


1810SR CTD Processing Notes

Parent Category: 2018 Cruises (/cruises/2018-cruises.html)

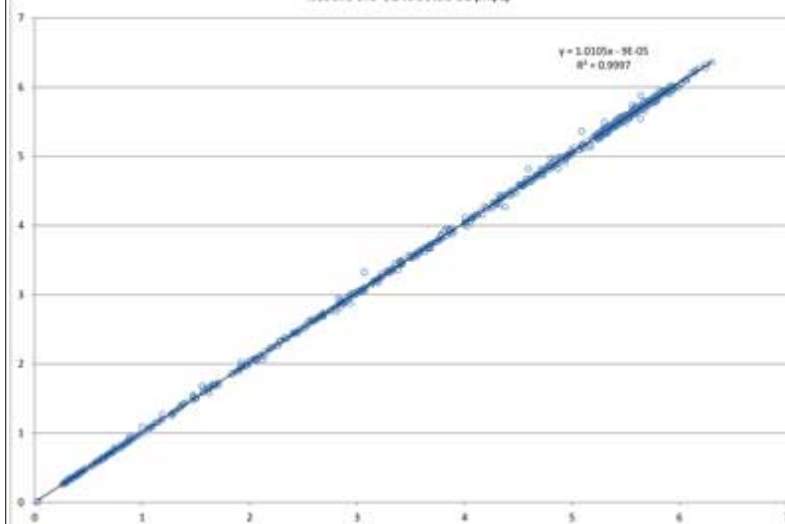
Category: CalCOFI 1810SR (/cruises/2018-cruises/calcofi-1810sr.html)

 Last Updated: 06 December 2018

CTD Processing Summary CalCOFI 1810SR CTD Preliminary Data		
Download 1810SR CTD raw cast files zipped (http://cappuccino.ucsd.edu/downloads/2018/20-1810SR_CTDCast.zip)	Download 1810SR Preliminary CTD + bottle data (http://cappuccino.ucsd.edu/downloads/2018/20-1810SR_CTDPrelim.zip)	
General CTD Notes - data acquisition notes, logistics, processing - see below.		
Please note that these regressions are generated from preliminary CTD vs bottle data and will be reprocessed once final bottle data are available. CTD temperatures and salinities do not usually change but oxygen, estimated chlorophyll-a, estimated nitrate may change significantly after point-checking. Questionable or mistrip bottle data are removed from these comparisons but may be visible on the CTD.csv plots. For this cruise and future cruises, both primary & secondary sensor profiles vs bottle data will be generated and archived in the downloadable CTD+Bottle data files. These plots are under the "csv-plots\Primary" & "csv-plots\Secondary" subdirectories.		
CTD sensor corrections derived by comparing CTD sensor data, 4sec averages prior-to-bottle closure, to bottle samples		
Dual T, S, & O2	Primary Sensor	Secondary Sensor
Salinity offset (bottle - CTD salinity; > 350m only; Seabird SBE4)	-0.0009	-0.0051
Oxygen ml/L (dual Seabird SBE43)	y = 1.0105x - 9E-05 R² = 0.9997	y = 1.0406x + 0.0298 R² = 0.9997
Oxygen umol/Kg (dual Seabird SBE43)	y = 1.0115x + 0.1427 R² = 0.9997	y = 1.0416x + 1.4464 R² = 0.9997
Single sensors	Linear	Polynomial
Nitrate - ISUS 4sec ave voltage vs Bottle NO3 (Satlantic ISUS v3 SN111)	y = 27.84x - 8.7272 R² = 0.9923	
Fluorometer - linear & polynomial regressions	y= 7.735x - 0.2485 R² = 0.8236	y = 8.7389x2+ 5.6343x - 0.1656 R² = 0.8300

