

**Revised Procedures  
for Calculating Regional  
Average Water Properties  
for Northeast Fisheries  
Science Center Cruises**

by

**David G. Mountain, Maureen H. Taylor,  
and Cristina Bascuñán**

April 2004

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## **Introduction**

Temperature and salinity measurements are made routinely on most Northeast Fisheries Science Center (NEFSC) survey and research cruises. The area of coverage extends from Cape Hatteras northeastward to the Gulf of Maine, and from near the coast to just seaward of the shelf break. Since 1991 a report of the water properties has been issued almost every year (e.g., Taylor and Bascuñán, 2003). This report includes regional average values of surface and bottom water temperature and salinity, and of the anomalies of temperature and salinity for five regions of the shelf (Figure 1). The anomalies are determined relative to reference annual cycles derived from data collected during the NEFSC Marine Resources Monitoring and Assessment Program (MARMAP) program. Holzwarth and Mountain (1992) present similar regional values for surface and bottom temperature as measured on the NEFSC spring and fall bottom trawl survey cruises from 1963 to 1990.

The methods used to determine the MARMAP annual cycles are described by Mountain and Holzwarth (1989). The methods used to calculate the anomalies, the regional average values, and the uncertainty in the regional average values are described by Holzwarth and Mountain (1992). This report documents changes that have been made to the reference annual cycles and to the methods used to calculate the regional average values. The revised cycles and methods will be used in the annual summary of water properties beginning with the report for 2003 (Bascuñán and Taylor, 2004). All previously reported regional average values have been recalculated using the revised annual cycles and methods, and are included in this report. In most cases differences between the original and the revised regional values are small ( $< 0.1$  °C or  $< 0.1$  PSU).

## **Changes in the Reference Annual Cycles**

The NEFSC MARMAP program (1977-1987) made observations of plankton and water properties at approximately 160 standard station locations 4-8 times per year. Temperature and salinity measurements were made using water bottles with reversing thermometers. The water samples collected were analyzed for salinity by a laboratory salinometer. During the last year of the program an electronic conductivity/temperature/depth (CTD) instrument was used.

Because the MARMAP measurements were made at fixed locations over a 10 year period, characteristic annual cycles of the surface and bottom temperature and salinity could be determined for each of the locations. The annual cycles were derived by sequentially fitting up to three harmonic cycles (periods of one, one half, and one third year) to the observations at a location (Mountain and Holzwarth, 1989). For each harmonic a significance test was performed to determine if the fit was statistically significant. In some cases no significant harmonic cycle was found and the annual cycle consisted only of the mean of the observations.

In 2002 an ORACLE database was established for NEFSC's hydrographic data. As part of that effort the historic hydrographic data was reviewed for quality before it was entered into the database. This quality control process resulted in some MARMAP data either being changed or deleted from the data set. Because of these changes the annual cycles based on the MARMAP data were recalculated using the data in the ORACLE database. In determining the bottom annual cycles, observations had to be no more than 10m or 10% of the water depth (which ever was greater) from the bottom to be included in

the calculations as representing a bottom value. Generally, only minor changes resulted in the annual cycles. In a few cases no significant annual cycle could be determined where previously one had been, and in a few other cases a cycle was determined where previously one had not been.

### **Changes in the Calculation of Anomalies**

To calculate the anomaly for an observation, the MARMAP stations closest to the observation location are determined. The expected value of the property (i.e., surface or bottom temperature or salinity) at each of these MARMAP stations is determined from the appropriate annual cycle for the calendar day on which the observation was made. The MARMAP values are averaged by a weighting inversely proportional to the square of the distance each is from the observation location. The anomaly is the difference between the observed value and the resulting averaged MARMAP value.

For calculating bottom anomalies, only MARMAP stations with bottom depths similar to the bottom depth of the observation station are included. The criterion used is that the depth difference has to be smaller than 25m or 25% of the bottom depth of the observation station, whichever is greater.

When calculating salinity anomalies, MARMAP stations that do not have a significant annual cycle are included by using the annual mean value for that station (i.e., the C1 value in Table 1). For calculating temperature anomalies, MARMAP stations without an annual cycle previously had not been included. Under the new procedures MARMAP stations without an annual cycle are included in calculating temperature anomalies by using the mean value for that station. The only MARMAP stations that do not have an annual cycle for bottom temperature are in the deep Gulf of Maine or seaward of the shelf break (>100m depth). Therefore, this change in the procedure for calculating bottom temperature anomalies only affects observations in those areas.

### **Changes in the Calculation of Regional Average Values**

The regional average values are determined by interpolating the observed values to a fine scale grid, with each grid point representing a known area. Previously the separation between grid points was 0.2 degrees latitude and 0.25 degrees longitude. In the revised procedures the separation has been reduced to 0.1 degree in latitude and 0.1 degree in longitude to provide a more accurate representation of an area. In addition the computer code used to determine if a station was within the boundaries of a region has been modified to correct for an error that in a few, specific situations identified stations close to but south of a regional boundary as being within the region.

### **Data Tables**

Annual Cycles:

The MARMAP annual cycles are calculated as the sum of three harmonics. For calendar day 'd', the value of the parameter 'V' is calculated by:



$$V(d) = \sum_{i=1}^3 C_i + A_i * \cos(r_i * d) + B_i * \cos(r_i * d)$$

where  $r_i = 2 * \pi (i/365)$  and the C's, A's and B's are the harmonic coefficients.

Tables 1-4 contain the coefficients for surface temperature, bottom temperature, surface salinity and bottom salinity, respectively. The columns in the tables are:

- MARMAP standard station number
- Latitude
- Longitude
- Bottom depth
- The harmonic coefficients C1, A1, B1, C2, A2, B2, C3, A3, B3
- The standard deviation of the original data values from the fitted curve

#### Regional Property Values:

For each cruise in the NEFSC hydrographic data base Tables 5-9 contain the revised area average surface and bottom temperature and temperature anomaly values for the five regions in figure 1. Tables 10-14 contain the same information for salinity. In these tables the columns are:

- Cruise name
- Region Code ()
- Year
- Calendar day
- Decimal-Year (year + calendar day/365)
- For the surface:
  - Number of stations in the region
  - Value
  - Anomaly
  - SDV1
  - SDV2
  - Flagg
- For the bottom:
  - Number of stations in the region
  - Value
  - Anomaly
  - SDV1
  - SDV2
  - Flagg
- Cruise Purpose Code

The Region Codes are:

- 1 MAB South
- 2 MAB North
- 3 Georges Bank
- 4 Gulf of Maine West
- 5 Gulf of Maine East

SDV1 indicates the uncertainty in the regional average anomaly value associated with the uncertainties in the MARMAP annual cycles (See Holzwarth and Mountain, 1990). SDV2 is the standard deviation of the anomaly values for the stations within the region. A Flagg value of 0 indicates that there were enough observations to calculate an area weighted value for the region. A Flagg value of 1 indicates that the spatial distribution of the observations was not sufficient to calculate an area average for the region and instead a simple average of the observations was calculated.

The cruise purpose codes are:

- 01 BLUEFISH SURVEY
- 02 LOBSTER SURVEY
- 03 COD SPAWNING SURVEY
- 10 NMFS NEFSC BOTTOM TRAWL SURVEY
- 16 NMFS ACOUSTICS SURVEY
- 20 GLOBEC BROADSCALE SURVEY
- 21 GLOBEC PROCESS STUDY
- 22 ECOSYSTEM MONITORING
- 23 MARMAP
- 24 LARVAL HERRING SURVEY
- 25 12-MILE DUMPSITE
- 27 WARM CORE RING CRUISE
- 50 NMFS NEFSC CLAM AND QUAHOG SURVEY
- 60 NMFS NEFSC SEA SCALLOP SURVEY
- 70 NMFS NEFSC GEAR COMPARISON
- 80 FOOD CHAIN DYNAMICS FEEDING ECOLOGY SURVEY
- 81 COASTAL OCEAN PROGRAM
- 82 APEX PREDATOR SURVEY
- 91 BENTHIC HABITAT STUDY
- 90 MARINE MAMMAL SURVEY
- 93 MISCELLANEOUS NON-RANDOM RESOURCE INVESTIGATION CRUISE

Regional average surface and bottom temperature for the spring and fall bottom trawl surveys from 1963 to 1990 are listed in Tables 15 and 16. The columns are the same as those for Tables 5-14 except that cruise name column is omitted.

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**Figure 1. Regions of the northeast continental shelf**

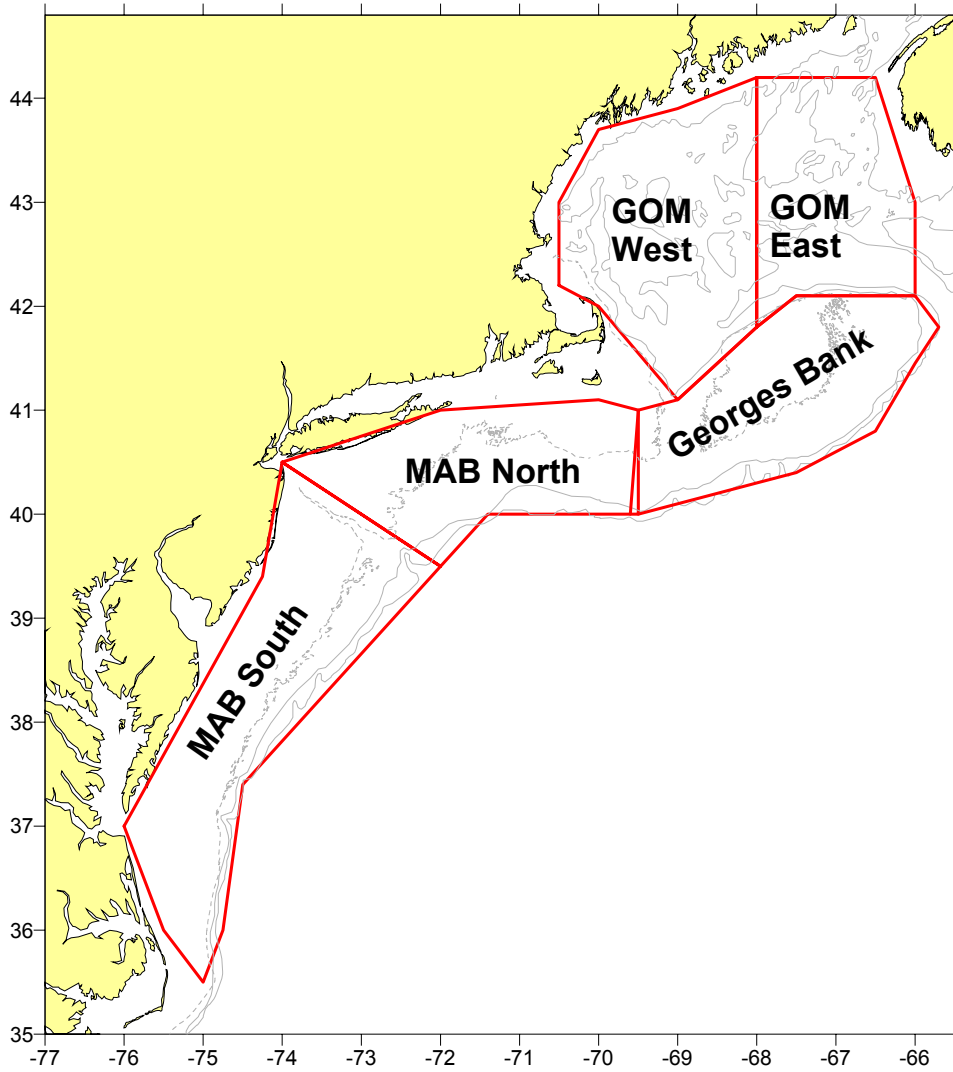


Table 1. Coefficients for the annual cycle of surface temperature for MARMAP standard station locations. See text for explanation.

Sta	Lat	Lon	Depth	C1	A1	B1	C2	A2	B2	C3	A3	B3	Sdv
1	35.27	75.23	26	21.48	-2.99	-3.43	0.00	0.00	0.00	0.00	0.00	0.00	2.49
2	35.47	75.25	29	17.25	-8.15	-6.20	0.00	0.00	0.00	0.00	0.00	0.00	2.11
3	35.68	74.97	54	17.48	-7.98	-6.52	0.00	0.00	0.00	0.00	0.00	0.00	2.33
4	35.85	75.48	19	15.34	-7.75	-6.89	-0.16	-0.07	-1.10	0.00	0.00	0.00	1.56
5	36.25	75.53	26	15.26	-7.52	-7.49	0.00	0.00	0.00	0.00	0.00	0.00	1.43
6	36.38	75.25	35	15.40	-6.94	-7.15	0.00	0.00	0.00	0.00	0.00	0.00	1.36
7	36.15	75.10	36	15.58	-6.68	-7.16	0.00	0.00	0.00	0.00	0.00	0.00	1.68
8	36.27	74.77	413	17.10	-4.63	-5.30	0.00	0.00	0.00	0.00	0.00	0.00	2.98
9	36.65	74.87	47	16.24	-5.40	-6.15	0.28	1.93	1.03	0.00	0.00	0.00	1.96
10	36.72	75.37	20	15.20	-7.09	-7.21	0.00	0.00	0.00	0.00	0.00	0.00	1.41
11	36.55	75.78	18	14.80	-7.85	-7.00	-0.15	0.12	-1.16	0.00	0.00	0.00	1.51
12	36.95	75.80	12	14.65	-8.26	-7.31	0.00	0.00	0.00	0.00	0.00	0.00	1.64
13	36.92	75.55	18	14.96	-7.54	-6.97	0.09	1.21	-0.72	0.00	0.00	0.00	1.33
14	36.88	75.32	24	15.27	-7.25	-7.05	0.00	0.00	0.00	0.00	0.00	0.00	1.40
15	36.85	75.07	35	15.61	-6.58	-6.89	0.14	1.21	0.58	0.00	0.00	0.00	1.42
16	36.82	74.83	49	15.82	-6.10	-6.44	0.27	1.48	1.17	0.00	0.00	0.00	1.55
17	36.77	74.58	1174	18.01	-3.41	-4.82	0.39	1.85	2.71	0.00	0.00	0.00	1.88
19	37.22	74.75	68	15.96	-4.87	-5.68	0.61	2.25	2.06	0.00	0.00	0.00	1.87
20	37.30	75.15	28	14.62	-6.88	-6.64	0.17	1.48	0.00	0.00	0.00	0.00	1.36
21	37.25	75.67	11	14.20	-8.29	-7.30	0.00	0.00	0.00	0.00	0.00	0.00	1.60
22	37.62	75.32	17	13.98	-7.54	-7.25	0.00	0.00	0.00	0.00	0.00	0.00	1.57
23	37.80	75.28	16	13.67	-7.86	-7.14	0.00	0.00	0.00	0.00	0.00	0.00	1.56
24	37.52	74.95	31	14.81	-6.87	-7.36	0.20	1.45	0.56	0.00	0.00	0.00	1.26
25	37.52	74.65	60	15.52	-4.67	-5.48	0.45	2.25	1.63	0.00	0.00	0.00	1.66
26	37.63	74.35	98	16.00	-4.90	-5.54	0.48	1.49	2.05	0.00	0.00	0.00	1.68
27	37.80	74.77	40	14.68	-6.65	-6.93	0.11	1.07	0.58	0.06	0.80	0.42	0.99
28	38.17	74.90	25	13.69	-6.95	-7.37	0.04	0.62	-0.72	0.00	0.00	0.00	1.22
29	38.75	74.95	18	12.62	-7.35	-7.26	0.00	0.00	0.00	0.00	0.00	0.00	1.46
30	38.58	74.80	27	13.12	-7.07	-7.34	0.00	0.00	0.00	0.00	0.00	0.00	1.37
31	38.42	74.65	32	14.00	-6.83	-7.56	0.17	1.06	0.45	0.00	0.00	0.00	1.19
32	38.23	74.52	41	14.22	-6.42	-6.87	0.17	1.36	0.63	0.00	0.00	0.00	1.25
33	38.07	74.37	48	14.59	-6.37	-6.55	0.21	1.13	0.98	0.00	0.00	0.00	1.12
34	37.85	74.18	116	15.49	-4.40	-5.92	0.35	1.63	1.95	0.00	0.00	0.00	1.58
35	37.68	74.05	1280	17.22	-3.93	-5.16	0.00	0.00	0.00	0.00	0.00	0.00	2.76
37	37.98	73.97	163	16.20	-4.15	-4.73	0.10	1.02	1.22	0.00	0.00	0.00	1.90
38	38.35	73.65	125	15.30	-4.59	-5.74	0.22	1.16	1.78	0.00	0.00	0.00	1.93
39	38.42	74.12	57	14.30	-5.80	-6.61	0.41	1.34	1.65	0.00	0.00	0.00	1.26
40	38.67	74.32	42	13.82	-6.49	-7.15	0.23	0.88	0.87	0.00	0.00	0.00	1.20
41	38.92	74.55	22	12.65	-6.37	-6.92	0.00	0.00	0.00	0.00	0.00	0.00	1.39
42	39.23	74.43	17	12.63	-7.00	-7.19	0.00	0.00	0.00	0.00	0.00	0.00	1.05
43	39.35	74.10	24	12.77	-6.84	-7.27	0.00	0.00	0.00	0.00	0.00	0.00	1.15
44	38.95	74.12	40	13.69	-5.62	-6.99	0.12	0.82	0.63	0.00	0.00	0.00	1.12
45	38.75	73.75	49	14.04	-4.55	-6.71	0.20	1.42	0.86	0.00	0.00	0.00	1.39
46	38.65	73.15	177	15.73	-3.66	-5.43	0.20	0.89	1.07	0.00	0.00	0.00	1.32
47	38.98	73.13	78	14.44	-4.51	-6.22	0.11	1.75	1.49	0.00	0.00	0.00	1.75
49	39.28	72.85	81	14.09	-4.51	-6.72	0.19	1.77	1.18	0.00	0.00	0.00	1.32
50	39.20	73.65	42	13.49	-5.70	-6.50	0.22	1.29	0.81	0.00	0.00	0.00	0.99
51	39.65	73.38	33	13.03	-5.83	-6.54	0.23	1.19	0.58	0.00	0.00	0.00	0.97
52	39.57	73.82	22	12.96	-6.41	-7.12	0.00	0.00	0.00	0.00	0.00	0.00	1.22
53	39.72	74.05	15	12.06	-6.76	-7.31	0.00	0.00	0.00	0.00	0.00	0.00	1.43
54	40.12	73.80	28	12.44	-6.48	-6.82	0.04	1.10	-0.54	0.00	0.00	0.00	0.88
55	40.43	73.83	26	12.18	-6.40	-6.87	0.00	0.00	0.00	0.00	0.00	0.00	1.22
56	40.27	73.60	25	12.50	-6.30	-7.12	0.01	0.98	-0.15	0.00	0.00	0.00	1.01
57	40.10	73.38	40	12.62	-5.65	-6.98	0.10	1.25	0.21	0.00	0.00	0.00	0.93
58	39.87	73.08	66	13.05	-4.76	-6.09	0.21	1.65	0.65	0.00	0.00	0.00	1.04
59	39.65	72.77	69	13.05	-4.27	-6.13	0.13	1.45	0.48	0.00	0.00	0.00	1.13
60	39.47	72.55	112	13.78	-3.76	-6.61	0.28	1.86	1.15	0.00	0.00	0.00	1.51
61	39.30	72.32	249	15.73	-3.86	-6.58	0.00	0.00	0.00	0.00	0.00	0.00	1.94
64	39.55	72.12	226	14.83	-3.65	-6.51	0.00	0.00	0.00	0.00	0.00	0.00	2.21
65	39.85	72.45	74	13.17	-4.21	-6.60	0.15	1.39	1.49	0.00	0.00	0.00	1.41
66	40.32	72.72	50	12.48	-4.23	-6.33	0.02	0.92	0.54	0.00	0.00	0.00	1.14
67	40.47	73.22	26	11.95	-5.70	-7.04	0.01	0.90	-0.09	0.00	0.00	0.00	1.14
68	40.73	72.67	26	11.32	-5.38	-6.55	0.00	0.00	0.00	0.00	0.00	0.00	1.05
69	40.57	72.47	41	12.21	-4.60	-6.49	0.00	0.91	0.30	0.00	0.00	0.00	1.10
70	40.23	71.95	65	12.99	-3.97	-6.75	0.04	1.34	1.15	0.00	0.00	0.00	1.46

