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Museum archives of the 19 years long time-series sediment trap samples collected at central subarctic Pacific Station SA and Bering Sea Station AB during 1990-2010

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Abstract

PARLUX type sediment traps were moored at 600 m above the sea-floor at Station SA (water depth: 5,406 m) in the central subarctic Pacific and at Station AB (water depth: 3,788 m) in the Aleutian Basin of the Bering Sea. The time-series flux samples were obtained during 1990-2010 for nineteen years. This allowed us to characterize primary fluxes of biogenic particles primarily produced near the surface layers of the deep water columns as well as to decipher the environmental variations associated with climate changes. Based on the samples various studies were conducted thus far, including the followings types: quantitative plankton taxon-numerical studies on diatoms, silicoflagellates, radiolarians, coccolithophores and planktic foraminfers; and geochemical aspects of chemical compounds such as biogenic opal, calcium carbonate and hexosamine as well as elements such as rare earth elements. Such studies published thus far are cited in this paper.

The sediment trap samples are archived at the Kyushu University Museum for permanent preservation. The grand total of the currently archived samples, including membrane filters and microslides for the two stations, is 3,552. The details of the samples are described herein and spreadsheet tables of the archives will also be electronically published by the Museum. This makes it possible for future scientists and students, who need to examine the relevant sediment trap samples, to access them properly.

Keywords: Museum archives, sediment trap samples, the central subarctic Pacific, the Bering Sea, Station SA, Station AB, sinking paticles, flux, time-series, seasonal, inter-annual

1. Introduction

Collection of time-series sediment trap samples allows us to comprehend detailed behaviors of biogenic particle production which is subsequently sinking into the deep sea. The production of biogenic particles is primarily concentrated in the upper most layers, with some exception in the deeper layers depending on taxa, of the oceans. Many, if not all, of the shell bearing plankton groups such as diatoms and radiolarians are produced attributing to certain environmental conditions and they can be transported to the sea-floor by means of aggregate sinking (e.g., Takahashi, 1986, 1987a, b, c, 1995; Takahashi et al., 1989, 1990; Honjo et al., 2008) and subsequently preserved as microfossils in sediments (e.g., Takahashi, 1994). Therefore, they can be well utilized for reconstruction of the past environmental conditions. With the same token the sinking particles intercepted by sediment traps can be utilized in reconstructing the relatively recent past environmental conditions prevailed at the time of their production.

In global scale Honjo et al. (2008) showed that the region inclusive of Stations SA and AB represents one of

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the highest biogenic opal/$CaCO_3$ ratios in the world and hence efficient performance of biological pump in the region is evident. Such an efficiency of the biological pump could change with varying environmental conditions such as increase in P_{CO_2}, sea surface temperature, and the constituents of $CaCO_3$ bearing plankton taxa. Thus, the time-series sediment trap samples from this particular region represents very important for the years to come, especially when one wishes to compare with the future environmental conditions. It is the authors wish that the sediment trap samples are permanently archived at the Kyushu University Museum. In order to properly archive the samples it is necessary to accompany with well organized documents for the samples. This paper serves as such a required publication.

1.1. Oceanographic setting

In the central subarctic Pacific the Alaskan Stream, an extension of the Alaskan Current, flows westward along the Aleutian Islands and enters the Bering Sea partially through the Amchitka Strait and to significant extent through the Near Strait west of Attu Island in the eastern Aleutian Islands (Fig. 1). A part of the Subarctic Current also joins the Alaskan Stream (Ohtani, 1965). Much of the Pacific water entering the Bering Sea is matched by outflow through the Aleutian Islands. The most significant outflow is through the Kamchatka Strait, which has a maximum depth of 4,420 m (Stabeno et al., 1999). Station SA is located approximately in between the pathways of the Subarctic Current and the Alaskan Stream and thus ideal location in monitoring the changes in the extent of both currents (Fig. 1).

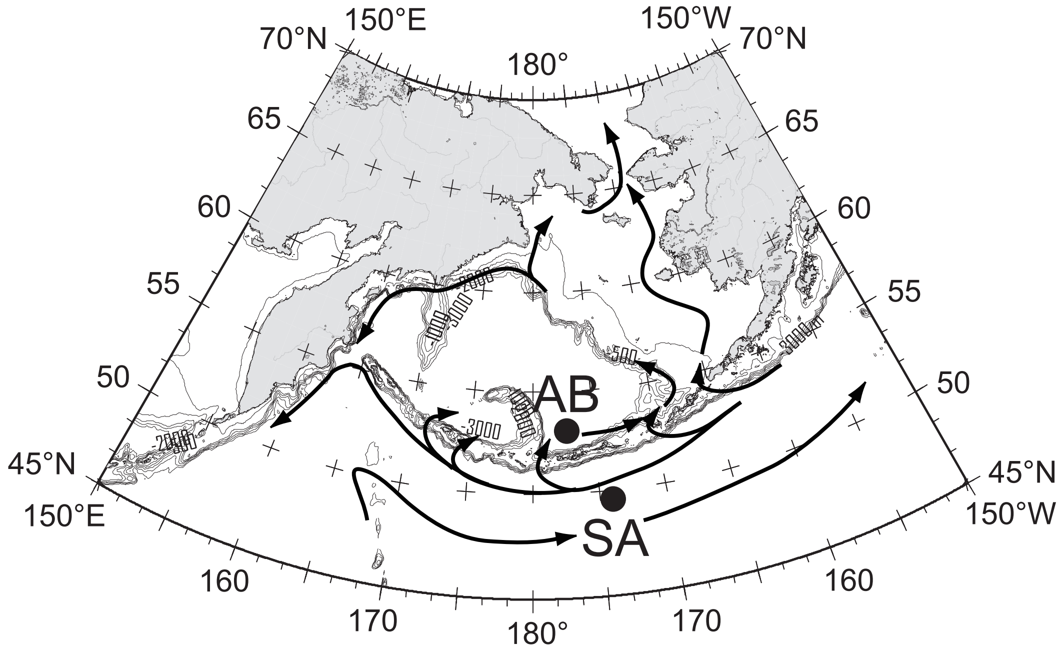

Fig. 1. Map showing the locations of Stations SA and AB. Also included are the bathymetric contour lines as well as major surface currents. The map is drawn based on Collaborative Research Center (SFB) 574 : https://sfb574.ifm-geomar.de/gmt-maps

The Bering Sea is a marginal sea which is semi-enclosed by landmasses of Russian Siberia to the west, Alaska to the east, and the Aleutian Islands to the south. Approximately half of the Bering Sea is a shallow (0-200 m), neritic environment, with the majority of the continental shelf spanning the eastern side of the basin off Alaska from Bristol Bay to the Bering Strait. The Bering Strait is ~50 m deep today (Takahashi, 2005) and the unidirectional net water flowing towards north through the Strait makes up a part of today's water mass properties of the Canadian Archipelago of the Arctic Ocean as well as that of the Labrador Sea in the Atlantic unique (Reid et al., 2007). Another half of the Bering Sea area is represented by hemipelagic waters in the Bering Basin, which can be split into three smaller basins, the Aleutian, Bowers, and Kamchatka (Komandorsky) Basins. Station AB is located in the southern part of the Aleutian Basin whose water depth is ~3,800 m (Fig. 1).

1.2. Sediment trap mooring experiment

Our initial sediment trap mooring experiment for the fist year began in August 1989 and completed in August 1990 at Station SA (49˚N, 174˚W) in the central subarctic Pacific. However, the implosion of one of the glass floats attached to the mooring caused the bottom end of the sediment trap cone plugged by the glass fragments, leading to incomplete collection of only trace amount of samples. In spite of such an accident occurred at Station SA during 1989-1990 the subsequent trap deployments/recoveries went fairly well during 1990-2010 for twenty years (nineteen years of actual sample acquisition; for details see Table 2), with several exceptions of missing a small number of samples (Tables 1-3).

1.3. The value of the trap samples

The value of the trap samples is immense. This is basically because that our samples came from rather critical time period when, for example, global warming is taking place today (IPCC AR4 SYR, 2007). The nineteen year long period for the sample collection is in the past and hence you are no longer be able to go back in time to take the same set of samples again. Therefore, such a sample set provides unique archives of the environmental proxies such as productivity (e.g., Takahashi et al., 2000, 2002; Onodera and Takahashi, 2009, 2011), temperature (e.g., Asahi and Takahashi, 2007, 2008; Tsutsui et al., submitted) and perhaps many other oceanographic conditions. We are providing the sample archives so that people of the future, for example, even a hundred years later, can properly access to the samples for their use, for instance, to compare with what they will collect at the same stations a hundred years later.

Our plan is to archive relevant time-series sediment samples (hereafter trap samples) permanently at the Kyushu University Museum. In order for the museum curators to properly be able to archive the samples at the Museum it is necessary for us to publish the detailed data base such as the present one organized here.

1.4. Studies conducted on the trap samples

A fair number of studies utilizing the trap samples from Stations SA and AB have been conducted thus far: Takahashi et al., 1996, 2000, 2002, 2007; Hashimoto et al., 1998; Kurihara and Takahashi, 2002; Asahi and Takahashi, 2007, 2008; Onodera and Takahashi, 2009, 2011; Onodera et al., 2007, 2009; Akagi et al., 2011; Ikenoue et al., 2012; Tsutsui et al., submitted. Studies concerning total mass, organic carbon (or organic matter), biogenic opal, and calcium carbonate ($CaCO_3$) have been backbones of further studies dealing with detailed proxies such as plankton taxa and assemblages; the backbone studies are Takahashi et al. (1997, 2000, 2002, 2007).

Constituents of organic and inorganic elements and compounds have also been of interest to many of us. The works on amino acids and hexosamine were represented by Hashimoto et al. (1997, 1998) and Maita et al. (1996, 1999). The results on rare earth elements were published by Akagi et al. (2011).

Because that diatoms as primary producers representing by far the largest contribution among many shell bearing sinking plankton assemblages we have been investigating the details. This includes taxon constituents, seasonality, inter-annual flux variability and many other aspects concerning environmental changes occurring in the region. The results for the initial eight years of diatom fluxes have been published by Onodera and Takahashi (2009) and Onodera et al. (2009). Other works on diatoms have also been published: Takahashi et al., 1996; Takahashi, 1999; Onodera et al., 2007. In order to decipher sexual production scheme of *Neodenticula seminae*, the dominant diatom taxon in the region, biometrics of this taxon have been measured and discussed for eight years by Kurihara and Takahashi (2002).

Silicoflagellates as primary producers constitute a rather minor group in terms of fluxes of skeletons, especially compared with that of diatoms, but they carry important environmental proxy signals. Onodera and Takahashi (2011) conducted the initial four years of silicoflagellate fluxes and obtained relevant results concerning environmental changes occurred in the region.

Radiolarians as microzooplankton constitute by far the most complex siliceous shell bearing sinking flux assemblage due to highly diversified taxa as well as a wide range in their living depth habitats (Takahashi, 1991). Ikenoue et al. (2012) carried out a fifteen year long time-series fluxes of radiolarians and discussed with the changes of climate indices. Earlier on preliminary results on radiolarians were achieved by Itaki and Takahashi (1995) and Itaki et al. (1997). Takahashi (1995) discussed the fate of biogenic opal particle fluxes together with citing earlier results of *Cycladophora davisiana*, an intermediate depth dwelling radiolarian.

Furthermore, coccolithophores represent the single most important primary producers among $CaCO_3$ shell bearing sinking plankton groups. The work by Tsutsui et al. (submitted) represents nineteen year long fluxes of major taxa including *Emiliania huxeleyi* and *Coccolithus pelagicus*. It is of interest to note that a sign of global warming has been detected with the increase in *E. huxeleyi* first time in sediment trap records (Tsutsui et al., submitted).

Planktic foraminifers, the last taxonomic group described here but not the least, are quite useful environmental tracers of the region and their fluxes appear to fluctuate depending on the temperature variations based on the nine year long trap results (Asahi and Takahashi, 2007). Utilities of multivariate analyses on planktonic foraminifers are discussed by Asahi and Takahashi (2003, 2008) and Asahi et al. (2007).

Table 1. Logistics of sediment trap deployments and recoveries carried out at Stations SA and AB.

Station/Deployment No.	SA2	SA3	SA4	SA5	SA6	SA7	SA8	SA9	SA10	SA11	SA12	SA13	SA14	SA15	SA16	SA17	SA18	SA19	SA20	SA21
Deployment year	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6	YEAR 7	YEAR 8	YEAR 9	YEAR 10	YEAR 11	YEAR 12	YEAR 13	YEAR 14	YEAR 15	YEAR 16	YEAR 17	YEAR 18	YEAR 19	YEAR 20
Latitude	49°00.3'N	48°59.8'N	48°59.5'N	48°59.7'N	49°00.9'N	49° 01.2'N	48° 59.5'N	49° 00.3'N	48° 57.2'N	49° 01.7'N	49° 00.6'N	49° 00.0'N	48° 59.8'N	49° 00.0'N	49° 00.1'N	48° 58.3'N	48° 59.3'N	48° 59.9'N	49° 01.9'N	49° 00.1'N
Longitude	174° 00.4'W	173° 54.8'W	173° 58.5'W	173° 57.9'W	174° 00.0'W	173° 58.9'W	173° 58.6'W	173° 58.6'W	173° 57.4'W	173° 59.4'W	173° 59.9'W	173° 59.6'W	173° 59.9'W	174° 00.4'W	174° 00.5'W	173° 59.3'W	173° 57.8'W	174° 00.0'W	174° 02.0'W	174° 00.1'W
Bottom depth (m)	5420	5400	5427	5416	5368	5378	5434	5426	5543	5340	5405	5407	5403	5409	5413	5479	5457	5417	5335	5415
Trap depth (m)	4826	4806	4833	4822	4774	4778	4834	4826	4943	4740	4805	4807	4803	4809	4813	4879	4857	4817	4735	4815
Period began	9Aug90	11Aug91	10Aug92	10Aug93	6Aug94	10Aug95	11Aug96	10Aug97	10Aug98	9Aug99	9Aug00	7Aug01	18Aug02	16Jul03	12Aug04	10Jul05	17Jun06	17Jul07	20Jun08	25Jun09
Period ended	4Aug91	2Aug92	20Jul93	2Aug94	2Aug95	2Aug96	4Aug97	5Aug98	5Aug99	4Aug00	5Aug01	31Jul02	10Jul03	10Jul04	6Jul05	7Jun06	7Jun07	7Jun08	7Jun09	9Jun10
Deployed on	8Aug90	10Aug91	9Aug92	9Aug93	5Aug94	9Aug95	10Aug96	9Aug97	9Aug98	8Aug99	9Aug00	6Aug01	17Aug02	15Jul03	10Aug04	9Jul05	16Jun06	16Jul07	18Jun08	13Jun09
Recovered on	10Aug91	9Aug92	9Aug93	5Aug94	9Aug95	9Aug96	9Aug97	9Aug98	8Aug99	9Aug00	6Aug01	17Aug02	14Jul03	10Aug04	9Jul05	16Jun06	16Jul07	18Jun08	13Jun09	18Jul10

Station/Deployment No.	AB1	AB2	AB3	AB4	AB5	AB6	AB7	AB8	AB9	AB14	AB15	AB16	AB18	AB19	AB20
Deployment year	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6	YEAR 7	YEAR 8	YEAR 9	YEAR 13	YEAR 14	YEAR 15	YEAR 17	YEAR 18	YEAR 19
Latitude	53° 32.0'N	53° 31.0'N	53° 30.0'N	53° 29.9'N	53° 30.4'N	53° 30.2'N	53° 29.9'N	53° 30.0'N	53° 29.6'N	53° 30.3'N	53° 28.8'N	53° 30.7'N	53° 23.9'N	53° 22.2'N	53° 26.1'N
Longitude	176° 56.2'W	177° 05.0'W	177° 04.7'W	177° 04.2'W	176° 59.7'W	177° 00.1'W	176° 59.7'W	177° 00.9'W	177° 00.2'W	177° 01.2'W	177° 00.5'W	177° 02.2'W	177° 01.4'W	176° 59.9'W	177° 00.2'W
Bottom depth (m)	3783	3790	3790	3789	3788	3786	3790	3786	3786	3781	3780	3792	3778	3778	3780
Trap depth (m)	3193	3200	3200	3199	3198	3186	3190	3186	3186	3181	3180	3192	3178	3178	3180
Period began	7Aug90	7Aug91	7Aug92	2Aug93	4Aug94	7Aug95	8Aug96	8Aug97	7Aug98	15Aug02	13Jul03	14Aug04	17Jun06	17Jul07	20Jun08
Period ended	1Aug91	31Jul92	20Jul93	31Jul94	25Jul95	25Jul96	1Aug97	1Aug98	3Aug99	10Jul03	10Jul04	6Jul05	7Jun07	7Jun08	7Jun09
Deployed on	6Aug90	6Aug91	6Aug92	1Aug93	3Aug94	7Aug95	7Aug96	7Aug97	6Aug98	14Aug02	12Jul03	12Aug04	14Jun06	13Jul07	14Jun08
Recovered on	5Aug91	6Aug92	31Jul93	2Aug94	6Aug95	6Aug96	6Aug97	5Aug98	6Aug99	12Jul03	12Aug04	7Jul05	13Jul07	14Jun08	23Jun09

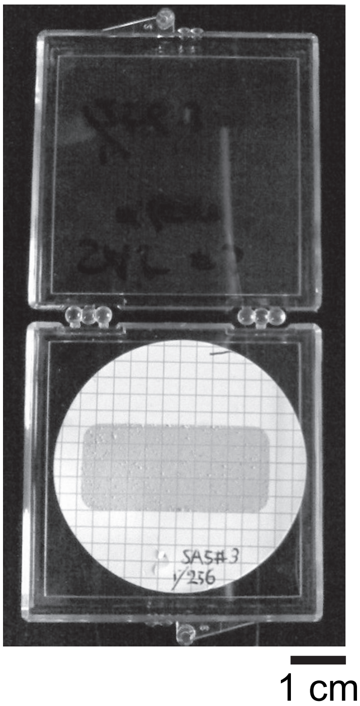

Fig. 2. An example of a dry sample prepared on Gelman® membrane filters together with a hinged plastic box for storage of the sample.

Fig. 3. An example of a microslide.

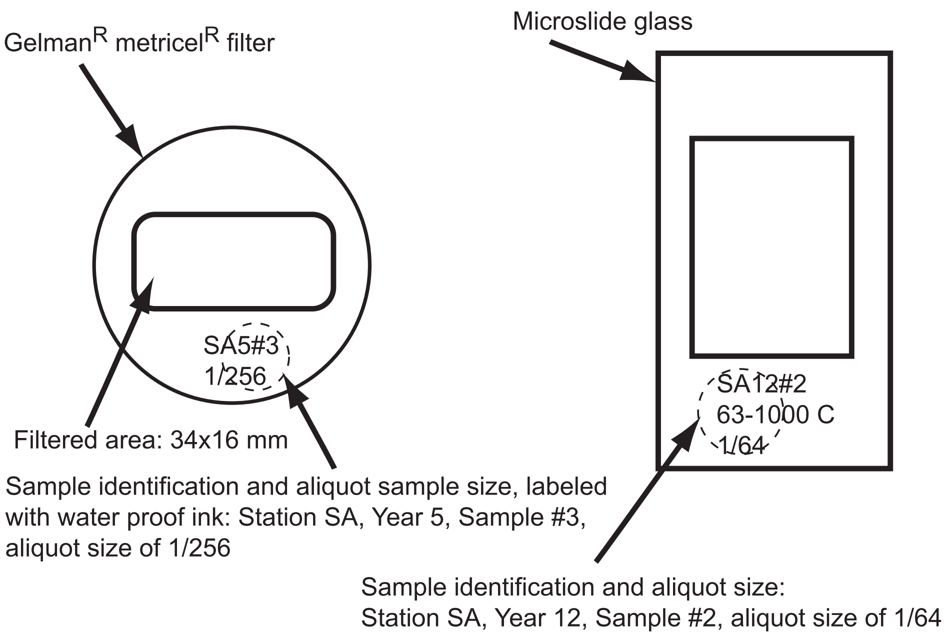

Fig. 4. Illustration showing examples of a label directly written on a Gelman® membrane filter and that placed on a microslide.

2. Methods

2.1. Sources of samples

A Honjo type (PARFLUX Mark 7G-13: aperture area: 0.50 m^2; 13 samplers) time-series sediment trap was employed for this study; its full description has been published (Honjo and Doherty, 1988). This trap model had been employed through till the following specified dates at each of the locations: Station SA: for 15 years till June 2005; Station AB: for 12 years till June 2002. Later on the above model had been replaced by PARFLUX Mark 7G-21 which had 21 samplers (see details in Table 1). Thus, with the new model the dates when the new sampling strategy began were the followings: Station SA: for 5 years since July 2005; Station AB: since August 2002 (Table 1).

Deep water samples from 2,000 m were obtained at each of the stations to prepare preservative solutions to fill the sample bottles. We employed two different preservative solutions depending on the year of the deployments: 5% glutaraldehyde for initial four years (1990-1994); and 5% formaldehyde for the last sixteen years (1994-2010). Such solutions were mixed with sodium borate as a buffer (pH 7.6 to 7.8). Our sampling strategy was to target high-resolution sampling such as for 20 days during highly productive spring to fall seasons and a relatively low resolution such as 56 days for the quiescent winter season. The details of exact temporal intervals of the samples are listed (Tables 2-3).

At each of the stations a mooring system with a trap was deployed from T/V Oshoro-Maru of the Hokkaido University and anchored to the sea-floor. Each of the mooring systems was designed to set the trap at approximately 600 m above the sea-floor. Such a depth of the moored sediment traps was determined in order to avoid possible inclusion of particles supplied by the nepheloid layer up to ca. 400 m above the seafloor (Ewing and Connary, 1970). The pelagic Station SA (49˚N, 174˚W) is located just south of the Aleutian Islands and Aleutian Trench in the central subarctic Pacific and its water depth is 5,406 m (Fig. 1; Table 1). A sediment trap was deployed at 4,812 m. Data for all 1990-2010 are presented here to directly compare with those at Station AB. During the 1989-1990 first year deployment (designated as YEAR minus 1), the bottom end of the trap funnel was plugged with glass fragments due to an accidental implosion of a glass sphere placed approximately 22 m directly above the trap. Thus, only limited flux samples were obtained during this period and the information is not included in this paper. The information from 1990 to 2010 (designated as YEARs 1-20 in this paper) of the actual trap deployments, is reported here.

The marginal sea Station AB (53.53˚N, 1773˚W) is located in the Aleutian Basin of the Bering Sea at a water depth of 3,788 m (Fig. 1; Table 1). This is a representative station for the Aleutian Basin. The sediment traps of the same types as those used at Station SA were deployed here at 3,198 m from August 1990 through June 2010 (YEARs 1-20). The two trap stations in the subarctic region are 530 km apart each other and located in distinctively different environments: "pelagic" vs "marginal sea".

The disturbance of the sedimentation of particles by currents was considered. In fact, we deployed a current meter (made by *Aanderaa*) placed 3 m below the sediment trap at Station SA during August 1989-1994. The results clearly suggested that the currents were weak (maximum of 3 cm s^{-1}: H. Miyake, unpublished data). Based on the current meter measurements, we conclude that the advective currents were negligibly small and they did not significantly affect the fluxes intercepted by the trap.

2.2. Sample identification numbers

The identification numbers for the trap samples are given; each table is organized for a single station for simplicity (Tables 2-3). More or less continuous time-series samples are available at Station SA, except for the bulk of samples during 2009-2010. This makes a collection of trap samples at Station SA for full 19 years since August 1990 (Table 2). A more irregular availability of samples is a reality at Station AB. No sample is available for YEARs 10-12, 16, and 20 at Station AB due to hiatuses in trap deployment or unsuccessful trap mooring recovery. Starting from the trap YEAR 13 in 2002 at Station AB the sample identification was designated as AB14, by skipping AB13 (Table 3). This was to synchronize the deployment year identification with that of Station SA, especially with the hiatuses of three years (YEARs 10-12) prior to YEAR 13. Note that SA14 and AB14 coincide for the deployments during 2002-2003. For more details see Tables 2-3.

2.3. Sample splitting and sieving

The recovered trap samples were kept refrigerated on board until the ship arrived at Hakodate Port, Japan. First, a whole sample was sieved through a 1 mm stainless steel mesh and then split with a rotary liquid sample splitter into 1/4 aliquots on board while the ship was in port. An exception is that during the initial three years for 1990-1993 the sieving process through a 63 μm stainless steel mesh was applied "prior to splitting". Such a sieving of a fair amount of sample through the fine mesh was, however, determined to be extremely difficult and hence an "initial 63 μm sieving" procedure was discontinued at the fourth year recovery. The alternative procedure starting from the fourth year and continued on to the successive years was to “sieve after splitting” into 1/4 aliquot size. This is how the two fractions were prepared after the initial three years: coarse fraction: 1 mm-63 μm; and fine fraction: <63 μm. The buffered 5% glutardehyde (formalin beginning from YEAR 5) solution was used to split the whole sample. This was not to change the concentration of the buffered preservatives. Two of the 1/4 aliquots were brought to each of the two separate shore laboratories (one lab. initially at Woods Hole Oceanographic Institution, Woods Hole, MA USA, and later moved to Hokkaido Tokai University, Sapporo, and subsequently to Kyushu University, Fukuoka; the other at Hokkaido University, Hakodate, Japan) and the aliquots were kept refrigerated until they were subjected to further splitting and subsequent analyses.

Apparent swimmers were removed by hand-picking under a dissecting microscope. Generally, there were several crustaceans in the >1 mm fractions (mega fraction); they were assumed to be swimmers since they were well preserved and sometimes with bright red color inidicating that they were alive at the time of entry to the trap sample bottle. In the 63 μm-1 mm fraction (coarse fraction), usually no visible crustaceans were spotted during sieving and thus most particles in the samples were left alone. The measured fluxes in the mega fraction turned out to be insignificant in weight compared with those of the coarse and fine (<63 μm) fractions. Therefore, the sum of the coarse and fine fractions is reported in Takahashi et al. (1997, 2000, 2002, 2007). The mega fraction contains mainly phaeodarian radiolarians (Takahashi et al., 1983).

2.4. Examples of microslide preparation and counting procedures for taxon-quantitative assessment of coccolithophores and radiolarians

It is a good idea to illustrate two examples of microslide preparations and counting procedures for taxon-quantitative assessment of the particle fluxes. We chose the procedures for coccolithophores and radiolarians for this paper.

For coccolithophores and coccoliths, generally, an aliquot size of 1/4,096 (one of 4,096th) of a liquid sample containing particles was filtered though a Gelman® membrane filter and a funnel with a rectangular opening of 34x16 mm in size (Figs. 2-4). When a population of coccolithophores and coccoliths on a filter was determined to be too thick or too thin to be able to efficiently count the following alternative aliquot sizes were sometimes used: 1/1,024, 1/256, 1/16,384 and 1/65,536. The filtered sample was desalted with distilled water and dried in an oven at 50˚C overnight, and then permanently mounted with Olympus immersion oil Type-F® on a microslide. The coccolithophores and coccoliths were counted on a compound light microscope, employing the magnification of x600. The calcareous nannoplankton fluxes are expressed as number of coccolithophores. The following conversion for a certain number of placoliths into one coccolithophore was made with the following rule: one coccolithophore of *C. pelagicus* represents 14 placoliths; and one coccolithophore of *E. huxleyi* represents 22 placoliths. The objective of the conversion is to understand accurate coccolithophore fluxes. Such conversions are applied only to the *C. pelagicus* and *E. huxleyi* cases, based on the observation of ca. twenty ccoccolithophore specimens for each taxon (Tsutsui et al., submitted).

For radiolarian enumerations, a 1/4 aliquot size sample was split into aliquot sizes of 1/16 to 1/1,024. A split sample was sieved through a stainless steel screen with 63 μm mesh first and then filtered through Gelman® membrane filters with a nominal pore size of 0.45 μm for retaining all the particles for quantitative counts. The filtered sample was desalted with distilled water and dried in an oven at 50˚C overnight, and then permanently mounted with Canada Balsam® on microslides. Each sample of a rectangular shape with 34.7x16.1 mm in size was examined under an Olympus® compound light microscope at x100-400 magnification for species identification and counting (Ikenoue et al., 2012).

2.5. Examples of long-term fluxes with total mass, biogenic opal, calcium carbonate, Others, and calcareous nannoplankton

It is of interest to illustrate examples of long-term time-series particle fluxes. The obtained 19 year long time-series fluxes of total mass, biogenic opal, calcium carbonate and Others are shown (Figs. 5-6) (Takahashi et al., 2011). Among many available data on the time-series fluxes, we have chosen calcareous nannoplankton to demonstrate because that we have up to date flux information for the entire 19 year long data at Stations SA and AB (Figs. 7-8). The upper illustrations of Figs. 7-8 show the fluxes whereas the lower illustrations show percentages of taxa, at Stations SA and AB, respectively. At the both sediment trap stations, two major taxa of calcareous nannoplankton are encountered. One is *Coccolithus pelagicus* and the other is *Emiliania huxleyi* (Figs. 7-8). Other taxa such as *Gephyrocapsa oceanica, Umbilicosphaera sibogae,* and *Brrarudosphaera bigelowi* were also encountered with minor occurrences compared to those of the dominant taxa. The mean flux of coccospheres at Station AB is 115.6x10^{6} coccospheres m^{-2} d^{-1} and the Station SA is 91.1x10^{6} coccospheres m^{-2} d^{-1}. The contribution of *C. pelagicus* is ca. 55% in total flux, and that of *E. huxleyi* is ca. 42% at both trap stations. The percentage of *E. huxleyi* at Station SA contributes approximately 50% during 1990 to 1999. Furthermore, during 2000 to 2009, *Coccolithus pelagicus* holds high percentages at Station SA (Tsutsui et al., submitted).

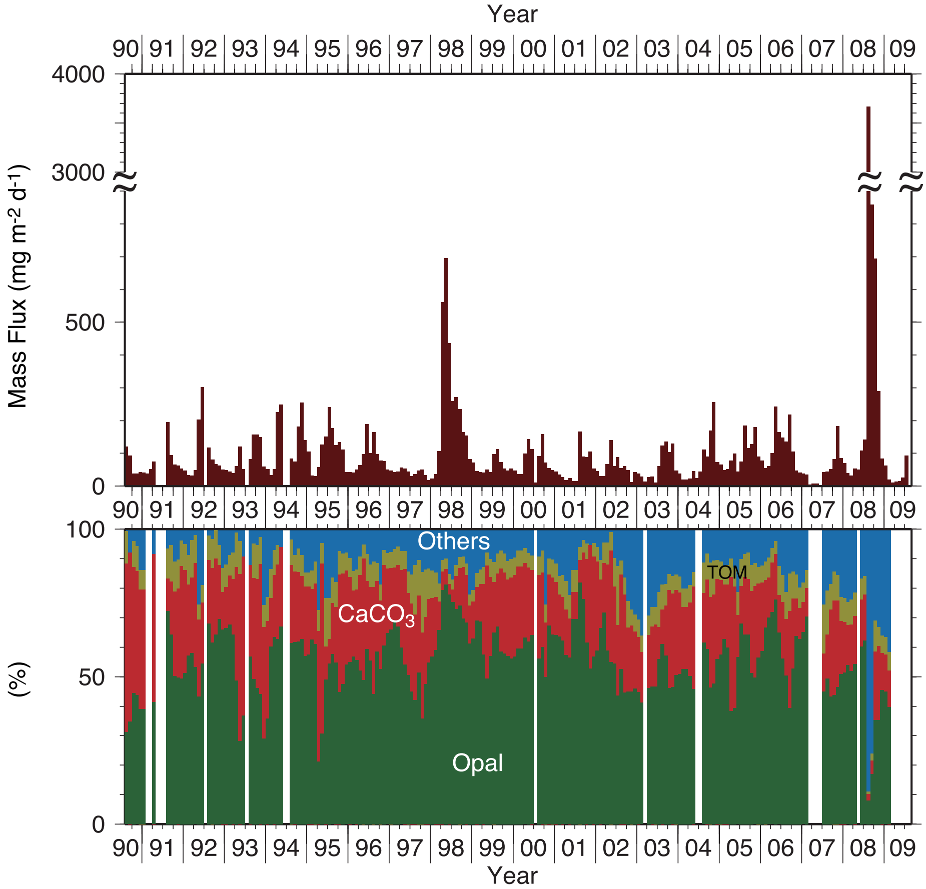

Fig. 5. Time-series fluxes of total mass and % representations of biogenic opal, $CaCO_3$, organic matter, and Others observed at Station SA during 1990-2009.

