

1504NH CTD Processing Summary

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Last Updated: 18 August 2016

CTD Processing Summary CalCOFI 1504NH CTD **Final** Data

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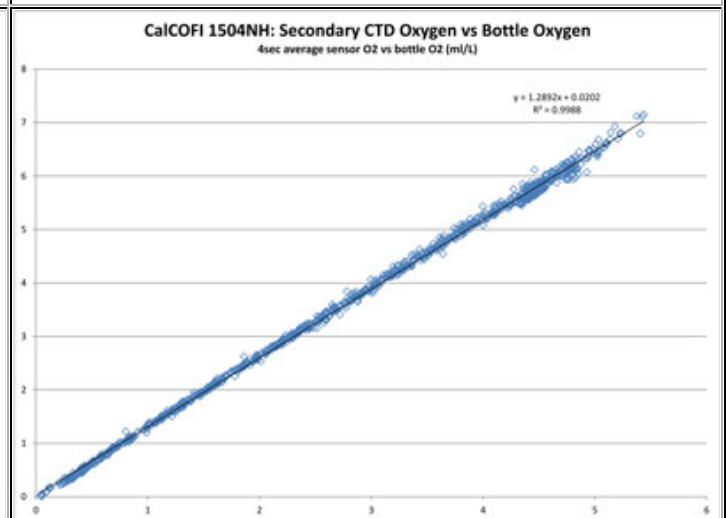
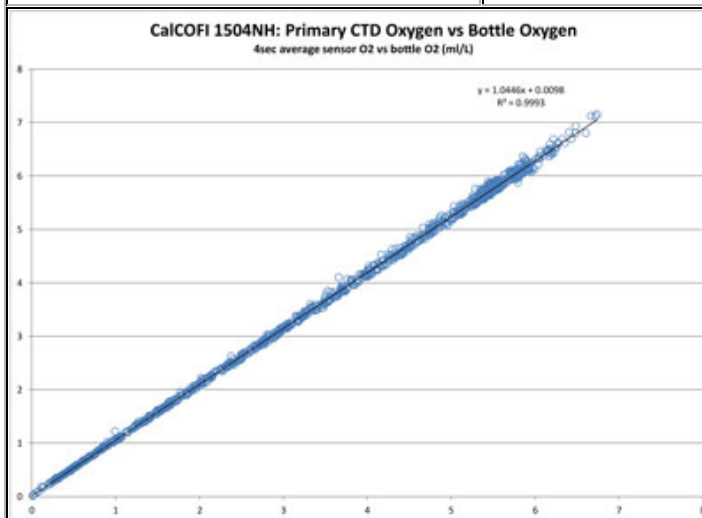
Download [1504NH Preliminary CTD + bottle data](#) Note: secondary oxygen sensor requires bottle-correction to be useful; calibration off.