71	39.87	71.82	169	14.12	-3.79	-6.71	0.24	1.21	1.38	0.00	0.00	0.00	1.96
72	40.07	71.50	92	13.23	-3.71	-6.69	0.22	1.70	1.84	0.00	0.00	0.00	1.42
73	40.52	71.60	76	12.69	-3.99	-6.73	0.17	2.12	0.97	0.00	0.00	0.00	1.22
74	40.82	72.13	40	11.39	-4.69	-6.61	0.00	0.00	0.00	0.00	0.00	0.00	1.10
75	41.07	71.70	45	10.92	-4.27	-6.26	-0.01	0.83	-0.14	0.00	0.00	0.00	0.73
76	41.33	71.35	30	11.25	-5.35	-6.63	0.04	1.19	-0.01	0.00	0.00	0.00	0.86
77	41.15	71.25	40	11.27	-4.47	-6.48	0.10	1.23	0.22	0.00	0.00	0.00	0.77
78	40.97	71.17	50	11.46	-3.94	-6.37	0.14	1.43	0.53	0.00	0.00	0.00	0.93
79	40.68	71.03	62	11.81	-4.08	-6.72	0.08	1.70	0.43	0.00	0.00	0.00	1.18
80	40.35	70.85	99	12.64	-3.95	-6.67	0.10	1.16	1.31	0.00	0.00	0.00	1.34
81	40.17	70.77	132	13.32	-3.59	-6.55	0.08	1.13	1.48	0.00	0.00	0.00	1.66
82	39.98	70.67	406	14.42	-3.36	-6.01	0.21	0.34	1.75	0.00	0.00	0.00	1.70
85	40.22	70.42	114	12.71	-3.62	-6.32	0.06	1.22	1.20	0.00	0.00	0.00	1.69
86	40.70	70.58	57	11.25	-3.61	-6.72	0.00	0.00	0.00	0.00	0.00	0.00	1.33
87	41.17	71.00	34	10.99	-4.31	-6.23	-0.01	0.90	-0.10	0.00	0.00	0.00	0.95
88	41.05	70.55	44	10.59	-3.83	-6.17	0.00	0.00	0.00	0.00	0.00	0.00	1.16
89	40.68	70.18	45	10.37	-3.35	-6.39	0.00	0.00	0.00	0.00	0.00	0.00	1.23
90	40.40	69.70	70	11.42	-2.93	-5.64	0.04	0.80	0.92	0.00	0.00	0.00	1.25
91	40.13	69.57	91	12.28	-3.21	-6.06	0.06	0.58	0.79	0.00	0.00	0.00	1.31
93	40.88	69.57	37	9.00	-2.17	-4.65	0.00	0.00	0.00	0.00	0.00	0.00	0.86
94	41.53	69.43	63	9.95	-3.98	-5.06	0.27	1.08	1.27	0.00	0.00	0.00	0.83
95	41.97	69.83	96	9.83	-4.05	-5.52	0.08	0.95	1.09	0.00	0.00	0.00	1.00
96	42.25	69.72	220	10.71	-4.23	-5.14	0.10	0.91	1.41	0.00	0.00	0.00	0.89
97	42.10	70.33	61	9.98	-5.30	-5.45	-0.06	1.49	0.54	0.00	0.00	0.00	1.19
98	42.43	70.63	75	9.59	-4.53	-4.74	-0.11	1.35	0.18	0.00	0.00	0.00	0.77
99	42.80	70.53	101	10.05	-5.05	-4.90	0.04	1.56	1.15	0.00	0.00	0.00	1.12
100	42.83	70.00	197	9.98	-3.64	-4.98	0.02	0.96	1.53	0.00	0.00	0.00	0.92
101	43.13	69.97	157	9.96	-4.04	-4.94	0.09	1.50	1.43	0.00	0.00	0.00	0.91
102	43.40	70.20	103	9.04	-3.72	-4.99	0.06	0.89	0.62	0.00	0.00	0.00	0.85
103	43.33	69.68	206	9.69	-4.18	-4.85	0.12	1.17	1.04	0.00	0.00	0.00	0.98
104	43.67	69.37	100	8.55	-2.81	-4.56	-0.16	1.53	0.53	0.00	0.00	0.00	0.83
105	42.97	69.28	163	9.74	-3.05	-3.65	0.00	0.00	0.00	0.00	0.00	0.00	0.91
106	42.58	69.23	225	10.21	-3.83	-4.91	0.11	0.94	1.71	0.00	0.00	0.00	0.94
107	42.18	69.20	194	10.71	-4.40	-5.52	0.17	0.91	1.90	0.00	0.00	0.00	0.81
108	41.90	69.17	216	10.67	-4.17	-5.64	0.08	0.93	1.77	0.00	0.00	0.00	0.81
109	41.65	69.15	170	10.47	-3.70	-5.36	0.08	0.61	1.42	0.00	0.00	0.00	0.90
110	41.33	69.12	160	10.03	-3.14	-5.04	0.19	0.72	1.25	0.00	0.00	0.00	0.83
111	41.07	69.10	89	9.05	-1.64	-4.42	0.09	0.29	0.89	0.00	0.00	0.00	0.92
112	40.92	69.10	72	9.67	-1.47	-5.54	0.05	-0.59	0.58	0.00	0.00	0.00	0.88
113	40.65	69.08	75	10.46	-2.80	-6.07	0.09	0.51	0.90	0.03	0.15	-0.82	1.10
114	40.42	69.05	80	11.52	-3.31	-5.67	0.14	1.66	0.98	0.00	0.00	0.00	1.09
115	40.08	69.02	171	13.59	-4.17	-6.64	0.00	0.00	0.00	0.00	0.00	0.00	1.91
117	40.48	68.62	82	11.07	-2.72	-5.41	0.04	0.86	0.84	0.00	0.00	0.00	0.98
118	40.33	68.35	131	12.17	-4.07	-5.23	0.00	0.00	0.00	0.00	0.00	0.00	1.61
119	40.52	67.93	109	11.11	-3.06	-5.71	0.12	0.25	0.82	0.00	0.00	0.00	1.30
120	40.80	68.28	57	9.73	-1.35	-5.03	0.00	0.00	0.00	0.00	0.00	0.00	0.63
121	40.85	68.73	64	9.84	-1.76	-5.44	0.00	0.00	0.00	0.00	0.00	0.00	0.75
122	41.33	68.70	85	9.91	-2.38	-5.12	0.00	0.00	0.00	0.00	0.00	0.00	1.12
123	41.18	68.13	38	10.20	-2.24	-5.80	0.00	0.00	0.00	0.00	0.00	0.00	0.57
124	41.62	68.10	35	10.04	-2.72	-5.62	0.08	-0.56	0.15	0.00	0.00	0.00	0.57
125	41.87	68.18	177	10.31	-3.07	-5.27	0.10	0.61	0.72	0.00	0.00	0.00	0.85
126	41.62	68.88	100	10.64	-3.24	-5.44	0.13	0.43	1.02	0.00	0.00	0.00	0.87
127	41.98	68.65	168	10.57	-4.06	-5.39	0.05	0.87	1.57	0.00	0.00	0.00	0.60
128	42.17	68.80	188	10.67	-4.05	-5.52	0.13	0.66	1.60	0.00	0.00	0.00	0.77
129	42.32	68.45	198	10.44	-4.00	-5.37	0.15	1.00	1.60	0.00	0.00	0.00	0.85
130	42.67	68.32	207	9.68	-3.06	-4.43	0.17	0.93	0.89	0.00	0.00	0.00	0.81
131	42.75	68.77	201	10.06	-3.46	-4.99	-0.01	0.98	1.56	0.00	0.00	0.00	0.78
132	42.92	68.37	152	9.68	-3.46	-4.99	0.19	0.94	1.54	0.10	0.10	-0.62	0.64
133	43.20	67.98	203	9.74	-3.27	-4.72	0.13	0.48	1.16	0.00	0.00	0.00	0.95
134	43.38	68.13	208	9.28	-2.87	-4.52	0.05	0.60	0.79	0.00	0.00	0.00	0.90
135	43.37	68.68	136	9.10	-2.67	-4.32	-0.01	0.75	0.58	0.00	0.00	0.00	0.69
136	43.13	69.02	172	9.71	-3.45	-4.36	-0.07	1.12	0.83	0.00	0.00	0.00	0.85
137	43.62	68.93	135	8.59	-2.15	-4.11	-0.01	0.74	0.54	0.00	0.00	0.00	0.73
138	43.97	68.58	88	7.91	-2.08	-4.49	0.00	0.00	0.00	0.00	0.00	0.00	0.87
140	43.97	68.18	108	8.30	-1.60	-3.76	0.00	0.00	0.00	0.00	0.00	0.00	0.79
141	44.33	67.72	68	7.09	-1.16	-4.15	0.00	0.00	0.00	0.00	0.00	0.00	0.45
142	43.82	67.72	223	9.40	-2.90	-4.77	-0.04	0.97	1.10	0.00	0.00	0.00	0.73
143	42.98	67.70	182	9.36	-2.54	-4.71	0.26	0.24	1.03	0.00	0.00	0.00	0.71
144	42.60	67.70	201	9.68	-3.14	-5.49	0.07	0.73	1.23	0.00	0.00	0.00	1.02
145	42.30	67.70	236	10.20	-3.44	-5.61	0.13	0.36	1.14	0.00	0.00	0.00	0.75
146	41.80	67.70	32	9.82	-2.54	-5.30	0.07	-0.42	0.20	0.00	0.00	0.00	0.64

147	41.50	67.68	24	10.13	-2.54	-5.76	0.00	0.00	0.00	0.00	0.00	0.00	0.64
148	41.27	67.68	40	10.01	-2.05	-5.80	0.00	0.00	0.00	0.00	0.00	0.00	0.62
149	40.93	67.68	67	10.27	-2.40	-5.75	0.12	0.37	0.62	0.00	0.00	0.00	0.84
150	40.62	67.68	81	10.69	-2.60	-5.38	0.12	0.49	0.73	0.00	0.00	0.00	0.97
151	40.37	67.67	780	13.87	-4.28	-5.08	0.00	0.00	0.00	0.00	0.00	0.00	2.29
153	40.77	67.32	97	10.42	-2.79	-5.20	0.07	0.41	0.81	0.00	0.00	0.00	1.07
154	40.67	67.08	190	12.02	-3.43	-5.47	0.00	0.00	0.00	0.00	0.00	0.00	2.53
155	41.22	66.93	68	9.72	-1.70	-5.04	0.00	0.00	0.00	0.00	0.00	0.00	0.71
157	41.55	67.02	63	9.49	-1.57	-5.28	0.00	0.00	0.00	0.00	0.00	0.00	0.78
158	41.60	66.52	83	9.27	-1.52	-5.26	0.00	0.00	0.00	0.00	0.00	0.00	0.64
159	42.03	66.83	75	9.08	-1.56	-4.74	0.15	-0.51	0.28	0.00	0.00	0.00	0.65
160	41.98	67.40	22	9.37	-2.07	-4.99	0.16	-0.45	0.37	0.00	0.00	0.00	0.65
161	42.18	67.25	180	9.75	-2.72	-4.97	0.16	0.04	0.58	0.00	0.00	0.00	0.68
162	42.72	67.47	205	9.30	-2.23	-4.52	0.31	0.02	0.71	0.00	0.00	0.00	0.37
163	42.77	66.97	170	8.92	-2.06	-4.68	0.00	0.00	0.00	0.00	0.00	0.00	0.61
164	43.20	66.80	142	7.92	-1.21	-4.46	0.00	0.00	0.00	0.00	0.00	0.00	0.42
165	43.58	66.73	126	8.63	-1.52	-3.99	0.00	0.00	0.00	0.00	0.00	0.00	0.83
166	43.50	67.00	205	8.20	-1.17	-3.93	0.00	0.00	0.00	0.00	0.00	0.00	0.68
167	43.70	67.43	205	9.03	-2.18	-4.07	0.16	-0.18	0.52	0.00	0.00	0.00	0.50
168	44.03	67.17	140	8.78	-2.15	-3.77	0.00	0.00	0.00	0.00	0.00	0.00	0.70
169	44.27	67.12	139	8.14	-1.45	-3.42	0.00	0.00	0.00	0.00	0.00	0.00	0.27
170	44.27	66.60	201	7.89	-1.11	-3.40	0.00	0.00	0.00	0.00	0.00	0.00	0.37
171	43.53	66.33	74	7.75	-1.71	-4.77	0.00	0.00	0.00	0.00	0.00	0.00	0.87
172	43.02	66.33	128	7.36	-1.36	-4.59	0.00	0.00	0.00	0.00	0.00	0.00	0.86
173	42.65	66.33	110	8.35	-2.17	-5.41	0.00	0.00	0.00	0.00	0.00	0.00	1.30
174	42.47	66.33	250	8.84	-2.49	-5.59	0.00	0.00	0.00	0.00	0.00	0.00	1.18
175	42.28	66.33	245	9.05	-2.49	-5.01	0.00	0.00	0.00	0.00	0.00	0.00	0.79
176	42.15	66.33	182	9.22	-2.34	-4.81	0.00	0.00	0.00	0.00	0.00	0.00	0.67
177	41.87	66.33	85	9.03	-1.72	-4.88	0.12	-0.33	0.39	0.00	0.00	0.00	0.52
178	41.50	66.33	89	9.45	-2.26	-4.86	0.00	0.00	0.00	0.00	0.00	0.00	0.84
179	41.17	66.32	155	10.70	-3.46	-5.81	0.00	0.00	0.00	0.00	0.00	0.00	1.47
181	44.00	66.20	22	7.23	-3.10	-5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.98
182	43.40	67.72	261	9.57	-3.05	-4.67	0.00	0.70	1.01	0.00	0.00	0.00	0.74
183	43.28	69.33	164	9.80	-3.26	-4.25	0.00	0.00	0.00	0.00	0.00	0.00	1.31
184	38.57	74.88	20	12.99	-7.57	-7.35	0.00	0.00	0.00	0.00	0.00	0.00	1.60
185	39.92	73.93	20	12.40	-6.62	-7.09	0.00	0.00	0.00	0.00	0.00	0.00	1.12
186	39.87	73.55	33	13.05	-5.95	-6.79	0.07	1.12	0.41	0.00	0.00	0.00	1.09
187	40.25	73.90	22	12.24	-6.72	-6.76	0.00	0.00	0.00	0.00	0.00	0.00	1.28
188	42.43	70.15	81	10.22	-4.05	-4.90	-0.09	1.08	1.08	0.00	0.00	0.00	1.04
189	42.82	66.33	62	8.10	-1.44	-3.49	0.00	0.00	0.00	0.00	0.00	0.00	0.78
190	43.28	66.33	81	6.78	-0.89	-4.22	0.00	0.00	0.00	0.00	0.00	0.00	0.77
191	41.65	65.92	125	9.11	-1.96	-5.13	0.00	0.00	0.00	0.00	0.00	0.00	0.68
192	41.90	65.82	148	9.06	-2.57	-5.53	0.00	0.00	0.00	0.00	0.00	0.00	0.87
193	40.87	66.62	245	12.55	-3.04	-5.56	0.00	0.00	0.00	0.00	0.00	0.00	3.22

Table 2. Coefficients for the annual cycle of bottom temperature for MARMAP standard station locations. See text for explanation.