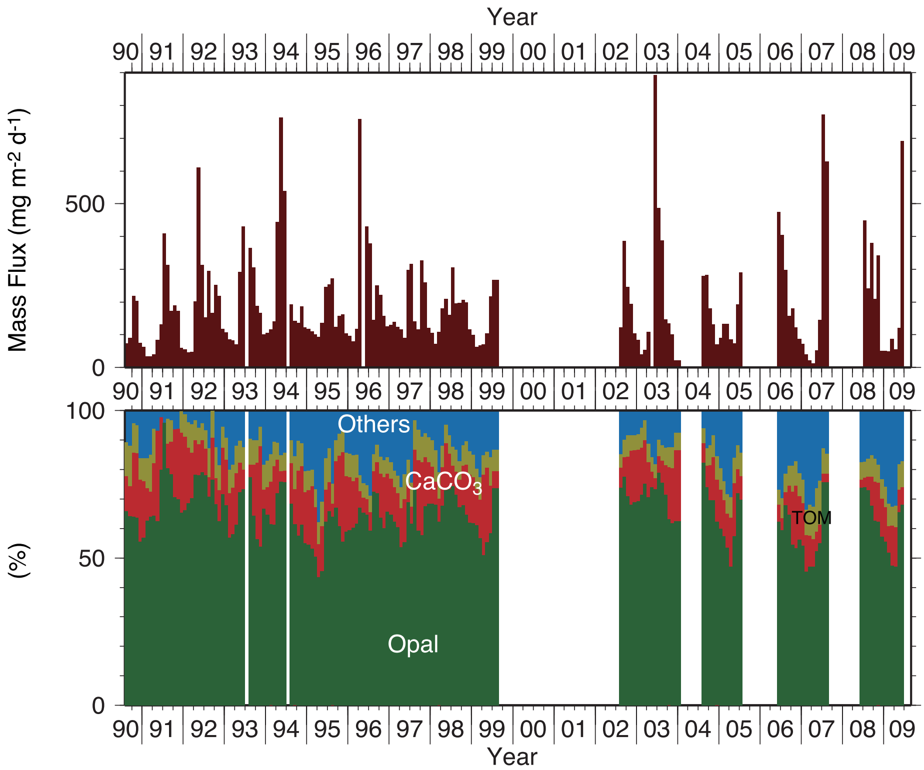

Fig. 6. Time-series fluxes of total mass and % representations of biogenic opal, $CaCO_3$, organic matter, and Others observed at Station AB during 1990-2009. Note that parts of the samples for 1999-2002, 2004, 2005-2006, 2007-2008, and 2009-2010 (shown with blank space) are missing due to either loss of the deployed mooring or malfunction of the traps (For details see Tables 1, 3).

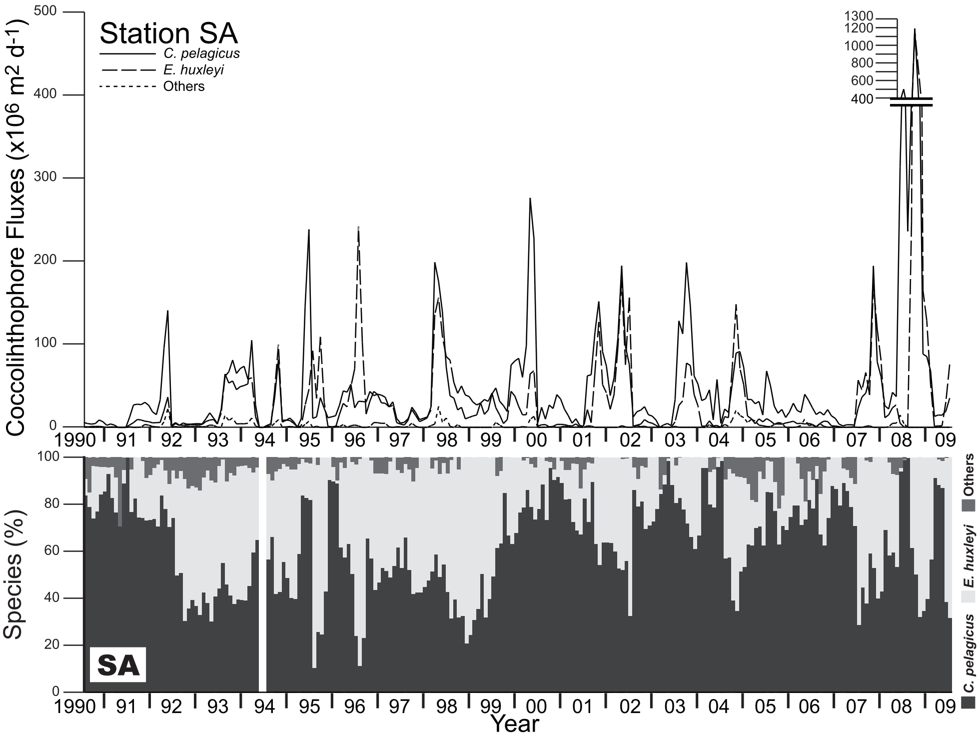

Fig. 7. Time-series fluxes of coccolithophores and species percentages of *Coccolithus pelagicus* and *Emiliniania huxleyi* at Station SA during 1990-2009.

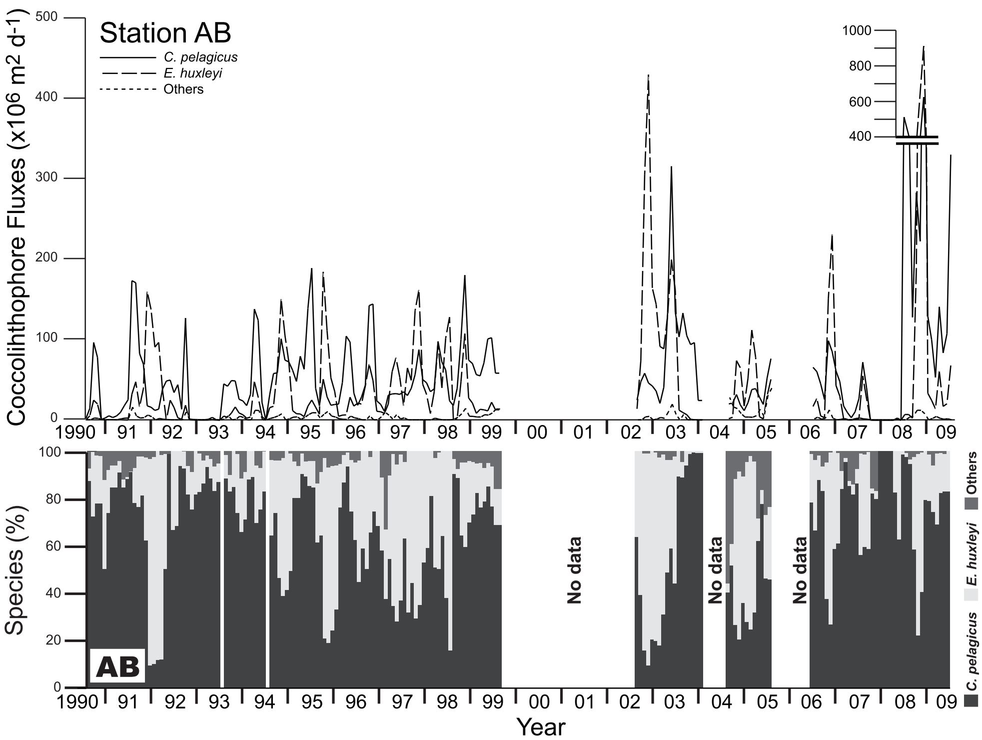

Fig. 8. Time-series fluxes of coccolithophores and species percentages of *Coccolithus pelagicus* and *Emiliniania huxleyi* at Station AB during 1990-2009.

3. Archival samples

The trap samples have been processed as: (1) dried membrane filters (Figs. 2, 4); and (2) microslide samples (Figs. 3-4). The curatorial label is directly written in the empty area of a filter (Fig. 2); and a label of a microslide is given with a computer produced printout for legibility (Fig. 3). Examples of labels are illustrated (Fig. 4). The left side of Fig. 4 shows an example of sample identification information with weather resistance oil-based ink for a filtered sample. The right part illustrates a labeling for a microslide.

The valuable archived sediment trap samples, including those in liquid, have thus far been curated in refrigerators at the Laboratory of Paleoenvironmental Science at the Kyushu University. However, it is only possible for the museum to archive dried samples. The archives of the trap samples now have been officially transferred to the Kyushu University Museum we hereby describe the curatorial information of the archived samples with the specific data in the spreadsheets in Microsoft® Excel™ format (Tables 4-7). The spreadsheets contain the following pieces of information relevant to the trap samples. The information concerning station identification, the deployment and recovery dates, geographic coordinates, water and trap depths are summarized (Table 1). The beginning and ending of each sampled intervals are given in two tables: Table 2 for Station SA and Table 3 for Station AB. The information concerning the museum archival samples are given in Table 4 (Station SA) and Table 5 (Station AB) for membrane filters and in Table 6 (Station SA) and Table 7 (Station AB) for microslides.

A total number of the sample membrane filters listed herein is 973 for Station SA (Table 4) and 1,034 for Station AB (Table 5), respectively. Furthermore, the microslides prepared thus far and listed herein sum up to a total number of 835 for Station SA (Table 6) and 710 for Station AB (Table 7), respectively. Therefore, a grand total of the two types of samples listed in this paper extends to 3,552.

While the details of the samples given here represent a part of the archival effort, which is currently proceeding at the Kyushu University. Therefore, additional samples will be added to the lists in the future. Updated information concerning the sample lists will be provided by the planned electronic publications by the Kyusyu University Museum.

4. Summary

Description of the long-term time-series PARLUX type sediment trap samples are given in this paper so that the readers to understand the basics of the samples. Briefly, the sediment traps were moored at 600 m above the sea-floor at Station SA (water depth: 5,460 m) in the pelagic central subarctic Pacific and at hemipelagic Station AB (water depth: 3,788 m) in the Aleutian Basin of the Bering Sea. The time-series flux samples were obtained during 1990-2010 for nineteen years. Because that the time-series samples of the past can never be obtained again the archives of the existing samples are quite valuable for future studies. They can, for instance, be compared to those may be obtained in the future in the same region and elsewhere. This is particularly significant in the eyes of global warming which is taking place now (e.g., IPCC AR4 SYR, 2007).

The archived sediment trap samples are located at the Kyusyu University Museum for permanent preservation. The details of the samples are given herein and spreadsheet tables of the archives will also be electronically published by the Kyusyu University Museum. This allows future scientists and students, who need to examine the sediment trap samples, to be able to access the samples.

5. Acknowledgements

We sincerely thank funding provided by US NSF, MEXT, and JSPS for time-series collection of sediment trap samples at Stations SA and AB during 1989-2010. Regarding this archival effort of the trap samples, specific funds were provided by the Kyusyu University Museum for the past three years, for which we gratefully acknowledge. We thank Professor Emeriti Yoshiaki Maita, Mitsuru Yanada, Hideo Miyake and Dr. Hiroji Onishi of the Hokkaido University for jointly conducting the time-series trap experiment together at Stations SA and AB for such a long period of time as greater than two decades. We also thank other people, whose names are too numerous to mention here, but those who worked on the trap materials as graduate and undergraduate students under the supervision of the senior author, and Captains, officers, crew of T/S Oshoro-maru during the 22 summer cruises of 1989-2010 are acknowledged. A manuscript of this paper was reviewed and benefitted by Dr. Yoshihiro Nakamuta of the Kyusyu University Museum, for which we thank.

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Table 2. Sample dates and intervals of the sediment trap materials recovered from Stations SA, 1990-2009.

Sequential #	Sample #	Open Date	Closed Date	Interval (d)
YEAR 1				
1	SA2#1	09Aug1990	23Aug1990	14
2	SA2#2	23Aug1990	12Sep1990	20
3	SA2#3	12Sep1990	02Oct1990	20
4	SA2#4	02Oct1990	27Nov1990	56
5	SA2#5	27Nov1990	22Jan1991	56
6	SA2#6	22Jan1991	19Mar1991	56
7	SA2#7	19Mar1991	08Apr1991	20
8	SA2#8	08Apr1991	28Apr1991	20
9	SA2#9	28Apr1991	18May1991	20
10	SA2#10	18May1991	07Jun1991	20
11	SA2#11	07Jun1991	27Jun1991	20
12	SA2#12	27Jun1991	17Jul1991	20
13	SA2#13	17Jul1991	04Aug1991	18
YEAR 2				
14	SA3#1	11Aug1991	23Aug1991	12
15	SA3#2	23Aug1991	12Sep1991	20
16	SA3#3	12Sep1991	02Oct1991	20
17	SA3#4	02Oct1991	27Nov1991	56
18	SA3#5	27Nov1991	22Jan1992	56
19	SA3#6	22Jan1992	19Mar1992	57
20	SA3#7	19Mar1992	08Apr1992	20
21	SA3#8	08Apr1992	28Apr1992	20
22	SA3#9	28Apr1992	18May1992	20
23	SA3#10	18May1992	07Jun1992	20
24	SA3#11	07Jun1992	27Jun1992	20
25	SA3#12	27Jun1992	17Jul1992	20
26	SA3#13	17Jul1992	02Aug1992	16
YEAR 3				
27	SA4#1	10Aug1992	23Aug1992	13
28	SA4#2	23Aug1992	12Sep1992	20
29	SA4#3	12Sep1992	02Oct1992	20
30	SA4#4	02Oct1992	22Oct1992	20
31	SA4#5	22Oct1992	27Nov1992	36
32	SA4#6	27Nov1992	22Jan1993	56
33	SA4#7	22Jan1993	19Mar1993	56
34	SA4#8	19Mar1993	08Apr1993	20
35	SA4#9	08Apr1993	28Apr1993	20
36	SA4#10	28Apr1993	18May1993	20
37	SA4#11	18May1993	07Jun1993	20
38	SA4#12	07Jun1993	27Jun1993	20
39	SA4#13	27Jun1993	20Jul1993	23
YEAR 4				
40	SA5#1	10Aug1993	23Aug1993	13
41	SA5#2	23Aug1993	12Sep1993	20
42	SA5#3	12Sep1993	02Oct1993	20
43	SA5#4	02Oct1993	22Oct1993	20
44	SA5#5	22Oct1993	27Nov1993	36
45	SA5#6	27Nov1993	22Jan1994	56
46	SA5#7	22Jan1994	19Mar1994	56
47	SA5#8	19Mar1994	08Apr1994	20
48	SA5#9	08Apr1994	28Apr1994	20
49	SA5#10	28Apr1994	18May1994	20
50	SA5#11	18May1994	07Jun1994	20
51	SA5#12	07Jun1994	27Jun1994	20
52	SA5#13	27Jun1994	02Aug1994	36
YEAR 5				
53	SA6#1	06Aug1994	23Aug1994	17
54	SA6#2	23Aug1994	12Sep1994	20
55	SA6#3	12Sep1994	02Oct1994	20
56	SA6#4	02Oct1994	22Oct1994	20
57	SA6#5	22Oct1994	27Nov1994	36
58	SA6#6	27Nov1994	22Jan1995	56
59	SA6#7	22Jan1995	19Mar1995	56
60	SA6#8	19Mar1995	08Apr1995	20
61	SA6#9	08Apr1995	28Apr1995	20
62	SA6#10	28Apr1995	13May1995	15
63	SA6#11	13May1995	28May1995	15
64	SA6#12	28May1995	17Jun1995	20
65	SA6#13	17Jun1995	02Aug1995	46
YEAR 6				
66	SA7#1	10Aug1995	12Sep1995	33
67	SA7#2	12Sep1995	02Oct1995	20
68	SA7#3	02Oct1995	22Oct1995	20
69	SA7#4	22Oct1995	27Nov1995	36
70	SA7#5	27Nov1995	22Jan1996	56
71	SA7#6	22Jan1996	19Mar1996	57
72	SA7#7	19Mar1996	08Apr1996	20
73	SA7#8	08Apr1996	28Apr1996	20
74	SA7#9	28Apr1996	18May1996	20
75	SA7#10	18May1996	07Jun1996	20
76	SA7#11	07Jun1996	27Jun1996	20
77	SA7#12	27Jun1996	17Jul1996	20
78	SA7#13	17Jul1996	02Aug1996	16
YEAR 7				
79	SA8#1	11Aug1996	23Aug1996	12
80	SA8#2	23Aug1996	12Sep1996	20
81	SA8#3	12Sep1996	02Oct1996	20
82	SA8#4	02Oct1996	22Oct1996	20
83	SA8#5	22Oct1996	27Nov1996	36
84	SA8#6	27Nov1996	22Jan1997	56
85	SA8#7	22Jan1997	19Mar1997	56
86	SA8#8	19Mar1997	08Apr1997	20
87	SA8#9	08Apr1997	28Apr1997	20
88	SA8#10	28Apr1997	18May1997	20
89	SA8#11	18May1997	07Jun1997	20
90	SA8#12	07Jun1997	27Jun1997	20
91	SA8#13	27Jun1997	04Aug1997	38
YEAR 8				
92	SA9#1	10Aug1997	23Aug1997	13
93	SA9#2	23Aug1997	12Sep1997	20
94	SA9#3	12Sep1997	02Oct1997	20
95	SA9#4	02Oct1997	22Oct1997	20
96	SA9#5	22Oct1997	27Nov1997	36
97	SA9#6	27Nov1997	22Jan1998	56
98	SA9#7	22Jan1998	19Mar1998	56
99	SA9#8	19Mar1998	08Apr1998	20
100	SA9#9	08Apr1998	28Apr1998	20
101	SA9#10	28Apr1998	18May1998	20
102	SA9#11	18May1998	07Jun1998	20
103	SA9#12	07Jun1998	27Jun1998	20
104	SA9#13	27Jun1998	05Aug1998	39

Table 2 (Cont.)

Sequential #	Sample #	Open Date	Closed Date	Interval (d)
YEAR 9				
105	SA10#1	10Aug1998	23Aug1998	13
106	SA10#2	23Aug1998	12Sep1998	20
107	SA10#3	12Sep1998	02Oct1998	20
108	SA10#4	02Oct1998	22Oct1998	20
109	SA10#5	22Oct1998	27Nov1998	36
110	SA10#6	27Nov1998	22Jan1999	56
111	SA10#7	22Jan1999	19Mar1999	56
112	SA10#8	19Mar1999	08Apr1999	20
113	SA10#9	08Apr1999	28Apr1999	20
114	SA10#10	28Apr1999	18May1999	20
115	SA10#11	18May1999	07Jun1999	20
116	SA10#12	07Jun1999	27Jun1999	20
117	SA10#13	27Jun1999	05Aug1999	39
YEAR 10				
118	SA11#1	09Aug1999	23Aug1999	14
119	SA11#2	23Aug1999	12Sep1999	20
120	SA11#3	12Sep1999	02Oct1999	20
121	SA11#4	02Oct1999	22Oct1999	20
122	SA11#5	22Oct1999	27Nov1999	36
123	SA11#6	27Nov1999	22Jan2000	56
124	SA11#7	22Jan2000	18Mar2000	56
125	SA11#8	18Mar2000	07Apr2000	20
126	SA11#9	07Apr2000	27Apr2000	20
127	SA11#10	27Apr2000	17May2000	20
128	SA11#11	17May2000	06Jun2000	20
129	SA11#12	06Jun2000	26Jun2000	20
130	SA11#13	26Jun2000	04Aug2000	39
YEAR 11				
131	SA12#1	09Aug2000	23Aug2000	14
132	SA12#2	23Aug2000	12Sep2000	20
133	SA12#3	12Sep2000	02Oct2000	20
134	SA12#4	02Oct2000	22Oct2000	20
135	SA12#5	22Oct2000	27Nov2000	36
136	SA12#6	27Nov2000	22Jan2001	56
137	SA12#7	22Jan2001	19Mar2001	56
138	SA12#8	19Mar2001	08Apr2001	20
139	SA12#9	08Apr2001	28Apr2001	20
140	SA12#10	28Apr2001	18May2001	20
141	SA12#11	18May2001	07Jun2001	20
142	SA12#12	07Jun2001	27Jun2001	20
143	SA12#13	27Jun2001	05Aug2001	39
YEAR 12				
144	SA13#1	07Aug2001	23Aug2001	16
145	SA13#2	23Aug2001	12Sep2001	20
146	SA13#3	12Sep2001	02Oct2001	20
147	SA13#4	02Oct2001	22Oct2001	20
148	SA13#5	22Oct2001	27Nov2001	36
149	SA13#6	27Nov2001	22Jan2002	56
150	SA13#7	22Jan2002	19Mar2002	56
151	SA13#8	19Mar2002	08Apr2002	20
152	SA13#9	08Apr2002	28Apr2002	20
153	SA13#10	28Apr2002	18May2002	20
154	SA13#11	18May2002	07Jun2002	20
155	SA13#12	07Jun2002	27Jun2002	20
156	SA13#13	27Jun2002	31Jul2002	34
YEAR 13				
157	SA14#1	18Aug2002	23Aug2002	5

Sequential #	Sample #	Open Date	Closed Date	Interval (d)
158	SA14#2	23Aug2002	12Sep2002	20
159	SA14#3	12Sep2002	02Oct2002	20
160	SA14#4	02Oct2002	22Oct2002	20
161	SA14#5	22Oct2002	27Nov2002	36
162	SA14#6	27Nov2002	22Jan2003	56
163	SA14#7	22Jan2003	28Feb2003	37
164	SA14#8	28Feb2003	08Apr2003	39
165	SA14#9	08Apr2003	28Apr2003	20
166	SA14#10	28Apr2003	18May2003	20
167	SA14#11	18May2003	07Jun2003	20
168	SA14#12	07Jun2003	27Jun2003	20
169	SA14#13	27Jun2003	10Jul2003	13
YEAR 14				
170	SA15#1	16Jul2003	03Aug2003	18
171	SA15#2	03Aug2003	23Aug2003	20
172	SA15#3	23Aug2003	12Sep2003	20
173	SA15#4	12Sep2003	02Oct2003	20
174	SA15#5	02Oct2003	22Oct2003	20
175	SA15#6	22Oct2003	27Nov2003	36
176	SA15#7	27Nov2003	22Jan2004	56
177	SA15#8	22Jan2004	08Apr2004	77
178	SA15#9	08Apr2004	28Apr2004	20
179	SA15#10	28Apr2004	18May2004	20
180	SA15#11	18May2004	07Jun2004	20
181	SA15#12	07Jun2004	27Jun2004	20
182	SA15#13	27Jun2004	10Jul2004	13
YEAR 15				
183	SA16#1	12Aug2004	23Aug2004	11
184	SA16#2	23Aug2004	12Sep2004	20
185	SA16#3	12Sep2004	02Oct2004	20
186	SA16#4	02Oct2004	22Oct2004	20
187	SA16#5	22Oct2004	27Nov2004	36
188	SA16#6	27Nov2004	22Jan2005	56
189	SA16#7	22Jan2005	19Mar2005	56
190	SA16#8	19Mar2005	08Apr2005	20
191	SA16#9	08Apr2005	28Apr2005	20
192	SA16#10	28Apr2005	18May2005	20
193	SA16#11	18May2005	07Jun2005	20
194	SA16#12	07Jun2005	27Jun2005	20
195	SA16#13	27Jun2005	06Jul2005	9
YEAR 16				
196	SA17#1	10Jul2005	03Aug2005	24
197	SA17#2	03Aug2005	23Aug2005	20
198	SA17#3	23Aug2005	02Sep2005	10
199	SA17#4	02Sep2005	12Sep2005	10
200	SA17#5	12Sep2005	22Sep2005	10
201	SA17#6	22Sep2005	02Oct2005	10
202	SA17#7	02Oct2005	12Oct2005	10
203	SA17#8	12Oct2005	22Oct2005	10
204	SA17#9	22Oct2005	09Nov2005	18
205	SA17#10	09Nov2005	27Nov2005	18
206	SA17#11	27Nov2005	22Jan2006	56
207	SA17#12	22Jan2006	28Feb2006	37
208	SA17#13	28Feb2006	19Mar2006	19
209	SA17#14	19Mar2006	29Mar2006	10
210	SA17#15	29Mar2006	08Apr2006	10
211	SA17#16	08Apr2006	18Apr2006	10
212	SA17#17	18Apr2006	28Apr2006	10

Table 2 (Cont.)

Sequential #	Sample #	Open Date	Closed Date	Interval (d)
213	SA17#18	28Apr2006	08May2006	10
214	SA17#19	08May2006	18May2006	10
215	SA17#20	18May2006	28May2006	10
216	SA17#21	28May2006	07Jun2006	10
YEAR 17				
217	SA18#1	17Jun2006	27Jun2006	10
218	SA18#2	27Jun2006	17Jul2006	20
219	SA18#3	17Jul2006	03Aug2006	17
220	SA18#4	03Aug2006	23Aug2006	20
221	SA18#5	23Aug2006	02Sep2006	10
222	SA18#6	02Sep2006	12Sep2006	10
223	SA18#7	12Sep2006	22Sep2006	10
224	SA18#8	22Sep2006	02Oct2006	10
225	SA18#9	02Oct2006	22Oct2006	20
226	SA18#10	22Oct2006	09Nov2006	18
227	SA18#11	09Nov2006	27Nov2006	18
228	SA18#12	27Nov2006	22Jan2007	56
229	SA18#13	22Jan2007	28Feb2007	37
230	SA18#14	28Feb2007	19Mar2007	19
231	SA18#15	19Mar2007	08Apr2007	20
232	SA18#16	08Apr2007	18Apr2007	10
233	SA18#17	18Apr2007	28Apr2007	10
234	SA18#18	28Apr2007	08May2007	10
235	SA18#19	08May2007	18May2007	10
236	SA18#20	18May2007	28May2007	10
237	SA18#21	28May2007	07Jun2007	10
YEAR 18				
238	SA19#1	17Jul2007	27Jul2007	10
239	SA19#2	27Jul2007	03Aug2007	7
240	SA19#3	03Aug2007	23Aug2007	20
241	SA19#4	23Aug2007	02Sep2007	10
242	SA19#5	02Sep2007	12Sep2007	10
243	SA19#6	12Sep2007	22Sep2007	10
244	SA19#7	22Sep2007	02Oct2007	10
245	SA19#8	02Oct2007	22Oct2007	20
246	SA19#9	22Oct2007	09Nov2007	18
247	SA19#10	09Nov2007	27Nov2007	18
248	SA19#11	27Nov2007	22Jan2008	56
249	SA19#12	22Jan2008	28Feb2008	37
250	SA19#13	28Feb2008	19Mar2008	20
251	SA19#14	19Mar2008	29Mar2008	10
252	SA19#15	29Mar2008	08Apr2008	10
253	SA19#16	08Apr2008	18Apr2008	10
254	SA19#17	18Apr2008	28Apr2008	10
255	SA19#18	28Apr2008	08May2008	10
256	SA19#19	08May2008	18May2008	10
257	SA19#20	18May2008	28May2008	10
258	SA19#21	28May2008	07Jun2008	10
YEAR 19				
259	SA20#1	20Jun2008	27Jun2008	7
260	SA20#2	27Jun2008	07Jul2008	10
261	SA20#3	07Jul2008	17Jul2008	10
262	SA20#4	17Jul2008	27Jul2008	10
263	SA20#5	27Jul2008	03Aug2008	7
264	SA20#6	03Aug2008	23Aug2008	20
265	SA20#7	23Aug2008	02Sep2008	10
266	SA20#8	02Sep2008	12Sep2008	10
267	SA20#9	12Sep2008	22Sep2008	10
268	SA20#10	22Sep2008	02Oct2008	10
269	SA20#11	02Oct2008	22Oct2008	20
270	SA20#12	22Oct2008	09Nov2008	18
271	SA20#13	09Nov2008	27Nov2008	18
272	SA20#14	27Nov2008	22Jan2009	56
273	SA20#15	22Jan2009	28Feb2009	37
274	SA20#16	28Feb2009	19Mar2009	19
275	SA20#17	19Mar2009	08Apr2009	20
276	SA20#18	08Apr2009	28Apr2009	20
277	SA20#19	28Apr2009	08May2009	10
278	SA20#20	08May2009	28May2009	20
279	SA20#21	28May2009	07Jun2009	10
YEAR 20				
280	SA21#01	25Jun2009	05Jul2009	10
281	SA21#02	05Jul2009	15Jul2009	10
282	SA21#03	15Jul2009	25Jul2009	10
283	SA21#04	25Jul2009	04Aug2009	10

Table 3. Sample dates and intervals of the sediment trap materials recovered from Stations AB, 1990-2009.

Sequential #	Sample #	Open Date	Closed Date	Interval (d)
YEAR 1				
1	AB1#1	07Aug1990	23Aug1990	16
2	AB1#2	23Aug1990	12Sep1990	20
3	AB1#3	12Sep1990	02Oct1990	20
4	AB1#4	02Oct1990	27Nov1990	56
5	AB1#5	27Nov1990	22Jan1991	56
6	AB1#6	22Jan1991	19Mar1991	56
7	AB1#7	19Mar1991	08Apr1991	20
8	AB1#8	08Apr1991	28Apr1991	20
9	AB1#9	28Apr1991	18May1991	20
10	AB1#10	18May1991	07Jun1991	20
11	AB1#11	07Jun1991	27Jun1991	20
12	AB1#12	27Jun1991	17Jul1991	20
13	AB1#13	17Jul1991	01Aug1991	15
YEAR 2				
14	AB2#1	07Aug1991	23Aug1991	16
15	AB2#2	23Aug1991	12Sep1991	20
16	AB2#3	12Sep1991	02Oct1991	20
17	AB2#4	02Oct1991	27Nov1991	56
18	AB2#5	27Nov1991	22Jan1992	56
19	AB2#6	22Jan1992	19Mar1992	57
20	AB2#7	19Mar1992	08Apr1992	20
21	AB2#8	08Apr1992	28Apr1992	20
22	AB2#9	28Apr1992	18May1992	20
23	AB2#10	18May1992	07Jun1992	20
24	AB2#11	07Jun1992	27Jun1992	20
25	AB2#12	27Jun1992	17Jul1992	20
26	AB2#13	17Jul1992	31Jul1992	14
YEAR 3				
27	AB3#1	07Aug1992	23Aug1992	16
28	AB3#2	23Aug1992	12Sep1992	20
29	AB3#3	12Sep1992	02Oct1992	20

Table 3 (Cont.)

