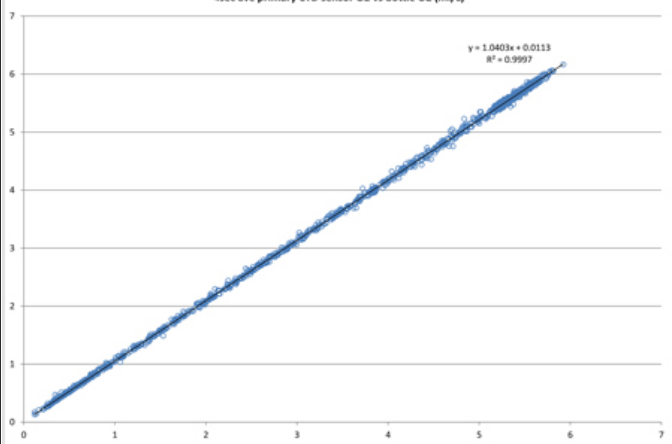
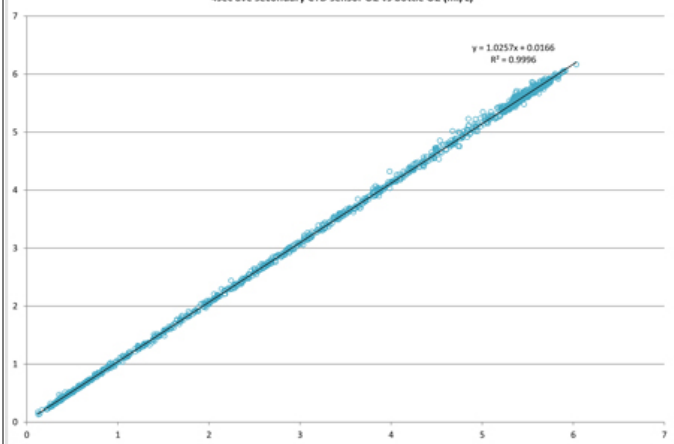
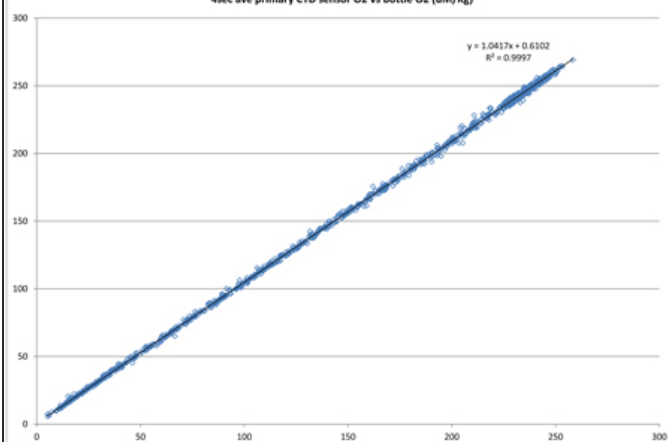


1711SR CTD Notes & Final Data Processing

Parent Category: 2017 Cruises (/cruises/2017-cruises.html)  
Category: CalCOFI 1711SR (/cruises/2017-cruises/calcofi-1711sr.html)  
Last Updated: 14 August 2018

