CalCOFI 1601RL

1601RL CTD Processing Summary (/cruises/2016-cruises/calcofi-1601rl/597-1601rl-ctd-processing-summary.html)

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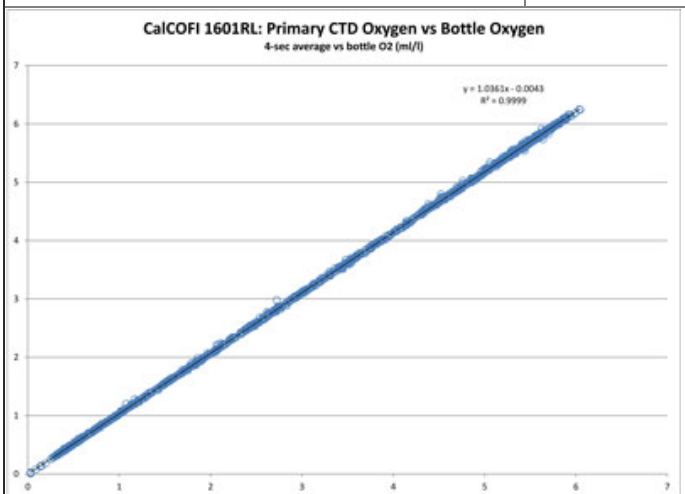
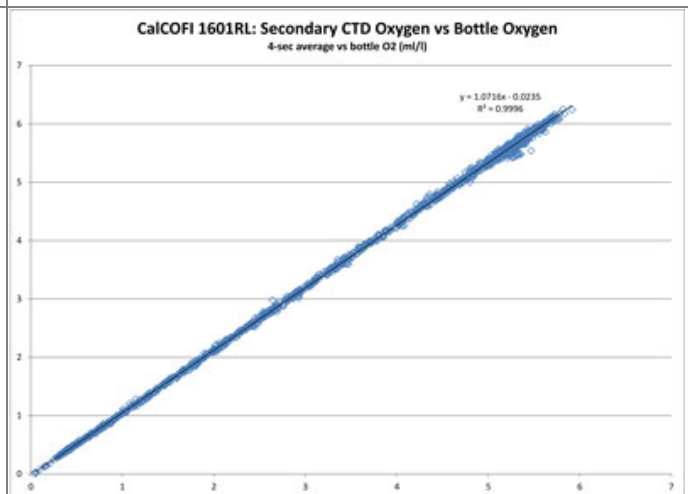
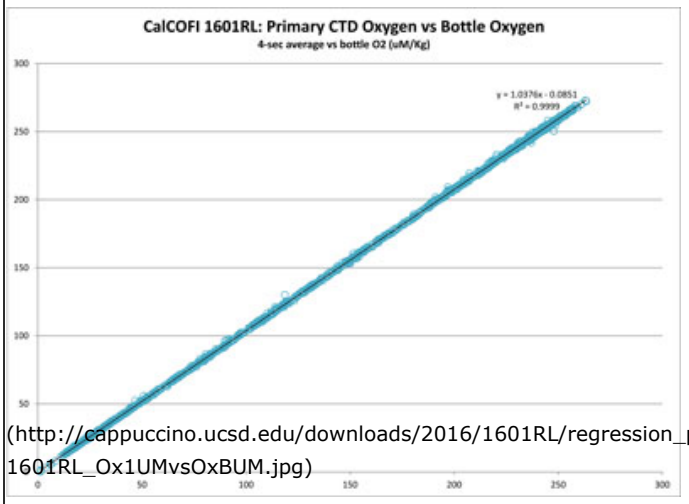
Last Updated: 23 March 2017