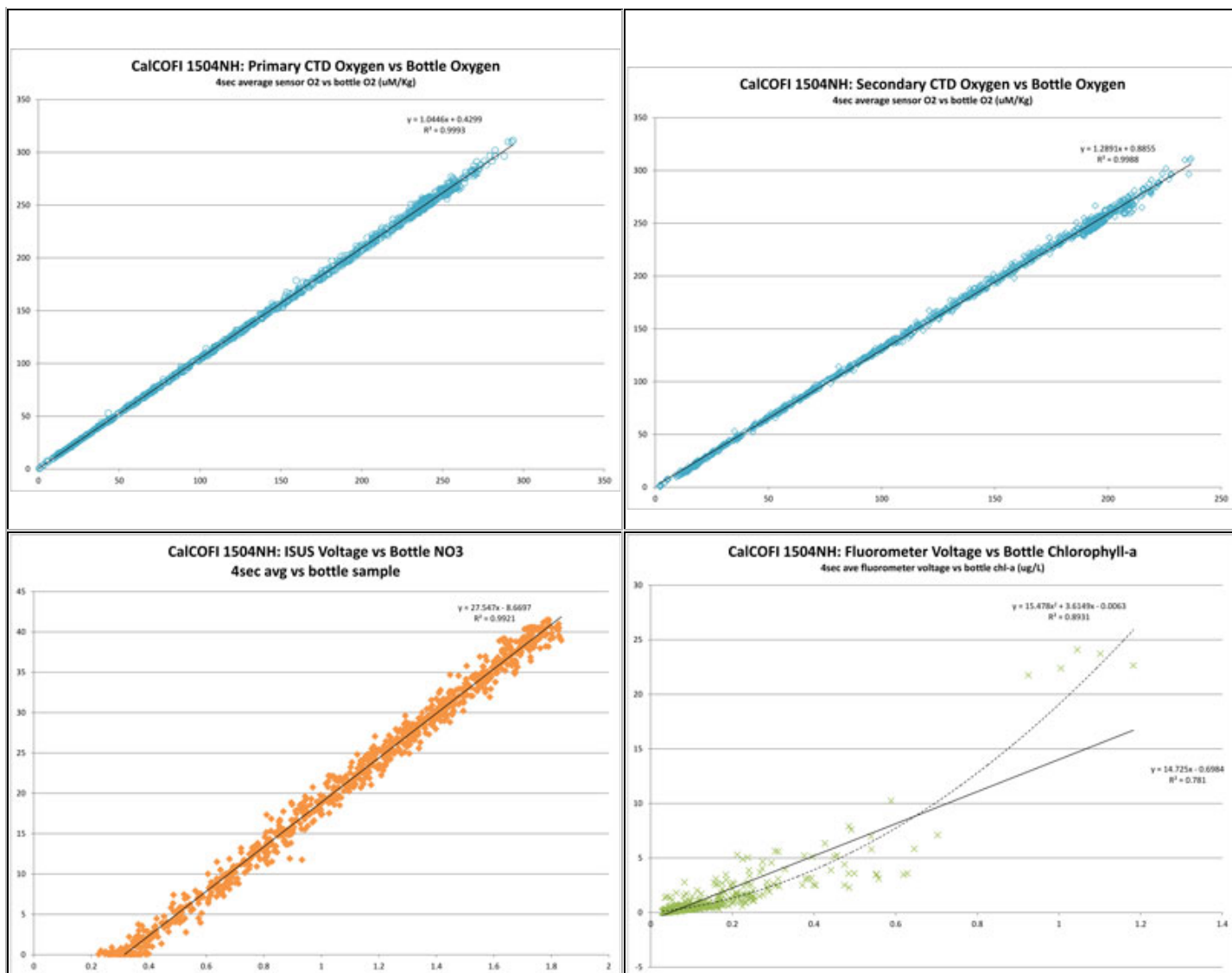
General CTD Notes - data acquisition notes, logistics, processing - see below.

Please note that these regressions are generated from CTD vs final published bottle data and were reprocessed using final bottle data. CTD temperatures and salinities do not change but oxygen, estimated chlorophyll-a, estimated nitrate may change significantly after point-checking.

