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Hydrographic Measurements Collected Aboard The UNOLS Ship R/V Walton Smith, 2015: Western Boundary Time Series Cruise – Florida Current

Cruise IDs: WS1501, FC1504, FC1505, FC1507, FC1509,
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The findings and conclusion on this report are those of the authors and do not necessarily represent the views of the funding agency.

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Abstract

This report summarizes the six cruises along 27°N on the UNOLS ship R/V Walton Smith involving full-water-column CTD and lowered ADCP profiles, along with shipboard ADCP profiles, conducted within the Florida Straits to monitor the Florida Current. This report describes the processing of a Seabird Electronics Model 9/11+ CTD O2 system and water samples collected from up to 23 10-liter Niskin bottles lowered to the bottom. This report includes a description of the calibrations procedures and profiles of pressure, salinity (conductivity), temperature, and dissolved oxygen concentrations. Water samples were also collected at various depths and analyzed for salinity and oxygen concentrations to aid with CTD calibration. A total of 9 CTD-O2/LADCP stations were occupied during each of the six cruises.

1 Introduction

The Florida Current transport time series began in 1982, as NOAA recognized the importance of long-term monitoring of the current transport and water mass properties of the Florida Current across the Florida Straits to determine its inter-annual variability to determine the strength of the subtropical gyre. Variations in the strength of the subtropical gyre in relation to the North Atlantic Oscillation (NAO) has been proposed as an important mechanism in the atmosphere-ocean feedback within coupled models (e.g. Latif and Barnett, 1996). Monitoring of the Florida Current includes a submarine cable, GPS measurements using drop sondes, as well as hydrographic measurements. All of these programs are collaborating with scientific analysis and logistics including ship time.

Hydrographic surveys consisting of a repeat LADCP/CTD/rosette section in the Florida Straits was carried out during 2015 (Figure 1 and Tables 1 - 6). These cruises consist of one day cruises on the R/V Walton Smith departing and returning to Miami, FL. A total of six cruises were completed consisting of a total of 54 LADCP/CTD/Rosette stations. Water samples (up to 9 for each station), LADCP, CTD data were collected on each cast to within 20 m of the bottom. Salinity and dissolved oxygen samples were analyzed from the majority of bottles sampled on the rosette.

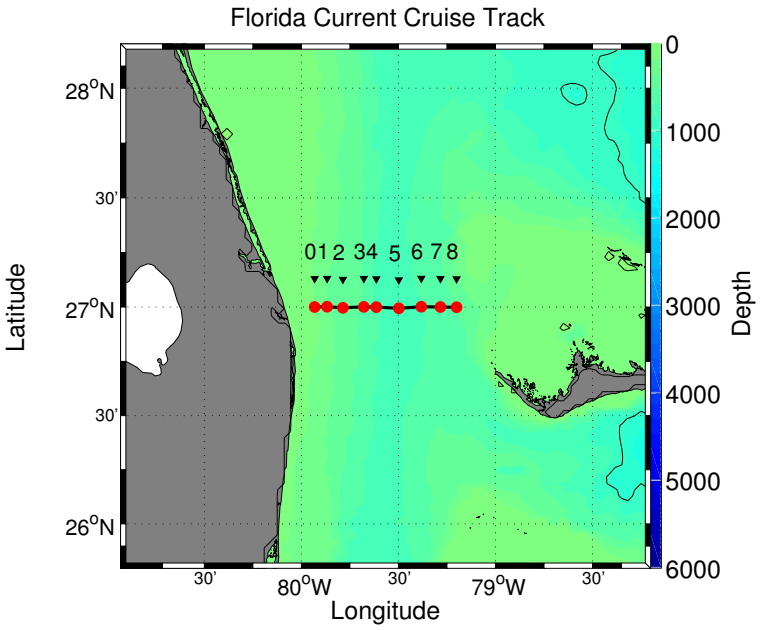


Figure 1: Florida Current CTD station locations. The landmasses are shaded. The red dots are the CTD stations.

Table 1: Florida Current (WS1501) – CTD Cast Summary

Station	Date	Time (GMT)	Latitude	Longitude	Depth
0	01/13/15	11:08:28	26.999N	79.932W	132
1	01/13/15	10:10:19	27.000N	79.867W	250
2	01/13/15	09:02:47	26.999N	79.784W	373
3	01/13/15	07:41:36	26.999N	79.687W	522
4	01/13/15	06:22:27	27.000N	79.614W	639
5	01/13/15	04:29:55	27.011N	79.501W	747
6	01/13/15	02:40:24	27.005N	79.386W	674
7	01/13/15	01:21:39	26.996N	79.282W	606
8	01/13/15	00:14:50	27.009N	79.206W	474

Table 2: Florida Current (FC1504) – CTD Cast Summary

Station	Date	Time (GMT)	Latitude	Longitude	Depth
0	04/10/15	10:46:14	27.006N	79.931W	133
1	04/10/15	09:56:43	27.002N	79.865W	258
2	04/10/15	08:51:28	26.992N	79.777W	383
3	04/10/15	07:32:16	27.008N	79.686W	518
4	04/10/15	06:27:13	26.994N	79.619W	634
5	04/10/15	04:54:57	27.010N	79.509W	748
6	04/10/15	03:14:32	27.008N	79.385W	674
7	04/10/15	01:54:46	27.000N	79.289W	611
8	04/10/15	00:50:43	26.999N	79.207W	462

Table 3: Florida Current (FC1505) – CTD Cast Summary

Station	Date	Time (GMT)	Latitude	Longitude	Depth
0	05/27/15	08:24:22	26.998N	79.932W	133
1	05/27/15	07:39:25	26.998N	79.869W	242
2	05/27/15	06:43:59	26.998N	79.782W	372
3	05/27/15	05:06:45	27.001N	79.683W	510
4	05/27/15	04:00:46	26.998N	79.616W	621
5	05/27/15	02:29:51	27.005N	79.502W	749
6	05/27/15	00:57:35	27.002N	79.383W	661
7	05/26/15	23:38:49	27.002N	79.283W	607
8	05/26/15	22:10:10	27.004N	79.207W	480

Table 4: Florida Current (FC1507) – CTD Cast Summary

Station	Date	Time (GMT)	Latitude	Longitude	Depth
0	07/15/15	09:08:17	27.004N	79.930W	134
1	07/15/15	08:12:13	27.001N	79.868W	243
2	07/15/15	06:53:44	27.010N	79.784W	370
3	07/15/15	05:15:56	27.002N	79.683W	522
4	07/15/15	03:58:13	27.000N	79.615W	635
5	07/15/15	01:05:41	26.998N	79.503W	738
6	07/14/15	23:15:03	27.006N	79.384W	666
7	07/14/15	21:51:30	27.002N	79.286W	605
8	07/14/15	20:47:16	27.003N	79.204W	471

Table 5: Florida Current (FC1509) – CTD Cast Summary

Station	Date	Time (GMT)	Latitude	Longitude	Depth
0	09/09/15	11:24:09	27.000N	79.932W	132
1	09/09/15	10:30:33	26.993N	79.867W	248
2	09/09/15	09:17:00	26.993N	79.782W	374
3	09/09/15	07:44:49	26.994N	79.684W	526
4	09/09/15	06:12:04	26.997N	79.617W	630
5	09/09/15	04:12:41	27.001N	79.497W	747
6	09/09/15	02:23:16	26.999N	79.386W	665
7	09/09/15	00:46:16	27.000N	79.280W	599
8	09/08/15	23:29:37	27.008N	79.197W	455

Table 6: Florida Current (FC1511) – CTD Cast Summary

Station	Date	Time (GMT)	Latitude	Longitude	Depth
0	11/11/15	13:34:59	27.001N	79.930W	135
1	11/11/15	12:42:00	26.987N	79.868W	247
2	11/11/15	11:40:25	26.996N	79.784W	374
3	11/11/15	10:24:37	27.000N	79.684W	524
4	11/11/15	09:13:28	27.003N	79.617W	630
5	11/11/15	07:33:58	26.998N	79.499W	743
6	11/11/15	06:03:27	26.992N	79.385W	666
7	11/11/15	01:12:47	27.003N	79.284W	603
8	11/11/15	00:04:12	27.000N	79.201W	468

2 Additional Sampling

Discrete nutrient and dissolved inorganic carbon samples were taken during cruises, FC1505 (no nutrients), FC1507, FC1509, and FC1511. Tables 7-10 summarize the bottle trip locations for each cruise.

Table 7: FC1505: Discrete Carbon Sampling positions.

Niskin	Station								
	0	1	2	3	4	5	6	7	8
1	C	C	C	C	C	C	C	C	C
3	C	C	C	C	C	C	C	C	C
5	C	C	C	C	C	C	C	C	C
7	C(d)	C	C	C	C	C	C	C	C
9		C	C	C	C	C	C	C	C
11			C	C	C	C	C	C	
12									C
13				C	C	C	C	C	
15						C	C(d)		

C - carbon sample, (d) - duplicate sample

Table 8: FC1507: Discrete Carbon and Nutrient Sampling positions.

Niskin	Station								
	0	1	2	3	4	5	6	7	8
2	C,N	C,N(d)	C,N(d)	C,N(d)	C,N(d)	C,N(d)	C,N(d)	C,N	C,N(d)
4	C,N	C,N	C,N	C,N(d)	C,N	C,N(d)	C,N	C,N(d)	C,N
5					C,N				
6	C,N	C,N	C,N	C,N		C,N	C,N	C,N	C,N
8	C,N	C,N	C,N	C,N	C,N	C,N	C,N	C,N	C,N
10		C,N	C,N	C,N	C,N	C,N	C,N	C,N	C,N
12			C,N	C,N	C,N	C,N	C,N	C,N	C,N(d)
14				C,N	C,N(d)	C,N	C,N(d)	C,N	
16						C,N(d)	C,N(d)		

C - carbon sample, N - nutrient sample, (d) - duplicate sample

Table 9: FC1509: Discrete Carbon and Nutrient Sampling positions.

Niskin	Station								
	0	1	2	3	4	5	6	7	8
2	C,N(d)	C,N	C,N	C,N	C,N(d)	C,N(d)	C,N(d)	C,N	C,N
4	C,N	C,N	C,N	C,N	C,N		C,N	C,N	C,N
6	C,N	C,N	C,N	C,N(d)	C,N	C,N	C,N	C,N	C,N
8	C,N(d)	C,N	C,N	C,N	C,N	C,N	C,N	C,N(d)	C,N
10		C,N(d)	C,N	C,N	C,N	C,N	C,N	C,N	C,N(d)
12			C,N(d,d)	C,N	C,N	C,N	C,N	C,N	C,N(d)
14				C,N	C,N(d)	C,N	C,N(d)		
16						C,N(d)		C,N(d)	
18						C,N	C,N		

C - carbon sample, N - nutrient sample, (d) - duplicate sample

Table 10: FC1511: Discrete Carbon and Nutrient Sampling positions.

Niskin	Station								
	0	1	2	3	4	5	6	7	8
1	C,N	C,N	C,N	C,N	C,N		C,N(d)		
2	C,N	C,N	C,N	C,N	C,N(d)		C,N	C,N(d)	
3	C,N(d,d)	C,N	C,N	C,N(d)	C,N				
4	C,N	C,N(d)	C,N	C,N	C,N	C,N	C,N	C,N	
5		C,N	C,N(d)	C,N	C,N	C,N(d)	C,N		
6			C,N	C,N	C,N	C,N	C,N	C,N	
7				C,N	C,N(d)	C,N	C,N(d)		
8						C,N	C,N	C,N	
9						C,N			
10								C,N(d)	
11									
12						C,N		C,N	
13						C,N			
14								C,N(d)	

C - carbon sample, N - nutrient sample, (d) - duplicate sample
Note: No bottles fired at station 8.

3 Standards and Pre-Cruise Calibrations

The CTD/O2 system is a real-time data acquisition system with the data from a Sea-Bird Electronics, Inc. (SBE) 9plus underwater unit transmitted via a conducting cable to a SBE 11plus deck unit (V2). The serial data from the underwater unit is sent to the deck unit in RS-232 NRZ format. The deck unit decodes the serial data and sends it to a personal computer for display and storage in a disk file using Sea-Bird Seasave software (version 7.21).

The SBE 911plus system transmits data from primary and auxiliary sensors in the form of binary numbers equivalent to the frequency or voltage outputs from those sensors. These are referred to as the raw data. The SBE software performs the calculations required to convert raw data to engineering units.

The SBE 911plus system is electrically and mechanically compatible with the standard, unmodified carousel water sampler, also made by Sea-Bird Electronics, Inc. A modem and carousel interface allows the 911plus system to control the operations of the carousel directly without interrupting the flow of data from the CTD.

The SBE 911plus underwater unit is configured with dual standard modular temperature (SBE 3 plus) and conductivity (SBE 4) sensors, which are mounted near the lower end cap. The conductivity cell entrance is co-planar with the tip of the temperature sensor probe. The pressure sensor is mounted inside the underwater unit main housing. A centrifugal pump module flushes water through sensor tubing at a constant rate independent of the CTD's motion to improve dynamic performance. Dual dissolved oxygen sensors (SBE 43) are added to the pumped sensor configuration following the temperature-conductivity (TC) pair. A list of sensors used during the cruises can be seen in Table 11.

Table 11: Equipment used during the 2014 Florida Straits cruises.

Instrument	SN	Stations	Use	Pre-Cruise Calibration	Comment
Sea-Bird SBE 32 24-palce Carousel Water Sampler	N/A	0-8			All Cruises
Sea-Bird SBE9plus CTD	0768	0-8		04/25/12	WS1501
Paroscientific Digiquartz Pressure Sensor	92973	0-8		04/25/12	
Sea-Bird SBE9plus CTD	0363	0-8		09/07/10	FC1504, 1505, 1507, 1509
Paroscientific Digiquartz Pressure Sensor	95798	0-8		09/07/10	
Sea-Bird SBE9plus CTD (Walton Smith)	0692	0-8		09/07/10	FC1504, 1505, 1507, 1509
Paroscientific Digiquartz Pressure Sensor		0-8		09/07/10	FC1511
Sea-Bird SBE3plus Temperature Sensor	1701	0-8	Primary	06/03/14	WS1501, FC1505
Sea-Bird SBE3plus Temperature Sensor	2946	0-8	Primary	06/03/14	FC1504
Sea-Bird SBE3plus Temperature Sensor	5898	0-8	Primary	03/18/15	FC1507, FC1509, FC1511
Sea-Bird SBE3plus Temperature Sensor	2946	0-8	Secondary	06/03/14	WS1501
Sea-Bird SBE3plus Temperature Sensor	5140	0-8	Secondary	02/07/14	FC1504
Sea-Bird SBE3plus Temperature Sensor	4799	0-8	Secondary	06/03/14	FC1505
Sea-Bird SBE3plus Temperature Sensor	5889	0-8	Secondary	10/11/14	FC1507, FC1509, FC1511
Sea-Bird SBE4C Conductivity Sensor	1346	0-8	Primary	09/06/12	WS1501, FC1505
Sea-Bird SBE4C Conductivity Sensor	2973	0-8	Primary	06/03/14	FC1504
Sea-Bird SBE4C Conductivity Sensor	3861	0-8	Primary	23/04/14	FC1507, FC1509, FC1511
Sea-Bird SBE4C Conductivity Sensor	2973	0-8	Secondary	06/03/14	WS1501, FC1505
Sea-Bird SBE4C Conductivity Sensor	1387	0-8	Secondary	06/22/12	FC1504
Sea-Bird SBE4C Conductivity Sensor	3860	0-8	Secondary	18/03/15	FC1507, FC1509, FC1511
Sea-Bird SBE43 Dissolved Oxygen Sensor	2712	0-8	Primary	10/23/13	WS1501
Sea-Bird SBE43 Dissolved Oxygen Sensor	1348	0-8	Primary	03/04/14	FC1504
Sea-Bird SBE43 Dissolved Oxygen Sensor	2940	0-8	Primary	08/02/14	FC1505
Sea-Bird SBE43 Dissolved Oxygen Sensor	2942	0-8	Primary	08/02/14	FC1507, FC1509, FC1511
Sea-Bird SBE43 Dissolved Oxygen Sensor	1348	0-8	Secondary	03/04/14	WS1501
Sea-Bird SBE43 Dissolved Oxygen Sensor	2712	0-8	Secondary	10/23/13	FC1504, 1505
Sea-Bird SBE43 Dissolved Oxygen Sensor	2948	0-8	Secondary	02/08/14	FC1507, FC1509, FC1511
Wet Labs Fluorometer	2088	0-8	scale: 1.0		FC1505, 1507, FC1509
Simrad 807 Altimeter	gold	0-8	scale: 15.0		WS1501, FC1507, FC1509
Teledyne	black	0-8	scale: 2.98		FC1504
Teledyne	black	0-8	scale: 15.0		FC1505
Valeport VA500	silver	0-8	scale: 15.0		FC1511

3.1 Pressure

The Paroscientific series 4000 Digiquartz high pressure transducer uses a quartz crystal resonator whose frequency of oscillation varies with pressure induced stress measuring changes in pressure as small as 0.01 parts per million with an absolute range of 0 to 10,000 psia (0 to 6885 dbar). Repeatability, hysteresis and pressure conformance are 0.002% of full-scale. The nominal pressure frequency (0 to full scale) is 34 to 38 kHz. The nominal temperature frequency is 172 kHz $\pm$ 50 ppm/°C.

The pressure sensors used during the Florida Straits cruises were s/n 0768, s/n 0363, and s/n 0692. Pre-cruise sensor calibrations were performed at Sea-Bird Electronics, Inc. in Bellevue, Washington. The following coefficient (Table 12) were entered into SEASAVE® using the configuration file:

Pressure coefficients are first formulated into:

$$\begin{aligned} c &= c_1 + c_2 * U + c_3 * U^2 \\ d &= d_1 + d_2 * U \\ t_0 &= t_1 + t_2 * U + t_3 * U^2 + t_4 * U^3 + t_5 * U^4 \end{aligned}$$

where U is temperature in degrees Celsius. Pressure is computed according to:

$$P\ (psia) = c * \left(1 - \frac{t_0^2}{t}\right) * \left[1 - d * \left(1 - \frac{t_0^2}{t}\right)\right]$$

where t is pressure period (μs). SEASAVE® automatically implements this equation.

Table 12: Pre-Cruise Calibration coefficients for the pressure sensor.

s/n 0768 April 25, 2012	s/n 0363 September 07, 2010	s/n 0692 February 09, 2015
c_1 = -4.481307e+04	c_1 = -4.698871e+04	c_1 = -5.115871e+04
c_2 = -6.537544e-01	c_2 = 6.928599e-01	c_2 = -7.101298e-01
c_3 = 1.443500e-02	c_3 = 1.264330e-02	c_3 = 1.630870e-02
d_1 = 3.647800e-02	d_1 = 3.832000e-02	d_1 = 4.025000e-02
d_2 = 0.000000e+00	d_2 = 0.000000e+00	d_2 = 0.000000e+00
t_1 = 3.040635e+01	t_1 = 2.996944e+01	t_1 = 3.009009e+01
t_2 = -4.851470e-04	t_2 = -1.348850e-04	t_2 = -4.846586e-04
t_3 = 4.277270e-06	t_3 = 3.953500e-06	t_3 = 4.249670e-06
t_4 = 2.826110e-09	t_4 = 2.102830e-09	t_4 = 3.078010e-09
t_5 = 0.000000e+00	t_5 = 0.000000e+00	t_5 = 0.000000e+00
Slope = 0.99988812	Slope = 0.99997597	Slope = 0.99992014
Offset = -2.55063	Offset = -2.35314	Offset = -0.62980
AD590M = 1.285440e-02	AD590M = 1.141000e-02	AD590M = 1.293700e-02
AD590B = -8.443560e+000	AD590B = -8.428130e+0	AD590B = -9.237969e+000

3.2 Temperature

The temperature-sensing element is a glass-coated thermistor bead, pressure protected by a stainless steel tube. The sensor output frequency ranges from 5–13 kHz corresponding to temperatures from -5 to 35°C. The output frequency is inversely proportional to the square root of the thermistor resistance, which controls the output of a patented Wien Bridge circuit. The thermistor resistance is exponentially related to temperature. The SBE 3 thermometer has a typical accuracy/stability of ±0.004°C per year and resolution of 0.0003°C at 24 samples per second. The SBE 3 thermometer has a fast response time of 0.070 seconds.

The temperature sensors (SBE 3plus) used during the Florida Straits cruises were serial numbers (s/n) 1701, 2946, 5140, 4799, 5898, and 5889. Pre-cruise sensor calibrations were performed at Sea-Bird Electronics, Inc. in Bellevue, Washington. The following coefficients (Tables 13 & 14) were entered into SEASAVE® using the configuration file. SEASAVE® automatically implements the equation below and converts between ITS-90 and IPTS-68 temperature scales as desired. The Temperature (ITS-90) is computed from g, h, i, j and f_0 and f is the instrument frequency (kHz) coefficients as follows:

$$T\,(^\circ C) = \frac{1}{\left\{g + h * \left[\ln\left(\frac{f_0}{f}\right)\right] + i * \left[\ln^2\left(\frac{f_0}{f}\right)\right] + j * \left[\ln^3\left(\frac{f_0}{f}\right)\right]\right\}} - 273.15$$

Table 13: Pre-Cruise Calibration coefficients for the temperature sensors.

s/n 1701 June 03, 2014	s/n 2946 June 03, 2014	s/n 5140 February 07, 2014
g = 4.79050738e-03	g = 4.34396030e-03	g = 4.36463665e-03
h = 6.53993411e-04	h = 6.39060473e-04	h = 6.40913384e-04
i = 1.85647190e-05	i = 2.13319840e-05	i = 2.22449273e-05
j = 1.02368630e-06	j = 1.82021671e-06	j = 2.06627300e-06
f_0 = 1000.0	f_0 = 1000.0	f_0 = 1000.0

Table 14: Pre-Cruise Calibration coefficients for the temperature sensors.

s/n 4799 June 03, 2014	s/n 5898 March 18, 2015	s/n 5889 October 11, 2014
g = 4.36399160e-03	g = 4.35074558e-03	g = 4.35727559e-03
h = 6.36989125e-04	h = 6.26163668e-04	h = 6.28679007e-04
i = 2.08608720e-05	i = 1.90902227e-05	i = 1.95064602e-05
j = 1.74535196e-06	j = 1.34888708e-06	j = 1.39726494e-06
f_0 = 1000.0	f_0 = 1000.0	f_0 = 1000.0

3.3 Conductivity

The flow-through conductivity-sensing element is a glass tube (cell) with three platinum electrodes (Seabird model SBE 4). The resistance measured between the center electrode and the end electrode pair is determined by the cell geometry and the specific conductance of the fluid within the cell, and controls the output frequency of a Wein Bridge circuit. The sensor has a frequency output of approximately 3 to 12 kHz corresponding to conductivity from 0 to 7 Siemens/meter (0 to 70 mmho/cm). The SBE 4 has a typical accuracy/stability of ± 0.0003 S·m^{-1}/month and resolution of 0.00004 S·m^{-1} at 24 scans per second.

The conductivity sensors used during the Florida Straits cruises were serial numbers (s/n) 1346, 2973, 1387, 3861 and 3860. Pre-cruise sensor calibrations were performed at Sea-Bird Electronics, Inc. in Bellevue, Washington. The coefficients shown in Tables 15 & 16 were entered into Seasave using the configuration file.

Conductivity calibration certificates show an equation containing the appropriate pressure-dependent correction term to account for the effect of hydrostatic loading (pressure) on the conductivity cell:

$$C\ (Siemens/meter) = \frac{(g + h * f^2 + i * f^3 + j * f^4)}{[10 * (1 + c_{t_{cor}} * t + c_{p_{cor}} * p)]}$$

where g, h, i, j, $c_{t_{cor}}$, and $c_{p_{cor}}$ are the calibrations coefficients shown above, f is the instrument frequency (kHz), t is the water temperature (degrees Celsius), and p is the water pressure (dbar). SEASAVE® automatically implements this equation.

Table 15: Pre-Cruise Calibration coefficients for the conductivity sensors.

s/n 1346 September 06, 2012	s/n 2973 June 03, 2014	s/n 1387 June 22, 2012
g = -4.06197809e+00	g = -9.95489419e+00	g = -1.06546238e+01
h = 5.34978458e+01	h = 1.34447627e+00	h = 1.59529776e+00
i = 2.36824449e-05	i = 4.95505363e-04	i = -7.39061063e-04
j = 3.06435606e-05	j = 3.96581562e-05	j = 1.44604090e-04
CPcor = -9.5700e-08	CPcor = -9.5700e-08	CPcor = -9.5700e-08
CTcor = 3.2500e-06	CTcor = 3.2500e-06	CTcor = 3.2500e-06

Table 16: Pre-Cruise Calibration coefficients for the conductivity sensors.

s/n 3860 March 18, 2015	s/n 3861 April 23, 2014
g = -1.03279941e+01	g = -1.02406797e+01
h = 1.48510533e+00	h = 1.36117321e+00
i = -1.17581430e-03	i = -6.02783494e-04
j = 1.67579701e-04	j = 1.10733316e-04
CPcor = -9.5700e-08	CPcor = -9.5700e-08
CTcor = 3.2500e-06	CTcor = 3.2500e-06

3.4 Dissolved Oxygen

The SBE 43 dissolved oxygen sensor uses a membrane polarographic oxygen detector (MPOD). Oxygen sensors determine the dissolved oxygen concentration by counting the number of oxygen molecules per second (flux) that diffuse through a membrane. By knowing the flux of oxygen and the geometry of the diffusion path, the concentration of oxygen can be computed. The permeability of the membrane to oxygen is a function of temperature and ambient pressure. In order to minimize the errors in the oxygen measurement due to the temperature differences between the water and the oxygen sensor, a temperature compensation is calculated using a temperature measured near the active surface of the sensor. The interface electronics output voltages proportional to the temperature-compensated oxygen current. Initial computation of dissolved oxygen in engineering units is done in the software. The range for dissolved oxygen is 120% of surface saturation in all natural waters, fresh and salt, and the nominal accuracy is 2% of saturation.

Under extreme pressure, changes can occur in gas permeable Teflon membranes that affect their permeability characteristics. Some of these changes (plasticization and amorphous/crystalinity ratios) have long time constants and depend on the sensor's time-pressure history. These slow processes result in hysteresis in long, deep casts. The hysteresis correction algorithm operates through the entire data profile and corrects the oxygen voltage values for changes in membrane permeability as pressure varies. At each measurement, the correction to the membrane permeability is calculated based on the current pressure and how long the sensor spent at previous pressures.

Sea-Bird has implemented an optional hysteresis correction for dissolved oxygen data. The correction algorithm requires a continuous time series of data, with no temporal data gaps (although a continuous time series is necessary, a constant sampling interval is not required). Prior to processing, do not remove any data from the downcast or upcast (if to be used), other than a surface soak at the beginning of the downcast.

Oxygen sensors 2712, 1348, 2940, 2942, and 2948 were used during the Florida Straits cruises. The following oxygen coefficients (Tables 17 & 18) were entered into SEASAVE® using the configuration file:

Table 17: Pre-Cruise Calibration coefficients for the dissolved oxygen sensors.

s/n 2712	s/n 1348	s/n 2940
October 13, 2013	Match 04, 2014	August 02, 2014
Soc = 0.4359	Soc = 0.3542	Soc = 0.4518
Voffset = -0.5267	Voffset = -0.5139	Voffset = -0.5133
Tau20 = 1.48	Tau20 = 1.07	Tau20 = 1.32
A = -1.4276e-03	A = -3.6375e-03	A = -2.7990e-03
B = 5.6096e-05	B = 2.0198e-04	B = 1.3679e-04
C = -1.0922e-06	C = -2.7879e-06	C = -1.9304e-06
$E_{nominal}$ = 0.036	$E_{nominal}$ = 0.036	$E_{nominal}$ = 0.036

Table 18: Pre-Cruise Calibration coefficients for the dissolved oxygen sensors.

s/n 2942 August 02, 2014	s/n 2948 August 02, 2014
Soc = 0.4807	Soc = 0.4430
Voffset = -0.5265	Voffset = -0.4911
Tau20 = 1.32	Tau20 = 2.14
A = -3.1137e-03	A = -2.9146e-03
B = 1.3898e-04	B = 1.5704e-04
C = -2.5716e-06	C = -2.5303e-06
$E_{nominal}$ = 0.036	$E_{nominal}$ = 0.036

The use of these constants in linear equations of the form $I = mV + b$ and $T = kV + c$ yield sensor membrane current and temperature (with maximum error of about 0.5 °C) as a function of sensor output voltage.

Dissolved oxygen concentration is calculated according to:

$$O\ (ml/l) = \{Soc * (V + V_{offset} + tau(T,S) * \frac{\delta v}{\delta t}) + p1 * station\}$$
$$*(1.0 + A * T + B * T^2 + C * T^3) * OXSAT(T,S) * e^{E*(\frac{P}{K})}$$

where Soc, V_{offset}, tau, A, B, C, E and $p1$ are the calibration coefficients shown above and V is the instrument voltage (V). T, S and P are the temperature, salinity and pressure measured by the CTD. K is the temperature in the absolute scale (K), $\delta v/\delta t$ is the oxygen voltage time derivative, *station* is the station number, and $OXSAT$ is the oxygen saturation value calculated according to (Weiss, 1970):

$$OXSAT(\theta,S) = \exp\left\{A_1 + A_2 * \left(\frac{100}{\theta}\right) + A_3 * \ln\left(\frac{\theta}{100}\right) + A_4 * \left(\frac{\theta}{100}\right)\right.$$
$$\left. + S * \left[B_1 + B_2 * \left(\frac{\theta}{100}\right) + B_3 * \left(\frac{\theta}{100}\right)^2\right]\right\}$$

where θ is the absolute temperature (K); and

$$\begin{array}{rrrr} A_1 = & -173.4292 & B_1 = & -0.033096 \\ A_2 = & 249.6339 & B_2 = & 0.014259 \\ A_3 = & 143.3483 & B_3 = & -0.00170 \\ A_4 = & -21.8492. & & \end{array}$$

SEASAVE® automatically implements this equation.

The hysteresis correction is calculated, using the oxygen voltages, with the following algorithm:

$$D = 1 + H_1 * (e^{\left(\frac{P(i)}{H2}\right)} - 1)$$

$$C = e(-1 * \left(\frac{Time(i) - Time(i-1))}{H3}\right)$$

$$O_V(i) = O_{volt}(i) + V_{offset}$$

$$O_{newvolts}(i) = a * \frac{a}{D}$$

$$O_{finalvolts}(i) = O_{newvolts}(i) - V_{offset}$$

Where:

i = indexing variable (must be a continuous time series to work; can be performed on bin averaged data), where i = 1:end (end is largest data index point plus 1).
$P(i)$ = pressure (decibars) at index point i .
$Time(i)$ = time (seconds) from start of index point i.
$O_{volt}(i)$ = SBE 43 oxygen voltage output directly from sensor, with no calibration or hysteresis corrections, at index point i.
V_{offset} = correction for an electronic offset that is applied to voltage output of sensor. V_{offset} correction is always negative (see factory calibration sheet for this coefficient). V_{offset} is added to raw voltages prior to hysteresis correction. At end of hysteresis corrections, V_{offset} is removed prior to data conversion using SBE 43 calibration equation (see $O_{finalvolts}(i)$).
$O_V(i)$ = dissolved oxygen voltage value with V_{offset} correction (made prior to hysteresis correction) at index point i.
D and C are temporary variables used to simplify expression in processing loop.
$H1$ = amplitude of hysteresis correction function. Default = -0.033, range = -0.02 to -0.05 (varies from sensor to sensor).
$H2$ = function constant or curvature function for hysteresis. Default = 5000.
$H3$ = time constant for hysteresis (seconds). Default = 1450, range = 1200 to 2000 (varies from sensor to sensor).
$O_{newvolts}(i)$ = hysteresis-corrected oxygen value at index point i.
$O_{finalvolts}(i)$ = hysteresis-corrected oxygen value at index point i with V_{offset} removed.

This step is necessary prior to computing oxygen concentration using SBE 43 calibration equation.

4 Data Acquisition

CTD/rosette casts were performed with a package consisting of a 24-place, 10-liter rosette frame, a 24-place water sampler (SBE32) and up to 23, 10-liter Bullister-style bottles. This package was deployed on all stations/casts. Underwater electronic components consisted of a Sea-Bird Electronics (SBE) 9 plus CTD with dual pumps and the following sensors: dual temperature (SBE3), dual conductivity (SBE4), dual dissolved oxygen (SBE43), and an altimeter. Some cruises included a fluorometer (not reported herein). The other underwater electronic components typically consisted of two RDI LADCPs (also not reported herein). A total of 54 CTD/rosette casts were made between all six cruises, usually to within 20 m of the bottom.

The CTD's supplied a standard Sea-Bird format data stream at a data rate of 24 frames/second. The SBE9 plus CTD was connected to the SBE32 24-place pylon providing for single-conductor sea cable operations. Power to the SBE9 plus CTD, SBE32 pylon, auxiliary sensors, and altimeter was provided through the sea cable from the SBE911 plus deck unit in the computer lab. The rosette system was suspended from a UNOLS-standard three-conductor 0.322" electro-mechanical sea cable.

The CTD was mounted vertically attached to the bottom center of the rosette frame. All SBE4 conductivity and SBE3 temperature sensors and their respective pumps were mounted vertically as recommended by SBE, outboard of the CTD. The CTD was outfitted with dual pumps. Primary temperature, conductivity, and dissolved oxygen were plumbed on one pump circuit and secondary temperature, conductivity, and dissolved oxygen on the other. Pump exhausts were attached to outside corners of the CTD cage and directed downward. The altimeter was mounted on the inside of a support strut adjacent to the bottom frame ring. The LADCP's were vertically mounted inside the bottle rings with one 300 kHz pointing down, the other 300 kHz transducer pointing up. The R/V Walton Smith's stern A-frame CTD winch was used with the 24-place 10-liter rosette for all station/casts. However, at most 23 water samples are collected due to the presence of an upward looking ADCP in place of one Niskin bottle.

O-rings were changed as necessary and bottle maintenance was performed each day to insure proper closure and sealing. Valves were inspected for leaks and repaired or replaced as needed.

4.1 System Problems

- FC1511 - During the first station, station 8, several modulo errors occurred during the cast with the data eventually 'spiking out.' All the cables were reseated and the cast was redone, but the modulo errors continued. The CTD, s/n 0363, was replaced with the R/V Walton Smith's CTD, s/n 0692 where it was discovered that s/n 0363 had flooded. Station 8 was completed, but no bottles were fired due to loss of communication with the carousel. It was discovered that the electrical termination of the winch

wire was at fault. The electrical termination was reterminated before station 7 and no further problems occurred.

-

4.2 Data Acquisition

The CTD data acquisition system consisted of an SBE-11plus (V2) deck unit and a networked generic PC workstation located in the aft of the science lab. SBE Seasave software version 7.21 was used for data acquisition and to close bottles on the rosette.

The console watch initiated CTD deployments after the ship stopped on station. The watch maintained a console operations log containing a description of each deployment, a record of every attempt to close a bottle and any pertinent comments.

Prior to each cast the CTD was powered on and an on deck surface pressure was recorded and then powered off before deployment. The deck watch leader directed the winch operator to raise the package, the stern A-frame and rosette were extended outboard, and the package quickly lowered into the water and submerged to 10-15 meters of wire out. Tag lines were necessary for both deployments and recoveries during this cruise. The CTD sensor pumps were configured with a 60 second startup delay. The CTD console operator waited for the CTD sensor pumps to turn on, waiting for 2-3 minutes for sensors to stabilize, then directed the winch operator to bring the package close to the surface, pause for typically 10 seconds, hitting "Mark Scan" and begin the descent. The profiling rate was no more than 30 m/min to 150 m and no more than 60 m/min deeper than 150 m depending on sea cable tension and the sea state.

The console watch monitored the progress of the deployment and quality of the CTD data through interactive graphics and operational displays. Additionally, the watch created a sample log for the deployment that would be later used to record the correspondence between rosette bottles and analytical samples taken. The altimeter channel, CTD pressure, wire-out and bathymetric depth were all monitored to determine the distance of the package from the bottom, usually allowing a safe approach to within 20 m.

On the up cast, the winch operator was directed to stop at each bottle trip depth. The CTD console operator waited 30 seconds before tripping a bottle using a "point and click" graphical trip button. The data acquisition system responded with trip confirmation messages and the corresponding CTD data in a rosette bottle trip window on the display. All tripping attempts were noted on the console log. The console watch then directed the winch operator to raise the package up to the next bottle trip location.

After the last bottle was tripped, the console watch directed the deck watch to bring the rosette on deck. Once on deck, the console watch terminated the data acquisition, turned

off the deck unit, and assisted with rosette sampling.

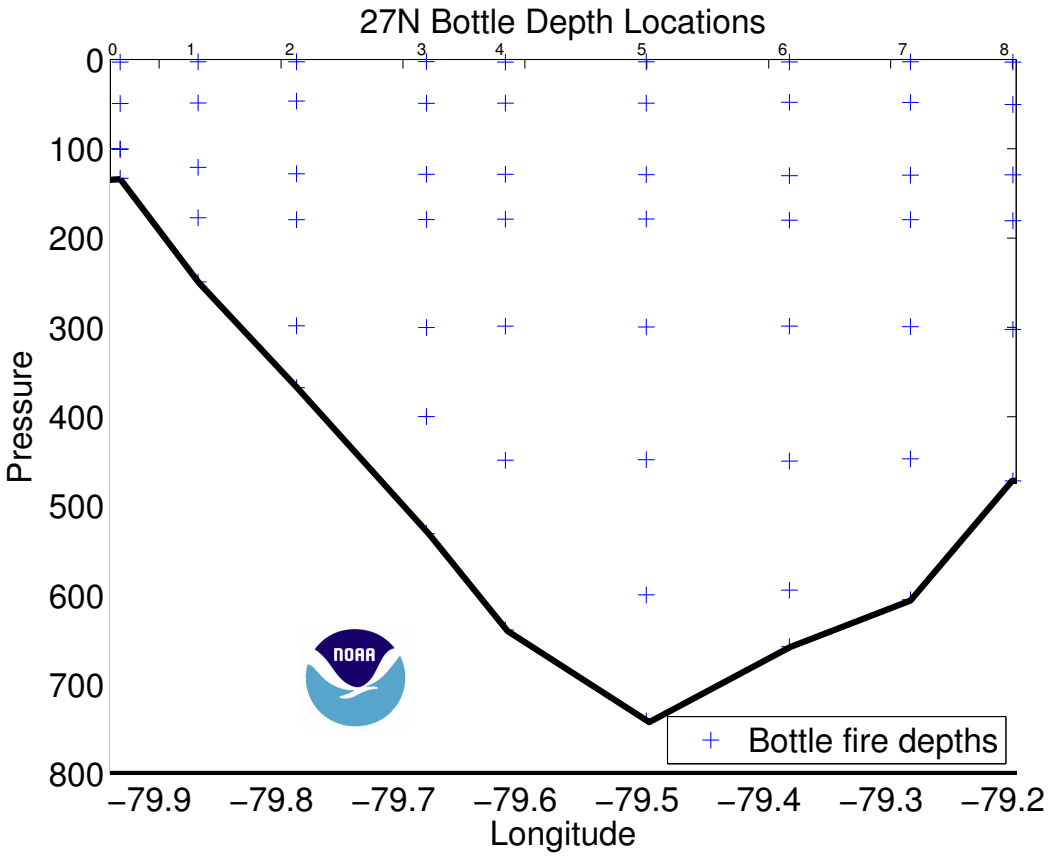


Figure 2: Nominal bottle locations for 27°N section in the Florida Straits.

4.3 Preliminary CTD Data Processing

Preliminary CTD data processing was performed using SEABIRD SBE Data Processing version 7.21k and AOML Matlab processing software. The raw CTD data and bottle trips acquired by SBE Seasave on the Windows 7 workstation were copied onto the CTD-PROC workstation, and processed to a 1-dbar series and a 1-second time series. Bottle trip values were extracted and a 1-decibar (dbar) down cast pressure series created.

Raw data are acquired from the instruments and are stored unmodified. The conversion module DATCNV uses the instrument configuration and pre-cruise factory calibration coefficients to create a converted engineering unit data file that is utilized by all SBEDataProc® post processing modules. Unless otherwise noted, all calibration parameters given are factory default values recommended by Sea Bird Electronics, Inc. The following is the SBEDataProc® processing module sequence and specifications for primary calibrated data (1 dbar averages) uses the following routines in order for reduction of CTD/O2 data from this cruise:

1. DATCNV converts raw data into engineering units and creates a .ROS bottle file. Both down and up casts were processed for scan, elapsed time(s), depth, pressure, t0 ITS-90 C, t1 ITS-90 C, c0 S/m, c1 S/m, salinity (PSU), salinity 2 (PSU), oxygen voltage V, oxygen 2 voltage V, altimeter, optical sensor, oxygen umol/kg, oxygen 2 umol/kg, oxygen mll/l, oxygen 2 ml/l, oxygen dv/dt, oxygen dv/dt 2, latitude, and longitude. MARKSCAN was used to determine the number of scans acquired on deck and while priming the system to exclude these scans from processing.

2. ALIGNCTD aligns temperature, conductivity, and oxygen measurements in time relative to pressure to ensure that derived parameters are made using measurements from the same parcel of water. Secondary conductivity and oxygen were automatically advanced by 0.073 seconds.

3. BOTTLESUM creates a summary of the bottle data. Bottle position, date, and time were output automatically. Pressure, temperature, conductivity, salinity, oxygen voltage and preliminary oxygen values were averaged over a 5 second interval.

4. WILDEDIT computes the standard deviation of 100 point bins, and then makes two passes through the data. The first pass flags points that differ from the mean by more than 2 standard deviations. A new standard deviation is computed excluding the flagged points and the second pass marks bad values greater than 20 standard deviations from the mean. For this data set, data were kept within a distance of 100 of the mean (i.e., all data).

5. FILTER applies a low pass filter to pressure with a time constant of 0.15 seconds. In order to produce zero phase (no time shift), the filter is first run forward through the file and then run backwards through the file.

6. CELLTM uses a recursive filter to remove conductivity cell thermal mass effects from measured conductivity. In areas with steep temperature gradients the thermal mass correction is on the order of 0.005 PSS-78. In other areas the correction is negligible. The value used for the thermal anomaly amplitude (alpha) was 0.03°C. The value used for the thermal anomaly time constant (1/beta) was 7.0°C.

7. LOOPEDIT removes scans associated with pressure slowdowns and reversals. If the CTD velocity is less than 0.25 m/s or the pressure is not greater than the previous maximum scan, the scan is omitted.

8. DERIVE uses 1 dbar averaged pressure, temperature, and conductivity to compute primary and secondary salinities. Oxygen voltage is used to calculate oxygen concentrations.

9. BINAVG averages the data into 1 dbar bins. Each bin is centered on an integer pressure value, e.g., the 1 dbar bin averages scans where pressure is between 0.5 dbar and 1.5 dbar. There is no surface bin. The number of points averaged in each bin is included in the data file.

10. STRIP removes the computed oxygen variable.

11. TRANS converts the binary data file into ASCII format.

12. SPLIT separates the cast into upcast and downcast values.

Package slowdowns and reversals owing to ship roll can move mixed water in tow to in front of the CTD sensors and create artificial density inversions and other artifacts. In addition to Seasoft module LOOPEDIT, a program computes values of density locally referenced between every 1 dbar of pressure to compute N^2 and linearly interpolates temperature, conductivity, and oxygen voltage over those records where N^2 is less than or equal to -1 x 10^{-5} s^{-2}. These data were retained but flagged as questionable in the final WOCE formatted files.

Final calibrations are applied to delooped data files. ITS-90 temperature, salinity, and oxygen are computed, and WOCE quality flags are created.

CTD data were examined at the completion of each deployment for clean corrected sensor response and any calibration shifts. As bottle salinity and oxygen results became available, they were used to refine shipboard conductivity and oxygen sensor calibrations.

A total of 54 casts were processed.

4.4 CTD Calibration Procedures

Laboratory calibrations of the CTD pressure, temperature, conductivity, and oxygen sensors were all performed at SBE. The calibration dates are listed in Table 11.

Secondary temperature, conductivity and dissolved oxygen (T2, C2 and DO2) sensors served as calibration checks for the reported primary sensors. During the cruise, it was determined that the primary sensors behaved more stably during the cruise.

In-situ salinity and dissolved O2 check samples collected during each cast were used to calibrate the conductivity and dissolved O2 sensors.

4.4.1 Salinity Analysis

A single Guildline Autosal (s/n 71011), model 8400B, located in 1st floor of AOML, was used for all salinity measurements. The autosal used was provided by AOML and last calibrated August 23, 2012. The salinometer readings were logged on a computer using Ocean Scientific International's logging hardware and software. The Autosal's water bath temperature was set to 24°C, which the Autosal is designed to automatically maintain. The laboratory's temperature is typically set and maintained to just below 24°C, to help further stabilize reading values and improve accuracy. The room temperature was monitored by a digital thermometer. Salinity analyses were performed after samples had equilibrated to laboratory temperature, usually within a couple days after collection. The salinometer was standardized for each group of samples analyzed (usually 2 casts and up to 52 samples) using two bottles of standard seawater: one at the beginning and end of each set of measurements. The salinometer output was logged to a computer file. The software prompted the analyst to flush the instrument's cell and change samples when appropriate. Prior to each run a sub-standard flush, approximately 200 ml, of the conductivity cell was conducted to flush out the DI water used in between runs. For each calibration standard, the salinometer cell was initially flushed 6 times before a set of conductivity ratio reading was taken. For each sample, the salinometer cell was initially flushed at least 3 times before a set of conductivity ratio readings were taken.

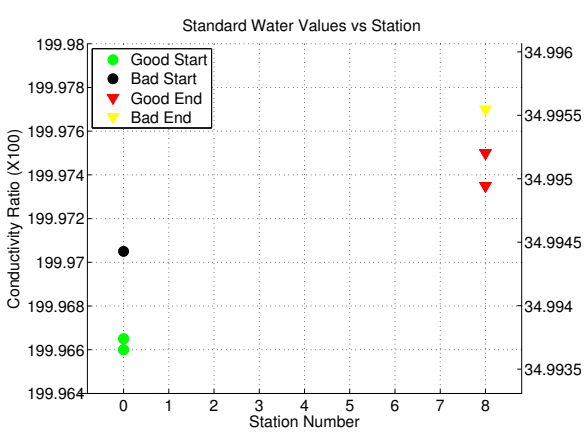
IAPSO Standard Seawater Batch P-155 was used to standardize the casts (Table 19).

Table 19: Nominal values for the batches of IAPSO standard seawater.

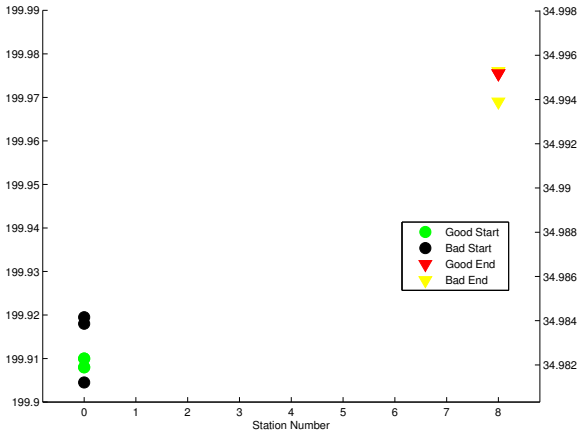
P-155
Use By: September 2015
K15: 0.99981
Salinity: 34.993

The salinity samples were collected in 200 ml Kimax high-alumina borosilicate bottles that had been rinsed at least three times with sample water prior to filling. The bottles were sealed with custom-made plastic insert thimbles and Nalgene screw caps. This assembly provides very low container dissolution and sample evaporation. Prior to sample collection, inserts were inspected for proper fit and loose inserts replaced to insure an airtight seal. Laboratory temperature was also monitored electronically throughout the cruise. PSS-78 salinity [UNES81] was calculated for each sample from the measured conductivity ratios. The offset between the initial standard seawater value and its reference value was applied to each sample. Then the difference (if any) between the initial and final vials of standard seawater was applied to each sample as a linear function of elapsed run time. The corrected salinity data was then incorporated into the cruise database. During the four Florida Straits cruises, a total of 315 salinity measurements were taken.

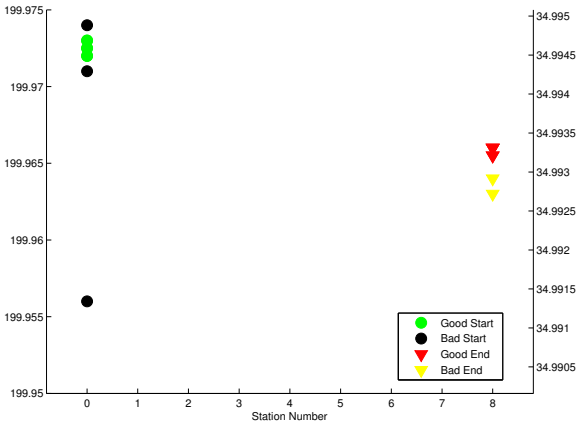
The running standard calibration values are shown in Figure 3. For WS1501 the autosal standards changed by 0.0001 in conductivity ratio (about 0.002 in salinity). For FC1504 the autosal standards changed by 0.0006 in conductivity ratio (about 0.013 in salinity). For FC1505 the autosal standards changed by 0.00007 in conductivity ratio (about 0.001 in salinity). For FC1507 the autosal standards changed by 0.0002 in conductivity ratio (about 0.004 in salinity). For FC1509 the autosal standards changed by 0.00007 in conductivity ratio (about 0.001 in salinity). For FC1511 the autosal standards changed by 0.0002 in conductivity ratio (about 0.004 in salinity).



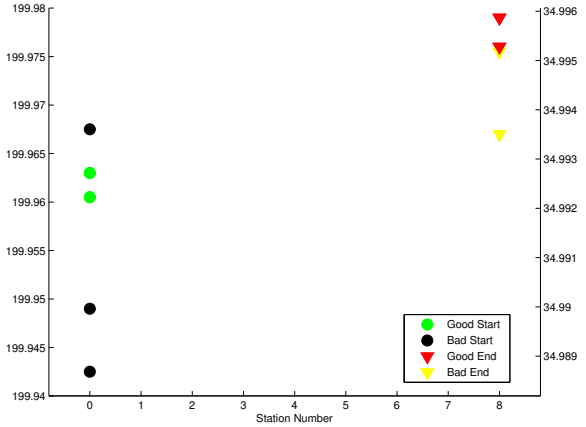
(a) WS1501



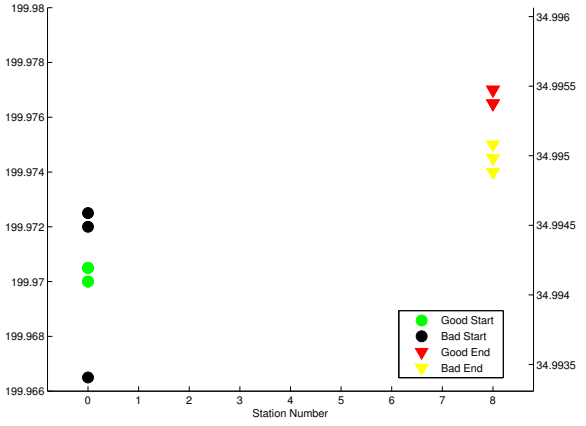
(b) FC1504



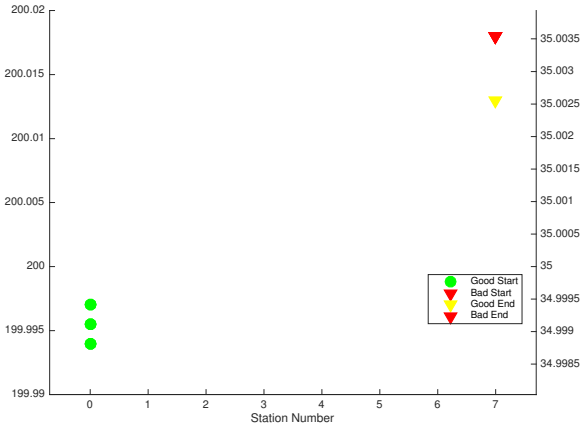
(c) FC1505



(d) FC1507



(e) FC1509



(f) FC1511

Figure 3: Standard vial calibrations throughout the cruise.

4.4.2 Oxygen Analysis

Dissolved oxygen analyses were performed with an automated titrator using amperometric end-point detection (Langdon, 2010). Sample titration, data logging, and graphical display were performed with a PC running a LabView program written by Ulises Rivero of AOML. Thiosulfate (17.5g per 500 ml) was dispensed by a 2 ml Gilmont burette driven with a stepper motor controlled by the titrator. Tests in the lab were performed to confirm that the precision and accuracy of the volume dispensed were comparable or superior to the Dosimat 665. The whole-bottle titration technique of Carpenter (1965), with modifications by Culberson et al. (1991), was used. Four replicate 10 ml iodate standards were run initially and if there requires any fill of new Thiosulfate and once again after bottle has reached half volume. The reagent blank determined as the difference between V1 and V2, the volumes of Thiosulfate required to titrate 1ml aliquots of the iodate standard. This method was found to produce a more reproducible blank value than the value determined as the intercept of a standard curve.

Dissolved oxygen samples were drawn from Niskin bottles into calibrated 125-150ml iodine titration flasks using silicon tubing. Bottles were rinsed three times and filled from the bottom, overflowing three volumes while taking care not to entrain any bubbles. The CTD temperatures were used to calculate $umol/kg$ concentrations. 1ml of MnCl2 and 1ml of NaOH/NaI were added immediately after drawing the sample was concluded using a ThermoScientific REPIPET II. The flasks were then stoppered and shaken well. Deionized water (DIW) was added to the neck of each flask to create a water seal. The total number of oxygen samples collected from the rosette was 339. A duplicate sample was taken at each station. The samples were stored in the lab in plastic totes at room temperature and run once back at AOML. The data was incorporated into the cruise database shortly after analysis. Thiosulfate normality was calculated from the laboratory temperature for each sample run.

The dispenser used for the standard solution (SOCOREX Calibrex 520) and the burette were calibrated gravimetrically just before the cruise. Oxygen flask volumes were determined gravimetrically with degassed deionized water at AOML. The correction for buoyancy was applied.

5 Post-Cruise Calibrations

Post cruise sensor calibrations were not done at Sea-Bird Electronics, Inc. Secondary temperature, conductivity and dissolved oxygen sensors served as calibration checks for the reported primary sensors.

In-situ salinity and dissolved oxygen samples collected during each cast were used to calibrate the conductivity and dissolved oxygen sensors.

Several sensor combinations were used during the cruises as listed in Table 11. For WS1501 and FC1505 the secondary T, C, and O were selected for final data reduction. For FC1504 the primary T, C, and O were selected for final data reduction. For FC1507 primary O and secondary T and C were selected for final data reduction. In addition to the Seasave processing modules, a group of Matlab script files called AOML/CTDCAL Toolbox were used. These scripts were based on earlier work of different groups as well as in modern statistical tools. They cover all the steps of the CTD data processing from the preliminary comparisons between sensors or bottle samples to data reductions and final sensors calibrations.

5.1 CTD Data Processing

By using the post cruise sensors calibrations; time drifts were estimated for the temperature and conductivity sensors (for estimated time drifts see the appropriate sections below). The processing module sequence used at sea is done again to include the time drifts as well the pressure correction. After this step the following Matlab scripts based on PMEL programs are applied to the CTD data:

- FILL_SURFACE was used to copy the first good value of salinity, potential temperature, oxygen and oxygen current back to the surface. The program then calculated temperature and conductivity, and zeroed doc/dt of oxygen current for those records.

- DESPIKE1 removed spikes from primary oxygen current and oxygen temperature data, as well as removing spikes from the primary conductivity sensor. Data were linearly interpolated over de-spiked records. Conductivity was back calculated, and sigma-theta and potential temperature were recomputed for the interpolated records.

- DESPIKE2 removed spikes from secondary sensors in the same method as DESPIKE1.

- Package slowdown and reversals due to ship roll can move mixed water in tow in front of the CTD sensors. This mixture can create artificial density inversions and other artifacts. In addition to the SEASOFT module LOOPEDIT, DELOOP, computes values of density locally referenced between every 1 dbar of pressure to compute N^2 = (- g/p) (dp/dz) and linearly interpolated measured parameters over those records where $N^2 \leq$ -1.0 e -05 s^{-2}.

5.2 CTD Pressure

Pressure sensor calibration coefficients derived from the pre-cruise calibrations were applied to raw pressure data during each cast. Residual pressure offsets (the difference between the first and last submerged pressures) were examined to check for calibration shifts (see Figure 4 and Tables 20 - 25. During WS1501 pressure sensor s/n 0768 was used, during FC1504, FC1505, FC1507, and FC1509 pressure sensor s/n 0363 was used and during FC1511 pressure sensor s/n 0692 was used. On deck pressures before the start of each cast was recorded and is plotted in Figure 4.

For WS11501 the on deck pressure before the cast was stable at 1.15 ± 0.028 dbar. A pressure offset correction of 1.153 dbar was applied before final calibration of the data. Near surface pressure values (which is taken as the near-surface pressure at the markscan and the last fired bottle pressure) showed little variability over the cruise (3.75 ± 0.33 dbar before and 2.77 ± 0.47 dbar after).

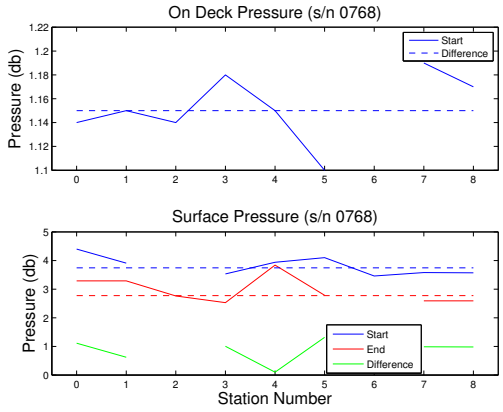
For FC1504 the on deck pressure before the cast was stable at 0.97 ± 0.06 dbar. A pressure offset correction of 0.965 dbar was applied before final calibration of the data. Near surface pressure values showed a little variability over the cruise between the start and end surface pressure (3.41 ± 0.49 dbar before and 2.69 ± 0.45 dbar after).

For FC1505 the on deck pressure before the cast was stable at 0.91 ± 0.11 dbar. A pressure offset correction of 0.908 dbar was applied before final calibration of the data. Near surface pressure values showed little variability over the cruise between the start and end surface pressure (3.5 ± 0.52 dbar before and 2.71 ± 0.26 dbar after).

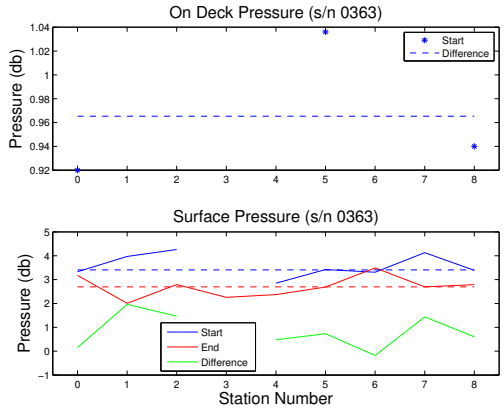
For FC1507 the on deck pressure before, 0.82± 0.16 dbar, and after, 0.82± 0.12 dbar, the cast were stable. A pressure offset correction of 0.822 dbar was applied before final calibration of the data. Near surface pressure values showed little variability over the cruise between the start and end surface pressure (3.33 ± 0.39 dbar before and 2.46 ± 0.27 dbar after).

For FC1509 the on deck pressure before the cast was stable at 0.76 ± 0.07 dbar. A pressure offset correction of 0.908 dbar was applied before final calibration of the data. Near surface pressure values showed little variability over the cruise between the start and end surface pressure (3.13 ± 0.12 dbar before and 3.74 ± 0.40 dbar after).

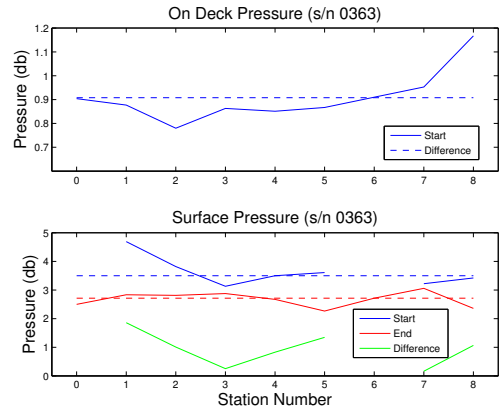
For FC1511 the on deck pressure before, -0.39 ± 0.15 dbar, and after, -0.55± 0.19 dbar, the cast were stable after an initial offset of 2 dbar was applied to the calibration file before the start of the cruise. A pressure offset correction of 0.475 dbar was applied before final calibration of the data for a total offset of -0.6298 dbar. Near surface pressure values showed little variability over the cruise between the start and end surface pressure (1.92 ± 0.23 dbar before and 2.67 ± 0.34 dbar after).