CTD Processing Summary CalCOFI 1601RL CTD Final Data - 14Mar2017		
Download 1601RL CTD raw cast files zipped (http://cappuccino.ucsd.edu/downloads/2016/20-1601RL_CTDCast.zip) (rev 22Mar2017)		Download 1601 FinalQC CTD + bottle data (http://cappuccino.ucsd.edu/downloads/2016/20-1601RL_CTDFinalQC.zip) (22Mar2017 revision)
General CTD Notes - data acquisition notes, logistics, processing - see below. **These regressions are generated from final CTD vs bottle data** and have gone through final reprocessing - very little changed. CTD temperatures and salinities do not usually change from preliminary to final data but oxygen, estimated chlorophyll-a, estimated nitrate may change significantly after point-checking. Questionable or mistrip bottle data were removed from these comparisons but may be visible on the CTD.csv plots. Questionable or bad data have been data coded in the CTD.csvs. For this cruise, both primary & secondary sensor profiles vs bottle data were generated and archived in the downloadable CTD+Bottle data files (http://cappuccino.ucsd.edu/downloads/2016/20-1601RL_CTDFinalQC.zip). These plots are under the "csv-plots\primary_plots" & "csv-plots\secondary_plots" subdirectories. Final data include the 10May2016 reprocessed secondary CTD oxygens; 22Mar2017 reprocessed cast 099		
CTD sensor corrections derived by comparing CTD sensor data, 4sec average prior to bottle closure, to bottle samples		
Dual T, S, & O2	Primary Sensor	Secondary Sensor
Salinity offset (bottle - CTD salinity; > 350m only; Seabird SBE4)	-0.0007	0.002354
Oxygen ml/L (dual Seabird SBE43; 2° O2 Calib Off)	y = 1.0361x - 0.0043 R² = 0.9999	y = 1.0716x - 0.0235 R² = 0.9996
Oxygen umol/Kg (dual Seabird SBE43; 2° O2 Calib Off)	y = 1.0376x - 0.0851 R² = 0.9999	y = 1.0731x - 0.9237 R² = 0.9996
Single sensors	Linear	Polynomial
Nitrate - ISUS 4sec ave voltage vs Bottle Nitrate (Satlantic MBARI-ISUS v2)	y = 29.475x - 2.8237 R² = 0.9922	
Fluorometer - linear & polynomial regressions	y = 7.9516x - 0.2637 R² = 0.9160	y = 6.1733x^2+6.3849x-0.1981 R² = 0.9205
 (http://cappuccino.ucsd.edu/downloads/2016/1601RL/regression_plots/20-1601RL_Ox1MLvsOxBML.jpg)		 (http://cappuccino.ucsd.edu/downloads/2016/1601RL/regression_plots/20-1601RL_Ox2MLvsOxBML.jpg)



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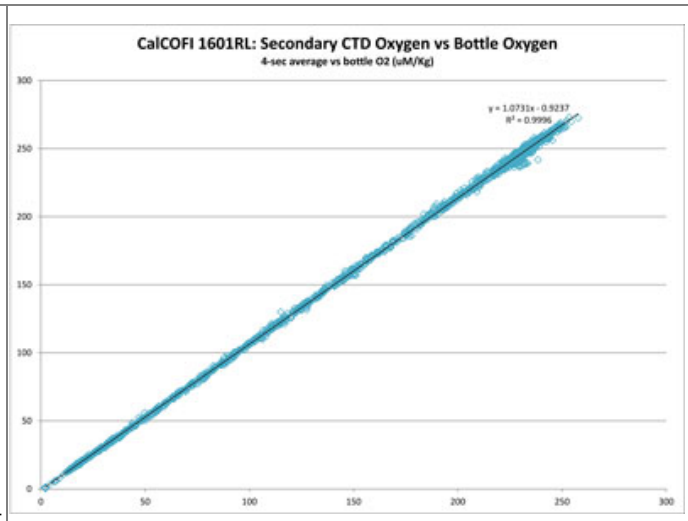

