

*Oceanography Branch CTD Data Report
Northeast Shelf Ecosystem Monitoring
Winter Survey – Cruise No. DE 08-02*

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CRUISE RESULTS
NOAA Fisheries Research Vessel DELAWARE II
Cruise No. DE 08-02
Northeast Shelf Ecosystem Monitoring Winter Survey

CRUISE PERIOD AND AREA

The cruise period was 22 January to 8 February 2008. The NOAA fisheries research vessel DELAWARE II sampled at a total of 94 stations. Of these, 29 were located in the Gulf of Maine (GOM), 30 were located on Georges Bank, 29 were in the Southern New England (SNE) area and 6 in the Mid-Atlantic Bight (MAB). The Gulf of Maine (GOM) stations included 5 fixed stations: the Wilkinson, Jordan and Georges basins, the site of a proposed liquefied natural gas (LNG) terminal east of Boston Harbor and the Northeast Channel (Figure 1).

OBJECTIVES

The primary objective of the cruise was to assess changing biological and physical properties which influence the sustainable productivity of the living marine resources of the northeast continental shelf ecosystem. Key parameters measured for the Ecosystem Monitoring Program included ichthyoplankton and zooplankton composition, abundance and distribution, plus water column temperature and salinity. Near-surface along-track chlorophyll-*a* fluorescence, water temperature and salinity were measured while underway with the vessel's flow-through sampling system. Secondary objectives of this cruise included the following:

- Vertical CTD casts to within 5 meters of the bottom in Gulf of Maine deep basin areas and the Northeast Channel to provide hydrographic data detailing the incursion of Labrador Current water.
- Sampling at the site of a proposed liquefied natural gas (LNG) terminal east of Boston Harbor, to collect baseline data.
- Collection of zooplankton for the Census of Marine Zooplankton Project (CMarZ) for Ann Bucklin, based at University of Connecticut, Avery Point.
- Collection of near-surface water samples for detection of *Pseudonitzschia* diatoms and *Alexandrium* dinoflagellates as part of the Harmful Algal Bloom Project (HAB) of the Woods Hole Oceanographic Institution (WHOI).
- Note presence and volume of *Calanus finmarchicus* in samples upon return of cruise to shore.
- Collection of euphausiids for Alison MacLeary, a URI Graduate School of Oceanography student.

METHODS

The survey consisted of 94 stations at which the vessel stopped to lower instruments over the side (Figure 1). All stations sampled were at randomly stratified locations except for 5 fixed-position stations in the GOM visited on all Ecosystem Monitoring cruises: Wilkinson Basin, Georges Basin, Jordan Basin, a proposed Liquefied Natural Gas terminal site east of Boston and the Northeast Channel. The other non-random station on this cruise was located in the eastern Southern New England area just west of the Great South Channel. This station was inserted to improve coverage in an area where two random stations were missed due to unsafe weather conditions when the vessel was there earlier.

Plankton and hydrographic sampling was conducted at all stations by making double oblique tows using the 61-cm bongo sampler and a Seabird CTD. The tows were made to approximately 5 m above the bottom, or to a maximum depth of 200 m. All plankton tows were conducted at a ship speed of 1.5 – 2.0 knots. Plankton sampling gear consisted of a 61-cm diameter aluminum bongo frame with two 335-micron nylon mesh nets. At the randomly designated CMarZ stations a 20-cm diameter PVC bongo frame fitted with paired 165-micron nylon mesh nets was put on the towing wire one half meter above the Seabird CTD with a wire stop (Figure 2.). A 45-kg lead weight in the shape of a flat-bottomed pear was attached by an 80-cm length of 3/8-inch diameter chain below the aluminum bongo frame to depress the sampler. The flat bottomed configuration of the depressor weight made for safer deployment and retrieval of the sampling gear when the boat was rolling in rough seas. A digital flowmeter was suspended within the mouth of each sampler to determine the amount of water filtered by each net. No flowmeters were used in the 20-cm bongos. The plankton sampling gear was deployed off the starboard stern quarter of the vessel using an A-frame and a Sea-Mac winch which was placed on the aft deck specifically for this operation. After retrieval, the bongo frames were carried into a covered work area on the port side of the aft deck and placed on tables for wash down of the nets to obtain the plankton samples. This work space allowed for much easier removal of the samples, particularly during inclement weather. The 61-cm bongo plankton samples were preserved in a 5% solution of formalin in seawater. The zooplankton Census Project samples from the 20-cm diameter bongos were preserved in 95% ethanol, which was changed once at 24 hours after the initial preservation. Tow depth was monitored in real time with a Seabird CTD profiler. The Seabird CTD profiler was hard-wired to the conductive towing cable, providing simultaneous depth, temperature, and salinity for each plankton tow. A CTD cast to within 5 m of the bottom was made in the Wilkinson, Jordan and Georges basins to provide hydrographic data from below the 200 m limit set for bongo tows.

Continuous monitoring of the seawater salinity, temperature and chlorophyll-*a* level, from a depth of 3.7 meters along the entire cruise track was done by means of a thermosalinograph, and a flow-through fluorometer hooked up to the ship's flow-through seawater system. The Scientific Computer System (SCS) recorded the output from both the thermosalinograph, and the fluorometer at 10-second intervals. The data records were given a time-date stamp by the GPS unit.

Samples for Seabird CTD salinity data calibration were obtained twice a day using a 1.7 liter Niskin bottle taking a water sample from 25 or more meters depth in an isohaline portion of the water column. Calibration of the CTD salinities and chlorophyll-*a* from the surface flow-through system was undertaken twice daily while the ship was underway. Sample analysis for these calibrations followed the protocol outlined in the Ecosystem Monitoring Program Operations Manual.

Census of Marine Zooplankton samples were collected using the 20-cm diameter bongos described above

at five randomly designated stations in three of the regions sampled: Southern New England, Georges Bank and Gulf of Maine and one station from the Mid-Atlantic Bight region.

Seawater sample collections were made at random stations in the Gulf of Maine to test for the presence of *Pseudonitzschia*, a pennate diatom, and *Alexandrium*, an armored dinoflagellate, both of which cause paralytic shellfish poisoning. The *Pseudonitzschia* samples were collected by filling a small 50 ml container containing some growth medium with seawater from the flow-through system discharge, and placing them in a small refrigerator set to an approximation of the ambient seawater temperature and equipped with an internal light on a timer to mimic the current photoperiod. The *Alexandrium* samples were collected by filtering two liters of the seawater from the flow-through system discharge through a 20 micron mesh filter and then placing the filtered material into a 15-ml centrifuge tube with 0.75 ml of concentrated formaldehyde as a preservative into a chilled cooler.

Presence and volume of *Calanus finmarchicus* was noted in the samples after completion of the cruise by measuring the settled height of the samples in mm, and then converting it to cubic centimeters by using the algorithm: volume = (-26.43) + (6.19)(sample height). From “A Method for Rapid Assessment of Plankton Volumes from Settled Height Measurements of Zooplankton Samples” Prezioso and Kane (in prep).