CalCOFI 1810SR: Primary CTD Oxygen vs Bottle Oxygen

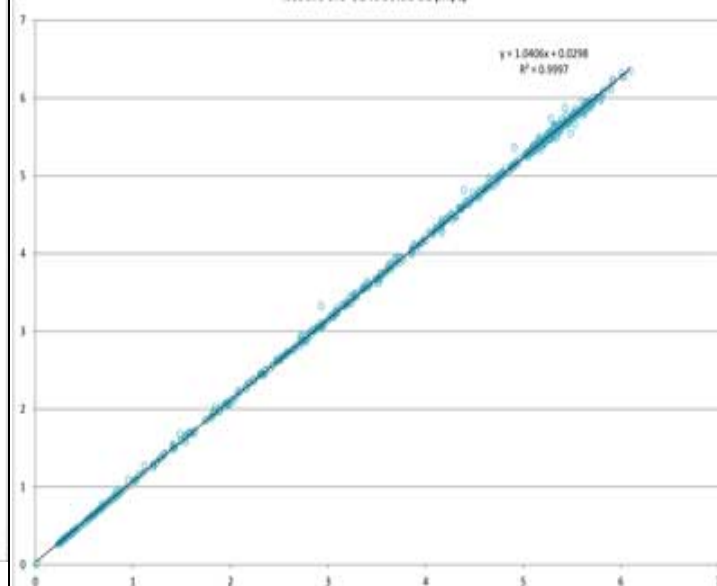
4sec ave CTD O2 vs bottle O2 (ml/L)



(http://cappuccino.ucsd.edu/downloads/2018/1810SR/1810SR_Ox1MLvsOxBML.jpg)

CalCOFI 1810SR: Secondary CTD Oxygen vs Bottle Oxygen

4sec ave CTD O2 vs bottle O2 (ml/L)

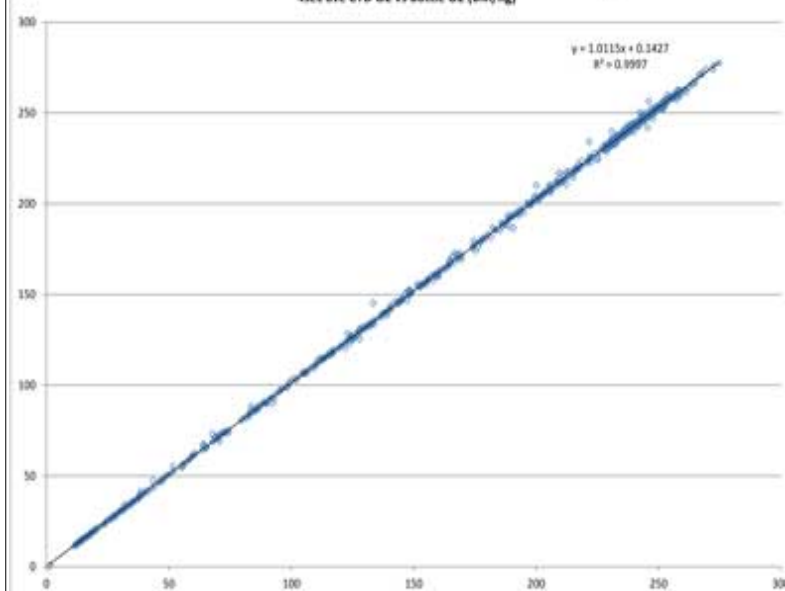


(http://cappuccino.ucsd.edu/downloads/2018/1810SR/1810SR_Ox2MLvsOxBML.jpg)

(<http://cappuccino.ucsd.edu/downloads/2018/1810SR>

CalCOFI 1810SR: Primary CTD Oxygen vs Bottle Oxygen

4sec ave CTD O2 vs bottle O2 (uM/Kg)

