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Diatom sinking fluxes in the western and central Equatorial Pacific during 1999-2002: Summary and data

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Abstract

Diatom sinking fluxes at Sites MT3-MT7 in the western Equatorial Pacific in 1999-2002 were studied in order to decipher the ecological relationships between the diatom fluxes and environmental conditions such as water temperature and salinity. As a supplement for those studies, this paper contains the compiled data tables of diatom fluxes at Sites MT3-MT7 together with an outline of major results based on the flux data. Not only total diatom fluxes but also the relative abundances of some major diatoms reflected the spacial and temporal migrations of the water masses from the Western Pacific Warm Pool (WPWP) and the Equatorial Upwelling Region (EUR). For example, the high fluxes of *Thalassiosira* spp., *Azpeitia* spp. and *Asteromphalus* spp. were observed in the EUR with relatively low temperature (<28ºC) and high salinity (>35.1). The abundances of those centric taxa may be indicative of the EUR. The correlation coefficient between total diatom fluxes and total radiolarian fluxes was significantly high at all sites. The flux ratios of radiolarian/diatoms were significantly lower than the data in the subarctic Pacific, and thus the significant contribution by both diatoms and radiolarians to biogenic opal is expected.

Keywords: diatom flux, sediment trap, equatorial Pacific, WPWP, EUR

1. Introduction

Four year records of diatom sinking fluxes were obtained in the western and central Equatorial Pacific in 1999-2002 in order to decipher the biogeographic relationships between diatom floral fluxes and longitudinal migrations of upper water masses associated with El Niño-Southern Oscillation (ENSO). In the research program "Global Carbon Cycle and Related Mapping based on Satellite Imagery" (GCMAPS), several sediment traps were deployed as one part of the project. As the results by the GCMAPS at this time, there are several publications on diatom biocoenosis and diatom fluxes in the Equatorial Pacific (Kobayashi and Takahashi, 2002; Ono et al., 2004; Takahashi et al., 2002, submitted). The diatom counting was conducted by three graduate school students, Department of Earth & Planetary Sciences, Graduate School of Sciences, Kyushu University. However, three data sets of their count data had not yet been compiled to one entity from

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the first to the final years of sediment trap deployments. For the further research on diatom fluxes and paleoceanography employing diatom fossils, the publication of the compiled data is warranted. Therefore, we herewith present the compiled data of diatom fluxes as the supplement together with an outline of the major results.

2. Samples and Methods

The time-series sediment traps (type SMD26S-6000, Nichiyu-Giken Co. Ltd., Tokyo) were deployed at Sites MT3-MT7 in the western and central Equatorial Pacific from January 1999 to January 2003 (Table 1; Fig. 1). This sediment trap is cone-shaped with 0.5 m^2 apertural area and 26 collecting sample bottles. The deployment, recovery, maintenance, and redeployment of sediment traps were conducted during the cruises of the R/V Mirai, Japan Agency for Marine-Earth Science and Technology (JAMSTEC). The sediment traps were deployed at two depths (approx. 1000 m [Shallow] and 2000-3000 m [Deep]) at all sites.

Table 1. Deployment summary of sediment traps at Sites MT3-MT7 from January 1999 through January 2003. The detail data for the sampled interval are tabulated in Appendix Table 1.

Site	Coordinate	Water Depth (m)	Trap Depth (m)	Sampled Interval (days)	Sampled Duration
MT3	0°01'S, 145°01'E	3680	2017	15/16/17	5 Jan. 1999 - 24 Dec. 2002
MT4	0°03'N, 159°57'E	2809	2030	15/16/17	9 Jan. 1999 - 15 Jan. 2003
MT5	0°02'S, 174°56'E	4821	3038	15/16/17	13 Jan. 1999 - 16 Jan. 2003
MT6	0°01'S, 174°10'W	5630	2945	15/16/17	17 Jan. 1999 - 1 Jan. 2001 1 Feb. 2002 - 21 Jan. 2003
MT7	0°00', 160°00'W	5153	3095	15/16/17	16 Jan. 2001 - 24 Jan. 2003

For diatom analysis, we employed splits of 1/256-1/1024 aliquot sizes of the original trap samples. A fraction of the liquid sample was filtered through a Gelman® membrane filter (47 mm diameter, 0.45μ m pore size). The filtered sample was mounted on a microslide with Canada Balsam as the mounting medium. Diatoms were counted under an Olympus® LM BX-50 light microscope at 400x magnification. The diatom assemblages were investigated by identifying to species level; at least 200 specimens (in two instances lower than this value due to availability of small amount of samples; MT3 16 July-01 August 2001; 16-23 December 2002); and generally greater than 200 valves per sample were counted under the light microscope (Appendix Table 1). The resulting counts yielded estimates of daily fluxes of diatom valves (Takahashi, 1986). Relative abundances of individual diatom taxa are given as percentages of each taxon in the total diatom assemblage in each of the trap sample. Diatom identification and counting were performed by Fumiko Kobayashi for the first year samples, Itsuro Ono for the second year and Yoichiro Katsurada for the third and fourth year samples. The diatom taxonomy in this study is essentially based on the system by Hasle and Syvertsen (1997). Due to the insufficient taxonomic agreement and the handover among three investigators who proceeded the counts, the species list of minor diatoms observed in the studied samples are not always consistent throughout four years in the census. For instance, when a given investigator in charge of the counts decided not to be confident in providing species level identity of the taxa the investigator only provided the taxon-count values at a higher level than species. Therefore, these uncertain diatom species are lumped to one taxon at genus or order level. Takahashi et al. (2002) and Ono et al. (2004) suggested the significant adverse influence

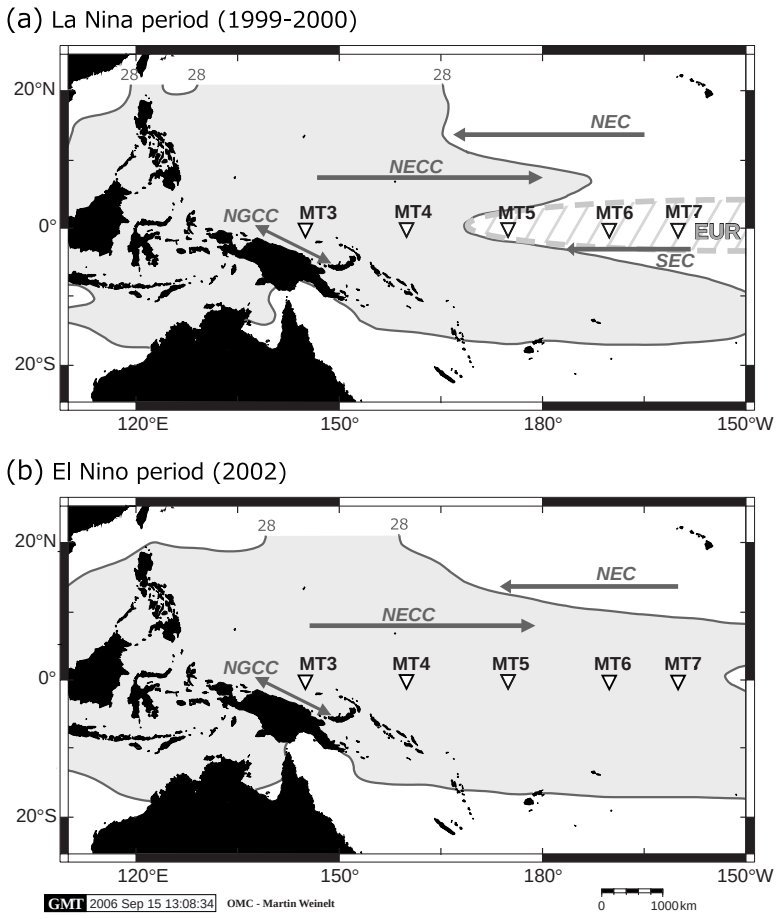


Fig. 1. The locality map of sediment trap Sites MT3-MT7 (reversed triangles) in the western and central Equatorial Pacific. The pale gray area represents the mean-high SST area (>28ºC) in (a) 1999 and 2000 (the La Nina condition) and (b) 2002 (the El Nino condition). EUR (hatched area): Equatorial Upwelling Region: SEC: Southern Equatorial Current: NECC: Northern Equatorial Counter Current; NGCC: New Guinea Coastal Current; and NEC: Northern Equatorial Current. SST data from Reynolds et al. (2002).

of swimmers in Shallow trap samples. Therefore, the data from Shallow sediment traps were not applied to further diatom flux study in Takahashi et al. (submitted). The data tabulated here are also limited to the data from Deep sediment traps (Appendix Tables 1-6). Although diatom photomicrographs are not presented here, the plate for major diatoms in this study is available in Ono et al. (2004).

3. Oceanographic Setting

In the studied area (Fig. 1), surface waters are categorized to two masses: the Western Pacific Warm Pool (WPWP); and the Equatorial Upwelling Region (EUR). The WPWP is defined by the high water temperature of greater than 28ºC (Yan et al., 1992). The EUR is located in the east of the WPWP, which is a mild upwelling area with lower temperature of <28ºC (Fig. 1a). The nutrient

supply from the subsurface into the surface layer of the WPWP is limited due to significant development of the thermocline; and thus the major nutrient concentrations and diatom standing stocks in the surface waters of the WPWP were significantly lower than those in the EUR (Kobayashi and Takahashi, 2002). During the La Nina period, Sites MT3 and MT4 were located in the WPWP whereas other sites were located in the EUR (Figs. 1a, 2a-c). During the El Nino period, the surface layers at all sites were under the influence of the WPWP waters (Figs. 1b, 2a-c). Because of the eastward migration of the WPWP in the El Nino period, the 20ºC isotherm depths at Site MT3 in 2002 was shallower than those in the previous three years whereas those at Site MT7 in 2002 was deeper (Fig. 2d).

4. Results and Discussion

4.1. Total Diatom Fluxes

Total diatom fluxes at Sites MT3-MT7 were different depending on the years and locations (Fig. 2e). Total diatom fluxes in the WPWP area were usually lower than those in the EUR. At Site MT3 in the WPWP, total diatom fluxes in the La Nina period were essentially lower than those in the El Nino period. However, total diatom fluxes in the EUR were higher in the La Nina than in the El Nino (Fig. 2e). This spacial and temporal variation of total diatom fluxes in the studied area is essentially related to the migration of the WPWP and the EUR. The longitudinal migrations of the WPWP and the EUR water masses are consistent with the variations of SST, salinity, and 20ºC isotherm depth (Fig. 2b-d). In particular, the biogeographic trend of total diatom fluxes was correlated at a significant level to sea surface temperature (r = -0.58; $p<0.0001$) and salinity (r = 0.43; $p<0.0001$) (Fig. 3). Except for Site MT3 where lithogenic materials are partially transported from the Papua New Guinea, diatom production and flux in the studied area are significantly supported by the nutrient supply from the subsurface (Takahashi et al., submitted). The obtained correlation coefficients suggest significant contribution of subsurface waters to diatom production and their fluxes in the studied area.

4.2. The occurrence patterns of major diatom taxa

In a large sense, centric diatom fluxes were relatively high in the EUR whereas pennate diatom fluxes including *Nitzschia bicapitata* were relatively abundant in the WPWP (Fig. 4; Ono et al., 2004). The relatively high abundances of such pennate diatoms suggest their tolerances to more oligotrophic condition in the WPWP (Treppke et al., 1996; Romero et al., 1999, 2000). Among the diatom taxa occurred in this study, *Rhizosolenia bergonii, Nitzschia bicapitata* and genus *Thalassionema* were the primary component in the diatom sinking assemblages (Figs. 4-5; Takahashi et al., submitted). The secondary dominant components in the studied samples were *Thalassiosira* spp. (mainly composed of *Thalassiosira eccentrica* group, *Th. endoseriata, Th. leptopus*, and *Th. oestrupii*), *Azpeitia* spp. (*Az. africana, Az. neocrenulata*, and *Az. nodulifera*), and *Rhizosolenia* spp. (Appendix Tables 2-6). The fluxes of *Nitzschia bicapitata* was the highest at Site MT3 among all sites whereas *Rhizosolenia bergonii* flux was the highest at Site MT5 (Fig. 5). The highest fluxes of *Thalassiosira* spp. and *Azpeitia* spp. were observed at Site MT6 in 2001. Because the flux data at Site MT7 do not include the period of the La Nina, the high abundances of relatively eutrophic diatoms were recorded at Site MT6 rather than at Site MT7.

In the relationship with sea surface temperature and salinity, the mean fluxes of *Nitzschia braarudii, N. bicapitata*, and *Rhizosolenia setigera* were usually high in the condition of high temperature and low salinity (Fig. 5). Although mean fluxes of *Nitzschia braarudii* and *N. bicapitata* at Site MT7 were higher than those at Sites MT5 and MT6, this probably reflects the difference in

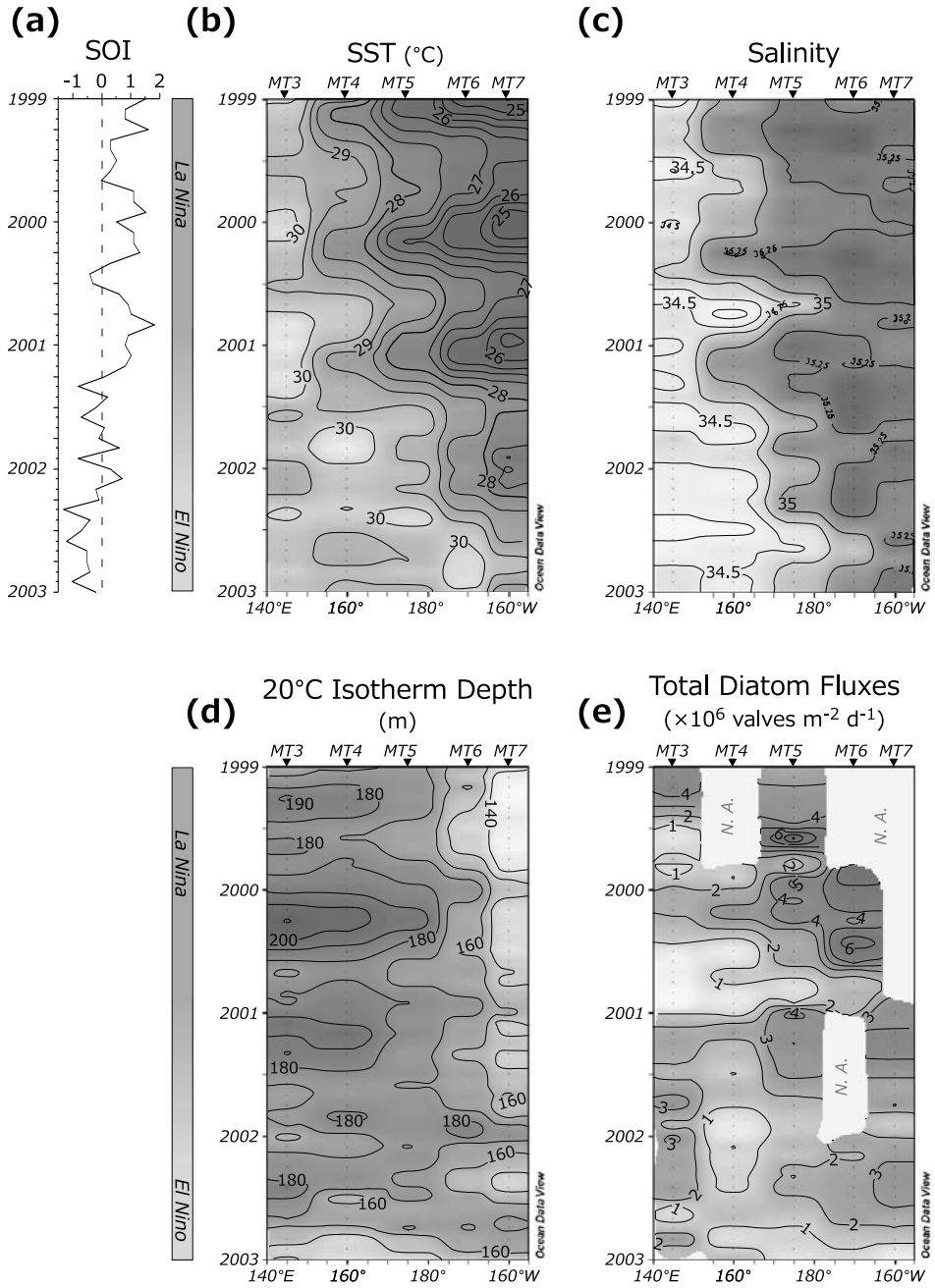


Fig. 2. Monthly isograms of (a) sea surface temperature (Reynolds et al., 2002), (b) salinity at 5 m water depth (Carton and Giese, submitted), (c) 20ºC isotherm depth (Behringer et al., 1998), and (d) total diatom flux.

the sampled period; and the data at Site MT7 reflect only temporal influence of the WPWP during the El Nino. In general, *Rhizosolenia setigera* is common in the estuaries of temperate and subtropical regions (Takano, 1990). The limited occurrences of *Rh. setigera* at Sites MT3 and MT4

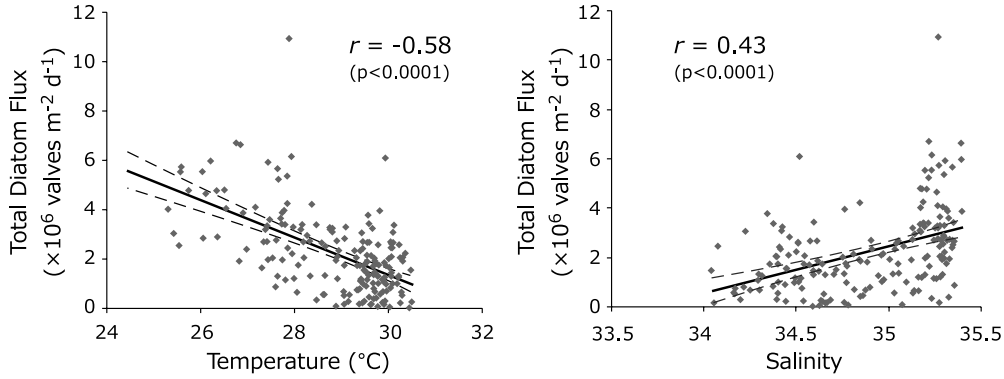


Fig. 3. The relationships between monthly data for total diatom fluxes and sea surface temperature or salinity. (a) sea surface temperature versus total diatom flux; (b) salinity versus total diatom flux. The data for SST and salinity were compared to the diatom flux in one month later, taking into account for the time lag of particle settling from sea surface to the trap depth.

probably reflect the partial influences of intensified rain fall in the western ITCZ and the Papua New Guinea during the La Nina period. The minor fluxes of *Diploneis* spp. were sometimes recorded at Site MT3 (Appendix Table 2). However, the *Diploneis* occurrences are probably explained as the advection of resuspended particles around the coasts of Papua New Guinea by the intensified undercurrent during the El Nino (Takahashi et al., submitted). The direct influences of river or coastal water input to diatom fluxes at Site MT3 are probably minor because (1) the occurrences of *Diploneis* were not limited to the rainy season and (2) other littoral diatoms were not recorded.