RESULTS

A summary of routine survey activities is presented in Table 1. Areal coverage for the cruise is shown in Figure 1. The DELAWARE II sailed at 1500 hours EST on Tuesday, 22 January 2008, under windy conditions and proceeded southeast to sample inshore stations off of Rhode Island and Long Island until the seas calmed down and permitted sampling further offshore and to the south on Wednesday and Thursday. The vessel was forced to return to Woods Hole however, when it lost use of its primary radar on the afternoon of Thursday, 24 January, as it was approaching Delaware Bay. Five additional Southern New England stations were sampled prior to the arrival of the vessel in Woods Hole on Saturday, 26 January at 1330 EST. The DELAWARE II remained in port until the following Tuesday not only for radar repair work and the exchange of three scientists, but to allow a large coastal storm to pass through the area. The vessel returned to sea on Tuesday at 0830, 29 January, and finished sampling the Southern New England area. No further sampling was done in the Mid-Atlantic Bight due to the time lost from the schedule. While en route to Georges Bank another storm system forced the vessel to by pass two stations in the southeast corner of the Southern New England area. A non-random station was inserted just west of the Great South Channel to minimize lost coverage a day later, when conditions improved. Georges Bank sampling continued all through Thursday and well into Friday, 1 February, but by Friday evening sustained winds of 40 knots and greater forced the vessel to move off the southern flank of Georges Bank in the vicinity of Munson Canyon and ride out the storm until the conditions came down to workable levels on Sunday morning, 3 February. By the end of this day sampling on Georges Bank was almost complete and the DELAWARE II spent the next three days working up into the Gulf of Maine. The weather at this point in the cruise was so calm that the vessel was able to easily make greater than 10 knots between stations. Only five stations up in the northeast sector of the Gulf of Maine were missed due to lack of time and the passing of a fast-moving squall in the vicinity of Jordan Basin, which slowed the vessel's progress for a short time. Sampling was continued by following a line of stations in a southwesterly direction along the Maine and New Hampshire coastlines, heading west and south to pick up stations along the coast, then east for offshore stations including the Wilkinson Basin and then back inshore towards Boston to the non-random proposed Liquefied Natural Gas (LNG) terminal site.

Sampling was completed on the morning of Thursday, 7 February 2008 with a random station in Cape Cod Bay. The DELAWARE II came through the Cape Cod Canal and docked in Woods Hole at the NMFS concrete pier at 1630 EST that same day, marking the end of the Winter Ecosystems Monitoring Survey, DE0802.

DISPOSITION OF SAMPLES AND DATA

The Seabird CTD data was retrieved by members of the Fisheries Oceanography Investigation. The Ecosystem Monitoring Investigation samples and associated data and log sheets were delivered to the Narragansett Laboratory of the NEFSC, Narragansett, RI, for quality control processing and further analysis. Salinity calibration samples from the CTD and flow through system were also delivered to Narragansett for analysis. Nancy Copley, Dave Kulis and Bruce Keafer of the Woods Hole Oceanographic Institute took the CMarZ, HAB and GOMTOX2008 samples from the vessel. The euphausiid samples in liquid nitrogen were delivered to the GSO-URI laboratory in Narragansett, RI. *Calanus* volume information will be forwarded to Tim Cole in the Protected Species Branch after the cruise report is completed.

SCIENTIFIC PERSONNEL

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Table 1. STATION OPERATION REPORT FOR CRUISE DE0802

CAST	STA.	Date(GMT)		TIME(GMT)		LAT	LONG	DEPTH	OPERATION	
		mm	dd	yy	hr	min		m	B=bongo W=water Z=zoogen V=vertical cast (CTD only) CO=Calanus observed / vol HAB=WHOI HAB sample N=nitrogen isotope	
1	1	1	23	2008	1	4	4123.6	7124.6	33	B
2	2	1	23	2008	3	50	4101.2	7130.8	48	B
3	3	1	23	2008	6	56	4051.2	7146.7	50	B
4	4	1	23	2008	10	34	4021.6	7158.6	65	B
5	5	1	23	2008	13	32	4018.8	7230.8	52	B
4	4	1	23	2008	10	34	4021.6	7158.6	65	B
5	5	1	23	2008	13	32	4018.8	7230.8	52	B
6	6	1	23	2008	17	43	4018.7	7318.9	33	B
7	7	1	23	2008	20	47	4023.6	7354.7	20	W1
8	7	1	23	2008	20	52	4023.5	7354.7	19	B
9	8	1	24	2008	0	16	4004	7400.6	24	B
10	9	1	24	2008	4	30	4003.7	7308.7	43	B
11	10	1	24	2008	7	18	3953.8	7236.8	57	B
12	11	1	24	2008	9	24	3943.8	7217.3	100	B
12	11	1	24	2008	9	24	3943.8	7217.3	100	B
13	12	1	24	2008	11	6	3939	7236.6	73	B
14	13	1	24	2008	11	50	3938.9	7243.5	71	B
15	14	1	24	2008	16	41	3906.5	7324.7	56	B
15	14	1	24	2008	16	41	3906.5	7324.7	56	B
16	15	1	24	2008	18	40	3911.2	7346.8	42	B
17	16	1	24	2008	19	33	3916.3	7352.8	36	B
18	17	1	24	2008	20	41	3918.6	7404.8	26	W2
19	17	1	24	2008	20	46	3918.6	7404.9	27	B
20	18	1	24	2008	23	49	3901.3	7424.7	26	B
21	19	1	24	2008	9	11	3948	7328	35	B
22	20	1	26	2008	2	42	4043.7	7032.7	57	W3
23	20	1	26	2008	2	50	4043.7	7032.6	57	B
24	21	1	26	2008	4	19	4043.9	7018.7	48	B
25	22	1	26	2008	8	44	4058.4	7048.6	49	B
26	23	1	26	2008	11	5	4108.7	7025	35	B
27	24	1	26	2008	14	25	4117.8	7051.9	27	B
27	24	1	26	2008	0	0	9999.9	9999.9	50	B
28	25	1	29	2008	21	45	4041.4	6944.6	53	B
29	26	1	30	2008	1	20	4033.8	7026.6	65	V1
30	26	1	30	2008	1	27	4033.7	7026.5	64	B
31	27	1	30	2008	2	51	4028.7	7040.6	77	B
32	28	1	30	2008	4	20	4018.8	7050.6	109	B
33	29	1	30	2008	6	13	4013.7	7110.8	108	B
34	30	1	30	2008	7	31	4003.6	7112.8	184	B

