29	4	29-Jun		66.3	132.1	33.5	19.6	17.1	16.0	14.8
29.33	8	65	25	6	29	8	29-Jun	35.6	22.4	128.0	28.5	12.6	15.2	14.3	12.7
29.50	12	66	26	6	29	12	29-Jun	16.6		152.2	27.3		12.4	6.7	
29.67	16	67	27	6	29	16	29-Jun	24.7	20.2	185.3	40.5	11.5	19.5		
29.83	20	68	28	6	29	20	29-Jun	13.2	33.9	176.8	55.8	17.5	20.5	7.1	

ASH MOUNTAIN PERIOD 1. DATA O/P 12/18/85

30.00	0	69	29	6	30	0	30-Jun		23.7	153.8	40.6		12.8		3.8
30.17	4	70	30	6	30	4	30-Jun		29.2	139.5	40.2	15.4	9.6		
30.33	8	71	31	6	30	8	30-Jun		24.0	146.0	29.6	14.6	8.2		
30.50	12	72	32	6	30	12	30-Jun		35.9	156.6	29.1	6.9	9.8		
30.67	16	73	33	6	30	16	30-Jun	19.7		185.4	18.4		8.6	7.2	
30.83	20	74	34	6	30	20	30-Jun	27.3	14.9	206.8	21.8	12.6	10.6		
31.00	0	75	35	7	1	0	01-Jul		18.0	124.3	19.8	7.8	6.9	5.4	
31.17	4	76	36	7	1	4	01-Jul		123.9	96.0	12.0	23.6	22.9		
31.33	8	77	37	7	1	8	01-Jul			113.5	13.3	7.4	8.7		
31.50	12	78	38	7	1	12	01-Jul	13.1	21.5	103.9	16.3		5.6		
31.67	16	79	39	7	1	16	01-Jul		27.3	130.7	12.3	9.1	6.0		
31.83	20	80	40	7	1	20	01-Jul	26.0	44.7	201.0	20.0		10.8	5.5	
32.00	0	81	1	7	2	0	02-Jul	59.9	68.8	252.3	39.1		37.4	39.6	28.2
32.17	4	82	2	7	2	4	02-Jul								
32.33	8	83	3	7	2	8	02-Jul								
32.50	12	84		7	2	12	02-Jul								
32.67	16	85		7	2	16	02-Jul								
32.83	20	86		7	2	20	02-Jul								

GIANT FOREST, SEQUOIA NP, SUMMER 1985.

STACKED FILTER UNIT GRAVIMETRIC MASS AND
LIPM SOOT CARBON CONCENTRATIONS.

SAMPLE START DATE	SOOT C LIPM ** ug/m^3	SFU MASS FINE ug/m^3	SFU MASS COURSE ug/m^3	SOOT C/ FINE MASS %	FINE/ TOTAL MASS %
18-Jun	0.38	17.15	28.12	2.2	37.9
19-Jun	0.25	12.60	13.87	2.0	47.6
20-Jun	0.40	13.47	20.44	3.0	39.7
21-Jun	0.52	14.69	19.01	3.6	43.6
22-Jun	0.38	11.42	18.01	3.4	38.8
23-Jun	0.27	16.44	15.89	1.6	50.9
24-Jun	0.24	14.63	17.22	1.7	45.9
25-Jun	0.32	12.12	15.84	2.7	43.4
26-Jun	0.24	10.87	14.60	2.2	42.7
27-Jun	0.26	10.66	14.86	2.4	41.8
28-Jun	0.30	26.80	19.66	1.1	57.7
29-Jun	0.34	10.74	15.72	3.2	40.6
30-Jun	0.31	9.22	10.64	3.4	46.4
01-Jul	0.27	8.57	12.63	3.2	40.4
02-Jul	0.34	8.71	13.81	3.9	38.7
03-Jul	0.31	8.83	13.34	3.5	39.8
04-Jul	0.27	11.11	13.89	2.4	44.4
05-Jul	0.22	10.88	11.52	2.0	48.6
06-Jul	0.35	12.73	15.90	2.7	44.5
07-Jul	0.27	9.00	14.82	3.0	37.8
08-Jul	0.36	8.70	11.04	4.1	44.1
09-Jul	0.31	10.56	15.42	3.0	40.6
10-Jul	0.37	13.46	18.09	2.8	42.7
11-Jul	0.36	15.36	17.40	2.3	46.9
12-Jul	0.34	13.56	15.00	2.5	47.5
13-Jul	0.36	14.46	16.32	2.5	47.0
14-Jul	0.28	11.54	12.67	2.4	47.7
15-Jul	0.34	14.67	15.93	2.3	47.9
16-Jul	0.41	14.61	16.10	2.8	47.6
17-Jul	0.33	15.54	16.73	2.1	48.2
18-Jul	0.42	15.89	14.91	2.6	51.6
19-Jul	0.32	15.49	10.98	2.1	58.5
20-Jul	0.52	15.97	11.63	3.3	57.9
21-Jul	0.29	9.82	8.07	2.9	54.9
22-Jul	0.34	10.84	9.05	3.1	54.5
23-Jul	1.09	22.41	13.42	4.9	62.5
24-Jul	0.45	14.48	12.32	3.1	54.0
25-Jul	0.49	11.02	5.42	4.5	67.0
26-Jul	0.46	15.12	11.76	3.1	56.3
27-Jul	0.42	10.87	10.56	3.8	50.7
28-Jul	0.34	11.49	10.24	3.0	52.9
29-Jul	0.35	8.98	12.78	3.9	41.3

GIANT FOREST, SEQUOIA NP, SUMMER 1985.

STACKED FILTER UNIT GRAVIMETRIC MASS AND LIPM SOOT CARBON CONCENTRATIONS.

SAMPLE START DATE	SOOT C LIPM ** ug/m^3	SFU MASS FINE ug/m^3	SFU MASS COURSE ug/m^3	SOOT C/ FINE MASS %	FINE/ TOTAL MASS %
30-Jul	0.29	12.29	12.73	2.4	49.1
31-Jul	0.30	12.69	13.61	2.3	48.2
01-Aug	0.33	13.05	15.53	2.5	45.7
02-Aug	0.46	12.55	13.05	3.6	49.0
03-Aug	0.37	11.78	13.43	3.2	46.7
04-Aug	0.39	11.92	12.21	3.3	49.4
05-Aug	0.39	11.06	13.14	3.6	45.7
06-Aug	0.38	11.77	14.47	3.2	44.9
07-Aug	0.44	14.75	18.29	3.0	44.6
08-Aug	0.43	12.76	16.45	3.4	43.7
09-Aug	0.42	15.05	15.85	2.8	48.7
10-Aug	0.35	15.03	16.88	2.3	47.1
11-Aug	0.44	15.23	15.94	2.9	48.8
12-Aug	0.36	14.77	17.15	2.4	46.3
13-Aug	0.32	16.17	16.45	2.0	49.6
14-Aug	0.43	14.72	15.82	2.9	48.2
15-Aug	0.42	15.55	19.28	2.7	44.6
16-Aug	0.36	16.50	18.61	2.2	47.0
17-Aug	0.31	11.47	12.85	2.7	47.2
18-Aug	0.41	13.23	9.20	3.1	59.0
19-Aug	0.42	12.09	10.23	3.4	54.2
20-Aug	0.67	13.36	12.74	5.1	51.2
21-Aug					
22-Aug	0.44	15.94	14.87	2.8	51.7
23-Aug	0.40	12.74	14.14	3.2	47.4
24-Aug	0.34	10.70	12.07	3.2	47.0
25-Aug	0.40	14.19	13.59	2.8	51.1
26-Aug	0.34	9.49	12.78	3.6	42.6
27-Aug	0.40	9.38	12.67	4.2	42.5
28-Aug	0.34	8.98	10.16	3.8	46.9
29-Aug	0.37	10.99	14.37	3.4	43.3
30-Aug	0.58	11.83	16.45	4.9	41.8
31-Aug	0.39	17.05	15.61	2.3	52.2
01-Sep	0.20	6.82	12.61	3.0	35.1
02-Sep	0.22	4.81	11.42	4.7	29.6
03-Sep	0.22	7.27	5.04	3.0	59.0
04-Sep	0.26	7.84	5.25	3.3	59.9
05-Sep	0.34	10.99	6.91	3.1	61.4
06-Sep	0.35	16.94	9.31	2.1	64.5
07-Sep	0.38	15.88	8.86	2.4	64.2
08-Sep	0.14	7.50	5.59	1.9	57.3
09-Sep	0.23	8.68	5.32	2.7	62.0

GIANT FOREST, SEQUOIA NP, SUMMER 1985.

STACKED FILTER UNIT GRAVIMETRIC MASS AND
LIPM SOOT CARBON CONCENTRATIONS.

SAMPLE START DATE	SOOT C LIPM ** ug/m^3	SFU MASS FINE ug/m^3	SFU MASS COURSE ug/m^3	SOOT C/ FINE MASS %	FINE/ TOTAL MASS %
10-Sep	0.22	8.48	5.11	2.6	62.4
11-Sep	0.62	17.45	9.68	3.5	64.3
12-Sep	0.53	10.30	5.45	5.1	65.4
13-Sep					
14-Sep	0.46	23.58	12.69	2.0	65.0
15-Sep	0.29	12.55	9.48	2.3	57.0
16-Sep	0.43	9.41	8.80	4.6	51.7
17-Sep	0.31	5.87	8.77	5.2	40.1
18-Sep	0.16	7.02	8.05	2.3	46.6
19-Sep	0.21	8.22	6.77	2.5	54.8
20-Sep	0.51	12.68	8.43	4.1	60.1
21-Sep	0.45	15.68	9.12	2.9	63.2
22-Sep	0.40	9.20	6.61	4.3	58.2
23-Sep	0.29	7.74	6.49	3.8	54.4
24-Sep	0.37	11.05	9.95	3.3	52.6
25-Sep	0.43	11.93	11.52	3.6	50.9
26-Sep	0.36	11.83	11.41	3.0	50.9
27-Sep	0.29	7.53	7.67	3.8	49.6
28-Sep	0.30	11.49	8.37	2.6	57.9
29-Sep	0.28	12.48	10.91	2.3	53.4
30-Sep	0.31	8.73	6.34	3.6	57.9
01-Oct	0.29	7.09	6.95	4.1	50.5
02-Oct	0.49	7.25	6.08	6.7	54.4
03-Oct	0.20	17.12	5.44	1.1	75.9
04-Oct	0.22	17.59	7.43	1.2	70.3
05-Oct	0.39	19.88	3.99	2.0	83.3
06-Oct	0.16	14.13	9.89	1.1	58.8
07-Oct	0.15	11.54	3.59	1.3	76.3
AVERAGE	0.36	12.45	12.29	3.0	50.9
STD DEV	0.12	3.62	4.27	0.9	9.0
COUNT	110	110	110	110	110

Updated April 26 1986.

SEQUOIA NP ACID DEPOSITION PROJECT
PARTICULATE ELEMENTAL CONCENTRATIONS

SITE: GIANT FOREST (LOWER KAWEAH)
SAMPLER: STACKED FILTER UNIT, FINE STAGE; 0.1 - 2.5 umad

DATE	Sodium	Mg	Al	Si	P	S
18-Jun	MD	MD	MD	MD	MD	MD
19-Jun	MD	MD	MD	MD	MD	MD
20-Jun	MD	MD	MD	MD	MD	MD
21-Jun	MD	MD	MD	MD	MD	MD
22-Jun	MD	MD	MD	MD	MD	MD
23-Jun	MD	MD	MD	MD	MD	MD
24-Jun	MD	MD	MD	MD	MD	MD
25-Jun	254.0 +/- 27.0	DL 3.6	141.5 +/- 15.6	293.5 +/- 29.9	DL 2.6	645.9 +/- 65.4
26-Jun	167.0 +/- 19.0	DL 3.3	159.0 +/- 16.6	353.8 +/- 35.8	DL 2.5	290.8 +/- 29.6
27-Jun	98.0 +/- 13.0	DL 3.7	150.5 +/- 17.1	264.5 +/- 27.3	DL 2.9	317.8 +/- 32.0
28-Jun	109.0 +/- 16.0	DL 3.8	199.9 +/- 21.5	323.8 +/- 33.0	DL 2.9	465.3 +/- 47.2
29-Jun	146.0 +/- 18.0	DL 3.6	184.7 +/- 19.9	327.6 +/- 33.3	DL 2.7	431.6 +/- 43.9
30-Jun	105.0 +/- 14.0	DL 3.2	131.7 +/- 14.7	226.7 +/- 23.3	DL 2.4	369.7 +/- 37.6
01-Jul	97.0 +/- 13.0	DL 3.7	106.2 +/- 11.3	260.8 +/- 26.5	DL 2.9	392.6 +/- 40.0
02-Jul	DL 6.4	DL 3.6	120.9 +/- 12.7	373.9 +/- 37.7	DL 2.7	474.3 +/- 48.0
03-Jul	DL 6.0	73.8 +/- 10.4	103.0 +/- 11.1	302.3 +/- 20.5	DL 2.4	482.7 +/- 48.8
04-Jul	92.0 +/- 13.6	DL 4.3	122.6 +/- 13.0	316.3 +/- 32.1	DL 3.4	398.0 +/- 40.8
05-Jul	DL 6.7	78.8 +/- 11.9	65.6 +/- 7.9	198.5 +/- 20.2	DL 2.9	452.4 +/- 45.8
06-Jul	106.0 +/- 15.0	DL 3.7	139.1 +/- 14.4	344.1 +/- 34.7	DL 2.7	582.2 +/- 59.0
07-Jul	90.0 +/- 12.3	DL 3.4	110.0 +/- 12.0	279.6 +/- 28.3	DL 2.5	456.8 +/- 46.4
08-Jul	79.0 +/- 12.2	DL 4.0	91.0 +/- 9.9	251.9 +/- 25.6	DL 3.2	464.2 +/- 47.3
09-Jul	DL 7.1	DL 4.0	120.1 +/- 12.7	338.3 +/- 34.2	DL 3.2	474.2 +/- 48.4
10-Jul	DL 7.5	125.1 +/- 16.1	155.2 +/- 16.9	487.4 +/- 49.0	DL 3.1	625.7 +/- 63.5
11-Jul	112.0 +/- 16.0	DL 3.9	151.9 +/- 16.2	411.2 +/- 41.4	DL 2.9	580.6 +/- 59.0
12-Jul	DL 7.2	DL 4.0	125.6 +/- 13.3	341.7 +/- 34.5	DL 3.2	506.4 +/- 51.7
13-Jul	99.0 +/- 13.5	DL 3.7	124.1 +/- 13.4	309.9 +/- 31.3	DL 2.9	499.5 +/- 50.7
14-Jul	104.0 +/- 14.7	DL 4.4	118.6 +/- 13.6	249.5 +/- 25.7	DL 3.5	482.5 +/- 49.3
15-Jul	104.0 +/- 14.9	DL 3.6	172.6 +/- 18.5	335.1 +/- 33.9	DL 2.5	696.8 +/- 70.5
16-Jul	158.0 +/- 19.2	DL 4.4	151.8 +/- 16.5	394.8 +/- 39.9	DL 3.4	691.8 +/- 70.1
17-Jul	216.0 +/- 25.4	DL 5.4	163.1 +/- 17.3	452.7 +/- 45.8	DL 4.1	1007.8 +/-102.0
18-Jul	144.0 +/- 19.4	DL 4.8	165.8 +/- 17.9	423.5 +/- 42.8	DL 3.6	805.9 +/- 81.6
19-Jul	DL 10.1	DL 5.9	76.0 +/- 9.3	242.9 +/- 25.0	DL 4.9	717.5 +/- 73.0
20-Jul	DL 8.0	DL 4.2	151.8 +/- 16.3	378.0 +/- 38.2	DL 3.2	742.2 +/- 75.3
21-Jul	DL 7.2	DL 3.9	83.6 +/- 9.6	244.4 +/- 24.8	DL 3.0	614.2 +/- 62.1
22-Jul	90.0 +/- 13.6	DL 4.3	90.0 +/- 10.8	253.0 +/- 25.7	DL 3.4	610.8 +/- 62.0
23-Jul	96.0 +/- 23.9	DL 10.0	116.0 +/- 14.9	273.5 +/- 29.1	DL 8.4	799.8 +/- 82.0
24-Jul	80.0 +/- 14.3	DL 5.0	76.1 +/- 9.4	205.2 +/- 21.2	DL 3.9	581.8 +/- 59.1
25-Jul	50.0 +/- 13.3	DL 4.2	65.1 +/- 8.2	131.6 +/- 13.9	DL 3.1	486.2 +/- 49.3
26-Jul	135.0 +/- 17.2	DL 4.5	130.2 +/- 14.2	284.1 +/- 29.0	DL 3.5	711.7 +/- 72.2
27-Jul	101.0 +/- 14.4	DL 4.3	83.9 +/- 9.8	217.6 +/- 22.3	DL 3.3	500.8 +/- 50.9
28-Jul	82.0 +/- 13.1	DL 4.2	94.7 +/- 11.1	251.0 +/- 25.6	DL 3.3	604.7 +/- 61.3
29-Jul	135.0 +/- 17.2	DL 4.5	84.7 +/- 9.3	241.6 +/- 24.6	DL 3.7	431.1 +/- 43.9
30-Jul	171.0 +/- 20.8	DL 3.9	137.9 +/- 16.0	192.4 +/- 20.3	DL 2.8	643.7 +/- 65.0
31-Jul	60.0 +/- 12.4	DL 3.7	107.9 +/- 12.4	172.6 +/- 18.0	DL 2.7	512.4 +/- 51.9
01-Aug	48.0 +/- 12.5	DL 3.9	105.1 +/- 11.3	215.9 +/- 22.1	DL 2.8	590.3 +/- 59.8
02-Aug	101.6 +/- 18.3	DL 4.4	106.0 +/- 11.8	246.9 +/- 25.2	DL 3.2	572.1 +/- 58.4
03-Aug	105.3 +/- 18.2	DL 4.5	135.0 +/- 14.9	303.8 +/- 30.8	DL 3.3	589.9 +/- 60.1
04-Aug	135.8 +/- 19.0	DL 4.5	131.2 +/- 14.6	331.8 +/- 33.6	DL 3.3	669.1 +/- 68.2

Elemental concentrations in ng/m³. '+/-' indicates Standard Deviation - counting statistics only.
'MD' indicates Missing Data - no sample. 'DL' indicates value below given Detection Limit.

SEQUOIA NP ACID DEPOSITION PROJECT
PARTICULATE ELEMENTAL CONCENTRATIONS

SITE: GIANT FOREST (LOWER KAWEAH)
SAMPLER: STACKED FILTER UNIT, FINE STAGE; 0.1 - 2.5 umad

DATE	Sodium	Mg	Al	Si	P	S
05-Aug	120.2 +/- 17.9	DL 4.4	120.1 +/- 13.3	275.9 +/- 28.0	DL 3.2	496.6 +/- 5
06-Aug	195.1 +/- 23.5	DL 4.5	164.4 +/- 17.6	376.1 +/- 38.1	DL 3.2	469.8 +/- 4
07-Aug	209.9 +/- 25.1	DL 4.5	184.4 +/- 19.8	365.5 +/- 37.0	DL 3.2	595.1 +/- 6
08-Aug	215.5 +/- 24.8	DL 4.5	177.2 +/- 19.1	395.2 +/- 39.9	DL 3.2	479.4 +/- 4
09-Aug	200.1 +/- 24.6	DL 4.7	183.5 +/- 19.7	412.1 +/- 41.6	DL 3.3	496.6 +/- 5
10-Aug	190.5 +/- 23.7	DL 4.5	186.0 +/- 19.7	454.4 +/- 45.8	DL 3.2	529.1 +/- 5
11-Aug	208.6 +/- 24.2	DL 4.5	167.1 +/- 18.5	281.7 +/- 28.9	DL 3.3	580.7 +/- 5
12-Aug	233.3 +/- 27.2	DL 4.5	158.2 +/- 17.2	351.3 +/- 35.6	DL 3.2	711.3 +/- 7
13-Aug	284.5 +/- 31.3	DL 3.0	168.7 +/- 18.1	325.3 +/- 32.9	DL 2.1	823.9 +/- 8
14-Aug	327.8 +/- 36.3	DL 6.0	158.7 +/- 18.0	313.3 +/- 32.2	DL 5.3	825.1 +/- 8
15-Aug	311.6 +/- 34.9	DL 6.1	210.2 +/- 22.8	394.5 +/- 40.2	DL 5.3	800.4 +/- 8
16-Aug	182.0 +/- 22.7	DL 4.4	155.6 +/- 16.8	357.6 +/- 36.1	DL 3.1	815.7 +/- 8
17-Aug	107.8 +/- 15.0	DL 4.2	93.3 +/- 10.4	210.5 +/- 21.4	DL 3.1	571.7 +/- 5
18-Aug	142.6 +/- 19.6	DL 5.7	75.6 +/- 10.0	162.5 +/- 17.5	DL 4.1	746.8 +/- 7
19-Aug	91.0 +/- 15.0	DL 4.2	77.3 +/- 8.9	160.0 +/- 16.5	DL 3.1	606.6 +/- 6
20-Aug	99.0 +/- 18.5	DL 7.1	162.2 +/- 19.4	184.1 +/- 20.4	DL 5.3	501.9 +/- 5
21-Aug	MD	MD	MD	MD	MD	MD
22-Aug	141.0 +/- 19.0	DL 3.0	147.8 +/- 16.0	308.6 +/- 31.3	DL 3.2	723.5 +/- 7
23-Aug	145.7 +/- 19.5	DL 4.5	151.8 +/- 16.3	326.1 +/- 33.0	DL 3.2	591.6 +/- 6
24-Aug	110.1 +/- 16.2	DL 3.0	118.0 +/- 12.7	232.8 +/- 23.6	DL 2.2	438.5 +/- 4
25-Aug	126.2 +/- 17.6	DL 3.0	134.5 +/- 14.6	313.7 +/- 31.7	DL 2.1	570.7 +/- 5
26-Aug	123.7 +/- 17.1	DL 4.3	127.9 +/- 14.0	307.1 +/- 31.1	DL 3.2	422.4 +/- 4
27-Aug	DL 8.2	DL 4.5	124.1 +/- 13.5	341.8 +/- 34.5	DL 3.3	455.1 +/- 4
28-Aug	91.2 +/- 14.4	DL 2.9	111.2 +/- 11.9	252.3 +/- 25.5	DL 2.1	329.3 +/- 3
29-Aug	184.3 +/- 23.9	DL 4.5	126.0 +/- 13.7	342.9 +/- 34.6	DL 3.3	472.2 +/- 4
30-Aug	139.1 +/- 18.9	DL 3.1	163.3 +/- 17.2	394.5 +/- 39.7	DL 3.3	528.1 +/- 5
31-Aug	DL 8.1	DL 4.4	165.9 +/- 17.7	381.4 +/- 38.4	DL 3.2	501.2 +/- 5
01-Sep	116.5 +/- 15.4	DL 2.9	138.1 +/- 14.7	284.4 +/- 28.8	DL 3.2	270.9 +/- 2
02-Sep	85.4 +/- 12.8	DL 2.8	95.1 +/- 10.1	236.5 +/- 23.9	DL 2.1	204.3 +/- 2
03-Sep	21.0 +/- 9.1	DL 2.7	30.0 +/- 4.2	57.0 +/- 6.4	DL 3.1	288.0 +/- 2
04-Sep	26.3 +/- 9.0	DL 2.7	21.2 +/- 3.6	43.6 +/- 5.1	DL 2.1	358.0 +/- 3
05-Sep	104.6 +/- 14.9	DL 4.3	66.5 +/- 9.3	81.6 +/- 9.5	DL 3.2	529.8 +/- 5
06-Sep	87.7 +/- 14.3	DL 4.4	69.1 +/- 8.9	129.9 +/- 13.9	DL 3.2	672.4 +/- 6
07-Sep	69.2 +/- 13.5	DL 4.5	56.8 +/- 7.1	154.0 +/- 15.9	DL 3.3	738.0 +/- 7
08-Sep	26.8 +/- 10.7	DL 2.8	26.8 +/- 3.8	73.1 +/- 7.7	DL 2.1	533.7 +/- 5
09-Sep	40.1 +/- 11.5	DL 4.2	24.0 +/- 4.3	46.9 +/- 5.8	DL 3.2	436.5 +/- 4
10-Sep	22.8 +/- 10.7	DL 2.7	17.8 +/- 3.0	46.7 +/- 5.4	DL 2.1	424.8 +/- 4
11-Sep	71.1 +/- 14.6	DL 4.4	79.9 +/- 10.0	129.6 +/- 14.1	DL 3.2	622.7 +/- 6
12-Sep	28.0 +/- 11.4	DL 2.8	37.2 +/- 5.0	69.2 +/- 7.7	DL 2.1	420.0 +/- 4
13-Sep	MD	MD	MD	MD	MD	MD
14-Sep	70.9 +/- 17.1	DL 5.7	95.4 +/- 10.8	217.9 +/- 22.3	DL 2.8	719.5 +/- 7
15-Sep	67.1 +/- 12.7	DL 2.9	73.1 +/- 8.7	131.0 +/- 13.8	DL 2.1	694.9 +/- 7
16-Sep	67.7 +/- 13.3	DL 4.2	56.1 +/- 6.9	112.6 +/- 12.0	DL 3.2	372.0 +/- 3
17-Sep	59.7 +/- 11.0	DL 2.8	57.0 +/- 6.4	109.1 +/- 11.3	DL 2.1	263.8 +/- 2
18-Sep	41.1 +/- 11.0	DL 4.1	25.2 +/- 4.3	54.6 +/- 6.5	DL 3.2	267.8 +/- 2
19-Sep	46.2 +/- 11.6	DL 2.8	43.9 +/- 5.9	77.1 +/- 8.7	DL 2.2	505.8 +/- 5
20-Sep	63.1 +/- 14.7	DL 5.6	62.3 +/- 7.9	172.4 +/- 18.1	DL 5.2	488.2 +/- 5
21-Sep	71.6 +/- 16.0	DL 4.4	87.7 +/- 10.1	195.8 +/- 20.2	DL 3.3	568.5 +/- 5

Elemental concentrations in ng/m³. '+/-' indicates Standard Deviation - counting statistics only.
'MD' indicates Missing Data - no sample. 'DL' indicates value below given Detection Limit.

SEQUOIA NP ACID DEPOSITION PROJECT
PARTICULATE ELEMENTAL CONCENTRATIONS

SITE: GIANT FOREST (LOWER KAWEAH)
SAMPLER: STACKED FILTER UNIT, FINE STAGE; 0.1 - 2.5 umad

DATE	Sodium	Mg	Al	Si	P	S
22-Sep	69.8 +/- 13.6	DL 2.9	83.4 +/- 9.1	208.8 +/- 21.2	DL 2.1	461.6 +/- 47.2
23-Sep	67.5 +/- 13.5	DL 4.3	78.3 +/- 8.7	194.0 +/- 19.7	DL 2.2	391.1 +/- 40.0
24-Sep	90.5 +/- 15.8	DL 4.5	123.7 +/- 13.4	321.8 +/- 32.5	DL 3.3	526.1 +/- 53.4
25-Sep	110.3 +/- 17.5	DL 4.5	153.5 +/- 16.5	388.7 +/- 39.3	DL 3.3	603.3 +/- 61.6
26-Sep	58.6 +/- 13.9	DL 4.5	88.2 +/- 10.0	247.1 +/- 25.1	DL 3.3	550.5 +/- 55.6
27-Sep	23.1 +/- 9.9	DL 4.2	48.4 +/- 5.8	140.6 +/- 14.5	DL 3.1	383.0 +/- 39.2
28-Sep	51.1 +/- 10.9	DL 3.0	51.9 +/- 6.2	129.9 +/- 13.3	DL 2.2	593.9 +/- 60.1
29-Sep	50.7 +/- 11.2	DL 4.4	69.0 +/- 8.3	208.5 +/- 21.3	DL 3.2	839.5 +/- 84.9
30-Sep	92.7 +/- 14.5	DL 5.8	50.5 +/- 7.0	157.4 +/- 16.5	DL 4.3	608.5 +/- 62.1
01-Oct	84.4 +/- 12.7	DL 4.3	85.2 +/- 9.2	222.8 +/- 22.7	DL 3.2	542.3 +/- 55.0
02-Oct	84.1 +/- 13.4	DL 4.4	79.8 +/- 9.2	184.4 +/- 19.1	DL 4.3	461.2 +/- 46.5
03-Oct	60.9 +/- 11.1	DL 4.1	53.6 +/- 6.4	146.1 +/- 15.2	DL 4.1	235.7 +/- 24.7
04-Oct	40.1 +/- 11.5	DL 4.2	59.3 +/- 6.8	168.2 +/- 17.3	DL 3.2	264.1 +/- 27.2
05-Oct	118.3 +/- 16.5	DL 4.6	136.8 +/- 15.1	428.8 +/- 43.3	DL 4.5	566.5 +/- 57.8
06-Oct	61.0 +/- 10.8	DL 4.2	73.2 +/- 8.5	208.8 +/- 21.3	DL 3.2	307.7 +/- 31.5
07-Oct	23.9 +/- 8.9	DL 4.2	13.6 +/- 3.0	54.6 +/- 6.2	DL 3.2	289.9 +/- 29.7
== Count	92		103	103		103
== Average	110.1		109.5	253.4		534.6
== Min	21.0		13.6	43.6		204.3
== Max	327.8		210.2	487.4		1007.8

Elemental concentrations in ng/m³. '+/-' indicates Standard Deviation - counting statistics only.
'MD' indicates Missing Data - no sample. 'DL' indicates value below given Detection Limit.

SEQUOIA NP ACID DEPOSITION PROJECT: SUMMER 1985
PARTICULATE ELEMENTAL CONCENTRATIONS

SITE: GIANT FOREST (LOWER KAWEAH)
SAMPLER: STACKED FILTER UNIT, FINE STAGE; 0.1 - 2.5 umad

DATE	Cl	K	Ca	Ti	V	Cr
18-Jun	MD	MD	MD	MD	MD	MD
19-Jun	MD	MD	MD	MD	MD	MD
20-Jun	MD	MD	MD	MD	MD	MD
21-Jun	MD	MD	MD	MD	MD	MD
22-Jun	MD	MD	MD	MD	MD	MD
23-Jun	MD	MD	MD	MD	MD	MD
24-Jun	MD	MD	MD	MD	MD	MD
25-Jun	DL 2.1	154.1 +/- 15.6	43.3 +/- 5.1	4.3 +/- 0.9	DL 0.9	DL 1.0
26-Jun	DL 2.0	193.0 +/- 19.4	78.1 +/- 8.5	4.3 +/- 0.9	DL 0.9	DL 0.9
27-Jun	DL 2.4	185.6 +/- 18.7	67.6 +/- 7.5	4.2 +/- 1.0	DL 1.0	DL 1.1
28-Jun	DL 2.3	207.9 +/- 20.9	64.8 +/- 7.4	4.1 +/- 0.9	1.0 +/- 0.5	DL 1.1
29-Jun	DL 2.2	212.8 +/- 21.4	60.1 +/- 7.0	5.2 +/- 1.0	DL 0.9	DL 1.0
30-Jun	DL 2.0	102.7 +/- 10.4	40.5 +/- 4.5	3.4 +/- 0.8	DL 0.9	DL 0.9
01-Jul	DL 2.3	79.4 +/- 8.2	37.8 +/- 4.1	3.1 +/- 0.9	DL 1.0	DL 1.1
02-Jul	DL 2.2	143.3 +/- 14.5	48.2 +/- 5.4	5.2 +/- 1.0	DL 1.0	DL 1.0
03-Jul	DL 1.9	143.6 +/- 14.5	42.5 +/- 4.9	4.3 +/- 0.8	DL 0.8	DL 0.9
04-Jul	DL 2.8	219.3 +/- 22.1	51.1 +/- 6.3	4.1 +/- 1.1	DL 1.2	DL 1.4
05-Jul	DL 2.4	219.9 +/- 22.2	36.7 +/- 5.2	2.6 +/- 0.9	DL 1.0	DL 1.1
06-Jul	DL 2.2	194.7 +/- 19.6	46.4 +/- 5.7	5.1 +/- 1.0	1.3 +/- 0.6	DL 1.0
07-Jul	DL 2.1	123.2 +/- 12.5	42.5 +/- 4.8	3.7 +/- 0.8	DL 0.9	DL 1.0
08-Jul	DL 2.6	109.9 +/- 11.2	40.1 +/- 4.5	2.8 +/- 1.0	DL 1.1	DL 1.3
09-Jul	DL 2.6	100.8 +/- 10.3	40.2 +/- 4.5	4.1 +/- 1.1	DL 1.2	DL 1.3
10-Jul	DL 2.4	190.2 +/- 19.2	61.1 +/- 6.9	7.4 +/- 1.2	DL 1.1	DL 1.2
11-Jul	DL 2.4	225.2 +/- 22.7	47.1 +/- 6.0	6.9 +/- 1.2	DL 1.1	DL 1.1
12-Jul	DL 2.6	161.4 +/- 16.4	42.2 +/- 5.1	4.4 +/- 1.1	DL 1.2	DL 1.3
13-Jul	DL 2.4	149.0 +/- 15.1	44.7 +/- 5.2	3.7 +/- 0.9	DL 1.1	DL 1.1
14-Jul	DL 2.9	147.2 +/- 15.0	34.8 +/- 4.4	3.3 +/- 1.1	DL 1.3	DL 1.4
15-Jul	DL 2.0	215.9 +/- 21.7	52.9 +/- 6.4	5.0 +/- 0.9	2.0 +/- 0.7	DL 0.9
16-Jul	DL 2.7	162.4 +/- 16.5	47.3 +/- 5.5	5.0 +/- 1.1	DL 1.2	DL 1.3
17-Jul	DL 3.5	236.8 +/- 23.9	55.5 +/- 6.9	4.2 +/- 1.3	DL 1.6	DL 1.6
18-Jul	DL 2.9	230.0 +/- 23.2	55.8 +/- 6.8	4.9 +/- 1.3	DL 1.2	DL 1.3
19-Jul	DL 4.1	161.9 +/- 16.6	21.6 +/- 3.7	1.9 +/- 1.4	DL 1.9	DL 2.0
20-Jul	DL 2.5	239.5 +/- 24.1	40.8 +/- 5.7	5.7 +/- 1.1	DL 1.0	DL 1.1
21-Jul	DL 2.4	148.8 +/- 15.1	21.8 +/- 3.3	3.7 +/- 1.0	DL 1.0	DL 1.1
22-Jul	DL 2.7	125.5 +/- 12.8	26.4 +/- 3.5	2.4 +/- 1.1	DL 1.3	DL 1.4
23-Jul	9.4 +/- 6.7	350.1 +/- 35.7	36.9 +/- 7.5	3.8 +/- 2.6	DL 3.2	DL 3.5
24-Jul	DL 3.2	263.1 +/- 26.6	30.8 +/- 5.5	2.4 +/- 1.3	DL 1.4	DL 1.5
25-Jul	DL 2.5	137.5 +/- 14.0	21.8 +/- 3.2	DL 1.1	1.3 +/- 0.5	DL 1.2
26-Jul	DL 2.8	205.1 +/- 20.7	42.0 +/- 5.4	3.1 +/- 1.1	DL 1.2	DL 1.3
27-Jul	DL 2.8	154.5 +/- 15.7	27.6 +/- 3.9	3.1 +/- 1.1	DL 1.3	DL 1.3
28-Jul	DL 2.6	109.5 +/- 11.2	30.6 +/- 3.7	3.2 +/- 1.1	DL 1.1	DL 1.2
29-Jul	DL 3.1	72.4 +/- 7.6	23.7 +/- 2.9	2.6 +/- 1.2	DL 1.4	DL 1.5
30-Jul	DL 2.3	78.1 +/- 8.1	30.6 +/- 3.4	1.9 +/- 0.9	DL 1.0	DL 1.0
31-Jul	DL 2.2	104.7 +/- 10.7	25.1 +/- 3.1	2.7 +/- 0.9	DL 0.9	DL 1.0
01-Aug	60.9 +/- 7.4	115.5 +/- 11.7	23.1 +/- 3.1	2.4 +/- 0.8	1.3 +/- 0.7	DL 1.0
02-Aug	DL 3.1	106.8 +/- 11.0	28.5 +/- 3.5	1.7 +/- 1.1	DL 1.0	DL 1.0
03-Aug	4.1 +/- 2.3	144.1 +/- 14.6	34.2 +/- 4.3	4.4 +/- 1.3	DL 1.0	1.1 +/- 1.0
04-Aug	DL 3.2	169.1 +/- 17.2	40.4 +/- 5.0	3.6 +/- 1.2	DL 1.0	DL 1.0

Elemental concentrations in ng/m³. '+/-' indicates Standard Deviation - counting statistics only.
'MD' indicates Missing Data - no sample. 'DL' indicates value below given Detection Limit.