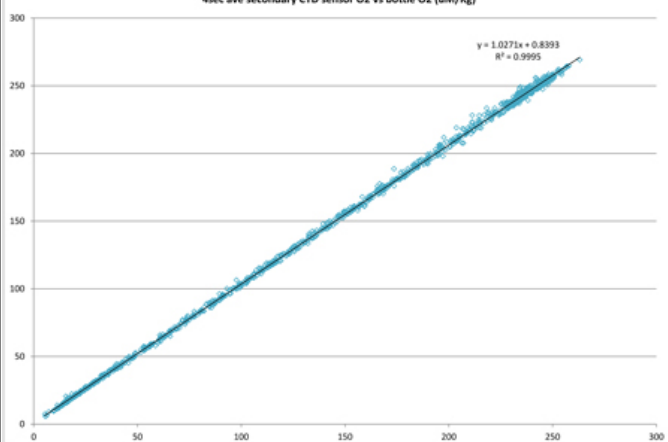
CTD Processing Summary CalCOFI 1711SR CTD Final Data		
Download 1711SR CTD raw cast files zipped ( <a href="http://cappuccino.ucsd.edu/downloads/2017/20-1711SR_CTDCast.zip">http://cappuccino.ucsd.edu/downloads/2017/20-1711SR_CTDCast.zip</a> )	Download 1711SR FinalQC CTD + bottle data ( <a href="http://cappuccino.ucsd.edu/downloads/2017/20-1711SR_CTDFinalQC.zip">http://cappuccino.ucsd.edu/downloads/2017/20-1711SR_CTDFinalQC.zip</a> )	
<b>General CTD Notes</b> - data acquisition notes, logistics, processing - see below. <b>These regressions were generated from FINAL CTD and bottle data</b> , having be point-check and remerged. Final bottle data have gone through CalCOFI's data-quality control which removes or flags questionable or mistrip bottle data and is publication-ready. CTD temperatures and salinities usually do not change significantly from preliminary bottle comparisons but oxygen, estimated chlorophyll-a, estimated nitrate may have changed significantly after point-checking. Questionable or mistrip bottle data are removed from these comparisons but may be visible on the CTD.csv plots. Both primary & secondary sensor profiles vs bottle data have been generated and archived in the downloadable CTD+Bottle data files (/cappuccino.ucsd.edu/downloads/2017/20-1711SR_CTDFinalQC.zip). CTD sensor profiles with bottle data plots are under the "csv-plots\Primary" & "csv-plots\Secondary" subdirectories. Cast-specific notes are listed below, referencing any issues with CTD data.		
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)	-0.0004	-0.0024
Oxygen ml/L (dual Seabird SBE43)	y = 1.0403x+0.0123 R² = 0.9997	y = 1.0257x + 0.0166 R² = 0.9996
Oxygen umol/Kg (dual Seabird SBE43; 2° O2 Calib Off)	y = 1.0417x+0.6102 R² = 0.9997	y = 1.0271x + 0.8393 R² = 0.9995
Single sensors	Linear	Polynomial
Nitrate - ISUS 4sec ave voltage vs Bottle NO3 (Satlantic ISUS v3 SN111)	y = 27.431x-4.502 R² = 0.9897	
Fluorometer - linear & polynomial regressions	y= 9.7172x-0.3856 R² = 0.7541	y = 31.828x2 + 1.0443x - 0.0142 R² = 0.8267
<div><div><p>CalCOFI 1711SR: Primary CTD Oxygen vs Bottle Oxygen</p><p>4sec ave primary CTD sensor O2 vs bottle O2 (ml/L)</p><p>(<a href="http://cappuccino.ucsd.edu/downloads/2017/1711SR/1711SR_Ox1MLvsOxBML.jpg">http://cappuccino.ucsd.edu/downloads/2017/1711SR/1711SR_Ox1MLvsOxBML.jpg</a>)</p></div><div><p>CalCOFI 1711SR: Secondary CTD Oxygen vs Bottle Oxygen</p><p>4sec ave secondary CTD sensor O2 vs bottle O2 (ml/L)</p><p>(<a href="http://cappuccino.ucsd.edu/downloads/2017/1711SR/1711SR_Ox2MLvsOxBML.jpg">http://cappuccino.ucsd.edu/downloads/2017/1711SR/1711SR_Ox2MLvsOxBML.jpg</a>)</p></div></div>		

