NOAA Data Report, OAR AOML - 82
https://doi.org/10.25923/g23r-a516

Hydrographic Measurements Collected in 2018 During Western Boundary Time Series Cruises in the Florida Current aboard the Research Vessels R/V *Walton Smith* and R/V *Savannah*, (FC1804, FC1806, FC1809, FC1810)

James A. Hooper V
Molly O. Baringer
Ryan H. Smith

Atlantic Oceanographic and Meteorological Laboratory
Miami, Florida
April 2021

noaa National Oceanic and Atmospheric Administration / Office of Oceanic and Atmospheric Research

NOAA Data Report OAR AOML - 82
https://doi.org/10.25923/g23r-a516

Hydrographic Measurements Collected in 2018 During Western Boundary Time Series Cruises in the Florida Current aboard the Research Vessels R/V *Walton Smith* and R/V *Savannah*, (FC1804, FC1806, FC1809, FC1810)

James A. Hooper V
University of Miami / Cooperative Institute for Marine and Atmospheric Studies
NOAA/ Atlantic Oceanographic and Meteorological Laboratory
Miami, Florida

Molly O. Baringer
NOAA/ Atlantic Oceanographic and Meteorological Laboratory
Miami, Florida

Ryan H. Smith
NOAA / Atlantic Oceanographic and Meteorological Laboratory
Miami, Florida

April 2021

UNITED STATES
DEPARTMENT OF COMMERCE

Gina M. Raimondo
Secretary

NATIONAL OCEANIC AND
ATMOSPHERIC ADMINISTRATION

Benjamin Friedman
Undersecretary for Oceans
and Atmosphere

OFFICE OF OCEANIC AND
ATMOSPHERIC RESEARCH

Craig N. McLean
Assistant Administrator

Disclaimer

NOAA does not approve, recommend, or endorse any proprietary product or material mentioned in this document. No reference shall be made to NOAA or to this document in any advertising or sales promotion, which would indicate or imply that NOAA approves, recommends, or endorses any proprietary product or proprietary material herein or which has as its purpose any intent to cause directly or indirectly the advertised product to be used or purchased because of this document.

The findings and conclusion on this report are those of the authors and do not necessarily represent the views of the funding agency.

Contents

List of Figures

List of Tables

Abstract

This report presents final calibrated conductivity, temperature, depth (CTD) data collected in the Florida Straits during four Western Boundary Time Series project (WBTS) research cruises conducted in 2018. These cruises took place aboard UNOLS ships R/V *F. G. Walton Smith* (FC1804, FC1809, FC1810) and R/V *Savannah* (FC1806). Funded through the Climate Program Office (CPO) of the National Oceanic and Atmospheric Administration (NOAA), these WBTS surveys were completed as part of a long term effort to monitor the strength and water mass properties of the Florida Current at 27°N in the Florida Straits.

1 Introduction

In 1982, NOAA began to regularly monitor the Florida Current across 27°N in the Florida Straits in an effort to develop a long-term record of the current's transport and water mass properties. As a leg of the Gulf Stream system in the North Atlantic Ocean, the Florida Current is the last component of this important western boundary current which is constrained by shallow channel bathymetry, as it flows through the Straits of Florida, making the section at 27°N an ideal location for a monitoring program.

It was recognized that a better understanding of the current's behavior and characteristics, including temporal and spatial modes of variability, is critical to determining the strength and variability of the North Atlantic Subtropical Gyre. The powerful Gulf Stream system transports heat and salt from lower latitudes poleward in the North Atlantic Ocean. The flow is comprised of water recirculating within the Subtropical Gyre as well as components from farther regions of the global ocean. For this reason, documenting the natural variations and characteristics of the current helps scientists to gain a better understanding of variations in the earth's climate and can potentially provide an early warning to anomalous changes.

NOAA's Atlantic Oceanographic and Meteorological Laboratory (AOML) in Miami, Florida, manages the WBTS project and monitors the Florida Current using a submarine cable, running across the Straits of Florida, which provides daily transport estimates of the current; regular small boat cruises at 27°N, which measure the current transport using a GPS dropsonde device, and regular hydrographic surveys at 27°N using larger research vessels. Moored instruments have also been used to estimate current transport over portions of the project's history.

This report documents final CTD data collected during WBTS hydrographic surveys of 27°N in 2018. It also provides some additional details regarding other measurements conducted during these research cruises. In 2018, four hydrographic surveys were completed. Three of these were conducted using the University of Miami's R/V *F. G. Walton Smith* (FC1804, FC1809, FC1810), and one was performed with the Skidaway Institute of Oceanography's R/V *Savannah* (FC1806).

On each survey, a CTD package, equipped with sensors designed to measure pressure, temperature, conductivity (to derive salinity), dissolved oxygen, and water velocity (via an attached lowered acoustic Doppler profiler, LADCP, system), was lowered from the surface to 10-20 m above the sea floor, at 9 historical locations extending across the Florida Straits between West Palm Beach, Florida and the Bahamas (Figure 1 and Tables 1 - 4). During each CTD cast, water samples were also collected at various depths. Of these, samples collected for salinity and dissolved oxygen analysis were used to calibrate CTD sensor data to a final state. These methods are detailed further in subsequent sections of this report.

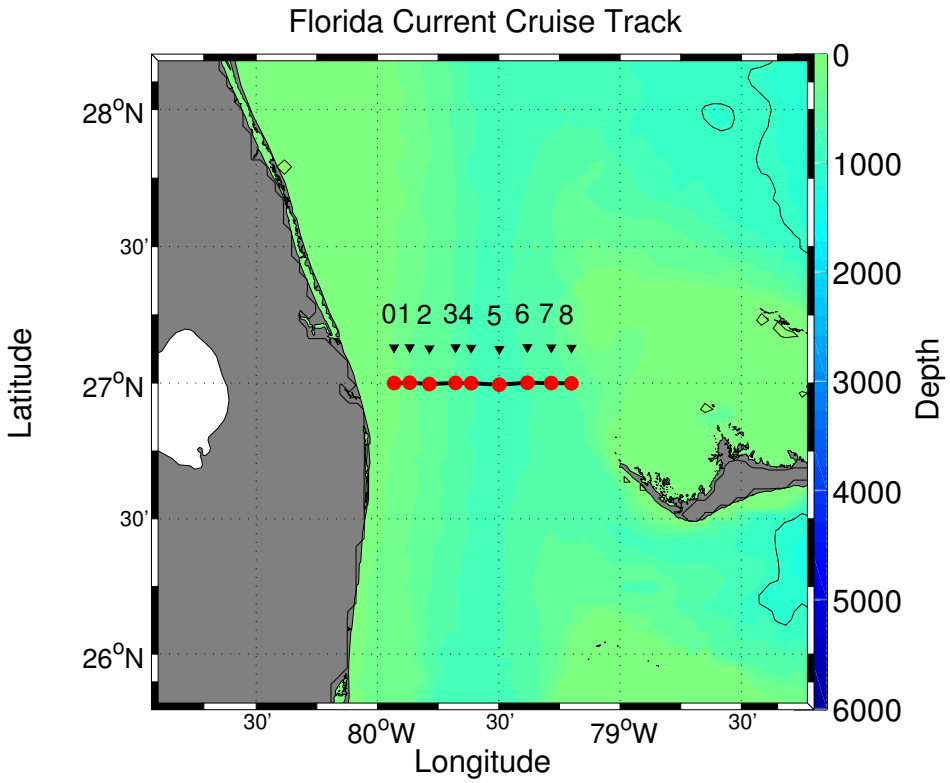


Figure 1: Historical sampling stations across the Straits of Florida at 27°N are shown above (red dots). CTD casts were conducted at each location (0-8) during each research cruise.

Table 1: Florida Current (FC1804) – CTD Cast Summary

Station	Date	Time (GMT)	Latitude	Longitude	Pressure
0	04/26/20	12:18:45	26.993N	79.928W	143
1	04/26/20	11:12:05	26.997N	79.861W	260
2	04/26/20	09:34:39	26.996N	79.785W	371
3	04/26/20	07:42:40	26.999N	79.677W	532
4	04/26/20	06:01:54	27.000N	79.614W	639
5	04/26/20	04:07:38	27.000N	79.497W	745
6	04/26/20	02:28:14	26.999N	79.384W	672
7	04/26/20	01:03:22	26.996N	79.285W	603
8	04/25/20	23:37:53	27.001N	79.200W	467

Table 2: Florida Current (FC1806) – CTD Cast Summary

Station	Date	Time (GMT)	Latitude	Longitude	Pressure
0	06/28/20	09:52:22	26.998N	79.930W	137
1	06/28/20	08:20:14	27.001N	79.865W	252
2	06/28/20	06:49:36	27.004N	79.781W	374
3	06/28/20	04:57:01	27.006N	79.680W	527
4	06/28/20	03:15:29	27.009N	79.618W	632
5	06/28/20	01:14:12	27.000N	79.496W	758
6	06/27/20	23:17:11	27.006N	79.384W	674
7	06/27/20	21:45:35	27.002N	79.283W	604
8	06/27/20	20:04:15	27.006N	79.200W	464

Table 3: Florida Current (FC1809) – CTD Cast Summary

Station	Date	Time (GMT)	Latitude	Longitude	Pressure
0	09/06/20	09:17:50	26.996N	79.932W	133
1	09/06/20	08:04:30	26.999N	79.869W	246
2	09/06/20	06:32:51	26.998N	79.784W	374
3	09/06/20	04:50:06	27.002N	79.685W	521
4	09/06/20	03:11:58	27.002N	79.615W	636
5	09/06/20	01:26:50	27.000N	79.501W	749
6	09/05/20	23:52:34	27.004N	79.391W	681
7	09/05/20	22:29:35	26.997N	79.285W	603
8	09/05/20	21:17:59	26.999N	79.210W	486

Table 4: Florida Current (FC1810) – CTD Cast Summary

Station	Date	Time (GMT)	Latitude	Longitude	Pressure
0	10/24/20	10:06:59	27.000N	79.930W	136
1	10/24/20	09:17:01	26.994N	79.866W	250
2	10/24/20	08:04:13	26.992N	79.784W	372
3	10/24/20	06:46:06	26.993N	79.688W	518
4	10/24/20	05:27:54	26.999N	79.610W	653
5	10/24/20	03:49:29	27.000N	79.501W	749
6	10/24/20	02:17:37	27.001N	79.384W	659
7	10/24/20	00:53:15	26.998N	79.286W	607
8	10/23/20	23:33:51	26.999N	79.202W	474

2 Additional Sampling

Discrete nutrient and dissolved inorganic carbon samples were taken during the 2018 Florida Current cruises. Tables 5-8 summarize the bottle trip locations for each cruise.

Table 5: FC1804: Discrete Carbon and Nutrient Sampling positions.

Niskin	Station								
	0	1	2	3	4	5	6	7	8
1	C,N(d)	C,N	C,N	C,N	C,N(d)	C,N	C,N(d)	C,N	C,N
2	C,N	C,N	C,N	C,N	C,N	C,N	C,N	C,N	C,N
3	C,N(d)	C,N	C,N	C,N(d)	C,N	C,N	C,N	C,N	C,N
4	C,N	C,N	C,N(d)	C,N	C,N	C,N	C,N	C,N(d)	C,N
5		C,N(d)	C,N	C,N	C,N	C,N	C,N	C,N	C,N(d)
6			C,N	C,N	C,N	C,N	C,N	C,N	C,N(d)
7				C,N	C,N(d)	C,N(d)	C,N(d)	C,N(d)	
13						C,N	C,N		

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

Table 6: FC1806: Discrete Carbon and Nutrient Sampling positions.

Niskin	Station								
	0	1	2	3	4	5	6	7	8
1	C,N(d)	C,N	C,N	C,N	C,N	C,N	C,N	C,N	C,N
2	C,N	C,N	C,N(d)	C,N	C,N(d)	C,N	C,N	C,N	C,N
3	C,N	C,N	C,N	C,N	C,N	C,N(d)	C,N	C,N	C,N
4	C,N(d)	C,N(d)	C,N	C,N	C,N	C,N	C,N	C,N(d)	C,N
5		C,N	C,N	C,N	C,N	C,N(d)	C,N	C,N	C,N(d)
6			C,N(d)	C,N(d)	C,N(d)	C,N	C,N	C,N(d)	C,N
7				C,N	C,N	C,N	C,N(d)	C,N	
13						C,N	C,N		

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

Table 7: FC1809: Discrete Carbon and Nutrient Sampling positions.

Niskin	Station								
	0	1	2	3	4	5	6	7	8
1	C,N(d)	C,N	C,N	C,N	C,N	C,N	C,N	C,N	C,N
2	C,N	C,N	C,N(d)	C,N	C,N(d)	C,N	C,N	C,N	C,N
3	C,N	C,N	C,N	C,N	C,N	C,N(d)		C,N	C,N
4	C,N(d)	C,N(d)	C,N	C,N	C,N	C,N	C,N	C,N(d)	C,N
5		C,N	C,N	C,N	C,N	C,N(d)	C,N	C,N	C,N(d)
6			C,N(d)	C,N(d)	C,N(d)	C,N	C,N	C,N(d)	C,N
7				C,N	C,N	C,N	C,N(d)	C,N	
13						C,N	C,N		

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

Table 8: FC1810: Discrete Carbon and Nutrient Sampling positions.

Niskin	Station								
	0	1	2	3	4	5	6	7	8
1	C,N(d)	C,N	C,N	C,N	C,N	C,N	C,N	C,N	C,N
2	C,N	C,N	C,N(d)	C,N	C,N(d)	C/N	C,N	C,N	C,N
3	C,N	C,N	C,N	C,N	C,N	C,N(d)	C,N	C,N	C,N
4	C,N(d)	C,N(d)	C,N	C,N	C,N	C,N	C,N	C,N(d)	C,N
5		C,N	C,N	C,N	C,N	C,N(d)	C,N	C,N	C,N(d)
6			C,N(d)	C,N(d)	C,N(d)	C,N	C,N	C,N(d)	C,N
7				C,N	C,N		C,N(d)	C,N	
13						C,N	C,N		

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

3 Standards and Pre-Cruise Calibrations

The CTD 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 SBE11plus 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 networked Windows computer for display and data storage using Sea-Bird Seasave software.

The SBE911plus system transmits data from primary, secondary 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 SBE911plus 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 SBE9plus underwater unit is configured with dual standard modular temperature (SBE3plus) and conductivity (SBE4) 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 (SBE43) are added to the pumped sensor configuration following the temperature-conductivity (TC) pair. A reference temperature sensor is mounted to the SBE9plus. A list of sensors used during the cruise can be seen in Table 9.

Table 9: FC2018 - Equipment used during CTD casts.

Instrument	SN	Stations	Use	Comment
AOML orange frame		0-8		FC1804, 1806, 1809, 1810
Sea-Bird SBE 32 24-palce Carousel Water Sampler	32 - 0980	0-8		FC1804, 1806, 1809, 1810
Sea-Bird SBE9plus CTD	0957	0-8		FC1804, 1806, 1809, 1810
Paroscientific Digiquartz Pressure Sensor	92973	0-8		
Sea-Bird SBE3plus Temperature Sensor	1652	0-8	Primary	FC1804, 1806, 1809, 1810
Sea-Bird SBE3plus Temperature Sensor	1609	0-8	Secondary	FC1804, 1806, 1809, 1810
Sea-Bird SBE4C Conductivity Sensor	1347	0-8	Primary	FC1804, 1806, 1809, 1810
Sea-Bird SBE4C Conductivity Sensor	1335	0-8	Secondary	FC1804, 1806, 1809, 1810
Sea-Bird SBE43 Dissolved Oxygen Sensor	0703	0-8	Primary	FC1804, 1806, 1809, 1810
Sea-Bird SBE43 Dissolved Oxygen Sensor	1266	0-8	Secondary	FC1804, 1806, 1809, 1810
Simrad 807 Altimeter	gold	0-8	scale: 15.0	FC1804, 1806, 1809, 1810
RDI LADCP - 300 kHz Workhorse (AOML)	13493	0-8	Upward	FC1804, 1806, 1809, 1810
RDI LADCP - 300 kHz Workhorse (AOML)	20550	0-8	Downward	FC1804, 1806, 1809, 1810

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 sensor utilized during the Florida Straits cruises was s/n 0957. Pre-cruise sensor calibrations were performed at Sea-Bird Electronics, Inc. in Bellevue, Washington. The calibration date and coefficients in Table 10 were entered into SEASAVE R 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 R automatically implements this equation.

Table 10: FC2018 – Pressure Calibration Date and Coefficients.

s/n 0957 October 09, 2014
c_1 = -4.701953e+04
c_2 = -3.199230e-01
c_3 = 1.464100e-02
d_1 = 3.748600e-02
d_2 = 0.000000e+00
t_1 = 3.002465e+01
t_2 = -3.417080e-04
t_3 = 4.277270e-06
t_4 = 2.793720e-09
t_5 = 0.000000e+00
Slope = 0.99996
Offset = -2.7284
AD590M = 1.28150e-02
AD590B = -9.22501e+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 SBE3plus thermometer has a typical accuracy/stability of ±0.004°C per year and resolution of 0.0003°C at 24 samples per second. The SBE3plus thermometer has a fast response time of 0.070 seconds.

The temperature sensors (SBE3plus) were used during the 2018 Florida Straits cruises, s/n 1652 and 1609. Pre-cruise sensor calibrations were performed at Sea-Bird Electronics, Inc. in Bellevue, Washington. The calibration dates and coefficients in Table 11 were entered into SEASAVE R using the configuration file. SEASAVE R 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 11: FC2018 – Temperature Calibration Dates and Coefficients.

s/n 1652	s/n 1609
January 30, 2018	January 27, 2018
g = 4.83715138e-03	g = 4.86646142e-03
h = 6.77742149e-04	h = 6.80593860e-04
i = 2.57818545e-05	i = 2.64834859e-05
j = 1.95220476e-06	j = 2.06266008e-06
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 (SBE4). 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 SBE4 has a typical accuracy/stability of ±0.0003 $S{\cdot}m^{-1}$/month and resolution of 0.00004 $S{\cdot}m^{-1}$ at 24 scans per second.

Two conductivity sensors were used during the 2018 Florida Straits cruises, s/n 1347 and 1335. Pre-cruise sensor calibrations were performed at Sea-Bird Electronics, Inc. in Bellevue, Washington. The calibration dates and coefficients shown in Table 12 were entered into Seasave R 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 R automatically implements this equation.

Table 12: FC2018 – Conductivity Calibration Dates and Coefficients.

s/n 1347 January 31, 2018	s/n 1335 February 14, 2018
g = -3.93443858e+00	g = -3.87045047e+00
h = 5.17592062e+01	h = 4.89278643e+01
i = -1.42393558e-04	i = -7.13781382e-05
j = 3.84181430e-05	j = 3.15227349e-05
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.

Two oxygen sensors were used during the 2018 Florida Straits cruises, s/n 0703 and 1266. The calibration dates and coefficients in Table 13 were entered into SEASAVE R using the configuration file.

Table 13: FC2018 – Oxygen Calibration Dates and Coefficients.

s/n 0703	s/n 1266
February 17, 2018	January 25, 2018
Soc = 0.52173	Soc = 0.41830
Voffset = -0.5221	Voffset = -0.5331
Tau20 = 1.22	Tau20 = 1.37
A = -3.6534e-03	A = -3.6840e-03
B = 1.2480e-04	B = 2.0557e-04
C = -1.8711e-06	C = -3.0805e-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 R 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 CTD Data Acquisition

CTD casts were performed with a package consisting of a 24-place, 10-liter rosette frame (AOML's orange frame), a 24-place water sampler pylon (SBE32) and 24, 10-liter Bullister-style Niskin bottles. This package was deployed on all casts. Underwater electronic components consisted of a SBE9plus CTD with dual pumps and the following sensors: dual temperature (SBE3plus), dual conductivity (SBE4), dual dissolved oxygen (SBE43) and an altimeter. The additional underwater electronic components consisted of two RDI 300 kHz LADCPs, one upward facing instrument and one downward facing instrument to measure water velocities. A total of 36 CTD casts were conducted during the four cruises usually to within 10-20 m of the bottom.

The CTD's supplied a standard Sea-Bird format data stream at a data rate of 24 frames/second. The SBE9plus CTD was connected to the SBE32 24-place pylon providing for single-conductor sea cable operations. Power to the SBE9plus CTD, SBE32 pylon, auxiliary sensors, and altimeter was provided through the sea cable from the SBE11plus deck unit in the computer lab. The CTD frame 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 SBE3plus 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 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 the support struts 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 during FC1804, FC1809, and FC18010. The R/V *Savannah's* starboard J-frame CTD winch was used with the 24-place 10-liter rosette for all station/casts during FC1804. 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 Niskin 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

- FC1804 - No viable dissolved oxygen samples were collected during the FC1804 survey, due to problems with the chemical reagents required to fix the oxygen samples prior to analysis.

4.2 CTD Operations

Prior to each cast, the deck watch prepared the CTD rosette for sampling. All valves, vents, and lanyards were checked for proper orientation. Niskin bottles were cocked, and all hardware and connections rechecked. Fifteen minutes or so prior to station, the deck unit was powered on and an on-deck pre-cast pressure was obtained. Once on station, the syringes were removed from the CTD sensor intake ports. Tag lines were used if necessary for both deployments and recoveries during the cruises. As directed by the deck watch leader, the CTD was lowered to 10 m for a 2-minute soak to remove any air bubble from the sensor lines and to make sure the sensors were behaving appropriately. The CTD was then brought back to just below the surface, with the console operator recording a Mark Scan just prior to beginning the descent. The profiling rate was no more than 30 m/min to 100 m and no more than 60 m/min deeper than 100 m. Upon recovery, the CTD deck unit was turned off once the on-deck pressure was recorded. The CTD frame was left on deck for sampling. The bottles and rosette were examined before samples were taken and anything unusual was noted on the sample log.

A console operator monitored the progress of the deployment and quality of the CTD data through interactive graphics and operational displays of the Seasave software. Additionally, the operator created a sample log for each cast, to be used 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 CTD package from the bottom, usually allowing a safe approach to within 10-20 m.

On the up-cast, the winch operator stopped at each predetermined bottle trip depth following instructions from the CTD console operator. The CTD console operator then waited 30 seconds before closing a bottle. 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 operator then directed the winch operator to raise the package up to the next bottle trip location. After the last bottle was tripped, the console operator directed the deck watch to bring the CTD package back on deck.

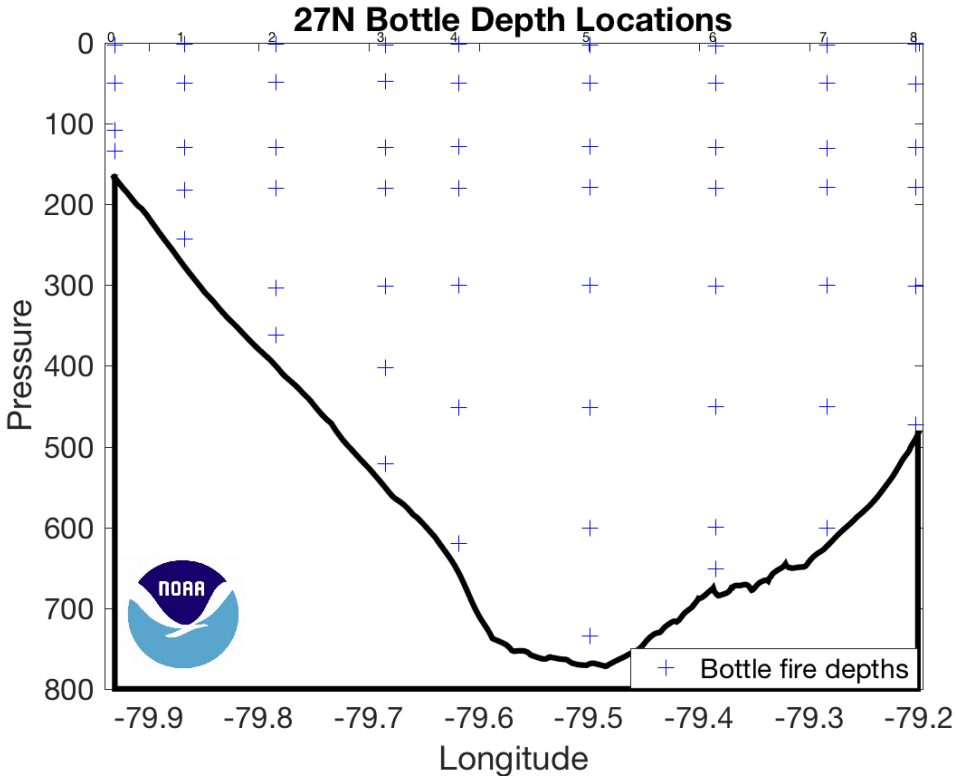


Figure 2: Nominal bottle locations for 27°N section in the Florida Straits.

4.3 Shipboard CTD Data Processing

Shipboard CTD data processing was performed automatically at the end of each deployment using SEABIRD SBE Data Processing version 7.26.7.114 and AOML Matlab processing software. The raw CTD data and bottle trips acquired by SBE Seasave on the Windows 10 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 R 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 R processing module sequence and specifications for calibrated data (1 dbar averages) 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 ml/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. Primary and secondary conductivity were automatically advanced by 0.073 seconds. Primary and secondary oxygen were advanced by 1.073.

3. 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.

4. 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.

5. 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.

6. 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.

7. 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.

8. DERIVE uses pressure, temperature, and conductivity to compute primary and secondary salinities, potential temperatures and densities. 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. TRANS converts the binary data file into ASCII format.

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

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 36 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 9.

A dual sensor configuration was employed on the CTD for temperature (T), conductivity (C), and dissolved oxygen (DO2). The secondary sensor set served as a calibration check for the primary sensors. During every cast, in-situ salinity and DO2 bottle samples were

collected for use in calibrating both the primary and secondary C and O2 sensors. During this particular cruise, it was determined that the secondary temperature, conductivity and dissolved oxygen sensors each behaved more stably than their primary counterparts.

4.4.1 Salinity Analysis

A Guildline Autosal, model 8400B laboratory salinometer, located in the climate-controlled salt van outside of AOML was used to determine the salinity of all water samples collected. Salinometer data output was logged to a computer file using Ocean Scientific International's (OSI) logging hardware and software interface. As a standard operating practice, the Autosal's water bath temperature was maintained at 24°C. In conjunction with this, to help further stabilize the Autosal and to improve measurement accuracy, the climate-controlled laboratory temperature was maintained at 1 to 2 degrees below 24°C. Salinity analyses were performed after samples had equilibrated to laboratory temperature, usually within a couple days after collection. The salinometer was routinely *standardized* for each group of salinity samples analyzed (usually 2 casts, up to 58 samples) using two bottles of standard seawater: one at the beginning, and one at the end of each group of samples. For each calibration standard, the salinometer cell was initially flushed 6 times before a set of conductivity ratio reading was taken. For each salinity sample, the salinometer cell was initially flushed at least 3 times before a set of conductivity ratio readings were taken. The analyst flushed the cell of the Autosal and changed samples as prompted by the OSI software. Before each analysis session (or *run*) a sub-standard flush of the Autosal, with approximately 200 ml of seawater, was performed prior to the standardization mentioned above. This assured that any deionized water that may have been stored in the cell of the Autosal between extended periods of inactivity was completely flushed from the system.

IAPSO Standard Seawater Batch P-158 (FC1804) and P-160 (FC1806, FC1809, FC1810) were used to standardize all casts (Table 15).

Table 14: FC2018 - Nominal values for the batches of IAPSO standard seawater.

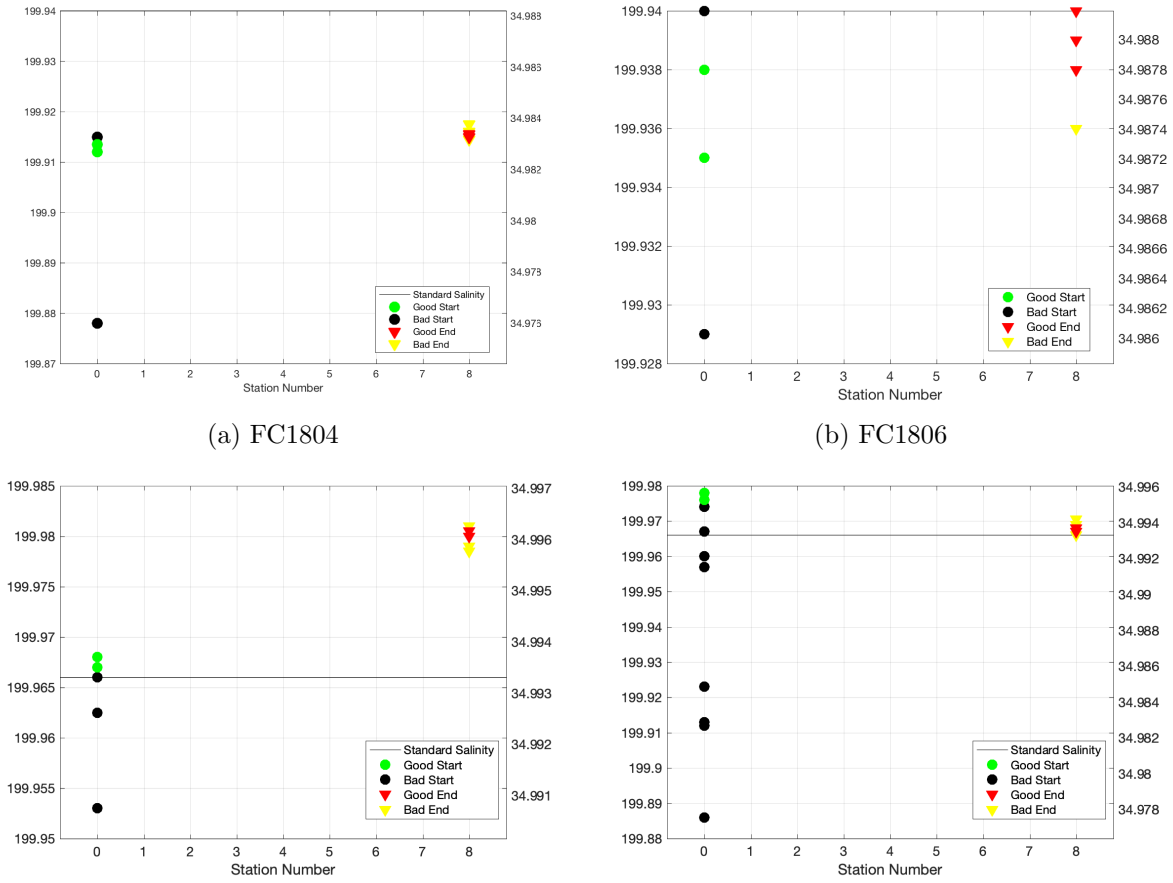
P-158
Use By: March 2018
K15: 0.99970
Salinity: 34.988

Table 15: FC2018 - Nominal values for the batches of IAPSO standard seawater.

P-160
Use By: July 2019
K15: 0.99983
Salinity: 34.993

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 polypropylene screw caps fitted with *Polyseal* poly cone inserts to prevent sample evaporation. 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 dataset. When duplicate measurements were deemed to have been collected and run properly, they were averaged and submitted with a quality flag of 6. On the four Florida Straits cruises, a total of 232 salinity measurements were taken.

The running standard calibration values are shown in Figure . For FC1804 and FC1806 the autosal standards drift was negligible. For FC1809 the autosal standards drifted by 0.00013 in conductivity ratio (about 0.003 in salinity). For FC1810 the autosal standards drifted by 0.0001 in conductivity ratio (about 0.002 in salinity).



(a) FC1804

(b) FC1806

(c) FC1809

(d) FC1810

Figure 3: Standard vial calibrations throughout the cruise before and after each Autosal run. The green dots and red triangles are the good values used before and after each run to calculate salinity and drift corrections, respectively. The black dots and yellow triangles are the bad values not used.

4.4.2 Oxygen Analysis

Dissolved oxygen samples were drawn from Niskin bottles into calibrated 125 iodine titration flasks using silicon tubing. Bottles were rinsed three times and filled from the bottom via the tubing, overflowing three volumes while taking care not to entrain any bubbles. 1 ml of $MnCl_2$ and 1 ml of $NaOH/NaI$ were added immediately after drawing the sample was concluded using a ThermoScientific REPIPET II. The flasks were then stoppered and well shaken. Deionized water was added to the neck of each flask to create a water seal. 226 oxygen samples were collected during the 3 cruises, including 52 duplicate samples (up to two duplicates taken randomly during each cast). Samples were stored on the ship in plastic totes and brought back to the AOML oxygen lab for analysis. NOTE: No viable dissolved oxygen samples were collected during the FC1804 survey, due to problems with the chemical reagents required to fix the oxygen samples prior to analysis.

Dissolved oxygen analyses were performed with an automated titrator using amperometric end-point detection (Langdon, 2010). The titrator was interfaced with a computer running LabView software customized by Ulises Rivero (NOAA/AOML). The software handled the sample titration and data logging; it also provided a graphical display of the data for the analyst. Thiosulfate (17.5 g per 500 ml) was dispensed by a 2 ml Gilmont burette driven with a stepper motor controlled by the titrator. The titration methodology follows techniques outlined by Carpenter (1965) and Culberson et al. (1991). Four replicate 10 ml iodate standards were run initially or once the thiosulfate bottle had reached half its volume, which ever came first. The reagent blank (the difference between thiosulfate volumes required to titrate two 1 ml aliquots of the iodate standard) was determined at the lab prior to running the oxygen samples. 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 immediately prior to the cruise. Oxygen flask volumes were also determined gravimetrically with degassed deionized water at AOML prior to use.

The data collected from the oxygen titrations performed were incorporated into the cruise dataset shortly after analysis.

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. The same pressure sensor as well as primary and secondary temperature, conductivity and oxygen sensors were used during the cruises as listed in Table 9. For all Florida Current cruises in 2018 the secondary T, C, and O were selected for final data reduction.

5.1 CTD Data Processing

In addition to the Seasave R processing modules, a group of Matlab script files collectively referred to as the AOML/CTDCAL Toolbox were used. These scripts are based on earlier work of different groups and 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.

- FILL_SURFACE was used to copy the first good value of salinity, temperature, oxygen and oxygen current back to the surface. The program then calculated potential temperature and conductivity, and zeroed doc/dt of oxygen current for those records.
- DESPIKE1 removed spikes from primary temperature, salinity and oxygen data. 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.
- CTD 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 Seasave R 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}.

Final calibrations are applied to delooped data files. ITS-90 temperature, PSS-78 salinity, and oxygen are computed, and WOCE quality flags are created (these flags and other CTD processing standards were established during the World Ocean Circulation Experiment in the 1990's).

5.2 CTD Pressure

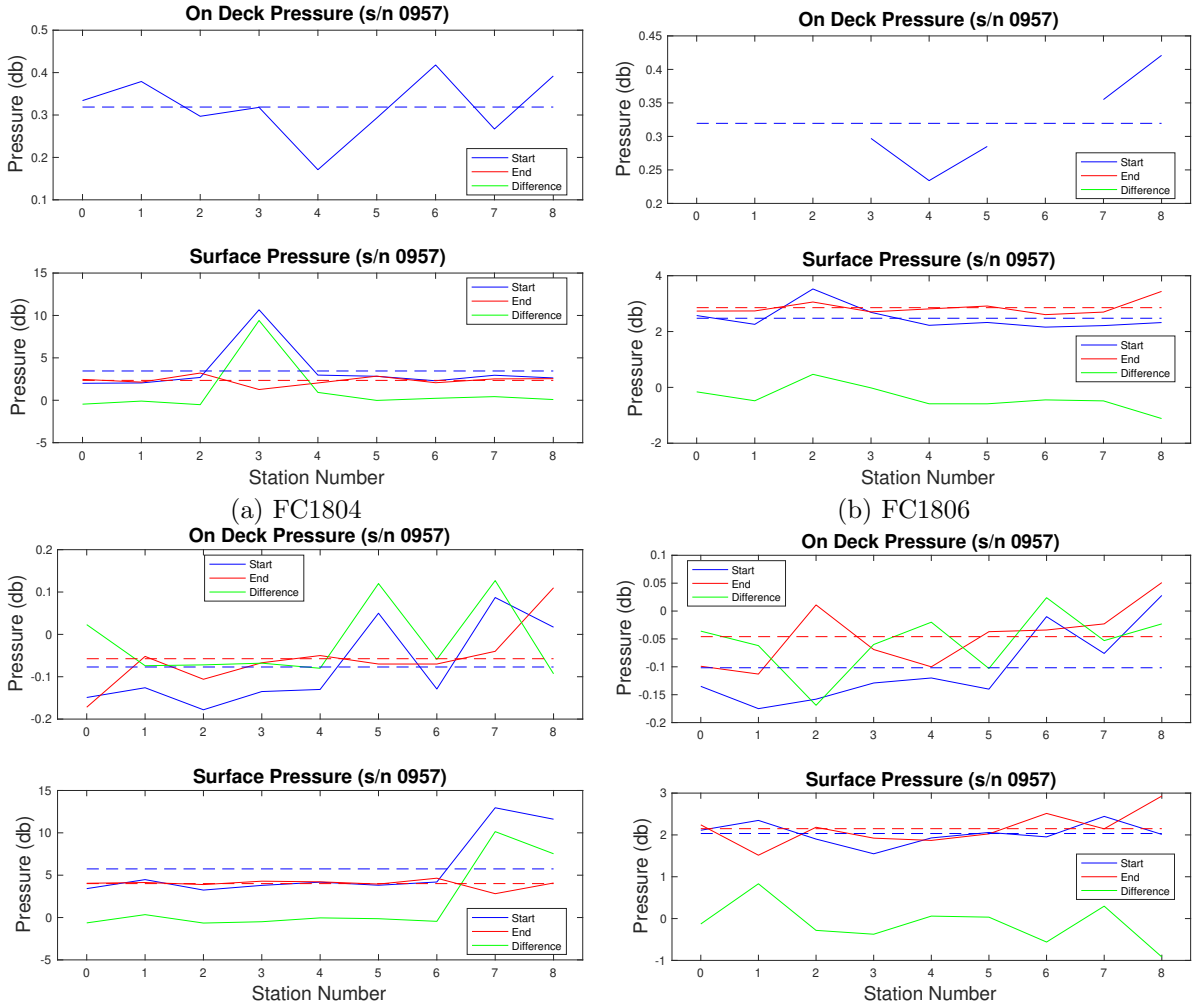
The Seabird pre-cruise pressure sensor calibration coefficients were applied to raw pressure data during each cast. Residual pressure offsets (the difference between the first and last submerged pressures) were examined to check for calibration shifts (see Figure 4 and Tables 16 - 19. All cruises used pressure sensor s/n 0957. Prior to each cruise a pressure offset of -0.588 (FC1804), -0.277 (FC1806), and -0.948 (FC1809 and FC1810) was applied to the original offset, -2.7284, in the pressure configuration file for a total pressure offset of -3.3164, -3.0054 and -3.6764, respectively. On deck pressures recorded before and after each cast are plotted in Figure 4.

For FC1804 the on deck pressure before the cast was stable at 0.32 ± 0.08 dbar (median ± standard deviation). No pressure correction offset was necessary 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 (3.45 ± 2.73 dbar before and 2.34 ± 0.55 dbar after).

For FC1806 the on deck pressure before the cast was stable at 0.32 ± 0.06 dbar. No pressure correction offset was necessary before final calibration of the data. Near surface pressure values showed a little variability over the cruise between the start and end surface pressure (2.48 ± 0.43 dbar before and 2.86 ± 0.26 dbar after).

For FC1809 the on deck pressure before and after the cast was stable at -0.08 ± 0.1 dbar and -0.06 ± 0.1 dbar, respectively. No pressure correction offset was necessary before final calibration of the data. Near surface pressure values showed little variability over the cruise between the start and end surface pressure (5.74 ± 3.74 dbar before and 4.01 ± 0.50 dbar after).

For FC1810 the on deck pressure before and after the cast were stable at -0.10 ± 0.07 dbar and -0.05 ± 0.05 dbar, respectively. No pressure correction offset was necessary before final calibration of the data. Near surface pressure values showed little variability over the cruise between the start and end surface pressure (2.03 ± 0.26 dbar before and 2.15 ± 0.40 dbar after).



(a) FC1804

(b) FC1806

(c) FC1809

(d) FC1810

Figure 4: Top panel are the pressures (s/n 0957) measured on deck before the cast (blue), at the end of the upcast (red) and differences (green). 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 the difference (green).

Table 16: FC1804 - Near surface pressure values and scan number used to remove surface soak and on-deck values (-999's are data no recorded).

Station	Markscan	Deck Prs Start	Deck Prs End	Sfc Prs Start	Sfc Prs End
0	2992	0.3340	-999.0000	2.0000	2.4600
1	2751	0.3790	-999.0000	2.0430	2.1400
2	3164	0.2970	-999.0000	2.6890	3.2090
3	3880	0.3180	-999.0000	10.6700	1.2670
4	2995	0.1710	-999.0000	2.9670	2.0400
5	2968	0.2930	-999.0000	2.8260	2.8430
6	2283	0.4180	-999.0000	2.2990	2.0670
7	2479	0.2670	-999.0000	2.9510	2.5220
8	3810	0.3920	-999.0000	2.6320	2.5460

Table 17: FC1806 - Near surface pressure values and scan number used to remove surface soak and on-deck values (-999's are data no recorded).

Station	Markscan	Deck Prs Start	Deck Prs End	Sfc Prs Start	Sfc Prs End
0	2270	0.3250	-999.0000	2.5730	2.7330
1	3105	-999.0000	-999.0000	2.2580	2.7380
2	2425	-999.0000	-999.0000	3.5252	3.0580
3	2721	0.2970	-999.0000	2.6870	2.7050
4	3517	0.2340	-999.0000	2.2230	2.8110
5	3087	0.2850	-999.0000	2.3250	2.9140
6	2510	-999.0000	-999.0000	2.1580	2.6060
7	3444	0.3550	-999.0000	2.2130	2.6970
8	3248	0.4210	-999.0000	2.3220	3.4380

Table 18: FC1809 - Near surface pressure values and scan number used to remove surface soak and on-deck values (-999's are data no recorded).

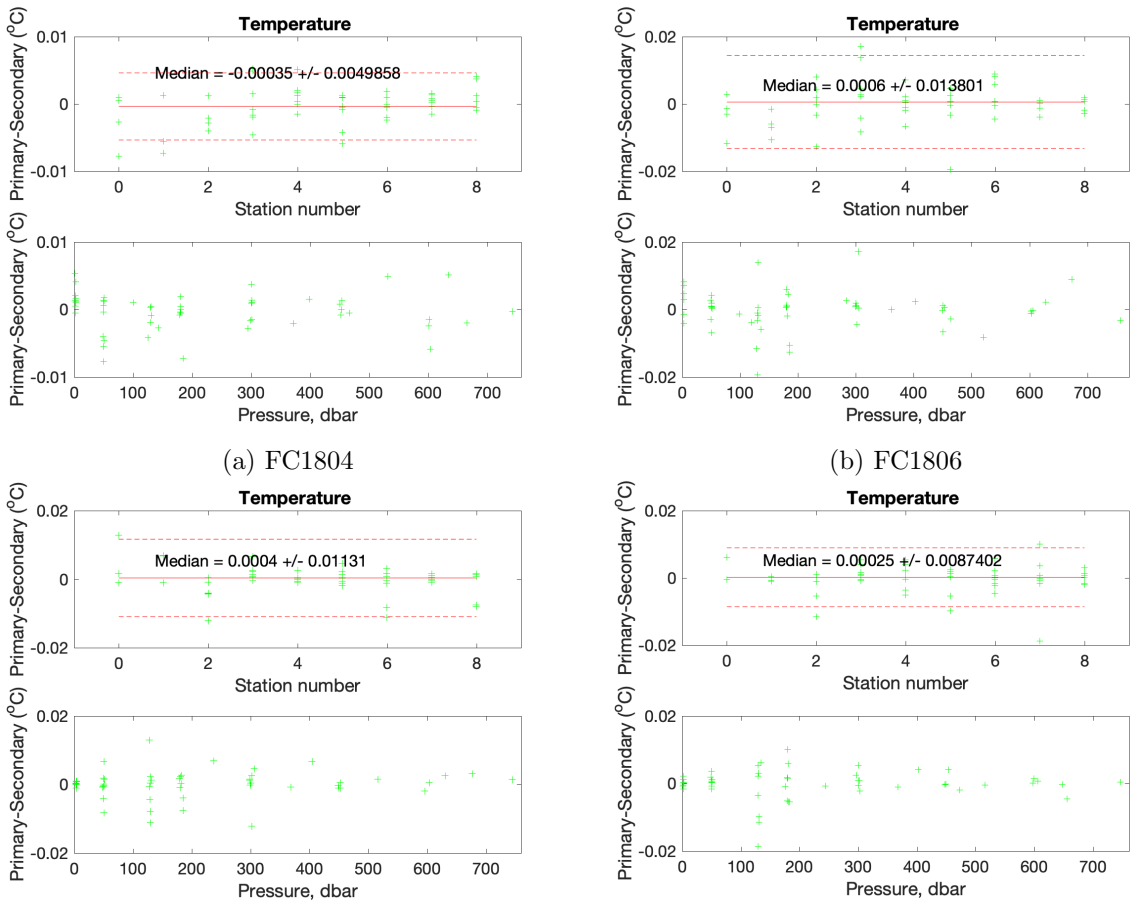
Station	Markscan	Deck Prs Start	Deck Prs End	Sfc Prs Start	Sfc Prs End
0	3283	-0.1490	-0.1720	3.4130	4.0460
1	3188	-0.1260	-0.0520	4.4770	4.1350
2	2851	-0.1780	-0.1060	3.2420	3.8930
3	4063	-0.1350	-0.0670	3.7970	4.2920
4	3941	-0.1300	-0.0500	4.1750	4.2150
5	3424	0.0500	-0.0700	3.8130	3.9510
6	4371	-0.1290	-0.0700	4.1950	4.6450
7	2018	0.0870	-0.0400	12.9580	2.8150
8	2583	0.0170	0.1100	11.6080	4.0780

Table 19: FC1810 - Near surface pressure values and scan number used to remove surface soak and on-deck values (-999's are data no recorded).