SEQUOIA NP ACID DEPOSITION PROJECT: SUMMER 1985
PARTICULATE ELEMENTAL CONCENTRATIONS

SITE: GIANT FOREST (LOWER KAWEAH)
SAMPLER: STACKED FILTER UNIT, FINE STAGE; 0.1 - 2.5 umad

DATE	Cl	K	Ca	Ti	V	Cr
05-Aug	DL 2.1	122.8 +/- 12.5	33.9 +/- 4.0	3.5 +/- 0.9	DL 1.0	DL 1.0
06-Aug	DL 3.2	176.6 +/- 17.9	52.0 +/- 5.6	4.8 +/- 1.3	DL 1.0	DL 1.0
07-Aug	DL 2.1	158.3 +/- 16.0	48.5 +/- 5.6	5.6 +/- 1.1	DL 1.0	DL 1.0
08-Aug	DL 3.2	148.9 +/- 15.1	52.8 +/- 5.9	6.4 +/- 1.2	DL 1.0	DL 1.0
09-Aug	DL 2.2	361.1 +/- 36.3	65.4 +/- 8.8	6.3 +/- 1.1	DL 1.0	DL 1.0
10-Aug	DL 2.1	177.9 +/- 18.0	55.4 +/- 6.3	7.3 +/- 1.2	DL 1.0	DL 1.0
11-Aug	DL 2.1	195.4 +/- 19.7	44.1 +/- 5.5	3.8 +/- 1.2	DL 1.0	DL 1.0
12-Aug	DL 2.1	101.4 +/- 10.4	53.3 +/- 5.7	5.5 +/- 1.1	DL 1.0	DL 1.0
13-Aug	DL 2.1	156.2 +/- 15.8	44.1 +/- 5.2	4.5 +/- 0.9	1.5 +/- 0.5	DL 1.0
14-Aug	DL 4.1	155.6 +/- 16.0	44.5 +/- 5.5	3.1 +/- 1.7	DL 2.0	DL 2.0
15-Aug	DL 4.2	181.2 +/- 18.5	53.8 +/- 6.4	5.4 +/- 1.7	DL 2.0	DL 2.0
16-Aug	DL 2.0	92.7 +/- 9.5	38.1 +/- 4.2	4.0 +/- 1.0	1.2 +/- 0.5	DL 1.0
17-Aug	DL 2.0	119.5 +/- 12.1	24.7 +/- 3.2	2.3 +/- 0.9	DL 1.0	DL 1.0
18-Aug	6.8 +/- 3.3	132.2 +/- 13.6	25.6 +/- 3.6	1.4 +/- 1.3	DL 1.9	2.3 +/- 1.3
19-Aug	DL 2.0	122.2 +/- 12.4	19.7 +/- 2.9	1.0 +/- 0.8	DL 1.0	DL 1.0
20-Aug	DL 4.2	151.4 +/- 15.7	34.4 +/- 4.6	DL 2.1	DL 2.0	DL 2.0
21-Aug		MD	MD	MD	MD	DL 1.0
22-Aug	DL 2.1	177.7 +/- 17.9	35.8 +/- 4.6	4.1 +/- 0.9	1.5 +/- 0.5	DL 1.0
23-Aug	DL 2.1	174.0 +/- 17.6	47.3 +/- 5.6	4.3 +/- 0.9	DL 1.0	DL 1.1
24-Aug	DL 2.2	156.7 +/- 15.8	34.5 +/- 4.4	5.6 +/- 0.9	DL 1.1	DL 1.0
25-Aug	DL 2.1	216.4 +/- 21.8	43.6 +/- 5.6	4.1 +/- 0.9	DL 1.0	DL 1.0
26-Aug	DL 3.1	125.6 +/- 12.8	36.5 +/- 4.3	4.5 +/- 1.2	DL 1.0	DL 1.0
27-Aug	DL 2.2	226.4 +/- 22.8	44.0 +/- 5.8	5.5 +/- 1.1	DL 1.0	DL 1.0
28-Aug	DL 2.1	132.2 +/- 13.4	32.4 +/- 4.0	3.4 +/- 0.8	DL 1.0	DL 1.0
29-Aug	DL 2.1	162.2 +/- 16.4	41.3 +/- 5.0	4.3 +/- 1.0	DL 1.0	DL 1.0
30-Aug	DL 2.2	210.7 +/- 21.2	54.2 +/- 6.5	5.6 +/- 1.0	DL 1.0	DL 1.0
31-Aug	DL 2.1	197.4 +/- 19.9	46.5 +/- 5.7	4.4 +/- 1.0	1.1 +/- 0.5	DL 1.0
01-Sep	DL 2.1	105.7 +/- 10.8	32.5 +/- 3.8	5.0 +/- 1.1	DL 1.0	DL 1.0
02-Sep	DL 2.1	60.2 +/- 6.3	25.8 +/- 2.9	2.9 +/- 0.9	DL 1.0	DL 1.0
03-Sep	DL 2.1	98.5 +/- 10.1	7.9 +/- 1.9	DL 1.0	DL 1.0	DL 1.0
04-Sep	DL 2.0	51.8 +/- 5.4	3.5 +/- 1.2	DL 1.0	DL 1.0	DL 1.0
05-Sep	DL 2.1	109.4 +/- 11.2	16.9 +/- 2.7	DL 1.0	DL 1.0	1.1 +/- 0.9
06-Sep	2.9 +/- 2.5	187.5 +/- 19.0	23.0 +/- 3.9	DL 1.0	DL 1.0	DL 1.0
07-Sep	DL 3.2	101.9 +/- 10.5	17.8 +/- 2.6	DL 1.0	DL 1.0	DL 1.0
08-Sep	DL 2.0	29.2 +/- 3.2	5.7 +/- 0.9	DL 1.0	DL 1.0	DL 1.0
09-Sep	DL 3.1	67.6 +/- 7.2	5.9 +/- 1.6	DL 1.0	DL 1.0	DL 1.0
10-Sep	DL 2.1	86.0 +/- 8.8	6.1 +/- 1.7	DL 1.0	DL 1.0	DL 1.0
11-Sep	DL 2.1	268.4 +/- 27.0	27.4 +/- 5.2	DL 1.0	DL 1.0	DL 1.0
12-Sep	DL 2.1	267.9 +/- 26.9	14.2 +/- 4.6	0.8 +/- 0.7	DL 1.0	DL 1.0
13-Sep	MD	MD	MD	MD	MD	MD
14-Sep	DL 2.8	228.4 +/- 23.0	27.6 +/- 4.7	2.5 +/- 1.0	DL 1.3	DL 1.3
15-Sep	DL 2.1	67.6 +/- 6.9	12.4 +/- 1.8	1.2 +/- 0.7	1.2 +/- 0.5	DL 1.0
16-Sep	DL 2.1	68.3 +/- 7.1	12.0 +/- 1.8	1.3 +/- 0.9	DL 1.0	DL 1.0
17-Sep	DL 1.1	37.5 +/- 3.9	16.0 +/- 1.8	1.4 +/- 0.6	DL 1.0	DL 1.0
18-Sep	DL 3.1	30.5 +/- 3.4	4.2 +/- 1.1	DL 1.0	DL 1.0	DL 1.0
19-Sep	DL 2.1	31.8 +/- 3.5	7.7 +/- 1.1	DL 1.1	DL 1.0	DL 1.0
20-Sep	DL 4.1	158.3 +/- 16.3	26.2 +/- 4.1	2.9 +/- 1.8	DL 2.0	DL 2.0
21-Sep	DL 3.2	200.6 +/- 20.3	22.1 +/- 4.0	2.7 +/- 1.0	DL 1.0	DL 1.0

Elemental concentrations in ng/m³. '+/-' indicates Standard Deviation - counting statistics only.
'MD' indicates Missing Data - no sample. 'DL' indicates value below given Detection Limit.

SEQUOIA NP ACID DEPOSITION PROJECT: SUMMER 1985
PARTICULATE ELEMENTAL CONCENTRATIONS

SITE: GIANT FOREST (LOWER KAWEAH)
SAMPLER: STACKED FILTER UNIT, FINE STAGE; 0.1 - 2.5 umad

DATE	Cl	K	Ca	Ti	V	Cr
22-Sep	DL 2.1	97.2 +/- 9.9	28.7 +/- 3.4	2.6 +/- 0.8	DL 1.0	DL 1.0
23-Sep	DL 2.1	76.9 +/- 7.9	30.1 +/- 3.4	2.2 +/- 0.8	DL 1.0	DL 1.0
24-Sep	DL 2.2	117.1 +/- 11.9	39.8 +/- 4.5	4.4 +/- 1.0	DL 1.0	DL 1.0
25-Sep	DL 3.2	221.0 +/- 22.3	51.5 +/- 6.3	5.7 +/- 1.1	DL 1.0	DL 1.0
26-Sep	DL 2.2	202.0 +/- 20.4	33.1 +/- 4.7	2.6 +/- 0.9	DL 1.0	DL 1.0
27-Sep	DL 2.1	83.3 +/- 8.6	23.5 +/- 2.9	2.1 +/- 1.2	DL 1.0	DL 1.0
28-Sep	DL 2.2	66.2 +/- 6.8	12.8 +/- 1.8	2.4 +/- 0.8	DL 1.1	DL 1.0
29-Sep	DL 3.2	93.7 +/- 9.7	20.0 +/- 2.7	2.2 +/- 1.2	DL 1.0	DL 1.0
30-Sep	DL 3.2	77.5 +/- 8.3	22.3 +/- 2.9	3.1 +/- 1.4	DL 2.0	DL 2.0
01-Oct	DL 2.1	83.1 +/- 8.6	28.4 +/- 3.3	3.9 +/- 1.0	DL 1.0	DL 1.0
02-Oct	DL 3.2	77.8 +/- 8.2	26.4 +/- 3.2	2.7 +/- 1.2	1.2 +/- 1.0	DL 2.1
03-Oct	39.2 +/- 5.3	80.0 +/- 8.3	32.4 +/- 3.5	1.8 +/- 1.1	2.6 +/- 1.0	DL 2.0
04-Oct	48.2 +/- 5.6	93.6 +/- 9.6	21.3 +/- 2.8	0.8 +/- 1.2	1.1 +/- 0.8	DL 1.0
05-Oct	DL 3.3	179.7 +/- ~~179.7~~ 18.	57.6 +/- 6.6	6.1 +/- 1.5	DL 1.0	DL 2.1
06-Oct	64.1 +/- 7.1	137.7 +/- ~~137.7~~ 14.	27.7 +/- 3.7	3.4 +/- 1.0	DL 1.0	DL 1.0
07-Oct	83.1 +/- 8.9	59.0 +/- ~~59.0~~ 6.	6.2 +/- 1.5	DL 1.1	DL 1.0	DL 1.0
== Count	9	103	103	89	13	103
== Average		146.9	34.7	3.7		1.1
== Min	2.9	29.2	3.5	0.8	1.0	0.5
== Max	83.1	361.1	78.1	7.4	2.6	3.2

Elemental concentrations in ng/m³. '+/-' indicates Standard Deviation - counting statistics only.
'MD' indicates Missing Data - no sample. 'DL' indicates value below given Detection Limit.

SEQUOIA NP ACID DEPOSITION PROJECT: SUMMER 1985
PARTICULATE ELEMENTAL CONCENTRATIONS

SITE: GIANT FOREST (LOWER KAWEAH)
SAMPLER: STACKED FILTER UNIT, FINE STAGE: 0.1 - 2.5 umad

DATE	Mn	Fe	Ni	Cu	Zn	Br	Pb
18-Jun	MD	MD	MD	MD	MD	MD	MD
19-Jun	MD	MD	MD	MD	MD	MD	MD
20-Jun	MD	MD	MD	MD	MD	MD	MD
21-Jun	MD	MD	MD	MD	MD	MD	MD
22-Jun	MD	MD	MD	MD	MD	MD	MD
23-Jun	MD	MD	MD	MD	MD	MD	MD
24-Jun	MD	MD	MD	MD	MD	MD	MD
25-Jun	1.5 +/- 0.8	73.6 +/- 7.5	0.6 +/- 0.5	1.3 +/- 0.5	2.5 +/- 0.6	4.3 +/- 1.0	10.0 +/- 2.2
26-Jun	1.2 +/- 0.7	75.2 +/- 7.6	DL 0.7	0.7 +/- 0.5	2.3 +/- 0.7	DL 0.6	4.5 +/- 1.8
27-Jun	1.4 +/- 0.9	62.9 +/- 6.5	1.0 +/- 0.6	DL 0.8	2.3 +/- 0.7	3.7 +/- 1.0	DL 2.2
28-Jun	1.3 +/- 0.8	76.8 +/- 7.8	1.1 +/- 0.6	DL 0.7	3.2 +/- 0.8	6.0 +/- 1.2	7.1 +/- 2.1
29-Jun	1.6 +/- 0.9	81.7 +/- 8.3	DL 0.7	1.9 +/- 0.6	4.1 +/- 0.8	5.1 +/- 1.1	7.9 +/- 2.2
30-Jun	DL 0.9	62.5 +/- 6.4	1.9 +/- 0.5	1.1 +/- 0.5	2.6 +/- 0.7	4.9 +/- 1.2	6.8 +/- 2.0
01-Jul	DL 1.1	62.2 +/- 6.4	1.4 +/- 0.5	0.6 +/- 0.5	2.0 +/- 0.7	DL 0.7	7.0 +/- 2.7
02-Jul	1.5 +/- 0.8	79.5 +/- 8.1	DL 0.7	2.0 +/- 0.7	4.3 +/- 0.8	DL 0.7	5.6 +/- 2.0
03-Jul	1.4 +/- 0.6	69.7 +/- 7.1	2.7 +/- 0.6	DL 0.6	3.3 +/- 0.7	2.9 +/- 0.8	5.5 +/- 1.8
04-Jul	1.7 +/- 1.0	75.4 +/- 7.8	1.0 +/- 0.6	1.8 +/- 0.8	3.9 +/- 0.9	DL 0.8	10.2 +/- 3.0
05-Jul	1.1 +/- 0.9	38.1 +/- 4.0	1.6 +/- 0.6	1.1 +/- 0.6	3.4 +/- 0.8	4.9 +/- 1.2	4.5 +/- 1.9
06-Jul	1.4 +/- 0.9	83.7 +/- 8.5	3.1 +/- 0.7	DL 0.7	4.3 +/- 0.8	DL 0.7	8.5 +/- 2.3
07-Jul	1.1 +/- 0.8	67.0 +/- 6.8	DL 0.7	0.9 +/- 0.5	2.5 +/- 0.6	4.4 +/- 1.2	7.7 +/- 2.2
08-Jul	1.0 +/- 0.8	55.9 +/- 5.8	2.0 +/- 0.7	DL 0.9	2.0 +/- 0.7	DL 0.7	8.8 +/- 2.5
09-Jul	1.1 +/- 0.8	84.8 +/- 8.7	1.5 +/- 0.7	DL 0.9	2.8 +/- 0.8	DL 0.7	11.2 +/- 2.9
10-Jul	2.2 +/- 0.8	114.0 +/- 11.6	2.4 +/- 0.7	0.9 +/- 0.6	5.6 +/- 1.0	6.9 +/- 2.3	10.3 +/- 2.7
11-Jul	2.9 +/- 0.8	100.1 +/- 10.2	DL 0.8	1.7 +/- 0.6	6.2 +/- 1.0	4.6 +/- 1.1	10.9 +/- 2.9
12-Jul	1.4 +/- 1.0	82.6 +/- 8.4	DL 0.9	2.5 +/- 0.8	7.2 +/- 1.1		12.0 +/- 3.1
13-Jul	1.7 +/- 0.8	82.1 +/- 8.4	1.9 +/- 0.6	1.4 +/- 0.6	5.0 +/- 0.9	4.8 +/- 1.3	7.6 +/- 2.4
14-Jul	1.4 +/- 1.0	62.4 0.6	DL 1.0	DL 1.0	3.9 +/- 1.0	5.1 +/- 1.3	10.9 +/- 3.2
15-Jul	1.5 +/- 0.8	90.5 +/- 9.2	5.3 +/- 0.8	DL 0.7	5.1 +/- 0.8	6.9 +/- 1.4	9.5 +/- 2.2
16-Jul	DL 1.3	96.5 +/- 9.8	DL 0.9	1.9 +/- 0.7	4.5 +/- 0.9	7.4 +/- 1.8	10.5 +/- 2.8
17-Jul	DL 1.6	97.0 +/- 10.0	DL 1.2	DL 1.2	4.6 +/- 1.1	DL 1.1	13.3 +/- 3.5
18-Jul	1.6 +/- 1.0	99.3 +/- 10.1	DL 1.0	DL 0.9	1.7 +/- 1.0	5.4 +/- 1.4	11.5 +/- 2.9
19-Jul	DL 2.0	51.9 +/- 5.6	DL 1.4	DL 1.4	3.9 +/- 1.2	DL 1.0	11.6 +/- 3.6
20-Jul	2.0 +/- 0.9	87.9 +/- 8.9	DL 0.8	1.9 +/- 0.6	6.6 +/- 1.1	5.9 +/- 1.6	12.5 +/- 2.9
21-Jul	DL 1.1	55.2 +/- 5.7	1.1 +/- 0.6	DL 0.8	3.7 +/- 0.8	6.4 +/- 1.8	7.4 +/- 2.4
22-Jul	DL 1.4	56.8 +/- 5.9	DL 1.0	1.8 +/- 0.7	2.6 +/- 0.8	10.9 +/- 2.7	10.9 +/- 3.0
23-Jul	4.7 +/- 2.7	64.4 +/- 7.2	DL 2.5	DL 2.4	5.3 +/- 2.1	DL 2.4	18.1 +/- 8.1
24-Jul	1.4 +/- 0.9	50.5 +/- 5.3	DL 1.1	DL 1.1	5.3 +/- 1.1	6.6 +/- 1.9	8.9 +/- 3.0
25-Jul	DL 1.1	29.9 +/- 3.2	DL 0.8	1.0 +/- 0.6	3.6 +/- 0.8	5.3 +/- 1.5	5.6 +/- 2.4
26-Jul	DL 1.3	74.2 +/- 7.6	DL 1.0	1.4 +/- 0.8	4.5 +/- 0.9	DL 0.8	11.4 +/- 3.2
27-Jul	1.7 +/- 1.1	48.4 +/- 5.1	DL 0.9	DL 0.9	3.3 +/- 0.8	4.7 +/- 1.2	7.7 +/- 2.9
28-Jul	DL 1.2	66.3 +/- 6.8	DL 0.9	DL 0.9	2.6 +/- 0.8	9.4 +/- 1.9	8.8 +/- 2.8
29-Jul	1.1 +/- 0.9	58.9 +/- 6.1	DL 1.1	1.2 +/- 0.7	4.2 +/- 1.0	DL 0.9	7.3 +/- 2.9
30-Jul	1.2 +/- 0.9	58.0 +/- 6.0	DL 0.7	1.4 +/- 0.6	3.2 +/- 0.7	3.6 +/- 1.0	6.8 +/- 3.0
31-Jul	DL 1.0	53.0 +/- 5.5	DL 0.7	1.9 +/- 0.6	5.9 +/- 1.0	4.1 +/- 1.1	6.8 +/- 2.3
01-Aug	1.0 +/- 0.9	60.6 +/- 6.2	2.3 +/- 0.6	3.0 +/- 0.7	3.1 +/- 0.7	DL 0.7	7.0 +/- 2.8
02-Aug	DL 1.0	60.9 +/- 6.4	4.7 +/- 1.0	DL 1.0	3.7 +/- 1.0	5.1 +/- 1.5	12.5 +/- 3.0
03-Aug	1.4 +/- 0.8	76.4 +/- 7.9	2.9 +/- 0.8	3.8 +/- 0.9	5.2 +/- 1.0	7.8 +/- 1.6	12.6 +/- 3.1
04-Aug	1.5 +/- 1.2	85.9 +/- 8.8	3.8 +/- 0.9	V10	5.7 +/- 1.0	7.9 +/- 1.8	14.7 +/- 3.7

Elemental concentrations in ng/m^3. '+/-' indicates Standard Deviation - counting statistics only.
'MD' indicates Missing Data - no sample. 'DL' indicates value below given Detection Limit.

SEQUOIA NP ACID DEPOSITION PROJECT: SUMMER 1985
PARTICULATE ELEMENTAL CONCENTRATIONS

SITE: GIANT FOREST (LOWER KAWEAH)
SAMPLER: STACKED FILTER UNIT, FINE STAGE; 0.1 - 2.5 umad

DATE	Mn	Fe	Ni	Cu	Zn	Br	Pb
05-Aug	1.3 +/- 0.9	67.4 +/- 6.9	2.4 +/- 0.6	2.0 +/- 0.7	8.6 +/- 1.0	7.7 +/- 1.6	13.8 +/-
06-Aug	3.1 +/- 1.1	92.8 +/- 9.5	2.4 +/- 0.8	1.7 +/- 0.7	19.1 +/- 2.0	5.8 +/- 1.5	15.3 +/-
07-Aug	1.9 +/- 0.9	92.2 +/- 9.4	2.0 +/- 0.6	2.0 +/- 0.6	10.2 +/- 1.0	8.6 +/- 1.6	10.4 +/-
08-Aug	2.1 +/- 1.0	98.0 +/- 10.0	2.7 +/- 0.8	DL 1.0	5.7 +/- 1.0	7.7 +/- 1.6	13.0 +/-
09-Aug	2.2 +/- 1.0	99.0 +/- 10.1	3.2 +/- 0.8	DL 1.0	4.9 +/- 1.0	8.0 +/- 1.8	14.1 +/-
10-Aug	2.6 +/- 1.0	110.2 +/- 11.2	1.8 +/- 0.7	1.6 +/- 0.6	5.2 +/- 1.0	6.0 +/- 1.4	9.5 +/-
11-Aug	2.8 +/- 1.0	76.0 +/- 7.8	1.6 +/- 0.7	DL 1.0	4.7 +/- 1.0	5.5 +/- 1.4	10.2 +/-
12-Aug	2.0 +/- 0.9	87.2 +/- 8.9	3.0 +/- 0.7	1.4 +/- 0.6	4.6 +/- 1.0	7.0 +/- 1.6	7.8 +/-
13-Aug	1.5 +/- 0.7	85.3 +/- 8.7	3.9 +/- 0.7	DL 1.0	4.7 +/- 1.0	6.2 +/- 1.2	11.9 +/-
14-Aug	2.1 +/- 1.5	78.0 +/- 8.1	4.6 +/- 1.3	DL 1.0	5.7 +/- 1.0	7.8 +/- 2.1	16.7 +/-
15-Aug	2.3 +/- 1.4	105.8 +/- 10.9	3.8 +/- 1.1	DL 1.0	8.2 +/- 1.0	7.4 +/- 2.0	19.7 +/-
16-Aug	2.0 +/- 0.8	91.5 +/- 9.3	3.2 +/- 0.7	1.8 +/- 0.6	5.8 +/- 1.0	7.8 +/- 1.5	16.7 +/-
17-Aug	1.5 +/- 0.9	51.8 +/- 5.3	1.6 +/- 0.6	1.8 +/- 0.6	4.0 +/- 1.0	4.8 +/- 1.2	11.5 +/-
18-Aug	DL 1.9	36.4 +/- 4.0	3.0 +/- 1.1	DL 1.0	5.9 +/- 1.0	3.4 +/- 1.5	12.4 +/-
19-Aug	0.0 +/- 1.0	39.0 +/- 4.1	4.2 +/- 0.8	DL 1.0	3.5 +/- 1.0	3.4 +/- 1.0	9.4 +/-
20-Aug	2.8 +/- 2.0	51.8 +/- 5.7	6.9 +/- 1.6	DL 2.0	5.2 +/- 1.0	5.3 +/- 2.1	14.7 +/-
21-Aug	MD	MD	MD	MD	MD	MD	MD
22-Aug	1.9 +/- 0.8	77.7 +/- 7.9	4.7 +/- 0.8	3.1 +/- 0.7	6.6 +/- 1.0	6.4 +/- 1.3	15.2 +/-
23-Aug	1.7 +/- 0.8	88.7 +/- 9.0	4.2 +/- 0.8	0.7 +/- 0.5	4.5 +/- 1.0	5.8 +/- 1.3	9.0 +/-
24-Aug	1.5 +/- 0.7	59.4 +/- 6.1	2.4 +/- 0.6	2.0 +/- 0.6	4.7 +/- 1.0	4.3 +/- 1.1	8.8 +/-
25-Aug	1.2 +/- 0.7	78.6 +/- 8.0	5.3 +/- 0.8	5.7 +/- 0.9	7.6 +/- 1.0	7.4 +/- 1.4	15.2 +/-
26-Aug	2.3 +/- 1.0	76.7 +/- 7.9	4.2 +/- 0.9	DL 1.0	4.3 +/- 1.0	4.6 +/- 1.3	9.9 +/-
27-Aug	1.7 +/- 0.8	89.4 +/- 9.1	4.0 +/- 0.8	DL 1.0	4.6 +/- 1.0	5.2 +/- 1.4	11.2 +/-
28-Aug	1.5 +/- 0.7	65.7 +/- 6.7	1.8 +/- 0.5	DL 1.0	4.0 +/- 1.0	4.0 +/- 1.1	7.8 +/-
29-Aug	1.7 +/- 0.8	81.3 +/- 8.3	2.7 +/- 0.6	1.7 +/- 0.6	5.4 +/- 1.0	6.0 +/- 1.4	8.1 +/-
30-Aug	1.5 +/- 0.9	98.1 +/- 9.9	5.1 +/- 0.8	DL 1.0	6.1 +/- 1.0	4.5 +/- 1.1	10.9 +/-
31-Aug	1.6 +/- 0.9	93.1 +/- 9.5	3.9 +/- 0.8	DL 1.0	5.7 +/- 1.0	6.8 +/- 1.4	8.3 +/-
01-Sep	1.5 +/- 0.9	74.1 +/- 7.6	1.0 +/- 0.6	DL 1.0	3.8 +/- 1.0	5.2 +/- 1.4	8.7 +/-
02-Sep	DL 1.0	55.9 +/- 5.8	DL 1.0	DL 1.0	3.8 +/- 1.0	1.6 +/- 0.8	7.3 +/-
03-Sep	DL 1.0	10.3 +/- 1.4	1.6 +/- 0.6	DL 1.0	2.2 +/- 1.0	2.7 +/- 1.0	DL
04-Sep	1.1 +/- 0.6	6.9 +/- 1.0	2.3 +/- 0.6	DL 1.0	4.4 +/- 1.0	2.7 +/- 0.8	6.9 +/-
05-Sep	DL 1.0	18.7 +/- 2.2	1.3 +/- 0.7	DL 1.0	3.5 +/- 1.0	3.7 +/- 1.3	DL
06-Sep	DL 1.0	29.4 +/- 3.2	2.6 +/- 0.7	DL 1.0	4.9 +/- 1.0	3.7 +/- 1.2	6.3 +/-
07-Sep	DL 1.0	36.0 +/- 3.9	2.8 +/- 0.8	DL 1.0	4.0 +/- 1.0	4.8 +/- 1.3	14.0 +/-
08-Sep	DL 1.0	12.8 +/- 1.5	1.6 +/- 0.5	DL 1.0	1.6 +/- 1.0	2.4 +/- 0.8	DL
09-Sep	DL 1.0	9.8 +/- 1.6	1.7 +/- 0.8	DL 1.0	4.5 +/- 1.0	2.9 +/- 1.3	5.1 +/-
10-Sep	DL 1.0	7.4 +/- 1.1	DL 1.0	DL 1.0	1.7 +/- 1.0	DL 1.0	4.9 +/-
11-Sep	1.0 +/- 1.0	33.1 +/- 3.5	2.9 +/- 0.7	DL 1.0	5.1 +/- 1.0	3.7 +/- 1.1	10.2 +/-
12-Sep	0.7 +/- 0.6	14.9 +/- 1.7	3.0 +/- 0.6	DL 1.0	3.1 +/- 1.0	1.7 +/- 0.8	4.8 +/-
13-Sep	MD	MD	MD	MD	MD	MD	MD
14-Sep	DL 1.3	55.4 +/- 5.8	4.9 +/- 1.0	DL 1.3	6.0 +/- 1.0	4.5 +/- 1.4	14.8 +/-
15-Sep	1.1 +/- 0.7	33.5 +/- 3.5	3.2 +/- 0.6	DL 1.0	2.0 +/- 1.0	2.6 +/- 0.8	10.0 +/-
16-Sep	DL 1.0	28.4 +/- 3.1	1.2 +/- 0.6	1.4 +/- 0.6	3.7 +/- 1.0	DL 1.0	11.2 +/-
17-Sep	DL 1.0	25.3 +/- 2.7	0.4 +/- 0.3	1.1 +/- 0.4	2.0 +/- 1.0	DL 1.0	5.0 +/-
18-Sep	DL 1.0	12.4 +/- 1.7	DL 1.0	9.8 +/- 1.4	8.0 +/- 1.0	DL 1.0	9.1 +/-
19-Sep	DL 1.0	17.3 +/- 2.0	DL 1.0	2.0 +/- 0.6	3.8 +/- 1.0	DL 1.0	7.4 +/-
20-Sep	1.6 +/- 1.4	40.3 +/- 4.5	2.7 +/- 1.1	10.5 +/- 1.7	8.8 +/- 1.0	DL 2.0	9.9 +/-
21-Sep	DL 1.0	48.4 +/- 5.1	2.1 +/- 0.7	DL 1.0	5.4 +/- 1.0	3.8 +/- 1.3	8.8 +/-

Elemental concentrations in ng/m^3. '+/-' indicates Standard Deviation - counting statistics only.
'MD' indicates Missing Data - no sample. 'DL' indicates value below given Detection Limit.

SEQUOIA NP ACID DEPOSITION PROJECT: SUMMER 1985
PARTICULATE ELEMENTAL CONCENTRATIONS

SITE: GIANT FOREST (LOWER KAWEAH)
SAMPLER: STACKED FILTER UNIT, FINE STAGE; 0.1 - 2.5 umad

DATE	Mn	Fe	Ni	Cu	Zn	Br	Pb
22-Sep	DL 1.0	48.0 +/- 5.0	1.4 +/- 0.6	DL 1.0	2.8 +/- 1.0	2.3 +/- 0.8	13.2 +/- 2.8
23-Sep	DL 1.0	46.1 +/- 4.8	2.5 +/- 0.6	5.1 +/- 0.9	3.8 +/- 1.0	2.8 +/- 0.9	9.8 +/- 2.3
24-Sep	1.2 +/- 0.9	80.7 +/- 8.2	3.3 +/- 0.8	0.8 +/- 0.6	3.6 +/- 1.0	4.0 +/- 1.3	7.6 +/- 3.2
25-Sep	2.3 +/- 1.1	95.8 +/- 9.7	2.4 +/- 0.8	DL 1.0	4.3 +/- 1.0	5.2 +/- 1.3	14.5 +/- 3.4
26-Sep	1.0 +/- 1.0	62.2 +/- 6.4	1.7 +/- 0.6	DL 1.0	4.3 +/- 1.0	5.4 +/- 1.3	5.1 +/- 2.3
27-Sep	DL 1.0	32.8 +/- 3.5	DL 1.0	DL 1.0	2.0 +/- 1.0	DL 1.0	9.1 +/- 2.6
28-Sep	1.1 +/- 0.8	29.5 +/- 3.1	1.3 +/- 0.5	DL 1.1	3.3 +/- 1.0	5.1 +/- 1.2	7.4 +/- 2.0
29-Sep	1.4 +/- 1.2	47.0 +/- 5.0	2.3 +/- 0.9	DL 1.0	3.5 +/- 1.0	5.4 +/- 1.3	9.7 +/- 3.0
30-Sep	DL 2.0	42.6 +/- 4.6	DL 1.0	DL 1.0	4.5 +/- 1.0	6.2 +/- 1.5	14.0 +/- 3.8
01-Oct	DL 1.0	56.4 +/- 5.9	2.2 +/- 0.7	2.2 +/- 0.7	4.2 +/- 1.0	DL 1.0	8.2 +/- 2.5
02-Oct	DL 2.1	47.5 +/- 5.1	2.7 +/- 0.9	2.7 +/- 0.9	9.0 +/- 1.0	DL 1.0	DL 3.1
03-Oct	DL 2.0	36.6 +/- 4.0	1.6 +/- 0.8	1.6 +/- 0.8	0.0 +/- 1.0	DL 1.0	9.7 +/- 5.2
04-Oct	DL 1.2	40.8 +/- 4.3	2.3 +/- 0.8	2.3 +/- 0.8	2.8 +/- 1.0	DL 1.0	8.7 +/- 2.7
05-Oct	DL 2.6	108.1 +/- 11.1	3.3 +/- 0.9	3.3 +/- 0.9	6.0 +/- 1.0	6.8 +/- 1.6	11.7 +/- 3.1
06-Oct	DL 1.3	52.0 +/- 5.4	DL 1.0	DL 1.0	3.9 +/- 1.0	5.5 +/- 1.3	6.5 +/- 2.6
07-Oct	DL 1.6	11.5 +/- 1.5	DL 1.0	1.0 +/- 0.7	2.5 +/- 1.0	2.7 +/- 1.1	6.4 +/- 2.4
== Count							
	65	103	73	48	103	78	98
== Average							
	1.6	62.1	2.6		4.5	5.3	9.9
== Min							
	0.0	6.9	0.4	0.6	0.0	1.6	4.5
== Max							
	4.7	114.0	6.9	10.5	19.1	10.9	19.7

Elemental concentrations in ng/m^3. '+/-' indicates Standard Deviation - counting statistics only.
'MD' indicates Missing Data - no sample. 'DL' indicates value below given Detection Limit.

EMERALD LAKE
****
STACKED FILTER UNIT, FINE STAGE.
STATISTICS OF 7-DAY SAMPLES.