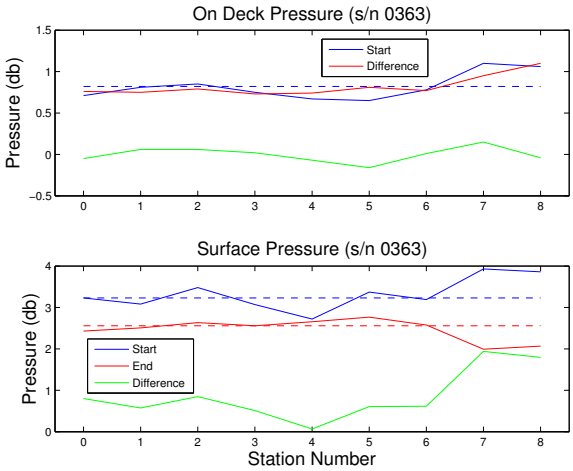
(a) WS1501



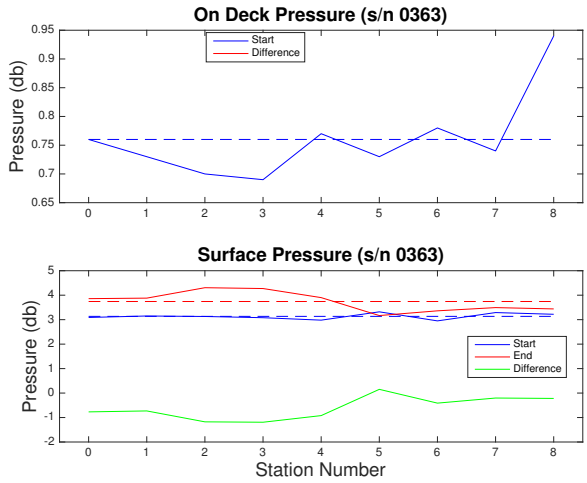
(b) FC1504



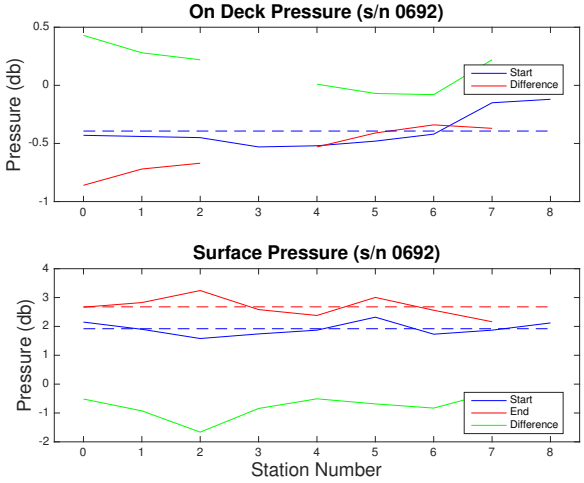
(c) FC1505



(d) FC1507



(e) FC1509



(f) FC1511

Figure 4: Pressure differences vs. station number. Top panel are the pressures measured on deck before the cast (blue). Bottom panel are the near sea surface pressure values measured at the start of the downcast (blue), at the end of the upcast (red) and their respective difference (green).

Table 20: WS1501: Near surface Pressure values and scan number used to remove surface soak and on-deck values.

Station	Markscan	Deck Prs Start	Sfc Prs Start	Sfc Prs End
0	1314	1.1400	4.4000	3.2880
1	1453	1.1500	3.9100	3.2900
2	1550	1.1400	-999	2.7620
3	1851	1.1800	3.5300	2.5270
4	1629	1.1500	3.9400	3.8390
5	1613	1.1000	4.1000	2.7850
6	2006	-999	3.4600	-999
7	2306	1.1900	3.5800	2.5920
8	2619	1.1700	3.5700	2.5900

Table 21: FC1504: Near surface Pressure values and scan number used to remove surface soak and on-deck values.

Station	Markscan	Deck Prs Start	Sfc Prs Start	Sfc Prs End
0	2462	0.9200	3.3300	3.1760
1	2734	-999	3.9700	2.0070
2	2495	-999	4.2600	2.7920
3	4829	-999	-999	2.2580
4	3826	-999	2.8500	2.3720
5	4665	1.0360	3.4200	2.6880
6	5262	-999	3.3100	3.4890
7	4233	-999	4.1300	2.6940
8	2619	0.9400	3.3900	2.7880

Table 22: FC1505: Near surface Pressure values and scan number used to remove surface soak and on-deck values.

Station	Markscan	Deck Prs Start	Sfc Prs Start	Sfc Prs End
0	1500	0.9040	-999	2.4980
1	2057	0.8770	4.6900	2.8330
2	1720	0.7800	3.8200	2.8140
3	2282	0.8630	3.1300	2.8760
4	2029	0.8510	3.5000	2.6720
5	2424	0.8670	3.6100	2.2640
6	2000	0.9100	-999	2.7130
7	841	0.9530	3.2200	3.0580
8	1300	1.1670	3.4200	2.3570

Table 23: FC1507: Near surface Pressure values and scan number used to remove surface soak and on-deck values.

Station	Markscan	Deck Prs Start	Deck Prs End	Sfc Prs Start	Sfc Prs End
0	1554	0.7100	0.7600	3.2300	2.4300
1	2264	0.8100	0.7500	3.0800	2.5070
2	2103	0.8500	0.7900	3.4800	2.6340
3	2207	0.7500	0.7300	3.0700	2.5580
4	1794	0.6700	0.7400	2.7200	2.6550
5	2587	0.6500	0.8100	3.3700	2.7650
6	1559	0.7800	0.7700	3.1900	2.5750
7	1788	1.1000	0.9500	3.9300	1.9910
8	2744	1.0600	1.1000	3.8600	2.0660

Table 24: FC1509: Near surface Pressure values and scan number used to remove surface soak and on-deck values.

Station	Markscan	Deck Prs Start	Deck Prs End	Sfc Prs Start	Sfc Prs End
0	1484	0.7600	-999.0000	3.0900	3.8590
1	1255	0.7300	-999.0000	3.1500	3.8800
2	1434	0.7000	-999.0000	3.1300	4.3060
3	1691	0.6900	-999.0000	3.0800	4.2720
4	1423	0.7700	-999.0000	2.9800	3.9010
5	1340	0.7300	-999.0000	3.3200	3.1680
6	936	0.7800	-999.0000	2.9500	3.3610
7	1183	0.7400	-999.0000	3.2900	3.4930
8	1884	0.9400	-999.0000	3.2200	3.4390

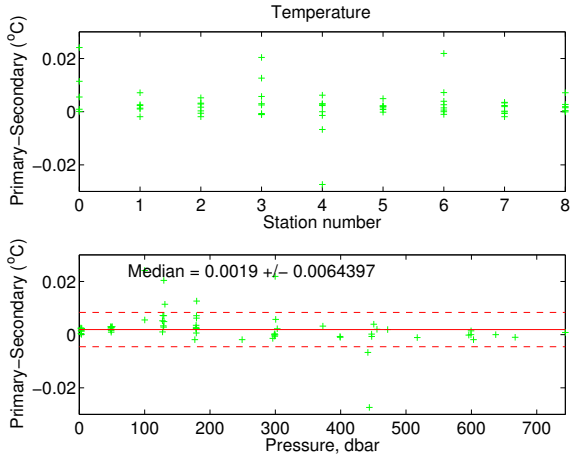
Table 25: FC1511: Near surface Pressure values and scan number used to remove surface soak and on-deck values.

Station	Markscan	Deck Prs Start	Deck Prs End	Sfc Prs Start	Sfc Prs End
0	1806	-0.4300	-0.8600	2.1500	2.6660
1	1352	-0.4400	-0.7200	1.9000	2.8260
2	1922	-0.4500	-0.6700	1.5800	3.2430
3	4585	-0.5300	-999	1.7400	2.5830
4	1374	-0.5200	-0.5300	1.8700	2.3790
5	1482	-0.4800	-0.4100	2.3200	3.0050
6	1575	-0.4200	-0.3400	1.7300	2.5600
7	3240	-0.1500	-0.3700	1.8700	2.1620
8	2544	-0.1200	-999s	2.1200	-999

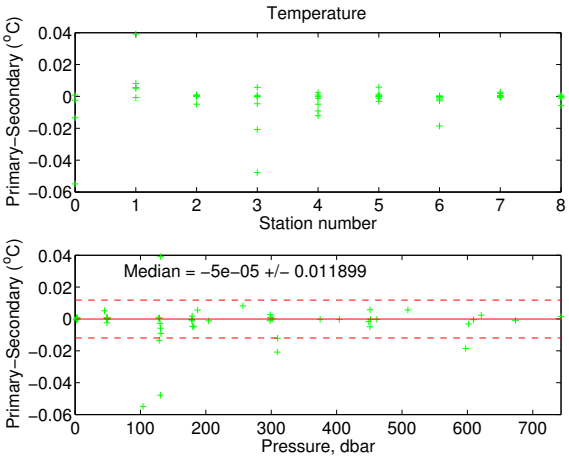
5.3 CTD Temperature

Temperature sensor calibration coefficients derived from the pre-cruise calibrations were applied to raw primary and secondary temperature data during each cast. Data accuracy, reproducibility and stability were examined by tabulating the difference between the two different temperature sensors over a range of pressures (bottle trip locations) for each cast.

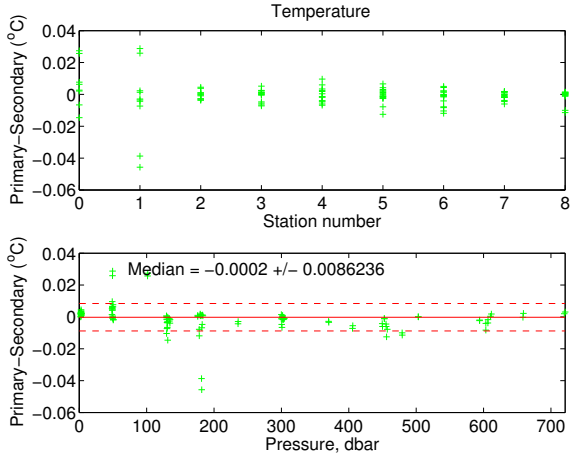
These comparisons are summarized in Figure 5, which shows the median temperature difference between the two sensors. For WS1501 there was a median of 0.002 °C and a standard deviation of 0.006 °C. For FC1504 there was a median of -5.0 · 10-5 °C and a standard deviation of 0.012 °C. For FC1505 there was a median of -0.0002 °C and a standard deviation of 0.009 °C. For FC1507 there was a median of 0.0004 °C and a standard deviation of 0.012 °C. For FC1509 there was a median of -0.0001 °C and a standard deviation of 0.007 °C. For FC1511 there was a median of -0.0007 °C and a standard deviation of 0.007 °C.



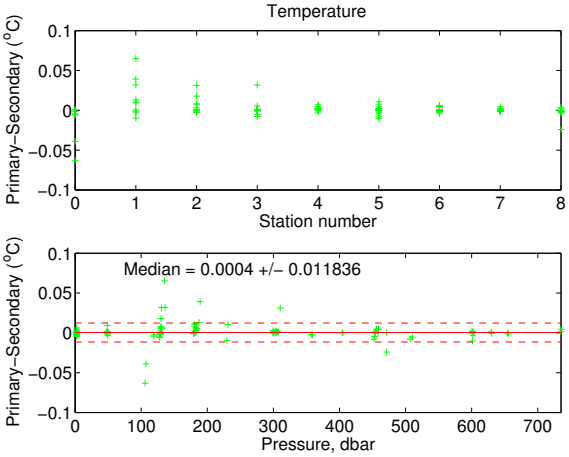
(a) WS1501



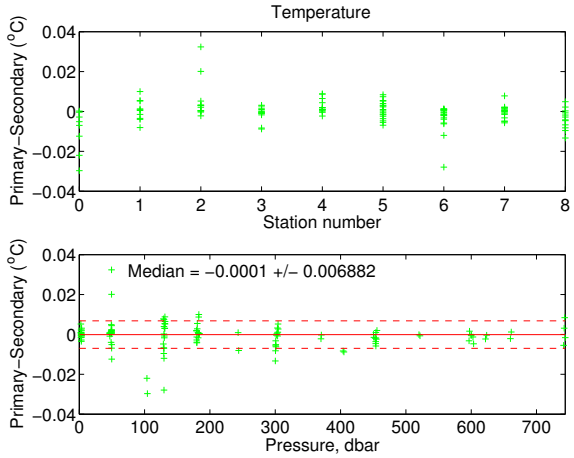
(b) FC1504



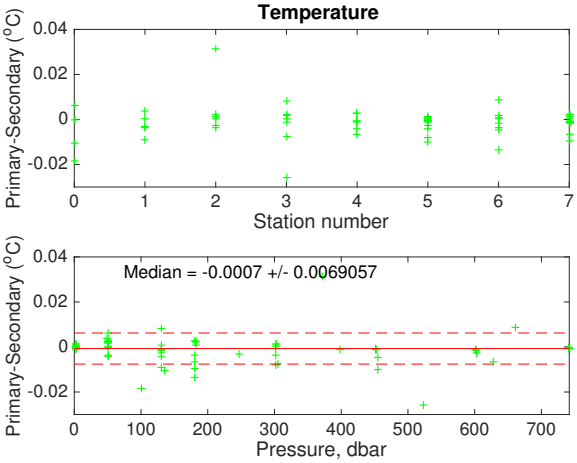
(c) FC1505



(d) FC1507



(e) FC1509



(f) FC1511

Figure 5: Temperature differences (after pressure corrections) between sensors by station number (top) and pressure (bottom). The green represents the surface data down to 1000 dbar. The blue represents data below 1000 dbar. The red solid line represents the median with the red dashed representing the standard deviation (same for top and bottom).

5.4 Conductivity

Conductivity sensor calibration coefficients derived from the pre-cruise calibrations were applied to raw primary and secondary conductivities. Comparisons between the primary and secondary sensors and between each of the sensors to conductivity calculated from bottle salinities were used to derive conductivity corrections. Uncorrected C1-C2 are shown in Figure 6 to help identify sensor drift. The AOML/CTDCAL Toolbox automatically applies a quality control to the data based on comparison with a normal distribution.

For WS1501 the sensors show a median difference of -0.0025 mS/cm and a standard deviation of 0.0076 mS/cm (Figure 6). Both sensors showed reasonable values for the residuals. The secondary sensor, s/n 2973, was used for all the final data values (Figure 7).

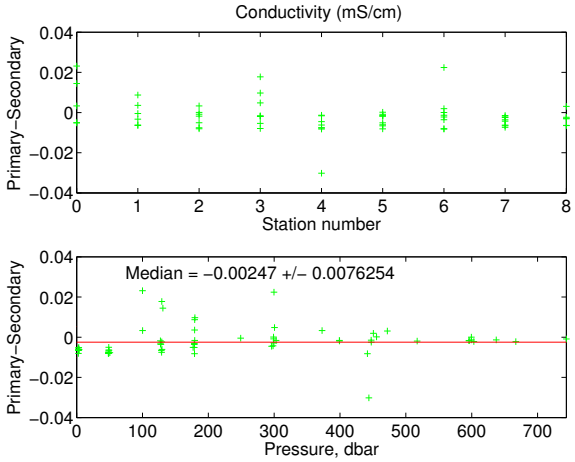
For FC1504 the sensors show a median difference of 0.003 mS/cm and a standard deviation of 0.013 mS/cm (Figure 6). Both sensors showed reasonable values for the residuals. The primary sensor, s/n 2973, was used for all the final data values (Figure 7).

For FC1505 the sensors show a median difference of -0.0028 mS/cm and a standard deviation of 0.0093 mS/cm (Figure 6). Both sensors showed reasonable values for the residuals. The secondary sensor, s/n 2973, was used for all the final data values (Figure 7).

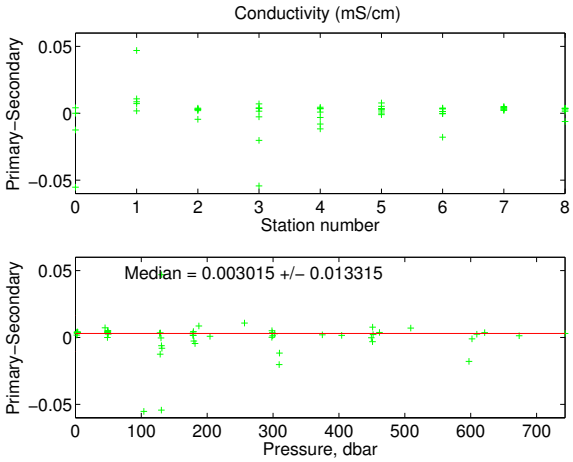
For FC1507 the sensors show a median difference of 0.0002 mS/cm and a standard deviation of 0.013 mS/cm (Figure 6). Both sensors showed reasonable values for the residuals. The secondary sensor, s/n 3860, was used for all the final data values (Figure 7).

For FC1509 the sensors show a median difference of -0.0005 mS/cm and a standard deviation of 0.0007 mS/cm (Figure 6). Both sensors showed reasonable values for the residuals. The primary sensor, s/n 3860, was used for all the final data values (Figure 7).

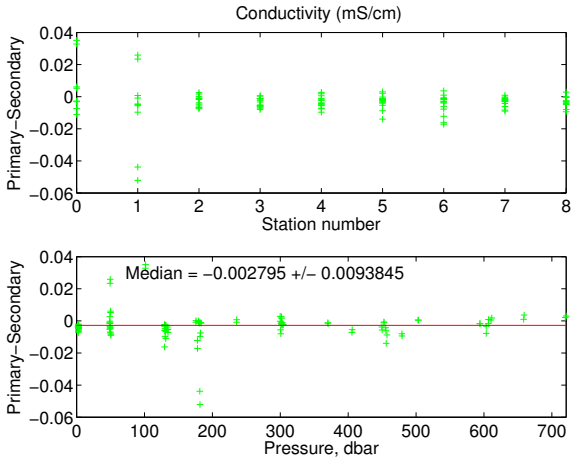
For FC1511 the sensors show a median difference of -0.002 mS/cm and a standard deviation of 0.007 mS/cm (Figure 6). Both sensors showed reasonable values for the residuals. The secondary sensor, s/n 3860, was used for all the final data values (Figure 7).



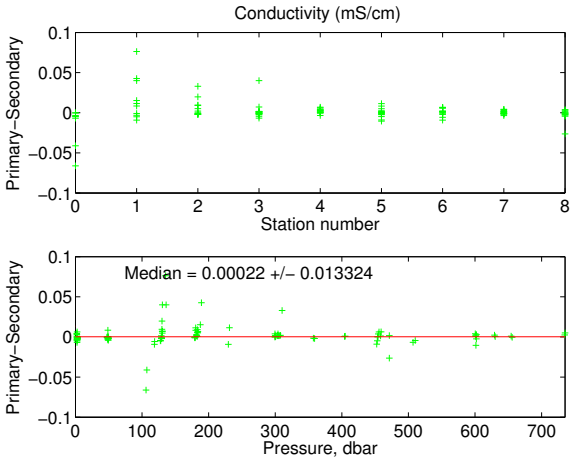
(a) WS1501



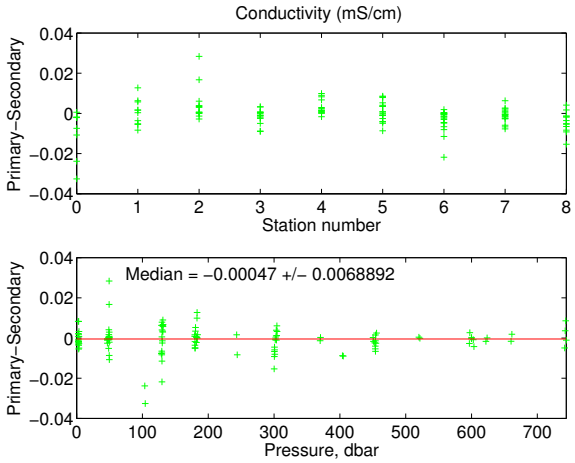
(b) FC1504



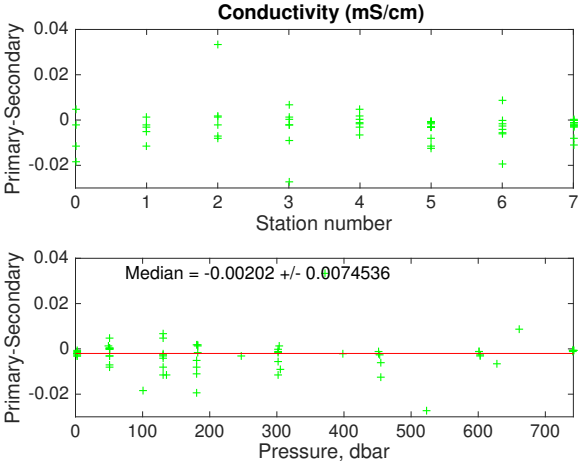
(c) FC1505



(d) FC1507



(e) FC1509



(f) FC1511

Figure 6: Conductivity (mS/cm) differences between sensors by station (top) and pressure (bottom). The red solid line represents the median with the red dashed representing the standard deviation.

In order to calibrate the CTD conductivity data against the sample conductivity we assume a constant additive correction (offset), multiplicative correction (slope), time drift correction (represented by station number) and where needed, a linear pressure-dependent term. A non-linear function is used to derive these coefficients and are applied to

$$C_{new} = [m * C_{CTD} + (p_1 * station) + b + pcor * P]$$

where C_{bottle} is bottle conductivity (S/m), C_{CTD} is pre-cruise calibrated CTD conductivity (S/m), m is the conductivity slope, b is the offset (S/m), P is the pressure, $pcor$ is the pressure correction coefficient, $station$ is the station number and p_1 is the polynomial coefficient. The fit is also weighted in such way that the final solution is preferentially forced to fit the data below a specified depth, in this case 1000 dbar. Final calibration coefficients are listed in Tables 26 & 27.

WS1501 s/n 2973	FC1504 s/n 2973	FC1505 s/n 2973	FC1507 s/n 3860
m= 0.9997107	m= 1.000253	m= 1.0008227	m= 1.0000941
p_1= 0	p_1= 0	p_1= 0	p_1= 0
b= 0.0216312	b= 0.0142737	b= -0.0203250	b= 0.0017699
$pcor$= -13573276e-05	$pcor$= -1.326568e-05	$pcor$= 7.6113532e-06	$pcor$= -74947231e-06

Table 26: Conductivity calibration coefficients applied for final calibration.

FC1509 s/n 3861	FC1511 s/n 3860
m= 0.9997113	m= 1.0001775
p_1= 0	p_1= 0
b= 0.0177152	b= -0.00375729
$pcor$= -1.3312604-05	$pcor$= 5.3584245e-06

Table 27: Conductivity calibration coefficients applied for final calibration.

For WS1501 the coefficients estimated by the equation above were then applied to the CTD conductivities and the final results (Figure 8 to Figure 9) show a residual of 8.1 · 10-4 psu and a standard deviation of 0.0051 psu. After data reduction 37 data points (84.1 %) were used in the final calculations.

For FC1504 the coefficients estimated by the equation above were then applied to the CTD conductivities and the final results (Figure 8 to Figure 9) show a residual of 9.4 · 10-4 psu and a standard deviation of 0.011 psu. After data reduction 37 data points (82.2 %) were used in the final calculations.

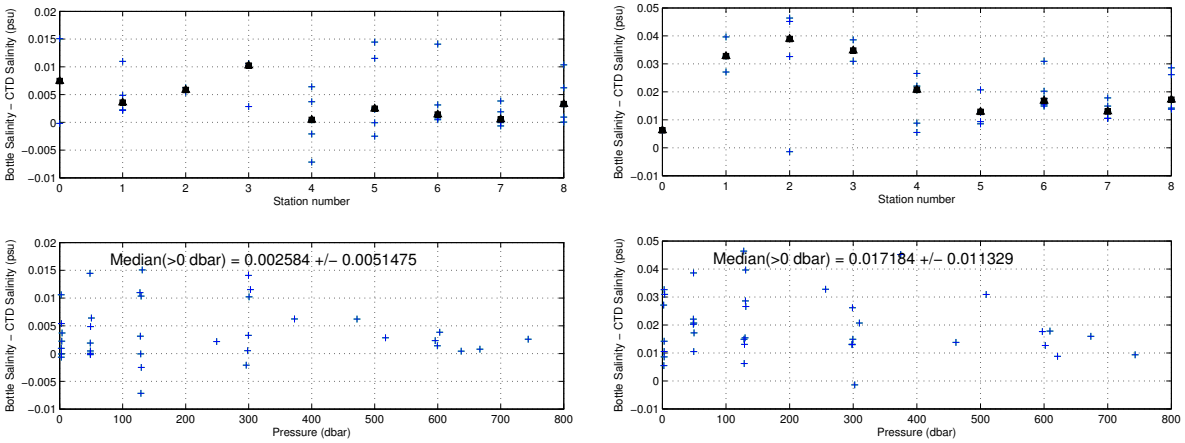
For FC1505 the coefficients estimated by the equation above were then applied to the CTD conductivities and the final results (Figure 8 to Figure 9) show a residual of -4.9 · 10-3 psu and a standard deviation of 0.016 psu. After data reduction 54 data points (93.1 %) were used in the final calculations.

For FC1507 the coefficients estimated by the equation above were then applied to the CTD conductivities and the final results (Figure 8 to Figure 9) show a residual of -8.4 · 10-4 psu and a standard deviation of 0.0096 psu. After data reduction 53 data points (91.4 %) were used in the final calculations.

For FC1509 the coefficients estimated by the equation above were then applied to the CTD conductivities and the final results (Figure 8 to Figure 9) show a residual of 5.1 · 10-4 psu and a standard deviation of 0.0041 psu. After data reduction 48 data points (82.8 %) were used in the final calculations.

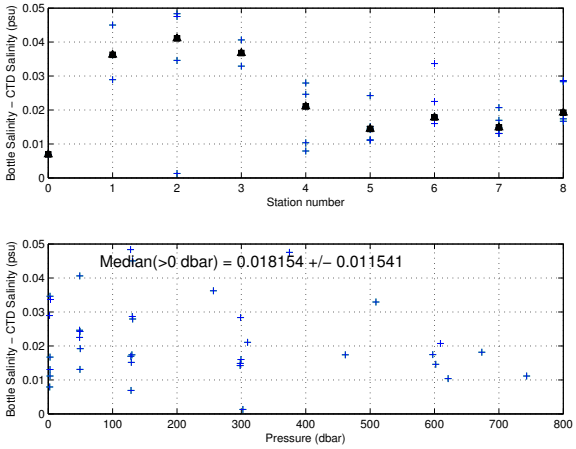
For FC1511 the coefficients estimated by the equation above were then applied to the CTD conductivities and the final results (Figure 8 to Figure 9) show a residual of -8.4 · 10-4 psu and a standard deviation of 0.0096 psu. After data reduction 47 data points (90.4 %) were used in the final calculations.

A final verification about the quality of the data was made by comparing the results of this cruise with some historical data (Figure 10 & 11).

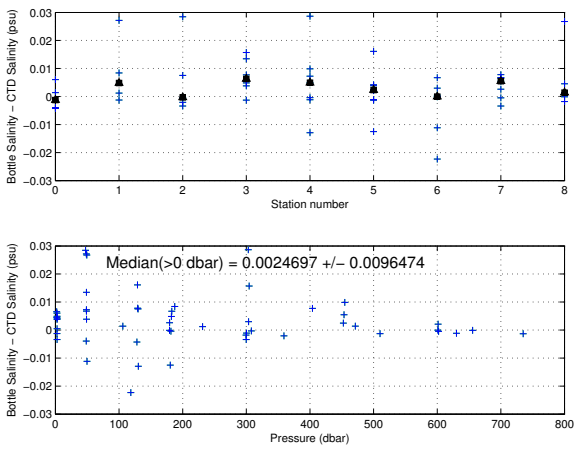


(a) WS1501

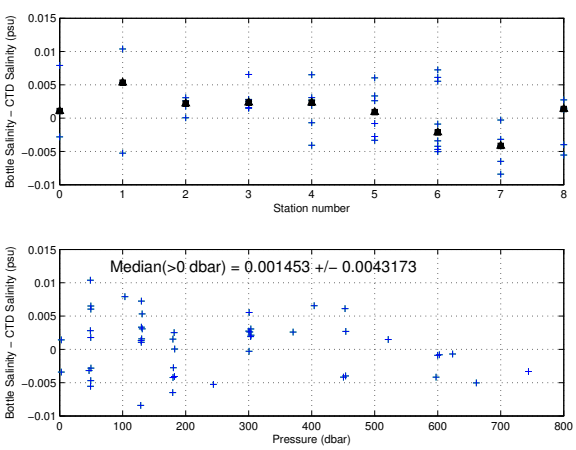
(b) FC1504



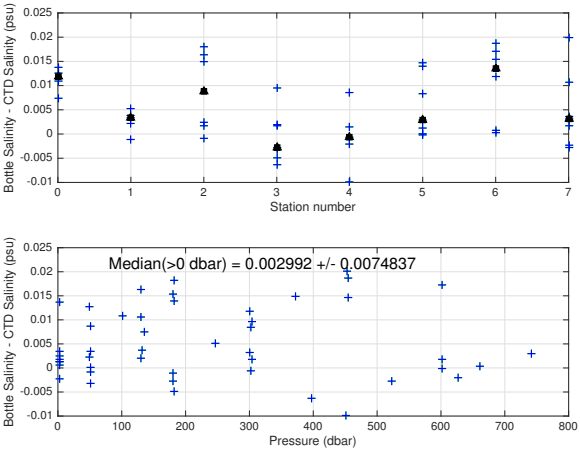
(c) FC1505



(d) FC1507

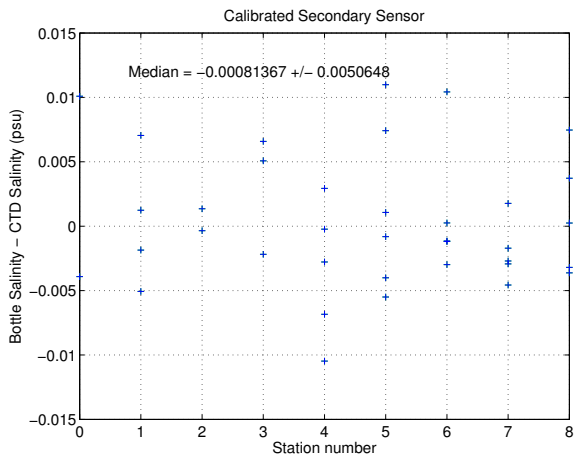


(e) FC1509

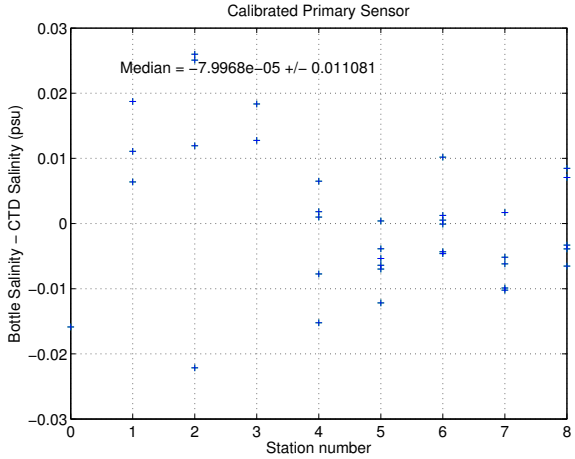


(f) FC1511

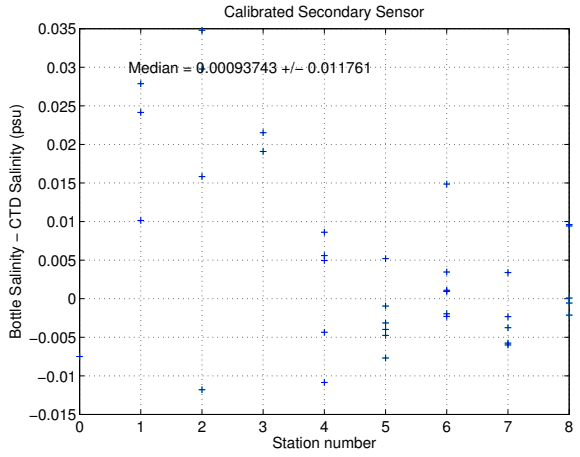
Figure 7: Bottle and uncalibrated CTD salinity differences plotted against pressure. The green crosses represent all data points and the blue are the data points below 1000 dbar. The median was calculated using only the data below 1000 dbar.



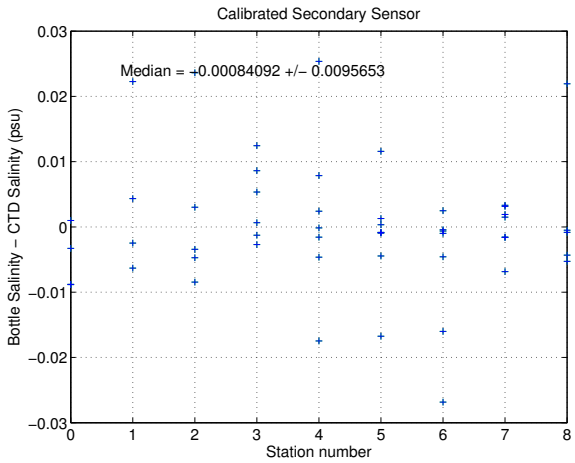
(a) WS1501



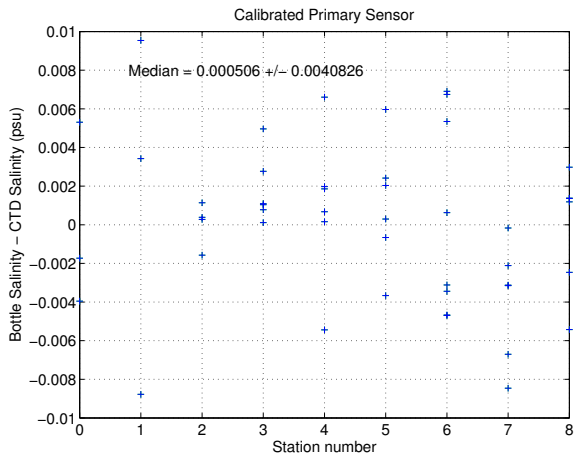
(b) FC1504



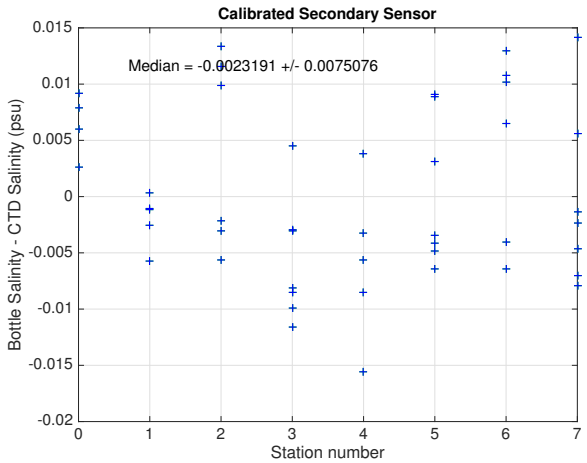
(c) FC1505



(d) FC1507

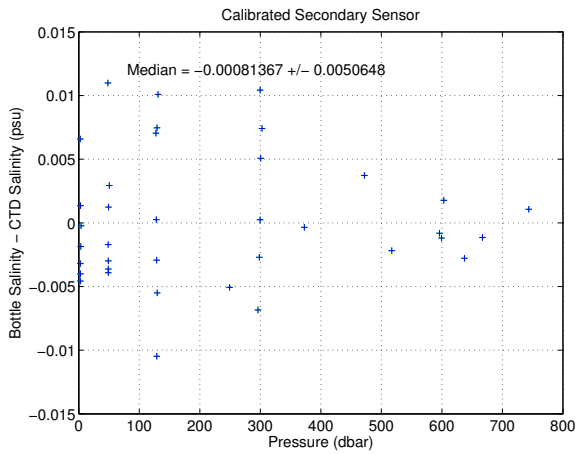


(e) FC1509

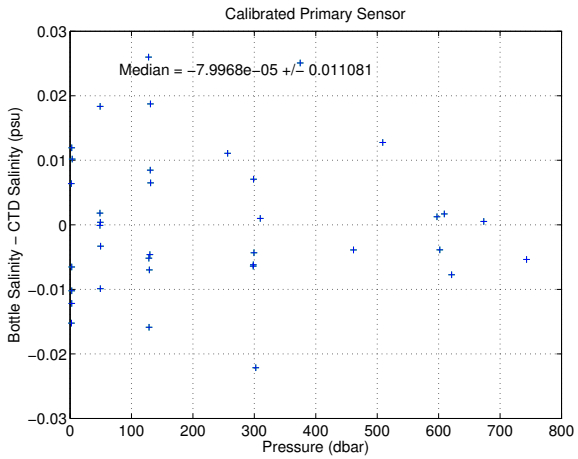


(f) FC1511

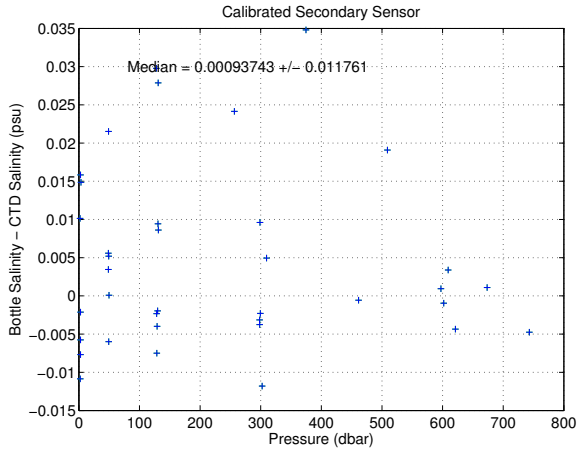
Figure 8: Bottle and calibrated CTD salinity differences plotted vs. station.



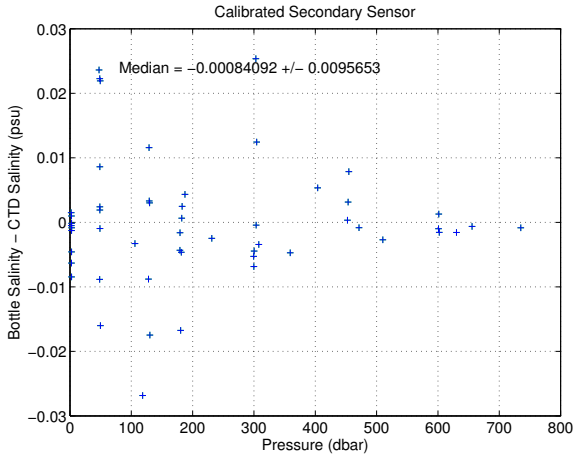
(a) WS1501



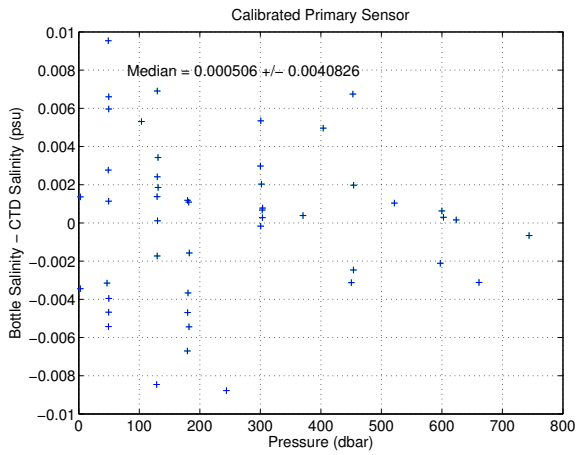
(b) FC1504



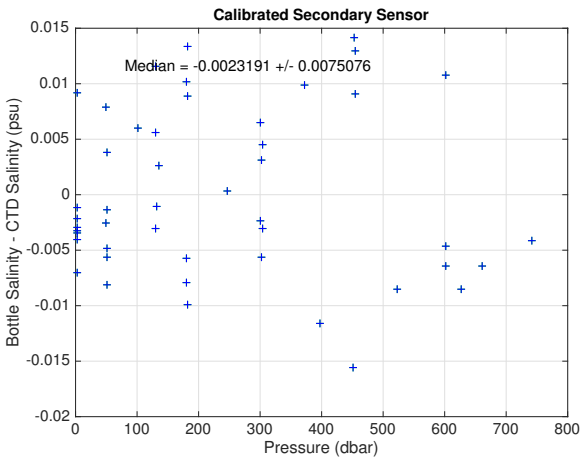
(c) FC1505



(d) FC1507

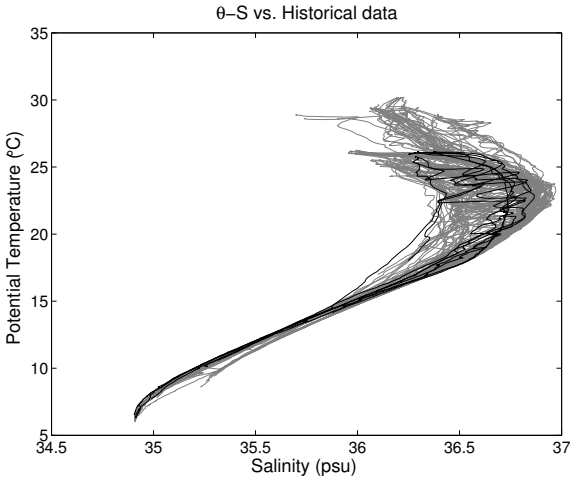


(e) FC1509

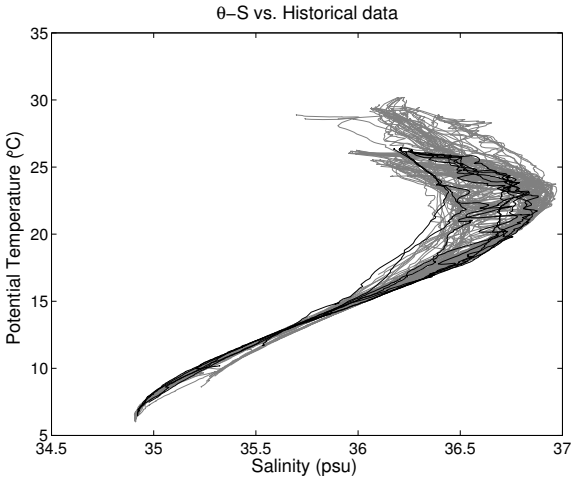


(f) FC1511

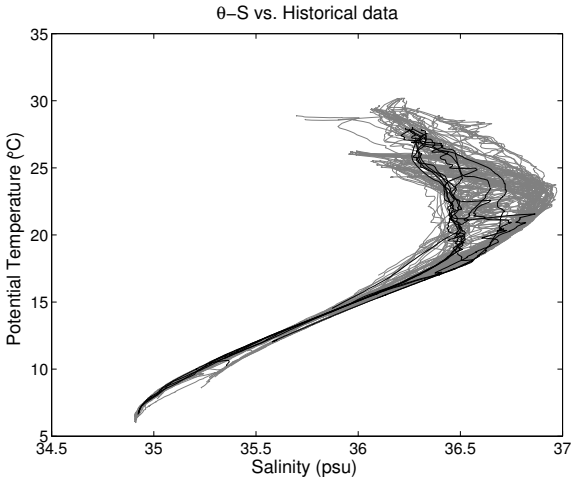
Figure 9: Bottle and calibrated CTD salinity differences plotted vs. pressure.



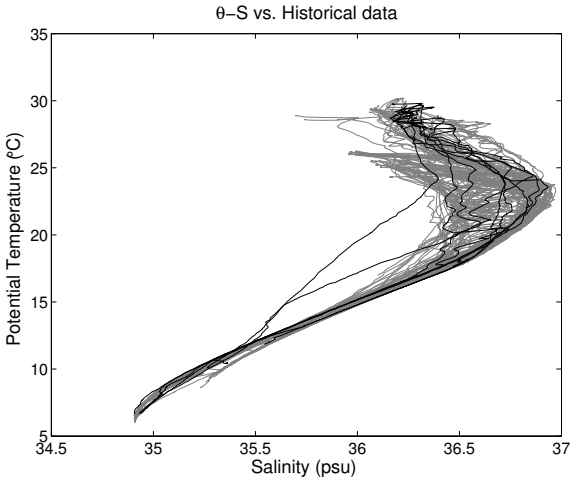
(a) WS1501



(b) FC1504



(c) FC1505



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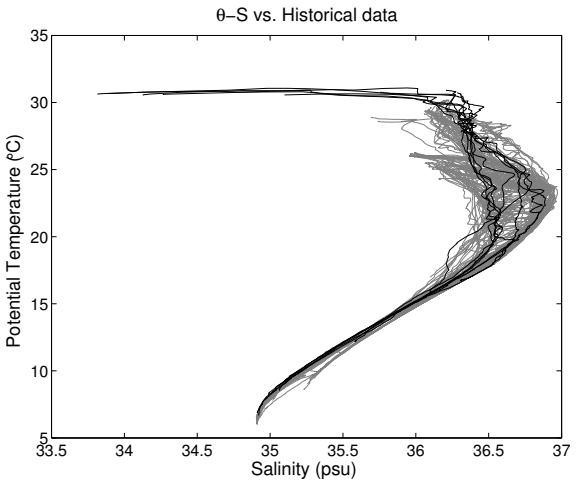
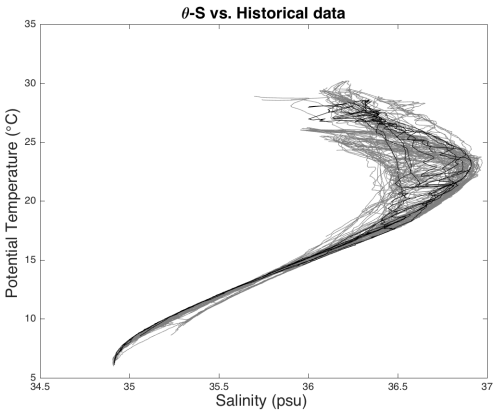
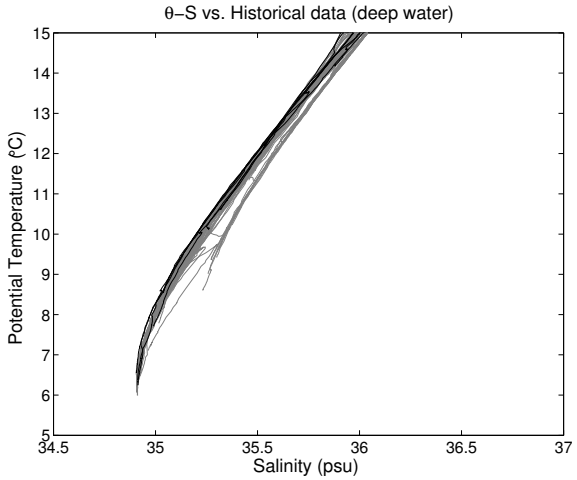


(e) FC1509

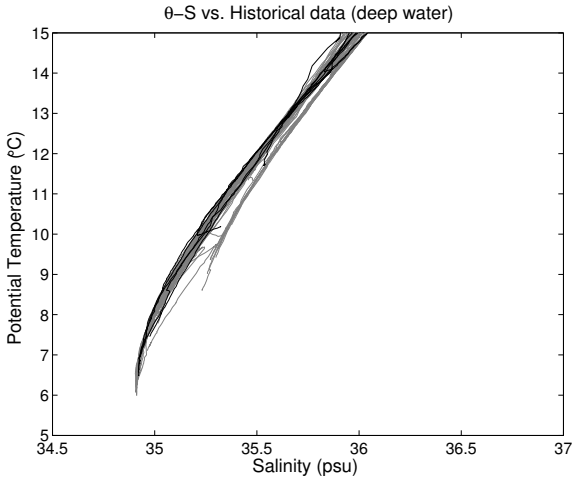


(f) FC1511

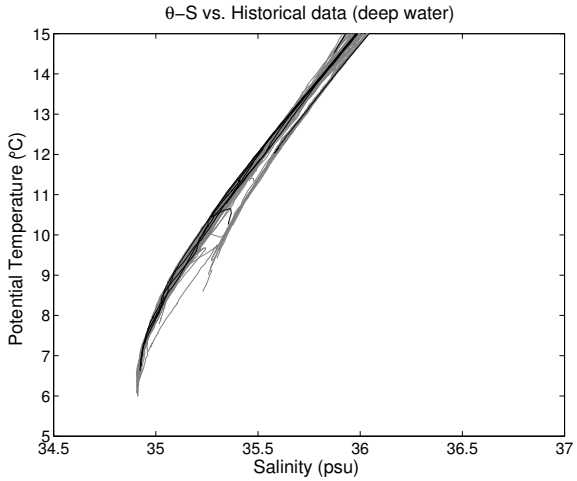
Figure 10: Potential Temperature - Salinity diagram for all stations. The solid black lines are the data collected during this cruise; the solid gray lines are data from the historical database.



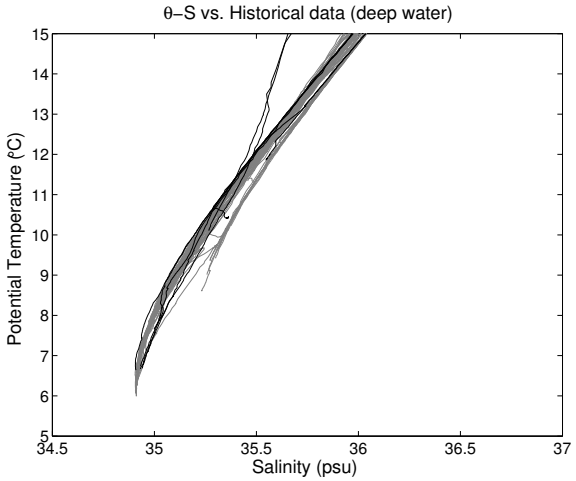
(a) WS1501



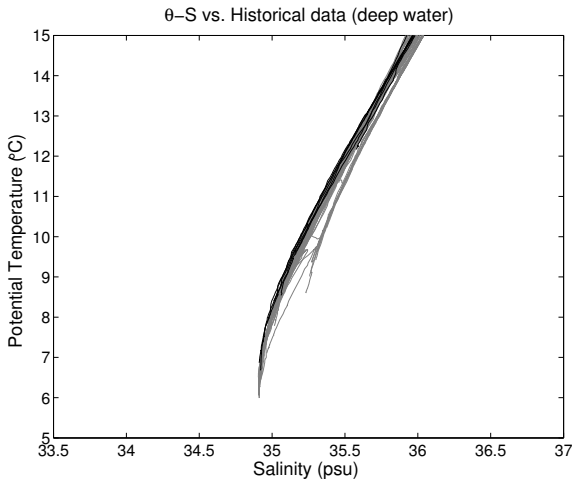
(b) FC1504



(c) FC1505



(d) FC1507



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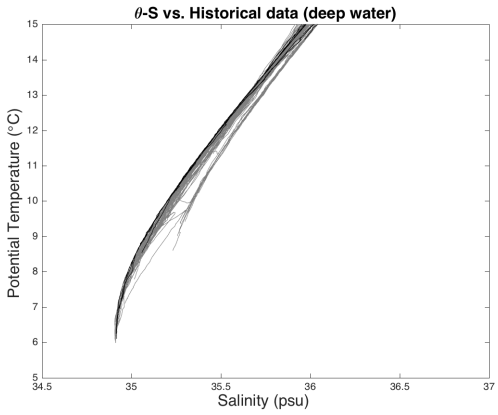


(f) FC1511

Figure 11: Potential Temperature - Salinity diagram for all stations. The solid black lines are the data collected during this cruise; the solid gray lines are data from the historical database.

5.5 Dissolved Oxygen

Three SBE43 dissolved O_2 (DO) sensors were used these four cruises (Table 11). Due to a hysteresis problem with the oxygen sensors the DO sensors were calibrated to dissolved O2 check samples by matching the up cast bottle trips to down cast CTD data along neutral density surfaces, calculating CTD dissolved O_2, and then minimizing the residuals using a non-linear least-squares fitting procedure.

The algorithm used for converting oxygen sensor current and probe temperature measurements as described, requires a non-linear least squares regression technique in order to determine the best fit coefficients of the model for oxygen sensor behavior to the water sample observations. A Matlab® sub-routine called `oxfit.m` from the AOML CTD/CAL TOOLBOX performs a non-linear least squares regression using the Gauss-Newton algorithm with Levenberg-Marquardt modifications for global convergence. This algorithm is independent of the first coefficients guess and demonstrates excellent convergence. This `oxfit.m` routine includes an optional time drift term (related with the station number), allowing all stations to be calibrated without breaking into discrete groupings. The Owens and Millard (1985) algorithm was modified as follows:

$$O\ (ml/l) = \{Soc * (V + V_{offset} + tau(T,S) * \frac{\delta v}{\delta t}) + p1 * station\}$$
$$*(1.0 + A * T + B * T^2 + C * T^3) * OXSAT(T,S) * e^{E*(\frac{P}{K})}$$

with

	WS1501 S/N 1348	FC1504 S/N 1348	FC1505 S/N 2712	FC1507 S/N 2942
Soc	0.3239702	0.3566653	0.3436758	0.4564715
V_offset	-0.4775609	-0.5054232	-0.4835133	-0.5025466
A	0.0056014	-0.0048440	-0.0008339	0.0064524
B	-0.0002042	-0.0003507	0.0000469	-0.0003501
C	0.0000046	-0.0000062	-0.0000001	0.0000058
E	0.0515292	0.0393237	0.0438336	0.0399808
tau	2.08	-0.83	-1.21	0.65
$p1$	0	0	0	0

	FC1509 S/N 2942	FC1511 S/N 2948
Soc	0.4576355	0.4627324
V_offset	-0.5211474	-0.4706104
A	0.01176887	-0.0020566
B	-0.0007075	0.00009752
C	0.0000118	-0.0000018
E	0.0411801	0.0330406
tau	0.41	2.10
$p1$	0	0

where Soc, tau, V_{offset}, A, B, C, E and $p1$ are the calibration coefficients shown above and V is the instrument voltage (V). T, S and P are the temperature, salinity and pressure measured by the CTD. K is the temperature in the absolute scale, *station* is the station number, and $OXSAT$ is the oxygen saturation.

For WS1501 a comparison between the primary and secondary sensors (Figure 12) was evaluated. The sensors show a median difference of -3.38 $umol/kg$ and a standard deviation of 0.72 $umol/kg$. The secondary sensor, s/n 1348, was used for all the final data values (Figure 13). After data reduction 53 data points (92.98%) were used in the final calculations. By minimizing the differences between the oxygen samples and the CTD oxygen estimated from the equation described in this section, the new coefficients above were calculated and then applied to the CTD original data (Figure 14 to Figure 15). The residual is -0.006 $umol/kg$ and the standard deviation 1.09 $umol/kg$.

For FC1504 a comparison between the primary and secondary sensors (Figure 12) was evaluated. The sensors show a median difference of 0.1 $umol/kg$ and a standard deviation of 0.58 $umol/kg$. The primary sensor, s/n 1348, was used for all the final data values (Figure 13). After data reduction 54 data points (94.74%) were used in the final calculations. By minimizing the differences between the oxygen samples and the CTD oxygen estimated from the equation described in this section, the new coefficients above were calculated and then applied to the CTD original data (Figure 14 to Figure 15). The residual is 0.029 $umol/kg$ and the standard deviation 1.77 $umol/kg$.

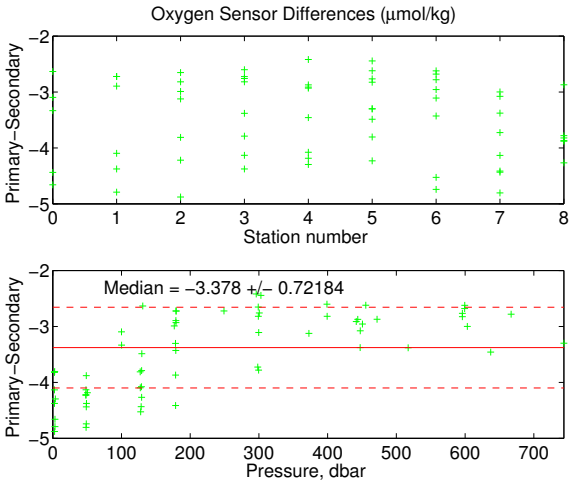
For FC1505 a comparison between the primary and secondary sensors (Figure 12) was evaluated. The sensors show a median difference of 0.1 $umol/kg$ and a standard deviation of 0.57 $umol/kg$. The secondary sensor, s/n 2712, was used for all the final data values (Figure 13). After data reduction 54 data points (93.1%) were used in the final calculations. By minimizing the differences between the oxygen samples and the CTD oxygen estimated from the equation described in this section, the new coefficients above were calculated and then applied to the CTD original data (Figure 14 to Figure 15). The residual is 0.16 $umol/kg$ and the standard deviation 0.99 $umol/kg$.

For FC1507 a comparison between the primary and secondary sensors (Figure 12) was evaluated. The sensors show a median difference of 4.28 $umol/kg$ and a standard deviation of 1.14 $umol/kg$. The primary sensor, s/n 2942, was used for all the final data values (Figure 13). After data reduction 53 data points (91.38%) were used in the final calculations. By minimizing the differences between the oxygen samples and the CTD oxygen estimated from the equation described in this section, the new coefficients above were calculated and then applied to the CTD original data (Figure 14 to Figure 15). The residual is 0.14 $umol/kg$ and the standard deviation 0.97 $umol/kg$.

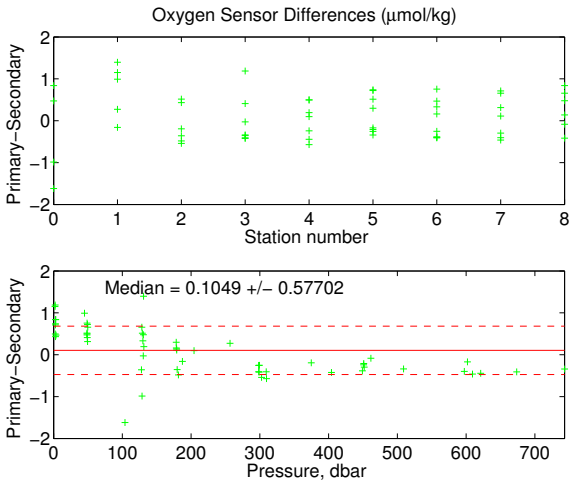
For FC1509 a comparison between the primary and secondary sensors (Figure 12) was evaluated. The sensors show a median difference of 3.88 $umol/kg$ and a standard deviation of 1.05 $umol/kg$. The primary sensor, s/n 2942, was used for all the final data values (Figure 13). After data reduction 54 data points (94.74%) were used in the final calculations. By minimizing the differences between the oxygen samples and the CTD oxygen estimated from the equation described in this section, the new coefficients above were calculated and then applied to the CTD original data (Figure 14 to Figure 15). The residual is -0.13 $umol/kg$ and the standard deviation 1.29 $umol/kg$.

For FC1511 a comparison between the primary and secondary sensors (Figure 12) was evaluated. The sensors show a median difference of 6.74 $umol/kg$ and a standard deviation of 1.62 $umol/kg$. The primary sensor, s/n 2948, was used for all the final data values (Figure 13). After data reduction 46 data points (88.46%) were used in the final calculations. By minimizing the differences between the oxygen samples and the CTD oxygen estimated from the equation described in this section, the new coefficients above were calculated and then applied to the CTD original data (Figure 14 to Figure 15). The residual is 0.03 $umol/kg$ and the standard deviation 0.73 $umol/kg$.

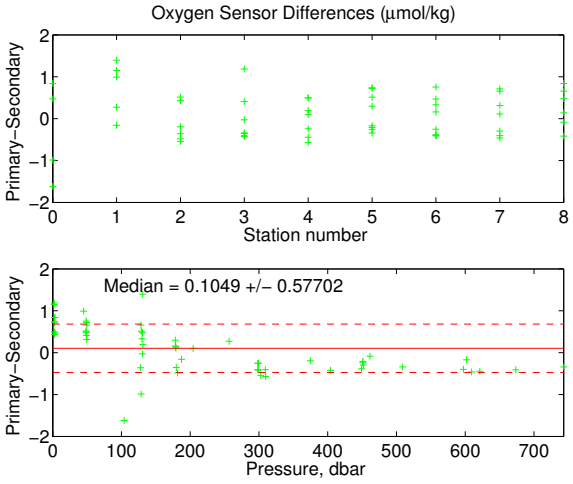
A final verification about the quality of the data, like in the salinity data, was made by comparing the results of this cruise with some historical data available at the location of the Florida Straits section (Figure 16 & 17).