**CalCOFI 1711SR: Primary CTD Oxygen vs Bottle Oxygen**  
4sec ave primary CTD sensor O2 vs bottle O2 (uM/Kg)



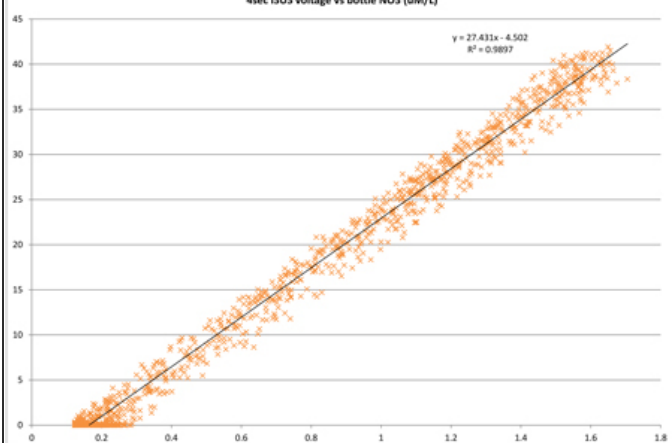
([http://cappuccino.ucsd.edu/downloads/2017/1711SR/1711SR\\_Ox1UMvsOxBUM.jpg](http://cappuccino.ucsd.edu/downloads/2017/1711SR/1711SR_Ox1UMvsOxBUM.jpg))

**CalCOFI 1711SR: Secondary CTD Oxygen vs Bottle Oxygen**  
4sec ave secondary CTD sensor O2 vs bottle O2 (uM/Kg)



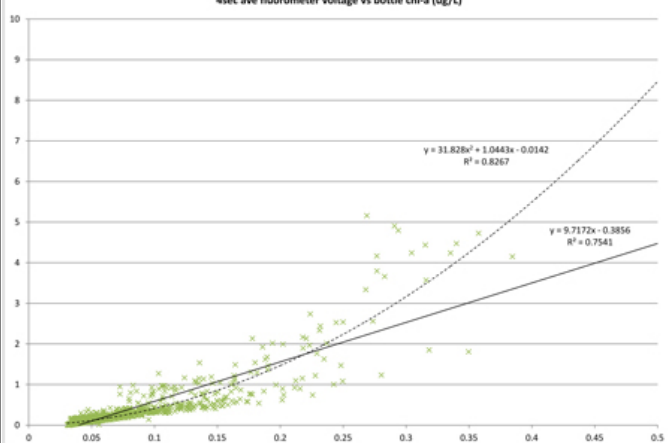
([http://cappuccino.ucsd.edu/downloads/2017/1711SR/1711SR\\_Ox2UMvsOxBUM.jpg](http://cappuccino.ucsd.edu/downloads/2017/1711SR/1711SR_Ox2UMvsOxBUM.jpg))