All concentrations in ng/m^3

	Al	Si	S	Cl	K	Ca
NUMBER ABOVE D.L	16	16	16	1	16	16
AVERAGE **	35.1	121	250	0.9	49.3	17.3
STD DEV	14.4	50	90	0.0	26.2	9.6
MAXIMUM	67.6	220	424	4.0	107.0	42.6
MINIMUM	9.5	34	129	DL	10.8	4.3
DET LIM				1.5		

	Ti	V	Cr	Mn	Fe	Ni
NUMBER ABOVE D.L	15	1	0	12	16	16
AVERAGE **	2.6	0.4		0.9	32.0	2.4
STD DEV	1.1	0.0		0.4	12.3	3.7
MAXIMUM	5.0	1.0	DL	1.8	54.6	16.7
MINIMUM	DL	DL	DL	0.6	9.3	0.7
DET LIM	1.0	0.7	0.8	1.0		

	Cu	Zn	Br	Pb	Soot C	Fine mass
NUMBER ABOVE D.L	12	13	8	11	16	16
AVERAGE **	0.9	1.6	2.0	4.2	109	5300
STD DEV	0.3	0.6	1.2	1.8	30	1370
MAXIMUM	1.6	3.2	5.3	8.7	164	7920
MINIMUM	DL	DL	DL	DL	55	2910
DET LIM	0.9	0.5	0.6	1.0		

** Average calculated using (0.5*DET LIM) for missing values.

ELEMENTAL RATIOS OF AVERAGE CONCENTRATIONS

Ni/V	1.3	1 sample only
Pb/Br	2.1	
K/Fe	1.5	
Zn/Cu	1.8	
S/Fine mass	4.7 %	

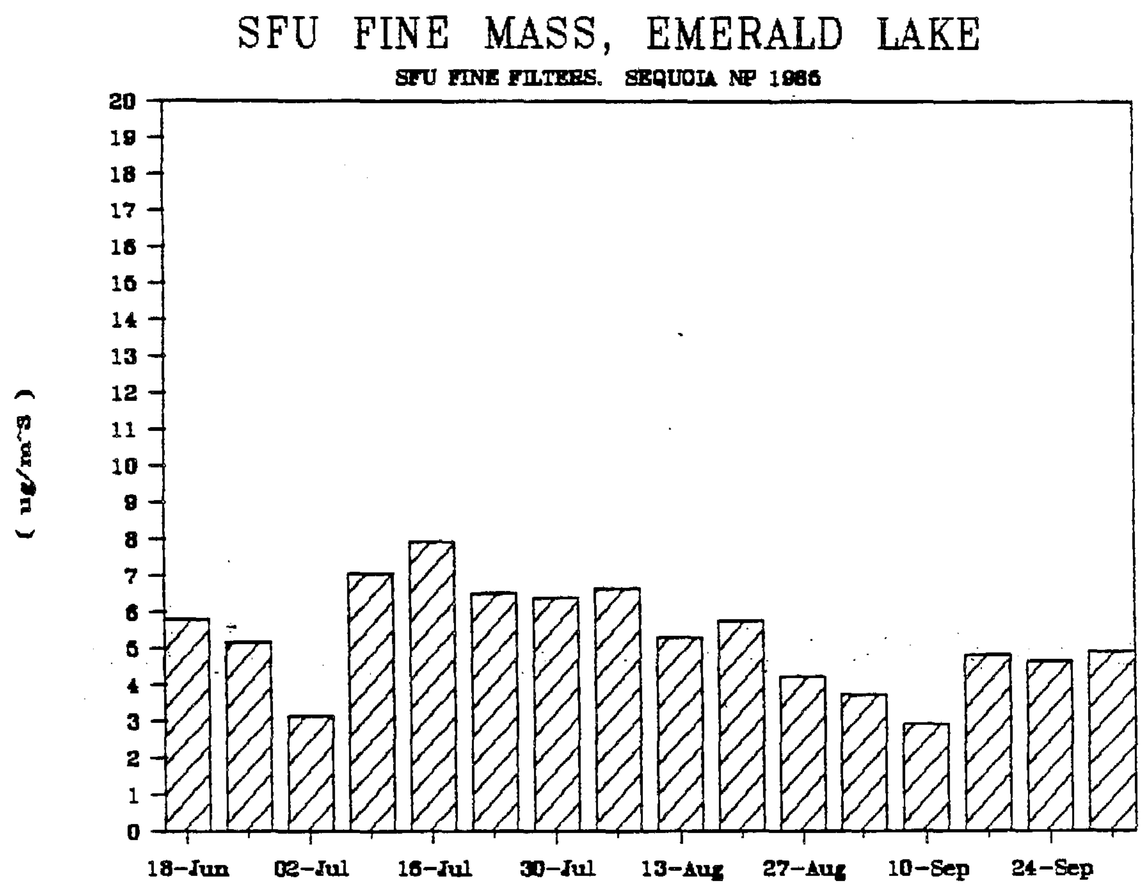
EMERALD LAKE, SEQUOIA NP, SUMMER 1985.

STACKED FILTER UNIT GRAVIMETRIC MASS AND LIPM SOOT CARBON CONCENTRATIONS.

SAMPLE START DATE	SOOT C LIPM ** ug/m^3	SFU MASS FINE ug/m^3	SFU MASS COURSE ug/m^3	SOOT C/ FINE MASS %	FINE/ TOTAL MASS %
18-Jun	0.122	5.79	7.51	2.1	43.5
25-Jun	0.110	5.17	11.28	2.1	31.4
02-Jul	0.088	3.11	6.87	2.8	31.1
09-Jul	0.164	7.06	4.64	2.3	60.3
16-Jul	0.106	7.92	23.50	1.3	25.2
23-Jul	0.125	6.53	6.76	1.9	49.1
30-Jul	0.142	6.38	18.01	2.2	26.2
06-Aug	0.153	6.63	8.69	2.3	43.3
13-Aug	0.104	5.29	18.58	2.0	22.2
20-Aug	0.132	5.74	6.60	2.3	46.5
27-Aug	0.102	4.22	4.93	2.4	46.1
03-Sep	0.055	3.70	3.94	1.5	48.4
10-Sep	0.058	2.91	2.04	2.0	58.8
17-Sep	0.090	4.80	2.44	1.9	66.3
24-Sep	0.113	4.65	3.16	2.4	59.5
01-Oct	0.076	4.94	6.63	1.5	42.7
	-----	-----	-----	-----	----
AVERAGE	0.109	5.30	8.47	2.1	43.8
STD DEV	0.030	1.37	6.09	0.4	13.1
COUNT	16	16	16	16	16

** LIPM: Absorption measurements by Laser Integrating Plate Method.

```
    b.abs = cc * ln ( Io/I )  [ 1/m ]
where  cc = A/V
        A = filter area  [ m^2 ]
        V = sampled volume  [ m^3 ]
       Io = laser intensity through clean filter
        I = laser intensity through exposed filter
soot mass = K * b.abs  [ g/m^3 ]
where   K = 0.1 [ g/m^2 ] is a nominal conversion factor to
            convert the absorption coefficient b.abs into mass
            concentration units.
```



SFU FINE MASS, EMERALD LAKE
SFU FINE FILTERS. SEQUOIA NP 1986
(ug/m^3)
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
18-Jun
02-Jul
16-Jul
30-Jul
13-Aug
27-Aug
10-Sep
24-Sep

SEQUOIA NP ACID DEPOSITION PROJECT 1985
PARTICULATE ELEMENTAL CONCENTRATIONS

SITE: EMERALD LAKE SAMPLE DURATION: 7 DAYS
SAMPLER: STACKED FILTER UNIT, FINE STAGE; 0.1 - 2.5 UMAD

DATE	Al	Si	S	Cl	K
18-Jun	67.6 +/- 7.5	220 +/- 22	398 +/- 40	DL 1.4	94.0 +/- 9.5
25-Jun	49.7 +/- 5.6	198 +/- 20	200 +/- 20	DL 2.1	68.1 +/- 7.0
02-Jul	33.2 +/- 3.7	93 +/- 9	139 +/- 14	DL 1.3	54.6 +/- 5.6
09-Jul	46.6 +/- 5.4	158 +/- 16	347 +/- 35	DL 1.4	107.0 +/-10.8
16-Jul	31.6 +/- 4.0	106 +/- 11	424 +/- 43	DL 1.3	68.9 +/- 7.0
23-Jul	37.4 +/- 4.6	149 +/- 15	378 +/- 38	DL 1.3	64.2 +/- 6.5
30-Jul	39.0 +/- 4.7	144 +/- 15	286 +/- 29	4.0 +/- 2.1	48.2 +/- 5.0
06-Aug	44.9 +/- 5.0	161 +/- 16	242 +/- 25	DL 1.8	58.7 +/- 6.1
13-Aug	22.7 +/- 3.2	100 +/- 10	254 +/- 26	DL 1.6	34.6 +/- 3.7
20-Aug	18.2 +/- 3.0	80 +/- 8	251 +/- 26	DL 2.2	33.3 +/- 3.7
27-Aug	42.5 +/- 4.6	140 +/- 14	178 +/- 18	DL 1.7	37.4 +/- 4.0
03-Sep	9.5 +/- 1.8	34 +/- 4	214 +/- 22	DL 1.5	10.8 +/- 1.4
10-Sep	10.9 +/- 1.7	36 +/- 4	129 +/- 13	DL 1.0	11.0 +/- 1.3
17-Sep	34.0 +/- 3.9	84 +/- 9	190 +/- 19	DL 1.0	23.3 +/- 2.5
24-Sep	40.3 +/- 4.6	126 +/- 13	206 +/- 21	DL 1.0	39.3 +/- 4.1
01-Oct	34.2 +/- 3.7	98 +/- 10	164 +/- 17	DL 1.0	35.1 +/- 3.6
== Count	16	16	16	1	16
== Average	35.1	121	250	4.0	49.3
== Min	9.5	34	129	4.0	10.8
== Max	67.6	220	424	4.0	107.0

Elemental concentrations in ng/m^3. '+/-' indicates Standard Deviation - counting statistics only.
'MD' indicates Missing Data - no sample. 'DL' indicates value below Detection Limit.

SEQUOIA NP ACID DEPOSITION PROJECT 1985
PARTICULATE ELEMENTAL CONCENTRATIONS

SITE: EMERALD LAKE SAMPLE DURATION: 7 DAYS
SAMPLER: STACKED FILTER UNIT, FINE STAGE; 0.1 - 2.5 UMAD

DATE	CA	Ti	V	Cr	Mn
18-Jun	34.4 +/- 3.8	4.3 +/- 0.7	1.0DL 0.5	DL 0.7	1.3 +/- 0.4
25-Jun	42.6 +/- 4.5	4.3 +/- 1.0	DL 0.9	DL 1.0	1.3 +/- 0.7
02-Jul	16.6 +/- 2.0	2.1 +/- 0.6	DL 0.6	DL 0.6	0.6 +/- 0.5
09-Jul	21.7 +/- 2.8	2.4 +/- 0.6	DL 0.6	DL 0.7	0.8 +/- 0.5
16-Jul	10.0 +/- 1.5	2.4 +/- 0.5	DL 0.5	DL 0.6	0.6 +/- 0.5
23-Jul	13.9 +/- 1.8	2.7 +/- 0.6	DL 0.6	DL 0.6	1.2 +/- 0.5
30-Jul	18.1 +/- 2.1	3.6 +/- 0.7	+/- 0.7	DL 0.8	1.2 +/- 0.6
06-Aug	25.2 +/- 2.8	5.0 +/- 0.9	DL 0.8	DL 0.9	1.8 +/- 0.7
13-Aug	12.6 +/- 2.5	2.8 +/- 0.7	DL 0.8	DL 0.8	0.7 +/- 0.5
20-Aug	13.3 +/- 1.7	1.2 +/- 1.0	DL 1.0	DL 1.1	1.5 +/- 0.8
27-Aug	16.7 +/- 1.9	3.0 +/- 0.8	DL 0.8	DL 0.9	1.2 +/- 0.6
03-Sep	4.3 +/- 0.7	1.4 +/- 0.6	DL 0.6	DL 0.7	0.7 +/- 0.5
10-Sep	5.4 +/- 0.7	DL 1.0	DL 1.0	DL 1.0	DL 1.0
17-Sep	10.9 +/- 1.3	1.7 +/- 0.6	DL 1.0	DL 1.0	DL 1.0
24-Sep	17.0 +/- 1.9	1.7 +/- 0.5	DL 1.0	DL 1.0	DL 1.0
01-Oct	13.4 +/- 1.5	2.0 +/- 0.5	DL 1.0	DL 1.0	DL 1.0
== Count	16	15	1	0	12
== Average	17.3	2.7			1.1
== Min	4.3	1.2			0.6
== Max	42.6	5.0			1.8

Elemental concentrations in ng/m^3. '+/-' indicates Standard Deviation - counting statistics only.
'MD' indicates Missing Data - no sample. 'DL' indicates value below Detection Limit.

SEQUOIA NP ACID DEPOSITION PROJECT 1985
PARTICULATE ELEMENTAL CONCENTRATIONS

SITE: EMERALD LAKE SAMPLE DURATION: 7 DAYS
SAMPLER: STACKED FILTER UNIT, FINE STAGE; 0.1 - 2.5 UMAD

DATE	Fe	Ni	Cu	Zn	Br	Pb
18-Jun	54.6 +/- 5.5	1.3 +/- 0.4	0.9 +/- 0.3	1.9 +/- 0.5	4.2 +/- 0.9	7.8 +/- 1.5
25-Jun	46.9 +/- 4.9	1.7 +/- 0.5	1.0 +/- 0.4	DL 0.6	DL 0.4	DL 1.3
02-Jul	24.7 +/- 2.6	1.2 +/- 0.3	0.7 +/- 0.3	1.0 +/- 0.4	DL 0.3	5.4 +/- 1.0
09-Jul	40.5 +/- 5.1	1.6 +/- 0.4	1.1 +/- 0.4	2.9 +/- 0.5	3.4 +/- 0.7	5.0 +/- 1.3
16-Jul	25.8 +/- 2.7	1.3 +/- 0.3	0.9 +/- 0.3	2.1 +/- 0.5	4.0 +/- 0.7	6.7 +/- 1.5
23-Jul	32.0 +/- 3.3	1.5 +/- 0.4	0.8 +/- 0.3	2.5 +/- 0.5	5.3 +/- 0.9	4.6 +/- 1.2
30-Jul	41.1 +/- 4.2	2.5 +/- 0.5	1.6 +/- 0.4	DL 0.5	4.4 +/- 0.8	8.3 +/- 1.9
06-Aug	46.5 +/- 4.8	2.6 +/- 0.6	1.6 +/- 0.4	3.2 +/- 0.7	DL 0.4	8.7 +/- 2.0
13-Aug	33.0 +/- 3.4	1.5 +/- 0.4	1.2 +/- 0.4	1.7 +/- 0.5	4.3 +/- 0.8	DL 1.1
20-Aug	30.8 +/- 3.3	16.7 +/- 1.9	DL 0.7	1.5 +/- 0.5	DL 0.4	6.8 +/- 1.8
27-Aug	39.6 +/- 4.1	1.4 +/- 0.4	1.2 +/- 0.5	1.8 +/- 0.5	DL 0.4	4.7 +/- 1.5
03-Sep	10.5 +/- 1.2	1.2 +/- 0.4	0.7 +/- 0.4	DL 0.4	DL 0.3	DL 0.9
10-Sep	9.3 +/- 1.1	1.3 +/- 0.4	DL 1.0	0.8 +/- 0.3	1.0 +/- 0.5	DL 1.0
17-Sep	20.8 +/- 2.2	1.2 +/- 0.3	DL 1.0	1.6 +/- 0.4	DL 1.0	DL 1.0
24-Sep	30.4 +/- 3.1	0.7 +/- 0.3	DL 1.0	2.1 +/- 0.5	3.1 +/- 0.8	3.5 +/- 1.4
01-Oct	24.8 +/- 2.6	0.8 +/- 0.3	0.8 +/- 0.3	1.7 +/- 0.4	DL 1.0	3.1 +/- 1.3
== Count	16	16	12	13	8	11
== Average	32.0	2.4	1.0	1.9	3.7	5.9
== Min	9.3	0.7	0.7	0.8	1.0	3.1
== Max	54.6	16.7	1.6	3.2	5.3	8.7

Elemental concentrations in ng/m^3. '+/-' indicates Standard Deviation - counting statistics only.
'MD' indicates Missing Data - no sample. 'DL' indicates value below Detection Limit.

SEQUOIA-GIANT FOREST / PERIOD 5 / STAGE 1 / PART 1

AMOUNTS IN NANOGRAMS/M**3
MATRIX CORRECTIONS USING DRUM1

ID	SLIDE	CC	NA	MG	AL	SI	P	S	CL	K	CA
1	3	0.238	58.6*	238.2	613.3	1722.1	24.4*	18.0*	16.7*	125.0	154.5
2	4	0.238	58.6*	43.8*	843.4	1958.2	24.4*	16.8*	15.3*	175.7	178.0
3	5	0.238	55.5*	313.2	635.3	1947.1	24.4*	16.8*	15.3*	159.7	183.9
4	6	0.238	55.5*	43.8*	528.1	1067.0	22.8*	16.8*	15.3*	83.5	110.5
5	7	0.238	55.5*	63.6	211.5	428.9	22.8*	16.8*	15.3*	33.4	40.2
6	8	0.238	74.0*	55.4*	324.7	461.5	30.4*	21.9*	19.5*	23.0	46.1
7	9	0.238	74.0*	126.1	428.5	1141.2	32.0*	21.9*	20.9*	90.7	115.0
8	10	0.238	61.7*	201.1	558.6	1564.3	25.9*	18.0*	16.7*	145.4	166.6
9	11	0.238	67.8*	52.5*	670.8	1589.6	28.9*	20.6*	18.1*	129.5	186.6
10	12	0.238	77.1*	76.0	366.9	832.0	32.0*	23.2*	20.9*	64.2	92.7
11	13	0.238	55.5*	102.8	219.9	474.7	22.8*	16.8*	15.3*	28.4	40.6
12	14	0.238	58.6*	142.1	433.9	916.8	25.9*	18.0*	16.7*	70.5	91.5
13	15	0.238	58.6*	46.7*	554.6	1147.3	25.9*	18.0*	16.7*	80.6	102.2
14	16	0.238	64.8*	49.6*	622.6	1575.0	27.4*	19.3*	18.1*	134.3	151.0
15	17	0.238	58.6*	43.8*	739.0	1642.6	24.4*	16.8*	15.3*	141.0	141.4
16	18	0.238	55.5*	113.7	644.5	1309.0	22.8*	16.8*	15.3*	125.7	129.7
17	19	0.238	52.4*	40.8*	305.3	657.0	21.3*	15.5*	13.9*	48.3	56.7
18	20	0.238	52.4*	40.8*	441.5	776.2	21.3*	15.5*	13.9*	50.3	81.3
19	21	0.238	52.4*	132.3	644.0	1211.7	22.8*	15.5*	13.9*	94.1	110.6
20	22	0.238	55.5*	182.1	635.7	1607.7	22.8*	16.8*	15.3*	145.3	157.3
21	23	0.238	207.2	135.6	967.5	2191.8	24.4*	16.8*	15.3*	203.1	209.2
22	24	0.238	58.6*	43.8*	751.0	1697.1	24.4*	18.0*	16.7*	139.1	139.8
23	25	0.238	58.6*	43.8*	476.5	982.1	24.4*	16.8*	15.3*	78.7	83.4
24	26	0.238	243.8	46.7*	442.6	887.0	24.4*	18.0*	16.7*	69.9	85.9
25	27	0.238	58.6*	173.2	607.5	1565.9	24.4*	18.0*	16.7*	122.4	144.0
26	28	0.238	58.6*	46.7*	669.5	1580.1	25.9*	18.0*	16.7*	132.4	136.0
27	29	0.238	61.7*	287.7	566.9	1594.6	24.4*	18.0*	16.7*	131.0	134.0
28	30	0.238	58.6*	259.8	354.5	912.6	24.4*	18.0*	16.7*	65.8	80.8
29	31	0.238	58.6*	46.7*	195.7	366.3	24.4*	18.0*	16.7*	18.7	35.2
30	32	0.238	90.3	40.8*	200.0	357.5	22.8*	16.8*	15.3*	22.2	31.8
31	33	0.238	56.5	46.7*	291.1	615.0	25.9*	18.0*	16.7*	46.1	72.1
32	34	0.238	58.6*	59.7	267.3	680.6	24.4*	16.8*	15.3*	49.3	66.2
33	35	0.238	52.0	77.3	372.1	779.6	24.4*	16.8*	15.3*	73.7	79.4
34	36	0.238	61.7*	44.8	218.2	510.2	24.4*	18.0*	16.7*	37.0	46.9
35	37	0.238	61.7*	75.8	156.1	212.6	25.9*	18.0*	16.7*	15.7	22.6
36	38	0.238	83.2	49.6*	138.7	248.3	25.9*	19.3*	16.7*	18.7	25.6
37	39	0.238	58.6*	46.7*	283.2	552.4	24.4*	18.0*	16.7*	39.8	54.2
38	40	0.238	55.5*	123.3	385.8	812.1	22.8*	16.8*	15.3*	63.2	66.0
39	41	0.238	55.5*	172.3	461.7	1059.9	24.4*	16.8*	15.3*	88.7	89.8
40	42	0.238	52.4*	40.8*	319.6	600.1	21.3*	15.5*	13.9*	41.8	54.1

SEQUOIA-GIANT FOREST / PERIOD 5 / STAGE 1 / PART 1

AMOUNTS IN NANOGRAMS/M**3
MATRIX CORRECTIONS USING DRUM1

ID	SLIDE	TI	V	CR	MN	FE	NI	CU	ZN	BR	PB
1	3	32.9	5.4*	5.4*	5.4*	339.8	4.3*	4.3*	4.2*	3.2*	9.9*
2	4	31.1	5.4*	5.4*	8.3	382.4	4.3*	3.2*	4.2*	3.2*	9.9*
3	5	29.9	5.4*	5.4*	7.3	376.8	4.3*	3.2*	4.2*	3.2*	9.9*
4	6	13.3	4.3*	5.4*	6.6	213.3	2.8	3.2*	4.2*	4.3*	9.9*
5	7	5.5*	4.3*	5.4*	5.4*	79.4	3.2*	3.2*	4.2*	3.2*	9.4*
6	8	8.1	6.5*	6.5*	6.5*	88.8	4.3*	4.3*	4.2*	6.4*	12.1*
7	9	11.9	6.5*	6.5*	6.5*	222.1	5.4*	4.3*	5.3*	6.4*	13.2*
8	10	28.2	5.4*	5.4*	10.1	309.8	4.3*	3.2*	4.2*	4.3*	11.0*
9	11	18.6	6.5*	6.5*	6.3	342.1	4.3*	4.3*	4.2*	5.4*	11.0*
10	12	14.7	6.5*	7.6*	6.5*	175.4	5.4*	4.3*	5.3*	7.5*	15.4*
11	13	7.2	4.3*	5.4*	5.4*	92.3	3.2*	3.2*	4.2*	3.2*	9.9*
12	14	16.7	5.4*	5.4*	6.4	209.6	4.3*	3.2*	4.2*	4.3*	11.0*
13	15	17.3	5.4*	5.4*	5.4*	217.2	4.3*	4.3*	4.2*	4.3*	11.0*
14	16	12.2	5.4*	6.5*	6.7	309.1	4.3*	4.3*	4.2*	4.3*	11.0*
15	17	24.3	5.4*	5.4*	10.5	344.9	4.3*	3.2*	4.2*	3.2*	9.4*
16	18	16.0	5.4*	5.4*	5.4*	280.6	3.2*	3.2*	4.2*	3.2*	8.8*
17	19	10.2	4.3*	4.4*	4.3*	140.7	3.2*	3.2*	3.2*	3.2*	8.8*
18	20	12.4	4.3*	4.4*	4.3*	166.4	3.2*	3.2*	3.2*	4.3*	9.9*
19	21	14.5	4.3*	5.4*	5.2	242.8	3.2*	3.2*	3.2*	4.3*	9.9*
20	22	26.7	4.3*	5.4*	4.3	334.1	3.2*	3.2*	4.2*	4.3*	9.9*
21	23	32.0	5.4*	5.4*	9.9	432.8	4.3*	3.2*	4.2*	3.2*	9.4*
22	24	24.3	5.4*	5.4*	6.5	313.5	4.3*	4.3*	4.2*	3.2*	9.9*
23	25	12.0	5.4*	5.4*	5.3	187.3	4.3*	3.2*	4.2*	3.2*	9.4*
24	26	12.3	5.4*	5.4*	4.9	178.9	4.3*	3.2*	4.2*	3.2*	9.9*
25	27	16.3	5.4*	5.4*	6.4	285.5	4.3*	3.2*	4.2*	3.2*	9.9*
26	28	14.8	5.4*	5.4*	9.4	312.6	4.3*	4.3*	4.2*	3.2*	11.0*
27	29	29.4	5.4*	5.4*	9.4	346.8	4.3*	3.2*	4.2*	3.2*	11.0*
28	30	10.9	5.4*	5.4*	5.4*	188.2	4.3*	3.2*	4.2*	3.2*	9.9*
29	31	5.5*	5.4*	5.4*	5.4*	80.1	4.3*	3.2*	4.2*	4.3*	11.0*
30	32	5.9	4.3*	5.4*	5.4*	102.1	3.2*	3.2*	4.2*	4.3*	9.9*
31	33	14.7	5.4*	5.4*	5.4*	138.9	4.3*	3.2*	4.2*	4.3*	11.0*
32	34	5.1	5.4*	5.4*	5.4*	146.2	4.3*	3.2*	4.2*	3.2*	9.9*
33	35	9.7	5.4*	5.4*	5.4*	172.9	4.3*	3.2*	4.2*	3.2*	9.9*
34	36	9.1	5.4*	5.4*	5.4*	114.2	4.3*	3.2*	4.2*	4.3*	11.0*
35	37	5.5*	5.4*	5.4*	5.4*	50.3	4.3*	4.3*	4.2*	4.3*	11.0*
36	38	5.5*	5.4*	5.4*	5.4*	59.0	4.3*	4.3*	4.2*	4.3*	11.0*
37	39	5.8	5.4*	5.4*	4.3	116.7	4.3*	3.2*	4.2*	4.3*	11.0*
38	40	9.8	5.4*	5.4*	5.4*	175.7	4.3*	3.2*	4.2*	3.2*	9.9*
39	41	17.7	5.4*	5.4*	5.9	234.0	4.3*	3.2*	4.2*	3.2*	9.4*
40	42	12.6	4.3*	4.4*	5.5	128.5	3.2*	3.2*	3.2*	3.2*	8.8*

* MINIMUM DETECTABLE LIMIT, ELEMENT NOT FOUND

ADDITIONAL ELEMENTS FOUND: ID, SLIDE, ELEMENT, AMOUNT
40 42 RU 51.1

SEQUOIA-GIANT FOREST / PERIOD 5 / STAGE 1 / PART 2

AMOUNTS IN NANOGRAMS/M**3
MATRIX CORRECTIONS USING DRUM1

ID	SLIDE	CC	NA	MG	AL	SI	P	S	CL	K	CA
1	3	0.238	52.4*	40.8*	177.0	247.6	21.3*	15.5*	13.9*	13.1	21.4
2	4	0.238	169.0	40.8*	177.0	341.8	21.3*	15.5*	13.9*	18.9	37.3
3	5	0.238	49.3*	211.8	323.4	827.6	21.3*	15.5*	13.9*	65.3	78.9
4	6	0.238	52.4*	252.6	486.7	1415.6	21.3*	15.5*	13.9*	110.7	146.6
5	7	0.238	52.4*	110.0	321.2	633.6	21.3*	15.5*	13.9*	50.3	63.5
6	8	0.238	52.4*	104.2	119.0	329.9	21.3*	15.5*	13.9*	16.5	30.1
7	9	0.238	52.4*	98.5	214.1	422.0	21.3*	15.5*	13.9*	27.9	47.3
8	10	0.238	55.5*	209.7	395.5	967.7	22.8*	15.5*	15.3*	75.2	94.8
9	11	0.238	64.8*	49.6*	428.2	1261.2	27.4*	19.3*	18.1*	102.6	118.0
10	12	0.238	58.6*	46.7*	524.2	1370.6	24.4*	18.0*	16.7*	107.0	129.3
11	13	0.238	52.4*	40.8*	253.6	614.8	21.3*	15.5*	13.9*	42.1	59.2
12	14	0.238	55.5*	53.1	195.8	430.9	25.9*	18.0*	16.7*	30.3	49.1
13	15	0.238	55.5*	87.7	347.4	672.2	22.8*	16.8*	15.3*	52.6	70.3
14	16	0.238	55.5*	43.8*	527.1	1165.6	22.8*	16.8*	15.3*	97.6	113.9
15	17	0.238	55.5*	43.8*	743.1	1854.5	22.8*	16.8*	15.3*	161.6	175.8
16	18	0.238	68.5	40.8*	709.6	1523.3	22.8*	15.5*	15.3*	105.2	163.0
17	19	0.238	52.4*	107.1	309.4	647.5	22.8*	15.5*	13.9*	34.8	59.9
18	20	0.238	52.4*	55.1	210.0	411.2	21.3*	15.5*	13.9*	27.0	43.3
19	21	0.238	52.4*	258.1	380.0	850.0	22.8*	16.8*	15.3*	46.2	90.9
20	22	0.238	55.5*	43.8*	612.0	1391.2	22.8*	16.8*	15.3*	102.7	119.7
21	23	0.238	55.5*	43.8*	653.1	1569.6	22.8*	16.8*	15.3*	148.1	137.4
22	24	0.238	55.5*	40.8*	595.8	1369.2	22.8*	16.8*	15.3*	117.2	124.4
23	25	0.238	52.4*	91.5	283.0	640.5	21.3*	15.5*	13.9*	41.4	68.3
24	26	0.238	55.5*	41.1	206.5	376.6	22.8*	12.7	13.9*	29.6	39.9
25	27	0.238	55.5*	51.2	272.3	644.0	22.8*	16.8*	15.3*	44.5	68.3
26	28	0.238	150.0	49.6*	723.6	1446.2	27.4*	19.3*	18.1*	127.0	141.9
27	29	0.238	61.7*	46.7*	755.5	1915.8	25.9*	18.0*	16.7*	166.0	164.2
28	30	0.238	120.4	43.8*	692.7	1335.2	24.4*	16.8*	15.3*	127.9	150.6
29	31	0.238	55.5*	43.8*	266.7	604.9	22.8*	16.8*	15.3*	44.7	58.2
30	32	0.238	121.2	43.8*	215.1	448.8	22.8*	16.8*	15.3*	30.0	52.0
31	33	0.238	58.6*	123.4	345.3	757.7	24.4*	16.8*	15.3*	57.3	73.3
32	34	0.238	58.6*	222.3	683.3	1501.6	24.4*	18.0*	16.7*	138.1	149.8
33	35	0.238	61.7*	192.0	808.4	1889.7	25.9*	18.0*	16.7*	180.5	181.1
34	36	0.238	61.7*	46.7*	618.0	1478.9	25.9*	18.0*	16.7*	130.5	152.5
35	37	0.238	52.4*	180.0	454.2	907.2	22.8*	15.5*	13.9*	65.7	78.3
36	38	0.238	55.5*	43.8*	242.0	403.8	22.8*	16.8*	15.3*	29.4	33.0
37	39	0.238	55.5*	60.1	362.0	721.9	22.8*	16.8*	15.3*	41.5	78.8
38	40	0.238	55.5*	359.5	582.2	1479.4	24.4*	16.6*	15.3*	111.0	121.6
39	41	0.238	55.5*	43.8*	691.4	1737.1	24.4*	18.0*	16.7*	147.4	161.3
40	42	0.238	55.5*	43.6*	679.0	1525.1	24.4*	16.8*	15.3*	126.5	147.1

SEQUOIA-GIANT FOREST / PERIOD 5 / STAGE 1 / PART 2

AMOUNTS IN NANOGRAMS/M**3
MATRIX CORRECTIONS USING DRUM1

ID	SLIDE	TI	V	CR	MN	FE	NI	CU	ZN	BR	PB
1	3	4.4*	4.3*	4.4*	4.3*	54.6	3.2*	3.2*	3.2*	3.2*	8.8*
2	4	4.4*	4.3*	4.4*	4.3*	76.6	3.2*	3.2*	3.2*	3.2*	8.8*
3	5	10.1	4.3*	4.4*	5.2	188.8	3.2*	3.2*	3.2*	3.2*	9.9*
4	6	28.7	4.3*	4.4*	6.1	276.5	3.2*	3.2*	3.2*	3.2*	8.8*
5	7	10.5	4.3*	4.4*	4.8	138.3	3.2*	3.2*	3.2*	3.2*	9.9*
6	8	4.4*	4.3*	4.4*	3.5	63.6	3.2*	3.2*	3.2*	3.2*	8.8*
7	9	5.4	4.3*	4.4*	4.3*	88.4	3.2*	3.2*	3.2*	3.2*	8.8*
8	10	14.4	4.3*	5.4*	8.9	196.3	3.2*	3.2*	3.2*	4.3*	9.9*
9	11	94.0	5.4*	38.8	6.5*	306.4	4.3*	4.3*	4.2*	4.3*	11.0*
10	12	61.0	5.4*	14.5	5.4*	299.2	4.3*	3.2*	4.2*	3.2*	9.9*
11	13	35.6	4.3*	10.5	4.3*	148.7	3.2*	3.2*	3.2*	4.3*	9.9*
12	14	49.7	5.4*	17.3	5.4*	158.7	4.3*	4.3*	4.2*	3.2*	11.0*
13	15	28.4	5.4*	5.6	5.4*	147.8	3.2*	3.2*	4.2*	3.2*	9.9*
14	16	20.6	5.4*	5.4*	4.4	263.6	4.3*	3.2*	4.2*	4.3*	9.9*
15	17	27.9	4.3*	5.4*	8.6	363.6	3.2*	3.2*	4.2*	4.3*	9.9*
16	18	22.7	4.3*	5.4*	7.4	305.0	3.2*	3.2*	4.2*	4.3*	9.9*
17	19	7.7	4.3*	5.4*	4.3*	139.5	3.2*	3.2*	3.2*	4.3*	9.9*
18	20	8.5	4.3*	4.4*	3.4	91.7	3.2*	3.2*	3.2*	4.3*	9.9*
19	21	10.5	4.3*	5.4*	7.3	178.1	3.2*	3.2*	4.2*	4.3*	9.9*
20	22	21.3	4.3*	5.4*	8.3	293.4	3.2*	3.2*	4.2*	4.3*	9.9*
21	23	24.1	4.3*	5.4*	7.8	338.3	3.2*	3.2*	4.2*	4.3*	9.9*
22	24	24.3	4.3*	5.4*	7.6	275.9	3.2*	3.2*	4.2*	4.3*	9.9*
23	25	11.8	4.3*	4.4*	4.6	115.0	3.2*	3.2*	3.2*	4.3*	9.9*
24	26	4.3	4.3*	4.4*	4.3*	77.5	3.2*	3.2*	3.2*	3.2*	9.9*
25	27	9.9	4.3*	5.4*	5.4*	129.5	4.0	3.2*	4.2*	3.2*	9.9*
26	28	17.7	5.4*	5.5*	6.5*	293.5	4.3*	4.3*	4.2*	4.3*	12.1*
27	29	28.4	5.4*	5.4*	9.1	404.9	4.3*	4.3*	4.2*	4.3*	11.0*
28	30	22.0	5.4*	5.4*	7.2	301.0	4.3*	3.2*	4.2*	3.2*	9.9*
29	31	11.8	4.3*	5.4*	7.6	112.6	3.2*	3.2*	3.2*	3.2*	9.9*
30	32	7.0	4.3*	5.4*	5.4*	82.2	3.2*	3.2*	4.2*	4.3*	9.9*
31	33	11.6	5.4*	5.4*	4.5	166.0	4.3*	3.2*	4.2*	3.2*	9.9*
32	34	24.1	5.4*	5.4*	5.5	298.4	4.3*	3.2*	4.2*	4.3*	11.0*
33	35	37.1	5.4*	5.4*	7.8	411.6	4.3*	4.3*	4.2*	4.3*	11.0*
34	36	23.9	5.4*	5.4*	5.2	328.8	4.3*	3.2*	4.2*	4.3*	9.9*
35	37	11.9	4.3*	5.4*	7.4	196.2	3.2*	3.2*	4.2*	3.2*	9.9*
36	38	6.1	4.3*	5.4*	4.9	85.5	3.2*	3.2*	4.2*	3.2*	9.9*
37	39	21.1	4.3*	5.4*	4.8	136.4	3.2*	3.2*	4.2*	4.3*	9.9*
38	40	17.9	5.4*	5.4*	6.3	302.4	4.3*	3.2*	4.2*	4.3*	11.0*
39	41	19.3	5.4*	5.4*	7.5	381.5	4.3*	3.2*	4.2*	3.2*	9.9*
40	42	27.0	5.4*	5.4*	3.8	327.6	4.3*	3.2*	4.2*	3.2*	9.9*