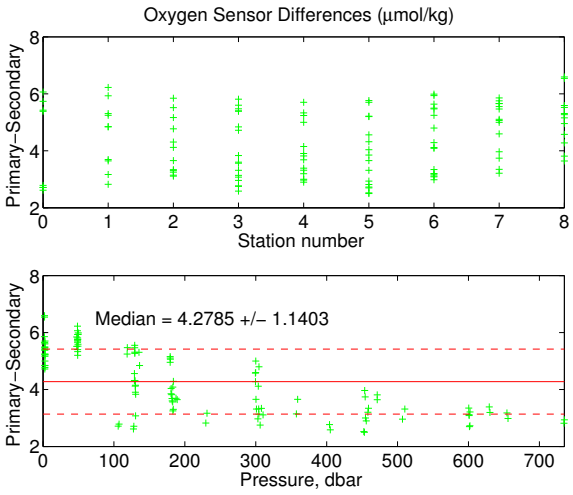
(a) WS1501



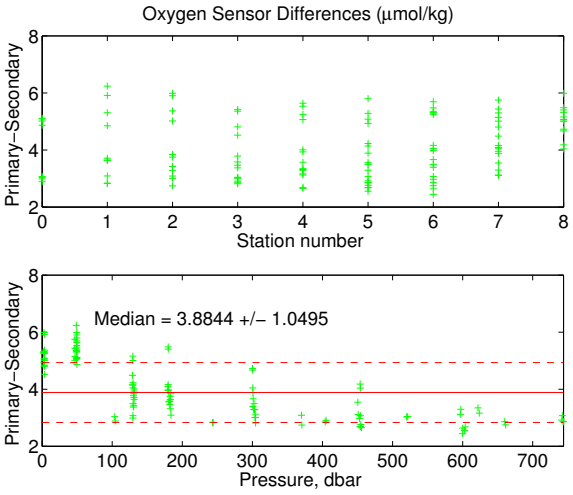
(b) FC1504



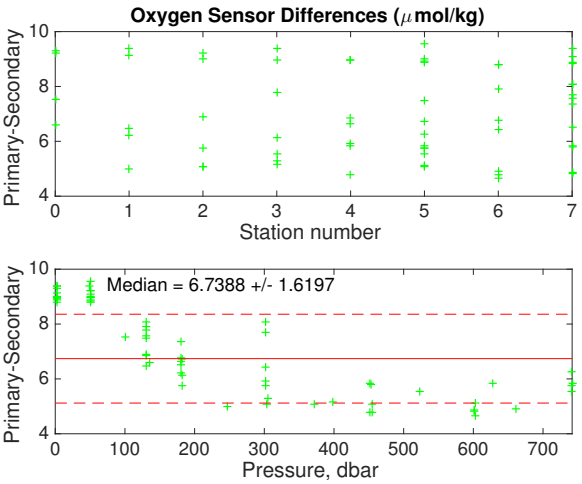
(c) FC1505



(d) FC1507

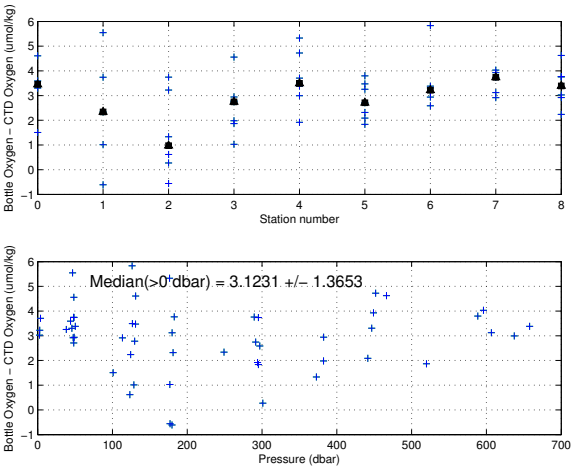


(e) FC1509

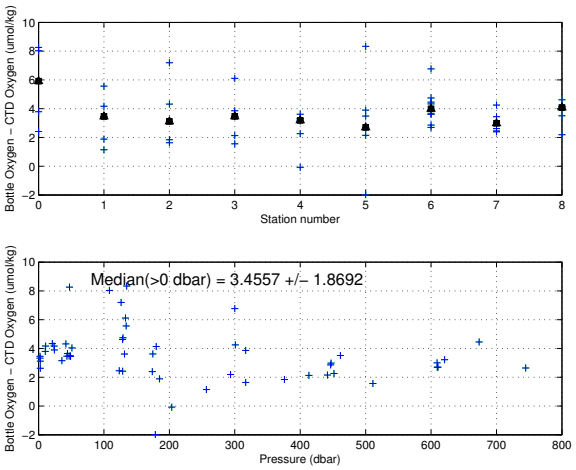


(f) FC1511

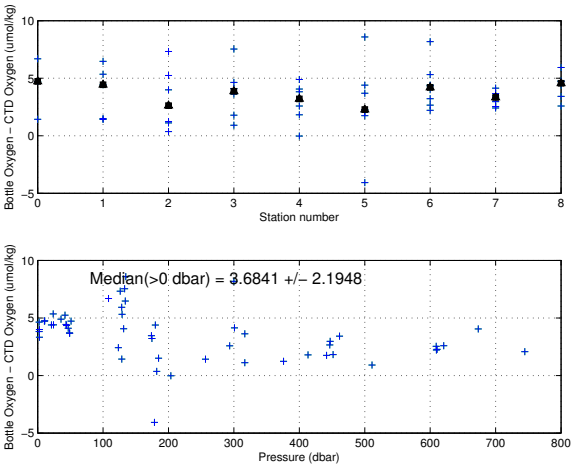
Figure 12: Dissolved oxygen differences between sensors by station (top) and by pressure (bottom). The red solid line represents the median with the red dashed representing the standard deviation.



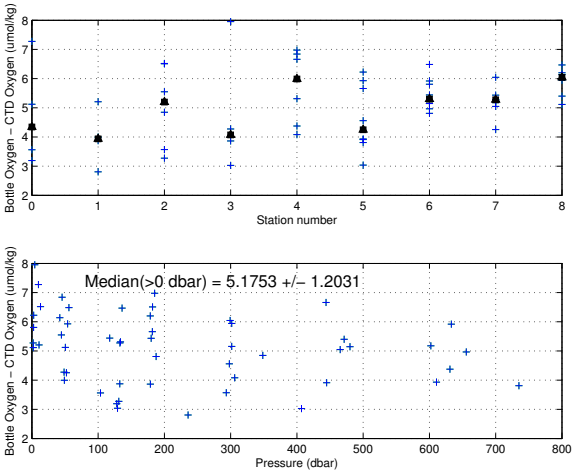
(a) WS1501



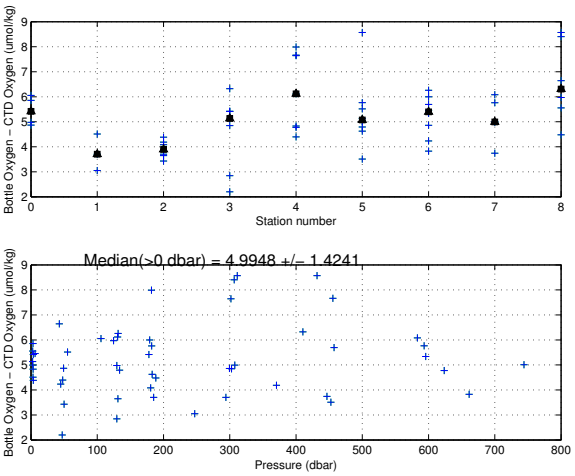
(b) FC1504



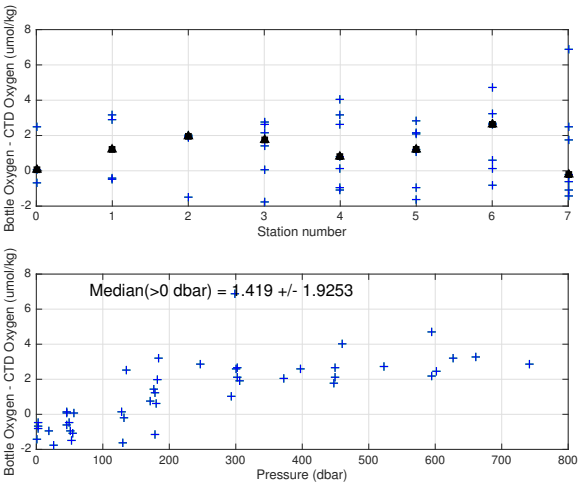
(c) FC1505



(d) FC1507

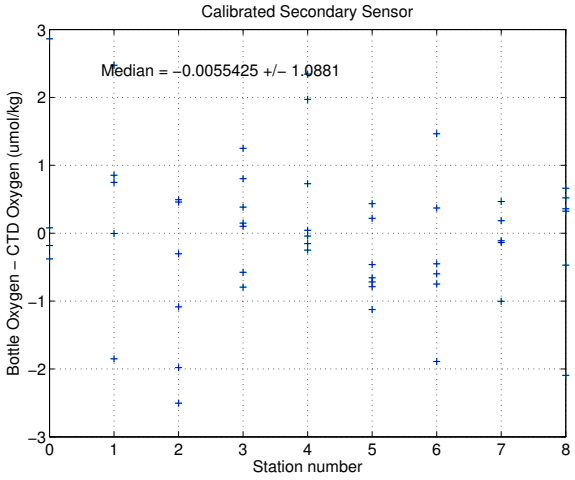


(e) FC1509

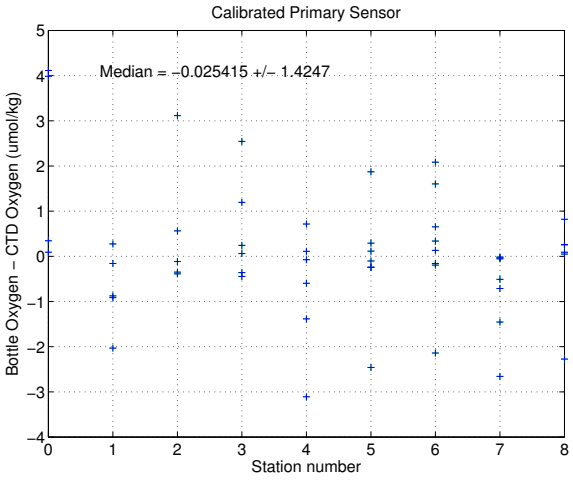


(f) FC1511

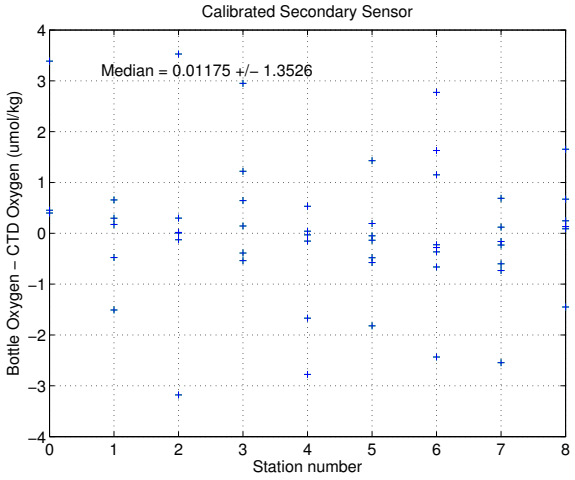
Figure 13: Bottle and uncalibrated CTD oxygen differences plotted against station number. The green crosses represent all data points and the blue are the data points below 1000 dbar. The median was calculated using only the data below 1000 dbar.



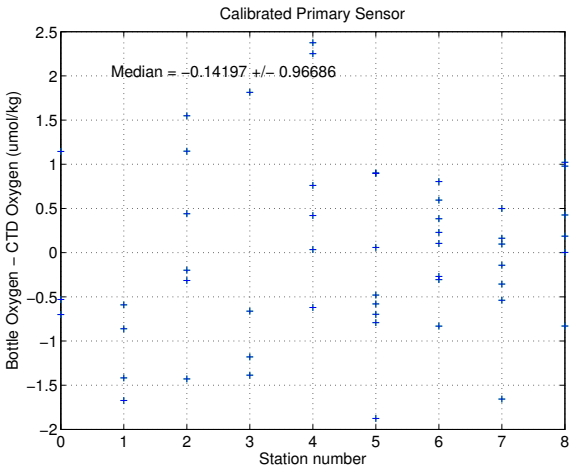
(a) WS1501



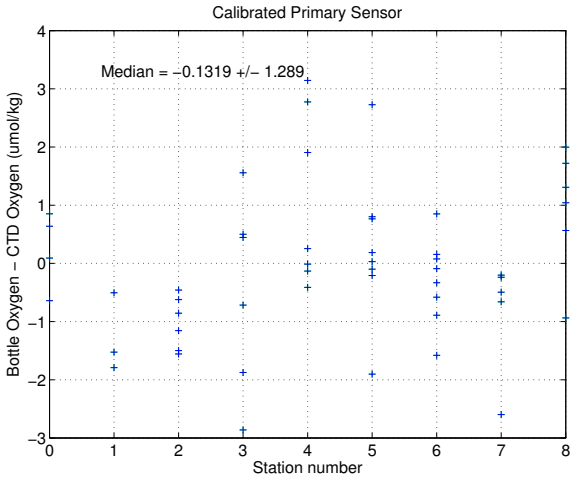
(b) FC1504



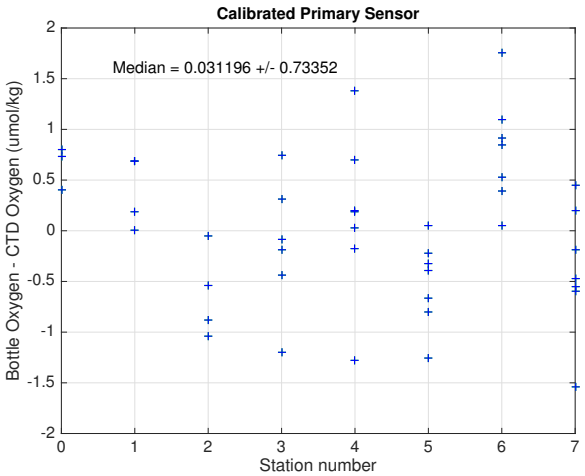
(c) FC1505



(d) FC1507

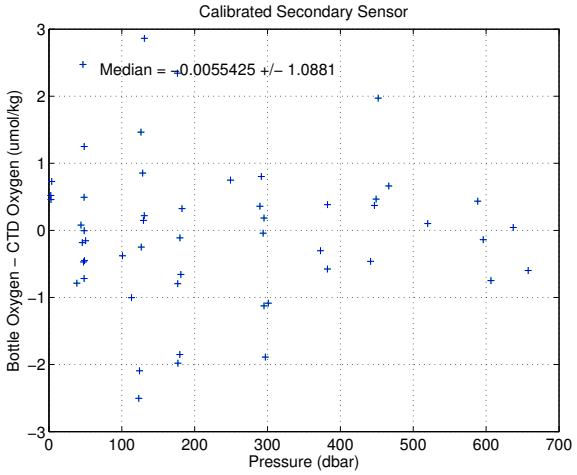


(e) FC1509

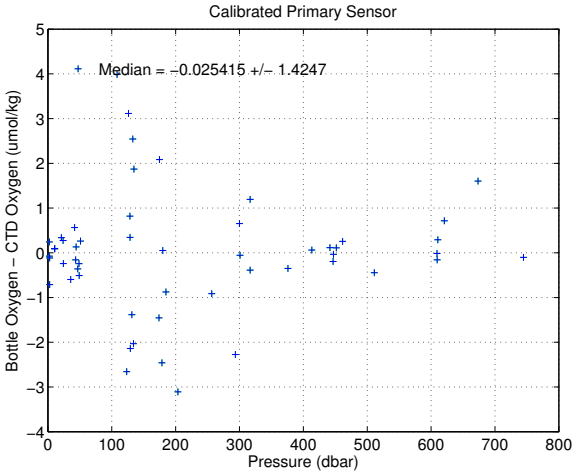


(f) FC1511

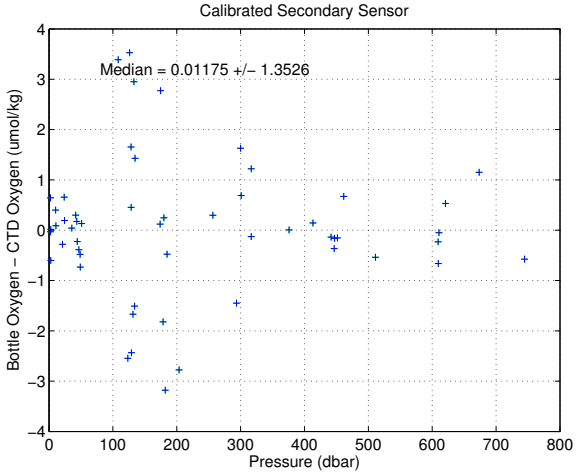
Figure 14: Bottle and calibrated CTD oxygen differences plotted vs. station.



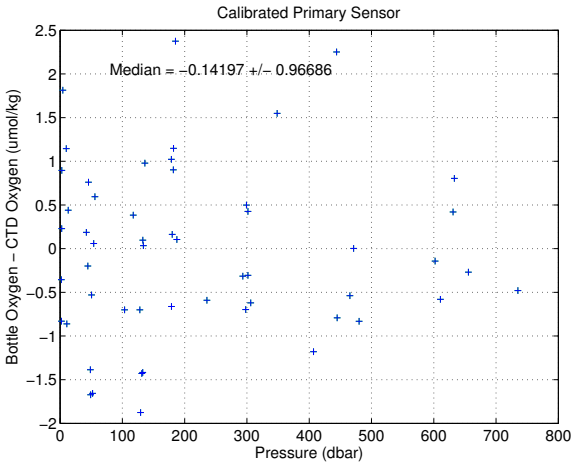
(a) WS1501



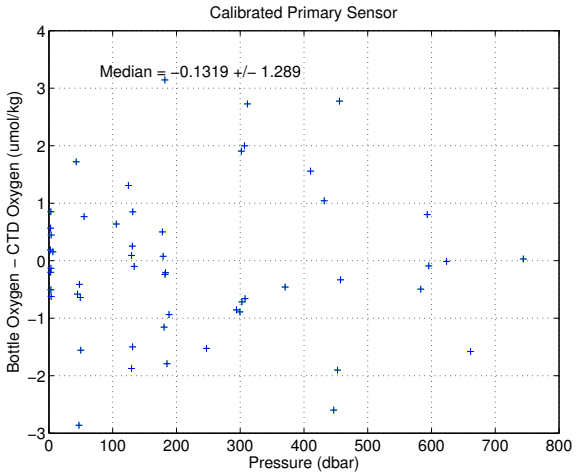
(b) FC1504



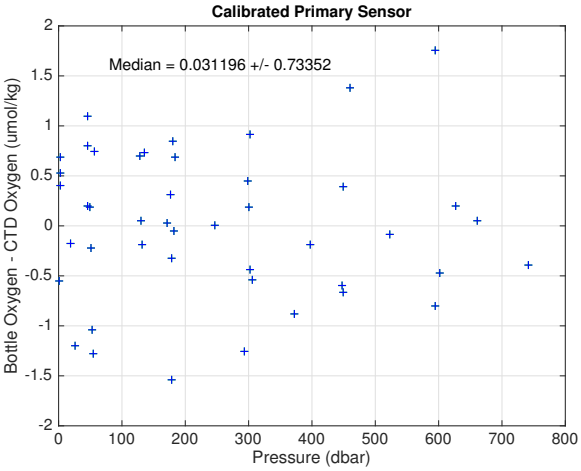
(c) FC1505



(d) FC1507

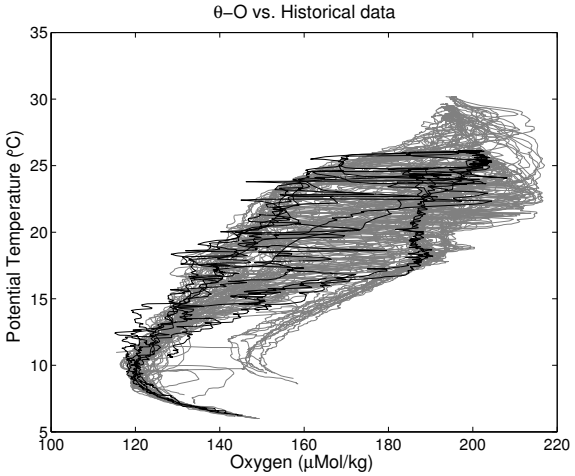


(e) FC1509

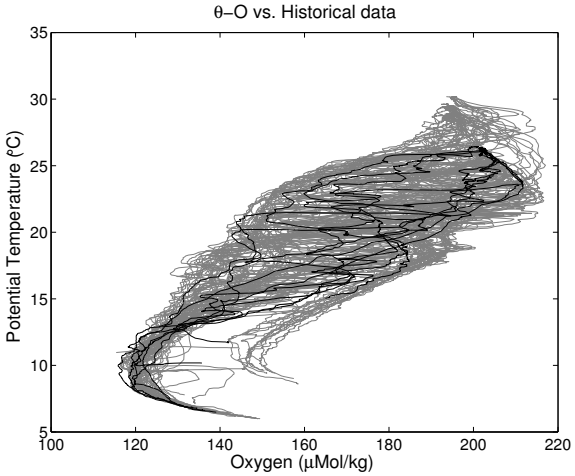


(f) FC1511

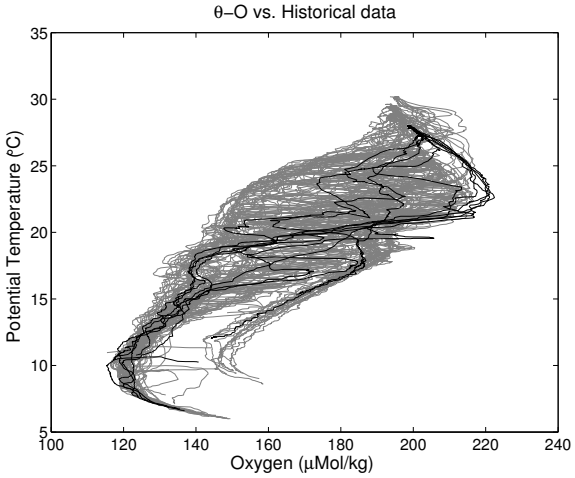
Figure 15: Bottle and calibrated CTD oxygen differences plotted vs. pressure.



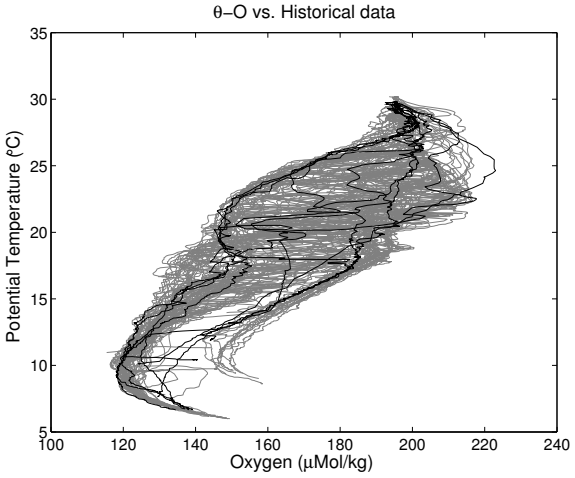
(a) WS1501



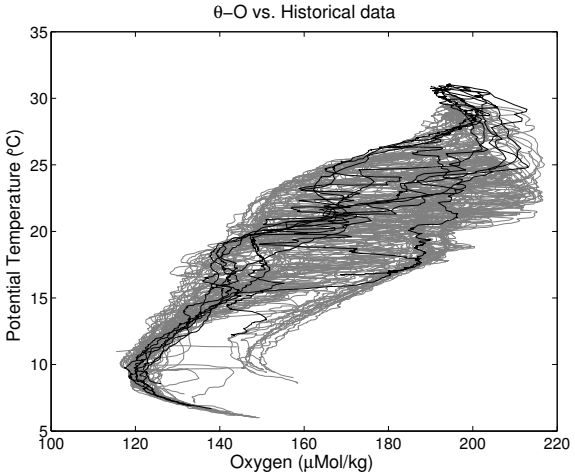
(b) FC1504



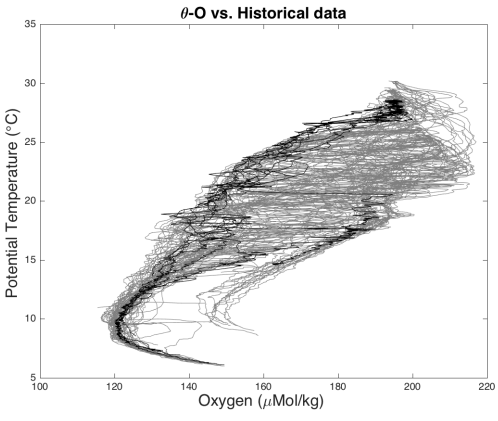
(c) FC1505



(d) FC1507

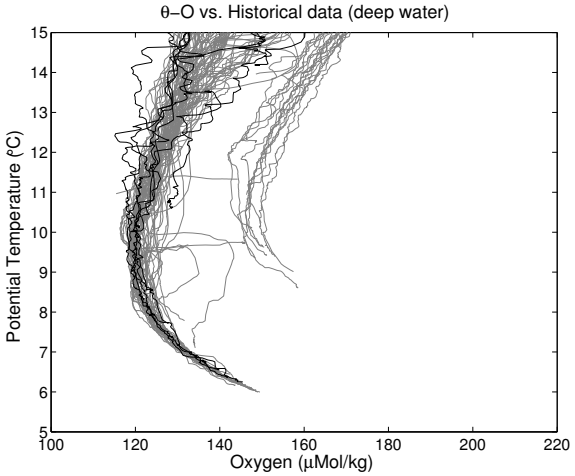


(e) FC1509

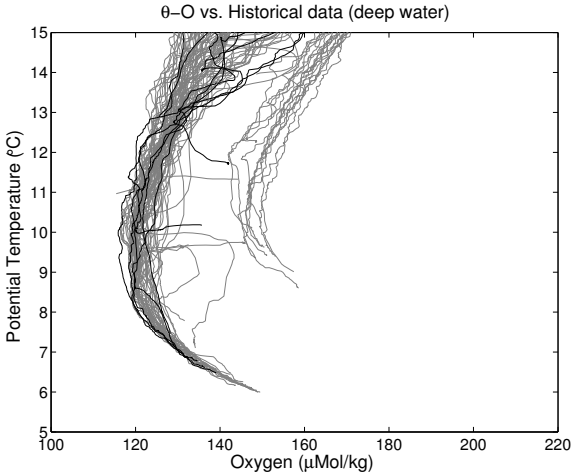


(f) FC1511

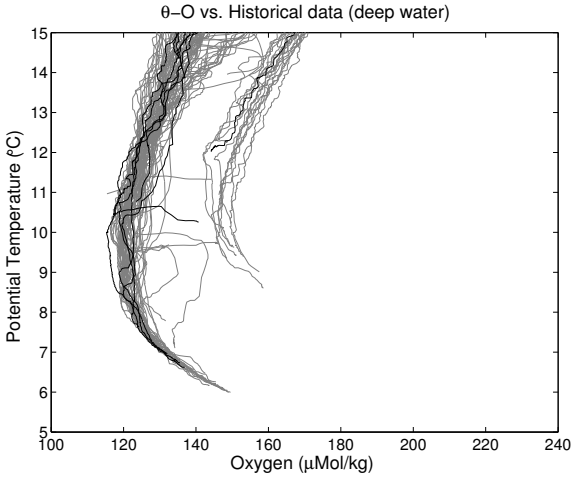
Figure 16: Potential Temperature - Oxygen diagram for all stations. The solid black lines are the data collected during this cruise; the solid gray lines are data from the historical database.



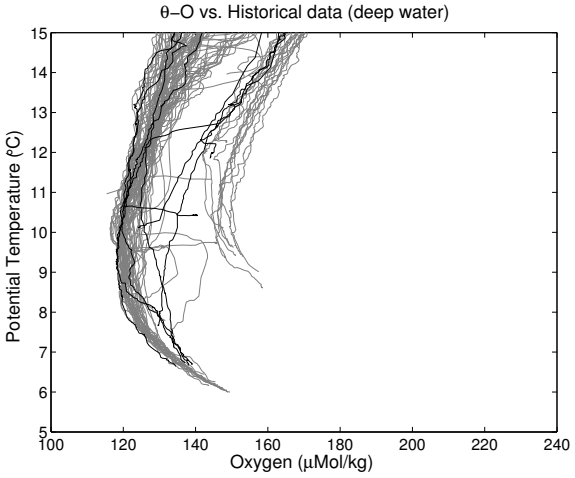
(a) WS1501



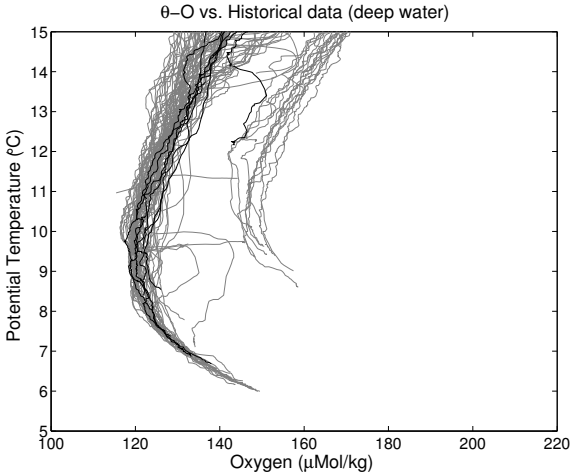
(b) FC1504



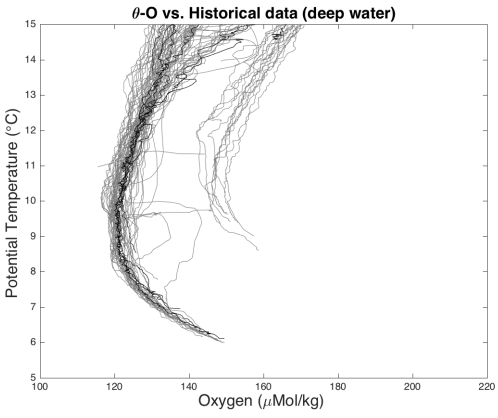
(c) FC1505



(d) FC1507



(e) FC1509



(f) FC1511

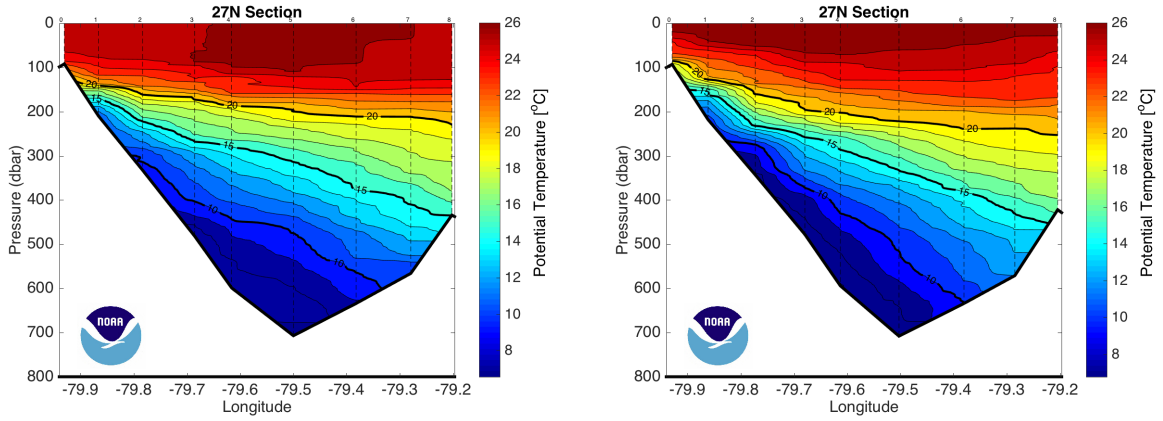
Figure 17: Potential Temperature - Oxygen diagram for all stations. The solid black lines are the data collected during this cruise; the solid gray lines are data from the historical database.

6 Final CTD Data Presentation

The final calibrated data files were used to produce the tables and station profile plots presented in Appendix A for each CTD station. The table on the top is in "standard depths" followed by the a table of the bottle trip depths. The corresponding profile plot is shown on the following page. Niskin bottle depths are presented on the right side of the profile plot. Bottle salinity and oxygen values are plotted as points in the three smaller plots.

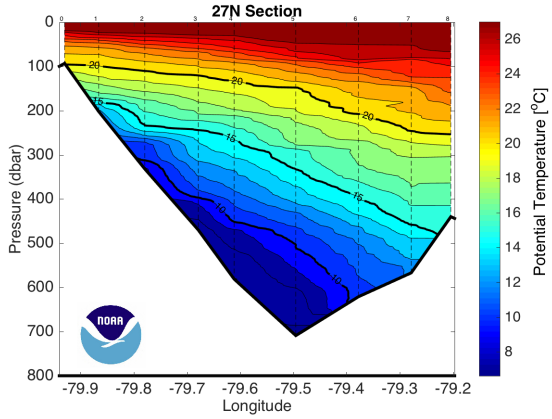
Vertical sections of potential temperature, CTD salinity, potential density, and CTD oxygen are contoured with pressure as the vertical axis. The Florida Current Section uses longitude as the horizontal axis (Figure 18 to Figure 21).

Post-cruise calibrations were applied to CTD data associated with bottle data using Matlab sub-routines (`apply_calibration.m`). WOCE quality flags were appended to bottle data records. "Bad values" (WOCE quality control value = 4) were flagged if the bottle samples failed the initial quality control and were not used for the calibration (which meant they typically fell outside 2.57 standard deviations of the difference between samples and uncalibrated CTD values). A second pass is applied, using the value of 2.5 times the standard deviation of the difference between calibrated CTD values and bottle samples, where bottle values may be flagged as "bad values" or as questionable (WOCE quality control value = 3).

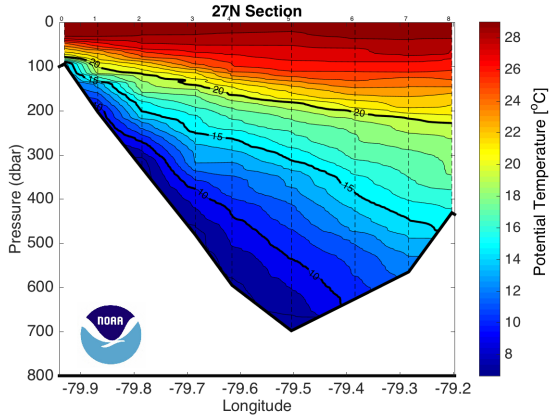


(a) WS1501

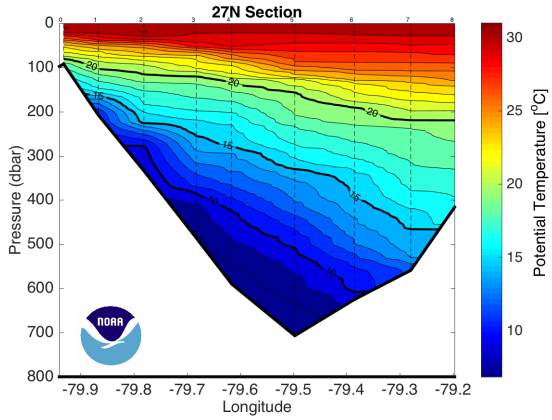
(b) FC1504



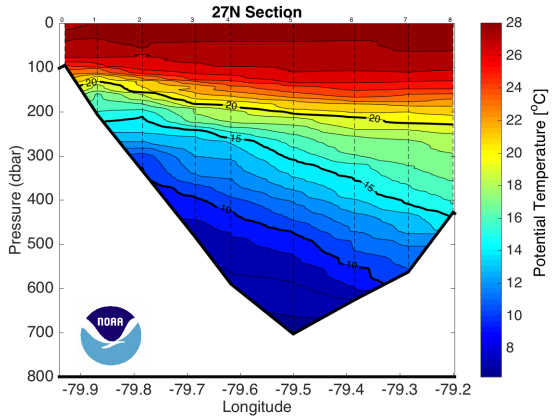
(c) FC1505



(d) FC1507

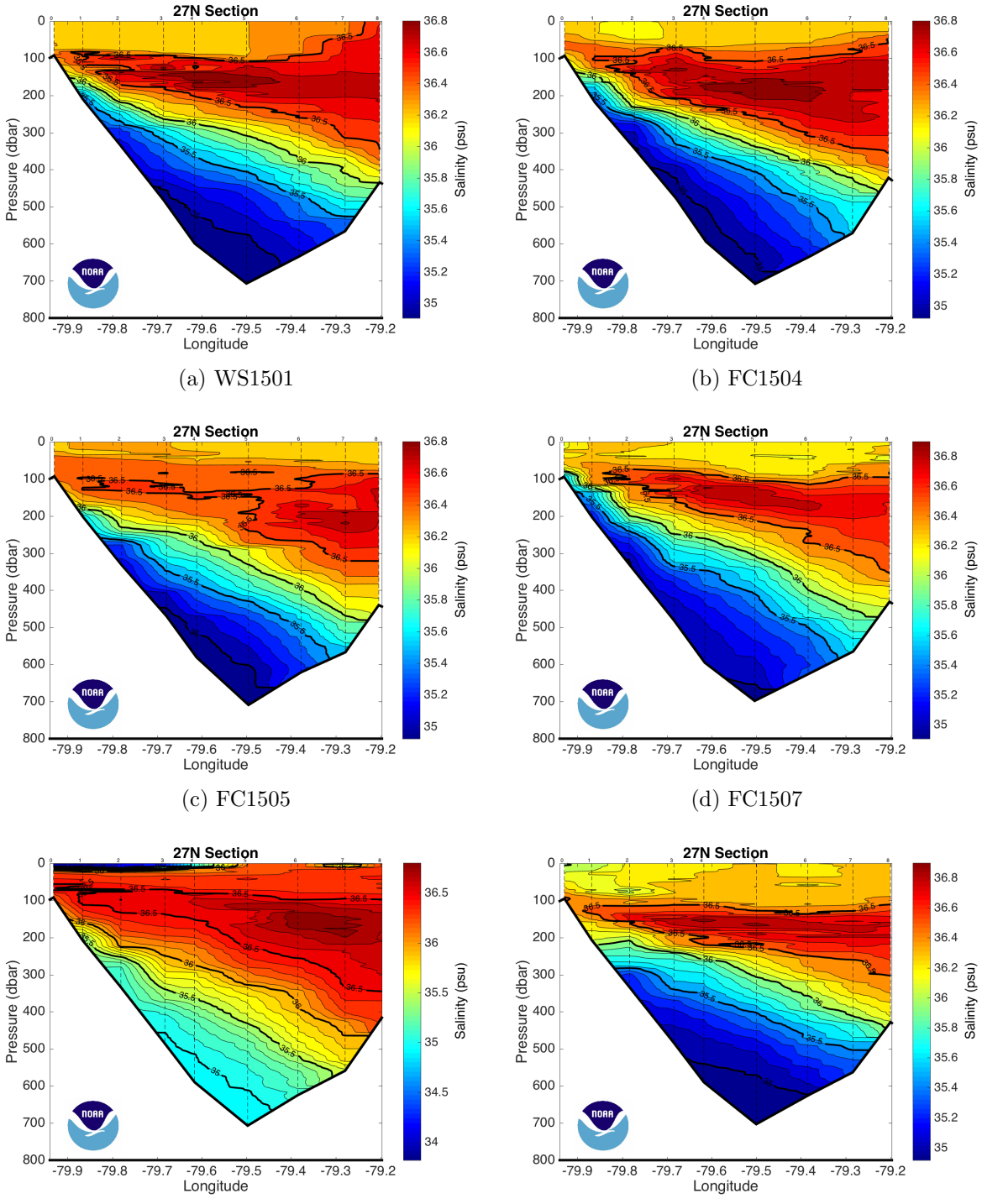


(e) FC1509



(f) FC1511

Figure 18: Potential Temperature (°C) section for the Florida Current North section. Dashed vertical lines are the CTD station locations.



(a) WS1501

(b) FC1504

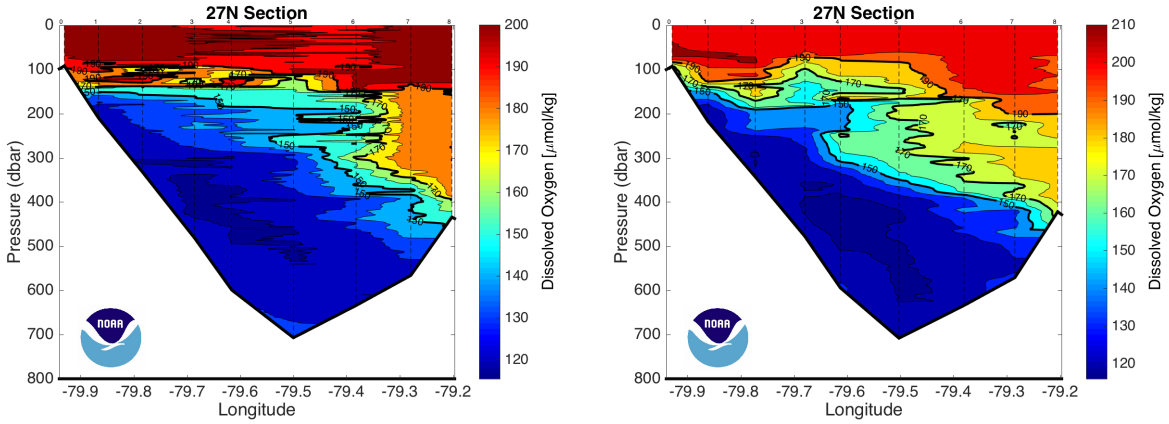
(c) FC1505

(d) FC1507

(e) FC1509

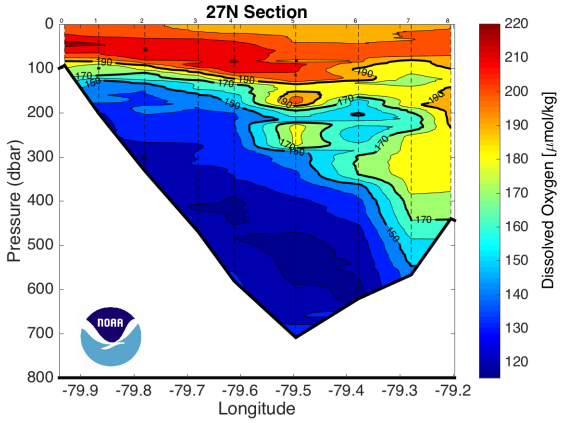
(f) FC1511

Figure 19: Salinity (PSS 78) section for the Florida Current North section. Dashed vertical lines are the CTD station locations.

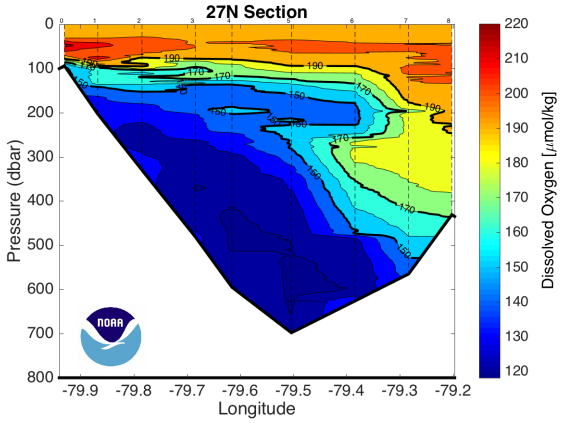


(a) WS1501

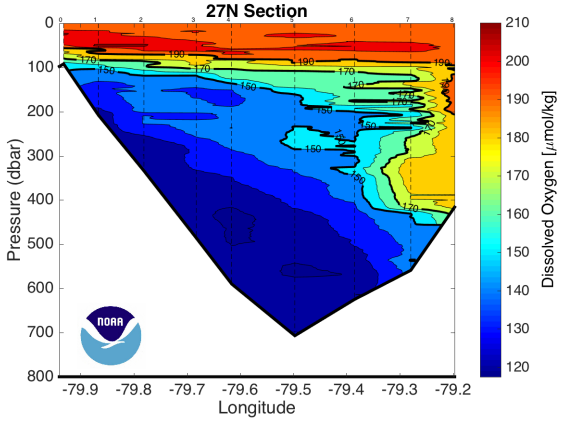
(b) FC1504



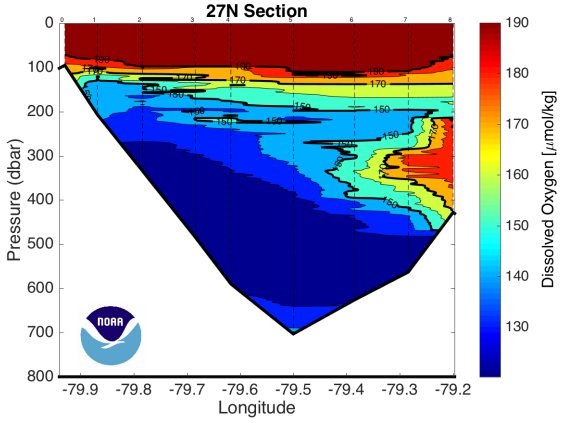
(c) FC1505



(d) FC1507

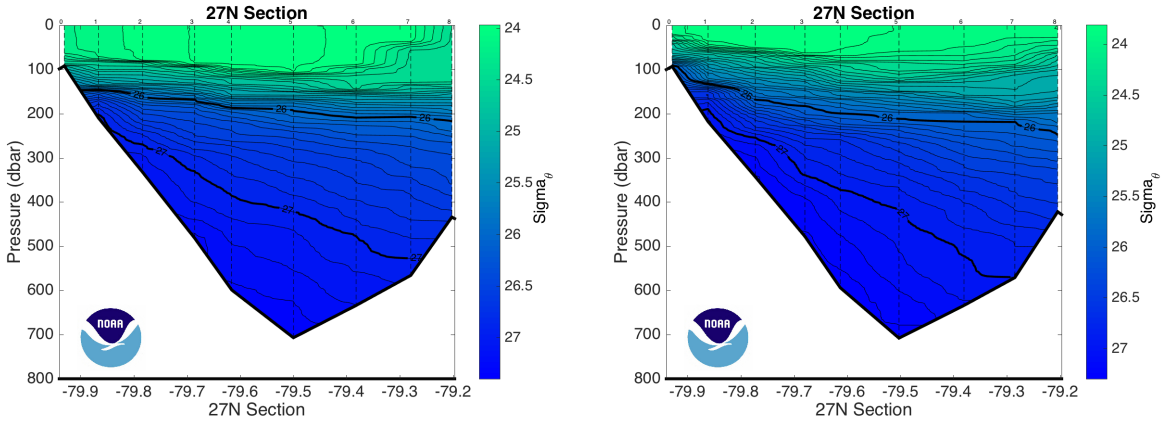


(e) FC1509



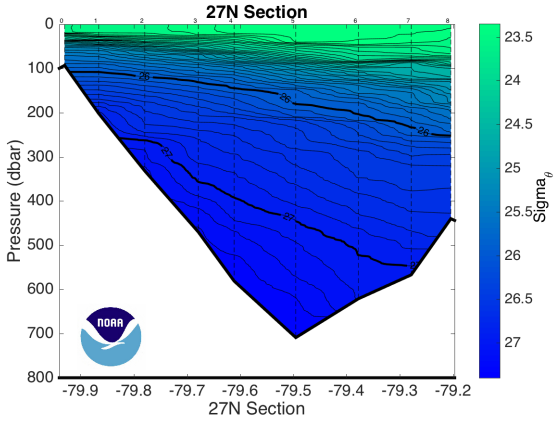
(f) FC1511

Figure 20: Dissolved Oxygen ($umol/kg$) section for the Florida Current North section. Dashed vertical lines are the CTD station locations.

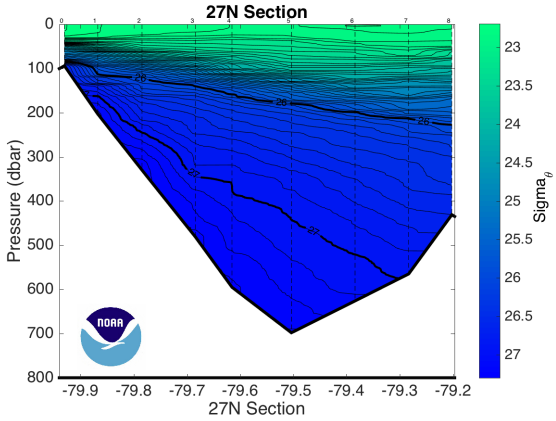


(a) WS1501

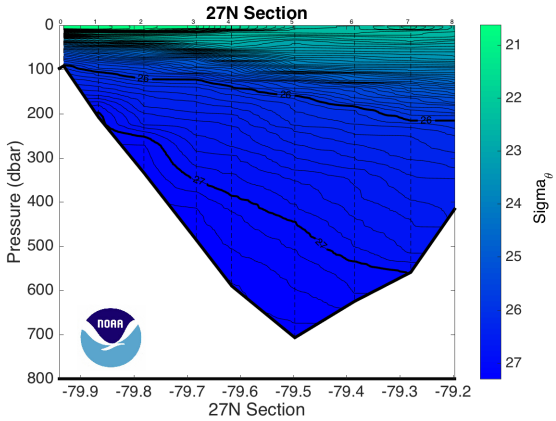
(b) FC1504



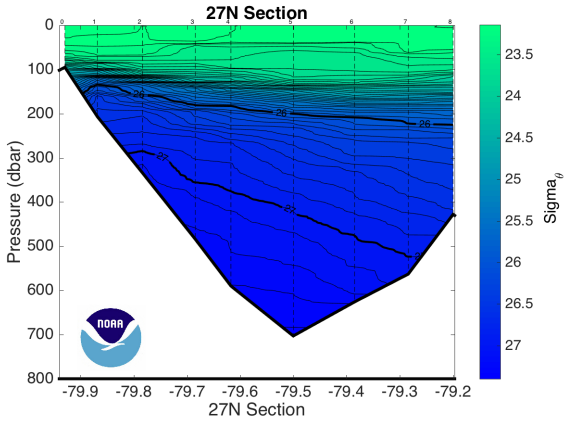
(c) FC1505



(d) FC1507



(e) FC1509



(f) FC1511

Figure 21: Neutral density (kg/m3) section for the Florida Current North section. Dashed vertical lines are the CTD station locations.

7 Acknowledgements

The successful completion of the cruise relied on dedicated assistance from many individuals on shore and on the UNOLS ship Walton Smith. Funded investigators in the project and members of the Western Boundary Time Series, and the RAPID/MOC programs were instrumental in planning and executing the cruise. The participants in the cruise, Ryan Smith, Grant Rawson, Robert Roddy, Shenfu Dong, Ricardo Domingues, Pedro Pena, Erik Valdes, Edward Pritchard, and Shaun Dolk showed dedication and camaraderie during the cruise. Officers and crew of the Walton Smith exhibited a high degree of professionalism and assistance to accomplish the mission and to make us feel at home during the voyage.

The U.S. Western Boundary Time Series Program is sponsored by NOAA's Office of Climate Observation. The U.S. Meridional Overturning Heat transport and Circulation Array is sponsored by the National Science Foundation's Physical Oceanography Program. The UK RAPID/MOC program is sponsored by the National Environmental Research Council (NERC). In particular, we wish to thank program managers Diane Stanitski (NOAA), David Legler (NOAA), Mike Johnson (NOAA), Eric Itsweire (NSF/OCE), and Meric Srokosz (NERC) for their financial support in the effort. This research was also carried out in part under the auspices of the Cooperative Institute of Marine and Atmospheric Studies (CIMAS), a Cooperative Institute of the University of Miami and the National Oceanic and Atmospheric Administration (NOAA), cooperative agreement #NA10OAR4320143. Additional support was provided by OAA's Atlantic Oceanographic and Meteorological Laboratory.

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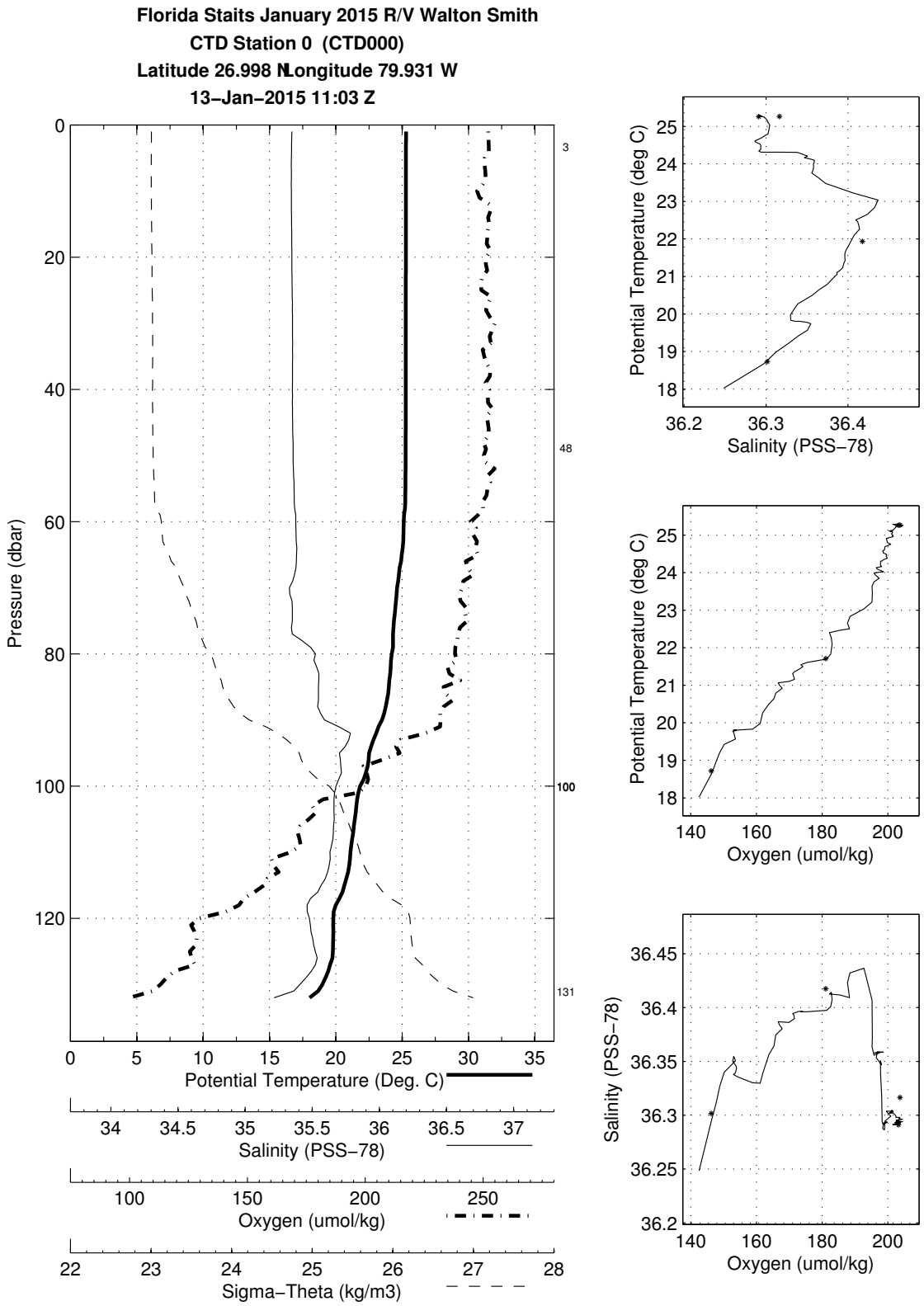
A Hydrographic - CTD Data

A.1 WS1501

Florida Straits 2015 R/V Walton Smith
CTD Station 0 (CTD000)
Latitude 26.998N Longitude 79.931W
13-Jan-2015 11:03Z

Pressure dbar	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}	DynHt m^2·s^{-2}	SigT kg·m^{-3}
1	25.287	25.287	36.293	203.4	0.004	24.230
10	25.288	25.286	36.291	201.5	0.037	24.230
20	25.280	25.276	36.293	203.0	0.074	24.234
30	25.274	25.268	36.294	204.5	0.111	24.237
50	25.270	25.259	36.295	202.6	0.184	24.241
75	24.400	24.384	36.294	199.8	0.275	24.506
100	21.849	21.829	36.401	182.6	0.353	25.331
125	19.801	19.778	36.350	152.8	0.413	25.851

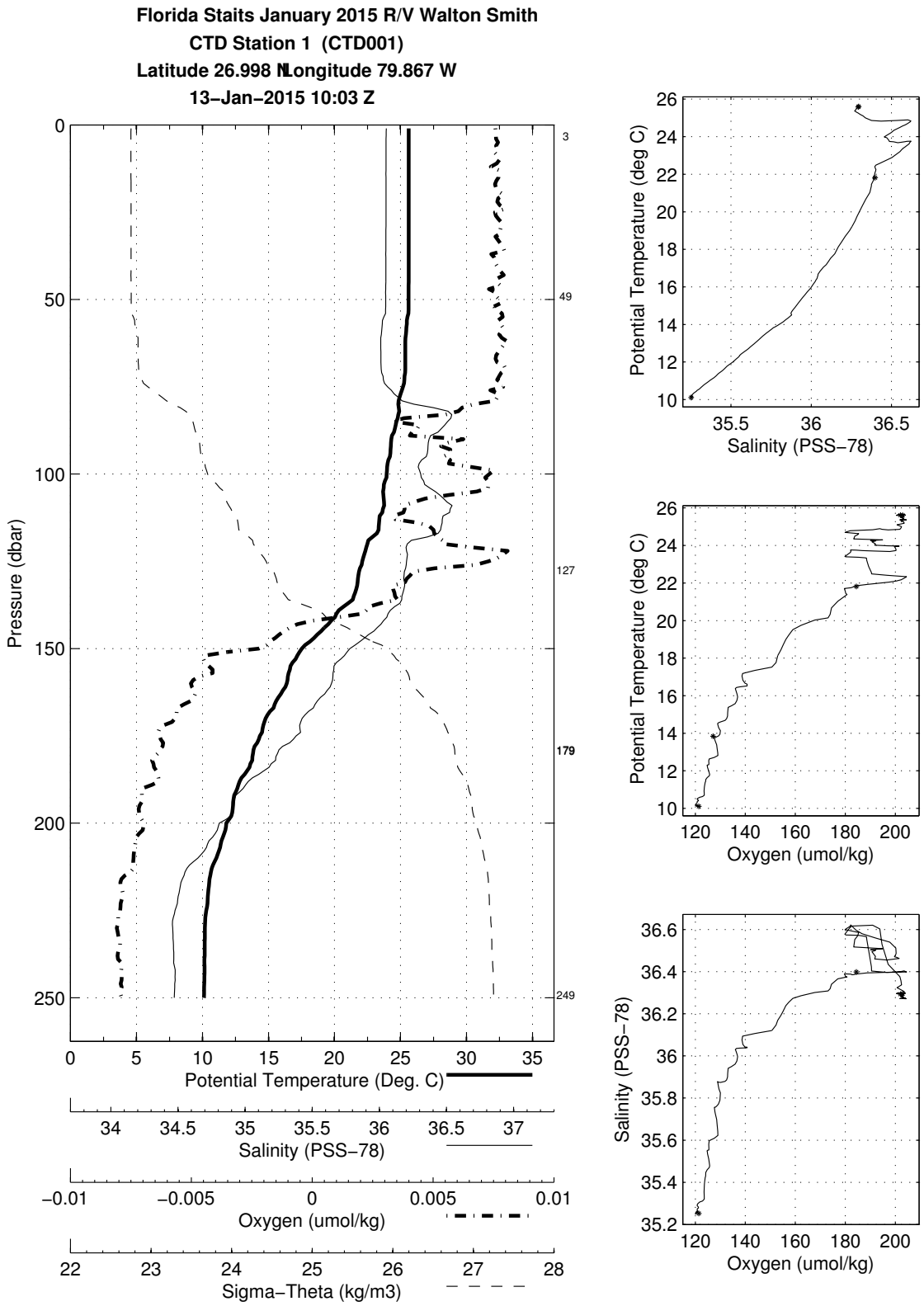
Pressure dbar	Niskin	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}
131	1	18.755	18.731	36.302	146.3
100	2	21.984	22.063	−999.000	−999.000
100	3	21.954	21.935	36.418	181.1
49	4	25.270	25.260	36.291	203.2
3	5	25.262	25.262	36.316	203.7


Florida Staits January 2015 R/V Walton Smith
CTD Station 0 (CTD000)
Latitude 26.998 N Longitude 79.931 W
13−Jan−2015 11:03 Z
Pressure (dbar)
Potential Temperature (Deg. C)
Salinity (PSS−78)
Oxygen (umol/kg)
Sigma−Theta (kg/m3)
Potential Temperature (deg C)
Salinity (PSS−78)
Potential Temperature (deg C)
Oxygen (umol/kg)
Salinity (PSS−78)
Oxygen (umol/kg)

Florida Straits 2015 R/V Walton Smith
CTD Station 1 (CTD001)
Latitude 26.998N Longitude 79.867W
13-Jan-2015 10:03Z

Pressure dbar	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}	DynHt m^2·s^{-2}	SigT kg·m^{-3}
1	25.624	25.624	36.299	201.9	0.004	24.131
10	25.624	25.622	36.298	202.7	0.038	24.131
20	25.625	25.621	36.298	203.6	0.076	24.131
30	25.625	25.619	36.297	202.9	0.113	24.131
50	25.622	25.611	36.296	202.7	0.189	24.133
75	25.204	25.188	36.306	203.5	0.283	24.271
100	23.976	23.955	36.468	200.5	0.367	24.767
125	22.130	22.105	36.398	200.4	0.441	25.251
150	17.546	17.520	36.120	150.6	0.501	26.249
200	11.829	11.803	35.480	125.8	0.570	27.000
250	10.136	10.107	35.259	121.0	0.620	27.136

