UNIVERSITY OF CALIFORNIA, SAN DIEGO SCRIPPS INSTITUTION OF OCEANOGRAPHY

data report

CalCOFI Cruise 1511
25 October – 13 November 2015

CC Reference 16 - 04
25 October 2016

UNIVERSITY OF CALIFORNIA, SAN DIEGO

SCRIPPS INSTITUTION OF OCEANOGRAPHY

LA JOLLA, CALIFORNIA 92093-0227

PHYSICAL, CHEMICAL AND BIOLOGICAL DATA

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CONTENTS

INTRODUCTION

The data presented in this report were collected during cruise 1511* of the California Cooperative Oceanic Fisheries Investigations (CalCOFI) program aboard the RV Oceanus. The CalCOFI program was organized in the late 1940's to study the causes of variations in population size of fishes of importance to the State of California. It is carried out by NOAA's National Marine Fisheries Service Southwest Fisheries Science Center, the California Department of Fish and Wildlife, and the Integrative Oceanography Division (IOD) at Scripps Institution of Oceanography (SIO). IOD contributes to this program by investigations of the physical, chemical and biological structure of the California Current. Data from the cruise were collected and processed by personnel of the Integrative Oceanography Division and the Southwest Fisheries Science Center. CalCOFI data presented in this report and collected on previous cruises can be accessed at http://www.calcofi.org.

STANDARD PROCEDURES

CTD/Rosette Cast Data

A Sea-Bird Electronics, Inc., Conductivity-Temperature-Depth (CTD) instrument (Seabird 911+, Serial number 3161-936) with a rosette was deployed at each station on this cruise. The rosette was equipped with 24 ten-liter plastic (PVC) bottles equipped with epoxy-coated springs and Viton O-rings. Each CTD/rosette cast usually sampled 20 depths to a maximum sampling depth of 515 meters, bottom depth permitting. Occasional stations have multiple bottles tripped at the same depth to provide more water for ancillary programs. Additional bottle depths also appear in combined hydrographic and primary productivity casts. The sample spacing was designed to sample depth intervals as close as 10 meters around the sharp upper thermocline features such as the chlorophyll, oxygen, nitrite maxima and the shallow salinity minimum. Salinity, oxygen and nutrients were determined at sea for all depths sampled. Chlorophyll-*a* and phaeopigments were determined at sea on samples from the top 200 meters, bottom depth permitting.

Pressures and temperatures assigned to the water sample data were derived from the CTD signals recorded just prior to the bottle trip. Pressures were converted to depths by the Saunders (1981) pressure-to-depth conversion technique. CTD temperatures reported with the bottle data have been rounded to the nearest hundredth of a degree Celsius.

Salinity samples were collected from all rosette bottles and analyzed at sea using a Guildline model 8410 Portasal salinometer. Salinity samples were drawn into 200 ml Kimax high-alumina borosilicate bottles that were rinsed three times with sample prior to filling. The results were compared with the CTD salinity to verify that the rosette bottle did not mis-trip or leak. The salinometer was standardized before and after each group of samples with standardized seawater. Periodic checks on the conductivity of the standardized seawater were made by comparison with IAPSO Standard Seawater batch P155. Salinity values were calculated using the algorithms for the Practical Salinity Scale, 1978 (UNESCO, 1981a) and are reported to three decimal places, provided that accepted standards were met.

Dissolved oxygen analyses were performed with an Ocean Data Facility of Scripps Institution of Oceanography designed automated oxygen titrator using photometric end-point detection based on the absorption of 365nm wavelength ultra-violet light. A computer using PC software controlled the titration of the samples and the data logging. The method used a modified Winkler titration following the technique of Carpenter (1965) with modifications by Culberson (1991), but with higher concentrations of thiosulfate solution (50 g/l). Standard KIO3 solutions prepared ashore were run at the beginning of each run. Reagent and sea water blanks were determined to account for presence of oxidizing or reducing materials.

* The first two digits represent the year and the last digits the month of the cruise.

Nutrient samples were analyzed at sea using a QuAAtro continuous flow analyzer (SEAL Analytical). Dissolved silicate, nitrate, and nitrite were analyzed using a modification of the method described by Armstrong (1967) and Gordon et al. (1992). Phosphate was measured with a modification of the Murphy and Riley (1962) protocol and ammonium is analyzed using a modified fluorometric method described by Kerouel and Aminot (1997). Samples were collected in 45ml high-density polypropylene screw top tubes which were acid washed and rinsed with sample three times prior to filling. Standardizations and cadmium-reduction coil efficiency determinations were performed at the beginning of every run. Drift and baseline corrections were performed in each run using a high standard and blank respectively inserted before and after sample sets. A sample of reference material for nutrients in seawater (RMNS), produced by KANSO technos (www.kanso.co.jp) was included in every run and those data were monitored throughout the cruise and available to adjust values for nitrate, nitrite, phosphate, and silicate if appropriate. A separate reference sample was used to monitor ammonium stability throughout the cruise. Samples not analyzed immediately after collection were refrigerated and run the following day.

Samples for chlorophyll-*a* and phaeopigments were collected in calibrated 138 ml polyethylene bottles and filtered onto Whatman GF/F filters. The pigments were extracted in cold 90% acetone (Venrick and Hayward, 1984) for a minimum of 24 hours. Chlorophyll-*a* and phaeopigment concentrations were determined from fluorescence readings before and after acidification with a Turner Designs Fluorometer Model 10-AU-005-CE (Yentsch and Menzel, 1963; Holm-Hansen *et al*., 1965).

Evaluation of the water sample data involved comparisons with the CTD data, adjacent stations and consideration of the variation of a property as a function of density or depth and the relationships with other properties (Klein, 1973). Precision estimates for routine analyses were made on CalCOFI cruise 9003 and are reported in SIO Ref. 91-4.

Primary Productivity Sampling

Primary productivity samples were taken each day shortly before local apparent noon (LAN). Primary production was estimated from ^{14}C uptake using a simulated *in situ* technique. Light penetration was estimated from the Secchi depth (assuming that the 1% light level is three times the Secchi depth). The depths with ambient light intensities corresponding to light levels simulated by the on-deck incubators were identified and sampled on the rosette up-cast. Occasionally an extra bottle or two were tripped in addition to the usual 20 levels sampled in the combined rosette-productivity cast in order to maintain the normal sampling depth resolution. Triplicate samples (two light and one dark control) were drawn from each productivity sample depth into 250 ml polycarbonate incubation bottles. Samples were inoculated with a cruise average of 10.36 µCi of ^{14}C as $NaHCO_3$ (200µl of stock solution) prepared in a 0.3 g/liter solution of sodium carbonate (Fitzwater *et al*., 1982). Samples were incubated from LAN to civil twilight in seawater-cooled incubators with neutral-density screens which simulate *in situ* light levels. At the end of the incubation, the samples were filtered onto Millipore HA filters and placed in scintillation vials. One half ml of 10% HCl was added to each sample. The sample was then allowed to sit, without a cap, at room temperature for 12 hours (after Lean and Burnison, 1979). Following this, 10 ml of scintillation cocktail were added to each sample and the samples were returned to SIO where the radioactivity was determined with a scintillation counter. Salinity, oxygen, nutrients, chlorophyll-*a* and phaeopigments were determined from all rosette productivity bottles.

Macrozooplankton Net Tows

Macrozooplankton was sampled with a 71 cm mouth diameter paired net (bongo net) equipped with 0.505mm plankton mesh. Bottom depth permitting, the nets were towed obliquely from 210 meters to the surface. The tow time for a standard tow was 21.5 minutes. Volumes filtered were determined from flowmeter readings and the mouth area of the net. Only one sample of each pair was retained and preserved. The biomass, as wet displacement volume, after removal of large (>5 ml) organisms, was determined in the laboratory ashore. These procedures are summarized in greater detail in Kramer *et al*. (1972).

Ancillary Programs

Several ancillary programs produced data on these cruises that are not presented in this report. These programs include:

1) *Underway Data*: Continuous near surface measurements of temperature, salinity and *in vivo* chlorophyll fluorescence were recorded from seawater pumped through the ship's uncontaminated seawater system. Water was drawn from a depth of approximately 5 meters. The data were logged in one-second increments using a Sea-Bird Electronics, Inc., SBE 45 MicroTSG Thermosalinograph for internal, SBE 38 Thermosalinograph for external, and a WetLabs WETstar fluorometer. The data has been processed to show 10 minute averages.

2) *ADCP*: Continuous profiles of ocean currents and acoustic backscatter between 20 and 500 meters deep were measured along the shiptrack from a hull-mounted 150 kHz Acoustic Doppler Current Profiler (ADCP). The ADCP raw data are collected and archived for potential data processing ashore. The National Centers for Environmental Information (NCEI) in collaboration with the E.Firing Acoustic Doppler Current Profiler (ADCP) Laboratory at the University of Hawaii have established the Joint Archive for Shipboard ADCP (JASADCP). The JASADCP is responsible for the acquisition, review, documentation, archival, and distribution of shipboard ADCP data sets, data may be accessed through their website (http://ilikai.soest.hawaii.edu/sadcp/index.html). Shipboard ADCP data is acquired by University of Hawaii Data Acquisition System (UDHAS) and uses Common Ocean Data Access System (CODAS) processing to incrementally build a dataset of averaged, edited ocean velocities for each ADCP and ping type specified. Processed data and plots are served on the shipboard network, and daily status summaries are emailed and available online (http://currents.soest.hawaii.edu/uhdas_fromships.html).

3) Underway Sea Surface pCO2 and pH measurements: Automated shipboard analysis of the partial pressure of CO2 and pH were made from the ship's underway flow-through system. pCO2 measurements were taken with the Shipboard Underway pCO2 Environmental Recorder (SUPER-CO2) sold by Sunburst Sensors designed with a showered equilibrator and a LI-COR 840A CO2/H2O non-dispersive infrared gas analyzer. pH measurements were taken with a Honeywell Durafet based on Ion Selective Field Effect Transistor (ISFET) technology. The Durafet pH sensor was calibrated before and after the cruise. pCO2 was calibrated with standard gases traceable to NIST every 4 hours, along with an atmospheric sample. Temperature and salinity were also sampled using a SeaBird Thermosalinograph (SBE45). Measurements were recorded every 4 seconds. (T. Martz, SIO)

4) *California Current Ecosystem Long Term Ecological Research Program*: The CCE-LTER program augments standard CalCOFI measurements to further characterize the lower trophic levels as well as the carbon system. Measurements of particulate organic carbon and nitrogen, dissolved organic carbon and nitrogen, taxon-specific phytoplankton pigments, flow-cytometric counts of bacteria and picoautotrophs and the determination of mesozooplankton size structure using a Laser Optical Plankton Counter are sampled for all CalCOFI stations. On CalCOFI lines 90 and 80 measurements also include microscopic counts of heterotrophic and autotrophic phytoplankton for biomass and abundance and mesozooplankton community structure sampled with the Planktonic Rate Processes in Oligotrophic Ocean Systems (PRPOOS) tow net. (M. Ohman, SIO)

5) *Advanced Laser Fluorometer Analyzer (ALFA)*: Continuous underway analysis of phytoplankton pigment groups and variable fluorescence (F_v/F_m). ALFA, developed by A. Chekalyuk at Lamont-Doherty Earth Observatory, uses laser stimulated emission at 405 and 532 nm together with spectral deconvolution analysis to distinguish fluorescence from three types of phycoerythrin, chlorophyll-*a*, and chromophoric dissolved organic matter (CDOM). The ALFA is useful for differentiating the contribution of cyanobacteria and cryptophytes from other phytoplankton taxa present in natural phytoplankton assemblages, as well as for assessing phytoplankton photophysiological status. (R. Goericke, SIO)

6) *Southern California Coastal Ocean Observing System (SCCOOS) Nearshore Observations*: The objective of these observations is to extend CalCOFI time series to the nearshore. Nearshore observations consist of 8 stations at the ends and interspersed with current CalCOFI lines on the 20 m isobath with a standard set of CalCOFI hydrographic observations as well as a CalBOBL net tow, particulate organic carbon and nitrogen, dissolved organic carbon and nitrogen and taxon-specific phytoplankton pigments data. (R. Goericke, SIO)

7) *Inorganic Carbon System*: The CalCOFI group collected samples for the characterization of the inorganic carbon system at selected locations along the cruise track with 14 profile and 8 additional surface water stations. Total inorganic carbon and alkalinity will be measured which will allow the calculation of pH and pCO_2. The objectives of these measurements are first the long-term characterization of the inorganic carbon system and its response to changing ocean climate and second measurements of pH in the coastal zone in order to monitor the impact of 'corrosive' waters on benthic ecosystems in the Southern California Bight. (R. Goericke, SIO)

8) *Marine Mammal Observations*: During daylight transits, visual line-transect surveys were conducted by marine mammal observers focusing on cetaceans. Acoustic line-transect surveys were performed using a towed hydrophone array which consists of multiple hydrophone elements that sample sounds up to 100 kHz allowing for localization of calling animals. Acoustic monitoring also takes place on individual stations using sonobuoys. (J. Hildebrand, SIO)

9) *Microbial Diversity and Gene Expression*: Samples suitable for purification of DNA and RNA from bacterial and microbial eukaryotic biomass are collected for molecular diversity assays targeted to various genetic marker loci (16S and 18S rRNA). DNA samples are collected at every station, in parallel with particulate organic matter (POM) samples, on Whatman GF/F filters. RNA samples are collected in parallel with primary productivity samples on 0.2 µM sterivex filters with a maximum filtration time of 30 min. Additional samples from the mixed layer, chlorophyll max, and two depths below the euphotic zone are collected along lines 80 and 90. (A. Allen, SIO and JCVI)

10) *Cesium-134 survey:* Samples were collected for radioactive isotopes of cesium-137 and -134 analysis using the ratio of the two isotopes to distinguish cesium from the more recent Fukushima source over fallout from weapons testing. Twenty liters of unfiltered seawater was collected from the surface ocean into two 10L plastic sample containers and shipped to the Center for Marine and Environmental Radioactivity at the Woods Hole Oceanographic for analysis. Final radioactive cesium concentrations are reported in units of Bq per cubic meter where one Becquerel equals one disintegration per second. http://ourradioactiveocean.org/results.html (Mitchell SIO, Buesseler WHOI)

TABULATED DATA

CTD/Rosette Cast Data

The time reported is the Coordinated Universal Time (UTC) of the first rosette bottle trip on the up cast. The rosette bottles tripped on the up cast are reported as cast 2, where cast 1 is considered to be the down CTD profile. The sample number reported is the cast number followed by a two-digit rosette bottle number. Bottom depths, determined acoustically, have been corrected using British Admiralty Tables (Carter, 1980) and are reported in meters. Weather conditions have been coded using WMO code 4501. Secchi depths are reported for most daylight stations.

Data values from discreet sampled CTD rosette were interpolated and are reported for standard depths. Interpolated or extrapolated standard level data are noted by the footnote "ISL" printed after the depth. Multiple bottles tripped at the same depth to provide water for ancillary programs are not used in the calculation of standard depth data. Density-related parameters have been calculated from the International Equation of State of Seawater 1980 (UNESCO, 1981b). Computed values of potential temperature, sigma-theta, specific volume anomaly (SVA), and dynamic height or geopotential anomaly are included with both observed and interpolated standard depth levels.

On stations where primary productivity samples were drawn a footnote appears after each productivity depth sampled. The corresponding primary productivity data are reported in a separate section following the tabulated rosette cast data.

Primary Productivity Data

In addition to the normal hydrographic data that are reported in the rosette cast data section, the tabulated data include: the *in situ* light levels at which the samples were collected, the uptake from each of the replicate light bottles, uptake 1 and uptake 2 (which have been corrected for dark uptake by subtracting the dark value), the mean

of the two uptake values and the dark uptake. The uptake values are totals for the incubation period. Also shown are the times of LAN, civil twilight, and the value of the mean uptake integrated from the surface to the deepest sample, assuming the shallowest value continues to the surface and that negative values (when dark uptake exceeds light uptake) are zero. The uptake data are reported to two significant digits (values <1.00) or one decimal (values >1.00). Incubation time, LAN, and civil twilight are given in local Pacific Standard Time (PST); to convert to UTC, add eight hours to the PST time. Incubation light intensities are listed in a footnote at the bottom of each page.

Macrozooplankton Data

Macrozooplankton biomass volumes are tabulated as total biomass volume ($cm^3/1000m^3$ strained) and as the total volume minus the volume of larger organisms under the heading "Small." Tow times are given in local PST (+8) time.

FOOTNOTES

In addition to footnotes, special notations are used without footnotes because the meaning is always the same:

D: CTD salinity value listed in place of normal shipboard salinity analysis.

ISL: After a depth value indicates that this is an interpolated or extrapolated standard level.

U: Uncertain value. Values which are not used in interpolation because they seem to be in error without apparent reason.

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PERSONNEL

CalCOFI Cruise 1511

SHIP'S CAPTAIN

Jeff Crews, R/V *Oceanus*

PERSONNEL PARTICIPATING IN THE COLLECTION OF DATA

		Participating (Legs)
Wolgast, David M. (Chief Scientist)	Staff Research Associate, SIO	1, 2
Andersen, Brad	Volunteer	1
Dovel, Shonna	Staff Research Associate, SIO	1
Floros, Nikolas	Volunteer	1
Hays, Amy	Fishery Biologist, NMFS	1
Manion, Sue	Fishery Biologist, NMFS	1
Miller, Melissa	Staff Research Associate, SIO	1
Roadman, Megan	Staff Research Associate, SIO	1
Rodgers-Wolgast, Jennifer	Staff Research Associate, SIO	1
Tricky, Jenny	Marine Mammal Observer, MPL	1, 2
Valentine, Nikki	Volunteer	1
Whitaker, Katherine	Marine Mammal Observer, MPL	1, 2
Wilkinson, James	Information Systems Analyst, SIO	1

Leg 1: Newport, Oregon to Dana Point, California, 25-28 October, 2015

Leg 2: Dana Point, California to San Diego, California, 28 October - 13 November, 2015

FIGURES

Cruise 1511

1. CalCOFI Cruise 1511 track and station positions.

2. Horizontal distribution of dynamic height anomaly (0 over 500m). In areas shallower than 500 m, the dynamic heights were extrapolated on the basis of the offshore deeper steric height as described in Reid and Mantyla (1976).

3. Horizontal distributions at 10 meters: A) chlorophyll-*a*; B) potential density; C) temperature; and D) salinity.

4. Horizontal distributions at 200 meters: A) dynamic height anomaly (200 over 500 m); B) potential density; C) temperature; and D) salinity.

5. Sections along CalCOFI line 90 (vertical exaggeration, 1000): A) potential density; B) temperature; C) salinity; D) silicate; E) nitrate; F) phosphate; G) chlorophyll-*a*; H) oxygen saturation; I) oxygen; J) nitrite; and K) phaeopigments.