The frequencies of high flux records of *Azpeitia* and *Thalassiosira* sharply increased in condition of lower temperature (<28ºC) and higher salinity (>35.1), which reflects the water condition of the EUR rather than the WPWP (Fig. 5). Although *Rhizosolenia bergonii* and *Roperia tesselata* also showed relatively high fluxes in the EUR than the WPWP, the responses of these taxa to temperature and salinity were rather gradual than those of *Azpeitia* and *Thalassiosira* spp. (Fig. 5). However, not only *Azpeitia* and *Thalassiosira* fluxes but also most of diatom taxon flux showed similar trends to the temporal patterns of temperature and salinity changes. Therefore, the relative abundances (percentages) of secondary dominant taxa do not show the longitudinal differences (Figs. 4-5). The biogeographic trends of diatom fluxes with different temperature and salinity conditions include the information of geographic differences on the nutrient concentrations between the WPWP (relatively oligotrophic) and the EUR (relatively eutrophic). It is not attempted at this time to determine which factor among temperature, salinity, or nutrients most significantly influenced to their flux variations. However, the biogeographic patterns of diatom fluxes are at least available for future paleoceanographic reconstruction effort as the proxy to assess which water masses of the WPWP and the EUR influenced the surface layer in the studied area.

4.3. The relationships with radiolarian fluxes

The radiolarian fluxes in the studied materials are the secondary component of siliceous shells in numbers of skeletons or valves. Radiolarians represent protozoa plankton whereas diatoms represent one of the major primary producer groups. And thus total radiolarian fluxes (Okazaki et al., 2008) shows the significant and positive correlation coefficient to total diatom fluxes (r = 0.68; p<0.0001; N = 142). In particular, when high total diatom flux was observed at Site MT5, the fluxes of surface radiolarian dwellers accompanied with high chlorophyll-a concentration were also high (Okazaki et

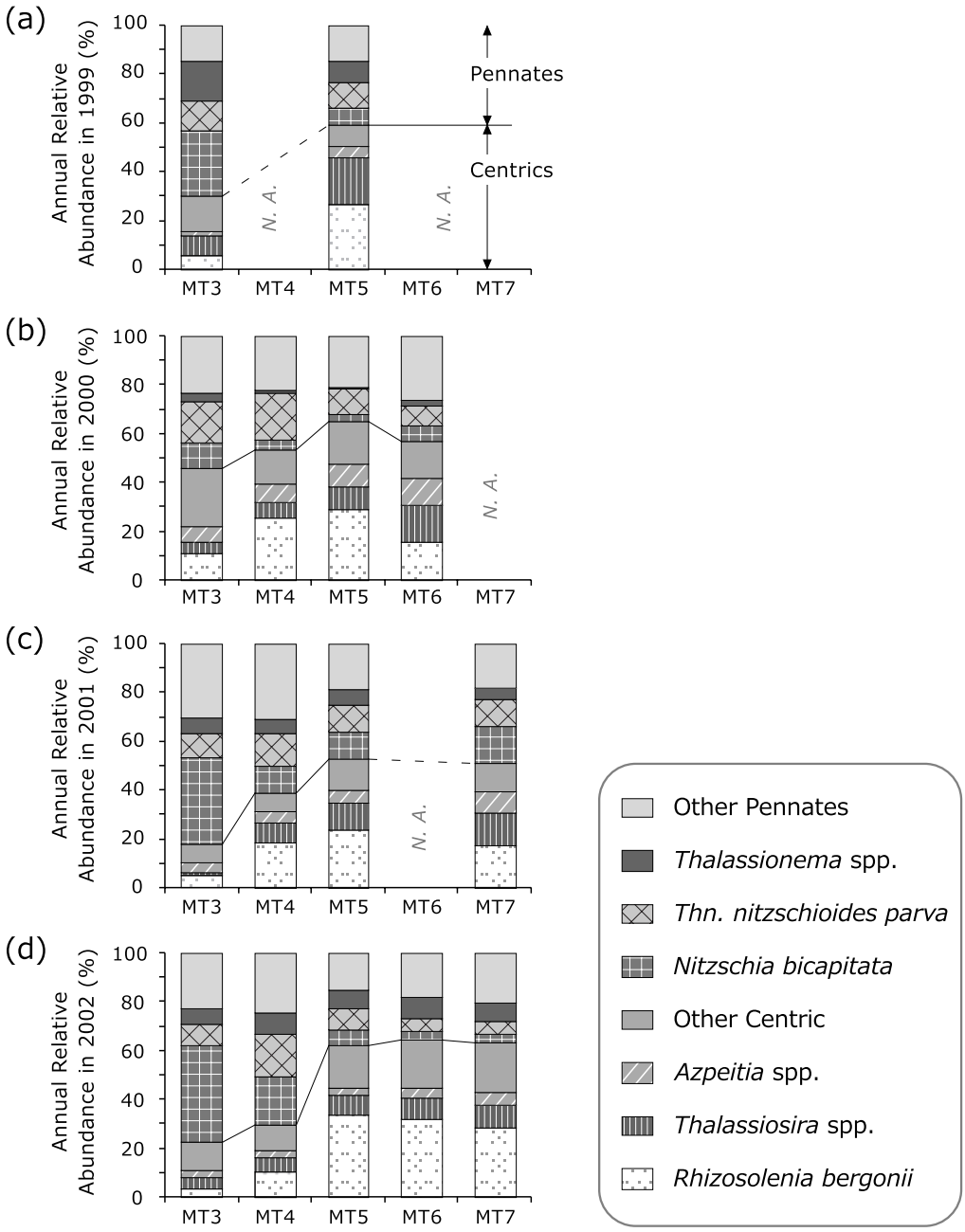


Fig. 4. Annual means of relative abundances of major diatom taxa. (a): 1999; (b) 2000; (c): 2001; and (d): 2002. "N. A." represents "Not Available" due to no deployment or malfunctions of sediment traps.

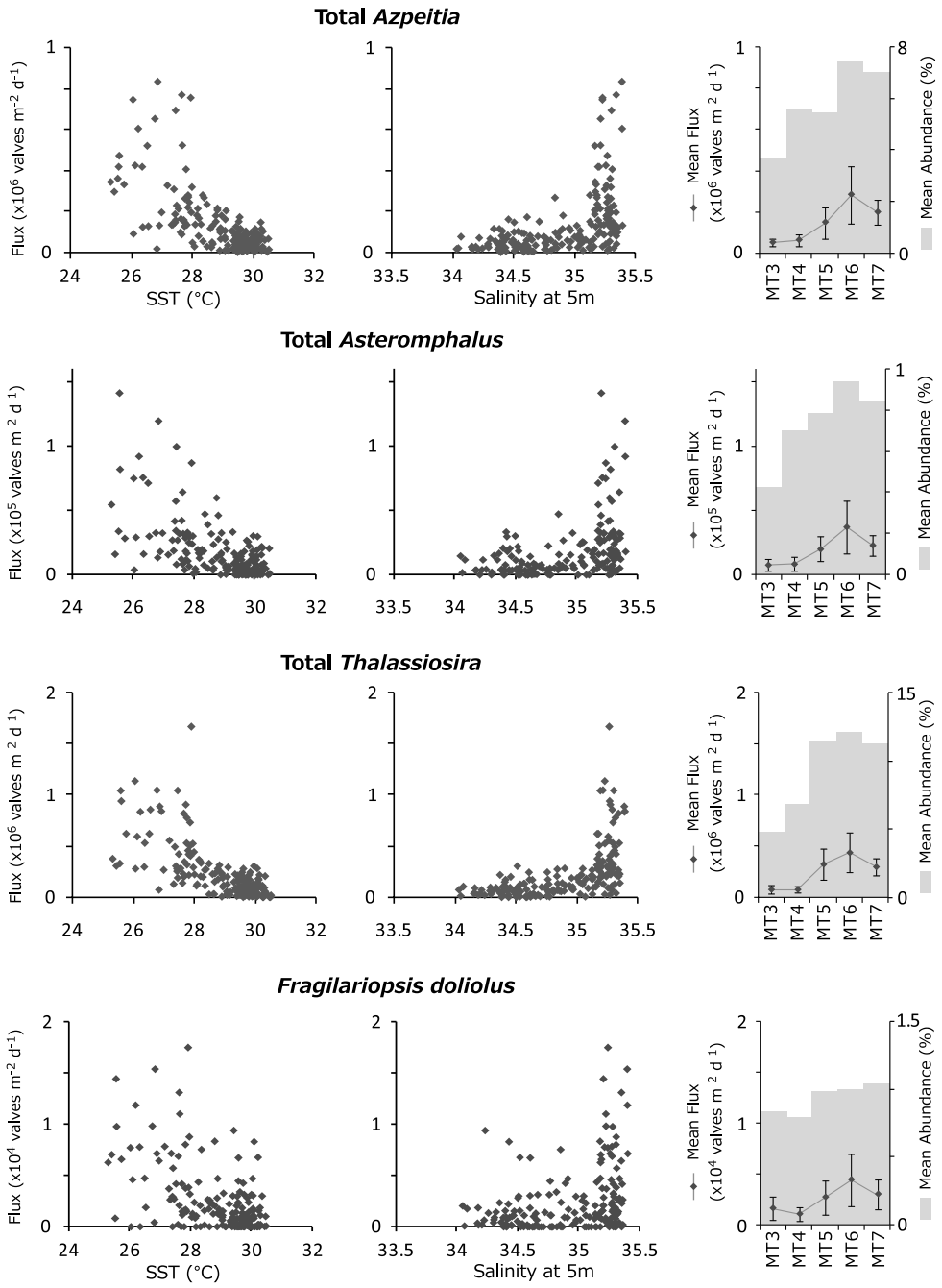
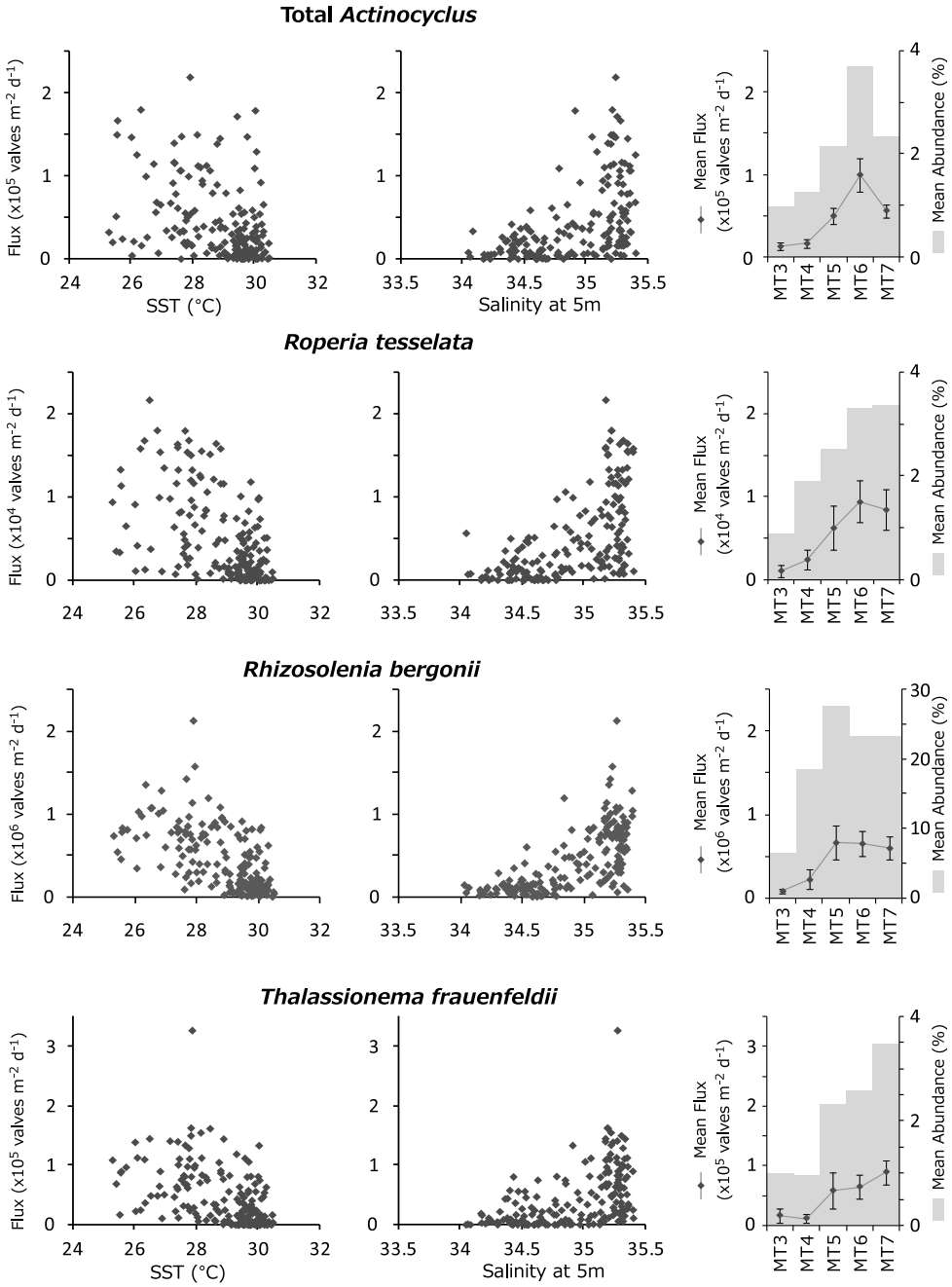


Fig. 5. The relationships between major diatom flux and sea surface temperature or salinity, and the mean flux and relative abundance at each site throughout the sampled duration. The left side: sea surface temperature versus monthly flux of diatom taxon; central: salinity at 5 m water depth versus monthly flux of diatom taxon; and the right side: the mean diatom flux with one standard deviation and mean relative abundance throughout the sampled duration at each site. The monthly data of SST and salinity were compared to the monthly diatom flux occurred one month later, taking into account for the time lag of particle settling from sea surface to the trap depth.


Total Actinocyclus
Flux (x10⁵ valves m⁻² d⁻¹)
SST (°C)
Salinity at 5m
Mean Flux (x10⁵ valves m⁻² d⁻¹)
Mean Abundance (%)
MT3
MT4
MT5
MT6
MT7
Roperia tesselata
Flux (x10⁴ valves m⁻² d⁻¹)
Mean Flux (x10⁴ valves m⁻² d⁻¹)
Rhizosolenia bergonii
Flux (x10⁶ valves m⁻² d⁻¹)
Mean Flux (x10⁶ valves m⁻² d⁻¹)
Thalassionema frauenfeldii
Flux (x10⁵ valves m⁻² d⁻¹)
Mean Flux (x10⁵ valves m⁻² d⁻¹)

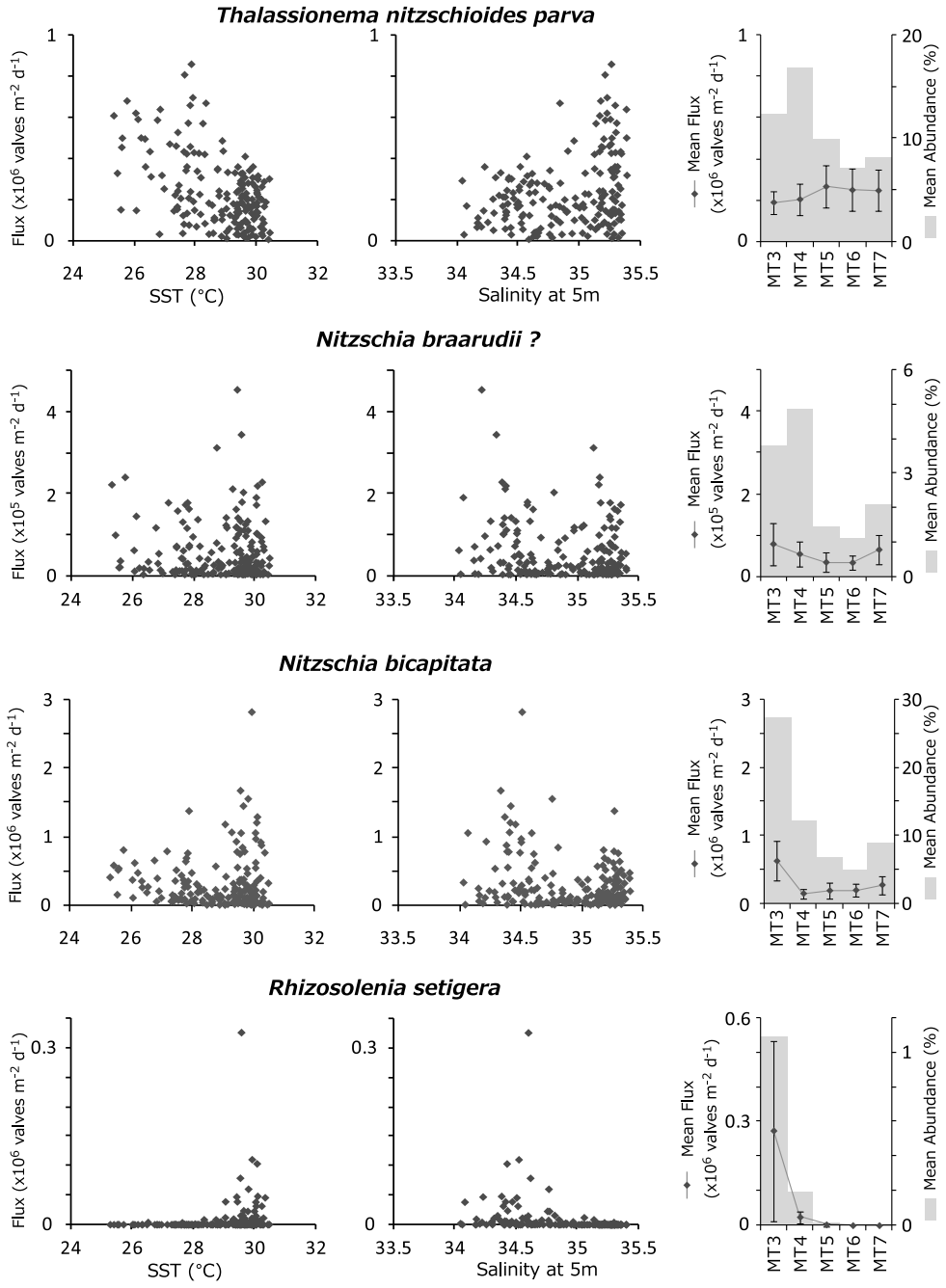


Fig. 5. (Continued)

al., 2008; Takahashi et al., submitted). The mean total diatom fluxes during the sampled duration varied from 1.3 × 10^6 valves m^{-2} d^{-1} at Site MT4 to 3.3 × 10^6 valves m^{-2} d^{-1} at Site MT6. The mean radiolarian fluxes during the sampled duration fluctuated from 7.6 × 10^3 shells m^{-2} d^{-1} at Site MT3 to 23.8 × 10^3 shells m^{-2} d^{-1} at Site MT6 (Okazaki et al., 2008). The amplitude of total radiolarian fluxes was lower than those of diatoms. The mean flux ratio of total diatoms/total radiolarians throughout the sampled duration varied from 130 at Site MT4 to 243 at Site MT3. Therefore, the fluctuation of this ratio is primarily due to the variations of diatom fluxes. The obtained flux ratios of total diatoms/total radiolarians were significantly lower than those in the subarctic Pacific (795 at Station SA; 1215 at Station AB: Onodera and Takahashi, 2009). Although the main contributor on the weight of sinking particles is coccoliths in the studied area (Honjo et al., 2008), the importance of radiolarians as the weight of sinking particles is apparently relatively significant than in their contribution in the subarctic Pacific. This is because that the individual weights of radiolarian skeletons are several orders of magnitude greater than those of diatom frustules (Takahashi and Honjo, 1983: Conley et al., 1989). Because the primary scope of this paper is to compile the diatom flux data, a possible discussion on the respective contributions to biogenic opal is outside of the scope of this paper. However, further discussions related this theme is warranted with the biogenic opal flux data in the future studies.