Sequential #	Sample #	Open Date	Closed Date	Interval (d)
30	AB3#4	02Oct1992	22Oct1992	20
31	AB3#5	22Oct1992	27Nov1992	36
32	AB3#6	27Nov1992	22Jan1993	56
33	AB3#7	22Jan1993	19Mar1993	56
34	AB3#8	19Mar1993	08Apr1993	20
35	AB3#9	08Apr1993	28Apr1993	20
36	AB3#10	28Apr1993	18May1993	20
37	AB3#11	18May1993	07Jun1993	20
38	AB3#12	07Jun1993	27Jun1993	20
39	AB3#13	27Jun1993	20Jul1993	23
YEAR 4				
40	AB4#1	02Aug1993	23Aug1993	21
41	AB4#2	23Aug1993	12Sep1993	20
42	AB4#3	12Sep1993	02Oct1993	20
43	AB4#4	02Oct1993	22Oct1993	20
44	AB4#5	22Oct1993	27Nov1993	36
45	AB4#6	27Nov1993	22Jan1994	56
46	AB4#7	22Jan1994	19Mar1994	56
47	AB4#8	19Mar1994	08Apr1994	20
48	AB4#9	08Apr1994	28Apr1994	20
49	AB4#10	28Apr1994	18May1994	20
50	AB4#11	18May1994	07Jun1994	20
51	AB4#12	07Jun1994	27Jun1994	20
52	AB4#13	27Jun1994	25Jul1994	28
YEAR 5				
53	AB5#1	04Aug1994	23Aug1994	19
54	AB5#2	23Aug1994	12Sep1994	20
55	AB5#3	12Sep1994	02Oct1994	20
56	AB5#4	02Oct1994	22Oct1994	20
57	AB5#5	22Oct1994	27Nov1994	36
58	AB5#6	27Nov1994	22Jan1995	56
59	AB5#7	22Jan1995	19Mar1995	56
60	AB5#8	19Mar1995	08Apr1995	20
61	AB5#9	08Apr1995	28Apr1995	20
62	AB5#10	28Apr1995	13May1995	15
63	AB5#11	13May1995	28May1995	15
64	AB5#12	28May1995	17Jun1995	20
65	AB5#13	17Jun1995	25Jul1995	38
YEAR 6				
66	AB6#1	07Aug1995	23Aug1995	16
67	AB6#2	23Aug1995	12Sep1995	20
68	AB6#3	12Sep1995	02Oct1995	20
69	AB6#4	02Oct1995	22Oct1995	20
70	AB6#5	22Oct1995	27Nov1995	36
71	AB6#6	27Nov1995	22Jan1996	56
72	AB6#7	22Jan1996	19Mar1996	57
73	AB6#8	19Mar1996	08Apr1996	20
74	AB6#9	08Apr1996	28Apr1996	20
75	AB6#10	28Apr1996	18May1996	20
76	AB6#11	18May1996	07Jun1996	20
77	AB6#12	07Jun1996	27Jun1996	20
78	AB6#13	27Jun1996	25Jul1996	28
YEAR 7				
79	AB7#1	08Aug1996	23Aug1996	15
80	AB7#2	23Aug1996	12Sep1996	20
81	AB7#3	12Sep1996	02Oct1996	20
82	AB7#4	02Oct1996	22Oct1996	20
83	AB7#5	22Oct1996	27Nov1996	36

Sequential #	Sample #	Open Date	Closed Date	Interval (d)
84	AB7#6	27Nov1996	22Jan1997	56
85	AB7#7	22Jan1997	19Mar1997	56
86	AB7#8	19Mar1997	08Apr1997	20
87	AB7#9	08Apr1997	28Apr1997	20
88	AB7#10	28Apr1997	18May1997	20
89	AB7#11	18May1997	07Jun1997	20
90	AB7#12	07Jun1997	27Jun1997	20
91	AB7#13	27Jun1997	01Aug1997	35
YEAR 8				
92	AB8#1	08Aug1997	23Aug1997	15
93	AB8#2	23Aug1997	12Sep1997	20
94	AB8#3	12Sep1997	02Oct1997	20
95	AB8#4	02Oct1997	22Oct1997	20
96	AB8#5	22Oct1997	27Nov1997	36
97	AB8#6	27Nov1997	22Jan1998	56
98	AB8#7	22Jan1998	19Mar1998	56
99	AB8#8	19Mar1998	08Apr1998	20
100	AB8#9	08Apr1998	28Apr1998	20
101	AB8#10	28Apr1998	18May1998	20
102	AB8#11	18May1998	07Jun1998	20
103	AB8#12	07Jun1998	27Jun1998	20
104	AB8#13	27Jun1998	01Aug1998	35
YEAR 9				
105	AB9#1	07Aug1998	23Aug1998	16
106	AB9#2	23Aug1998	12Sep1998	20
107	AB9#3	12Sep1998	02Oct1998	20
108	AB9#4	02Oct1998	22Oct1998	20
109	AB9#5	22Oct1998	27Nov1998	36
110	AB9#6	27Nov1998	22Jan1999	56
111	AB9#7	22Jan1999	19Mar1999	56
112	AB9#8	19Mar1999	08Apr1999	20
113	AB9#9	08Apr1999	28Apr1999	20
114	AB9#10	28Apr1999	18May1999	20
115	AB9#11	18May1999	07Jun1999	20
116	AB9#12	07Jun1999	27Jun1999	20
117	AB9#13	27Jun1999	03Aug1999	37
YEAR 13*				
118	AB14#1	15Aug2002	23Aug2002	8
119	AB14#2	23Aug2002	02Sep2002	10
120	AB14#3	02Sep2002	12Sep2002	10
121	AB14#4	12Sep2002	22Sep2002	10
122	AB14#5	22Sep2002	02Oct2002	10
123	AB14#6	02Oct2002	12Oct2002	10
124	AB14#7	12Oct2002	22Oct2002	10
125	AB14#8	22Oct2002	27Nov2002	36
126	AB14#9	27Nov2002	22Jan2003	56
127	AB14#10	22Jan2003	19Mar2003	56
128	AB14#11	19Mar2003	29Mar2003	10
129	AB14#12	29Mar2003	08Apr2003	10
130	AB14#13	08Apr2003	18Apr2003	10
131	AB14#14	18Apr2003	28Apr2003	10
132	AB14#15	28Apr2003	08May2003	10
133	AB14#16	08May2003	18May2003	10
134	AB14#17	18May2003	28May2003	10
135	AB14#18	28May2003	07Jun2003	10
136	AB14#19	07Jun2003	17Jun2003	10
137	AB14#20	17Jun2003	27Jun2003	10
138	AB14#21	27Jun2003	10Jul2003	13

Table 3 (Cont.)

Sequential #	Sample #	Open Date	Closed Date	Interval (d)
YEAR 14				
139	AB15#1	13Jul2003	03Aug2003	21
140	AB15#2	03Aug2003	23Aug2003	20
141	AB15#3	23Aug2003	02Sep2003	10
142	AB15#4	02Sep2003	12Sep2003	10
143	AB15#5	12Sep2003	22Sep2003	10
144	AB15#6	22Sep2003	02Oct2003	10
145	AB15#7	02Oct2003	12Oct2003	10
146	AB15#8	12Oct2003	22Oct2003	10
147	AB15#9	22Oct2003	27Nov2003	36
148	AB15#10	27Nov2003	22Jan2004	56
YEAR 15				
149	AB16#1	14Aug2004	23Aug2004	9
150	AB16#2	23Aug2004	02Sep2004	10
151	AB16#3	02Sep2004	12Sep2004	10
152	AB16#4	12Sep2004	22Sep2004	10
153	AB16#5	22Sep2004	02Oct2004	10
154	AB16#6	02Oct2004	12Oct2004	10
155	AB16#7	12Oct2004	22Oct2004	10
156	AB16#8	22Oct2004	27Nov2004	36
157	AB16#9	27Nov2004	22Jan2005	56
158	AB16#10	22Jan2005	19Mar2005	56
159	AB16#11	19Mar2005	29Mar2005	10
160	AB16#12	29Mar2005	08Apr2005	10
161	AB16#13	08Apr2005	18Apr2005	10
162	AB16#14	18Apr2005	28Apr2005	10
163	AB16#15	28Apr2005	08May2005	10
164	AB16#16	08May2005	18May2005	10
165	AB16#17	18May2005	28May2005	10
166	AB16#18	28May2005	07Jun2005	10
167	AB16#19	07Jun2005	17Jun2005	10
168	AB16#20	17Jun2005	27Jun2005	10
169	AB16#21	27Jun2005	06Jul2005	9
YEAR 17*				
170	AB18#1	17Jun2006	27Jun2006	10
171	AB18#2	27Jun2006	17Jul2006	20
172	AB18#3	17Jul2006	03Aug2006	17
173	AB18#4	03Aug2006	23Aug2006	20
174	AB18#5	23Aug2006	02Sep2006	10
175	AB18#6	02Sep2006	12Sep2006	10
176	AB18#7	12Sep2006	22Sep2006	10
177	AB18#8	22Sep2006	02Oct2006	10
178	AB18#9	02Oct2006	22Oct2006	20
179	AB18#10	22Oct2006	09Nov2006	18
180	AB18#11	09Nov2006	27Nov2006	18
181	AB18#12	27Nov2006	22Jan2007	56
182	AB18#13	22Jan2007	28Feb2007	37
183	AB18#14	28Feb2007	19Mar2007	19
184	AB18#15	19Mar2007	08Apr2007	20
185	AB18#16	08Apr2007	18Apr2007	10
186	AB18#17	18Apr2007	28Apr2007	10
187	AB18#18	28Apr2007	08May2007	10
188	AB18#19	08May2007	18May2007	10
189	AB18#20	18May2007	28May2007	10
190	AB18#21	28May2007	07Jun2007	10
YEAR 18				
191	AB19#1	17Jul2007	27Jul2007	10
192	AB19#2	27Jul2007	03Aug2007	7
193	AB19#3	03Aug2007	23Aug2007	20
194	AB19#4	23Aug2007	02Sep2007	10
195	AB19#5	02Sep2007	12Sep2007	10
196	AB19#6	12Sep2007	22Sep2007	10
197	AB19#7	22Sep2007	02Oct2007	10
198	AB19#8	02Oct2007	22Oct2007	20
199	AB19#9	22Oct2007	09Nov2007	18
200	AB19#10	09Nov2007	27Nov2007	18
201	AB19#11	27Nov2007	22Jan2008	56
202	AB19#12	22Jan2008	28Feb2008	37
203	AB19#13	28Feb2008	19Mar2008	20
204	AB19#14	19Mar2008	29Mar2008	10
205	AB19#15	29Mar2008	08Apr2008	10
206	AB19#16	08Apr2008	18Apr2008	10
207	AB19#17	18Apr2008	28Apr2008	10
208	AB19#18	28Apr2008	08May2008	10
209	AB19#19	08May2008	18May2008	10
210	AB19#20	18May2008	28May2008	10
211	AB19#21	28May2008	07Jun2008	10
YEAR 19				
212	AB20#1	20Jun2008	27Jun2008	7
213	AB20#2	27Jun2008	07Jul2008	10
214	AB20#3	07Jul2008	17Jul2008	10
215	AB20#4	17Jul2008	27Jul2008	10
216	AB20#5	27Jul2008	03Aug2008	7
217	AB20#6	03Aug2008	23Aug2008	20
218	AB20#7	23Aug2008	02Sep2008	10
219	AB20#8	02Sep2008	12Sep2008	10
220	AB20#9	12Sep2008	22Sep2008	10
221	AB20#10	22Sep2008	02Oct2008	10
222	AB20#11	02Oct2008	22Oct2008	20
223	AB20#12	22Oct2008	09Nov2008	18
224	AB20#13	09Nov2008	27Nov2008	18
225	AB20#14	27Nov2008	22Jan2009	56
226	AB20#15	22Jan2009	28Feb2009	37
227	AB20#16	28Feb2009	19Mar2009	19
228	AB20#17	19Mar2009	08Apr2009	20
229	AB20#18	08Apr2009	28Apr2009	20
230	AB20#19	28Apr2009	08May2009	10
231	AB20#20	08May2009	28May2009	20
232	AB20#21	28May2009	07Jun2009	10

No sample is available for YEARs 10-12, 16, and 20 at Station AB due to hiatuses in trap deployment or unsuccessful trap mooring recovery. Starting from the trap YEAR 13 in 2002 at Station AB the sample identification was designated as AB14 in order to synchronize with that of Station SA, by skipping AB13 (Table 4).

Table 4. List of archival filter samples from Station SA.

Sample ID	Size (μm)	Aliquot size & ID
SA2#1	63-1000	1/256
SA2#1	<1000	1/1024C
SA2#1	<1000	1/4096B
SA2#1	<1000	1/16384A
SA2#1	<1000	1/16384B
SA2#1	<1000	1/16384C
SA2#1	<1000	1/16384D
SA2#2	63-1000	1/256A
SA2#2	63-1000	1/256B
SA2#2	63-1000	1/1024
SA2#2	<1000	1/1024B
SA2#2	<1000	1/1024C
SA2#2	<1000	1/4096B
SA2#2	<1000	1/16384D
SA2#2	<63	1/64
SA2#3	63-1000	1/256A
SA2#3	<1000	1/1024B
SA2#3	<1000	1/1024C
SA2#3	<1000	1/16384D
SA2#4	63-1000	1/256A
SA2#4	<1000	1/1024B
SA2#4	<1000	1/1024C
SA2#4	<1000	1/4096B
SA2#4	<1000	1/16384C
SA2#4	<1000	1/16384D
SA2#4	<63	1/64
SA2#5	63-1000	1/256A
SA2#5	63-1000	1/256B
SA2#5	63-1000	1/1024A
SA2#5	63-1000	1/1024B
SA2#5	<1000	1/1024B
SA2#5	<1000	1/1024C
SA2#5	<1000	1/4096C
SA2#5	<1000	1/16384A
SA2#5	<1000	1/16384B
SA2#5	<1000	1/16384C
SA2#5	<1000	1/16384D
SA2#5	<63	1/64
SA2#5	<63	1/256A
SA2#6	63-1000	1/256B
SA2#6	<1000	1/1024B
SA2#6	<1000	1/1024C
SA2#6	<1000	1/4096B
SA2#6	<1000	1/16384A
SA2#6	<1000	1/16384B
SA2#6	<1000	1/16384C
SA2#6	<1000	1/16384D
SA2#6	<63	1/64
SA2#6	<63	1/1024A
SA2#6	<63	1/1024B
SA2#6	<63	1/1024D
SA2#7	63-1000	1/256A
SA2#7	<1000	1/1024B
SA2#7	<1000	1/1024C
SA2#7	<1000	1/4096B
SA2#7	<1000	1/16384B
SA2#7	<1000	1/16384C
SA2#7	<1000	1/16384D
SA2#7	<63	1/1024A
SA2#7	<63	1/1024B
SA2#7	<63	1/1024D
SA2#8	63-1000	1/256A
SA2#8	<1000	1/1024B
SA2#8	<1000	1/1024C
SA2#8	<1000	1/16384B
SA2#8	<1000	1/16384C
SA2#8	<1000	1/16384D
SA2#8	<63	1/64(1)
SA2#8	<63	1/64(2)
SA2#8	<63	1/1024A
SA2#8	<63	1/1024B
SA2#8	<63	1/1024D
SA3#1	63-1000	1/256B
SA3#1	63-1000	1/1024C
SA3#1	<1000	1/1024B
SA3#1	<1000	1/1024C
SA3#1	<1000	1/16384C
SA3#1	<1000	1/16384D
SA3#1	<63	1/256
SA3#1	<63	1/256
SA3#1	<63	1/256
SA3#1	<63	1/256A
SA3#1	<63	1/256B
SA3#1	<63	1/1024
SA3#1	<63	1/1024
SA3#1	<63	1/1024
SA3#1	<63	1/1024A
SA3#2	63-1000	1/256B
SA3#2	63-1000	1/1024A
SA3#2	63-1000	1/1024B
SA3#2	<1000	1/1024B
SA3#2	<1000	1/1024C
SA3#2	<1000	1/16384B
SA3#2	<1000	1/16384C
SA3#2	<1000	1/16384D
SA3#2	<63	1/64
SA3#2	<63	1/256A
SA3#2	<63	1/256B
SA3#2	<63	1/1024B
SA3#2	<63	1/1024C
SA3#3	63-1000	1/256B
SA3#3	63-1000	1/1024A
SA3#3	63-1000	1/1024B
SA3#3	<1000	1/1024B
SA3#3	<1000	1/1024C
SA3#3	<1000	1/4096C
SA3#3	<1000	1/16384B
SA3#3	<1000	1/16384C
SA3#3	<1000	1/16384D
SA3#3	<63	1/64
SA3#3	<63	1/256A
SA3#3	<63	1/256B
SA3#3	<63	1/1024A
SA3#3	<63	1/1024C
SA3#4	63-1000	1/256B
SA3#4	63-1000	1/1024B
SA3#4	63-1000	1/1024C
SA3#4	<1000	1/1024B
SA3#4	<1000	1/1024C
SA3#4	<1000	1/4096C
SA3#4	<63	1/64
SA3#4	<63	1/256A
SA3#4	<63	1/256B
SA3#4	<63	1/1024B
SA3#4	<63	1/1024C
SA3#5	63-1000	1/256B
SA3#5	63-1000	1/1024B
SA3#5	63-1000	1/1024C
SA3#5	<1000	1/1024B
SA3#5	<1000	1/1024C
SA3#5	<1000	1/4096C
SA3#5	<1000	1/16384D
SA3#5	<63	1/64
SA3#5	<63	1/256A
SA3#5	<63	1/256B
SA3#5	<63	1/1024A
SA3#5	<63	1/1024C
SA3#6	63-1000	1/1024B
SA3#6	63-1000	1/1024C
SA3#6	63-1000	
SA3#6	<1000	1/1024B
SA3#6	<1000	1/1024C
SA3#6	<1000	1/4096C
SA3#6	<63	1/256A
SA3#6	<63	1/256B
SA3#6	<63	1/1024A
SA3#6	<63	1/1024B
SA3#7	63-1000	1/1024B
SA3#7	63-1000	1/1024C
SA3#7	<1000	1/256A
SA3#7	<1000	1/256B
SA3#7	<1000	1/256C
SA3#7	<1000	1/1024B
SA3#7	<1000	1/1024C
SA3#7	<1000	1/16384B
SA3#7	<1000	1/16384C
SA3#7	<1000	1/16384D
SA3#7	<63	1/256A
SA3#7	<63	1/256B
SA3#7	<63	1/256C
SA3#7	<63	1/1024A
SA3#7	<63	1/1024C
SA3#8	63-1000	1/256B
SA3#8	63-1000	1/1024A
SA3#8	63-1000	1/1024C
SA3#8	<1000	1/256A
SA3#8	<1000	1/256B
SA3#8	<1000	1/256C

Table 4 (Cont.)

Sample ID	Size (μm)	Aliquot size & ID
SA3#8	<1000	1/256C
SA3#8	<1000	1/1024B
SA3#8	<1000	1/1024C
SA3#8	<1000	1/16384C
SA3#8	<1000	1/16384D
SA3#8	<63	1/64
SA3#8	<63	1/256A
SA3#8	<63	1/256B
SA3#8	<63	1/256C
SA3#8	<63	1/1024B
SA3#8	<63	1/1024C
SA3#9	<1000	1/256A
SA3#9	<1000	1/1024A
SA3#9	<1000	1/1024A’
SA3#9	<1000	1/1024B’
SA3#9	<1000	1/16384B
SA3#9	<1000	1/16384C
SA3#9	<1000	1/16384D
SA3#10	<1000	1/1024A
SA3#10	<1000	1/1024A’
SA3#10	<1000	1/1024B
SA3#10	<1000	1/1024C
SA3#10	<1000	1/4096C(5)
SA3#10	<63	1/256A
SA3#10	<63	1/256C
SA3#11	<1000	1/256A
SA3#11	<1000	1/16384D
SA3#11	<63	1/64
SA3#11	<63	1/256C
SA3#12	<63	1/256B
SA3#12	<63	1/1024A
SA4#1	<1000	1/1024B
SA4#1	<1000	1/16384B
SA4#1	<1000	1/16384C
SA4#1	<1000	1/16384D
SA4#1	<63	1/64
SA4#1	<63	1/256B
SA4#1	<63	1/1024A
SA4#1	<63	1/1024B
SA4#1	<63	1/1024C
SA4#1	<63	1/4096A
SA4#1	<63	1/4096B
SA4#1	<63	1/4096D
SA4#2	<1000	1/1024B
SA4#2	<1000	1/16384B
SA4#2	<1000	1/16384C
SA4#2	<1000	1/16384D
SA4#2	<63	1/256B
SA4#2	<63	1/1024A
SA4#2	<63	1/1024B
SA4#2	<63	1/1024C
SA4#2	<63	1/4096A
SA4#2	<63	1/4096B
SA4#2	<63	1/4096D
SA4#3	<1000	1/1024B
SA4#3	<1000	1/4096C
SA4#3	<1000	1/16384C
SA4#3	<1000	1/16384D
SA4#3	<63	1/256B
SA4#3	<63	1/1024A
SA4#3	<63	1/1024B
SA4#3	<63	1/1024C
SA4#3	<63	1/4096A
SA4#3	<63	1/4096B
SA4#3	<63	1/4096D
SA4#4	<1000	1/1024B
SA4#4	<1000	1/1024C
SA4#4	<1000	1/4096B
SA4#4	<1000	1/16384C
SA4#4	<1000	1/16384D
SA4#4	<63	1/64
SA4#4	<63	1/256B
SA4#4	<63	1/1024A
SA4#4	<63	1/1024B
SA4#4	<63	1/1024C
SA4#4	<63	1/4096A
SA4#4	<63	1/4096B
SA4#4	<63	1/4096D
SA4#5	63-1000	1/256B
SA4#5	63-1000	1/1024B
SA4#5	63-1000	1/1024D
SA4#5	<1000	1/1024B
SA4#5	<1000	1/1024C
SA4#5	<1000	1/4096B
SA4#5	<1000	1/16384D
SA4#5	<63	1/256B
SA4#5	<63	1/1024A
SA4#5	<63	1/1024B
SA4#5	<63	1/1024C
SA4#5	<63	1/4096A
SA4#5	<63	1/4096B
SA4#5	<63	1/4096D
SA4#6	63-1000	1/256A(4)
SA4#6	<1000	1/1024B
SA4#6	<1000	1/4096B
SA4#6	<1000	1/16384B
SA4#6	<1000	1/16384C
SA4#6	<1000	1/16384D
SA4#6	<63	1/64
SA4#6	<63	1/256B
SA4#6	<63	1/256C
SA4#6	<63	1/1024A
SA4#6	<63	1/1024C
SA4#6	<63	1/4096A
SA4#6	<63	1/4096B
SA4#6	<63	1/4096D
SA4#7	<1000	1/1024B
SA4#7	<1000	1/1024C
SA4#7	<1000	1/4096B
SA4#7	<1000	1/16384C
SA4#7	<1000	1/16384D
SA4#7	<63	1/256B
SA4#7	<63	1/256C
SA4#7	<63	1/1024A
SA4#7	<63	1/1024B
SA4#7	<63	1/4096B
SA4#8	63-1000	1/1024A
SA4#8	63-1000	1/1024D
SA4#8	<1000	1/1024B
SA4#8	<1000	1/1024C
SA4#8	<1000	1/16384C
SA4#8	<1000	1/16384D
SA4#8	<63	1/64
SA4#8	<63	1/256B
SA4#8	<63	1/1024A
SA4#8	<63	1/1024B
SA4#8	<63	1/1024C
SA4#8	<63	1/4096A
SA4#8	<63	1/4096B
SA4#8	<63	1/4096D
SA4#9	<1000	1/1024B
SA4#9	<1000	1/4096B
SA4#9	<63	1/64
SA4#9	<63	1/256B
SA4#9	<63	1/1024A
SA4#9	<63	1/1024B
SA4#9	<63	1/1024C
SA4#9	<63	1/4096A
SA4#9	<63	1/4096A
SA4#9	<63	1/4096B
SA4#9	<63	1/4096D
SA4#9	<63	1/4096D
SA4#10	63-1000	1/256A
SA4#10	<1000	1/256A
SA4#10	<1000	1/256B
SA4#10	<1000	1/256C
SA4#10	<1000	1/1024B
SA4#10	<1000	1/1024C
SA4#10	<1000	1/4096B
SA4#10	<1000	1/16384B
SA4#10	<1000	1/16384C
SA4#10	<1000	1/16384D
SA4#10	<63	1/64
SA4#10	<63	1/256A
SA4#10	<63	1/256B
SA4#10	<63	1/1024A
SA4#10	<63	1/1024B
SA4#10	<63	1/1024C
SA4#10	<63	1/4096A
SA4#10	<63	1/4096B
SA4#10	<63	1/4096D
SA4#11	<1000	1/1024B
SA4#11	<1000	1/1024C
SA4#11	<1000	1/16384A
SA4#11	<1000	1/16384B
SA4#11	<1000	1/16384C
SA4#11	<1000	1/16384D
SA4#11	<63	1/64
SA4#11	<63	1/256B
SA4#11	<63	1/1024A
SA4#11	<63	1/1024B

Table 4 (Cont.)

Sample ID	Size (μm)	Aliquot size & ID
SA4#11	<63	1/1024C
SA4#11	<63	1/4096A
SA4#11	<63	1/4096B
SA4#11	<63	1/4096D
SA4#12	<1000	1/1024B
SA4#12	<1000	1/1024C
SA4#12	<1000	1/4096C
SA4#12	<1000	1/16384A
SA4#12	<1000	1/16384B
SA4#12	<1000	1/16384C
SA4#12	<1000	1/16384D
SA4#12	<63	1/256B
SA4#12	<63	1/256B
SA4#12	<63	1/256C
SA4#12	<63	1/256C
SA4#12	<63	1/256D
SA4#12	<63	1/1024A
SA4#12	<63	1/1024C
SA4#12	<63	1/4096A
SA4#12	<63	1/4096C
SA4#12	<63	1/4096D
SA4#13	63-1000	1/256A
SA4#13	63-1000	1/256B
SA4#13	<1000	1/1024C
SA4#13	<1000	1/1024B
SA4#13	<63	1/256A
SA4#13	<63	1/256B
SA4#13	<63	1/256B
SA4#13	<63	1/256C
SA4#13	<63	1/256C
SA4#13	<63	1/1024A
SA4#13	<63	1/1024C
SA4#13	<63	1/4096A
SA4#13	<63	1/4096C
SA4#13	<63	1/4096D
SA5#1	63-1000	1/256C(2)
SA5#1	<1000	1/256A
SA5#1	<1000	1/256B
SA5#1	<1000	1/256C
SA5#1	<1000	1/1024C
SA5#1	<1000	1/4096B
SA5#1	<1000	1/4096C
SA5#1	<1000	1/16384A
SA5#1	<1000	1/16384B
SA5#1	<1000	1/16384C
SA5#1	<1000	1/16384D
SA5#1	<63	1/64
SA5#1	<63	1/256C
SA5#2	<1000	1/256B
SA5#2	<1000	1/256C
SA5#2	<1000	1/1024B
SA5#2	<1000	1/4096C
SA5#2	<63	1/64
SA5#2	<63	1/256A
SA5#3	<1000	1/256A
SA5#3	<1000	1/256B
SA5#3	<1000	1/256C

Sample ID	Size (μm)	Aliquot size & ID
SA5#3	<1000	1/256C
SA5#3	<1000	1/1024A
SA5#3	<1000	1/1024B
SA5#3	<1000	1/1024B
SA5#3	<1000	1/1024C
SA5#3	<1000	1/4096A
SA5#3	<1000	1/4096B
SA5#3	<1000	1/4096C
SA5#3	<1000	1/4096C
SA5#3	<1000	1/16384A
SA5#3	<1000	1/16384B
SA5#3	<1000	1/16384C
SA5#3	<1000	1/16384D
SA5#3	<63	1/64
SA5#3	<63	1/256A
SA5#4	<1000	1/256B
SA5#4	<1000	1/256C
SA5#4	<1000	1/1024A
SA5#4	<1000	1/4096C
SA5#4	<63	1/64
SA5#4	<63	1/256A
SA5#5	<1000	1/256A
SA5#5	<1000	1/256B
SA5#5	<1000	1/256B
SA5#5	<1000	1/256C
SA5#5	<1000	1/256C
SA5#5	<1000	1/1024A
SA5#5	<1000	1/1024B
SA5#5	<1000	1/1024B
SA5#5	<1000	1/1024C
SA5#5	<1000	1/4096A
SA5#5	<1000	1/4096B
SA5#5	<1000	1/16384B
SA5#5	<1000	1/16384C
SA5#5	<1000	1/16384D
SA5#5	<63	1/64
SA5#5	<63	1/256A
SA5#6	<1000	1/256B
SA5#6	<1000	1/256C
SA5#6	<1000	1/1024A
SA5#6	<1000	1/4096B
SA5#6	<63	1/64
SA5#6	<63	1/256A
SA5#7	<1000	1/256B
SA5#7	<1000	1/256C
SA5#7	<1000	1/1024A
SA5#7	<1000	1/4096B
SA5#7	<63	1/64
SA5#8	<1000	1/256B
SA5#8	<1000	1/256C
SA5#8	<1000	1/1024B
SA5#8	<1000	1/4096B
SA5#8	<63	1/64
SA5#9	<1000	1/256B
SA5#9	<1000	1/256C
SA5#9	<1000	1/1024A
SA5#9	<1000	1/4096C

Sample ID	Size (μm)	Aliquot size & ID
SA5#9	<63	1/64
SA5#9	<63	1/256A
SA5#10	<1000	1/256B
SA5#10	<1000	1/256C
SA5#10	<1000	1/1024A
SA5#10	<1000	1/4096C
SA5#10	<63	1/64
SA5#11	63-1000	1/1024D
SA6#1	<1000	1/1024C
SA6#1	<1000	1/4096B
SA6#1	<1000	1/16384B
SA6#1	<1000	1/16384C
SA6#1	<1000	1/16384D
SA6#2	<1000	1/1024C
SA6#2	<1000	1/4096B
SA6#2	<1000	1/16384B
SA6#2	<1000	1/16384C
SA6#2	<1000	1/16384D
SA6#3	<1000	1/1024C
SA6#3	<1000	1/4096B
SA6#3	<1000	1/16384B
SA6#3	<1000	1/16384C
SA6#3	<1000	1/16384D
SA6#4	<1000	1/1024C
SA6#4	<1000	1/4096B
SA6#4	<1000	1/16384B
SA6#4	<1000	1/16384C
SA6#4	<1000	1/16384D
SA6#4	<63	2/1024
SA6#5	<1000	1/1024B
SA6#5	<1000	1/1024C
SA6#5	<1000	1/16384B
SA6#5	<1000	1/16384C
SA6#5	<1000	1/16384D
SA6#5	<63	1/1024
SA6#5	<63	1/1024
SA6#5	<63	1/1024
SA6#5	<63	2/4096
SA6#6	<1000	1/1024C
SA6#6	<1000	1/16384B
SA6#6	<1000	1/16384C
SA6#6	<1000	1/16384D
SA6#7	<1000	1/1024C
SA6#7	<1000	1/4096B
SA6#7	<1000	1/16384B
SA6#7	<1000	1/16384C
SA6#7	<1000	1/16384D
SA6#8	<1000	1/1024C
SA6#8	<1000	1/4096B
SA6#8	<1000	1/16384B
SA6#8	<1000	1/16384C
SA6#8	<1000	1/16384D
SA6#9	<1000	1/1024C
SA6#9	<1000	1/4096B
SA6#9	<1000	1/16384B
SA6#9	<1000	1/16384C
SA6#9	<1000	1/16384D

Table 4 (Cont.)

Sample ID	Size (µm)	Aliquot size & ID
SA6#10	<1000	1/1024C
SA6#10	<1000	1/4096C
SA6#10	<1000	1/16384B
SA6#10	<1000	1/16384C
SA6#10	<1000	1/16384D
SA6#11	<1000	1/1024C
SA6#11	<1000	1/4096C
SA6#11	<1000	1/16384B
SA6#11	<1000	1/16384C
SA6#11	<1000	1/16384D
SA6#12	<1000	1/4096C
SA6#12	<1000	1/16384D
SA6#13	<1000	1/1024C
SA6#13	<1000	1/16384B
SA6#13	<1000	1/16384C
SA6#13	<1000	1/16384D
SA6#13	<63	2/1024
SA7#1	63-1000	1/1024B
SA7#1	63-1000	1/4096B
SA7#1	<1000	1/1024A
SA7#1	<1000	1/4096C
SA7#1	<1000	1/16384B
SA7#1	<1000	1/16384C
SA7#1	<1000	1/16384D
SA7#1	<63	1/4096B
SA7#2	63-1000	1/1024B
SA7#2	63-1000	1/4096B
SA7#2	<1000	1/1024A
SA7#2	<1000	1/4096C
SA7#2	<1000	1/16384B
SA7#2	<1000	1/16384C
SA7#2	<1000	1/16384D
SA7#2	<63	1/4096B
SA7#3	63-1000	1/1024B
SA7#3	63-1000	1/4096B
SA7#3	<1000	1/1024A
SA7#3	<1000	1/4096C
SA7#3	<1000	1/16384B
SA7#3	<1000	1/16384C
SA7#3	<1000	1/16384D
SA7#3	<63	1/4096B
SA7#4	63-1000	1/1024B
SA7#4	63-1000	1/4096B
SA7#4	<1000	1/1024A
SA7#4	<1000	1/4096C
SA7#4	<1000	1/16384B
SA7#4	<1000	1/16384C
SA7#4	<1000	1/16384D
SA7#4	<63	1/4096B
SA7#5	63-1000	1/1024B
SA7#5	63-1000	1/4096C
SA7#5	<1000	1/1024A
SA7#5	<1000	1/4096C
SA7#5	<1000	1/16384B
SA7#5	<1000	1/16384C
SA7#5	<1000	1/16384D
SA7#5	<63	1/4096B

Sample ID	Size (µm)	Aliquot size & ID
SA7#6	63-1000	1/1024B
SA7#6	63-1000	1/4096B
SA7#6	<1000	1/1024A
SA7#6	<1000	1/4096C
SA7#6	<1000	1/16384B
SA7#6	<1000	1/16384C
SA7#6	<1000	1/16384D
SA7#6	<63	1/4096B
SA7#7	63-1000	1/1024B
SA7#7	63-1000	1/4096B
SA7#7	<1000	1/1024A
SA7#7	<1000	1/4096C
SA7#7	<1000	1/16384B
SA7#7	<1000	1/16384C
SA7#7	<1000	1/16384D
SA7#7	<63	1/4096B
SA7#8	63-1000	1/1024B
SA7#8	63-1000	1/4096B
SA7#8	<1000	1/1024A
SA7#8	<1000	1/4096C
SA7#8	<1000	1/16384A
SA7#8	<1000	1/16384C
SA7#8	<1000	1/16384D
SA7#8	<63	1/4096B
SA7#9	63-1000	1/1024B
SA7#9	63-1000	1/4096B
SA7#9	<1000	1/1024A
SA7#9	<1000	1/4096C
SA7#9	<1000	1/16384B
SA7#9	<1000	1/16384C
SA7#9	<1000	1/16384D
SA7#9	<63	1/4096B
SA7#10	63-1000	1/1024B
SA7#10	63-1000	1/4096B
SA7#10	<1000	1/1024A
SA7#10	<1000	1/4096C
SA7#10	<1000	1/16384B
SA7#10	<1000	1/16384C
SA7#10	<1000	1/16384D
SA7#10	<63	1/256B
SA7#10	<63	1/4096B
SA7#11	63-1000	1/1024B
SA7#11	63-1000	1/4096B
SA7#11	<1000	1/1024A
SA7#11	<1000	1/4096C
SA7#11	<1000	1/16384B
SA7#11	<1000	1/16384C
SA7#11	<1000	1/16384D
SA7#11	<63	1/256B
SA7#11	<63	1/4096B
SA7#12	63-1000	1/1024B
SA7#12	63-1000	1/4096B
SA7#12	<1000	1/1024A
SA7#12	<1000	1/4096C
SA7#12	<1000	1/16384B
SA7#12	<1000	1/16384C
SA7#12	<1000	1/16384D

Sample ID	Size (µm)	Aliquot size & ID
SA7#12	<63	1/256B
SA7#12	<63	1/4096B
SA7#13	63-1000	1/1024B
SA7#13	63-1000	1/4096B
SA7#13	<1000	1/1024A
SA7#13	<1000	1/4096C
SA7#13	<1000	1/16384B
SA7#13	<1000	1/16384C
SA7#13	<1000	1/16384D
SA7#13	<63	1/256B
SA7#13	<63	1/4096B
SA8#1	63-1000	1/1024B
SA8#1	63-1000	1/4096B
SA8#1	<1000	1/1024A
SA8#1	<1000	1/4096C
SA8#1	<1000	1/16384B
SA8#1	<1000	1/16384C
SA8#1	<1000	1/16384D
SA8#1	<63	1/256B
SA8#1	<63	1/4096B
SA8#2	63-1000	1/1024B
SA8#2	63-1000	1/4096B
SA8#2	<1000	1/1024A
SA8#2	<1000	1/4096C
SA8#2	<1000	1/16384B
SA8#2	<1000	1/16384C
SA8#2	<1000	1/16384D
SA8#2	<63	1/256B
SA8#2	<63	1/4096B
SA8#3	63-1000	1/1024B
SA8#3	63-1000	1/4096B
SA8#3	<1000	1/1024A
SA8#3	<1000	1/4096C
SA8#3	<1000	1/16384B
SA8#3	<1000	1/16384C
SA8#3	<1000	1/16384D
SA8#3	<63	1/256B
SA8#3	<63	1/4096B
SA8#4	63-1000	1/1024B
SA8#4	63-1000	1/4096B
SA8#4	<1000	1/1024A
SA8#4	<1000	1/4096C
SA8#4	<1000	1/16384B
SA8#4	<1000	1/16384C
SA8#4	<1000	1/16384D
SA8#4	<63	1/256B
SA8#4	<63	1/4096B
SA8#5	63-1000	1/1024B
SA8#5	63-1000	1/4096B
SA8#5	<1000	1/1024A
SA8#5	<1000	1/4096C
SA8#5	<1000	1/16384B
SA8#5	<1000	1/16384C
SA8#5	<1000	1/16384D
SA8#5	<63	1/256B
SA8#5	<63	1/4096B
SA8#6	63-1000	1/1024B

Table 4 (Cont.)