Sta	Lat	Lon	Depth	C1	A1	B1	C2	A2	B2	C3	A3	B3	Sdv
1	35.27	75.23	26	20.80	-2.58	-3.24	0.00	0.00	0.00	0.00	0.00	0.00	2.42
2	35.47	75.25	29	17.27	-6.17	-5.56	-0.41	-0.31	-2.72	0.00	0.00	0.00	2.70
3	35.68	74.97	54	13.63	0.25	-3.91	-0.39	0.26	-3.38	0.00	0.00	0.00	2.58
4	35.85	75.48	19	13.50	-4.53	-6.76	-0.38	-0.83	-1.75	0.00	0.00	0.00	2.16
5	36.25	75.53	26	12.02	-1.95	-5.94	-0.60	-1.54	-1.88	0.00	0.00	0.00	1.52
6	36.38	75.25	35	11.91	-0.89	-4.74	-0.48	-1.48	-1.38	0.00	0.00	0.00	1.37
7	36.15	75.10	36	12.73	-1.21	-4.51	-0.63	-1.25	-1.61	0.00	0.00	0.00	2.16
9	36.65	74.87	47	11.24	2.16	-2.69	-0.23	-0.06	-1.87	0.00	0.00	0.00	1.83
10	36.72	75.37	20	12.78	-3.31	-6.55	0.00	0.00	0.00	0.00	0.00	0.00	1.44
11	36.55	75.78	18	12.57	-3.91	-7.25	-0.26	-1.64	-1.02	0.09	1.52	0.64	1.27
12	36.95	75.80	12	13.01	-5.17	-8.17	0.00	0.00	0.00	0.00	0.00	0.00	1.76
13	36.92	75.55	18	12.40	-3.23	-7.08	-0.20	-1.34	-0.38	0.00	1.11	0.32	1.22
14	36.88	75.32	24	11.50	-1.50	-5.88	-0.17	-1.11	-1.11	0.00	0.00	0.00	1.43
15	36.85	75.07	35	10.93	0.67	-3.73	-0.10	-0.23	-1.85	0.00	0.00	0.00	1.65
16	36.82	74.83	49	10.80	1.45	-2.06	0.15	1.28	-2.07	0.00	0.00	0.00	2.07
19	37.22	74.75	68	10.46	2.18	-1.76	0.00	0.00	0.00	0.00	0.00	0.00	2.04
20	37.30	75.15	28	10.89	-0.83	-4.82	-0.21	-0.49	-1.65	0.00	0.00	0.00	1.52
21	37.25	75.67	11	13.34	-6.60	-7.70	0.00	0.00	0.00	0.00	0.00	0.00	1.66
22	37.62	75.32	17	12.37	-4.68	-7.52	0.00	0.00	0.00	0.00	0.00	0.00	1.57
23	37.80	75.28	16	12.78	-6.30	-7.67	0.00	0.00	0.00	0.00	0.00	0.00	1.40
24	37.52	74.95	31	10.45	-0.37	-4.37	-0.28	-0.37	-1.97	-0.02	0.02	1.01	1.29
25	37.52	74.65	60	10.22	2.51	-1.43	-0.15	0.48	-1.44	0.00	0.00	0.00	1.89
26	37.63	74.35	98	11.82	1.42	-1.73	0.00	0.00	0.00	0.00	0.00	0.00	1.49
27	37.80	74.77	40	9.65	0.78	-3.80	-0.24	-0.16	-2.06	0.00	0.00	0.00	1.30
28	38.17	74.90	25	11.74	-3.68	-7.04	0.00	0.00	0.00	0.00	0.00	0.00	1.80
29	38.75	74.95	18	11.70	-5.59	-7.36	0.00	0.00	0.00	0.00	0.00	0.00	1.47
30	38.58	74.80	27	10.40	-2.15	-5.88	-0.37	-1.10	-1.61	-0.05	0.43	1.05	1.28
31	38.42	74.65	32	9.77	-0.29	-4.51	-0.32	-0.13	-1.93	0.00	0.00	0.00	1.29
32	38.23	74.52	41	9.20	1.00	-3.22	-0.11	0.15	-2.17	0.00	0.00	0.00	1.00
33	38.07	74.37	48	9.38	1.60	-2.60	-0.08	-0.01	-2.09	0.00	0.00	0.00	1.08
34	37.85	74.18	116	12.01	1.20	-1.27	0.00	0.00	0.00	0.00	0.00	0.00	1.31
37	37.98	73.97	163	12.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.85
38	38.35	73.65	125	12.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.55
39	38.42	74.12	57	8.99	2.19	-1.65	-0.14	0.33	-1.75	0.00	0.00	0.00	1.54
40	38.67	74.32	42	9.10	0.48	-3.49	-0.32	0.05	-2.04	0.00	0.00	0.00	1.14
41	38.92	74.55	22	10.96	-3.19	-6.46	0.00	0.00	0.00	0.00	0.00	0.00	1.59
42	39.23	74.43	17	11.15	-4.82	-6.90	0.00	0.00	0.00	0.00	0.00	0.00	1.61
43	39.35	74.10	24	10.13	-2.31	-6.49	-0.35	-1.45	-1.03	0.01	0.77	0.47	1.21
44	38.95	74.12	40	9.09	0.47	-3.47	-0.35	-0.28	-1.92	0.00	0.00	0.00	1.22
45	38.75	73.75	49	8.83	2.00	-2.28	0.01	0.42	-2.16	0.00	0.00	0.00	1.38
46	38.65	73.15	177	11.91	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.02
47	38.98	73.13	78	10.12	2.10	-1.47	0.00	0.00	0.00	0.00	0.00	0.00	2.02
49	39.28	72.85	81	9.89	2.26	-1.86	0.00	0.00	0.00	0.00	0.00	0.00	2.25
50	39.20	73.65	42	8.83	1.25	-3.12	-0.20	-0.15	-2.21	0.00	0.00	0.00	0.93
51	39.65	73.38	33	8.68	0.76	-3.81	-0.23	-0.62	-1.88	0.00	0.00	0.00	0.92
52	39.57	73.82	22	10.02	-1.93	-5.65	-0.14	-1.19	-0.95	0.00	0.00	0.00	1.33
53	39.72	74.05	15	10.27	-3.79	-6.73	-0.20	-1.64	-1.02	0.00	0.00	0.00	2.09
54	40.12	73.80	28	8.87	-0.64	-5.11	-0.09	-0.69	-1.34	0.00	0.00	0.00	1.41
55	40.43	73.83	26	9.56	-1.11	-5.51	-0.19	-0.49	-1.22	0.00	0.00	0.00	1.40
56	40.27	73.60	25	9.74	-1.75	-6.46	-0.15	-0.98	-0.69	0.00	0.00	0.00	1.13
57	40.10	73.38	40	8.24	1.31	-3.61	-0.20	-0.30	-1.85	0.00	0.00	0.00	1.05
58	39.87	73.08	66	7.86	1.76	-2.24	-0.08	0.44	-1.42	0.00	0.00	0.00	1.26
59	39.65	72.77	69	8.59	2.31	-2.31	-0.13	0.23	-1.20	0.00	0.00	0.00	1.47
60	39.47	72.55	112	11.66	0.79	-1.31	0.00	0.00	0.00	0.00	0.00	0.00	1.24
61	39.30	72.32	249	10.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.09
64	39.55	72.12	226	10.82	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.44
65	39.85	72.45	74	8.49	2.61	-1.94	-0.05	0.85	-0.91	0.00	0.00	0.00	1.38
66	40.32	72.72	50	7.71	1.41	-2.61	-0.04	0.04	-0.86	0.00	0.00	0.00	0.78
67	40.47	73.22	26	9.29	-1.46	-5.40	-0.28	-0.41	-1.39	0.00	0.00	0.00	1.30
68	40.73	72.67	26	9.91	-2.92	-5.93	0.00	0.00	0.00	0.00	0.00	0.00	1.88
69	40.57	72.47	41	8.43	0.91	-4.04	-0.25	-0.05	-1.31	0.00	0.00	0.00	0.89
70	40.23	71.95	65	8.41	2.59	-2.86	-0.10	1.02	-1.57	0.00	0.00	0.00	1.13
71	39.87	71.82	169	11.79	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.98
72	40.07	71.50	92	11.60	0.78	-1.62	0.00	0.00	0.00	0.00	0.00	0.00	1.60
73	40.52	71.60	76	8.41	2.15	-2.72	-0.10	1.20	-0.96	0.00	0.00	0.00	1.18



74	40.82	72.13	40	8.54	0.31	-4.88	-0.13	-0.47	-1.26	0.00	0.00	0.00	1.12
75	41.07	71.70	45	8.97	-0.39	-5.08	0.00	0.00	0.00	0.00	0.00	0.00	1.44
76	41.33	71.35	30	9.29	-1.99	-5.88	-0.14	-0.15	-0.84	0.04	0.35	0.57	0.95
77	41.15	71.25	40	8.60	-0.49	-4.85	-0.04	0.22	-0.87	0.00	0.00	0.00	0.90
78	40.97	71.17	50	8.29	0.93	-4.53	-0.15	0.45	-1.12	0.00	0.00	0.00	0.91
79	40.68	71.03	62	8.31	0.97	-4.32	-0.21	0.78	-1.45	0.00	0.00	0.00	1.16
80	40.35	70.85	99	11.58	1.18	-0.91	-0.06	-0.60	-1.17	0.00	0.00	0.00	1.63
81	40.17	70.77	132	12.42	0.41	-0.66	0.00	0.00	0.00	0.00	0.00	0.00	0.91
82	39.98	70.67	406	8.76	0.79	0.91	0.00	0.00	0.00	0.00	0.00	0.00	0.72
85	40.22	70.42	114	12.23	1.01	-1.07	0.00	0.00	0.00	0.00	0.00	0.00	1.40
86	40.70	70.58	57	8.42	0.51	-4.57	-0.20	-0.64	-1.86	0.00	0.00	0.00	1.44
87	41.17	71.00	34	9.21	-1.72	-5.53	-0.14	0.14	-0.89	0.00	0.00	0.00	0.92
88	41.05	70.55	44	8.44	-0.90	-5.19	-0.08	-0.55	-1.28	0.00	0.00	0.00	1.07
89	40.68	70.18	45	8.56	-0.71	-5.07	-0.14	-0.56	-1.64	0.00	0.00	0.00	1.27
90	40.40	69.70	70	8.89	0.81	-3.21	-0.16	0.25	-1.23	0.00	0.00	0.00	1.49
91	40.13	69.57	91	10.96	1.33	-1.77	0.00	0.00	0.00	0.00	0.00	0.00	2.04
93	40.88	69.57	37	8.88	-2.10	-4.72	0.00	0.00	0.00	0.00	0.00	0.00	0.83
94	41.53	69.43	63	6.12	0.86	-2.07	-0.14	0.33	-0.80	0.00	0.00	0.00	0.76
95	41.97	69.83	96	5.80	0.88	-1.76	-0.07	0.22	-0.61	0.00	0.00	0.00	0.52
96	42.25	69.72	220	6.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.65
97	42.10	70.33	61	5.90	0.35	-3.32	-0.17	0.12	-1.05	0.00	0.00	0.00	0.77
98	42.43	70.63	75	5.91	0.51	-3.18	-0.11	0.54	-0.42	0.00	0.00	0.00	0.68
99	42.80	70.53	101	5.06	1.38	-1.97	0.00	0.00	0.00	0.00	0.00	0.00	1.44
100	42.83	70.00	197	5.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.75
101	43.13	69.97	157	5.35	0.70	-0.75	-0.14	0.85	-0.04	-0.02	0.50	0.34	0.46
102	43.40	70.20	103	6.28	1.13	-2.31	-0.22	0.32	-0.69	0.00	0.00	0.00	0.94
103	43.33	69.68	206	5.43	0.52	-0.48	0.00	0.00	0.00	0.00	0.00	0.00	0.57
104	43.67	69.37	100	6.45	1.01	-2.72	-0.16	0.30	-0.61	0.00	0.00	0.00	0.49
105	42.97	69.28	163	5.73	0.88	-0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.65
106	42.58	69.23	225	6.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.71
107	42.18	69.20	194	5.72	0.55	-0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.48
108	41.90	69.17	216	5.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.68
109	41.65	69.15	170	5.35	0.63	-0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.45
110	41.33	69.12	160	5.47	1.06	-0.32	-0.07	0.64	-0.07	-0.06	0.40	0.09	0.37
111	41.07	69.10	89	6.96	0.66	-2.27	0.00	0.00	0.00	0.00	0.00	0.00	0.83
112	40.92	69.10	72	8.39	-0.81	-3.89	0.00	0.00	0.00	0.00	0.00	0.00	0.80
113	40.65	69.08	75	8.40	-0.32	-3.77	-0.08	-0.41	-1.28	-0.05	-0.93	0.58	1.06
114	40.42	69.05	80	9.10	1.18	-3.24	-0.17	0.59	-1.56	0.00	0.00	0.00	1.07
115	40.08	69.02	171	11.36	1.24	0.24	0.00	0.00	0.00	0.00	0.00	0.00	1.26
117	40.48	68.62	82	8.79	1.08	-2.79	-0.10	0.89	-0.68	0.00	0.00	0.00	1.22
118	40.33	68.35	131	11.64	0.67	-0.62	0.00	0.00	0.00	0.00	0.00	0.00	1.00
119	40.52	67.93	109	9.97	1.10	-1.49	0.00	0.00	0.00	0.00	0.00	0.00	1.74
120	40.80	68.28	57	9.32	-0.75	-4.60	0.00	0.00	0.00	0.00	0.00	0.00	0.81
121	40.85	68.73	64	9.50	-1.42	-5.08	0.00	0.00	0.00	0.00	0.00	0.00	0.82
122	41.33	68.70	85	6.92	0.57	-1.91	0.00	0.00	0.00	0.00	0.00	0.00	1.18
123	41.18	68.13	38	10.27	-2.12	-5.67	0.00	0.00	0.00	0.00	0.00	0.00	0.54
124	41.62	68.10	35	10.01	-2.70	-5.52	0.10	-0.51	0.13	0.00	0.00	0.00	0.61
125	41.87	68.18	177	6.57	0.65	-0.43	0.00	0.00	0.00	0.00	0.00	0.00	0.74
126	41.62	68.88	100	5.50	0.91	-0.70	-0.13	0.74	0.03	0.00	0.29	0.39	0.40
127	41.98	68.65	168	5.81	0.67	0.16	-0.02	0.21	0.37	0.00	0.00	0.00	0.43
128	42.17	68.80	188	5.59	0.65	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.47
129	42.32	68.45	198	6.78	-0.02	-0.75	0.00	0.00	0.00	0.00	0.00	0.00	0.68
130	42.67	68.32	207	6.79	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.70
131	42.75	68.77	201	6.91	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.68
132	42.92	68.37	152	6.43	0.44	-0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.47
133	43.20	67.98	203	6.69	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.94
134	43.38	68.13	208	6.98	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.03
135	43.37	68.68	136	6.41	1.19	-1.43	-0.10	0.57	-0.46	0.00	0.00	0.00	0.76
136	43.13	69.02	172	6.02	0.89	-0.45	0.00	0.00	0.00	0.00	0.00	0.00	0.39
137	43.62	68.93	135	6.47	0.96	-2.82	0.00	0.00	0.00	0.00	0.00	0.00	0.59
138	43.97	68.58	88	6.69	0.18	-3.57	-0.19	0.01	-0.58	0.00	0.00	0.00	0.60
140	43.97	68.18	108	6.59	0.47	-2.68	-0.25	0.71	-0.36	0.00	0.00	0.00	0.55
141	44.33	67.72	68	6.70	-0.65	-3.85	0.00	0.00	0.00	0.00	0.00	0.00	0.49
142	43.82	67.72	223	7.59	0.52	-0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.68
143	42.98	67.70	182	7.03	0.62	-0.42	0.00	0.00	0.00	0.00	0.00	0.00	0.49
144	42.60	67.70	201	7.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.71
145	42.30	67.70	236	7.97	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.69
146	41.80	67.70	32	9.72	-2.38	-5.28	0.08	-0.47	0.20	0.00	0.00	0.00	0.64
147	41.50	67.68	24	10.08	-2.63	-5.71	0.00	0.00	0.00	0.00	0.00	0.00	0.58
148	41.27	67.68	40	10.00	-2.01	-5.79	0.00	0.00	0.00	0.00	0.00	0.00	0.61
149	40.93	67.68	67	8.77	-0.38	-4.23	-0.15	0.09	-0.55	0.00	0.00	0.00	0.51

150	40.62	67.68	81	8.80	1.09	-2.51	-0.15	0.54	-0.74	0.00	0.00	0.00	1.29
153	40.77	67.32	97	9.26	0.67	-1.75	0.00	0.00	0.00	0.00	0.00	0.00	1.77
154	40.67	67.08	190	10.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.76
155	41.22	66.93	68	8.55	-0.39	-4.02	-0.10	0.20	-0.44	0.00	0.00	0.00	0.55
157	41.55	67.02	63	9.32	-1.09	-4.87	0.00	0.00	0.00	0.00	0.00	0.00	0.61
158	41.60	66.52	83	8.40	-0.62	-4.18	0.00	0.00	0.00	0.00	0.00	0.00	0.66
159	42.03	66.83	75	8.75	-0.87	-3.86	0.00	0.00	0.00	0.00	0.00	0.00	0.58
160	41.98	67.40	22	9.28	-1.91	-4.67	0.16	-0.28	0.46	0.00	0.00	0.00	0.52
162	42.72	67.47	205	7.86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.75
163	42.77	66.97	170	8.79	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.07
164	43.20	66.80	142	8.06	0.22	-2.16	0.00	0.00	0.00	0.00	0.00	0.00	0.56
165	43.58	66.73	126	7.69	0.85	-1.75	0.00	0.00	0.00	0.00	0.00	0.00	0.89
166	43.50	67.00	205	8.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.86
167	43.70	67.43	205	7.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.78
168	44.03	67.17	140	7.10	0.79	-0.72	0.00	0.00	0.00	0.00	0.00	0.00	0.64
171	43.53	66.33	74	7.05	-0.26	-3.61	0.00	0.00	0.00	0.00	0.00	0.00	0.89
172	43.02	66.33	128	7.25	0.65	-2.51	0.00	0.00	0.00	0.00	0.00	0.00	1.07
173	42.65	66.33	110	7.87	-0.19	-1.43	0.00	0.00	0.00	0.00	0.00	0.00	1.04
174	42.47	66.33	250	7.86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.94
175	42.28	66.33	245	8.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.66
176	42.15	66.33	182	7.81	0.09	-0.70	0.00	0.00	0.00	0.00	0.00	0.00	0.57
177	41.87	66.33	85	8.08	-0.51	-3.43	0.00	0.00	0.00	0.00	0.00	0.00	0.71
178	41.50	66.33	89	7.48	0.31	-2.76	-0.14	0.04	-0.76	0.00	0.00	0.00	0.88
179	41.17	66.32	155	9.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.94
181	44.00	66.20	22	7.03	-2.79	-5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.94
182	43.40	67.72	261	7.66	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.72
183	43.28	69.33	164	5.69	1.17	-0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.46
184	38.57	74.88	20	11.84	-5.25	-7.78	0.00	0.00	0.00	0.00	0.00	0.00	1.44
185	39.92	73.93	20	10.13	-2.92	-6.79	-0.18	-1.06	-0.50	0.00	0.00	0.00	1.13
186	39.87	73.55	33	8.90	0.43	-4.25	-0.26	-0.81	-1.55	0.00	0.00	0.00	1.05
187	40.25	73.90	22	10.13	-2.82	-6.67	0.00	0.00	0.00	0.00	0.00	0.00	1.56
188	42.43	70.15	81	5.89	0.99	-2.24	-0.09	0.45	-0.44	0.00	0.00	0.00	0.61
189	42.82	66.33	62	7.18	-0.05	-3.09	0.00	0.00	0.00	0.00	0.00	0.00	1.17
190	43.28	66.33	81	6.80	-0.88	-4.28	0.00	0.00	0.00	0.00	0.00	0.00	0.74
191	41.65	65.92	125	8.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.66
192	41.90	65.82	148	8.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.01
193	40.87	66.62	245	10.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.90

Table 3. Coefficients for the annual cycle of surface salinity for MARMAP standard station locations. See text for explanation.