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5. References

Behringer, D.W., Ji, M., and Leetmaa, A. (1998) An improved coupled model for ENSO prediction and implications for ocean initialization. Part I: The ocean data assimilation system. *Monthly Weather Review*, **126**, 1013-1021. WWW page: http://ingrid.ldgo.columbia.edu/ SOURCES/. NOAA/.NCEP/.EMC/.CMB/.Pacific/.monthly/.D20eq/

Carton, J.A., and Giese, B.S. (submitted). A reanalysis of ocean climate using SODA. *Monthly Weather Review*. WWW page: http://iridl.ldeo.columbia.edu/SOURCES/.CARTON-GIESE/

Conley, D.J., Kilham, S.S., and Theriot, E. (1989) Differences in silica content between marine and freshwater diatoms. *Limnology and Oceanography*. **34**, 205-213.

Hasle, G.R., and Syvertsen, E.E. (1997) Marine Diatoms. In: Tomas, C. R. (Ed.), *Identifying Marine Phytoplankton*. Academic Press, San Diego. pp. 5-385.

Honjo, S., Manganini, S.J., Krishfield, R.A., and Francois, R. (2008) Particulate organic carbon fluxes to the ocean interior and factors controlling the biological pump: A synthesis of global sediment trap programs since 1983. *Progress in Oceanography*, **76**, 217-285.

Kobayashi, F., and Takahashi, K. (2002) Distribution of diatom along the Equatorial transect in the western central Pacific during the 1999 La Niña condition. *Deep-Sea Research II*, **49**, 2801-2821.

Okazaki, Y., Takahashi, K., Asahi, H. (2008) Temporal fluxes of radiolarians in the central and western equatorial Pacific. *Micropaleontology*, **54**, 71-86.

Ono, I., Takahashi, K., and Kobayashi, F. (2004) Time-series fluxes of diatoms in the central and western equatorial Pacific, 1999-2000. In: Poulin, M. (Ed.), *Proceedings of 17th International Diatom Symposium 2002, Ottawa, Canada*. Biopress, Bristol, England, pp. 271-280.

Onodera, J., and Takahashi, K. 2009. Long-term diatom fluxes in response to oceanographic conditions at Stations AB and SA in the central subarctic Pacific and the Bering Sea, 1990-1998. *Deep-Sea Research I, **56**,* 189-211.

Reynolds, R.W., Rayner, N.A., Smith, T.M., Stokes, D.C., and Wang, W. (2002) An improved in situ and satellite SST analysis for climate. *Journal of Climate*, **15**, 1609-1625. WWW page http://ingrid.ldeo.columbia.edu/SOURCES/.IGOSS/.nmc/.weekly/.

Romero, O.E., Lange, C.B., Fischer, G., Treppke, U.F., and Wefer, G. (1999) Variability in export production documented by downward fluxes and species composition of marine planktonic diatoms: observations from the tropical and equatorial Atlantic. In: Fischer, G., Wefer, G. (Eds.), *Use of Proxies in Paleoceanography, Examples from the South Atlantic*. Springer Verlag, Berlin, Heidelberg, pp. 365-392.

Romero, O.E., Fischer, G., Lange, C.B., and Wefer, G. (2000) Siliceous phytoplankton of the western equatorial Atlantic: Sediment traps and surface sediments. *Deep-Sea Research II,* **47**, 1939-1959.

Takahashi, K. (1986) Seasonal fluxes of pelagic diatoms in the subarctic Pacific, 1982-1983. *Deep-Sea Research*, **33**, 1225-1251.

Takahashi, K., and Honjo, S. (1983) Radiolarian skeletons: Size, weight, sinking speed and residence time in tropical pelagic oceans. *Deep-Sea Research*, **30(5A)**, 548-568.

Takahashi, K., Kobayashi, F., and Ono, I. (2002) Seasonal fluxes of diatoms in the western equatorial Pacific during the 1999 La Niña conditions. *Journal of the Geological Society of Japan*, **108**, 721-732. [In Japanese with English Abstract]

Takahashi, K., Onodera, J., and Katsurada, Y. submitted. Time-series fluxes of diatoms in the central and western equatorial Pacific, 1999-2002: the relationships between tempo-spatial migrations of the Western Pacific Warm Pool with El Niño-Southern Oscillation and taxon-quantitative variations. Submitted to *Deep-Sea Research I.*

Takano, H. (1990) Diatoms. In: Fukuyo, Y., Takano, H., Chihara, M., and Matsuoka, K., (Eds.), *Red tide organisms in Japan - An illustrated taxonomic guide*. Uchida Rokakuho, Tokyo, pp. 162-331.

Treppke, U.F., Lange, C.B., and Wefer, G., (1996) Vertical fluxes of diatoms and silicoflagellates in the eastern equatorial Atlantic, and their contribution to the sedimentary record. *Marine Micropaleontology*, **28**, 73-96.

Yan, X.-H., Ho, C-R., Zheng, Q., and Klemas, V. (1992) Temperature and size variation of the Western Pacific Warm Pool. *Science*, **258**, 1643-1645.

Appendix Table 1. Sample dates, duration, and total number of counted diatom valves in sediment trap samples at Stations MT3-MT7 in the western and central equatorial Pacific during January 1999 to January 2003.

Sample ID	Initial Date (M/D/Y)	Closed Date (M/D/Y)	Sampled Interval (days)	Total Counted Diatoms (No. of Valves)
Site MT3				
(MR99) #01	01/05/99	01/16/99	11	473
#02	01/16/99	02/01/99	16	482
#03	02/01/99	02/16/99	15	418
#04	02/16/99	03/01/99	13	417
#05	03/01/99	03/16/99	15	1162
#06	03/16/99	04/01/99	16	491
#07	04/01/99	04/16/99	15	544
#08	04/16/99	05/01/99	15	510
#09	05/01/99	05/16/99	15	258
#10	05/16/99	06/01/99	16	485
#11	06/01/99	06/16/99	15	311
#12	06/16/99	07/01/99	15	159
#13	07/01/99	07/16/99	15	310
#14	07/16/99	08/01/99	16	413
#15	08/01/99	08/16/99	15	204
#16	08/16/99	09/01/99	16	209
#17	09/01/99	09/16/99	15	425
#18	09/16/99	10/01/99	15	380
#19	10/01/99	10/16/99	15	308
#20	10/16/99	11/01/99	16	403
#21	11/01/99	11/16/99	15	143
#22	11/16/99	11/21/99	5	218
(MR00) #01	12/01/99	12/16/99	15	341.5
#02	12/16/99	01/01/00	16	494
#03	01/01/00	01/16/00	15	491.5
#04	01/16/00	02/01/00	16	198
#05	02/01/00	02/16/00	15	192
#06	02/16/00	03/01/00	14	193
#07	03/01/00	03/16/00	15	181.5
#08	03/16/00	04/01/00	16	193
#09	04/01/00	04/16/00	15	213
#10	04/16/00	05/01/00	15	232.5
#11	05/01/00	05/16/00	15	160.5
#12	05/16/00	06/01/00	16	188.5
#13	06/01/00	06/16/00	15	192.5
#14	06/16/00	07/01/00	15	169.5
#15	07/01/00	07/16/00	15	74
#16	07/16/00	08/01/00	16	81.5
#17	08/01/00	08/16/00	15	116.5
#18	08/16/00	09/01/00	16	188
#19	09/01/00	09/16/00	15	202.5
#20	09/16/00	10/01/00	15	234.5
#21	10/01/00	10/16/00	15	175.5
#22	10/16/00	11/01/00	16	246.5
#23	11/01/00	11/16/00	15	124
#24	11/16/00	12/01/00	15	111.5
#25	12/01/00	12/16/00	15	168
#26	12/16/00	01/01/01	16	251
(MR01) #01	02/01/01	02/16/01	15	374
#02	02/16/01	03/01/01	13	279
#03	03/01/01	03/16/01	15	548
#04	03/16/01	04/01/01	16	585
#05	04/01/01	04/16/01	15	483
#06	04/16/01	05/01/01	15	471
#07	05/01/01	05/16/01	15	441
#08	05/16/01	06/01/01	16	396
#09	06/01/01	06/16/01	15	336
#10	06/16/01	07/01/01	15	453
#11	07/01/01	07/16/01	15	390
#12	07/16/01	08/01/01	16	156
#13	08/01/01	08/16/01	15	477
#14	08/16/01	09/01/01	16	429
#15	09/01/01	09/16/01	15	516
#16	09/16/01	10/01/01	15	402
#17	10/01/01	10/16/01	15	586
#18	10/16/01	11/01/01	16	404
#19	11/01/01	11/16/01	15	399
#20	11/16/01	12/01/01	15	372
#21	12/01/01	12/16/01	15	296
#22	12/16/01	01/01/02	16	297
#23	01/01/02	01/16/02	15	596
#24	01/16/02	02/02/02	17	300
(MR02) #01	03/18/02	04/01/02	14	423
#02	04/01/02	04/16/02	15	366
#03	04/16/02	05/01/02	15	376
#04	05/01/02	05/16/02	15	380
#05	05/16/02	06/01/02	16	300
#06	06/01/02	06/16/02	15	470
#07	06/16/02	07/01/02	15	362
#08	07/01/02	07/16/02	15	422
#09	07/16/02	08/01/02	16	333
#10	08/01/02	08/16/02	15	300
#11	08/16/02	09/01/02	16	300
#12	09/01/02	09/16/02	15	224
#13	09/16/02	10/01/02	15	210
#14	10/01/02	10/16/02	15	240
#15	10/16/02	11/01/02	16	340
#16	11/01/02	11/16/02	15	408
#17	11/16/02	12/01/02	15	556
#18	12/01/02	12/16/02	15	344
#19	12/16/02	12/24/02	8	98
Site MT4				
(MR00) #01	12/01/99	12/16/99	15	211.5
#02	12/16/99	01/01/00	16	159.5
#03	01/01/00	01/16/00	15	300
#04	01/16/00	02/01/00	16	363
#05	02/01/00	02/16/00	15	195
#06	02/16/00	03/01/00	14	254.5
#07	03/01/00	03/16/00	15	279
#08	03/16/00	04/01/00	16	345.5
#09	04/01/00	04/16/00	15	216
#10	04/16/00	05/01/00	15	250
#11	05/01/00	05/16/00	15	211.5
#12	05/16/00	06/01/00	16	398.5
#13	06/01/00	06/16/00	15	244.5
#14	06/16/00	07/01/00	15	107
#15	07/01/00	07/16/00	15	130
#16	07/16/00	08/01/00	16	81
#17	08/01/00	08/16/00	15	91
#18	08/16/00	09/01/00	16	174.5
#19	09/01/00	09/16/00	15	194
#20	09/16/00	10/01/00	15	153.5
#21	10/01/00	10/16/00	15	280
#22	10/16/00	11/01/00	16	285.5
#23	11/01/00	11/16/00	15	114
#24	11/16/00	12/01/00	15	151.5
#25	12/01/00	12/16/00	15	217
#26	12/16/00	01/01/01	16	325.5

Appendix Table 1. (cont.)

Sample ID	Initial Date (M/D/Y)	Closed Date (M/D/Y)	Sampled Interval (days)	Total Counted Diatoms (No. of Valves)
(MR01) #01	01/26/01	02/01/01	6	249
#02	02/01/01	02/16/01	15	398
#03	02/16/01	03/01/01	13	384
#04	03/01/01	03/16/01	15	462
#05	03/16/01	04/01/01	16	406
#06	04/01/01	04/16/01	15	296
#07	04/16/01	05/01/01	15	284
#08	05/01/01	05/16/01	15	456
#09	05/16/01	06/01/01	16	276
#10	06/01/01	06/16/01	15	312
#11	06/16/01	07/01/01	15	284
#12	07/01/01	07/16/01	15	255
#13	07/16/01	08/01/01	16	328
#14	08/01/01	08/16/01	15	366
#15	08/16/01	09/01/01	16	412
#16	09/01/01	09/16/01	15	406
#17	09/16/01	10/01/01	15	328
#18	10/01/01	10/16/01	15	538
#19	10/16/01	11/01/01	16	462
#20	11/01/01	11/16/01	15	394
#21	11/16/01	12/01/01	15	400
#22	12/01/01	12/16/01	15	244
#23	12/16/01	01/01/02	16	198
#24	01/01/02	01/16/02	15	322
#25	01/16/02	02/01/02	16	264
(MR02) #01	02/01/02	02/16/02	15	298
#02	02/16/02	03/01/02	13	342
#03	03/01/02	03/16/02	15	210
#04	03/16/02	04/01/02	16	291
#05	04/01/02	04/16/02	15	213
#06	04/16/02	05/01/02	15	270
#07	05/01/02	05/16/02	15	294
#08	05/16/02	06/01/02	16	258
#09	06/01/02	06/16/02	15	356
#10	06/16/02	07/01/02	15	225
#11	07/01/02	07/16/02	15	242
#12	07/16/02	08/01/02	16	290
#13	08/01/02	08/16/02	15	326
#14	08/16/02	09/01/02	16	340
#15	09/01/02	09/16/02	15	436
#16	09/16/02	10/01/02	15	392
#17	10/01/02	10/16/02	15	214
#18	10/16/02	11/01/02	16	232
#19	11/01/02	11/16/02	15	272
#20	11/16/02	12/01/02	15	222
#21	12/01/02	12/16/02	15	315
#22	12/16/02	01/01/03	16	330
#23	01/01/03	01/15/03	14	418
Site MT5				
(MR99) #01	01/13/99	01/16/99	3	210
#02	01/16/99	02/01/99	16	372
#03	02/01/99	02/16/99	15	335
#04	02/16/99	03/01/99	13	380
#05	03/01/99	03/16/99	15	379
#06	03/16/99	04/01/99		
#07	04/01/99	04/16/99	15	561
#08	04/16/99	05/01/99	15	517
#09	05/01/99	05/16/99	15	461
#10	05/16/99	06/01/99	16	607
#11	06/01/99	06/16/99	15	480
#12	06/16/99	07/01/99	15	240
#13	07/01/99	07/16/99	15	568
#14	07/16/99	08/01/99	16	497
#15	08/01/99	08/16/99	15	506
#16	08/16/99	09/01/99	16	236
#17	09/01/99	09/16/99	15	177
#18	09/16/99	10/01/99	15	264
#19	10/01/99	10/16/99	15	263
#20	10/16/99	11/01/99	16	259
#21	11/01/99	11/16/99	15	371
#22	11/16/99	12/01/99	15	329
(MR00) #01	12/16/99	01/01/00	16	422.5
#02	01/01/00	01/16/00	15	444
#03	01/16/00	02/01/00	16	373.5
#04	02/01/00	02/16/00	15	309
#05	02/16/00	03/01/00	14	226.5
#06	03/01/00	03/16/00	15	322.5
#07	03/16/00	04/01/00	16	481
#08	04/01/00	04/16/00	15	381
#09	04/16/00	05/01/00	15	443
#10	05/01/00	05/16/00	15	340.5
#11	05/16/00	06/01/00	16	404.5
#12	06/01/00	06/16/00	15	323.5
#13	06/16/00	07/01/00	15	316.5
#14	07/01/00	07/16/00	15	276.5
#15	07/16/00	08/01/00	16	382
#16	08/01/00	08/16/00	15	304.5
#17	08/16/00	09/01/00	16	443.5
#18	09/01/00	09/16/00	15	403.5
#19	09/16/00	10/01/00	15	187.5
#20	10/01/00	10/16/00	15	446
#21	10/16/00	11/01/00	16	202.5
#22	11/01/00	11/16/00	15	229
#23	11/16/00	12/01/00	15	211.5
#24	12/01/00	12/16/00	15	256.5
#25	12/16/00	01/01/01	16	236.5
(MR01) #01	01/22/01	02/01/01	10	536
#02	02/01/01	02/16/01	15	484
#03	02/16/01	03/01/01	13	466
#04	03/01/01	03/16/01	15	510
#05	03/16/01	04/01/01	16	558
#06	04/01/01	04/16/01	15	510
#07	04/16/01	05/01/01	15	510
#08	05/01/01	05/16/01	15	412
#09	05/16/01	06/01/01	16	400
#10	06/01/01	06/16/01	15	519
#11	06/16/01	07/01/01	15	486
#12	07/01/01	07/16/01	15	396
#13	07/16/01	08/01/01	16	422
#14	08/01/01	08/16/01	15	356
#15	08/16/01	09/01/01	16	340
#16	09/01/01	09/16/01	15	318
#17	09/16/01	10/01/01	15	282
#18	10/01/01	10/16/01	15	326
#19	10/16/01	11/01/01	16	378
#20	11/01/01	11/16/01	15	297
#21	11/16/01	12/01/01	15	220
#22	12/01/01	12/16/01	15	338
#23	12/16/01	01/01/02	16	220
(MR02) #01	02/01/02	02/16/02	15	250
#02	02/16/02	03/01/02	13	316
#03	03/01/02	03/16/02	15	272
#04	03/16/02	04/01/02	16	270
#05	04/01/02	04/16/02	15	225
#06	04/16/02	05/01/02	15	486

Appendix Table 1. (cont.)

