NITRATE, SILICATE AND PHOSPHATE ATLAS FOR THE SCOTIAN SHELF AND THE GULF OF MAINE

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1999

Canadian Technical Report of Hydrography and Ocean Sciences 203

Fisheries and Oceans Pêches et Océans

Canada

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Cat. No. Fs 97-18/203E ISSN 0711-6764

Correct citation for this publication:

Petrie, B., P. Yeats and P. Strain. 1999. Nitrate, silicate and phosphate atlas for the Scotian Shelf and the Gulf of Maine. Can. Tech. Rep. Hydrogr. Ocean Sci. 203, vii + 96 pp.

TABLE OF CONTENTS

LIST OF FIGURES/TABLES

ABSTRACT

Petrie, B., P. Yeats and P. Strain. 1999. Nitrate, silicate and phosphate atlas for the Scotian Shelf and the Gulf of Maine. Can. Tech. Rep. Hydrogr. Ocean Sci. 203, vii + 96 pp.

We divided the continental shelf from Cabot Strait, at the entrance of the Gulf of St. Lawrence, to the western Gulf of Maine into 9 sub-areas based primarily on the distribution and availability of nutrient observations. For each area, we calculated the monthly means, standard deviations and extremes of nitrate, silicate and phosphate, and present the results as tables, time series plots at selected depths and contoured plots with time (depth) as the horizontal (vertical) axis. We used optimal estimation to calculate the nitrate, silicate and phosphate distributions at 0, 30, 50, 100, 150 m and the bottom for the 15th of February, May, August and November corresponding to the winter, spring, summer and fall.

RÉSUMÉ

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Nous avons divisé la région de la plat-forme continentale, depuis le détroit de Cabot, à l'entrée du golfe du Saint-Laurent, jusqu'a l'ouest du golfe du Maine, en 9 sous-zones, en fonction essentiellement de la distribution et de la disponibilité des données sur les sels nutritifs. Pour chacune de ces sous-zones, nous avons calculé les moyennes mensuelles, les écarts-types ainsi que les extrêmes de nitrate, de silicate et de phosphate. Nous présentons les résultats de ces calculs sous forme de tableaux, de courbes de séries chronologiques à certaines profondeurs et de courbes profilées dans lesquelles l'axe horizontal représente le temps et l'axe vertical la profondeur. Nous avons eu recours à des estimatons optimales pour calculer les distributions de nitrate, de silicate et de phosphate à 0, 30, 50, 100, 150 m, ainsi qu'au fond, au 15e jour de févier, de mai, d'août et de novembre, soit en hiver, au printemps, en été et en automne.

1. Introduction

Since the early 1990s, the Marine Environmental Science Division (MESD) has been compiling a number of chemical, biological and physical variables in a database with query capabilities. These data include not only those collected by MESD but also those sent to the Marine Environmental Data Service (MEDS) in Ottawa and the National Oceanographic Center (NODC) in Washington, as well as data recovered from universities, consulting firms and other groups that do not necessarily send data to a national agency. The variables stored include nitrate, nitrite, ammonium, urea, total nitrogen, silicate, phosphate, total phosphate, chlorophyll a, phaeophytin, dissolved oxygen, temperature, salinity, particulate organic carbon, particulate organic nitrogen, and suspended particulate matter. By far the most extensive holdings are for nitrate, phosphate, silicate, temperature, salinity and dissolved oxygen. The geographical limits for the MESD database are from 35°-90°N and 40°-90°W, an area that encompasses the Atlantic coast of Canada, including the Gulf of St. Lawrence and the eastern Arctic Archipelago. We plan to make the database available to other researchers and the general public through the same Department of Fisheries and Oceans website that supports our hydrographic and ocean current databases. We encourage anyone who has observations of the variables listed above that are not presently in the MEDS or NODC databases to send them to the appropriate agency or to us for archival.

In this report for the Scotian Shelf and the Gulf of Maine, we review the spatial and temporal distribution of nitrate, silicate and phosphate observations, calculate the optimally estimated seasonal concentrations at 6 depths on a 12'x12' latitude-longitude grid, and compute the monthly means, standard deviations and extreme values for 9 selected sub-regions in our area of interest. Extensive review of the observations was required to quality control the database. The temperature, salinity and dissolved oxygen data aided this task.

Temperature and salinity atlases for the Scotian Shelf region have proven useful in a broad range of issues (e.g., Drinkwater and Trites 1987, Drinkwater et al. 1999). Similar atlases have not been available for nutrients. However, some idea of the annual variation of nutrients can be obtained from the work of Fournier et al. (1977), who presented nitrate and phosphate profiles from seasonal cruises (May and November 1974, March and August 1975) for the Halifax section across the Scotian Shelf. The MESD database includes these observations with many others and has allowed us to examine the annual cycle of the nitrate, phosphate and silicate for more areas and at a finer temporal resolution than the Fournier et al. study. Moreover, our statistics, at least in theory, should better represent the long-term mean conditions.

2. Distribution of data

The seasonal distributions of nitrate stations for the Scotian Shelf and the Gulf of Maine are shown in Figure 1a-d. The spatial distributions for silicate and phosphate do not

differ significantly from that of nitrate. There are some minor qualitative differences for the temporal distributions. Each panel shows the station locations of the observations between 0-10 m, 40-60 m, and histograms of the number of measurements in 10 m intervals from the surface to 200 m, and the number of data points in 5 year intervals. Winter corresponds to the months of January, February and March, spring to April, May and June, summer to July, August and September, and fall to October, November and December. Data were extracted from the database for the Scotian Shelf and the Gulf of Maine approximately out to the 2000 m isobath. Initial plots of the data from sub-regions indicated that there were a large number of erroneous observations requiring extensive editing. We also eliminated observations from coastal inlets because they can reflect very local conditions and misrepresent the nutrient values on the shelf. After this general editing, we had 29,858 nitrate, 28,589 silicate and 31,475 phosphate observations.

Several things are evident from Figure 1 and Table 1. There are more measurements for the spring and summer than for the other seasons by about a factor of 2. Compare, for example, the winter nitrate distribution in the 0-10 m layer with the summertime distribution. The number of sites is considerably greater for the latter, especially for the central and eastern Gulf of Maine. Silicate and phosphate distributions are quite similar to that for nitrate. The number of observations decreases with depth, indicating greater data density near the surface, and decreases offshore, with few data from the continental slope region. Coverage is better in the western half of the Scotian Shelf and the Gulf of Maine than in the eastern half of the region. The greatest concentration of data is found in the 1975-1980 period. We also note that some data from recent years have been incorporated into the database. The nutrient data from the Scotian Shelf summer groundfish surveys, extensive broad scale surveys, are an example. These data, as well as those from other oceanographic expeditions, will be incorporated into the database as they become available.

Table 1. Number of Nutrient Observations by Season

	Winter	Spring	Summer	Fall	Total
Nitrate	3,721	9,682	10,468	5,987	29,858
Silicate	3,726	9,185	9,714	5,964	28,589
Phosphate	4,096	9,943	10,846	6,590	31,475

3. Seasonal optimally estimated nutrient distributions

Optimal estimation (OE) is a technique to determine values of a chosen variable on a fixed grid at a specified time. The method uses data scattered in space and time and a weighting function to interpolate and extrapolate onto the fixed grid. The weighting depends on a four dimensional (x, y, z and t) correlation function specified by the user and the position of the observations in the four dimensional space relative to the fixed

grid. We chose the form of the correlation function used by Petrie et al. (1996) for the temperature, salinity and density fields:

$$r = e^{-d} * (1 + d + d^2 / 3)$$

where r is the correlation coefficient and d is a pseudo-distance given by:

$$d = \sqrt{x'^2 + y'^2 + z'^2 + t'^2}$$

The primed quantities represent the scaled variables, e.g., x′ is the distance in the x direction divided by the scale in that direction. The x, y, z and t variables represent the horizontal (positive eastwards, northwards), vertical, and time coordinates. The {x,y,z,t} scales varied from {40 km, 40 km, 15 m, 45d} in winter for 0-30 m (below 30 m, the z scale was 25 m), to {30 km, 30 km, 15 m, 30 d} for the other 3 seasons (below 30 m, the z scale was 25 m). Additional details of the technique and scale choices are given by Petrie and Dean-Moore (1996).

As noted, the results of optimal estimation depend strongly on the distribution of data in space and time. Given the distribution shown in Fig. 1 and Table 1, we expect that there will be more uncertainty for periods with fewer data , e.g. winter, than for periods with more observations, e.g. summer. The input data are the observations used to create Figure 1. Our grid has levels at 0, 30, 50, 100, 150 m, where the depth permitted, and the bottom depth (or 1000 m, whichever was shallower). Estimates were made for the 15th of February, May, August and November, the midpoints of the seasons. The region covered by the OE grid, the bottom depths shaded with a grey scale and the 100, 200, 500 and 1000m contours are shown in Figure 2. Note that the very inshore coastal regions have been excluded from the grid to correspond with our elimination of the inlet nutrient data.

The optimal estimation technique can produce an error field if a typical measurement uncertainty is provided with the input observations. This error field depends on the form of the correlation function and the spatial and temporal distribution of observations. If there are few observations near the grid point (x_1, y_1, z_1, t_1), then its error will be large. For all nutrients we specified a nominal error of 0.1 μM. The resulting error fields should be interpreted as indicating the relative error between different parts of the overall region.

Figures 3 a-e, 4 a-e and 5 a-e display the seasonal, optimally estimated nitrate, silicate and phosphate concentrations for the Scotian Shelf and the Gulf of Maine at 0, 30, 50, 100, at the bottom (which varies from 0 to 1000 m over the region). We have omitted the 150m level because the shelf region has only small areas this deep, and the slope region has generally poor estimates because of lack of data. Several features are worth noting.

The surface, winter nitrate concentrations are highest in the eastern Scotian Shelf and decrease towards the southwest (Fig. 3a). The strong gradients in the northeast corner of the plot may reflect the lack of data and the extrapolation of gradients by the optimal

estimator, rather than a true decrease. By mid-spring, nitrate is largely depleted in the surface and, in fact, the concentrations decrease down to at least the 50 m depth (Fig. 3b,c). Concentrations remain low throughout the summer. By fall, nitrate has started to increase in the Gulf of Maine and the western half of the Scotian Shelf but remains low on the eastern half of the Shelf. Springtime, surface nitrate concentrations are highest in a ring around the coastline in the Gulf of Maine with summertime highs at the entrance to the Bay of Fundy and off southwest Nova Scotia. Note that the scale for bottom nutrient concentrations has been doubled in order to see some of the variation (Fig. 3e,f).

Surface silicate also is highest in winter but with a more even distribution than nitrate (Fig. 4a). Between winter and spring, the silicate concentrations also decrease markedly, with areas of higher concentrations around the coast of the Gulf of Maine and at the mouth of the Bay of Fundy. The winter distributions at 30 and 50 m tend to have higher values near the coast with strong cross-shelf gradients (Fig. 4b,c). Both depths also show depleted silicate values in the spring. The elevated silicate concentrations off Georges Bank in the fall (November 15) are caused by limited data in the region. There are no data within 100 km in October, no data within about 50 km in November, and 4 stations (13 observations) right in the area in December. Thus, the data from December are closer when measured by the non-dimensional distance used by the optimal estimator. These observations reflect the higher values usually reached in December and are the main contributor to the localized high silicate concentrations

The decrease of concentrations is less dramatic for surface phosphate than for the other two nutrients (Fig. 5a). The maps show a gradual change from about 0.6 to 1.0 μM in winter to a range of approximately 0.2 to 0.6 μM in summer. The decrease is smaller at 30 m and almost imperceptible at 50 m (Fig. 5b,c).

The error fields for nitrate are shown in Figure 6 a-e. The error fields for silicate and phosphate are very similar to those for nitrate. The surface nitrate error fields generally have their lowest values over the Scotian Shelf and in the Gulf of Maine. In the winter though, the errors are slightly higher in western and central Gulf, a consequence of fewer data there, than over the rest of the shelf area. The largest errors are over the continental slope and occasionally in the Laurentian Channel. The same pattern is followed at deeper levels but with higher errors; in addition, larger errors are sometimes found over the eastern Scotian Shelf (e.g. 30 m, winter, Fig. 6b). Errors are generally lower in the Gulf of Maine and on a line running southwestwards from Halifax (the Halifax Section, see Fig. 1a, the line of stations at the middle of the Scotian Shelf, see also Fig. 6b,c). These regions have the greatest sampling density and therefore are expected to have the smallest errors.

4. Long-term averages, standard deviations and extremes

We divided the Scotian Shelf and the Gulf of Maine region into a number of sub-areas in order to calculate monthly statistics for nitrate, silicate and phosphate. The sub-areas are Cabot Strait, Sydney Bight, the eastern, central and western Scotian Shelf, the eastern,

central and western Gulf of Maine and the Bay of Fundy (Fig. 7). There is a slight overlap between the boxes representing Sydney Bight and Cabot Strait. However, the database does not contain observations in the overlapping region. There were no appreciable differences in the statistics of the nutrient data from the western and eastern halves of Cabot Strait. Therefore, we combined all of the data to increase the number of samples in the statistical averages. There were too few data from the southern Gulf of St. Lawrence and surprisingly from Georges Bank to warrant compiling the monthly statistics for these sub-areas.

The overall size of the areas and the vertical resolution were governed by the distributions of data. To set the vertical resolution, we used the central Scotian Shelf as our reference area (Table 4). Most of the observations are from near-surface depths, permitting greater vertical resolution there (e.g., see Fig. 1). As depth increases, the number of observations decreases, requiring larger vertical intervals to maintain a reasonable number of data points for the statistical calculations. We chose monthly averages as the temporal resolution which allowed, for example, examination of the rapid decrease of nutrient concentrations during the spring blooms. Even with this choice, there were some months when the data coverage was not adequate (see December, Table 4) and some depth intervals where there were less than 10 observations (see September, Table 4). Tables 2-10 are the tables of the statistics for the nine sub-areas.

There were individual observations that were suspect but were retained in the dataset. A good example is given in Table 5a, nitrate maximum concentration (=37.94 μM), August, 100-275 m depth range. We examined the observations for this month and found that 3 deep values from the same station (150, 200 and 226 m, bottom depth 231 m) exceeded 35 μM. However, they did not divert substantially from the vertical profile of nitrate; moreover, they fitted the overall trend reasonably well when plotted as a function of salinity. Though we have some suspicions concerning these data, we did not remove them from the database.

The central Scotian Shelf had better than average coverage. Cabot Strait, Sydney Bight and the Bay of Fundy had the poorest data coverage. In addition to the tables of nutrient concentrations, we have contoured the monthly mean values against depth and plotted the average values, the averages plus and minus one standard deviation, and the extremes for 4 depth intervals (Fig. 8-16). The former illustrates the rapid loss of nitrate and silicate from the near-surface layer in the spring and the more gradual reduction of phosphate (e.g., Fig. 11a). In addition, there appears to be an increase of deep nitrate and silicate concentrations during summer in some sub-regions (e. g., Fig. 11a, 12a, 15a, 16a).

5. Summary

Atlases of water temperature, salinity and density for the Scotian Shelf region have been available for quite some time and are updated approximately every decade (e.g. Drinkwater and Trites 1987; Petrie et al. 1996). These technical reports have proven to

be quite useful. The latest versions of the atlases for the Scotian Shelf and Gulf of Maine, the Gulf of St. Lawrence and the Newfoundland and Labrador Shelves are also maintained on the Ocean Sciences Division website. These atlases had a large database to build on and, consequently, have had spatial resolution down to bank and basin scale; moreover, even with 10 years between updates of the technical reports, the statistics in the tables do not change much from atlas to atlas, they are quite stable. For the same east coast region covered by the nutrient database, the temperature-salinity database has approximately 15 million entries. Most of these entries are temperature data. This is complemented by a sea surface temperature database derived from satellites of about 4 million points. The nutrient database has far fewer observations, just over 400,000 entries, a factor of 50 times less than the hydrographic database. In addition, not all of these have nitrate, silicate and phosphate values.

As more nutrient data become available from new oceanographic expeditions and from recovery of existing data not now in the database, the climatology for our sub-regions is likely to change more than we have seen for temperature. Moreover, we shall be able to refine our sub-areas, making them smaller, and our vertical resolution, making it finer. For some areas we expect that the nutrient climatology will evolve very quickly. Consequently, some of the products featured in this report will be available on the OSD website (http://www.mar.dfo-mpo.gc.ca/science/ocean/welcome.html). This will also permit more timely updates than can be achieved thorough conventional technical reports.

6. Acknowledgements

We thank Fasil WoldeGeorgis and Elizabeth Gonzalez for technical support preparing this report. A number of individuals provided nutrient data that allowed for the expansion of the database, in particular we thank Brian Irwin and Glen Harrison. We thank GLOBEC Canada for providing some financial assistance for this project. Ken Drinkwater and Glen Harrison provided useful reviews of this report.

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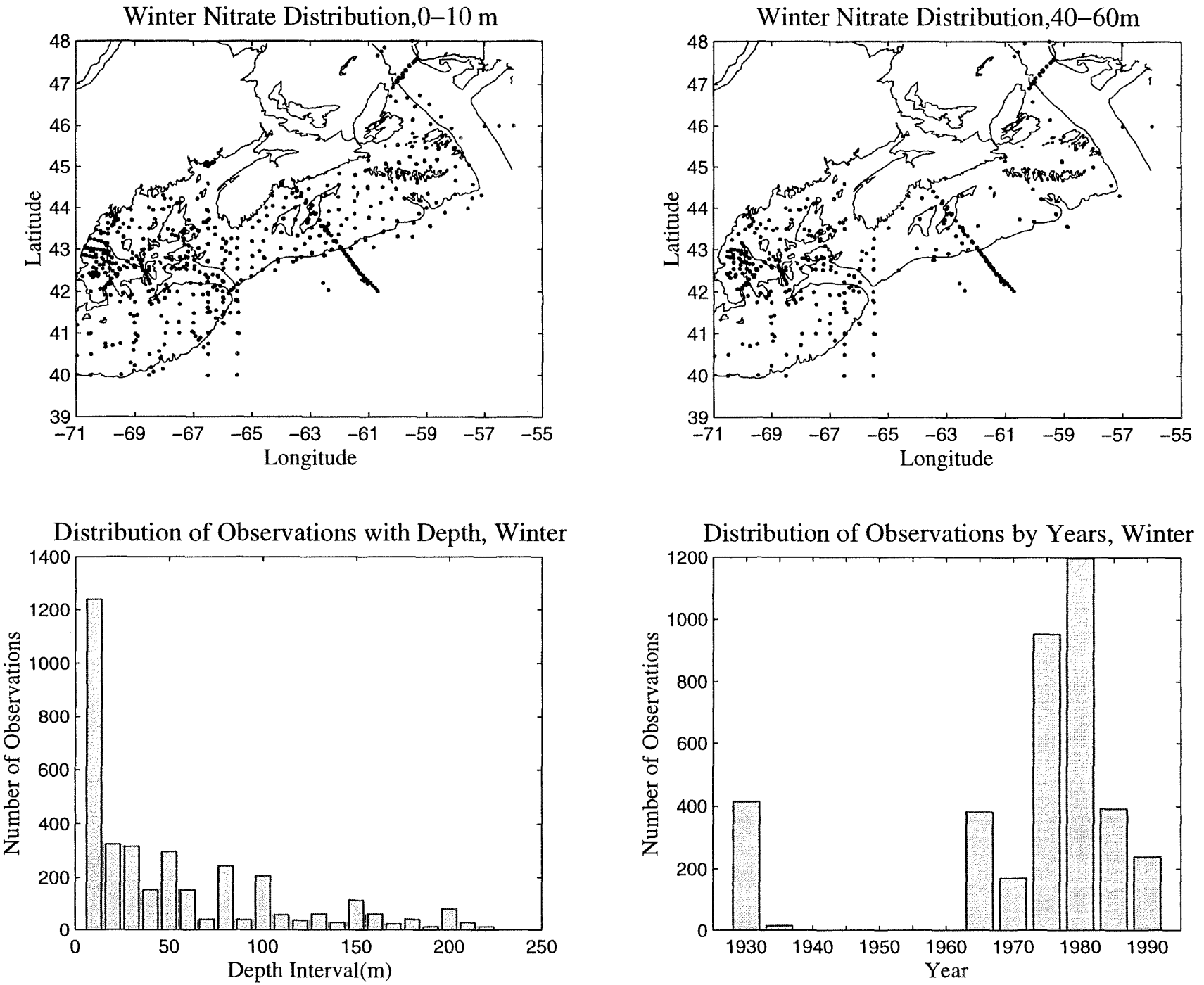

Figure 1a. Distribution of nitrate stations for the 0-10 m and 40-60 m depth ranges, by depth and 5 year blocks for winter.

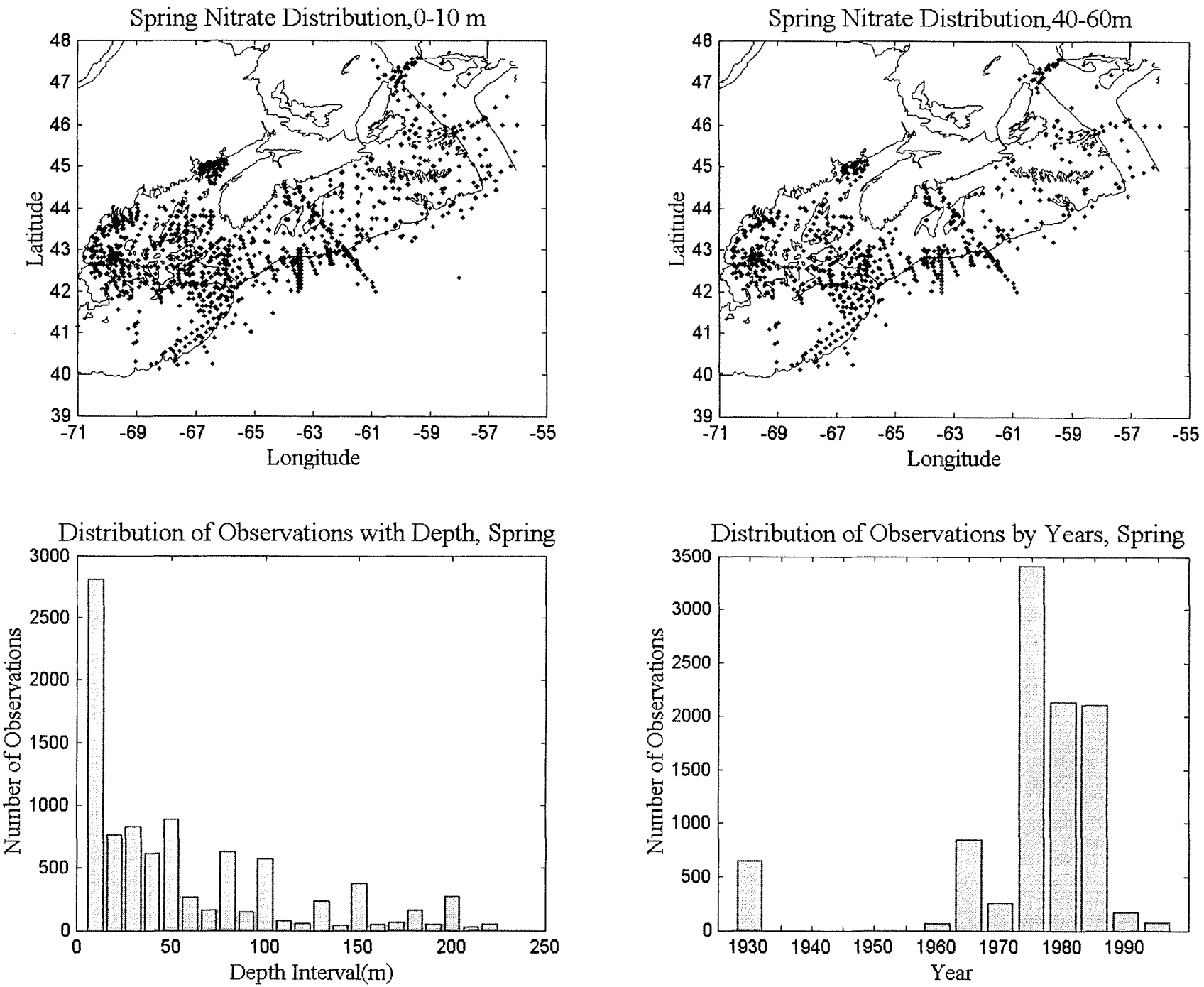

Figure 1b. Distribution of nitrate stations for the 0-10 m and 40-60 m depth ranges, by depth and 5 year blocks for spring.

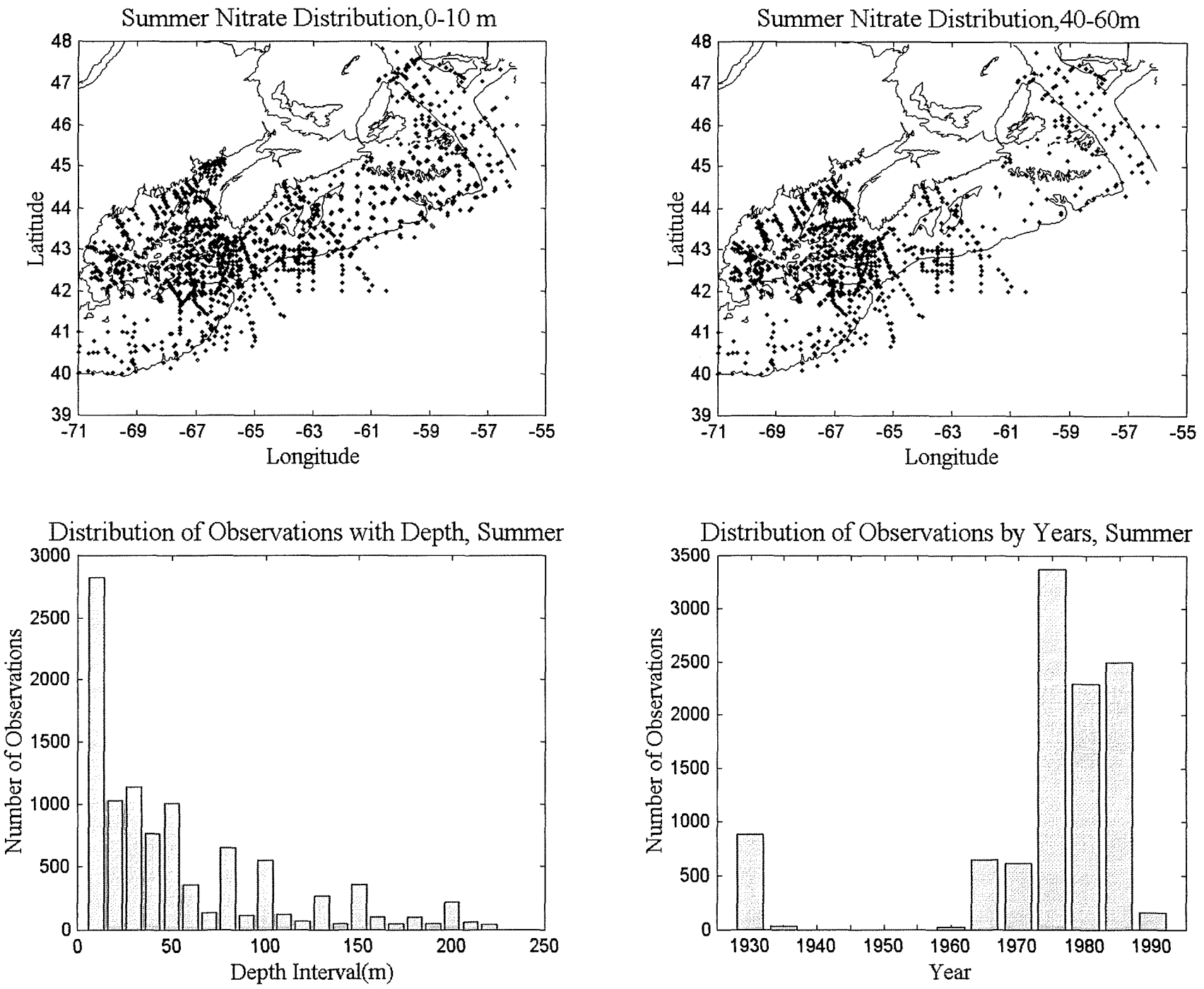

Figure 1c. Distribution of nitrate stations for the 0-10 m and 40-60 m depth ranges, by depth and 5 year blocks for summer.

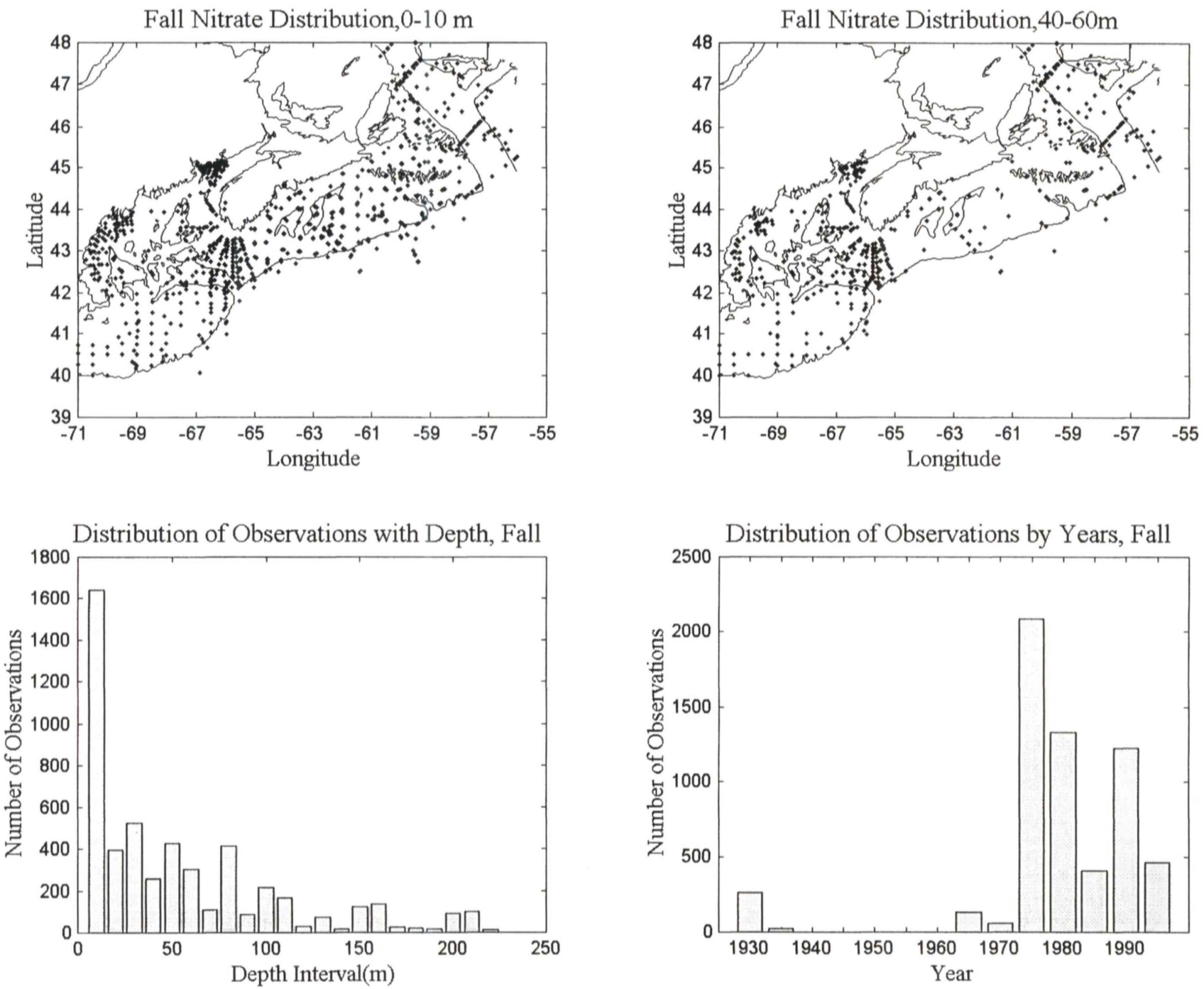

Figure 1d. Distribution of nitrate stations for the 0-10 m and 40-60 m depth ranges, by depth and 5 year blocks for fall.

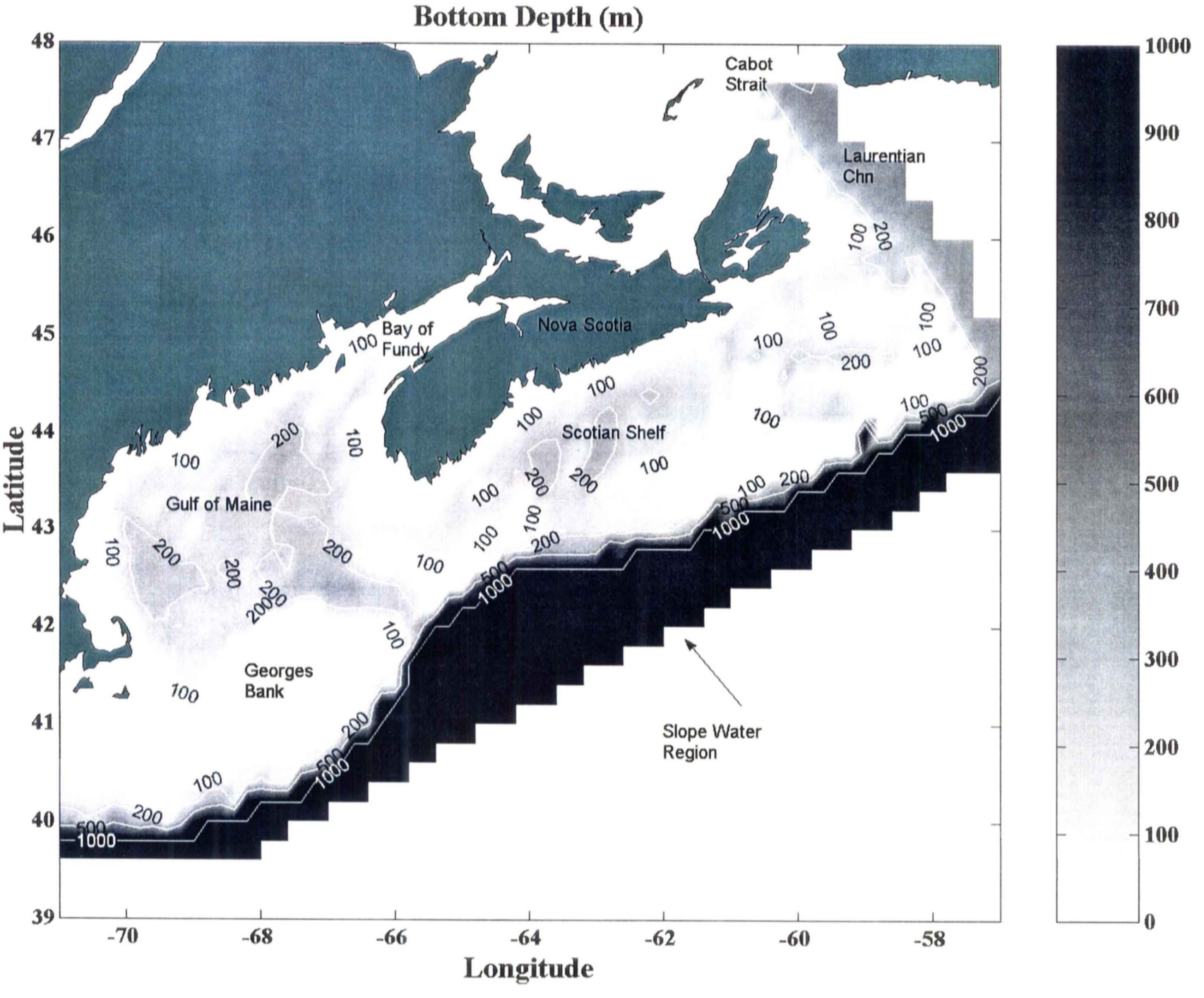

Figure 2. The region covered by the OE grid, the bottom depths shaded with a grey scale and the 100, 200, 500 and 1000 m contours are shown.

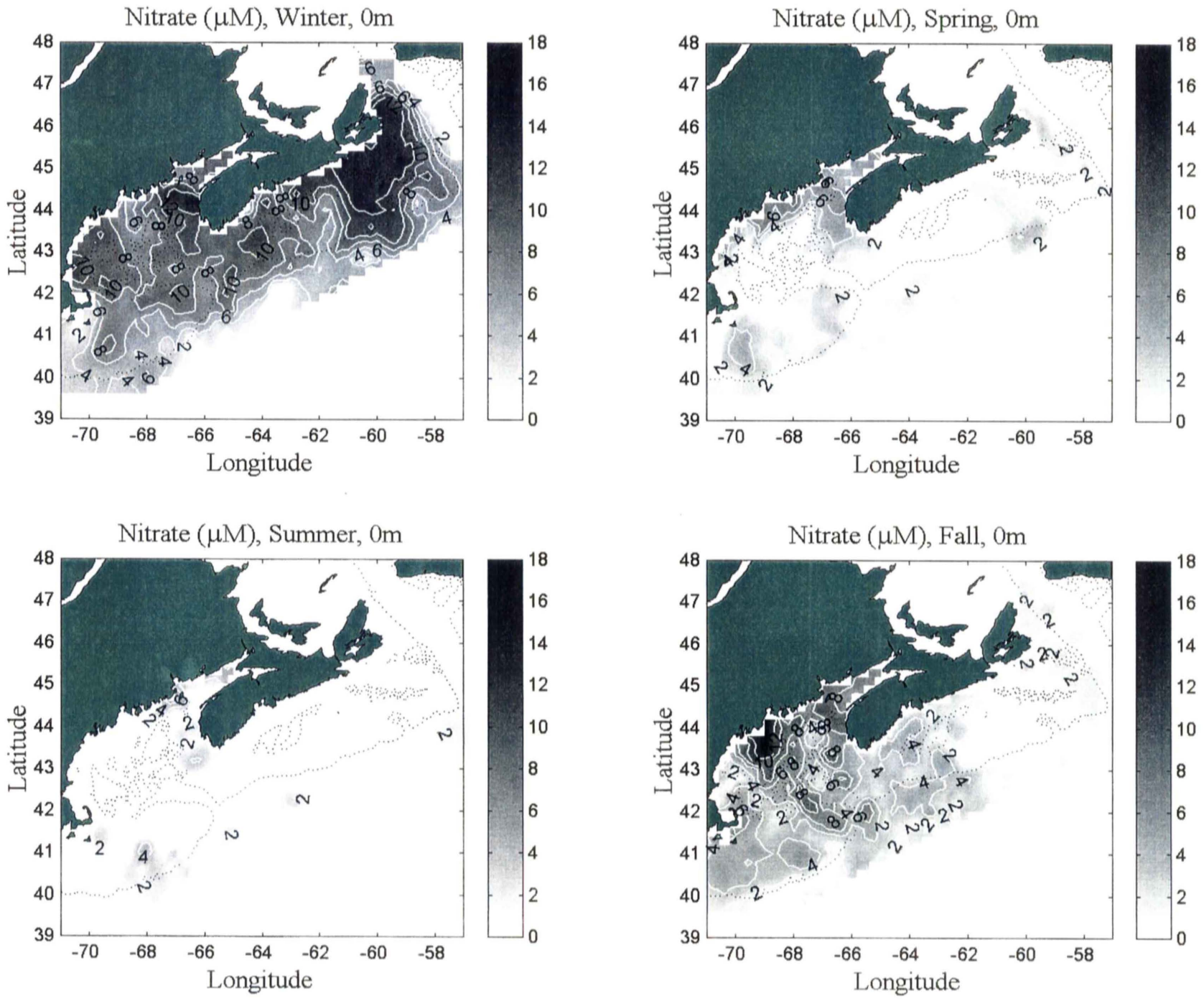

Figure 3a. The seasonal, optimally estimated nitrate concentrations (μM) for the Scotian Shelf and the Gulf of Maine at 0 m.

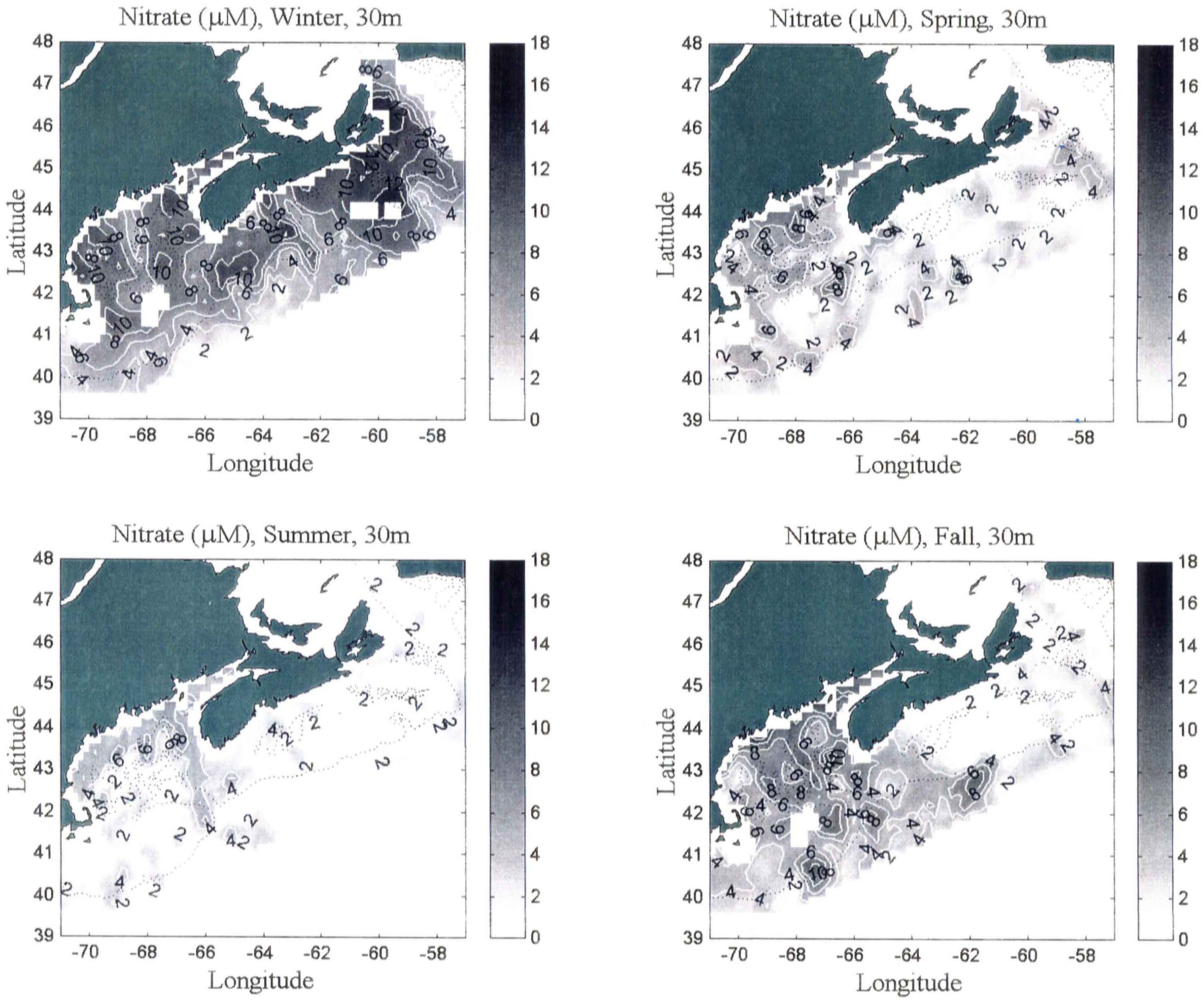

Figure 3b. The seasonal, optimally estimated nitrate concentrations (μM) for the Scotian Shelf and the Gulf of Maine at 30 m.

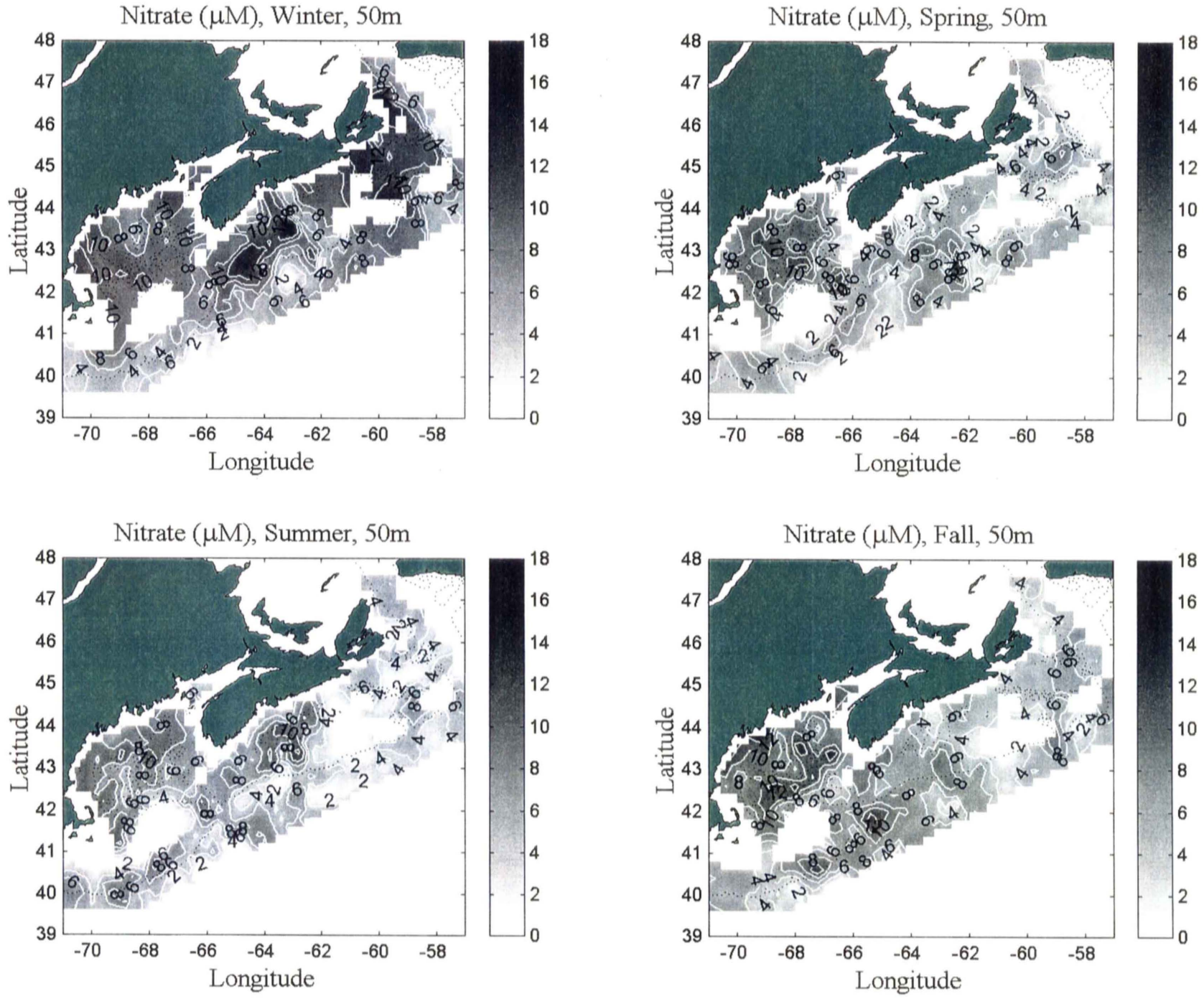

Figure 3c. The seasonal, optimally estimated nitrate concentrations (μM) for the Scotian Shelf and the Gulf of Maine at 50 m.