Station	Markscan	Deck Prs Start	Deck Prs End	Sfc Prs Start	Sfc Prs End
0	3503	-0.1350	-0.0990	2.1120	2.2410
1	3355	-0.1750	-0.1130	2.3470	1.5150
2	3282	-0.1580	0.0110	1.9010	2.1830
3	3649	-0.1290	-0.0690	1.5490	1.9230
4	3502	-0.1200	-0.1000	1.9280	1.8690
5	3556	-0.1400	-0.0370	2.0590	2.0250
6	3456	-0.0100	-0.0340	1.9530	2.5140
7	3456	-0.0760	-0.0230	2.4430	2.1460
8	3670	0.0280	0.0510	2.0120	2.9290

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 FC1804 there was a median of -0.0003 °C and a standard deviation of 0.005 °C. For FC1806 there was a median of 0.0006 °C and a standard deviation of 0.014 °C. For FC1809 there was a median of 0.0004 °C and a standard deviation of 0.01 °C. For FC1810 there was a median of 0.0002 °C and a standard deviation of 0.009 °C. The secondary sensor, s/n 1609, was used for all cruises.



(a) FC1804

(b) FC1806

(c) FC1809

(d) FC1810

Figure 5: Temperature differences between sensors by station number (top) and pressure (bottom). The green represents all the cruise data. The red solid line represents the median with the red dashed representing the standard deviation (same for top and bottom).

5.4 Conductivity

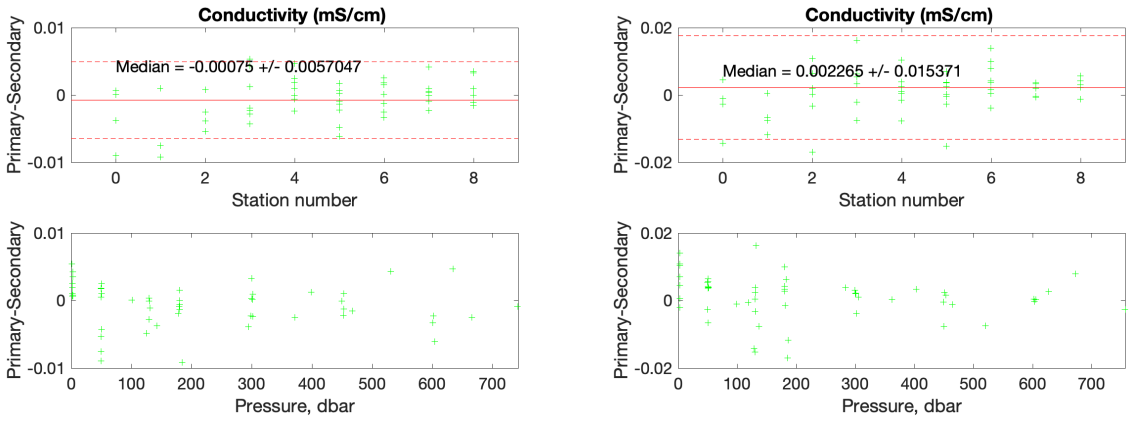
The Seabird pre-cruise conductivity sensor calibration coefficients were applied to raw primary and secondary conductivity data during each cast. Comparisons between the primary and secondary sensors and between each of the sensors to conductivity calculated from bottle salinities were used to derive 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 FC1804 the sensors show a median difference of -0.0008 mS/cm and a standard deviation of 0.006 mS/cm (Figure 6). Both sensors showed reasonable values for the residuals. The secondary sensor, s/n 1347, was used for all the final data values (Figure 7).

For FC1806 the sensors show a median difference of 0.002 mS/cm and a standard deviation of 0.02 mS/cm (Figure 6). Both sensors showed reasonable values for the residuals. The secondary sensor, s/n 1347, was used for all the final data values (Figure 7).

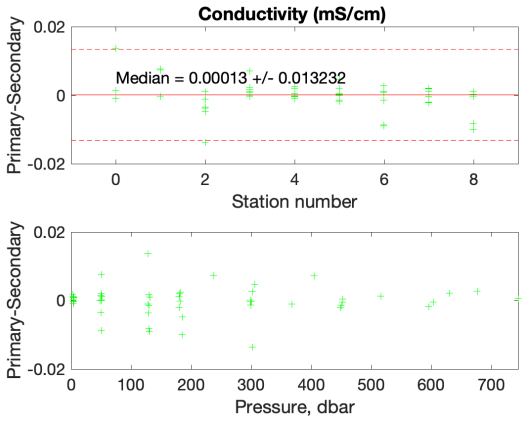
For FC1809 the sensors show a median difference of 0.0001 mS/cm and a standard deviation of 0.01 mS/cm (Figure 6). Both sensors showed reasonable values for the residuals. The secondary sensor, s/n 1347, was used for all the final data values (Figure 7).

For FC1810 the sensors show a median difference of 0.0004 mS/cm and a standard deviation of 0.009 mS/cm (Figure 6). Both sensors showed reasonable values for the residuals. The secondary sensor, s/n 1347, was used for all the final data values (Figure 7).

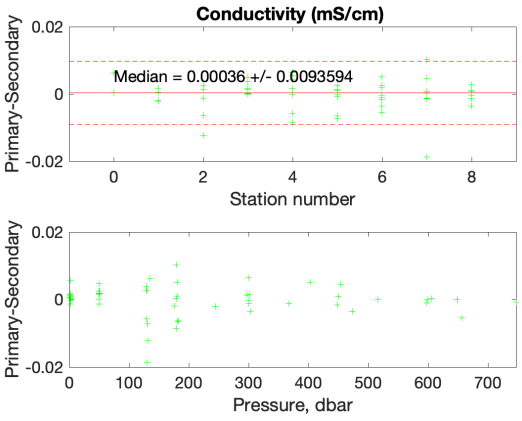


(a) FC1804

(b) FC1806



(c) FC1809



(d) FC1810

Figure 6: Conductivity upcast bottle stop (mS/cm) differences between sensors by station (top) and pressure (bottom). The green represents all the cruise data. 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

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

with

FC1804 s/n 1347	FC1806 s/n 1347	FC1809 s/n 1347	FC1810 s/n 1347
m= 1.00006062E+00	m= 9.99537390E-01	m= 9.99672989E-01	m= 1.00010300E+00
p_1= 0	p_1= 0	p_1= 0	p_1= 0
b= 4.32670959E-03	b= 3.90719165E-02	b= 2.45305111E-02	b= 1.70390937E-03
$pcor$= -1.64488889E-06	$pcor$= -2.82259609E-05	$pcor$= -2.09072534E-05	$pcor$= -3.75772493E-06

Table 20: Conductivity calibration coefficients applied for final calibration.

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 20.

For FC1804 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 median of -9.6 · 10-4 psu and a standard deviation of 0.004 psu. After data reduction 50 data points (87.7 %) were used in the final calculations.

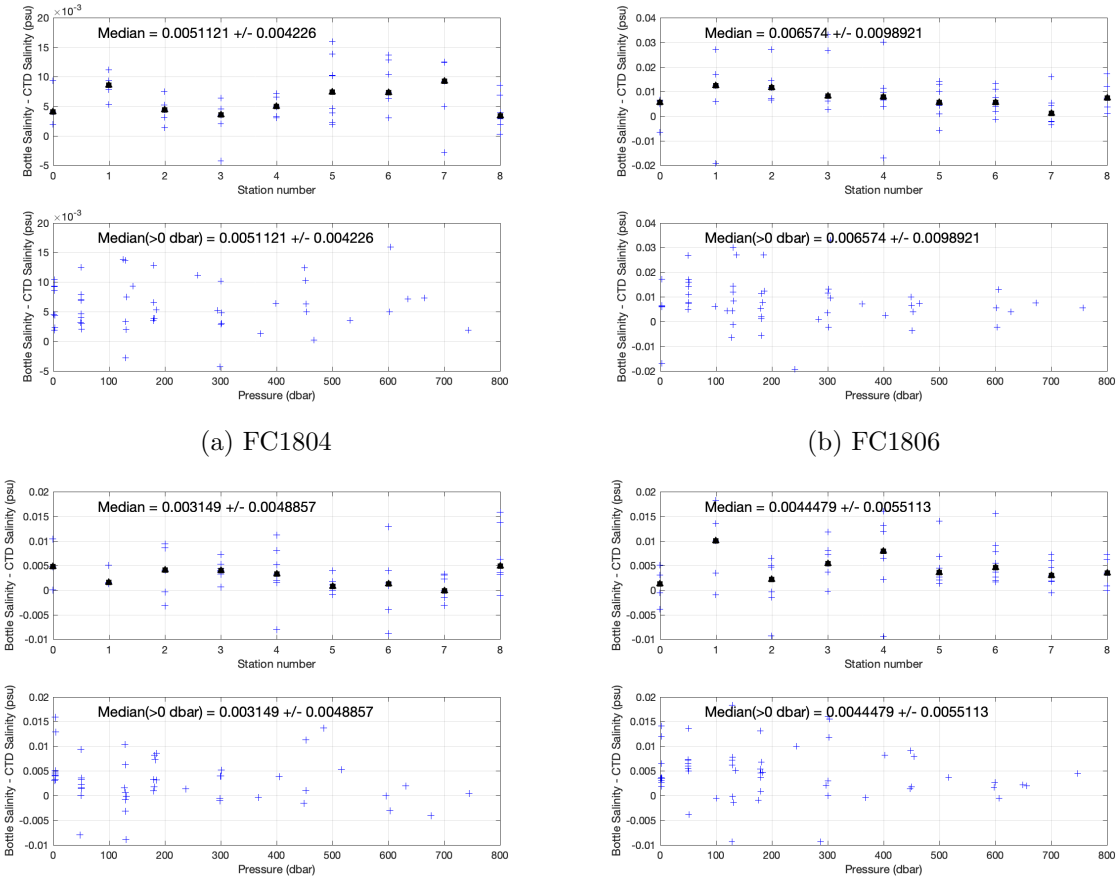
For FC1806 the coefficients estimated by the equation above were then applied to the CTD conductivities and the final results (Figure 8 to Figure 9) show a median of -1.4 · 10-3 psu and a standard deviation of 0.01 psu. After data reduction 53 data points (94.6 %) were used in the final calculations.

For FC1809 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 median of 1.5 · 10-4 psu and a standard deviation of 0.005 psu. After data reduction 50 data points (87.7 %) were used in the final calculations.

For FC1810 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 median of -4.6 · 10-4 psu and a standard deviation of 0.005 psu. After data reduction 55 data points (96.5 %)

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).



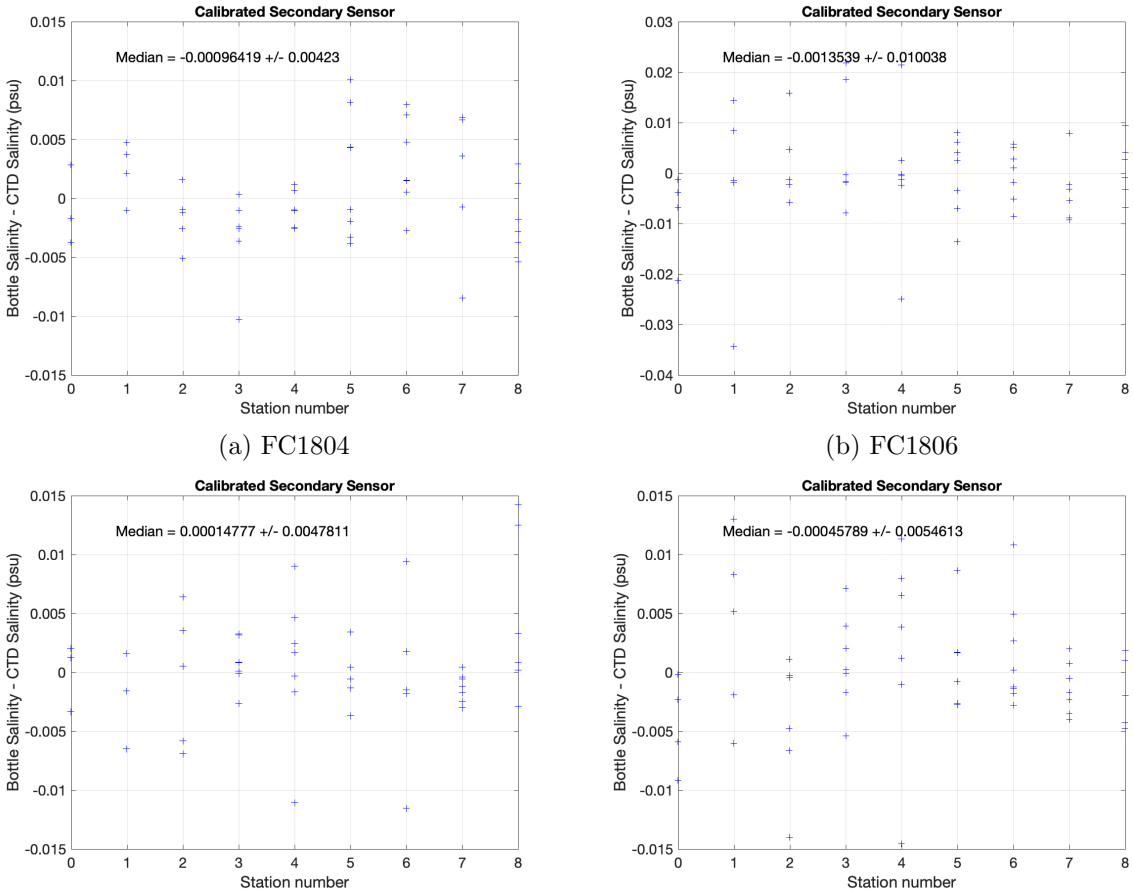
(a) FC1804

(b) FC1806

(c) FC1809

(d) FC1810

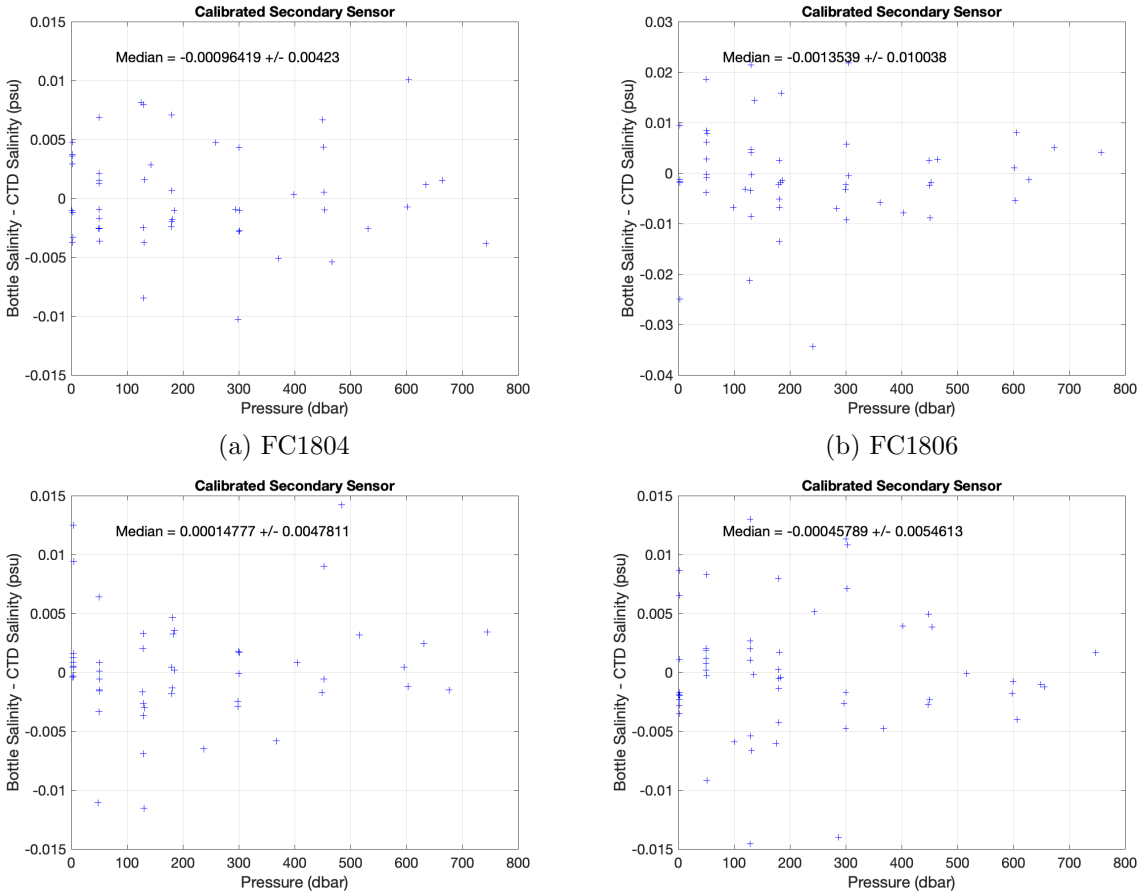
Figure 7: Bottle and uncalibrated CTD salinity differences plotted by station and pressure. The blue crosses represent all data points and the black square represent the median for each station. The overall median and standard deviation was calculated using all data points.



(a) FC1804 (b) FC1806

(c) FC1809 (d) FC1810

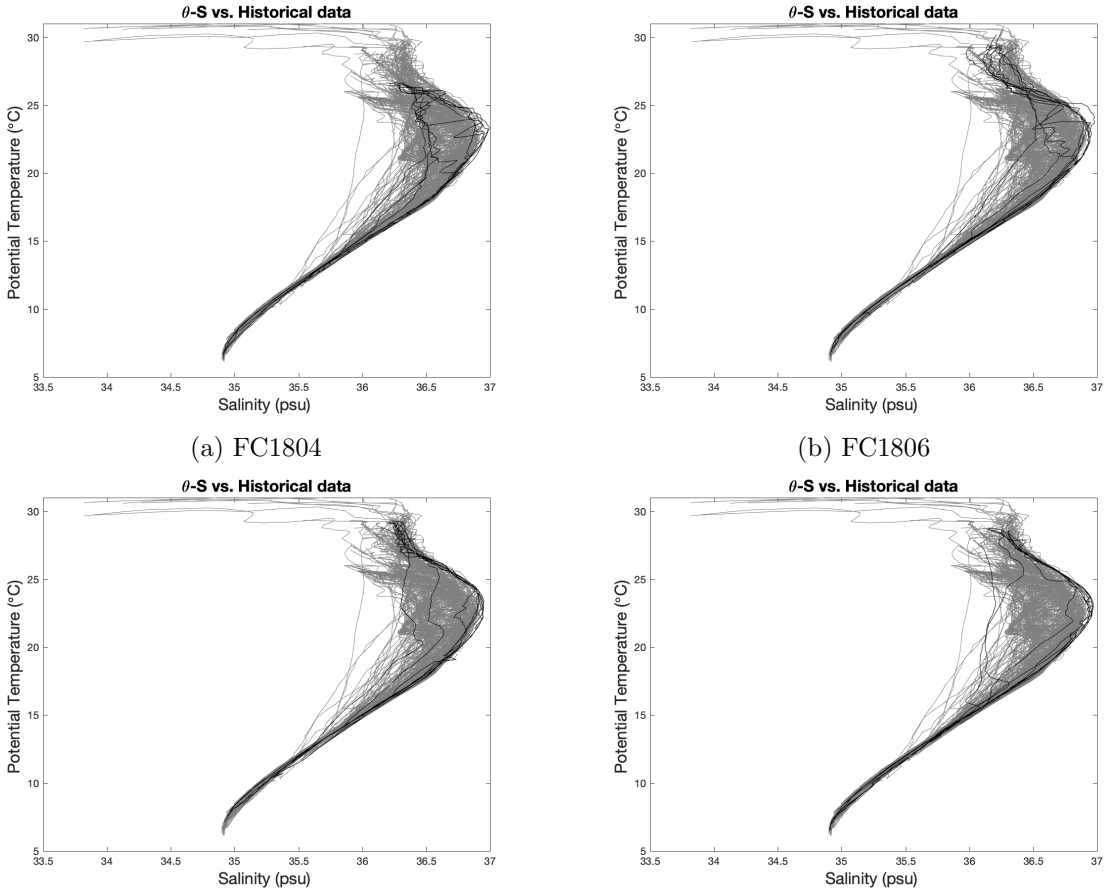
Figure 8: Bottle and calibrated CTD salinity differences plotted vs. station. The blue crosses represent all data points. The median values shown were calculated using all data.



(a) FC1804 (b) FC1806

(c) FC1809 (d) FC1810

Figure 9: Bottle and calibrated CTD salinity differences plotted vs. pressure. The blue crosses represent all data points. The median values shown were calculated using all data.



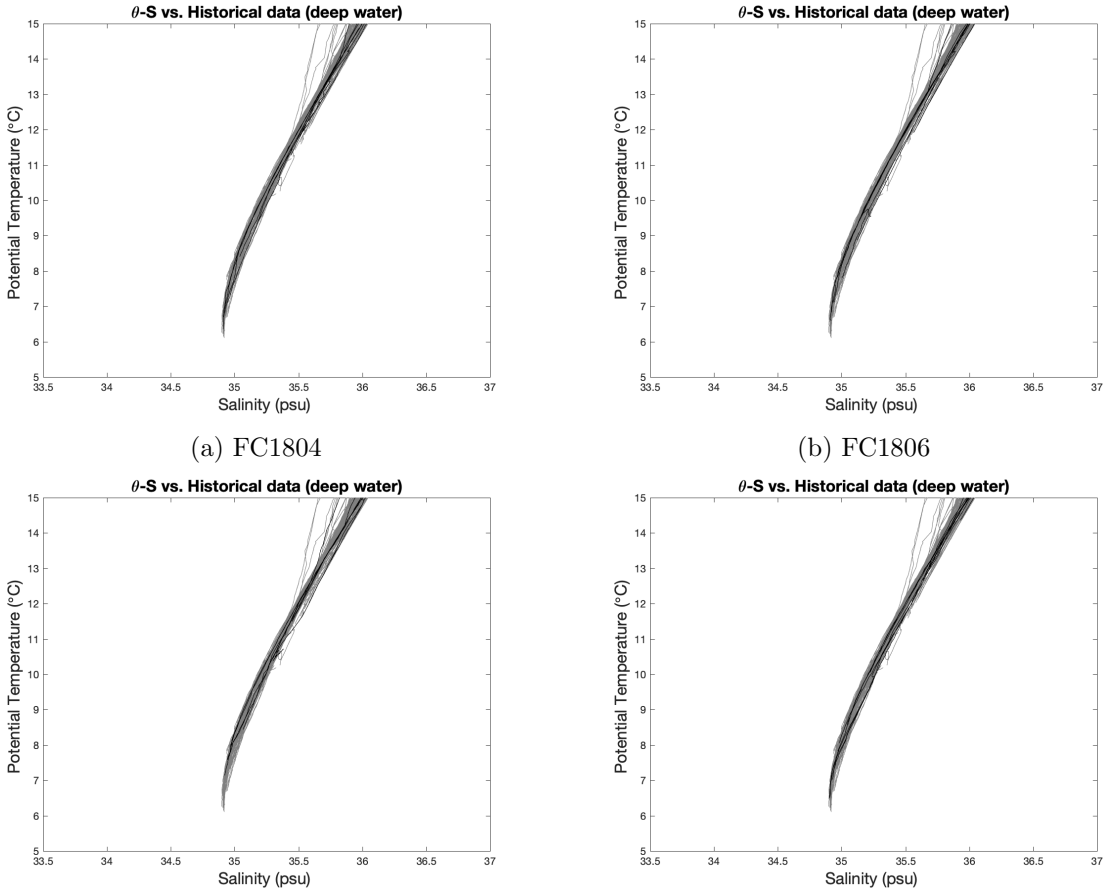
(a) FC1804

(b) FC1806

(c) FC1809

(d) FC1810

Figure 10: Potential Temperature (θ) - Salinity diagram for all stations. The solid black lines are the data collected during the 2018 cruises. Solid gray lines are historical data collected during the project.



(a) FC1804

(b) FC1806

(c) FC1809

(d) FC1810

Figure 11: Potential Temperature (θ) - Salinity diagram for all stations (deep water). The solid black lines are the data collected during the 2018 cruises. Solid gray lines are historical data collected during the project.

5.5 Dissolved Oxygen

Three SBE43 dissolved O_2 (DO) sensors were used these four cruises (Table 9). Due to a hysteresis problem with the oxygen sensors, the oxygen sensors were calibrated to dissolved O_2 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 non-linear least squares regression using the Gauss-Newton algorithm with Levenberg-Marquardt modifications for global convergence is used to profiles to the bottle data. 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

	FC1804 S/N 1266	FC1806 S/N 1266	FC1809 S/N 1266	FC1810 S/N 1266
Soc	0.37567658	0.37567658	0.413296829	0.439563663
V_offset	-0.48374534	-0.48374534	-0.526531004	-0.559443525
A	0.008229761	0.008229761	-0.000127072	-0.005838893
B	-0.000372755	-0.000372755	-3.77453E-05	0.000250427
C	6.27966E-06	6.27966E-06	1.26195E-06	-3.55333E-06
E	0.042141512	0.042141512	0.035976778	0.037801453
tau	0.938249443	0.938249443	0.139602001	-0.12008021
$p1$	0	0	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 FC1804 a comparison between the primary and secondary sensors (Figure 12) was evaluated. The sensors show a median difference of -2.72 $umol/kg$ and a standard deviation of 0.79 $umol/kg$. FC1804 had no bottle oxygen samples. The same primary and secondary

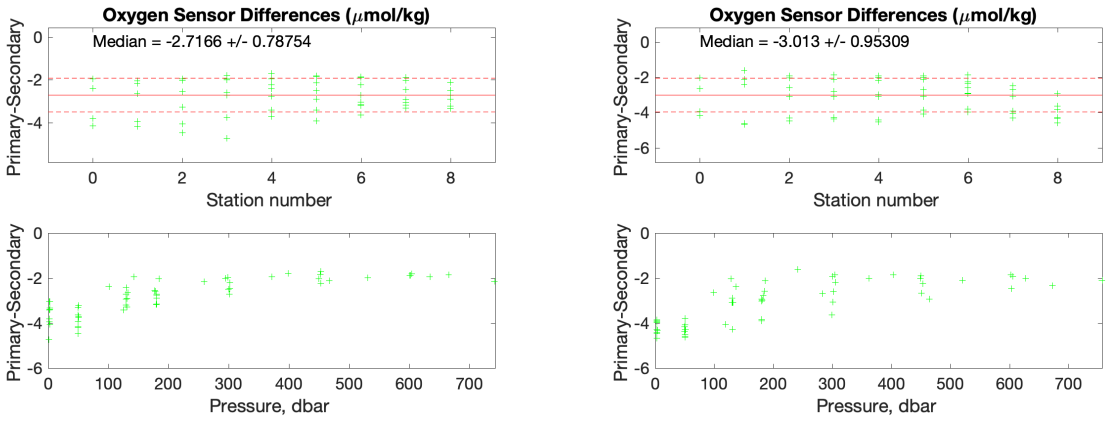
sensors were used for the following 2018 Florida Current cruises and the oxygen coefficients for FC1806 were used to calibrate the sensors. The secondary was used for final calibrations.

For FC1806 a comparison between the primary and secondary sensors (Figure 12) was evaluated. The sensors show a median difference of -3.01 $umol/kg$ and a standard deviation of 0.95 $umol/kg$. The secondary sensor was used for all the final data values (Figure 13). After data reduction 47 data points (81.03%) 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 median is -0.025 $umol/kg$ and the standard deviation 0.73 $umol/kg$.

For FC1809 a comparison between the primary and secondary sensors (Figure 12) was evaluated. The sensors show a median difference of -2.86 $umol/kg$ and a standard deviation of 1.05 $umol/kg$. The secondary sensor was used for all the final data values (Figure 13). After data reduction 50 data points (86.21%) 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 median is -0.093 $umol/kg$ and the standard deviation 0.57 $umol/kg$.

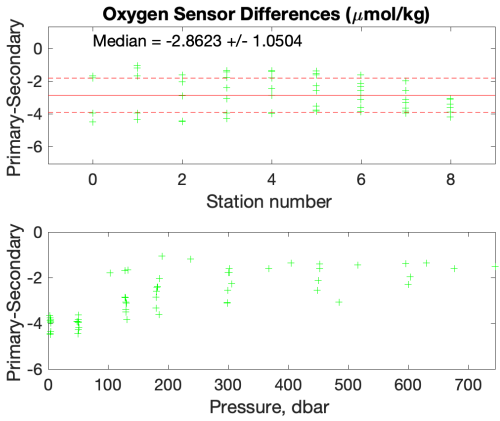
For FC1810 a comparison between the primary and secondary sensors (Figure 12) was evaluated. The sensors show a median difference of -3.41 $umol/kg$ and a standard deviation of 1.23 $umol/kg$. The secondary sensor was used for all the final data values (Figure 13). After data reduction 56 data points (96.55%) 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 median is 0.011 $umol/kg$ and the standard deviation 0.83 $umol/kg$.

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).

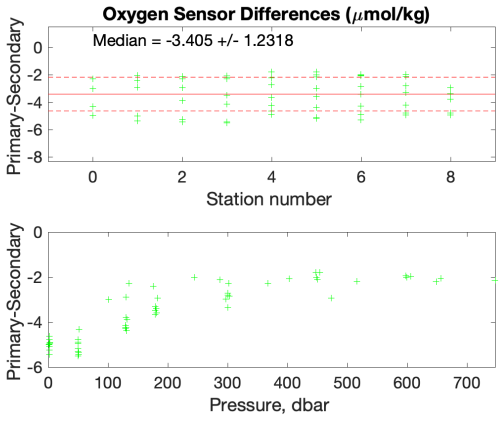


(a) FC1804

(b) FC1806

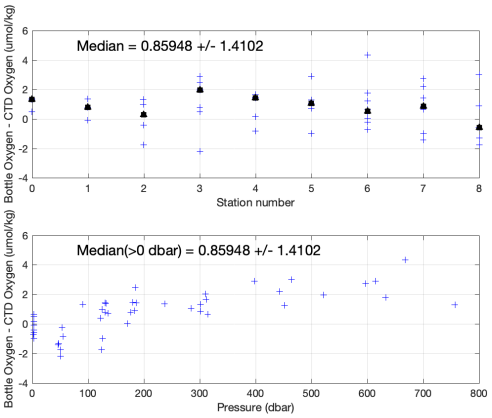


(c) FC1809

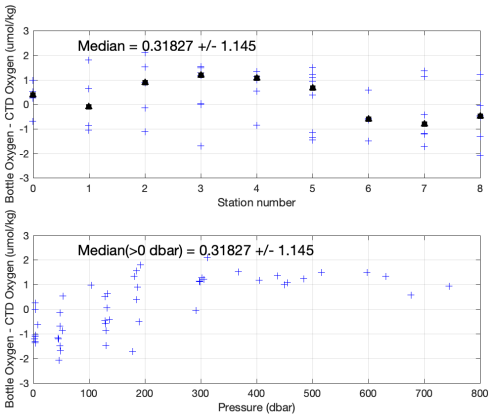


(d) FC1810

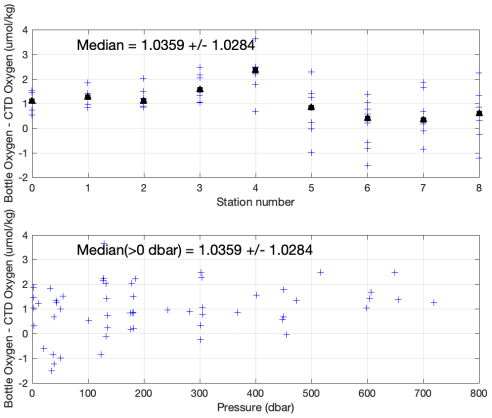
Figure 12: Dissolved oxygen upcast bottle stop differences between sensors by station (top) and pressure (bottom). The green represents all the cruise data. The red solid line represents the median with the red dashed representing the standard deviation.



(a) FC1806

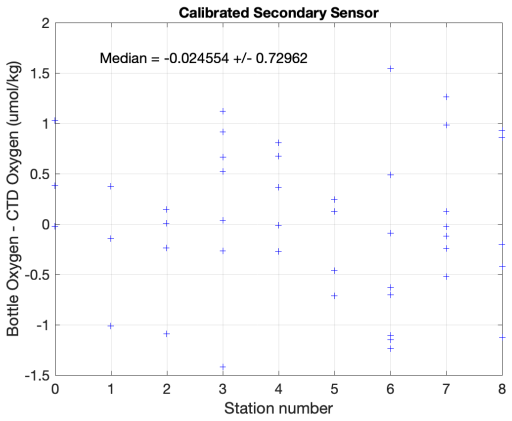


(b) FC1809

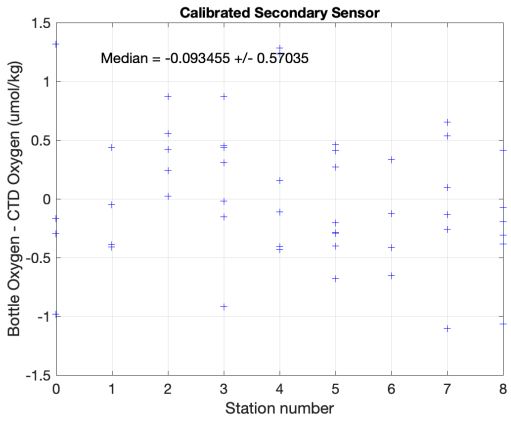


(c) FC1810

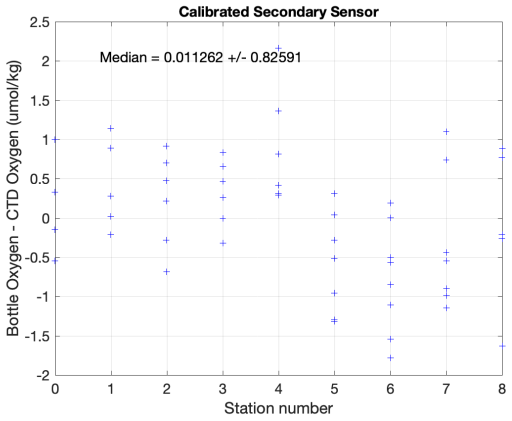
Figure 13: Bottle and uncalibrated CTD oxygen differences plotted by station and pressure. The blue crosses represent all data points and the black square represent the median for each station. The overall median and standard deviation was calculated using all data points.



(a) FC1806

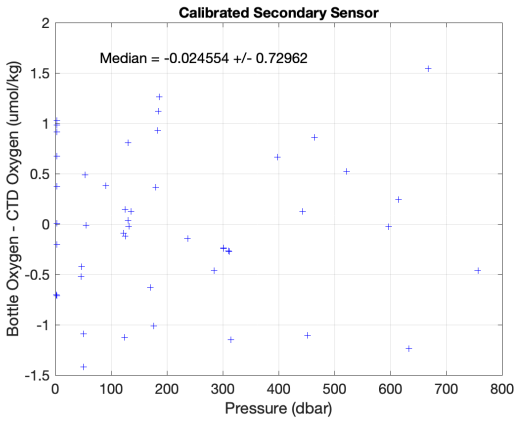


(b) FC1809

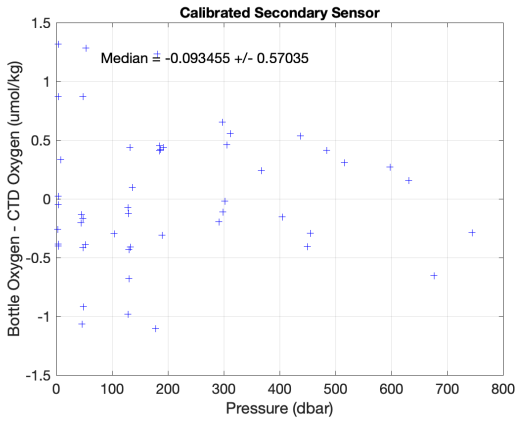


(c) FC1810

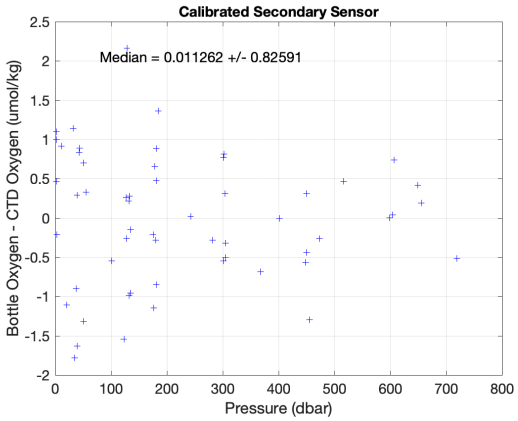
Figure 14: Bottle and calibrated CTD oxygen differences plotted vs. station. The blue crosses represent all data points. The median values shown were calculated using all data.



(a) FC1806

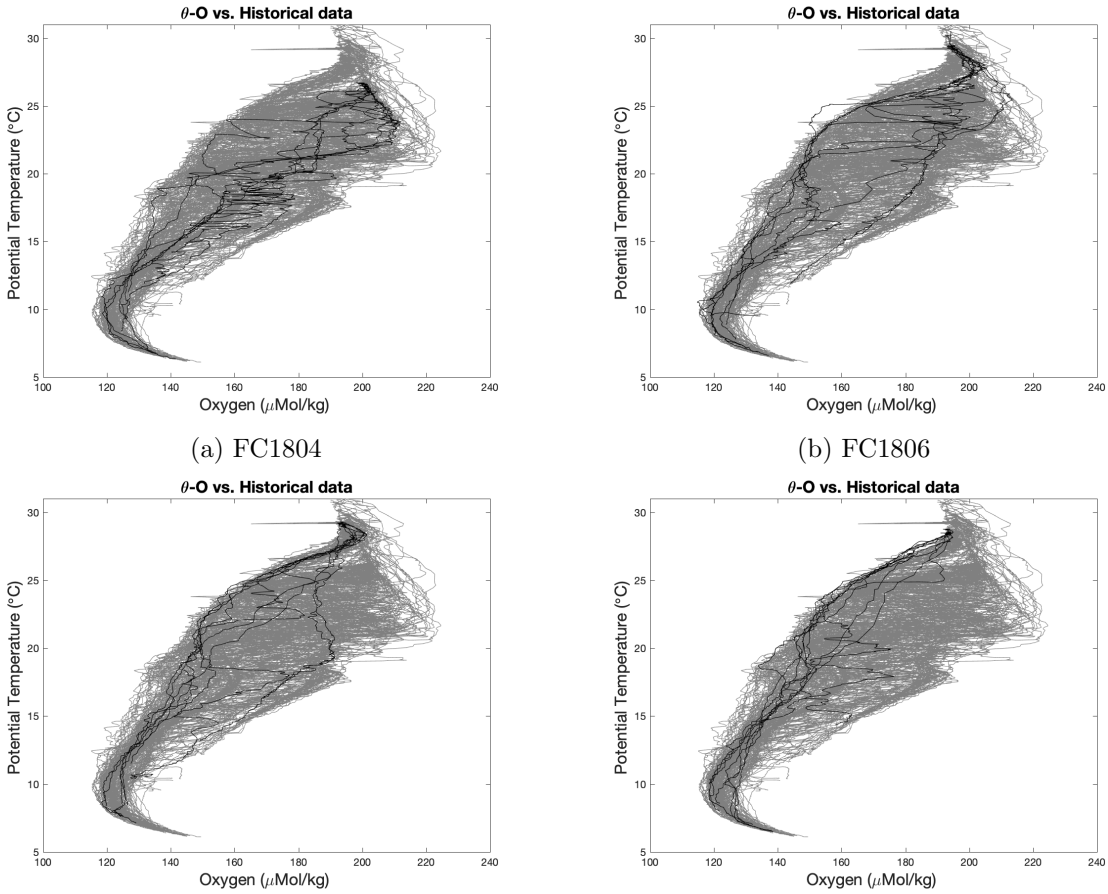


(b) FC1809



(c) FC1810

Figure 15: Bottle and calibrated CTD oxygen differences plotted vs. pressure. The blue crosses represent all data points. The median values shown were calculated using all data.



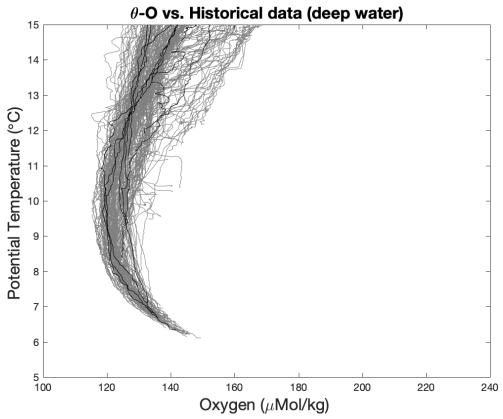
(a) FC1804

(b) FC1806

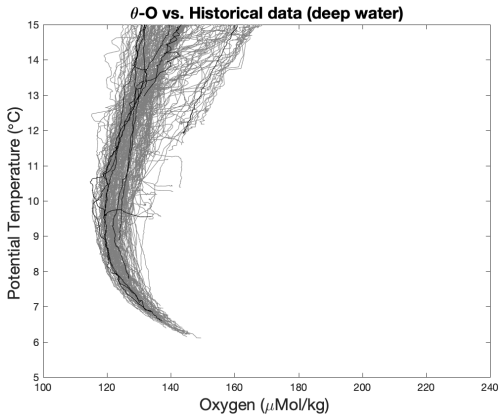
(c) FC1809

(d) FC1810

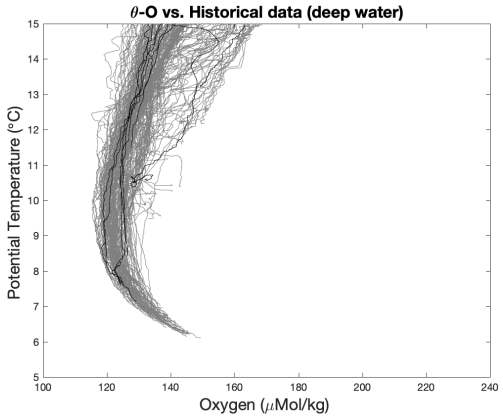
Figure 16: Potential Temperature (θ) - Oxygen diagram for all stations. The solid black lines are the data collected during the 2018 cruises. Solid gray lines are historical data collected during the project.



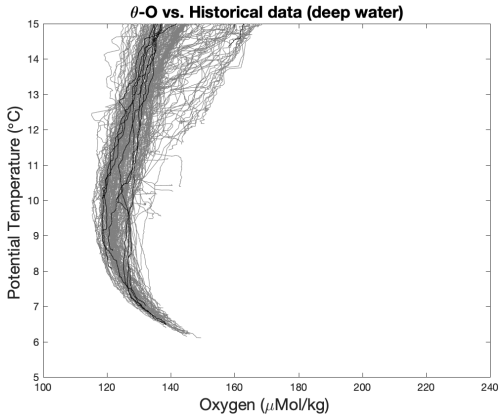
(a) FC1804



(b) FC1806



(c) FC1809



(d) FC1810

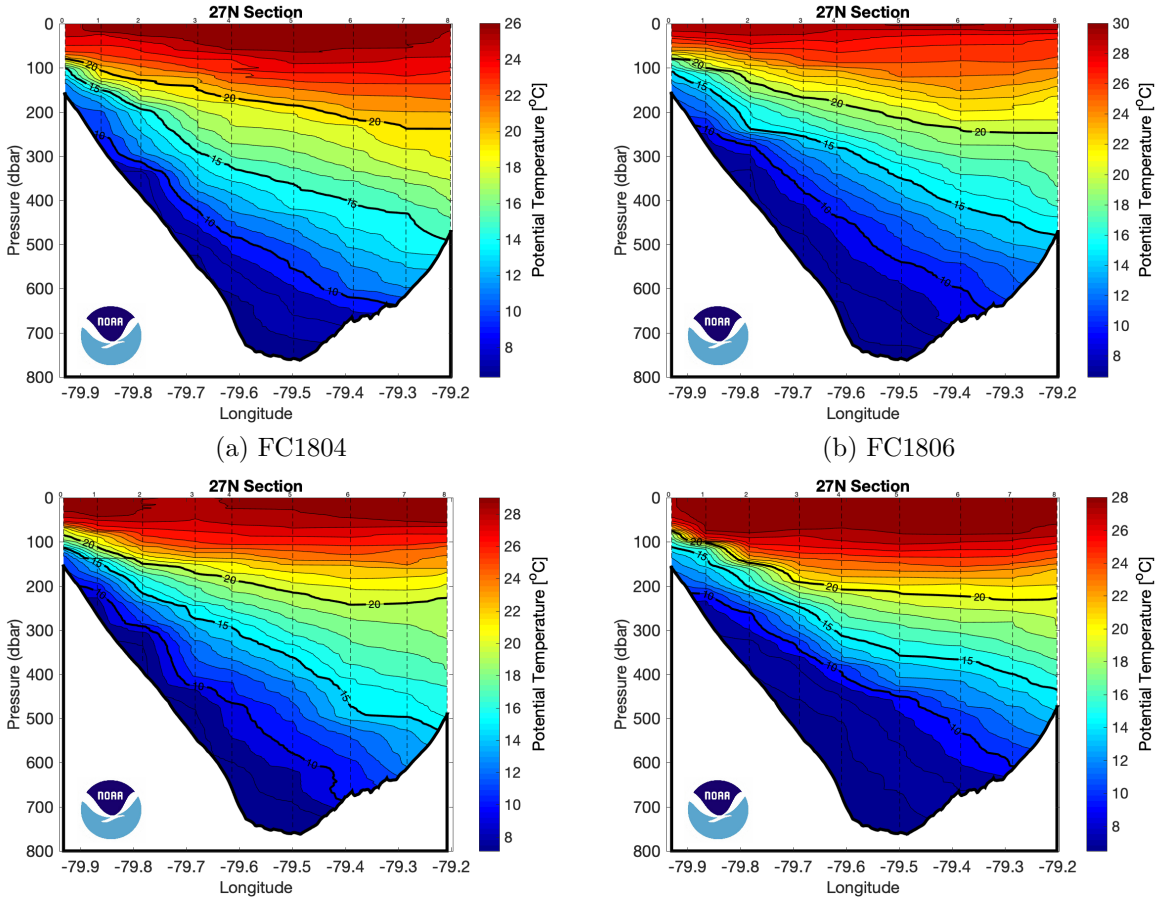
Figure 17: Potential Temperature (θ) - Oxygen diagram for all stations (deep water). The solid black lines are the data collected during the 2018 cruises. Solid gray lines are historical data collected during the project.

6 Final CTD Data Presentation

Post-cruise calibrations, determined from bottle data, 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 fell outside 2.57 standard deviations of the difference between samples and uncalibrated CTD values). A second pass was 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".