**CalCOFI 1711SR: ISUS Voltage vs Bottle Nitrate**  
4sec ISUS voltage vs bottle NO3 (uM/L)



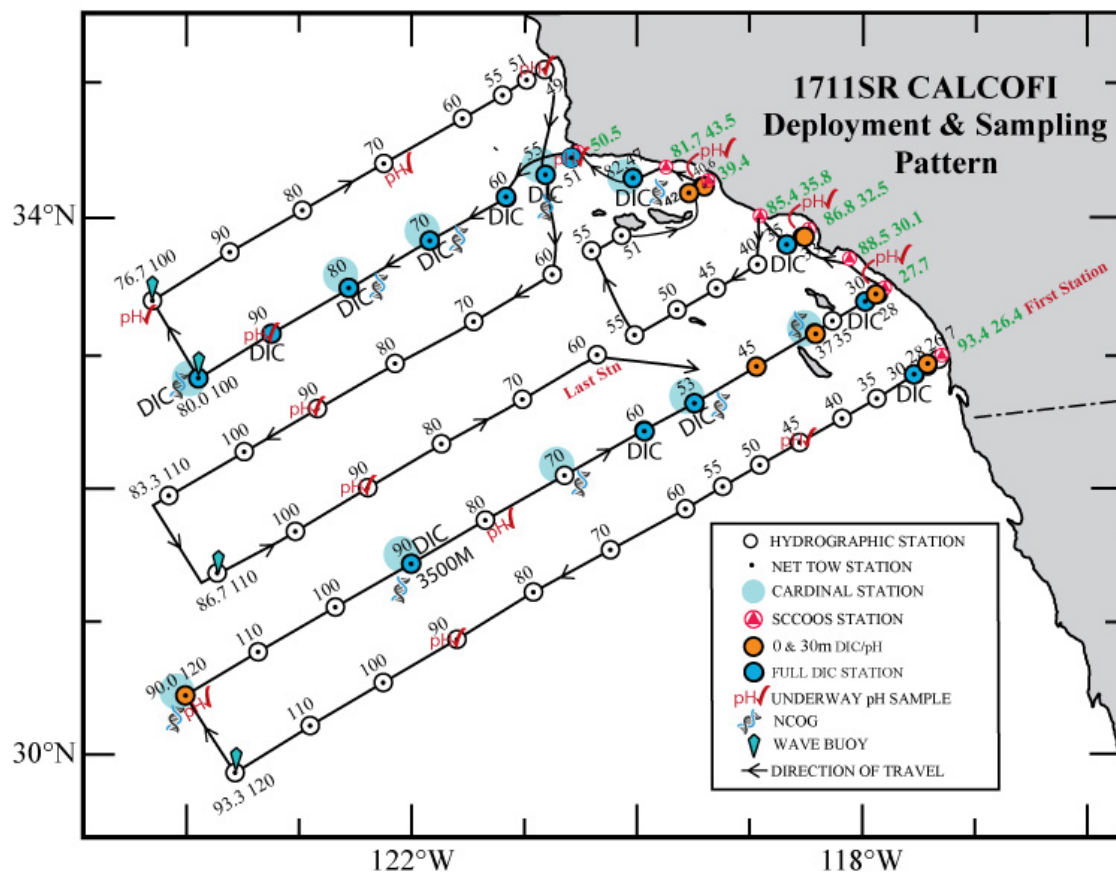
([http://cappuccino.ucsd.edu/downloads/2017/1711SR/1711SR\\_ISUSVvsNO3.jpg](http://cappuccino.ucsd.edu/downloads/2017/1711SR/1711SR_ISUSVvsNO3.jpg))

**CalCOFI 1711SR: Fluorometer Voltage vs Bottle Chlorophyll-a**  
4sec ave fluorometer voltage vs bottle chl-a (ug/L)



([http://cappuccino.ucsd.edu/downloads/2017/1711SR/1711SR\\_FIVvsChla.jpg](http://cappuccino.ucsd.edu/downloads/2017/1711SR/1711SR_FIVvsChla.jpg))

**General notes: These are cast & final CTD & bottle sample processing notes from 1711SR cruise**



([http://calcofi.org/images/maps/1708SR\\_CruiseTrackHR.jpg](http://calcofi.org/images/maps/1708SR_CruiseTrackHR.jpg))

#### CalCOFI 1711SR General Cruise & Cast Notes:

Stations and Station Order: CalCOFI 1711SR on RV Sally Ride occupied 74 scheduled stations: 65 standard (occupied 4 times a year) and 9 SCCOOS 20m nearshore stations. The station order was atypical due to personnel exchanged and weather. The first two lines, 93 & 90, were occupied normally, starting off San Diego. But naval operations near sta 90.45 restricted our ability to occupy this station.

A sta order change - instead of continuing offshore on Line 86.7, RV Sally Ride transited north to Line 83.3 after sta 86.7 55.0 due to a family emergency. Station 83.3 55.0, 83.3 51.0, & 83.3 42.0 were finished before exchanging people at Ventura Harbor on 17 Nov. Coastal stations on Line 83.3 were occupied then we transited north to Santa Barbara SCCOOS sta 81.7 43.5 and Basin sta 81.8 46.9 (82.47). Cardinal Line 80.0 stations were next, to take advantage of the favorable weather. Sta 80.0 55.0 was bypassed initially because a Vandenberg missile launch flight path kept us out of the area. Offshore stations on Line 83.3 & 86.7 plus sta 80.0 55.0 were occupied as we transited south after sta 76.7 49.0. Please refer to the cruise track map figure below for clarification.

