# Sediment Trap Data from the Strait of Georgia, May, 1995, to January, 1999



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# SEDIMENT TRAP DATA FROM THE STRAIT OF GEORGIA, MAY, 1995, TO JANUARY, 1999

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Sediment traps were deployed in four locations in the Strait of Georgia during the period May, 1995, to January, 1999. For the less than 500-micron portion of captured sediment, analysis were done for percent composition values of total carbon, organic carbon, total nitrogen, carbonate carbon, and biogenic silica as well as for stable isotopes of carbon and nitrogen. Fluxes for total dry weight, organic carbon, carbonate carbon, total nitrogen, and biogenic silica were calculated for each collection interval. Collection intervals varied from 8 to 20 days. There is a 3-year record from nine deployments from March, 1996, to January, 1999 for the 150-metre sediment trap at station GSCM3 which is located in the deep basin between Valdes Island and Sturgeon Bank. Also at station GSCM3, there is a 1- year record from February, 1998, to January, 1999, for traps deployed at 225 and 300 metres. At station GSCM2, located off Saturna Island and GSCM4 off Gabriola Island, there is a 2-year record from six deployments at 150 metres for March, 1996, to February, 1998. At station GS, also off Gabriola Island, there is a record from two trap deployed at 325 and 340 metres, respectively, from May, 1995, to April, 1996.



**Key words:** Strait of Georgia, sediment trap, carbon, nitrogen, biogenic silica, carbonate, carbon isotopes, nitrogen isotopes, flux.



## RÉSUMÉ

O'Brien, M.C., M. Soon, B. Nielsen, C. Elliot, T. Juhasz, R.W. Macdonald, K.L. Denman, R.E. Thomson, S.E. Calvert. 2000. Sediment Trap Data from the Strait of Georgia, May, 1995 to January, 1999. Can. Data Rep. Hydrogr. Ocean Sci. **155**: 92 pp.

Des pièges à sédiments ont été déployés à quatre sites du détroit Georgia de mai, 1995, à janvier, 1999. Les particules de moins de 500 microns récoltées ont été analysées pour en déterminer la composition en pourcentage du carbone total, carbone organique, azote total, carbone sous forme de carbonate et silice biogénique, de même que la composition des isotopes stables du carbone et de l'azote. Les flux en poids sec total, carbone organique, carbone sous forme de carbonate, azote total et silice biogénique ont été calculés pour chacun des intervalles de temps entre les déploiements, ceux-ci variant entre 8 et 20 jours. Nous rapportons l'enregistrement de trois années de données pour neuf

déploiements de mars, 1996, à janvier, 1999, à 150 m de profondeur à la station GSCM3, laquelle est située dans le bassin profond entre l'île Valdes et le banc Sturgeon. Nous rapportons également, pour cette même station, l'enregistrement d'une année de données pour trois déploiements à 225 et 300 m de profondeur de février, 1998, à janvier, 1999. Pour les stations GSCM2 et GSCM4, respectivement situées au large des îles Saturna et Gabriola, nous rapportons l'enregistrement de deux années de données pour six déploiements à 150 m de de données pour deux déploiements à 325 et 340 m de profondeur de mai, 1995, à avril, 1996 à la station GS, également située au large de l'île Gabriola.

**Mots clés:** Détroit Georgia, piège à sédiments , carbone, azote, silice biogénique, carbonate, isotopes du carbone, isotopes de l'azote, flux.

## ACKNOWLEDGMENTS

This work was funded by Fisheries and Oceans Canada as part of the program entitled “Study of factors influencing the marine survival of coho and chinook salmon in the Strait of Georgia.” We are indebted to the officers and the crews of CCGS Vector and CCGS John P. Tully for their assistance in the deployments and recoveries of 27 moorings over the 3-year period of the study. Thanks to Patricia Kemer for preparing the mooring figures and to Charles Gobiel for assisting us by translating the abstract into French.

## 1. INTRODUCTION

As part of larger programs designed to study the transport of particles and factors influencing the marine survival of coho and chinook salmon, sediment traps were deployed in the central basin of the Strait of Georgia. The data will be used to assist in the determination of the timing of biological production and the timing and geographic extent of sinking particles from the Fraser River.

There is strong evidence of changes in the Strait of Georgia ecosystem and it has been hypothesized that these changes are associated with climatic changes as, for example, manifested in a warming trend in the waters of the Strait of Georgia. Comparisons of surface phytoplankton biomass and sediment trap materials will help to resolve the relationship between surface production and vertical transport of particles.

Sediment traps and current meters were deployed during the period from May, 1995, to January, 1999, at stations GS, GSCM2, GSCM3 and GSCM4. The data from the analysis of the trap material from the less than 500 micron portion is reported here with the exception of the microscopic analysis which will be reported elsewhere. The greater than 500 micron portion has been set aside for future analysis. The samples were sieved and subsampled at the Institute of Ocean Sciences and a portion was sent to the Department of Earth and Ocean Sciences at the University of British Columbia (UBC) for analysis. This report documents the analysis conducted by UBC and includes data for the percent composition values for total carbon, organic carbon, total nitrogen, carbonate carbon, and biogenic silica. Also reported are the flux data for the collection intervals including total dry weight flux, organic carbon flux, carbonate carbon flux, total nitrogen flux, and biogenic silica flux as well as the stable isotope data for carbon and nitrogen.

At station GSCM3, in the deep basin (408 metres) between Valdes Island and Sturgeon Bank, there is a 3-year continuous sediment trap record at 150 metres (March, 1996, to January, 1999) and a 1-year record at 225 and 300 metres (February, 1998, to January, 1999). At station GSCM2 off Saturna Island and GSCM4 off Gabriola Island, there is a 2-year continuous sediment trap record at 150 metres (March, 1996, to February, 1998). At station GS off Gabriola Island and not far from GSCM4 there is a continuous sediment trap record from two deployments (325 and 340 metres) from May, 1995, to April, 1996. Figure 1 shows the locations of the mooring stations.

Current meter records were collected at stations GSCM1, GSCM2, GSCM3, and GSCM4 to assist in the interpretation of the sediment trap data and are reported elsewhere. The depths of the current meters on the moorings are noted in Table 2. There were no current meters deployed on the moorings at

station GS. See Figures 3 and 4 for the mooring configurations at stations GSCM1, GSCM2, GSCM3, and GSCM4.

CTD/Rosette transects were done at the times of deployment and recovery of the moorings and Figure 2 shows the locations of these stations. Table 1b lists the cruise identifications and dates for the CTD/R work done in the Strait of Georgia during the period from January, 1996, to January, 1999. Water samples for dissolved oxygen, salinity, and nutrients (nitrate plus nitrite, silicate, and orthophosphate) were taken and analyzed during these cruises. The CTD and water chemistry data is reported elsewhere.

### 1.1 Overview of the field work

The sampling program consisted of the following operations:

- **Moorings deployed at four stations (GSCM1, GSCM2, GSCM3, and GSCM4) for a period of 2 years from March, 1996, to February, 1998.** See Figure 1 for a map of the station locations and Figure 3 for the mooring configurations. At each of the four sites, there were six deployments (A to F) of the moorings to cover the 2-year time period. The deployments were designated by the station name followed by a letter (e.g., GSCM3-A and GSCM3-B for the first and second deployments at GSCM3). The moorings at stations GSCM2, GSCM3 and GSCM4 in the central basin of the Strait of Georgia had Baker-type sediment traps at 150 metres with Aanderaa RCM4 current meters just below the traps as well as one or two additional current meters depending on the depth of the site. See Table 2 and Figure 3 for current meter depths on each mooring. The mooring at GSCM1 was located in Haro Strait and had current meters at 100 and 125 metres but no sediment trap. See Tables 1, 2, 3, and 4 for additional mooring details and information.

- **Moorings deployed at station GSCM3 for one year from February, 1998, to January, 1999.** There were three deployments made at GSCM3 for this period (deployments G, H, and I) and the moorings consisted of three Baker-type sediment traps at 150, 225, and 300 metres and five Aanderaa RCM4 current meters at 50, 151.65, 126.65, 301.65, and 330 metres. The sediment traps on the moorings were designated by the station name, followed by a letter designating the deployment (G,H, or I) and the depth of the trap (e.g., GSCM3-H-225). See Figure 4 for the mooring configuration and Tables 1, 2, 3, and 4 for mooring details.

- **Moorings deployed at station GS (close to station GSCM4) from May, 1995, to September, 1995, and again from October, 1995, to April, 1996.** This mooring consisted of a single Baker-type sediment trap at 325 metres for the first deployment and at approximately 340 metres for the second. The

deployments are designated GS1 and GS2. See Tables 1, 2, 3, and 4 for mooring information. There were no current meters deployed with this mooring. The sediment trap stalled on cup 5 at station GS1 and stayed there for the remainder of the deployment so that the interval for this cup was very long (81.75 days). The sample appeared intact on recovery but it is possible that there was some sample lost given that the cup had not closed.

## 2. FIELD SAMPLING METHODS AND EQUIPMENT

Baker-type sediment traps were used on the moorings (see Figure 4). A brief description of the trap, deployment and recovery details, and a chain of custody up to and including sample splitting is described below.

### 2.1 Baker sequential sediment traps and preparations for deployment

The Baker trap shown in Figure 5 is a 1-metre long, 220-cm ID pvc tube that houses an asymmetrical polyethylene funnel (Baker and Milburn 1983). The gravitationally settling particles in the water column are collected *via* the funnel into one of ten 200 mL acrylic sample tubes. The collection area of the Baker trap is 0.032 $m^2$. The bottles are rotated into position at time intervals determined by switch settings on the timer electronics board. The traps were set up with a delay long enough that the carousel does not rotate to the first position until the mooring is deployed and settled in place. The moorings were deployed top first, anchor last. The time intervals were set so that the collection intervals at stations GSCM2, GSCM3, and GSCM4 were the same. The collection intervals varied from 8 days to 20 days depending on the cruise logistics.

In preparation for deployment, the sample tubes and carousels were soaked in a RBS bath (20 mL RBS concentrate per litre of water) overnight, rinsed well with warm tap water, soaked in a 1 N HCl bath for 4 hours, rinsed with double run Milli-Q water, and air dried. To inhibit bacterial growth and to create a density gradient, 200 mg $HgCl_2$ and 2 g NaCl were added to each sample tube for deployments A to F at stations GSCM2, GSCM3, and GSCM4. The final concentration of $HgCl_2$ in these tubes was 1 g/L. A high purity grade of NaCl (Suprapur) was used. For the last deployments at station GSCM3 (GSCM3-150, GSCM3-225, and GSCM3-300 for deployments G, H and I), the amount of $HgCl_2$ was reduced slightly and added to the tubes dissolved in double run Milli-Q water. The final concentration was 0.75 g/L (3 mL of a 50 mg/mL solution was added to each tube along with the 2 grams of NaCl). For station GS, sodium azide was used as the preservative, but no record was kept of the amount added or how much NaCl was added to the tubes. After the addition of the preservative, the tubes were filled with sea water collected at the depth at which the trap was to be deployed.

The deployment and recovery dates and times are listed in Tables 1 to 4 along with the station location, cruise identification, collection intervals, trap settings, sample preservation, notes on trap recoveries, and current meter depths.

## 3. SAMPLE HANDLING AND ANALYTICAL METHODS

On retrieval, the traps were covered and kept cool until they could be dismantled and the samples transferred to a cooler. Onboard, the samples were wet-sieved through a 500 micron Nitex or polypropylene sieve using the supernatant liquid or filtered sea water where necessary. The less than 500 micron portion was transferred to a 250-mL wide mouth polybottle (acid cleaned overnight in 1N HCl and rinsed with double Milli-Q water) and stored in the dark at 4 degrees Centigrade. The greater than 500 micron fraction was transferred to an acid- cleaned scintillation vial and stored at 4 degrees Centrigrade in a portion of the supernatant. The samples were brought back to the laboratory at the Institute of Ocean Sciences for subsampling and analysis as described below.

### 3.1 Subsampling

In the lab at the Institute of Ocean Sciences, the less than 500-micron samples were split into four equal portions using a rotary splitter. Two of these portions were recombined into the original 250-mL bottle and sent as a wet sample to the Department of Earth and Ocean Sciences at the University of British Columbia. One-quarter of the sample was set aside as a wet sample for future contaminant analysis. The remaining quarter was set aside for possible metal analysis and for archival purposes. Before splitting, a sample of the supernatant was sampled into an acid cleaned, polycarbonate test tube or 15 mL polybottle and stored at 4 degrees Centigrade. Where possible, only the supernatant was used in the splitting process. The samples from station GSCM2 were often larger, and when necessary, filtered sea water was used to complete the splitting. See Figure 6 for a schematic of the sample splitting.

### 3.2 Total dry weight flux

After splitting the main <500 micron sample into four subsamples, two of the subsamples were combined to one portion comprising one-half of the total. This was sent as a wet sample in the original 250-mL polybottle or in a plastic cup to the lab at the Department for Earth and Ocean Sciences at the University

of British Columbia. At UBC, the trap samples were prepared for analysis by removing sea salt by washing and centrifugation with distilled de-ionized water. After rinsing, the samples were freeze-dried and gently disaggregated in an agate mortar and pestle, and transferred to a clean plastic vial. The total weight of the sediment collected was determined by multiplying by 2 to represent the total sample. The dried sample was used for the total carbon, total nitrogen, carbonate carbon, biogenic silica, $\delta^{13}C_{organic,}$ and $\delta^{15}N_{total}$ analysis.

The total dry weight flux was determined as follows:

$$F = W/(A \times I) \quad (1)$$

where

$F$ = Total dry weight flux
$W$ = Total weight of sample in grams
$A$ = Collection area of the Baker trap funnel (0.032 $m^2$)
$I$ = Collection interval in days.

### 3.3 Total carbon, organic carbon, total nitrogen, and carbonate analysis

Total carbon, total nitrogen, and carbonate analysis were performed in the laboratory at the Department of Earth and Ocean Sciences at the University of British Columbia. Total carbon and nitrogen were determined by combustion/gas chromatography using a Carlo Erba CHN analyzer (Verardo et al. 1990; King et al. 1998). Carbonate carbon was separately determined by acid evolution of CO2 and quantification using a UIC coulometer (Huffman 1977; Johnson et al. 1993). Organic carbon was obtained by subtracting the carbonate carbon from the total carbon. The precision of the analyses was ±3% for organic C, carbonate C, and nitrogen.

For total nitrogen (0.089 to 2.260%) the pooled standard deviation ($s_p$) was 0.021% for 33 pairs. For total carbon (0.832 to 19.109%) $s_p$ was 0.094% for 33 pairs. For organic carbon (0.708 to 19.068%) $s_p$ was 0.114% for 33 pairs.

For carbonate carbon (0.001 to 0.930%) $s_p$ was 0.013% for 36 pairs. See Tables 5 and 6 for a data summary. See Tables 7 and 8 for the values of the individual replicates. The data reported in Appendix 1 reports the first replicate value and is not an average of the two values. The fluxes are also calculated using the first replicate values.

### 3.4 Biogenic silica analysis

The analysis was performed in the laboratory at the Department of Earth and Ocean Sciences at the University of British Columbia. Biogenic silica was determined following the method and equations of (Mortlock and Froelich 1989). The method consists of extracting amorphous silica from a sediment sample with 2M $Na_2CO_3$ and then measuring the dissolved silicon concentration in the extract by molybdate-blue spectrophotometry.

There were 31 samples run in duplicate and the pooled standard deviation $s_p$ is 0.573% for biogenic silica (range 1.579 to 28.056%). See Tables 5 and 6 for a data summary and Table 9 for the values of the individual replicates. The data reported in Appendix 1 reports the first replicate value and is not an average of the two values.

### 3.5 Carbon and nitrogen isotope analysis

The analysis was performed in the laboratory at the Department for Earth and Ocean Sciences at the University of British Columbia. The isotopic composition of organic carbon ($\delta^{13}C_{organic}$) was determined on decarbonated (10% HCl) subsamples using a VG PRISM isotope ratio mass spectrometer, with a Carlo Erba CHN analyzer fitted in-line as the gas preparation device (Calvert et al. 1995). The isotopic data for organic carbon are reported in the conventional $\delta$-notation (equation 2) with respect to the PDB standard. Precision was ±0.2 ppt. $\delta^{15}N_{total}$ values were determined on a second set of untreated subsamples using the same CHN-PRISM setup (Waser, et al. 1998; Waser et al. 1998). The results are reported relative to air $N_2$ (equation 3) and the precision was ±0.3 ppt.

The isotopic composition of organic carbon is measured relative to the PDB (Pee Dee Belemnite) standard and is reported as follows:

$$\delta^{13}C_{organic} = \left( \frac{(^{13}C/^{15}C)_{sample}}{(^{13}C/^{15}C)_{standard}} - 1 \right) \times 1000 \qquad (2)$$

The isotopic composition of total nitrogen is referenced to air and is reported as follows:

$$\delta^{15}N_{total} = \left( \frac{(^{15}N/^{14}N)_{sample}}{(^{15}N/^{14}N)_{standard}} - 1 \right) \times 1000 \qquad (3)$$

The pooled standard deviation ($s_p$) for $\delta^{13}C_{organic}$ (-24.2 to -19.4) is 0.064 ppt for 24 duplicate pairs and for $\delta^{15}N_{total}$ (3.54 to 9.18), $s_p$ is 0.149 ppt for 26 duplicate pairs. See Table 6 for a summary and Table 10 for the values of the individual

replicates for the carbon isotope analysis. Table 11 reports the values of the individual replicates for the nitrogen isotope analysis. The data reported in Appendix 1 reports the first replicate value and is not an average of the two values.

### 3.6 Quality control procedures

The precision of the methods used was estimated by analyzing replicates and is expressed as the pooled standard deviation $s_p$, which is calculated as

$$s_p = \sqrt{\frac{\sum \nu_i s_i^2}{\sum \nu_i}} \quad \textbf{or} \quad s_p = \sqrt{\frac{\sum d_i^2}{2k}} \tag{4}$$

where $\nu_i = n_i - 1$ degrees of freedom, and the $n_i$ and $s_i$, refer to the number of replicates and their standard deviation for the individual components used in the pooled standard deviation calculation. In most cases, the replicate data consists of $k$ duplicates, and $d_i$ is defined as the difference between duplicates. Table 5 summarizes the pooled standard deviations calculated for the analysis reported here.

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## 5. LIST OF FIGURES

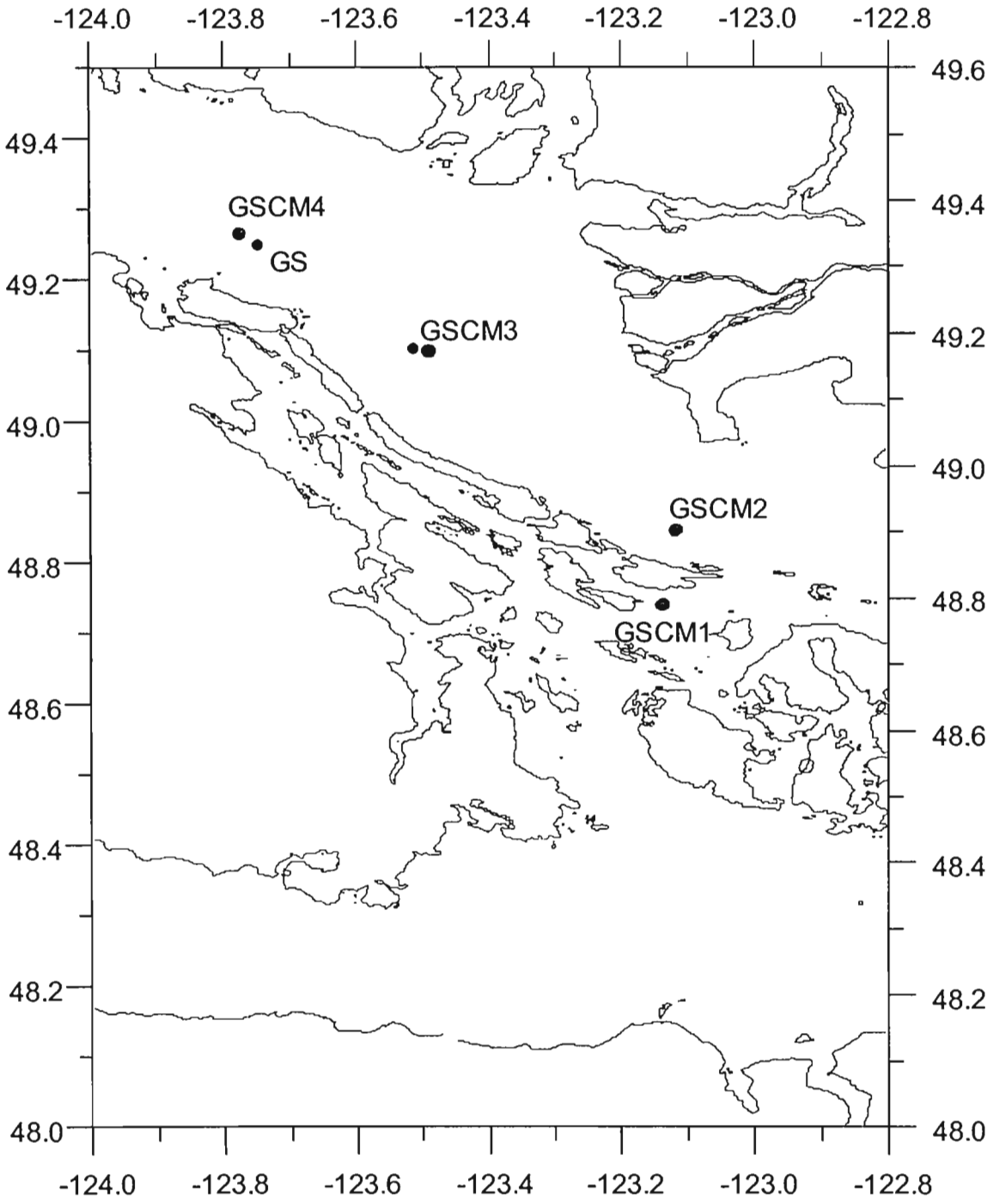



**Figure 1. Strait of Georgia mooring locations.**

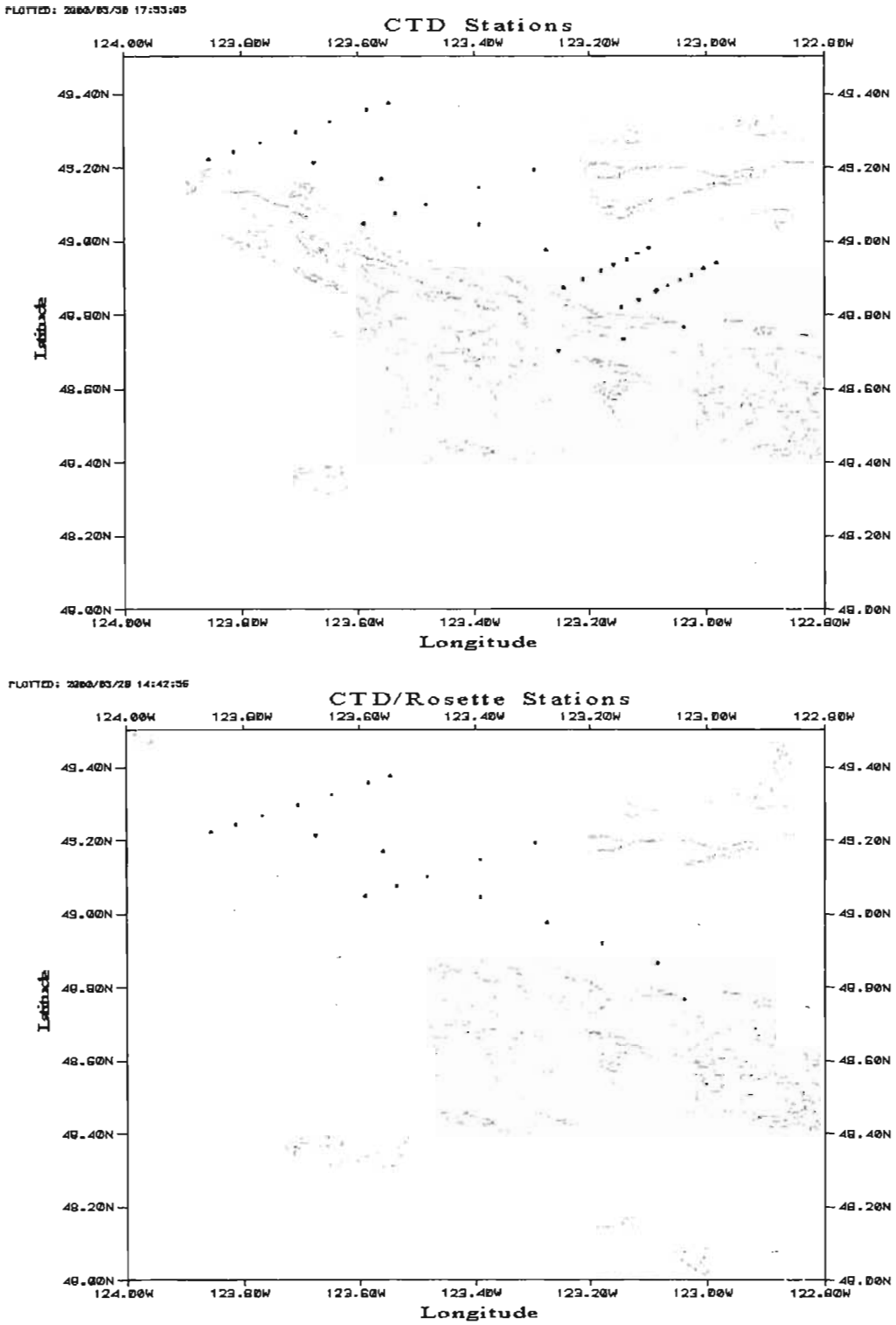



**Figure 2. Strait of Georgia CTD and CTD/Rosette stations.**

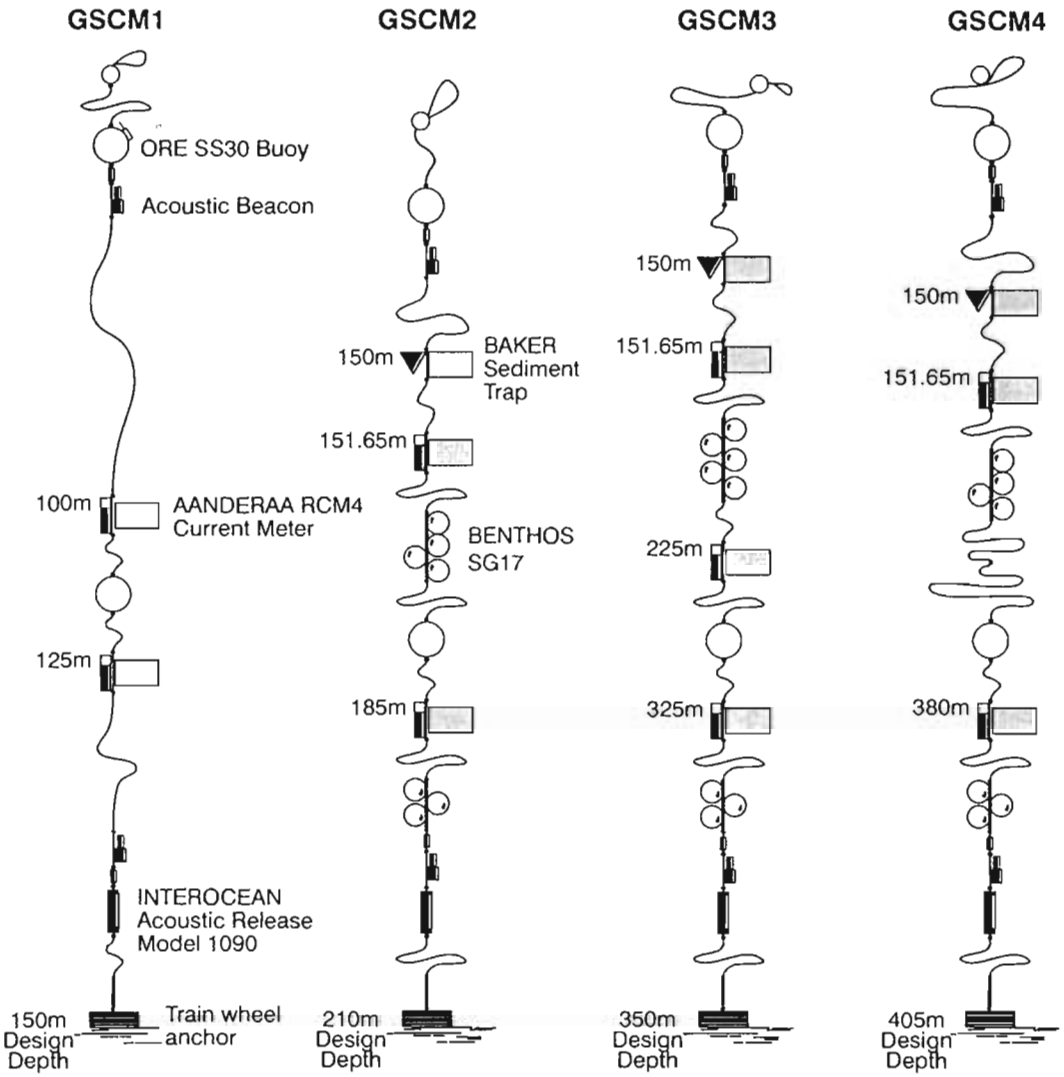



**Figure 3. Mooring layouts for stations GSCM1, GSCM2, GSCM3, and GSCM4 (deployments A to F).**

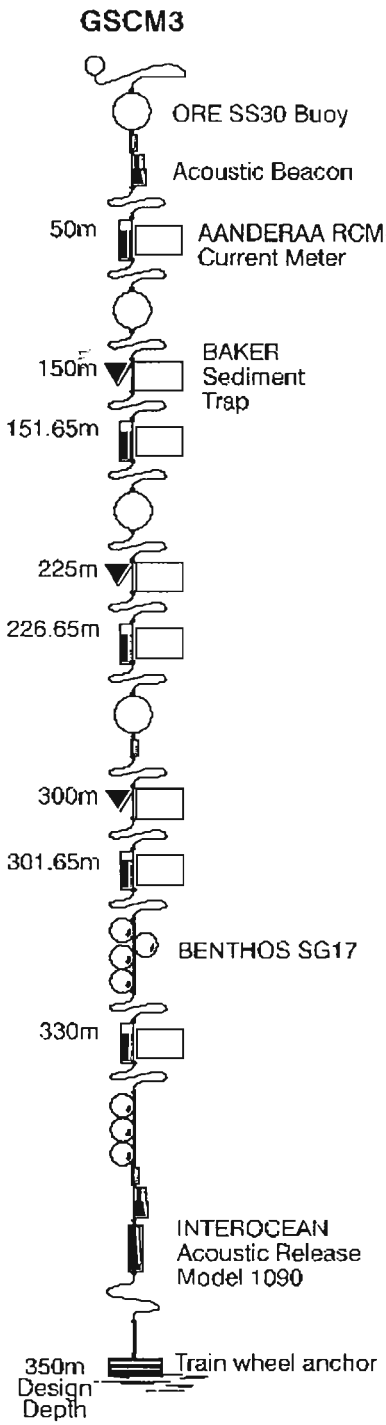



**Figure 4. Mooring layout for station GSCM3 (deployments G,H, and I).**

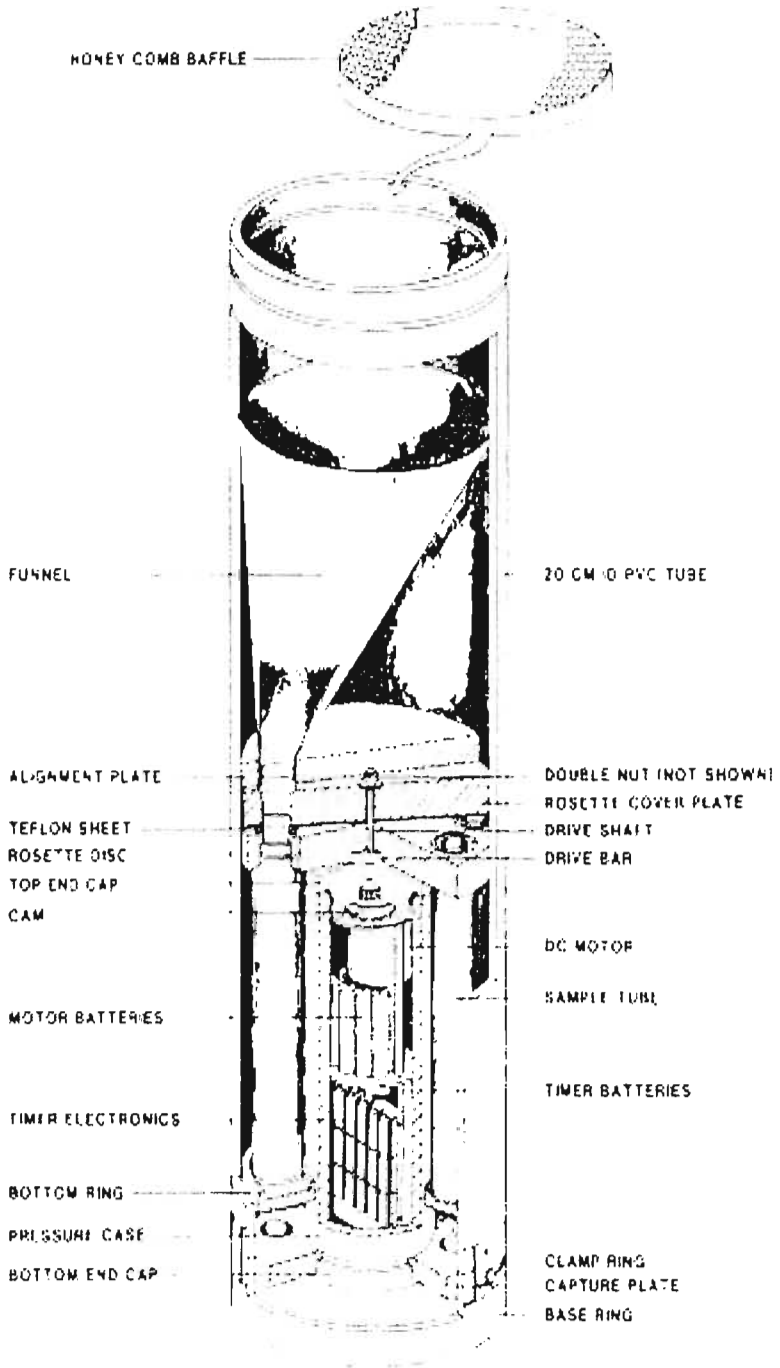



**Figure 5. Baker sequential sediment trap.**

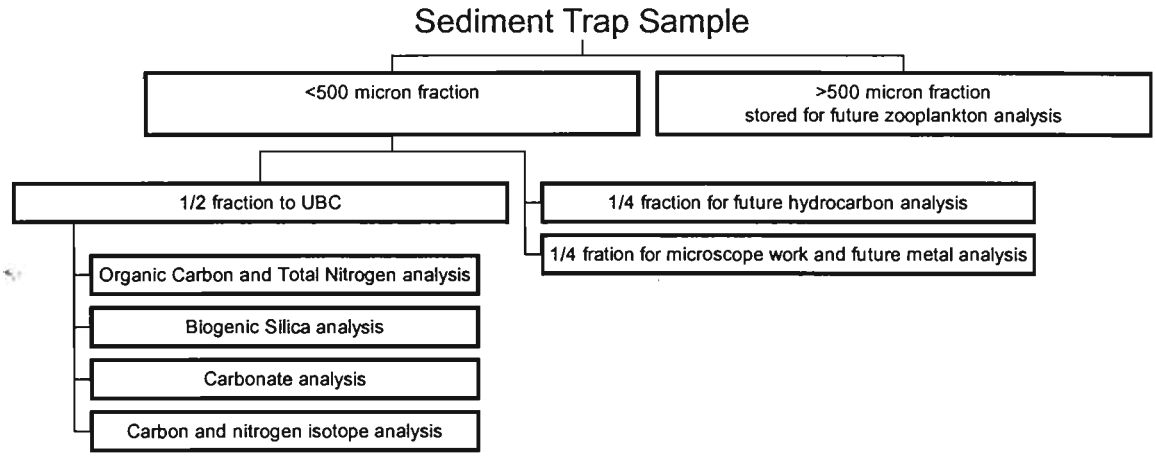



**Figure 6. Sieving and subsampling scheme for sediment trap material.**

## 6. LIST OF TABLES

**Table 1a. Mooring station information.**

| Trap # | Station | Deployment Cruise # (Vessel) | Recovery Cruise # (Vessel) | Latitude | Longitude | Bottom Depth (metres) | Launch date/time (Anchor released) | Date/time recovered |
|---|---|---|---|---|---|---|---|---|
| 1 | GS1 | (Tully) | (R.B. Young) | 49 15.00 N | 123 45.00 W | 400 | May 10/95 (1600 GMT) | Sept 13/95 (1800 ???) |
| 2 | GS2 | (Vector) | (R.B. Young) | 49 15.04 N | 123 45.00 W | 405 | Sep 27/95 (1845 GMT) | Apr 10/96 (1910 GMT) |
| 3 | GSCM1-A | 9603 (Vector) | 9611 (Vector) | 48 44.470 N | 123 08.376 W | 150 | Feb 29/96 (1121 PST) | Jun 17/96 (1521 PST) |
| 4 | GSCM2-A | 9603 (Vector) | 9611 (Vector) | 48 50.852 N | 123 07.044 W | 210 | Feb 29/96 (0942 PST) | Jun 19/96 (1330 PST) |
| 5 | GSCM3-A | 9603 (Vector) | 9611 (Vector) | 49 06.025 N | 123 29.564 W | 350 | Feb 27/96 (1038 PST) | Jun 17/96 (1835 PST) |
| 6 | GSCM4-A | 9603 (Vector) | 9611 (Vector) | 49 16.006 N | 123 46.493 W | 408 | Feb 28/96 (1034 PST) | Jun 18/96 (0706 PST) |
| 7 | GSCM1-B | 9611 (Vector) | 9636 (Vector) | 48 44.468 N | 123 08.455 W | 147 | June 20/96 (1219 PST) | Sept 9/96 (1418 PST) |
| 8 | GSCM2-B | 9611 (Vector) | 9636 (Vector) | 48 50.825 N | 123 07.124 W | 207 | June 20/96 (0944 PST) | Sept 9/96 (1553 PST) |
| 9 | GSCM3-B | 9611 (Vector) | 9636 (Vector) | 49 05.989 N | 123 29.474 W | 348 | June 19/96 (0938 PST) | Sept 11/96 (0709 PST) |
| 10 | GSCM4-B | 9611 (Vector) | 9636 (Vector) | 49 15.990 N | 123 46.478 W | 408 | June 18/96 (1146 PST) | Sept 10/96 (0705 PST) |
| 11 | GSCM1-C | 9636 (Vector) | 9703 (Vector) | 48 44.461 N | 123 08.530 W | 156 | Sept 12/96 (0953 PST) | Feb 17/97 (1630 PST) |
| 12 | GSCM2-C | 9636 (Vector) | 9703 (Vector) | 48 50.816 N | 123 07.208 W | 215.5 | Sept 12/96 (0821 PST) | Feb 20/97 (0812 PST) |
| 13 | GSCM3-C | 9636 (Vector) | 9703 (Vector) | 49 05.981 N | 123 29.550 W | 341.6 | Sept 11/96 (1047 PST) | Feb 18/97 (1318 PST) |
| 14 | GSCM4-C | 9636 (Vector) | 9703 (Vector) | 49 15.997 N | 123 46.572 W | 408.1 | Sept 10/96 (1025 PST) | Feb 18/97 (0811 PST) |
| 15 | GSCM1-D | 9703 (Vector) | 9725 (Vector) | 48 44.425 N | 123 08.591 W | 158 | Feb 20/97 (1631 PST) | May 27/97 ( 1252 PST) |
| 16 | GSCM2-D | 9703 (Vector) | 9725 (Vector) | 48 50.803 N | 123 07.283 W | 215 | Feb 20/97 (1130 PST) | May 27/97 (1450 PST) |
| 17 | GSCM3-D | 9703 (Vector) | 9725 (Vector) | 49 06.028 N | 123 29.513 W | 365 | Feb 18/97 ( 1640 PST) | May 29/97 (1725 PST) |
| 18 | GSCM4-D | 9703 (Vector) | 9725 (Vector) | 49 15.951 N | 123 46.690 W | 417 | Feb 18/97 (1128 PST) | May 28/97 (0710 PST) |
| 19 | GSCM1-E | 9725 (Vector) | 9742 (Tully) | 48 44.459 N | 123 08.363 W | 150 | May 29/97 (0831 PST) | Oct 5/97 (0705 PST) |
| 20 | GSCM2-E | 9725 (Vector) | 9742 (Tully) | 48 50.855 N | 123 07.049 W | 209 | May 29/97 (1211 PST) | Oct 5/97 (1230 PST) |
| 21 | GSCM3-E | 9725 (Vector) | 9742(Tully) | 49 06.025 N | 123 29.564 W | 344 | May 28/97 (1541 PDT) | Oct 4/97 (1215 PDT) |
| 22 | GSCM4-E | 9725 (Vector) | 9742 (Tully) | 49 16.006 N | 123 46.656 W | 408 | May 28/97 (1249 PST) | Oct 4/97 (0645 PST) |

Table 1a (continued).

| Trap # | Station | Deployment Cruise # (Vessel) | Recovery Cruise # (Vessel) | Latitude | Longitude | Bottom Depth (metres) | Launch date/time (Anchor released) | Date/time recovered |
|---|---|---|---|---|---|---|---|---|
| 23 | GSCM1-F | 9742 (Tully) | 9805 (Vector) | 48 44.495 N | 123 08.365 W | 151 | Oct 5/97 (0915 PST) | Feb 13/98 (0740 PST) |
| 24 | GSCM2-F | 9742 (Tully) | 9805 (Vector) | 48 50.868 N | 123 07.035 W | 208 | Oct 5/97 (1500 PST) | Feb 13/98 (0914 PST) |
| 25 | GSCM3-F | 9742 (Tully) | 9805 (Vector) | 49 05.980 N | 123 29.536 W | 348 | Oct 4/97 (1541 PST) | Feb 11//98 (0843 PST) |
| 26 | GSCM4-F | 9742 (Tully) | 9805 (Vector) | 49 15.986 N | 123 46.635 W | 408 | Oct 4/97 (1016 PST) | Feb 11/98 (1104 PST) |
| 27 | GSCM3-G-150 | 9805 (Vector) | 9811 (Tully) | 49 6.092 N | 123 29.728 W | 348 | Feb 12/98 1455 PST | May 31/98 13:25 PDT |
| 28 | GSCM3-G-225 | 9805 (Vector) | 9811 (Tully) | 49 6.092 N | 123 29.728 W | 348 | Feb 12/98 1455 PST | May 31/98 13:25 PDT |
| 29 | GSCM3-G-300 | 9805 (Vector) | 9811 (Tully) | 49 6.092 N | 123 29.728 W | 348 | Feb 12/98 1455 PST | May 31/98 13:25 PDT |
| 30 | GSCM3-H-150 | 9811 (Tully) | 9835 (Tully) | 49 06.090 N | 123 29.723 W | 344 | May 31/98 1610 PST | Oct 3/98 0753 PDT |
| 31 | GSCM3-H-225 | 9811 (Tully) | 9836 (Tully) | 49 06.090 N | 123 29.723 W | 344 | May 31/98 1610 PST | Oct 3/98 0753 PDT |
| 32 | GSCM3-H-300 | 9811 (Tully) | 9837 (Tully) | 49 06.090 N | 123 29.723 W | 344 | May 31/98 1610 PST | Oct 3/98 0753 PDT |
| 33 | GSCM3-I-150 | 9837 (Tully) | 9905 (Tully) | 49 06.255 N | 123 30.952 W | 351 | Oct 3/98 1219 PST | Jan 24/99 12:30 PST |
| 34 | GSCM3-I-225 | 9837 (Tully) | 9905 (Tully) | 49 06.255 N | 123 30.952 W | 351 | Oct 3/98 1219 PST | May 26/99 10:15 PDT |
| 35 | GSCM3-I-300 | 9837 (Tully) | 9905 (Tully) | 49 06.255 N | 123 30.952 W | 351 | Oct 3/98 1219 PST | May 26/99 10:15 PDT |

**Table 1b. Cruise identification for CTD and CTD/R casts in the Strait of Georgia.**

| Cruise identification number | Start date | Finish date | Vessel |
|---|---|---|---|
| 9603 | 26-Feb-96 | 01-Mar-96 | Vector |
| 9611 | 17-Jun-96 | 21-Jun-96 | Vector |
| 9636 | 09-Sep-96 | 13-Sep-96 | Vector |
| 9703 | 17-Feb-97 | 24-Feb-97 | Vector |
| 9725 | 26-May-97 | 30-May-97 | Vector |
| 9738 | 06-Oct-87 | 12-Oct-97 | Vector |
| 9742 | 22-Sep-97 | 05-Oct-97 | Tully |
| 9805 | 09-Feb-98 | 12-Feb-98 | Vector |
| 9811 | 25-May-98 | 31-May-98 | Tully |
| 9814 | 01-Jun-98 | 19-Jun-98 | Vector |
| 9822 | 04-Sep-98 | 19-Sep-98 | Vector |
| 9835 | 21-Sep-98 | 05-Oct-98 | Tully |
| 9836 | 06-Oct-98 | 19-Oct-98 | Tully |
| 9839 | 16-Nov-98 | 28-Nov-98 | Tully |
| 9906 | 21-Jan-99 | 25-Jan-99 | Tully |
| (GS1) | 01-Sep-95 | see note below | |
| (GS2) | 01-May-96 | see note below | |

**Note** : Samples from GS1 and GS2 were collected by Dr. C.S. Wong and and were kindly donated to this project. Information on the cruises is not available.