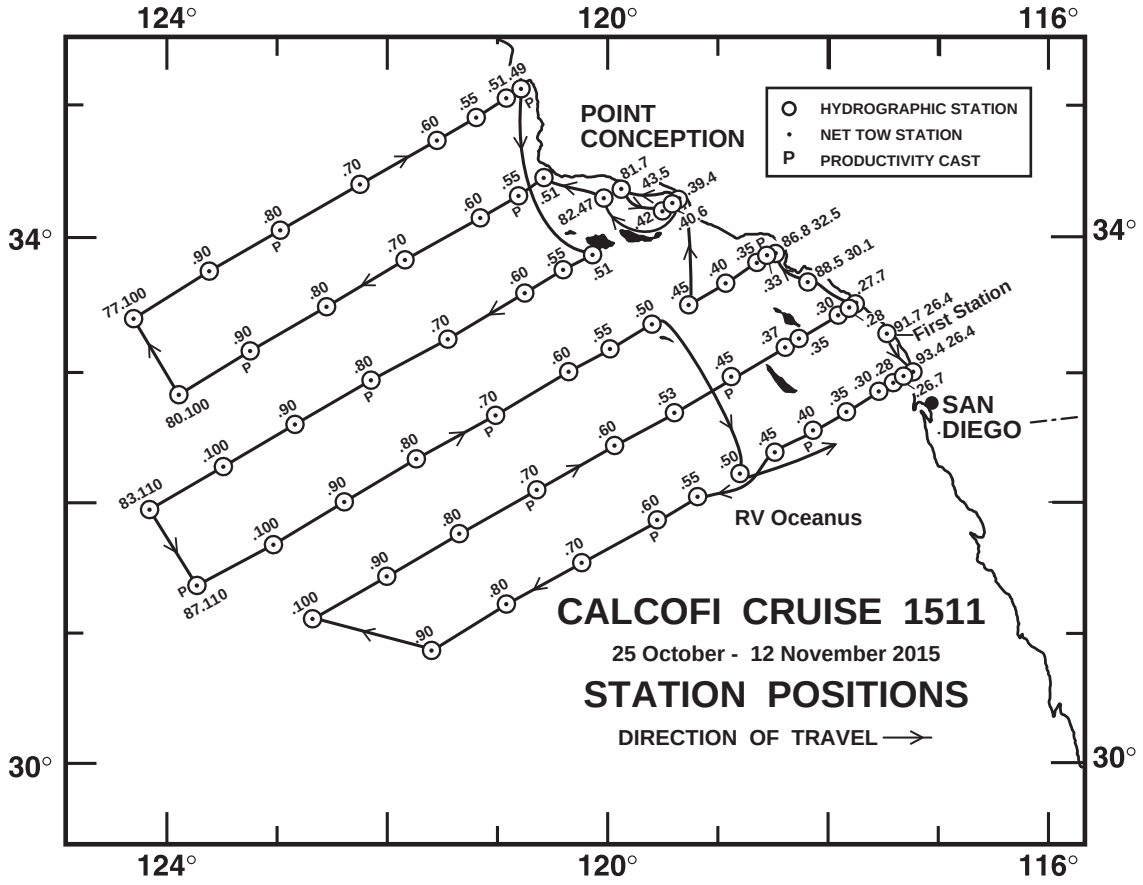

FIGURE 1

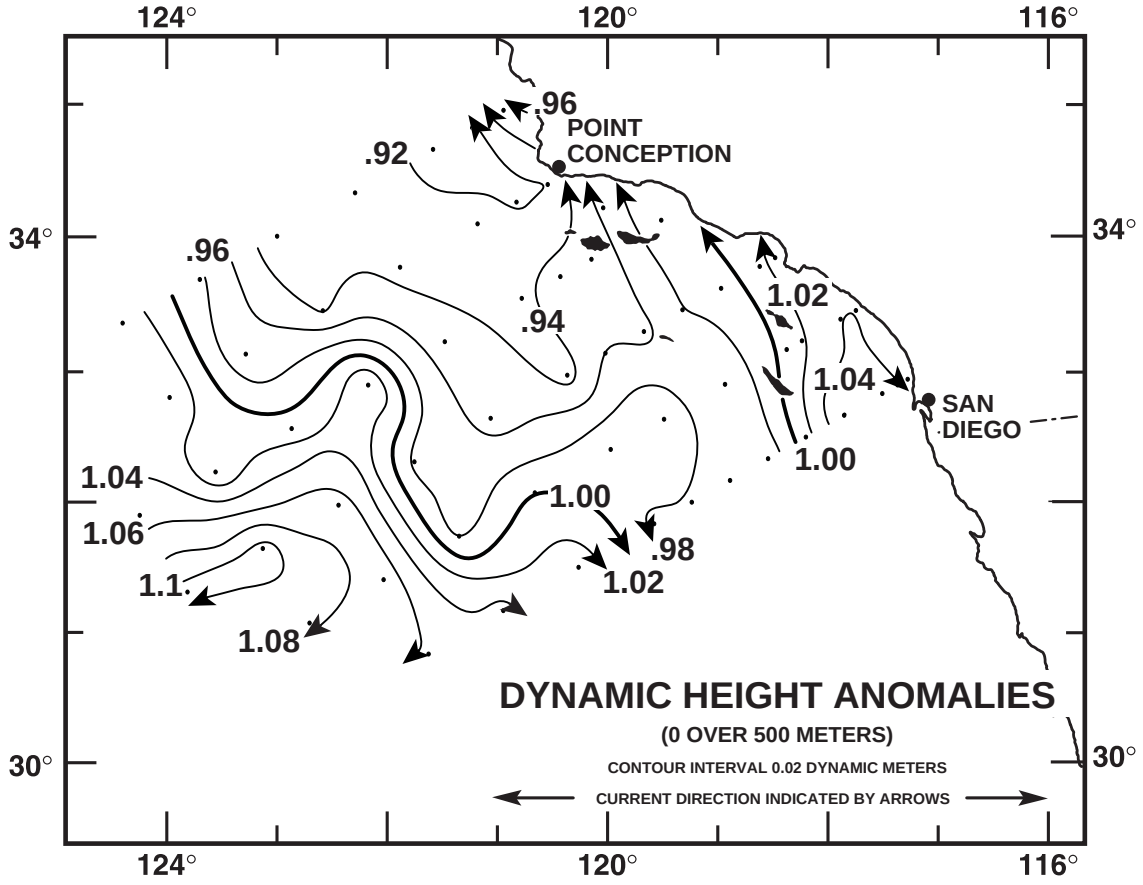

FIGURE 2

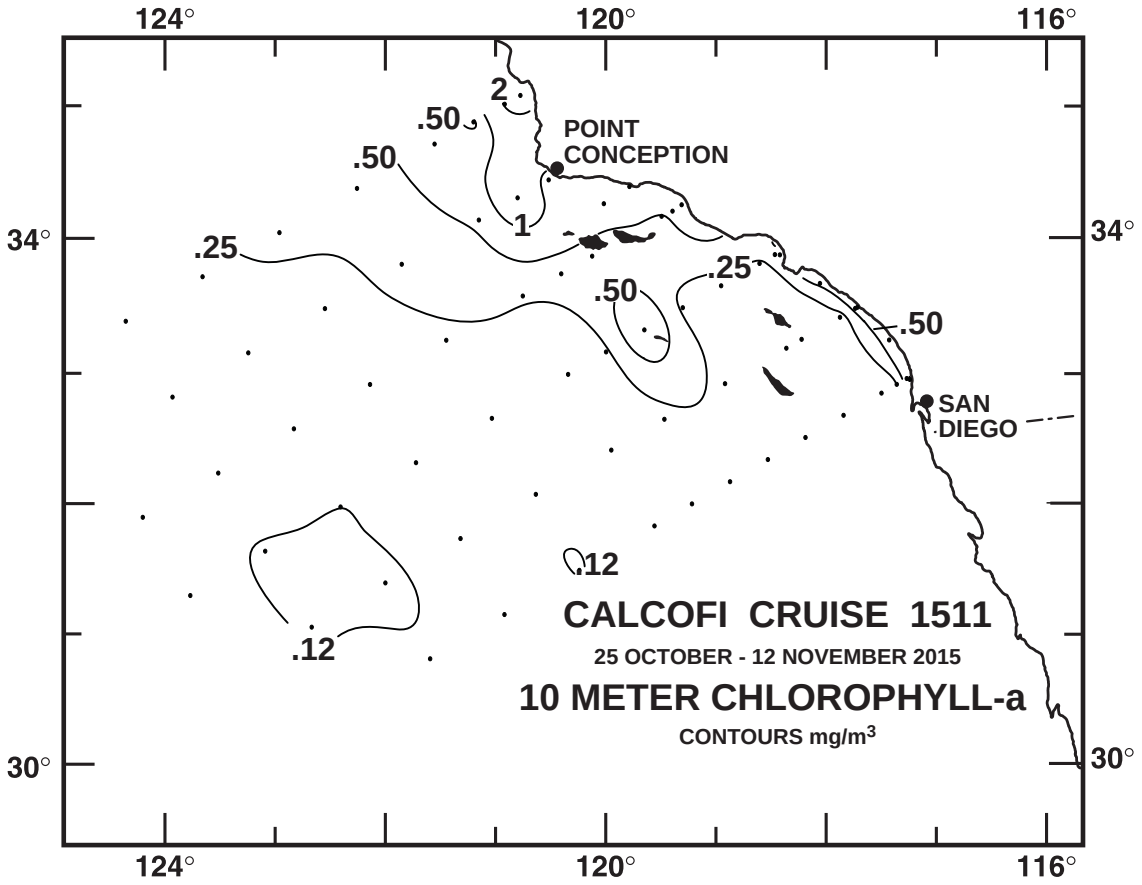

FIGURE 3A

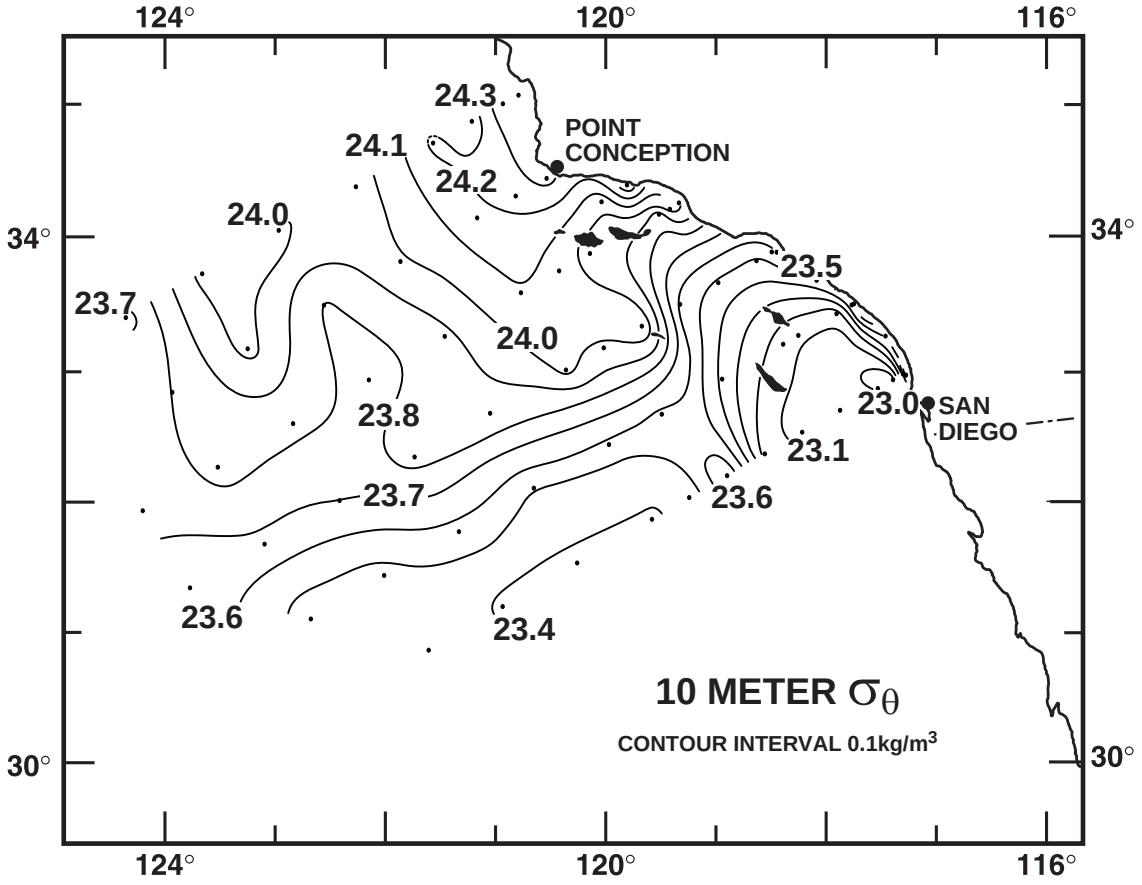

FIGURE 3B

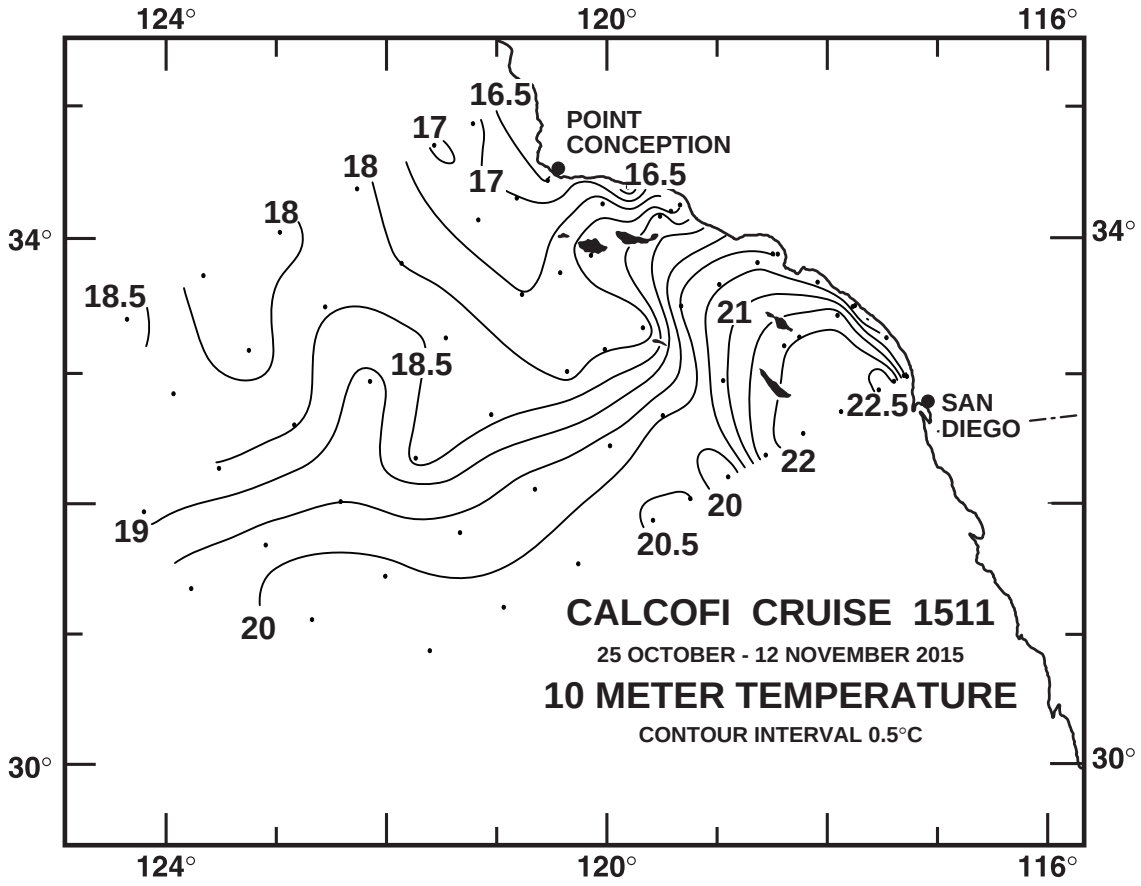

FIGURE 3C

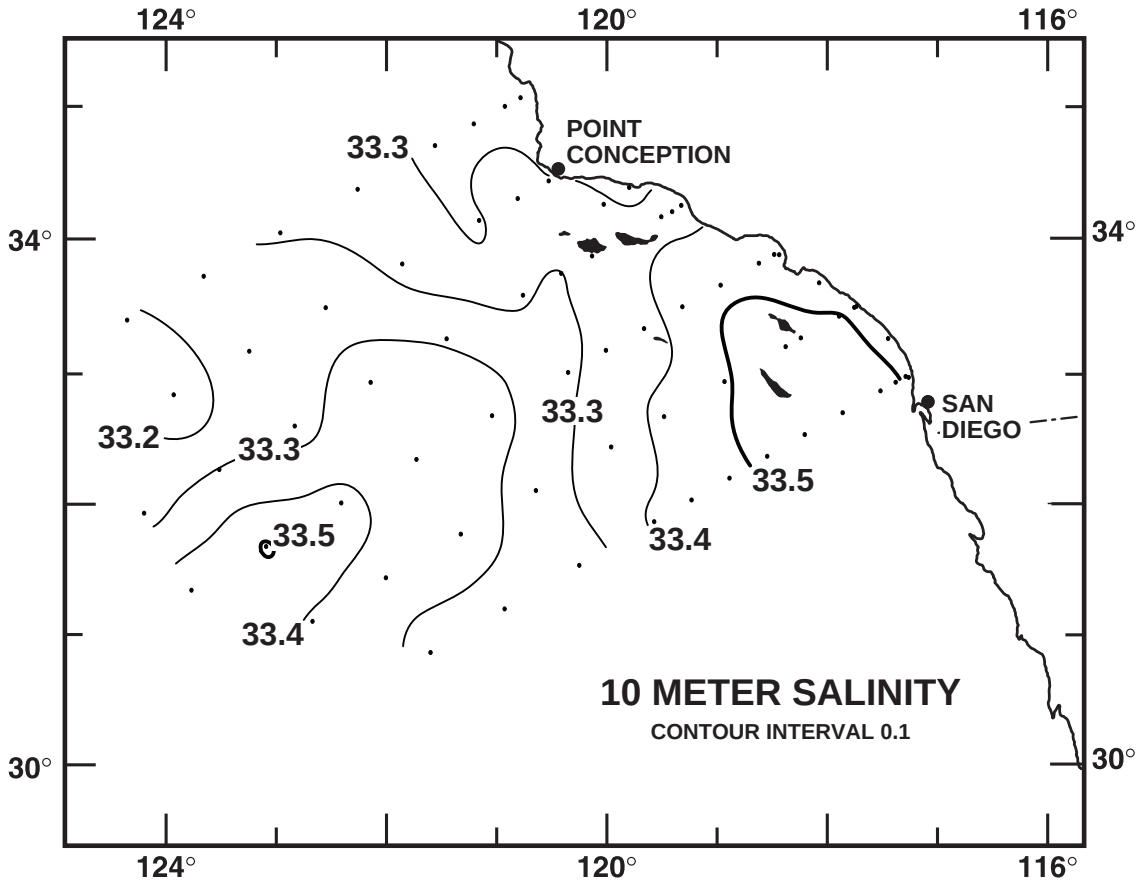

FIGURE 3D

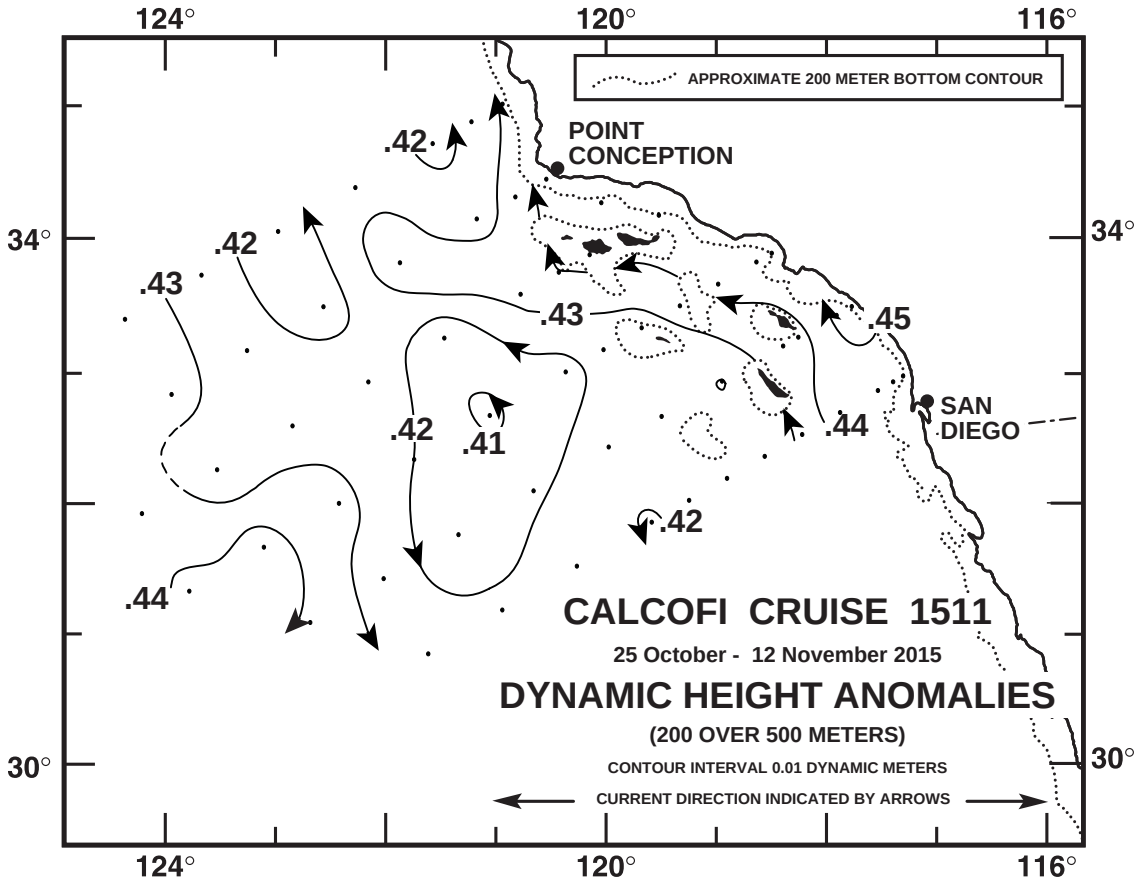

FIGURE 4A

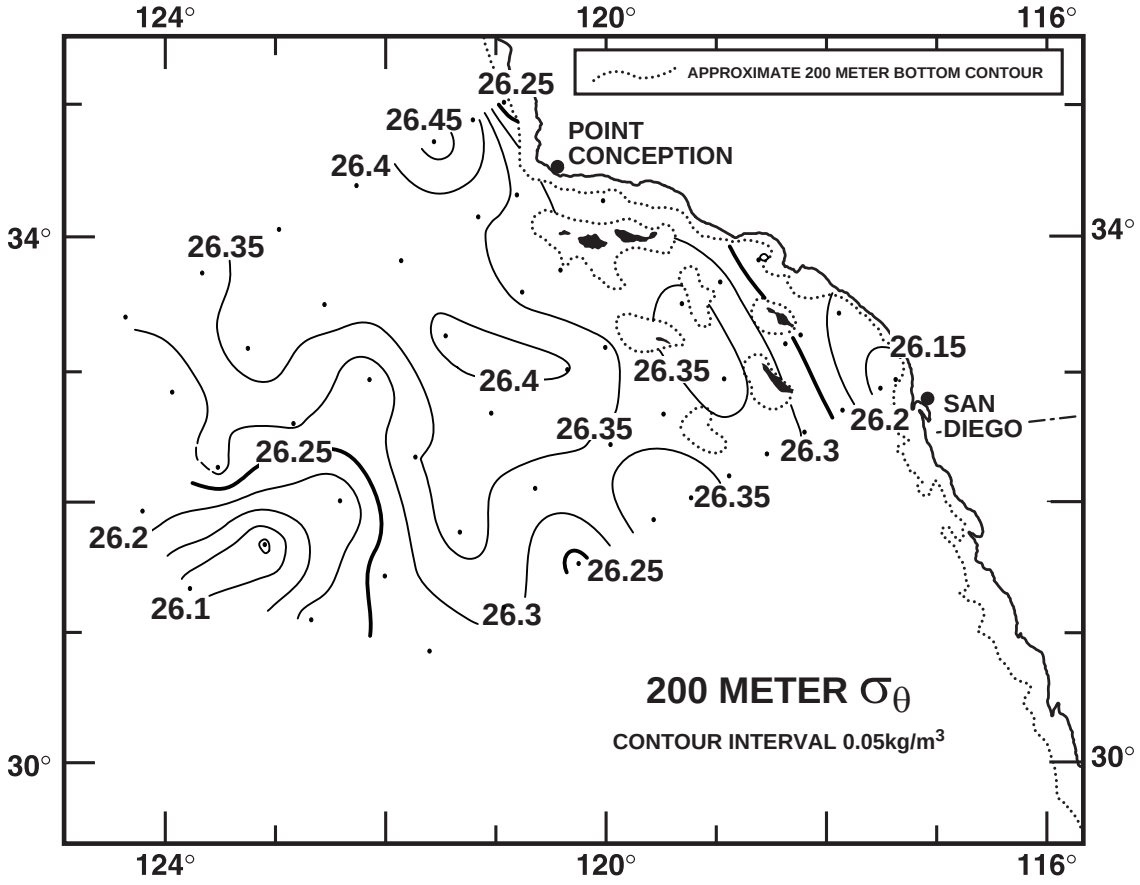

FIGURE 4B

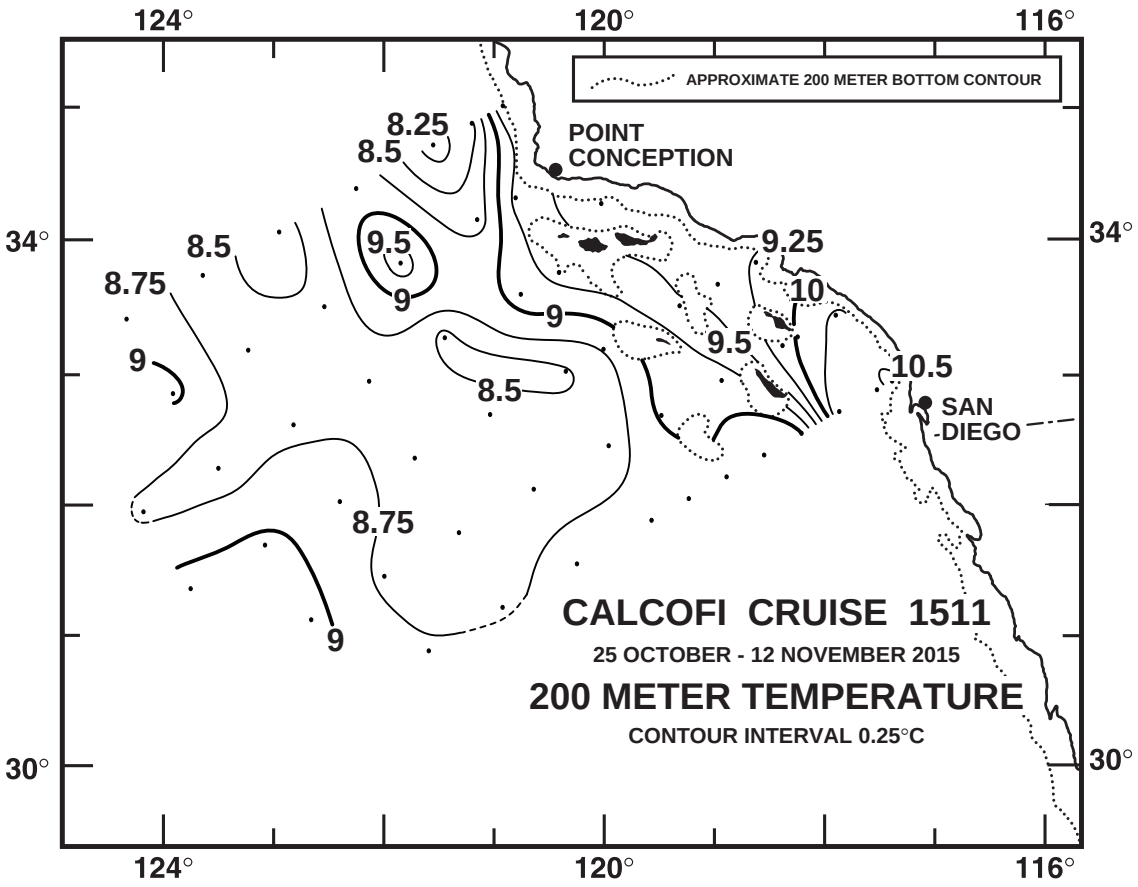

FIGURE 4C

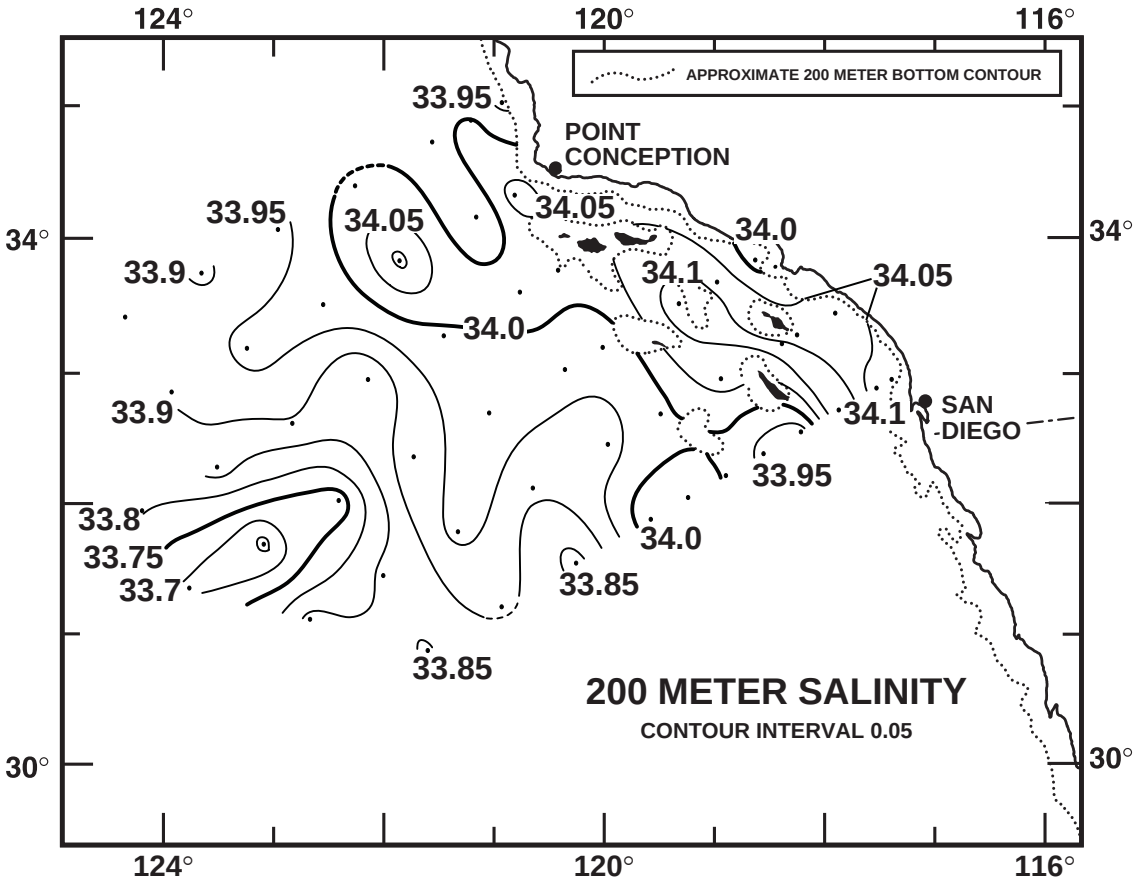

FIGURE 4D

CALCOFI CRUISE 1511

31 October - 2 November 2015

POTENTIAL DENSITY (σ_θ) ALONG CALCOFI LINE 90

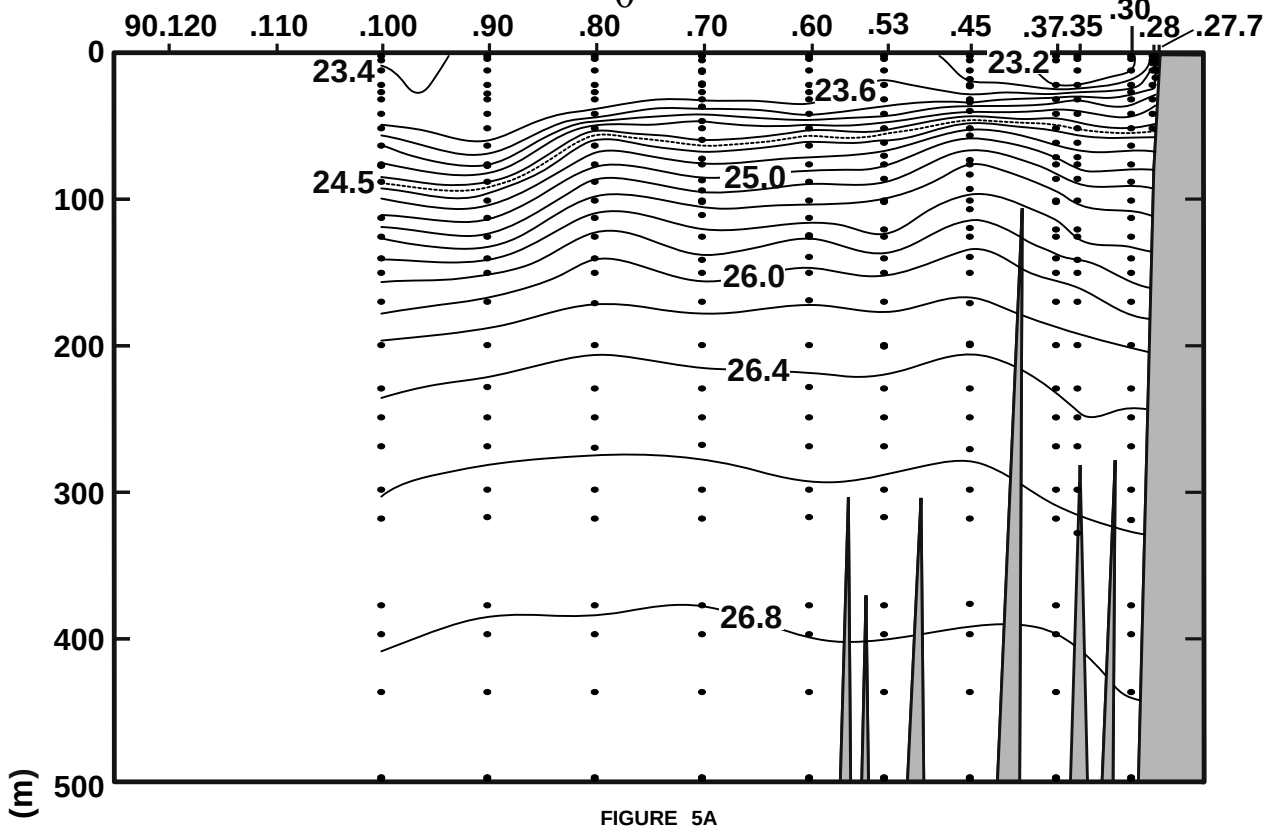

FIGURE 5A

TEMPERATURE (^{o}C) ALONG CALCOFI LINE 90

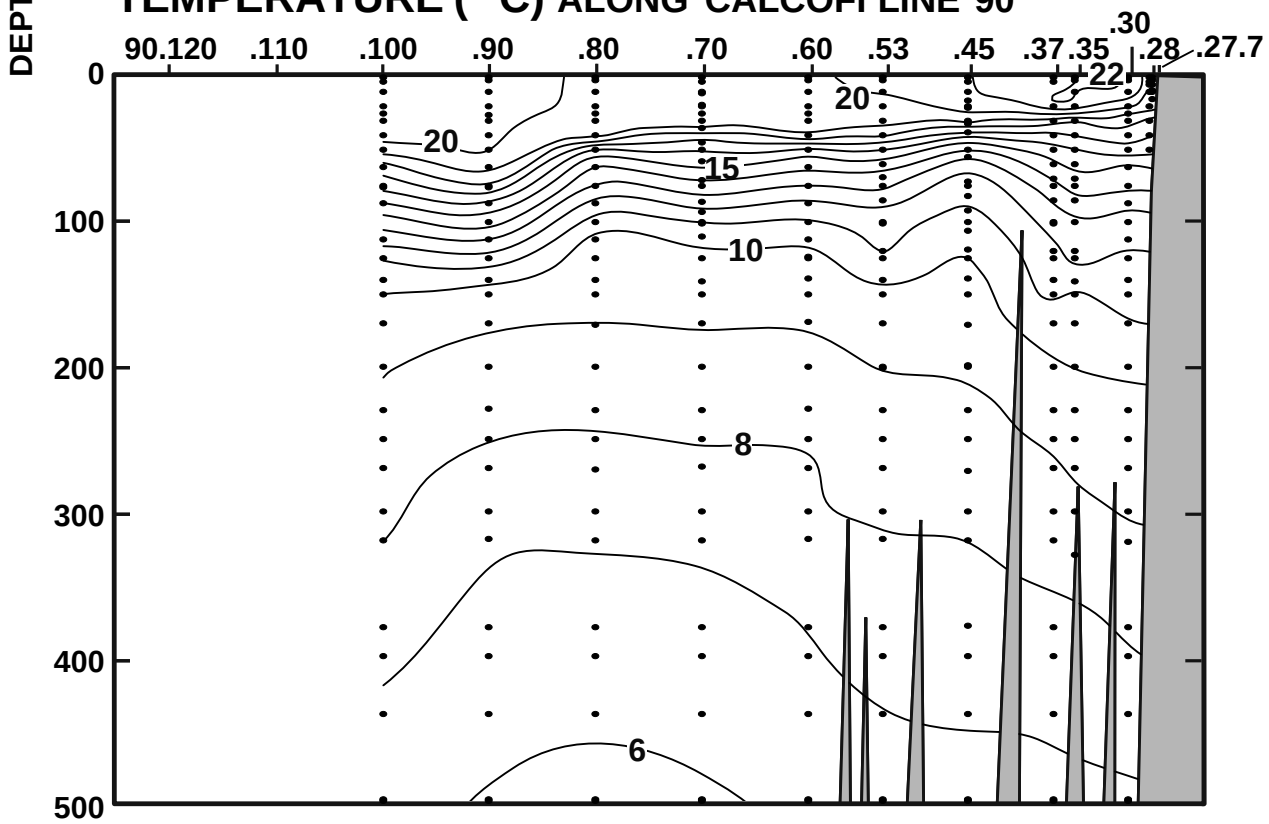

FIGURE 5B

CALCOFI CRUISE 1511

31 October - 2 November 2015

SALINITY ALONG CALCOFI LINE 90

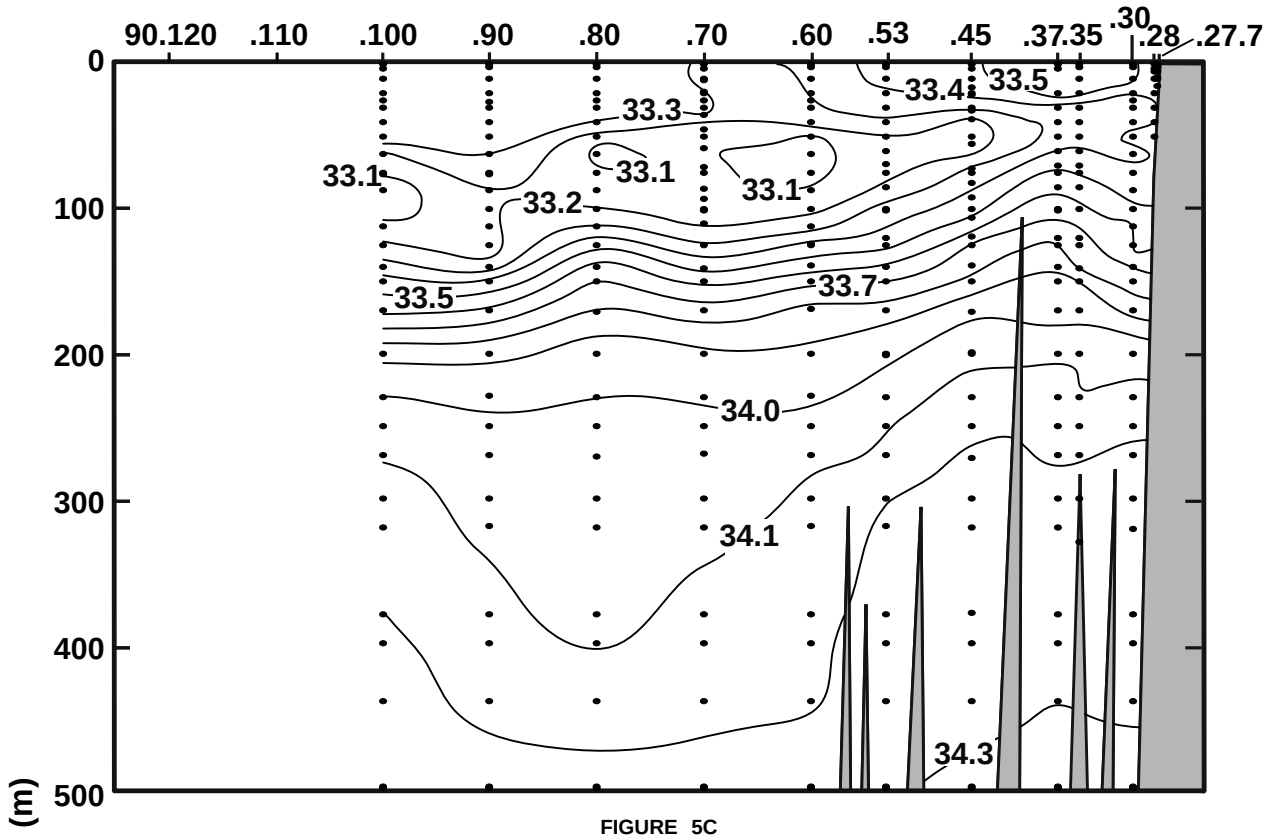

FIGURE 5C

SILICATE (μM/L) ALONG CALCOFI LINE 90

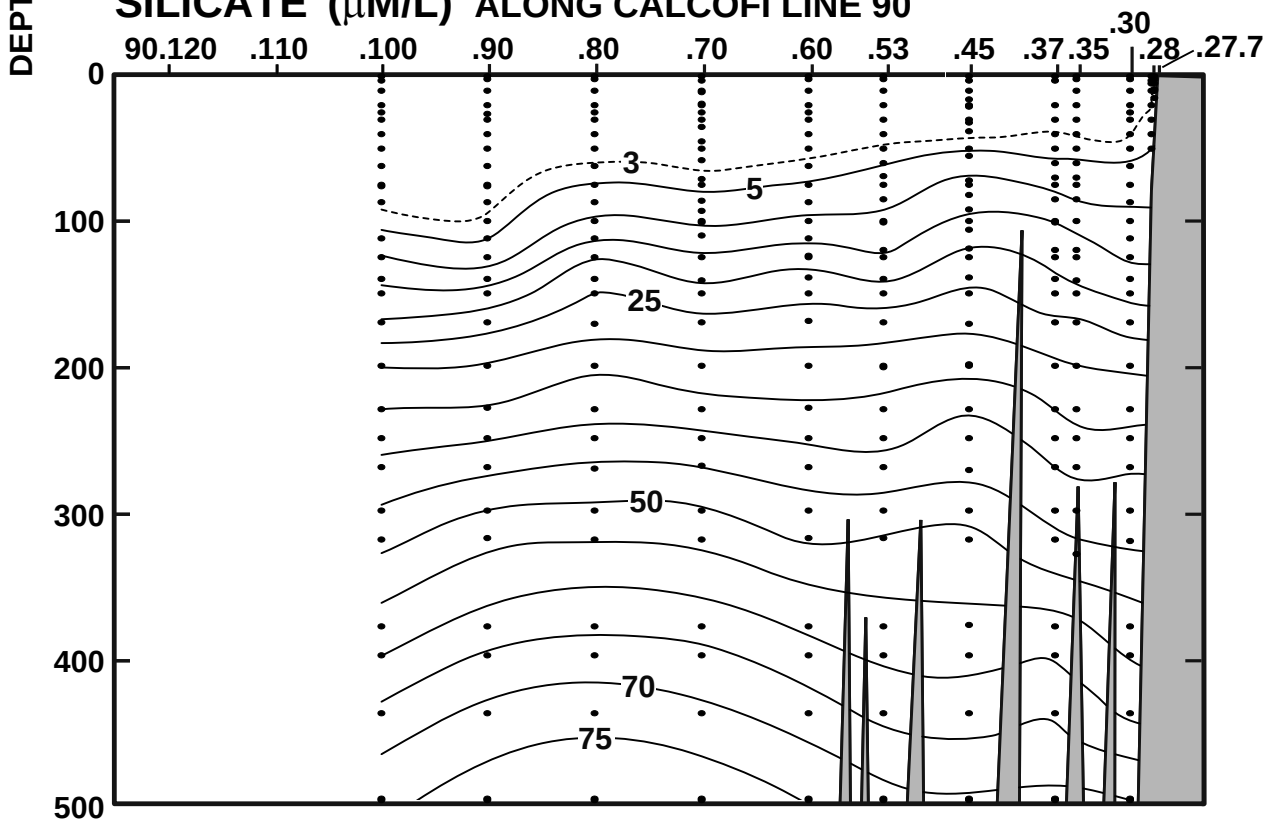

FIGURE 5D

CALCOFI CRUISE 1511

31 October - 3 November 2015

NITRATE (μM/L) ALONG CALCOFI LINE 90

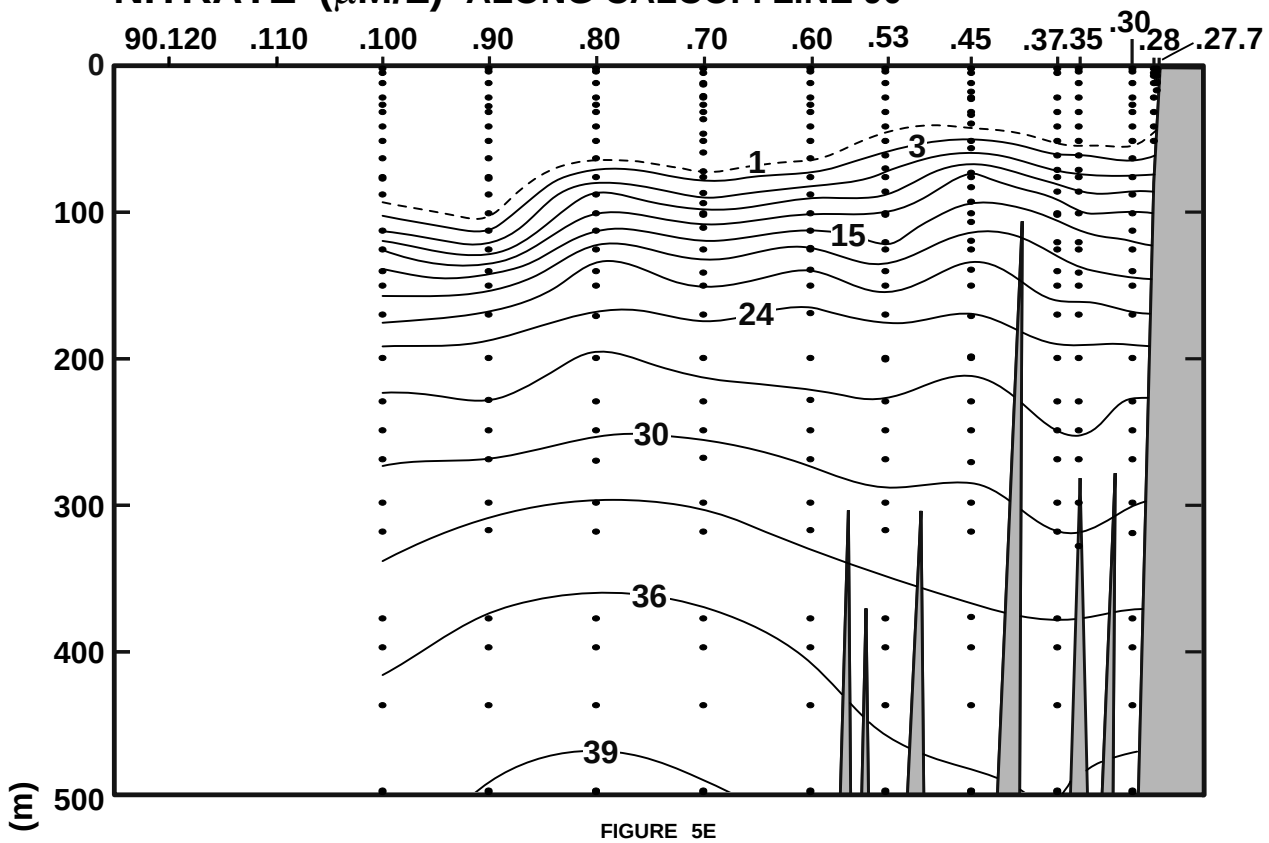

FIGURE 5E

PHOSPHATE (μM/L) ALONG CALCOFI LINE 90

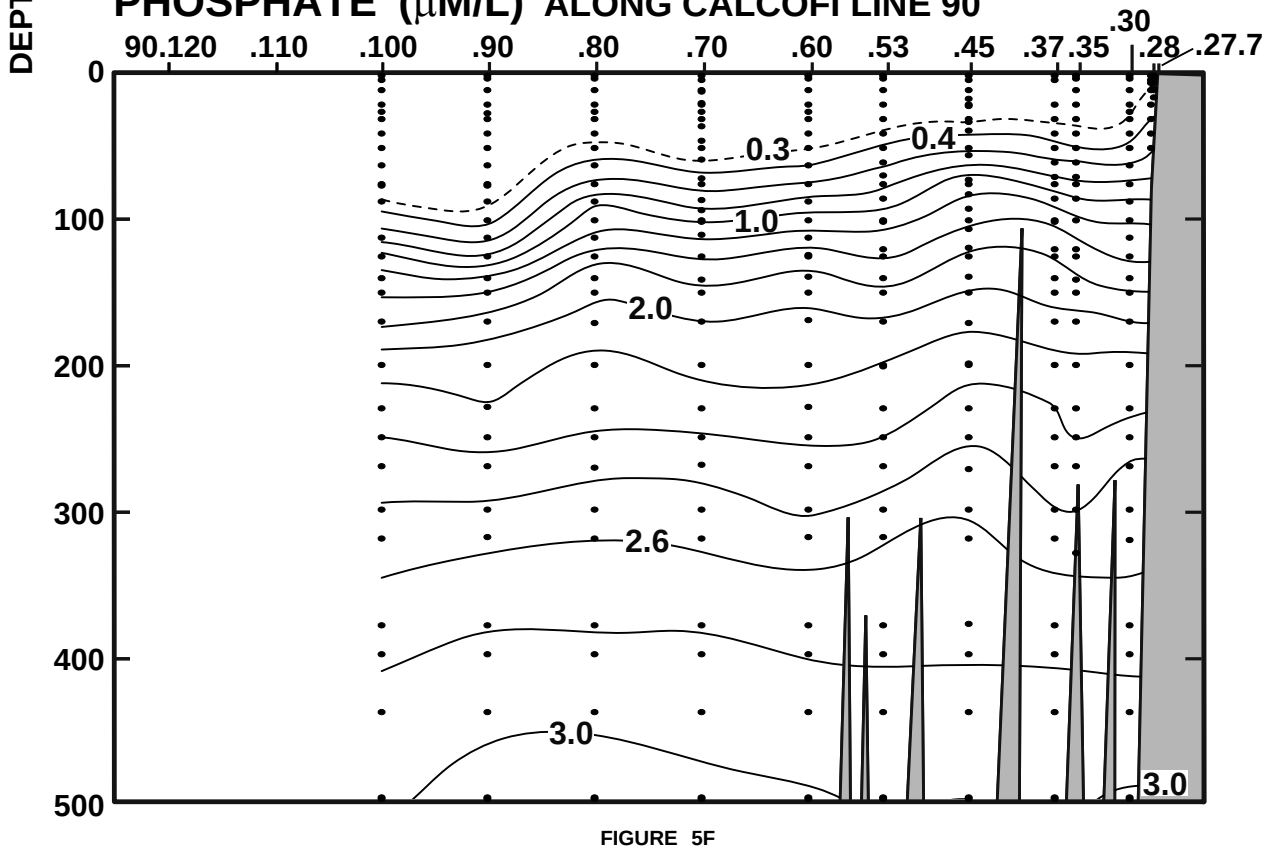

FIGURE 5F

CALCOFI CRUISE 1511

31 October - 3 November 2015

CHLOROPHYLL-a (μg/L) ALONG CALCOFI LINE 90

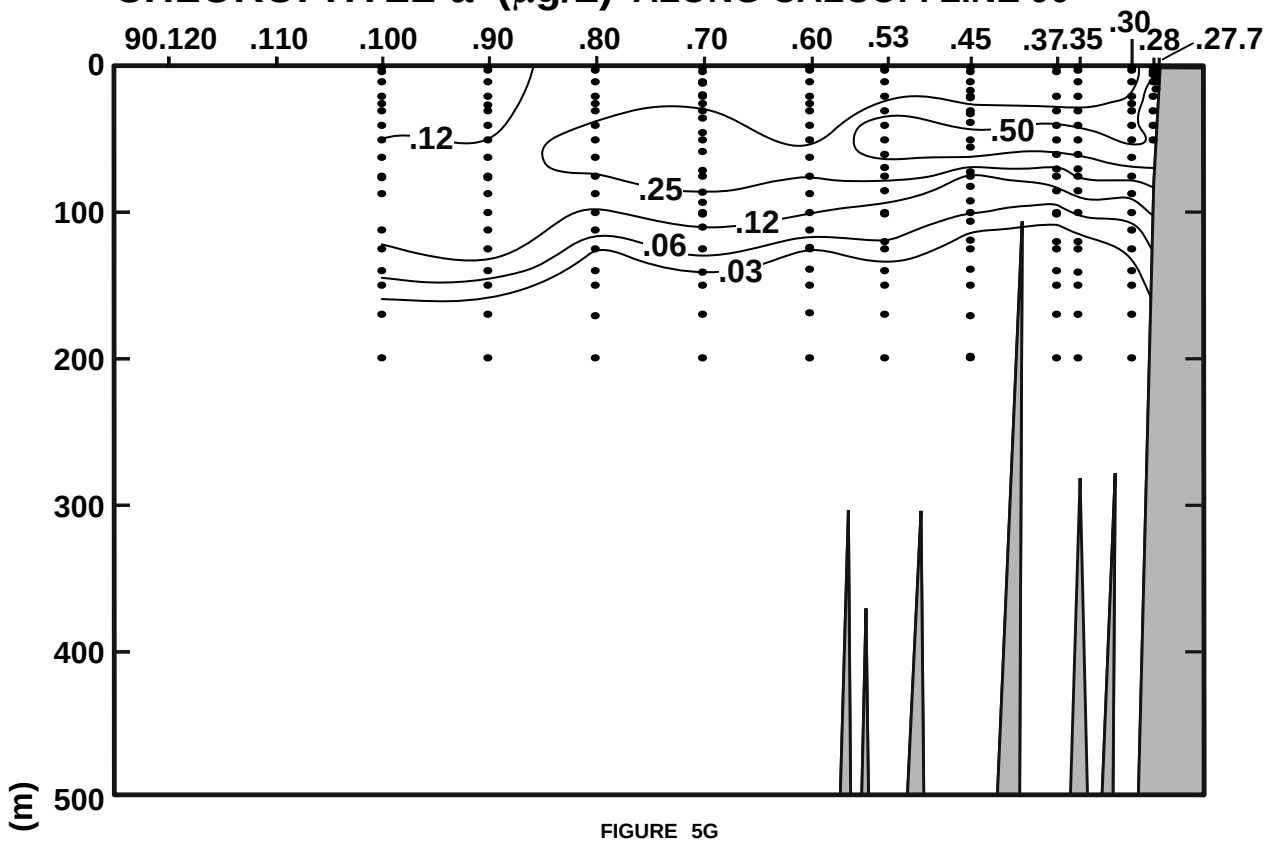

FIGURE 5G

OXYGEN SATURATION (%) ALONG CALCOFI LINE 90

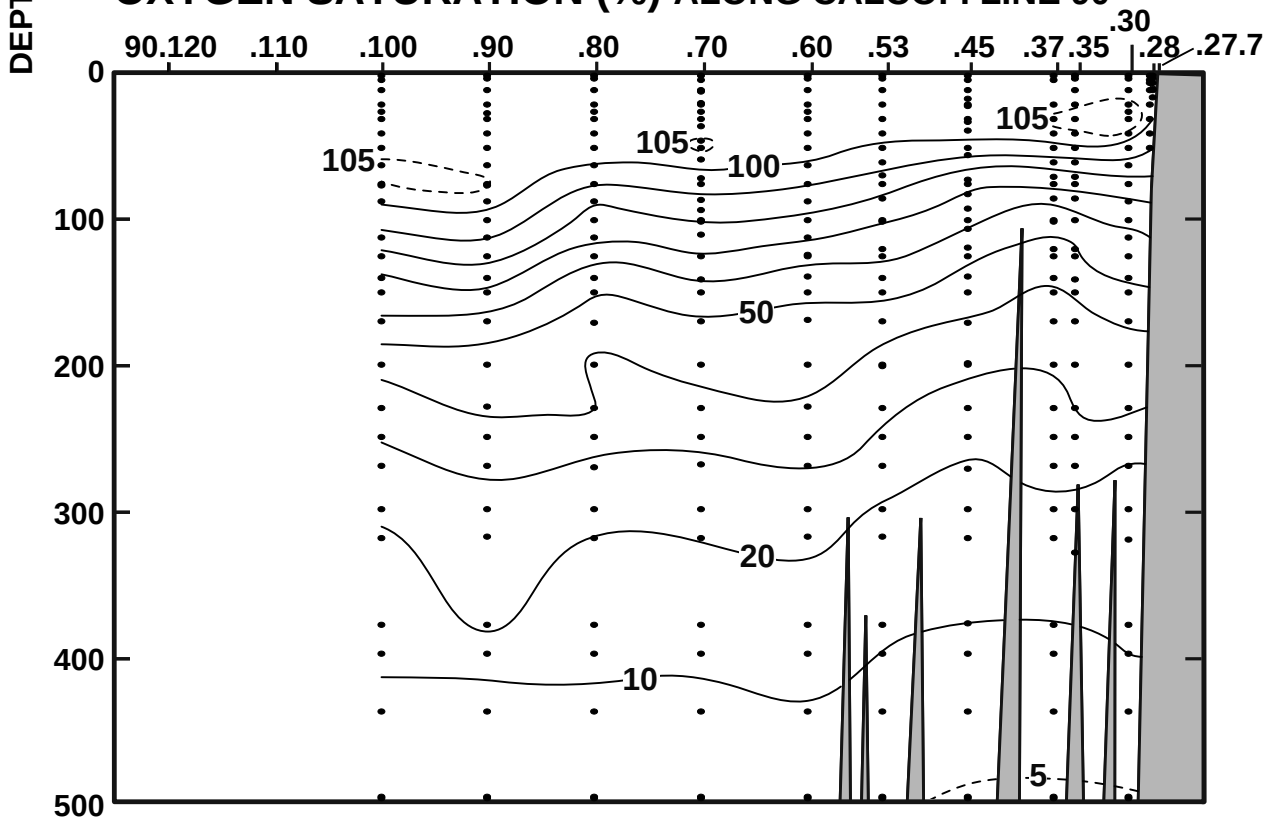

FIGURE 5H

CALCOFI CRUISE 1511

31 October - 3 November 2015

OXYGEN (mL/L) ALONG CALCOFI LINE 90

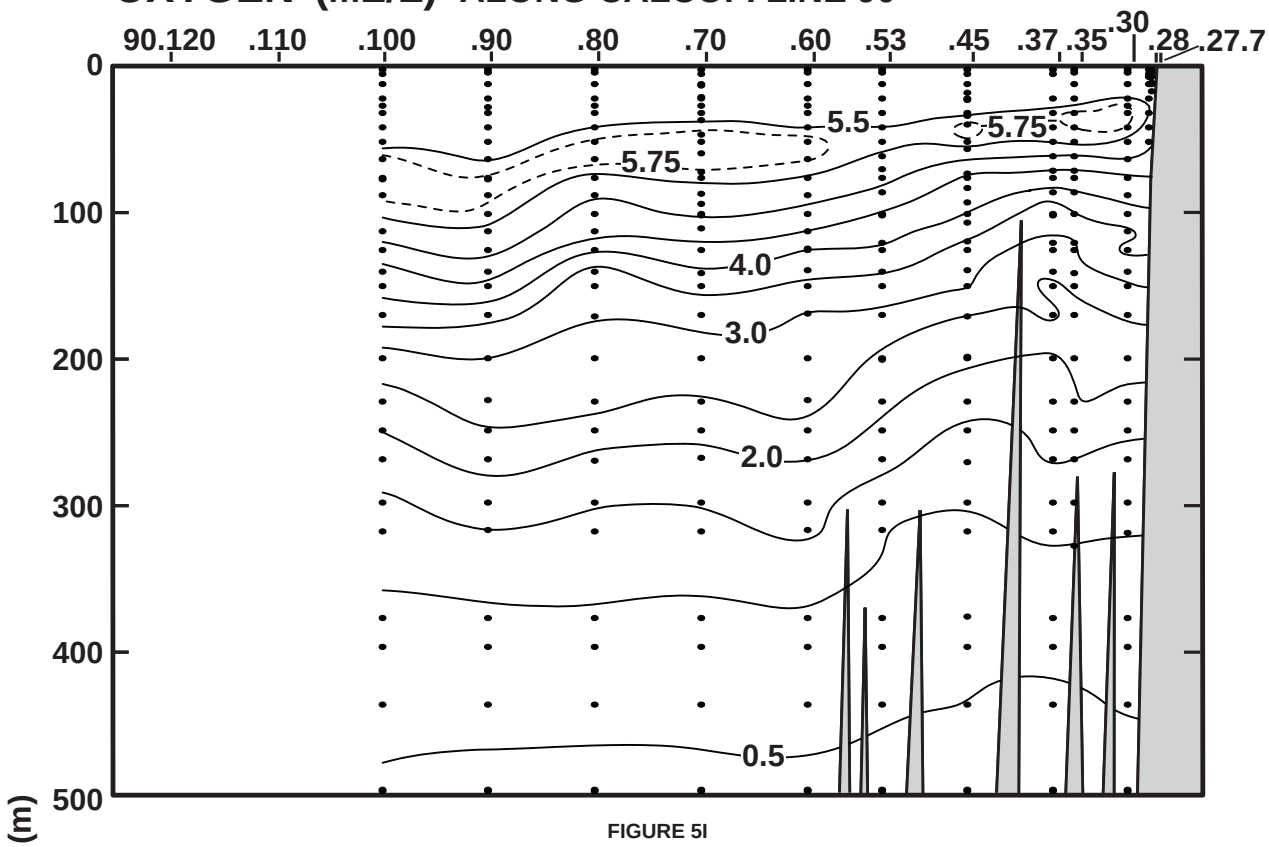

FIGURE 5I

NITRITE (μM/L) ALONG CALCOFI LINE 90

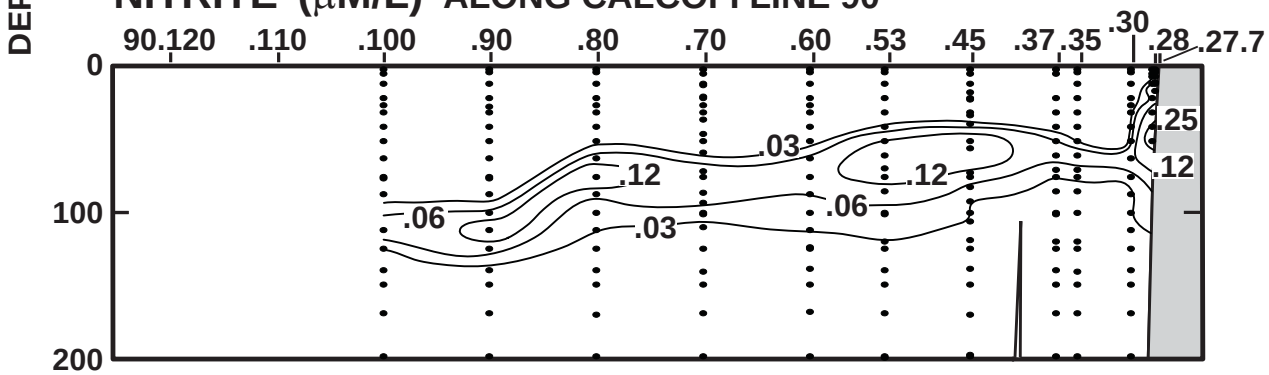

FIGURE 5J

PHAEOPIGMENTS (μg/L) ALONG CALCOFI LINE 90

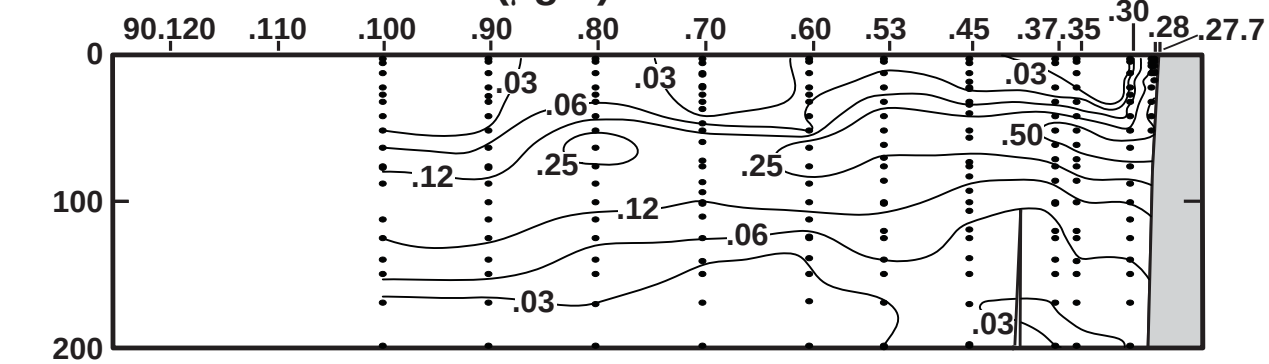

FIGURE 5K

RV OCEANUS CALCOFI CRUISE 1511 STATION 76.7 49.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
35 5.3 N	120 46.6 W	08/11/2015	1352	UTC	72 m	100	06 kn			1015.2 mb	12.4 C	9.4 C				051

DEPTH m		TEMP DEG C	POTTEMP DEG C		SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		16.08	16.08		33.275	24.403	351.7	0.000	5.75	251.2	102.2	2.8	0.35	0.1	0.04	0.02	2.39	0.62	0	
2	A	16.08	16.08		33.275	24.403	351.7	0.007	5.75	251.2	102.2	2.8	0.35	0.1	0.04	0.02	2.39	0.62	2	13
6	A	16.09	16.09		33.277	24.404	351.7	0.021	5.78	252.4	102.7	2.8	0.34	0.1	0.04	0.02	2.28	0.57	6	12
7	A	16.09	16.09		33.270	24.397	352.4	0.025	5.75	251.3	102.3	2.8	0.38	0.1	0.04	0.02	2.27	0.53	7	11
9		16.09	16.09		33.278	24.405	351.8	0.032											9	10
10		16.08	16.08		33.279	24.406	351.7	0.035	5.75	251.0	102.1	2.8	0.36	0.1	0.04	0.03	2.28	0.57	10	08
10		16.08	16.08		33.276	24.404	351.9	0.034											10	09
13	A	16.04	16.04		33.274	24.414	351.1	0.046	5.77	252.0	102.4	2.8	0.36	0.1	0.04	0.03	2.41	0.60	13	07
20	ISL	16.00	D 15.99		33.272	D 24.421	350.6	0.071	5.78	D251.8	D102.5	3.0	0.37	0.2	0.05	0.08	3.00	0.67	20	
24		16.01	16.00		33.274	24.421	350.7	0.086											24	06
25	A	15.50	15.49		33.274	24.535	339.9	0.088	5.76	251.8	101.3	3.1	0.38	0.4	0.05	0.12	3.43	0.72	25	05
30	ISL	15.23	D 15.22		33.267	D 24.589	334.9	0.105	5.74	D250.3	D100.3	3.9	0.44	0.8	0.11	0.19	3.93	0.71	30	
31	A	15.21	15.21		33.270	24.595	334.4	0.108	5.71	249.4	99.8	4.0	0.45	0.9	0.12	0.20	4.03	0.71	31	04
41		14.20	14.19		33.289	24.828	312.5	0.140	5.06	221.1	86.6	7.6	0.74	4.9	0.30	0.02	1.64	0.52	41	03
50		14.21	14.20		33.291	24.827	312.9	0.168	5.02	219.1	85.9	7.7	0.75	5.1	0.31	0.04	1.54	0.56	50	02
60		13.95	13.94		33.300	24.887	307.4	0.199	4.80	209.8	81.8	9.4	0.86	6.3	0.41	0.04	0.79	0.48	60	01