Sample ID	Initial Date (M/D/Y)	Closed Date (M/D/Y)	Sampled Interval (days)	Total Counted Diatoms (No. of Valves)
#07	05/01/02	05/16/02	15	526
#08	05/16/02	06/01/02	16	420
#09	06/01/02	06/16/02	15	528
#10	06/16/02	07/01/02	15	490
#11	07/01/02	07/16/02	15	440
#12	07/16/02	08/01/02	16	502
#13	08/01/02	08/16/02	15	436
#14	08/16/02	09/01/02	16	328
#15	09/01/02	09/16/02	15	406
#16	09/16/02	10/01/02	15	288
#17	10/01/02	10/16/02	15	248
#18	10/16/02	11/01/02	16	232
#19	11/01/02	11/16/02	15	258
#20	11/16/02	12/01/02	15	336
#21	12/01/02	12/16/02	15	291
#22	12/16/02	01/01/03	16	273
#23	01/01/03	01/16/03	15	180
Site M6				
(MR00) #01	12/16/99	01/01/00	16	410
#02	01/01/00	01/16/00	15	316.5
#03	01/16/00	02/01/00	16	357
#04	02/01/00	02/16/00	15	326.5
#05	02/16/00	03/01/00	14	306
#06	03/01/00	03/16/00	15	330
#07	03/16/00	04/01/00	16	371.5
#08	04/01/00	04/16/00	15	166
#09	04/16/00	05/01/00	15	137
#10	05/01/00	05/16/00	15	338
#11	05/16/00	06/01/00	16	376.5
#12	06/01/00	06/16/00	15	421
#13	06/16/00	07/01/00	15	356
#14	07/01/00	07/16/00	15	321.5
#15	07/16/00	08/01/00	16	395.5
#16	08/01/00	08/16/00	15	367
#17	08/16/00	09/01/00	16	327
#18	09/01/00	09/16/00	15	155
#19	09/16/00	10/01/00	15	116
#20	10/01/00	10/16/00	15	85.5
#21	10/16/00	11/01/00	16	129.5
#22	11/01/00	11/16/00	15	122
#23	11/16/00	12/01/00	15	240.5
#24	12/01/00	12/16/00	15	254
#25	12/16/00	01/01/01	16	237.5
(MR01) #01-26				
(MR02) #01	02/01/02	02/16/02	15	604
#02	02/16/02	03/01/02	13	514
#03	03/01/02	03/16/02	15	406
#04	03/16/02	04/01/02	16	288
#05	04/01/02	04/16/02	15	506
#06	04/16/02	05/01/02	15	394
#07	05/01/02	05/16/02	15	309
#08	05/16/02	06/01/02	16	246
#09	06/01/02	06/16/02	15	313
#10	06/16/02	07/01/02	15	290
#11	07/01/02	07/16/02	15	234
#12	07/16/02	08/01/02	16	303
#13	08/01/02	08/16/02	15	264
#14	08/16/02	09/01/02	16	245
#15	09/01/02	09/16/02	15	273
#16	09/16/02	10/01/02	15	245
#17	10/01/02	10/16/02	15	216
#18	10/16/02	11/01/02	16	324
#19	11/01/02	11/16/02	15	390
#20	11/16/02	12/01/02	15	258
#21	12/01/02	12/16/02	15	402
#22	12/16/02	01/01/03	16	237
#23	01/01/03	01/16/03	15	226
#24	01/16/03	01/21/03	5	228
Site MT7				
(MR01) #01	01/16/01	02/01/01	16	514
#02	02/01/01	02/16/01	15	330
#03	02/16/01	03/01/01	13	432
#04	03/01/01	03/16/01	15	630
#05	03/16/01	04/01/01	16	550
#06	04/01/01	04/16/01	15	634
#07	04/16/01	05/01/01	15	480
#08	05/01/01	05/16/01	15	432
#09	05/16/01	06/01/01	16	440
#10	06/01/01	06/16/01	15	484
#11	06/16/01	07/01/01	15	554
#12	07/01/01	07/16/01	15	486
#13	07/16/01	08/01/01	16	408
#14	08/01/01	08/16/01	15	366
#15	08/16/01	09/01/01	16	400
#16	09/01/01	09/16/01	15	442
#17	09/16/01	10/01/01	15	408
#18	10/01/01	10/16/01	15	624
#19	10/16/01	11/01/01	16	474
#20	11/01/01	11/16/01	15	298
#21	11/16/01	12/01/01	15	328
#22	12/01/01	12/16/01	15	230
#23	12/16/01	01/01/02	16	206
#24	01/01/02	01/16/02	15	296
(MR02) #01	01/25/02	02/01/02	7	386
#02	02/01/02	02/16/02	15	682
#03	02/16/02	03/01/02	13	496
#04	03/01/02	03/16/02	15	486
#05	03/16/02	04/01/02	16	490
#06	04/01/02	04/16/02	15	678
#07	04/16/02	05/01/02	15	586
#08	05/01/02	05/16/02	15	404
#09	05/16/02	06/01/02	16	642
#10	06/01/02	06/16/02	15	716
#11	06/16/02	07/01/02	15	586
#12	07/01/02	07/16/02	15	654
#13	07/16/02	08/01/02	16	630
#14	08/01/02	08/16/02	15	602
#15	08/16/02	09/01/02	16	622
#16	09/01/02	09/16/02	15	446
#17	09/16/02	10/01/02	15	486
#18	10/01/02	10/16/02	15	580
#19	10/16/02	11/01/02	16	378
#20	11/01/02	11/16/02	15	466
#21	11/16/02	12/01/02	15	258
#22	12/01/02	12/16/02	15	466
#23	12/16/02	01/01/03	16	370
#24	01/01/03	01/16/03	15	300
#25	01/16/03	01/24/03	8	216

Appendix Table 2. Diatom fluxes (x10^2 valves m^{-2} d^{-1}) at Site MT3 from January 1999 to December 2002. The symbol "- -" represents "No Record" which does not necessarily mean absent. This is because of the different nature of diatom counts proceeded by different investigators. In several instances the investigator in charge decided not to be confident in providing species level identity of the taxa. In those cases the flux values of given taxa are included either as genus spp., "Other Centrics", or "Other Pennates". The same definition of the symbol "- -" is also true for Appendix Tables 3-6.

Site MT3	(MR99) #01	#02	#03	#04	#05	#06	#07	#08	#09	#10	#11	#12	#13	#14	#15	#16	#17	#18	#19	#20	#21	#22	(MR00) #01
CENTRICS																							
Actinocyclus spp.	0	0	0	0	75	0	0	75	75	70	150	0	23	9	5	0	0	19	0	70	0	5	219
Asterolampra marylandica	102	0	0	87	225	0	0	0	75	141	0	0	9	0	5	0	0	38	19	0	0	5	0
Asteromphalus spp.	205	211	0	87	300	70	300	150	75	211	75	0	5	9	0	53	56	19	0	70	0	9	63
Azpeitia africana	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	63
Az. neocrenulata	0	0	75	0	0	70	150	0	375	211	150	300	5	13	14	18	56	0	19	0	38	5	313
Az. nodulifer	0	70	0	0	0	0	150	0	0	0	0	0	14	0	9	18	0	0	0	0	0	0	94
Bacteriastrum elongatum	102	70	150	260	75	70	0	0	0	0	0	0	0	0	0	0	0	0	19	352	0	0	63
Bac. spp.	922	563	451	607	1877	915	601	751	300	493	375	0	14	4	0	70	56	56	19	282	56	9	63
Chaetoceros spp.	2560	2253	526	1040	6158	704	1652	1126	1126	1056	451	150	33	18	0	88	75	75	131	845	0	19	172
Coscinodiscus spp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hemidiscus cuneiformis	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	19	0	0	0	0	31
Proboscia alata	102	0	75	0	826	0	75	150	0	422	0	75	0	0	9	0	19	19	19	0	0	0	0
Rhizosolenia bergonii	1229	563	1577	953	1577	1126	1577	1502	1427	1619	976	901	113	136	103	211	638	657	488	1338	244	61	893
Rh. decipiens	512	493	451	607	1352	634	300	601	451	1126	300	0	23	26	9	18	169	94	75	211	19	5	110
Rh. setigera	410	563	526	433	1427	774	526	676	375	1197	300	150	42	31	9	53	131	56	19	211	0	5	31
Rh. spp.	1741	1197	601	866	3379	1197	2253	1427	1201	1478	976	451	33	31	28	53	113	75	56	493	38	0	157
Roperia tesselata	0	70	0	0	75	0	150	0	75	0	0	0	0	0	0	35	56	0	19	0	0	0	251
Thalassiosira cf. *eccentrica*	307	352	225	0	451	141	300	150	150	70	375	225	0	44	9	88	169	75	56	0	0	9	407
Th. endoseriata	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Th. leptopus	102	70	0	0	75	0	75	0	150	0	150	0	0	0	5	0	38	19	0	70	0	0	63
Th. lineata	102	70	0	0	75	0	150	0	0	70	0	0	0	0	0	0	19	0	0	0	0	0	31
Th. oestrupii	102	0	0	0	0	211	75	0	0	0	75	0	5	22	0	0	19	0	19	70	0	9	31
Th. spp.	3174	1619	1877	2253	3004	2112	2253	1877	1877	2534	1877	751	131	185	80	246	788	657	526	1901	113	84	188
Trigonium spp.	0	70	75	173	0	70	0	0	0	0	75	0	0	4	0	0	0	0	19	0	0	0	94
Other Centrics	1331	1549	826	693	1877	915	2553	1427	601	1126	1051	676	61	114	89	176	432	357	507	915	150	47	31
PENNATES																							
Alveus marinus	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	63
Diploneis spp.	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	63
Fragilariopsis doliolus	0	0	0	0	0	0	225	0	0	0	0	225	5	0	23	0	38	0	38	0	0	0	251
Fragilariopsis spp.	2253	1267	1427	1560	1727	1056	976	1051	75	986	826	225	14	35	5	0	56	94	38	70	19	5	0
Lioloma spp.	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0
Nitzschia bicapitata	17818	11264	11114	14730	42202	14432	14643	16521	4205	10771	6833	2403	239	321	160	827	1389	1464	1070	6477	469	174	1034
Nit. cf. *braarudii*	410	282	300	260	75	141	150	451	75	70	75	225	9	4	0	0	0	38	131	282	0	0	125
Nit. sicula	0	141	0	87	225	141	0	0	0	70	150	75	5	4	9	18	56	38	0	0	0	0	31
Nit. cf. *villarealii*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0
Nit. spp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	940
Pseudo-nitzschia spp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	94
Synedropsis hyperborea	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0
Thalassionema frauenfeldii	410	986	526	347	901	211	526	300	451	493	375	300	28	48	23	70	207	113	19	563	94	28	251
Thn. nitzschioides var. *parva*	3584	2394	2253	1993	3830	3379	3229	3604	2028	3661	1427	1802	141	268	80	475	1258	939	957	7251	507	230	2412
Other forms of *Thn. nitzschioides*	6554	4928	5031	5979	11339	2675	3604	3755	2028	2675	3529	1502	216	242	136	581	1070	939	864	2042	469	131	501
Thalassiothrix spp.	512	211	0	433	300	141	601	75	150	211	75	225	23	22	14	88	38	75	38	1408	188	33	188
Other Pennates	3891	2675	3304	2686	3830	3379	3755	2628	2028	3379	2703	1277	263	224	131	493	1033	1201	620	3450	282	150	1378
TOTAL DIATOM FLUX	48435	33933	31389	36131	87258	34566	40851	38298	19374	34144	23354	11940	1455	1817	957	3678	7979	7134	5782	28371	2685	1023	10697

Appendix Table 2. (cont.)

Site MT3	(MR00) #02	#03	#04	#05	#06	#07	#08	#09	#10	#11	#12	#13	#14	#15	#16	#17	#18	#19	#20	#21	#22	#23	#24
CENTRICS																							
Actinocyclus spp.	281	200	313	334	89	133	536	417	585	390	73	334	130	55	9	29	70	61	45	100	67	17	16
Asterolampra marylandica	0	0	0	222	89	0	0	167	98	293	219	0	0	0	0	0	0	0	0	0	0	0	0
Asteromphalus spp.	94	0	0	111	179	0	179	83	0	0	0	0	33	0	0	10	0	0	0	38	22	0	0
Azpeitia africana	0	133	0	334	179	400	357	83	390	293	293	111	65	14	9	0	14	49	45	25	44	0	16
Az. neocrenulata	500	467	1043	334	536	534	536	417	293	488	366	446	293	0	43	29	112	110	197	75	177	17	16
Az. nodulifer	219	133	104	111	179	133	89	334	0	195	219	334	228	42	35	39	84	24	121	25	55	0	16
Bacteriastrum elongatum	0	67	104	111	447	133	357	250	195	98	73	223	33	28	9	39	42	12	30	38	22	6	0
Bac. spp.	125	67	0	0	0	0	0	0	195	98	219	0	0	0	0	10	14	24	0	0	11	0	5
Chaetoceros spp.	125	500	104	334	447	1001	447	834	488	390	366	223	65	69	9	0	56	18	8	0	50	6	0
Coscinodiscus spp.	31	133	0	111	0	133	0	83	0	0	146	0	98	0	9	0	0	12	0	13	11	0	0
Hemidiscus cuneiformis	0	0	0	0	0	0	89	0	0	0	0	223	0	0	0	0	14	0	0	0	11	6	0
Proboscia alata	0	0	0	0	45	67	45	83	195	0	73	223	49	7	4	5	14	12	15	0	11	0	3
Rhizosolenia bergonii	1314	1902	1043	1223	1117	1735	1162	1334	2779	1463	1719	2396	1105	166	82	112	572	396	311	276	338	66	49
Rh. decipiens	985	10742	4431	5282	3708	5071	2011	2335	1512	1219	731	1728	423	69	17	63	77	67	53	6	28	9	0
Rh. setigera	31	100	52	111	0	133	89	209	244	49	73	111	33	14	4	10	7	18	8	25	6	9	0
Rh. spp.	156	334	0	111	179	601	447	417	731	244	585	557	81	21	9	49	56	43	38	75	55	9	19
Roperia tesselata	344	200	209	445	268	667	357	417	878	293	731	223	390	42	26	59	56	49	45	63	33	52	5
Thalassiosira cf. *eccentrica*	626	334	834	445	536	0	536	584	585	878	146	780	130	0	35	39	98	110	167	0	89	0	38
Th. endoseriata	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Th. leptopus	31	0	209	0	0	0	0	0	195	98	146	0	33	28	0	0	0	12	0	0	0	0	0
Th. lineata	63	0	0	0	0	0	89	167	0	0	73	111	33	14	26	0	14	12	15	0	11	17	0
Th. oestrupii	94	0	104	0	89	133	0	83	0	98	73	223	98	0	0	0	0	12	0	0	11	0	0
Th. spp.	532	534	626	445	357	267	89	417	0	0	0	0	65	0	0	49	14	37	61	25	0	6	0
Trigonium spp.	31	67	0	222	89	133	179	0	0	0	73	111	33	0	0	0	0	0	45	0	0	0	0
Other Centrics	313	67	0	0	0	667	357	250	829	293	439	446	260	69	35	39	98	73	167	151	155	23	38
PENNATES																							
Alveus marinus	63	0	104	334	89	133	89	83	195	293	73	0	0	0	0	10	42	12	45	13	55	12	0
Diploneis spp.	0	0	104	0	0	133	268	0	0	0	0	223	0	0	0	0	0	0	15	0	0	0	0
Fragilariopsis doliolus	375	0	0	222	0	133	89	334	293	293	73	892	0	0	0	0	0	37	0	25	0	0	0
Fragilariopsis spp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lioloma spp.	16	0	0	0	45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nitzschia bicapitata	1095	5071	1877	2558	1787	2002	1877	2002	3803	2828	1609	3232	260	69	43	78	154	183	288	213	111	29	27
Nit. cf. *braarudii*	63	0	209	0	0	133	0	83	0	390	219	223	33	0	35	59	0	0	15	0	11	12	16
Nit. sicula	0	200	0	222	447	0	0	250	98	195	146	0	98	0	0	10	28	49	15	0	0	0	0
Nit. cf. *villarealii*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nit. spp.	1439	4337	3232	2002	2591	1334	2055	1918	2828	1170	1170	1003	130	41	61	88	154	171	288	188	189	81	54
Pseudo-nitzschia spp.	94	133	0	0	0	267	0	0	195	98	73	0	0	14	0	0	42	0	0	0	11	6	5
Synedropsis hyperborea	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Thalassionema frauenfeldii	188	334	0	0	0	0	0	334	0	0	0	0	0	0	0	0	0	0	45	25	0	0	0
Thn. nitzschioides var. *parva*	3190	3603	2711	2780	1877	3336	2413	1668	3608	2341	2267	4458	618	166	95	146	447	451	864	389	688	202	168
Other forms of *Thn. nitzschioides*	1157	601	938	778	715	1201	447	250	98	0	219	1003	65	14	17	20	56	110	76	25	55	35	11
Thalassiothrix spp.	281	667	0	56	0	0	0	125	98	0	73	56	49	0	0	20	56	12	0	0	17	12	8
Other Pennates	1595	1868	2294	2113	1162	3603	2055	1751	1268	1170	1024	1560	585	83	95	127	237	293	531	389	388	87	92
TOTAL DIATOM FLUX	15450	32794	20642	21351	17246	24220	17246	17765	22674	15653	13787	21455	5510	1024	706	1136	2625	2469	3556	2201	2734	716	604

Appendix Table 2. (cont.)

Site MT3	#25	#26	(MR01) #01	#02	#03	#04	#05	#06	#07	#08	#09	#10	#11	#12	#13	#14	#15	#16	#17	#18	#19	#20	#21
CENTRICS																							
Actinocyclus spp.	4	5	485	0	334	104	501	334	167	0	334	556	0	313	167	104	0	111	501	0	56	0	0
Asterolampra marylandica	0	7	54	0	0	52	0	0	0	0	0	56	0	39	56	52	0	56	0	0	0	0	0
Asteromphalus spp.	1	0	215	120	167	156	56	0	0	104	56	278	0	156	167	0	250	0	250	0	111	0	167
Azpeitia africana	4	2	323	0	0	469	0	167	167	521	167	667	167	156	667	0	834	334	1334	626	612	500	167
Az. neocrenulata	11	10	430	120	667	678	445	500	0	0	278	0	334	156	0	0	0	0	0	0	0	0	0
Az. nodulifer	11	6	323	241	626	678	834	167	278	313	1001	334	500	313	890	156	334	0	334	156	167	0	0
Bacteriastrum elongatum	0	3	0	0	167	156	0	334	0	0	0	167	0	0	0	156	167	0	167	0	0	0	0
Bac. spp.	1	2	108	0	42	0	56	334	222	0	222	167	0	156	56	0	584	167	334	156	111	0	0
Chaetoceros spp.	1	5	861	120	167	0	0	0	334	0	0	167	0	0	0	0	0	0	1168	626	167	1001	0
Coscinodiscus spp.	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hemidiscus cuneiformis	1	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Proboscia alata	0	0	0	0	0	0	0	0	0	0	167	334	667	0	167	156	0	0	167	313	167	167	0
Rhizosolenia bergonii	30	40	861	481	667	1407	1501	2836	2335	2189	1168	1501	667	313	1668	782	1668	834	2335	782	1001	1668	500
Rh. decipiens	1	5	0	120	0	469	667	1001	667	626	1334	834	334	0	667	313	0	667	1668	313	167	167	0
Rh. setigera	0	1	0	0	0	0	500	167	500	469	334	334	0	156	667	156	834	167	167	156	167	167	0
Rh. spp.	6	11	323	0	0	156	834	0	0	0	500	167	167	0	0	156	334	0	1668	313	334	334	334
Roperia tesselata	6	9	215	0	0	0	0	167	0	0	0	0	0	0	0	0	0	0	0	469	334	0	0
Thalassiosira cf. *eccentrica*	4	13	0	0	0	0	167	167	0	156	0	0	0	156	334	1407	1001	334	1334	626	834	667	167
Th. endoseriata	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Th. leptopus	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Th. lineata	0	5	0	0	0	0	0	0	0	469	0	0	0	0	0	0	0	0	0	0	0	0	0
Th. oestrupii	1	0	0	0	0	0	0	0	0	0	0	0	0	0	167	313	167	0	0	0	0	0	0
Th. spp.	1	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Trigonium spp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	156	0	0	167	0	0	0	0
Other Centrics	4	6	0	241	42	104	0	0	1	0	0	111	0	156	0	1	0	0	167	156	0	0	0
PENNATES																							
Alveus marinus	1	3	54	40	42	0	56	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Diploneis spp.	6	2	0	0	209	0	0	389	0	0	0	334	0	0	0	0	250	0	0	0	278	0	250
Fragilariopsis doliolus	0	3	215	0	500	938	0	334	167	469	0	334	0	0	167	0	1001	1001	500	0	723	0	334
Fragilariopsis spp.	0	0	215	0	250	261	0	0	0	0	167	111	0	78	56	0	167	111	0	0	56	56	0
Lioloma spp.	0	1	0	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nitzschia bicapitata	36	61	5166	1804	8007	11572	10342	10342	8674	7663	8173	10509	7006	1407	8173	8445	12010	7840	19016	16733	9675	8340	4837
Nit. cf. *braarudii*	1	2	430	0	667	938	1001	1001	1501	1095	2168	2335	1334	469	1668	1095	6505	2502	4003	2815	1835	2168	1668
Nit. sicula	0	6	108	0	167	156	167	0	0	0	0	0	167	0	0	0	0	0	0	0	167	0	167
Nit. cf. *villarealii*	0	0	430	120	167	626	167	667	0	313	667	167	667	156	334	156	667	167	500	156	334	167	0
Nit. spp.	6	30	484	200	292	365	445	278	500	573	445	612	723	391	612	313	834	500	667	626	445	945	250
Pseudo-nitzschia spp.	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Synedropsis hyperborea	0	0	2714	0	0	0	2898	0	0	2557	0	0	0	0	2898	0	0	0	0	0	0	2898	0
Thalassionema frauenfeldii	4	3	215	120	83	209	0	111	111	0	0	111	0	0	111	0	167	56	167	0	0	111	0
Thn. nitzschioides var. *parva*	33	61	4305	2286	2669	2919	2947	2280	2057	1929	1001	1223	3614	626	2335	2867	4837	2836	2335	2346	1835	1835	1334
Other forms of *Thn. nitzschioides*	22	30	2368	1925	2377	3857	1001	1223	2891	1564	500	1112	667	313	1223	938	2669	612	1668	782	500	612	167
Thalassiothrix spp.	1	2	54	40	0	0	0	56	0	52	0	0	0	0	56	52	0	0	0	0	0	56	0
Other Pennates	33	36	1937	3168	6176	4274	5171	3337	3947	2085	56	2668	4671	626	6061	4587	7756	4059	8341	3440	2168	1669	2002
TOTAL DIATOM FLUX	234	376	22893	11188	24482	30546	29754	26189	24521	23148	18738	25187	21684	6138	29365	22362	43036	22352	48958	31589	22241	23526	12343

Appendix Table 2. (cont.)