**Table 2. Mooring and sediment trap information.**

| Trap # | Station | Trap depth (metres) | CM depths (metres) | # of CM | Trap type | Trap serial number | Fin serial number | Trap on - date/time | Delay (hours) | Delay setting | Interval (days) | Interval setting | See note in Table 4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | GS1 | 325 | no CM | 0 | Baker | 31533 | ? | May 5/95 (1600 GMT) | 176 | 87 | 10.5 | 251 | 1 |
| 2 | GS2 | approx 340 | no CM | 0 | Baker | 31533 | ? | ? | ? | ? | 20 | 479 | 2 |
| 3 | GSCM1-A | no trap | 100, 125 | 2 | no trap | | | | | | | | 3 |
| 4 | GSCM2-A | 150 | 151, 185 | 2 | Baker | 86090C | F1 | Feb 26/96 (1600 PST) | 152 | 75 | 10.5 | 251 | 4 |
| 5 | GSCM3-A | 150 | 151, 225, 325 | 3 | Baker | 86090B | F3 | Feb 26/96 (1600 PST) | 152 | 75 | 10.5 | 251 | 5 |
| 6 | GSCM4-A | 150 | 151, 380 | 2 | Baker | 87302B | F2 | Feb 26/96 (1600 PST) | 152 | 75 | 10.5 | 251 | 6 |
| 7 | GSCM1-B | no trap | 100, 125 | 2 | no trap | | | | | | | | 7 |
| 8 | GSCM2-B | 150 | 151, 185 | 2 | Baker | 87302A | F2 | June 17/96 (1600 PDT) | 80 | 39 | 8 | 191 | 8 |
| 9 | GSCM3-B | 150 | 151, 225, 325 | 3 | Baker | 718106 | 718106 | June 17/96 (1600 PDT) | 80 | 39 | 8 | 191 | 9 |
| 10 | GSCM4-B | 150 | 151, 325 | 2 | Baker | 718105 | 718105 | June 17/96 (1600 PDT) | 80 | 39 | 8 | 191 | 10 |
| 11 | GSCM1-C | no trap | 100, 125 | 2 | no trap | | | | | | | | 11 |
| 12 | GSCM2-C | 150.0 | 151.65, 185 | 2 | Baker | 86090C | F1 | Sept 9/96 (1600 PDT) | 80 | 39 | 15.75 | 377 | 12 |
| 13 | GSCM3-C | 150.0 | 151, 225, 325 | 3 | Baker | 86090B | 87302A | Sept 9/96 (1600 PDT) | 80 | 39 | 15.75 | 377 | 13 |
| 14 | GSCM4-C | 150.0 | 150.65, 325 | 2 | Baker | 87302B | F3 | Sept 9/96 (1600 PDT) | 80 | 39 | 15.75 | 377 | 14 |
| 15 | GSCM1-D | no trap | 107.9, 132.9 | 2 | no trap | | | | | | | | 15 |
| 16 | GSCM2-D | 155 | 157, 190 | 2 | Baker | 87302A | F2 | Feb 13/97 (1000 PST) | 194 | 96 | 9.375 | 224 | 16 |
| 17 | GSCM3-D | 165 | 167, 240, 340 | 3 | Baker | 718106 | 718106 | Feb 13/97 (1000 PST) | 194 | 96 | 9.375 | 224 | 17 |
| 18 | GSCM4-D | 162 | 164.3, 392.3 | 2 | Baker | 718105 | 718105 | Feb 13/97 (1000 PST) | 194 | 96 | 9.375 | 224 | 18 |
| 19 | GSCM1-E | no trap | 100, 125 | 2 | no trap | | | | | | | | 19 |
| 20 | GSCM2-E | 149 | 151, 184 | 2 | Baker | 86090C | F1 | May 23/97 (1400 PDT) | 178 | 88 | 12.5 | 299 | 20 |
| 21 | GSCM3-E | 144 | 146, 219, 319 | 3 | Baker | 86090B | F3 | May 23/97 (1400 PDT) | 178 | 88 | 12.5 | 299 | 21 |
| 22 | GSCM4-E | 153 | 155, 383 | 2 | Baker | 87302B | 87302A | May 23/97 (1400 PDT) | 178 | 88 | 12.5 | 299 | 22 |

Table 2 (continued).

| Trap # | Station | Trap depth (metres) | CM depths (metres) | # of CM | Trap type | Trap serial number | Fin serial number | Trap on - date/time | Delay (hours) | Delay setting | Interval (days) | Interval setting | See note in Table 4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 23 | GSCM1-F | no trap | 101, 126 | 2 | no trap | | | | | | | | 23 |
| 24 | GSCM2-F | 148 | 150, 183 | 2 | Baker | 87302A | F2 | Oct 1/97 (1600 PST) | 104 | 51 | 12.75 | 305 | 24 |
| 25 | GSCM3-F | 148 | 150, 223, 323 | 3 | Baker | 718106 | 718106 | Oct 1/97 (1600 PST) | 104 | 51 | 12.75 | 305 | 25 |
| 26 | GSCM4-F | 153 | 155, 383 | 2 | Baker | 718105 | 718105 | Oct 1/97 (1600 PST) | 104 | 51 | 12.75 | 305 | 26 |
| 27 | GSCM3-G-150 | 148 | 48, 149.65, 224.65, 299.65, 328 | 5 | Baker | 87302B | 87302A | Feb 5/98 16:00 PDT | 200 | 99 | 10.75 | 257 | 27 |
| 28 | GSCM3-G-225 | 223 | | | Baker | 86090C | F1 | Feb 5/98 16:00 PDT | 200 | 99 | 10.75 | 257 | 28 |
| 29 | GSCM3-G-300 | 298 | | | Baker | 86090B | F3 | Feb 5/98 16:00 PDT | 200 | 99 | 10.75 | 257 | 29 |
| 30 | GSCM3-H-150 | 146 | 42, 145.65, 220.65, 295.65, 324 | 5 | Baker | 718105 | 718105 | May 27/98 1400 PDT | 130 | 64 | 12.25 | 293 | 30 |
| 31 | GSCM3-H-225 | 219 | | | Baker | 718106 | 718106 | May 27/98 1400 PDT | 130 | 64 | 12.25 | 293 | 31 |
| 32 | GSCM3-H-300 | 294 | | | Baker | 87302A | F2 | May 27/98 1400 PDT | 130 | 64 | 12.25 | 293 | 32 |
| 33 | GSCM3-I-150 | 151 | 51, 153, 228, 303, 331 | 5 | Baker | 87302B | 87302A | Oct 1/98 1400 PDT | 58 | 28 | 10.75 | 257 | 33 |
| 34 | GSCM3-I-225 | 226 | | | Baker | 86090C | F1 | Oct 1/98 1400 PDT | 58 | 28 | 10.75 | 257 | 34 |
| 35 | GSCM3-I-300 | 301 | | | Baker | 86090B | F3 | Oct 1/98 1400 PDT | 58 | 28 | 10.75 | 257 | 35 |

**Table 3. Timing of sequential traps and sample preservation.**

| Trap # | Station | Start interval #1 | End interval #10 - Planned | End interval #10 - Actual | Preservative added | NaCl added | See note # in Table 4 |
|---|---|---|---|---|---|---|---|
| 1 | GS1 | May 13/95 (0000 GMT) | Aug 26/95 (0000 GMT) | Recovered on cup #5 | Sodium Azide | ? | 1 |
| 2 | GS2 | Oct 2/95 (0000 GMT) | Apr 19/96 (0000GMT) | Apr 10/96 (1910 GMT) | Sodium Azide | ? | 2 |
| 3 | GSCM1-A | | | | | | |
| 4 | GSCM2-A | Mar 4/96 (0000 PST) | Jun 17/96 (0000 PST) | Jun 17/96 (0000 PST) | 200 mg $HgCl_2$ per tube | 2 gm NaCl per | 3 |
| 5 | GSCM3-A | Mar 4/96 (0000 PST) | Jun 17/96 (0000 PST) | Jun 17/96 (0000 PST) | 200 mg $HgCl_2$ per tube | 2 gm NaCl per | 4 |
| 6 | GSCM4-A | Mar 4/96 (0000 PST) | Jun 17/96 (0000 PST) | Jun 17/96 (0000 PST) | 200 mg $HgCl_2$ per tube | 2 gm NaCl per | 5 |
| 7 | GSCM1-B | | | | | | |
| 8 | GSCM2-B | Jun 21/96 (0000 PDT) | Sept 9/96 (0000 PDT) | Stopped between 9 & 10 | 200 mg $HgCl_2$ per tube | 2 gm NaCl per | 6 |
| 9 | GSCM3-B | Jun 21/96 (0000 PDT) | Sept 9/96 (0000 PDT) | Recovered on cup 8 | 200 mg $HgCl_2$ per tube | 2 gm NaCl per | 7 |
| 10 | GSCM4-B | Jun 21/96 (0000 PDT) | Sept 9/96 (0000 PDT) | Sept 9/96 (0000 PDT) | 200 mg $HgCl_2$ per tube | 2 gm NaCl per | 8 |
| 11 | GSCM1-C | | | | | | |
| 12 | GSCM2-C | Sept 13/96 (0000 PDT) | Feb 17/97 (1200 PDT) | Feb 17/97 (1200 PDT) | 200 mg $HgCl_2$ per tube | 2 gm NaCl per | 9 |
| 13 | GSCM3-C | Sept 13/96 (0000 PDT) | Feb 17/97 (1200 PDT) | Feb 17/97 (1200 PDT) | 200 mg $HgCl_2$ per tube | 2 gm NaCl per | 10 |
| 14 | GSCM4-C | Sept 13/96 (0000 PDT) | Feb 17/97 (1200 PDT) | Feb 17/97 (1200 PDT) | 200 mg $HgCl_2$ per tube | 2 gm NaCl per | 11 |
| 15 | GSCM1-D | | | | | | |
| 16 | GSCM2-D | Feb 21/97 (1200 PST) | May 26/97 (0600 PST) | May 26/97 (0600 PST) | 200 mg $HgCl_2$ per tube | 2 gm NaCl per | 12 |
| 17 | GSCM3-D | Feb 21/97 (1200 PST) | May 26/97 (0600 PST) | May 26/97 (0600 PST) | 200 mg $HgCl_2$ per tube | 2 gm NaCl per | 13 |
| 18 | GSCM4-D | Feb 21/97 (1200 PST) | May 26/97 (0600 PST) | May 26/97 (0600 PST) | 200 mg $HgCl_2$ per tube | 2 gm NaCl per | 14 |
| 19 | GSCM1-E | | | | | | |
| 20 | GSCM2-E | May 31/97 (0000 PDT) | Oct 3/97 (0000 PDT) | Oct 3/97 (0000 PDT) | 200 mg $HgCl_2$ per tube | 2 gm NaCl per | 15 |
| 21 | GSCM3-E | May 31/97 (0000 PDT) | Oct 3/97 (0000 PDT) | Oct 3/97 (0000 PDT) | 200 mg $HgCl_2$ per tube | 2 gm NaCl per | 16 |
| 22 | GSCM4-E | May 31/97 (0000 PDT) | Oct 3/97 (0000 PDT) | Oct 3/97 (0000 PDT) | 200 mg $HgCl_2$ per tube | 2 gm NaCl per | 17 |

Table 3 (continued).

| Trap # | Station | Start interval #1 | End interval #10 - Planned | End interval #10 - Actual | Preservative added | NaCl added | See note # in Table 4 |
|---|---|---|---|---|---|---|---|
| 23 | GSCM1-F | | | | | | |
| 24 | GSCM2-F | Oct 6/97 (0000 PST) | Feb 10/98 (1200 PST) | Feb 10/98 (1200 PST) | 200 mg $HgCl_2$ per tube | 2 gm NaCl per | 18 |
| 25 | GSCM3-F | Oct 6/97 (0000 PST) | Feb 10/98 (1200 PST) | Feb 10/98 (1200 PST) | 200 mg $HgCl_2$ per tube | 2 gm NaCl per | 19 |
| 26 | GSCM4-F | Oct 6/97 (0000 PST) | Feb 10/98 (1200 PST) | Feb 10/98 (1200 PST) | 200 mg $HgCl_2$ per tube | 2 gm NaCl per | 20 |
| 27 | GSCM3-G-150 | Feb 14/98 00:00 PDT | Jun 1/98 12:00 PDT | May 31/98 13:25 PDT | 3ml X 50mg/ml solution $HgCl_2$ | 2 gm NaCl per | 21 |
| 28 | GSCM3-G-225 | Feb 14/98 00:00 PDT | Jun 1/98 12:00 PDT | May 31/98 13:25 PDT | 3ml X 50mg/ml solution $HgCl_2$ | 2 gm NaCl per | 22 |
| 29 | GSCM3-G-300 | Feb 14/98 00:00 PDT | Jun 1/98 12:00 PDT | May 31/98 13:25 PDT | 3ml X 50mg/ml solution $HgCl_2$ | 2 gm NaCl per | 23 |
| 30 | GSCM3-H-150 | June 2/98 0000 PDT | Oct 2/98 1200 PDT | Oct 2/98 1200 PDT | 3ml X 50mg/ml solution $HgCl_2$ | 2 gm NaCl per | 24 |
| 31 | GSCM3-H-225 | June 2/98 0000 PDT | Oct 2/98 1200 PDT | Oct 2/98 1200 PDT | 3ml X 50mg/ml solution $HgCl_2$ | 2 gm NaCl per | 25 |
| 32 | GSCM3-H-300 | June 2/98 0000 PDT | Oct 2/98 1200 PDT | Oct 2/98 1200 PDT | 3ml X 50mg/ml solution $HgCl_2$ | 2 gm NaCl per | 26 |
| 33 | GSCM3-I-150 | Oct 4/98 0000 PDT | Jan 19/99 1200 PDT | Jan 19/99 1200 PDT | 3ml X 50mg/ml solution $HgCl_2$ | 2 gm NaCl per | 27 |
| 34 | GSCM3-I-225 | Oct 4/98 0000 PDT | Jan 19/99 1200 PDT | Jan 19/99 1200 PDT | 3ml X 50mg/ml solution $HgCl_2$ | 2 gm NaCl per | 28 |
| 35 | GSCM3-I-300 | Oct 4/98 0000 PDT | Jan 19/99 1200 PDT | Jan 19/99 1200 PDT | 3ml X 50mg/ml solution $HgCl_2$ | 2 gm NaCl per | 29 |

**Table 4. Notes on the sediment trap deployments.**

| Trap # | Station | Notes : |
|---|---|---|
| | | |
| 1 | GS1 | Trap was on cup #5 on recovery. It appears that everything worked normally up to this time then the electronics battery failed. |
| 2 | GS2 | Cup#10 - collection time of 11.8 days. The trap was on cup#10 on recovery. Trap was turned to zero position ASAP with magnet. Sample#10 appeared to be intact although small amount of sediment was seen flushing from the trap on recovery. |
| 3 | GSCM1-A | No trap. |
| 4 | GSCM2-A | Trap worked properly. |
| 5 | GSCM3-A | Trap worked properly. |
| 6 | GSCM4-A | Trap worked properly. |
| 7 | GSCM1-B | No trap. |
| 8 | GSCM2-B | Trap covered with sediment and growth on recovery. Recovered with funnel positioned between cups 9 and 10. Sediment seen streaming from trap on recovery, probably from cup 10 but may be some loss from cup 9 too. Cup 9 did not look disturbed. |
| 9 | GSCM3-B | Recovered on cup # 8 - trap seems to have worked normally up to then. There was no sediment seen streaming from the trap on recovery. Cup 8 is an integrated sample covering the period for intervals 8, 9 and 10 plus the last few days before recovery. |
| 10 | GSCM4-B | Trap worked properly. |
| 11 | GSCM1-C | No trap. |
| 12 | GSCM2-C | Trap worked properly. |
| 13 | GSCM3-C | Trap worked properly. |
| 14 | GSCM4-C | Trap worked properly. |
| 15 | GSCM1-D | No trap. |
| 16 | GSCM2-D | Trap worked properly. |
| 17 | GSCM3-D | Trap worked properly. |
| 18 | GSCM4-D | Trap worked properly. |
| 19 | GSCM1-E | No trap. |
| 20 | GSCM2-E | Trap worked properly. Not enough preservative in about the first half of the collection. |
| 21 | GSCM3-E | Trap worked properly. |
| 22 | GSCM4-E | Trap worked properly. |
| 23 | GSCM1-F | No trap. |
| 24 | GSCM2-F | Trap worked properly. |
| 25 | GSCM3-F | Deployment and recovery positions were different in log. Check of bridge log confirmed position. Good collection, complete. |
| 26 | GSCM4-F | Trap worked properly. |

**Table 4 (continued).**

| Trap # | Station | Notes : |
|---|---|---|
| | | |
| 27 | GSCM3-G-150 | Recovered on Cup 10. Top trap towed to straightem mooring on recovery and cup 10 of top trap lost most of its contents. |
| 28 | GSCM3-G-225 | Recovered on Cup 10. Does not appear to have lost any significant amount of sample. |
| 29 | GSCM3-G-300 | Recovered on Cup 10 - does not appear to havve lost any significant amount of sample. |
| 30 | GSCM3-H-150 | Traps closed and all collections are complete |
| 31 | GSCM3-H-225 | Traps closed and all collections are complete |
| 32 | GSCM3-H-300 | Traps closed and all collections are complete |
| 33 | GSCM3-I-150 | All collections complete. Acoustic releases failed and mooring recovered by dragging. Top trap and top two current meters recovered on Jan 24 1230 PST. The remaining current meters and last two traps were recovered on May 26th by dragging. Acoustic release, a pinger and 3 floats were not recovered. |
| 34 | GSCM3-I-225 | All collections complete. Acoustic releases failed and mooring recovered by dragging. Top trap and top two current meters recovered on Jan 24 1230 PST. The remaining current meters and last two traps were recovered on May 26th by dragging during cruise 9906. Acoustic release, a pinger and 3 floats were not recovered. |
| 35 | GSCM3-I-300 | All collections complete. Acoustic releases failed and mooring recovered by dragging. Top trap and top two current meters recovered on Jan 24 1230 PST. The remaining current meters and last two traps were recovered on May 26th by dragging during cruise 9906. Acoustic release, a pinger and 3 floats were not recovered. |

**Table 5. Pooled standard deviation for sediment trap analysis.**

| Analysis | Units | Number of pairs | Pooled standard deviation | Range (total data set) | Range (analyzed pairs) |
|---|---|---|---|---|---|
| Carbonate carbon | % | 36 | 0.013 | 0.001 - 0.930 | 0.007 - 0.331 |
| Total nitrogen | % | 33 | 0.021 | 0.089 - 2.260 | 0.103 - 1.030 |
| Total carbon | % | 33 | 0.094 | 0.832 - 19.109 | 1.060 - 9.451 |
| Organic carbon | % | 33 | 0.114 | 0.708 - 19.068 | 0.882 - 9.333 |
| Biogenic silica | % | 31 | 0.573 | 1.579 - 28.056 | 1.6 - 28.1 |
| $\delta^{13}C_{organic}$ | ppt | 24 | 0.064 | (-24.165) to (-19.480) | (-24.13) to (-19.58) |
| $\delta^{15}N_{total}$ | ppt | 26 | 0.149 | 3.54 - 9.18 | 4.44 - 9.07 |
| % $CaCO_3$ | % | 36 | 0.110 | 0.008 - 7.750 | 0.058 - 2.758 |
| % OPAL | % | 31 | 1.376 | 3.790 - 67.335 | 3.790 - 67.335 |

**Table 6. Summary of data set.**

| Analysis | Units | Maximum | Minimum | Median | Average | Number |
|---|---|---|---|---|---|---|
| Total weight collected | g/cup | 55.2 | 0.1 | 2.6 | 6.3 | 290 |
| Total dry weight flux | $g/m^2/d$ | 170.0 | 0.3 | 7.0 | 17.4 | 290 |
| Organic carbon flux | $mg/m^2/d$ | 2338.6 | 15.5 | 175.5 | 338.2 | 290 |
| Total nitrogen flux | $mg/m^2/d$ | 288.5 | 2.1 | 21.6 | 41.8 | 290 |
| Carbonate carbon flux | $mg/m^2/d$ | 563.0 | 0.0 | 6.8 | 21.1 | 290 |
| Biogenic silica flux | $mg/m^2/d$ | 5534.0 | 21.3 | 296.2 | 750.0 | 290 |
| Opal flux | $mg/m^2/d$ | 13281.7 | 51.2 | 711.0 | 1800.1 | 290 |
| Carbonate carbon | % | 0.930 | 0.001 | 0.098 | 0.110 | 291 |
| Calcium carbonate | % | 7.750 | 0.008 | 0.817 | 0.917 | 290 |
| Organic carbon | % | 19.068 | 0.708 | 2.631 | 3.564 | 292 |
| Total carbon | % | 19.109 | 0.832 | 2.725 | 3.673 | 292 |
| Total nitrogen | % | 2.260 | 0.089 | 0.327 | 0.443 | 292 |
| Biogenic silica | % | 28.056 | 1.579 | 4.766 | 5.661 | 290 |
| Opal | % | 67.335 | 3.790 | 11.439 | 13.585 | 290 |
| $\delta^{13}C_{organic}$ (vpdb) | ppt | -19.480 | -24.165 | -21.980 | -21.962 | 280 |
| $\delta^{15}N_{total}$ (vs air) | ppt | 9.180 | 3.540 | 6.370 | 6.495 | 247 |
| CN ratio | weight | 12.835 | 4.108 | 8.051 | 8.125 | 292 |
| CN ratio | atomic | 14.968 | 4.791 | 9.389 | 9.475 | 292 |

**Table 7. Duplicate values for CHN analysis.**

| Station | | Cuo # | 1 % $N_{total}$ | 2 % $N_{total}$ | 1 %$C_{total}$ | 2 %$C_{total}$ | 1 %$C_{organic}$ | 2 %$C_{organic}$ |
|---|---|---|---|---|---|---|---|---|
| GSCM2 | A | 7 | 0.176 | 0.183 | 1.622 | 1.648 | 1.517 | 1.573 |
| GSCM2 | B | 1 | 0.170 | 0.177 | 1.527 | 1.494 | 1.376 | 1.369 |
| GSCM2 | C | 4 | 0.188 | 0.211 | 1.706 | 1.925 | 1.577 | 1.792 |
| GSCM2 | C | 5 | 0.210 | 0.217 | 1.918 | 1.964 | 1.799 | 1.832 |
| GSCM2 | D | 10 | 0.209 | 0.203 | 1.820 | 1.826 | 1.692 | 1.712 |
| GSCM2 | E | 5 | 0.197 | 0.223 | 1.667 | 1.978 | 1.524 | 1.860 |
| GSCM2 | F | 8 | 0.180 | 0.173 | 1.571 | 1.687 | 1.454 | |
| GSCM2 | F | 4 | 0.182 | 0.175 | 1.649 | 1.664 | 1.531 | |
| GSCM3 | A | 8 | 0.175 | 0.105 | 1.077 | 1.103 | 0.952 | 0.937 |
| GSCM3 | B | 4 | 0.255 | 0.243 | 2.010 | 1.991 | 1.906 | 1.833 |
| GSCM3 | C | 10 | 0.146 | 0.159 | 1.629 | 1.756 | 1.492 | 1.756 |
| GSCM3 | D | 10 | 0.104 | 0.103 | 1.082 | 1.060 | 0.882 | 0.917 |
| GSCM3 | D | 9 | 0.165 | 0.163 | 1.414 | 1.422 | 1.330 | 1.343 |
| GSCM3 | E | 1 | 0.120 | 0.143 | 1.096 | 1.249 | 1.033 | |
| GSCM3 | E | 2 | 0.147 | 0.157 | 1.152 | 1.319 | 1.070 | |
| GSCM3 | F | 10 | 0.148 | 0.142 | 1.583 | 1.698 | 1.459 | |
| GSCM3-150 | G | 2 | 0.227 | 0.229 | 2.222 | 2.196 | 2.145 | 2.101 |
| GSCM3-150 | H | 1 | 0.284 | 0.278 | 2.547 | 2.528 | 2.370 | 2.362 |
| GSCM3-150 | I | 10 | 0.216 | 0.258 | 2.066 | 2.052 | 2.000 | 1.969 |
| GSCM3-225 | G | 4 | 0.418 | 0.403 | 3.227 | 3.113 | 3.170 | 3.061 |
| GSCM3-225 | H | 1 | 0.238 | 0.237 | 2.068 | 2.130 | 1.933 | 1.979 |
| GSCM3-225 | I | 9 | 0.183 | 0.258 | 1.939 | 2.031 | 1.862 | |
| GSCM3-300 | G | 5 | 0.347 | 0.304 | 2.721 | 2.486 | 2.659 | 2.418 |
| GSCM3-300 | G | 4 | 0.449 | 0.413 | 3.314 | 3.094 | 3.247 | 3.028 |
| GSCM3-300 | H | 1 | 0.246 | 0.262 | 2.138 | 2.266 | 2.023 | 2.151 |
| GSCM3-300 | I | 6 | 0.183 | 0.237 | 1.757 | 1.792 | 1.627 | 1.668 |
| GSCM4 | A | 3 | 0.683 | 0.696 | 5.454 | 5.406 | 5.432 | |
| GSCM4 | B | 6 | 0.973 | 1.030 | 9.451 | 9.346 | 9.333 | 9.247 |
| GSCM4 | C | 3 | 0.919 | 0.939 | 7.698 | 7.915 | 7.497 | 7.726 |
| GSCM4 | D | 9 | 1.004 | 0.966 | 6.721 | 6.393 | 6.706 | |
| GSCM4 | E | 4 | 0.375 | 0.372 | 2.938 | 3.022 | 2.876 | |
| GSCM4 | E | 3 | 0.575 | 0.575 | 4.260 | 4.328 | 4.252 | 4.321 |
| GSCM4 | F | 6 | 0.421 | 0.387 | 3.305 | 3.417 | 3.254 | |
| | | Maximum | 1.004 | 1.030 | 9.451 | 9.346 | 9.333 | 9.247 |
| | | Minimum | 0.104 | 0.103 | 1.077 | 1.060 | 0.882 | 0.917 |

**Table 8. Duplicate values for carbonate carbon analysis.**

| Station | | Cup # | 1 $\%C_{carbonate}$ | 1 $\%CaCO_3$ | 2 $\%C_{carbonate}$ | 2 $\%CaCO_3$ |
|---|---|---|---|---|---|---|
| GSCM2 | B | 1 | 0.151 | 1.258 | 0.125 | 1.039 |
| GSCM2 | E | 4 | 0.138 | 1.150 | 0.134 | 1.117 |
| GSCM2 | E | 5 | 0.143 | 1.192 | 0.117 | 0.979 |
| GSCM2 | A | 7 | 0.105 | 0.875 | 0.075 | 0.627 |
| GSCM2 | D | 10 | 0.128 | 1.067 | 0.113 | 0.945 |
| GSCM-2 | C | 4 | 0.129 | 1.075 | 0.133 | 1.109 |
| GSCM-2 | C | 5 | 0.119 | 0.992 | 0.132 | 1.097 |
| GSCM3 | E | 3 | 0.131 | 1.092 | 0.137 | 1.142 |
| GSCM3 | B | 4 | 0.104 | 0.867 | 0.157 | 1.311 |
| GSCM3 | F | 4 | 0.114 | 0.950 | 0.116 | 0.967 |
| GSCM3 | E | 7 | 0.114 | 0.950 | 0.120 | 1.000 |
| GSCM3 | A | 8 | 0.125 | 1.042 | 0.167 | 1.388 |
| GSCM3 | E | 8 | 0.104 | 0.867 | 0.110 | 0.917 |
| GSCM3 | D | 9 | 0.084 | 0.700 | 0.079 | 0.657 |
| GSCM3 | D | 10 | 0.200 | 1.667 | 0.143 | 1.192 |
| GSCM3-150 | H | 1 | 0.177 | 1.475 | 0.166 | 1.385 |
| GSCM3-150 | I | 1 | 0.298 | 2.483 | 0.311 | 2.592 |
| GSCM3-150 | G | 2 | 0.077 | 0.642 | 0.095 | 0.791 |
| GSCM3-150 | G | 5 | 0.052 | 0.433 | 0.050 | 0.417 |
| GSCM3-150 | I | 10 | 0.066 | 0.550 | 0.083 | 0.693 |
| GSCM3-225 | H | 1 | 0.135 | 1.125 | 0.151 | 1.256 |
| GSCM3-225 | I | 2 | 0.128 | 1.067 | 0.128 | 1.067 |
| GSCM3-225 | G | 4 | 0.057 | 0.475 | 0.052 | 0.430 |
| GSCM3-225 | G | 5 | 0.060 | 0.500 | 0.060 | 0.500 |
| GSCM3-300 | H | 1 | 0.115 | 0.958 | 0.116 | 0.963 |
| GSCM3-300 | G | 2 | 0.121 | 1.008 | 0.118 | 0.983 |
| GSCM3-300 | G | 4 | 0.067 | 0.558 | 0.067 | 0.554 |
| GSCM3-300 | G | 5 | 0.062 | 0.517 | 0.068 | 0.567 |
| GSCM3-300 | I | 6 | 0.130 | 1.083 | 0.124 | 1.033 |
| GSCM4 | E | 1 | 0.081 | 0.675 | 0.090 | 0.750 |
| GSCM4 | F | 1 | 0.033 | 0.275 | 0.037 | 0.308 |
| GSCM4 | E | 2 | 0.326 | 2.717 | 0.331 | 2.758 |
| GSCM4 | E | 3 | 0.008 | 0.067 | 0.007 | 0.058 |
| GSCM4 | B | 6 | 0.118 | 0.983 | 0.099 | 0.824 |
| GSCM-4 | C | 3 | 0.201 | 1.675 | 0.190 | 1.580 |
| WG-1 | F | 4 | 0.113 | 0.942 | 0.115 | 0.958 |
| | | maximum | 0.326 | 2.717 | 0.331 | 2.758 |
| | | minimum | 0.008 | 0.067 | 0.007 | 0.058 |

**Table 9. Duplicate values for biogenic silica analysis.**

| Station | | Cup # | 1 % Biogenic Si | 2 % Biogenic Si | 1 % Opal | 2 % Opal |
|---|---|---|---|---|---|---|
| GSCM2 | A | 7 | 4.318 | 4.775 | 10.363 | 11.461 |
| GSCM2 | C | 5 | 4.248 | 4.028 | 10.195 | 9.668 |
| GSCM2 | C | 4 | 3.638 | 4.594 | 8.730 | 11.025 |
| GSCM2 | D | 10 | 3.967 | 4.253 | 9.520 | 10.206 |
| GSCM2 | E | 5 | 4.958 | 4.515 | 11.900 | 10.836 |
| GSCM2 | F | 8 | 2.943 | 3.315 | 7.064 | 7.957 |
| GSCM2 | F | 4 | 3.204 | 4.174 | 7.689 | 10.018 |
| GSCM3 | A | 8 | 1.949 | 2.210 | 4.678 | 5.304 |
| GSCM3 | B | 4 | 2.797 | 3.773 | 6.712 | 9.056 |
| GSCM3 | C | 10 | 1.781 | 2.757 | 4.274 | 6.618 |
| GSCM3 | D | 10 | 1.579 | 2.138 | 3.790 | 5.131 |
| GSCM3 | D | 9 | 4.021 | 3.634 | 9.651 | 8.721 |
| GSCM3 | E | 2 | 2.036 | 2.339 | 4.886 | 5.614 |
| GSCM3 | E | 1 | 2.655 | 2.719 | 6.373 | 6.526 |
| GSCM3 | F | 10 | 2.166 | 1.597 | 5.197 | 3.832 |
| GSCM3-150 | G | 2 | 3.511 | 4.252 | 8.425 | 10.205 |
| GSCM3-150 | H | 1 | 6.212 | 7.895 | 14.910 | 18.948 |
| GSCM3-150 | I | 10 | 3.139 | 3.080 | 7.534 | 7.392 |
| GSCM3-225 | G | 4 | 9.214 | 6.981 | 22.114 | 16.753 |
| GSCM3-225 | H | 1 | 6.683 | 6.126 | 16.040 | 14.702 |
| GSCM3-225 | I | 9 | 3.306 | 3.425 | 7.935 | 8.221 |
| GSCM3-300 | G | 5 | 5.333 | 6.522 | 12.799 | 15.652 |
| GSCM3-300 | G | 4 | 8.714 | 9.483 | 20.913 | 22.758 |
| GSCM3-300 | H | 1 | 6.746 | 6.524 | 16.190 | 15.658 |
| GSCM3-300 | I | 6 | 3.690 | 3.086 | 8.855 | 7.407 |
| GSCM4 | A | 3 | 28.056 | 26.406 | 67.335 | 63.374 |
| GSCM4 | B | 6 | 16.822 | 17.542 | 40.372 | 42.101 |
| GSCM4 | C | 3 | 6.197 | 6.020 | 14.872 | 14.448 |
| GSCM4 | D | 9 | 13.690 | 13.966 | 32.855 | 33.518 |
| GSCM4 | E | 3 | 4.698 | 4.380 | 11.275 | 10.512 |
| GSCM4 | E | 4 | 4.195 | 4.843 | 10.067 | 11.623 |
| | | maximum | 28.056 | 26.406 | 67.335 | 63.374 |
| | | minimum | 1.579 | 1.597 | 3.790 | 3.832 |

Note: %Opal = (%Biogenic Si) x 2.4

**Table 10. Duplicate values for carbon isotope analysis.**

| Station | | Cup # | $\delta^{13}C$-1 | $\delta^{13}C$-2 |
|---|---|---|---|---|
| GSCM2 | C | 9 | -22.02 | -21.95 |
| GSCM2 | D | 1 | -22.32 | -22.24 |
| GSCM2 | D | 6 | -21.86 | -21.75 |
| GSCM2 | E | 6 | -22.12 | -21.91 |
| GSCM3 | A | 3 | -20.02 | -20.16 |
| GSCM3 | B | 1 | -22.03 | -22.03 |
| GSCM3 | C | 10 | -24.20 | -24.13 |
| GSCM3 | D | 7 | -20.52 | -20.48 |
| GSCM3-150 | G | 1 | -23.33 | -23.24 |
| GSCM3-150 | H | 2 | -22.22 | -22.23 |
| GSCM3-150 | H | 1 | -20.39 | -20.20 |
| GSCM3-150 | I | 3 | -22.12 | -22.26 |
| GSCM3-225 | G | 9 | -19.78 | -19.82 |
| GSCM3-225 | H | 5 | -22.49 | -22.50 |
| GSCM3-225 | I | 6 | -23.55 | -23.51 |
| GSCM3-300 | G | 9 | -21.36 | -21.38 |
| GSCM3-300 | G | 10 | -21.03 | -20.94 |
| GSCM3-300 | H | 10 | -21.97 | -21.95 |
| GSCM3-300 | H | 2 | -21.53 | -21.51 |
| GSCM3-300 | I | 10 | -22.93 | -22.87 |
| GSCM4 | A | 4 | -20.55 | -20.57 |
| GSCM4 | D | 8 | -20.24 | -20.12 |
| GSCM4 | D | 10 | -19.58 | -19.58 |
| GSCM4 | F | 5 | -21.56 | -21.65 |
| | | maximum | -19.58 | -19.58 |
| | | minimum | -24.20 | -24.13 |

**Table 11. Duplicate values for nitrogen isotope analysis.**

| Station | | Cup # | $\delta^{15}$N-1 | $\delta^{15}$N-2 | $\delta^{15}$N-3 |
|---|---|---|---|---|---|
| GSCM3 | A | 7 | 4.44 | 4.66 | |
| GSCM3 | A | 6 | 4.68 | 4.81 | |
| GSCM2 | E | 2 | 5.73 | 5.51 | |
| GSCM2 | E | 6 | 6.08 | 6.02 | |
| GSCM2 | C | 6 | 5.81 | 6.07 | 5.92 |
| GSCM2 | C | 4 | 5.96 | 6.24 | 6.23 |
| GSCM4 | E | 7 | 6.03 | 6.26 | |
| GSCM3-225 | G | 5 | 6.21 | 6.3 | |
| GSCM3-225 | G | 6 | 6.33 | 6.3 | |
| GSCM4 | E | 4 | 6.14 | 6.34 | |
| GSCM3-225 | H | 1 | 6.22 | 6.36 | |
| GSCM-150 | G | 8 | 6.55 | 6.37 | |
| GSCM-150 | H | 2 | 6.27 | 6.47 | |
| GSCM-150 | H | 3 | 6.27 | 6.63 | |
| GSCM2 | C | 3 | 6.38 | 6.64 | 6.44 |
| GSCM-150 | H | 4 | 6.95 | 6.7 | |
| GSCM4 | F | 3 | 6.78 | 6.74 | |
| GSCM3-150 | H | 1 | 6.78 | 6.78 | |
| GSCM3 | F | 5 | 6.5 | 6.8 | |
| GSCM3-225 | H | 2 | 6.73 | 6.85 | |
| GSCM3-225 | G | 7 | 6.6 | 6.91 | |
| GSCM3 | B | 8 | 7.13 | 7.06 | |
| GSCM3-300 | H | 4 | 7.46 | 7.26 | |
| GSCM3-300 | H | 8 | 7.48 | 7.53 | |
| GSCM3-225 | H | 5 | 7.27 | 7.56 | |
| GSCM3-225 | H | 9 | 8.74 | 9.07 | |
| GSCM3-225 | I | 1 | 6.52 | 6.23 | |
| GSCM3-300 | I | 9 | 5.23 | 5.55 | |
| | | maximum | 8.74 | 9.07 | 6.44 |
| | | minimum | 4.44 | 4.66 | 5.92 |