A) PRIMARY PRODUCTIVITY SAMPLES WERE TAKEN FROM THESE LEVELS.
D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED O2;

RV OCEANUS CALCOFI CRUISE 1511 STATION 76.7 51.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
35 1.3 N	120 55.1 W	08/11/2015	1119	UTC	240 m	340	15 kn			1014.6 mb	15.5 C	14.2 C				050

DEPTH m		TEMP DEG C	POTTEMP DEG C		SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		16.26	16.26		33.288	24.374	354.4	0.000	5.82	254.2	103.8	3.0	0.38	0.0	0.05	0.00	2.11	0.54	0	
2		16.26	16.26		33.288	24.374	354.5	0.007	5.82	254.2	103.8	3.0	0.38	0.0	0.05	0.00	2.11	0.54	2	16
9		16.27	16.26		33.297	24.379	354.2	0.032											9	15
10		16.23	16.23		33.288	24.380	354.1	0.035	5.80	253.1	103.3	3.0	0.39	0.0	0.04	0.01	2.12	0.55	10	14
20		16.11	16.11		33.281	24.402	352.4	0.071	5.77	252.2	102.7	3.2	0.39	0.1	0.05	0.00	2.31	0.62	20	13
30		15.98	15.97		33.274	24.428	350.3	0.106	5.69	248.6	101.0	3.4	0.41	0.4	0.08	0.10	2.34	0.59	30	12
40		15.08	15.07		33.271	24.626	331.7	0.140	5.32	232.4	92.7	5.2	0.58	2.4	0.29	0.11	0.56	0.40	40	11
50		14.07	14.06		33.275	24.844	311.2	0.172	4.99	218.1	85.2	6.8	0.74	5.0	0.22	0.00	0.37	0.30	50	10
60		13.70	13.69		33.273	24.918	304.4	0.203	4.93	215.3	83.5	7.3	0.81	6.2	0.11	0.00	0.22	0.25	60	09
70		13.26	13.25		33.288	25.020	295.0	0.233	4.76	207.8	79.9	8.4	0.89	7.6	0.07	0.00	0.21	0.24	71	08
75	ISL	13.23	D 13.22		33.294	D 25.030	294.2	0.250	4.74	D206.7	D 79.6	8.9	0.93	8.3	0.07	0.00	0.19	0.22	76	
85		12.72	12.71		33.339	25.166	281.4	0.276	4.47	195.3	74.2	9.9	1.02	9.7	0.07	0.00	0.14	0.17	86	07
100	ISL	11.38	D 11.36		33.259	D 25.357	263.4	0.320	4.58	D199.4	D 73.8	10.5	1.12	12.1	0.05	0.00	0.16	0.19	101	
101		11.12	11.11		33.241	25.389	260.3	0.320	4.61	201.5	74.0	10.6	1.13	12.3	0.05	0.00	0.16	0.19	102	06
120		10.11	10.10		33.416	25.702	230.8	0.366	3.97	173.6	62.4	16.9	1.48	18.1	0.03	0.00	0.05	0.09	121	05
125	ISL	9.94	D 9.93		33.494	D 25.791	222.5	0.380	3.79	D165.2	D 59.4	18.5	1.55	19.2	0.03	0.00	0.04	0.08	126	
140		9.64	9.63		33.663	25.973	205.4	0.410	3.20	139.8	49.8	23.5	1.76	22.8	0.04	0.01	0.01	0.05	141	04
150	ISL	9.63	D 9.61		33.745	D 26.040	199.3	0.433	2.97	D129.5	D 46.3	25.0	1.82	23.3	0.05	0.00	0.01	0.06	151	
170		9.68	9.66		33.862	26.124	191.9	0.470	2.61	113.8	40.6	28.0	1.95	24.3	0.08	0.00	0.01	0.07	171	03
200		9.47	9.45		33.933	26.214	183.9	0.526	2.37	103.2	36.7	30.5	2.02	25.6	0.09	0.00	0.01	0.07	202	02
230		8.96	8.93		34.071	26.405	166.2	0.578	1.66	72.5	25.5	40.9	2.36	29.1	0.18	0.10			232	01

D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED O2;

RV OCEANUS CALCOFI CRUISE 1511 STATION 76.7 55.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
34 53.3 N	121 11.9 W	08/11/2015	0754	UTC	562 m	350	13 kn			1016.0 mb	15.9 C	14.0 C				049

DEPTH m		TEMP DEG C	POTTEMP DEG C		SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		17.25	17.25		33.275	24.132	377.4	0.000	5.60	244.7	101.9	2.3	0.29	0.0	0.02	0.00	0.37	0.14	0	
3		17.25	17.25		33.275	24.133	377.5	0.011	5.60	244.7	101.9	2.3	0.29	0.0	0.02	0.00	0.37	0.14	3	21
10		17.24	17.24		33.282	24.141	377.0	0.038	5.61	245.0	102.0	2.3	0.32	0.0	0.02	0.00	0.39	0.16	10	19
10		17.24	17.24		33.276	24.137	377.4	0.036											10	20
20		17.13	17.13		33.272	24.160	375.5	0.075	5.62	245.5	102.0	2.4	0.33	0.0	0.02	0.00	0.54	0.21	20	18
30		16.54	16.53		33.265	24.294	363.1	0.112	5.72	249.9	102.6	2.8	0.35	0.1	0.04	0.00	1.50	0.47	30	17
40		15.72	15.71		33.276	24.489	344.8	0.148	5.80	253.2	102.3	3.6	0.41	0.4	0.06	0.00	3.15	0.69	40	16
50		13.32	13.32		33.069	24.836	311.8	0.180	5.87	256.6	98.6	4.2	0.51	1.6	0.10	0.00	0.88	0.58	50	15
60		11.49	11.48		33.217	25.302	267.6	0.209	4.67	203.9	75.4	10.2	1.10	12.3	0.05	0.00	0.18	0.28	60	14
70		11.28	11.27		33.215	25.340	264.3	0.236	4.66	203.5	74.9	10.7	1.11	12.3	0.05	0.00	0.16	0.23	71	13
75	ISL	10.89	D 10.88		33.297	D 25.473	251.6	0.251	4.49	D195.7	D 71.7	12.1	1.19	13.7	0.04	0.00	0.13	0.20	76	
85		10.52	10.51		33.353	25.580	241.6	0.274	4.19	183.0	66.4	15.0	1.36	16.5	0.04	0.00	0.08	0.12	86	11
100		9.87	9.85		33.462	25.778	223.1	0.309	3.88	169.5	60.6	18.5	1.52	19.2	0.03	0.00	0.04	0.07	101	12
120		9.34	9.33		33.687	26.040	198.6	0.351	3.32	145.0	51.4	23.9	1.72	22.8	0.02	0.00	0.01	0.04	121	10
125	ISL	9.35	D 9.34		33.718	D 26.063	196.5	0.363	3.26	D141.8	D 50.4	24.9	1.75	23.3	0.02	0.00	0.01	0.04	126	
140		9.08	9.06		33.809	26.178	185.8	0.390	3.04	132.5	46.7	27.7	1.84	24.8	0.02	0.00	0.00	0.03	141	09
150	ISL	8.90	D 8.88		33.878	D 26.261	178.1	0.410	2.90	D126.2	D 44.5	29.3	1.89	25.6	0.02	0.00	0.00	0.03	151	
170		8.71	8.69		33.937	26.337	171.3	0.443	2.66	116.3	40.7	32.6	1.98	27.1	0.02	0.00	0.00	0.03	171	08
200		8.42	8.40		34.005	26.436	162.4	0.493	2.35	102.7	35.7	36.9	2.13	28.6	0.02	0.00	0.00	0.03	202	07
231		8.05	8.02		34.045	26.524	154.5	0.542	2.10	91.6	31.6	41.4	2.23	30.3	0.02	0.00			233	06
250	ISL	7.98	D 7.95		34.057	D 26.545	152.9	0.574	1.92	D 83.7	D 28.9	43.8	2.32	31.1	0.02	0.00			252	
270		7.91	7.88		34.105	26.593	148.7	0.601	1.60	69.9	24.0	46.3	2.41	32.0	0.02	0.00			272	05
300	ISL	8.21	D 8.18		34.232	D 26.649	144.2	0.649	1.01	D 44.1	D 15.3	49.3	2.55	32.7	0.02	0.00			302	
320		7.99	7.96		34.230	26.680	141.5	0.675	0.92	40.0	13.8	51.3	2.65	33.1	0.02	0.00			323	04
380		7.20	7.16		34.217	26.785	132.0	0.757	0.77	33.7	11.4	59.6	2.78	35.6	0.02	0.00			383	03
400	ISL	7.06	D 7.02		34.201	D 26.792	131.6	0.788	0.76	D 33.0	D 11.2	62.5	2.81	36.3	0.02	0.00			403	
440		6.46	6.42		34.158	26.839	127.2	0.835	0.75	32.6	10.9	68.2	2.88	37.8	0.02	0.00			444	02
500	ISL	6.10	D 6.05		34.186	D 26.908	121.1	0.915	0.56	D 24.3	D 8.0	75.1	3.00	38.3	0.02	0.00			504	
515		6.28	6.23		34.250	26.936	119.0	0.926	0.38	16.7	5.5	76.8	3.03	38.4	0.02	0.00			519	01

D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED O2;

RV OCEANUS CALCOFI CRUISE 1511 STATION 76.7 60.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
34 43.3 N	121 32.9 W	08/11/2015	0402 UTC	944 m	330 15 kn			1016.2 mb	15.8 C	14.4 C				048

DEPTH m		TEMP DEG C		POTTEMP DEG C		SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L		OXYGEN µmol/Kg		OXY PCT		SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		16.89		16.89		33.281	24.223	368.8	0.000	5.76		251.7		104.0		2.1	0.37	0.0	0.02	0.13	0.73	0.24	0	
2		16.89		16.89		33.281	24.223	368.8	0.007	5.76		251.7		104.0		2.1	0.37	0.0	0.02	0.13	0.73	0.24	2	20
10		16.89		16.89		33.280	24.222	369.2	0.037	5.73		250.1		103.4		2.1	0.35	0.0	0.02	0.11	0.78	0.27	10	19
20		16.89		16.89		33.281	24.222	369.6	0.074	5.72		249.8		103.3		2.1	0.35	0.0	0.02	0.14	0.81	0.28	20	18
30		16.91		16.90		33.282	24.221	370.0	0.111	5.72		249.9		103.3		2.0	0.35	0.0	0.02	0.02	1.07	0.34	30	17
40		15.13		15.12		33.175	24.541	339.8	0.146	5.57		243.2		97.0		4.0	0.51	1.8	0.22	0.32	1.04	0.41	40	16
50		12.59		12.58		33.154	25.047	291.7	0.178	5.18		226.1		85.6		6.8	0.84	7.3	0.17	0.00	0.43	0.49	50	15
60		11.59		11.59		33.233	25.295	268.3	0.206	4.60		200.7		74.5		10.3	1.15	12.5	0.06	0.37	0.18	0.27	60	14
70		10.65		10.64		33.331	25.542	245.0	0.232	4.22		184.1		66.9		13.8	1.34	15.8	0.04	0.25	0.09	0.15	71	13
75	ISL	10.57	D	10.56		33.366	D 25.583	241.1	0.246	4.08	D	177.7	D	64.7		15.0	1.39	16.7	0.04	0.00	0.08	0.13	76	
85		10.22		10.21		33.456	25.713	228.9	0.267	3.84		167.5		60.4		17.3	1.49	18.5	0.03	0.00	0.05	0.10	86	12
100		9.74		9.73		33.501	25.829	218.2	0.301	3.77		164.5		58.7		19.7	1.57	20.1	0.03	0.04	0.03	0.06	101	11
120		9.16		9.15		33.628	26.022	200.2	0.343	3.64		158.9		56.0		23.2	1.68	22.0	0.03	0.01	0.01	0.04	121	10
125	ISL	9.20	D	9.19		33.663	D 26.044	198.2	0.355	3.54	D	154.2	D	54.6		24.5	1.74	22.8	0.03	0.03	0.01	0.04	126	
140		9.23		9.21		33.843	26.181	185.6	0.381	2.85		124.5		44.0		28.3	1.90	25.0	0.03	0.10	0.01	0.04	141	09
150	ISL	9.12	D	9.10		33.914	D 26.254	178.9	0.402	2.66	D	115.7	D	41.0		30.0	1.93	25.7	0.03	0.00	0.01	0.04	151	
170		8.79		8.77		33.975	26.355	169.6	0.434	2.69		117.5		41.2		33.4	1.99	26.9	0.02	0.00	0.00	0.03	171	08
200		8.08		8.06		33.991	26.476	158.4	0.484	2.76		120.6		41.6		37.2	2.01	28.0	0.02	0.00	0.00	0.02	202	07
230		7.80		7.77		34.021	26.541	152.7	0.530	2.37		103.5		35.5		41.7	2.16	30.1	0.02	0.00			232	06
250	ISL	7.54	D	7.52		34.007	D 26.567	150.4	0.564	2.37	D	103.0	D	35.2		44.9	2.24	31.3	0.02	0.00			252	
270		7.33		7.30		34.021	26.609	146.7	0.590	2.01		87.7		29.7		48.1	2.32	32.5	0.02	0.00			272	05
300	ISL	7.00	D	6.97		34.043	D 26.673	141.0	0.637	1.69	D	73.7	D	24.9		53.3	2.46	34.3	0.02	0.00			302	
319		6.85		6.82		34.058	26.706	138.1	0.660	1.45		63.3		21.2		56.7	2.55	35.5	0.02	0.00			322	04
380		6.44		6.41		34.078	26.776	132.1	0.742	1.18		51.3		17.1		62.8	2.69	37.2	0.02	0.00			383	03
400	ISL	6.36	D	6.33		34.085	D 26.793	130.8	0.774	1.08	D	46.8	D	15.6		65.3	2.74	37.8	0.01	0.00			403	
440		6.07		6.03		34.100	26.843	126.4	0.820	0.92		40.0		13.2		70.4	2.84	39.0	0.01	0.00			444	02
500	ISL	5.77	D	5.72		34.159	D 26.928	118.9	0.900	0.61	D	26.4	D	8.7		77.1	2.95	40.2	0.01	0.00			504	
515		5.75		5.71		34.160	26.931	118.8	0.912	0.59		25.7		8.4		78.8	2.98	40.6	0.01	0.04			519	01

D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED O2;

RV OCEANUS CALCOFI CRUISE 1511 STATION 76.7 70.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
34 23.3 N	122 14.7 W	07/11/2015	2213 UTC	4018 m	350 18 kn	330 04 05	1	1017.2 mb	16.5 C	14.5 C	26 m	3/8	SC	047

DEPTH m		TEMP DEG C		POTTEMP DEG C		SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L		OXYGEN µmol/Kg		OXY PCT		SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		18.19		18.19		33.341	23.955	394.3	0.000	5.48		239.4		101.6		1.6	0.28	0.0	0.01	0.00	0.27	0.07	0	
2		18.19		18.19		33.341	23.956	394.4	0.008	5.48		239.4		101.6		1.6	0.28	0.0	0.01	0.00	0.27	0.07	2	20
10		18.19		18.19		33.341	23.958	394.5	0.040	5.49		239.6		101.6		1.5	0.26	0.0	0.01	0.00	0.25	0.06	10	19
20		18.16		18.16		33.342	23.966	394.1	0.079	5.49		239.6		101.6		1.5	0.28	0.0	0.01	0.00	0.24	0.08	20	18
30		18.11		18.11		33.344	23.980	393.1	0.118	5.49		239.8		101.6		1.5	0.27	0.0	0.01	0.00	0.29	0.13	30	17
40		14.96		14.95		33.277	24.656	328.8	0.154	5.72		250.0		99.5		1.8	0.30	0.0	0.01	0.00	0.43	0.18	40	16
50		12.82		12.81		33.094	24.955	300.5	0.186	5.78		252.7		96.1		4.5	0.62	3.5	0.13	0.00	0.80	0.67	50	15
60		12.10		12.09		33.173	25.155	281.6	0.215	5.05		220.4		82.6		7.4	0.88	7.8	0.08	0.00	0.39	0.40	60	14
70		11.42		11.41		33.253	25.344	263.9	0.242	4.56		199.2		73.6		10.8	1.13	12.6	0.04	0.00	0.20	0.31	71	13
75	ISL	10.98	D	10.97		33.292	D 25.453	253.6	0.258	4.49	D	195.4	D	71.7		12.1	1.20	13.9	0.04	0.00	0.17	0.27	76	
85		10.61		10.60		33.358	25.570	242.6	0.280	4.17		182.3		66.2		14.7	1.35	16.3	0.03	0.00	0.10	0.17	86	12
100		10.33		10.32		33.512	25.739	226.9	0.315	3.64		158.8		57.4		18.4	1.52	19.0	0.02	0.00	0.06	0.11	101	11
120		9.80		9.79		33.654	25.939	208.2	0.359	3.28		143.0		51.2		22.7	1.68	21.9	0.02	0.00	0.01	0.05	121	10
125	ISL	9.79	D	9.78		33.678	D 25.960	206.4	0.373	3.20	D	139.2	D	49.9		23.4	1.71	22.3	0.02	0.00	0.01	0.05	126	
140		9.53		9.51		33.750	26.060	197.2	0.399	3.01		131.5		46.8		25.6	1.79	23.5	0.02	0.00	0.01	0.04	141	09
150	ISL	9.42	D	9.41		33.784	D 26.103	193.2	0.423	2.96	D	128.8	D	45.9		26.7	1.83	24.2	0.02	0.00	0.01	0.04	151	
170		9.27		9.25		33.872	26.199	184.6	0.457	2.68		116.9		41.4		29.1	1.90	25.5	0.02	0.00	0.00	0.05	171	08
200		8.87		8.85		34.008	26.369	168.9	0.510	2.25		98.3		34.5		34.7	2.12	27.9	0.02	0.00	0.00	0.02	202	07
230		8.62		8.60		34.092	D 26.474	159.5	0.564	1.89	D	82.0	D	28.8									232	06
250	ISL	8.46	D	8.44		34.102	D 26.507	156.7	0.596	1.79	D	77.9	D	27.2		41.4	2.25	30.1	0.02	0.00			252	
270		8.04		8.01		34.089	26.561	151.8	0.622	1.80		78.4		27.0		44.1	2.30	31.0	0.02	0.00			272	05
300	ISL	7.98	D	7.95		34.160	D 26.627	146.1	0.672	1.29	D	56.2	D	19.4		49.2	2.49	32.6	0.02	0.00			302	
320		7.87		7.84		34.204	26.678	141.6	0.695	0.98		42.8		14.7		52.5	2.62	33.6	0.02	0.00			323	04
380		7.07		7.03		34.188	26.780	132.3	0.778	0.81		35.1		11.9		61.9	2.79	35.9	0.02	0.01			383	03
400	ISL	6.86	D	6.82		34.178	D 26.801	130.5	0.810	0.79	D	34.5	D	11.6		64.8	2.80	36.8	0.02	0.00			403	
440		6.13		6.09		34.118	26.850	125.8	0.855	0.85		37.3		12.3		70.6	2.81	38.7	0.02	0.00			444	02
500	ISL	5.77	D	5.73		34.167	D 26.933	118.3	0.936	0.57	D	24.9	D	8.2		77.7	3.01	39.8	0.02	0.00			504	
515		5.99		5.94		34.222	26.951	117.2	0.945	0.46		20.0		6.6		79.4	3.06	40.0	0.02	0.02			519	01

D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED O2;

RV OCEANUS CALCOFI CRUISE 1511 STATION 76.7 80.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
34 3.3 N	122 56.5 W	07/11/2015	1724 UTC	4231 m	350 16 kn	360 04 05	1	1020.2 mb	16.2 C	14.3 C	21 m	5/8	AC	046

DEPTH m		TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		17.77	17.77	33.334	24.054	384.9	0.000	5.50	240.4	101.2	1.6	0.26	0.0	0.01	0.00	0.29	0.10	0	
3	A	17.77	17.77	33.334	24.054	385.0	0.012	5.50	240.4	101.2	1.6	0.26	0.0	0.01	0.00	0.29	0.10	3	24
10	ISL	17.77 D	17.76	33.313 D	24.039	386.7	0.039	5.53 D	241.1 D	101.6	1.6	0.27	0.0	0.01	0.00	0.29	0.10	10	
13	A	17.77	17.76	33.313	24.039	386.8	0.050	5.51	240.7	101.3	1.6	0.27	0.0	0.01	0.00	0.28	0.09	13	22
13		17.77	17.76	33.313	24.040	386.8	0.049											13	23
17	A	17.76	17.76	33.313	24.040	386.9	0.066	5.53	241.5	101.6	1.6	0.30	0.0	0.01	0.00	0.30	0.10	17	21
20	ISL	17.77 D	17.76	33.312 D	24.039	387.1	0.078	5.53 D	241.1 D	101.6	1.6	0.29	0.0	0.01	0.00	0.29	0.09	20	
24		17.77	17.76	33.316	24.042	387.0	0.093	5.52	241.2	101.4	1.6	0.27	0.0	0.01	0.00	0.28	0.09	24	20
30	A	17.75	17.75	33.314	24.045	386.9	0.116	5.51	240.7	101.2	1.6	0.29	0.0	0.01	0.01	0.28	0.09	30	19
40		14.50	14.50	33.092	24.611	333.1	0.152	6.00	262.0	103.1	2.8	0.38	0.0	0.02	0.00	0.61	0.30	40	18
49		13.98	13.97	33.156	24.770	318.2	0.181	5.78	252.5	98.4	3.5	0.48	0.9	0.06	0.05	0.50	0.33	49	16
50	ISL	13.71 D	13.70	33.151 D	24.822	313.3	0.186	5.70 D	248.6 D	96.6	3.7	0.50	1.4	0.08	0.00	0.49	0.33	50	
50		13.71	13.70	33.154	24.824	313.1	0.183											50	17
56	A	13.00	12.99	33.128	24.946	301.5	0.203	5.50	240.1	91.7	5.1	0.65	4.2	0.20	0.00	0.40	0.32	56	15
66		12.29	12.28	33.174	25.120	285.1	0.232	5.08	221.8	83.5	6.9	0.88	8.1	0.16	0.00	0.32	0.31	67	14
75	A	10.96	10.95	33.172	25.363	262.1	0.257	4.90	214.1	78.3	10.3	1.07	12.2	0.04	0.02	0.20	0.19	76	13
88		10.53	10.52	33.305	25.542	245.3	0.290	4.35	189.9	68.9	13.6	1.26	15.4	0.03	0.00	0.10	0.14	89	12
100		10.07	10.06	33.404	25.698	230.7	0.318	4.06	177.4	63.7	16.7	1.39	17.9	0.02	0.00	0.05	0.08	101	11
119		9.64	9.62	33.587	25.913	210.6	0.360	3.51	153.2	54.6	21.6	1.64	21.6	0.02	0.01	0.02	0.04	120	10
125	ISL	9.43 D	9.41	33.663 D	26.007	201.8	0.375	3.33 D	144.7 D	51.5	22.8	1.66	22.2	0.02	0.00	0.01	0.04	126	
141		8.94	8.92	33.737	26.144	189.0	0.404	3.44	150.0	52.7	26.0	1.72	23.7	0.02	0.00	0.01	0.03	142	09
150	ISL	8.83 D	8.82	33.790 D	26.202	183.7	0.424	3.37 D	146.7 D	51.6	26.9	1.74	24.1	0.02	0.00	0.00	0.03	151	
170		8.68	8.66	33.838	26.264	178.2	0.457	3.29	143.8	50.2	28.8	1.78	24.9	0.02	0.00	0.00	0.02	171	08
200		8.32	8.30	33.932	26.394	166.3	0.509	3.13	136.8	47.4	32.7	1.85	26.4	0.02	0.00	0.00	0.03	202	07
230		7.87	7.84	33.991	26.508	155.9	0.557	2.62	114.2	39.2	39.8	2.03	29.2	0.02	0.00			232	06
250	ISL	7.65 D	7.62	34.008 D	26.553	151.8	0.592	2.37 D	103.1 D	35.3	42.8	2.13	30.4	0.02	0.00			252	
270		7.42	7.39	34.018	26.594	148.2	0.618	2.14	93.3	31.7	45.7	2.23	31.7	0.02	0.00			272	05
300	ISL	7.07 D	7.04	34.048 D	26.667	141.6	0.666	1.65 D	72.0 D	24.3	51.8	2.40	33.8	0.01	0.00			302	
320		6.92	6.89	34.063	26.700	138.7	0.690	1.45	63.2	21.2	55.8	2.52	35.2	0.01	0.00			323	04
380		6.48	6.44	34.115	26.801	129.8	0.770	0.97	42.1	14.0	64.9	2.75	37.7	0.01	0.02			383	03
400	ISL	6.46 D	6.42	34.153 D	26.834	127.0	0.801	0.78 D	34.0 D	11.4	67.7	2.81	38.2	0.01	0.00			403	
440		6.19	6.15	34.195	26.903	120.8	0.846	0.55	24.1	8.0	73.2	2.94	39.1	0.01	0.00			444	02
500	ISL	5.74 D	5.70	34.205 D	26.967	115.1	0.922	0.46 D	20.2 D	6.6	81.3	3.04	40.8	0.01	0.00			504	
515		5.63	5.58	34.209	26.985	113.5	0.933	0.44	19.1	6.2	83.3	3.06	41.3	0.01	0.00			519	01

A) PRIMARY PRODUCTIVITY SAMPLES WERE TAKEN FROM THESE LEVELS.
D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED O2;

RV OCEANUS CALCOFI CRUISE 1511 STATION 76.7 90.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
33 43.4 N	123 38.0 W	07/11/2015	1038 UTC	4264 m	360 16 kn			1020.0 mb	16.0 C	14.6 C				045

DEPTH m		TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		17.73	17.73	33.291	24.031	387.1	0.000	5.54	241.9	101.7	1.4	0.25	0.0	0.02	0.44	0.20	0.06	0	
2		17.73	17.73	33.291	24.031	387.1	0.008	5.54	241.9	101.7	1.4	0.25	0.0	0.02	0.44	0.20	0.06	2	20
10		17.72	17.72	33.288	24.030	387.6	0.039	5.51	240.5	101.1	1.6	0.26	0.0	0.02	0.00	0.19	0.06	10	19
20	ISL	17.67 D	17.66	33.270 D	24.031	387.9	0.078	5.52 D	240.8 D	101.2	1.7	0.26	0.0	0.02	0.00	0.19	0.06	20	
25		17.68	17.68	33.287	24.040	387.1	0.097	5.51	240.7	101.1	1.7	0.26	0.0	0.02	0.02	0.20	0.07	25	18
30	ISL	17.67 D	17.66	33.270 D	24.031	388.2	0.117	5.53 D	241.0 D	101.3	1.7	0.26	0.0	0.02	0.00	0.20	0.06	30	
40		17.57	17.57	33.258	24.046	387.2	0.155	5.53	241.6	101.2	1.7	0.26	0.0	0.02	0.00	0.20	0.06	40	17
50		14.53	14.52	32.757	24.349	358.4	0.192	6.07	265.3	104.3	2.2	0.29	0.0	0.02	0.04	0.25	0.16	50	16
62		13.43	13.42	32.738	24.560	338.5	0.234	6.00	262.2	100.7	2.7	0.35	0.0	0.03	0.00	0.35	0.28	63	15
75		13.45	13.44	33.151	24.876	308.8	0.276	5.69	248.4	95.7	3.8	0.35	0.6	0.16	0.00	0.33	0.35	76	14
87		12.40	12.39	33.104	25.046	292.9	0.312	5.43	237.3	89.4	5.8	0.61	4.8	0.12	0.01	0.24	0.34	88	13
100		11.21	11.19	33.206	25.347	264.3	0.348	4.73	206.5	75.9	10.1	1.09	12.3	0.04	0.00	0.16	0.24	101	12
112		10.76	10.74	33.320	25.516	248.4	0.379	4.23	184.6	67.2	13.9	1.29	16.0	0.03	0.00	0.10	0.13	113	11
125		10.01	9.99	33.417	25.720	229.2	0.410	3.90	170.3	61.1	17.8	1.49	19.3	0.03	0.00	0.05	0.07	126	10
140		9.98	9.96	33.658	25.914	211.1	0.443	3.07	133.8	48.1	23.0	1.73	22.6	0.03	0.01	0.01	0.05	141	09
150	ISL	9.65 D	9.64	33.681 D	25.986	204.4	0.468	3.16 D	137.4 D	49.1	24.3	1.77	23.2	0.03	0.00	0.01	0.05	151	
171		9.39	9.37	33.785	26.110	193.0	0.505	2.85	124.3	44.1	26.9	1.85	24.7	0.03	0.00	0.00	0.04	172	08
200		8.54	8.52	33.886	26.324	173.1	0.559	2.85	124.6	43.4	32.0	1.93	27.1	0.03	0.00	0.00	0.03	202	07
230		8.23	8.20	33.968	26.437	162.8	0.609	2.61	113.9	39.4	36.5	2.05	28.7	0.03	0.00			232	06
250	ISL	8.01 D	7.98	34.014 D	26.506	156.6	0.645	2.24 D	97.3 D	33.6	40.6	2.16	30.1	0.03	0.00			252	
270		7.73	7.71	34.028	26.557	151.9	0.672	2.02	88.3	30.2	44.7	2.27	31.6	0.03	0.11			272	05
300	ISL	7.31 D	7.28	34.042 D	26.630	145.3	0.722	1.77 D	77.1 D	26.2	50.1	2.40	33.4	0.03	0.06			302	
320		7.03	7.00	34.047	26.672	141.4	0.745	1.61	70.3	23.7	53.8	2.48	34.6	0.03	0.02			323	04
380		6.71	6.68	34.103	26.761	133.8	0.828	1.07	46.7	15.6	62.5	2.70	37.3	0.03	0.00			383	03
400	ISL	6.48 D	6.45	34.115 D	26.801	130.1	0.860	0.94 D	40.7 D	13.6	65.9	2.77	38.1	0.03	0.00			403	
440		6.11	6.08	34.145	26.872	123.6	0.905	0.67	29.4	9.7	72.7	2.91	39.9	0.02	0.00			444	02
500	ISL	5.59 D	5.55	34.168 D	26.957	115.9	0.984	0.54 D	23.7 D	7.7	81.3	3.01	40.5	0.03	0.00			504	
515		5.54	5.49	34.181	26.973	114.5	0.994	0.48	21.1	6.9	83.4	3.04	40.7	0.03	0.03			519	01

D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED O2;

RV OCEANUS CALCOFI CRUISE 1511 STATION 76.7 100.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
33 23.3 N	124 19.4 W	07/11/2015	0449	UTC	4553 m	350 15 kn			1022.0 mb	16.9 C	14.3 C				044

DEPTH m		TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		18.83	18.83	33.180	23.675	421.0	0.000	5.40	236.1	101.3	1.9	0.27	0.0	0.01	0.00	0.16	0.03	0	
2		18.83	18.83	33.180	23.675	421.1	0.008	5.40	236.1	101.3	1.9	0.27	0.0	0.01	0.00	0.16	0.03	2	20
10		18.83	18.83	33.181	23.676	421.4	0.042	5.41	236.5	101.4	1.9	0.27	0.0	0.01	0.00	0.15	0.03	10	19
20	ISL	18.83 D	18.82	33.179 D	23.676	421.8	0.085	5.41 D	236.1	D101.4	1.9	0.26	0.0	0.01	0.00	0.15	0.04	20	
25		18.83	18.83	33.182	23.678	421.8	0.105	5.40	236.0	101.2	1.9	0.26	0.0	0.01	0.00	0.15	0.04	25	18
30	ISL	18.84 D	18.83	33.178 D	23.674	422.4	0.127	5.41 D	236.0	D101.4	1.9	0.26	0.0	0.01	0.00	0.15	0.04	30	
40		18.83	18.83	33.180	23.677	422.5	0.169	5.40	236.0	101.2	2.0	0.26	0.0	0.01	0.00	0.15	0.04	40	17
50		18.79	18.79	33.181	23.689	421.7	0.211	5.41	236.5	101.4	1.9	0.26	0.0	0.01	0.02	0.15	0.05	50	16
62		16.58	16.57	33.007	24.088	383.9	0.259	5.93	258.9	106.2	2.3	0.28	0.0	0.01	0.00	0.32	0.15	63	15
75		14.62	14.61	33.008	24.523	342.6	0.306	5.97	260.7	102.8	2.7	0.28	0.0	0.02	0.00	0.37	0.29	76	14
87		13.19	13.18	33.059	24.857	310.9	0.346	5.74	250.8	96.1	4.4	0.54	2.3	0.13	0.07	0.36	0.37	88	13
100		11.17	11.16	33.087	25.261	272.5	0.383	5.18	226.1	83.0	8.2	0.86	8.9	0.04	0.01	0.15	0.24	101	12
112		10.55	10.53	33.155	25.424	257.2	0.415	5.03	219.6	79.6	10.7	1.02	11.8	0.03	0.00	0.13	0.16	113	11
125		9.97	9.95	33.255	25.600	240.6	0.448	4.94	215.9	77.3	12.6	1.13	13.7	0.02	0.00	0.10	0.11	126	10
140		9.28	9.27	33.410	25.833	218.5	0.482	4.51	197.1	69.6	17.8	1.38	17.9	0.02	0.01	0.04	0.04	141	09
150	ISL	9.10 D	9.08	33.470 D	25.910	211.4	0.507	4.38 D	190.7 D	67.3	20.0	1.48	19.6	0.02	0.00	0.03	0.03	151	
170		9.03	9.02	33.675	26.081	195.6	0.544	3.73	163.0	57.3	24.5	1.67	22.9	0.02	0.00	0.01	0.02	171	08
200		8.95	8.93	33.945	26.307	174.9	0.600	2.48	108.3	38.1	32.3	2.05	27.7	0.02	0.06	0.00	0.03	202	07
230		8.80	8.77	34.020	26.391	167.5	0.651	2.18	95.0	33.3	35.6	2.17	28.9	0.02	0.00			232	06
250	ISL	8.56 D	8.53	34.062 D	26.461	161.1	0.688	1.98 D	86.3 D	30.2	38.3	2.24	30.0	0.02	0.00			252	
270		8.25	8.22	34.079 D	26.521	155.6	0.720	1.86	81.0	28.1	41.1	2.30	31.1	0.02	0.00			272	05
300	ISL	8.05 D	8.01	34.130 D	26.593	149.4	0.766	1.48 D	64.3 D	22.3	45.7	2.44	32.6	0.02	0.00			302	
320		7.80	7.77	34.125	26.626	146.4	0.791	1.39	60.5	20.8	48.7	2.54	33.6	0.02	0.01			323	04
380		7.00	6.96	34.121	26.737	136.3	0.876	1.08	47.2	15.9	58.2	2.72	36.6	0.02	0.03			383	03
400	ISL	6.86 D	6.83	34.136 D	26.767	133.7	0.908	0.95 D	41.2 D	13.9	61.8	2.79	37.5	0.02	0.03			403	
440		6.36	6.32	34.151	26.846	126.4	0.955	0.72	31.3	10.4	69.0	2.93	39.4	0.02	0.04			444	02
500	ISL	5.84 D	5.79	34.194 D	26.947	117.1	1.035	0.51 D	22.1 D	7.3	79.5	3.07	41.3	0.02	0.03			504	
516		5.61	5.56	34.182	26.966	115.3	1.047	0.51	22.2	7.2	82.3	3.11	41.8	0.02	0.03			520	01

D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED O2;

RV OCEANUS CALCOFI CRUISE 1511 STATION 80.0 51.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
34 27.1 N	120 31.4 W	05/11/2015	1441	UTC	75 m	050 06 kn	310 02 06	1	1020.4 mb	15.2 C	9.8 C		1/8	ST	037

DEPTH m		TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		16.45	16.45	33.298	24.337	357.9	0.000	5.62	245.6	100.7	3.7	0.38	0.3	0.08	0.00	1.04	0.19	0	
2		16.45	16.45	33.298	24.337	358.0	0.007	5.62	245.6	100.7	3.7	0.38	0.3	0.08	0.00	1.04	0.19	2	10
5		16.45	16.45	33.298	24.337	358.1	0.018	5.62	245.4	100.6	3.8	0.39	0.3	0.09	0.00	0.90	0.32	5	09
10		16.44	16.43	33.301	24.343	357.7	0.036	5.57	243.1	99.7	3.9	0.40	0.5	0.11	0.02	0.85	0.36	10	07
10		16.44	16.43	33.299	24.342	357.8	0.035											10	08
20		15.13	15.12	33.283	24.623	331.4	0.070	5.38	235.1	93.9	5.0	0.53	1.9	0.21	0.01	0.65	0.36	20	06
30		14.44	14.44	33.273	24.763	318.3	0.103	5.09	222.4	87.6	6.0	0.67	3.6	0.19	0.00	0.57	0.13	30	05
40		14.18	14.17	33.304	24.842	311.0	0.134	4.90	213.9	83.8	7.0	0.75	4.9	0.18	0.00	0.33	0.27	40	04
50		13.61	13.61	33.322	24.974	298.8	0.165	4.71	205.8	79.7	7.9	0.84	6.5	0.09	0.05	0.20	0.23	50	03
60		12.99	12.98	33.314	25.093	287.7	0.194	4.60	200.8	76.7	9.3	0.96	8.6	0.10	0.00	0.17	0.18	60	02
65		12.86	12.85	33.314	25.118	285.4	0.208	4.57	199.7	76.2	9.5	0.98	8.8	0.10	0.00	0.21	0.18	66	01

D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED O2;

RV OCEANUS CALCOFI CRUISE 1511 STATION 80.0 55.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
34 19.0 N	120 48.1 W	05/11/2015	1754	UTC	806 m	360 07 kn	310 03 06	0	1022.0 mb	15.9 C	11.6 C	15 m	0/8		038

DEPTH m		TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		17.07	17.07	33.355	24.236	367.6	0.000	5.65	246.6	102.4	2.9	0.35	0.0	0.02	0.00	1.61	0.39	0	
3	A	17.07	17.07	33.355	24.236	367.6	0.011	5.65	246.6	102.4	2.9	0.35	0.0	0.02	0.00	1.61	0.39	3	23
9	A	17.04	17.03	33.354	24.245	367.1	0.033	5.65	246.6	102.3	2.9	0.34	0.0	0.02	0.00	1.62	0.44	9	22
10	ISL	17.03 D	17.02	33.351 D	24.245	367.1	0.037	5.64 D	245.8 D	102.1	2.9	0.34	0.0	0.02	0.00	1.63	0.44	10	
12	A	17.03	17.03	33.354	24.246	367.0	0.044	5.63	245.9	102.0	2.8	0.33	0.0	0.02	0.00	1.66	0.44	12	19
13		17.03	17.03	33.354	24.246	367.0	0.046											12	21
12		17.03	17.03	33.354	24.247	367.0	0.043											12	20
20	ISL	17.02 D	17.02	33.352 D	24.248	367.2	0.074	5.60 D	244.3 D	101.5	2.8	0.33	0.0	0.02	0.00	1.76	0.43	20	
22	A	17.00	17.00	33.354	24.254	366.7	0.081	5.62	245.5	101.8	2.8	0.33	0.0	0.02	0.00	1.78	0.43	22	18
30	ISL	15.05 D	15.05	33.308 D	24.660	328.2	0.109	5.51 D	240.0 D	95.9	5.6	0.59	3.2	0.13	0.00	1.35	0.44	30	
32		14.55	14.55	33.296	24.758	318.9	0.115	5.20	227.1	89.6	6.3	0.65	4.0	0.16	0.09	1.24	0.45	32	17
42	A	12.80	12.79	33.338	25.148	281.9	0.145	4.92	214.6	81.7	9.6	0.93	8.7	0.17	0.03	0.72	0.45	42	16
50	ISL	11.79 D	11.79	33.416 D	25.401	258.0	0.168	4.15 D	180.9 D	67.6	12.7	1.15	12.6	0.09	0.00	0.48	0.26	50	
52	A	11.69	11.68	33.429	25.430	255.2	0.172	4.05	177.0	65.9	13.5	1.20	13.6	0.07	0.00	0.42	0.21	52	15
62		11.37	11.36	33.482	25.530	246.0	0.197	3.82	166.9	61.7	15.1	1.31	15.1	0.05	0.00	0.16	0.19	63	14
70		11.28	11.27	33.494	25.556	243.7	0.216	3.78	164.9	60.9	15.5	1.34	15.4	0.04	0.00	0.12	0.17	71	13
75	ISL	11.16 D	11.15	33.509 D	25.589	240.7	0.230	3.73 D	162.6 D	60.0	16.2	1.37	16.0	0.04	0.00	0.10	0.14	76	
85		10.85	10.83	33.537	25.668	233.4	0.252	3.65	159.4	58.3	17.6	1.42	17.1	0.04	0.00	0.04	0.09	86	12
100		10.61	10.60	33.651	25.799	221.3	0.286	3.27	142.6	51.9	20.1	1.59	19.1	0.02	0.00	0.02	0.06	101	11
120		10.25	10.23	33.715	25.912	210.9	0.330	3.10	135.2	48.9	22.5	1.68	20.6	0.03	0.00	0.01	0.05	121	10
125	ISL	10.06 D	10.04	33.758 D	25.978	204.8	0.342	3.03 D	132.1 D	47.7	23.4	1.73	21.2	0.03	0.00	0.01	0.05	126	
140		9.91	9.89	33.842	26.069	196.4	0.370	2.66	116.1	41.7	26.3	1.86	22.9	0.02	0.00	0.01	0.04	141	09
150	ISL	9.77 D	9.75	33.879 D	26.122	191.6	0.392	2.60 D	113.0 D	40.6	27.9	1.91	23.7	0.02	0.00	0.01	0.04	151	
170		9.50	9.49	33.975	26.240	180.8	0.427	2.30	100.5	35.8	31.0	2.01	25.4	0.02	0.00	0.00	0.04	171	08
199		9.34	9.32	34.071	26.344	171.6	0.478	1.86	81.1	28.8	35.0	2.19	27.1	0.02	0.00	0.00	0.04	201	07
200	ISL	9.36 D	9.34	34.075 D	26.343	171.6	0.482	1.76 D	76.5 D	27.3	35.0	2.19	27.1	0.02	0.00			202	
231		9.15	9.12	34.118	26.412	165.7	0.532	1.79	78.1	27.6	37.0	2.20	27.8	0.02	0.00			233	06
250	ISL	8.83 D	8.81	34.116 D	26.461	161.3	0.567	1.75 D	76.3 D	26.9	39.1	2.24	28.5	0.02	0.00			252	
269		8.61	8.58	34.133	26.510	156.9	0.593	1.66	72.3	25.3	41.2	2.28	29.3	0.02	0.00			271	05
300	ISL	8.42 D	8.38	34.205 D	26.597	149.3	0.645	1.22 D	52.9 D	18.5	45.6	2.44	30.7	0.02	0.00			302	
319		8.25	8.21	34.224	26.638	145.6	0.669	1.07	46.6	16.2	48.3	2.53	31.5	0.02	0.00			322	04
380		7.46	7.42	34.211	26.743	136.2	0.755	0.86	37.6	12.8	56.8	2.66	34.2	0.02	0.00			383	03
400	ISL	7.36 D	7.32	34.204 D	26.753	135.6	0.788	0.85 D	37.0 D	12.6	59.7	2.72	34.6	0.02	0.00			403	
440		7.03	6.99	34.228	26.818	129.8	0.835	0.63	27.4	9.2	65.4	2.84	35.6	0.02	0.00			444	02
500	ISL	6.36 D	6.31	34.224 D	26.905	121.7	0.917	0.51 D	22.1 D	7.4	74.6	2.93	38.1	0.02	0.00			504	
515		6.01	5.96	34.182	26.916	120.5	0.929	0.57	25.0	8.2	76.9	2.95	38.7	0.02	0.00			519	01

A) PRIMARY PRODUCTIVITY SAMPLES WERE TAKEN FROM THESE LEVELS.
D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED O2;