Site MT3	#22	#23	#24	(MR02) #01	#02	#03	#04	#05	#06	#07	#08	#09	#10	#11	#12	#13	#14	#15	#16	#17	#18	#19
CENTRICS																						
Actinocyclus spp.	0	0	0	298	397	334	334	0	455	0	667	0	7	0	42	76	133	104	111	83	167	51
Asterolampra marylandica	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0
Asteromphalus spp.	0	0	0	357	79	0	0	0	303	334	250	0	7	70	42	51	44	0	222	167	83	0
Azpeitia africana	104	167	294	298	477	500	167	313	0	0	334	313	28	174	83	76	89	104	167	250	334	51
Az. neocrenulata	0	0	0	357	635	1334	167	156	303	500	334	313	0	139	0	101	133	209	167	334	167	77
Az. nodulifer	0	0	294	298	159	334	167	0	0	250	334	0	0	209	0	152	133	209	167	334	0	51
Bacteriastrum elongatum	0	167	442	0	0	0	0	0	76	0	83	0	0	0	0	101	133	0	0	0	0	0
Bac. spp.	52	167	294	119	0	167	167	0	531	83	417	313	0	0	0	126	0	0	0	0	0	0
Chaetoceros spp.	156	2335	589	894	635	500	500	78	303	667	667	156	42	104	0	152	0	104	1334	500	334	0
Coscinodiscus spp.	0	0	0	119	0	83	83	0	0	83	0	52	0	0	0	0	44	0	0	83	0	0
Hemidiscus cuneiformis	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Proboscia alata	156	1168	442	477	0	167	167	0	0	0	0	156	0	0	167	25	0	209	334	500	500	0
Rhizosolenia bergonii	782	2168	1177	238	874	1751	1668	547	758	1084	1835	573	195	209	459	202	489	469	500	1668	834	0
Rh. decipiens	0	834	294	60	159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	668	0
Rh. setigera	313	5838	1030	60	159	667	0	39	1365	834	500	313	0	0	0	0	0	104	0	500	0	0
Rh. spp.	626	5004	2061	1489	1509	2168	2002	352	152	1001	667	313	0	209	667	51	534	104	1168	2002	1001	0
Roperia tesselata	0	0	0	179	318	0	167	0	0	500	167	0	0	0	0	51	0	0	0	334	0	0
Thalassiosira cf. *eccentrica*	156	0	0	596	635	1334	334	156	303	1418	334	417	42	313	42	25	400	521	167	334	0	102
Th. endoseriata	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Th. leptopus	0	0	0	0	79	0	83	0	76	167	0	0	0	0	0	25	0	52	0	0	0	77
Th. lineata	0	0	0	179	318	0	0	0	76	0	0	0	0	0	42	25	0	0	167	334	0	0
Th. oestrupii	0	0	0	357	635	584	417	156	910	0	667	52	0	0	209	25	267	209	167	334	334	77
Th. spp.	0	0	0	179	0	500	0	0	531	0	667	0	83	313	0	0	0	521	167	500	0	0
Trigonium spp.	0	0	0	0	159	0	0	156	0	500	83	0	0	0	0	0	0	0	334	0	0	0
Other Centrics	156	0	0	417	238	751	250	0	1441	83	1501	261	97	521	83	126	0	626	167	917	500	51
PENNATES																						
Alveus marinus	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Diploneis spp.	0	500	0	0	318	0	0	195	0	250	0	0	0	139	0	0	267	0	0	500	0	0
Fragilariopsis doliolus	313	334	1030	238	159	167	167	39	1516	250	167	209	7	70	83	202	44	104	111	83	167	51
Fragilariopsis spp.	0	83	0	298	0	0	167	39	379	0	83	0	0	35	0	101	44	52	0	83	83	0
Lioloma spp.	0	0	0	0	79	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nitzschia bicapitata	6724	14679	7359	10723	12074	13178	13511	3206	14103	11676	15847	6672	827	4344	2419	1997	3781	7558	8729	22269	12093	1226
Nit. cf. *braarudii*	1720	2502	1030	2085	1271	1501	1501	938	3488	834	2502	1251	63	626	1168	708	934	1668	834	1334	834	153
Nit. sicula	0	0	0	357	0	167	167	156	303	0	0	469	42	70	0	0	267	0	167	0	0	0
Nit. cf. *villarealii*	0	0	0	357	477	167	500	704	607	667	0	0	0	209	0	0	534	313	334	334	334	0
Nit. spp.	521	584	883	357	318	167	167	391	303	0	0	938	42	139	0	101	400	0	167	0	0	0
Pseudo-nitzschia spp.	0	0	0	60	79	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Synedropsis hyperborea	0	0	0	0	0	167	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Thalassionema frauenfeldii	0	334	147	0	953	167	1001	156	0	0	0	0	28	348	0	101	0	0	778	834	1501	0
Thn. nitzschioides var. *parva*	1251	4671	1030	1132	2701	1668	3336	1173	2199	4170	2335	1251	313	1043	1501	379	0	1043	2224	4337	3670	281
Other forms of *Thn. nitzschioides*	469	3086	1472	119	635	1334	500	391	1516	1084	1334	209	209	834	1001	253	534	417	834	2335	1668	255
Thalassiothrix spp.	0	0	0	60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Pennates	1981	5088	2208	2621	2542	2169	4170	2385	4700	3753	4421	3389	139	591	1334	177	1467	3545	3336	5754	3336	0
TOTAL DIATOM FLUX	15482	49708	22077	25140	29072	31359	31693	11729	35636	30192	35113	17358	2085	10390	9341	5282	10675	17724	22686	46540	28607	2502

Appendix Table 3. Diatom fluxes (x10^2 valves m^{-2} d^{-1}) at Site MT4 from December 1999 to January 2003.

Site MT4	(MR00) #01	#02	#03	#04	#05	#06	#07	#08	#09	#10	#11	#12	#13	#14	#15	#16	#17	#18	#19	#20	#21	#22	#23	#24	#25
CENTRICS																									
Actinocyclus spp.	37	125	334	447	313	426	334	447	778	1420	712	453	122	142	46	38	11	0	658	564	219	307	32	22	21
Asterolampra marylandica	0	0	0	0	0	0	0	112	0	284	0	0	0	0	0	0	11	0	0	0	0	0	16	0	0
Asteromphalus spp.	19	125	0	223	313	340	500	447	111	284	0	41	0	71	0	0	0	135	94	0	55	245	0	33	10
Azpeitia africana	204	188	133	596	104	85	334	223	111	426	178	82	244	35	8	25	0	81	188	0	55	123	32	44	0
Az. neocrenulata	167	375	1068	894	834	511	2002	1564	334	994	534	905	244	106	85	38	45	270	1692	658	301	675	176	77	73
Az. nodulifer	111	438	534	372	417	426	1001	223	445	426	445	576	285	71	15	13	45	243	282	188	109	61	16	55	21
Bacteriastrum elongatum	19	0	67	74	0	0	0	112	0	0	89	41	0	0	0	0	0	27	94	0	55	245	0	0	0
Bac. spp.	0	63	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	94	0	55	61	32	11	0
Chaetoceros spp.	46	156	334	447	52	213	667	614	111	923	222	144	183	0	4	0	0	40	282	0	96	123	0	28	16
Coscinodiscus spp.	37	63	133	74	0	170	0	335	111	142	89	123	81	35	8	13	11	27	0	94	82	61	16	11	10
Hemidiscus cuneiformis	19	0	0	0	0	0	0	0	0	0	0	82	41	0	0	0	0	27	94	94	55	61	0	11	0
Proboscia alata	0	0	33	37	0	0	0	0	0	0	0	0	0	0	0	0	0	0	94	0	0	0	0	0	10
Rhizosolenia bergonii	630	2158	4537	4989	3075	3404	12761	11058	6227	8802	3692	4280	2421	1065	216	290	261	1200	3806	3618	1791	3986	650	398	1027
Rh. decipiens	19	0	167	149	52	255	417	391	222	568	178	185	61	35	0	6	0	0	141	0	68	123	8	6	10
Rh. setigera	0	31	33	0	52	43	167	0	0	0	0	21	20	0	0	0	11	0	0	0	0	215	0	0	0
Rh. spp.	0	0	100	74	104	213	334	56	278	497	222	226	142	35	4	6	0	67	188	141	68	276	16	17	0
Roperia tesselata	37	250	667	298	1043	511	1001	1117	556	994	623	165	285	142	23	13	11	27	282	94	137	0	64	77	42
Thalassiosira cf. *eccentrica*	315	500	600	1043	1460	1191	2168	1229	1446	1420	890	658	203	106	46	13	34	324	376	752	301	491	80	88	63
Th. endoseriata	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Th. leptopus	19	0	0	0	104	170	500	112	111	0	178	41	41	0	0	0	11	27	0	94	0	0	0	22	0
Th. lineata	37	125	267	74	209	255	500	447	222	142	178	206	122	0	15	0	45	0	282	94	55	245	0	0	0
Th. oestrupii	0	0	0	0	104	85	0	223	111	142	0	0	0	0	0	0	0	0	94	0	0	0	16	0	0
Th. spp.	0	125	334	0	0	170	167	112	222	142	178	206	41	71	23	0	11	0	282	0	109	0	16	11	0
Trigonium spp.	0	63	133	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11	0
Other Centrics	259	438	1068	1117	626	1362	3169	1899	667	426	890	823	366	106	39	50	34	216	752	94	383	797	48	77	63
PENNATES																									
Alveus marinus	93	63	200	0	313	0	0	447	222	284	0	165	41	71	0	25	0	0	0	94	27	0	0	11	21
Diploneis spp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fragilariopsis doliolus	185	0	267	74	104	170	500	1005	445	426	89	165	0	0	0	0	0	0	188	94	164	123	16	0	21
Fragilariopsis spp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lioloma spp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nitzschia bicapitata	74	438	1001	1415	1251	426	1334	3128	1779	2271	1245	535	163	71	8	38	45	189	658	188	273	491	32	77	21
Nit. cf. *braarudii*	37	0	67	372	0	340	334	112	111	142	0	206	41	0	0	0	0	54	94	0	27	123	0	22	0
Nit. sicula	19	0	67	298	104	255	0	447	334	426	178	82	0	0	8	0	11	27	94	282	27	0	0	0	10
Nit. cf. *villarealii*	0	0	0	0	0	0	167	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nit. spp.	111	876	1868	3947	1668	1277	3837	3798	2446	3833	2046	905	529	248	23	50	57	404	1879	1128	547	1104	32	55	31
Pseudo-nitzschia spp.	0	63	0	819	209	85	167	559	0	142	89	82	81	35	0	0	11	0	0	282	0	0	0	11	0
Synedropsis hyperborea	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Thalassionema frauenfeldii	19	125	133	372	417	426	834	670	334	426	0	123	81	35	23	0	0	0	470	0	137	307	0	11	10
Thn. nitzschioides var. *parva*	853	2252	3603	5138	4379	5362	8173	5250	4337	7098	3559	3210	1098	887	185	227	250	917	3383	2161	1367	4783	257	298	511
Other forms of *Thn. nitzschioides*	93	188	133	223	521	681	667	112	0	0	0	288	41	0	46	25	0	0	0	0	219	429	0	0	125
Thalassiothrix spp.	19	31	0	223	0	0	584	223	0	71	0	82	81	18	23	13	6	27	94	0	96	184	8	33	21
Other Pennates	408	688	2135	3277	2502	2808	3503	1899	1779	2271	2313	1193	610	426	154	126	102	351	1692	1128	684	2269	257	122	115
TOTAL DIATOM FLUX	3883	9946	20017	27069	20329	21659	46122	38369	23853	35420	18816	16296	7669	3815	1004	1009	1027	4678	18325	11841	7561	17907	1820	1640	2252

Appendix Table 3. (cont.)

Site MT4	(MR01) #26	#01	#02	#03	#04	#05	#06	#07	#08	#09	#10	#11	#12	#13	#14	#15	#16	#17	#18	#19	#20	#21	#22	#23
CENTRICS																								
Actinocyclus spp.	73	35	37	370	167	63	209	83	56	70	33	83	6	89	83	142	28	159	21	39	100	10	17	7
Asterolampra marylandica	0	35	0	74	0	0	0	0	0	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0
Asteromphalus spp.	0	87	111	0	83	188	83	125	334	174	100	0	17	89	83	95	83	0	63	0	50	21	17	0
Azpeitia africana	12	35	185	444	667	313	250	125	556	139	200	83	33	223	167	284	167	953	83	156	67	42	67	13
Az. neocrenulata	182	104	334	592	751	375	334	250	500	278	267	250	33	268	334	474	222	1271	125	156	200	83	100	13
Az. nodulifer	121	52	148	444	584	313	167	167	500	139	167	83	33	179	83	284	195	635	104	117	67	83	67	13
Bacteriastrum elongatum	0	17	74	0	0	63	0	42	0	0	0	0	0	0	0	0	0	79	0	0	0	0	0	0
Bac. spp.	24	0	0	222	83	63	42	83	0	139	0	0	11	45	42	47	0	0	0	59	17	21	17	13
Chaetoceros spp.	48	17	259	296	250	375	125	125	389	139	100	125	17	313	125	190	111	159	42	20	17	21	50	13
Coscinodiscus spp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hemidiscus cuneiformis	24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Proboscia alata	0	17	74	74	0	188	0	83	0	0	0	0	6	89	125	0	28	0	42	0	50	21	0	0
Rhizosolenia bergonii	1115	1060	3559	6662	7673	5505	3253	2711	3892	1668	1868	2252	234	1877	1585	3696	2446	3177	2127	1916	1034	709	634	182
Rh. decipiens	36	52	297	0	0	125	83	83	111	70	33	0	11	89	83	142	56	0	83	0	67	21	0	7
Rh. setigera	0	0	0	0	167	0	42	0	167	70	0	0	6	45	42	0	0	0	125	0	0	0	0	7
Rh. spp.	67	191	259	962	500	688	125	125	667	174	467	375	6	179	42	142	56	556	584	59	17	31	33	13
Roperia tesselata	133	139	519	370	167	125	83	250	222	70	100	250	17	179	250	0	139	318	167	39	0	63	33	13
Thalassiosira cf. *eccentrica*	194	122	371	148	584	375	250	167	222	278	234	334	39	268	584	474	195	635	417	235	234	83	33	13
Th. endoseriata	- -	70	74	148	250	188	125	167	167	70	100	167	22	89	292	190	111	477	209	117	67	52	50	26
Th. leptopus	24	52	74	222	334	250	167	167	222	104	33	125	11	134	250	190	83	397	125	98	50	63	50	13
Th. lineata	24	35	74	148	167	188	125	0	111	104	100	125	17	89	250	237	56	318	104	117	67	42	67	20
Th. oestrupii	0	17	148	148	250	125	125	83	222	35	67	83	11	179	167	142	111	477	83	98	83	52	50	13
Th. spp.	0	35	297	148	83	688	250	417	890	70	33	83	39	313	375	237	83	477	354	39	67	10	17	7
Trigonium spp.	0	0	0	0	0	63	0	125	0	35	0	0	0	0	0	47	28	0	0	20	0	0	33	0
Other Centrics	206	17	148	74	83	125	83	42	111	70	100	83	11	0	42	95	56	79	63	39	17	31	33	7
PENNATES																								
Alveus marinus	12	70	74	0	83	0	167	0	222	0	167	0	28	0	83	190	83	0	0	59	0	42	0	0
Diploneis spp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fragilariopsis doliolus	36	0	148	444	0	250	250	0	222	0	133	0	0	179	167	95	0	0	83	78	267	104	0	13
Fragilariopsis spp.	0	17	0	0	0	0	83	0	0	0	0	0	0	45	0	0	0	0	21	0	0	0	0	13
Lioloma spp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nitzschia bicapitata	61	365	1038	6366	6839	4504	1334	1084	4337	348	934	667	50	983	2168	2843	667	3654	1710	938	634	459	300	124
Nit. cf. *braarudii*	0	209	1260	888	4170	2002	250	1001	1557	834	1134	1168	167	1608	1668	1516	1334	1271	959	1016	801	563	567	228
Nit. sicula	24	35	0	0	167	0	83	0	111	70	0	0	28	0	167	190	167	0	42	39	67	0	33	20
Nit. cf. *villarealii*	0	104	74	444	667	0	0	167	222	70	0	167	0	89	334	0	0	0	83	274	133	0	67	33
Nit. spp.	230	122	297	370	417	813	0	417	167	313	167	459	44	357	209	426	0	1112	63	156	150	115	83	26
Pseudo-nitzschia spp.	24	0	0	148	250	0	83	0	111	104	0	125	0	89	83	95	56	0	0	0	17	0	50	7
Synedropsis hyperborea	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Thalassionema frauenfeldii	97	87	185	0	417	0	125	0	167	139	0	334	22	0	250	0	56	0	104	78	67	0	67	13
Thn. nitzschioides var. *parva*	606	417	1334	2813	5505	1501	1251	1251	2891	1668	1735	1668	167	2591	2252	2464	2085	4448	1168	1564	967	730	534	222
Other forms of *Thn. nitzschioides*	12	156	445	1481	1835	876	834	1168	2891	417	667	667	200	715	584	1516	667	1271	709	391	267	229	200	163
Thalassiothrix spp.	48	0	519	0	2252	1001	1418	250	111	556	200	83	67	357	250	806	167	397	125	0	0	125	50	26
Other Pennates	461	556	2335	3923	3086	4066	542	1084	3002	1182	1268	2002	61	2904	2043	2275	1751	3733	1230	1114	934	344	751	13
TOTAL DIATOM FLUX	3897	4326.5	14753	28426	38532	25396	12344	11843	25354	9591	10409	11843	1418	14655	15263	19524	11287	26053	11218	9031	6572	4170	4070	1290

Appendix Table 3. (cont.)