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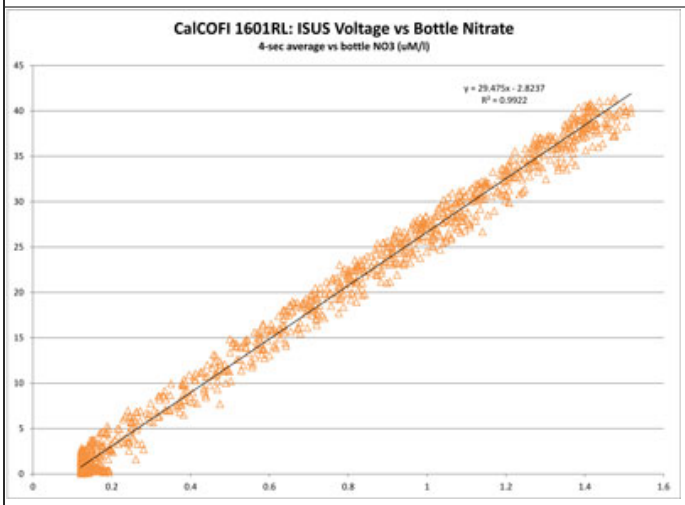

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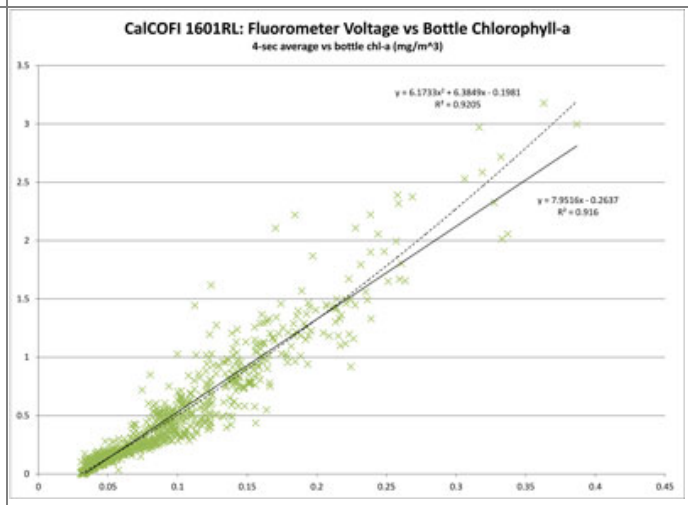
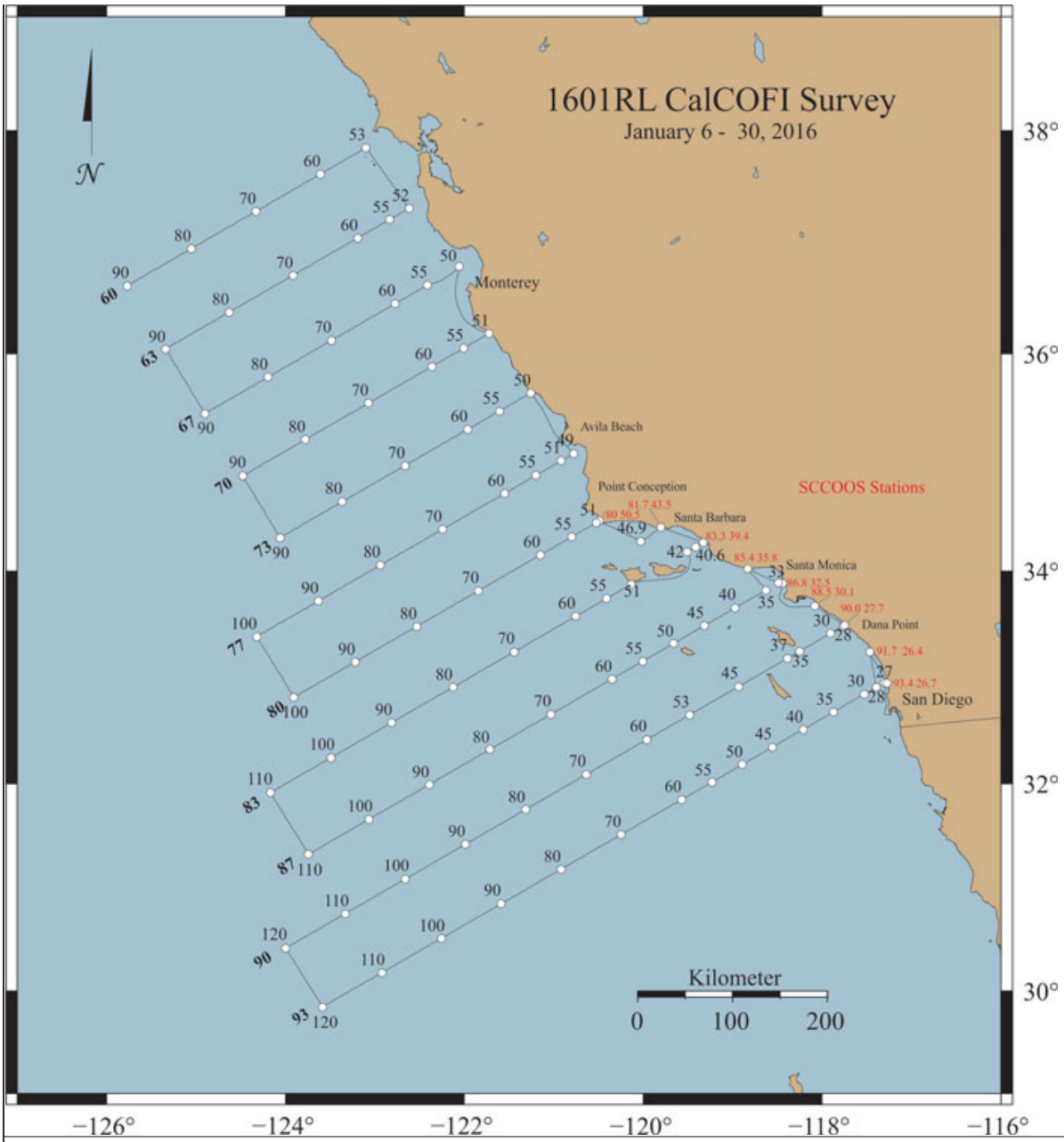