CUFES egg survey and bird observations were not performed this cruise.

#### CTD General Notes and Problems:

The SIO-CalCOFI 24-bottle CTD-LARS rosette was installed on RV Sally Ride's termination, LARS deployment system, and CTD PC & non-uplink deck unit. The CTD configuration throughout the cruise was our standard: Seabird 911+ with dual T, C, O<sub>2</sub>, & pumps; Wetlabs C-Star 25cm transmissometer; Biospherical QSP200L PAR; Datasonics/Benthos Altimeter; WET Labs ECO-AFL/FL; Seabird SBE 18 pH; CCE-LTER Satlantic ISUS v3 (SN 111 serviced & upgraded to firmware v3 just prior to CalCOFI 1708SR) & Wetlabs (custom) 12V batteries. Please refer to the xmlcon files or cruise prospectus for additional info & metadata.

The newly serviced & upgraded ISUS nitrate sensor responded normally for all casts after the light pipe reflector was replaced prior to the cruise.

Logistics: CalCOFI 1711SR pre-loaded a stakebed & van with gear Monday 06 Nov, then loaded RV Sally Ride at MarFac Tuesday 07 Nov. More loading and setup continued Wednesday 08 Nov although the ship was inaccessible from 1100-1630 at the fuel pier. Departure was 0800 09 Nov with 19 scientists, technicians and volunteers at. No acoustic calibration of the EK60 was performed. One NCOG volunteer was taken ashore as scheduled on 15 Nov at Dana Point. An additional personnel exchange was done two days later at Ventura Harbor due to a family emergency.

RV Sally Ride's two-conductor termination was used with the Sally Ride's v2 non-uplink deck unit and CTD PC for all casts. Sally Ride's monitor, keyboard & mouse were also used. SIO-CalCOFI's Seabird Remote Depth Readout Box was not used. NMEA GPS feed is attached to the CTD PC via serial port. The Sally Ride CTD PC is set to UTC so event times (CELog) had to be adjusted (CELog reprogrammed to optionally convert UTC) to PST.

The termination work fine throughout the cruise and no sensors were replaced. The primary and secondary conductivity & oxygen sensors performed well throughout the cruise. All four sensor had been serviced and calibrated by Seabird prior to the cruise.

SIO-CalCOFI ran their data network on the ship's network and there were no issues. Internet was available throughout the cruise on individual devices using a quota-based user account on either wireless or hard-wired connections.

The CESL sample log tablet, hard-wired to the data network, worked reliably although slow at times. The Sally Ride bridge watch logged most station activities on an eventlog tablet via wifi. The CTD console PC and supplemental sample-area tablet were also available for logging events.

SIO-CalCOFI's Portal "Harry" was used throughout the cruise and worked fine.

E. Hunt performed nutrient analysis on QuAAtro nutrient analysis this cruise, supervised by D. Faber & Chief Scientist D. Schuller.

RV Sally Ride has Knudsen 3.5 & 12kHz echosounders to find the bottom depth but was not used this cruise. RV Sally Ride's bottom mapping echosounders were used for bottom depth and performed well when configured using our bottom depth reference ranges.