The final calibrated CTD data files were used to produce the section plots that follow and the tables and station profile plots presented in the appendices. 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).

In Appendix A, for each CTD station, the upper table presents "standard depths" of the CTD cast, while the lower table lists the bottle CTD trip depths for the cast. Following the two tables, a page of 4 plots illustrate the data collected of the stations. Niskin bottle depths are indicated on the right side of the larger profile plot and bottle salinity and oxygen values are plotted as points in the three smaller plots. A WOCE formatted CTD cast summary file is shown in Appendix B. It lists information regarding the beginning, middle (bottom of the cast), and end of each CTD cast. Finally, a bottle summary file (WOCE formatted) is presented in Appendix C. This table lists the specific details associated with each Niskin bottle trip over the course of the entire cruise. The -999's in the tables represent missing data.



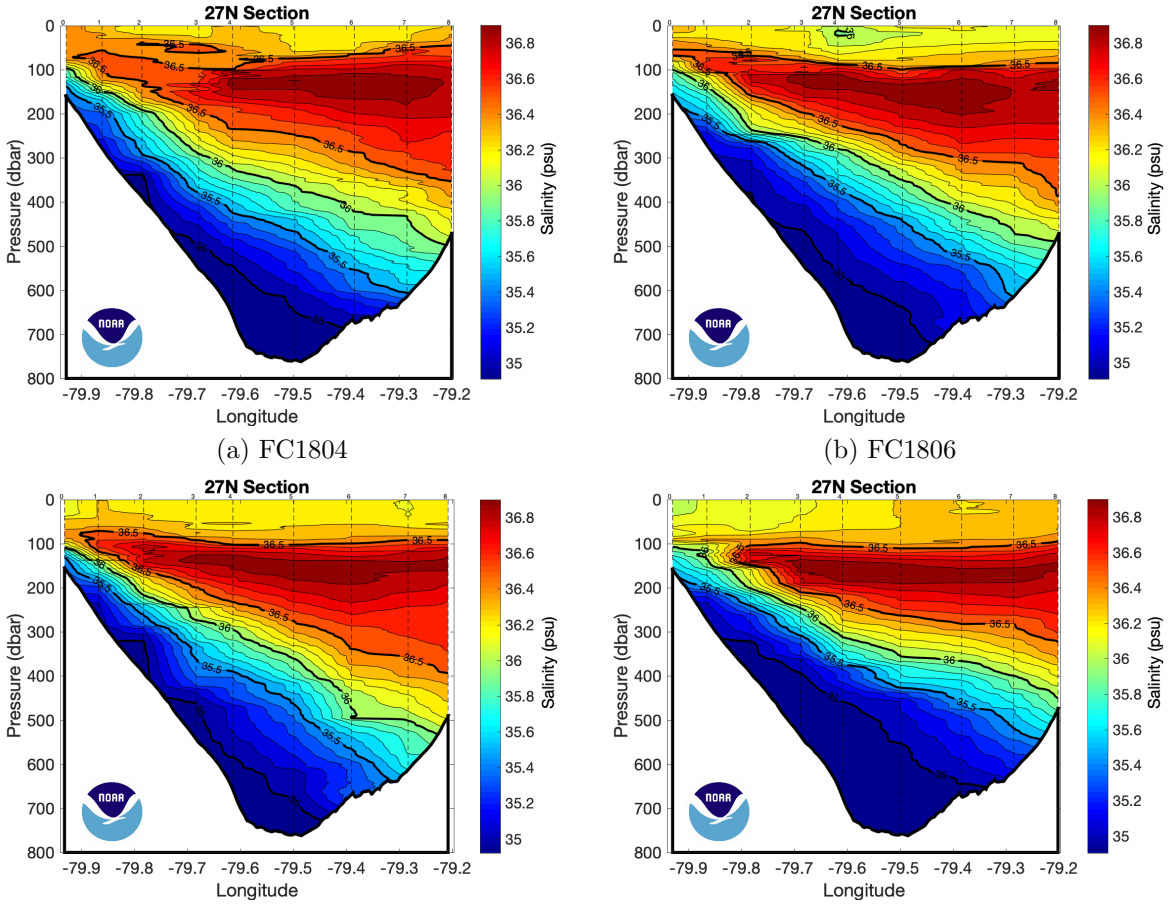
(a) FC1804

(b) FC1806

(c) FC1809

(d) FC1810

Figure 18: Potential Temperature (°C) for the 27°N section. Dashed vertical lines are the CTD station locations.



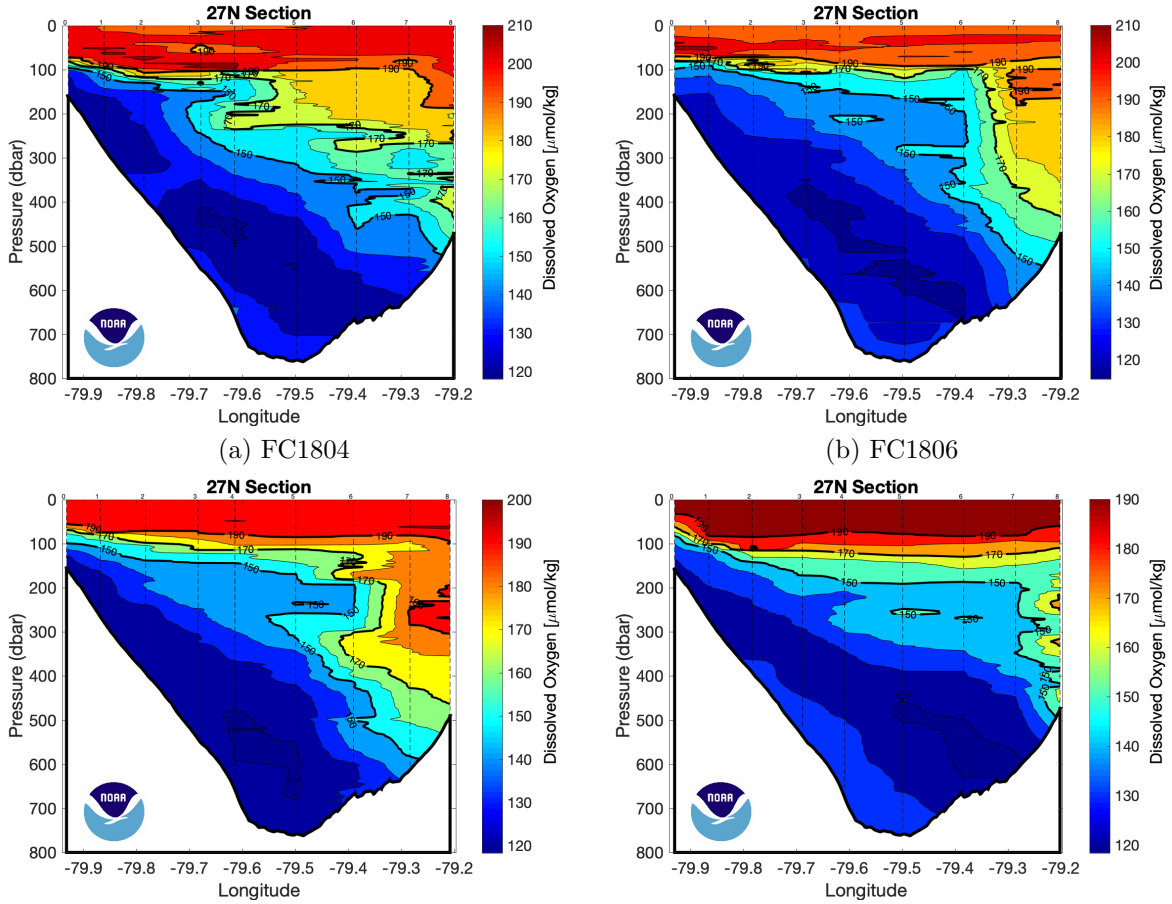
(a) FC1804

(b) FC1806

(c) FC1809

(d) FC1810

Figure 19: Salinity (PSS 78) for the 27°N section. Dashed vertical lines are the CTD station locations.



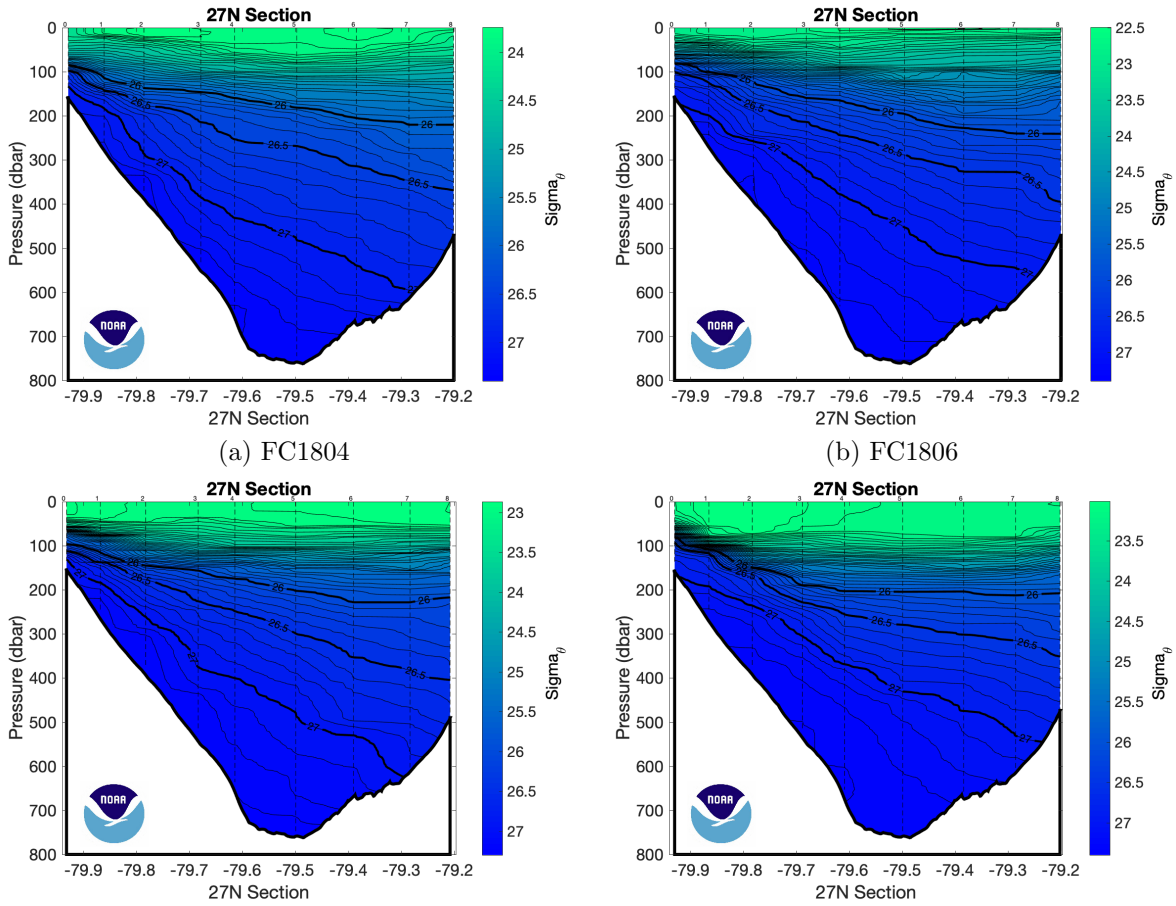
(a) FC1804

(b) FC1806

(c) FC1809

(d) FC1810

Figure 20: Dissolved Oxygen (μmol/kg) for the 27°N section. Dashed vertical lines are the CTD station locations.



(a) FC1804

(b) FC1806

(c) FC1809

(d) FC1810

Figure 21: Neutral density (kg/m3) for the 27°N 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 at sea. Western Boundary Time Series project members were instrumental in planning and executing the cruise, and we offer special thanks to our research cruise participants in 2018: Grant Rawson, Pedro Pena, Tom Sevilla, Shaun Dolk, Erik Valdes and Denis Volkov. Additionally we would like to thank the officers and crew of the R/V *F. G. Walton Smith* and the R/V *Savannah*, who exhibited a high degree of professionalism and assistance to accomplish our work, while at the same time making us feel at home during the voyages. We also thank NOAA program managers for their continued support of our efforts. This research was also made possible with support of the Cooperative Institute for Marine and Atmospheric Studies (CIMAS), a Cooperative Institute of the University of Miami and NOAA via cooperative agreement #NA15OAR4320064. Additional support was provided by OAR's Atlantic Oceanographic and Meteorological Laboratory. SPECIAL NOTE: A portion of this research was conducted within the jurisdictional waters of the Bahamas. Bahamian research clearance was obtained prior to each Florida Current survey with a waiver of port entry. We thank the Bahamian government for providing this request of research clearance.

8 References

Carpenter, J. H., 1965a: The accuracy of the Winkler method for dissolved oxygen analysis, *Limnology and Oceanography*, **10**, 135-140.

Carpenter, J. H., 1965b: The Chesapeake Bay Institute Technique for the Winkler dissolved oxygen method, *Limnology and Oceanography*, **10**, 141-143.

Culberson, C. H., G. Knapp, M. C. Stalcup, R. T. Williams, and F. Zemlyak, 1991: A Comparison of methods for the determination of dissolved oxygen in seawater. *Woods Hole Oceanogr. Inst. WHPO*, **91-2**, 77p.

Langdon, C., 2010: Determination of dissolved oxygen in seawater by Winkler titration using the amperometric technique, *IOCCP Report*, **14-134**, 18p.

Weiss, R. F., 1970: The solubility of nitrogen, oxygen and argon in water and seawater, *Deep-Sea Res.*, **17**, **4**, Pages 721-735.

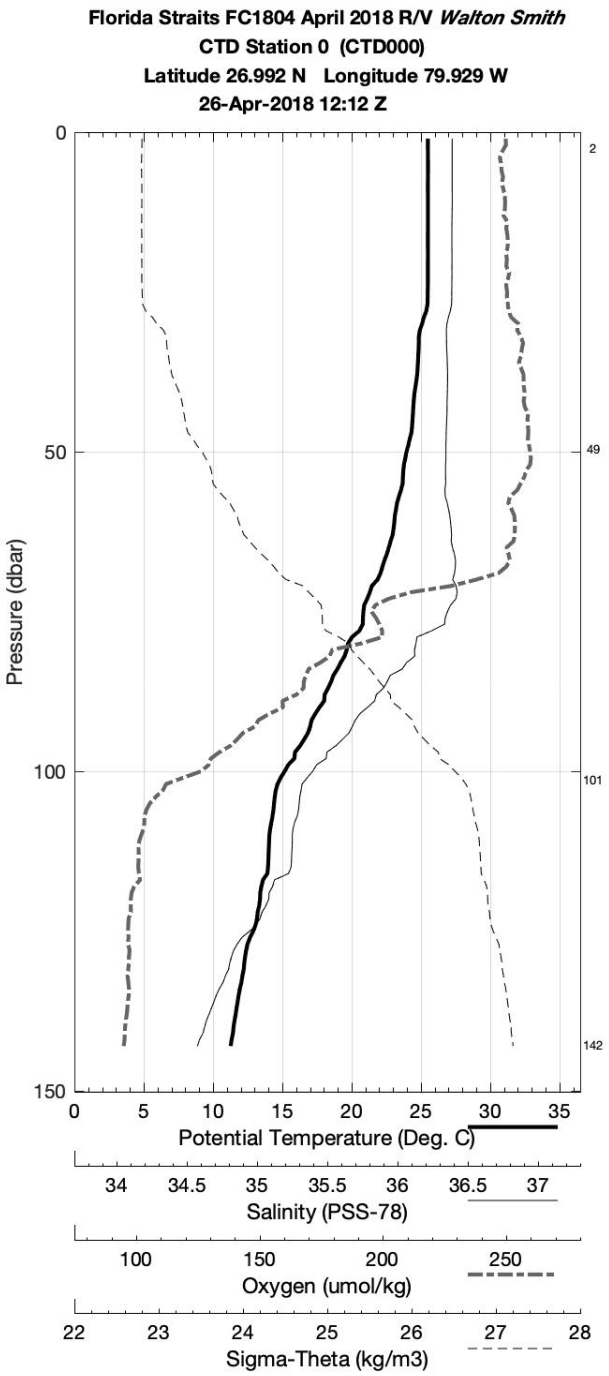
A Hydrographic - CTD Data

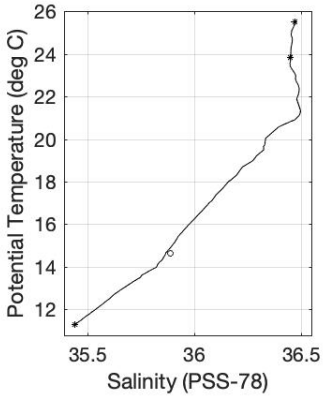
A.1 FC1804 - April 2018

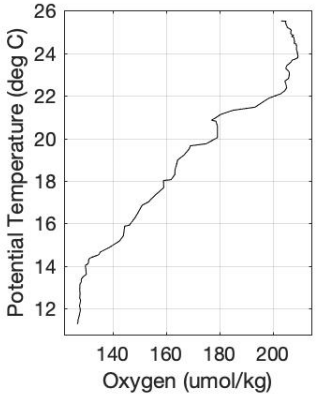
Florida Straits FC1804 April 2018 R/V *Walton Smith*
CTD Station 0 (CTD000)
Latitude 26.992N Longitude 79.929W
26-Apr-2018 12:12Z

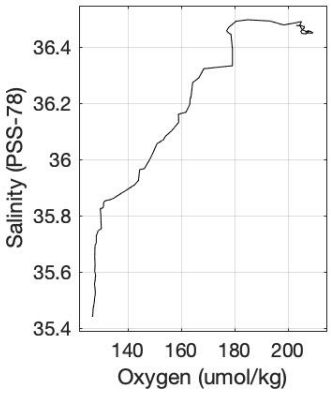
Pressure dbar	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}	DynHt m^2·s^{-2}	SigT kg·m^{-3}
1	25.506	25.506	36.478	204.1	0.004	24.303
10	25.511	25.509	36.478	203.9	0.036	24.302
20	25.512	25.508	36.477	204.3	0.072	24.301
30	25.097	25.090	36.456	206.7	0.108	24.414
50	23.977	23.966	36.452	209.0	0.176	24.751
75	20.870	20.856	36.458	176.8	0.247	25.644
100	15.189	15.173	35.911	142.4	0.294	26.636
125	12.921	12.904	35.655	127.5	0.326	26.920

Pressure dbar	Niskin	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}
143	1	11.286	11.268	35.444	−999.0
101	2	14.630	14.615	35.889	−999.0
50	3	23.833	23.823	36.448	−999.0
2	4	25.511	25.510	36.470	−999.0


Florida Straits FC1804 April 2018 R/V *Walton Smith*
CTD Station 0 (CTD000)
Latitude 26.992 N Longitude 79.929 W
26-Apr-2018 12:12 Z
Pressure (dbar)
0
50
100
150
2
49
101
142
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 12
35.5 36 36.5
Salinity (PSS-78)

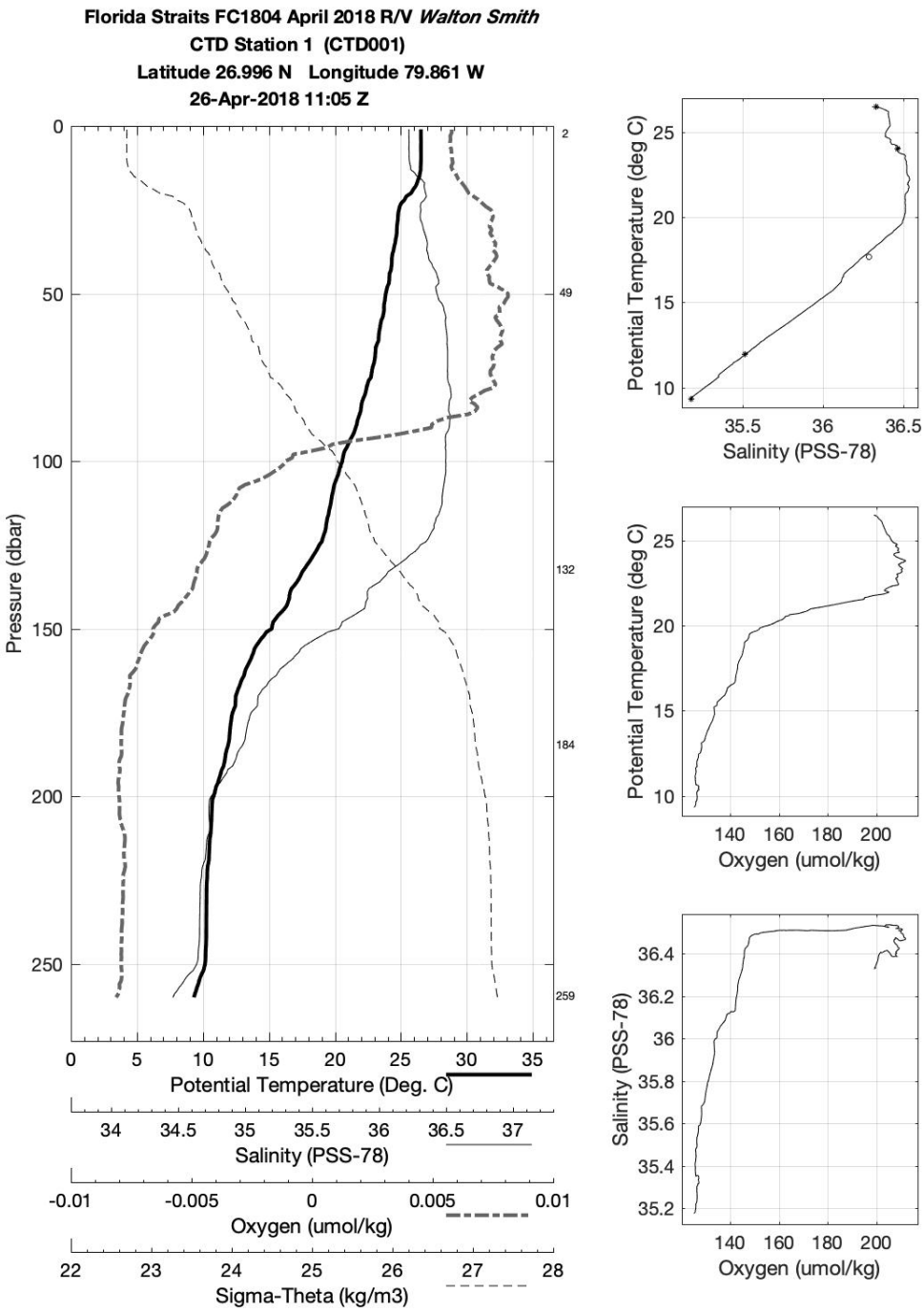

Potential Temperature (deg C)
26 24 22 20 18 16 14 12
140 160 180 200
Oxygen (umol/kg)


Salinity (PSS-78)
36.4 36.2 36 35.8 35.6 35.4
140 160 180 200
Oxygen (umol/kg)

Florida Straits FC1804 April 2018 R/V *Walton Smith*
CTD Station 1 (CTD001)
Latitude 26.996N Longitude 79.861W
26-Apr-2018 11:05Z

Pressure dbar	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}	DynHt m^2·s^{-2}	SigT kg·m^{-3}
1	26.510	26.510	36.330	199.5	0.004	23.876
10	26.519	26.517	36.331	199.6	0.040	23.875
20	25.781	25.777	36.411	203.3	0.079	24.168
30	24.703	24.696	36.398	207.9	0.115	24.490
50	23.859	23.848	36.467	212.0	0.181	24.797
75	22.741	22.725	36.519	208.4	0.255	25.165
100	20.574	20.555	36.509	162.7	0.318	25.765
125	18.833	18.810	36.386	145.8	0.370	26.129
150	15.242	15.219	35.986	133.4	0.411	26.684
200	10.833	10.809	35.361	125.8	0.468	27.092
250	10.188	10.159	35.290	126.4	0.517	27.151

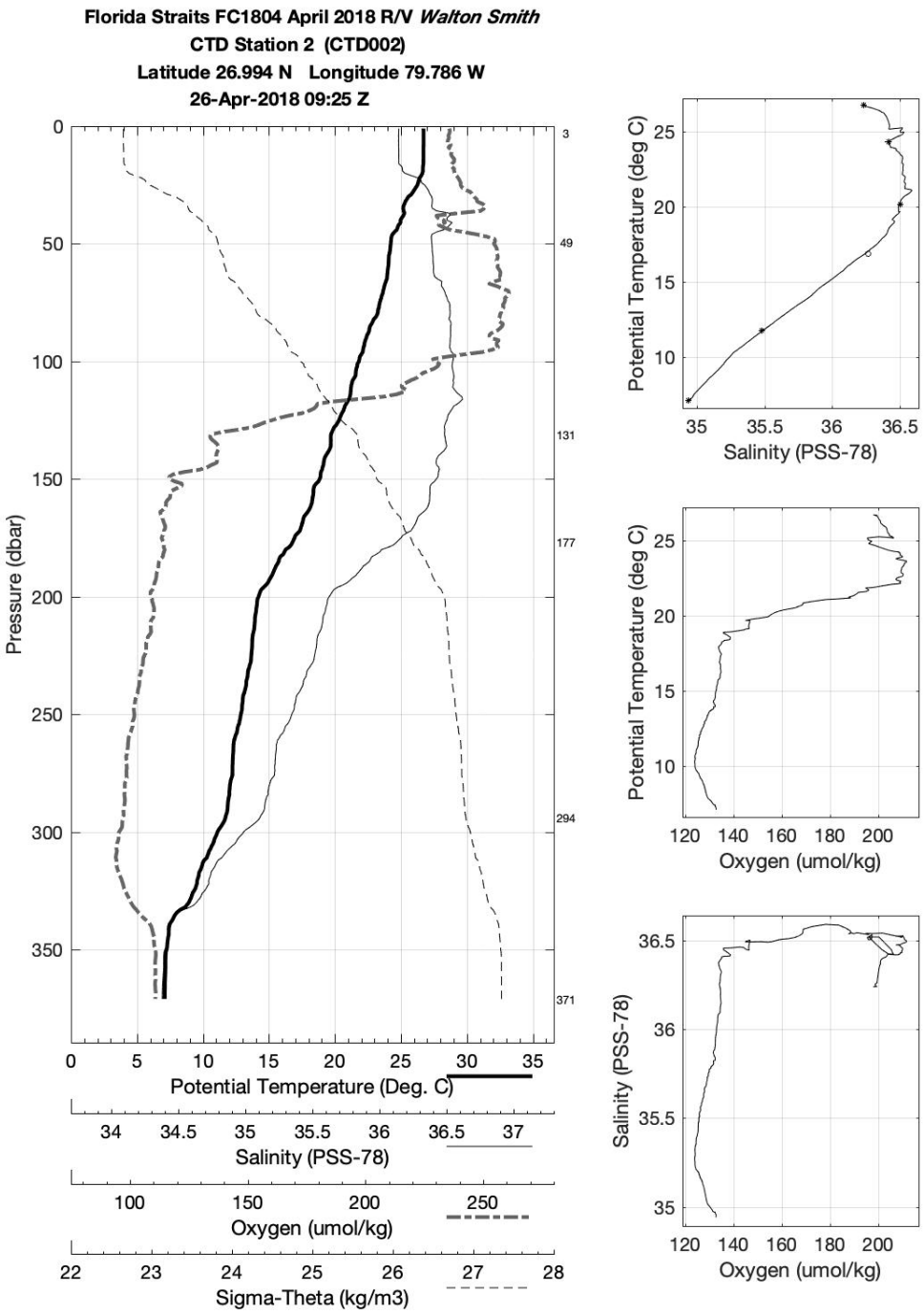
Pressure dbar	Niskin	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}
259	1	9.347	9.318	35.180	−999.0
184	2	11.968	11.944	35.517	−999.0
132	3	17.712	17.690	36.287	−999.0
50	4	24.052	24.042	36.461	−999.0
2	5	26.512	26.512	36.330	−999.0


Florida Straits FC1804 April 2018 R/V Walton Smith
CTD Station 1 (CTD001)
Latitude 26.996 N Longitude 79.861 W
26-Apr-2018 11:05 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 FC1804 April 2018 R/V *Walton Smith*
CTD Station 2 (CTD002)
Latitude 26.994N Longitude 79.786W
26-Apr-2018 09:25Z

Pressure dbar	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}	DynHt m^2·s^{-2}	SigT kg·m^{-3}
1	26.713	26.713	36.240	198.4	0.004	23.744
10	26.712	26.710	36.239	199.0	0.041	23.744
20	26.637	26.632	36.273	199.7	0.083	23.795
30	25.566	25.560	36.420	203.9	0.122	24.242
50	24.239	24.228	36.421	208.3	0.191	24.649
75	23.410	23.394	36.516	210.7	0.271	24.969
100	21.840	21.821	36.535	195.3	0.340	25.436
125	20.333	20.309	36.503	158.8	0.400	25.826
150	18.870	18.843	36.445	135.9	0.450	26.167
200	14.241	14.212	35.858	131.8	0.530	26.806
250	12.906	12.871	35.653	128.0	0.592	26.925
300	11.136	11.099	35.390	124.6	0.649	27.061

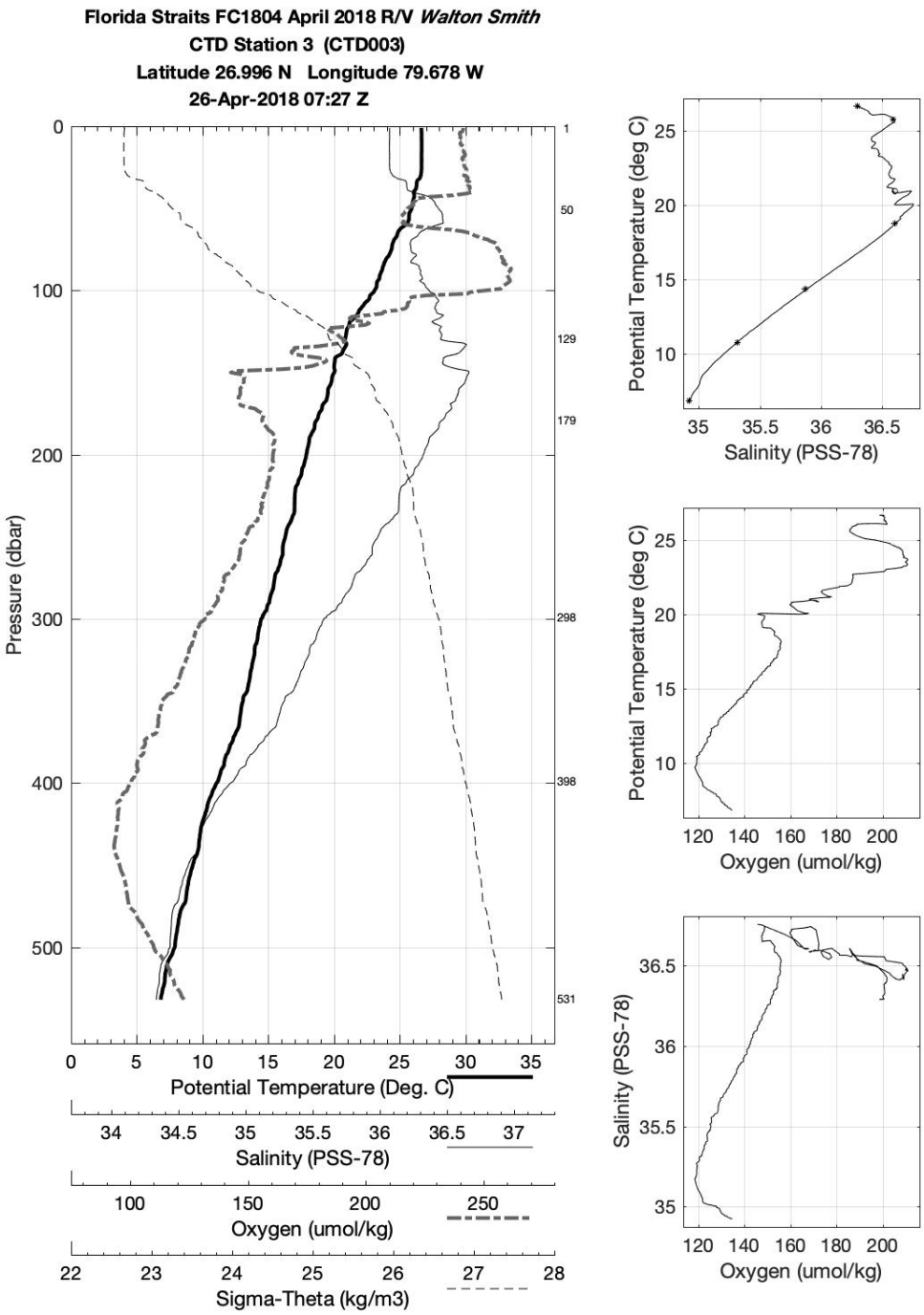
Pressure dbar	Niskin	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}
371	1	7.143	7.107	34.938	−999.0
294	2	11.777	11.738	35.481	−999.0
177	3	16.938	16.908	36.265	−999.0
131	4	20.174	20.149	36.502	−999.0
49	5	24.322	24.311	36.415	−999.0
3	6	26.744	26.743	36.234	−999.0


Florida Straits FC1804 April 2018 R/V Walton Smith
CTD Station 2 (CTD002)
Latitude 26.994 N Longitude 79.786 W
26-Apr-2018 09:25 Z
Pressure (dbar)
0
50
100
150
200
250
300
350
3
49
131
177
294
371
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 FC1804 April 2018 R/V *Walton Smith*
CTD Station 3 (CTD003)
Latitude 26.996N Longitude 79.678W
26-Apr-2018 07:27Z

Pressure dbar	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}	DynHt m^2·s^{-2}	SigT kg·m^{-3}
1	26.640	26.639	36.291	199.8	0.004	23.806
10	26.663	26.661	36.290	199.2	0.041	23.798
20	26.661	26.656	36.290	199.5	0.082	23.800
30	26.604	26.597	36.309	199.9	0.123	23.833
50	25.908	25.897	36.577	186.8	0.200	24.256
75	24.391	24.375	36.416	208.0	0.287	24.601
100	23.097	23.076	36.523	204.9	0.365	25.067
125	20.974	20.949	36.586	169.1	0.430	25.716
150	20.046	20.018	36.757	145.7	0.483	26.098
200	17.924	17.890	36.488	155.5	0.573	26.440
250	16.328	16.288	36.222	149.1	0.652	26.621
300	14.507	14.462	35.905	139.7	0.723	26.788
400	11.119	11.069	35.358	122.5	0.847	27.042
500	7.943	7.891	35.003	127.7	0.946	27.293

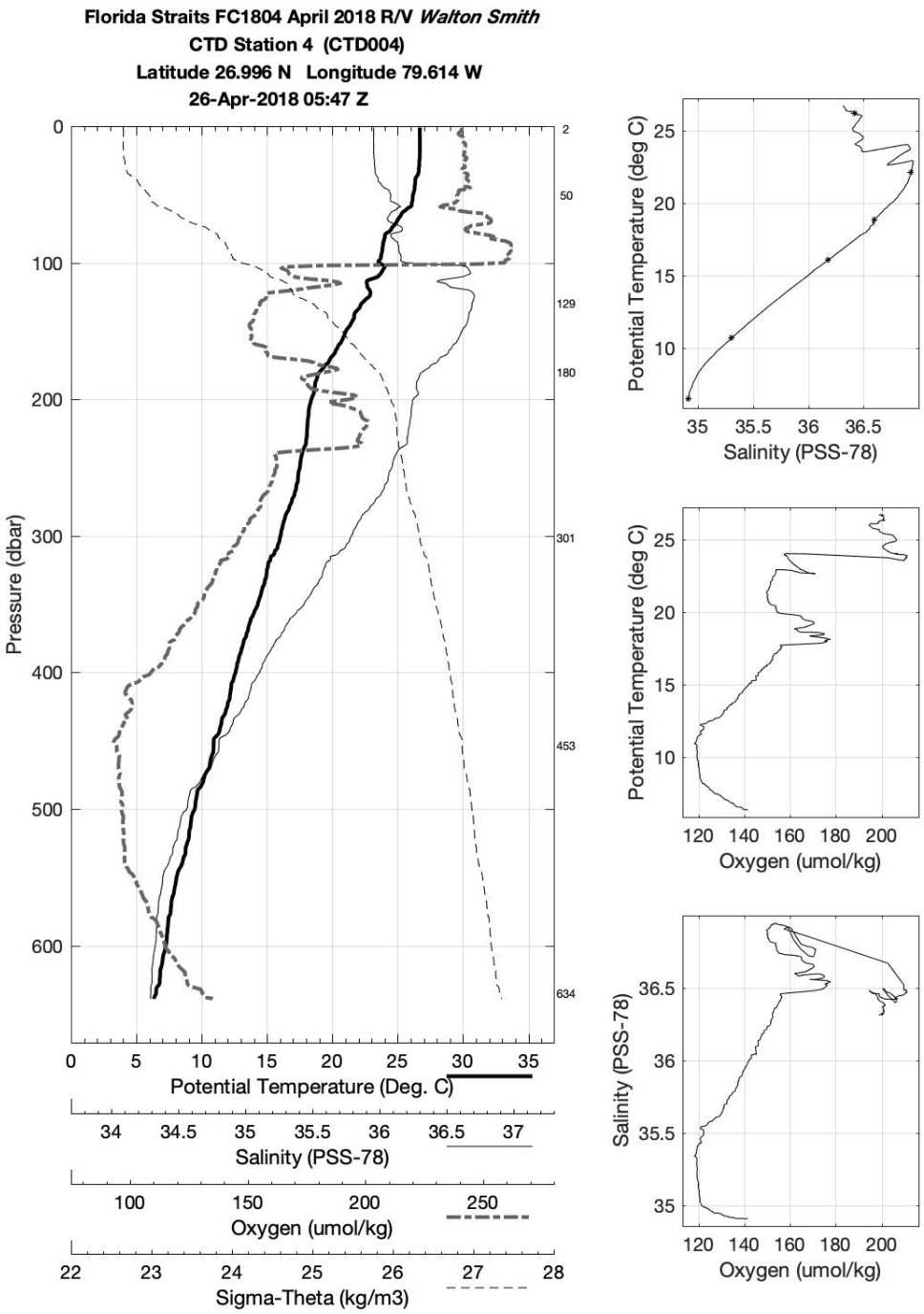
Pressure dbar	Niskin	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}
531	1	6.888	6.838	34.921	−999.0
399	2	10.792	10.743	35.313	−999.0
299	3	14.389	14.344	35.873	−999.0
179	4	18.816	18.784	36.609	−999.0
129	5	20.930	20.905	36.606	−999.0
51	6	25.776	25.765	36.588	−999.0
1	7	26.672	26.671	36.296	−999.0


Florida Straits FC1804 April 2018 R/V Walton Smith
CTD Station 3 (CTD003)
Latitude 26.996 N Longitude 79.678 W
26-Apr-2018 07:27 Z
Pressure (dbar)
0
100
200
300
400
500
1
50
129
179
298
398
531
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 FC1804 April 2018 R/V *Walton Smith*
CTD Station 4 (CTD004)
Latitude 26.996N Longitude 79.614W
26-Apr-2018 05:47Z

Pressure dbar	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}	DynHt m^2·s^{-2}	SigT kg·m^{-3}
1	26.695	26.694	36.316	199.6	0.004	23.807
10	26.704	26.701	36.315	199.9	0.041	23.804
20	26.703	26.698	36.316	200.2	0.082	23.806
30	26.637	26.630	36.323	200.4	0.123	23.833
50	26.198	26.187	36.423	198.6	0.202	24.049
75	24.551	24.535	36.496	200.4	0.294	24.614
100	23.551	23.530	36.523	209.7	0.373	24.934
125	22.832	22.806	36.948	153.8	0.442	25.468
150	21.072	21.043	36.872	150.0	0.499	25.908
200	18.430	18.394	36.564	173.2	0.595	26.371
250	17.553	17.511	36.430	156.1	0.678	26.489
300	16.078	16.029	36.176	147.7	0.756	26.646
400	12.653	12.599	35.598	126.7	0.890	26.937
500	9.513	9.455	35.137	119.9	1.002	27.151
600	7.306	7.246	34.939	130.1	1.094	27.336

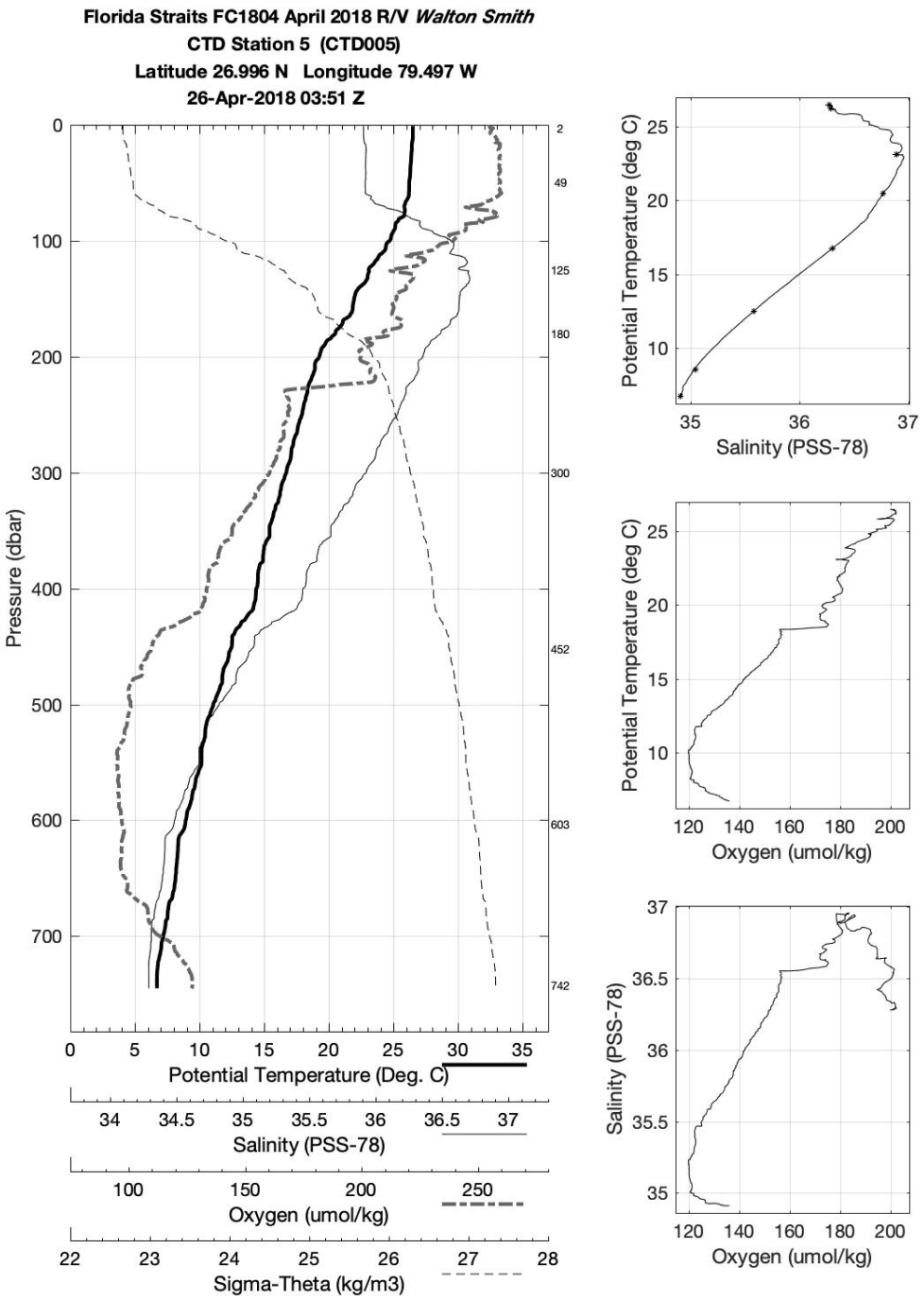
Pressure dbar	Niskin	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}
635	1	6.536	6.477	34.913	−999.0
453	2	10.733	10.677	35.303	−999.0
302	3	16.105	16.056	36.175	−999.0
180	4	18.898	18.866	36.602	−999.0
130	5	22.155	22.129	36.929	−999.0
51	6	26.170	26.159	36.422	−999.0
2	7	26.673	26.674	−999.000	−999.0


Florida Straits FC1804 April 2018 R/V Walton Smith
CTD Station 4 (CTD004)
Latitude 26.996 N Longitude 79.614 W
26-Apr-2018 05:47 Z
Pressure (dbar)
Potential Temperature (Deg. C)
Salinity (PSS-78)
Oxygen (umol/kg)
Sigma-Theta (kg/m3)
Potential Temperature (deg C)
Salinity (PSS-78)
Oxygen (umol/kg)

Florida Straits FC1804 April 2018 R/V *Walton Smith*
CTD Station 5 (CTD005)
Latitude 26.996N Longitude 79.497W
26-Apr-2018 03:51Z

Pressure dbar	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}	DynHt m^2·s^{-2}	SigT kg·m^{-3}
1	26.488	26.488	36.278	199.9	0.004	23.844
10	26.489	26.487	36.280	200.9	0.041	23.846
20	26.418	26.414	36.294	201.7	0.081	23.880
30	26.359	26.352	36.293	201.9	0.121	23.898
50	26.218	26.207	36.290	201.9	0.201	23.942
75	25.873	25.857	36.516	200.6	0.298	24.223
100	24.724	24.702	36.837	192.0	0.384	24.821
125	23.097	23.071	36.895	178.6	0.457	25.351
150	21.983	21.953	36.890	179.7	0.519	25.668
200	19.293	19.257	36.656	172.1	0.626	26.221
250	17.969	17.925	36.494	156.4	0.713	26.436
300	16.765	16.716	36.296	152.5	0.794	26.577
400	14.444	14.384	35.894	139.0	0.939	26.796
500	11.125	11.061	35.358	122.6	1.063	27.044
600	8.995	8.928	35.074	120.8	1.170	27.187
700	7.262	7.193	34.926	128.9	1.262	27.334