Sta	Lat	Lon	Depth	C1	A1	B1	C2	A2	B2	C3	A3	B3	Sdv
1	35.27	75.23	26	34.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.63
2	35.47	75.25	29	33.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.72
3	35.68	74.97	54	33.82	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.55
4	35.85	75.48	19	30.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.91
5	36.25	75.53	26	31.97	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.11
6	36.38	75.25	35	32.75	0.85	0.25	0.00	0.00	0.00	0.00	0.00	0.00	1.01
7	36.15	75.10	36	33.05	1.00	0.46	0.00	0.00	0.00	0.00	0.00	0.00	1.05
8	36.27	74.77	413	34.04	0.80	0.94	0.00	0.00	0.00	0.00	0.00	0.00	1.06
9	36.65	74.87	47	33.30	1.33	0.79	0.00	0.00	0.00	0.00	0.00	0.00	0.91
10	36.72	75.37	20	32.49	0.73	0.32	0.00	0.00	0.00	0.00	0.00	0.00	0.81
11	36.55	75.78	18	30.03	0.45	-1.26	0.00	0.00	0.00	0.00	0.00	0.00	1.68
12	36.95	75.80	12	29.84	2.27	-0.40	0.00	0.00	0.00	0.00	0.00	0.00	2.02
13	36.92	75.55	18	31.78	1.16	0.16	0.00	0.00	0.00	0.00	0.00	0.00	1.09
14	36.88	75.32	24	32.54	0.97	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.96
15	36.85	75.07	35	32.88	1.12	0.53	0.00	0.00	0.00	0.00	0.00	0.00	0.86
16	36.82	74.83	49	33.31	1.23	0.57	0.00	0.00	0.00	0.00	0.00	0.00	0.90
17	36.77	74.58	1174	34.13	1.39	0.60	0.00	0.00	0.00	0.00	0.00	0.00	0.72
19	37.22	74.75	68	33.51	1.14	0.55	0.00	0.00	0.00	0.00	0.00	0.00	0.83
20	37.30	75.15	28	32.50	1.00	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.69
21	37.25	75.67	11	31.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.40
22	37.62	75.32	17	32.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.80
23	37.80	75.28	16	31.66	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.87
24	37.52	74.95	31	32.65	0.93	0.42	0.00	0.00	0.00	0.00	0.00	0.00	0.74
25	37.52	74.65	60	33.35	1.21	0.53	0.00	0.00	0.00	0.00	0.00	0.00	0.62
26	37.63	74.35	98	33.82	1.33	0.70	0.00	0.00	0.00	0.00	0.00	0.00	0.72
27	37.80	74.77	40	32.71	1.04	0.31	0.00	0.00	0.00	0.00	0.00	0.00	0.74
28	38.17	74.90	25	32.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.98
29	38.75	74.95	18	30.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.02
30	38.58	74.80	27	31.86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.83
31	38.42	74.65	32	32.39	0.71	0.37	0.00	0.00	0.00	0.00	0.00	0.00	0.66
32	38.23	74.52	41	32.73	0.98	0.60	0.00	0.00	0.00	0.00	0.00	0.00	0.67
33	38.07	74.37	48	32.91	0.94	0.62	0.00	0.00	0.00	0.00	0.00	0.00	0.65
34	37.85	74.18	116	33.61	1.33	0.59	0.00	0.00	0.00	0.00	0.00	0.00	0.69
35	37.68	74.05	1280	34.48	0.66	0.69	0.00	0.00	0.00	0.00	0.00	0.00	0.80
37	37.98	73.97	163	33.85	1.07	0.61	0.00	0.00	0.00	0.00	0.00	0.00	0.80
38	38.35	73.65	125	33.78	0.77	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.96
39	38.42	74.12	57	33.03	0.84	0.62	0.00	0.00	0.00	0.00	0.00	0.00	0.65
40	38.67	74.32	42	32.68	0.84	0.56	0.00	0.00	0.00	0.00	0.00	0.00	0.65
41	38.92	74.55	22	31.99	0.54	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.70
42	39.23	74.43	17	31.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.73
43	39.35	74.10	24	31.95	0.56	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.68
44	38.95	74.12	40	32.63	1.02	0.63	0.00	0.00	0.00	0.00	0.00	0.00	0.54
45	38.75	73.75	49	33.13	0.63	0.42	0.00	0.00	0.00	0.00	0.00	0.00	0.64
46	38.65	73.15	177	34.06	1.28	0.23	0.00	0.00	0.00	0.00	0.00	0.00	0.70
47	38.98	73.13	78	33.21	1.12	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.73
49	39.28	72.85	81	33.29	0.97	-0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.70
50	39.20	73.65	42	32.68	0.96	0.52	0.00	0.00	0.00	0.00	0.00	0.00	0.70
51	39.65	73.38	33	32.41	1.06	0.45	-0.09	-0.65	0.01	0.00	0.00	0.00	0.48
52	39.57	73.82	22	32.17	0.89	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.72
53	39.72	74.05	15	31.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.89
54	40.12	73.80	28	31.87	0.95	-0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.70
55	40.43	73.83	26	30.74	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.68
56	40.27	73.60	25	31.95	0.79	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.75
57	40.10	73.38	40	32.41	0.90	0.29	-0.05	-0.38	-0.21	0.00	0.00	0.00	0.51
58	39.87	73.08	66	32.72	1.02	0.32	0.00	0.00	0.00	0.00	0.00	0.00	0.57
59	39.65	72.77	69	32.96	0.90	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.67
60	39.47	72.55	112	33.50	0.95	-0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.67
61	39.30	72.32	249	34.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00
64	39.55	72.12	226	34.00	0.60	-0.47	0.00	0.00	0.00	0.00	0.00	0.00	0.73
65	39.85	72.45	74	33.19	0.58	-0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.54
66	40.32	72.72	50	32.48	0.94	0.39	0.00	0.00	0.00	0.00	0.00	0.00	0.58
67	40.47	73.22	26	32.00	0.75	0.38	0.00	0.00	0.00	0.00	0.00	0.00	0.51
68	40.73	72.67	26	31.85	0.69	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.56
69	40.57	72.47	41	32.22	0.82	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.54
70	40.23	71.95	65	33.15	0.66	-0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.62

71	39.87	71.82	169	33.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.93
72	40.07	71.50	92	33.52	0.51	-0.36	0.00	0.00	0.00	0.00	0.00	0.00	0.73
73	40.52	71.60	76	33.12	0.62	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.55
74	40.82	72.13	40	31.85	0.98	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.55
75	41.07	71.70	45	31.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.69
76	41.33	71.35	30	32.16	0.41	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.43
77	41.15	71.25	40	32.38	0.32	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.40
78	40.97	71.17	50	32.49	0.37	0.28	0.00	0.00	0.00	0.00	0.00	0.00	0.39
79	40.68	71.03	62	32.79	0.28	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.48
80	40.35	70.85	99	33.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.60
81	40.17	70.77	132	33.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.65
82	39.98	70.67	406	34.09	0.39	-0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.65
85	40.22	70.42	114	33.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.55
86	40.70	70.58	57	32.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.42
87	41.17	71.00	34	32.33	0.33	0.28	0.00	0.00	0.00	0.00	0.00	0.00	0.43
88	41.05	70.55	44	32.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.44
89	40.68	70.18	45	32.65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.42
90	40.40	69.70	70	32.87	0.23	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.32
91	40.13	69.57	91	33.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.55
93	40.88	69.57	37	32.52	0.28	0.40	0.00	0.00	0.00	0.00	0.00	0.00	0.31
94	41.53	69.43	63	32.41	0.63	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.36
95	41.97	69.83	96	32.25	0.74	0.34	0.00	0.00	0.00	0.00	0.00	0.00	0.47
96	42.25	69.72	220	32.52	0.78	0.35	0.00	0.00	0.00	0.00	0.00	0.00	0.43
97	42.10	70.33	61	31.77	0.85	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.54
98	42.43	70.63	75	31.58	0.99	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.62
99	42.80	70.53	101	31.65	1.07	-0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.55
100	42.83	70.00	197	32.43	0.67	0.26	0.00	0.00	0.00	0.00	0.00	0.00	0.37
101	43.13	69.97	157	32.33	0.81	0.32	0.00	0.00	0.00	0.00	0.00	0.00	0.38
102	43.40	70.20	103	31.80	0.87	-0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.45
103	43.33	69.68	206	32.50	0.57	0.21	0.00	0.00	0.00	0.00	0.00	0.00	0.42
104	43.67	69.37	100	32.35	0.54	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.31
105	42.97	69.28	163	32.65	0.52	0.27	0.00	0.00	0.00	0.00	0.00	0.00	0.45
106	42.58	69.23	225	32.67	0.45	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.35
107	42.18	69.20	194	32.64	0.53	0.49	-0.01	-0.18	-0.18	0.00	0.00	0.00	0.30
108	41.90	69.17	216	32.63	0.41	0.57	-0.01	-0.13	-0.25	0.00	0.00	0.00	0.29
109	41.65	69.15	170	32.51	0.52	0.54	0.00	0.00	0.00	0.00	0.00	0.00	0.30
110	41.33	69.12	160	32.47	0.52	0.44	-0.01	-0.22	-0.10	0.00	0.00	0.00	0.32
111	41.07	69.10	89	32.63	0.34	0.42	-0.01	-0.18	-0.12	0.00	0.00	0.00	0.27
112	40.92	69.10	72	32.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.37
113	40.65	69.08	75	32.90	0.18	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.26
114	40.42	69.05	80	32.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.34
115	40.08	69.02	171	34.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.01
117	40.48	68.62	82	32.88	0.11	0.23	0.00	0.00	0.00	0.00	0.00	0.00	0.31
118	40.33	68.35	131	33.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.65
119	40.52	67.93	109	32.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.40
120	40.80	68.28	57	32.77	0.03	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.21
121	40.85	68.73	64	32.80	0.02	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.20
122	41.33	68.70	85	32.68	0.37	0.37	-0.03	-0.24	-0.14	0.00	0.00	0.00	0.28
123	41.18	68.13	38	32.74	0.00	0.26	0.00	0.00	0.00	0.00	0.00	0.00	0.20
124	41.62	68.10	35	32.77	0.09	0.27	0.00	0.00	0.00	0.00	0.00	0.00	0.23
125	41.87	68.18	177	32.68	0.29	0.45	0.00	0.00	0.00	0.00	0.00	0.00	0.28
126	41.62	68.88	100	32.64	0.46	0.40	0.00	0.00	0.00	0.00	0.00	0.00	0.35
127	41.98	68.65	168	32.67	0.29	0.51	-0.01	-0.09	-0.21	0.00	0.00	0.00	0.29
128	42.17	68.80	188	32.68	0.41	0.46	-0.02	-0.10	-0.28	0.00	0.00	0.00	0.32
129	42.32	68.45	198	32.70	0.36	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.34
130	42.67	68.32	207	32.78	0.37	0.29	0.00	0.00	0.00	0.00	0.00	0.00	0.35
131	42.75	68.77	201	32.70	0.51	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.30
132	42.92	68.37	152	32.70	0.44	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.29
133	43.20	67.98	203	32.61	0.65	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.33
134	43.38	68.13	208	32.66	0.48	-0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.36
135	43.37	68.68	136	32.63	0.49	-0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.36
136	43.13	69.02	172	32.59	0.61	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.46
137	43.62	68.93	135	32.49	0.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.38
138	43.97	68.58	88	32.31	0.48	-0.26	0.00	0.00	0.00	0.00	0.00	0.00	0.30
140	43.97	68.18	108	32.65	0.50	-0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.30
141	44.33	67.72	68	32.43	0.44	-0.34	0.00	0.00	0.00	0.00	0.00	0.00	0.30
142	43.82	67.72	223	32.71	0.47	-0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.27
143	42.98	67.70	182	32.59	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.49
144	42.60	67.70	201	32.63	0.41	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.27
145	42.30	67.70	236	32.65	0.34	0.36	0.00	0.00	0.00	0.00	0.00	0.00	0.31
146	41.80	67.70	32	32.77	0.13	0.28	0.00	0.00	0.00	0.00	0.00	0.00	0.23

147	41.50	67.68	24	32.73	0.06	0.32	0.00	0.00	0.00	0.00	0.00	0.00	0.21
148	41.27	67.68	40	32.69	0.02	0.34	0.00	0.00	0.00	0.00	0.00	0.00	0.21
149	40.93	67.68	67	32.74	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.26
150	40.62	67.68	81	32.84	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.33
151	40.37	67.67	780	33.97	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.89
153	40.77	67.32	97	32.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.41
154	40.67	67.08	190	33.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.74
155	41.22	66.93	68	32.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.28
157	41.55	67.02	63	32.76	-0.01	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.24
158	41.60	66.52	83	32.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.28
159	42.03	66.83	75	32.85	0.15	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.21
160	41.98	67.40	22	32.83	0.08	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.23
161	42.18	67.25	180	32.71	0.22	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.31
162	42.72	67.47	205	32.65	0.55	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.21
163	42.77	66.97	170	32.53	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.45
164	43.20	66.80	142	32.46	-0.05	-0.47	0.00	0.00	0.00	0.00	0.00	0.00	0.26
165	43.58	66.73	126	32.60	0.28	-0.21	0.00	0.00	0.00	0.00	0.00	0.00	0.26
166	43.50	67.00	205	32.65	0.23	-0.26	0.00	0.00	0.00	0.00	0.00	0.00	0.30
167	43.70	67.43	205	32.66	0.55	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.28
168	44.03	67.17	140	32.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.56
169	44.27	67.12	139	32.59	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.46
170	44.27	66.60	201	32.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.54
171	43.53	66.33	74	32.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.44
172	43.02	66.33	128	32.26	-0.10	-0.49	0.00	0.00	0.00	0.00	0.00	0.00	0.51
173	42.65	66.33	110	32.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.63
174	42.47	66.33	250	32.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.52
175	42.28	66.33	245	32.46	0.11	-0.21	0.00	0.00	0.00	0.00	0.00	0.00	0.29
176	42.15	66.33	182	32.59	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.34
177	41.87	66.33	85	32.76	0.03	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.19
178	41.50	66.33	89	32.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.40
179	41.17	66.32	155	33.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.61
181	44.00	66.20	22	31.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.46
182	43.40	67.72	261	32.62	0.46	-0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.38
183	43.28	69.33	164	32.65	0.45	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.43
184	38.57	74.88	20	31.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.05
185	39.92	73.93	20	31.77	0.61	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.69
186	39.87	73.55	33	32.35	0.83	0.26	0.00	0.00	0.00	0.00	0.00	0.00	0.64
187	40.25	73.90	22	31.36	0.79	-0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.89
188	42.43	70.15	81	32.28	0.77	0.29	0.00	0.00	0.00	0.00	0.00	0.00	0.40
189	42.82	66.33	62	32.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.49
190	43.28	66.33	81	32.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.61
191	41.65	65.92	125	32.66	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.37
192	41.90	65.82	148	32.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.40
193	40.87	66.62	245	33.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.65

Table 4. Coefficients for the annual cycle of bottom salinity for MARMAP standard station locations. See text for explanation.