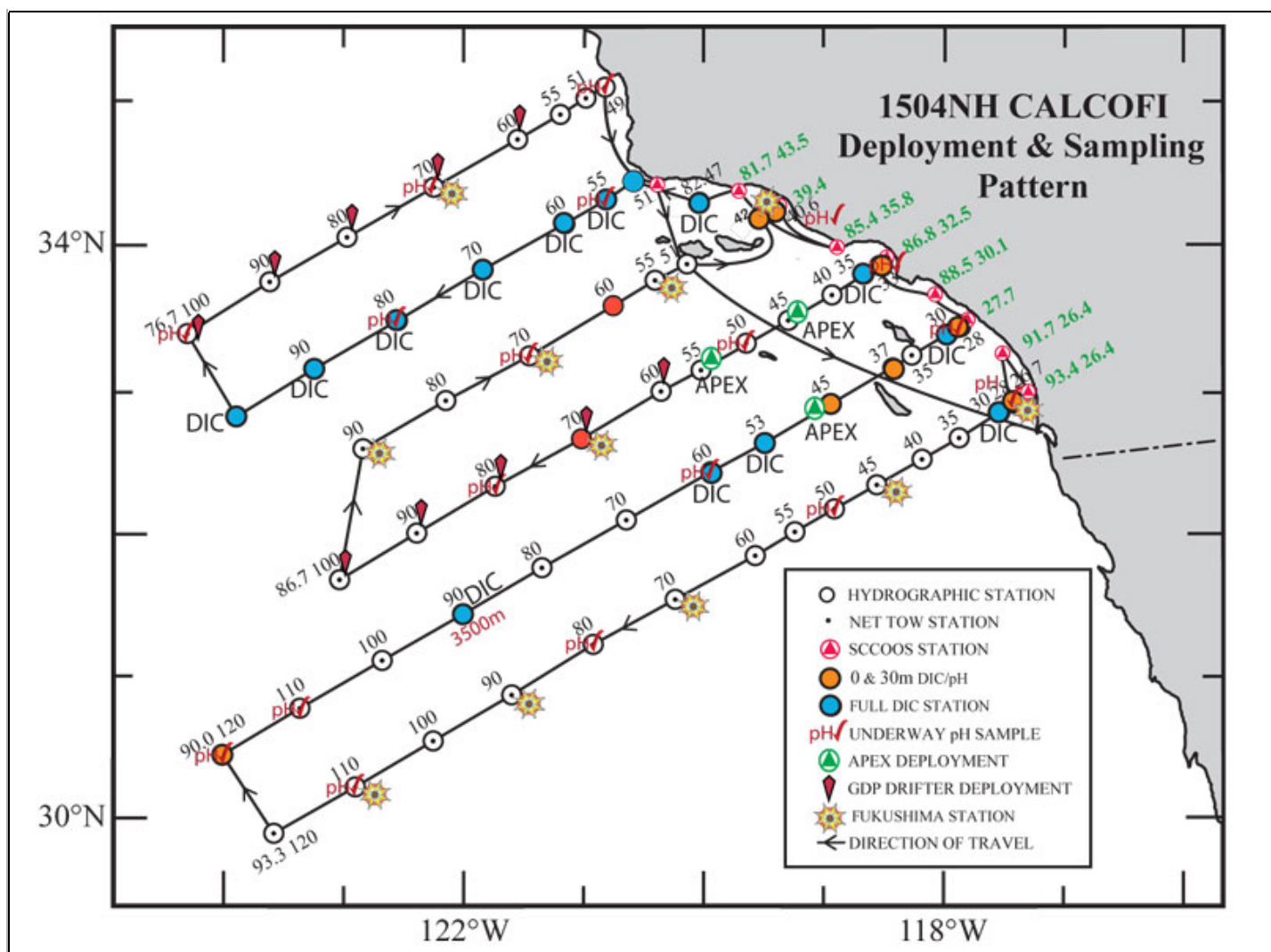
CTD sensor corrections derived by comparing CTD sensor data, 4sec average prior to bottle closure, to bottle samples

Dual T, S, & O2	Primary Sensor	Secondary Sensor	
Salinity offset (bottle - CTD salinity; > 350m only; Seabird SBE4)	0.00065	-0.00181	
Oxygen ml/L (dual Seabird SBE43; 2° O2 Calib Off)	$y = 1.0446x + 0.0098$ $R^2 = 0.9993$	$y = 1.2892x + 0.0202$ $R^2 = 0.9988$	
Oxygen umol/Kg (dual Seabird SBE43; 2° O2 Calib Off)	$y = 1.0446x + 0.4299$ $R^2 = 0.9993$	$y = 1.2891x + 0.8855$ $R^2 = 0.9988$	
Single sensors	Linear	Polynomial	
Nitrate - ISUS 4sec ave voltage vs Bottle Nitrate (Satlantic MBARI-ISUS v2)	$y = 27.545x - 8.6641$ $R^2 = 0.9927$		
Fluorometer - linear & polynomial regressions	$y = 14.725x - 0.6984$ $R^2 = 0.781$	$y = 15.478x^2 + 3.6149x - 0.0063$ $R^2 = 0.8931$	





