

Oceanography Branch CTD Data Report
CTD_REPORT_2018006HB

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DATE: March 8, 2019

Oceanography Branch CTD Data Report

CTD_REPORT_2018006HB

NOAA Fisheries Service
Northeast Fisheries Science Center
Woods Hole, MA 02543

HB 1806
Fall Bottom Trawl Survey
Data Coverage: August 29 – November 12, 2018
Mid Atlantic Bight, Georges Bank, Gulf of Maine

This report presents a summary of surface and bottom temperature and salinity data collected during the Northeast Fisheries Science Center's HB1806 Fall Bottom Trawl Survey aboard the NOAA FSV *Henry B Bigelow*. Data was obtained with a Sea-Bird Electronics SBE Model 19+ profiling CTD (s/n 4477) during double oblique bongo tows and on vertical casts with a SBE Model 9/11+ s/n 0832. Sea water samples were taken for the purpose of calibrating salinity values. An SBE43 Dissolved Oxygen sensor and a Biospherical Instruments Inc. QSP2300 PAR (Photosynthetically Active Radiation) sensor were attached to the SBE 9/11+. A QSR2200 Surface PAR sensor was located on the flying bridge and relayed data in realtime to the 9/11+ deck unit. The PAR data obtained during the vertical profiling casts is included in the archived CTD data; the surface PAR data will be made available on request. Data presented here have been audited, however, corrections and/or updates may be applied at a later time.

The SBE19+ was deployed on 87 double oblique bongo casts and 26 vertical/water sampling casts. The SBE9/11+ was used successfully on 209 stations. Data presented here have been audited, however, corrections and/or updates may be applied at a later time.

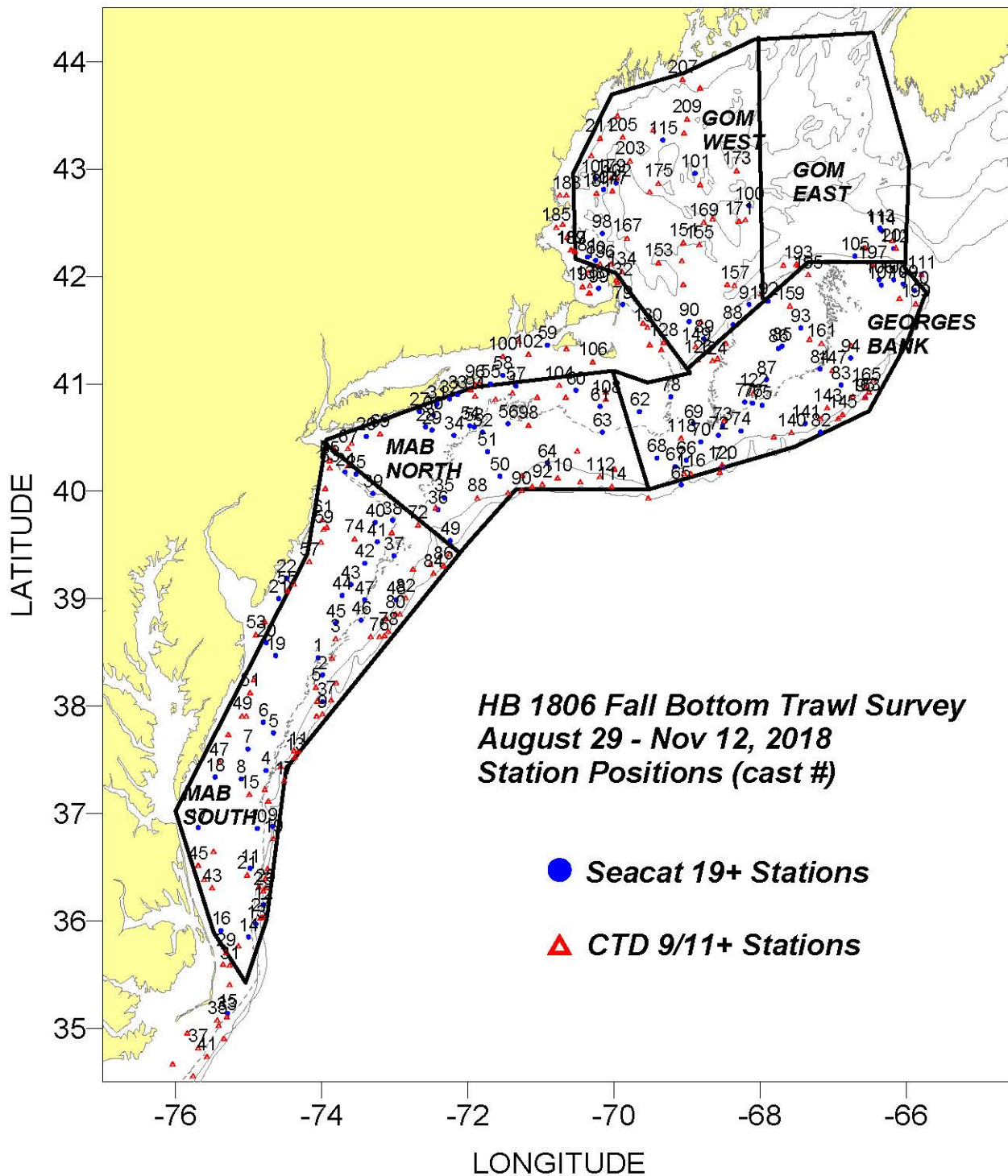
The most recent and complete station data can be found in an [NODC formatted ASCII file](#) and in a [comma delimited file](#).

This report may be viewed on the Oceanography Branch website at:

<http://www.nefsc.noaa.gov/HydroAtlas/>

choose: **2018 Cruises**
 AUG_TRAWL_HB1806
 CTD_REPORT_2018006HB.pdf

Revised: March 8, 2019



**Areal average surface and bottom temperature/salinity and temperature/salinity anomalies for the
HB1806 Fall Bottom Trawl Survey
29 Aug - 12 Nov, 2018**

		SURFACE						BOTTOM						
CRUISE	CD	#obs	T/S	Anomaly	SDV1	SDV2	Flag	#obs	T/S	Anomaly	SDV1	SDV2	Flag	Purpose
Western Gulf of Maine														
hb1806	300	48	13.17	1.45	0.16	1.05	0	43	8.61	1.32	0.13	0.99	0	10
hb1806	300	48	32.48	-0.09	0.07	0.28	0	43	33.49	0.01	0.05	0.25	0	10
Eastern Gulf of Maine														
hb1806	308	11	12.02	-0.11	1.01	0.35	1	6	10.52	1.16	0.96	1.41	1	10
hb1806	308	11	32.42	-0.09	0.42	0.22	1	6	34.37	0.33	0.26	0.16	1	10
Georges Bank														
hb1806	284	59	16.68	1.50	0.20	1.72	0	56	12.82	0.81	0.20	1.35	0	10
hb1806	284	59	32.93	0.12	0.06	0.73	0	56	33.33	-0.01	0.06	0.45	0	10
MAB North														
hb1806	263	50	20.91	2.24	0.24	1.05	0	47	14.38	1.76	0.31	2.35	0	10
hb1806	263	50	32.97	0.38	0.11	0.56	0	47	33.13	-0.56	0.10	0.39	0	10
MAB South														
hb1806	254	95	25.25	2.82	0.20	1.18	0	93	14.59	1.08	0.24	3.29	0	10
hb1806	254	95	32.02	-0.29	0.11	1.04	0	93	32.94	-0.77	0.09	0.60	0	10

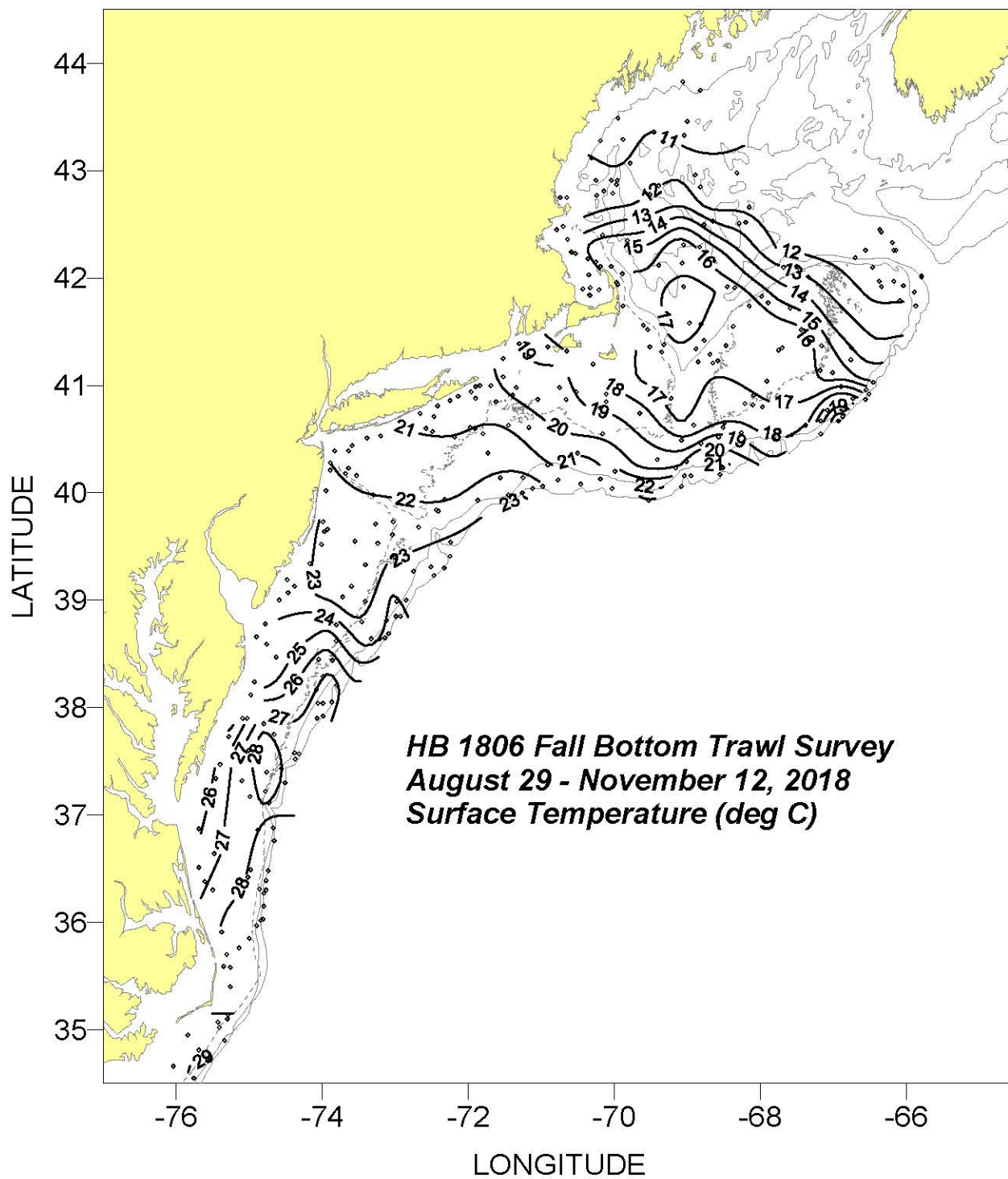
"CRUISE": the code name for a cruise; "CD": the calendar mid-date of all the stations within a region for a cruise;