35 31 1 30 2008 10 11 4013.6 7140.4 84 B

Table 1. (cont.) STATION OPERATION REPORT FOR CRUISE DE0802

CAST	STA.	Date(GMT)		TIME(GMT)			LAT	LONG	DEPTH	OPERATION
		mm	dd	yy	hr	min				
									m	B=bongo W=water Z=zoogen V=vertical cast (CTD only) CO=Calanus observed/vol HAB=WHOI HAB sample N=nitrogen isotope
36	32	1	30	2008	13	20	3953.4	7142.5	212	B
37	33	1	31	2008	9	1	4019	6836.6	101	B
38	34	1	31	2008	11	31	4026.4	6816.6	108	B
38	34	1	31	2008	8	11	4026.4	6816.6	108	B
39	35	1	31	2008	13	58	4026.2	6844.8	80	B
40	36	1	31	2008	15	9	4028.7	6856.6	74	B
41	37	1	31	2008	17	8	4029.4	6919.8	67	B
42	38	1	31	2008	19	22	4041.5	6900.8	72	B
43	39	1	31	2008	20	34	4048.9	6852.7	68	W4
44	39	1	31	2008	20	39	4049	6852.7	70	W5
45	39	1	31	2008	20	45	4049	6852.8	70	B
46	40	1	31	2008	22	23	4101.3	6842.8	63	B
47	41	2	1	2008	1	4	4121.1	6902.6	159	B, CO/ 178cc
48	42	2	1	2008	2	43	4131.3	6852.9	156	B, CO/ 302cc
49	43	2	1	2008	3	55	4128.7	6842.8	131	B, CO/ 147cc
50	44	2	1	2008	6	6	4118.9	6822.9	53	B
51	45	2	1	2008	7	0	4123.4	6813.8	48	B
51	45	2	1	2008	7	7	4123.4	6813.8	48	B
52	46	2	1	2008	9	47	4106.3	6756.8	45	W6
53	46	2	1	2008	9	52	4106.3	6756.9	45	B
54	47	2	1	2008	11	17	4101.3	6742.8	58	B
55	48	2	1	2008	13	27	4118.5	6732.7	44	B
56	49	2	1	2008	14	32	4108.9	6730.7	53	B
57	50	2	1	2008	15	37	4101.4	6724.8	67	B
58	51	2	1	2008	17	40	4043.7	6718.5	97	B
59	52	2	1	2008	19	26	4033.9	6708.7	174	B
60	53	2	1	2008	20	12	4031.3	6708.8	221	V2
61	53	2	1	2008	20	26	4031.3	6708.9	217	W7
62	53	2	1	2008	20	33	4031.4	6709	210	B
63	54	2	3	2008	19	24	4106.3	6644.9	75	B
64	55	2	3	2008	9	7	4118.6	6638.6	83	B
65	56	2	3	2008	10	14	4118.9	6630.9	92	W8
66	56	2	3	2008	10	22	4118.8	6631	92	B
67	57	2	3	2008	12	57	4123.9	6601.2	236	B
68	57	2	3	2008	13	26	4124	6602	212	V3
69	58	2	3	2008	14	8	4126.1	6606.6	130	V4
70	58	2	3	2008	14	17	4126	6606.5	130	B
71	59	2	3	2008	17	17	4143.7	6624.9	79	B
71	59	2	3	2008	17	17	4143.7	6624.9	79	B
72	60	2	3	2008	17	47	4141.2	6624.5	82	B
73	61	2	3	2008	19	17	4130.9	6635.1	83	B
74	62	2	3	2008	20	6	4128.7	6642.9	77	W9
74	62	2	3	2008	20	16	4128.7	6642.9	77	B
75	63	2	3	2008	22	22	4121.4	6708.3	58	W10
76	63	2	3	2008	22	28	4121.5	6708.4	57	B

77	64	2	4	2008	0	46	4141.1	6726.5	58	B
78	65	2	4	2008	3	5	4158.6	6711.1	51	B

Table 1. (cont.) STATION OPERATION REPORT FOR CRUISE DE0802

CAST	STA.	Date(GMT)		TIME(GMT)		LAT	LONG	DEPTH		OPERATION
		mm	dd	yy	hr min					
								m		B=bongo W=water Z=zoogen V=vertical cast (CTD only) CO=Calanus observed/vol HAB=WHOI HAB sample N=nitrogen isotope
79	66	2	4	2008	3 37	4201	6712.7	54		B
80	67	2	4	2008	5 25	4213.7	6702.6	213		V5
81	67	2	4	2008	5 42	4213.5	6702.4	210		B, CO/ 252cc
82	68	2	4	2008	6 54	4208.9	6700.8	83		B
83	69	2	4	2008	10 33	4203.7	6616.7	90		B, CO/ 147cc
84	70	2	4	2008	13 22	4213.3	6546.4	222		W11
85	70	2	4	2008	13 38	4213.2	6546.5	223		B
86	71	2	4	2008	16 14	4221.2	6614.3	236		V6
87	71	2	4	2008	16 28	4221.1	6614.3	237		B
88	72	2	4	2008	20 55	4224.9	6659.9	361		W12
89	72	2	4	2008	21 17	4224.8	6700	361		B, CO/ 190cc
90	73	2	4	2008	23 54	4248.4	6700.9	205		B, CO/ 73cc
91	74	2	5	2008	3 10	4226.1	6720.2	337		V7
92	74	2	5	2008	3 28	4226.2	6720.2	336		B, CO/ 177cc
93	75	2	5	2008	7 7	4221.2	6802.9	182		B, CO/ 221cc
94	76	2	5	2008	9 12	4226.4	6825.1	212		B, CO/ 252cc
95	77	2	5	2008	10 32	4236.2	6828.9	218		B, CO/ 283cc
96	78	2	5	2008	11 58	4246.4	6828.8	188		B, CO/ 221cc
97	79	2	5	2008	16 8	4321	6805	225		B, CO/ 376cc
98	79	2	5	2008	16 30	4320.8	6804.4	226		W13
99	80	2	5	2008	19 9	4324.1	6741.9	245		V8
100	80	2	5	2008	19 30	4324.4	6741.6	245		B, CO/ 364cc
101	81	2	5	2008	22 37	4350	6749.4	209		B, CO/ 252cc
102	82	2	6	2008	1 18	4411.3	6750.7	120		B, CO/ 221cc
103	83	2	6	2008	6 57	4341.1	6850.8	120		W14
104	83	2	6	2008	7 3	4341	6850.8	118		B, CO/ 178cc
105	84	2	6	2008	11 6	4323.9	6938.3	157		B, CO/ 190cc
106	85	2	6	2008	15 19	4301.4	7026.3	100		B, CO/ 178cc
107	86	2	6	2008	19 3	4301.4	6942.4	146		B, CO/ 221cc
108	87	2	6	2008	21 21	4256.4	6917.2	160		B, CO/ 234cc
109	88	2	6	2008	23 24	4240.6	6911.3	161		B, CO/ 221cc
110	89	2	7	2008	2 1	4230.2	6939.9	250		W15
111	89	2	7	2008	2 19	4230.2	6940.3	251		B, CO/ 394cc
112	90	2	7	2008	4 40	4211.3	6940.6	232		V9
113	90	2	7	2008	4 55	4211.4	6940.8	234		B, CO/ 271cc
114	91	2	7	2008	6 1	4210.4	6948.6	176		B, CO/ 407cc
115	92	2	7	2008	9 28	4214	7012.6	35		B
116	93	2	7	2008	11 43	4224.3	7036.7	82		B
117	94	2	7	2008	14 41	4158.9	7022.8	49		B

Table 1. (cont.) STATION OPERATION REPORT FOR CRUISE DE0802

TOTALS: Bongo Casts	= 094
Bongo 6B3Z Samples	= 094
Bongo 6B3I Samples	= 094
Water Samples	= 15
Vertical Casts	= 9
CTD Casts	= 117
CMarZ (Zoogen) samples	= 16
HAB samples	= 14
GOMTOX2008 samples	= 10
Euphausids collected	= 30
<u>Calanus</u> observations	= 25