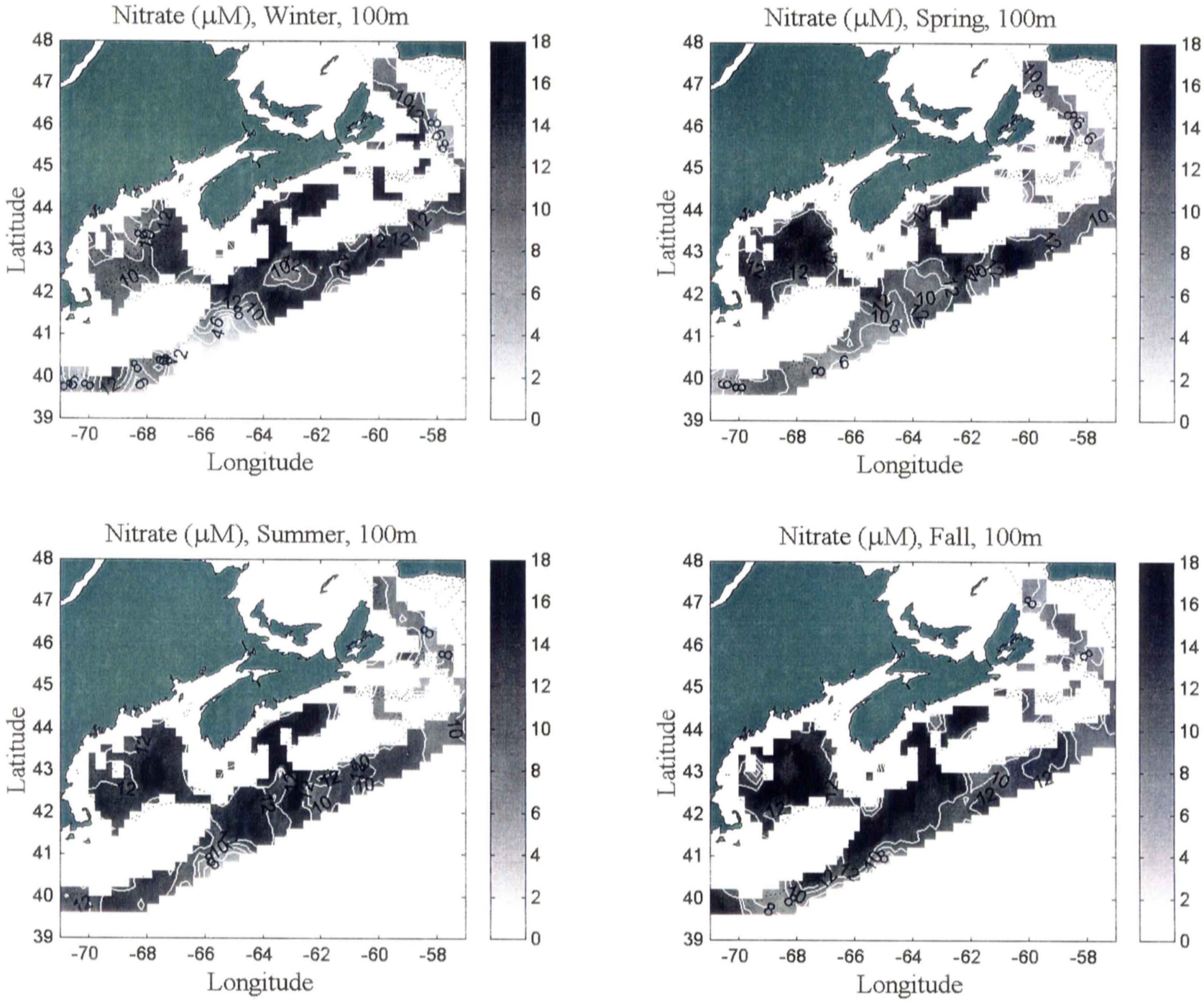

Figure 3d. The seasonal, optimally estimated nitrate concentrations (μM) for the Scotian Shelf and the Gulf of Maine at 100 m.

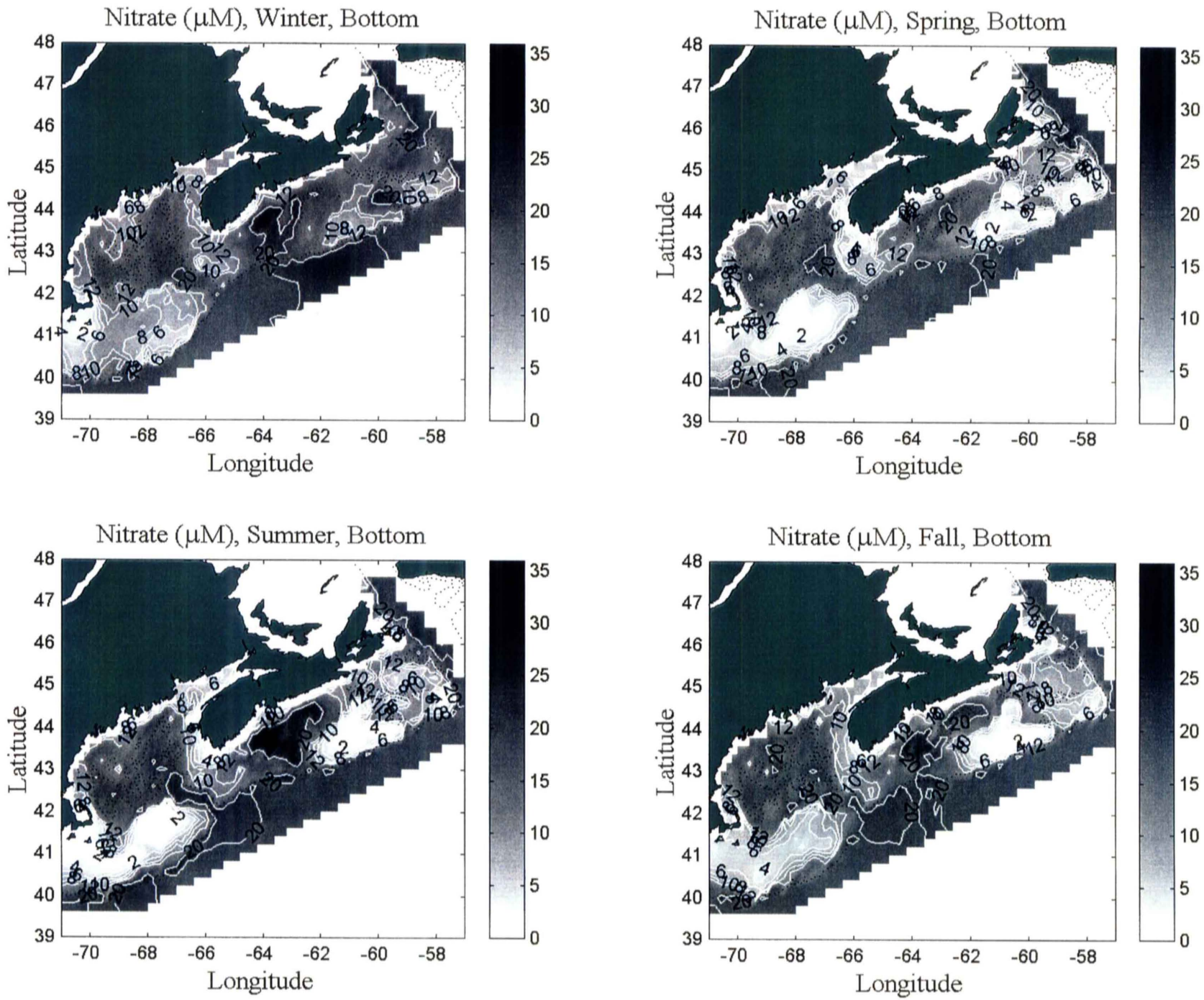

Figure 3e. The seasonal, optimally estimated nitrate concentrations (μM) for the Scotian Shelf and the Gulf of Maine at the bottom.

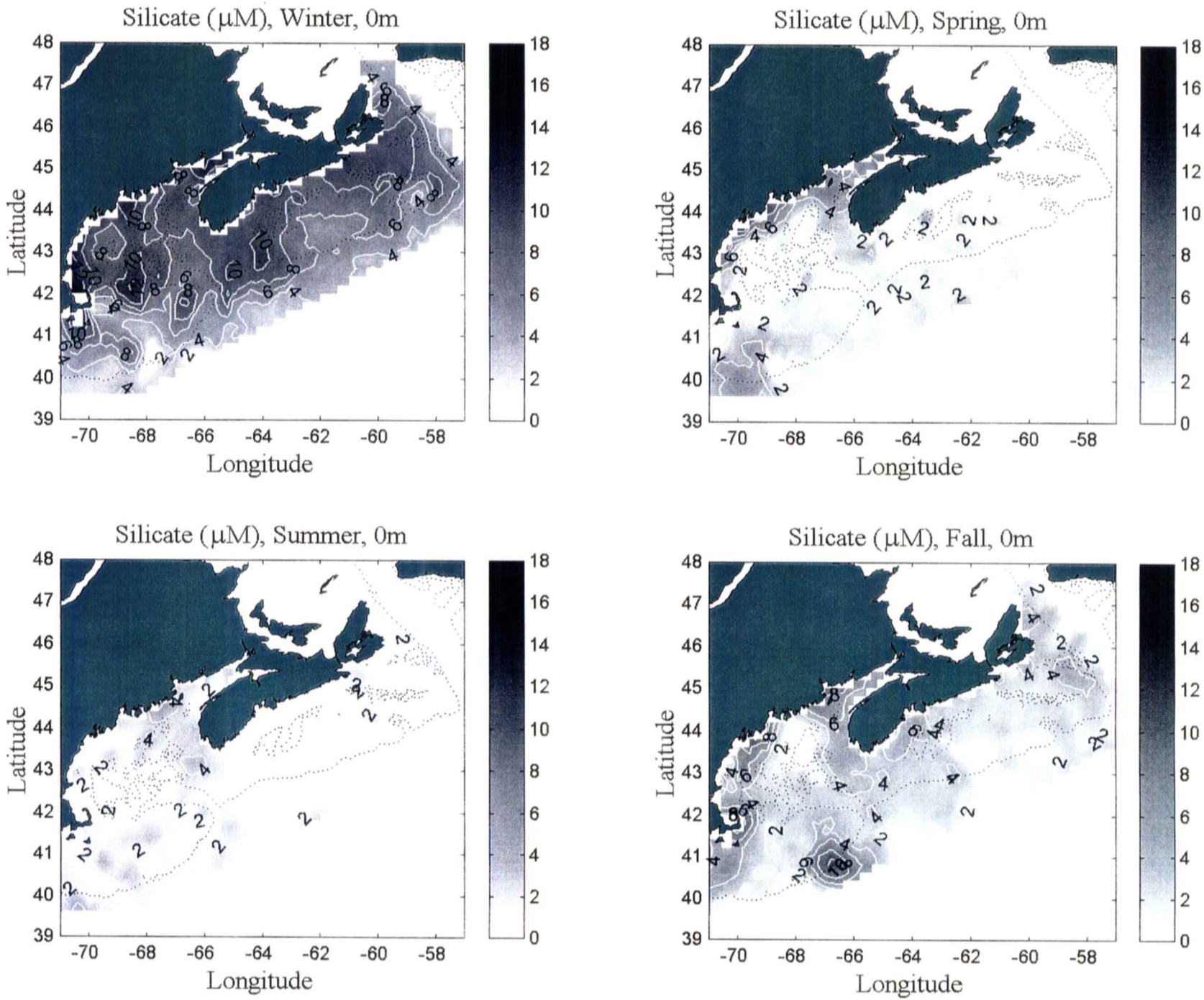

Figure 4a. The seasonal, optimally estimated silicate concentrations (μM) for the Scotian Shelf and the Gulf of Maine at 0 m.

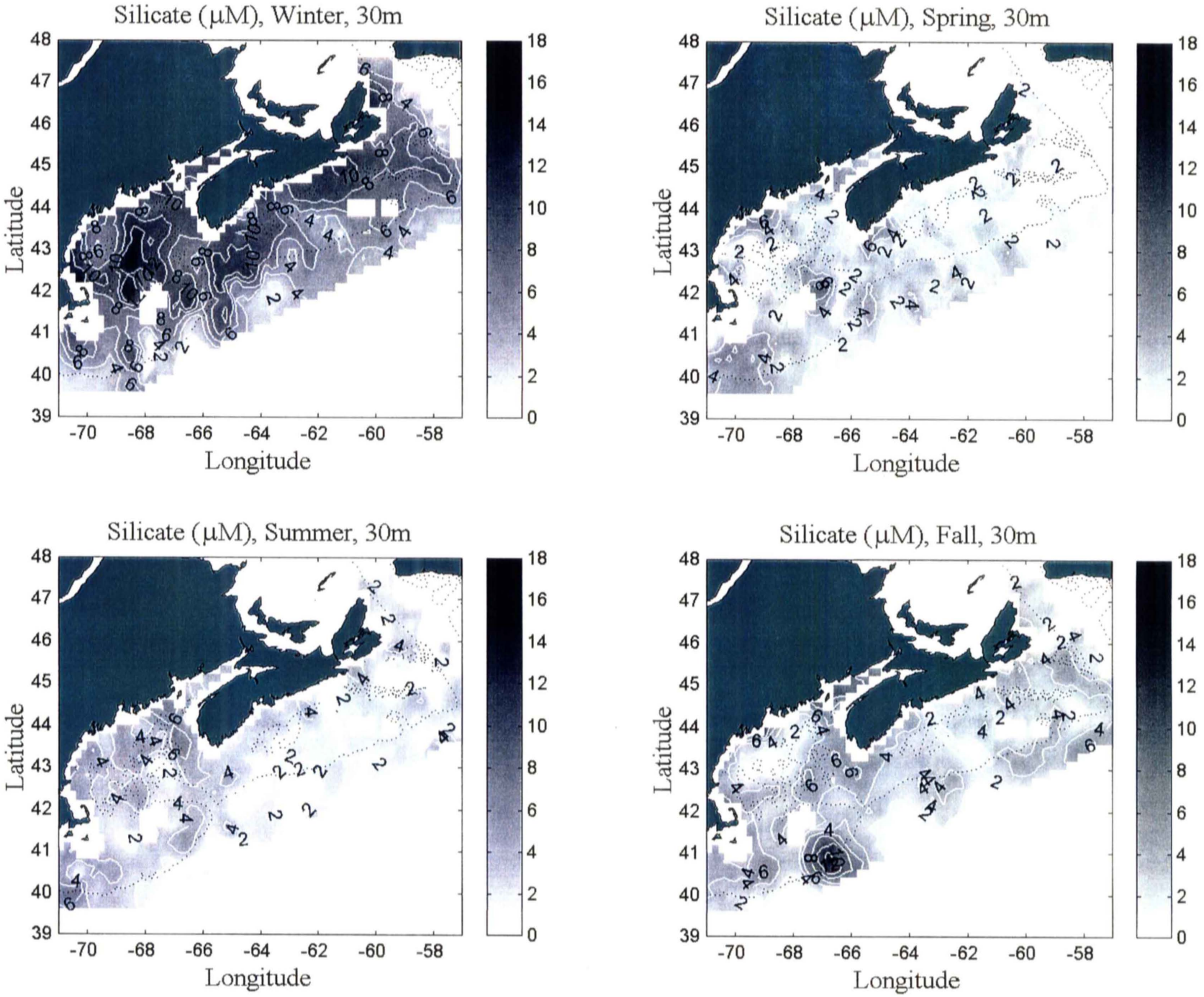

Figure 4b. The seasonal, optimally estimated silicate concentrations (μM) for the Scotian Shelf and the Gulf of Maine at 30 m.

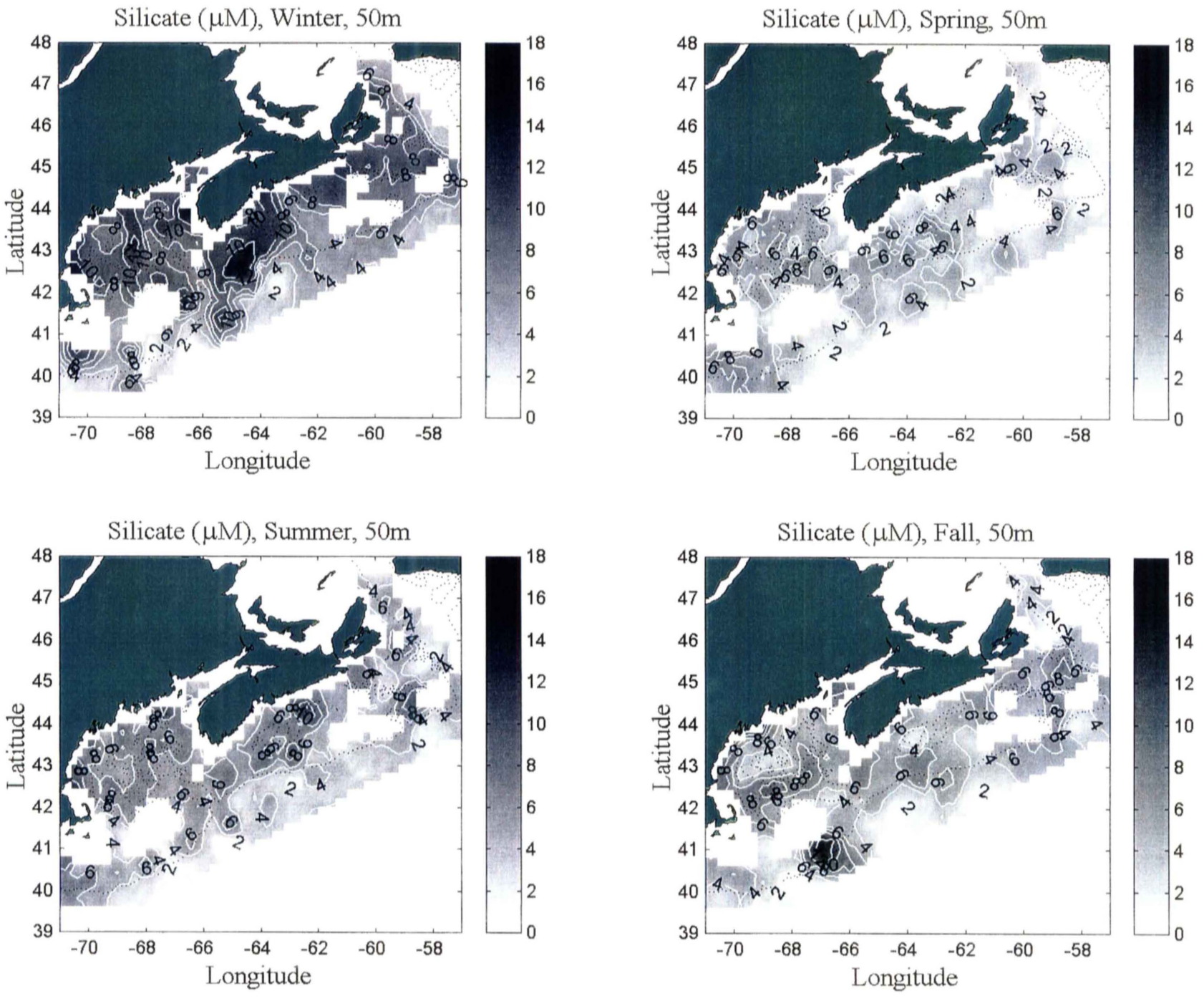

Figure 4c. The seasonal, optimally estimated silicate concentrations (μM) for the Scotian Shelf and the Gulf of Maine at 50 m.

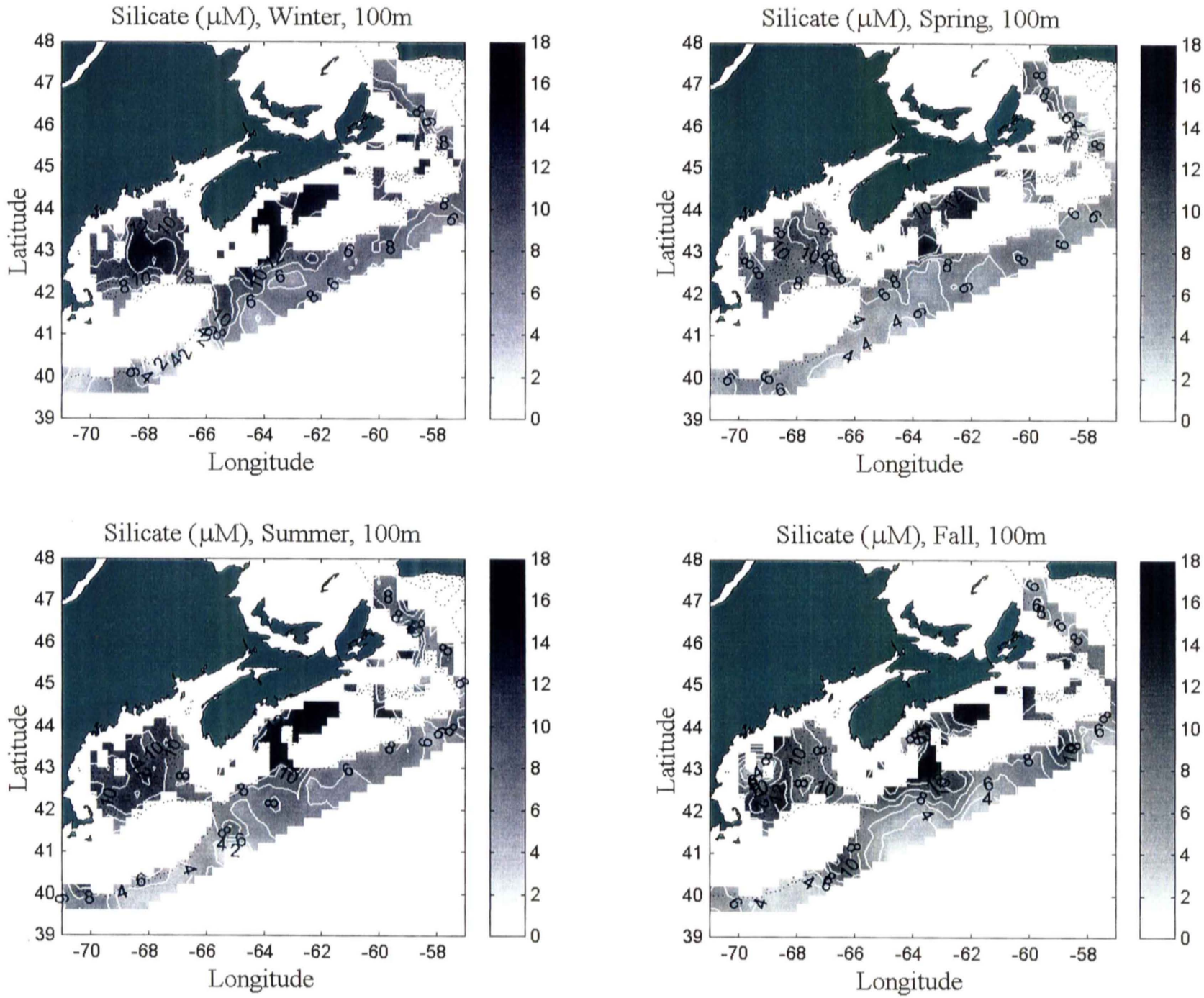

Figure 4d. The seasonal, optimally estimated silicate concentrations (μM) for the Scotian Shelf and the Gulf of Maine at 100 m.

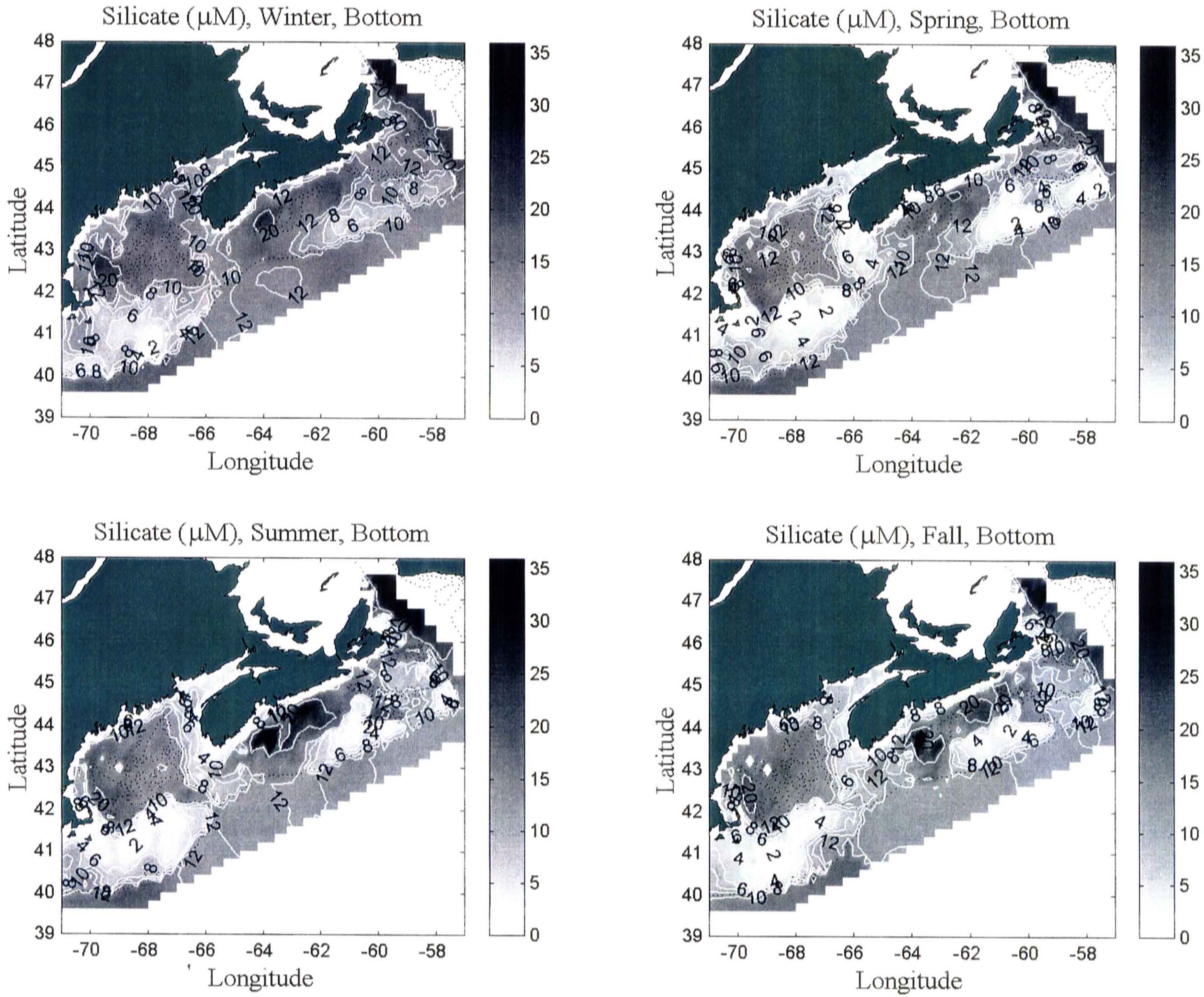

Figure 4e. The seasonal, optimally estimated silicate concentrations (μM) for the Scotian Shelf and the Gulf of Maine at the bottom.

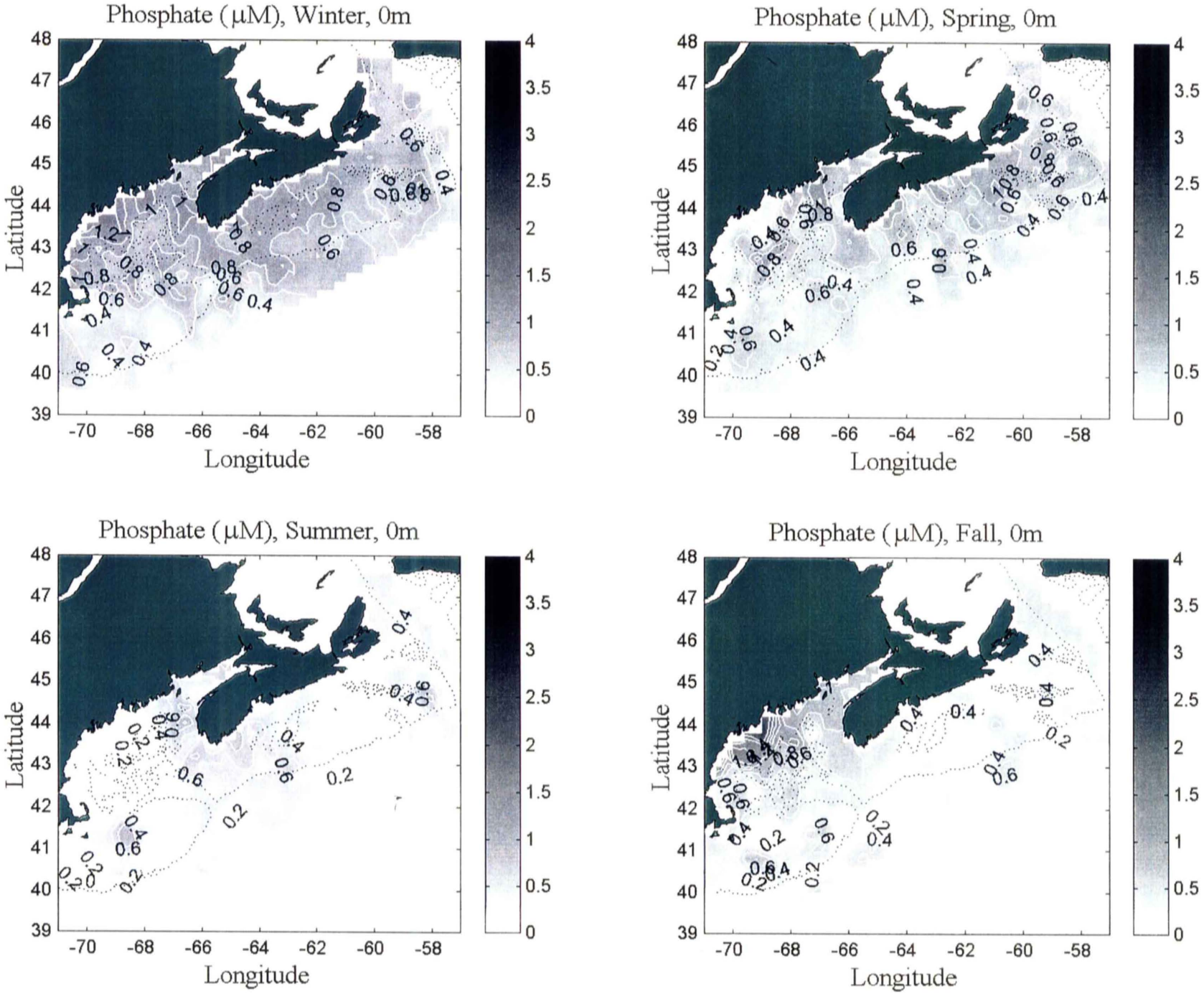

Figure 5a. The seasonal, optimally estimated phosphate concentrations (μM) for the Scotian Shelf and the Gulf of Maine at 0 m.

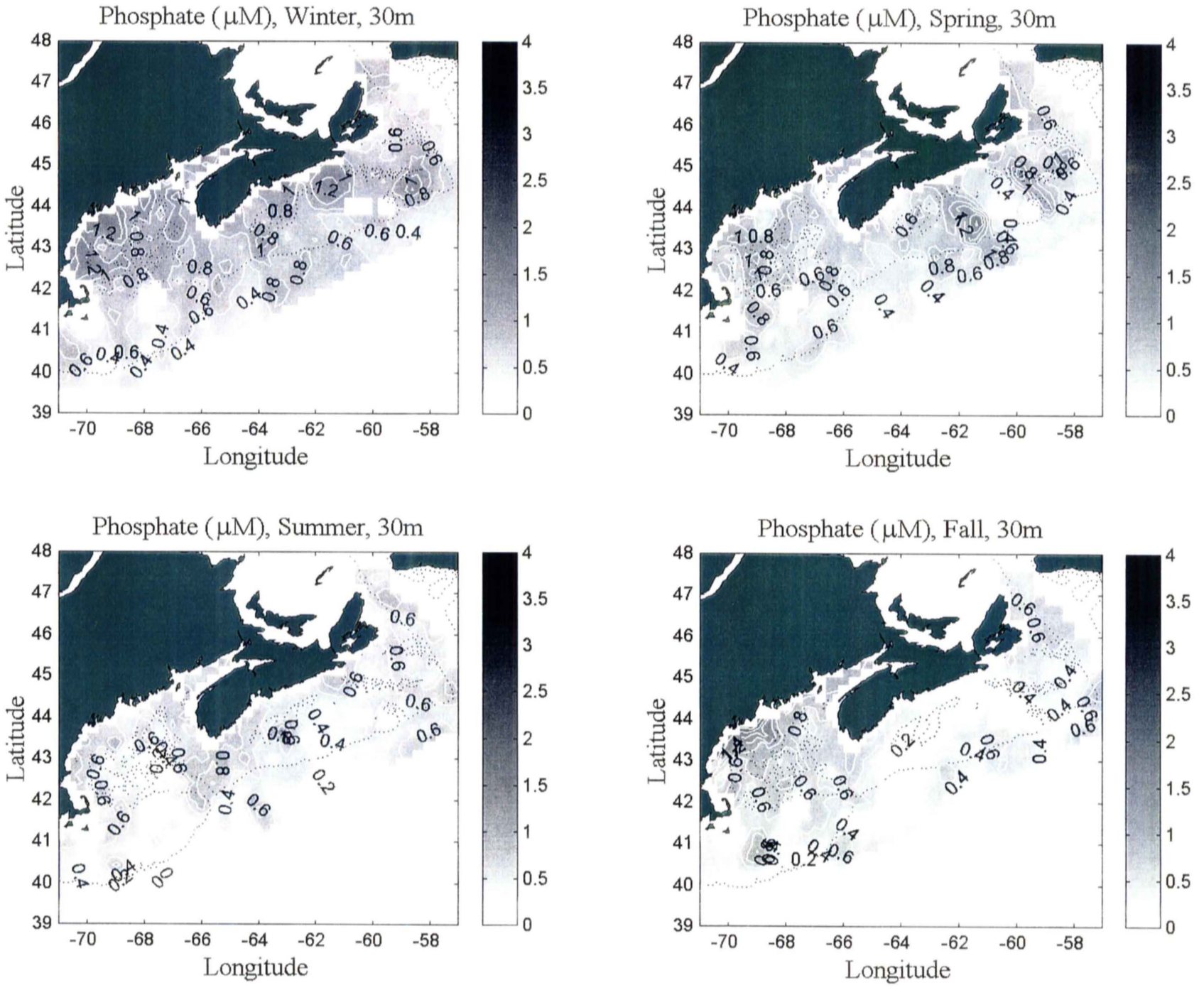

Figure 5b. The seasonal, optimally estimated phosphate concentrations (μM) for the Scotian Shelf and the Gulf of Maine at 30 m.

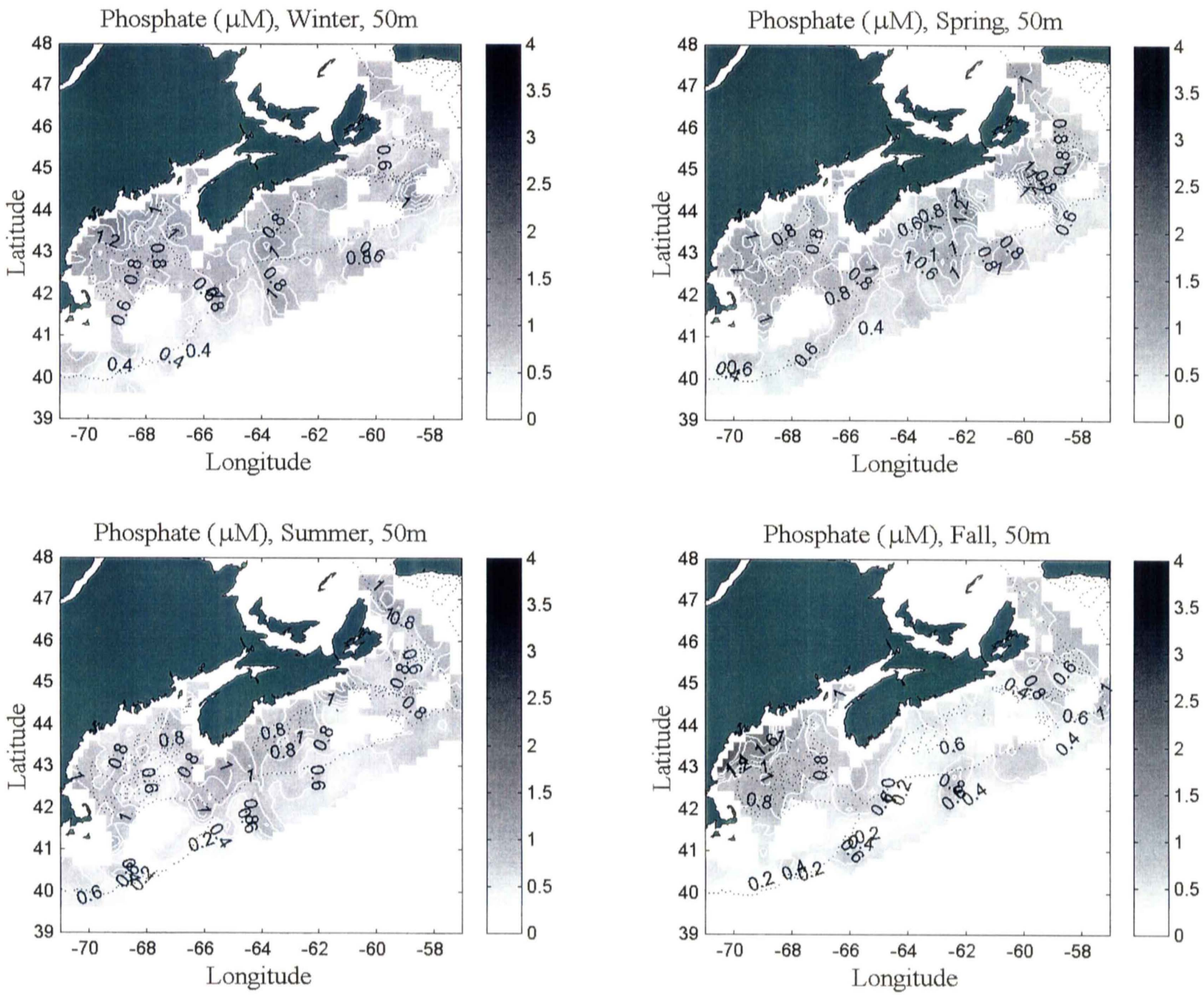

Figure 5c. The seasonal, optimally estimated phosphate concentrations (μM) for the Scotian Shelf and the Gulf of Maine at 50 m.

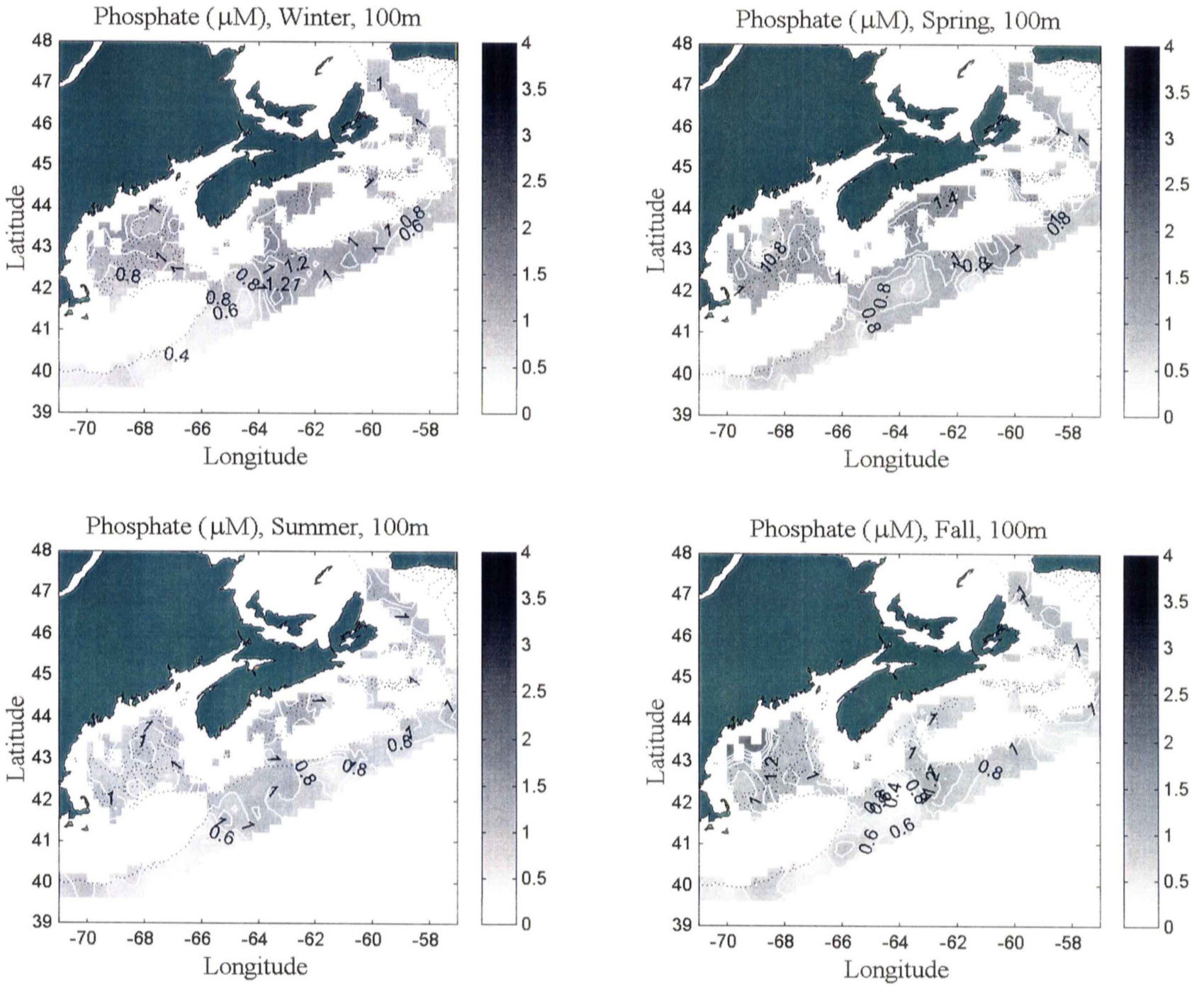

Figure 5d. The seasonal, optimally estimated phosphate concentrations (μM) for the Scotian Shelf and the Gulf of Maine at 100 m.

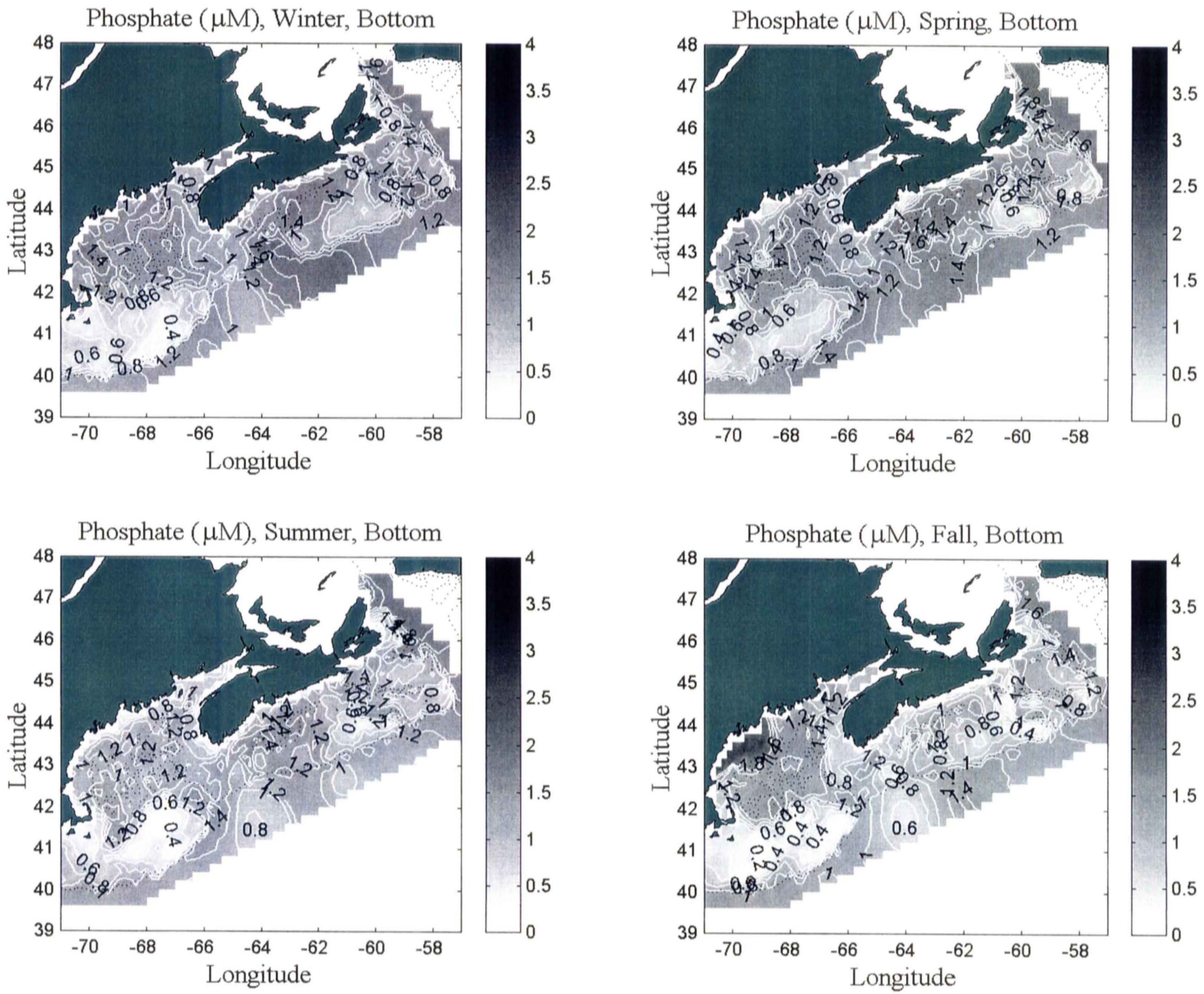

Figure 5e. The seasonal, optimally estimated phosphate concentrations (μM) for the Scotian Shelf and the Gulf of Maine at the bottom.