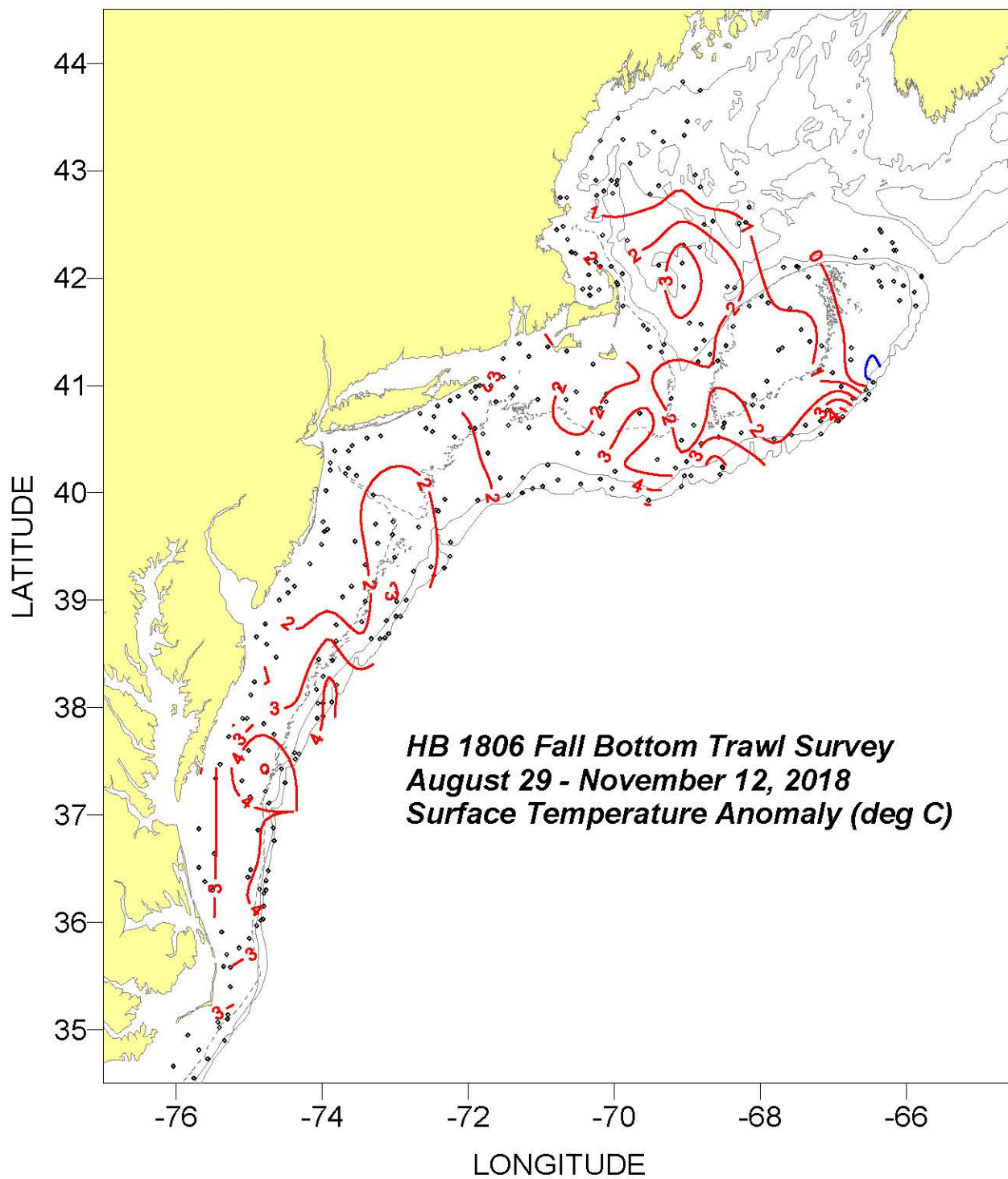
"#obs": the number of observations include in each average; "T/S": the areal average temp/salt; "Anomaly": the areal average temp/salt anomaly;

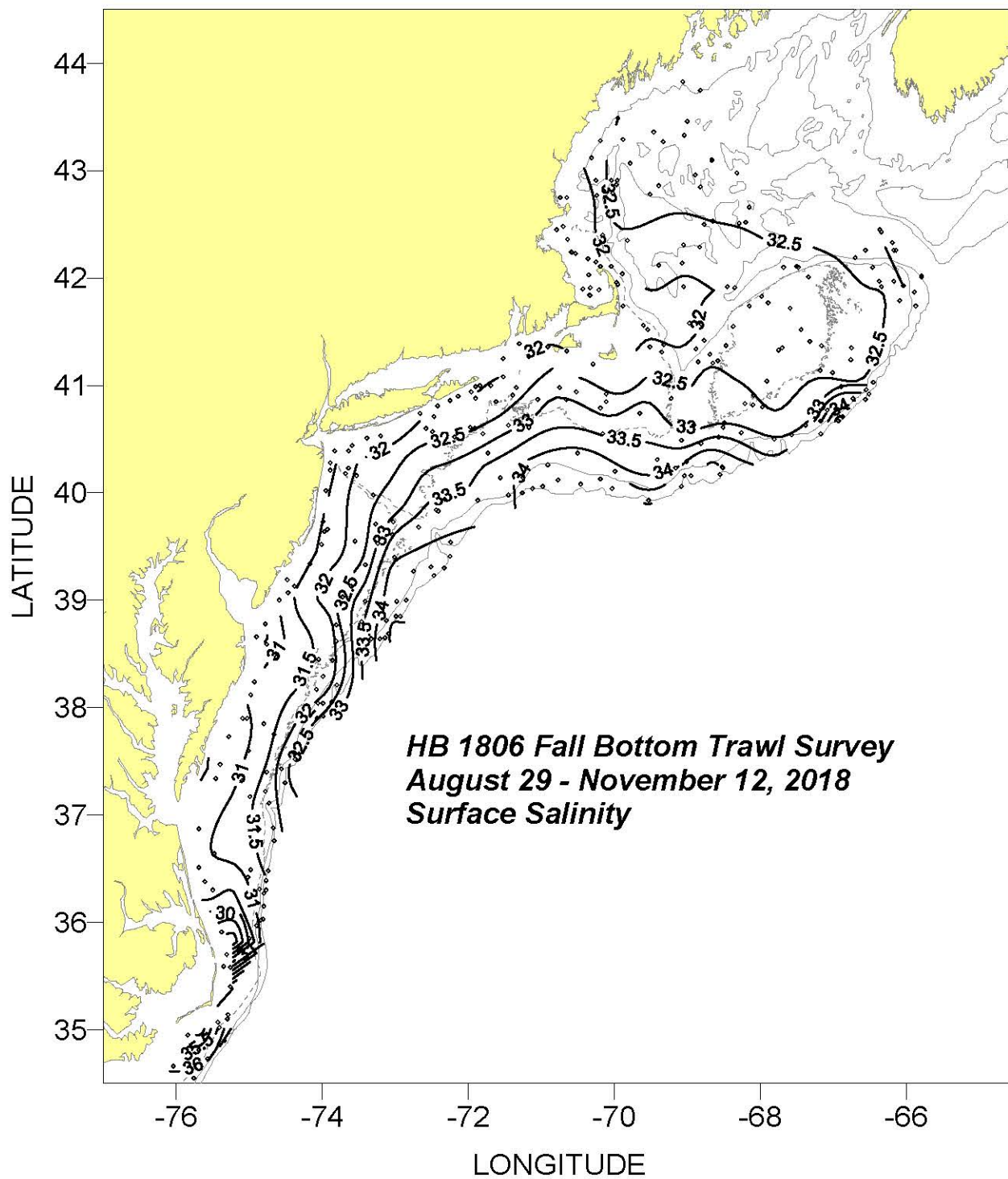
"SDV1": the standard deviation associated with the average temp/salt anomaly; "SDV2": the standard deviation of the individual anomalies from which the average anomaly was derived.