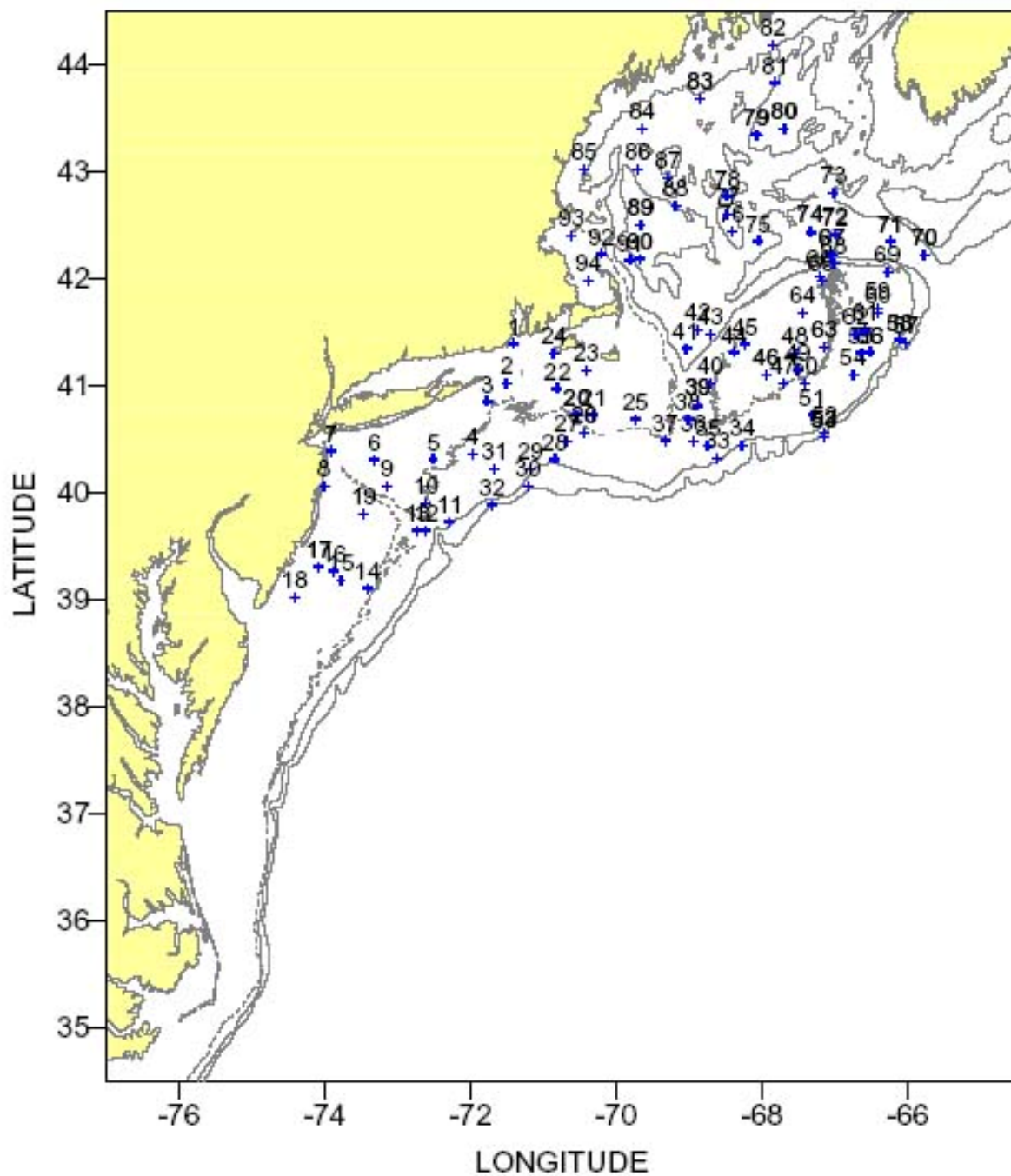


Figure 1. Station locations numbered consecutively for Winter Ecosystem Monitoring Cruise DE 08-02, 22 January - 7 February 2008.

Appendix A.

Hydrography Data Collected During the 2008 Winter ECOMON Survey Delaware II 0802

Areal average surface and bottom temperature/salinity and temperature/salinity anomalies for DEL0802 ECOMON Survey

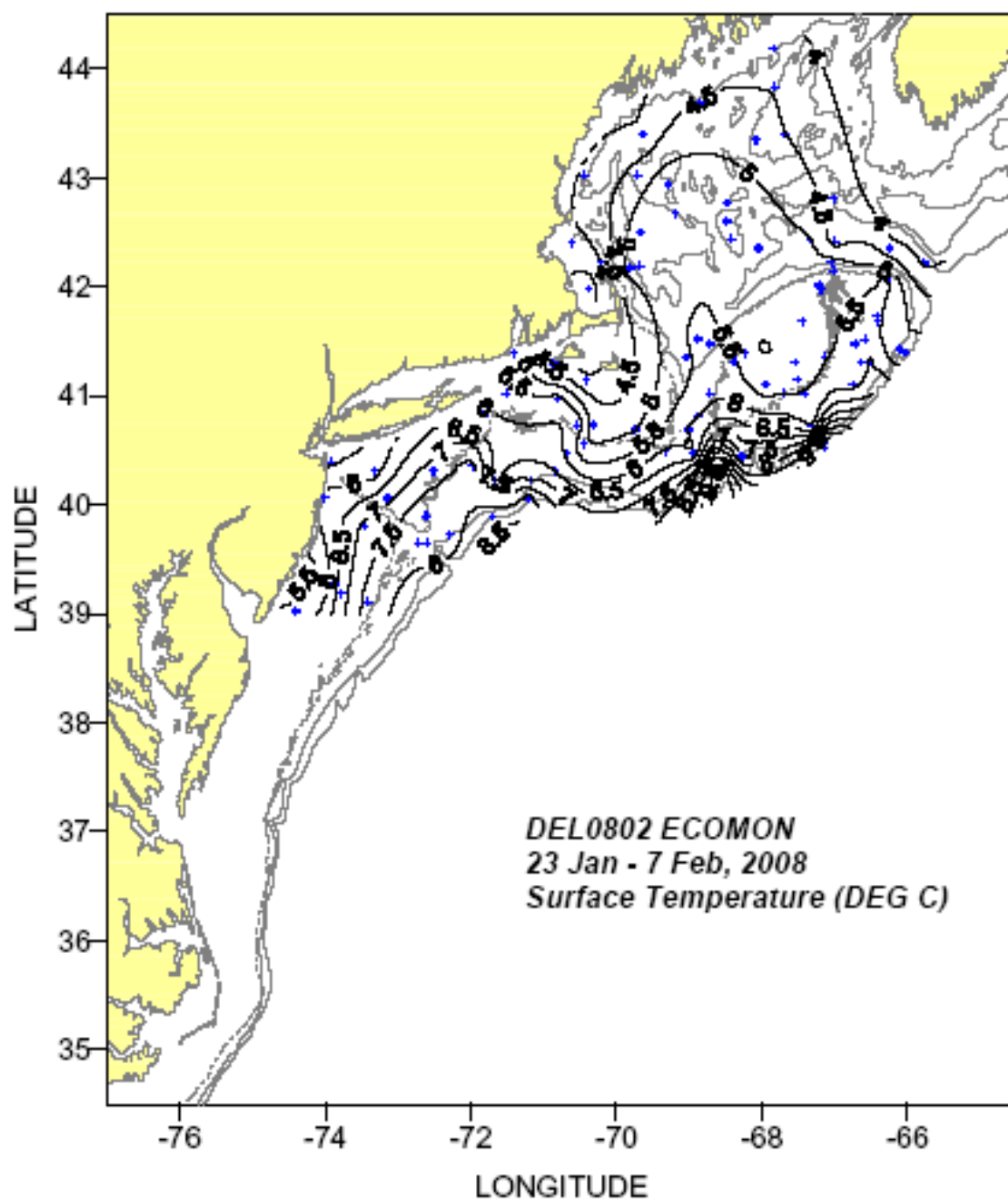
		SURFACE						BOTTOM					
CRUISE	CD	#obs	T/S	Anomaly	SDV1	SDV2	Flag	#obs	T/S	Anomaly	SDV1	SDV2	Flag
Gulf of Maine West													
DEL0802	36	21	4.95	-0.55	0.23	0.50	0	17	6.25	0.18	0.22	0.51	0
DEL0802	36	21	32.95	-0.13	0.15	0.30	0	17	33.58	0.02	0.13	0.24	0
Gulf of Maine East													
DEL0802	36	14	4.59	-0.44	0.27	1.09	1	10	7.10	-0.40	0.32	1.08	1
DEL0802	36	14	32.65	-0.18	0.19	0.59	1	10	34.34	-0.08	0.15	0.51	1
Georges Bank													
DEL0802	33	39	6.07	0.40	0.18	1.28	0	26	6.01	-0.05	0.23	0.95	0
DEL0802	33	39	32.91	-0.02	0.11	0.44	0	26	32.94	-0.11	0.14	0.29	0
MAB North													
DEL0802	26	21	6.37	-0.29	0.28	1.21	0	16	6.72	-0.51	0.33	1.95	0
DEL0802	26	21	32.49	-0.60	0.19	0.64	0	16	32.80	-0.80	0.19	0.61	0
MAB South													
DEL0802	24	14	6.55	0.75	0.32	1.12	1	14	7.43	1.14	0.34	1.22	1
DEL0802	24	14	31.83	-1.10	0.27	0.68	1	14	32.71	-0.58	0.22	0.50	1