## 7. LIST OF APPENDICES

**Appendix 1. Percent composition, CN ratio, and CN isotopes.**

| STATION | DATE START mm/dd/yy | DATE END mm/dd/yy | CUP # | INTERVAL days | CARB-ONATE CARBON % | ORGANIC CARBON % | TOTAL CARBON % | TOTAL NITROGEN % | CN RATIO atomic | BIO-GENIC SILICA % | $\delta^{13}C_{organic}$ vs PDB ppt | $\delta^{15}N_{total}$ vs air ppt |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GS | 5/13/95 0:00 | 5/23/95 12:00 | 1 | 10.50 | 0.053 | 3.383 | 3.436 | 0.426 | 9.27 | 13.191 | -20.83 | 6.37 |
| GS | 5/23/95 12:00 | 6/3/95 0:00 | 2 | 10.50 | 0.088 | 5.261 | 5.349 | 0.659 | 9.31 | 8.076 | -21.43 | 6.07 |
| GS | 6/3/95 0:00 | 6/13/95 12:00 | 3 | 10.50 | 0.110 | 3.261 | 3.371 | 0.476 | 7.98 | 8.723 | -20.37 | 7.44 |
| GS | 6/13/95 12:00 | 6/24/95 0:00 | 4 | 10.50 | 0.025 | 3.437 | 3.462 | 0.510 | 7.85 | 9.295 | -20.93 | 7.36 |
| GS | 6/24/95 0:00 | 9/13/95 18:00 | 5 | 81.75 | 0.151 | 3.227 | 3.378 | 0.397 | 9.47 | 8.123 | -21.61 | 6.75 |
| GS | 10/2/95 0:00 | 10/22/95 0:00 | 1 | 20.00 | 0.188 | 3.128 | 3.316 | 0.415 | 8.78 | 8.511 | -21.56 | 6.23 |
| GS | 10/22/95 0:00 | 11/11/95 0:00 | 2 | 20.00 | 0.104 | 2.703 | 2.807 | 0.297 | 10.61 | 4.321 | -21.66 | 6.69 |
| GS | 11/11/95 0:00 | 12/1/95 0:00 | 3 | 20.00 | 0.182 | 3.072 | 3.254 | 0.384 | 9.33 | 5.173 | -21.96 | 6.56 |
| GS | 12/1/95 0:00 | 12/21/95 0:00 | 4 | 20.00 | 0.097 | 2.784 | 2.881 | 0.286 | 11.34 | 4.121 | -22.45 | 6.83 |
| GS | 12/21/95 0:00 | 1/10/96 0:00 | 5 | 20.00 | 0.186 | 3.555 | 3.741 | 0.406 | 10.22 | 4.880 | -22.09 | 7.32 |
| GS | 1/10/96 0:00 | 1/30/96 0:00 | 6 | 20.00 | 0.126 | 3.467 | 3.593 | 0.427 | 9.47 | 5.017 | -21.90 | 7.88 |
| GS | 1/30/96 0:00 | 2/19/96 0:00 | 7 | 20.00 | 0.120 | 3.096 | 3.216 | 0.423 | 8.54 | 5.521 | -21.82 | 8.19 |
| GS | 2/19/96 0:00 | 3/10/96 0:00 | 8 | 20.00 | 0.152 | 2.919 | 3.071 | 0.321 | 10.61 | 4.669 | -21.96 | 6.58 |
| GS | 3/10/96 0:00 | 3/30/96 0:00 | 9 | 20.00 | 0.012 | 3.215 | 3.227 | 0.458 | 8.19 | 14.845 | -20.37 | 6.08 |
| GS | 3/30/96 0:00 | 4/10/96 19:10 | 10 | 11.80 | 0.042 | 3.294 | 3.336 | 0.453 | 8.48 | 13.126 | -19.74 | 6.18 |

## Appendix 1. Percent composition, CN ratio, and CN isotopes.

| STATION | | DATE START mm/dd/yy | DATE END mm/dd/yy | CUP # | INTERVAL days | CARB-ONATE CARBON % | ORGANIC CARBON % | TOTAL CARBON % | TOTAL NITROGEN % | CN RATIO atomic | BIO-GENIC SILICA % | $\delta^{13}C_{organic}$ vs PDB ppt | $\delta^{15}N_{total}$ vs air ppt |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GSCM4 | A | 3/4/96 0:00 | 3/14/96 12:00 | 1 | 10.50 | 0.097 | 4.261 | 4.358 | 0.590 | 8.42 | 8.000 | -21.78 | 7.44 |
| GSCM4 | A | 3/14/96 12:00 | 3/25/96 0:00 | 2 | 10.50 | 0.019 | 4.970 | 4.989 | 0.667 | 8.69 | 20.430 | -20.73 | 7.16 |
| GSCM4 | A | 3/25/96 0:00 | 4/4/96 12:00 | 3 | 10.50 | 0.142 | 5.312 | 5.454 | 0.683 | 9.08 | 28.056 | -19.48 | 6.74 |
| GSCM4 | A | 4/4/96 12:00 | 4/15/96 0:00 | 4 | 10.50 | 0.090 | 8.682 | 8.772 | 1.116 | 9.07 | 11.149 | -20.56 | 8.37 |
| GSCM4 | A | 4/15/96 0:00 | 4/25/96 12:00 | 5 | 10.50 | 0.116 | 7.144 | 7.260 | 0.978 | 8.52 | 7.464 | -20.48 | 8.04 |
| GSCM4 | A | 4/25/96 12:00 | 5/6/96 0:00 | 6 | 10.50 | 0.062 | 3.875 | 3.937 | 0.565 | 8.00 | 5.057 | -21.61 | 8.17 |
| GSCM4 | A | 5/6/96 0:00 | 5/16/96 12:00 | 7 | 10.50 | 0.038 | 5.566 | 5.604 | 0.774 | 8.39 | 17.094 | -20.01 | 7.68 |
| GSCM4 | A | 5/16/96 12:00 | 5/27/96 0:00 | 8 | 10.50 | 0.024 | 7.920 | 7.944 | 0.974 | 9.48 | 18.114 | -20.13 | 7.03 |
| GSCM4 | A | 5/27/96 0:00 | 6/6/96 12:00 | 9 | 10.50 | 0.072 | 9.559 | 9.631 | 1.338 | 8.33 | 11.251 | -20.75 | 7.92 |
| GSCM4 | A | 6/6/96 12:00 | 6/17/96 0:00 | 10 | 10.50 | 0.050 | 6.161 | 6.211 | 0.803 | 8.95 | 16.092 | -20.28 | 7.44 |
| GSCM4 | B | 6/21/96 0:00 | 6/29/96 0:00 | 1 | 8.00 | 0.071 | 9.617 | 9.688 | 1.028 | 10.91 | 6.333 | -21.43 | 7.29 |
| GSCM4 | B | 6/29/96 0:00 | 7/7/96 0:00 | 2 | 8.00 | 0.076 | 9.241 | 9.317 | 0.998 | 10.79 | 6.458 | -21.47 | 6.91 |
| GSCM4 | B | 7/7/96 0:00 | 7/15/96 0:00 | 3 | 8.00 | 0.430 | 7.574 | 8.004 | 0.963 | 9.17 | 6.047 | -21.08 | 7.84 |
| GSCM4 | B | 7/15/96 0:00 | 7/23/96 0:00 | 4 | 8.00 | 0.112 | 12.715 | 12.827 | 1.252 | 11.84 | 3.925 | -21.59 | 7.35 |
| GSCM4 | B | 7/23/96 0:00 | 7/31/96 0:00 | 5 | 8.00 | 0.041 | 19.068 | 19.109 | 1.486 | 14.97 | 8.892 | -22.22 | 7.12 |
| GSCM4 | B | 7/31/96 0:00 | 8/8/96 0:00 | 6 | 8.00 | 0.118 | 9.333 | 9.451 | 0.973 | 11.19 | 16.822 | -21.10 | 6.82 |
| GSCM4 | B | 8/8/96 0:00 | 8/16/96 0:00 | 7 | 8.00 | 0.131 | 11.119 | 11.250 | 1.182 | 10.97 | 15.236 | -21.53 | 7.14 |
| GSCM4 | B | 8/16/96 0:00 | 8/24/96 0:00 | 8 | 8.00 | 0.076 | 13.439 | 13.515 | 1.446 | 10.84 | 11.101 | -22.02 | 8.04 |
| GSCM4 | B | 8/24/96 0:00 | 9/1/96 0:00 | 9 | 8.00 | 0.093 | 16.981 | 17.074 | 1.826 | 10.85 | 7.275 | -21.93 | 7.30 |
| GSCM4 | B | 9/1/96 0:00 | 9/9/96 0:00 | 10 | 8.00 | 0.046 | 12.794 | 12.840 | 1.589 | 9.39 | 8.406 | -21.48 | 7.68 |
| GSCM4 | C | 9/13/96 0:00 | 9/28/96 18:00 | 1 | 15.75 | 0.250 | 13.036 | 13.286 | 1.237 | 12.29 | 7.894 | -22.51 | 7.67 |
| GSCM4 | C | 9/28/96 18:00 | 10/14/96 12:00 | 2 | 15.75 | 0.174 | 9.693 | 9.867 | 1.078 | 10.49 | 9.112 | -22.56 | 7.31 |
| GSCM4 | C | 10/14/96 12:00 | 10/30/96 6:00 | 3 | 15.75 | 0.201 | 7.497 | 7.698 | 0.919 | 9.52 | 6.197 | -22.48 | 7.99 |
| GSCM4 | C | 10/30/96 6:00 | 11/15/96 0:00 | 4 | 15.75 | 0.094 | 8.318 | 8.412 | 0.884 | 10.98 | 5.894 | -22.57 | 8.38 |
| GSCM4 | C | 11/15/96 0:00 | 11/30/96 18:00 | 5 | 15.75 | 0.089 | 11.804 | 11.893 | 1.222 | 11.27 | 5.997 | -22.67 | 8.26 |
| GSCM4 | C | 11/30/96 18:00 | 12/16/96 12:00 | 6 | 15.75 | 0.109 | 5.847 | 5.956 | 0.690 | 9.88 | 5.161 | -22.48 | 8.55 |
| GSCM4 | C | 12/16/96 12:00 | 1/1/97 6:00 | 7 | 15.75 | 0.101 | 7.128 | 7.229 | 0.722 | 11.52 | 5.534 | -22.86 | 8.12 |
| GSCM4 | C | 1/1/97 6:00 | 1/17/97 0:00 | 8 | 15.75 | 0.097 | 4.189 | 4.286 | 0.462 | 10.56 | 5.296 | -22.33 | 7.38 |
| GSCM4 | C | 1/17/97 0:00 | 2/1/97 18:00 | 9 | 15.75 | 0.104 | 5.280 | 5.384 | 0.547 | 11.26 | 5.697 | -22.84 | 7.41 |
| GSCM4 | C | 2/1/97 18:00 | 2/17/97 12:00 | 10 | 15.75 | 0.068 | 4.310 | 4.378 | 0.523 | 9.62 | 5.181 | -22.22 | 8.60 |
| GSCM4 | D | 2/21/97 12:00 | 3/2/97 21:00 | 1 | 9.38 | 0.063 | 7.910 | 7.973 | 1.025 | 9.00 | 5.801 | -21.98 | |
| GSCM4 | D | 3/2/97 21:00 | 3/12/97 6:00 | 2 | 9.38 | 0.051 | 9.390 | 9.441 | 1.262 | 8.67 | 13.057 | | |
| GSCM4 | D | 3/12/97 6:00 | 3/21/97 15:00 | 3 | 9.38 | 0.049 | 7.074 | 7.123 | 1.021 | 8.08 | 8.201 | -21.54 | |
| GSCM4 | D | 3/21/97 15:00 | 3/31/97 0:00 | 4 | 9.38 | 0.050 | 5.466 | 5.516 | 0.783 | 8.15 | 8.250 | -22.20 | 7.64 |

## Appendix 1. Percent composition, CN ratio, and CN isotopes.

| STATION | | DATE START mm/dd/yy | DATE END mm/dd/yy | CUP # | INTERVAL days | CARB-ONATE CARBON % | ORGANIC CARBON % | TOTAL CARBON % | TOTAL NITROGEN % | CN RATIO atomic | BIO-GENIC SILICA % | $\delta^{13}C_{organic}$ vs PDB ppt | $\delta^{15}N_{total}$ vs air ppt |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GSCM4 | D | 3/31/97 0:00 | 4/9/97 9:00 | 5 | 9.38 | 0.114 | 5.014 | 5.128 | 0.710 | 8.24 | 8.986 | -22.11 | 7.62 |
| GSCM4 | D | 4/9/97 9:00 | 4/18/97 18:00 | 6 | 9.38 | 0.002 | 7.497 | 7.499 | 1.083 | 8.08 | 16.211 | -21.49 | 7.39 |
| GSCM4 | D | 4/18/97 18:00 | 4/28/97 3:00 | 7 | 9.38 | 0.001 | 6.774 | 6.775 | 0.900 | 8.78 | 19.437 | -20.13 | 6.88 |
| GSCM4 | D | 4/28/97 3:00 | 5/7/97 12:00 | 8 | 9.38 | 0.034 | 7.523 | 7.557 | 1.091 | 8.04 | 14.588 | -20.18 | 7.26 |
| GSCM4 | D | 5/7/97 12:00 | 5/16/97 21:00 | 9 | 9.38 | 0.015 | 6.706 | 6.721 | 1.004 | 7.79 | 13.690 | -19.77 | 7.97 |
| GSCM4 | D | 5/16/97 21:00 | 5/26/97 6:00 | 10 | 9.38 | 0.086 | 12.922 | 13.008 | 2.260 | 6.67 | 12.066 | -19.58 | 8.87 |
| GSCM4 | E | 5/31/97 0:00 | 6/12/97 12:00 | 1 | 12.50 | 0.081 | 6.598 | 6.679 | 0.897 | 8.57 | 10.705 | -21.10 | 7.06 |
| GSCM4 | E | 6/12/97 12:00 | 6/25/97 0:00 | 2 | 12.50 | 0.326 | 8.395 | 8.721 | 1.247 | 7.85 | 5.805 | -20.07 | 8.02 |
| GSCM4 | E | 6/25/97 0:00 | 7/7/97 12:00 | 3 | 12.50 | 0.008 | 4.252 | 4.260 | 0.575 | 8.62 | 4.698 | -20.73 | 7.16 |
| GSCM4 | E | 7/7/97 12:00 | 7/20/97 0:00 | 4 | 12.50 | 0.062 | 2.876 | 2.938 | 0.375 | 8.94 | 4.195 | -21.58 | 6.24 |
| GSCM4 | E | 7/20/97 0:00 | 8/1/97 12:00 | 5 | 12.50 | 0.020 | 8.049 | 8.069 | 1.014 | 9.26 | 5.331 | -20.78 | 6.87 |
| GSCM4 | E | 8/1/97 12:00 | 8/14/97 0:00 | 6 | 12.50 | 0.116 | 4.616 | 4.732 | 0.562 | 9.57 | 4.364 | -21.04 | 7.14 |
| GSCM4 | E | 8/14/97 0:00 | 8/26/97 12:00 | 7 | 12.50 | 0.072 | 9.429 | 9.501 | 1.127 | 9.75 | 8.147 | -21.28 | 6.15 |
| GSCM4 | E | 8/26/97 12:00 | 9/8/97 0:00 | 8 | 12.50 | 0.057 | 9.031 | 9.088 | 1.050 | 10.03 | 6.240 | -21.11 | 6.29 |
| GSCM4 | E | 9/8/97 0:00 | 9/20/97 12:00 | 9 | 12.50 | 0.090 | 10.203 | 10.293 | 1.217 | 9.78 | 5.116 | -20.71 | 6.63 |
| GSCM4 | E | 9/20/97 12:00 | 10/3/97 0:00 | 10 | 12.50 | 0.047 | 10.437 | 10.484 | 1.281 | 9.50 | 5.151 | -21.74 | 6.71 |
| GSCM4 | F | 10/6/97 0:00 | 10/18/97 18:00 | 1 | 12.75 | 0.033 | 5.171 | 5.204 | 0.739 | 8.17 | 4.015 | -21.14 | 7.02 |
| GSCM4 | F | 10/18/97 18:00 | 10/31/97 12:00 | 2 | 12.75 | 0.066 | 4.921 | 4.987 | 0.666 | 8.62 | 5.161 | -21.22 | 7.13 |
| GSCM4 | F | 10/31/97 12:00 | 11/13/97 6:00 | 3 | 12.75 | 0.070 | 3.695 | 3.765 | 0.470 | 9.18 | 4.707 | -22.07 | 6.76 |
| GSCM4 | F | 11/13/97 6:00 | 11/26/97 0:00 | 4 | 12.75 | 0.054 | 3.480 | 3.534 | 0.428 | 9.49 | 5.437 | -22.05 | 6.72 |
| GSCM4 | F | 11/26/97 0:00 | 12/8/97 18:00 | 5 | 12.75 | 0.041 | 4.523 | 4.564 | 0.613 | 8.60 | 4.772 | -21.61 | 8.21 |
| GSCM4 | F | 12/8/97 18:00 | 12/21/97 12:00 | 6 | 12.75 | 0.051 | 3.254 | 3.305 | 0.421 | 9.01 | 4.991 | -22.18 | 6.93 |
| GSCM4 | F | 12/21/97 12:00 | 1/3/98 6:00 | 7 | 12.75 | 0.070 | 4.785 | 4.855 | 0.724 | 7.71 | 4.267 | -21.45 | 8.50 |
| GSCM4 | F | 1/3/98 6:00 | 1/16/98 0:00 | 8 | 12.75 | 0.081 | 4.285 | 4.366 | 0.557 | 8.97 | 5.058 | -21.95 | 7.60 |
| GSCM4 | F | 1/16/98 0:00 | 1/28/98 18:00 | 9 | 12.75 | 0.100 | 4.462 | 4.562 | 0.638 | 8.16 | 4.669 | -21.79 | 8.95 |
| GSCM4 | F | 1/28/98 18:00 | 2/10/98 12:00 | 10 | 12.75 | 0.027 | 5.408 | 5.435 | 0.744 | 8.48 | 5.009 | -21.17 | 9.18 |

**Appendix 1. Percent composition, CN ratio, and CN isotopes.**

| STATION | | DATE START mm/dd/yy | DATE END mm/dd/yy | CUP # | INTERVAL days | CARB-ONATE CARBON % | ORGANIC CARBON % | TOTAL CARBON % | TOTAL NITROGEN % | CN RATIO atomic | BIO-GENIC SILICA % | $\delta^{13}C_{organic}$ vs PDB ppt | $\delta^{15}N_{total}$ vs air ppt |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GSCM3 | A | 3/4/96 0:00 | 3/14/96 12:00 | 1 | 10.50 | 0.111 | 2.778 | 2.889 | 0.333 | 9.74 | 7.038 | -22.26 | 5.98 |
| GSCM3 | A | 3/14/96 12:00 | 3/25/96 0:00 | 2 | 10.50 | 0.070 | 1.792 | 1.862 | 0.253 | 8.26 | 8.940 | -21.42 | 5.15 |
| GSCM3 | A | 3/25/96 0:00 | 4/4/96 12:00 | 3 | 10.50 | 0.074 | 6.266 | 6.340 | 0.747 | 9.78 | 11.570 | -20.09 | 6.08 |
| GSCM3 | A | 4/4/96 12:00 | 4/15/96 0:00 | 4 | 10.50 | 0.058 | 1.899 | 1.957 | 0.237 | 9.36 | 7.424 | -20.90 | 6.06 |
| GSCM3 | A | 4/15/96 0:00 | 4/25/96 12:00 | 5 | 10.50 | 0.083 | 1.247 | 1.330 | 0.155 | 9.37 | 4.067 | -21.81 | 5.91 |
| GSCM3 | A | 4/25/96 12:00 | 5/6/96 0:00 | 6 | 10.50 | 0.080 | 1.432 | 1.512 | 0.182 | 9.19 | 2.080 | -23.30 | 4.75 |
| GSCM3 | A | 5/6/96 0:00 | 5/16/96 12:00 | 7 | 10.50 | 0.124 | 0.708 | 0.832 | 0.089 | 9.30 | 2.398 | -23.34 | 4.55 |
| GSCM3 | A | 5/16/96 12:00 | 5/27/96 0:00 | 8 | 10.50 | 0.125 | 0.952 | 1.077 | 0.175 | 6.34 | 1.949 | -23.42 | 3.81 |
| GSCM3 | A | 5/27/96 0:00 | 6/6/96 12:00 | 9 | 10.50 | 0.127 | 0.990 | 1.117 | 0.109 | 10.54 | 1.916 | -23.54 | 3.93 |
| GSCM3 | A | 6/6/96 12:00 | 6/17/96 0:00 | 10 | 10.50 | 0.145 | 1.709 | 1.854 | 0.247 | 8.07 | 3.822 | -22.28 | 4.98 |
| GSCM3 | B | 6/21/96 0:00 | 6/29/96 0:00 | 1 | 8.00 | 0.150 | 1.553 | 1.703 | 0.171 | 10.57 | 2.192 | -22.03 | 5.63 |
| GSCM3 | B | 6/29/96 0:00 | 7/7/96 0:00 | 2 | 8.00 | 0.111 | 2.599 | 2.710 | 0.338 | 8.96 | 3.480 | -21.47 | 6.32 |
| GSCM3 | B | 7/7/96 0:00 | 7/15/96 0:00 | 3 | 8.00 | 0.219 | 3.028 | 3.247 | 0.370 | 9.55 | 3.495 | -21.49 | 6.29 |
| GSCM3 | B | 7/15/96 0:00 | 7/23/96 0:00 | 4 | 8.00 | 0.104 | 1.906 | 2.010 | 0.255 | 8.71 | 2.797 | -21.75 | 5.87 |
| GSCM3 | B | 7/23/96 0:00 | 7/31/96 0:00 | 5 | 8.00 | 0.139 | 3.790 | 3.929 | 0.522 | 8.47 | 3.368 | -21.38 | 6.70 |
| GSCM3 | B | 7/31/96 0:00 | 8/8/96 0:00 | 6 | 8.00 | 0.085 | 3.070 | 3.155 | 0.405 | 8.85 | 5.396 | -21.33 | 6.64 |
| GSCM3 | B | 8/8/96 0:00 | 8/16/96 0:00 | 7 | 8.00 | 0.175 | 2.927 | 3.102 | 0.440 | 7.75 | 3.726 | -21.38 | 6.85 |
| GSCM3 | B | 8/16/96 0:00 | 8/24/96 0:00 | 8 | 26.38 | 0.098 | 5.027 | 5.125 | 0.558 | 10.51 | 5.970 | -21.54 | 7.10 |
| GSCM3 | C | 9/13/96 0:00 | 9/28/96 18:00 | 1 | 15.75 | 0.160 | 6.626 | 6.786 | 0.723 | 10.68 | 6.811 | -21.95 | 7.24 |
| GSCM3 | C | 9/28/96 18:00 | 10/14/96 12:00 | 2 | 15.75 | 0.117 | 5.968 | 6.085 | 0.704 | 9.89 | 7.631 | -22.22 | 7.68 |
| GSCM3 | C | 10/14/96 12:00 | 10/30/96 6:00 | 3 | 15.75 | 0.155 | 3.100 | 3.255 | 0.365 | 9.91 | 3.905 | -22.43 | 7.17 |
| GSCM3 | C | 10/30/96 6:00 | 11/15/96 0:00 | 4 | 15.75 | 0.139 | 2.259 | 2.398 | 0.261 | 10.07 | 3.426 | -22.95 | 6.30 |
| GSCM3 | C | 11/15/96 0:00 | 11/30/96 18:00 | 5 | 15.75 | 0.213 | 1.816 | 2.029 | 0.207 | 10.21 | 2.330 | -23.54 | 6.06 |
| GSCM3 | C | 11/30/96 18:00 | 12/16/96 12:00 | 6 | 15.75 | 0.195 | 1.765 | 1.960 | 0.191 | 10.75 | 2.669 | -23.24 | 5.34 |
| GSCM3 | C | 12/16/96 12:00 | 1/1/97 6:00 | 7 | 15.75 | 0.218 | 2.377 | 2.595 | 0.266 | 10.43 | 3.965 | -22.89 | 6.77 |
| GSCM3 | C | 1/1/97 6:00 | 1/17/97 0:00 | 8 | 15.75 | 0.190 | 1.726 | 1.916 | 0.186 | 10.83 | 2.615 | -23.40 | 5.57 |
| GSCM3 | C | 1/17/97 0:00 | 2/1/97 18:00 | 9 | 15.75 | 0.171 | 1.845 | 2.016 | 0.197 | 10.94 | 2.866 | -23.32 | 4.99 |
| GSCM3 | C | 2/1/97 18:00 | 2/17/97 12:00 | 10 | 15.75 | 0.137 | 1.492 | 1.629 | 0.146 | 11.96 | 1.781 | -24.17 | 5.02 |
| GSCM3 | D | 2/21/97 12:00 | 3/2/97 21:00 | 1 | 9.38 | 0.088 | 3.525 | 3.613 | 0.444 | 9.26 | 4.264 | -22.50 | 7.65 |
| GSCM3 | D | 3/2/97 21:00 | 3/12/97 6:00 | 2 | 9.38 | 0.139 | 1.920 | 2.059 | 0.214 | 10.49 | 2.663 | -23.50 | 5.81 |
| GSCM3 | D | 3/12/97 6:00 | 3/21/97 15:00 | 3 | 9.38 | 0.097 | 2.453 | 2.550 | 0.293 | 9.77 | 4.120 | -22.78 | 5.95 |
| GSCM3 | D | 3/21/97 15:00 | 3/31/97 0:00 | 4 | 9.38 | 0.057 | 2.426 | 2.483 | 0.287 | 9.85 | 5.845 | -22.78 | 5.84 |
| GSCM3 | D | 3/31/97 0:00 | 4/9/97 9:00 | 5 | 9.38 | 0.126 | 1.866 | 1.992 | 0.228 | 9.54 | 3.704 | -22.94 | 5.51 |
| GSCM3 | D | 4/9/97 9:00 | 4/18/97 18:00 | 6 | 9.38 | 0.075 | 2.421 | 2.496 | 0.325 | 8.69 | 6.554 | -21.45 | 6.09 |

## Appendix 1. Percent composition, CN ratio, and CN isotopes.

| STATION | | DATE START mm/dd/yy | DATE END mm/dd/yy | CUP # | INTERVAL days | CARB-ONATE CARBON % | ORGANIC CARBON % | TOTAL CARBON % | TOTAL NITROGEN % | CN RATIO atomic | BIO-GENIC SILICA % | $\delta^{13}C_{organic}$ vs PDB ppt | $\delta^{15}N_{total}$ vs air ppt |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GSCM3 | D | 4/18/97 18:00 | 4/28/97 3:00 | 7 | 9.38 | 0.055 | 3.959 | 4.014 | 0.622 | 7.42 | 11.096 | -20.50 | 7.19 |
| GSCM3 | D | 4/28/97 3:00 | 5/7/97 12:00 | 8 | 9.38 | 0.096 | 1.319 | 1.415 | 0.161 | 9.55 | 3.096 | -22.86 | 4.56 |
| GSCM3 | D | 5/7/97 12:00 | 5/16/97 21:00 | 9 | 9.38 | 0.084 | 1.330 | 1.414 | 0.165 | 9.42 | 4.021 | -22.32 | 4.98 |
| GSCM3 | D | 5/16/97 21:00 | 5/26/97 6:00 | 10 | 9.38 | 0.200 | 0.882 | 1.082 | 0.104 | 9.91 | 1.579 | -23.72 | 3.54 |
| GSCM3 | E | 5/31/97 0:00 | 6/12/97 12:00 | 1 | 12.50 | 0.063 | 1.033 | 1.096 | 0.120 | 10.00 | 2.655 | -22.53 | 5.10 |
| GSCM3 | E | 6/12/97 12:00 | 6/25/97 0:00 | 2 | 12.50 | 0.082 | 1.070 | 1.152 | 0.147 | 8.49 | 2.036 | -22.70 | 5.68 |
| GSCM3 | E | 6/25/97 0:00 | 7/7/97 12:00 | 3 | 12.50 | 0.131 | 1.263 | 1.394 | 0.158 | 9.32 | 3.426 | -22.23 | 5.69 |
| GSCM3 | E | 7/7/97 12:00 | 7/20/97 0:00 | 4 | 12.50 | 0.082 | 1.707 | 1.789 | 0.206 | 9.69 | 3.454 | -21.99 | 6.29 |
| GSCM3 | E | 7/20/97 0:00 | 8/1/97 12:00 | 5 | 12.50 | 0.183 | 0.934 | 1.117 | 0.118 | 9.22 | 1.859 | -22.69 | 5.66 |
| GSCM3 | E | 8/1/97 12:00 | 8/14/97 0:00 | 6 | 12.50 | 0.128 | 2.825 | 2.953 | 0.346 | 9.52 | 2.760 | -21.54 | 6.89 |
| GSCM3 | E | 8/14/97 0:00 | 8/26/97 12:00 | 7 | 12.50 | 0.114 | 3.275 | 3.389 | 0.376 | 10.15 | 4.516 | -21.45 | 5.72 |
| GSCM3 | E | 8/26/97 12:00 | 9/8/97 0:00 | 8 | 12.50 | 0.104 | 2.441 | 2.545 | 0.272 | 10.45 | 3.100 | -21.77 | 5.98 |
| GSCM3 | E | 9/8/97 0:00 | 9/20/97 12:00 | 9 | 12.50 | 0.103 | 3.489 | 3.592 | 0.443 | 9.18 | 3.530 | -21.78 | 7.79 |
| GSCM3 | E | 9/20/97 12:00 | 10/3/97 0:00 | 10 | 12.50 | 0.106 | 3.060 | 3.166 | 0.358 | 9.97 | 3.937 | -22.16 | 5.33 |
| GSCM3 | F | 10/6/97 0:00 | 10/18/97 18:00 | 1 | 12.75 | 0.101 | 1.662 | 1.763 | 0.187 | 10.36 | 1.991 | -23.16 | 5.81 |
| GSCM3 | F | 10/18/97 18:00 | 10/31/97 12:00 | 2 | 12.75 | 0.180 | 1.532 | 1.712 | 0.199 | 8.97 | 2.068 | -22.47 | 6.74 |
| GSCM3 | F | 10/31/97 12:00 | 11/13/97 6:00 | 3 | 12.75 | 0.095 | 2.606 | 2.701 | 0.315 | 9.64 | 4.357 | -22.00 | 6.72 |
| GSCM3 | F | 11/13/97 6:00 | 11/26/97 0:00 | 4 | 12.75 | 0.114 | 1.405 | 1.519 | 0.173 | 9.47 | 2.255 | -23.39 | 4.65 |
| GSCM3 | F | 11/26/97 0:00 | 12/8/97 18:00 | 5 | 12.75 | 0.083 | 2.304 | 2.387 | 0.297 | 9.05 | 3.671 | -22.07 | 6.65 |
| GSCM3 | F | 12/8/97 18:00 | 12/21/97 12:00 | 6 | 12.75 | 0.149 | 1.598 | 1.747 | 0.166 | 11.24 | 2.537 | -22.63 | 4.69 |
| GSCM3 | F | 12/21/97 12:00 | 1/3/98 6:00 | 7 | 12.75 | 0.098 | 1.705 | 1.803 | 0.184 | 10.81 | 2.796 | -22.33 | 5.18 |
| GSCM3 | F | 1/3/98 6:00 | 1/16/98 0:00 | 8 | 12.75 | 0.135 | 1.508 | 1.643 | 0.161 | 10.91 | 2.409 | -22.56 | 5.72 |
| GSCM3 | F | 1/16/98 0:00 | 1/28/98 18:00 | 9 | 12.75 | 0.078 | 1.773 | 1.851 | 0.207 | 10.01 | 2.186 | -22.59 | 5.85 |
| GSCM3 | F | 1/28/98 18:00 | 2/10/98 12:00 | 10 | 12.75 | 0.124 | 1.459 | 1.583 | 0.148 | 11.52 | 2.166 | -22.91 | 4.48 |

## Appendix 1. Percent composition, CN ratio, and CN isotopes.

| STATION | | DATE START mm/dd/yy | DATE END mm/dd/yy | CUP # | INTERVAL days | CARB-ONATE CARBON % | ORGANIC CARBON % | TOTAL CARBON % | TOTAL NITROGEN % | CN RATIO atomic | BIO-GENIC SILICA % | $\delta^{13}C_{organic}$ vs PDB ppt | $\delta^{15}N_{total}$ vs air ppt |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GSCM2 | A | 3/4/96 0:00 | 3/14/96 12:00 | 1 | 10.50 | 0.049 | 2.042 | 2.091 | 0.223 | 10.69 | 4.636 | -22.53 | 5.51 |
| GSCM2 | A | 3/14/96 12:00 | 3/25/96 0:00 | 2 | 10.50 | 0.020 | 1.864 | 1.884 | 0.229 | 9.49 | 5.988 | -21.94 | 5.22 |
| GSCM2 | A | 3/25/96 0:00 | 4/4/96 12:00 | 3 | 10.50 | 0.077 | 1.454 | 1.531 | 0.166 | 10.23 | 4.492 | -22.23 | 5.90 |
| GSCM2 | A | 4/4/96 12:00 | 4/15/96 0:00 | 4 | 10.50 | 0.048 | 1.603 | 1.651 | 0.200 | 9.34 | 4.564 | -22.21 | 5.47 |
| GSCM2 | A | 4/15/96 0:00 | 4/25/96 12:00 | 5 | 10.50 | 0.083 | 2.052 | 2.135 | 0.214 | 11.17 | 4.903 | -22.14 | 5.76 |
| GSCM2 | A | 4/25/96 12:00 | 5/6/96 0:00 | 6 | 10.50 | 0.087 | 1.821 | 1.908 | 0.219 | 9.69 | 4.266 | -22.15 | 5.74 |
| GSCM2 | A | 5/6/96 0:00 | 5/16/96 12:00 | 7 | 10.50 | 0.105 | 1.517 | 1.622 | 0.176 | 10.06 | 4.318 | -22.31 | 5.71 |
| GSCM2 | A | 5/16/96 12:00 | 5/27/96 0:00 | 8 | 10.50 | 0.054 | 1.788 | 1.842 | 0.222 | 9.39 | 4.022 | -22.23 | 5.90 |
| GSCM2 | A | 5/27/96 0:00 | 6/6/96 12:00 | 9 | 10.50 | 0.113 | 1.653 | 1.766 | 0.227 | 8.48 | 4.201 | -21.85 | 6.21 |
| GSCM2 | A | 6/6/96 12:00 | 6/17/96 0:00 | 10 | 10.50 | 0.049 | 1.554 | 1.603 | 0.209 | 8.67 | 5.261 | -21.60 | 5.37 |
| GSCM2 | B | 6/21/96 0:00 | 6/29/96 0:00 | 1 | 8.00 | 0.151 | 1.376 | 1.527 | 0.170 | 9.45 | 3.082 | -21.97 | 5.59 |
| GSCM2 | B | 6/29/96 0:00 | 7/7/96 0:00 | 2 | 8.00 | 0.102 | 1.688 | 1.790 | 0.205 | 9.59 | 5.241 | -21.82 | 5.31 |
| GSCM2 | B | 7/7/96 0:00 | 7/15/96 0:00 | 3 | 8.00 | 0.098 | 1.834 | 1.932 | 0.258 | 8.28 | 3.861 | -21.53 | 5.59 |
| GSCM2 | B | 7/15/96 0:00 | 7/23/96 0:00 | 4 | 8.00 | 0.084 | 1.372 | 1.456 | 0.200 | 8.01 | 3.487 | -21.72 | 5.66 |
| GSCM2 | B | 7/23/96 0:00 | 7/31/96 0:00 | 5 | 8.00 | 0.086 | 1.437 | 1.523 | 0.139 | 12.05 | 2.615 | -21.72 | 5.61 |
| GSCM2 | B | 7/31/96 0:00 | 8/8/96 0:00 | 6 | 8.00 | 0.930 | 0.969 | 1.899 | 0.236 | 4.79 | 4.455 | -21.49 | 5.14 |
| GSCM2 | B | 8/8/96 0:00 | 8/16/96 0:00 | 7 | 8.00 | 0.138 | 2.510 | 2.648 | 0.345 | 8.49 | 5.641 | -21.11 | 5.68 |
| GSCM2 | B | 8/16/96 0:00 | 8/24/96 0:00 | 8 | 8.00 | 0.115 | 1.763 | 1.878 | 0.242 | 8.48 | 4.458 | -21.39 | 5.80 |
| GSCM2 | B | 8/24/96 0:00 | 9/1/96 0:00 | 9 | 8.00 | 0.141 | 2.306 | 2.447 | 0.302 | 8.90 | 4.767 | -21.40 | 6.40 |
| GSCM2 | B | 9/1/96 0:00 | 9/9/96 0:00 | 10 | 8.00 | 0.089 | 4.018 | 4.107 | 0.507 | 9.24 | | | |
| GSCM2 | C | 9/13/96 0:00 | 9/28/96 18:00 | 1 | 15.75 | 0.123 | 2.092 | 2.215 | 0.244 | 10.00 | 4.173 | -21.67 | 6.19 |
| GSCM2 | C | 9/28/96 18:00 | 10/14/96 12:00 | 2 | 15.75 | 0.117 | 1.634 | 1.751 | 0.194 | 9.84 | 4.765 | -21.85 | 6.35 |
| GSCM2 | C | 10/14/96 12:00 | 10/30/96 6:00 | 3 | 15.75 | 0.109 | 1.917 | 2.026 | 0.223 | 10.05 | 5.275 | -21.67 | 6.49 |
| GSCM2 | C | 10/30/96 6:00 | 11/15/96 0:00 | 4 | 15.75 | 0.129 | 1.577 | 1.706 | 0.188 | 9.77 | 3.638 | -21.74 | 6.14 |
| GSCM2 | C | 11/15/96 0:00 | 11/30/96 18:00 | 5 | 15.75 | 0.119 | 1.799 | 1.918 | 0.210 | 9.97 | 4.248 | -21.81 | 6.56 |
| GSCM2 | C | 11/30/96 18:00 | 12/16/96 12:00 | 6 | 15.75 | 0.098 | 1.873 | 1.971 | 0.214 | 10.23 | 2.987 | -21.97 | 5.93 |
| GSCM2 | C | 12/16/96 12:00 | 1/1/97 6:00 | 7 | 15.75 | 0.106 | 1.952 | 2.058 | 0.228 | 10.00 | 4.744 | -21.75 | 5.53 |
| GSCM2 | C | 1/1/97 6:00 | 1/17/97 0:00 | 8 | 15.75 | 0.125 | 1.999 | 2.124 | 0.223 | 10.44 | 3.978 | -22.04 | 5.95 |
| GSCM2 | C | 1/17/97 0:00 | 2/1/97 18:00 | 9 | 15.75 | 0.081 | 2.380 | 2.461 | 0.264 | 10.51 | 4.550 | -21.99 | 5.31 |
| GSCM2 | C | 2/1/97 18:00 | 2/17/97 12:00 | 10 | 15.75 | 0.090 | 2.239 | 2.329 | 0.246 | 10.62 | 4.353 | -22.27 | 5.89 |
| GSCM2 | D | 2/21/97 12:00 | 3/2/97 21:00 | 1 | 9.38 | 0.122 | 2.220 | 2.342 | 0.249 | 10.42 | 5.665 | -22.28 | 5.75 |
| GSCM2 | D | 3/2/97 21:00 | 3/12/97 6:00 | 2 | 9.38 | 0.133 | 1.987 | 2.120 | 0.231 | 10.05 | 3.807 | -22.33 | 5.49 |
| GSCM2 | D | 3/12/97 6:00 | 3/21/97 15:00 | 3 | 9.38 | 0.126 | 2.345 | 2.471 | 0.273 | 10.04 | 5.084 | -22.20 | 5.62 |
| GSCM2 | D | 3/21/97 15:00 | 3/31/97 0:00 | 4 | 9.38 | 0.096 | 2.421 | 2.517 | 0.281 | 10.06 | 5.103 | -22.28 | 5.32 |

## Appendix 1. Percent composition, CN ratio, and CN isotopes.

| STATION | | DATE START mm/dd/yy | DATE END mm/dd/yy | CUP # | INTERVAL days | CARB-ONATE CARBON % | ORGANIC CARBON % | TOTAL CARBON % | TOTAL NITROGEN % | CN RATIO atomic | BIO-GENIC SILICA % | $\delta^{13}C_{organic}$ vs PDB ppt | $\delta^{15}N_{total}$ vs air ppt |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GSCM2 | D | 3/31/97 0:00 | 4/9/97 9:00 | 5 | 9.38 | 0.120 | 2.072 | 2.192 | 0.234 | 10.31 | 4.561 | -22.23 | 5.47 |
| GSCM2 | D | 4/9/97 9:00 | 4/18/97 18:00 | 6 | 9.38 | 0.102 | 2.150 | 2.252 | 0.263 | 9.52 | 5.810 | -21.81 | 5.49 |
| GSCM2 | D | 4/18/97 18:00 | 4/28/97 3:00 | 7 | 9.38 | 0.118 | 1.713 | 1.831 | 0.208 | 9.62 | 4.525 | -21.75 | 5.29 |
| GSCM2 | D | 4/28/97 3:00 | 5/7/97 12:00 | 8 | 9.38 | 0.098 | 2.496 | 2.594 | 0.319 | 9.13 | 6.733 | -21.54 | 5.67 |
| GSCM2 | D | 5/7/97 12:00 | 5/16/97 21:00 | 9 | 9.38 | 0.106 | 2.172 | 2.278 | 0.270 | 9.39 | 6.373 | -21.77 | 5.27 |
| GSCM2 | D | 5/16/97 21:00 | 5/26/97 6:00 | 10 | 9.38 | 0.128 | 1.692 | 1.820 | 0.209 | 9.44 | 3.967 | -21.67 | 5.46 |
| GSCM2 | E | 5/31/97 0:00 | 6/12/97 12:00 | 1 | 12.50 | 0.139 | 1.635 | 1.774 | 0.221 | 8.61 | 8.153 | -21.87 | 5.55 |
| GSCM2 | E | 6/12/97 12:00 | 6/25/97 0:00 | 2 | 12.50 | 0.149 | 1.704 | 1.853 | 0.246 | 8.08 | 4.468 | -21.72 | 5.62 |
| GSCM2 | E | 6/25/97 0:00 | 7/7/97 12:00 | 3 | 12.50 | 0.135 | 1.696 | 1.831 | 0.219 | 9.05 | 5.606 | -21.93 | 5.95 |
| GSCM2 | E | 7/7/97 12:00 | 7/20/97 0:00 | 4 | 12.50 | 0.138 | 1.757 | 1.895 | 0.236 | 8.67 | 4.289 | -21.78 | 5.77 |
| GSCM2 | E | 7/20/97 0:00 | 8/1/97 12:00 | 5 | 12.50 | 0.143 | 1.524 | 1.667 | 0.197 | 9.04 | 4.958 | -21.93 | 5.84 |
| GSCM2 | E | 8/1/97 12:00 | 8/14/97 0:00 | 6 | 12.50 | 0.103 | 1.731 | 1.834 | 0.225 | 8.96 | 4.248 | -22.02 | 6.05 |
| GSCM2 | E | 8/14/97 0:00 | 8/26/97 12:00 | 7 | 12.50 | 0.140 | 1.768 | 1.908 | 0.237 | 8.69 | 4.510 | -21.99 | 6.40 |
| GSCM2 | E | 8/26/97 12:00 | 9/8/97 0:00 | 8 | 12.50 | 0.120 | 2.043 | 2.163 | 0.239 | 9.97 | 4.117 | -21.66 | 6.45 |
| GSCM2 | E | 9/8/97 0:00 | 9/20/97 12:00 | 9 | 12.50 | 0.166 | 1.688 | 1.854 | 0.203 | 9.70 | 4.643 | -21.82 | 6.37 |
| GSCM2 | E | 9/20/97 12:00 | 10/3/97 0:00 | 10 | 12.50 | 0.066 | 2.332 | 2.398 | 0.296 | 9.20 | 4.363 | -21.88 | 6.78 |
| GSCM2 | F | 10/6/97 0:00 | 10/18/97 18:00 | 1 | 12.75 | 0.083 | 2.054 | 2.137 | 0.246 | 9.73 | 3.884 | -21.95 | 6.55 |
| GSCM2 | F | 10/18/97 18:00 | 10/31/97 12:00 | 2 | 12.75 | 0.116 | 1.851 | 1.967 | 0.229 | 9.44 | 3.783 | -22.06 | 6.29 |
| GSCM2 | F | 10/31/97 12:00 | 11/13/97 6:00 | 3 | 12.75 | 0.104 | 1.829 | 1.933 | 0.221 | 9.63 | 3.804 | -21.96 | 6.27 |
| GSCM2 | F | 11/13/97 6:00 | 11/26/97 0:00 | 4 | 12.75 | 0.118 | 1.531 | 1.649 | 0.182 | 9.81 | 3.204 | -22.36 | 6.47 |
| GSCM2 | F | 11/26/97 0:00 | 12/8/97 18:00 | 5 | 12.75 | 0.098 | 1.825 | 1.923 | 0.224 | 9.49 | 3.910 | -22.24 | 6.14 |
| GSCM2 | F | 12/8/97 18:00 | 12/21/97 12:00 | 6 | 12.75 | 0.123 | 1.370 | 1.493 | 0.172 | 9.27 | 3.624 | -22.16 | 6.35 |
| GSCM2 | F | 12/21/97 12:00 | 1/3/98 6:00 | 7 | 12.75 | 0.092 | 1.603 | 1.695 | 0.191 | 9.78 | 3.187 | -22.19 | 6.07 |
| GSCM2 | F | 1/3/98 6:00 | 1/16/98 0:00 | 8 | 12.75 | 0.117 | 1.454 | 1.571 | 0.180 | 9.45 | 2.943 | -22.31 | 6.32 |
| GSCM2 | F | 1/16/98 0:00 | 1/28/98 18:00 | 9 | 12.75 | 0.113 | 1.712 | 1.825 | 0.213 | 9.36 | 3.588 | -21.98 | 6.73 |
| GSCM2 | F | 1/28/98 18:00 | 2/10/98 12:00 | 10 | 12.75 | 0.124 | 1.795 | 1.919 | 0.230 | 9.09 | 3.220 | -22.08 | 6.70 |