Sta	Lat	Lon	Depth	C1	A1	B1	C2	A2	B2	C3	A3	B3	Sdv
1	35.27	75.23	26	35.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.70
2	35.47	75.25	29	34.58	-1.58	-0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.96
3	35.68	74.97	54	34.76	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.68
4	35.85	75.48	19	32.51	-0.87	0.05	0.00	0.00	0.00	0.00	0.00	0.00	1.11
5	36.25	75.53	26	33.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.63
6	36.38	75.25	35	33.59	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.54
7	36.15	75.10	36	33.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.68
8	36.27	74.77	413	35.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.17
9	36.65	74.87	47	34.09	0.62	0.27	0.00	0.00	0.00	0.00	0.00	0.00	0.64
10	36.72	75.37	20	33.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.64
11	36.55	75.78	18	31.98	-0.85	-0.38	0.00	0.00	0.00	0.00	0.00	0.00	0.69
12	36.95	75.80	12	31.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.91
13	36.92	75.55	18	32.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.65
14	36.88	75.32	24	33.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.52
15	36.85	75.07	35	33.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.63
16	36.82	74.83	49	34.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.76
19	37.22	74.75	68	34.25	0.52	0.47	0.00	0.00	0.00	0.00	0.00	0.00	0.52
20	37.30	75.15	28	33.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.54
21	37.25	75.67	11	31.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.82
22	37.62	75.32	17	32.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.66
23	37.80	75.28	16	32.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.76
24	37.52	74.95	31	33.13	0.30	0.38	0.00	0.00	0.00	0.00	0.00	0.00	0.54
25	37.52	74.65	60	34.04	0.49	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.48
26	37.63	74.35	98	35.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.55
27	37.80	74.77	40	33.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.51
28	38.17	74.90	25	32.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.64
29	38.75	74.95	18	31.79	-0.55	-0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.61
30	38.58	74.80	27	32.59	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.48
31	38.42	74.65	32	32.92	0.13	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.42
32	38.23	74.52	41	33.31	0.12	0.34	0.00	0.00	0.00	0.00	0.00	0.00	0.46
33	38.07	74.37	48	33.57	0.41	0.26	0.00	0.00	0.00	0.00	0.00	0.00	0.48
34	37.85	74.18	116	35.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.47
37	37.98	73.97	163	35.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.16
38	38.35	73.65	125	35.47	-0.12	-0.22	0.00	0.00	0.00	0.00	0.00	0.00	0.27
39	38.42	74.12	57	33.67	0.42	0.31	0.00	0.00	0.00	0.00	0.00	0.00	0.51
40	38.67	74.32	42	33.25	0.20	0.31	0.00	0.00	0.00	0.00	0.00	0.00	0.48
41	38.92	74.55	22	32.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.62
42	39.23	74.43	17	32.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.57
43	39.35	74.10	24	32.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.54
44	38.95	74.12	40	33.13	0.29	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.43
45	38.75	73.75	49	33.53	0.43	0.22	0.00	0.00	0.00	0.00	0.00	0.00	0.46
46	38.65	73.15	177	35.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.14
47	38.98	73.13	78	34.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.75
49	39.28	72.85	81	34.37	0.54	-0.26	0.00	0.00	0.00	0.00	0.00	0.00	0.62
50	39.20	73.65	42	33.24	0.42	0.35	0.00	0.00	0.00	0.00	0.00	0.00	0.43
51	39.65	73.38	33	33.02	0.22	0.36	0.00	0.00	0.00	0.00	0.00	0.00	0.38
52	39.57	73.82	22	32.59	0.37	0.32	0.00	0.00	0.00	0.00	0.00	0.00	0.53
53	39.72	74.05	15	31.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.64
54	40.12	73.80	28	32.78	0.36	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.45
55	40.43	73.83	26	32.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.69
56	40.27	73.60	25	32.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.63
57	40.10	73.38	40	33.03	0.34	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.38
58	39.87	73.08	66	33.42	0.42	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.35
59	39.65	72.77	69	33.72	0.63	-0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.45
60	39.47	72.55	112	35.15	0.21	-0.29	0.00	0.00	0.00	0.00	0.00	0.00	0.37
61	39.30	72.32	249	35.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.13
64	39.55	72.12	226	35.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.13
65	39.85	72.45	74	33.89	0.69	-0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.56
66	40.32	72.72	50	33.17	0.37	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.37
67	40.47	73.22	26	32.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.48
68	40.73	72.67	26	32.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.52
69	40.57	72.47	41	32.97	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.34
70	40.23	71.95	65	33.66	0.56	-0.21	0.00	0.00	0.00	0.00	0.00	0.00	0.44
71	39.87	71.82	169	35.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.18
72	40.07	71.50	92	34.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.36

73	40.52	71.60	76	33.70	0.49	-0.32	0.00	0.00	0.00	0.00	0.00	0.00	0.45
74	40.82	72.13	40	32.79	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.36
75	41.07	71.70	45	32.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.42
76	41.33	71.35	30	32.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.46
77	41.15	71.25	40	32.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.41
78	40.97	71.17	50	33.04	0.33	-0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.45
79	40.68	71.03	62	33.32	0.22	-0.37	0.00	0.00	0.00	0.00	0.00	0.00	0.54
80	40.35	70.85	99	34.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.45
81	40.17	70.77	132	35.46	0.04	-0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.21
82	39.98	70.67	406	35.19	0.06	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.08
85	40.22	70.42	114	35.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.41
86	40.70	70.58	57	33.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.54
87	41.17	71.00	34	32.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.47
88	41.05	70.55	44	32.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.38
89	40.68	70.18	45	32.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.36
90	40.40	69.70	70	33.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.51
91	40.13	69.57	91	34.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.67
93	40.88	69.57	37	32.49	0.27	0.36	0.00	0.00	0.00	0.00	0.00	0.00	0.31
94	41.53	69.43	63	32.80	0.21	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.27
95	41.97	69.83	96	32.98	0.25	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.24
96	42.25	69.72	220	33.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.19
97	42.10	70.33	61	32.48	0.22	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.33
98	42.43	70.63	75	32.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.36
99	42.80	70.53	101	32.73	0.29	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.26
100	42.83	70.00	197	33.77	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.21
101	43.13	69.97	157	33.35	0.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.23
102	43.40	70.20	103	32.80	0.52	-0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.23
103	43.33	69.68	206	33.51	0.10	-0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.09
104	43.67	69.37	100	32.93	0.38	-0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.18
105	42.97	69.28	163	33.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.13
106	42.58	69.23	225	34.05	0.15	-0.01	0.01	-0.07	0.09	0.00	0.00	0.00	0.13
107	42.18	69.20	194	33.69	0.15	-0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.14
108	41.90	69.17	216	33.68	0.12	-0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.17
109	41.65	69.15	170	33.46	0.13	-0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.11
110	41.33	69.12	160	33.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.16
111	41.07	69.10	89	32.85	0.18	0.23	0.00	0.00	0.00	0.00	0.00	0.00	0.23
112	40.92	69.10	72	32.79	0.11	0.23	0.00	0.00	0.00	0.00	0.00	0.00	0.28
113	40.65	69.08	75	33.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.35
114	40.42	69.05	80	33.58	0.20	-0.36	0.00	0.00	0.00	0.00	0.00	0.00	0.56
115	40.08	69.02	171	35.41	0.16	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.18
117	40.48	68.62	82	33.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.35
118	40.33	68.35	131	35.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.36
119	40.52	67.93	109	34.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.52
120	40.80	68.28	57	32.79	0.04	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.23
121	40.85	68.73	64	32.82	0.02	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.22
122	41.33	68.70	85	32.92	0.14	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.23
123	41.18	68.13	38	32.73	-0.03	0.22	0.00	0.00	0.00	0.00	0.00	0.00	0.19
124	41.62	68.10	35	32.76	0.05	0.26	0.00	0.00	0.00	0.00	0.00	0.00	0.22
125	41.87	68.18	177	33.98	0.08	-0.31	0.00	0.00	0.00	0.00	0.00	0.00	0.35
126	41.62	68.88	100	33.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.19
127	41.98	68.65	168	33.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.22
128	42.17	68.80	188	33.66	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.23
129	42.32	68.45	198	34.22	-0.17	-0.38	0.00	0.00	0.00	0.00	0.00	0.00	0.24
130	42.67	68.32	207	34.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.19
131	42.75	68.77	201	34.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.23
132	42.92	68.37	152	33.90	0.15	-0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.17
133	43.20	67.98	203	33.98	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.29
134	43.38	68.13	208	34.22	0.13	-0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.19
135	43.37	68.68	136	33.39	0.25	-0.27	0.00	0.00	0.00	0.00	0.00	0.00	0.21
136	43.13	69.02	172	33.58	0.23	-0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.22
137	43.62	68.93	135	33.05	0.27	-0.27	0.00	0.00	0.00	0.00	0.00	0.00	0.23
138	43.97	68.58	88	32.62	0.30	-0.40	0.00	0.00	0.00	0.00	0.00	0.00	0.23
140	43.97	68.18	108	33.19	0.24	-0.43	0.00	0.00	0.00	0.00	0.00	0.00	0.26
141	44.33	67.72	68	32.62	0.37	-0.38	0.00	0.00	0.00	0.00	0.00	0.00	0.25
142	43.82	67.72	223	34.36	0.08	-0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.16
143	42.98	67.70	182	34.13	0.13	-0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.20
144	42.60	67.70	201	34.66	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.19
145	42.30	67.70	236	34.91	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.13
146	41.80	67.70	32	32.78	0.13	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.22
147	41.50	67.68	24	32.71	0.06	0.35	0.00	0.00	0.00	0.00	0.00	0.00	0.19
148	41.27	67.68	40	32.68	0.03	0.33	0.01	-0.16	0.00	0.00	0.00	0.00	0.18

149	40.93	67.68	67	32.86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.26
150	40.62	67.68	81	33.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.51
153	40.77	67.32	97	33.77	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.52
154	40.67	67.08	190	35.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50
155	41.22	66.93	68	32.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.23
157	41.55	67.02	63	32.76	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.27
158	41.60	66.52	83	32.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.20
159	42.03	66.83	75	32.93	0.09	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.21
160	41.98	67.40	22	32.82	0.08	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.23
162	42.72	67.47	205	34.83	-0.15	-0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.11
163	42.77	66.97	170	34.77	-0.08	-0.32	0.00	0.00	0.00	0.00	0.00	0.00	0.16
164	43.20	66.80	142	33.84	-0.04	-0.57	0.00	0.00	0.00	0.00	0.00	0.00	0.16
165	43.58	66.73	126	33.65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.30
166	43.50	67.00	205	34.37	0.00	-0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.15
167	43.70	67.43	205	34.29	0.10	-0.21	0.00	0.00	0.00	0.00	0.00	0.00	0.18
168	44.03	67.17	140	33.92	0.08	-0.38	0.00	0.00	0.00	0.00	0.00	0.00	0.21
171	43.53	66.33	74	32.46	-0.08	-0.57	0.00	0.00	0.00	0.00	0.00	0.00	0.42
172	43.02	66.33	128	33.22	0.15	-0.64	0.00	0.00	0.00	0.00	0.00	0.00	0.40
173	42.65	66.33	110	33.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.55
174	42.47	66.33	250	35.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10
175	42.28	66.33	245	34.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15
176	42.15	66.33	182	34.39	0.08	-0.37	0.00	0.00	0.00	0.00	0.00	0.00	0.27
177	41.87	66.33	85	32.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.18
178	41.50	66.33	89	33.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.39
179	41.17	66.32	155	34.68	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.69
181	44.00	66.20	22	31.65	-0.04	-0.53	0.00	0.00	0.00	0.00	0.00	0.00	0.28
182	43.40	67.72	261	34.38	0.14	-0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.18
183	43.28	69.33	164	33.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.27
184	38.57	74.88	20	32.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.63
185	39.92	73.93	20	32.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.57
186	39.87	73.55	33	32.89	0.23	0.31	0.00	0.00	0.00	0.00	0.00	0.00	0.42
187	40.25	73.90	22	32.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.59
188	42.43	70.15	81	32.81	0.31	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.32
189	42.82	66.33	62	32.87	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.52
190	43.28	66.33	81	32.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.51
191	41.65	65.92	125	34.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.58
192	41.90	65.82	148	34.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.45
193	40.87	66.62	245	35.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.24





ALB9504	1	1995	78	1995.21	28	8.09	1.94	0.23	1.35	0	26	7.34	1.75	0.27	1.17	1	10
ALB9507	1	1995	174	1995.48	41	19.32	0.05	0.21	0.84	1	39	8.01	0.40	0.24	1.34	1	60
PE9501	1	1995	197	1995.54	12	23.53	0.94	0.38	1.59	1	1	6.53	-1.64	-9.99	-9.99	1	93
ALB9512	1	1995	256	1995.70	62	22.87	0.73	0.19	0.73	0	57	20.01	3.46	0.18	2.42	1	10
ALB9603	1	1996	42	1996.12	67	5.45	-1.06	0.17	1.98	0	58	6.68	0.09	0.19	1.96	0	10
ALB9604	1	1996	80	1996.22	99	6.05	-0.43	0.13	1.28	0	90	6.24	0.18	0.16	1.28	0	10
ALB9609	1	1996	216	1996.59	133	21.94	-1.83	0.11	1.16	1	97	6.45	-1.34	0.14	0.94	1	60
ALB9611	1	1996	259	1996.71	84	22.00	0.09	0.15	1.66	0	73	14.09	-0.38	0.19	3.18	0	10
ALB9703	1	1997	39	1997.11	56	7.07	0.23	0.18	1.97	0	42	7.70	1.12	0.23	1.45	0	10
ALB9704	1	1997	69	1997.19	82	7.53	1.76	0.15	1.78	0	73	8.56	2.81	0.18	2.03	0	10
DEL9705	1	1997	72	1997.20	18	7.20	2.63	0.31	0.84	1	17	7.21	3.12	0.34	0.89	1	93
DEL9706	1	1997	146	1997.40	15	12.18	-1.86	0.30	1.52	1	14	9.52	1.53	0.33	1.55	1	70
DEL9707	1	1997	171	1997.47	17	18.73	-0.40	0.30	1.37	1	16	11.68	1.77	0.33	1.23	1	50
ALB9709	1	1997	207	1997.57	161	22.79	-0.56	0.10	1.13	1	158	8.64	1.03	0.11	1.07	1	60
ALB9711	1	1997	257	1997.70	77	22.59	0.36	0.15	1.07	0	70	15.20	0.83	0.19	2.32	0	10
ALB9803	1	1998	43	1998.12	51	7.36	0.79	0.18	2.17	0	43	7.81	1.10	0.22	2.32	0	10
ALB9804	1	1998	67	1998.18	78	6.77	1.10	0.16	2.16	0	70	7.01	2.02	0.17	2.61	1	10
DEL9804	1	1998	77	1998.21	9	6.76	0.72	0.44	1.66	1	6	6.10	1.21	0.51	1.54	1	93
DEL9806	1	1998	145	1998.40	19	15.63	-0.80	0.31	1.18	1	19	11.07	-0.08	0.32	1.32	1	82
ALB9807	1	1998	149	1998.41	40	15.32	-0.37	0.22	1.54	0	36	9.39	0.30	0.24	0.93	0	22
AJ9801	1	1998	196	1998.54	6	22.75	0.16	0.56	0.99	1	1	7.98	0.72	-9.99	-9.99	1	93
ALB9809	1	1998	207	1998.57	42	25.26	1.69	0.21	1.14	1	41	8.60	0.75	0.22	0.99	1	60
ALB9811	1	1998	270	1998.74	77	22.44	1.68	0.15	1.18	0	71	14.44	-0.20	0.18	2.49	0	10
DEL9813	1	1998	309	1998.85	39	15.08	-0.42	0.22	0.89	0	37	12.95	-1.51	0.24	1.66	0	22
ALB9902	1	1999	37	1999.10	60	8.55	1.81	0.18	1.54	0	45	8.92	2.36	0.22	1.41	0	10
ALB9903	1	1999	71	1999.19	80	7.64	1.89	0.15	1.60	0	70	8.66	2.95	0.18	1.92	0	10
DEL9907	1	1999	157	1999.43	6	18.13	2.44	0.50	0.74	1	6	11.24	1.38	0.57	0.90	1	50
ALB9909	1	1999	202	1999.55	57	23.81	0.73	0.17	1.32	1	57	11.37	3.60	0.19	2.15	1	60
ALB9910	1	1999	270	1999.74	81	21.39	0.73	0.15	1.05	0	74	16.79	2.15	0.19	2.05	0	10
NP9901	1	1999	313	1999.86	26	17.06	1.93	0.27	1.72	0	23	16.22	1.83	0.30	0.91	0	22
ALB0001	1	2000	47	2000.13	63	8.38	1.67	0.17	1.71	0	52	8.12	1.55	0.20	1.71	0	10
ALB0002	1	2000	82	2000.22	78	8.25	1.95	0.15	1.43	0	70	7.74	1.80	0.18	1.39	0	10
DEL0006	1	2000	146	2000.40	32	15.07	-0.02	0.23	1.08	0	28	10.07	0.93	0.26	1.76	0	22
ALB0004	1	2000	200	2000.55	43	22.19	-0.57	0.20	1.38	1	43	9.20	1.61	0.21	1.38	1	60
ALB0006	1	2000	256	2000.70	80	22.45	0.22	0.15	1.55	0	73	15.91	1.85	0.17	2.11	0	10
ALB0007	1	2000	307	2000.84	33	15.34	-0.56	0.25	0.57	0	33	15.31	0.35	0.24	1.17	1	22
ALB0102	1	2001	35	2001.10	66	6.87	-0.02	0.16	1.98	0	54	7.06	0.24	0.19	1.52	0	10
DEL0101	1	2001	46	2001.12	18	7.90	-0.30	0.34	1.18	1	7	8.21	0.81	0.52	1.40	1	16
ALB0103	1	2001	70	2001.19	86	6.84	0.65	0.14	1.14	0	78	7.00	1.07	0.18	1.50	0	10
ALB0106	1	2001	141	2001.39	39	13.49	-0.47	0.21	1.00	1	36	8.52	-0.33	0.22	1.73	1	22
DEL0104	1	2001	141	2001.39	17	15.16	-0.68	0.33	1.33	1	17	11.40	0.46	0.34	1.98	1	82
ALB0107	1	2001	188	2001.52	53	23.75	1.90	0.18	1.80	1	51	7.73	0.16	0.20	2.30	1	60
ALB0110	1	2001	255	2001.70	83	23.59	1.30	0.15	1.09	0	75	13.94	-0.33	0.19	3.29	0	10
ALB0111	1	2001	305	2001.83	34	16.86	0.65	0.24	0.72	0	32	15.89	1.10	0.26	1.28	0	22
ALB0203	1	2002	45	2002.12	84	10.96	3.44	0.15	2.39	1	62	10.27	3.45	0.18	2.25	1	10
DEL0201	1	2002	55	2002.15	26	8.99	2.69	0.26	1.61	1	16	8.57	3.75	0.31	2.25	1	16
ALB0204	1	2002	78	2002.21	81	9.35	3.15	0.14	0.93	0	75	9.11	3.08	0.18	1.23	0	10
ALB0206	1	2002	144	2002.40	38	14.65	-0.17	0.21	0.63	0	37	11.77	2.71	0.23	1.43	0	22
ALB0208	1	2002	204	2002.56	47	24.60	1.36	0.19	1.02	1	46	9.63	1.98	0.21	1.27	1	60
NOB0201	1	2002	228	2002.62	33	25.24	1.20	0.23	1.50	0	32	14.01	1.38	0.24	2.88	1	22
ALB0210	1	2002	255	2002.70	77	23.32	1.00	0.15	0.97	0	72	15.59	1.56	0.19	2.72	0	10
DEL0210	1	2002	304	2002.83	34	16.83	0.60	0.23	0.96	0	33	15.91	1.15	0.24	1.08	0	22
OC384	1	2002	302	2002.83	14	17.67	0.77	0.41	1.02	1	1	13.63	0.57	-9.99	-9.99	1	91
DEL0302	1	2003	47	2003.13	57	7.11	0.63	0.17	1.77	0	39	6.92	0.80	0.23	2.02	0	10
DEL0303	1	2003	75	2003.21	69	6.56	0.52	0.16	1.80	0	63	5.89	0.05	0.18	1.95	0	10
ALB0301	1	2003	214	2003.59	55	23.00	-0.34	0.18	2.29	1	55	7.95	-0.03	0.19	1.38	1	60
ALB0306	1	2003	308	2003.84	5	15.90	1.06	0.57	0.81	1	2	13.30	0.32	-9.99	-9.99	1	22