Sample ID	Size (μm)	Aliquot size & ID
SA8#6	63-1000	1/4096B
SA8#6	<1000	1/1024A
SA8#6	<1000	1/4096C
SA8#6	<1000	1/16384B
SA8#6	<1000	1/16384C
SA8#6	<1000	1/16384D
SA8#6	<63	1/256B
SA8#6	<63	1/4096B
SA8#7	63-1000	1/1024B
SA8#7	63-1000	1/4096B
SA8#7	<1000	1/1024A
SA8#7	<1000	1/4096C
SA8#7	<1000	1/16384B
SA8#7	<1000	1/16384C
SA8#7	<1000	1/16384D
SA8#7	<63	1/256B
SA8#7	<63	1/4096B
SA8#8	63-1000	1/1024B
SA8#8	63-1000	1/4096B
SA8#8	<1000	1/1024A
SA8#8	<1000	1/4096C
SA8#8	<1000	1/16384B
SA8#8	<1000	1/16384C
SA8#8	<1000	1/16384D
SA8#8	<63	1/256B
SA8#8	<63	1/4096B
SA8#9	63-1000	1/1024B
SA8#9	63-1000	1/4096B
SA8#9	<1000	1/1024A
SA8#9	<1000	1/4096C
SA8#9	<1000	1/16384B
SA8#9	<1000	1/16384C
SA8#9	<1000	1/16384D
SA8#9	<63	1/256B
SA8#9	<63	1/4096B
SA8#10	63-1000	1/1024B
SA8#10	63-1000	1/4096B
SA8#10	<1000	1/1024A
SA8#10	<1000	1/4096C
SA8#10	<1000	1/16384B
SA8#10	<1000	1/16384C
SA8#10	<1000	1/16384D
SA8#10	<63	1/256B
SA8#10	<63	1/4096B
SA8#11	63-1000	1/1024B
SA8#11	63-1000	1/4096B
SA8#11	<1000	1/1024A
SA8#11	<1000	1/4096C
SA8#11	<1000	1/16384B
SA8#11	<1000	1/16384C
SA8#11	<1000	1/16384D
SA8#11	<63	1/256B
SA8#11	<63	1/4096B
SA8#12	63-1000	1/1024B
SA8#12	63-1000	1/4096B
SA8#12	<1000	1/1024A
SA8#12	<1000	1/4096C
SA8#12	<1000	1/16384B
SA8#12	<1000	1/16384C
SA8#12	<1000	1/16384D
SA8#12	<63	1/256B
SA8#12	<63	1/4096B
SA8#13	63-1000	1/1024B
SA8#13	63-1000	1/4096B
SA8#13	<1000	1/1024A
SA8#13	<1000	1/4096C
SA8#13	<1000	1/16384B
SA8#13	<1000	1/16384C
SA8#13	<1000	1/16384D
SA8#13	<63	1/256B
SA8#13	<63	1/4096B
SA9#1	63-1000	1/1024B
SA9#1	63-1000	1/4096B
SA9#1	<1000	1/1024A
SA9#1	<1000	1/4096C
SA9#1	<1000	1/16384B
SA9#1	<1000	1/16384C
SA9#1	<1000	1/16384D
SA9#1	<63	1/256C
SA9#1	<63	1/4096B
SA9#2	63-1000	1/1024B
SA9#2	63-1000	1/4096B
SA9#2	<1000	1/1024A
SA9#2	<1000	1/4096C
SA9#2	<1000	1/16384B
SA9#2	<1000	1/16384C
SA9#2	<1000	1/16384D
SA9#2	<63	1/256C
SA9#2	<63	1/4096B
SA9#3	63-1000	1/1024B
SA9#3	63-1000	1/4096B
SA9#3	<1000	1/1024A
SA9#3	<1000	1/4096C
SA9#3	<1000	1/16384B
SA9#3	<1000	1/16384C
SA9#3	<1000	1/16384D
SA9#3	<63	1/256C
SA9#3	<63	1/4096B
SA9#4	63-1000	1/1024B
SA9#4	63-1000	1/4096B
SA9#4	<1000	1/1024A
SA9#4	<1000	1/4096C
SA9#4	<1000	1/16384B
SA9#4	<1000	1/16384C
SA9#4	<1000	1/16384D
SA9#4	<63	1/4096B
SA9#5	63-1000	1/1024B
SA9#5	63-1000	1/4096B
SA9#5	<1000	1/1024A
SA9#5	<1000	1/4096C
SA9#5	<1000	1/16384B
SA9#5	<1000	1/16384C
SA9#5	<1000	1/16384D
SA9#5	<63	1/256C
SA9#5	<63	1/1024B
SA9#6	63-1000	1/1024B
SA9#6	63-1000	1/4096B
SA9#6	<1000	1/1024A
SA9#6	<1000	1/4096C
SA9#6	<1000	1/16384B
SA9#6	<1000	1/16384C
SA9#6	<1000	1/16384D
SA9#6	<63	1/256C
SA9#6	<63	1/4096B
SA9#7	63-1000	1/1024B
SA9#7	63-1000	1/4096B
SA9#7	<1000	1/1024A
SA9#7	<1000	1/4096C
SA9#7	<1000	1/16384B
SA9#7	<1000	1/16384C
SA9#7	<1000	1/16384D
SA9#7	<63	1/256C
SA9#7	<63	1/1024B
SA9#8	63-1000	1/1024B
SA9#8	63-1000	1/4096B
SA9#8	<1000	1/1024A
SA9#8	<1000	1/4096C
SA9#8	<1000	1/16384B
SA9#8	<1000	1/16384C
SA9#8	<1000	1/16384D
SA9#8	<63	1/256C
SA9#8	<63	1/1024B
SA9#9	63-1000	1/1024B
SA9#9	63-1000	1/4096B
SA9#9	<1000	1/1024A
SA9#9	<1000	1/4096C
SA9#9	<1000	1/16384B
SA9#9	<1000	1/16384C
SA9#9	<1000	1/16384D
SA9#9	<63	1/256C
SA9#9	<63	1/1024B
SA9#10	63-1000	1/1024B
SA9#10	63-1000	1/1024C
SA9#10	63-1000	1/4096B
SA9#10	63-1000	1/4096C
SA9#10	<1000	1/1024A
SA9#10	<1000	1/16384B
SA9#10	<1000	1/16384C
SA9#10	<1000	1/16384D
SA9#10	<63	1/256C
SA9#10	<63	1/1024B
SA9#10	<63	1/1024C
SA9#11	63-1000	1/1024B
SA9#11	63-1000	1/4096B
SA9#11	<1000	1/1024A
SA9#11	<1000	1/4096C
SA9#11	<1000	1/16384B
SA9#11	<1000	1/16384C
SA9#11	<1000	1/16384D
SA9#11	<63	1/256C
SA9#11	<63	1/1024B

Table 4 (Cont.)

Sample ID	Size (μm)	Aliquot size & ID
SA9#12	63-1000	1/1024B
SA9#12	63-1000	1/4096B
SA9#12	<1000	1/1024A
SA9#12	<1000	1/4096C
SA9#12	<1000	1/16384B
SA9#12	<1000	1/16384C
SA9#12	<1000	1/16384D
SA9#12	<63	1/256C
SA9#12	<63	1/1024B
SA9#13	63-1000	1/1024C
SA9#13	63-1000	1/4096B
SA9#13	<1000	1/1024A
SA9#13	<1000	1/4096C
SA9#13	<1000	1/16384B
SA9#13	<1000	1/16384C
SA9#13	<1000	1/16384D
SA9#13	<63	1/256C
SA9#13	<63	1/1024B
SA10#1	63-1000	1/1024C
SA10#1	63-1000	1/4096C
SA10#1	<1000	1/4096A
SA10#1	<1000	1/4096B
SA10#1	<1000	1/16384A
SA10#1	<1000	1/16384B
SA10#1	<1000	1/16384C
SA10#1	<1000	1/16384D
SA10#2	63-1000	1/4096C
SA10#2	<1000	1/4096A
SA10#2	<1000	1/4096B
SA10#2	<1000	1/16384A
SA10#2	<1000	1/16384B
SA10#2	<1000	1/16384C
SA10#2	<1000	1/16384D
SA10#2	<63	1/1024C
SA10#3	63-1000	1/1024C
SA10#3	<1000	1/4096A
SA10#3	<1000	1/4096B
SA10#3	<1000	1/16384A
SA10#3	<1000	1/16384B
SA10#3	<1000	1/16384C
SA10#3	<1000	1/16384D
SA10#4	63-1000	1/1024C
SA10#4	63-1000	1/4096C
SA10#4	<1000	1/4096A
SA10#4	<1000	1/4096B
SA10#4	<1000	1/16384A
SA10#4	<1000	1/16384B
SA10#4	<1000	1/16384C
SA10#4	<1000	1/16384D
SA10#5	63-1000	1/1024C
SA10#5	63-1000	1/4096C
SA10#5	<1000	1/4096A
SA10#5	<1000	1/4096B
SA10#5	<1000	1/16384A
SA10#5	<1000	1/16384B
SA10#5	<1000	1/16384C
SA10#5	<1000	1/16384D
SA10#6	63-1000	1/1024C
SA10#6	63-1000	1/4096C
SA10#6	<1000	1/4096A
SA10#6	<1000	1/4096B
SA10#6	<1000	1/16384A
SA10#6	<1000	1/16384B
SA10#6	<1000	1/16384C
SA10#6	<1000	1/16384D
SA10#7	63-1000	1/1024C
SA10#7	63-1000	1/4096C
SA10#7	<1000	1/4096A
SA10#7	<1000	1/4096B
SA10#7	<1000	1/16384A
SA10#7	<1000	1/16384B
SA10#7	<1000	1/16384C
SA10#7	<1000	1/16384D
SA10#8	63-1000	1/1024C
SA10#8	63-1000	1/4096C
SA10#8	<1000	1/4096A
SA10#8	<1000	1/4096B
SA10#8	<1000	1/16384A
SA10#8	<1000	1/16384B
SA10#8	<1000	1/16384C
SA10#8	<1000	1/16384D
SA10#9	63-1000	1/1024C
SA10#9	63-1000	1/4096C
SA10#9	<1000	1/4096A
SA10#9	<1000	1/4096B
SA10#9	<1000	1/16384A
SA10#9	<1000	1/16384B
SA10#9	<1000	1/16384C
SA10#9	<1000	1/16384D
SA10#10	63-1000	1/1024C
SA10#10	63-1000	1/4096C
SA10#10	63-1000	1/4096C
SA10#10	<1000	1/4096A
SA10#10	<1000	1/4096B
SA10#10	<1000	1/16384A
SA10#10	<1000	1/16384B
SA10#10	<1000	1/16384C
SA10#10	<1000	1/16384D
SA10#11	63-1000	1/1024C
SA10#11	63-1000	1/4096C
SA10#11	<1000	1/4096A
SA10#11	<1000	1/4096B
SA10#11	<1000	1/16384A
SA10#11	<1000	1/16384B
SA10#11	<1000	1/16384C
SA10#11	<1000	1/16384D
SA10#12	63-1000	1/1024C
SA10#12	63-1000	1/4096C
SA10#12	<1000	1/4096A
SA10#12	<1000	1/4096B
SA10#12	<1000	1/16384A
SA10#12	<1000	1/16384B
SA10#12	<1000	1/16384C
SA10#12	<1000	1/16384D
SA10#13	63-1000	1/1024C
SA10#13	63-1000	1/4096C
SA10#13	<1000	1/4096A
SA10#13	<1000	1/4096B
SA10#13	<1000	1/16384A
SA10#13	<1000	1/16384B
SA10#13	<1000	1/16384C
SA10#13	<1000	1/16384D

Table 5. List of archival filter samples from Station AB.

Sample ID	Size (μm)	Aliquot size & ID
AB1#1	63-1000	1/256a
AB1#1	63-1000	1/256b
AB1#1	63-1000	1/1024C
AB1#1	63-1000	1/4096A
AB1#1	63-1000	1/4096C
AB1#1	63-1000	1/4096D
AB1#1	<1000	1/1024B
AB1#1	<1000	1/16384B
AB1#1	<1000	1/16384C
AB1#1	<1000	1/16384D
AB1#1	<63	1/1024
AB1#1	<63	1/1024A
AB1#1	<63	1/4096
AB1#1	<63	1/4096
AB1#1	<63	1/4096A
AB1#2	63-1000	1/64
AB1#2	63-1000	1/256a
AB1#2	63-1000	1/1024A
AB1#2	63-1000	1/4096A
AB1#2	63-1000	1/4096C
AB1#2	63-1000	1/4096D
AB1#2	<1000	1/1024A
AB1#2	<1000	1/1024B
AB1#2	<1000	1/16384B
AB1#2	<1000	1/16384C
AB1#2	<1000	1/16384D
AB1#2	<63	1/256a
AB1#2	<63	1/256b
AB1#2	<63	1/1024
AB1#2	<63	1/1024A

Table 5 (Cont.)

Sample ID	Size (μm)	Aliquot size & ID	Sample ID	Size (μm)	Aliquot size & ID	Sample ID	Size (μm)	Aliquot size & ID
AB1#2	<63	1/4096	AB1#6	63-1000	1/256b	AB1#8	<1000	1/4096B
AB1#2	<63	1/4096	AB1#6	63-1000	1/1024C	AB1#8	<63	1/64
AB1#2	<63	1/4096A	AB1#6	63-1000	1/4096A	AB1#8	<63	1/256a
AB1#3	63-1000	1/64	AB1#6	63-1000	1/4096B	AB1#8	<63	1/1024A
AB1#3	63-1000	1/256a	AB1#6	63-1000	1/4096D	AB1#8	<63	1/4096
AB1#3	63-1000	1/256b	AB1#6	<1000	1/1024A	AB1#8	<63	1/4096
AB1#3	63-1000	1/1024A	AB1#6	<1000	1/1024B	AB1#8	<63	1/4096A
AB1#3	63-1000	1/1024b	AB1#6	<1000	1/1024C	AB1#9	63-1000	1/256a
AB1#3	63-1000	1/1024C	AB1#6	<1000	1/16384B	AB1#9	63-1000	1/256b
AB1#3	63-1000	1/4096A	AB1#6	<1000	1/16384C	AB1#9	63-1000	1/1024A
AB1#3	63-1000	1/4096C	AB1#6	<1000	1/16384D	AB1#9	63-1000	1/4096A
AB1#3	63-1000	1/4096D	AB1#6	<63	1/64	AB1#9	63-1000	1/4096C
AB1#3	<1000	1/1024A	AB1#6	<63	1/256a	AB1#9	63-1000	1/4096D
AB1#3	<1000	1/1024B	AB1#6	<63	1/256a	AB1#9	<1000	1/1024C
AB1#3	<1000	1/1024C	AB1#6	<63	1/256b	AB1#9	<1000	1/4096B
AB1#3	<1000	1/16384B	AB1#6	<63	1/1024	AB1#9	<1000	1/16384B
AB1#3	<1000	1/16384C	AB1#6	<63	1/1024A	AB1#9	<1000	1/16384C
AB1#3	<1000	1/16384D	AB1#6	<63	1/1024a	AB1#9	<1000	1/16384D
AB1#3	<63	1/64(1)	AB1#6	<63	1/4096	AB1#9	<63	1/64
AB1#3	<63	1/64(2)	AB1#6	<63	1/4096A	AB1#9	<63	1/256a
AB1#3	<63	1/256a	AB1#7	63-1000	1/256A	AB1#9	<63	1/1024
AB1#3	<63	1/1024	AB1#7	63-1000	1/256a	AB1#9	<63	1/1024A
AB1#3	<63	1/1024A	AB1#7	63-1000	1/256B	AB1#9	<63	1/4096
AB1#3	<63	1/4096	AB1#7	63-1000	1/256C	AB1#9	<63	1/4096
AB1#3	<63	1/4096	AB1#7	63-1000	1/1024D	AB1#9	<63	1/4096A
AB1#3	<63	1/4096A	AB1#7	63-1000	1/4096A	AB1#10	63-1000	1/256a
AB1#4	63-1000	1/12288D	AB1#7	63-1000	1/4096C	AB1#10	63-1000	1/256b
AB1#4	63<	1/256C	AB1#7	63-1000	1/4096D	AB1#10	63-1000	1/1024A
AB1#4	63<	1/1024C	AB1#7	<1000	1/256A	AB1#10	63-1000	1/4096A
AB1#4	<1000	1/4096C	AB1#7	<1000	1/256B	AB1#10	63-1000	1/4096C
AB1#4	<1000	1/12288A	AB1#7	<1000	1/256C	AB1#10	63-1000	1/4096D
AB1#4	<1000	1/12288B	AB1#7	<1000	1/1024B	AB1#10	<1000	1/1024A
AB1#4	<63	1/64(1)	AB1#7	<1000	1/4096C	AB1#10	<1000	1/1024C
AB1#4	<63	1/64(2)	AB1#7	<1000	1/16384B	AB1#10	<1000	1/16384B
AB1#4	<63	1/1024a	AB1#7	<1000	1/16384C	AB1#10	<1000	1/16384C
AB1#4	<63	1/12288D	AB1#7	<1000	1/16384D	AB1#10	<1000	1/16384D
AB1#5	63-1000	1/256a	AB1#7	<63	1/64	AB1#10	<63	1/64
AB1#5	63-1000	1/256b	AB1#7	<63	1/64	AB1#10	<63	1/1024A
AB1#5	63-1000	1/1024	AB1#7	<63	1/256a	AB1#10	<63	1/4096
AB1#5	63-1000	1/1024A	AB1#7	<63	1/256b	AB1#10	<63	1/4096
AB1#5	63-1000	1/1024b	AB1#7	<63	1/1024	AB1#10	<63	1/4096A
AB1#5	63-1000	1/1024C	AB1#7	<63	1/1024A	AB1#11	63-1000	1/256b
AB1#5	63-1000	1/4096A	AB1#7	<63	1/1024a	AB1#11	63-1000	1/1024A
AB1#5	63-1000	1/4096C	AB1#7	<63	1/4096	AB1#11	63-1000	1/4096A
AB1#5	63-1000	1/4096D	AB1#7	<63	1/4096	AB1#11	63-1000	1/4096C
AB1#5	<1000	1/1024A	AB1#7	<63	1/4096A	AB1#11	63-1000	1/4096D
AB1#5	<1000	1/1024C	AB1#8	63-1000	1/256a	AB1#11	<1000	1/4096B
AB1#5	<1000	1/16384B	AB1#8	63-1000	1/256b	AB1#11	<1000	1/16384B
AB1#5	<1000	1/16384C	AB1#8	63-1000	1/1024A	AB1#11	<1000	1/16384C
AB1#5	<1000	1/16384D	AB1#8	63-1000	1/4096A	AB1#11	<1000	1/16384D
AB1#5	<63	1/256a	AB1#8	63-1000	1/4096C	AB1#11	<63	1/64
AB1#5	<63	1/256b	AB1#8	63-1000	1/4096D	AB1#11	<63	1/256a
AB1#5	<63	1/1024	AB1#8	<1000	1/1024A	AB1#11	<63	1/1024
AB1#5	<63	1/1024a	AB1#8	<1000	1/1024C	AB1#11	<63	1/1024A
AB1#5	<63	1/4096	AB1#8	<1000	1/16384B	AB1#11	<63	1/4096
AB1#5	<63	1/4096	AB1#8	<1000	1/16384C	AB1#11	<63	1/4096
AB1#5	<63	1/4096A	AB1#8	<1000	1/16384D	AB1#11	<63	1/4096A

Table 5 (Cont.)

Sample ID	Size (μm)	Aliquot size & ID
AB1#12	<63	1/64
AB1#12	<63	1/256B
AB1#12	<63	1/256C
AB1#13	<1000	1/1024
AB2#1	<1000	1/256A
AB2#1	<1000	1/256B
AB2#1	<1000	1/1024B
AB2#1	<1000	1/1024C
AB2#1	<63	1/64(1)
AB2#1	<63	1/64(2)
AB2#1	<63	1/256C
AB2#2	<1000	1/256A
AB2#2	<1000	1/256B
AB2#2	<1000	1/1024B
AB2#2	<1000	1/1024C
AB2#2	<1000	1/4096A
AB2#2	<1000	1/4096B
AB2#2	<63	1/64
AB2#2	<63	1/256C
AB2#3	<1000	1/256A
AB2#3	<1000	1/256B
AB2#3	<1000	1/1024B
AB2#3	<1000	1/1024C
AB2#3	<1000	1/4096A
AB2#3	<1000	1/4096B
AB2#3	<63	1/64
AB2#3	<63	1/256C
AB2#4	<1000	1/256A
AB2#4	<1000	1/256B
AB2#4	<1000	1/1024B
AB2#4	<1000	1/1024C
AB2#4	<1000	1/4096B
AB2#4	<1000	1/4096C
AB2#4	<63	1/64(1)
AB2#4	<63	1/64(2)
AB2#4	<63	1/256C
AB2#5	<1000	1/256A
AB2#5	<1000	1/256B
AB2#5	<1000	1/1024B
AB2#5	<1000	1/1024C
AB2#5	<1000	1/4096A
AB2#5	<63	1/64
AB2#5	<63	1/256C
AB2#6	<1000	1/256A
AB2#6	<1000	1/256B
AB2#6	<1000	1/1024C
AB2#6	<1000	1/4096A
AB2#6	<1000	1/4096C
AB2#6	<63	1/64
AB2#6	<63	1/256D
AB2#7	<1000	1/256A
AB2#7	<1000	1/1024B
AB2#7	<1000	1/4096A
AB2#7	<1000	1/4096C
AB2#7	<63	1/64
AB2#7	<63	1/256B
AB2#7	<63	1/256C
AB2#8	<1000	1/256A
AB2#8	<1000	1/256B
AB2#8	<1000	1/1024B
AB2#8	<1000	1/1024C
AB2#8	<63	1/64
AB2#8	<63	1/256C
AB2#9	63-1000	1/256D
AB2#9	63-1000	1/12288D
AB2#9	<1000	1/1024
AB2#9	<1000	1/1024B
AB2#9	<1000	1/1024C
AB2#9	<1000	1/12288
AB2#9	<1000	1/12288A
AB2#9	<63	1/256D
AB2#9	<63	2/1024
AB2#9	<63	1/1024
AB2#9	<63	1/12288D
AB2#10	63-1000	1/4096A
AB2#10	63-1000	1/12288d
AB2#10	<1000	1/256A
AB2#10	<1000	1/12288A
AB2#10	<1000	1/12288B
AB2#10	<63	1/256D
AB2#10	<63	1/1024d
AB2#10	<63	1/12288d
AB2#11	63-1000	1/4096A
AB2#11	63-1000	1/12288d
AB2#11	<1000	1/256A
AB2#11	<1000	1/1024C
AB2#11	<1000	1/12288A
AB2#11	<1000	1/12288B
AB2#11	<63	1/256D
AB2#11	<63	1/4096A
AB2#11	<63	1/12288d
AB2#12	63-1000	1/4096A
AB2#12	63-1000	1/12288d
AB2#12	<1000	1/256A
AB2#12	<1000	1/256B
AB2#12	<1000	1/1024B
AB2#12	<1000	1/12288A
AB2#12	<1000	1/12288B
AB2#12	<63	1/64
AB2#12	<63	1/256D
AB2#12	<63	1/4096A
AB2#12	<63	1/12288d
AB2#13	<63	1/64
AB2#13	<63	1/256C
AB2#13	<63	1/256D
AB3#1	<1000	1/1024A
AB3#1	<1000	1/1024B
AB3#1	<1000	1/1024C
AB3#1	<1000	1/4096B
AB3#1	<1000	1/16384C
AB3#1	<1000	1/16384D
AB3#1	<1000	1/16384D
AB3#1	<63	1/64
AB3#1	<63	1/256B
AB3#1	<63	1/256C
AB3#1	<63	1/1024A
AB3#1	<63	1/1024B
AB3#1	<63	1/4096B(3)
AB3#1	<63	1/4096C
AB3#1	<63	1/12288A
AB3#1	<63	1/12288D
AB3#1	<63	1/12288D
AB3#2	<1000	1/1024A
AB3#2	<1000	1/1024B
AB3#2	<1000	1/1024C
AB3#2	<1000	1/4096C
AB3#2	<1000	1/16384B
AB3#2	<1000	1/16384C
AB3#2	<1000	1/16384D
AB3#2	<63	1/64
AB3#2	<63	1/256B
AB3#2	<63	1/256C
AB3#2	<63	1/1024A
AB3#2	<63	1/1024B
AB3#2	<63	1/4096B
AB3#2	<63	1/4096C
AB3#2	<63	1/12288A
AB3#2	<63	1/12288C
AB3#2	<63	1/12288D
AB3#3	63-1000	1/12288D
AB3#3	<1000	1/4096C
AB3#3	<1000	1/12288A
AB3#3	<1000	1/12288B
AB3#3	<63	1/64
AB3#3	<63	1/128
AB3#3	<63	1/1024A
AB3#3	<63	1/12288D
AB3#4	63-1000	1/12288D
AB3#4	63-1000	1/12288d
AB3#4	<1000	1/1024B
AB3#4	<1000	1/1024C
AB3#4	<1000	1/1024C
AB3#4	<1000	1/4096B
AB3#4	<1000	1/4096C
AB3#4	<1000	1/4096C
AB3#4	<1000	1/12288A
AB3#4	<1000	1/12288A
AB3#4	<1000	1/12288A
AB3#4	<1000	1/12288B
AB3#4	<1000	1/12288C
AB3#4	<1000	1/12288C
AB3#4	<63	1/64
AB3#4	<63	1/256C
AB3#4	<63	1/12288d
AB3#4	<63	1/12288D
AB3#5	63-1000	1/12288D
AB3#5	<1000	1/1024C
AB3#5	<1000	1/4096C
AB3#5	<1000	1/12288A
AB3#5	<1000	1/12288C
AB3#5	<63	1/64

Table 5 (Cont.)

Sample ID	Size (μm)	Aliquot size & ID
AB3#5	<63	1/256C
AB3#5	<63	1/12288D
AB3#6	63-1000	1/12288D
AB3#6	<1000	1/1024B
AB3#6	<1000	1/4096C
AB3#6	<1000	1/12288A
AB3#6	<1000	1/12288B
AB3#6	<63	1/64
AB3#6	<63	1/256C
AB3#6	<63	1/12288D
AB3#7	63-1000	1/12288D
AB3#7	<1000	1/64
AB3#7	<1000	1/1024B
AB3#7	<1000	1/4096B
AB3#7	<1000	1/4096C
AB3#7	<1000	1/4096C
AB3#7	<1000	1/12288A
AB3#7	<1000	1/12288A
AB3#7	<1000	1/12288B
AB3#7	<1000	1/12288B
AB3#7	<1000	1/12288C
AB3#7	<1000	1/12288C
AB3#7	<63	1/256C
AB3#7	<63	1/12288D
AB3#8	63-1000	1/12288D
AB3#8	<1000	1/4096B
AB3#8	<1000	1/12288A
AB3#8	<1000	1/12288C
AB3#8	<63	1/64
AB3#8	<63	1/128
AB3#8	<63	1/256C
AB3#8	<63	1/12288D
AB3#9	63-1000	1/12288D
AB3#9	<1000	1/1024B
AB3#9	<1000	1/12288B
AB3#9	<1000	1/12288C
AB3#9	<63	1/64
AB3#9	<63	1/128
AB3#9	<63	1/256C
AB3#9	<63	1/12288D
AB3#10	63-1000	1/12288D
AB3#10	63-1000	1/12288d
AB3#10	<1000	1/1024B
AB3#10	<1000	1/1024B
AB3#10	<1000	1/1024C
AB3#10	<1000	1/1024C
AB3#10	<1000	1/4096B
AB3#10	<1000	1/4096C
AB3#10	<1000	1/4096C
AB3#10	<1000	1/12288A
AB3#10	<1000	1/12288A
AB3#10	<1000	1/12288B
AB3#10	<1000	1/12288B
AB3#10	<1000	1/12288C
AB3#10	<63	1/64
AB3#10	<63	1/256C
AB3#10	<63	1/4096a
AB3#10	<63	1/12288d
AB3#10	<63	1/12288D
AB3#11	63-1000	1/12288D
AB3#11	<1000	1/4096B
AB3#11	<1000	1/12288A
AB3#11	<1000	1/12288B
AB3#11	<63	1/64
AB3#11	<63	1/256
AB3#11	<63	1/256C
AB3#11	<63	1/12288D
AB4#1	<1000	1/256B
AB4#1	<1000	1/4096D
AB4#1	<63	1/64
AB4#1	<63	1/256C
AB4#2	<1000	1/256B
AB4#2	<1000	1/4096D(6)
AB4#2	<63	1/64(1)
AB4#2	<63	1/64(2)
AB4#2	<63	1/256C
AB4#3	<1000	1/256B
AB4#3	<1000	1/4096D
AB4#3	<63	1/256C
AB4#4	<1000	1/256B
AB4#4	<1000	1/4096C A-2
AB4#4	<63	1/64
AB4#4	<63	1/256C
AB4#5	63-1000	SEM
AB4#5	<1000	1/1024B
AB4#5	<63	1/64
AB4#5	<63	1/256B
AB4#5	<63	1/256C
AB4#5		1/1024A’
AB4#5		1/1024B’
AB4#5		1/1024C’
AB4#5		1/4096A’
AB4#5		1/4096B’
AB4#5		1/4096D’
AB4#6	<1000	1/256B
AB4#6	<1000	1/1024C
AB4#6	<63	1/64
AB4#6	<63	1/256C
AB4#6		1/1024A’
AB4#6		1/1024B’
AB4#6		1/1024C’
AB4#6		1/4096A’
AB4#6		1/4096C’
AB4#6		1/4096D’
AB4#7	<1000	1/256B
AB4#7	<1000	1/1024B
AB4#7	<1000	1/4096C
AB4#7	<63	1/64
AB4#7	<63	1/256C
AB4#8	<1000	1/256B
AB4#8	<1000	1/4096A
AB4#8	<1000	1/12288B A-1
AB4#8	<1000	1/16384A
AB4#8	<1000	1/16384D
AB4#8	<63	1/64
AB4#8	<63	1/256C
AB4#9	<1000	1/256B
AB4#9	<1000	1/4096d(7)
AB4#9	<63	1/64
AB4#9	<63	1/256C
AB4#10	<1000	1/256B
AB4#10	<1000	1/1024A
AB4#10	<1000	1/1024B
AB4#10	<1000	1/1024B
AB4#10	<1000	1/4096A
AB4#10	<1000	1/4096B
AB4#10	<1000	1/4096C
AB4#10	<1000	1/12288B
AB4#10	<1000	1/16384A
AB4#10	<1000	1/16384D
AB4#10	<63	1/64
AB4#10	<63	1/256C
AB4#11	<1000	1/256B
AB4#11	<1000	1/1024A
AB4#11	<1000	1/1024B
AB4#11	<1000	1/1024C
AB4#11	<1000	1/1024C
AB4#11	<1000	1/4096A
AB4#11	<1000	1/4096C
AB4#11	<1000	1/12288B
AB4#11	<1000	1/16384A
AB4#11	<1000	1/16384D
AB4#11	<63	1/64
AB4#11	<63	1/256C
AB4#12	<1000	1/256B
AB4#12	<1000	1/256C
AB4#12	<1000	1/1024A
AB4#12	<1000	1/1024C
AB4#12	<1000	1/4096A
AB4#12	<1000	1/4096D A-3
AB5#1	<1000	1/1024A
AB5#1	<1000	1/1024B
AB5#1	<1000	1/16384A
AB5#1	<1000	1/16384B
AB5#1	<1000	1/16384D
AB5#1	<63	3/1024
AB5#2	<1000	1/1024A
AB5#2	<1000	1/16384B
AB5#2	<1000	1/16384D
AB5#2	<63	3/1024
AB5#3	<1000	1/1024B
AB5#3	<1000	1/1024C
AB5#3	<1000	1/4096B
AB5#3	<1000	1/16384A
AB5#3	<1000	1/16384B
AB5#3	<1000	1/16384D
AB5#3	<63	3/1024
AB5#4	<1000	1/1024A
AB5#4	<1000	1/1024B
AB5#4	<1000	1/4096B
AB5#4	<1000	1/16384A

Table 5 (Cont.)