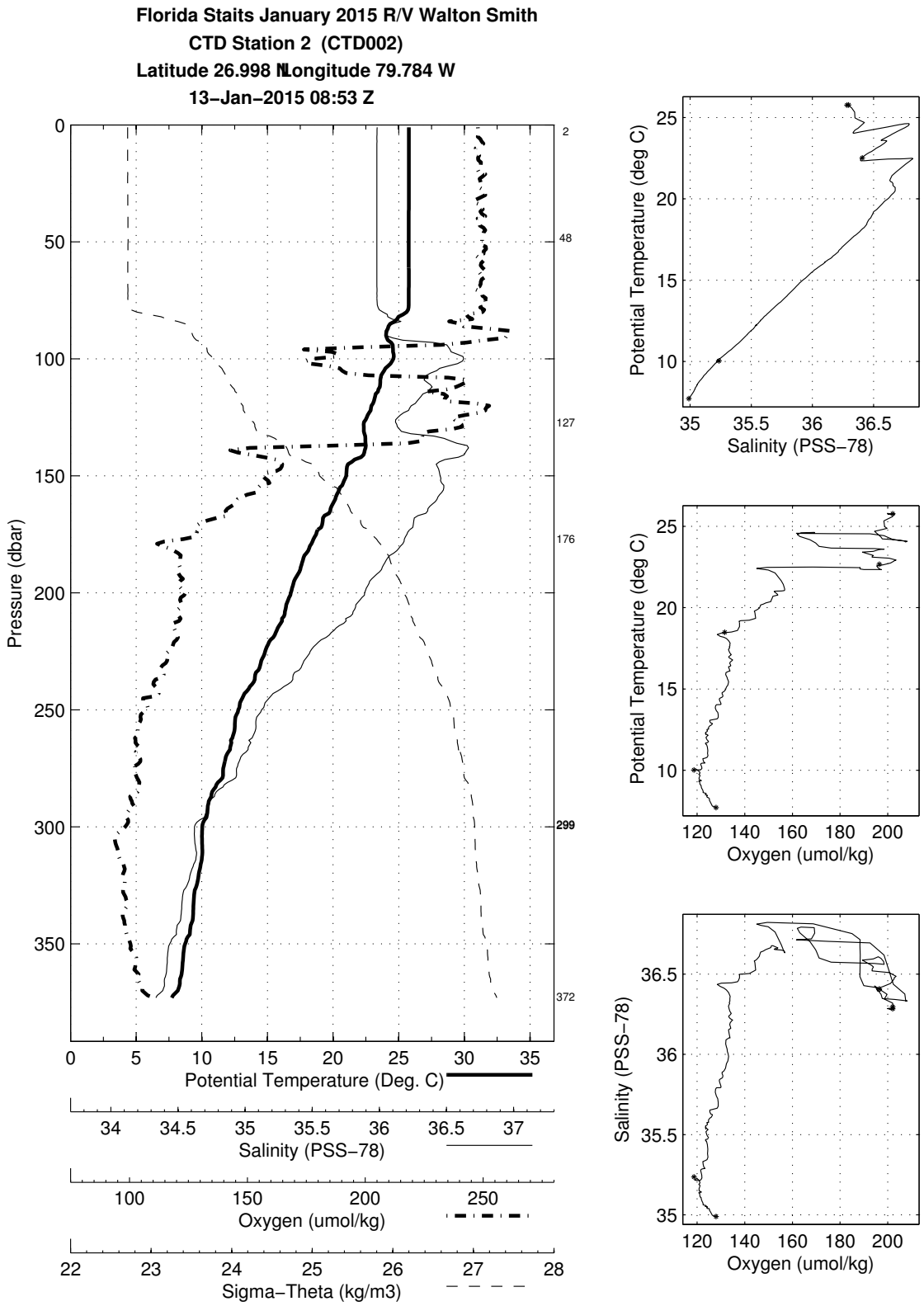
Pressure dbar	Niskin	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}
249	1	10.139	10.109	35.252	121.4
179	2	13.877	14.091	−999.000	−999.000
179	3	13.874	14.088	−999.000	−999.000
127	4	21.843	21.818	36.399	184.4
49	5	25.591	25.580	36.293	202.1
3	6	25.604	25.603	36.295	202.9


Florida Staits January 2015 R/V Walton Smith
CTD Station 1 (CTD001)
Latitude 26.998 N Longitude 79.867 W
13−Jan−2015 10:03 Z
Pressure (dbar)
Potential Temperature (Deg. C)
Salinity (PSS−78)
Oxygen (umol/kg)
Sigma−Theta (kg/m3)
Potential Temperature (deg C)
Salinity (PSS−78)
Oxygen (umol/kg)

Florida Straits 2015 R/V Walton Smith
CTD Station 2 (CTD002)
Latitude 26.998N Longitude 79.784W
13-Jan-2015 08:53Z

Pressure dbar	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}	DynHt m^2·s^{-2}	SigT kg·m^{-3}
1	25.773	25.773	36.286	201.0	0.004	24.075
10	25.772	25.770	36.285	200.5	0.038	24.075
20	25.774	25.770	36.285	201.1	0.077	24.075
30	25.775	25.768	36.284	202.6	0.115	24.075
50	25.771	25.760	36.285	201.9	0.192	24.078
75	25.782	25.766	36.285	202.6	0.288	24.076
100	24.616	24.595	36.793	163.6	0.374	24.821
125	22.593	22.568	36.408	195.4	0.449	25.126
150	21.026	20.997	36.655	152.3	0.514	25.755
200	16.816	16.783	36.213	134.9	0.608	26.497
250	12.813	12.778	35.608	125.9	0.678	26.909
300	10.065	10.030	35.215	121.3	0.733	27.115

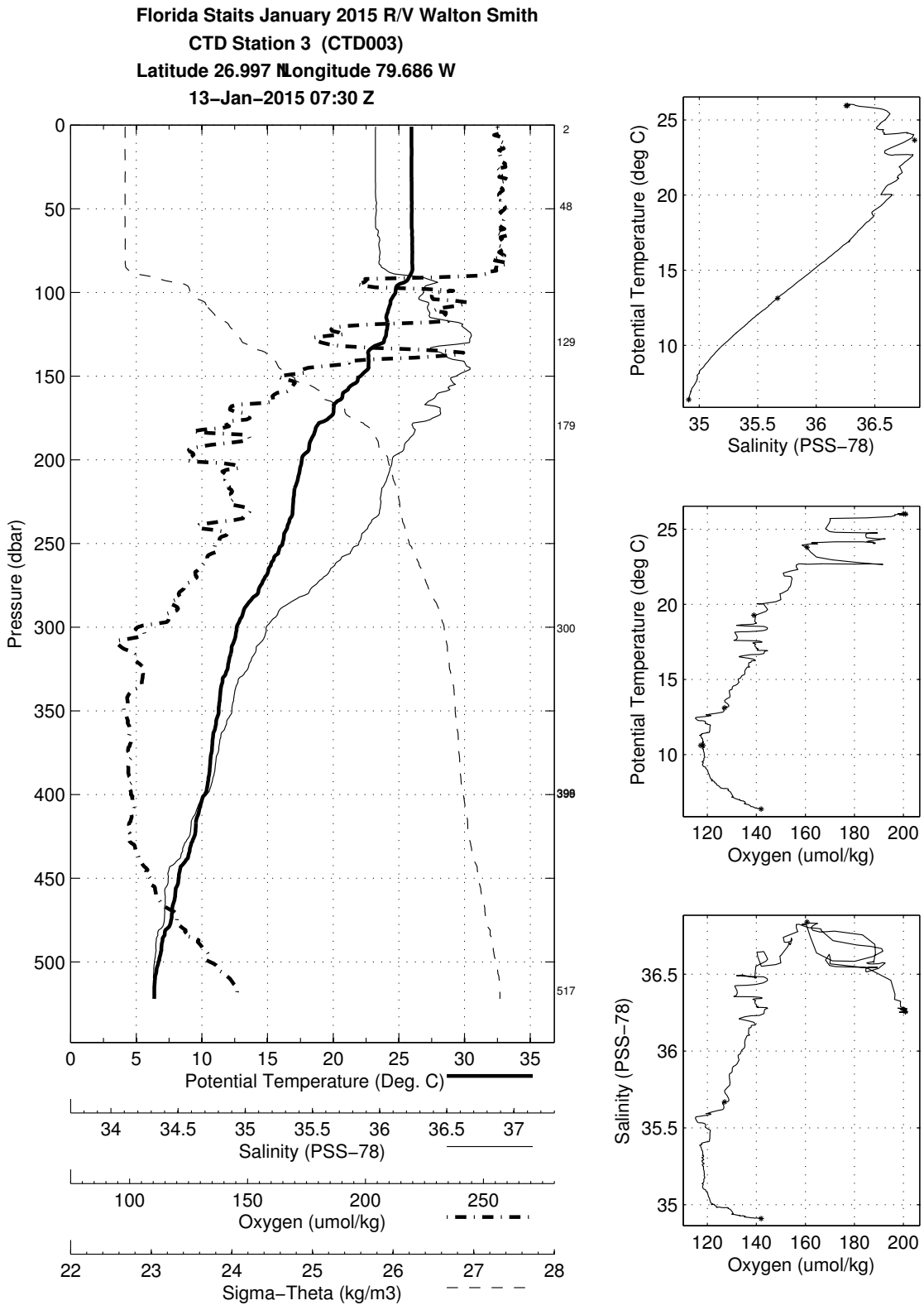
Pressure dbar	Niskin	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}
373	1	7.754	7.717	34.989	127.9
299	2	10.075	10.486	−999.000	−999.000
299	3	10.078	10.043	35.237	118.7
177	4	18.561	18.730	−999.000	−999.000
127	5	22.539	22.514	36.407	196.5
48	6	25.782	25.772	36.296	202.1
3	7	25.764	25.763	36.283	202.1


Florida Staits January 2015 R/V Walton Smith
CTD Station 2 (CTD002)
Latitude 26.998 N Longitude 79.784 W
13−Jan−2015 08:53 Z
Pressure (dbar)
0
50
100
150
200
250
300
350
2
48
127
176
299
372
0 5 10 15 20 25 30 35
Potential Temperature (Deg. C)
34 34.5 35 35.5 36 36.5 37
Salinity (PSS−78)
100 150 200 250
Oxygen (umol/kg)
22 23 24 25 26 27 28
Sigma−Theta (kg/m3)
Potential Temperature (deg C)
35 35.5 36 36.5
Salinity (PSS−78)
Potential Temperature (deg C)
120 140 160 180 200
Oxygen (umol/kg)
Salinity (PSS−78)
120 140 160 180 200
Oxygen (umol/kg)

Florida Straits 2015 R/V Walton Smith
CTD Station 3 (CTD003)
Latitude 26.997N Longitude 79.686W
13-Jan-2015 07:30Z

Pressure dbar	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}	DynHt m^2·s^{-2}	SigT kg·m^{-3}
1	25.964	25.963	36.254	199.2	0.004	23.991
10	25.962	25.960	36.253	199.9	0.039	23.992
20	25.968	25.964	36.253	199.7	0.078	23.991
30	25.970	25.963	36.254	199.9	0.117	23.991
50	25.989	25.977	36.258	200.8	0.196	23.990
75	26.039	26.022	36.279	200.0	0.295	23.992
100	24.755	24.733	36.544	185.8	0.388	24.590
125	24.051	24.025	36.831	165.0	0.467	25.021
150	22.111	22.081	36.740	151.0	0.536	25.518
200	17.646	17.611	36.355	130.8	0.637	26.407
250	16.181	16.141	36.153	137.7	0.716	26.602
300	12.690	12.648	35.593	119.8	0.784	26.923
400	10.283	10.235	35.234	118.4	0.896	27.094
500	6.735	6.688	34.920	135.9	0.987	27.398

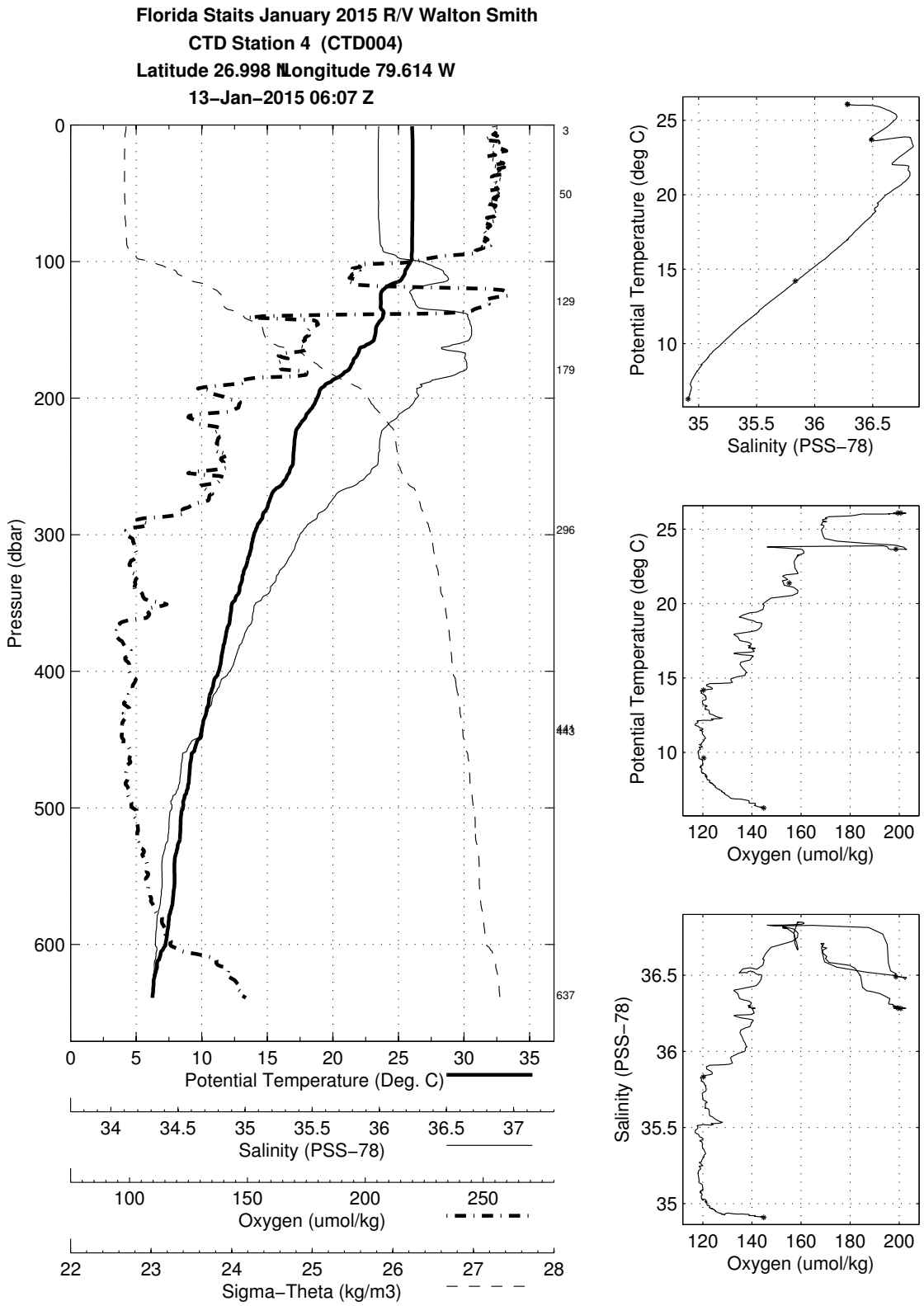
Pressure dbar	Niskin	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}
517	1	6.428	6.381	34.910	141.9
399	2	10.621	11.155	−999.000	−999.000
399	3	10.625	11.159	−999.000	−999.000
301	4	13.175	13.133	35.669	127.0
180	5	19.266	19.432	−999.000	−999.000
129	6	23.682	23.655	36.840	160.6
48	7	25.968	25.957	36.266	200.1
3	8	25.953	25.953	36.255	200.8


Florida Staits January 2015 R/V Walton Smith
CTD Station 3 (CTD003)
Latitude 26.997 N Longitude 79.686 W
13−Jan−2015 07:30 Z
Pressure (dbar)
Potential Temperature (Deg. C)
Salinity (PSS−78)
Oxygen (umol/kg)
Sigma−Theta (kg/m3)
Potential Temperature (deg C)
Salinity (PSS−78)
Potential Temperature (deg C)
Oxygen (umol/kg)
Salinity (PSS−78)
Oxygen (umol/kg)

Florida Straits 2015 R/V Walton Smith
CTD Station 4 (CTD004)
Latitude 26.998N Longitude 79.614W
13-Jan-2015 06:07Z

Pressure dbar	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}	DynHt m^2·s^{-2}	SigT kg·m^{-3}
1	26.042	26.041	36.285	199.9	0.004	23.991
10	26.071	26.069	36.283	198.5	0.039	23.980
20	26.082	26.077	36.283	200.9	0.078	23.977
30	26.084	26.078	36.283	199.5	0.118	23.977
50	26.084	26.073	36.283	200.8	0.197	23.978
75	26.072	26.055	36.289	198.5	0.295	23.989
100	25.948	25.925	36.546	182.0	0.393	24.224
125	23.669	23.643	36.486	203.1	0.478	24.873
150	23.303	23.272	36.850	159.2	0.552	25.258
200	18.833	18.797	36.516	141.3	0.668	26.233
250	16.903	16.862	36.265	140.6	0.752	26.519
300	14.021	13.977	35.806	119.3	0.823	26.815
400	11.344	11.293	35.380	119.8	0.945	27.018
500	8.625	8.571	35.028	120.5	1.048	27.209
600	7.297	7.238	34.929	128.8	1.139	27.329

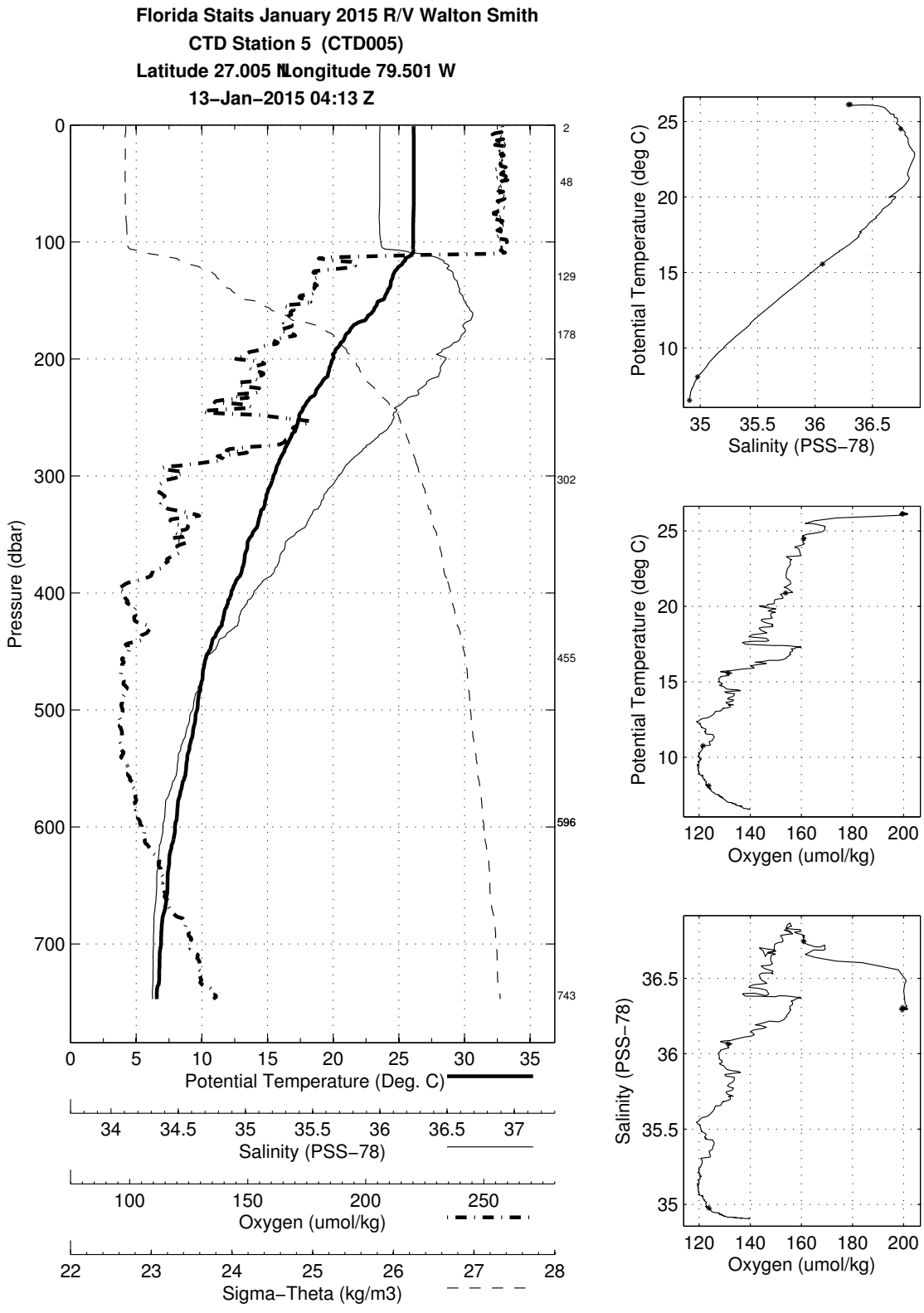
Pressure dbar	Niskin	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}
637	1	6.325	6.267	34.909	144.8
444	2	9.556	10.173	−999.000	−999.000
442	3	9.663	10.274	−999.000	−999.000
296	4	14.247	14.203	35.832	120.3
179	5	21.370	21.517	−999.000	−999.000
129	6	23.721	23.694	36.490	198.7
50	7	26.096	26.084	36.284	199.5
4	8	26.083	26.082	36.282	200.6


Florida Staits January 2015 R/V Walton Smith
CTD Station 4 (CTD004)
Latitude 26.998 N Longitude 79.614 W
13−Jan−2015 06:07 Z
Pressure (dbar)
0
100
200
300
400
500
600
3
50
129
179
296
443
637
0 5 10 15 20 25 30 35
Potential Temperature (Deg. C)
34 34.5 35 35.5 36 36.5 37
Salinity (PSS−78)
100 150 200 250
Oxygen (umol/kg)
22 23 24 25 26 27 28
Sigma−Theta (kg/m3)
Potential Temperature (deg C)
25
20
15
10
35 35.5 36 36.5
Salinity (PSS−78)
Potential Temperature (deg C)
25
20
15
10
120 140 160 180 200
Oxygen (umol/kg)
Salinity (PSS−78)
36.5
36
35.5
35
120 140 160 180 200
Oxygen (umol/kg)

Florida Straits 2015 R/V Walton Smith
CTD Station 5 (CTD005)
Latitude 27.005N Longitude 79.501W
13-Jan-2015 04:13Z

Pressure dbar	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}	DynHt m^2·s^{-2}	SigT kg·m^{-3}
1	26.123	26.123	36.298	200.4	0.004	23.975
10	26.137	26.135	36.296	200.2	0.039	23.969
20	26.137	26.132	36.296	200.0	0.079	23.970
30	26.141	26.135	36.296	200.2	0.118	23.969
50	26.146	26.135	36.296	200.2	0.197	23.969
75	26.131	26.114	36.294	198.6	0.296	23.974
100	26.110	26.087	36.302	201.5	0.395	23.989
125	24.716	24.689	36.737	160.6	0.486	24.750
150	23.624	23.592	36.811	159.4	0.563	25.134
200	20.019	19.981	36.702	144.1	0.681	26.066
250	17.447	17.405	36.384	153.0	0.773	26.479
300	15.492	15.445	36.042	131.5	0.850	26.677
400	12.290	12.237	35.526	120.5	0.982	26.952
500	9.686	9.628	35.151	120.0	1.093	27.133
600	8.011	7.949	34.970	124.0	1.190	27.258
700	6.950	6.882	34.913	134.4	1.276	27.366

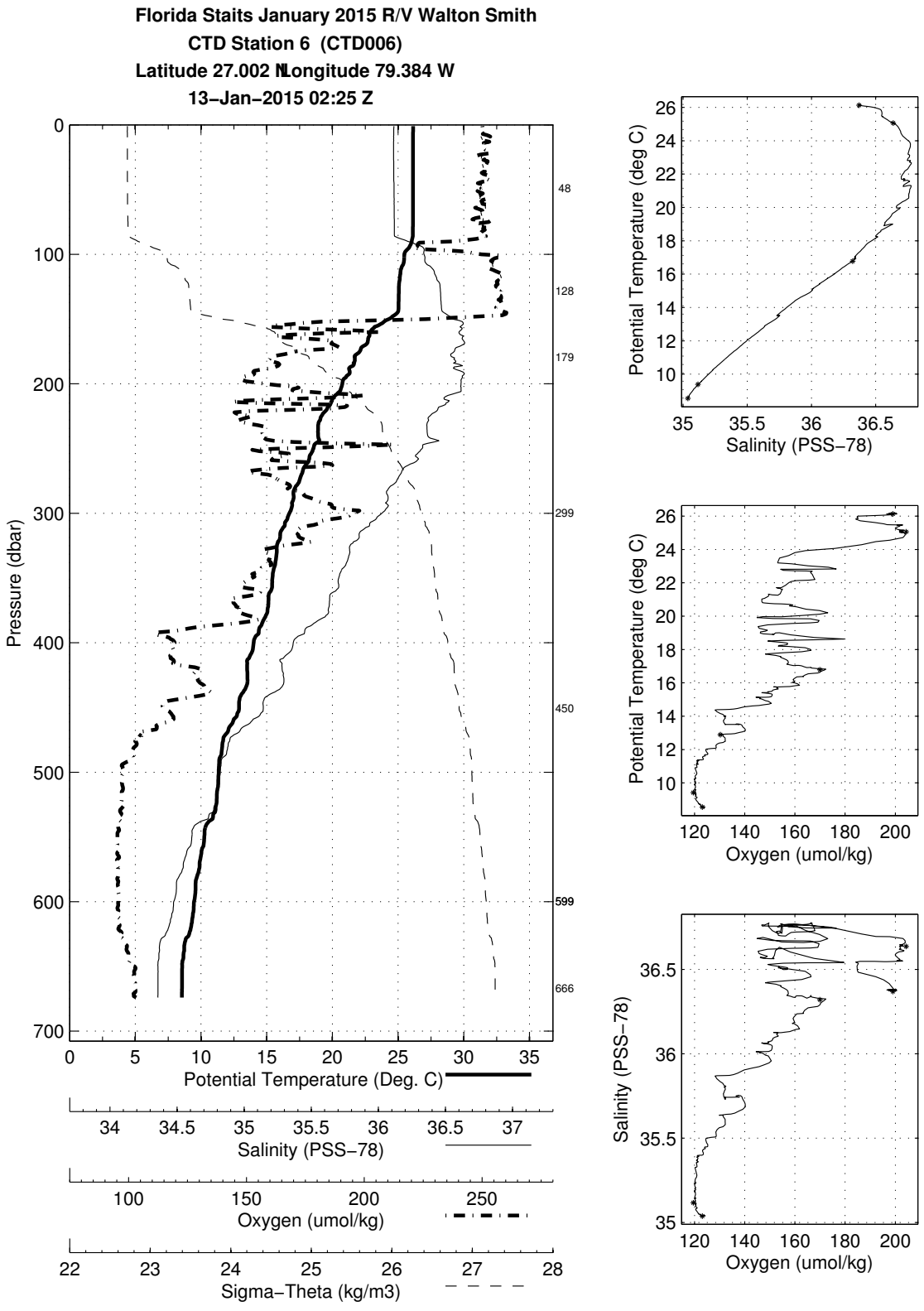
Pressure dbar	Niskin	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}
744	1	6.591	6.521	34.907	231.3
596	2	8.143	9.004	−999.000	−999.000
596	3	8.143	8.081	34.977	123.8
455	4	10.837	11.440	−999.000	−999.000
303	5	15.604	15.556	36.065	131.3
179	6	20.982	21.132	−999.000	−999.000
130	7	24.544	24.516	36.746	160.9
48	8	26.147	26.136	36.306	199.5
3	9	26.127	26.126	36.292	199.5


Florida Staits January 2015 R/V Walton Smith
CTD Station 5 (CTD005)
Latitude 27.005 N Longitude 79.501 W
13−Jan−2015 04:13 Z
Pressure (dbar)
0
100
200
300
400
500
600
700
2
48
129
178
302
455
596
743
0 5 10 15 20 25 30 35
Potential Temperature (Deg. C)
34 34.5 35 35.5 36 36.5 37
Salinity (PSS−78)
100 150 200 250
Oxygen (umol/kg)
22 23 24 25 26 27 28
Sigma−Theta (kg/m3)
Potential Temperature (deg C)
25
20
15
10
35 35.5 36 36.5
Salinity (PSS−78)
Potential Temperature (deg C)
25
20
15
10
120 140 160 180 200
Oxygen (umol/kg)
Salinity (PSS−78)
36.5
36
35.5
35
120 140 160 180 200
Oxygen (umol/kg)

Florida Straits 2015 R/V Walton Smith
CTD Station 6 (CTD006)
Latitude 27.002N Longitude 79.384W
13-Jan-2015 02:25Z

Pressure dbar	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}	DynHt m^2·s^{-2}	SigT kg·m^{-3}
1	26.140	26.139	36.377	198.8	0.004	24.029
10	26.139	26.137	36.375	198.7	0.039	24.029
20	26.141	26.137	36.375	200.3	0.078	24.028
30	26.144	26.137	36.376	200.3	0.116	24.029
50	26.149	26.137	36.378	199.0	0.194	24.030
75	26.147	26.130	36.379	200.1	0.292	24.034
100	25.498	25.476	36.547	198.6	0.387	24.365
125	25.088	25.061	36.639	201.7	0.475	24.562
150	24.314	24.282	36.710	186.6	0.559	24.852
200	20.787	20.748	36.757	151.9	0.686	25.901
250	18.592	18.548	36.537	155.3	0.784	26.313
300	16.772	16.722	36.308	170.8	0.866	26.585
400	14.058	14.000	35.807	132.5	1.012	26.811
500	11.406	11.342	35.392	121.7	1.136	27.018
600	9.528	9.459	35.129	120.3	1.247	27.144

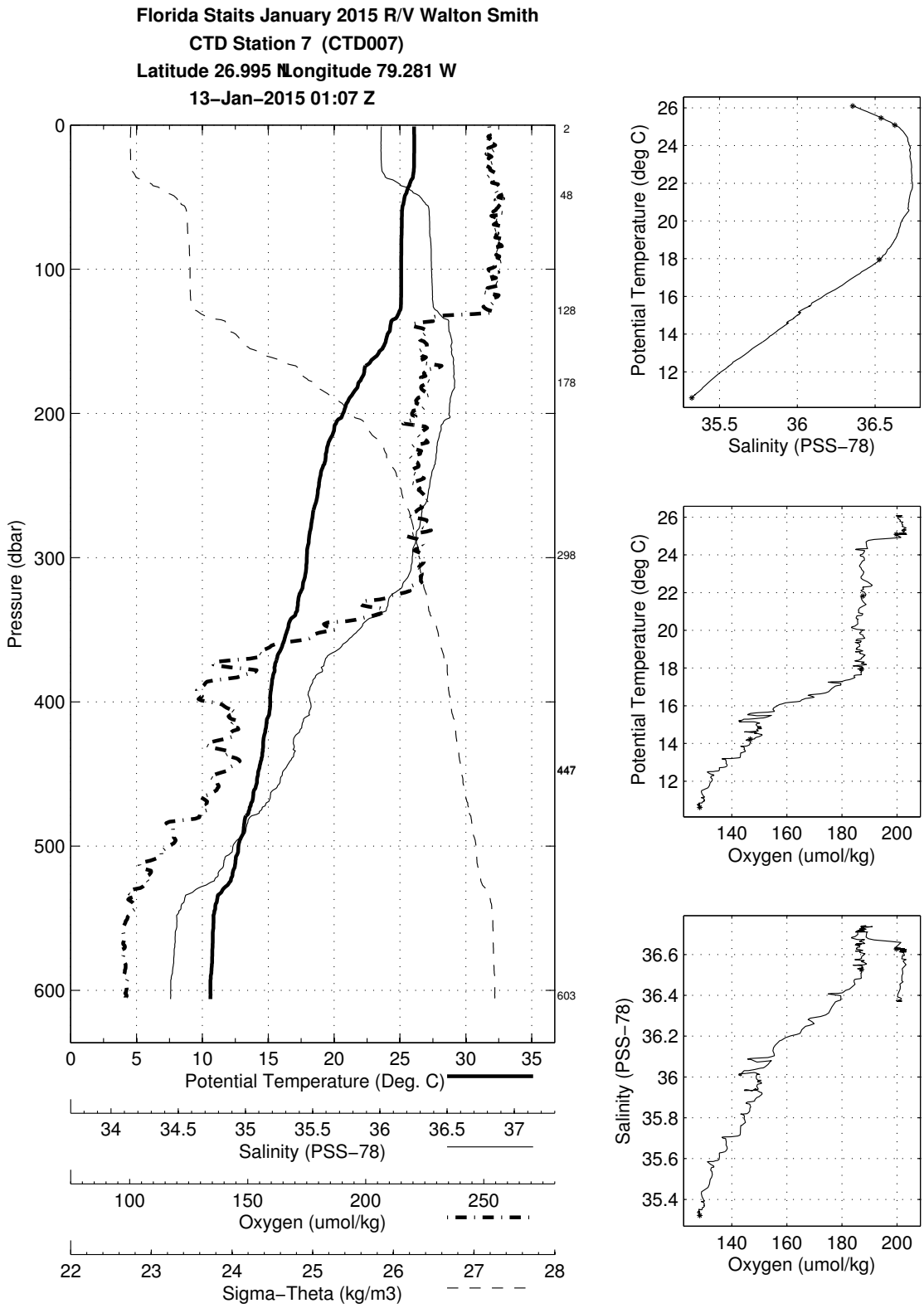
Pressure dbar	Niskin	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}
667	1	8.621	8.549	35.037	123.1
599	2	9.440	10.268	−999.000	−999.000
599	3	9.453	9.384	35.116	119.5
451	4	12.923	13.473	−999.000	−999.000
300	5	16.828	16.778	36.321	170.0
179	6	21.726	21.869	−999.000	−999.000
128	7	25.093	25.064	36.636	204.3
49	8	26.146	26.135	36.370	199.0


Florida Staits January 2015 R/V Walton Smith
CTD Station 6 (CTD006)
Latitude 27.002 N Longitude 79.384 W
13−Jan−2015 02:25 Z
Pressure (dbar)
Potential Temperature (Deg. C)
Salinity (PSS−78)
Oxygen (umol/kg)
Sigma−Theta (kg/m3)
48
128
179
299
450
599
666
Potential Temperature (deg C)
Salinity (PSS−78)
Potential Temperature (deg C)
Oxygen (umol/kg)
Salinity (PSS−78)
Oxygen (umol/kg)

Florida Straits 2015 R/V Walton Smith
CTD Station 7 (CTD007)
Latitude 26.995N Longitude 79.281W
13-Jan-2015 01:07Z

Pressure dbar	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}	DynHt m^2·s^{-2}	SigT kg·m^{-3}
1	26.075	26.074	36.374	200.5	0.004	24.047
10	26.080	26.078	36.372	200.3	0.039	24.044
20	26.080	26.075	36.372	200.0	0.077	24.045
30	26.062	26.056	36.376	200.7	0.116	24.054
50	25.359	25.348	36.569	202.3	0.190	24.420
75	25.141	25.125	36.615	202.2	0.276	24.524
100	25.109	25.087	36.625	200.3	0.362	24.543
125	25.100	25.072	36.633	200.7	0.448	24.554
150	23.952	23.920	36.727	187.5	0.528	24.973
200	20.714	20.675	36.712	185.2	0.656	25.886
250	18.890	18.845	36.615	186.4	0.753	26.296
300	17.978	17.926	36.528	186.5	0.840	26.462
400	15.208	15.146	36.017	145.1	0.995	26.724
500	12.802	12.733	35.631	136.9	1.131	26.936
600	10.686	10.612	35.319	128.6	1.246	27.094

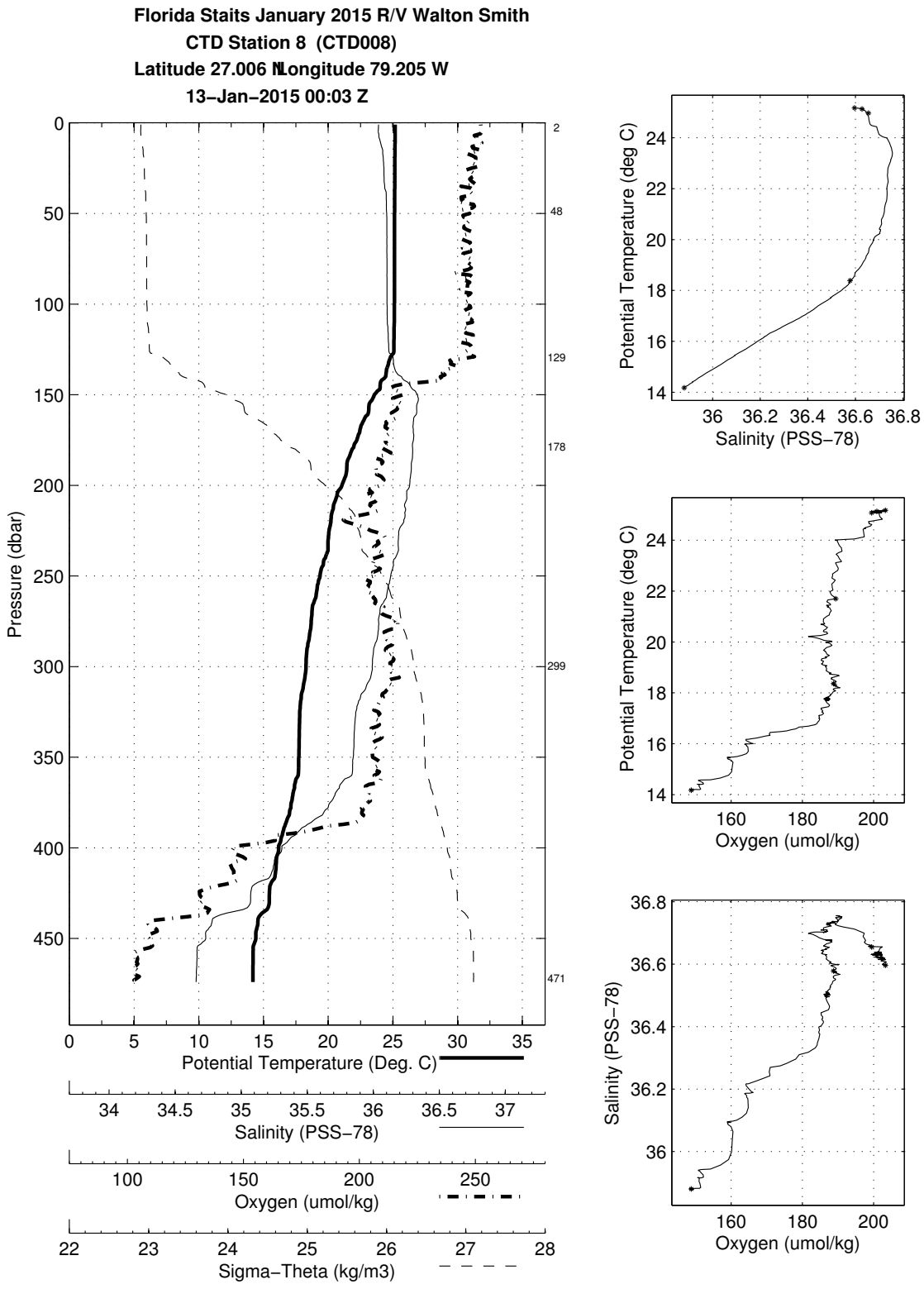
Pressure dbar	Niskin	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}
603	1	10.692	10.617	35.321	128.4
447	2	14.282	14.798	−999.000	−999.000
448	3	14.286	14.802	−999.000	−999.000
298	4	18.004	17.952	36.527	187.1
179	5	21.842	21.984	−999.000	−999.000
129	6	25.110	25.081	36.627	199.8
49	7	25.471	25.461	36.538	455.1
3	8	26.096	26.095	36.356	−999.000


Florida Staits January 2015 R/V Walton Smith
CTD Station 7 (CTD007)
Latitude 26.995 N Longitude 79.281 W
13−Jan−2015 01:07 Z
Pressure (dbar)
Potential Temperature (Deg. C)
Salinity (PSS−78)
Oxygen (umol/kg)
Sigma−Theta (kg/m3)
Potential Temperature (deg C)
Salinity (PSS−78)
Oxygen (umol/kg)

Florida Straits 2015 R/V Walton Smith
CTD Station 8 (CTD008)
Latitude 27.006N Longitude 79.205W
13-Jan-2015 00:03Z

Pressure dbar	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}	DynHt m^2·s^{-2}	SigT kg·m^{-3}
1	25.172	25.172	36.598	203.4	0.003	24.497
10	25.170	25.168	36.605	203.0	0.034	24.503
20	25.153	25.149	36.618	202.6	0.068	24.519
30	25.150	25.144	36.620	202.0	0.103	24.522
50	25.140	25.129	36.630	201.7	0.171	24.534
75	25.139	25.122	36.632	201.8	0.256	24.537
100	25.139	25.117	36.632	200.9	0.342	24.539
125	25.104	25.077	36.639	201.6	0.428	24.557
150	23.593	23.561	36.753	191.1	0.508	25.099
200	21.101	21.062	36.721	187.5	0.636	25.788
250	19.416	19.370	36.646	186.5	0.740	26.184
300	18.340	18.287	36.574	189.1	0.830	26.406
400	16.239	16.175	36.217	164.3	0.994	26.644

Pressure dbar	Niskin	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}
472	1	14.244	14.174	35.880	148.8
300	2	18.443	18.390	36.578	188.7
179	3	21.790	21.932	−999.000	−999.000
129	4	24.995	24.967	36.655	199.5
49	5	25.142	25.131	36.628	200.9
3	6	25.171	25.170	36.596	203.3

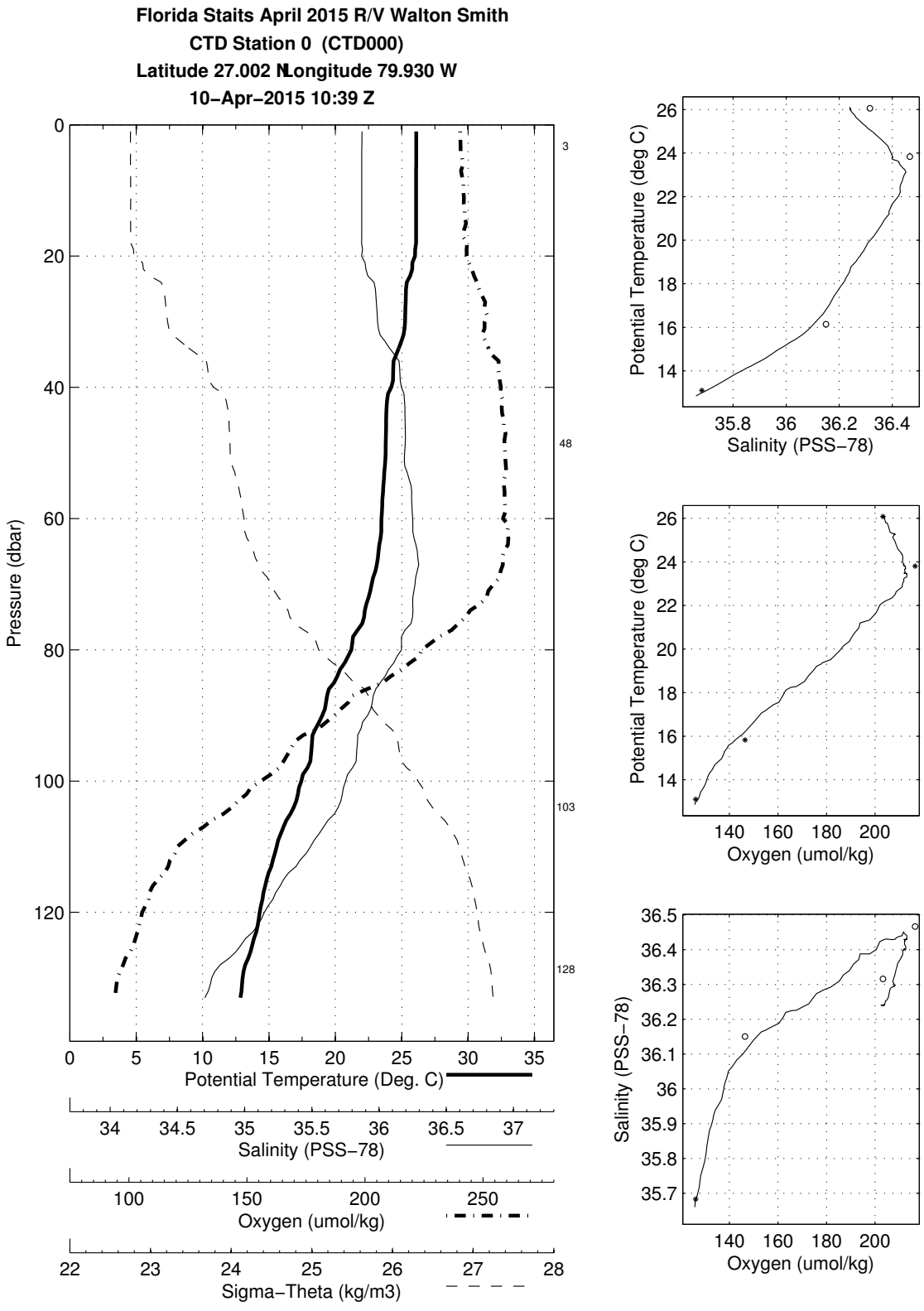

Florida Staits January 2015 R/V Walton Smith
CTD Station 8 (CTD008)
Latitude 27.006 N Longitude 79.205 W
13−Jan−2015 00:03 Z
Pressure (dbar)
Potential Temperature (Deg. C)
Salinity (PSS−78)
Oxygen (umol/kg)
Sigma−Theta (kg/m3)
Potential Temperature (deg C)
Salinity (PSS−78)
Potential Temperature (deg C)
Oxygen (umol/kg)
Salinity (PSS−78)
Oxygen (umol/kg)

A.2 FC1504

Florida Straits 2015 R/V Walton Smith
CTD Station 0 (CTD000)
Latitude 27.002N Longitude 79.930W
10-Apr-2015 10:39Z

Pressure dbar	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}	DynHt m^2·s^{-2}	SigT kg·m^{-3}
1	26.088	26.088	36.242	202.4	0.004	23.943
10	26.084	26.082	36.241	203.1	0.040	23.944
20	26.004	26.000	36.240	203.9	0.079	23.969
30	25.252	25.245	36.299	207.8	0.117	24.248
50	23.793	23.782	36.399	212.4	0.183	24.766
75	22.181	22.166	36.429	203.6	0.259	25.257
100	17.459	17.442	36.181	158.2	0.312	26.314
125	13.762	13.744	35.793	129.9	0.347	26.854

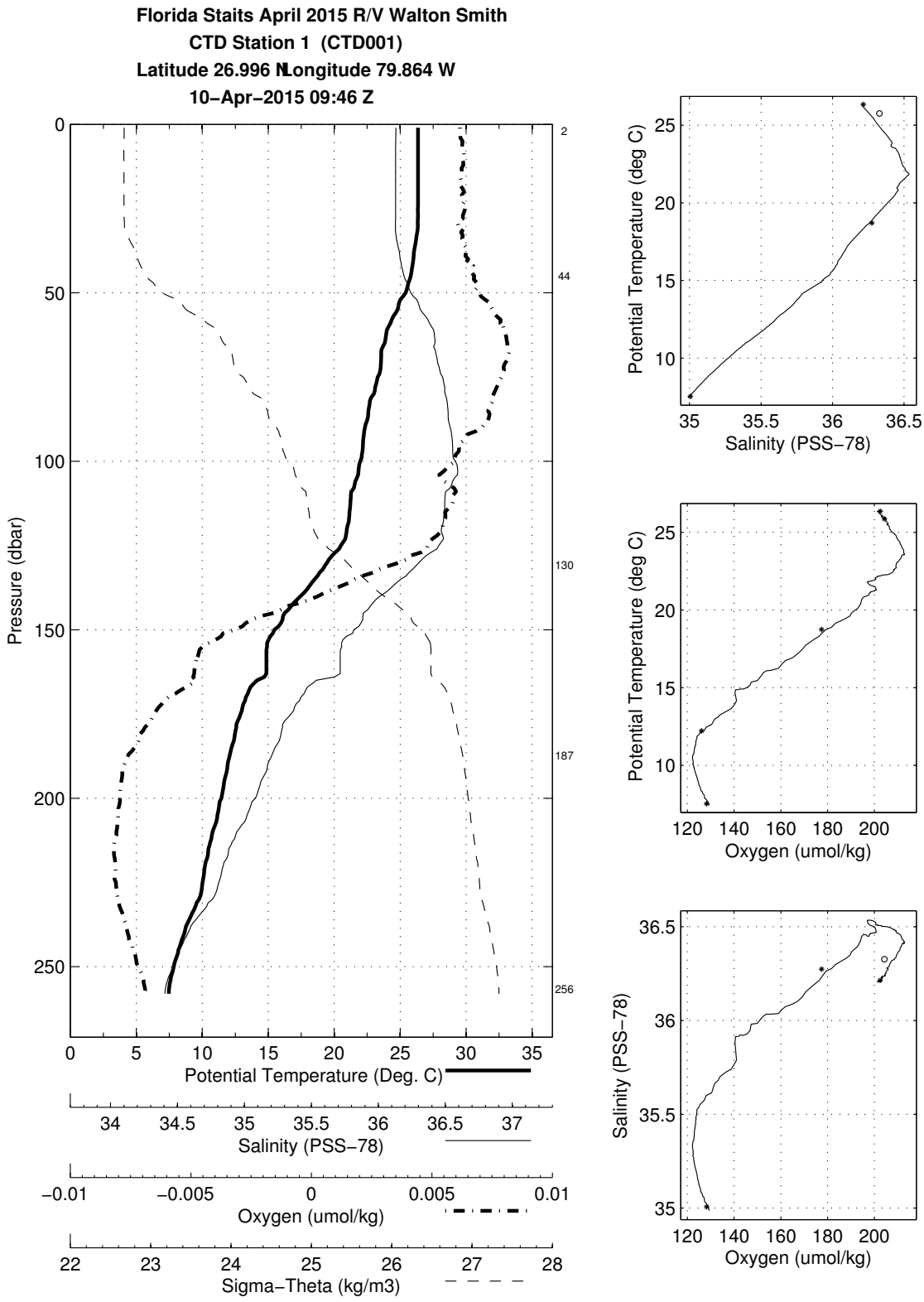
Pressure dbar	Niskin	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}
129	1	13.123	13.105	35.683	126.1
104	2	16.157	16.141	36.150	146.4
49	3	23.851	23.841	36.466	216.5
3	4	26.059	26.059	36.316	203.2


Florida Staits April 2015 R/V Walton Smith
CTD Station 0 (CTD000)
Latitude 27.002 N Longitude 79.930 W
10−Apr−2015 10:39 Z
Pressure (dbar)
Potential Temperature (Deg. C)
Salinity (PSS−78)
Oxygen (umol/kg)
Sigma−Theta (kg/m3)
Potential Temperature (deg C)
Salinity (PSS−78)
Oxygen (umol/kg)

Florida Straits 2015 R/V Walton Smith
CTD Station 1 (CTD001)
Latitude 26.996N Longitude 79.864W
10-Apr-2015 09:46Z

Pressure dbar	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}	DynHt m^2·s^{-2}	SigT kg·m^{-3}
1	26.349	26.349	36.209	201.8	0.004	23.836
10	26.357	26.355	36.207	202.2	0.041	23.833
20	26.356	26.352	36.207	202.7	0.081	23.834
30	26.342	26.335	36.207	201.3	0.122	23.839
50	25.424	25.412	36.287	206.3	0.201	24.188
75	23.312	23.297	36.456	211.3	0.283	24.952
100	21.985	21.965	36.524	200.7	0.353	25.386
125	20.524	20.500	36.436	194.3	0.414	25.724
150	15.482	15.458	35.985	149.9	0.461	26.630
200	11.479	11.454	35.467	123.5	0.521	27.055
250	7.862	7.837	35.029	127.9	0.568	27.321

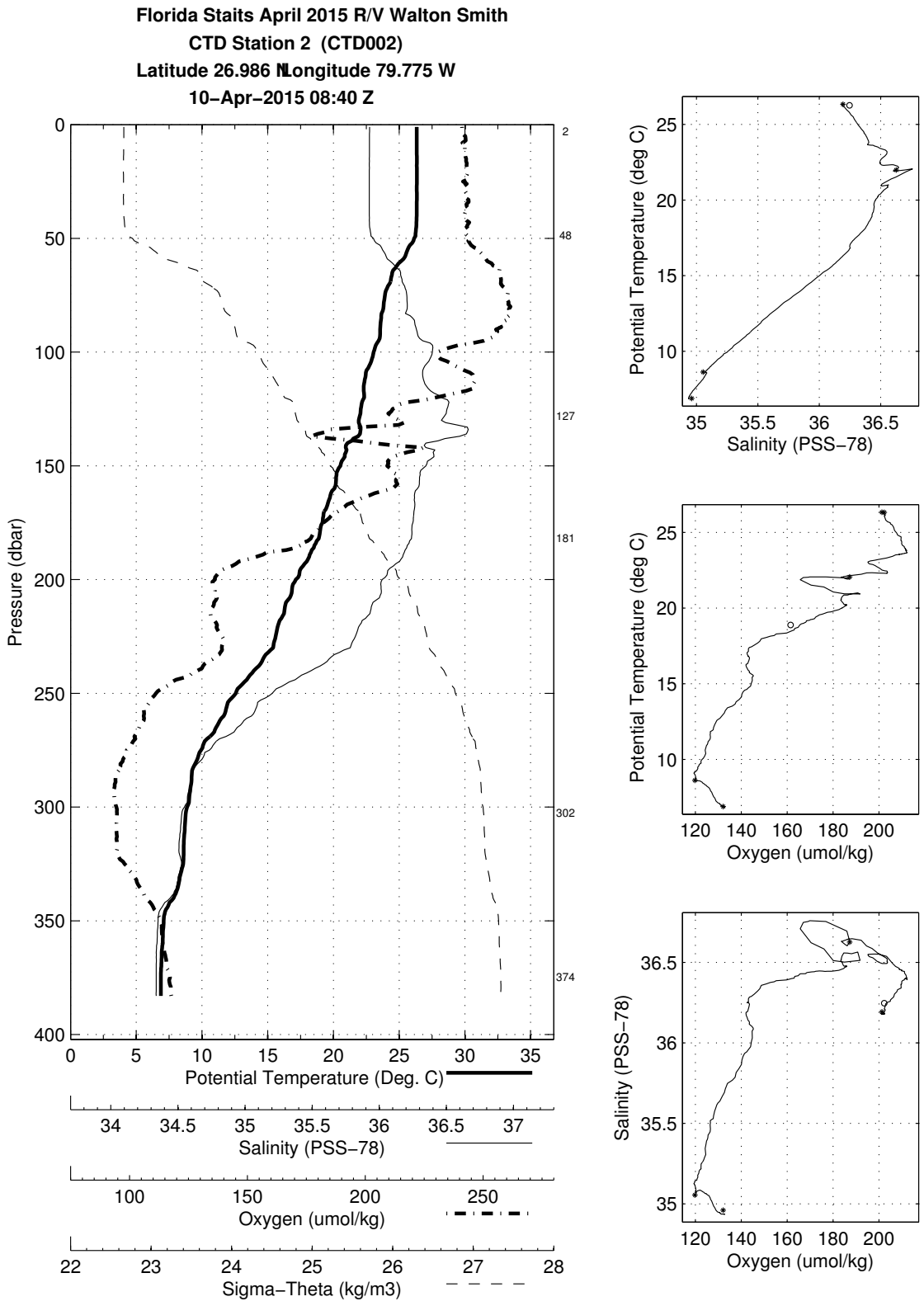
Pressure dbar	Niskin	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}
257	1	7.553	7.528	35.006	128.2
187	2	12.288	12.526	−999.000	−999.000
131	3	18.728	18.705	36.274	177.5
45	4	25.763	25.753	36.327	204.3
2	5	26.333	26.333	36.215	202.6


Florida Staits April 2015 R/V Walton Smith
CTD Station 1 (CTD001)
Latitude 26.996 N Longitude 79.864 W
10−Apr−2015 09:46 Z
Pressure (dbar)
Potential Temperature (Deg. C)
Salinity (PSS−78)
Oxygen (umol/kg)
Sigma−Theta (kg/m3)
Potential Temperature (deg C)
Salinity (PSS−78)
Potential Temperature (deg C)
Oxygen (umol/kg)
Salinity (PSS−78)
Oxygen (umol/kg)

Florida Straits 2015 R/V Walton Smith
CTD Station 2 (CTD002)
Latitude 26.986N Longitude 79.775W
10-Apr-2015 08:40Z

Pressure dbar	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}	DynHt m^2·s^{-2}	SigT kg·m^{-3}
1	26.337	26.337	36.183	200.8	0.004	23.820
10	26.337	26.335	36.182	201.5	0.041	23.820
20	26.349	26.344	36.181	201.9	0.082	23.817
30	26.350	26.343	36.181	201.8	0.122	23.817
50	26.142	26.131	36.205	202.8	0.204	23.902
75	23.929	23.914	36.400	211.4	0.293	24.727
100	23.078	23.057	36.549	195.2	0.371	25.093
125	22.103	22.078	36.635	184.6	0.440	25.439
150	20.560	20.531	36.511	183.3	0.501	25.772
200	17.171	17.137	36.257	143.1	0.599	26.446
250	12.599	12.565	35.614	129.3	0.670	26.956
300	8.901	8.868	35.101	120.0	0.719	27.218

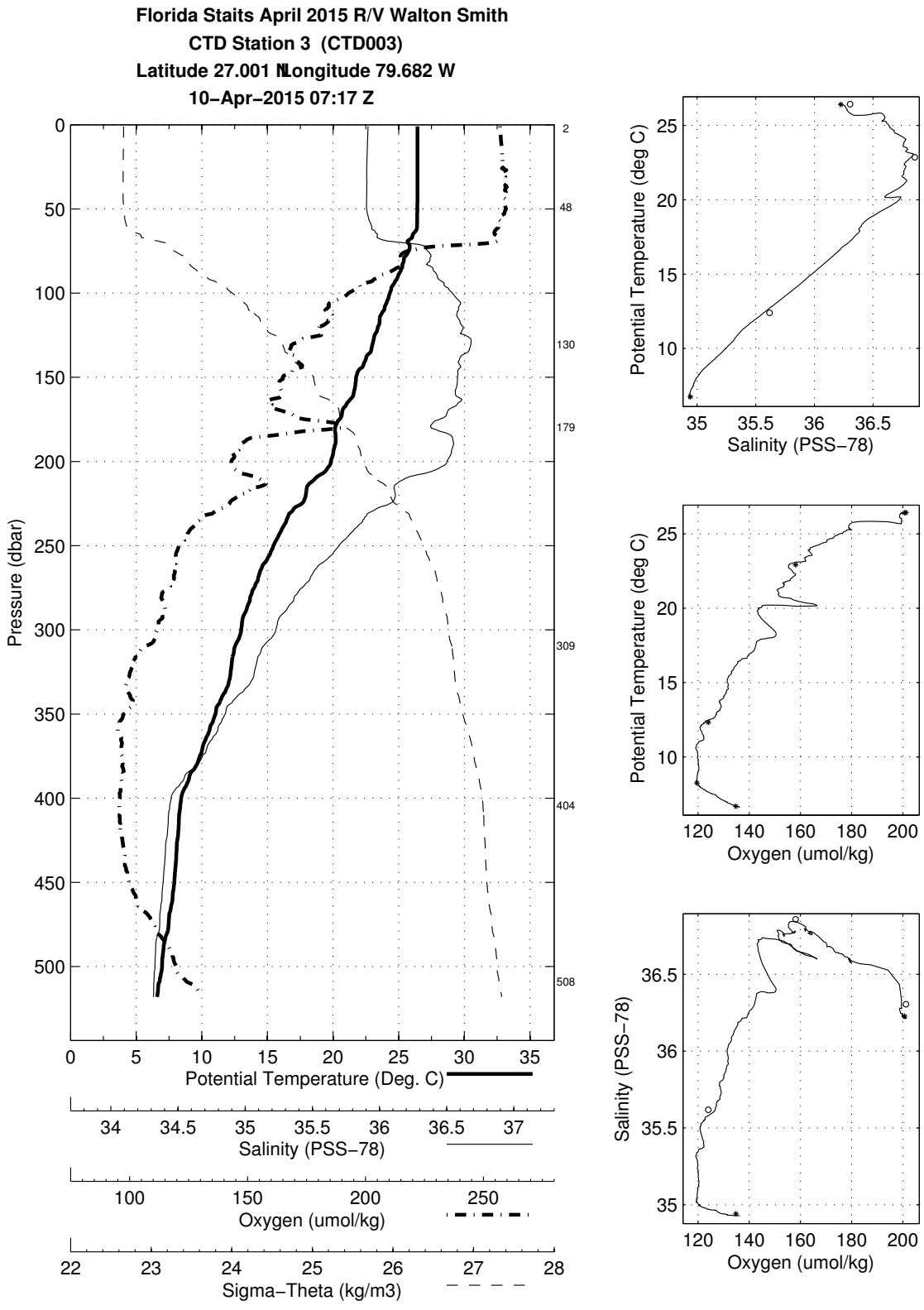
Pressure dbar	Niskin	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}
375	1	6.917	6.881	34.961	132.0
302	2	8.660	8.628	35.055	119.8
182	3	18.775	18.947	−999.000	−999.000
128	4	22.014	21.989	36.626	187.2
49	5	26.279	26.268	36.246	202.3
3	6	26.342	26.341	36.193	201.3


Florida Staits April 2015 R/V Walton Smith
CTD Station 2 (CTD002)
Latitude 26.986 N Longitude 79.775 W
10−Apr−2015 08:40 Z
Pressure (dbar)
Potential Temperature (Deg. C)
Salinity (PSS−78)
Oxygen (umol/kg)
Sigma−Theta (kg/m3)
Potential Temperature (deg C)
Salinity (PSS−78)
Potential Temperature (deg C)
Oxygen (umol/kg)
Salinity (PSS−78)
Oxygen (umol/kg)