**Appendix 1. Percent composition, CN ratio, and CN isotopes.**

| STATION | DATE START mm/dd/yy | DATE END mm/dd/yy | CUP # | INTERVAL days | CARB-ONATE CARBON % | ORGANIC CARBON % | TOTAL CARBON % | TOTAL NITROGEN % | CN RATIO atomic | BIO-GENIC SILICA % | $\delta^{13}C_{organic}$ vs PDB ppt | $\delta^{15}N_{total}$ vs air ppt |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GSCM3-G-150 | 2/14/98 0:00 | 2/24/98 18:00 | 1 | 10.75 | 0.082 | 2.251 | 2.333 | 0.213 | 12.32 | 2.595 | -23.33 | 6.08 |
| GSCM3-G-150 | 2/24/98 18:00 | 3/7/98 12:00 | 2 | 10.75 | 0.077 | 2.145 | 2.222 | 0.227 | 11.01 | 3.511 | -22.85 | 5.68 |
| GSCM3-G-150 | 3/7/98 12:00 | 3/18/98 6:00 | 3 | 10.75 | 0.084 | 2.757 | 2.841 | 0.345 | 9.33 | 6.680 | -21.69 | 5.53 |
| GSCM3-G-150 | 3/18/98 6:00 | 3/29/98 0:00 | 4 | 10.75 | 0.061 | 3.398 | 3.459 | 0.468 | 8.47 | 10.194 | -20.38 | 5.78 |
| GSCM3-G-150 | 3/29/98 0:00 | 4/8/98 18:00 | 5 | 10.75 | 0.052 | 2.472 | 2.524 | 0.282 | 10.23 | 6.703 | -21.16 | 6.08 |
| GSCM3-G-150 | 4/8/98 18:00 | 4/19/98 12:00 | 6 | 10.75 | 0.090 | 3.402 | 3.492 | 0.393 | 10.09 | 7.369 | -20.85 | 6.09 |
| GSCM3-G-150 | 4/19/98 12:00 | 4/30/98 6:00 | 7 | 10.75 | 0.087 | 3.104 | 3.191 | 0.386 | 9.38 | 7.706 | -20.49 | 7.18 |
| GSCM3-G-150 | 4/30/98 6:00 | 5/11/98 0:00 | 8 | 10.75 | 0.060 | 1.896 | 1.956 | 0.230 | 9.60 | 4.956 | -21.57 | 6.55 |
| GSCM3-G-150 | 5/11/98 0:00 | 5/21/98 18:00 | 9 | 10.75 | 0.066 | 2.368 | 2.434 | 0.291 | 9.50 | 5.234 | -21.1 | 6.91 |
| GSCM3-G-150 | 5/21/98 18:00 | 5/31/1998 13:25 | 10 | 9.809 |  | 2.809 | 2.809 | 0.326 | 10.05 |  |  |  |
| GSCM3-H-150 | 6/2/98 0:00 | 6/14/98 6:00 | 1 | 12.25 | 0.177 | 2.370 | 2.547 | 0.284 | 9.72 | 6.212 | -20.39 | 6.78 |
| GSCM3-H-150 | 6/14/98 6:00 | 6/26/98 12:00 | 2 | 12.25 | 0.318 | 1.835 | 2.153 | 0.234 | 9.14 | 3.524 | -22.22 | 6.27 |
| GSCM3-H-150 | 6/26/98 12:00 | 7/8/98 18:00 | 3 | 12.25 | 0.243 | 2.303 | 2.546 | 0.311 | 8.65 | 3.160 | -23.09 | 6.27 |
| GSCM3-H-150 | 7/8/98 18:00 | 7/21/98 0:00 | 4 | 12.25 | 0.130 | 2.577 | 2.707 | 0.336 | 8.95 | 4.216 | -23.17 | 6.95 |
| GSCM3-H-150 | 7/21/98 0:00 | 8/2/98 6:00 | 5 | 12.25 | 0.144 | 3.148 | 3.292 | 0.430 | 8.53 | 3.842 | -22.96 | 6.82 |
| GSCM3-H-150 | 8/2/98 6:00 | 8/14/98 12:00 | 6 | 12.25 | 0.135 | 3.065 | 3.200 | 0.408 | 8.76 | 4.296 | -22.39 | 6.94 |
| GSCM3-H-150 | 8/14/98 12:00 | 8/26/98 18:00 | 7 | 12.25 | 0.330 | 4.892 | 5.222 | 0.691 | 8.25 | 6.822 | -22.06 | 7.37 |
| GSCM3-H-150 | 8/26/98 18:00 | 9/8/98 0:00 | 8 | 12.25 | 0.273 | 6.400 | 6.673 | 0.921 | 8.10 | 8.910 | -22.99 | 7.61 |
| GSCM3-H-150 | 9/8/98 0:00 | 9/20/98 6:00 | 9 | 12.25 | 0.324 | 5.179 | 5.503 | 0.741 | 8.15 | 8.512 | -23.15 | 8.09 |
| GSCM3-H-150 | 9/20/98 6:00 | 10/2/98 12:00 | 10 | 12.25 | 0.271 | 7.507 | 7.778 | 1.110 | 7.88 | 9.072 | -22.92 |  |
| GSCM3-I-150 | 10/4/98 0:00 | 10/14/98 18:00 | 1 | 10.750 | 0.298 | 4.079 | 4.4 | 0.5 | 8.82 | 4.672 | -22.900 | 6.00 |
| GSCM3-I-150 | 10/14/98 18:00 | 10/25/98 12:00 | 2 | 10.750 | 0.253 | 3.773 | 4.0 | 0.5 | 9.06 | 5.182 | -22.580 | 6.89 |
| GSCM3-I-150 | 10/25/98 12:00 | 11/5/98 6:00 | 3 | 10.750 | 0.150 | 4.267 | 4.4 | 0.6 | 8.58 | 7.523 | -22.120 | 7.75 |
| GSCM3-I-150 | 11/5/98 6:00 | 11/16/98 0:00 | 4 | 10.750 | 0.205 | 2.643 | 2.8 | 0.3 | 9.01 | 4.068 | -22.540 | 6.79 |
| GSCM3-I-150 | 11/16/98 0:00 | 11/26/98 18:00 | 5 | 10.750 | 0.122 | 2.100 | 2.2 | 0.2 | 10.51 | 3.223 | -23.110 | 5.62 |
| GSCM3-I-150 | 11/26/98 18:00 | 12/7/98 12:00 | 6 | 10.750 | 0.118 | 1.571 | 1.7 | 0.2 | 11.72 | 2.408 | -23.820 | 5.55 |
| GSCM3-I-150 | 12/7/98 12:00 | 12/18/98 6:00 | 7 | 10.750 | 0.099 | 1.757 | 1.9 | 0.2 | 11.35 | 2.435 | -23.500 | 6.39 |
| GSCM3-I-150 | 12/18/98 6:00 | 12/29/98 0:00 | 8 | 10.750 | 0.118 | 2.506 | 2.6 | 0.3 | 9.71 | 3.534 | -23.020 | 6.83 |
| GSCM3-I-150 | 12/29/98 0:00 | 1/8/99 18:00 | 9 | 10.750 | 0.064 | 1.938 | 2.0 | 0.2 | 10.77 | 2.963 | -23.130 | 6.29 |
| GSCM3-I-150 | 1/8/99 18:00 | 1/19/99 12:00 | 10 | 10.750 | 0.066 | 2.000 | 2.1 | 0.2 | 10.82 | 3.139 | -23.330 | 5.95 |

**Appendix 1. Percent composition, CN ratio, and CN isotopes.**

| STATION | DATE START mm/dd/yy | DATE END mm/dd/yy | CUP # | INTERVAL days | CARB-ONATE CARBON % | ORGANIC CARBON % | TOTAL CARBON % | TOTAL NITROGEN % | CN RATIO atomic | BIO-GENIC SILICA % | $\delta^{13}C_{organic}$ vs PDB ppt | $\delta^{15}N_{total}$ vs air ppt |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GSCM3-G-225 | 2/14/98 0:00 | 2/24/98 18:00 | 1 | 10.75 | 0.070 | 2.510 | 2.580 | 0.289 | 10.14 | 3.425 | -22.36 | 7.27 |
| GSCM3-G-225 | 2/24/98 18:00 | 3/7/98 12:00 | 2 | 10.75 | 0.075 | 2.304 | 2.379 | 0.249 | 10.78 | 4.249 | -22.71 | 6.6 |
| GSCM3-G-225 | 3/7/98 12:00 | 3/18/98 6:00 | 3 | 10.75 | 0.053 | 3.118 | 3.171 | 0.410 | 8.87 | 6.434 | -21.42 | 5.73 |
| GSCM3-G-225 | 3/18/98 6:00 | 3/29/98 0:00 | 4 | 10.75 | 0.057 | 3.170 | 3.227 | 0.418 | 8.84 | 9.214 | -20.82 | 6.16 |
| GSCM3-G-225 | 3/29/98 0:00 | 4/8/98 18:00 | 5 | 10.75 | 0.060 | 2.723 | 2.783 | 0.315 | 10.09 | 5.334 | -21.31 | 6.21 |
| GSCM3-G-225 | 4/8/98 18:00 | 4/19/98 12:00 | 6 | 10.75 | 0.064 | 3.235 | 3.299 | 0.407 | 9.27 | 6.939 | -20.92 | 6.33 |
| GSCM3-G-225 | 4/19/98 12:00 | 4/30/98 6:00 | 7 | 10.75 | 0.060 | 3.342 | 3.402 | 0.427 | 9.13 | 6.809 | -20.7 | 6.6 |
| GSCM3-G-225 | 4/30/98 6:00 | 5/11/98 0:00 | 8 | 10.75 | 0.045 | 2.363 | 2.408 | 0.305 | 9.03 | 4.336 | -21.61 | 6.52 |
| GSCM3-G-225 | 5/11/98 0:00 | 5/21/98 18:00 | 9 | 10.75 | 0.086 | 3.871 | 3.957 | 0.684 | 6.60 | 5.914 | -19.78 | 8.51 |
| GSCM3-G-225 | 5/21/98 18:00 | 5/31/1998 13:25 | 10 | 9.809 | 0.103 | 2.850 | 2.953 | 0.451 | 7.38 | 6.168 | -20.07 | 8.08 |
| GSCM3-H-225 | 6/2/98 0:00 | 6/14/98 6:00 | 1 | 12.25 | 0.135 | 1.933 | 2.068 | 0.238 | 9.48 | 6.683 | -20.96 | 6.22 |
| GSCM3-H-225 | 6/14/98 6:00 | 6/26/98 12:00 | 2 | 12.25 | 0.239 | 1.909 | 2.148 | 0.252 | 8.85 | 4.407 | -21.86 | 6.73 |
| GSCM3-H-225 | 6/26/98 12:00 | 7/8/98 18:00 | 3 | 12.25 | 0.127 | 2.084 | 2.211 | 0.264 | 9.21 | 3.689 | -22.79 | 6.56 |
| GSCM3-H-225 | 7/8/98 18:00 | 7/21/98 0:00 | 4 | 12.25 | 0.189 | 2.398 | 2.587 | 0.316 | 8.85 | 4.455 | -22.99 | 6.21 |
| GSCM3-H-225 | 7/21/98 0:00 | 8/2/98 6:00 | 5 | 12.25 | 0.100 | 3.129 | 3.229 | 0.435 | 8.38 | 5.341 | -22.49 | 7.27 |
| GSCM3-H-225 | 8/2/98 6:00 | 8/14/98 12:00 | 6 | 12.25 | 0.112 | 2.823 | 2.935 | 0.351 | 9.38 | 4.860 | -22.37 | 6.22 |
| GSCM3-H-225 | 8/14/98 12:00 | 8/26/98 18:00 | 7 | 12.25 | 0.148 | 3.384 | 3.532 | 0.439 | 8.99 | 6.180 | -21.95 | 6.86 |
| GSCM3-H-225 | 8/26/98 18:00 | 9/8/98 0:00 | 8 | 12.25 | 0.170 | 3.597 | 3.767 | 0.459 | 9.14 | 8.276 | -22.46 | 7.5 |
| GSCM3-H-225 | 9/8/98 0:00 | 9/20/98 6:00 | 9 | 12.25 | 0.160 | 4.026 | 4.186 | 0.622 | 7.55 | 6.848 | -21.88 | 8.74 |
| GSCM3-H-225 | 9/20/98 6:00 | 10/2/98 12:00 | 10 | 12.25 | 0.234 | 4.659 | 4.893 | 0.645 | 8.43 | 8.105 | -22.48 | 7.61 |
| GSCM3-I-225 | 10/4/98 0:00 | 10/14/98 18:00 | 1 | 10.750 | 0.060 | 2.670 | 2.7 | 0.3 | 9.48 | 4.680 | -22.800 | 6.52 |
| GSCM3-I-225 | 10/14/98 18:00 | 10/25/98 12:00 | 2 | 10.750 | 0.128 | 3.300 | 3.4 | 0.4 | 9.24 | 5.220 | -22.430 | 7.35 |
| GSCM3-I-225 | 10/25/98 12:00 | 11/5/98 6:00 | 3 | 10.750 | 0.069 | 3.546 | 3.6 | 0.4 | 9.32 | 6.300 | -22.180 | 7.69 |
| GSCM3-I-225 | 11/5/98 6:00 | 11/16/98 0:00 | 4 | 10.750 | 0.062 | 2.954 | 3.0 | 0.4 | 9.72 | 4.304 | -22.670 | 8.14 |
| GSCM3-I-225 | 11/16/98 0:00 | 11/26/98 18:00 | 5 | 10.750 | 0.090 | 2.166 | 2.26 | 0.24 | 10.32 | 3.825 | -22.740 | 6.46 |
| GSCM3-I-225 | 11/26/98 18:00 | 12/7/98 12:00 | 6 | 10.750 | 0.089 | 1.672 | 1.76 | 0.18 | 10.84 | 2.671 | -23.550 | 5.96 |
| GSCM3-I-225 | 12/7/98 12:00 | 12/18/98 6:00 | 7 | 10.750 | 0.073 | 1.851 | 1.92 | 0.18 | 11.86 | 2.906 | -23.360 | 5.87 |
| GSCM3-I-225 | 12/18/98 6:00 | 12/29/98 0:00 | 8 | 10.750 | 0.071 | 2.201 | 2.27 | 0.24 | 10.78 | 4.054 | -22.850 | 5.73 |
| GSCM3-I-225 | 12/29/98 0:00 | 1/8/99 18:00 | 9 | 10.750 | 0.077 | 1.862 | 1.94 | 0.18 | 11.87 | 3.306 | -23.090 | 6.02 |
| GSCM3-I-225 | 1/8/99 18:00 | 1/19/99 12:00 | 10 | 10.750 | 0.071 | 1.993 | 2.06 | 0.22 | 10.62 | 3.397 | -23.240 | 6.27 |

**Appendix 1. Percent composition, CN ratio, and CN isotopes.**

| STATION | DATE START mm/dd/yy | DATE END mm/dd/yy | CUP # | INTERVAL days | CARB-ONATE CARBON % | ORGANIC CARBON % | TOTAL CARBON % | TOTAL NITROGEN % | CN RATIO atomic | BIO-GENIC SILICA % | $\delta^{13}C_{organic}$ vs PDB ppt | $\delta^{15}N_{total}$ vs air ppt |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GSCM3-G-300 | 2/14/98 0:00 | 2/24/98 18:00 | 1 | 10.75 | 0.090 | 2.102 | 2.192 | 0.239 | 10.27 | 3.903 | -22.88 | 6.37 |
| GSCM3-G-300 | 2/24/98 18:00 | 3/7/98 12:00 | 2 | 10.75 | 0.121 | 2.184 | 2.305 | 0.254 | 10.03 | 3.786 | -22.71 | 5.95 |
| GSCM3-G-300 | 3/7/98 12:00 | 3/18/98 6:00 | 3 | 10.75 | 0.076 | 2.837 | 2.913 | 0.371 | 8.93 | 5.900 | -21.79 | 5.81 |
| GSCM3-G-300 | 3/18/98 6:00 | 3/29/98 0:00 | 4 | 10.75 | 0.067 | 3.247 | 3.314 | 0.449 | 8.43 | 8.714 | -20.68 | 5.87 |
| GSCM3-G-300 | 3/29/98 0:00 | 4/8/98 18:00 | 5 | 10.75 | 0.062 | 2.659 | 2.721 | 0.347 | 8.93 | 5.333 | -21.55 | 5.51 |
| GSCM3-G-300 | 4/8/98 18:00 | 4/19/98 12:00 | 6 | 10.75 | 0.100 | 2.907 | 3.007 | 0.384 | 8.84 | 6.880 | -21.39 | 6.17 |
| GSCM3-G-300 | 4/19/98 12:00 | 4/30/1998 6:00 | 7 | 10.75 | 0.063 | 2.810 | 2.873 | 0.374 | 8.76 | 6.265 | -21.24 | 5.91 |
| GSCM3-G-300 | 4/30/98 6:00 | 5/11/1998 0:00 | 8 | 10.75 | 0.076 | 2.181 | 2.257 | 0.288 | 8.84 | 4.193 | -21.91 | 5.39 |
| GSCM3-G-300 | 5/11/98 0:00 | 5/21/1998 18:00 | 9 | 10.75 | 0.079 | 2.485 | 2.564 | 0.341 | 8.50 | 5.066 | -21.36 | 6.03 |
| GSCM3-G-300 | 5/21/98 18:00 | 5/31/1998 13:25 | 10 | 9.809 | 0.067 | 2.690 | 2.757 | 0.410 | 7.65 | 5.761 | -21.03 | 6.36 |
| GSCM3-H-300 | 6/2/98 0:00 | 6/14/98 6:00 | 1 | 12.25 | 0.115 | 2.023 | 2.138 | 0.246 | 9.60 | 6.746 | -20.93 | 6.61 |
| GSCM3-H-300 | 6/14/98 6:00 | 6/26/98 12:00 | 2 | 12.25 | 0.162 | 2.330 | 2.492 | 0.302 | 8.99 | 4.906 | -21.53 | 7.35 |
| GSCM3-H-300 | 6/26/98 12:00 | 7/8/98 18:00 | 3 | 12.25 | 0.100 | 2.479 | 2.579 | 0.328 | 8.80 | 3.619 | -21.89 | 7.3 |
| GSCM3-H-300 | 7/8/98 18:00 | 7/21/98 0:00 | 4 | 12.25 | 0.091 | 2.449 | 2.540 | 0.312 | 9.14 | 4.250 | -22.27 | 7.46 |
| GSCM3-H-300 | 7/21/98 0:00 | 8/2/98 6:00 | 5 | 12.25 | 0.070 | 2.770 | 2.840 | 0.357 | 9.04 | 5.291 | -22.48 | 7.08 |
| GSCM3-H-300 | 8/2/98 6:00 | 8/14/98 12:00 | 6 | 12.25 | 0.127 | 2.628 | 2.755 | 0.332 | 9.22 | 4.663 | -22.19 | 6.71 |
| GSCM3-H-300 | 8/14/98 12:00 | 8/26/98 18:00 | 7 | 12.25 | 0.123 | 2.826 | 2.949 | 0.360 | 9.15 | 5.733 | -22.00 | 7.34 |
| GSCM3-H-300 | 8/26/98 18:00 | 9/8/98 0:00 | 8 | 12.25 | 0.134 | 2.907 | 3.041 | 0.378 | 8.97 | 6.847 | -21.89 | 7.48 |
| GSCM3-H-300 | 9/8/98 0:00 | 9/20/98 6:00 | 9 | 12.25 | 0.121 | 2.641 | 2.762 | 0.336 | 9.18 | 5.916 | -22.25 | 7.09 |
| GSCM3-H-300 | 9/20/98 6:00 | 10/2/98 12:00 | 10 | 12.25 | 0.113 | 3.115 | 3.228 | 0.408 | 8.91 | 6.776 | -21.97 | 7.17 |
| GSCM3-I-300 | 10/4/98 0:00 | 10/14/98 18:00 | 1 | 10.750 | 0.067 | 2.433 | 2.50 | 0.28 | 10.10 | 6.282 | -22.310 | 6.39 |
| GSCM3-I-300 | 10/14/98 18:00 | 10/25/98 12:00 | 2 | 10.750 | 0.072 | 2.828 | 2.90 | 0.34 | 9.61 | 6.175 | -22.150 | 7.64 |
| GSCM3-I-300 | 10/25/98 12:00 | 11/5/98 6:00 | 3 | 10.750 | 0.061 | 2.843 | 2.90 | 0.33 | 10.12 | 7.644 | -22.180 | 6.92 |
| GSCM3-I-300 | 11/5/98 6:00 | 11/16/98 0:00 | 4 | 10.750 | 0.067 | 2.319 | 2.4 | 0.3 | 10.33 | 4.797 | -22.580 | 6.96 |
| GSCM3-I-300 | 11/16/98 0:00 | 11/26/98 18:00 | 5 | 10.750 | 0.074 | 2.236 | 2.3 | 0.3 | 10.23 | 4.211 | -22.900 | 7.06 |
| GSCM3-I-300 | 11/26/98 18:00 | 12/7/98 12:00 | 6 | 10.750 | 0.130 | 1.627 | 1.8 | 0.2 | 10.38 | 3.690 | -23.250 | 5.82 |
| GSCM3-I-300 | 12/7/98 12:00 | 12/18/98 6:00 | 7 | 10.750 | 0.088 | 1.859 | 1.9 | 0.2 | 10.21 | 3.312 | -23.000 | 6.52 |
| GSCM3-I-300 | 12/18/98 6:00 | 12/29/98 0:00 | 8 | 10.750 | 0.057 | 2.242 | 2.3 | 0.2 | 10.61 | 3.856 | -22.870 | 5.52 |
| GSCM3-I-300 | 12/29/98 0:00 | 1/8/99 18:00 | 9 | 10.750 | 0.064 | 2.150 | 2.2 | 0.2 | 10.04 | 3.743 | -22.900 | 5.23 |
| GSCM3-I-300 | 1/8/99 18:00 | 1/19/99 12:00 | 10 | 10.750 | 0.075 | 2.178 | 2.3 | 0.2 | 10.35 | 3.551 | -22.930 | 6.15 |

**Appendix 2. Flux Data.**

| STATION | DATE START mm/dd/yy | DATE END mm/dd/yy | CUP # | INTERVAL days | TOTAL DRY WEIGHT g/cup | TOTAL DRY WEIGHT FLUX $g/m^2/d$ | ORGANIC CARBON FLUX $mg/m^2/d$ | TOTAL NITROGEN FLUX $mg/m^2/d$ | CARBONATE CARBON FLUX $mg/m^2/d$ | BIOGENIC SILICA FLUX $mg/m^2/d$ |
|---|---|---|---|---|---|---|---|---|---|---|
| GS | 5/13/95 0:00 | 5/23/95 12:00 | 1 | 10.50 | 0.860 | 2.608 | 88.21 | 11.10 | 1.38 | 343.97 |
| GS | 5/23/95 12:00 | 6/3/95 0:00 | 2 | 10.50 | 2.182 | 6.618 | 348.21 | 43.63 | 5.82 | 534.47 |
| GS | 6/3/95 0:00 | 6/13/95 12:00 | 3 | 10.50 | 2.183 | 6.623 | 215.93 | 31.54 | 7.28 | 577.69 |
| GS | 6/13/95 12:00 | 6/24/95 0:00 | 4 | 10.50 | 0.863 | 2.618 | 89.98 | 13.36 | 0.65 | 243.39 |
| GS | 6/24/95 0:00 | 9/13/95 18:00 | 5 | 81.75 | 8.876 | 3.458 | 111.57 | 13.74 | 5.22 | 280.88 |
| GS | 10/2/95 0:00 | 10/22/95 0:00 | 1 | 20.00 | 2.754 | 4.385 | 137.16 | 18.21 | 8.24 | 373.25 |
| GS | 10/22/95 0:00 | 11/11/95 0:00 | 2 | 20.00 | 2.882 | 4.589 | 124.04 | 13.63 | 4.77 | 198.29 |
| GS | 11/11/95 0:00 | 12/1/95 0:00 | 3 | 20.00 | 1.676 | 2.669 | 81.99 | 10.24 | 4.86 | 138.08 |
| GS | 12/1/95 0:00 | 12/21/95 0:00 | 4 | 20.00 | 1.776 | 2.828 | 78.73 | 8.10 | 2.74 | 116.54 |
| GS | 12/21/95 0:00 | 1/10/96 0:00 | 5 | 20.00 | 0.906 | 1.442 | 51.29 | 5.85 | 2.68 | 70.40 |
| GS | 1/10/96 0:00 | 1/30/96 0:00 | 6 | 20.00 | 0.895 | 1.426 | 49.43 | 6.09 | 1.80 | 71.53 |
| GS | 1/30/96 0:00 | 2/19/96 0:00 | 7 | 20.00 | 1.242 | 1.977 | 61.20 | 8.35 | 2.37 | 109.14 |
| GS | 2/19/96 0:00 | 3/10/96 0:00 | 8 | 20.00 | 1.274 | 2.029 | 59.25 | 6.51 | 3.08 | 94.75 |
| GS | 3/10/96 0:00 | 3/30/96 0:00 | 9 | 20.00 | 1.992 | 3.172 | 102.00 | 14.53 | 0.38 | 470.93 |
| GS | 3/30/96 0:00 | 4/10/96 19:10 | 10 | 11.80 | 2.604 | 7.029 | 231.55 | 31.86 | 2.95 | 922.70 |

## Appendix 2. Flux Data.

| STATION | | DATE START mm/dd/yy | DATE END mm/dd/yy | CUP # | INTERVAL days | TOTAL DRY WEIGHT g/cup | TOTAL DRY WEIGHT FLUX $g/m^2/d$ | ORGANIC CARBON FLUX $mg/m^2/d$ | TOTAL NITROGEN FLUX $mg/m^2/d$ | CARBONATE CARBON FLUX $mg/m^2/d$ | BIOGENIC SILICA FLUX $mg/m^2/d$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| GSCM4 | A | 3/4/96 0:00 | 3/14/96 12:00 | 1 | 10.50 | 0.321 | 0.975 | 41.53 | 5.75 | 0.95 | 77.96 |
| GSCM4 | A | 3/14/96 12:00 | 3/25/96 0:00 | 2 | 10.50 | 0.103 | 0.313 | 15.53 | 2.08 | 0.06 | 63.85 |
| GSCM4 | A | 3/25/96 0:00 | 4/4/96 12:00 | 3 | 10.50 | 1.039 | 3.152 | 167.42 | 21.51 | 4.48 | 884.32 |
| GSCM4 | A | 4/4/96 12:00 | 4/15/96 0:00 | 4 | 10.50 | 0.298 | 0.902 | 78.34 | 10.07 | 0.81 | 100.61 |
| GSCM4 | A | 4/15/96 0:00 | 4/25/96 12:00 | 5 | 10.50 | 0.339 | 1.029 | 73.50 | 10.06 | 1.19 | 76.79 |
| GSCM4 | A | 4/25/96 12:00 | 5/6/96 0:00 | 6 | 10.50 | 0.702 | 2.130 | 82.54 | 12.04 | 1.32 | 107.71 |
| GSCM4 | A | 5/6/96 0:00 | 5/16/96 12:00 | 7 | 10.50 | 0.322 | 0.978 | 54.42 | 7.57 | 0.37 | 167.12 |
| GSCM4 | A | 5/16/96 12:00 | 5/27/96 0:00 | 8 | 10.50 | 0.449 | 1.363 | 107.96 | 13.28 | 0.33 | 246.91 |
| GSCM4 | A | 5/27/96 0:00 | 6/6/96 12:00 | 9 | 10.50 | 0.273 | 0.829 | 79.26 | 11.09 | 0.60 | 93.28 |
| GSCM4 | A | 6/6/96 12:00 | 6/17/96 0:00 | 10 | 10.50 | 0.495 | 1.502 | 92.54 | 12.06 | 0.75 | 241.68 |
| GSCM4 | B | 6/21/96 0:00 | 6/29/96 0:00 | 1 | 8.00 | 0.482 | 1.921 | 184.70 | 19.75 | 1.36 | 121.63 |
| GSCM4 | B | 6/29/96 0:00 | 7/7/96 0:00 | 2 | 8.00 | 0.491 | 1.956 | 180.79 | 19.53 | 1.49 | 126.34 |
| GSCM4 | B | 7/7/96 0:00 | 7/15/96 0:00 | 3 | 8.00 | 0.350 | 1.395 | 105.66 | 13.44 | 6.00 | 84.35 |
| GSCM4 | B | 7/15/96 0:00 | 7/23/96 0:00 | 4 | 8.00 | 0.345 | 1.372 | 174.48 | 17.18 | 1.54 | 53.86 |
| GSCM4 | B | 7/23/96 0:00 | 7/31/96 0:00 | 5 | 8.00 | 0.278 | 1.105 | 210.78 | 16.42 | 0.45 | 98.29 |
| GSCM4 | B | 7/31/96 0:00 | 8/8/96 0:00 | 6 | 8.00 | 0.500 | 1.989 | 185.62 | 19.35 | 2.35 | 334.57 |
| GSCM4 | B | 8/8/96 0:00 | 8/16/96 0:00 | 7 | 8.00 | 0.278 | 1.106 | 122.99 | 13.07 | 1.45 | 168.53 |
| GSCM4 | B | 8/16/96 0:00 | 8/24/96 0:00 | 8 | 8.00 | 0.270 | 1.075 | 144.51 | 15.55 | 0.82 | 119.37 |
| GSCM4 | B | 8/24/96 0:00 | 9/1/96 0:00 | 9 | 8.00 | 0.306 | 1.217 | 206.60 | 22.21 | 1.13 | 88.51 |
| GSCM4 | B | 9/1/96 0:00 | 9/9/96 0:00 | 10 | 8.00 | 0.248 | 0.986 | 126.21 | 15.68 | 0.45 | 82.92 |
| GSCM4 | C | 9/13/96 0:00 | 9/28/96 18:00 | 1 | 15.75 | 0.467 | 0.945 | 123.20 | 11.69 | 2.36 | 74.60 |
| GSCM4 | C | 9/28/96 18:00 | 10/14/96 12:00 | 2 | 15.75 | 0.404 | 0.817 | 79.18 | 8.80 | 1.42 | 74.44 |
| GSCM4 | C | 10/14/96 12:00 | 10/30/96 6:00 | 3 | 15.75 | 0.503 | 1.016 | 76.19 | 9.33 | 2.04 | 62.98 |
| GSCM4 | C | 10/30/96 6:00 | 11/15/96 0:00 | 4 | 15.75 | 0.291 | 0.588 | 48.91 | 5.20 | 0.55 | 34.65 |
| GSCM4 | C | 11/15/96 0:00 | 11/30/96 18:00 | 5 | 15.75 | 0.184 | 0.371 | 43.82 | 4.54 | 0.33 | 22.26 |
| GSCM4 | C | 11/30/96 18:00 | 12/16/96 12:00 | 6 | 15.75 | 0.238 | 0.482 | 28.16 | 3.32 | 0.52 | 24.86 |
| GSCM4 | C | 12/16/96 12:00 | 1/1/97 6:00 | 7 | 15.75 | 0.191 | 0.386 | 27.50 | 2.78 | 0.39 | 21.35 |
| GSCM4 | C | 1/1/97 6:00 | 1/17/97 0:00 | 8 | 15.75 | 0.380 | 0.768 | 32.16 | 3.55 | 0.74 | 40.65 |
| GSCM4 | C | 1/17/97 0:00 | 2/1/97 18:00 | 9 | 15.75 | 0.254 | 0.513 | 27.08 | 2.80 | 0.53 | 29.22 |
| GSCM4 | C | 2/1/97 18:00 | 2/17/97 12:00 | 10 | 15.75 | 0.379 | 0.766 | 32.99 | 4.00 | 0.52 | 39.66 |
| GSCM4 | D | 2/21/97 12:00 | 3/2/97 21:00 | 1 | 9.38 | 0.187 | 0.636 | 50.27 | 6.52 | 0.40 | 36.87 |
| GSCM4 | D | 3/2/97 21:00 | 3/12/97 6:00 | 2 | 9.38 | 0.140 | 0.475 | 44.57 | 5.99 | 0.24 | 61.98 |
| GSCM4 | D | 3/12/97 6:00 | 3/21/97 15:00 | 3 | 9.38 | 0.195 | 0.661 | 46.77 | 6.75 | 0.32 | 54.22 |
| GSCM4 | D | 3/21/97 15:00 | 3/31/97 0:00 | 4 | 9.38 | 0.266 | 0.903 | 49.34 | 7.06 | 0.45 | 74.47 |

**Appendix 2. Flux Data.**

| STATION | | DATE START mm/dd/yy | DATE END mm/dd/yy | CUP # | INTERVAL days | TOTAL DRY WEIGHT g/cup | TOTAL DRY WEIGHT FLUX $g/m^2/d$ | ORGANIC CARBON FLUX $mg/m^2/d$ | TOTAL NITROGEN FLUX $mg/m^2/d$ | CARBONATE CARBON FLUX $mg/m^2/d$ | BIOGENIC SILICA FLUX $mg/m^2/d$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| GSCM4 | D | 3/31/97 0:00 | 4/9/97 9:00 | 5 | 9.38 | 0.391 | 1.330 | 66.67 | 9.44 | 1.52 | 119.50 |
| GSCM4 | D | 4/9/97 9:00 | 4/18/97 18:00 | 6 | 9.38 | 0.240 | 0.814 | 61.05 | 8.82 | 0.02 | 132.00 |
| GSCM4 | D | 4/18/97 18:00 | 4/28/97 3:00 | 7 | 9.38 | 0.458 | 1.556 | 105.40 | 14.00 | 0.02 | 302.44 |
| GSCM4 | D | 4/28/97 3:00 | 5/7/97 12:00 | 8 | 9.38 | 0.332 | 1.127 | 84.77 | 12.30 | 0.38 | 164.39 |
| GSCM4 | D | 5/7/97 12:00 | 5/16/97 21:00 | 9 | 9.38 | 0.492 | 1.670 | 111.98 | 16.77 | 0.25 | 228.59 |
| GSCM4 | D | 5/16/97 21:00 | 5/26/97 6:00 | 10 | 9.38 | 0.277 | 0.942 | 121.67 | 21.28 | 0.81 | 113.61 |
| GSCM4 | E | 5/31/97 0:00 | 6/12/97 12:00 | 1 | 12.50 | 0.865 | 2.204 | 145.45 | 19.78 | 1.79 | 235.96 |
| GSCM4 | E | 6/12/97 12:00 | 6/25/97 0:00 | 2 | 12.50 | 0.564 | 1.438 | 120.71 | 17.93 | 4.69 | 83.47 |
| GSCM4 | E | 6/25/97 0:00 | 7/7/97 12:00 | 3 | 12.50 | 1.035 | 2.636 | 112.07 | 15.15 | 0.21 | 123.83 |
| GSCM4 | E | 7/7/97 12:00 | 7/20/97 0:00 | 4 | 12.50 | 1.731 | 4.410 | 126.85 | 16.54 | 2.73 | 185.00 |
| GSCM4 | E | 7/20/97 0:00 | 8/1/97 12:00 | 5 | 12.50 | 0.910 | 2.319 | 186.70 | 23.52 | 0.46 | 123.66 |
| GSCM4 | E | 8/1/97 12:00 | 8/14/97 0:00 | 6 | 12.50 | 0.576 | 1.468 | 67.77 | 8.26 | 1.70 | 64.06 |
| GSCM4 | E | 8/14/97 0:00 | 8/26/97 12:00 | 7 | 12.50 | 0.584 | 1.488 | 140.34 | 16.78 | 1.07 | 121.25 |
| GSCM4 | E | 8/26/97 12:00 | 9/8/97 0:00 | 8 | 12.50 | 0.553 | 1.408 | 127.15 | 14.78 | 0.80 | 87.85 |
| GSCM4 | E | 9/8/97 0:00 | 9/20/97 12:00 | 9 | 12.50 | 0.474 | 1.208 | 123.27 | 14.70 | 1.09 | 61.81 |
| GSCM4 | E | 9/20/97 12:00 | 10/3/97 0:00 | 10 | 12.50 | 0.443 | 1.130 | 117.91 | 14.47 | 0.53 | 58.18 |
| GSCM4 | F | 10/6/97 0:00 | 10/18/97 18:00 | 1 | 12.75 | 0.404 | 1.009 | 52.16 | 7.45 | 0.33 | 40.50 |
| GSCM4 | F | 10/18/97 18:00 | 10/31/97 12:00 | 2 | 12.75 | 0.353 | 0.883 | 43.43 | 5.88 | 0.58 | 45.55 |
| GSCM4 | F | 10/31/97 12:00 | 11/13/97 6:00 | 3 | 12.75 | 0.475 | 1.186 | 43.81 | 5.57 | 0.83 | 55.81 |
| GSCM4 | F | 11/13/97 6:00 | 11/26/97 0:00 | 4 | 12.75 | 0.467 | 1.167 | 40.63 | 4.99 | 0.63 | 63.46 |
| GSCM4 | F | 11/26/97 0:00 | 12/8/97 18:00 | 5 | 12.75 | 0.544 | 1.359 | 61.49 | 8.33 | 0.56 | 64.87 |
| GSCM4 | F | 12/8/97 18:00 | 12/21/97 12:00 | 6 | 12.75 | 0.607 | 1.516 | 49.32 | 6.38 | 0.77 | 75.65 |
| GSCM4 | F | 12/21/97 12:00 | 1/3/98 6:00 | 7 | 12.75 | 0.441 | 1.101 | 52.68 | 7.97 | 0.77 | 46.98 |
| GSCM4 | F | 1/3/98 6:00 | 1/16/98 0:00 | 8 | 12.75 | 0.314 | 0.783 | 33.57 | 4.37 | 0.63 | 39.63 |
| GSCM4 | F | 1/16/98 0:00 | 1/28/98 18:00 | 9 | 12.75 | 0.302 | 0.755 | 33.68 | 4.81 | 0.75 | 35.25 |
| GSCM4 | F | 1/28/98 18:00 | 2/10/98 12:00 | 10 | 12.75 | 0.324 | 0.808 | 43.70 | 6.01 | 0.22 | 40.48 |