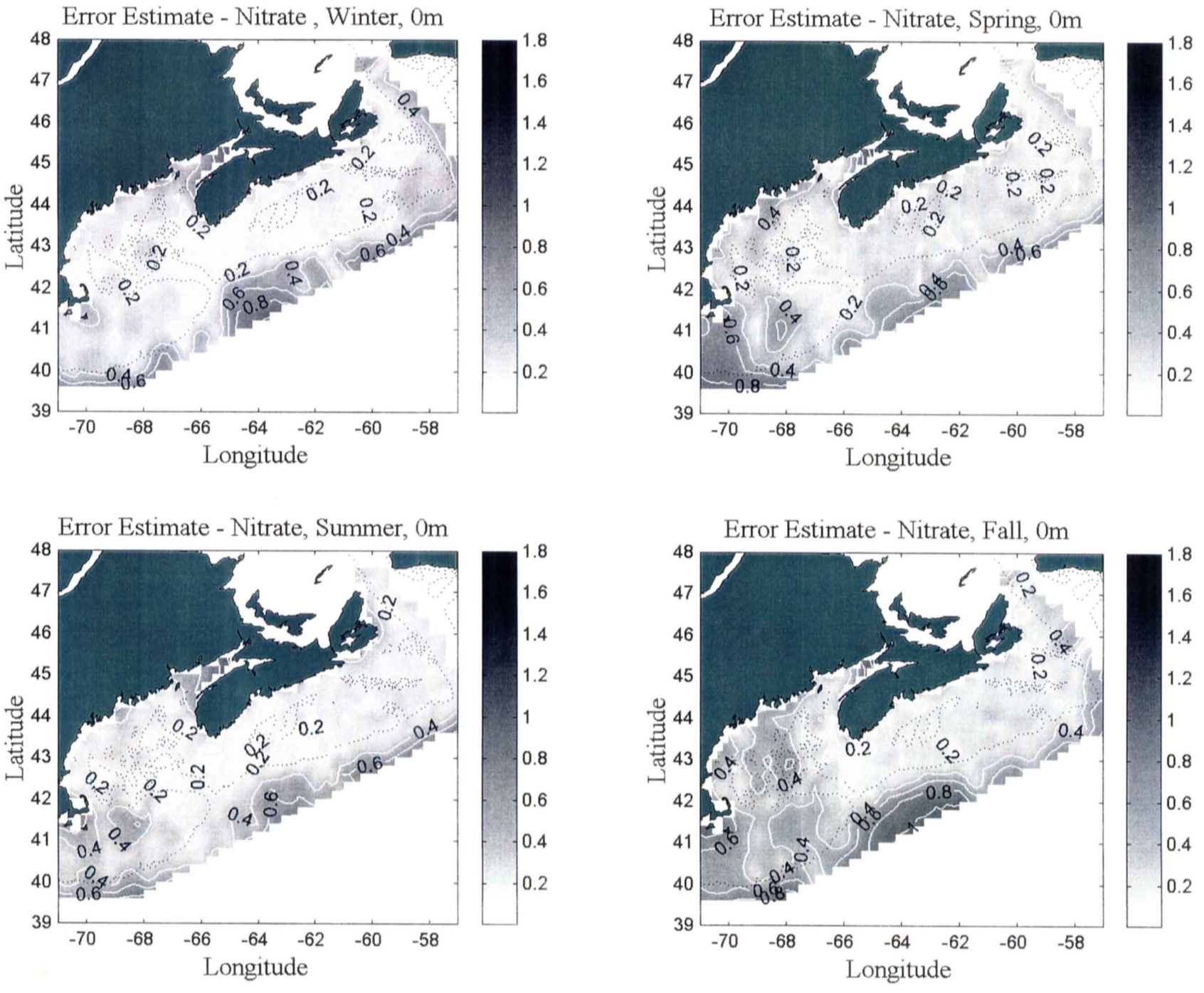

Figure 6a. The seasonal, optimally estimated nitrate error fields (μM) for the Scotian Shelf and the Gulf of Maine at 0 m.

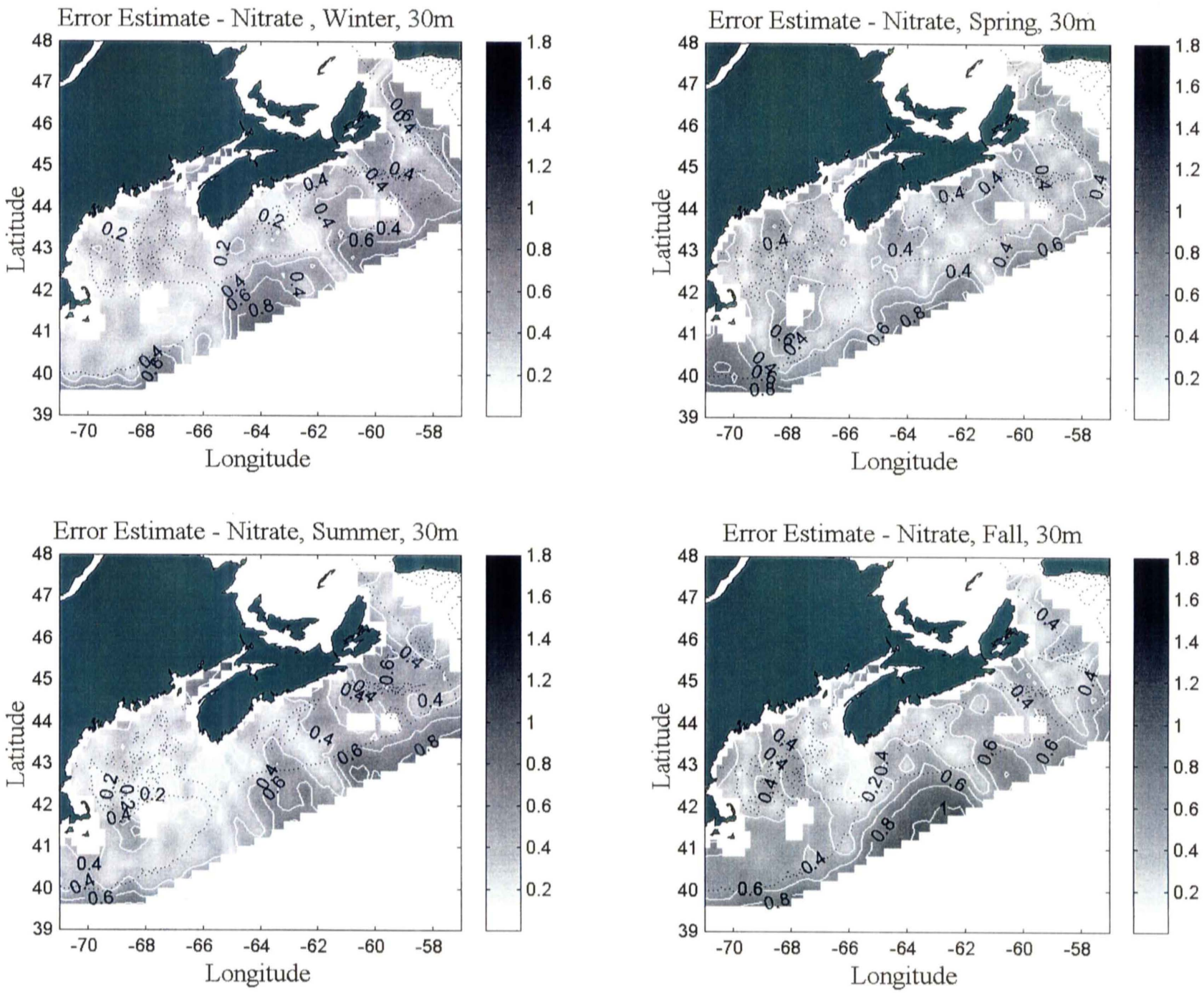

Figure 6b. The seasonal, optimally estimated nitrate error fields (μM) for the Scotian Shelf and the Gulf of Maine at 30 m.

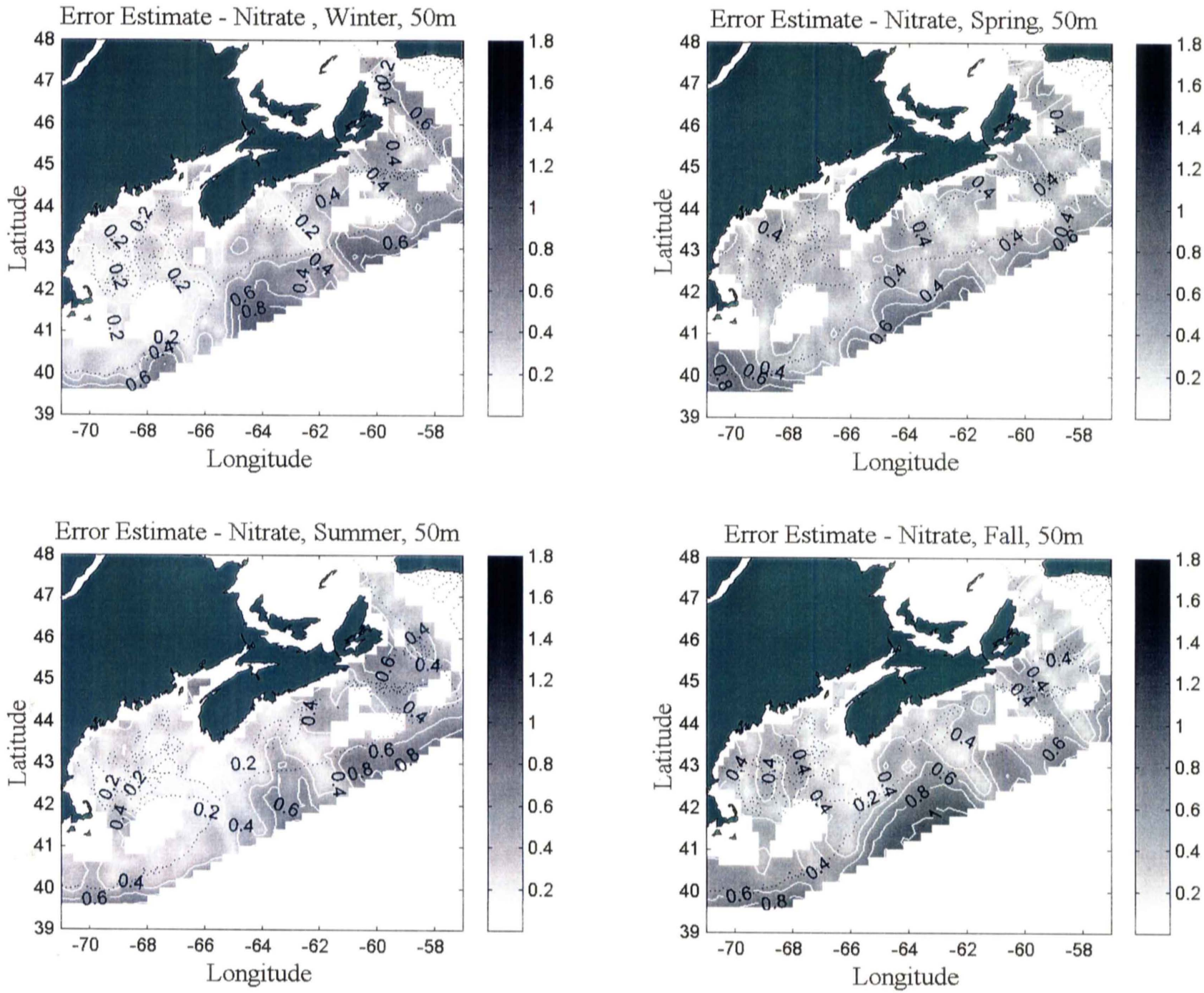

Figure 6c. The seasonal, optimally estimated nitrate error fields (μM) for the Scotian Shelf and the Gulf of Maine at 50 m.

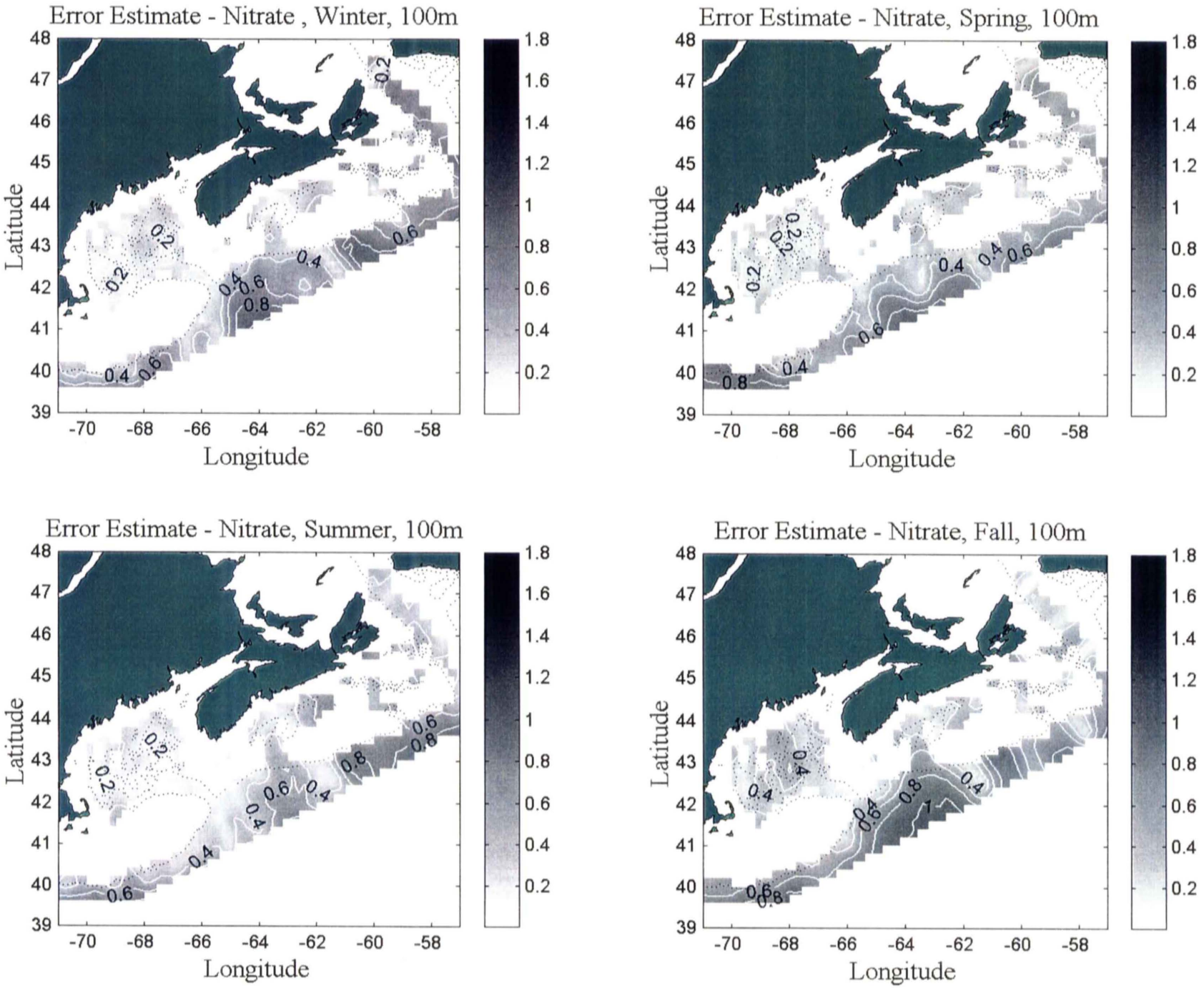

Figure 6d. The seasonal, optimally estimated nitrate error fields (μM) for the Scotian Shelf and the Gulf of Maine at 100 m.

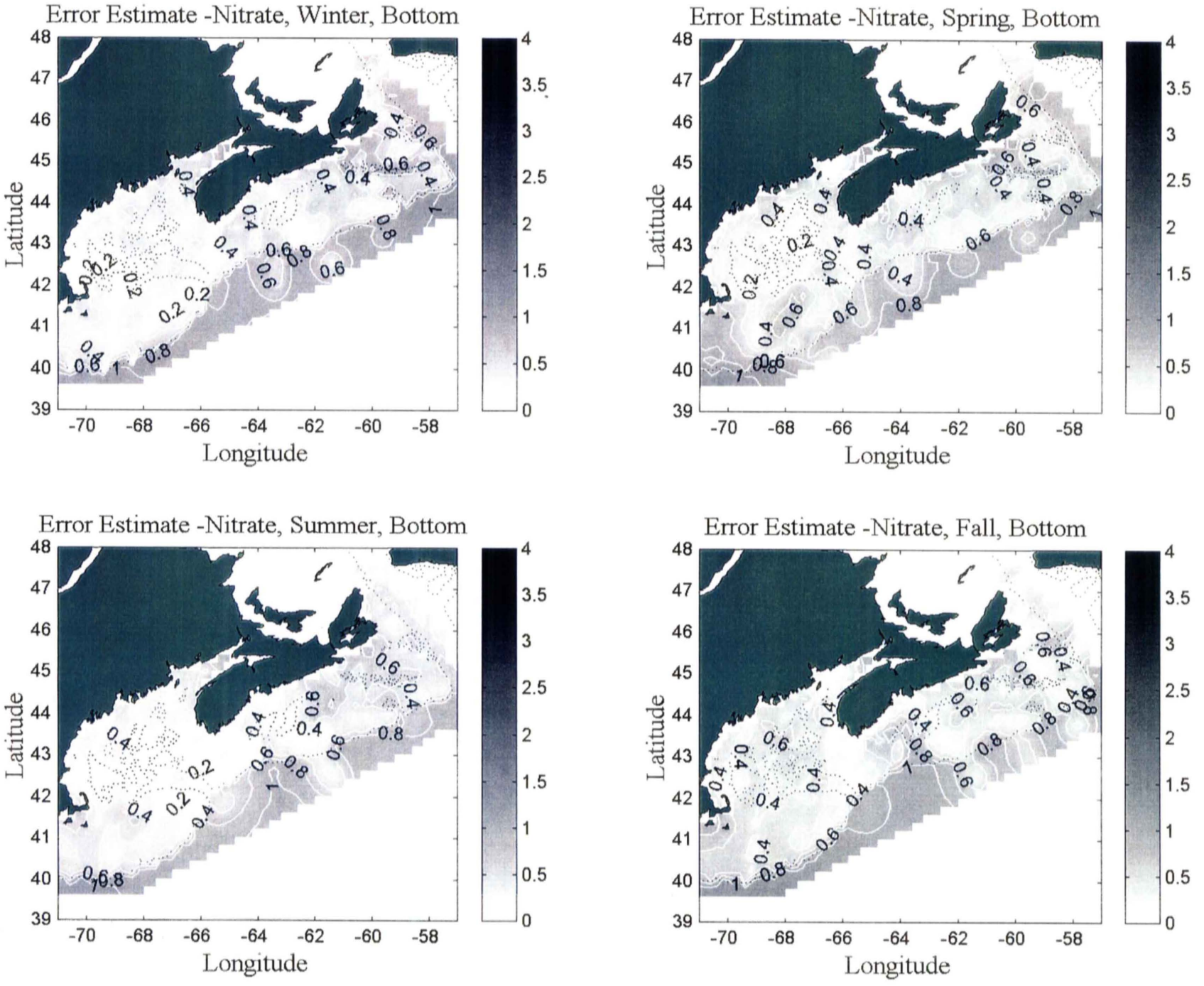

Figure 6e. The seasonal, optimally estimated nitrate error fields (μM) for the Scotian Shelf and the Gulf of Maine at the bottom.

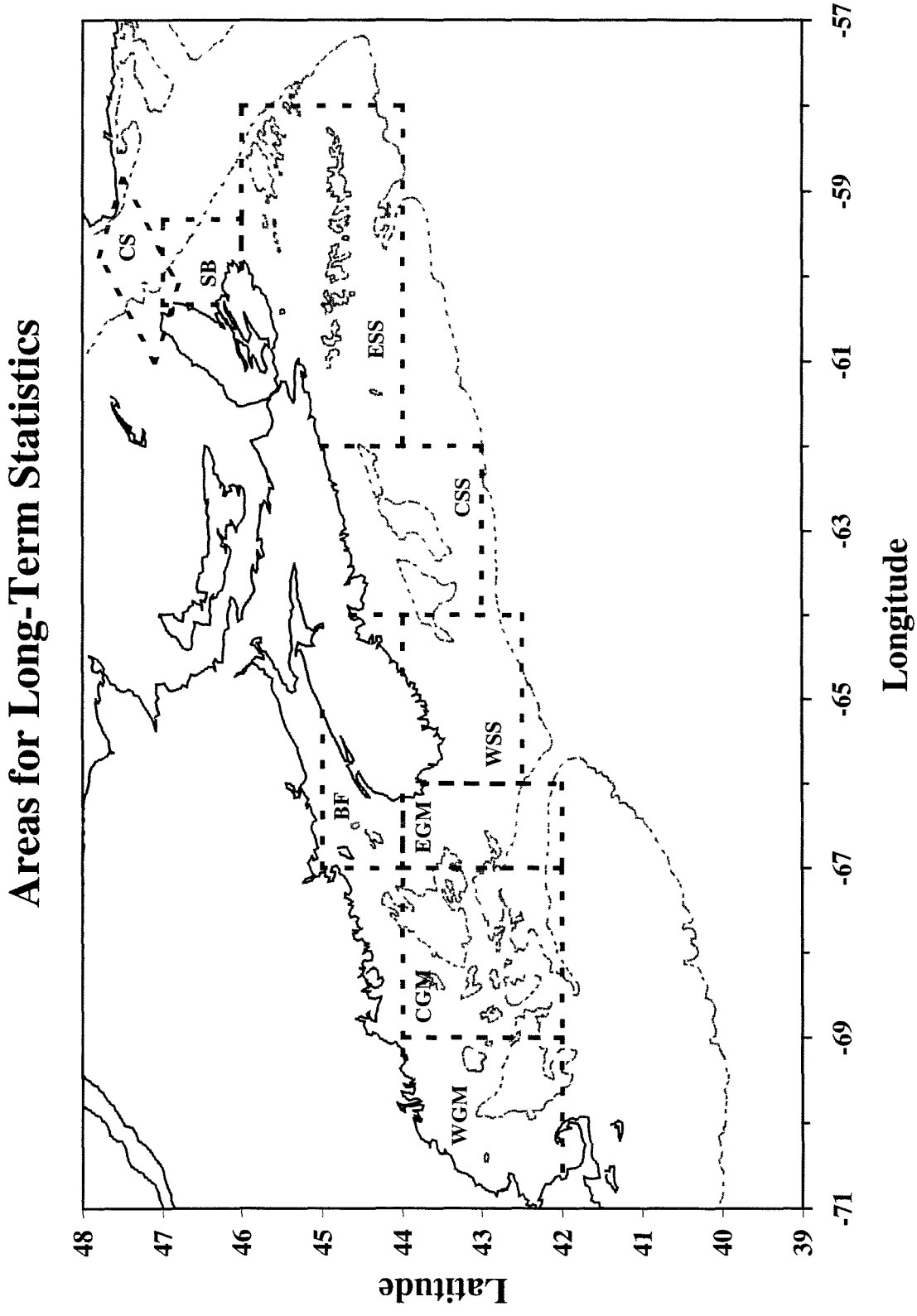

Figure 7. Statistical sub-areas for the Scotian Shelf and the Gulf of Maine: Cabot Strait (CS), Sydney Bight (SB), eastern Scotian Shelf (ESS), central Scotian Shelf (CSS), western Scotian Shelf (WSS), eastern Gulf of Maine (EGM), central Gulf of Maine (CGM), western Gulf of Maine (WGM), and the Bay of Fundy (BF).

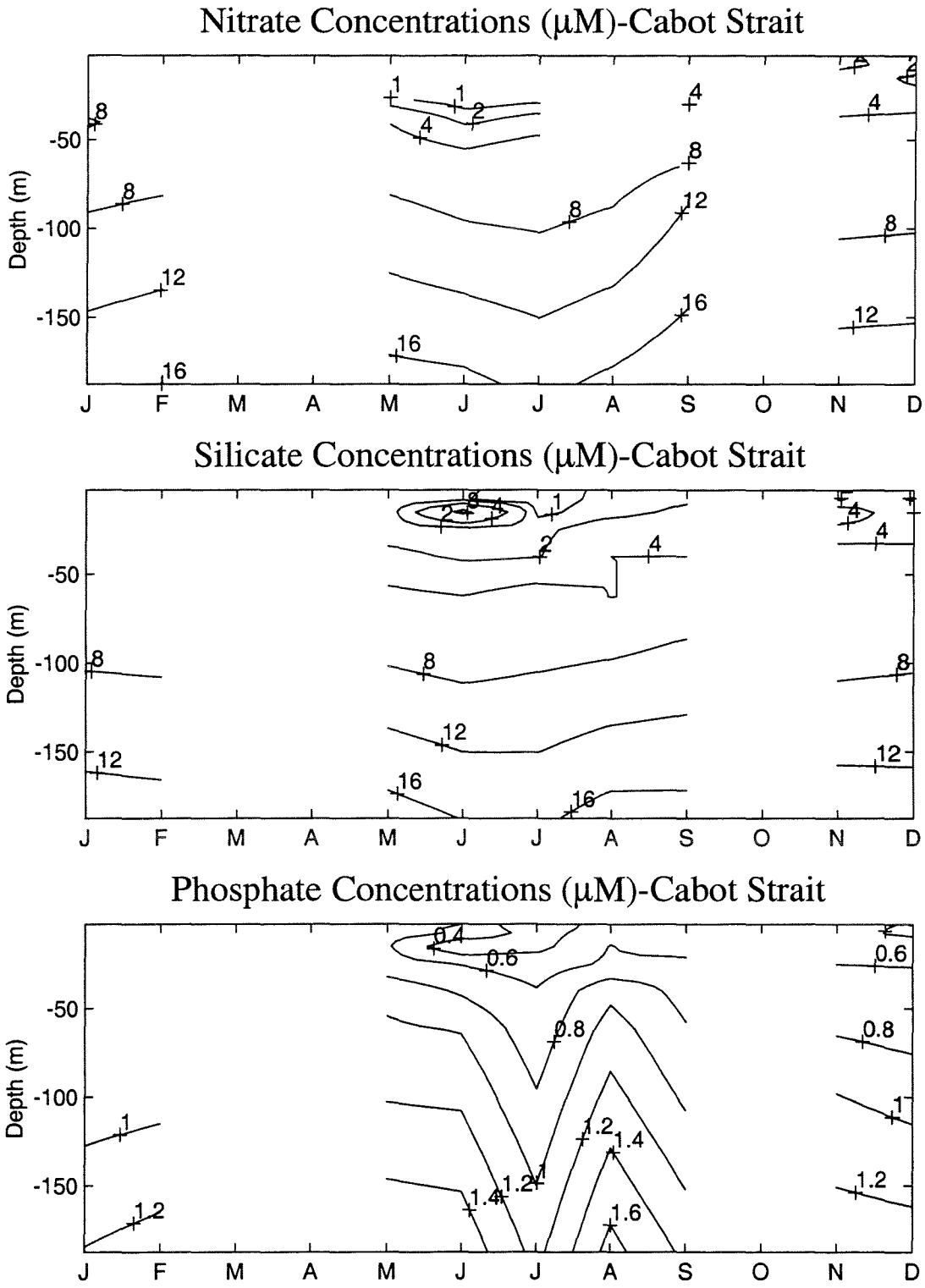

Figure 8a. Contour plot of monthly mean concentrations (μM) of nitrate, silicate, and phosphate for Cabot Strait.

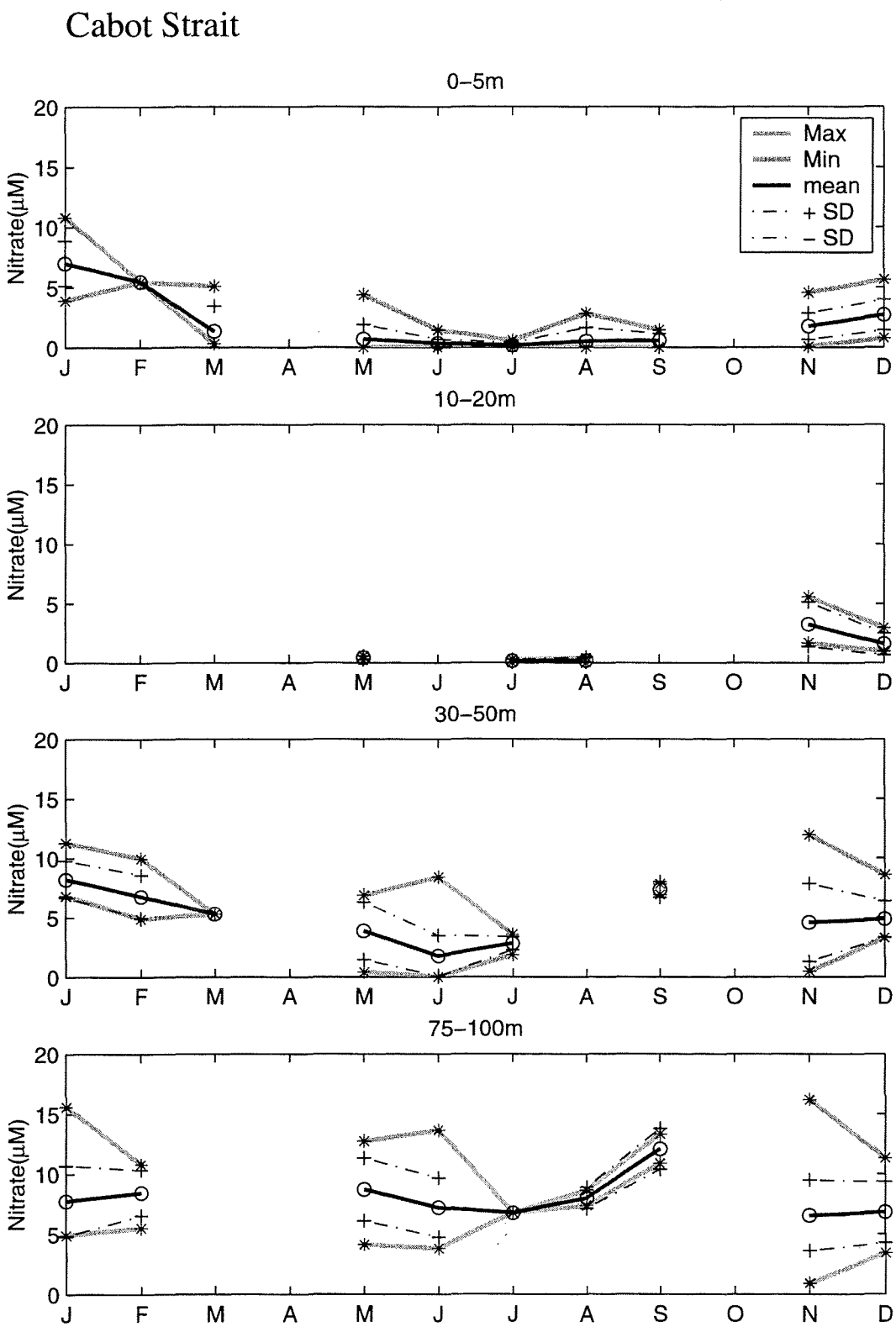

Figure 8b. Time series plots of monthly mean concentrations, mean ± 1 standard deviation and extreme values for nitrate for Cabot Strait.

Cabot Strait

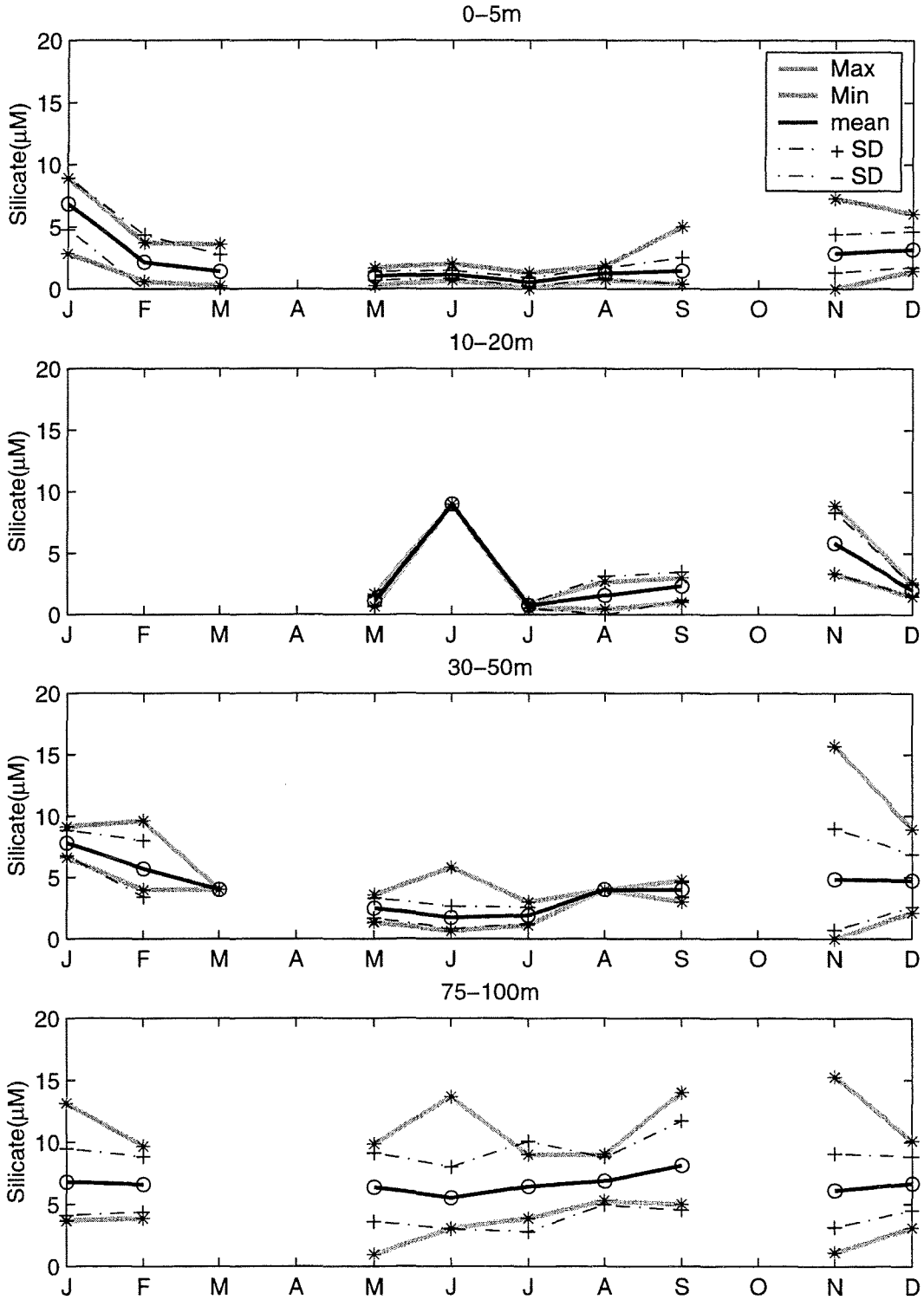

Figure 8c. Time series plots of monthly mean concentrations, mean ± 1 standard deviation and extreme values for silicate for Cabot Strait.

Cabot Strait

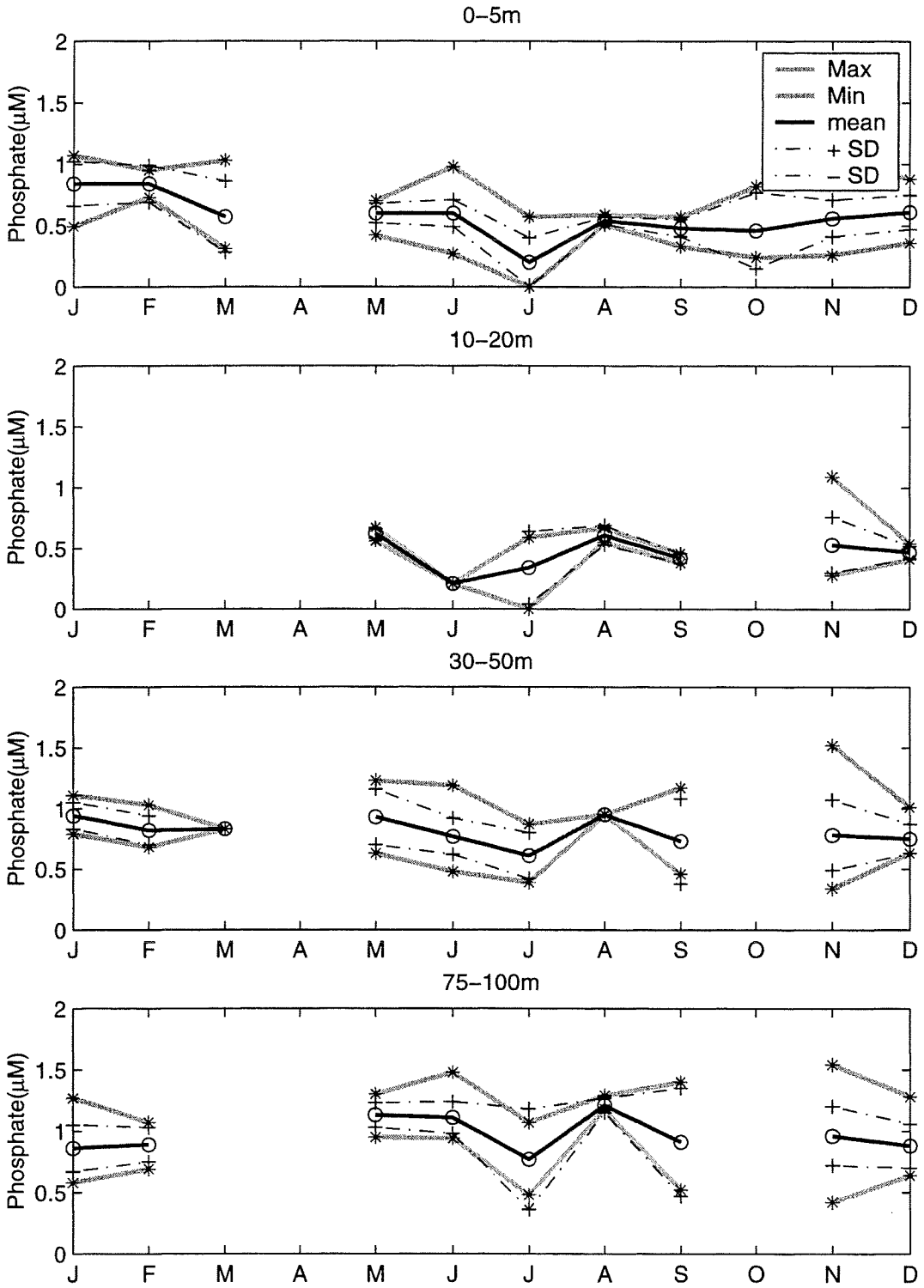

Figure 8d. Time series plots of monthly mean concentrations, mean ± 1 standard deviation and extreme values for phosphate for Cabot Strait.

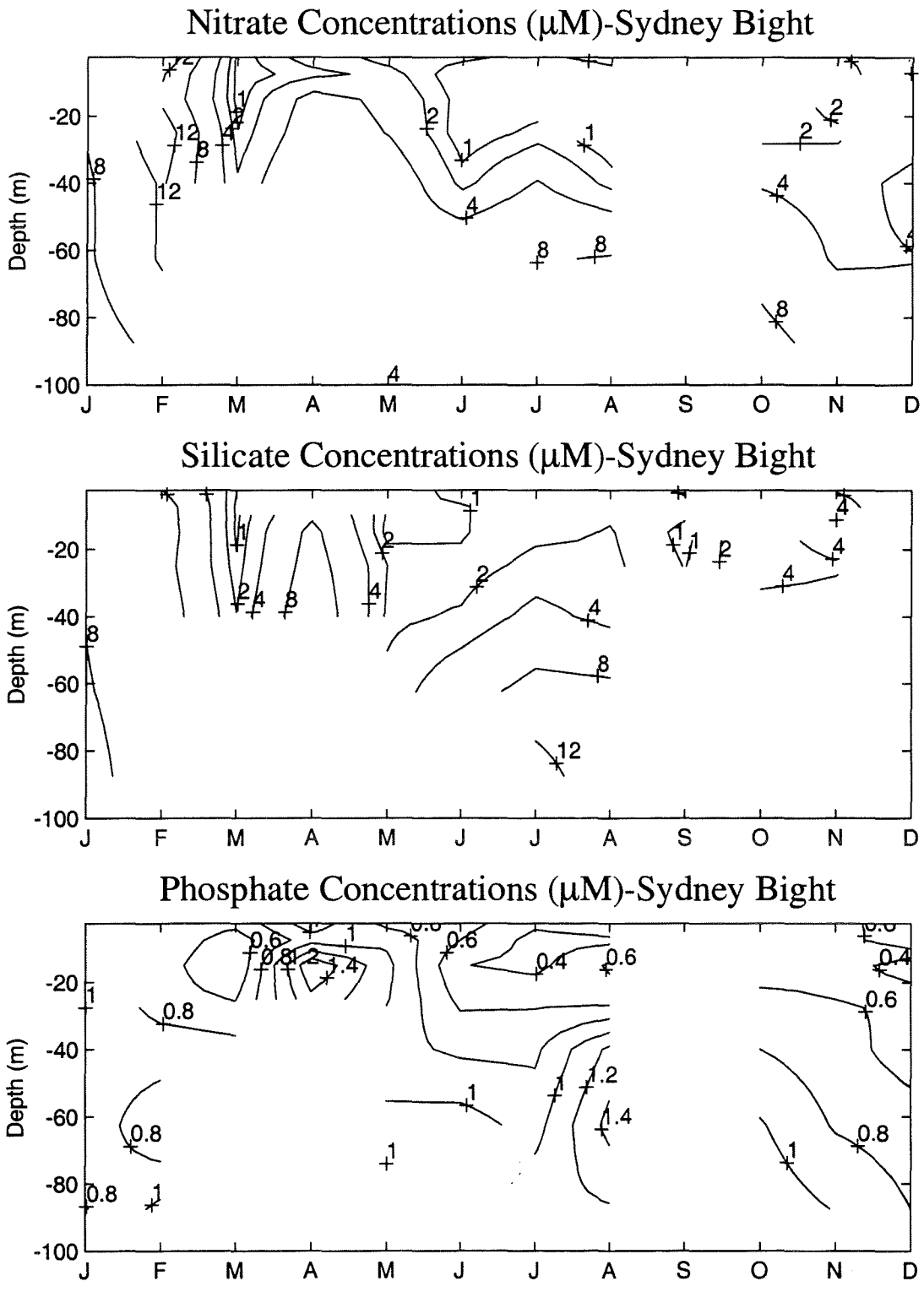

Figure 9a. Contour plot of monthly mean concentrations (µM) of nitrate, silicate, and phosphate for Sydney Bight.

Sydney Bight

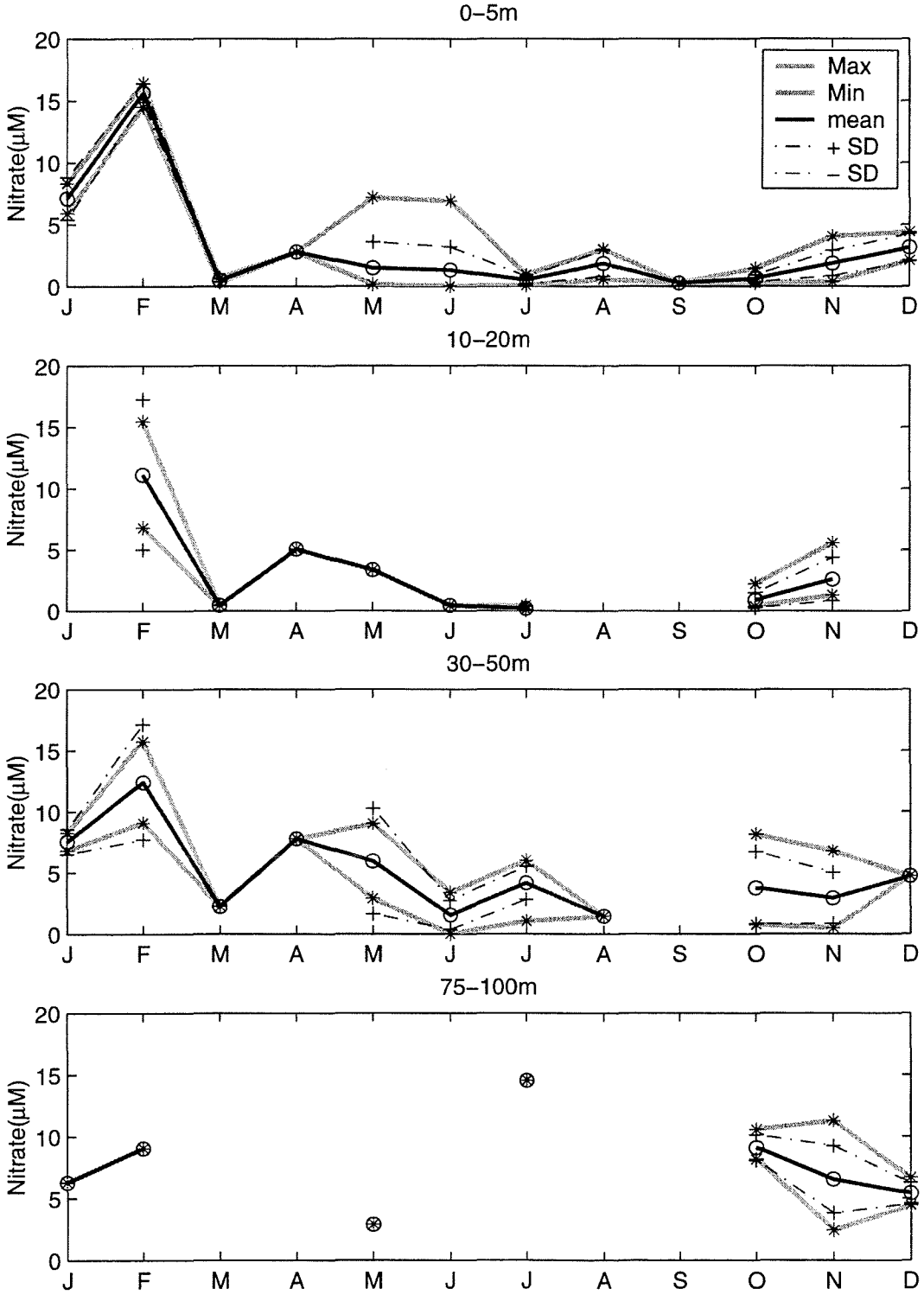

Figure 9b. Time series plots of monthly mean concentrations, mean ± 1 standard deviation and extreme values for nitrate for Sydney Bight.