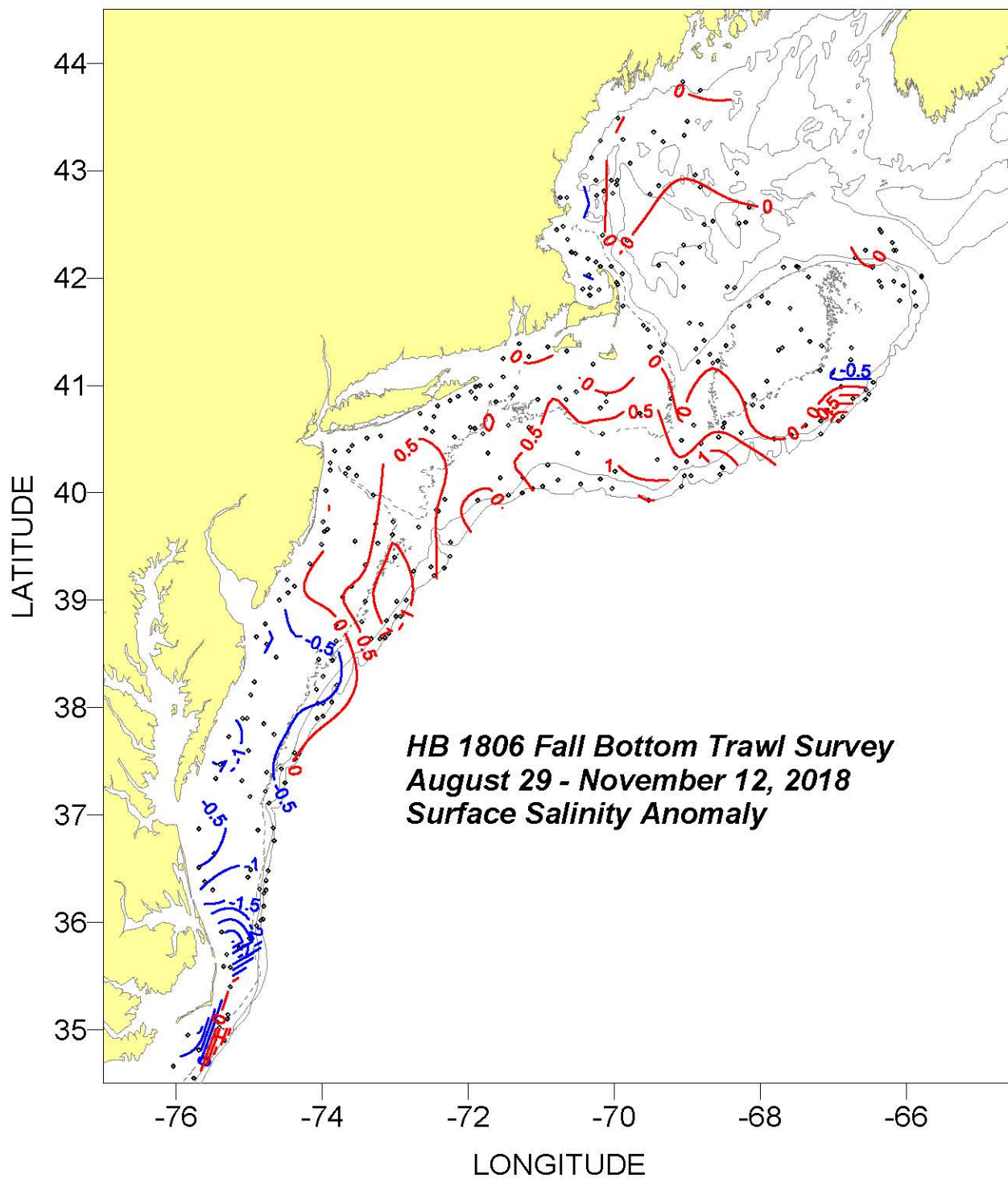
"Flag": a value of "1" indicates that a true areal average could not be calculated due to poor station coverage. The areal averages listed were derived from a simple average of the observations within the region.

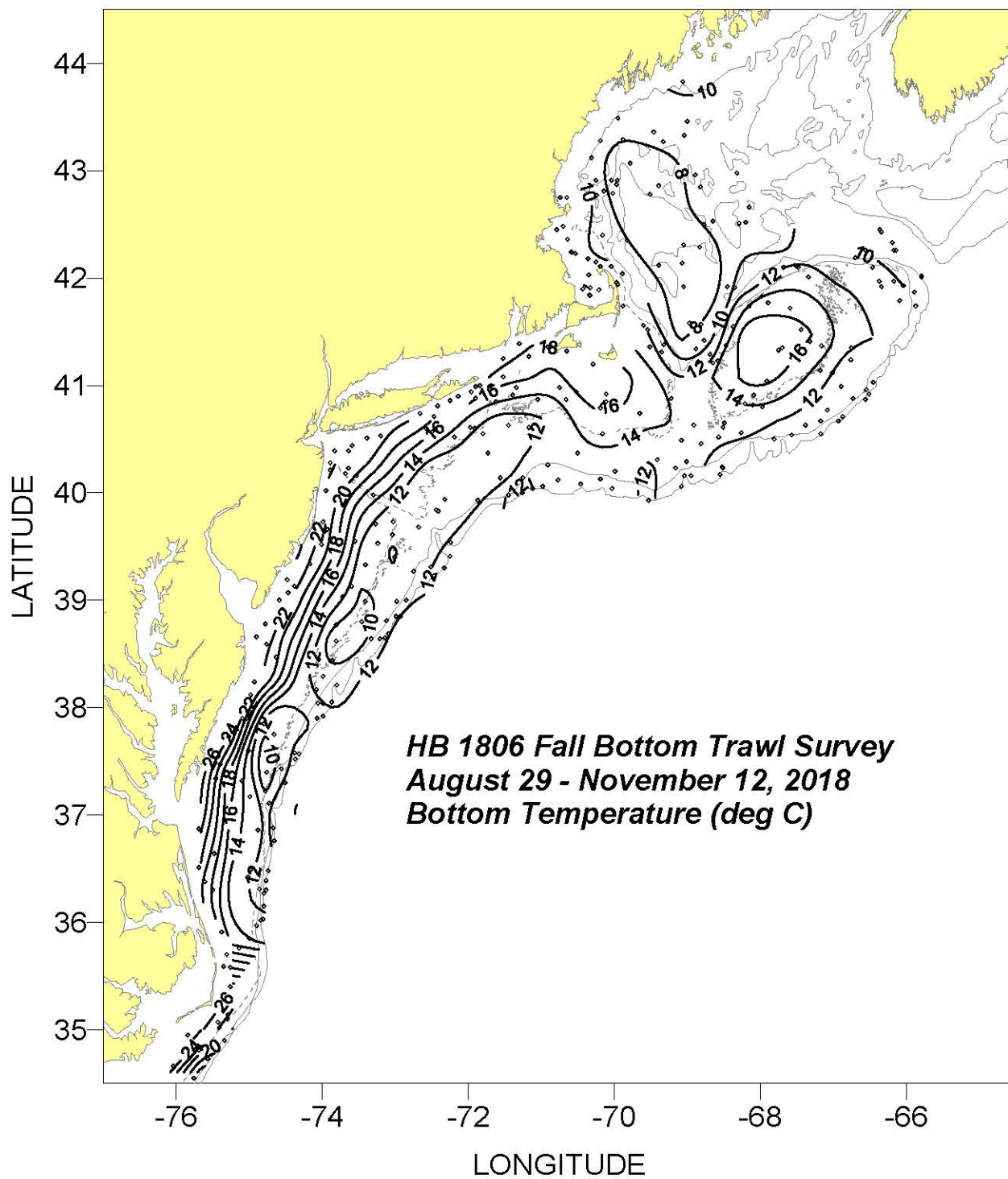
"Purpose": 2 digit code identifying the NEFSC program survey where 10 denotes a bottom trawl survey.