Site MT4	#24	#25	(MR02) #01	#02	#03	#04	#05	#06	#07	#08	#09	#10	#11	#12	#13	#14	#15	#16	#17	#18	#19	#20	#21	#22	#23
CENTRICS																									
Actinocyclus spp.	10	0	0	179	33	130	0	0	334	156	185	0	167	89	0	156	191	250	83	0	0	83	56	0	268
Asterolampra marylandica	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	39	0	0	0	0	0	0	0	0	0
Asteromphalus spp.	10	0	67	179	0	26	0	83	334	313	0	81	0	0	0	313	191	167	0	0	0	83	0	0	0
Azpeitia africana	42	29	0	358	167	78	83	83	445	156	185	20	334	0	111	156	381	250	250	125	83	167	0	156	0
Az. neocrenulata	42	39	67	448	200	0	0	0	0	235	463	41	83	89	0	0	477	83	167	0	0	0	0	0	0
Az. nodulifer	42	10	133	90	67	0	0	125	111	78	185	0	167	0	0	78	0	0	0	0	0	0	0	0	0
Bacteriastrum elongatum	0	0	0	90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bac. spp.	31	0	0	0	0	0	167	0	0	0	0	20	0	89	111	0	0	0	0	0	0	0	0	0	89
Chaetoceros spp.	73	29	133	0	67	0	83	42	334	78	185	0	0	268	0	235	191	0	0	0	0	0	0	78	0
Coscinodiscus spp.	0	0	67	45	0	0	0	0	0	39	0	0	42	45	56	39	48	0	0	0	0	0	0	0	0
Hemidiscus cuneiformis	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Proboscia alata	0	0	67	45	33	26	0	83	37	39	93	7	83	89	111	78	95	42	42	125	42	0	0	0	89
Rhizosolenia bergonii	365	137	1268	2596	967	964	250	1668	1112	1016	1761	258	709	1474	2168	899	1287	2168	667	970	792	167	334	391	1340
Rh. decipiens	21	0	0	90	0	52	0	83	37	0	0	7	0	0	0	78	0	0	0	0	0	0	0	0	0
Rh. setigera	21	0	0	90	0	0	0	83	0	0	93	7	83	0	0	39	191	0	0	0	0	0	0	0	0
Rh. spp.	52	5	334	179	400	339	417	667	741	313	834	0	334	536	556	508	953	334	0	500	167	0	250	469	626
Roperia tesselata	52	20	234	627	67	209	83	167	111	156	324	61	83	179	890	313	667	83	83	125	0	167	83	391	536
Thalassiosira cf. *eccentrica*	115	39	200	492	67	156	0	250	222	235	371	47	334	89	445	391	191	334	167	219	0	334	334	469	491
Th. endoseriata	52	20	33	45	0	78	0	0	0	0	0	7	0	179	222	0	95	0	0	0	0	83	0	78	0
Th. leptopus	52	20	33	45	0	0	0	167	0	117	139	0	83	179	111	156	191	83	167	250	125	83	250	235	179
Th. lineata	31	20	0	45	0	0	0	0	0	39	46	7	0	0	0	0	0	167	167	0	0	0	0	0	0
Th. oestrupii	31	15	0	179	0	78	0	83	111	0	0	20	83	89	0	0	0	83	0	125	42	83	167	0	179
Th. spp.	21	0	133	45	200	52	0	167	111	235	232	20	0	268	222	0	0	417	167	0	167	167	0	235	268
Trigonium spp.	10	0	133	134	67	26	0	0	0	0	46	0	0	0	0	78	0	0	0	0	0	28	0	0	0
Other Centrics	31	10	33	0	0	52	0	167	74	156	232	7	0	89	445	39	191	292	42	63	167	222	28	0	223
PENNATES																									
Alveus marinus	63	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Diploneis spp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fragilariopsis doliolus	42	0	67	537	167	26	56	83	37	78	185	7	42	45	278	156	95	0	0	63	0	0	56	0	0
Fragilariopsis spp.	0	0	0	0	0	0	0	0	37	78	0	0	0	0	0	39	0	0	0	0	0	0	0	0	0
Lioloma spp.	0	0	33	0	0	156	0	250	222	78	0	41	125	0	222	235	286	83	83	0	334	0	0	156	447
Nitzschia bicapitata	730	293	2135	3044	1334	1069	945	1334	1816	1916	2317	197	1251	2770	4170	2854	3717	3002	2252	1939	1251	1084	2780	3362	5898
Nit. cf. *braarudii*	438	156	667	716	334	0	195	584	334	547	556	41	584	626	556	626	1144	250	334	250	250	334	584	1564	983
Nit. sicula	21	0	0	179	0	0	83	0	0	0	185	0	167	89	0	78	0	0	0	125	0	0	83	78	89
Nit. cf. *villarealii*	63	98	67	90	133	235	83	334	222	313	463	41	250	357	890	626	572	334	83	250	0	0	0	156	357
Nit. spp.	94	49	100	0	67	209	83	167	222	235	1344	61	417	626	111	313	1144	1126	417	250	250	417	83	547	1162
Pseudo-nitzschia spp.	21	10	434	537	133	156	500	167	556	78	278	20	417	268	222	391	667	500	250	0	250	0	250	78	89
Synedropsis hyperborea	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Thalassionema frauenfeldii	52	0	267	269	0	78	83	0	148	0	232	0	0	89	0	0	286	584	0	0	42	0	0	0	89
Thn. nitzschioides var. *parva*	334	117	1268	2148	967	1877	1168	1918	1705	2033	3336	244	2419	1877	3670	2541	4051	3002	1585	876	876	1751	2196	1407	1519
Other forms of *Thn. nitzschioides*	313	78	334	179	400	156	751	751	222	547	649	61	834	804	1557	547	1620	751	667	250	167	250	334	704	1787
Thalassiothrix spp.	10	15	167	179	200	156	195	167	259	156	417	41	167	45	0	39	95	42	292	0	0	0	0	39	0
Other Pennates	73	83	1468	1432	934	1199	695	1585	1001	665	1158	163	834	1608	1001	1251	1763	1918	959	751	667	667	890	2307	1966
TOTAL DIATOM FLUX	3357	1290	9942	15308	7006	7584	5922	11259	10898	10087	16495	1526	10092	12957	18126	13292	20779	16347	8924	7256	5671	6172	8757	12901	18676

Appendix Table 4. Diatom fluxes (x10^2 valves m^{-2} d^{-1}) at Site MT5 from January 1999 to January 2003.

Site MT5	(MR99) #01	#02	#03	#04	#05	#06	#07	#08	#09	#10	#11	#12	#13	#14	#15	#16	#17	#18	#19	#20	#21	#22	(MR00) #01
CENTRICS																							
Actinocyclus spp.	117	211	225	87	75	--	225	300	0	141	300	225	375	0	300	1690	601	75	300	18	38	38	2182
Asterolampra marylandica	0	0	0	0	0	--	0	0	0	0	0	0	0	0	300	0	0	0	0	0	0	0	0
Asteromphalus spp.	70	141	150	173	75	--	300	300	150	211	150	225	225	141	601	0	0	75	0	18	56	38	873
Azpeitia africana	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2182
Az. neocrenulata	141	141	300	953	976	--	451	150	150	0	601	225	225	0	300	845	601	150	75	35	0	19	4073
Az. nodulifer	0	211	225	0	75	--	150	225	601	211	300	150	0	211	0	0	601	0	0	106	38	56	1309
Bacteriastrum elongatum	23	0	0	87	0	--	75	150	0	141	75	225	150	211	300	0	601	0	75	18	0	19	0
Bac. spp.	0	70	0	173	0	--	0	0	150	141	0	0	75	0	2403	0	0	0	0	18	19	0	145
Chaetoceros spp.	23	282	751	520	150	--	601	751	150	282	225	225	375	704	11414	1690	1201	451	150	35	75	38	1236
Coscinodiscus spp.	0	0	0	0	0	--	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	873
Hemidiscus cuneiformis	0	0	150	347	300	--	75	225	375	422	75	150	150	282	300	0	0	0	0	0	0	0	145
Proboscia alata	0	0	0	0	75	--	75	75	75	0	0	0	0	0	0	0	0	0	75	0	0	0	73
Rhizosolenia bergonii	1549	6899	6158	8751	6909	--	9762	11715	8636	12179	11114	5707	10588	8730	30037	12390	13216	3830	4731	1214	1877	1952	15711
Rh. decipiens	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	509
Rh. setigera	0	70	0	0	0	--	75	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rh. spp.	23	70	225	260	75	--	75	225	75	282	150	75	300	211	601	563	901	0	0	0	19	0	0
Roperia tesselata	23	70	0	260	225	--	526	225	75	141	75	75	375	0	1802	845	300	225	150	0	19	19	1164
Thalassiosira cf. *eccentrica*	0	282	0	173	75	--	75	0	0	0	0	0	150	141	0	0	0	0	0	0	0	0	4073
Th. endoseriata	70	141	751	347	451	--	375	1051	0	493	150	150	751	282	901	282	901	225	300	53	113	207	0
Th. leptopus	94	70	75	260	75	--	150	75	300	211	75	75	451	141	300	282	300	75	0	18	38	0	145
Th. lineata	0	282	375	173	300	--	375	225	451	352	300	0	0	70	0	0	300	0	150	0	0	0	436
Th. oestrupii	23	0	75	347	75	--	375	150	225	422	150	75	150	70	300	0	0	150	75	18	0	19	291
Th. spp.	681	3309	2553	5459	4581	--	8711	5557	6383	7955	6158	2703	6833	6477	22828	8448	12916	3229	3004	827	1108	751	291
Trigonium spp.	0	0	0	0	0	--	0	0	0	70	0	0	0	0	0	0	0	0	0	35	0	0	145
Other Centrics	469	1830	1652	1300	1201	--	3680	3755	3079	4013	2478	1802	3304	3027	4806	8166	2403	2628	1652	299	676	620	3055
PENNATES																							
Alveus marinus	0	0	0	0	75	--	0	225	150	282	300	300	150	0	0	0	0	0	0	0	0	0	727
Diploneis spp.	0	0	0	0	0	--	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fragilariopsis doliolus	0	0	0	0	0	--	75	300	1427	0	451	75	225	70	300	0	0	0	601	35	38	150	1746
Fragilariopsis spp.	0	0	0	0	0	--	0	225	75	70	375	75	75	282	601	563	0	0	0	0	0	0	0
Lioloma spp.	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0
Nitzschia bicapitata	141	2534	2553	2599	2103	--	3079	2253	1877	2182	2478	451	3604	1549	18022	9574	5106	2253	1051	229	282	225	1600
Nit. cf. *braarudii*	0	141	300	0	150	--	75	150	0	211	75	0	150	70	0	282	0	0	0	0	19	0	0
Nit. sicula	0	70	75	87	225	--	150	150	150	70	150	0	300	70	0	563	0	75	75	0	0	38	291
Nit. cf. *villarealii*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0
Nit. spp.	0	0	0	0	0	--	75	0	75	141	75	0	0	70	0	0	0	0	0	0	19	19	2037
Pseudo-nitzschia spp.	70	352	751	607	601	--	826	601	451	915	526	150	601	563	2103	563	601	751	1126	123	38	113	727
Synedropsis hyperborea	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0
Thalassionema frauenfeldii	23	141	225	520	451	--	601	375	225	0	225	225	676	563	5407	1126	901	451	225	158	150	113	291
Thn. nitzschioides var. *parva*	399	2886	3304	3899	2929	--	3830	2403	2703	3661	2553	1877	3755	3450	9912	7322	4806	2028	2478	475	920	432	6983
Other forms of *Thn. nitzschioides*	516	3661	2403	2946	3604	--	2778	3229	2854	2886	2628	1201	2778	2957	15019	4506	901	1201	1051	475	451	469	1018
Thalassiothrix spp.	141	845	601	780	1201	--	976	901	1427	1197	1577	451	1201	1901	11414	2816	1802	451	676	70	375	188	1164
Other Pennates	329	1478	1277	1820	1427	--	3529	2854	2328	3450	2253	1126	4656	2746	11715	3942	4205	1502	1727	282	601	657	5964
TOTAL DIATOM FLUX	4928	26189	25156	32926	28460	--	42127	38823	34618	42733	36045	18022	42653	34989	151989	66458	53166	19825	19750	4558	6965	6176	61461

Appendix Table 4. (cont.)

Site MT5	(MR00) #02	#03	#04	#05	#06	#07	#08	#09	#10	#11	#12	#13	#14	#15	#16	#17	#18	#19	#20	#21	#22	#23	#24
CENTRICS																							
Actinocyclus spp.	1637	1303	1079	745	222	1751	1750	1941	601	688	667	551	437	640	426	1450	673	22	284	109	150	177	83
Asterolampra marylandica	0	0	196	0	111	0	0	0	0	0	133	0	0	0	0	0	0	0	17	0	0	319	0
Asteromphalus spp.	252	391	687	149	556	876	547	971	400	250	334	306	125	355	189	181	428	44	67	47	33	177	33
Azpeitia africana	1511	652	196	149	111	500	547	485	200	0	200	428	187	213	142	363	122	11	50	0	50	0	33
Az. neocrenulata	3273	1824	1962	1489	2891	3378	2844	2184	1068	1376	934	1163	935	1422	757	2901	1775	132	567	188	67	142	183
Az. nodulifer	1385	1824	589	1787	1668	1877	1094	1213	133	1126	667	857	374	711	615	816	490	66	350	125	117	106	150
Bacteriastrum elongatum	0	261	0	0	0	125	109	243	67	0	67	0	0	0	0	91	122	0	0	0	17	0	0
Bac. spp.	0	391	196	149	222	125	0	121	0	0	0	122	0	0	0	91	61	0	33	0	0	0	0
Chaetoceros spp.	881	847	785	74	612	1564	164	789	400	344	400	61	187	178	24	861	306	22	125	94	17	142	75
Coscinodiscus spp.	504	652	196	298	667	1251	438	607	133	375	267	245	125	142	189	453	306	66	100	16	33	106	33
Hemidiscus cuneiformis	252	130	294	0	111	375	219	243	0	0	133	61	0	0	0	0	61	0	33	0	33	35	17
Proboscia alata	189	65	0	74	0	125	164	364	133	94	167	122	218	36	189	181	153	5	25	8	25	0	8
Rhizosolenia bergonii	14540	13879	6133	9383	8396	13011	12360	14679	5872	6130	5271	4622	4802	6575	3786	9473	7315	598	2410	1157	1551	3514	1426
Rh. decipiens	189	65	294	223	1056	563	164	303	67	250	133	245	281	249	189	680	428	11	75	31	0	89	100
Rh. setigera	0	65	0	0	0	0	0	0	0	0	0	0	0	0	24	0	0	0	0	0	0	0	0
Rh. spp.	0	0	0	0	0	0	0	0	0	31	0	31	0	0	0	0	0	5	0	0	75	0	33
Roperia tesselata	1762	1824	687	1638	1446	2877	1531	1820	1134	1564	667	979	624	1137	426	1269	796	77	150	63	100	248	117
Thalassiosira cf. *eccentrica*	1888	2606	1276	1638	2669	3753	2297	1456	1468	813	1401	1041	1310	1422	710	1541	2081	132	267	63	83	71	133
Th. endoseriata	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Th. leptopus	126	0	196	149	222	125	109	0	0	63	0	0	0	0	0	91	61	0	17	47	0	0	17
Th. lineata	1259	391	491	894	890	1501	1094	364	267	500	1068	428	561	498	237	816	306	33	50	31	67	0	67
Th. oestrupii	252	391	589	298	111	125	0	121	0	188	67	0	0	142	0	91	0	0	0	0	17	0	0
Th. spp.	0	0	392	149	111	2877	109	364	400	1626	400	1224	187	1706	189	1632	245	165	33	172	117	248	117
Trigonium spp.	0	130	0	0	111	0	0	0	0	63	0	0	0	0	47	0	0	0	17	16	0	0	0
Other Centrics	3714	3649	1668	2830	1334	3253	1149	2669	1401	313	667	306	1871	924	828	544	1408	66	459	23	183	373	33
PENNATES																							
Alveus marinus	378	130	196	0	222	250	0	243	0	375	0	184	125	284	284	91	184	22	67	16	0	0	0
Diploneis spp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fragilariopsis doliolus	504	1694	981	447	445	500	219	1334	534	751	467	367	624	142	142	272	490	22	117	16	133	213	33
Fragilariopsis spp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lioloma spp.	0	0	0	149	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nitzschia bicapitata	1007	521	981	149	1668	2002	1531	5459	1201	876	1134	306	312	782	379	997	918	11	100	109	67	319	17
Nit. cf. *braarudii*	629	521	0	0	111	500	0	0	0	63	0	184	0	71	0	0	122	0	17	16	0	35	17
Nit. sicula	755	391	98	745	222	375	438	1092	334	250	400	367	0	0	379	453	184	11	100	0	0	0	17
Nit. cf. *villarealii*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nit. spp.	1133	1955	1079	745	2113	2752	2406	5338	1001	1626	1334	796	437	2346	615	2448	918	11	350	125	150	319	417
Pseudo-nitzschia spp.	504	261	294	149	222	250	328	607	200	125	133	0	0	142	0	272	306	11	33	0	0	142	33
Synedropsis hyperborea	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16	0	0	0
Thalassionema frauenfeldii	1888	782	687	596	778	2127	984	1213	267	751	667	857	998	924	331	1269	612	66	117	16	83	71	183
Thn. nitzschioides var. *parva*	9945	6255	4317	4915	3559	5129	5797	4125	2669	2377	2335	1775	1247	2559	1893	6527	2020	198	601	235	350	355	400
Other forms of *Thn. nitzschioides*	1259	912	589	447	890	125	656	121	0	63	0	0	0	71	0	544	184	0	17	31	0	0	33
Thalassiothrix spp.	1637	391	245	149	334	1126	219	243	100	188	200	275	156	426	47	635	153	33	25	23	50	53	100
Other Pennates	2644	3519	2944	3128	1779	5004	2406	3033	2669	2064	1268	1469	1122	3057	1372	3173	1469	219	767	375	250	248	367
TOTAL DIATOM FLUX	55896	48673	30319	33733	35863	60175	41674	53742	22719	25302	21585	19374	17242	27153	14409	40206	24699	2058	7439	3167	3820	7506	4279

Appendix Table 4. (cont.)