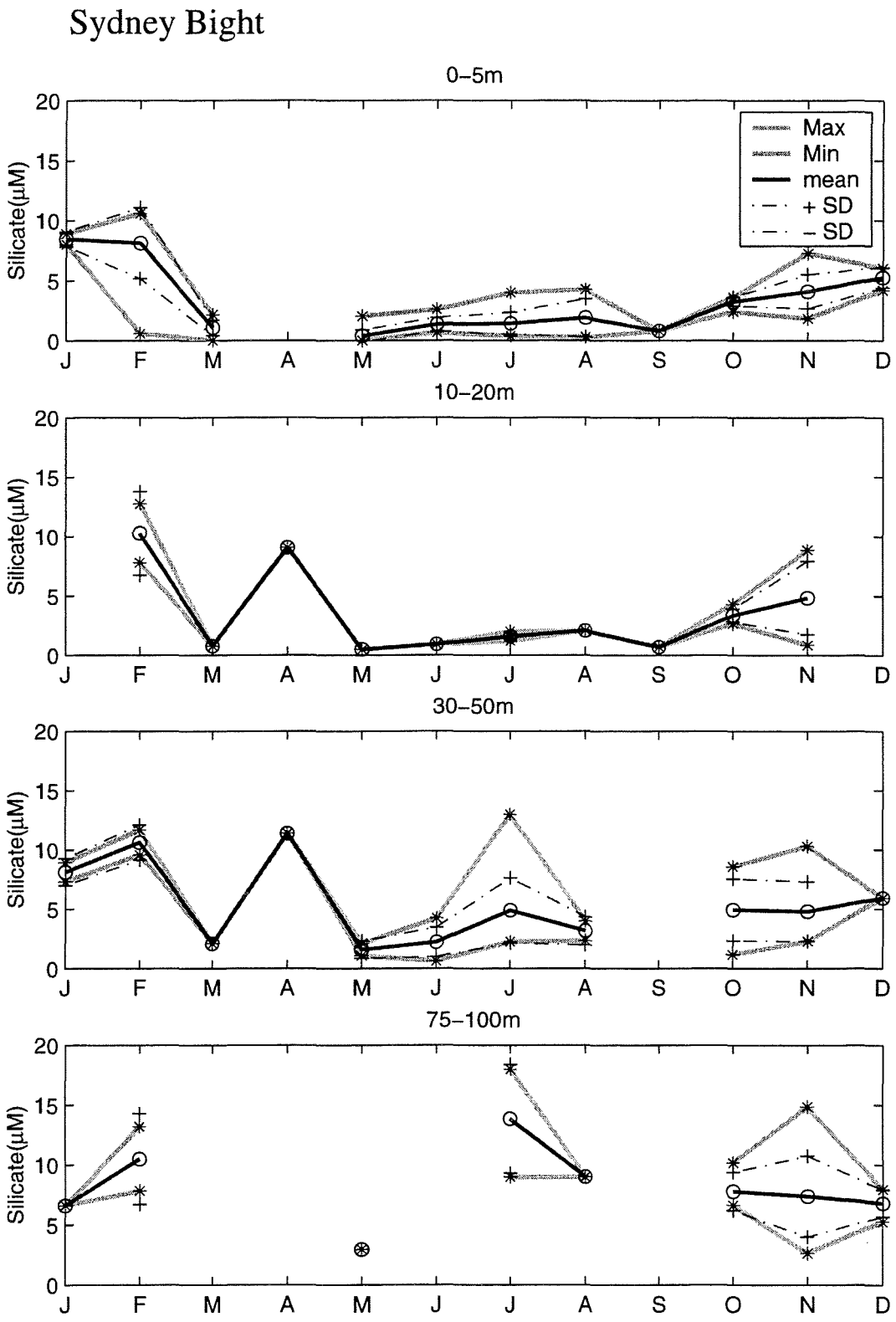

Figure 9c. Time series plots of monthly mean concentrations, mean ± 1 standard deviation and extreme values for silicate for Sydney Bight.

Sydney Bight

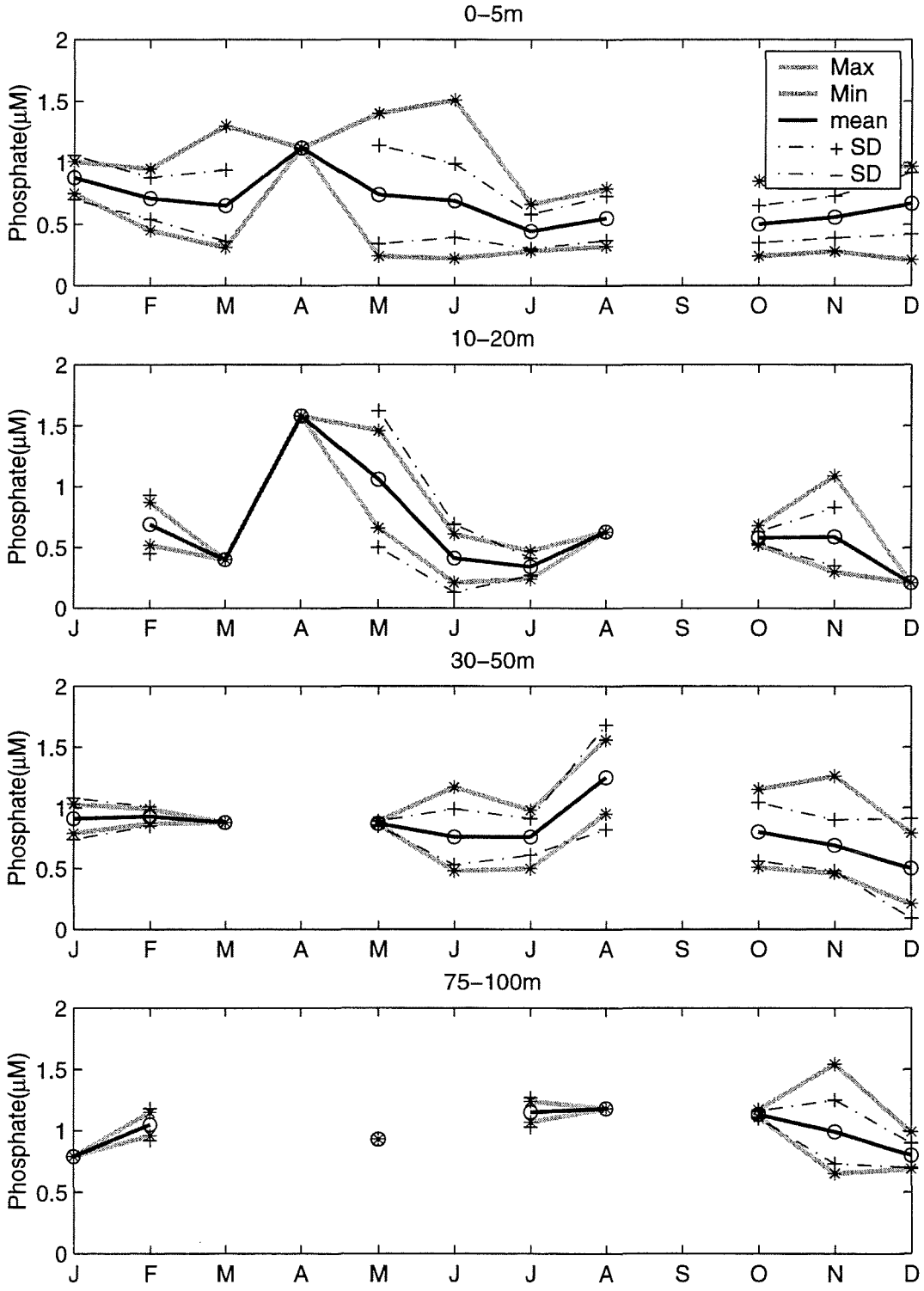

Figure 9d. Time series plots of monthly mean concentrations, mean ± 1 standard deviation and extreme values for phosphate for Sydney Bight.

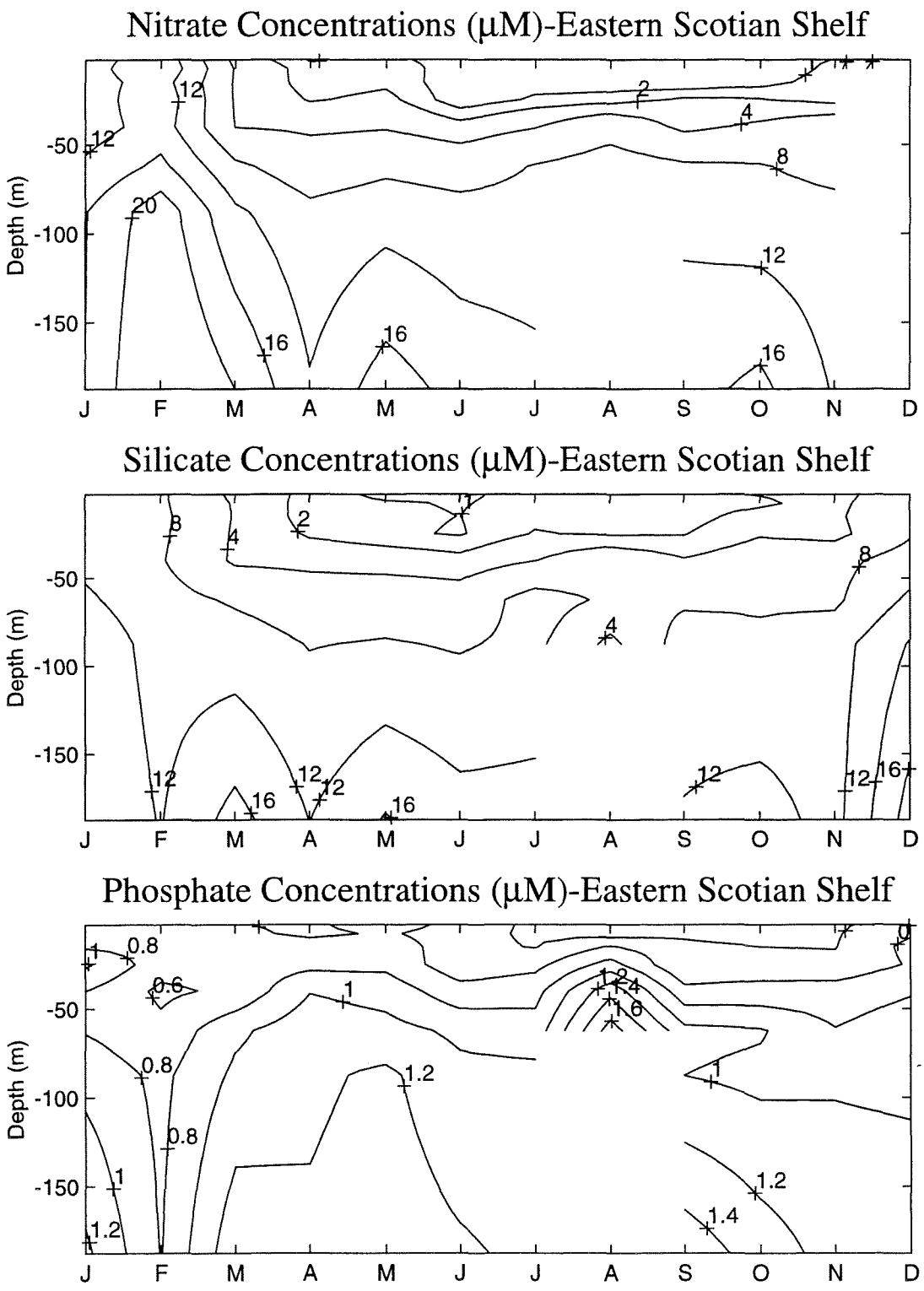

Figure 10a. Contour plot of monthly mean concentrations (μM) of nitrate, silicate, and phosphate for the Eastern Scotian Shelf.

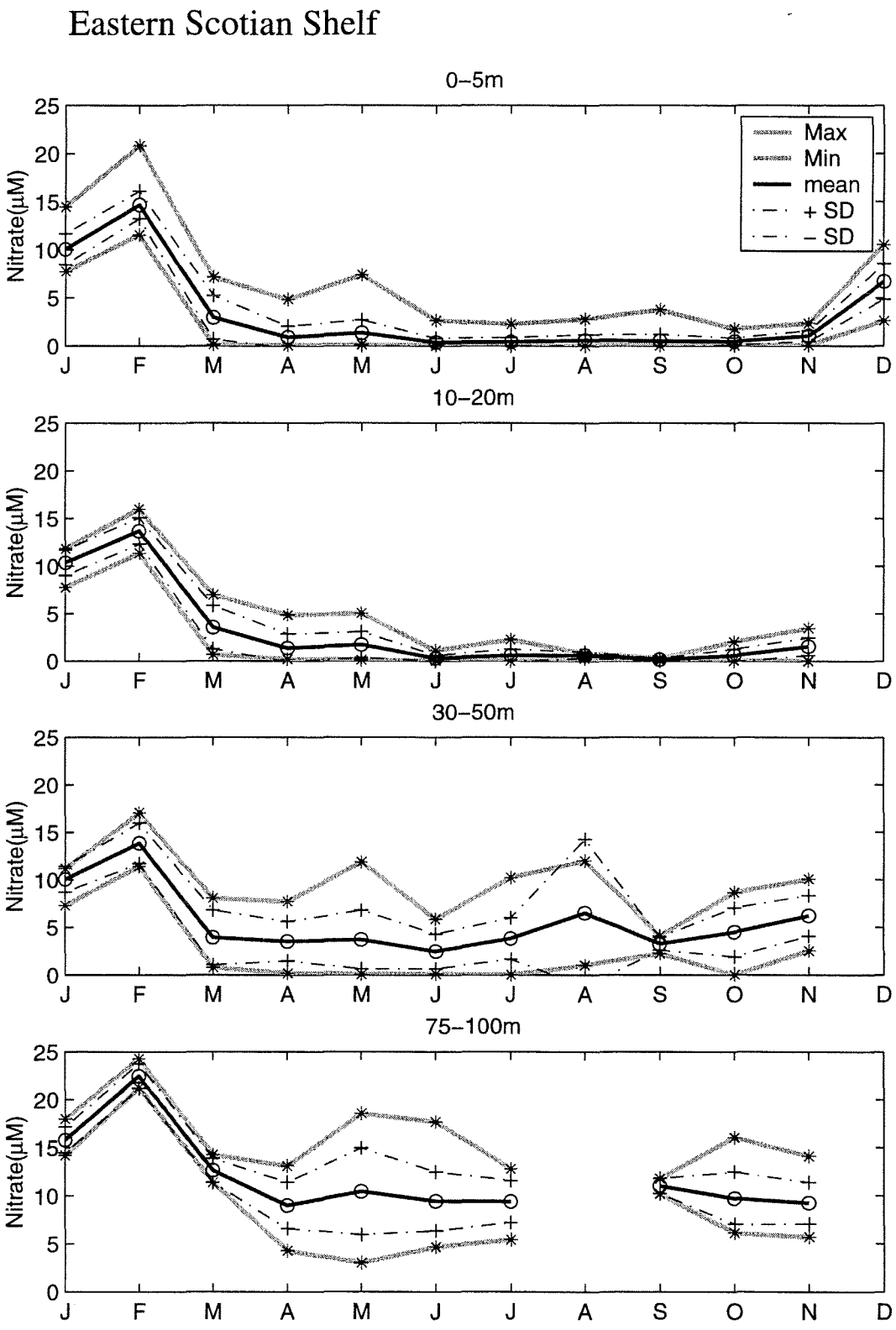

Figure 10b. Time series plots of monthly mean concentrations, mean ± 1 standard deviation and extreme values for nitrate for Eastern Scotian Shelf.

Eastern Scotian Shelf

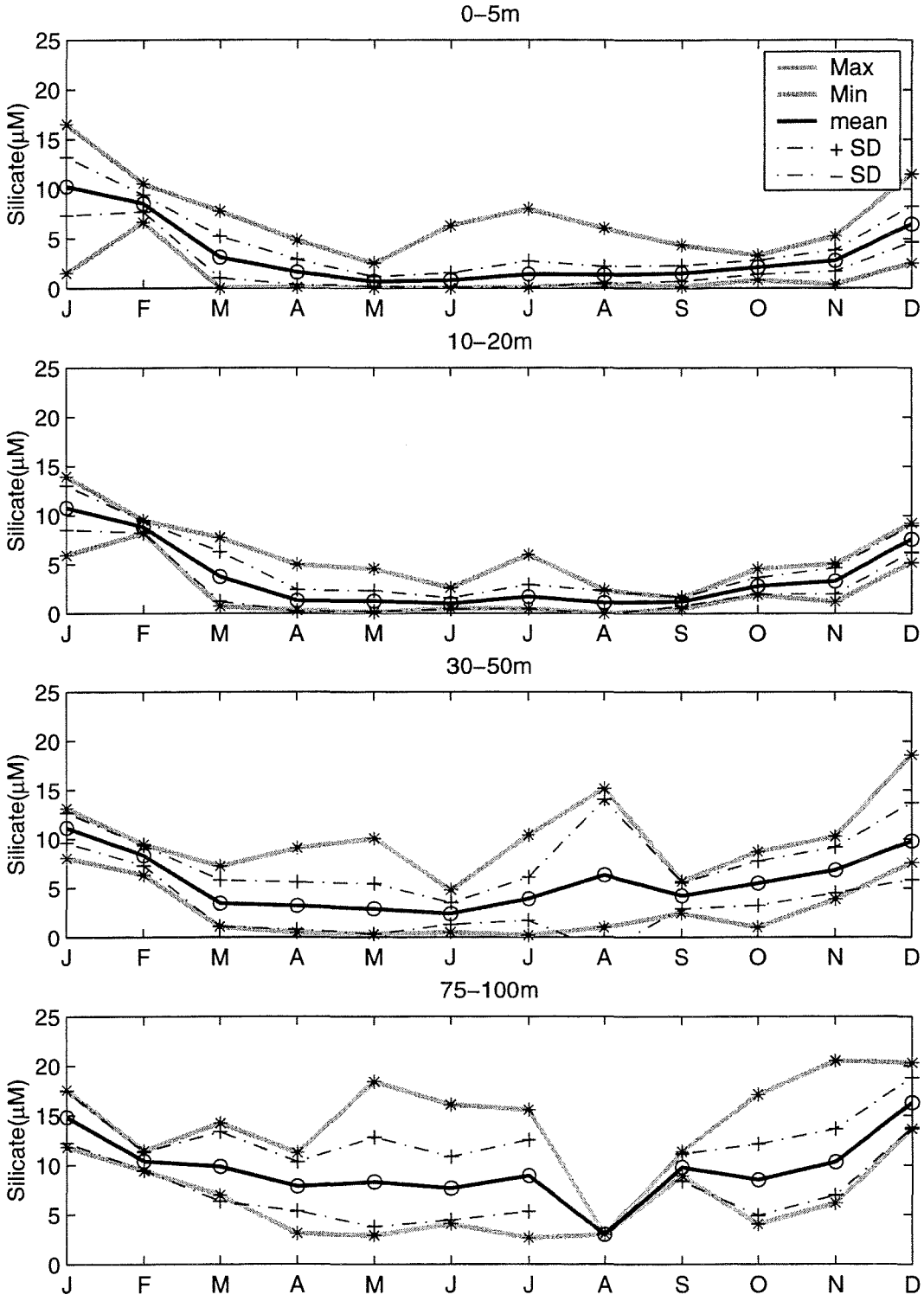

Figure 10c. Time series plots of monthly mean concentrations, mean ± 1 standard deviation and extreme values for silicate for Eastern Scotian Shelf.

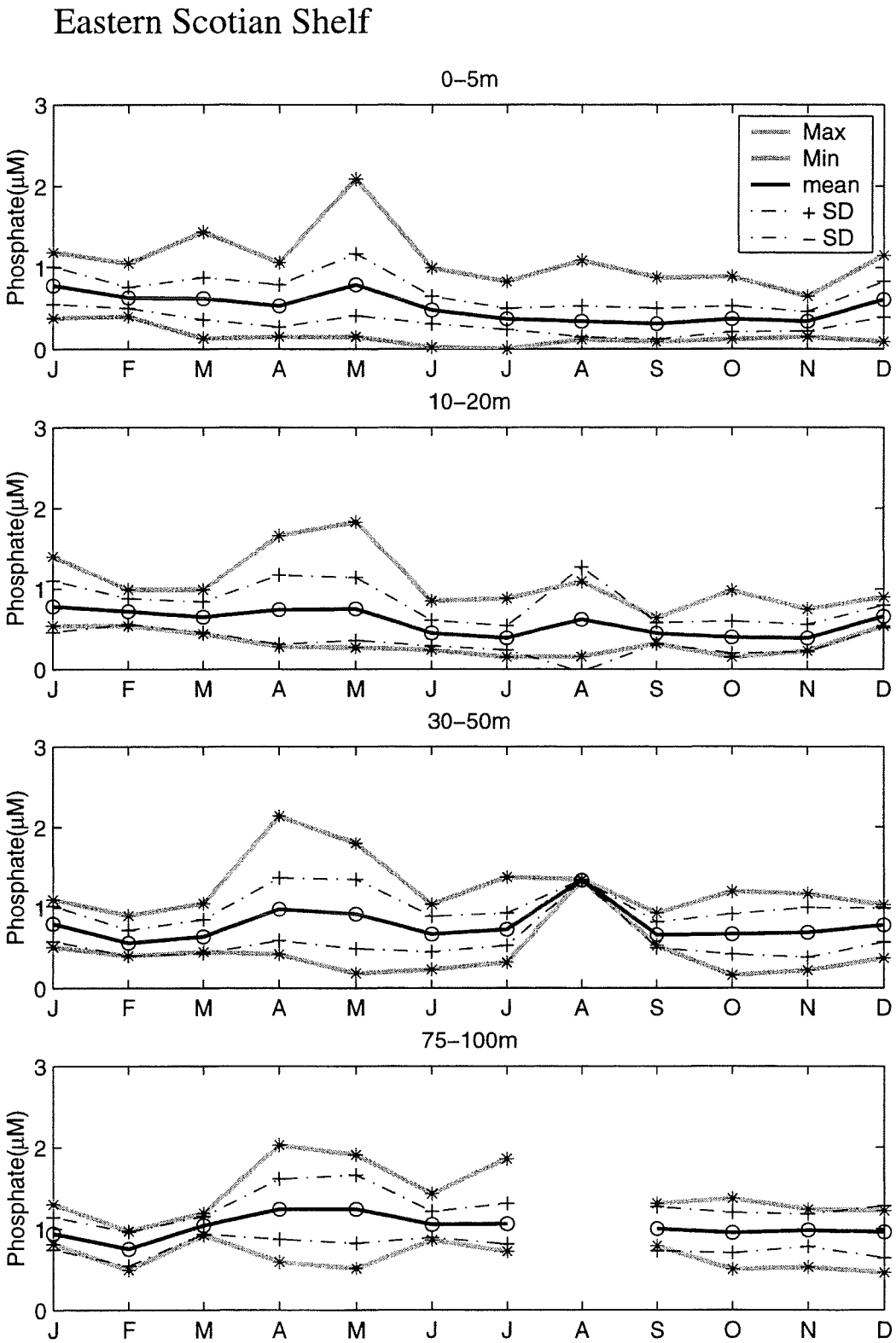

Figure 10d. Time series plots of monthly mean concentrations, mean ± 1 standard deviation and extreme values for phosphate for Eastern Scotian Shelf.

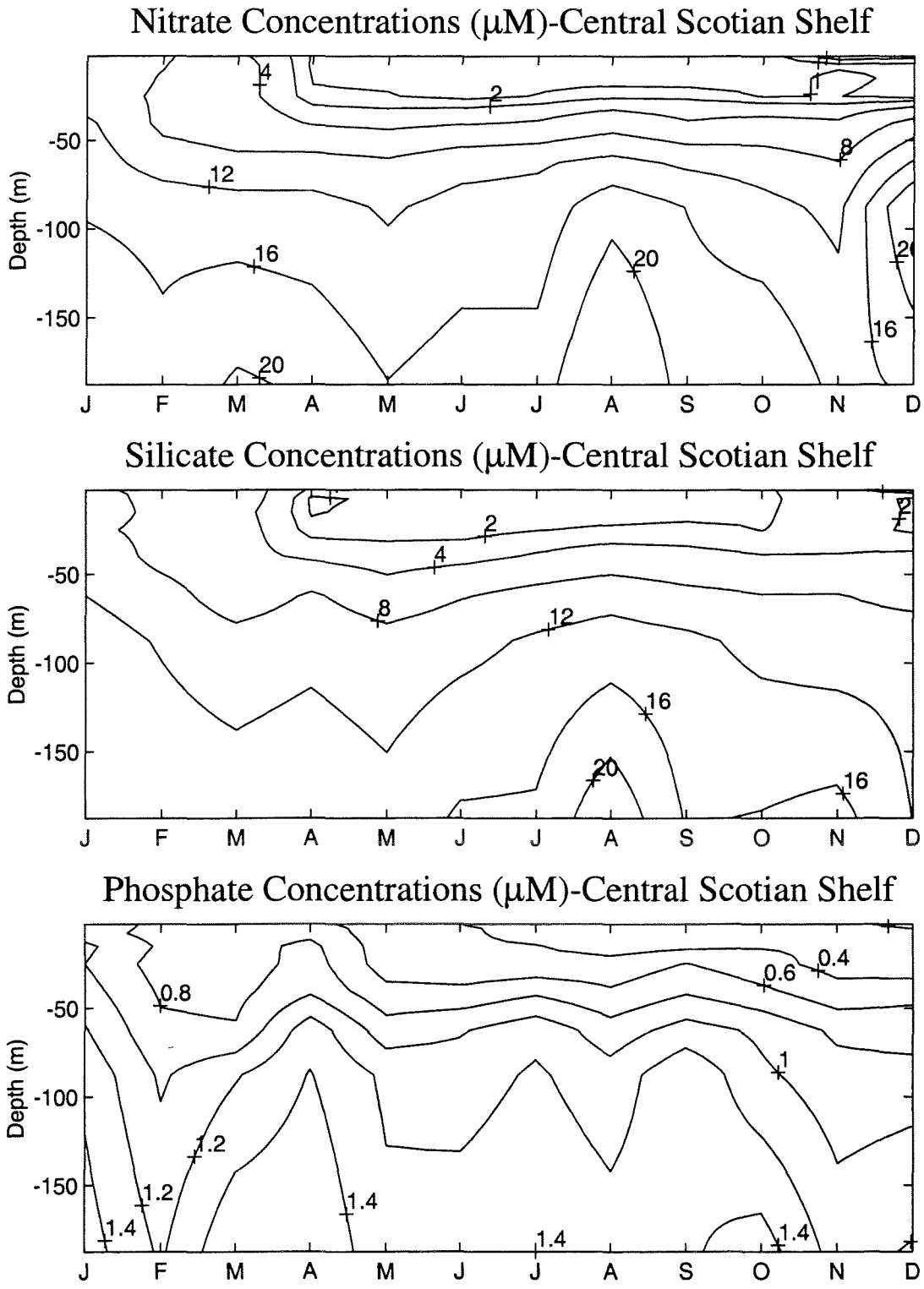

Figure 11a. Contour plot of monthly mean concentrations (μM) of nitrate, silicate, and phosphate for Central Scotian Shelf.

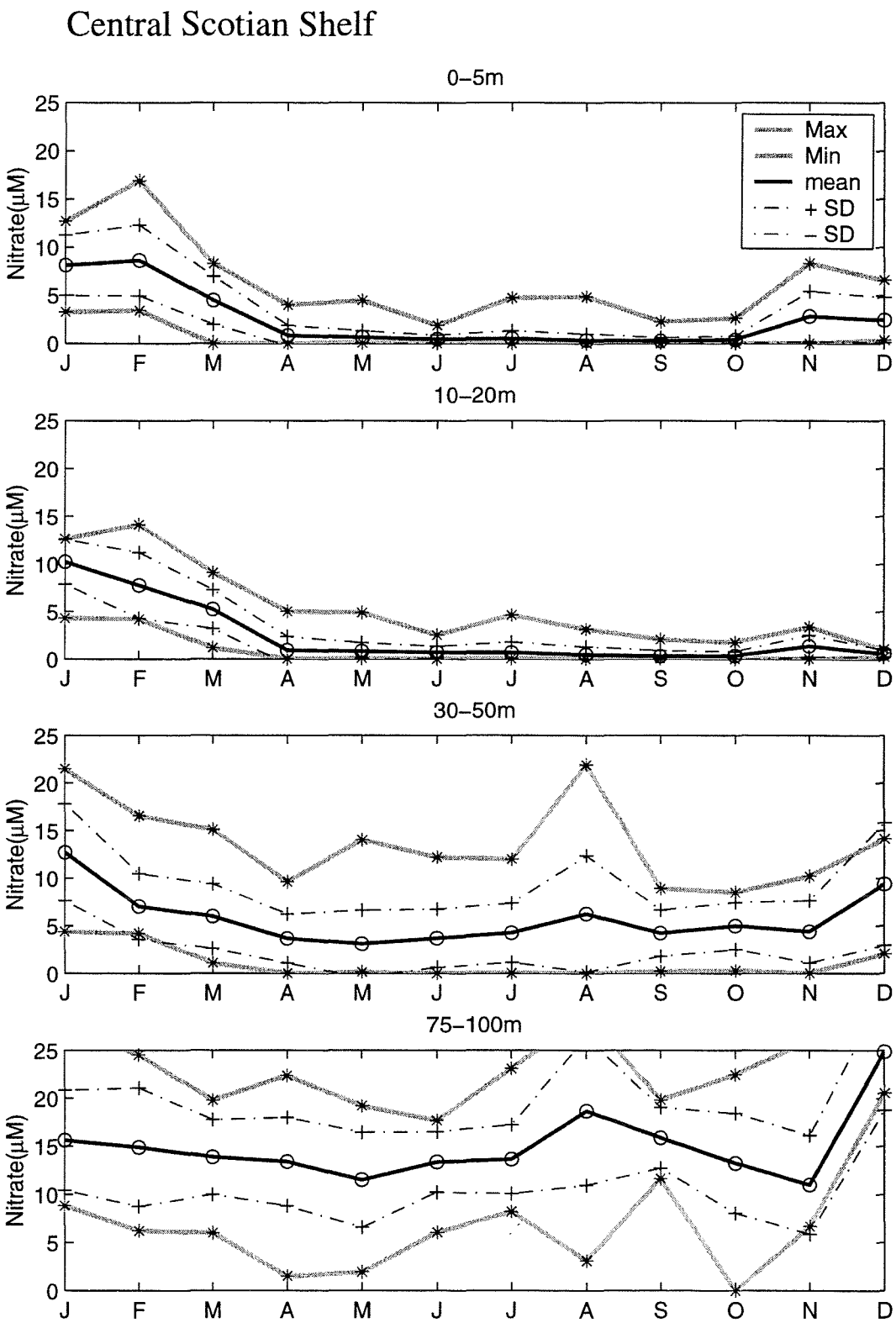

Figure 11b. Time series plots of monthly mean concentrations, mean ± 1 standard deviation and extreme values for nitrate for Central Scotian Shelf.

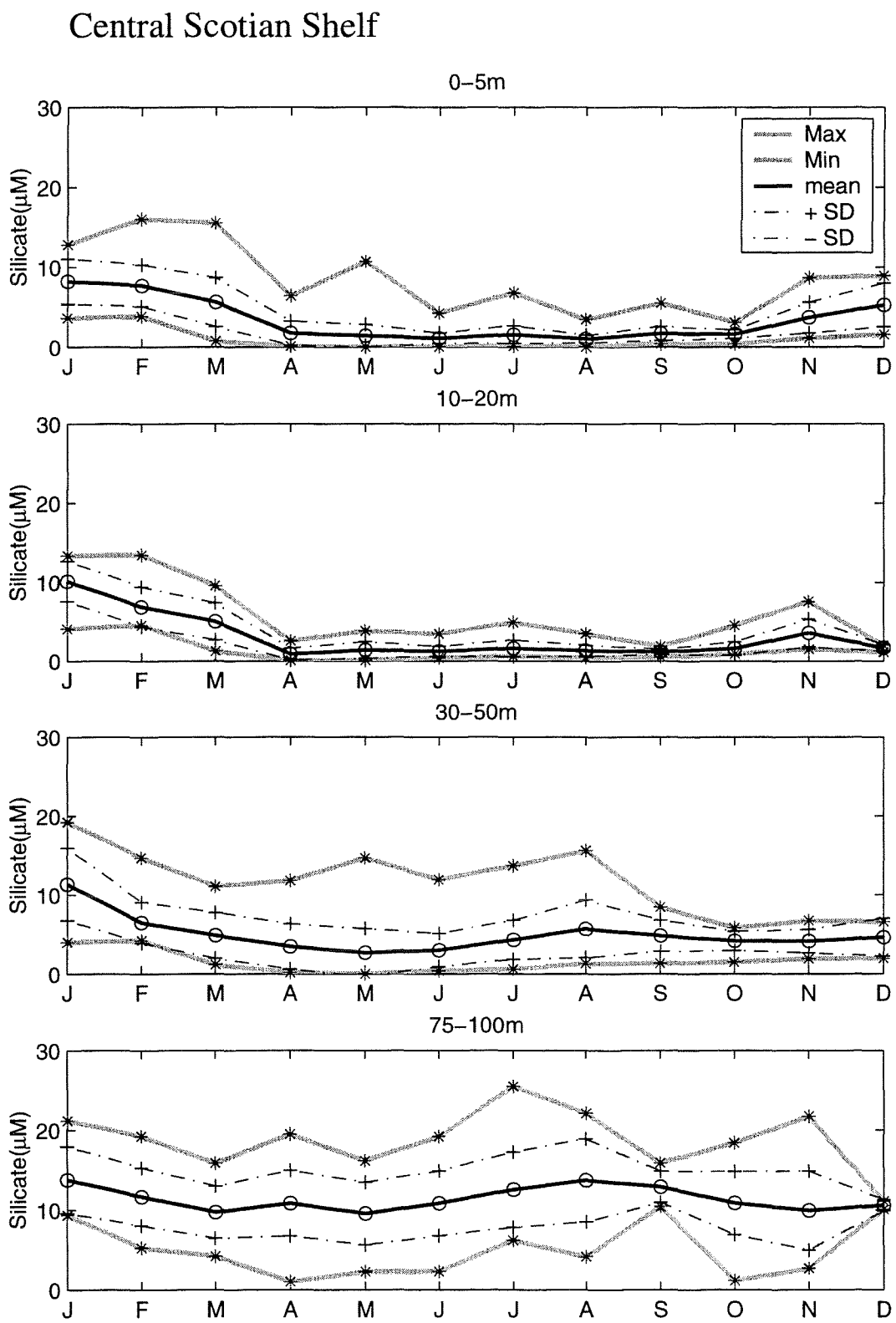

Figure 11c. Time series plots of monthly mean concentrations, mean ± 1 standard deviation and extreme values for silicate for Central Scotian Shelf.

Central Scotian Shelf

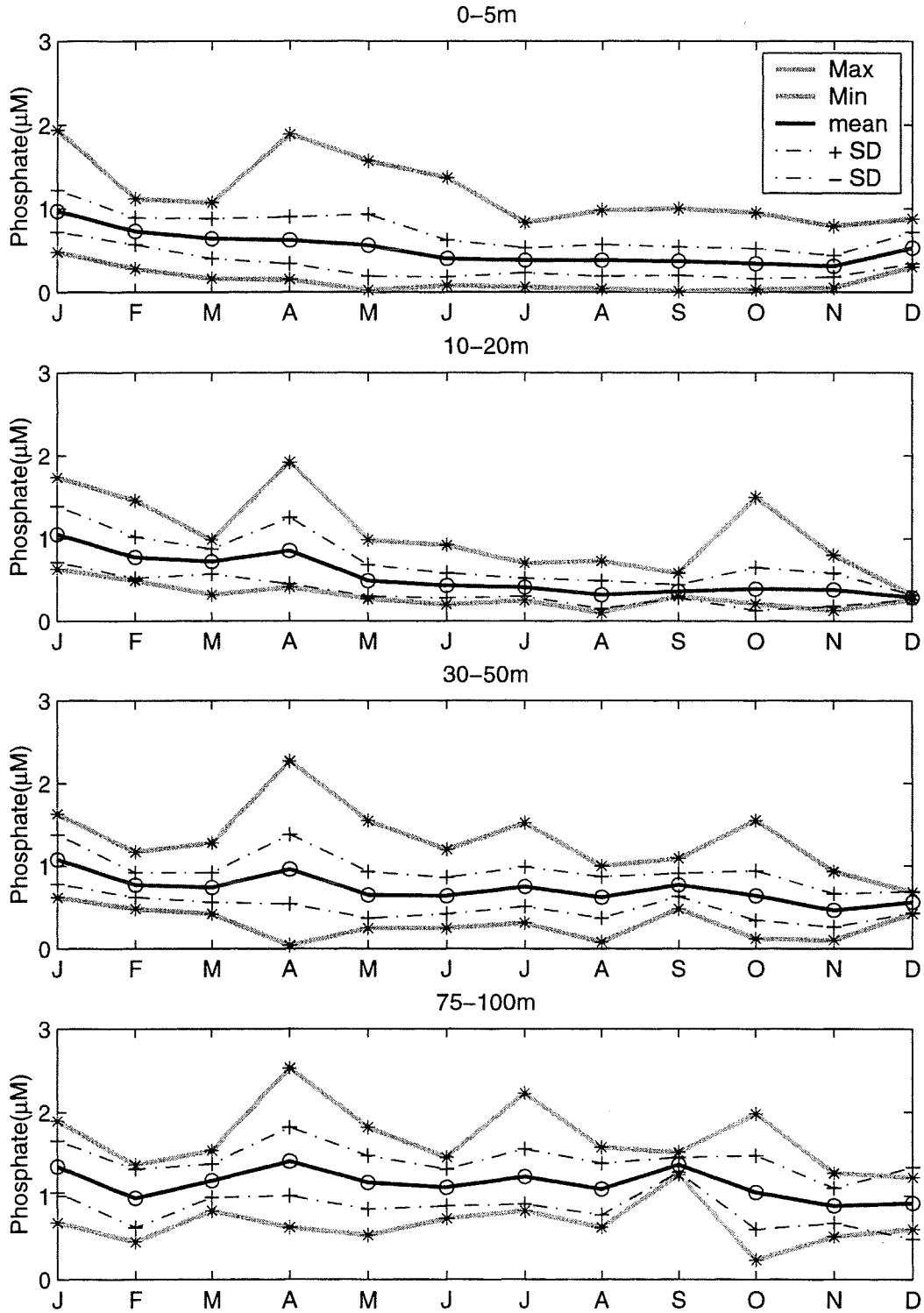

Figure 11d. Time series plots of monthly mean concentrations, mean ± 1 standard deviation and extreme values for phosphate for Central Scotian Shelf.

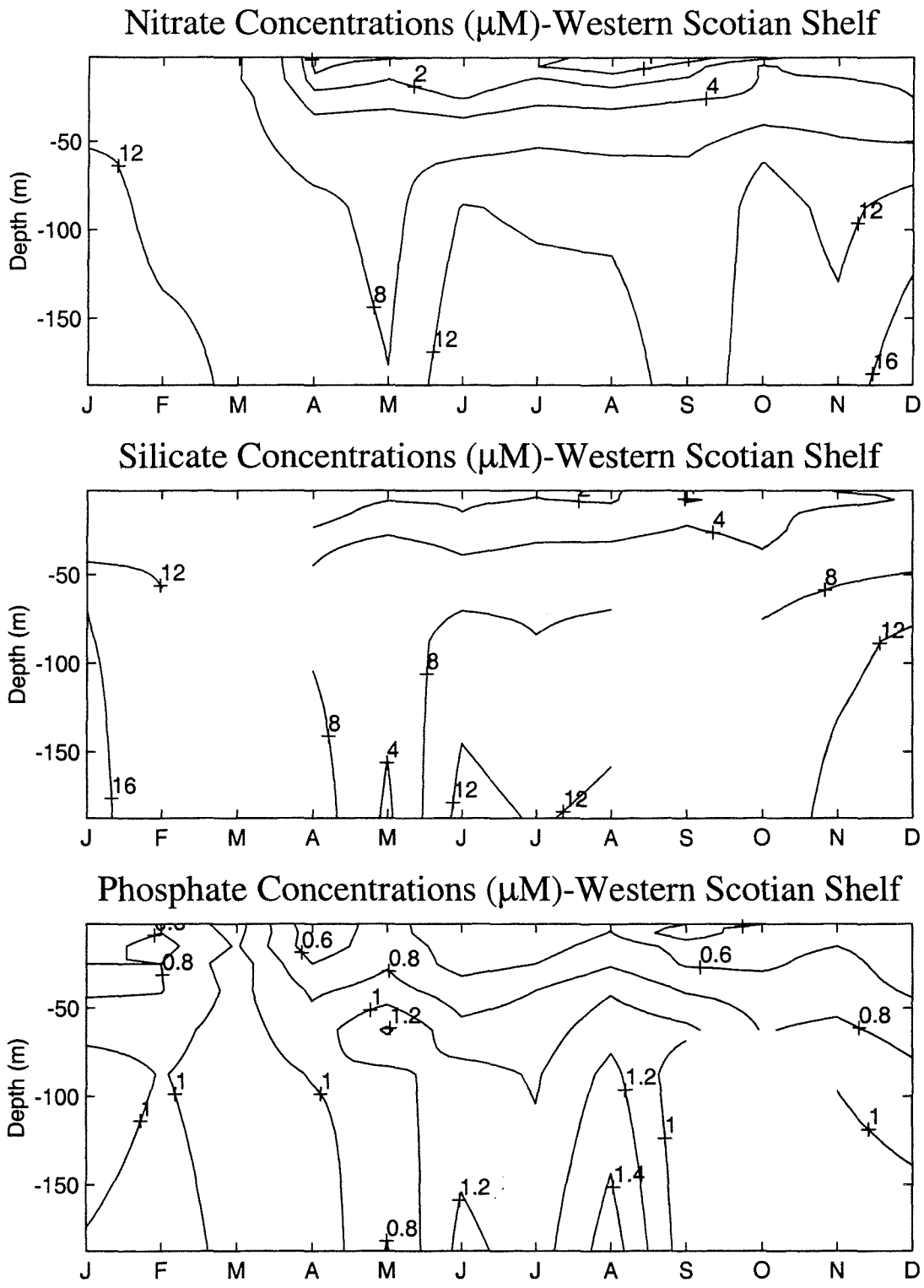

Figure 12a. Contour plot of monthly mean concentrations (μM) of nitrate, silicate, and phosphate for Western Scotian Shelf.

Western Scotian Shelf

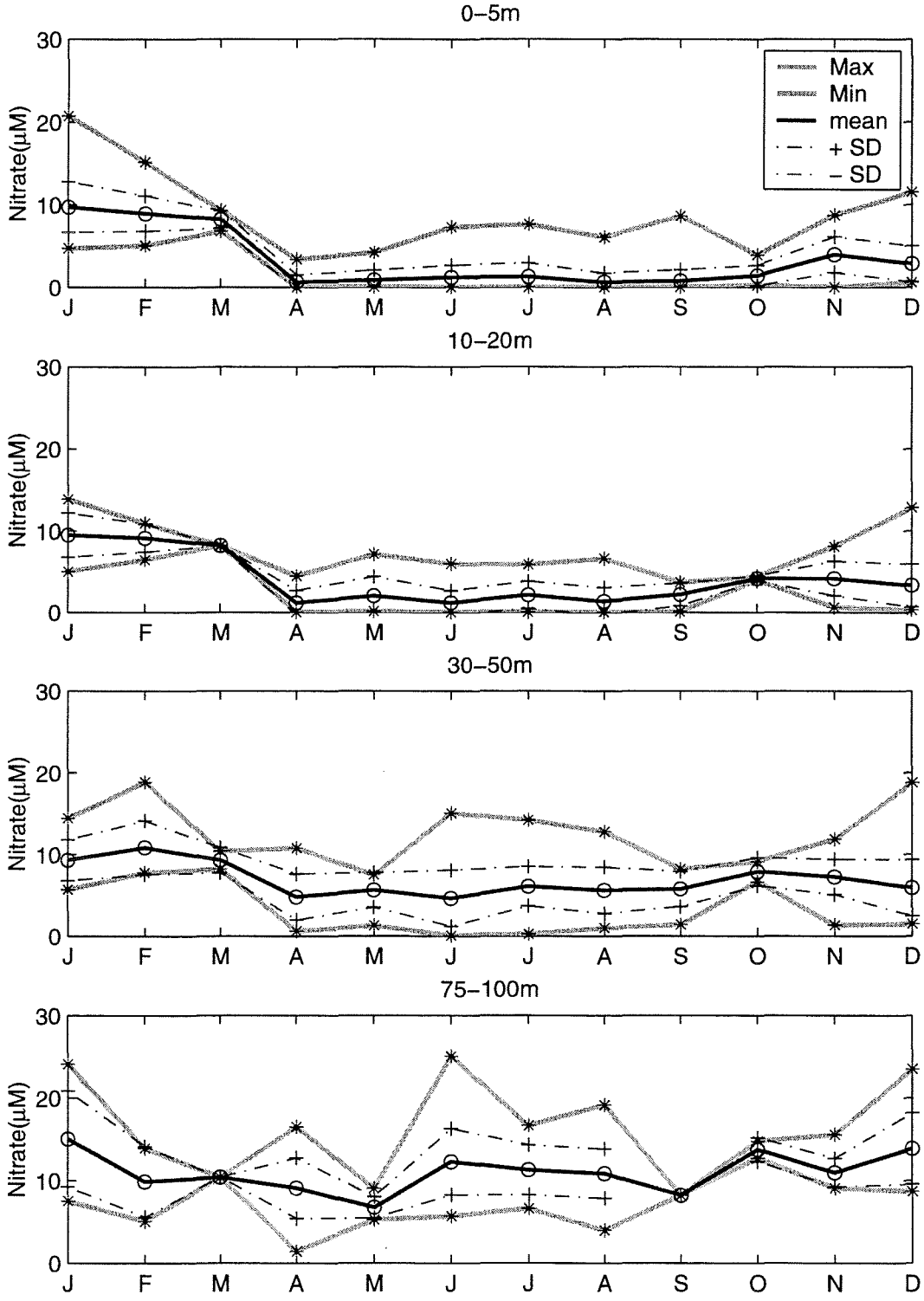

Figure 12b. Time series plots of monthly mean concentrations, mean ± 1 standard deviation and extreme values for nitrate for Western Scotian Shelf.