Sample ID	Size (μm)	Aliquot size & ID
AB5#4	<1000	1/16384B
AB5#4	<1000	1/16384D
AB5#4	<63	3/1024
AB5#5	<1000	1/1024B
AB5#5	<1000	1/16384B
AB5#5	<1000	1/16384D
AB5#5	<63	3/1024
AB5#6	<1000	1/1024A
AB5#6	<1000	1/1024B
AB5#6	<1000	1/1024C
AB5#6	<1000	1/16384A
AB5#6	<1000	1/16384B
AB5#6	<1000	1/16384D
AB5#6	<63	3/1024
AB5#7	<1000	1/1024A
AB5#7	<1000	1/1024B
AB5#7	<1000	1/1024C
AB5#7	<1000	1/16384A
AB5#7	<1000	1/16384B
AB5#7	<1000	1/16384D
AB5#7	<63	3/1024
AB5#8	<1000	1/1024A
AB5#8	<1000	1/1024B
AB5#8	<1000	1/4096B
AB5#8	<1000	1/16384A
AB5#8	<1000	1/16384D
AB5#9	<1000	1/1024A
AB5#9	<1000	1/1024B
AB5#9	<1000	1/4096B
AB5#9	<1000	1/16384A
AB5#9	<1000	1/16384B
AB5#9	<1000	1/16384B
AB5#9	<1000	1/16384D
AB5#10	<1000	1/1024A
AB5#10	<1000	1/4096A
AB5#10	<1000	1/16384A
AB5#10	<1000	1/16384B
AB5#10	<1000	1/16384D
AB5#11	<1000	1/1024B
AB5#11	<1000	1/4096B
AB5#11	<1000	1/16384A
AB5#11	<1000	1/16384B
AB5#11	<1000	1/16384D
AB5#12	<1000	1/1024A
AB5#12	<1000	1/1024B
AB5#12	<1000	1/1024C
AB5#12	<1000	1/16384A
AB5#12	<1000	1/16384B
AB5#12	<1000	1/16384D
AB5#12	<63	3/1024
AB5#13	<1000	1/1024B
AB5#13	<1000	1/1024C
AB5#13	<1000	1/16384A
AB5#13	<1000	1/16384B
AB6#1	63-1000	1/4096A
AB6#1	<1000	1/1024C
AB6#1	<1000	1/4096B
AB6#1	<1000	1/16384B
AB6#1	<1000	1/16384C
AB6#1	<1000	1/16384D
AB6#1	<63	1/4096A
AB6#2	63-1000	1/4096B
AB6#2	<1000	1/1024A
AB6#2	<1000	1/4096C
AB6#2	<1000	1/16384B
AB6#2	<1000	1/16384C
AB6#2	<1000	1/16384D
AB6#2	<63	1/4096B
AB6#3	63-1000	1/4096B
AB6#3	<1000	1/1024A
AB6#3	<1000	1/4096C
AB6#3	<1000	1/16384B
AB6#3	<1000	1/16384C
AB6#3	<1000	1/16384D
AB6#3	<63	1/4096B
AB6#4	63-1000	1/4096B
AB6#4	<1000	1/1024A
AB6#4	<1000	1/4096C
AB6#4	<1000	1/16384B
AB6#4	<1000	1/16384C
AB6#4	<1000	1/16384D
AB6#4	<63	1/4096B
AB6#5	63-1000	1/4096B
AB6#5	<1000	1/1024A
AB6#5	<1000	1/4096C
AB6#5	<1000	1/16384B
AB6#5	<1000	1/16384C
AB6#5	<1000	1/16384D
AB6#5	<63	1/4096B
AB6#6	63-1000	1/4096B
AB6#6	<1000	1/1024A
AB6#6	<1000	1/4096C
AB6#6	<1000	1/16384B
AB6#6	<1000	1/16384C
AB6#6	<1000	1/16384D
AB6#6	<63	1/4096B
AB6#7	63-1000	1/4096B
AB6#7	<1000	1/1024A
AB6#7	<1000	1/4096C
AB6#7	<1000	1/16384B
AB6#7	<1000	1/16384C
AB6#7	<1000	1/16384D
AB6#7	<63	1/4096B
AB6#8	63-1000	1/4096B
AB6#8	<1000	1/1024A
AB6#8	<1000	1/4096C
AB6#8	<1000	1/16384B
AB6#8	<1000	1/16384C
AB6#8	<1000	1/16384D
AB6#8	<63	1/4096B
AB6#9	63-1000	1/4096B
AB6#9	<1000	1/1024A
AB6#9	<1000	1/4096C
AB6#9	<1000	1/16384B
AB6#9	<1000	1/16384C
AB6#9	<1000	1/16384D
AB6#10	63-1000	1/4096B
AB6#10	<1000	1/1024A
AB6#10	<1000	1/4096C
AB6#10	<1000	1/16384B
AB6#10	<1000	1/16384C
AB6#10	<1000	1/16384D
AB6#11	63-1000	1/4096B
AB6#11	<1000	1/1024A
AB6#11	<1000	1/4096C
AB6#11	<1000	1/16384B
AB6#11	<1000	1/16384C
AB6#11	<1000	1/16384D
AB6#11	<63	1/4096B
AB6#12	63-1000	1/4096B
AB6#12	<1000	1/1024A
AB6#12	<1000	1/4096C
AB6#12	<1000	1/16384B
AB6#12	<1000	1/16384C
AB6#12	<1000	1/16384D
AB6#12	<63	1/4096B
AB6#13	63-1000	1/4096B
AB6#13	<1000	1/1024A
AB6#13	<1000	1/4096C
AB6#13	<1000	1/16384B
AB6#13	<1000	1/16384C
AB6#13	<1000	1/16384D
AB6#13	<63	1/4096B
AB7#1	63-1000	1/1024B
AB7#1	63-1000	1/4096B
AB7#1	<1000	1/1024A
AB7#1	<1000	1/4096C
AB7#1	<1000	1/16384B
AB7#1	<1000	1/16384C
AB7#1	<1000	1/16384D
AB7#1	<63	1/256B
AB7#1	<63	1/4096B
AB7#2	63-1000	1/1024B
AB7#2	63-1000	1/4096B
AB7#2	<1000	1/1024A
AB7#2	<1000	1/4096C
AB7#2	<1000	1/16384B
AB7#2	<1000	1/16384C
AB7#2	<1000	1/16384D
AB7#2	<63	1/256B
AB7#2	<63	1/4096B
AB7#3	63-1000	1/1024B
AB7#3	63-1000	1/4096B
AB7#3	<1000	1/1024A
AB7#3	<1000	1/4096C
AB7#3	<1000	1/16384B
AB7#3	<1000	1/16384C
AB7#3	<1000	1/16384D
AB7#3	<63	1/256B
AB7#3	<63	1/4096B
AB7#4	63-1000	1/1024B

Table 5 (Cont.)

Sample ID	Size (μm)	Aliquot size & ID
AB7#4	63-1000	1/4096B
AB7#4	<1000	1/1024A
AB7#4	<1000	1/4096C
AB7#4	<1000	1/16384B
AB7#4	<1000	1/16384C
AB7#4	<1000	1/16384D
AB7#4	<63	1/256B
AB7#4	<63	1/4096B
AB7#5	63-1000	1/1024B
AB7#5	63-1000	1/4096B
AB7#5	<1000	1/1024A
AB7#5	<1000	1/16384B
AB7#5	<1000	1/16384C
AB7#5	<1000	1/16384C
AB7#5	<1000	1/16384D
AB7#5	<63	1/256B
AB7#5	<63	1/4096B
AB7#6	63-1000	1/1024B
AB7#6	63-1000	1/4096B
AB7#6	<1000	1/1024A
AB7#6	<1000	1/4096C
AB7#6	<1000	1/16384B
AB7#6	<1000	1/16384C
AB7#6	<1000	1/16384D
AB7#6	<63	1/256B
AB7#6	<63	1/4096B
AB7#7	63-1000	1/1024B
AB7#7	63-1000	1/4096B
AB7#7	<1000	1/1024A
AB7#7	<1000	1/4096C
AB7#7	<1000	1/16384B
AB7#7	<1000	1/16384C
AB7#7	<1000	1/16384D
AB7#7	<63	1/256B
AB7#7	<63	1/4096B
AB7#8	63-1000	1/1024B
AB7#8	63-1000	1/4096B
AB7#8	<1000	1/1024A
AB7#8	<1000	1/16384B
AB7#8	<1000	1/16384C
AB7#8	<1000	1/16384D
AB7#8	<63	1/256B
AB7#8	<63	1/4096B
AB7#9	63-1000	1/1024B
AB7#9	63-1000	1/4096B
AB7#9	<1000	1/1024A
AB7#9	<1000	1/4096C
AB7#9	<1000	1/16384B
AB7#9	<1000	1/16384C
AB7#9	<1000	1/16384D
AB7#9	<63	1/256B
AB7#9	<63	1/4096B
AB7#10	63-1000	1/1024B
AB7#10	63-1000	1/4096B
AB7#10	<1000	1/1024A
AB7#10	<1000	1/4096C
AB7#10	<1000	1/16384B
AB7#10	<1000	1/16384C
AB7#10	<1000	1/16384D
AB7#10	<63	1/256B
AB7#10	<63	1/4096B
AB7#11	63-1000	1/1024B
AB7#11	63-1000	1/4096B
AB7#11	<1000	1/1024A
AB7#11	<1000	1/4096C
AB7#11	<1000	1/16384B
AB7#11	<1000	1/16384C
AB7#11	<1000	1/16384D
AB7#11	<63	1/256B
AB7#11	<63	1/4096B
AB7#12	63-1000	1/1024B
AB7#12	63-1000	1/4096B
AB7#12	<1000	1/1024A
AB7#12	<1000	1/4096C
AB7#12	<1000	1/16384B
AB7#12	<1000	1/16384C
AB7#12	<1000	1/16384D
AB7#12	<63	1/256B
AB7#12	<63	1/4096B
AB7#13	63-1000	1/1024B
AB7#13	63-1000	1/4096B
AB7#13	<1000	1/1024A
AB7#13	<1000	1/4096C
AB7#13	<1000	1/16384B
AB7#13	<1000	1/16384C
AB7#13	<63	1/256B
AB7#13	<63	1/4096B
AB8#1	63-1000	1/1024B
AB8#1	63-1000	1/4096B
AB8#1	<1000	1/1024A
AB8#1	<1000	1/4096C
AB8#1	<1000	1/16384B
AB8#1	<1000	1/16384C
AB8#1	<1000	1/16384D
AB8#1	<63	1/256B
AB8#1	<63	1/1024B
AB8#2	63-1000	1/1024B
AB8#2	63-1000	1/4096B
AB8#2	<1000	1/1024A
AB8#2	<1000	1/4096C
AB8#2	<1000	1/16384B
AB8#2	<1000	1/16384C
AB8#2	<1000	1/16384D
AB8#2	<63	1/256B
AB8#2	<63	1/1024B
AB8#3	63-1000	1/1024B
AB8#3	63-1000	1/4096B
AB8#3	<1000	1/1024A
AB8#3	<1000	1/4096A
AB8#3	<1000	1/16384B
AB8#3	<1000	1/16384C
AB8#3	<1000	1/16384D
AB8#3	<63	1/256B
AB8#3	<63	1/1024B
AB8#4	63-1000	1/1024B
AB8#4	63-1000	1/4096B
AB8#4	<1000	1/1024A
AB8#4	<1000	1/4096C
AB8#4	<1000	1/16384B
AB8#4	<1000	1/16384C
AB8#4	<1000	1/16384D
AB8#4	<63	1/256B
AB8#4	<63	1/1024B
AB8#5	63-1000	1/1024B
AB8#5	63-1000	1/4096B
AB8#5	63-1000	1/16384C
AB8#5	<1000	1/1024A
AB8#5	<1000	1/4096C
AB8#5	<1000	1/16384D
AB8#5	<63	1/256B
AB8#5	<63	1/1024B
AB8#5	<63	1/16384B
AB8#6	63-1000	1/1024B
AB8#6	63-1000	1/4096B
AB8#6	<1000	1/1024A
AB8#6	<1000	1/4096C
AB8#6	<1000	1/16384B
AB8#6	<1000	1/16384C
AB8#6	<1000	1/16384D
AB8#6	<63	1/256B
AB8#6	<63	1/1024B
AB8#7	63-1000	1/1024B
AB8#7	63-1000	1/4096B
AB8#7	<1000	1/1024A
AB8#7	<1000	1/4096C
AB8#7	<1000	1/16384B
AB8#7	<1000	1/16384C
AB8#7	<1000	1/16384D
AB8#7	<63	1/256B
AB8#7	<63	1/1024A
AB8#8	63-1000	1/1024B
AB8#8	63-1000	1/4096B
AB8#8	<1000	1/1024A
AB8#8	<1000	1/4096C
AB8#8	<1000	1/16384B
AB8#8	<1000	1/16384C
AB8#8	<1000	1/16384D
AB8#8	<63	1/256B
AB8#8	<63	1/1024B
AB8#9	63-1000	1/1024B
AB8#9	63-1000	1/4096B
AB8#9	<1000	1/1024A
AB8#9	<1000	1/4096C
AB8#9	<1000	1/16384B
AB8#9	<1000	1/16384C
AB8#9	<1000	1/16384D
AB8#9	<63	1/256B
AB8#9	<63	1/1024B
AB8#10	63-1000	1/1024B
AB8#10	63-1000	1/4096B
AB8#10	<1000	1/1024A

Table 5 (Cont.)

Sample ID	Size (µm)	Aliquot size & ID
AB8#10	<1000	1/4096C
AB8#10	<1000	1/16384B
AB8#10	<1000	1/16384C
AB8#10	<1000	1/16384D
AB8#10	<63	1/256B
AB8#10	<63	1/1024B
AB8#11	63-1000	1/1024B
AB8#11	63-1000	1/4096B
AB8#11	<1000	1/1024A
AB8#11	<1000	1/4096C
AB8#11	<1000	1/16384C
AB8#11	<1000	1/16384D
AB8#11	<63	1/256B
AB8#11	<63	1/1024B
AB8#12	63-1000	1/1280B
AB8#12	63-1000	1/5120B
AB8#12	<1000	1/1280A
AB8#12	<1000	1/5120C
AB8#12	<1000	1/20480B
AB8#12	<1000	1/20480C
AB8#12	<1000	1/20480D
AB8#12	<63	1/320C
AB8#12	<63	1/5120B
AB8#13	63-1000	1/1024B
AB8#13	63-1000	1/4096B
AB8#13	<1000	1/1024A
AB8#13	<1000	1/4096C
AB8#13	<1000	1/16384B
AB8#13	<1000	1/16384C
AB8#13	<1000	1/16384D
AB8#13	<1000	1/16384D
AB8#13	<63	1/256B
AB8#13	<63	1/1024B
AB9#1	63-1000	1/1024C
AB9#1	63-1000	1/4096
AB9#1	<1000	1/1024B
AB9#1	<1000	1/4096B
AB9#1	<1000	1/16384A
AB9#1	<1000	1/16384B
AB9#1	<1000	1/16384C
AB9#1	<1000	1/16384C
AB9#1	<1000	1/16384D
AB9#1	<63	1/256C
AB9#2	63-1000	1/1024C
AB9#2	63-1000	1/4096
AB9#2	<1000	1/1024B
AB9#2	<1000	1/4096B
AB9#2	<1000	1/16384A
AB9#2	<1000	1/16384B
AB9#2	<1000	1/16384C
AB9#2	<1000	1/16384D
AB9#2	<63	1/256C
AB9#3	63-1000	1/1024C
AB9#3	63-1000	1/4096
AB9#3	<1000	1/1024B
AB9#3	<1000	1/4096B
AB9#3	<1000	1/16384A
AB9#3	<1000	1/16384B
AB9#3	<1000	1/16384C
AB9#3	<1000	1/16384D
AB9#3	<63	1/256C
AB9#4	63-1000	1/1024C
AB9#4	63-1000	1/4096C
AB9#4	<1000	1/1024B
AB9#4	<1000	1/4096B
AB9#4	<1000	1/16384A
AB9#4	<1000	1/16384B
AB9#4	<1000	1/16384C
AB9#4	<1000	1/16384D
AB9#4	<63	1/256C
AB9#5	63-1000	1/1024C
AB9#5	63-1000	1/4096C
AB9#5	<1000	1/1024B
AB9#5	<1000	1/16384A
AB9#5	<1000	1/16384B
AB9#5	<1000	1/16384C
AB9#5	<1000	1/16384D
AB9#5	<63	1/256C
AB9#6	63-1000	1/1024C
AB9#6	63-1000	1/4096C
AB9#6	<1000	1/1024B
AB9#6	<1000	1/4096B
AB9#6	<1000	1/16384A
AB9#6	<1000	1/16384B
AB9#6	<1000	1/16384C
AB9#6	<1000	1/16384D
AB9#6	<63	1/256C
AB9#7	63-1000	1/1024C
AB9#7	63-1000	1/4096C
AB9#7	<1000	1/1024B
AB9#7	<1000	1/4096B
AB9#7	<1000	1/16384A
AB9#7	<1000	1/16384B
AB9#7	<1000	1/16384C
AB9#7	<1000	1/16384D
AB9#7	<63	1/256C
AB9#8	63-1000	1/1024C
AB9#8	63-1000	1/4096C
AB9#8	<1000	1/1024B
AB9#8	<1000	1/4096C
AB9#8	<1000	1/16384A
AB9#8	<1000	1/16384B
AB9#8	<1000	1/16384C
AB9#8	<1000	1/16384D
AB9#8	<63	1/256C
AB9#9	63-1000	1/1024C
AB9#9	63-1000	1/4096C
AB9#9	<1000	1/1024B
AB9#9	<1000	1/4096A
AB9#9	<1000	1/16384A
AB9#9	<1000	1/16384B
AB9#9	<1000	1/16384D
AB9#9	<63	1/256C
AB9#10	63-1000	1/1024C
AB9#10	63-1000	1/4096C
AB9#10	<1000	1/1024B
AB9#10	<1000	1/4096A
AB9#10	<1000	1/16384A
AB9#10	<1000	1/16384B
AB9#10	<1000	1/16384C
AB9#10	<1000	1/16384D
AB9#10	<63	1/256C
AB9#11	63-1000	1/1024C
AB9#11	63-1000	1/4096C
AB9#11	<1000	1/1024B
AB9#11	<1000	1/4096B
AB9#11	<1000	1/16384
AB9#11	<1000	1/16384B
AB9#11	<1000	1/16384C
AB9#11	<1000	1/16384D
AB9#11	<63	1/256C
AB9#12	63-1000	1/1024C
AB9#12	63-1000	1/4096C
AB9#12	<1000	1/1024B
AB9#12	<1000	1/4096A
AB9#12	<1000	1/16384A
AB9#12	<1000	1/16384B
AB9#12	<1000	1/16384C
AB9#12	<1000	1/16384D
AB9#12	<63	1/256C
AB9#13	63-1000	1/1024C
AB9#13	63-1000	1/4096C
AB9#13	<1000	1/1024B
AB9#13	<1000	1/4096B
AB9#13	<1000	1/16384A
AB9#13	<1000	1/16384B
AB9#13	<1000	1/16384C
AB9#13	<1000	1/16384D
AB9#13	<63	1/256C

Table 6. List of archival microslides for Station SA.

Sample ID	Size (µm)	Aliquot size
SA2#1	63-1000	1/256
SA2#2	63-1000	1/256
SA2#2	63-1000	1/1024b
SA2#3	63-1000	1/256
SA2#4	63-1000	1/256
SA2#5	63-1000	1/1024
SA2#6	63-1000	1/256
SA2#7	63-1000	1/256
SA2#8	63-1000	1/256
SA2 #1	<1000	1/1024
SA2 #2	<1000	1/1024
SA2 #3	<1000	1/1024
SA2 #4	<1000	1/1024
SA2 #5	<1000	1/1024
SA2 #6	<1000	1/1024
SA2 #7	<1000	1/1024
SA2 #8	<1000	1/1024
SA2 #1	<1000	1/4096
SA2 #2	<1000	1/4096
SA2 #3	<1000	1/4096
SA2 #4	<1000	1/4096
SA2 #5	<1000	1/4096
SA2 #6	<1000	1/4096
SA2 #7	<1000	1/4096
SA2 #8	<1000	1/4096
SA2#1	<63	1/256
SA2#1	<63	1/256
SA2#2	<63	1/256
SA2#2	<63	1/256
SA2#3	<63	1/256
SA2#3	<63	1/256
SA2#4	<63	1/256
SA2#4	<63	1/256
SA2#5	<63	1/256
SA2#5	<63	1/256b
SA2#6	<63	1/256B
SA2#6	<63	1/256c
SA2#6	<63	1/1024c
SA2#7	<63	1/256B
SA2#7	<63	1/256c
SA2#7	<63	1/1024c
SA2#8	<63	1/256B
SA2#8	<63	1/256c
SA2#8	<63	1/1024c
SA3#1	63-1000	1/256C
SA3#2	63-1000	1/256C
SA3#3	63-1000	1/256C
SA3#4	63-1000	1/256C
SA3#5	63-1000	1/256C
SA3#6	63-1000	1/256C
SA3#7	63-1000	1/256C
SA3#8	63-1000	1/256C
SA3#9	63-1000	1/256C
SA3#10	63-1000	1/256C
SA3#11	63-1000	1/1024d
SA3#12	63-1000	1/256C
SA3#1	63-1000	1/1024D
SA3#2	63-1000	1/1024D
SA3#3	63-1000	1/1024D
SA3#4	63-1000	1/1024D
SA3#5	63-1000	1/1024D
SA3#6	63-1000	1/1024D
SA3#7	63-1000	1/1024D
SA3#8	63-1000	1/1024d
SA3#9	63-1000	1/1024d
SA3#10	63-1000	1/1024d
SA3#12	63-1000	1/1024d
SA3#1	63-1000	1/1024b
SA3#7	63-1000	1/256a
SA3#7	63-1000	1/256b
SA3#8	63-1000	1/256a
SA3#10	63-1000	1/256a
SA3#11	63-1000	1/256b
SA3#12	63-1000	1/256B
SA3#12	63-1000	1/1024a
SA3 #1	<1000	1/1024
SA3 #2	<1000	1/1024
SA3 #3	<1000	1/1024
SA3 #4	<1000	1/1024
SA3 #5	<1000	1/1024
SA3 #6	<1000	1/1024
SA3 #7	<1000	1/1024
SA3 #8	<1000	1/1024
SA3 #9	<1000	1/1024
SA3 #10	<1000	1/1024
SA3 #11	<1000	1/1024
SA3 #1	<1000	1/4096
SA3 #2	<1000	1/4096
SA3 #3	<1000	1/4096
SA3 #4	<1000	1/4096
SA3 #5	<1000	1/4096
SA3 #6	<1000	1/4096
SA3 #7	<1000	1/4096
SA3 #8	<1000	1/4096
SA3 #9	<1000	1/4096
SA3 #10	<1000	1/4096
SA3 #11	<1000	1/4096
SA3#1	<63	1/1024d
SA3#2	<63	1/1024A
SA3#2	<63	1/1024d
SA3#3	<63	1/1024B
SA3#3	<63	1/1024d
SA3#4	<63	1/1024A
SA3#4	<63	1/1024d
SA3#5	<63	1/1024B
SA3#6	<63	1/1024c
SA3#6	<63	1/1024d
SA3#7	<63	1/1024B
SA3#7	<63	1/1024d
SA3#8	<63	1/1024A
SA3#8	<63	1/1024d
SA3#9	<63	1/256c
SA3#10	<63	1/1024d
SA3#11	<63	1/256
SA3#11	<63	1/1024d
SA3#12	<63	1/1024d
SA3#1	<63	1/1024B
SA3#5	<63	1/1024d
SA3#9	<63	1/1024d
SA4#1	63-1000	1/256a
SA4#2	63-1000	1/256a
SA4#5	63-1000	1/256C
SA4#5	63-1000	1/1024C
SA4#8	63-1000	1/256a
SA4#8	63-1000	1/256B
SA4#8	63-1000	1/1024C
SA4#9	63-1000	1/256a
SA4#10	63-1000	1/256
SA4#10	63-1000	1/256a
SA4#10	63-1000	1/1024b
SA4#11	63-1000	1/256a
SA4#12	63-1000	1/256a
SA4#13	63-1000	1/256C
SA4#3	<1000	1/1024A
SA4#4	<1000	1/1024A
SA4#6	<1000	1/1024A
SA4#7	<1000	1/1024A
SA4 #1	<1000	1/1024
SA4 #2	<1000	1/1024
SA4 #3	<1000	1/1024
SA4 #4	<1000	1/1024
SA4 #5	<1000	1/1024
SA4 #6	<1000	1/1024
SA4 #7	<1000	1/1024
SA4 #8	<1000	1/1024
SA4 #9	<1000	1/1024
SA4 #10	<1000	1/1024
SA4 #11	<1000	1/1024
SA4 #12	<1000	1/1024
SA4 #1	<1000	1/4096
SA4 #2	<1000	1/4096
SA4 #3	<1000	1/4096
SA4 #4	<1000	1/4096
SA4 #5	<1000	1/4096
SA4 #6	<1000	1/4096
SA4 #7	<1000	1/4096
SA4 #8	<1000	1/4096
SA4 #9	<1000	1/4096
SA4 #10	<1000	1/4096
SA4 #11	<1000	1/4096
SA4 #12	<1000	1/4096
SA4#1	<63	1/256c
SA4#2	<63	1/256c
SA4#3	<63	1/256c
SA4#4	<63	1/256c
SA4#5	<63	1/256c
SA4#6	<63	1/1024B
SA4#7	<63	1/1024C
SA4#8	<63	1/256c
SA4#9	<63	1/256c
SA4#10	<63	1/256c

Table 6 (Cont.)

Sample ID	Size (μm)	Aliquot size
SA4#11	<63	1/256c
SA4#12	<63	1/256a
SA4#13	<63	1/256d
SA4#12	<63	1/1024B
SA4#13	<63	1/1024B
SA4#1	<63	1/4096C
SA4#2	<63	1/4096C
SA4#3	<63	1/4096C
SA4#4	<63	1/4096C
SA4#5	<63	1/4096C
SA4#6	<63	1/4096C
SA4#7	<63	1/4096C
SA4#8	<63	1/4096C
SA4#9	<63	1/4096C
SA4#10	<63	1/4096C
SA4#11	<63	1/4096C
SA4#12	<63	1/4096B
SA4#13	<63	1/4096B
SA4#12	<63	1/1024B
SA4#13	<63	1/1024B
SA5#1	63-1000	1/256A
SA5#2	63-1000	1/256A
SA5#3	63-1000	1/256A
SA5#4	63-1000	1/256A
SA5#5	63-1000	1/256A
SA5#6	63-1000	1/256A
SA5#7	63-1000	1/256A
SA5#8	63-1000	1/256A
SA5#9	63-1000	1/256A
SA5#10	63-1000	1/256A
SA5 #1	<1000	1/1024
SA5 #2	<1000	1/1024
SA5 #3	<1000	1/1024
SA5 #4	<1000	1/1024
SA5 #5	<1000	1/1024
SA5 #6	<1000	1/1024
SA5 #7	<1000	1/1024
SA5 #8	<1000	1/1024
SA5 #9	<1000	1/1024
SA5 #10	<1000	1/1024
SA5 #1	<1000	1/4096
SA5 #2	<1000	1/4096
SA5 #3	<1000	1/4096
SA5 #4	<1000	1/4096
SA5 #5	<1000	1/4096
SA5 #6	<1000	1/4096
SA5 #7	<1000	1/4096
SA5 #8	<1000	1/4096
SA5 #9	<1000	1/4096
SA5 #10	<1000	1/4096
SA5#1	<63	1/256
SA5#2	<63	1/1024
SA5#3	<63	1/1024
SA5#4	<63	1/1024
SA5#5	<63	1/1024
SA5#6	<63	1/1024
SA5#7	<63	1/256
SA5#8	<63	1/256
SA5#9	<63	1/1024
SA5#10	<63	1/256
SA6#1	63-1000	1/256
SA6#2	63-1000	1/256
SA6#3	63-1000	1/256
SA6#4	63-1000	1/256
SA6#5	63-1000	1/256
SA6#6	63-1000	1/1024
SA6#7	63-1000	1/256
SA6#8	63-1000	1/256
SA6#9	63-1000	1/256
SA6#10	63-1000	1/256
SA6#11	63-1000	1/256
SA6#12	63-1000	1/256
SA6#13	63-1000	1/1024
SA6 #1	<1000	1/1024
SA6 #2	<1000	1/1024
SA6 #3	<1000	1/1024
SA6 #4	<1000	1/1024
SA6 #5	<1000	1/1024
SA6 #6	<1000	1/1024
SA6 #7	<1000	1/1024
SA6 #8	<1000	1/1024
SA6 #9	<1000	1/1024
SA6 #10	<1000	1/1024
SA6 #11	<1000	1/1024
SA6 #12	<1000	1/1024
SA6 #13	<1000	1/1024
SA6 #1	<1000	1/4096
SA6 #2	<1000	1/4096
SA6 #3	<1000	1/4096
SA6 #4	<1000	1/4096
SA6 #5	<1000	1/4096
SA6 #6	<1000	1/4096
SA6 #7	<1000	1/4096
SA6 #8	<1000	1/4096
SA6 #9	<1000	1/4096
SA6 #10	<1000	1/4096
SA6 #11	<1000	1/4096
SA6 #12	<1000	1/4096
SA6 #13	<1000	1/4096
SA6#1	<63	1/256
SA6#2	<63	1/256
SA6#3	<63	1/256
SA6#4	<63	2/1024
SA6#5	<63	2/4096
SA6#6	<63	1/1024
SA6#7	<63	1/256
SA6#8	<63	1/256
SA6#9	<63	1/256
SA6#10	<63	1/256
SA6#11	<63	1/256
SA6#12	<63	1/256
SA6#13	<63	1/4096
SA7#1	63-1000	1/256B
SA7#2	63-1000	1/256B
SA7#3	63-1000	1/256B
SA7#4	63-1000	1/256B
SA7#5	63-1000	1/256B
SA7#6	63-1000	1/256B
SA7#7	63-1000	1/256B
SA7#8	63-1000	1/256B
SA7#9	63-1000	1/256B
SA7#10	63-1000	1/256B
SA7#11	63-1000	1/256B
SA7#12	63-1000	1/256B
SA7#13	63-1000	1/256B
SA7 #1	<1000	1/1024
SA7 #2	<1000	1/1024
SA7 #3	<1000	1/1024
SA7 #4	<1000	1/1024
SA7 #5	<1000	1/1024
SA7 #6	<1000	1/1024
SA7 #7	<1000	1/1024
SA7 #8	<1000	1/1024
SA7 #9	<1000	1/1024
SA7 #10	<1000	1/1024
SA7 #11	<1000	1/1024
SA7 #12	<1000	1/1024
SA7 #13	<1000	1/1024
SA7 #1	<1000	1/4096
SA7 #2	<1000	1/4096
SA7 #3	<1000	1/4096
SA7 #4	<1000	1/4096
SA7 #5	<1000	1/4096
SA7 #6	<1000	1/4096
SA7 #7	<1000	1/4096
SA7 #8	<1000	1/4096
SA7 #9	<1000	1/4096
SA7 #10	<1000	1/4096
SA7 #11	<1000	1/4096
SA7 #12	<1000	1/4096
SA7 #13	<1000	1/4096
SA7#1	<63	1/256B
SA7#2	<63	1/256B
SA7#3	<63	1/256B
SA7#4	<63	1/256B
SA7#5	<63	1/256B
SA7#6	<63	1/256B
SA7#7	<63	1/256B
SA7#8	<63	1/256B
SA7#9	<63	1/256B
SA7#1	<63	1/1024B
SA7#2	<63	1/1024B
SA7#3	<63	1/1024B
SA7#4	<63	1/1024B
SA7#5	<63	1/1024B
SA7#6	<63	1/1024B
SA7#7	<63	1/1024B
SA7#8	<63	1/1024B
SA7#9	<63	1/1024B
SA7#10	<63	1/1024B
SA7#11	<63	1/1024B
SA7#12	<63	1/1024B
SA7#13	<63	1/1024B
SA8#1	63-1000	1/256B

Table 6 (Cont.)