Florida Straits 2015 R/V Walton Smith
CTD Station 3 (CTD003)
Latitude 27.001N Longitude 79.682W
10-Apr-2015 07:17Z

Pressure dbar	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}	DynHt m^2·s^{-2}	SigT kg·m^{-3}
1	26.438	26.437	36.222	200.0	0.004	23.818
10	26.438	26.435	36.219	200.2	0.041	23.816
20	26.438	26.433	36.216	200.5	0.082	23.815
30	26.440	26.434	36.215	200.5	0.123	23.813
50	26.428	26.416	36.213	201.2	0.204	23.818
75	25.790	25.774	36.583	180.3	0.303	24.299
100	24.353	24.332	36.731	167.9	0.388	24.853
125	23.192	23.167	36.808	162.1	0.461	25.257
150	21.782	21.752	36.762	154.0	0.526	25.627
200	19.858	19.821	36.697	143.1	0.635	26.104
250	15.489	15.450	36.045	132.1	0.719	26.678
300	13.040	12.998	35.666	127.3	0.784	26.909
400	8.468	8.425	35.034	119.5	0.892	27.236
500	7.013	6.966	34.937	131.5	0.977	27.374

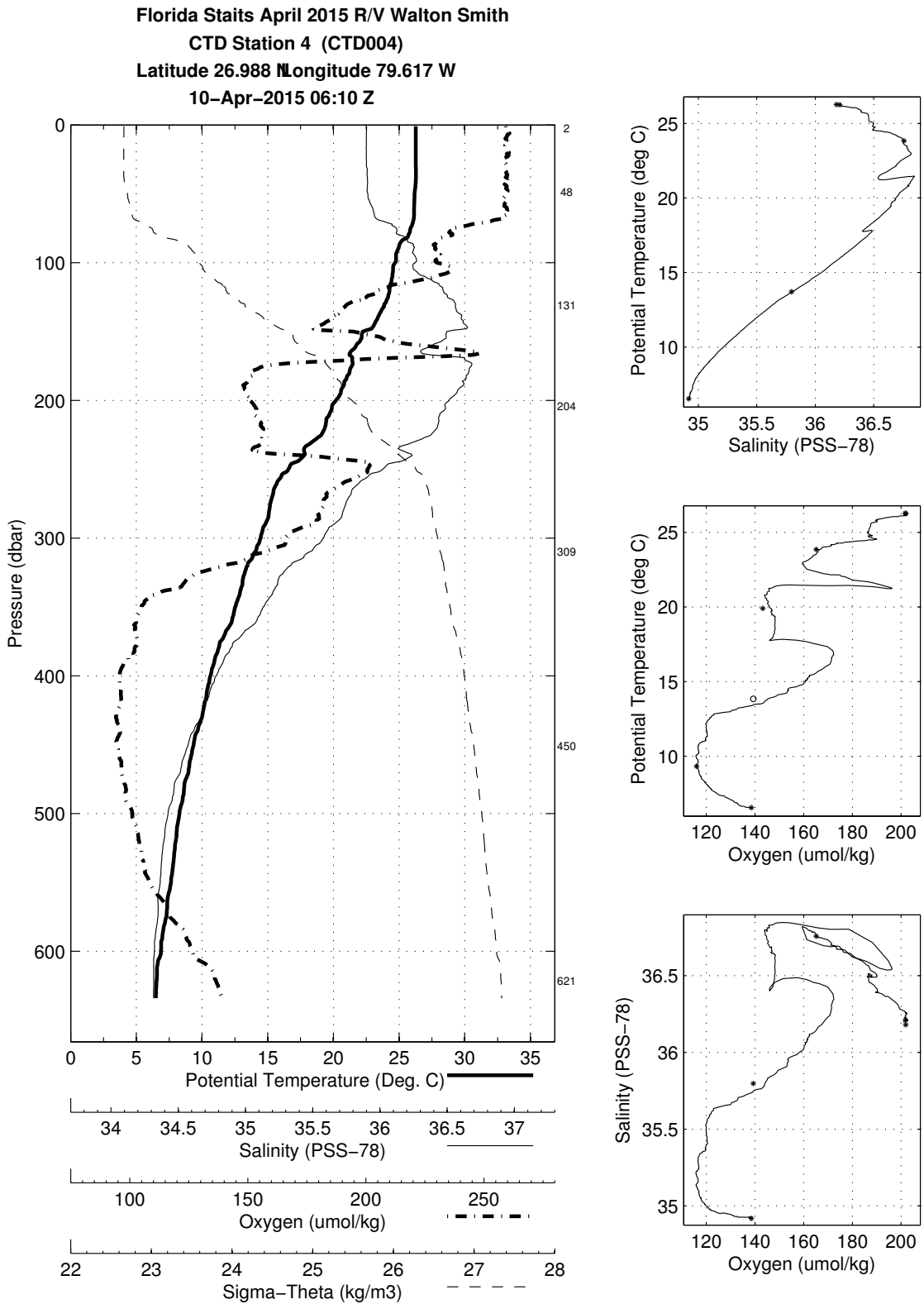
Pressure dbar	Niskin	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}
509	1	6.792	6.744	34.942	134.8
404	2	8.278	8.866	−999.000	−999.000
309	3	12.441	12.399	35.618	124.0
180	4	20.135	20.293	−999.000	−999.000
130	5	22.883	22.857	36.857	158.1
49	6	26.417	26.406	36.227	200.7
2	7	26.431	26.431	36.305	201.2


Florida Staits April 2015 R/V Walton Smith
CTD Station 3 (CTD003)
Latitude 27.001 N Longitude 79.682 W
10−Apr−2015 07:17 Z
Pressure (dbar)
Potential Temperature (Deg. C)
Salinity (PSS−78)
Oxygen (umol/kg)
Sigma−Theta (kg/m3)
Potential Temperature (deg C)
Salinity (PSS−78)
Potential Temperature (deg C)
Oxygen (umol/kg)
Salinity (PSS−78)
Oxygen (umol/kg)

Florida Straits 2015 R/V Walton Smith
CTD Station 4 (CTD004)
Latitude 26.988N Longitude 79.617W
10-Apr-2015 06:10Z

Pressure dbar	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}	DynHt m^2·s^{-2}	SigT kg·m^{-3}
1	26.270	26.269	36.211	202.0	0.004	23.863
10	26.274	26.272	36.210	201.9	0.040	23.861
20	26.275	26.271	36.210	202.7	0.081	23.861
30	26.277	26.270	36.210	202.0	0.121	23.862
50	26.190	26.179	36.219	202.2	0.202	23.897
75	25.880	25.863	36.392	190.2	0.301	24.127
100	24.721	24.699	36.504	186.8	0.390	24.570
125	24.194	24.167	36.698	171.1	0.472	24.878
150	22.260	22.230	36.695	168.3	0.543	25.441
200	20.229	20.191	36.710	145.3	0.659	26.016
250	16.617	16.576	36.309	171.4	0.749	26.620
300	14.498	14.453	35.951	153.6	0.818	26.825
400	10.690	10.641	35.304	116.7	0.937	27.077
500	8.331	8.278	35.013	119.4	1.037	27.242
600	6.925	6.868	34.931	132.6	1.123	27.382

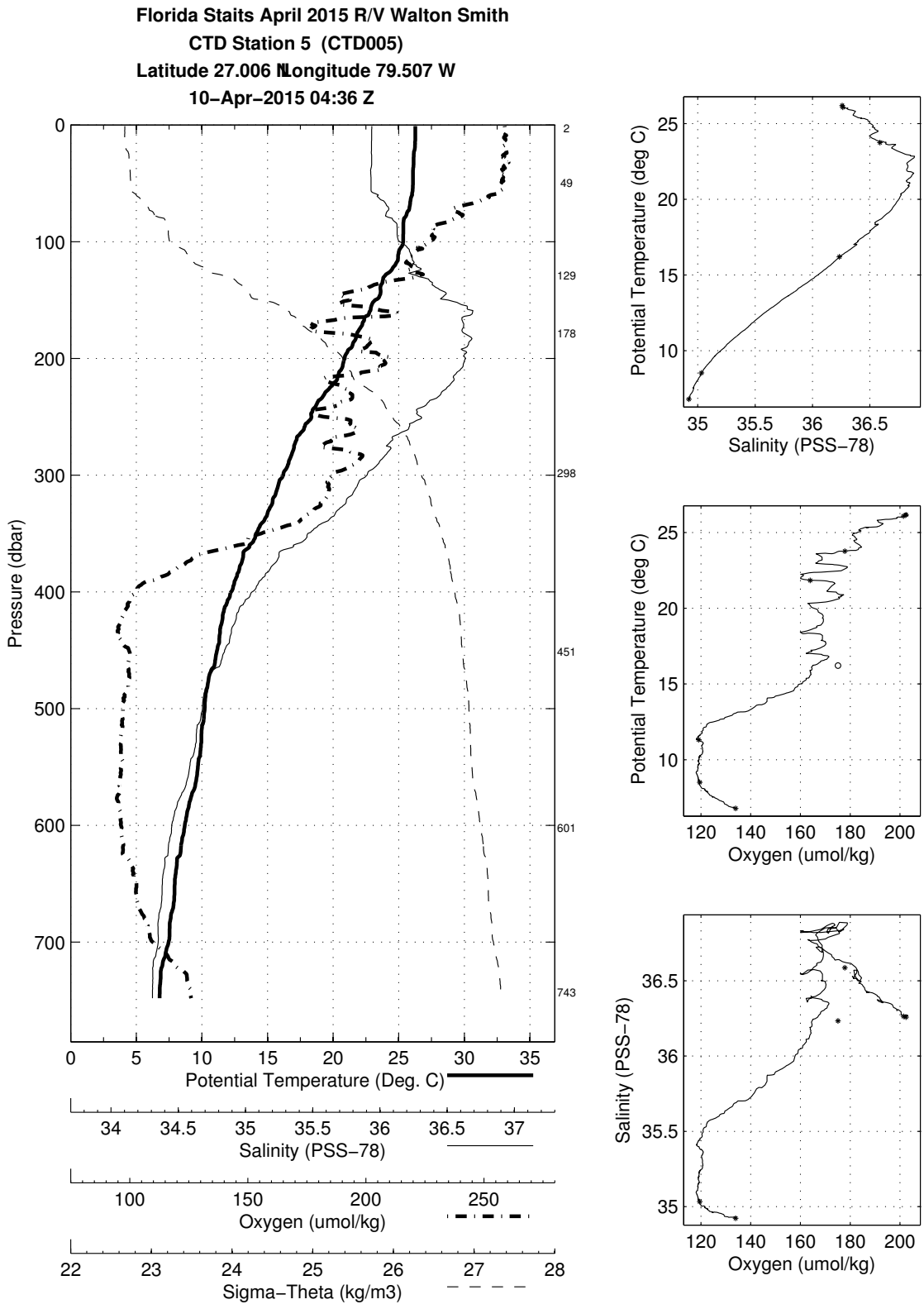
Pressure dbar	Niskin	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}
621	1	6.597	6.539	34.918	138.5
451	2	9.367	9.997	−999.000	−999.000
310	3	13.756	13.711	35.797	139.3
204	4	20.052	20.232	−999.000	−999.000
131	5	23.859	23.832	36.758	165.2
49	6	26.263	26.252	36.208	201.7
2	7	26.268	26.267	36.181	201.9


Florida Staits April 2015 R/V Walton Smith
CTD Station 4 (CTD004)
Latitude 26.988 N Longitude 79.617 W
10−Apr−2015 06:10 Z
Pressure (dbar)
Potential Temperature (Deg. C)
Salinity (PSS−78)
Oxygen (umol/kg)
Sigma−Theta (kg/m3)
Potential Temperature (deg C)
Salinity (PSS−78)
Potential Temperature (deg C)
Oxygen (umol/kg)
Salinity (PSS−78)
Oxygen (umol/kg)

Florida Straits 2015 R/V Walton Smith
CTD Station 5 (CTD005)
Latitude 27.006N Longitude 79.507W
10-Apr-2015 04:36Z

Pressure dbar	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}	DynHt m^2·s^{-2}	SigT kg·m^{-3}
1	26.265	26.265	36.270	202.3	0.004	23.909
10	26.266	26.264	36.269	202.2	0.040	23.908
20	26.232	26.227	36.268	202.4	0.080	23.919
30	26.139	26.132	36.269	202.9	0.119	23.949
50	26.093	26.082	36.265	202.0	0.199	23.962
75	25.648	25.631	36.359	192.4	0.296	24.174
100	25.358	25.336	36.441	185.9	0.387	24.327
125	24.430	24.403	36.549	181.7	0.474	24.694
150	23.226	23.195	36.736	168.7	0.550	25.194
200	20.931	20.893	36.844	177.4	0.672	25.928
250	18.403	18.359	36.572	163.0	0.769	26.387
300	16.245	16.196	36.240	164.9	0.848	26.657
400	12.280	12.226	35.537	122.2	0.980	26.963
500	10.276	10.216	35.233	119.4	1.092	27.097
600	8.762	8.696	35.046	118.9	1.196	27.203
700	7.531	7.460	34.962	125.9	1.288	27.324

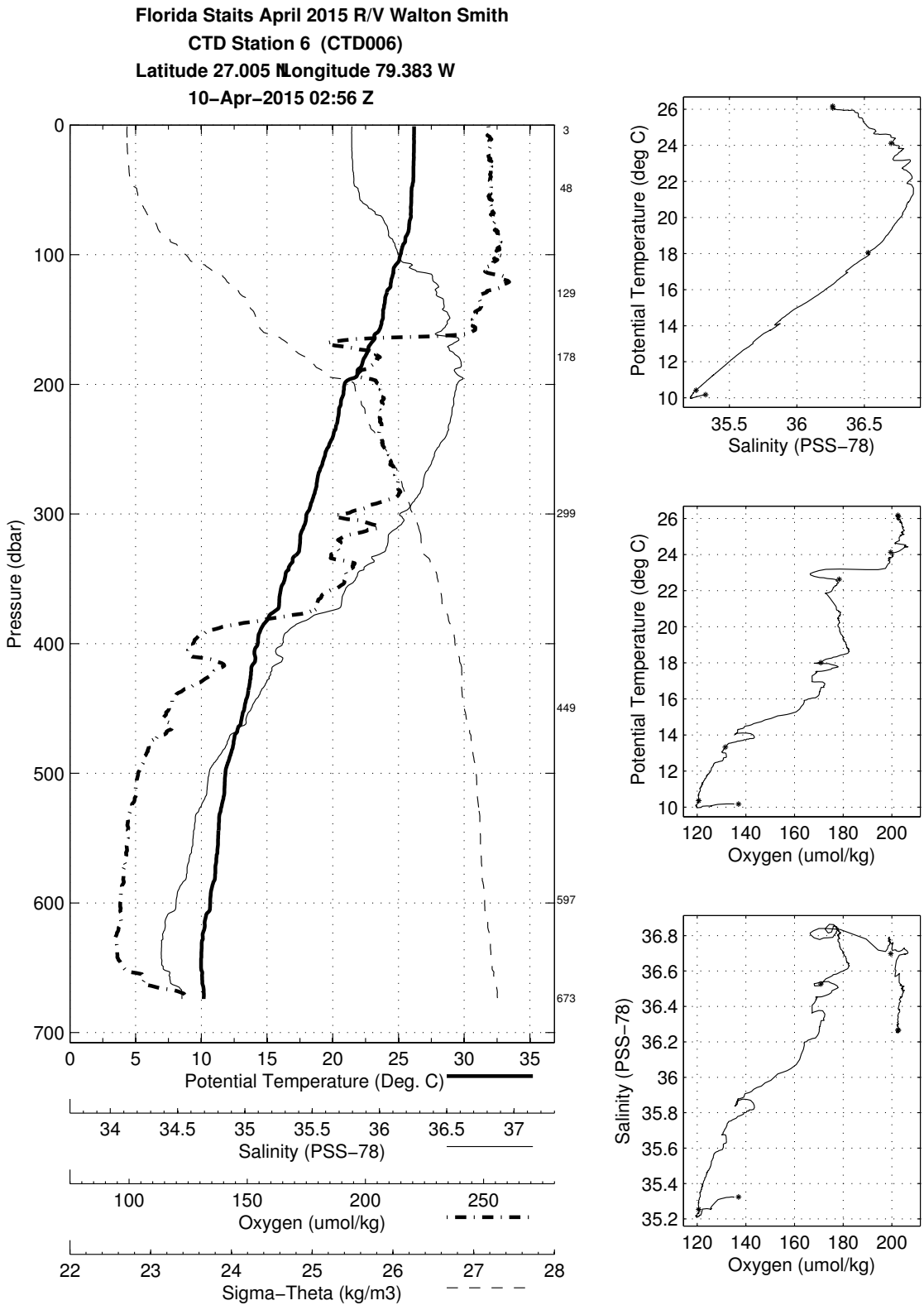
Pressure dbar	Niskin	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}
743	1	6.862	6.791	34.922	133.9
602	2	8.600	8.535	35.033	119.5
451	3	11.349	11.935	−999.000	−999.000
298	4	16.249	16.200	36.234	175.1
178	5	21.874	22.015	−999.000	−999.000
129	6	23.770	23.742	36.587	177.9
49	7	26.079	26.068	36.264	201.4
3	8	26.184	26.183	36.259	202.4


Florida Staits April 2015 R/V Walton Smith
CTD Station 5 (CTD005)
Latitude 27.006 N Longitude 79.507 W
10−Apr−2015 04:36 Z
Pressure (dbar)
0
100
200
300
400
500
600
700
2
49
129
178
298
451
601
743
0 5 10 15 20 25 30 35
Potential Temperature (Deg. C)
34 34.5 35 35.5 36 36.5 37
Salinity (PSS−78)
100 150 200 250
Oxygen (umol/kg)
22 23 24 25 26 27 28
Sigma−Theta (kg/m3)
Potential Temperature (deg C)
25
20
15
10
35 35.5 36 36.5
Salinity (PSS−78)
Potential Temperature (deg C)
25
20
15
10
120 140 160 180 200
Oxygen (umol/kg)
Salinity (PSS−78)
36.5
36
35.5
35
120 140 160 180 200
Oxygen (umol/kg)

Florida Straits 2015 R/V Walton Smith
CTD Station 6 (CTD006)
Latitude 27.005N Longitude 79.383W
10-Apr-2015 02:56Z

Pressure dbar	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}	DynHt m^2·s^{-2}	SigT kg·m^{-3}
1	26.184	26.184	36.255	202.1	0.004	23.922
10	26.182	26.180	36.253	202.5	0.040	23.923
20	26.176	26.171	36.254	202.3	0.080	23.926
30	26.158	26.151	36.259	202.2	0.119	23.936
50	26.004	25.992	36.289	202.2	0.199	24.008
75	25.847	25.830	36.433	203.4	0.295	24.168
100	25.172	25.150	36.513	204.2	0.387	24.439
125	24.414	24.387	36.730	205.1	0.470	24.836
150	23.815	23.784	36.784	198.6	0.545	25.057
200	20.932	20.893	36.831	178.0	0.676	25.918
250	19.601	19.555	36.720	179.3	0.779	26.192
300	18.061	18.009	36.517	170.1	0.869	26.432
400	14.344	14.284	35.873	136.6	1.021	26.802
500	11.900	11.834	35.473	124.4	1.149	26.989
600	10.746	10.671	35.292	120.4	1.266	27.062

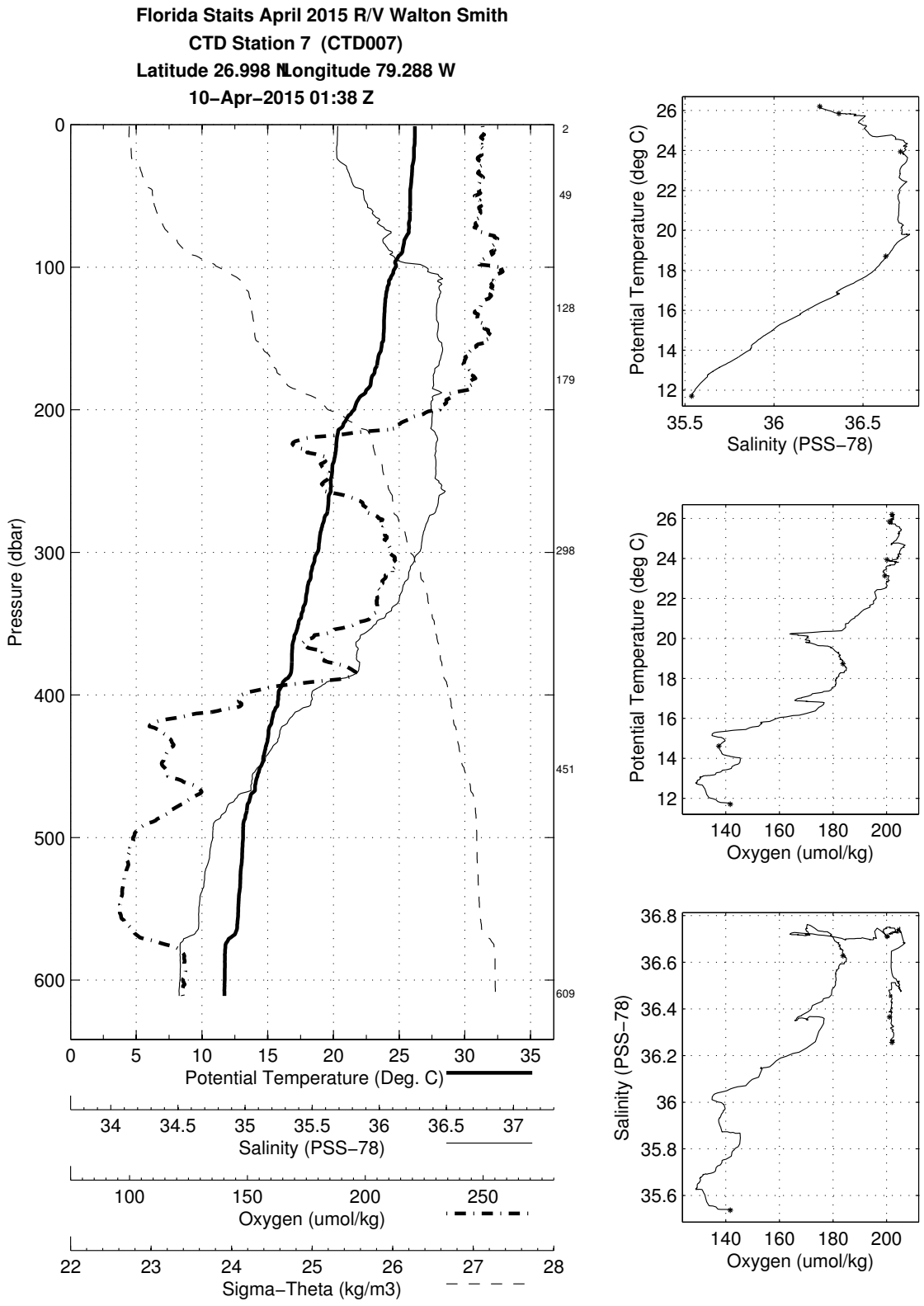
Pressure dbar	Niskin	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}
674	1	10.259	10.178	35.324	137.0
597	2	10.490	10.417	35.254	120.6
449	3	13.381	13.919	−999.000	−999.000
299	4	18.097	18.045	36.527	170.8
179	5	22.654	22.789	−999.000	−999.000
130	6	24.134	24.106	36.698	199.6
49	7	26.075	26.064	36.266	202.7
3	8	26.170	26.170	36.266	202.5


Florida Staits April 2015 R/V Walton Smith
CTD Station 6 (CTD006)
Latitude 27.005 N Longitude 79.383 W
10−Apr−2015 02:56 Z
Pressure (dbar)
Potential Temperature (Deg. C)
Salinity (PSS−78)
Oxygen (umol/kg)
Sigma−Theta (kg/m3)
Potential Temperature (deg C)
Salinity (PSS−78)
Potential Temperature (deg C)
Oxygen (umol/kg)
Salinity (PSS−78)
Oxygen (umol/kg)

Florida Straits 2015 R/V Walton Smith
CTD Station 7 (CTD007)
Latitude 26.998N Longitude 79.288W
10-Apr-2015 01:38Z

Pressure dbar	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}	DynHt m^2·s^{-2}	SigT kg·m^{-3}
1	26.196	26.195	36.267	202.5	0.004	23.928
10	26.194	26.191	36.265	202.5	0.040	23.928
20	26.131	26.127	36.262	202.2	0.079	23.946
30	26.006	26.000	36.308	202.5	0.119	24.021
50	25.856	25.845	36.387	200.9	0.196	24.129
75	25.757	25.741	36.512	201.7	0.290	24.256
100	24.741	24.720	36.674	206.0	0.378	24.692
125	23.958	23.932	36.726	202.4	0.455	24.969
150	23.840	23.808	36.729	203.8	0.531	25.008
200	21.607	21.568	36.698	193.8	0.669	25.630
250	19.850	19.804	36.733	170.5	0.775	26.136
300	18.833	18.780	36.642	183.5	0.869	26.333
400	15.875	15.811	36.145	153.5	1.031	26.673
500	13.195	13.124	35.690	131.5	1.170	26.903
600	11.816	11.737	35.541	141.6	1.294	27.059

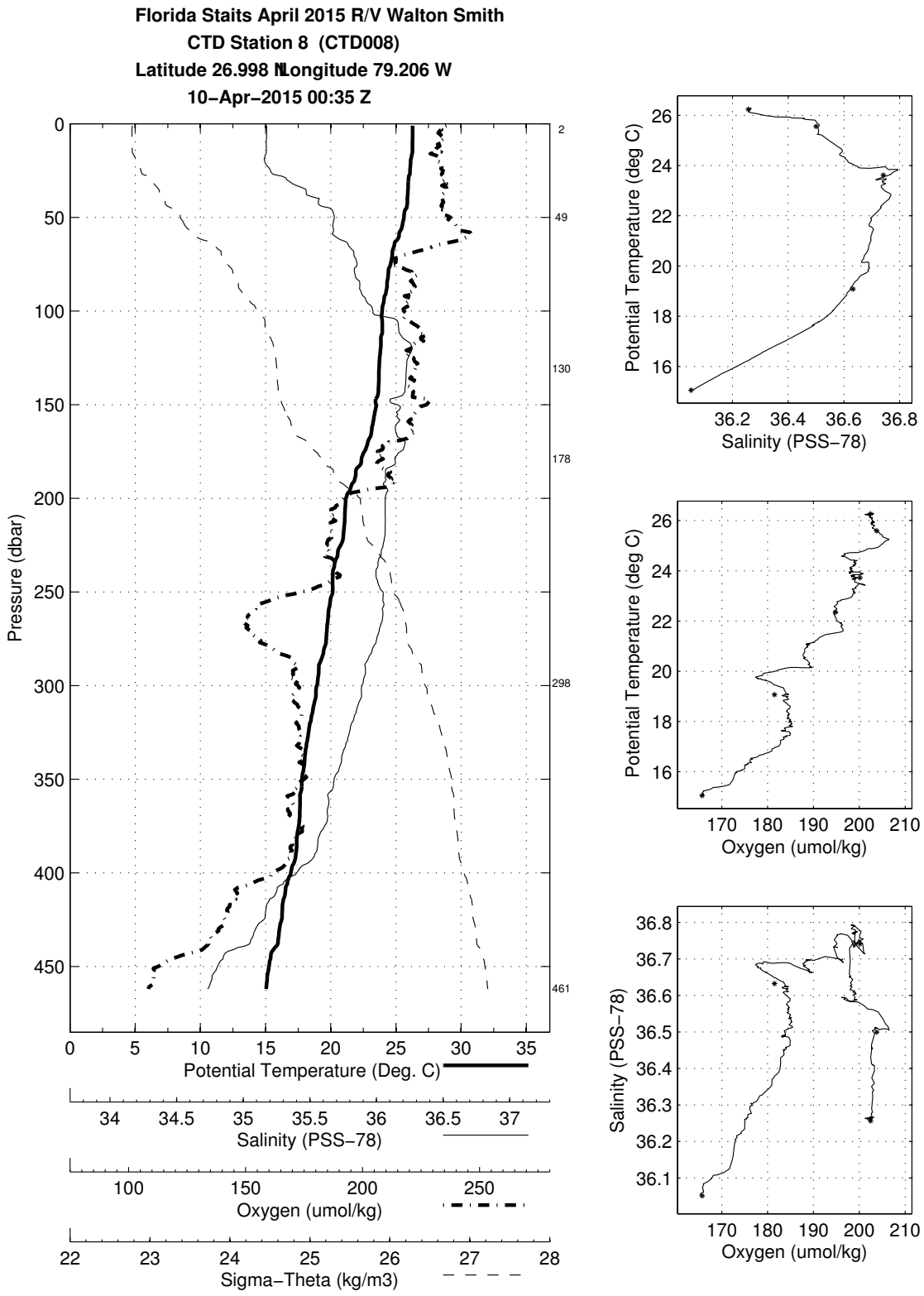
Pressure dbar	Niskin	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}
609	1	11.784	11.704	35.537	141.7
452	2	14.605	15.119	−999.000	−999.000
298	3	18.762	18.708	36.628	183.7
179	4	23.092	23.223	−999.000	−999.000
128	5	23.965	23.938	36.711	200.2
49	6	25.862	25.851	36.365	201.1
3	7	26.208	26.208	36.257	202.0


Florida Staits April 2015 R/V Walton Smith
CTD Station 7 (CTD007)
Latitude 26.998 N Longitude 79.288 W
10−Apr−2015 01:38 Z
Pressure (dbar)
Potential Temperature (Deg. C)
Salinity (PSS−78)
Oxygen (umol/kg)
Sigma−Theta (kg/m3)
Potential Temperature (deg C)
Salinity (PSS−78)
Potential Temperature (deg C)
Oxygen (umol/kg)
Salinity (PSS−78)
Oxygen (umol/kg)

Florida Straits 2015 R/V Walton Smith
CTD Station 8 (CTD008)
Latitude 26.998N Longitude 79.206W
10-Apr-2015 00:35Z

Pressure dbar	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}	DynHt m^2·s^{-2}	SigT kg·m^{-3}
1	26.274	26.274	36.266	203.3	0.004	23.903
10	26.269	26.267	36.265	202.9	0.040	23.904
20	26.130	26.126	36.259	202.2	0.080	23.944
30	25.970	25.963	36.340	203.2	0.119	24.056
50	25.633	25.621	36.512	203.8	0.194	24.292
75	24.604	24.588	36.595	196.1	0.281	24.672
100	23.959	23.938	36.652	197.9	0.360	24.911
125	23.779	23.752	36.780	199.1	0.435	25.063
150	23.506	23.475	36.742	200.8	0.508	25.116
200	21.193	21.154	36.696	190.2	0.641	25.744
250	20.201	20.154	36.689	184.8	0.752	26.009
300	18.989	18.935	36.612	184.4	0.850	26.270
400	17.008	16.941	36.376	181.4	1.020	26.585

Pressure dbar	Niskin	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}
461	1	15.122	15.050	36.051	165.7
299	2	19.139	19.085	36.633	181.5
179	3	22.359	22.497	−999.000	−999.000
131	4	23.650	23.623	36.741	200.1
50	5	25.572	25.561	36.500	203.8
3	6	26.243	26.243	36.257	202.4

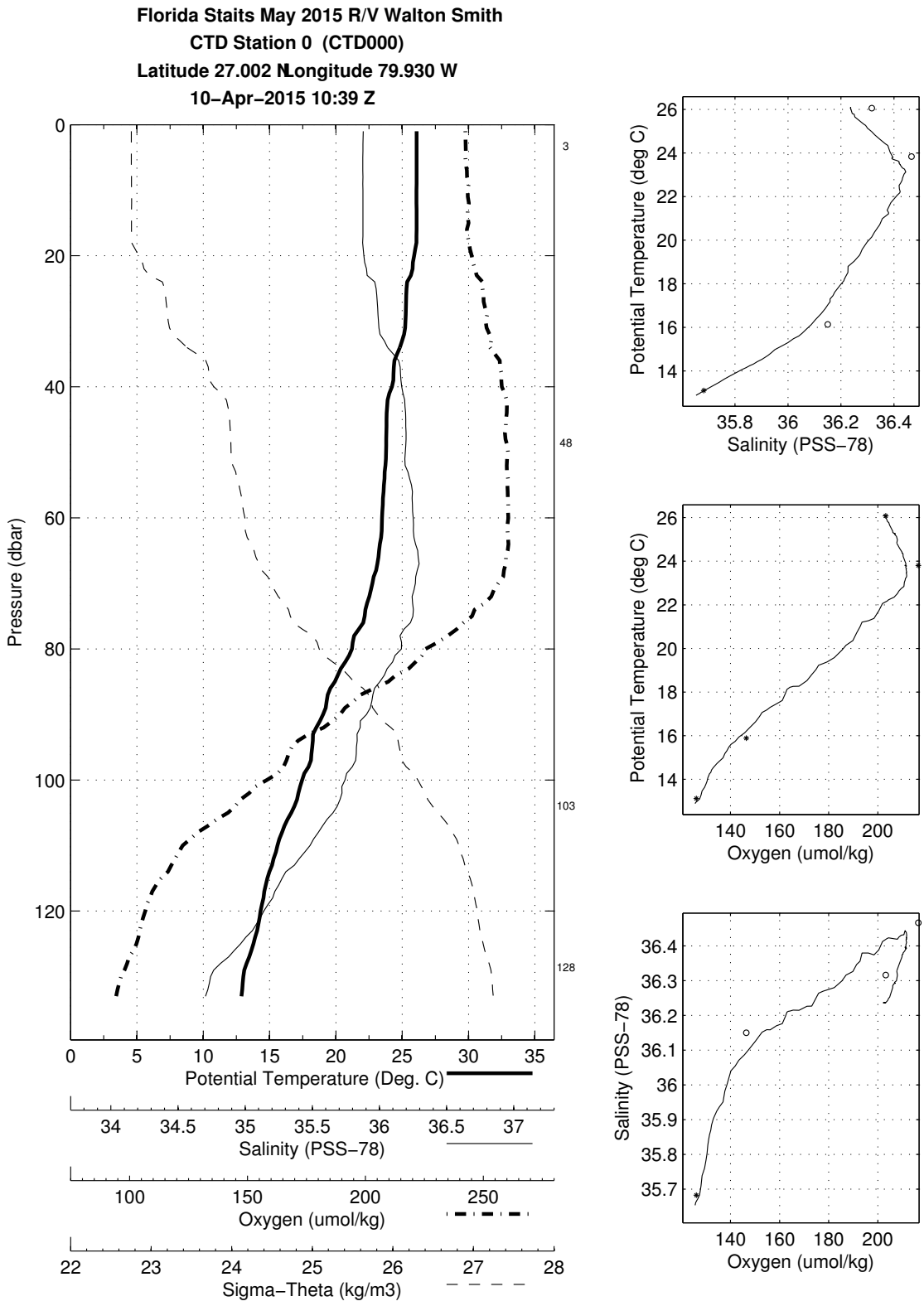

Florida Staits April 2015 R/V Walton Smith
CTD Station 8 (CTD008)
Latitude 26.998 N Longitude 79.206 W
10−Apr−2015 00:35 Z
Pressure (dbar)
Potential Temperature (Deg. C)
Salinity (PSS−78)
Oxygen (umol/kg)
Sigma−Theta (kg/m3)
Potential Temperature (deg C)
Salinity (PSS−78)
Potential Temperature (deg C)
Oxygen (umol/kg)
Salinity (PSS−78)
Oxygen (umol/kg)

A.3 FC1505

Florida Straits 2015 R/V Walton Smith
CTD Station 0 (CTD000)
Latitude 26.997N Longitude 79.931W
27-May-2015 08:18Z

Pressure dbar	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}	DynHt m^2·s^{-2}	SigT kg·m^{-3}
1	27.237	27.237	36.283	201.4	0.004	23.608
10	27.241	27.238	36.282	202.1	0.043	23.607
20	26.503	26.498	36.288	206.0	0.085	23.849
30	24.974	24.968	36.332	215.2	0.123	24.358
50	22.418	22.408	36.450	220.8	0.185	25.204
75	20.927	20.913	36.470	201.2	0.248	25.638
100	18.274	18.257	36.282	168.0	0.303	26.191
125	15.152	15.133	35.946	139.0	0.342	26.672

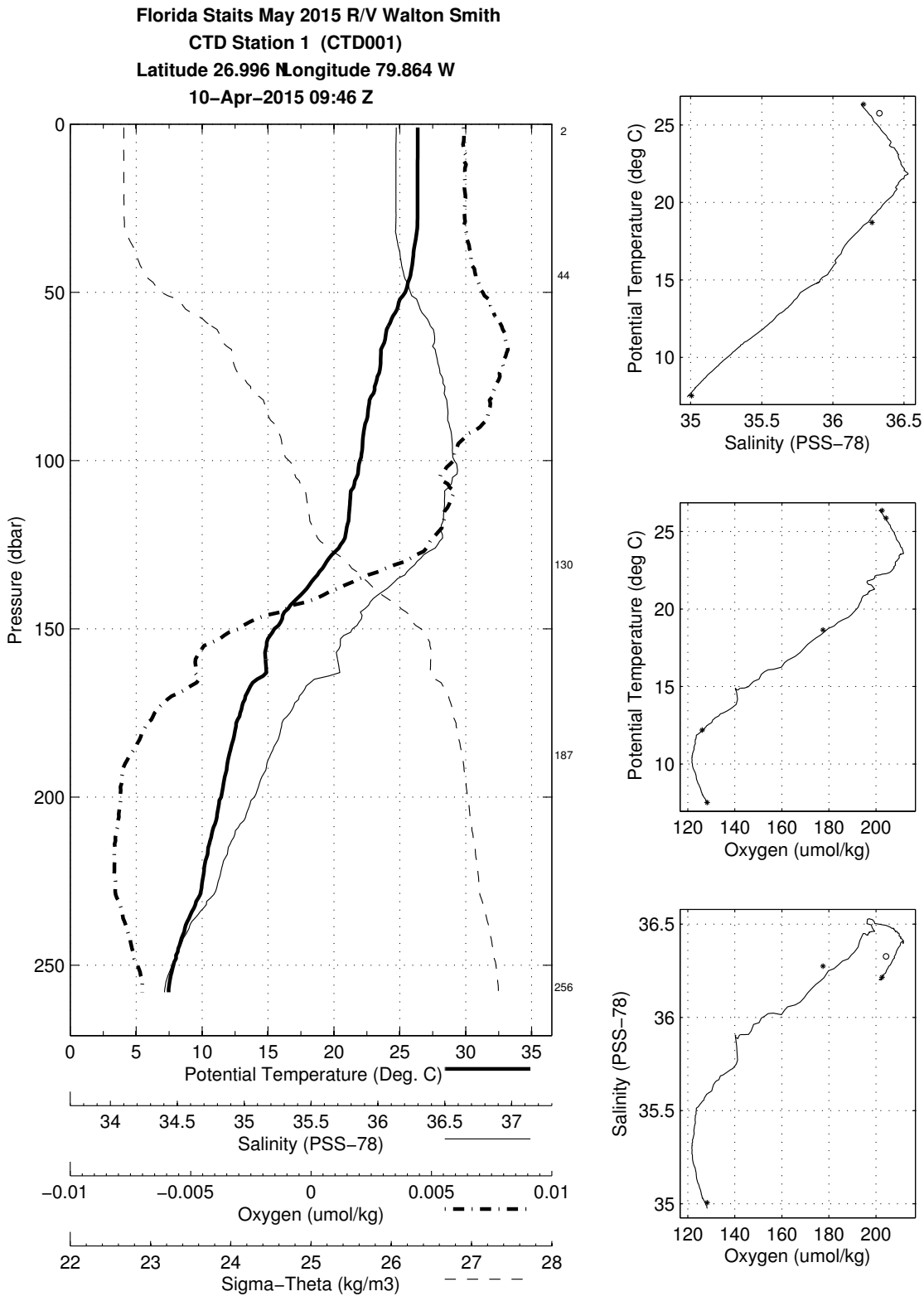
Pressure dbar	Niskin	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}
131	1	14.649	14.630	35.897	135.2
131	2	14.696	14.847	−999.000	−999.000
101	3	18.210	18.193	36.282	166.4
102	4	18.180	18.280	−999.000	−999.000
50	5	22.431	22.421	36.428	220.0
50	6	22.424	22.463	−999.000	−999.000
2	7	27.274	27.273	36.308	201.8
2	8	27.273	27.274	−999.000	−999.000


Florida Staits May 2015 R/V Walton Smith
CTD Station 0 (CTD000)
Latitude 27.002 N Longitude 79.930 W
10−Apr−2015 10:39 Z
Pressure (dbar)
0
20
40
60
80
100
120
3
48
103
128
0 5 10 15 20 25 30 35
Potential Temperature (Deg. C)
34 34.5 35 35.5 36 36.5 37
Salinity (PSS−78)
100 150 200 250
Oxygen (umol/kg)
22 23 24 25 26 27 28
Sigma−Theta (kg/m3)
Potential Temperature (deg C)
26 24 22 20 18 16 14
35.8 36 36.2 36.4
Salinity (PSS−78)
Potential Temperature (deg C)
26 24 22 20 18 16 14
140 160 180 200
Oxygen (umol/kg)
Salinity (PSS−78)
36.4 36.3 36.2 36.1 36 35.9 35.8 35.7
140 160 180 200
Oxygen (umol/kg)

Florida Straits 2015 R/V Walton Smith
CTD Station 0 (CTD000)
Latitude 26.997N Longitude 79.931W
27-May-2015 08:18Z

Pressure dbar	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}	DynHt m^2·s^{-2}	SigT kg·m^{-3}
1	27.237	27.237	36.283	201.4	0.004	23.608
10	27.241	27.238	36.282	202.1	0.043	23.607
20	26.503	26.498	36.288	206.0	0.085	23.849
30	24.974	24.968	36.332	215.2	0.123	24.358
50	22.418	22.408	36.450	220.8	0.185	25.204
75	20.927	20.913	36.470	201.2	0.248	25.638
100	18.274	18.257	36.282	168.0	0.303	26.191
125	15.152	15.133	35.946	139.0	0.342	26.672

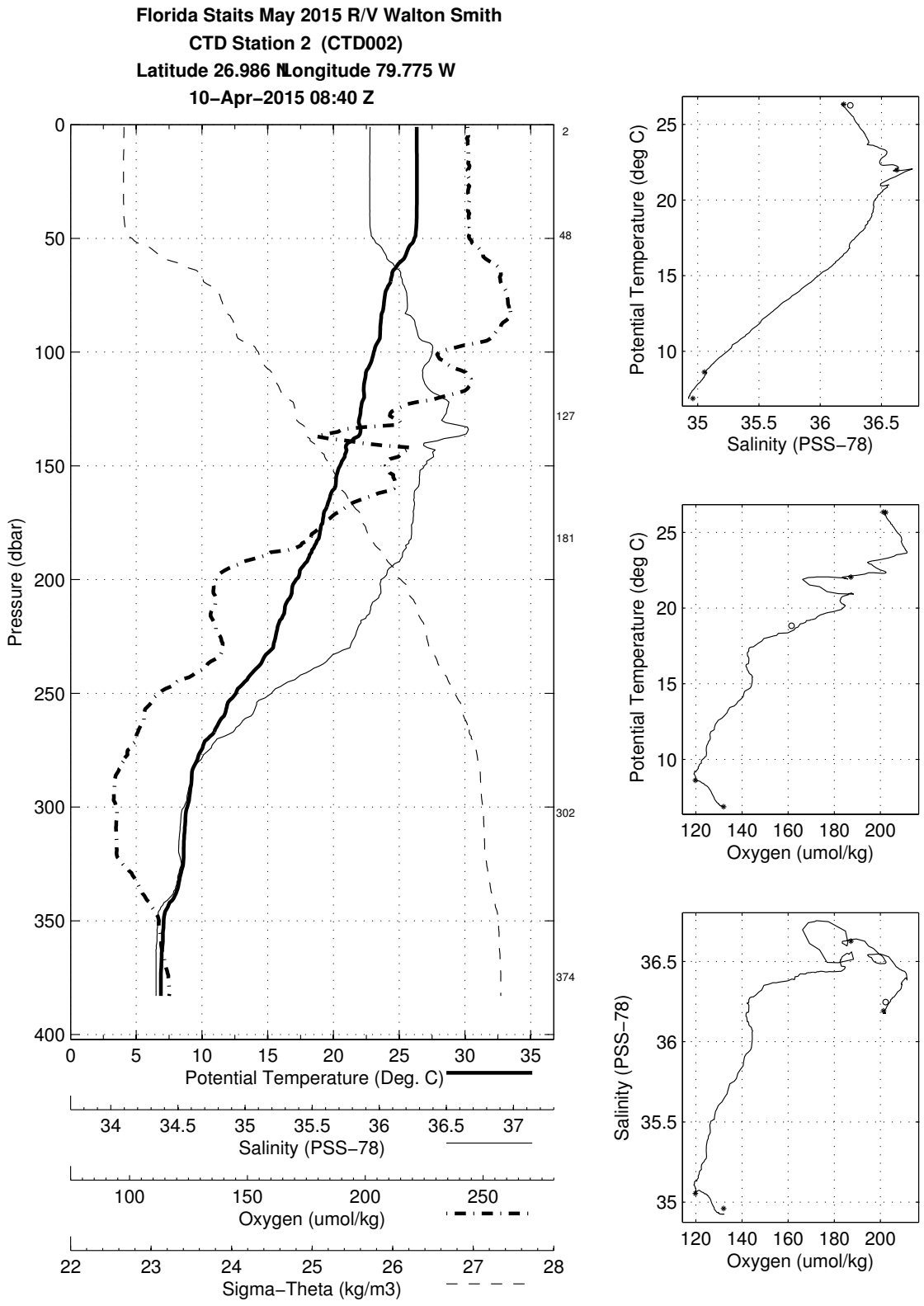
Pressure dbar	Niskin	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}
131	1	14.649	14.630	35.897	135.2
131	2	14.696	14.847	−999.000	−999.000
101	3	18.210	18.193	36.282	166.4
102	4	18.180	18.280	−999.000	−999.000
50	5	22.431	22.421	36.428	220.0
50	6	22.424	22.463	−999.000	−999.000
2	7	27.274	27.273	36.308	201.8
2	8	27.273	27.274	−999.000	−999.000


Florida Staits May 2015 R/V Walton Smith
CTD Station 1 (CTD001)
Latitude 26.996 N Longitude 79.864 W
10−Apr−2015 09:46 Z
Pressure (dbar)
Potential Temperature (Deg. C)
Salinity (PSS−78)
Oxygen (umol/kg)
Sigma−Theta (kg/m3)
Potential Temperature (deg C)
Salinity (PSS−78)
Oxygen (umol/kg)

Florida Straits 2015 R/V Walton Smith
CTD Station 2 (CTD002)
Latitude 26.996N Longitude 79.781W
27-May-2015 06:34Z

Pressure dbar	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}	DynHt m^2·s^{-2}	SigT kg·m^{-3}
1	27.561	27.561	36.337	200.9	0.004	23.544
10	27.561	27.558	36.336	201.0	0.043	23.544
20	27.271	27.267	36.307	202.9	0.087	23.617
30	26.376	26.369	36.294	209.0	0.128	23.893
50	24.021	24.011	36.437	220.1	0.201	24.726
75	21.786	21.772	36.474	216.1	0.272	25.402
100	20.525	20.506	36.492	183.2	0.332	25.765
125	19.397	19.374	36.508	161.2	0.384	26.077
150	18.367	18.341	36.445	139.9	0.431	26.294
200	16.174	16.142	36.170	142.0	0.511	26.615
250	13.550	13.514	35.754	136.4	0.580	26.872
300	10.258	10.222	35.257	119.7	0.634	27.114

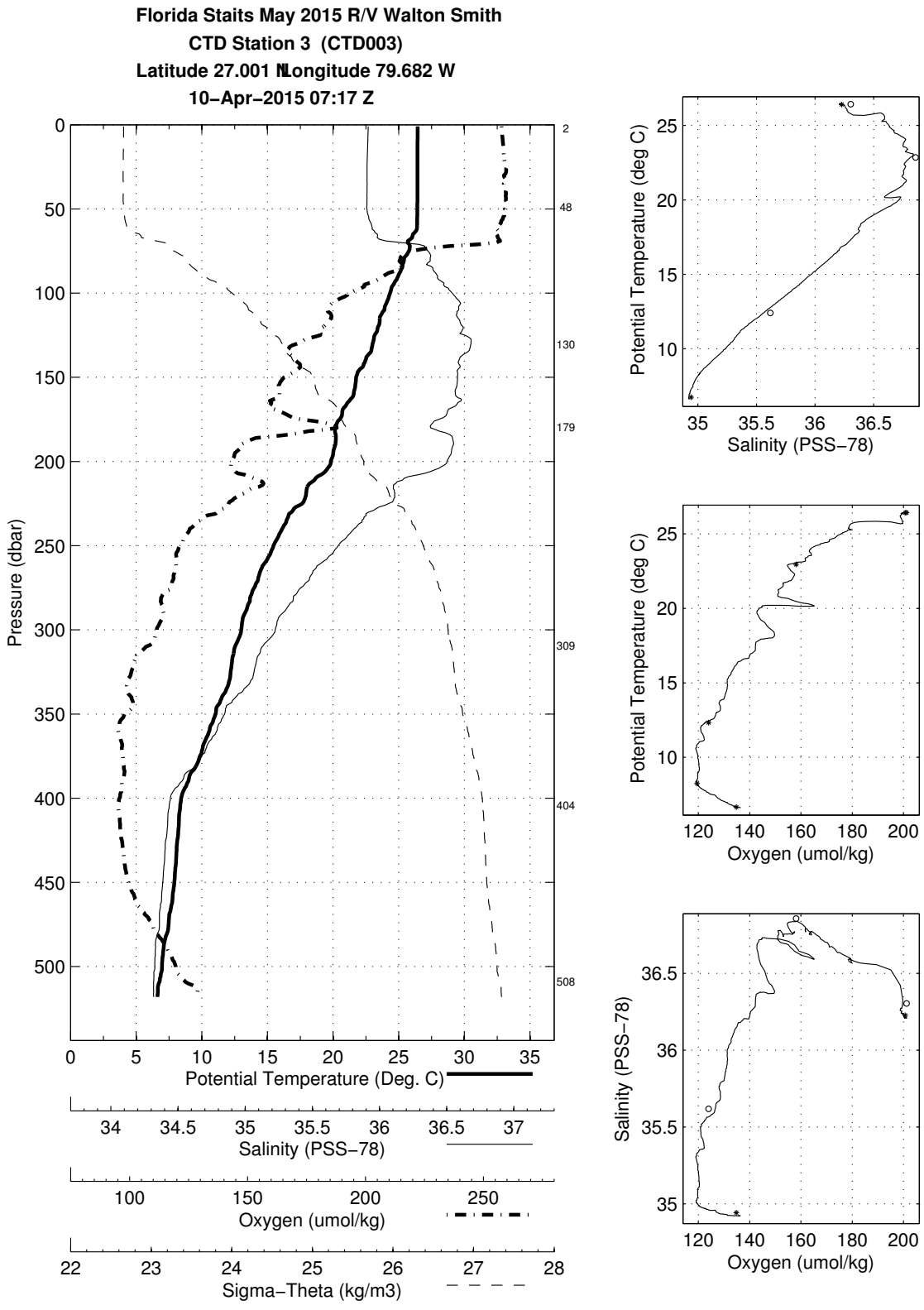
Pressure dbar	Niskin	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}
370	1	7.677	7.640	34.950	124.5
370	2	7.678	8.229	−999.000	−999.000
302	3	10.037	10.001	35.227	120.2
302	4	10.053	10.468	−999.000	−999.000
176	5	17.135	17.106	36.290	138.5
176	6	17.133	17.314	−999.000	−999.000
131	7	19.067	19.043	36.534	146.8
131	8	19.051	19.174	−999.000	−999.000
50	9	24.184	24.173	36.446	221.7
50	10	24.175	24.209	−999.000	−999.000
3	11	27.556	27.555	36.324	200.4
3	12	27.554	27.556	−999.000	−999.000


Florida Staits May 2015 R/V Walton Smith
CTD Station 2 (CTD002)
Latitude 26.986 N Longitude 79.775 W
10−Apr−2015 08:40 Z
Pressure (dbar)
Potential Temperature (Deg. C)
Salinity (PSS−78)
Oxygen (umol/kg)
Sigma−Theta (kg/m3)
Potential Temperature (deg C)
Salinity (PSS−78)
Potential Temperature (deg C)
Oxygen (umol/kg)
Salinity (PSS−78)
Oxygen (umol/kg)

Florida Straits 2015 R/V Walton Smith
CTD Station 3 (CTD003)
Latitude 26.997N Longitude 79.681W
27-May-2015 04:54Z

Pressure dbar	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}	DynHt m^2·s^{-2}	SigT kg·m^{-3}
1	27.801	27.800	36.311	198.4	0.004	23.446
10	27.815	27.812	36.310	199.5	0.044	23.442
20	27.733	27.728	36.329	200.5	0.089	23.484
30	26.905	26.898	36.330	206.4	0.132	23.752
50	24.812	24.801	36.385	214.6	0.207	24.449
75	22.634	22.619	36.490	212.8	0.285	25.174
100	21.022	21.003	36.476	204.6	0.350	25.617
125	19.893	19.870	36.515	173.4	0.406	25.953
150	18.992	18.965	36.481	157.2	0.456	26.163
200	17.114	17.081	36.301	138.3	0.543	26.494
250	14.740	14.703	35.932	131.9	0.617	26.757
300	13.640	13.597	35.753	131.0	0.683	26.854
400	9.755	9.709	35.190	122.7	0.798	27.150
500	7.114	7.066	34.933	130.4	0.885	27.357

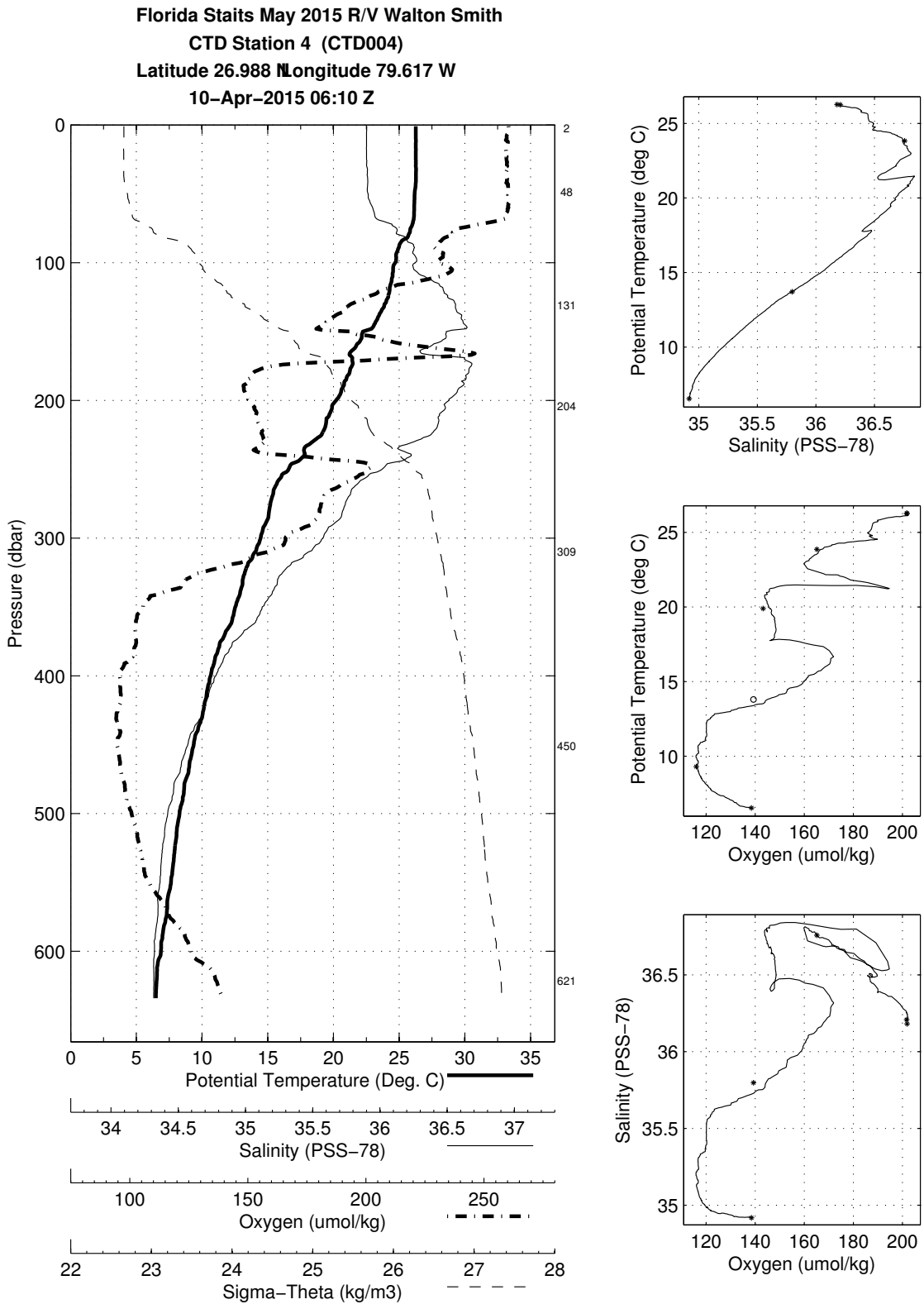
Pressure dbar	Niskin	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}
503	1	7.061	7.012	34.924	131.0
503	2	7.062	7.821	−999.000	−999.000
406	3	9.110	9.065	35.096	118.3
406	4	9.099	9.673	−999.000	−999.000
300	5	13.606	13.563	35.752	130.8
301	6	13.595	13.956	−999.000	−999.000
181	7	17.821	17.790	36.380	140.8
181	8	17.817	17.997	−999.000	−999.000
130	9	19.760	19.736	36.494	174.2
129	10	19.761	19.877	−999.000	−999.000
49	11	24.840	24.829	36.395	215.3
49	12	24.847	24.878	−999.000	−999.000
3	13	27.787	27.786	36.313	199.6
3	14	27.787	27.788	−999.000	−999.000


Florida Staits May 2015 R/V Walton Smith
CTD Station 3 (CTD003)
Latitude 27.001 N Longitude 79.682 W
10−Apr−2015 07:17 Z
Pressure (dbar)
Potential Temperature (Deg. C)
Salinity (PSS−78)
Oxygen (umol/kg)
Sigma−Theta (kg/m3)
Potential Temperature (deg C)
Salinity (PSS−78)
Potential Temperature (deg C)
Oxygen (umol/kg)
Salinity (PSS−78)
Oxygen (umol/kg)

Florida Straits 2015 R/V Walton Smith
CTD Station 4 (CTD004)
Latitude 26.993N Longitude 79.615W
27-May-2015 03:46Z

Pressure dbar	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}	DynHt m^2·s^{-2}	SigT kg·m^{-3}
1	27.913	27.913	36.233	198.8	0.005	23.351
10	27.919	27.917	36.232	199.5	0.045	23.349
20	27.847	27.843	36.241	199.6	0.090	23.380
30	27.013	27.006	36.329	206.0	0.134	23.717
50	25.472	25.461	36.294	213.9	0.213	24.178
75	23.556	23.540	36.419	217.9	0.299	24.853
100	21.429	21.410	36.451	216.4	0.368	25.486
125	20.376	20.353	36.493	188.0	0.427	25.807
150	19.490	19.463	36.509	162.3	0.480	26.055
200	17.881	17.847	36.395	140.3	0.572	26.379
250	15.447	15.408	36.050	137.0	0.649	26.691
300	14.123	14.079	35.832	135.4	0.717	26.814
400	11.404	11.353	35.398	118.7	0.840	27.021
500	8.270	8.217	35.026	122.0	0.942	27.261
600	6.884	6.826	34.928	133.7	1.025	27.386