* MINIMUM DETECTABLE LIMIT, ELEMENT NOT FOUND

UC DAVIS PIXE ANALYSIS FILE 31513 ANALYSIS ON 02/26/86 O/P ON 02/27/86
SEQUOIA-GIANT FOREST / PERIOD 5 / STAGE 1 / PART 3

AMOUNTS IN NANOGRAMS/M**3
MATRIX CORRECTIONS USING DRUM1

ID	SLIDE	CC	NA	MG	AL	SI	P	S	CL	K	CA
1	3	0.238	55.5*	58.9	257.5	563.9	22.8*	16.8*	15.3*	34.3	49.2

ID	SLIDE	TI	V	CR	MN	FE	NI	CU	ZN	BR	PB
1	3	5.4	4.3*	5.4*	5.4*	115.2	3.2*	3.2*	4.2*	3.2*	9.9*

* MINIMUM DETECTABLE LIMIT, ELEMENT NOT FOUND

UC DAVIS PIXE ANALYSIS FILE 31521 ANALYSIS ON 02/26/86 O/P ON 02/27/86
SEQUOIA-GIANT FOREST / PERIOD 5 / STAGE 2 / PART 1

AMOUNTS IN NANOGRAMS/M**3
MATRIX CORRECTIONS USING DRUM2

ID	SLIDE	CC	NA	MG	AL	SI	P	S	CL	K	CA
1	3	0.238	161.3	31.1*	256.8	491.5	21.6*	16.1*	14.5*	45.8	58.1
2	4	0.238	327.9	29.6*	299.6	826.6	19.2*	15.0*	13.3*	68.0	86.3
3	5	0.238	40.2*	293.5	283.8	876.0	19.2*	15.1*	13.3*	61.4	88.5
4	6	0.238	37.0*	233.8	223.5	467.2	19.1*	15.0*	13.2*	37.9	49.6
5	7	0.238	36.2*	99.4	87.7	256.8	19.0*	14.9*	13.2*	17.1	25.1
6	8	0.238	154.3	28.9*	231.4	306.9	19.0*	15.0*	13.2*	19.5	29.6
7	9	0.238	37.4*	228.9	240.5	620.5	19.1*	15.0*	13.3*	53.9	57.9
8	10	0.238	321.5	29.6*	319.3	786.9	19.2*	15.0*	13.3*	76.1	83.3
9	11	0.238	37.9*	309.3	294.8	798.2	19.2*	15.0*	13.3*	60.6	99.5
10	12	0.238	102.5	28.9*	241.0	335.9	19.0*	15.0*	13.2*	29.3	39.6
11	13	0.238	36.1*	170.9	59.8	203.1	19.0*	13.8*	13.2*	14.6	26.6
12	14	0.238	36.4*	28.8*	179.9	345.6	19.0*	13.8*	13.2*	21.7	40.4
13	15	0.238	37.3*	195.1	241.0	608.3	19.1*	13.9*	13.3*	43.9	64.8
14	16	0.238	37.6*	27.4*	298.4	781.2	19.1*	13.9*	13.3*	58.6	81.9
15	17	0.238	38.1*	249.2	285.1	904.8	19.2*	13.9*	13.3*	78.4	96.0
16	18	0.238	37.3*	29.3*	337.7	648.1	19.1*	15.0*	13.3*	53.3	71.5
17	19	0.238	36.4*	28.8*	168.4	350.6	19.0*	13.8*	13.2*	26.5	38.6
18	20	0.238	37.1*	88.0	304.7	546.6	19.1*	13.8*	13.3*	36.4	45.5
19	21	0.238	37.0*	27.2*	305.5	512.8	19.1*	13.8*	13.2*	40.3	55.0
20	22	0.238	36.0*	218.4	370.9	856.5	19.2*	13.9*	12.1*	71.4	99.7
21	23	0.238	38.3*	27.8*	425.1	1049.3	19.2*	13.9*	12.1*	91.4	99.7
22	24	0.238	36.1*	216.4	333.7	952.0	17.9*	13.9*	12.1*	84.0	93.3
23	25	0.238	38.9*	31.0*	236.0	538.4	20.3*	15.0*	13.2*	43.4	46.0
24	26	0.238	35.4*	172.7	272.5	690.4	17.8*	13.9*	12.1*	54.1	62.9
25	27	0.238	35.5*	27.4*	302.6	802.8	17.8*	13.9*	12.1*	56.9	81.7
26	28	0.238	35.1*	178.1	202.8	629.2	17.8*	13.8*	12.1*	42.2	64.3
27	29	0.238	36.9*	27.1*	232.7	532.8	19.0*	13.8*	12.0*	39.5	38.9
28	30	0.238	34.4*	26.9*	197.4	370.2	19.0*	13.8*	12.0*	25.7	27.1
29	31	0.238	36.1*	26.8*	134.0	233.3	19.0*	13.8*	12.0*	7.2	23.6
30	32	0.238	36.1*	26.8*	145.3	260.8	19.0*	13.8*	13.2*	11.2	21.0
31	33	0.238	36.4*	109.0	146.4	349.9	19.0*	13.8*	13.2*	21.2	36.3
32	34	0.238	57.5	112.0	126.3	351.2	19.0*	13.8*	13.2*	21.6	37.8
33	35	0.238	36.4*	65.2	124.8	365.7	19.0*	15.0*	13.2*	25.0	32.4
34	36	0.238	36.2*	97.7	103.4	259.6	19.0*	14.9*	13.2*	14.9	25.4
35	37	0.238	35.7*	28.5*	21.5*	139.0	18.9*	14.9*	13.2*	7.6*	19.6
36	38	0.238	35.7*	64.5	72.7	104.6	18.9*	14.9*	13.2*	7.6*	6.6
37	39	0.238	116.9	28.8*	170.2	275.9	19.0*	15.0*	13.2*	18.3	21.0
38	40	0.238	36.9*	259.9	171.5	453.5	19.0*	15.0*	13.2*	31.2	46.2
39	41	0.238	37.1*	29.2*	262.9	579.7	19.1*	15.0*	13.3*	58.3	59.4
40	42	0.238	38.5*	139.1	152.8	332.8	19.0*	15.0*	13.2*	20.7	39.1

UC DAVIS PIXE ANALYSIS FILE 31521 ANALYSIS ON 02/26/86 O/P ON 02/27/86

SEQUOIA-GIANT FOREST / PERIOD 5 / STAGE 2 / PART 1

AMOUNTS IN NANOGRAMS/M**3
MATRIX CORRECTIONS USING DRUM2

ID	SLIDE	TI	V	CR	MN	FE	NI	CU	ZN	BR	PB
1	3	15.8	5.2*	5.2*	3.4	119.4	4.2*	3.1*	4.1*	4.2*	10.5*
2	4	7.3	5.2*	5.2*	6.9	179.6	4.2*	3.1*	4.1*	4.2*	10.5*
3	5	5.3*	5.2*	5.2*	5.2*	183.7	4.2*	3.1*	4.1*	4.2*	9.5*
4	6	10.6	4.2*	5.2*	5.2*	106.1	3.1*	3.1*	4.1*	3.1*	9.5*
5	7	5.6	4.2*	5.2*	5.2*	55.4	3.1*	3.1*	4.1*	3.1*	8.4*
6	8	5.3*	5.2*	5.2*	5.2*	78.3	4.2*	3.1*	4.1*	3.1*	9.5*
7	9	11.4	4.2*	5.2*	5.2*	145.8	3.1*	3.1*	4.1*	4.2*	9.5*
8	10	12.6	4.2*	5.2*	5.1	170.2	3.1*	3.1*	4.1*	4.2*	9.5*
9	11	8.8	4.2*	5.2*	5.2*	184.5	3.1*	3.1*	4.1*	4.2*	9.5*
10	12	8.7	4.2*	5.2*	3.1	77.9	3.1*	3.1*	4.1*	4.2*	9.5*
11	13	5.3*	4.2*	5.2*	5.2*	47.7	3.1*	3.1*	4.1*	4.2*	9.5*
12	14	5.3*	3.5	5.2*	5.2*	84.9	3.1*	3.1*	3.1*	4.2*	9.5*
13	15	11.0	4.2*	5.2*	5.2*	133.4	3.1*	3.1*	4.1*	4.2*	9.5*
14	16	10.6	4.2*	5.2*	5.2*	179.5	3.1*	3.1*	3.1*	4.2*	9.5*
15	17	18.8	4.2*	5.2*	4.8	202.7	3.1*	3.1*	4.1*	4.2*	9.5*
16	18	9.1	4.2*	5.2*	5.2*	158.3	3.1*	3.1*	4.1*	4.2*	9.5*
17	19	5.3*	4.2*	5.2*	5.2*	83.6	3.1*	3.1*	4.1*	4.2*	9.5*
18	20	6.5	4.2*	5.2*	3.5	121.9	3.1*	3.1*	4.1*	3.1*	9.5*
19	21	6.6	4.2*	5.2*	4.2	130.9	3.1*	3.1*	4.1*	3.1*	9.5*
20	22	14.9	4.2*	5.2*	5.8	180.5	3.1*	3.1*	4.1*	3.1*	9.5*
21	23	16.3	4.2*	5.2*	7.8	231.5	3.1*	3.1*	4.1*	3.1*	8.4*
22	24	15.6	4.2*	4.2*	5.4	205.1	3.1*	3.1*	3.1*	3.1*	8.4*
23	25	12.5	5.2*	5.2*	4.0	116.5	4.2*	3.1*	4.1*	4.2*	9.5*
24	26	10.1	4.2*	4.2*	4.2*	152.2	3.1*	3.1*	3.1*	3.1*	9.5*
25	27	4.8	4.2*	4.2*	3.1	166.1	3.1*	3.1*	3.1*	3.1*	9.5*
26	28	8.2	4.2*	4.2*	4.1	129.6	3.1*	3.1*	3.1*	3.1*	9.5*
27	29	6.2	4.2*	5.2*	5.2*	122.9	3.1*	3.1*	3.1*	3.1*	9.5*
28	30	5.3*	4.2*	5.2*	4.2*	78.8	3.1*	3.1*	3.1*	3.1*	8.4*
29	31	5.3*	4.2*	5.2*	3.6	53.5	3.1*	3.1*	4.1*	3.1*	9.5*
30	32	5.3*	4.2*	5.2*	5.2*	56.0	3.1*	3.1*	4.1*	3.1*	9.5*
31	33	6.5	4.2*	5.2*	5.2*	68.1	3.1*	3.1*	4.1*	3.1*	9.5*
32	34	4.0	4.2*	5.2*	5.2*	73.3	3.1*	3.1*	4.1*	3.1*	9.5*
33	35	3.9	4.2*	5.2*	4.4	76.6	3.1*	3.1*	4.1*	4.2*	9.5*
34	36	5.3*	5.2*	5.2*	4.6	51.9	3.1*	3.1*	4.1*	4.2*	9.5*
35	37	5.3*	4.2*	5.2*	5.2*	25.0	3.1*	3.1*	4.1*	3.1*	9.5*
36	38	5.3*	4.2*	5.2*	5.2*	21.2	3.1*	3.1*	4.1*	4.2*	9.5*
37	39	4.6	4.2*	5.2*	5.2*	63.5	3.1*	3.1*	4.1*	3.1*	9.5*
38	40	6.2	5.2*	5.2*	4.3	91.8	4.2*	3.1*	4.1*	3.1*	9.5*
39	41	5.9	5.2*	5.2*	5.1	133.5	4.2*	3.1*	4.1*	3.1*	9.5*
40	42	5.3*	5.2*	5.2*	5.2*	71.0	3.1*	3.1*	4.1*	3.1*	9.5*

* MINIMUM DETECTABLE LIMIT, ELEMENT NOT FOUND

SEQUOIA-GIANT FOREST / PERIOD 5 / STAGE 2 / PART 2

AMOUNTS IN NANOGRAMS/M**3
MATRIX CORRECTIONS USING DRUM2

ID	SLIDE	CC	NA	MG	AL	SI	P	S	CL	K	CA
1	3	0.238	35.9*	206.4	86.7	77.0	18.9*	14.9*	13.2*	7.6*	10.2
2	4	0.238	35.8*	28.6*	169.7	77.4	18.9*	14.9*	13.2*	7.6*	17.9
3	5	0.238	38.3*	123.4	123.0	303.6	19.0*	15.0*	13.2*	18.3	31.2
4	6	0.238	37.6*	132.0	301.9	698.3	19.1*	15.0*	13.3*	61.7	88.7
5	7	0.238	36.3*	28.8*	197.7	272.6	19.0*	14.9*	13.2*	16.4	34.6
6	8	0.238	35.8*	98.0	21.5*	141.0	18.9*	13.8*	12.0*	7.6*	14.5
7	9	0.238	35.9*	28.6*	145.5	157.7	18.9*	14.9*	13.2*	7.7	13.4
8	10	0.238	36.8*	133.5	175.1	462.3	19.0*	15.0*	13.2*	34.0	41.5
9	11	0.238	37.6*	27.4*	335.6	782.3	19.1*	13.9*	13.3*	66.3	82.5
10	12	0.238	36.0*	285.8	320.6	863.8	19.2*	13.9*	12.1*	72.3	98.2
11	13	0.238	36.7*	27.1*	233.0	441.8	19.0*	13.8*	12.0*	37.2	50.5
12	14	0.238	36.2*	28.7*	125.0	280.1	19.0*	13.8*	12.0*	18.4	31.8
13	15	0.238	36.2*	26.8*	139.9	305.1	19.0*	13.8*	12.0*	17.7	27.0
14	16	0.238	36.6*	73.4	160.8	408.2	19.0*	13.8*	13.2*	26.2	40.2
15	17	0.238	37.0*	29.1*	239.8	585.3	19.1*	13.8*	13.2*	42.7	52.5
16	18	0.238	37.3*	29.3*	299.3	669.7	19.1*	13.9*	13.3*	52.1	71.6
17	19	0.238	36.4*	26.9*	188.8	327.0	19.0*	13.8*	12.0*	18.7	38.8
18	20	0.238	36.0*	76.6	88.3	180.5	18.9*	13.8*	12.0*	7.8	20.3
19	21	0.238	97.1	63.9	205.0	231.8	19.0*	13.8*	12.0*	10.6	26.7
20	22	0.238	36.7*	123.9	176.5	455.5	19.0*	13.8*	13.2*	25.9	43.4
21	23	0.238	37.2*	119.6	202.2	655.7	19.1*	13.9*	13.3*	47.3	70.8
22	24	0.238	39.4*	29.3*	271.5	661.7	19.1*	15.0*	13.3*	57.7	73.7
23	25	0.238	36.4*	54.7	195.4	318.2	19.0*	15.0*	13.2*	18.2	33.3
24	26	0.238	35.9*	26.7*	99.7	195.5	18.9*	13.8*	12.0*	13.4	23.7
25	27	0.238	36.3*	26.9*	195.4	303.2	19.0*	13.8*	12.0*	8.8	33.0
26	28	0.238	37.0*	158.9	217.4	513.7	19.1*	15.0*	13.2*	38.0	57.5
27	29	0.238	35.4*	27.4*	339.5	748.5	19.1*	13.9*	12.1*	58.5	72.8
28	30	0.238	38.0*	187.1	301.1	908.5	19.2*	13.9*	12.1*	82.8	87.2
29	31	0.238	36.9*	145.3	188.1	484.7	19.0*	13.8*	12.0*	32.5	53.2
30	32	0.238	36.5*	26.9*	157.7	399.2	17.7*	13.8*	12.0*	23.9	43.4
31	33	0.238	36.5*	102.9	176.0	367.0	19.0*	13.8*	12.0*	29.7	43.0
32	34	0.238	37.2*	88.2	271.8	622.9	19.1*	13.9*	12.1*	44.2	57.6
33	35	0.238	35.5*	27.4*	371.6	743.2	19.1*	13.9*	12.1*	61.8	82.0
34	36	0.238	38.3*	27.7*	412.8	1017.1	19.2*	13.9*	13.3*	87.3	125.8
35	37	0.238	35.0*	182.5	233.9	532.0	19.1*	13.8*	13.3*	40.2	44.5
36	38	0.238	35.9*	26.7*	123.2	184.3	18.9*	13.8*	12.0*	13.9	18.5
37	39	0.238	34.3*	26.9*	188.3	323.4	17.7*	13.8*	12.0*	19.1	36.6
38	40	0.238	36.7*	27.1*	249.6	467.2	19.0*	13.8*	12.0*	33.0	35.0
39	41	0.238	37.9*	164.5	319.3	813.6	19.1*	13.9*	12.1*	78.7	88.3
40	42	0.238	37.9*	27.6*	406.6	862.2	19.1*	13.9*	13.3*	71.6	89.3

SEQUOIA-GIANT FOREST / PERIOD 5 / STAGE 2 / PART 2

AMOUNTS IN NANOGRAMS/M**3
MATRIX CORRECTIONS USING DRUM2

ID	SLIDE	TI	V	CR	MN	FE	NI	CU	ZN	BR	PB
1	3	5.3*	4.2*	5.2*	5.2*	24.7	3.1*	3.1*	4.1*	3.1*	9.5*
2	4	5.3*	4.2*	5.2*	4.9	20.9	3.1*	3.1*	4.1*	3.1*	9.5*
3	5	5.3*	5.2*	5.2*	5.2*	64.6	4.2*	3.1*	4.1*	3.1*	9.5*
4	6	8.4	4.2*	5.2*	3.3	162.2	3.1*	3.1*	4.1*	4.2*	9.5*
5	7	7.2	4.2*	5.2*	5.2*	65.2	3.1*	3.1*	4.1*	3.1*	9.5*
6	8	5.3*	4.2*	5.2*	4.4	20.7	3.1*	3.1*	4.1*	3.1*	9.5*
7	9	4.7	4.2*	5.2*	5.2*	41.1	3.1*	3.1*	4.1*	3.1*	9.5*
8	10	5.3*	4.2*	5.2*	5.9	103.0	3.1*	3.1*	4.1*	3.1*	9.5*
9	11	12.6	4.2*	5.2*	5.6	168.5	3.1*	3.1*	4.1*	3.1*	9.5*
10	12	13.0	4.2*	5.2*	5.2*	194.3	3.1*	3.1*	4.1*	3.1*	9.5*
11	13	10.1	4.2*	5.2*	5.2*	107.0	3.1*	3.1*	4.1*	3.1*	9.5*
12	14	4.2	4.2*	5.2*	5.2*	61.6	3.1*	3.1*	3.1*	4.2*	9.5*
13	15	5.3*	4.2*	5.2*	4.2*	67.9	3.1*	3.1*	3.1*	4.2*	9.5*
14	16	6.6	4.2*	5.2*	5.2*	95.0	3.1*	3.1*	4.1*	4.2*	9.5*
15	17	5.0	4.2*	5.2*	3.5	122.8	3.1*	3.1*	4.1*	4.2*	9.5*
16	18	9.8	4.2*	5.2*	5.2*	154.9	3.1*	3.1*	4.1*	4.2*	9.5*
17	19	4.1	4.2*	5.2*	5.2	69.4	3.1*	3.1*	3.1*	4.2*	9.5*
18	20	5.3*	4.2*	5.2*	4.2*	40.7	3.1*	3.1*	3.1*	4.2*	9.5*
19	21	6.0	4.2*	5.2*	6.6	59.6	3.1*	3.1*	3.1*	4.2*	9.5*
20	22	5.5	4.2*	5.2*	4.6	97.4	3.1*	3.1*	3.1*	4.2*	9.5*
21	23	7.3	4.2*	5.2*	4.6	134.0	3.1*	3.1*	4.1*	4.2*	9.5*
22	24	10.2	4.2*	5.2*	5.4	157.8	3.1*	3.1*	4.1*	4.2*	9.5*
23	25	5.3*	4.2*	5.2*	5.2*	77.5	3.1*	3.1*	4.1*	3.1*	9.5*
24	26	5.3*	4.2*	5.2*	3.9	40.6	3.1*	3.1*	3.1*	3.1*	9.5*
25	27	9.5	4.2*	5.2*	6.2	68.3	3.1*	3.1*	3.1*	3.1*	9.5*
26	28	6.2	4.2*	5.2*	5.2*	113.7	3.1*	3.1*	4.1*	3.1*	9.5*
27	29	10.0	4.2*	5.2*	5.2*	164.4	3.1*	3.1*	4.1*	3.1*	9.5*
28	30	9.2	4.2*	5.2*	5.2	190.6	3.1*	3.1*	4.1*	3.1*	9.5*
29	31	6.8	4.2*	5.2*	5.2*	101.6	3.1*	3.1*	3.1*	3.1*	9.5*
30	32	7.0	4.2*	4.2*	3.9	76.3	3.1*	3.1*	3.1*	3.1*	8.4*
31	33	5.3*	4.2*	5.2*	3.3	79.0	3.1*	3.1*	3.1*	3.1*	9.5*
32	34	10.5	4.2*	5.2*	4.7	140.7	3.1*	3.1*	3.1*	3.1*	9.5*
33	35	12.6	4.2*	5.2*	4.5	169.5	3.1*	3.1*	4.1*	3.1*	9.5*
34	36	16.2	4.2*	5.2*	5.2*	235.2	3.1*	3.1*	4.1*	3.1*	9.5*
35	37	7.9	4.2*	5.2*	5.2*	123.8	3.1*	3.1*	4.1*	3.1*	9.5*
36	38	5.3*	3.7	5.2*	4.1	33.1	3.1*	3.1*	3.1*	3.1*	8.4*
37	39	5.9	4.2*	4.2*	5.1	68.1	3.1*	3.1*	3.1*	3.1*	9.5*
38	40	11.8	4.2*	5.2*	4.2*	107.2	3.1*	3.1*	3.1*	3.1*	8.4*
39	41	8.7	4.2*	5.2*	4.0	181.0	3.1*	3.1*	3.1*	3.1*	9.5*
40	42	14.8	4.2*	5.2*	5.2*	206.6	3.1*	3.1*	4.1*	3.1*	9.5*

* MINIMUM DETECTABLE LIMIT, ELEMENT NOT FOUND

UC DAVIS PIXE ANALYSIS FILE 31523 ANALYSIS ON 02/26/86 O/P ON 02/27/86

SEQUOIA-GIANT FOREST / PERIOD 5 / STAGE 2 / PART 3

AMOUNTS IN NANOGRAMS/M**3

MATRIX CORRECTIONS USING DRUM2

D	SLIDE	CC	NA	MG	AL	SI	P	S	CL	K	CA
1	3	0.238	35.1*	27.3*	285.9	601.8	19.1*	13.8*	12.1*	56.8	66.9
2	4	0.238	34.5*	27.0*	178.9	401.8	19.0*	13.6*	12.0*	23.6	42.2
3	5	0.238	36.4*	26.9*	179.0	339.6	19.0*	13.8*	12.0*	16.2	33.9

D	SLIDE	TI	V	CR	MN	FE	NI	CU	ZN	BR	PB
1	3	28.0	4.2*	5.2*	6.8	137.8	3.1*	3.1*	3.1*	3.1*	9.5*
2	4	9.6	4.2*	5.2*	4.2*	81.5	3.1*	3.1*	3.1*	3.1*	8.4*
3	5	5.3*	4.2*	5.2*	5.2*	84.7	3.1*	3.1*	3.1*	3.1*	9.5*

* MINIMUM DETECTABLE LIMIT, ELEMENT NOT FOUND

SEQUOIA-GIANT FOREST / PERIOD 5 / STAGE 3 / PART 1

AMOUNTS IN NANOGRAMS/M**3
MATRIX CORRECTIONS USING DRUM3:

D	SLIDE	CC	NA	MG	AL	SI	P	S	CL	K	CA
1	3	0.238	292.7	27.5*	115.1	249.8	22.7*	17.7	15.4*	19.9	26.3
2	4	0.238	294.8	26.4*	305.5	311.9	21.7*	41.4	14.4*	33.5	67.7
3	5	0.238	347.3	24.9*	312.7	359.9	19.4*	48.6	13.3*	43.7	52.2
4	6	0.238	228.6	24.6*	158.3	258.8	20.4*	24.9	13.2*	20.1	37.7
5	7	0.238	212.5	23.1*	110.2	156.9	19.3*	13.6	13.2*	18.8	31.0
6	8	0.238	163.2	23.0*	91.7	126.7	18.1*	15.0*	13.2*	8.3*	21.6
7	9	0.238	317.2	23.3*	150.2	273.5	18.2*	30.8	13.3*	31.7	35.2
8	10	0.238	411.3	23.4*	207.6	303.3	19.4*	45.0	13.3*	48.0	47.9
9	11	0.238	238.3	26.2*	237.7	248.8	20.5*	27.7	14.4*	34.5	62.8
0	12	0.238	98.7	24.4*	135.6	94.8	19.3*	18.2	13.2*	12.3	22.5
1	13	0.238	114.5	21.5*	159.2	71.4	18.1*	20.5	12.1*	7.2	27.2
2	14	0.238	189.1	21.7*	192.1	152.9	18.2*	16.2	12.1*	20.4	25.9
3	15	0.238	222.8	23.2*	202.3	231.9	18.2*	20.4	13.2*	33.0	40.9
4	16	0.238	176.9	23.2*	251.1	251.8	19.3*	15.1*	13.2*	29.8	39.4
5	17	0.238	283.2	23.3*	221.1	270.2	19.3*	20.2	13.3*	36.6	47.6
6	18	0.238	200.6	26.0*	130.5	245.6	21.6*	17.2*	14.3*	26.3	33.8
7	19	0.238	160.8	23.0*	93.6	154.6	18.1*	15.0*	13.2*	15.1	25.3
8	20	0.238	108.6	26.0*	295.8	145.2	20.4*	16.1*	14.3*	12.9	23.8
9	21	0.238	237.7	23.1*	125.6	213.2	19.3*	15.1*	13.2*	25.4	31.6
0	22	0.238	222.5	24.7*	141.5	315.0	20.5*	15.4	13.2*	26.2	38.8
1	23	0.238	161.9	24.6*	256.6	337.2	20.5*	16.0	13.3*	34.2	46.2
2	24	0.238	320.7	26.3*	199.3	410.6	21.6*	17.3*	15.5*	31.5	37.5
3	25	0.238	248.3	24.7*	134.2	367.4	19.3*	13.4	13.3*	41.9	43.4
4	26	0.238	265.8	23.3*	155.6	349.7	19.3*	24.1	13.3*	32.1	33.2
5	27	0.238	262.4	23.3*	149.6	377.0	19.3*	17.5	13.3*	25.8	51.7
6	28	0.238	29.9*	152.7	115.7	258.0	19.3*	15.1*	13.2*	25.6	35.3
7	29	0.238	244.3	23.1*	89.5	249.9	19.3*	15.1*	13.2*	13.7	22.4
8	30	0.238	29.7*	147.0	63.6	195.1	19.3*	15.0*	13.2*	12.2	31.6
9	31	0.238	163.6	22.9*	18.5*	153.4	18.1*	15.0*	13.2*	8.3	12.1
0	32	0.238	84.5	22.9*	83.1	130.5	11.6	15.0*	13.2*	12.0	6.2*
1	33	0.238	201.2	21.6*	78.9	174.9	18.1*	13.3	12.1*	10.3	24.1
2	34	0.238	136.5	21.5*	73.6	173.1	18.1*	14.0*	12.1*	9.9	20.5
3	35	0.238	122.4	21.6*	199.3	109.0	18.1*	16.5	12.1*	15.0	28.7
4	36	0.238	84.3	21.5*	59.8	106.2	18.1*	10.7	12.1*	12.7	6.2*
5	37	0.238	46.3	21.3*	17.1*	37.8	16.9*	13.9*	12.1*	7.3*	6.2*
6	38	0.238	84.4	21.4*	41.9	30.2	21.1	13.9*	12.1*	7.3*	9.1
7	39	0.238	51.2	21.5*	129.3	72.9	17.0*	15.5	12.1*	6.9	10.6
8	40	0.238	71.9	21.5*	121.9	160.4	17.0*	14.0*	12.1*	19.6	22.5
9	41	0.238	26.9*	172.3	82.8	248.1	18.2*	16.3	12.1*	41.3	33.9
0	42	0.238	142.6	21.5*	76.8	117.7	18.1*	14.0*	12.1*	16.7	20.4

SEQUOIA-GIANT FOREST / PERIOD 5 / STAGE 3 / PART 1

AMOUNTS IN NANOGRAMS/M**3
MATRIX CORRECTIONS USING DRUM3

D	SLIDE	TI	V	CR	MN	FE	NI	CU	ZN	BR	PB
1	3	6.2*	6.1*	6.1*	5.7	69.3	5.1*	4.1*	5.1*	5.1*	10.3*
2	4	6.6	6.1*	6.1*	6.1*	104.9	4.1*	4.1*	4.1*	4.1*	11.3*
3	5	5.2*	5.1*	5.1*	5.1*	114.9	4.1*	4.1*	4.1*	4.1*	10.3*
4	6	5.2*	5.1*	5.1*	5.1*	68.1	4.1*	4.1*	4.1*	4.1*	10.3*
5	7	5.2*	5.1*	5.1*	5.1*	50.0	4.1*	4.1*	4.1*	3.1*	10.3*
6	8	5.1*	5.1*	5.1*	5.1*	42.2	4.1*	3.1*	4.1*	3.1*	9.2*
7	9	5.2*	5.1*	5.1*	5.1*	80.5	4.1*	3.1*	4.1*	3.1*	9.2*
8	10	5.2*	5.1*	5.1*	3.8	87.5	4.1*	3.1*	4.1*	4.1*	10.3*
9	11	6.2*	5.1*	6.1*	5.2	101.8	4.1*	4.1*	4.1*	4.1*	10.3*
0	12	5.1*	5.1*	5.1*	5.4	37.0	4.1*	4.1*	4.1*	4.1*	10.3*
1	13	5.1*	5.1*	5.1*	5.1*	36.9	4.1*	3.1*	4.1*	3.1*	9.2*
2	14	5.2*	4.1	5.1*	5.1*	50.6	4.1*	3.1*	4.1*	3.1*	9.2*
3	15	7.1	5.1*	5.1*	5.1*	74.1	4.1*	3.1*	4.1*	3.1*	9.2*
4	16	5.2*	5.1*	5.1*	5.1*	80.2	4.1*	4.1*	4.1*	3.1*	9.2*
5	17	7.5	5.1*	5.1*	5.1*	92.3	4.1*	4.1*	4.1*	3.1*	10.3*
6	18	6.2*	5.1*	6.1*	6.1*	79.2	4.1*	4.1*	4.1*	4.1*	11.3*
7	19	5.1*	5.1*	5.1*	5.1*	48.8	4.1*	3.1*	4.1*	3.1*	9.2*
8	20	6.2*	5.1*	6.1*	6.1*	63.8	4.1*	4.1*	4.1*	4.1*	10.3*
9	21	5.2*	5.1*	5.1*	5.1*	62.9	4.1*	3.1*	4.1*	3.1*	9.2*
0	22	5.2*	5.1*	5.1*	5.1*	81.2	4.1*	4.1*	4.1*	4.1*	10.3*
1	23	6.2*	5.1*	6.1*	5.1*	101.3	4.1*	4.1*	4.1*	4.1*	10.3*
2	24	5.9	6.1*	6.1*	6.1*	115.9	4.1*	4.1*	5.1*	4.1*	10.3*
3	25	5.2*	5.1*	5.1*	5.1*	95.0	4.1*	4.1*	4.1*	3.1*	10.3*
4	26	5.2*	5.1*	5.1*	3.8	82.9	4.1*	4.1*	4.1*	3.1*	9.2*
5	27	6.5	5.1*	5.1*	5.1*	86.5	4.1*	4.1*	4.1*	3.1*	9.2*
6	28	5.2*	5.1*	5.1*	5.1*	68.4	4.1*	3.1*	4.1*	3.1*	9.2*
7	29	5.2*	5.1*	5.1*	5.1*	57.9	4.1*	4.1*	4.1*	3.1*	9.2*
8	30	5.1*	5.1*	5.1*	5.4	48.1	4.1*	3.1*	4.1*	3.1*	9.2*
9	31	5.1*	5.1*	5.1*	5.1*	31.6	4.1*	3.1*	4.1*	3.1*	9.2*
0	32	6.1	5.1*	5.1*	5.1*	33.9	4.1*	3.1*	4.1*	3.1*	9.2*
1	33	5.1*	5.1*	5.1*	5.1*	43.4	4.1*	3.1*	4.1*	3.1*	9.2*
2	34	5.1*	5.1*	5.1*	5.1*	39.8	4.1*	3.1*	4.1*	3.1*	9.2*
3	35	5.3	5.1*	5.1*	5.1*	50.9	4.1*	3.1*	4.1*	3.1*	9.2*
4	36	6.5	5.1*	5.1*	5.1*	29.7	4.1*	3.1*	4.1*	3.1*	9.2*
5	37	5.1*	4.1*	5.1*	5.8	11.6	3.1*	3.1*	4.1*	4.1*	9.2*
6	38	5.1*	4.1*	5.1*	5.1*	10.4	3.1*	3.1*	4.1*	4.1*	9.2*
7	39	5.1*	4.1*	5.1*	3.2	28.1	3.1*	3.1*	4.1*	4.1*	9.2*
8	40	5.1*	4.1*	5.1*	5.1*	53.9	3.1*	3.1*	4.1*	4.1*	9.2*
9	41	5.2*	5.1*	5.1*	5.4	71.0	3.1*	3.1*	4.1*	3.1*	9.2*
0	42	5.1*	5.1*	5.1*	5.1*	38.8	4.1*	3.1*	4.1*	3.1*	9.2*