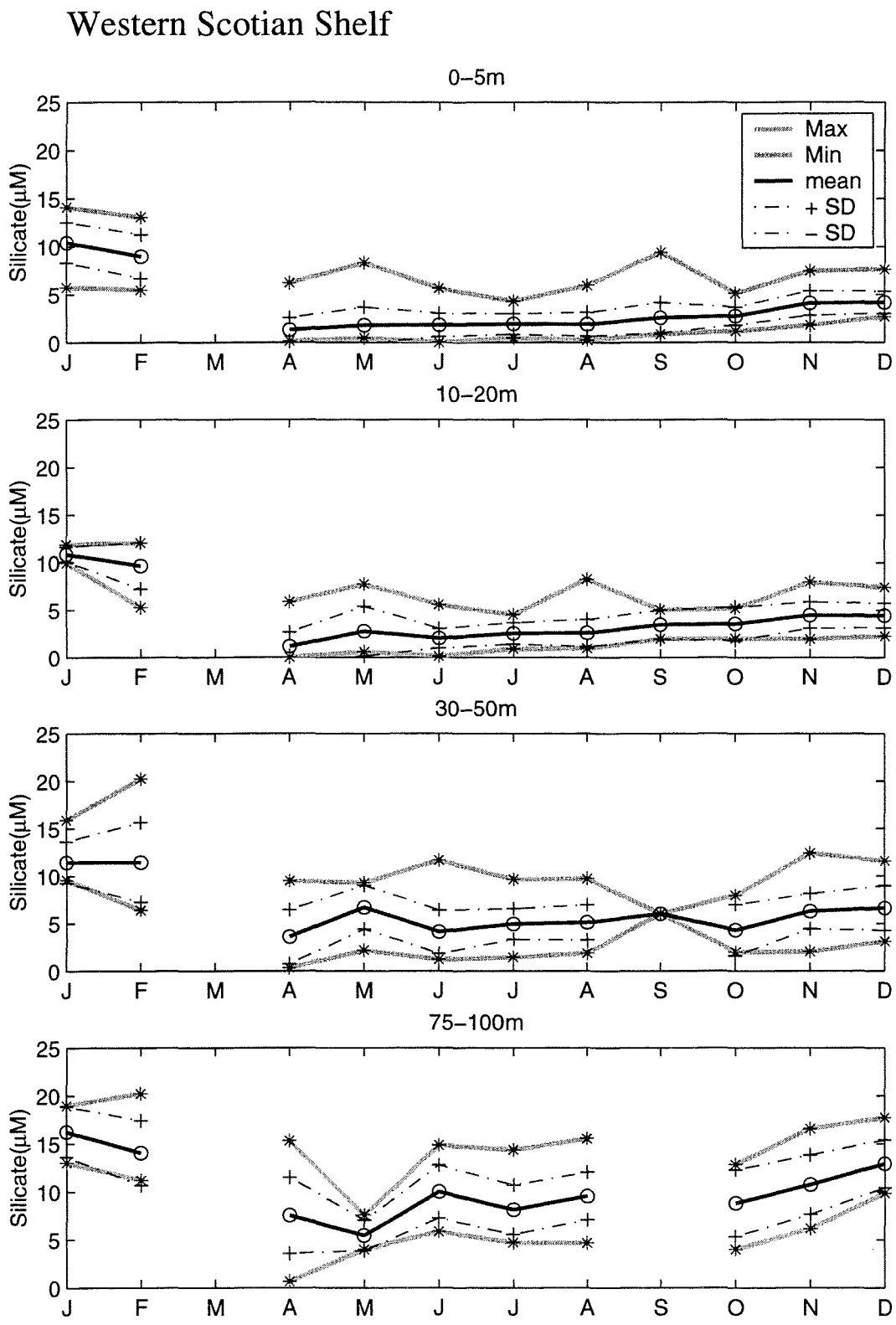

Figure 12c. Time series plots of monthly mean concentrations, mean ± 1 standard deviation and extreme values for silicate for Western Scotian Shelf.

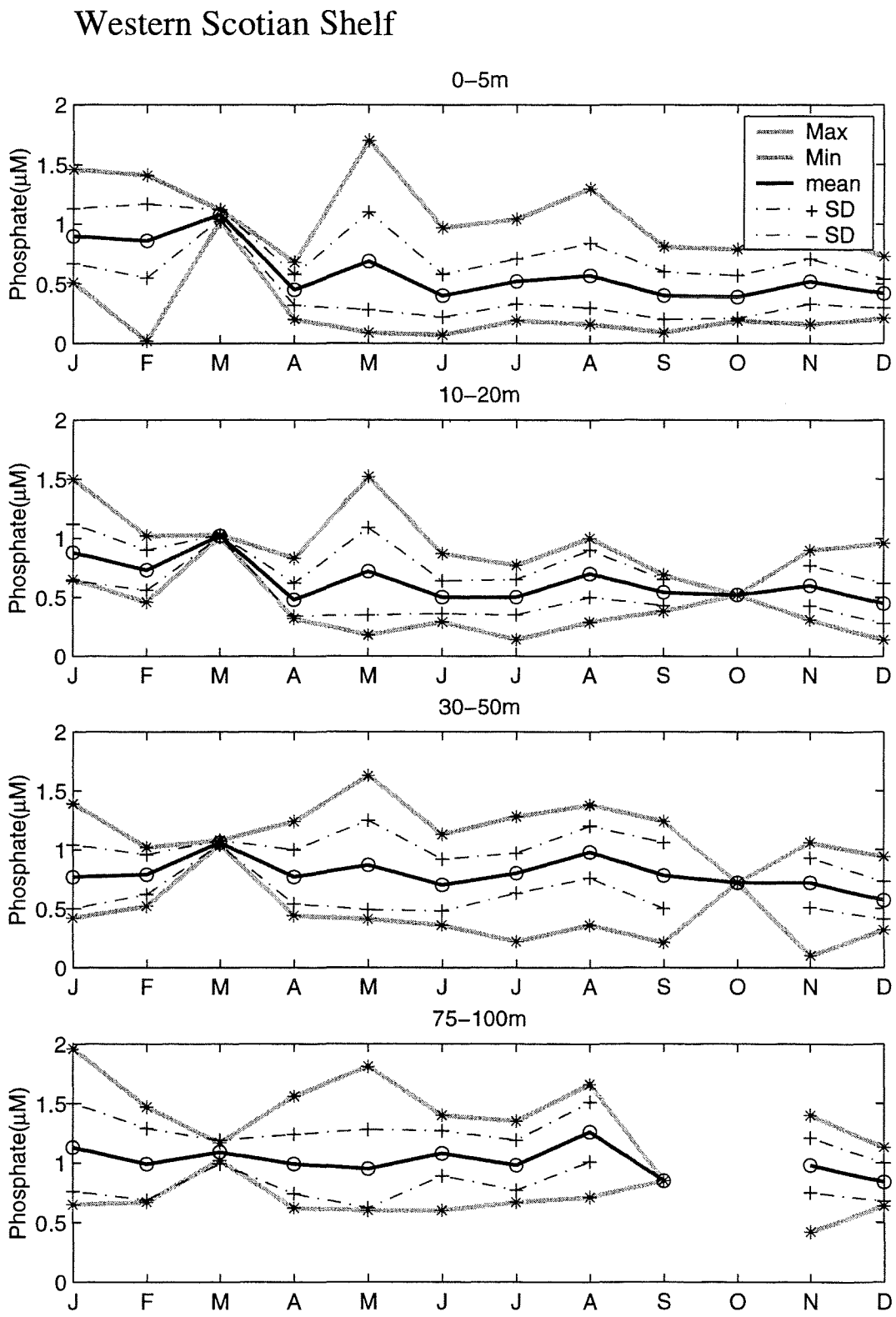

Figure 12d. Time series plots of monthly mean concentrations, mean ± 1 standard deviation and extreme values for phosphate for Western Scotian Shelf.

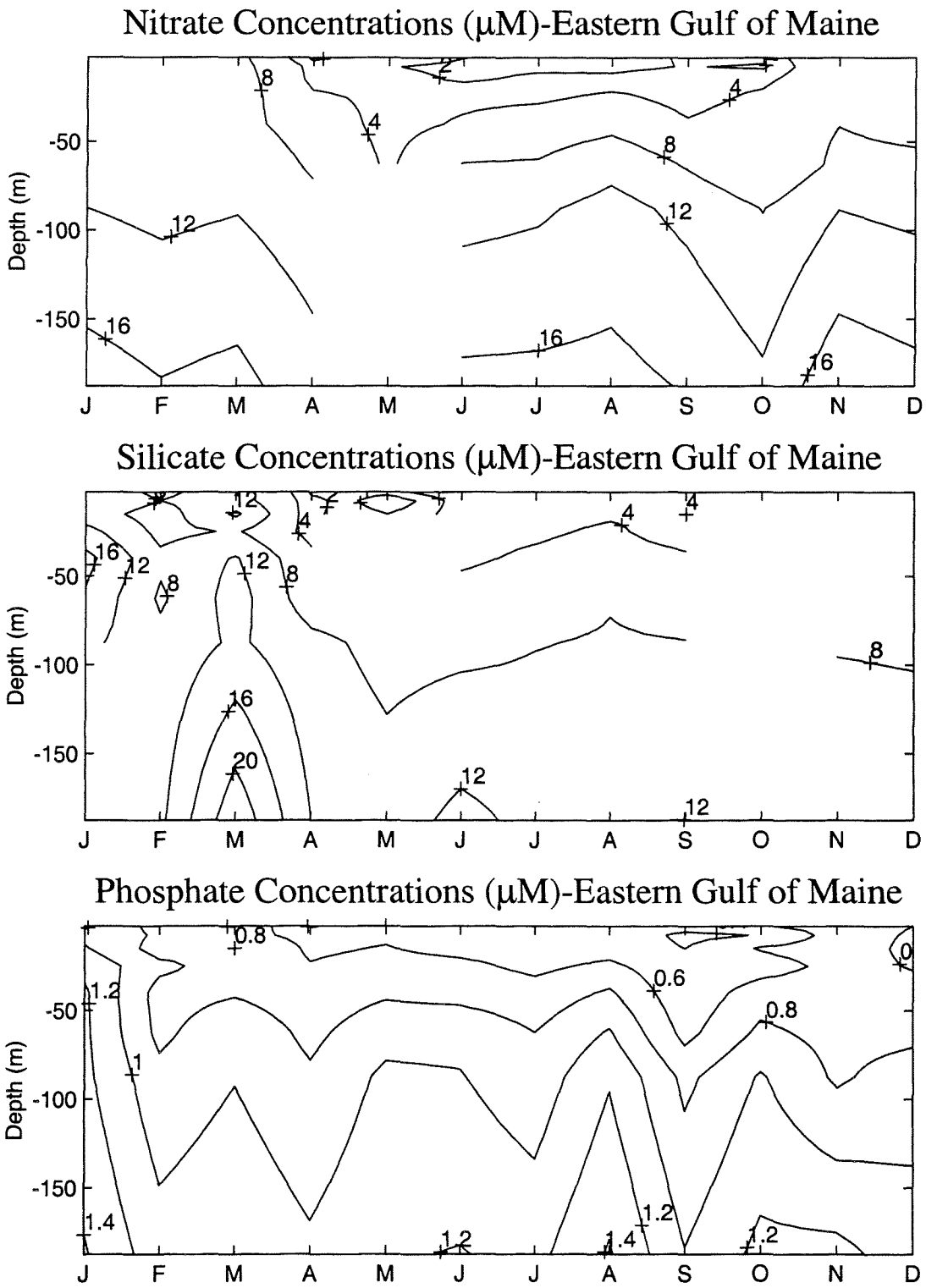

Figure 13a. Contour plot of monthly mean concentrations (μM) of nitrate, silicate, and phosphate for Eastern Gulf of Maine.

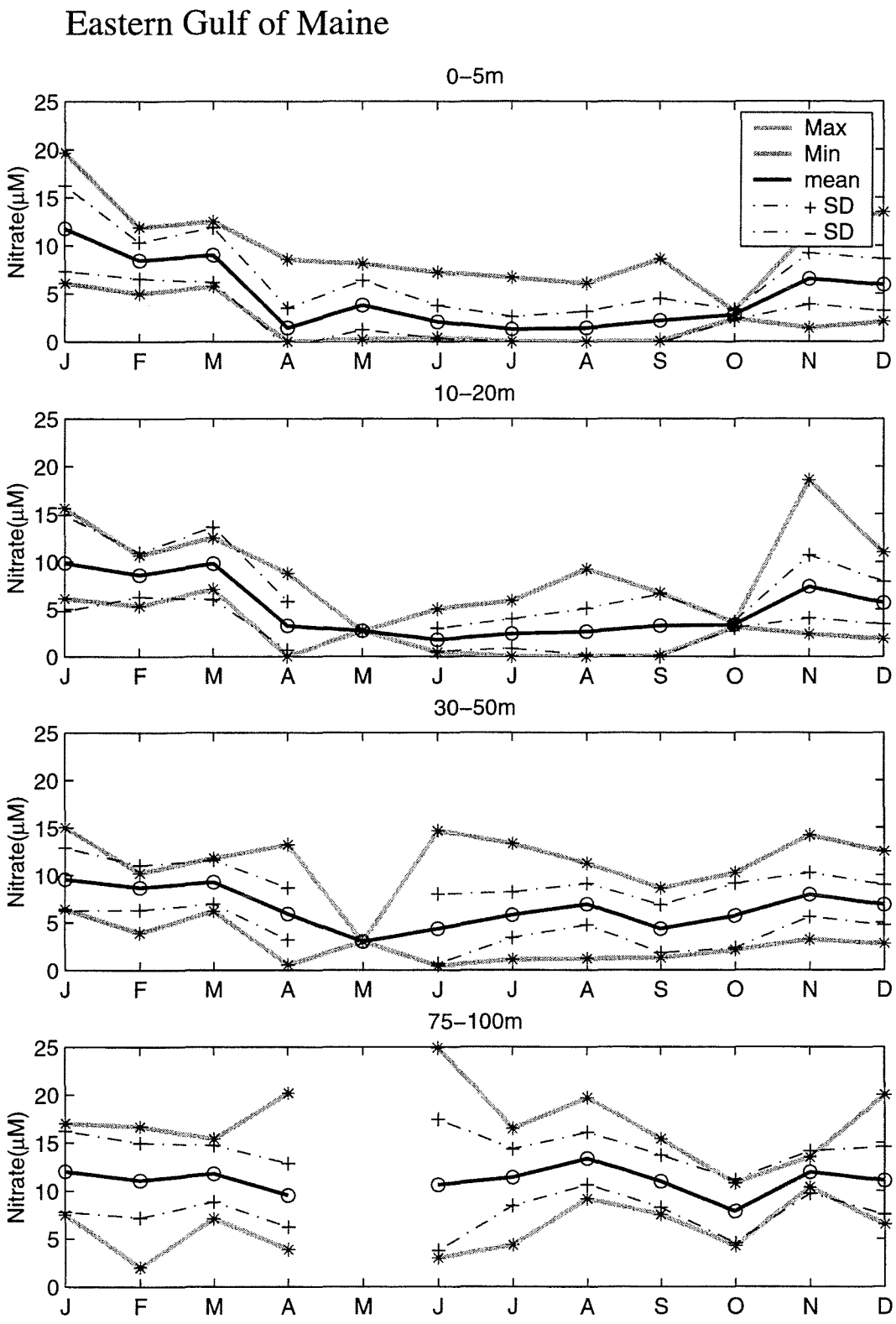

Figure 13b. Time series plots of monthly mean concentrations, mean ± 1 standard deviation and extreme values for nitrate for Eastern Gulf of Maine.

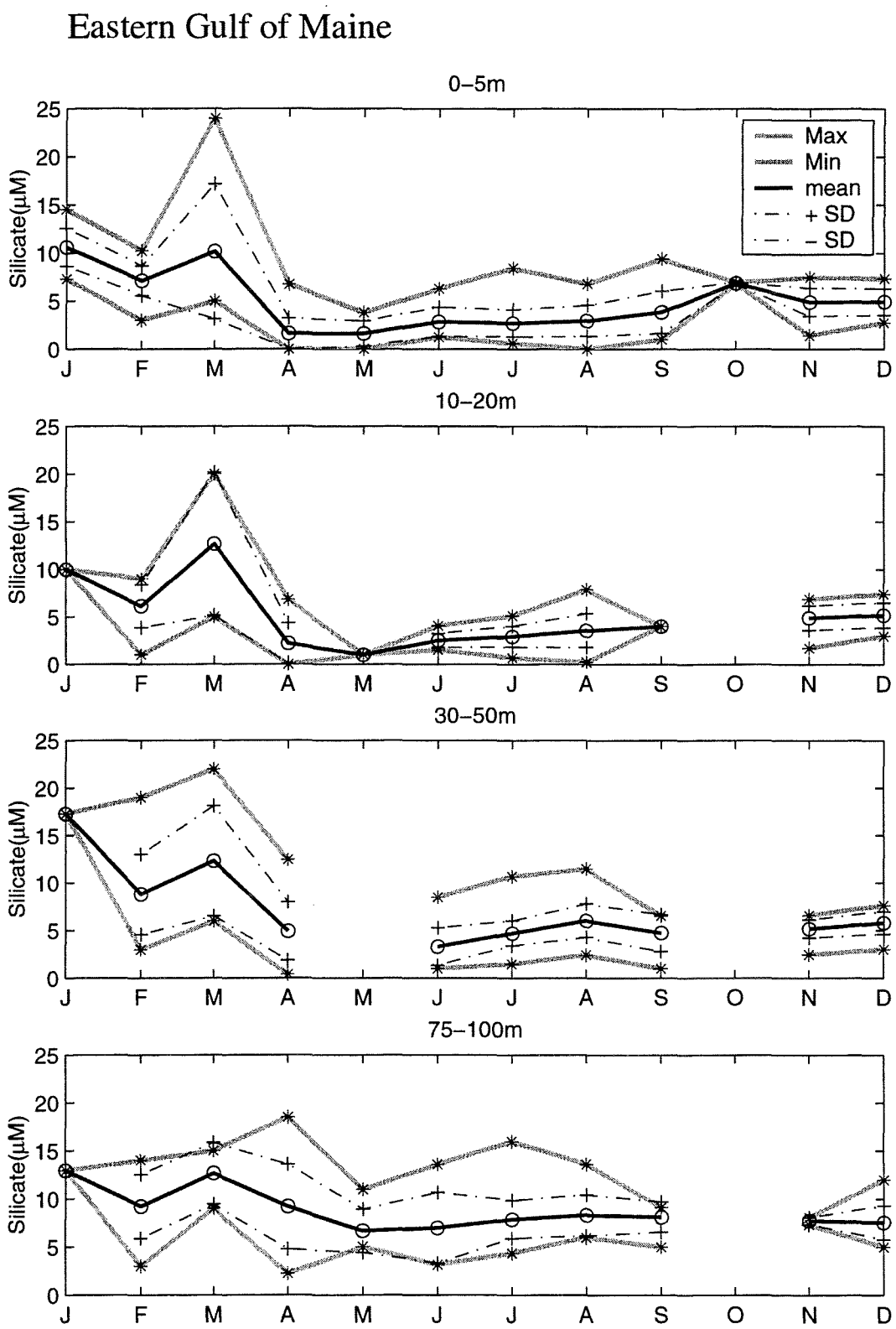

Figure 13c. Time series plots of monthly mean concentrations, mean ± 1 standard deviation and extreme values for silicate for Eastern Gulf of Maine.

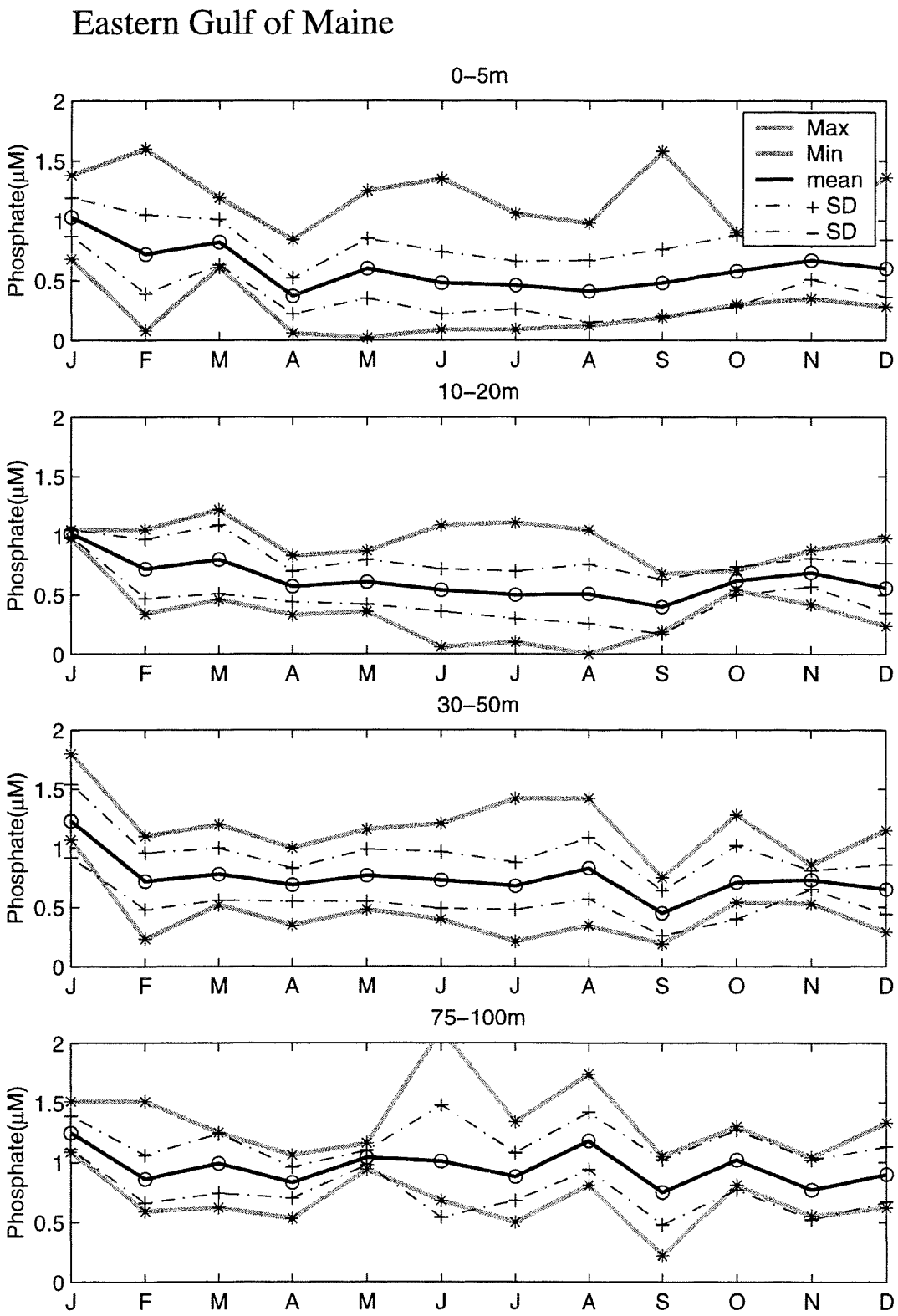

Figure 13d. Time series plots of monthly mean concentrations, mean ± 1 standard deviation and extreme values for phosphate for Eastern Gulf of Maine.

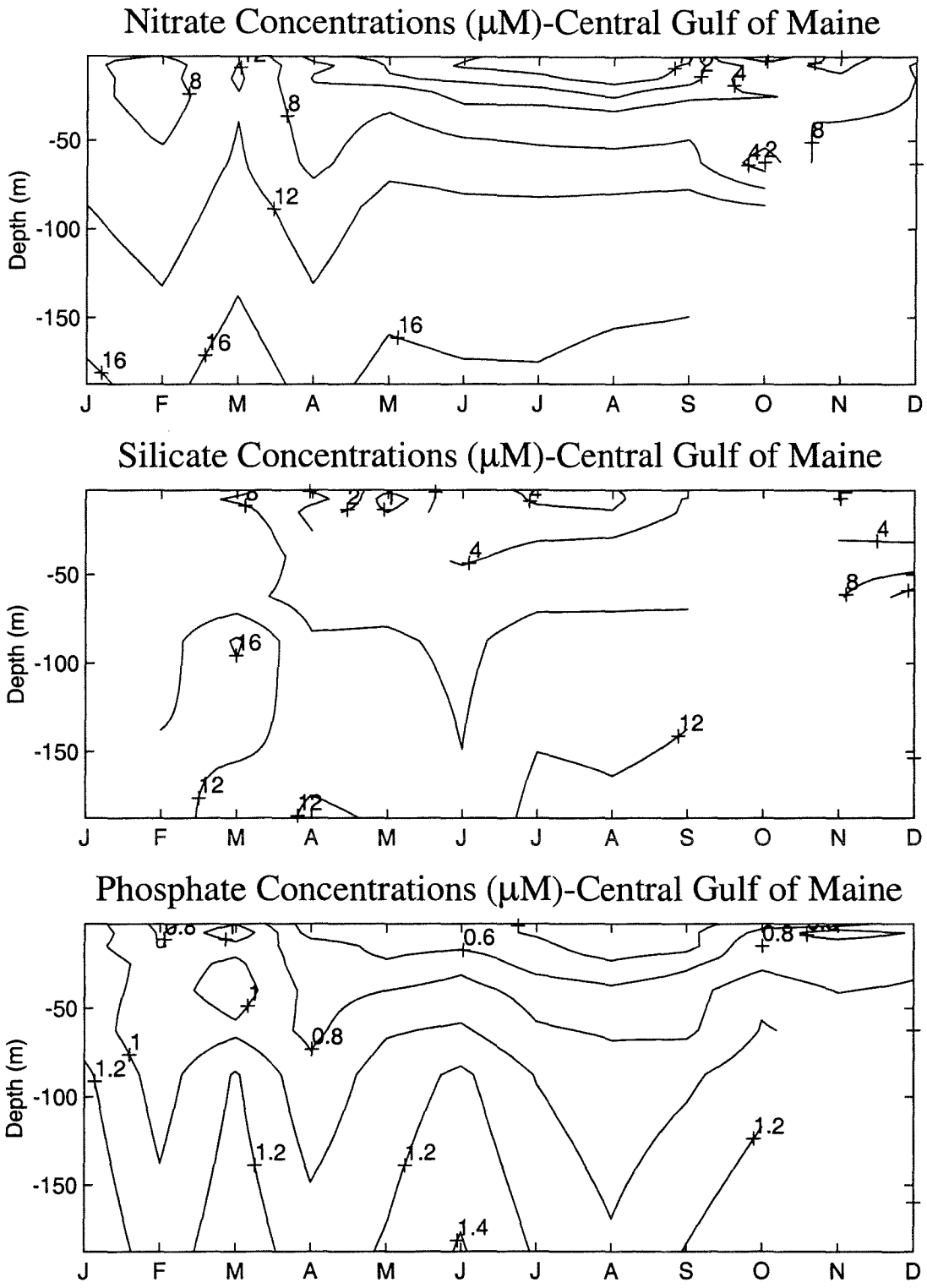

Figure 14a. Contour plot of monthly mean concentrations (μM) of nitrate, silicate, and phosphate for Central Gulf of Maine.

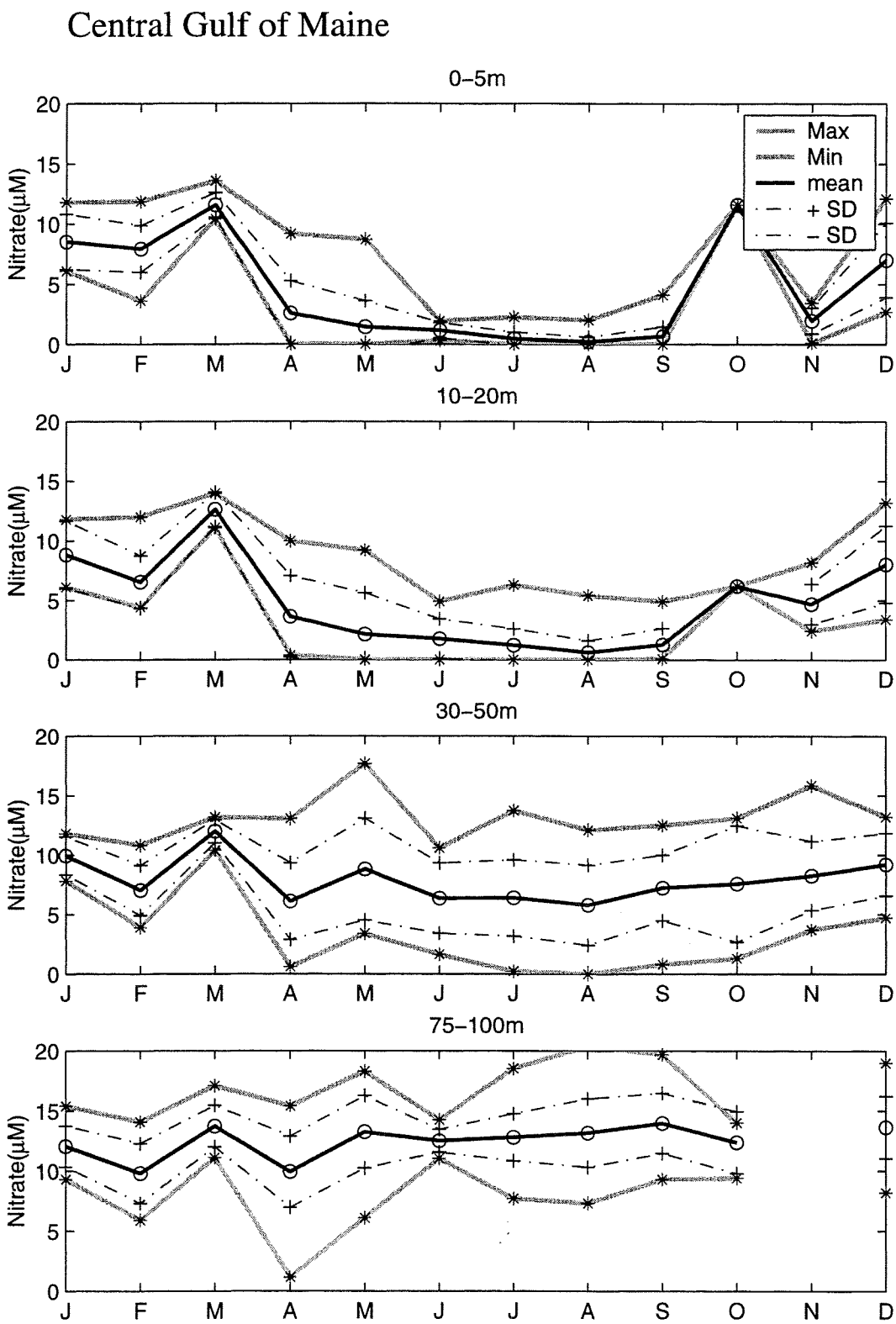

Figure 14b. Time series plots of monthly mean concentrations, mean ± 1 standard deviation and extreme values for nitrate for Central Gulf of Maine.

Central Gulf of Maine

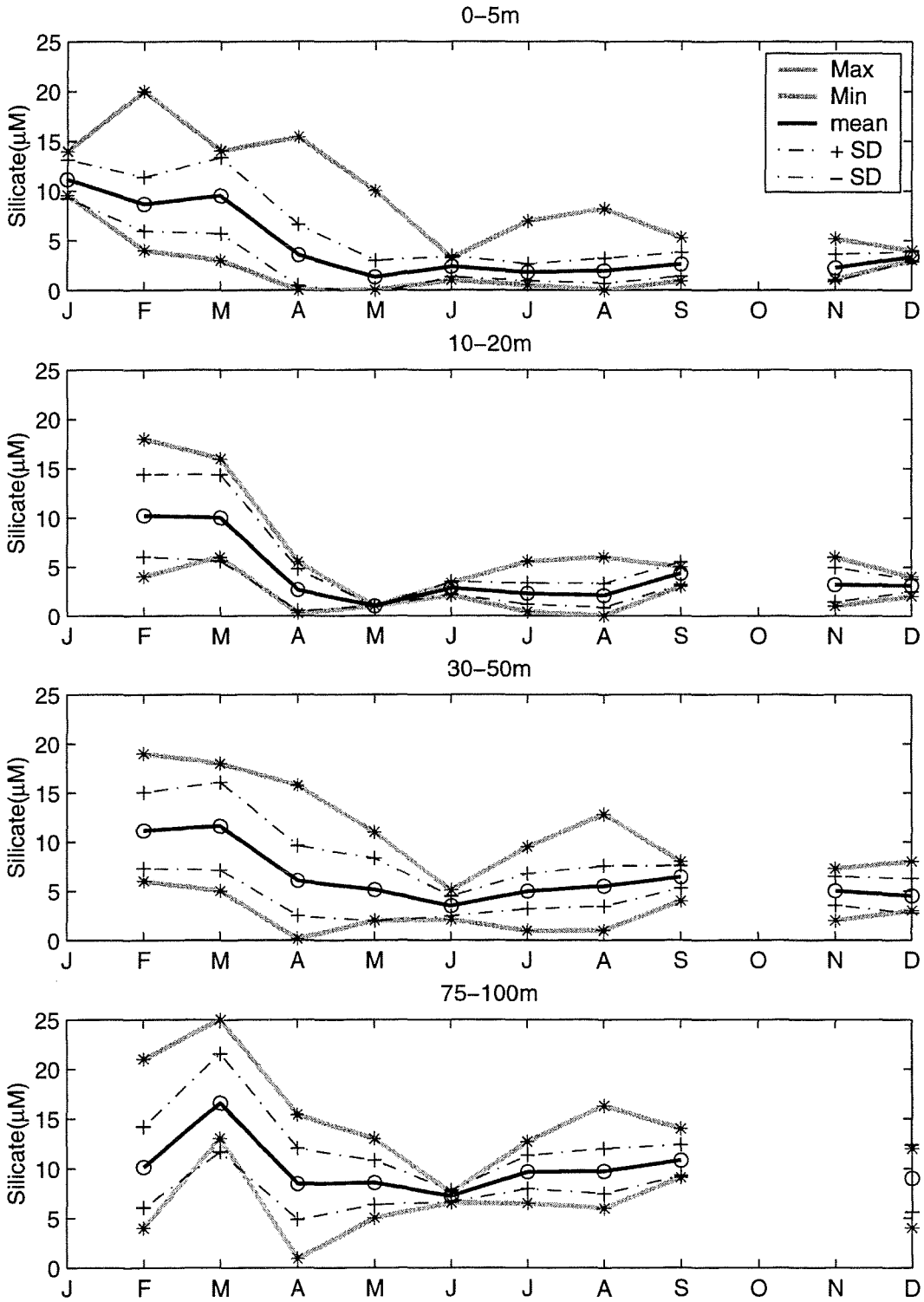

Figure 14c. Time series plots of monthly mean concentrations, mean ± 1 standard deviation and extreme values for silicate for Central Gulf of Maine.

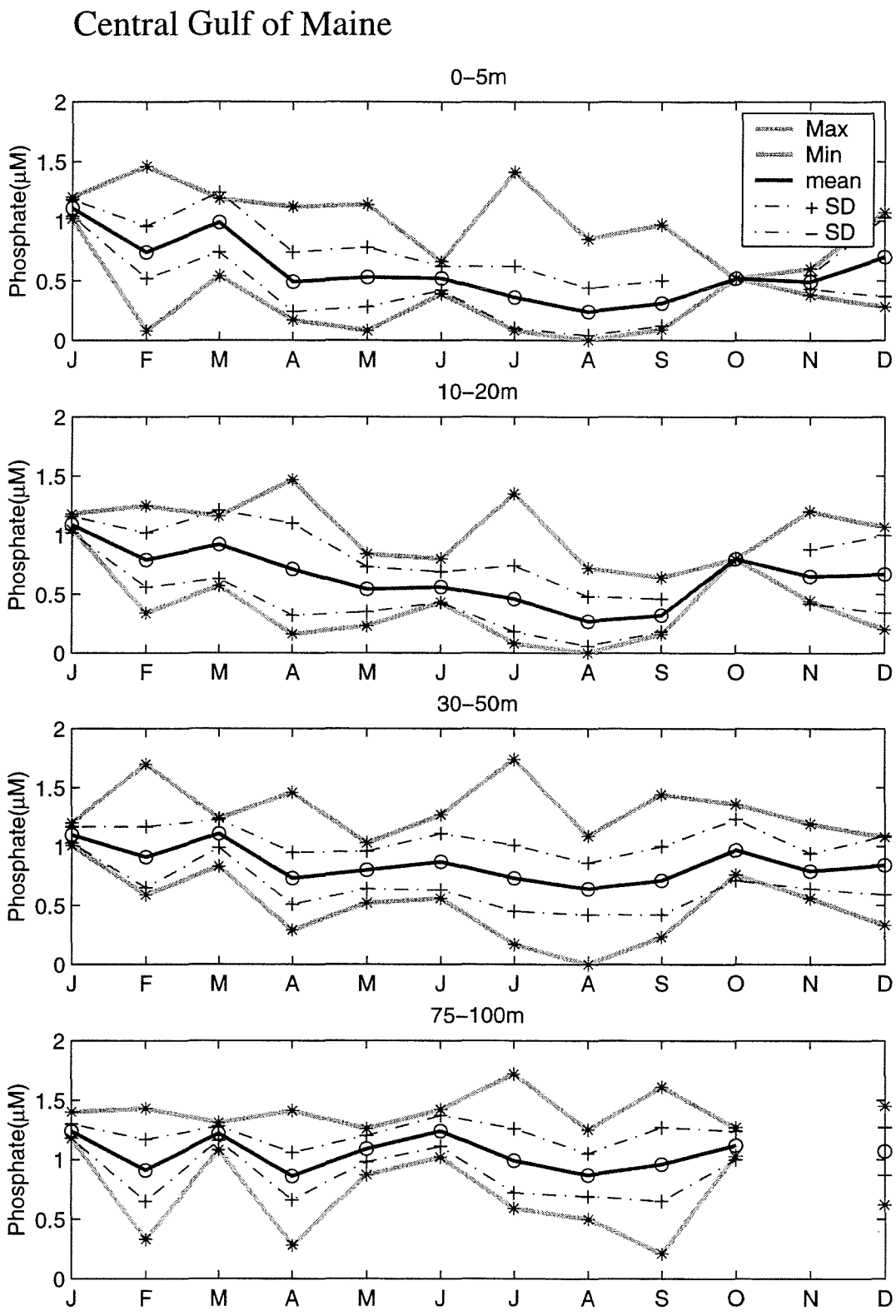

Figure 14d. Time series plots of monthly mean concentrations, mean ± 1 standard deviation and extreme values for phosphate for Central Gulf of Maine.

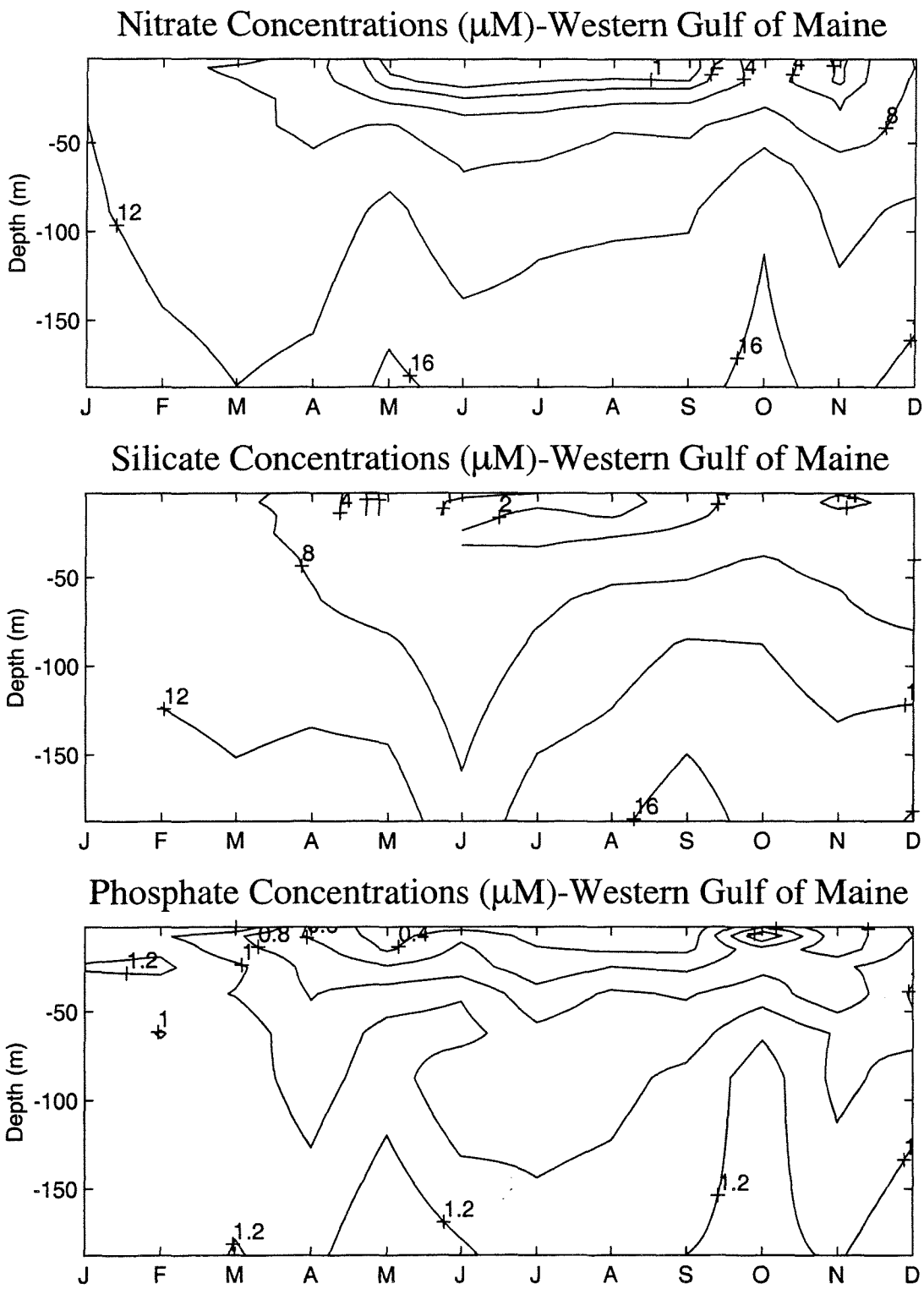

Figure 15a. Contour plot of monthly mean concentrations (μM) of nitrate, silicate, and phosphate for Western Gulf of Maine.

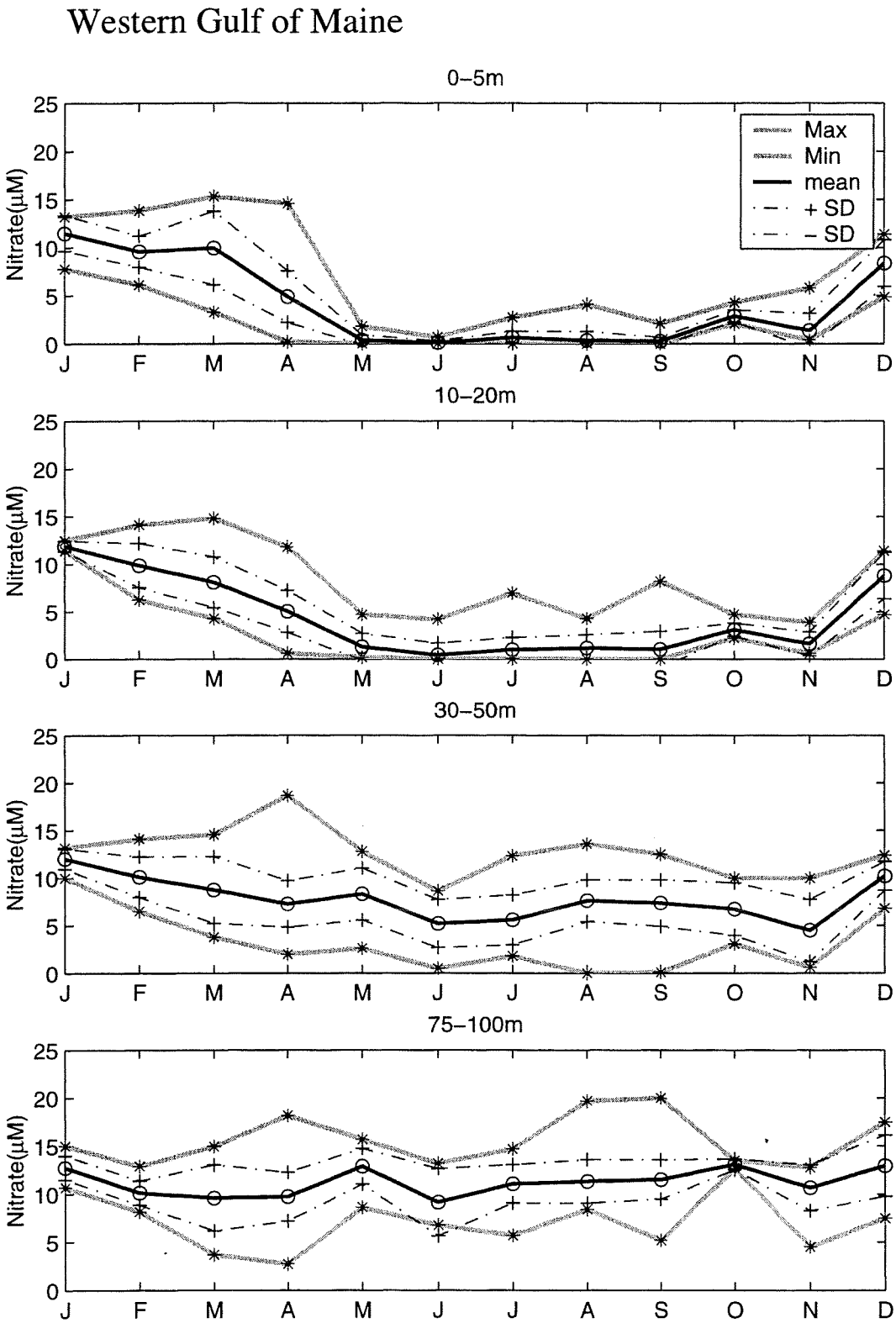

Figure 15b. Time series plots of monthly mean concentrations, mean ± 1 standard deviation and extreme values for nitrate for Western Gulf of Maine.