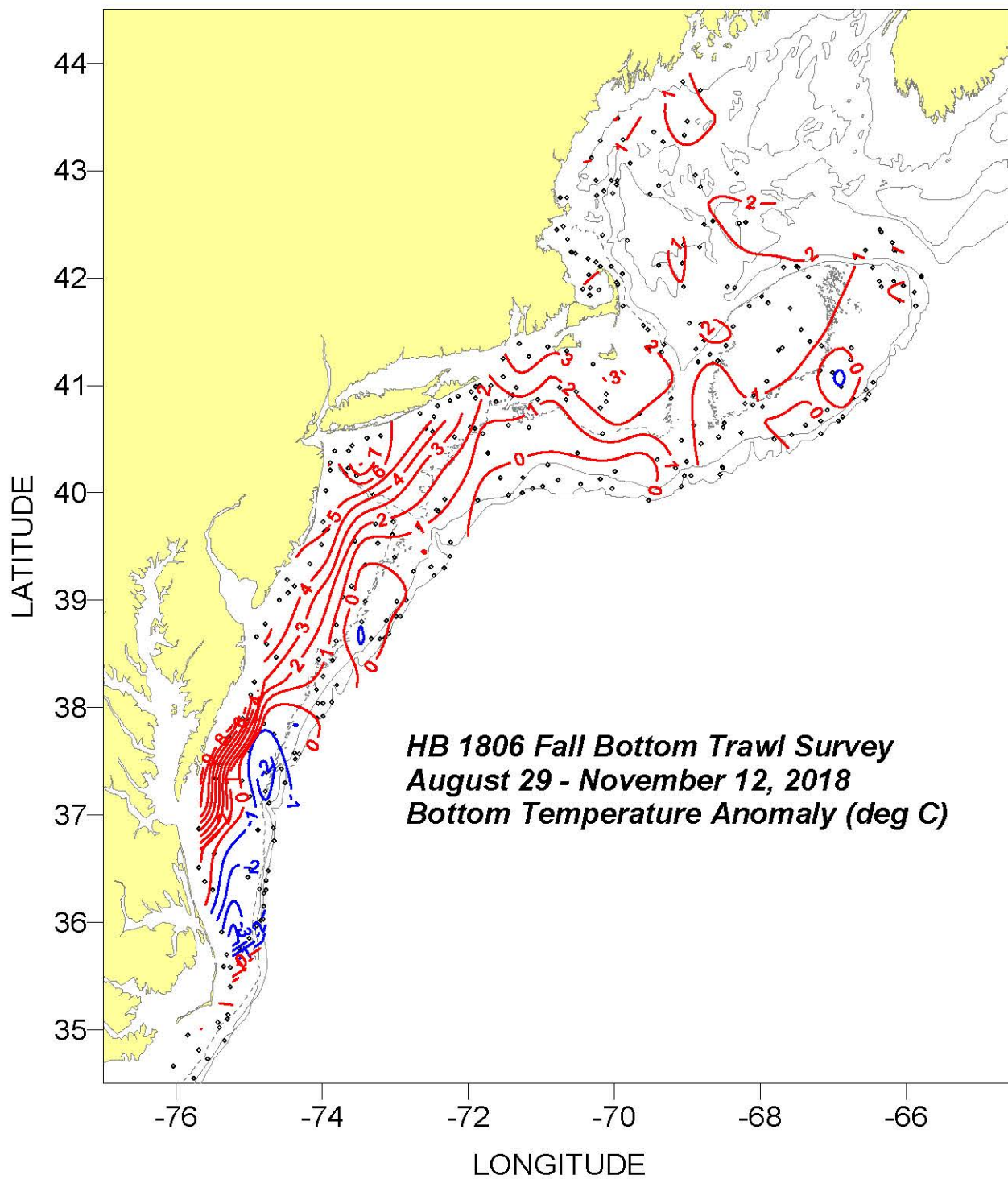


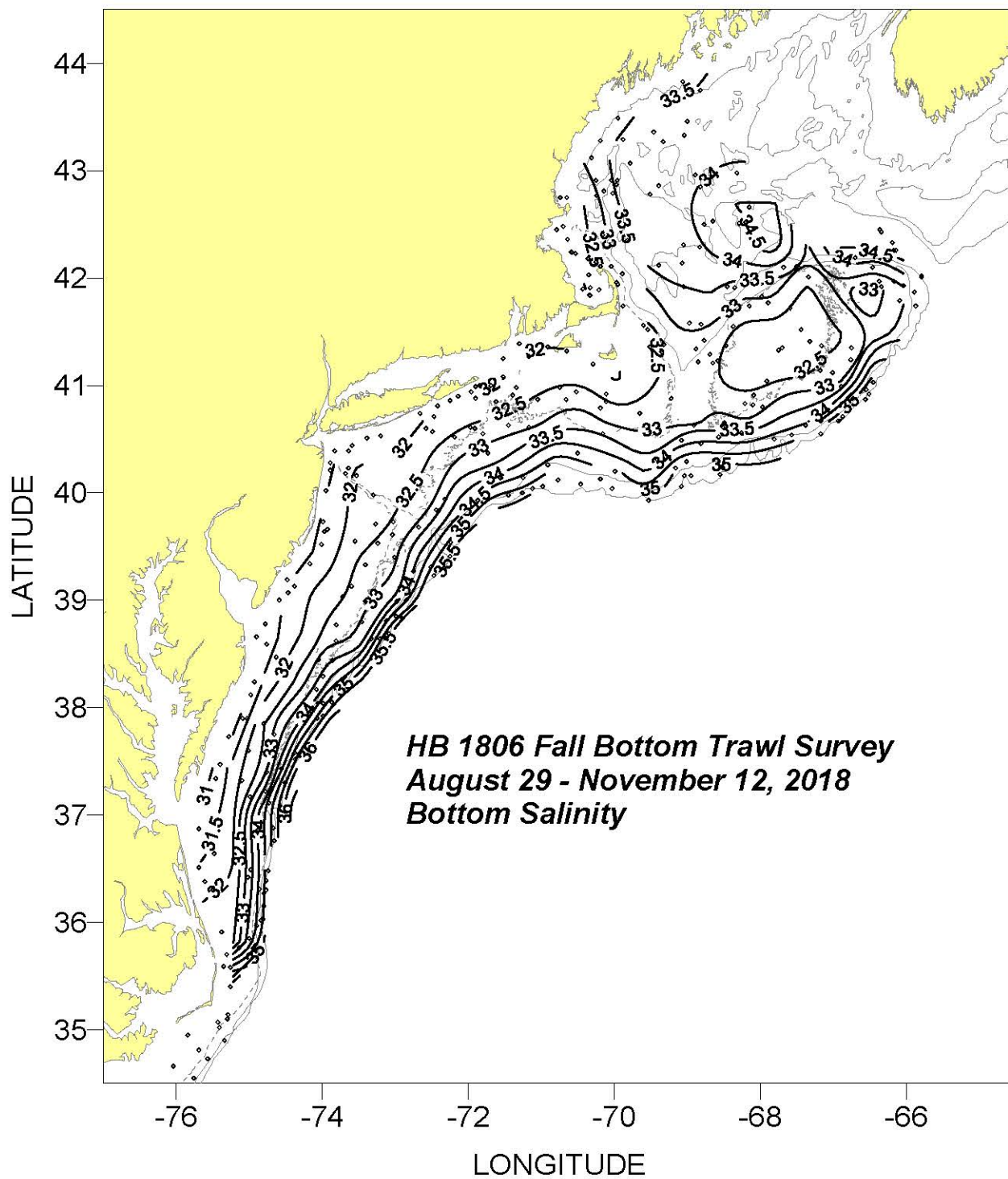


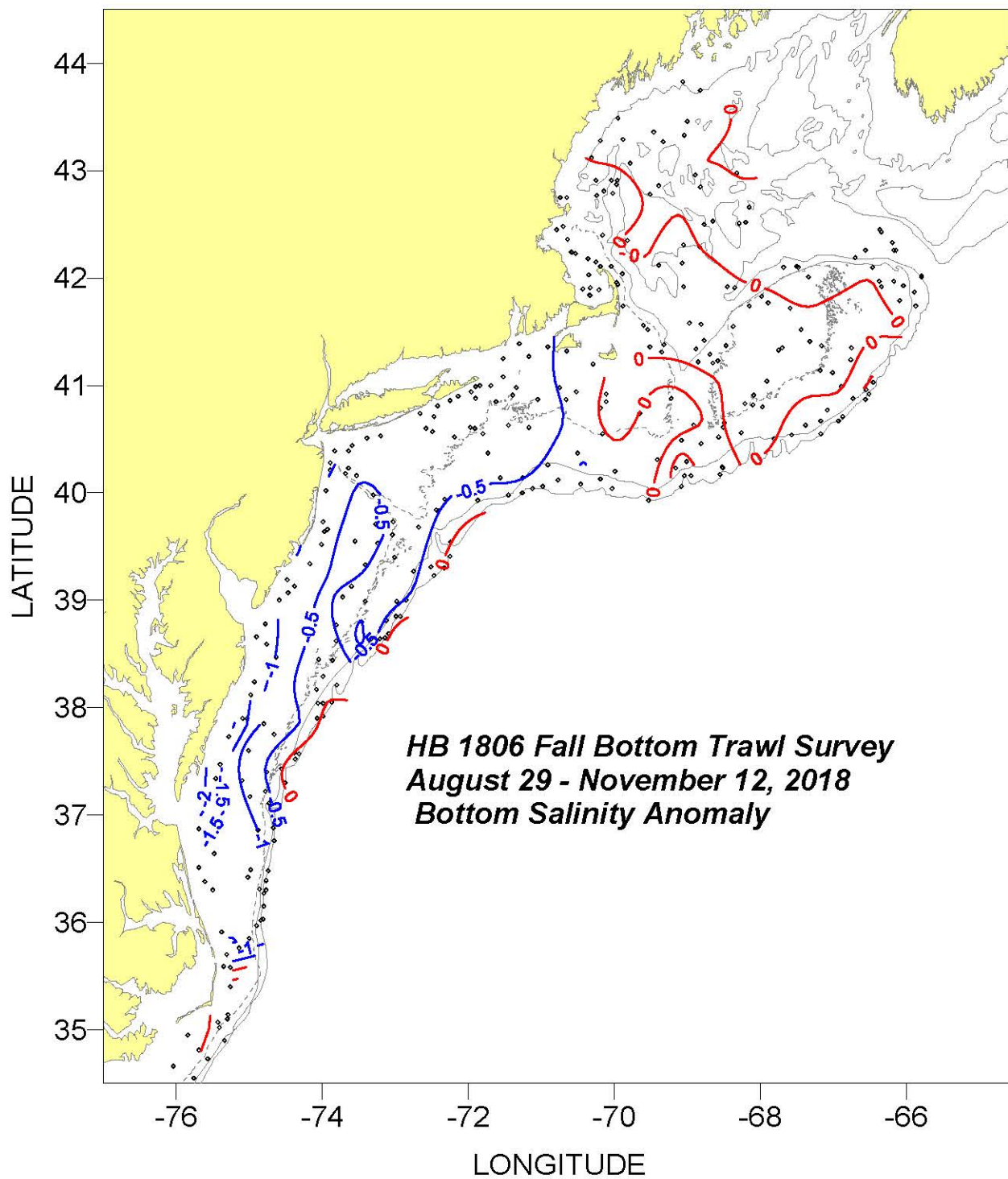












HB1806 Fall Bottom Trawl Survey
Aug 29 - Nov 12, 2018

Cast	Site ID	Lat	Long	Day	Mo	Year	Time	Btm	Sfc	Sfc	Deepest Observed	Deepest Observed	Meters from	Method of
#	#	(DDMM.M)	(DDMM.M)				(GMT)	Depth (m)	Temp (deg C)	Salt	Temp (deg C)	Salt	Bottom	Deployment
1	1	4054.6	7123.1	29	8	2018	18:03	58	22.54	31.96	10.82	32.76	6	W
2	2	4050.9	7137.4	4	9	2018	18:35	56	NaN	NaN	11.07	32.75	7	W
3	26917	3836.9	7348.7	5	9	2018	9:08	57	26.42	31.47	8.83	33.00	6	V
4	26812	3826.3	7351.4	5	9	2018	13:09	60	26.92	32.05	8.80	33.14	4	V
1	26670	3827.0	7403.2	5	9	2018	15:40	57	27.03	31.03	8.37	32.86	4	B
2	26788	3817.2	7359.5	5	9	2018	17:40	70	27.59	31.43	8.67	33.04	4	B
5	26817	3810.1	7404.9	5	9	2018	19:57	73	NaN	NaN	9.31	33.31	3	V
6	26910	3812.8	7347.8	5	9	2018	22:28	117	26.95	32.06	12.91	35.34	2	V
7	26946	3802.9	7352.2	6	9	2018	1:46	180	27.16	32.74	12.33	35.52	1	V
3	26834	3802.7	7359.4	6	9	2018	4:02	114	27.12	32.58	11.77	34.57	11	B
8	26806	3802.4	7403.3	6	9	2018	5:56	109	27.10	31.79	11.39	34.54	4	W
9	26741	3755.1	7359.5	6	9	2018	8:25	210	27.05	32.80	12.81	35.62	3	V
10	26832	3754.2	7404.3	6	9	2018	10:19	141	27.06	32.13	13.02	35.66	5	V
11	26804	3734.0	7419.0	6	9	2018	13:47	176	27.26	32.74	12.65	35.56	8	V
12	26999	3735.0	7422.5	6	9	2018	16:02	98	27.02	33.14	10.46	34.00	4	V
13	26962	3731.4	7422.0	6	9	2018	17:25	111	27.54	33.17	12.83	35.52	5	V
14	26899	3725.9	7433.9	6	9	2018	19:27	82	27.66	31.74	10.33	33.98	3	V
4	26762	3723.8	7445.7	6	9	2018	21:29	47	28.54	31.55	8.42	32.84	4	B
5	26656	3744.8	7439.3	7	9	2018	0:19	53	28.20	31.50	8.91	32.73	5	B
6	26963	3750.9	7448.1	7	9	2018	2:44	32	27.84	31.13	10.86	32.51	2	W
7	26997	3736.1	7500.7	7	9	2018	5:22	26	28.19	31.23	11.54	32.36	6	B
8	26765	3719.0	7506.2	7	9	2018	7:54	32	28.19	30.98	10.99	32.44	7	B
15	26976	3710.1	7459.6	7	9	2018	10:12	39	28.36	31.65	10.04	32.64	8	V
16	26811	3713.0	7446.8	7	9	2018	12:21	59	27.76	31.60	9.03	33.19	4	V
17	26745	3718.1	7430.6	7	9	2018	14:45	151	27.48	31.96	13.22	35.60	5	W
18	26912	3706.3	7443.9	7	9	2018	17:19	120	27.36	31.92	12.77	35.43	2	V
9	26979	3652.7	7440.0	7	9	2018	20:40	104	28.73	31.58	12.78	35.36	2	B
19	26862	3645.7	7439.5	7	9	2018	22:37	200	28.68	32.15	12.75	35.56	1	V

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Aug 29 - Nov 12, 2018

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#	#	(DDMM.M)	(DDMM.M)				(GMT)	Depth (m)	Temp (deg C)	Salt	Temp (deg C)	Salt	Bottom	Deployment
10	26778	3651.5	7453.0	8	9	2018	1:20	43	28.26	31.52	9.47	NaN	4	B
20	26878	3629.0	7444.2	8	9	2018	4:52	230	28.11	31.39	11.80	35.49	15	V
11	26983	3629.6	7458.9	8	9	2018	7:47	46	28.58	31.17	10.48	32.73	5	B
21	26690	3625.1	7500.9	8	9	2018	9:37	38	28.21	30.91	10.35	32.79	4	V
22	26729	3618.7	7451.6	8	9	2018	11:50	78	27.66	31.33	8.54	33.23	4	V
23	26919	3616.5	7447.7	8	9	2018	14:16	108	28.00	31.35	10.43	33.97	4	V
24	26672	3623.3	7446.3	8	9	2018	16:20	197	28.10	31.34	12.18	35.54	3	V
25	26860	3618.1	7446.3	8	9	2018	18:02	256	27.85	31.36	10.68	35.35	1	V
12	26882	3609.2	7448.0	8	9	2018	20:13	126	29.21	31.35	12.18	34.93	1	B
26	26925	3602.0	7448.4	8	9	2018	22:05	136	28.09	31.37	13.29	35.59	3	V
27	26950	3600.9	7450.7	8	9	2018	23:42	99	28.17	31.36	10.57	34.17	3	V
13	26757	3558.1	7454.2	9	9	2018	1:26	86	28.27	30.62	9.20	33.41	4	V