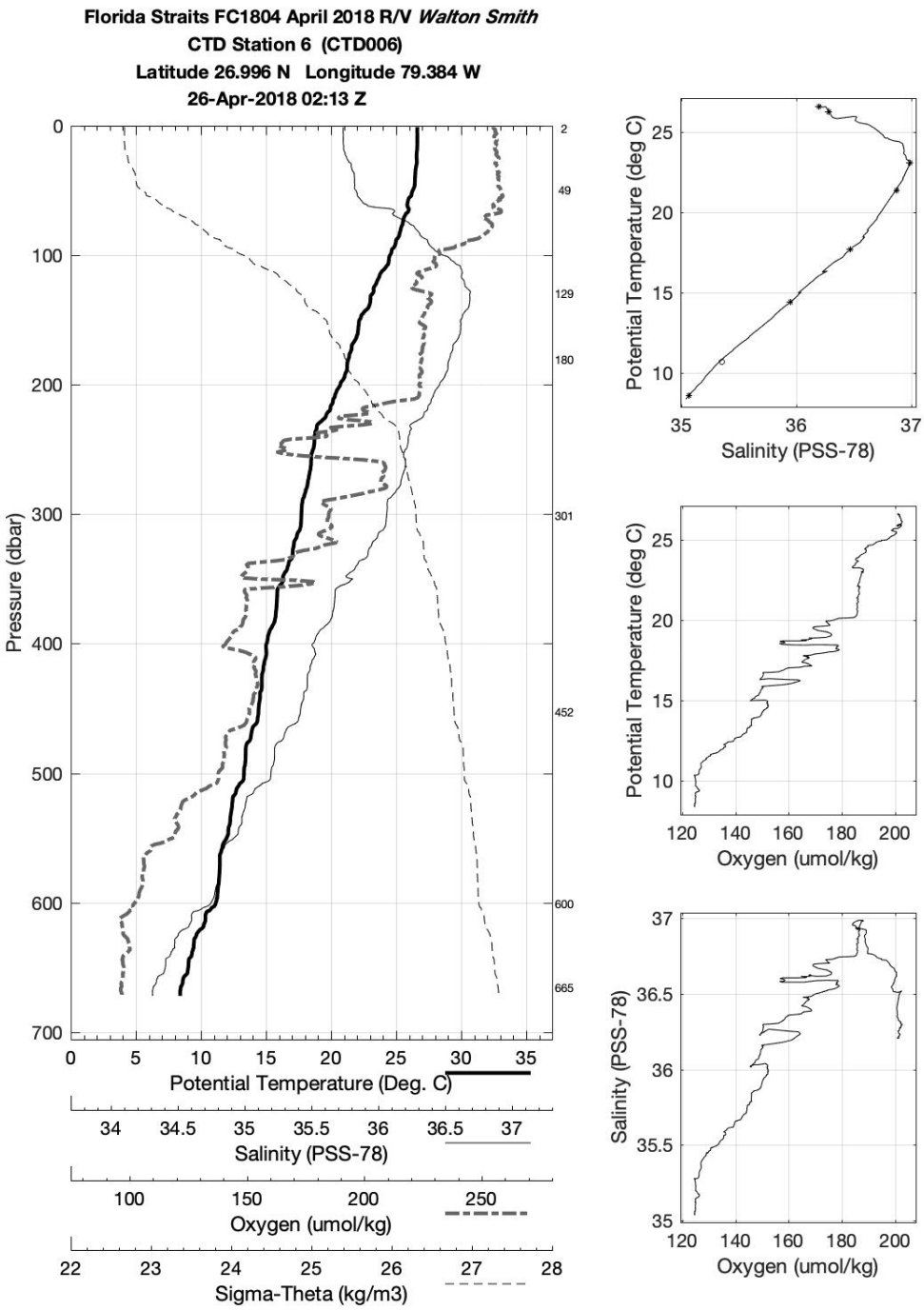
Pressure dbar	Niskin	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}
743	1	6.763	6.692	34.907	−999.0
604	2	8.578	8.513	35.039	−999.0
452	3	12.527	12.466	35.578	−999.0
300	4	16.791	16.742	36.300	−999.0
180	5	20.499	20.465	36.762	−999.0
125	6	23.126	23.100	36.885	−999.0
50	7	26.254	26.242	36.289	−999.0
3	13	26.473	26.473	36.274	−999.0


Florida Straits FC1804 April 2018 R/V Walton Smith
CTD Station 5 (CTD005)
Latitude 26.996 N Longitude 79.497 W
26-Apr-2018 03:51 Z
Pressure (dbar)
Potential Temperature (Deg. C)
Salinity (PSS-78)
Oxygen (umol/kg)
Sigma-Theta (kg/m3)
Potential Temperature (deg C)
Salinity (PSS-78)
Oxygen (umol/kg)

Florida Straits FC1804 April 2018 R/V *Walton Smith*
CTD Station 6 (CTD006)
Latitude 26.996N Longitude 79.384W
26-Apr-2018 02:13Z

Pressure dbar	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}	DynHt m^2·s^{-2}	SigT kg·m^{-3}
1	26.626	26.626	36.208	200.7	0.004	23.747
10	26.626	26.624	36.207	200.9	0.041	23.748
20	26.595	26.590	36.215	201.3	0.083	23.764
30	26.573	26.566	36.257	201.3	0.124	23.803
50	26.282	26.270	36.286	202.1	0.205	23.919
75	25.529	25.513	36.610	200.1	0.300	24.401
100	24.552	24.530	36.819	189.1	0.384	24.860
125	23.300	23.274	36.962	184.0	0.456	25.343
150	22.205	22.175	36.925	186.0	0.520	25.632
200	20.750	20.712	36.797	185.4	0.634	25.942
250	18.653	18.608	36.588	158.6	0.730	26.336
300	17.770	17.718	36.473	167.1	0.816	26.471
400	15.101	15.039	36.020	146.0	0.969	26.750
500	13.376	13.305	35.765	144.5	1.104	26.924
600	11.227	11.150	35.398	127.6	1.223	27.059

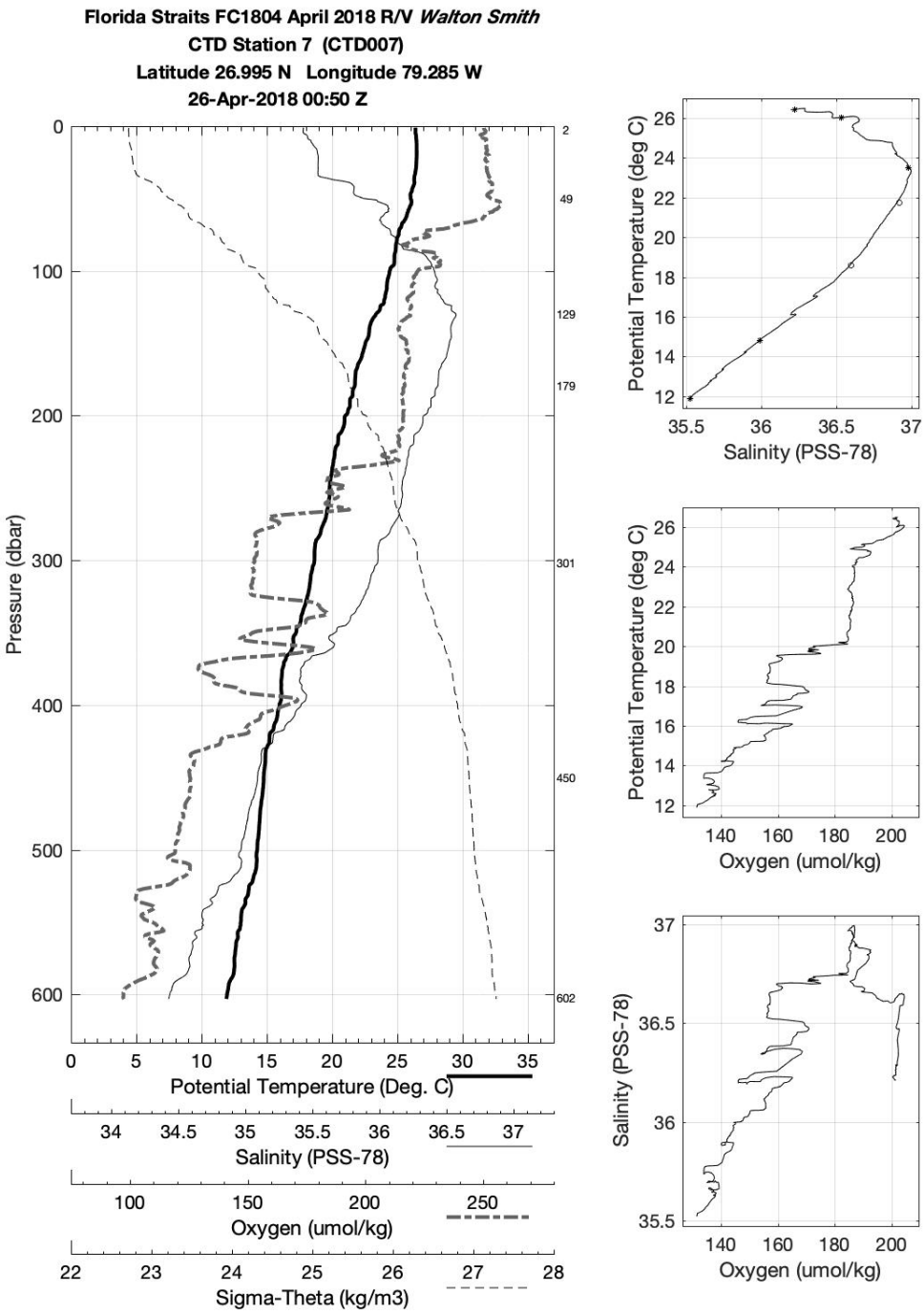
Pressure dbar	Niskin	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}
665	1	8.668	8.595	35.064	−999.0
601	2	10.806	10.731	35.349	−999.0
453	3	14.514	14.446	35.945	−999.0
301	4	17.768	17.716	36.464	−999.0
180	5	21.434	21.398	36.866	−999.0
130	6	23.122	23.095	36.987	−999.0
50	7	26.302	26.291	36.281	−999.0
2	13	26.599	26.599	36.194	−999.0


Florida Straits FC1804 April 2018 R/V Walton Smith
CTD Station 6 (CTD006)
Latitude 26.996 N Longitude 79.384 W
26-Apr-2018 02:13 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 FC1804 April 2018 R/V *Walton Smith*
CTD Station 7 (CTD007)
Latitude 26.995N Longitude 79.285W
26-Apr-2018 00:50Z

Pressure dbar	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}	DynHt m^2·s^{-2}	SigT kg·m^{-3}
1	26.399	26.399	36.213	200.9	0.004	23.823
10	26.477	26.475	36.253	201.3	0.041	23.829
20	26.493	26.488	36.288	201.9	0.081	23.851
30	26.422	26.416	36.288	201.5	0.122	23.875
50	26.034	26.022	36.523	202.3	0.199	24.176
75	25.134	25.118	36.662	190.2	0.289	24.562
100	24.444	24.422	36.884	188.2	0.369	24.942
125	23.723	23.697	36.971	187.0	0.443	25.225
150	22.584	22.553	36.960	186.0	0.508	25.551
200	21.048	21.009	36.828	185.4	0.625	25.884
250	19.864	19.818	36.717	173.7	0.728	26.121
300	18.706	18.653	36.595	156.9	0.823	26.330
400	16.036	15.972	36.201	163.0	0.986	26.678
500	14.341	14.266	35.894	141.6	1.128	26.822
600	12.039	11.959	35.530	131.7	1.256	27.008

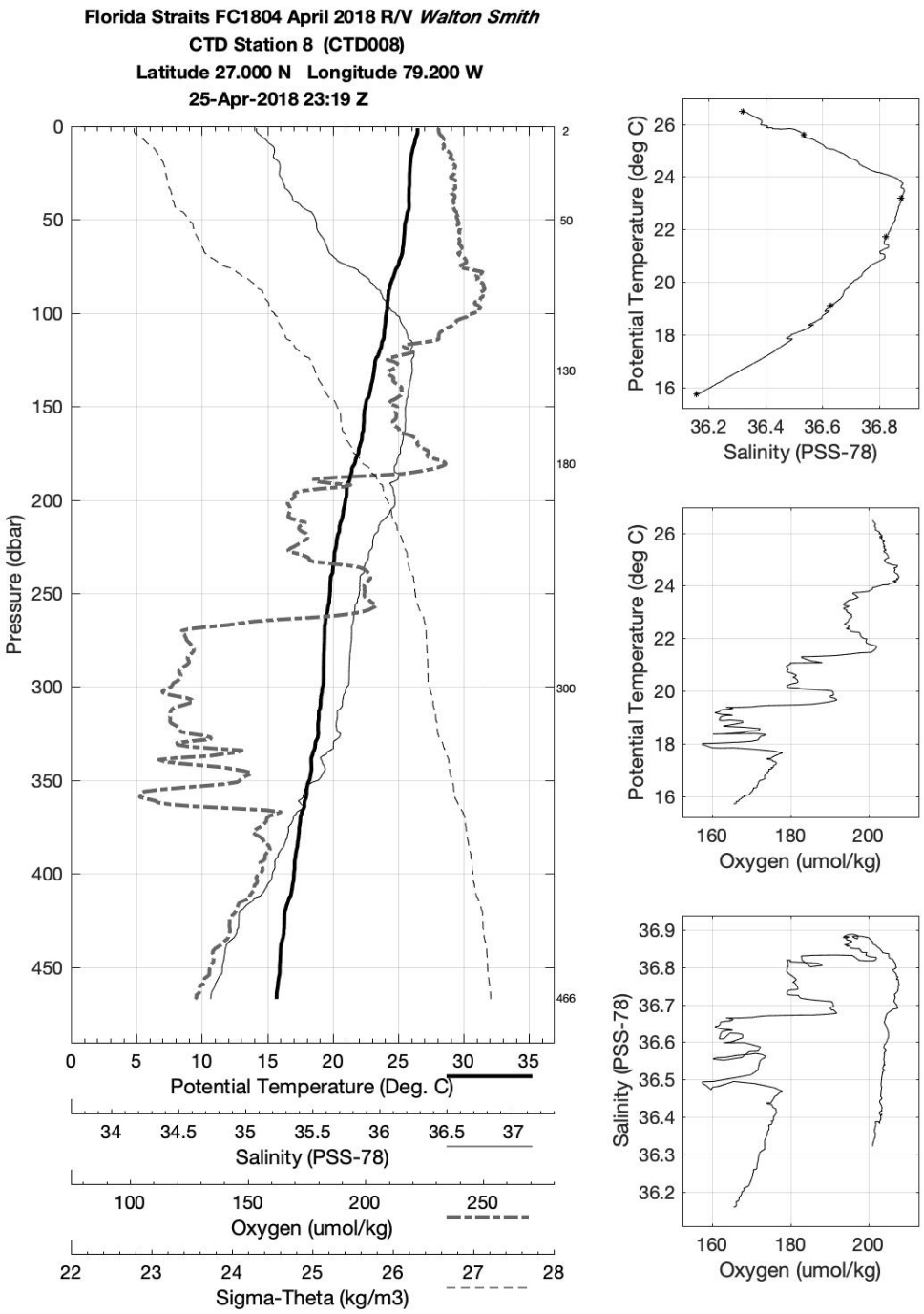
Pressure dbar	Niskin	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}
602	1	11.985	11.905	35.522	−999.0
450	2	14.873	14.805	35.987	−999.0
301	3	18.642	18.588	36.597	−999.0
179	4	21.799	21.764	36.919	−999.0
130	5	23.519	23.492	36.976	−999.0
50	6	26.037	26.026	36.533	−999.0
3	7	26.408	26.408	36.223	−999.0


Florida Straits FC1804 April 2018 R/V Walton Smith
CTD Station 7 (CTD007)
Latitude 26.995 N Longitude 79.285 W
26-Apr-2018 00:50 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 FC1804 April 2018 R/V *Walton Smith*
CTD Station 8 (CTD008)
Latitude 27.000N Longitude 79.200W
25-Apr-2018 23:19Z

Pressure dbar	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}	DynHt m^2·s^{-2}	SigT kg·m^{-3}
1	26.478	26.478	36.324	200.9	0.004	23.882
10	26.207	26.205	36.377	201.7	0.040	24.008
20	25.940	25.935	36.405	202.9	0.078	24.114
30	25.872	25.866	36.417	203.2	0.116	24.145
50	25.617	25.606	36.535	203.7	0.190	24.315
75	24.988	24.972	36.653	203.9	0.278	24.600
100	24.115	24.094	36.821	206.1	0.356	24.993
125	23.301	23.275	36.879	193.5	0.429	25.279
150	22.519	22.489	36.857	194.9	0.495	25.491
200	21.010	20.972	36.818	179.4	0.615	25.887
250	19.824	19.778	36.691	190.2	0.718	26.111
300	19.284	19.230	36.647	162.1	0.815	26.221
400	17.097	17.030	36.380	175.1	0.990	26.567

Pressure dbar	Niskin	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}
467	1	15.798	15.723	36.157	−999.0
301	2	19.159	19.105	36.629	−999.0
181	3	21.744	21.708	36.822	−999.0
131	4	23.207	23.180	36.876	−999.0
50	5	25.600	25.589	36.534	−999.0
3	6	26.468	26.468	36.320	−999.0

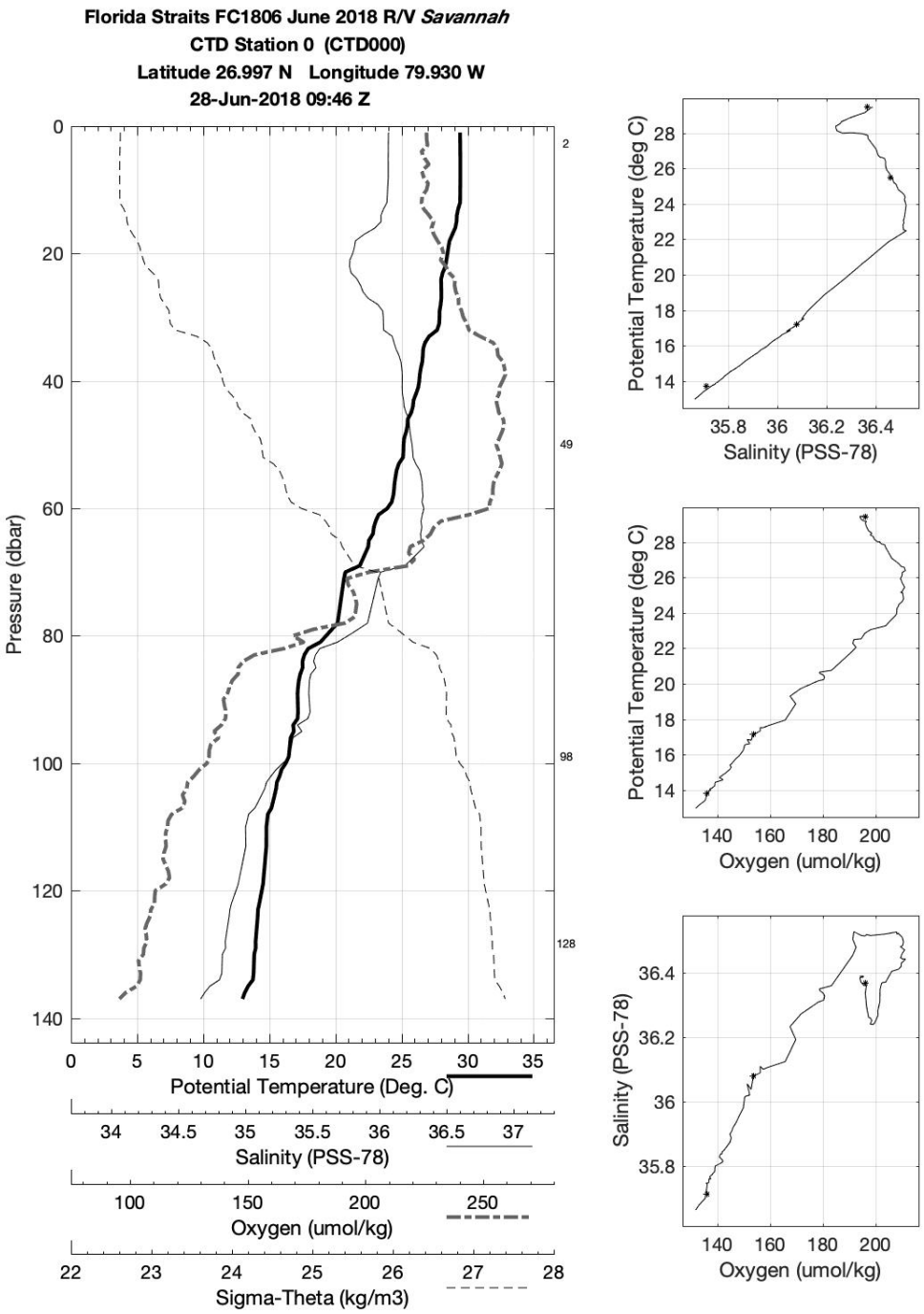

Florida Straits FC1804 April 2018 R/V Walton Smith
CTD Station 8 (CTD008)
Latitude 27.000 N Longitude 79.200 W
25-Apr-2018 23:19 Z
Pressure (dbar)
Potential Temperature (Deg. C)
Salinity (PSS-78)
Oxygen (umol/kg)
Sigma-Theta (kg/m3)
Potential Temperature (deg C)
Salinity (PSS-78)
Potential Temperature (deg C)
Oxygen (umol/kg)
Salinity (PSS-78)
Oxygen (umol/kg)

A.2 FC1806 - June 2018

Florida Straits FC1806 June 2018 R/V *Savannah*
CTD Station 0 (CTD000)
Latitude 26.997N Longitude 79.930W
28-Jun-2018 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	29.439	29.439	36.389	195.0	0.005	22.959
10	29.449	29.447	36.385	195.1	0.049	22.954
20	28.486	28.481	36.250	198.5	0.097	23.177
30	27.884	27.877	36.368	202.7	0.142	23.464
50	25.167	25.156	36.480	209.5	0.220	24.412
75	20.387	20.373	36.326	180.6	0.293	25.674
100	16.257	16.241	35.981	149.7	0.339	26.447
125	14.102	14.083	35.771	137.3	0.374	26.765

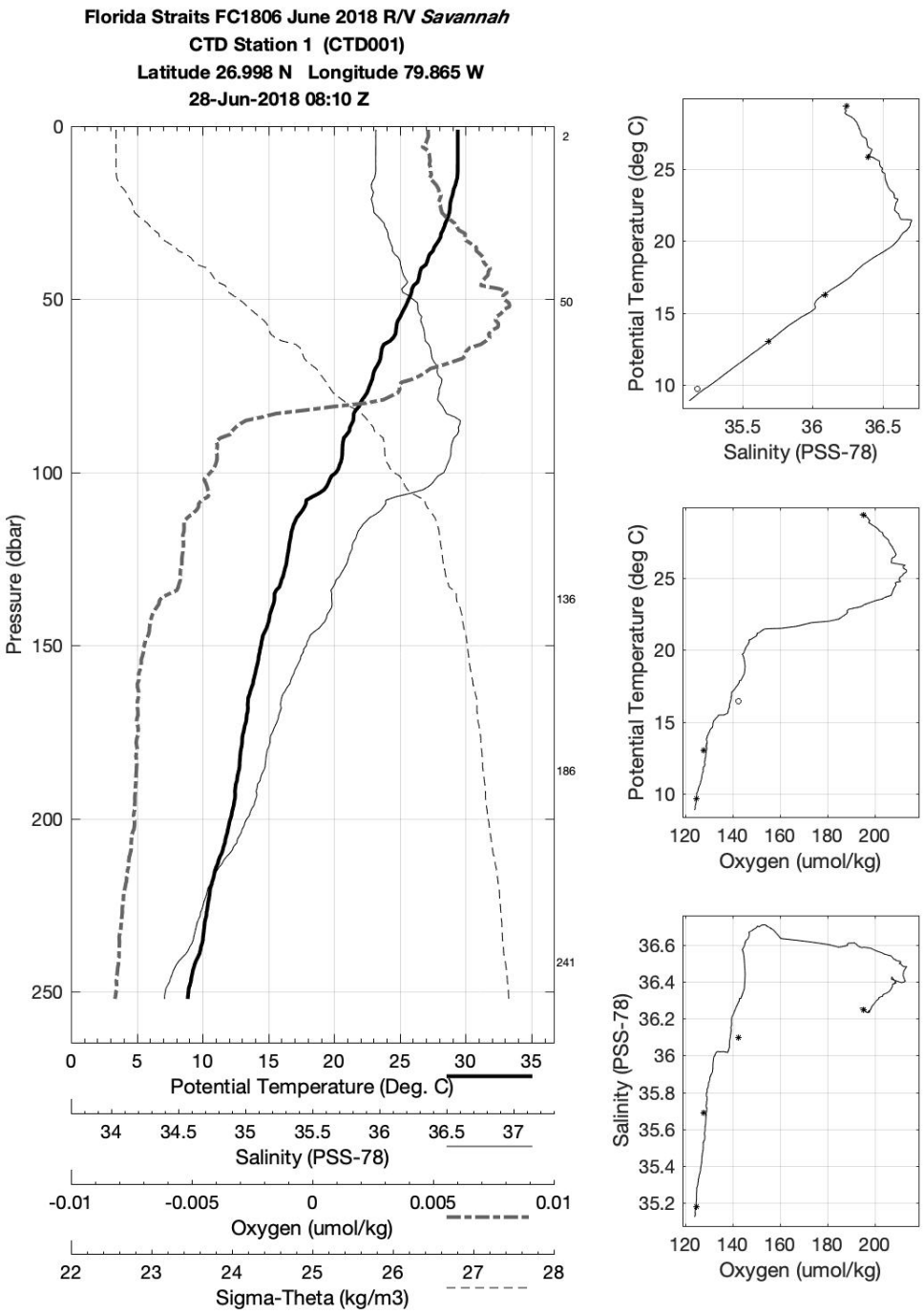
Pressure dbar	Niskin	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}
128	1	13.746	13.727	35.713	135.9
99	2	17.228	17.211	36.079	153.7
50	3	25.476	25.465	36.460	222.0
3	4	29.463	29.463	36.368	196.2


Florida Straits FC1806 June 2018 R/V Savannah
CTD Station 0 (CTD000)
Latitude 26.997 N Longitude 79.930 W
28-Jun-2018 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 FC1806 June 2018 R/V *Savannah*
CTD Station 1 (CTD001)
Latitude 26.998N Longitude 79.865W
28-Jun-2018 08:10Z

Pressure dbar	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}	DynHt m^2·s^{-2}	SigT kg·m^{-3}
1	29.402	29.402	36.256	194.8	0.005	22.872
10	29.405	29.403	36.255	195.3	0.050	22.871
20	29.002	28.997	36.239	197.8	0.099	22.996
30	28.286	28.279	36.315	201.8	0.147	23.292
50	25.674	25.662	36.455	212.1	0.229	24.237
75	22.719	22.704	36.601	188.2	0.308	25.234
100	20.168	20.149	36.620	145.4	0.367	25.958
125	16.441	16.421	36.108	138.9	0.410	26.502
150	14.470	14.447	35.884	130.3	0.445	26.775
200	12.144	12.118	35.566	128.1	0.505	27.006
250	8.954	8.927	35.130	123.9	0.554	27.232

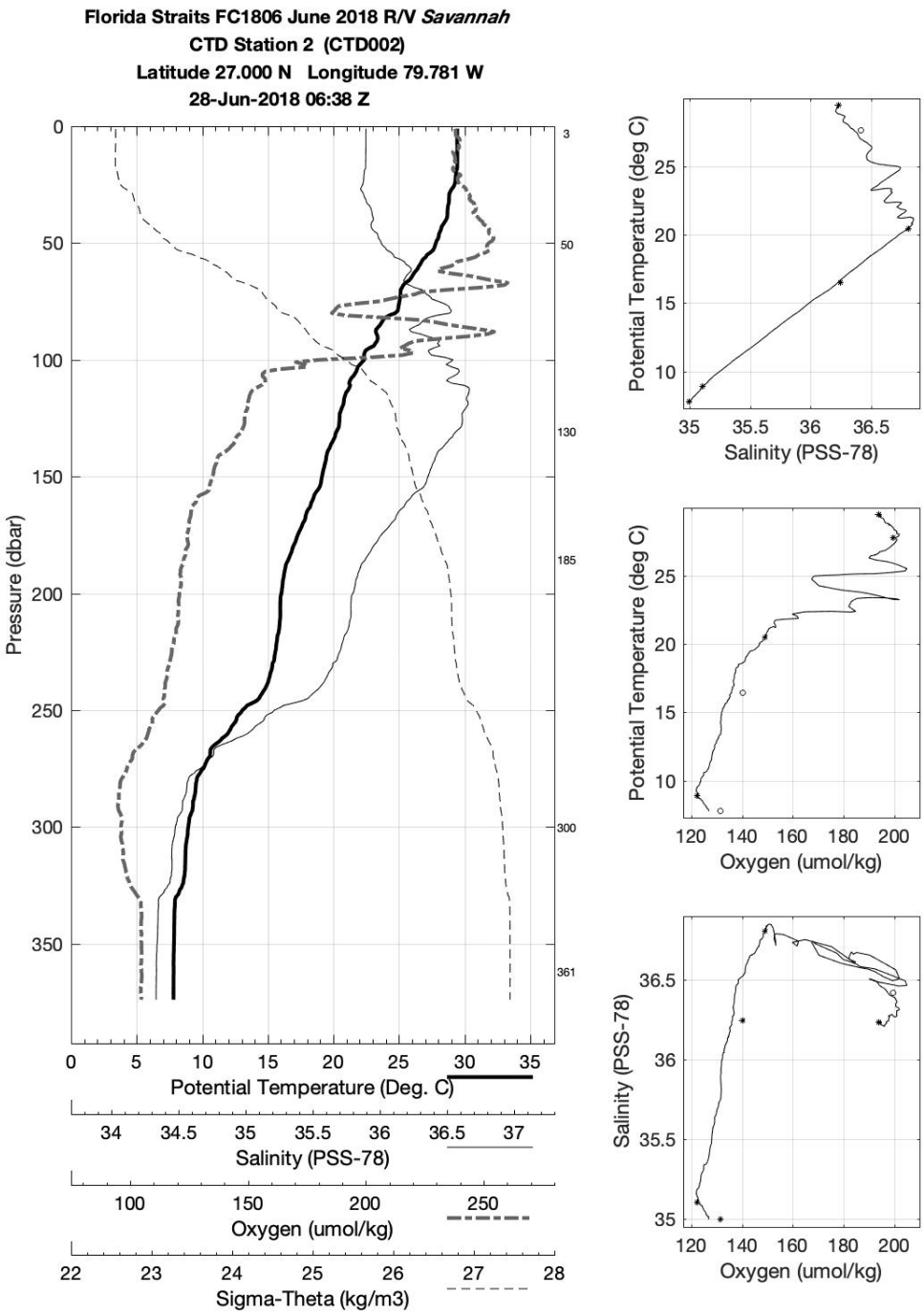
Pressure dbar	Niskin	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}
241	1	9.712	9.684	35.181	124.4
186	2	13.051	13.026	35.688	127.6
137	3	16.295	16.273	36.095	142.3
51	4	25.869	25.858	36.399	223.7
3	5	29.387	29.386	36.245	195.2


Florida Straits FC1806 June 2018 R/V Savannah
CTD Station 1 (CTD001)
Latitude 26.998 N Longitude 79.865 W
28-Jun-2018 08:10 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 FC1806 June 2018 R/V *Savannah*
CTD Station 2 (CTD002)
Latitude 27.000N Longitude 79.781W
28-Jun-2018 06:38Z

Pressure dbar	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}	DynHt m^2·s^{-2}	SigT kg·m^{-3}
1	29.434	29.434	36.237	193.9	0.005	22.847
10	29.442	29.440	36.236	194.4	0.050	22.844
20	29.358	29.353	36.226	194.4	0.100	22.866
30	28.829	28.822	36.225	197.1	0.149	23.044
50	27.812	27.801	36.326	201.0	0.243	23.457
75	25.048	25.032	36.663	177.4	0.339	24.589
100	22.365	22.345	36.749	164.9	0.413	25.449
125	20.492	20.469	36.803	148.8	0.468	26.012
150	19.160	19.133	36.602	142.0	0.517	26.212
200	16.063	16.031	36.160	134.9	0.598	26.633
250	13.096	13.061	35.698	130.4	0.669	26.921
300	8.963	8.931	35.115	122.4	0.719	27.219

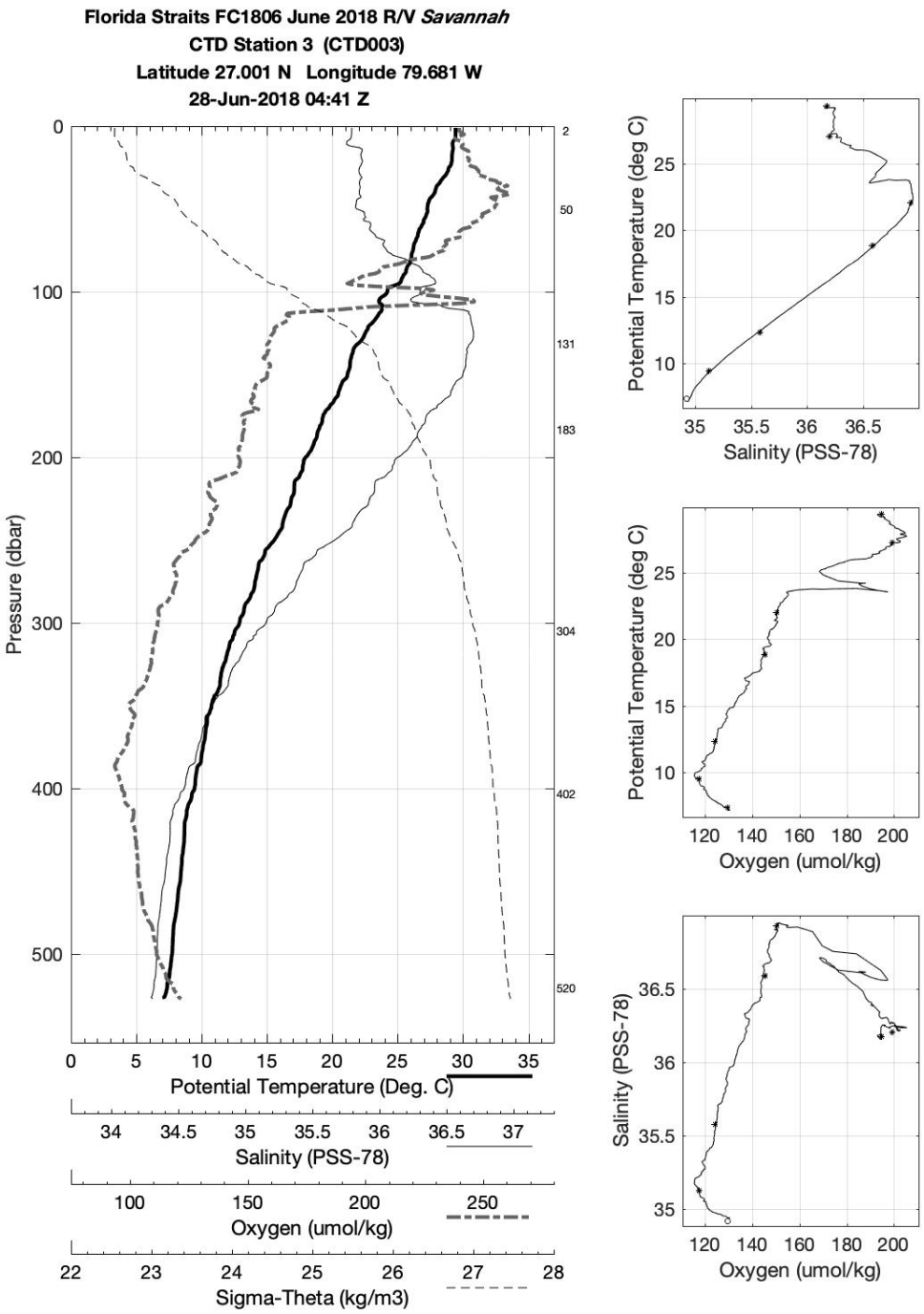
Pressure dbar	Niskin	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}
362	1	7.846	7.809	34.996	131.2
300	2	8.932	8.899	35.107	122.2
186	3	16.531	16.500	36.240	140.1
131	4	20.480	20.455	36.803	148.9
51	5	27.633	27.621	36.415	199.7
3	6	29.459	29.458	36.230	193.9


Florida Straits FC1806 June 2018 R/V Savannah
CTD Station 2 (CTD002)
Latitude 27.000 N Longitude 79.781 W
28-Jun-2018 06:38 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 FC1806 June 2018 R/V *Savannah*
CTD Station 3 (CTD003)
Latitude 27.001N Longitude 79.681W
28-Jun-2018 04:41Z

Pressure dbar	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}	DynHt m^2·s^{-2}	SigT kg·m^{-3}
1	29.429	29.428	36.187	193.9	0.005	22.811
10	29.202	29.199	36.154	194.5	0.050	22.864
20	29.155	29.151	36.249	196.2	0.100	22.951
30	28.625	28.618	36.242	199.0	0.148	23.125
50	27.273	27.261	36.217	201.4	0.238	23.550
75	26.185	26.168	36.404	190.5	0.341	24.040
100	24.229	24.208	36.614	186.2	0.429	24.801
125	22.544	22.519	36.944	151.5	0.500	25.548
150	21.187	21.158	36.878	150.2	0.557	25.881
200	17.981	17.946	36.471	143.7	0.652	26.413
250	15.588	15.549	36.079	133.7	0.730	26.681
300	12.931	12.890	35.652	125.2	0.795	26.920
400	9.489	9.444	35.142	117.1	0.903	27.157
500	7.781	7.730	34.972	125.0	0.995	27.292

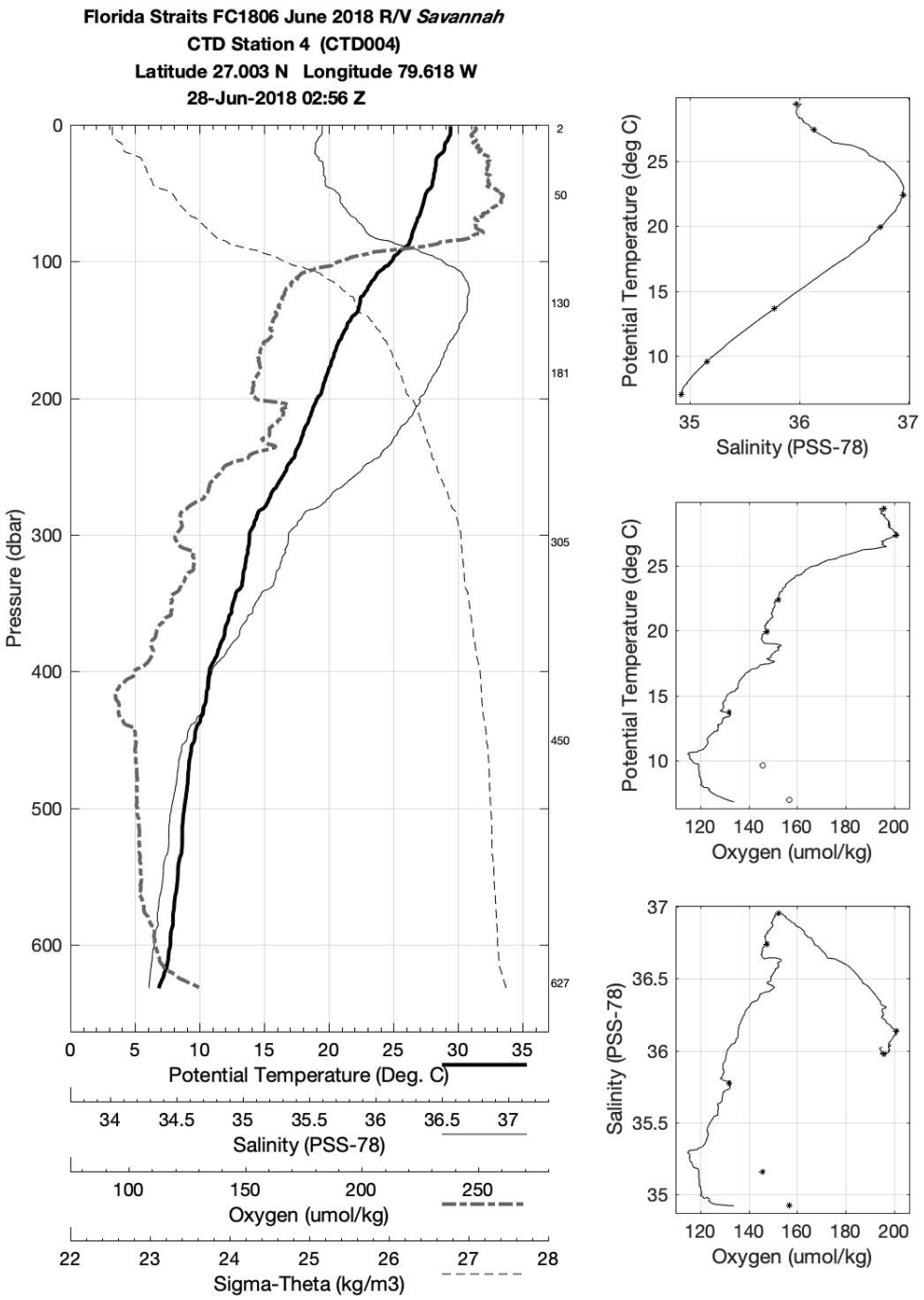
Pressure dbar	Niskin	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}
520	1	7.399	7.347	34.921	129.7
403	2	9.448	9.402	35.126	117.6
305	3	12.356	12.315	35.578	124.2
183	4	18.858	18.825	36.586	145.7
131	5	22.106	22.080	36.927	150.5
50	6	27.107	27.096	36.204	199.5
3	7	29.381	29.381	36.174	194.9


Florida Straits FC1806 June 2018 R/V Savannah
CTD Station 3 (CTD003)
Latitude 27.001 N Longitude 79.681 W
28-Jun-2018 04:41 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 FC1806 June 2018 R/V *Savannah*
CTD Station 4 (CTD004)
Latitude 27.003N Longitude 79.618W
28-Jun-2018 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	29.406	29.406	36.022	195.1	0.005	22.695
10	29.235	29.232	35.998	194.6	0.051	22.735
20	28.840	28.835	35.974	195.8	0.102	22.851
30	28.280	28.272	36.027	198.0	0.150	23.078
50	27.530	27.518	36.121	200.6	0.244	23.396
75	26.636	26.619	36.285	195.1	0.352	23.808
100	24.852	24.830	36.786	164.7	0.446	24.743
125	22.665	22.640	36.946	152.3	0.515	25.514
150	21.289	21.260	36.885	149.3	0.574	25.858
200	19.174	19.137	36.642	146.0	0.675	26.242
250	16.817	16.775	36.285	139.1	0.759	26.555
300	13.897	13.854	35.807	128.5	0.830	26.842
400	10.819	10.770	35.322	119.0	0.950	27.068
500	8.870	8.815	35.063	119.7	1.052	27.197
600	7.803	7.741	34.955	123.6	1.146	27.277

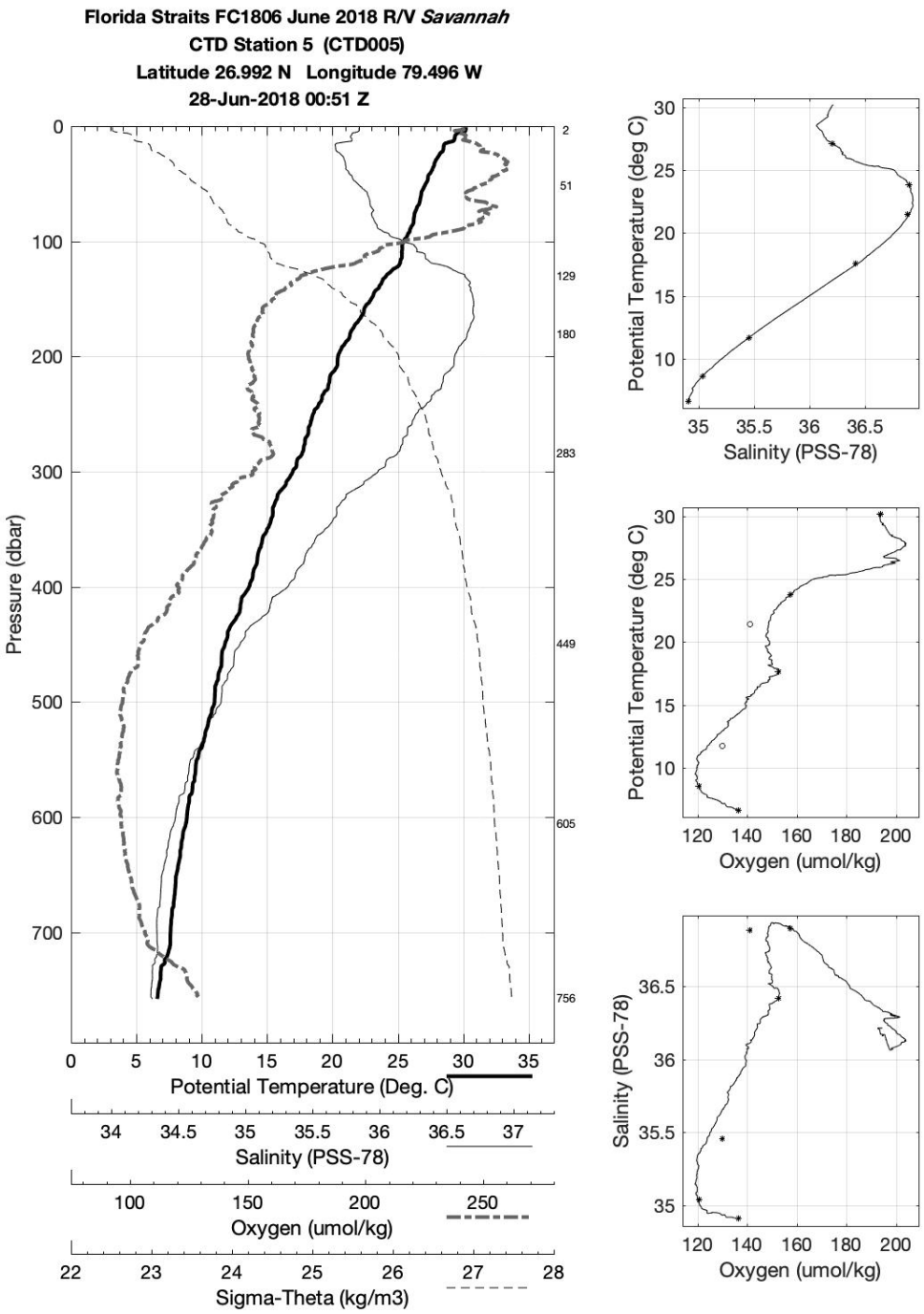
Pressure dbar	Niskin	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}
628	1	7.086	7.025	34.924	156.8
450	2	9.655	9.603	35.158	145.7
305	3	13.703	13.659	35.770	131.8
181	4	19.958	19.924	36.741	147.4
130	5	22.416	22.390	36.957	152.5
51	6	27.421	27.409	36.136	200.8
3	7	29.403	29.402	35.977	195.9