Site MT5	(MR01) #25	#01	#02	#03	#04	#05	#06	#07	#08	#09	#10	#11	#12	#13	#14	#15	#16	#17	#18	#19	#20	#21	#22
CENTRICS																							
Actinocyclus spp.	57	200	417	240	867	680	668	334	477	234	387	501	334	1251	715	372	133	0	0	104	159	152	222
Asterolampra marylandica	0	0	83	0	133	68	167	0	0	78	145	0	0	156	79	74	0	0	0	0	0	0	0
Asteromphalus spp.	69	300	334	240	200	340	334	167	159	234	532	668	167	234	159	0	0	0	108	208	0	152	0
Azpeitia africana	0	1001	334	241	534	680	500	834	635	626	435	667	834	469	0	447	400	247	430	104	635	152	556
Az. neocrenulata	114	1001	834	361	1068	1088	1501	1334	477	469	870	1001	834	313	159	298	400	0	646	313	794	152	0
Az. nodulifer	69	801	417	361	400	816	584	834	794	626	435	167	1001	626	159	447	400	62	323	104	477	303	0
Bacteriastrum elongatum	23	0	0	60	0	136	83	83	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bac. spp.	11	0	0	60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Chaetoceros spp.	69	200	167	60	0	272	84	84	0	0	0	0	0	78	0	0	0	0	0	104	0	0	0
Coscinodiscus spp.	11	0	0	60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hemidiscus cuneiformis	11	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Proboscia alata	6	200	334	301	0	136	334	167	0	156	0	334	334	156	0	0	0	0	0	0	0	152	0
Rhizosolenia bergonii	1114	7206	6672	4812	8140	5643	10175	12510	6672	7584	7252	14345	8841	8132	8976	7000	5605	5313	5488	3962	3177	1061	6005
Rh. decipiens	103	1401	667	601	534	408	1001	667	1350	938	725	1001	834	938	159	447	267	0	108	521	318	303	445
Rh. setigera	0	0	334	0	0	0	334	0	477	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rh. spp.	11	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	1	0	0	1	0
Roperia tesselata	57	1201	1751	1323	534	1088	1501	1501	1271	1251	145	834	167	313	635	745	734	927	538	730	477	76	445
Thalassiosira cf. *eccentrica*	103	1902	2335	1083	1601	816	1668	1501	1430	1173	870	1334	667	938	794	298	667	741	323	104	477	76	111
Th. endoseriata	0	1001	1835	722	801	544	667	751	635	547	193	334	417	469	556	223	133	124	161	261	265	227	167
Th. leptopus	0	600	417	481	534	680	834	667	635	704	242	250	334	626	556	223	133	124	161	313	265	152	167
Th. lineata	34	801	667	361	534	816	667	834	556	626	97	500	417	469	635	149	334	124	215	261	265	190	222
Th. oestrupii	0	1601	1168	842	534	408	667	500	318	313	193	667	334	938	318	745	133	185	215	209	318	265	222
Th. spp.	80	1401	417	241	200	952	500	834	238	156	145	751	83	156	477	596	667	371	215	209	159	303	334
Trigonium spp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Centrics	29	3603	1501	1744	1934	3195	3420	2085	1669	1018	388	833	1750	1878	238	1191	803	1790	646	833	1269	529	1224
PENNATES																							
Alveus marinus	0	200	167	120	200	136	167	83	238	0	48	250	0	156	159	149	0	0	54	209	0	76	0
Diploneis spp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fragilariopsis doliolus	0	801	834	0	267	272	167	584	318	156	97	334	417	235	238	223	133	0	215	261	159	0	167
Fragilariopsis spp.	0	600	167	120	67	204	167	167	318	156	48	0	0	156	238	74	133	185	215	104	106	0	0
Lioloma spp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nitzschia bicapitata	11	7606	3753	2646	4671	5575	2669	2669	2542	3597	1450	3002	3169	5161	4607	2830	4137	1977	1614	1877	1589	303	2113
Nit. cf. *braarudii*	11	1601	2085	1323	1201	1904	667	667	1747	938	1209	334	1501	782	635	149	133	247	430	1147	0	76	1001
Nit. sicula	11	200	83	180	133	204	667	167	79	313	387	667	0	156	159	149	133	185	108	209	159	76	0
Nit. cf. *villarealii*	0	400	334	120	267	408	500	667	477	469	290	250	667	313	159	298	400	556	323	209	159	38	222
Nit. spp.	149	1301	501	481	400	680	584	584	397	234	145	750	417	782	397	149	200	0	431	260	318	265	445
Pseudo-nitzschia spp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Synedropsis hyperborea	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Thalassionema frauenfeldii	137	1501	1168	782	1001	1224	1668	1585	1033	391	774	1334	1501	156	1191	1043	1201	927	753	626	741	531	612
Thn. nitzschioides var. *parva*	217	6605	5338	3128	2535	2856	4671	4504	5163	3362	1741	5171	4003	2658	2701	3872	1068	2101	2260	3336	1906	1213	1001
Other forms of *Thn. nitzschioides*	23	3203	1835	1083	1868	1904	1501	1168	159	1173	870	667	1334	938	1271	745	534	927	538	1147	1271	1213	1223
Thalassiothrix spp.	11	1201	834	481	333	680	918	1001	397	469	387	500	167	312	79	149	667	124	269	313	53	76	222
Other Pennates	160	4005	2584	3370	2537	3127	2501	3001	2065	3285	4593	3088	2504	3051	1828	2234	1670	185	754	1666	211	227	1668
TOTAL DIATOM FLUX	2703	53645	40367	28028	34028	37939	42535	42535	32726	31276	25093	40534	33027	32996	28277	25319	21218	17422	17541	19704	15727	8340	18793

Appendix Table 4. (cont.)

Site MT5	#23	(MR02) #01	#02	#03	#04	#05	#06	#07	#08	#09	#10	#11	#12	#13	#14	#15	#16	#17	#18	#19	#20	#21	#22	#23
CENTRICS																								
Actinocyclus spp.	78	382	480	417	313	334	514	668	984	1239	1334	501	804	779	391	542	166	250	156	334	333	362	260	278
Asterolampra marylandica	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Asteromphalus spp.	0	286	289	83	79	166	128	83	268	190	223	83	0	223	0	125	0	83	0	0	0	55	52	55
Azpeitia africana	156	286	384	83	156	334	128	42	0	334	445	83	179	223	0	417	166	83	79	83	334	0	235	0
Az. neocrenulata	78	668	337	83	156	251	321	251	134	286	111	0	0	278	156	166	83	166	79	83	166	0	0	223
Az. nodulifer	0	381	144	0	39	251	64	42	45	48	0	0	179	223	0	0	0	0	79	111	0	0	0	0
Bacteriastrum elongatum	0	0	0	0	39	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bac. spp.	0	0	0	0	39	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Chaetoceros spp.	0	95	0	0	39	0	0	0	179	0	0	0	0	0	0	0	83	0	0	0	0	0	79	0
Coscinodiscus spp.	0	95	0	0	0	0	0	0	0	0	0	42	0	56	0	0	0	0	0	28	0	0	0	28
Hemidiscus cuneiformis	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Proboscia alata	0	191	0	0	0	0	257	42	89	95	0	0	357	166	0	83	0	0	0	55	0	0	0	0
Rhizosolenia bergonii	1173	5623	4763	4337	4066	5838	9110	7589	7327	8292	9564	6422	6792	8507	4300	5505	3169	4671	2737	2419	4671	2919	2059	1140
Rh. decipiens	39	381	384	83	79	917	1155	500	626	858	2002	1168	2055	1445	1251	1334	583	1001	547	500	500	251	156	0
Rh. setigera	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rh. spp.	0	0	0	0		0	0		0	0	0	0	1	1	1		1					0	0	
Roperia tesselata	78	858	384	500	312	751	385	166	492	572	1001	334	447	723	235	668	334	166	391	251	459	83	131	334
Thalassiosira cf. *eccentrica*	156	381	674	251	547	583	770	834	1072	191	334	751	626	556	312	251	251	83	156	83	417	166	79	223
Th. endoseriata	39	191	0	0	0	0	1155	0	89	0	0	0	0	0	156	251	166	83	0	0	0	0	0	0
Th. leptopus	78	763	193	417	156	334	257	251	715	763	890	583	179	0	0	166	334	0	312	0	83	83	79	445
Th. lineata	39	0	0	0	0	83	0	0	0	0	0	0	89	445	0	0	0	0	0	0	0	0	0	0
Th. oestrupii	117	0	0	0	79	334	0	334	447	668	334	583	268	556	235	334	0	166	0	83	83	166	79	0
Th. spp.	156	477	289	83	156	500	513	500	268	477	223	500	804	223	156	500	0	166	235	83	251	166	156	0
Trigonium spp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Centrics	237	2192	1205	250	469	1917	3333	1210	1117	2859	1555	1125	2234	2388	1095	667	251	86	311	389	209	334	76	54
PENNATES		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Alveus marinus	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Diploneis spp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fragilariopsis doliolus	0	191	722	83	0	0	641	166	0	95	111	0	45	0	0	42	0	0	39	0	0	0	0	0
Fragilariopsis spp.	0	95	240	83	0	0	128	83	0	0	55	0	45	0	0	0	0	0	0	0	0	0	0	0
Lioloma spp.	0	477	96	166	235	83	257	251	89	286	556	500	268	223	235	334	166	0	79	83	417	166	312	0
Nitzschia bicapitata	469	954	384	583	235	1501	3337	1751	1072	1429	1613	751	1430	2224	938	1042	0	417	703	334	1251	251	1017	334
Nit. cf. *braarudii*	78	763	96	0	235	0	2309	417	179	572	556	834	357	668	235	583	417	83	196	0	334	251	79	0
Nit. sicula	59	286	96	83	79	83	385	166	89	0	223	166	0	111	0	0	0	0	0	0	83	0	0	0
Nit. cf. *villarealii*	0	191	289	83	79	251	128	166	357	286	334	166	179	0	79	83	0	83	79	166	83	83	79	445
Nit. spp.	59	763	384	668	312	834	128	1835	715	668	223	334	983	890	547	417	83	166	0	83	166	83	0	0
Pseudo-nitzschia spp.	0	572	193	83	235	83	385	334	357	477	223	83	89	0	156	166	166	208	79	0	251	83	156	0
Synedropsis hyperborea	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Thalassionema frauenfeldii	156	0	0	0	0	0	0	0	0	0	334	0	0	0	0	417	500	417	312	166	166	251	235	334
Thn. nitzschioides var. *parva*	156	3051	1203	917	1173	1334	2438	2919	1072	2478	2335	1376	2144	1557	1134	1334	445	542	782	334	1251	1641	574	306
Other forms of *Thn. nitzschioides*	235	1239	481	1168	470	1334	2053	251	537	858	1334	500	626	1334	470	751	251	751	703	834	1084	166	391	334
Thalassiothrix spp.	156	0	0	42	39	0	64	0	0	48	55	0	45	55	39	0	111	42	0	0	42	28	27	28
Other Pennates	509	2000	1494	794	741	668	834	1084	448	1097	1278	1460	1208	388	702	751	279	545	1016	668	1377	500	806	444
TOTAL DIATOM FLUX	4300	23829	15205	11343	10556	18766	31180	21935	18766	25164	27245	18349	22429	24242	12823	16931	8006	10260	9071	7172	14012	8090	7116	5004

Appendix Table 5. Diatom fluxes (x10^2 valves m^{-2} d^{-1}) at Site MT6 from December 1999 to January 2003.

Site MT6	(MR00) #01	#02	#03	#04	#05	#06	#07	#08	#09	#10	#11	#12	#13	#14	#15	#16	#17	#18	#19	#20	#21	#22	#23	#24	#25
CENTRICS																									
Actinocyclus spp.	1144	855	2067	1524	1446	2360	951	857	657	1216	1770	1017	1030	1372	1597	1684	1100	336	460	328	0	0	744	734	612
Asterolampra marylandica	0	0	0	0	181	0	0	0	0	0	0	0	0	0	0	0	157	0	0	0	0	0	0	0	0
Asteromphalus spp.	327	1026	477	847	1988	1011	634	514	164	1042	805	339	2061	1200	799	505	785	0	230	109	107	161	0	133	408
Azpeitia africana	0	0	0	0	0	0	0	0	164	0	1127	1187	172	686	479	0	0	504	0	219	427	0	83	200	204
Az. neocrenulata	4740	5815	7314	3387	2711	3371	4121	3427	2794	3822	4828	7122	3778	3944	5431	6736	4556	2015	1380	437	1067	0	2316	534	952
Az. nodulifer	1798	855	954	1186	1085	1011	792	171	657	1042	1288	1865	2576	2229	1118	2863	1257	672	690	219	320	0	744	334	476
Bacteriastrum elongatum	0	342	0	339	0	0	0	0	0	174	0	170	0	343	479	0	0	0	0	0	0	0	83	67	68
Bac. spp.	0	0	0	169	181	169	0	171	0	0	0	0	0	0	0	0	0	0	0	0	107	0	0	0	0
Chaetoceros spp.	1553	855	398	762	542	506	792	171	657	695	161	933	687	686	799	1347	1257	588	460	55	213	968	165	600	612
Coscinodiscus spp.	0	0	0	0	0	0	0	0	329	0	322	339	687	343	639	505	785	168	0	109	107	0	165	67	0
Hemidiscus cuneiformis	817	342	159	169	362	0	792	171	164	174	322	1187	172	0	160	505	157	0	0	0	0	161	0	0	68
Proboscia alata	0	0	80	0	90	0	0	86	82	87	322	339	86	0	80	0	0	84	0	0	0	161	0	33	136
Rhizosolenia bergonii	10051	7354	6837	7791	7863	9862	6736	3769	5342	8425	11025	11871	13738	8745	7428	7746	7305	4281	1611	1256	2080	4033	3722	2836	2719
Rh. decipiens	0	599	477	0	723	590	158	86	164	347	161	0	773	514	319	337	157	168	0	0	0	81	124	133	476
Rh. setigera	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rh. spp.	0	0	0	931	0	0	79	0	0	0	322	424	0	0	0	0	0	252	58	55	53	323	0	67	0
Roperia tesselata	1798	1026	795	847	1808	843	1426	343	329	1390	1770	1187	1889	1372	1278	505	471	168	690	109	427	0	331	734	544
Thalassiosira cf. *eccentrica*	6374	4105	6678	4065	4338	3203	5705	1371	986	3822	2253	3052	1889	2572	3834	3873	2356	1007	460	546	853	0	744	667	544
Th. endoseriata	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Th. leptopus	1144	684	636	677	181	506	951	514	164	347	1288	848	687	171	1118	1179	471	504	0	328	0	0	0	0	0
Th. lineata	654	855	1590	1355	1808	506	1902	1199	164	174	966	1526	172	343	160	337	471	504	230	109	213	0	496	534	544
Th. oestrupii	2288	684	795	1355	362	0	317	0	164	0	805	170	515	1029	799	505	471	839	115	0	107	0	662	133	0
Th. spp.	0	4447	2226	2710	3977	2529	3170	1028	986	3648	3380	3900	4980	6516	4313	3873	2828	2015	690	1202	960	1291	579	133	0
Trigonium spp.	0	0	159	339	181	337	475	171	0	695	322	339	859	343	319	674	314	168	0	0	107	0	0	0	0
Other Centrics	6374	2736	1749	4742	4700	5394	4596	3084	822	7122	2897	1696	1889	1543	1438	842	943	336	345	219	213	0	1406	1068	1427
PENNATES																									
Alveus marinus	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	133	0
Diploneis spp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fragilariopsis doliolus	981	1539	0	169	2711	843	1109	0	164	1563	805	1526	1546	343	799	1516	1100	0	230	0	0	323	248	400	340
Fragilariopsis spp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lioloma spp.	0	86	0	85	90	0	238	0	0	0	0	254	0	429	80	84	0	0	58	0	0	0	0	0	0
Nitzschia bicapitata	6537	2907	4452	5758	4519	4889	5864	1885	1151	5733	3702	5427	2404	3087	3994	5389	3299	1007	690	109	320	968	1406	334	748
Nit. cf. *braarudii*	1144	855	318	169	181	337	317	343	0	0	322	339	687	686	639	674	1885	168	345	109	427	968	414	0	136
Nit. sicula	981	1026	795	1524	904	169	792	343	164	695	805	1526	343	857	1757	337	943	0	0	0	427	645	0	334	68
Nit. cf. *villarealii*	0	0	318	0	0	0	0	0	164	174	0	170	0	0	0	0	0	0	0	0	0	81	0	0	0
Nit. spp.	5393	3078	2226	4234	2892	4214	4596	2913	1644	4864	4024	5766	3263	4115	6709	3705	4085	3022	690	1639	1813	3711	1241	2202	1495
Pseudo-nitzschia spp.	1144	342	477	0	1265	1517	1268	1542	329	1737	2092	1017	515	1029	2077	1347	943	672	460	546	213	645	0	0	136
Synedropsis hyperborea	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Thalassionema frauenfeldii	490	1026	1749	847	904	1011	792	343	0	347	161	254	1546	1372	639	842	785	168	460	328	160	161	83	334	612
Thn. nitzschioides var. *parva*	5884	5131	7314	4403	4700	5732	4279	1028	1972	5038	4989	5257	7556	4973	5591	5220	3456	1847	805	328	1173	2097	2730	1668	1223
Other forms of *Thn. nitzschioides*	654	1197	318	169	0	0	317	0	0	695	1288	1357	343	343	3195	1684	1257	336	345	0	107	484	414	334	0
Thalassiothrix spp.	0	86	0	169	90	0	317	0	164	0	161	339	343	0	160	84	393	0	0	0	0	0	83	133	170
Other Pennates	4740	4276	5406	4573	2531	4720	5388	2913	1972	3648	6116	8649	3950	3944	4952	6904	7384	4197	1841	983	1813	2420	910	2068	1427
TOTAL DIATOM FLUX	67009	54128	56766	55296	55314	55630	58877	28440	22519	58716	60597	71393	61134	55129	63178	61801	51371	26022	13344	9341	13814	19683	19893	16947	16142

Appendix Table 5. (cont.)