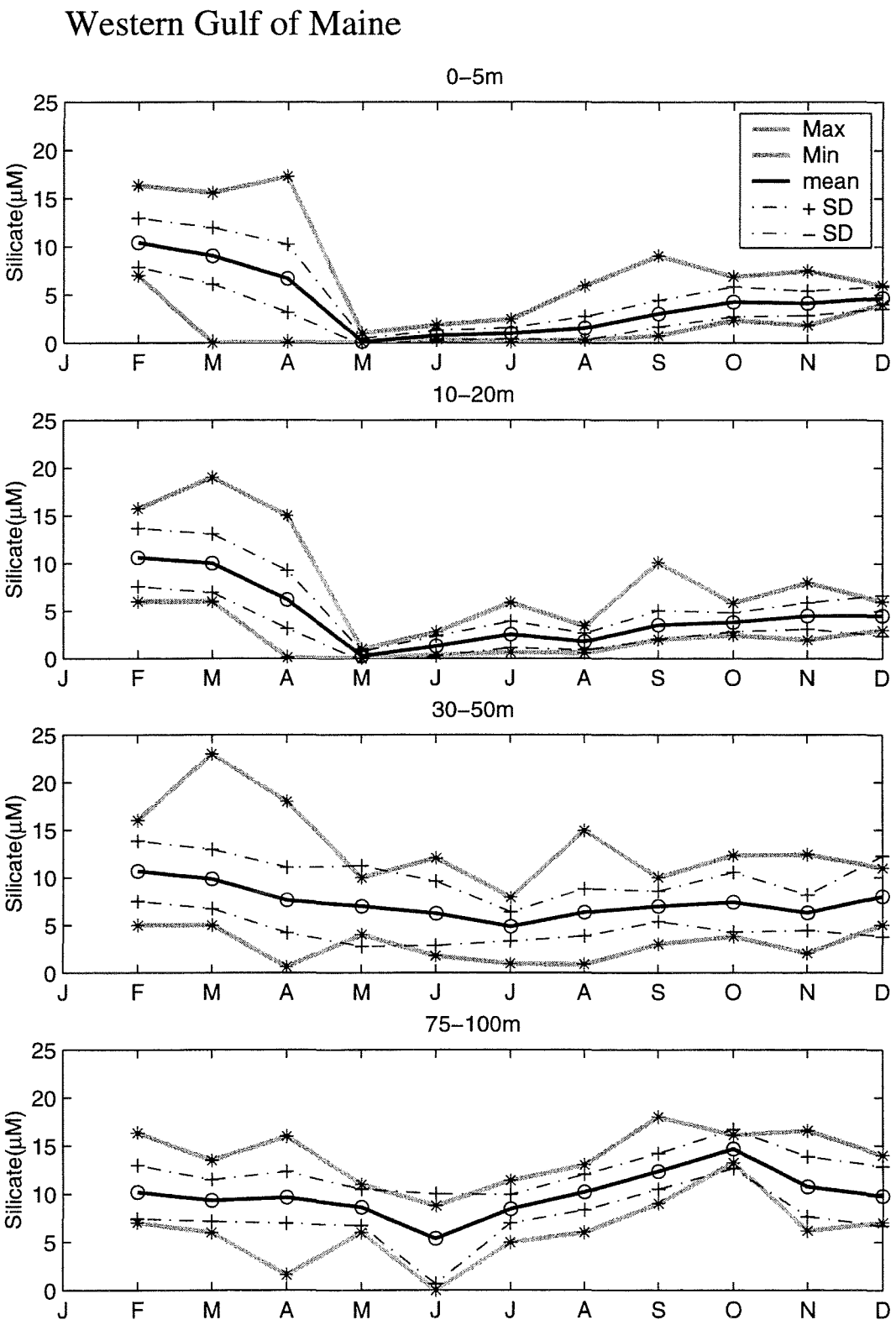

Figure 15c. Time series plots of monthly mean concentrations, mean ± 1 standard deviation and extreme values for silicate for Western Gulf of Maine.

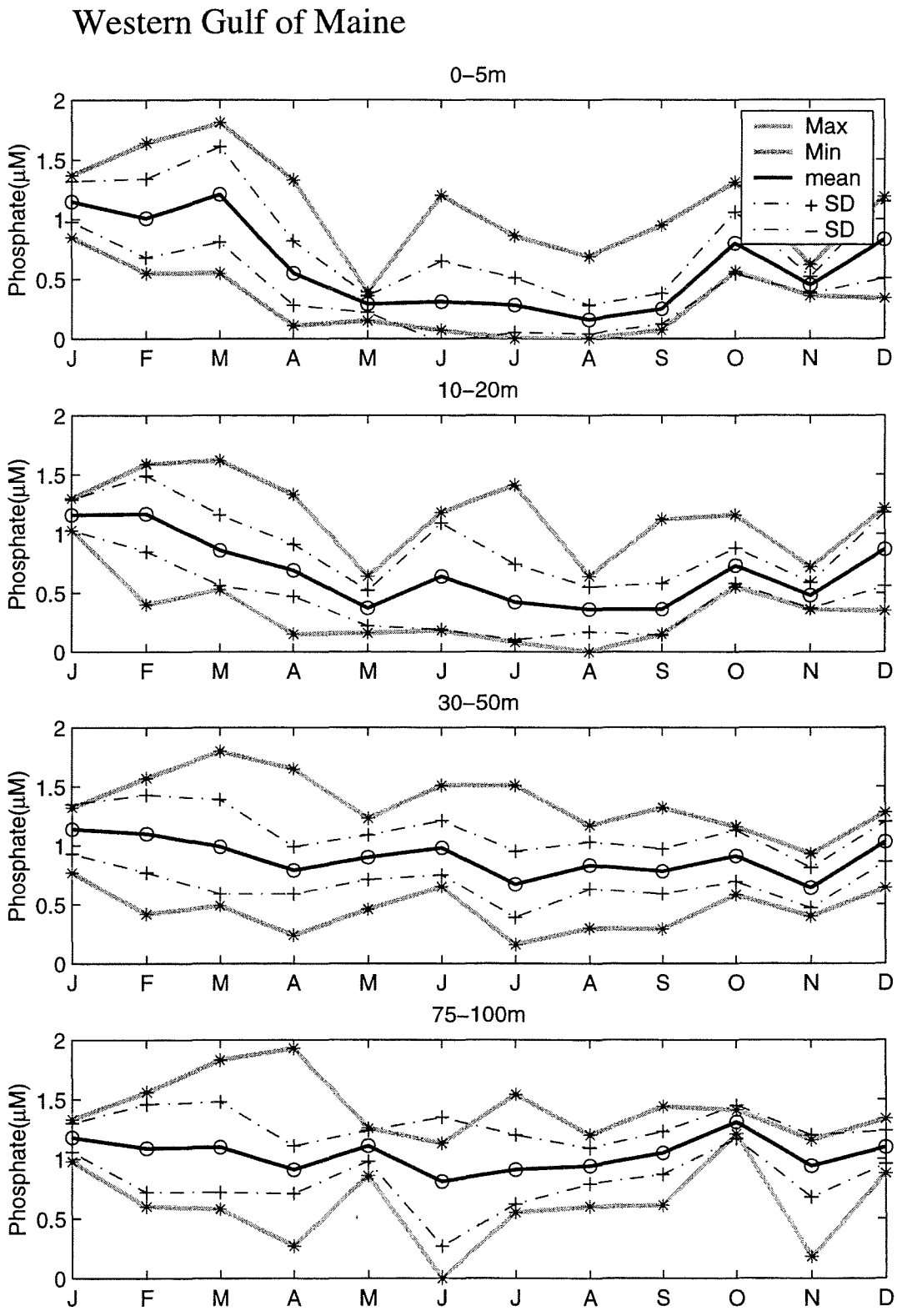

Figure 15d. Time series plots of monthly mean concentrations, mean ± 1 standard deviation and extreme values for phosphate for Western Gulf of Maine.

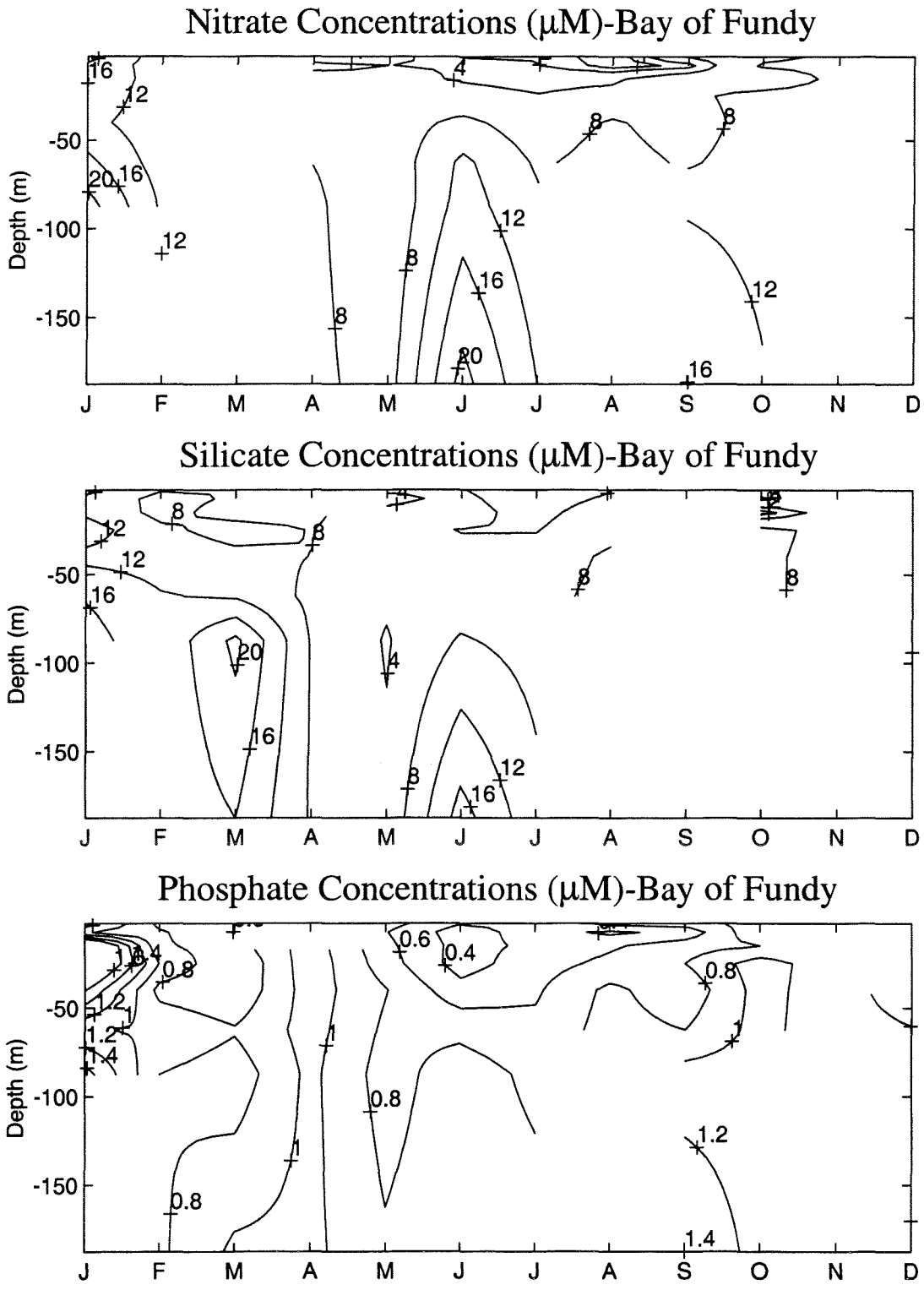

Figure 16a. Contour plot of monthly mean concentrations (μM) of nitrate, silicate, and phosphate for Bay of Fundy.

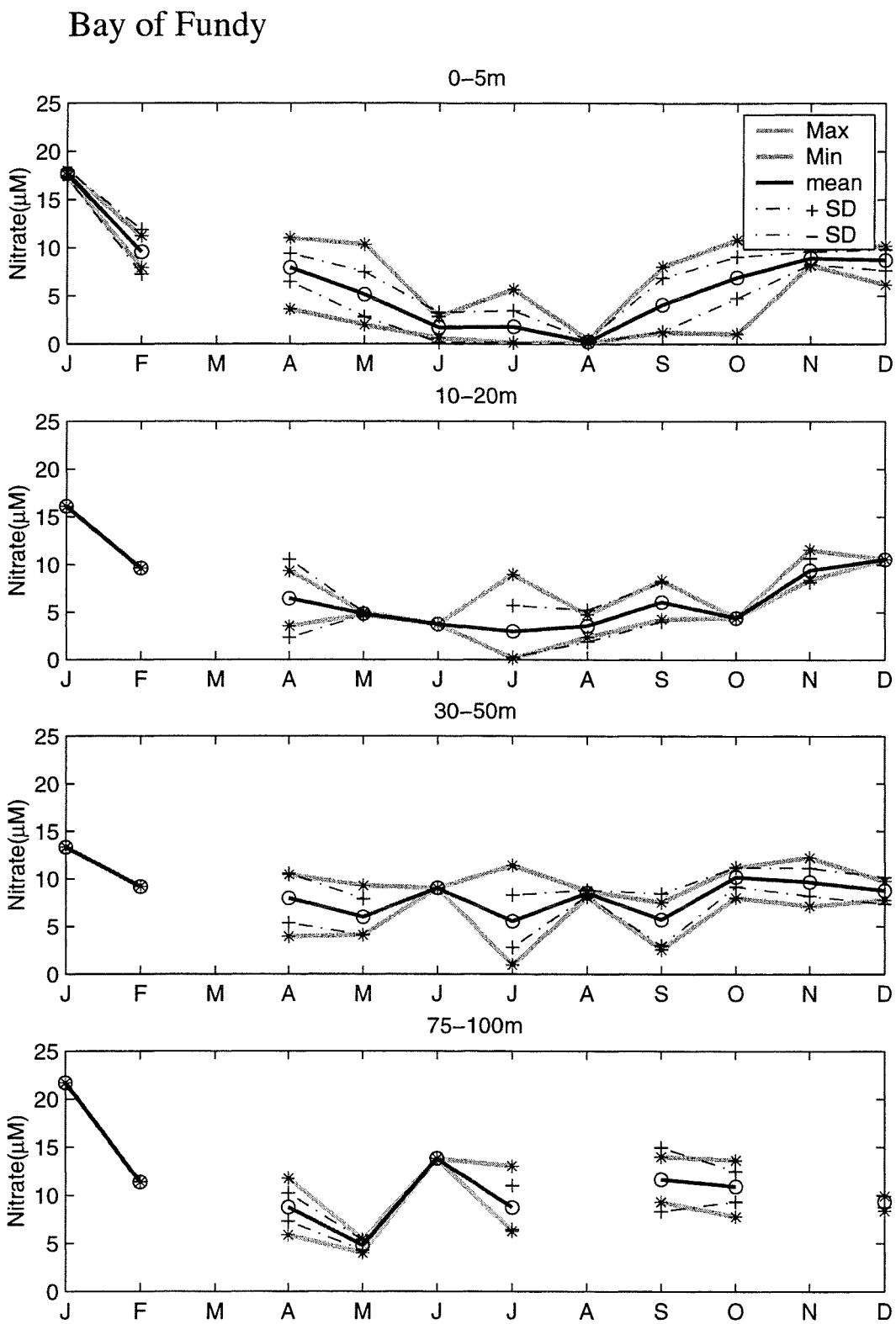

Figure 16b. Time series plots of monthly mean concentrations, mean ± 1 standard deviation and extreme values for nitrate for Bay of Fundy.

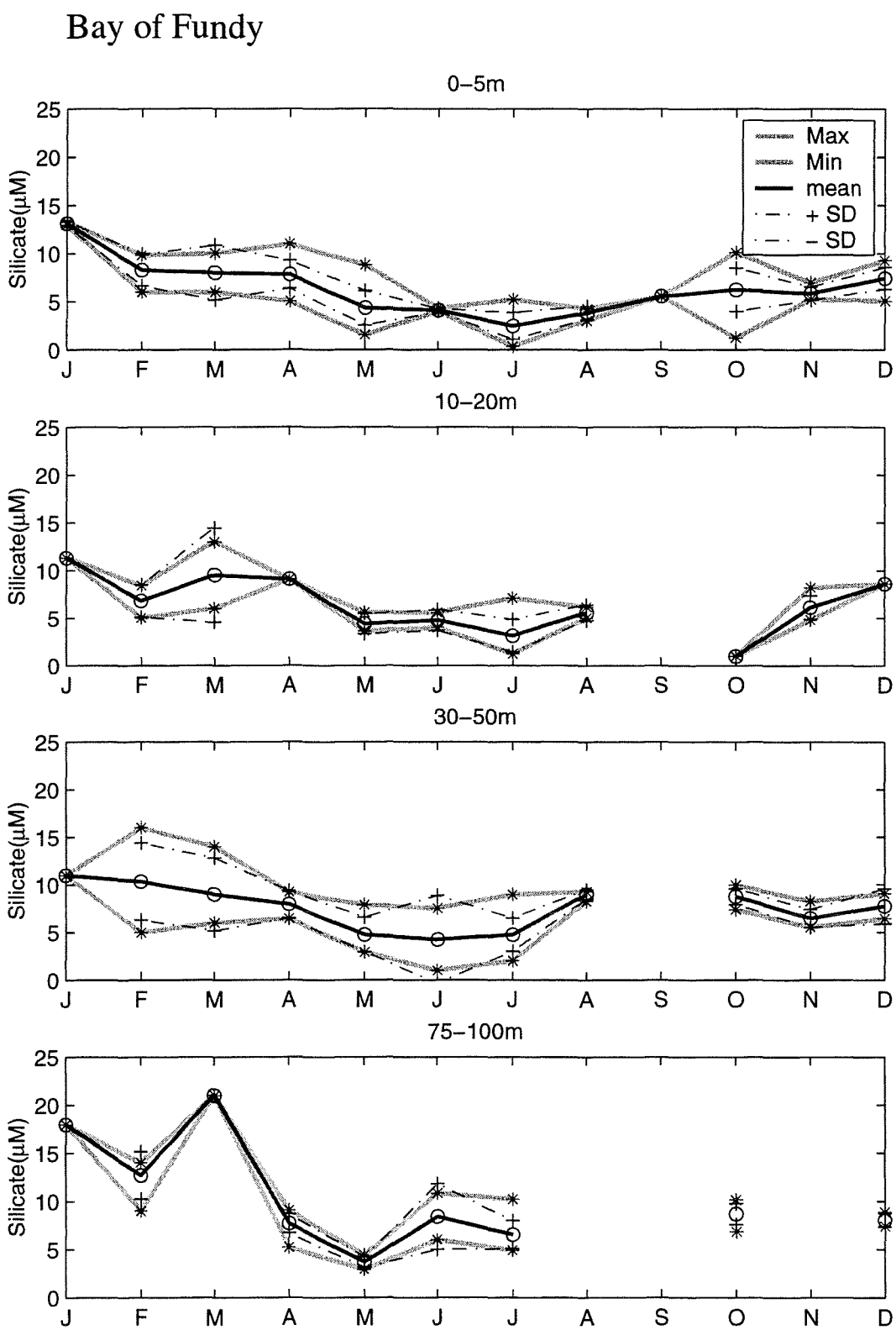

Figure 16c. Time series plots of monthly mean concentrations, mean ± 1 standard deviation and extreme values for silicate for Bay of Fundy.

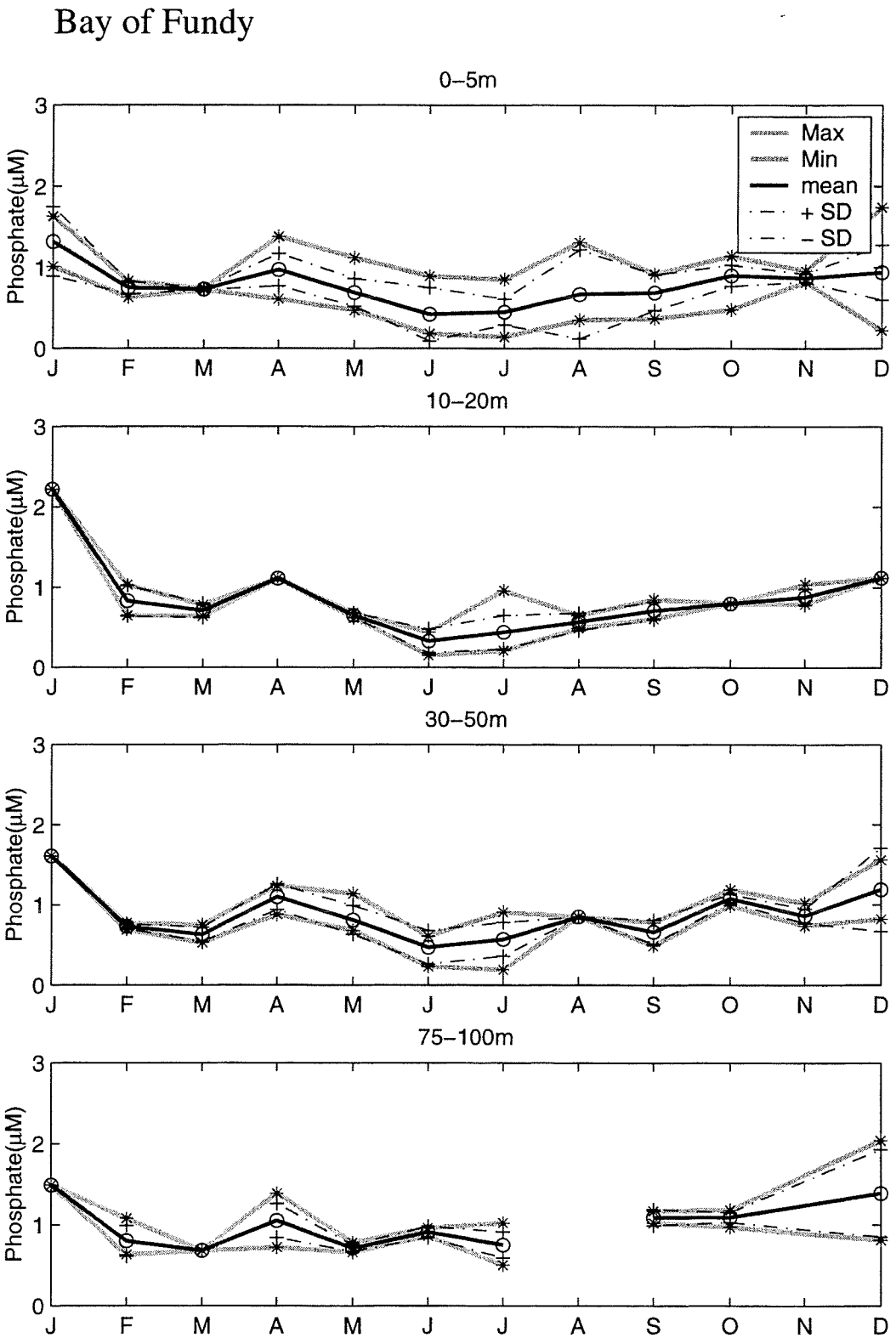

Figure 16d. Time series plots of monthly mean concentrations, mean ± 1 standard deviation and extreme values for phosphate for Bay of Fundy.

Nitrate Data - Cabot Strait

(46.8N, 60.1W; 47.1N, 61W; 47.8N, 59.75W; 47.5N, 58.85W; 46.8N, 60.1W)

Average Nitrate (µM)

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	7.01	5.47	1.35		0.70	0.36	0.17	0.52	0.59		1.75	2.73
5-10		6.88			0.22	0.09	0.05	0.02	0.71		1.40	2.98
10-20					0.44		0.15	0.20			3.26	1.62
20-30	6.79	7.53			0.73	0.20	0.25		2.39		2.07	2.55
30-50	8.23	6.77	5.30		3.87	1.78	2.84		7.36		4.57	4.86
50-75	6.72	6.55			5.83	5.04	6.38	5.61	7.91		4.22	4.29
75-100	7.76	8.46			8.72	7.20	6.75	8.00	12.09		6.54	6.84
100-275	14.95	16.03	12.95		17.44	16.94	15.10	16.88	18.87		14.51	14.71

Standard Deviation

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	1.89		2.10		1.21	0.32	0.21	1.13	0.56		1.11	1.27
5-10		1.59			0.19	0.10	0.04	0.04	0.46		0.89	1.40
10-20					0.15		0.14	0.28			1.88	0.93
20-30	2.68	1.97			0.90	0.30	0.27		1.78		1.38	1.25
30-50	1.57	1.82			2.42	1.74	0.55		0.66		3.29	1.52
50-75	2.62	1.79			2.18	2.24	3.34	1.03	1.87		2.59	2.36
75-100	2.94	1.91			2.63	2.47		0.89	1.71		2.95	2.54
100-275	4.70	5.21	4.83		4.28	3.84	2.86	3.36	3.49		5.28	5.05

Number of Observations

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	13	1	5		12	38	9	6	16		63	24
5-10		14			9	32	6	5	5		12	9
10-20					5		3	2			4	4
20-30	6	4			8	33	2		5		33	13
30-50	6	8	1		8	33	7		2		23	10
50-75	11	7			5	35	4	6	3		69	31
75-100	11	9			8	29	1	2	2		62	17
100-275	34	32	3		33	62	14	11	10		241	100

Minimum Nitrate Concentration

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	3.88	5.47	0.29		0.00	0.00	0.00	0.00	0.00		0.08	0.79
5-10		4.64			0.00	0.00	0.00	0.00	0.00		0.31	0.75
10-20					0.20		0.02	0.00			1.68	1.01
20-30	3.90	5.37			0.00	0.00	0.06		0.20		0.30	0.88
30-50	6.82	4.89	5.30		0.42	0.00	1.87		6.89		0.47	3.27
50-75	3.63	4.89			2.32	1.32	1.90	3.98	6.04		0.66	1.07
75-100	4.91	5.52			4.12	3.81	6.75	7.37	10.88		0.90	3.43
100-275	6.31	6.51	9.23		6.79	6.25	11.05	11.61	13.15		3.87	4.27

Maximum Nitrate Concentration

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	10.83	5.47	5.09		4.37	1.44	0.58	2.83	1.44		4.56	5.66
5-10		9.62			0.52	0.46	0.08	0.09	1.29		3.09	4.50
10-20					0.56		0.29	0.40			5.58	2.98
20-30	10.93	9.54			2.67	1.28	0.44		4.60		4.81	4.47
30-50	11.28	9.97	5.30		6.87	8.40	3.57		7.82		11.96	8.59
50-75	12.90	9.51			7.91	11.40	9.23	6.65	9.78		11.69	8.85
75-100	15.60	10.81			12.74	13.64	6.75	8.63	13.30		16.19	11.33
100-275	22.90	23.69	18.41		22.70	23.74	19.79	21.11	21.99		24.38	23.25

Table 2a. Average concentrations, standard deviations, number of observations, minimum and maximum concentrations for nitrate for Cabot Strait.

Silicate Data - Cabot Strait

(46.8N, 60.1W; 47.1N, 61W; 47.8N, 59.75W; 47.5N, 58.85W; 46.8N, 60.1W)

Average Silicate (µM)

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	6.86	2.16	1.39		1.04	1.16	0.52	1.26	1.44		2.87	3.18
5-10		6.06			1.13	1.06	0.52	1.33	1.79		1.76	4.27
10-20					1.13	9.00	0.74	1.55	2.33		5.85	2.00
20-30	6.09	7.27			1.19	1.23	1.62	3.00	2.62		3.16	3.30
30-50	7.81	5.71	3.99		2.50	1.73	1.90	4.00	4.00		4.85	4.72
50-75	6.05	4.93			4.53	4.03	4.98	3.95	4.72		4.34	4.41
75-100	6.81	6.60			6.37	5.51	6.43	6.87	8.12		6.11	6.67
100-275	13.87	13.51	10.27		17.81	15.88	15.28	17.68	17.47		14.52	14.18

Standard Deviation

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	2.07	2.20	1.35		0.35	0.32	0.35	0.43	1.08		1.55	1.45
5-10		2.45			0.24	0.91	0.22	0.66	1.33		1.65	2.16
10-20					0.40		0.23	1.57	1.15		2.49	0.48
20-30	2.71	2.96			0.66	1.22	0.35		0.93		1.62	1.75
30-50	1.05	2.30			0.82	0.93	0.67		0.63		4.14	2.14
50-75	2.61	1.93			2.46	2.48	2.91	0.56	0.39		2.63	2.24
75-100	2.69	2.25			2.77	2.50	3.64	1.92	3.59		2.97	2.16
100-275	5.34	5.88	3.54		6.04	4.90	5.60	4.59	4.26		6.69	6.17

Number of Observations

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	13	2	5		12	38	9	6	19		68	24
5-10		14			9	33	6	5	8		12	9
10-20					5	1	3	2	3		4	4
20-30	6	4			8	34	2	1	8		33	13
30-50	6	8	1		8	33	8	1	5		23	10
50-75	11	7			5	36	5	6	6		70	31
75-100	11	9			8	29	2	3	5		62	17
100-275	34	32	3		33	62	19	13	15		244	100

Minimum Silicate Concentration

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	2.85	0.60	0.23		0.26	0.68	0.00	0.72	0.37		0.00	1.42
5-10		3.50			0.78	0.53	0.17	0.50	0.02		0.00	1.46
10-20					0.66	9.00	0.48	0.44	1.00		3.33	1.48
20-30	3.01	3.75			0.58	0.48	1.37	3.00	1.38		0.00	1.38
30-50	6.61	3.98	3.99		1.33	0.63	1.10	4.00	3.00		0.00	2.10
50-75	2.77	3.49			0.90	1.92	0.92	3.54	4.00		0.00	1.51
75-100	3.67	3.85			0.94	3.04	3.85	5.27	5.00		1.10	3.11
100-275	5.03	4.69	7.45		2.43	4.60	7.64	9.87	10.50		1.36	3.88

Maximum Silicate Concentration

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	8.92	3.71	3.57		1.70	2.02	1.28	1.84	5.00		7.29	6.03
5-10		10.07			1.52	6.00	0.82	2.04	4.00		4.45	6.49
10-20					1.68	9.00	0.90	2.66	3.00		8.87	2.64
20-30	8.97	9.78			2.71	8.00	1.87	3.00	4.00		6.69	6.11
30-50	9.14	9.58	3.99		3.58	5.82	3.00	4.00	4.73		15.70	8.89
50-75	10.83	9.02			7.41	13.00	8.00	4.81	5.00		15.72	8.93
75-100	13.13	9.67			9.84	13.66	9.00	9.00	14.00		15.26	10.09
100-275	28.79	25.29	14.24		27.95	26.96	26.00	24.84	23.25		33.45	30.49

Table 2b. Average concentrations, standard deviations, number of observations, minimum and maximum concentrations for silicate for Cabot Strait.

Phosphate Data - Cabot Strait

(46.8N, 60.1W; 47.1N, 61W; 47.8N, 59.75W; 47.5N, 58.85W; 46.8N, 60.1W)

Average Phosphate (μM)

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	0.84	0.84	0.57		0.61	0.61	0.21	0.54	0.48	0.46	0.56	0.61
5-10		0.84			0.66	0.58	0.32	0.53	0.49		0.53	0.65
10-20					0.63	0.21	0.34	0.61	0.42		0.54	0.48
20-30	0.80	0.88			0.68	0.59	0.51	0.63	0.73		0.60	0.58
30-50	0.95	0.83	0.83		0.94	0.77	0.61	0.95	0.74		0.79	0.76
50-75	0.83	0.80			1.04	0.99	0.68	1.10	0.83		0.78	0.72
75-100	0.86	0.90			1.13	1.11	0.78	1.22	0.91		0.97	0.89
100-275	1.22	1.29	1.15		1.59	1.56	1.14	1.67	1.36		1.35	1.32

Standard Deviation

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	0.18	0.16	0.29		0.09	0.11	0.20	0.03	0.08	0.31	0.16	0.15
5-10		0.13			0.08	0.09	0.25	0.04	0.12		0.17	0.18
10-20					0.04		0.31	0.08	0.04		0.23	0.06
20-30	0.24	0.15			0.09	0.09	0.40		0.22		0.18	0.12
30-50	0.11	0.13			0.23	0.15	0.19		0.36		0.29	0.12
50-75	0.21	0.12			0.13	0.15	0.25	0.09	0.34		0.23	0.19
75-100	0.20	0.15			0.11	0.13	0.42	0.06	0.44		0.25	0.19
100-275	0.27	0.24	0.17		0.21	0.19	0.27	0.17	0.43		0.30	0.28

Number of Observations

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	13	2	5		12	38	8	5	18	3	68	24
5-10		14			9	32	6	5	8		17	9
10-20					5	1	3	2	3		9	4
20-30	6	4			8	34	2	1	8		38	13
30-50	6	8	1		8	34	8	1	5		33	10
50-75	11	7			5	36	5	6	6		74	31
75-100	11	9			8	29	2	3	5		66	17
100-275	34	32	3		33	62	18	13	15		247	100

Minimum Phosphate Concentration

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	0.49	0.73	0.31		0.42	0.27	0.00	0.51	0.33	0.24	0.26	0.36
5-10		0.68			0.59	0.38	0.13	0.48	0.32		0.15	0.40
10-20					0.56	0.21	0.00	0.55	0.38		0.28	0.41
20-30	0.52	0.69			0.59	0.29	0.23	0.63	0.46		0.34	0.42
30-50	0.79	0.68	0.83		0.63	0.49	0.39	0.95	0.46		0.34	0.63
50-75	0.54	0.70			0.85	0.77	0.30	0.97	0.51		0.33	0.39
75-100	0.58	0.69			0.95	0.94	0.48	1.18	0.52		0.42	0.64
100-275	0.69	0.83	1.02		1.08	1.09	0.70	1.44	0.71		0.59	0.77

Maximum Phosphate Concentration

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	1.07	0.95	1.03		0.70	0.98	0.57	0.59	0.57	0.82	1.05	0.88
5-10		1.12			0.82	0.82	0.68	0.58	0.72		0.82	0.86
10-20					0.67	0.21	0.59	0.67	0.46		1.09	0.55
20-30	1.07	1.02			0.84	0.81	0.79	0.63	0.97		1.10	0.77
30-50	1.11	1.03	0.83		1.23	1.19	0.87	0.95	1.17		1.52	1.02
50-75	1.18	1.05			1.21	1.37	0.92	1.23	1.18		1.49	1.08
75-100	1.28	1.08			1.30	1.48	1.07	1.29	1.40		1.55	1.28
100-275	1.78	1.69	1.35		1.92	1.94	1.52	1.98	1.82		2.11	1.91

Table 2c. Average concentrations, standard deviations, number of observations, minimum and maximum concentrations for phosphate for Cabot Strait.

Nitrate Data - Sydney Bight (46 - 47 N, 59.33 - 60.33 W)

Average Nitrate (μM)

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	7.11	15.65	0.50	2.79	1.49	1.32	0.51	1.88	0.27	0.64	1.87	3.16
5-10		12.34	0.48	1.55	2.49	0.09	0.26	0.00			1.04	4.14
10-20		11.13	0.45	5.04	3.35	0.45	0.20			0.87	2.60	
20-30	8.27	14.42	1.07	5.81	3.86	0.23	1.39	0.00	0.54	1.52	1.76	2.92
30-50	7.55	12.43	2.26	7.78	5.96	1.54	4.17	1.46		3.77	2.94	4.74
50-75	7.50	12.46			5.11	6.64	7.70	8.26		6.71	3.63	3.92
75-100	6.28	9.04			2.89		14.55			9.11	6.54	5.43
100-275					11.34			16.69			12.16	

Standard Deviation

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	1.72	0.74	0.13		2.10	1.88	0.30	1.05		0.29	1.04	1.12
5-10		3.55			3.76	0.13	0.36				0.62	0.37
10-20		6.12					0.14			0.62	1.77	
20-30		4.95			3.61	0.45	0.46			0.87	1.07	1.45
30-50	1.03	4.72			4.31	1.18	1.37			2.95	2.10	
50-75	1.39					4.23	3.73			2.63	2.69	1.74
75-100										1.03	2.74	0.85
100-275								7.95			4.49	

Number of Observations

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	2	8	12	1	14	15	10	5	1	14	24	4
5-10		3	1	1	3	6	6	1			7	3
10-20		2	1	1	1	1	7			7	6	
20-30	1	3	1	1	3	6	5	1	1	6	20	2
30-50	2	2	1	1	2	6	11	1		11	11	1
50-75	2	1			1	5	4	1		18	23	6
75-100	1	1			1		1			4	19	6
100-275					1			3			25	

Minimum Nitrate Concentration

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	5.89	14.51	0.29	2.79	0.14	0.00	0.06	0.57	0.27	0.27	0.37	2.12
5-10		8.59	0.48	1.55	0.17	0.00	0.00	0.00			0.31	3.77
10-20		6.80	0.45	5.04	3.35	0.45	0.09			0.39	1.28	
20-30	8.27	8.80	1.07	5.81	0.78	0.00	0.60	0.00	0.54	0.21	0.30	1.89
30-50	6.82	9.09	2.26	7.78	2.91	0.00	1.05	1.46		0.75	0.48	4.74
50-75	6.52	12.46			5.11	0.67	4.38	8.26		1.14	0.83	2.18
75-100	6.28	9.04			2.89		14.55			8.16	2.44	4.43
100-275					11.34			7.60			4.21	

Maximum Nitrate Concentration

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	8.32	16.43	0.68	2.79	7.18	6.91	0.93	3.01	0.27	1.44	4.04	4.42
5-10		15.64	0.48	1.55	6.83	0.34	0.96	0.00			1.73	4.50
10-20		15.46	0.45	5.04	3.35	0.45	0.45			2.22	5.58	
20-30	8.27	18.15	1.07	5.81	7.84	1.14	1.80	0.00	0.54	2.55	4.54	3.94
30-50	8.27	15.76	2.26	7.78	9.01	3.38	6.00	1.46		8.10	6.77	4.74
50-75	8.48	12.46			5.11	11.40	11.04	8.26		8.88	11.12	6.67
75-100	6.28	9.04			2.89		14.55			10.56	11.28	6.69
100-275					11.34			22.36			20.08	

Table 3a. Average concentrations, standard deviations, number of observations, minimum and maximum concentrations for nitrate for Sydney Bight.

Silicate Data - Sydney Bight (46 - 47 N, 59.33 - 60.33 W)

Average Silicate (µM)

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	8.48	8.15	1.07		0.39	1.36	1.44	1.90	0.80	3.26	4.09	5.26
5-10		9.95	0.72	6.59	0.91	0.93	1.54	1.76	1.39		3.12	5.89
10-20		10.29	0.77	9.08	0.48	0.92	1.59	2.09	0.69	3.36	4.85	
20-30	8.97	9.63	1.19	9.90	1.99	1.17	2.56	2.26	0.96	3.26	3.81	4.75
30-50	8.14	10.63	2.08	11.40	1.59	2.23	4.91	3.17		4.93	4.80	5.93
50-75	7.74	10.10			2.48	6.37	9.38	9.12		6.88	5.64	5.43
75-100	6.62	10.50			2.95		13.85	9.00		7.79	7.38	6.79
100-275					11.66			17.87			14.08	

Standard Deviation

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	0.63	2.96	0.66		0.52	0.57	0.93	1.59		0.35	1.42	0.85
5-10		2.12			0.85	0.24	0.35				1.12	0.51
10-20		3.53					0.27			0.54	3.09	
20-30		2.20			1.51	0.32	0.78	1.05		1.47	1.36	1.84
30-50	1.15	1.48			0.74	1.24	2.74	1.18		2.62	2.51	
50-75	2.09					3.66	5.33			2.08	3.40	1.75
75-100		3.79					4.54			1.61	3.39	1.11
100-275								10.27			5.87	

Number of Observations

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	2	9	12		14	15	12	6	1	14	24	4
5-10		3	1	1	3	6	7	1	1		5	3
10-20		2	1	1	1	1	8	1	1	7	5	
20-30	1	3	1	1	3	6	7	2	1	6	18	2
30-50	2	2	1	1	2	6	13	2		11	9	1
50-75	2	1			1	5	6	1		18	18	6
75-100	1	2			1		3	1		4	19	6
100-275					1			3			25	

Minimum Silicate Concentration

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	8.03	0.60	0.00		0.00	0.68	0.38	0.28	0.80	2.40	1.83	4.18
5-10		7.77	0.72	6.59	0.24	0.68	1.00	1.76	1.39		1.86	5.39
10-20		7.79	0.77	9.08	0.48	0.92	1.20	2.09	0.69	2.67	0.88	
20-30	8.97	7.41	1.19	9.90	0.67	0.93	1.50	1.51	0.96	0.90	1.85	3.45
30-50	7.33	9.58	2.08	11.40	1.07	0.63	2.25	2.33		1.17	2.27	5.93
50-75	6.26	10.10			2.48	1.62	4.50	9.12		2.10	1.64	3.04
75-100	6.62	7.82			2.95		9.00	9.00		6.63	2.64	5.25
100-275					11.66			6.10			4.70	

Maximum Silicate Concentration

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	8.92	10.60	2.17		2.04	2.59	4.00	4.26	0.80	3.60	7.29	6.03
5-10		12.01	0.72	6.59	1.87	1.32	1.95	1.76	1.39		4.45	6.40
10-20		12.78	0.77	9.08	0.48	0.92	2.00	2.09	0.69	4.29	8.87	
20-30	8.97	11.81	1.19	9.90	3.64	1.79	4.00	3.00	0.96	4.89	6.69	6.05
30-50	8.95	11.68	2.08	11.40	2.11	4.24	13.00	4.00		8.58	10.30	5.93
50-75	9.22	10.10			2.48	10.68	19.00	9.12		9.48	15.72	7.62
75-100	6.62	13.18			2.95		18.00	9.00		10.17	14.84	7.96
100-275					11.66			25.05			23.71	

Table 3b. Average concentrations, standard deviations, number of observations, minimum and maximum concentrations for silicate for Sydney Bight.

Phosphate Data - Sydney Bight (46 - 47 N, 59.33 - 60.33 W)

Average Phosphate (μM)

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	0.88	0.71	0.66	1.12	0.74	0.70	0.44	0.56		0.51	0.56	0.67
5-10		0.75	0.50	0.91	0.96	0.60	0.34	0.37	0.20		0.49	0.80
10-20		0.70	0.40	1.58	1.06	0.41	0.35	0.63		0.58	0.60	0.21
20-30	1.02	0.68	0.59	1.35	1.02	0.56	0.56	0.52		0.62	0.60	0.59
30-50	0.91	0.93	0.88		0.88	0.76	0.76	1.26		0.81	0.70	0.50
50-75	0.96	0.61			1.06	1.10	0.92	1.47		1.02	0.79	0.71
75-100	0.79	1.06			0.93		1.16	1.18		1.13	1.00	0.81
100-275					1.58			1.71			1.29	

Standard Deviation

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	0.19	0.18	0.30		0.40	0.30	0.14	0.19		0.16	0.17	0.25
5-10		0.20			0.58	0.13	0.08				0.08	0.05
10-20		0.25			0.57	0.28	0.08			0.05	0.24	
20-30		0.26			0.44	0.13	0.07	0.16		0.12	0.17	0.10
30-50	0.17	0.08			0.02	0.23	0.16	0.43		0.25	0.22	0.41
50-75	0.14					0.24	0.19			0.21	0.24	0.14
75-100		0.13					0.12			0.03	0.26	0.10
100-275								0.38			0.26	

Number of Observations

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	2	9	12	1	13	17	9	6		17	25	9
5-10		3	1	1	3	7	6	1	1		8	3
10-20		2	1	1	2	2	7	1		7	7	1
20-30	1	3	1	1	3	7	5	2		6	21	3
30-50	2	2	1		2	7	12	2		11	13	2
50-75	2	1			1	6	5	1		18	24	6
75-100	1	2			1		2	1		3	19	6
100-275					1			3			25	

Minimum Phosphate Concentration

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	0.75	0.45	0.31	1.12	0.24	0.22	0.28	0.32		0.24	0.28	0.21
5-10		0.61	0.50	0.91	0.57	0.38	0.24	0.37	0.20		0.33	0.76
10-20		0.52	0.40	1.58	0.66	0.21	0.24	0.63		0.52	0.30	0.21
20-30	1.02	0.46	0.59	1.35	0.62	0.29	0.46	0.40		0.48	0.41	0.52
30-50	0.79	0.87	0.88		0.86	0.49	0.50	0.95		0.51	0.47	0.21
50-75	0.87	0.61			1.06	0.72	0.60	1.47		0.50	0.46	0.50
75-100	0.79	0.96			0.93		1.07	1.18		1.11	0.65	0.69
100-275					1.58			1.28			0.82	

Maximum Phosphate Concentration

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	1.02	0.95	1.30	1.12	1.40	1.51	0.66	0.79		0.85	0.98	0.97
5-10		0.97	0.50	0.91	1.62	0.80	0.48	0.37	0.20		0.58	0.86
10-20		0.87	0.40	1.58	1.46	0.61	0.47	0.63		0.68	1.09	0.21
20-30	1.02	0.97	0.59	1.35	1.49	0.69	0.64	0.63		0.80	1.10	0.71
30-50	1.03	0.99	0.88		0.89	1.17	0.98	1.56		1.15	1.26	0.79
50-75	1.06	0.61			1.06	1.37	1.08	1.47		1.23	1.49	0.87
75-100	0.79	1.15			0.93		1.24	1.18		1.17	1.55	0.99
100-275					1.58			1.98			1.66	

Table 3c. Average concentrations, standard deviations, number of observations, minimum and maximum concentrations for phosphate for Sydney Bight.

Nitrate Data - Eastern Scotian Shelf (44 - 46 N, 58 - 62 W)

Average Nitrate (µM)

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	10.06	14.69	2.96	0.90	1.36	0.35	0.42	0.59	0.52	0.46	1.04	6.73
5-10	10.28	15.41	3.67	1.28	1.91	0.16	0.23	0.74	0.22	0.10	1.32	7.62
10-20	10.37	13.71	3.58	1.36	1.73	0.30	0.58	0.63	0.16	0.59	1.54	
20-30	9.92	14.74	3.65	1.87	2.40	0.33	1.17	1.31	2.26	2.11	1.38	
30-50	10.06	13.87	3.94	3.54	3.72	2.47	3.82	6.52	3.29	4.50	6.21	
50-75	12.83	17.01	8.85	5.58	7.10	6.06	8.26	9.88	8.62	8.28	6.70	
75-100	15.82	22.48	12.64	8.99	10.46	9.43	9.38		11.03	9.72	9.25	
100-275	16.06	25.66	20.02	12.43	18.00	14.66	13.33		14.53	17.02	11.63	

Standard Deviation

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	1.60	1.44	2.28	1.15	1.34	0.45	0.46	0.58	0.70	0.36	0.57	1.86
5-10	1.66	0.78	2.44	1.34	1.77	0.29	0.22	0.54		0.09	0.46	
10-20	1.35	1.39	2.28	1.49	1.36	0.30	0.67	0.33	0.13	0.66	0.93	
20-30	1.33	3.88	2.73	1.95	2.64	0.41	1.11	0.56	2.44	1.18	1.32	
30-50	1.37	2.14	2.89	2.08	3.10	1.83	2.19	7.78	0.68	2.58	2.15	
50-75	2.38	2.83	3.51	2.72	4.56	3.28	2.39	4.32	1.50	2.05	2.68	
75-100	1.36	1.29	1.25	2.43	4.53	3.08	2.19		0.79	2.73	2.18	
100-275	0.97	4.14	3.43	3.59	7.03	3.07	2.79		2.94	2.91	3.71	

Number of Observations

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	25	55	60	36	70	106	55	72	65	39	58	60
5-10	8	7	7	9	17	20	25	3	1	3	19	1
10-20	8	7	7	13	18	13	24	3	3	9	14	
20-30	7	7	7	14	20	23	30	2	2	9	28	
30-50	7	7	7	17	19	27	37	2	5	18	17	
50-75	6	6	6	14	14	22	16	2	5	25	27	
75-100	5	4	4	14	13	17	14		3	10	23	
100-275	3	3	4	10	10	17	19		4	7	31	

Minimum Nitrate Concentration

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	7.71	11.55	0.14	0.02	0.12	0.00	0.00	0.02	0.02	0.00	0.07	2.64
5-10	7.92	14.53	0.32	0.15	0.13	0.00	0.00	0.12	0.22	0.02	0.52	7.62
10-20	7.76	11.35	0.69	0.18	0.11	0.03	0.00	0.25	0.04	0.03	0.00	
20-30	7.43	10.66	0.28	0.20	0.04	0.00	0.00	0.91	0.53	0.03	0.03	
30-50	7.29	11.42	0.79	0.18	0.07	0.09	0.00	1.02	2.25	0.00	2.54	
50-75	10.03	12.74	5.14	2.13	0.28	0.63	4.26	6.82	7.49	4.59	0.60	
75-100	14.20	21.23	11.39	4.25	3.02	4.66	5.41		10.21	6.09	5.71	
100-275	15.09	21.21	16.41	7.15	9.05	7.25	9.38		11.62	12.95	7.94	

Maximum Nitrate Concentration

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	14.45	20.84	7.15	4.82	7.36	2.65	2.25	2.81	3.77	1.76	2.35	10.54
5-10	12.47	16.65	7.08	3.83	7.20	1.17	0.77	1.09	0.22	0.19	2.13	7.62
10-20	11.84	16.00	6.98	4.83	5.02	1.09	2.25	0.85	0.30	2.01	3.47	
20-30	11.34	22.89	7.71	5.59	9.57	1.45	3.75	1.70	3.98	3.45	5.57	
30-50	11.19	17.07	8.08	7.70	11.88	5.85	10.22	12.02	4.10	8.68	10.05	
50-75	16.64	19.89	12.39	10.67	16.20	13.20	12.45	12.93	10.39	14.36	11.92	
75-100	17.98	24.29	14.26	13.08	18.55	17.70	12.77		11.78	16.06	14.13	
100-275	17.02	29.39	24.53	17.43	28.86	19.99	20.03		18.42	21.89	22.13	

Table 4a. Average concentrations, standard deviations, number of observations, minimum and maximum concentrations for nitrate for Eastern Scotian Shelf.