RV OCEANUS CALCOFI CRUISE 1511 STATION 80.0 60.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
34 9.0 N	121 9.0 W	05/11/2015	2220 UTC	2194 m	360 10 kn	340 04 06	1	1021.4 mb	16.2 C	12.5 C	21 m	2/8	CS	039

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0	17.23	17.23	33.296	24.154	375.4	0.000	5.61	245.2	102.1	3.7	0.34	0.0	0.02	0.00	0.51	0.21	0	
2	17.23	17.23	33.296	24.154	375.4	0.008	5.61	245.2	102.1	3.7	0.34	0.0	0.02	0.00	0.51	0.21	2	21
10	17.12	17.12	33.295	24.179	373.4	0.037	5.61	245.0	101.8	3.3	0.34	0.0	0.02	0.00	0.56	0.19	10	19
11	17.03	17.02	33.294	24.201	371.3	0.040											11	20
19	16.92	16.92	33.300	24.230	368.8	0.071	5.61	245.0	101.4	3.5	0.35	0.1	0.04	0.00	0.86	0.32	19	18
20 ISL	16.92 D	16.92	33.296 D	24.228	369.1	0.075	5.61 D	244.8 D	101.5	3.5	0.35	0.1	0.04	0.00	0.85	0.32	20	
30	16.69	16.68	33.299	24.285	364.0	0.111	5.59	244.3	100.6	3.6	0.37	0.2	0.04	0.00	0.77	0.33	30	17
41	14.57	14.57	33.266	24.730	321.8	0.149	5.43	237.0	93.6	5.1	0.54	2.1	0.21	0.22	0.63	0.34	41	16
49	13.62	13.61	33.312	24.965	299.6	0.174	4.74	206.9	80.1	8.0	0.83	6.9	0.12	0.00	0.37	0.30	49	15
50 ISL	13.36 D	13.36	33.318 D	25.021	294.3	0.178	4.68 D	204.0 D	78.8	8.2	0.84	7.1	0.11	0.00	0.36	0.30	50	
60	12.81	12.80	33.328	25.139	283.3	0.206	4.51	197.1	75.1	9.8	0.97	9.2	0.07	0.00	0.24	0.27	60	14
70	12.11	12.10	33.351	25.291	269.0	0.233	4.33	189.1	71.0	11.6	1.11	11.6	0.06	0.06	0.14	0.17	71	13
75 ISL	11.96 D	11.95	33.409 D	25.365	262.1	0.248	4.12 D	179.4 D	67.3	12.2	1.14	12.1	0.05	0.00	0.12	0.16	76	
86	11.59	11.58	33.413	25.438	255.4	0.275	4.07	177.9	66.1	13.3	1.20	13.3	0.04	0.00	0.09	0.13	87	12
100	10.85	10.83	33.393	25.557	244.3	0.310	4.10	179.0	65.4	14.8	1.29	15.2	0.03	0.00	0.07	0.11	101	11
120	9.95	9.93	33.536	25.823	219.3	0.356	3.71	161.8	58.0	19.9	1.52	19.4	0.03	0.00	0.03	0.06	121	10
125 ISL	9.94 D	9.92	33.557 D	25.841	217.8	0.370	3.65 D	158.9 D	57.1	21.0	1.57	20.2	0.03	0.00	0.02	0.06	126	
139	9.48	9.47	33.671	26.005	202.3	0.397	3.22	140.7	50.0	23.9	1.72	22.4	0.02	0.03	0.01	0.05	140	09
150 ISL	9.32 D	9.30	33.751 D	26.094	194.0	0.421	3.06 D	133.3 D	47.3	25.7	1.77	23.3	0.02	0.00	0.01	0.04	151	
170	8.99	8.97	33.833	26.213	183.2	0.456	2.88	125.7	44.2	29.0	1.86	24.9	0.02	0.00	0.01	0.03	171	08
200	8.62	8.60	33.941	26.356	170.1	0.509	2.60	113.6	39.6	33.4	2.00	26.8	0.02	0.04	0.00	0.04	202	07
230	8.29	8.27	33.996	26.449	161.7	0.559	2.36	103.1	35.7	37.1	2.09	28.3	0.02	0.00			232	06
250 ISL	8.06 D	8.03	34.027 D	26.509	156.3	0.595	2.15 D	93.6 D	32.4	40.9	2.18	29.6	0.02	0.00			252	
270	7.74	7.71	34.037	26.564	151.2	0.622	1.96	85.5	29.3	44.7	2.26	30.9	0.02	0.00			272	05
300 ISL	7.60 D	7.57	34.092 D	26.628	145.6	0.670	1.53 D	66.5 D	22.8	49.3	2.41	32.3	0.01	0.00			302	
320	7.40	7.37	34.104	26.666	142.3	0.696	1.35	59.1	20.1	52.3	2.51	33.3	0.01	0.00			323	04
380	6.86	6.82	34.139	26.770	133.1	0.778	0.95	41.6	14.0	60.6	2.70	35.6	0.01	0.00			383	03
400 ISL	6.64 D	6.61	34.130 D	26.792	131.1	0.810	0.91 D	39.5 D	13.3	62.4	2.75	35.8	0.01	0.00			403	
440	6.86	6.82	34.259	26.866	125.1	0.855	0.49	21.4	7.2	66.2	2.85	36.2	0.02	0.12			444	02
500 ISL	6.34 D	6.30	34.259 D	26.936	118.9	0.935	0.41 D	17.8 D	5.9	74.1	2.97	37.7	0.02	0.11			504	
514	6.29	6.24	34.264	26.946	118.0	0.944	0.39	17.0	5.6	75.9	3.00	38.0	0.02	0.11			518	01

D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED O2;

RV OCEANUS CALCOFI CRUISE 1511 STATION 80.0 70.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
33 49.0 N	121 50.6 W	06/11/2015	0412 UTC	3627 m	350 18 kn			1022.1 mb	16.4 C	13.8 C				040

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0	17.97	17.97	33.326	23.999	390.2	0.000	5.49	240.1	101.4	1.8	0.29	0.0	0.02	0.09	0.32	0.14	0	
2	17.97	17.97	33.326	23.999	390.2	0.008	5.49	240.1	101.4	1.8	0.29	0.0	0.02	0.09	0.32	0.14	2	22
10	17.97	17.97	33.323	23.996	390.8	0.039	5.49	240.0	101.4	1.7	0.30	0.0	0.01	0.00	0.33	0.12	10	20
11	17.98	17.97	33.323	23.996	390.9	0.041											11	21
20	17.98	17.97	33.328	24.000	390.8	0.078	5.50	240.2	101.4	1.7	0.29	0.0	0.00	0.00	0.32	0.12	20	19
30	17.93	17.92	33.333	24.017	389.6	0.117	5.49	240.0	101.3	1.7	0.30	0.0	0.00	0.27	0.37	0.14	30	18
40	15.50	15.50	33.172	24.457	347.9	0.155											40	17
41	14.88	14.87	33.178	24.598	334.4	0.157	5.75	251.3	99.8	3.2	0.44	0.7	0.05	0.09	1.23	0.66	41	16
50	12.96	12.95	33.119	24.947	301.3	0.186	5.50	240.1	91.6	5.3	0.66	4.1	0.15	0.13	0.82	0.63	50	15
60	11.57	11.56	33.231	25.299	267.9	0.215	4.73	206.8	76.6	9.7	1.05	10.8	0.05	0.49	0.32	0.35	60	14
70	10.65	10.64	33.329	25.539	245.2	0.240	4.31	188.2	68.4	13.9	1.29	15.1	0.02	0.18	0.15	0.15	71	13
75 ISL	10.37 D	10.36	33.386 D	25.633	236.4	0.254	4.07 D	177.2 D	64.3	15.5	1.38	16.4	0.02	0.22	0.12	0.13	76	
85	10.16	10.15	33.511	25.766	224.0	0.275	3.66	160.0	57.6	18.8	1.55	19.0	0.01	0.31	0.06	0.08	86	12
100	10.10	10.09	33.730	25.948	207.0	0.308	2.95	129.0	46.5	23.1	1.75	21.7	0.01	0.25	0.03	0.05	101	11
120	9.75	9.74	33.831	26.085	194.4	0.348	2.79	121.9	43.6	26.0	1.84	23.2	0.01	0.00	0.01	0.04	121	10
125 ISL	9.74 D	9.72	33.851 D	26.103	192.8	0.359	2.72 D	118.4 D	42.5	26.6	1.87	23.5	0.01	0.00	0.01	0.04	126	
140	9.85	9.83	33.930	26.147	189.0	0.386	2.32	101.3	36.3	28.5	1.96	24.5	0.01	0.07	0.01	0.03	141	09
150 ISL	9.78 D	9.77	33.975 D	26.194	184.8	0.407	2.19 D	95.2 D	34.2	29.7	2.01	25.0	0.01	0.07	0.01	0.03	151	
170	9.64	9.62	34.052	26.279	177.2	0.441	1.95	85.1	30.4	32.0	2.12	26.2	0.01	0.08	0.00	0.03	171	08
200	9.45	9.43	34.118	26.362	169.9	0.493	1.72	75.3	26.8	34.9	2.24	27.2	0.01	0.00	0.00	0.02	202	07
230	9.21	9.19	34.152 D	26.428	164.2	0.547	1.59 D	69.1 D	24.6								232	06
250 ISL	9.09 D	9.06	34.193 D	26.481	159.6	0.579	1.39 D	60.5 D	21.5	40.0	2.36	29.1	0.01	0.00			252	
270	8.69	8.66	34.182	26.535	154.7	0.607	1.39	60.7	21.2	42.1	2.41	29.8	0.01	0.02			272	05
300 ISL	8.49 D	8.46	34.223 D	26.599	149.1	0.657	1.13 D	48.9 D	17.1	45.6	2.51	31.0	0.01	0.01			302	
320	8.23	8.20	34.210	26.629	146.5	0.683	1.09	47.7	16.5	48.0	2.57	31.8	0.01	0.01			323	04
380	7.96	7.92	34.271	26.719	138.9	0.769	0.77	33.5	11.5	53.8	2.74	33.3	0.02	0.22			383	03
400 ISL	7.50 D	7.46	34.202 D	26.732	137.7	0.801	0.92 D	40.0 D	13.7	56.5	2.75	34.2	0.02	0.15			403	
440	6.84	6.80	34.167	26.796	131.6	0.849	0.84	36.8	12.3	62.0	2.77	36.1	0.02	0.01			444	02
500 ISL	6.24 D	6.19	34.199 D	26.901	121.9	0.933	0.56 D	24.5 D	8.1	72.3	2.95	38.5	0.02	0.07			504	
515	6.04	5.99	34.181	26.912	120.9	0.944	0.55	24.1	7.9	74.8	3.00	39.1	0.02	0.09			519	01

D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED O2;

RV OCEANUS CALCOFI CRUISE 1511 STATION 80.0 80.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
33 29.0 N	122 32.0 W	06/11/2015	1011	UTC	4006 m	360 22 kn			1022.4 mb	16.5 C	14.1 C				041

DEPTH m		TEMP DEG C		POTTEMP DEG C		SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		18.44		18.44		33.200	23.787	410.3	0.000	5.44	237.9	101.3	1.7	0.30	0.0	0.01	0.12	0.16	0.05	0	
3		18.44		18.44		33.200	23.787	410.4	0.012	5.44	237.9	101.3	1.7	0.30	0.0	0.01	0.12	0.16	0.05	3	22
10		18.44		18.44		33.200	23.788	410.7	0.041	5.44	237.6	101.2	1.6	0.26	0.0	0.01	0.00	0.17	0.06	10	20
10		18.44		18.44		33.200	23.788	410.7	0.041											10	21
20	ISL	18.45	D	18.45		33.200	D 23.786	411.2	0.083	5.45	D237.9	D101.4	1.7	0.27	0.0	0.01	0.00	0.17	0.05	20	
26		18.45		18.44		33.200	23.788	411.3	0.107	5.44	237.7	101.2	1.7	0.27	0.0	0.01	0.00	0.17	0.05	26	19
30	ISL	18.45	D	18.44		33.197	D 23.786	411.7	0.124	5.46	D238.0	D101.5	1.7	0.27	0.0	0.01	0.00	0.18	0.06	30	
40		18.40		18.40		33.214	23.810	409.8	0.164	5.45	238.2	101.3	1.7	0.27	0.0	0.01	0.00	0.20	0.07	40	18
50		14.05		14.04		33.183	24.777	317.5	0.201	6.18	269.8	105.3	3.3	0.43	0.4	0.04	0.02	1.19	0.65	50	16
50		14.05		14.04		33.180	24.775	317.8	0.199											50	17
62		11.95		11.94		33.219	25.219	275.6	0.236	5.03	220.0	82.2	7.2	0.90	8.6	0.09	0.00	0.46	0.43	63	15
75	ISL	11.24	D	11.23		33.242	D 25.367	261.8	0.274	4.58	D199.6	D 73.7	10.5	1.15	12.9	0.04	0.00	0.20	0.26	76	
76		11.24		11.23		33.231	25.360	262.5	0.274	4.61	201.5	74.1	10.7	1.17	13.2	0.04	0.01	0.18	0.25	77	14
87		10.24		10.23		33.276	25.570	242.6	0.302	4.37	191.0	68.8	14.1	1.35	16.4	0.03	0.09	0.11	0.13	88	13
100		9.59		9.57		33.420	25.791	221.8	0.332	4.00	174.5	62.0	19.4	1.54	20.0	0.03	0.00	0.03	0.05	101	12
112		9.40		9.39		33.523	25.902	211.5	0.358	3.70	161.6	57.2	22.2	1.62	21.4	0.02	0.00	0.01	0.05	113	11
125		9.19		9.18		33.694	26.070	195.8	0.384	3.24	141.3	49.9	25.7	1.75	23.5	0.02	0.01	0.01	0.03	126	10
140		9.00		8.98		33.733	26.132	190.2	0.413	3.19	139.2	48.9	27.2	1.80	24.3	0.02	0.00	0.01	0.03	141	09
150	ISL	8.97	D	8.95		33.788	D 26.180	185.8	0.436	3.03	D131.9	D 46.5	28.3	1.84	24.8	0.02	0.00	0.01	0.03	151	
170		8.84		8.83		33.856	26.253	179.3	0.469	2.88	125.7	44.1	30.5	1.93	25.8	0.02	0.00	0.00	0.03	171	08
200		8.55		8.53		33.973	26.391	166.8	0.521	2.51	109.4	38.1	34.8	2.07	27.7	0.02	0.00	0.00	0.03	202	07
230		8.22		8.20		34.018	26.477	159.0	0.569	2.32	101.1	35.0	39.2	2.13	29.0	0.02	0.00			232	06
250	ISL	8.03	D	8.00		34.048	D 26.530	154.3	0.606	2.07	D 89.8	D 31.1	43.1	2.27	30.4	0.02	0.00			252	
270		7.75		7.72		34.081	26.597	148.2	0.631	1.67	72.9	25.0	47.0	2.40	31.9	0.02	0.00			272	05
300	ISL	7.46	D	7.43		34.097	D 26.651	143.4	0.680	1.44	D 62.4	D 21.3	51.6	2.51	33.3	0.02	0.00			302	
320		7.25		7.22		34.106	26.688	140.1	0.703	1.28	56.1	19.0	54.7	2.58	34.3	0.02	0.04			323	04
380		6.39		6.36		34.124	26.819	128.0	0.783	0.85	36.9	12.3	67.6	2.86	37.6	0.02	0.01			383	03
400	ISL	6.25	D	6.22		34.138	D 26.849	125.4	0.815	0.75	D 32.7	D 10.8	70.0	2.89	38.0	0.02	0.02			403	
440		6.04		6.00		34.161	26.894	121.4	0.858	0.63	27.3	9.0	74.6	2.95	38.9	0.02	0.04			444	02
500	ISL	5.71	D	5.66		34.226	D 26.989	113.1	0.936	0.39	D 17.1	D 5.6	81.6	3.05	39.7	0.02	0.06			504	
515		5.68		5.63		34.232	26.997	112.5	0.946	0.37	16.3	5.3	83.4	3.07	39.9	0.02	0.07			519	01

D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED O2;

RV OCEANUS CALCOFI CRUISE 1511 STATION 80.0 90.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
33 9.0 N	123 13.3 W	06/11/2015	1736	UTC	4240 m	360 17 kn	020 04 06	1	1023.5 mb	16.8 C	14.2 C	25 m	3/8	AC	042

DEPTH m		TEMP DEG C		POTTEMP DEG C		SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		17.71		17.71		33.292	24.036	386.6	0.000	5.54	241.8	101.6	1.6	0.27	0.0	0.02	0.07	0.26	0.06	0	
3	A	17.71		17.71		33.292	24.036	386.7	0.012	5.54	241.8	101.6	1.6	0.27	0.0	0.02	0.07	0.26	0.06	3	24
9		17.71		17.71		33.291	24.035	387.0	0.035											9	23
10		17.71		17.71		33.291	24.035	387.1	0.039	5.54	242.0	101.7	1.6	0.27	0.0	0.01	0.00	0.24	0.07	10	22
15	A	17.71		17.71		33.292	24.036	387.2	0.058	5.57	243.3	102.2	1.6	0.27	0.0	0.01	0.00	0.23	0.07	15	21
20	A	17.70		17.69		33.292	24.041	386.9	0.078	5.56	D242.4	D102.0	1.6	0.27	0.0	0.01	0.00	0.26	0.07	20	20
30	ISL	17.69	D	17.69		33.288	D 24.039	387.4	0.117	5.53	D241.4	D101.5	1.7	0.27	0.0	0.01	0.00	0.27	0.09	30	
37	A	15.59		15.58		33.220	24.475	346.1	0.142	5.65	246.7	99.4	1.8	0.27	0.0	0.01	0.00	0.28	0.10	37	19
47		14.30		14.29		32.899	24.506	343.3	0.177	6.05	264.3	103.5	2.7	0.35	0.0	0.01	0.04	0.33	0.26	47	18
50	ISL	14.34	D	14.33		32.986	D 24.564	337.9	0.189	6.01	D261.9	D102.9	2.8	0.33	0.0	0.02	0.03	0.31	0.26	50	
58		14.36		14.35		33.180	24.711	324.1	0.213	5.79	252.7	99.3	3.3	0.29	0.1	0.04	0.01	0.28	0.24	58	17
68	A	12.90		12.89		33.159	24.990	297.7	0.245	5.50	240.4	91.6	4.9	0.48	2.7	0.16	0.00	0.25	0.25	69	15
68		12.90		12.89		33.160	24.991	297.6	0.245											69	16
75	ISL	12.51	D	12.50		33.154	D 25.063	290.9	0.268	5.42	D236.0	D 89.4	6.0	0.63	4.8	0.11	0.00	0.21	0.25	76	
78		12.08		12.07		33.136	25.131	284.4	0.274	5.35	233.8	87.5	6.5	0.69	5.7	0.09	0.00	0.19	0.25	79	14
89	A	11.27		11.26		33.141	25.284	270.0	0.304	5.01	218.9	80.6	9.1	0.98	10.4	0.04	0.00	0.16	0.19	90	13
100		10.32		10.30		33.191	25.491	250.5	0.333	4.94	215.6	77.7	12.0	1.12	12.7	0.03	0.00	0.09	0.12	101	12
109		10.13		10.12		33.190	25.522	247.7	0.355	4.95	216.2	77.6	12.0	1.13	12.7	0.03	0.00	0.09	0.12	110	11
125		9.34		9.32		33.349	25.777	223.6	0.393	4.45	194.4	68.7	17.8	1.43	17.7	0.02	0.00	0.04	0.05	126	10
140		9.08		9.06		33.501	25.938	208.6	0.425	4.11	179.3	63.0	21.0	1.54	19.8	0.02	0.00	0.01	0.03	141	09
150	ISL	8.99	D	8.97		33.594	D 26.025	200.5	0.449	4.15	D180.6	D 63.6	23.6	1.64	21.3	0.02	0.00	0.01	0.02	151	
170		8.77		8.75		33.806	26.226	181.8	0.484	3.25	142.1	49.7	28.8	1.83	24.4	0.01	0.00	0.00	0.02	171	08
200		8.56		8.54		33.971	26.388	167.0	0.536	2.49	108.9	38.0	34.7	2.07	27.4	0.01	0.00	0.00	0.02	202	07
230		8.04		8.01		34.003	26.493	157.4	0.585	2.48	108.4	37.4	38.7	2.12	28.2	0.01	0.00			232	06
250	ISL	7.75	D	7.73		33.992	D 26.526	154.5	0.620	2.61	D113.5	D 39.0	41.9	2.22	29.6	0.01	0.00			252	
270		7.76		7.73		34.047	26.569	150.8	0.646	1.97	86.1	29.5	45.1	2.32	31.0	0.01	0.00			272	05
300	ISL	7.41	D	7.38		34.075	D 26.641	144.4	0.696	1.67	D 72.6	D 24.7	50.3	2.46	32.7	0.01	0.00			302	
321		7.24		7.20		34.084	26.674	141.5	0.721	1.41	61.7	20.9	54.0	2.56	33.9	0.01	0.00			324	04
380		6.98		6.94		34.160	26.770	133.2	0.802	0.86	37.6	12.7	60.9	2.77	35.7	0.02	0.00			383	03
400	ISL	6.84	D	6.80		34.182	D 26.807	129.9	0.834	0.72	D 31.5	D 10.6	63.5	2.82	36.2	0.02	0.00			403	
440		6.61		6.57		34.201	26.853	126.0	0.879	0.59	25.7	8.6	68.8	2.92	37.3	0.02	0.03			444	02
500	ISL	6.17	D	6.12		34.251	D 26.951	117.2	0.959	0.39	D 17.0	D 5.6	76.4	3.03	38.2	0.02	0.02			504	
515		6.11		6.06		34.255	26.962	116.3	0.970	0.38	16.5	5.4	78.3	3.06	38.4	0.02	0.02			519	01

A) PRIMARY PRODUCTIVITY SAMPLES WERE TAKEN FROM THESE LEVELS.
D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; SECONDARY CRUISE-CORRECTED O2;

RV OCEANUS CALCOFI CRUISE 1511 STATION 80.0 100.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
32 49.0 N	123 54.2 W	06/11/2015	2238	UTC	4220 m	350 18 kn	020 04 05	1	1022.0 mb	17.2 C	14.3 C	31 m	3/8	AC	043

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0	18.05	18.05	33.090	23.799	409.2	0.000	5.50	240.4	101.5	1.7	0.25	0.0	0.01	0.00	0.13	0.03	0	23
10	18.04	18.03	33.089	23.802	409.3	0.041	5.53	241.6	102.0	1.7	0.24	0.0	0.01	0.00	0.12	0.03	10	21
10	18.04	18.03	33.090	23.803	409.3	0.039											10	22
20 ISL	18.00 D	17.99	33.084 D	23.809	409.1	0.082	5.53 D	241.2 D	101.9	1.7	0.24	0.0	0.01	0.00	0.14	0.04	20	
26	17.95	17.95	33.085	23.820	408.2	0.106	5.57	243.4	102.6	1.7	0.24	0.0	0.01	0.00	0.14	0.04	26	20
30 ISL	17.93 D	17.92	33.083 D	23.826	407.7	0.123	5.54 D	241.6 D	101.9	1.7	0.24	0.0	0.01	0.00	0.15	0.04	30	
41	17.82	17.81	33.089	23.858	405.2	0.167	5.55	242.5	101.9	1.8	0.25	0.0	0.02	0.00	0.17	0.05	41	19
49	17.02	17.01	33.105	24.061	386.0	0.199	5.81	254.0	105.1	2.1	0.26	0.0	0.01	0.06	0.23	0.11	49	18
50 ISL	16.95 D	16.94	33.110 D	24.080	384.2	0.204	5.80 D	253.0 D	104.8	2.1	0.26	0.0	0.01	0.00	0.24	0.11	50	
63	15.71	15.70	33.121	24.372	356.8	0.251	5.96	260.5	105.1	2.5	0.23	0.0	0.02	0.00	0.24	0.10	64	17
75	15.23	15.22	33.209	24.548	340.3	0.293	5.90	257.8	103.1	2.8	0.22	0.0	0.01	0.00	0.22	0.21	76	16
87	13.95	13.93	33.137	24.765	319.9	0.332	5.70	248.9	96.9	3.4	0.34	0.4	0.08	0.00	0.25	0.23	88	14
88	13.70	13.68	33.143	24.821	314.6	0.334											89	15
100 ISL	13.11 D	13.10	33.112 D	24.915	305.8	0.376	5.47 D	238.4 D	91.4	4.1	0.41	1.2	0.17	0.00	0.25	0.21	101	
101	13.37	13.36	33.117	24.867	310.5	0.376	5.60	244.8	94.2	4.1	0.41	1.3	0.18	0.00	0.25	0.20	102	13
113	12.09	12.07	33.095	25.099	288.4	0.412	5.35	233.5	87.4	6.4	0.66	5.4	0.07	0.00	0.22	0.18	114	12
125	10.85	10.84	33.192	25.400	259.9	0.445	4.83	210.8	76.9	10.3	1.08	12.1	0.04	0.00	0.13	0.16	126	11
141	9.87	9.85	33.388	25.721	229.4	0.484	4.06	177.2	63.3	16.9	1.45	18.0	0.03	0.00	0.06	0.06	142	10
150 ISL	9.74 D	9.72	33.530 D	25.854	217.0	0.508	3.63 D	158.2 D	56.6	19.4	1.55	19.6	0.03	0.00	0.04	0.05	151	
170	9.39	9.37	33.703	26.046	199.1	0.546	3.13	136.8	48.5	24.9	1.76	23.1	0.03	0.00	0.01	0.02	171	09
200	9.07	9.05	33.904	26.256	179.7	0.603	2.58	112.5	39.6	30.7	1.96	25.6	0.02	0.00	0.00	0.02	202	08
230	8.66	8.64	33.975	26.376	168.8	0.655	2.45	106.9	37.4	34.2	2.03	27.1	0.02	0.00			232	07
250 ISL	8.50 D	8.47	34.046 D	26.457	161.4	0.693	2.10 D	91.3 D	31.9	37.4	2.13	28.2	0.02	0.00			252	
271	8.22	8.19	34.066	26.516	156.1	0.722	1.94	84.5	29.3	40.9	2.24	29.5	0.02	0.06			273	06
300 ISL	8.08 D	8.05	34.134 D	26.592	149.5	0.771	1.49 D	64.8 D	22.5	45.1	2.39	30.5	0.02	0.04			302	
319	7.93	7.90	34.151	26.626	146.5	0.794	1.29	56.3	19.4	47.9	2.48	31.1	0.02	0.02			322	05
380	6.77	6.74	34.103	26.753	134.6	0.880	1.12	48.9	16.4	59.8	2.65	35.5	0.02	0.00			383	04
400 ISL	6.59 D	6.56	34.111 D	26.783	131.9	0.913	0.98 D	42.8 D	14.3	63.2	2.70	36.1	0.02	0.00			403	
440	6.12	6.08	34.104	26.839	126.8	0.959	0.92	40.0	13.2	69.9	2.79	37.3	0.02	0.00			444	03
500 ISL	5.89 D	5.84	34.178 D	26.928	118.9	1.039	0.57 D	24.9 D	8.2	76.9	2.95	38.7	0.02	0.00			504	
515	5.77	5.73	34.193	26.955	116.6	1.050	0.52	22.6	7.4	78.6	2.99	39.0	0.02	0.00			519	02
516	5.77	5.73	34.193	26.955	116.5	1.051	0.52	22.7	7.4	79.3	2.98	39.1	0.02	0.04			520	01

D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED O2;

RV OCEANUS CALCOFI CRUISE 1511 STATION 81.7 43.5

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
34 24.1 N	119 47.8 W	04/11/2015	1503	UTC	20 m	360 14 kn	260 02 05	0	1012.4 mb	13.6 C	9.6 C		0/8		033

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0	16.03	16.03	33.248	24.395	352.4	0.000	5.52	240.8	97.9	4.8	0.55	0.7	0.33	0.22	0.74	0.46	0	
2	16.03	16.03	33.248	24.395	352.4	0.007	5.52	240.8	97.9	4.8	0.55	0.7	0.33	0.22	0.74	0.46	2	04
5	16.03	16.03	33.245	24.393	352.7	0.018	5.54	241.7	98.3	4.6	0.52	0.6	0.31	0.19	0.75	0.45	5	03
10	15.97	15.97	33.239	24.401	352.1	0.035	5.55	242.1	98.3	4.5	0.51	0.7	0.30	0.16	0.87	0.27	10	02
15	15.75	15.75	33.230	24.445	348.2	0.053	5.47	238.7	96.5	5.2	0.54	1.1	0.41	0.00	0.69	0.40	15	01

D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED O2;

RV OCEANUS CALCOFI CRUISE 1511 STATION 81.8 46.9

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
34 16.4 N	120 1.6 W	05/11/2015	0107	UTC	576 m	310 25 kn	260 06 05	1	1013.7 mb	17.2 C	11.8 C		1/8	CS	036

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0	17.84	17.84	33.327	24.032	387.0	0.000	5.61	244.8	103.2	2.7	0.31	0.0	0.03	0.00	0.60	0.24	0	
2	17.84	17.83	33.327	24.033	387.0	0.008	5.61	244.8	103.2	2.7	0.31	0.0	0.03	0.00	0.60	0.24	2	24
10	17.86	17.86	33.319	24.022	388.4	0.039	5.62	245.6	103.5	2.5	0.31	0.0	0.03	0.00	0.59	0.22	10	23
20	17.90	17.89	33.317	24.011	389.7	0.078	5.63	245.9	103.7	2.4	0.32	0.0	0.03	0.00	0.56	0.20	20	22
30	17.70	17.70	33.303	24.049	386.5	0.116	5.61	244.9	102.9	2.4	0.32	0.1	0.03	0.00	0.61	0.26	30	21
39	14.78	14.78	33.265	24.685	326.1	0.149	5.25	229.5	91.0	5.4	0.60	3.6	0.18	0.00	0.58	0.41	39	20
50	13.34	13.33	33.306	25.018	294.6	0.183	4.83	211.0	81.2	7.8	0.81	6.6	0.14	0.00	0.36	0.29	50	19
60	12.71	12.70	33.387	25.205	277.0	0.211	4.36	190.5	72.4	9.9	1.01	9.8	0.07	0.00	0.14	0.19	60	18
71	12.16	12.15	33.393	25.314	266.8	0.241	4.26	186.0	69.9	11.1	1.10	11.4	0.05	0.00	0.12	0.15	72	17
75 ISL	11.92 D	11.91	33.420 D	25.381	260.6	0.254	4.06 D	176.9 D	66.3	11.8	1.14	12.1	0.05	0.00	0.11	0.14	76	
85	11.65	11.64	33.456	25.460	253.3	0.277	3.93	171.4	63.7	13.5	1.24	13.9	0.04	0.00	0.08	0.11	86	16
100	11.30	11.29	33.537	25.587	241.6	0.315	3.64	158.8	58.7	15.8	1.36	15.9	0.03	0.00	0.04	0.09	101	15
120	11.13	11.11	33.614	25.679	233.3	0.362	3.35	146.4	53.9	17.5	1.49	17.4	0.02	0.00	0.03	0.08	121	14
125 ISL	11.08 D	11.07	33.623 D	25.695	231.9	0.376	3.36 D	146.3 D	54.0	18.2	1.51	17.8	0.02	0.00	0.03	0.08	126	
138	10.64	10.62	33.677	25.815	220.7	0.403	3.18	138.7	50.6	20.0	1.57	19.0	0.02	0.00	0.01	0.07	139	13
150 ISL	10.14 D	10.13	33.824 D	26.015	201.9	0.431	2.73 D	118.9 D	43.0	23.0	1.70	20.8	0.02	0.00	0.01	0.06	151	
170	9.90	9.88	33.920	26.133	191.1	0.468	2.37	103.2	37.1	27.9	1.92	23.8	0.02	0.00	0.00	0.06	171	12
200	9.67	9.65	34.037	26.262	179.5	0.524	1.84	80.3	28.7	32.9	2.11	26.0	0.02	0.00	0.00	0.06	202	11
230	9.45	9.42	34.086	26.339	172.8	0.577	1.55	67.7	24.1	36.7	2.22	26.9	0.02	0.00			232	10
250 ISL	9.11 D	9.08	34.160 D	26.452	162.3	0.614	1.08 D	47.0 D	16.6	41.4	2.35	28.3	0.02	0.00			252	
270	8.89	8.86	34.175	26.500	158.1	0.643	0.96	41.8	14.7	46.1	2.48	29.8	0.02	0.00			272	09
300 ISL	8.48 D	8.45	34.185 D	26.571	151.8	0.693	0.76 D	32.9 D	11.5	52.3	2.59	30.9	0.01	0.00			302	
320	8.20	8.17	34.191	26.618	147.5	0.719	0.61	26.5	9.2	56.4	2.66	31.7	0.01	0.00			323	08
379	7.73	7.69	34.210	26.704	140.1	0.804	0.47	20.3	7.0	63.6	2.78	32.3	0.01	0.00			382	07
400 ISL	7.59 D	7.55	34.217 D	26.731	137.8	0.838	0.39 D	17.0 D	5.8	68.1	2.85	32.1	0.01	0.00			403	
441	7.11	7.07	34.245	26.820	129.7	0.888	0.27	11.6	3.9	77.0	2.99	31.7	0.01	0.00			445	06
481	6.80	6.75	34.243	26.862	126.1	0.939	0.10	4.3	1.4	90.5	3.25	28.1	0.01	0.00			485	05
500 ISL	6.73 D	6.68	34.246 D	26.875	125.1	0.969	0.05 D	2.0 D	0.7	95.9	3.35	25.5	0.01	0.00			504	
515	6.70	6.65	34.246	26.878	125.0	0.982	0.06	2.5	0.8	100.1	3.43	23.4	0.01	0.09			519	04
540	6.66	6.61	34.247	26.885	124.7	1.013	0.03	1.4	0.5	107.5	3.61	18.2	0.78	0.00			545	03
565	6.66	6.60	34.250	26.889	124.7	1.044	0.04	1.6	0.5	115.2	3.80	10.7	3.30	0.00			570	02
570	6.66	6.60	34.250	26.889	124.8	1.050	0.03	1.2	0.4	115.2	3.78	10.7	3.24	0.04			575	01

A) SANTA BARBARA BASIN STATION.
D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED O2;

RV OCEANUS CALCOFI CRUISE 1511 STATION 83.3 39.4

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
34 15.9 N	119 19.7 W	04/11/2015	1143 UTC	19 m	050 11 kn			1010.7 mb	11.1 C	7.5 C				032

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0	18.19	18.19	33.390	23.993	390.7	0.000	5.29	230.9	98.0	5.5	0.61	0.4	0.19	0.37	1.04	0.66	0	
2	18.19	18.19	33.390	23.993	390.7	0.008	5.29	230.9	98.0	5.5	0.61	0.4	0.19	0.37	1.04	0.66	2	04
5	18.13	18.13	33.388	24.009	389.4	0.020	5.28	230.8	97.8	5.6	0.63	0.4	0.20	0.37	0.97	0.69	5	03
10	18.04	18.03	33.365	24.013	389.2	0.039	5.27	230.0	97.3	5.6	0.65	0.5	0.24	0.44	0.98	0.62	10	01
10	18.04	18.03	33.355	24.006	389.9	0.037											10	02

D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED O2;

RV OCEANUS CALCOFI CRUISE 1511 STATION 83.3 40.6

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
34 13.0 N	119 24.6 W	04/11/2015	2027 UTC	36 m	270 18 kn	250 04 05	1	1012.8 mb	17.3 C	12.4 C	12 m	3/8	SC	035

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0	17.64	17.64	33.326	24.078	382.6	0.000	5.56	242.8	101.9	2.6	0.34	0.0	0.02	0.00	0.60	0.19	0	
2	17.64	17.64	33.326	24.078	382.7	0.008	5.56	242.8	101.9	2.6	0.34	0.0	0.02	0.00	0.60	0.19	2	06
5	17.63	17.63	33.326	24.081	382.5	0.019	5.58	243.8	102.3	2.7	0.35	0.0	0.02	0.00			5	05
10	17.63	17.63	33.328	24.083	382.5	0.038	5.58	243.6	102.3	2.6	0.34	0.0	0.03	0.00	0.61	0.22	10	03
10	17.63	17.63	33.325	24.081	382.7	0.038											10	04
20	17.09	17.09	33.318	24.204	371.3	0.076	5.63	245.8	102.1	2.7	0.35	0.0	0.03	0.00	0.65	0.23	20	02
30 ISL	15.70 D	15.69	33.299 D	24.510	342.4	0.113	5.46 D	238.0 D	96.3	4.7	0.71	0.9	0.21	0.00	0.61	0.64	30	
32	15.69	15.69	33.301	24.513	342.3	0.119	5.33	232.7	94.0	5.1	0.78	1.1	0.25	0.18	0.60	0.73	32	01

D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED O2;

RV OCEANUS CALCOFI CRUISE 1511 STATION 83.3 42.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
34 10.7 N	119 30.5 W	04/11/2015	1746 UTC	136 m	310 22 kn	290 03 05	1	1013.5 mb	16.2 C	11.6 C	21 m	1/8	ST	034

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0	18.88	18.88	33.398	23.828	406.4	0.000	5.43	237.1	102.0	2.2	0.30	0.0	0.01	0.00	0.45	0.18	0	
3 A	18.88	18.88	33.398	23.829	406.5	0.012	5.43	237.1	102.0	2.2	0.30	0.0	0.01	0.00	0.45	0.18	3	16
10 ISL	18.89 D	18.89	33.380 D	23.814	408.2	0.041	5.44 D	237.4 D	102.2	2.2	0.31	0.0	0.01	0.00	0.45	0.17	10	
13 A	18.89	18.89	33.389	23.821	407.7	0.053	5.43	237.2	102.0	2.2	0.31	0.0	0.01	0.00	0.45	0.17	13	13
13	18.89	18.89	33.392	23.823	407.4	0.055											13	15
14	18.89	18.89	33.383	23.815	408.3	0.055											14	14
17 A	18.88	18.88	33.390	23.823	407.6	0.069	5.43	237.2	102.0	2.2	0.30	0.0	0.01	0.00	0.51	0.20	17	12
20 ISL	18.89 D	18.88	33.380 D	23.815	408.5	0.082	5.44 D	237.3 D	102.2	2.2	0.30	0.0	0.01	0.00	0.51	0.19	20	
24	18.81	18.81	33.385	23.838	406.5	0.098	5.45	237.8	102.1	2.2	0.30	0.0	0.01	0.00	0.52	0.19	24	11
30 ISL	18.52 D	18.51	33.328 D	23.868	403.8	0.123	5.50 D	239.9 D	102.5	2.1	0.31	0.0	0.01	0.00	0.51	0.22	30	
31 A	18.46	18.45	33.337	23.890	401.7	0.126	5.49	239.8	102.3	2.1	0.31	0.0	0.01	0.00	0.50	0.22	31	10
40	17.08	17.07	33.246	24.154	376.8	0.161	5.63	245.9	102.0	1.9	0.32	0.0	0.02	0.02	0.78	0.55	40	09
49	15.26	15.25	33.304	24.613	333.3	0.193	5.44	237.7	95.2	4.0	0.49	0.5	0.13	0.00	0.79	0.53	49	07
49	15.26	15.25	33.304	24.613	333.3	0.193											49	08
50 ISL	14.99 D	14.98	33.296 D	24.665	328.4	0.198	5.39 D	234.7 D	93.7	4.2	0.51	0.9	0.13	0.00	0.76	0.51	50	
57 A	14.28	14.27	33.297 D	24.817	314.0	0.221	5.06 D	220.7 D	86.8								57	06
66	13.71	13.70	33.279 D	24.923	304.2	0.249	4.91 D	213.7 D	83.1								67	05
75 ISL	12.58 D	12.57	33.444 D	25.275	270.8	0.275	4.05 D	176.3 D	67.0	10.9	1.14	11.2	0.03	0.00	0.09	0.12	76	
76 A	12.36	12.35	33.450	25.321	266.4	0.275	4.02	175.5	66.3	11.2	1.16	11.7	0.03	0.00	0.06	0.10	77	04
88	12.09	12.08	33.520	25.428	256.5	0.307	3.69	160.9	60.4	13.6	1.29	13.8	0.03	0.00	0.04	0.09	89	03
100 ISL	11.79 D	11.78	33.563 D	25.517	248.3	0.339	3.53 D	153.5 D	57.5	14.9	1.38	15.2	0.02	0.00	0.03	0.07	101	
101	11.69	11.68	33.563	25.536	246.5	0.339	3.51	153.3	57.1	15.0	1.39	15.4	0.02	0.02	0.03	0.07	102	02
125	11.26	11.25	33.674	25.701	231.4	0.397	3.16	137.9	50.9	18.5	1.58	18.0	0.03	0.00	0.02	0.06	126	01

A) PRIMARY PRODUCTIVITY SAMPLES WERE TAKEN FROM THESE LEVELS.
D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED O2;

RV OCEANUS CALCOFI CRUISE 1511 STATION 83.3 51.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
33 52.7 N	120 7.9 W	08/11/2015	2308 UTC	99 m	310 20 kn	310 02 05	1	1013.1 mb	16.8 C	14.5 C	21 m	3/8	CS	052

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0	18.66	18.66	33.403	23.889	400.6	0.000	5.44	237.6	101.7	1.9	0.29	0.0	0.02	0.00	0.30	0.09	0	
2	18.66	18.65	33.403	23.889	400.7	0.008	5.44	237.6	101.7	1.9	0.29	0.0	0.02	0.00	0.30	0.09	2	11
10	18.40	18.40	33.390	23.943	395.9	0.040	5.46	238.4	101.5	1.9	0.28	0.0	0.02	0.00	0.40	0.11	10	09
10	18.40	18.40	33.388	23.942	396.0	0.040											10	10
20	17.01	17.01	33.317	24.223	369.6	0.078	5.62	245.6	101.8	2.3	0.34	0.3	0.04	0.01	1.46	0.40	20	08
30	14.15	14.15	33.196	24.764	318.2	0.113	5.33	232.9	91.1	5.3	0.65	4.0	0.19	0.10	1.04	0.49	30	07
40	13.85	13.84	33.209	24.838	311.4	0.144	5.21	227.5	88.5	6.1	0.71	5.0	0.19	0.09	0.82	0.43	40	06
50	12.63	12.62	33.231	25.099	286.8	0.174	4.86	212.4	80.5	8.4	0.91	8.4	0.17	0.01	0.29	0.29	50	05
60	12.29	12.28	33.271	25.196	277.8	0.202	4.66	203.3	76.5	9.6	1.01	9.9	0.14	0.00	0.22	0.24	60	04
70	12.13	12.12	33.308	25.255	272.5	0.230	4.50	196.7	73.8	10.5	1.08	11.0	0.11	0.00	0.20	0.20	71	03
75 ISL	12.09 D	12.08	33.328 D	25.278	270.4	0.246	4.48 D	195.2 D	73.4	11.5	1.15	11.9	0.10	0.00	0.17	0.20	76	
80	11.91	11.90	33.408	25.375	261.3	0.256	4.13	180.5	67.5	12.4	1.21	12.8	0.09	0.00	0.14	0.19	81	02
90	10.95	10.94	33.655	25.741	226.6	0.281	3.24	141.4	51.9	19.5	1.58	18.7	0.05	0.00	0.04	0.10	91	01

D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED O2;

RV OCEANUS CALCOFI CRUISE 1511 STATION 83.3 55.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
33 44.7 N	120 24.6 W	09/11/2015	0221	UTC	973 m	310 15 kn			1013.6 mb	16.6 C	15.0 C				053