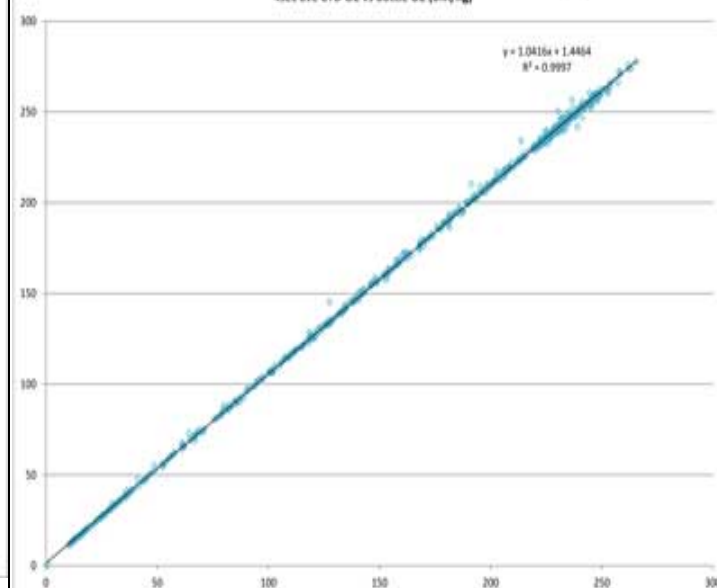


/1810SR_Ox1UMvsOxBUM.jpg)

(<http://cappuccino.ucsd.edu/downloads/2018/1810SR>

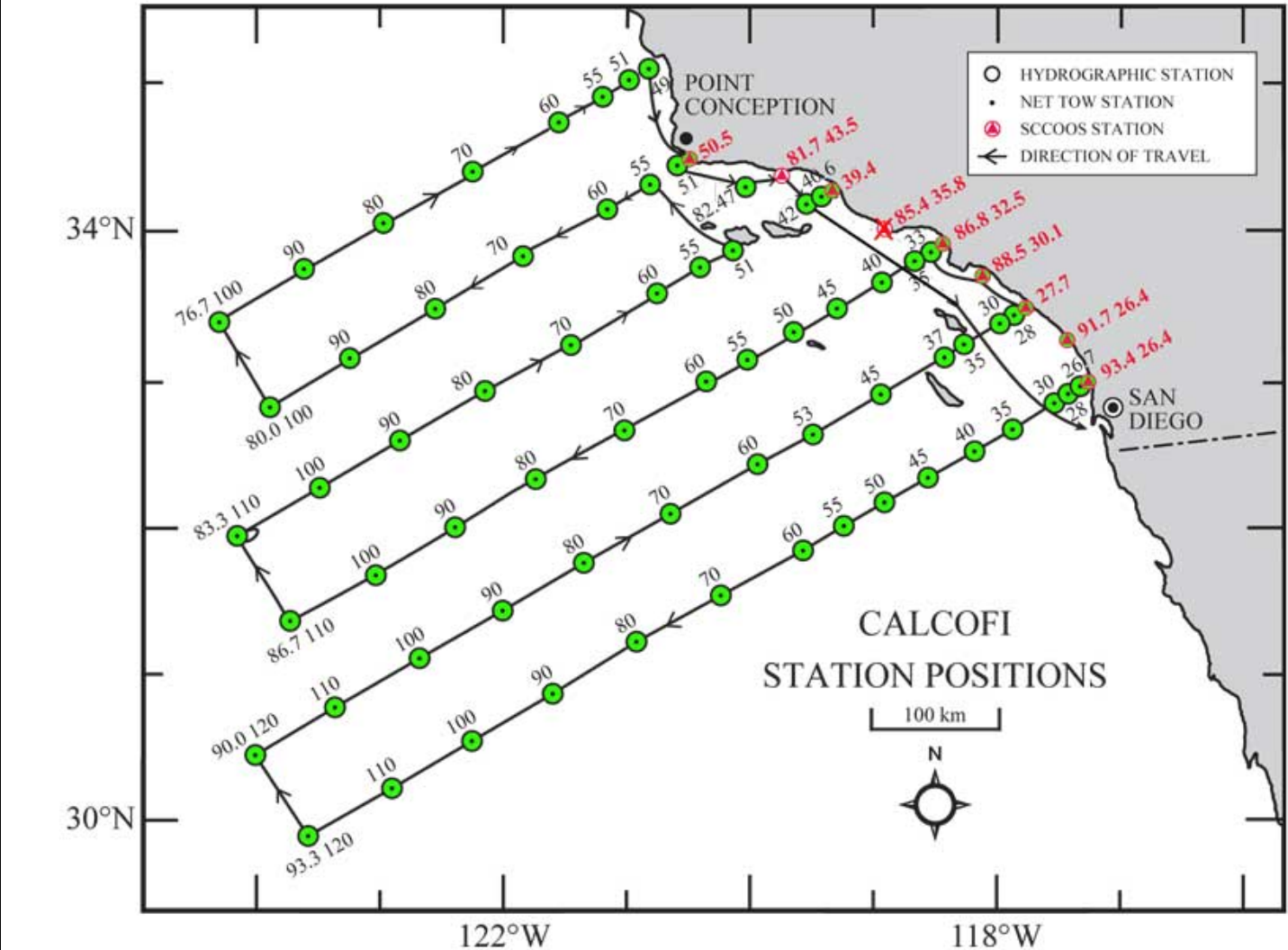
CalCOFI 1810SR: Secondary CTD Oxygen vs Bottle Oxygen