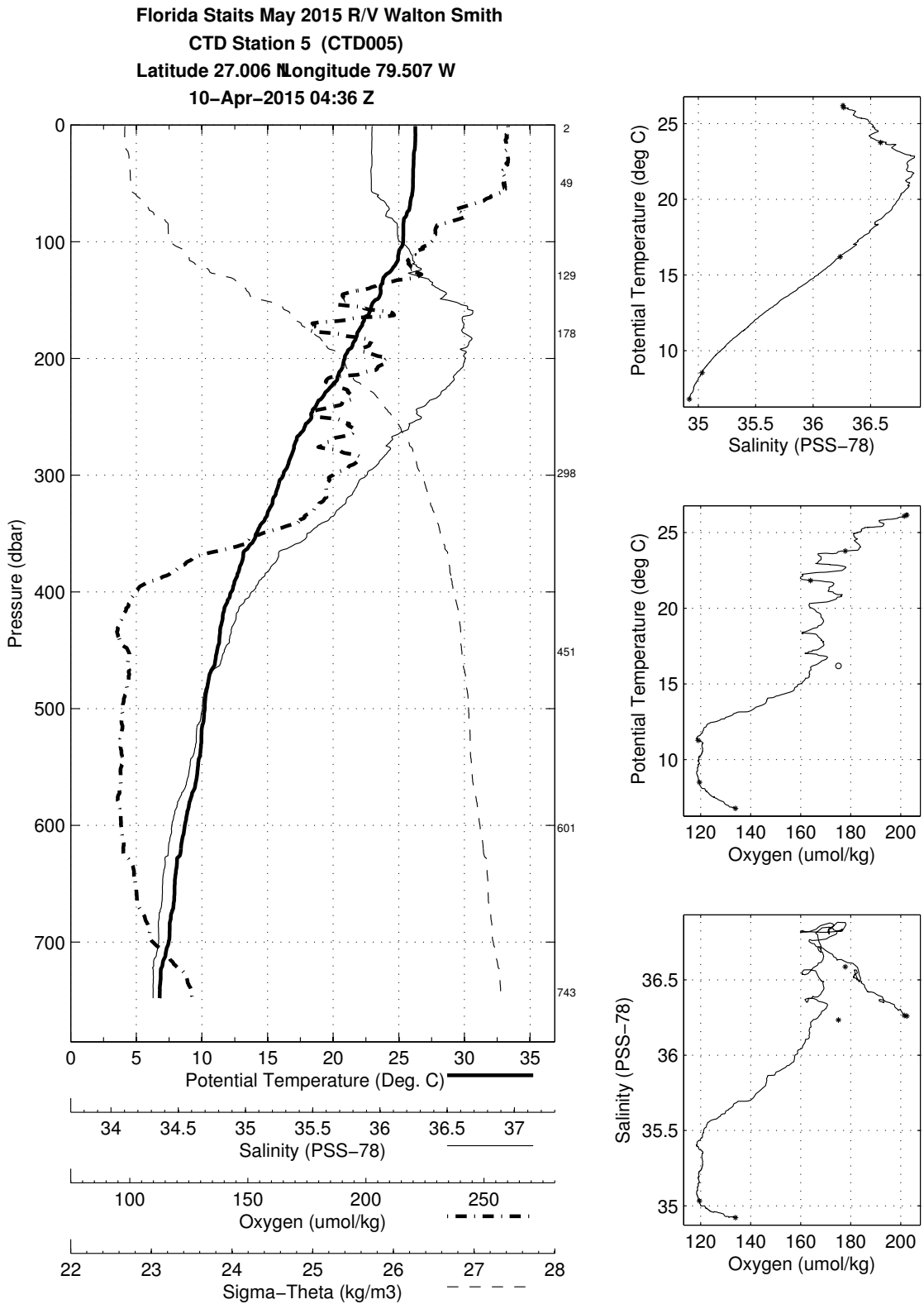
Pressure dbar	Niskin	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}
612	1	6.869	6.810	34.925	133.8
610	2	6.873	7.792	−999.000	−999.000
450	3	9.836	9.783	35.204	121.3
450	4	9.820	10.439	−999.000	−999.000
302	5	14.080	14.036	35.821	134.7
302	6	14.076	14.431	−999.000	−999.000
182	7	18.478	18.446	36.440	151.3
182	8	18.456	18.632	−999.000	−999.000
135	9	19.993	19.968	36.475	175.7
135	10	19.981	20.101	−999.000	−999.000
49	11	25.653	25.642	36.278	212.9
49	12	25.650	25.680	−999.000	−999.000
3	13	27.905	27.905	36.228	199.1
3	14	27.904	27.906	−999.000	−999.000


Florida Staits May 2015 R/V Walton Smith
CTD Station 4 (CTD004)
Latitude 26.988 N Longitude 79.617 W
10−Apr−2015 06:10 Z
Pressure (dbar)
Potential Temperature (Deg. C)
Salinity (PSS−78)
Oxygen (umol/kg)
Sigma−Theta (kg/m3)
Potential Temperature (deg C)
Salinity (PSS−78)
Potential Temperature (deg C)
Oxygen (umol/kg)
Salinity (PSS−78)
Oxygen (umol/kg)

Florida Straits 2015 R/V Walton Smith
CTD Station 5 (CTD005)
Latitude 26.998N Longitude 79.499W
27-May-2015 02:12Z

Pressure dbar	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}	DynHt m^2·s^{-2}	SigT kg·m^{-3}
1	27.983	27.983	36.268	198.9	0.005	23.354
10	27.985	27.983	36.266	199.2	0.045	23.353
20	27.988	27.983	36.266	199.3	0.090	23.353
30	27.941	27.934	36.264	198.9	0.136	23.367
50	26.860	26.849	36.374	204.2	0.223	23.802
75	25.311	25.295	36.436	203.5	0.320	24.336
100	22.858	22.838	36.436	211.4	0.400	25.070
125	21.562	21.537	36.452	206.6	0.468	25.452
150	19.921	19.893	36.476	189.5	0.526	25.917
200	19.023	18.987	36.466	167.8	0.629	26.145
250	17.519	17.476	36.476	183.0	0.714	26.532
300	15.669	15.622	36.094	143.3	0.791	26.676
400	13.438	13.381	35.716	127.6	0.929	26.870
500	10.126	10.067	35.217	115.7	1.045	27.110
600	8.132	8.069	35.008	122.7	1.145	27.270
700	7.026	6.958	34.930	131.6	1.230	27.370

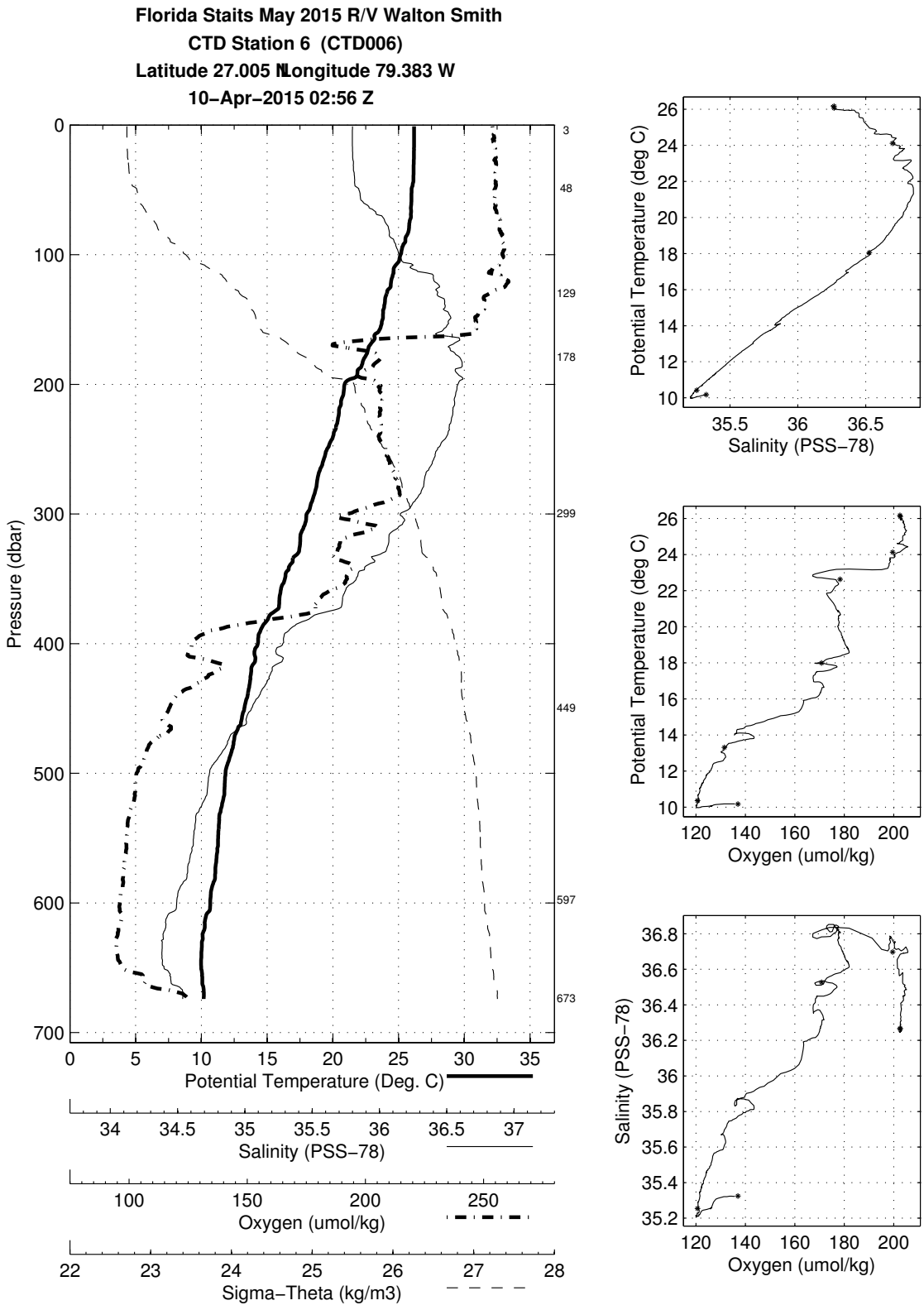
Pressure dbar	Niskin	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}
721	1	6.982	6.912	34.918	132.8
720	2	6.994	8.067	−999.000	−999.000
594	3	8.377	8.314	35.034	122.0
594	4	8.375	9.227	−999.000	−999.000
456	5	11.312	11.253	35.399	122.9
457	6	11.285	11.879	−999.000	−999.000
304	7	15.508	15.460	36.073	142.3
304	8	15.507	15.842	−999.000	−999.000
183	9	19.565	19.531	36.485	181.5
184	10	19.562	19.729	−999.000	−999.000
134	11	21.143	21.117	36.467	195.9
134	12	21.134	21.245	−999.000	−999.000
49	13	26.811	26.800	36.364	204.6
49	14	26.817	26.845	−999.000	−999.000
2	15	27.975	27.974	36.253	199.1
2	16	27.974	27.975	−999.000	−999.000


Florida Staits May 2015 R/V Walton Smith
CTD Station 5 (CTD005)
Latitude 27.006 N Longitude 79.507 W
10−Apr−2015 04:36 Z
Pressure (dbar)
Potential Temperature (Deg. C)
Salinity (PSS−78)
Oxygen (umol/kg)
Sigma−Theta (kg/m3)
Potential Temperature (deg C)
Salinity (PSS−78)
Potential Temperature (deg C)
Oxygen (umol/kg)
Salinity (PSS−78)
Oxygen (umol/kg)

Florida Straits 2015 R/V Walton Smith
CTD Station 6 (CTD006)
Latitude 26.998N Longitude 79.381W
27-May-2015 00:42Z

Pressure dbar	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}	DynHt m^2·s^{-2}	SigT kg·m^{-3}
1	27.879	27.879	36.266	199.6	0.004	23.387
10	27.883	27.880	36.264	199.7	0.045	23.385
20	27.887	27.882	36.265	199.4	0.090	23.385
30	27.873	27.866	36.263	199.3	0.135	23.389
50	27.135	27.123	36.313	202.4	0.224	23.668
75	26.573	26.556	36.408	201.1	0.326	23.921
100	24.240	24.219	36.511	189.1	0.418	24.720
125	22.565	22.540	36.489	196.3	0.494	25.196
150	21.555	21.526	36.576	182.2	0.559	25.549
200	20.374	20.336	36.721	149.7	0.670	25.986
250	18.773	18.728	36.577	150.2	0.766	26.297
300	17.224	17.174	36.401	171.2	0.850	26.548
400	15.021	14.959	35.983	137.1	1.003	26.739
500	12.119	12.052	35.512	123.6	1.134	26.977
600	10.568	10.494	35.278	117.7	1.250	27.083

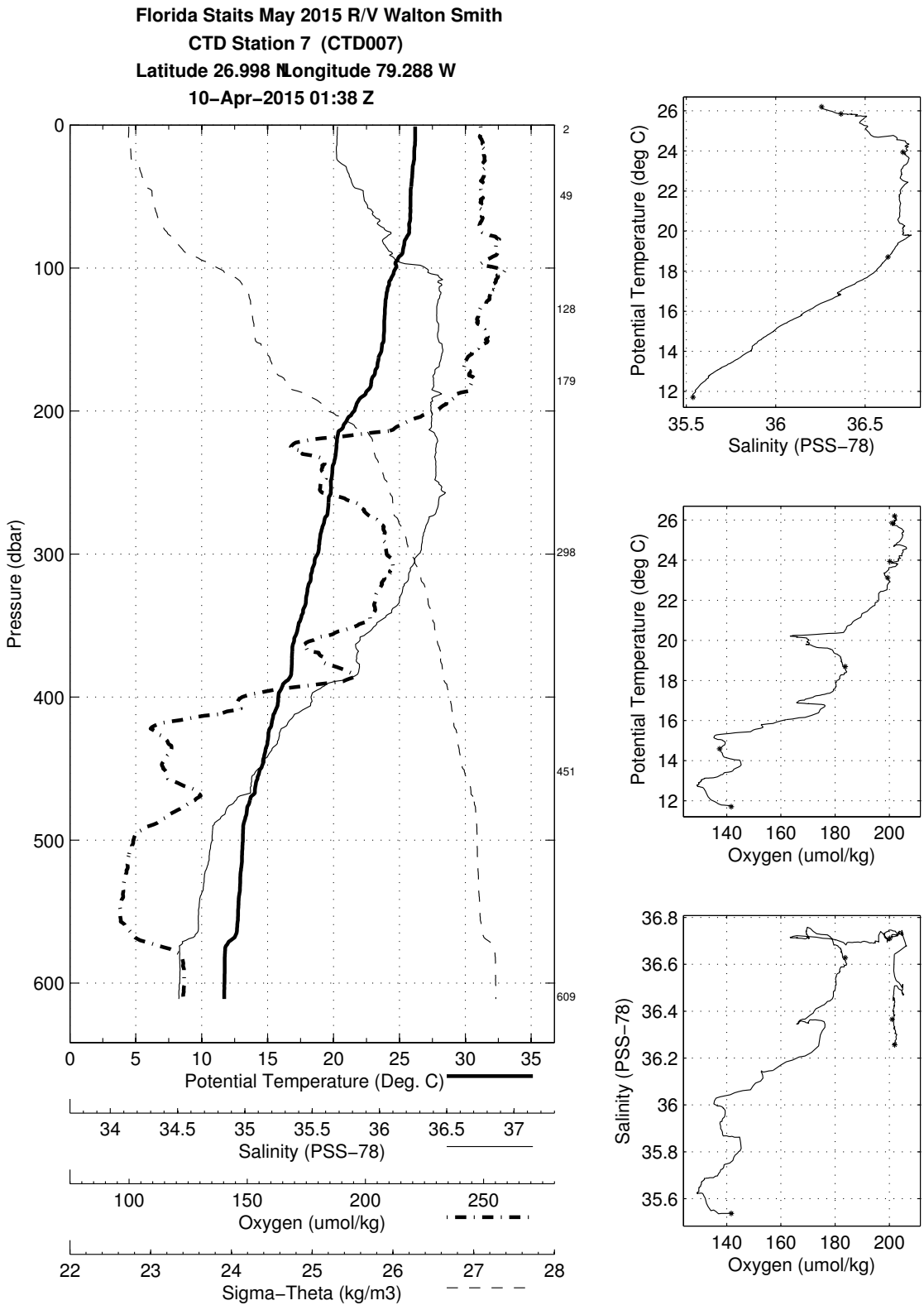
Pressure dbar	Niskin	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}
659	1	10.256	10.176	35.383	141.2
659	2	10.258	11.137	−999.000	−999.000
603	3	10.305	10.232	35.398	140.6
603	4	10.300	11.107	−999.000	−999.000
453	5	13.246	13.182	35.689	128.6
453	6	13.245	13.790	−999.000	−999.000
301	7	17.235	17.184	36.393	170.4
301	8	17.235	17.542	−999.000	−999.000
178	9	20.605	20.572	36.772	154.9
178	10	20.590	20.742	−999.000	−999.000
130	11	22.362	22.336	36.672	177.5
130	12	22.357	22.457	−999.000	−999.000
49	13	27.189	27.178	36.360	202.0
49	14	27.186	27.212	−999.000	−999.000
3	15	27.858	27.857	36.241	199.3
3	16	27.858	27.859	−999.000	−999.000


Florida Staits May 2015 R/V Walton Smith
CTD Station 6 (CTD006)
Latitude 27.005 N Longitude 79.383 W
10−Apr−2015 02:56 Z
Pressure (dbar)
Potential Temperature (Deg. C)
Salinity (PSS−78)
Oxygen (umol/kg)
Sigma−Theta (kg/m3)
Potential Temperature (deg C)
Salinity (PSS−78)
Potential Temperature (deg C)
Oxygen (umol/kg)
Salinity (PSS−78)
Oxygen (umol/kg)

Florida Straits 2015 R/V Walton Smith
CTD Station 7 (CTD007)
Latitude 26.999N Longitude 79.281W
26-May-2015 23:25Z

Pressure dbar	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}	DynHt m^2·s^{-2}	SigT kg·m^{-3}
1	27.864	27.864	36.254	199.0	0.004	23.383
10	27.869	27.867	36.253	199.4	0.045	23.381
20	27.831	27.826	36.250	200.2	0.090	23.392
30	27.782	27.775	36.248	200.3	0.135	23.407
50	27.042	27.031	36.286	202.5	0.223	23.677
75	26.282	26.265	36.395	195.1	0.326	24.003
100	24.372	24.350	36.538	181.5	0.412	24.701
125	23.840	23.813	36.640	174.1	0.492	24.939
150	21.778	21.748	36.552	185.0	0.562	25.469
200	21.265	21.226	36.793	170.0	0.684	25.797
250	19.936	19.889	36.683	180.4	0.791	26.075
300	18.382	18.329	36.582	186.0	0.884	26.402
400	16.252	16.187	36.246	175.6	1.043	26.663
500	13.946	13.873	35.862	157.4	1.186	26.880
600	12.153	12.072	35.587	144.4	1.308	27.031

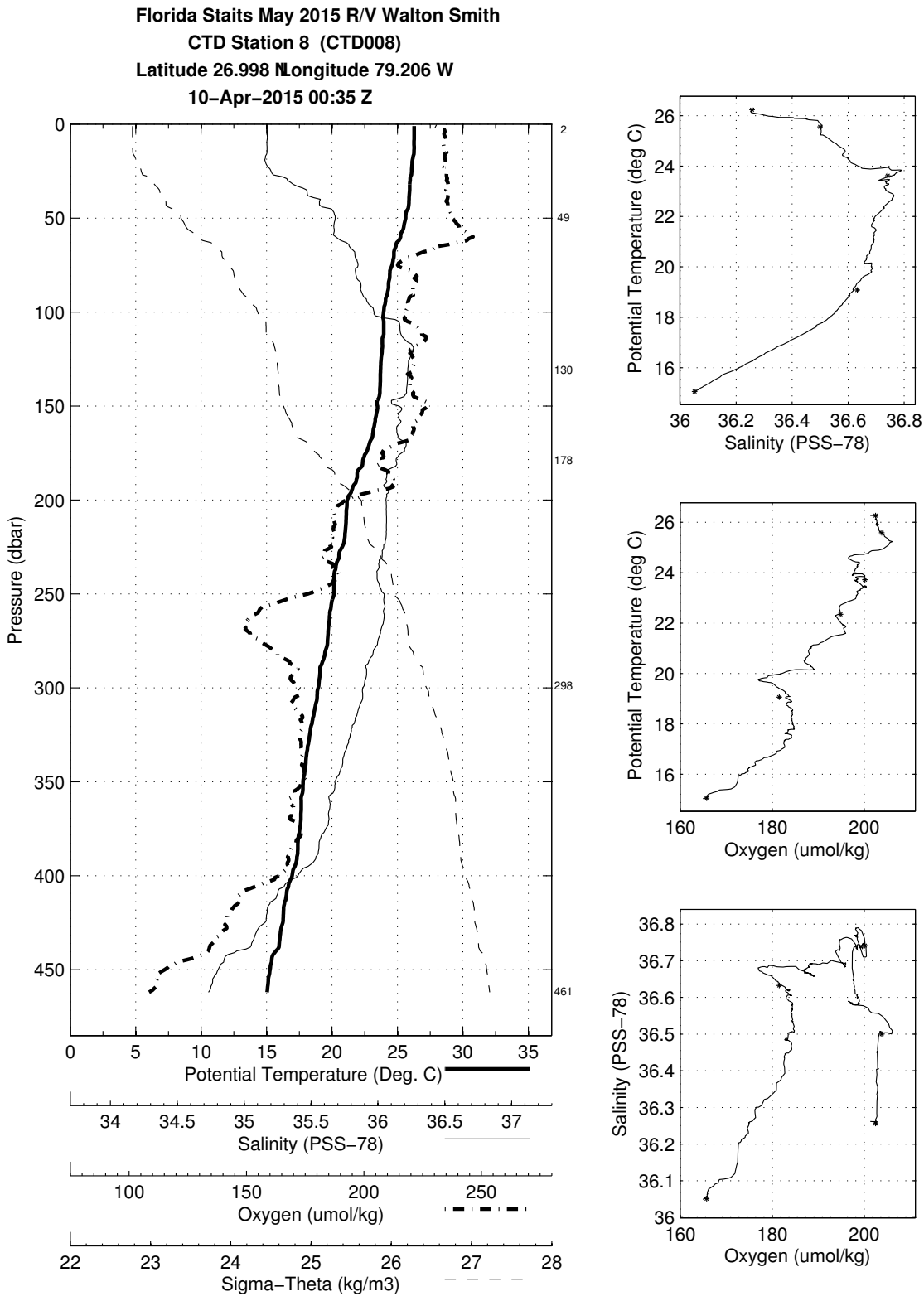
Pressure dbar	Niskin	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}
607	1	12.128	12.046	35.567	145.0
606	2	12.121	12.039	36.139	−999.000
455	3	15.496	15.994	−999.000	−999.000
456	4	15.478	15.976	−999.000	−999.000
303	5	18.006	17.953	36.534	186.1
303	6	18.004	18.300	−999.000	−999.000
180	7	21.425	21.390	36.530	186.9
180	8	21.425	21.571	−999.000	−999.000
130	9	24.150	24.123	36.614	175.1
130	10	24.147	24.235	−999.000	−999.000
51	11	27.281	27.269	36.272	202.6
51	12	27.282	27.309	−999.000	−999.000
3	13	27.846	27.846	36.249	199.1
3	14	27.844	27.846	−999.000	−999.000


Florida Staits May 2015 R/V Walton Smith
CTD Station 7 (CTD007)
Latitude 26.998 N Longitude 79.288 W
10−Apr−2015 01:38 Z
Pressure (dbar)
Potential Temperature (Deg. C)
Salinity (PSS−78)
Oxygen (umol/kg)
Sigma−Theta (kg/m3)
Potential Temperature (deg C)
Salinity (PSS−78)
Potential Temperature (deg C)
Oxygen (umol/kg)
Salinity (PSS−78)
Oxygen (umol/kg)

Florida Straits 2015 R/V Walton Smith
CTD Station 8 (CTD008)
Latitude 27.002N Longitude 79.206W
26-May-2015 21:57Z

Pressure dbar	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}	DynHt m^2·s^{-2}	SigT kg·m^{-3}
1	27.821	27.821	36.249	199.9	0.004	23.393
10	27.801	27.799	36.252	200.1	0.045	23.402
20	27.654	27.650	36.274	200.8	0.089	23.468
30	27.547	27.540	36.277	201.0	0.133	23.505
50	27.302	27.290	36.262	201.2	0.221	23.575
75	26.497	26.480	36.367	198.9	0.326	23.914
100	24.970	24.949	36.643	190.4	0.419	24.600
125	24.159	24.132	36.708	182.1	0.501	24.895
150	23.455	23.424	36.720	191.7	0.576	25.115
200	21.696	21.656	36.708	193.0	0.710	25.613
250	20.420	20.373	36.691	188.9	0.825	25.952
300	18.223	18.170	36.564	185.9	0.918	26.428
400	16.420	16.354	36.277	176.5	1.078	26.648

Pressure dbar	Niskin	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}
479	1	15.422	15.347	36.100	168.5
479	2	15.389	15.914	−999.000	−999.000
300	3	18.215	18.163	36.556	185.6
300	4	18.212	18.502	−999.000	−999.000
180	5	22.210	22.173	36.679	196.7
180	6	22.212	22.352	−999.000	−999.000
131	7	23.893	23.865	36.742	185.8
131	8	23.893	23.985	−999.000	−999.000
50	9	27.220	27.208	36.307	199.9
50	10	27.223	27.249	−999.000	−999.000
2	11	27.832	27.833	−999.000	−999.000
2	12	27.830	27.830	36.236	201.3

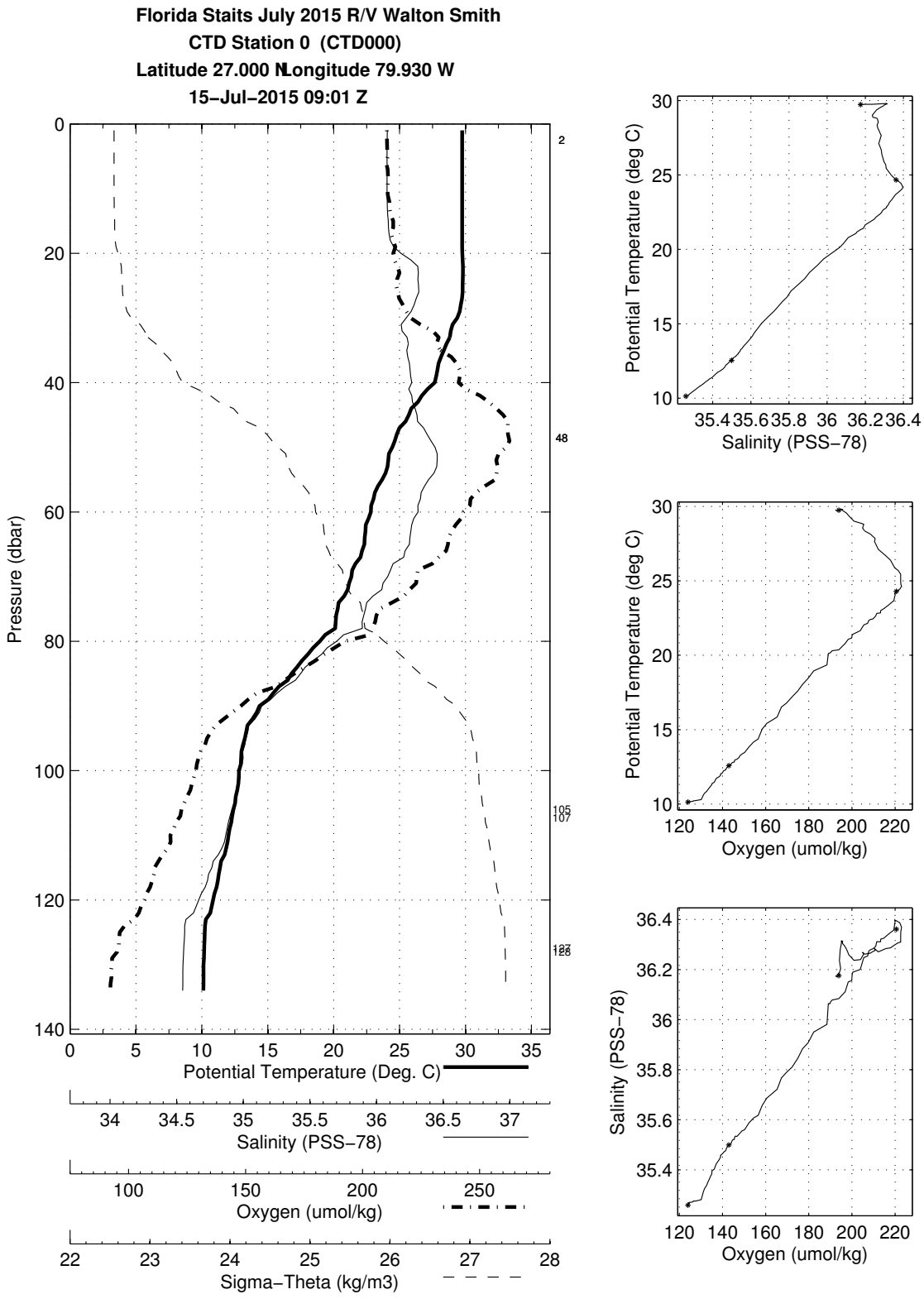

Florida Staits May 2015 R/V Walton Smith
CTD Station 8 (CTD008)
Latitude 26.998 N Longitude 79.206 W
10−Apr−2015 00:35 Z
Pressure (dbar)
Potential Temperature (Deg. C)
Salinity (PSS−78)
Oxygen (umol/kg)
Sigma−Theta (kg/m3)
Potential Temperature (deg C)
Salinity (PSS−78)
Potential Temperature (deg C)
Oxygen (umol/kg)
Salinity (PSS−78)
Oxygen (umol/kg)

A.4 FC1507

Florida Straits 2015 R/V Walton Smith
CTD Station 0 (CTD000)
Latitude 27.000N Longitude 79.930W
15-Jul-2015 09:01Z

Pressure dbar	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}	DynHt m^2·s^{-2}	SigT kg·m^{-3}
1	29.751	29.751	36.175	192.7	0.005	22.693
10	29.750	29.748	36.174	192.8	0.052	22.693
20	29.756	29.751	36.235	194.2	0.103	22.738
30	29.373	29.366	36.259	198.5	0.154	22.886
50	24.458	24.448	36.387	222.2	0.238	24.558
75	20.320	20.306	36.078	190.9	0.311	25.503
100	12.829	12.816	35.521	145.4	0.354	26.834
125	10.234	10.219	35.275	126.5	0.381	27.129

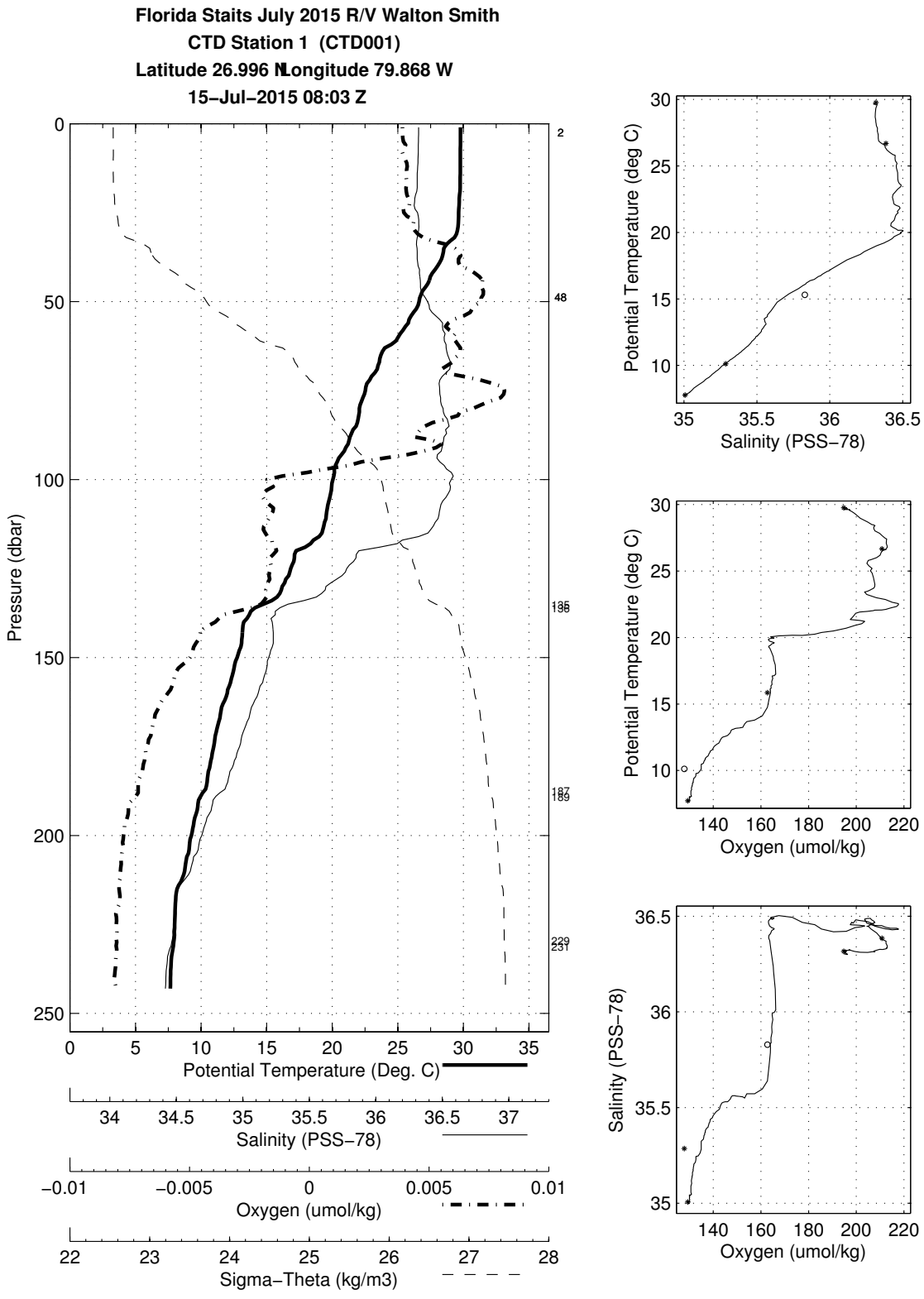
Pressure dbar	Niskin	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}
128	1	10.147	10.132	35.259	124.0
127	2	10.141	10.318	−999.000	−999.000
106	3	12.559	12.544	35.499	142.9
107	4	12.480	12.616	−999.000	−999.000
49	5	24.685	24.675	36.361	220.6
49	6	24.701	24.733	−999.000	−999.000
2	7	29.730	29.729	36.176	193.9
2	8	29.727	29.728	−999.000	−999.000


Florida Staits July 2015 R/V Walton Smith
CTD Station 0 (CTD000)
Latitude 27.000 N Longitude 79.930 W
15−Jul−2015 09:01 Z
Pressure (dbar)
Potential Temperature (Deg. C)
Salinity (PSS−78)
Oxygen (umol/kg)
Sigma−Theta (kg/m3)
Potential Temperature (deg C)
Salinity (PSS−78)
Potential Temperature (deg C)
Oxygen (umol/kg)
Salinity (PSS−78)
Oxygen (umol/kg)

Florida Straits 2015 R/V Walton Smith
CTD Station 1 (CTD001)
Latitude 26.996N Longitude 79.868W
15-Jul-2015 08:03Z

Pressure dbar	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}	DynHt m^2·s^{-2}	SigT kg·m^{-3}
1	29.774	29.774	36.322	194.7	0.005	22.795
10	29.767	29.765	36.319	195.3	0.051	22.796
20	29.711	29.706	36.306	195.7	0.101	22.806
30	29.548	29.541	36.322	197.4	0.151	22.875
50	26.628	26.617	36.369	212.5	0.241	23.872
75	22.532	22.517	36.432	217.7	0.324	25.160
100	20.070	20.052	36.493	164.1	0.387	25.888
125	16.855	16.835	35.946	164.8	0.436	26.280
150	12.765	12.744	35.538	146.7	0.473	26.861
200	9.286	9.264	35.187	131.7	0.524	27.222

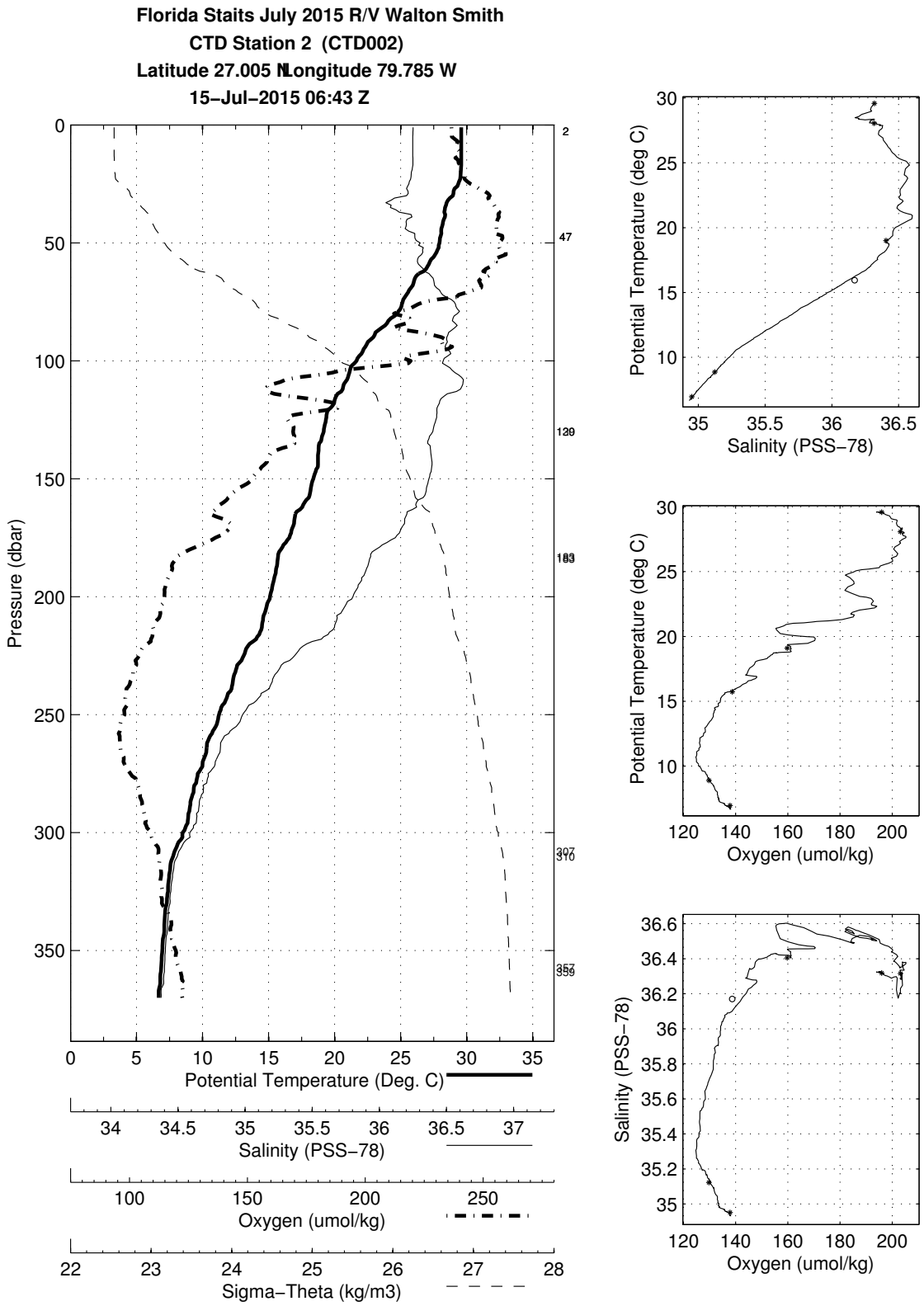
Pressure dbar	Niskin	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}
231	1	7.793	7.769	35.007	129.4
230	2	7.892	8.235	−999.000	−999.000
187	3	10.138	10.116	35.286	127.9
189	4	10.006	10.268	−999.000	−999.000
135	5	15.333	15.312	35.829	162.7
136	6	14.890	15.046	−999.000	−999.000
49	7	26.698	26.687	36.385	210.8
49	8	26.696	26.723	−999.000	−999.000
3	9	29.767	29.767	36.316	194.7
3	10	29.766	29.767	−999.000	−999.000


Florida Staits July 2015 R/V Walton Smith
CTD Station 1 (CTD001)
Latitude 26.996 N Longitude 79.868 W
15−Jul−2015 08:03 Z
Pressure (dbar)
Potential Temperature (Deg. C)
Salinity (PSS−78)
Oxygen (umol/kg)
Sigma−Theta (kg/m3)
Potential Temperature (deg C)
Salinity (PSS−78)
Oxygen (umol/kg)

Florida Straits 2015 R/V Walton Smith
CTD Station 2 (CTD002)
Latitude 27.005N Longitude 79.785W
15-Jul-2015 06:43Z

Pressure dbar	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}	DynHt m^2·s^{-2}	SigT kg·m^{-3}
1	29.590	29.590	36.325	194.0	0.005	22.860
10	29.588	29.585	36.323	194.9	0.050	22.860
20	29.551	29.546	36.315	196.4	0.100	22.868
30	28.957	28.950	36.289	201.9	0.149	23.049
50	27.953	27.942	36.364	203.9	0.241	23.440
75	25.161	25.145	36.551	188.3	0.341	24.470
100	21.675	21.656	36.491	185.5	0.416	25.448
125	19.365	19.342	36.451	159.9	0.471	26.042
150	18.406	18.379	36.413	152.3	0.519	26.260
200	15.136	15.105	35.992	134.3	0.596	26.714
250	11.274	11.243	35.384	126.0	0.658	27.030
300	8.521	8.489	35.092	131.5	0.706	27.271

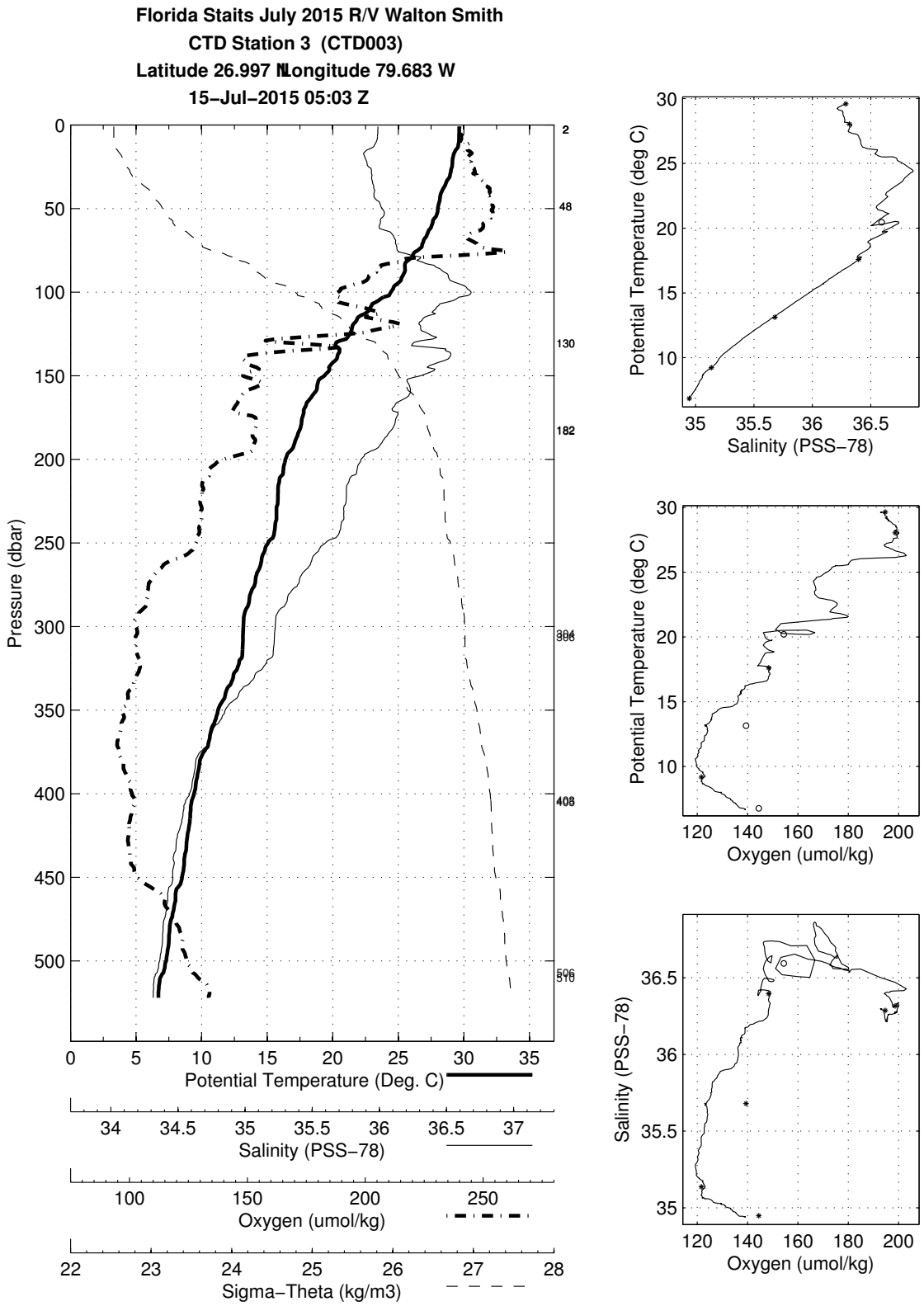
Pressure dbar	Niskin	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}
359	1	6.989	6.955	34.951	137.9
357	2	7.002	7.547	−999.000	−999.000
308	3	8.902	8.868	35.123	129.8
310	4	8.876	9.321	−999.000	−999.000
183	5	15.976	15.946	36.170	138.7
184	6	15.889	16.090	−999.000	−999.000
130	7	19.029	19.006	36.405	159.8
130	8	18.968	19.090	−999.000	−999.000
47	9	28.057	28.046	36.316	203.2
47	10	28.054	28.078	−999.000	−999.000
3	11	29.578	29.577	36.318	196.0
3	12	29.590	29.591	−999.000	−999.000


Florida Staits July 2015 R/V Walton Smith
CTD Station 2 (CTD002)
Latitude 27.005 N Longitude 79.785 W
15−Jul−2015 06:43 Z
Pressure (dbar)
Potential Temperature (Deg. C)
Salinity (PSS−78)
Oxygen (umol/kg)
Sigma−Theta (kg/m3)
Potential Temperature (deg C)
Salinity (PSS−78)
Potential Temperature (deg C)
Oxygen (umol/kg)
Salinity (PSS−78)
Oxygen (umol/kg)

Florida Straits 2015 R/V Walton Smith
CTD Station 3 (CTD003)
Latitude 26.997N Longitude 79.683W
15-Jul-2015 05:03Z

Pressure dbar	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}	DynHt m^2·s^{-2}	SigT kg·m^{-3}
1	29.639	29.639	36.299	192.8	0.005	22.824
10	29.616	29.614	36.290	193.7	0.050	22.825
20	29.146	29.141	36.223	195.6	0.100	22.936
30	28.949	28.942	36.263	196.6	0.149	23.033
50	28.023	28.011	36.326	200.0	0.242	23.388
75	26.492	26.475	36.416	202.1	0.349	23.952
100	24.450	24.429	36.863	166.7	0.436	24.924
125	21.342	21.317	36.607	169.2	0.503	25.630
150	19.381	19.353	36.557	146.3	0.555	26.120
200	16.417	16.385	36.197	142.2	0.639	26.579
250	15.101	15.062	35.982	136.2	0.713	26.715
300	13.222	13.180	35.678	123.2	0.778	26.882
400	9.458	9.413	35.160	122.5	0.890	27.176
500	7.344	7.295	34.979	134.1	0.979	27.361

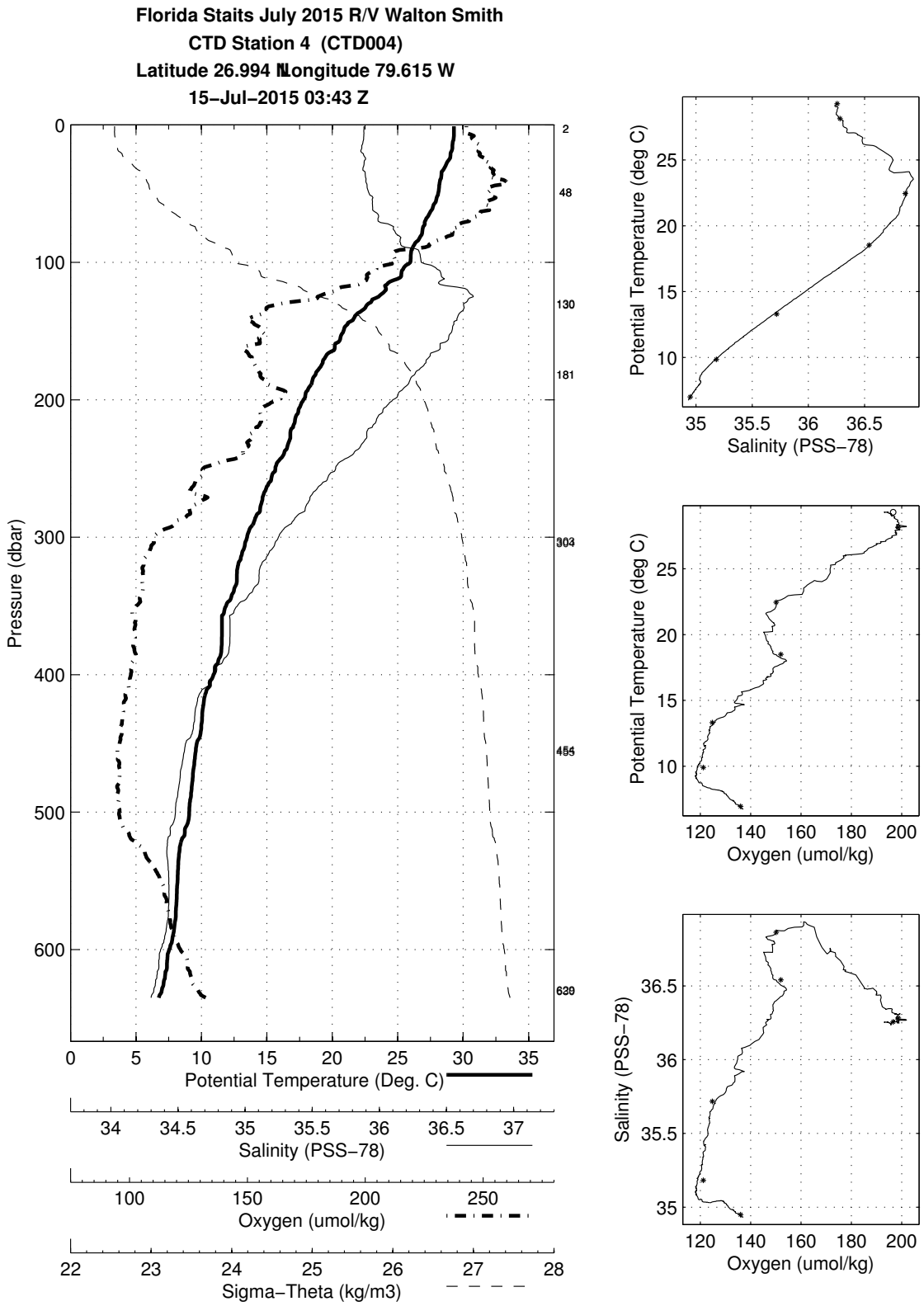
Pressure dbar	Niskin	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}
510	1	6.902	6.853	34.948	144.5
507	2	7.016	7.782	−999.000	−999.000
404	3	9.270	9.224	35.137	121.7
405	4	9.264	9.834	−999.000	−999.000
304	5	13.172	13.129	35.680	139.4
306	6	13.157	13.530	−999.000	−999.000
182	7	17.614	17.583	36.396	148.4
183	8	17.611	17.795	−999.000	−999.000
130	9	20.475	20.450	36.594	154.4
131	10	20.439	20.552	−999.000	−999.000
49	11	28.044	28.033	36.317	198.6
49	12	28.042	28.066	−999.000	−999.000
3	13	29.598	29.597	36.286	194.7
3	14	29.602	29.604	−999.000	−999.000
3	15	29.600	29.601	−999.000	−999.000
3	16	29.600	29.601	−999.000	−999.000
3	17	29.601	29.602	−999.000	−999.000


Florida Staits July 2015 R/V Walton Smith
CTD Station 3 (CTD003)
Latitude 26.997 N Longitude 79.683 W
15−Jul−2015 05:03 Z
Pressure (dbar)
Potential Temperature (Deg. C)
Salinity (PSS−78)
Oxygen (umol/kg)
Sigma−Theta (kg/m3)
Potential Temperature (deg C)
Salinity (PSS−78)
Potential Temperature (deg C)
Oxygen (umol/kg)
Salinity (PSS−78)
Oxygen (umol/kg)

Florida Straits 2015 R/V Walton Smith
CTD Station 4 (CTD004)
Latitude 26.994N Longitude 79.615W
15-Jul-2015 03:43Z

Pressure dbar	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}	DynHt m^2·s^{-2}	SigT kg·m^{-3}
1	29.300	29.300	36.255	193.0	0.005	22.906
10	29.269	29.267	36.253	194.3	0.049	22.916
20	29.068	29.063	36.239	195.8	0.099	22.974
30	28.652	28.645	36.253	198.5	0.147	23.124
50	28.096	28.084	36.287	197.8	0.239	23.335
75	26.935	26.918	36.437	190.6	0.348	23.827
100	25.985	25.963	36.611	176.8	0.445	24.261
125	23.564	23.537	36.935	161.1	0.525	25.244
150	20.885	20.856	36.801	149.1	0.585	25.905
200	17.820	17.785	36.433	152.6	0.679	26.423
250	15.695	15.656	36.079	136.4	0.757	26.657
300	13.531	13.488	35.723	126.2	0.825	26.854
400	10.968	10.918	35.324	121.0	0.944	27.043
500	9.125	9.069	35.084	118.5	1.047	27.172
600	7.592	7.531	34.992	131.6	1.137	27.337

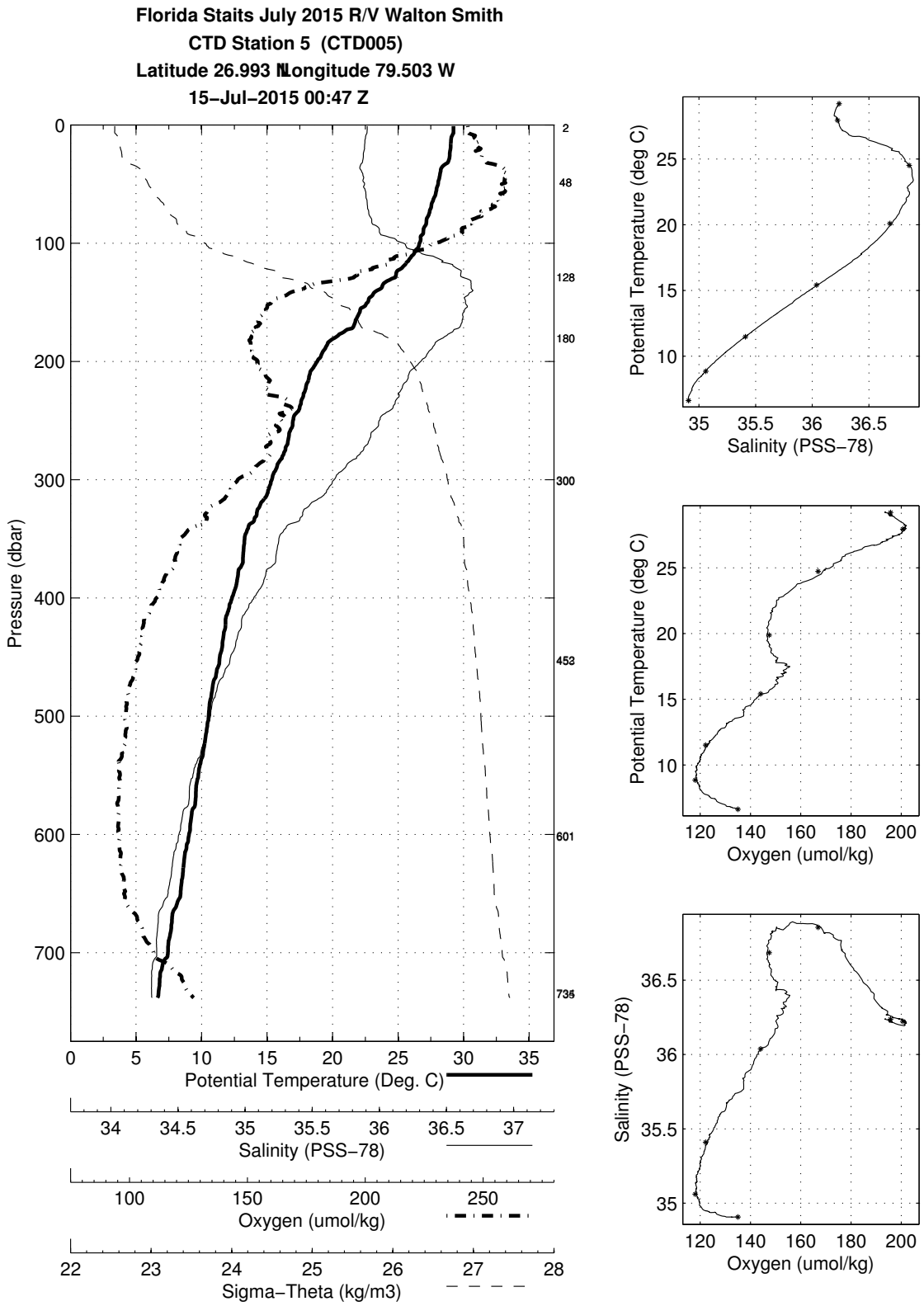
Pressure dbar	Niskin	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}
630	1	7.053	6.992	34.949	136.0
629	2	7.075	8.016	−999.000	−999.000
455	3	9.900	9.846	35.182	121.2
456	4	9.885	10.510	−999.000	−999.000
303	5	13.327	13.284	35.717	124.7
304	6	13.305	13.674	−999.000	−999.000
181	7	18.567	18.535	36.540	152.0
182	8	18.561	18.735	−999.000	−999.000
130	9	22.474	22.447	36.863	150.1
130	10	22.445	22.544	−999.000	−999.000
49	11	28.156	28.144	36.282	198.6
49	12	28.162	28.186	−999.000	−999.000
3	13	29.276	29.276	36.256	196.6
3	14	29.279	29.280	−999.000	−999.000


Florida Staits July 2015 R/V Walton Smith
CTD Station 4 (CTD004)
Latitude 26.994 N Longitude 79.615 W
15−Jul−2015 03:43 Z
Pressure (dbar)
Potential Temperature (Deg. C)
Salinity (PSS−78)
Oxygen (umol/kg)
Sigma−Theta (kg/m3)
Potential Temperature (deg C)
Salinity (PSS−78)
Potential Temperature (deg C)
Oxygen (umol/kg)
Salinity (PSS−78)
Oxygen (umol/kg)

Florida Straits 2015 R/V Walton Smith
CTD Station 5 (CTD005)
Latitude 26.993N Longitude 79.503W
15-Jul-2015 00:47Z

Pressure dbar	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}	DynHt m^2·s^{-2}	SigT kg·m^{-3}
1	29.231	29.231	36.240	193.5	0.005	22.918
10	29.079	29.076	36.229	194.9	0.049	22.961
20	29.006	29.001	36.223	196.3	0.098	22.983
30	28.864	28.857	36.211	197.2	0.147	23.022
50	28.060	28.048	36.223	200.8	0.240	23.299
75	27.387	27.369	36.249	196.8	0.352	23.540
100	26.650	26.627	36.465	186.4	0.458	23.941
125	24.894	24.867	36.818	169.4	0.549	24.757
150	22.707	22.676	36.846	151.2	0.620	25.428
200	18.856	18.820	36.570	148.3	0.729	26.268
250	17.023	16.981	36.313	153.4	0.814	26.527
300	15.406	15.359	36.034	144.0	0.890	26.690
400	12.376	12.322	35.538	126.5	1.020	26.945
500	10.602	10.541	35.270	120.0	1.135	27.069
600	9.109	9.042	35.076	118.5	1.241	27.171
700	7.502	7.432	34.939	125.9	1.337	27.309

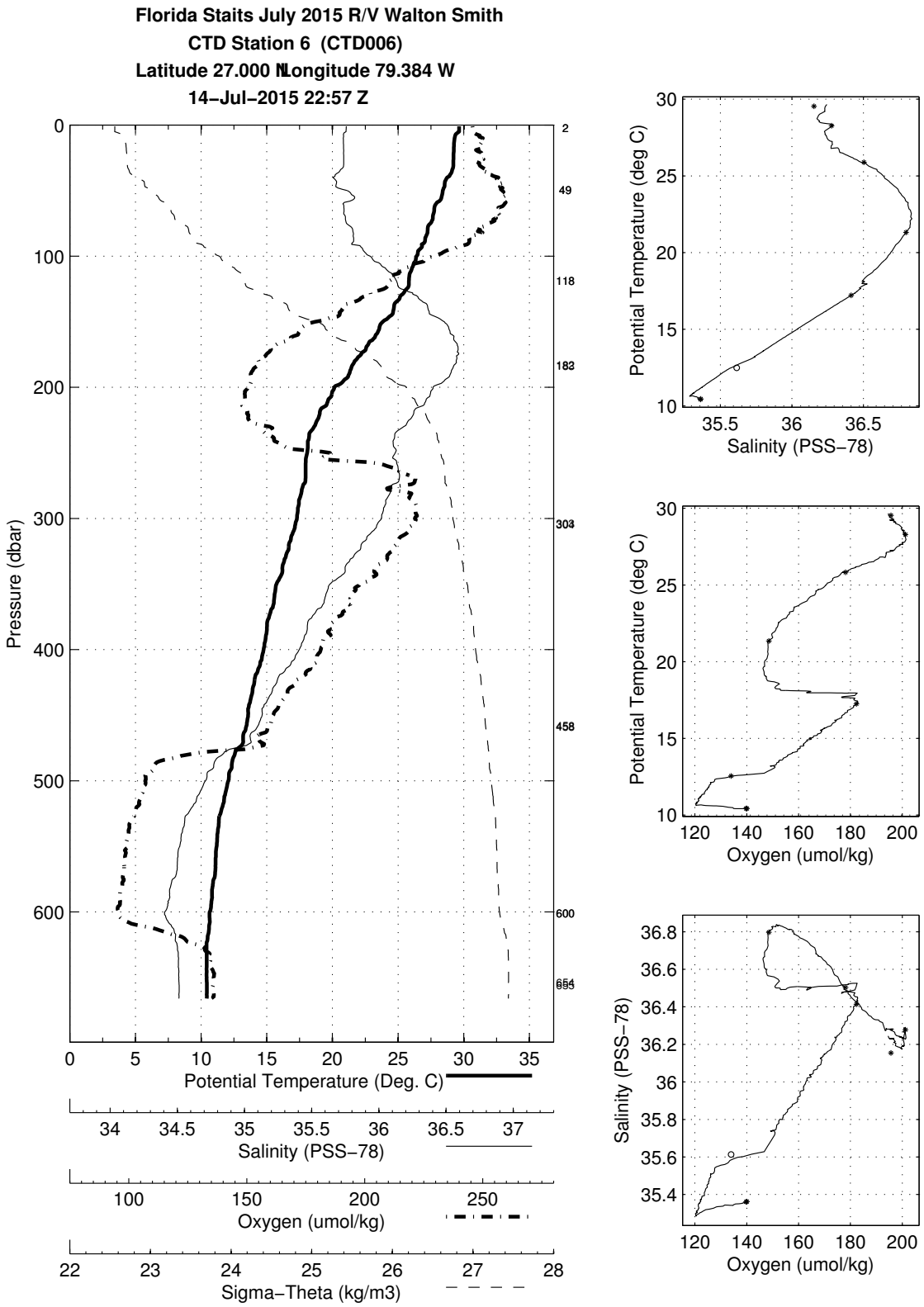
Pressure dbar	Niskin	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}
735	1	6.698	6.628	34.908	135.0
735	2	6.677	7.783	−999.000	−999.000
601	3	8.918	8.851	35.060	118.0
602	4	8.901	9.749	−999.000	−999.000
452	5	11.540	11.482	35.410	122.1
453	6	11.521	12.106	−999.000	−999.000
300	7	15.454	15.407	36.038	144.0
301	8	15.461	15.793	−999.000	−999.000
180	9	20.128	20.095	36.685	147.4
181	10	20.102	20.262	−999.000	−999.000
129	11	24.541	24.514	36.855	166.9
129	12	24.555	24.640	−999.000	−999.000
49	13	27.951	27.940	36.223	200.6
49	14	27.953	27.977	−999.000	−999.000
3	15	29.206	29.205	36.237	195.7
3	16	29.210	29.211	−999.000	−999.000