Sample ID	Size (μm)	Aliquot size
SA8#2	63-1000	1/256B
SA8#3	63-1000	1/256B
SA8#4	63-1000	1/256B
SA8#5	63-1000	1/256B
SA8#6	63-1000	1/256B
SA8#7	63-1000	1/256B
SA8#8	63-1000	1/256B
SA8#9	63-1000	1/256B
SA8#10	63-1000	1/256B
SA8#11	63-1000	1/256B
SA8#12	63-1000	1/256B
SA8#13	63-1000	1/256B
SA8 #1	<1000	1/1024
SA8 #2	<1000	1/1024
SA8 #3	<1000	1/1024
SA8 #4	<1000	1/1024
SA8 #5	<1000	1/1024
SA8 #6	<1000	1/1024
SA8 #7	<1000	1/1024
SA8 #8	<1000	1/1024
SA8 #9	<1000	1/1024
SA8 #10	<1000	1/1024
SA8 #11	<1000	1/1024
SA8 #12	<1000	1/1024
SA8 #13	<1000	1/1024
SA8 #1	<1000	1/4096
SA8 #2	<1000	1/4096
SA8 #3	<1000	1/4096
SA8 #4	<1000	1/4096
SA8 #5	<1000	1/4096
SA8 #6	<1000	1/4096
SA8 #7	<1000	1/4096
SA8 #8	<1000	1/4096
SA8 #9	<1000	1/4096
SA8 #10	<1000	1/4096
SA8 #11	<1000	1/4096
SA8 #12	<1000	1/4096
SA8 #13	<1000	1/4096
SA8#1	<63	1/1024B
SA8#2	<63	1/1024B
SA8#3	<63	1/1024B
SA8#4	<63	1/1024B
SA8#5	<63	1/1024B
SA8#6	<63	1/1024B
SA8#7	<63	1/1024B
SA8#8	<63	1/1024B
SA8#9	<63	1/1024B
SA8#10	<63	1/1024B
SA8#11	<63	1/1024B
SA8#12	<63	1/1024B
SA8#13	<63	1/1024B
SA9#1	63-1000	1/256C
SA9#2	63-1000	1/256C
SA9#3	63-1000	1/256C
SA9#4	63-1000	1/1024
SA9#5	63-1000	1/256C
SA9#6	63-1000	1/256C
SA9#7	63-1000	1/256C
SA9#8	63-1000	1/256C
SA9#9	63-1000	1/256C
SA9#10	63-1000	1/256C
SA9#11	63-1000	1/256C
SA9#12	63-1000	1/256C
SA9#13	63-1000	1/256C
SA9 #1	<1000	1/1024
SA9 #2	<1000	1/1024
SA9 #3	<1000	1/1024
SA9 #4	<1000	1/1024
SA9 #5	<1000	1/1024
SA9 #6	<1000	1/1024
SA9 #7	<1000	1/1024
SA9 #8	<1000	1/1024
SA9 #9	<1000	1/1024
SA9 #10	<1000	1/1024
SA9 #11	<1000	1/1024
SA9 #12	<1000	1/1024
SA9 #13	<1000	1/1024
SA9 #1	<1000	1/4096
SA9 #2	<1000	1/4096
SA9 #3	<1000	1/4096
SA9 #4	<1000	1/4096
SA9 #5	<1000	1/4096
SA9 #6	<1000	1/4096
SA9 #7	<1000	1/4096
SA9 #8	<1000	1/4096
SA9 #9	<1000	1/4096
SA9 #10	<1000	1/4096
SA9 #11	<1000	1/4096
SA9 #12	<1000	1/4096
SA9 #13	<1000	1/4096
SA9#1	<63	1/1024B
SA9#2	<63	1/1024B
SA9#3	<63	1/1024B
SA9#4	<63	1/1024
SA9#4	<63	1/1024B
SA9#5	<63	1/4096B
SA9#6	<63	1/1024B
SA9#7	<63	1/4096B
SA9#8	<63	1/4096B
SA9#9	<63	1/4096B
SA9#10	<63	1/4096C
SA9#11	<63	1/4096B
SA9#12	<63	1/4096B
SA9#13	<63	1/4096B
SA10#1	63-1000	1/256C
SA10#2	63-1000	1/256C
SA10#3	63-1000	1/256C
SA10#4	63-1000	1/256C
SA10#5	63-1000	1/256C
SA10#6	63-1000	1/256C
SA10#7	63-1000	1/256C
SA10#8	63-1000	1/256C
SA10#9	63-1000	1/256C
SA10#10	63-1000	1/256C
SA10#11	63-1000	1/256C
SA10#12	63-1000	1/256C
SA10#13	63-1000	1/256C
SA10 #1	<1000	1/4096
SA10 #2	<1000	1/4096
SA10 #3	<1000	1/4096
SA10 #4	<1000	1/4096
SA10 #5	<1000	1/4096
SA10 #6	<1000	1/4096
SA10 #7	<1000	1/4096
SA10 #8	<1000	1/4096
SA10 #9	<1000	1/4096
SA10 #10	<1000	1/4096
SA10 #11	<1000	1/4096
SA10 #12	<1000	1/4096
SA10 #13	<1000	1/4096
SA10#1	<63	1/256
SA10#1	<63	1/1024C
SA10#1	<63	1/4096
SA10#2	<63	1/256
SA10#2	<63	1/1024C
SA10#2	<63	1/4096
SA10#3	<63	1/256
SA10#3	<63	1/1024C
SA10#3	<63	1/4096
SA10#4	<63	1/256
SA10#4	<63	1/1024
SA10#4	<63	1/4096C
SA10#5	<63	1/256
SA10#5	<63	1/1024
SA10#5	<63	1/4096C
SA10#6	<63	1/256
SA10#6	<63	1/1024
SA10#6	<63	1/4096C
SA10#7	<63	1/256
SA10#7	<63	1/1024
SA10#7	<63	1/4096C
SA10#8	<63	1/256
SA10#8	<63	1/1024C
SA10#8	<63	1/4096
SA10#9	<63	1/256
SA10#9	<63	1/1024C
SA10#9	<63	1/4096
SA10#10	<63	1/256
SA10#10	<63	1/1024C
SA10#10	<63	1/4096
SA10#11	<63	1/256
SA10#11	<63	1/1024C
SA10#11	<63	1/4096
SA10#12	<63	1/256
SA10#12	<63	1/1024C
SA10#12	<63	1/4096
SA10#13	<63	1/256
SA10#13	<63	1/1024
SA10#13	<63	1/4096C
SA11#1	63-1000	1/256
SA11#2	63-1000	1/256
SA11#3	63-1000	1/256
SA11#4	63-1000	1/256
SA11#5	63-1000	1/256

Table 6 (Cont.)

Sample ID	Size (μm)	Aliquot size	Sample ID	Size (μm)	Aliquot size	Sample ID	Size (μm)	Aliquot size
SA11#6	63-1000	1/256	SA12 #12	<1000	1/4096	SA14 #5	<1000	1/4096
SA11#7	63-1000	1/256	SA12 #13	<1000	1/4096	SA14 #6	<1000	1/4096
SA11#8	63-1000	1/256	SA12#1	<63	1/320	SA14 #7	<1000	1/4096
SA11#9	63-1000	1/256	SA12#2	<63	1/320	SA14 #8	<1000	1/4096
SA11#10	63-1000	1/256	SA12#3	<63	1/1280	SA14 #9	<1000	1/4096
SA11#11	63-1000	1/256	SA12#4	<63	1/320	SA14 #10	<1000	1/4096
SA11#12	63-1000	1/256	SA12#5	<63	1/320	SA14 #11	<1000	1/4096
SA11#13	63-1000	1/256	SA12#6	<63	1/320	SA14 #12	<1000	1/4096
SA11 #1	<1000	1/4096	SA12#7	<63	1/320	SA14#1	<63	1/64
SA11 #2	<1000	1/4096	SA12#8	<63	1/320	SA14#2	<63	1/64
SA11 #3	<1000	1/4096	SA12#9	<63	1/320	SA14#3	<63	1/64
SA11 #4	<1000	1/4096	SA12#10	<63	1/320	SA14#4	<63	1/64
SA11 #5	<1000	1/4096	SA12#11	<63	1/320	SA14#5	<63	1/256
SA11 #6	<1000	1/4096	SA12#12	<63	1/320	SA14#6	<63	1/256
SA11 #7	<1000	1/4096	SA12#13	<63	1/320	SA14#7	<63	1/64
SA11 #8	<1000	1/4096	SA13#1	63-1000	1/256	SA14#8	<63	1/64
SA11 #9	<1000	1/4096	SA13#2	63-1000	1/256	SA14#9	<63	1/64
SA11 #10	<1000	1/4096	SA13#3	63-1000	1/64	SA14#10	<63	1/64
SA11 #11	<1000	1/4096	SA13#4	63-1000	1/64	SA14#11	<63	1/64
SA11 #12	<1000	1/4096	SA13#5	63-1000	1/256	SA14#12	<63	1/16
SA11 #13	<1000	1/4096	SA13#6	63-1000	1/256	SA14#13	<63	1/16
SA11#1	<63	1/256	SA13#7	63-1000	1/64	SA15#1	63-1000	1/256
SA11#2	<63	1/256	SA13#8	63-1000	1/64	SA15#2	63-1000	1/256
SA11#3	<63	1/256	SA13#9	63-1000	1/64	SA15#3	63-1000	1/256
SA11#4	<63	1/256	SA13#10	63-1000	1/256	SA15#4	63-1000	1/64
SA11#5	<63	1/256	SA13#11	63-1000	1/64	SA15#5	63-1000	1/64
SA11#6	<63	1/256	SA13#12	63-1000	1/64	SA15#6	63-1000	1/256
SA11#7	<63	1/256	SA13#13	63-1000	1/256	SA15#7	63-1000	1/64
SA11#8	<63	1/256	SA13#1	<63	1/1280	SA15#8	63-1000	1/64
SA11#9	<63	1/256	SA13#2	<63	1/1280	SA15#9	63-1000	1/64
SA11#10	<63	1/256	SA13#3	<63	1/320	SA15#10	63-1000	1/64
SA11#11	<63	1/256	SA13#4	<63	1/320	SA15 #1	<1000	1/4096
SA11#12	<63	1/256	SA13#5	<63	1/1280	SA15 #2	<1000	1/4096
SA11#13	<63	1/256	SA13#6	<63	1/1280	SA15 #3	<1000	1/4096
SA12#1	63-1000	1/64	SA13#7	<63	1/320	SA15 #4	<1000	1/4096
SA12#2	63-1000	1/64	SA13#8	<63	1/320	SA15 #5	<1000	1/4096
SA12#3	63-1000	1/256	SA13#9	<63	1/320	SA15 #6	<1000	1/4096
SA12#4	63-1000	1/64	SA13#10	<63	1/1280	SA15 #7	<1000	1/4096
SA12#5	63-1000	1/64	SA13#11	<63	1/320	SA15 #8	<1000	1/4096
SA12#6	63-1000	1/64	SA13#12	<63	1/320	SA15 #9	<1000	1/4096
SA12#7	63-1000	1/64	SA13#13	<63	1/1280	SA15 #10	<1000	1/4096
SA12#8	63-1000	1/64	SA14#1	63-1000	1/64	SA15#1	<63	1/1280
SA12#9	63-1000	1/64	SA14#2	63-1000	1/64	SA15#2	<63	1/1280
SA12#10	63-1000	1/64	SA14#3	63-1000	1/64	SA15#3	<63	1/1280
SA12#11	63-1000	1/64	SA14#4	63-1000	1/64	SA15#4	<63	1/320
SA12#12	63-1000	1/64	SA14#5	63-1000	1/256	SA15#5	<63	1/320
SA12#13	63-1000	1/64	SA14#6	63-1000	1/256	SA15#6	<63	1/1280
SA12 #1	<1000	1/4096	SA14#7	63-1000	1/64	SA15#7	<63	1/320
SA12 #2	<1000	1/4096	SA14#8	63-1000	1/64	SA15#8	<63	1/64
SA12 #3	<1000	1/4096	SA14#9	63-1000	1/64	SA15#9	<63	1/320
SA12 #4	<1000	1/4096	SA14#10	63-1000	1/64	SA15#10	<63	1/320
SA12 #5	<1000	1/4096	SA14#11	63-1000	1/64	SA16#1	63-1000	1/64
SA12 #6	<1000	1/4096	SA14#12	63-1000	1/16	SA16#2	63-1000	1/64
SA12 #7	<1000	1/4096	SA14#13	63-1000	1/16	SA16#3	63-1000	1/64
SA12 #8	<1000	1/4096	SA14 #1	<1000	1/4096	SA16#4	63-1000	1/256
SA12 #9	<1000	1/4096	SA14 #2	<1000	1/4096	SA16#5-1	63-1000	1/256
SA12 #10	<1000	1/4096	SA14 #3	<1000	1/4096	SA16#5-2	63-1000	1/256
SA12 #11	<1000	1/4096	SA14 #4	<1000	1/4096	SA16#5-3 1/2	63-1000	1/64

Table 6 (Cont.)

Sample ID	Size (μm)	Aliquot size
SA16#5-3 2/2	63-1000	1/64
SA16#5-4	63-1000	1/64
SA16#6	63-1000	1/256
SA16#7	63-1000	1/64
SA16#8	63-1000	1/64
SA16#9 1/2	63-1000	1/64
SA16#9 2/2	63-1000	1/64
SA16#10 1/2	63-1000	1/64
SA16#10 2/2	63-1000	1/64
SA16#11	63-1000	1/64
SA16#12	63-1000	1/64
SA16#13	63-1000	1/64
SA16 #1	<1000	1/4096
SA16 #2	<1000	1/4096
SA16 #3	<1000	1/4096
SA16 #4	<1000	1/4096
SA16 #5	<1000	1/4096
SA16 #6	<1000	1/4096
SA16 #7	<1000	1/4096
SA16 #8	<1000	1/4096
SA16 #9	<1000	1/4096
SA16 #10	<1000	1/4096
SA16 #11	<1000	1/4096
SA16 #12	<1000	1/4096
SA16 #13	<1000	1/4096
SA16#1	<63	1/320
SA16#2	<63	1/320
SA16#3	<63	1/320
SA16#4	<63	1/1280
SA16#5-1	<63	1/1280
SA16#5-2	<63	1/1280
SA16#5-3	<63	1/320
SA16#5-4	<63	1/320
SA16#6	<63	1/1280
SA16#7	<63	1/160
SA16#8	<63	1/320
SA16#9	<63	1/320
SA16#10	<63	1/320
SA16#11	<63	1/320
SA16#12	<63	1/320
SA16#13	<63	1/320
SA17#1	63-1000	1/256
SA17#2	63-1000	1/256
SA17#3	63-1000	1/256
SA17#4	63-1000	1/256
SA17#5	63-1000	1/256
SA17#6	63-1000	1/256
SA17#7	63-1000	1/256
SA17#8	63-1000	1/256
SA17#9	63-1000	1/256
SA17#10	63-1000	1/256
SA17#11	63-1000	1/256
SA17#13	63-1000	1/256
SA17#14	63-1000	1/256
SA17#15	63-1000	1/256
SA17#16	63-1000	1/256
SA17#17	63-1000	1/256
SA17#18	63-1000	1/256
SA17#19	63-1000	1/256
SA17#20	63-1000	1/256
SA17#21	63-1000	1/256
SA17 #1	<1000	1/4096
SA17 #2	<1000	1/4096
SA17 #3	<1000	1/4096
SA17 #4	<1000	1/4096
SA17 #5	<1000	1/4096
SA17 #6	<1000	1/4096
SA17 #7	<1000	1/4096
SA17 #8	<1000	1/4096
SA17 #9	<1000	1/4096
SA17 #10	<1000	1/4096
SA17 #11	<1000	1/4096
SA17 #12	<1000	1/4096
SA17 #13	<1000	1/4096
SA17 #14	<1000	1/4096
SA17 #15	<1000	1/4096
SA17 #16	<1000	1/4096
SA17 #17	<1000	1/4096
SA17 #18	<1000	1/4096
SA17 #19	<1000	1/4096
SA17 #20	<1000	1/4096
SA17 #21	<1000	1/4096
SA18 #1	<1000	1/4096
SA18 #2	<1000	1/4096
SA18 #3	<1000	1/4096
SA18 #4	<1000	1/4096
SA18 #5	<1000	1/4096
SA18 #6	<1000	1/4096
SA18 #7	<1000	1/4096
SA18 #8	<1000	1/4096
SA18 #9	<1000	1/4096
SA18 #10	<1000	1/4096
SA18 #11	<1000	1/4096
SA18 #12	<1000	1/4096
SA19 #1	<1000	1/4096
SA19 #2	<1000	1/4096
SA19 #3	<1000	1/4096
SA19 #4	<1000	1/4096
SA19 #5	<1000	1/4096
SA19 #6	<1000	1/4096
SA19 #7	<1000	1/4096
SA19 #8	<1000	1/4096
SA19 #9	<1000	1/4096
SA19 #10	<1000	1/4096
SA19 #11	<1000	1/4096
SA19 #12	<1000	1/4096
SA19 #13	<1000	1/4096
SA19 #14	<1000	1/4096
SA19 #15	<1000	1/4096
SA19 #16	<1000	1/4096
SA19 #17	<1000	1/4096
SA19 #18	<1000	1/4096
SA19 #19	<1000	1/4096
SA19 #20	<1000	1/4096
SA19 #21	<1000	1/4096
SA2#2	63-125	1/64
SA2#4	63-125	1/64
SA2#5	63-125	1/64
SA2#6	63-125	1/64
SA2#8	63-125	1/64
SA3#2	63-125	1/64
SA3#3	63-125	1/64
SA3#4	63-125	1/64
SA3#5	63-125	1/64
SA3#8	63-125	1/64
SA3#11	63-125	1/64
SA4#1	63-125	1/64
SA4#4	63-125	1/64
SA4#6	63-125	1/64
SA4#8	63-125	1/64
SA4#9	63-125	1/64
SA4#10	63-125	1/64
SA4#11	63-125	1/64
SA5#1	63-125	1/64
SA5#2	63-125	1/64
SA5#3	63-125	1/64
SA5#4	63-125	1/64
SA5#5	63-125	1/64
SA5#6+#7	63-125	1/64
SA5#8	63-125	1/64
SA5#9	63-125	1/64
SA5#10	63-125	1/64

Table 7. List of archival microslides for Station AB.

Sample ID	Size (μm)	Aliquot size
AB1#1	63-1000	1/1024B
AB1#2	63-1000	1/1024B
AB1#3	63-1000	1/1024B
AB1#4	63-1000	1/1024a
AB1#4	63-1000	1/1024c
AB1#5	63-1000	1/1024B
AB1#6	63-1000	1/1024B
AB1#7	63-1000	1/1024B
AB1#8	63-1000	1/1024B
AB1#9	63-1000	1/1024B
AB1#10	63-1000	1/1024B
AB1#11	63-1000	1/1024B
AB1#12	63-1000	1/256b
AB1#12	63-1000	1/256c
AB1#1	<1000	1/1024

Table 7 (Cont.)

Sample ID	Size (μm)	Aliquot size	Sample ID	Size (μm)	Aliquot size	Sample ID	Size (μm)	Aliquot size
AB1#2	<1000	1/1024	AB2#5	<1000	1/4096	AB3#1	<63	1/4096D
AB1#3	<1000	1/1024	AB2#6	<1000	1/4096	AB3#1	<63	1/12288c
AB1#4	<1000	1/1024	AB2#7	<1000	1/4096	AB3#2	<63	1/4096D
AB1#5	<1000	1/1024	AB2#8	<1000	1/4096	AB3#2	<63	1/12288b
AB1#6	<1000	1/1024	AB2#9	<1000	1/4096	AB3#4	<63	1/1024
AB1#7	<1000	1/1024	AB2#10	<1000	1/4096	AB3#4	<63	1/1024d
AB1#8	<1000	1/1024	AB2#11	<1000	1/4096	AB3#9	<63	1/1024a
AB1#9	<1000	1/1024	AB2#12	<1000	1/4096	AB3#10	<63	1/1024A
AB1#10	<1000	1/1024	AB2#13	<1000	1/4096	AB3#11	<63	1/1024A
AB1#11	<1000	1/1024	AB3#1	63-1000	1/256c	AB4#1	63-1000	1/256
AB1#12	<1000	1/1024	AB3#1	63-1000	1/256D	AB4#2	63-1000	1/256
AB1#1	<1000	1/4096	AB3#2	63-1000	1/256c	AB4#3	63-1000	1/256
AB1#2	<1000	1/4096	AB3#2	63-1000	1/256D	AB4#4	63-1000	1/256
AB1#3	<1000	1/4096	AB3#3	63-1000	1/128	AB4#5	63-1000	1/256
AB1#4	<1000	1/4096	AB3#3	63-1000	1/256c	AB4#6	63-1000	1/256
AB1#5	<1000	1/4096	AB3#4	63-1000	1/256c	AB4#7	63-1000	1/256
AB1#6	<1000	1/4096	AB3#4	63-1000	1/1024A	AB4#8	63-1000	1/256
AB1#7	<1000	1/4096	AB3#5	63-1000	1/256c	AB4#9	63-1000	1/256
AB1#8	<1000	1/4096	AB3#6	63-1000	1/256c	AB4#10	63-1000	1/256
AB1#9	<1000	1/4096	AB3#7	63-1000	1/256c	AB4#11	63-1000	1/256
AB1#10	<1000	1/4096	AB3#8	63-1000	1/256c	AB4#12	63-1000	1/256
AB1#11	<1000	1/4096	AB3#9	63-1000	1/256c	AB4#1	<1000	1/1024
AB1#12	<1000	1/4096	AB3#10	63-1000	1/256c	AB4#2	<1000	1/1024
AB2#1	63-1000	1/256c	AB3#11	63-1000	1/256c	AB4#3	<1000	1/1024
AB2#2	63-1000	1/256c	AB3#12	63-1000	1/256c	AB4#4	<1000	1/1024
AB2#3	63-1000	1/256c	AB3#13	63-1000	1/256c	AB4#5	<1000	1/1024
AB2#4	63-1000	1/256c	AB3#3	63-1000	1/1024a	AB4#6	<1000	1/1024
AB2#5	63-1000	1/256c	AB3#4	63-1000	1/1024d	AB4#7	<1000	1/1024
AB2#6	63-1000	1/256D	AB3#8	63-1000	1/128	AB4#8	<1000	1/1024
AB2#7	63-1000	1/256B	AB3#8	63-1000	1/1024a	AB4#9	<1000	1/1024
AB2#7	63-1000	1/256C	AB3#9	63-1000	1/128	AB4#10	<1000	1/1024
AB2#8	63-1000	1/256c	AB3#9	63-1000	1/1024a	AB4#11	<1000	1/1024
AB2#9	63-1000	2/1024	AB3#10	63-1000	1/1024A	AB4#1	<1000	1/4096
AB2#9	63-1000	1/1024	AB3#10	63-1000	1/1024d	AB4#2	<1000	1/4096
AB2#9	63-1000	1/1024a	AB3#11	63-1000	1/1024A	AB4#3	<1000	1/4096
AB2#10	63-1000	1/256D	AB3#7	<1000	1/4096D	AB4#4	<1000	1/4096
AB2#11	63-1000	1/256D	AB3#1	<1000	1/1024	AB4#5	<1000	1/4096
AB2#12	63-1000	1/256D	AB3#2	<1000	1/1024	AB4#6	<1000	1/4096
AB2#13	63-1000	1/256b	AB3#3	<1000	1/1024	AB4#7	<1000	1/4096
AB2#13	63-1000	1/256c	AB3#4	<1000	1/1024	AB4#8	<1000	1/4096
AB2#13	63-1000	1/256D	AB3#5	<1000	1/1024	AB4#9	<1000	1/4096
AB2#1	<1000	1/1024	AB3#6	<1000	1/1024	AB4#10	<1000	1/4096
AB2#2	<1000	1/1024	AB3#7	<1000	1/1024	AB4#11	<1000	1/4096
AB2#3	<1000	1/1024	AB3#8	<1000	1/1024	AB4#1	<63	2/1024
AB2#4	<1000	1/1024	AB3#9	<1000	1/1024	AB4#1	<63	1/1024
AB2#5	<1000	1/1024	AB3#10	<1000	1/1024	AB4#1	<63	1/1024
AB2#6	<1000	1/1024	AB3#11	<1000	1/1024	AB4#2	<63	2/1024
AB2#7	<1000	1/1024	AB3#1	<1000	1/4096	AB4#2	<63	1/1024
AB2#8	<1000	1/1024	AB3#2	<1000	1/4096	AB4#2	<63	1/1024
AB2#9	<1000	1/1024	AB3#3	<1000	1/4096	AB4#3	<63	2/1024
AB2#10	<1000	1/1024	AB3#4	<1000	1/4096	AB4#3	<63	1/1024
AB2#11	<1000	1/1024	AB3#5	<1000	1/4096	AB4#3	<63	1/1024
AB2#12	<1000	1/1024	AB3#6	<1000	1/4096	AB4#4	<63	2/1024
AB2#13	<1000	1/1024	AB3#7	<1000	1/4096	AB4#4	<63	1/1024
AB2#1	<1000	1/4096	AB3#8	<1000	1/4096	AB4#4	<63	1/1024
AB2#2	<1000	1/4096	AB3#9	<1000	1/4096	AB4#5	<63	2/1024
AB2#3	<1000	1/4096	AB3#10	<1000	1/4096	AB4#5	<63	1/1024
AB2#4	<1000	1/4096	AB3#11	<1000	1/4096	AB4#5	<63	1/1024

Table 7 (Cont.)

Sample ID	Size (μm)	Aliquot size
AB4#6	<63	2/1024
AB4#6	<63	1/1024
AB4#6	<63	1/1024
AB4#7	<63	2/1024
AB4#7	<63	1/1024
AB4#7	<63	1/1024
AB4#8	<63	2/1024
AB4#8	<63	1/1024
AB4#8	<63	1/1024
AB4#9	<63	2/1024
AB4#9	<63	1/1024
AB4#9	<63	1/1024
AB4#10	<63	2/1024
AB4#10	<63	1/1024
AB4#10	<63	1/1024
AB4#11	<63	2/1024
AB4#11	<63	1/1024
AB4#11	<63	1/1024
AB4#12	<63	2/1024
AB4#12	<63	1/1024
AB4#12	<63	1/1024
AB5#1	63-1000	1/256
AB5#2	63-1000	1/256
AB5#3	63-1000	1/256
AB5#4	63-1000	1/256
AB5#5	63-1000	1/256
AB5#6	63-1000	1/256
AB5#7	63-1000	1/256
AB5#8	63-1000	1/256
AB5#9	63-1000	1/256
AB5#10	63-1000	1/256
AB5#11	63-1000	1/256
AB5#12	63-1000	1/256
AB5#13	63-1000	1/1024
AB5#1	<1000	1/1024
AB5#2	<1000	1/1024
AB5#3	<1000	1/1024
AB5#4	<1000	1/1024
AB5#5	<1000	1/1024
AB5#6	<1000	1/1024
AB5#7	<1000	1/1024
AB5#8	<1000	1/1024
AB5#9	<1000	1/1024
AB5#10	<1000	1/1024
AB5#11	<1000	1/1024
AB5#12	<1000	1/1024
AB5#13	<1000	1/1024
AB5#1	<1000	1/4096
AB5#2	<1000	1/4096
AB5#3	<1000	1/4096
AB5#4	<1000	1/4096
AB5#5	<1000	1/4096
AB5#6	<1000	1/4096
AB5#7	<1000	1/4096
AB5#8	<1000	1/4096
AB5#9	<1000	1/4096
AB5#10	<1000	1/4096
AB5#11	<1000	1/4096
AB5#12	<1000	1/4096
AB5#13	<1000	1/4096
AB5#1	<63	1/1024
AB5#2	<63	1/1024
AB5#3	<63	1/1024
AB5#4	<63	1/1024
AB5#5	<63	1/1024
AB5#6	<63	1/1024
AB5#7	<63	1/1024
AB5#8	<63	1/256
AB5#9	<63	1/256
AB5#10	<63	1/256
AB5#11	<63	1/256
AB5#12	<63	1/1024
AB5#13	<63	1/1024
AB6#1	63-1000	1/256B
AB6#2	63-1000	1/256B
AB6#3	63-1000	1/256B
AB6#5	63-1000	1/256B
AB6#6	63-1000	1/256B
AB6#7	63-1000	1/256B
AB6#8	63-1000	1/256B
AB6#9	63-1000	1/256B
AB6#10	63-1000	1/256B
AB6#11	63-1000	1/256B
AB6#12	63-1000	1/256B
AB6#13	63-1000	1/256B
AB6#1	63-1000	1/1024A
AB6#2	63-1000	1/1024B
AB6#3	63-1000	1/1024B
AB6#4	63-1000	1/1024B
AB6#5	63-1000	1/1024B
AB6#6	63-1000	1/1024B
AB6#7	63-1000	1/1024B
AB6#8	63-1000	1/1024B
AB6#9	63-1000	1/1024B
AB6#10	63-1000	1/1024B
AB6#11	63-1000	1/1024B
AB6#12	63-1000	1/1024B
AB6#13	63-1000	1/1024B
AB6#12	<1000	1/16384A
AB6#13	<1000	1/16384A
AB6#1	<1000	1/1024
AB6#2	<1000	1/1024
AB6#3	<1000	1/1024
AB6#4	<1000	1/1024
AB6#5	<1000	1/1024
AB6#6	<1000	1/1024
AB6#7	<1000	1/1024
AB6#8	<1000	1/1024
AB6#9	<1000	1/1024
AB6#10	<1000	1/1024
AB6#11	<1000	1/1024
AB6#12	<1000	1/1024
AB6#13	<1000	1/1024
AB6#1	<1000	1/4096
AB6#2	<1000	1/4096
AB6#3	<1000	1/4096
AB6#4	<1000	1/4096
AB6#5	<1000	1/4096
AB6#6	<1000	1/4096
AB6#7	<1000	1/4096
AB6#8	<1000	1/4096
AB6#9	<1000	1/4096
AB6#10	<1000	1/4096
AB6#11	<1000	1/4096
AB6#12	<1000	1/4096
AB6#13	<1000	1/4096
AB6#1	<63	1/256B
AB6#2	<63	1/256B
AB6#3	<63	1/256B
AB6#4	<63	1/256B
AB6#5	<63	1/256B
AB6#6	<63	1/256B
AB6#7	<63	1/256B
AB6#8	<63	1/256B
AB6#9	<63	1/256B
AB6#10	<63	1/256B
AB6#11	<63	1/256B
AB6#12	<63	1/256B
AB6#13	<63	1/256B
AB6#1	<63	1/1024A
AB6#2	<63	1/1024B
AB6#3	<63	1/1024B
AB6#4	<63	1/1024B
AB6#5	<63	1/1024B
AB6#6	<63	1/1024B
AB6#7	<63	1/1024A
AB6#8	<63	1/1024B
AB6#9	<63	1/1024B
AB6#10	<63	1/1024B
AB6#11	<63	1/1024B
AB6#12	<63	1/1024B
AB6#13	<63	1/1024B
AB6#9	<63	1/4096B
AB6#10	<63	1/4096B
AB7#1	63-1000	1/256B
AB7#2	63-1000	1/256B
AB7#3	63-1000	1/256B
AB7#4	63-1000	1/256B
AB7#5	63-1000	1/256B
AB7#6	63-1000	1/256B
AB7#7	63-1000	1/256B
AB7#8	63-1000	1/256B
AB7#9	63-1000	1/256B
AB7#10	63-1000	1/256B
AB7#11	63-1000	1/256B
AB7#12	63-1000	1/256B
AB7#13	63-1000	1/256B
AB7#1	<1000	1/1024
AB7#2	<1000	1/1024
AB7#3	<1000	1/1024
AB7#4	<1000	1/1024
AB7#5	<1000	1/1024
AB7#6	<1000	1/1024
AB7#7	<1000	1/1024

Table 7 (Cont.)