Silicate Data - Eastern Scotian Shelf (44 - 46 N, 58 - 62 W)

Average Silicate (µM)

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	10.27	8.55	3.13	1.62	0.67	0.79	1.40	1.36	1.48	2.10	2.79	6.49
5-10	11.18	8.61	3.67	1.35	1.14	0.92	1.42	1.43	1.25	1.59	2.94	7.45
10-20	10.79	8.81	3.77	1.30	1.25	1.00	1.71	1.11	1.20	2.81	3.32	7.61
20-30	10.44	8.68	3.58	1.78	1.23	0.89	2.10	1.80	1.90	3.82	2.95	7.57
30-50	11.14	8.32	3.47	3.21	2.88	2.40	3.91	6.32	4.23	5.48	6.83	9.77
50-75	12.66	9.45	7.55	5.89	5.99	5.53	9.68	7.33	7.44	7.69	7.28	12.84
75-100	14.86	10.39	9.83	7.84	8.29	7.64	8.93	3.00	9.75	8.51	10.30	16.29
100-275	15.60	11.78	17.45	11.93	16.31	13.61	13.65		12.34	13.72	10.57	21.82

Standard Deviation

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	2.96	0.85	2.12	1.28	0.49	0.74	1.34	0.84	0.80	0.71	1.08	1.81
5-10	2.25	0.77	2.19	1.01	0.91	0.74	1.60	0.96	0.26	0.12	1.03	1.73
10-20	2.25	0.61	2.54	1.12	1.07	0.58	1.23	1.20	0.46	0.86	1.34	1.37
20-30	2.09	1.29	2.41	1.24	1.04	0.40	1.74	1.13	1.45	1.08	1.55	1.27
30-50	1.55	1.04	2.37	2.41	2.57	1.12	2.20	7.71	1.34	2.25	2.33	3.94
50-75	2.37	1.65	3.64	3.13	3.67	3.05	3.59	6.06	2.38	2.03	3.37	3.71
75-100	2.61	0.92	3.51	2.48	4.51	3.20	3.63		1.38	3.61	3.34	2.54
100-275	5.09	2.88	9.14	3.75	8.15	3.79	5.45		2.54	5.38	2.74	5.32

Number of Observations

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	40	56	60	40	72	106	57	79	78	40	58	73
5-10	10	7	7	13	19	20	27	3	5	3	19	7
10-20	10	7	7	17	19	12	25	3	5	9	14	7
20-30	10	7	7	18	20	23	31	2	5	9	28	7
30-50	10	7	7	21	19	26	40	3	5	18	17	7
50-75	8	6	6	14	14	22	19	3	5	25	27	7
75-100	5	4	4	17	13	17	16	1	3	10	23	5
100-275	3	4	4	15	10	17	22		4	7	31	5

Minimum Silicate Concentration

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	1.51	6.66	0.02	0.06	0.00	0.00	0.05	0.40	0.14	0.80	0.37	2.52
5-10	6.21	7.60	0.68	0.46	0.23	0.29	0.07	0.77	0.83	1.45	1.40	4.55
10-20	5.94	8.17	0.73	0.32	0.10	0.49	0.47	0.00	0.48	1.90	1.17	5.20
20-30	6.51	5.93	0.58	0.43	0.29	0.46	0.02	1.00	0.53	2.25	0.40	5.36
30-50	8.08	6.35	1.08	0.47	0.32	0.49	0.19	1.00	2.44	0.99	3.85	7.59
50-75	9.76	6.96	3.58	0.84	2.52	1.62	3.75	2.00	4.20	3.46	1.13	9.34
75-100	11.81	9.43	6.96	3.10	2.89	4.05	2.65	3.00	8.91	4.04	6.15	13.64
100-275	12.44	10.02	9.39	6.00	4.87	6.45	6.94		9.48	8.57	5.99	15.18

Maximum Silicate Concentration

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	16.52	10.54	7.78	4.82	2.51	6.30	8.00	6.04	4.33	3.30	5.27	11.53
5-10	14.24	9.68	6.76	3.96	3.53	3.45	7.38	2.53	1.49	1.69	4.89	10.03
10-20	13.95	9.50	7.73	4.96	4.55	2.60	6.00	2.39	1.58	4.56	5.07	9.23
20-30	13.34	9.95	7.17	5.09	4.66	2.10	8.00	2.60	4.36	5.37	6.98	9.26
30-50	13.13	9.46	7.23	9.08	10.08	4.80	10.40	15.16	5.69	8.70	10.24	18.57
50-75	17.64	11.20	11.33	10.04	14.90	12.55	17.45	13.92	10.68	14.56	15.46	19.37
75-100	17.55	11.45	14.23	11.22	18.41	16.09	15.57	3.00	11.35	17.10	20.51	20.32
100-275	21.48	16.08	28.43	17.08	27.60	19.95	27.16		15.63	24.13	21.40	26.42

Table 4b. Average concentrations, standard deviations, number of observations, minimum and maximum concentrations for silicate for Eastern Scotian Shelf.

Phosphate Data - Eastern Scotian Shelf (44 - 46 N, 58 - 62 W)

Average Phosphate (µM)

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	0.78	0.63	0.62	0.53	0.80	0.49	0.37	0.35	0.31	0.38	0.35	0.61
5-10	0.78	0.75	0.69	0.53	0.65	0.46	0.38	0.32	0.36	0.29	0.39	0.57
10-20	0.79	0.72	0.65	0.74	0.76	0.45	0.40	0.63	0.46	0.41	0.39	0.66
20-30	1.03	0.68	0.70	0.74	0.76	0.47	0.54	0.88	0.41	0.49	0.45	0.63
30-50	0.80	0.57	0.65	0.99	0.92	0.67	0.73	1.35	0.66	0.67	0.70	0.78
50-75	0.79	0.66	0.97	1.13	1.08	0.97	0.89	1.71	1.07	1.03	0.82	0.92
75-100	0.95	0.75	1.05	1.16	1.25	1.05	1.07		1.00	0.95	0.98	0.96
100-275	1.24	0.80	1.35	1.24	1.33	1.24	1.16		1.54	1.32	1.12	1.13

Standard Deviation

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	0.23	0.13	0.26	0.26	0.39	0.18	0.13	0.19	0.19	0.17	0.12	0.23
5-10	0.16	0.09	0.21	0.31	0.28	0.14	0.13	0.08	0.24	0.12	0.13	0.21
10-20	0.32	0.17	0.19	0.44	0.40	0.17	0.15	0.66	0.13	0.20	0.18	0.15
20-30	0.42	0.09	0.20	0.39	0.35	0.16	0.16		0.37	0.23	0.17	0.13
30-50	0.22	0.17	0.22	0.50	0.43	0.23	0.20	0.01	0.17	0.26	0.31	0.22
50-75	0.24	0.21	0.41	0.49	0.58	0.19	0.21	1.04	0.33	0.23	0.24	0.14
75-100	0.20	0.21	0.12	0.37	0.43	0.17	0.26		0.27	0.25	0.20	0.32
100-275	0.27	0.22	0.22	0.38	0.47	0.22	0.22		0.37	0.26	0.14	0.24

Number of Observations

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	25	56	60	33	65	110	53	78	73	83	58	73
5-10	9	7	7	10	18	26	27	2	5	15	19	7
10-20	6	7	7	17	19	18	24	2	4	20	14	7
20-30	7	6	7	18	20	28	30	1	4	20	28	7
30-50	7	7	7	21	18	33	37	2	5	41	17	7
50-75	5	6	6	14	14	21	18	2	4	34	27	7
75-100	5	4	4	16	14	23	17		3	20	23	5
100-275	3	4	3	13	9	27	20		4	9	31	5

Minimum Phosphate Concentration

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	0.38	0.40	0.13	0.15	0.15	0.02	0.00	0.12	0.09	0.12	0.15	0.09
5-10	0.55	0.62	0.24	0.15	0.23	0.24	0.14	0.26	0.08	0.15	0.19	0.36
10-20	0.54	0.54	0.44	0.28	0.27	0.24	0.15	0.16	0.32	0.15	0.23	0.54
20-30	0.62	0.59	0.41	0.32	0.17	0.24	0.20	0.88	0.18	0.15	0.14	0.40
30-50	0.51	0.40	0.45	0.42	0.18	0.23	0.32	1.34	0.53	0.16	0.22	0.37
50-75	0.55	0.46	0.35	0.52	0.18	0.58	0.44	0.97	0.80	0.36	0.22	0.69
75-100	0.81	0.49	0.92	0.60	0.51	0.86	0.72		0.79	0.50	0.53	0.46
100-275	0.94	0.61	1.20	0.76	0.72	0.79	0.78		1.13	0.78	0.80	0.72

Maximum Phosphate Concentration

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	1.19	1.05	1.44	1.06	2.09	1.00	0.83	1.09	0.88	0.89	0.65	1.15
5-10	1.07	0.90	0.90	1.09	1.36	0.70	0.88	0.38	0.63	0.55	0.56	0.90
10-20	1.40	0.99	0.99	1.66	1.83	0.85	0.88	1.09	0.64	0.98	0.75	0.90
20-30	1.82	0.84	0.93	1.61	1.38	0.74	0.90	0.88	0.96	0.82	0.92	0.81
30-50	1.10	0.90	1.05	2.14	1.80	1.04	1.38	1.35	0.93	1.20	1.18	1.03
50-75	1.14	1.05	1.46	2.07	2.24	1.33	1.16	2.44	1.52	1.65	1.20	1.15
75-100	1.30	0.97	1.19	2.03	1.91	1.43	1.86		1.31	1.37	1.25	1.22
100-275	1.47	1.08	1.60	1.78	2.16	1.67	1.71		2.00	1.70	1.36	1.33

Table 4c. Average concentrations, standard deviations, number of observations, minimum and maximum concentrations for phosphate for Eastern Scotian Shelf.

Nitrate Data - Central Scotian Shelf (43 - 45 N, 62 - 64 W)

Average Nitrate (μM)

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	8.13	8.64	4.51	0.85	0.62	0.46	0.52	0.35	0.28	0.40	2.83	2.46
5-10	9.13	8.18	5.26	0.77	0.47	0.59	0.27	0.30	0.31	0.26	0.80	0.71
10-20	10.22	7.76	5.26	0.94	0.83	0.72	0.69	0.48	0.32	0.35	1.39	0.61
20-30	9.45	7.53	5.14	1.13	1.07	0.69	1.05	1.72	1.73	0.95	1.04	0.46
30-50	12.72	7.04	6.00	3.66	3.09	3.69	4.26	6.25	4.23	4.97	4.37	9.39
50-75	14.14	9.92	8.77	9.51	8.62	10.76	11.48	13.28	11.26	10.20	8.11	16.42
75-100	15.65	14.92	13.89	13.41	11.51	13.38	13.67	18.68	15.90	13.25	10.98	24.88
100-275	19.98	17.14	20.66	19.28	16.12	17.96	17.76	25.96	18.15	19.76	14.91	16.57

Standard Deviation

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	3.14	3.69	2.50	1.05	0.70	0.41	0.82	0.64	0.35	0.39	2.60	2.36
5-10	2.83	3.86	2.14	1.18	0.33	0.78	0.43	0.34	0.48	0.27	0.76	0.53
10-20	2.35	3.46	2.04	1.45	0.91	0.64	1.10	0.83	0.59	0.45	1.18	0.40
20-30	3.71	3.18	2.23	1.20	1.06	0.79	2.25	2.83	2.16	1.46	1.26	0.27
30-50	5.10	3.47	3.40	2.58	3.53	3.07	3.13	6.11	2.42	2.48	3.27	6.44
50-75	5.34	2.67	4.92	4.03	5.42	3.90	2.73	6.28	3.50	3.21	5.39	11.05
75-100	5.22	6.18	3.89	4.61	4.94	3.15	3.58	7.72	3.16	5.19	5.15	6.10
100-275	4.33	5.20	2.37	3.27	4.89	3.81	4.82	6.33	4.20	4.08	6.06	5.09

Number of Observations

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	71	65	47	111	83	101	50	99	84	73	81	13
5-10	16	20	19	34	41	34	23	24	30	18	12	3
10-20	13	20	21	30	34	28	22	28	11	17	10	3
20-30	17	20	23	33	32	37	27	29	28	22	22	3
30-50	13	31	31	52	57	53	45	32	38	20	14	3
50-75	14	17	15	34	20	32	34	19	27	22	18	3
75-100	11	10	18	31	17	22	18	16	9	21	18	2
100-275	12	11	16	47	30	17	30	19	21	36	18	5

Minimum Nitrate Concentration

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	3.28	3.44	0.01	0.00	0.05	0.00	0.02	0.00	0.00	0.00	0.00	0.36
5-10	4.27	4.26	1.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.01	0.33
10-20	4.31	4.23	1.20	0.03	0.10	0.00	0.06	0.00	0.07	0.00	0.02	0.28
20-30	4.24	4.17	0.80	0.01	0.07	0.00	0.05	0.00	0.00	0.00	0.05	0.17
30-50	4.36	4.20	1.10	0.00	0.12	0.00	0.01	0.00	0.20	0.28	0.01	2.06
50-75	5.72	5.67	2.40	0.94	1.39	2.87	5.79	0.44	5.00	2.06	2.84	3.91
75-100	8.84	6.23	6.00	1.49	1.92	6.03	8.21	3.09	11.64	0.00	6.67	20.56
100-275	10.87	7.67	15.26	11.43	2.51	10.65	9.78	15.45	10.39	11.55	4.13	8.07

Maximum Nitrate Concentration

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	12.69	16.93	8.30	4.01	4.47	1.89	4.74	4.85	2.26	2.64	8.34	6.61
5-10	12.54	15.40	8.40	3.92	1.29	3.92	1.82	1.20	1.50	0.87	2.53	1.32
10-20	12.63	14.13	9.10	5.03	4.88	2.52	4.63	3.16	2.08	1.76	3.39	1.05
20-30	17.68	13.39	9.00	3.92	4.44	3.17	11.51	11.11	7.82	6.27	5.43	0.71
30-50	21.47	16.57	15.12	9.62	14.04	12.21	12.00	21.93	8.90	8.50	10.20	14.14
50-75	24.83	13.32	17.55	17.56	18.48	17.69	16.00	23.74	18.12	14.02	19.80	24.86
75-100	27.30	24.54	19.80	22.37	19.20	17.70	23.10	28.82	19.80	22.46	26.04	29.19
100-275	27.22	28.20	23.25	27.81	22.30	23.20	28.79	37.94	24.00	27.71	23.42	20.55

Table 5a. Average concentrations, standard deviations, number of observations, minimum and maximum concentrations for nitrate for Central Scotian Shelf.

Silicate Data - Central Scotian Shelf (43 - 45 N, 62 - 64 W)

Average Silicate (μM)

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	8.22	7.71	5.64	1.73	1.42	1.10	1.55	1.00	1.70	1.62	3.69	5.28
5-10	9.20	7.13	5.80	0.83	1.20	1.16	1.83	1.26	1.98	1.44	3.62	1.58
10-20	10.12	6.88	5.06	0.89	1.41	1.25	1.63	1.34	1.21	1.62	3.61	1.70
20-30	8.89	6.82	5.33	1.31	1.48	1.36	1.93	2.26	2.73	1.96	2.93	1.69
30-50	11.36	6.50	4.90	3.48	2.68	3.03	4.34	5.72	4.84	4.19	4.15	4.63
50-75	12.03	10.02	5.44	8.58	5.56	7.76	9.58	10.79	9.27	8.20	8.27	6.67
75-100	13.77	11.66	9.74	10.86	9.55	10.83	12.56	13.74	12.90	10.88	9.91	10.59
100-275	15.69	14.61	14.26	15.17	13.44	16.58	16.67	23.30	15.63	16.25	17.41	11.92

Standard Deviation

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	2.83	2.61	3.07	1.51	1.40	0.64	1.11	0.48	0.91	0.54	1.96	2.74
5-10	2.94	2.62	2.35	0.64	0.85	0.90	1.33	0.71	1.36	0.55	1.96	0.43
10-20	2.54	2.53	2.34	0.77	1.07	0.63	1.05	0.69	0.34	0.86	1.80	0.46
20-30	2.97	2.58	2.27	1.30	1.16	0.85	0.73	1.70	1.60	1.13	1.42	0.59
30-50	4.61	2.60	2.90	2.87	3.06	2.10	2.48	3.64	1.97	1.23	1.49	2.40
50-75	4.30	3.99	4.15	3.91	3.22	2.97	3.19	3.83	3.18	2.07	4.56	3.34
75-100	4.19	3.63	3.28	4.10	3.92	4.06	4.73	5.21	1.95	3.97	4.94	0.70
100-275	3.61	3.67	2.20	3.68	3.29	5.21	6.66	8.30	2.16	4.01	6.98	2.93

Number of Observations

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	71	67	46	100	83	101	52	102	88	76	74	17
5-10	16	20	17	26	41	34	25	24	30	21	15	3
10-20	13	19	20	26	34	27	22	28	12	19	15	3
20-30	17	20	23	33	33	37	29	28	28	23	22	3
30-50	13	31	28	42	54	55	47	33	38	21	16	3
50-75	15	21	12	31	19	33	35	19	27	22	23	3
75-100	13	13	17	25	17	28	19	16	9	21	25	2
100-275	15	17	13	45	27	24	30	19	21	35	27	6

Minimum Silicate Concentration

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	3.63	3.85	0.75	0.06	0.00	0.00	0.10	0.00	0.41	0.35	1.11	1.55
5-10	4.06	4.73	1.20	0.04	0.02	0.13	0.60	0.00	0.78	0.79	1.54	1.22
10-20	4.10	4.55	1.30	0.10	0.09	0.40	0.60	0.48	0.54	0.92	1.52	1.18
20-30	4.04	4.30	1.00	0.17	0.32	0.22	0.70	0.26	0.78	0.21	1.31	1.10
30-50	4.02	4.21	1.20	0.18	0.03	0.40	0.60	1.31	1.35	1.50	1.92	1.95
50-75	6.25	3.66	0.49	0.90	0.58	1.50	4.40	4.72	0.80	3.06	2.54	2.96
75-100	9.33	5.25	4.20	1.01	2.27	2.31	6.20	4.11	10.42	1.15	2.68	10.09
100-275	11.52	9.00	11.39	7.84	7.37	5.89	9.00	12.03	11.10	10.40	8.55	6.02

Maximum Silicate Concentration

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	12.81	16.04	15.53	6.43	10.73	4.23	6.79	3.43	5.50	3.09	8.68	8.94
5-10	12.51	15.08	9.98	2.37	3.23	5.10	7.10	3.70	5.70	3.00	8.38	2.05
10-20	13.38	13.46	9.57	2.57	3.84	3.46	4.91	3.51	1.91	4.54	7.60	2.02
20-30	13.34	14.15	8.50	5.03	4.88	4.29	4.04	7.60	5.80	5.55	6.06	2.28
30-50	19.23	14.72	11.10	11.82	14.71	11.94	13.70	15.62	8.46	5.84	6.72	6.58
50-75	21.30	16.79	12.92	18.04	12.16	14.19	19.65	17.15	14.71	11.14	20.13	9.45
75-100	21.21	19.24	15.88	19.49	16.18	19.18	25.52	22.13	15.90	18.42	21.75	11.08
100-275	21.33	24.47	18.97	23.75	19.99	26.10	35.71	44.31	19.38	25.01	35.48	13.80

Table 5b. Average concentrations, standard deviations, number of observations, minimum and maximum concentrations for silicate for Central Scotian Shelf.

Phosphate Data - Central Scotian Shelf (43 - 45 N, 62 - 64 W)

Average Phosphate (µM)

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	0.97	0.74	0.65	0.62	0.57	0.41	0.38	0.38	0.37	0.34	0.31	0.54
5-10	0.91	0.72	0.74	0.75	0.49	0.44	0.33	0.33	0.32	0.34	0.29	0.28
10-20	1.05	0.78	0.73	0.85	0.50	0.43	0.42	0.33	0.37	0.39	0.39	0.29
20-30	1.00	0.71	0.69	0.89	0.50	0.44	0.45	0.47	0.62	0.48	0.34	0.21
30-50	1.09	0.77	0.74	0.97	0.66	0.64	0.75	0.63	0.78	0.64	0.46	0.56
50-75	1.23	0.84	0.83	1.33	0.89	0.99	1.14	0.89	1.10	0.96	0.76	0.67
75-100	1.35	0.97	1.19	1.42	1.16	1.11	1.23	1.08	1.38	1.05	0.88	0.91
100-275	1.51	1.17	1.58	1.60	1.27	1.34	1.41	1.31	1.38	1.51	1.12	1.23

Standard Deviation

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	0.26	0.16	0.25	0.29	0.37	0.22	0.15	0.19	0.18	0.19	0.14	0.20
5-10	0.19	0.17	0.18	0.28	0.21	0.20	0.09	0.17	0.14	0.19	0.16	0.04
10-20	0.34	0.26	0.16	0.41	0.20	0.15	0.11	0.17	0.08	0.27	0.21	0.03
20-30	0.33	0.19	0.17	0.38	0.24	0.15	0.11	0.30	0.47	0.22	0.17	0.09
30-50	0.31	0.16	0.19	0.42	0.28	0.22	0.24	0.26	0.15	0.31	0.21	0.13
50-75	0.29	0.27	0.35	0.50	0.26	0.24	0.25	0.24	0.18	0.27	0.22	0.27
75-100	0.32	0.35	0.20	0.42	0.32	0.23	0.34	0.31	0.09	0.44	0.21	0.44
100-275	0.20	0.27	0.19	0.35	0.28	0.31	0.28	0.35	0.20	0.40	0.30	0.22

Number of Observations

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	70	57	46	107	82	102	51	101	94	79	82	18
5-10	16	18	17	34	40	33	25	23	29	24	21	3
10-20	13	18	19	30	34	28	22	27	11	21	18	3
20-30	17	19	22	35	31	37	29	28	27	23	30	3
30-50	12	30	29	51	55	52	47	31	37	28	22	3
50-75	14	18	14	34	19	33	35	19	26	23	26	3
75-100	13	9	17	31	17	28	19	16	8	22	27	2
100-275	13	16	13	49	29	24	30	19	19	40	30	6

Minimum Phosphate Concentration

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	0.48	0.28	0.16	0.15	0.02	0.08	0.06	0.05	0.01	0.03	0.05	0.30
5-10	0.50	0.45	0.30	0.29	0.25	0.10	0.22	0.09	0.18	0.04	0.05	0.25
10-20	0.63	0.49	0.32	0.41	0.27	0.20	0.25	0.10	0.30	0.21	0.13	0.26
20-30	0.46	0.34	0.34	0.40	0.18	0.11	0.25	0.09	0.34	0.11	0.05	0.15
30-50	0.62	0.48	0.42	0.04	0.25	0.25	0.31	0.08	0.48	0.12	0.10	0.42
50-75	0.79	0.39	0.05	0.68	0.51	0.46	0.76	0.51	0.85	0.20	0.25	0.50
75-100	0.68	0.45	0.82	0.63	0.53	0.73	0.82	0.62	1.25	0.23	0.51	0.60
100-275	1.21	0.64	1.22	0.79	0.47	0.84	1.09	0.62	1.10	0.59	0.57	0.91

Maximum Phosphate Concentration

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	1.94	1.12	1.07	1.89	1.57	1.37	0.83	0.98	1.00	0.95	0.79	0.88
5-10	1.18	0.99	1.06	1.39	1.22	1.03	0.55	0.84	0.63	0.78	0.59	0.32
10-20	1.74	1.46	0.98	1.92	0.98	0.92	0.70	0.73	0.58	1.50	0.80	0.32
20-30	1.74	1.22	1.08	1.93	1.14	0.89	0.76	1.33	2.88	0.95	0.71	0.31
30-50	1.63	1.17	1.28	2.27	1.55	1.20	1.52	1.00	1.09	1.55	0.93	0.68
50-75	1.95	1.30	1.34	2.82	1.43	1.69	1.91	1.33	1.43	1.38	1.28	0.98
75-100	1.90	1.37	1.54	2.53	1.82	1.46	2.23	1.58	1.52	1.98	1.27	1.22
100-275	1.87	1.54	1.80	2.74	1.77	1.80	2.37	1.95	1.74	2.83	1.63	1.43

Table 5c. Average concentrations, standard deviations, number of observations, minimum and maximum concentrations for phosphate for Central Scotian Shelf.

Nitrate Data - Western Scotian Shelf (42.5 - 44 N, 64 - 66 W)

Average Nitrate (μM)

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	9.73	8.95	8.23	0.62	0.89	1.22	1.27	0.61	0.76	1.38	3.94	2.86
5-10	10.97	9.17	8.20	0.80	1.73	1.22	1.00	0.58	1.29	4.23	2.97	3.09
10-20	9.47	9.13	8.20	1.18	2.02	1.18	2.16	1.37	2.21	4.17	4.18	3.33
20-30	9.57	10.09	9.30	2.52	2.71	1.91	3.10	2.81	3.79	4.23	6.44	3.98
30-50	9.31	10.85	9.30	4.81	5.65	4.64	6.10	5.61	5.76	7.87	7.23	5.93
50-75	13.66	9.37	9.93	6.95	7.06	8.55	9.31	8.64	8.51	12.08	9.55	10.16
75-100	15.05	9.86	10.40	9.08	6.73	12.29	11.27	10.85	8.20	13.72	10.94	13.89
100-275	14.95	14.49	10.87	10.63	8.16	15.34	14.89	15.12	9.30	14.38	13.47	19.43

Standard Deviation

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	3.08	2.15	1.05	0.91	1.18	1.45	1.69	1.11	1.37	1.25	2.19	2.18
5-10	2.69	1.72		0.91	1.76	1.93	1.21	0.95	1.31	0.42	2.35	2.68
10-20	2.72	1.73	0.00	1.51	2.38	1.48	1.67	1.69	1.38	0.32	2.12	2.63
20-30	1.88	2.45		2.55	2.55	2.36	2.25	2.45	2.24	0.22	1.94	2.70
30-50	2.51	3.31	1.56	2.82	2.12	3.45	2.41	2.84	2.16	1.74	2.16	3.44
50-75	4.86	3.33	0.40	3.01	1.62	3.85	2.43	3.39	0.92	4.09	1.07	3.69
75-100	5.81	4.29	0.00	3.68	1.29	4.01	3.03	2.99		1.46	1.73	4.33
100-275	2.47	4.66	1.46	2.58	2.56	3.85	3.58	2.86			2.10	

Number of Observations

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	36	40	4	31	23	65	56	47	48	18	58	34
5-10	8	10	1	9	11	35	35	63	9	2	18	21
10-20	9	10	2	11	10	38	34	61	7	2	25	24
20-30	8	10	1	14	11	37	37	58	9	2	29	22
30-50	10	9	2	23	10	55	58	123	8	2	38	37
50-75	8	6	3	24	7	26	39	56	3	2	16	15
75-100	6	5	2	19	7	25	18	47	1	2	13	8
100-275	2	2	3	7	3	13	10	31	1	1	5	1

Minimum Nitrate Concentration

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	4.70	5.05	6.80	0.00	0.08	0.00	0.00	0.00	0.03	0.20	0.00	0.58
5-10	6.40	6.44	8.20	0.03	0.00	0.00	0.05	0.00	0.16	3.93	0.15	0.27
10-20	5.00	6.47	8.20	0.04	0.13	0.03	0.04	0.03	0.12	3.94	0.63	0.33
20-30	6.10	7.02	9.30	0.08	0.34	0.02	0.17	0.06	0.61	4.07	1.43	1.35
30-50	5.70	7.76	8.20	0.61	1.30	0.08	0.27	0.98	1.40	6.64	1.35	1.50
50-75	7.50	5.04	9.70	1.27	5.57	1.17	6.00	2.09	7.50	9.18	7.58	4.05
75-100	7.50	5.06	10.40	1.43	5.25	5.70	6.60	3.98	8.20	12.69	9.08	8.70
100-275	13.20	11.19	9.70	6.49	5.59	7.80	9.28	9.65	9.30	14.38	11.51	19.43

Maximum Nitrate Concentration

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	20.74	15.17	9.30	3.36	4.20	7.29	7.62	6.06	8.63	3.87	8.73	11.55
5-10	13.98	11.05	8.20	2.53	4.70	10.34	3.90	6.00	4.61	4.53	7.92	11.06
10-20	13.86	10.90	8.20	4.47	7.11	5.96	5.86	6.60	3.70	4.39	8.10	12.87
20-30	11.58	14.61	9.30	9.25	8.62	8.02	7.09	9.08	7.07	4.38	9.77	13.89
30-50	14.41	18.85	10.40	10.78	7.50	15.05	14.21	12.79	8.20	9.10	11.83	18.81
50-75	20.56	12.10	10.40	13.64	10.39	19.09	18.36	20.49	9.30	14.97	11.04	19.30
75-100	24.11	13.93	10.40	16.47	9.02	25.06	16.64	19.15	8.20	14.75	15.54	23.51
100-275	16.70	17.78	12.50	13.03	10.70	21.09	20.16	19.93	9.30	14.38	16.68	19.43

Table 6a. Average concentrations, standard deviations, number of observations, minimum and maximum concentrations for nitrate for Western Scotian Shelf.

Silicate Data - Western Scotian Shelf (42.5 - 44 N, 64 - 66 W)

Average Silicate (μM)

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	10.41	8.97		1.33	1.80	1.83	1.93	1.91	2.58	2.76	4.11	4.19
5-10	11.12	9.79		1.07	1.92	1.85	2.03	1.78	4.13	3.54	3.51	4.17
10-20	10.89	9.65		1.17	2.76	2.01	2.54	2.60	3.46	3.54	4.48	4.44
20-30	10.87	10.38		2.19	3.39	2.21	3.18	3.21	4.22	3.26	5.62	4.73
30-50	11.46	11.44		3.60	6.72	4.14	4.95	5.12	6.04	4.30	6.29	6.64
50-75	15.90	12.16		5.49	5.97	7.09	7.23	7.38	7.21	7.16	8.66	10.23
75-100	16.25	14.05		7.54	5.45	10.03	8.14	9.54		8.81	10.74	12.91
100-275	17.79	12.50		10.29	3.29	13.45	11.65	13.00		9.08	13.61	15.46

Standard Deviation

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	2.12	2.27		1.25	1.90	1.22	1.08	1.25	1.60	0.95	1.27	1.16
5-10	1.06	2.63		1.57	1.74	1.03	1.03	0.98	0.84	1.79	0.91	0.95
10-20	0.79	2.44		1.52	2.63	1.05	1.13	1.43	1.54	1.78	1.39	1.30
20-30	0.98	2.99		2.61	2.89	1.43	1.27	1.64	1.75	1.73	1.35	1.34
30-50	2.20	4.19		2.85	2.30	2.28	1.63	1.85		2.68	1.87	2.35
50-75	2.81	1.05		3.53	2.02	3.54	1.90	2.54		2.84	2.96	3.12
75-100	2.63	3.38		3.97	1.59	2.79	2.56	2.48		3.48	3.11	2.49
100-275		1.51		3.21		1.58	4.15	3.16		4.54	2.99	

Number of Observations

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	33	40		34	22	62	56	46	43	27	58	34
5-10	7	10		10	9	32	35	63	3	4	19	20
10-20	7	10		13	9	37	34	60	3	4	26	24
20-30	7	10		15	9	35	37	58	3	5	31	22
30-50	7	9		25	8	50	58	121	1	6	39	37
50-75	6	6		26	7	25	39	56	1	6	23	15
75-100	4	6		22	5	21	18	47		5	18	8
100-275	1	2		11	1	10	10	31		6	8	1

Minimum Silicate Concentration

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	5.75	5.46		0.16	0.47	0.00	0.46	0.26	0.87	1.17	1.80	2.70
5-10	9.69	5.37		0.10	0.50	0.72	0.48	0.58	3.22	2.00	2.25	3.00
10-20	9.96	5.27		0.00	0.60	0.11	0.90	0.94	1.96	2.00	1.95	2.25
20-30	9.73	5.55		0.16	0.64	0.12	1.05	0.44	2.34	2.00	2.18	2.70
30-50	9.59	6.41		0.31	2.18	1.21	1.45	1.89	6.04	2.00	2.03	3.12
50-75	11.33	11.02		0.46	3.70	0.95	4.84	3.00	7.21	3.00	2.96	5.82
75-100	13.02	11.20		0.66	4.00	5.85	4.71	4.66		4.00	6.15	9.83
100-275	17.79	11.43		4.78	3.29	10.54	7.10	7.85		3.00	10.31	15.46

Maximum Silicate Concentration

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	14.08	13.02		6.19	8.30	5.65	4.32	5.94	9.41	5.11	7.46	7.65
5-10	12.78	11.77		5.41	5.58	5.64	4.14	5.97	4.88	5.30	5.85	6.75
10-20	11.90	12.06		5.88	7.72	5.57	4.50	8.25	5.04	5.14	7.95	7.41
20-30	12.51	14.37		9.62	9.34	6.29	5.55	7.39	5.79	5.46	8.31	7.41
30-50	15.88	20.23		9.49	9.31	11.68	9.66	9.72	6.04	7.95	12.40	11.58
50-75	18.80	13.88		14.43	9.41	14.73	14.15	16.98	7.21	11.38	15.42	17.67
75-100	18.96	20.23		15.33	7.59	14.87	14.37	15.53		12.84	16.57	17.72
100-275	17.79	13.57		16.22	3.29	16.33	21.09	20.10		14.47	18.08	15.46

Table 6b. Average concentrations, standard deviations, number of observations, minimum and maximum concentrations for silicate for Western Scotian Shelf.

Phosphate Data - Western Scotian Shelf (42.5 - 44 N, 64 - 66 W)

Average Phosphate (µM)

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	0.91	0.87	1.08	0.46	0.69	0.41	0.53	0.58	0.40	0.39	0.53	0.42
5-10	0.92	0.81	1.06	0.50	0.68	0.45	0.43	0.61	0.26	0.56	0.48	0.40
10-20	0.89	0.74	1.02	0.48	0.73	0.51	0.51	0.71	0.54	0.52	0.60	0.46
20-30	0.81	0.80	1.11	0.61	0.78	0.51	0.60	0.78	0.58	0.55	0.71	0.46
30-50	0.78	0.80	1.06	0.77	0.87	0.71	0.80	0.99	0.79	0.72	0.73	0.58
50-75	0.93	0.94	1.09	0.88	1.23	0.86	0.90	1.13	1.06	0.79	0.84	0.74
75-100	1.13	0.99	1.10	1.00	0.96	1.09	0.98	1.26	0.85		0.98	0.84
100-275	0.99	0.90	1.06	1.16	0.80	1.27	1.10	1.51	0.88		1.20	1.15

Standard Deviation

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	0.24	0.32	0.05	0.13	0.42	0.19	0.19	0.27	0.20	0.18	0.20	0.13
5-10	0.31	0.14		0.16	0.44	0.14	0.12	0.20	0.14		0.09	0.10
10-20	0.25	0.17	0.01	0.14	0.38	0.15	0.15	0.20	0.12		0.17	0.17
20-30	0.26	0.30		0.21	0.36	0.16	0.18	0.25	0.18		0.24	0.12
30-50	0.28	0.17	0.03	0.23	0.38	0.22	0.18	0.22	0.29		0.22	0.16
50-75	0.34	0.21	0.06	0.24	0.52	0.22	0.21	0.25	0.32		0.22	0.12
75-100	0.38	0.30	0.11	0.26	0.33	0.19	0.22	0.25			0.24	0.16
100-275	0.18	0.31	0.05	0.26	0.10	0.11	0.26	0.23			0.35	

Number of Observations

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	40	23	4	36	25	59	57	50	50	17	57	32
5-10	11	9	1	11	13	34	35	65	9	1	19	20
10-20	13	10	2	12	13	37	34	61	7	1	25	24
20-30	12	10	1	16	13	37	37	61	9	1	32	22
30-50	17	11	2	24	11	53	58	126	8	1	41	37
50-75	11	6	2	26	8	24	39	56	3	1	25	15
75-100	8	5	2	21	11	25	17	50	1		20	8
100-275	7	3	3	14	5	13	10	33	1		8	1

Minimum Phosphate Concentration

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	0.51	0.02	1.02	0.20	0.09	0.07	0.19	0.16	0.09	0.19	0.16	0.21
5-10	0.46	0.57	1.06	0.31	0.16	0.21	0.22	0.09	0.14	0.56	0.34	0.23
10-20	0.65	0.46	1.01	0.32	0.18	0.29	0.14	0.29	0.38	0.52	0.31	0.14
20-30	0.35	0.24	1.11	0.26	0.38	0.25	0.15	0.23	0.25	0.55	0.05	0.30
30-50	0.42	0.52	1.04	0.45	0.41	0.36	0.22	0.36	0.21	0.72	0.10	0.32
50-75	0.60	0.58	1.04	0.42	0.46	0.35	0.37	0.64	0.82	0.79	0.39	0.48
75-100	0.65	0.67	1.02	0.62	0.60	0.60	0.67	0.71	0.85		0.42	0.64
100-275	0.65	0.54	1.01	0.71	0.64	1.09	0.54	0.84	0.88		0.48	1.15

Maximum Phosphate Concentration

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	1.46	1.41	1.12	0.68	1.70	0.97	1.04	1.30	0.81	0.79	0.95	0.73
5-10	1.40	1.04	1.06	0.78	1.45	0.80	0.69	0.96	0.53	0.56	0.64	0.64
10-20	1.50	1.02	1.03	0.83	1.52	0.87	0.77	1.00	0.69	0.52	0.90	0.96
20-30	1.36	1.37	1.11	1.12	1.37	1.04	0.94	1.30	0.83	0.55	0.99	0.67
30-50	1.39	1.02	1.08	1.25	1.63	1.13	1.28	1.38	1.24	0.72	1.06	0.94
50-75	1.49	1.17	1.13	1.44	2.05	1.14	1.71	1.55	1.42	0.79	1.13	0.97
75-100	1.96	1.47	1.17	1.56	1.81	1.40	1.35	1.66	0.85		1.40	1.13
100-275	1.18	1.12	1.11	1.66	0.89	1.41	1.49	1.81	0.88		1.72	1.15

Table 6c. Average concentrations, standard deviations, number of observations, minimum and maximum concentrations for phosphate for Western Scotian Shelf.

Nitrate Data - Eastern Gulf of Maine (42 - 44 N, 66 - 67 W)

Average Nitrate (μM)

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	11.78	8.46	9.03	1.42	3.80	2.05	1.28	1.41	2.19	2.80	6.57	5.93
5-10	10.55	8.74	9.30	2.99	2.10	1.51	1.64	1.45	2.12	1.67	7.35	5.62
10-20	9.84	8.60	9.80	3.23	2.70	1.77	2.41	2.63	3.27	3.35	7.40	5.68
20-30	11.67	8.77	9.70	4.56	3.30	3.41	3.43	4.70	3.00	4.63	7.38	5.84
30-50	9.56	8.68	9.26	5.91	3.00	4.36	5.80	6.95	4.34	5.72	7.94	6.88
50-75	10.62	9.08	11.43	7.27	3.50	8.10	8.31	10.77	7.57	4.20	8.97	8.81
75-100	12.01	11.08	11.78	9.52		10.61	11.39	13.35	10.97	7.87	11.94	11.07
100-275	17.93	16.26	17.25	13.71		17.03	17.13	17.31	15.72	12.80	18.75	17.33

Standard Deviation

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	4.47	1.90	2.84	2.07	2.57	1.72	1.32	1.76	2.34	0.57	2.69	2.70
5-10	5.65	1.47		2.75		0.86	1.28	1.65	2.01	1.40	3.07	1.98
10-20	5.07	2.33	3.82	2.57		1.22	1.56	2.45	3.31	0.35	3.31	2.23
20-30	5.66	1.28	0.99	3.13		2.73	1.83	2.76	2.30	4.85	3.14	2.09
30-50	3.32	2.38	2.32	2.74		3.65	2.41	2.19	2.50	3.40	2.32	2.12
50-75	5.17	3.22	3.75	3.36		5.31	2.65	2.74	2.50	2.90	1.22	3.13
75-100	4.22	3.91	2.96	3.32		6.84	2.97	2.74	2.73	3.30	2.21	3.52
100-275	4.84	3.22	3.32	4.16		4.63	4.28	3.26	3.31	1.41	0.64	3.66

Number of Observations

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	18	38	4	46	16	38	98	55	25	2	30	34
5-10	3	4	1	14	1	18	44	40	5	3	17	23
10-20	3	6	2	22	1	23	63	54	3	2	20	27
20-30	3	6	2	22	1	18	56	57	5	4	20	24
30-50	5	6	5	50	1	31	113	95	10	6	35	42
50-75	3	11	3	38	1	16	67	33	9	3	14	21
75-100	9	9	6	44		9	45	19	8	3	2	23
100-275	12	15	13	79		9	57	22	23	2	2	33

Minimum Nitrate Concentration

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	6.10	5.00	5.70	0.00	0.22	0.42	0.00	0.00	0.06	2.40	1.43	2.10
5-10	6.80	6.60	9.30	0.22	2.10	0.45	0.08	0.00	0.00	0.20	2.55	2.70
10-20	6.10	5.30	7.10	0.00	2.70	0.45	0.00	0.00	0.10	3.10	2.40	1.90
20-30	8.20	7.20	9.00	0.11	3.30	0.42	0.16	0.00	0.90	0.10	2.29	2.60
30-50	6.40	3.90	6.20	0.55	3.00	0.45	1.11	1.22	1.30	2.10	3.23	2.79
50-75	7.10	4.80	7.10	2.08	3.50	1.59	2.10	5.37	4.10	1.30	6.75	4.05
75-100	7.50	2.00	7.10	3.87		3.00	4.35	9.15	7.50	4.30	10.37	6.50
100-275	8.20	11.10	12.10	4.44		10.40	7.98	12.39	11.10	11.80	18.30	11.40

Maximum Nitrate Concentration

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	19.65	11.89	12.50	8.57	8.11	7.21	6.67	6.06	8.63	3.20	11.48	13.50
5-10	17.05	9.91	9.30	8.76	2.10	3.41	4.50	6.43	5.40	3.00	16.95	11.30
10-20	15.61	10.64	12.50	8.76	2.70	5.00	5.85	9.22	6.70	3.60	18.59	11.00
20-30	18.20	10.17	10.40	10.40	3.30	10.43	7.86	11.37	6.50	11.50	16.64	11.30
30-50	15.02	10.20	11.80	13.20	3.00	14.67	13.32	11.25	8.60	10.20	14.20	12.50
50-75	16.56	13.54	13.60	16.72	3.50	21.49	15.19	17.10	9.65	7.10	10.74	17.10
75-100	17.02	16.67	15.40	20.19		24.93	16.47	19.70	15.40	10.80	13.50	20.00
100-275	22.80	20.30	22.10	20.52		26.16	25.93	21.58	20.96	13.80	19.20	22.90

Table 7a. Average concentrations, standard deviations, number of observations, minimum and maximum concentrations for nitrate for Eastern Gulf of Maine.

Silicate Data - Eastern Gulf of Maine (42 - 44 N, 66 - 67 W)

Average Silicate (μM)

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	10.59	7.11	10.17	1.62	1.62	2.85	2.70	2.95	3.86	6.86	4.91	4.93
5-10	11.15	8.03	9.83	2.57	0.00	2.59	2.71	2.92	3.00		4.96	5.39
10-20	9.98	6.12	12.67	2.20	1.00	2.51	2.92	3.54	4.00		4.90	5.20
20-30	13.37	6.93	8.40	2.85		2.93	3.37	4.66	2.00		4.96	5.73
30-50	17.29	8.82	12.33	4.95		3.32	4.71	6.03	4.76		5.19	5.80
50-75	15.48	7.40	13.75	5.57	4.60	5.50	6.27	7.77	6.29		6.32	6.71
75-100	12.96	9.22	12.67	9.19	6.67	6.98	7.86	8.31	8.13		7.71	7.52
100-275		11.10	23.00	12.02	9.96	13.10	10.95	10.54	12.04		11.29	10.52

Standard Deviation

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	1.96	1.56	7.03	1.62	1.32	1.52	1.41	1.61	2.20	0.13	1.47	1.38
5-10		2.64	2.93	2.39		0.66	0.93	1.48			1.11	1.15
10-20		2.27	7.51	2.14		0.75	1.11	1.78			1.30	1.33
20-30		2.86	3.36	2.29		1.21	1.06	1.92	1.41		1.23	1.26
30-50		4.22	5.81	3.06		1.98	1.30	1.77	1.95		0.95	1.20
50-75		3.52	4.57	2.72	2.41	3.36	1.27	2.36	2.22		0.82	0.59
75-100		3.33	3.21	4.41	2.25	3.69	1.98	2.13	1.59		0.38	1.76
100-275		3.49	3.46	4.71	2.40	1.49	2.77	1.80	3.75		0.69	2.22

Number of Observations

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	14	45	6	44	23	34	98	58	26	2	30	24
5-10	1	8	6	11	1	14	44	38	1		17	17
10-20	1	12	3	19	1	20	63	55	1		20	20
20-30	1	10	5	19		15	56	58	2		20	16
30-50	1	16	9	47		26	114	90	6		35	29
50-75	1	16	4	36	5	11	67	33	8		16	13
75-100	1	14	3	42	6	8	45	20	6		4	12
100-275		22	3	76	54	5	58	23	18		2	19

Minimum Silicate Concentration

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	7.28	3.00	5.00	0.00	0.00	1.23	0.59	0.00	1.00	6.77	1.43	2.74
5-10	11.15	5.00	7.00	0.28	0.00	1.59	1.07	0.04	3.00		1.50	4.00
10-20	9.98	1.00	5.00	0.00	1.00	1.50	0.67	0.22	4.00		1.73	3.00
20-30	13.37	4.00	5.00	0.10		1.35	0.94	1.49	1.00		1.95	3.00
30-50	17.29	3.00	6.00	0.41		1.00	1.47	2.45	1.00		2.46	3.00
50-75	15.48	2.00	9.00	0.60	2.00	2.40	3.11	5.19	3.00		5.16	5.82
75-100	12.96	3.00	9.00	2.24	5.00	3.15	4.35	6.00	5.00		7.30	5.00
100-275		5.00	21.00	2.53	4.00	12.28	5.86	8.00	5.00		10.80	7.00

Maximum Silicate Concentration

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	14.51	10.24	24.00	6.75	3.80	6.28	8.43	6.76	9.41	6.95	7.46	7.35
5-10	11.15	13.00	15.00	6.83	0.00	3.75	4.65	6.15	3.00		6.15	7.65
10-20	9.98	9.00	20.00	6.84	1.00	4.05	5.10	7.85	4.00		6.88	7.41
20-30	13.37	14.00	12.00	7.11		5.33	6.21	9.81	3.00		6.40	7.56
30-50	17.29	19.00	22.00	12.45		8.51	10.67	11.46	6.54		6.60	7.65
50-75	15.48	16.00	19.00	13.89	8.00	12.11	9.40	15.12	8.39		7.79	7.80
75-100	12.96	14.00	15.00	18.51	11.00	13.59	15.97	13.64	9.12		8.08	12.00
100-275		17.60	27.00	22.24	14.00	15.75	19.12	12.96	22.25		11.78	15.00

Table 7b. Average concentrations, standard deviations, number of observations, minimum and maximum concentrations for silicate for Eastern Gulf of Maine.