**Appendix 2. Flux Data.**

| STATION | | DATE START mm/dd/yy | DATE END mm/dd/yy | CUP # | INTERVAL days | TOTAL DRY WEIGHT g/cup | TOTAL DRY WEIGHT FLUX $g/m^2/d$ | ORGANIC CARBON FLUX $mg/m^2/d$ | TOTAL NITROGEN FLUX $mg/m^2/d$ | CARBONATE CARBON FLUX $mg/m^2/d$ | BIOGENIC SILICA FLUX $mg/m^2/d$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| GSCM3 | A | 3/4/96 0:00 | 3/14/96 12:00 | 1 | 10.50 | 0.989 | 2.999 | 83.32 | 9.98 | 3.33 | 211.07 |
| GSCM3 | A | 3/14/96 12:00 | 3/25/96 0:00 | 2 | 10.50 | 2.992 | 9.076 | 162.61 | 22.95 | 6.35 | 811.38 |
| GSCM3 | A | 3/25/96 0:00 | 4/4/96 12:00 | 3 | 10.50 | 3.458 | 10.488 | 657.16 | 78.35 | 7.76 | 1213.41 |
| GSCM3 | A | 4/4/96 12:00 | 4/15/96 0:00 | 4 | 10.50 | 1.897 | 5.755 | 109.28 | 13.62 | 3.34 | 427.21 |
| GSCM3 | A | 4/15/96 0:00 | 4/25/96 12:00 | 5 | 10.50 | 2.936 | 8.906 | 111.07 | 13.83 | 7.39 | 362.20 |
| GSCM3 | A | 4/25/96 12:00 | 5/6/96 0:00 | 6 | 10.50 | 7.051 | 21.385 | 306.27 | 38.88 | 17.11 | 444.88 |
| GSCM3 | A | 5/6/96 0:00 | 5/16/96 12:00 | 7 | 10.50 | 5.947 | 18.037 | 127.63 | 16.01 | 22.37 | 432.59 |
| GSCM3 | A | 5/16/96 12:00 | 5/27/96 0:00 | 8 | 10.50 | 7.343 | 22.273 | 212.02 | 39.03 | 27.84 | 434.12 |
| GSCM3 | A | 5/27/96 0:00 | 6/6/96 12:00 | 9 | 10.50 | 6.709 | 20.348 | 201.37 | 22.27 | 25.84 | 389.90 |
| GSCM3 | A | 6/6/96 12:00 | 6/17/96 0:00 | 10 | 10.50 | 4.170 | 12.649 | 216.19 | 31.22 | 18.34 | 483.49 |
| GSCM3 | B | 6/21/96 0:00 | 6/29/96 0:00 | 1 | 8.00 | 2.489 | 9.909 | 153.88 | 16.97 | 14.86 | 217.17 |
| GSCM3 | B | 6/29/96 0:00 | 7/7/96 0:00 | 2 | 8.00 | 1.594 | 6.344 | 164.85 | 21.46 | 7.04 | 220.75 |
| GSCM3 | B | 7/7/96 0:00 | 7/15/96 0:00 | 3 | 8.00 | 0.985 | 3.921 | 118.73 | 14.50 | 8.59 | 137.04 |
| GSCM3 | B | 7/15/96 0:00 | 7/23/96 0:00 | 4 | 8.00 | 2.965 | 11.804 | 224.99 | 30.12 | 12.28 | 330.11 |
| GSCM3 | B | 7/23/96 0:00 | 7/31/96 0:00 | 5 | 8.00 | 0.811 | 3.228 | 122.34 | 16.84 | 4.49 | 108.73 |
| GSCM3 | B | 7/31/96 0:00 | 8/8/96 0:00 | 6 | 8.00 | 1.600 | 6.370 | 195.60 | 25.78 | 5.41 | 343.74 |
| GSCM3 | B | 8/8/96 0:00 | 8/16/96 0:00 | 7 | 8.00 | 1.407 | 5.602 | 163.95 | 24.66 | 9.80 | 208.69 |
| GSCM3 | B | 8/16/96 0:00 | 8/24/96 0:00 | 8 | 26.38 | 2.400 | 2.898 | 145.67 | 16.17 | 2.84 | 172.97 |
| GSCM3 | C | 9/13/96 0:00 | 9/28/96 18:00 | 1 | 15.75 | 0.785 | 1.587 | 105.14 | 11.48 | 2.54 | 108.09 |
| GSCM3 | C | 9/28/96 18:00 | 10/14/96 12:00 | 2 | 15.75 | 0.713 | 1.442 | 86.04 | 10.15 | 1.69 | 110.02 |
| GSCM3 | C | 10/14/96 12:00 | 10/30/96 6:00 | 3 | 15.75 | 1.431 | 2.894 | 89.71 | 10.56 | 4.48 | 112.99 |
| GSCM3 | C | 10/30/96 6:00 | 11/15/96 0:00 | 4 | 15.75 | 1.550 | 3.133 | 70.77 | 8.19 | 4.36 | 107.36 |
| GSCM3 | C | 11/15/96 0:00 | 11/30/96 18:00 | 5 | 15.75 | 3.601 | 7.282 | 132.23 | 15.10 | 15.51 | 169.66 |
| GSCM3 | C | 11/30/96 18:00 | 12/16/96 12:00 | 6 | 15.75 | 4.033 | 8.155 | 143.92 | 15.62 | 15.90 | 217.67 |
| GSCM3 | C | 12/16/96 12:00 | 1/1/97 6:00 | 7 | 15.75 | 1.621 | 3.279 | 77.94 | 8.71 | 7.15 | 129.98 |
| GSCM3 | C | 1/1/97 6:00 | 1/17/97 0:00 | 8 | 15.75 | 4.186 | 8.465 | 146.11 | 15.73 | 16.08 | 221.35 |
| GSCM3 | C | 1/17/97 0:00 | 2/1/97 18:00 | 9 | 15.75 | 5.683 | 11.492 | 211.99 | 22.59 | 19.65 | 329.31 |
| GSCM3 | C | 2/1/97 18:00 | 2/17/97 12:00 | 10 | 15.75 | 5.850 | 11.830 | 176.54 | 17.22 | 16.21 | 210.65 |
| GSCM3 | D | 2/21/97 12:00 | 3/2/97 21:00 | 1 | 9.38 | 0.592 | 2.011 | 70.90 | 8.93 | 1.77 | 85.74 |
| GSCM3 | D | 3/2/97 21:00 | 3/12/97 6:00 | 2 | 9.38 | 2.879 | 9.779 | 187.79 | 20.88 | 13.59 | 260.44 |
| GSCM3 | D | 3/12/97 6:00 | 3/21/97 15:00 | 3 | 9.38 | 2.552 | 8.670 | 212.65 | 25.37 | 8.41 | 357.19 |
| GSCM3 | D | 3/21/97 15:00 | 3/31/97 0:00 | 4 | 9.38 | 1.418 | 4.818 | 116.89 | 13.84 | 2.75 | 281.62 |
| GSCM3 | D | 3/31/97 0:00 | 4/9/97 9:00 | 5 | 9.38 | 1.418 | 4.817 | 89.90 | 10.98 | 6.07 | 178.42 |
| GSCM3 | D | 4/9/97 9:00 | 4/18/97 18:00 | 6 | 9.38 | 3.166 | 10.756 | 260.37 | 34.92 | 8.07 | 704.89 |

## Appendix 2. Flux Data.

| STATION | | DATE START mm/dd/yy | DATE END mm/dd/yy | CUP # | INTERVAL days | TOTAL DRY WEIGHT g/cup | TOTAL DRY WEIGHT FLUX g/m$^2$/d | ORGANIC CARBON FLUX mg/m$^2$/d | TOTAL NITROGEN FLUX mg/m$^2$/d | CARBONATE CARBON FLUX mg/m$^2$/d | BIOGENIC SILICA FLUX mg/m$^2$/d |
|---|---|---|---|---|---|---|---|---|---|---|---|
| GSCM3 | D | 4/18/97 18:00 | 4/28/97 3:00 | 7 | 9.38 | 1.047 | 3.556 | 140.77 | 22.13 | 1.96 | 394.54 |
| GSCM3 | D | 4/28/97 3:00 | 5/7/97 12:00 | 8 | 9.38 | 8.056 | 27.366 | 361.00 | 44.07 | 26.27 | 847.23 |
| GSCM3 | D | 5/7/97 12:00 | 5/16/97 21:00 | 9 | 9.38 | 8.636 | 29.337 | 390.18 | 48.29 | 24.64 | 1179.67 |
| GSCM3 | D | 5/16/97 21:00 | 5/26/97 6:00 | 10 | 9.38 | 26.980 | 91.652 | 808.37 | 95.09 | 183.30 | 1447.34 |
| GSCM3 | E | 5/31/97 0:00 | 6/12/97 12:00 | 1 | 12.50 | 14.876 | 37.900 | 391.44 | 45.64 | 23.88 | 1006.38 |
| GSCM3 | E | 6/12/97 12:00 | 6/25/97 0:00 | 2 | 12.50 | 15.097 | 38.463 | 411.65 | 56.53 | 31.54 | 782.96 |
| GSCM3 | E | 6/25/97 0:00 | 7/7/97 12:00 | 3 | 12.50 | 5.946 | 15.150 | 191.41 | 23.94 | 19.85 | 519.08 |
| GSCM3 | E | 7/7/97 12:00 | 7/20/97 0:00 | 4 | 12.50 | 3.717 | 9.471 | 161.72 | 19.47 | 7.77 | 327.16 |
| GSCM3 | E | 7/20/97 0:00 | 8/1/97 12:00 | 5 | 12.50 | 11.476 | 29.237 | 273.13 | 34.54 | 53.50 | 543.55 |
| GSCM3 | E | 8/1/97 12:00 | 8/14/97 0:00 | 6 | 12.50 | 2.458 | 6.263 | 176.92 | 21.67 | 8.02 | 172.87 |
| GSCM3 | E | 8/14/97 0:00 | 8/26/97 12:00 | 7 | 12.50 | 2.938 | 7.484 | 245.12 | 28.15 | 8.53 | 337.99 |
| GSCM3 | E | 8/26/97 12:00 | 9/8/97 0:00 | 8 | 12.50 | 3.918 | 9.982 | 243.63 | 27.19 | 10.38 | 309.41 |
| GSCM3 | E | 9/8/97 0:00 | 9/20/97 12:00 | 9 | 12.50 | 2.238 | 5.702 | 198.98 | 25.28 | 5.87 | 201.27 |
| GSCM3 | E | 9/20/97 12:00 | 10/3/97 0:00 | 10 | 12.50 | 3.017 | 7.686 | 235.19 | 27.51 | 8.15 | 302.60 |
| GSCM3 | F | 10/6/97 0:00 | 10/18/97 18:00 | 1 | 12.75 | 4.601 | 11.492 | 191.04 | 21.51 | 11.61 | 228.79 |
| GSCM3 | F | 10/18/97 18:00 | 10/31/97 12:00 | 2 | 12.75 | 4.288 | 10.712 | 164.09 | 21.34 | 19.28 | 221.47 |
| GSCM3 | F | 10/31/97 12:00 | 11/13/97 6:00 | 3 | 12.75 | 1.360 | 3.396 | 88.48 | 10.71 | 3.23 | 147.95 |
| GSCM3 | F | 11/13/97 6:00 | 11/26/97 0:00 | 4 | 12.75 | 5.079 | 12.686 | 178.26 | 21.95 | 14.46 | 286.06 |
| GSCM3 | F | 11/26/97 0:00 | 12/8/97 18:00 | 5 | 12.75 | 2.990 | 7.469 | 172.08 | 22.17 | 6.20 | 274.16 |
| GSCM3 | F | 12/8/97 18:00 | 12/21/97 12:00 | 6 | 12.75 | 5.567 | 13.905 | 222.17 | 23.04 | 20.72 | 352.73 |
| GSCM3 | F | 12/21/97 12:00 | 1/3/98 6:00 | 7 | 12.75 | 4.726 | 11.805 | 201.27 | 21.70 | 11.57 | 330.07 |
| GSCM3 | F | 1/3/98 6:00 | 1/16/98 0:00 | 8 | 12.75 | 4.464 | 11.150 | 168.18 | 17.97 | 15.05 | 268.66 |
| GSCM3 | F | 1/16/98 0:00 | 1/28/98 18:00 | 9 | 12.75 | 3.210 | 8.019 | 142.19 | 16.57 | 6.25 | 175.31 |
| GSCM3 | F | 1/28/98 18:00 | 2/10/98 12:00 | 10 | 12.75 | 9.018 | 22.526 | 328.69 | 33.28 | 27.93 | 487.81 |

**Appendix 2. Flux Data.**

| STATION | | DATE START mm/dd/yy | DATE END mm/dd/yy | CUP # | INTERVAL days | TOTAL DRY WEIGHT g/cup | TOTAL DRY WEIGHT FLUX $g/m^2/d$ | ORGANIC CARBON FLUX $mg/m^2/d$ | TOTAL NITROGEN FLUX $mg/m^2/d$ | CARBONATE CARBON FLUX $mg/m^2/d$ | BIOGENIC SILICA FLUX $mg/m^2/d$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| GSCM2 | A | 3/4/96 0:00 | 3/14/96 12:00 | 1 | 10.50 | 11.223 | 34.039 | 694.91 | 75.78 | 16.68 | 1578.23 |
| GSCM2 | A | 3/14/96 12:00 | 3/25/96 0:00 | 2 | 10.50 | 12.585 | 38.171 | 711.40 | 87.44 | 7.63 | 2285.72 |
| GSCM2 | A | 3/25/96 0:00 | 4/4/96 12:00 | 3 | 10.50 | 16.198 | 49.130 | 714.25 | 81.43 | 37.83 | 2206.89 |
| GSCM2 | A | 4/4/96 12:00 | 4/15/96 0:00 | 4 | 10.50 | 15.152 | 45.958 | 736.47 | 91.91 | 22.06 | 2097.47 |
| GSCM2 | A | 4/15/96 0:00 | 4/25/96 12:00 | 5 | 10.50 | 10.158 | 30.810 | 632.26 | 66.00 | 25.57 | 1510.58 |
| GSCM2 | A | 4/25/96 12:00 | 5/6/96 0:00 | 6 | 10.50 | 7.862 | 23.846 | 434.33 | 52.26 | 20.75 | 1017.20 |
| GSCM2 | A | 5/6/96 0:00 | 5/16/96 12:00 | 7 | 10.50 | 30.871 | 93.634 | 1419.96 | 164.57 | 98.32 | 4042.95 |
| GSCM2 | A | 5/16/96 12:00 | 5/27/96 0:00 | 8 | 10.50 | 19.457 | 59.014 | 1055.23 | 131.06 | 31.87 | 2373.73 |
| GSCM2 | A | 5/27/96 0:00 | 6/6/96 12:00 | 9 | 10.50 | 20.800 | 63.088 | 1042.84 | 143.38 | 71.29 | 2650.35 |
| GSCM2 | A | 6/6/96 12:00 | 6/17/96 0:00 | 10 | 10.50 | 9.992 | 30.306 | 470.92 | 63.36 | 14.85 | 1594.30 |
| GSCM2 | B | 6/21/96 0:00 | 6/29/96 0:00 | 1 | 8.00 | 42.706 | 170.008 | 2338.63 | 288.52 | 256.71 | 5239.06 |
| GSCM2 | B | 6/29/96 0:00 | 7/7/96 0:00 | 2 | 8.00 | 12.546 | 49.946 | 843.29 | 102.51 | 50.94 | 2617.74 |
| GSCM2 | B | 7/7/96 0:00 | 7/15/96 0:00 | 3 | 8.00 | 16.492 | 65.653 | 1203.87 | 169.59 | 64.34 | 2534.86 |
| GSCM2 | B | 7/15/96 0:00 | 7/23/96 0:00 | 4 | 8.00 | 18.134 | 72.189 | 990.08 | 144.12 | 60.64 | 2517.03 |
| GSCM2 | B | 7/23/96 0:00 | 7/31/96 0:00 | 5 | 8.00 | 20.306 | 80.838 | 1161.96 | 112.49 | 69.52 | 2114.29 |
| GSCM2 | B | 7/31/96 0:00 | 8/8/96 0:00 | 6 | 8.00 | 15.207 | 60.538 | 586.85 | 142.85 | 563.00 | 2696.99 |
| GSCM2 | B | 8/8/96 0:00 | 8/16/96 0:00 | 7 | 8.00 | 5.927 | 23.596 | 592.34 | 81.41 | 32.56 | 1331.17 |
| GSCM2 | B | 8/16/96 0:00 | 8/24/96 0:00 | 8 | 8.00 | 13.340 | 53.103 | 936.42 | 128.73 | 61.07 | 2367.38 |
| GSCM2 | B | 8/24/96 0:00 | 9/1/96 0:00 | 9 | 8.00 | 8.015 | 31.906 | 735.88 | 96.39 | 44.99 | 1520.93 |
| GSCM2 | B | 9/1/96 0:00 | 9/9/96 0:00 | 10 | 8.00 | | | | | | |
| GSCM2 | C | 9/13/96 0:00 | 9/28/96 18:00 | 1 | 15.75 | 15.986 | 32.324 | 676.34 | 78.86 | 39.76 | 1348.91 |
| GSCM2 | C | 9/28/96 18:00 | 10/14/96 12:00 | 2 | 15.75 | 16.157 | 32.669 | 533.74 | 63.23 | 38.22 | 1556.53 |
| GSCM2 | C | 10/14/96 12:00 | 10/30/96 6:00 | 3 | 15.75 | 13.439 | 27.175 | 520.97 | 60.47 | 29.62 | 1433.50 |
| GSCM2 | C | 10/30/96 6:00 | 11/15/96 0:00 | 4 | 15.75 | 35.386 | 71.553 | 1128.53 | 134.72 | 92.30 | 2602.78 |
| GSCM2 | C | 11/15/96 0:00 | 11/30/96 18:00 | 5 | 15.75 | 44.631 | 90.246 | 1623.14 | 189.80 | 107.39 | 3833.52 |
| GSCM2 | C | 11/30/96 18:00 | 12/16/96 12:00 | 6 | 15.75 | 16.934 | 34.242 | 641.26 | 73.11 | 33.56 | 1022.94 |
| GSCM2 | C | 12/16/96 12:00 | 1/1/97 6:00 | 7 | 15.75 | 25.729 | 52.025 | 1015.64 | 118.42 | 55.15 | 2468.06 |
| GSCM2 | C | 1/1/97 6:00 | 1/17/97 0:00 | 8 | 15.75 | 23.412 | 47.340 | 946.27 | 105.71 | 59.17 | 1883.03 |
| GSCM2 | C | 1/17/97 0:00 | 2/1/97 18:00 | 9 | 15.75 | 31.221 | 63.131 | 1502.37 | 166.76 | 51.14 | 2872.50 |
| GSCM2 | C | 2/1/97 18:00 | 2/17/97 12:00 | 10 | 15.75 | 24.723 | 49.992 | 1119.37 | 122.88 | 44.99 | 2176.23 |
| GSCM2 | D | 2/21/97 12:00 | 3/2/97 21:00 | 1 | 9.38 | 15.976 | 54.270 | 1204.92 | 134.90 | 66.21 | 3074.63 |
| GSCM2 | D | 3/2/97 21:00 | 3/12/97 6:00 | 2 | 9.38 | 21.909 | 74.425 | 1479.13 | 171.67 | 98.61 | 2833.54 |
| GSCM2 | D | 3/12/97 6:00 | 3/21/97 15:00 | 3 | 9.38 | 11.753 | 39.924 | 936.22 | 108.80 | 50.30 | 2029.91 |
| GSCM2 | D | 3/21/97 15:00 | 3/31/97 0:00 | 4 | 9.38 | 9.343 | 31.738 | 768.26 | 89.08 | 30.47 | 1619.61 |

## Appendix 2. Flux Data.

| STATION | | DATE START mm/dd/yy | DATE END mm/dd/yy | CUP # | INTERVAL days | TOTAL DRY WEIGHT g/cup | TOTAL DRY WEIGHT FLUX $g/m^2/d$ | ORGANIC CARBON FLUX $mg/m^2/d$ | TOTAL NITROGEN FLUX $mg/m^2/d$ | CARBONATE CARBON FLUX $mg/m^2/d$ | BIOGENIC SILICA FLUX $mg/m^2/d$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| GSCM2 | D | 3/31/97 0:00 | 4/9/97 9:00 | 5 | 9.38 | 16.837 | 57.196 | 1185.05 | 134.10 | 68.64 | 2608.54 |
| GSCM2 | D | 4/9/97 9:00 | 4/18/97 18:00 | 6 | 9.38 | 16.023 | 54.429 | 1170.13 | 143.41 | 55.52 | 3162.12 |
| GSCM2 | D | 4/18/97 18:00 | 4/28/97 3:00 | 7 | 9.38 | 18.049 | 61.312 | 1050.41 | 127.39 | 72.35 | 2774.38 |
| GSCM2 | D | 4/28/97 3:00 | 5/7/97 12:00 | 8 | 9.38 | 8.770 | 29.793 | 743.73 | 95.03 | 29.20 | 2005.99 |
| GSCM2 | D | 5/7/97 12:00 | 5/16/97 21:00 | 9 | 9.38 | 16.174 | 54.944 | 1193.12 | 148.24 | 58.24 | 3501.81 |
| GSCM2 | D | 5/16/97 21:00 | 5/26/97 6:00 | 10 | 9.38 | 29.845 | 101.385 | 1715.52 | 211.98 | 129.77 | 4021.75 |
| GSCM2 | E | 5/31/97 0:00 | 6/12/97 12:00 | 1 | 12.50 | 21.801 | 55.544 | 908.10 | 122.98 | 77.21 | 4528.41 |
| GSCM2 | E | 6/12/97 12:00 | 6/25/97 0:00 | 2 | 12.50 | 25.521 | 65.022 | 1107.98 | 159.92 | 96.88 | 2905.37 |
| GSCM2 | E | 6/25/97 0:00 | 7/7/97 12:00 | 3 | 12.50 | 38.744 | 98.711 | 1674.12 | 215.68 | 133.26 | 5534.04 |
| GSCM2 | E | 7/7/97 12:00 | 7/20/97 0:00 | 4 | 12.50 | 18.659 | 47.538 | 835.22 | 112.33 | 65.60 | 2038.69 |
| GSCM2 | E | 7/20/97 0:00 | 8/1/97 12:00 | 5 | 12.50 | 31.451 | 80.129 | 1221.38 | 157.64 | 114.58 | 3973.02 |
| GSCM2 | E | 8/1/97 12:00 | 8/14/97 0:00 | 6 | 12.50 | 20.771 | 52.920 | 916.04 | 119.20 | 54.51 | 2248.05 |
| GSCM2 | E | 8/14/97 0:00 | 8/26/97 12:00 | 7 | 12.50 | 16.619 | 42.342 | 748.67 | 100.49 | 59.28 | 1909.48 |
| GSCM2 | E | 8/26/97 12:00 | 9/8/97 0:00 | 8 | 12.50 | 10.562 | 26.911 | 549.80 | 64.34 | 32.29 | 1107.88 |
| GSCM2 | E | 9/8/97 0:00 | 9/20/97 12:00 | 9 | 12.50 | 16.860 | 42.955 | 724.99 | 87.18 | 71.31 | 1994.27 |
| GSCM2 | E | 9/20/97 12:00 | 10/3/97 0:00 | 10 | 12.50 | 12.069 | 30.749 | 716.94 | 90.89 | 20.29 | 1341.48 |
| GSCM2 | F | 10/6/97 0:00 | 10/18/97 18:00 | 1 | 12.75 | 14.318 | 35.763 | 734.50 | 88.05 | 29.68 | 1389.02 |
| GSCM2 | F | 10/18/97 18:00 | 10/31/97 12:00 | 2 | 12.75 | 29.031 | 72.514 | 1342.16 | 165.83 | 84.12 | 2743.07 |
| GSCM2 | F | 10/31/97 12:00 | 11/13/97 6:00 | 3 | 12.75 | 23.140 | 57.800 | 1057.36 | 128.01 | 60.11 | 2198.65 |
| GSCM2 | F | 11/13/97 6:00 | 11/26/97 0:00 | 4 | 12.75 | 53.119 | 132.682 | 2031.82 | 241.59 | 156.56 | 4251.04 |
| GSCM2 | F | 11/26/97 0:00 | 12/8/97 18:00 | 5 | 12.75 | 29.668 | 74.104 | 1352.10 | 166.22 | 72.62 | 2897.27 |
| GSCM2 | F | 12/8/97 18:00 | 12/21/97 12:00 | 6 | 12.75 | 41.351 | 103.286 | 1415.02 | 177.92 | 127.04 | 3743.52 |
| GSCM2 | F | 12/21/97 12:00 | 1/3/98 6:00 | 7 | 12.75 | 37.376 | 93.358 | 1496.73 | 178.43 | 85.89 | 2975.61 |
| GSCM2 | F | 1/3/98 6:00 | 1/16/98 0:00 | 8 | 12.75 | 55.174 | 137.814 | 2003.74 | 247.40 | 161.24 | 4056.39 |
| GSCM2 | F | 1/16/98 0:00 | 1/28/98 18:00 | 9 | 12.75 | 20.869 | 52.127 | 892.35 | 111.19 | 58.90 | 1870.44 |
| GSCM2 | F | 1/28/98 18:00 | 2/10/98 12:00 | 10 | 12.75 | 35.027 | 87.490 | 1570.44 | 201.42 | 108.49 | 2816.87 |

## Appendix 2. Flux Data.

| STATION | DATE START mm/dd/yy | DATE END mm/dd/yy | CUP # | INTERVAL days | TOTAL DRY WEIGHT g/cup | TOTAL DRY WEIGHT FLUX $g/m^2/d$ | ORGANIC CARBON FLUX $mg/m^2/d$ | TOTAL NITROGEN FLUX $mg/m^2/d$ | CARBONATE CARBON FLUX $mg/m^2/d$ | BIOGENIC SILICA FLUX $mg/m^2/d$ |
|---|---|---|---|---|---|---|---|---|---|---|
| GSCM3-G-150 | 2/14/98 0:00 | 2/24/98 18:00 | 1 | 10.75 | 2.659 | 7.877 | 177.29 | 16.78 | 6.46 | 204.40 |
| GSCM3-G-150 | 2/24/98 18:00 | 3/7/98 12:00 | 2 | 10.75 | 5.491 | 16.267 | 348.95 | 36.98 | 12.53 | 571.08 |
| GSCM3-G-150 | 3/7/98 12:00 | 3/18/98 6:00 | 3 | 10.75 | 5.218 | 15.457 | 426.12 | 53.28 | 12.98 | 1032.54 |
| GSCM3-G-150 | 3/18/98 6:00 | 3/29/98 0:00 | 4 | 10.75 | 3.931 | 11.646 | 395.70 | 54.50 | 7.10 | 1187.27 |
| GSCM3-G-150 | 3/29/98 0:00 | 4/8/98 18:00 | 5 | 10.75 | 3.732 | 11.055 | 273.33 | 31.15 | 5.75 | 741.01 |
| GSCM3-G-150 | 4/8/98 18:00 | 4/19/98 12:00 | 6 | 10.75 | 2.530 | 7.496 | 254.99 | 29.48 | 6.75 | 552.39 |
| GSCM3-G-150 | 4/19/98 12:00 | 4/30/98 6:00 | 7 | 10.75 | 2.272 | 6.730 | 208.90 | 25.96 | 5.85 | 518.55 |
| GSCM3-G-150 | 4/30/98 6:00 | 5/11/98 0:00 | 8 | 10.75 | 3.488 | 10.332 | 195.89 | 23.79 | 6.20 | 512.00 |
| GSCM3-G-150 | 5/11/98 0:00 | 5/21/98 18:00 | 9 | 10.75 | 4.027 | 11.930 | 282.57 | 34.69 | 7.87 | 624.37 |
| GSCM3-G-150 | 5/21/98 18:00 | 5/31/1998 13:25 | 10 | 9.809 | | | | | | |
| GSCM3-H-150 | 6/2/98 0:00 | 6/14/98 6:00 | 1 | 12.25 | 4.389 | 11.411 | 270.42 | 32.44 | 20.20 | 708.90 |
| GSCM3-H-150 | 6/14/98 6:00 | 6/26/98 12:00 | 2 | 12.25 | 2.793 | 7.261 | 133.21 | 16.99 | 23.09 | 255.90 |
| GSCM3-H-150 | 6/26/98 12:00 | 7/8/98 18:00 | 3 | 12.25 | 1.845 | 4.795 | 110.45 | 14.90 | 11.65 | 151.53 |
| GSCM3-H-150 | 7/8/98 18:00 | 7/21/98 0:00 | 4 | 12.25 | 2.550 | 6.630 | 170.85 | 22.27 | 8.62 | 279.52 |
| GSCM3-H-150 | 7/21/98 0:00 | 8/2/98 6:00 | 5 | 12.25 | 1.516 | 3.941 | 124.09 | 16.96 | 5.68 | 151.44 |
| GSCM3-H-150 | 8/2/98 6:00 | 8/14/98 12:00 | 6 | 12.25 | 2.045 | 5.316 | 162.95 | 21.70 | 7.18 | 228.40 |
| GSCM3-H-150 | 8/14/98 12:00 | 8/26/98 18:00 | 7 | 12.25 | 0.794 | 2.064 | 100.97 | 14.27 | 6.81 | 140.82 |
| GSCM3-H-150 | 8/26/98 18:00 | 9/8/98 0:00 | 8 | 12.25 | 0.352 | 0.914 | 58.51 | 8.42 | 2.50 | 81.46 |
| GSCM3-H-150 | 9/8/98 0:00 | 9/20/98 6:00 | 9 | 12.25 | 0.545 | 1.416 | 73.32 | 10.49 | 4.59 | 120.51 |
| GSCM3-H-150 | 9/20/98 6:00 | 10/2/98 12:00 | 10 | 12.25 | 0.218 | 0.566 | 42.47 | 6.28 | 1.53 | 51.32 |
| GSCM3-I-150 | 10/4/98 0:00 | 10/14/98 18:00 | 1 | 10.750 | 0.840 | 2.488 | 101.48 | 13.42 | 7.41 | 116.24 |
| GSCM3-I-150 | 10/14/98 18:00 | 10/25/98 12:00 | 2 | 10.750 | 0.643 | 1.906 | 71.91 | 9.25 | 4.82 | 98.77 |
| GSCM3-I-150 | 10/25/98 12:00 | 11/5/98 6:00 | 3 | 10.750 | 0.648 | 1.921 | 81.96 | 11.14 | 2.88 | 144.51 |
| GSCM3-I-150 | 11/5/98 6:00 | 11/16/98 0:00 | 4 | 10.750 | 1.217 | 3.604 | 95.27 | 12.33 | 7.39 | 146.61 |
| GSCM3-I-150 | 11/16/98 0:00 | 11/26/98 18:00 | 5 | 10.750 | 2.174 | 6.439 | 135.21 | 15.00 | 7.86 | 207.52 |
| GSCM3-I-150 | 11/26/98 18:00 | 12/7/98 12:00 | 6 | 10.750 | 1.948 | 5.770 | 90.64 | 9.02 | 6.81 | 138.95 |
| GSCM3-I-150 | 12/7/98 12:00 | 12/18/98 6:00 | 7 | 10.750 | 2.962 | 8.774 | 154.13 | 15.83 | 8.69 | 213.65 |
| GSCM3-I-150 | 12/18/98 6:00 | 12/29/98 0:00 | 8 | 10.750 | 1.128 | 3.342 | 83.76 | 10.06 | 3.94 | 118.11 |
| GSCM3-I-150 | 12/29/98 0:00 | 1/8/99 18:00 | 9 | 10.750 | 2.095 | 6.206 | 120.29 | 13.02 | 3.97 | 183.91 |
| GSCM3-I-150 | 1/8/99 18:00 | 1/19/99 12:00 | 10 | 10.750 | 3.848 | 11.401 | 227.99 | 24.58 | 7.52 | 357.90 |

**Appendix 2. Flux Data.**

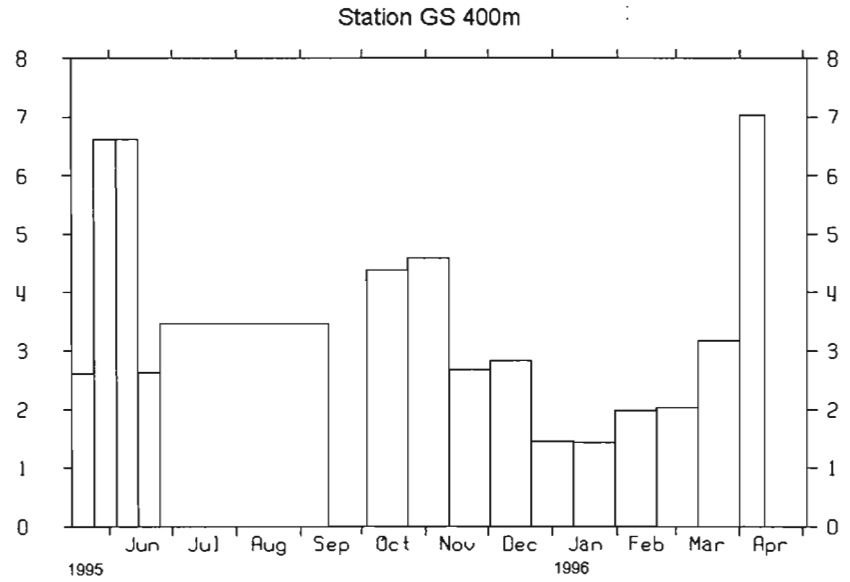
| STATION | DATE START mm/dd/yy | DATE END mm/dd/yy | CUP # | INTERVAL days | TOTAL DRY WEIGHT g/cup | TOTAL DRY WEIGHT FLUX $g/m^2/d$ | ORGANIC CARBON FLUX $mg/m^2/d$ | TOTAL NITROGEN FLUX $mg/m^2/d$ | CARBONATE CARBON FLUX $mg/m^2/d$ | BIOGENIC SILICA FLUX $mg/m^2/d$ |
|---|---|---|---|---|---|---|---|---|---|---|
| GSCM3-G-225 | 2/14/98 0:00 | 2/24/98 18:00 | 1 | 10.75 | 1.640 | 4.858 | 121.93 | 14.02 | 3.40 | 166.37 |
| GSCM3-G-225 | 2/24/98 18:00 | 3/7/98 12:00 | 2 | 10.75 | 1.581 | 4.682 | 107.89 | 11.67 | 3.51 | 198.95 |
| GSCM3-G-225 | 3/7/98 12:00 | 3/18/98 6:00 | 3 | 10.75 | 2.540 | 7.524 | 234.55 | 30.83 | 3.99 | 484.06 |
| GSCM3-G-225 | 3/18/98 6:00 | 3/29/98 0:00 | 4 | 10.75 | 2.899 | 8.588 | 272.27 | 35.94 | 4.90 | 791.34 |
| GSCM3-G-225 | 3/29/98 0:00 | 4/8/98 18:00 | 5 | 10.75 | 1.814 | 5.373 | 146.29 | 16.91 | 3.22 | 286.57 |
| GSCM3-G-225 | 4/8/98 18:00 | 4/19/98 12:00 | 6 | 10.75 | 2.122 | 6.286 | 203.39 | 25.58 | 4.02 | 436.20 |
| GSCM3-G-225 | 4/19/98 12:00 | 4/30/98 6:00 | 7 | 10.75 | 1.283 | 3.801 | 127.05 | 16.23 | 2.28 | 258.83 |
| GSCM3-G-225 | 4/30/98 6:00 | 5/11/98 0:00 | 8 | 10.75 | 2.622 | 7.769 | 183.56 | 23.71 | 3.50 | 336.81 |
| GSCM3-G-225 | 5/11/98 0:00 | 5/21/98 18:00 | 9 | 10.75 | 1.436 | 4.254 | 164.68 | 29.10 | 3.66 | 251.61 |
| GSCM3-G-225 | 5/21/98 18:00 | 5/31/1998 13:25 | 10 | 9.809 | 1.113 | 3.612 | 102.95 | 16.28 | 3.72 | 222.78 |
| GSCM3-H-225 | 6/2/98 0:00 | 6/14/98 6:00 | 1 | 12.25 | 4.882 | 12.692 | 245.36 | 30.18 | 17.13 | 848.25 |
| GSCM3-H-225 | 6/14/98 6:00 | 6/26/98 12:00 | 2 | 12.25 | 3.013 | 7.834 | 149.58 | 19.71 | 18.68 | 345.25 |
| GSCM3-H-225 | 6/26/98 12:00 | 7/8/98 18:00 | 3 | 12.25 | 2.304 | 5.990 | 124.81 | 15.80 | 7.61 | 220.98 |
| GSCM3-H-225 | 7/8/98 18:00 | 7/21/98 0:00 | 4 | 12.25 | 2.831 | 7.361 | 176.50 | 23.25 | 13.91 | 327.91 |
| GSCM3-H-225 | 7/21/98 0:00 | 8/2/98 6:00 | 5 | 12.25 | 1.963 | 5.104 | 159.67 | 22.21 | 5.10 | 272.57 |
| GSCM3-H-225 | 8/2/98 6:00 | 8/14/98 12:00 | 6 | 12.25 | 2.580 | 6.706 | 189.32 | 23.54 | 7.51 | 325.91 |
| GSCM3-H-225 | 8/14/98 12:00 | 8/26/98 18:00 | 7 | 12.25 | 1.411 | 3.668 | 124.12 | 16.10 | 5.43 | 226.68 |
| GSCM3-H-225 | 8/26/98 18:00 | 9/8/98 0:00 | 8 | 12.25 | 0.892 | 2.318 | 83.37 | 10.63 | 3.94 | 191.84 |
| GSCM3-H-225 | 9/8/98 0:00 | 9/20/98 6:00 | 9 | 12.25 | 1.395 | 3.626 | 145.97 | 22.54 | 5.80 | 248.29 |
| GSCM3-H-225 | 9/20/98 6:00 | 10/2/98 12:00 | 10 | 12.25 | 0.815 | 2.120 | 98.76 | 13.67 | 4.96 | 171.80 |
| GSCM3-I-225 | 10/4/98 0:00 | 10/14/98 18:00 | 1 | 10.750 | 1.241 | 3.675 | 98.13 | 12.07 | 2.21 | 172.00 |
| GSCM3-I-225 | 10/14/98 18:00 | 10/25/98 12:00 | 2 | 10.750 | 0.994 | 2.945 | 97.19 | 12.27 | 3.77 | 153.73 |
| GSCM3-I-225 | 10/25/98 12:00 | 11/5/98 6:00 | 3 | 10.750 | 0.886 | 2.624 | 93.04 | 11.64 | 1.81 | 165.28 |
| GSCM3-I-225 | 11/5/98 6:00 | 11/16/98 0:00 | 4 | 10.750 | 1.393 | 4.126 | 121.87 | 14.63 | 2.56 | 177.58 |
| GSCM3-I-225 | 11/16/98 0:00 | 11/26/98 18:00 | 5 | 10.750 | 2.249 | 6.662 | 144.28 | 16.30 | 6.00 | 254.79 |
| GSCM3-I-225 | 11/26/98 18:00 | 12/7/98 12:00 | 6 | 10.750 | 3.493 | 10.348 | 173.04 | 18.61 | 9.21 | 276.42 |
| GSCM3-I-225 | 12/7/98 12:00 | 12/18/98 6:00 | 7 | 10.750 | 3.369 | 9.981 | 184.72 | 18.16 | 7.29 | 290.02 |
| GSCM3-I-225 | 12/18/98 6:00 | 12/29/98 0:00 | 8 | 10.750 | 1.554 | 4.604 | 101.32 | 10.96 | 3.27 | 186.64 |
| GSCM3-I-225 | 12/29/98 0:00 | 1/8/99 18:00 | 9 | 10.750 | 3.591 | 10.638 | 198.12 | 19.46 | 8.19 | 351.71 |
| GSCM3-I-225 | 1/8/99 18:00 | 1/19/99 12:00 | 10 | 10.750 | 3.376 | 10.000 | 199.32 | 21.89 | 7.10 | 339.67 |

## Appendix 2. Flux Data.

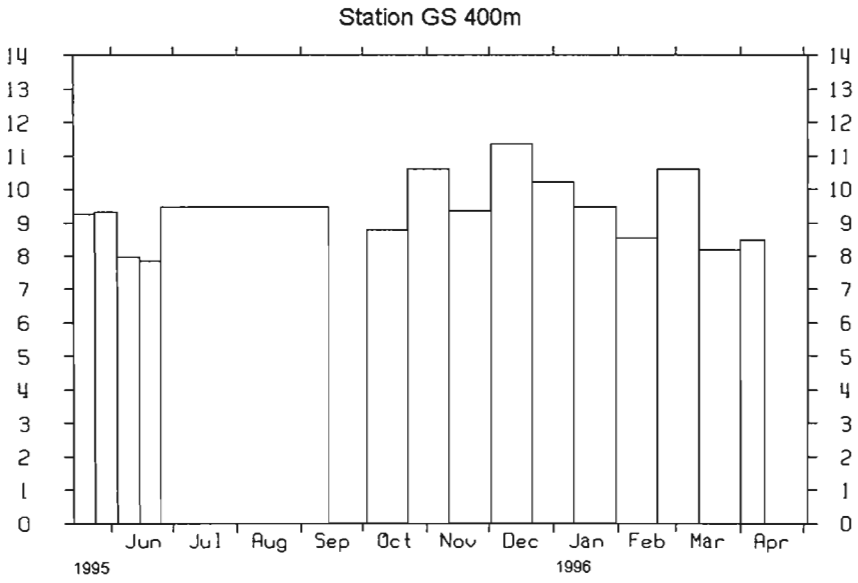
| STATION | DATE START mm/dd/yy | DATE END mm/dd/yy | CUP # | INTERVAL days | TOTAL DRY WEIGHT g/cup | TOTAL DRY WEIGHT FLUX $g/m^2/d$ | ORGANIC CARBON FLUX $mg/m^2/d$ | TOTAL NITROGEN FLUX $mg/m^2/d$ | CARBONATE CARBON FLUX $mg/m^2/d$ | BIOGENIC SILICA FLUX $mg/m^2/d$ |
|---|---|---|---|---|---|---|---|---|---|---|
| GSCM3-G-300 | 2/14/98 0:00 | 2/24/98 18:00 | 1 | 10.75 | 3.425 | 10.146 | 213.24 | 24.20 | 9.13 | 395.99 |
| GSCM3-G-300 | 2/24/98 18:00 | 3/7/98 12:00 | 2 | 10.75 | 3.619 | 10.722 | 234.14 | 27.23 | 12.97 | 405.93 |
| GSCM3-G-300 | 3/7/98 12:00 | 3/18/98 6:00 | 3 | 10.75 | 4.055 | 12.014 | 340.79 | 44.52 | 9.13 | 708.80 |
| GSCM3-G-300 | 3/18/98 6:00 | 3/29/98 0:00 | 4 | 10.75 | 4.811 | 14.253 | 462.76 | 64.02 | 9.55 | 1241.96 |
| GSCM3-G-300 | 3/29/98 0:00 | 4/8/98 18:00 | 5 | 10.75 | 3.839 | 11.373 | 302.37 | 39.50 | 7.05 | 606.47 |
| GSCM3-G-300 | 4/8/98 18:00 | 4/19/98 12:00 | 6 | 10.75 | 3.017 | 8.937 | 259.81 | 34.29 | 8.94 | 614.89 |
| GSCM3-G-300 | 4/19/98 12:00 | 4/30/1998 6:00 | 7 | 10.75 | 2.349 | 6.960 | 195.58 | 26.05 | 4.38 | 436.04 |
| GSCM3-G-300 | 4/30/98 6:00 | 5/11/1998 0:00 | 8 | 10.75 | 3.667 | 10.864 | 236.90 | 31.25 | 8.26 | 455.58 |
| GSCM3-G-300 | 5/11/98 0:00 | 5/21/1998 18:00 | 9 | 10.75 | 2.348 | 6.956 | 172.88 | 23.73 | 5.50 | 352.40 |
| GSCM3-G-300 | 5/21/98 18:00 | 5/31/1998 13:25 | 10 | 9.809 | 0.918 | 2.980 | 80.18 | 12.22 | 2.00 | 171.70 |
| GSCM3-H-300 | 6/2/98 0:00 | 6/14/98 6:00 | 1 | 12.25 | 6.272 | 16.305 | 329.78 | 40.05 | 18.75 | 1099.92 |
| GSCM3-H-300 | 6/14/98 6:00 | 6/26/98 12:00 | 2 | 12.25 | 3.455 | 8.982 | 209.25 | 27.16 | 14.55 | 440.64 |
| GSCM3-H-300 | 6/26/98 12:00 | 7/8/98 18:00 | 3 | 12.25 | 2.981 | 7.750 | 192.12 | 25.45 | 7.75 | 280.43 |
| GSCM3-H-300 | 7/8/98 18:00 | 7/21/98 0:00 | 4 | 12.25 | 3.227 | 8.390 | 205.44 | 26.22 | 7.63 | 356.54 |
| GSCM3-H-300 | 7/21/98 0:00 | 8/2/98 6:00 | 5 | 12.25 | 2.825 | 7.345 | 203.46 | 26.26 | 5.14 | 388.61 |
| GSCM3-H-300 | 8/2/98 6:00 | 8/14/98 12:00 | 6 | 12.25 | 3.237 | 8.415 | 221.16 | 27.97 | 10.69 | 392.37 |
| GSCM3-H-300 | 8/14/98 12:00 | 8/26/98 18:00 | 7 | 12.25 | 2.457 | 6.388 | 180.54 | 23.01 | 7.86 | 366.26 |
| GSCM3-H-300 | 8/26/98 18:00 | 9/8/98 0:00 | 8 | 12.25 | 1.784 | 4.639 | 134.86 | 17.54 | 6.22 | 317.59 |
| GSCM3-H-300 | 9/8/98 0:00 | 9/20/98 6:00 | 9 | 12.25 | 3.047 | 7.922 | 209.25 | 26.59 | 9.59 | 468.73 |
| GSCM3-H-300 | 9/20/98 6:00 | 10/2/98 12:00 | 10 | 12.25 | 2.317 | 6.025 | 187.65 | 24.57 | 6.81 | 408.26 |
| GSCM3-I-300 | 10/4/98 0:00 | 10/14/98 18:00 | 1 | 10.750 | 3.361 | 9.956 | 242.25 | 27.97 | 6.67 | 625.49 |
| GSCM3-I-300 | 10/14/98 18:00 | 10/25/98 12:00 | 2 | 10.750 | 2.839 | 8.412 | 237.88 | 28.85 | 6.06 | 519.42 |
| GSCM3-I-300 | 10/25/98 12:00 | 11/5/98 6:00 | 3 | 10.750 | 2.797 | 8.286 | 235.54 | 27.15 | 5.05 | 633.33 |
| GSCM3-I-300 | 11/5/98 6:00 | 11/16/98 0:00 | 4 | 10.750 | 4.529 | 13.418 | 311.15 | 35.11 | 8.99 | 643.71 |
| GSCM3-I-300 | 11/16/98 0:00 | 11/26/98 18:00 | 5 | 10.750 | 4.243 | 12.571 | 281.07 | 32.04 | 9.30 | 529.30 |
| GSCM3-I-300 | 11/26/98 18:00 | 12/7/98 12:00 | 6 | 10.750 | 6.225 | 18.441 | 300.02 | 33.70 | 23.97 | 680.38 |
| GSCM3-I-300 | 12/7/98 12:00 | 12/18/98 6:00 | 7 | 10.750 | 4.769 | 14.129 | 262.67 | 29.99 | 12.43 | 467.88 |
| GSCM3-I-300 | 12/18/98 6:00 | 12/29/98 0:00 | 8 | 10.750 | 3.160 | 9.362 | 209.89 | 23.08 | 5.34 | 360.98 |
| GSCM3-I-300 | 12/29/98 0:00 | 1/8/99 18:00 | 9 | 10.750 | 5.780 | 17.123 | 368.11 | 42.78 | 10.96 | 640.93 |
| GSCM3-I-300 | 1/8/99 18:00 | 1/19/99 12:00 | 10 | 10.750 | 4.508 | 13.354 | 290.81 | 32.76 | 10.02 | 474.19 |