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0	17.64	17.64	33.298	24.057	384.6	0.000	5.57	243.3	102.1	2.3	0.31	0.0	0.01	0.00	0.29	0.08	0	
2	17.64	17.64	33.298	24.057	384.7	0.008	5.57	243.3	102.1	2.3	0.31	0.0	0.01	0.00	0.29	0.08	2	21
10	17.65	17.64	33.298	24.057	385.0	0.039	5.56	243.0	101.9	2.2	0.30	0.0	0.01	0.00	0.27	0.09	10	19
10	17.65	17.64	33.298	24.057	385.0	0.038											10	20
20	17.48	17.48	33.291	24.091	382.1	0.077	5.58	244.0	102.0	2.3	0.30	0.0	0.01	0.04	0.32	0.08	20	18
30	14.78	14.78	33.085	24.545	339.0	0.113	5.86	256.3	101.4	3.3	0.40	0.4	0.04	0.00	1.48	0.36	30	17
40	13.27	13.26	33.078	24.854	309.9	0.145	5.52	241.0	92.5	5.2	0.61	3.6	0.13	0.07	0.67	0.33	40	16
50	12.72	12.71	33.118	24.994	296.7	0.176	5.25	229.2	87.0	6.8	0.76	6.3	0.10	0.00	0.52	0.30	50	15
60	12.24	12.23	33.149	25.111	285.9	0.205	5.06	221.2	83.1	7.9	0.87	8.1	0.08	0.00	0.37	0.32	60	14
70	11.53	11.52	33.224	25.301	268.0	0.232	4.76	208.1	77.0	10.4	1.04	11.3	0.04	0.03	0.41	0.23	71	13
75 ISL	11.34 D	11.33	33.275 D	25.375	261.0	0.248	4.62	D201.1 D	74.4	11.5	1.11	12.5	0.04	0.00	0.30	0.20	76	
84	10.88	10.87	33.334	25.504	248.9	0.269	4.36	190.5	69.6	13.7	1.23	14.7	0.03	0.00	0.10	0.13	85	12
100	10.51	10.50	33.512	25.708	229.9	0.307	3.89	169.8	61.6	17.8	1.46	17.9	0.03	0.00	0.05	0.07	101	11
120	10.25	10.23	33.684	25.888	213.2	0.351	3.22	140.7	50.8	21.8	1.66	20.6	0.03	0.07	0.02	0.06	121	10
125 ISL	10.20 D	10.19	33.675 D	25.888	213.3	0.365	3.25	D141.6 D	51.3	22.3	1.68	20.9	0.03	0.00	0.02	0.06	126	
140	10.04	10.03	33.771	25.991	203.9	0.393	2.96	129.1	46.4	24.0	1.75	21.8	0.03	0.00	0.01	0.05	141	09
150 ISL	9.82 D	9.80	33.772 D	26.030	200.4	0.417	3.07	D133.5 D	48.0	25.1	1.79	22.5	0.02	0.00	0.01	0.05	151	
170	9.65	9.63	33.888	26.149	189.4	0.452	2.68	117.2	41.8	27.5	1.88	24.0	0.02	0.00	0.00	0.04	171	08
200	9.35	9.32	34.020	26.302	175.5	0.506	2.17	94.7	33.6	32.3	2.08	26.0	0.02	0.00	0.00	0.04	202	07
230	9.12	9.09	34.140	26.434	163.6	0.557	1.70	74.2	26.2	37.0	2.25	28.4	0.02	0.00			232	06
250 ISL	8.91 D	8.88	34.157 D	26.481	159.4	0.595	1.61 D	70.0 D	24.7	38.9	2.30	28.5	0.02	0.00			252	
270	8.80	8.77	34.176	26.515	156.7	0.621	1.44	62.7	22.0	40.7	2.34	28.6	0.02	0.00			272	05
300 ISL	8.55 D	8.52	34.194 D	26.568	152.1	0.673	1.30 D	56.7 D	19.9	44.7	2.43	30.4	0.02	0.00			302	
320	8.18	8.15	34.186	26.617	147.6	0.698	1.24	54.1	18.7	47.4	2.49	31.6	0.02	0.01			323	04
380	7.67	7.63	34.218	26.719	138.6	0.784	0.89	38.6	13.2	54.7	2.68	33.9	0.02	0.04			383	03
400 ISL	7.42 D	7.38	34.210 D	26.750	135.9	0.818	0.84 D	36.4 D	12.4	58.1	2.73	34.9	0.02	0.00			403	
440	6.90	6.86	34.229	26.836	128.0	0.864	0.60	26.0	8.7	65.1	2.83	36.8	0.02	0.00			444	02
500 ISL	6.39 D	6.35	34.263 D	26.932	119.3	0.946	0.42 D	18.2 D	6.1	74.0	2.97	38.2	0.02	0.00			504	
515	6.19	6.14	34.249	26.947	117.8	0.956	0.42	18.2	6.0	76.3	3.00	38.5	0.02	0.01			519	01

D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED O2;

RV OCEANUS CALCOFI CRUISE 1511 STATION 83.3 60.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
33 34.7 N	120 45.3 W	09/11/2015	0619	UTC	1369 m	330 22 kn			1014.5 mb	16.2 C	15.7 C				054

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0	17.50	17.50	33.302	24.094	381.1	0.000	5.59	244.4	102.2	1.8	0.28	0.2	0.01	0.01	0.26	0.09	0	
3	17.50	17.50	33.302	24.094	381.2	0.011	5.59	244.4	102.2	1.8	0.28	0.2	0.01	0.01	0.26	0.09	3	21
10	17.50	17.50	33.302	24.095	381.4	0.038	5.59	244.4	102.2	1.8	0.31	0.2	0.02	0.22	0.26	0.09	10	19
10	17.50	17.50	33.303	24.096	381.3	0.040											10	20
20	17.48	17.48	33.303	24.100	381.3	0.076	5.61	245.0	102.5	1.8	0.28	0.2	0.01	0.00	0.27	0.09	20	18
30	16.91	16.91	33.283	24.221	370.1	0.114	5.77	252.1	104.2	1.5	0.30	0.2	0.01	0.17	0.84	0.30	30	17
40	14.15	14.14	33.121	24.707	323.9	0.149	5.69	248.5	97.1	4.2	0.49	2.3	0.11	0.08	1.49	0.47	40	16
50	12.53	12.53	33.161	25.063	290.2	0.179	5.12	223.7	84.6	7.6	0.86	7.5	0.12	0.21	0.55	0.35	50	15
60	11.69	11.68	33.207	25.259	271.7	0.207	4.80	209.8	77.9	9.9	1.02	11.0	0.07	0.29	0.28	0.31	60	14
70	10.95	10.94	33.275	25.446	254.1	0.234	4.51	197.3	72.1	12.4	1.16	13.6	0.05	0.09	0.17	0.18	71	13
75 ISL	10.84 D	10.83	33.325 D	25.504	248.7	0.248	4.42	D192.6 D	70.5	13.0	1.20	14.3	0.05	0.07	0.15	0.16	76	
85	10.67	10.66	33.352	25.554	244.2	0.271	4.28	187.1	68.0	14.3	1.28	15.5	0.04	0.02	0.09	0.12	86	12
100	10.42	10.41	33.501	25.714	229.3	0.306	3.82	166.7	60.4	17.6	1.42	17.8	0.03	0.00	0.05	0.08	101	11
120	10.15	10.13	33.584	25.827	219.0	0.351	3.65	159.3	57.4	19.5	1.49	19.3	0.03	0.00	0.03	0.06	121	10
125 ISL	9.76 D	9.74	33.616 D	25.917	210.4	0.364	3.53	D153.8 D	55.1	20.6	1.54	20.0	0.02	0.00	0.03	0.05	126	
140	9.82	9.80	33.767	26.025	200.5	0.393	3.10	135.3	48.4	24.0	1.70	22.1	0.02	0.00	0.01	0.04	141	09
150 ISL	9.75 D	9.74	33.840 D	26.094	194.3	0.415	2.92	D127.0 D	45.6	25.5	1.77	23.0	0.02	0.00	0.01	0.04	151	
170	9.43	9.41	33.906	26.198	184.7	0.451	2.67	116.5	41.4	28.7	1.91	24.9	0.02	0.11	0.01	0.03	171	08
200	9.18	9.16	34.029	26.336	172.3	0.504	2.24	97.7	34.6	33.0	2.05	26.5	0.02	0.23	0.00	0.03	202	07
230	9.17	9.14	34.118	26.409	166.0	0.555	1.79	78.2	27.6	36.5	2.23	27.7	0.02	0.21			232	06
250 ISL	8.72 D	8.70	34.110 D	26.473	160.1	0.591	1.81 D	78.5 D	27.6	38.7	2.25	28.7	0.02	0.00			252	
270	8.58	8.55	34.117	26.502	157.7	0.619	1.71	74.6	26.0	41.0	2.27	29.6	0.02	0.00			272	05
300 ISL	8.50 D	8.46	34.195 D	26.577	151.2	0.670	1.27 D	55.3 D	19.3	44.8	2.40	30.8	0.02	0.00			302	
320	8.25	8.22	34.203	26.620	147.3	0.696	1.14	49.9	17.3	47.4	2.48	31.6	0.02	0.09			323	04
380	7.34	7.30	34.213	26.762	134.3	0.780	0.83	36.3	12.3	57.1	2.65	35.0	0.01	0.09			383	03
400 ISL	7.37 D	7.34	34.253 D	26.789	132.1	0.812	0.66 D	28.5 D	9.7	59.5	2.71	35.6	0.01	0.15			403	
440	6.81	6.77	34.251	26.866	125.0	0.859	0.56	24.5	8.2	64.4	2.83	36.6	0.01	0.27			444	02
500 ISL	6.26 D	6.22	34.249 D	26.937	118.6	0.938	0.42 D	18.4 D	6.1								504	
516	6.23	6.18	34.262 D	26.952	117.4	0.957	0.40 D	17.5 D	5.8								520	01

D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED O2;

RV OCEANUS CALCOFI CRUISE 1511 STATION 83.3 70.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
33 14.7 N	121 26.6 W	09/11/2015	1218	UTC	3801 m	330 16 kn			1012.0 mb	16.4 C	13.3 C				055

DEPTH m		TEMP DEG C		POTTEMP DEG C		SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L		OXYGEN µmol/Kg		OXY PCT		SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		18.45		18.45		33.299	23.859	403.5	0.000	5.42		236.7		100.9		1.7	0.25	0.0	0.01	0.00	0.24	0.06	0	
3		18.45		18.45		33.299	23.859	403.6	0.012	5.42		236.7		100.9		1.7	0.25	0.0	0.01	0.00	0.24	0.06	3	21
10		18.46		18.46		33.298	23.858	404.0	0.040	5.43		237.1		101.1		1.6	0.26	0.0	0.01	0.00	0.21	0.07	10	19
10		18.46		18.46		33.301	23.860	403.8	0.039														10	20
20	ISL	18.47	D	18.46		33.296	D 23.855	404.6	0.081	5.43	D	236.9	D	101.1		1.7	0.26	0.0	0.01	0.00	0.21	0.06	20	
25		18.47		18.46		33.302	23.861	404.3	0.101	5.43		237.2		101.1		1.7	0.26	0.0	0.01	0.00	0.22	0.06	25	18
30	ISL	18.47	D	18.46		33.296	D 23.856	404.9	0.122	5.43	D	236.9	D	101.1		1.7	0.26	0.0	0.01	0.00	0.22	0.07	30	
40		18.47		18.46		33.305	23.865	404.5	0.162	5.42		236.9		101.0		1.7	0.27	0.0	0.01	0.00	0.23	0.09	40	17
50		18.39		18.38		33.289	23.872	404.2	0.202	5.45		238.0		101.3		1.8	0.27	0.0	0.01	0.00	0.25	0.09	50	16
62		13.64		13.63		33.275	24.933	303.0	0.244	5.23		228.3		88.4		5.8	0.75	5.1	0.23	0.00	0.53	0.44	63	15
75		11.81		11.80		33.242	25.264	271.7	0.282	4.73		206.7		77.0		9.7	1.02	11.1	0.05	0.00	0.25	0.33	76	14
87		10.50		10.49		33.298	25.542	245.3	0.313	4.36		190.6		69.0		13.6	1.26	15.2	0.04	0.00	0.12	0.19	88	13
100		10.10		10.09		33.401	25.690	231.4	0.344	4.04		176.3		63.4		17.0	1.41	18.1	0.02	0.00	0.07	0.08	101	12
112		9.57		9.56		33.496	25.853	216.2	0.371	3.96		172.9		61.4		20.0	1.53	20.0	0.03	0.00	0.03	0.05	113	11
125		9.40		9.39		33.655	26.005	202.0	0.398	3.31		144.5		51.2		24.0	1.74	23.0	0.02	0.00	0.01	0.04	126	10
141		8.99		8.97		33.732	26.132	190.2	0.429	3.44		150.1		52.8		26.0	1.74	23.3	0.02	0.03	0.01	0.02	142	09
150	ISL	8.84	D	8.82		33.787	D 26.199	184.0	0.449	3.40	D	147.9	D	52.0		27.1	1.76	23.8	0.02	0.00	0.01	0.02	151	
170		8.61		8.59		33.858	26.291	175.6	0.482	3.30		144.0		50.2		29.5	1.80	24.9	0.02	0.00	0.00	0.02	171	08
200		8.41		8.39		33.986	26.422	163.7	0.533	2.60		113.5		39.4		35.5	2.03	27.2	0.02	0.00	0.00	0.03	202	07
231		8.00		7.98		34.011	26.504	156.4	0.583	2.29		99.7		34.4		40.0	2.17	29.8	0.02	0.00			233	06
250	ISL	7.92	D	7.89		34.072	D 26.565	150.9	0.615	1.79	D	77.9	D	26.9		43.9	2.29	31.1	0.01	0.00			252	
270		7.68		7.65		34.089	26.614	146.5	0.642	1.60		69.8		23.9		47.9	2.42	32.6	0.01	0.00			272	05
300	ISL	7.42	D	7.39		34.116	D 26.672	141.4	0.689	1.35	D	58.8	D	20.1		52.8	2.55	33.9	0.01	0.00			302	
319		7.30		7.27		34.139	26.708	138.3	0.712	1.11		48.6		16.5		56.0	2.64	34.8	0.01	0.00			322	04
380		6.76		6.72		34.174	26.811	129.1	0.793	0.78		34.2		11.5		64.0	2.83	37.0	0.02	0.00			383	03
400	ISL	6.62	D	6.59		34.191	D 26.843	126.3	0.824	0.69	D	30.1	D	10.1		66.3	2.87	37.2	0.02	0.00			403	
440		6.39		6.35		34.204	26.884	122.9	0.869	0.58		25.2		8.4		70.9	2.94	37.6	0.02	0.01			444	02
500	ISL	6.03	D	5.98		34.237	D 26.958	116.4	0.946	0.43	D	18.8	D	6.2		77.4	3.03	39.1	0.02	0.01			504	
516		5.96		5.92		34.247	26.974	115.0	0.959	0.39		17.0		5.6		79.1	3.05	39.5	0.02	0.01			520	01

D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED O2;

RV OCEANUS CALCOFI CRUISE 1511 STATION 83.3 80.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
32 54.7 N	122 7.7 W	09/11/2015	1826	UTC	4190 m	300 11 kn	320 02 05	1	1018.1 mb	16.8 C	12.3 C	46 m	4/8	AC	056

DEPTH m		TEMP DEG C		POTTEMP DEG C		SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L		OXYGEN µmol/Kg		OXY PCT		SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		19.19		19.19		33.387	23.743	414.6	0.000	5.38		234.8		101.5		2.0	0.25	0.0	0.01	0.00	0.13	0.03	0	
3	A	19.19		19.19		33.387	23.743	414.7	0.012	5.38		234.8		101.5		2.0	0.25	0.0	0.01	0.00	0.13	0.03	3	24
10	ISL	19.19	D	19.18		33.378	D 23.737	415.6	0.042	5.37	D	234.3	D	101.4		2.2	0.25	0.0	0.01	0.00	0.12	0.03	10	
15	A	19.18		19.18		33.379	23.739	415.6	0.062	5.38		235.0		101.6		2.3	0.25	0.0	0.01	0.00	0.11	0.03	15	21
15		19.18		19.18		33.379	23.739	415.6	0.063														15	23
15		19.18		19.18		33.379	23.739	415.6	0.062														15	22
20	ISL	19.19	D	19.18		33.377	D 23.737	415.9	0.084	5.37	D	234.4	D	101.5		2.3	0.25	0.0	0.01	0.00	0.11	0.03	20	
28		19.18		19.18		33.377	D 23.739	416.1	0.117	5.37	D	234.3	D	101.4									28	20
30	ISL	19.18	D	19.18		33.377	D 23.739	416.2	0.126	5.37	D	234.4	D	101.4		2.1	0.25	0.0	0.01	0.00	0.12	0.03	30	
36	A	19.18		19.18		33.379	23.741	416.3	0.150	5.37		234.5		101.4		2.0	0.25	0.0	0.02	0.00	0.12	0.03	36	19
47		19.14		19.13		33.376	23.750	415.8	0.195	5.38		234.9		101.5		2.0	0.25	0.0	0.02	0.00	0.13	0.03	47	18
50	ISL	19.15	D	19.15		33.381	D 23.751	415.8	0.210	5.38	D	234.7	D	101.5		2.1	0.25	0.0	0.02	0.00	0.15	0.04	50	
57		16.91		16.90		33.159	24.128	379.9	0.236	5.98		261.2		107.9		2.3	0.25	0.0	0.01	0.00	0.19	0.06	57	17
66	A	16.14		16.13		33.116	24.273	366.3	0.270	5.96		260.5		106.0		2.4	0.26	0.0	0.01	0.00	0.18	0.08	67	16
75	ISL	15.66	D	15.65		33.108	D 24.374	356.9	0.304	5.94	D	258.8	D	104.5		2.6	0.28	0.0	0.01	0.00	0.21	0.12	76	
87		14.83		14.82		33.127	24.571	338.5	0.344	5.83		254.7		101.0		2.9	0.31	0.0	0.01	0.01	0.24	0.18	88	14
87		14.83		14.82		33.153	24.591	336.6	0.344														88	15
100	ISL	13.69	D	13.67		33.206	D 24.872	310.1	0.389	5.55	D	241.9	D	93.9		5.0	0.54	3.1	0.09	0.03	0.20	0.17	101	
107		11.96		11.94		33.181	25.191	279.5	0.407	5.32		232.6		86.9		6.1	0.67	4.8	0.13	0.04	0.18	0.16	108	13
125	ISL	10.64	D	10.63		33.294	D 25.515	248.8	0.458	4.54	D	197.7	D	72.1		12.3	1.22	14.0	0.03	0.00	0.09	0.10	126	
126	A	10.51		10.50		33.295	25.539	246.6	0.457	4.52		197.5		71.6		12.7	1.25	14.5	0.03	0.00	0.08	0.10	127	12
137		9.93		9.91		33.321	25.658	235.3	0.483	4.55		198.5		71.0		15.0	1.31	15.7	0.02	0.00	0.05	0.07	138	11
150		9.55		9.53		33.426	25.803	221.7	0.513	4.30		187.9		66.7		17.6	1.43	18.0	0.02	0.00	0.03	0.04	151	10
163	A	9.30		9.28		33.541	25.934	209.5	0.541	4.14		180.7		63.8		20.0	1.48	19.4	0.02	0.00	0.01	0.05	164	09
182		9.00		8.98		33.731	26.130	191.2	0.579	3.78		164.9		57.9		24.2	1.64	21.9	0.01	0.02	0.00	0.02	183	08
198		8.79		8.77		33.849	26.256	179.5	0.609	3.56		155.4		54.4		27.2	1.70	23.4	0.01	0.00	0.00	0.02	200	07
200	ISL	8.79	D	8.77		33.848	D 26.256	179.6	0.617	3.58	D	155.8	D	54.7		27.7	1.72	23.6	0.01	0.00			202	
230		8.32		8.30		33.956	26.413	165.2	0.664	2.79		121.8		42.2		34.7	2.01	27.1	0.01	0.00			232	06
250	ISL	8.10	D	8.07		33.994	D 26.477	159.3	0.702	2.55	D	110.9	D	38.4		38.6	2.13	28.8	0.02	0.00			252	
270		7.79		7.76		34.011	26.536	154.0	0.728	2.28		99.3		34.0		42.4	2.24	30.5	0.03	0.00			272	05
300	ISL	7.38	D	7.35		34.035	D 26.614	146.9	0.779	1.88	D	81.6	D	27.8		47.5	2.37	32.4	0.02	0.00			302	
320		7.24		7.21		34.044	26.642	144.5	0.802	1.73		75.3		25.5		50.9	2.46	33.6	0.01	0.00			323	04
379		6.66		6.62		34.092	26.759	133.8	0.884	1.19		51.7		17.3		60.8	2.66	36.3	0.01	0.00			382	03
400	ISL	6.52	D	6.49		34.114	D 26.795	130.7	0.919	1.04	D	45.1	D	15.1		63.5	2.74	37.1	0.01	0.00			403	
440		6.37		6.33		34.154	26.848	126.2	0.964	0.75		32.9		10.9		68.6	2.88	38.6	0.01	0.01			444	02
500	ISL	6.24	D	6.20		34.255	D 26.945	117.9	1.044	0.40	D	17.5	D	5.8		76.1	3.01	39.7	0.01	0.00			504	
515		6.11		6.06		34.238	26.948	117.6	1.056	0.40		17.4		5.7		78.0	3.04	40.0	0.01	0.00			519	01

A) PRIMARY PRODUCTIVITY SAMPLES WERE TAKEN FROM THESE LEVELS.
D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED O2;

RV OCEANUS CALCOFI CRUISE 1511 STATION 83.3 90.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
32 34.7 N	122 48.7 W	10/11/2015	0016	UTC	4287 m	290 19 kn	290 06 07	1	1017.0 mb	17.5 C	13.9 C		5/8	SC	057

DEPTH m		TEMP DEG C		POTTEMP DEG C		SALINITY		SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg		OXY PCT		SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		18.44		18.44		33.243		23.821	407.1	0.000	5.48	239.4		101.9		1.5	0.28	0.0	0.01	0.00	0.14	0.04	0	
3		18.44		18.44		33.243		23.821	407.2	0.012	5.48	239.4		101.9		1.5	0.28	0.0	0.01	0.00	0.14	0.04	3	21
10		18.44		18.43		33.242		23.821	407.5	0.041	5.44	237.8		101.3		1.6	0.26	0.0	0.01	0.00	0.14	0.04	10	19
10		18.44		18.43		33.242		23.821	407.6	0.041													10	20
20	ISL	18.44	D	18.44		33.240	D	23.820	408.0	0.082	5.47	D238.5		D101.7		1.6	0.26	0.0	0.01	0.00	0.15	0.04	20	
25		18.42		18.41		33.241		23.826	407.6	0.102	5.45	238.1		101.4		1.5	0.26	0.0	0.01	0.00	0.15	0.04	25	18
30	ISL	18.40	D	18.40		33.237	D	23.827	407.7	0.123	5.47	D238.4		D101.6		1.6	0.26	0.0	0.01	0.00	0.16	0.05	30	
40		18.36		18.35		33.238		23.839	406.9	0.163	5.45	237.8		101.1		1.6	0.27	0.0	0.01	0.00	0.19	0.05	40	17
49		17.85		17.84		33.232		23.960	395.8	0.199	5.47	238.8		100.5		1.5	0.26	0.0	0.01	0.00	0.22	0.08	49	16
50	ISL	17.51	D	17.50		33.153	D	23.983	393.6	0.205	5.66	D246.6		D103.3		1.6	0.27	0.0	0.01	0.00	0.22	0.08	50	
62		14.67		14.66		32.930		24.453	348.8	0.247	6.07	265.0		104.6		2.8	0.33	0.0	0.01	0.00	0.26	0.18	62	15
75		13.54		13.53		32.963		24.711	324.5	0.291	5.81	253.7		97.8		3.9	0.46	0.9	0.08	0.04	0.32	0.27	76	14
87		12.69		12.68		32.971		24.887	308.0	0.329	5.56	242.7		92.0		5.2	0.63	3.9	0.27	0.00	0.31	0.28	88	13
100		11.68		11.67		33.060		25.147	283.4	0.367	5.18	226.2		83.9		8.0	0.91	9.4	0.06	0.00	0.19	0.20	101	12
112		10.86		10.84		33.170		25.381	261.3	0.400	4.77	208.2		76.0		10.4	1.14	12.9	0.02	0.00	0.12	0.15	113	11
125		10.24		10.22		33.272		25.568	243.7	0.433	4.47	195.1		70.3		14.2	1.27	15.7	0.02	0.00	0.08	0.10	126	10
140		9.77		9.76		33.405		25.750	226.6	0.468	3.98	173.8		62.0		17.8	1.50	19.1	0.02	0.02	0.04	0.06	141	09
150	ISL	9.27	D	9.25		33.539	D	25.936	209.0	0.493	3.91	D170.2	D	60.3		20.0	1.57	20.3	0.02	0.00	0.03	0.05	151	
171		8.93		8.91		33.752	D	26.158	188.3	0.535	3.34	D145.4	D	51.2									172	08
200		8.69		8.67		33.898		26.310	174.5	0.585	2.86	124.8		43.6		31.1	1.92	26.3	0.01	0.00	0.00	0.02	202	07
230		8.28		8.25		33.959		26.423	164.2	0.636	2.84	123.8		42.9		34.7	1.97	27.4	0.02	0.01			232	06
250	ISL	8.04	D	8.01		33.986	D	26.479	159.1	0.671	2.82	D122.6	D	42.4		37.8	2.05	28.3	0.02	0.02			252	
270		7.79		7.76		34.001		26.529	154.6	0.699	2.54	110.9		38.0		41.0	2.12	29.2	0.01	0.02			272	05
300	ISL	7.38	D	7.35		34.028	D	26.609	147.3	0.749	2.07	D 90.1	D	30.7		47.5	2.31	31.7	0.01	0.00			302	
320		7.12		7.09		34.042		26.656	143.0	0.774	1.77	77.3		26.1		51.8	2.43	33.4	0.02	0.00			323	04
380		6.59		6.55		34.103		26.777	132.2	0.856	1.08	47.3		15.8		62.9	2.73	37.0	0.02	0.04			383	03
400	ISL	6.42	D	6.38		34.115	D	26.809	129.3	0.888	0.95	D 41.4	D	13.8		66.1	2.80	37.6	0.02	0.04			403	
440		6.05		6.01		34.149		26.883	122.5	0.933	0.70	30.7		10.1		72.4	2.93	38.8	0.02	0.03			444	02
500	ISL	5.70	D	5.65		34.191	D	26.962	115.6	1.010	0.52	D 22.7	D	7.4		79.9	3.05	40.0	0.02	0.03			504	
515		5.63		5.58		34.202		26.979	114.1	1.021	0.47	20.4		6.7		81.8	3.08	40.3	0.02	0.03			519	01

D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED O2;

RV OCEANUS CALCOFI CRUISE 1511 STATION 83.3 100.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
32 14.7 N	123 29.5 W	10/11/2015	0555	UTC	4160 m	350 16 kn			1020.2 mb	16.8 C	14.0 C				058

DEPTH m		TEMP DEG C		POTTEMP DEG C		SALINITY		SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg		OXY PCT		SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		18.53		18.53		33.295		23.838	405.5	0.000	5.43	237.2		101.2		1.4	0.28	0.0	0.01	0.02	0.18	0.05	0	
2		18.53		18.53		33.295		23.838	405.5	0.008	5.43	237.2		101.2		1.4	0.28	0.0	0.01	0.02	0.18	0.05	2	21
10		18.53		18.52		33.298		23.842	405.5	0.041	5.43	237.3		101.3		1.6	0.26	0.0	0.01	0.00	0.18	0.05	10	19
10		18.53		18.52		33.295		23.840	405.7	0.041													10	20
20	ISL	18.53	D	18.52		33.294	D	23.839	406.2	0.082	5.44	D237.3		D101.4		1.4	0.27	0.0	0.01	0.00	0.18	0.06	20	
26		18.53		18.52		33.296		23.840	406.3	0.106	5.42	236.7		101.0		1.3	0.27	0.0	0.01	0.02	0.19	0.06	26	18
30	ISL	18.53	D	18.52		33.294	D	23.839	406.6	0.123	5.44	D237.2		D101.4		1.3	0.27	0.0	0.01	0.00	0.20	0.06	30	
41		18.52		18.52		33.302		23.847	406.2	0.167	5.43	237.3		101.3		1.3	0.28	0.0	0.02	0.00	0.23	0.06	41	17
50		18.52		18.52		33.303		23.849	406.4	0.203	5.41	236.4		100.9		1.3	0.27	0.0	0.01	0.00	0.24	0.07	50	16
62		17.90		17.89		33.283		23.988	393.6	0.251	5.49	239.6		101.0		1.4	0.29	0.0	0.01	0.03	0.29	0.11	62	15
75		13.66		13.65		33.036		24.744	321.4	0.298	6.05	264.4		102.3		3.5	0.47	0.7	0.06	0.08	0.55	0.38	76	14
88		12.18		12.17		33.032		25.031	294.2	0.338	5.38	235.2		88.2		6.3	0.75	6.5	0.15	0.01	0.29	0.27	89	13
100		11.32		11.31		33.118		25.257	272.9	0.372	4.95	216.4		79.7		9.1	1.06	11.4	0.03	0.01	0.16A	0.18A	101	12
112		10.43		10.42		33.252		25.518	248.2	0.403	4.50	196.5		71.1		13.5	1.31	15.7	0.03	0.00	0.08	0.11	113	11
125		9.92		9.90		33.415		25.734	227.9	0.434	3.97	173.3		62.0		18.1	1.56	19.6	0.02	0.02	0.04	0.05	126	10
141		9.46		9.45		33.542		25.908	211.6	0.469	3.57	155.7		55.2		21.2	1.69	21.1	0.02	0.05	0.02	0.04	142	09
150	ISL	9.16	D	9.14		33.614	D	26.013	201.7	0.491	3.61	D157.0	D	55.5		23.1	1.74	22.2	0.02	0.04	0.01	0.03	151	
170		8.94		8.93		33.756		26.159	188.2	0.527	3.13	136.6		48.0		27.1	1.86	24.8	0.01	0.01	0.00	0.03	171	08
200		8.53		8.51		33.886		26.326	172.9	0.581	3.40	148.4		51.7		29.9	1.81	25.2	0.01	0.03	0.00	0.02	202	07
231		8.03		8.00		33.990		26.484	158.3	0.632	2.58	112.5		38.7		38.0	2.11	29.2	0.02	0.06			233	06
250	ISL	7.84	D	7.81		34.015	D	26.532	154.0	0.666	2.30	D 99.9	D	34.4		41.7	2.23	30.6	0.02	0.42			252	
270		7.52		7.49		34.032		26.591	148.6	0.692	2.03	88.5		30.2		45.7	2.36	32.0	0.02	0.79			272	05
300	ISL	7.29	D	7.26		34.048	D	26.637	144.6	0.741	1.75	D 76.2	D	25.9		50.6	2.49	33.8	0.01	0.48			302	
320		7.07		7.04		34.071		26.686	140.1	0.764	1.53	66.6		22.5		53.8	2.57	34.9	0.01	0.27			323	04
381		6.47		6.43		34.113		26.800	129.8	0.847	0.98	42.6		14.2		64.9	2.85	38.2	0.02	0.36			384	03
400	ISL	6.29	D	6.26		34.112	D	26.823	127.8	0.878	0.90	D 39.0	D	13.0		68.0	2.90	38.8	0.02	0.27			403	
440		5.98		5.94		34.151		26.894	121.4	0.921	0.68	29.7		9.8		74.4	3.00	40.1	0.01	0.07			444	02
500	ISL	5.63	D	5.59		34.186	D	26.966	115.1	1.000	0.50	D 21.5	D	7.0		81.2	3.10	41.1	0.01	0.33			504	
515		5.60		5.56		34.206		26.985	113.4	1.009	0.45	19.8		6.4		82.9	3.12	41.4	0.01	0.39			519	01

A) SECOND FLUOROMETER READING RECALCULATED BECAUSE ACID RATIO > TAU OF PURE CHL-A
D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED O2;

RV OCEANUS CALCOFI CRUISE 1511 STATION 83.3 110.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
31 54.7 N	124 10.2 W	10/11/2015	1142 UTC	4264 m	360 24 kn			1021.3 mb	16.5 C	13.3 C				059

DEPTH m		TEMP DEG C		POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		18.82		18.82	33.253	23.733	415.5	0.000	5.42	236.6	101.5	1.8	0.28	0.0	0.01	0.05	0.13	0.04	0	
2		18.82		18.82	33.253	23.733	415.6	0.008	5.42	236.6	101.5	1.8	0.28	0.0	0.01	0.05	0.13	0.04	2	21
10		18.83		18.83	33.255	23.733	415.9	0.042	5.41	236.5	101.5	1.8	0.28	0.0	0.01	0.04	0.13	0.04	10	19
10		18.83		18.83	33.254	23.733	415.9	0.040											10	20
20	ISL	18.83	D	18.83	33.253	D 23.732	416.4	0.084	5.42	D236.4	D101.6	1.8	0.28	0.0	0.01	0.03	0.13	0.04	20	
24		18.83		18.83	33.264	23.740	415.8	0.100	5.42	236.7	101.6	1.8	0.28	0.0	0.01	0.03	0.13	0.04	24	18
30	ISL	18.83	D	18.82	33.253	D 23.734	416.6	0.126	5.41	D236.1	D101.4	1.8	0.28	0.0	0.01	0.04	0.13	0.04	30	
40		18.84		18.83	33.255	23.734	417.0	0.167	5.46	238.4	102.3	1.8	0.28	0.0	0.01	0.06	0.13	0.04	40	17
50		18.54		18.53	33.276	23.825	408.7	0.208	5.54	242.0	103.3	2.0	0.27	0.0	0.01	0.03	0.17	0.05	50	16
62		16.68		16.67	33.178	24.197	373.5	0.255	5.91	258.1	106.2	2.3	0.26	0.0	0.01	0.04	0.20	0.08	62	15
75	ISL	15.95	D	15.93	33.172	D 24.360	358.4	0.305	5.83	D254.3	D103.3	2.4	0.27	0.0	0.01	0.04	0.19	0.16	76	
76		15.94		15.93	33.184	24.372	357.3	0.306	5.82	254.4	103.2	2.4	0.27	0.0	0.01	0.04	0.19	0.17	77	14
87		14.97		14.95	33.206	24.603	335.5	0.344	5.79	252.9	100.6	2.6	0.27	0.0	0.01	0.04	0.19	0.17	88	13
100		13.89		13.88	33.205	24.829	314.2	0.386	5.67	247.6	96.3	3.3	0.34	0.1	0.07	0.06	0.20	0.15	101	12
112		12.57		12.56	33.198	25.087	289.7	0.422	5.32	232.5	88.0	5.7	0.65	4.4	0.15	0.04	0.15	0.15	113	11
125	ISL	11.08	D	11.07	33.187	D 25.355	264.2	0.462	5.07	D220.6	D 81.1	8.4	0.91	9.1	0.03	0.05	0.12	0.12	126	
126		10.97		10.95	33.181	25.371	262.7	0.461	5.12	223.7	81.8	8.6	0.93	9.5	0.03	0.05	0.12	0.11	127	10
140		9.99		9.97	33.246	25.590	241.8	0.496	4.87	212.6	76.1	13.1	1.22	14.4	0.02	0.04	0.07	0.10	141	09
150	ISL	9.46	D	9.44	33.385	D 25.786	223.3	0.524	4.65	D202.4	D 71.9	16.2	1.36	16.8	0.02	0.03	0.05	0.08	151	
172		9.09		9.07	33.629	26.037	199.9	0.566	3.73	163.0	57.4	23.0	1.68	22.1	0.01	0.02	0.01	0.03	173	08
200		8.70		8.68	33.802	26.234	181.6	0.620	3.36	146.8	51.3	27.4	1.81	24.3	0.02	0.02	0.00	0.02	202	07
230		8.39		8.36	33.943	26.393	167.0	0.672	3.06	133.6	46.4	32.7	1.92	26.5	0.01	0.02			232	06
250	ISL	8.14	D	8.11	33.970	D 26.453	161.6	0.709	2.91	D126.5	D 43.8	36.3	2.02	27.8	0.01	0.02			252	
270		7.82		7.79	33.991	26.517	155.8	0.737	2.65	115.8	39.7	39.9	2.12	29.1	0.01	0.02			272	05
300	ISL	7.57	D	7.54	34.032	D 26.586	149.7	0.787	2.05	D 89.2	D 30.5	45.4	2.30	31.5	0.01	0.03			302	
320		7.34		7.31	34.045	26.629	145.8	0.812	1.81	79.1	26.8	49.0	2.42	33.1	0.01	0.03			323	04
381		6.67		6.63	34.090	26.757	134.1	0.898	1.18	51.5	17.2	59.9	2.70	36.6	0.01	0.05			384	03
400	ISL	6.51	D	6.47	34.097	D 26.784	131.8	0.928	1.05	D 45.6	D 15.2	63.8	2.78	37.5	0.01	0.05			403	
440		6.06		6.02	34.134	26.871	123.7	0.974	0.74	32.1	10.6	71.9	2.96	39.4	0.01	0.04			444	02
500	ISL	5.67	D	5.62	34.183	D 26.959	115.8	1.052	0.52	D 22.6	D 7.4	80.6	3.06	40.5	0.01	0.09			504	
515		5.57		5.53	34.192	26.978	114.1	1.063	0.48	21.0	6.8	82.7	3.08	40.8	0.01	0.10			519	01

D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED O2;

RV OCEANUS CALCOFI CRUISE 1511 STATION 86.7 33.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
33 53.4 N	118 29.4 W	03/11/2015	1749 UTC	58 m	340 03 kn	270 03 06	2	1010.5 mb	15.7 C	12.1 C	31 m	1/8	CU	028

DEPTH m		TEMP DEG C		POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		20.20		20.20	33.447	23.526	435.3	0.000	5.43	237.4	104.6	1.7	0.24	0.0	0.00	0.00	0.28	0.09	0	
2	A	20.20		20.20	33.447	23.526	435.3	0.009	5.43	237.4	104.6	1.7	0.24	0.0	0.00	0.00	0.28	0.09	2	10
10		19.98		19.98	33.428	23.571	431.4	0.043	5.47	238.8	104.8	1.8	0.25	0.0	0.00	0.00	0.28	0.12	10	07
10		19.98		19.98	33.423	23.567	431.8	0.042											10	09
10		19.98		19.98	33.422	23.566	431.9	0.044											10	08
19	A	18.20		18.19	33.321	23.941	396.5	0.081	5.75	251.2	106.5	2.0	0.27	0.0	0.00	0.00	0.36	0.14	19	11
20	ISL	17.73	D	17.72	33.261	D 24.009	389.9	0.085	5.91	D257.8	D108.5	2.1	0.28	0.0	0.00	0.00	0.37	0.16	20	
25	A	17.27		17.26	33.243	24.106	380.9	0.104	5.89	257.4	107.2	2.6	0.33	0.0	0.00	0.00	0.43	0.22	25	05
30	ISL	16.73	D	16.73	33.242	D 24.231	369.1	0.124	5.86	D255.7	D105.6	3.1	0.38	0.3	0.11	0.00	0.47	0.28	30	
35		16.05		16.04	33.246	24.392	353.9	0.141	5.62	245.7	99.9	3.6	0.42	0.6	0.21	0.00	0.51	0.33	35	03
35		16.05		16.04	33.243	24.390	354.1	0.141											35	04
45	A	15.17		15.16	33.282	24.616	332.9	0.175	5.24	229.0	91.5	5.0	0.57	2.4	0.38	0.00	0.33	0.30	45	02
50	ISL	14.95	D	14.94	33.315	D 24.688	326.1	0.193	4.92	D214.3	D 85.5	6.3	0.68	3.8	0.32	0.00	0.25	0.31	50	
51	A	14.96		14.95	33.319	24.689	326.1	0.195	4.90	214.1	85.2	6.6	0.70	4.1	0.31	0.00	0.23	0.31	51	01

A) PRIMARY PRODUCTIVITY SAMPLES WERE TAKEN FROM THESE LEVELS.
D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED O2;

RV OCEANUS CALCOFI CRUISE 1511 STATION 86.7 35.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
33 49.4 N	118 37.7 W	03/11/2015	2006 UTC	29 m	290 12 kn	340 03 05	1	1009.4 mb	17.0 C	13.0 C	28 m	1/8	CU	029

DEPTH m		TEMP DEG C		POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		20.66		20.66	33.480	23.430	444.5	0.000	5.32	232.5	103.4	1.9	0.26	0.0	0.00	0.00	0.21	0.05	0	
3		20.66		20.66	33.480	23.430	444.6	0.013	5.32	232.5	103.4	1.9	0.26	0.0	0.00	0.00	0.21	0.05	3	21
10		20.40		20.40	33.462	23.485	439.6	0.044	5.38	235.1	104.0	2.0	0.25	0.0	0.00	0.00	0.23	0.06	10	19
10		20.40		20.40	33.463	23.486	439.6	0.045											10	20
20		17.86		17.86	33.276	23.988	392.0	0.086	5.84	255.0	107.4	2.5	0.32	0.0	0.02	0.00	0.49	0.22	20	18
30		16.41		16.40	33.276	24.332	359.5	0.123	5.60	244.8	100.3	3.7	0.42	0.6	0.26	0.00	1.03	0.48	30	17
40		16.13		16.12	33.282	24.401	353.3	0.159	5.41	236.3	96.2	4.1	0.48	1.5	0.21	0.00	0.49	0.37	40	16
50		15.69		15.68	33.317	24.528	341.4	0.194	5.19	226.5	91.5	4.9	0.55	2.7	0.08	0.00	0.26	0.24	50	15
60		14.98		14.98	33.354	24.711	324.3	0.227	4.87	212.9	84.8	6.0	0.70	4.3	0.10	0.00	0.18	0.22	60	14
70		14.40		14.39	33.390	24.865	309.9	0.259	4.61	201.1	79.2	7.2	0.81	6.0	0.04	0.00	0.14	0.20	71	13
75	ISL	14.11	D	14.09	33.402	D 24.935	303.3	0.276	4.55	D198.3	D 77.8	7.9	0.87	7.1	0.03	0.00	0.12	0.17	76	
85		13.31		13.30	33.411	25.106	287.2	0.304	4.26	186.3	71.7	9.3	1.00	9.2	0.02	0.00	0.08	0.11	86	12
100		12.68		12.67	33.472	25.277	271.3	0.345	3.96	172.9	65.7	11.5	1.16	11.9	0.02	0.00	0.05	0.10	101	11
120		12.00		11.99	33.527	25.451	255.2	0.398	3.71	162.1	60.8	13.6	1.29	14.2	0.02	0.00	0.05	0.09	121	10
125	ISL	11.70	D	11.69	33.527	D 25.507	249.9	0.414	3.77	D164.0	D 61.3	14.5	1.34	15.0	0.02	0.00	0.04	0.09	126	
140		11.24		11.22	33.609	25.656	236.1	0.447	3.39	148.1	54.6	17.1	1.47	17.4	0.01	0.00	0.03	0.07	141	09
150	ISL	10.83	D	10.81	33.753	D 25.842	218.6	0.473	2.97	D129.3	D 47.5	20.0	1.62	19.4	0.01	0.00	0.02	0.06	151	
170		10.50		10.48	33.947	26.052	199.0	0.512	2.35	102.7	37.4	25.9	1.93	23.3	0.01	0.00	0.00	0.03	171	08
200		9.78		9.76	33.976	26.196	185.7	0.569	2.38	103.8	37.2	28.8	1.97	24.9	0.01	0.00	0.00	0.03	202	07
230		9.43		9.40	34.075	26.334	173.3	0.623	1.93	D 83.9	D 30.0	33.7	2.16	27.0	0.01	0.00			232	06
250	ISL	9.29	D	9.27	34.147	D 26.413	166.2	0.662	1.62	D 70.3	D 25.0	36.1	2.26	27.8	0.01	0.00			252	
270		9.23		9.20	34.189	26.456	162.5	0.690	1.47	64.1	22.7	38.4	2.35	28.5	0.01	0.00			272	05
300	ISL	8.84	D	8.81	34.239	D 26.558	153.3	0.743	1.15	D 49.9	D 17.6	43.4	2.49	30.3	0.01	0.00			302	
320		8.59		8.55	34.272	26.623	147.3	0.768	0.90	39.4	13.8	46.7	2.59	31.5	0.01	0.00			323	04
380		7.91		7.87	34.284	26.736	137.3	0.853	0.64	28.0	9.6	55.3	2.75	33.8	0.02	0.00			383	03
400	ISL	7.69	D	7.65	34.290	D 26.773	134.0	0.886	0.58	D 25.2	D 8.7	57.9	2.80	34.4	0.02	0.00			403	
440		7.32		7.27	34.294	26.831	128.9	0.933	0.46	20.2	6.8	63.2	2.90	35.7	0.02	0.00			444	02
500	ISL	6.67	D	6.62	34.312	D 26.934	119.4	1.015	0.32	D 13.8	D 4.6	72.9	3.02	37.4	0.02	0.00			504	
515		6.56		6.51	34.316	26.953	117.8	1.025	0.28	12.4	4.1	75.3	3.05	37.8	0.02	0.00			519	01