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

Cast 001 : 9 btl PRODO Sta 93.3 26.7, Event#: 7, Bottom depth: 60  
Cast 002 : 3 btl SCCOOS Sta 93.4 26.4, Event#: 19, Bottom depth: 15; Forgot to start data archiving until at depth, only 10m  
Cast 003 : 4 btl SCCOOS Sta 91.7 26.4, Event#: 26, Bottom depth: 21; ISUS not plugged in - **no ISUS data**  
Cast 004 : 20 btl Sta 93.3 28.0, Event#: 34, Bottom depth: 644; 0&30m DIC/pH; @84m on upcast - salp or ? causing sensor to pegg - **upcast primary temperature, salinity, oxygen data from 93 to 84m are bad** due to biofouling. These data were flagged bad "9" and set to "Nan" - use secondary upcast data.  
Cast 005 : 20 btl Sta 93.3 30.0, Event#: 48, Bottom depth: 849; DIC  
Cast 006 : 20 btl Sta 93.3 35.0, Event#: 59, Bottom depth: 617  
Cast 007 : 21 btl Sta 93.3 40.0, Event#: 70, Bottom depth: 1485; bottom depth seems shallow, EM122 not updating, lat/lon are okay  
Cast 008 : 24 btl PRODO Sta 93.3 45.0, Event#: 86, Bottom depth: 1369; check pH #14410  
Cast 009 : 20 btl Sta 93.3 50.0, Event#: 101, Bottom depth: 1468  
Cast 010 : 21 btl Sta 93.3 55.0, Event#: 113, Bottom depth: 1586  
Cast 011 : 20 btl Sta 93.3 60.0, Event#: 130, Bottom depth: 1853  
Cast 012 : 20 btl Sta 93.3 70.0, Event#: 142, Bottom depth: 3936  
Cast 013 : 24 btl PRODO Sta 93.3 80.0, Event#: 157, Bottom depth: 3831  
Cast 014 : 20 btl Sta 93.3 90.0, Event#: 171, Bottom depth: 4093; check pH #14411  
Cast 015 : 20 btl Sta 93.3 100.0, Event#: 180, Bottom depth: 4161  
Cast 016 : 21 btl Sta 93.3 110.0, Event#: 189, Bottom depth: 3878  
Cast 017 : 24 btl PRODO Sta 93.3 120.0, Event#: 205, Bottom depth: 4116; wave buoy deployed #453  
Cast 018 : 22 btl Sta 90.0 120.0, Event#: 219, Bottom depth: 4249; 0&30m DIC/pH+NCOG, check pH #14412  
Cast 019 : 20 btl Sta 90.0 110.0, Event#: 230, Bottom depth: 4012  
Cast 020 : 21 btl Sta 90.0 100.0, Event#: 243, Bottom depth: 4011; started data archiving @10m, brought back to surface then down to 515m  
Cast 021 : 24 btl PRODO Sta 90.0 90.0, Event#: 261, Bottom depth: 3914; DIC+NCOG  
Cast 022 : 20 btl Sta 90.0 80.0, Event#: 276, Bottom depth: 3689; check pH #14425  
Cast 023 : 22 btl Sta 90.0 70.0, Event#: 287, Bottom depth: 3836; NCOG  
Cast 024 : 20 btl Sta 90.0 60.0, Event#: 301, Bottom depth: 881; DIC  
Cast 025 : 24 btl PRODO Sta 90.0 53.0, Event#: 319, Bottom depth: 1318; DIC+NCOG; no GPS on CTD Deployed event  
Sta 90.0 45.0 not occupied due to naval operation restriction  
Cast 026 : 22 btl Sta 90.0 37.0, Event#: 334, Bottom depth: 1180; 0&30m DIC/pH+NCOG, check pH #14412  
Cast 027 : 18 btl Sta 90.0 35.0, Event#: 347, Bottom depth: 315  
Cast 028 : 21 btl Sta 90.0 30.0, Event#: 360, Bottom depth: 611; DIC; wire out indicator is slow to update - about 1min late  
Cast 029 : 5 btl SCCOOS Sta 90.0 27.7, Event#: 373, Bottom depth: 29; wire out indicator still not working, 1min behind  
Cast 030 : 10 btl PRODO Sta 90.0 28.0, Event#: 391, Bottom depth: 62; 0&30m DIC/pH, check pH #14457  