4sec ave CTD O2 vs bottle O2 (uM/Kg)



/1810SR_Ox2UMvsOxBUM.jpg)

General notes: These are cast & preliminary CTD Processing Notes from 1810SR cruise



<http://cappuccino.ucsd.edu/downloads/2018/1802SH/1802ActualCruiseTrack.jpg>

CalCOFI 1810SR General Cruise & Cast Notes:

CalCOFI Autumn Cruise 1810SR was scheduled to occupy 75 stations from San Diego to Pt Conception. All stations were occupied except one - sta 85.4 35.8 Pt Dume SCCOOS - which was dropped due to time lost to bad weather. This was an early autumn cruise and the weather was excellent for the first week of the cruise and good for the rest of the cruise.

CTD General Notes and Problems:

CalCOFI used their 24-10L CTD-rosette on RV Sally Ride's infrastructure - two-pin termination, cable grip, & shackle; deck unit, monitor, trackball, & network. SIO-CalCOFI's Seabird 911+, 24-bottle epoxy-coated LARS rosette was deployed by the forward LARS winch arm on 72 stations.

Standard sensor configuration: dual T, C, & O₂ on separately plumbed & pumped horizontal arrays; Wetlabs ECO-FI fluorometer; C-Star transmissometer; Biospherical PAR & Surface PAR (mounted on the LTER GP van); MBARI-ISUS v3 w/ battery; SBE18 pH; altimeter. Refer to .hdr files for serial & model numbers or the table below. Primary & secondary T, C, & O₂ sensors were not changed from the last cruise, 1804SH, since their calibration & agreement were still on target. ISUS was DI lab calibrated prior to the cruise. Both sensor sets worked fine throughout the cruise and no changes were necessary.

Setup: Using SIO-CalCOFI's 24-10L bottle CTD-rosette epoxy-coated LARS frame.	
CTD - SBE 9+ (SN#3161-0936) Sensor Configuration	
1° Sensors: freshly calibrated	2° Sensors:
SBE 3plus temperature sensor (SN#2533); Conductivity SBE 4 Sensor (SN#3568) Oxygen SBE 43 Sensor (SN#3284) Pump	SBE 3plus temperature sensor (SN#5109); Conductivity SBE 4 Sensor (SN#3569) Oxygen SBE 43 Sensor (SN#0680) Pump
Other sensors (unpumped)	
Wetlabs ECO/FL Fluorometer SN#3122 Wetlabs C-Star Transmissometer SN#CST-811DR pH SBE 18 SN#0709 Remote PAR SN#70209	CCE-LTER MBARI-ISUS v3 SN#111 Altimeter SN#46604 Carousel SBE 32 3217964-0225 Reference PAR SN#20514 pin broken during setup