Florida Staits July 2015 R/V Walton Smith
CTD Station 5 (CTD005)
Latitude 26.993 N Longitude 79.503 W
15−Jul−2015 00:47 Z
Pressure (dbar)
Potential Temperature (Deg. C)
Salinity (PSS−78)
Oxygen (umol/kg)
Sigma−Theta (kg/m3)
Potential Temperature (deg C)
Salinity (PSS−78)
Potential Temperature (deg C)
Oxygen (umol/kg)
Salinity (PSS−78)
Oxygen (umol/kg)

Florida Straits 2015 R/V Walton Smith
CTD Station 6 (CTD006)
Latitude 27.000N Longitude 79.384W
14-Jul-2015 22:57Z

Pressure dbar	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}	DynHt m^2·s^{-2}	SigT kg·m^{-3}
1	29.651	29.651	36.245	194.5	0.005	22.779
10	29.307	29.304	36.229	196.7	0.050	22.885
20	29.243	29.238	36.231	195.6	0.100	22.908
30	29.213	29.205	36.231	195.9	0.149	22.919
50	28.418	28.406	36.250	200.7	0.246	23.201
75	27.482	27.464	36.246	197.8	0.360	23.507
100	26.424	26.402	36.371	186.2	0.465	23.941
125	25.674	25.646	36.536	175.9	0.560	24.303
150	23.862	23.831	36.762	161.5	0.644	25.027
200	20.178	20.140	36.703	147.5	0.769	26.024
250	18.114	18.071	36.503	164.7	0.861	26.406
300	17.349	17.298	36.431	182.4	0.944	26.541
400	14.825	14.764	35.997	162.7	1.090	26.793
500	12.144	12.077	35.502	126.0	1.219	26.964
600	10.728	10.654	35.286	120.4	1.336	27.061

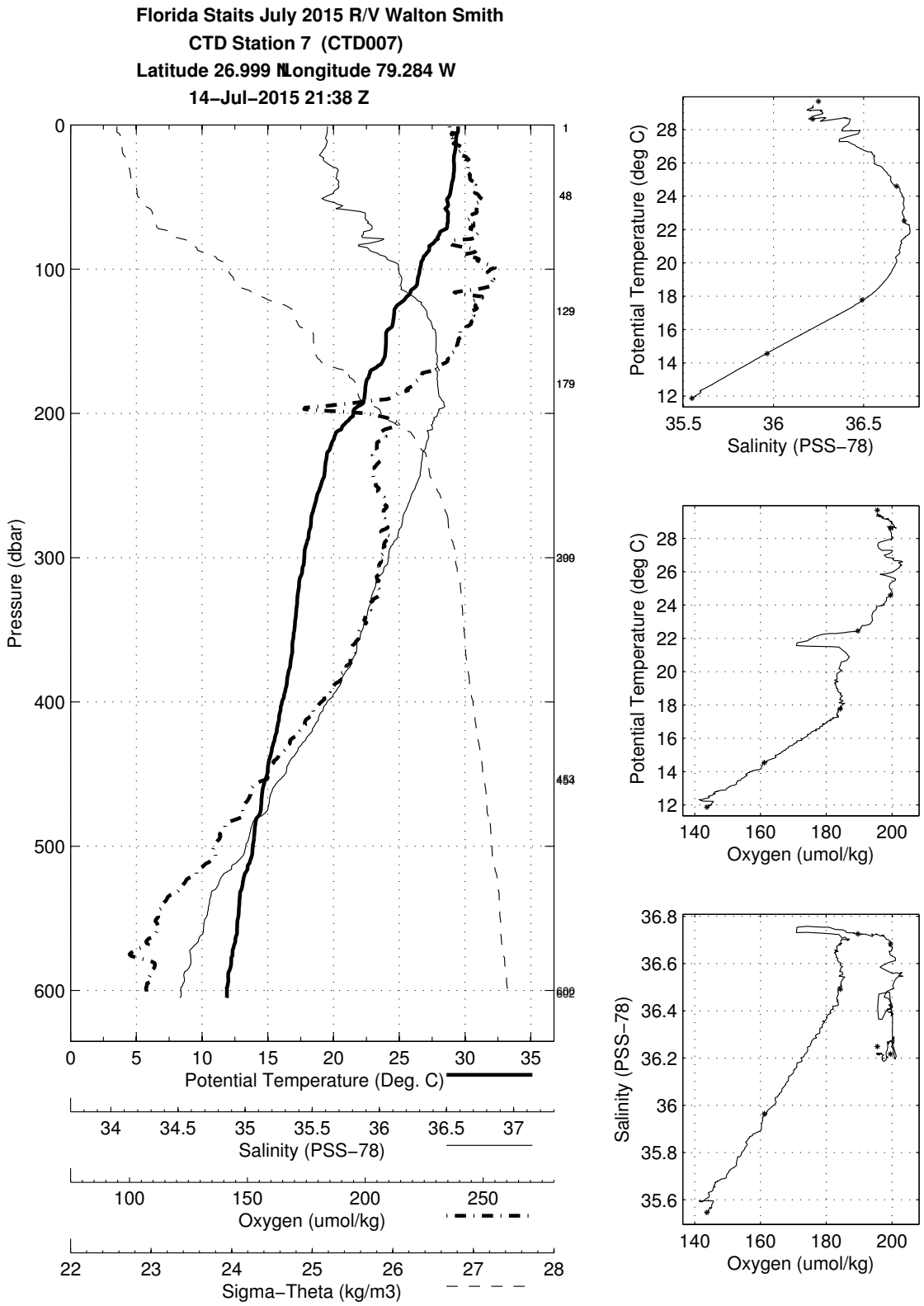
Pressure dbar	Niskin	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}
656	1	10.506	10.425	35.360	139.7
654	2	10.507	11.373	−999.000	−999.000
601	3	10.530	10.456	35.363	140.1
601	4	10.520	11.317	−999.000	−999.000
458	5	12.547	12.485	35.613	134.0
459	6	12.544	13.112	−999.000	−999.000
304	7	17.265	17.214	36.414	182.3
304	8	17.252	17.561	−999.000	−999.000
183	9	21.352	21.316	36.797	148.5
184	10	21.314	21.465	−999.000	−999.000
119	11	25.918	25.892	36.503	178.1
119	12	25.929	26.000	−999.000	−999.000
50	13	28.279	28.268	36.277	201.2
50	14	28.280	28.304	−999.000	−999.000
3	15	29.539	29.538	36.154	195.7
3	16	29.510	29.511	−999.000	−999.000


Florida Staits July 2015 R/V Walton Smith
CTD Station 6 (CTD006)
Latitude 27.000 N Longitude 79.384 W
14−Jul−2015 22:57 Z
Pressure (dbar)
Potential Temperature (Deg. C)
Salinity (PSS−78)
Oxygen (umol/kg)
Sigma−Theta (kg/m3)
Potential Temperature (deg C)
Salinity (PSS−78)
Oxygen (umol/kg)

Florida Straits 2015 R/V Walton Smith
CTD Station 7 (CTD007)
Latitude 26.999N Longitude 79.284W
14-Jul-2015 21:38Z

Pressure dbar	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}	DynHt m^2·s^{-2}	SigT kg·m^{-3}
1	29.469	29.468	36.222	195.5	0.005	22.824
10	29.321	29.319	36.215	196.1	0.050	22.869
20	29.209	29.204	36.190	197.3	0.100	22.889
30	29.177	29.170	36.263	198.6	0.149	22.956
50	28.772	28.760	36.211	200.6	0.247	23.054
75	28.081	28.063	36.386	200.4	0.364	23.416
100	26.587	26.564	36.547	202.5	0.468	24.023
125	24.869	24.842	36.655	200.0	0.561	24.641
150	24.022	23.990	36.719	197.0	0.641	24.946
200	21.547	21.508	36.727	181.3	0.779	25.668
250	19.068	19.023	36.626	183.0	0.880	26.259
300	17.821	17.769	36.500	183.7	0.967	26.479
400	16.143	16.079	36.220	173.8	1.125	26.668
500	13.934	13.861	35.847	155.7	1.266	26.871
600	11.969	11.889	35.551	144.2	1.390	27.038

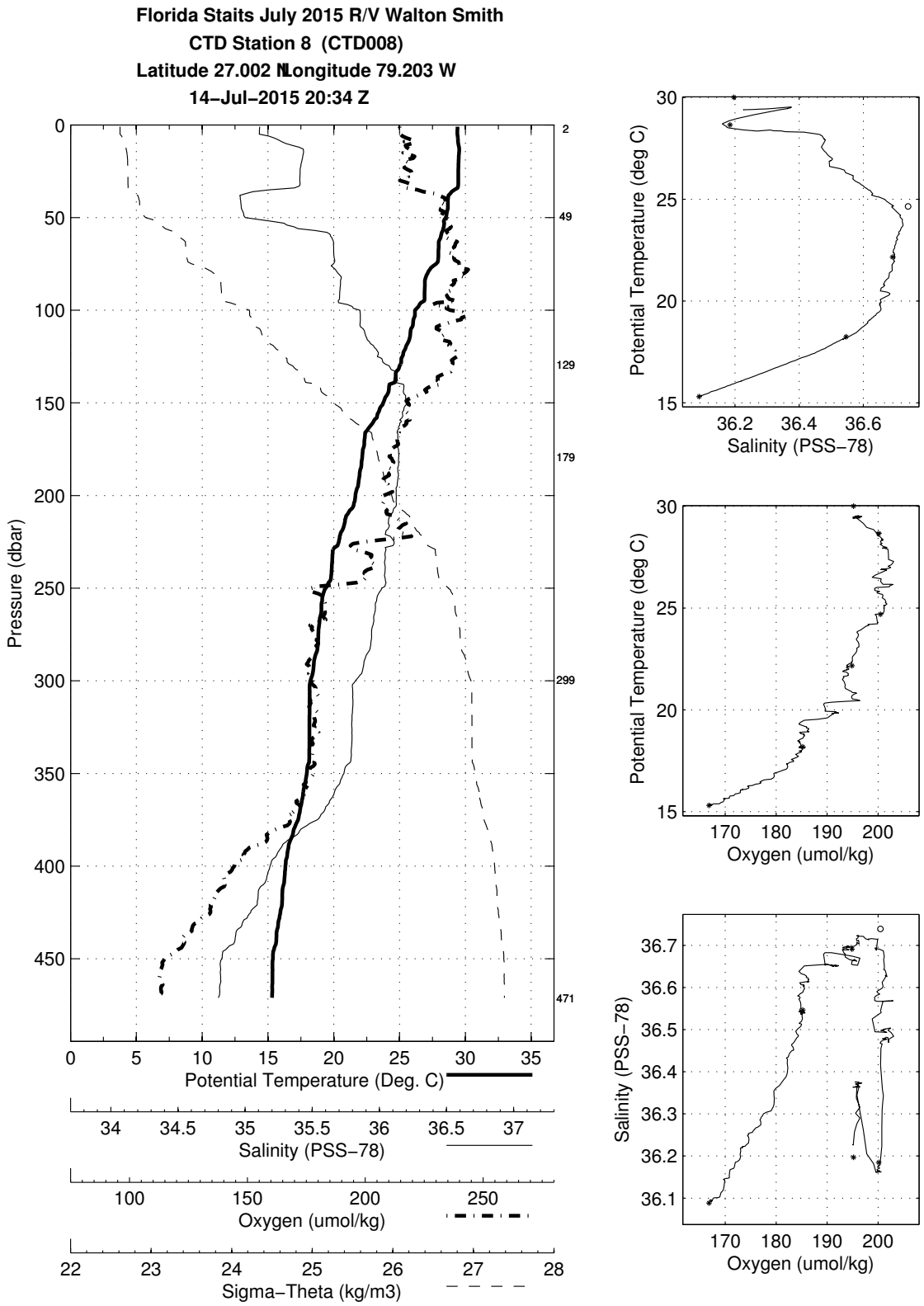
Pressure dbar	Niskin	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}
602	1	11.950	11.870	35.546	143.7
600	2	11.952	12.707	−999.000	−999.000
454	3	14.628	14.560	35.965	161.2
454	4	14.627	15.143	−999.000	−999.000
300	5	17.823	17.771	36.492	184.3
300	6	17.823	18.119	−999.000	−999.000
179	7	22.557	22.521	36.726	189.6
180	8	22.560	22.696	−999.000	−999.000
129	9	24.625	24.597	36.684	199.5
129	10	24.624	24.709	−999.000	−999.000
49	11	28.640	28.628	36.217	199.5
49	12	28.639	28.661	−999.000	−999.000
2	13	29.693	29.693	36.249	195.5
2	14	29.703	29.704	−999.000	−999.000


Florida Staits July 2015 R/V Walton Smith
CTD Station 7 (CTD007)
Latitude 26.999 N Longitude 79.284 W
14−Jul−2015 21:38 Z
Pressure (dbar)
Potential Temperature (Deg. C)
Salinity (PSS−78)
Oxygen (umol/kg)
Sigma−Theta (kg/m3)
Potential Temperature (deg C)
Salinity (PSS−78)
Potential Temperature (deg C)
Oxygen (umol/kg)
Salinity (PSS−78)
Oxygen (umol/kg)

Florida Straits 2015 R/V Walton Smith
CTD Station 8 (CTD008)
Latitude 27.002N Longitude 79.203W
14-Jul-2015 20:34Z

Pressure dbar	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}	DynHt m^2·s^{-2}	SigT kg·m^{-3}
1	29.394	29.393	36.227	195.0	0.005	22.853
10	29.459	29.456	36.316	196.4	0.050	22.898
20	29.485	29.480	36.369	196.0	0.099	22.931
30	29.465	29.458	36.363	195.1	0.149	22.934
50	28.522	28.510	36.178	200.4	0.246	23.113
75	27.790	27.773	36.477	202.0	0.357	23.581
100	26.192	26.169	36.567	200.9	0.459	24.163
125	25.234	25.207	36.626	201.8	0.550	24.507
150	23.789	23.757	36.723	196.0	0.631	25.019
200	21.683	21.643	36.690	193.2	0.763	25.603
250	19.428	19.382	36.641	184.7	0.871	26.177
300	18.279	18.226	36.552	184.8	0.963	26.405
400	16.390	16.324	36.263	175.8	1.130	26.644

Pressure dbar	Niskin	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}
471	1	15.382	15.308	36.088	166.8
471	2	15.352	15.870	−999.000	−999.000
299	3	18.301	18.249	36.546	185.2
300	4	18.329	18.617	−999.000	−999.000
179	5	22.199	22.163	36.691	194.9
179	6	22.193	22.332	−999.000	−999.000
129	7	24.673	24.645	36.739	200.4
129	8	24.679	24.764	−999.000	−999.000
49	9	28.668	28.656	36.185	200.1
49	10	28.671	28.694	−999.000	−999.000
2	11	30.005	30.005	36.197	195.2
2	12	29.966	29.967	−999.000	−999.000

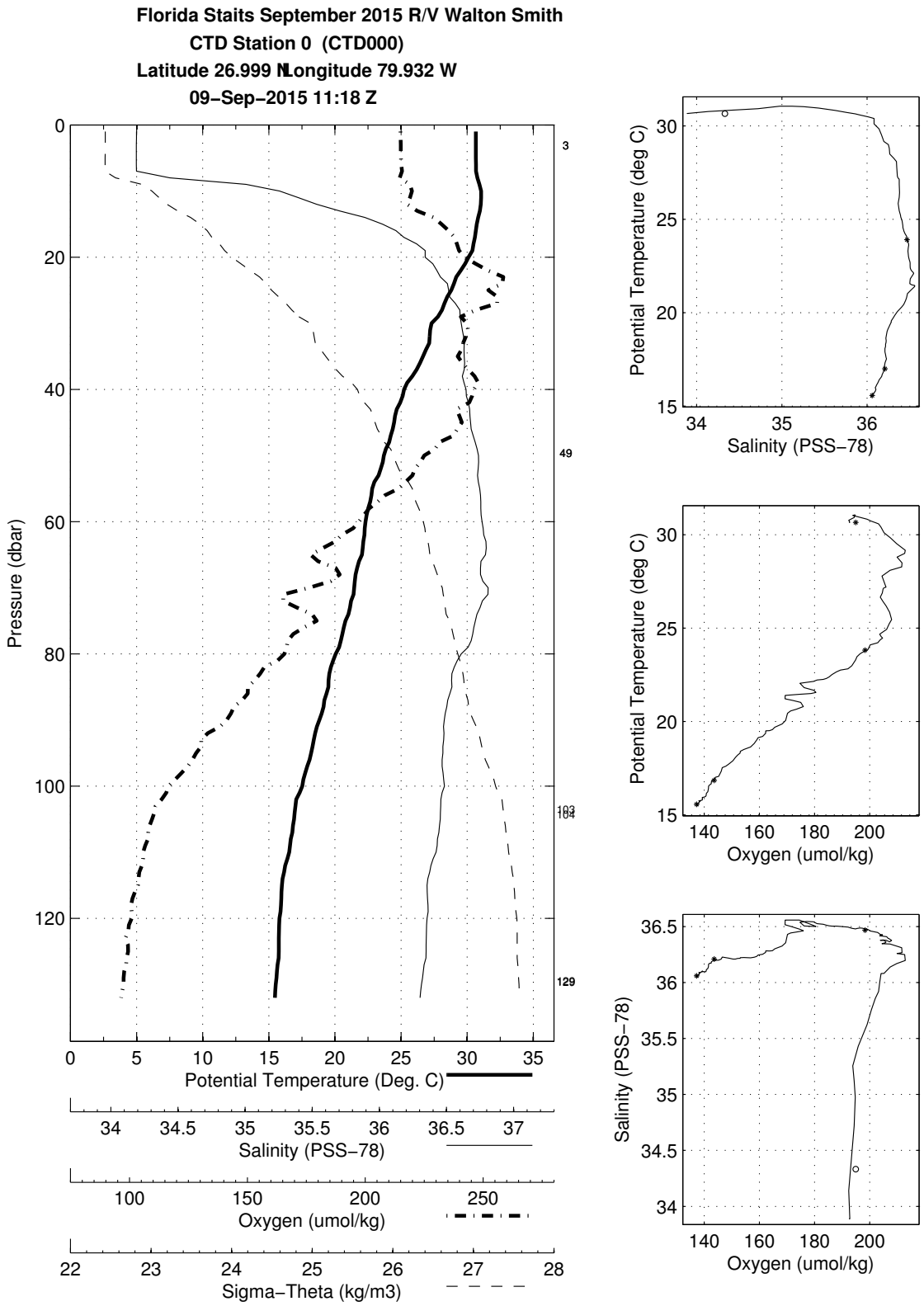

Florida Staits July 2015 R/V Walton Smith
CTD Station 8 (CTD008)
Latitude 27.002 N Longitude 79.203 W
14−Jul−2015 20:34 Z
Pressure (dbar)
Potential Temperature (Deg. C)
Salinity (PSS−78)
Oxygen (umol/kg)
Sigma−Theta (kg/m3)
Potential Temperature (deg C)
Salinity (PSS−78)
Oxygen (umol/kg)

A.5 FC1509

Florida Straits 2015 R/V Walton Smith
CTD Station 0 (CTD000)
Latitude 26.999N Longitude 79.932W
09-Sep-2015 11:18Z

Pressure dbar	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}	DynHt m^2·s^{-2}	SigT kg·m^{-3}
1	30.655	30.655	33.889	192.5	0.007	20.669
10	31.056	31.053	34.975	194.8	0.070	21.344
20	30.107	30.102	36.081	205.2	0.128	22.502
30	27.309	27.302	36.355	205.6	0.175	23.641
50	23.705	23.694	36.486	197.2	0.248	24.857
75	20.813	20.798	36.461	175.9	0.315	25.662
100	17.547	17.530	36.227	146.6	0.366	26.328
125	15.771	15.751	36.088	138.6	0.404	26.642

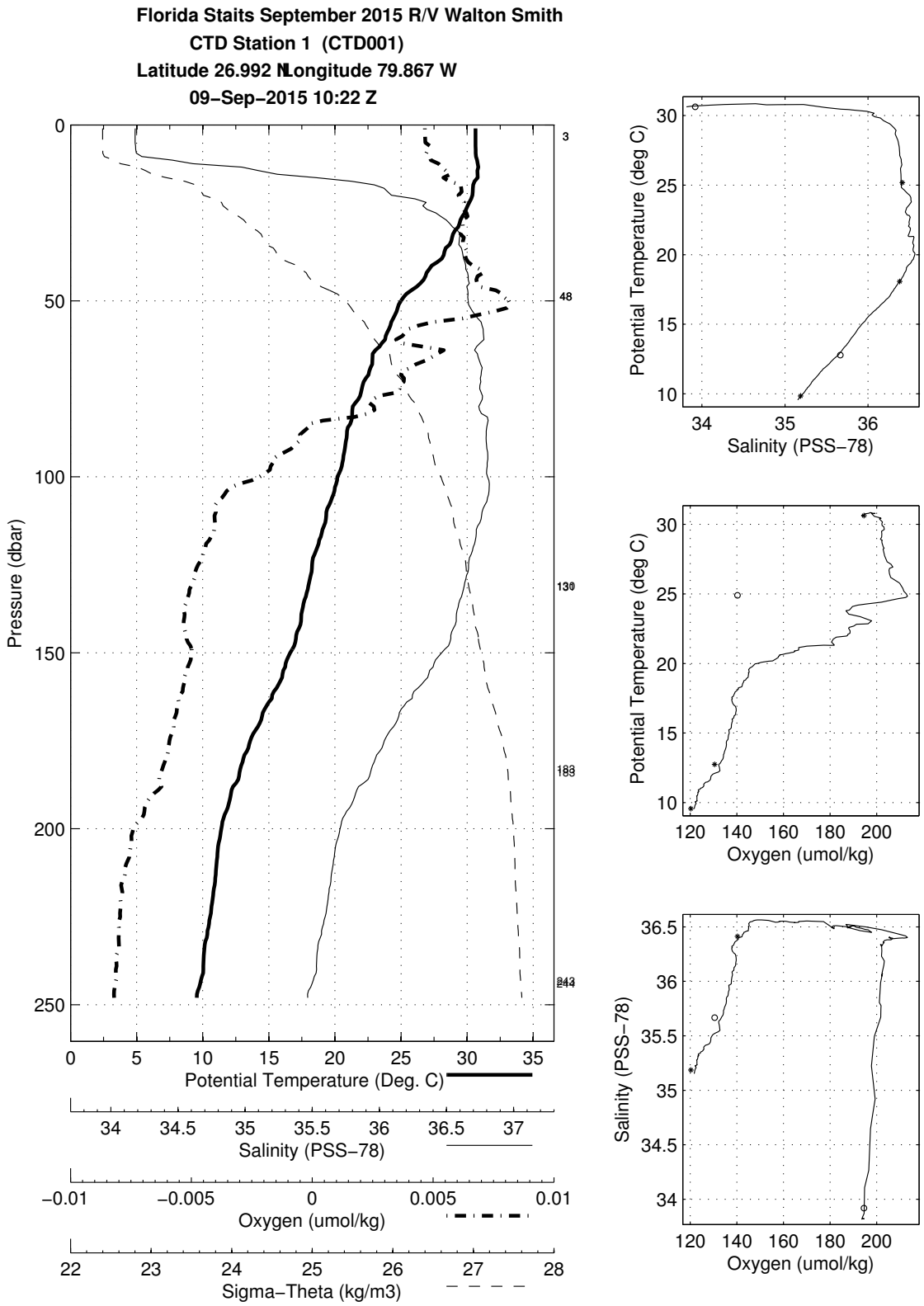
Pressure dbar	Niskin	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}
130	1	15.590	15.569	36.059	137.2
130	2	15.604	15.748	−999.000	−999.000
104	3	17.017	16.999	36.209	143.6
104	4	16.965	17.074	−999.000	−999.000
50	5	23.920	23.909	36.467	198.3
50	6	23.916	23.950	−999.000	−999.000
3	7	30.659	30.658	34.332	194.9
3	8	30.665	30.666	−999.000	−999.000


Florida Staits September 2015 R/V Walton Smith
CTD Station 0 (CTD000)
Latitude 26.999 N Longitude 79.932 W
09−Sep−2015 11:18 Z
Pressure (dbar)
Potential Temperature (Deg. C)
Salinity (PSS−78)
Oxygen (umol/kg)
Sigma−Theta (kg/m3)
Potential Temperature (deg C)
Salinity (PSS−78)
Potential Temperature (deg C)
Oxygen (umol/kg)
Salinity (PSS−78)
Oxygen (umol/kg)

Florida Straits 2015 R/V Walton Smith
CTD Station 1 (CTD001)
Latitude 26.992N Longitude 79.867W
09-Sep-2015 10:22Z

Pressure dbar	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}	DynHt m^2·s^{-2}	SigT kg·m^{-3}
1	30.634	30.634	33.819	193.4	0.007	20.624
10	30.761	30.758	34.106	194.8	0.071	20.796
20	30.409	30.404	35.806	201.2	0.132	22.191
30	29.092	29.085	36.318	202.2	0.184	23.025
50	25.006	24.995	36.400	212.8	0.269	24.401
75	22.051	22.036	36.489	187.6	0.345	25.340
100	20.210	20.191	36.549	155.4	0.403	25.893
125	18.293	18.271	36.403	141.2	0.452	26.279
150	16.635	16.610	36.195	139.7	0.494	26.524
200	11.436	11.410	35.407	126.3	0.558	27.017

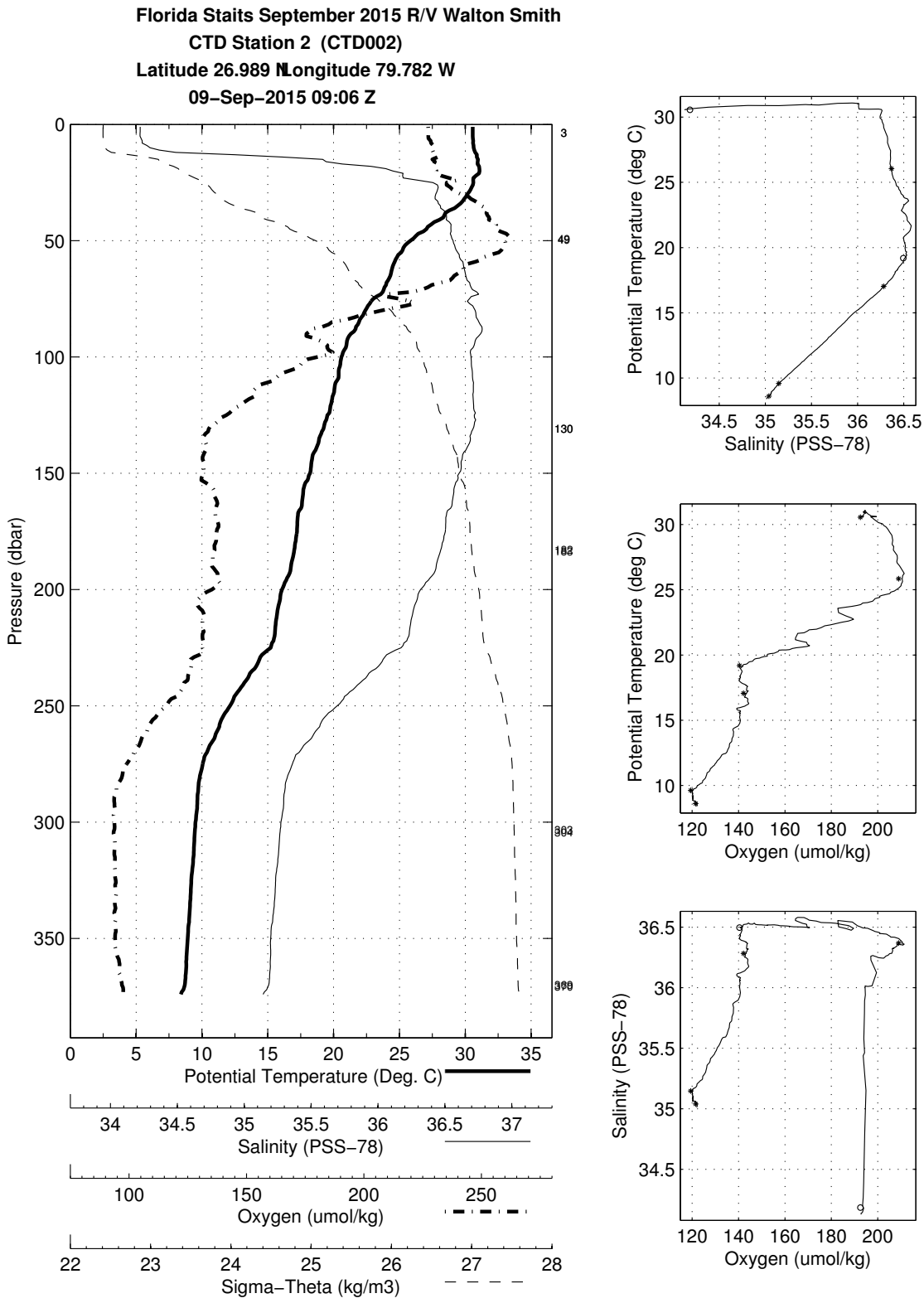
Pressure dbar	Niskin	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}
244	1	9.870	9.841	35.187	120.3
243	2	9.954	10.291	−999.000	−999.000
183	3	12.808	12.783	35.667	130.5
184	4	12.756	12.986	−999.000	−999.000
131	5	18.102	18.080	36.382	−999.000
131	6	18.083	18.212	−999.000	−999.000
49	7	25.190	25.179	36.413	140.3
49	8	25.197	25.228	−999.000	−999.000
3	9	30.627	30.626	33.919	194.6
3	10	30.623	30.625	−999.000	−999.000


Florida Staits September 2015 R/V Walton Smith
CTD Station 1 (CTD001)
Latitude 26.992 N Longitude 79.867 W
09−Sep−2015 10:22 Z
Pressure (dbar)
Potential Temperature (Deg. C)
Salinity (PSS−78)
Oxygen (umol/kg)
Sigma−Theta (kg/m3)
Potential Temperature (deg C)
Salinity (PSS−78)
Oxygen (umol/kg)

Florida Straits 2015 R/V Walton Smith
CTD Station 2 (CTD002)
Latitude 26.989N Longitude 79.782W
09-Sep-2015 09:06Z

Pressure dbar	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}	DynHt m^2·s^{-2}	SigT kg·m^{-3}
1	30.571	30.570	34.129	192.7	0.007	20.878
10	30.645	30.642	34.200	193.4	0.069	20.906
20	31.088	31.083	35.940	194.6	0.131	22.056
30	30.152	30.144	36.247	200.3	0.185	22.612
50	25.852	25.841	36.372	210.5	0.276	24.119
75	23.017	23.002	36.489	186.3	0.359	25.063
100	20.614	20.595	36.501	167.1	0.422	25.748
125	19.548	19.525	36.525	146.0	0.476	26.051
150	18.229	18.203	36.416	140.5	0.522	26.307
200	16.113	16.080	36.139	142.7	0.603	26.605
250	12.165	12.132	35.541	132.0	0.670	26.984
300	9.542	9.508	35.138	120.1	0.721	27.143

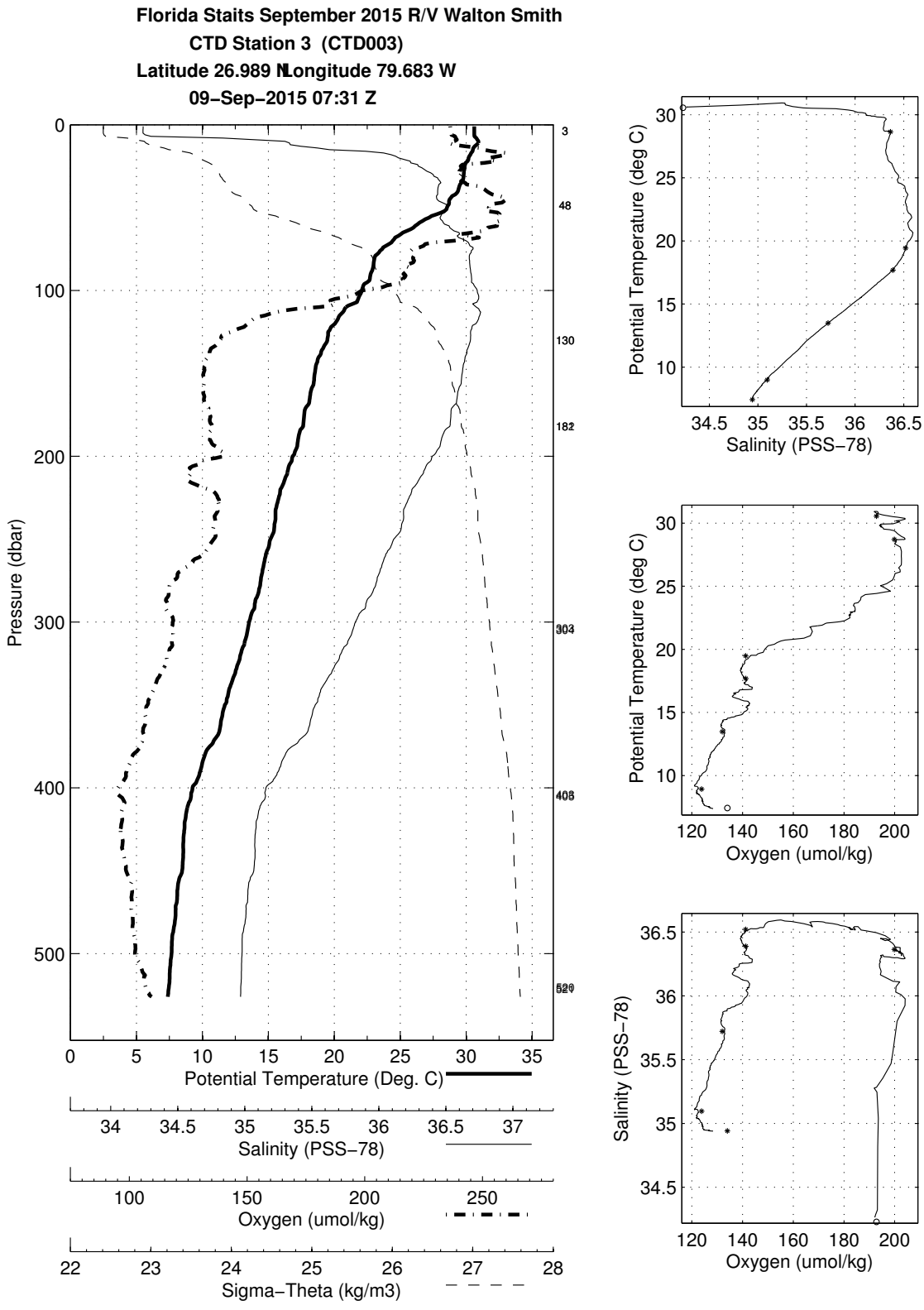
Pressure dbar	Niskin	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}
371	1	8.652	8.613	35.040	121.5
370	2	8.702	9.234	−999.000	−999.000
303	3	9.618	9.584	35.147	119.4
304	4	9.597	10.023	−999.000	−999.000
183	5	17.056	17.025	36.282	142.1
183	6	17.051	17.241	−999.000	−999.000
131	7	19.211	19.188	36.496	140.4
131	8	19.206	19.328	−999.000	−999.000
49	9	26.059	26.048	36.369	209.0
49	10	26.025	26.054	−999.000	−999.000
4	11	30.554	30.553	34.184	192.5
4	12	30.552	30.554	−999.000	−999.000


Florida Staits September 2015 R/V Walton Smith
CTD Station 2 (CTD002)
Latitude 26.989 N Longitude 79.782 W
09−Sep−2015 09:06 Z
Pressure (dbar)
Potential Temperature (Deg. C)
Salinity (PSS−78)
Oxygen (umol/kg)
Sigma−Theta (kg/m3)
Potential Temperature (deg C)
Salinity (PSS−78)
Oxygen (umol/kg)

Florida Straits 2015 R/V Walton Smith
CTD Station 3 (CTD003)
Latitude 26.989N Longitude 79.683W
09-Sep-2015 07:31Z

Pressure dbar	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}	DynHt m^2·s^{-2}	SigT kg·m^{-3}
1	30.616	30.616	34.268	192.1	0.007	20.966
10	30.934	30.932	35.246	193.0	0.067	21.589
20	30.184	30.179	36.028	200.4	0.124	22.436
30	29.825	29.817	36.268	194.4	0.176	22.739
50	28.557	28.545	36.365	200.4	0.274	23.242
75	23.655	23.639	36.543	184.1	0.369	24.917
100	22.114	22.094	36.572	173.3	0.440	25.386
125	19.557	19.534	36.525	145.4	0.497	26.049
150	18.552	18.526	36.468	139.4	0.545	26.265
200	16.873	16.840	36.261	143.7	0.629	26.521
250	15.199	15.161	35.996	141.7	0.703	26.704
300	13.588	13.546	35.731	132.9	0.770	26.848
400	9.298	9.253	35.115	121.2	0.884	27.167
500	7.713	7.663	34.950	124.8	0.976	27.284

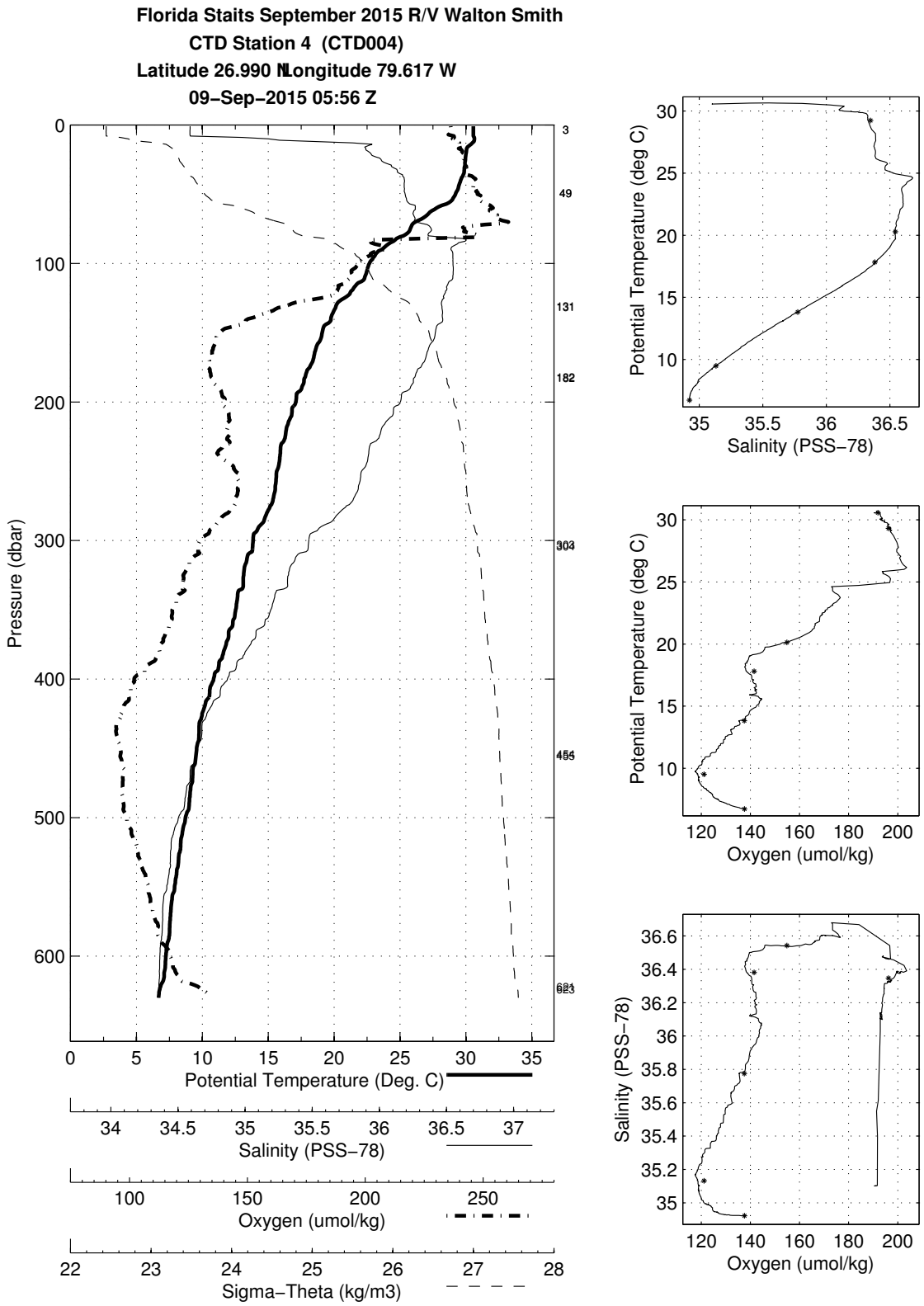
Pressure dbar	Niskin	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}
522	1	7.473	7.421	34.942	134.0
520	2	7.482	8.254	−999.000	−999.000
404	3	9.028	8.983	35.095	123.8
405	4	8.995	9.570	−999.000	−999.000
304	5	13.528	13.485	35.721	132.0
305	6	13.536	13.902	−999.000	−999.000
182	7	17.717	17.686	36.388	141.3
182	8	17.711	17.893	−999.000	−999.000
130	9	19.450	19.426	36.520	141.2
130	10	19.446	19.565	−999.000	−999.000
49	11	28.654	28.642	36.364	199.9
49	12	28.657	28.680	−999.000	−999.000
3	13	30.558	30.557	34.229	192.8
4	14	30.545	30.546	−999.000	−999.000


Florida Staits September 2015 R/V Walton Smith
CTD Station 3 (CTD003)
Latitude 26.989 N Longitude 79.683 W
09−Sep−2015 07:31 Z
Pressure (dbar)
Potential Temperature (Deg. C)
Salinity (PSS−78)
Oxygen (umol/kg)
Sigma−Theta (kg/m3)
Potential Temperature (deg C)
Salinity (PSS−78)
Potential Temperature (deg C)
Oxygen (umol/kg)
Salinity (PSS−78)
Oxygen (umol/kg)

Florida Straits 2015 R/V Walton Smith
CTD Station 4 (CTD004)
Latitude 26.990N Longitude 79.617W
09-Sep-2015 05:56Z

Pressure dbar	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}	DynHt m^2·s^{-2}	SigT kg·m^{-3}
1	30.572	30.572	35.102	191.0	0.006	21.607
10	30.649	30.647	35.549	191.4	0.061	21.915
20	30.024	30.019	36.130	193.5	0.116	22.567
30	29.909	29.901	36.252	194.4	0.168	22.699
50	29.226	29.214	36.330	196.9	0.268	22.991
75	25.799	25.782	36.479	194.0	0.375	24.218
100	22.699	22.679	36.603	170.3	0.454	25.243
125	20.794	20.770	36.552	162.4	0.518	25.739
150	19.122	19.095	36.502	140.5	0.570	26.145
200	17.127	17.093	36.303	141.1	0.657	26.492
250	15.684	15.644	36.081	143.7	0.733	26.661
300	13.893	13.850	35.780	135.8	0.803	26.822
400	10.899	10.849	35.315	121.4	0.925	27.049
500	8.773	8.718	35.036	119.8	1.027	27.191
600	7.290	7.231	34.929	129.3	1.118	27.330

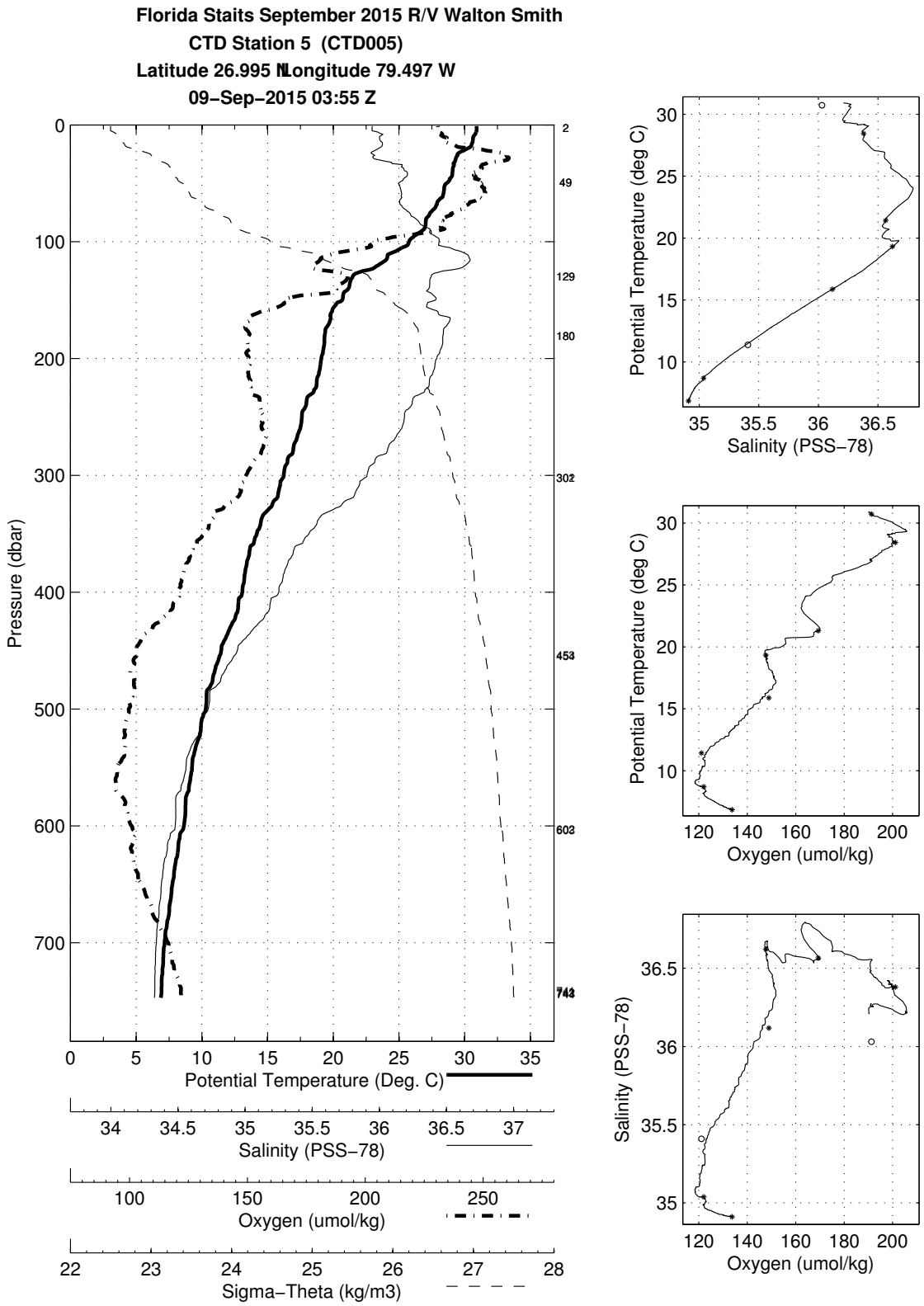
Pressure dbar	Niskin	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}
624	1	6.782	6.722	34.923	137.6
622	2	6.796	7.735	−999.000	−999.000
454	3	9.545	9.493	35.132	121.2
456	4	9.532	10.164	−999.000	−999.000
303	5	13.866	13.822	35.775	137.5
304	6	13.861	14.222	−999.000	−999.000
182	7	17.859	17.827	36.381	141.5
183	8	17.837	18.019	−999.000	−999.000
131	9	20.304	20.279	36.543	154.9
131	10	20.293	20.407	−999.000	−999.000
50	11	29.250	29.238	36.347	196.2
50	12	29.265	29.286	−999.000	−999.000
3	13	30.579	30.578	34.846	191.9
3	14	30.568	30.570	−999.000	−999.000


Florida Staits September 2015 R/V Walton Smith
CTD Station 4 (CTD004)
Latitude 26.990 N Longitude 79.617 W
09−Sep−2015 05:56 Z
Pressure (dbar)
Potential Temperature (Deg. C)
Salinity (PSS−78)
Oxygen (umol/kg)
Sigma−Theta (kg/m3)
Potential Temperature (deg C)
Salinity (PSS−78)
Oxygen (umol/kg)

Florida Straits 2015 R/V Walton Smith
CTD Station 5 (CTD005)
Latitude 26.995N Longitude 79.497W
09-Sep-2015 03:55Z

Pressure dbar	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}	DynHt m^2·s^{-2}	SigT kg·m^{-3}
1	30.907	30.907	36.211	190.1	0.006	22.320
10	30.669	30.666	36.254	191.3	0.055	22.437
20	30.247	30.242	36.250	197.4	0.108	22.580
30	29.315	29.307	36.254	205.5	0.159	22.903
50	28.624	28.612	36.366	199.7	0.255	23.220
75	27.400	27.383	36.432	193.7	0.367	23.674
100	25.801	25.779	36.609	175.6	0.466	24.317
125	22.295	22.269	36.634	165.8	0.544	25.383
150	20.706	20.677	36.588	155.6	0.604	25.792
200	19.133	19.097	36.596	147.8	0.702	26.217
250	17.643	17.600	36.402	151.0	0.791	26.446
300	16.278	16.229	36.180	147.4	0.871	26.602
400	13.128	13.072	35.652	132.4	1.009	26.884
500	10.349	10.289	35.232	121.3	1.126	27.083
600	8.698	8.633	35.036	122.0	1.228	27.205
700	7.230	7.161	34.923	130.1	1.319	27.336

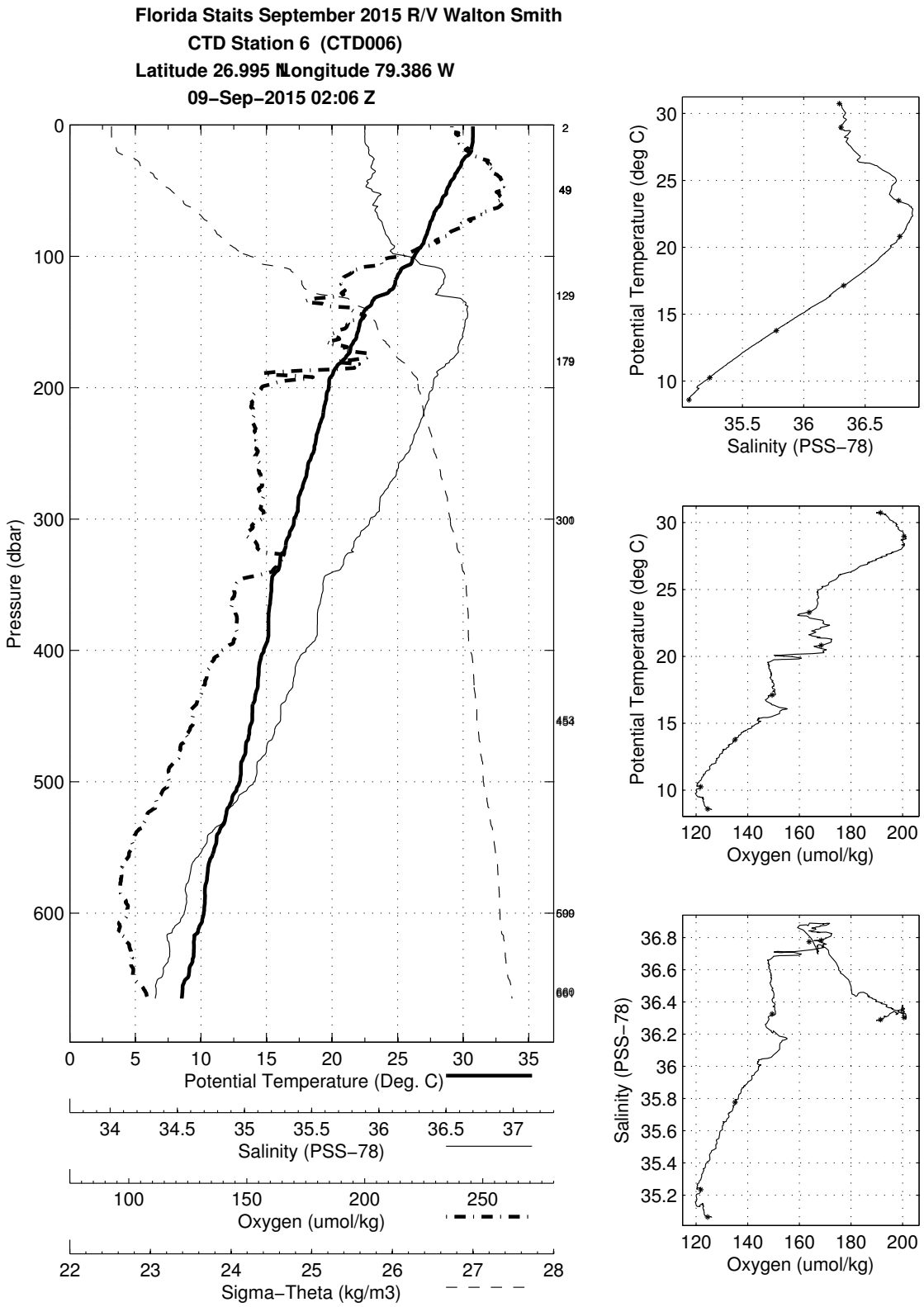
Pressure dbar	Niskin	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}
744	1	6.923	6.851	34.911	133.8
743	2	6.966	8.073	−999.000	−999.000
742	3	6.989	8.094	−999.000	−999.000
742	4	6.983	8.087	−999.000	−999.000
603	5	8.754	8.688	35.038	122.1
604	6	8.739	9.593	−999.000	−999.000
454	7	11.434	11.375	35.409	121.1
455	8	11.410	11.999	−999.000	−999.000
302	9	15.915	15.867	36.118	149.0
302	10	15.911	16.238	−999.000	−999.000
181	11	19.357	19.324	36.621	147.6
181	12	19.338	19.504	−999.000	−999.000
130	13	21.450	21.424	36.565	169.3
130	14	21.449	21.555	−999.000	−999.000
49	15	28.454	28.442	36.380	201.1
49	16	28.458	28.481	−999.000	−999.000
2	17	30.727	30.727	36.030	191.3
2	18	30.699	30.700	−999.000	−999.000


Florida Staits September 2015 R/V Walton Smith
CTD Station 5 (CTD005)
Latitude 26.995 N Longitude 79.497 W
09−Sep−2015 03:55 Z
Pressure (dbar)
Potential Temperature (Deg. C)
Salinity (PSS−78)
Oxygen (umol/kg)
Sigma−Theta (kg/m3)
Potential Temperature (deg C)
Salinity (PSS−78)
Potential Temperature (deg C)
Oxygen (umol/kg)
Salinity (PSS−78)
Oxygen (umol/kg)

Florida Straits 2015 R/V Walton Smith
CTD Station 6 (CTD006)
Latitude 26.995N Longitude 79.386W
09-Sep-2015 02:06Z

Pressure dbar	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}	DynHt m^2·s^{-2}	SigT kg·m^{-3}
1	30.744	30.743	36.287	190.0	0.005	22.435
10	30.733	30.731	36.286	191.2	0.054	22.438
20	30.613	30.608	36.309	193.4	0.108	22.498
30	29.858	29.850	36.329	198.0	0.159	22.774
50	28.736	28.724	36.327	200.2	0.257	23.154
75	27.489	27.472	36.389	192.0	0.370	23.612
100	26.308	26.286	36.537	179.1	0.473	24.104
125	24.620	24.593	36.717	167.2	0.559	24.763
150	22.175	22.145	36.873	168.1	0.626	25.601
200	19.778	19.741	36.684	150.0	0.736	26.115
250	18.579	18.534	36.534	149.0	0.830	26.313
300	17.155	17.105	36.318	150.1	0.915	26.501
400	14.854	14.792	35.943	141.7	1.065	26.745
500	13.031	12.961	35.640	130.6	1.200	26.897
600	10.282	10.210	35.230	121.7	1.317	27.095

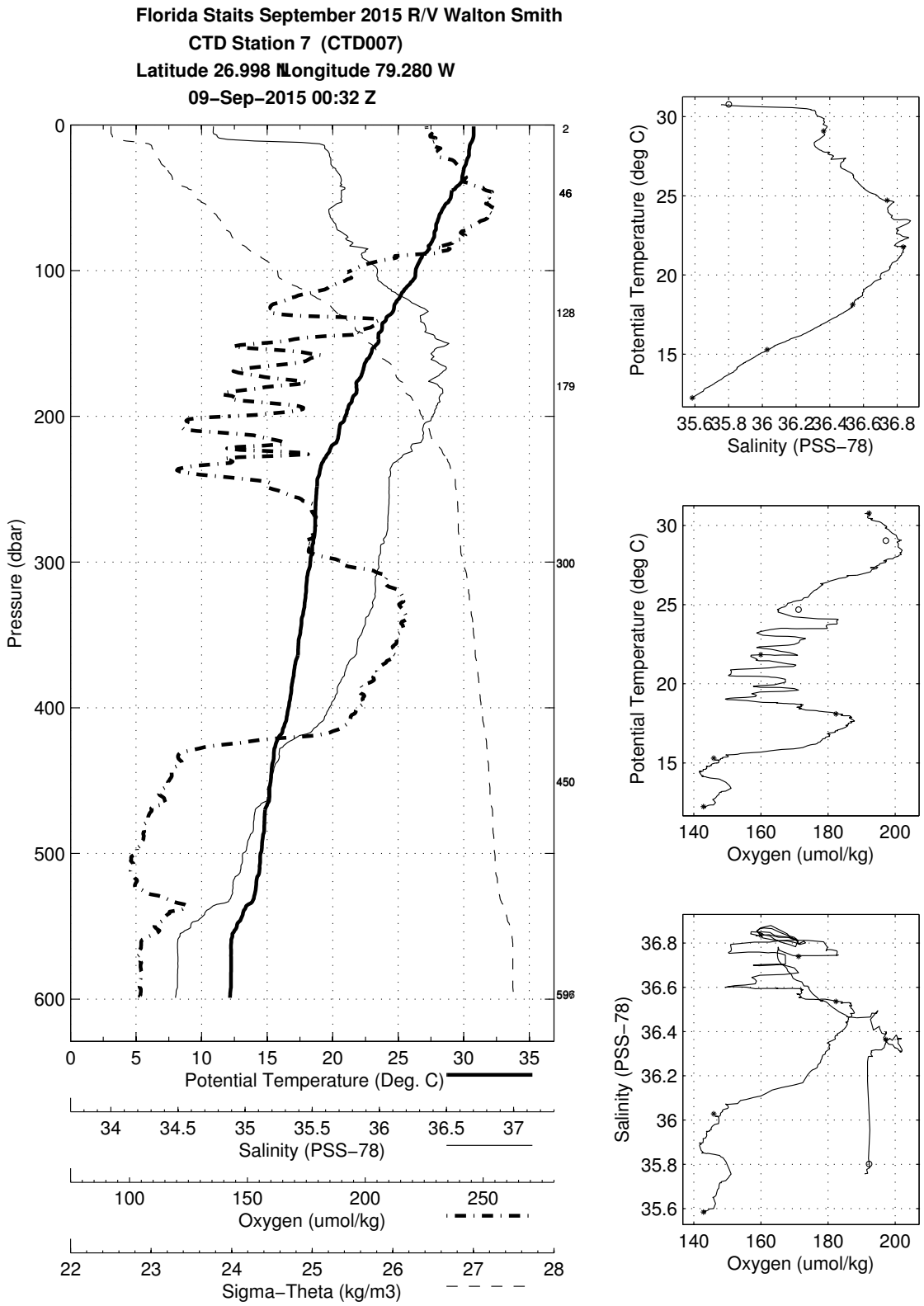
Pressure dbar	Niskin	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}
661	1	8.669	8.597	35.064	124.5
660	2	8.665	9.598	−999.000	−999.000
600	3	10.314	10.241	35.235	121.8
600	4	10.311	11.114	−999.000	−999.000
453	5	13.838	13.772	35.777	135.0
454	6	13.814	14.348	−999.000	−999.000
301	7	17.184	17.134	36.326	149.5
301	8	17.163	17.470	−999.000	−999.000
180	9	20.843	20.809	36.783	168.5
180	10	20.829	20.981	−999.000	−999.000
130	11	23.510	23.483	36.774	163.8
130	12	23.518	23.611	−999.000	−999.000
49	13	28.985	28.973	36.304	200.6
49	14	28.985	29.007	−999.000	−999.000
49	15	28.987	29.009	−999.000	−999.000
49	16	28.986	29.007	−999.000	−999.000
3	17	30.737	30.736	36.290	191.5
3	18	30.738	30.739	−999.000	−999.000