Sample ID	Size (μm)	Aliquot size
AB7#8	<1000	1/1024
AB7#9	<1000	1/1024
AB7#10	<1000	1/1024
AB7#11	<1000	1/1024
AB7#12	<1000	1/1024
AB7#13	<1000	1/1024
AB7#1	<1000	1/4096
AB7#2	<1000	1/4096
AB7#3	<1000	1/4096
AB7#4	<1000	1/4096
AB7#5	<1000	1/4096
AB7#6	<1000	1/4096
AB7#7	<1000	1/4096
AB7#8	<1000	1/4096
AB7#9	<1000	1/4096
AB7#10	<1000	1/4096
AB7#11	<1000	1/4096
AB7#12	<1000	1/4096
AB7#13	<1000	1/4096
AB7#1	<63	1/1024
AB7#5	<63	1/1024
AB7#6	<63	1/1024
AB7#7	<63	1/1024
AB7#8	<63	1/1024
AB7#9	<63	1/1024
AB7#10	<63	1/1024
AB7#11	<63	1/1024
AB7#12	<63	1/1024
AB7#13	<63	1/1024
AB8#1	63-1000	1/256B
AB8#2	63-1000	1/256B
AB8#3	63-1000	1/256B
AB8#4	63-1000	1/256B
AB8#5	63-1000	1/256B
AB8#6	63-1000	1/256B
AB8#7	63-1000	1/256B
AB8#8	63-1000	1/256B
AB8#9	63-1000	1/256B
AB8#10	63-1000	1/256B
AB8#11	63-1000	1/256B
AB8#12	63-1000	1/256B
AB8#13	63-1000	1/256B
AB8#1	<1000	1/1024
AB8#2	<1000	1/1024
AB8#3	<1000	1/1024
AB8#4	<1000	1/1024
AB8#5	<1000	1/1024
AB8#6	<1000	1/1024
AB8#7	<1000	1/1024
AB8#8	<1000	1/1024
AB8#9	<1000	1/1024
AB8#10	<1000	1/1024
AB8#11	<1000	1/1024
AB8#12	<1000	1/1024
AB8#13	<1000	1/1024
AB8#1	<1000	1/4096
AB8#2	<1000	1/4096
AB8#3	<1000	1/4096
AB8#4	<1000	1/4096
AB8#5	<1000	1/4096
AB8#6	<1000	1/4096
AB8#7	<1000	1/4096
AB8#8	<1000	1/4096
AB8#9	<1000	1/4096
AB8#10	<1000	1/4096
AB8#11	<1000	1/4096
AB8#12	<1000	1/4096
AB8#13	<1000	1/4096
AB8#1	<63	1/4096
AB8#2	<63	1/4096
AB8#3	<63	1/4096
AB8#4	<63	1/4096
AB8#5	<63	1/4096
AB8#6	<63	1/4096
AB8#7	<63	1/4096
AB8#8	<63	1/4096
AB8#9	<63	1/4096
AB8#10	<63	1/4096
AB8#11	<63	1/4096
AB8#12	<63	1/4096
AB8#13	<63	1/4096
AB9#1	63-1000	1/256C
AB9#2	63-1000	1/256C
AB9#3	63-1000	1/256C
AB9#4	63-1000	1/256C
AB9#5	63-1000	1/256C
AB9#6	63-1000	1/256C
AB9#7	63-1000	1/256C
AB9#8	63-1000	1/256C
AB9#9	63-1000	1/256C
AB9#10	63-1000	1/256C
AB9#11	63-1000	1/256C
AB9#12	63-1000	1/256C
AB9#13	63-1000	1/256C
AB9#1	<1000	1/4096
AB9#2	<1000	1/4096
AB9#3	<1000	1/4096
AB9#4	<1000	1/4096
AB9#5	<1000	1/4096
AB9#6	<1000	1/4096
AB9#7	<1000	1/4096
AB9#8	<1000	1/4096
AB9#9	<1000	1/4096
AB9#10	<1000	1/4096
AB9#11	<1000	1/4096
AB9#12	<1000	1/4096
AB9#13	<1000	1/4096
AB9#1	<63	1/1024
AB9#2	<63	1/1024
AB9#3	<63	1/1024
AB9#4	<63	1/1024
AB9#5	<63	1/1024
AB9#6	<63	1/1024
AB9#7	<63	1/1024
AB9#8	<63	1/1024
AB9#9	<63	1/1024
AB9#10	<63	1/1024
AB9#11	<63	1/1024
AB9#12	<63	1/1024
AB9#13	<63	1/1024
AB9#1	<63	1/4096
AB9#2	<63	1/4096
AB9#3	<63	1/4096
AB9#4	<63	1/4096
AB9#5	<63	1/4096
AB9#6	<63	1/4096
AB9#7	<63	1/4096
AB9#8	<63	1/4096
AB9#9	<63	1/4096
AB9#10	<63	1/4096
AB9#11	<63	1/4096
AB9#12	<63	1/4096
AB9#13	<63	1/4096
AB14#1	63-1000	1/64
AB14#2	63-1000	1/64
AB14#3	63-1000	1/256
AB14#4	63-1000	1/256
AB14#5	63-1000	1/256
AB14#6	63-1000	1/256
AB14#7	63-1000	1/256
AB14#8	63-1000	1/256
AB14#9	63-1000	1/256
AB14#10	63-1000	1/256
AB14#11	63-1000	1/64
AB14#12	63-1000	1/64
AB14#13	63-1000	1/64
AB14#14	63-1000	1/64
AB14#15	63-1000	1/256
AB14#16	63-1000	1/256
AB14#17	63-1000	1/256
AB14#18	63-1000	1/256
AB14#19	63-1000	1/256
AB14#20	63-1000	1/16
AB14#21	63-1000	1/16
AB14#1	<1000	1/4096
AB14#2	<1000	1/4096
AB14#3	<1000	1/4096
AB14#4	<1000	1/4096
AB14#5	<1000	1/4096
AB14#6	<1000	1/4096
AB14#7	<1000	1/4096
AB14#8	<1000	1/4096
AB14#9	<1000	1/4096
AB14#10	<1000	1/4096
AB14#11	<1000	1/4096
AB14#12	<1000	1/4096
AB14#13	<1000	1/4096
AB14#14	<1000	1/4096
AB14#15	<1000	1/4096
AB14#16	<1000	1/4096
AB14#17	<1000	1/4096
AB14#18	<1000	1/4096
AB14#19	<1000	1/4096
AB14#1	<63	1/320

Table 7 (Cont.)

Sample ID	Size (μm)	Aliquot size
AB14#2	<63	1/320
AB14#3	<63	1/1280
AB14#4	<63	1/1280
AB14#5	<63	1/1280
AB14#6	<63	1/1280
AB14#7	<63	1/1280
AB14#8	<63	1/1280
AB14#9	<63	1/1280
AB14#10	<63	1/1280
AB14#11	<63	1/320
AB14#12	<63	1/320
AB14#13	<63	1/320
AB14#14	<63	1/320
AB14#15	<63	1/1280
AB14#16	<63	1/1280
AB14#17	<63	1/1280
AB14#18	<63	1/1280
AB14#19	<63	1/1280
AB14#20	<63	1/16
AB14#21	<63	1/16
AB15#1	63-1000	1/256
AB15#2	63-1000	1/256
AB15#3	63-1000	1/256
AB15#4	63-1000	1/64
AB15#5	63-1000	1/64
AB15#6	63-1000	1/64
AB15#7	63-1000	1/64
AB15#8	63-1000	1/64
AB15#9	63-1000	1/256
AB15#10	63-1000	1/64
AB15#1	<1000	1/4096
AB15#2	<1000	1/4096
AB15#3	<1000	1/4096
AB15#4	<1000	1/4096
AB15#5	<1000	1/4096
AB15#6	<1000	1/4096
AB15#7	<1000	1/4096
AB15#8	<1000	1/4096
AB15#9	<1000	1/4096
AB15#10	<1000	1/4096
AB15#1	<63	1/1280
AB15#2	<63	1/1280
AB15#3	<63	1/1280
AB15#4	<63	1/320
AB15#5	<63	1/320
AB15#6	<63	1/320
AB15#7	<63	1/320
AB15#8	<63	1/320
AB15#9	<63	1/1280
AB15#10	<63	1/320
AB16#1	63-1000	1/256
AB16#2	63-1000	1/256
AB16#3	63-1000	1/256
AB16#4	63-1000	1/256
AB16#5	63-1000	1/256
AB16#6	63-1000	1/256
AB16#7	63-1000	1/256
AB16#8	63-1000	1/256
AB16#9	63-1000	1/256
AB16#10	63-1000	1/256
AB16#11	63-1000	1/64
AB16#12	63-1000	1/64
AB16#13	63-1000	1/64
AB16#14	63-1000	1/64
AB16#15	63-1000	1/64
AB16#16	63-1000	1/64
AB16#17	63-1000	1/64
AB16#18	63-1000	1/64
AB16#19	63-1000	1/256
AB16#20	63-1000	1/64
AB16#21	63-1000	1/64
AB16#1	<1000	1/4096
AB16#2	<1000	1/4096
AB16#3	<1000	1/4096
AB16#4	<1000	1/4096
AB16#5	<1000	1/4096
AB16#6	<1000	1/4096
AB16#7	<1000	1/4096
AB16#8	<1000	1/4096
AB16#9	<1000	1/4096
AB16#10	<1000	1/4096
AB16#11	<1000	1/4096
AB16#12	<1000	1/4096
AB16#13	<1000	1/4096
AB16#14	<1000	1/4096
AB16#15	<1000	1/4096
AB16#16	<1000	1/4096
AB16#17	<1000	1/4096
AB16#18	<1000	1/4096
AB16#19	<1000	1/4096
AB16#20	<1000	1/4096
AB16#21	<1000	1/4096
AB16#1	<63	1/1280
AB16#2	<63	1/1280
AB16#3	<63	1/1280
AB16#4	<63	1/1280
AB16#5	<63	1/1280
AB16#6	<63	1/1280
AB16#7	<63	1/1280
AB16#8	<63	1/1280
AB16#9	<63	1/1280
AB16#10	<63	1/1280
AB16#11	<63	1/320
AB16#12	<63	1/320
AB16#13	<63	1/320
AB16#14	<63	1/320
AB16#15	<63	1/320
AB16#16	<63	1/320
AB16#17	<63	1/320
AB16#18	<63	1/320
AB16#19	<63	1/1280
AB16#20	<63	1/320
AB16#21	<63	1/320
AB18#1	<1000	1/4096
AB18#2	<1000	1/4096
AB18#3	<1000	1/4096
AB18#4	<1000	1/4096
AB18#5	<1000	1/4096
AB18#6	<1000	1/4096
AB18#7	<1000	1/4096
AB18#8	<1000	1/4096
AB18#9	<1000	1/4096
AB18#10	<1000	1/4096
AB18#11	<1000	1/4096
AB18#12	<1000	1/4096
AB18#13	<1000	1/4096
AB18#14	<1000	1/4096
AB18#15	<1000	1/4096
AB19#1	<1000	1/4096
AB19#2	<1000	1/4096
AB19#3	<1000	1/4096
AB1#2	63-125	1/64
AB1#3	63-125	1/64
AB1#4	63-125	1/64
AB1#6	63-125	1/64
AB1#7	63-125	1/64
AB1#8	63-125	1/64
AB1#9	63-125	1/64
AB1#10	63-125	1/64
AB1#11	63-125	1/64
AB1#12	63-125	1/64
AB2#1	63-125	1/64
AB2#2	63-125	1/64
AB2#3	63-125	1/64
AB2#4	63-125	1/64
AB2#5	63-125	1/64
AB2#6	63-125	1/64
AB2#7	63-125	1/64
AB2#8	63-125	1/64
AB2#9	63-125	1/64
AB2#12	63-125	1/64
AB2#13	63-125	1/64
AB3#1	63-125	1/64
AB3#2	63-125	1/64
AB3#3	63-125	1/64
AB3#4	63-125	1/64
AB3#5	63-125	1/64
AB3#6	63-125	1/64
AB3#7	63-125	1/64
AB3#8	63-125	1/64
AB3#9	63-125	1/64
AB3#10	63-125	1/64
AB3#11	63-125	1/64
AB4#1	63-125	1/64
AB4#2	63-125	1/64
AB4#4	63-125	1/64
AB4#5	63-125	1/64
AB4#6	63-125	1/64
AB4#7	63-125	1/64
AB4#8	63-125	1/64
AB4#9	63-125	1/64
AB4#10	63-125	1/64
AB4#11	63-125	1/64

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Alkaline leaching characteristics of biogenic opal in IODP drilled cores from the Bering Sea

Shinya Iwasaki, Kozo Takahashi and Yoshiyuki Kanematsu

Abstract

Leaching characteristics of biogenic opal in alkaline solutions were studied for Bering Sea sediment samples from the cores obtained during Integrated Ocean Drilling Program (IODP) Expedition 323. Generally, biogenic opal content is measured after alkaline leaching using Na_2CO_3 solution. Biogenic opal in some sediment samples could not be completely leached by Na_2CO_3 solutions, particularly in the deeper sections depending on sites: below the depth of ca. 122 m (CCSF-A) with 1.1 Ma at Site U1341 and ca. 211 m (CCSF-A) with 0.8 Ma at Site U1343. Strong alkaline 2M and 4M NaOH solutions were used instead of the standard Na_2CO_3 solution. As a result of the time-series leaching analysis, silicon contribution rates from clay minerals and other detrital grains were estimated in each of the methods employing two different concentrations of NaOH solutions. This made possible to correct for silicon contribution of clay minerals and other detrital grains.

Keywords: Biogenic opal, alkaline leaching, IODP Expedition 323, Bering Sea, diagenesis, Sites U1341 and U1343

1. Introduction

The Bering Sea is known as one of the North Pacific marginal seas with a high biological productivity and high biogenic opal fluxes with its key location between the Pacific Ocean and the Arctic Ocean for the surface water circulation (Fig. 1). The changes in biological productivity and consequent biogenic opal fluxes are considered to be well governed by the change in sea surface conditions. From these points of views, the Bering Sea is a suitable region to study the evolution of paleoceanographic changes that are relevant to the global context during the Pliocene to Peistocene (Takahashi et al., 2011a, b).

The primary objectives of IODP Expedition 323 were to characterize changes that occurred in the Bering Sea around the times of: (1) the onset of the Northern Hemisphere Glaciation (NHG, ca. 2.7 Ma); (2) the Mid Pleistocene Transition (MPT, ca. 1 Ma); and (3) glacial-interglacial cycles (<1 Ma). During IODP Expedition 323, a total of seven sites were drilled in the Bering Sea. Among them four sites were drilled in the area of the Bering slope, and three sites were drilled on Bowers Ridge. The cores from these sites are mostly obtained by advanced piston coring (APC) with triple holes in the upper section in order to fill core-to-core gaps by splicing pertinent cores. Hence they allow us to study high resolution reconstruction of the Pliocene-Pleistocene record.

Biogenic opal is one of the most important and useful indicators that depict productivity capacity in the oceans (e.g., Leinen et al., 1986). Diatoms, radiolarians, silicoflagellates and sponge spicules are the primary constituents of biogenic opal. In the subarctic Pacific and its northern marginal seas, it is known that the export of diatoms is especially high (Takahashi et al., 2000, 2002; Honjo et al., 2010). Thus, it is anticipated that in the Bering Sea, diatom frustules make up the main component of biogenic opal, which can also shed light on past changes in primary productivity. Because that diatom productivity is influenced by surface water structure, water circulation and sea-ice cover, such conditions can be reconstructed in part by measuring biogenic opal content.

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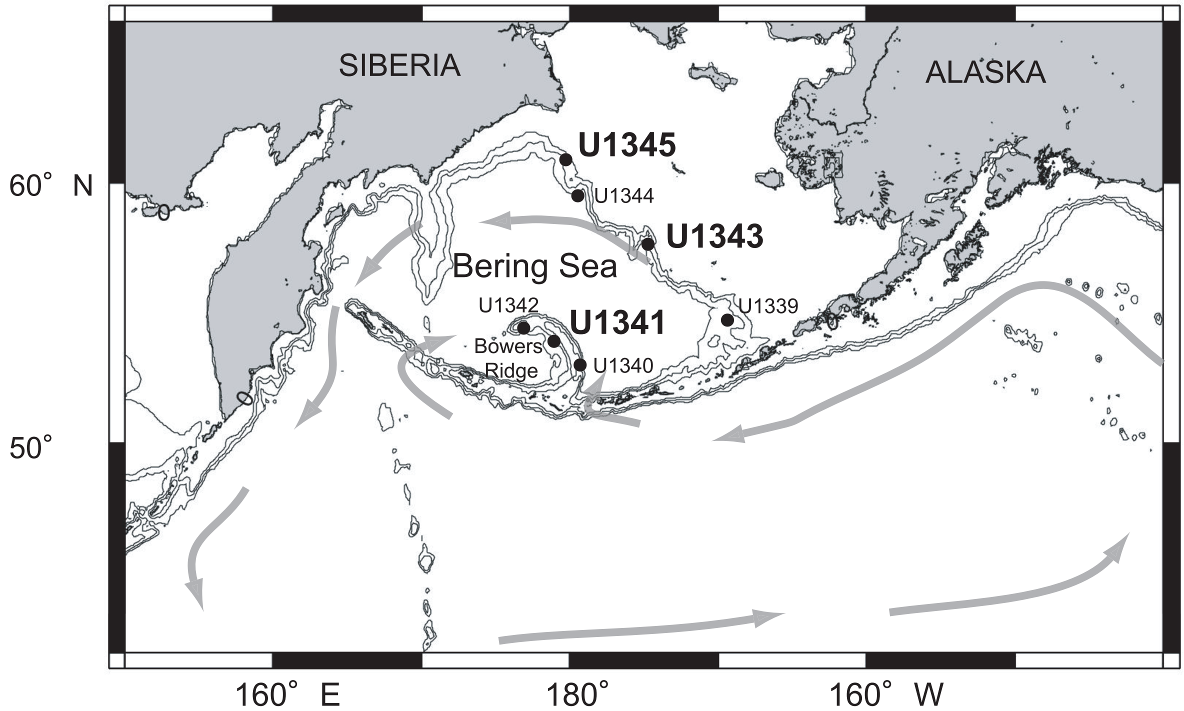

Fig. 1. Topographic map showing the locations of Site U1341, U1343 and U1345 together with all other sites of IODP Expedition 323 in the Bering Sea. Arrows show the direction of the major surface currents (Map drawn by "Online Map Creation").

To measure biogenic opal contents in the Bering Sea sediments the leaching characteristics of the sediment was investigated. Two molar Na_2CO_3 solution has been conventionally employed to dissolve biogenic opal in sediments (e.g., Okazaki et al., 2005; Iwasaki et al., 2012). In our study, however, as the depth in the sediment section goes deeper with increasing ages, we encountered the situations in which it was not possible to dissolve biogenic opal matter sufficiently by the standard method with the Na_2CO_3 solution. This is considered to be due to diagenesis of the biogenic opal transformation from opal-A into opal-CT (e.g., Hein et al., 1978). Therefore, in this paper we employed two solutions of different concentrations of NaOH to see how sufficiently biogenic opal was leached.

2. Materials and Methods

2.1. Drilled cores

Among the seven sites drilled in the Bering Sea during IODP Expedition 323, Sites U1340, U1341 and U1342 were drilled on Bowers Ridge. In particular, Site U1341 is located at 2,177 m water depth in the western slope of Bowers Ridge, and this site was drilled to 600 meters below sea-floor (mbsf) with a more or less complete record of the last 4.3 Myrs (Takahashi et al., 2011b). On the other hand, Sites U1339, U1343, U1344 and U1345 are located in the area of high biological productivity called the "Green Belt". The Green Belt is formed along the Bering Slope, whose water mass originates from the Alaskan Stream water that flows into the Bering Sea. Among the four sites which were drilled in the Bering Slope, the bottom cored depth of drilled Site U1343, with water depth of 1,986 m, is 745 mbsf with the bottom age of approximately 2.4 Ma. Site U1345 is the most northerly located one of all sites and its water depth is 1,020 m. This site was drilled to 150 mbsf with its bottom age of 0.5 Ma (Takahashi, 2011a). In this study, we used these three drilled sites (U1341, U1343 and U1345) to discuss the leaching of biogenic opal in the drilled cores from IODP Expedition 323.

2.2. Leaching methods

A sediment sample was crushed into fine powder in a mortar with a pestle after being freeze-dried at −45 ºC for 24 h. After the sample was dried, solutions of 10% H_2O_2 and 1 N HCl were added to 10 mg of the sample in a polypropylene centrifuge tube to remove organic material and calcium carbonate. Biogenic opal was leached using two types of 10.0 ml alkaline solutions (2M or 4M NaOH, depending of the depth of the samples) at 85 ºC for 5 h, followed by molybdate-yellow spectrophotometry with a Shimazu UV Mini-1240 Spectrophotometer. The measured values were expressed in weight percent (wt%) biogenic opal. First, weight percent silicon (%Si) was calculated by equation (1), based on measured silicon concentration (C_{Si}). Next, the values were converted to weight percent biogenic opal (%biogenic opal) using the equation (2) (Mortlock and Froelich, 1989).

$\%Si = 100\times(CSi\times V\times 10^{-3}\times 28.09/M)$ … (1)
%Si (wt%)…Weight percent silicon
C_{Si} (mM)…Silicon concentration
V (ml)…Volume of solution
M (mg)…Sample mass

$\%Biogenic\ opal=2.4\times(\%Si - \%Lsi\times T)$ …(2)
%Bogenic opal (wt%)…Weight percent biogenic opal
%Si (wt%)…Weight percent silicon
%Lsi (wt%/h)…Dissolution rate of silicon derived from clay and other detrital grains
T (h)…Dissolution time

3. Discussion

3.1. Diagenesis of biogenic opal and leaching with NaOH

It is known that biogenic opal in the deep-sea is often transformed from opal-A to opal-CT by the effect of diagenesis (caused by e.g., temperature and pressure) in the deeper part of sedimentary record (e.g., Hein et al., 1978). The effect of diagenesis is thought to cause dissolution and reprecipitation of biogenic opal. In fact, such a diagenesis has already been recognized during IODP Expedition 323 (Takahashi et al., 2011a). We initially attempted to leach biogenic opal with 2 M Na_2CO_3 solution of the standard leaching method (Mortlock and Froelich, 1989) for the samples from both Sites U1341 and U1343. However, it turned out that substantial amount of biogenic opal had been left unleached with the Na_2CO_3 solution in many samples, which were determined by microscopic examinations. In particular, we found that some sponge spicules in samples near the bottom of the holes at Sites U1341 and U1343 were sometimes hard to completely dissolve with the Na_2CO_3 solution and hence they were still present in residues after leaching. In the case of the samples from Site U1341 we found that the opal-diagenesis was apparent below the depth of ~122 m (CCSF-A), whose age is 1.1 Ma.

In order to overcome of the problematic situation with the Na_2CO_3 leaching we employed NaOH solutions for the leaching process. For the samples from Site U1341, 10 ml of 2M NaOH solution was used for leaching biogenic opal in the samples from relatively shallow depths (0-122 m CCSF-A, 1.1 Ma) and 10 ml of 4M NaOH solution was used for the samples from deeper depths (below 122 m CCSF-A). At Site U1343 on the other hand, 10ml of 2M NaOH solution was used for the samples from shallower depths (0-210.6 m CCSF-A, 0.8 Ma) and 10 ml of 4M NaOH solution was used for the deeper samples (below 210.6 m CCSF-A). For the samples from Site U1345, 2M NaOH solution was used (0-162 m CCSF-A, 0.5 Ma). Reproducibility of the measurements was assessed based on replicated measurements of the representative samples without further correction for lithogenic matter for both the methods (2M and 4M NaOH), precision average was generally better than ±4 wt% for the method with the 2M NaOH solution, and ±6 wt% for the 4M NaOH solution.

Based on the analyses employing 2 M Na_2CO_3 solution and 2M and 4M NaOH solutions it was possible to determine the shallowest depths at which biogenic opal diagenisis began to occur at IODP Expedition 323 sites. For example, %biogenic opal values for identical samples from Site U1341 employing the two different extraction procedures showed substantial difference in biogenic opal values depending on the depths of samples (Fig. 2). Such a piece of information on the opal diagenetic front is quite important for geochemistry of sediments.

3.2. Correction for dissolved silicon derived from lithogenic matter

Generally, NaOH solutions are reported to dissolve a greater amount of silicon from lithogenic matter than the method with Na_2CO_3 solution (e.g., Eggimann et al., 1980; Paasche, 1980). The correction for the dissolved silicon released from the lithogenic matter during the extraction process of biogenic opal is necessary. Thus, we determined the dissolution of silica from clay minerals and other lithogenic matter using time-series extractions. The separation of biogenic opal from lithogenic silica is based on the different leaching characteristics of the two phases: relatively fast dissolution of biogenic opal and rather continuous and constant dissolution of silica in lithogenic matter (DeMaster, 1981). Therefore, it is anticipated that only small amount of dissolved silicon from lithogenic matter is included in the measured %biogenic opal values (wt%) at 85 ºC for 5 h. To confirm this, we measured the dissolved silicon in several batches of alkaline extraction with varying in duration (1-8 h). The results showed the dissolution rates of silica from lithogenic matter in the specific samples based on each of the leaching procedures (2M and 4M NaOH: Fig. 3). According to the visual microscopic examination, leaching of biogenic opal was completed during the 5 h alkaline extraction with 2M and 4M NaOH solutions. Thus, it is considered that the leached dissolved silicon after the 5 h alkaline extraction is derived mostly from lithogenic matter. Based on this consideration, we estimated dissolution rate of silica from lithogenic matter as follows: 0.38 (wt% h^{-1}) for 2M NaOH solution and 0.78 (wt% h^{-1}) for 4M NaOH solution. These values are useful in correcting for the influence by lithogenic matter.

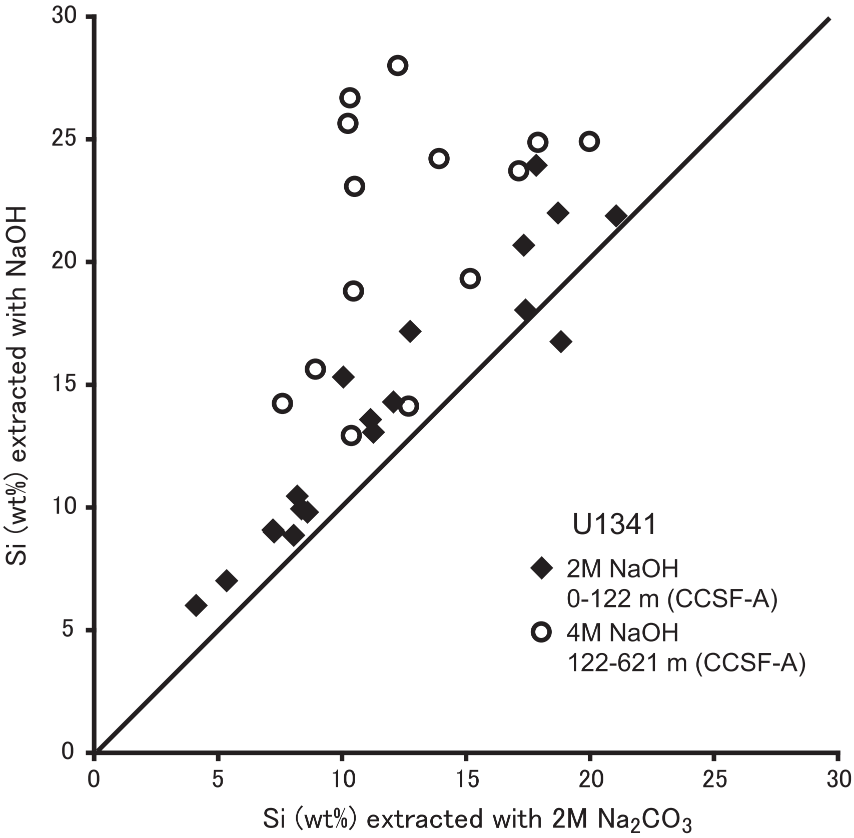

Fig. 2. Plot of silica extracted with NaOH solutions versus that with a Na_2CO_3 solution. Samples were selected at random from 0-122 m and 122-621 m (CCSF-A), respectively. The diagonal straight line represents the one to one correspondence between the two different methods employing the NaOH and Na_2CO_3 solutions.

4. Conclusions

In this study, leaching characteristics of biogenic opal in alkaline solutions were investigated for Bering Sea sediment samples. It was revealed that leaching characteristics of biogenic opal in sediment samples were different depending on depth/age due to diagenesis in the sediments. We reached the conclusion that it is necessary to employ the suitable alkaline solutions in order to measure biogenic opal content. Particularly, in the case of sample analysis of IODP Expedition 323 sediments, we suggest the use of two types of alkaline solutions depending on the depth of samples as follows. First, for the samples from Site U1341, 10 ml of 2M NaOH for shallower depths (0-122 m CCSF-A, 1.1 Ma) and 10 ml of 4M NaOH for deeper depths (below 122 m CCSF-A)

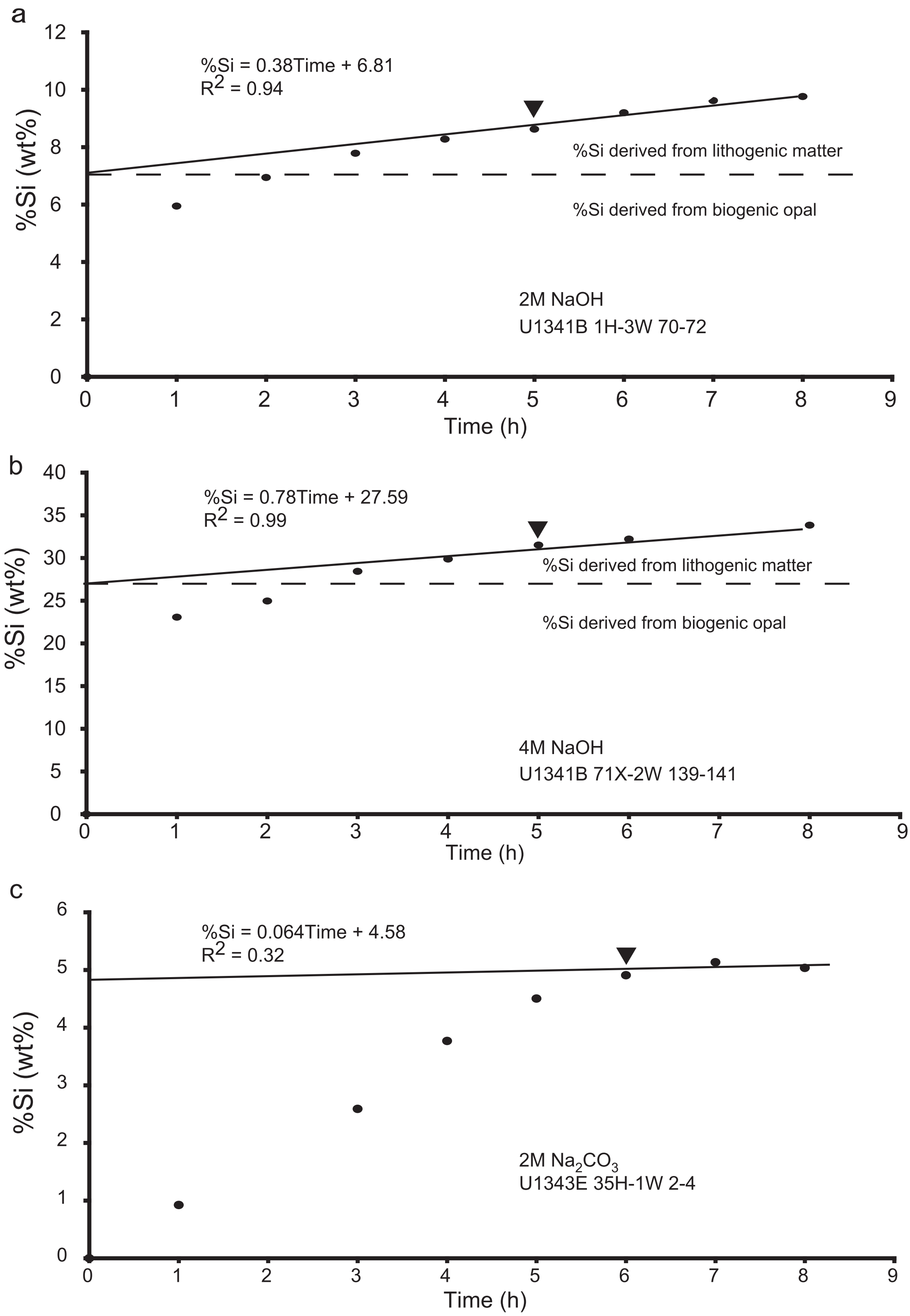

Fig. 3. Examples of the obtained %Si (wt%) versus time (h) plots for 85ºC with different concentrations of alkaline leaching of biogenic opal. (a) The leaching with 2M NaOH solution for Sample U1341B 1H-3W, 70-72 cm [0.03 Ma]; (b) The leaching with 4M NaOH solution for Sample U1341B 71X-2W, 139-141 cm [4.23 Ma]; (c) The leaching with 2M Na_2CO_3 solution for Sample U1343E 35H-1W, 2-4 cm [1.17 Ma]. The triangles show the earliest samples in the time-series leaching with absence of biogenic opal, based on visual microscopic examinations. The diagonal straight lines are the regression lines through the data obtained between; 5-8 h (a-b) and 6-8 h (c) of leaching, and the equations of the regression line are also shown. The level lines show the calculated %Si.

are recommended. Second, at Site U1343, 10 ml of 2M NaOH for shallower depths (0-210.6 m CCSF-A, 0.8 Ma) and 10 ml of 4M NaOH for deeper depths (below 210.6 m CCSF-A) are recommended. Finally, at Site U1345, 10 ml of 2M NaOH is recommended for the entire section (0-162 m CCSF-A, 0.5 Ma). However, a more detail examination is needed at each of the sites for the exact determination of the demarcation depths between with or without the diagenesis. Furthermore, because we employed NaOH solutions for alkaline leaching in this study, the dissolution rates of silica in lithogenic matter were calculated. This, enabled us to obtain most desirable values which we confidently defined as biogenic opal. The methods described here will be useful for the future measurements of other drilled cores in the region as well as others.