(http://cappuccino.ucsd.edu/downloads/2016/1601RL/regression_plots/20-1601RL_FlVvsChla.jpg)

General notes: These are cast & FINAL CTD Processing Notes from 1601RL cruise



CalCOFI 1601RL General Cruise & Cast Notes:

Stations and Station Order: this cruise occupied 104 stations: 95 standard & 9 SCCOOS. The station order was standard south-north, west-east-west. After the standard southern 74 station pattern was completed at 76.7 49.0, the rosette seawater sampling was reduced from 24 to 12 bottles. After sta 70.0 51.0, most of the SIO scientific personnel disembarked in Monterey.

The Pt Dume SCCOOS station at 85.4 35.8 was occupied last, during the transit home as sta 104.

CTD General Notes and Problems:

The CTD configuration throughout the cruise was standard: Seabird 911+ (new pressure case since 1501) with dual T, C, O2, & pumps; Wetlabs C-Star 25cm transmissometer; Biospherical QSP200L PAR; Datasonics/Benthos Altimeter; WET Labs ECO-AFL/FL; Seabird SBE 18 pH; Satlantic ISUS v2, new lamp AND spectrophotometer (since 1511OC) & Wetlabs (custom) batteries. Please refer to the xmlcon files or cruise prospectus for additional info & metadata. There were no sensor failures this cruise but the primary oxygen sensor and secondary sensor were noticeably different (~0.3 ml/l) - both responded properly so refer to the bottle-corrected data for best data. Jan 6th, day of departure, was extremely stormy so the ship stayed in San Diego Bay till early Jan 7th. Due to this loss of shiptime the 3500m deep casts on sta 90.90 was not performed. The transmissometer did not have the dropout problems of the previous cruise usually seen after the 3500m deep cast. The ISUS was mounted vertically, with optics pointing down. pH sensor was lab-calbrated before the cruise and appears to have worked fine. Comparison to check DIC-pH samples are pending.