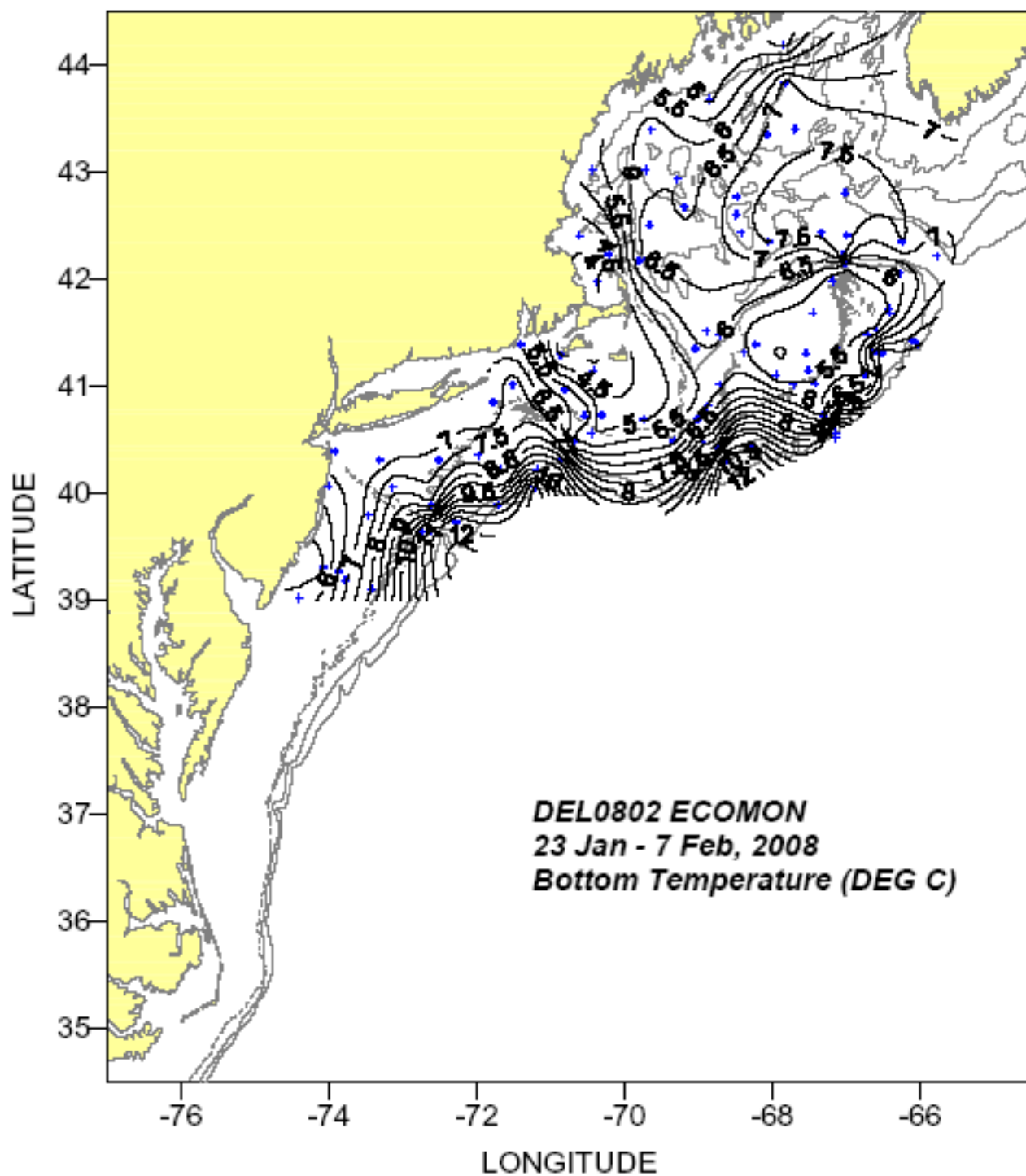
"CRUISE", the code name for a cruise: "CD", the calendar mid-date of all the stations within a region for a cruise:

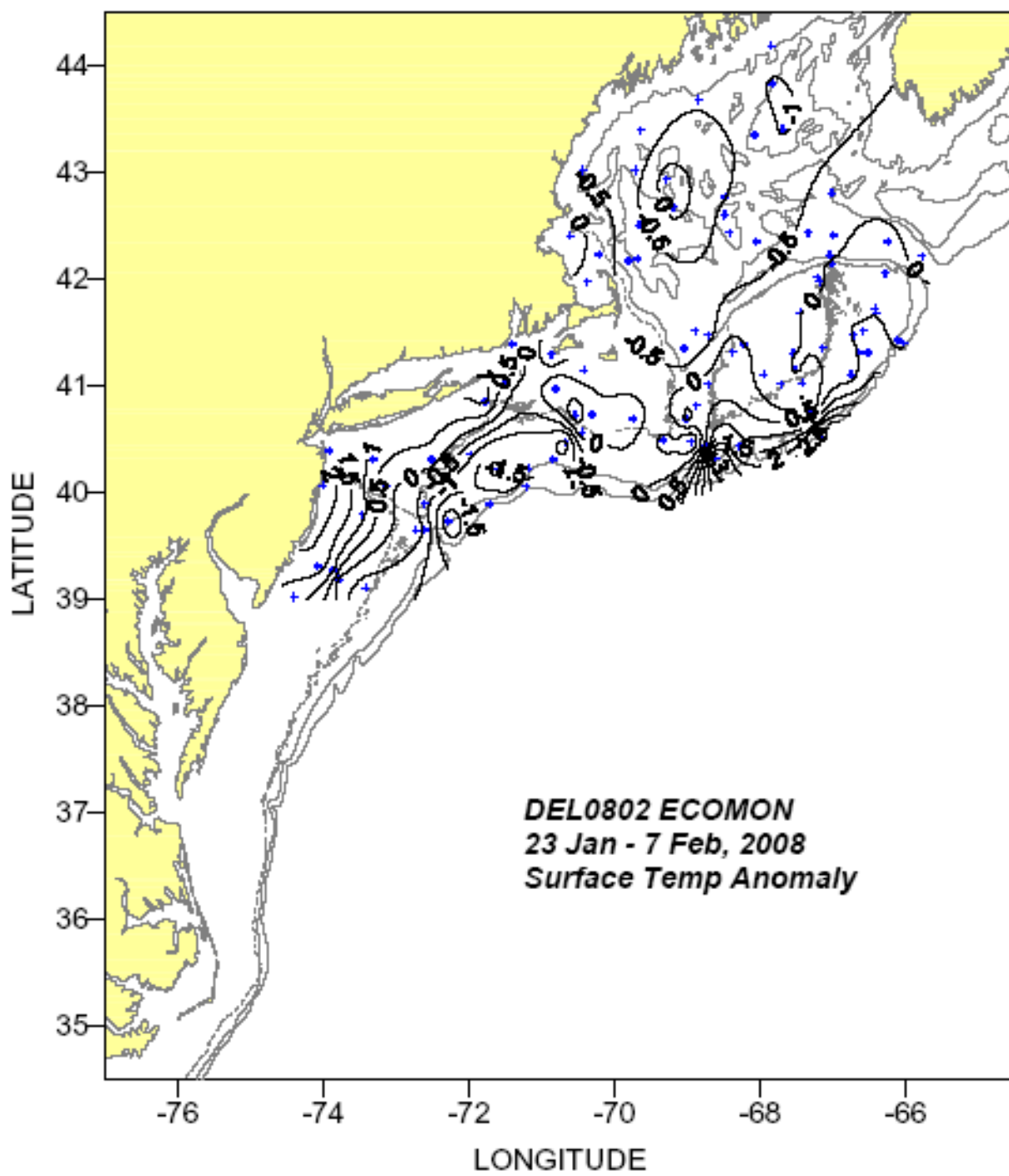
"#obs", the number of observations include in each average: "T/S", the areal average temp/salt: "Anomaly", the areal average temp/salt anomaly:

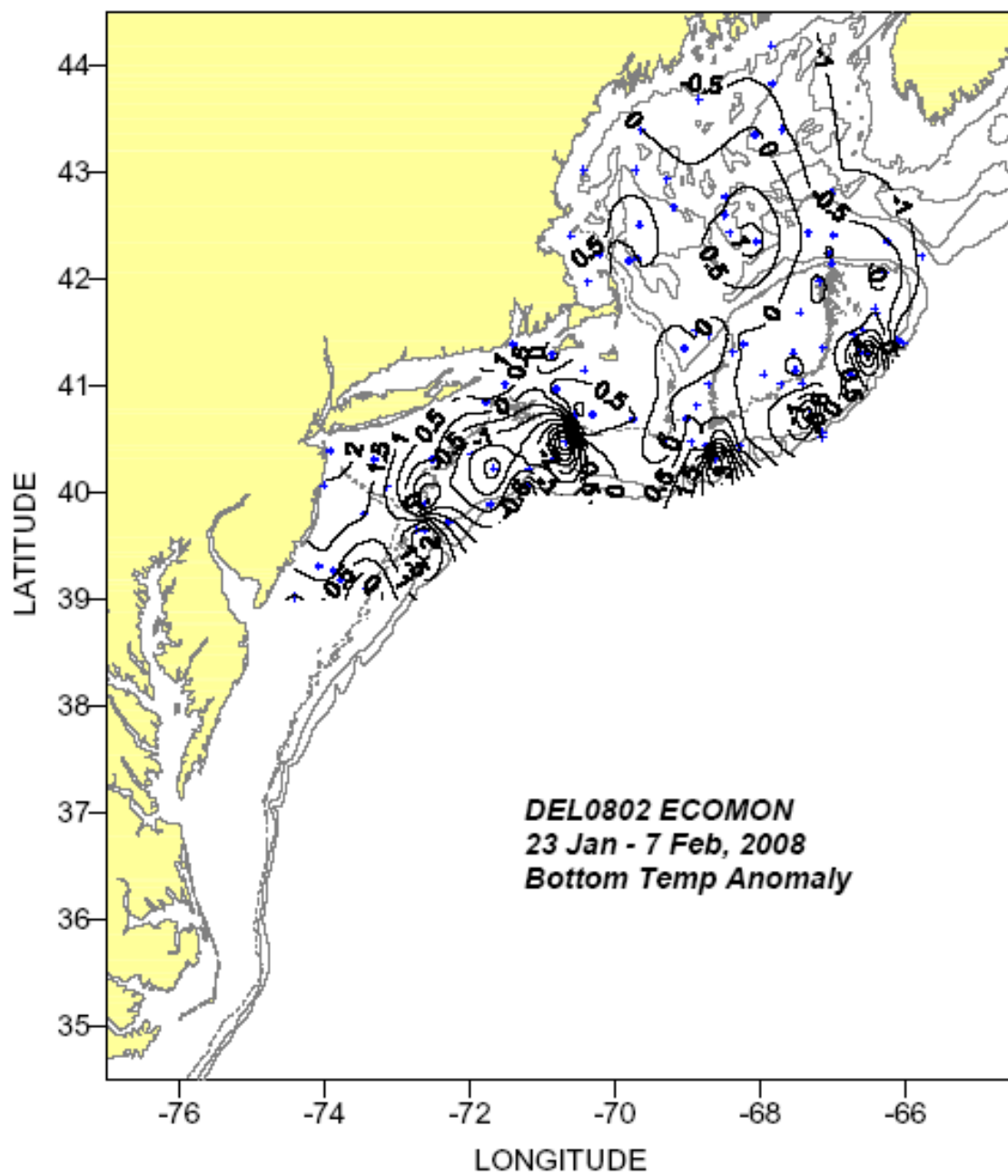
"SDV1", the standard deviation associated with the average temp/salt anomaly: "SDV2", the standard deviation of the individual anomalies from which the average anomaly was derived