General notes: These are cast & final CTD Processing Notes from 1504NH cruise



CalCOFI 1504NH General Cast Notes: This cruise occupied 70 stations: 61 standard, & 9 SCCOOS. The stations were occupied in traditional sequence but offshore stations 86.7 110, 83.3 110, 83.3 100 were not occupied in order to finish the northern coastal stations. Other stations skipped because of bad weather: 86.7 70.0 & 83.3 60.0. Net tows were skipped initially on 83.3 51.0 & 80.0 51.0 but picked up on the transit south. All coastal SCCOOS stations were occupied. No deep CTD casts were performed - the 3500m cast on 90.90 was cancelled due to lack of shiptime. A standard 515m cast was performed on 90.0 90.0.

CalCOFI 1504NH was on SIO RV New Horizon, possibly the last cruise on New Horizon since the ship is scheduled for retirement in mid-2015. ~150m of rusty wire was removed prior to termination and with new slip-rings installed by STS, all conductors were working. There were no issues with the conductive wire this cruise, only with the winch operations. The CTD-rosette was laid on its side on station 90.0 60.0 because an inexperienced winch operator paid out additional wire instead of taking up wire when the CTD-rosette landed on the gunwale.

The CTD & deck unit returned from servicing at Seabird May 30th, the first day of loading - the 'fish' pressure case was replaced. Unfortunately, a backup conductivity sensor & oxygen sensor required additional repair and did not come back in time for our departure. The secondary oxygen sensor (SN#1075) which had just return, freshly serviced and calibrated, did not behave properly. Reading ~1ml/l too low at surface, compared to the primary sensor. It was responding so was left on but data from the secondary oxygen sensor requires bottle-correction if it is to be used. The primary sensor worked fine on all casts and is considered the best CTD oxygen data. Please refer to specific cast notes below for other comments.

The CTD configuration throughout the cruise was standard: Seabird 911+ (new pressure case) with dual T, C, O₂, & pumps;

Wetlabs C-Star 25cm transmissometer; Biospherical QSP200L PAR; Datasonics/Benthos Altimeter; WET Labs ECO-AFL/FL; Seabird pH; Satlantic ISUS v2 & battery. Please refer to the xmlcon files or cruise prospectus for additional info. Other than the secondary oxygen sensor reading low at surface, the only other issue was with the transmissometer. The C-Star transmissometer worked fine for the first 20 casts but started having low voltage issues at depths below 400m on the downcast. Upcast transmissometer data appears to be fine but further scrutiny is required. The Satlantic ISUS nitrate sensor lamp hours have reached 700 hours so after CalCOFI 1507OC, it will be sent back to Satlantic for lamp replacement. The ISUS was mounted vertically, with optics pointing down.

Cast Notes:

Cast 01 - 03: no issues reported on Console Ops.

Cast 04 - 93.3 28.0: all sensors look good except secondary oxygen which disagrees with primary by ~1 ml/l. ISUS profile looks noisier than usual but responsive. Basin-like low oxygen on this station in deeper samples, O2 bottle sample precipitate very white.

Cast 05 - calm night

Cast 06 - extra marker at 40m, edited out

Cast 10 - Happy Easter! Weather rough; chl max ~10m deeper on upcast. Post-cast readjusted 2° oxygen sensor in hopes of improving flow - didn't help, sensor calibration faulty.