Site MT6	(MR01) #01-26	(MR02) #01	#02	#03	#04	#05	#06	#07	#08	#09	#10	#11	#12	#13	#14	#15	#16	#17	#18	#19	#20	#21	#22	#23	#24
CENTRICS																									
Actinocyclus spp.	--	1238	879.8	1168	625.8	750.9	1483	1113	469.6	1667	1223	1334	2086	1891	1042	1222	2336	1446	728.9	1084	750.9	794.7	285	268	300
Asterolampra marylandica	--	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Asteromphalus spp.	--	572	109.8	83.2	78.63	0	278.4	110.9	0	249.6	110.9	0	104.1	445.9	104.1	0	110.9	110.9	0	166.4	166.4	0	0	0	99.6
Azpeitia africana	--	334	879.8	500.3	312.4	417.1	741.3	333.9	312.4	417.1	889.6	222.9	729.9	444.8	625.8	555.7	1001	667.7	104.1	333.9	166.4	555.7	284	133	0
Az. neocrenulata	--	334	550.3	166.4	0	166.4	185.6	222.9	0	333.9	333.9	667.7	104.1	444.8	208.3	444.8	333.9	110.9	312.4	250.7	333.9	158.9	71.1	0	99.6
Az. nodulifer	--	191	219.7	166.4	0	0	185.6	0	0	0	110.9	0	104.1	0	104.1	110.9	0	0	208.3	166.4	0	158.9	71.1	67.2	0
Bacteriastrum elongatum	--	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bac. spp.	--	0	110	0	0	83.4	0	0	0	0	0	111.2	0	0	0	0	0	0	0	83.4	0	0	0	0	0
Chaetoceros spp.	--	191	109.8	83.2	156.2	166.4	278.4	333.9	234.8	333.9	778.7	0	416.5	333.9	0	0	222.9	0	69.06	250.7	0	78.93	0	0	200
Coscinodiscus spp.	--	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hemidiscus cuneiformis	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Proboscia alata	--	95	109.8	0	156.2	667.7	834.1	333.9	78.63	333.9	333.9	333.9	625.8	0	312.4	0	110.9	110.9	0	0	83.2	0	0	133	99.6
Rhizosolenia bergonii	--	7673	11548	5630	2815	6089	10194	11788	6099	8674	10675	8563	10843	9898	7507	8340	8896	7562	4100	5421	3337	5402	2061	2202	1402
Rh. decipiens	--	1143	440.5	333.9	782	834.1	1297	1445	782	1084	889.6	1113	416.5	889.6	521.7	1779	1001	333.9	625.8	500.3	333.9	158.9	142	133	300
Rh. setigera	--	0	110	0	39.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rh. spp.	--	429	440.5	541.9	234.8	249.6	648.5	667.7	468.6	584.5	667.7	889.6	624.8	0	520.6	1113	110.9	444.8	104.1	667.7	333.9	158.9	214	0	0
Roperia tesselata	--	954	1650	1001	782	1084	2224	2558	938.2	583.5	1890	1001	1146	1890	625.8	1445	667.7	1445	625.8	667.7	417.1	396.8	142	400	99.6
Thalassiosira cf. *eccentrica*	--	763	550.3	500.3	156.2	500.3	462.9	222.9	625.8	583.5	555.7	333.9	208.3	667.7	625.8	667.7	110.9	778.7	312.4	83.2	83.2	78.93	0	133	200
Th. endoseriata	--	95	329.5	83.2	0	83.2	0	110.9	0	83.2	0	222.9	0	333.9	0	222.9	110.9	110.9	0	0	0	0	0	133	0
Th. leptopus	--	286	440.5	333.9	312.4	417.1	371.2	1001	312.4	417.1	444.8	1001	625.8	0	416.5	333.9	444.8	222.9	104.1	417.1	166.4	78.93	71.1	201	0
Th. lineata	--	0	0	0	0	83.4	0	0	0	0	111.2	0	0	0	0	111.2	0	0	0	0	83.4	238.3	0	66.7	100
Th. oestrupii	--	381	1209	250.7	312.4	166.4	1020	444.8	625.8	834.1	555.7	222.9	729.9	889.6	625.8	1445	1223	555.7	312.4	667.7	166.4	794.7	213	267	901
Th. spp.	--	572	220	250.2	156.4	500.4	741.4	889.6	703.7	750.6	222.4	667.2	312.8	667.2	417	556	778.4	222.4	104.3	83.4	667.2	238.3	142	0	100
Trigonium spp.	--	0	0	166.4	78.63	0	371.2	0	156.2	0	110.9	0	104.1	333.9	104.1	0	110.9	0	0	0	83.2	0	0	67.2	0
Other Centrics	--	860	329	334.3	39.34	1002	646.4	1221	1016	84.58	557.1	775.7	938.9	1220	626.4	890.1	668	333.3	107.2	166	84.58	398.1	0	333	1.43
PENNATES																									
Alveus marinus	--	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Diploneis spp.	--	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fragilariopsis doliolus	--	238	329.5	0	0	0	0	333.9	156.2	333.9	667.7	0	104.1	0	0	778.7	222.9	0	0	41.6	0	0	0	0	0
Fragilariopsis spp.	--	191	110	0	0	0	0	0	0	83.4	0	0	208.5	0	0	0	0	0	0	41.7	0	0	23.7	0	0
Lioloma spp.	--	763	440.5	83.2	274.1	83.2	278.4	0	0	166.4	222.9	555.7	312.4	222.9	0	0	222.9	0	104.1	41.6	0	78.93	71.2	133	200
Nitzschia bicapitata	--	1668	329.5	583.5	156.2	834.1	3151	1113	782	1084	1890	889.6	1460	1001	1251	667.7	778.7	889.6	104.1	417.1	0	158.9	237	0	0
Nit. cf. *braarudii*	--	858	219.7	250.7	78.63	417.1	371.2	222.9	234.8	166.4	333.9	110.9	208.3	222.9	312.4	0	0	333.9	104.1	417.1	0	0	0	0	0
Nit. sicula	--	572	329.5	83.2	156.2	83.2	0	222.9	156.2	166.4	222.9	222.9	521.7	333.9	416.5	222.9	110.9	110.9	312.4	83.2	0	0	71.2	67.2	0
Nit. cf. *villarealii*	--	191	219.7	83.2	156.2	83.2	371.2	222.9	78.63	83.2	110.9	222.9	312.4	222.9	0	110.9	110.9	222.9	208.3	417.1	83.2	237.9	0	0	99.6
Nit. spp.	--	1334	770	458.7	312.4	667.7	1390	1779	1329	917.3	667.7	667.7	1146	667.7	834.1	667.7	667.7	555.7	0	458.7	166.4	396.8	0	434	433
Pseudo-nitzschia spp.	--	953	440.5	626.1	234.8	500.3	1575	778.7	391	1668	333.9	778.7	1459	1113	1252	1334	667.7	778.7	312.4	374.4	417.1	1033	214	300	568
Synedropsis hyperborea	--	48	0	0	39.1	0	0	0	0	83.4	0	0	0	0	0	111.2	0	0	0	0	41.7	0	0	0	0
Thalassionema frauenfeldii	--	477	219.7	0	156.2	583.5	1668	222.9	312.4	667.7	2224	222.9	834.1	1113	521.7	1223	1445	1001	625.8	333.9	750.9	873.6	71.2	467	800
Thn. nitzschioides var. *parva*	--	1715	1979	1168	586.5	1334	1390	1668	469.6	500.3	1668	1890	938.2	1223	2190	1445	1557	1779	765	625.1	83.2	834.1	568	634	568
Other forms of *Thn. nitzschioides*	--	1049	989.7	917.3	1017	834.1	1575	1557	782	1668	778.7	889.6	1460	778.7	1356	1113	1223	1445	208.3	917.3	625.1	476.8	71.2	267	500
Thalassiothrix spp.	--	95	110	0	39.1	83.4	92.67	0	78.19	0	111.2	111.2	104.3	0	104.3	0	0	222.4	34.75	41.7	41.7	39.72	0	33.4	33.4
Other Pennates	--	2527	1541	1084	1016	2336	2686	3443	1641	1503	2555	2001	2399	2110	2919	3445	2000	2225	661.2	1044	1294	2146	591	667	501
TOTAL DIATOM FLUX	--	28786	28265	16931	11259	21101	36512	34362	19234	26105	32249	26021	31589	29358	25543	30358	27245	24020	11259	16263	10759	15966	5615	7539	7607

Appendix Table 6. Diatom fluxes (x10^2 valves m^{-2} d^{-1}) at Site MT7 from January 2001 to January 2003.

Site MT7	(MR01) #01	#02	#03	#04	#05	#06	#07	#08	#09	#10	#11	#12	#13	#14	#15	#16	#17	#18	#19	#20	#21	#22	#23	#24
CENTRICS																								
Actinocyclus spp.	313	167	231	417	78	167	250	167	521	790	334	334	0	222	313	400	0	834	104	0	0	417	235	167
Asterolampra marylandica	0	83	0	0	0	0	0	0	0	176	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Asteromphalus spp.	547	167	154	334	235	500	83	0	313	0	334	167	438	222	104	133	0	348	313	167	0	167	78	111
Azpeitia africana	1095	834	770	1501	1407	2335	1501	1001	1043	1844	1601	1168	876	445	730	667	858	1251	626	417	417	167	235	167
Az. neocrenulata	1564	1168	1386	1334	1095	1001	1251	834	1251	1229	1201	1835	876	890	626	1601	858	973	1251	334	250	667	235	56
Az. nodulifer	782	1001	770	834	469	1334	1084	1168	1251	1317	934	1001	626	222	417	667	763	834	417	83	250	417	235	111
Bacteriastrum elongatum	156	0	0	0	78	83	0	0	0	0	0	167	0	0	0	0	0	0	0	0	0	0	0	0
Bac. spp.	0	0	77	0	78	0	0	0	0	0	0	0	0	0	0	0	0	139	0	0	0	0	0	0
Chaetoceros spp.	391	500	770	1084	782	584	167	0	0	263	267	834	125	334	0	1001	191	0	104	0	0	0	313	56
Coscinodiscus spp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	67	0	0	0	0	0	0	0	0
Hemidiscus cuneiformis	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Proboscia alata	0	167	154	0	78	250	334	0	0	176	0	167	125	0	0	133	381	139	209	500	0	292	0	0
Rhizosolenia bergonii	7350	4671	6159	9174	7037	12510	8007	9508	6047	9657	5471	7840	4629	3447	2606	5338	3145	8757	2711	1668	3086	1001	821	1001
Rh. decipiens	626	334	770	334	469	167	83	0	417	351	0	0	500	445	104	267	0	973	626	83	584	834	235	334
Rh. setigera	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rh. spp.	0	667	385	500	1016	917	250	334	209	351	133	167	125	278	365	667	572	834	1564	626	751	500	156	612
Roperia tesselata	938	83	616	834	469	334	500	500	1460	1756	1601	584	751	667	521	1068	858	834	730	167	626	209	430	111
Thalassiosira cf. *eccentrica*	938	334	1386	1501	1720	1585	1251	1501	1251	1141	1334	1501	876	834	782	1868	715	765	834	334	751	334	156	334
Th. endoseriata	782	250	770	1001	1095	1084	1334	834	938	878	667	584	563	278	521	801	381	1251	417	500	209	292	195	139
Th. leptopus	469	334	385	834	626	1001	1001	1001	1043	527	801	751	563	389	626	600	286	556	521	250	292	334	156	167
Th. lineata	626	334	308	917	626	667	1084	1251	1043	439	801	834	500	445	782	734	238	834	730	334	250	334	156	195
Th. oestrupii	313	83	1078	1084	1251	834	917	334	626	439	1201	1334	751	778	730	1201	286	417	834	250	417	250	469	445
Th. spp.	626	83	770	334	1407	667	417	834	417	88	801	250	313	222	313	400	572	695	521	209	167	42	39	167
Trigonium spp.	156	0	154	167	156	334	0	167	104	0	0	167	125	0	0	133	0	0	209	83	0	0	0	0
Other Centrics	156	250	154	334	2033	1001	1334	250	1251	702	400	834	626	445	365	801	286	417	313	83	125	83	313	222
PENNATES																								
Alveus marinus	156	0	0	167	0	0	0	0	0	0	0	0	0	0	0	67	0	0	0	0	0	0	78	0
Diploneis spp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fragilariopsis doliolus	626	1251	154	1001	313	417	500	0	1564	0	267	1501	250	0	209	0	334	0	313	167	250	42	0	83
Fragilariopsis spp.	0	417	0	334	0	250	167	0	521	0	0	500	0	0	0	0	334	0	0	0	167	0	0	83
Lioloma spp.	0	0	0	167	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nitzschia bicapitata	4066	4837	6775	8173	7975	7339	5004	4504	11259	6497	6272	5671	3753	2335	3128	4804	2192	8757	5004	1835	1585	584	1095	1001
Nit. cf. *braarudii*	2189	1001	924	3169	1564	1168	1668	1001	2502	1054	1201	834	1001	445	938	667	763	2363	1147	584	167	334	469	222
Nit. sicula	938	667	1232	500	156	500	167	667	626	527	400	500	500	445	209	133	286	139	0	83	0	0	78	111
Nit. cf. *villarealii*	156	167	308	167	156	667	167	334	0	176	400	167	250	111	104	133	95	348	417	83	0	0	117	0
Nit. spp.	547	500	770	500	626	334	334	0	521	0	0	500	0	0	209	267	191	209	0	459	0	292	117	83
Pseudo-nitzschia spp.	391	584	231	0	0	167	417	0	209	0	0	0	250	0	0	200	0	209	0	0	0	125	0	0
Synedropsis hyperborea	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Thalassionema frauenfeldii	1095	834	539	1001	938	917	1334	1251	1564	1580	1001	1001	1001	1056	626	667	953	1390	834	626	751	334	313	195
Thn. nitzschioides var. *parva*	6099	3336	3233	8173	5473	7173	4671	4003	5421	6672	4804	5338	3253	3225	2919	2669	2097	2780	1355	917	667	459	235	612
Other forms of *Thn. nitzschioides*	3128	1001	462	2335	1877	2335	1835	834	1043	1405	1868	1168	751	1001	730	534	381	1460	834	250	834	626	391	334
Thalassiothrix spp.	313	667	154	0	0	167	250	250	313	176	0	167	0	0	104	133	95	278	104	83	0	0	0	111
Other Pennates	2658	751	1232	4337	1720	4087	2669	3503	1147	2283	2869	2669	1126	1168	1772	667	1334	4587	1668	1251	1084	459	704	1001
TOTAL DIATOM FLUX	40190	27523	33258	52544	43005	52877	40033	36030	45871	42491	36964	40534	25521	20350	20851	29491	19445	43369	24708	12427	13678	9591	8054	8229

Appendix Table 6. (cont.)

Site MT7	(MR02) #01	#02	#03	#04	#05	#06	#07	#08	#09	#10	#11	#12	#13	#14	#15	#16	#17	#18	#19	#20	#21	#22	#23	#24	#25
CENTRICS																									
Actinocyclus spp.	938	1319	804	1147	1177	1028	1752	939	2038	834	1407	1669	1079	886	882	312	625	782	294	508	604	216	138	20	85
Asterolampra marylandica	0	49	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Asteromphalus spp.	156	489	357	209	942	313	375	0	340	417	365	730	196	261	294	313	0	78	98	39	107	59	9	0	8
Azpeitia africana	938	977	715	782	1177	670	876	704	1359	573	1095	1147	1030	573	1227	491	508	430	392	156	284	195	37	20	23
Az. neocrenulata	469	489	447	261	471	447	626	313	1019	938	834	938	687	521	589	447	391	391	392	0	71	98	0	20	85
Az. nodulifer	0	293	357	104	118	357	751	313	566	730	521	104	392	521	687	179	235	235	196	156	142	39	37	39	0
Bacteriastrum elongatum	78	0	0	0	0	0	0	0	0	0	0	52	0	0	0	0	0	0	0	0	0	0	0	0	0
Bac. spp.	235	49	89	0	118	45	0	78	170	52	52	52	49	52	49	45	39	39	0	0	0	20	0	0	8
Chaetoceros spp.	0	49	357	104	589	447	250	0	283	313	417	104	589	521	392	0	469	313	98	235	0	0	18	39	0
Coscinodiscus spp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hemidiscus cuneiformis	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Proboscia alata	156	586	447	104	589	447	375	469	340	938	313	0	392	0	196	0	0	78	196	78	284	59	18	0	23
Rhizosolenia bergonii	7193	10165	5630	6255	5534	8042	10259	9539	8038	9279	7610	8445	10695	10113	8831	6255	4613	8210	6770	6646	2914	1486	1196	684	487
Rh. decipiens	938	782	357	521	1060	536	626	313	453	521	521	626	294	209	589	447	313	704	491	469	284	78	18	20	46
Rh. setigera	0	98	0	0	59	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rh. spp.	1251	2346	894	1355	1825	894	1126	1720	1245	1251	938	834	687	521	491	89	704	313	294	78	213	156	18	0	0
Roperia tesselata	1877	0	1117	1147	2119	1251	1939	1564	906	1564	1460	1043	1276	1981	1177	670	782	704	785	469	284	176	184	78	85
Thalassiosira cf. *eccentrica*	782	586	179	521	706	357	375	1251	793	1147	521	313	98	626	687	268	704	0	294	469	213	20	74	20	46
Th. endoseriata	313	0	223	0	118	0	63	0	113	313	0	313	0	209	0	179	0	0	98	0	0	59	0	0	8
Th. leptopus	313	684	89	209	353	179	1251	782	566	417	104	209	491	521	196	268	0	78	196	0	0	39	74	0	0
Th. lineata	0	98	0	0	235	179	0	0	0	0	417	521	294	209	687	89	391	235	392	78	0	0	37	20	93
Th. oestrupii	1095	977	447	834	706	894	1126	1564	1472	1981	730	1877	491	1043	1472	1251	1016	1486	981	1095	711	195	110	98	93
Th. spp.	626	782	536	313	1060	626	500	313	226	834	104	209	196	313	294	268	235	547	196	313	0	137	18	39	23
Trigonium spp.	156	0	536	104	0	0	125	0	0	0	209	104	0	0	196	89	0	156	294	0	142	59	0	0	23
Other Centrics	0	1369	358	1876	1296	1608	625	312	792	1355	834	1667	982	626	688	1207	704	78	1080	235	71	116	184	117	69
PENNATES																									
Alveus marinus	156	0	0	0	0	0	125	78	0	52	0	0	0	0	0	0	0	0	0	0	0	10	0	0	0
Diploneis spp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fragilariopsis doliolus	0	391	983	0	589	0	0	0	170	0	313	313	98	782	883	402	156	117	0	0	0	0	83	0	31
Fragilariopsis spp.	0	49	134	0	59	0	0	0	0	0	104	52	0	52	49	0	0	0	0	0	0	0	9	0	0
Lioloma spp.	938	0	0	0	118	0	0	0	0	0	0	0	0	0	49	0	0	0	0	0	0	0	9	0	0
Nitzschia bicapitata	1173	1271	715	1460	353	938	1501	1251	2491	2189	626	1668	1276	1303	1030	536	938	391	442	313	71	166	92	0	23
Nit. cf. *braarudii*	313	98	89	104	118	89	0	0	113	209	521	417	196	0	294	268	156	0	196	156	0	0	0	0	0
Nit. sicula	156	0	89	104	0	357	250	313	226	626	417	313	0	313	98	0	235	0	294	78	0	39	37	0	23
Nit. cf. *villarealii*	469	195	89	313	589	447	375	156	453	209	104	209	98	104	196	89	235	391	294	78	213	0	0	20	0
Nit. spp.	626	586	268	521	235	715	1251	704	2264	1303	1043	1251	1668	1147	883	179	313	469	343	313	284	176	18	39	0
Pseudo-nitzschia spp.	1251	1075	715	626	1060	983	1001	1095	679	730	1877	1043	1570	1460	1177	536	626	469	294	860	142	195	74	78	46
Synedropsis hyperborea	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Thalassionema frauenfeldii	1095	684	983	730	471	1430	1376	1407	1698	1355	1877	1043	785	1147	589	983	547	1407	981	1016	71	117	184	98	23
Thn. nitzschioides var. *parva*	2033	1271	1162	1981	1060	1162	2127	2346	2151	1772	1877	2294	2061	1981	2846	1519	1329	1095	687	1407	426	98	166	39	162
Other forms of *Thn. nitzschioides*	782	684	268	626	1295	1251	1376	1251	1698	938	626	521	1079	417	294	447	704	469	98	391	355	59	110	156	93
Thalassiothrix spp.	626	1026	581	521	353	938	1501	469	962	626	626	834	196	626	98	268	704	391	196	508	426	78	120	72	8
Other Pennates	3049	3812	2145	2502	2296	3664	2752	2346	2717	3857	2085	3180	1962	2398	2404	1832	1329	2619	1177	2072	853	410	331	241	54
TOTAL DIATOM FLUX	30181	33329	22161	25334	28848	30293	36655	31589	36342	37323	30546	34091	30908	31432	30516	19927	19000	22675	18545	18218	9170	4555	3404	1955	1668