ALB0111	2	2001	307	2001.84	23	15.47	1.21	0.28	0.69	0	22	13.81	0.63	0.29	1.42	0	22
ALB0203	2	2002	55	2002.15	49	7.01	1.96	0.19	1.05	1	36	7.10	2.28	0.21	1.41	1	10
DEL0201	2	2002	62	2002.17	13	8.01	2.13	0.41	0.79	1	6	7.54	2.89	0.52	1.41	1	16
ALB0204	2	2002	77	2002.21	49	7.33	2.86	0.19	0.93	0	44	7.94	2.83	0.24	1.27	0	10
ALB0206	2	2002	147	2002.40	21	12.52	1.01	0.27	1.20	0	18	8.52	0.88	0.31	1.46	0	22
ALB0208	2	2002	211	2002.58	18	21.99	2.17	0.29	1.33	1	18	9.07	0.98	0.29	0.70	1	60
NOB0201	2	2002	231	2002.63	21	23.66	3.55	0.28	1.31	0	19	11.24	1.03	0.32	1.88	0	22
ALB0210	2	2002	267	2002.73	55	19.74	1.42	0.19	1.39	0	50	13.12	0.96	0.24	2.76	0	10
OC384	2	2002	305	2002.83	4	19.22	2.49	0.80	1.00	1	0	0.00	-9.99	-9.99	-9.99	1	91
DEL0210	2	2002	307	2002.84	19	15.66	1.23	0.28	1.32	0	17	14.63	1.41	0.32	1.14	0	22
DEL0302	2	2003	57	2003.16	27	4.67	-0.48	0.26	1.04	1	17	3.78	-0.95	0.31	2.06	1	10
DEL0303	2	2003	86	2003.24	53	5.21	0.60	0.20	0.84	0	49	4.30	-1.64	0.23	2.13	0	10
ALB0301	2	2003	224	2003.61	19	22.56	2.45	0.29	2.02	1	19	9.45	0.94	0.28	1.46	1	60
ALB0306	2	2003	309	2003.85	26	14.98	0.77	0.26	0.53	0	21	12.96	-0.12	0.31	0.98	0	22









ALB0111	3	2001	313	2001.86	30	13.27	0.65	0.21	0.92	0	27	12.52	0.55	0.22	1.09	0	22
ALB0202	3	2002	28	2002.08	15	6.60	1.35	0.24	0.37	1	14	6.67	1.17	0.24	0.76	1	22
ALB0203	3	2002	60	2002.16	17	5.92	0.69	0.30	0.75	1	10	7.72	2.04	0.38	2.80	1	10
ALB0204	3	2002	98	2002.27	48	6.24	1.29	0.15	0.63	0	42	6.78	1.57	0.19	0.83	0	10
ALB0206	3	2002	151	2002.41	32	11.13	1.89	0.19	1.28	0	26	8.80	1.12	0.23	0.94	0	22
ALB0208	3	2002	219	2002.60	60	18.32	2.90	0.15	2.26	0	59	11.12	0.37	0.16	2.22	0	60
NOB0201	3	2002	235	2002.64	28	20.03	3.57	0.20	1.78	0	24	12.98	0.98	0.24	1.81	0	22
ALB0209	3	2002	236	2002.65	21	18.93	3.90	0.22	1.04	1	19	12.11	0.56	0.22	1.59	1	91
DEL0208	3	2002	268	2002.73	19	17.23	1.75	0.22	0.97	1	19	15.34	1.80	0.22	1.98	1	16
ALB0210	3	2002	280	2002.77	46	17.63	2.39	0.16	1.56	0	37	14.29	1.62	0.18	1.97	0	10
DEL0210	3	2002	313	2002.86	30	12.75	0.16	0.19	0.63	0	27	12.73	0.82	0.22	0.98	0	22
DEL0301	3	2003	29	2003.08	22	5.07	-0.60	0.21	0.58	1	19	5.14	-0.82	0.23	1.03	1	22
DEL0303	3	2003	96	2003.26	50	4.40	-0.52	0.15	0.91	0	44	4.66	-0.38	0.17	0.93	0	10
DEL0305	3	2003	146	2003.40	29	8.49	-0.02	0.23	2.03	0	27	7.99	0.52	0.25	1.71	0	22
ARM0301	3	2003	234	2003.64	37	17.77	1.97	0.18	1.83	1	26	11.83	-0.96	0.19	1.70	1	22
ALB0301	3	2003	236	2003.65	58	17.56	1.69	0.15	2.09	0	57	10.50	-1.10	0.16	2.04	0	60
DEL0308	3	2003	264	2003.72	46	15.90	0.77	0.15	1.14	1	46	13.26	0.44	0.15	2.84	1	16
DEL0310	3	2003	307	2003.84	15	13.39	0.40	0.27	0.43	1	15	12.52	0.16	0.25	1.00	1	91
ALB0306	3	2003	312	2003.86	33	13.38	0.59	0.18	0.72	0	24	12.35	0.37	0.21	1.02	0	22











ALB9904	5	1999	145	1999.40	14	9.08	1.01	0.26	0.92	1	13	7.87	0.61	0.26	0.79	1	20
AJ9901	5	1999	159	1999.44	18	10.75	2.13	0.22	1.35	0	11	7.50	0.35	0.29	0.82	0	22
ALB9906	5	1999	173	1999.47	7	13.52	2.31	0.37	1.43	1	7	8.80	0.23	0.37	1.57	1	20
AJ9902	5	1999	226	1999.62	13	13.26	0.37	0.29	1.44	1	6	10.31	0.65	0.42	0.53	1	93
IS9901	5	1999	240	1999.66	19	16.98	2.78	0.24	1.69	0	15	10.00	1.34	0.27	1.45	0	22
ALB9910	5	1999	299	1999.82	35	12.15	0.40	0.17	0.81	0	31	10.12	1.51	0.18	0.99	0	10
ALB9911	5	1999	323	1999.89	10	10.22	0.28	0.27	0.68	0	8	10.16	1.32	0.30	0.79	0	22
ALB0002	5	2000	115	2000.32	32	5.98	0.83	0.17	0.76	0	27	7.52	0.93	0.19	0.89	0	10
DEL0006	5	2000	156	2000.43	9	9.70	1.35	0.27	0.80	0	8	7.93	0.75	0.30	0.61	0	22
ALB0005	5	2000	240	2000.66	12	16.96	2.79	0.28	1.51	0	9	9.19	0.29	0.31	1.66	0	22
DEL0008	5	2000	273	2000.75	34	16.00	1.10	0.18	0.72	1	33	9.49	0.34	0.16	1.04	1	16
ALB0006	5	2000	283	2000.77	28	13.14	0.19	0.18	0.77	0	23	9.05	0.50	0.22	1.41	0	10
ALB0007	5	2000	318	2000.87	15	10.81	0.38	0.22	0.55	0	12	8.96	0.44	0.26	1.02	0	22
ALB0103	5	2001	108	2001.29	33	3.92	-0.81	0.17	0.98	0	30	6.62	0.06	0.18	0.74	0	10
DEL0105	5	2001	154	2001.42	19	8.01	-0.44	0.22	0.84	0	11	7.06	0.07	0.26	0.75	0	22
ALB0108	5	2001	212	2001.58	5	15.74	0.62	0.42	0.75	1	5	7.64	0.29	0.44	0.14	1	93
DEL0108	5	2001	220	2001.60	4	16.13	0.83	0.47	1.66	1	4	7.70	0.34	0.50	0.31	1	93
ALB0107	5	2001	226	2001.62	8	19.59	5.66	0.33	0.33	1	8	7.08	-5.43	0.32	1.13	1	60
ALB0109	5	2001	237	2001.65	21	14.48	-0.14	0.20	1.66	0	17	7.98	-0.57	0.23	1.85	0	22
DEL0109	5	2001	269	2001.74	34	16.28	1.43	0.18	1.03	1	34	8.75	0.19	0.17	0.88	1	16
ALB0110	5	2001	284	2001.78	33	13.00	0.20	0.18	1.13	0	31	8.60	-0.21	0.19	1.23	0	10
ALB0111	5	2001	316	2001.87	12	10.02	-0.53	0.26	0.75	0	10	8.68	0.32	0.29	0.70	0	22
ALB0202	5	2002	27	2002.07	15	5.79	0.44	0.23	0.76	0	11	7.45	0.34	0.28	1.11	0	22
ALB0204	5	2002	108	2002.30	36	5.45	0.70	0.17	0.79	0	33	7.28	0.56	0.19	0.79	0	10
ALB0206	5	2002	154	2002.42	19	9.13	0.71	0.18	0.48	0	10	7.97	0.99	0.28	0.64	0	22
ALB0208	5	2002	222	2002.61	7	16.73	2.32	0.36	1.37	1	7	9.00	-2.35	0.36	2.77	1	60
ALB0209	5	2002	234	2002.64	5	18.35	4.08	0.43	1.88	1	2	7.06	-5.24	-9.99	-9.99	1	91
NOB0201	5	2002	237	2002.65	15	16.53	2.40	0.25	1.71	0	13	9.31	0.86	0.27	1.84	0	22
DEL0208	5	2002	267	2002.73	22	16.64	1.41	0.21	0.70	1	22	9.43	0.47	0.21	0.84	1	16
ALB0210	5	2002	292	2002.80	30	13.46	1.18	0.17	0.94	0	28	9.90	1.10	0.17	1.54	0	10
DEL0210	5	2002	316	2002.87	6	11.12	0.46	0.38	0.33	1	3	9.69	0.49	0.53	0.01	1	22
DEL0301	5	2003	26	2003.07	13	3.33	-2.08	0.23	1.13	0	9	7.22	0.29	0.29	1.27	0	22
DEL0303	5	2003	105	2003.29	31	3.61	-1.00	0.17	0.70	0	29	6.44	-0.18	0.18	0.88	0	10
DEL0305	5	2003	148	2003.41	13	6.60	-1.30	0.27	0.86	1	12	7.32	0.41	0.31	0.93	1	22
ALB0301	5	2003	237	2003.65	7	16.66	1.92	0.36	1.36	1	7	9.24	-3.13	0.34	2.77	1	60
ARM0301	5	2003	237	2003.65	16	15.22	0.41	0.20	2.23	0	9	8.64	0.23	0.27	1.75	0	22
DEL0308	5	2003	262	2003.72	39	16.05	1.13	0.16	1.17	1	38	8.24	0.34	0.15	1.46	1	16
ALB0306	5	2003	315	2003.86	8	11.27	0.02	0.35	0.56	1	6	8.82	0.38	0.40	1.51	1	22





REL9501	1	1995	78	1995.21	36	33.45	0.55	0.25	0.99	1	10	33.90	0.42	0.28	0.59	1	93
ALB9504	1	1995	78	1995.21	28	33.62	0.51	0.18	0.69	0	26	33.50	0.20	0.17	0.59	1	10
ALB9507	1	1995	174	1995.48	41	32.35	0.28	0.15	0.37	1	39	33.40	-0.11	0.14	0.48	1	60
PE9501	1	1995	197	1995.54	12	33.21	0.89	0.26	1.20	1	1	32.92	-1.11	-9.99	-9.99	1	93
ALB9512	1	1995	256	1995.70	61	32.66	0.52	0.14	0.63	0	56	32.53	-0.18	0.12	0.56	1	10
ALB9603	1	1996	42	1996.12	67	32.83	-0.82	0.13	0.95	0	58	33.60	-0.12	0.12	0.71	0	10
ALB9604	1	1996	80	1996.22	98	32.85	-0.20	0.10	0.89	0	90	33.13	-0.31	0.10	0.72	0	10
ALB9609	1	1996	216	1996.59	130	30.62	-1.28	0.08	0.42	1	97	32.51	-0.84	0.08	0.43	1	60
ALB9611	1	1996	259	1996.71	84	30.65	-1.53	0.11	1.30	0	73	31.77	-1.40	0.11	0.73	0	10
ALB9703	1	1997	39	1997.11	56	32.40	-1.30	0.14	0.54	0	42	32.71	-0.99	0.14	0.48	0	10
ALB9704	1	1997	69	1997.19	82	31.75	-1.31	0.11	1.13	0	73	32.59	-0.83	0.11	1.33	0	10
DEL9705	1	1997	72	1997.20	18	30.27	-2.01	0.26	2.22	1	17	30.60	-2.11	0.22	2.52	1	93
DEL9706	1	1997	146	1997.40	14	31.20	-0.22	0.25	0.30	1	14	31.92	-0.59	0.21	0.60	1	70
DEL9707	1	1997	171	1997.47	16	30.65	-0.95	0.24	1.00	1	16	31.91	-0.91	0.20	0.18	1	50
ALB9711	1	1997	257	1997.70	77	31.79	-0.45	0.12	1.04	0	70	32.58	-0.62	0.11	0.71	0	10
ALB9803	1	1998	43	1998.12	51	32.78	-0.89	0.14	0.78	0	43	33.11	-0.69	0.13	0.78	0	10
ALB9804	1	1998	67	1998.18	77	32.01	-1.00	0.12	1.28	0	70	32.26	-0.83	0.11	0.79	1	10
DEL9804	1	1998	77	1998.21	9	32.56	-0.85	0.32	0.34	1	6	32.47	-0.88	0.30	0.32	1	93
DEL9806	1	1998	145	1998.40	19	29.62	-2.19	0.26	2.03	1	19	31.29	-1.87	0.21	0.56	1	82
ALB9807	1	1998	149	1998.41	40	31.08	-1.06	0.17	1.03	0	36	31.99	-1.28	0.15	0.57	0	22
AJ9801	1	1998	196	1998.54	6	31.48	-1.07	0.39	0.27	1	1	32.53	-0.58	-9.99	-9.99	1	93
ALB9809	1	1998	207	1998.57	42	30.08	-1.81	0.15	0.56	1	41	32.58	-0.85	0.13	0.48	1	60
ALB9811	1	1998	270	1998.74	77	31.24	-1.07	0.11	0.76	0	71	32.09	-1.21	0.11	0.80	0	10
DEL9813	1	1998	309	1998.85	39	31.82	-1.05	0.17	0.34	0	37	32.01	-1.36	0.15	0.49	0	22
ALB9902	1	1999	37	1999.10	60	32.62	-0.95	0.14	0.51	0	45	32.80	-0.84	0.14	0.39	0	10
ALB9903	1	1999	71	1999.19	80	32.37	-0.67	0.11	0.96	0	70	33.03	-0.37	0.11	1.24	0	10
DEL9907	1	1999	157	1999.43	5	31.16	-0.40	0.43	0.11	1	5	31.92	-0.38	0.37	0.39	1	50
ALB9909	1	1999	202	1999.55	57	32.27	0.35	0.12	0.81	1	57	34.13	0.75	0.11	0.78	1	60
ALB9910	1	1999	270	1999.74	81	32.75	0.39	0.11	1.42	0	74	33.46	0.28	0.11	1.26	0	10
NP9901	1	1999	313	1999.86	26	33.62	0.53	0.21	0.81	0	23	34.23	0.75	0.18	0.62	0	22
ALB0001	1	2000	47	2000.13	63	34.50	0.81	0.13	0.48	0	52	34.53	0.77	0.12	0.42	0	10
ALB0002	1	2000	82	2000.22	78	33.51	0.59	0.12	0.98	0	70	33.68	0.31	0.11	0.90	0	10
DEL0006	1	2000	146	2000.40	31	32.45	0.27	0.18	0.75	0	28	33.39	0.16	0.16	0.55	0	22
ALB0004	1	2000	200	2000.55	43	32.21	0.27	0.14	0.83	1	43	33.35	0.05	0.12	0.55	1	60
ALB0006	1	2000	256	2000.70	79	32.53	0.33	0.11	1.54	0	73	32.69	-0.53	0.11	1.00	0	10
ALB0007	1	2000	307	2000.84	33	33.10	0.20	0.19	0.47	0	33	33.10	-0.26	0.14	0.53	1	22
ALB0102	1	2001	35	2001.10	66	33.39	-0.27	0.12	0.61	0	54	33.53	-0.13	0.12	0.48	0	10
DEL0101	1	2001	46	2001.12	18	33.64	-0.51	0.23	0.34	1	7	33.87	-0.12	0.31	0.52	1	16
ALB0103	1	2001	70	2001.19	86	32.74	-0.41	0.11	1.12	0	78	33.21	-0.26	0.11	0.70	0	10
ALB0106	1	2001	141	2001.39	39	32.15	-0.12	0.16	0.48	1	36	32.67	-0.57	0.14	0.29	1	22
DEL0104	1	2001	141	2001.39	17	31.55	-0.31	0.28	1.18	1	17	32.30	-0.85	0.22	0.56	1	82
ALB0107	1	2001	188	2001.52	52	31.41	-0.58	0.13	0.54	1	51	33.28	-0.09	0.12	0.56	1	60
ALB0110	1	2001	255	2001.70	82	32.52	0.32	0.11	1.11	0	75	32.83	-0.28	0.12	0.59	0	10
ALB0111	1	2001	305	2001.83	32	33.49	0.64	0.19	0.52	0	32	33.69	0.37	0.16	0.52	0	22
ALB0203	1	2002	45	2002.12	84	34.46	0.50	0.11	0.72	1	62	34.43	0.59	0.11	0.65	1	10
DEL0201	1	2002	55	2002.15	24	33.88	0.19	0.20	0.58	1	16	33.94	0.43	0.19	0.42	1	16
ALB0204	1	2002	78	2002.21	80	33.78	0.80	0.11	0.83	0	75	33.90	0.45	0.11	0.62	0	10
ALB0206	1	2002	144	2002.40	38	33.21	1.02	0.16	0.61	0	37	33.78	0.43	0.14	0.37	0	22
ALB0208	1	2002	204	2002.56	46	32.07	0.18	0.14	0.56	1	46	33.42	0.09	0.12	0.51	1	60
NOB0201	1	2002	228	2002.62	33	32.41	0.59	0.18	0.70	0	32	33.29	0.30	0.15	0.49	1	22
ALB0210	1	2002	255	2002.70	77	32.41	0.30	0.11	0.60	0	72	32.80	-0.28	0.11	0.54	0	10
DEL0210	1	2002	304	2002.83	34	33.22	0.46	0.17	0.56	0	33	33.28	0.00	0.15	0.60	0	22
OC384	1	2002	302	2002.83	14	34.69	0.44	0.26	0.43	1	1	35.11	-0.26	-9.99	-9.99	1	91
DEL0302	1	2003	47	2003.13	52	34.10	0.47	0.14	0.52	0	38	34.28	0.56	0.14	0.40	0	10
DEL0303	1	2003	75	2003.21	64	33.03	0.04	0.13	1.99	0	62	33.55	0.14	0.11	1.52	0	10
ALB0301	1	2003	214	2003.59	52	31.34	-0.66	0.13	0.57	1	55	33.51	0.10	0.11	0.48	1	60
ALB0306	1	2003	308	2003.84	5	33.34	0.01	0.40	0.56	1	2	33.74	0.49	-9.99	-9.99	1	22