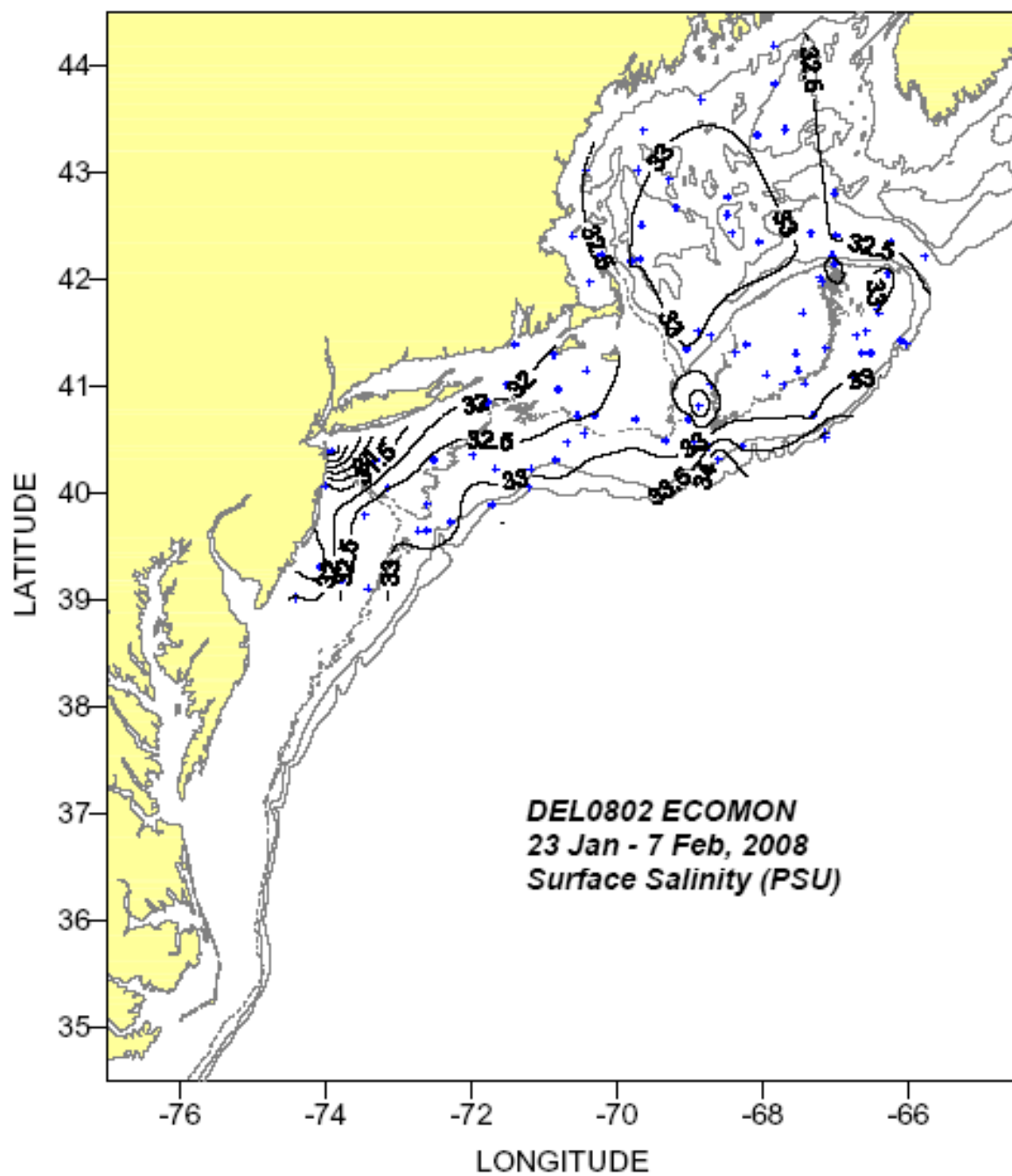
"Flag", a value of "1" indicates that a true areal average could not be calculated due to poor station coverage. The areal averages listed were derived from a simple average of the observations within the region. A value of "0" indicates a true areal average.