# Appendix 3. Station GS – May, 1995, to April, 1996.

## Total Flux ($g/m^2/day$)

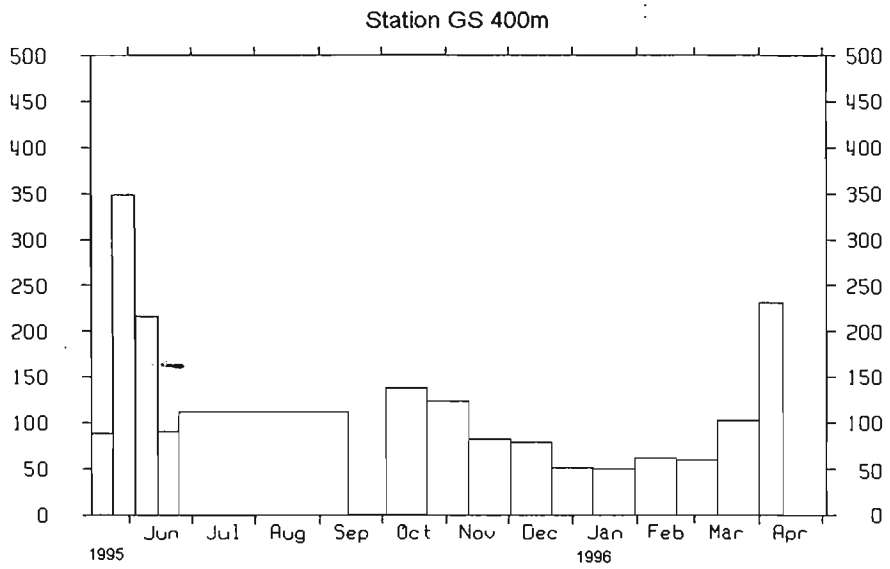



## CN Ratio (atomic)

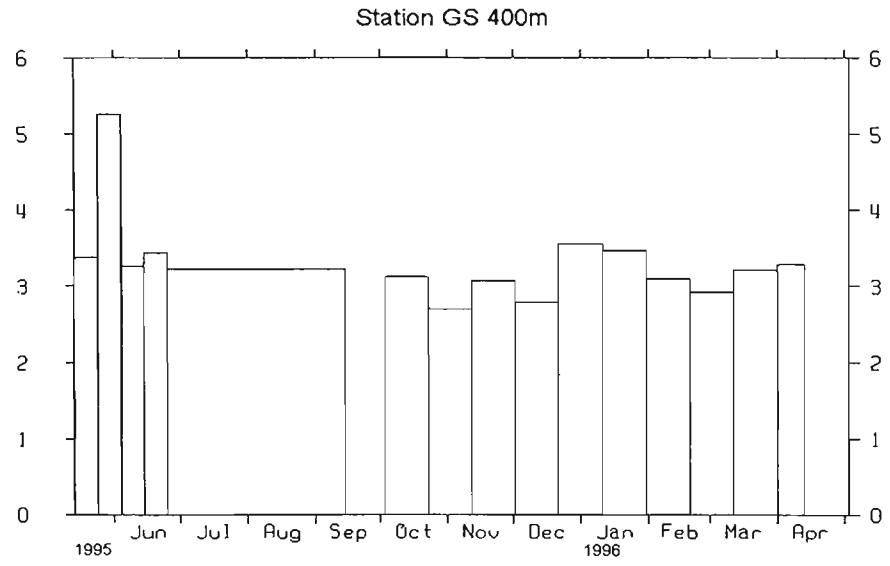


# Appendix 3. Station GS – May, 1995, to April, 1996.

## Organic Carbon Flux (mg C/m$^2$/day)

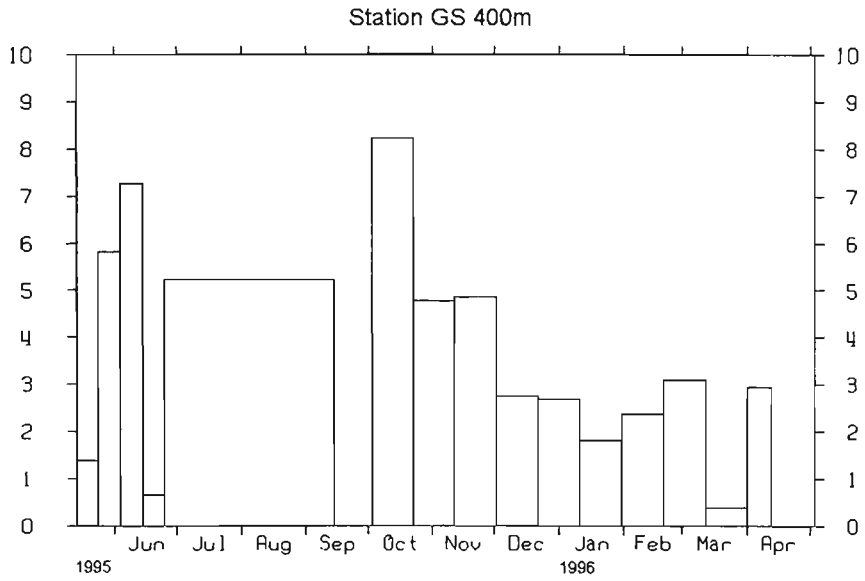



## Percent Organic Carbon

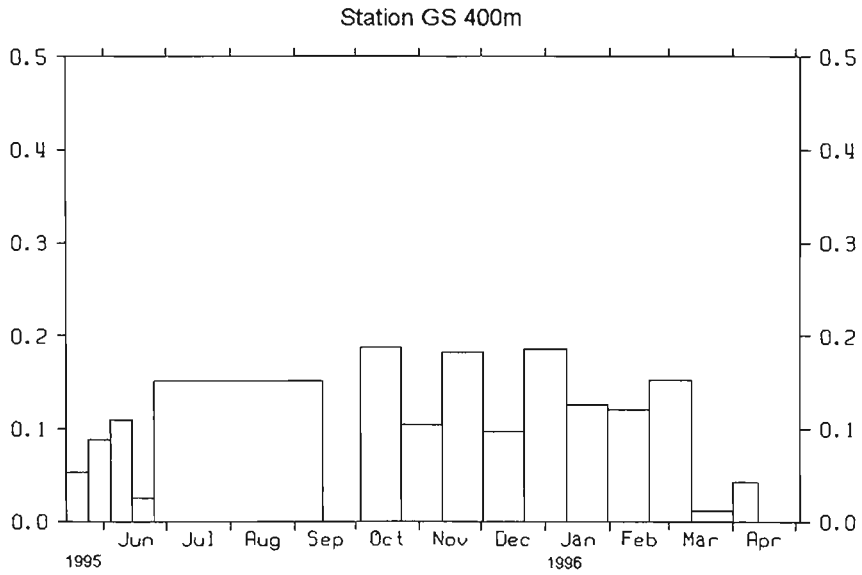


# Appendix 3. Station GS – May, 1995,to April, 1996.

## Carbonate Carbon Flux (mg C/m$^2$/day)

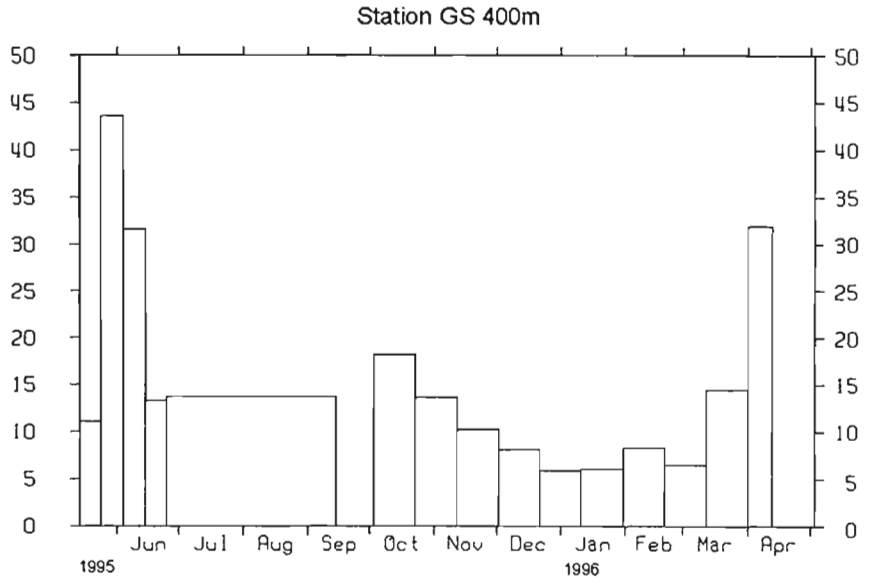



## Percent Inorganic Carbon

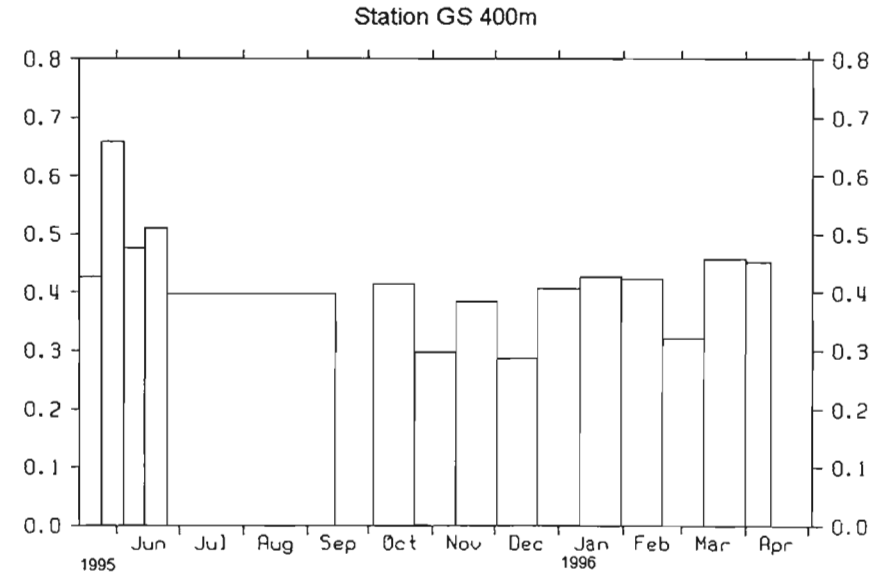


# Appendix 3. Station GS – May, 1995 to April, 1996.

## Total Nitrogen Flux (mg N/m$^2$/day)

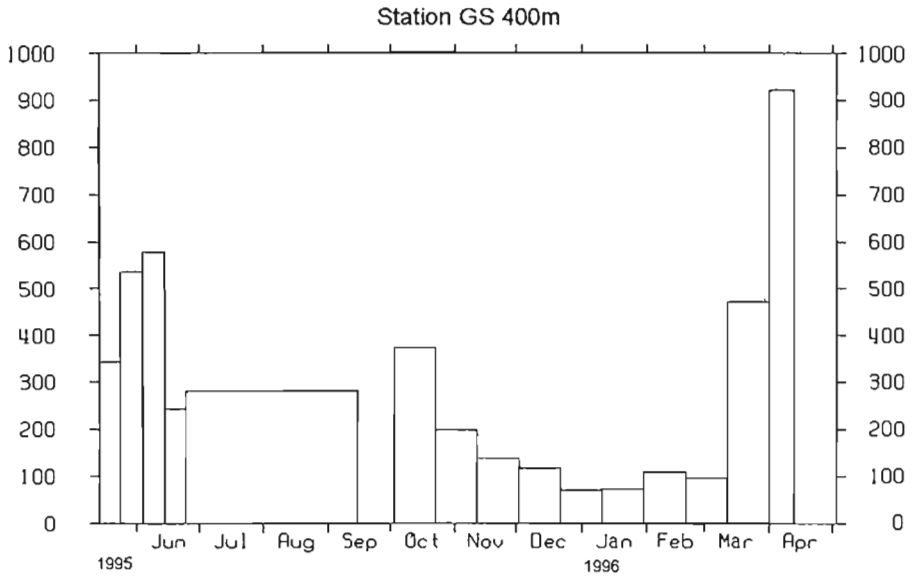



## Percent Total Nitrogen

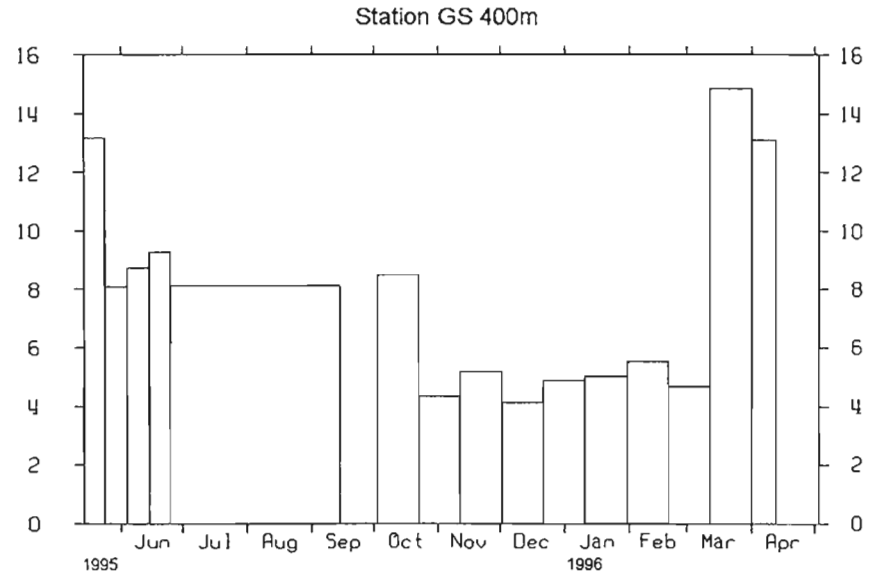


# Appendix 3. Station GS – May, 1995, to April, 1996.

## Biogenic Si Flux (mg Si/$m^2$/day)

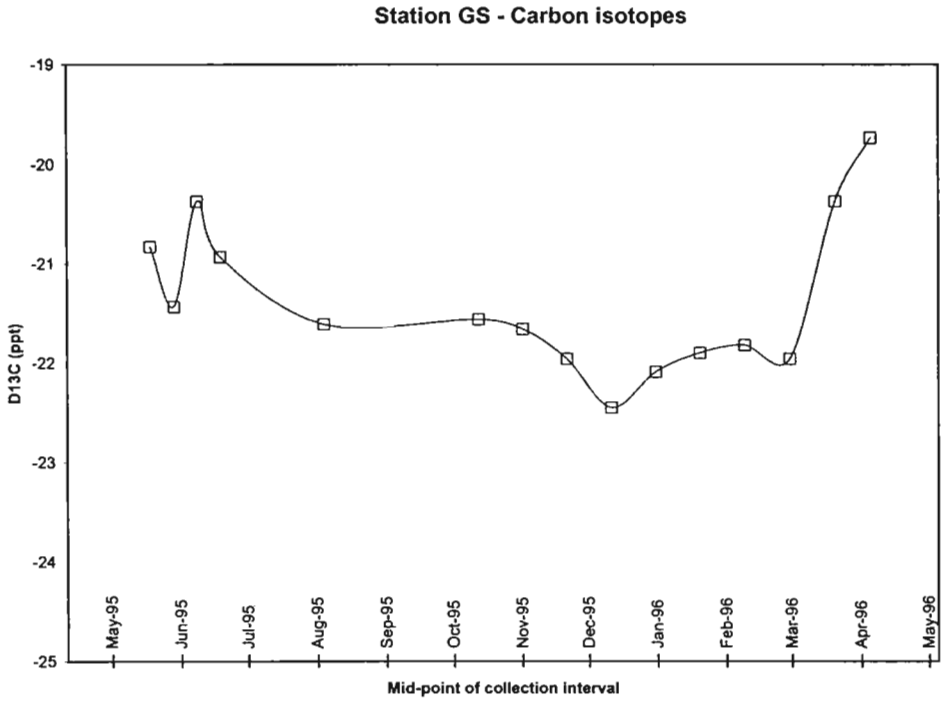


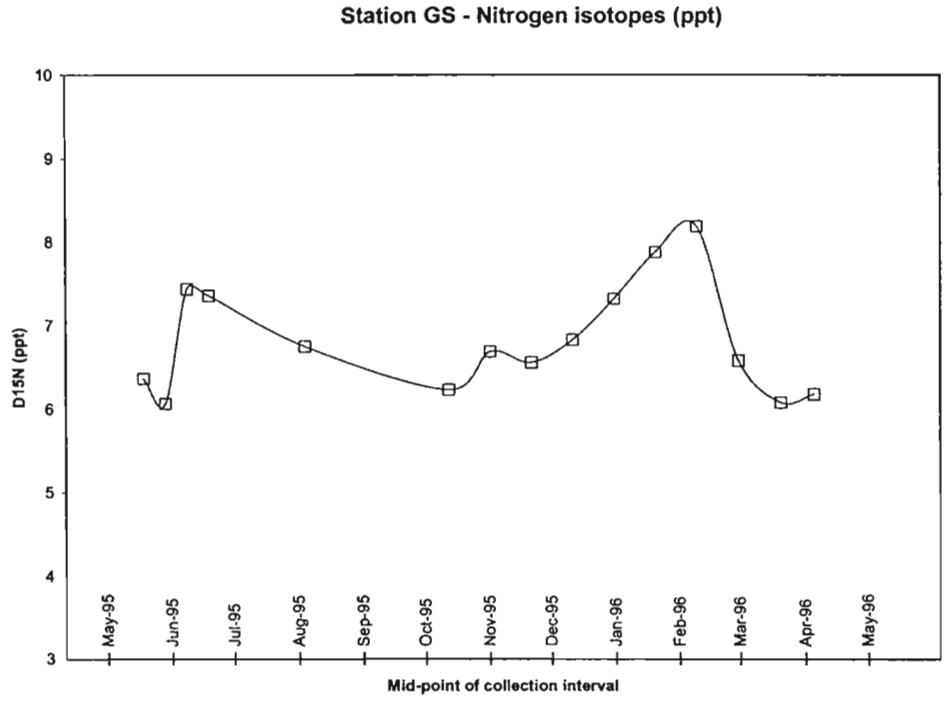

## Percent Biogenic Si



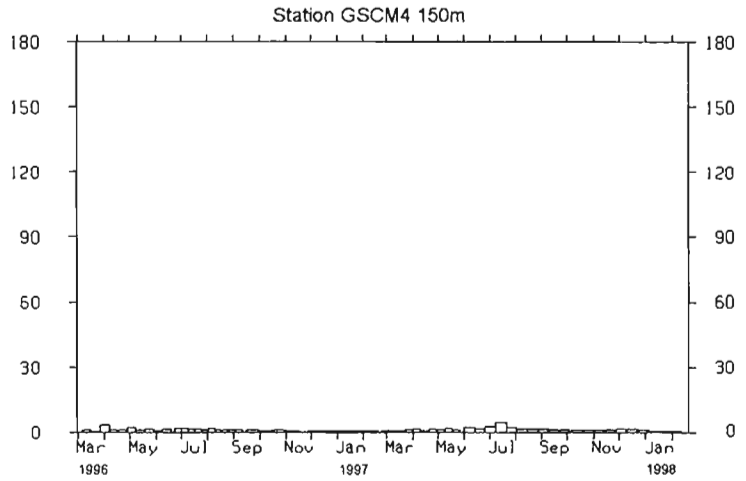
# Appendix 3. Station GS – May, 1995, to April, 1996.

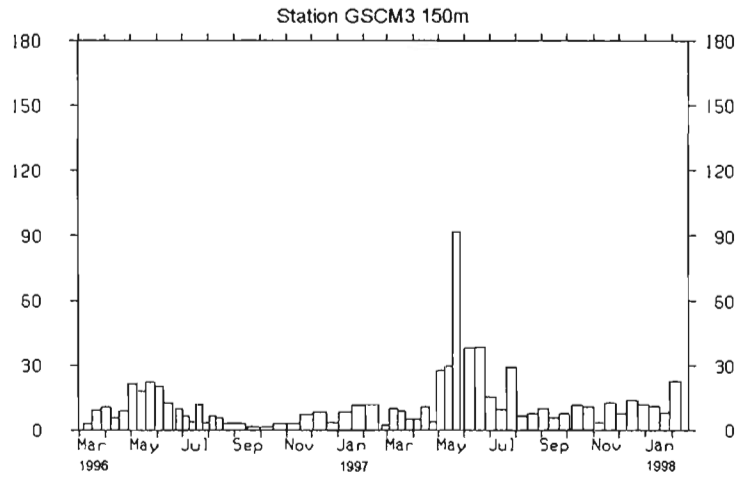
## Carbon and nitrogen isotopes

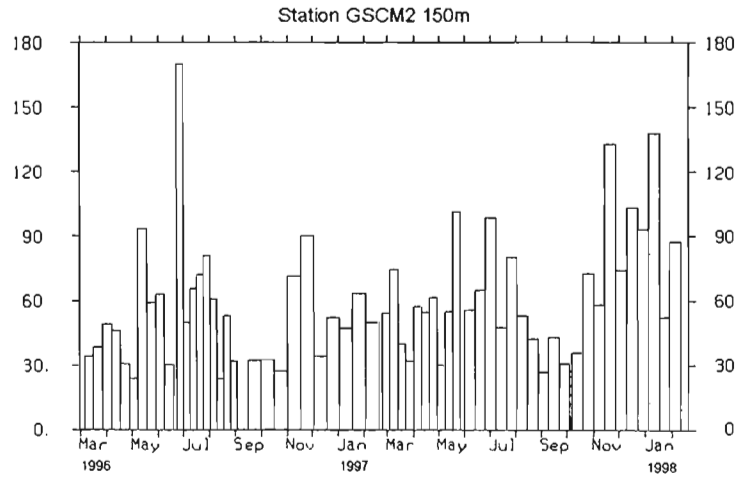


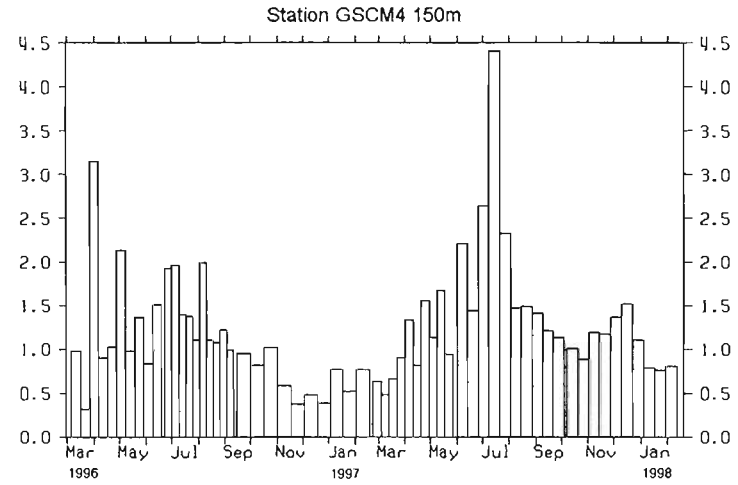
# Appendix 4. Stations GSCM2, GSCM3, and GSCM4 March, 1996, to February, 1998. Total Flux ($g/m^2/day$) all plots on same scale.

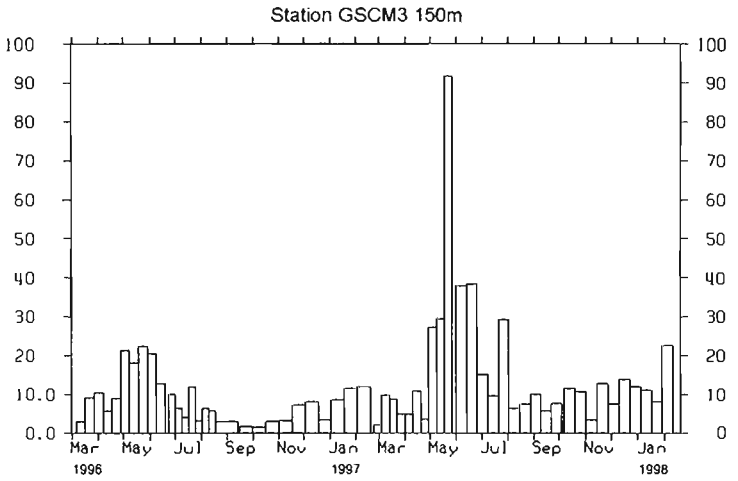


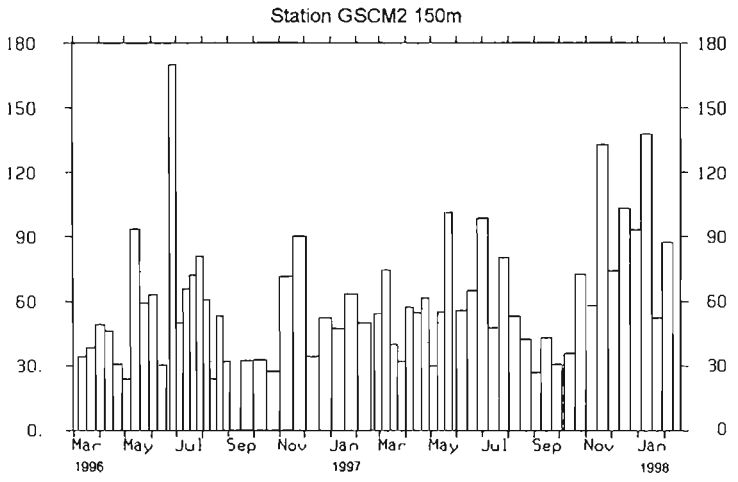



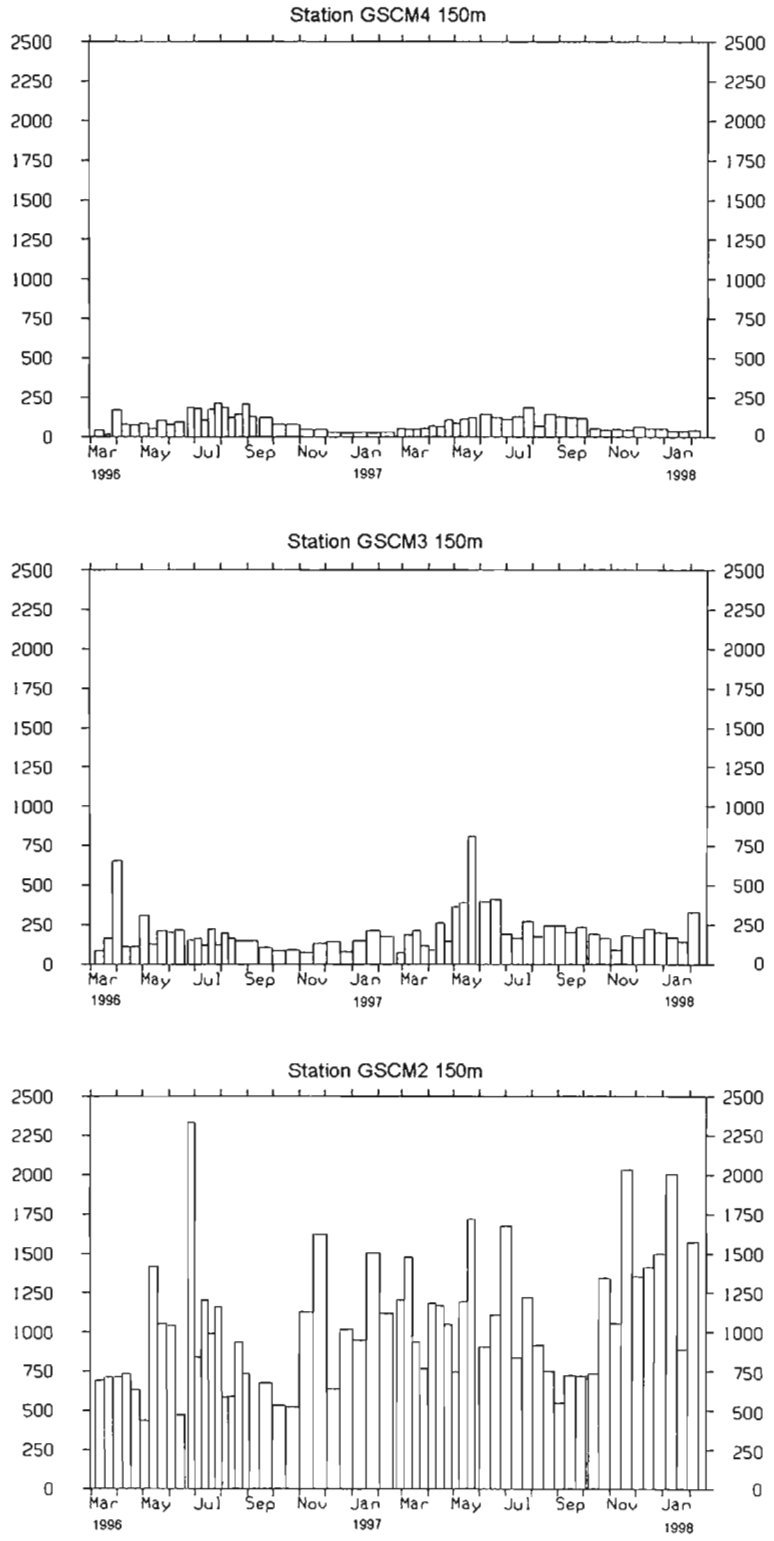
# Appendix 4. Stations GSCM2, GSCM3, and GSCM4 March, 1996, to February, 1998. Total Flux (g/m$^2$/day) – plots on different scales.



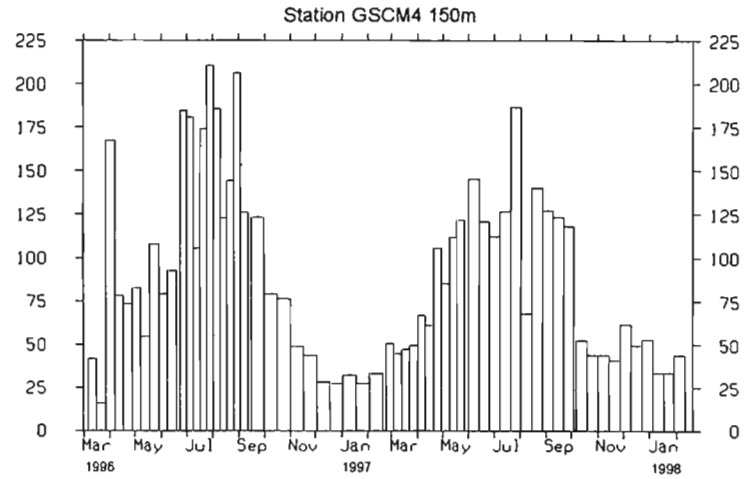



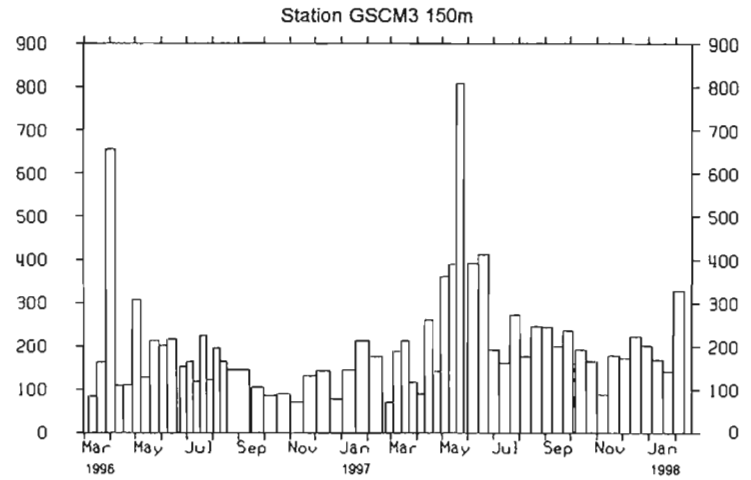



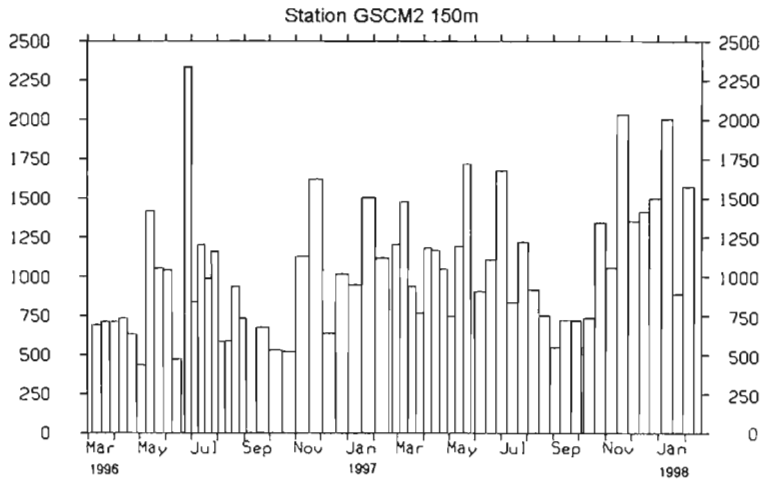
# Appendix 4. Stations GSCM2, GSCM3, and GSCM4 March, 1996, to February, 1998. Organic Carbon Flux (mg C/m$^2$/day) all plots on same scale.



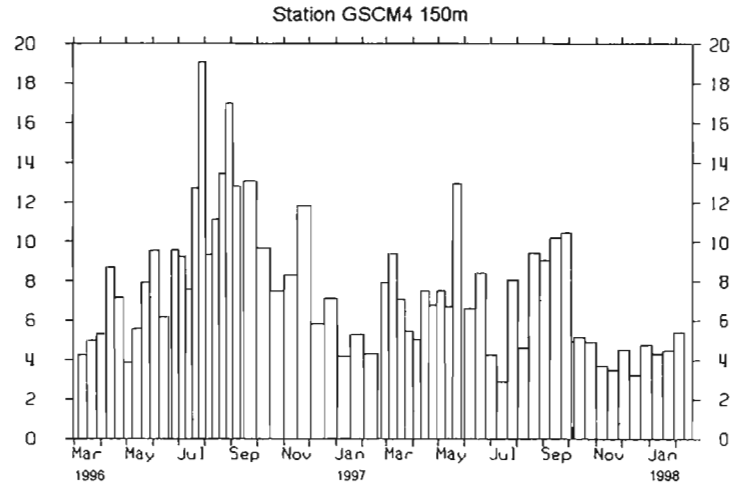
# Appendix 4. Stations GSCM2, GSCM3, and GSCM4 March, 1996,to February, 1998. Organic Carbon Flux (mg C/m$^2$/day) – plots on different scales.