Logistics & General System/Sampling Notes:

Cast Notes (transcribed from console ops, clipboard notes, & data processing):

Cast 001 sta 93.3 26.7: 60m bttom, 10 bottle prodo station (on time, left the dock at 0800PDT); winch problem noted, stopped at 26.5m on the way down to straighten it out level wind; again at ~40m, each time from 23-5mins

Cast 002 sta 93.3 23.4 26.4 SCCOOS: 21m bottom, 4 bottle SCCOOS station

Cast 003 sta 91.7 26.4 SCCOOS: 21m bottom, 4 bottles; 15m chl max (terminal depth)

Cast 004 sta 93.3 28.0: 20 bottle cast to 515m; 28m chl max, 0m mixed layer; 0 & 30m DIC/pH taken; starting down at 20m/min for winch adjustment; 10m/min at 55m, stopping at 59m for ~4mins then back to normal downcast; calm evening; ISUS spike ~130m downcast

Cast 005 sta 93.3 30: 20 bottle cast to 515m; 47m chl max, 5m mixed layer; 5 DIC samples taken; ISUS dropout ~150-200m downcast

Cast 006 sta 93.3 35.0: 20 bottle cast to 515m

Cast 007 sta 93.3 40.0: 21 bottle cast to 515m

Cast 008 sta 93.3 45.0: 24 bottle prodo cast to 515m, with NCOG, 10m Size Fractionation, & prodo depths; chl max ~60-70m

Cast 009 sta 93.3 50.0: 20 bottle cast to 515m; missed tripping bottle #17, had to go back down = yo-yo'd from 25m>40m>25m

Cast 010 sta 93.3 55.0: 20 bottle cast to 515m; 68m chl max, 18m mixed layer; calm evening, launched just after

sunset; ISUS spike @515m, otherwise good; downcast & upcast different especially 150m-surface

Cast 011 sta 93.3 60.0: 20 bottle cast to 515m; some rolls, winds picking up, 19kts; chl max 65-75m, 36m mixed layer

Cast 012 sta 93.3 70.0: 20 bottle cast to 515m; nothing noted

Cast 013 sta 93.3 80.0: 24 bottle prodo cast to 515m; one NCOG bottle, needed prodo depths

Cast 014 sta 93.3 90.0: 20 bottle cast to 515m; dual chl max - main at 46m, 2nd at 105m, 30m mixed layer; calm evening

Cast 015 sta 93.3 100.0: 20 bottle cast to 515m; 64m chl mx, 44m mixed layer

Cast 016 sta 93.3 110.0: 20 bottle cast to 515m; nothing noted

Cast 017 sta 93.3 120.0: 24 bottle prodo cast to 515m; 2 extra NCOG bottles, no LTER

Cast 018 sta 90.0 120.0: 22 bottle cast to 515m, two extra NCOG bottles closed (10m & 87m); ~80m chl max; calm late afternoon

Cast 019 sta 90.0 110.0: 20 bottle cast to 515m; 56m chl max, 39m mixed layer

Cast 020 sta 90.0 100.0: 20 bottle cast to 515m, nothing noted

Cast 021 sta 90.0 90.0: 23 bottle prodo cast to 515m, two extra NCOG bottles closed

Cast 022 sta 90.0 80.0: 20 bottle cast to 515m; 56m main & 84m 2nd chl maxes; unusual O2 dip ~180-200m; seas picking up a little, choppy; bottle #3 top valve left open

Cast 023 sta 90.0 70.0: 22 bottle cast to 515m, two NCOG bottle tripped at 40m chl max & 10m

Cast 024 sta 90.0 60.0: 20 bottle cast to 515m; nothing unusual noted

Cast 025 sta 90.0 53.0: 24 bottel prodo cast to 515m; no ISUS signal even though plugged in, bad power connector perhaps, will change power cable