D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED O2;

RV OCEANUS CALCOFI CRUISE 1511 STATION 86.7 40.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
33 39.3 N	118 58.4 W	04/11/2015	0038	UTC	741 m	290 25 kn	290 07 06	1	1008.4 mb	17.6 C	14.5 C		3/8	CU	030

DEPTH m		TEMP DEG C		POTTEMP DEG C		SALINITY		SIGMA THETA	SVA	DYN HT	OXYGEN ml/L		OXYGEN µmol/Kg		OXY PCT		SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		20.47		20.47		33.482		23.483	439.4	0.000	5.42		236.8		104.9		2.1	0.25	0.0	0.02	0.00	0.21	0.05	0	
2		20.47		20.46		33.482		23.483	439.5	0.009	5.42		236.8		104.9		2.1	0.25	0.0	0.02	0.00	0.21	0.05	2	24
10		20.47		20.47		33.480		23.480	440.1	0.044	5.42		236.8		104.9		2.0	0.26	0.0	0.01	0.00	0.23	0.05	10	23
20		20.38		20.38		33.477		23.503	438.3	0.088	5.37		234.4		103.7		2.0	0.25	0.0	0.01	0.00	0.22	0.05	20	22
30		17.21		17.20		33.239		24.117	380.0	0.129	5.97		260.9		108.5		2.3	0.32	0.0	0.00	0.02	0.38	0.13	30	21
40		15.62		15.61		33.192		24.447	348.8	0.165	5.96		260.5		105.0		2.5	0.37	0.0	0.01	0.00	0.81	0.39	40	20
50		14.36		14.35		33.216		24.738	321.3	0.199	5.49		239.8		94.2		4.3	0.55	2.2	0.22	0.00	0.66	0.45	50	19
60		13.54		13.53		33.293		24.966	299.8	0.230	5.08		221.9		85.8		6.1	0.73	4.9	0.18	0.05	0.37	0.31	60	18
70		12.62		12.61		33.274		25.135	283.9	0.259	4.75		207.5		78.7		8.4	0.93	8.7	0.08	0.00	0.20	0.20	71	17
75	ISL	12.22	D	12.21	D	33.318	D	25.246	273.5	0.275	4.55	D	198.2	D	74.7		9.3	0.99	9.8	0.06	0.00	0.17	0.18	76	
85		11.91		11.90		33.359		25.336	265.1	0.300	4.30		187.9		70.2		11.2	1.12	12.0	0.04	0.00	0.11	0.14	86	16
100		11.39		11.38		33.615		25.632	237.3	0.338	3.30		144.1		53.3		16.8	1.49	17.0	0.01	0.00	0.04	0.08	101	15
120		11.12		11.10		33.780		25.810	220.9	0.384	2.73		119.2		43.9		20.9	1.72	19.9	0.01	0.00	0.01	0.05	121	14
125	ISL	11.12	D	11.10		33.799	D	25.825	219.6	0.397	2.69	D	117.2	D	43.3		21.3	1.74	20.2	0.01	0.00	0.01	0.04	126	
140		10.80		10.78		33.824		25.902	212.6	0.427	2.69		117.2		42.9		22.5	1.78	21.0	0.01	0.00	0.01	0.04	141	13
150	ISL	10.66	D	10.64		33.827	D	25.930	210.1	0.450	2.72	D	118.4	D	43.3		23.7	1.82	21.6	0.02	0.00	0.01	0.04	151	
170		10.20		10.18		33.930		26.089	195.3	0.488	2.50		109.1		39.4		26.2	1.90	23.0	0.03	0.00	0.01	0.05	171	12
200		9.56		9.53		34.092		26.325	173.5	0.544	1.97		86.1		30.7		32.5	2.12	26.1	0.01	0.00	0.01	0.03	202	11
231		9.30		9.27		34.142		26.406	166.3	0.596	1.73		75.7		26.9		35.7	2.24	27.5	0.01	0.06			233	10
250	ISL	9.16	D	9.13	D	34.176	D	26.456	162.0	0.632	1.57	D	68.2	D	24.2		37.9	2.32	28.2	0.01	0.04			252	
270		9.10		9.07		34.226		26.507	157.6	0.659	1.28		55.9		19.7		40.2	2.40	29.0	0.01	0.01			272	09
300	ISL	8.92	D	8.88	D	34.250	D	26.555	153.6	0.711	1.12	D	48.6	D	17.2		42.8	2.48	29.8	0.01	0.00			302	
320		8.75		8.72		34.266		26.594	150.2	0.736	0.98		42.7		15.0		44.6	2.54	30.4	0.01	0.00			323	08
380		7.98		7.94		34.282		26.726	138.3	0.823	0.74		32.1		11.1		52.9	2.70	32.8	0.01	0.00			383	07
400	ISL	7.84	D	7.80	D	34.283	D	26.746	136.7	0.857	0.67	D	29.0	D	10.0		55.3	2.75	33.4	0.01	0.00			403	
441		7.43		7.38		34.303		26.822	129.8	0.905	0.48		21.0		7.1		60.3	2.84	34.8	0.01	0.00			445	06
500	ISL	7.00	D	6.95	D	34.306	D	26.885	124.5	0.988	0.40	D	17.4	D	5.9		67.8	2.93	36.2	0.01	0.00			504	
515		6.77		6.72		34.306		26.917	121.5	0.998	0.34		15.0		5.0		69.7	2.95	36.5	0.01	0.00			519	05
600		6.13		6.08		34.341		27.029	111.4	1.097	0.22		9.5		3.1		81.9	3.10	37.9	0.01	0.02			605	04
660		5.75		5.69		34.368		27.099	105.0	1.162	0.15		6.4		2.1		91.8	3.19	37.7	0.02	0.02			666	03
700	ISL	5.68	D	5.61	D	34.368	D	27.109	104.6	1.214	0.15	D	6.7	D	2.2		95.9	3.23	37.2	0.02	0.02			706	
726		5.49		5.42		34.381		27.142	101.5	1.231	0.11		4.8		1.6		98.5	3.26	36.8	0.02	0.02			733	02
730		5.49		5.43		34.380		27.141	101.7	1.235	0.11		4.7		1.5		99.2	3.28	36.6	0.02	0.04			737	01

D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED O2;

RV OCEANUS CALCOFI CRUISE 1511 STATION 86.7 45.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
33 29.4 N	119 19.1 W	04/11/2015	0509	UTC	1634 m	310 29 kn			1010.4 mb	17.4 C	13.9 C				031

DEPTH m		TEMP DEG C		POTTEMP DEG C		SALINITY		SIGMA THETA	SVA	DYN HT	OXYGEN ml/L		OXYGEN µmol/Kg		OXY PCT		SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		20.11		20.11		33.486		23.579	430.2	0.000	5.32		232.1		102.2		2.1	0.33	0.0	0.00	0.35	0.18	0.04	0	
3		20.11		20.11		33.486		23.579	430.3	0.013	5.32		232.1		102.2		2.1	0.33	0.0	0.00	0.35	0.18	0.04	3	21
10	ISL	20.12	D	20.11		33.478	D	23.573	431.2	0.044	5.33	D	232.7	D	102.5		2.0	0.27	0.0	0.00	0.00	0.18	0.04	10	
11		20.12		20.12		33.479		23.572	431.4	0.047	5.33	D	232.5	D	102.5		2.0	0.26	0.0	0.00	0.00	0.18	0.04	11	19
11		20.12		20.12		33.481		23.574	431.2	0.046														11	20
20	ISL	20.11	D	20.10		33.476	D	23.575	431.5	0.087	5.34	D	232.9	D	102.6		2.0	0.27	0.0	0.00	0.00	0.18	0.05	20	
21		20.13		20.12		33.481		23.574	431.6	0.090	5.32		232.2		102.2		2.0	0.27	0.0	0.00	0.00	0.18	0.05	21	18
30		19.92		19.91		33.479		23.628	426.8	0.129	5.33		232.6		102.0		2.0	0.27	0.0	0.00	0.01	0.18	0.05	30	17
41		16.49		16.49		33.267		24.306	362.3	0.172	5.80		253.3		103.9		2.7	0.36	0.0	0.00	0.00	0.34	0.14	41	16
50	ISL	15.51	D	15.50		33.307	D	24.561	338.3	0.206	5.53	D	240.8	D	97.1		3.4	0.45	0.0	0.00	0.00	0.56	0.38	50	
51		15.12		15.11		33.334		24.666	328.3	0.207	5.55		242.4		96.8		3.4	0.46	0.0	0.00	0.07	0.58	0.40	51	15
60		13.11		13.10		33.241		25.012	295.4	0.235	5.04		219.9		84.2		6.8	0.79	6.1	0.07	0.01	0.32	0.27	60	14
70		12.73		12.72		33.233		25.081	289.1	0.265	4.97		217.1		82.5		7.3	0.84	7.2	0.05	0.00	0.30	0.26	71	13
75	ISL	12.07	D	12.06	D	33.246	D	25.218	276.1	0.281	4.81	D	209.5	D	78.7		8.4	0.92	8.6	0.03	0.00	0.26	0.22	76	
85		11.67		11.66		33.303		25.337	264.9	0.306	4.54		198.1		73.6		10.6	1.07	11.5	0.01	0.00	0.17	0.14	86	12
100		10.99		10.98		33.470		25.590	241.2	0.344	4.00		174.6		64.0		13.9	1.30	14.7	0.01	0.12	0.07	0.11	101	11
120		10.69		10.67		33.660		25.792	222.4	0.390	3.40		148.3		54.1		18.8	1.52	18.4	0.00	0.00	0.03	0.06	121	10
125	ISL	10.58	D	10.56		33.747	D	25.880	214.2	0.403	3.11	D	135.2	D	49.4		19.8	1.58	19.1	0.00	0.00	0.02	0.05	126	
140		10.46		10.44		33.820		25.958	207.1	0.433	2.86		124.9		45.4		22.8	1.76	21.0	0.01	0.14	0.01	0.04	141	09
150	ISL	10.35	D	10.33		33.930	D	26.064	197.3	0.455	2.53	D	110.1	D	40.0		24.6	1.85	22.0	0.01	0.57	0.01	0.04	151	
170		10.03		10.01		34.014		26.183	186.4	0.492	2.27		99.0		35.7		28.2	2.04	24.1	0.00	1.44	0.01	0.04	171	08
200		9.49		9.47		34.137		26.371	169.1	0.545	1.86		81.1		28.9		34.3	2.20	26.6	0.00	0.17	0.00	0.03	202	07
231		9.11		9.09		34.177		26.464	160.8	0.596	1.58		69.0		24.4		38.1	2.33	28.1	0.01	0.72			233	06
250	ISL	9.01	D	8.98	D	34.191	D	26.492	158.5	0.630	1.50	D	65.3	D	23.1		39.7	2.37	28.7	0.01	0.38			252	
270		8.90		8.87		34.205		26.521	156.2	0.658	1.31		57.0		20.1		41.4	2.42	29.3	0.01	0.02			272	05
300	ISL	8.63	D	8.60	D	34.246	D	26.595	149.6	0.708	1.11	D	48.2	D	16.9		44.9	2.51	30.4	0.01	0.02			302	
322		8.43		8.40		34.249		26.629	146.7	0.737	1.01		44.2		15.4		47.4	2.57	31.1	0.01	0.02			325	04
381		7.94		7.91		34.282		26.730	137.9	0.821	0.66		28.7		9.9		54.3	2.74	33.1	0.01	0.07			384	03
400	ISL	7.72	D	7.68	D	34.292	D	26.770	134.3	0.851	0.59	D	25.8	D	8.9		56.8	2.79	33.8	0.01	0.12			403	
440		7.33		7.29		34.297		26.831	128.9	0.900	0.47		20.5		7.0		62.1	2.88	35.2	0.01	0.22			444	02
500	ISL	6.76	D	6.72	D	34.313	D	26.923	120.7	0.980	0.35	D	15.1	D	5.1		70.7	3.00	36.9	0.01	0.20			504	
516		6.62		6.57		34.315		26.944	118.7	0.994	0.30		13.0		4.4		73.0	3.03	37.4	0.01	0.19			520	01

D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED O2;

RV OCEANUS CALCOFI CRUISE 1511 STATION 86.7 45.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
33 29.3 N	119 19.2 W	12/11/2015	1150 UTC	1639 m	350 09 kn			1017.5 mb	17.8 C	13.7 C				068

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0	18.71	18.71	33.450 D	23.911	398.5	0.000	5.44	D237.1	D101.8								0	
10	18.72	18.71	33.449 D	23.909	399.1	0.040	5.44	D237.1	D101.8								10	
20	18.70	18.70	33.446 D	23.911	399.3	0.080	5.43	D236.9	D101.7								20	
30	18.35	18.34	33.421 D	23.982	393.0	0.120	5.46	D238.1	D101.5								30	
50	13.90	13.89	33.299 D	24.898	306.0	0.191	5.09	D222.0	D 86.6								50	
75	11.74	11.73	33.380 D	25.384	260.3	0.261	4.33	D188.4	D 70.3								76	
100	10.52	10.51	33.498 D	25.694	231.2	0.324	3.89	D169.3	D 61.6								101	
125	10.42	10.40	33.877 D	26.009	201.9	0.378	2.65	D115.2	D 42.0								126	
150	10.19	10.18	33.994 D	26.140	190.1	0.428	2.41	D104.9	D 38.1								151	
200	9.55	9.53	34.169 D	26.386	167.7	0.518	1.72	D 74.8	D 26.8								202	
250	8.79	8.76	34.173 D	26.513	156.4	0.600	1.58	D 68.7	D 24.2								252	
300	8.37	8.34	34.233 D	26.625	146.5	0.676	1.09	D 47.5	D 16.6								302	
400	7.40	7.36	34.288 D	26.814	129.9	0.815	0.53	D 23.2	D 7.9								403	
500	6.69	6.64	34.315 D	26.934	119.5	0.942	0.32	D 14.1	D 4.7								504	

D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED O2;

RV OCEANUS CALCOFI CRUISE 1511 STATION 86.7 50.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
33 19.4 N	119 39.8 W	12/11/2015	0836 UTC	82 m	330 12 kn			1019.2 mb	17.0 C	14.4 C				067

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0	17.44	17.44	33.307	24.111	379.5	0.000	5.56	242.8	101.5	2.1	0.32	0.1	0.02	0.00	0.64	0.15	0	
3	17.44	17.44	33.307	24.111	379.6	0.011	5.56	242.8	101.5	2.1	0.32	0.1	0.02	0.00	0.64	0.15	3	10
5	17.44	17.44	33.306	24.111	379.7	0.019	5.58	243.7	101.9	2.1	0.32	0.0	0.02	0.00	0.63	0.17	5	09
9	17.46	17.45	33.311	24.112	379.7	0.035											9	08
10	17.47	17.47	33.314	24.110	379.9	0.038	5.57	243.3	101.7	1.9	0.30	0.0	0.01	0.00	0.84	0.21	10	07
20	17.47	17.46	33.308	24.108	380.5	0.076	5.56	243.0	101.6	2.0	0.32	0.1	0.01	0.00	0.68	0.20	20	06
30	17.57	17.56	33.309	24.086	383.0	0.114	5.58	243.7	102.1	2.1	0.31	0.0	0.02	0.00	0.74	0.20	30	05
40	17.55	17.55	33.344	24.116	380.5	0.152	5.60	244.6	102.4	1.6	0.32	0.0	0.02	0.00	1.36	0.37	40	04
50	17.20	17.19	33.357	24.212	371.7	0.190	5.58	243.7	101.4	1.8	0.32	0.1	0.02	0.00	1.59	0.42	50	03
60	13.70	13.69	33.219	24.876	308.4	0.224	5.16	225.6	87.4	6.4	0.71	5.4	0.22	0.00	0.42	0.39	60	02
70	13.20	13.19	33.239	24.994	297.4	0.254	4.95	216.1	82.9	8.1	0.84	7.6	0.18	0.04	0.28	0.28	71	01

D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED O2;

RV OCEANUS CALCOFI CRUISE 1511 STATION 86.7 55.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
33 9.4 N	120 0.4 W	12/11/2015	0436 UTC	1206 m	330 14 kn			1021.3 mb	16.1 C	13.4 C				066

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0	17.96	17.96	33.302	23.983	391.6	0.000	5.52	241.0	101.7	1.9	0.28	0.0	0.01	0.00	0.20	0.06	0	
2	17.96	17.96	33.302	23.984	391.7	0.008	5.52	241.0	101.7	1.9	0.28	0.0	0.01	0.00	0.20	0.06	2	21
10	17.96	17.96	33.303	23.983	392.0	0.039	5.50	240.3	101.4	1.8	0.27	0.0	0.01	0.00	0.20	0.07	10	19
10	17.96	17.96	33.303	23.984	392.0	0.039											10	20
20 ISL	17.96 D	17.95	33.300 D	23.984	392.4	0.079	5.51	D240.3	D101.6	1.8	0.30	0.0	0.01	0.00	0.20	0.07	20	
25	17.95	17.94	33.305	23.990	392.0	0.098	5.50	240.6	101.5	1.8	0.32	0.0	0.02	0.10	0.21	0.07	25	18
30 ISL	17.92 D	17.91	33.296 D	23.991	392.0	0.118	5.51	D240.4	D101.6	1.9	0.32	0.0	0.02	0.09	0.23	0.08	30	
40	17.80	17.79	33.288	24.014	390.2	0.157	5.52	241.0	101.4	1.9	0.31	0.0	0.02	0.06	0.29	0.10	40	17
50	16.77	16.76	33.242	24.225	370.5	0.195	5.60	244.6	100.8	2.2	0.33	0.1	0.04	0.20	0.45	0.18	50	16
62	13.94	13.93	33.117	24.748	320.7	0.236	5.51	240.7	93.6	4.8	0.61	3.1	0.16	0.18	0.41	0.25	63	15
75	12.20	12.19	33.189	25.149	282.6	0.275	4.95	216.2	81.2	8.6	0.89	8.9	0.07	0.00	0.21	0.20	76	14
87	11.38	11.37	33.222	25.327	265.9	0.308	4.81	210.1	77.5	9.7	1.05	10.4	0.05	0.26	0.16	0.25	88	13
100	10.32	10.31	33.364	25.624	237.8	0.341	4.24	185.1	66.8	15.2	1.33	16.3	0.02	0.00	0.08	0.10	101	12
112	10.03	10.02	33.499	25.779	223.3	0.369	3.85	168.3	60.4	18.2	1.50	18.7	0.02	0.07	0.03	0.07	113	11
125	9.95	9.93	33.587	25.862	215.7	0.397	3.61	157.8	56.6	19.9	1.58	19.7	0.02	0.24	0.02	0.05	126	10
140	9.78	9.76	33.685	25.968	206.0	0.429	3.32	145.2	51.9	22.4	1.68	21.4	0.02	0.00	0.01	0.04	141	09
150 ISL	9.32 D	9.30	33.754 D	26.097	193.8	0.451	3.14	D136.8	D 48.6	24.4	1.75	22.6	0.02	0.00	0.01	0.04	151	
170	9.19	9.17	33.867	26.208	183.7	0.487	2.88	125.8	44.4	28.4	1.88	24.9	0.01	0.00	0.00	0.03	171	08
200	8.70	8.68	33.957	26.355	170.2	0.540	2.60	113.6	39.7	33.0	2.05	26.9	0.01	0.04	0.00	0.02	202	07
231	8.41	8.39	34.053	26.476	159.2	0.591	2.12	92.4	32.1	38.8	2.20	29.1	0.01	0.00			233	06
250 ISL	8.13 D	8.10	34.077 D	26.538	153.6	0.624	1.93	D 84.1	D 29.1	41.3	2.28	30.1	0.01	0.00			252	
270	8.07	8.04	34.089	26.556	152.2	0.651	1.75	76.6	26.4	44.0	2.37	31.1	0.01	0.00			272	05
300 ISL	7.60 D	7.57	34.120 D	26.650	143.6	0.700	1.42	D 61.8	D 21.2	50.1	2.54	33.1	0.01	0.00			302	
320	7.48	7.45	34.169	26.706	138.6	0.723	1.08	47.0	16.0	54.2	2.65	34.4	0.01	0.00			323	04
380	7.26	7.23	34.236	26.791	131.5	0.804	0.71	30.9	10.5	60.0	2.80	35.6	0.01	0.08			383	03
400 ISL	7.21 D	7.17	34.249 D	26.809	130.1	0.836	0.64	D 28.0	D 9.5	62.2	2.84	36.1	0.01	0.14			403	
439	6.89	6.84	34.260	26.863	125.4	0.881	0.54	23.6	7.9	66.4	2.91	36.9	0.01	0.26			443	02
500 ISL	6.55 D	6.50	34.281 D	26.925	120.1	0.962	0.40	D 17.5	D 5.9	71.7	2.97	38.0	0.01	0.00			504	
515	6.53	6.49	34.286	26.932	119.7	0.973	0.39	17.1	5.7	73.0	2.99	38.3	0.01	0.00			519	01

D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED O2;

RV OCEANUS CALCOFI CRUISE 1511 STATION 86.7 60.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
32 59.3 N	120 20.9 W	12/11/2015	0019	UTC	718 m	350 16 kn	340 04 08	0	1021.7 mb	16.5 C	12.6 C		0/8		065

DEPTH m		TEMP DEG C		POTTEMP DEG C		SALINITY		SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg		OXY PCT		SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		17.75		17.75		33.298		24.030	387.2	0.000	5.56	243.1		102.2		1.8	0.29	0.0	0.02	0.01	0.22	0.07	0	
2		17.75		17.75		33.298		24.030	387.3	0.008	5.56	243.1		102.2		1.8	0.29	0.0	0.02	0.01	0.22	0.07	2	21
10		17.76		17.76		33.299		24.030	387.6	0.039	5.55	D242.2		D102.0		1.8	0.30	0.0	0.01	0.00	0.22	0.07	10	19
10		17.76		17.76		33.302		24.032	387.4	0.040													10	20
20		17.69		17.69		33.296		24.045	386.6	0.077	5.55	242.4		101.8		1.7	0.31	0.0	0.01	0.02	0.25	0.08	20	18
30	ISL	17.21	D	17.20		33.312	D	24.173	374.7	0.116	5.65	D246.4		D102.7		1.6	0.31	0.0	0.01	0.00	0.39	0.13	30	
31		17.20		17.20		33.313		24.176	374.4	0.119	5.64	246.5		102.5		1.5	0.31	0.1	0.01	0.00	0.41	0.13	31	17
40		16.15		16.14		33.260		24.379	355.3	0.152	5.67	247.8		100.9		1.9	0.31	0.0	0.01	0.04	0.52	0.19	40	16
49		14.15		14.15		33.076		24.673	327.5	0.183	5.73	250.4		97.8		3.9	0.44	1.2	0.09	0.02	0.57	0.34	49	15
50	ISL	14.08	D	14.07		33.079	D	24.691	325.8	0.188	5.70	D248.6	D	97.3		4.2	0.47	1.7	0.09	0.02	0.55	0.34	50	
60		12.53		12.53		33.158		25.061	290.7	0.217	5.13	224.1		84.7		7.2	0.81	7.1	0.10	0.01	0.29	0.31	60	14
69		12.25		12.24		33.182		25.134	284.0	0.243	5.02	219.3		82.4		7.7	0.87	8.0	0.08	0.00	0.28	0.30	70	13
75	ISL	11.95	D	11.94		33.274	D	25.261	271.9	0.262	4.77	D207.7	D	77.8		9.4	0.98	10.0	0.07	0.00	0.22	0.24	76	
85		11.20		11.19		33.314		25.432	255.9	0.286	4.40	192.4		70.8		12.1	1.16	13.3	0.05	0.00	0.12	0.14	86	12
100		10.66		10.65		33.407		25.600	240.2	0.323	4.09	178.8		65.0		15.2	1.33	16.2	0.04	0.00	0.06	0.10	101	11
120		9.55		9.54		33.617		25.952	207.0	0.368	3.52	153.7		54.6		22.2	1.68	21.6	0.02	0.00	0.01	0.04	121	10
125	ISL	9.54	D	9.52		33.622	D	25.958	206.5	0.381	3.52	D153.2	D	54.6		23.1	1.71	22.1	0.02	0.00	0.01	0.04	126	
140		9.26		9.24		33.759		26.111	192.2	0.408	3.18	138.8		49.1		25.8	1.80	23.8	0.02	0.01	0.01	0.03	141	09
150	ISL	9.14	D	9.12		33.807	D	26.168	187.0	0.430	3.07	D133.6	D	47.3		27.0	1.84	24.3	0.02	0.00	0.01	0.03	151	
170		8.95		8.93		33.872		26.248	179.8	0.464	2.89	126.0		44.3		29.4	1.91	25.5	0.01	0.00	0.00	0.03	171	08
200		8.46		8.44		33.973		26.406	165.3	0.515	2.55	111.4		38.7		34.6	2.05	27.6	0.01	0.00	0.00	0.03	202	07
230		8.14		8.12		34.034		26.501	156.7	0.564	2.16	94.5		32.6		40.3	2.23	29.7	0.01	0.00			232	06
250	ISL	8.00	D	7.97		34.051	D	26.537	153.6	0.599	1.99	D 86.7	D	29.9		44.0	2.34	31.0	0.01	0.00			252	
270		7.78		7.75		34.098		26.607	147.3	0.625	1.59	69.3		23.7		47.6	2.44	32.3	0.01	0.00			272	05
300	ISL	7.64	D	7.61		34.116	D	26.641	144.5	0.674	1.43	D 62.3	D	21.4		51.7	2.57	33.5	0.01	0.00			302	
320		7.39		7.36		34.155		26.707	138.4	0.696	1.11	48.4		16.4		54.5	2.65	34.4	0.01	0.00			323	04
380		6.82		6.79		34.218		26.837	126.8	0.776	0.65	28.4		9.5		64.9	2.86	36.8	0.02	0.01			383	02
400	ISL	6.75	D	6.71		34.222	D	26.850	125.8	0.808	0.62	D 27.0	D	9.1		66.9	2.88	37.1	0.02	0.01			403	
440		6.56		6.52		34.234		26.886	122.8	0.851	0.51	22.4		7.5		70.7	2.93	37.9	0.01	0.01			444	03
500	ISL	6.24	D	6.19		34.277	D	26.963	116.2	0.931	0.37	D 16.0	D	5.3		75.6	3.04	38.8	0.01	0.01			504	
516		6.15		6.10		34.284		26.980	114.7	0.941	0.34	14.9		4.9		76.9	3.07	39.0	0.01	0.01			520	01

D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED O2;

RV OCEANUS CALCOFI CRUISE 1511 STATION 86.7 70.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
32 39.4 N	121 2.0 W	11/11/2015	1813	UTC	3898 m	020 15 kn	350 05 07	0	1024.5 mb	16.4 C	13.3 C	26 m	0/8		064

DEPTH m		TEMP DEG C		POTTEMP DEG C		SALINITY		SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg		OXY PCT		SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		18.38		18.38		33.314		23.888	400.7	0.000	5.46	238.4		101.5		1.6	0.28	0.0	0.02	0.00	0.19	0.06	0	
2	A	18.38		18.38		33.314		23.888	400.8	0.008	5.46	238.4		101.5		1.6	0.28	0.0	0.02	0.00	0.19	0.06	2	24
10		18.38		18.38		33.304		23.882	401.7	0.040	5.47	239.0		101.8		1.6	0.27	0.0	0.02	0.01	0.18	0.06	10	22
10		18.38		18.38		33.303		23.881	401.8	0.041													10	23
15	A	18.38		18.38		33.303		23.882	401.9	0.060	5.47	238.8		101.7		1.5	0.29	0.0	0.02	0.02	0.19	0.06	15	21
20	ISL	18.37	D	18.37		33.299	D	23.881	402.2	0.081	5.46	D238.0		D101.4		1.5	0.28	0.0	0.02	0.00	0.20	0.06	20	
21	A	18.38		18.37		33.309		23.887	401.6	0.084	5.48	239.3		101.9		1.5	0.28	0.0	0.02	0.00	0.20	0.06	21	20
30	ISL	18.37	D	18.37		33.299	D	23.882	402.5	0.121	5.46	D238.2		D101.5		1.5	0.28	0.0	0.02	0.00	0.20	0.06	30	
39	A	18.29		18.28		33.313		23.914	399.8	0.157	5.45	238.1		101.2		1.5	0.28	0.0	0.02	0.00	0.19	0.07	39	19
50		15.18		15.18		33.153		24.513	342.9	0.197	6.00	261.9		104.6		2.0	0.34	0.0	0.01	0.01	0.29	0.19	50	18
61		13.97		13.96		33.151		24.768	318.7	0.234	5.70	249.0		97.0		3.7	0.44	1.0	0.10	0.00	0.37	0.31	61	17
71	A	12.32		12.31		33.145		25.093	287.9	0.264	5.38	235.1		88.5		5.6	0.63	4.4	0.15	0.00	0.23	0.36	72	15
71		12.32		12.31		33.146		25.093	287.9	0.264													72	16
75	ISL	12.05	D	12.04		33.162	D	25.157	281.9	0.278	5.19	D226.2	D	84.9		7.0	0.75	6.6	0.11	0.00	0.20	0.30	76	
82		11.02		11.01		33.155		25.338	264.6	0.295	4.97	217.1		79.5		9.4	0.97	10.5	0.03	0.00	0.16	0.18	83	14
92	A	10.62		10.61		33.201		25.446	254.6	0.321	4.79	209.3		76.0		11.3	1.11	12.7	0.03	0.00	0.12	0.15	93	13
100	ISL	10.36	D	10.35		33.279	D	25.551	244.7	0.343	4.53	D197.2	D	71.5		13.0	1.21	14.4	0.02	0.00	0.09	0.12	101	
102		10.23		10.22		33.267		25.564	243.5	0.346	4.57	199.6		71.9		13.4	1.23	14.8	0.02	0.00	0.09	0.11	103	12
110		10.02		10.01		33.411		25.713	229.6	0.364	4.06	177.2		63.6		17.0	1.46	18.1	0.02	0.01	0.04	0.07	111	11
124		9.80		9.79		33.556		25.862	215.6	0.396	3.59	156.9		56.1		20.1	1.61	20.5	0.02	0.00	0.02	0.04	125	10
125	ISL	9.77	D	9.76		33.582	D	25.888	213.2	0.401	3.45	D150.2	D	53.8		20.4	1.62	20.6	0.02	0.00	0.02	0.04	126	
139		9.36		9.35		33.697		26.046	198.4	0.427	3.35	146.1		51.8		24.1	1.75	22.8	0.02	0.01	0.01	0.03	140	09
150	ISL	9.22	D	9.20		33.732	D	26.097	193.8	0.451	3.28	D142.9	D	50.7		25.9	1.81	23.7	0.02	0.00	0.01	0.03	151	
170		8.94		8.92		33.866		26.246	180.0	0.485	2.90	126.7		44.5		29.2	1.91	25.4	0.01	0.00	0.00	0.02	171	08
199		8.52		8.50		33.970		26.392	166.5	0.536	2.48	108.4		37.8		34.5	2.09	27.8	0.01	0.00	0.00	0.02	201	07
200	ISL	8.54	D	8.52		33.974	D	26.393	166.5	0.541	2.45	D106.4	D	37.2		34.7	2.10	27.8	0.01	0.00			202	
229		8.30		8.28		34.082	D	26.515	155.5	0.588	1.86	D 81.0	D	28.2									231	06
250	ISL	7.82	D	7.80		34.058	D	26.568	150.6	0.620	1.90	D 82.7	D	28.5									252	
270		7.65		7.63		34.098		26.624	145.5	0.648	1.54	67.1		22.9		48.4	2.45	32.7	0.02	0.00			272	05
300	ISL	7.80	D	7.77		34.205	D	26.688	140.2	0.693	1.01	D 43.8	D	15.1		52.1	2.59	33.7	0.01	0.00			302	
319		7.48		7.45		34.187		26.721	137.2	0.718	0.97	42.5		14.5		54.4	2.68	34.4	0.01	0.00			322	04
379		7.08		7.04		34.269		26.842	126.5	0.797	0.52	22.8		7.7		63.1	2.92	36.4	0.01	0.00			382	03
400	ISL	6.96	D	6.92		34.280	D	26.868	124.3	0.826	0.48	D 20.8	D	7.0		65.0	2.95	36.7	0.01	0.00			403	
440		6.73		6.69		34.290		26.907	121.1	0.873	0.40	17.3		5.8		68.6	3.00	37.4	0.01	0.00			444	02
500	ISL	6.42	D	6.37		34.314	D	26.969	115.9	0.948	0.30	D 13.0	D	4.3		74.8	3.07	38.6	0.02	0.00			504	
514		6.31		6.26		34.307		26.977	115.1	0.960	0.29	12.5		4.1		76.2	3.09	38.9	0.02	0.01			518	01

A) PRIMARY PRODUCTIVITY SAMPLES WERE TAKEN FROM THESE LEVELS.
D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED O2;

RV OCEANUS CALCOFI CRUISE 1511 STATION 86.7 80.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
32 19.4 N	121 42.9 W	11/11/2015	1140 UTC	4070 m	010 21 kn			1023.9 mb	15.8 C	12.6 C				063

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0	18.40	18.40	33.295	23.869	402.6	0.000	5.43	237.1	101.0	2.5	0.24	0.0	0.01	0.00	0.20	0.07	0	
3	18.40	18.40	33.295	23.869	402.7	0.012	5.43	237.1	101.0	2.5	0.24	0.0	0.01	0.00	0.20	0.07	3	21
9	18.41	18.41	33.295	23.867	403.1	0.036											9	20
10 ISL	18.42 D	18.42	33.294 D	23.865	403.3	0.041	5.45 D	237.5 D	101.3	1.8	0.26	0.0	0.01	0.00	0.20	0.07	10	
11	18.42	18.41	33.295	23.867	403.2	0.044	5.43	237.2	101.0	1.7	0.26	0.0	0.01	0.00	0.20	0.07	11	19
20 ISL	18.43 D	18.42	33.293 D	23.864	403.8	0.081	5.44 D	237.4 D	101.3	1.7	0.25	0.0	0.01	0.00	0.21	0.07	20	
26	18.43	18.42	33.297	23.867	403.8	0.105	5.44	237.4	101.1	1.7	0.25	0.0	0.01	0.00	0.21	0.07	26	18
30 ISL	18.42 D	18.42	33.293 D	23.865	404.1	0.122	5.44 D	237.4 D	101.3	1.7	0.25	0.0	0.01	0.00	0.21	0.07	30	
40	18.42	18.42	33.294	23.866	404.4	0.161	5.44	237.6	101.2	1.6	0.25	0.0	0.01	0.00	0.21	0.07	40	17
50	18.37	18.36	33.295	23.882	403.3	0.202	5.44	237.6	101.1	1.6	0.26	0.0	0.01	0.03	0.20	0.07	50	16
62	14.94	14.93	33.062	24.495	344.9	0.247	6.06	264.5	105.1	2.8	0.35	0.0	0.02	0.01	0.50	0.43	62	15
75	12.27	12.26	33.121	25.083	288.9	0.288	5.31	232.0	87.2	6.1	0.72	5.8	0.10	0.00	0.26	0.36	76	14
87	11.70	11.69	33.207	25.256	272.7	0.322	4.77	208.5	77.5	9.5	1.00	10.9	0.04	0.00	0.15	0.22	88	13
100 ISL	11.01 D	10.99	33.321 D	25.472	252.4	0.358	4.24 D	184.8 D	67.9	12.9	1.20	14.6	0.03	0.00	0.08	0.12	101	
101	10.86	10.85	33.313	25.491	250.6	0.358	4.32	188.8	68.9	13.1	1.22	14.9	0.03	0.01	0.07	0.11	102	12
111	10.14	10.13	33.360	25.653	235.3	0.383	4.26	186.0	66.9	16.4	1.36	17.2	0.02	0.02	0.05	0.08	112	11
125	9.47	9.46	33.496	25.870	214.8	0.414	3.90	170.4	60.5	19.7	1.52	19.8	0.02	0.00	0.02	0.05	126	10
141	9.26	9.24	33.678	26.047	198.3	0.447	3.37	147.1	52.0	24.4	1.71	22.9	0.02	0.02	0.01	0.02	142	09
150 ISL	9.12 D	9.10	33.753 D	26.128	190.8	0.467	3.20 D	139.4 D	49.3	25.9	1.76	23.7	0.02	0.00	0.01	0.02	151	
170	8.89	8.87	33.845	26.237	180.8	0.502	2.95	128.9	45.2	29.2	1.86	25.6	0.02	0.00	0.00	0.02	171	08
200	8.63	8.61	33.934	26.348	170.8	0.555	2.70	117.8	41.1	32.7	1.97	27.1	0.01	0.00	0.00	0.02	202	07
230	8.23	8.20	34.002	26.464	160.2	0.604	2.36	103.0	35.6	37.9	2.10	29.0	0.02	0.00			232	06
250 ISL	8.11 D	8.09	34.054 D	26.522	155.1	0.639	2.07 D	89.8 D	31.1	41.4	2.20	30.2	0.02	0.00			252	
270	7.71	7.68	34.049	26.578	149.9	0.667	1.90	82.8	28.3	44.9	2.30	31.5	0.02	0.00			272	05
300 ISL	7.46 D	7.43	34.074 D	26.633	145.1	0.714	1.60 D	69.5 D	23.7	49.1	2.44	32.8	0.02	0.00			302	
320	7.49	7.45	34.140	26.682	140.8	0.739	1.24	53.9	18.4	51.8	2.54	33.7	0.02	0.00			323	04
382	6.84	6.80	34.182	26.806	129.7	0.823	0.80	34.7	11.6	61.8	2.76	36.4	0.02	0.02			385	03
400 ISL	6.89 D	6.85	34.232 D	26.839	126.9	0.852	0.60 D	26.1 D	8.8	63.9	2.81	36.8	0.02	0.02			403	
439	6.62	6.58	34.241	26.883	123.2	0.896	0.51	22.2	7.4	68.4	2.93	37.7	0.02	0.03			443	02
500 ISL	5.95 D	5.91	34.214 D	26.949	117.1	0.975	0.46 D	19.9 D	6.6	76.3	3.02	39.4	0.02	0.04			504	
516	5.89	5.85	34.220	26.961	116.1	0.987	0.42	18.3	6.0	78.4	3.04	39.8	0.02	0.04			520	01

D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED O2;

RV OCEANUS CALCOFI CRUISE 1511 STATION 86.7 90.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
31 59.4 N	122 23.6 W	11/11/2015	0531 UTC	4092 m	350 21 kn			1024.9 mb	16.7 C	12.1 C				062

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0	19.51	19.51	33.450	23.708	417.9	0.000	5.33	232.8	101.3	1.9	0.23	0.0	0.01	0.04	0.12	0.03	0	
2	19.51	19.51	33.450	23.708	418.0	0.008	5.33	232.8	101.3	1.9	0.23	0.0	0.01	0.04	0.12	0.03	2	21
10	19.53	19.53	33.450	23.704	418.7	0.042	5.33	232.7	101.3	1.8	0.23	0.0	0.01	0.01	0.12	0.05	10	19
10	19.53	19.53	33.451	23.706	418.6	0.043											10	20
20 ISL	19.53 D	19.52	33.447 D	23.703	419.2	0.084	5.35 D	233.3 D	101.7	1.8	0.24	0.0	0.00	0.02	0.12	0.04	20	
25	19.53	19.53	33.448	23.703	419.4	0.105	5.33	233.0	101.4	1.8	0.24	0.0	0.00	0.02	0.12	0.04	25	18
30 ISL	19.53 D	19.53	33.447 D	23.703	419.6	0.127	5.35 D	233.3 D	101.7	1.8	0.25	0.0	0.00	0.00	0.12	0.04	30	
40	19.53	19.52	33.448	23.705	419.9	0.168	5.33	232.7	101.3	1.8	0.26	0.0	0.00	0.00	0.12	0.04	40	17
50	19.53	19.52	33.448	23.706	420.2	0.210	5.34	233.0	101.4	1.8	0.25	0.0	0.00	0.02	0.12	0.04	50	16
62	18.84	18.83	33.430	23.869	405.1	0.259	5.36	234.1	100.6	1.8	0.23	0.0	0.00	0.00	0.13	0.04	62	15
75	16.51	16.50	33.182	24.239	369.9	0.310	5.84	255.0	104.6	2.1	0.24	0.0	0.00	0.00	0.19	0.12	76	14
88	15.43	15.41	33.172	24.476	347.6	0.356	5.76	251.4	100.9	2.3	0.26	0.0	0.00	0.00	0.19	0.19	89	13
100	14.46	14.44	33.222	24.725	324.2	0.397	5.58	243.6	95.9	3.1	0.36	0.3	0.10	0.02	0.23	0.16	101	12
112	13.20	13.19	33.298	25.041	294.2	0.434	5.35	233.6	89.7	4.5	0.50	2.8	0.13	0.00	0.17	0.15	113	11
125	11.59	11.58	33.193	25.268	272.6	0.471	5.19	226.7	84.0	7.1	0.78	7.5	0.02	0.00	0.13	0.12	126	10
140	10.65	10.63	33.198	25.440	256.3	0.510	5.03	219.9	79.9	9.3	0.94	10.4	0.01	0.00	0.08	0.13	141	09
150 ISL	10.10 D	10.08	33.290 D	25.607	240.5	0.540	4.83 D	210.2 D	75.7	12.2	1.09	13.0	0.01	0.00	0.06	0.10	151	
170	9.39	9.37	33.495	25.884	214.4	0.580	4.30	187.8	66.5	18.0	1.40	18.3	0.01	0.00	0.02	0.04	171	08
200	8.90	8.88	33.723	26.141	190.5	0.641	3.70	161.8	56.7	23.9	1.62	22.1	0.00	0.02	0.01	0.02	202	07
231	8.53	8.50	33.911	26.347	171.5	0.697	3.10	135.3	47.1	30.8	1.84	25.8	0.00	0.02			233	06
250 ISL	8.30 D	8.28	33.959 D	26.419	164.9	0.734	2.84 D	123.7 D	43.0	34.9	1.96	27.6	0.00	0.00			252	
270	7.92	7.89	33.997	26.507	156.8	0.761	2.42	105.5	36.2	39.1	2.08	29.6	0.01	0.00			272	05
300 ISL	7.48 D	7.45	34.030 D	26.596	148.6	0.812	1.98 D	86.0 D	29.4	45.4	2.30	31.8	0.01	0.00			302	
320	7.27	7.24	34.055	26.645	144.2	0.837	1.77	77.2	26.2	49.6	2.45	33.4	0.01	0.00			323	04
380	6.69	6.66	34.106	26.766	133.3	0.920	1.15	50.0	16.7	60.3	2.69	36.5	0.00	0.03			383	03
400 ISL	6.50 D	6.46	34.119 D	26.802	130.0	0.952	1.01 D	43.9 D	14.7	63.5	2.75	37.2	0.00	0.03			403	
440	6.19	6.15	34.162	26.877	123.3	0.997	0.75	32.8	10.8	70.0	2.87	38.7	0.00	0.02			444	02
500 ISL	5.78 D	5.74	34.192 D	26.952	116.6	1.076	0.51 D	22.3 D	7.3	78.2	3.01	40.1	0.01	0.02			504	
515	5.79	5.74	34.220	26.974	114.7	1.086	0.44	19.4	6.3	80.2	3.05	40.4	0.01	0.02			519	01

D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED O2;

RV OCEANUS CALCOFI CRUISE 1511 STATION 86.7 100.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
31 39.4 N	123 4.2 W	10/11/2015	2333	UTC	4119 m	350 20 kn	350 07 07	1	1023.0 mb	17.0 C	13.4 C	32 m	5/8	SC	061