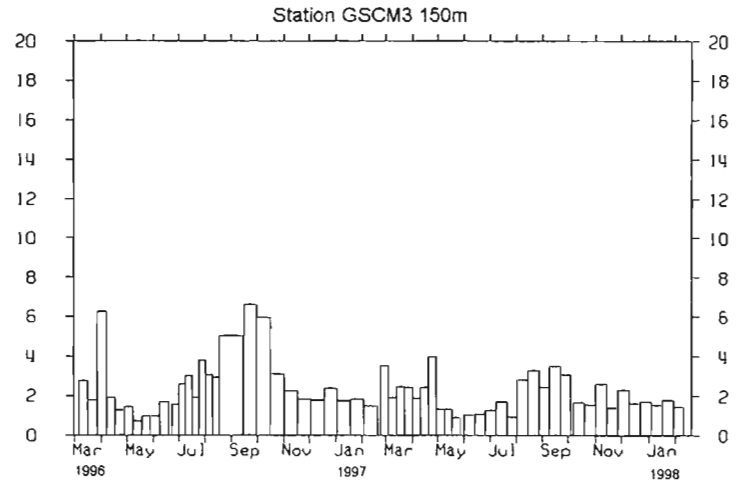


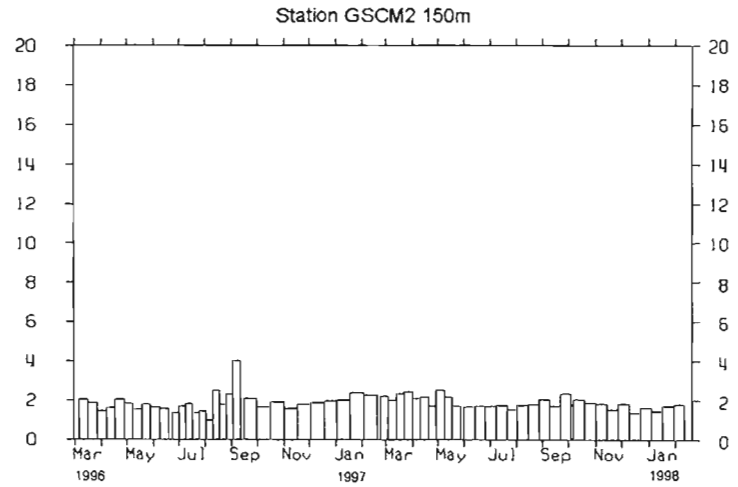



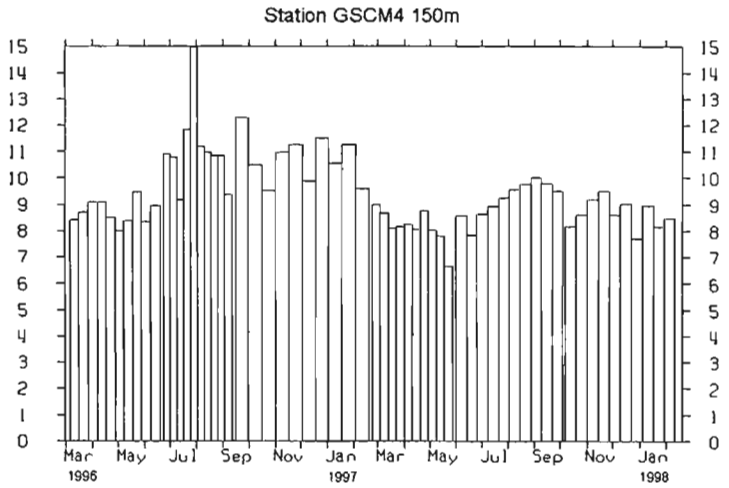
# Appendix 4. Stations GSCM2, GSCM3, and GSCM4 March, 1996, to February, 1998. Percent Organic Carbon

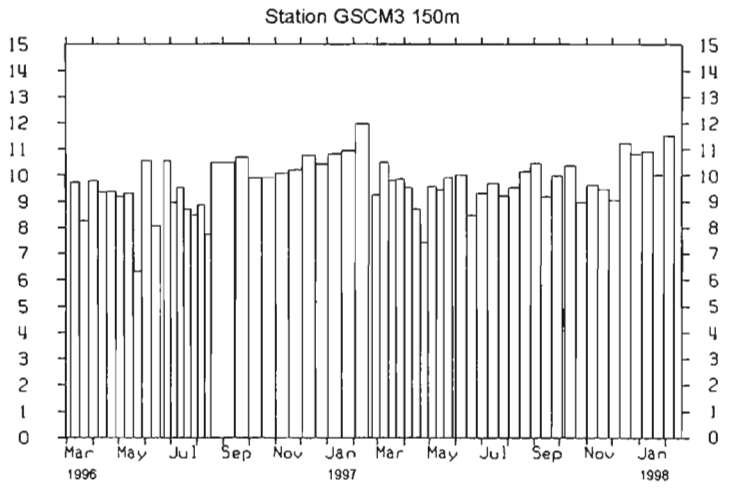


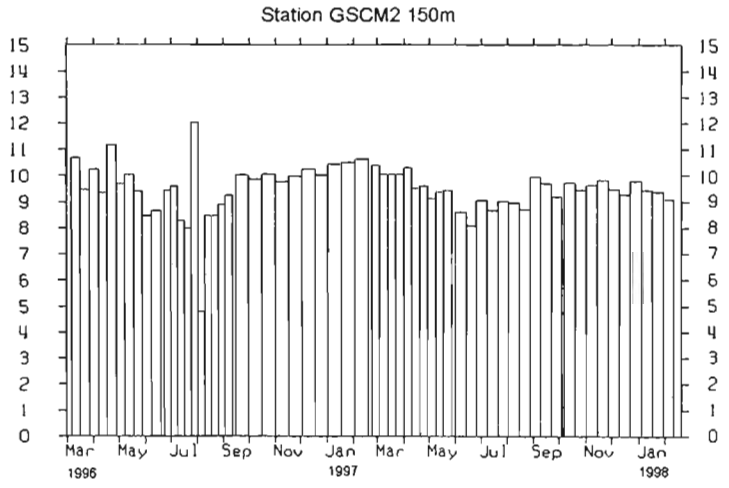



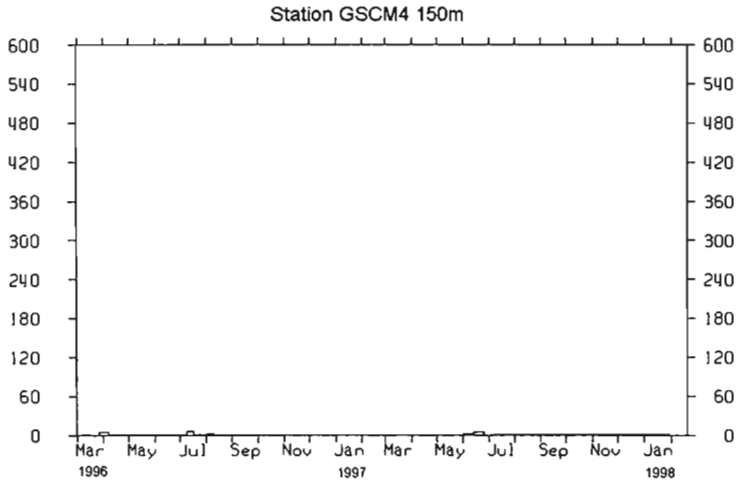
# Appendix 4. Stations GSCM2, GSCM3, and GSCM4 March, 1996,to February, 1998. CN Ratio (atomic)

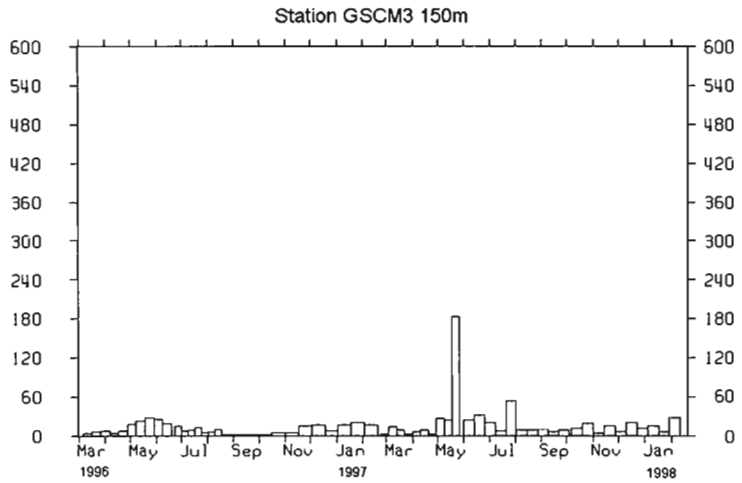


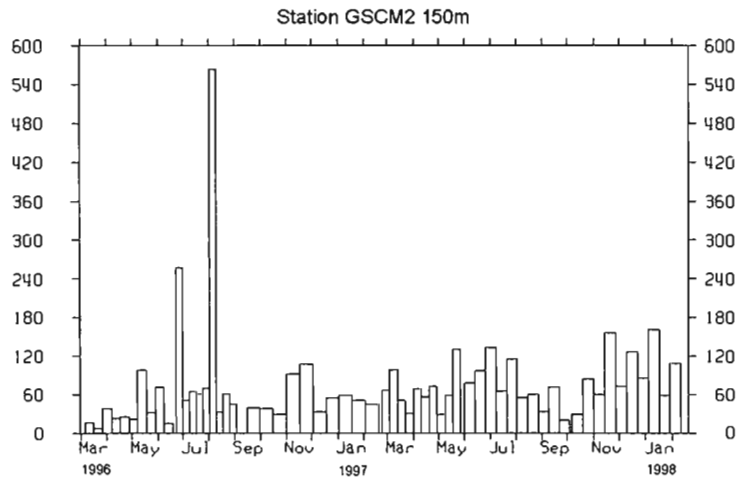



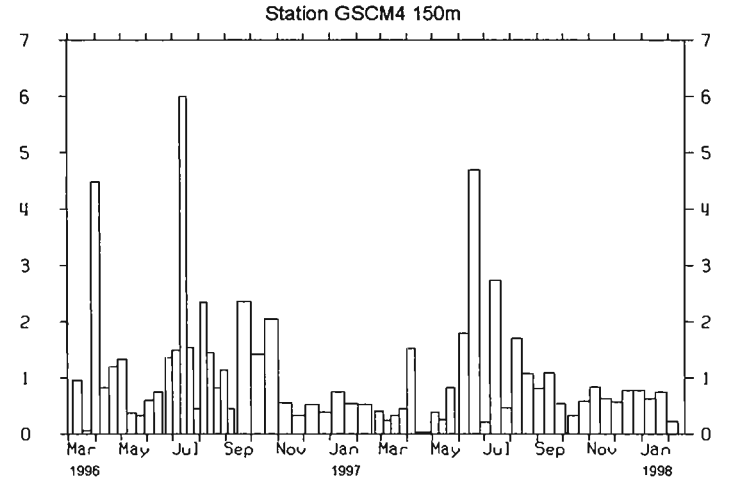
# Appendix 4. Stations GSCM2, GSCM3, and GSCM4 March, 1996, to February, 1998. Carbonate Carbon Flux (mg C/m$^2$/day) – all plots on same scale.

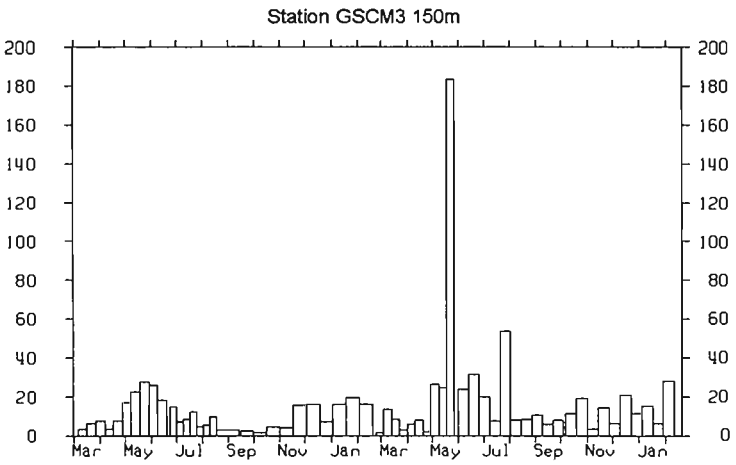


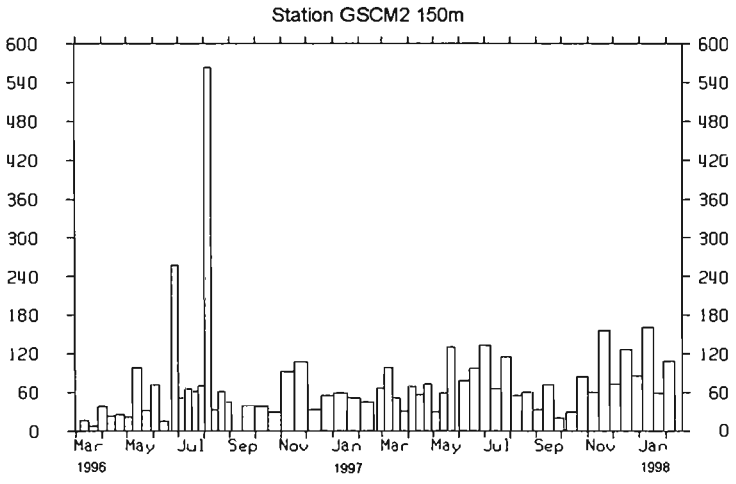



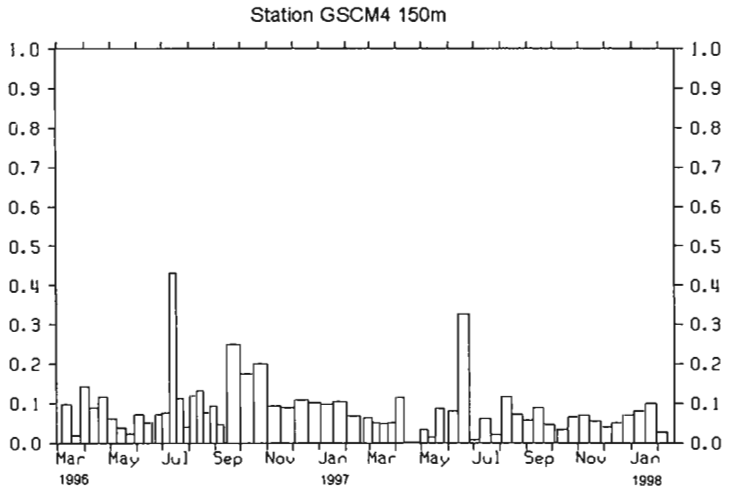
# Appendix 4. Stations GSCM2, GSCM3, and GSCM4 March, 1996 to February, 1998. Carbonate Carbon Flux (mg C/m$^2$/day) - plots on different scales.

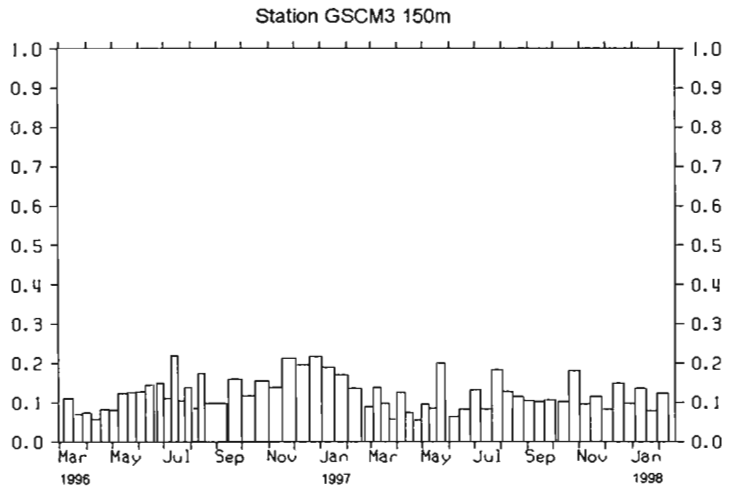


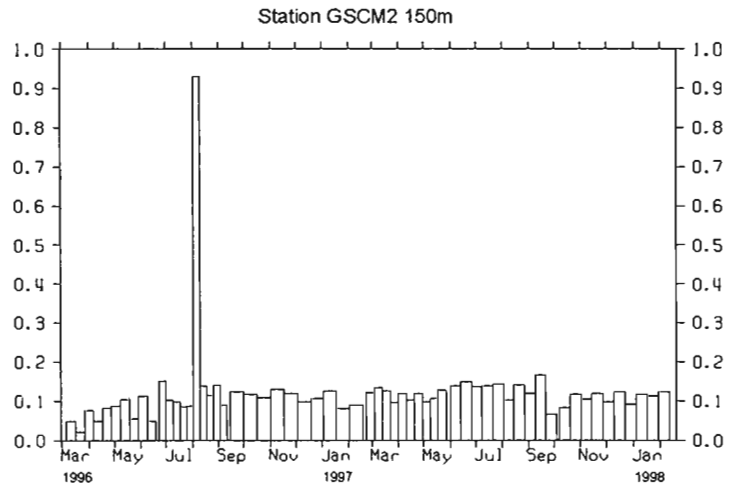



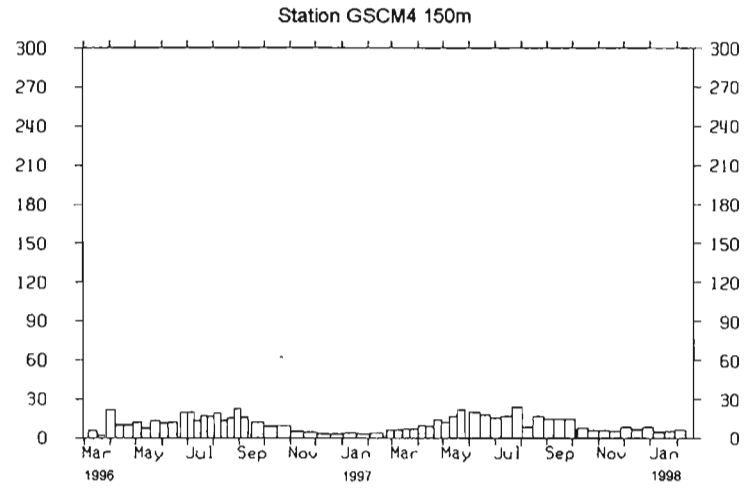
# Appendix 4. Stations GSCM2, GSCM3, and GSCM4 March, 1996, to February, 1998. Percent Carbonate Carbon

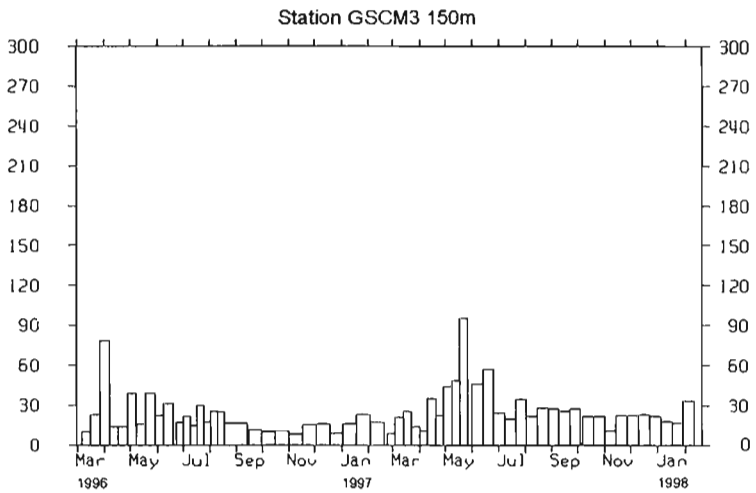


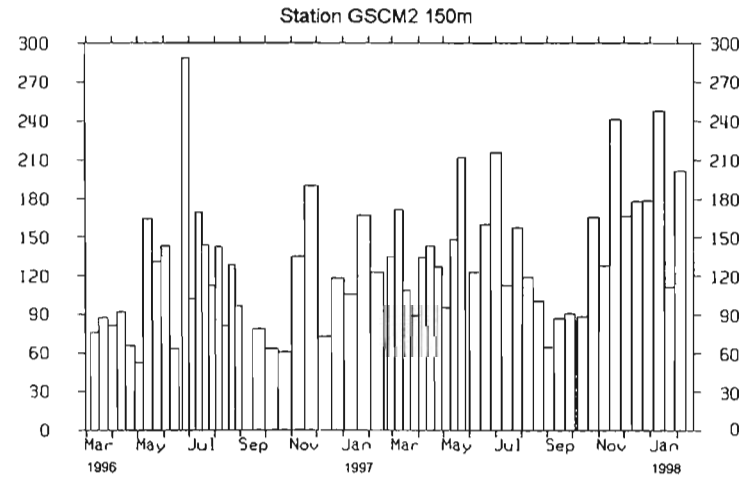



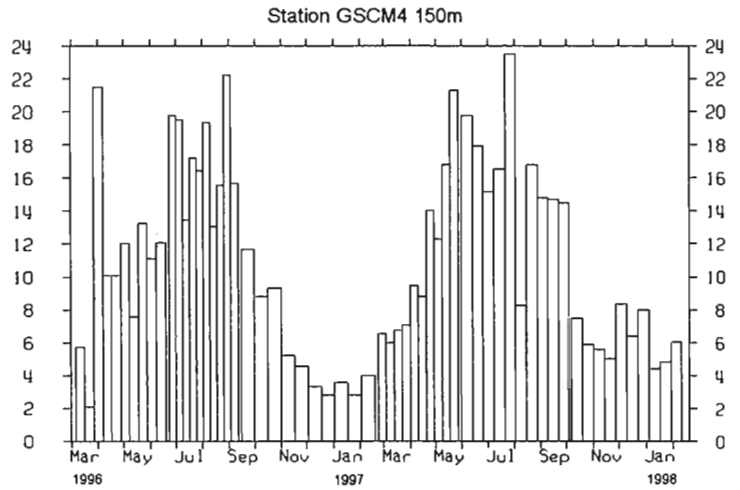
# Appendix 4. Stations GSCM2, GSCM3, and GSCM4 March, 1996, to February, 1998. Total Nitrogen Flux (mg N/m$^2$/day) – all plots on same scale.

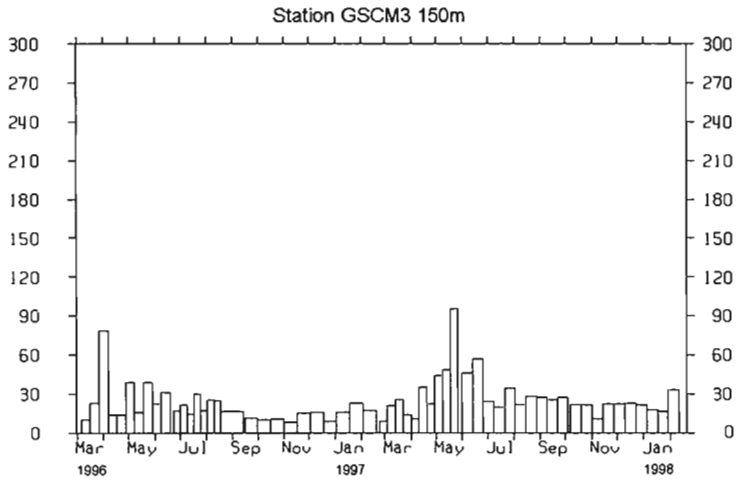


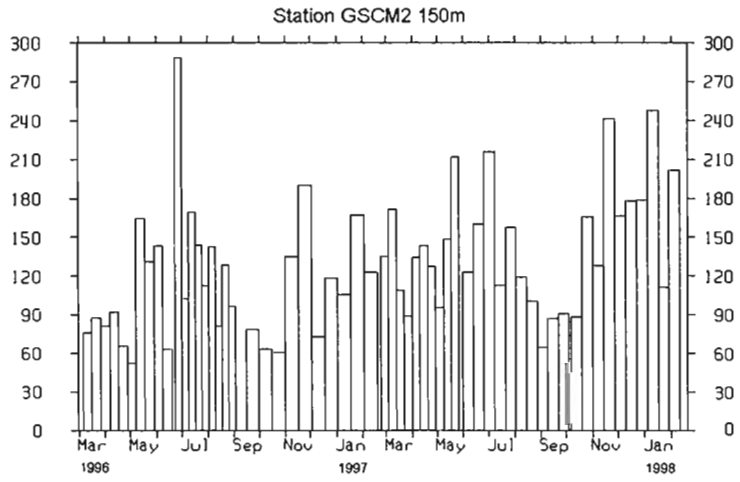



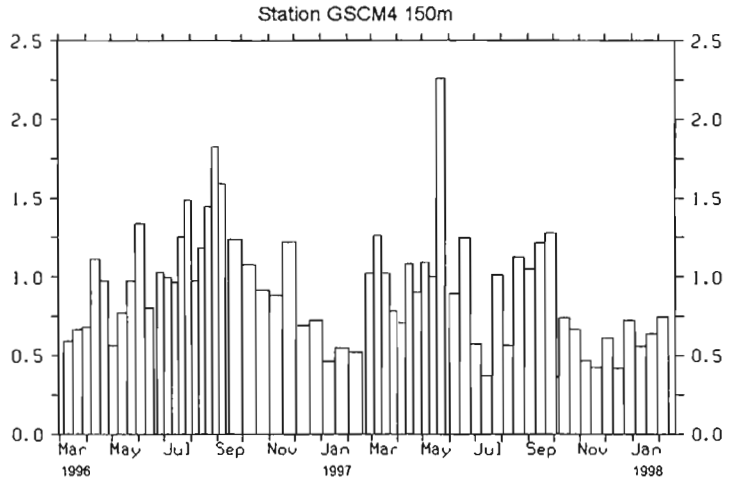
# Appendix 4. Stations GSCM2, GSCM3, and GSCM4 March, 1996,to February, 1998 Total Nitrogen Flux (mg $N/m^2$/day) - plots on different scales.

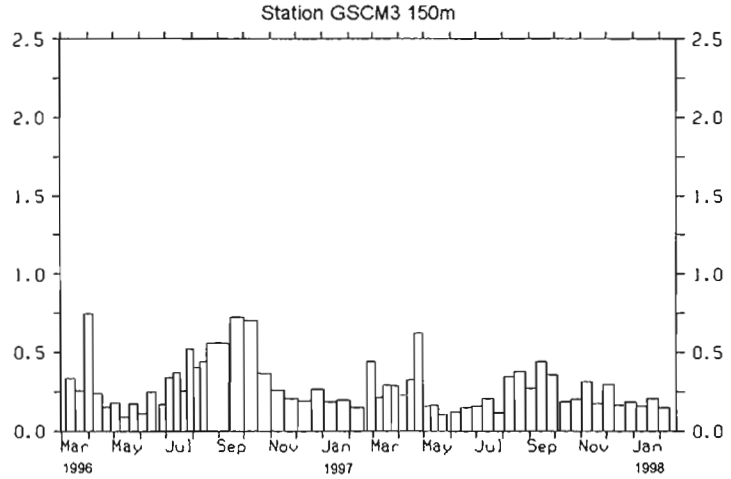


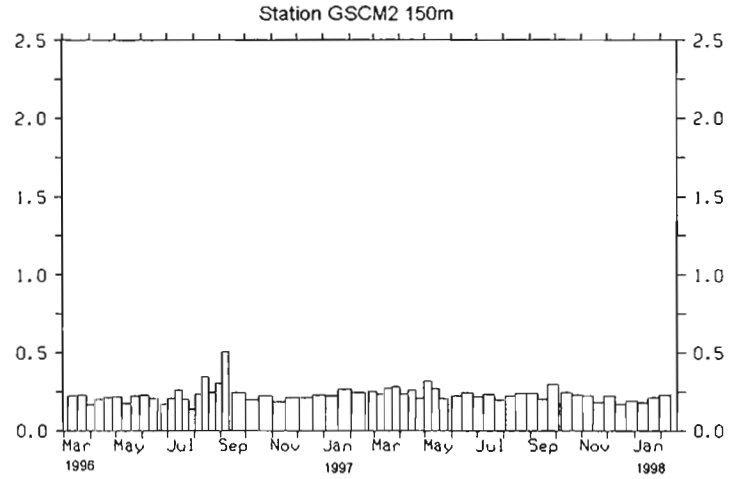



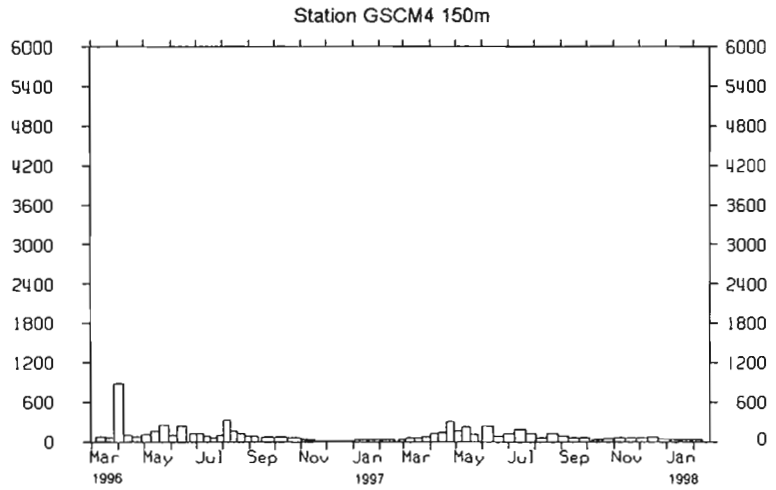
# Appendix 4. Stations GSCM2, GSCM3, and GSCM4 March, 1996, to February, 1998 Percent Total Nitrogen

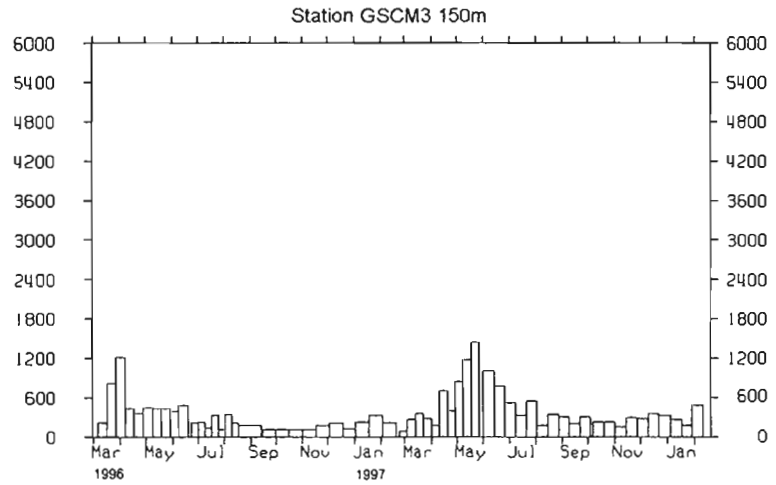


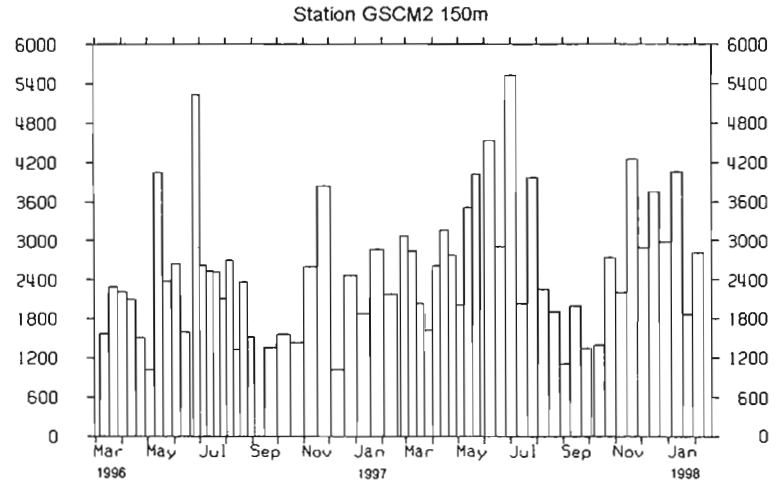



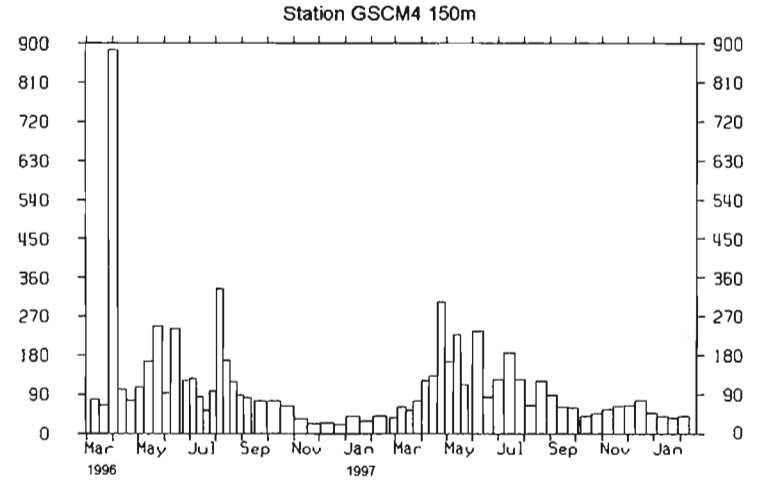
# Appendix 4. Stations GSCM2, GSCM3, and GSCM4 March, 1996, to February, 1998. Biogenic Silica Flux (mg Si/m$^2$/day) – all plots on same scale.

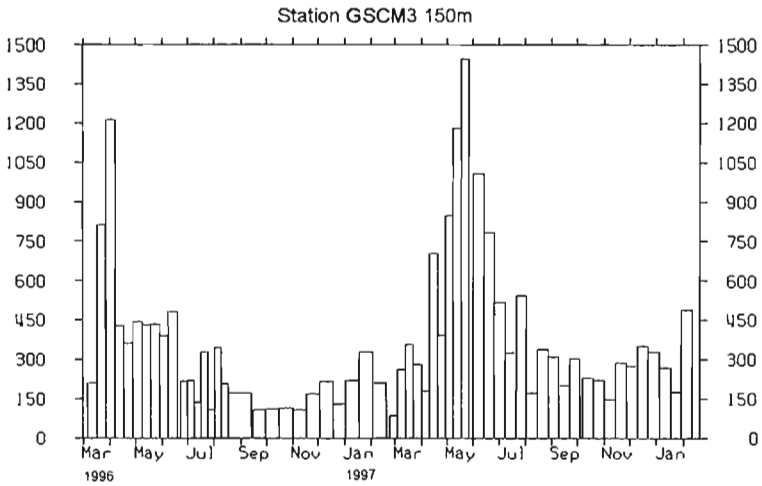


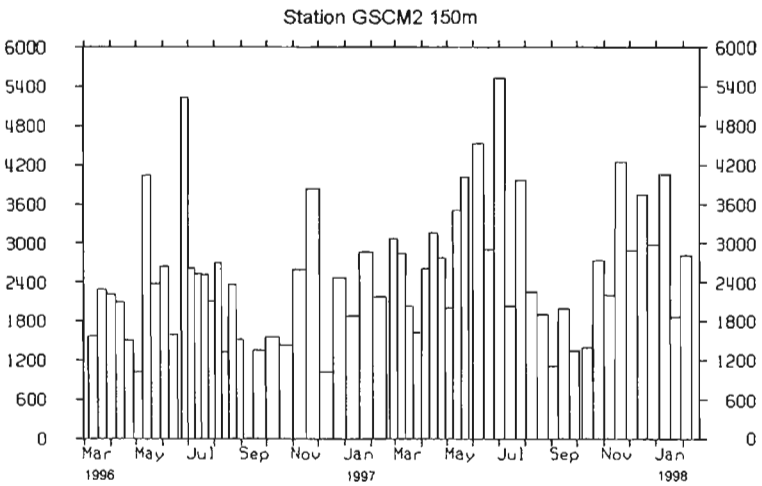



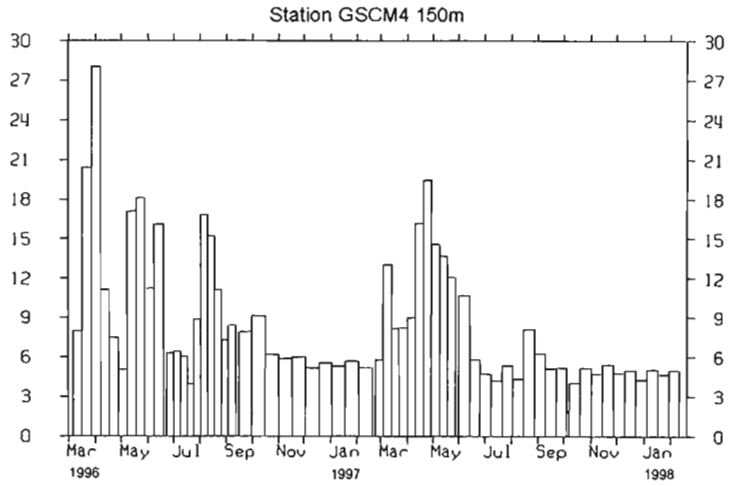
# Appendix 4. Stations GSCM2, GSCM3, and GSCM4 March, 1996, to February, 1998. Biogenic Silica Flux (mg Si/$m^2$/day) – plots on different scales.

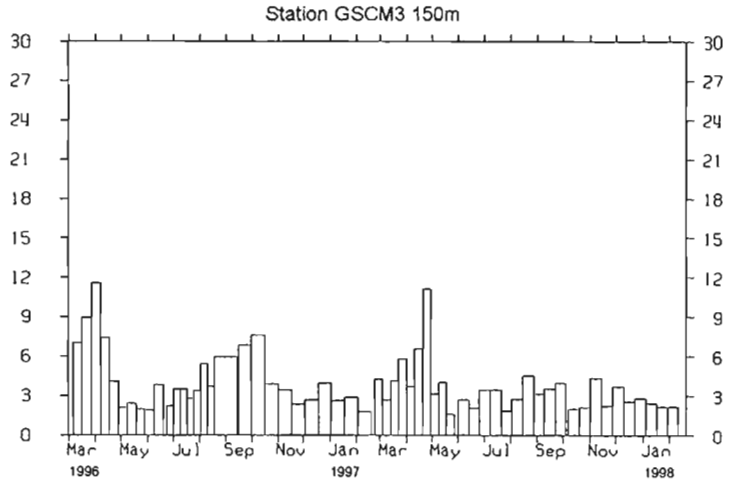


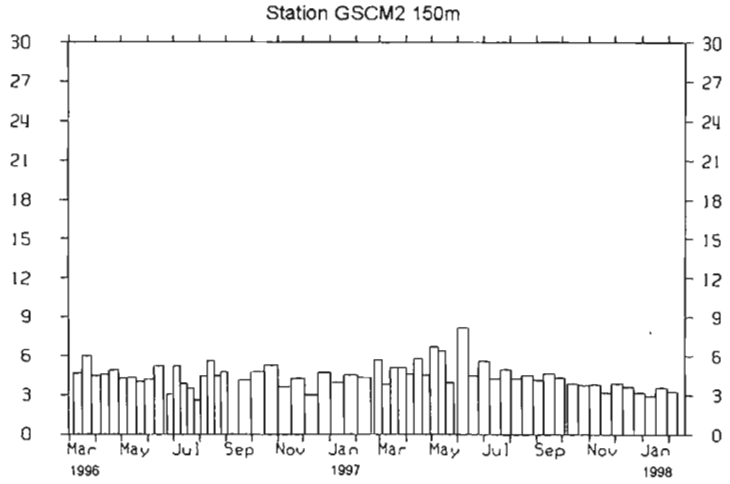



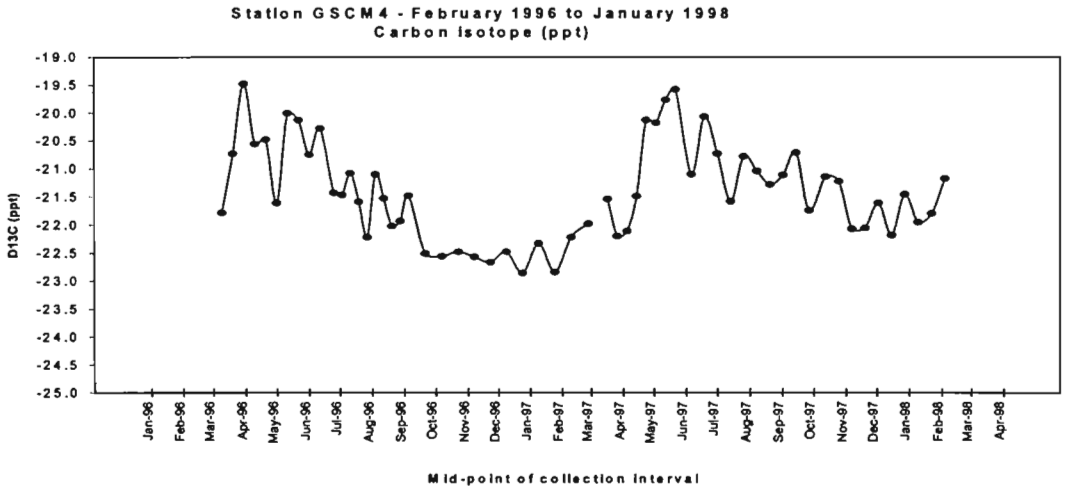
# Appendix 4. Stations GSCM2, GSCM3, and GSCM4
# March, 1996, to February, 1998
# Percent Biogenic Silica (%Si)

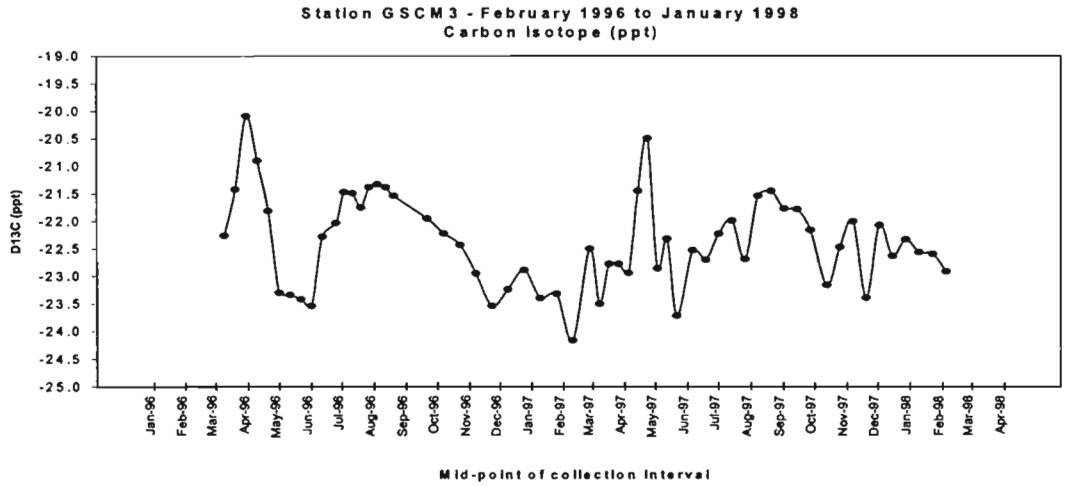


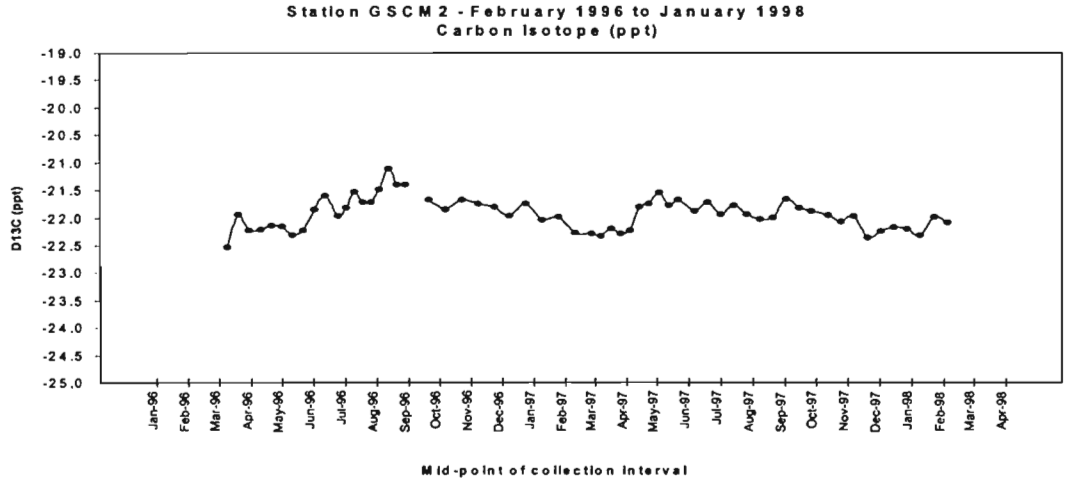



# Appendix 4. Stations GSCM2, GSCM3, and GSCM4 March, 1996, to February, 1998. $\delta^{13}C_{organic}$ (ppt)

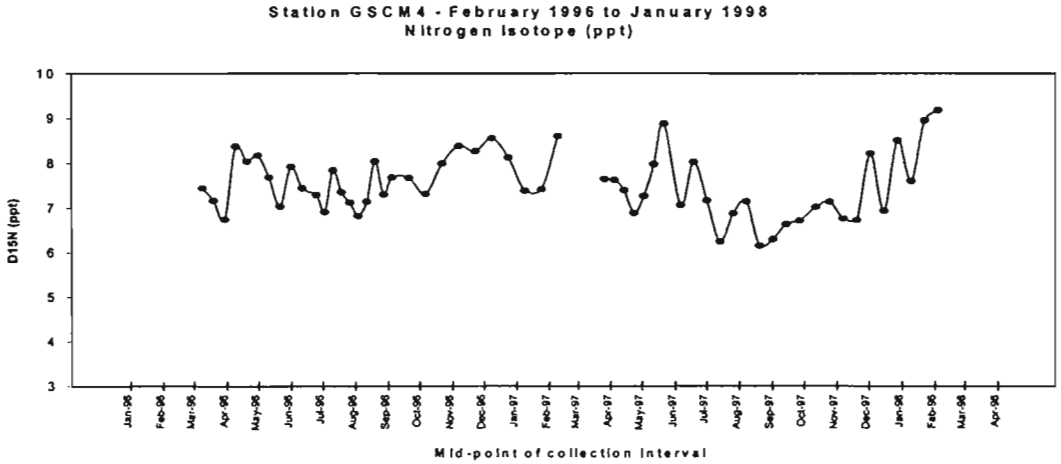


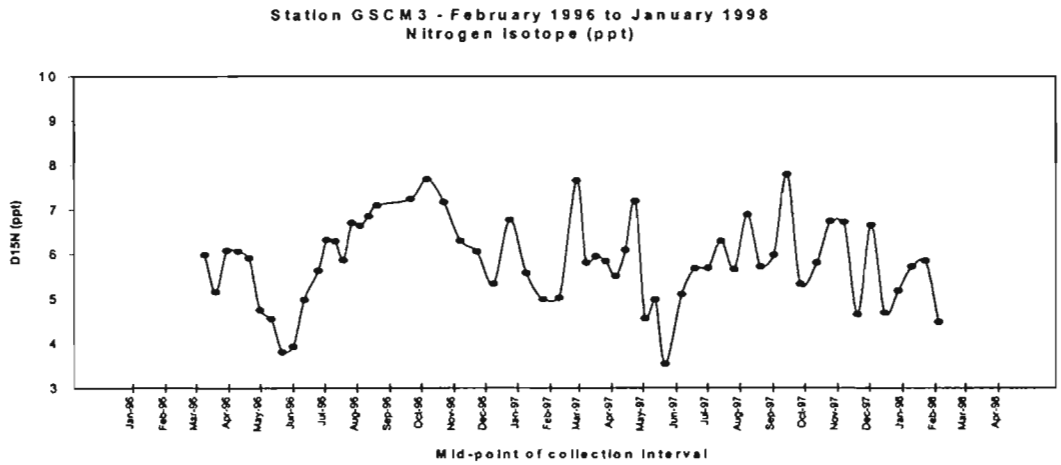



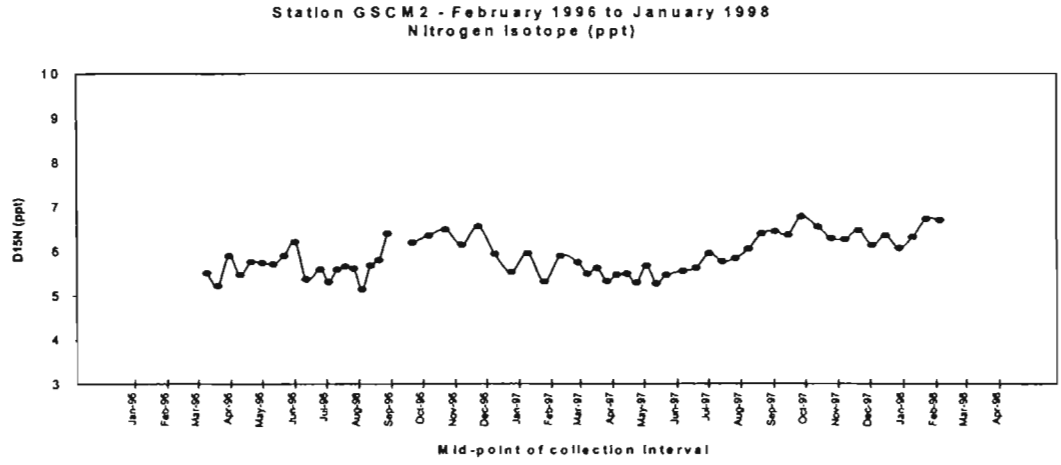



# Appendix 4. Stations GSCM2, GSCM3, and GSCM4 March, 1996, to February, 1998.

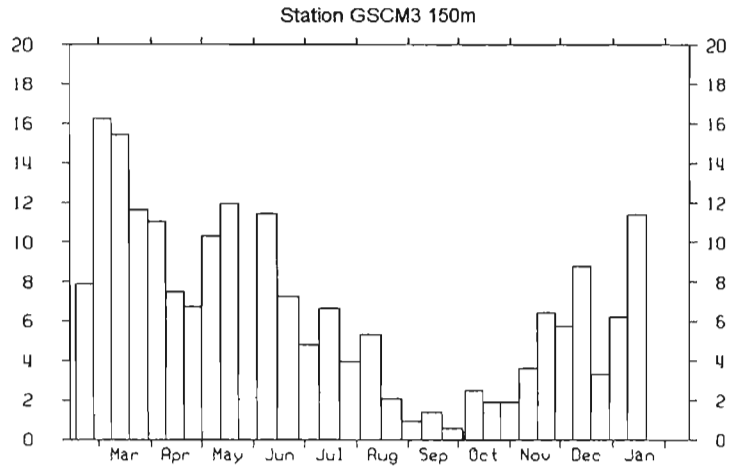
## $\delta^{15}N_{total}$ (ppt)