Cast 026 sta 90.0 45.0: no problem with Navy; 21 bottle cast to 515m, one extra LTER bottle at 10m; 38m chl max, 22m mixed layer; "classic" profiles; new ISUS cable installed pre-cast - looks good, battery v ~12.86

Cast 027 sta 90.0 37.0: 22 bottle cast to 515m, 2 extra NCOG; 32m chl max

Cast 028 sta 90.0 35.0: 18 bottle cast to 315m;

Cast 029 sta 90.0 30.0: 21 bottle cast to 515m;

Cast 030 sta 90.0 28.0: 63m bottom, 12 bottle cast to 59m; underway pH #15714

Cast 031 sta 90.0 27.7 SCCOOS: 23m bottom; 4 bottle cast to 16m

Cast 032 sta 88.5 30.1 SCCOOS: 17m bottom, 4 bottle cast to 14.5m

Cast 033 sta 86.8 32.5 SCCOOS: 27m bottom, 5 bottle cast to 20m; 15m chl max, 7m mixed layer

Cast 034 sta 86.7 33.0: 56m bottom, 8 bottle cast; extremeley calm, clear skies after sundown; 18m chl max

Cast 035 sta 86.7 35.0: 21 bottle cast to 515m; 31m chl max, 6m mixed layer; choppy compared to last sta, 17kt winds; bottle #17 did not closed (chl max); installed a new trigger and shortened the lanyard post-cast

Cast 036 sta 86.7 40.0: Santa Monica Basin, 750m bottom, 22 bottle to 740m, terminal depth; winch issues - level wind wrap problem, stopped at 656m on upcast then went back down to 740m to take out bad wrap; went back & forth 10m at 730-740m then back up slowly (at 0023PST) at ~2m/min, stopping again at 215m (0033pst)

Cast 037 sta 86.7 45.0: 21 bottle cast to 515m; no issues with winch or anything else noted

Cast 038 sta 86.7 50.0: 13 bottles prodo cast to 68m at San Nicolas Island; console ops times recorded in PDT

Cast 039 sta 86.7 55.0: 21 bottle cast to 515m; no issues noted

Cast 040 sta 86.7 60.0: 21 bottle cast to 515m; 45m chl max, 30m mixed layer; some swell but not rough, started cast a little deeper ~3m to keep it from popping out of the water; overcast, 14kt wind; bottle #19 didn't close, trigger cleaned & lanyard will move to the left for better angle next cast

Cast 041 sta 86.7 70.0: 21 bottle cast to 515m; 44m chl max, 23m mixed layer; no issues noted

Cast 042 sta 86.7 80.0: 23 bottle cast to 515m; double-tripped bottle #2 & 3 at 440m (mistake); double trip #8 & 9 at 200m (mistake); went from 200m to 120m, tripped #10, then back down to 170m, 140, 112m so #9=200m, #10=120m, #11=170m, #12=140m, #13=112; CTD yo-yo'd on upcast

Cast 043 sta 86.7 90.0: 24 bottle prodo cast to 515m; no issues noted

Cast 044 sta 86.7 100.0: 21 bottle cast to 515m; chl max 80, broad 50-100m; relatively calm, 12.7kt winds, getting better; T,S,O2 "feature" @310-380m

Cast 045 sta 86.7 110.0: 21 bottle cast to 515m; 70m chl max, 40m mixed layer; no issues noted

Cast 046 sta 83.3 110.0: 21 bottle cast to 515m; no issues noted

Cast 047 sta 83.3 100.0: 24 bottle prodo cast to 515m; no issues noted

Cast 048 sta 83.3 90.0: 21 bottle cast to 515m; 94m chl max; choppy seas; salinity layers (stratification) 50-200m (pumps ok); full moon rise during nets