Florida Straits FC1806 June 2018 R/V Savannah
CTD Station 4 (CTD004)
Latitude 27.003 N Longitude 79.618 W
28-Jun-2018 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 FC1806 June 2018 R/V *Savannah*
CTD Station 5 (CTD005)
Latitude 26.992N Longitude 79.496W
28-Jun-2018 00:51Z

Pressure dbar	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}	DynHt m^2·s^{-2}	SigT kg·m^{-3}
1	30.198	30.198	36.215	194.2	0.005	22.569
10	29.363	29.360	36.162	194.9	0.052	22.815
20	28.492	28.487	36.068	198.8	0.101	23.037
30	27.893	27.886	36.124	203.6	0.148	23.278
50	27.142	27.131	36.205	199.1	0.237	23.584
75	26.324	26.307	36.295	199.2	0.341	23.914
100	25.499	25.476	36.485	181.5	0.438	24.318
125	24.604	24.577	36.804	163.0	0.524	24.834
150	22.988	22.958	36.930	152.9	0.595	25.410
200	20.468	20.430	36.814	147.6	0.710	26.031
250	18.560	18.515	36.571	149.9	0.806	26.347
300	17.020	16.969	36.333	148.4	0.890	26.545
400	13.688	13.630	35.767	132.2	1.032	26.858
500	11.041	10.978	35.349	120.1	1.151	27.052
600	8.935	8.869	35.064	119.8	1.256	27.189
700	7.684	7.613	34.947	125.0	1.350	27.290

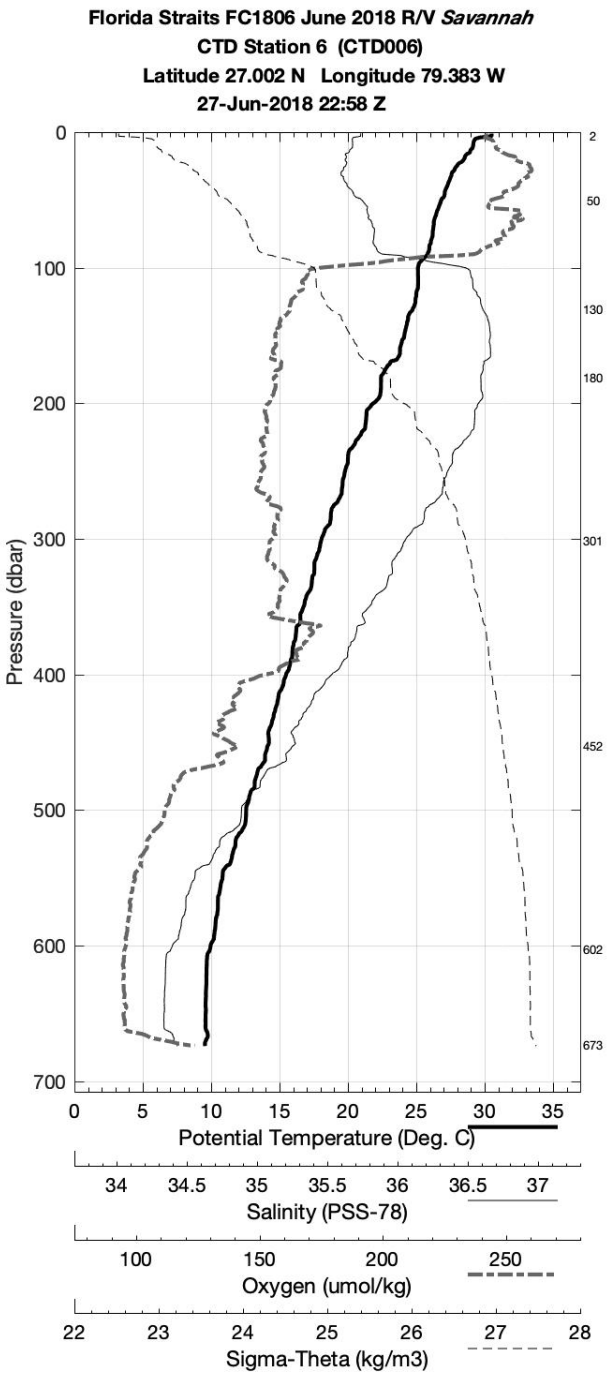
Pressure dbar	Niskin	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}
757	1	6.683	6.611	34.913	136.4
606	2	8.657	8.591	35.041	120.4
449	3	11.759	11.701	35.457	129.9
284	4	17.603	17.554	36.421	152.5
181	5	21.518	21.482	36.881	141.0
130	6	23.841	23.813	36.896	157.3
51	7	27.111	27.099	36.211	220.7
3	13	29.998	29.999	−999.000	−999.0

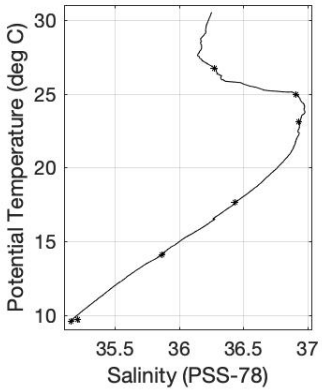

Florida Straits FC1806 June 2018 R/V Savannah
CTD Station 5 (CTD005)
Latitude 26.992 N Longitude 79.496 W
28-Jun-2018 00:51 Z
Pressure (dbar)
Potential Temperature (Deg. C)
Salinity (PSS-78)
Oxygen (umol/kg)
Sigma-Theta (kg/m3)
Potential Temperature (deg C)
Salinity (PSS-78)
Potential Temperature (deg C)
Oxygen (umol/kg)
Salinity (PSS-78)
Oxygen (umol/kg)

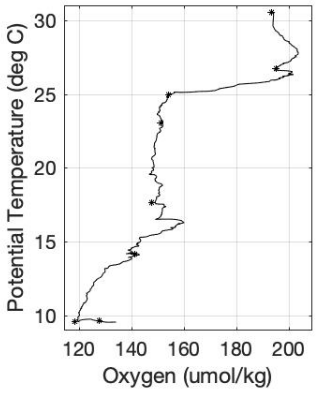
Florida Straits FC1806 June 2018 R/V *Savannah*
CTD Station 6 (CTD006)
Latitude 27.002N Longitude 79.383W
27-Jun-2018 22:58Z

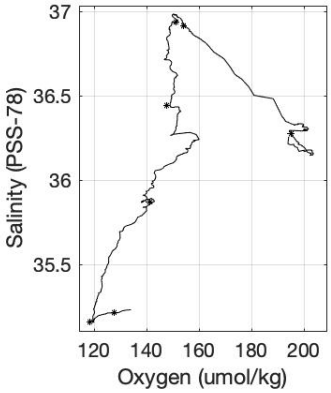
Pressure dbar	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}	DynHt m^2·s^{-2}	SigT kg·m^{-3}
1	30.508	30.507	36.255	194.2	0.005	22.492
10	29.155	29.152	36.209	196.1	0.051	22.921
20	28.488	28.484	36.168	200.0	0.099	23.114
30	27.603	27.596	36.145	202.5	0.145	23.388
50	26.838	26.826	36.261	195.2	0.232	23.723
75	26.211	26.194	36.330	197.7	0.333	23.976
100	25.139	25.117	36.839	159.9	0.427	24.696
125	24.960	24.932	36.924	154.0	0.508	24.817
150	24.153	24.121	36.979	150.6	0.583	25.104
200	21.892	21.852	36.912	149.3	0.715	25.713
250	19.831	19.785	36.740	147.7	0.821	26.147
300	18.123	18.070	36.507	150.1	0.914	26.409
400	15.536	15.473	36.092	148.6	1.072	26.709
500	12.630	12.561	35.589	127.8	1.207	26.937
600	10.026	9.955	35.201	119.8	1.322	27.117

Pressure dbar	Niskin	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}
673	1	9.774	9.695	35.213	127.6
603	2	9.682	9.611	35.159	118.2
453	3	14.187	14.120	35.866	141.3
302	4	17.688	17.636	36.438	147.8
181	5	23.147	23.109	36.934	151.2
131	6	24.965	24.937	36.909	154.2
51	7	26.752	26.740	36.274	195.2
3	13	30.083	30.084	−999.000	−999.0


Florida Straits FC1806 June 2018 R/V Savannah
CTD Station 6 (CTD006)
Latitude 27.002 N Longitude 79.383 W
27-Jun-2018 22:58 Z
Pressure (dbar)
Potential Temperature (Deg. C)
Salinity (PSS-78)
Oxygen (umol/kg)
Sigma-Theta (kg/m3)


Potential Temperature (deg C)
Salinity (PSS-78)

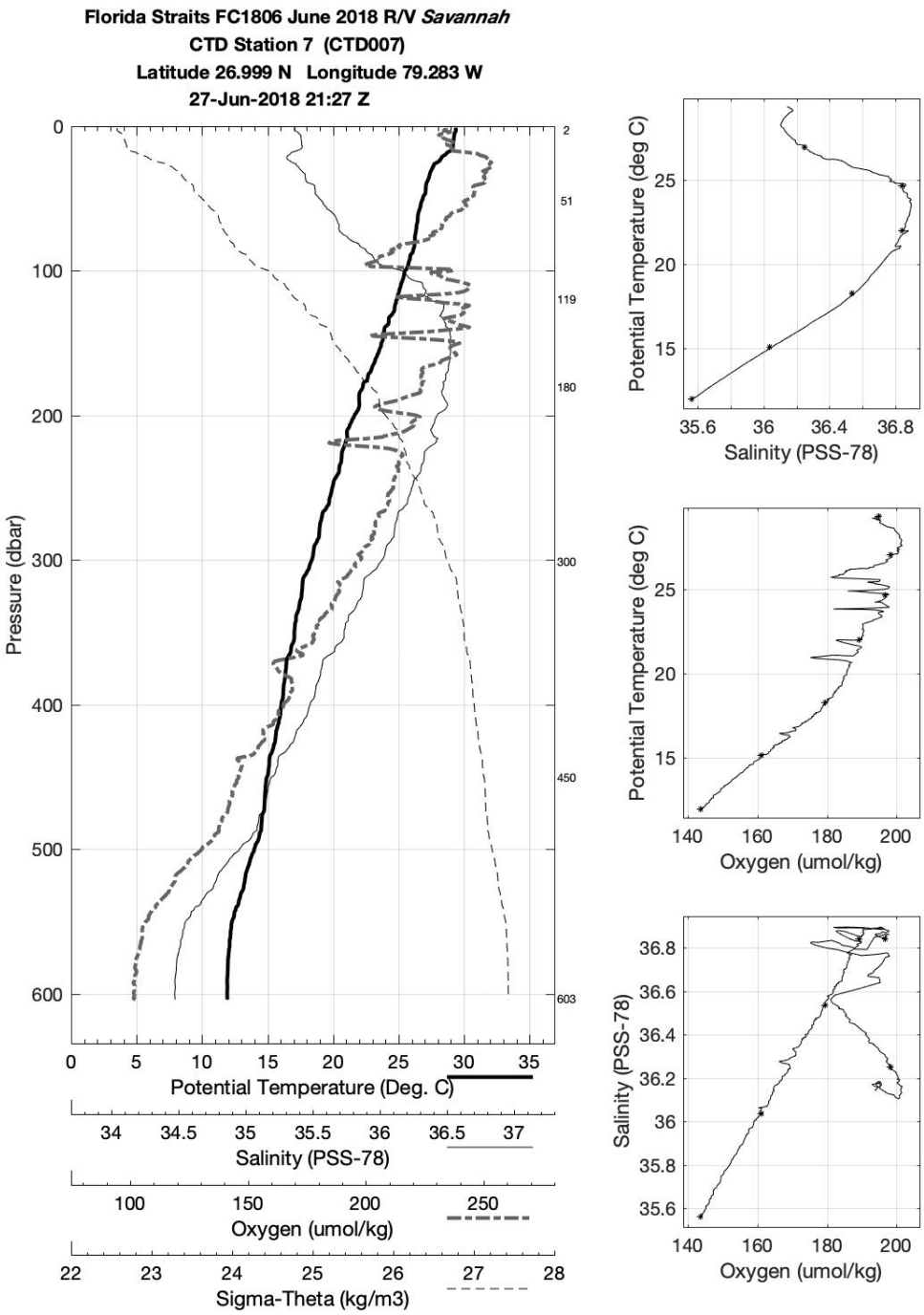

Potential Temperature (deg C)
Oxygen (umol/kg)


Salinity (PSS-78)
Oxygen (umol/kg)

Florida Straits FC1806 June 2018 R/V *Savannah*
CTD Station 7 (CTD007)
Latitude 26.999N Longitude 79.283W
27-Jun-2018 21:27Z

Pressure dbar	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}	DynHt m^2·s^{-2}	SigT kg·m^{-3}
1	29.373	29.373	36.144	194.0	0.005	22.798
10	29.193	29.191	36.175	194.8	0.050	22.883
20	28.510	28.505	36.113	199.6	0.099	23.065
30	27.537	27.530	36.171	200.7	0.145	23.429
50	26.861	26.850	36.262	197.9	0.232	23.717
75	26.291	26.274	36.378	192.2	0.333	23.987
100	25.497	25.474	36.662	195.0	0.427	24.452
125	24.731	24.704	36.863	197.4	0.510	24.840
150	23.717	23.686	36.891	196.3	0.585	25.167
200	21.680	21.641	36.830	189.4	0.714	25.710
250	19.984	19.937	36.707	185.7	0.823	26.081
300	18.426	18.373	36.564	180.3	0.916	26.377
400	16.117	16.053	36.217	168.0	1.076	26.672
500	14.056	13.982	35.875	154.8	1.217	26.868
600	11.998	11.918	35.563	143.9	1.339	27.043

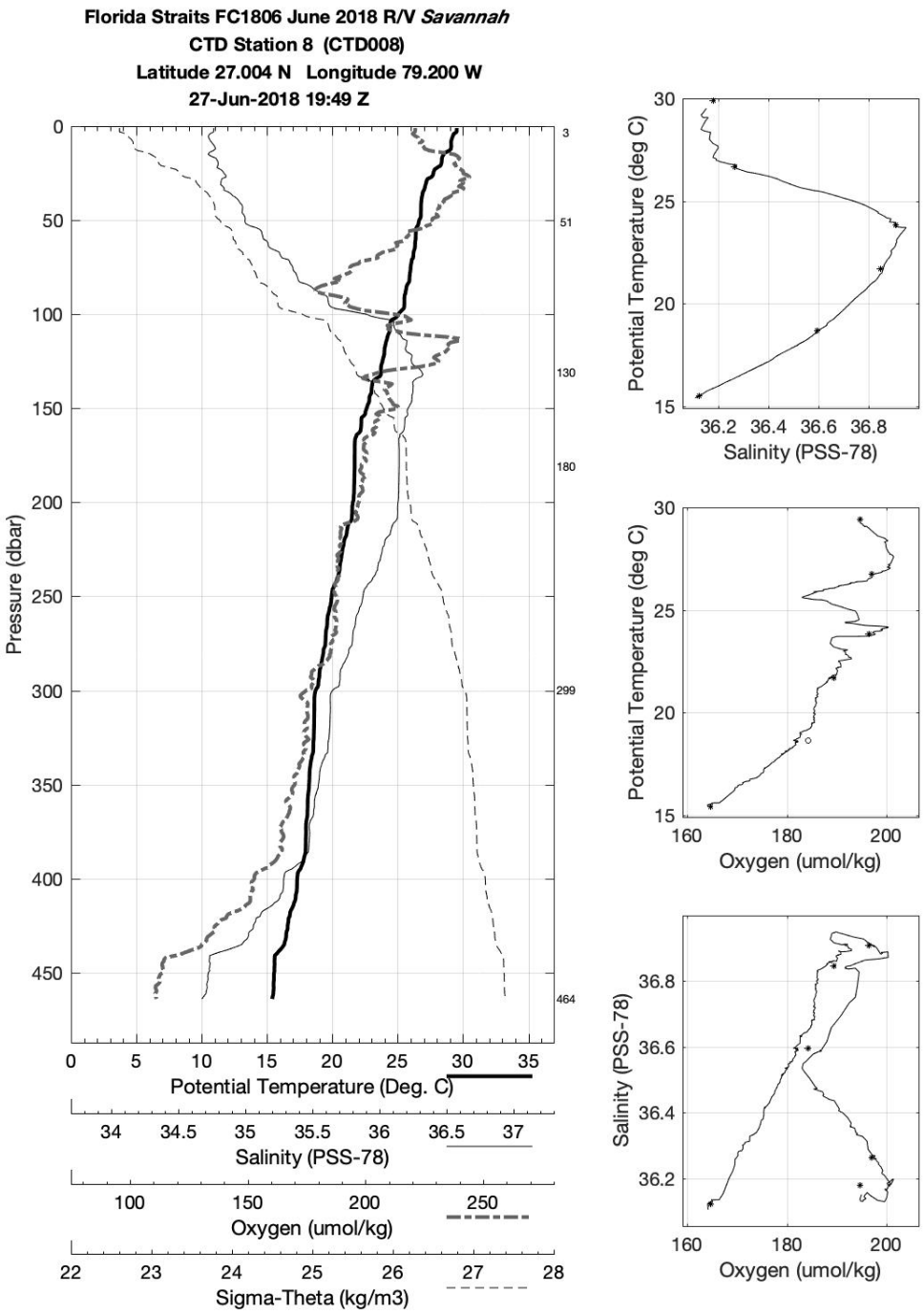
Pressure dbar	Niskin	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}
604	1	12.033	11.953	35.562	143.8
451	2	15.135	15.065	36.037	161.3
301	3	18.298	18.245	36.536	179.4
180	4	22.060	22.024	36.842	189.3
120	5	24.685	24.659	36.842	196.7
51	6	26.966	26.954	36.249	198.1
3	7	30.920	30.919	36.172	194.8


Florida Straits FC1806 June 2018 R/V Savannah
CTD Station 7 (CTD007)
Latitude 26.999 N Longitude 79.283 W
27-Jun-2018 21:27 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 FC1806 June 2018 R/V *Savannah*
CTD Station 8 (CTD008)
Latitude 27.004N Longitude 79.200W
27-Jun-2018 19:49Z

Pressure dbar	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}	DynHt m^2·s^{-2}	SigT kg·m^{-3}
1	29.522	29.521	36.151	194.9	0.005	22.752
10	29.099	29.097	36.151	195.7	0.050	22.896
20	28.345	28.340	36.167	199.6	0.098	23.161
30	27.189	27.182	36.178	200.7	0.143	23.547
50	26.654	26.642	36.270	196.9	0.227	23.789
75	26.006	25.989	36.453	187.2	0.326	24.133
100	25.053	25.031	36.734	192.5	0.417	24.643
125	23.862	23.835	36.906	197.7	0.493	25.134
150	22.658	22.627	36.893	192.9	0.560	25.478
200	21.605	21.566	36.854	188.2	0.679	25.750
250	19.994	19.947	36.721	185.6	0.788	26.089
300	18.772	18.718	36.604	182.0	0.884	26.320
400	17.380	17.312	36.418	175.9	1.059	26.528

Pressure dbar	Niskin	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}
464	1	15.547	15.474	36.121	164.7
300	2	18.734	18.681	36.594	184.2
181	3	21.715	21.679	36.846	189.4
131	4	23.845	23.817	36.909	196.5
51	5	26.695	26.684	36.264	197.0
3	6	29.916	29.915	36.178	194.6

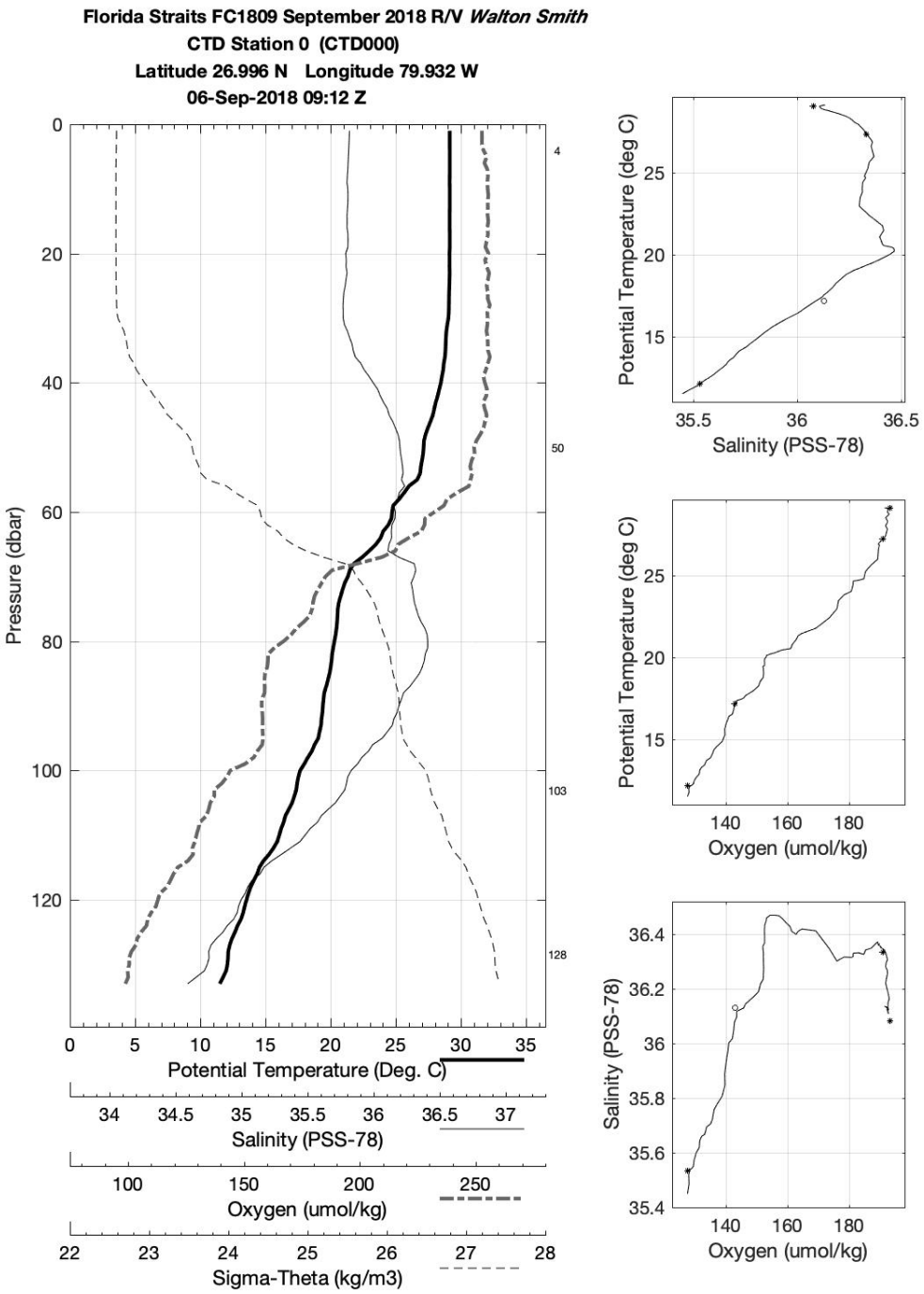

Florida Straits FC1806 June 2018 R/V Savannah
CTD Station 8 (CTD008)
Latitude 27.004 N Longitude 79.200 W
27-Jun-2018 19:49 Z
Pressure (dbar)
Potential Temperature (Deg. C)
Salinity (PSS-78)
Oxygen (umol/kg)
Sigma-Theta (kg/m3)
Potential Temperature (deg C)
Salinity (PSS-78)
Potential Temperature (deg C)
Oxygen (umol/kg)
Salinity (PSS-78)
Oxygen (umol/kg)

A.3 FC1809 - September 2018

Florida Straits FC1809 September 2018 R/V *Walton Smith*
CTD Station 0 (CTD000)
Latitude 26.996N Longitude 79.932W
06-Sep-2018 09:12Z

Pressure dbar	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}	DynHt m^2·s^{-2}	SigT kg·m^{-3}
1	29.133	29.133	36.136	191.8	0.005	22.873
10	29.139	29.136	36.130	192.8	0.050	22.867
20	29.121	29.116	36.121	193.0	0.100	22.867
30	29.039	29.032	36.110	192.8	0.150	22.887
50	27.141	27.130	36.351	190.4	0.242	23.694
75	20.563	20.549	36.421	161.2	0.324	25.699
100	17.677	17.660	36.144	146.4	0.376	26.233
125	12.682	12.665	35.599	130.3	0.413	26.925

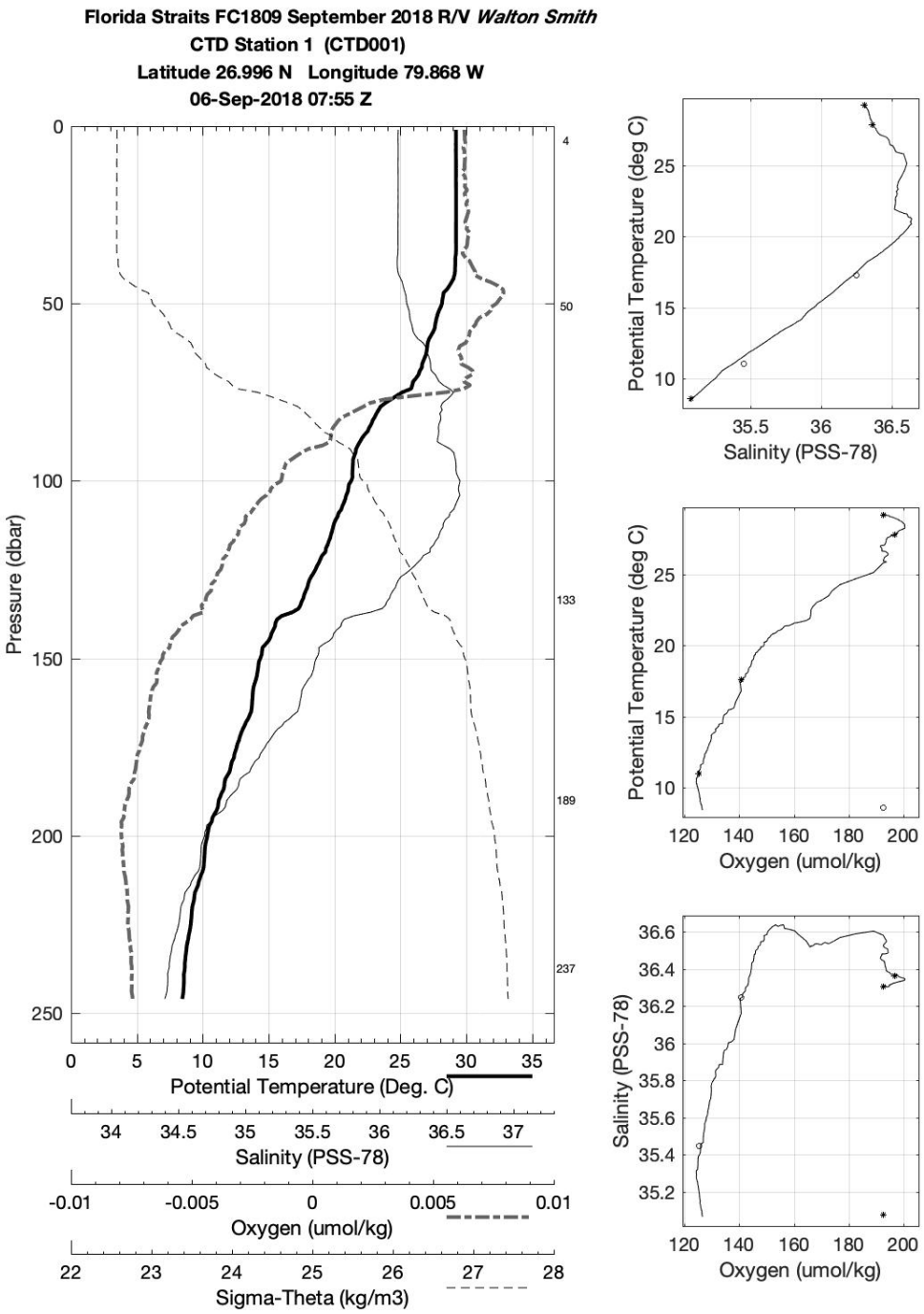
Pressure dbar	Niskin	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}
128	1	12.129	12.112	35.534	127.4
103	2	17.206	17.189	36.131	143.1
50	3	27.343	27.331	36.334	191.1
4	4	29.059	29.058	36.081	193.4


Florida Straits FC1809 September 2018 R/V Walton Smith
CTD Station 0 (CTD000)
Latitude 26.996 N Longitude 79.932 W
06-Sep-2018 09:12 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 FC1809 September 2018 R/V *Walton Smith*
CTD Station 0 (CTD000)
Latitude 26.996N Longitude 79.932W
06-Sep-2018 09:12Z

Pressure dbar	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}	DynHt m^2·s^{-2}	SigT kg·m^{-3}
1	29.133	29.133	36.136	191.8	0.005	22.873
10	29.139	29.136	36.130	192.8	0.050	22.867
20	29.121	29.116	36.121	193.0	0.100	22.867
30	29.039	29.032	36.110	192.8	0.150	22.887
50	27.141	27.130	36.351	190.4	0.242	23.694
75	20.563	20.549	36.421	161.2	0.324	25.699
100	17.677	17.660	36.144	146.4	0.376	26.233
125	12.682	12.665	35.599	130.3	0.413	26.925

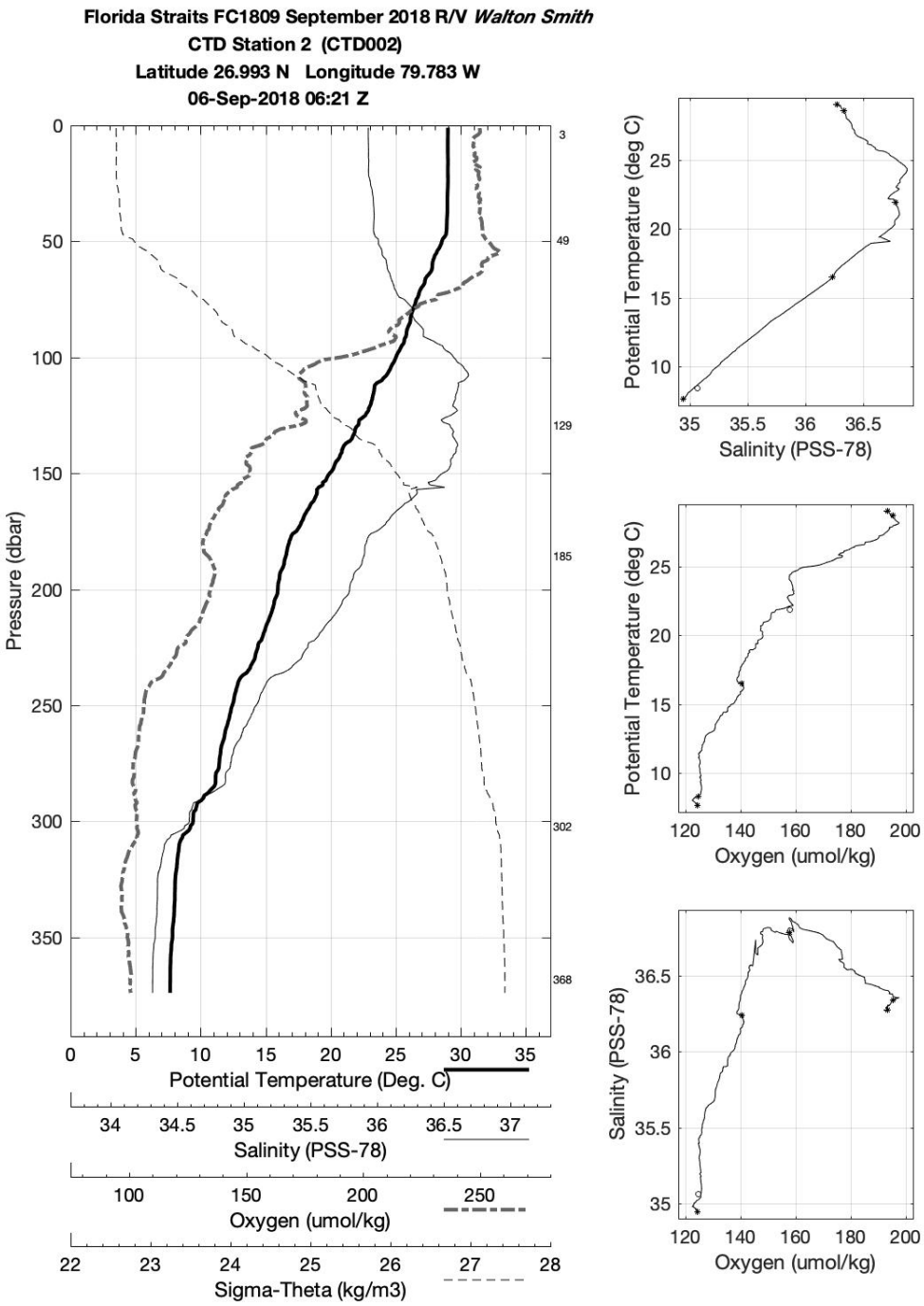
Pressure dbar	Niskin	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}
128	1	12.129	12.112	35.534	127.4
103	2	17.206	17.189	36.131	143.1
50	3	27.343	27.331	36.334	191.1
4	4	29.059	29.058	36.081	193.4


Florida Straits FC1809 September 2018 R/V Walton Smith
CTD Station 1 (CTD001)
Latitude 26.996 N Longitude 79.868 W
06-Sep-2018 07:55 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 FC1809 September 2018 R/V *Walton Smith*
CTD Station 2 (CTD002)
Latitude 26.993N Longitude 79.783W
06-Sep-2018 06:21Z

Pressure dbar	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}	DynHt m^2·s^{-2}	SigT kg·m^{-3}
1	29.002	29.002	36.270	193.7	0.005	23.017
10	28.996	28.994	36.271	192.6	0.048	23.021
20	29.001	28.996	36.271	193.5	0.097	23.020
30	28.977	28.970	36.296	193.5	0.145	23.048
50	28.556	28.544	36.332	195.3	0.241	23.217
75	26.598	26.580	36.489	185.0	0.349	23.974
100	25.028	25.006	36.791	165.9	0.441	24.694
125	22.684	22.659	36.774	157.3	0.513	25.378
150	19.950	19.922	36.722	148.1	0.569	26.097
200	15.961	15.929	36.156	140.2	0.651	26.654
250	12.471	12.437	35.586	126.9	0.716	26.959
300	9.452	9.418	35.178	125.4	0.770	27.189

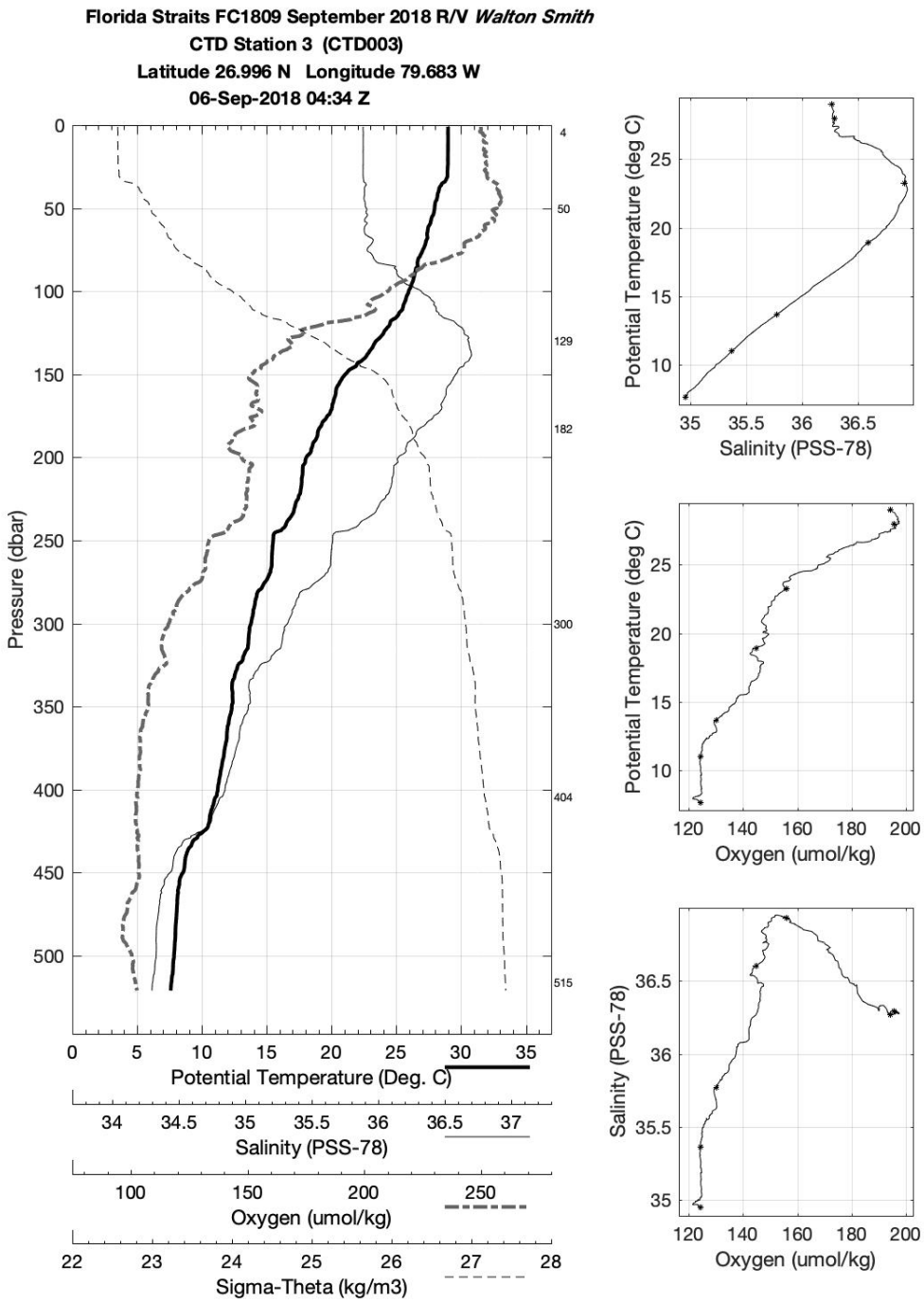
Pressure dbar	Niskin	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}
368	1	7.691	7.654	34.947	124.4
302	2	8.462	8.430	35.065	124.5
185	3	16.524	16.493	36.239	140.5
129	4	21.927	21.901	36.783	158.1
50	5	28.599	28.587	36.335	195.5
4	6	29.013	29.012	36.273	193.4


Florida Straits FC1809 September 2018 R/V Walton Smith
CTD Station 2 (CTD002)
Latitude 26.993 N Longitude 79.783 W
06-Sep-2018 06:21 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 FC1809 September 2018 R/V *Walton Smith*
CTD Station 3 (CTD003)
Latitude 26.996N Longitude 79.683W
06-Sep-2018 04:34Z

Pressure dbar	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}	DynHt m^2·s^{-2}	SigT kg·m^{-3}
1	28.989	28.989	36.268	193.3	0.005	23.020
10	28.992	28.989	36.268	193.9	0.048	23.020
20	28.982	28.977	36.268	194.4	0.097	23.024
30	28.952	28.944	36.268	194.5	0.145	23.035
50	27.964	27.952	36.288	196.6	0.238	23.379
75	27.070	27.052	36.293	190.0	0.347	23.675
100	25.977	25.955	36.633	174.7	0.446	24.280
125	24.054	24.028	36.902	157.0	0.530	25.074
150	21.089	21.060	36.849	147.3	0.593	25.886
200	18.091	18.056	36.489	145.3	0.689	26.399
250	15.537	15.498	36.077	138.8	0.768	26.691
300	13.833	13.789	35.794	130.8	0.836	26.846
400	11.274	11.223	35.401	124.5	0.955	27.047
500	7.900	7.849	34.969	123.4	1.051	27.272

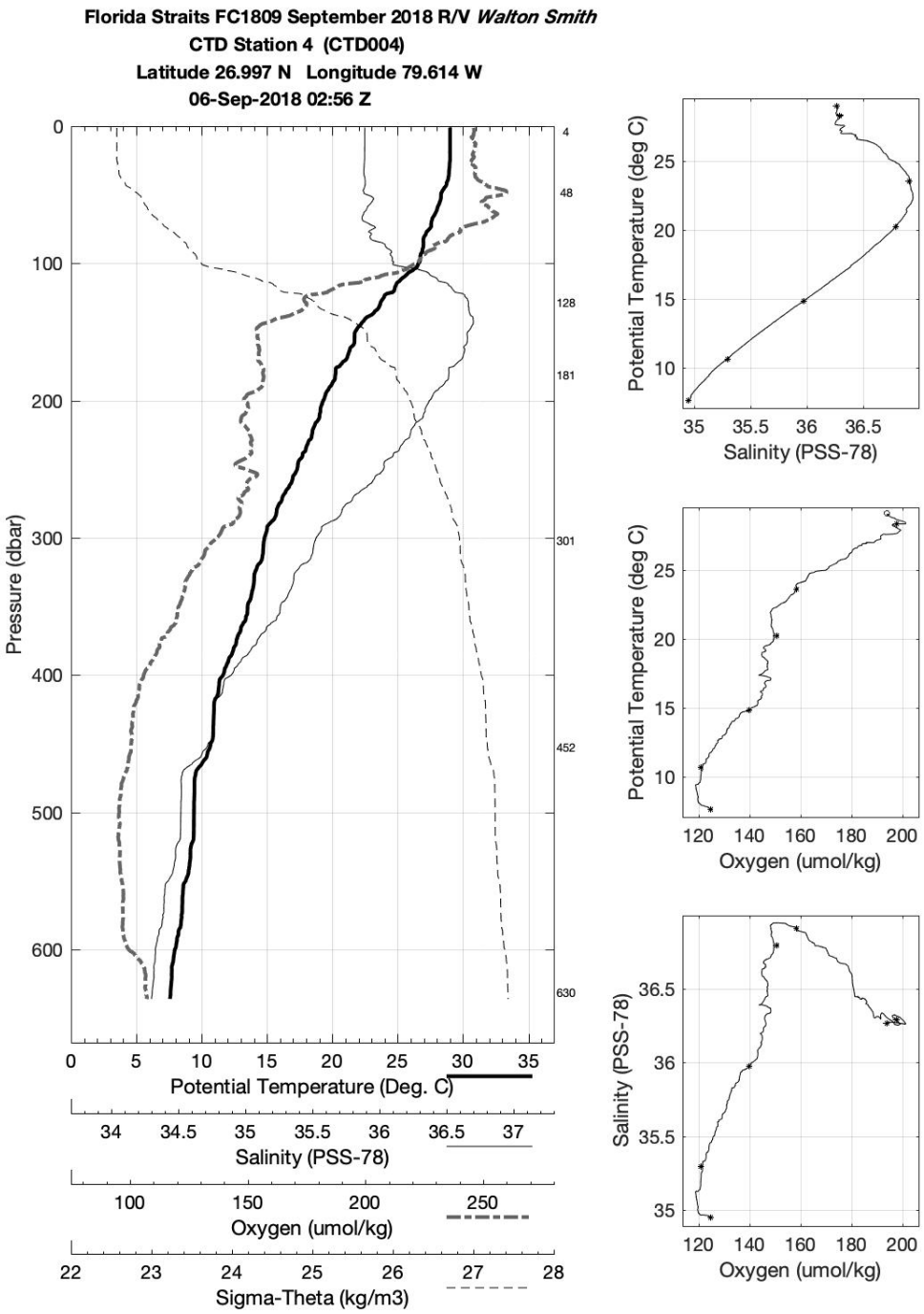
Pressure dbar	Niskin	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}
516	1	7.701	7.649	34.950	124.4
404	2	11.038	10.987	35.364	124.3
300	3	13.729	13.686	35.770	130.4
183	4	18.969	18.936	36.599	144.8
130	5	23.299	23.272	36.926	156.0
50	6	27.985	27.973	36.289	195.5
4	7	28.983	28.982	36.268	194.2


Florida Straits FC1809 September 2018 R/V Walton Smith
CTD Station 3 (CTD003)
Latitude 26.996 N Longitude 79.683 W
06-Sep-2018 04:34 Z
Pressure (dbar)
Potential Temperature (Deg. C)
Salinity (PSS-78)
Oxygen (umol/kg)
Sigma-Theta (kg/m3)
Potential Temperature (deg C)
Salinity (PSS-78)
Potential Temperature (deg C)
Oxygen (umol/kg)
Salinity (PSS-78)
Oxygen (umol/kg)

Florida Straits FC1809 September 2018 R/V *Walton Smith*
CTD Station 4 (CTD004)
Latitude 26.997N Longitude 79.614W
06-Sep-2018 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	29.005	29.004	36.270	194.4	0.005	23.017
10	29.007	29.005	36.269	194.6	0.048	23.016
20	29.008	29.003	36.268	194.2	0.097	23.016
30	28.964	28.957	36.265	194.8	0.145	23.029
50	28.322	28.310	36.284	200.4	0.241	23.259
75	27.437	27.420	36.320	191.4	0.353	23.577
100	26.598	26.575	36.443	182.3	0.457	23.941
125	23.959	23.932	36.899	158.4	0.542	25.100
150	21.762	21.733	36.908	148.4	0.607	25.744
200	19.333	19.297	36.671	145.6	0.711	26.222
250	17.336	17.294	36.386	146.0	0.798	26.508
300	14.851	14.806	35.967	139.7	0.872	26.761
400	11.688	11.636	35.439	124.2	1.000	27.000
500	9.463	9.406	35.126	119.0	1.108	27.151
600	8.000	7.938	34.968	121.0	1.206	27.258