Florida Staits September 2015 R/V Walton Smith
CTD Station 6 (CTD006)
Latitude 26.995 N Longitude 79.386 W
09−Sep−2015 02:06 Z
Pressure (dbar)
Potential Temperature (Deg. C)
Salinity (PSS−78)
Oxygen (umol/kg)
Sigma−Theta (kg/m3)
Potential Temperature (deg C)
Salinity (PSS−78)
Potential Temperature (deg C)
Oxygen (umol/kg)
Salinity (PSS−78)
Oxygen (umol/kg)

Florida Straits 2015 R/V Walton Smith
CTD Station 7 (CTD007)
Latitude 26.998N Longitude 79.280W
09-Sep-2015 00:32Z

Pressure dbar	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}	DynHt m^2·s^{-2}	SigT kg·m^{-3}
1	30.755	30.755	35.758	190.9	0.006	22.034
10	30.692	30.689	35.827	192.0	0.058	22.108
20	30.404	30.399	36.311	192.9	0.111	22.572
30	30.003	29.995	36.341	197.0	0.163	22.733
50	29.023	29.011	36.367	201.3	0.263	23.088
75	27.771	27.754	36.383	197.0	0.377	23.516
100	26.356	26.334	36.540	178.4	0.480	24.090
125	24.718	24.691	36.745	164.9	0.569	24.755
150	23.462	23.431	36.880	163.0	0.644	25.234
200	20.999	20.961	36.804	158.0	0.767	25.879
250	18.821	18.777	36.595	165.4	0.866	26.298
300	18.343	18.290	36.545	177.0	0.955	26.383
400	16.692	16.626	36.309	179.3	1.119	26.609
500	14.568	14.493	35.898	142.8	1.267	26.776

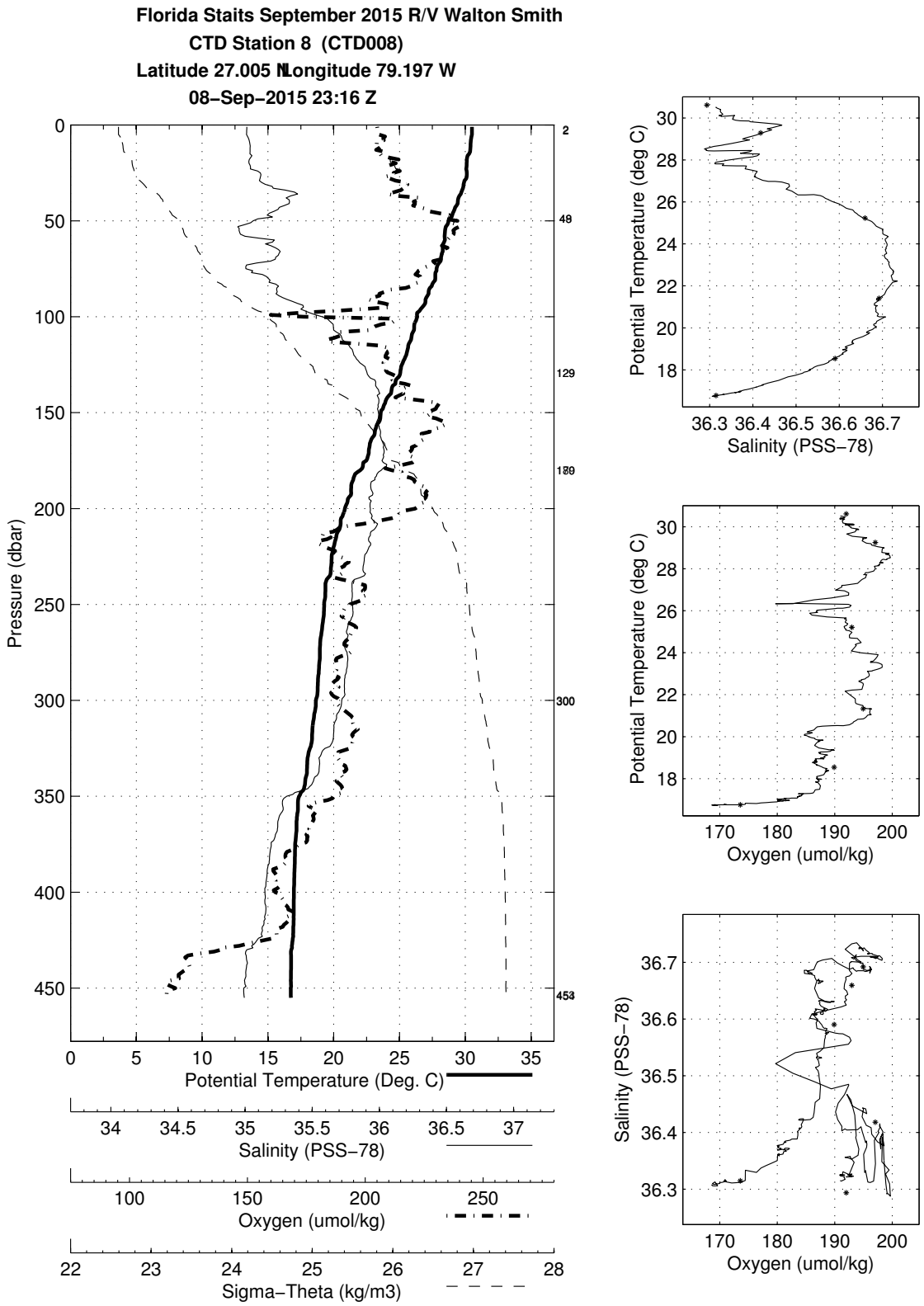
Pressure dbar	Niskin	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}
597	1	12.320	12.239	35.584	142.9
597	2	12.310	13.049	−999.000	−999.000
450	3	15.355	15.284	36.029	145.9
451	4	15.351	15.847	−999.000	−999.000
301	5	18.184	18.132	36.536	182.3
301	6	18.171	18.463	−999.000	−999.000
179	7	21.810	21.775	36.836	160.0
179	8	21.817	21.960	−999.000	−999.000
129	9	24.746	24.718	36.740	171.2
129	10	24.735	24.819	−999.000	−999.000
47	11	29.099	29.087	36.364	197.2
47	12	29.101	29.122	−999.000	−999.000
47	13	29.102	29.122	−999.000	−999.000
47	14	29.102	29.122	−999.000	−999.000
3	15	30.778	30.777	35.802	192.2
3	16	30.774	30.775	−999.000	−999.000


Florida Staits September 2015 R/V Walton Smith
CTD Station 7 (CTD007)
Latitude 26.998 N Longitude 79.280 W
09−Sep−2015 00:32 Z
Pressure (dbar)
Potential Temperature (Deg. C)
Salinity (PSS−78)
Oxygen (umol/kg)
Sigma−Theta (kg/m3)
Potential Temperature (deg C)
Salinity (PSS−78)
Potential Temperature (deg C)
Oxygen (umol/kg)
Salinity (PSS−78)
Oxygen (umol/kg)

Florida Straits 2015 R/V Walton Smith
CTD Station 8 (CTD008)
Latitude 27.005N Longitude 79.197W
08-Sep-2015 23:16Z

Pressure dbar	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}	DynHt m^2·s^{-2}	SigT kg·m^{-3}
1	30.509	30.509	36.316	191.0	0.005	22.537
10	30.408	30.405	36.325	190.9	0.053	22.580
20	30.114	30.110	36.322	193.0	0.105	22.680
30	29.905	29.898	36.360	194.1	0.156	22.781
50	28.738	28.726	36.334	199.5	0.254	23.158
75	27.830	27.813	36.313	195.8	0.369	23.444
100	26.371	26.348	36.541	183.2	0.473	24.087
125	25.203	25.175	36.662	191.7	0.565	24.544
150	23.607	23.575	36.709	196.3	0.644	25.062
200	20.886	20.848	36.685	195.0	0.774	25.819
250	19.318	19.272	36.631	188.1	0.876	26.198
300	18.703	18.650	36.600	187.0	0.969	26.334
400	17.041	16.974	36.370	180.2	1.136	26.572

Pressure dbar	Niskin	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}
454	1	16.852	16.776	36.315	173.6
454	2	16.820	17.286	−999.000	−999.000
300	3	18.593	18.540	36.590	189.9
300	4	18.586	18.871	−999.000	−999.000
180	5	21.437	21.402	36.692	195.0
180	6	21.428	21.575	−999.000	−999.000
129	7	25.259	25.230	36.659	193.0
129	8	25.243	25.324	−999.000	−999.000
49	9	29.298	29.286	36.418	197.1
49	10	29.300	29.321	−999.000	−999.000
3	11	30.613	30.613	36.294	192.0
3	12	30.612	30.613	−999.000	−999.000

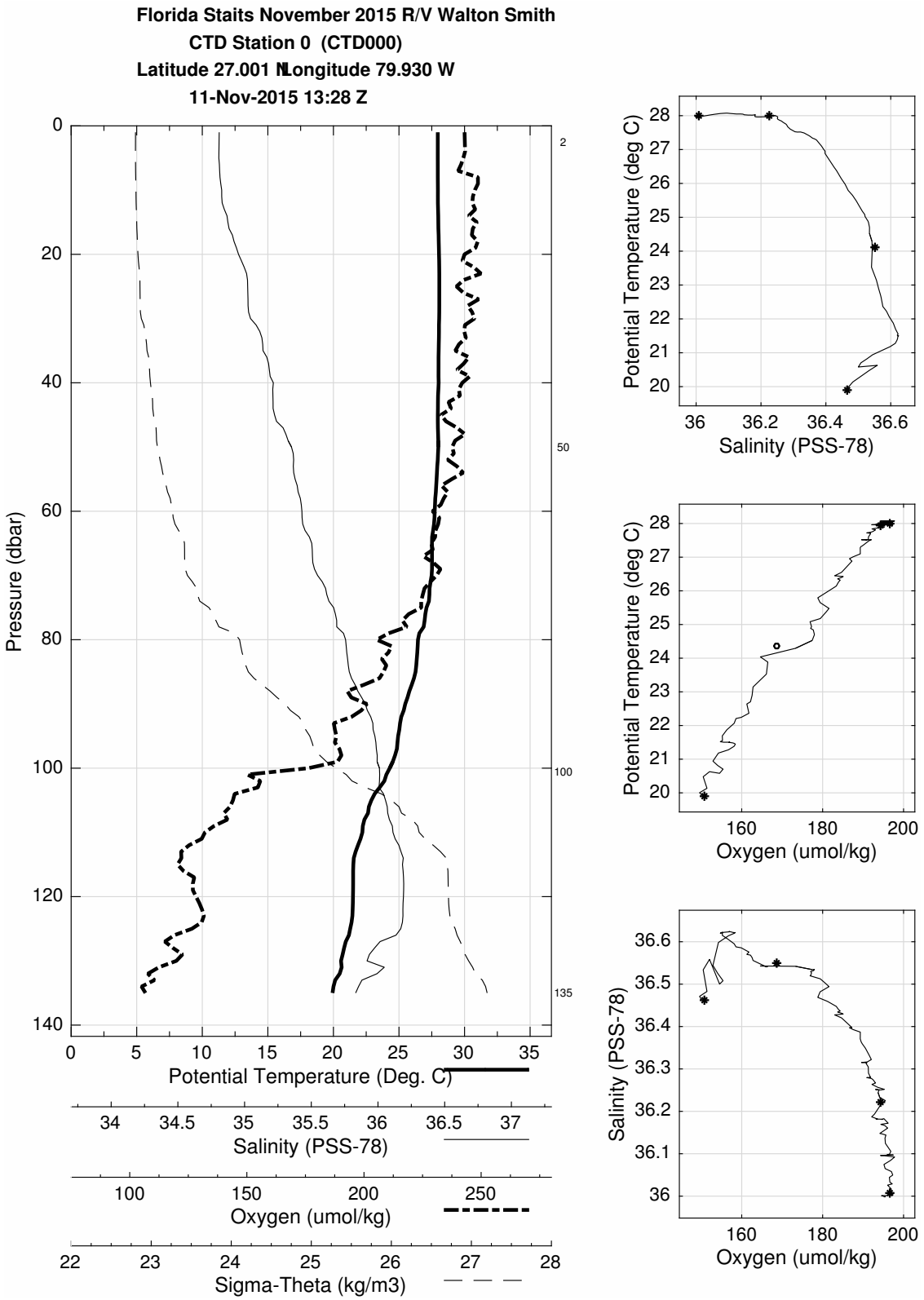

Florida Staits September 2015 R/V Walton Smith
CTD Station 8 (CTD008)
Latitude 27.005 N Longitude 79.197 W
08−Sep−2015 23:16 Z
Pressure (dbar)
Potential Temperature (Deg. C)
Salinity (PSS−78)
Oxygen (umol/kg)
Sigma−Theta (kg/m3)
Potential Temperature (deg C)
Salinity (PSS−78)
Oxygen (umol/kg)

A.6 FC1511

Florida Straits 2015 R/V Walton Smith
CTD Station 0 (CTD000)
Latitude 27.001N Longitude 79.930W
11-Nov-2015 13:28Z

Pressure dbar	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}	DynHt m^2·s^{-2}	SigT kg·m^{-3}
1	27.960	27.959	36.000	195.5	0.005	23.160
10	27.970	27.968	36.008	196.9	0.047	23.163
20	28.056	28.051	36.065	195.5	0.094	23.179
30	28.072	28.065	36.106	196.9	0.141	23.205
50	28.013	28.001	36.244	193.7	0.233	23.330
75	27.116	27.098	36.387	189.3	0.343	23.731
100	24.314	24.293	36.542	173.3	0.437	24.722
125	21.303	21.279	36.614	156.7	0.502	25.647

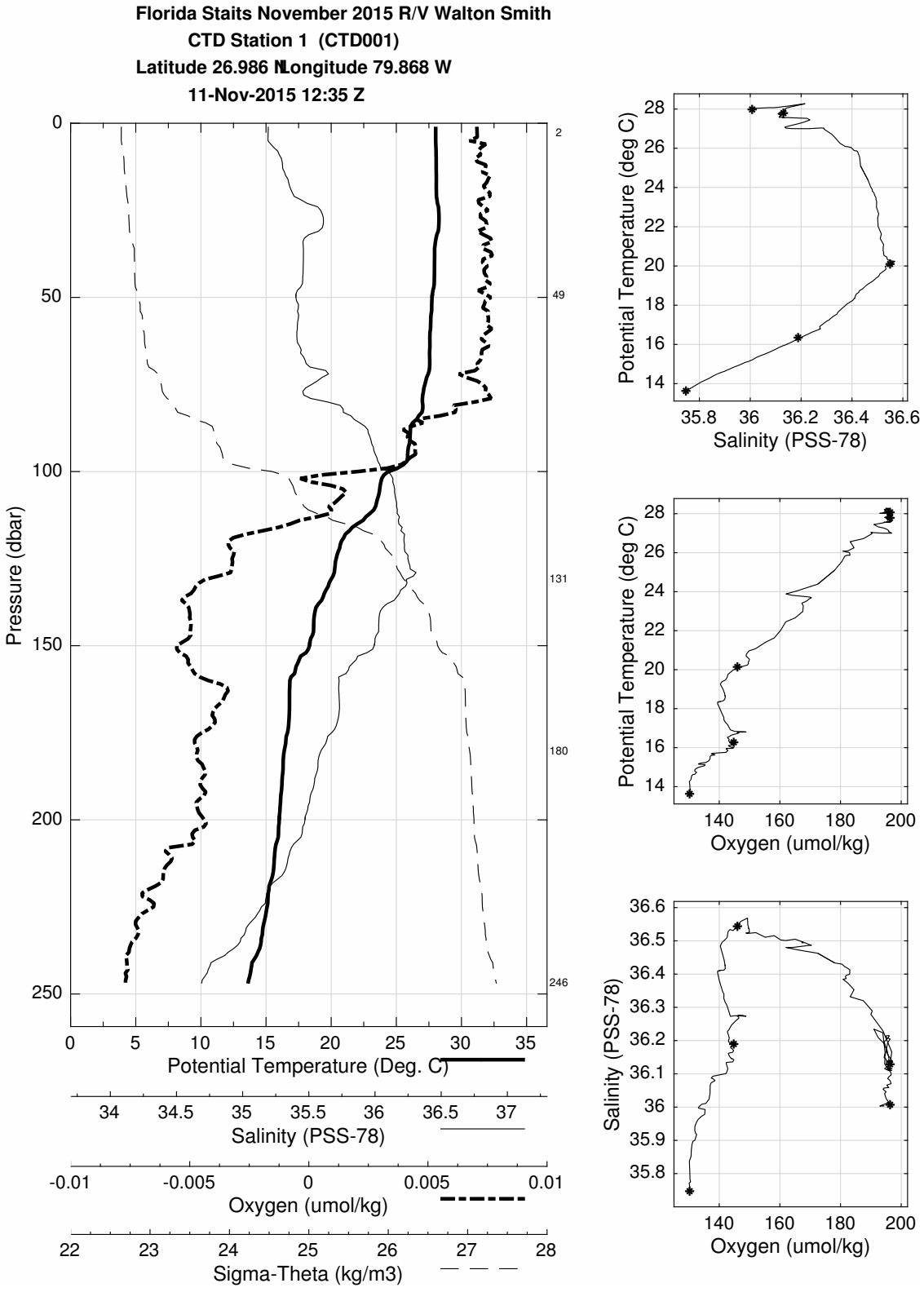
Pressure dbar	Niskin	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}
135	1	19.937	19.912	36.464	150.8
101	2	24.148	24.127	36.551	168.7
50	3	27.986	27.974	36.224	194.3
3	4	27.976	27.975	36.006	196.5


Florida Staits November 2015 R/V Walton Smith
CTD Station 0 (CTD000)
Latitude 27.001 N Longitude 79.930 W
11-Nov-2015 13:28 Z
Pressure (dbar)
Potential Temperature (Deg. C)
Salinity (PSS-78)
Oxygen (umol/kg)
Sigma-Theta (kg/m3)
Potential Temperature (deg C)
Salinity (PSS-78)
Potential Temperature (deg C)
Oxygen (umol/kg)
Salinity (PSS-78)
Oxygen (umol/kg)

Florida Straits 2015 R/V Walton Smith
CTD Station 1 (CTD001)
Latitude 26.986N Longitude 79.868W
11-Nov-2015 12:35Z

Pressure dbar	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}	DynHt m^2·s^{-2}	SigT kg·m^{-3}
1	28.022	28.022	36.004	194.3	0.005	23.143
10	28.061	28.058	36.054	194.0	0.047	23.168
20	28.078	28.073	36.097	196.7	0.094	23.196
30	28.261	28.253	36.211	195.9	0.141	23.222
50	27.751	27.740	36.110	196.9	0.233	23.315
75	27.210	27.193	36.170	195.4	0.346	23.537
100	24.409	24.387	36.463	172.5	0.445	24.633
125	20.408	20.385	36.537	149.6	0.514	25.832
150	18.363	18.337	36.409	139.5	0.563	26.267
200	16.040	16.008	36.145	144.5	0.640	26.627

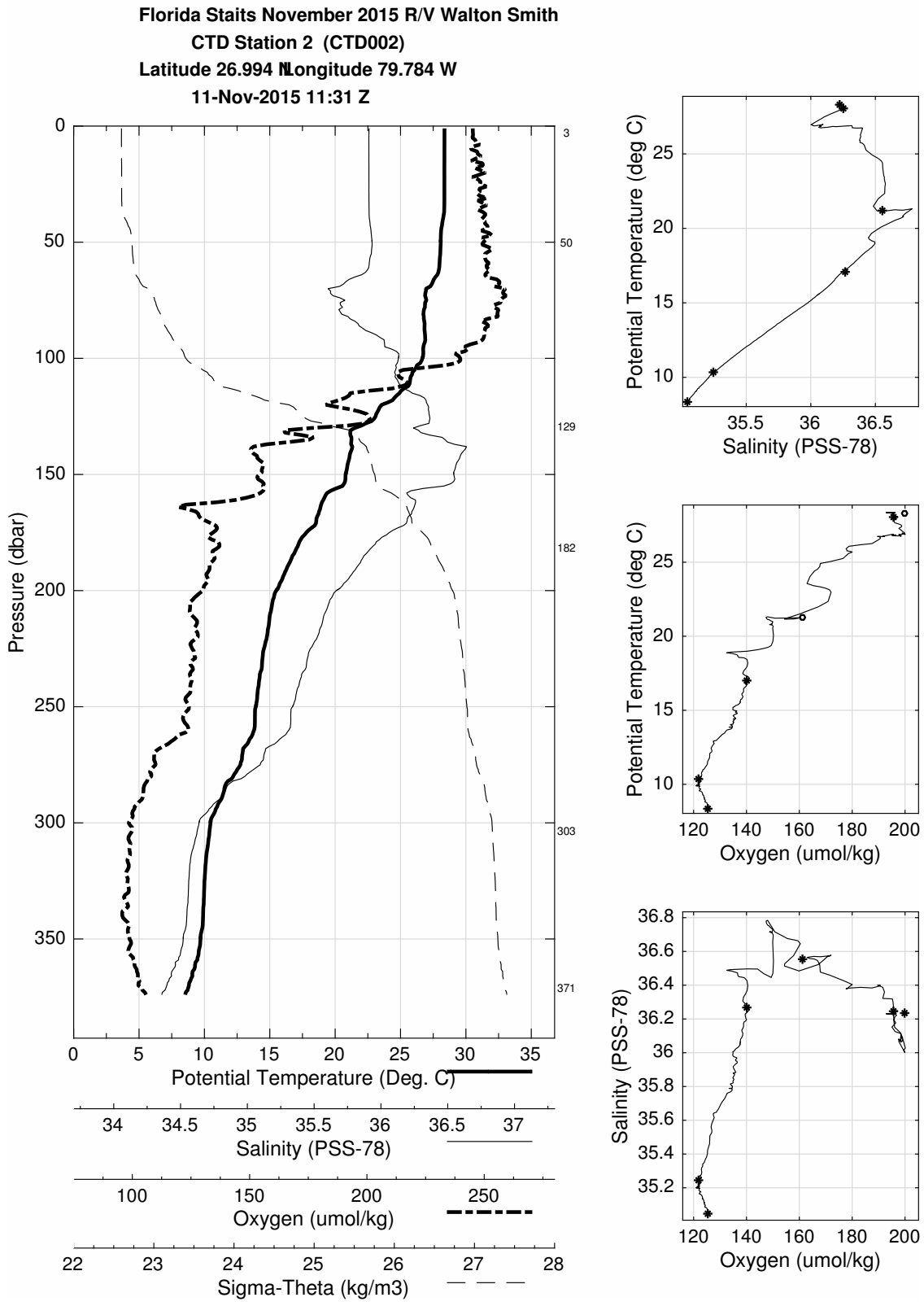
Pressure dbar	Niskin	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}
247	1	13.639	13.603	35.749	130.2
180	2	16.349	16.320	36.187	144.9
131	3	20.096	20.072	36.546	146.1
50	4	27.817	27.805	36.129	196.3
3	5	28.024	28.023	36.007	196.4


Florida Staits November 2015 R/V Walton Smith
CTD Station 1 (CTD001)
Latitude 26.986 N Longitude 79.868 W
11-Nov-2015 12:35 Z
Pressure (dbar)
Potential Temperature (Deg. C)
Salinity (PSS-78)
Oxygen (umol/kg)
Sigma-Theta (kg/m3)
Potential Temperature (deg C)
Salinity (PSS-78)
Potential Temperature (deg C)
Oxygen (umol/kg)
Salinity (PSS-78)
Oxygen (umol/kg)

Florida Straits 2015 R/V Walton Smith
CTD Station 2 (CTD002)
Latitude 26.994N Longitude 79.784W
11-Nov-2015 11:31Z

Pressure dbar	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}	DynHt m^2·s^{-2}	SigT kg·m^{-3}
1	28.362	28.362	36.233	193.2	0.005	23.203
10	28.361	28.359	36.231	192.9	0.047	23.203
20	28.360	28.356	36.232	195.9	0.093	23.204
30	28.362	28.355	36.232	194.6	0.140	23.204
50	28.084	28.072	36.250	195.4	0.233	23.311
75	26.996	26.978	36.096	198.9	0.346	23.550
100	26.697	26.674	36.399	190.6	0.451	23.876
125	23.113	23.088	36.576	171.6	0.539	25.104
150	20.827	20.799	36.713	149.2	0.599	25.854
200	15.526	15.494	36.047	137.6	0.686	26.669
250	13.970	13.934	35.799	134.7	0.754	26.819
300	10.496	10.460	35.269	122.2	0.813	27.082

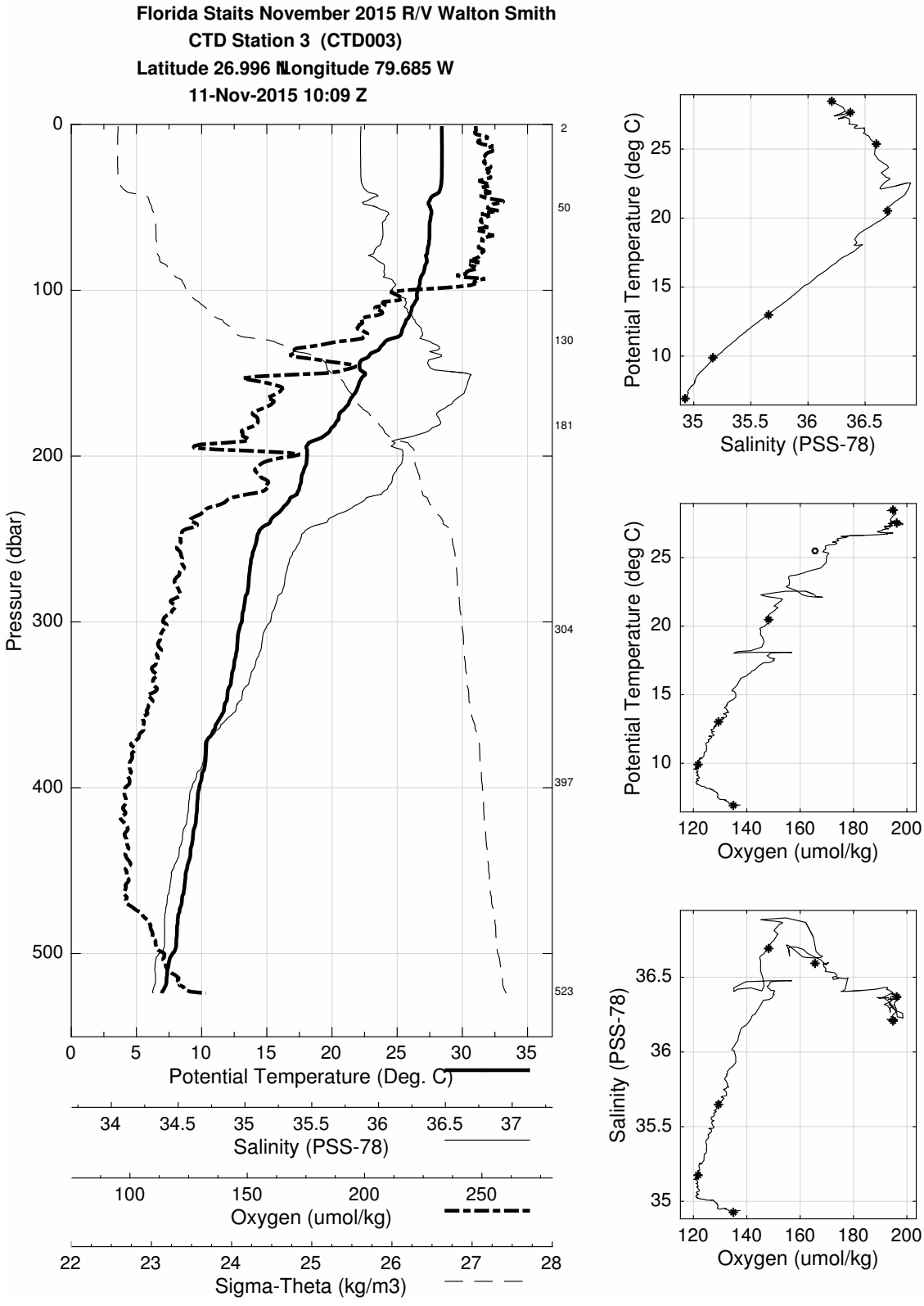
Pressure dbar	Niskin	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}
372	1	8.408	8.369	35.049	125.3
304	2	10.360	10.323	35.243	121.6
182	3	17.127	17.097	36.262	140.2
130	4	21.193	21.167	36.552	161.2
51	5	28.086	28.074	36.247	195.5
3	6	28.355	28.355	36.230	199.7


Florida Staits November 2015 R/V Walton Smith
CTD Station 2 (CTD002)
Latitude 26.994 N Longitude 79.784 W
11-Nov-2015 11:31 Z
Pressure (dbar)
Potential Temperature (Deg. C)
Salinity (PSS-78)
Oxygen (umol/kg)
Sigma-Theta (kg/m3)
Potential Temperature (deg C)
Salinity (PSS-78)
Potential Temperature (deg C)
Oxygen (umol/kg)
Salinity (PSS-78)
Oxygen (umol/kg)

Florida Straits 2015 R/V Walton Smith
CTD Station 3 (CTD003)
Latitude 26.996N Longitude 79.685W
11-Nov-2015 10:09Z

Pressure dbar	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}	DynHt m^2·s^{-2}	SigT kg·m^{-3}
1	28.424	28.423	36.218	192.8	0.005	23.172
10	28.430	28.428	36.216	193.2	0.047	23.168
20	28.439	28.434	36.217	195.1	0.094	23.167
30	28.434	28.427	36.217	195.1	0.141	23.170
50	27.546	27.534	36.316	195.2	0.232	23.537
75	27.352	27.334	36.308	194.0	0.341	23.596
100	26.610	26.587	36.407	178.3	0.445	23.909
125	25.383	25.355	36.594	170.0	0.540	24.437
150	22.576	22.546	36.867	162.1	0.613	25.482
200	18.115	18.080	36.477	155.5	0.719	26.384
250	14.269	14.232	35.847	132.5	0.797	26.792
300	13.126	13.084	35.660	128.8	0.861	26.887
400	9.870	9.823	35.176	121.1	0.975	27.120
500	7.821	7.770	34.974	129.2	1.070	27.287

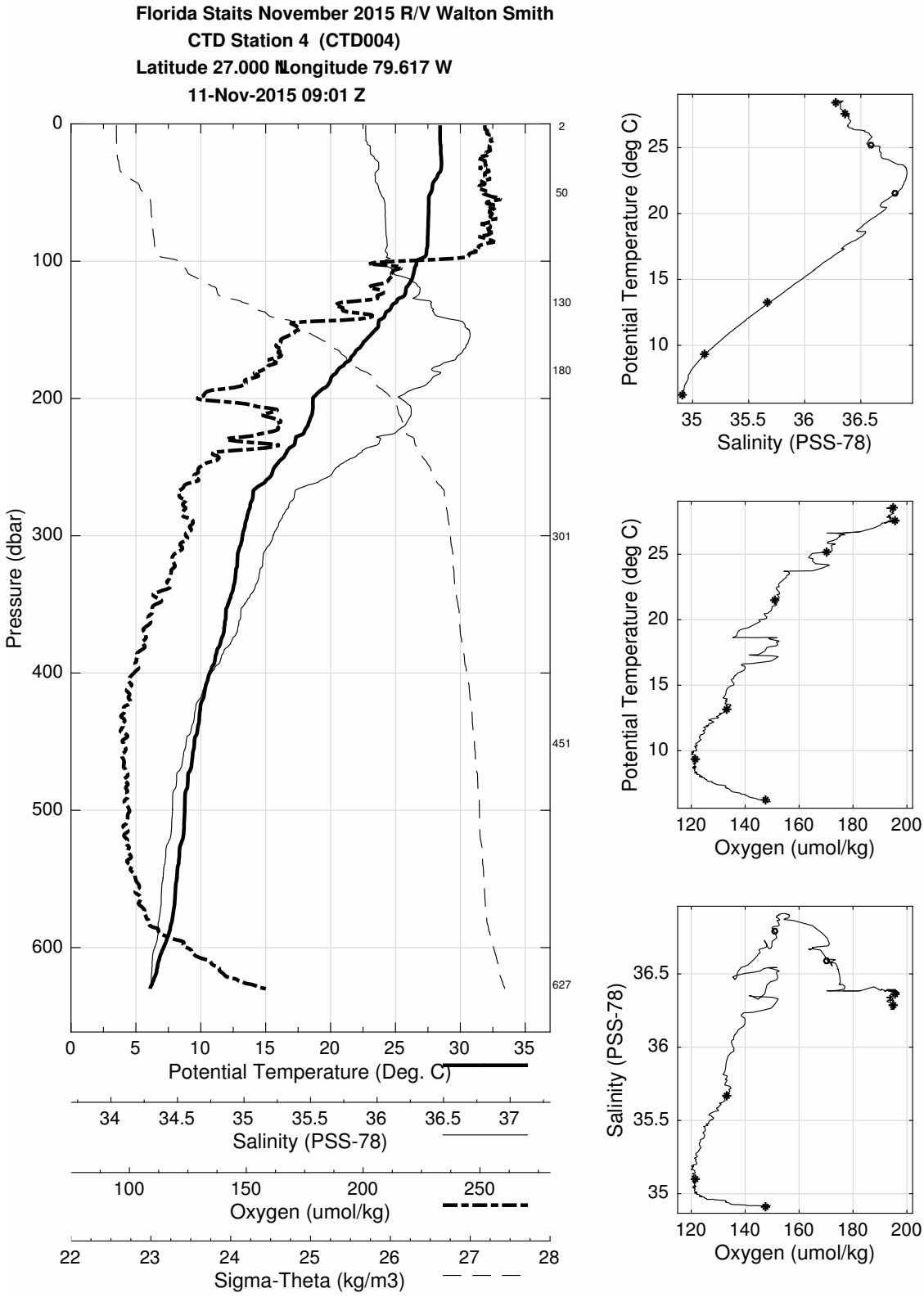
Pressure dbar	Niskin	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}
523	1	6.977	6.927	34.928	135.3
398	2	9.937	9.891	35.173	121.9
305	3	13.019	12.977	35.649	129.1
182	4	20.546	20.511	36.692	148.4
131	5	25.394	25.365	36.590	165.6
51	6	27.622	27.610	36.367	195.9
3	7	28.419	28.418	36.213	194.6


Florida Staits November 2015 R/V Walton Smith
CTD Station 3 (CTD003)
Latitude 26.996 N Longitude 79.685 W
11-Nov-2015 10:09 Z
Pressure (dbar)
Potential Temperature (Deg. C)
Salinity (PSS-78)
Oxygen (umol/kg)
Sigma-Theta (kg/m3)
Potential Temperature (deg C)
Salinity (PSS-78)
Potential Temperature (deg C)
Oxygen (umol/kg)
Salinity (PSS-78)
Oxygen (umol/kg)

Florida Straits 2015 R/V Walton Smith
CTD Station 4 (CTD004)
Latitude 27.000N Longitude 79.617W
11-Nov-2015 09:01Z

Pressure dbar	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}	DynHt m^2·s^{-2}	SigT kg·m^{-3}
1	28.441	28.441	36.260	193.9	0.005	23.197
10	28.443	28.441	36.260	195.0	0.047	23.197
20	28.493	28.489	36.287	194.6	0.093	23.202
30	28.546	28.539	36.340	193.9	0.140	23.225
50	27.742	27.730	36.350	193.6	0.231	23.498
75	27.535	27.518	36.384	195.0	0.339	23.593
100	26.642	26.619	36.383	176.3	0.446	23.882
125	25.714	25.686	36.584	172.0	0.542	24.327
150	23.481	23.449	36.906	156.2	0.621	25.248
200	18.677	18.641	36.479	135.4	0.734	26.244
250	15.726	15.687	36.081	136.0	0.817	26.652
300	13.257	13.214	35.681	133.2	0.884	26.877
400	10.736	10.687	35.292	122.8	1.002	27.060
500	8.818	8.763	35.051	121.8	1.104	27.196
600	7.189	7.131	34.939	133.4	1.196	27.353

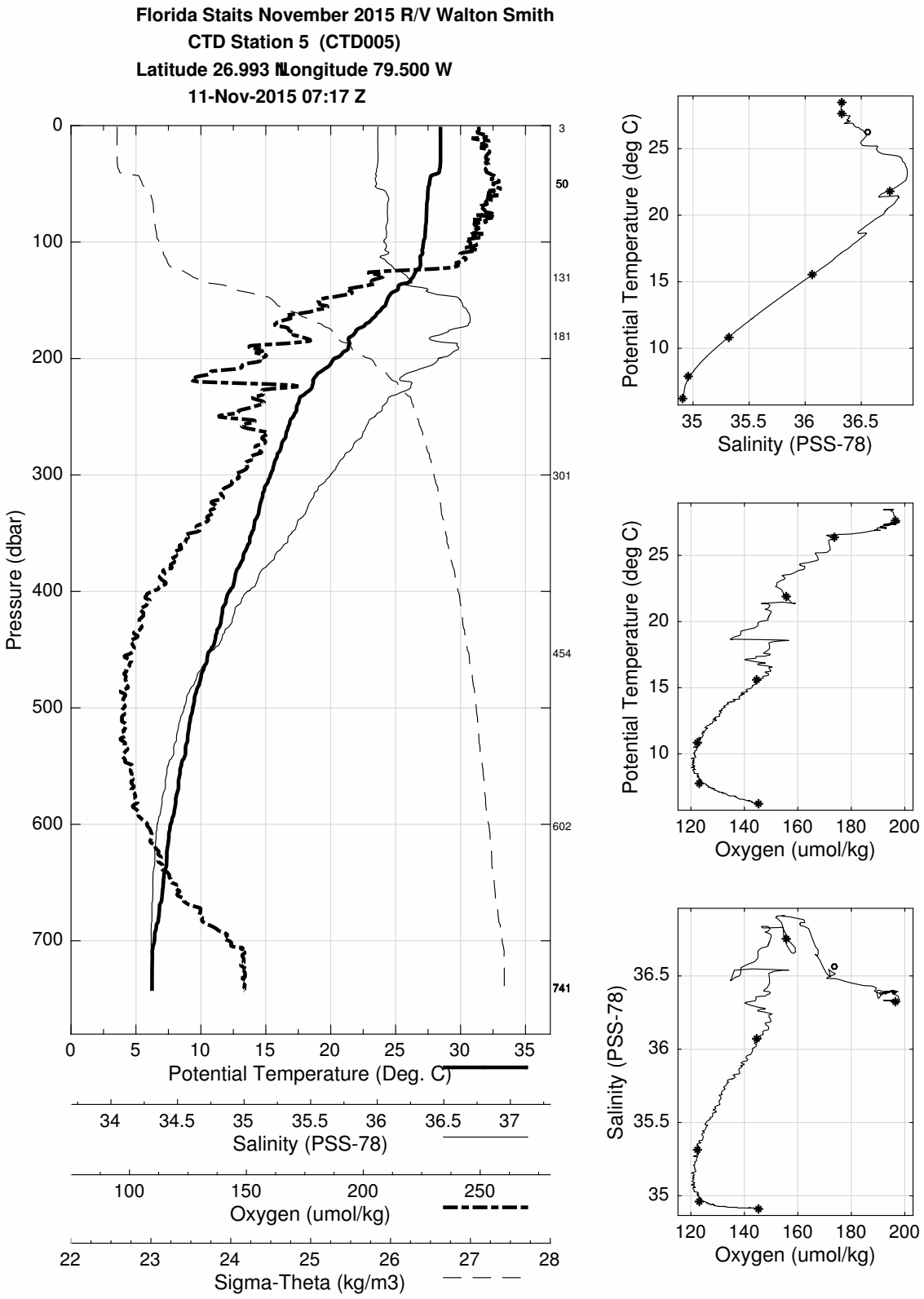
Pressure dbar	Niskin	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}
628	1	6.244	6.187	34.910	147.3
452	2	9.399	9.348	35.100	121.6
301	3	13.233	13.191	35.668	133.4
180	4	21.585	21.549	36.797	151.0
131	5	25.215	25.187	36.584	170.5
51	6	27.638	27.627	36.361	195.7
2	7	28.477	28.477	36.282	194.9


Florida Staits November 2015 R/V Walton Smith
CTD Station 4 (CTD004)
Latitude 27.000 N Longitude 79.617 W
11-Nov-2015 09:01 Z
Pressure (dbar)
Potential Temperature (Deg. C)
Salinity (PSS-78)
Oxygen (umol/kg)
Sigma-Theta (kg/m3)
Potential Temperature (deg C)
Salinity (PSS-78)
Potential Temperature (deg C)
Oxygen (umol/kg)
Salinity (PSS-78)
Oxygen (umol/kg)

Florida Straits 2015 R/V Walton Smith
CTD Station 5 (CTD005)
Latitude 26.993N Longitude 79.500W
11-Nov-2015 07:17Z

Pressure dbar	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}	DynHt m^2·s^{-2}	SigT kg·m^{-3}
1	28.456	28.456	36.334	193.5	0.005	23.248
10	28.458	28.456	36.333	195.2	0.046	23.247
20	28.462	28.457	36.334	195.0	0.092	23.247
30	28.462	28.455	36.334	195.8	0.139	23.248
50	27.617	27.605	36.325	196.2	0.229	23.521
75	27.393	27.376	36.393	196.0	0.337	23.646
100	27.171	27.148	36.371	191.7	0.443	23.704
125	26.604	26.575	36.481	174.3	0.547	23.970
150	24.371	24.339	36.852	160.7	0.636	24.943
200	20.299	20.262	36.709	148.8	0.764	25.996
250	17.147	17.105	36.314	140.2	0.853	26.498
300	15.406	15.359	36.037	143.9	0.929	26.692
400	12.244	12.191	35.518	127.0	1.062	26.954
500	9.441	9.384	35.123	121.0	1.172	27.152
600	7.718	7.657	34.953	125.8	1.268	27.288
700	6.486	6.421	34.917	142.4	1.350	27.432

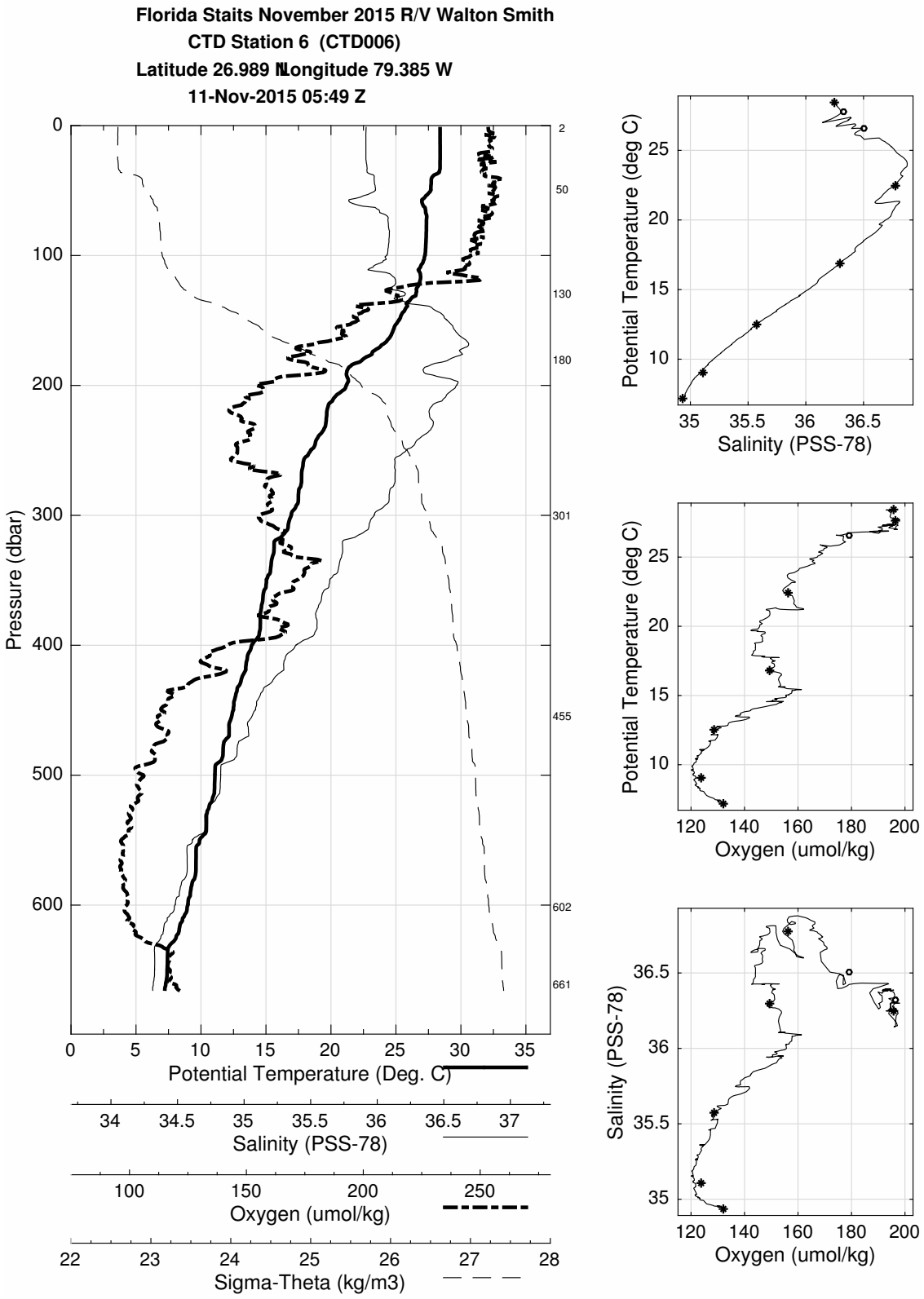
Pressure dbar	Niskin	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}
742	1	6.309	7.439	−999.000	−999.000
742	2	6.309	7.439	−999.000	−999.000
742	3	6.306	7.436	−999.000	−999.000
741	4	6.308	6.240	34.913	145.1
603	5	7.888	7.826	34.960	123.4
454	6	10.837	10.781	35.319	122.4
302	7	15.578	15.530	36.069	144.8
181	8	21.869	21.833	36.750	155.3
131	9	26.269	26.240	36.564	173.7
51	10	27.625	27.650	−999.000	−999.000
51	11	27.614	27.640	−999.000	−999.000
51	12	27.610	27.598	36.322	196.4
3	13	28.445	28.444	36.328	204.2


Florida Staits November 2015 R/V Walton Smith
CTD Station 5 (CTD005)
Latitude 26.993 N Longitude 79.500 W
11-Nov-2015 07:17 Z
Pressure (dbar)
Potential Temperature (Deg. C)
Salinity (PSS-78)
Oxygen (umol/kg)
Sigma-Theta (kg/m3)
Potential Temperature (deg C)
Salinity (PSS-78)
Potential Temperature (deg C)
Oxygen (umol/kg)
Salinity (PSS-78)
Oxygen (umol/kg)

Florida Straits 2015 R/V Walton Smith
CTD Station 6 (CTD006)
Latitude 26.989N Longitude 79.385W
11-Nov-2015 05:49Z

Pressure dbar	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}	DynHt m^2·s^{-2}	SigT kg·m^{-3}
1	28.397	28.397	36.250	195.3	0.005	23.204
10	28.399	28.396	36.249	195.4	0.047	23.204
20	28.406	28.401	36.249	195.8	0.093	23.202
30	28.401	28.394	36.254	193.7	0.140	23.208
50	27.684	27.672	36.306	196.4	0.230	23.485
75	27.366	27.348	36.386	194.3	0.338	23.650
100	27.255	27.232	36.376	191.7	0.445	23.680
125	26.627	26.598	36.399	176.5	0.549	23.901
150	25.247	25.214	36.748	168.6	0.642	24.597
200	21.226	21.187	36.805	148.1	0.781	25.817
250	18.478	18.434	36.495	144.1	0.880	26.309
300	16.991	16.941	36.300	148.5	0.964	26.527
400	13.956	13.898	35.819	142.1	1.107	26.842
500	11.134	11.071	35.359	125.0	1.230	27.042
600	9.056	8.989	35.080	121.5	1.337	27.183

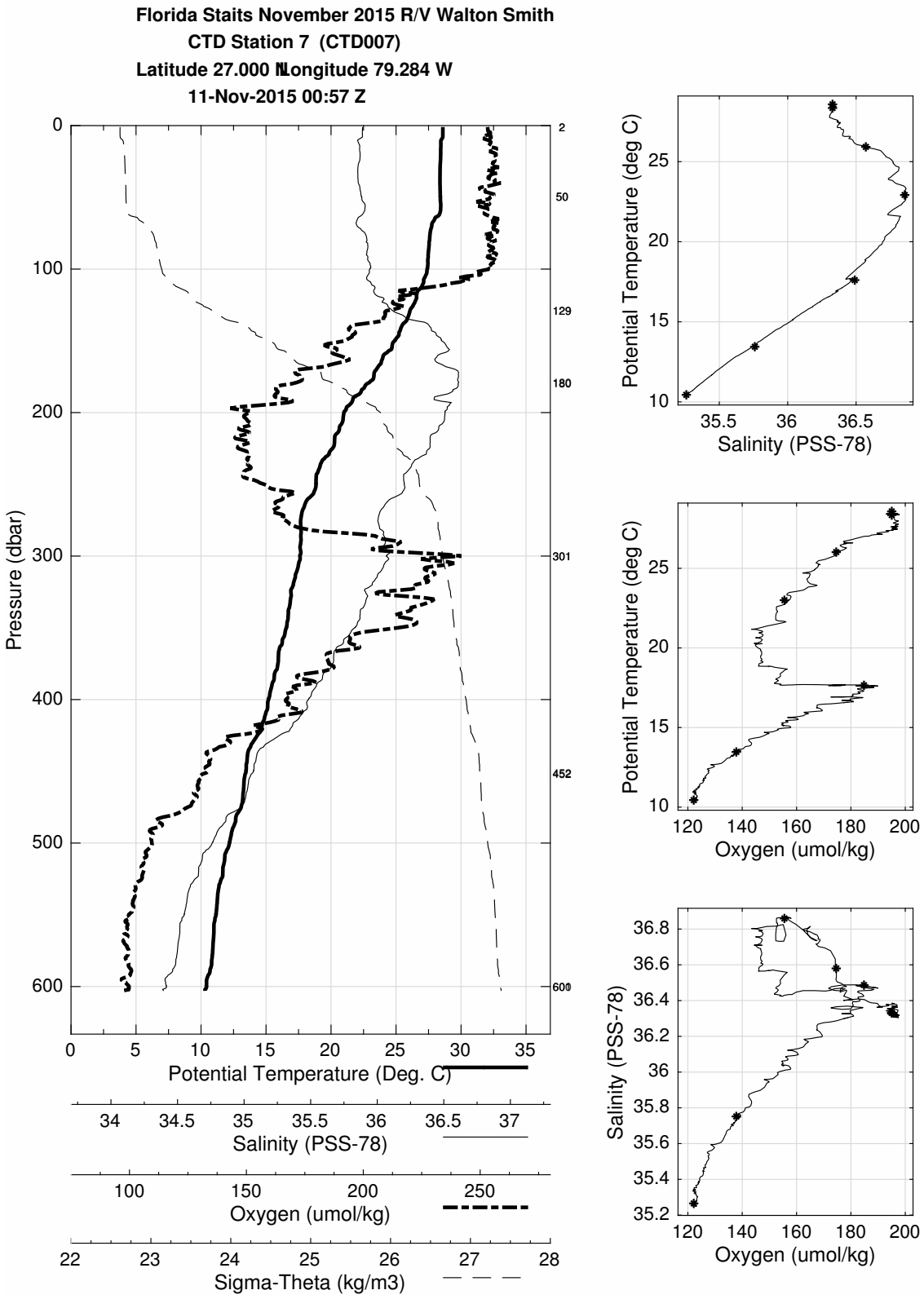
Pressure dbar	Niskin	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}
662	1	7.271	7.205	34.935	132.0
602	2	9.138	9.070	35.102	123.5
455	3	12.511	12.449	35.579	128.9
301	4	16.925	16.875	36.296	149.4
181	5	22.487	22.451	36.781	156.2
130	6	26.576	26.546	36.503	178.9
50	7	27.735	27.724	36.325	196.4
3	8	28.405	28.405	36.246	195.4


Florida Staits November 2015 R/V Walton Smith
CTD Station 6 (CTD006)
Latitude 26.989 N Longitude 79.385 W
11-Nov-2015 05:49 Z
Pressure (dbar)
Potential Temperature (Deg. C)
Salinity (PSS-78)
Oxygen (umol/kg)
Sigma-Theta (kg/m3)
Potential Temperature (deg C)
Salinity (PSS-78)
Potential Temperature (deg C)
Oxygen (umol/kg)
Salinity (PSS-78)
Oxygen (umol/kg)

Florida Straits 2015 R/V Walton Smith
CTD Station 7 (CTD007)
Latitude 27.000N Longitude 79.284W
11-Nov-2015 00:57Z

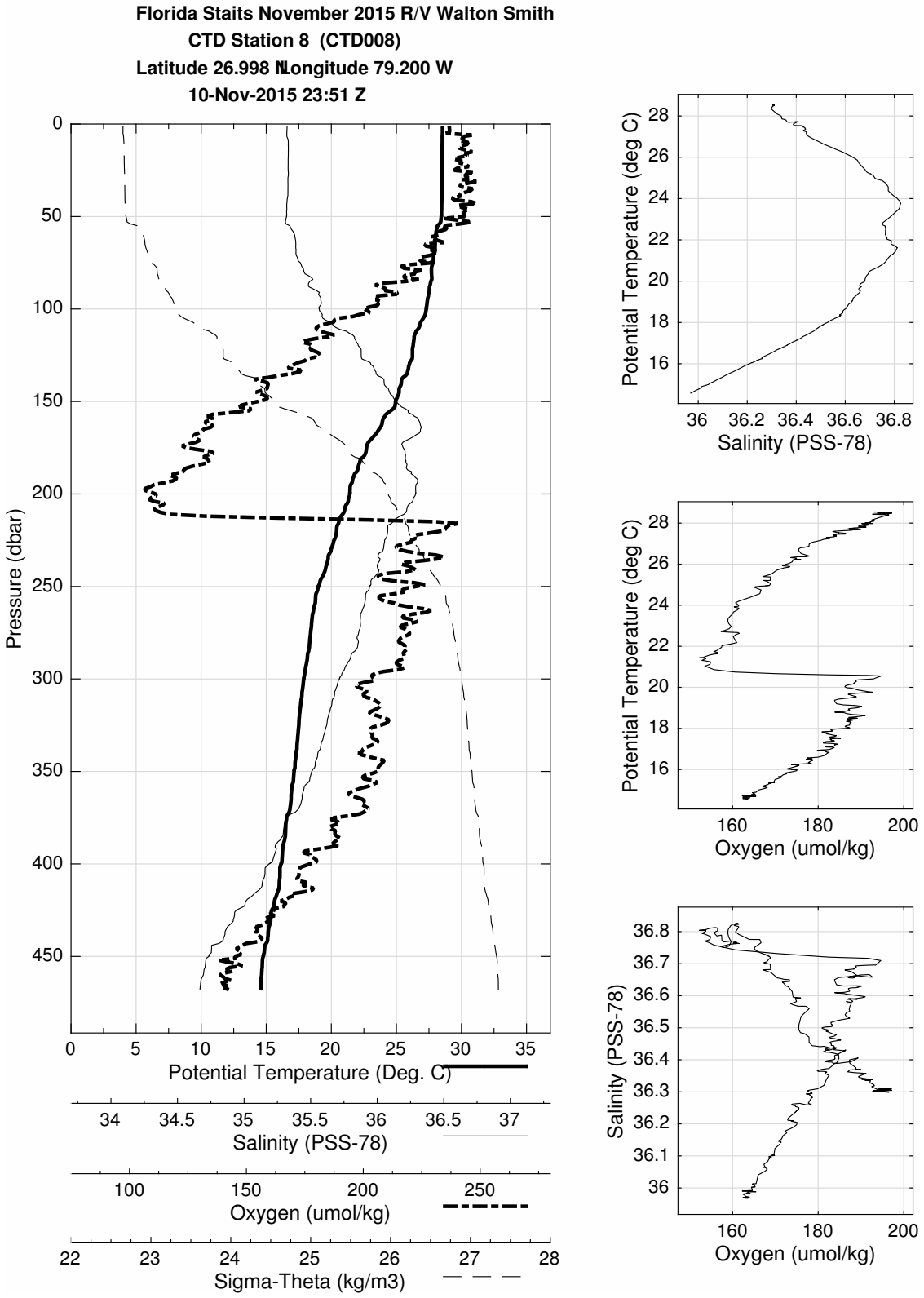
Pressure dbar	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}	DynHt m^2·s^{-2}	SigT kg·m^{-3}
1	28.600	28.600	36.341	195.2	0.005	23.205
10	28.465	28.463	36.314	195.2	0.047	23.230
20	28.439	28.434	36.327	197.1	0.093	23.250
30	28.396	28.388	36.315	195.5	0.139	23.256
50	28.422	28.410	36.336	195.7	0.232	23.265
75	27.636	27.618	36.354	195.8	0.345	23.538
100	27.423	27.399	36.380	195.6	0.454	23.629
125	26.352	26.324	36.477	177.2	0.557	24.046
150	24.921	24.888	36.773	166.5	0.646	24.716
200	21.023	20.985	36.791	147.3	0.784	25.863
250	18.889	18.844	36.568	150.3	0.885	26.260
300	17.656	17.604	36.470	189.9	0.970	26.496
400	15.244	15.182	36.044	154.6	1.123	26.737
500	12.251	12.184	35.519	127.6	1.255	26.957
600	10.492	10.418	35.269	123.1	1.371	27.090

Pressure dbar	Niskin	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}
601	1	10.493	10.420	35.264	122.3
601	2	10.492	11.290	−999.000	−999.000
452	3	13.516	13.452	35.755	137.8
453	4	13.508	14.047	−999.000	−999.000
301	5	17.712	17.660	36.485	184.7
301	6	17.712	18.011	−999.000	−999.000
180	7	22.960	22.923	36.859	155.3
180	8	22.968	23.101	−999.000	−999.000
130	9	25.972	25.943	36.575	174.4
130	10	25.976	26.052	−999.000	−999.000
50	11	28.415	28.403	36.331	195.0
50	12	28.413	28.436	−999.000	−999.000
2	13	28.580	28.579	36.332	194.7
2	14	28.580	28.581	−999.000	−999.000


Florida Staits November 2015 R/V Walton Smith
CTD Station 7 (CTD007)
Latitude 27.000 N Longitude 79.284 W
11-Nov-2015 00:57 Z
Pressure (dbar)
Potential Temperature (Deg. C)
Salinity (PSS-78)
Oxygen (umol/kg)
Sigma-Theta (kg/m3)
Potential Temperature (deg C)
Salinity (PSS-78)
Potential Temperature (deg C)
Oxygen (umol/kg)
Salinity (PSS-78)
Oxygen (umol/kg)

Florida Straits 2015 R/V Walton Smith
CTD Station 8 (CTD008)
Latitude 26.998N Longitude 79.200W
10-Nov-2015 23:51Z

Pressure	Temp90	PoTemp90	Salinity	Oxygen	DynHt	SigT
dbar	°C	°C	PSS-78	μmol·kg^{-1}	m^2·s^{-2}	kg·m^{-3}
1	28.544	28.543	36.306	193.5	0.005	23.197
10	28.530	28.527	36.310	196.1	0.047	23.206
20	28.522	28.517	36.310	195.2	0.093	23.209
30	28.509	28.502	36.309	195.2	0.140	23.213
50	28.464	28.452	36.303	195.6	0.233	23.226
75	27.824	27.806	36.357	191.2	0.346	23.479
100	27.322	27.299	36.430	181.9	0.454	23.699
125	26.264	26.236	36.593	175.2	0.554	24.162
150	24.973	24.940	36.729	167.6	0.642	24.667
200	21.465	21.425	36.804	153.7	0.778	25.751
250	19.047	19.002	36.625	188.9	0.883	26.264
300	17.936	17.884	36.509	183.3	0.970	26.457
400	16.200	16.135	36.236	174.6	1.129	26.667


Florida Staits November 2015 R/V Walton Smith
CTD Station 8 (CTD008)
Latitude 26.998 N Longitude 79.200 W
10-Nov-2015 23:51 Z
Pressure (dbar)
Potential Temperature (Deg. C)
Salinity (PSS-78)
Oxygen (umol/kg)
Sigma-Theta (kg/m3)
Potential Temperature (deg C)
Salinity (PSS-78)
Potential Temperature (deg C)
Oxygen (umol/kg)
Salinity (PSS-78)
Oxygen (umol/kg)