* MINIMUM DETECTABLE LIMIT, ELEMENT NOT FOUND

SEQUOIA-GIANT FOREST / PERIOD 5 / STAGE 3 / PART 2

AMOUNTS IN NANOGRAMS/M**3
MATRIX CORRECTIONS USING DRUM3

D	SLIDE	CC	NA	MG	AL	SI	P	S	CL	K	CA
1	3	0.238	66.6	123.8	18.4*	42.1	18.1*	13.9*	12.1*	23.8	14.8
2	4	0.238	27.8*	140.6	18.4*	24.1	18.1*	13.9*	12.1*	8.3*	7.9
3	5	0.238	29.5*	163.3	49.5	117.1	18.1*	15.0*	13.2*	13.5	16.0
4	6	0.238	30.2*	206.4	128.1	358.0	19.3*	15.1*	13.2*	35.7	47.5
5	7	0.238	274.7	23.1*	107.1	186.2	18.2*	15.1*	13.2*	15.2	27.0
6	8	0.238	29.3*	106.5	18.4*	94.0	18.1*	15.0*	12.1*	8.3*	12.2
7	9	0.238	29.3*	55.1	48.3	57.6	10.6	13.9*	12.1*	8.3*	10.2
8	10	0.238	28.4*	154.5	99.3	250.2	18.2*	15.1*	13.2*	28.9	27.2
9	11	0.238	30.2*	186.1	103.1	360.0	18.2*	14.0*	12.1*	36.8	51.7
0	12	0.238	370.2	22.0*	151.7	441.6	18.2*	15.5	12.2*	40.3	51.9
1	13	0.238	291.8	21.8*	121.4	290.4	18.2*	14.0*	12.1*	40.1	34.5
2	14	0.238	167.5	21.6*	163.8	176.4	18.1*	12.7	12.1*	25.7	25.1
3	15	0.238	169.4	21.6*	122.0	144.6	18.1*	14.0*	18.3	40.6	24.9
4	16	0.238	224.6	21.7*	105.8	225.7	17.0*	21.4	20.7	44.6	41.7
5	17	0.238	120.9	21.8*	292.2	223.9	18.2*	14.0*	12.1*	41.2	46.0
6	18	0.238	171.9	21.8*	214.4	317.4	18.2*	14.0*	12.1*	30.7	50.4
7	19	0.238	234.9	21.6*	84.2	211.0	17.0*	18.3	12.1*	15.1	26.3
8	20	0.238	110.3	21.5*	117.2	147.3	17.0*	14.0*	12.1*	7.3*	36.5
9	21	0.238	105.7	21.5*	95.1	154.4	18.1*	12.1	12.1*	7.2	19.5
0	22	0.238	28.1*	21.6*	128.9	205.1	18.1*	14.0*	12.1*	8.1	30.4
1	23	0.238	28.5*	123.2	100.5	330.2	18.2*	14.0*	12.1*	31.7	47.4
2	24	0.238	169.6	21.9*	173.4	537.8	18.2*	14.0*	12.2*	39.2	57.2
3	25	0.238	28.1*	78.6	103.2	164.5	18.1*	14.0*	12.1*	8.5	22.4
4	26	0.238	60.9	21.4*	89.4	96.5	18.1*	13.9*	12.1*	7.3*	10.1
5	27	0.238	28.1*	74.0	88.7	203.6	17.0*	14.0*	12.1*	7.3*	20.2
6	28	0.238	93.2	21.7*	158.6	285.7	17.0*	14.0*	12.1*	13.0	25.3
7	29	0.238	28.6*	134.8	107.6	429.4	18.2*	14.0*	12.1*	20.7	34.9
8	30	0.238	124.2	21.9*	192.2	438.6	18.2*	14.0*	12.2*	43.9	55.4
9	31	0.238	51.8	21.6*	180.0	176.0	18.1*	14.0*	12.1*	19.8	31.5
0	32	0.238	28.2*	136.2	49.5	211.2	18.1*	14.0*	12.1*	11.1	27.4
1	33	0.238	28.1*	118.2	75.9	183.5	17.0*	14.0*	12.1*	12.8	27.8
2	34	0.238	28.2*	97.3	97.9	231.5	18.1*	14.0*	12.1*	17.1	24.3
3	35	0.238	82.0	21.7*	139.9	268.3	17.0*	14.0*	12.1*	22.6	36.1
4	36	0.238	31.1*	24.4*	102.3	215.3	19.3*	15.0*	13.2*	11.4	31.4
5	37	0.238	28.1*	29.8	90.4	172.8	18.1*	14.0*	12.1*	7.7	22.4
6	38	0.238	27.8*	22.8*	56.0	49.3	18.1*	13.9*	12.1*	8.3*	23.5
7	39	0.238	29.2*	22.8*	37.5	84.3	18.1*	13.9*	12.1*	8.3*	12.3
8	40	0.238	29.4*	22.9*	61.4	116.7	18.1*	15.0*	13.2*	8.3*	6.2*
9	41	0.238	28.3*	43.4	79.1	244.4	18.1*	15.0*	12.1*	10.6	74.2
0	42	0.238	29.8*	32.1	106.0	293.1	19.3*	15.1*	13.2*	17.3	36.2

SEQUOIA-GIANT FOREST / PERIOD 5 / STAGE 3 / PART 2

AMOUNTS IN NANOGRAMS/M**3
MATRIX CORRECTIONS USING DRUM3

D	SLIDE	TI	V	CR	MN	FE	NI	CU	ZN	BR	PB
1	3	5.1*	5.1*	5.1*	5.1*	10.6	4.1*	3.1*	4.1*	3.1*	9.2*
2	4	5.1*	3.4	5.1*	5.1*	7.1	4.1*	3.1*	4.1*	3.1*	9.2*
3	5	5.1*	5.1*	5.1*	5.1*	32.4	4.1*	3.1*	4.1*	3.1*	9.2*
4	6	5.0	5.1*	5.1*	5.1*	94.6	4.1*	4.1*	4.1*	3.1*	9.2*
5	7	5.2*	5.1*	5.1*	5.1*	40.3	4.1*	3.1*	4.1*	3.1*	9.2*
6	8	5.1*	5.1*	5.1*	5.1*	16.8	4.1*	3.1*	4.1*	3.1*	9.2*
7	9	5.1*	5.1*	5.1*	6.1	21.0	4.1*	3.1*	4.1*	3.1*	9.2*
8	10	7.6	5.1*	5.1*	5.1*	76.1	4.1*	3.1*	4.1*	3.1*	9.2*
9	11	5.5	5.1*	5.1*	4.3	84.9	4.1*	3.1*	4.1*	3.1*	9.2*
10	12	8.7	5.1*	5.1*	4.6	110.6	4.1*	3.1*	4.1*	3.1*	9.2*
11	13	4.7	5.1*	5.1*	5.1*	71.1	2.4	3.1*	4.1*	3.1*	9.2*
12	14	5.2*	5.1*	5.1*	5.1*	48.5	4.1*	3.1*	4.1*	4.1*	10.3*
13	15	5.2*	5.1*	5.1*	5.1*	47.3	4.1*	3.1*	4.1*	4.1*	10.3*
14	16	4.5	4.1*	5.1*	3.9	57.7	3.1*	3.1*	4.1*	4.1*	9.2*
15	17	5.2*	5.1*	5.1*	5.1*	81.5	4.1*	3.1*	4.1*	4.1*	10.3*
16	18	4.4	5.1*	5.1*	4.6	91.4	4.1*	3.1*	4.1*	4.1*	10.3*
17	19	4.6	4.1*	5.1*	5.1*	52.0	3.1*	3.1*	4.1*	4.1*	9.2*
18	20	5.1*	5.1*	5.1*	5.1*	36.1	3.1*	3.1*	4.1*	4.1*	9.2*
19	21	4.7	4.1*	5.1*	5.1*	34.1	3.1*	3.1*	4.1*	4.1*	9.2*
20	22	5.4	5.1*	5.1*	4.1	56.4	4.1*	3.1*	4.1*	4.1*	10.3*
21	23	5.2*	5.1*	5.1*	5.1*	88.9	4.1*	3.1*	4.1*	4.1*	9.2*
22	24	7.0	5.1*	5.1*	5.1*	108.9	4.1*	3.1*	4.1*	4.1*	10.3*
23	25	5.1*	5.1*	5.1*	5.1*	34.9	4.1*	3.1*	4.1*	3.1*	9.2*
24	26	5.1*	5.1*	5.1*	5.1*	20.6	4.1*	3.1*	4.1*	3.1*	8.2*
25	27	5.1*	4.1*	5.1*	3.2	23.2	3.1*	3.1*	4.1*	4.1*	9.2*
26	28	5.2*	5.1*	5.1*	5.1*	56.2	3.1*	3.1*	4.1*	4.1*	10.3*
27	29	5.2*	5.1*	5.1*	5.1*	83.6	4.1*	3.1*	4.1*	4.1*	10.3*
28	30	8.4	5.1*	5.1*	5.1*	109.7	4.1*	3.1*	4.1*	4.1*	10.3*
29	31	6.8	5.1*	5.1*	5.1*	61.8	3.1*	3.1*	4.1*	4.1*	9.2*
30	32	4.9	5.1*	5.1*	3.9	48.8	4.1*	3.1*	4.1*	4.1*	9.2*
31	33	5.1*	5.1*	5.1*	5.1*	44.6	3.1*	3.1*	4.1*	3.1*	9.2*
32	34	5.2*	5.1*	5.1*	5.1*	63.8	4.1*	3.1*	4.1*	4.1*	9.2*
33	35	5.5	4.1*	5.1*	5.1*	72.8	3.1*	3.1*	4.1*	4.1*	9.2*
34	36	5.1*	5.1*	5.1*	5.1*	64.2	4.1*	3.1*	4.1*	4.1*	10.3*
35	37	5.1*	5.1*	5.1*	5.3	54.5	4.1*	3.1*	4.1*	4.1*	9.2*
36	38	4.4	5.1*	5.1*	5.1	16.8	4.1*	3.1*	4.1*	4.1*	9.2*
37	39	5.1*	5.1*	5.1*	5.1*	30.9	4.1*	3.1*	4.1*	4.1*	9.2*
38	40	4.2	5.1*	5.1*	5.1*	79.6	4.1*	3.1*	4.1*	4.1*	10.3*
39	41	5.1*	5.1*	5.1*	5.1*	65.1	4.1*	3.1*	4.1*	4.1*	10.3*
40	42	5.2*	5.1*	5.1*	5.1*	77.9	4.1*	3.1*	4.1*	4.1*	10.3*

* MINIMUM DETECTABLE LIMIT, ELEMENT NOT FOUND

UC DAVIS PIXE ANALYSIS FILE 31533 ANALYSIS ON 02/27/86 O/P ON 02/27/86

SEQUOIA-GIANT FOREST / PERIOD 5 / STAGE 3 / PART 3

AMOUNTS IN NANOGRAMS/M**3
MATRIX CORRECTIONS USING DRUM3

ID	SLIDE	CC	NA	MG	AL	SI	P	S	CL	K	CA
1	3	0.238	29.7*	23.0*	208.2	183.6	19.3*	15.0*	13.2*	12.3	26.5
2	4	0.238	29.4*	24.3*	100.0	134.8	19.2*	15.0*	13.2*	8.3*	18.8
3	5	0.238	30.9*	44.3	143.2	87.6	20.4*	16.1*	13.2*	8.3*	7.4

ID	SLIDE	TI	V	CR	MN	FE	NI	CU	ZN	BR	PB
1	3	5.1*	5.1*	5.1*	5.1*	65.5	4.1*	3.1*	4.1*	4.1*	10.3*
2	4	5.1*	5.1*	5.1*	5.1*	40.4	4.1*	4.1*	4.1*	4.1*	10.3*
3	5	5.1*	5.1*	5.1*	5.1*	33.4	4.1*	4.1*	4.1*	4.1*	10.3*

* MINIMUM DETECTABLE LIMIT, ELEMENT NOT FOUND

SEQUOIA-GIANT FOREST / PERIOD 5 / STAGE 4 / PART 1

AMOUNTS IN NANOGRAMS/M**3
MATRIX CORRECTIONS USING DRUM4

ID	SLIDE	CC	NA	MG	AL	SI	P	S	CL	K	CA
1	3	0.238	169.4	22.0*	97.6	74.4	19.2*	56.8	12.6*	13.9	19.0
2	4	0.238	213.2	22.0*	18.6*	140.0	19.2*	71.4	12.6*	11.7	23.3
3	5	0.238	231.3	22.1*	124.9	139.2	19.2*	77.5	13.7*	21.7	23.4
4	6	0.238	211.5	20.8*	38.2	77.7	18.1*	56.6	12.6*	8.2*	12.2
5	7	0.238	149.4	19.5*	53.1	34.5	18.1*	29.7	12.6*	8.2*	10.4
6	8	0.238	110.5	20.7*	48.0	43.7	18.1*	27.6	12.6*	8.2*	6.1*
7	9	0.238	183.1	19.5*	72.6	62.4	17.1*	64.5	12.6*	9.3	15.1
8	10	0.238	252.0	20.8*	17.5*	118.0	18.1*	57.5	12.6*	18.6	20.1
9	11	0.238	198.3	19.6*	110.0	129.4	17.1*	66.6	12.6*	14.5	31.0
10	12	0.238	65.5	19.4*	17.3*	18.5*	17.0*	26.9	12.6*	8.2*	6.1*
11	13	0.238	161.2	19.4*	49.3	17.4*	17.0*	23.0	12.6*	8.2*	10.4
12	14	0.238	188.9	19.5*	30.5	41.6	17.0*	27.7	12.6*	8.2*	6.9
13	15	0.238	219.7	19.5*	16.3*	93.3	17.1*	47.2	11.6*	8.2*	13.3
14	16	0.238	178.3	19.6*	94.3	107.8	18.1*	47.9	12.6*	16.0	25.6
15	17	0.238	224.7	19.6*	58.3	155.3	17.1*	44.9	11.6*	14.7	22.4
16	18	0.238	163.4	19.5*	77.0	91.6	17.1*	46.3	12.6*	10.3	20.2
17	19	0.238	157.9	18.3*	31.3	67.4	17.1*	53.2	11.6*	9.4	15.5
18	20	0.238	90.4	18.2*	76.7	58.6	17.0*	17.7	11.6*	10.0	14.6
19	21	0.238	120.6	18.3*	76.4	73.4	17.1*	30.7	11.6*	11.1	14.6
20	22	0.238	169.1	18.3*	62.0	116.2	17.1*	46.3	11.6*	18.6	24.7
21	23	0.238	148.5	19.6*	73.3	206.3	17.1*	40.1	11.6*	20.6	18.3
22	24	0.238	100.4	19.6*	167.2	90.1	17.1*	38.8	11.6*	19.5	21.4
23	25	0.238	141.7	19.5*	58.6	87.2	17.1*	52.9	11.6*	13.2	6.4
24	26	0.238	82.9	18.3*	84.8	64.7	17.1*	71.3	11.6*	14.4	6.1*
25	27	0.238	88.0	19.5*	56.9	63.3	17.0*	38.5	11.6*	8.2*	18.9
26	28	0.238	82.4	18.2*	38.3	72.5	17.0*	35.4	11.5*	9.1	7.6
27	29	0.238	116.2	19.5*	33.2	79.9	17.0*	37.1	11.6*	10.1	16.1
28	30	0.238	97.0	18.2*	52.1	39.2	16.0*	38.5	11.5*	7.1*	7.5
29	31	0.238	63.9	18.2*	36.5	19.6	17.0*	34.0	11.5*	7.1*	6.1*
30	32	0.238	23.2*	70.2	30.0	25.9	16.0*	31.3	11.5*	7.1*	6.1*
31	33	0.238	23.3*	49.6	49.2	24.4	17.0*	26.2	11.5*	7.1*	6.1*
32	34	0.238	50.6	81.3	16.2*	50.3	17.0*	33.8	11.5*	7.1*	6.1*
33	35	0.238	72.8	19.4*	46.8	41.9	17.0*	45.3	11.5*	8.2*	6.1*
34	36	0.238	112.5	18.2*	16.2*	37.4	16.0*	45.7	11.5*	7.1*	6.1*
35	37	0.238	115.8	18.2*	16.2*	17.4*	16.0*	55.6	11.5*	7.1*	6.1*
36	38	0.238	33.3	18.2*	61.7	17.4*	15.9*	18.6	11.5*	7.1*	6.1*
37	39	0.238	95.6	18.2*	18.9	16.0	16.0*	29.6	11.5*	7.1*	6.1*
38	40	0.238	23.2*	18.2*	46.2	51.6	16.0*	40.7	11.5*	10.2	6.1*
39	41	0.238	73.3	18.2*	34.8	71.1	16.0*	41.3	11.5*	7.1*	20.5
40	42	0.238	126.4	18.2*	30.3	46.0	16.0*	31.5	11.5*	7.1*	6.1*

SEQUOIA-GIANT FOREST / PERIOD 5 / STAGE 4 / PART 1

AMOUNTS IN NANOGRAMS/M**3
MATRIX CORRECTIONS USING DRUM4

ID	SLIDE	TI	V	CR	MN	FE	NI	CU	ZN	BR	PB
1	3	5.1*	5.1*	5.1*	5.1*	33.8	4.0*	4.0*	4.0*	4.0*	11.1*
2	4	5.1*	5.1*	5.1*	5.1*	42.6	4.0*	4.0*	4.0*	4.0*	10.1*
3	5	6.4	5.1*	6.1*	5.1*	58.7	4.0*	4.0*	4.0*	4.0*	10.1*
4	6	5.1*	5.1*	5.1*	5.1*	29.0	4.0*	4.0*	4.0*	4.0*	10.1*
5	7	5.1*	5.1*	5.1*	5.1*	13.9	4.0*	3.0*	4.0*	4.0*	9.1*
6	8	5.1*	5.1*	5.1*	5.1*	21.3	4.0*	3.0*	4.0*	4.0*	9.1*
7	9	5.1*	5.1*	5.1*	5.1*	27.0	4.0*	3.0*	4.0*	4.0*	10.1*
8	10	5.1*	5.1*	5.1*	5.1*	40.8	2.8	4.0*	4.0*	4.0*	10.1*
9	11	5.1*	5.1*	5.1*	5.1*	56.6	4.0*	3.0*	4.0*	4.0*	10.1*
10	12	5.1*	5.1*	5.1*	5.1*	6.7	4.0*	3.0*	4.0*	4.0*	10.1*
11	13	8.2	5.1*	5.1*	5.1*	5.1*	4.0*	3.0*	4.0*	4.0*	10.1*
12	14	5.1*	5.1*	5.1*	5.1*	15.0	4.0*	3.0*	4.0*	4.0*	10.1*
13	15	5.1*	5.1*	5.1*	5.1*	24.6	4.0*	3.0*	4.0*	4.0*	10.1*
14	16	5.1*	5.1*	5.1*	5.1*	43.7	4.0*	3.0*	4.0*	4.0*	10.1*
15	17	5.1*	5.1*	5.1*	3.1	56.6	4.0*	3.0*	4.0*	4.0*	10.1*
16	18	5.1*	5.1*	5.1*	5.1*	30.3	4.0*	3.0*	4.0*	4.0*	10.1*
17	19	5.1*	4.0*	5.1*	5.1*	22.5	3.0*	3.0*	4.0*	3.0*	9.1*
18	20	5.1*	5.1*	5.1*	5.1*	27.7	4.0*	3.0*	4.0*	3.0*	9.1*
19	21	5.1*	5.1*	5.1*	5.1*	28.1	4.0*	3.0*	4.0*	3.0*	9.1*
20	22	5.1*	4.0*	5.1*	5.1*	43.2	3.0*	3.0*	4.0*	3.0*	9.1*
21	23	5.1*	5.1*	5.1*	5.1*	54.8	4.0*	3.0*	4.0*	3.0*	10.1*
22	24	5.1*	5.1*	5.1*	5.1*	45.1	4.0*	3.0*	4.0*	3.0*	10.1*
23	25	5.1*	4.7	5.1*	5.1*	29.3	4.0*	3.0*	4.0*	4.0*	10.1*
24	26	5.1*	5.1*	5.1*	5.1*	25.7	4.0*	3.0*	4.0*	3.0*	10.1*
25	27	5.1*	5.1*	5.1*	5.1*	23.2	4.0*	3.0*	4.0*	3.0*	10.1*
26	28	5.1*	5.1*	5.1*	5.1*	21.4	3.0*	3.0*	4.0*	3.0*	10.1*
27	29	5.1*	4.0*	5.1*	5.1*	22.6	3.1	3.0*	4.0*	3.0*	10.1*
28	30	5.1*	4.0*	5.1*	5.1*	11.2	3.0*	3.0*	4.0*	3.0*	9.1*
29	31	5.1*	5.1*	5.1*	5.1*	5.8	3.0*	3.0*	4.0*	3.0*	10.1*
30	32	5.1*	5.1*	5.1*	5.1*	7.7	3.0*	3.0*	4.0*	3.0*	9.1*
31	33	5.1*	4.0*	5.1*	5.1*	11.2	3.0*	3.0*	4.0*	3.0*	9.1*
32	34	5.1*	5.1*	5.1*	5.1*	12.0	4.0*	3.0*	4.0*	3.0*	9.1*
33	35	5.1*	5.1*	5.1*	5.1*	13.0	4.0*	3.0*	4.0*	3.0*	9.1*
34	36	5.1*	4.0*	5.1*	5.1*	8.1	3.0*	3.0*	4.0*	3.0*	9.1*
35	37	5.1*	5.5	5.1*	3.5	6.1	3.0*	3.0*	4.0*	3.0*	9.1*
36	38	5.1*	4.0*	5.1*	4.7	4.0*	3.0*	3.0*	4.0*	3.0*	9.1*
37	39	5.1*	4.0*	5.1*	5.1*	6.4	3.0*	3.0*	4.0*	3.0*	9.1*
38	40	5.1*	4.0*	5.1*	4.0*	12.6	3.0*	3.0*	3.0*	3.0*	9.1*
39	41	5.1*	4.0*	5.1*	5.1*	25.1	3.0*	3.0*	4.0*	3.0*	9.1*
40	42	5.1*	5.0	5.1*	5.1*	9.1	3.0*	3.0*	4.0*	3.0*	9.1*

* MINIMUM DETECTABLE LIMIT, ELEMENT NOT FOUND

SEQUOIA-GIANT FOREST / PERIOD 5 / STAGE 4 / PART 2

AMOUNTS IN NANOGRAMS/M**3
MATRIX CORRECTIONS USING DRUM4

ID	SLIDE	CC	NA	MG	AL	SI	P	S	CL	K	CA
1	3	0.238	95.4	18.1*	16.2*	16.3*	15.9*	16.0	11.5*	7.1*	6.1*
2	4	0.238	21.9*	39.0	11.8	16.3*	17.7	18.9	11.5*	7.1*	6.1*
3	5	0.238	32.4	90.4	16.2*	17.4*	16.0*	27.1	11.5*	7.1*	6.1*
4	6	0.238	85.1	18.3*	80.2	126.6	17.1*	28.4	11.6*	10.5	15.0
5	7	0.238	79.0	18.2*	34.0	49.8	16.0*	22.8	11.5*	7.1*	5.2
6	8	0.238	47.8	18.1*	15.0*	16.3*	15.9*	37.5	10.5*	7.1*	6.5
7	9	0.238	49.6	40.0	15.0*	16.3*	12.2	22.3	10.5*	7.1	6.1*
8	10	0.238	23.2	71.7	15.1*	47.6	14.9*	17.7	10.5*	7.1*	9.3
9	11	0.238	151.2	17.1*	44.1	176.9	16.0*	26.7	10.5*	10.9	10.5
10	12	0.238	95.2	17.2*	146.7	144.3	16.0*	40.0	10.5*	27.9	29.3
11	13	0.238	89.5	17.0*	15.1*	135.2	16.0*	36.7	10.5*	9.6	13.0
12	14	0.238	141.5	17.0*	23.3	46.5	16.0*	35.0	11.5*	7.1*	5.2
13	15	0.238	126.9	18.2*	16.2*	61.4	17.0*	26.9	11.5*	6.5	13.3
14	16	0.238	60.0	18.2*	66.0	62.6	16.0*	25.3	10.5*	7.1*	5.3
15	17	0.238	57.0	18.2*	78.5	53.2	16.0*	14.7	11.5*	7.1*	7.6
16	18	0.238	50.9	18.2*	39.7	66.0	16.0*	12.3	11.5*	7.4	14.7
17	19	0.238	46.8	18.2*	28.3	27.8	13.7	13.5*	11.5*	7.1*	6.1*
18	20	0.238	38.7	18.1*	16.2*	42.8	17.0*	13.5*	11.5*	7.1*	6.1*
19	21	0.238	47.3	18.2*	13.4	17.4*	17.0*	13.8	11.5*	8.2*	13.0
20	22	0.238	23.2*	58.5	20.4	34.2	10.2	12.6	11.5*	7.1*	5.9
21	23	0.238	43.5	49.4	16.2*	34.1	17.0*	13.5*	11.5*	7.9	14.0
22	24	0.238	23.2*	19.4*	24.3	37.3	17.0*	23.6	11.5*	13.6	6.1*
23	25	0.238	23.1*	19.3*	39.8	17.4*	17.0*	31.3	11.5*	7.1*	6.1*
24	26	0.238	23.1*	28.9	14.0	16.3*	10.7	13.4	11.5*	7.1*	6.1*
25	27	0.238	23.2*	18.2*	24.4	17.4*	16.0*	13.5*	11.5*	7.1*	6.1*
26	28	0.238	21.9*	21.6	27.1	28.7	11.7	14.5	11.5*	7.1*	7.0
27	29	0.238	37.8	18.1*	23.9	22.5	15.9*	13.5*	11.5*	7.1*	6.1*
28	30	0.238	49.5	18.2*	21.8	39.0	13.8	13.5*	11.5*	6.5	7.0
29	31	0.238	61.5	18.2*	15.0*	47.5	15.9*	13.5*	11.5*	7.1*	6.1*
30	32	0.238	34.2	18.1*	18.9	28.3	15.9*	12.4*	10.5*	7.1*	7.1
31	33	0.238	21.9*	29.0	18.4	30.2	15.5	12.4*	10.5*	7.1*	7.6
32	34	0.238	21.9*	28.6	26.8	32.1	15.9*	12.4*	10.5*	7.1*	5.8
33	35	0.238	21.9*	18.1*	26.5	36.0	15.9*	15.0	10.5*	7.1*	9.8
34	36	0.238	20.8*	75.5	15.1*	55.4	14.9*	14.6	10.5*	7.1*	10.3
35	37	0.238	22.0*	17.0*	50.3	68.1	14.9*	20.4	10.5*	7.7	11.0
36	38	0.238	20.7*	46.3	18.0	16.3*	14.9*	21.0	10.5*	7.1	5.1*
37	39	0.238	21.9*	16.9*	37.2	16.3*	15.9*	12.4*	10.5*	7.1*	5.1*
38	40	0.238	23.2	16.9*	53.6	16.3*	20.8	12.4*	10.5*	7.1*	6.4
39	41	0.238	26.9	17.0*	50.0	43.3	8.8	13.5	10.5*	7.1*	13.8
40	42	0.238	41.9	17.0*	53.0	37.7	14.9*	9.7	10.5*	7.1*	6.0

UC DAVIS PIXE ANALYSIS FILE 31542 ANALYSIS ON 02/27/86 O/P ON 02/27/86
SEQUOIA-GIANT FOREST / PERIOD 5 / STAGE 4 / PART 2

AMOUNTS IN NANOGRAMS/M**3
MATRIX CORRECTIONS USING DRUM4

D	SLIDE	TI	V	CR	MN	FE	NI	CU	ZN	BR	PB
1	3	5.1*	4.0*	5.1*	5.1*	4.0*	3.4	3.0*	4.0*	3.0*	9.1*
2	4	5.1*	3.8	5.1*	5.1*	4.0*	3.0*	3.0*	4.0*	3.0*	9.1*
3	5	5.1*	4.4	5.1*	5.1*	5.1*	3.0*	3.0*	4.0*	3.0*	9.1*
4	6	5.1*	5.1*	5.1*	5.1*	47.7	3.0*	3.0*	4.0*	3.0*	9.1*
5	7	5.1*	4.0*	5.1*	5.1*	13.0	3.0*	3.0*	3.0*	3.0*	9.1*
6	8	5.1*	3.1	5.1*	4.0*	4.0*	3.0*	3.0*	3.0*	3.0*	9.1*
7	9	5.1*	4.0*	5.1*	4.0*	4.0*	3.0*	3.0*	3.0*	3.0*	9.1*
8	10	4.1*	4.0*	4.0*	4.0*	13.7	3.0*	3.0*	3.0*	4.0*	9.1*
9	11	3.9	4.0*	5.1*	4.0*	35.7	3.0*	3.0*	3.0*	4.0*	9.1*
0	12	6.3	4.0*	4.0*	3.2	48.4	3.0*	3.0*	3.0*	4.0*	9.1*
1	13	4.7	4.0*	4.0*	4.0*	32.2	3.0*	3.0*	3.0*	3.0*	9.1*
2	14	5.1*	4.0*	5.1*	5.1*	12.2	3.0*	3.0*	3.0*	4.0*	9.1*
3	15	5.1*	5.1*	5.1*	5.1*	17.2	3.0*	3.0*	4.0*	3.0*	9.1*
4	16	3.5	4.0*	5.1*	4.0*	13.3	3.0*	3.0*	3.0*	4.0*	9.1*
5	17	5.1*	4.0*	5.1*	5.1*	23.8	3.0*	3.0*	4.0*	3.0*	9.1*
6	18	5.1*	4.0*	5.1*	5.1*	18.1	3.0*	3.0*	4.0*	3.0*	10.1*
7	19	5.1*	3.7	5.1*	5.1*	15.3	3.0*	3.0*	4.0*	3.0*	10.1*
8	20	5.1*	4.0*	5.1*	5.1*	7.7	3.0*	3.0*	4.0*	4.0*	10.1*
9	21	139.1	5.1*	5.1*	5.1*	6.1	4.0*	3.0*	4.0*	4.0*	10.1*
0	22	5.1*	4.0*	5.1*	3.2	9.4	3.0*	3.0*	4.0*	4.0*	10.1*
1	23	5.1*	5.1*	5.1*	5.1*	18.0	4.0*	3.0*	4.0*	4.0*	10.1*
2	24	5.1*	5.1*	5.1*	5.1*	9.5	3.0*	3.0*	4.0*	4.0*	9.1*
3	25	5.1*	5.1*	5.1*	5.1*	5.1*	3.0*	3.0*	4.0*	4.0*	10.1*
4	26	5.1*	4.0*	5.1*	5.1*	4.0*	3.0*	3.0*	4.0*	4.0*	10.1*
5	27	5.1*	4.0*	5.1*	5.1*	4.0*	3.0*	3.0*	4.0*	4.0*	10.1*
6	28	5.1*	4.0*	5.1*	5.1*	5.5	3.0*	3.0*	3.0*	3.0*	10.1*
7	29	5.1*	4.0*	5.1*	5.1*	19.7	3.0*	3.0*	4.0*	3.0*	10.1*
8	30	5.1*	4.0*	5.1*	5.1*	13.7	3.0*	3.0*	4.0*	3.0*	10.1*
9	31	5.1*	4.0*	5.1*	5.1*	15.3	3.0*	3.0*	3.0*	3.0*	10.1*
0	32	5.1*	4.0*	5.1*	4.0*	13.2	3.0*	3.0*	3.0*	3.0*	9.1*
1	33	4.1*	4.0*	4.0*	4.0*	12.3	3.0*	3.0*	3.0*	3.0*	8.1*
2	34	5.1*	4.0*	5.1*	3.5	12.7	3.0*	3.0*	3.0*	3.0*	9.1*
3	35	5.1*	4.0*	5.1*	4.0*	18.2	3.0*	3.0*	3.0*	3.0*	9.1*
4	36	4.1*	4.0*	4.0*	3.1	23.2	3.0*	3.0*	3.0*	3.0*	9.1*
5	37	4.1*	4.0*	4.0*	4.3	30.0	3.0*	3.0*	3.0*	3.0*	8.1*
6	38	4.1*	4.0*	4.0*	4.1	3.4	3.0*	3.0*	3.0*	3.0*	9.1*
7	39	5.1*	4.0*	5.1*	4.0*	5.2	3.0*	3.0*	3.0*	3.0*	9.1*
8	40	5.1*	4.0*	5.1*	4.0*	10.0	3.0*	3.0*	3.0*	3.0*	9.1*
9	41	4.1*	4.0*	4.0*	4.0*	17.2	3.0*	3.0*	3.0*	3.0*	8.1*
0	42	4.1*	4.0*	4.0*	4.0*	17.6	3.0*	3.0*	3.0*	4.0*	9.1*

* MINIMUM DETECTABLE LIMIT, ELEMENT NOT FOUND

JC DAVIS PIXE ANALYSIS FILE 31543 ANALYSIS ON 02/27/86 O/P ON 02/27/86

IEQUOIA-GIANT FOREST / PERIOD 5 / STAGE 4 / PART 3

AMOUNTS IN NANOGRAMS/M**3
MATRIX CORRECTIONS USING DRUM4

SLIDE	CC	NA	MG	AL	SI	P	S	CL	K	CA
3	0.238	22.1*	47.0	33.8	73.2	14.9*	12.4*	10.5*	7.1*	29.9
4	0.238	58.3	17.0*	28.0	29.9	14.9*	16.1	10.5*	7.1*	5.1*
5	0.238	50.1	17.0*	35.8	32.4	14.9*	13.8	10.5*	7.1*	5.1*

SLIDE	TI	V	CR	MN	FE	NI	CU	ZN	BR	PB
3	4.1*	4.0*	4.0*	4.0*	17.6	3.0*	3.0*	3.0*	18.9	9.1*
4	4.1*	4.0*	4.0*	4.0*	16.3	3.0*	3.0*	3.0*	4.0*	9.1*
5	4.1*	4.0*	4.0*	4.0*	14.2	3.0*	3.0*	3.0*	4.0*	9.1*

* MINIMUM DETECTABLE LIMIT, ELEMENT NOT FOUND

EQUOIA-GIANT FOREST / PERIOD 5 / STAGE 7 / PART 1

AMOUNTS IN NANOGRAMS/M**3
MATRIX CORRECTIONS USING DRUM7

SLIDE	CC	NA	MG	AL	SI	P	S	CL	K	CA
3	0.238	96.3	18.1*	16.0	19.1*	34.4	25.7	13.1*	7.7	7.0*
4	0.238	60.3	17.1*	32.9	17.0*	20.2	67.6	12.1*	8.0*	7.0*
5	0.238	47.2	17.1*	25.1	18.0*	15.3	23.4	12.1*	8.0*	7.0*
6	0.238	52.5	16.1*	26.7	16.0*	16.1*	17.6	11.1*	8.0*	6.0*
7	0.238	19.6*	63.5	26.8	16.0*	23.0	13.1*	11.1*	8.0*	6.0*
8	0.238	19.6*	62.7	14.0*	16.0*	32.9	18.5	11.1*	8.0*	6.0*
9	0.238	19.5*	15.0*	14.0*	16.0*	16.1*	51.0	11.1*	7.0*	6.0*
10	0.238	19.6*	59.4	17.3	16.0*	25.7	59.8	11.1*	7.0*	6.0*
11	0.238	19.6*	58.2	14.0*	16.0*	16.1*	43.5	11.1*	7.0*	6.0*
12	0.238	18.5*	49.0	17.8	16.0*	11.9	14.2	11.1*	7.0*	6.0*
13	0.238	101.2	15.1*	14.0*	16.0*	15.1*	19.0	11.1*	7.0*	6.0*
14	0.238	32.6	15.0*	13.0*	15.0*	15.1*	44.7	11.1*	5.9	6.0*
15	0.238	13.0	50.2	13.0*	15.0*	15.1*	55.9	11.1*	7.0*	6.0*
16	0.238	19.6*	44.9	14.0*	16.0*	25.0	45.1	11.1*	7.0*	6.0*
17	0.238	44.5	15.0*	45.9	16.0*	15.1*	13.1*	11.1*	7.0*	6.0*
18	0.238	47.7	50.9	14.1*	16.0*	16.1*	32.3	11.1*	8.0*	6.0*
19	0.238	19.6*	15.1*	60.9	16.0*	12.8	43.3	11.1*	7.0*	6.0*
20	0.238	58.0	72.2	14.1*	16.0*	26.4	36.5	11.1*	7.0*	6.0*
21	0.238	19.6*	86.7	14.1*	16.0*	19.7	55.9	11.1*	7.0*	6.0*
22	0.238	36.8	15.1*	24.9	16.0*	25.8	66.0	11.1*	7.0*	6.0*
23	0.238	19.6*	44.1	32.1	16.0*	43.2	33.5	11.1*	7.0*	6.0*
24	0.238	54.7	15.1*	51.7	16.1*	16.0	56.0	11.1*	7.0*	6.5
25	0.238	18.6*	71.1	13.7	16.0*	14.2	33.1	11.1*	8.0*	6.0*
26	0.238	18.5*	85.5	14.0*	16.0*	16.1*	13.1*	11.1*	8.0*	6.0*
27	0.238	56.1	63.6	14.1*	16.0*	21.5	31.9	11.1*	7.0*	6.0*
28	0.238	18.6*	57.1	13.0*	15.0*	20.8	53.4	11.1*	7.0*	6.0*
29	0.238	18.6*	71.1	22.1	15.0*	15.1*	22.8	11.1*	7.0*	6.0*
30	0.238	18.5*	79.3	14.0*	16.0*	15.1*	20.6	11.1*	7.0*	6.0*
31	0.238	19.6	60.5	13.0*	15.0*	18.9	22.6	11.1*	7.0*	6.0*
32	0.238	18.6*	80.3	20.2	15.0*	37.2	13.1*	11.1*	7.0*	6.0*
33	0.238	20.9	65.4	13.6	15.0*	16.2	31.2	11.1*	7.0*	6.0*
34	0.238	18.6*	58.9	13.0*	15.0*	23.2	70.1	11.1*	7.0*	6.0*
35	0.238	18.6*	76.6	13.0*	15.0*	11.3	41.5	11.1*	7.0*	6.0*
36	0.238	18.6*	75.5	13.0*	15.0*	25.9	35.3	11.1*	7.0*	6.0*
37	0.238	18.6*	86.1	13.0*	15.0*	21.4	23.4	11.1*	7.0*	6.0*
38	0.238	18.6*	15.1*	65.6	13.6	17.8	29.1	11.1*	7.0*	6.0*
39	0.238	18.6*	67.0	14.0*	15.0*	13.1	44.6	11.1*	7.0*	6.0*
40	0.238	19.7*	15.1*	46.7	9.7	15.1*	117.9	11.1*	7.0*	15.2
41	0.238	21.9	15.1*	55.4	16.0*	19.1	90.3	11.1*	7.0*	6.0*
42	0.238	18.5*	15.1*	49.2	15.0*	17.6	38.6	11.1*	7.0*	6.0*