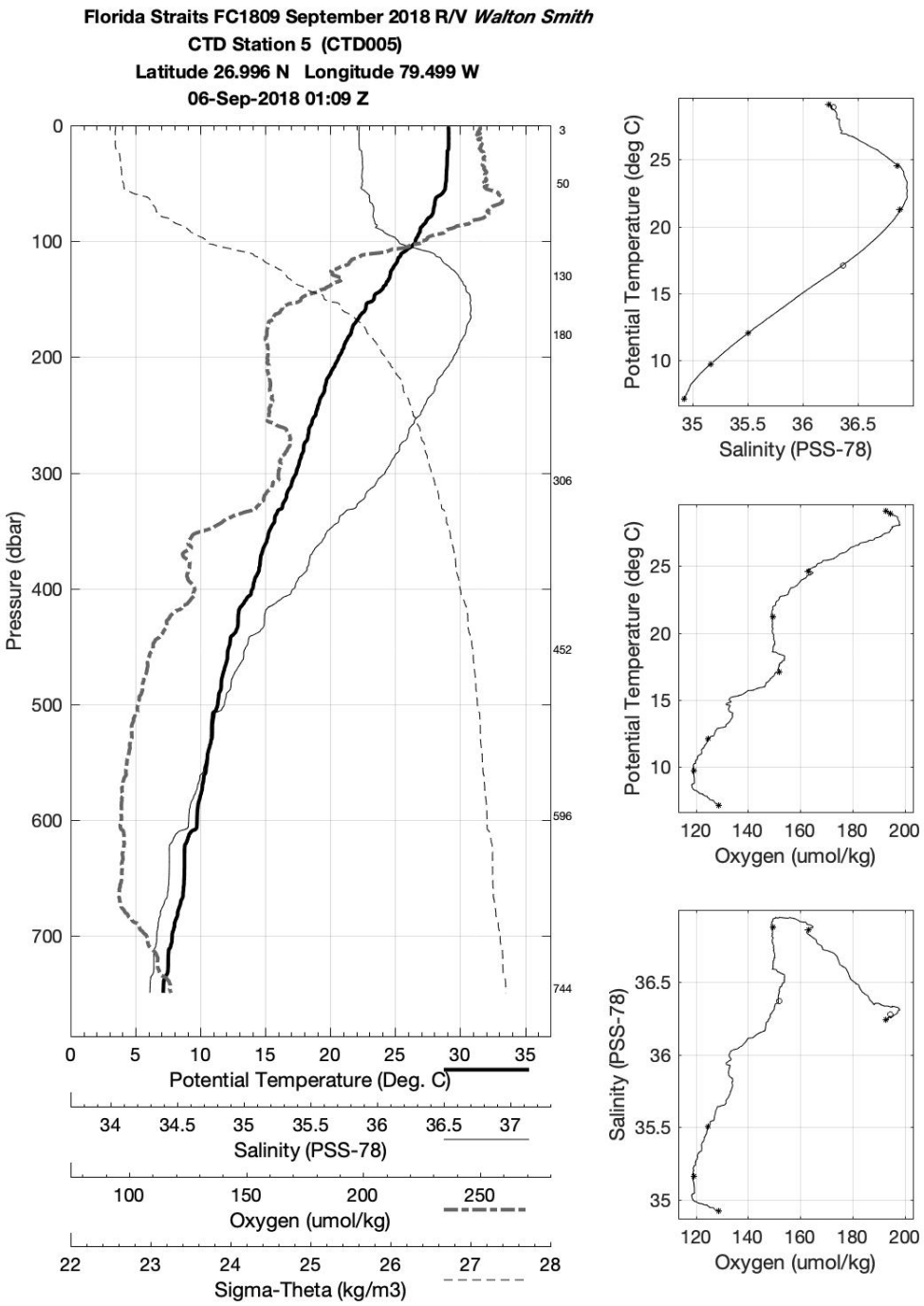
Pressure dbar	Niskin	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}
631	1	7.683	7.619	34.950	125.0
453	2	10.693	10.637	35.296	121.1
302	3	14.903	14.857	35.972	139.9
182	4	20.255	20.221	36.789	150.9
128	5	23.559	23.532	36.909	158.3
48	6	28.280	28.269	36.291	197.9
4	7	28.983	28.982	36.265	194.0


Florida Straits FC1809 September 2018 R/V Walton Smith
CTD Station 4 (CTD004)
Latitude 26.997 N Longitude 79.614 W
06-Sep-2018 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 FC1809 September 2018 R/V *Walton Smith*
CTD Station 5 (CTD005)
Latitude 26.996N Longitude 79.499W
06-Sep-2018 01:09Z

Pressure dbar	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}	DynHt m^2·s^{-2}	SigT kg·m^{-3}
1	29.102	29.101	36.241	193.6	0.005	22.962
10	29.115	29.112	36.240	193.5	0.049	22.958
20	29.102	29.097	36.243	193.4	0.098	22.965
30	29.002	28.995	36.261	194.5	0.147	23.013
50	28.889	28.877	36.259	194.8	0.244	23.051
75	27.935	27.917	36.331	195.2	0.359	23.423
100	26.579	26.556	36.489	181.3	0.465	23.981
125	24.733	24.706	36.835	162.7	0.552	24.819
150	23.388	23.357	36.943	156.3	0.626	25.304
200	20.677	20.638	36.836	149.3	0.743	25.991
250	18.915	18.870	36.627	149.6	0.839	26.299
300	17.426	17.375	36.404	151.6	0.925	26.502
400	14.078	14.019	35.829	134.1	1.071	26.824
500	11.397	11.333	35.391	122.3	1.193	27.019
600	9.809	9.739	35.166	118.8	1.304	27.126
700	7.892	7.820	34.965	124.1	1.403	27.273

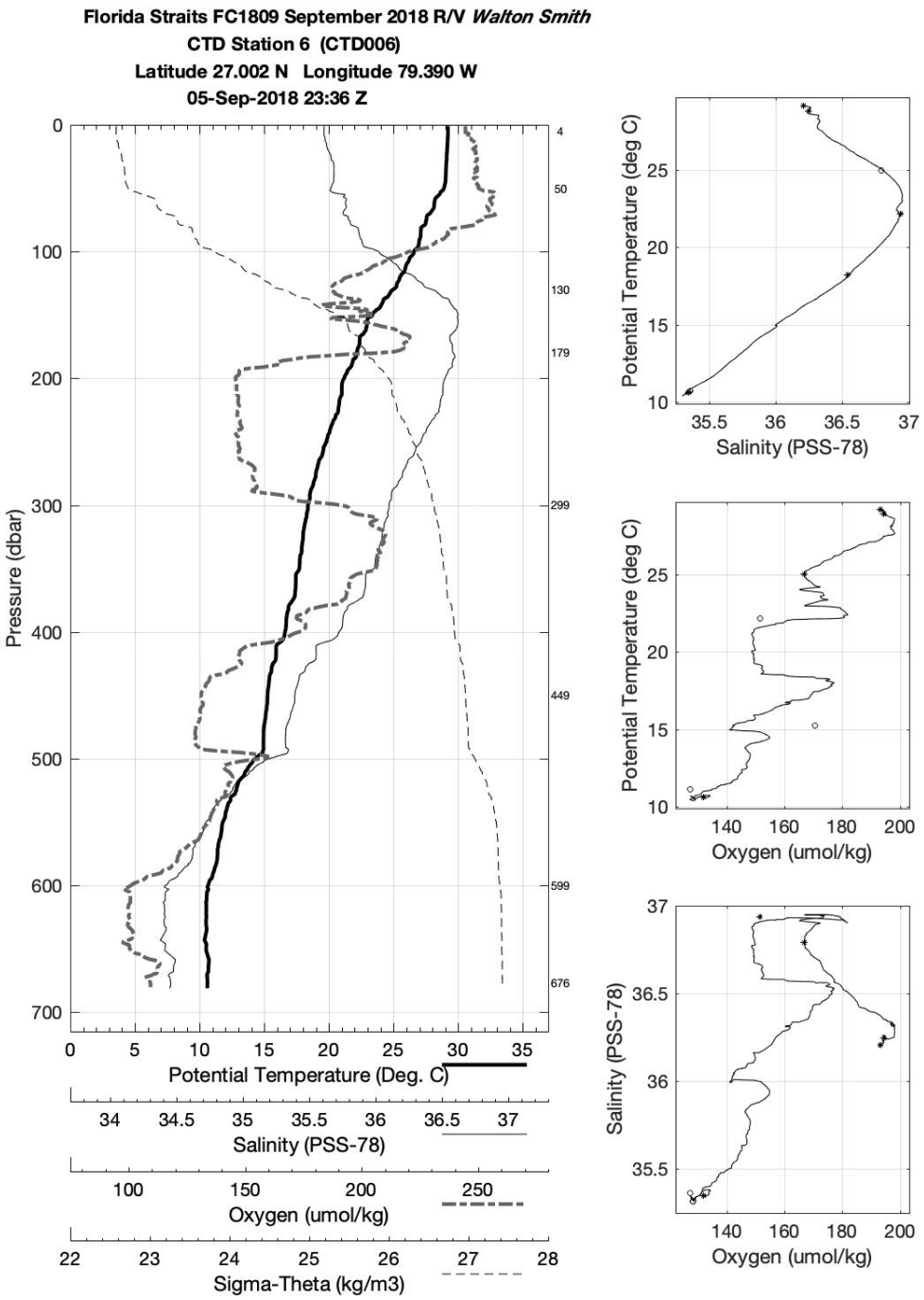
Pressure dbar	Niskin	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}
745	1	7.227	7.153	34.926	128.7
596	2	9.800	9.731	35.164	119.2
453	3	12.132	12.071	35.504	124.8
306	4	17.144	17.092	36.368	151.9
181	5	21.289	21.253	36.880	149.5
130	6	24.571	24.543	36.860	163.1
50	7	28.914	28.902	36.275	194.5
4	13	29.102	29.101	36.237	193.0


Florida Straits FC1809 September 2018 R/V Walton Smith
CTD Station 5 (CTD005)
Latitude 26.996 N Longitude 79.499 W
06-Sep-2018 01:09 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 FC1809 September 2018 R/V *Walton Smith*
CTD Station 6 (CTD006)
Latitude 27.002N Longitude 79.390W
05-Sep-2018 23:36Z

Pressure dbar	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}	DynHt m^2·s^{-2}	SigT kg·m^{-3}
1	29.197	29.197	36.209	192.3	0.005	22.906
10	29.186	29.184	36.213	192.8	0.049	22.913
20	29.143	29.138	36.230	194.1	0.099	22.942
30	29.076	29.069	36.261	194.2	0.148	22.988
50	28.908	28.895	36.246	194.8	0.245	23.035
75	27.554	27.537	36.345	195.6	0.359	23.558
100	26.601	26.578	36.513	181.6	0.463	23.993
125	25.296	25.269	36.754	167.7	0.555	24.585
150	23.393	23.362	36.952	175.1	0.631	25.309
200	21.205	21.166	36.880	148.8	0.753	25.880
250	19.862	19.815	36.747	149.3	0.858	26.144
300	18.432	18.379	36.569	168.8	0.950	26.379
400	16.666	16.600	36.291	160.7	1.116	26.601
500	14.362	14.287	35.903	153.4	1.263	26.824
600	10.719	10.645	35.327	128.9	1.381	27.094

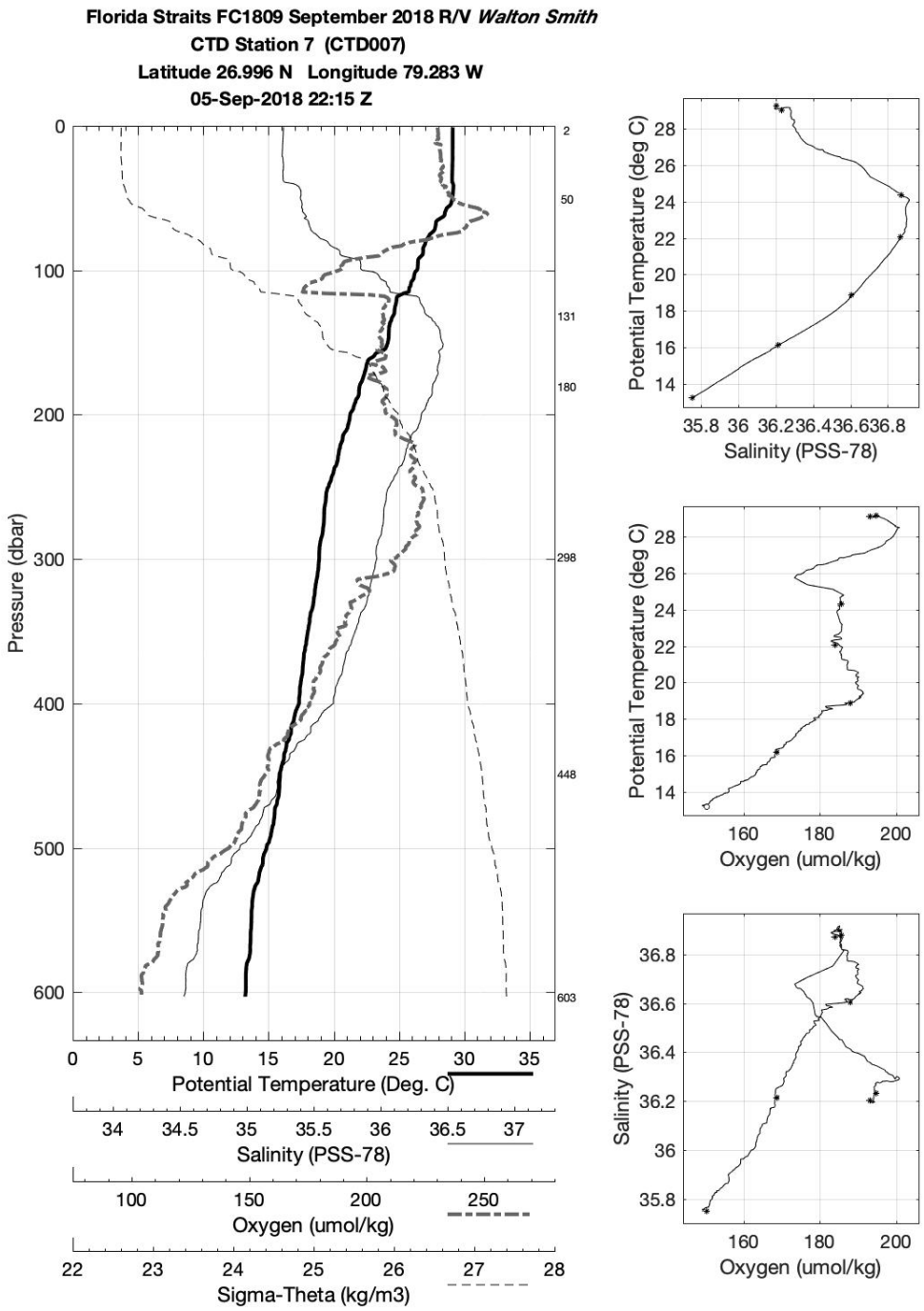
Pressure dbar	Niskin	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}
677	1	10.663	10.579	35.348	131.9
600	2	10.798	10.723	35.360	127.3
450	3	15.282	15.778	−999.000	−999.0
300	4	18.277	18.225	36.541	−999.0
180	5	22.221	22.185	36.941	151.5
130	6	24.981	24.953	36.794	166.9
51	7	28.800	28.788	36.249	194.5
5	13	29.143	29.142	36.206	193.3


Florida Straits FC1809 September 2018 R/V Walton Smith
CTD Station 6 (CTD006)
Latitude 27.002 N Longitude 79.390 W
05-Sep-2018 23:36 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 FC1809 September 2018 R/V *Walton Smith*
CTD Station 7 (CTD007)
Latitude 26.996N Longitude 79.283W
05-Sep-2018 22:15Z

Pressure dbar	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}	DynHt m^2·s^{-2}	SigT kg·m^{-3}
1	29.108	29.108	36.199	193.5	0.005	22.929
10	29.108	29.105	36.196	193.4	0.049	22.927
20	29.108	29.103	36.193	193.9	0.099	22.926
30	29.090	29.083	36.198	194.0	0.148	22.936
50	29.098	29.086	36.275	195.8	0.246	22.993
75	27.379	27.362	36.345	194.8	0.362	23.614
100	26.392	26.369	36.554	178.8	0.463	24.090
125	24.729	24.702	36.824	185.7	0.550	24.811
150	24.172	24.139	36.912	185.1	0.627	25.048
200	21.292	21.253	36.818	186.1	0.752	25.809
250	19.631	19.585	36.673	190.7	0.858	26.149
300	18.930	18.876	36.617	186.8	0.952	26.290
400	17.406	17.338	36.423	174.4	1.125	26.525
500	14.913	14.836	36.002	162.4	1.277	26.781
600	13.332	13.246	35.757	149.4	1.410	26.930

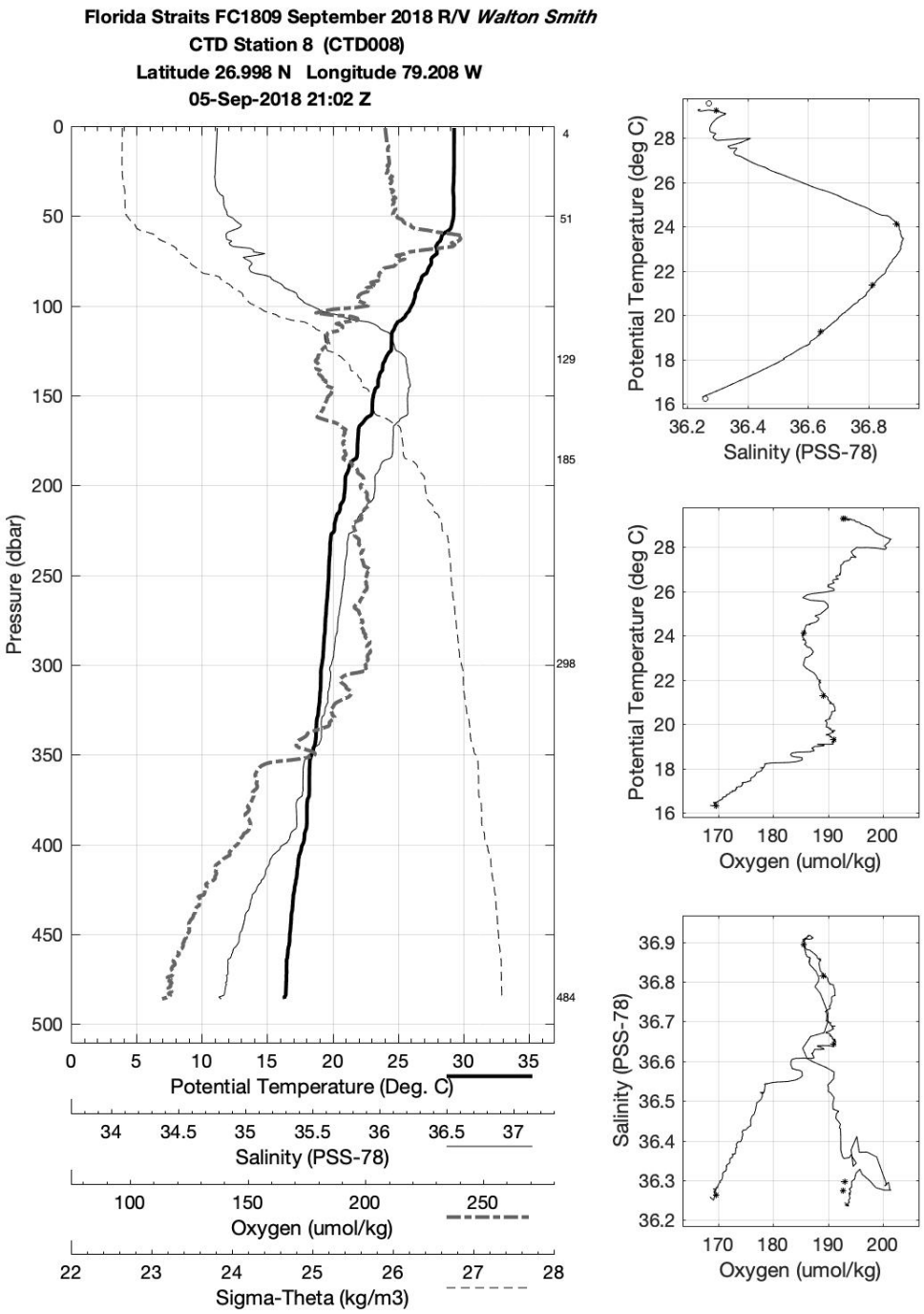
Pressure dbar	Niskin	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}
604	1	13.318	13.232	35.753	150.4
449	2	16.210	16.137	36.213	168.8
299	3	18.908	18.854	36.604	188.1
180	4	22.108	22.072	36.868	184.1
132	5	24.388	24.360	36.875	185.6
51	6	29.038	29.026	36.233	194.8
3	7	29.269	29.269	36.203	193.3


Florida Straits FC1809 September 2018 R/V Walton Smith
CTD Station 7 (CTD007)
Latitude 26.996 N Longitude 79.283 W
05-Sep-2018 22:15 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 FC1809 September 2018 R/V *Walton Smith*
CTD Station 8 (CTD008)
Latitude 26.998N Longitude 79.208W
05-Sep-2018 21:02Z

Pressure dbar	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}	DynHt m^2·s^{-2}	SigT kg·m^{-3}
1	29.295	29.295	36.245	193.0	0.005	22.900
10	29.295	29.293	36.242	193.2	0.050	22.898
20	29.295	29.290	36.239	193.4	0.099	22.897
30	29.270	29.263	36.237	193.7	0.149	22.905
50	29.263	29.251	36.283	194.3	0.248	22.943
75	27.566	27.548	36.356	194.5	0.364	23.563
100	26.068	26.045	36.572	191.1	0.464	24.206
125	24.501	24.474	36.868	186.0	0.547	24.914
150	23.151	23.120	36.908	186.8	0.618	25.347
200	20.995	20.957	36.794	190.3	0.739	25.872
250	19.753	19.707	36.688	191.0	0.842	26.128
300	19.231	19.176	36.641	190.9	0.939	26.231
400	17.777	17.708	36.476	176.8	1.119	26.475

Pressure dbar	Niskin	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}
485	1	16.311	16.232	36.262	169.6
299	2	19.332	19.277	36.642	191.1
185	3	21.390	21.353	36.815	189.2
130	4	24.164	24.137	36.894	185.6
51	5	29.270	29.257	36.297	193.0
4	6	29.572	29.571	36.273	192.7

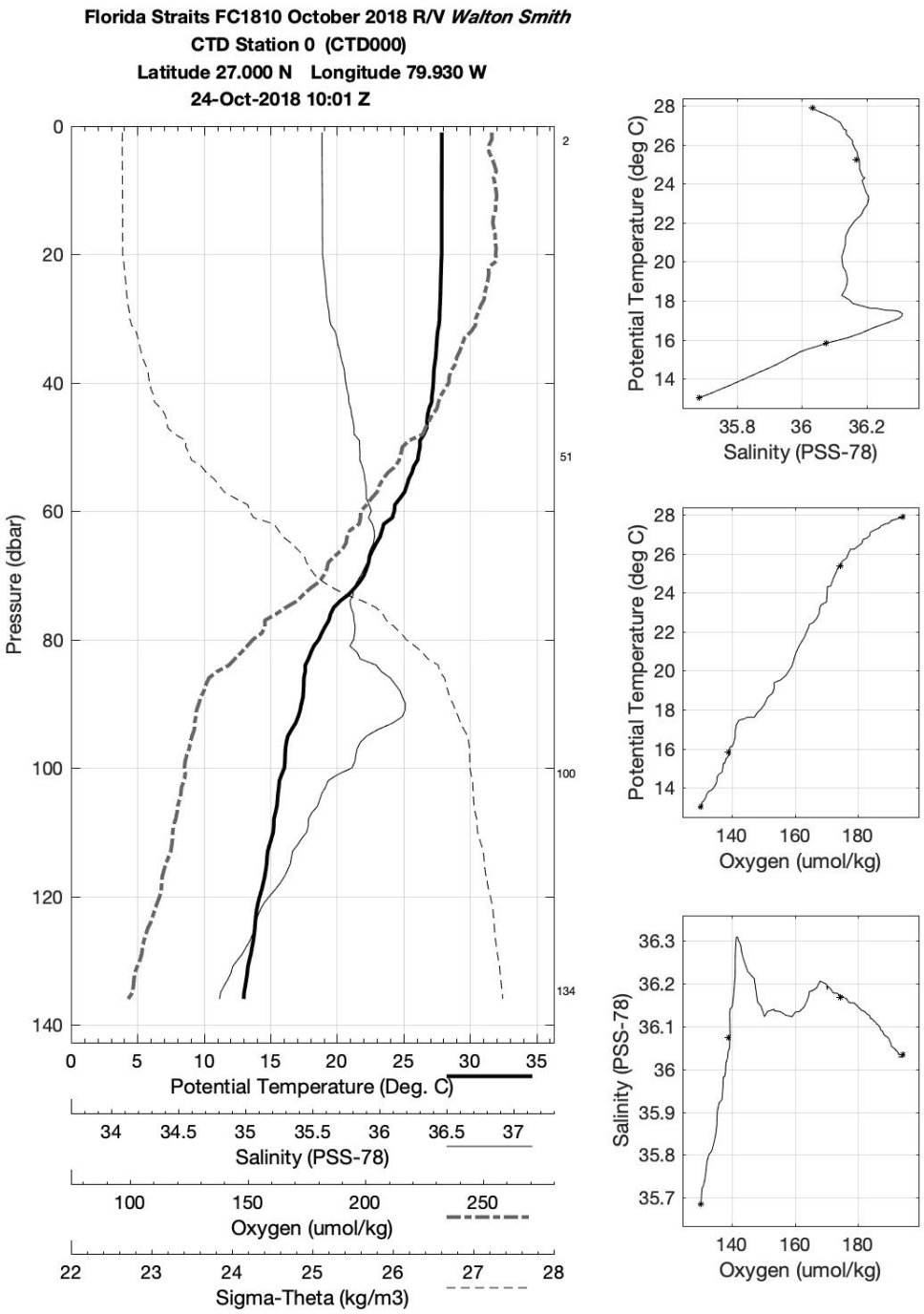

Florida Straits FC1809 September 2018 R/V Walton Smith
CTD Station 8 (CTD008)
Latitude 26.998 N Longitude 79.208 W
05-Sep-2018 21:02 Z
Pressure (dbar)
Potential Temperature (Deg. C)
Salinity (PSS-78)
Oxygen (umol/kg)
Sigma-Theta (kg/m3)
Potential Temperature (deg C)
Salinity (PSS-78)
Potential Temperature (deg C)
Oxygen (umol/kg)
Salinity (PSS-78)
Oxygen (umol/kg)

A.4 FC1810 - October 2018

Florida Straits FC1810 October 2018 R/V *Walton Smith*
CTD Station 0 (CTD000)
Latitude 27.000N Longitude 79.930W
24-Oct-2018 10:01Z

Pressure dbar	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}	DynHt m^2·s^{-2}	SigT kg·m^{-3}
1	27.880	27.880	36.029	193.2	0.005	23.208
10	27.880	27.878	36.029	194.0	0.047	23.209
20	27.879	27.874	36.030	193.9	0.093	23.211
30	27.723	27.715	36.054	190.4	0.140	23.280
50	26.255	26.244	36.155	177.6	0.227	23.829
75	19.773	19.759	36.126	157.2	0.309	25.685
100	16.064	16.048	36.129	139.4	0.352	26.606
125	13.842	13.824	35.802	133.0	0.386	26.844

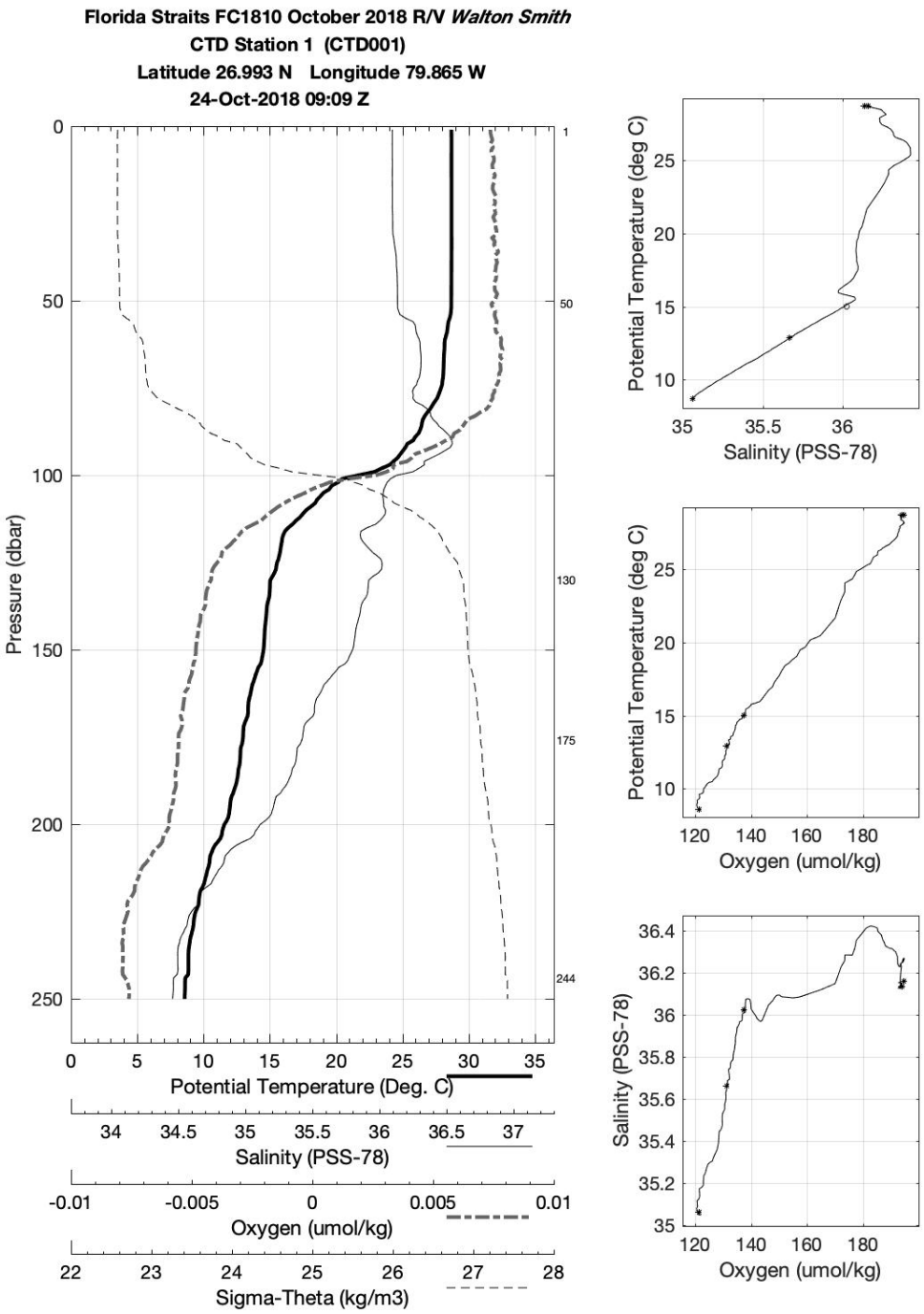
Pressure dbar	Niskin	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}
135	1	13.041	13.023	35.686	130.2
101	2	15.854	15.838	36.074	139.0
52	3	25.266	25.255	36.169	174.4
2	4	27.913	27.913	36.033	194.1


Florida Straits FC1810 October 2018 R/V Walton Smith
CTD Station 0 (CTD000)
Latitude 27.000 N Longitude 79.930 W
24-Oct-2018 10:01 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 FC1810 October 2018 R/V *Walton Smith*
CTD Station 1 (CTD001)
Latitude 26.993N Longitude 79.865W
24-Oct-2018 09:09Z

Pressure dbar	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}	DynHt m^2·s^{-2}	SigT kg·m^{-3}
1	28.698	28.697	36.129	192.5	0.005	23.013
10	28.704	28.702	36.130	193.1	0.048	23.012
20	28.709	28.705	36.130	193.5	0.097	23.011
30	28.715	28.708	36.131	193.7	0.146	23.012
50	28.702	28.690	36.154	193.2	0.243	23.035
75	27.931	27.914	36.234	193.1	0.359	23.352
100	21.684	21.665	36.150	170.0	0.455	25.186
125	15.561	15.541	36.078	139.0	0.501	26.682
150	14.549	14.526	35.933	134.8	0.534	26.796
200	11.594	11.569	35.478	129.7	0.592	27.043
250	8.601	8.575	35.047	121.7	0.640	27.223

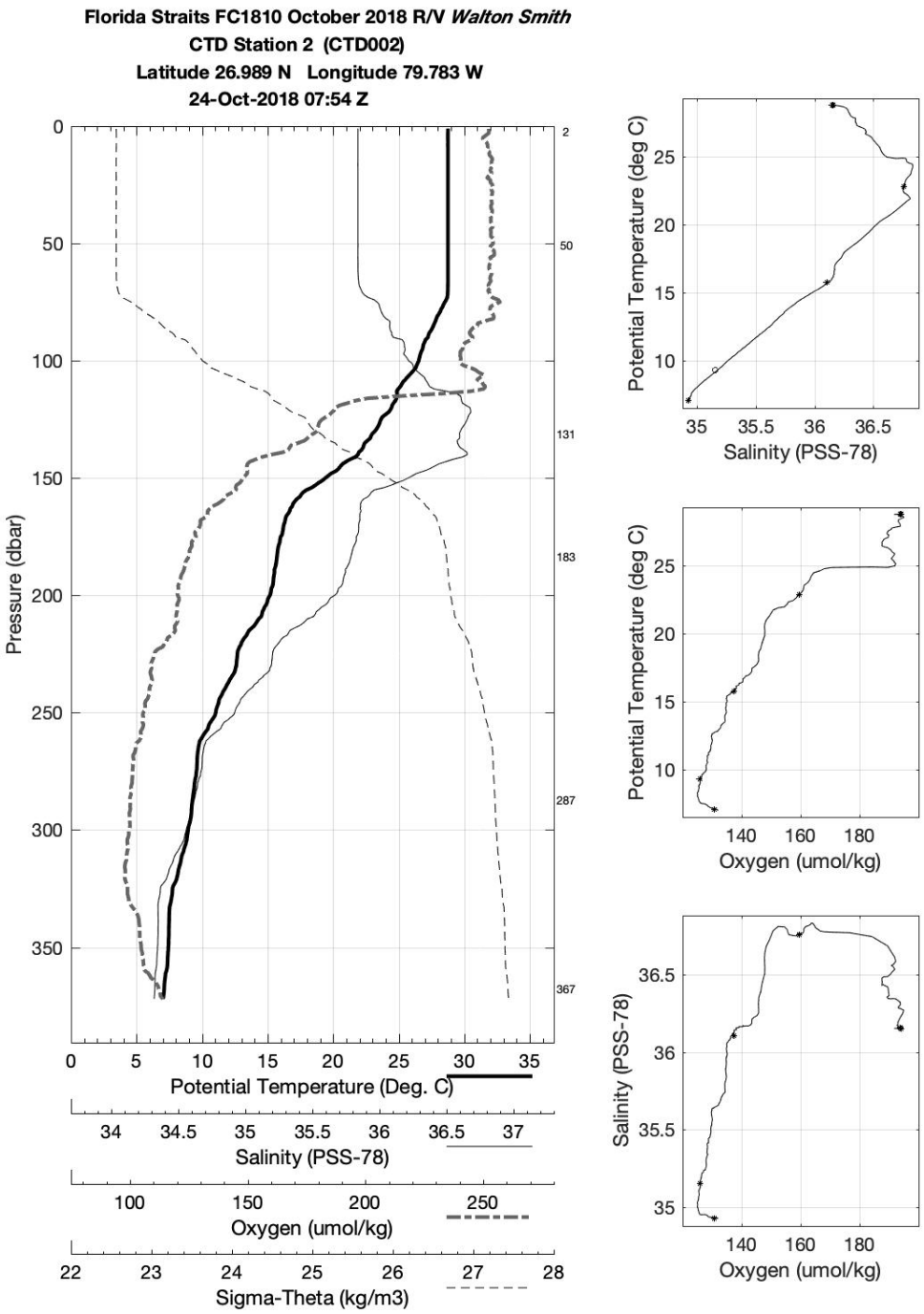
Pressure dbar	Niskin	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}
244	1	8.762	8.736	35.064	121.5
176	2	12.915	12.891	35.664	131.3
130	3	15.058	15.038	36.024	137.2
51	4	28.697	28.685	36.160	194.4
2	5	28.701	28.700	36.134	194.0


Florida Straits FC1810 October 2018 R/V *Walton Smith*
CTD Station 1 (CTD001)
Latitude 26.993 N Longitude 79.865 W
24-Oct-2018 09:09 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 FC1810 October 2018 R/V *Walton Smith*
CTD Station 2 (CTD002)
Latitude 26.989N Longitude 79.783W
24-Oct-2018 07:54Z

Pressure dbar	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}	DynHt m^2·s^{-2}	SigT kg·m^{-3}
1	28.757	28.757	36.155	192.8	0.005	23.013
10	28.756	28.754	36.155	192.5	0.048	23.014
20	28.762	28.757	36.155	193.4	0.097	23.013
30	28.764	28.757	36.155	193.4	0.146	23.013
50	28.769	28.757	36.155	193.7	0.243	23.013
75	28.538	28.520	36.271	195.0	0.364	23.179
100	26.555	26.532	36.460	187.6	0.472	23.967
125	23.668	23.641	36.812	161.8	0.557	25.121
150	19.426	19.398	36.456	147.2	0.619	26.032
200	15.203	15.172	36.015	135.0	0.695	26.717
250	11.067	11.036	35.413	128.6	0.755	27.091
300	8.967	8.934	35.122	125.9	0.801	27.224

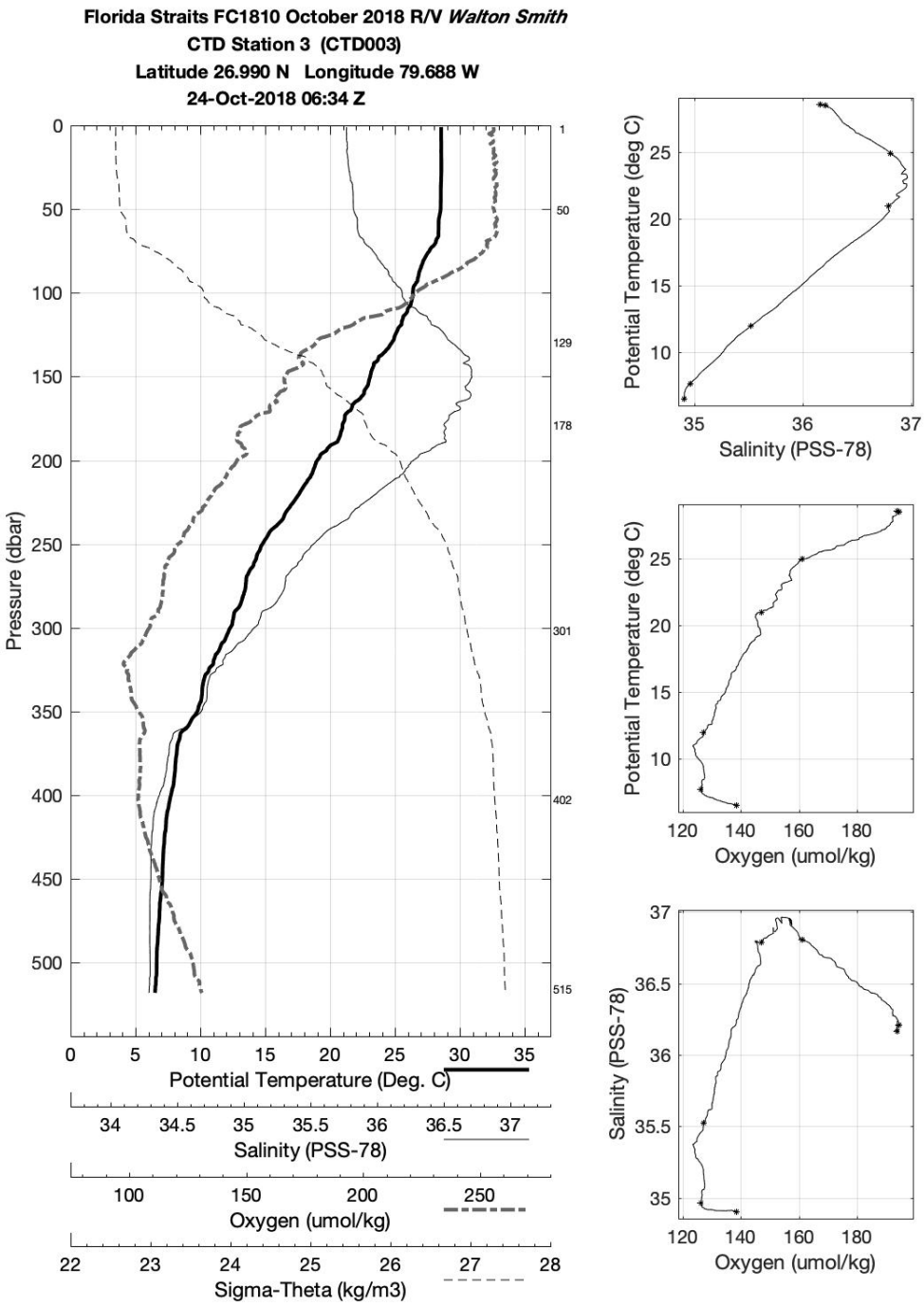
Pressure dbar	Niskin	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}
368	1	7.134	7.098	34.927	130.7
287	2	9.346	9.314	35.153	126.0
183	3	15.772	15.743	36.109	137.7
131	4	22.797	22.771	36.757	159.6
51	5	28.775	28.763	36.154	194.0
2	6	28.756	28.755	36.157	193.6


Florida Straits FC1810 October 2018 R/V Walton Smith
CTD Station 2 (CTD002)
Latitude 26.989 N Longitude 79.783 W
24-Oct-2018 07:54 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 FC1810 October 2018 R/V *Walton Smith*
CTD Station 3 (CTD003)
Latitude 26.990N Longitude 79.688W
24-Oct-2018 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	28.549	28.549	36.166	193.5	0.005	23.090
10	28.561	28.559	36.169	193.5	0.048	23.089
20	28.566	28.562	36.174	193.5	0.095	23.092
30	28.564	28.557	36.187	193.9	0.143	23.103
50	28.522	28.510	36.209	193.6	0.238	23.136
75	27.661	27.644	36.333	191.6	0.354	23.514
100	26.393	26.371	36.520	178.7	0.457	24.064
125	25.040	25.012	36.793	162.8	0.547	24.693
150	23.111	23.080	36.965	154.2	0.620	25.402
200	19.045	19.009	36.592	145.0	0.733	26.236
250	14.819	14.781	35.955	133.9	0.814	26.757
300	12.334	12.294	35.576	128.5	0.876	26.980
400	7.776	7.736	34.972	126.4	0.972	27.291
500	6.679	6.633	34.913	136.7	1.051	27.400

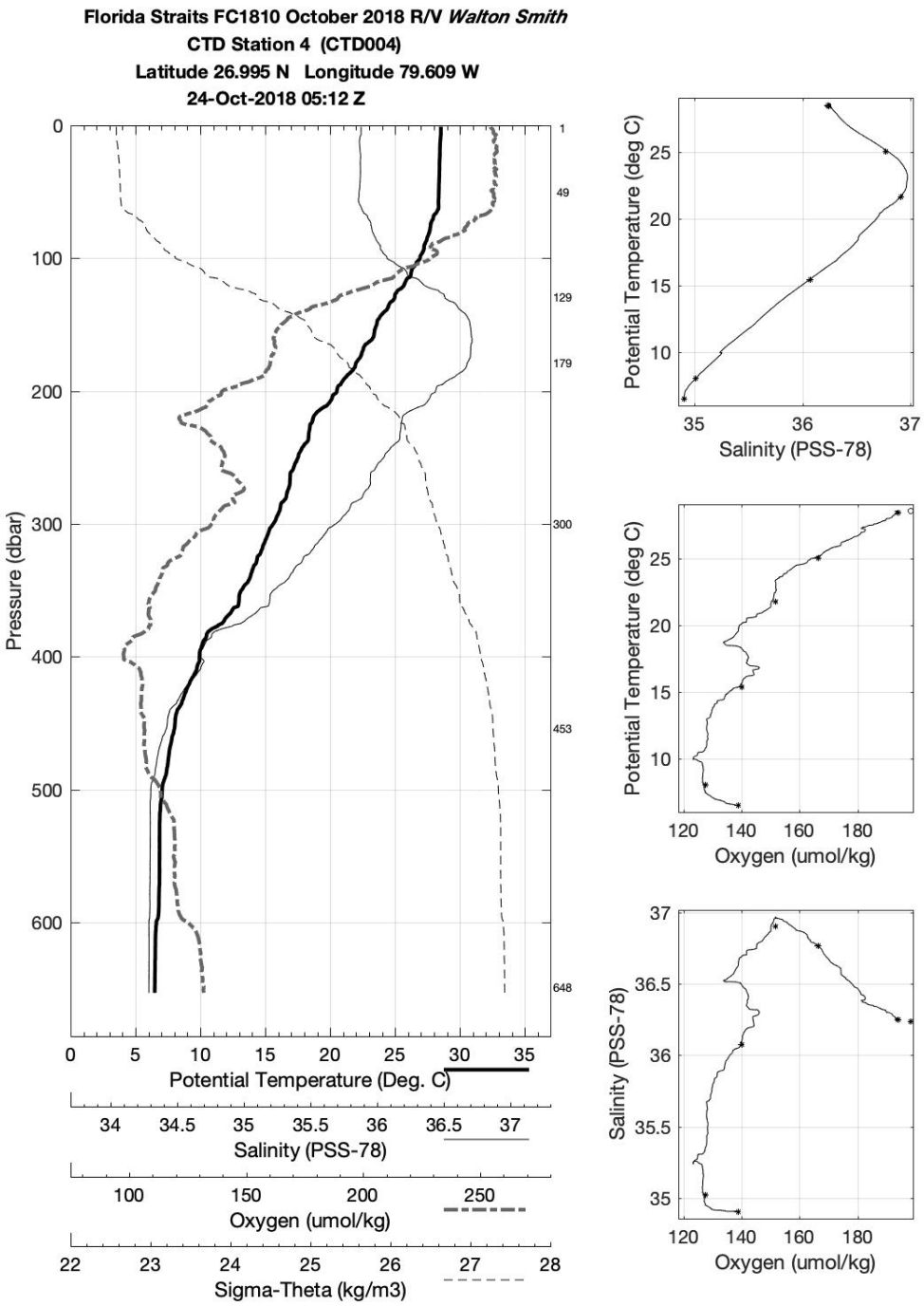
Pressure dbar	Niskin	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}
516	1	6.556	6.508	34.905	138.7
402	2	7.705	7.665	34.965	126.4
302	3	11.983	11.943	35.525	127.3
179	4	20.993	20.958	36.788	147.2
130	5	24.905	24.877	36.807	161.1
50	6	28.521	28.509	36.207	194.5
2	7	28.549	28.548	36.164	194.0