Cast 031 : 3 btl SCCOOS Sta 88.5 30.1, Event#: 396, Bottom depth: 16  
Cast 032 : 4 btl SCCOOS Sta 86.8 32.5, Event#: 403, Bottom depth: 24; named 1710032, corrected  
Cast 033 : 6 btl Sta 86.7 33.0, Event#: 412, Bottom depth: 54; 0&30m DIC/pH, check pH #14460  
Cast 034 : 21 btl Sta 86.7 35.0, Event#: 427, Bottom depth: 649; DIC  
Cast 035 : 6 btl SCCOOS Sta 85.4 35.8, Event#: 440, Bottom depth: 34  
Cast 036 : 24 btl Santa Monica Basin Sta 86.7 40.0, Event#: 446, Bottom depth: 758; missed tripping 120m bottle initially, went back down and got it after 100m, bottle #10 (230m) mistripped; **station mislabeled 86.4** in hdr file - fixed 86.7  
Cast 037 : 21 btl Sta 86.7 45.0, Event#: 459, Bottom depth: 1644; station mislabeled 86.4 in hdr file - fixed 86.7  
Cast 038 : 11 btl PRODO Sta 86.7 50.0, Event#: 475, Bottom depth: 78  
Cast 039 : 21 btl Sta 86.7 55.0, Event#: 491, Bottom depth: 1205  
Cast 040 : 21 btl Sta 83.3 55.0, Event#: 508, Bottom depth: 977  
Cast 041 : 10 btl Sta 83.3 51.0, Event#: 521, Bottom depth: 97  
Cast 042 : 11 btl Sta 83.3 42.0, Event#: 534, Bottom depth: 115; 0&30m DIC/pH, check pH #14471; depth on multipbeam going between 100 & 115m so did 100m cast (altimeter read 15m at terminal depth)  
Cast 043 : 5 btl SCCOOS Sta 83.3 39.4, Event#: 548, Bottom depth: 190  
Cast 044 : 7 btl PRODO Sta 83.3 40.6, Event#: 557, Bottom depth: 32; 0&30m DIC/pH  
Cast 045 : 4 btl Sta 81.7 43.5, Event#: 570, Bottom depth: 180  
Cast 046 : 24 btl Santa Barbara Basin Sta 81.8 46.9, Event#: 579, Bottom depth: 576; DIC+NCOG  
Cast 047 : 6 btl SCCOOS Sta 80.0 50.5, Event#: 594, Bottom depth: 24  
Cast 048 : 9 btl Sta 80.0 51.0, Event#: 601, Bottom depth: 73; DIC, check pH #14485  
Sta 80.55 postponed to Cast 062 due to Vandenberg Rocket Launch flight path  
Cast 049 : 21 btl Sta 80.0 60.0, Event#: 615, Bottom depth: 2190; DIC; bottle #21 tripped but didn't close so seawater samples taken from underway right away; bottle #10 O2 draw temperature is high, probable mistrip  
Cast 050 : 24 btl PRODO Sta 80.0 70.0, Event#: 640, Bottom depth: 3617; DIC+NCOG; pH odd from 50-75m downcast, biofouling?  
Cast 051 : 22 btl Sta 80.0 80.0, Event#: 649, Bottom depth: 3985; DIC+NCOG; bottle #14 & 15 duplicates, bottle #21 & 22 duplicates (in case of mistrips); pH odd from 0-150m downcast, failing?  
Cast 052 : 20 btl Sta 80.0 90.0, Event#: 662, Bottom depth: 4240; DIC, check pH #14514; yo-yo'd on upcast 63 then 68 then 58 target; 3 pH dropouts from 100-160m downcast  
Cast 053 : 24 btl Sta 80.0 100.0, Event#: 673, Bottom depth: 4398; DIC+NCOG, Wave Buoy #631; winch error message on upcast between 87m & 75m caused short stopage; unusual stratified profiles on both profiles, pump on so most likely real; extremely calm seas; pH odd 60-120m downcast  
Cast 054 : 22 btl PRODO Sta 76.7 100.0, Event#: 691, Bottom depth: 4587; check pH #14533, wave buoy #632; two additional surface bottles closed; pH off