Cast 049 sta 83.3 80.0: 21 bottle cast to 515m; 46m chl max; long swell, some rolls

Cast 050 sta 83.3 70.0: 21 bottle cast to 515m; no issues noted

Cast 051 sta 83.3 60.0: 24 bottle prodo cast to 515m; no issues noted

Cast 052 sta 83.3 55.0: 21 bottle cast to 515m; 25m chl max, 26m mixed layer; no issues noted

Cast 053 sta 83.3 51.0: 11 bottle cast to 90m, 98m bottom; 28kt winds - quite different from last station; downcast & upcast profiles quite different

Cast 054 sta 80.0 55.0: headed north after Santa Rosa Is sta 83.51 to Line 80; hdr mislabeled 83.3 55.0 - fixed in files post-cruise; 23 bottle cardinal station

Cast 055 sta 80.0 60.0: 24 bottle prodo cast to 515m; hdr mislabeled 83.3 60.0 - fixed in files post-cruise

Cast 056 sta 80.0 70.0: 22 bottle cardinal station cast to 515m; no issues except hdr mislabeled 83.3 70.0 - fixed in files post-cruise

Cast 057 sta 80.0 80.0: 22 bottle cardinal station cast to 515m; 46m chl max, 32m mixed layer; hdr mislabeled 83.3 80.0 - fixed in files post-cruise; rough choppy conditions, night 18kt winds, ship pretty stable even with the big swell; 400m T,S,O2 feature; winch operator missed 380m depth, went to 376m then back down to 380m as requested

Cast 058 sta 80.0 90.0: 20 bottle cast to 515m; hdr mislabeled 83.3 90.0 - fixed in files post-cruise

Cast 059 sta 80.0 100.0: 24 bottle prodo cast to 515m; hdr mislabeled 83.3 100.0 - fixed in files post-cruise; no other issues noted

Cast 060 sta 76.7 100.0: 20 bottle cast to 515m; no issues noted

Cast 061 sta 76.7 90.0: 20 bottle cast to 515m; 40m chl max, 20m mixed layer; Big rools, rough roly conditions, 16kt winds

Cast 062 sta 76.7 80.0: 20 bottle cast to 515m, nothing noted

Cast 063 sta 76.7 70.0: 24 bottle prodo cast to 515m Type I; nothing noted

Cast 064 sta 76.7 60.0: 20 bottle cast to 515m, no issues noted

Cast 065 sta 76.7 55.0: 20 bottle cast to 515m; really green surface water - chl max at surface (7m actually), 9m mixed layer; choppy conditions, late afternoon; 200m O2 feature

Cast 066 sta 76.7 51.0: 16 bottle cast to 230m, 237m bottom; calmer here than last station; 18m chl max, 20m mixed layer; 3/4 orange moon

Cast 067 sta 76.7 49.0: 9 bottle cast to 60m, 67m bottom;

Cast 068 sta 80.0 51.0: 10 bottle cast to 70m, 74m bottom (alt 6m);

Cast 069 sta 80.0 50.5 SCCOOS: 5 bottle 15m cast, 21m bottom

Cast 070 sta 81.8 46.9: Santa Barbara Basin prodo station - 24 bottle cast to 568m; nothing noted

Cast 071 sta 81.7 43.5 SCCOOS: 5 bottle 17m cast, 22m bottom

Cast 072 sta 83.3 39.4 SCCOOS: 5 bottle 15m cast, 20m bottom; altimeter not displayed on MET, turned it back on by re-adding it to the serial string (config changed to _50M ie different)

Cast 073 sta 83.3 40.6: 6 bottle cast to 25m, 32m bottom; 24m chl max, 8m mixed layer; calm, shallow

Cast 074 sta 83.3 40.6: 12 bottle cast to 125m, 131m bottom; 32m chl max, 12m mixed layer; shallow & calm; last station!; CTD plumbing ie sensors rinsed with Triton, soaked 30mins, rinsed with DI

JRW 06 Nov 2018