Florida Straits FC1810 October 2018 R/V Walton Smith
CTD Station 3 (CTD003)
Latitude 26.990 N Longitude 79.688 W
24-Oct-2018 06:34 Z
Pressure (dbar)
Potential Temperature (Deg. C)
Salinity (PSS-78)
Oxygen (umol/kg)
Sigma-Theta (kg/m3)
Potential Temperature (deg C)
Salinity (PSS-78)
Potential Temperature (deg C)
Oxygen (umol/kg)
Salinity (PSS-78)
Oxygen (umol/kg)

Florida Straits FC1810 October 2018 R/V *Walton Smith*
CTD Station 4 (CTD004)
Latitude 26.995N Longitude 79.609W
24-Oct-2018 05:12Z

Pressure dbar	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}	DynHt m^2·s^{-2}	SigT kg·m^{-3}
1	28.533	28.533	36.261	192.8	0.005	23.167
10	28.508	28.506	36.253	193.7	0.047	23.170
20	28.464	28.459	36.254	194.0	0.094	23.187
30	28.432	28.425	36.256	193.5	0.141	23.199
50	28.381	28.369	36.247	193.1	0.234	23.211
75	27.762	27.744	36.322	188.4	0.349	23.473
100	26.955	26.932	36.426	181.2	0.457	23.814
125	25.177	25.149	36.761	166.5	0.551	24.627
150	23.618	23.586	36.957	153.1	0.627	25.247
200	20.550	20.512	36.736	142.0	0.748	25.949
250	17.570	17.527	36.405	142.4	0.840	26.465
300	15.661	15.614	36.097	140.0	0.917	26.680
400	9.980	9.933	35.238	123.4	1.040	27.150
500	7.108	7.060	34.917	130.2	1.129	27.345
600	6.671	6.615	34.905	135.5	1.208	27.397

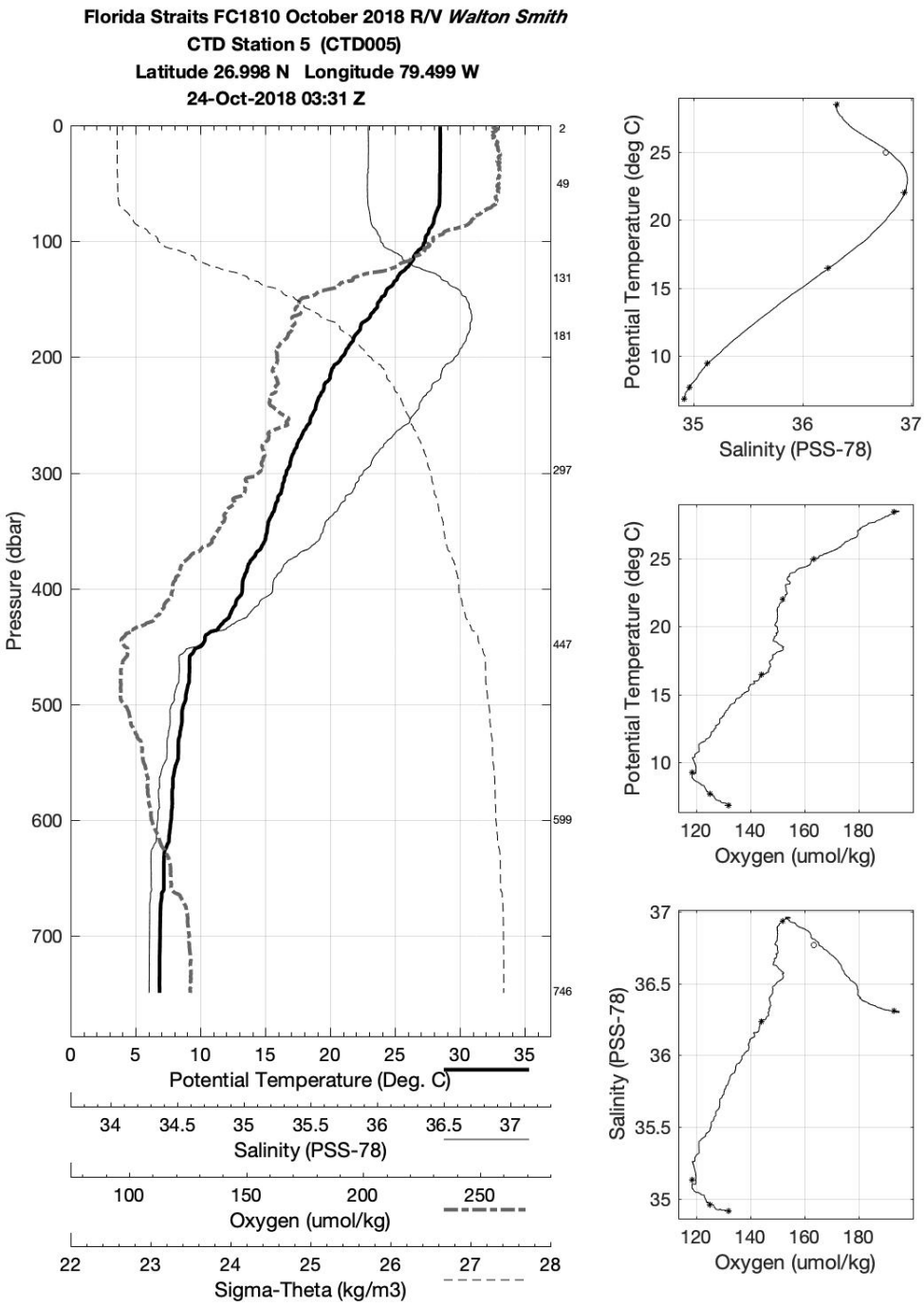
Pressure dbar	Niskin	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}
649	1	6.551	6.491	34.903	138.9
454	2	8.053	8.006	35.017	127.5
300	3	15.482	15.435	36.074	140.1
179	4	21.664	21.628	36.908	151.7
129	5	25.042	25.014	36.769	166.4
50	6	28.398	28.386	36.247	194.0
2	7	28.487	28.487	36.237	198.2


Florida Straits FC1810 October 2018 R/V Walton Smith
CTD Station 4 (CTD004)
Latitude 26.995 N Longitude 79.609 W
24-Oct-2018 05:12 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 FC1810 October 2018 R/V *Walton Smith*
CTD Station 5 (CTD005)
Latitude 26.998N Longitude 79.499W
24-Oct-2018 03:31Z

Pressure dbar	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}	DynHt m^2·s^{-2}	SigT kg·m^{-3}
1	28.473	28.473	36.306	193.3	0.005	23.221
10	28.479	28.476	36.306	193.5	0.046	23.220
20	28.482	28.477	36.307	194.2	0.093	23.220
30	28.481	28.474	36.306	194.2	0.140	23.221
50	28.460	28.448	36.300	194.4	0.233	23.225
75	28.190	28.172	36.314	190.9	0.349	23.327
100	27.337	27.313	36.384	181.2	0.460	23.660
125	25.751	25.723	36.661	172.1	0.559	24.374
150	23.946	23.914	36.931	154.8	0.639	25.130
200	20.928	20.890	36.856	149.9	0.762	25.938
250	18.660	18.615	36.593	151.2	0.858	26.338
300	16.670	16.620	36.272	146.2	0.941	26.582
400	13.287	13.231	35.698	129.0	1.082	26.887
500	8.763	8.708	35.054	119.3	1.190	27.207
600	7.805	7.744	34.966	124.8	1.282	27.285
700	6.962	6.894	34.913	132.3	1.366	27.365

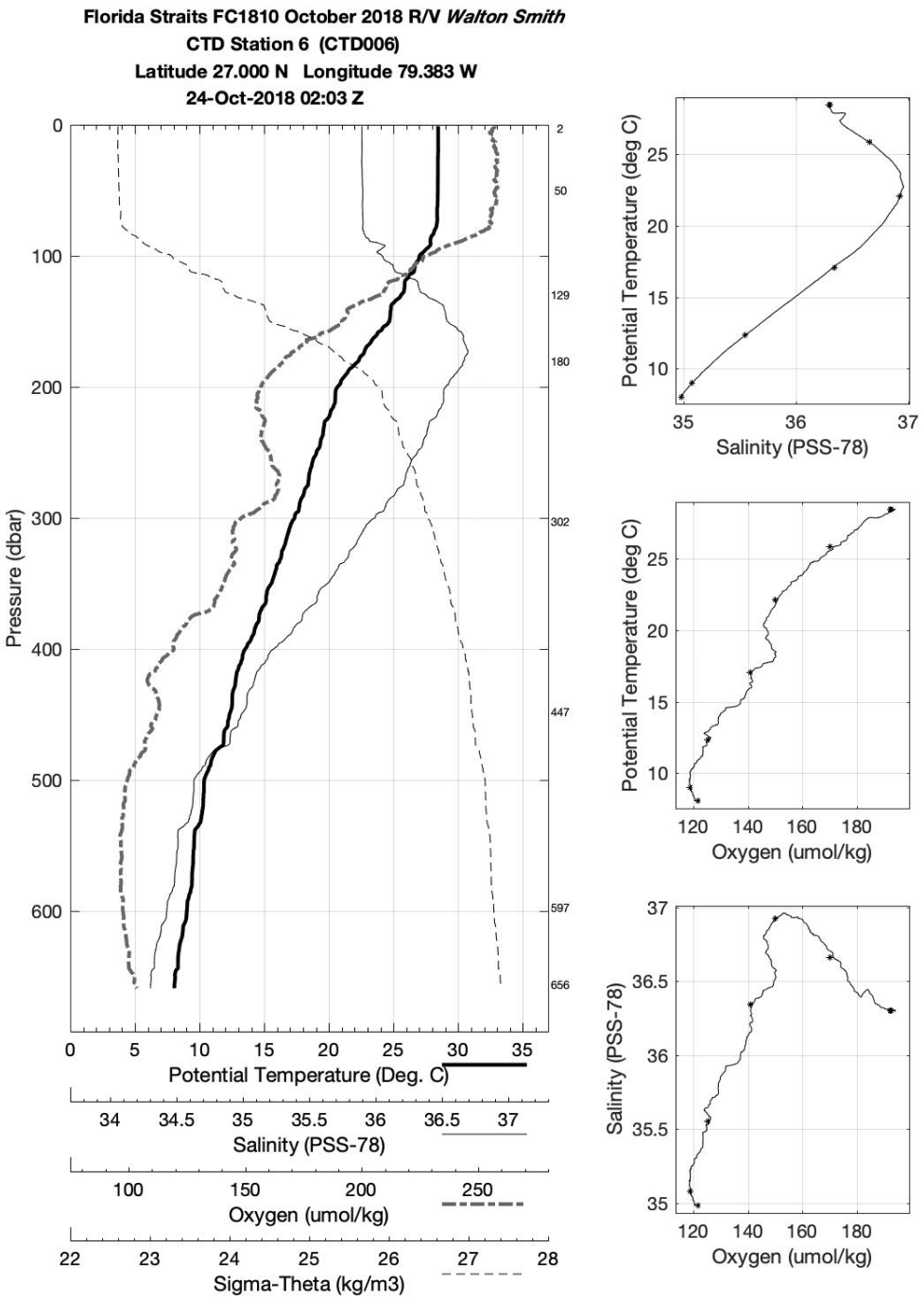
Pressure dbar	Niskin	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}
747	1	6.932	6.860	34.912	132.1
599	2	7.734	7.673	34.959	125.2
448	3	9.520	9.469	35.130	118.6
297	4	16.504	16.455	36.234	143.9
182	5	22.058	22.021	36.939	151.9
131	6	25.006	24.978	36.768	163.3
50	7	28.444	28.467	−999.000	−999.0
2	13	28.457	28.457	36.313	192.9


Florida Straits FC1810 October 2018 R/V Walton Smith
CTD Station 5 (CTD005)
Latitude 26.998 N Longitude 79.499 W
24-Oct-2018 03:31 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 FC1810 October 2018 R/V *Walton Smith*
CTD Station 6 (CTD006)
Latitude 27.000N Longitude 79.383W
24-Oct-2018 02:03Z

Pressure dbar	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}	DynHt m^2·s^{-2}	SigT kg·m^{-3}
1	28.444	28.444	36.300	193.5	0.005	23.226
10	28.454	28.452	36.299	192.7	0.046	23.223
20	28.460	28.456	36.300	193.7	0.093	23.222
30	28.442	28.435	36.298	194.3	0.139	23.228
50	28.437	28.425	36.305	193.7	0.233	23.236
75	28.381	28.363	36.307	192.8	0.349	23.258
100	27.036	27.013	36.427	179.7	0.460	23.789
125	25.865	25.837	36.656	171.6	0.557	24.334
150	24.712	24.680	36.831	162.8	0.640	24.823
200	20.717	20.678	36.822	146.5	0.767	25.969
250	19.090	19.045	36.646	148.4	0.866	26.268
300	17.404	17.353	36.381	142.7	0.953	26.489
400	13.593	13.536	35.749	129.2	1.099	26.863
500	10.420	10.359	35.254	119.8	1.220	27.088
600	9.079	9.012	35.084	118.9	1.324	27.182

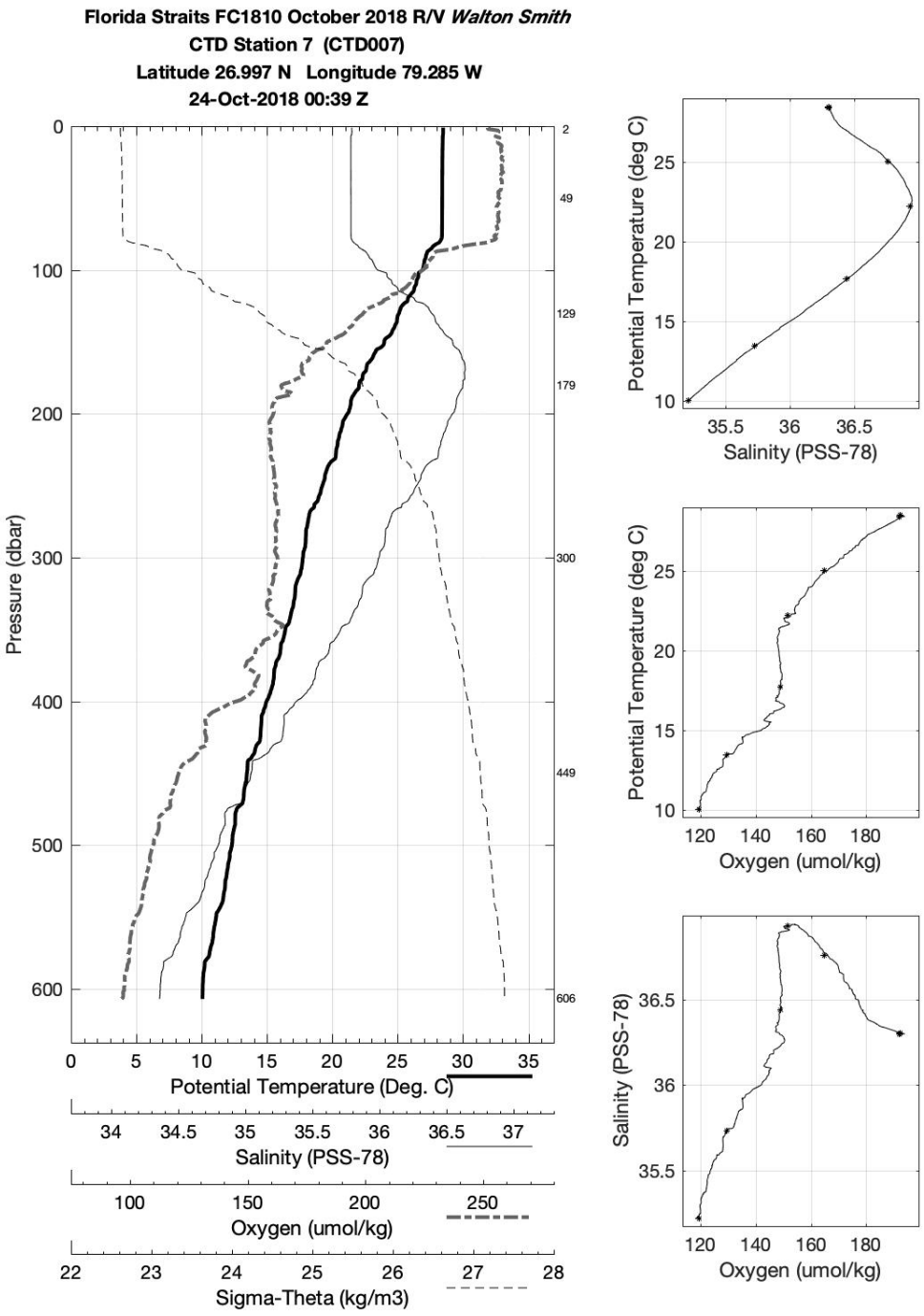
Pressure dbar	Niskin	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}
656	1	8.114	8.045	34.981	121.6
598	2	9.072	9.005	35.080	118.9
448	3	12.388	12.327	35.553	125.4
303	4	17.125	17.074	36.341	140.9
180	5	22.120	22.084	36.924	150.0
130	6	25.842	25.813	36.659	170.2
50	7	28.450	28.438	36.302	192.3
3	13	28.442	28.441	36.298	192.5


Florida Straits FC1810 October 2018 R/V Walton Smith
CTD Station 6 (CTD006)
Latitude 27.000 N Longitude 79.383 W
24-Oct-2018 02:03 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 FC1810 October 2018 R/V *Walton Smith*
CTD Station 7 (CTD007)
Latitude 26.997N Longitude 79.285W
24-Oct-2018 00:39Z

Pressure dbar	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}	DynHt m^2·s^{-2}	SigT kg·m^{-3}
1	28.474	28.473	36.306	191.0	0.005	23.221
10	28.444	28.442	36.301	193.3	0.046	23.227
20	28.426	28.421	36.301	194.0	0.093	23.234
30	28.419	28.412	36.301	193.7	0.139	23.237
50	28.415	28.403	36.301	193.3	0.232	23.241
75	28.405	28.387	36.301	192.8	0.349	23.246
100	26.931	26.908	36.449	178.2	0.457	23.839
125	25.346	25.319	36.726	168.5	0.551	24.548
150	23.999	23.967	36.875	159.1	0.632	25.071
200	21.195	21.156	36.874	148.5	0.755	25.878
250	19.277	19.231	36.671	149.1	0.857	26.239
300	17.799	17.748	36.459	149.3	0.944	26.453
400	15.022	14.960	35.993	141.2	1.099	26.747
500	12.380	12.312	35.553	124.6	1.230	26.958
600	10.150	10.078	35.225	118.9	1.346	27.115

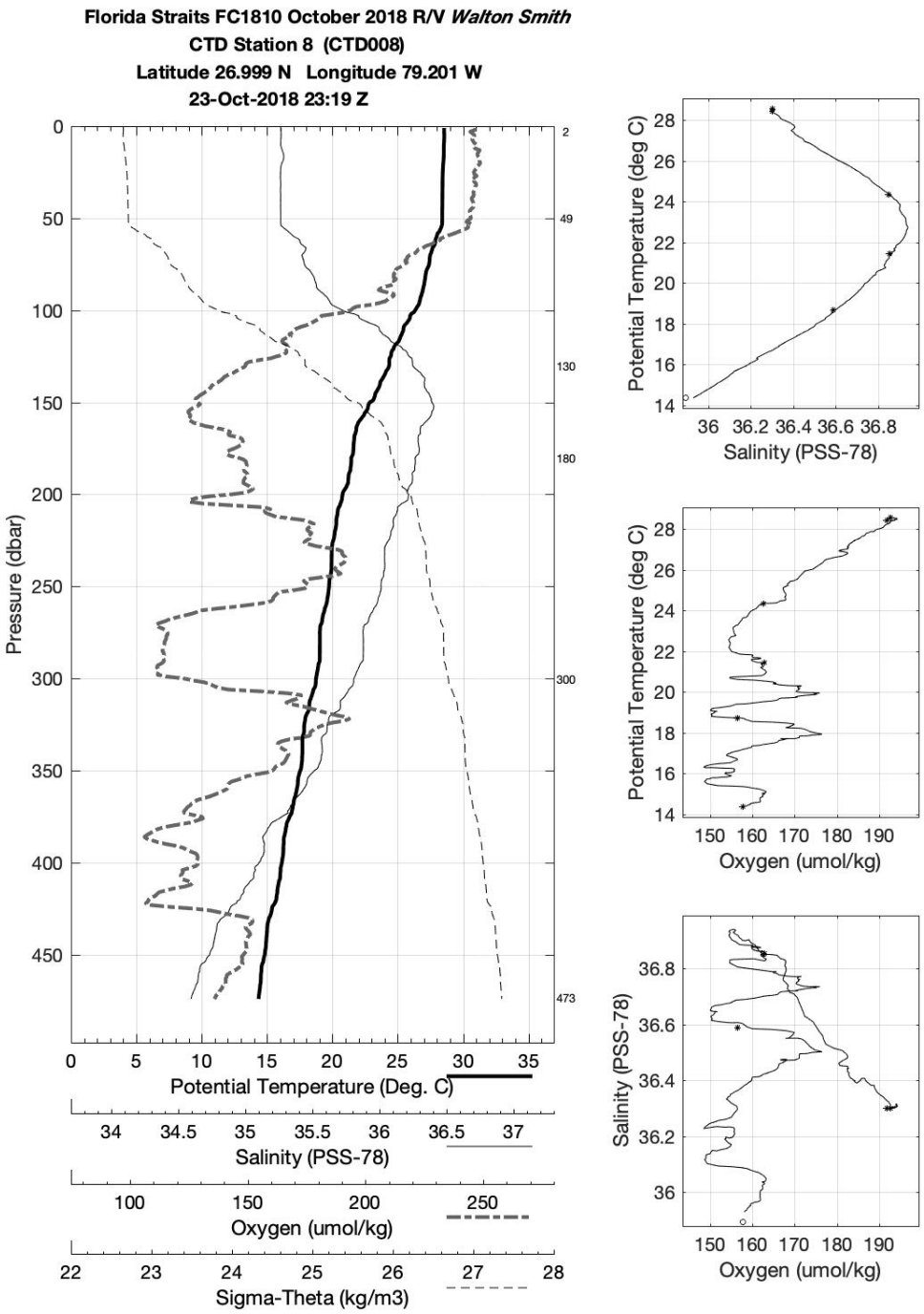
Pressure dbar	Niskin	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}
606	1	10.138	10.065	35.218	119.3
450	2	13.524	13.460	35.731	129.4
300	3	17.738	17.686	36.442	148.8
180	4	22.233	22.197	36.933	151.5
130	5	25.073	25.045	36.759	164.8
50	6	28.412	28.400	36.299	192.1
2	7	28.465	28.465	36.303	192.4


Florida Straits FC1810 October 2018 R/V Walton Smith
CTD Station 7 (CTD007)
Latitude 26.997 N Longitude 79.285 W
24-Oct-2018 00:39 Z
Pressure (dbar)
Potential Temperature (Deg. C)
Salinity (PSS-78)
Oxygen (umol/kg)
Sigma-Theta (kg/m3)
Potential Temperature (deg C)
Salinity (PSS-78)
Potential Temperature (deg C)
Oxygen (umol/kg)
Salinity (PSS-78)
Oxygen (umol/kg)

Florida Straits FC1810 October 2018 R/V *Walton Smith*
CTD Station 8 (CTD008)
Latitude 26.999N Longitude 79.201W
23-Oct-2018 23:19Z

Pressure dbar	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}	DynHt m^2·s^{-2}	SigT kg·m^{-3}
1	28.545	28.545	36.303	193.5	0.005	23.195
10	28.530	28.527	36.302	193.7	0.047	23.200
20	28.482	28.477	36.307	194.2	0.093	23.220
30	28.432	28.425	36.302	193.4	0.140	23.234
50	28.412	28.400	36.302	193.0	0.233	23.242
75	27.416	27.398	36.400	183.8	0.344	23.645
100	26.358	26.335	36.559	176.6	0.446	24.105
125	24.493	24.466	36.836	166.5	0.531	24.892
150	22.892	22.861	36.932	155.7	0.603	25.440
200	20.818	20.780	36.835	160.3	0.719	25.952
250	19.797	19.750	36.720	170.6	0.820	26.141
300	18.797	18.744	36.607	153.9	0.914	26.316
400	16.193	16.128	36.211	155.8	1.079	26.650

Pressure dbar	Niskin	Temp90 °C	PoTemp90 °C	Salinity PSS-78	Oxygen μmol·kg^{-1}
473	1	14.433	14.362	35.894	157.9
300	2	18.723	18.669	36.589	156.5
180	3	21.479	21.444	36.853	162.9
130	4	24.379	24.351	36.849	162.5
50	5	28.418	28.406	36.300	191.7
3	6	28.545	28.544	36.300	192.7


Florida Straits FC1810 October 2018 R/V Walton Smith
CTD Station 8 (CTD008)
Latitude 26.999 N Longitude 79.201 W
23-Oct-2018 23:19 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)

B WOCE Summary File

B.1 FC1804 - April 2018

Table 21: FC1804 – WOCE Summary File

SHIP/CRS EXPOCODE	WOCE SECT	STN	CAST	CAST TYPE	CAST DATE	UTC TIME	EVENT CODE	LAT	LON	NAV	UNC DPH	HT ABV BTM	MAX PRS	NO. BTLS	PARA-METERS
FCTSWS	FC1804	0	1	ROS	04/26/2018	12:12:55	BE	26.990N	79.929W	GPS					
FCTSWS	FC1804	0	1	ROS	04/26/2018	12:18:45	BO	26.993N	79.928W	GPS	142	15	143	4	1,2
FCTSWS	FC1804	0	1	ROS	04/26/2018	12:27:53	EN	26.999N	79.926W	GPS					
FCTSWS	FC1804	1	1	ROS	04/26/2018	11:05:17	BE	26.993N	79.861W	GPS					
FCTSWS	FC1804	1	1	ROS	04/26/2018	11:12:05	BO	26.997N	79.861W	GPS	257	19	260	5	1,2
FCTSWS	FC1804	1	1	ROS	04/26/2018	11:25:14	EN	27.006N	79.859W	GPS					
FCTSWS	FC1804	2	1	ROS	04/26/2018	09:25:34	BE	26.990N	79.787W	GPS					
FCTSWS	FC1804	2	1	ROS	04/26/2018	09:34:39	BO	26.996N	79.785W	GPS	369	18	371	6	1,2
FCTSWS	FC1804	2	1	ROS	04/26/2018	09:50:22	EN	27.004N	79.781W	GPS					
FCTSWS	FC1804	3	1	ROS	04/26/2018	07:27:57	BE	26.989N	79.680W	GPS					
FCTSWS	FC1804	3	1	ROS	04/26/2018	07:42:40	BO	26.999N	79.677W	GPS	527	20	532	7	1,2
FCTSWS	FC1804	3	1	ROS	04/26/2018	08:03:10	EN	27.009N	79.676W	GPS					
FCTSWS	FC1804	4	1	ROS	04/26/2018	05:47:56	BE	26.989N	79.615W	GPS					
FCTSWS	FC1804	4	1	ROS	04/26/2018	06:01:54	BO	27.000N	79.614W	GPS	630	23	639	7	1,2
FCTSWS	FC1804	4	1	ROS	04/26/2018	06:23:01	EN	27.017N	79.613W	GPS					
FCTSWS	FC1804	5	1	ROS	04/26/2018	03:51:59	BE	26.989N	79.497W	GPS					
FCTSWS	FC1804	5	1	ROS	04/26/2018	04:07:38	BO	27.000N	79.497W	GPS	736	23	745	8	1,2
FCTSWS	FC1804	5	1	ROS	04/26/2018	04:32:01	EN	27.016N	79.498W	GPS					
FCTSWS	FC1804	6	1	ROS	04/26/2018	02:13:56	BE	26.991N	79.383W	GPS					
FCTSWS	FC1804	6	1	ROS	04/26/2018	02:28:14	BO	26.999N	79.384W	GPS	660	18	672	8	1,2
FCTSWS	FC1804	6	1	ROS	04/26/2018	02:50:53	EN	27.011N	79.387W	GPS					
FCTSWS	FC1804	7	1	ROS	04/26/2018	00:51:05	BE	26.992N	79.284W	GPS					
FCTSWS	FC1804	7	1	ROS	04/26/2018	01:03:22	BO	26.996N	79.285W	GPS	597	19	603	7	1,2
FCTSWS	FC1804	7	1	ROS	04/26/2018	01:24:25	EN	27.004N	79.286W	GPS					
FCTSWS	FC1804	8	1	ROS	04/25/2018	23:19:49	BE	26.998N	79.200W	GPS					
FCTSWS	FC1804	8	1	ROS	04/25/2018	23:37:53	BO	27.001N	79.200W	GPS	463	19	467	6	1,2
FCTSWS	FC1804	8	1	ROS	04/25/2018	23:53:00	EN	27.004N	79.200W	GPS					

Note:Parameter 1 - salinity sampled, Parameter 2 - oxygen sampled

B.2 FC1806 - June 2018

Table 22: FC1806 – WOCE Summary File

SHIP/CRS EXPOCODE	WOCE SECT	STN	CAST	CAST TYPE	CAST DATE	UTC TIME	EVENT CODE	LAT	LON	NAV	UNC DPH	HT ABV BTM	MAX PRS	NO. BTLS	PARA-METERS
FCTSSAV	FC1806	0	1	ROS	06/28/2018	09:47:04	BE	26.994N	79.930W	GPS					
FCTSSAV	FC1806	0	1	ROS	06/28/2018	09:52:22	BO	26.998N	79.930W	GPS	127	27	137	4	1,2
FCTSSAV	FC1806	0	1	ROS	06/28/2018	10:02:28	EN	27.006N	79.928W	GPS					
FCTSSAV	FC1806	1	1	ROS	06/28/2018	08:11:10	BE	26.993N	79.866W	GPS					
FCTSSAV	FC1806	1	1	ROS	06/28/2018	08:20:14	BO	27.001N	79.865W	GPS	240	29	252	5	1,2
FCTSSAV	FC1806	1	1	ROS	06/28/2018	08:33:43	EN	27.013N	79.864W	GPS					
FCTSSAV	FC1806	2	1	ROS	06/28/2018	06:38:45	BE	26.994N	79.782W	GPS					
FCTSSAV	FC1806	2	1	ROS	06/28/2018	06:49:36	BO	27.004N	79.781W	GPS	359	33	374	6	1,2
FCTSSAV	FC1806	2	1	ROS	06/28/2018	07:06:35	EN	27.020N	79.779W	GPS					
FCTSSAV	FC1806	3	1	ROS	06/28/2018	04:42:15	BE	26.993N	79.683W	GPS					
FCTSSAV	FC1806	3	1	ROS	06/28/2018	04:57:01	BO	27.006N	79.680W	GPS	516	24	527	7	1,2
FCTSSAV	FC1806	3	1	ROS	06/28/2018	05:19:08	EN	27.027N	79.677W	GPS					
FCTSSAV	FC1806	4	1	ROS	06/28/2018	02:56:58	BE	26.992N	79.618W	GPS					
FCTSSAV	FC1806	4	1	ROS	06/28/2018	03:15:29	BO	27.009N	79.618W	GPS	623	23	632	7	1,2
FCTSSAV	FC1806	4	1	ROS	06/28/2018	03:42:05	EN	27.030N	79.616W	GPS					
FCTSSAV	FC1806	5	1	ROS	06/28/2018	00:51:36	BE	26.983N	79.496W	GPS					
FCTSSAV	FC1806	5	1	ROS	06/28/2018	01:14:12	BO	27.000N	79.496W	GPS	751	12	758	8	1,2
FCTSSAV	FC1806	5	1	ROS	06/28/2018	01:43:56	EN	27.019N	79.498W	GPS					
FCTSSAV	FC1806	6	1	ROS	06/27/2018	22:58:47	BE	26.996N	79.383W	GPS					
FCTSSAV	FC1806	6	1	ROS	06/27/2018	23:17:11	BO	27.006N	79.384W	GPS	668	21	674	8	1,2
FCTSSAV	FC1806	6	1	ROS	06/27/2018	23:46:53	EN	27.022N	79.385W	GPS					
FCTSSAV	FC1806	7	1	ROS	06/27/2018	21:28:12	BE	26.996N	79.284W	GPS					
FCTSSAV	FC1806	7	1	ROS	06/27/2018	21:45:35	BO	27.002N	79.283W	GPS	599	18	604	7	1,2
FCTSSAV	FC1806	7	1	ROS	06/27/2018	22:07:50	EN	27.010N	79.283W	GPS					
FCTSSAV	FC1806	8	1	ROS	06/27/2018	19:50:04	BE	27.003N	79.200W	GPS					
FCTSSAV	FC1806	8	1	ROS	06/27/2018	20:04:15	BO	27.006N	79.200W	GPS	460	17	464	6	1,2
FCTSSAV	FC1806	8	1	ROS	06/27/2018	20:22:25	EN	27.010N	79.199W	GPS					

Note:Parameter 1 - salinity sampled, Parameter 2 - oxygen sampled

B.3 FC1809 - September 2018

Table 23: FC1809 – WOCE Summary File

SHIP/CRS EXPOCODE	WOCE SECT	STN	CAST	CAST TYPE	CAST DATE	UTC TIME	EVENT CODE	LAT	LON	NAV	UNC DPH	HT ABV BTM	MAX PRS	NO. BTLS	PARA-METERS
FCTSWS	FC1809	0	1	ROS	09/06/2018	09:12:58	BE	26.993N	79.931W	GPS					
FCTSWS	FC1809	0	1	ROS	09/06/2018	09:17:50	BO	26.996N	79.932W	GPS	128	24	133	4	1,2
FCTSWS	FC1809	0	1	ROS	09/06/2018	09:29:48	EN	27.007N	79.935W	GPS					
FCTSWS	FC1809	1	1	ROS	09/06/2018	07:56:03	BE	26.990N	79.866W	GPS					
FCTSWS	FC1809	1	1	ROS	09/06/2018	08:04:30	BO	26.999N	79.869W	GPS	50	203	246	5	1,2
FCTSWS	FC1809	1	1	ROS	09/06/2018	08:18:05	EN	27.012N	79.871W	GPS					
FCTSWS	FC1809	2	1	ROS	09/06/2018	06:21:41	BE	26.986N	79.781W	GPS					
FCTSWS	FC1809	2	1	ROS	09/06/2018	06:32:51	BO	26.998N	79.784W	GPS	365	49	374	6	1,2
FCTSWS	FC1809	2	1	ROS	09/06/2018	06:50:22	EN	27.014N	79.785W	GPS					
FCTSWS	FC1809	3	1	ROS	09/06/2018	04:34:49	BE	26.988N	79.680W	GPS					
FCTSWS	FC1809	3	1	ROS	09/06/2018	04:50:06	BO	27.002N	79.685W	GPS	512	24	521	7	1,2
FCTSWS	FC1809	3	1	ROS	09/06/2018	05:11:44	EN	27.021N	79.688W	GPS					
FCTSWS	FC1809	4	1	ROS	09/06/2018	02:56:26	BE	26.989N	79.610W	GPS					
FCTSWS	FC1809	4	1	ROS	09/06/2018	03:11:58	BO	27.002N	79.615W	GPS	626	67	636	7	1,2
FCTSWS	FC1809	4	1	ROS	09/06/2018	03:35:06	EN	27.019N	79.620W	GPS					
FCTSWS	FC1809	5	1	ROS	09/06/2018	01:10:06	BE	26.991N	79.497W	GPS					
FCTSWS	FC1809	5	1	ROS	09/06/2018	01:26:50	BO	27.000N	79.501W	GPS	738	23	749	8	1,2
FCTSWS	FC1809	5	1	ROS	09/06/2018	01:51:08	EN	27.014N	79.506W	GPS					
FCTSWS	FC1809	6	1	ROS	09/05/2018	23:36:24	BE	26.999N	79.386W	GPS					
FCTSWS	FC1809	6	1	ROS	09/05/2018	23:52:34	BO	27.004N	79.391W	GPS	671	20	681	8	1,2
FCTSWS	FC1809	6	1	ROS	09/06/2018	00:14:45	EN	27.012N	79.398W	GPS					
FCTSWS	FC1809	7	1	ROS	09/05/2018	22:16:04	BE	26.995N	79.281W	GPS					
FCTSWS	FC1809	7	1	ROS	09/05/2018	22:29:35	BO	26.997N	79.285W	GPS	599	20	603	7	1,2
FCTSWS	FC1809	7	1	ROS	09/05/2018	22:49:32	EN	26.999N	79.291W	GPS					
FCTSWS	FC1809	8	1	ROS	09/05/2018	21:02:21	BE	26.997N	79.204W	GPS					
FCTSWS	FC1809	8	1	ROS	09/05/2018	21:17:59	BO	26.999N	79.210W	GPS	481	21	486	6	1,2
FCTSWS	FC1809	8	1	ROS	09/05/2018	21:35:10	EN	27.003N	79.218W	GPS					

Note:Parameter 1 - salinity sampled, Parameter 2 - oxygen sampled

B.4 FC1810 - October 2018

Table 24: FC1810 – WOCE Summary File

SHIP/CRS EXPOCODE	WOCE SECT	STN	CAST	CAST TYPE	CAST DATE	UTC TIME	EVENT CODE	LAT	LON	NAV	UNC DPH	HT ABV BTM	MAX PRS	NO. BTLS	PARA-METERS
FCTSWS	FC1810	0	1	ROS	10/24/2018	10:01:17	BE	26.998N	79.929W	GPS					
FCTSWS	FC1810	0	1	ROS	10/24/2018	10:06:59	BO	27.000N	79.930W	GPS	134	19	136	4	1,2
FCTSWS	FC1810	0	1	ROS	10/24/2018	10:16:51	EN	27.002N	79.933W	GPS					
FCTSWS	FC1810	1	1	ROS	10/24/2018	09:09:33	BE	26.990N	79.864W	GPS					
FCTSWS	FC1810	1	1	ROS	10/24/2018	09:17:01	BO	26.994N	79.866W	GPS	242	25	250	5	1,2
FCTSWS	FC1810	1	1	ROS	10/24/2018	09:28:33	EN	27.002N	79.869W	GPS					
FCTSWS	FC1810	2	1	ROS	10/24/2018	07:54:17	BE	26.985N	79.782W	GPS					
FCTSWS	FC1810	2	1	ROS	10/24/2018	08:04:13	BO	26.992N	79.784W	GPS	365	22	372	6	1,2
FCTSWS	FC1810	2	1	ROS	10/24/2018	08:20:12	EN	27.002N	79.789W	GPS					
FCTSWS	FC1810	3	1	ROS	10/24/2018	06:34:42	BE	26.985N	79.688W	GPS					
FCTSWS	FC1810	3	1	ROS	10/24/2018	06:46:06	BO	26.993N	79.688W	GPS	512	21	518	7	1,2
FCTSWS	FC1810	3	1	ROS	10/24/2018	07:05:34	EN	27.005N	79.689W	GPS					
FCTSWS	FC1810	4	1	ROS	10/24/2018	05:13:07	BE	26.988N	79.607W	GPS					
FCTSWS	FC1810	4	1	ROS	10/24/2018	05:27:54	BO	26.999N	79.610W	GPS	643	23	653	7	1,2
FCTSWS	FC1810	4	1	ROS	10/24/2018	05:49:11	EN	27.012N	79.612W	GPS					
FCTSWS	FC1810	5	1	ROS	10/24/2018	03:31:52	BE	26.995N	79.497W	GPS					
FCTSWS	FC1810	5	1	ROS	10/24/2018	03:49:29	BO	27.000N	79.501W	GPS	741	20	749	8	1,2
FCTSWS	FC1810	5	1	ROS	10/24/2018	04:13:29	EN	27.007N	79.506W	GPS					
FCTSWS	FC1810	6	1	ROS	10/24/2018	02:03:19	BE	26.998N	79.382W	GPS					
FCTSWS	FC1810	6	1	ROS	10/24/2018	02:17:37	BO	27.001N	79.384W	GPS	651	23	659	8	1,2
FCTSWS	FC1810	6	1	ROS	10/24/2018	02:41:14	EN	27.006N	79.389W	GPS					
FCTSWS	FC1810	7	1	ROS	10/24/2018	00:39:52	BE	26.996N	79.284W	GPS					
FCTSWS	FC1810	7	1	ROS	10/24/2018	00:53:15	BO	26.998N	79.286W	GPS	601	19	607	7	1,2
FCTSWS	FC1810	7	1	ROS	10/24/2018	01:13:47	EN	27.001N	79.288W	GPS					
FCTSWS	FC1810	8	1	ROS	10/23/2018	23:20:13	BE	27.000N	79.201W	GPS					
FCTSWS	FC1810	8	1	ROS	10/23/2018	23:33:51	BO	26.999N	79.202W	GPS	470	18	474	6	1,2
FCTSWS	FC1810	8	1	ROS	10/23/2018	23:51:13	EN	27.000N	79.202W	GPS					