ALB0111	2	2001	307	2001.84	24	32.99	0.00	0.18	0.48	1	22	33.61	-0.12	0.17	0.54	0	22
ALB0203	2	2002	55	2002.15	49	33.09	-0.02	0.12	0.42	1	36	33.25	-0.08	0.13	0.44	1	10
DEL0201	2	2002	62	2002.17	12	33.45	0.12	0.28	0.40	1	6	33.36	0.03	0.31	0.46	1	16
ALB0204	2	2002	77	2002.21	49	33.10	0.17	0.13	0.46	0	44	33.47	0.09	0.14	0.40	0	10
ALB0206	2	2002	147	2002.40	20	32.52	0.11	0.18	0.39	0	17	33.09	-0.24	0.18	0.43	0	22
ALB0208	2	2002	211	2002.58	18	32.07	0.23	0.20	0.60	1	18	32.83	-0.16	0.17	0.20	1	60
NOB0201	2	2002	231	2002.63	21	32.30	-0.09	0.19	0.51	0	19	33.20	-0.13	0.19	0.37	0	22
ALB0210	2	2002	267	2002.73	55	32.99	0.37	0.12	0.59	0	50	33.53	0.14	0.14	0.64	0	10
OC384	2	2002	305	2002.83	4	35.48	1.31	0.51	0.37	1	0	0.00	-9.99	-9.99	-9.99	1	91
DEL0210	2	2002	307	2002.84	19	33.96	0.99	0.19	0.68	0	17	34.12	0.50	0.19	0.45	0	22
DEL0302	2	2003	57	2003.16	22	33.48	0.40	0.19	0.42	1	17	33.39	0.07	0.18	0.69	1	10
DEL0303	2	2003	86	2003.24	52	32.83	-0.02	0.13	1.03	0	48	33.17	-0.31	0.14	0.62	0	10
ALB0301	2	2003	224	2003.61	15	31.46	-0.46	0.21	0.69	1	19	33.31	0.26	0.17	0.40	1	60
ALB0306	2	2003	309	2003.85	26	33.06	0.03	0.17	0.52	0	21	33.75	0.25	0.19	0.41	0	22







ALB0110	3	2001	275	2001.75	50	32.76	0.03	0.09	0.46	0	42	32.85	-0.13	0.11	0.40	0	10
ALB0111	3	2001	313	2001.86	30	32.61	-0.15	0.12	0.21	0	27	32.70	-0.29	0.14	0.33	0	22
ALB0202	3	2002	28	2002.08	15	32.86	-0.07	0.15	0.07	1	14	32.95	0.01	0.14	0.28	1	22
ALB0203	3	2002	60	2002.16	17	32.69	-0.39	0.18	0.31	1	10	33.43	0.06	0.23	0.99	1	10
ALB0204	3	2002	98	2002.27	47	32.68	-0.28	0.09	0.34	0	41	33.11	-0.06	0.11	0.27	0	10
ALB0206	3	2002	151	2002.41	32	32.78	-0.10	0.11	0.24	0	26	32.85	-0.18	0.13	0.28	0	22
ALB0208	3	2002	219	2002.60	59	32.77	0.14	0.09	0.46	0	59	33.04	0.04	0.10	0.33	0	60
NOB0201	3	2002	235	2002.64	28	33.21	0.44	0.12	0.74	0	24	33.09	0.06	0.14	0.34	0	22
ALB0209	3	2002	236	2002.65	21	32.69	0.08	0.13	0.58	1	19	32.90	0.08	0.13	0.24	1	91
DEL0208	3	2002	268	2002.73	18	32.62	0.10	0.14	0.14	1	19	32.91	0.24	0.13	0.43	1	16
ALB0210	3	2002	280	2002.77	46	33.09	0.36	0.10	0.68	0	37	33.41	0.38	0.11	0.52	0	10
DEL0210	3	2002	313	2002.86	30	32.97	0.24	0.11	0.20	0	27	33.23	0.24	0.13	0.34	0	22
DEL0301	3	2003	29	2003.08	11	33.21	0.31	0.18	0.16	1	10	33.24	0.22	0.18	0.35	1	22
DEL0303	3	2003	96	2003.26	44	32.45	-0.51	0.09	0.49	0	44	32.71	-0.43	0.10	0.41	0	10
DEL0305	3	2003	146	2003.40	29	32.92	0.06	0.13	0.66	0	27	33.13	0.00	0.15	0.46	0	22
ARM0301	3	2003	234	2003.64	36	32.36	-0.29	0.11	0.23	1	25	32.71	-0.05	0.11	0.32	1	22
ALB0301	3	2003	236	2003.65	55	32.34	-0.31	0.09	0.33	0	57	32.90	-0.01	0.09	0.27	0	60
DEL0308	3	2003	264	2003.72	45	32.49	0.00	0.08	0.18	1	46	32.70	0.06	0.08	0.20	1	16
DEL0310	3	2003	307	2003.84	14	32.70	-0.06	0.16	0.10	1	15	32.91	0.05	0.15	0.25	1	91
ALB0306	3	2003	312	2003.86	33	32.75	0.00	0.11	0.22	0	24	32.99	-0.01	0.13	0.48	0	22













ALB9904	5	1999	145	1999.40	14	32.34	-0.37	0.17	0.30	1	13	33.43	-0.04	0.16	0.44	1	20
AJ9901	5	1999	159	1999.44	18	32.05	-0.26	0.16	0.23	0	11	33.53	-0.10	0.17	0.30	0	22
ALB9906	5	1999	173	1999.47	7	32.31	-0.25	0.24	0.13	1	7	33.78	0.13	0.22	0.30	1	20
AJ9902	5	1999	226	1999.62	13	32.75	0.50	0.20	0.35	1	6	33.22	0.52	0.31	0.19	1	93
IS9901	5	1999	240	1999.66	19	32.54	0.12	0.18	0.32	0	15	34.40	0.35	0.15	0.42	0	22
ALB9910	5	1999	299	1999.82	35	33.25	0.62	0.12	0.41	0	31	34.52	0.31	0.10	0.35	0	10
ALB9911	5	1999	323	1999.89	10	33.41	0.64	0.19	0.42	0	8	34.29	0.39	0.18	0.28	0	22
ALB0002	5	2000	115	2000.32	32	32.49	0.04	0.13	0.27	0	27	33.92	0.07	0.10	0.45	0	10
DEL0006	5	2000	157	2000.43	8	32.41	0.07	0.26	0.13	1	8	33.63	-0.03	0.16	0.25	0	22
ALB0005	5	2000	240	2000.66	12	32.49	0.05	0.19	0.17	0	9	34.14	0.15	0.18	0.27	0	22
DEL0008	5	2000	273	2000.75	32	32.47	0.03	0.11	0.14	1	33	34.36	0.10	0.08	0.11	1	16
ALB0006	5	2000	283	2000.77	28	32.66	0.10	0.13	0.28	0	23	34.24	0.09	0.11	0.28	0	10
ALB0007	5	2000	318	2000.87	14	31.70	-1.02	0.16	0.79	0	12	33.96	-0.26	0.14	0.38	0	22
ALB0103	5	2001	108	2001.29	30	31.84	-0.61	0.13	0.33	0	30	33.76	-0.11	0.10	0.36	0	10
DEL0105	5	2001	154	2001.42	19	31.84	-0.52	0.17	0.22	0	11	33.66	-0.10	0.14	0.26	0	22
ALB0108	5	2001	212	2001.58	5	32.18	-0.05	0.28	0.05	1	5	34.26	-0.02	0.22	0.07	1	93
DEL0108	5	2001	220	2001.60	4	32.14	-0.10	0.32	0.07	1	4	34.26	-0.02	0.25	0.12	1	93
ALB0107	5	2001	226	2001.62	8	31.43	-0.94	0.19	0.11	1	8	32.73	-0.01	0.19	0.15	1	60
ALB0109	5	2001	237	2001.65	21	32.09	-0.25	0.15	0.38	0	17	34.01	0.01	0.13	0.33	0	22
DEL0109	5	2001	269	2001.74	34	32.19	-0.27	0.11	0.23	1	34	34.53	0.00	0.08	0.13	1	16
ALB0110	5	2001	284	2001.78	31	32.45	-0.14	0.13	0.17	0	31	34.24	-0.03	0.10	0.23	0	10
ALB0111	5	2001	316	2001.87	12	32.84	0.19	0.19	0.34	0	10	34.22	-0.01	0.15	0.31	0	22
ALB0202	5	2002	27	2002.07	15	32.42	-0.36	0.16	0.33	0	11	33.99	0.00	0.14	0.38	0	22
ALB0204	5	2002	108	2002.30	35	32.28	-0.19	0.13	0.32	0	33	34.00	0.05	0.10	0.31	0	10
ALB0206	5	2002	154	2002.42	19	32.33	-0.03	0.14	0.21	0	10	34.03	0.15	0.15	0.25	0	22
ALB0208	5	2002	222	2002.61	7	32.56	0.07	0.22	0.16	1	7	32.97	0.04	0.22	0.64	1	60
ALB0209	5	2002	234	2002.64	5	32.42	-0.08	0.24	0.20	1	2	66.46	1.10	-9.99	-9.99	1	91
NOB0201	5	2002	237	2002.65	15	32.58	0.15	0.18	0.33	0	13	34.27	0.21	0.14	0.24	0	22
DEL0208	5	2002	267	2002.73	22	32.55	0.12	0.14	0.15	1	22	34.44	0.15	0.11	0.21	1	16
ALB0210	5	2002	291	2002.80	28	32.97	0.39	0.13	0.29	0	28	34.41	0.31	0.10	0.35	0	10
DEL0210	5	2002	316	2002.87	6	33.02	0.26	0.26	0.16	1	3	34.55	0.08	0.27	0.23	1	22
DEL0303	5	2003	105	2003.29	24	32.22	-0.25	0.13	0.39	0	29	33.80	-0.11	0.09	0.33	0	10
DEL0305	5	2003	148	2003.41	13	32.38	-0.03	0.20	0.24	1	12	34.00	0.12	0.17	0.19	1	22
ALB0301	5	2003	237	2003.65	7	32.33	-0.17	0.21	0.12	1	7	32.76	0.09	0.21	0.14	1	60
ARM0301	5	2003	237	2003.65	16	32.51	0.12	0.14	0.31	0	9	34.40	0.12	0.14	0.33	0	22
DEL0308	5	2003	262	2003.72	38	32.44	-0.03	0.11	0.19	1	38	34.72	0.17	0.08	0.22	1	16
ALB0306	5	2003	315	2003.86	8	32.76	0.12	0.23	0.08	1	6	34.51	0.55	0.25	0.72	1	22

Table 15. Spring Bottom Trawl Survey regional temperature values. See text for explanation.

Reg	Year	Day	Yrday	Npts	Temp	Dtemp	SDV1	SDV2	Flg	Npts	Temp	Dtemp	SDV1	SDV2	Flg	Pc
<b>Southern Middle Atlantic Bight:</b>																
1	1968	70	1968.19	55	5.06	-1.04	0.18	1.22	0	42	5.53	-0.50	0.23	1.35	0	10
1	1969	69	1969.19	49	4.98	-1.05	0.20	1.32	0	35	5.00	-0.93	0.25	1.40	0	10
1	1970	116	1970.32	52	8.20	-1.60	0.19	1.24	0	35	6.88	-1.16	0.23	1.18	0	10
1	1971	94	1971.26	50	6.31	-0.76	0.18	0.95	0	38	6.50	-0.22	0.23	1.68	0	10
1	1972	75	1972.21	54	7.50	1.45	0.19	1.34	0	45	8.11	2.14	0.21	1.40	0	10
1	1973	102	1973.28	165	9.36	0.67	0.13	1.51	0	147	8.80	1.02	0.17	1.68	0	10
1	1974	91	1974.25	105	9.87	2.14	0.16	2.99	0	92	10.19	3.12	0.20	1.52	0	10
1	1975	74	1975.20	64	6.95	1.08	0.16	1.20	1	48	6.50	1.38	0.20	1.73	1	10
1	1976	77	1976.21	102	7.92	1.93	0.14	1.26	0	93	8.29	2.42	0.17	1.46	0	10
1	1977	87	1977.24	100	7.19	0.39	0.13	1.33	0	92	6.22	0.07	0.17	1.34	0	10
1	1978	87	1978.24	90	6.13	-0.58	0.14	1.16	0	82	6.11	0.01	0.17	1.50	0	10
1	1979	93	1979.25	95	7.30	0.16	0.14	1.64	0	80	6.56	0.18	0.19	1.50	0	10
1	1980	90	1980.25	82	7.58	0.63	0.15	1.64	0	72	7.26	0.94	0.20	1.33	0	10
1	1981	93	1981.25	90	7.17	0.16	0.15	1.22	0	81	6.77	0.47	0.18	1.33	0	10
1	1982	78	1982.21	34	6.42	-0.07	0.24	0.87	1	28	5.85	0.07	0.28	0.99	1	10
1	1983	79	1983.22	82	7.36	1.26	0.15	1.05	0	73	7.36	1.39	0.19	1.30	0	10
1	1984	73	1984.20	65	6.66	0.74	0.16	1.13	0	55	7.00	1.22	0.20	1.89	0	10
1	1985	66	1985.18	34	8.08	1.57	0.29	1.39	1	21	6.11	1.29	0.30	0.98	1	10
1	1986	72	1986.20	41	7.17	1.20	0.21	2.02	0	37	6.77	1.15	0.25	1.62	0	10
1	1987	89	1987.24	46	6.63	0.00	0.19	1.83	0	60	6.17	-0.20	0.21	1.85	0	10
1	1988	71	1988.19	35	6.14	0.41	0.22	1.79	0	32	6.83	1.04	0.26	1.41	0	10
1	1989	62	1989.17	26	7.82	0.89	0.28	1.22	1	18	7.06	1.33	0.34	1.82	1	10
1	1990	70	1990.19	30	8.05	2.27	0.24	1.43	0	25	7.52	1.87	0.30	1.29	0	10

<b>Northern Middle Atlantic Bight:</b>																
2	1968	73	1968.20	30	2.96	-1.62	0.23	0.93	0	20	3.66	-1.70	0.29	2.23	0	10
2	1969	71	1969.20	38	3.94	-0.53	0.20	1.31	0	28	5.02	-0.42	0.25	1.70	0	10
2	1970	111	1970.30	42	5.74	-0.62	0.20	1.13	0	32	5.00	-1.19	0.26	1.53	0	10
2	1971	82	1971.22	47	3.92	-0.87	0.19	0.64	0	32	6.10	0.31	0.25	2.04	0	10
2	1972	76	1972.21	46	5.26	0.76	0.20	1.09	0	33	5.93	0.99	0.24	1.39	0	10
2	1973	92	1973.25	111	5.46	1.03	0.16	1.62	0	100	7.49	1.76	0.22	1.77	0	10
2	1974	94	1974.26	81	7.05	1.59	0.18	1.87	0	68	8.04	2.47	0.23	1.43	0	10
2	1975	74	1975.20	56	4.32	-0.49	0.19	2.30	0	37	6.25	0.29	0.30	1.50	0	10
2	1976	73	1976.20	64	5.98	1.50	0.17	1.05	0	54	7.45	2.25	0.21	1.27	0	10
2	1977	103	1977.28	54	5.93	0.25	0.19	1.22	0	46	5.17	-0.90	0.24	1.66	0	10
2	1978	99	1978.27	64	4.67	-0.65	0.18	0.70	0	54	3.84	-1.40	0.24	1.25	0	10
2	1979	106	1979.29	73	5.62	-0.17	0.17	0.98	0	64	5.81	0.11	0.20	1.24	0	10
2	1980	100	1980.27	119	5.93	0.61	0.14	0.95	0	110	6.01	0.30	0.15	0.94	0	10
2	1981	104	1981.28	58	5.93	0.29	0.19	0.66	0	51	5.25	-0.49	0.24	1.31	0	10
2	1982	104	1982.28	32	4.16	-1.39	0.22	1.04	1	29	4.53	-0.32	0.24	2.02	1	10
2	1983	91	1983.25	60	5.89	1.12	0.19	0.85	0	49	5.81	0.96	0.22	1.09	0	10
2	1984	81	1984.22	52	4.79	0.27	0.19	0.84	0	42	5.30	-0.10	0.22	1.29	0	10
2	1985	77	1985.21	19	5.45	1.05	0.30	1.26	0	16	6.29	1.13	0.34	1.44	0	10
2	1986	89	1986.24	21	6.80	1.82	0.27	0.73	0	18	7.01	1.54	0.33	0.98	0	10
2	1987	100	1987.27	27	6.36	0.90	0.26	1.63	0	22	6.11	-0.08	0.31	1.45	0	10
2	1988	81	1988.22	23	4.56	0.22	0.26	0.93	0	29	6.46	1.42	0.25	1.26	0	10
2	1989	75	1989.21	10	4.96	0.69	0.40	2.42	1	8	4.34	0.61	0.44	3.21	1	10
2	1990	78	1990.21	22	6.26	1.80	0.26	0.77	0	19	6.19	1.49	0.31	1.42	0	10

<b>Georges Bank:</b>																
3	1968	94	1968.26	49	4.18	-0.89	0.16	0.55	0	36	4.07	-1.07	0.19	0.58	0	10
3	1969	83	1969.23	59	5.14	0.45	0.15	1.12	0	45	4.91	0.17	0.18	0.67	0	10
3	1970	84	1970.23	54	4.29	-0.66	0.15	0.94	0	41	4.33	-0.84	0.20	1.00	0	10
3	1971	89	1971.24	84	4.17	-0.87	0.13	0.74	0	68	4.71	-0.62	0.15	0.97	0	10
3	1972	96	1972.26	87	5.23	0.11	0.14	1.11	0	73	5.23	0.18	0.17	0.76	0	10
3	1973	106	1973.29	59	5.44	0.02	0.16	0.81	0	47	6.29	0.90	0.19	1.43	0	10
3	1974	100	1974.27	56	5.94	0.75	0.16	1.10	0	44	6.50	1.13	0.21	0.91	0	10
3	1975	100	1975.27	81	5.10	-0.21	0.12	1.44	0	63	5.94	0.70	0.15	1.00	0	10
3	1976	93	1976.25	58	5.95	1.09	0.15	0.67	0	50	5.97	0.86	0.17	1.05	0	10
3	1977	112	1977.31	60	7.24	1.39	0.15	1.09	0	48	6.04	0.40	0.19	1.13	0	10
3	1978	107	1978.29	59	4.68	-0.82	0.14	0.87	0	50	4.65	-0.92	0.17	0.98	0	10
3	1979	107	1979.29	101	5.59	-0.04	0.12	0.69	0	89	5.45	-0.18	0.14	0.86	0	10