:QUOIA-GIANT FOREST / PERIOD 5 / STAGE 7 / PART 1

AMOUNTS IN NANOGRAMS/M**3
MATRIX CORRECTIONS USING DRUM7

SLIDE	TI	V	CR	MN	FE	NI	CU	ZN	BR	PB
3	6.0*	5.0*	6.0*	6.0*	5.0*	4.0*	4.0*	4.0*	5.0*	10.0*
4	5.0*	5.0*	5.0*	5.0*	5.0*	4.0*	4.0*	4.0*	4.0*	10.0*
5	5.0*	5.1	5.0*	5.0*	5.0*	4.0*	4.0*	4.0*	4.0*	10.0*
6	5.0*	5.0*	5.0*	5.0*	5.0*	4.0*	3.0*	4.0*	4.0*	10.0*
7	5.0*	5.0*	5.0*	5.0*	5.0*	4.0*	3.0*	4.0*	4.0*	10.0*
8	4.1	5.0*	5.0*	4.2	5.0*	4.0*	3.0*	4.0*	3.0*	10.0*
9	5.0*	3.2	5.0*	5.0*	5.0*	3.0*	3.0*	4.0*	3.0*	9.0*
10	5.0*	6.6	5.0*	5.0*	5.0*	4.0*	3.0*	4.0*	3.0*	9.0*
11	5.0*	5.0*	5.0*	5.0*	5.0*	4.0*	3.0*	4.0*	3.0*	9.0*
12	5.0*	5.0*	5.0*	5.0*	5.0*	3.0*	3.0*	4.0*	3.0*	9.0*
13	5.0*	5.0*	5.0*	5.0*	5.0*	4.0*	3.0*	4.0*	3.0*	9.0*
14	5.0*	4.0*	5.0*	5.7	4.0*	3.0*	3.0*	4.0*	3.0*	9.0*
15	5.0*	4.0*	5.0*	4.7	4.0*	3.0*	3.0*	4.0*	3.0*	9.0*
16	5.0*	4.0*	4.3	5.0*	5.0*	3.0*	3.0*	4.0*	3.0*	9.0*
17	5.0*	5.0*	5.0*	5.0*	5.0*	4.0*	3.0*	4.0*	3.0*	9.0*
18	62.9	5.0*	5.0*	5.0*	5.0*	4.0*	3.0*	4.0*	3.0*	9.0*
19	5.0*	5.0*	6.2	5.0*	5.0*	3.0*	3.0*	4.0*	3.0*	9.0*
20	5.0*	5.0*	5.0*	5.0*	5.0*	4.0*	3.0*	4.0*	3.0*	9.0*
21	5.0*	5.0*	5.0*	5.0*	5.0*	4.0*	3.0*	4.0*	3.0*	9.0*
22	5.0*	5.0*	5.0*	5.0*	5.0*	3.0*	3.0*	4.0*	3.0*	9.0*
23	4.1	5.0*	5.0*	5.0*	5.0*	3.0*	3.0*	4.0*	3.0*	9.0*
24	5.0*	5.0*	5.0*	5.0*	5.0*	4.0*	3.0*	4.0*	3.0*	9.0*
25	5.0*	3.9	5.0*	5.0*	5.0*	4.0*	3.0*	4.0*	3.0*	9.0*
26	5.0*	5.0*	5.0*	5.0*	5.0*	4.0*	3.0*	4.0*	3.0*	9.0*
27	5.0*	4.0*	5.0*	5.0	5.0*	3.0*	3.0*	4.0*	3.0*	9.0*
28	3.8	4.0*	5.0*	5.0*	4.0*	3.0*	3.0*	4.0*	4.0*	9.0*
29	5.0*	4.9	5.0*	5.0*	4.0*	3.0*	3.0*	4.0*	4.0*	9.0*
30	5.0*	5.0*	5.0*	5.0*	5.0*	4.0*	3.0*	4.0*	4.0*	10.0*
31	5.0*	4.0*	5.0*	5.0*	4.0*	3.0*	3.0*	4.0*	4.0*	9.0*
32	5.0*	4.0*	5.0*	5.0*	4.0*	3.0*	3.0*	4.0*	4.0*	9.0*
33	4.0	6.7	5.0*	5.0*	4.0*	3.0*	3.0*	4.0*	4.0*	9.0*
34	5.0*	3.7	5.0*	5.0*	4.0*	3.0*	3.0*	4.0*	4.0*	9.0*
35	4.3	4.0*	5.0*	5.0*	4.0*	3.0*	3.0*	4.0*	4.0*	9.0*
36	5.0*	4.0*	5.0*	5.0*	4.0*	3.0*	3.0*	4.0*	4.0*	9.0*
37	5.0*	4.8	5.0*	5.0*	4.0*	3.0*	3.0*	4.0*	4.0*	9.0*
38	5.0*	4.0*	5.0*	4.5	4.0*	3.0*	3.0*	4.0*	4.0*	9.0*
39	5.0*	4.0*	5.4	5.0*	4.0*	3.0*	3.0*	4.0*	3.0*	8.0*
40	5.0*	5.9	5.0*	5.0*	4.0*	3.0*	3.0*	4.0*	3.0*	9.0*
41	5.0*	4.0*	5.0*	5.0*	5.0*	3.0*	3.0*	4.0*	3.0*	9.0*
42	5.0*	4.6	5.0*	5.0*	4.0*	3.0*	3.0*	3.0*	4.0*	9.0*

* MINIMUM DETECTABLE LIMIT, ELEMENT NOT FOUND

:QUOIA-GIANT FOREST / PERIOD 5 / STAGE 7 / PART 2

AMOUNTS IN NANOGRAMS/M**3
MATRIX CORRECTIONS USING DRUM7

SLIDE	CC	NA	MG	AL	SI	P	S	CL	K	CA
3	0.238	18.6*	57.2	38.9	15.0*	18.0	27.1	11.1*	7.0*	6.0*
4	0.238	19.6*	86.7	14.0*	17.4	16.1*	13.1*	11.1*	7.0*	6.0*
5	0.238	55.0	15.1*	13.0*	15.0*	22.2	55.0	11.1*	7.0*	6.0*
6	0.238	110.5	15.1*	24.9	16.1*	15.5	127.4	11.1*	8.0*	6.0*
7	0.238	19.6*	15.1*	29.4	35.8	16.1*	58.9	11.1*	5.7	6.0*
8	0.238	24.1	48.4	14.0*	16.0*	16.8	13.1*	11.1*	7.0*	6.0*
9	0.238	32.2	42.0	14.1*	16.1*	23.2	13.1*	11.1*	7.0*	6.0*
10	0.238	42.6	32.3	14.1*	16.0*	16.1*	45.3	11.1*	7.0*	6.0*
11	0.238	18.8*	32.3	14.1*	12.8	15.2*	73.1	11.1*	7.0*	6.0*
12	0.238	18.6*	38.8	13.0*	15.0*	17.0	37.5	11.1*	7.0*	6.0*
13	0.238	18.5*	32.6	11.0	16.0*	16.1*	39.9	11.1*	7.0*	6.0*
15	0.238	25.4	23.0	22.0	16.0*	15.1*	24.9	11.1*	7.0*	6.0*
16	0.238	18.6*	15.1*	42.3	15.0*	14.0	58.2	11.1*	7.0*	6.0*
17	0.238	19.6*	27.6	26.8	15.0*	15.1*	51.5	11.1*	7.0*	6.0*
18	0.238	18.6*	51.1	13.0*	10.3	15.4	38.4	11.1*	7.0*	6.0*
19	0.238	18.5*	77.8	13.0*	15.0*	13.6	19.4	11.1*	7.0*	6.0*
20	0.238	26.1	37.2	13.0*	15.0*	22.5	39.6	11.1*	7.0*	6.0*
21	0.238	29.5	15.0*	13.0*	15.0*	15.4	30.3	11.1*	7.0*	6.0*
22	0.238	18.5*	15.0*	45.3	15.0*	15.1*	39.8	11.1*	7.0*	6.0*
23	0.238	18.7*	15.1*	182.1	15.1*	17.8	18.6	11.1*	7.0*	6.0*
24	0.238	20.9	94.7	13.0*	15.0*	19.1	13.3	11.1*	7.0*	6.0*
25	0.238	19.5*	34.6	14.0*	16.0*	17.6	15.7	11.1*	8.0*	6.0*
26	0.238	22.6*	25.1	16.0*	18.0*	18.1*	17.4	13.1*	9.0*	7.0*
27	0.238	21.7	17.0*	16.0*	18.0*	18.1*	17.2	13.1*	9.0*	7.0*
28	0.238	19.6*	39.3	15.0	16.0*	20.7	34.9	11.1*	8.0*	6.0*
29	0.238	19.6*	32.1	14.0*	16.0*	16.1*	44.8	11.1*	8.0*	6.0*
30	0.238	18.5*	42.1	12.1	16.0*	15.1*	27.5	11.1*	7.0*	9.5
31	0.238	19.5*	15.0*	35.0	16.0*	16.1*	32.2	11.1*	7.0*	6.0*
32	0.238	19.6*	15.1*	39.4	16.0*	27.3	55.9	11.1*	7.4	6.0*
33	0.238	18.5*	49.3	14.0*	15.0*	15.1*	32.5	11.1*	7.0*	6.0*
34	0.238	18.6*	40.0	14.0*	15.0*	12.1	57.2	11.1*	7.0*	6.0*
35	0.238	18.6*	67.9	13.0*	15.0*	14.7	53.5	11.1*	7.0*	6.0*
36	0.238	18.5*	15.0*	13.0*	15.0*	13.7	32.7	11.1*	7.0*	6.0*
37	0.238	53.2	32.4	13.1*	15.0*	30.5	13.1*	11.1*	7.0*	58.2
38	0.238	69.6	15.1*	35.2	15.0*	15.1*	17.4	11.1*	7.0*	6.0*
39	0.238	25.9	15.0*	13.0*	15.0*	24.5	18.1	11.1*	7.0*	6.0*
40	0.238	18.5*	56.7	13.0*	15.0*	22.6	25.8	11.1*	7.0*	6.0*
41	0.238	34.5	15.0*	13.0*	15.0*	15.1*	43.7	11.1*	7.0*	6.0*
42	0.238	18.5*	29.9	13.0*	15.0*	12.8	21.2	11.1*	7.0*	6.0*

EQUOIA-GIANT FOREST / PERIOD 5 / STAGE 7 / PART 2

AMOUNTS IN NANOGRAMS/M**3
MATRIX CORRECTIONS USING DRUM7

SLIDE	TI	V	CR	MN	FE	NI	CU	ZN	BR	PB
3	5.0*	4.0*	3.1	5.0*	4.0*	3.3	3.0*	4.0*	4.0*	9.0*
4	5.0*	5.0*	5.0*	5.0*	5.0*	3.0*	3.0*	4.0*	4.0*	9.0*
5	5.0*	4.0*	5.0*	5.0*	4.0*	3.0*	7.8	4.0*	4.0*	9.0*
6	5.0*	5.0*	5.0*	5.0*	5.0*	4.0*	3.0*	4.0*	4.0*	10.0*
7	5.0*	5.0*	5.0*	4.0	5.0*	3.0*	3.0*	4.0*	3.0*	9.0*
8	5.0*	5.0*	5.0*	5.0*	5.0*	4.0*	5.8	4.0*	3.0*	9.0*
9	4.2	5.0*	5.7	5.0*	5.0*	4.1	300.6	4.0*	3.0*	9.0*
10	5.0*	5.0*	5.0*	5.0*	5.0*	4.0*	52.1	4.0*	3.0*	9.0*
11	5.0*	5.0*	5.0*	5.0*	5.0*	3.0*	74.6	4.0*	3.0*	9.0*
12	5.0*	3.9	5.0*	5.0*	4.0*	3.0*	18.7	4.0*	3.0*	9.0*
13	5.0*	5.0*	5.0*	5.0*	5.0*	4.0*	6.5	4.0*	3.0*	9.0*
15	5.0*	5.0*	5.0*	5.0*	5.0*	4.0*	3.0*	4.0*	3.0*	9.0*
16	5.0*	4.0*	5.0*	5.0*	4.0*	3.0*	3.0*	4.0*	3.0*	9.0*
17	5.3	4.0*	5.0*	4.4	4.0*	3.0*	3.0*	4.0*	3.0*	9.0*
18	5.4	4.0*	5.0*	5.0*	4.0*	3.0*	3.0*	3.0*	3.0*	9.0*
19	5.0*	4.0*	5.0*	5.0*	5.0*	3.0*	3.0*	4.0*	3.0*	9.0*
20	5.0*	4.0*	5.0*	5.0*	4.0*	3.0*	3.0*	4.0*	4.0*	9.0*
21	5.0*	4.0*	5.0*	5.0*	4.0*	3.0*	3.0*	4.0*	4.0*	9.0*
22	7.6	4.0*	5.0*	5.1	4.0*	3.0*	3.0*	4.0*	4.0*	9.0*
23	3.7	4.0*	5.0*	7.1	4.0*	3.0*	13.4	4.0*	4.0*	9.0*
24	5.0*	5.0*	5.0*	5.0*	5.0*	3.0*	3.0*	4.0*	4.0*	10.0*
25	5.0*	5.0*	5.0*	5.0*	5.0*	3.9	3.0*	4.0*	3.0*	10.0*
26	6.0*	5.0*	6.0*	6.0*	5.0*	4.0*	4.0*	4.0*	5.0*	10.0*
27	6.0*	5.0*	6.0*	5.0*	5.0*	4.0*	4.0*	4.0*	4.0*	11.0*
28	5.0*	5.0*	5.0*	5.0*	5.0*	4.0*	3.0*	4.0*	4.0*	10.0*
29	5.0*	4.6	5.0*	4.4	5.0*	4.0*	3.0*	4.0*	3.0*	10.0*
30	5.0*	4.6	5.0*	5.0*	5.0*	3.0*	3.0*	4.0*	3.0*	9.0*
31	4.9	5.0*	5.0*	5.0*	5.0*	4.0*	3.0*	4.0*	3.0*	9.0*
32	5.0*	4.0*	5.0*	5.0*	5.0*	3.0*	3.0*	4.0*	3.0*	9.0*
33	5.0*	4.5	5.0*	5.0*	5.0*	3.0*	3.0*	4.0*	3.0*	9.0*
34	5.0*	4.1	5.0*	5.0*	5.0*	3.0*	3.0*	4.0*	3.0*	9.0*
35	8.2	4.0*	5.0*	5.0*	4.0*	3.0*	3.0*	4.0*	3.0*	9.0*
36	4.3	4.0*	5.0*	3.6	4.0*	3.0*	3.0*	4.0*	3.0*	9.0*
37	5.0*	4.0*	5.0*	3.4	5.0*	3.0*	3.0*	4.0*	3.0*	9.0*
38	5.0*	4.0*	5.0*	5.0*	4.0*	3.0*	3.0*	4.0*	4.0*	9.0*
39	5.0*	4.0*	5.0*	5.0*	4.0*	3.0*	3.0*	4.0*	3.0*	9.0*
40	4.3	4.0*	5.0*	5.0*	4.0*	3.0*	3.0*	3.0*	3.0*	9.0*
41	5.0*	4.0*	5.0*	5.0*	4.0*	3.0*	3.0*	3.0*	3.0*	9.0*
42	5.0*	4.0*	5.0*	5.0*	4.0*	3.0*	3.0*	3.0*	3.0*	9.0*

* MINIMUM DETECTABLE LIMIT, ELEMENT NOT FOUND

EQUOIA-GIANT FOREST / PERIOD 5 / STAGE 7 / PART 3

AMOUNTS IN NANOGRAMS/M**3
MATRIX CORRECTIONS USING DRUM7

SLIDE	CC	NA	MG	AL	SI	P	S	CL	K	CA
3	0.238	18.5*	57.2	13.0*	15.0*	20.6	13.1*	11.1*	7.0*	6.0*
4	0.238	39.7	36.8	13.0*	15.0*	15.1*	22.5	11.1*	7.0*	6.0*
5	0.238	16.6	71.7	13.0*	15.0*	15.1*	16.6	11.1*	7.0*	6.0*

SLIDE	TI	V	CR	MN	FE	NI	CU	ZN	BR	PB
3	5.0*	4.0*	5.0*	5.0*	4.0*	3.0*	3.0*	4.0*	4.0*	9.0*
4	5.0*	4.0*	5.0*	5.0*	4.0*	3.0*	3.0*	4.0*	3.0*	9.0*
5	5.0*	4.0*	5.0*	5.0*	4.0*	3.0*	3.0*	4.0*	3.0*	9.0*

* MINIMUM DETECTABLE LIMIT, ELEMENT NOT FOUND

SEQUOIA-GIANT FOREST / PERIOD 2 / STAGE 6 / PART 1

AMOUNTS IN NANOGRAMS/M**3
MATRIX CORRECTIONS USING DRUM6

ID	SLIDE	CC	NA	MG	AL	SI	P	S	CL	K	CA
1	3	0.244	44.3*	36.1*	34.1	70.8	37.6*	31.3*	27.3*	18.1*	15.1*
2	4	0.244	42.3*	34.1*	29.0	128.7	36.6*	30.3*	26.3*	17.1*	14.1*
3	5	0.244	41.2*	33.0*	35.5	93.1	34.6*	28.3*	25.3*	15.6	13.1*
4	6	0.244	43.4*	35.1*	37.0	120.7	37.6*	31.3*	27.3*	18.1*	14.1*
5	7	0.244	46.5*	38.3*	34.6*	156.8	39.7*	33.3*	29.4*	20.1*	16.1*
6	8	0.244	43.3*	35.1*	32.5*	134.0	37.6*	31.3*	27.3*	18.1*	15.1*
7	9	0.244	41.2*	33.0*	30.4*	34.9*	146.4	29.3*	25.3*	17.1*	13.1*
8	10	0.244	40.1*	32.9*	29.5	86.6	34.6*	28.2*	25.3*	17.1*	13.1*
9	11	0.244	41.2*	33.0*	38.9	115.0	34.6*	29.3*	25.3*	17.1*	13.1*
10	12	0.244	36.6*	30.1*	27.5*	93.1	95.2	223.7	22.3*	46.3	12.1*
11	13	0.244	33.4*	26.9*	145.1	79.4	62.9	212.4	19.3*	26.5	10.1*
12	14	0.244	34.4*	27.9*	87.2	51.7	88.3	198.3	22.0	13.1*	11.1*
13	15	0.244	33.2*	26.8*	24.2*	76.4	92.5	196.4	16.7	23.8	10.1*
14	16	0.244	33.2*	26.8*	72.6	73.7	64.6	191.0	19.3*	13.1*	10.1*
15	17	0.244	33.2*	26.8*	66.7	78.2	79.9	143.2	16.5	13.1*	10.1*
16	18	0.244	33.4*	101.1	39.1	81.1	80.5	179.5	19.3*	26.4	10.1*
17	19	0.244	33.5*	27.0*	88.5	78.8	73.2	248.1	19.3*	67.4	10.1*
18	20	0.244	32.6*	26.0*	93.4	64.9	86.9	246.8	19.3*	154.6	10.1*
19	21	0.244	32.5*	25.9*	70.3	85.8	82.8	220.2	19.3*	110.9	23.6
20	22	0.244	32.1*	58.5	36.4	79.8	84.3	88.8	19.6	12.1*	10.1*
21	23	0.244	30.9*	24.6*	22.1*	90.0	76.5	142.2	17.2*	17.5	9.1*
22	24	0.244	32.4*	25.9*	140.6	59.8	94.4	220.1	18.3*	37.7	10.1*
23	25	0.244	32.3*	25.8*	24.3*	93.3	90.9	273.4	19.3*	27.0	10.1*
24	26	0.244	32.6*	25.9*	126.6	73.5	78.7	298.2	20.3*	78.2	10.1*
25	27	0.244	33.9*	28.2*	25.5*	129.7	126.1	383.8	21.4*	87.5	41.7
26	28	0.244	34.3*	27.9*	98.8	130.3	153.8	25.3*	22.3*	26.6	12.1*
27	29	0.244	34.1*	27.8*	236.3	94.7	29.5*	25.3*	22.3*	14.1*	11.1*
28	30	0.244	34.3*	27.9*	277.5	108.6	29.6*	24.3*	22.3*	35.2	12.1*
29	31	0.244	33.9*	27.1*	163.2	95.0	108.0	421.3	21.4*	14.1*	11.1*
30	32	0.244	34.0*	27.2*	97.6	106.7	131.3	410.8	25.1	38.0	11.1*
31	33	0.244	36.7*	30.2*	42.4	61.3	111.3	301.7	21.3*	50.1	11.1*
32	34	0.244	35.6*	29.1*	145.9	57.3	98.2	226.3	21.3*	14.1*	11.1*
33	35	0.244	34.3*	27.9*	95.8	100.4	102.0	107.9	20.3*	13.1*	8.9
34	36	0.244	34.5*	58.8	25.4*	124.0	121.6	195.5	20.3*	13.1*	10.9
35	37	0.244	34.5*	28.0*	104.2	79.8	109.7	244.5	20.3*	14.1*	11.1*
36	38	0.244	35.8*	28.1*	70.3	94.3	144.6	309.1	21.3*	30.6	11.1*
37	39	0.244	35.7*	75.3	93.2	87.1	29.6*	292.3	21.3*	33.7	16.3
38	40	0.244	34.6*	28.0*	158.3	85.3	147.5	164.8	21.3*	14.1*	11.1*
39	41	0.244	33.6*	27.0*	188.9	80.0	111.2	220.7	20.3*	14.9	11.1*
40	42	0.244	33.6*	27.0*	131.6	81.7	94.1	258.1	20.3*	54.6	11.1*

SEQUOIA-GIANT FOREST / PERIOD 2 / STAGE 6 / PART 1

AMOUNTS IN NANOGRAMS/M**3
MATRIX CORRECTIONS USING DRUM6

ID	SLIDE	TI	V	CR	MN	FE	NI	CU	ZN	BR	PB
1	3	12.1*	13.0*	12.0*	11.0*	10.0*	8.0*	7.0*	7.0*	12.0*	25.1*
2	4	11.0*	12.0*	11.0*	11.0*	10.0*	7.0*	7.0*	7.0*	11.0*	23.1*
3	5	11.0*	12.0*	11.0*	10.0	10.0*	7.0*	6.0*	6.0*	11.0*	22.1*
4	6	12.1*	13.0*	12.0*	11.0*	11.0*	7.0*	7.0*	7.0*	12.0*	24.1*
5	7	13.1*	14.0*	13.0*	13.0*	12.0*	8.0*	7.0*	8.0*	14.0*	28.1*
6	8	12.1*	13.0*	12.0*	12.0*	11.0*	8.0*	7.0*	7.0*	12.0*	24.1*
7	9	11.0*	12.0*	11.0*	10.0*	10.0*	7.0*	7.0*	7.0*	10.0*	21.1*
8	10	11.0*	12.0*	11.0*	11.0*	10.0*	7.0*	7.0*	7.0*	10.0*	20.1*
9	11	11.0*	12.0*	11.0*	11.0*	10.0*	7.0*	7.0*	7.0*	10.0*	21.1*
10	12	10.1*	10.0*	10.0*	10.1	9.0*	6.0*	6.0*	14.2	6.0*	17.1*
11	13	8.0*	9.0*	8.0*	8.0*	7.0*	6.0*	5.0*	5.0*	6.0*	13.0*
12	14	9.0*	10.0*	9.0*	9.0*	8.0*	6.0*	6.0*	6.0*	7.0*	14.0*
13	15	8.0*	9.0*	8.0*	8.0*	6.6	6.0*	5.0*	5.0*	7.0*	14.0*
14	16	8.0*	9.0*	8.0*	8.0*	8.0*	6.0*	7.6	9.6	7.0*	13.0*
15	17	8.0*	9.0*	8.0*	8.0*	7.0*	6.0*	5.0*	7.9	6.0*	13.0*
16	18	8.0*	9.0*	8.0*	11.3	7.0*	6.0*	5.0*	5.0*	6.0*	13.0*
17	19	8.0*	9.0*	8.0*	8.0*	13.6	6.0*	5.0*	7.1	6.0*	13.0*
18	20	8.0*	9.0*	8.0*	8.0*	13.9	6.0*	5.0*	12.2	6.0*	13.0*
19	21	8.0*	9.0*	8.0*	8.0*	7.0*	5.0*	5.0*	9.9	6.0*	13.0*
20	22	8.0*	9.0*	8.0*	8.0*	7.0*	5.0*	5.0*	5.0*	6.0*	12.0*
21	23	8.0*	8.0*	8.0*	7.0*	7.0*	5.0*	5.0*	5.9	6.0*	12.0*
22	24	8.0*	9.0*	8.0*	8.0*	7.0*	5.0*	5.0*	5.0*	6.0*	12.0*
23	25	8.0*	9.0*	8.0*	8.0*	7.0*	5.0*	5.0*	6.9	6.0*	12.0*
24	26	9.0*	9.0*	9.0*	8.0*	8.0*	6.0*	5.0*	5.0*	6.0*	12.0*
25	27	15.2	10.0*	9.0*	9.0*	11.8	6.0*	6.0*	7.6	6.0*	13.0*
26	28	9.0*	10.0*	9.0*	9.0*	8.0*	6.0*	6.0*	6.0*	7.0*	14.0*
27	29	9.0*	10.0*	7.5	9.0*	8.0*	6.0*	6.0*	6.0*	7.0*	14.0*
28	30	10.0*	10.0*	10.0*	9.0*	9.0*	6.0*	6.0*	6.0*	7.0*	14.0*
29	31	11.3	10.0*	9.0*	9.0*	8.0*	6.0*	6.0*	6.0*	6.0*	13.0*
30	32	9.1*	9.0*	9.0*	9.9	8.9	6.0*	5.0*	5.0*	6.0*	13.0*
31	33	9.0*	10.0*	9.0*	9.0*	8.0*	6.0*	6.0*	6.0*	8.0*	17.1*
32	34	9.0*	10.0*	9.0*	9.0*	8.0*	6.3	6.0*	6.0*	8.0*	16.1*
33	35	9.0*	10.0*	9.0*	9.0*	8.0*	6.0*	5.0*	5.0*	7.0*	14.0*
34	36	30.6	10.0*	9.0*	9.0*	8.7	6.0*	5.0*	6.0*	7.0*	14.0*
35	37	9.0*	10.0*	9.0*	9.0*	8.0*	6.0*	6.0*	6.0*	7.0*	14.0*
36	38	9.0*	10.0*	9.0*	9.0*	8.0*	6.0*	6.0*	10.0	7.0*	14.0*
37	39	9.0*	10.0*	9.0*	9.0*	8.0*	6.0*	6.0*	10.0	7.0*	15.0*
38	40	9.0*	10.0*	9.0*	9.0*	8.0*	6.0*	6.0*	6.0*	7.0*	14.0*
39	41	9.0*	10.0*	9.0*	9.0*	8.0*	6.0*	5.0*	10.2	7.0*	14.0*
40	42	9.0*	10.0*	9.0*	9.0*	8.0*	6.2	6.0*	6.0*	6.0*	13.0*

* MINIMUM DETECTABLE LIMIT, ELEMENT NOT FOUND

SEQUOIA-GIANT FOREST / PERIOD 2 / STAGE 6 / PART 2

AMOUNTS IN NANOGRAMS/M**3
MATRIX CORRECTIONS USING DRUM6

ID	SLIDE	CC	NA	MG	AL	SI	P	S	CL	K	CA
1	3	0.244	34.7*	28.1*	144.5	66.4	103.7	271.6	21.3*	11.7	8.8
2	4	0.244	33.9*	28.2*	211.8	78.8	101.9	352.9	21.4*	47.8	11.1*
3	5	0.244	34.0*	27.2*	224.1	108.5	166.5	320.8	37.2	16.3	11.1*
4	6	0.244	33.8*	27.1*	234.4	56.6	108.1	350.1	20.3*	13.8	11.1*
5	7	0.244	33.6*	27.0*	119.8	117.8	73.5	320.6	20.3*	13.1*	11.1*
6	8	0.244	33.4*	26.9*	24.3*	133.4	27.6*	338.7	20.3*	30.5	11.1*
7	9	0.244	33.8*	63.9	73.2	101.8	99.4	310.4	20.3*	29.0	11.1*
8	10	0.244	33.7*	27.1*	135.4	99.4	109.4	328.5	21.3*	35.3	11.1*
9	11	0.244	32.5*	90.3	24.4*	95.7	113.6	257.2	19.3*	36.5	37.3
10	12	0.244	32.5*	44.6	81.1	74.8	101.1	297.5	19.3*	27.2	10.8
11	13	0.244	32.6*	25.9*	97.4	68.7	99.5	320.5	19.3*	42.0	10.1*
12	14	0.244	32.9*	26.1*	160.7	65.2	92.3	422.3	13.4	52.0	10.1*
13	15	0.244	32.7*	26.0*	106.4	52.3	81.3	422.9	19.3*	42.4	10.1*
14	16	0.244	32.8*	79.4	23.4*	86.8	82.1	436.1	19.3*	54.6	9.8
15	17	0.244	32.1*	25.2*	241.1	88.1	120.9	477.5	18.3*	86.0	10.1*
16	18	0.244	31.6*	24.9*	122.9	86.4	66.5	339.1	18.3*	37.8	10.1*
17	19	0.244	31.2*	24.7*	83.0	58.4	76.1	212.8	18.3*	18.4	10.1*
18	20	0.244	31.1*	24.7*	23.2*	60.7	83.3	197.7	18.3*	30.4	10.1*
19	21	0.244	31.5*	59.9	127.4	67.0	105.4	229.5	19.3*	52.7	10.1*
20	22	0.244	36.7*	26.0*	5271.3	24.2*	62.8	181.6	16.8*	40.4	9.2*
21	23	0.244	32.6*	44.4	146.0	43.4	107.4	251.2	19.3*	69.0	10.1*
22	24	0.244	32.3*	25.8*	23.2*	65.8	81.4	289.1	19.3*	46.0	10.1*
23	25	0.244	31.0*	25.7*	23.2*	62.2	94.8	191.7	19.3*	15.4	10.1*
24	26	0.244	31.5*	36.7	69.0	89.1	104.1	249.1	18.3*	17.5	10.1*
25	27	0.244	32.3*	25.8*	23.2*	79.5	79.3	279.3	19.3*	31.9	10.1*
26	28	0.244	31.4*	24.8*	23.3*	85.7	96.4	289.4	19.3*	19.1	10.1*
27	29	0.244	32.8*	170.8	68.3	82.7	98.2	315.9	20.3*	35.6	10.1*
28	30	0.244	35.0*	28.2*	241.9	111.1	109.6	310.7	22.4*	15.5	11.1*
29	31	0.244	33.3*	47.5	135.7	82.3	28.6*	210.7	21.3*	14.1*	11.1*
30	32	0.244	34.7*	28.1*	161.8	92.2	105.3	233.7	22.3*	22.4	11.1*
31	33	0.244	34.9*	28.2*	218.3	124.4	109.9	268.1	23.4*	15.1*	12.1*
32	34	0.244	35.0*	28.2*	223.3	156.1	30.7*	373.1	22.4*	30.0	12.1*
33	35	0.244	35.3*	28.4*	225.1	156.8	172.8	381.6	22.4*	15.2*	12.1*
34	36	0.244	35.1*	28.3*	188.1	140.4	130.6	338.0	22.4*	31.6	12.1*
35	37	0.244	34.7*	28.1*	155.9	103.8	145.8	188.5	28.1	14.1*	11.1*
36	38	0.244	34.6*	28.1*	186.5	99.3	119.0	175.3	21.3*	15.8	10.9
37	39	0.244	34.8*	28.1*	210.8	106.5	29.6*	304.4	22.4*	45.3	11.1*
38	40	0.244	34.3*	27.9*	181.9	121.2	123.3	25.3*	22.3*	14.1*	12.1*
39	41	0.244	34.6*	28.0*	150.5	113.4	29.6*	295.9	22.3*	29.7	12.1*
40	42	0.244	34.1*	27.8*	186.1	94.4	29.5*	25.3*	22.3*	14.1*	11.1*

SEQUOIA-GIANT FOREST / PERIOD 2 / STAGE 6 / PART 2

AMOUNTS IN NANOGRAMS/M**3
MATRIX CORRECTIONS USING DRUM6

ID	SLIDE	TI	V	CR	MN	FE	NI	CU	ZN	BR	PB
1	3	9.0*	10.0*	9.0*	7.4	8.0*	6.0*	5.0*	6.0*	18.2	13.0*
2	4	9.1*	10.0*	9.0*	9.0*	8.0*	6.0*	6.0*	6.0*	6.0*	13.0*
3	5	9.1*	9.0*	9.0*	8.0*	8.0*	6.0*	5.0*	5.0*	6.0*	13.0*
4	6	9.1*	9.0*	9.0*	8.0*	8.0*	6.0*	5.0*	5.0*	6.0*	13.0*
5	7	9.0*	9.0*	9.0*	8.0*	8.0*	6.0*	5.0*	5.0*	6.0*	13.0*
6	8	9.0*	9.0*	9.0*	8.0*	8.3	6.0*	5.0*	6.0	6.0*	13.0*
7	9	9.0*	9.0*	9.0*	8.0*	34.5	6.0*	5.0*	5.0*	6.0*	13.0*
8	10	9.0*	10.0*	9.0*	9.0*	8.0*	6.0*	6.0*	6.0*	6.0*	13.0*
9	11	8.0*	9.0*	8.0*	8.0*	5.9	6.0*	5.0*	5.0*	6.0*	13.0*
10	12	8.0*	9.0*	8.0*	8.0*	7.0*	6.0*	5.0*	6.7	6.0*	13.0*
11	13	12.0	9.0*	8.0*	6.1	7.0*	5.0*	5.0*	5.0*	6.0*	13.0*
12	14	8.0*	9.0*	8.0*	12.3	7.0*	5.0*	5.0*	7.9	6.0*	12.0*
13	15	8.0*	9.0*	8.0*	8.0*	7.0*	4.6	5.0*	5.0*	6.0*	12.0*
14	16	8.0*	9.0*	7.2	8.0*	5.8	5.0*	5.0*	5.0*	6.0*	12.0*
15	17	8.0*	9.0*	8.0*	8.0*	7.0*	5.0*	5.0*	10.6	6.0*	12.0*
16	18	8.0*	5.7	8.0*	8.0*	43.3	5.0*	5.0*	5.0*	5.0*	11.0*
17	19	8.0*	9.0*	8.0*	8.0*	8.5	5.0*	5.0*	5.0*	6.0*	11.0*
18	20	8.0*	9.0*	8.0*	8.0*	22.1	5.0*	5.0*	11.5	6.0*	12.0*
19	21	8.0*	9.0*	8.0*	8.0*	7.0*	5.0*	5.0*	5.0*	6.0*	12.0*
20	22	7.1*	8.1*	7.1*	5.3	50.9	5.0*	9.4	7.1	5.0*	10.0*
21	23	8.0*	9.0*	8.0*	8.0*	7.0*	6.0*	5.0*	12.2	6.0*	12.0*
22	24	8.0*	9.0*	8.0*	8.0*	7.0*	6.0*	5.0*	5.0*	6.0*	12.0*
23	25	8.0*	9.0*	8.0*	8.1	9.0	5.0*	5.0*	7.6	6.0*	12.0*
24	26	8.0*	9.0*	13.5	8.0*	54.6	5.0*	5.0*	14.6	6.0*	12.0*
25	27	8.0*	9.0*	8.0*	8.0*	26.8	8.6	5.0*	5.0*	6.0*	12.0*
26	28	8.0*	9.0*	8.0*	8.0*	66.4	12.9	5.0*	8.2	6.0*	12.0*
27	29	9.1*	9.0*	9.0*	8.0*	8.0*	6.1	5.0*	8.9	6.0*	12.0*
28	30	9.1*	10.0*	9.0*	10.2	13.1	6.0*	6.0*	6.0*	6.0*	13.0*
29	31	9.0*	10.0*	9.0*	9.0*	8.0*	6.0*	6.0*	6.0*	6.0*	13.0*
30	32	9.0*	10.0*	9.0*	9.0*	8.0*	6.0*	6.0*	6.0*	7.0*	14.0*
31	33	10.1*	11.0*	10.0*	9.0*	9.0*	7.0*	6.0*	6.7	7.0*	14.0*
32	34	10.1*	10.0*	10.0*	8.3	9.0*	6.0*	6.0*	6.0*	7.0*	14.0*
33	35	10.1*	11.0*	10.0*	10.0*	9.0*	7.0*	6.0*	6.0*	7.0*	14.0*
34	36	10.1*	11.0*	10.0*	10.0*	9.0*	7.0*	6.0*	6.0*	7.0*	14.0*
35	37	7.8	10.0*	9.0*	9.0*	8.0*	6.0*	6.0*	6.8	7.0*	14.0*
36	38	9.0*	10.0*	9.0*	9.0*	8.0*	6.0*	6.0*	6.0*	7.0*	14.0*
37	39	9.0*	10.0*	9.0*	9.0*	8.0*	6.0*	6.0*	13.1	7.0*	14.0*
38	40	10.0*	10.0*	9.0*	9.0*	9.0*	6.0*	6.0*	6.0*	7.0*	14.0*
39	41	10.1*	10.0*	9.0*	9.0*	9.0*	6.0*	6.0*	6.0*	7.0*	14.0*
40	42	9.0*	10.0*	9.0*	9.0*	8.0*	6.0*	6.0*	6.0*	7.0*	14.0*