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Long-term observations of iron-oxyhydroxide-rich reddish-brown water in Nagahama Bay, Satsuma Iwo-Jima Island, Kagoshima, Japan

Takuya Ueshiba and Shoichi Kiyokawa

Abstract

Nagahama Bay, in the southern part of Satsuma Iwo-Jima Island (38 km south of Kyushu Island, Japan), contains an active hydrothermal system along the beach and at the fishing port. The construction of a breakwater around the bay has resulted in a semi-closed body of water with an entrance from the south. From this bay, reddish-brown seawater enriched in iron-oxyhydroxides is discharged to the Pacific Ocean constantly. The greenish-blue seawater of the Pacific Ocean occasionally enters the bay and mixes with the reddish-brown water. The daily flow pattern of the reddish-brown seawater in the bay has been monitored previously during storms and periods of heavy rain. However, greenish-blue seawater is sometimes observed in the bay at low tide. Therefore, we monitored the color of the sea surface and water at the seafloor for periods of 26 and 12 days during spring and autumn, respectively, using automatic still cameras to compare the water color with meteorological data recorded at Iwo-Jima Island.

The results show that a southerly wind is associated with the trapping of reddish-brown surface water in the bay. In contrast, a northerly wind brings greenish-blue water from the open ocean into the bay, even at low tide. The factors that control the color of seawater in Nagahama Bay are not only the tidal cycle and storm waves, but also wind speed and direction.

Keywords: Satsuma Iwo-Jima Island, iron-oxyhydroxides, hydrothermal system, shallow-water, tide, wind

1. Introduction

Iron deposits of various ages are found in many regions worldwide (Robb, 2005); however, little is known about the mechanism of iron sedimentation (Konhauser et al., 2002), especially the details of the suspension of iron hydroxide in seawater and its mode of accumulation on the seafloor.

Nagahama Bay on Satsuma Iwo-Jima Island, Japan, contains iron-rich reddish-brown seawater and modern-day hydrothermal iron-oxyhydroxide sediments on the seafloor (Nagata, 2011). Observations of turbidity in the bay have shown that the seawater color is controlled by tidal level, storm waves, and heavy rain (Ninomiya and Kiyokawa, 2009; Kiyokawa et al., in press); however, greenish-blue seawater is observed in the bay at low tide during periods of fine weather, and this cannot be explained by previous models of the daily flow pattern of iron-rich reddish-brown seawater in the bay. Moreover, no previous study has compared the seawater color in the bay with meteorological data. In this study, we observed the daily flow pattern of reddish-brown iron-rich water in Nagahama Bay for 26 days in autumn and 12 days in spring using one or two automatic still cameras, in order to compare the pattern of color change in the seawater with the record of wind speed and direction.

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2. Location and geology of Nagahama Bay

Nagahama Bay, Satsuma Iwo-Jima Island, is located about 38 km south of Kyushu Island, Japan (Fig. 1). Iwo-Jima Island contains the Kikai-caldera rim, extending NE–SW (Matumoto, 1943), and two active volcanoes: the rhyolitic Iwo-dake and basaltic Inamura-dake (Ono et al., 1982). Reddish-brown to white water is discharged from the eastern and southern coasts of Satsuma Iwo-Jima Island. These waters are colored because they contain complex molecules of Si–Fe–Al after neutralization of hot spring waters with seawater (Nogami et al., 1993). The reddish-brown iron-oxyhydroxide-rich seawater remains on the surface, maintaining the high temperature of the hot spring water. In Nagahama Bay, therefore, the reddish-brown seawater overlies colder seawater from the open ocean (Ninomiya and Kiyokawa, 2009). A large volume of reddish-brown seawater containing iron-oxyhydroxides is constantly discharged from Nagahama Bay to the open ocean (Sikaura and Tazaki, 2001); however, the construction of a breakwater in the bay, to protect against strong waves, means that the reddish-brown seawater is retained in the bay to a greater degree than at other parts of the coast around Iwo-Jima Island.

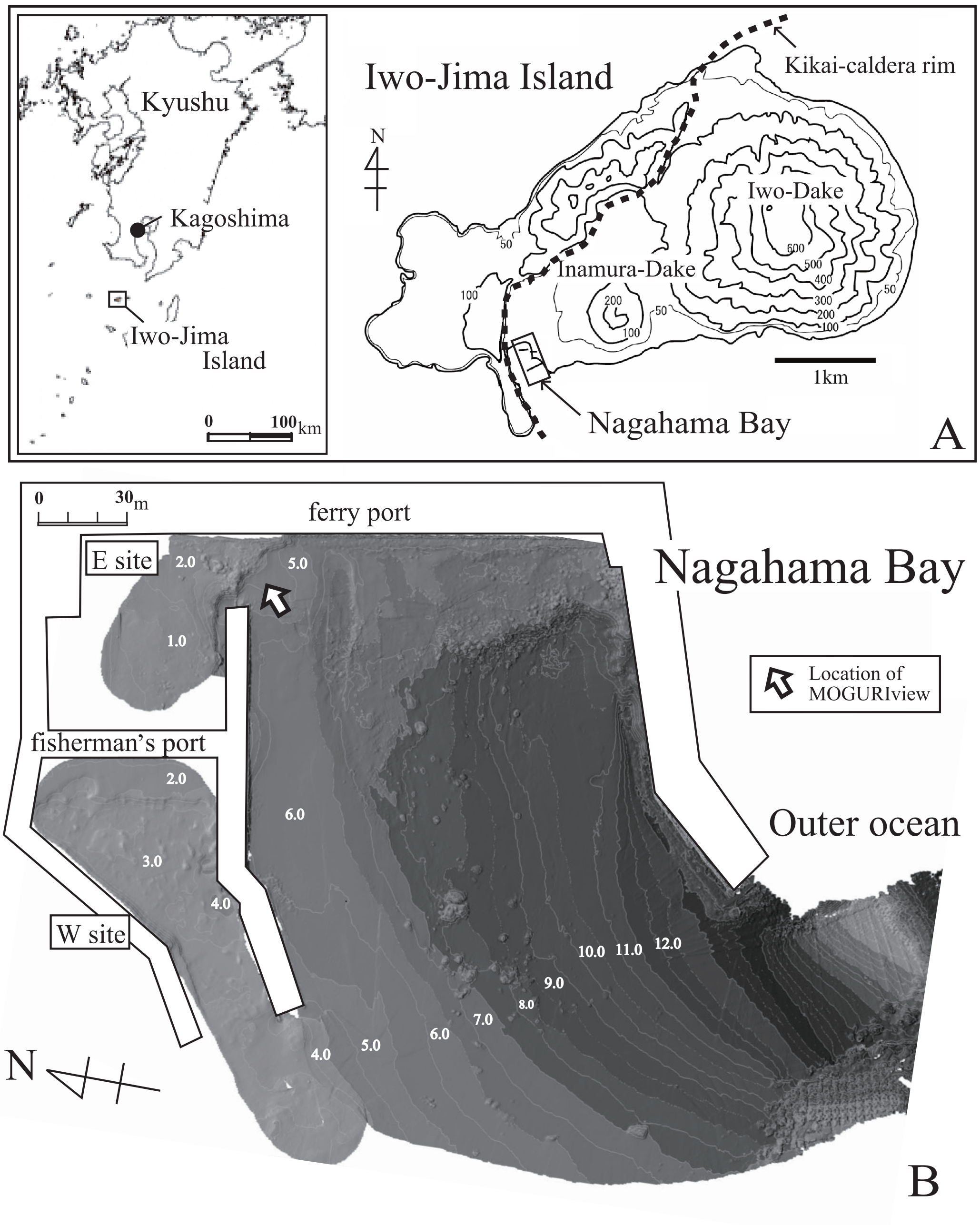

Fig. 1. (A) Locality map of Iwo-Jima Island and Nagahama Bay. (B) Sea Bat bathymetric map of Nagahama Bay in September 2010 (by Windy Network Co.).

3. Methods

3.1. Long-term monitoring system

To monitor the color of seawater in Nagahama Bay, we prepared two long-term automatic monitoring systems: MOGURIKU, which observes the bay from on land, and MOGURIview, which observes the seawater from the seafloor (Fig. 2). MOGURIKU is a fixed camera that was used to capture an image of Nagahama Bay at 5-min intervals for 26 and 12 days. MOGURIKU was attached to Misaki Bridge, from where it could capture an image of all of Nagahama Bay from an elevation of about 100 m. MOGURIview is a submarine automatic camera with an LED flash, and in the present study it was used to capture an underwater image of the seawater at the seafloor in Nagahama Bay at 10-min intervals for 12 days. MOGURIview was set at a water depth of about 4.5 m, at a site located east of the fishing port in the bay (Fig. 1).

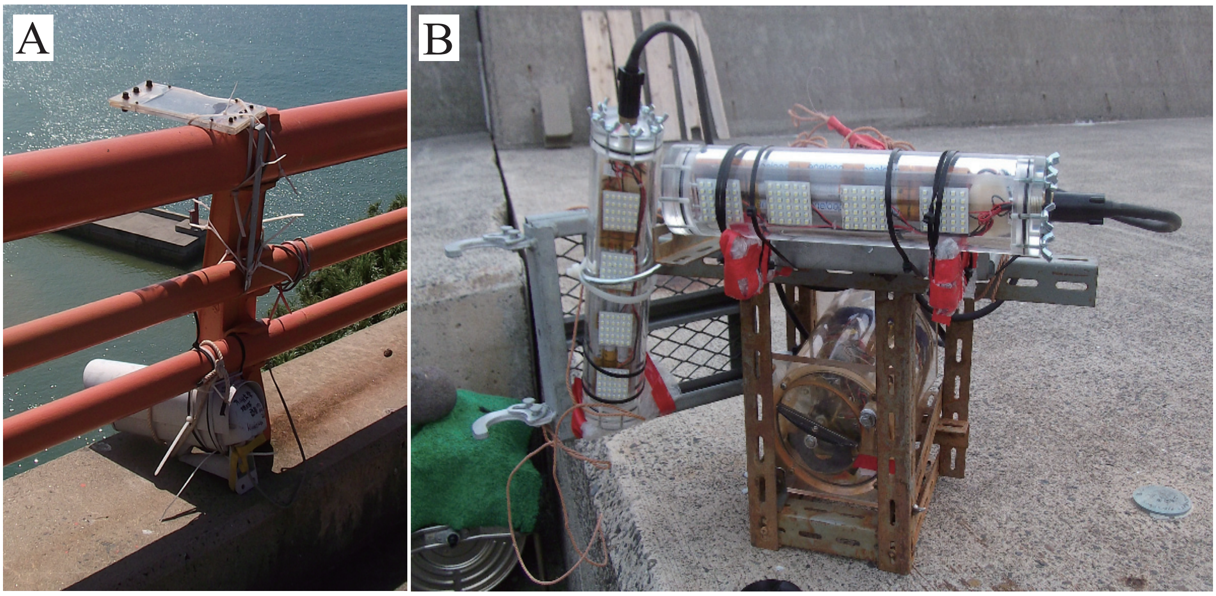

Fig. 2. (A) The sea surface automatic monitoring camera “MOGURIKU” installed on Misaki Bridge. (B) The seafloor automatic monitoring camera “MOGURIview”.

3.2 Observation period

Monitoring of the sea surface and seafloor was performed during two periods: 3–28 October 2009 and 5–16 April 2011 (Figs. 3-4). In first period, MOGURIKU alone recorded changes in the color of surface water within the bay. In the second period, we used both MOGURIKU and MOGURIview (Fig. 4). Unfortunately, iron-oxyhydroxides adhered to the lens of MOGURIview, obscuring the images taken after 14 April.

3.3. Meteorological data

We analyzed wind data recorded at Mishima Center, approximately 30 m north of Nagahama Bay, where analog meteorological data are recorded hourly. We compared these data with the long-term observation images and tide data (Figs. 3-4) from the Makurazaki tidal station, as reported by Japan Meteorological Agency (2011).

4. Results

Figures 3 and 4 compare the sea surface and seafloor image data with tide, wind speed, and wind direction data. As Nagahama Bay is located between very steep cliffs of the caldera rim to the west and the mountain Inamura-Dake to the east, wind direction in the bay is almost always from the north or south. Wind speed is generally 0.0–5.0 m s^{-1}, although speeds of more than 10 m s^{-1} are recorded during storms.

During the first monitoring period (26 days), when just the sea surface was observed (Fig. 3), the seawater in the bay was reddish-brown when the wind blew from the south, and greenish-blue when from the north. During spring tide (13–18 October), the water in the central part of the bay was greenish-blue during high tide and when the wind blew from the north. The water was reddish-brown when the wind blew from the south.

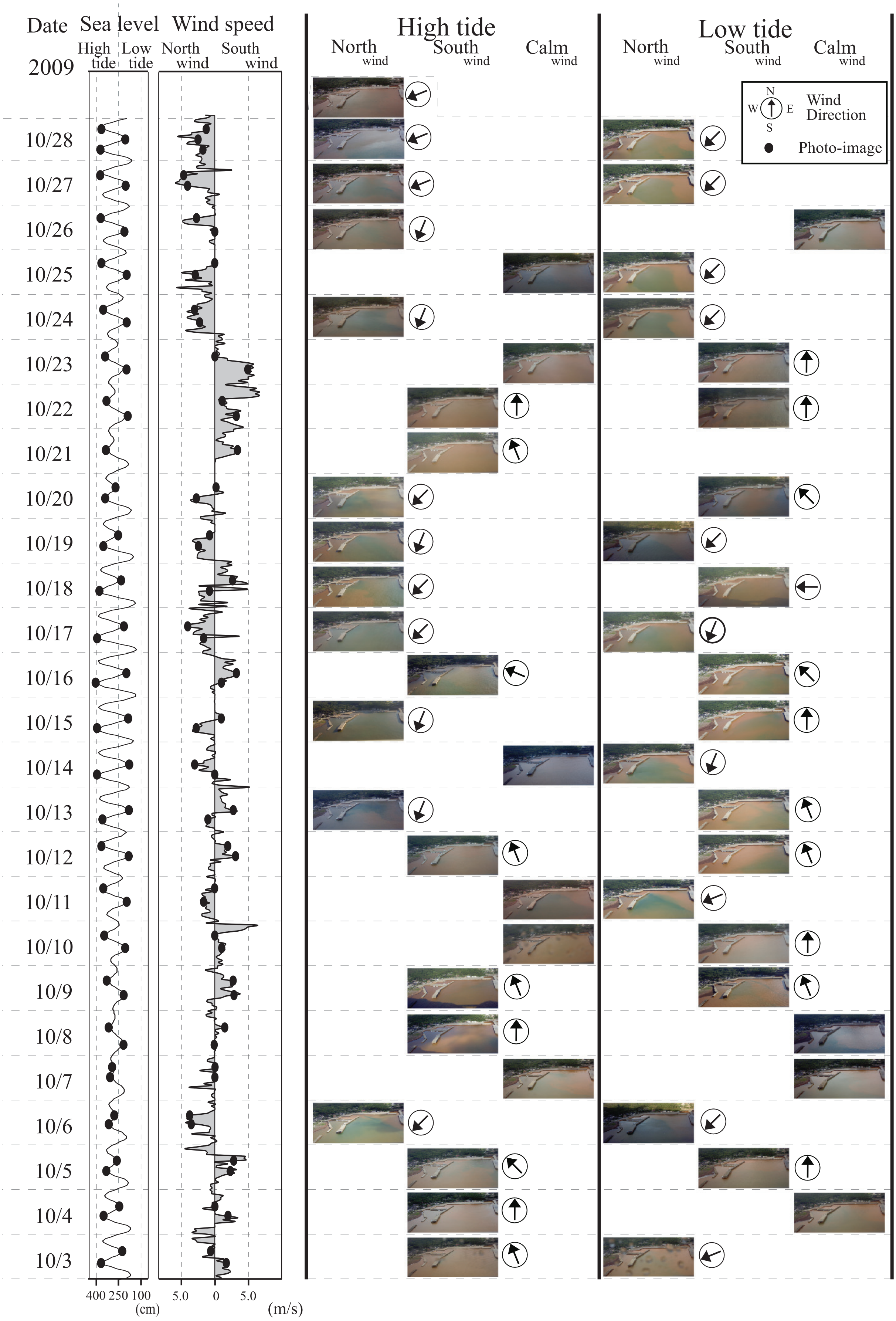

Fig. 3. Water color compared with sea level (cm) (JMA, 2011) and wind speed (m s-1) for Nagahama Bay during the autumn monitoring period.

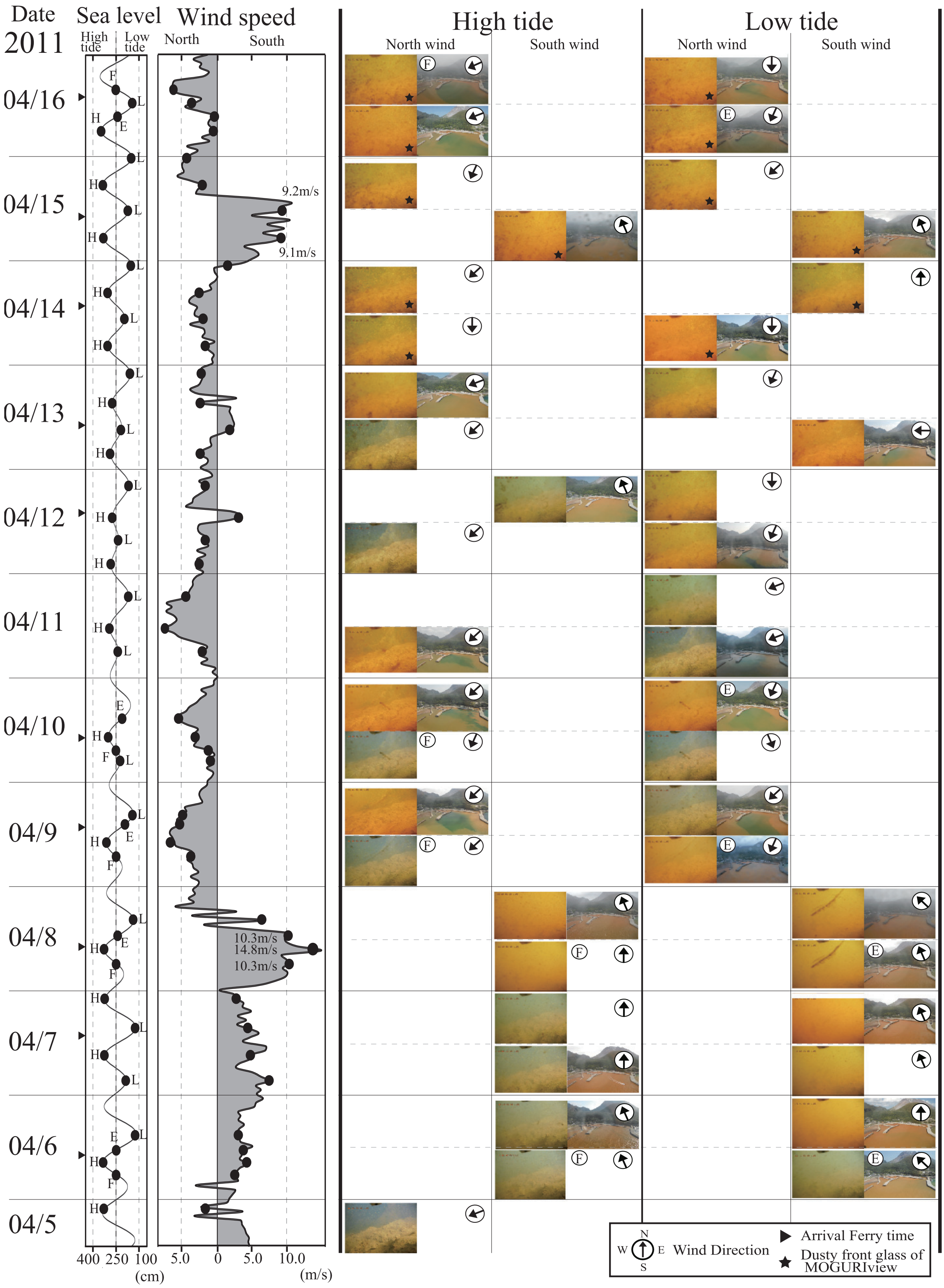

Fig. 4. Water color at the seafloor and sea surface compared with sea level (cm) (JMA, 2011) and wind speed (m s^{-1}) during the spring monitoring period. Black dots are observation points. H=high tide. F=flowing tide. E=ebb tide. L=low tide. The influence of sunlight reflection affects the color tone in the seafloor images taken during daytime.

During the second monitoring period (12 days), when both cameras were used (Fig. 4), seawater at the bottom of Nagahama Bay became clear during high and flowing tides, but was cloudy during low and ebb tides. During 10–12 April (neap tide), however, water at the seafloor was clear, and greenish-blue water entered the bay at both high and low tides. On these three days, the wind was from the north. The surface waters of Nagahama Bay were reddish-brown during periods of southerly wind, and greenish-blue during periods of northerly wind.

A storm struck the bay on 8 April (Fig. 4), when the wind speed exceeded 10 m s^{-1}. On this day, the surface seawater in the bay was reddish-brown and water at the seafloor was cloudy. The route of a ferry passed close to MOGURIview, mixing the reddish-brown water with the underlying greenish-blue water and depositing iron-oxyhydroxides on the seafloor (Fig. 4). On 9 April, water at the seafloor became cloudy after the passing of the ferry at 13:15 (all times are local time), and cleared by 16:00. The ferry also passed MOGURIview at 9:55 on 10 April, resulting in cloudy water near the seafloor from 10:00 to 13:00.

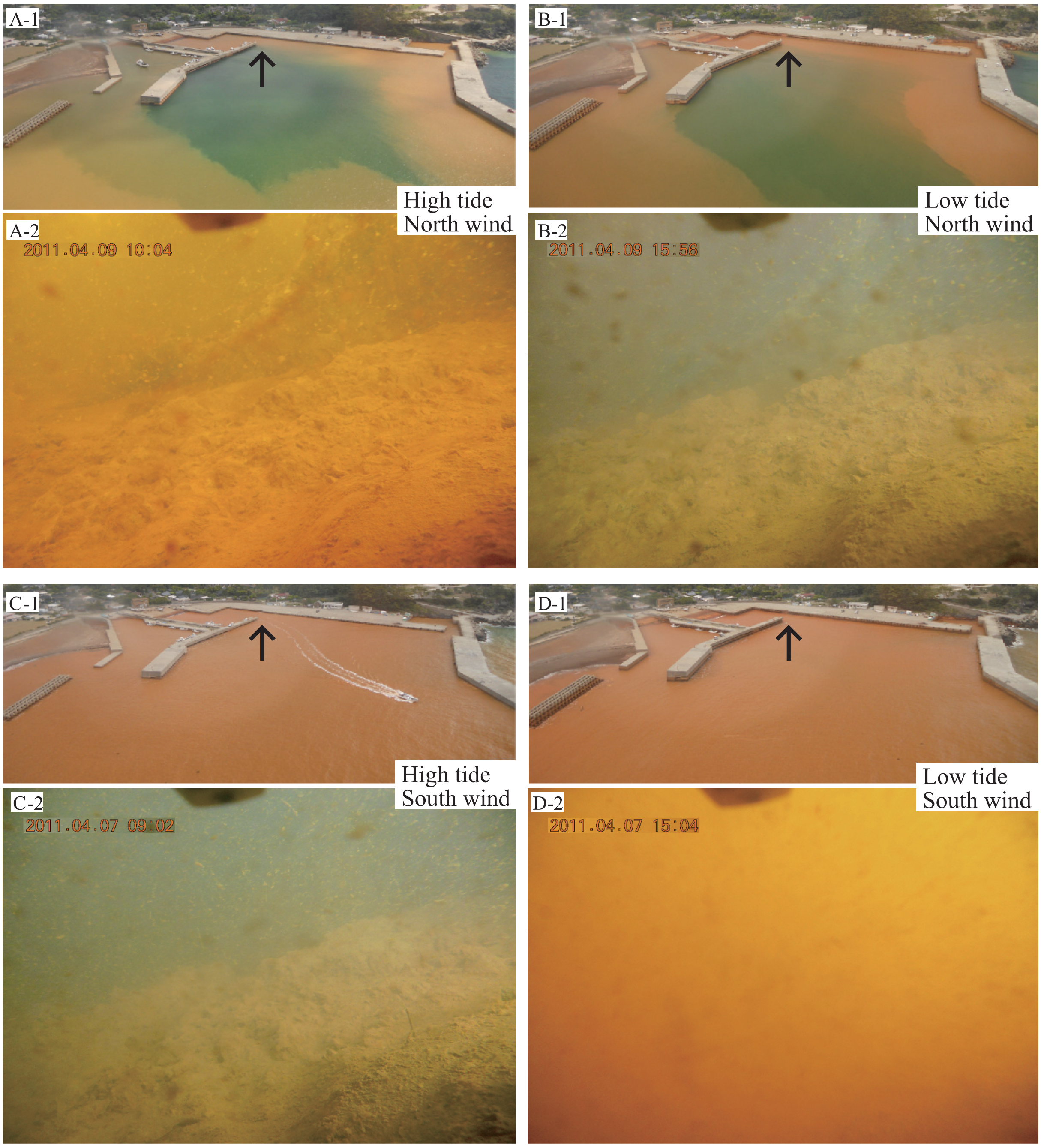

Fig. 5. Sea surface (upper photos) and seafloor (lower photos, 4.5 m water depth) images of water in Nagahama Bay. (A) Northerly wind and high tide on 9 April 2011. (B) Northerly wind and low tide on 9 April 2011. (C) Southerly wind and high tide on 7 April 2011. (D) Southerly wind and low tide on 7 April 2011. Arrows indicate the location of MOGURIview. Daytime photographs of the seafloor are much brighter (orange color) than those taken during the morning or evening.

5. Discussion

Turbidity in Nagahama Bay is affected by the tidal cycle, strong waves, and heavy rain (Kiyokawa et al., in press). In particular, water from the open ocean flows into the bay during high tide. Our observations on 6, 7, and 12 April 2011 show that greenish-blue seawater from the open ocean entered at high tide, whereas reddish-brown water was discharged from the bay at low tide. Ninomiya and Kiyokawa (2009) also reported the influence of the tidal cycle on the color of seawater. When a northerly wind blows, seawater at the bottom of Nagahama Bay is clear even during low tide (Fig. 5). In addition, when a southerly wind blew during the period 3–28 October, the sea surface in Nagahama Bay was reddish-brown, even at high tide. During periods with calm winds, iron-oxyhydroxides in the reddish-brown seawater are readily deposited on the seafloor in Nagahama Bay.

Our observations indicate that wind direction and speed are important controls on the movement of surface water. Consequently, during periods of northerly wind, greenish-blue water of the open ocean enters the bay, whereas reddish-brown seawater is trapped in the bay during periods of southerly wind (Fig. 6). Wind patterns are therefore the key to understanding the sedimentation of iron-oxyhydroxides in reddish-brown seawater at the seafloor in Nagahama Bay. Turbidity in the bay is highest at neap tide and during a southerly wind. These conditions may be the most favorable for the sedimentation of iron-oxyhydroxides in reddish-brown seawater.

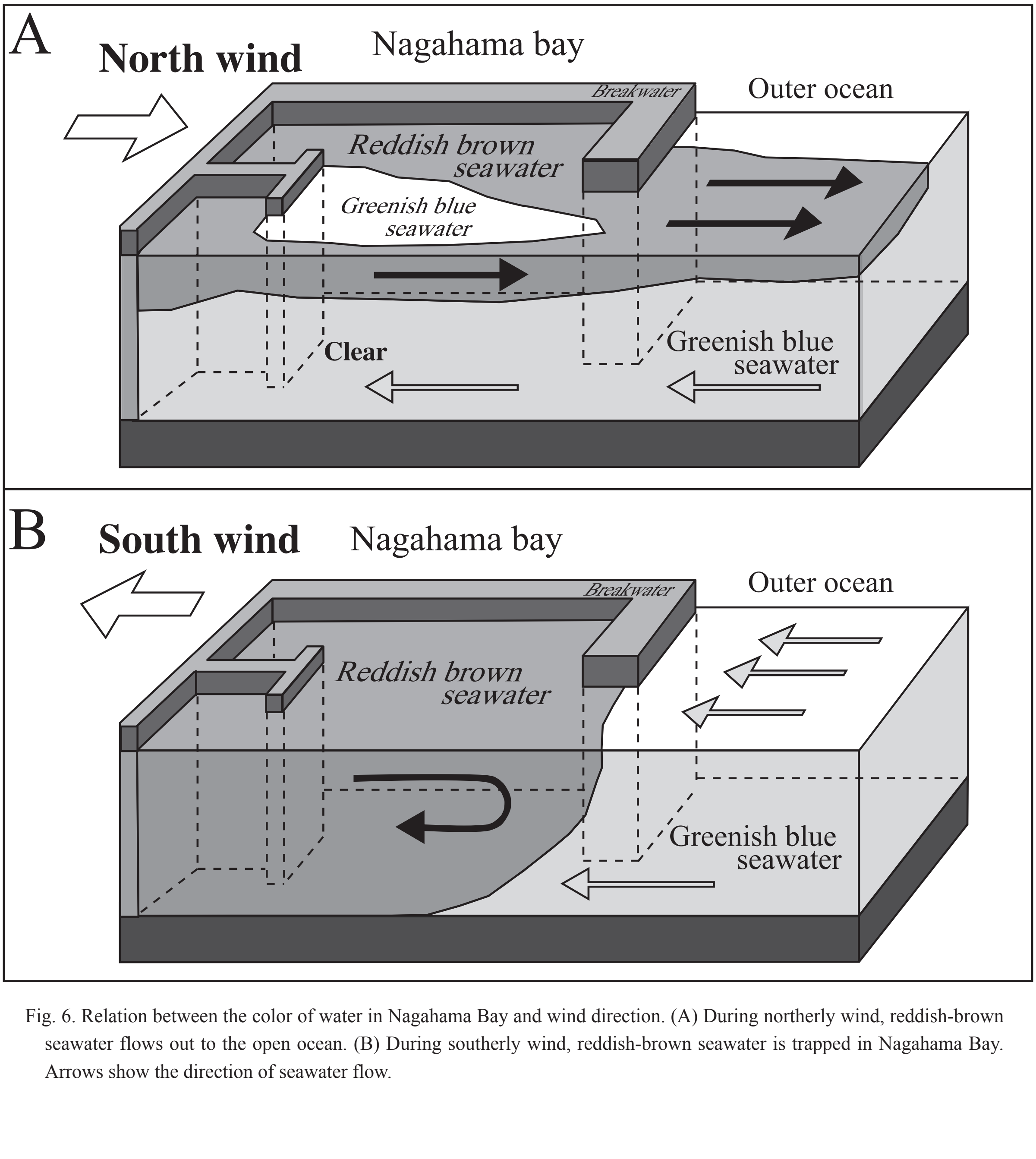

Fig. 6. Relation between the color of water in Nagahama Bay and wind direction. (A) During northerly wind, reddish-brown seawater flows out to the open ocean. (B) During southerly wind, reddish-brown seawater is trapped in Nagahama Bay. Arrows show the direction of seawater flow.

The seafloor in the bay is strongly affected by large waves during storms and typhoons. During the storm observed during the present study (8 April), water at the seafloor was cloudy, even during high and flowing tides. The passing of a ferry also resulted in cloudy seafloor water for about 3 hours.

6. Conclusions

1) The color of surface seawater in Nagahama Bay is significantly controlled by wind direction and speed. Reddish-brown seawater is trapped in the bay when a southerly wind is blowing. In contrast, greenish-blue seawater enters the bay when a northerly wind is blowing.

2) The color of seawater in the bay is also affected by the tidal cycle. It is likely that iron-oxyhydroxides are trapped in the bay during neap tide and when a southerly wind is blowing. These conditions may be favorable for the deposition of iron-oxyhydroxides on the seafloor.

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