DEPTH m		TEMP DEG C		POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		19.84		19.84	33.521	23.677	420.8	0.000	5.33	232.7	101.9	2.4	0.26	0.0	0.01	0.00	0.11	0.02	0	
2		19.84		19.84	33.521	23.678	420.9	0.008	5.33	232.7	101.9	2.4	0.26	0.0	0.01	0.00	0.11	0.02	2	21
10		19.84		19.84	33.518	23.675	421.5	0.042	5.30	231.3	101.3	2.0	0.26	0.0	0.01	0.00	0.11	0.04	10	19
11		19.84		19.84	33.520	23.676	421.4	0.045											11	20
20	ISL	19.82	D	19.81	33.510	D 23.677	421.7	0.085	5.33	D232.5	D101.9	2.1	0.25	0.0	0.01	0.00	0.11	0.03	20	
25		19.83		19.83	33.516	23.678	421.8	0.105	5.30	231.5	101.4	2.1	0.25	0.0	0.01	0.00	0.11	0.03	25	18
30	ISL	19.79	D	19.78	33.502	D 23.679	422.0	0.127	5.33	D232.6	D101.9	2.1	0.25	0.0	0.01	0.00	0.11	0.03	30	
40		19.75		19.74	33.497	23.687	421.6	0.169	5.31	231.7	101.3	2.0	0.25	0.0	0.01	0.00	0.11	0.03	40	17
50		19.73		19.72	33.491	23.689	421.9	0.211	5.31	231.7	101.3	2.0	0.25	0.0	0.01	0.00	0.12	0.03	50	16
61		18.83		18.82	33.420	23.864	405.5	0.256	5.68	248.1	106.5	2.2	0.24	0.0	0.01	0.00	0.21	0.06	61	15
75	ISL	17.74	D	17.72	33.483	D 24.182	375.6	0.313	5.77	D251.7	D106.1	2.3	0.21	0.0	0.01	0.00	0.21	0.09	76	
76		17.72		17.71	33.507	24.204	373.6	0.315	5.77	252.0	106.1	2.3	0.21	0.0	0.01	0.00	0.21	0.09	77	14
86		17.12		17.10	33.422	24.283	366.3	0.352	5.71	249.5	103.7	2.3	0.25	0.0	0.01	0.00	0.21	0.16	87	13
99		16.49		16.47	33.534	24.517	344.4	0.398	5.57	243.4	100.0	2.7	0.25	0.0	0.02	0.00	0.21	0.20	100	12
100	ISL	16.55	D	16.54	33.568	D 24.528	343.4	0.404	5.54	D241.5	D 99.6	2.8	0.26	0.0	0.03	0.00	0.21	0.19	101	
112		14.75		14.73	33.267	24.698	327.2	0.442	5.53	241.7	95.7	3.6	0.37	0.4	0.13	0.00	0.21	0.17	113	11
125		12.78		12.76	33.160	25.019	296.6	0.482	5.39	235.4	89.4	5.0	0.58	3.3	0.14	0.00	0.17	0.15	126	10
138		11.29		11.27	33.132	25.276	272.1	0.519	5.12	223.5	82.3	8.4	0.91	9.4	0.03	0.00	0.11	0.13	139	09
150	ISL	10.42	D	10.40	33.204	D 25.485	252.2	0.555	4.90	D213.2	D 77.3	10.4	1.02	11.4	0.02	0.00	0.08	0.10	151	
171		9.84		9.82	33.356	25.703	231.9	0.602	4.73	206.4	73.7	13.9	1.21	14.8	0.02	0.00	0.04	0.06	172	08
200	ISL	9.12	D	9.10	33.669	D 26.064	197.9	0.668	3.72	D161.9	D 57.2	22.2	1.57	21.1	0.02	0.00	0.01	0.03	202	
201		9.14		9.12	33.662	D 26.056	198.7	0.670	3.75	D163.3	D 57.7	22.5	1.58	21.3	0.02	0.00	0.01	0.03	203	07
229		8.69		8.66	33.870	26.290	176.9	0.719	3.26	142.2	49.7	29.3	1.81	25.2	0.02	0.00			231	06
250	ISL	8.43	D	8.40	33.939	D 26.385	168.2	0.759	3.04	D132.2	D 46.1	32.3	1.88	26.3	0.02	0.00			252	
273		8.18		8.15	33.976	26.452	162.2	0.794	2.92	127.3	44.0	35.6	1.96	27.5	0.02	0.00			275	05
300	ISL	7.63	D	7.60	34.012	D 26.561	152.0	0.840	2.32	D100.8	D 34.5	42.0	2.15	30.1	0.02	0.00			302	
322		7.39		7.36	34.022	26.603	148.3	0.869	2.10	91.6	31.1	47.2	2.31	32.1	0.02	0.00			325	04
380		6.75		6.71	34.066	26.727	137.0	0.952	1.44	63.0	21.1	58.2	2.60	35.7	0.02	0.00			383	03
400	ISL	6.58	D	6.54	34.093	D 26.772	133.0	0.984	1.13	D 49.3	D 16.5	61.5	2.69	36.6	0.02	0.00			403	
441		6.33		6.29	34.138	26.840	126.9	1.032	0.80	34.8	11.5	68.2	2.86	38.4	0.02	0.00			445	02
500	ISL	5.85	D	5.81	34.196	D 26.947	117.2	1.111	0.52	D 22.8	D 7.5	78.4	3.01	40.2	0.01	0.00			504	
515		5.71		5.67	34.207	26.973	114.8	1.122	0.45	19.7	6.4	81.0	3.05	40.7	0.01	0.04			519	01

D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED O2;

RV OCEANUS CALCOFI CRUISE 1511 STATION 86.7 110.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
31 19.4 N	123 44.6 W	10/11/2015	1742	UTC	3946 m	350 14 kn	360 04 06	1	1024.7 mb	17.0 C	13.1 C	35 m	5/8	AC	060

DEPTH m		TEMP DEG C		POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		19.91		19.91	33.489	23.633	425.0	0.000	5.29	230.9	101.3	2.0	0.26	0.0	0.01		0.12	0.06	0	
2	A	19.91		19.91	33.489	23.634	425.1	0.009	5.29	230.9	101.3	2.0	0.26	0.0	0.01		0.12	0.06	2	24
10	ISL	19.91	D	19.91	33.478	D 23.626	426.2	0.043	5.31	D231.5	D101.6	2.0	0.25	0.0	0.01	0.00	0.13	0.03	10	
12		19.91		19.91	33.482	23.630	425.9	0.051											12	23
12		19.91		19.91	33.487	23.634	425.5	0.052											12	22
13		19.91		19.91	33.480	23.628	426.1	0.055	5.28	230.7	101.2	2.0	0.24	0.0	0.01	0.00	0.14	0.02	13	21
20	ISL	19.91	D	19.91	33.478	D 23.626	426.5	0.086	5.30	D231.4	D101.6	2.0	0.26	0.0	0.01	0.00	0.13	0.02	20	
22	A	19.91		19.91	33.487	23.635	425.8	0.094	5.30	231.3	101.5	2.0	0.26	0.0	0.01	0.00	0.12	0.02	22	20
27	A	19.91		19.91	33.491	23.638	425.7	0.115	5.29	231.2	101.4	2.0	0.25	0.0	0.00	0.00	0.11	0.03	27	19
30	ISL	19.91	D	19.91	33.478	D 23.628	426.8	0.129	5.30	D231.3	D101.6	2.0	0.25	0.0	0.00	0.00	0.11	0.03	30	
40		19.91		19.90	33.482	23.633	426.8	0.170	5.30	231.3	101.4	2.0	0.25	0.0	0.00	0.00	0.12	0.03	40	18
50	ISL	19.91	D	19.90	33.477	D 23.630	427.4	0.215	5.29	D231.0	D101.4	2.0	0.25	0.0	0.00	0.00	0.21	0.07	50	
51	A	19.90		19.89	33.480	23.635	427.0	0.217	5.29	231.0	101.3	2.0	0.25	0.0	0.00	0.00	0.22	0.07	51	17
67		17.73		17.72	33.342	24.075	385.5	0.282	5.81	253.7	106.7	2.2	0.24	0.0	0.00	0.00	0.22	0.23	68	16
75	ISL	17.44	D	17.42	33.365	D 24.163	377.3	0.315	5.81	D253.4	D106.1	2.2	0.25	0.0	0.00	0.00	0.22	0.21	76	
81		17.04		17.03	33.383	24.271	367.2	0.335	5.73	250.3	103.9	2.3	0.25	0.0	0.00	0.00	0.21	0.20	82	15
96	A	16.02		16.01	33.394	24.515	344.3	0.389	5.57	243.4	99.0	2.7	0.30	0.2	0.06	0.00	0.20	0.23	97	13
96		16.02		16.01	33.393	24.515	344.4	0.387											97	14
100	ISL	15.87	D	15.85	33.391	D 24.548	341.3	0.405	5.58	D243.0	D 98.7	2.9	0.32	0.3	0.09	0.00	0.20	0.19	101	
104		15.44		15.42	33.360	24.619	334.6	0.416	5.51	240.7	96.7	3.1	0.34	0.5	0.13	0.00	0.21	0.15	105	12
115		14.09		14.07	33.304	24.866	311.1	0.451	5.43	237.0	92.6	3.8	0.44	1.6	0.19	0.00	0.16	0.14	116	11
122	A	13.37		13.35	33.225	24.952	303.0	0.473	5.36	233.9	90.1	4.6	0.56	3.3	0.05	0.00	0.13	0.10	123	10
125	ISL	13.01	D	12.99	33.240	D 25.036	295.0	0.486	5.41	D235.6	D 90.2	5.2	0.61	4.2	0.04	0.00	0.13	0.10	126	
140		11.13		11.11	33.180	25.342	265.8	0.524	5.16	225.2	82.6	7.8	0.85	8.5	0.02	0.00	0.09	0.08	141	09
150	ISL	10.42	D	10.41	33.238	D 25.511	249.7	0.554	4.87	D212.0	D 76.9	10.9	1.03	11.6	0.01	0.00	0.06	0.07	151	
169		9.78		9.76	33.393	25.741	228.2	0.595	4.40	192.1	68.5	16.8	1.36	17.5	0.01	0.00	0.01	0.04	170	08
200	ISL	9.12	D	9.10	33.683	D 26.076	196.8	0.666	3.78	D164.4	D 58.1	22.9	1.59	21.8	0.01	0.00	0.01	0.02	202	
201		9.12		9.10	33.679	26.072	197.2	0.663	3.79	165.2	58.2	23.1	1.60	22.0	0.01	0.00	0.01	0.02	203	07
230		8.71		8.69	33.883	26.297	176.4	0.717	3.28	143.3	50.1	29.0	1.79	25.2	0.01	0.05			232	06
250	ISL	8.48	D	8.46	33.931	D 26.370	169.7	0.758	3.08	D133.9	D 46.7	32.6	1.89	26.7	0.01	0.00			252	
270		8.09		8.07	33.982	26.469	160.5	0.785	2.77	120.8	41.7	36.2	1.99	28.2	0.01	0.00			272	05
300	ISL	7.73	D	7.70	34.014	D 26.548	153.3	0.839	2.35	D102.4	D 35.1	42.4	2.17	30.6	0.01	0.00			302	
319		7.44		7.41	34.028	26.601	148.5	0.861	2.08	90.7	30.8	46.3	2.28	32.1	0.01	0.00			322	04
380		6.67		6.64	34.067	26.737	136.0	0.947	1.39	60.6	20.2	59.0	2.58	36.3	0.01	0.00			383	03
400	ISL	6.56	D	6.52	34.081	D 26.764	133.6	0.982	1.23	D 53.6	D 17.9	62.0	2.65	37.1	0.01	0.00			403	
440		6.22		6.18	34.123	26.842	126.5	1.026	0.89	39.0	12.9	68.0	2.79	38.7	0.01	0.00			444	02
500	ISL	5.82	D	5.77	34.164	D 26.926	119.1	1.109	0.63	D 27.4	D 9.0	77.4	2.95	40.4	0.01	0.00			504	
515		5.71		5.67	34.182	26.954	116.5	1.117	0.54	23.7	7.7	79.7	2.99	40.9	0.01	0.00			519	01

A) PRIMARY PRODUCTIVITY SAMPLES WERE TAKEN FROM THESE LEVELS.
D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED O2;

RV OCEANUS CALCOFI CRUISE 1511 STATION 86.8 32.5

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
33 53.3 N	118 26.7 W	03/11/2015	1628 UTC	26 m	290 04 kn	290 03 06	0	1010.3 mb	15.6 C	11.8 C		0/8		027

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0	19.81	19.81	33.398	23.590	429.1	0.000	5.51 D	240.3 D	105.3	2.0	0.24	0.0	0.02	0.00	0.64	0.26	0	
2	19.81	19.81	33.398	23.591	429.2	0.009	5.51 D	240.3 D	105.3	2.0	0.24	0.0	0.02	0.00	0.64	0.26	2	05
6	19.81	19.81	33.398	23.591	429.3	0.026	5.57	243.4	106.4	2.0	0.24	0.0	0.00	0.00	0.69	0.25	6	04
10	19.80	19.80	33.433	23.620	426.7	0.043	5.62	245.7	107.4	2.0	0.23	0.0	0.00	0.00	0.66	0.25	10	03
15	19.57	19.57	33.418	23.669	422.2	0.064	5.49	240.1	104.5	2.4	0.26	0.0	0.03	0.00	1.00	0.38	15	02
20	19.03	19.03	33.348	23.754	414.3	0.085	5.48	239.3	103.1	3.0	0.28	0.1	0.10	0.00	1.16	0.48	20	01

D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED O2;

RV OCEANUS CALCOFI CRUISE 1511 STATION 88.5 30.1

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
33 40.4 N	118 5.1 W	03/11/2015	1228 UTC	21 m	340 07 kn			1009.0 mb	16.5 C	13.0 C				026

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0	20.21	20.21	33.407	23.492	438.5	0.000	5.38	234.9	103.5	2.0	0.26	0.0	0.03	0.00	0.54	0.26	0	
2	20.21	20.21	33.407	23.493	438.6	0.009	5.38	234.9	103.5	2.0	0.26	0.0	0.03	0.00	0.54	0.26	2	04
5	20.21	20.21	33.407	23.493	438.6	0.022	5.34	233.2	102.8	2.0	0.28	0.0	0.03	0.00	0.55	0.24	5	03
10	20.25	20.25	33.406	23.483	439.8	0.044	5.33	233.1	102.8	2.0	0.26	0.0	0.03	0.00	0.54	0.24	10	02
14	19.46	19.46	33.386	23.673	421.9	0.061	5.50	240.3	104.4	2.7	0.34	0.0	0.06	0.01	0.67	0.29	14	01

D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED O2;

RV OCEANUS CALCOFI CRUISE 1511 STATION 90.0 27.7

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
33 29.6 N	117 44.9 W	03/11/2015	1000 UTC	23 m	290 14 kn			1008.9 mb	17.6 C	13.9 C				025

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0	20.36	20.36	33.442	23.480	439.6	0.000	5.33	233.0	103.0	2.1	0.29	0.0	0.04	0.00	0.46	0.23	0	
2	20.36	20.36	33.442	23.481	439.7	0.009	5.33	233.0	103.0	2.1	0.29	0.0	0.04	0.00	0.46	0.23	2	04
5	20.38	20.38	33.442	23.477	440.2	0.022	5.34	233.3	103.1	2.1	0.30	0.0	0.03	0.00	0.46	0.23	5	03
9	19.26	19.26	33.438	23.764	412.9	0.039	5.38	235.3	101.9	2.8	0.34	0.0	0.07	0.00	0.68	0.39	9	02
10 ISL	18.93 D	18.93	33.413 D	23.828	406.9	0.044	5.40	235.6	101.5	2.9	0.35	0.0	0.08	0.00	0.72	0.41	10	
15	18.86	18.86	33.410	23.843	405.6	0.064	5.48	239.4	102.8	3.5	0.39	0.1	0.12	0.13	0.91	0.51	15	01

D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED O2;

RV OCEANUS CALCOFI CRUISE 1511 STATION 90.0 28.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
33 29.1 N	117 46.1 W	03/11/2015	0806 UTC	64 m	290 71 kn			1009.0 mb	17.5 C	13.6 C				024

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0	20.46	20.46	33.454	23.463	441.3	0.000	5.38	235.1	104.1	2.3	0.28	0.0	0.02	0.00	0.46	0.22	0	
3	20.46	20.46	33.454	23.463	441.4	0.013	5.38	235.1	104.1	2.3	0.28	0.0	0.02	0.00	0.46	0.22	3	07
5	20.46	20.46	33.444	23.456	442.2	0.022	5.35	233.8	103.5	2.4	0.29	0.1	0.03	0.00	0.43	0.23	5	06
10	20.47	20.47	33.444	23.454	442.6	0.044	5.35	233.9	103.6	2.3	0.30	0.0	0.02	0.00	0.42	0.21	10	05
20	19.66	19.66	33.448	23.669	422.5	0.087	5.42	236.6	103.2	2.8	0.32	0.0	0.05	0.00	0.63	0.31	20	04
30	17.66	17.65	33.393	24.128	379.0	0.128	5.47	239.2	100.4	4.0	0.41	0.2	0.20	0.18	0.97	0.54	30	03
40	17.06	17.05	33.401	24.277	365.1	0.165	5.30	231.6	96.1	4.4	0.47	0.7	0.28	0.00	0.81	0.63	40	02
50	16.39	16.38	33.417	24.447	349.2	0.200	5.05	220.5	90.3	5.1	0.59	1.8	0.33	0.00	0.53	0.46	50	01

D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED O2;

RV OCEANUS CALCOFI CRUISE 1511 STATION 90.0 30.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
33 25.1 N	117 54.3 W	03/11/2015	0508 UTC	615 m	320 18 kn			1008.7 mb	17.3 C	15.1 C				023

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0	21.85	21.85	33.521	23.138	472.4	0.000	5.19	226.8	103.0	1.7	0.25	0.0	0.02	0.00	0.16	0.03	0	
2	21.85	21.85	33.521	23.138	472.4	0.009	5.19	226.8	103.0	1.7	0.25	0.0	0.02	0.00	0.16	0.03	2	21
10	21.84	21.84	33.521	23.140	472.6	0.047	5.19	226.6	102.9	1.7	0.24	0.0	0.01	0.00	0.16	0.03	10	19
10	21.84	21.84	33.529	23.147	472.0	0.047											10	20
20 ISL	20.07 D	20.07	33.406 D	23.531	435.7	0.093	5.56	D242.6	D106.8	1.9	0.27	0.0	0.01	0.00	0.25	0.06	20	
25	18.96	18.96	33.344	23.769	413.1	0.114	5.83	254.8	109.6	2.1	0.28	0.0	0.00	0.00	0.29	0.07	25	18
30 ISL	18.50 D	18.49	33.300 D	23.852	405.4	0.135	5.98	D260.9	D111.4	2.3	0.30	0.0	0.00	0.00	0.30	0.08	30	
40	17.54	17.54	33.369	24.138	378.4	0.173	5.74	250.9	105.0	2.8	0.35	0.0	0.00	0.00	0.31	0.11	40	17
50	16.66	16.65	33.428	24.393	354.4	0.210	5.45	238.0	98.0	3.6	0.40	0.0	0.01	0.00	0.41	0.26	50	16
62	14.74	14.73	33.359	24.769	318.8	0.250	5.03	219.8	87.1	5.3	0.62	2.5	0.10	0.00	0.72	0.66	63	15
75	14.29	14.28	33.464	24.945	302.4	0.291	4.43	193.7	76.1	7.5	0.84	6.3	0.04	0.00	0.29	0.44	76	14
87	13.22	13.21	33.479	25.176	280.7	0.326	4.12	179.9	69.1	9.6	1.03	9.8	0.02	0.00	0.13	0.19	88	13
100	12.60	12.59	33.504	25.318	267.4	0.361	3.89	170.0	64.5	11.4	1.17	12.2	0.03	0.00	0.09	0.12	101	12
112	12.40	12.38	33.628	25.454	254.8	0.393	3.38	147.8	55.9	14.2	1.36	14.7	0.02	0.00	0.04	0.08	113	11
125	11.68	11.67	33.572	25.546	246.2	0.425	3.63	158.5	59.0	14.2	1.36	15.2	0.02	0.00	0.04	0.08	126	10
140	11.64	11.62	33.711	25.663	235.6	0.461	3.09	135.0	50.2	17.2	1.53	17.5	0.02	0.00	0.02	0.06	141	09
150 ISL	11.36 D	11.34	33.738 D	25.736	228.8	0.488	2.99	D130.0	D 48.3	18.9	1.62	18.7	0.02	0.00	0.02	0.05	151	
170	10.95	10.93	33.854	25.900	213.6	0.528	2.60	113.6	41.7	22.3	1.80	21.2	0.01	0.00	0.01	0.04	171	08
200	10.30	10.28	34.086	26.195	186.1	0.588	2.00	87.3	31.6	29.5	2.09	25.3	0.01	0.00	0.00	0.03	202	07
230	9.42	9.40	34.122	26.371	169.7	0.642	1.97	86.1	30.6	33.5	2.17	27.2	0.01	0.00			232	06
250 ISL	9.33 D	9.30	34.171 D	26.426	165.0	0.680	1.60	D 69.5	D 24.8	36.7	2.30	28.0	0.01	0.00			252	
270	9.21	9.18	34.238	26.498	158.5	0.708	1.24	54.2	19.2	39.8	2.43	28.8	0.01	0.00			272	05
300 ISL	9.06 D	9.03	34.261 D	26.540	155.1	0.761	1.12	D 48.7	D 17.3	42.4	2.49	30.0	0.01	0.00			302	
321	8.83	8.79	34.267	26.583	151.3	0.787	1.01	44.2	15.5	44.2	2.54	30.8	0.01	0.00			324	04
380	8.13	8.09	34.286	26.705	140.4	0.873	0.70	30.5	10.5	52.1	2.71	33.3	0.02	0.00			383	03
400 ISL	7.95 D	7.91	34.289 D	26.736	137.7	0.908	0.66	D 28.8	D 10.0	54.3	2.76	33.9	0.02	0.00			403	
440	7.61	7.56	34.293	26.789	133.2	0.955	0.54	23.4	8.0	58.6	2.86	35.1	0.02	0.00			444	02
500 ISL	6.80 D	6.76	34.309 D	26.915	121.5	1.040	0.33	D 14.3	D 4.8	69.9	3.03	37.0	0.02	0.00			504	
516	6.60	6.55	34.321	26.951	118.0	1.050	0.29	12.6	4.2	72.9	3.07	37.5	0.02	0.00			520	01

D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED O2;

RV OCEANUS CALCOFI CRUISE 1511 STATION 90.0 35.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
33 15.1 N	118 15.0 W	03/11/2015	0055 UTC	334 m	300 26 kn	300 05 30	1	1007.2 mb	18.8 C	16.2 C		7/8	SC	022

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0	21.96	21.96	33.542	23.123	473.7	0.000	5.14	224.7	102.3	1.8	0.21	0.1	0.01	0.01	0.16	0.04	0	
2	21.96	21.96	33.542	23.124	473.8	0.010	5.14	224.7	102.3	1.8	0.21	0.1	0.01	0.01	0.16	0.04	2	18
10	21.97	21.97	33.540	23.121	474.4	0.047	5.15	225.1	102.5	1.8	0.22	0.0	0.01	0.01	0.15	0.03	10	16
10	21.97	21.97	33.543	23.123	474.2	0.047											10	17
20	21.75	21.75	33.524	23.169	470.3	0.095	5.21	227.8	103.3	1.8	0.22	0.0	0.02	0.02	0.16	0.03	20	15
30	17.83	17.82	33.336	24.044	387.0	0.138	5.81	253.9	106.9	2.5	0.29	0.0	0.01	0.01	0.33	0.10	30	14
40	17.14	17.13	33.364	24.231	369.6	0.175	5.72	249.8	103.8	3.0	0.32	0.0	0.01	0.00	0.42	0.17	40	13
50	15.86	15.85	33.306	24.480	346.0	0.211	5.67	248.0	100.4	3.4	0.39	0.2	0.02	0.00	1.04	0.62	50	12
60	15.33	15.32	33.461	24.718	323.7	0.245	4.80	209.6	84.1	5.8	0.64	3.5	0.10	0.00	0.50	0.59	60	11
70	14.69	14.68	33.477	24.869	309.5	0.276	4.49	196.4	77.8	7.1	0.76	5.4	0.05	0.00	0.30	0.42	71	10
75 ISL	14.49 D	14.48	33.492 D	24.925	304.4	0.293	4.34	D190.5	D 74.8	7.9	0.84	6.5	0.04	0.00	0.26	0.35	76	
85	13.82	13.80	33.536	25.099	288.0	0.321	3.98	174.1	67.7	9.6	0.99	8.8	0.03	0.01	0.18	0.21	86	09
100	12.86	12.85	33.608	25.348	264.6	0.363	3.52	153.6	58.6	12.6	1.22	12.0	0.02	0.03	0.07	0.12	101	08
120	12.31	12.29	33.736	25.555	245.4	0.414	2.95	129.0	48.7	16.5	1.44	16.0	0.02	0.00	0.03	0.08	121	07
125 ISL	12.27 D	12.25	33.735 D	25.562	244.8	0.429	3.00	D130.6	D 49.4	17.1	1.48	16.6	0.02	0.00	0.02	0.07	126	
141	11.46	11.45	33.796	25.761	226.2	0.463	2.87	125.2	46.4	19.3	1.61	18.4	0.02	0.00	0.01	0.06	142	06
150 ISL	10.80 D	10.78	33.907 D	25.967	206.7	0.486	2.62	D113.6	D 41.9	21.3	1.70	19.7	0.02	0.01	0.01	0.05	151	
170	10.57	10.55	33.996	26.077	196.6	0.524	2.28	99.6	36.3	26.0	1.90	22.5	0.02	0.02	0.00	0.04	171	05
200	10.00	9.97	34.067	26.232	182.5	0.581	2.10	91.7	33.0	29.9	2.02	24.6	0.02	0.01	0.00	0.03	202	04
230	9.44	9.41	34.085	26.340	172.7	0.634	2.01	87.9	31.3	33.0	2.08	25.9	0.03	0.02			232	03
250 ISL	9.33 D	9.31	34.135 D	26.396	167.8	0.671	1.81	D 78.7	D 28.1	35.6	2.18	26.7	0.03	0.02			252	
270	9.19	9.16	34.188	26.462	161.9	0.701	1.50	65.6	23.2	38.1	2.27	27.6	0.03	0.02			272	02
300 ISL	8.78 D	8.75	34.236 D	26.565	152.6	0.752	1.19	D 51.9	D 18.2	42.4	2.39	29.0	0.03	0.02			302	
330	8.51	8.47	34.262	26.628	147.0	0.793	0.97	42.5	14.8	46.6	2.51	30.4	0.03	0.02			333	01

D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED O2;

RV OCEANUS CALCOFI CRUISE 1511 STATION 90.0 37.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
33 11.1 N	118 23.2 W	02/11/2015	2149 UTC	1177 m	280 17 kn	300 04 06	1	1008.4 mb	19.6 C	16.7 C	31 m	4/8	SC	021

DEPTH m		TEMP DEG C		POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		21.96		21.96	33.583	23.153	470.9	0.000	5.11	223.2	101.7	2.1	0.24	0.1	0.01	0.02	0.17	0.03	0	
3		21.96		21.96	33.583	23.154	471.0	0.014	5.11	223.2	101.7	2.1	0.24	0.1	0.01	0.02	0.17	0.03	3	22
10		21.96		21.95	33.576	23.151	471.5	0.047	5.13	224.3	102.1						0.17	0.03	10	20
10		21.96		21.95	33.576	23.151	471.5	0.045											10	21
20		21.93		21.92	33.576	23.160	471.1	0.094	5.13	224.1	102.0	2.0	0.22	0.0	0.01	0.00	0.17	0.04	20	19
30		18.59		18.59	33.345	23.862	404.4	0.138	5.72	249.8	106.7	2.3	0.27	0.0	0.01	0.01	0.27	0.07	30	18
40		16.58		16.57	33.320	24.328	360.2	0.176	5.70	249.1	102.4	3.2	0.37	0.1	0.02	0.01	0.53	0.31	40	17
50		15.54		15.54	33.315	24.558	338.5	0.211	5.51	240.7	96.9	3.9	0.46	0.4	0.07	0.01	0.93	0.66	50	15
50		15.54		15.54	33.311	24.555	338.9	0.211											50	16
60		14.84		14.83	33.374	24.758	319.8	0.244	5.00	218.6	86.8	5.4	0.63	3.1	0.07	0.01	0.41	0.40	60	14
70		14.29		14.28	33.503	24.974	299.5	0.275	4.45	194.3	76.4	7.4	0.81	5.6	0.03	0.00	0.23	0.28	71	13
75	ISL	13.60	D	13.59	33.497	D 25.114	286.3	0.292	4.22	183.8	71.4	8.7	0.92	7.4	0.03	0.00	0.18	0.23	76	
85		13.10		13.09	33.570	25.270	271.6	0.318	3.76	164.2	63.0	11.4	1.14	11.0	0.02	0.00	0.09	0.13	86	12
100	ISL	12.40	D	12.38	33.704	D 25.513	248.9	0.359	3.19	139.1	52.8	14.9	1.37	14.4	0.02	0.00	0.04	0.08	101	
101		12.43		12.42	33.688	25.493	250.8	0.359	3.16	137.8	52.2	15.1	1.39	14.6	0.02	0.01	0.04	0.07	102	11
120		11.78		11.76	33.777	25.687	232.7	0.405	2.90	126.6	47.3	18.1	1.55	17.0	0.02	0.01	0.02	0.05	121	10
125	ISL	11.67	D	11.66	33.809	D 25.732	228.6	0.420	2.81	D122.5	D 45.8	18.7	1.59	17.5	0.02	0.01	0.02	0.05	126	
140		11.40		11.38	33.856	25.820	220.6	0.451	2.68	117.2	43.5	20.6	1.69	18.8	0.02	0.02	0.01	0.05	141	09
150	ISL	11.31	D	11.29	33.979	D 25.931	210.2	0.475	2.66	115.7	42.9	22.1	1.73	19.8	0.02	0.02	0.01	0.04	151	
170		10.30		10.28	33.912	26.059	198.3	0.514	2.60	113.7	41.2	25.2	1.82	21.6	0.02	0.01	0.00	0.03	171	08
200		9.95		9.92	34.108	26.272	178.6	0.571	1.93	84.3	30.3	30.9	2.08	24.6	0.01	0.00	0.00	0.03	202	07
230		9.49		9.46	34.170	26.398	167.2	0.622	1.71	74.5	26.5	35.2	2.21	26.0	0.01	0.00			232	06
250	ISL	9.22	D	9.19	34.194	D 26.461	161.5	0.659	1.59	D 69.1	D 24.6	37.8	2.26	27.0	0.01	0.00			252	
270		8.80		8.78	34.182	26.518	156.3	0.687	1.55	67.6	23.7	40.4	2.30	28.1	0.01	0.01			272	05
300	ISL	8.66	D	8.62	34.224	D 26.575	151.5	0.738	1.26	D 54.9	D 19.3	43.6	2.40	29.2	0.01	0.01			302	
320		8.47		8.44	34.235	26.612	148.3	0.764	1.15	50.1	17.5	45.7	2.47	29.9	0.01	0.01			323	04
380		7.55		7.51	34.266	26.774	133.3	0.848	0.68	29.5	10.1	57.4	2.73	32.9	0.01	0.01			383	03
400	ISL	7.44	D	7.40	34.282	D 26.803	130.9	0.879	0.58	D 25.3	D 8.6	59.9	2.78	33.6	0.01	0.01			403	
440		7.10		7.06	34.300	26.865	125.4	0.926	0.41	18.0	6.1	65.0	2.87	35.0	0.01	0.02			444	02
500	ISL	6.67	D	6.62	34.311	D 26.934	119.4	1.005	0.32	D 13.8	D 4.6	71.9	2.96	35.8	0.02	0.03			504	
515		6.54		6.49	34.317	26.956	117.5	1.017	0.28	12.4	4.1	73.6	2.98	36.0	0.02	0.03			519	01

D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; SECONDARY CRUISE-CORRECTED O2;

RV OCEANUS CALCOFI CRUISE 1511 STATION 90.0 45.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
32 55.1 N	118 56.3 W	02/11/2015	1733 UTC	1695 m	300 19 kn	270 04 06	2	1011.0 mb	18.0 C	17.0 C	26 m	8/8	SC	020

DEPTH m		TEMP DEG C		POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		20.90		20.90	33.485	23.368	450.3	0.000	5.20	227.0	101.3	1.7	0.24	0.1	0.01	0.00	0.18	0.04	0	
3	A	20.90		20.90	33.485	23.369	450.4	0.014	5.20	227.0	101.3	1.7	0.24	0.1	0.01	0.00	0.18	0.04	3	24
10		20.90		20.90	33.484	23.370	450.6	0.045	5.17	225.9	100.9	1.7	0.25	0.1	0.01	0.01	0.18	0.05	10	21
11		20.90		20.90	33.484	23.370	450.6	0.047											10	23
11		20.90		20.90	33.487	23.372	450.5	0.049											11	22
16	A	20.87		20.87	33.482	23.377	450.2	0.072	5.22	227.9	101.7	1.7	0.26	0.1	0.01	0.01	0.18	0.05	16	20
20	ISL	20.63	D	20.63	33.444	D 23.411	447.1	0.091	5.25	D228.9	D101.8	1.6	0.27	0.1	0.01	0.01	0.20	0.05	20	
21	A	20.41		20.41	33.426	23.456	442.8	0.095	5.27	230.1	101.8	1.6	0.27	0.1	0.01	0.01	0.20	0.05	21	19
30	ISL	19.16	D	19.15	33.306	D 23.691	420.8	0.134	5.46	D238.1	D103.0	1.3	0.29	0.1	0.01	0.01	0.26	0.10	30	
32		19.03		19.03	33.309	23.725	417.5	0.142	5.50	240.3	103.5	1.3	0.29	0.1	0.01	0.01	0.27	0.11	32	18
38	A	16.62		16.61	33.171	24.204	371.9	0.166	5.87	256.5	105.4	1.4	0.33	0.0	0.01	0.02	0.39	0.22	38	16
38		16.62		16.61	33.179	24.210	371.4	0.166											38	17
50	ISL	13.95	D	13.94	33.143	D 24.767	318.6	0.209	5.74	D250.2	D 97.6	4.3	0.56	3.2	0.20	0.02	0.63	0.35	50	
55		13.01		13.00	33.148	24.960	300.2	0.222	5.37	234.7	89.6	5.5	0.65	4.5	0.27	0.02	0.73	0.40	55	15
72	A	11.45		11.44	33.314	25.386	259.9	0.270	4.48	195.5	72.3	11.9	1.12	12.2	0.09	0.02	0.12	0.15	73	14
75	ISL	11.34	D	11.33	33.342	D 25.428	256.0	0.280	4.39	D191.2	D 70.8	12.2	1.14	12.6	0.08	0.00	0.11	0.15	76	
82		11.21		11.20	33.360	25.466	252.6	0.296	4.32	188.7	69.5	13.0	1.19	13.5	0.05	0.00	0.09	0.13	83	13
92	A	10.90		10.89	33.416	25.565	243.4	0.320	4.13	180.3	65.9	14.6	1.29	15.0	0.03	0.00	0.07	0.11	93	12
100	ISL	10.68	D	10.67	33.465	D 25.641	236.3	0.342	3.96	D172.4	D 63.0	15.7	1.35	16.0	0.03	0.00	0.06	0.09	101	
106		10.54		10.53	33.490	25.685	232.2	0.354	3.90	170.4	61.9	16.6	1.40	16.8	0.03	0.02	0.05	0.08	107	11
119		10.05		10.04	33.628	25.877	214.2	0.383	3.47	151.4	54.4	20.3	1.58	19.4	0.02	0.01	0.02	0.05	120	10
125	ISL	9.97	D	9.96	33.720	D 25.962	206.2	0.398	3.23	D140.6	D 50.7	21.4	1.63	20.1	0.02	0.01	0.02	0.05	126	
139		9.73		9.71	33.762	26.036	199.4	0.424	3.09	134.8	48.2	24.1	1.74	21.8	0.02	0.02	0.01	0.05	140	09
150	ISL	9.56	D	9.55	33.821	D 26.110	192.6	0.448	3.05	D132.9	D 47.5	25.8	1.82	22.7	0.02	0.02	0.01	0.04	151	
171		9.64		9.62	33.989	26.229	181.9	0.485	2.41	105.1	37.5	29.1	1.98	24.3	0.02	0.01	0.01	0.03	172	08
199		9.17		9.15	34.070	26.371	168.9	0.534	2.11	92.1	32.6	33.7	2.12	26.2	0.01	0.02	0.01	0.04	201	07
200	ISL	9.14	D	9.12	34.079	D 26.382	167.9	0.539	2.11	D 91.8	D 32.6	33.9	2.13	26.3	0.01	0.02			202	
230		8.67		8.65	34.139	26.503	156.8	0.584	1.65	D 71.7	D 25.2	39.8	2.31	28.5	0.01	0.01			232	06
250	ISL	8.57	D	8.54	34.181	D 26.553	152.5	0.619	1.41	D 61.5	D 21.5	41.8	2.39	28.9	0.01	0.01			252	
272		8.51		8.48	34.217	26.591	149.3	0.649	1.23	53.6	18.7	44.0	2.47	29.4	0.01	0.01			274	05
300	ISL	8.30	D	8.27	34.238	D 26.640	145.1	0.694	1.05	D 45.6	D 15.9	48.5	2.58	31.0	0.01	0.02			302	
320		7.96		7.92	34.256	26.706	139.0	0.718	0.85	37.3	12.8	51.6	2.66	32.1	0.01	0.02			323	04
379		7.63		7.59	34.266	26.763	134.5	0.799	0.67	29.2	10.0	56.3	2.76	33.3	0.01	0.02			382	03
400	ISL	7.37	D	7.33	34.282	D 26.812	130.0	0.832	0.57	D 24.8	D 8.5	58.2	2.79	33.8	0.01	0.02			403	
440		7.12		7.08	34.287	26.852	126.7	0.878	0.50	21.8	7.4	61.9	2.86	34.8	0.02	0.03			444	02
500	ISL	6.56	D	6.51	34.317	D 26.953	117.5	0.958	0.31	D 13.6	D 4.6	70.4	3.00	36.5	0.01	0.03			504	
515		6.54		6.49	34.318	26.957	117.3	0.969	0.32	14.1	4.7	72.5	3.03	37.0	0.01	0.03			519	01

A) PRIMARY PRODUCTIVITY SAMPLES WERE TAKEN FROM THESE LEVELS.
D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; SECONDARY CRUISE-CORRECTED O2;

RV OCEANUS CALCOFI CRUISE 1511 STATION 90.0 53.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
32 39.0 N	119 29.0 W	02/11/2015	1000 UTC	1316 m	310 19 kn	310 19 13		1013.8 mb	18.7 C	17.7 C				019

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0	20.34	20.34	33.445	23.487	439.0	0.000	5.24	228.8	101.1	1.7	0.25	0.0	0.01	0.00	0.18	0.05	0	
2	20.34	20.34	33.445	23.487	439.1	0.009	5.24	228.8	101.1	1.7	0.25	0.0	0.01	0.00	0.18	0.05	2	23
10	20.07	20.07	33.445	23.560	432.5	0.044	5.28	230.6	101.3	1.7	0.26	0.1	0.01	0.03	0.17	0.06	10	21
10	20.07	20.07	33.445	23.560	432.5	0.043											10	22
20	19.56	19.56	33.376	23.640	425.2	0.087	5.41	236.6	103.0	1.7	0.27	0.0	0.01	0.01	0.25	0.10	20	20
30	19.48	19.47	33.366	23.654	424.3	0.129	5.39	235.6	102.3	1.7	0.26	0.1	0.01	0.01	0.26	0.13	30	19
40	18.28	18.27	33.275	23.887	402.4	0.170	5.49	240.1	101.9	2.0	0.30	0.2	0.02	0.02	0.89	0.40	40	18
50	15.78	15.77	33.187	24.408	352.8	0.208	5.52	241.4	97.5	3.5	0.44	1.9	0.13	0.02	0.69	0.37	50	16
50	15.78	15.77	33.186	24.408	352.9	0.208											50	17
60	14.69	14.68	33.161	24.625	332.4	0.242	5.48	239.7	94.7	4.4	0.54	3.0	0.19	0.02	0.59	0.38	60	15
69	13.40	13.39	33.171	24.901	306.3	0.271	5.20	227.2	87.4	6.4	0.72	5.7	0.17	0.02	0.34	0.22	70	14
75 ISL	13.28 D	13.27	33.177 D	24.930	303.6	0.292	5.10	222.2	85.6	7.0	0.77	6.6	0.14	0.02	0.28	0.22	76	
85	12.37	12.35	33.215	25.139	283.9	0.319	4.93	215.6	81.2	8.1	0.86	8.1	0.10	0.01	0.18	0.22	86	13
100 ISL	11.42 D	11.41	33.363 D	25.430	256.5	0.362	4.39	191.0	70.8	11.8	1.12	12.2	0.04	0.02	0.09	0.13	101	
101	11.36	11.35	33.346	25.428	256.7	0.362	4.35	190.0	70.1	12.0	1.14	12.5	0.04	0.02	0.09	0.13	102	12
120	11.08	11.06	33.433	25.547	245.8	0.410	4.04	176.7	64.9	14.2	1.30	14.6	0.03	0.02	0.06	0.11	121	11
125 ISL	10.85 D	10.84	33.475 D	25.619	239.0	0.425	3.91	170.4	62.5	15.5	1.36	15.6	0.03	0.02	0.05	0.10	126	
140	10.16	10.14	33.610	25.846	217.7	0.456	3.53	154.0	55.5	19.4	1.53	18.6	0.03	0.01	0.02	0.06	141	10
150 ISL	9.79 D	9.77	33.692 D	25.971	205.9	0.481	3.32	144.4	51.8	21.9	1.62	20.1	0.03	0.01	0.02	0.05	151	
170	9.44	9.42	33.834	26.142	190.1	0.517	2.90	126.9	45.0	27.1	1.81	23.1	0.03	0.01	0.01	0.03	171	09
200 ISL	9.07 D	9.05	33.981 D	26.316	174.0	0.575	2.41	105.0	37.2	32.1	2.01	25.2	0.02	0.02	0.01	0.03	202	
201	9.03	9.01	33.976	26.319	173.8	0.573	2.40	104.7	36.9	32.3	2.02	25.3	0.02	0.02	0.01	0.03	203	08
230	8.75	8.72	34.045	26.418	164.9	0.622	2.13	93.0	32.5	36.2	2.11	27.0	0.02	0.01			232	07
250 ISL	8.62 D	8.59	34.096 D	26.478	159.5	0.659	1.86 D	81.0 D	28.4	38.6	2.20	27.8	0.02	0.00			252	
270	8.39	8.37	34.119	26.532	154.8	0.686	1.77 D	77.1 D	26.9	41.0	2.28	28.7	0.02	0.00			272	06
300 ISL	8.10 D	8.07	34.195 D	26.637	145.3	0.736	1.21 D	52.4 D	18.2	47.0	2.47	30.5	0.02	0.00			302	
319	7.97	7.94	34.218	26.674	142.1	0.759	1.02	44.5	15.3	50.8	2.59	31.7	0.02	0.00			322	05
380	7.46	7.42	34.233	26.761	134.5	0.843	0.78	33.9	11.5	56.7	2.74	33.5	0.01	0.02			383	04
400 ISL	7.35 D	7.31	34.254 D	26.794	131.7	0.876	0.70	30.3	10.3	59.0	2.78	34.1	0.01	0.02			403	
440	6.98	6.93	34.261	26.852	126.5	0.922	0.54	23.5	7.9	63.6	2.86	35.2	0.01	0.01			444	03
500 ISL	6.56 D	6.52	34.289 D	26.930	119.7	1.002	0.38	16.5	5.5	71.3	2.98	36.7	0.01	0.03			504	
516	6.45	6.40	34.298	26.953	117.6	1.015	0.34	14.7	4.9	73.4	3.01	37.1	0.01	0.04			520	01
516	6.45	6.40	34.299	26.954	117.6	1.014											520	02