* MINIMUM DETECTABLE LIMIT, ELEMENT NOT FOUND

SEQUOIA-GIANT FOREST / PERIOD 2 / STAGE 6 / PART 3

AMOUNTS IN NANOGRAMS/M**3
MATRIX CORRECTIONS USING DRUM6

ID	SLIDE	CC	NA	MG	AL	SI	P	S	CL	K	CA
1	3	0.244	34.8*	28.1*	134.5	94.4	141.4	291.6	21.3*	21.3	11.1*
2	4	0.244	34.2*	27.3*	215.8	123.4	145.6	416.7	21.4*	46.1	11.1*
3	5	0.244	35.1*	28.3*	144.7	122.6	138.1	392.3	22.4*	45.9	11.1*
4	6	0.244	34.0*	27.2*	200.1	94.4	146.9	385.9	20.3*	17.6	11.1*

ID	SLIDE	TI	V	CR	MN	FE	NI	CU	ZN	BR	PB
1	3	9.0*	10.0*	9.0*	9.0*	8.0*	6.0*	6.0*	6.0*	7.0*	13.0*
2	4	9.1*	10.0*	7.0	9.0*	8.0*	6.0*	6.0*	6.0*	7.0*	13.0*
3	5	9.1*	10.0*	9.0*	9.0*	8.0*	6.2	6.0*	6.0*	7.0*	13.0*
4	6	9.1*	10.0*	9.0*	9.0*	13.1	6.0*	6.0*	7.5	6.0*	13.0*

* MINIMUM DETECTABLE LIMIT, ELEMENT NOT FOUND

SEQUOIA-GIANT FOREST / PERIOD 4 / STAGE 6 / PART 1

AMOUNTS IN NANOGRAMS/M**3
MATRIX CORRECTIONS USING DRUM6

ID	SLIDE	CC	NA	MG	AL	SI	P	S	CL	K	CA
1	3	0.239	34.7*	27.6*	25.1*	37.5	27.4*	42.5	19.2*	13.1*	10.1*
2	4	0.239	30.4*	24.4*	21.9*	24.6*	23.4*	19.2*	17.2*	11.1*	9.1*
3	5	0.239	28.4*	23.3*	20.9*	34.8	22.3*	16.2*	16.2*	11.1*	9.1*
4	6	0.239	28.3*	22.3*	19.9*	33.9	21.3*	18.2*	15.2*	10.1*	8.0*
5	7	0.239	28.4*	22.3*	19.9*	26.9	22.3*	18.2*	16.2*	16.1	8.0*
6	8	0.239	27.4*	22.3*	30.2	57.3	22.4*	18.2*	16.2*	10.1*	8.1*
7	9	0.239	27.3*	22.3*	19.9*	29.9	21.3*	18.1*	15.2*	10.1*	6.0*
8	10	0.239	28.3*	22.3*	19.9*	26.5	21.3*	17.1*	15.2*	10.1*	8.1*
9	11	0.239	27.3*	21.2*	18.8*	18.1	21.3*	17.1*	15.2*	10.1*	8.1*
10	12	0.239	26.7*	21.4*	18.9*	31.7	20.4*	119.1	14.2*	141.9	11.3
11	13	0.239	26.3*	21.2*	18.8*	33.3	20.3*	17.1*	15.2*	10.1*	8.1*
12	14	0.239	26.6*	21.4*	18.9*	47.6	20.4*	213.4	14.2*	9.0	24.5
13	15	0.239	26.6*	21.4*	18.9*	25.2	67.7	163.3	14.2*	10.1*	6.1*
14	16	0.239	26.4*	20.2*	18.9*	20.6*	79.5	81.3	14.2*	9.1*	8.1*
15	17	0.239	25.4*	20.3*	17.8*	21.3	62.9	100.3	14.2*	9.1*	7.0*
16	18	0.239	26.0*	20.5*	18.0*	23.5	81.1	371.9	14.2*	76.8	11.0
17	19	0.239	26.1*	20.6*	18.0*	20.5	70.7	553.5	14.2*	21.8	7.1*
18	20	0.239	25.9*	20.5*	18.0*	23.3	19.4*	380.4	13.2*	120.6	7.1*
19	21	0.239	25.4*	19.2*	16.8*	17.5	68.7	90.6	13.2*	9.1*	7.0*
20	22	0.239	24.2*	19.1*	16.8*	18.5*	69.4	29.5	13.2*	9.1*	7.0*
21	23	0.239	24.3*	19.1*	16.8*	18.5*	47.8	64.5	13.2*	18.8	7.0*
22	24	0.239	24.5*	19.2*	16.8*	25.4	61.1	150.1	13.2*	21.0	7.0*
23	25	0.239	25.4*	20.3*	17.8*	27.5	63.6	102.0	13.2*	9.1*	7.0*
24	26	0.239	25.3*	20.2*	17.8*	32.9	19.3*	77.3	17.0	10.8	7.0*
25	27	0.239	25.3*	20.2*	17.8*	19.5*	72.1	43.4	13.2*	9.1*	7.0*
26	28	0.239	25.3*	19.1*	17.8*	15.2	70.0	15.1*	13.2*	9.1*	7.0*
27	29	0.239	24.3*	19.1*	16.8*	20.0	55.5	37.1	13.2*	9.1*	7.0*
28	30	0.239	24.3*	19.1*	28.4	31.1	18.3*	39.3	13.2*	9.1*	7.0*
29	31	0.239	25.4*	20.2*	17.8*	26.0	54.8	103.6	13.2*	9.1*	7.0*
30	32	0.239	25.5*	20.3*	18.0	32.5	57.9	83.9	13.2*	9.1*	7.0*
31	33	0.239	25.4*	19.2*	21.7	31.2	41.7	52.8	13.2*	9.1*	7.0*
32	34	0.239	24.3*	19.2*	16.8*	37.5	52.7	36.9	12.8	9.1*	7.0*
33	35	0.239	24.3*	19.1*	16.8*	27.4	80.8	22.6	13.2*	9.1*	7.0*
34	36	0.239	25.2*	20.2*	17.8*	28.1	19.3*	32.4	14.2*	9.1*	7.0*
35	37	0.239	25.5*	20.3*	22.7	28.8	72.0	97.6	14.2*	9.1*	7.0*
36	38	0.239	25.4*	20.3*	17.4	14.9	61.4	78.3	13.2*	30.8	7.0*
37	39	0.239	25.4*	20.3*	51.2	20.1	66.3	57.2	13.2*	9.1*	7.0*
38	40	0.239	25.3*	19.1*	15.5	29.2	54.7	30.2	13.2*	9.1*	7.0*
39	41	0.239	25.3*	19.1*	17.8*	26.6	57.5	27.9	13.2*	9.1*	5.5
40	42	0.239	28.5*	22.3*	19.9*	32.1	53.6	17.1*	15.2*	10.1*	12.0

SEQUOIA-GIANT FOREST / PERIOD 4 / STAGE 6 / PART 1

AMOUNTS IN NANOGRAMS/M**3
MATRIX CORRECTIONS USING DRUM6

ID	SLIDE	TI	V	CR	MN	FE	NI	CU	ZN	BR	PB
1	3	8.0*	9.0*	8.0*	8.0*	7.0*	6.0*	5.0*	5.0*	8.0*	16.0*
2	4	7.0*	8.0*	7.0*	7.0*	7.0*	5.0*	5.0*	5.0*	6.0*	13.0*
3	5	7.0*	8.0*	7.0*	7.0*	6.0*	4.5	4.0*	4.0*	5.0*	11.0*
4	6	7.0*	7.0*	7.0*	7.0*	6.0*	4.0*	4.0*	4.0*	5.0*	11.0*
5	7	7.0*	8.0*	7.0*	7.0*	6.0*	5.0*	4.0*	4.0*	5.0*	11.0*
6	8	7.0*	7.0*	7.0*	7.0*	6.0*	5.0*	4.0*	4.0*	5.0*	10.0*
7	9	7.0*	7.0*	7.0*	7.0*	6.0*	5.0*	4.0*	4.0*	5.0*	10.0*
8	10	7.0*	7.0*	7.0*	6.0*	6.0*	4.0*	4.0*	4.0*	5.0*	11.0*
9	11	7.0*	7.0*	7.0*	6.0*	6.0*	4.0*	4.0*	6.1	5.0*	10.0*
10	12	6.0*	7.0*	6.0*	6.0*	6.0*	4.9	4.0*	4.0*	5.0*	9.0*
11	13	6.0*	5.2	6.0*	6.0*	6.0*	4.0*	4.0*	4.0*	5.0*	9.0*
12	14	6.0*	7.0*	5.8	6.0*	6.0*	4.0*	4.0*	4.0*	4.0*	9.0*
13	15	6.0*	7.0*	6.0*	6.0*	6.0*	4.0*	4.0*	4.4	4.0*	9.0*
14	16	6.0*	7.0*	5.8	6.0*	6.0*	4.0*	4.0*	4.0*	4.0*	9.0*
15	17	6.0*	6.0*	6.0*	7.5	5.0*	4.0*	4.0*	6.3	4.0*	9.0*
16	18	6.0*	7.0*	6.0*	6.0*	7.8	4.0*	4.0*	4.0*	4.0*	9.0*
17	19	6.0*	6.0*	6.0*	6.0*	5.0*	4.0*	4.0*	4.0*	4.0*	9.0*
18	20	6.0*	6.0*	6.0*	5.0	5.0*	4.5	4.0*	4.0*	4.0*	8.0*
19	21	9.5	6.0*	6.0*	5.0*	4.3	4.0*	4.0*	4.0*	4.0*	8.0*
20	22	4.5	6.0*	6.0*	4.0	5.0*	4.0*	4.0*	4.0*	4.0*	8.0*
21	23	6.0*	6.0*	6.0*	6.0*	5.0*	4.0*	4.0*	4.0*	4.0*	8.0*
22	24	6.0*	6.0*	6.0*	5.0*	5.0*	4.0*	4.0*	4.0*	4.0*	8.0*
23	25	6.0*	6.0*	6.0*	6.0*	5.0*	4.3	4.0*	4.0*	4.0*	8.0*
24	26	6.0*	6.0*	6.0*	6.0*	5.0*	4.0*	4.0*	4.0*	4.0*	9.0*
25	27	6.0*	6.0*	6.0*	6.0*	5.0*	4.0*	4.0*	4.0*	4.0*	8.0*
26	28	6.0*	6.0*	6.0*	6.0*	5.0*	4.0*	4.0*	4.0*	4.0*	8.0*
27	29	6.0*	6.0*	6.0*	6.0*	5.0*	4.0*	4.0*	4.0*	4.0*	8.0*
28	30	6.9	6.0*	6.0*	6.0*	4.1	3.0	4.0*	4.0*	4.0*	8.0*
29	31	6.0*	6.0*	6.0*	6.0*	5.0*	4.0*	4.0*	4.0*	4.0*	8.0*
30	32	6.0*	6.0*	5.3	6.0*	8.2	10.1	4.0*	5.2	4.0*	8.0*
31	33	6.0*	6.0*	6.0*	6.0*	5.0*	4.0*	4.0*	4.0*	4.0*	8.0*
32	34	6.0*	6.0*	4.7	5.0*	5.0*	4.0*	4.0*	4.0*	4.0*	8.0*
33	35	4.7	6.0*	6.0*	5.0*	5.0*	4.0*	4.0*	4.0*	4.0*	8.0*
34	36	6.0*	7.0*	6.0*	6.0*	5.0*	4.0*	4.0*	4.0*	4.0*	9.0*
35	37	5.7	6.0*	6.0*	6.0*	5.0*	4.0*	4.0*	4.0*	4.0*	9.0*
36	38	6.0*	6.0*	6.0*	6.0*	5.0*	3.5	4.0*	4.0*	4.0*	8.0*
37	39	6.0*	6.0*	6.0*	6.0*	5.0*	7.3	4.0*	4.0*	4.0*	9.0*
38	40	4.8	6.0*	6.0*	6.0*	5.0*	4.0	4.0*	4.0*	4.0*	8.0*
39	41	6.0*	6.0*	6.0*	6.0*	5.0*	4.0*	4.0*	4.0*	4.0*	8.0*
40	42	6.0*	7.0*	6.0*	6.0*	6.0*	4.0*	4.0*	4.0*	5.0*	11.0*

* MINIMUM DETECTABLE LIMIT, ELEMENT NOT FOUND

SEQUOIA-GIANT FOREST / PERIOD 4 / STAGE 6 / PART 2

AMOUNTS IN NANOGRAMS/M**3
MATRIX CORRECTIONS USING DRUM6

ID	SLIDE	CC	NA	MG	AL	SI	P	S	CL	K	CA
1	3	0.239	33.8*	26.6*	24.1*	22.3	52.2	20.2*	18.2*	12.1*	9.1*
2	4	0.239	34.8*	26.6*	24.1*	32.0	59.5	34.9	18.2*	12.1*	10.1*
3	5	0.239	32.6*	25.5*	23.0*	24.6*	43.8	19.2*	17.2*	11.1*	9.1*
4	6	0.239	32.6*	25.5*	22.0*	23.6*	46.7	24.4	16.2*	11.1*	9.1*
5	7	0.239	26.3*	20.2*	17.8*	27.4	32.0	16.1*	14.2*	9.1*	7.0*
6	8	0.239	25.3*	20.2*	21.3	23.0	59.5	32.4	13.2*	9.1*	7.0*
7	9	0.239	26.4*	21.3*	18.9*	25.4	61.3	53.1	14.2*	9.1*	7.0*
8	10	0.239	26.4*	20.2*	17.8*	19.5*	37.1	68.0	14.2*	36.0	7.0*
9	11	0.239	25.3*	20.2*	17.8*	18.8	69.6	15.1*	13.2*	9.1*	7.0*
10	12	0.239	25.2*	19.1*	17.8*	19.5*	43.9	15.1*	13.1*	9.1*	7.0*
11	13	0.239	25.3*	20.2*	17.8*	19.3	48.9	15.1*	13.2*	9.1*	7.0*
12	14	0.239	27.5*	21.3*	15.6	31.6	64.3	53.4	14.2*	15.4	7.0*
13	15	0.239	25.3*	20.2*	17.8*	19.5*	46.7	66.5	13.2*	9.1*	7.0*
14	16	0.239	24.4*	19.2*	24.5	26.9	46.9	78.3	16.7	23.3	7.0*
15	17	0.239	24.2*	19.1*	16.8*	18.5*	41.4	58.1	13.2*	9.1*	7.0*
16	18	0.239	24.2*	19.1*	15.4	18.5*	64.9	22.6	13.2*	9.1*	7.0*
17	19	0.239	25.3*	19.1*	16.7*	18.5*	57.8	14.6	13.2*	9.1*	7.0*
18	20	0.239	25.4*	20.2*	12.4	19.1	71.0	48.5	13.2*	19.1	7.0*
19	21	0.239	25.4*	20.2*	24.1	28.8	66.0	71.9	14.2*	9.1*	7.0*
20	22	0.239	25.3*	20.2*	17.8*	22.1	19.3*	44.6	14.2*	21.2	7.0*
21	23	0.239	25.4*	20.2*	17.8*	21.9	70.8	61.1	14.2*	16.3	7.0*
22	24	0.239	25.3*	20.2*	17.8*	19.5*	63.4	22.5	14.2*	9.1*	7.0*
23	25	0.239	25.3*	20.2*	17.8*	16.1	55.6	33.8	14.2*	9.1*	7.0*
24	26	0.239	25.5*	20.3*	17.9*	15.4	78.5	67.6	14.2*	62.9	7.0*
25	27	0.239	25.4*	20.2*	15.9	32.7	80.4	43.7	14.2*	9.1*	7.0*
26	28	0.239	25.8*	19.0	17.9*	31.1	52.1	123.8	14.2*	196.1	8.1*
27	29	0.239	25.4*	20.2*	17.8*	20.6*	63.7	57.2	14.2*	51.8	8.1*
28	30	0.239	25.3*	20.2*	17.8*	20.5*	63.9	25.6	14.2*	9.1*	7.0*
29	31	0.239	25.2*	20.1*	17.8*	20.5	19.3*	16.1*	14.2*	9.1*	7.0*
30	32	0.239	26.3*	21.2*	18.8*	20.5*	66.3	16.1*	14.2*	10.1*	8.1*
31	33	0.239	26.4*	21.3*	18.9*	24.4	45.2	78.4	15.2*	10.1*	8.1*
32	34	0.239	29.5*	23.4*	20.9*	22.6*	50.1	57.9	16.2*	10.1*	8.1*
33	35	0.239	26.4*	21.3*	18.9*	17.6	52.5	62.7	14.2*	10.4	8.1*
34	36	0.239	26.3*	21.2*	18.8*	20.5*	38.5	18.4	14.2*	10.1*	8.0*
35	37	0.239	26.3*	20.2*	18.8*	20.5*	47.6	28.9	14.2*	9.1*	8.1*
36	38	0.239	25.3*	21.2*	18.9*	21.6*	33.4	51.3	15.2*	13.1	8.1*
37	39	0.239	24.2*	20.2*	18.9*	20.5*	20.3*	90.9	14.2*	10.6	8.1*
38	40	0.239	25.3*	20.2*	18.8*	20.5*	20.3*	41.1	14.2*	32.8	8.1*
39	41	0.239	25.4*	21.3*	18.9*	21.6*	21.4*	48.7	15.2*	115.1	8.4
40	42	0.239	26.2*	21.2*	19.9*	21.5*	21.3*	18.1*	15.2*	10.1*	8.0*

SEQUOIA-GIANT FOREST / PERIOD 4 / STAGE 6 / PART 2

AMOUNTS IN NANOGRAMS/M**3
MATRIX CORRECTIONS USING DRUM6

ID	SLIDE	TI	V	CR	MN	FE	NI	CU	ZN	BR	PB
1	3	46.9	8.0*	8.0*	7.0*	7.0*	5.0*	5.0*	5.0*	8.0*	16.0*
2	4	8.0*	8.0*	8.0*	8.0*	7.0*	5.0*	5.0*	5.0*	8.0*	16.0*
3	5	7.0*	8.0*	7.0*	7.0*	6.0*	5.0*	4.0*	4.0*	7.0*	15.0*
4	6	7.0*	8.0*	7.0*	7.0*	6.0*	5.0*	4.0*	4.0*	7.0*	15.0*
5	7	6.0*	7.0*	6.0*	6.0*	5.0*	4.0*	4.0*	4.0*	5.0*	9.0*
6	8	6.0*	6.0*	6.0*	6.0*	5.0*	4.0*	4.0*	4.0*	4.0*	9.0*
7	9	6.0*	7.0*	6.0*	6.0*	5.0*	4.0*	4.0*	4.0*	5.0*	10.0*
8	10	6.0*	6.0*	6.0*	6.0*	5.0*	5.2	4.0*	4.0*	4.0*	9.0*
9	11	6.0*	6.0*	6.0*	5.0*	5.0*	4.0*	41.8	4.0*	4.0*	9.0*
10	12	6.0*	6.0*	6.0*	4.5	5.0*	4.0*	4.0*	4.7	4.0*	8.0*
11	13	6.0*	6.0*	6.0*	7.0	5.0*	4.0*	4.0*	4.0*	4.0*	9.0*
12	14	6.0*	6.5	6.0*	6.0*	6.4	4.0*	4.0*	4.0*	5.0*	11.0*
13	15	6.0*	6.0*	6.0*	6.0*	5.0*	4.0*	4.0*	4.0*	4.0*	9.0*
14	16	6.0*	6.0*	6.0*	5.0*	5.0*	2.9	4.0*	4.0*	4.0*	8.0*
15	17	6.0*	6.0*	6.0*	5.1	5.0*	4.0*	4.0*	4.0*	4.0*	8.0*
16	18	5.1	6.0*	6.0*	5.0*	5.0*	4.0*	4.0*	4.0*	4.0*	8.0*
17	19	6.0*	6.0*	6.0*	6.0*	5.0*	4.0*	4.0*	4.0*	4.0*	8.0*
18	20	6.0*	6.0*	6.0*	6.4	5.0*	4.0*	4.0*	4.0*	4.0*	8.0*
19	21	6.0*	6.0*	6.0*	6.0*	5.0*	4.0*	4.0*	4.0*	4.0*	9.0*
20	22	6.0*	7.0*	6.0*	6.0*	5.0*	4.0*	4.0*	4.0*	4.0*	9.0*
21	23	6.0*	7.0*	6.0*	6.0*	5.0*	4.0*	4.0*	4.0*	4.0*	9.0*
22	24	6.0*	6.0*	6.0*	6.0*	5.0*	4.2	4.0*	4.0*	4.0*	9.0*
23	25	6.0*	7.0*	6.0*	6.0*	5.0*	4.0*	4.0*	4.0*	4.0*	9.0*
24	26	6.0*	5.2	6.0*	6.0*	5.0*	5.6	4.0*	4.0*	4.0*	9.0*
25	27	6.0*	7.0*	6.0*	6.0*	5.0*	4.0*	4.0*	4.0*	4.0*	9.0*
26	28	6.0*	7.0*	6.0*	6.0*	5.0*	4.0*	4.0*	4.0*	4.0*	9.0*
27	29	6.0*	7.0*	6.0*	6.0*	5.0*	4.0*	4.0*	4.0*	4.0*	9.0*
28	30	6.0*	7.0*	6.0*	6.0*	5.0*	4.0*	4.0*	4.0*	4.0*	9.0*
29	31	6.0*	4.7	6.0*	6.0*	5.0*	4.0*	4.0*	4.0*	4.0*	9.0*
30	32	6.0*	7.0*	6.0*	6.0*	6.0*	4.0*	4.0*	4.0*	5.0*	10.0*
31	33	6.0*	7.0*	6.0*	6.0*	6.0*	4.0*	4.0*	4.0*	5.0*	10.0*
32	34	7.0*	7.0*	7.0*	7.0*	6.0*	5.0*	4.0*	4.0*	6.0*	12.0*
33	35	6.0*	7.0*	6.0*	6.0*	6.0*	4.0*	4.0*	4.0*	5.0*	9.0*
34	36	6.0*	7.0*	6.0*	6.4	6.0*	4.0*	4.0*	4.0*	5.0*	10.0*
35	37	6.0*	7.0*	6.0*	6.0*	5.0*	4.0*	4.0*	4.0*	4.0*	9.0*
36	38	6.0*	7.0*	6.0*	6.0*	6.0*	4.0*	4.0*	4.0*	5.0*	10.0*
37	39	6.0*	7.0*	6.0*	5.1	6.0*	4.0*	4.0*	4.0*	5.0*	9.0*
38	40	6.0*	4.7	6.0*	6.0*	6.0*	4.0*	4.0*	4.0*	5.0*	10.0*
39	41	6.0*	7.0*	6.0*	6.0*	6.0*	4.0*	4.0*	5.4	5.0*	10.0*
40	42	7.0*	7.0*	7.0*	6.0*	6.0*	4.0*	4.0*	4.0*	5.0*	10.0*

* MINIMUM DETECTABLE LIMIT, ELEMENT NOT FOUND

SEQUOIA-GIANT FOREST / PERIOD 4 / STAGE 6 / PART 3

AMOUNTS IN NANOGRAMS/M**3
MATRIX CORRECTIONS USING DRUM6

ID	SLIDE	CC	NA	MG	AL	SI	P	S	CL	K	CA
1	3	0.239	25.2*	20.2*	18.8*	32.7	20.3*	17.1*	14.2*	9.1*	8.1*
2	4	0.239	25.3*	21.3*	18.9*	16.7	35.1	73.1	15.2*	10.1*	8.1*
3	5	0.239	25.2*	21.2*	18.8*	21.5*	21.3*	17.1*	15.2*	10.1*	8.0*
4	6	0.239	24.6*	20.4*	19.0*	26.6	20.4*	338.8	14.2*	15.1	8.1*

ID	SLIDE	TI	V	CR	MN	FE	NI	CU	ZN	BR	PB
1	3	6.0*	6.6	6.0*	6.0*	6.0*	5.3	4.0*	4.0*	5.0*	9.0*
2	4	6.0*	7.0*	6.0*	6.0*	6.7	4.0*	4.0*	4.0*	5.0*	10.0*
3	5	7.0*	7.0*	7.0*	6.0*	6.0*	4.0*	4.0*	4.0*	5.0*	10.0*
4	6	6.0*	7.0*	6.0*	4.7	6.0*	4.0*	4.0*	4.0*	4.0*	9.0*

* MINIMUM DETECTABLE LIMIT, ELEMENT NOT FOUND

SEQUOIA-GIANT FOREST / PERIOD 3 / STAGE 5 / PART 1

AMOUNTS IN NANOGRAMS/M**3
MATRIX CORRECTIONS USING DRUMS

ID	SLIDE	CC	NA	MG	AL	SI	P	S	CL	K	CA
1	3	0.241	66.0	64.4	17.5*	19.0*	18.7*	145.9	13.4*	27.2	7.1*
2	4	0.241	62.9	21.1*	16.4*	23.1	23.0	104.0	13.3*	22.3	10.5
3	5	0.241	54.7	20.0*	17.3*	19.9*	16.3	98.1	13.3*	17.8	49.9
4	6	0.241	96.6	18.9*	17.3*	16.8*	18.6*	132.2	13.3*	8.5	20.1
5	7	0.241	53.1	18.9*	28.2	17.8*	20.3	173.4	12.3*	24.3	6.1*
6	8	0.241	107.3	17.8*	22.1	17.8*	24.0	166.5	12.3*	19.3	6.1*
7	9	0.241	102.9	17.8*	26.4	17.6*	18.8	162.9	12.3*	53.4	6.1*
8	10	0.241	66.8	17.8*	46.8	17.6*	17.6*	158.2	12.3*	57.5	6.1*
9	11	0.241	66.0	17.8*	31.0	12.1	21.4	202.6	12.3*	37.4	10.6
10	12	0.241	22.3*	78.1	16.3*	17.8*	17.6*	249.5	12.3*	23.4	7.6
11	13	0.241	62.7	17.8*	19.9	16.8*	16.5*	280.6	12.3*	19.5	8.8
12	14	0.241	22.4*	74.6	22.6	16.8*	16.5*	298.3	12.3*	35.6	6.1*
13	15	0.241	18.0	58.8	15.2*	16.8*	15.5	242.3	11.3*	41.6	11.4
14	16	0.241	21.1*	74.7	20.2	16.8*	16.5*	139.9	11.3*	42.1	6.1*
15	17	0.241	21.1*	82.3	15.1*	16.7*	16.5*	117.2	11.3*	27.9	6.1*
16	18	0.241	68.9	17.8*	28.1	16.6*	15.3	130.9	11.3*	27.4	6.1*
17	19	0.241	45.7	17.8*	74.9	16.8*	16.5*	122.0	11.3*	20.1	6.1*
18	20	0.241	71.0	16.7*	46.5	16.4	16.5*	149.7	11.3*	19.9	6.1*
19	21	0.241	32.2	16.7*	48.1	16.8*	16.5*	171.0	11.3*	31.6	10.6
20	22	0.241	66.7	16.8*	15.2*	16.8*	19.6	304.7	11.3*	68.1	10.7
21	23	0.241	69.1	16.8*	59.1	16.8*	15.5*	367.6	11.3*	50.2	5.6
22	24	0.241	51.1	16.8*	52.3	16.8*	12.1	417.3	11.3*	71.9	6.1*
23	25	0.241	21.4*	16.6*	43.4	16.8*	19.4	351.6	11.3*	55.0	6.1*
24	26	0.241	20.2*	98.7	15.2*	15.7*	26.3	292.0	11.3*	40.4	6.1*
25	27	0.241	20.2*	84.4	24.4	15.7*	22.7	249.4	11.3*	31.7	6.1*
26	28	0.241	69.1	16.7*	56.2	16.0	16.5*	214.9	11.3*	17.0	16.9
27	29	0.241	21.2*	50.4	27.3	15.1	16.5*	178.2	11.3*	19.6	6.1*
28	30	0.241	21.3*	94.9	13.0	16.8*	20.7	233.2	11.3*	36.8	6.1*
29	31	0.241	20.2*	113.3	18.0	16.8*	12.5	239.5	11.3*	14.5	6.1*
30	32	0.241	21.1*	61.9	15.2*	16.6*	16.5*	191.0	11.3*	19.3	6.1*
31	33	0.241	20.1*	102.8	15.2*	15.7*	23.5	186.3	11.3*	18.4	6.1*
32	34	0.241	21.2*	51.2	17.3	16.8*	32.5	169.6	11.3*	23.0	6.1*
33	35	0.241	20.0*	54.5	14.1*	15.7*	15.5*	132.9	11.3*	33.9	6.1*
34	36	0.241	21.9	16.6*	30.5	16.7*	15.5*	165.4	11.3*	23.8	6.1*
35	37	0.241	74.0	16.7*	21.0	15.7*	16.5	171.8	11.3*	18.5	6.1*
36	38	0.241	20.1*	16.7*	71.8	15.7*	27.4	172.2	11.3*	23.7	6.1*
37	39	0.241	20.0*	50.2	26.6	15.7*	15.5*	134.8	11.3*	13.6	24.5
38	40	0.241	94.9	16.7*	42.8	15.7*	13.3	127.5	11.3*	15.6	6.1*
39	41	0.241	44.4	16.6*	40.2	16.7*	15.5*	101.6	11.3*	7.4	6.1*
40	42	0.241	21.1*	47.5	15.1*	16.8*	15.5*	135.5	11.3*	12.8	6.1*

SEQUOIA-GIANT FOREST / PERIOD 3 / STAGE 5 / PART 1

AMOUNTS IN NANOGRAMS/M**3
MATRIX CORRECTIONS USING DRUMS

ID	SLIDE	TI	V	CR	MN	FE	NI	CU	ZN	BR	PB
1	3	6.1*	5.0*	6.0*	6.0*	8.1	4.0*	296.2	55.2	4.0*	11.1*
2	4	8.1	5.0*	6.4	6.0*	5.0*	4.0*	4.0*	4.0*	5.0*	10.1*
3	5	6.0*	5.0*	6.0*	6.0*	6.0*	4.0*	4.0*	4.0*	5.0*	10.1*
4	6	6.0*	5.0*	6.0*	4.6	5.0*	4.0*	4.0*	4.0*	4.0*	10.1*
5	7	5.0*	5.0*	5.0*	5.0*	5.0*	4.0*	4.0*	4.0*	4.0*	10.1*
6	8	5.0*	5.0*	5.0*	5.5	5.0*	4.0*	3.0*	4.0*	4.0*	10.1*
7	9	5.0*	5.0*	5.0*	5.0*	5.0*	4.0*	4.0*	4.0*	4.0*	10.1*
8	10	5.0*	5.0*	5.0*	5.0*	5.0*	4.0*	3.0*	4.0*	4.0*	10.1*
9	11	4.6	5.0*	5.0*	5.0*	5.0*	4.0*	3.0*	4.0*	4.0*	10.1*
10	12	5.0*	5.0*	5.0*	5.0*	5.0*	4.0*	3.0*	4.0*	4.0*	10.1*
11	13	5.0*	5.0*	5.0*	5.0*	5.0*	3.2	3.0*	4.0*	4.0*	10.1*
12	14	5.0*	5.0	5.0*	5.0*	5.0*	4.0*	3.0*	4.0*	4.0*	10.1*
13	15	5.0*	4.3	5.0*	4.8	5.0*	4.0*	3.0*	4.0*	3.0*	9.1*
14	16	3.9	5.0*	5.0*	5.0*	5.0*	4.0*	3.0*	4.0*	3.0*	9.1*
15	17	5.0*	5.0*	5.0*	5.0*	5.0*	4.0*	3.0*	4.0*	3.0*	9.1*
16	18	5.0*	5.0*	5.0*	3.5	5.0*	4.0*	3.0*	4.0*	3.0*	9.1*
17	19	4.3	5.0*	5.0*	5.0*	5.0*	4.0*	3.0*	4.0*	3.0*	9.1*
18	20	5.0*	5.0*	5.0*	5.0*	5.0*	4.0*	3.0*	4.0*	3.0*	9.1*
19	21	5.0*	4.0*	4.6	5.0*	5.0*	3.0*	3.0*	4.0*	3.0*	9.1*
20	22	5.0*	5.0*	5.0*	4.5	3.5	3.0*	3.0*	4.0*	4.0*	10.1*
21	23	5.0*	5.0*	5.0*	5.0*	5.0*	3.0*	3.0*	4.0*	4.0*	9.1*
22	24	5.0*	5.0*	5.0*	5.0*	5.0*	4.0*	3.0*	4.0*	4.0*	9.1*
23	25	5.0*	6.0	7.8	5.0*	4.0*	3.0*	3.0*	4.0*	4.0*	9.1*
24	26	5.0*	5.0*	5.0*	5.0*	5.0*	3.0*	3.0*	4.0*	4.0*	9.1*
25	27	3.5	4.0*	5.0*	5.0*	4.0*	3.0*	3.0*	4.0*	4.0*	9.1*
26	28	5.0*	4.0*	5.0*	3.5	4.0*	3.0*	3.0*	4.0*	4.0*	9.1*
27	29	5.0*	5.0*	5.0*	5.0*	5.0*	3.0*	3.0*	4.0*	4.0*	9.1*
28	30	5.0*	5.0*	5.0*	5.0*	5.0*	4.0*	3.0*	4.0*	4.0*	10.1*
29	31	5.0*	5.0*	5.0*	5.0*	5.0*	4.0*	3.0*	4.0*	4.0*	9.1*
30	32	5.0*	5.0*	5.0*	5.0*	5.0*	4.0*	3.0*	4.0*	3.0*	9.1*
31	33	5.0*	5.0*	5.0*	5.0*	5.0*	3.0*	3.0*	4.0*	4.0*	9.1*
32	34	5.0*	3.9	5.0*	5.0*	5.0*	3.0*	3.0*	4.0*	3.0*	9.1*
33	35	5.0*	4.0*	5.0*	5.7	4.0*	3.0*	3.0*	4.0*	3.0*	9.1*
34	36	5.0*	5.0*	5.0*	5.0*	5.0*	3.0*	3.0*	4.0*	3.0*	9.1*
35	37	5.0*	4.0*	5.0*	5.0*	4.0*	3.0*	3.0*	4.0*	3.0*	9.1*
36	38	5.0*	4.0*	5.0*	2.9	4.0*	3.0*	3.0*	4.0	4.0*	9.1*
37	39	5.0*	4.0*	5.0*	5.0*	4.0*	3.0*	3.0*	4.0*	12.3	9.1*
38	40	5.0*	4.0*	5.0*	5.0*	4.0*	3.0*	3.0*	4.0*	4.0*	9.1*
39	41	5.0*	4.0*	5.1	5.0*	5.0*	3.0*	3.0*	4.0*	3.0*	9.1*
40	42	5.0*	5.0*	5.0*	5.0*	5.0*	3.0*	3.0*	4.0*	3.0*	9.1*