Note:Parameter 1 - salinity sampled, Parameter 2 - oxygen sampled

C WOCE Bottle Summary File

C.1 FC1804 - April 2018

Table 25: FC1804 – WOCE Bottle Summary File

SHIP/CRS EXPOCODE	WOCE SECT	STN	CAST	BTL#	BTL# Flag	DATE	UTC TIME	LAT	LON	DEPTH	CTD PRS	CTD TMP	CTD SAL	SAL FLAG	BTL SAL	SAL FLAG	CTD OXY	OXY FLAG	BTL OXY	OXY FLAG
FCTSWS	FC1804	0	1	1	2	20180426	1220	26.994N	79.928W	142	143	11.289	35.441	2	35.444	2	-999.0	2	-999.0	9
FCTSWS	FC1804	0	1	2	2	20180426	1222	26.996N	79.928W	101	101	14.629	35.864	2	35.889	4	-999.0	2	-999.0	9
FCTSWS	FC1804	0	1	3	2	20180426	1224	26.997N	79.927W	49	50	23.841	36.449	2	36.448	2	-999.0	2	-999.0	9
FCTSWS	FC1804	0	1	4	2	20180426	1227	26.999N	79.926W	2	2	25.510	36.474	2	36.470	2	-999.0	2	-999.0	9
FCTSWS	FC1804	1	1	1	2	20180426	1113	26.998N	79.861W	257	259	9.357	35.176	2	35.180	2	-999.0	2	-999.0	9
FCTSWS	FC1804	1	1	2	2	20180426	1116	27.000N	79.861W	183	184	11.975	35.518	2	35.517	2	-999.0	2	-999.0	9
FCTSWS	FC1804	1	1	3	2	20180426	1118	27.001N	79.860W	131	132	17.732	36.253	2	36.287	4	-999.0	2	-999.0	9
FCTSWS	FC1804	1	1	4	2	20180426	1121	27.004N	79.860W	49	50	24.058	36.459	2	36.461	2	-999.0	2	-999.0	9
FCTSWS	FC1804	1	1	5	2	20180426	1125	27.006N	79.859W	2	2	26.511	36.326	2	36.330	2	-999.0	2	-999.0	9
FCTSWS	FC1804	2	1	1	2	20180426	0936	26.997N	79.785W	369	371	7.145	34.943	2	34.938	2	-999.0	2	-999.0	9
FCTSWS	FC1804	2	1	2	2	20180426	0939	26.998N	79.784W	292	294	11.779	35.482	2	35.481	2	-999.0	2	-999.0	9
FCTSWS	FC1804	2	1	3	2	20180426	0942	27.000N	79.783W	176	177	16.955	36.243	2	36.265	4	-999.0	2	-999.0	9
FCTSWS	FC1804	2	1	4	2	20180426	0944	27.001N	79.783W	130	131	20.187	36.501	2	36.502	2	-999.0	2	-999.0	9
FCTSWS	FC1804	2	1	5	2	20180426	0947	27.003N	79.782W	49	49	24.326	36.417	2	36.415	2	-999.0	2	-999.0	9
FCTSWS	FC1804	2	1	6	2	20180426	0950	27.005N	79.781W	3	3	26.743	36.236	2	36.234	2	-999.0	2	-999.0	9
FCTSWS	FC1804	3	1	1	2	20180426	0744	27.000N	79.677W	527	531	6.883	34.924	2	34.921	2	-999.0	2	-999.0	9
FCTSWS	FC1804	3	1	2	2	20180426	0748	27.002N	79.677W	396	399	10.791	35.313	2	35.313	2	-999.0	2	-999.0	9
FCTSWS	FC1804	3	1	3	2	20180426	0751	27.004N	79.677W	297	299	14.390	35.883	2	35.873	2	-999.0	2	-999.0	9
FCTSWS	FC1804	3	1	4	2	20180426	0754	27.006N	79.678W	178	179	18.817	36.611	2	36.609	2	-999.0	2	-999.0	9
FCTSWS	FC1804	3	1	5	2	20180426	0756	27.006N	79.677W	128	129	20.932	36.583	2	36.606	4	-999.0	2	-999.0	9
FCTSWS	FC1804	3	1	6	2	20180426	0759	27.008N	79.677W	51	51	25.780	36.591	2	36.588	2	-999.0	2	-999.0	9
FCTSWS	FC1804	3	1	7	2	20180426	0803	27.009N	79.676W	1	1	26.666	36.297	2	36.296	2	-999.0	2	-999.0	9
FCTSWS	FC1804	4	1	1	2	20180426	0603	27.002N	79.614W	630	635	6.531	34.912	2	34.913	2	-999.0	2	-999.0	9
FCTSWS	FC1804	4	1	2	2	20180426	0608	27.005N	79.613W	450	453	10.732	35.304	2	35.303	2	-999.0	2	-999.0	9
FCTSWS	FC1804	4	1	3	2	20180426	0611	27.008N	79.614W	299	302	16.106	36.176	2	36.175	2	-999.0	2	-999.0	9
FCTSWS	FC1804	4	1	4	2	20180426	0615	27.011N	79.614W	179	180	18.898	36.601	2	36.602	2	-999.0	2	-999.0	9
FCTSWS	FC1804	4	1	5	2	20180426	0616	27.012N	79.613W	129	130	22.155	36.931	2	36.929	2	-999.0	2	-999.0	9
FCTSWS	FC1804	4	1	6	2	20180426	0619	27.015N	79.613W	50	51	26.169	36.424	2	36.422	2	-999.0	2	-999.0	9
FCTSWS	FC1804	4	1	7	2	20180426	0622	27.017N	79.612W	2	2	26.671	36.310	2	-999.000	9	-999.0	2	-999.0	9
FCTSWS	FC1804	5	1	1	2	20180426	0410	27.001N	79.497W	736	743	6.763	34.911	2	34.907	2	-999.0	2	-999.0	9
FCTSWS	FC1804	5	1	2	2	20180426	0413	27.003N	79.497W	599	604	8.584	35.029	2	35.039	2	-999.0	2	-999.0	9
FCTSWS	FC1804	5	1	3	2	20180426	0417	27.006N	79.497W	449	452	12.528	35.574	2	35.578	2	-999.0	2	-999.0	9
FCTSWS	FC1804	5	1	4	2	20180426	0421	27.008N	79.497W	298	300	16.791	36.296	2	36.300	2	-999.0	2	-999.0	9
FCTSWS	FC1804	5	1	5	2	20180426	0424	27.010N	79.498W	179	180	20.499	36.764	2	36.762	2	-999.0	2	-999.0	9
FCTSWS	FC1804	5	1	6	2	20180426	0426	27.012N	79.498W	124	125	23.130	36.876	2	36.885	2	-999.0	2	-999.0	9
FCTSWS	FC1804	5	1	7	2	20180426	0429	27.015N	79.498W	49	50	26.252	36.290	2	36.289	2	-999.0	2	-999.0	9
FCTSWS	FC1804	5	1	13	2	20180426	0432	27.016N	79.498W	3	3	26.472	36.277	2	36.274	2	-999.0	2	-999.0	9
FCTSWS	FC1804	6	1	1	2	20180426	0231	27.000N	79.385W	660	665	8.670	35.062	2	35.064	2	-999.0	2	-999.0	9
FCTSWS	FC1804	6	1	2	2	20180426	0233	27.001N	79.385W	596	601	10.808	35.330	2	35.349	4	-999.0	2	-999.0	9
FCTSWS	FC1804	6	1	3	2	20180426	0237	27.003N	79.385W	449	453	14.514	35.945	2	35.945	2	-999.0	2	-999.0	9
FCTSWS	FC1804	6	1	4	2	20180426	0240	27.005N	79.386W	299	301	17.767	36.467	2	36.464	2	-999.0	2	-999.0	9
FCTSWS	FC1804	6	1	5	2	20180426	0243	27.007N	79.386W	179	180	21.432	36.859	2	36.866	2	-999.0	2	-999.0	9
FCTSWS	FC1804	6	1	6	2	20180426	0245	27.008N	79.386W	129	130	23.135	36.979	2	36.987	2	-999.0	2	-999.0	9
FCTSWS	FC1804	6	1	7	2	20180426	0248	27.010N	79.386W	50	50	26.303	36.279	2	36.281	2	-999.0	2	-999.0	9
FCTSWS	FC1804	6	1	13	2	20180426	0250	27.012N	79.387W	2	2	26.599	36.189	2	36.194	2	-999.0	2	-999.0	9
FCTSWS	FC1804	7	1	1	2	20180426	0105	26.997N	79.285W	597	602	11.987	35.523	2	35.522	2	-999.0	2	-999.0	9
FCTSWS	FC1804	7	1	2	2	20180426	0109	26.999N	79.285W	447	450	14.873	35.980	2	35.987	2	-999.0	2	-999.0	9
FCTSWS	FC1804	7	1	3	2	20180426	0112	27.000N	79.285W	299	301	18.640	36.579	2	36.597	4	-999.0	2	-999.0	9
FCTSWS	FC1804	7	1	4	2	20180426	0116	27.001N	79.285W	178	179	21.800	36.894	2	36.919	4	-999.0	2	-999.0	9
FCTSWS	FC1804	7	1	5	2	20180426	0118	27.002N	79.285W	129	130	23.518	36.985	2	36.976	2	-999.0	2	-999.0	9
FCTSWS	FC1804	7	1	6	2	20180426	0121	27.003N	79.285W	49	50	26.037	36.526	2	36.533	2	-999.0	2	-999.0	9
FCTSWS	FC1804	7	1	7	2	20180426	0124	27.004N	79.286W	3	3	26.407	36.219	2	36.223	2	-999.0	2	-999.0	9
FCTSWS	FC1804	8	1	1	2	20180425	2338	27.001N	79.200W	463	467	15.798	36.162	2	36.157	2	-999.0	2	-999.0	9
FCTSWS	FC1804	8	1	2	2	20180425	2342	27.002N	79.200W	298	301	19.155	36.632	2	36.629	2	-999.0	2	-999.0	9
FCTSWS	FC1804	8	1	3	2	20180425	2345	27.003N	79.200W	179	181	21.744	36.823	2	36.822	2	-999.0	2	-999.0	9
FCTSWS	FC1804	8	1	4	2	20180425	2347	27.003N	79.200W	130	131	23.208	36.880	2	36.876	2	-999.0	2	-999.0	9
FCTSWS	FC1804	8	1	5	2	20180425	2350	27.004N	79.200W	50	50	25.599	36.532	2	36.534	2	-999.0	2	-999.0	9
FCTSWS	FC1804	8	1	6	2	20180425	2352	27.004N	79.200W	3	3	26.464	36.317	2	36.320	2	-999.0	2	-999.0	9

C.2 FC1806 - June 2018

Table 26: FC1806 – WOCE Bottle Summary File

SHIP/CRS EXPOCODE	WOCE SECT	STN	CAST	BTL#	BTL# Flag	DATE	UTC TIME	LAT	LON	DEPTH	CTD PRS	CTD TMP	CTD SAL	SAL FLAG	BTL SAL	SAL FLAG	CTD OXY	OXY FLAG	BTL OXY	OXY FLAG
FCTSSAV	FC1806	0	1	1	2	20180628	0954	26.993N	79.930W	127	128	13.757	35.734	2	35.713	2	135.9	2	135.9	2
FCTSSAV	FC1806	0	1	2	2	20180628	0954	26.993N	79.930W	98	99	17.229	36.086	2	36.079	2	153.3	2	153.7	2
FCTSSAV	FC1806	0	1	3	2	20180628	0954	26.993N	79.930W	50	50	25.479	36.464	2	36.460	2	212.4	2	222.0	4
FCTSSAV	FC1806	0	1	4	2	20180628	0954	26.993N	79.930W	3	3	29.461	36.369	2	36.368	2	195.2	2	196.2	2
FCTSSAV	FC1806	0	1	5	2	20180628	0954	26.993N	79.930W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	0	1	6	2	20180628	0954	26.993N	79.930W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	0	1	7	2	20180628	0954	26.993N	79.930W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	0	1	8	2	20180628	0954	26.993N	79.930W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	0	1	9	2	20180628	0954	26.993N	79.930W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	0	1	10	2	20180628	0954	26.993N	79.930W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	0	1	11	2	20180628	0954	26.993N	79.930W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	0	1	12	2	20180628	0954	26.993N	79.930W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	0	1	13	2	20180628	0954	26.993N	79.930W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	0	1	14	2	20180628	0954	26.993N	79.930W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	0	1	15	2	20180628	0954	26.993N	79.930W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	0	1	16	2	20180628	0954	26.993N	79.930W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	0	1	17	2	20180628	0954	26.993N	79.930W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	0	1	18	2	20180628	0954	26.993N	79.930W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	0	1	19	2	20180628	0954	26.993N	79.930W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	0	1	20	2	20180628	0954	26.993N	79.930W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	0	1	21	2	20180628	0954	26.993N	79.930W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	0	1	22	2	20180628	0954	26.993N	79.930W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	0	1	23	2	20180628	0954	26.993N	79.930W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	0	1	24	2	20180628	0954	26.993N	79.930W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	1	1	1	2	20180628	0822	26.991N	79.866W	240	241	9.624	35.215	2	35.181	4	124.6	2	124.4	2
FCTSSAV	FC1806	1	1	2	2	20180628	0822	26.991N	79.866W	185	186	13.062	35.690	2	35.688	2	128.6	2	127.6	2
FCTSSAV	FC1806	1	1	3	2	20180628	0822	26.991N	79.866W	136	137	16.301	36.080	2	36.095	2	137.5	2	142.3	4
FCTSSAV	FC1806	1	1	4	2	20180628	0822	26.991N	79.866W	50	51	25.876	36.390	2	36.399	2	213.7	2	223.7	4
FCTSSAV	FC1806	1	1	5	2	20180628	0822	26.991N	79.866W	3	3	29.388	36.247	2	36.245	2	194.9	2	195.2	2
FCTSSAV	FC1806	1	1	6	2	20180628	0822	26.991N	79.866W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	1	1	7	2	20180628	0822	26.991N	79.866W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	1	1	8	2	20180628	0822	26.991N	79.866W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	1	1	9	2	20180628	0822	26.991N	79.866W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	1	1	10	2	20180628	0822	26.991N	79.866W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	1	1	11	2	20180628	0822	26.991N	79.866W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	1	1	12	2	20180628	0822	26.991N	79.866W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	1	1	13	2	20180628	0822	26.991N	79.866W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	1	1	14	2	20180628	0822	26.991N	79.866W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	1	1	15	2	20180628	0822	26.991N	79.866W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	1	1	16	2	20180628	0822	26.991N	79.866W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	1	1	17	2	20180628	0822	26.991N	79.866W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	1	1	18	2	20180628	0822	26.991N	79.866W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	1	1	19	2	20180628	0822	26.991N	79.866W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	1	1	20	2	20180628	0822	26.991N	79.866W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	1	1	21	2	20180628	0822	26.991N	79.866W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	1	1	22	2	20180628	0822	26.991N	79.866W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	1	1	23	2	20180628	0822	26.991N	79.866W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	1	1	24	2	20180628	0822	26.991N	79.866W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	2	1	1	2	20180628	0651	26.992N	79.782W	359	362	7.846	35.002	2	34.996	2	125.6	2	131.2	4
FCTSSAV	FC1806	2	1	2	2	20180628	0651	26.992N	79.782W	298	300	8.930	35.109	2	35.107	2	122.5	2	122.2	2
FCTSSAV	FC1806	2	1	3	2	20180628	0651	26.992N	79.782W	184	186	16.543	36.224	2	36.240	2	134.0	2	140.1	4
FCTSSAV	FC1806	2	1	4	2	20180628	0651	26.992N	79.782W	130	131	20.483	36.799	2	36.803	2	148.8	2	148.9	2
FCTSSAV	FC1806	2	1	5	2	20180628	0651	26.992N	79.782W	50	51	27.629	36.341	2	36.415	4	200.7	2	199.7	2
FCTSSAV	FC1806	2	1	6	2	20180628	0651	26.992N	79.782W	3	3	29.451	36.231	2	36.230	2	193.9	2	193.9	2
FCTSSAV	FC1806	2	1	7	2	20180628	0651	26.992N	79.782W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	2	1	8	2	20180628	0651	26.992N	79.782W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	2	1	9	2	20180628	0651	26.992N	79.782W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	2	1	10	2	20180628	0651	26.992N	79.782W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	2	1	11	2	20180628	0651	26.992N	79.782W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	2	1	12	2	20180628	0651	26.992N	79.782W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	2	1	13	2	20180628	0651	26.992N	79.782W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9

FCTSSAV	FC1806	2	1	14	2	20180628	0651	26.992N	79.782W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	2	1	15	2	20180628	0651	26.992N	79.782W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	2	1	16	2	20180628	0651	26.992N	79.782W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	2	1	17	2	20180628	0651	26.992N	79.782W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	2	1	18	2	20180628	0651	26.992N	79.782W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	2	1	19	2	20180628	0651	26.992N	79.782W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	2	1	20	2	20180628	0651	26.992N	79.782W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	2	1	21	2	20180628	0651	26.992N	79.782W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	2	1	22	2	20180628	0651	26.992N	79.782W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	2	1	23	2	20180628	0651	26.992N	79.782W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	2	1	24	2	20180628	0651	26.992N	79.782W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	3	1	1	2	20180628	0459	26.991N	79.683W	516	520	7.407	34.945	2	34.921	4	129.2	2	129.7	2
FCTSSAV	FC1806	3	1	2	2	20180628	0459	26.991N	79.683W	400	403	9.446	35.134	2	35.126	2	117.0	2	117.6	2
FCTSSAV	FC1806	3	1	3	2	20180628	0459	26.991N	79.683W	303	305	12.339	35.556	2	35.578	2	124.4	2	124.2	2
FCTSSAV	FC1806	3	1	4	2	20180628	0459	26.991N	79.683W	182	183	18.853	36.588	2	36.586	2	144.6	2	145.7	2
FCTSSAV	FC1806	3	1	5	2	20180628	0459	26.991N	79.683W	131	131	22.092	36.928	2	36.927	2	150.5	2	150.5	2
FCTSSAV	FC1806	3	1	6	2	20180628	0459	26.991N	79.683W	50	50	27.105	36.186	2	36.204	2	200.9	2	199.5	4
FCTSSAV	FC1806	3	1	7	2	20180628	0459	26.991N	79.683W	3	3	29.386	36.175	2	36.174	2	193.9	2	194.9	2
FCTSSAV	FC1806	3	1	8	2	20180628	0459	26.991N	79.683W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	3	1	9	2	20180628	0459	26.991N	79.683W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	3	1	10	2	20180628	0459	26.991N	79.683W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	3	1	11	2	20180628	0459	26.991N	79.683W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	3	1	12	2	20180628	0459	26.991N	79.683W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	3	1	13	2	20180628	0459	26.991N	79.683W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	3	1	14	2	20180628	0459	26.991N	79.683W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	3	1	15	2	20180628	0459	26.991N	79.683W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	3	1	16	2	20180628	0459	26.991N	79.683W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	3	1	17	2	20180628	0459	26.991N	79.683W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	3	1	18	2	20180628	0459	26.991N	79.683W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	3	1	19	2	20180628	0459	26.991N	79.683W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	3	1	20	2	20180628	0459	26.991N	79.683W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	3	1	21	2	20180628	0459	26.991N	79.683W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	3	1	22	2	20180628	0459	26.991N	79.683W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	3	1	23	2	20180628	0459	26.991N	79.683W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	3	1	24	2	20180628	0459	26.991N	79.683W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	4	1	1	2	20180628	0317	26.991N	79.618W	623	628	7.084	34.925	2	34.924	2	129.5	2	156.8	4
FCTSSAV	FC1806	4	1	2	2	20180628	0317	26.991N	79.618W	447	450	9.661	35.161	2	35.158	2	116.9	2	145.7	4
FCTSSAV	FC1806	4	1	3	2	20180628	0317	26.991N	79.618W	303	305	13.703	35.770	2	35.770	2	132.0	2	131.8	2
FCTSSAV	FC1806	4	1	4	2	20180628	0317	26.991N	79.618W	180	181	19.960	36.739	2	36.741	2	147.1	2	147.4	2
FCTSSAV	FC1806	4	1	5	2	20180628	0317	26.991N	79.618W	130	130	22.417	36.936	2	36.957	2	151.7	2	152.5	2
FCTSSAV	FC1806	4	1	6	2	20180628	0317	26.991N	79.618W	51	51	27.420	36.136	2	36.136	2	200.9	2	200.8	2
FCTSSAV	FC1806	4	1	7	2	20180628	0317	26.991N	79.618W	3	3	29.395	36.002	2	35.977	2	195.2	2	195.9	2
FCTSSAV	FC1806	4	1	8	2	20180628	0317	26.991N	79.618W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	4	1	9	2	20180628	0317	26.991N	79.618W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	4	1	10	2	20180628	0317	26.991N	79.618W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	4	1	11	2	20180628	0317	26.991N	79.618W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	4	1	12	2	20180628	0317	26.991N	79.618W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	4	1	13	2	20180628	0317	26.991N	79.618W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	4	1	14	2	20180628	0317	26.991N	79.618W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	4	1	15	2	20180628	0317	26.991N	79.618W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	4	1	16	2	20180628	0317	26.991N	79.618W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	4	1	17	2	20180628	0317	26.991N	79.618W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	4	1	18	2	20180628	0317	26.991N	79.618W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	4	1	19	2	20180628	0317	26.991N	79.618W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	4	1	20	2	20180628	0317	26.991N	79.618W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	4	1	21	2	20180628	0317	26.991N	79.618W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	4	1	22	2	20180628	0317	26.991N	79.618W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	4	1	23	2	20180628	0317	26.991N	79.618W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	4	1	24	2	20180628	0317	26.991N	79.618W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	5	1	1	2	20180628	0115	26.982N	79.496W	751	757	6.686	34.909	2	34.913	2	136.8	2	136.4	2
FCTSSAV	FC1806	5	1	2	2	20180628	0115	26.982N	79.496W	601	606	8.658	35.033	2	35.041	2	120.2	2	120.4	2
FCTSSAV	FC1806	5	1	3	2	20180628	0115	26.982N	79.496W	446	449	11.760	35.454	2	35.457	2	121.1	2	129.9	4
FCTSSAV	FC1806	5	1	4	2	20180628	0115	26.982N	79.496W	282	284	17.600	36.428	2	36.421	2	153.0	2	152.5	2
FCTSSAV	FC1806	5	1	5	2	20180628	0115	26.982N	79.496W	179	181	21.517	36.894	2	36.881	2	147.7	2	141.0	4
FCTSSAV	FC1806	5	1	6	2	20180628	0115	26.982N	79.496W	129	130	23.860	36.900	2	36.896	2	157.1	2	157.3	2
FCTSSAV	FC1806	5	1	7	2	20180628	0115	26.982N	79.496W	51	51	27.110	36.205	2	36.211	2	199.5	2	220.7	4

FCTSSAV	FC1806	5	1	8	2	20180628	0115	26.982N	79.496W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	5	1	9	2	20180628	0115	26.982N	79.496W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	5	1	10	2	20180628	0115	26.982N	79.496W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	5	1	11	2	20180628	0115	26.982N	79.496W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	5	1	12	2	20180628	0115	26.982N	79.496W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	5	1	13	2	20180628	0115	26.982N	79.496W	3	3	29.993	36.185	2	-999.000	9	194.5	2	193.8	2
FCTSSAV	FC1806	5	1	14	2	20180628	0115	26.982N	79.496W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	5	1	15	2	20180628	0115	26.982N	79.496W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	5	1	16	2	20180628	0115	26.982N	79.496W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	5	1	17	2	20180628	0115	26.982N	79.496W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	5	1	18	2	20180628	0115	26.982N	79.496W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	5	1	19	2	20180628	0115	26.982N	79.496W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	5	1	20	2	20180628	0115	26.982N	79.496W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	5	1	21	2	20180628	0115	26.982N	79.496W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	5	1	22	2	20180628	0115	26.982N	79.496W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	5	1	23	2	20180628	0115	26.982N	79.496W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	5	1	24	2	20180628	0115	26.982N	79.496W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	6	1	1	2	20180627	2319	26.995N	79.383W	668	673	9.765	35.207	2	35.213	2	126.0	2	127.6	4
FCTSSAV	FC1806	6	1	2	2	20180627	2319	26.995N	79.383W	598	603	9.682	35.158	2	35.159	2	119.4	2	118.2	2
FCTSSAV	FC1806	6	1	3	2	20180627	2319	26.995N	79.383W	450	453	14.186	35.868	2	35.866	2	142.4	2	141.3	2
FCTSSAV	FC1806	6	1	4	2	20180627	2319	26.995N	79.383W	299	302	17.692	36.433	2	36.438	2	148.9	2	147.8	2
FCTSSAV	FC1806	6	1	5	2	20180627	2319	26.995N	79.383W	179	181	23.141	36.939	2	36.934	2	151.8	2	151.2	2
FCTSSAV	FC1806	6	1	6	2	20180627	2319	26.995N	79.383W	130	131	24.965	36.918	2	36.909	2	154.3	2	154.2	2
FCTSSAV	FC1806	6	1	7	2	20180627	2319	26.995N	79.383W	50	51	26.751	36.271	2	36.274	2	194.8	2	195.2	2
FCTSSAV	FC1806	6	1	8	2	20180627	2319	26.995N	79.383W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	6	1	9	2	20180627	2319	26.995N	79.383W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	6	1	10	2	20180627	2319	26.995N	79.383W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	6	1	11	2	20180627	2319	26.995N	79.383W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	6	1	12	2	20180627	2319	26.995N	79.383W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	6	1	13	2	20180627	2319	26.995N	79.383W	3	3	30.075	36.228	2	-999.000	9	194.2	2	193.5	2
FCTSSAV	FC1806	6	1	14	2	20180627	2319	26.995N	79.383W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	6	1	15	2	20180627	2319	26.995N	79.383W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	6	1	16	2	20180627	2319	26.995N	79.383W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	6	1	17	2	20180627	2319	26.995N	79.383W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	6	1	18	2	20180627	2319	26.995N	79.383W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	6	1	19	2	20180627	2319	26.995N	79.383W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	6	1	20	2	20180627	2319	26.995N	79.383W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	6	1	21	2	20180627	2319	26.995N	79.383W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	6	1	22	2	20180627	2319	26.995N	79.383W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	6	1	23	2	20180627	2319	26.995N	79.383W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	6	1	24	2	20180627	2319	26.995N	79.383W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	7	1	1	2	20180627	2146	26.995N	79.284W	599	604	12.034	35.568	2	35.562	2	143.8	2	143.8	2
FCTSSAV	FC1806	7	1	2	2	20180627	2146	26.995N	79.284W	447	451	15.134	36.046	2	36.037	2	161.2	2	161.3	2
FCTSSAV	FC1806	7	1	3	2	20180627	2146	26.995N	79.284W	299	301	18.297	36.545	2	36.536	2	179.6	2	179.4	2
FCTSSAV	FC1806	7	1	4	2	20180627	2146	26.995N	79.284W	179	180	22.060	36.844	2	36.842	2	188.0	2	189.3	2
FCTSSAV	FC1806	7	1	5	2	20180627	2146	26.995N	79.284W	119	120	24.688	36.846	2	36.842	2	196.8	2	196.7	2
FCTSSAV	FC1806	7	1	6	2	20180627	2146	26.995N	79.284W	51	51	26.966	36.241	2	36.249	2	198.6	2	198.1	2
FCTSSAV	FC1806	7	1	7	2	20180627	2146	26.995N	79.284W	3	3	30.888	36.200	2	36.172	4	193.8	2	194.8	2
FCTSSAV	FC1806	7	1	8	2	20180627	2146	26.995N	79.284W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	7	1	9	2	20180627	2146	26.995N	79.284W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	7	1	10	2	20180627	2146	26.995N	79.284W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	7	1	11	2	20180627	2146	26.995N	79.284W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	7	1	12	2	20180627	2146	26.995N	79.284W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	7	1	13	2	20180627	2146	26.995N	79.284W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	7	1	14	2	20180627	2146	26.995N	79.284W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	7	1	15	2	20180627	2146	26.995N	79.284W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	7	1	16	2	20180627	2146	26.995N	79.284W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	7	1	17	2	20180627	2146	26.995N	79.284W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	7	1	18	2	20180627	2146	26.995N	79.284W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	7	1	19	2	20180627	2146	26.995N	79.284W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	7	1	20	2	20180627	2146	26.995N	79.284W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	7	1	21	2	20180627	2146	26.995N	79.284W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	7	1	22	2	20180627	2146	26.995N	79.284W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	7	1	23	2	20180627	2146	26.995N	79.284W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	7	1	24	2	20180627	2146	26.995N	79.284W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	8	1	1	2	20180627	2005	27.003N	79.200W	460	464	15.550	36.118	2	36.121	2	163.8	2	164.7	2

FCTSSAV	FC1806	8	1	2	2	20180627	2005	27.003N	79.200W	297	300	18.733	36.598	2	36.594	2	180.6	2	184.2	4
FCTSSAV	FC1806	8	1	3	2	20180627	2005	27.003N	79.200W	180	181	21.713	36.853	2	36.846	2	188.5	2	189.4	2
FCTSSAV	FC1806	8	1	4	2	20180627	2005	27.003N	79.200W	130	131	23.846	36.905	2	36.909	2	197.6	2	196.5	2
FCTSSAV	FC1806	8	1	5	2	20180627	2005	27.003N	79.200W	51	51	26.694	36.265	2	36.264	2	197.5	2	197.0	2
FCTSSAV	FC1806	8	1	6	2	20180627	2005	27.003N	79.200W	3	3	29.894	36.169	2	36.178	2	194.8	2	194.6	2
FCTSSAV	FC1806	8	1	7	2	20180627	2005	27.003N	79.200W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	8	1	8	2	20180627	2005	27.003N	79.200W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	8	1	9	2	20180627	2005	27.003N	79.200W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	8	1	10	2	20180627	2005	27.003N	79.200W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	8	1	11	2	20180627	2005	27.003N	79.200W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	8	1	12	2	20180627	2005	27.003N	79.200W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	8	1	13	2	20180627	2005	27.003N	79.200W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	8	1	14	2	20180627	2005	27.003N	79.200W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	8	1	15	2	20180627	2005	27.003N	79.200W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	8	1	16	2	20180627	2005	27.003N	79.200W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	8	1	17	2	20180627	2005	27.003N	79.200W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	8	1	18	2	20180627	2005	27.003N	79.200W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	8	1	19	2	20180627	2005	27.003N	79.200W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	8	1	20	2	20180627	2005	27.003N	79.200W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	8	1	21	2	20180627	2005	27.003N	79.200W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	8	1	22	2	20180627	2005	27.003N	79.200W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	8	1	23	2	20180627	2005	27.003N	79.200W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9
FCTSSAV	FC1806	8	1	24	2	20180627	2005	27.003N	79.200W	-999	-999	-999.000	-999.000	9	-999.000	9	-999.0	9	-999.0	9

C.3 FC1809 - September 2018

Table 27: FC1809 – WOCE Bottle Summary File

SHIP/CRS EXPOCODE	WOCE SECT	STN	CAST	BTL#	BTL# Flag	DATE	UTC TIME	LAT	LON	DEPTH	CTD PRS	CTD TMP	CTD SAL	SAL FLAG	BTL SAL	SAL FLAG	CTD OXY	OXY FLAG	BTL OXY	OXY FLAG
FCTSWS	FC1809	0	1	1	2	20180906	0919	26.999N	79.933W	128	128	12.116	35.532	2	35.534	2	128.4	2	127.4	2
FCTSWS	FC1809	0	1	2	2	20180906	0924	27.003N	79.934W	102	103	17.185	36.086	2	36.131	4	143.4	2	143.1	2
FCTSWS	FC1809	0	1	3	2	20180906	0927	27.005N	79.935W	50	50	27.341	36.338	2	36.334	2	191.3	2	191.1	2
FCTSWS	FC1809	0	1	4	2	20180906	0929	27.008N	79.935W	4	4	29.060	36.079	2	36.081	2	192.1	2	193.4	2
FCTSWS	FC1809	1	1	1	2	20180906	0806	27.001N	79.869W	236	237	8.612	35.082	2	35.075	2	125.2	2	192.6	4
FCTSWS	FC1809	1	1	2	2	20180906	0808	27.003N	79.869W	189	190	11.009	35.357	2	35.447	4	124.9	2	125.4	2
FCTSWS	FC1809	1	1	3	2	20180906	0811	27.006N	79.870W	132	133	17.301	36.218	2	36.249	4	141.1	2	140.7	2
FCTSWS	FC1809	1	1	4	2	20180906	0815	27.010N	79.871W	50	51	27.872	36.364	2	36.362	2	197.1	2	196.7	2
FCTSWS	FC1809	1	1	5	2	20180906	0817	27.013N	79.872W	4	4	29.224	36.305	2	36.306	2	192.7	2	192.7	2
FCTSWS	FC1809	2	1	1	2	20180906	0634	26.999N	79.784W	365	368	7.692	34.953	2	34.947	2	124.1	2	124.4	2
FCTSWS	FC1809	2	1	2	2	20180906	0636	27.001N	79.784W	300	302	8.474	35.036	2	35.065	4	124.0	2	124.5	2
FCTSWS	FC1809	2	1	3	2	20180906	0641	27.006N	79.784W	184	185	16.528	36.236	2	36.239	2	140.1	2	140.5	2
FCTSWS	FC1809	2	1	4	2	20180906	0644	27.008N	79.784W	128	129	21.931	36.790	2	36.783	2	151.9	2	158.1	4
FCTSWS	FC1809	2	1	5	2	20180906	0647	27.012N	79.784W	49	50	28.603	36.329	2	36.335	2	194.6	2	195.5	2
FCTSWS	FC1809	2	1	6	2	20180906	0649	27.014N	79.785W	4	4	29.012	36.273	2	36.273	2	193.4	2	193.4	2
FCTSWS	FC1809	3	1	1	2	20180906	0452	27.003N	79.685W	512	516	7.699	34.947	2	34.950	2	124.1	2	124.4	2
FCTSWS	FC1809	3	1	2	2	20180906	0455	27.006N	79.685W	401	404	11.031	35.363	2	35.364	2	124.5	2	124.3	2
FCTSWS	FC1809	3	1	3	2	20180906	0458	27.009N	79.685W	298	300	13.729	35.771	2	35.770	2	130.4	2	130.4	2
FCTSWS	FC1809	3	1	4	2	20180906	0502	27.013N	79.686W	181	183	18.966	36.595	2	36.599	2	144.3	2	144.8	2
FCTSWS	FC1809	3	1	5	2	20180906	0504	27.015N	79.686W	129	130	23.297	36.929	2	36.926	2	155.5	2	156.0	2
FCTSWS	FC1809	3	1	6	2	20180906	0507	27.018N	79.687W	50	50	27.985	36.289	2	36.289	2	196.4	2	195.5	2
FCTSWS	FC1809	3	1	7	2	20180906	0510	27.021N	79.688W	4	4	28.982	36.267	2	36.268	2	193.3	2	194.2	2
FCTSWS	FC1809	4	1	1	2	20180906	0313	27.003N	79.616W	626	631	7.680	34.947	2	34.950	2	124.8	2	125.0	2
FCTSWS	FC1809	4	1	2	2	20180906	0318	27.006N	79.616W	449	453	10.692	35.287	2	35.296	2	121.5	2	121.1	2
FCTSWS	FC1809	4	1	3	2	20180906	0322	27.010N	79.617W	299	302	14.900	35.971	2	35.972	2	140.0	2	139.9	2
FCTSWS	FC1809	4	1	4	2	20180906	0325	27.013N	79.617W	180	182	20.255	36.784	2	36.789	2	149.6	2	150.9	2
FCTSWS	FC1809	4	1	5	2	20180906	0327	27.014N	79.617W	127	128	23.559	36.911	2	36.909	2	158.8	2	158.3	2
FCTSWS	FC1809	4	1	6	2	20180906	0330	27.017N	79.618W	48	48	28.281	36.302	2	36.291	2	196.7	2	197.9	2
FCTSWS	FC1809	4	1	7	2	20180906	0334	27.019N	79.620W	4	4	28.983	36.265	2	36.265	2	214.3	2	194.0	4
FCTSWS	FC1809	5	1	1	2	20180906	0128	27.001N	79.501W	738	745	7.225	34.922	2	34.926	2	129.0	2	128.7	2
FCTSWS	FC1809	5	1	2	2	20180906	0132	27.004N	79.501W	591	596	9.802	35.164	2	35.164	2	118.9	2	119.2	2
FCTSWS	FC1809	5	1	3	2	20180906	0136	27.006N	79.502W	449	453	12.133	35.504	2	35.504	2	125.1	2	124.8	2
FCTSWS	FC1809	5	1	4	2	20180906	0140	27.009N	79.503W	304	306	17.139	36.349	2	36.368	4	151.4	2	151.9	2
FCTSWS	FC1809	5	1	5	2	20180906	0143	27.011N	79.504W	179	181	21.286	36.882	2	36.880	2	149.1	2	149.5	2
FCTSWS	FC1809	5	1	6	2	20180906	0145	27.012N	79.504W	129	130	24.570	36.863	2	36.860	2	163.7	2	163.1	2
FCTSWS	FC1809	5	1	7	2	20180906	0148	27.013N	79.505W	50	50	28.915	36.248	2	36.275	4	194.7	2	194.5	2
FCTSWS	FC1809	5	1	13	2	20180906	0150	27.015N	79.506W	4	4	29.101	36.237	2	36.237	2	193.4	2	193.0	2
FCTSWS	FC1809	6	1	1	2	20180905	2354	27.005N	79.392W	671	677	10.660	35.350	2	35.348	2	132.6	2	131.9	2
FCTSWS	FC1809	6	1	2	2	20180905	2356	27.006N	79.393W	595	600	10.820	35.331	2	35.360	4	132.9	2	127.3	4
FCTSWS	FC1809	6	1	3	2	20180906	0000	27.007N	79.393W	447	450	15.283	36.033	2	-999.000	9	141.3	2	170.4	4
FCTSWS	FC1809	6	1	4	2	20180906	0003	27.009N	79.394W	297	300	18.277	36.539	2	36.541	2	171.3	2	-999.0	9
FCTSWS	FC1809	6	1	5	2	20180906	0006	27.010N	79.395W	178	180	22.219	36.943	2	36.941	2	176.4	2	151.5	4
FCTSWS	FC1809	6	1	6	2	20180906	0008	27.010N	79.396W	129	130	24.992	36.806	2	36.794	2	167.0	2	166.9	2
FCTSWS	FC1809	6	1	7	2	20180906	0011	27.011N	79.397W	50	51	28.808	36.250	2	36.249	2	194.9	2	194.5	2
FCTSWS	FC1809	6	1	13	2	20180906	0014	27.012N	79.398W	5	5	29.142	36.197	2	36.206	2	192.9	2	193.3	2
FCTSWS	FC1809	7	1	1	2	20180905	2230	26.997N	79.285W	599	604	13.318	35.754	2	35.753	2	137.1	2	150.4	4
FCTSWS	FC1809	7	1	2	2	20180905	2234	26.998N	79.286W	445	449	16.210	36.215	2	36.213	2	168.3	2	168.8	2
FCTSWS	FC1809	7	1	3	2	20180905	2237	26.998N	79.287W	296	299	18.907	36.606	2	36.604	2	187.4	2	188.1	2
FCTSWS	FC1809	7	1	4	2	20180905	2240	26.998N	79.288W	179	180	22.109	36.868	2	36.868	2	185.2	2	184.1	2
FCTSWS	FC1809	7	1	5	2	20180905	2242	26.998N	79.288W	131	132	24.387	36.878	2	36.875	2	185.5	2	185.6	2
FCTSWS	FC1809	7	1	6	2	20180905	2245	26.999N	79.290W	50	51	29.038	36.234	2	36.233	2	194.9	2	194.8	2
FCTSWS	FC1809	7	1	7	2	20180905	2249	26.999N	79.291W	3	3	29.269	36.203	2	36.203	2	193.5	2	193.3	2
FCTSWS	FC1809	8	1	1	2	20180905	2119	26.999N	79.211W	481	485	16.367	36.248	2	36.262	2	169.2	2	169.6	2
FCTSWS	FC1809	8	1	2	2	20180905	2124	27.000N	79.213W	297	299	19.331	36.645	2	36.642	2	191.3	2	191.1	2
FCTSWS	FC1809	8	1	3	2	20180905	2127	27.001N	79.215W	184	185	21.397	36.815	2	36.815	2	189.5	2	189.2	2
FCTSWS	FC1809	8	1	4	2	20180905	2129	27.001N	79.216W	129	130	24.172	36.890	2	36.894	2	185.6	2	185.6	2
FCTSWS	FC1809	8	1	5	2	20180905	2132	27.002N	79.217W	51	51	29.268	36.296	2	36.297	2	194.1	2	193.0	2
FCTSWS	FC1809	8	1	6	2	20180905	2135	27.003N	79.219W	4	4	29.571	36.261	2	36.273	2	193.1	2	192.7	2

C.4 FC1810 - October 2018

Table 28: FC1810 – WOCE Bottle Summary File

SHIP/CRS EXPOCODE	WOCE SECT	STN	CAST	BTL#	BTL# Flag	DATE	UTC TIME	LAT	LON	DEPTH	CTD PRS	CTD TMP	CTD SAL	SAL FLAG	BTL SAL	SAL FLAG	CTD OXY	OXY FLAG	BTL OXY	OXY FLAG
FCTSWS	FC1810	0	1	1	2	20181024	1008	27.001N	79.931W	134	135	13.035	35.686	2	35.686	2	130.3	2	130.2	2
FCTSWS	FC1810	0	1	2	2	20181024	1010	27.001N	79.931W	100	101	15.876	36.080	2	36.074	2	139.5	2	139.0	2
FCTSWS	FC1810	0	1	3	2	20181024	1012	27.001N	79.932W	51	52	25.245	36.178	2	36.169	2	174.1	2	174.4	2
FCTSWS	FC1810	0	1	4	2	20181024	1015	27.002N	79.933W	2	2	27.914	36.035	2	36.033	2	193.1	2	194.1	2
FCTSWS	FC1810	1	1	1	2	20181024	0918	26.995N	79.866W	242	244	8.763	35.059	2	35.064	2	121.4	2	121.5	2
FCTSWS	FC1810	1	1	2	2	20181024	0920	26.996N	79.867W	175	176	12.916	35.670	2	35.664	2	131.5	2	131.3	2
FCTSWS	FC1810	1	1	3	2	20181024	0922	26.997N	79.868W	129	130	15.082	36.011	2	36.024	2	136.9	2	137.2	2
FCTSWS	FC1810	1	1	4	2	20181024	0925	27.001N	79.869W	50	51	28.697	36.151	2	36.160	2	193.6	2	194.4	2
FCTSWS	FC1810	1	1	5	2	20181024	0928	27.003N	79.870W	2	2	28.702	36.136	2	36.134	2	192.9	2	194.0	2
FCTSWS	FC1810	2	1	1	2	20181024	0806	26.993N	79.785W	365	368	7.135	34.931	2	34.927	2	131.4	2	130.7	2
FCTSWS	FC1810	2	1	2	2	20181024	0808	26.995N	79.786W	285	287	9.322	35.167	2	35.153	2	126.3	2	126.0	2
FCTSWS	FC1810	2	1	3	2	20181024	0811	26.997N	79.787W	182	183	15.777	36.109	2	36.109	2	137.2	2	137.7	2
FCTSWS	FC1810	2	1	4	2	20181024	0814	27.000N	79.789W	130	131	22.809	36.764	2	36.757	2	159.4	2	159.6	2
FCTSWS	FC1810	2	1	5	2	20181024	0817	27.001N	79.789W	50	51	28.774	36.154	2	36.154	2	193.3	2	194.0	2
FCTSWS	FC1810	2	1	6	2	20181024	0820	27.003N	79.790W	2	2	28.755	36.156	2	36.157	2	192.7	2	193.6	2
FCTSWS	FC1810	3	1	1	2	20181024	0648	26.994N	79.688W	512	516	6.556	34.906	2	34.905	2	138.2	2	138.7	2
FCTSWS	FC1810	3	1	2	2	20181024	0651	26.996N	79.688W	399	402	7.701	34.961	2	34.965	2	126.4	2	126.4	2
FCTSWS	FC1810	3	1	3	2	20181024	0654	26.997N	79.688W	300	302	11.982	35.518	2	35.525	2	127.6	2	127.3	2
FCTSWS	FC1810	3	1	4	2	20181024	0657	27.000N	79.688W	178	179	20.991	36.788	2	36.788	2	146.5	2	147.2	2
FCTSWS	FC1810	3	1	5	2	20181024	0659	27.001N	79.689W	129	130	24.900	36.812	2	36.807	2	160.8	2	161.1	2
FCTSWS	FC1810	3	1	6	2	20181024	0702	27.003N	79.689W	50	50	28.522	36.205	2	36.207	2	193.7	2	194.5	2
FCTSWS	FC1810	3	1	7	2	20181024	0705	27.006N	79.690W	2	2	28.548	36.166	2	36.164	2	193.6	2	194.0	2
FCTSWS	FC1810	4	1	1	2	20181024	0529	27.000N	79.610W	643	649	6.552	34.904	2	34.903	2	138.5	2	138.9	2
FCTSWS	FC1810	4	1	2	2	20181024	0534	27.003N	79.610W	451	454	8.049	35.013	2	35.017	2	127.2	2	127.5	2
FCTSWS	FC1810	4	1	3	2	20181024	0538	27.005N	79.611W	298	300	15.476	36.063	2	36.074	2	139.3	2	140.1	2
FCTSWS	FC1810	4	1	4	2	20181024	0541	27.007N	79.611W	178	179	21.669	36.900	2	36.908	2	150.3	2	151.7	2
FCTSWS	FC1810	4	1	5	2	20181024	0543	27.008N	79.611W	128	129	25.046	36.784	2	36.769	2	164.2	2	166.4	2
FCTSWS	FC1810	4	1	6	2	20181024	0546	27.010N	79.611W	50	50	28.397	36.246	2	36.247	2	193.7	2	194.0	2
FCTSWS	FC1810	4	1	7	2	20181024	0548	27.012N	79.612W	2	2	28.485	36.230	2	36.237	2	192.3	2	198.2	4
FCTSWS	FC1810	5	1	1	2	20181024	0350	27.000N	79.501W	741	747	6.932	34.911	2	34.912	2	132.6	2	132.1	2
FCTSWS	FC1810	5	1	2	2	20181024	0354	27.001N	79.502W	595	599	7.733	34.960	2	34.959	2	125.1	2	125.2	2
FCTSWS	FC1810	5	1	3	2	20181024	0358	27.003N	79.503W	444	448	9.485	35.133	2	35.130	2	119.9	2	118.6	2
FCTSWS	FC1810	5	1	4	2	20181024	0401	27.004N	79.504W	295	297	16.502	36.237	2	36.234	2	143.6	2	143.9	2
FCTSWS	FC1810	5	1	5	2	20181024	0405	27.005N	79.505W	180	182	22.063	36.938	2	36.939	2	152.2	2	151.9	2
FCTSWS	FC1810	5	1	6	2	20181024	0407	27.006N	79.505W	130	131	25.016	36.792	2	36.768	4	164.2	2	163.3	2
FCTSWS	FC1810	5	1	7	2	20181024	0410	27.006N	79.506W	49	50	28.442	36.289	2	-999.000	9	193.9	2	-999.0	9
FCTSWS	FC1810	5	1	13	2	20181024	0412	27.007N	79.506W	2	2	28.457	36.305	2	36.313	2	194.2	2	192.9	2
FCTSWS	FC1810	6	1	1	2	20181024	0219	27.001N	79.385W	651	656	8.118	34.982	2	34.981	2	121.4	2	121.6	2
FCTSWS	FC1810	6	1	2	2	20181024	0222	27.002N	79.385W	593	598	9.072	35.082	2	35.080	2	118.9	2	118.9	2
FCTSWS	FC1810	6	1	3	2	20181024	0225	27.003N	79.386W	444	448	12.388	35.548	2	35.553	2	125.9	2	125.4	2
FCTSWS	FC1810	6	1	4	2	20181024	0229	27.004N	79.387W	300	303	17.127	36.330	2	36.341	2	141.4	2	140.9	2
FCTSWS	FC1810	6	1	5	2	20181024	0232	27.004N	79.388W	179	180	22.115	36.925	2	36.924	2	150.9	2	150.0	2
FCTSWS	FC1810	6	1	6	2	20181024	0235	27.005N	79.388W	129	130	25.840	36.656	2	36.659	2	171.8	2	170.2	2
FCTSWS	FC1810	6	1	7	2	20181024	0238	27.006N	79.389W	50	50	28.449	36.302	2	36.302	2	194.1	2	192.3	2
FCTSWS	FC1810	6	1	13	2	20181024	0240	27.006N	79.389W	2	3	28.443	36.301	2	36.298	2	193.6	2	192.5	2
FCTSWS	FC1810	7	1	1	2	20181024	0055	26.998N	79.286W	601	606	10.137	35.222	2	35.218	2	118.6	2	119.3	2
FCTSWS	FC1810	7	1	2	2	20181024	0058	26.999N	79.286W	446	450	13.525	35.734	2	35.731	2	129.8	2	129.4	2
FCTSWS	FC1810	7	1	3	2	20181024	0102	26.999N	79.287W	298	300	17.739	36.443	2	36.442	2	149.3	2	148.8	2
FCTSWS	FC1810	7	1	4	2	20181024	0105	27.000N	79.287W	178	180	22.223	36.933	2	36.933	2	152.6	2	151.5	2
FCTSWS	FC1810	7	1	5	2	20181024	0107	27.000N	79.287W	129	130	25.092	36.757	2	36.759	2	165.8	2	164.8	2
FCTSWS	FC1810	7	1	6	2	20181024	0110	27.001N	79.288W	50	50	28.408	36.298	2	36.299	2	193.0	2	192.1	2
FCTSWS	FC1810	7	1	7	2	20181024	0113	27.001N	79.288W	2	2	28.467	36.306	2	36.303	2	191.3	2	192.4	2
FCTSWS	FC1810	8	1	1	2	20181023	2334	26.999N	79.202W	470	473	14.435	35.926	2	35.894	4	158.1	2	157.9	2
FCTSWS	FC1810	8	1	2	2	20181023	2339	27.000N	79.202W	298	300	18.722	36.594	2	36.589	2	155.8	2	156.5	2
FCTSWS	FC1810	8	1	3	2	20181023	2342	27.000N	79.202W	179	180	21.478	36.857	2	36.853	2	162.0	2	162.9	2
FCTSWS	FC1810	8	1	4	2	20181023	2344	27.000N	79.202W	129	130	24.376	36.848	2	36.849	2	162.8	2	162.5	2
FCTSWS	FC1810	8	1	5	2	20181023	2347	27.000N	79.202W	50	50	28.420	36.298	2	36.300	2	193.4	2	191.7	2
FCTSWS	FC1810	8	1	6	2	20181023	2350	27.000N	79.202W	3	3	28.545	36.302	2	36.300	2	192.9	2	192.7	2