180-300m downcast

Cast 055 : 21 btl Sta 76.7 90.0, Event#: 705, Bottom depth: 4346; pH noisy ~175-300m; carousel triggers #14 & #21 replaced pre-cast

Cast 056 : 20 btl Sta 76.7 80.0, Event#: 716, Bottom depth: 4237; bottle #21 test tripped, closed - no samples taken since duplicate surface; pH questionable from 50-270m downcast

Cast 057 : 20 btl Sta 76.7 70.0, Event#: 725, Bottom depth: 4022; check pH #14534; calm night, lots of petrels collected in bird box; pH questionable 40-240m downcast

Cast 058 : 22 btl PRODO Sta 76.7 60.0, Event#: 744, Bottom depth: 900; pH questionable 0-150m downcast, no spare so sensor will be sent for service post-cruise

Cast 059 : 22 btl Sta 76.7 55.0, Event#: 753, Bottom depth: 562; winch auto-position problem so went back to 20m to get water since bottle #18 didn't close; pH bad from 40-150m downcast

Cast 060 : 18 btl Sta 76.7 51.0, Event#: 770, Bottom depth: 237; trigger #18 serviced pre-cast, extra bottle test tripped to test - closed okay; pH bad 50-150m downcast

Cast 061 : 8 btl Sta 76.7 49.0, Event#: 783, Bottom depth: 66; check pH #14535; pH looks okay but shallow station

Cast 062 : 24 btl Sta 80.0 55.0, Event#: 794, Bottom depth: 827; DIC+NCOG+extra 15m DIC; yo-yo'd 18m then 08m then 18m then 13m then 8m; pH questionable 30-105m downcast & 300m spike

Cast 063 : 21 btl Sta 83.3 60.0, Event#: 805, Bottom depth: 1390+; broad chl max w/ very slight bump at 46m; pH problem at ~150m

Cast 064 : 23 btl PRODO Sta 83.3 70.0, Event#: 824, Bottom depth: 3803; pH issues still especially at ~110m downcast then flakey to 300m

Cast 065 : 21 btl Sta 83.3 80.0, Event#: 839, Bottom depth: 4210; pH bad 0-100m downcast

Cast 066 : 21 btl Sta 83.3 90.0, Event#: 848, Bottom depth: 4309; triple chl peaks, main two at 58m & 70m; pH bad 0-120m

Cast 067 : 21 btl Sta 83.3 100.0, Event#: 857, Bottom depth: 4200; calm cool foggy misty night, unusual t & s profiles - stratified 50-150m; Ph bad 0-140m downcast

Cast 068 : 24 btl PRODO Sta 83.3 110.0, Event#: 872, Bottom depth: 4237; pH not too bad - questionable dip 250-300m downcast

Cast 069 : 21 btl Sta 86.7 110.0, Event#: 885, Bottom depth: 4039; Wave Buoy #633 deployed leaving station; pH bad 20-120m & 260-300m downcast

Cast 070 : 21 btl Sta 86.7 100.0, Event#: 895, Bottom depth: 4162; bottle #18 mistripped; pH bad 0-180m & 250-300m downcast

Cast 071 : 21 btl Sta 86.7 90.0, Event#: 904, Bottom depth: 4145; check pH #14546 (taken after sta); trigger #18 replaced pre-cast - closed & looked good; seas choppier, some roll; pH still bad 0-100m downcast

Cast 072 : 24 btl PRODO Sta 86.7 80.0, Event#: 918, Bottom depth: 4087; pH okay 45-515m downcast

Cast 073 : 21 btl Sta 86.7 70.0, Event#: 930, Bottom depth: 3825; pH okay 55-515m downcast

Cast 074 : 21 btl Sta 86.7 60.0, Event#: 945, Bottom depth: 719; pH okay 70-515m downcast

JRW 29 Nov 2017