Cast 11 - 95m fluorometer spike on downcast - considered "bug-on-the-windshield"

Cast 12 - extra marker at 200m, edited out post-cast/pre-`<Ctrl><Alt>B` (backup)

Cast 13 - extra marker at 170m, edited out post-cast/pre-`<Ctrl><Alt>B` (backup); bottle 24 tripped as extra bottle

Cast 14 - 4 10L bottles tripped at 10m for Fukushima seawater collection

Cast 15 - 1000's of small-medium pyrosomes seen prior to CTD launch - no apparent bio-fouling seen post-cast

Cast 17 - bottles #16 & #23 mistripped, no water

Cast 18 - some big rolls

Cast 20 - on upcast, CTD was lowered back to 75m after arrival and tripping of 40m bottle

Cast 22 - slow, big rollers; nice chl peak at 74m; deep noise on transmissometer on downcast - it had been behaving till now

Cast 24 - 90.0 60.0 wire angle/ship speed when CTD was at ~30m on upcast ***CTD landed badly, on side, bent/broke the upper ring, repaired & straightened as best possible post-cast. Continued to use primary rosette frame but upper ring was damaged, off-round.

Cast 26 - up & downcast different @ <400m

Cast 32 - ISUS not plugged into battery - no ISUS (v6) data; new 12v/5ah battery installed post-cast - trying out commercial battery pack instead of home-made

Cast 33 - new ISUS battery working fine

Cast 36 - bottle #23 did not close - mistrip no water from 10m

Cast 37 - transmissometer issues at depth on downcast

Cast 39 - rough weather, 20+kt winds; transmissometer flakey at depth on downcast between 450-515; fine on upcast (?)

Cast 40 - CTD prepped on station due to rough weather. winds 24-28kts; transmissometer outage fro 420-515m on downcast, upcast okay

Cast 42 - rough, big rolls; transmissometer outage @ 420-510m on downcast

Cast 43 - bottle 12 opened, mistrip

Cast 46 - abrupt thermocline at ~70m, spiked a bit; short delay at surface since aft control event log tablet had to be restarted

Cast 48 - 33kt winds at retrieval ie rough weather, no nets (nets were picked up on the way home)

Cast 50 - Fukushima seawater collected at 10m, 4 10L bottles closed

Cast 51 - noisy fluorometer profile due to high chl-a

Cast 54 - #16 mistrip, no closure, #23 mistrip no closure - closed using pole manually before retrieval

Cast 56 - extra 15m bottle for DIC tripped, all samples taken

Cast 59 - relatively calm; no nav file; #22 mistrip, no water from surface so bucket sample was taken

Cast 61 - #23 mistripped so bottle 24 was 10m and #23 was tripped manually with pole for surface

Cast 63 - bottle #16 mistrip, didn't close, next to bent stancion; cleaned post-cast

Cast 65 - bottles #15 & 16 tripped in reverse order; CTD lowered from 48 back to 56m

Cast 65A - 76.7 70.0 Fukushima water extra cast - 5@600m, 5@300m, 5@200m, 6@100m

Cast 66 - bottle #16 didn't close again, may be interference of bent stancion, no 40m water; fluorometer noisy > 180m; transmissometer issues @420-485m downcast

Cast 67 - position 16 was cleaned pre-cast but and extra bottle was tripped for insurance; O2 draw temperature looks good so bottle 16 did close at depth, salt taken from 17 to verify; trans bad 420-493 downcast

Cast 68 - salt & oxygen different on upcast between 125-60m

Cast 69 - 76.7 49.0 very high chlorophyll

File notes:

Seasoft-generated asc-hdr files were not renamed to YY-YYLLLLSSSS_####d or u.asc & .hdr. Voltages were not relabled. This practice makes it difficult to reprocess & merge with bottle data if necessary.

Missing nav files:

Cast 52, 57, & 59 no nav files created

Mislabeled found and corrected:

None apparent (a first!)

07May2015