3	1980	116	1980.32	57	6.48	0.41	0.15	1.16	0	49	6.52	0.64	0.17	1.09	0	10
3	1981	117	1981.32	57	5.78	-0.29	0.15	0.73	0	43	5.64	-0.18	0.19	0.66	0	10
3	1982	110	1982.30	60	5.17	-0.49	0.15	0.72	0	47	4.93	-0.60	0.18	0.98	0	10
3	1983	102	1983.28	56	6.35	1.06	0.15	0.92	0	46	6.00	0.71	0.19	0.81	0	10
3	1984	92	1984.25	55	5.64	0.69	0.16	0.91	0	44	5.94	0.97	0.19	1.08	0	10
3	1985	87	1985.24	22	5.63	0.76	0.22	1.37	0	17	5.15	0.42	0.29	0.67	0	10
3	1986	101	1986.28	23	6.58	0.98	0.22	0.81	0	19	6.39	1.36	0.26	1.08	0	10
3	1987	111	1987.30	26	6.70	0.61	0.21	2.11	0	22	6.29	0.54	0.26	1.50	0	10
3	1988	88	1988.24	23	4.60	-0.13	0.22	0.73	0	28	5.05	-0.26	0.22	1.01	0	10
3	1989	85	1989.23	27	4.57	0.02	0.22	0.61	0	23	4.96	0.00	0.25	1.03	0	10
3	1990	92	1990.25	25	5.39	0.60	0.21	0.69	0	23	5.42	0.57	0.24	0.77	0	10

### Gulf of Maine West:

4	1968	96	1968.26	46	3.44	-0.92	0.16	0.57	0	43	4.68	-0.21	0.15	1.15	0	10
4	1969	96	1969.26	40	3.59	-0.94	0.18	1.15	0	35	5.05	0.01	0.16	0.77	0	10
4	1970	89	1970.24	46	3.75	-0.59	0.16	0.87	0	44	6.20	1.03	0.14	1.02	0	10
4	1971	105	1971.29	56	3.85	-1.11	0.16	0.53	0	52	6.14	0.99	0.14	1.19	0	10
4	1972	103	1972.28	46	4.60	-0.17	0.16	0.61	0	46	5.84	0.83	0.14	1.04	0	10
4	1973	123	1973.34	40	6.55	0.20	0.19	0.78	0	40	5.63	0.36	0.16	0.79	0	10
4	1974	118	1974.32	41	5.19	-0.70	0.17	2.74	0	29	6.54	1.27	0.18	0.64	0	10
4	1975	123	1975.34	75	5.96	-0.62	0.18	2.76	1	67	6.27	0.88	0.16	1.55	1	10
4	1976	109	1976.30	55	6.10	0.76	0.15	0.72	0	55	6.74	1.65	0.13	0.89	0	10
4	1977	128	1977.35	57	6.51	-0.31	0.15	1.37	0	54	5.04	-0.17	0.13	1.05	0	10
4	1978	131	1978.36	55	6.22	-1.01	0.14	0.95	0	55	5.33	0.13	0.12	0.70	0	10
4	1979	115	1979.32	74	5.71	0.11	0.13	1.05	0	71	4.76	-0.28	0.11	0.71	0	10
4	1980	119	1980.33	46	6.08	0.08	0.17	0.73	0	45	5.09	-0.09	0.15	0.73	0	10
4	1981	136	1981.37	51	7.89	0.15	0.15	0.68	0	51	5.02	-0.31	0.13	0.75	0	10
4	1982	122	1982.33	51	6.05	-0.26	0.16	1.05	0	50	5.41	0.26	0.14	0.81	0	10
4	1983	114	1983.31	51	5.85	0.40	0.15	0.76	0	50	5.40	0.31	0.13	0.87	0	10
4	1984	106	1984.29	49	4.81	-0.15	0.16	0.78	0	49	5.59	0.42	0.14	0.52	0	10
4	1985	98	1985.27	17	4.90	0.33	0.26	0.67	0	17	5.22	0.09	0.23	0.93	0	10
4	1986	111	1986.30	24	6.11	0.90	0.21	0.64	0	24	6.47	1.30	0.18	1.03	0	10
4	1987	114	1987.31	21	4.61	-0.80	0.23	1.14	0	21	5.18	0.04	0.19	1.04	0	10
4	1988	103	1988.28	22	4.58	-0.23	0.23	0.82	0	22	5.96	1.15	0.20	0.76	0	10
4	1989	97	1989.27	16	4.28	-0.52	0.27	1.05	0	16	4.79	-0.19	0.23	0.83	0	10
4	1990	94	1990.26	11	4.39	-0.07	0.32	0.81	0	11	4.61	0.02	0.27	0.63	0	10

### Gulf of Maine East:

5	1968	108	1968.30	29	4.49	-0.79	0.18	0.79	0	25	5.62	-0.98	0.21	0.88	0	10
5	1969	92	1969.25	32	3.34	-0.97	0.18	1.72	0	25	5.71	-0.80	0.21	1.23	0	10
5	1970	90	1970.25	37	3.17	-0.98	0.16	0.92	0	35	6.46	-0.13	0.17	0.89	0	10
5	1971	111	1971.30	49	4.16	-0.93	0.15	0.61	0	45	6.28	-0.22	0.16	0.86	0	10
5	1972	109	1972.30	58	4.35	-0.39	0.15	0.80	0	57	6.72	0.43	0.16	0.81	0	10
5	1973	125	1973.34	30	5.12	-0.75	0.16	0.76	0	29	7.49	0.91	0.17	1.47	0	10
5	1974	117	1974.32	34	5.28	-0.04	0.18	1.07	0	17	7.09	0.98	0.24	1.35	1	10
5	1975	122	1975.33	23	3.97	-1.71	0.19	1.26	0	23	7.02	-0.02	0.20	1.01	0	10
5	1976	114	1976.31	29	6.26	1.02	0.18	0.67	0	29	7.51	0.75	0.19	0.84	0	10
5	1977	124	1977.34	33	5.96	0.11	0.17	0.75	0	33	6.25	-0.38	0.17	0.96	0	10
5	1978	129	1978.35	39	4.94	-1.20	0.15	1.06	0	37	5.76	-0.91	0.16	0.87	0	10
5	1979	120	1979.33	41	5.22	-0.21	0.15	0.87	0	39	6.18	-0.30	0.16	1.16	0	10
5	1980	124	1980.34	28	5.51	-0.28	0.18	0.72	0	28	6.36	-0.30	0.19	1.37	0	10
5	1981	129	1981.35	27	6.24	0.02	0.18	0.61	0	25	6.20	-0.34	0.19	0.77	0	10
5	1982	120	1982.33	32	5.14	-0.34	0.16	0.80	0	31	6.18	-0.36	0.16	1.16	0	10
5	1983	109	1983.30	32	4.55	-0.39	0.16	1.04	0	31	6.03	-0.56	0.17	1.18	0	10
5	1984	111	1984.30	32	3.97	-1.06	0.16	1.22	0	32	6.28	-0.39	0.17	1.14	0	10
5	1985	97	1985.27	10	3.66	-0.85	0.29	1.23	0	9	6.19	0.13	0.30	0.94	0	10
5	1986	108	1986.30	16	6.04	1.27	0.23	0.73	0	16	8.46	1.90	0.24	0.88	0	10
5	1987	116	1987.32	19	3.92	-1.32	0.21	0.78	0	19	5.97	-0.39	0.22	1.17	0	10
5	1988	98	1988.27	14	3.58	-0.88	0.24	0.75	0	15	6.26	0.15	0.23	1.09	0	10
5	1989	94	1989.26	11	4.26	-0.37	0.29	1.83	1	11	6.44	-0.28	0.30	1.61	1	10
5	1990	104	1990.28	14	4.72	0.27	0.27	0.69	0	14	6.00	-0.02	0.27	0.72	0	10



Table 16. Fall Bottom Trawl Survey regional temperature values. See text for explanation.

Reg	Year	Day	Yrday	Npts	Temp	Dtemp	SDV1	SDV2	Flg	Npts	Temp	Dtemp	SDV1	SDV2	Flg	Pc
<b>Southern Middle Atlantic Bight:</b>																
1	1963	346	1963.95	10	10.61	-1.46	0.42	0.67	1	7	10.30	-1.36	0.49	0.75	1	10
1	1964	301	1964.82	7	13.77	-2.41	0.50	1.77	1	5	9.74	-2.65	0.59	2.18	1	10
1	1965	311	1965.85	8	14.11	-2.19	0.53	1.91	1	2	10.55	-2.86	-9.99	-9.99	1	10
1	1966	315	1966.86	10	12.96	-2.59	0.47	1.91	1	3	11.33	-1.80	0.72	3.36	1	10
1	1967	297	1967.81	60	16.61	-0.76	0.18	0.88	0	37	12.80	-1.70	0.24	1.94	0	10
1	1968	290	1968.79	62	19.32	1.12	0.17	1.11	0	50	12.75	-1.91	0.20	2.79	0	10
1	1969	287	1969.79	49	17.61	-1.04	0.19	5.65	0	39	15.09	0.96	0.23	2.20	0	10
1	1970	259	1970.71	60	22.23	0.24	0.17	3.09	0	46	9.92	-3.29	0.21	2.36	0	10
1	1971	281	1971.77	57	20.85	1.45	0.19	2.70	0	40	12.86	-1.54	0.24	3.89	0	10
1	1972	289	1972.79	119	17.64	-0.47	0.14	1.81	0	100	13.81	0.20	0.19	1.96	0	10
1	1973	278	1973.76	123	20.95	1.22	0.14	2.95	0	111	15.20	0.54	0.18	1.69	0	10
1	1974	273	1974.75	99	20.62	0.27	0.14	2.21	0	87	15.65	0.72	0.19	1.61	0	10
1	1975	303	1975.83	105	16.53	0.15	0.14	1.86	0	90	14.36	-0.19	0.18	1.65	0	10
1	1976	283	1976.78	107	19.21	0.17	0.14	0.97	0	97	14.66	-0.18	0.16	1.91	0	10
1	1977	275	1977.75	100	19.17	-0.96	0.14	3.77	0	88	14.03	-0.81	0.18	1.78	0	10
1	1978	259	1978.71	89	22.11	0.09	0.15	3.36	0	82	12.58	-1.62	0.18	2.45	0	10
1	1979	272	1979.74	86	20.36	-0.23	0.15	1.36	0	76	13.55	-1.10	0.19	2.24	0	10
1	1980	274	1980.75	88	19.66	-0.52	0.15	7.13	0	65	13.40	-0.95	0.19	2.40	0	10
1	1981	272	1981.74	85	19.47	-1.15	0.15	1.25	0	72	14.58	-0.13	0.18	1.85	0	10
1	1982	270	1982.74	89	20.73	0.06	0.15	1.33	0	80	14.11	-0.63	0.18	1.94	0	10
1	1983	269	1983.74	97	21.45	0.54	0.14	1.06	0	85	14.59	-0.16	0.18	2.07	0	10
1	1984	265	1984.73	82	20.98	-0.36	0.15	1.46	0	73	13.31	-1.20	0.18	2.51	0	10
1	1985	273	1985.75	39	21.96	1.49	0.22	1.70	0	35	16.02	1.40	0.27	1.99	0	10
1	1986	265	1986.73	42	21.17	-0.19	0.20	1.51	0	57	15.09	0.72	0.21	2.76	0	10
1	1987	261	1987.72	38	22.39	0.43	0.21	3.54	0	33	13.64	-0.80	0.26	2.53	0	10
1	1988	263	1988.72	34	21.29	-0.41	0.22	1.29	0	31	11.70	-2.77	0.26	3.05	0	10
1	1989	263	1989.72	34	22.68	1.20	0.25	0.89	0	30	13.53	-0.79	0.29	3.58	0	10
1	1990	261	1990.71	37	22.38	0.60	0.22	1.08	0	34	17.43	1.31	0.24	2.86	1	10
<b>Northern Middle Atlantic Bight:</b>																
2	1963	346	1963.95	30	10.25	-0.92	0.24	1.16	1	20	11.41	0.10	0.29	1.34	1	10
2	1964	300	1964.82	31	13.22	-1.94	0.24	1.09	0	21	10.77	-2.54	0.31	1.36	0	10
2	1965	310	1965.85	31	13.09	-1.12	0.23	1.63	0	21	10.22	-3.04	0.29	1.77	0	10
2	1966	314	1966.86	32	12.40	-1.56	0.24	1.42	0	23	9.51	-3.49	0.30	1.55	0	10
2	1967	304	1967.83	46	13.82	-1.09	0.19	2.08	0	29	9.29	-3.52	0.27	1.10	0	10
2	1968	292	1968.80	38	16.44	0.38	0.20	1.13	0	29	11.02	-1.86	0.25	2.01	0	10
2	1969	291	1969.80	44	14.67	-1.59	0.20	6.39	0	28	12.27	-0.37	0.28	1.49	0	10
2	1970	294	1970.80	39	16.62	0.67	0.21	1.92	0	30	10.53	-2.54	0.26	1.93	0	10
2	1971	281	1971.77	46	18.68	1.47	0.19	2.38	0	38	10.96	-1.52	0.22	2.17	0	10
2	1972	286	1972.78	74	16.98	0.45	0.17	3.73	0	57	12.62	-0.07	0.22	1.50	0	10
2	1973	278	1973.76	87	16.52	-0.19	0.18	4.32	0	71	13.01	0.54	0.25	1.94	0	10
2	1974	276	1974.76	57	17.75	0.04	0.19	1.21	0	48	13.19	0.24	0.25	2.01	0	10
2	1975	289	1975.79	62	15.98	-0.26	0.18	2.17	0	53	12.38	-0.63	0.23	1.49	0	10
2	1976	281	1976.77	62	17.25	0.17	0.18	2.01	0	52	12.94	0.03	0.22	1.64	0	10
2	1977	285	1977.78	61	16.26	-0.51	0.18	1.72	0	51	13.19	0.25	0.23	1.30	0	10
2	1978	283	1978.78	85	16.07	-0.78	0.15	3.39	0	71	12.23	-0.18	0.18	2.02	0	10
2	1979	285	1979.78	89	16.32	-0.47	0.15	1.37	0	79	11.91	-0.94	0.18	1.54	0	10
2	1980	284	1980.78	53	17.88	1.02	0.19	5.34	0	46	12.98	0.19	0.24	1.95	0	10
2	1981	284	1981.78	55	14.47	-2.20	0.19	1.21	0	50	11.40	-1.34	0.23	1.26	0	10
2	1982	282	1982.77	61	17.31	0.36	0.18	1.29	0	50	13.04	0.12	0.23	1.68	0	10
2	1983	279	1983.76	51	18.11	0.84	0.18	0.87	0	42	12.06	-0.59	0.22	1.99	0	10
2	1984	275	1984.75	45	17.48	-0.27	0.23	1.46	0	37	12.62	0.22	0.27	2.17	0	10
2	1985	288	1985.79	19	17.54	1.03	0.29	1.66	0	15	14.21	1.29	0.34	1.68	0	10
2	1986	280	1986.77	27	17.90	0.61	0.24	1.33	0	26	12.88	0.04	0.28	1.68	0	10
2	1987	272	1987.75	21	17.70	-0.11	0.27	0.82	0	21	11.85	-0.65	0.30	2.37	0	10
2	1988	271	1988.74	27	18.41	0.39	0.26	1.19	0	22	11.86	-0.66	0.30	2.30	0	10
2	1989	271	1989.74	25	19.19	1.46	0.30	1.05	0	24	12.79	0.54	0.32	2.48	0	10
2	1990	268	1990.73	17	18.71	0.49	0.40	1.00	0	14	13.71	1.36	0.45	1.50	0	10
<b>Georges Bank:</b>																
3	1963	338	1963.93	44	8.93	-1.53	0.18	1.51	0	31	8.81	-1.56	0.22	1.48	0	10
3	1964	314	1964.86	50	10.69	-1.93	0.17	1.07	0	34	9.28	-2.19	0.22	1.03	0	10



5	1975	308	1975.84	34	11.40	0.27	0.17	0.93	0	33	8.87	0.14	0.17	1.49	0	10
5	1976	318	1976.87	37	10.18	-0.19	0.16	0.83	0	36	9.73	1.18	0.17	1.05	0	10
5	1977	323	1977.89	33	9.66	-0.30	0.16	0.74	0	30	9.09	0.46	0.19	2.62	0	10
5	1978	303	1978.83	54	11.20	-0.35	0.14	0.73	0	54	8.37	-0.27	0.15	1.27	0	10
5	1979	313	1979.86	49	10.88	0.17	0.16	1.45	0	43	9.24	0.76	0.16	1.32	0	10
5	1980	306	1980.84	36	10.53	-0.74	0.17	0.72	0	31	8.47	-0.14	0.21	1.08	0	10
5	1981	306	1981.84	30	10.55	-0.73	0.16	1.52	0	30	8.04	-0.73	0.18	1.05	0	10
5	1982	302	1982.83	40	11.24	-0.34	0.15	0.74	0	40	7.89	-0.83	0.16	1.15	0	10
5	1983	306	1983.84	40	11.28	-0.06	0.19	0.70	0	39	8.63	-0.23	0.19	1.73	0	10
5	1984	300	1984.82	30	12.61	0.95	0.19	0.72	0	24	9.57	0.67	0.23	2.48	0	10
5	1985	306	1985.84	14	11.21	-0.02	0.26	1.10	0	14	9.40	0.41	0.26	2.42	0	10
5	1986	303	1986.83	17	11.09	-0.26	0.23	0.42	0	29	8.97	0.38	0.19	0.97	0	10
5	1987	294	1987.80	17	10.88	-1.35	0.24	0.79	0	17	8.56	-0.10	0.24	2.32	0	10
5	1988	294	1988.80	14	10.89	-1.22	0.23	0.77	0	14	8.50	-0.52	0.25	1.26	0	10
5	1989	299	1989.82	18	11.36	-0.49	0.25	0.74	0	17	8.11	-0.61	0.26	0.98	0	10
5	1990	292	1990.80	9	12.84	0.94	0.33	5.58	1	9	8.32	-0.36	0.34	2.71	1	10



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