Logistics: CalCOFI 1601RL was CalCOFI's first cruise on NOAA R/V Reuben Lasker. We did a Dec pre-holiday load & setup since the departure was scheduled so soon after the post-holiday return Jan 4th. Two days of loading and setup were performed at 10th Avenue Marine Terminal on Dec 21 & 22. Final setup and securing were performed Jan 4-5. We sailed Jan 6th, performing an acoustic calibration in San Diego Bay anchorage off Shelter Island. High winds and stormy weather Jan 6th delayed our departure out of San Diego Bay until daybreak Jan 7th.

RV Reuben Lasker's two-conductor termination was used on SIO-CalCOFI's 911+ CTD, deck unit, (2nd) CTD computer, and depth-readout box along with SIO-CalCOFI's 24-bottle rosette. There were no issues with the conductive wire except a tendency for the forward wire guide to flip upward if the wire was slack. It was important to keep the CTD wire taunt when beginning to lift the rosette off the deck.
SIO-CalCOFI ran their own data network independent of the ship's network although some Lasker ethernet ports (constant temperature room & chl van) were connected to the SIO-CalCOFI router. Some scientific computers were connected to both the data network and ship's network for internet access. This networking scheme will be implemented on RVs Shimada and Sally Ride. Both the CESL sample log tablet and CELog event tablet performed more reliably when hard-wired to the data network. Wifi connections on both tablets would lose drive mapping to the data server.

Note: SIO-CalCOFI CTD PC & deck unit were interfaced with R/V Reuben Lasker CTD monitor, keyboard, mouse, sea cable, & GPS. KVM connections from the Lasker's rack-mounted CPU & deck unit were moved to our systems. Our remote-depth readout connected to the deck unit was installed into the winch shack by the ET. The remote depth readout was off by 2m and may need to be reprogrammed. Other than the primary Win7 blade PC found "DOA" when we returned from Christmas break, there were no problems with the CTD/Deck Unit/Sea Cable configuration. GPS was connected to a serial to USB FTDI dongle on the lower front usb port.

RV Reuben Lasker does not have a Knudsen 3 or 12kHz echosounder to find the bottom depth. The EK60 system or bridge charts provided bottom depths.

10 May 2016 - the secondary CTD oxygen sensor was used on CalCOFI 1604SH so the xmlcon coefficients were carried over from 1601RL. It was discovered the wrong sensor serial number was set on 1601RL ie wrong coefficients. So all the casts were reprocessed using the correct secondary CTD oxygen coefficients. All plots and data files have been updated. All other sensor data are unaffected. These data should be close to final although once final bottle are available, the bottle-CTD merge will be redone.

Cast Notes:

Cast 901 - San Diego Bay anchorage acoustic calibration sound velocity CTD cast to 8m. No water samples, just a sensor profile.

Cast 001 - 002: computer date & time were wrong; the primary CTD PC was replaced by the backup system which had the wrong date & time. Time was fixed before cast 003.

Cast 005 - wire angle going up & down

Cast 006 - bottle #5 O2 draw temperature was warm = mistrip

Cast 007 - RV Lasker survey tech Jacyln M. performed the cast, trained by JRW

Cast 015 - bottle #18 mistrip, tripped but no closure; carousel crown swapped while trigger was replaced

Cast 016 - backup carousel crown problematic - bottles #16 & 17 did not close so the CTD was sent back down to 60m, 50m, 40m (bottles #21, 22, 33). Original crown was installed post-cast, post-rebuild.