Phosphate Data - Eastern Gulf of Maine (42 - 44 N, 66 - 67 W)

Average Phosphate (μM)

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	1.04	0.73	0.83	0.37	0.60	0.48	0.47	0.42	0.49	0.59	0.68	0.60
5-10	0.96	0.78	0.68	0.54	0.58	0.54	0.48	0.55	0.35	0.42	0.68	0.59
10-20	1.02	0.73	0.81	0.58	0.62	0.54	0.51	0.51	0.40	0.63	0.69	0.57
20-30	1.14	0.85	0.70	0.62	0.67	0.65	0.55	0.65	0.43	0.50	0.67	0.59
30-50	1.24	0.73	0.78	0.70	0.77	0.73	0.69	0.84	0.45	0.71	0.73	0.66
50-75	1.25	0.75	0.96	0.75	0.94	0.96	0.81	1.02	0.54	0.84	0.75	0.76
75-100	1.25	0.87	0.99	0.84	1.05	1.01	0.89	1.18	0.76	1.02	0.78	0.91
100-275	1.43	1.10	1.19	1.04	1.19	1.21	1.14	1.43	1.02	1.26	1.26	1.10

Standard Deviation

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	0.16	0.33	0.20	0.16	0.26	0.26	0.20	0.26	0.29	0.30	0.16	0.25
5-10	0.09	0.18	0.17	0.18	0.18	0.13	0.20	0.23	0.20	0.13	0.15	0.21
10-20	0.04	0.25	0.29	0.14	0.19	0.19	0.21	0.25	0.24	0.12	0.12	0.22
20-30	0.18	0.32	0.26	0.22	0.25	0.23	0.20	0.24	0.22	0.20	0.13	0.19
30-50	0.32	0.25	0.23	0.15	0.22	0.24	0.21	0.26	0.19	0.32	0.09	0.21
50-75	0.25	0.29	0.25	0.17	0.31	0.35	0.18	0.26	0.23	0.13	0.11	0.24
75-100	0.15	0.21	0.26	0.13	0.07	0.48	0.20	0.25	0.27	0.25	0.25	0.23
100-275	0.16	0.29	0.23	0.19	0.11	0.30	0.31	0.29	0.21	0.01	0.00	0.28

Number of Observations

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	18	26	10	43	22	37	99	50	32	3	26	33
5-10	3	7	7	13	7	19	44	40	7	3	17	22
10-20	3	12	5	19	7	24	63	57	5	2	20	27
20-30	3	11	7	21	7	19	56	57	8	3	20	23
30-50	5	16	13	48	9	31	112	95	15	5	34	43
50-75	3	18	7	35	6	17	67	33	14	3	16	21
75-100	9	15	9	38	8	9	45	19	11	3	4	23
100-275	12	24	19	81	12	10	57	22	27	2	2	34

Minimum Phosphate Concentration

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	0.68	0.08	0.61	0.06	0.02	0.09	0.09	0.12	0.19	0.30	0.35	0.28
5-10	0.86	0.42	0.54	0.26	0.34	0.25	0.10	0.21	0.19	0.28	0.40	0.28
10-20	0.98	0.34	0.46	0.34	0.36	0.06	0.10	0.00	0.19	0.54	0.42	0.24
20-30	0.99	0.46	0.36	0.17	0.36	0.31	0.15	0.20	0.19	0.28	0.43	0.27
30-50	1.07	0.23	0.52	0.35	0.48	0.40	0.21	0.35	0.19	0.54	0.53	0.29
50-75	1.08	0.30	0.62	0.35	0.47	0.61	0.44	0.38	0.23	0.75	0.52	0.34
75-100	1.09	0.59	0.62	0.53	0.94	0.68	0.50	0.81	0.22	0.81	0.55	0.62
100-275	1.13	0.66	0.78	0.54	1.01	0.82	0.50	0.88	0.60	1.25	1.26	0.61

Maximum Phosphate Concentration

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	1.38	1.60	1.19	0.85	1.25	1.35	1.06	0.98	1.58	0.90	1.01	1.36
5-10	1.03	0.96	1.06	0.85	0.87	0.81	1.00	0.93	0.65	0.54	1.08	0.98
10-20	1.05	1.05	1.22	0.84	0.87	1.09	1.11	1.05	0.68	0.71	0.88	0.98
20-30	1.34	1.50	1.06	0.98	0.94	1.14	0.99	1.19	0.72	0.65	0.82	0.96
30-50	1.80	1.10	1.20	1.00	1.16	1.21	1.42	1.42	0.75	1.28	0.86	1.15
50-75	1.54	1.34	1.24	1.11	1.32	1.68	1.23	1.45	0.88	0.99	0.94	1.36
75-100	1.51	1.51	1.25	1.07	1.16	2.11	1.34	1.75	1.05	1.30	1.05	1.33
100-275	1.58	1.71	1.48	1.53	1.34	1.63	2.03	1.83	1.31	1.26	1.26	1.59

Table 7c. Average concentrations, standard deviations, number of observations, minimum and maximum concentrations for phosphate for Eastern Gulf of Maine.

Nitrate Data - Central Gulf of Maine (42 - 44 N, 67 - 69 W)

Average Nitrate (μM)

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	8.52	7.94	11.59	2.59	1.44	1.17	0.47	0.22	0.68	11.60	1.96	7.00
5-10	8.60	6.11	12.13	4.81	1.80	0.86	0.61	0.15	1.18	5.15	3.12	8.54
10-20	8.83	6.54	12.63	3.64	2.15	1.78	1.23	0.64	1.28	6.20	4.70	8.03
20-30	9.15	5.87	11.78	5.22	6.75	3.04	2.84	1.91	3.55	3.85	4.75	8.37
30-50	9.94	7.03	12.02	6.11	8.82	6.38	6.39	5.78	7.25	7.58	8.24	9.20
50-75	9.43	8.78	12.57	6.91	11.09	10.81	9.26	9.27	9.03	1.95	11.74	11.95
75-100	12.05	9.80	13.74	9.92	13.25	12.52	12.81	13.17	13.96	12.37		13.65
100-275	16.67	14.75	18.27	14.72	17.08	16.58	16.45	17.31	17.25		11.73	19.74

Standard Deviation

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	2.29	1.95	1.03	2.67	2.16	0.66	0.55	0.37	0.78		1.09	3.10
5-10	2.55	1.87	1.27	3.68	3.70	0.64	0.57	0.42	1.41	0.35	1.48	3.25
10-20	2.86	2.21	1.46	3.42	3.49	1.67	1.38	0.99	1.38		1.70	3.22
20-30	0.78	1.42	0.94	3.00	1.34	2.82	2.44	2.16	2.67	0.49	1.90	3.21
30-50	1.60	2.12	0.97	3.23	4.30	2.95	3.22	3.37	2.76	4.91	2.91	2.64
50-75	1.12	1.76	0.40	3.32	3.36	1.30	3.05	3.97	2.71	1.77	2.74	2.62
75-100	1.70	2.50	1.72	2.97	3.03	0.95	1.98	2.85	2.52	2.57		2.60
100-275	3.42	3.28	2.82	3.52	3.54	2.91	2.83	2.93	3.38		1.84	2.44

Number of Observations

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	5	51	7	79	55	6	105	95	37	1	9	21
5-10	2	7	4	18	5	5	45	42	17	2	9	14
10-20	3	10	3	12	6	6	90	77	11	1	12	18
20-30	2	11	4	26	2	6	100	93	16	2	10	15
30-50	5	18	6	59	10	12	148	107	33	4	19	27
50-75	3	32	3	26	25	6	92	59	33	2	7	13
75-100	10	20	14	54	42	9	81	51	30	3		21
100-275	19	104	29	153	239	13	198	166	133		4	46

Minimum Nitrate Concentration

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	6.10	3.60	10.40	0.00	0.00	0.30	0.00	0.00	0.00	11.60	0.10	2.70
5-10	6.80	3.80	10.70	0.29	0.00	0.00	0.00	0.00	0.00	4.90	1.50	3.80
10-20	6.10	4.40	11.10	0.39	0.00	0.00	0.00	0.00	0.10	6.20	2.43	3.40
20-30	8.60	3.80	10.40	0.36	5.80	1.05	0.00	0.00	0.10	3.50	1.90	3.00
30-50	7.80	3.90	10.40	0.60	3.40	1.65	0.22	0.00	0.80	1.30	3.70	4.70
50-75	8.20	4.40	12.10	0.45	4.90	9.30	0.87	0.10	3.27	0.70	7.47	8.20
75-100	9.30	5.90	11.10	1.16	6.10	11.04	7.70	7.30	9.30	9.40		8.20
100-275	11.10	5.20	13.60	1.78	6.30	12.10	6.50	10.66	9.90		9.70	15.00

Maximum Nitrate Concentration

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	11.80	11.86	13.60	9.20	8.72	1.95	2.24	2.00	4.10	11.60	3.45	12.10
5-10	10.40	8.50	13.20	10.00	8.40	1.74	2.62	1.90	5.30	5.40	5.50	13.60
10-20	11.80	12.00	14.00	10.00	9.20	4.90	6.29	5.41	4.90	6.20	8.18	13.20
20-30	9.70	7.98	12.50	10.00	7.70	8.60	9.37	7.49	8.70	4.20	7.80	13.20
30-50	11.80	10.83	13.20	13.06	17.70	10.60	13.73	12.10	12.50	13.10	15.83	13.20
50-75	10.40	11.29	12.80	12.50	15.90	12.80	14.85	16.80	14.70	3.20	13.95	19.10
75-100	15.40	14.07	17.10	15.40	18.30	14.25	18.53	20.40	19.70	14.00		19.00
100-275	23.20	19.76	25.00	22.10	24.00	21.40	22.97	25.00	27.80		13.70	26.20

Table 8a. Average concentrations, standard deviations, number of observations, minimum and maximum concentrations for nitrate for Central Gulf of Maine.

Silicate Data - Central Gulf of Maine (42 - 44 N, 67 - 69 W)

Average Silicate (μM)

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	11.17	8.67	9.50	3.55	1.32	2.40	1.81	1.95	2.60		2.27	3.38
5-10		10.85	7.20	5.06	0.25	3.08	1.80	1.57	4.23		1.94	3.75
10-20		10.21	10.00	2.65	1.00	2.84	2.28	2.10	4.33		3.20	3.13
20-30		10.26	11.33	3.94		2.77	3.30	3.43	5.25		3.41	3.60
30-50		11.17	11.63	6.05	5.14	3.48	4.99	5.51	6.43		5.03	4.50
50-75		8.81	9.17	6.40	6.78	5.84	7.10	7.14	6.86		7.60	14.00
75-100		10.14	16.60	8.45	8.58	7.21	9.64	9.72	10.82			9.00
100-275		13.85	9.86	12.53	11.70	8.50	13.40	12.71	13.19		13.00	13.55

Standard Deviation

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	1.95	2.73	3.83	3.08	1.67	1.05	0.85	1.26	1.22		1.36	0.52
5-10		3.74	1.64	2.90	0.50	0.11	0.88	0.99	1.07		0.92	0.50
10-20		4.20	4.42	2.14	0.00	0.66	1.09	1.24	1.15		1.76	0.64
20-30		4.40	4.55	2.78		0.79	1.59	1.65	1.26		1.59	1.14
30-50		3.88	4.47	3.57	3.18	1.02	1.79	2.07	1.14		1.48	1.76
50-75		1.94	3.76	3.18	2.41	1.03	1.94	2.77	2.00		1.73	
75-100		4.07	4.98	3.59	2.23	0.58	1.68	2.28	1.56			3.39
100-275		3.79	2.54	4.06	2.32	2.12	2.74	2.21	2.30		1.41	3.00

Number of Observations

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	4	56	6	77	53	4	97	93	24		8	8
5-10		13	5	11	4	2	37	39	3		9	4
10-20		16	5	6	4	3	79	74	3		11	8
20-30		17	6	19		4	89	87	4		10	5
30-50		25	8	56	7	6	129	100	10		16	6
50-75		38	6	26	23	4	76	53	20		8	1
75-100		24	5	53	38	3	69	49	11			5
100-275		113	7	145	236	2	162	166	68		2	22

Minimum Silicate Concentration

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	9.57	4.00	3.00	0.02	0.00	1.00	0.51	0.00	0.91		1.05	3.00
5-10		5.00	5.00	0.79	0.00	3.00	0.40	0.00	3.00		1.00	3.00
10-20		4.00	6.00	0.27	1.00	2.10	0.41	0.00	3.00		1.00	2.00
20-30		3.00	4.00	0.27		2.00	0.50	0.00	4.00		1.00	2.00
30-50		6.00	5.00	0.15	2.00	2.10	0.96	1.00	4.00		2.00	3.00
50-75		5.00	4.00	0.89	1.00	5.00	2.21	2.74	3.39		5.10	14.00
75-100		4.00	13.00	0.93	5.00	6.54	6.49	6.00	9.09			4.00
100-275		4.00	7.00	1.22	3.00	7.00	4.02	6.00	8.86		12.00	6.00

Maximum Silicate Concentration

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	13.99	20.00	14.00	15.42	10.00	3.27	6.96	8.21	5.27		5.18	4.00
5-10		17.00	9.00	8.60	1.00	3.15	3.57	3.47	5.00		3.60	4.00
10-20		18.00	16.00	5.50	1.00	3.36	5.55	6.00	5.00		6.00	4.00
20-30		21.00	16.00	7.31		3.57	7.10	8.05	7.00		5.63	5.00
30-50		19.00	18.00	15.77	11.00	5.10	9.49	12.82	8.00		7.28	8.00
50-75		14.00	14.00	15.42	10.00	7.32	11.79	19.00	10.21		9.90	14.00
75-100		21.00	25.00	15.42	13.00	7.59	12.70	16.30	14.00			12.00
100-275		24.00	14.00	24.66	18.00	10.00	21.29	19.10	19.00		14.00	19.00

Table 8b. Average concentrations, standard deviations, number of observations, minimum and maximum concentrations for silicate for Central Gulf of Maine.

Phosphate Data - Central Gulf of Maine (42 - 44 N, 67 - 69 W)

Average Phosphate (μM)

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	1.11	0.74	0.99	0.49	0.54	0.52	0.36	0.25	0.32	0.52	0.49	0.70
5-10	1.14	0.79	1.17	0.52	0.49	0.50	0.38	0.16	0.35	0.66	0.94	0.79
10-20	1.09	0.80	0.92	0.71	0.55	0.57	0.47	0.27	0.32	0.80	0.65	0.67
20-30	1.17	0.89	1.05	0.67	0.62	0.76	0.51	0.43	0.57	0.75	0.61	0.74
30-50	1.10	0.91	1.12	0.73	0.80	0.87	0.74	0.64	0.72	0.97	0.80	0.85
50-75	1.12	0.83	0.96	0.75	0.99	1.03	0.82	0.79	0.76	1.01	0.96	1.00
75-100	1.25	0.91	1.22	0.86	1.10	1.24	0.99	0.87	0.96	1.12		1.08
100-275	1.39	1.10	1.33	1.09	1.22	1.42	1.19	1.03	1.21	1.39	1.41	1.26

Standard Deviation

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	0.07	0.23	0.25	0.25	0.26	0.11	0.26	0.20	0.20		0.07	0.34
5-10	0.08	0.14	0.07	0.21	0.16	0.12	0.20	0.14	0.15	0.20	1.16	0.32
10-20	0.08	0.23	0.29	0.39	0.20	0.14	0.28	0.21	0.14		0.24	0.34
20-30	0.06	0.29	0.23	0.28	0.20	0.19	0.27	0.20	0.29	0.06	0.07	0.32
30-50	0.07	0.26	0.13	0.22	0.17	0.24	0.28	0.22	0.29	0.27	0.16	0.25
50-75	0.08	0.25	0.26	0.22	0.20	0.18	0.27	0.21	0.27	0.13	0.17	0.08
75-100	0.06	0.26	0.06	0.21	0.11	0.13	0.27	0.18	0.31	0.13		0.21
100-275	0.10	0.23	0.20	0.21	0.12	0.13	0.29	0.18	0.29		0.03	0.17

Number of Observations

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	6	55	9	90	20	6	107	95	44	1	9	17
5-10	2	13	4	24	10	4	45	42	21	2	9	14
10-20	3	16	5	12	10	6	90	77	15	1	11	18
20-30	2	17	5	35	10	6	100	91	23	2	10	15
30-50	5	25	8	68	15	12	148	105	44	4	19	26
50-75	3	37	5	39	10	6	92	56	41	2	9	14
75-100	10	25	14	69	14	9	82	49	36	3		21
100-275	18	113	32	240	26	13	199	169	137	1	3	46

Minimum Phosphate Concentration

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	1.02	0.08	0.54	0.17	0.08	0.39	0.08	0.00	0.09	0.52	0.38	0.28
5-10	1.08	0.54	1.07	0.20	0.31	0.36	0.09	0.00	0.19	0.52	0.42	0.31
10-20	1.05	0.34	0.57	0.17	0.23	0.43	0.08	0.00	0.16	0.80	0.44	0.20
20-30	1.13	0.37	0.65	0.24	0.34	0.49	0.11	0.00	0.19	0.70	0.48	0.29
30-50	1.01	0.59	0.83	0.29	0.52	0.56	0.17	0.00	0.23	0.76	0.56	0.33
50-75	1.03	0.41	0.66	0.28	0.72	0.84	0.42	0.19	0.26	0.92	0.68	0.86
75-100	1.18	0.33	1.08	0.28	0.87	1.02	0.59	0.50	0.21	1.03		0.62
100-275	1.24	0.32	0.80	0.29	0.73	1.28	0.68	0.60	0.52	1.39	1.37	0.70

Maximum Phosphate Concentration

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	1.20	1.46	1.19	1.12	1.14	0.66	1.41	0.85	0.97	0.52	0.60	1.07
5-10	1.20	1.02	1.24	0.89	0.83	0.62	1.02	0.48	0.80	0.80	4.00	1.07
10-20	1.18	1.25	1.16	1.47	0.84	0.80	1.35	0.72	0.64	0.80	1.20	1.07
20-30	1.21	1.45	1.21	1.46	0.87	0.97	1.35	0.96	1.33	0.79	0.76	1.04
30-50	1.20	1.70	1.24	1.46	1.03	1.27	1.74	1.09	1.44	1.36	1.19	1.08
50-75	1.18	1.56	1.22	1.14	1.26	1.35	1.76	1.18	1.26	1.10	1.22	1.19
75-100	1.40	1.43	1.31	1.41	1.26	1.42	1.72	1.25	1.61	1.27		1.45
100-275	1.54	1.65	1.61	1.76	1.42	1.63	2.24	1.50	2.11	1.39	1.43	1.62

Table 8c. Average concentrations, standard deviations, number of observations, minimum and maximum concentrations for phosphate for Central Gulf of Maine.

Nitrate Data - Western Gulf of Maine (42 - 44 N, 69 - 71 W)

Average Nitrate (µM)

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	11.51	9.59	9.97	4.90	0.38	0.11	0.65	0.37	0.28	2.88	1.38	8.40
5-10	11.25	9.44	7.03	4.67	0.79	0.17	0.63	0.28	0.32	3.52	1.70	8.16
10-20	11.90	9.87	8.09	5.03	1.29	0.45	1.01	1.19	1.05	3.11	1.64	8.80
20-30	11.85	8.83	9.34	6.62	3.20	2.07	2.38	3.21	3.46	3.34	3.68	9.08
30-50	12.03	10.11	8.75	7.28	8.33	5.22	5.61	7.62	7.37	6.72	4.48	10.22
50-75	12.27	10.46	9.96	8.52	10.68	7.81	8.33	9.75	9.37	11.95	9.83	9.55
75-100	12.75	10.13	9.62	9.74	12.90	9.16	11.07	11.32	11.54	13.09	10.66	12.96
100-275	15.84	13.54	12.02	12.99	16.86	14.84	14.37	15.15	15.06	13.66	14.82	17.28

Standard Deviation

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	1.86	1.62	3.84	2.68	0.52	0.22	0.66	0.92	0.39	0.62	1.80	2.44
5-10	1.79	1.27	2.38	2.76	1.08	0.29	0.47	0.42	0.71	0.76	2.52	2.17
10-20	0.56	2.34	2.68	2.20	1.43	1.25	1.28	1.41	1.90	0.69	1.26	2.44
20-30	2.70	1.35	3.13	2.49	3.16	2.13	2.43	3.20	2.64	0.89	2.04	1.95
30-50	1.08	2.14	3.52	2.44	2.74	2.54	2.63	2.20	2.46	2.76	3.27	1.53
50-75	0.81	1.59	3.25	2.19	2.20	2.16	2.44	2.23	2.19	2.31	1.79	0.93
75-100	1.26	1.27	3.43	2.54	1.87	3.52	2.00	2.28	2.05	0.57	2.40	3.18
100-275	3.54	3.30	3.63	3.38	2.79	7.42	2.29	3.35	2.65	0.07	2.34	3.60

Number of Observations

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	7	42	63	244	13	10	41	37	58	14	8	9
5-10	4	3	25	125	9	4	23	16	48	3	7	8
10-20	3	18	24	132	10	11	45	29	43	15	8	8
20-30	4	14	40	123	5	9	60	33	47	8	4	6
30-50	7	25	56	217	11	12	71	54	93	11	13	11
50-75	3	31	36	137	16	10	54	48	57	6	8	4
75-100	11	11	31	105	18	3	60	33	53	2	10	11
100-275	12	79	71	282	84	10	115	74	200	3	39	17

Minimum Nitrate Concentration

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	7.80	6.13	3.30	0.20	0.00	0.00	0.01	0.00	0.00	2.05	0.40	4.90
5-10	8.60	8.40	3.30	0.10	0.10	0.00	0.04	0.00	0.00	2.93	0.50	5.00
10-20	11.40	6.24	4.30	0.60	0.20	0.00	0.01	0.00	0.00	2.24	0.60	4.70
20-30	7.80	6.03	2.80	1.10	0.80	0.00	0.03	0.00	0.00	2.49	1.50	5.80
30-50	10.00	6.50	3.80	2.00	2.60	0.50	1.80	0.00	0.10	3.07	0.60	6.80
50-75	11.80	8.56	5.30	2.84	6.60	5.45	3.22	4.88	2.95	8.45	6.40	8.40
75-100	10.70	8.14	3.70	2.75	8.60	6.78	5.70	8.40	5.20	12.69	4.50	7.50
100-275	12.10	8.30	5.40	3.02	9.40	6.83	9.06	9.53	8.40	13.59	10.90	11.40

Maximum Nitrate Concentration

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	13.20	13.86	15.33	14.59	1.80	0.70	2.72	4.10	2.10	4.30	5.80	11.40
5-10	12.50	10.86	11.40	10.40	3.50	0.60	1.48	1.70	4.30	4.37	7.40	11.30
10-20	12.50	14.10	14.81	11.80	4.70	4.20	6.94	4.30	8.20	4.72	3.90	11.40
20-30	13.20	12.24	14.56	16.85	8.40	6.50	11.07	13.20	9.40	4.92	6.10	11.30
30-50	13.20	14.11	14.57	18.70	12.80	8.65	12.34	13.60	12.50	10.00	10.00	12.40
50-75	13.20	14.36	15.01	15.66	14.00	11.14	15.40	17.10	12.80	13.95	12.10	10.40
75-100	15.00	12.89	14.97	18.19	15.70	13.20	14.70	19.70	20.00	13.49	12.80	17.50
100-275	22.50	19.20	20.00	22.28	21.40	25.70	19.40	30.40	21.40	13.72	18.20	22.80

Table 9a. Average concentrations, standard deviations, number of observations, minimum and maximum concentrations for nitrate for Western Gulf of Maine.

Silicate Data - Western Gulf of Maine (42 - 44 N, 69 - 71 W)

Average Silicate (μM)

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5		10.42	9.05	6.69	0.13	0.78	0.99	1.51	3.02	4.26	4.11	4.67
5-10		11.05	8.75	6.27	0.33	1.20	1.55	1.23	2.88	5.95	3.51	4.67
10-20		10.62	10.01	6.21	0.25	1.31	2.54	1.77	3.53	3.82	4.48	4.50
20-30		9.01	9.06	6.91		2.14	3.08	3.57	4.48	4.38	5.62	5.00
30-50		10.69	9.87	7.63	7.00	6.23	4.87	6.36	6.97	7.41	6.29	8.00
50-75		10.65	9.05	8.24	6.10	7.19	7.24	8.95	9.01	12.22	8.66	4.00
75-100		10.20	9.32	9.64	8.60	5.34	8.45	10.18	12.36	14.68	10.74	9.75
100-275		15.28	13.50	14.64	14.63	9.06	14.21	15.16	18.23	13.41	13.61	16.40

Standard Deviation

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5		2.56	2.94	3.55	0.35	0.50	0.57	1.21	1.39	1.55	1.27	1.15
5-10		2.05	2.27	2.99	0.58	0.83	0.90	0.55	0.95	0.30	0.91	0.58
10-20		3.07	3.08	3.05	0.50	1.04	1.39	0.88	1.51	1.00	1.39	2.12
20-30		2.74	2.14	2.87		1.03	1.73	1.39	2.08	1.91	1.35	
30-50		3.19	3.12	3.44	4.24	3.37	1.53	2.50	1.61	3.13	1.87	4.24
50-75		2.41	2.06	2.87	1.79	2.50	2.51	2.87	3.10	2.40	2.96	
75-100		2.79	2.16	2.69	1.90	4.69	1.49	1.85	1.87	2.04	3.11	3.10
100-275		5.68	5.26	4.66	3.36	0.73	4.63	3.37	4.04	0.21	2.99	3.51

Number of Observations

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5		45	59	215	8	7	27	28	46	14	58	3
5-10		4	22	101	3	2	11	8	34	3	19	3
10-20		19	24	106	4	8	31	18	34	15	26	2
20-30		15	38	96		6	44	24	33	8	31	1
30-50		29	51	176	2	8	50	35	70	11	39	2
50-75		32	33	119	10	6	38	30	43	6	23	1
75-100		10	23	85	10	3	42	20	34	2	18	4
100-275		73	54	231	75	4	97	39	171	3	8	5

Minimum Silicate Concentration

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5		7.00	0.00	0.08	0.00	0.35	0.09	0.32	0.73	2.33	1.80	4.00
5-10		8.00	4.00	0.51	0.00	0.61	0.52	0.56	0.00	5.72	2.25	4.00
10-20		6.00	6.00	0.12	0.00	0.38	0.65	0.56	2.00	2.44	1.95	3.00
20-30		3.00	3.35	0.40		1.16	0.39	1.33	0.00	2.38	2.18	5.00
30-50		5.00	5.00	0.65	4.00	1.78	0.95	0.89	3.00	3.80	2.03	5.00
50-75		7.00	4.67	0.65	3.00	3.15	2.89	2.69	2.73	9.24	2.96	4.00
75-100		7.00	6.00	1.60	6.00	0.00	4.98	6.00	9.00	13.23	6.15	7.00
100-275		7.00	3.42	3.36	8.00	8.33	5.25	8.10	8.00	13.17	10.31	13.00

Maximum Silicate Concentration

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5		16.36	15.60	17.29	1.00	1.85	2.44	5.89	9.03	6.85	7.46	6.00
5-10		12.45	14.00	14.00	1.00	1.78	3.40	2.00	5.00	6.29	5.85	5.00
10-20		15.74	19.00	15.00	1.00	2.77	5.88	3.41	10.07	5.82	7.95	6.00
20-30		14.00	13.10	14.00		3.37	7.46	6.49	11.99	7.67	8.31	5.00
30-50		16.00	23.00	18.00	10.00	12.05	7.91	14.95	10.00	12.33	12.40	11.00
50-75		16.24	15.00	14.50	9.00	10.49	17.04	15.53	15.44	14.90	15.42	4.00
75-100		16.35	13.50	16.00	11.00	8.77	11.40	13.00	18.00	16.12	16.57	14.00
100-275		26.31	27.00	25.00	22.00	10.06	27.30	20.37	26.00	13.55	18.08	20.00

Table 9b. Average concentrations, standard deviations, number of observations, minimum and maximum concentrations for silicate for Western Gulf of Maine.

Phosphate Data - Western Gulf of Maine (42 - 44 N, 69 - 71 W)

Average Phosphate (µM)

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	1.15	1.02	1.21	0.56	0.29	0.31	0.28	0.16	0.25	0.80	0.46	0.83
5-10	1.19	1.03	0.83	0.57	0.31	0.57	0.32	0.20	0.25	1.19	0.48	0.80
10-20	1.16	1.17	0.87	0.69	0.37	0.65	0.42	0.36	0.36	0.73	0.48	0.88
20-30	1.21	1.25	1.06	0.74	0.62	0.71	0.47	0.61	0.56	0.75	0.76	0.94
30-50	1.14	1.11	1.00	0.80	0.91	0.99	0.67	0.83	0.78	0.91	0.64	1.04
50-75	1.13	1.00	1.13	0.86	1.08	1.09	0.85	0.93	0.90	1.18	0.98	0.95
75-100	1.19	1.09	1.11	0.92	1.11	0.81	0.91	0.95	1.06	1.31	0.94	1.10
100-275	1.19	1.10	1.21	1.15	1.39	1.25	1.08	1.11	1.21	1.25	1.18	1.37

Standard Deviation

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	0.17	0.33	0.41	0.27	0.07	0.35	0.23	0.12	0.14	0.26	0.08	0.32
5-10	0.21	0.31	0.25	0.28	0.10	0.47	0.21	0.09	0.14	0.07	0.14	0.32
10-20	0.14	0.33	0.31	0.22	0.16	0.45	0.32	0.20	0.23	0.15	0.11	0.31
20-30	0.24	0.35	0.40	0.23	0.24	0.31	0.33	0.23	0.25	0.09	0.26	0.28
30-50	0.21	0.33	0.41	0.20	0.20	0.24	0.28	0.20	0.19	0.22	0.17	0.18
50-75	0.11	0.37	0.42	0.23	0.14	0.21	0.35	0.23	0.17	0.15	0.10	0.28
75-100	0.12	0.38	0.39	0.21	0.13	0.54	0.30	0.15	0.19	0.14	0.27	0.15
100-275	0.16	0.37	0.32	0.26	0.23	0.16	0.29	0.17	0.21	0.02	0.11	0.12

Number of Observations

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	7	46	67	135	9	10	41	38	60	14	8	9
5-10	4	7	32	96	9	4	22	16	49	3	7	8
10-20	3	22	29	95	9	10	44	27	44	15	8	8
20-30	4	17	45	100	8	9	58	32	48	8	4	6
30-50	7	30	62	187	15	12	70	52	95	11	13	11
50-75	3	33	39	108	11	10	52	40	58	6	8	4
75-100	11	12	34	97	14	4	59	29	54	2	11	11
100-275	10	79	72	335	28	10	117	74	204	3	39	17

Minimum Phosphate Concentration

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	0.85	0.55	0.55	0.11	0.15	0.07	0.00	0.00	0.07	0.56	0.36	0.34
5-10	0.87	0.58	0.51	0.11	0.11	0.13	0.03	0.00	0.12	1.15	0.28	0.34
10-20	1.03	0.40	0.53	0.15	0.16	0.18	0.08	0.00	0.15	0.55	0.36	0.35
20-30	0.86	0.49	0.51	0.19	0.32	0.21	0.11	0.07	0.16	0.62	0.52	0.46
30-50	0.77	0.42	0.49	0.24	0.46	0.65	0.16	0.30	0.29	0.58	0.40	0.64
50-75	1.01	0.55	0.54	0.35	0.76	0.82	0.36	0.01	0.42	0.95	0.85	0.54
75-100	0.98	0.60	0.58	0.27	0.86	0.00	0.55	0.60	0.61	1.21	0.18	0.88
100-275	0.86	0.54	0.62	0.39	1.10	1.06	0.70	0.60	0.20	1.24	0.96	0.99

Maximum Phosphate Concentration

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	1.37	1.64	1.81	1.33	0.39	1.20	0.86	0.69	0.95	1.31	0.62	1.19
5-10	1.35	1.41	1.29	1.49	0.40	1.20	0.77	0.36	0.92	1.27	0.67	1.18
10-20	1.30	1.59	1.62	1.33	0.64	1.18	1.41	0.64	1.12	1.16	0.72	1.22
20-30	1.34	1.69	1.80	1.59	1.03	1.17	1.61	1.01	1.26	0.89	1.10	1.23
30-50	1.32	1.57	1.80	1.65	1.23	1.51	1.51	1.17	1.32	1.16	0.93	1.28
50-75	1.22	1.69	1.84	2.01	1.23	1.59	1.88	1.43	1.24	1.34	1.16	1.18
75-100	1.33	1.56	1.83	1.93	1.26	1.13	1.54	1.20	1.44	1.41	1.16	1.34
100-275	1.38	2.18	1.77	2.38	2.18	1.49	2.02	1.44	1.84	1.28	1.44	1.54

Table 9c. Average concentrations, standard deviations, number of observations, minimum and maximum concentrations for phosphate for Western Gulf of Maine.

Nitrate Data - Bay of Fundy (45 - 46 N, 65 - 67 W)

Average Nitrate (μM)

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	17.70	9.59		7.96	5.17	1.71	1.79	0.24	4.09	6.91	8.93	8.74
5-10	15.10	9.95		2.31	4.02	3.86	2.05	0.48	1.30	8.58	9.23	
10-20	16.10	9.62		6.44	4.82	3.72	2.99	3.56	6.08	4.40	9.44	10.57
20-30	15.76	8.84		6.87	4.97	5.07	4.18	4.94	6.90	9.96	9.89	
30-50	13.32	9.19		7.97	6.00	9.04	5.56	8.53	5.72	10.20	9.67	8.75
50-75	16.97	10.06		7.95	5.34	12.85	7.40	9.74	7.43	10.38	10.31	9.07
75-100	21.70	11.39		8.74	4.79	13.82	8.71		11.65	10.91		9.33
100-275		13.69	10.90	9.06	6.18	21.51	12.00		16.10	12.32		9.25

Standard Deviation

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	0.40	2.33		1.46	2.34	1.57	1.66	0.19	2.79	2.16	0.67	1.08
5-10					0.66		1.95			1.99	1.45	
10-20				4.12	0.14		2.73	1.68	2.08		1.24	
20-30				3.20	0.16		2.84	0.37		1.14	1.13	
30-50				2.60	1.91		2.76	0.31	2.74	1.03	1.47	1.40
50-75		3.36		1.71	1.16		2.28		0.52	1.25	1.04	0.66
75-100				1.47	0.54		2.29		3.32	1.59		0.61
100-275		0.60		2.13	1.89	0.13	3.38		1.40	1.40		1.01

Number of Observations

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	2	2		50	20	2	33	3	6	42	5	21
5-10	1	1		1	8	1	9	1	1	3	5	
10-20	1	1		2	3	1	14	2	5	1	5	1
20-30	1	1		3	2	1	14	4	1	2	5	
30-50	1	1		5	8	1	27	4	3	12	10	2
50-75	1	2		20	18	1	20	1	2	26	4	13
75-100	1	1		17	6	1	18		2	15		6
100-275		2	1	28	20	2	26		3	24		15

Minimum Nitrate Concentration

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	17.41	7.94		3.63	1.97	0.60	0.09	0.11	1.20	1.02	8.18	6.18
5-10	15.10	9.95		2.31	3.16	3.86	0.23	0.48	1.30	6.30	8.10	
10-20	16.10	9.62		3.53	4.73	3.72	0.13	2.37	4.25	4.40	8.40	10.57
20-30	15.76	8.84		3.42	4.86	5.07	0.10	4.60	6.90	9.15	8.40	
30-50	13.32	9.19		3.96	4.11	9.04	0.96	8.10	2.57	8.02	7.13	7.76
50-75	16.97	7.68		4.76	4.03	12.85	2.15	9.74	7.06	7.48	9.60	7.73
75-100	21.70	11.39		5.86	3.99	13.82	6.24		9.30	7.78		8.37
100-275		13.26	10.90	5.98	4.19	21.42	6.67		14.70	9.90		6.77

Maximum Nitrate Concentration

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	17.98	11.23		11.03	10.34	2.82	5.67	0.46	8.04	10.80	9.90	10.20
5-10	15.10	9.95		2.31	5.16	3.86	6.38	0.48	1.30	9.95	11.70	
10-20	16.10	9.62		9.35	4.98	3.72	8.95	4.75	8.32	4.40	11.55	10.57
20-30	15.76	8.84		9.75	5.08	5.07	10.20	5.46	6.90	10.76	11.55	
30-50	13.32	9.19		10.42	9.31	9.04	11.40	8.75	7.50	11.20	12.23	9.74
50-75	16.97	12.43		11.10	8.69	12.85	11.10	9.74	7.80	12.14	11.85	10.11
75-100	21.70	11.39		11.78	5.43	13.82	13.00		14.00	13.63		9.93
100-275		14.11	10.90	15.11	10.34	21.60	19.48		17.50	15.16		10.75

Table 10a. Average concentrations, standard deviations, number of observations, minimum and maximum concentrations for nitrate for Bay of Fundy.

Silicate Data - Bay of Fundy (45 - 46 N, 65 - 67 W)

Average Silicate (µM)

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	13.13	8.30	8.00	7.84	4.34	4.12	2.48	3.84	5.57	6.26	5.87	7.45
5-10	11.02	6.76	8.50		3.49	4.50	2.62	4.46		8.46	5.75	
10-20	11.32	6.80	9.50	9.07	4.40	4.78	3.13	5.58		1.00	6.12	8.60
20-30	13.85	8.85	6.50	8.15	4.39	3.96	3.90	6.16		9.25	6.53	
30-50	11.00	10.36	9.00	7.95	4.77	4.27	4.76	8.98		8.76	6.48	7.75
50-75	15.64	12.28	11.50	7.06	4.60	5.93	6.03	9.84		8.41	7.16	7.62
75-100	17.97	12.70	21.00	7.70	3.70	8.42	6.54			8.70		8.03
100-275		12.75	16.00	7.60	4.86	17.66	9.32			9.36		7.56

Standard Deviation

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	0.23	1.65	2.83	1.45	1.80	0.17	1.40	0.70		2.26	0.69	1.15
5-10		1.32	0.71		0.77	0.71	1.40			0.10	1.00	
10-20		1.71	4.95		1.06	1.10	1.72	0.83			1.25	
20-30		0.21	0.71	1.61	0.16	1.95	1.79	0.00		1.13	1.02	
30-50		4.06	3.83	1.44	1.81	4.62	1.75	0.49		0.84	0.95	1.85
50-75		4.24	3.54	1.23	1.41	3.49	1.60			1.24	1.50	0.68
75-100		2.47		0.97	0.55	3.42	1.46			1.09		0.70
100-275		3.25		1.53	1.19	0.15	2.48			1.05		0.80

Number of Observations

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	2	4	2	49	18	3	33	3	1	41	5	21
5-10	1	3	2		8	2	9	1		2	5	
10-20	1	3	2	1	3	2	14	2		1	5	1
20-30	1	2	2	2	2	3	14	2		2	5	
30-50	1	5	4	4	8	2	27	4		12	10	2
50-75	1	3	2	19	18	3	20	1		26	4	13
75-100	1	4	1	16	6	2	18			15		6
100-275		3	1	28	20	2	26			24		15

Minimum Silicate Concentration

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	12.96	6.00	6.00	5.04	1.55	4.00	0.36	3.04	5.57	1.23	5.25	5.08
5-10	11.02	6.00	8.00		2.58	4.00	1.03	4.46		8.39	4.50	
10-20	11.32	5.00	6.00	9.07	3.62	4.00	1.23	4.99		1.00	4.80	8.60
20-30	13.85	8.70	6.00	7.01	4.27	2.00	1.51	6.16		8.45	5.55	
30-50	11.00	5.00	6.00	6.44	2.92	1.00	2.01	8.24		7.39	5.52	6.44
50-75	15.64	7.66	9.00	5.00	2.95	3.00	3.08	9.84		5.34	5.18	6.78
75-100	17.97	9.00	21.00	5.24	2.92	6.00	4.89			6.86		7.38
100-275		9.00	16.00	5.36	2.99	17.55	5.71			7.73		5.67

Maximum Silicate Concentration

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	13.29	9.84	10.00	10.99	8.81	4.31	5.21	4.27	5.57	10.10	6.98	9.29
5-10	11.02	8.28	9.00		4.52	5.00	5.63	4.46		8.53	7.20	
10-20	11.32	8.41	13.00	9.07	5.61	5.56	7.10	6.16		1.00	8.18	8.60
20-30	13.85	9.00	7.00	9.29	4.50	5.89	7.91	6.16		10.05	8.25	
30-50	11.00	16.00	14.00	9.24	7.87	7.53	8.98	9.26		9.98	8.25	9.05
50-75	15.64	16.00	14.00	9.14	7.92	9.79	9.65	9.84		10.40	8.63	9.04
75-100	17.97	14.00	21.00	9.07	4.40	10.83	10.20			10.14		8.89
100-275		14.70	16.00	12.02	6.69	17.76	13.90			11.17		8.76

Table 10b. Average concentrations, standard deviations, number of observations, minimum and maximum concentrations for silicate for Bay of Fundy.

Phosphate Data - Bay of Fundy (45 - 46 N, 65 - 67 W)

Average Phosphate (μM)

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	1.32	0.75	0.73	0.98	0.69	0.43	0.46	0.67	0.70	0.91	0.88	0.94
5-10	1.02	0.84	0.59		0.62	0.30	0.49	0.36	0.46	0.97	0.85	
10-20	2.22	0.83	0.71	1.12	0.65	0.33	0.45	0.57	0.71	0.80	0.89	1.12
20-30	2.16	0.99	0.61	1.14	0.70	0.31	0.51	0.65	0.80	1.11	0.87	
30-50	1.61	0.74	0.63	1.10	0.82	0.48	0.57	0.85	0.67	1.08	0.86	1.19
50-75	1.02	0.97	0.82	1.09	0.77	0.75	0.66	0.88	0.80	1.07	0.86	0.98
75-100	1.49	0.80	0.68	1.06	0.72	0.91	0.76		1.10	1.10		1.39
100-275		0.76	1.04	1.06	0.84	0.96	0.91		1.40	1.14		1.16

Standard Deviation

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	0.44	0.09	0.01	0.20	0.17	0.34	0.16	0.55	0.23	0.14	0.06	0.34
5-10		0.22	0.00		0.04	0.18	0.24			0.11	0.08	
10-20		0.19	0.10		0.03	0.16	0.22	0.11	0.12		0.10	
20-30		0.44	0.02	0.08	0.03	0.15	0.22	0.00		0.10	0.11	
30-50		0.04	0.09	0.17	0.18	0.21	0.22	0.00	0.16	0.06	0.10	0.52
50-75		0.33	0.33	0.18	0.10	0.20	0.20		0.08	0.07	0.04	0.32
75-100		0.20		0.21	0.04	0.07	0.17		0.11	0.07		0.55
100-275				0.20	0.14	0.18	0.23		0.09	0.08		0.52

Number of Observations

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	2	4	2	49	20	4	33	3	6	42	5	21
5-10	1	3	2		8	2	9	1	1	3	5	
10-20	1	3	2	1	3	3	14	2	5	1	5	1
20-30	1	2	2	2	2	3	14	2	1	2	5	
30-50	1	5	4	4	8	3	27	4	3	12	10	2
50-75	1	3	2	19	17	2	20	1	3	26	4	13
75-100	1	4	1	16	6	2	18		2	15		6
100-275		1	1	26	20	2	26		3	24		15

Minimum Phosphate Concentration

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	1.01	0.63	0.72	0.62	0.48	0.18	0.14	0.35	0.37	0.49	0.82	0.23
5-10	1.02	0.61	0.59		0.57	0.17	0.15	0.36	0.46	0.84	0.80	
10-20	2.22	0.65	0.64	1.12	0.62	0.15	0.21	0.49	0.61	0.80	0.79	1.12
20-30	2.16	0.68	0.59	1.08	0.68	0.20	0.21	0.65	0.80	1.04	0.74	
30-50	1.61	0.69	0.53	0.89	0.69	0.23	0.19	0.85	0.49	1.00	0.74	0.82
50-75	1.02	0.77	0.59	0.67	0.69	0.61	0.30	0.88	0.73	0.93	0.82	0.75
75-100	1.49	0.63	0.68	0.72	0.66	0.86	0.50		1.02	0.97		0.81
100-275		0.76	1.04	0.79	0.65	0.83	0.37		1.30	1.02		0.77

Maximum Phosphate Concentration

DepthRange (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-5	1.63	0.83	0.74	1.38	1.12	0.89	0.85	1.31	0.92	1.14	0.96	1.74
5-10	1.02	1.04	0.59		0.69	0.43	0.99	0.36	0.46	1.04	1.00	
10-20	2.22	1.03	0.78	1.12	0.68	0.44	0.96	0.65	0.85	0.80	1.04	1.12
20-30	2.16	1.30	0.62	1.19	0.72	0.48	0.87	0.65	0.80	1.18	1.00	
30-50	1.61	0.77	0.75	1.24	1.14	0.61	0.91	0.85	0.78	1.20	1.02	1.56
50-75	1.02	1.35	1.05	1.46	1.10	0.89	0.99	0.88	0.89	1.23	0.92	1.90
75-100	1.49	1.08	0.68	1.40	0.78	0.96	1.03		1.17	1.19		2.04
100-275		0.76	1.04	1.34	1.18	1.08	1.63		1.45	1.27		2.76

Table 10c. Average concentrations, standard deviations, number of observations, minimum and maximum concentrations for phosphate for Bay of Fundy.