14	26624	3550.9	7500.1	9	9	2018	3:27	49	28.70	29.27	13.14	32.96	7	B
28	26777	3545.8	7508.3	9	9	2018	5:39	31	28.51	28.53	13.71	33.00	3	V
29	26735	3541.9	7518.8	9	9	2018	7:59	24	28.58	28.53	18.83	32.47	4	V
30	26938	3535.3	7521.0	9	9	2018	9:41	25	28.40	27.52	19.32	33.31	5	V
31	26664	3535.0	7515.7	9	9	2018	11:25	28	28.30	32.26	27.40	35.89	4	W
32	26990	3524.0	7515.8	9	9	2018	13:22	28	28.56	33.75	26.83	36.21	4	V
15	26630	3508.7	7517.2	9	9	2018	15:33	34	29.16	35.38	26.20	36.30	5	B
33	26855	3506.1	7517.8	9	9	2018	17:14	58	29.23	36.09	24.86	36.37	3	V
34	26845	3501.3	7524.6	9	9	2018	18:55	58	29.43	36.17	23.31	36.29	1	V
35	26816	3504.0	7525.9	9	9	2018	20:19	27	28.64	30.78	26.42	36.26	3	V
36	26774	3457.0	7550.1	9	9	2018	22:57	26	29.64	36.15	28.39	36.33	2	V
37	26844	3448.5	7541.2	10	9	2018	0:58	44	29.33	36.10	23.94	36.35	3	V
38	26727	3439.7	7602.5	10	9	2018	3:47	39	29.45	36.12	26.23	36.31	1	V
39	26969	3423.4	7550.1	10	9	2018	6:21	227	28.49	36.11	11.36	35.43	4	W
40	26880	3432.8	7545.3	10	9	2018	8:41	132	28.76	36.15	15.70	36.09	4	V
41	26706	3443.6	7534.2	10	9	2018	11:21	158	28.75	36.16	14.22	35.86	7	V

HB1806 Fall Bottom Trawl Survey
Aug 29 - Nov 12, 2018

Cast	Site ID	Lat	Long	Day	Mo	Year	Time	Btm	Sfc	Sfc	Deepest Observed	Deepest Observed	Meters from	Method of
#	#	(DDMM.M)	(DDMM.M)				(GMT)	Depth (m)	Temp (deg C)	Salt	Temp (deg C)	Salt	Bottom	Deployment
42	26801	3454.2	7520.7	10	9	2018	14:24	267	29.22	36.21	11.80	35.49	13	V
16	26978	3554.9	7522.9	10	9	2018	21:58	23	28.74	29.51	18.11	32.21	4	B
43	26992	3618.0	7529.9	11	9	2018	2:21	30	27.00	30.90	17.39	32.14	4	V
44	26884	3622.9	7536.3	11	9	2018	4:44	26	26.31	30.99	20.07	31.80	8	V
45	26759	3630.3	7541.2	11	9	2018	6:36	24	26.55	30.80	21.52	31.49	5	V
46	26755	3638.2	7528.7	11	9	2018	8:50	20	26.30	31.23	19.75	31.68	6	V
17	26856	3651.9	7541.4	11	9	2018	11:25	25	25.85	30.79	25.56	31.12	7	B
18	26921	3720.2	7527.9	11	9	2018	18:19	25	25.57	30.46	24.57	31.04	3	W
47	26779	3728.2	7524.2	11	9	2018	20:01	22	25.81	30.54	24.19	30.91	2	V
48	26719	3743.5	7517.0	11	9	2018	23:04	23	25.71	30.75	24.06	30.79	3	V
49	26748	3753.9	7505.1	12	9	2018	1:26	26	24.27	30.90	23.62	31.02	2	V
50	26802	3754.1	7501.6	12	9	2018	3:42	26	23.78	31.12	22.91	31.14	5	V
51	26970	3807.3	7458.8	12	9	2018	5:58	19	24.62	31.04	23.67	31.12	5	V
52	26667	3814.6	7455.9	12	9	2018	7:36	22	24.24	31.23	23.55	31.23	6	W
19	26971	3828.3	7437.9	12	9	2018	10:21	25	23.11	31.52	22.73	31.56	6	B
20	26918	3835.3	7445.5	12	9	2018	12:24	23	24.47	30.49	23.40	31.37	6	W
53	26636	3839.6	7453.9	12	9	2018	14:07	25	24.05	29.65	24.14	30.72	6	V
54	26959	3847.1	7446.7	12	9	2018	16:53	21	24.51	31.10	23.86	31.12	4	V
21	26668	3859.8	7435.1	12	9	2018	19:35	18	25.19	30.74	23.90	30.79	3	B
55	26951	3904.2	7428.4	12	9	2018	21:44	19	23.40	31.41	22.94	31.74	4	V
56	26995	3908.1	7422.9	12	9	2018	23:32	25	23.44	31.55	22.69	31.70	5	V
22	26800	3911.3	7429.0	13	9	2018	1:49	20	23.76	31.06	22.73	31.25	4	B
57	26858	3920.7	7410.5	13	9	2018	4:46	21	23.34	31.37	23.13	31.50	5	V
58	26923	3930.9	7400.6	13	9	2018	6:50	24	NaN	NaN	22.27	31.58	6	V
59	26994	3938.5	7358.4	13	9	2018	10:38	26	22.53	31.57	21.80	31.57	5	V
60	26644	3939.8	7355.8	13	9	2018	12:15	28	22.54	31.51	21.77	31.58	5	V
61	26771	3944.1	7359.3	13	9	2018	13:44	24	23.08	31.54	22.55	31.49	5	V
62	26660	4001.3	7357.3	13	9	2018	16:13	25	22.74	31.40	22.47	31.51	3	V