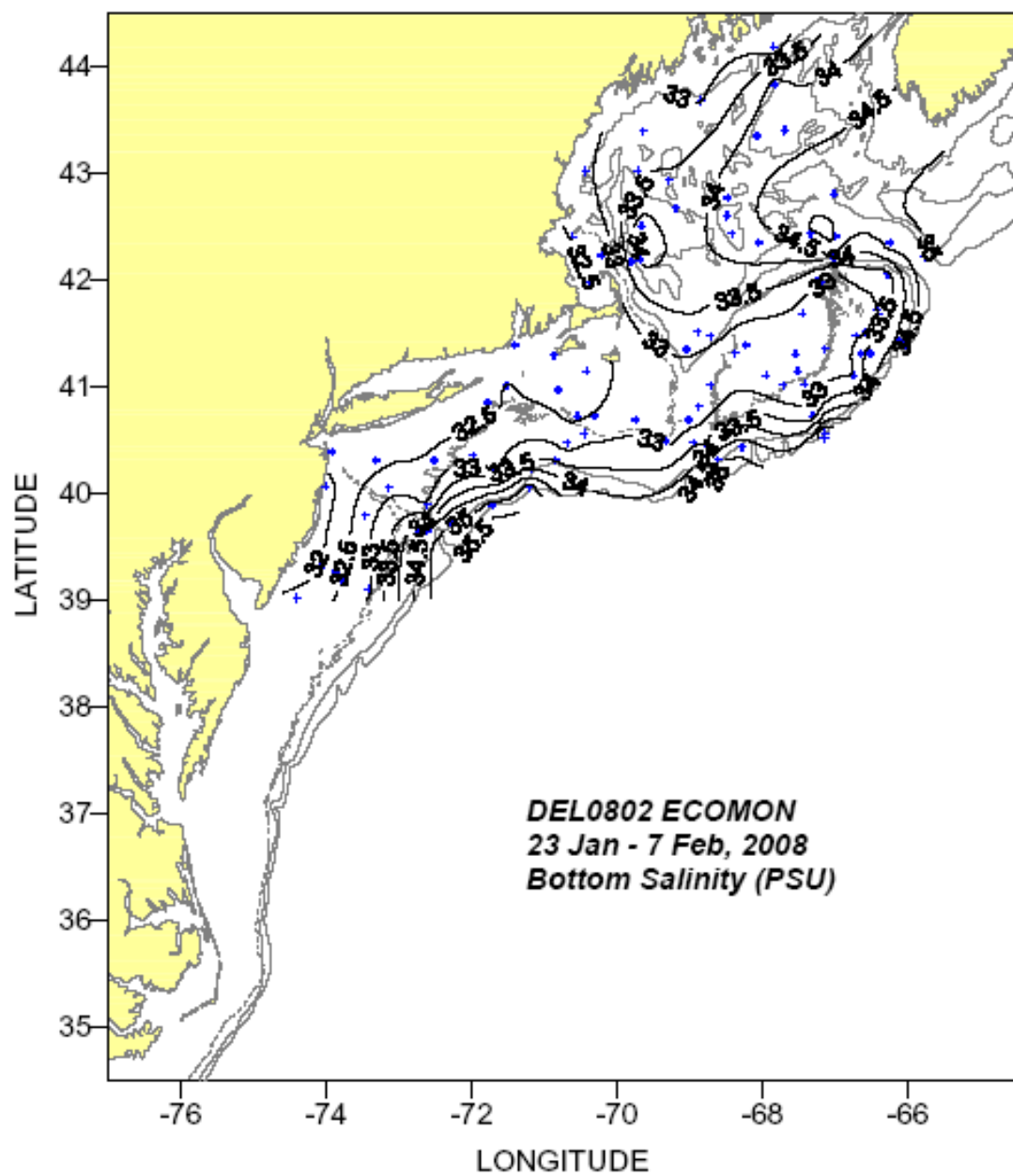


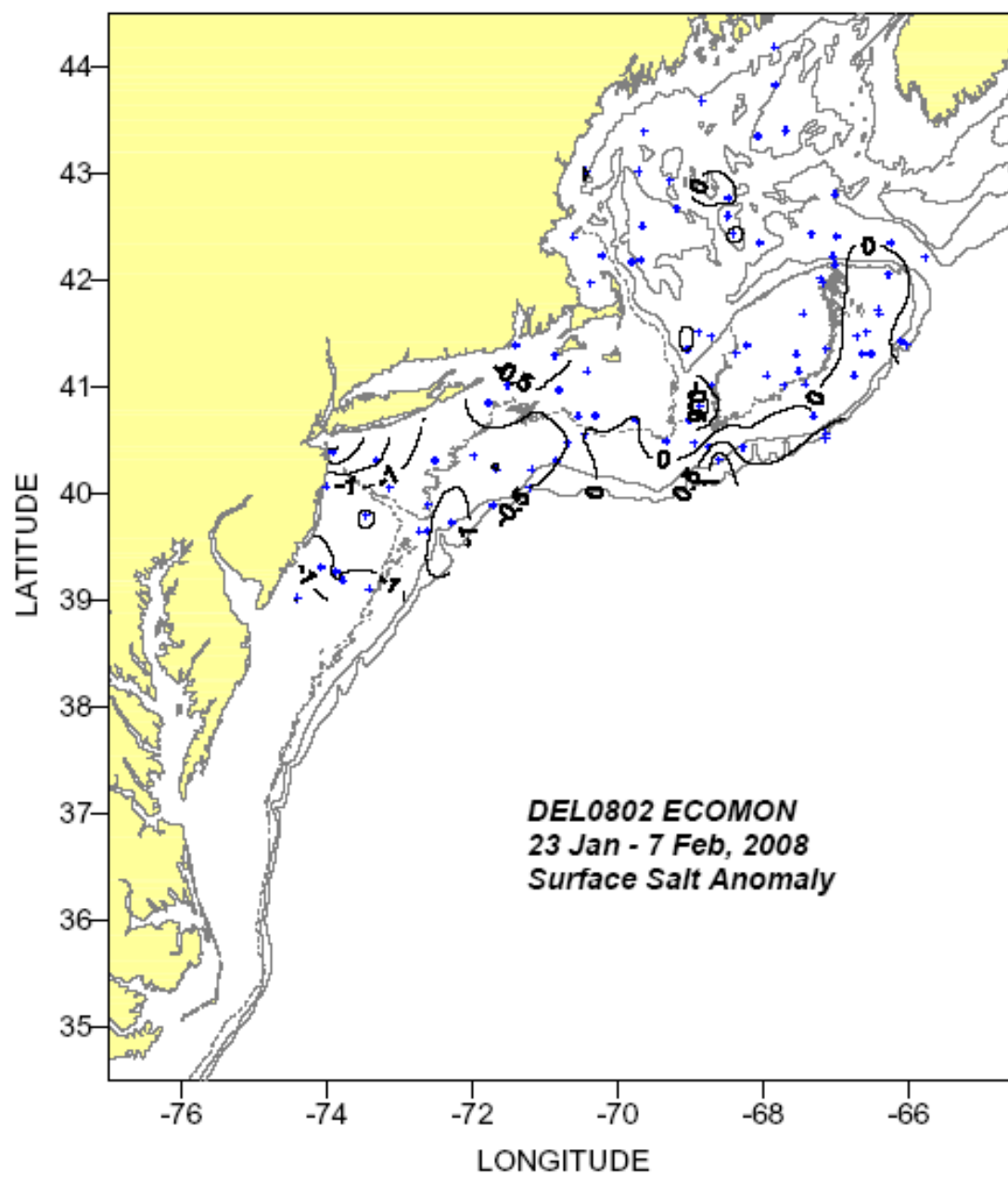












DEL0802 ECOMON
23 Jan - 7 Feb, 2008

<i>Cast #</i>	<i>Sta #</i>	<i>Lat</i>	<i>Long</i>	<i>Day</i>	<i>Mo</i>	<i>Year</i>	<i>Time (GMT)</i>	<i>Btm Depth</i>	<i>Sfc Temp</i>	<i>Sfc Salt</i>	<i>Btm Temp</i>	<i>Btm Salt</i>	<i>Meters from Bottom</i>
1	1	4123.60	7124.60	23	1	2008	1:04	33	5.25	31.72	6.03	32.14	4
2	2	4101.20	7130.80	23	1	2008	3:49	48	5.76	31.83	7.31	32.53	2
3	3	4051.20	7146.70	23	1	2008	6:55	50	6.00	32.02	6.69	32.38	4
4	4	4021.60	7158.60	23	1	2008	10:34	65	7.69	32.80	7.73	32.81	4
5	5	4018.80	7230.80	23	1	2008	13:31	52	7.23	32.63	7.25	32.63	5
6	6	4018.70	7318.90	23	1	2008	17:43	33	5.77	31.21	6.70	32.30	6
7	7	4023.60	7354.70	23	1	2008	20:46	20	5.40	28.55	7.09	32.35	2
8	7	4023.50	7354.70	23	1	2008	20:52	19	5.43	28.69	7.11	32.35	2
9	8	4004.00	7400.60	24	1	2008	0:16	24	6.18	31.72	6.20	31.77	3
10	9	4003.70	7308.70	24	1	2008	4:30	43	6.87	32.48	7.87	32.88	4
11	10	3953.80	7236.80	24	1	2008	7:18	57	7.91	32.91	7.90	32.91	3
12	11	3943.80	7217.30	24	1	2008	9:23	100	7.66	32.86	12.04	35.07	4
13	12	3939.00	7236.60	24	1	2008	11:06	73	7.74	32.88	11.86	34.67	6
14	13	3938.90	7243.50	24	1	2008	11:49	71	7.92	32.94	10.99	34.39	5
15	14	3906.50	7324.70	24	1	2008	16:40	56	7.71	32.78	8.06	32.92	4
16	15	3911.20	7346.80	24	1	2008	18:40	42	6.77	32.50	6.92	32.55	4
17	16	3916.30	7352.80	24	1	2008	19:32	36	6.41	32.30	6.53	32.34	5
18	17	3918.60	7404.80	24	1	2008	20:40	26	5.34	31.06	5.37	31.93	2
19	17	3918.60	7404.90	24	1	2008	20:46	27	5.30	31.90	5.35	31.92	5
20	18	3901.30	7424.70	24	1	2008	23:49	26	5.61	32.08	5.64	32.08	4
21	19	3948.00	7328.00	25	1	2008	9:10	35	7.12	32.78	7.14	32.78	3
22	20	4043.70	7032.70	26	1	2008	2:42	57	5.95	32.41	5.98	32.41	3
23	20	4043.70	7032.60	26	1	2008	2:49	57	5.91	32.41	5.96	32.41	6
24	21	4043.90	7018.70	26	1	2008	4:19	48	4.83	32.49	4.80	32.52	3
25	22	4058.40	7048.60	26	1	2008	8:43	49	5.76	32.36	5.75	32.37	3
26	23	4108.70	7025.00	26	1	2008	11:04	35	4.06	32.20	4.08	32.21	4
27	24	4117.80	7051.90	26	1	2008	14:25	27	3.86	32.02	3.83	32.03	5
28	25	4041.40	6944.60	29	1	2008	21:45	53	4.97	32.87	4.96	32.88	5
29	26	4033.80	7026.60	30	1	2008	1:19	65	4.96	32.83	4.92	32.84	32
30	26	4033.70	7026.50	30	1	2008	1:27	64	4.96	32.83	4.90	32.84	5
31	27	4028.70	7040.60	30	1	2008	2:50	77	5.89	32.70	5.38	32.72	6