* MINIMUM DETECTABLE LIMIT, ELEMENT NOT FOUND

SEQUOIA-GIANT FOREST / PERIOD 3 / STAGE 5 / PART 2

AMOUNTS IN NANOGRAMS/M**3
MATRIX CORRECTIONS USING DRUMS

ID	SLIDE	CC	NA	MG	AL	SI	P	S	CL	K	CA
1	3	0.241	58.5	16.7*	19.9	16.8*	16.5*	238.2	11.3*	18.4	8.0
2	4	0.241	21.1*	16.6*	43.5	16.7*	16.5*	173.7	11.3*	19.3	6.1*
3	5	0.241	63.5	57.5	15.2*	15.7*	13.9	120.6	11.3*	33.0	6.1*
4	6	0.241	41.3	16.6*	37.4	15.7*	15.5*	128.5	11.3*	39.9	6.1*
5	7	0.241	72.5	16.7*	18.8	16.6*	15.5*	162.1	11.3*	37.1	6.1*
6	8	0.241	28.3	30.8	21.8	16.8*	16.5*	243.3	11.3*	52.9	6.1*
7	9	0.241	21.3*	59.9	15.2*	16.8*	16.2	267.4	11.3*	58.0	7.8
8	10	0.241	29.0	16.7*	33.9	16.8*	17.8	192.1	11.3*	29.3	6.1*
9	11	0.241	20.0*	61.2	14.1*	15.7*	15.5*	149.0	11.3*	23.5	6.1*
10	12	0.241	68.6	16.6*	30.7	15.7*	15.5*	111.5	10.2*	21.3	8.4
11	13	0.241	119.2	16.7*	26.3	15.7*	15.5*	163.7	11.3*	54.9	6.1*
12	14	0.241	20.0*	65.9	14.1*	15.7*	15.5*	178.6	11.3*	42.3	6.1*
13	15	0.241	20.1*	89.8	16.7	15.7*	17.5	160.9	11.3*	43.5	6.1*
14	16	0.241	20.0*	48.6	29.5	15.7*	22.6	95.7	11.3*	9.6	6.1*
15	17	0.241	21.0*	16.6*	79.4	16.7*	16.5*	62.3	11.3*	7.1*	6.1*
16	18	0.241	21.0*	16.6*	27.4	16.7*	15.5*	100.2	11.3*	16.7	6.1*
17	19	0.241	47.4	16.7*	13.3	16.8*	16.5*	106.3	11.3*	24.7	6.1*
18	20	0.241	16.3	16.6*	15.1*	15.7*	15.5*	135.8	11.3*	18.2	6.1*
19	21	0.241	21.1*	16.6*	35.0	16.7*	15.2	154.8	11.3*	26.3	6.1*
20	22	0.241	20.0*	85.4	17.0	15.7*	14.0	123.9	11.3*	29.0	6.1*
21	23	0.241	93.0	16.6*	14.1*	15.7*	20.1	121.1	11.3*	16.2	6.1*
22	24	0.241	21.2*	73.4	16.6	15.7*	18.9	150.3	11.3*	31.1	6.1*
23	25	0.241	52.5	16.7*	46.8	15.7*	30.3	164.5	11.3*	18.9	6.1*
24	26	0.241	20.0*	49.1	18.1	15.7*	23.8	175.5	11.3*	18.0	6.1*
25	27	0.241	21.1*	47.6	15.1*	16.7*	15.5*	143.1	11.3*	20.0	6.1*
26	28	0.241	21.0*	48.1	12.0	16.7*	16.5*	79.8	11.3*	12.0	6.1*
27	29	0.241	21.0*	28.5	26.9	16.7*	16.9	57.4	11.3*	7.1*	6.1*
26	30	0.241	24.1	17.7*	34.3	16.7*	16.5*	83.7	11.3*	9.8	6.1*
29	31	0.241	21.0*	74.8	15.1*	16.7*	17.6	80.6	11.3*	7.1*	6.1*
30	32	0.241	21.0*	52.9	15.1*	16.7*	16.5*	76.8	11.3*	6.2	6.1*
31	33	0.241	65.2	16.6*	26.6	16.7*	15.5*	96.7	11.3*	14.0	6.1*
32	34	0.241	73.5	16.6*	15.1*	16.7*	16.5*	90.2	11.3*	7.0	6.2
33	35	0.241	21.0*	16.7	22.5	16.7*	16.5*	84.9	11.3*	8.1*	6.1*
34	36	0.241	70.1	17.7*	15.5	17.8*	17.5*	101.6	12.3*	8.1*	6.1*
35	37	0.241	44.6	30.8	25.3	16.7*	13.2	126.7	11.3*	7.1*	6.1*
36	38	0.241	27.0	19.0	32.5	16.7*	19.0	141.1	11.3*	11.6	6.1*
37	39	0.241	21.1*	87.9	15.1*	16.7*	16.5*	133.0	11.3*	8.1*	6.2
38	40	0.241	46.0	106.5	15.2*	16.8*	25.2	131.7	11.3*	7.1*	6.1*
39	41	0.241	21.1*	118.6	31.3	16.7*	17.4	86.4	11.3*	8.1*	6.1*
40	42	0.241	177.4	17.8*	40.7	16.8*	22.2	91.0	12.3*	8.1*	6.1*

SEQUOIA-GIANT FOREST / PERIOD 3 / STAGE 5 / PART 2

AMOUNTS IN NANOGRAMS/M**3
MATRIX CORRECTIONS USING DRUMS

ID	SLIDE	TI	V	CR	MN	FE	NI	CU	ZN	BR	PB
1	3	5.0*	5.0*	5.0*	5.6	5.0*	3.0*	3.0*	4.0*	3.0*	9.1*
2	4	5.0*	5.0*	5.0*	5.0*	5.0*	4.0*	3.0*	4.0*	3.0*	9.1*
3	5	5.0*	4.0*	3.3	5.0*	4.0*	3.0*	3.0*	4.0*	4.0*	9.1*
4	6	3.8	4.8	5.0*	5.0*	4.0*	3.0*	3.0*	3.0*	3.0*	9.1*
5	7	5.0*	5.0*	5.0*	5.0*	5.0*	3.0*	3.0*	4.0*	3.0*	9.1*
6	8	5.0*	5.0*	5.0*	6.6	5.0*	4.0*	3.0*	4.0*	3.0*	10.1*
7	9	5.0*	5.0*	5.0*	5.0*	5.0*	3.0*	3.0*	4.0*	3.0*	9.1*
8	10	5.0*	5.0*	3.7	5.0*	5.0*	3.0*	3.0*	4.0*	3.0*	9.1*
9	11	5.0*	4.0*	5.0*	5.0*	4.0*	3.0*	3.0*	4.0*	3.0*	9.1*
10	12	3.8	4.0*	5.0*	4.0*	4.0*	3.0*	3.0*	3.0*	4.0*	9.1*
11	13	5.0*	4.0*	5.0*	5.0*	4.0*	3.0*	3.0*	4.0*	3.0*	9.1*
12	14	5.0*	4.0*	5.0*	5.0*	4.0*	3.0*	3.0*	4.0*	3.0*	9.1*
13	15	5.0*	4.4	5.0*	5.0*	4.0*	3.0*	3.0*	3.0*	3.0*	9.1*
14	16	6.1	4.0*	5.0*	4.0*	4.0*	3.0*	3.0*	3.0*	3.0*	9.1*
15	17	5.0*	5.0*	5.0*	5.0*	5.0*	3.0*	3.0*	4.0*	3.0*	9.1*
16	18	5.0*	4.0*	5.0*	6.6	4.0*	3.0*	3.0*	4.0*	4.0*	10.1*
17	19	8.0	5.0*	5.0*	5.0*	64.8	4.0*	3.0*	4.0*	3.0*	9.1*
18	20	5.0*	4.0*	5.0*	5.0*	4.0*	3.0*	3.0*	4.0*	3.0*	9.1*
19	21	5.0*	4.0*	5.0*	5.0*	4.0*	3.0*	3.0*	4.0*	3.0*	10.1*
20	22	5.0*	4.0*	5.0*	5.0*	4.0*	3.0*	3.0*	4.0*	3.0*	9.1*
21	23	5.1	4.0*	5.0*	5.0*	4.0*	3.0*	3.0*	4.0*	4.0*	9.1*
22	24	5.0*	4.0*	5.0*	4.4	4.0*	3.0*	3.0*	4.0*	4.0*	9.1*
23	25	5.0*	4.0*	5.0*	6.8	4.0*	3.0*	3.0*	4.0*	4.0*	9.1*
24	26	5.0*	4.0*	5.0*	5.0*	4.0*	3.0*	3.0*	4.0*	3.0*	9.1*
25	27	5.0*	3.9	5.0*	4.0	4.0*	3.0*	3.0*	4.0*	3.0*	9.1*
26	28	5.0*	5.0*	5.0*	5.1	5.0*	3.0*	3.0*	4.0*	4.0*	10.1*
27	29	5.0*	4.0*	5.0*	5.0*	5.0*	3.0*	3.0*	4.0*	4.0*	10.1*
28	30	5.0*	5.0*	5.0*	5.0*	5.0*	4.0*	3.0*	4.0*	4.0*	10.1*
29	31	5.0*	5.0*	5.0*	5.0*	5.0*	3.0*	3.0*	4.0*	4.0*	10.1*
30	32	5.0*	5.0*	5.0*	5.0*	5.0*	4.0*	3.0*	4.0*	4.0*	10.1*
31	33	5.0*	4.0*	5.0*	5.0*	5.0*	3.0*	3.0*	4.0*	3.0*	10.1*
32	34	5.0*	5.0*	5.0*	5.0*	5.0*	4.0*	3.0*	4.0*	3.0*	10.1*
33	35	5.0*	5.0*	5.0*	5.0*	5.0*	4.0*	3.0*	4.0*	4.0*	10.1*
34	36	5.0*	5.0*	5.0*	5.0*	5.0*	4.0*	3.0*	4.0*	4.0*	10.1*
35	37	5.0*	5.0*	5.0*	5.4	5.0*	3.0*	3.0*	4.0*	3.0*	10.1*
36	38	5.0*	4.0	5.0*	5.0*	5.0*	3.0*	3.0*	4.0*	3.0*	9.1*
37	39	5.0*	5.0*	5.0*	5.0*	5.0*	4.0*	3.0*	4.0*	3.0*	9.1*
38	40	5.0*	5.0*	5.0*	5.0*	5.0*	4.0*	3.0*	4.0*	4.0*	9.1*
39	41	5.0*	5.0*	5.0*	5.0*	5.0*	4.0*	3.0*	4.0*	3.0*	9.1*
40	42	6.7	5.0*	5.0*	5.0*	5.0*	4.0*	3.0*	4.0*	3.0*	9.1*

* MINIMUM DETECTABLE LIMIT, ELEMENT NOT FOUND

UC DAVIS PIXE ANALYSIS FILE 31353 ANALYSIS ON 02/27/86 O/P ON 02/27/86
SEQUOIA-GIANT FOREST / PERIOD 3 / STAGE 5 / PART 3

AMOUNTS IN NANOGRAMS/M**3
MATRIX CORRECTIONS USING DRUMS

ID	SLIDE	CC	NA	MG	AL	SI	P	S	CL	K	CA
1	3	0.241	41.1	101.2	16.2*	22.8	35.6	100.0	12.3*	8.1*	6.1*
2	4	0.241	45.9	17.8*	93.2	17.6*	16.5*	123.9	12.3*	8.1*	6.1*

ID	SLIDE	TI	V	CR	MN	FE	NI	CU	ZN	BR	PB
1	3	5.0*	4.4	5.4	5.0*	5.0*	4.0*	4.0*	4.0*	3.0*	9.1*
2	4	5.0*	4.4	5.0*	3.7	5.0*	4.0*	3.0*	4.0*	3.0*	9.1*

* MINIMUM DETECTABLE LIMIT, ELEMENT NOT FOUND

SEQUOIA-GIANT FOREST / PERIOD 4 / STAGE 5 / PART 1

AMOUNTS IN NANOGRAMS/M**3
MATRIX CORRECTIONS USING DRUMS

ID	SLIDE	CC	NA	MG	AL	SI	P	S	CL	K	CA
1	3	0.239	25.5*	104.3	18.4*	19.9*	15.3	94.6	14.3*	9.1*	7.1*
2	4	0.239	87.1	31.8	22.5	27.2*	26.8*	139.1	18.4*	12.1*	10.1*
3	5	0.239	98.2	25.5*	22.7*	25.1*	24.8*	145.2	17.4*	11.1*	9.1*
4	6	0.239	70.7	24.4*	21.6*	24.1*	23.7*	194.5	16.4*	11.1*	9.1*
5	7	0.239	36.6	42.5	17.3*	18.9*	18.6*	255.8	13.3*	9.1*	7.1*
6	8	0.239	68.5	42.2	17.4*	18.9*	18.5	287.5	13.3*	8.1*	7.1*
7	9	0.239	48.4	48.9	16.2*	17.6*	17.5*	196.4	12.3*	8.1*	6.1*
8	10	0.239	58.8	16.6*	40.4	16.7*	19.4	91.7	11.3*	8.1*	6.1*
9	11	0.239	36.1	18.9*	37.5	17.6*	21.7	182.6	12.3*	8.8	6.1*
10	12	0.239	39.0	17.7*	16.2	17.6*	17.5*	100.4	12.3*	8.1*	6.1*
11	13	0.239	23.1*	18.8*	16.2*	18.6*	17.5*	73.2	12.3*	8.1*	7.1*
12	14	0.239	24.2*	19.9*	17.3*	18.6*	18.5*	86.8	13.3*	9.1*	7.1*
13	15	0.239	19.9*	37.1	12.9	15.7*	15.5*	114.0	11.3*	5.6	6.1*
14	16	0.239	19.9*	16.6*	14.0*	15.7*	15.5*	127.4	11.3*	17.9	6.1*
15	17	0.239	49.8	16.6*	25.1	15.7*	15.5*	123.3	11.3*	11.4	6.1*
16	18	0.239	68.2	16.6*	24.8	15.7*	13.3	98.7	11.3*	13.6	6.1*
17	19	0.239	33.5	16.6*	51.9	15.7*	15.5*	149.0	11.3*	12.5	6.1*
18	20	0.239	20.0*	54.4	13.3	15.7*	11.6	143.7	11.3*	8.9	6.1*
19	21	0.239	19.9*	34.4	22.0	15.7*	15.5*	82.5	11.3*	7.1*	6.1*
20	22	0.239	9.9*	7.7*	6.5*	6.3*	6.2*	18.2	4.1*	3.1	2.0*
21	23	0.239	25.8	17.7*	40.7	16.7*	29.5	63.5	11.3*	8.1*	5.5
22	24	0.239	20.9*	11.9	15.1*	16.7*	16.5*	55.8	11.2*	8.6	6.1*
23	25	0.239	20.9*	16.5*	15.1*	16.7*	15.4*	44.3	11.2*	7.1*	6.1*
24	26	0.239	19.8*	11.8	14.0*	15.7*	15.4*	33.3	10.2*	7.1*	6.1*
25	27	0.239	19.8*	16.6*	15.7	15.7*	17.5	29.7	11.2*	7.1*	6.1*
26	28	0.239	19.8*	15.4*	14.0*	15.7*	15.4*	41.1	10.2*	11.6	6.1*
27	29	0.239	19.8*	16.5*	14.0*	15.7*	15.4*	18.9	11.2*	12.0	6.1*
28	30	0.239	20.9*	17.6*	15.1*	16.7*	16.5*	36.6	11.2*	16.2	6.1*
29	31	0.239	18.7*	15.5*	12.9*	14.6*	14.4*	46.0	10.2*	19.5	5.0*
30	32	0.239	18.7*	15.4*	14.0*	14.6*	14.4*	42.6	10.2*	12.9	5.0*
31	33	0.239	18.7*	15.4*	14.0*	15.7*	15.4*	39.9	10.2*	16.5	5.0*
32	34	0.239	19.8*	15.5*	14.0*	15.7*	14.4*	47.2	10.2*	20.6	5.0*
33	35	0.239	18.7*	15.4*	14.0*	14.6*	14.4*	33.2	10.2*	19.5	5.0*
34	36	0.239	20.9*	17.7*	15.1*	16.7*	16.5*	51.1	11.2*	22.0	6.1*
35	37	0.239	22.0*	17.6*	16.2*	17.7*	17.5*	36.1	12.3*	14.8	6.1*
36	38	0.239	22.0*	17.6*	16.1*	17.7*	17.5*	21.2	12.3*	8.1*	6.1*
37	39	0.239	20.9*	16.5*	15.1*	16.7*	15.4*	40.3	11.2*	8.0	6.1*
38	40	0.239	19.8*	16.5*	14.0*	15.7*	15.4*	46.6	11.2*	10.2	6.1*
39	41	0.239	20.9*	16.5*	15.1*	16.7*	16.5*	45.4	11.2*	7.4	6.1*
40	42	0.239	20.9*	17.6*	15.1*	16.7*	16.5*	38.0	11.2*	8.1*	6.1*

SEQUOIA-GIANT FOREST / PERIOD 4 / STAGE 5 / PART 1

AMOUNTS IN NANOGRAMS/M**3
MATRIX CORRECTIONS USING DRUMS

ID	SLIDE	TI	V	CR	MN	FE	NI	CU	ZN	BR	PB
1	3	6.0*	6.0*	6.0*	6.0*	6.0*	4.0*	4.0*	7.7	5.0*	10.1*
2	4	6.1*	8.0*	8.0*	8.0*	8.0*	6.0*	5.0*	6.0*	6.0*	17.1*
3	5	7.1*	7.0*	7.0*	8.2	7.0*	5.0*	5.0*	5.0*	8.0*	16.1*
4	6	7.1*	7.0*	7.0*	7.0*	7.0*	5.0*	4.0*	5.0*	7.0*	15.1*
5	7	6.0*	5.0*	6.0*	6.0*	5.0*	4.0*	4.0*	4.0*	4.0*	11.1*
6	8	6.0*	5.0*	6.0*	5.0*	5.0*	4.0*	4.0*	4.0*	4.0*	10.1*
7	9	5.0*	5.0*	5.0*	5.0*	3.9	4.0*	3.0*	4.0*	4.0*	10.1*
8	10	5.0*	5.0*	5.0*	5.0*	5.0*	4.0*	3.0*	4.0*	3.0*	10.1*
9	11	5.0*	5.0*	5.0*	5.0*	5.0*	4.0*	4.0*	4.0*	4.0*	10.1*
10	12	5.0*	5.1	5.0*	5.0*	5.0*	4.0*	3.0*	4.0*	4.0*	10.1*
11	13	5.0*	5.0*	5.0*	5.0*	5.0*	4.0*	4.0*	4.0*	4.0*	10.1*
12	14	6.0*	6.3	6.0*	5.0*	5.0*	4.0*	4.0*	4.0*	5.0*	10.1*
13	15	5.0*	4.0*	5.0*	5.0*	4.0*	3.0*	3.0*	4.0*	4.0*	9.1*
14	16	5.0*	4.4	5.0*	5.0*	4.0*	3.0*	3.0*	4.0*	3.0*	9.1*
15	17	5.0*	4.0*	5.0*	5.0*	4.0*	3.0*	3.0*	4.0*	4.0*	9.1*
16	18	5.0*	4.0*	5.0*	5.0*	4.0*	3.0*	3.0*	4.0*	3.0*	9.1*
17	19	5.0*	4.0*	5.0*	5.0*	4.0*	3.0*	3.0*	4.0*	3.0*	9.1*
18	20	5.5	4.0*	5.0*	5.0*	4.0*	3.0*	3.0*	4.0*	4.0*	9.1*
19	21	5.0*	4.0*	5.0*	5.0*	4.0*	3.0*	3.0*	4.0*	4.0*	9.1*
20	22	2.0*	2.0*	2.0*	2.0*	2.0*	1.0*	1.0*	1.0*	1.0*	4.0*
21	23	5.0*	5.0*	5.0*	5.0*	5.0*	4.0*	3.0*	4.0*	4.0*	10.1*
22	24	5.0*	5.0*	5.0*	5.0*	5.0*	4.0*	3.0*	4.0*	4.0*	10.1*
23	25	5.0*	4.6	5.0*	5.0*	4.0*	3.0*	3.0*	4.0*	4.0*	10.1*
24	26	5.0*	4.2	5.0*	4.0*	4.0*	3.0*	3.0*	3.0*	3.0*	9.1*
25	27	5.0*	5.2	5.0*	4.8	4.0*	3.0*	3.0*	3.0*	3.0*	10.1*
26	28	3.7	4.0*	5.0*	4.0*	4.0*	3.0*	3.0*	3.0*	3.0*	9.1*
27	29	5.0*	4.0*	5.0*	4.0*	4.0*	3.0*	3.0*	3.0*	3.0*	10.1*
28	30	5.0*	5.0*	5.0*	5.0*	5.0*	3.0*	3.0*	4.0*	4.0*	10.1*
29	31	7.0	4.0*	4.0*	4.0*	4.0*	3.0*	3.0*	3.0*	4.0*	9.1*
30	32	4.0*	4.1	4.0*	4.0*	4.0*	3.0*	3.0*	3.0*	4.0*	9.1*
31	33	5.0*	4.0*	4.0*	4.0*	4.0*	3.0*	3.0*	3.0*	3.0*	9.1*
32	34	7.1	4.0*	4.0*	4.0*	4.0*	3.0*	3.0*	3.0*	3.0*	9.1*
33	35	4.0*	4.0*	4.0*	4.0*	4.0*	3.0*	3.0*	3.0*	4.0*	9.1*
34	36	5.4	5.0*	5.0*	4.2	5.0*	3.0*	3.0*	4.0*	4.0*	10.1*
35	37	5.0*	5.0*	5.0*	5.0*	5.0*	4.0*	3.0*	4.0*	4.0*	10.1*
36	38	5.0*	5.0*	5.0*	4.3	5.0*	4.0*	3.0*	4.0*	4.0*	9.1*
37	39	5.0*	4.0*	5.0*	5.0*	4.0*	3.0*	3.0*	4.0*	4.0*	10.1*
38	40	5.0*	4.0*	5.0*	5.0*	4.0*	3.0*	3.0*	3.0*	3.0*	9.1*
39	41	5.0	5.0*	5.0*	5.0*	3.7	4.0*	3.0*	4.0*	4.0*	10.1*
40	42	5.0*	5.0*	5.0*	5.0*	5.0*	4.0*	3.0*	4.0*	4.0*	10.1*

* MINIMUM DETECTABLE LIMIT, ELEMENT NOT FOUND

ADDITIONAL ELEMENTS FOUND: ID, SLIDE, ELEMENT, AMOUNT
8 10 BA 35.6

SEQUOIA-GIANT FOREST / PERIOD 4 / STAGE 5 / PART 2

AMOUNTS IN NANOGRAMS/M**3
MATRIX CORRECTIONS USING DRUMS

ID	SLIDE	CC	NA	MG	AL	SI	P	S	CL	K	CA
1	3	0.239	20.8*	16.5*	15.1*	16.7*	16.5*	14.2*	11.2*	6.1*	6.1*
2	4	0.239	20.8*	17.6*	15.1*	16.7*	16.5*	14.2*	12.3*	8.1*	6.1*
3	5	0.239	22.0*	18.8*	16.2*	18.8*	17.5*	15.2*	12.3*	8.1*	7.1*
4	6	0.239	60.6	16.6*	15.1*	16.7*	16.5*	17.2	11.2*	8.1*	6.1*
5	7	0.239	26.1	16.5*	15.1*	16.7*	16.5*	13.2*	11.2*	8.1*	6.1*
6	8	0.239	40.0	16.6*	15.1*	16.7*	16.5*	17.0	11.2*	7.1*	12.3
7	9	0.239	55.6	16.6*	15.1*	16.7*	16.5*	16.7	11.2*	8.1*	6.1*
8	10	0.239	22.1	18.3	16.2*	18.8*	17.5*	18.9	12.3*	6.1*	7.1*
9	11	0.239	109.2	16.6*	15.1*	16.7*	16.5*	14.2*	12.3*	8.1*	6.1*
10	12	0.239	76.3	17.7*	16.2*	17.8*	17.5*	26.6	12.3*	8.1*	6.1*
11	13	0.239	89.0	19.9*	17.3*	19.9*	19.6*	55.8	13.3*	12.1	7.1*
12	14	0.239	116.9	19.9*	17.3*	19.9*	19.6*	71.8	13.3*	10.4	7.1*
13	15	0.239	119.1	18.8*	14.5	18.8*	18.6*	68.4	13.3*	12.2	7.1*
14	16	0.239	21.0*	91.1	15.1*	17.8*	16.5*	48.4	12.3*	8.1*	6.1*
15	17	0.239	22.1*	102.4	15.1*	17.8*	14.8	49.3	12.3*	8.1*	6.1*
16	18	0.239	130.8	17.7*	15.1*	17.8*	16.5*	55.7	12.3*	8.7	7.4
17	19	0.239	29.7	59.2	15.1*	16.7*	25.1	38.0	11.3*	6.1*	6.1*
18	20	0.239	41.7	50.6	17.4	16.7*	16.5*	14.2*	12.3*	8.1*	6.1*
19	21	0.239	22.1*	107.4	15.1*	16.7*	16.5*	36.9	11.3*	7.1*	6.1*
20	22	0.239	22.2*	108.4	15.1*	16.7*	46.6	44.9	11.3*	8.1*	6.1*
21	23	0.239	54.1	17.7*	54.9	17.6*	17.5*	36.8	12.3*	8.1*	6.1*
22	24	0.239	142.9	17.8*	52.2	17.8*	15.7	43.4	12.3*	15.7	7.7
23	25	0.239	23.4*	107.8	51.4	17.8*	47.8	50.2	12.3*	37.0	6.1*
24	26	0.239	94.1	18.9*	90.5	18.9*	18.6*	53.0	13.3*	32.5	7.8
25	27	0.239	24.4*	148.1	17.3*	18.8*	18.6*	39.9	13.3*	45.2	7.1*
26	28	0.239	84.4	20.0*	126.2	18.9*	26.3	40.8	13.3*	47.0	7.1*
27	29	0.239	65.3	21.1*	74.8	20.2	31.0	32.6	14.3*	26.9	8.4
28	30	0.239	52.4	204.8	26.0*	39.8	28.9*	47.5	20.5*	27.9	10.1*
29	31	0.239	25.6*	180.7	17.3*	32.2	25.6	45.6	13.3*	9.1*	7.1*
30	32	0.239	23.4*	216.5	17.3*	18.8*	18.6*	40.4	13.3*	14.6	7.1*
31	33	0.239	23.4*	178.2	16.2*	70.0	17.5*	31.8	12.3*	8.1*	7.8
32	34	0.239	127.0	18.8*	16.2*	18.8*	37.6	40.4	13.3*	5.9	7.1*
33	35	0.239	183.4	20.0*	52.6	19.9*	37.4	52.9	13.3*	13.2	7.1*
34	36	0.239	110.5	112.8	18.4*	21.0*	34.7	89.2	14.3*	9.1*	7.1*
35	37	0.239	49.5	20.0*	99.3	19.9*	19.6*	119.4	13.3*	9.1*	15.1
36	38	0.239	26.7	49.4	16.2*	11.5	15.9	66.7	12.3*	8.1*	6.1*
37	39	0.239	76.7	48.6	16.2*	17.8*	17.5*	96.6	12.3*	8.1*	6.1*
38	40	0.239	21.0*	48.9	30.0	16.7*	12.9	40.1	11.3*	8.1*	6.1*
39	41	0.239	26.4	17.7*	15.1*	16.7*	16.5*	51.2	11.2*	8.1*	6.1*
40	42	0.239	62.1	17.7*	19.5	16.7*	16.5*	131.5	11.3*	8.1*	6.1*

SEQUOIA-GIANT FOREST / PERIOD 4 / STAGE 5 / PART 2

AMOUNTS IN NANOGRAMS/M**3
MATRIX CORRECTIONS USING DRUMS

ID	SLIDE	TI	V	CR	MN	FE	NI	CU	ZN	BR	PB
1	3	5.0*	5.0*	5.0*	5.0*	5.0	4.0*	3.0*	4.0*	4.0*	10.1*
2	4	5.0*	5.0*	5.0*	5.0*	4.2	4.0*	3.0*	4.0*	4.0*	10.1*
3	5	5.0*	5.0*	5.0*	5.0*	5.0*	4.0*	55.5	4.0*	4.0*	10.1*
4	6	5.0*	5.0*	5.0*	5.0*	5.4	4.0*	3.0*	4.0*	3.0*	9.1*
5	7	5.0*	5.0*	5.0*	5.0*	4.4	4.0*	3.0*	4.0*	3.0*	9.1*
6	8	5.0*	4.5	5.0*	5.0*	5.0*	4.0*	3.0*	4.0*	3.0*	9.1*
7	9	3.8	5.0*	5.0*	3.9	5.0*	4.0*	10.7	4.0*	3.0*	9.1*
8	10	5.0*	5.0*	5.0	5.0*	5.0*	4.0*	4.0*	4.0*	4.0*	11.1*
9	11	5.0*	5.0*	5.0*	5.0*	5.0*	4.0*	3.0*	4.0*	3.0*	10.1*
10	12	5.0*	5.0*	5.0*	5.0*	5.0*	4.0*	10.2	4.0*	4.0*	10.1*
11	13	6.0*	5.0*	6.0*	6.0*	5.0*	4.0*	4.0*	4.0*	5.0*	11.1*
12	14	6.0*	6.0*	6.0*	6.0*	4.2	4.0*	4.0*	4.0*	4.0*	10.1*
13	15	8.7	5.0*	6.0*	5.0*	5.0*	4.0*	4.0*	4.0*	4.0*	10.1*
14	16	5.0*	5.0*	5.0*	5.0*	5.0*	4.0*	3.0*	4.0*	3.0*	10.1*
15	17	5.0*	5.0*	5.0*	6.0	5.0*	4.0*	3.0*	4.0*	3.0*	10.1*
16	18	7.2	5.5	5.0*	5.0*	5.0*	4.0*	3.0*	4.0*	4.0*	10.1*
17	19	5.0*	5.0*	5.0*	5.0*	5.0*	4.0*	3.0*	4.0*	4.0*	10.1*
18	20	5.0*	5.0*	5.0*	5.0*	5.0*	4.0*	3.0*	4.0*	4.0*	10.1*
19	21	7.5	5.0*	5.0*	5.0*	5.0*	3.0*	3.0*	4.0*	3.0*	9.1*
20	22	7.1	6.8	5.0*	5.0*	5.0*	3.0*	3.0*	4.0*	3.0*	9.1*
21	23	5.0*	5.0*	5.0*	5.0*	5.0*	4.0*	3.0*	4.0*	3.0*	9.1*
22	24	5.0*	5.0*	5.0*	5.0*	5.0*	4.0*	3.0*	4.0*	3.0*	9.1*
23	25	5.0*	10.5	5.0*	5.0*	5.0*	4.0*	3.0*	4.0*	4.0*	10.1*
24	26	11.1	5.0*	5.0*	5.0*	5.0*	4.0*	4.0*	4.0*	4.0*	9.1*
25	27	6.5	5.0*	5.0*	5.7	5.0*	4.0*	4.0*	4.0*	4.0*	10.1*
26	28	12.9	5.0*	5.0*	5.0*	5.0*	4.0*	4.0*	4.0*	4.0*	10.1*
27	29	5.7	6.0*	6.0*	6.0*	6.0*	4.0*	4.0*	4.0*	4.0*	11.1*
28	30	9.1*	9.1	9.0*	8.0*	8.0*	6.0*	5.0*	6.0*	9.0*	18.1*
29	31	4.4	7.8	6.0*	6.0*	5.0*	4.0*	4.0*	4.0*	4.0*	10.1*
30	32	5.8	5.0*	5.0*	5.0*	5.0*	4.0*	4.0*	4.0*	3.0*	11.1*
31	33	5.3	5.0*	5.0*	4.6	5.0*	4.0*	4.0*	4.0*	3.0*	11.1*
32	34	5.0	5.0*	6.0*	5.0*	5.0*	4.0*	4.0*	4.0*	3.0*	11.1*
33	35	8.3	5.0*	6.0*	6.0*	5.0*	4.0*	4.0*	4.0*	4.0*	10.1*
34	36	6.0*	6.0*	6.0*	6.0*	6.0*	4.0*	4.0*	5.0*	4.0*	11.1*
35	37	6.0*	5.1	6.0*	6.6	5.0*	4.0*	4.0*	4.0*	4.0*	10.1*
36	38	5.0*	5.0*	5.0*	5.0*	5.0*	4.0*	3.0*	4.0*	4.0*	11.1*
37	39	5.0*	5.0*	5.0*	4.0	5.0*	4.0*	3.0*	4.0*	4.0*	10.1*
38	40	6.0	5.0*	5.0*	5.0*	5.0*	4.0*	3.0*	4.0*	4.0*	10.1*
39	41	5.0*	5.0*	5.0*	5.0*	5.0*	4.0*	3.0*	4.0*	4.0*	10.1*
40	42	5.0*	5.0*	5.0*	5.0*	5.0*	4.0*	3.0*	4.0*	4.0*	10.1*

* MINIMUM DETECTABLE LIMIT, ELEMENT NOT FOUND

UC DAVIS PIXE ANALYSIS FILE 31453. ANALYSIS ON 02/27/86 O/P ON 02/27/86

SEQUOIA-GIANT FOREST / PERIOD 4 / STAGE 5 / PART 3

AMOUNTS IN NANOGRAMS/M**3
MATRIX CORRECTIONS USING DRUMS

ID	SLIDE	CC	NA	MG	AL	SI	P	S	CL	K	CA
1	3	0.239	64.5	17.7*	25.8	17.8*	17.5*	135.3	12.3*	6.8	6.5
2	4	0.239	54.5	19.9*	17.3*	18.8*	18.6*	115.1	13.3*	8.1	7.1*
3	5	0.239	80.5	18.9*	20.8	17.8*	18.2	114.9	12.3*	8.1*	6.1*
4	6	0.239	154.9	17.9*	19.4	17.6*	17.1	229.8	12.3*	8.1*	6.1*

ID	SLIDE	TI	V	CR	MN	FE	NI	CU	ZN	BR	PB
1	3	5.0*	5.0*	5.0*	5.0*	5.0*	4.0*	3.0*	4.0*	4.0*	10.1*
2	4	6.0*	5.0*	5.0*	4.3	5.0*	4.0*	4.0*	4.0*	5.0*	10.1*
3	5	5.1	5.0*	5.8	5.0*	5.0*	4.0*	3.0*	4.0*	4.0*	10.1*
4	6	5.0*	5.0*	5.0*	5.0*	5.0*	3.7	3.0*	4.0*	4.0*	10.1*

* MINIMUM DETECTABLE LIMIT, ELEMENT NOT FOUND