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#	#	(DDMM.M)	(DDMM.M)				(GMT)	Depth (m)	Temp (deg C)	Salt	Temp (deg C)	Salt	Bottom	Deployment
63	26688	4012.3	7353.6	13	9	2018	18:26	22	22.73	31.04	22.59	31.26	3	V
24	26890	4010.7	7340.9	13	9	2018	21:11	43	22.36	32.23	14.12	32.16	2	B
25	26716	4009.5	7332.0	13	9	2018	22:57	41	21.67	32.26	20.02	32.21	5	B
64	26864	4013.7	7338.4	14	9	2018	1:40	32	22.04	32.33	21.71	32.27	5	V
65	26651	4017.1	7353.2	14	9	2018	4:11	24	21.70	31.52	21.71	31.51	7	V
66	26956	4023.3	7349.5	14	9	2018	6:04	32	22.46	31.24	21.00	31.55	6	V
67	26634	4023.4	7338.2	14	9	2018	7:53	25	21.58	31.69	21.58	31.70	10	W
68	26838	4026.5	7335.5	14	9	2018	10:58	24	21.87	31.38	21.87	31.39	9	V
26	26848	4030.8	7323.5	14	9	2018	13:12	24	21.60	31.33	21.51	31.36	8	B
69	26773	4031.8	7311.9	14	9	2018	15:12	31	21.06	31.58	21.06	31.59	7	V
27	26896	4044.4	7239.6	14	9	2018	19:59	27	20.82	31.65	20.52	31.76	2	W
28	26985	4035.8	7234.9	14	9	2018	21:59	42	20.98	32.50	17.01	32.21	2	V
29	26871	4034.0	7229.2	14	9	2018	23:30	43	21.01	32.38	11.98	32.54	6	B
30	26663	4042.7	7228.3	15	9	2018	3:10	33	20.46	31.77	20.01	32.08	3	W
31	26685	4048.6	7225.0	15	9	2018	4:07	28	20.54	31.49	20.28	31.71	4	V
32	26767	4051.3	7215.1	15	9	2018	5:40	31	20.34	31.55	20.03	31.81	8	V
33	26684	4054.0	7208.2	15	9	2018	7:02	31	20.17	31.61	20.16	31.65	6	V
34	26654	4031.3	7211.5	15	9	2018	10:24	58	20.95	32.58	11.71	32.60	5	B
35	26712	3956.4	7219.2	15	9	2018	14:43	80	21.63	33.43	9.96	33.13	9	B
36	26736	3949.6	7224.4	15	9	2018	16:27	79	21.61	33.28	9.89	33.01	5	V
71	26960	3950.4	7226.5	15	9	2018	18:21	82	21.59	33.29	9.91	33.05	3	W
72	26645	3940.8	7240.7	15	9	2018	21:09	76	23.18	34.26	10.00	33.03	5	V
37	26687	3923.9	7300.5	16	9	2018	0:17	62	22.97	34.42	9.77	32.79	5	B
73	26728	3936.8	7302.6	16	9	2018	2:37	65	22.43	32.72	10.11	32.64	2	V
38	26977	3943.9	7301.6	16	9	2018	4:17	55	22.35	32.72	10.32	32.54	7	B
39	26808	3958.6	7317.9	16	9	2018	7:21	70	22.01	32.68	10.98	32.59	11	W
40	26647	3942.3	7316.4	16	9	2018	9:56	42	22.41	32.46	10.68	32.49	6	B
41	26908	3931.9	7314.6	16	9	2018	12:19	40	22.58	32.52	10.48	32.52	5	B

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#	#	(DDMM.M)	(DDMM.M)				(GMT)	Depth (m)	Temp (deg C)	Salt	Temp (deg C)	Salt	Bottom	Deployment
74	26744	3933.3	7332.7	16	9	2018	14:26	39	22.47	32.09	13.11	32.30	5	W
42	26652	3919.8	7324.5	16	9	2018	16:57	47	22.79	32.53	10.15	32.68	6	B
43	26841	3908.0	7335.9	16	9	2018	19:47	49	22.18	32.96	10.58	32.69	8	B
44	26818	3901.7	7343.5	16	9	2018	21:32	44	22.42	32.69	10.93	32.49	4	W
45	26863	3846.3	7348.5	16	9	2018	23:55	48	22.36	32.82	10.08	32.71	3	B
46	26944	3848.3	7327.4	17	9	2018	2:31	71	22.00	33.09	9.55	32.92	6	W
47	26775	3859.4	7324.3	17	9	2018	4:32	63	22.32	33.22	9.69	32.83	6	B
75	26955	3838.2	7319.8	17	9	2018	7:35	92	23.95	34.56	9.52	33.10	6	V
76	26859	3838.6	7312.9	17	9	2018	9:12	131	24.06	34.58	13.07	35.49	6	W
77	26697	3838.8	7308.1	17	9	2018	11:18	213	24.11	34.60	12.30	35.53	6	V
78	26866	3841.5	7305.3	17	9	2018	12:58	202	23.97	34.54	11.93	35.49	7	V
79	26628	3848.7	7307.3	17	9	2018	14:51	89	23.93	34.55	9.71	33.20	8	V
80	26846	3851.1	7259.4	17	9	2018	17:21	109	24.55	34.55	12.28	34.82	7	V
81	26829	3851.2	7255.8	17	9	2018	19:00	216	23.93	34.47	12.39	35.53	5	V
48	26888	3859.2	7258.7	17	9	2018	21:05	89	24.48	34.52	11.16	33.77	8	B
82	26633	3859.8	7251.1	17	9	2018	23:12	124	24.27	34.48	12.24	34.85	6	W
83	26933	3916.4	7245.0	18	9	2018	2:04	102	22.26	33.32	9.89	33.19	4	W
84	26784	3913.7	7228.5	18	9	2018	4:43	213	23.57	34.44	11.96	35.48	6	V
85	27000	3918.5	7230.3	18	9	2018	7:04	145	23.64	34.34	12.95	35.55	6	V
86	26881	3918.0	7219.8	18	9	2018	9:00	230	25.23	34.79	12.09	35.50	7	V
87	26650	3924.3	7215.1	18	9	2018	11:03	265	23.61	34.43	12.16	35.51	10	V
49	26635	3932.3	7214.6	18	9	2018	14:08	143	23.22	34.13	12.93	35.51	7	B
88	26691	3955.9	7152.4	18	9	2018	18:15	118	22.62	33.56	12.45	34.99	3	V
89	26854	3958.8	7127.0	18	9	2018	21:14	127	23.08	33.96	12.80	35.36	5	V
90	26738	3959.8	7115.6	18	9	2018	23:12	275	22.89	33.80	10.39	35.33	4	W
91	26873	4002.4	7107.4	19	9	2018	2:09	237	23.67	34.32	11.56	35.45	3	V
92	26974	4003.6	7058.8	19	9	2018	4:47	214	23.37	34.18	12.42	35.51	7	V
93	26751	4008.2	7115.0	19	9	2018	7:25	120	22.68	34.44	12.39	34.60	8	V

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Cast	Site ID	Lat	Long	Day	Mo	Year	Time	Btm	Sfc	Sfc	Deepest Observed	Deepest Observed	Meters from	Method of
#	#	(DDMM.M)	(DDMM.M)				(GMT)	Depth (m)	Temp (deg C)	Salt	Temp (deg C)	Salt	Bottom	Deployment
50	26926	4008.3	7133.7	19	9	2018	9:46	86	20.49	33.23	11.96	34.10	5	B
51	26776	4021.9	7144.0	19	9	2018	12:00	79	22.17	33.68	10.14	32.96	8	B
52	26710	4033.3	7148.0	19	9	2018	14:06	70	20.93	32.73	10.65	32.80	10	B
53	26641	4035.9	7154.6	19	9	2018	15:44	56	21.29	32.57	12.52	32.44	5	W
54	26836	4036.8	7158.1	19	9	2018	17:54	56	21.24	32.54	11.66	32.57	5	B
94	26961	4053.0	7153.9	19	9	2018	20:31	37	21.06	31.32	18.60	32.31	10	W
95	26629	4056.2	7157.7	19	9	2018	22:37	30	20.82	31.34	19.85	32.05	5	V
96	26851	4059.4	7154.2	20	9	2018	0:31	22	20.64	31.27	20.66	31.29	4	V
97	26824	4100.1	7150.6	20	9	2018	2:15	25	20.64	31.21	20.65	31.24	6	V
55	26915	4059.9	7141.6	20	9	2018	4:32	42	20.61	32.34	14.79	32.24	7	B
56	26823	4037.6	7126.9	20	9	2018	8:21	66	20.07	32.86	11.18	32.68	6	B
98	26715	4036.4	7110.1	20	9	2018	11:28	68	20.44	33.17	11.41	32.69	6	W
99	26822	4051.9	7102.7	20	9	2018	14:18	60	19.67	32.61	12.19	32.63	6	V
57	26766	4059.1	7120.4	20	9	2018	18:12	44	19.48	32.20	14.95	32.27	5	B
100	26626	4115.1	7130.9	25	9	2018	17:12	40	19.49	31.99	19.16	31.99	9	V
58	26825	4105.0	7131.0	25	9	2018	20:54	22	19.35	32.06	19.34	32.05	7	B
101	26653	4123.4	7117.9	26	9	2018	5:20	31	19.55	31.94	19.55	31.94	5	V
102	27159	4116.2	7110.5	26	9	2018	8:01	37	18.96	32.01	17.90	32.07	6	W
59	26931	4121.6	7054.5	26	9	2018	12:07	30	19.00	31.88	18.93	31.89	9	B
103	27070	4119.1	7039.1	26	9	2018	16:15	19	18.40	31.96	18.31	31.96	5	V
104	26747	4058.6	7045.0	26	9	2018	19:59	51	19.66	33.16	14.23	32.49	6	V
105	26699	4052.1	7039.4	26	9	2018	22:31	54	19.22	32.99	13.44	32.60	5	V
60	26695	4056.6	7031.1	27	9	2018	0:38	48	19.28	33.08	15.61	32.60	4	B
106	26739	4112.1	7017.4	27	9	2018	4:33	27	17.97	32.05	17.96	32.05	6	V
107	26984	4055.1	7006.8	27	9	2018	8:11	25	17.81	32.01	17.66	32.05	5	V
108	26750	4050.9	7006.5	27	9	2018	10:20	28	17.78	31.98	17.17	32.24	6	W
61	26796	4047.6	7011.5	27	9	2018	12:07	42	17.15	32.38	17.71	33.04	9	B
62	26770	4044.7	6938.9	27	9	2018	16:09	43	19.29	33.67	19.23	33.69	11	B