Cast 017 - bottle #21 mistrip sp CTD sent back to 13m, tripped bottle #24

Cast 018 - mistrips on bottles #5, 21, 13; CTD sent back to 84m & bottle #24 was closed, collecting seawater missed by #13. Carousel serviced again post-cast

Cast 019 - all bottles tripped & O2 draw temperatures look good; some "noise" in the surface data was noted at start

Cast 020 - early prodo cast, nets first

Cast 023 - no mistrips detected

Cast 027 - bottle #21 was open at surface so CTD was sent back down to 10m & #23 tripped for NCOG; #5 was opened, no samples; #6 O2 draw temperature was warm = mistrip, closed at shallower depth

Cast 028 - #5 mistripped again, no samples; #5 & #6 triggers were cleaned last cast but there was no time to replace triggers because of NCOG filttrations

Cast 029-034 - no mistrips detected

Cast 035 - AB Allen was late getting out on deck - no one told him we were arriving on station. CTD wire was out of the sheave on 1st lift off deck - odd scraping noise, CTD was lowered, wire inspected for damage - looked fine, CTD slack taken up slowly and 2nd lift off deck was fine. JRW told the winch operator to stop at 480m but it kept going so the CTD probably landed on the bottom, according to the altimeter. CTD was brought up 5m to 480m and bottle #1 closed. This station is usually a full cast so station position may have been off. Data look fine and there were no visible signs of any damage.

Cast 037 - CTD was sent back down to 46m from 40m after 50m (prodo depths), bottle trip initially missed by operator.

Cast 039 - bottle #9 was a duplicate trip; bottle #4 O2 draw temp was warm, mistripped

Cast 041 - winch readout failure, cast stopped at 320m, CTD returned to surface, cast restarted. Aborted cast data file labeled 1601041A; full cast 1601041 includes all bottle closures & mrk file. Cause : emergency stop button had been pressed on the bridge accidentally (apparently too easy to do when leaning over the console), twisting the button to reset took awhile to figure out.

Cast 044 - ISUS battery not plugged in; no ISUS-NO3 data; battery "C" was installed post-cast.

Cast 045 - bottle #21 was tripped and closed at surface but was empty (a real head-scratcher; drained or tripped out of water); bucket sample taken for surface samples

Cast 049 - cold,foggy night; big rolls +-5m

Cast 053 - bottle #11 & 12 were extra bottle trips

Cast 061 & 065 - big, slow ship rolls

Cast 066 - big slow rolls; CTD pressure offset adjusted precast from -1.55 to -1.70 so -0.15

Cast 075 - switched to table-driven 12-bottle rosette casts; bottom depth was only 35m though

Cast 076 - wire angle at start of cast ~15deg outboard

Cast 082 - bottle #10 didn't close (trigger 19)

Cast 084 - big roll cause CTD to come out, pumps went off so restarted and told winch operator to keep it covered

Cast 085 - rough night, big rolls

Cast 087 - leg 2 begins as most SIO personnel were dropped off in Monterey; 50m bottle #7 did not close so CTD was sent back to 50m and bottle #11 closed

Cast 090 - file misnamed 160190 then renamed post-cast to 1601090; filename embedded in 1601090.hex file is incorrect 160190.hex

Cast 094 - bottle #7 didn't close

Cast 095 - bottle #7 didn't close again so table-driven was changed to trigger 12 instead of 13; lanyard for #7 on trigger 12 from now on.

Cast 098 - 099 - shallow casts

Cast 099 - Line was mislabeled 63.3 (63.3 50.0), correct Line.Sta is 60.0 50.0 - corrected in all data including 1601099.hex.

Cast 104 - final cast

File notes:

14Mar2017 update to 20-1601RL_CTDFinalQC.zip file:

Seasoft-generated asc-hdr files are available renamed to 20-1601RL_LLLLSSSS_###d or u.asc & .hdr. Voltages in the .asc files were also re-labled. Since this makes it difficult to reprocess & merge with bottle data if necessary, the original .asc, .hdr, & .btl have also been archived. Their voltage header labels have not been changed so refer to the corresponding .hdr file for sensor configuration. This cruise did not have any sensors rearranged.

Mislabels found and corrected:

Cast 075 was initially mislabled as sta 76.7 50.0 but hex editor corrected to 73.3 50.0

Cast 099 was mislabeled as sta 63.3 50.0 but corrected in post-processing to 60.0 50.0

Cast 090 filenames were mislabled 160190.hex, .hdr, .mrk... and renamed 1601090.hex... post-cast

09Jan2016