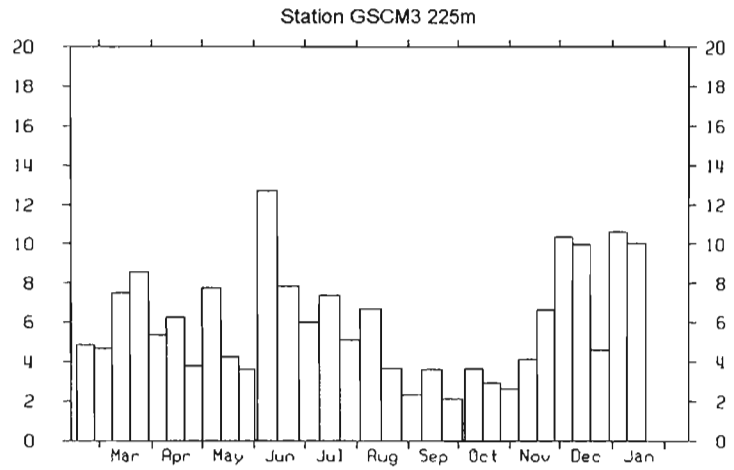


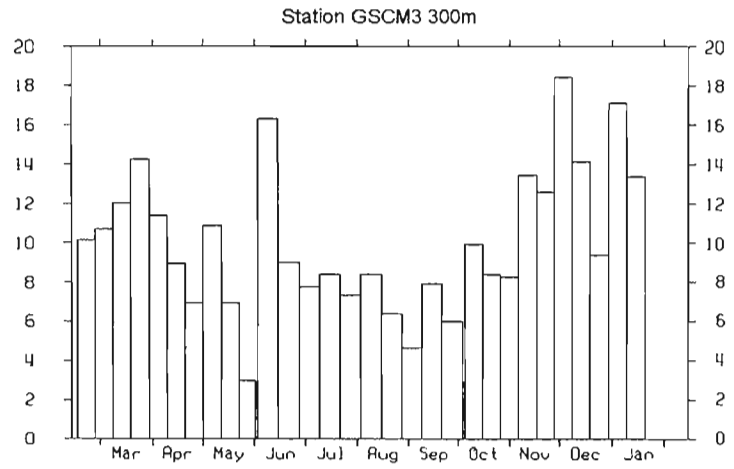



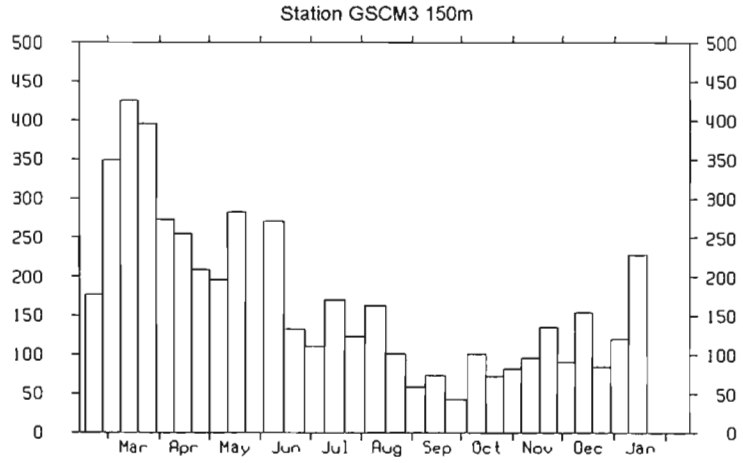
# Appendix 5. Station GSCM3 – February, 1998 to January, 1999. Total flux (g/m$^2$/day)

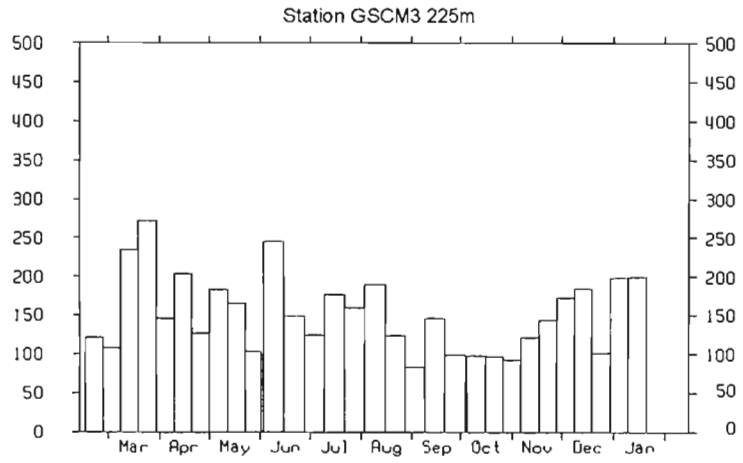


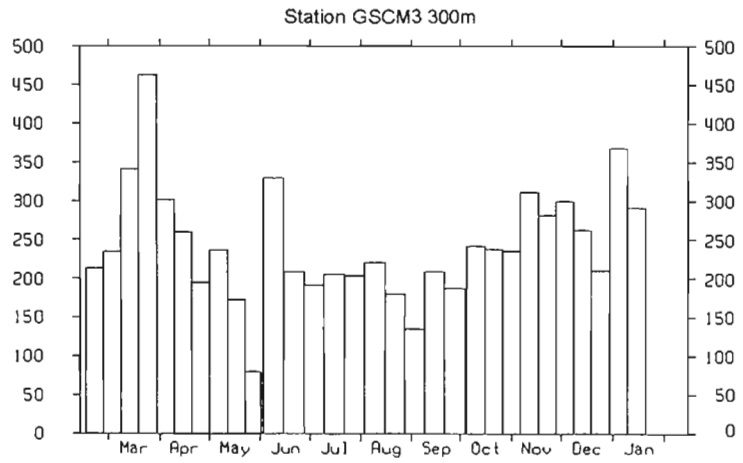



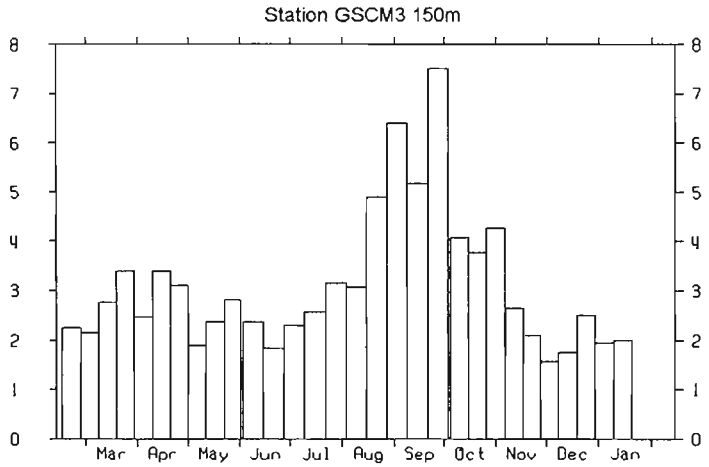
# Appendix 5. Station GSCM3 – February, 1998, to January, 1999. Organic Carbon Flux (mg C/m$^2$/day)

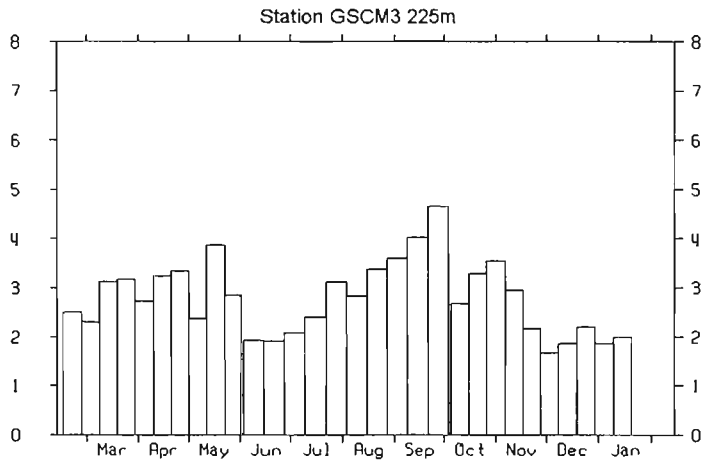


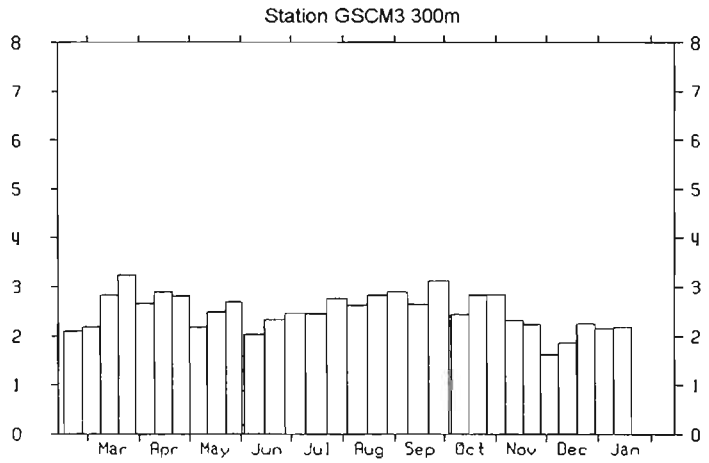



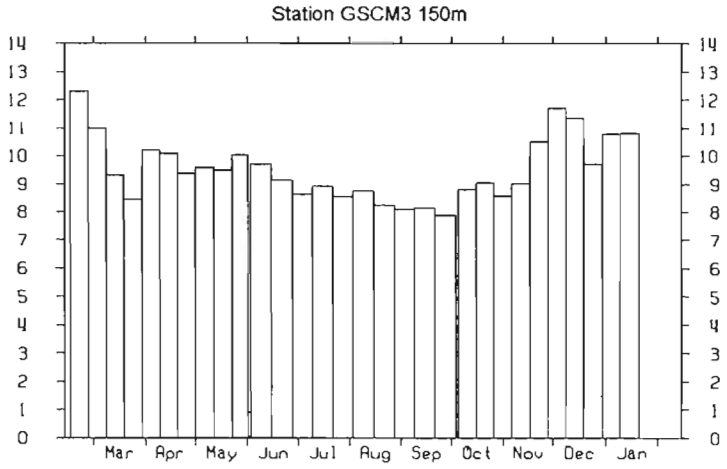
# Appendix 5. Station GSCM3 – February, 1998, to January, 1999. Percent Organic Carbon

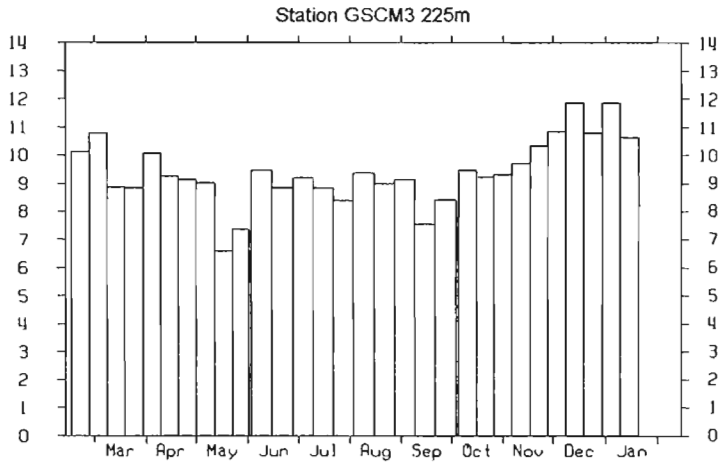


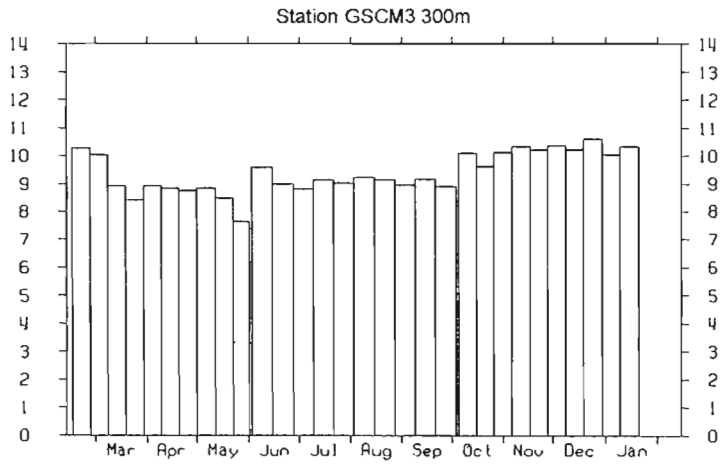



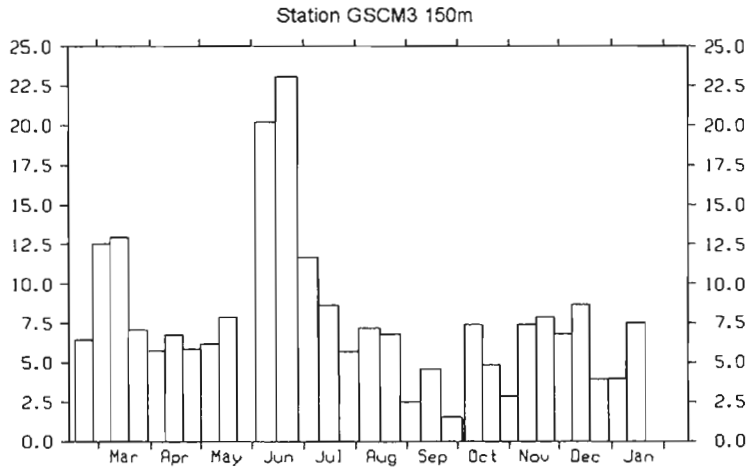
# Appendix 5. Station GSCM3 – February, 1998, to January, 1999. CN Ratio (atomic)

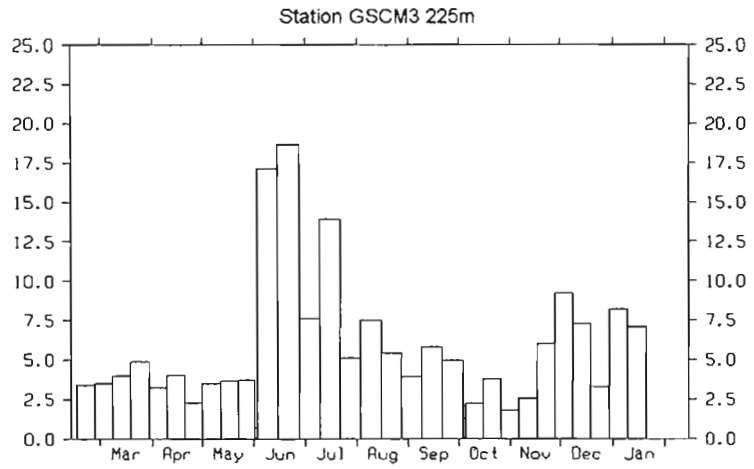


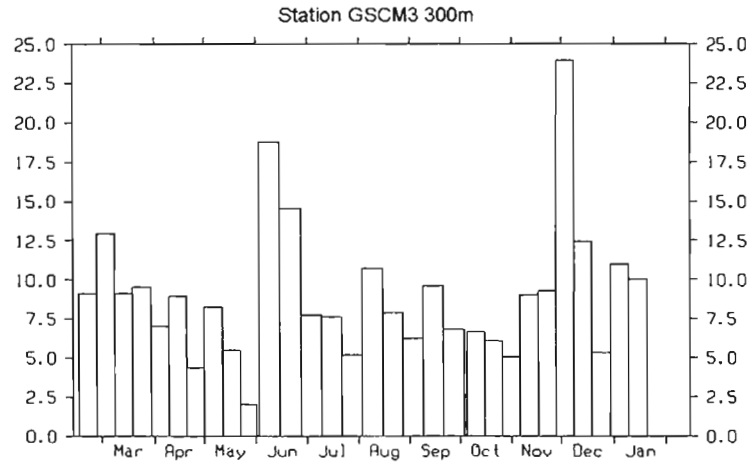



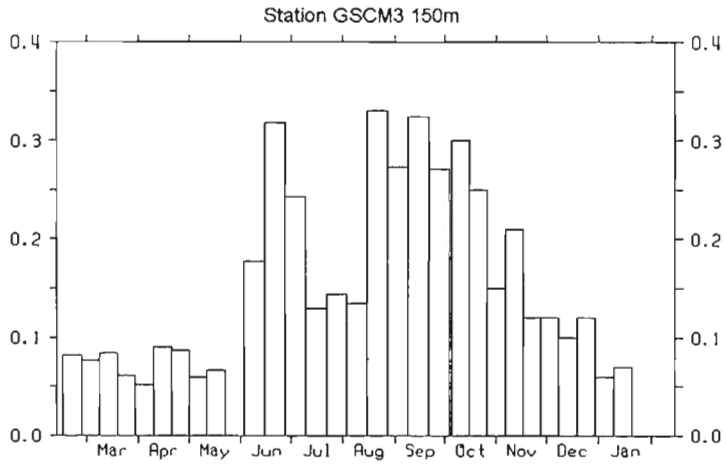
# Appendix 5. Station GSCM3 – February, 1998, to January, 1999. Carbonate Carbon Flux (mg C/m$^2$/day)

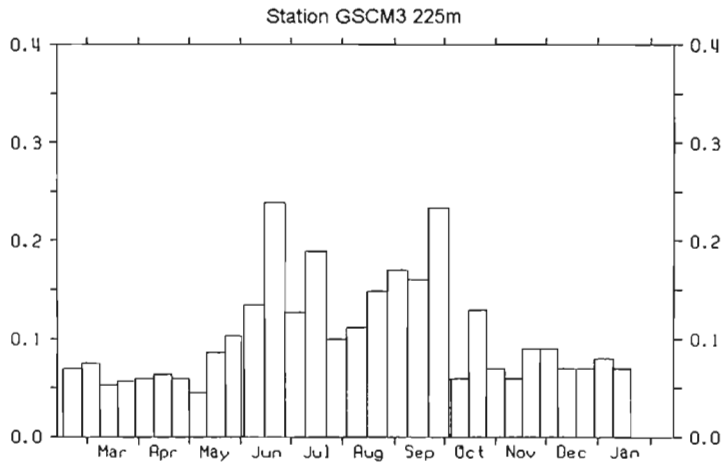


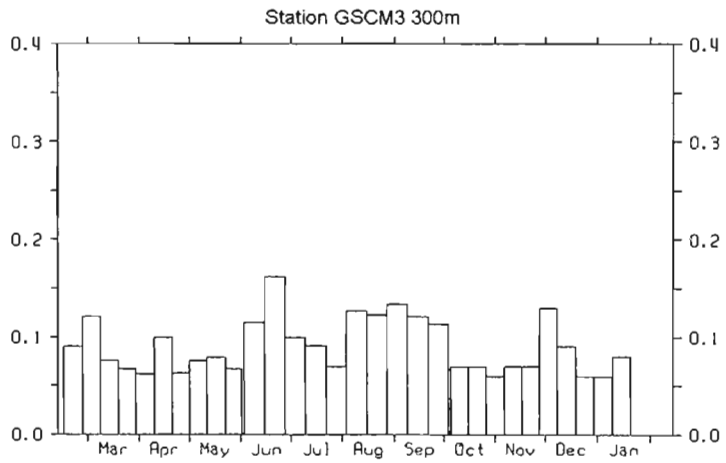



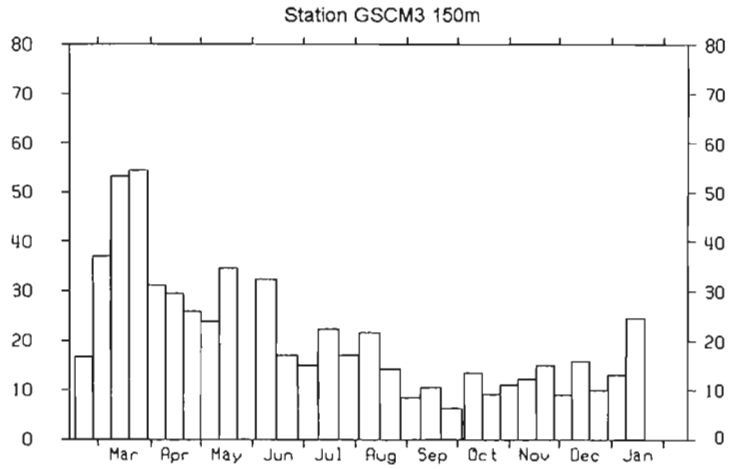
# Appendix 5. Station GSCM3 – February, 1998, to January, 1999. Percent Carbonate Carbon (%C)

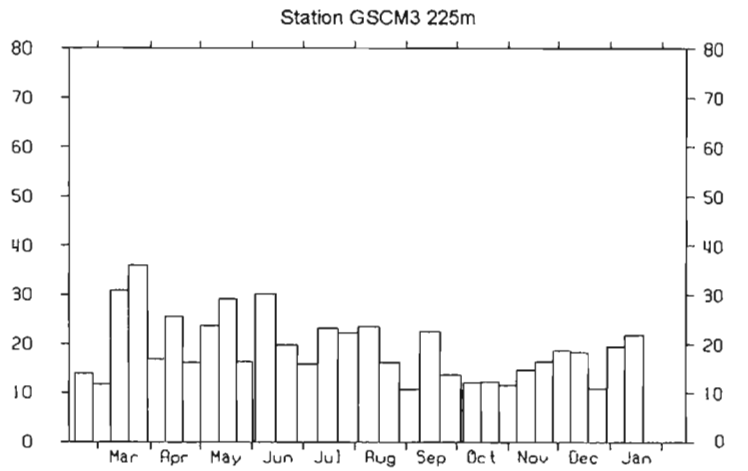


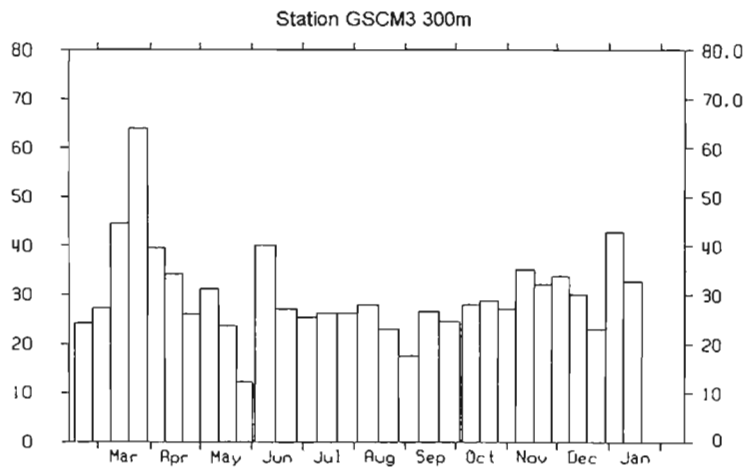



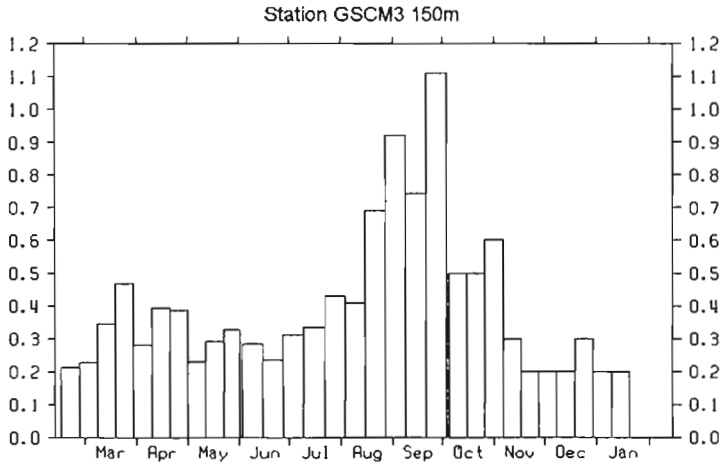
# Appendix 5. Station GSCM3 – February, 1998, to January, 1999. Total Nitrogen Flux (mg N/m$^2$/day)

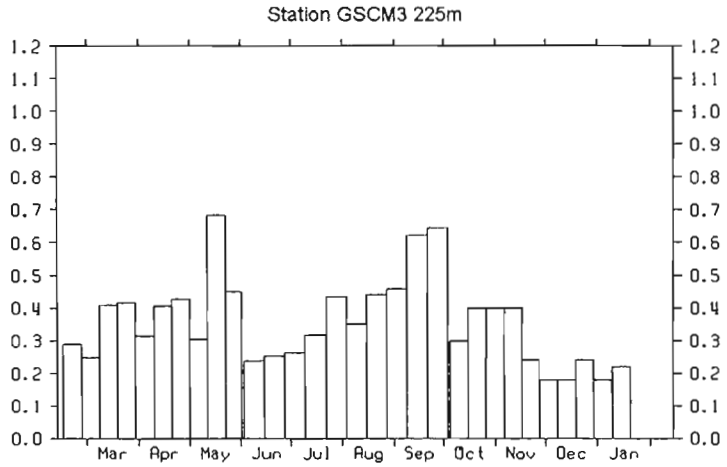


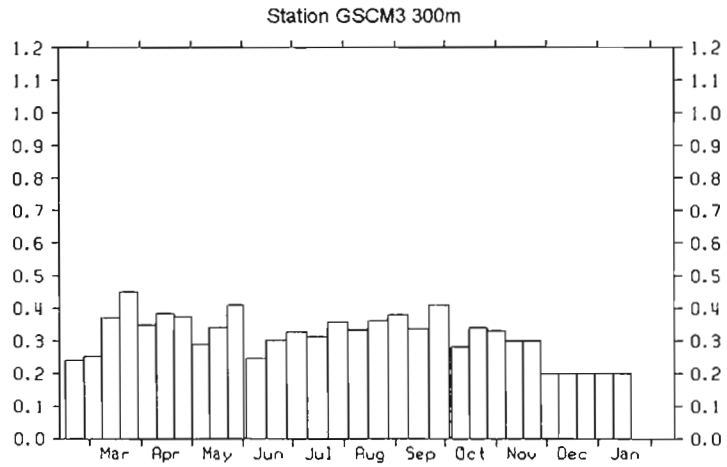



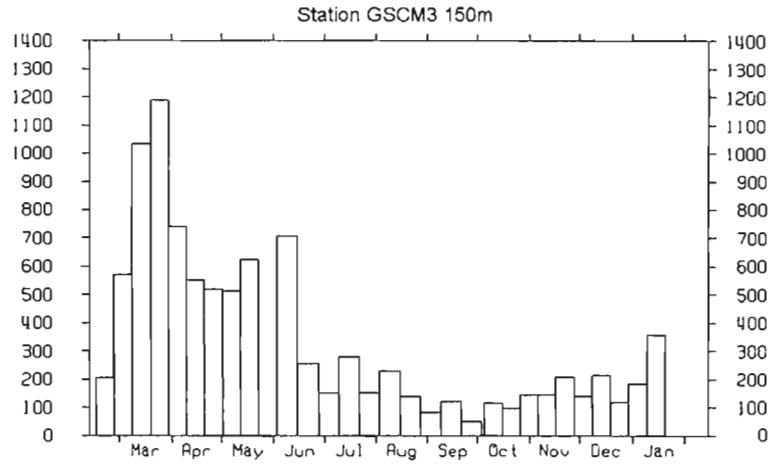
# Appendix 5. Station GSCM3 – February, 1998, to January, 1999. Percent Total Nitrogen

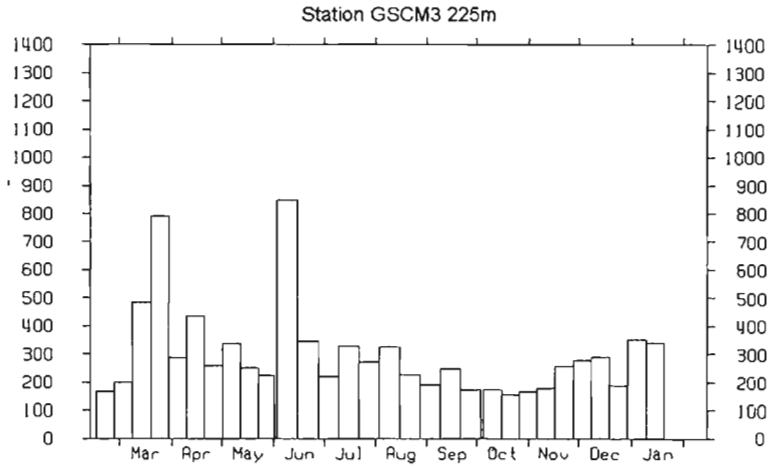


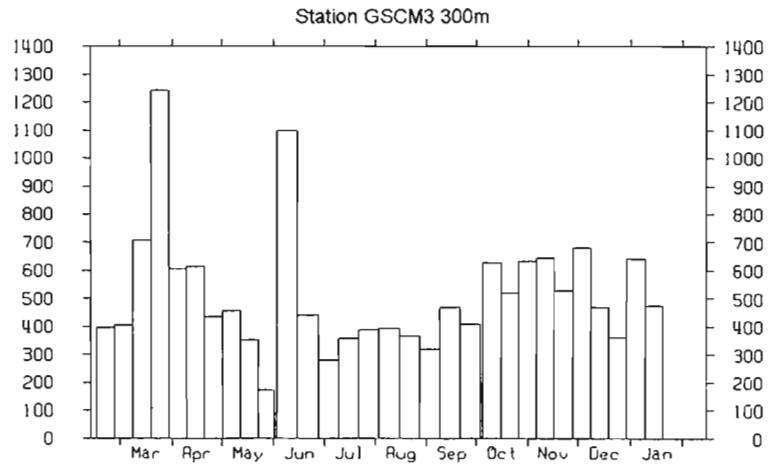



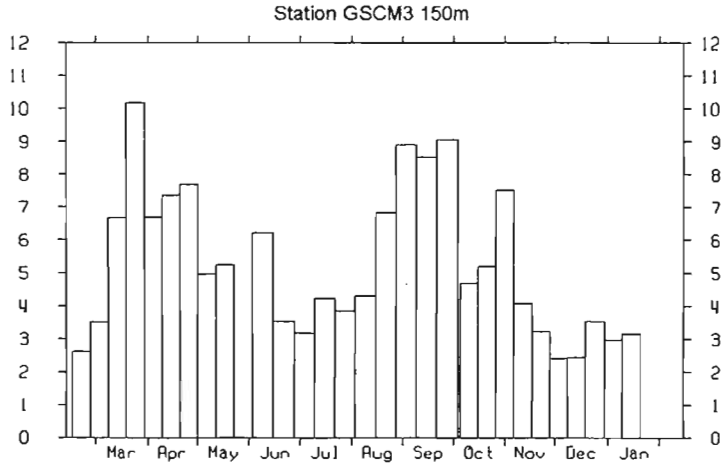
# Appendix 5. Station GSCM3 – February, 1998, to January, 1999 Biogenic Silica Flux (mg Si/$m^2$/day)

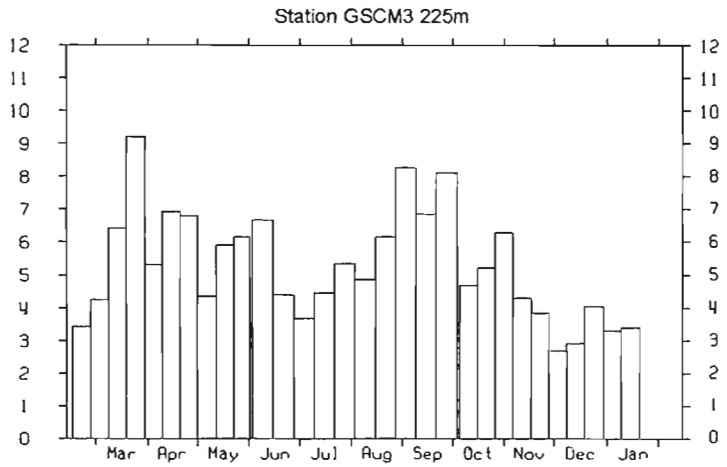


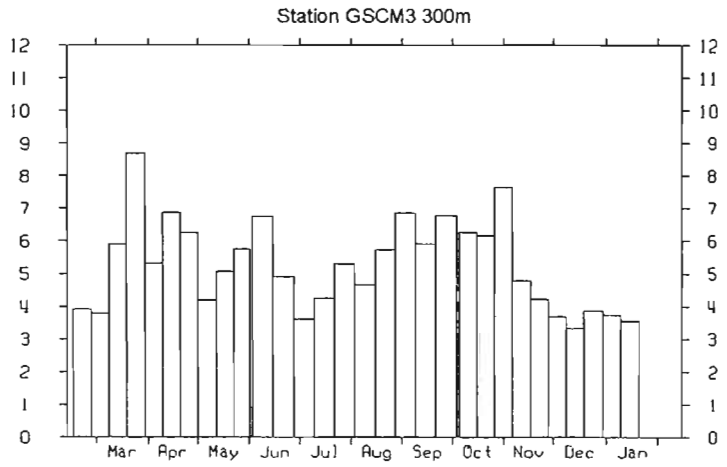



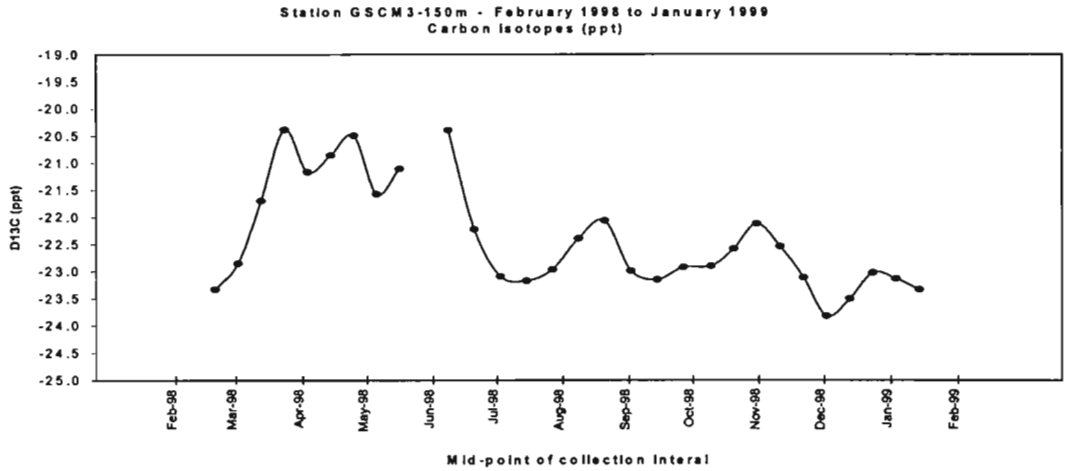
# Appendix 5. Station GSCM3 – February, 1998, to January, 1999. Percent Biogenic Silica (%Si)

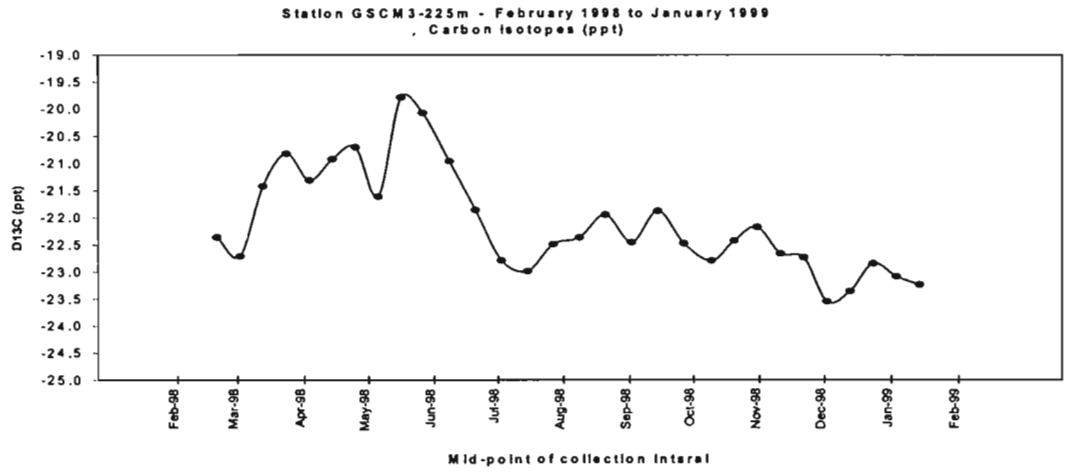


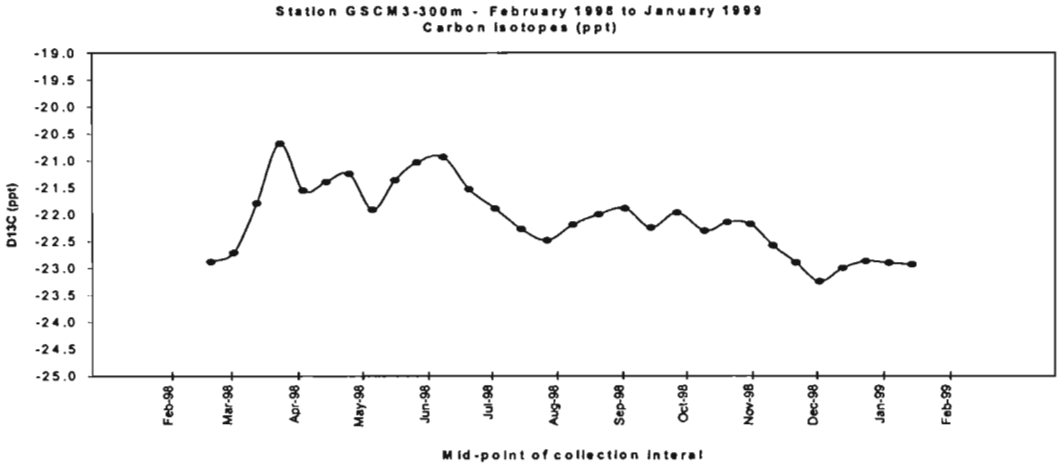



# Appendix 5. Station GSCM3 (3 depths) – 1998 to 1999.
# $\delta^{13}C_{organic}$ (ppt)



# Appendix 5. Station GSCM3 (3 depths) – 1998 to 1999. $\delta^{15}N_{total}$ (ppt)