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#	#	(DDMM.M)	(DDMM.M)				(GMT)	Depth (m)	Temp (deg C)	Salt	Temp (deg C)	Salt	Bottom	Deployment
63	26769	4033.3	7009.7	27	9	2018	20:03	59	20.72	33.82	14.89	33.32	8	B
109	26700	4022.3	7030.0	28	9	2018	1:50	88	20.64	33.95	12.69	34.05	3	V
64	26911	4015.8	7054.8	28	9	2018	5:05	122	20.91	34.29	12.85	34.74	9	B
110	26794	4007.3	7046.3	28	9	2018	7:23	138	22.06	34.77	12.97	35.47	6	W
111	26725	4004.6	7027.6	28	9	2018	11:09	194	22.08	34.82	12.25	35.52	8	V
112	26869	4007.9	7011.5	28	9	2018	14:24	122	22.91	35.08	12.72	34.97	5	V
113	26830	4011.7	6959.7	28	9	2018	16:30	100	20.68	34.08	12.34	34.53	5	V
114	26900	4002.6	7001.5	28	9	2018	19:19	156	23.17	35.01	12.27	35.47	4	V
115	26826	3956.1	6932.0	29	9	2018	0:06	225	23.42	34.96	11.00	35.39	10	V
65	26722	4003.5	6904.5	29	9	2018	2:57	191	23.66	34.94	12.19	35.48	7	B
116	26781	4009.4	6857.2	29	9	2018	5:38	142	23.30	35.15	13.67	35.64	4	W
117	26631	4009.5	6902.3	29	9	2018	7:31	145	22.35	35.00	12.81	35.61	4	V
66	26683	4017.4	6900.3	29	9	2018	9:51	99	19.12	33.65	13.49	34.94	7	B
67	26754	4013.6	6909.4	29	9	2018	11:40	104	20.49	34.08	12.91	34.86	8	B
68	26937	4018.6	6924.6	29	9	2018	14:08	80	18.39	33.18	11.46	33.38	8	W
118	26625	4029.5	6904.6	29	9	2018	16:56	80	17.68	32.99	11.57	32.91	4	V
69	26852	4037.9	6854.6	29	9	2018	19:21	68	17.81	32.93	13.80	32.97	6	B
70	26835	4027.8	6848.6	29	9	2018	21:06	77	18.66	33.34	11.19	33.13	7	B
119	26935	4010.5	6832.8	30	9	2018	0:20	197	23.16	35.12	12.53	35.58	6	V
71	26833	4013.9	6830.3	30	9	2018	2:43	196	21.90	34.75	11.98	35.46	7	B
120	26833	4014.2	6831.3	30	9	2018	3:13	224	21.94	34.79	10.73	35.37	9	V
72	26843	4030.9	6834.0	30	9	2018	6:45	82	18.36	33.24	11.72	34.24	7	B
73	26867	4036.7	6830.3	30	9	2018	8:42	69	17.74	32.78	11.73	33.32	4	W
121	26954	4039.1	6829.6	30	9	2018	10:46	66	17.68	32.83	12.70	32.90	5	W
74	26689	4033.4	6815.8	30	9	2018	12:48	96	18.34	33.15	11.07	33.58	8	B
75	26914	4048.2	6758.0	30	9	2018	15:44	71	17.42	32.53	12.50	32.61	5	B
76	26903	4049.4	6806.1	30	9	2018	17:13	64	16.87	32.36	13.73	32.50	4	B
122	26868	4054.8	6805.7	30	9	2018	19:28	49	16.77	32.41	14.84	32.46	4	V

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#	#	(DDMM.M)	(DDMM.M)				(GMT)	Depth (m)	Temp (deg C)	Salt	Temp (deg C)	Salt	Bottom	Deployment
77	26986	4049.7	6812.7	30	9	2018	21:23	52	17.74	32.62	15.19	32.42	5	B
123	26799	4113.5	6834.6	1	10	2018	1:43	62	17.10	32.57	15.03	32.62	4	V
124	26958	4112.4	6839.0	1	10	2018	3:39	65	16.93	32.56	14.31	32.61	6	V
125	26669	4117.2	6841.1	1	10	2018	6:00	76	17.29	32.56	10.87	32.64	5	W
126	26798	4113.1	6851.0	1	10	2018	8:35	99	16.98	32.58	8.16	32.79	6	V
78	26904	4052.9	6913.3	1	10	2018	12:33	64	15.61	32.42	16.21	32.94	6	B
127	26724	4118.5	6920.9	1	10	2018	17:36	65	15.95	32.17	10.14	32.55	3	V
128	26889	4122.7	6919.3	1	10	2018	19:24	86	17.80	32.06	9.22	32.66	6	V
129	26987	4121.8	6930.5	1	10	2018	23:18	34	16.40	32.10	13.26	32.25	3	V
130	26924	4131.3	6932.4	2	10	2018	2:55	43	16.64	31.87	11.73	32.37	5	V
131	26981	4133.4	6936.1	2	10	2018	12:34	46	16.87	31.93	10.88	32.34	5	W
79	26714	4144.1	6953.0	2	10	2018	17:29	22	16.70	31.75	16.13	31.75	6	B
132	26813	4156.3	6957.1	2	10	2018	20:06	27	16.37	31.71	13.86	31.96	4	V
133	26892	4157.9	6958.0	2	10	2018	23:28	27	16.39	31.73	13.76	31.95	4	V
134	26840	4202.5	6953.2	3	10	2018	2:42	88	17.03	32.14	9.45	32.83	5	V
135	26673	4206.6	7002.2	3	10	2018	5:32	54	16.72	31.64	10.56	32.39	6	W
136	26764	4206.4	7011.3	3	10	2018	7:41	49	17.07	31.58	14.67	31.81	5	V
80	26783	4208.9	7015.1	3	10	2018	10:44	59	17.05	31.51	10.54	32.15	5	B
81	26638	4210.6	7021.8	3	10	2018	12:35	56	16.74	31.54	9.29	32.26	6	W
137	26701	4201.8	7020.9	3	10	2018	14:27	54	17.63	31.53	10.22	32.22	6	V
138	26753	4154.8	7019.9	3	10	2018	17:18	35	17.65	31.48	11.64	32.00	4	V
139	26803	4029.9	6748.4	10	10	2018	7:10	118	16.75	32.55	11.04	34.12	1	W
140	26865	4032.3	6734.3	10	10	2018	12:14	125	18.69	33.53	12.48	34.93	4	V
141	26705	4037.8	6722.7	10	10	2018	14:32	99	17.35	32.66	9.98	33.84	6	B
142	26711	4040.1	6710.3	10	10	2018	17:04	108	21.39	35.04	14.06	35.39	3	V
82	26895	4032.9	6710.1	10	10	2018	19:12	177	22.44	35.35	12.73	35.51	9	B
143	26847	4046.1	6704.7	10	10	2018	22:20	100	19.02	33.83	9.14	33.32	7	W
144	26991	4040.5	6655.9	11	10	2018	0:55	186	22.01	35.28	11.31	35.44	6	V

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#	#	(DDMM.M)	(DDMM.M)				(GMT)	Depth (m)	Temp (deg C)	Salt	Temp (deg C)	Salt	Bottom	Deployment
145	26850	4042.5	6652.1	11	10	2018	3:05	196	21.83	35.21	11.74	35.48	6	V
146	26916	4052.7	6643.7	11	10	2018	5:21	105	19.22	34.01	12.61	35.05	3	V
83	26820	4059.6	6653.7	11	10	2018	7:32	74	16.07	32.44	10.27	32.75	5	B
147	26696	4107.1	6700.3	11	10	2018	10:02	69	16.18	32.47	11.64	32.66	3	V
84	26998	4108.7	6710.9	11	10	2018	12:15	65	14.96	32.38	13.35	32.49	7	B
85	26943	4121.2	6741.9	11	10	2018	16:11	38	17.67	32.30	17.66	32.30	7	B
86	26746	4120.0	6744.8	11	10	2018	18:05	40	17.04	32.31	17.00	32.31	13	B
87	26975	4102.4	6754.4	11	10	2018	20:47	46	16.92	32.31	16.45	32.32	5	B
88	26732	4132.9	6822.2	12	10	2018	1:24	46	16.37	32.48	16.19	32.50	6	W
148	26723	4122.0	6828.3	12	10	2018	4:24	78	15.53	32.30	14.42	32.51	8	V
89	26837	4125.4	6846.3	12	10	2018	7:12	138	16.86	31.99	7.15	32.89	7	B
149	26661	4120.7	6852.8	12	10	2018	9:18	137	16.58	31.92	6.95	32.97	6	W
150	26760	4134.2	6848.8	12	10	2018	12:13	158	17.16	31.96	6.77	33.06	6	V
90	26682	4134.9	6858.3	12	10	2018	14:44	118	17.17	31.72	6.90	33.02	2	B
151	26782	4218.8	6903.2	13	10	2018	0:34	224	17.05	32.03	8.56	34.36	16	V
152	27119	4208.5	6904.4	13	10	2018	4:10	166	16.64	32.05	6.61	33.54	7	W
153	26789	4207.2	6923.4	13	10	2018	8:18	212	16.47	32.12	6.87	33.71	4	V
154	26922	4155.3	6902.8	13	10	2018	12:03	195	17.06	32.01	6.65	33.58	8	V
155	26793	4217.6	6850.0	13	10	2018	17:07	215	16.78	32.04	6.79	33.60	8	V
156	26948	4155.3	6827.1	13	10	2018	21:51	181	16.89	32.02	7.44	33.71	7	V
157	26721	4154.6	6821.2	14	10	2018	0:10	201	16.78	31.94	8.29	34.17	10	V
91	26945	4144.1	6808.8	14	10	2018	3:16	49	NaN	NaN	14.25	32.45	8	B
158	26657	4149.7	6758.7	14	10	2018	6:12	57	15.28	32.28	14.81	32.68	4	W
92	26761	4146.3	6753.5	14	10	2018	8:14	35	15.59	32.28	15.65	32.27	6	B
159	26646	4143.0	6735.4	14	10	2018	10:55	41	16.26	32.06	16.38	32.37	7	V
93	26677	4131.0	6726.6	14	10	2018	16:07	31	15.44	NaN	16.73	32.28	7	B
160	27007	4124.7	6719.3	14	10	2018	18:10	49	16.31	32.35	16.31	32.35	7	V
161	26887	4122.2	6709.5	14	10	2018	20:05	52	14.89	32.41	14.81	32.41	8	V

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#	#	(DDMM.M)	(DDMM.M)				(GMT)	Depth (m)	Temp (deg C)	Salt	Temp (deg C)	Salt	Bottom	Deployment
162	26693	4121.1	6645.2	14	10	2018	23:28	76	14.17	32.38	12.92	32.59	7	V
94	26676	4114.6	6645.7	15	10	2018	1:38	75	14.11	32.33	12.74	32.56	31	B
95	26839	4052.2	6633.4	15	10	2018	6:02	658	20.95	35.00	21.17	35.37	616	V
163	26839	4052.2	6633.4	15	10	2018	6:19	595	20.95	35.04	5.33	35.01	2	W
164	26810	4055.1	6630.3	15	10	2018	9:48	493	18.32	33.99	6.20	35.05	1	V
165	26637	4057.3	6633.0	15	10	2018	12:56	131	14.24	32.66	12.67	34.99	6	V
166	26874	4102.0	6626.9	15	10	2018	14:43	174	15.29	32.75	10.42	35.34	1	V
167	26902	4221.2	6949.2	17	10	2018	14:28	252	13.89	32.45	7.81	34.09	5	W
98	26648	4223.9	7009.5	17	10	2018	18:23	76	13.25	32.31	9.99	32.60	7	V
99	26734	4153.5	7012.5	18	10	2018	2:02	31	16.03	31.46	16.06	31.45	10	W
168	26815	4150.2	7020.0	18	10	2018	15:14	28	14.87	31.54	14.85	31.54	3	W
169	26780	4230.0	6845.9	31	10	2018	5:13	204	11.81	32.70	8.56	34.38	13	W
170	26972	4231.8	6839.0	31	10	2018	7:02	202	12.30	32.39	9.46	34.76	9	V
171	26713	4230.3	6817.2	31	10	2018	10:05	202	12.19	32.51	9.64	34.80	5	V
172	26957	4231.2	6812.2	31	10	2018	12:26	189	12.10	32.58	9.38	34.66	8	V
100	26861	4239.4	6809.0	31	10	2018	14:49	212	11.60	32.76	9.09	34.52	18	B
173	26720	4258.9	6819.2	31	10	2018	19:18	189	11.64	32.89	7.80	33.91	5	V
101	26768	4257.3	6853.4	31	10	2018	22:54	152	11.44	32.99	8.11	33.69	7	B
174	26704	4250.9	6849.3	1	11	2018	1:28	200	11.37	33.03	8.17	34.13	11	V
175	26718	4251.8	6923.2	1	11	2018	5:28	130	11.91	32.49	7.93	33.32	9	W
176	26742	4246.6	6930.4	1	11	2018	7:20	186	11.60	32.68	7.29	33.81	8	V
177	26649	4247.1	7001.1	1	11	2018	10:32	179	11.32	32.91	6.79	33.46	6	V
102	26929	4252.0	6958.0	1	11	2018	12:47	199	11.43	32.68	7.00	33.68	6	B
178	26679	4254.8	6957.8	1	11	2018	15:19	192	11.34	32.64	7.16	33.81	7	W
179	26763	4254.8	7002.1	1	11	2018	17:17	117	11.29	32.57	8.43	33.26	10	V
180	26659	4307.2	7018.9	1	11	2018	20:19	119	11.43	32.60	9.11	33.21	8	V
103	26797	4254.5	7015.1	1	11	2018	22:55	160	11.67	32.40	7.77	33.18	7	B
104	26666	4248.8	7008.3	2	11	2018	1:59	115	11.40	32.64	9.37	32.88	8	W

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Cast	Site ID	Lat	Long	Day	Mo	Year	Time	Btm	Sfc	Sfc	Deepest Observed	Deepest Observed	Meters from	Method of
#	#	(DDMM.M)	(DDMM.M)				(GMT)	Depth (m)	Temp (deg C)	Salt	Temp (deg C)	Salt	Bottom	Deployment
181	26790	4246.4	7014.6	2	11	2018	4:04	38	11.32	32.43	11.51	32.58	8	W
182	26942	4245.2	7044.6	2	11	2018	8:42	38	10.47	30.73	10.89	32.19	16	V
183	26671	4245.2	7039.2	2	11	2018	12:00	32	10.25	29.99	10.95	32.41	5	V
184	26842	4229.0	7041.8	2	11	2018	15:47	57	11.53	32.04	11.05	32.32	9	V
185	26949	4226.8	7047.2	2	11	2018	18:29	40	11.47	31.95	11.21	32.06	7	V
186	26901	4221.5	7038.3	2	11	2018	21:44	72	11.44	32.05	10.68	32.38	8	V
187	27220	4214.2	7034.9	3	11	2018	1:32	40	11.81	32.00	11.62	32.13	7	V
188	26872	4213.9	7032.0	3	11	2018	4:43	57	11.83	32.00	11.65	32.17	8	V
189	27142	4214.4	7035.6	3	11	2018	6:40	35	11.68	31.85	11.60	32.13	7	V
190	26756	4150.2	7020.3	3	11	2018	13:39	30	12.91	31.60	12.57	31.72	6	V
191	27144	4154.1	7025.8	3	11	2018	16:07	36	12.88	31.48	12.24	32.00	7	W
192	26988	4206.1	6740.8	4	11	2018	21:41	183	12.03	32.43	9.55	34.83	9	W
193	26772	4205.8	6728.9	5	11	2018	0:09	101	12.45	32.36	12.15	32.43	7	V
194	26964	4206.6	6730.1	5	11	2018	2:01	167	12.41	32.37	9.97	35.16	10	V
195	26928	4200.6	6720.4	5	11	2018	4:22	52	12.57	32.41	12.60	32.41	7	W
105	26787	4211.5	6642.3	5	11	2018	8:18	213	11.45	32.54	9.68	35.10	8	B
196	26876	4215.5	6633.4	5	11	2018	11:36	262	11.60	32.68	9.85	35.19	10	V
197	26639	4206.2	6627.5	5	11	2018	14:15	86	11.40	32.59	9.68	33.25	9	V
106	26792	4158.0	6622.0	5	11	2018	18:35	86	11.54	32.53	11.02	32.75	4	B
107	26940	4155.2	6620.5	5	11	2018	20:16	82	11.52	32.53	11.39	32.61	6	W
108	26897	4158.0	6610.1	5	11	2018	22:03	92	11.41	32.61	10.38	32.95	7	B
109	26930	4155.9	6602.6	5	11	2018	23:47	98	11.74	32.51	9.85	33.44	7	B
110	26952	4152.4	6553.6	6	11	2018	2:10	114	11.70	32.53	9.83	34.12	9	B
198	26907	4147.3	6605.6	6	11	2018	5:15	90	11.70	32.52	10.65	32.97	6	W
199	26853	4144.5	6552.3	6	11	2018	8:48	124	11.68	32.63	9.85	33.88	1	V
200	26643	4200.7	6547.6	6	11	2018	12:15	252	12.28	32.75	7.02	35.07	4	V
111	26643	4201.4	6547.5	6	11	2018	12:39	255	12.27	32.70	6.85	35.02	3	W
112	26703	4215.9	6610.0	6	11	2018	19:12	240	11.68	32.23	9.58	35.11	38	B

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Cast	Site ID	Lat	Long	Day	Mo	Year	Time	Btm	Sfc	Sfc	Deepest Observed	Deepest Observed	Meters from	Method of
#	#	(DDMM.M)	(DDMM.M)				(GMT)	Depth (m)	Temp (deg C)	Salt	Temp (deg C)	Salt	Bottom	Deployment
201	26703	4215.4	6608.6	6	11	2018	19:41	256	11.71	32.28	9.47	35.16	10	V
202	26982	4220.0	6611.4	6	11	2018	21:42	241	11.56	32.25	9.57	35.19	9	V
113	26709	4226.8	6621.3	7	11	2018	3:18	253	11.55	32.51	9.86	35.19	53	B
114	26709	4225.9	6620.6	7	11	2018	3:52	254	11.53	32.52	9.82	35.18	7	V
203	26692	4304.4	6946.6	9	11	2018	13:11	162	11.00	32.97	7.21	33.57	5	W
115	26875	4316.1	6920.0	9	11	2018	17:16	170	11.23	32.92	8.35	33.64	7	B
204	26678	4321.5	6927.5	9	11	2018	21:30	178	11.14	33.01	8.28	33.73	7	W
205	26980	4317.6	6952.5	10	11	2018	0:48	182	10.96	32.95	7.03	33.64	5	V
206	26686	4329.1	6957.1	11	11	2018	19:09	118	10.47	32.53	9.15	33.38	4	W
207	26795	4349.8	6903.8	12	11	2018	7:16	75	10.19	32.73	10.71	33.22	5	V
208	27043	4345.0	6849.1	12	11	2018	12:55	110	10.23	32.77	10.59	33.52	9	W
209	26936	4327.8	6859.8	12	11	2018	15:24	132	10.50	33.06	9.13	33.78	7	V
210	27022	4319.7	6902.1	12	11	2018	17:42	160	10.62	33.02	8.21	33.83	7	V
211	27350	4316.8	7011.4	12	11	2018	23:42	108	9.13	31.73	8.71	33.32	7	W

Deployment codes: B=bongo cast; W=water cast; and V=vertical cast

Records in bold are collected with an SBE911+ CTD