D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; SECONDARY CRUISE-CORRECTED O2;

RV OCEANUS CALCOFI CRUISE 1511 STATION 90.0 60.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
32 25.1 N	119 57.6 W	02/11/2015	0030 UTC	883 m	320 18 kn	320 04 05	0	1015.0 mb	19.2 C	18.2 C		0/8		018

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0	19.74	19.74	33.305	23.539	434.0	0.000	5.35	233.9	102.1	1.4	0.26	0.0	0.01	0.01	0.14	0.04	0	
2	19.74	19.73	33.305	23.540	434.1	0.009	5.35	233.9	102.1	1.4	0.26	0.0	0.01	0.01	0.14	0.04	2	20
10	19.75	19.74	33.305	23.537	434.6	0.043	5.34	233.6	101.9	1.4	0.25	0.0	0.01	0.01	0.13	0.04	10	19
20 ISL	19.74 D	19.74	33.305 D	23.539	434.9	0.087	5.33 D	232.4 D	101.6	1.4	0.25	0.0	0.01	0.01	0.14	0.04	20	
25	19.73	19.72	33.301	23.542	434.8	0.109	5.35	233.6	101.9	1.4	0.25	0.0	0.01	0.01	0.14	0.04	25	18
30 ISL	19.67 D	19.67	33.299 D	23.554	433.9	0.131	5.34 D	232.8 D	101.6	1.4	0.25	0.0	0.01	0.01	0.17	0.05	30	
40	19.04	19.03	33.275	23.698	420.5	0.173	5.43	237.3	102.2	1.5	0.26	0.0	0.01	0.01	0.23	0.07	40	17
50	15.47	15.46	33.064	24.382	355.3	0.212	5.94	259.6	104.1	2.5	0.28	0.0	0.01	0.02	0.15	0.04	50	16
62	14.22	14.21	33.081	24.664	328.8	0.253	5.78	252.7	98.9	3.4	0.39	0.4	0.06	0.02	0.42	0.38	62	15
75	13.02	13.01	33.078	24.906	305.9	0.294	5.45	238.1	90.8	5.2	0.62	4.0	0.13	0.02	0.25	0.30	76	14
87	11.69	11.68	33.108	25.182	279.8	0.329	5.16	225.6	83.7	7.8	0.87	8.3	0.05	0.02	0.16	0.22	88	13
100	10.91	10.89	33.175	25.376	261.4	0.364	4.84	211.6	77.2	11.1	1.12	12.3	0.04	0.02	0.12	0.14	101	12
112	10.27	10.26	33.255	25.548	245.3	0.395	4.57	199.5	71.9	13.6	1.27	14.9	0.03	0.03	0.08	0.10	113	11
124	9.68	9.67	33.433	25.786	222.8	0.423	4.03	176.1	62.7	18.6	1.51	18.9	0.02	0.02	0.03	0.04	125	10
125 ISL	9.68 D	9.66	33.445 D	25.797	221.8	0.428	3.96 D	172.3 D	61.6	18.8	1.52	19.1	0.02	0.02	0.03	0.04	126	
139	9.45	9.44	33.561	25.924	210.0	0.455	3.64	159.2	56.4	21.6	1.65	21.0	0.02	0.06	0.01	0.03	140	09
150 ISL	9.30 D	9.29	33.676 D	26.038	199.4	0.481	3.40 D	147.9 D	52.5	23.9	1.73	22.3	0.02	0.05	0.01	0.03	151	
169	9.08	9.06	33.826	26.193	185.1	0.515	2.96	129.3	45.5	28.0	1.86	24.5	0.02	0.03	0.00	0.02	170	08
200	8.64	8.62	33.924	26.338	171.7	0.570	2.91	127.1	44.4	31.7	1.93	25.9	0.02	0.04	0.00	0.03	202	07
229	8.29	8.27	33.979	26.436	162.9	0.618	2.61 D	113.6 D	39.5	35.8	2.06	27.5	0.02	0.06			231	06
250 ISL	8.13 D	8.10	34.013 D	26.488	158.3	0.656	2.45 D	106.6 D	36.9	39.3	2.17	28.7	0.02	0.03			252	
270	7.87	7.84	34.052	26.557	152.0	0.683	2.02	88.3	30.3	42.6	2.28	29.8	0.01	0.01			272	05
300 ISL	8.00 D	7.97	34.136 D	26.604	148.3	0.733	1.61 D	70.1 D	24.2	46.5	2.38	31.3	0.02	0.02			302	
319	7.56	7.53	34.095	26.636	145.3	0.757	1.62	70.6	24.1	48.9	2.45	32.2	0.02	0.03			322	04
380	7.01	6.98	34.162	26.767	133.5	0.842	0.97	42.2	14.2	59.0	2.74	35.1	0.02	0.05			383	03
400 ISL	6.93 D	6.89	34.178 D	26.792	131.4	0.874	0.89 D	38.7 D	13.1	61.9	2.79	35.8	0.02	0.04			403	
440	6.53	6.49	34.188	26.854	125.8	0.920	0.67	29.1	9.7	67.6	2.89	37.1	0.02	0.03			444	02
500 ISL	6.24 D	6.19	34.252 D	26.943	118.0	0.999	0.44 D	19.1 D	6.3	74.6	3.02	38.3	0.02	0.06			504	
516	6.12	6.08	34.258 D	26.963	116.3	1.018	0.41	17.7	5.9	76.4	3.05	38.7	0.02	0.07			520	01

D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED O2;

RV OCEANUS CALCOFI CRUISE 1511 STATION 90.0 70.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
32 5.1 N	120 38.3 W	01/11/2015	1646 UTC	3822 m	340 14 kn	300 03 07	0	1017.6 mb	19.7 C	18.5 C	31 m	0/8		017

DEPTH m		TEMP DEG C		POTTEMP DEG C		SALINITY		SIGMA THETA	SVA	DYN HT	OXYGEN ml/L		OXYGEN µmol/Kg		OXY PCT		SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		19.90		19.90		33.290		23.486	439.1	0.000	5.28		230.9		101.1		1.4	0.28	0.0	0.01	0.02	0.14	0.01	0	
3	A	19.90		19.90		33.290		23.487	439.2	0.013	5.28		230.9		101.1		1.4	0.28	0.0	0.01	0.02	0.14	0.01	3	24
10	ISL	19.87	D	19.87		33.289	D	23.492	438.9	0.044	5.28	D	230.4	D	101.0		1.5	0.28	0.0	0.01	0.03	0.13	0.03	10	
11		19.89		19.89		33.289		23.488	439.3	0.048	5.29		231.3		101.2		1.5	0.28	0.0	0.01	0.03	0.13	0.03	11	22
11		19.89		19.89		33.290		23.489	439.3	0.047														11	23
19	A	19.81		19.81		33.304		23.521	436.5	0.083	5.29		231.1		101.0		1.5	0.27	0.0	0.01	0.02	0.17	0.00	19	21
20	ISL	19.81	D	19.80		33.304	D	23.522	436.5	0.088	5.29	D	230.7	D	101.0		1.5	0.27	0.0	0.01	0.02	0.18	0.01	20	
25	A	19.81		19.80		33.304		23.523	436.6	0.110	5.29		231.3		101.1		1.5	0.26	0.0	0.01	0.01	0.21	0.01	25	20
30	ISL	19.77	D	19.76		33.316	D	23.542	435.0	0.132	5.28	D	230.5	D	100.8		1.5	0.27	0.0	0.01	0.01	0.26	0.01	30	
35		19.01		19.01		33.288		23.714	418.8	0.153	5.42		236.9		102.0		1.6	0.27	0.0	0.01	0.01	0.32	0.01	35	19
45	A	16.23		16.22		33.116		24.251	367.7	0.192	5.95		259.8		105.9		2.2	0.27	0.0	0.01	0.02	0.41	0.05	45	18
50	ISL	16.09	D	16.08		33.102	D	24.273	365.8	0.212	5.95	D	259.2	D	105.6		2.3	0.28	0.0	0.01	0.02	0.38	0.10	50	
57		15.63		15.62		33.106		24.378	355.9	0.235														57	17
58		15.60		15.59		33.106		24.385	355.3	0.239	5.90		257.9		103.8		2.4	0.29	0.0	0.01	0.02	0.35	0.18	58	16
71		14.09		14.08		33.110		24.713	324.4	0.283	5.75		251.1		98.0		3.2	0.45	0.6	0.09	0.03	0.39	0.18	72	15
75	ISL	13.66	D	13.65		33.137	D	24.823	313.9	0.298	5.57	D	242.8	D	94.2		4.0	0.52	1.9	0.09	0.03	0.35	0.16	76	
86	A	12.55		12.54		33.122		25.031	294.3	0.330	5.31		232.0		87.7		6.2	0.71	5.4	0.09	0.02	0.24	0.13	87	14
93		11.83		11.82		33.124		25.168	281.2	0.350	5.22		228.0		84.9		6.8	0.78	6.6	0.07	0.02	0.21	0.17	94	13
100	ISL	10.96	D	10.95		33.134	D	25.334	265.5	0.372	5.03	D	219.1	D	80.3		9.2	0.98	10.1	0.03	0.01	0.17	0.11	101	
101		10.89		10.88		33.130		25.343	264.7	0.372	5.02		219.2		80.0		9.6	1.01	10.6	0.03	0.01	0.16	0.10	102	12
110	A	10.33		10.32		33.165		25.468	252.8	0.395	4.90		214.2		77.2		11.3	1.13	12.4	0.03	0.05	0.12	0.12	111	11
125		9.92		9.90		33.313		25.654	235.5	0.431	4.42		193.2		69.1		15.7	1.37	16.4	0.02	0.03	0.08	0.06	126	10
141		9.61		9.59		33.473		25.830	219.0	0.468	3.91		170.7		60.7		19.5	1.55	19.3	0.02	0.05	0.03	0.03	142	09
150	ISL	9.46	D	9.44		33.576	D	25.936	209.1	0.490	3.68	D	160.0	D	56.9		21.6	1.63	20.6	0.02	0.04	0.02	0.03	151	
170		9.10		9.08		33.737		26.121	191.9	0.527	3.19		139.3		49.1		26.2	1.80	23.5	0.01	0.01	0.00	0.02	171	08
200		8.63		8.61		33.909		26.329	172.6	0.582	2.80		122.1		42.6		31.5	1.95	25.8	0.01	0.02	0.00	0.02	202	07
230		8.26		8.24		33.982		26.443	162.3	0.632	2.45	D	106.5	D	37.0		36.7	2.08	28.0	0.01	0.01			232	06
250	ISL	8.08	D	8.05		34.030	D	26.508	156.4	0.668	2.18	D	94.8	D	32.8		41.0	2.22	29.5	0.01	0.01			252	
269		7.79		7.76		34.062	D	26.576	150.2	0.697	1.82		79.3		27.2		45.0	2.35	30.9	0.01	0.01			271	05
300	ISL	7.32	D	7.29		34.076	D	26.654	143.0	0.743	1.53	D	66.7	D	22.7		50.7	2.48	32.8	0.01	0.03			302	
320		7.12		7.09		34.083		26.688	140.0	0.768	1.36		59.3		20.0		54.3	2.57	34.0	0.01	0.04			323	04
380		6.65		6.61		34.144		26.801	129.9	0.849	0.85		36.9		12.3		63.4	2.79	36.3	0.01	0.02			383	03
400	ISL	6.54	D	6.50		34.166	D	26.834	127.1	0.879	0.73	D	31.8	D	10.6		66.1	2.84	36.8	0.01	0.02			403	
440		6.22		6.18		34.186		26.891	121.9	0.925	0.58		25.4		8.4		71.3	2.93	37.9	0.01	0.02			444	02
500	ISL	5.90	D	5.86		34.225	D	26.963	115.7	1.001	0.42	D	18.1	D	6.0		79.3	3.04	39.1	0.01	0.04			504	
515		5.79		5.75		34.246		26.994	112.9	1.013	0.35		15.3		5.0		81.3	3.07	39.4	0.01	0.05			519	01

A) PRIMARY PRODUCTIVITY SAMPLES WERE TAKEN FROM THESE LEVELS.
D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED O2;

RV OCEANUS CALCOFI CRUISE 1511 STATION 90.0 80.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
31 45.1 N	121 18.9 W	01/11/2015	1050 UTC	3706 m	340 12 kn			1016.5 mb	19.2 C	18.6 C				016

DEPTH m		TEMP DEG C		POTTEMP DEG C		SALINITY		SIGMA THETA	SVA	DYN HT	OXYGEN ml/L		OXYGEN µmol/Kg		OXY PCT		SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		19.83		19.83		33.360		23.557	432.3	0.000	5.35		233.6		102.2		1.2	0.26	0.0	0.01	0.01	0.17	0.06	0	
2		19.83		19.83		33.360		23.558	432.3	0.009	5.35		233.6		102.2		1.2	0.26	0.0	0.01	0.01	0.17	0.06	2	20
10		19.84		19.84		33.360		23.555	433.0	0.043	5.31		231.8		101.4		1.2	0.25	0.0	0.02	0.01	0.17	0.05	10	19
20	ISL	19.85	D	19.84		33.361	D	23.555	433.3	0.157	5.29	D	230.6	D	101.0		1.2	0.25	0.0	0.02	0.01	0.18	0.05	20	
25		19.84		19.84		33.362		23.558	433.3	0.108	5.31		231.8		101.4		1.2	0.25	0.0	0.02	0.01	0.18	0.05	25	18
30	ISL	19.85	D	19.84		33.361	D	23.556	433.6	0.200	5.28	D	230.3	D	100.9		1.2	0.25	0.0	0.02	0.01	0.21	0.06	30	
40		19.79		19.78		33.344		23.560	433.7	0.173	5.35		233.5		102.1		1.2	0.26	0.0	0.02	0.02	0.26	0.08	40	17
50		15.72		15.71		33.131		24.377	355.8	0.213	5.98		261.3		105.4		2.3	0.33	0.0	0.02	0.02	0.33	0.23	50	16
62		13.88		13.87		33.060		24.719	323.5	0.254	5.89		257.4		100.0		3.2	0.43	0.6	0.06	0.12	0.44	0.39	62	15
75		12.95		12.94		33.128		24.958	300.9	0.294	5.44		237.5		90.5		5.0	0.65	4.1	0.23	0.02	0.22	0.23	76	14
87		11.55		11.53		33.162		25.250	273.2	0.329	4.97		217.2		80.4		8.5	0.98	10.0	0.06	0.00	0.15	0.17	88	13
100		10.59		10.58		33.187		25.440	255.3	0.363	4.85		212.1		76.9		10.7	1.10	12.1	0.04	0.00	0.11	0.15	101	12
112		9.71		9.70		33.304		25.681	232.5	0.392	4.75		207.3		73.8		14.4	1.25	14.9	0.03	0.01	0.07	0.10	113	11
125		9.40		9.39		33.479		25.867	215.0	0.421	4.04		176.4		62.4		19.7	1.53	19.3	0.02	0.00	0.03	0.07	126	10
140		9.41		9.39		33.647		25.998	203.0	0.453	3.31		144.7		51.3		23.7	1.74	22.4	0.02	0.01	0.01	0.04	141	09
150	ISL	9.29	D	9.28		33.695	D	26.056	197.7	0.544	3.25	D	141.2	D	50.1		25.1	1.78	23.0	0.02	0.01	0.01	0.04	151	
171		8.99		8.97		33.816		26.199	184.5	0.513	3.06		133.5		46.9		27.9	1.86	24.3	0.02	0.01	0.01	0.03	172	08
200		8.57		8.55		33.966		26.382	167.6	0.564	2.48		108.1		37.7		34.4	2.08	27.5	0.02	0.00	0.00	0.03	202	07
230		8.14		8.12		34.000		26.475	159.2	0.613	2.69		117.5		40.5		38.4	2.10	28.3	0.02	0.00			232	06
250	ISL	7.92	D	7.89		34.026	D	26.529	154.3	0.717	2.23	D	96.8	D	33.4		42.0	2.23	29.8	0.02	0.00			252	
271		7.65		7.62		34.048		26.586	149.1	0.676	1.88		82.2		28.1		45.9	2.36	31.3	0.02	0.01			273	05
300	ISL	7.31	D	7.29		34.076	D	26.656	142.9	0.792	1.54	D	66.8	D	22.7		51.0	2.50	33.0	0.02	0.02			302	
320		7.13		7.10		34.089		26.691	139.7	0.747	1.35		58.9		19.9		54.5	2.60	34.1	0.02	0.02			323	04
380		6.51		6.48		34.114	D	26.796	130.3	0.902	0.95		41.6		13.9		63.8	2.78	36.7	0.02	0.02			383	03
400	ISL	6.30	D	6.27		34.118	D	26.826	127.5	0.928	0.86	D	37.2	D	12.4		66.9	2.84	37.3	0.02	0.02			403	
440		6.10		6.06		34.168		26.893	121.7	0.904	0.60		26.3		8.7		72.9	2.97	38.5	0.02	0.02			444	02
500	ISL	5.81	D	5.76		34.220	D	26.971	114.8	1.050	0.41	D	17.7	D	5.8		79.6	3.07	39.5	0.02	0.02			504	
515		5.75		5.70		34.230		26.987	113.5	0.992	0.37		16.3		5.3		81.3	3.09	39.7	0.02	0.02			519	01

D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED O2;

RV OCEANUS CALCOFI CRUISE 1511 STATION 90.0 90.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
31 25.1 N	121 59.4 W	01/11/2015	0350	UTC	3979 m	330 08 kn			1017.9 mb	19.6 C	18.8 C				015

DEPTH m		TEMP DEG C		POTTEMP DEG C		SALINITY		SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg		OXY PCT		SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		20.23		20.23		33.352		23.445	443.0	0.000	5.27	230.2		101.4		1.9	0.26	0.0	0.01	0.10	0.09	0.02	0	
2		20.23		20.23		33.352		23.445	443.1	0.009	5.27	230.2		101.4		1.9	0.26	0.0	0.01	0.10	0.09	0.02	2	24
10		20.23		20.23		33.352		23.448	443.1	0.044	5.29	231.3		101.9		1.9	0.26	0.0	0.01	0.01	0.09	0.02	10	22
10		20.23		20.23		33.349		23.446	443.4	0.046													10	23
20	ISL	20.13	D	20.12		33.349	D	23.474	441.1	0.089	5.27	D230.0	D	101.3		1.9	0.25	0.0	0.01	0.01	0.09	0.02	20	
26		20.12		20.11		33.349		23.476	441.1	0.115	5.26	229.9		101.1		1.9	0.25	0.0	0.01	0.01	0.09	0.03	26	21
30	ISL	20.12	D	20.11		33.350	D	23.478	441.2	0.134	5.26	D229.7	D	101.1		1.9	0.25	0.0	0.01	0.01	0.09	0.02	30	
40		20.11		20.10		33.350		23.479	441.4	0.177	5.27	230.3		101.3		1.9	0.24	0.0	0.01	0.02	0.10	0.02	40	20
50		20.10		20.09		33.353		23.486	441.2	0.221	5.27	230.2		101.2		1.9	0.24	0.0	0.01	0.01	0.11	0.03	50	19
62		19.40		19.39		33.324		23.645	426.4	0.273	5.42	236.7		102.7		1.8	0.25	0.0	0.01	0.01	0.17A	0.07A	62	18
75	ISL	17.86	D	17.85		33.225	D	23.954	397.3	0.329	5.77	D251.5	D	106.1		2.0	0.23	0.0	0.01	0.01	0.20	0.07	76	
76		17.68		17.66		33.232		24.004	392.5	0.330	5.78	252.4		105.9		2.0	0.23	0.0	0.01	0.01	0.20	0.07	77	17
87		15.81		15.79		33.187		24.403	354.6	0.372	5.82	254.1		102.7		2.5	0.27	0.0	0.01	0.02	0.20	0.15	88	16
100		14.55		14.54		33.205		24.692	327.4	0.416	5.64	246.4		97.1		3.3	0.34	0.4	0.06	0.02	0.21	0.15	101	15
112		13.07		13.05		33.163		24.963	301.6	0.454	5.42	237.0		90.6		4.9	0.55	2.8	0.20	0.00	0.20	0.15	113	14
125		11.63		11.62		33.133		25.214	277.7	0.491	5.19	226.8		84.1		6.9	0.79	6.9	0.07	0.01	0.17	0.13	126	13
140		10.23		10.21		33.253		25.556	245.2	0.530	4.64	202.7		72.9		13.4	1.26	14.6	0.02	0.01	0.07	0.09	141	12
150	ISL	9.58	D	9.57		33.425	D	25.797	222.3	0.558	4.47	D194.4	D	69.3		16.5	1.40	16.9	0.02	0.00	0.05	0.07	151	
170		9.12		9.10		33.615		26.021	201.3	0.597	3.66	160.0		56.3		22.8	1.68	21.4	0.01	0.00	0.01	0.02	171	11
200		8.67		8.65		33.865		26.288	176.6	0.653	3.01	131.4		45.9		30.4	1.92	25.2	0.02	0.02	0.00	0.02	202	10
229		8.31		8.29		33.969		26.425	164.0	0.703	2.78	121.3		42.0		35.0	2.00	26.8	0.02	0.02			231	09
250	ISL	8.04	D	8.01		34.015	D	26.502	156.9	0.740	2.48	D108.0	D	37.4		39.5	2.13	28.5	0.02	0.00			252	
270		7.71		7.68		34.030		26.562	151.4	0.768	2.20	95.9		32.8		43.7	2.25	30.0	0.02	0.00			272	08
300	ISL	7.25	D	7.23		34.054	D	26.646	143.7	0.816	1.78	D 77.3	D	26.3		50.1	2.43	32.3	0.02	0.00			302	
319		7.07		7.04		34.070		26.686	140.2	0.839	1.50	65.6		22.1		54.2	2.55	33.7	0.02	0.00			322	07
380		6.65		6.61		34.130		26.791	130.9	0.922	0.93	D 40.4	D	13.5		62.7	2.79	36.2	0.02	0.03			383	06
400	ISL	6.66	D	6.62		34.165	D	26.818	128.7	0.952	0.78	D 34.0	D	11.4		65.7	2.85	36.8	0.01	0.02			403	
440		6.18		6.14		34.176		26.890	122.1	0.998	0.62	27.0		8.9		71.9	2.97	38.1	0.01	0.01			444	05
500	ISL	5.94	D	5.90		34.234	D	26.966	115.5	1.075	0.41	D 17.9	D	5.9		78.4	3.06	39.1	0.01	0.01			504	
515		5.86		5.81		34.238		26.979	114.4	1.087	0.37	16.2		5.3		80.0	3.08	39.3	0.01	0.01			519	04
600	ISL	5.38	D	5.33		34.298	D	27.087	104.8	1.186	0.25	D 10.8	D	3.5		90.0	3.17	40.7	0.01	0.02			605	
650		5.11		5.05		34.334		27.147	99.3	1.231	0.21	9.1		2.9		95.8	3.22	41.5	0.01	0.02			656	03
700	ISL	4.93	D	4.88		34.386	D	27.209	93.8	1.286	0.24	D 10.2	D	3.3									706	
800	ISL	4.47	D	4.41		34.422	D	27.290	86.5	1.377	0.32	D 13.8	D	4.4									807	
900	ISL	4.18	D	4.11		34.458	D	27.350	81.4	1.462	0.42	D 18.3	D	5.8									908	
1000	ISL	3.90	D	3.82		34.481	D	27.399	77.1	1.542	0.53	D 23.1	D	7.3									1009	
1100	ISL	3.64	D	3.56		34.504	D	27.444	73.2	1.618	0.65	D 28.3	D	8.8									1111	
1200	ISL	3.41	D	3.32		34.521	D	27.482	69.9	1.691	0.76	D 33.0	D	10.2									1212	
1300	ISL	3.16	D	3.07		34.538	D	27.519	66.5	1.760	0.88	D 38.4	D	11.9									1313	
1400	ISL	2.94	D	2.84		34.554	D	27.552	63.4	1.826	1.01	D 43.7	D	13.4									1415	
1500	ISL	2.78	D	2.67		34.565	D	27.577	61.2	1.889	1.11	D 48.4	D	14.8									1516	
1600	ISL	2.63	D	2.52		34.576	D	27.599	59.2	1.950	1.22	D 52.9	D	16.1									1617	
1800	ISL	2.26	D	2.14		34.606	D	27.655	53.7	2.064	1.57	D 68.1	D	20.5									1820	
2000	ISL	2.10	D	1.96		34.621	D	27.682	51.5	2.171	1.79	D 77.9	D	23.4									2024	
2200	ISL	1.95	D	1.80		34.636	D	27.707	49.4	2.274	2.02	D 87.8	D	26.3									2227	
2400	ISL	1.84	D	1.67		34.649	D	27.728	47.8	2.373	2.24	D 97.2	D	29.0									2431	
2600	ISL	1.76	D	1.57		34.656	D	27.742	46.9	2.469	2.39	D103.9	D	30.9									2635	
2800	ISL	1.68	D	1.48		34.662	D	27.755	46.1	2.564	2.53	D109.8	D	32.6									2839	
3000	ISL	1.64	D	1.41		34.666	D	27.764	45.8	2.658	2.63	D114.2	D	33.8									3043	
3200	ISL	1.59	D	1.34		34.670	D	27.773	45.4	2.751	2.75	D119.5	D	35.3									3247	
3400	ISL	1.56	D	1.30		34.673	D	27.780	45.4	2.844	2.83	D123.0	D	36.3									3452	
3501		1.55		1.28		34.676		27.784	45.4	3.294	2.89	126.2		37.1		172.7	2.66	37.5	0.02	0.05			3555	01
3501		1.55		1.28		34.675		27.783	45.5	3.294													3555	02

A) SECOND FLUOROMETER READING NOT RECORDED CHLOROPHYLL AND PHAEOPIGMENT CALCULATED WITH ASSUMED ACID RATIO INTERPOLATED FROM ADJACENT LEVELS
D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED O2;

RV OCEANUS CALCOFI CRUISE 1511 STATION 90.0 100.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
31 5.1 N	122 39.1 W	31/10/2015	2043	UTC	4071 m	360 09 kn	310 04 05	1	1017.6 mb	19.5 C	18.5 C		6/8	ST	014

DEPTH m		TEMP DEG C		POTTEMP DEG C		SALINITY		SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg		OXY PCT		SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		20.56		20.56		33.389		23.386	448.6	0.000	5.24	228.9		101.5		2.0	0.24	0.0	0.01	0.00	0.07	0.02	0	
3		20.56		20.56		33.389		23.387	448.7	0.014	5.24	228.9		101.5		2.0	0.24	0.0	0.01	0.00	0.07	0.02	3	20
10		20.46		20.46		33.384		23.412	446.6	0.045	5.24	229.0		101.4		2.0	0.25	0.0	0.01	0.00	0.09	0.02	10	19
20	ISL	20.39	D	20.39		33.383	D	23.428	445.5	0.090	5.23	D228.3	D	101.1		2.0	0.24	0.0	0.01	0.00	0.10	0.02	20	
25		20.39		20.39		33.383		23.430	445.5	0.112	5.24	229.1		101.3		2.0	0.24	0.0	0.01	0.00	0.10	0.02	25	18
30	ISL	20.39	D	20.39		33.383	D	23.430	445.7	0.135	5.24	D228.7	D	101.2		2.0	0.24	0.0	0.01	0.00	0.11	0.02	30	
40		20.39		20.38		33.382		23.432	446.0	0.179	5.25	229.5		101.4		2.0	0.24	0.0	0.01	0.00	0.12	0.01	40	17
50		19.53		19.52		33.381		23.655	425.0	0.222	5.25	229.2		99.7		2.0	0.25	0.0	0.01	0.00	0.12	0.03	50	16
62		17.46		17.45		33.182		24.016	390.9	0.271	5.91	258.3		107.8		2.1	0.24	0.0	0.01	0.00	0.18	0.06	62	15
75	ISL	16.39	D	16.38		33.110	D	24.212	372.5	0.324	5.85	D255.0	D	104.5		2.2	0.26	0.0	0.01	0.00	0.20	0.10	76	
76		16.28		16.26		33.108		24.237	370.2	0.324	5.87	256.6		104.6		2.2	0.26	0.0	0.01	0.00	0.20	0.10	77	14
87		14.99		14.98		33.043		24.472	347.9	0.364	5.83	254.9		101.3		2.4	0.30	0.0	0.01	0.00	0.22	0.18	88	13
100		13.39		13.38		33.086	D	24.839	313.1	0.410	5.55	D241.9	D	93.3									101	12
112		12.52		12.50		33.109		25.029	295.2	0.443	5.29	231.3		87.3		6.0	0.72	5.6	0.09	0.00	0.15	0.22	113	11
125		11.07		11.06		33.223		25.385	261.3	0.480	4.77	208.5		76.4		10.4	1.07	11.9	0.03	0.00	0.11	0.12	126	10
140		10.45		10.44		33.343		25.587	242.3	0.517	4.34	189.5		68.6		14.1	1.28	15.4	0.02	0.01	0.07	0.10	141	09
150	ISL	9.97	D	9.96		33.443	D	25.746	227.3	0.545	4.14	D180.1	D	64.8		16.2	1.37	16.9	0.02	0.00	0.05	0.07	151	
170		9.63		9.61		33.573		25.906	212.5	0.585	3.78	165.2		58.8		20.4	1.55	19.9	0.01	0.00	0.01	0.02	171	08
200		9.06		9.04		33.870		26.231	182.1	0.644	2.75	120.1		42.3		29.9	1.93	25.4	0.01	0.00	0.00	0.03	202	07
230		8.85		8.83		34.002		26.368	169.6	0.697	2.31	101.0		35.4		35.0	2.10	27.4	0.01	0.00			232	06
250	ISL	8.60	D	8.57		34.073	D	26.464	160.9	0.735	2.01	D 87.3	D	30.6		38.2	2.20	28.6	0.01	0.00			252	
270		8.38		8.35		34.090		26.511	156.7	0.762	1.78	77.7		27.0		41.3	2.30	29.8	0.01	0.01			272	05
300	ISL	8.19	D	8.16		34.159	D	26.594	149.3	0.813	1.40	D 60.7	D	21.1		45.5	2.42	31.1	0.01	0.01			302	
320		8.02		7.98		34.154		26.617	147.4	0.839	1.28	55.8		19.2		48.3	2.50	32.0	0.01	0.01			323	04
380		7.42		7.38		34.201		26.742	136.3	0.924	0.86	37.6		12.8		56.8	2.70	34.4	0.01	0.01			383	03
400	ISL	7.22	D	7.18		34.212	D	26.779	133.0	0.956	0.76	D 32.8	D	11.2		59.9	2.76	35.2	0.01	0.01			403	
440		6.84		6.79		34.229		26.845	127.0	1.003	0.59	25.7		8.6		66.0	2.88	36.7	0.01	0.02			444	02
500	ISL	6.40	D	6.36		34.250	D	26.920	120.4	1.083	0.46	D 19.8	D	6.6		73.1	2.97	38.0	0.01	0.03			504	
516		6.28		6.23		34.263		26.947	118.0	1.096	0.40	17.4		5.7		75.0	3.00	38.4	0.01	0.03			520	01

D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED O2;

RV OCEANUS CALCOFI CRUISE 1511 STATION 91.7 26.4

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
33 14.8 N	117 27.8 W	29/10/2015	0025	UTC	19 m	210	03 kn	300 01 07	1	1009.0 mb	22.8 C	21.2 C		6/8	SC	001

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0	21.48	21.48	33.429	23.170	469.3	0.000	5.38	235.3	106.1	1.9	0.28	0.0	0.02	0.00	0.26	0.09	0	
2	21.48	21.48	33.429	23.170	469.3	0.009	5.38	235.3	106.1	1.9	0.28	0.0	0.02	0.00	0.26	0.09	2	04
5	21.28	21.28	33.431	23.227	464.0	0.023	5.50	240.4	108.0	1.9	0.27	0.0	0.02	0.32	0.30	0.11	5	03
10	20.56	20.56	33.424	23.415	446.3	0.046	5.67	248.0	109.9	2.7	0.35	0.0	0.03	0.13	0.63	0.27	10	02
14	19.71	19.71	33.421	23.635	425.4	0.064	5.60	244.9	106.9	3.2	0.38	0.0	0.04	0.78	0.82	0.34	14	01

D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED O2;

RV OCEANUS CALCOFI CRUISE 1511 STATION 93.3 26.7

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
32 57.4 N	117 18.3 W	29/10/2015	0412	UTC	66 m	210	08 kn			1009.0 mb	21.9 C	20.5 C				003

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0	21.73	21.73	33.475	23.136	472.5	0.000	5.30	231.7	105.0	2.3	0.29	0.0	0.02	0.02	0.39	0.17	0	
2	21.73	21.73	33.475	23.136	472.6	0.010	5.30	231.7	105.0	2.3	0.29	0.0	0.02	0.02	0.39	0.17	2	08
6	21.05	21.05	33.475	23.322	455.0	0.028	5.29	231.4	103.5	2.3	0.28	0.0	0.02	0.00	0.39	0.16	6	07
10	21.11	21.11	33.452	23.288	458.4	0.046	5.39	235.7	105.6	2.7	0.29	0.0	0.02	0.00	0.71	0.35	10	06
20	17.90	17.89	33.377	24.057	385.4	0.089	5.56	243.0	102.4	3.9	0.37	0.5	0.37	0.22	1.52	0.75	20	05
30	16.60	16.59	33.390	24.376	355.3	0.126	5.48	239.7	98.5	3.9	0.41	0.0	0.04	0.00	1.01	0.77	30	04
40	16.08	16.07	33.416	24.515	342.3	0.161	5.05	220.7	89.8	5.1	0.56	2.0	0.18	0.05	0.60	0.54	40	03
50	15.77	15.76	33.436	24.601	334.5	0.194	4.81	210.3	85.1	5.9	0.66	3.4	0.12	0.60	0.39	0.50	50	02
58	15.62	15.61	33.453 D	24.648	330.2	0.222	4.72	D205.5 D	83.1								58	01

D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED O2;

RV OCEANUS CALCOFI CRUISE 1511 STATION 93.3 28.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
32 54.8 N	117 23.7 W	29/10/2015	0611	UTC	649 m	280	08 kn			1009.0 mb	22.2 C	19.9 C				004

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0	22.63	22.63	33.541	22.934	491.8	0.000	5.13	224.1	103.2	1.9	0.23	0.0	0.01	0.00	0.15	0.04	0	
2	22.63	22.63	33.541	22.934	491.9	0.010	5.13	224.1	103.2	1.9	0.23	0.0	0.01	0.00	0.15	0.04	2	20
10	22.63	22.63	33.541	22.935	492.2	0.049	5.11	223.2	102.8	1.9	0.22	0.0	0.01	0.00	0.14	0.03	10	19
20	22.09	22.08	33.534	23.085	478.3	0.098	5.23	228.4	104.2	1.9	0.23	0.0	0.01	0.00	0.15	0.04	20	18
30	18.84	18.84	33.421	23.859	404.7	0.142	5.74	250.7	107.7	3.0	0.29	0.0	0.01	0.00	0.26	0.09	30	17
40	17.26	17.25	33.354	24.194	373.0	0.181	5.71	249.5	103.9	3.0	0.33	0.0	0.01	0.00	0.26	0.14	40	16
50	16.74	16.73	33.393	24.347	358.8	0.217	5.50	240.3	99.1	3.9	0.39	0.0	0.02	0.00	0.42	0.38	50	15
60	15.36	15.35	33.501	24.742	321.4	0.251	4.53	198.1	79.5	6.8	0.75	4.4	0.05	0.02	0.34	0.40	60	14
70	14.74	14.73	33.501	24.879	308.6	0.283	4.24	185.1	73.4	8.2	0.87	6.6	0.03	0.00	0.20	0.27	71	13
75 ISL	14.53 D	14.51	33.536 D	24.951	301.9	0.299	4.11	D179.1 D	70.9	8.7	0.91	7.2	0.03	0.00	0.17	0.24	76	
85	14.09	14.07	33.524	25.034	294.2	0.328	4.01	175.2	68.5	9.5	0.99	8.4	0.03	0.00	0.12	0.18	86	12
100	13.06	13.05	33.548	25.262	272.9	0.371	3.69	161.2	61.8	12.0	1.19	11.8	0.03	0.00	0.04	0.10	101	11
120	12.18	12.17	33.630	25.497	250.9	0.423	3.25	142.0	53.4	15.0	1.39	14.9	0.02	0.00	0.02	0.07	121	10
125 ISL	12.07 D	12.05	33.677 D	25.555	245.5	0.437	3.18	D138.6 D	52.2	16.0	1.45	15.8	0.02	0.00	0.02	0.07	126	
140	11.65	11.63	33.733	25.678	234.1	0.472	2.79	121.9	45.4	19.1	1.64	18.5	0.02	0.00	0.01	0.06	141	09
150 ISL	11.57 D	11.55	33.795 D	25.741	228.3	0.496	2.67	D116.3 D	43.4	20.7	1.71	19.5	0.02	0.00	0.01	0.05	151	
170	11.09	11.07	33.899	25.911	212.6	0.539	2.31	101.0	37.2	23.7	1.86	21.5	0.02	0.02	0.01	0.04	171	08
200	10.60	10.58	34.045	26.111	194.2	0.600	2.01	87.6	31.9	27.9	2.05	23.8	0.02	0.00	0.00	0.03	202	07
230	10.10	10.08	34.129	26.264	180.2	0.656	1.82	79.4	28.7	30.9	2.13	25.3	0.02	0.00			232	06
250 ISL	9.47 D	9.44	34.133 D	26.373	170.0	0.692	1.92 D	83.4 D	29.8	33.8	2.17	26.6	0.02	0.00			252	
270	8.98	8.95	34.121	26.442	163.6	0.724	1.89	82.6	29.1	36.8	2.20	27.8	0.02	0.00			272	05
300 ISL	8.72 D	8.68	34.222 D	26.564	152.6	0.773	1.32 D	57.2 D	20.1	42.6	2.40	29.6	0.02	0.00			302	
320	8.54	8.51	34.248	26.612	148.4	0.802	1.02	44.4	15.5	46.5	2.53	30.8	0.02	0.00			323	04
380	7.92	7.89	34.284	26.734	137.5	0.888	0.66	28.7	9.9	53.9	2.71	33.0	0.02	0.05			383	03
400 ISL	7.67 D	7.63	34.298 D	26.782	133.1	0.917	0.56 D	24.2 D	8.3	57.3	2.77	33.9	0.02	0.00			403	
440	7.23	7.19	34.294	26.843	127.6	0.968	0.42	18.2	6.2	64.1	2.88	35.6	0.02	0.00			444	02
500 ISL	6.69 D	6.65	34.315 D	26.934	119.5	1.044	0.32 D	14.1 D	4.7	70.7	2.98	37.1	0.02	0.00			504	
515	6.64	6.59	34.306	26.934	119.7	1.060	0.31	13.6	4.6	72.4	3.00	37.5	0.02	0.12			519	01

D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED O2;

RV OCEANUS CALCOFI CRUISE 1511 STATION 93.3 30.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
32 50.8 N	117 31.9 W	29/10/2015	0901 UTC	847 m	280 09 kn			1007.7 mb	21.7 C	19.5 C				005

DEPTH m		TEMP DEG C		POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L		OXYGEN µmol/Kg		OXY PCT		SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		22.51		22.51	33.566	22.989	486.6	0.000	5.19		226.6		104.2		2.4	0.24	0.0	0.01	0.00	0.18	0.04	0	
2		22.51		22.50	33.566	22.989	486.6	0.010	5.19		226.6		104.2		2.4	0.24	0.0	0.01	0.00	0.18	0.04	2	21
10		22.51		22.51	33.566	22.989	487.0	0.049	5.25		229.4		105.5		2.4	0.23	0.0	0.01	0.00	0.18	0.05	10	20
20	ISL	22.51	D	22.51	33.577	D 22.998	486.6	0.098	5.11	D	223.2	D	102.7		2.5	0.24	0.0	0.01	0.00	0.22	0.06	20	
25		21.27		21.26	33.481	23.270	460.8	0.121	5.55		242.5		109.0		2.5	0.25	0.0	0.01	0.00	0.24	0.07	25	19
30	ISL	19.27	D	19.26	33.402	D 23.736	416.5	0.144	5.86	D	255.6	D	110.8		2.7	0.28	0.0	0.01	0.00	0.27	0.08	30	
40		17.94		17.93	33.384	24.054	386.5	0.183	5.75		251.1		106.0		3.0	0.33	0.0	0.01	0.00	0.34	0.11	40	18
50		16.66		16.65	33.399	24.370	356.6	0.220	5.53		241.8		99.5		3.5	0.38	0.0	0.01	0.00	0.38	0.28	50	17
55		15.89		15.89	33.347	24.505	343.9	0.238	5.52		241.2		97.8		3.6	0.42	0.0	0.03	0.00	0.82	0.62	55	16
62		15.39		15.38	33.374	24.639	331.3	0.261	5.12		223.6		89.8		4.8	0.58	2.3	0.12	0.00	0.47	0.43	62	15
75		14.60		14.59	33.486	24.896	307.1	0.303	4.55		198.9		78.6		6.9	0.76	4.9	0.04	0.00	0.20	0.20	76	14
87		13.39		13.37	33.521	25.175	280.7	0.338	4.07		177.9		68.6		9.6	1.01	9.2	0.03	0.02	0.08	0.15	88	13
100		12.68		12.66	33.570	25.354	264.0	0.374	3.74		163.6		62.2		11.8	1.17	12.0	0.03	0.00	0.05	0.11	101	12
112		12.37		12.35	33.660	25.485	251.9	0.405	3.25		142.2		53.7		14.8	1.37	15.0	0.03	0.58	0.03	0.08	113	11
125		11.99		11.97	33.789	25.657	235.8	0.436	2.73		119.5		44.8		18.2	1.60	17.7	0.02	0.23	0.02	0.06	126	10
140		11.62		11.60	33.846	25.771	225.3	0.471	2.35		102.7		38.2		21.1	1.76	19.7	0.02	0.00	0.01	0.04	141	09
150	ISL	11.29	D	11.27	33.846	D 25.831	219.7	0.495	2.50	D	108.9	D	40.4		21.9	1.78	20.3	0.02	0.00	0.01	0.04	151	
170		10.92		10.90	33.877	25.923	211.4	0.536	2.44	D	106.2	D	39.1		23.4	1.82	21.4	0.02	0.00	0.01	0.04	171	08
200		10.41		10.38	34.016	D 26.122	193.0	0.600	2.14	D	93.3	D	34.0									202	07
230		10.00		9.97	34.106	26.263	180.3	0.653	1.93		84.1		30.3		31.0	2.11	25.6	0.02	0.00			232	06
250	ISL	9.37	D	9.34	34.142	D 26.396	167.8	0.691	1.77	D	77.2	D	27.5		34.3	2.18	26.7	0.02	0.00			252	
270		9.18		9.15	34.188	26.463	161.8	0.721	1.60		69.8		24.7		37.6	2.25	27.9	0.02	0.00			272	05
300	ISL	8.67	D	8.64	34.191	D 26.546	154.2	0.772	1.48	D	64.3	D	22.6		42.0	2.36	29.5	0.02	0.00			302	
320		8.42		8.38	34.213	26.603	149.0	0.798	1.26		55.1		19.2		44.9	2.43	30.5	0.02	0.00			323	04
380		7.95		7.91	34.263	26.714	139.4	0.885	0.81		35.3		12.1		52.5	2.66	32.8	0.02	0.02			383	03
400	ISL	7.82	D	7.78	34.280	D 26.746	136.6	0.918	0.69	D	29.8	D	10.3		55.6	2.72	33.5	0.02	0.00			403	
440		7.35		7.30	34.294	26.827	129.3	0.966	0.48		20.9		7.1		61.7	2.84	35.1	0.02	0.00			444	02
500	ISL	6.71	D	6.66	34.309	D 26.927	120.2	1.047	0.34	D	14.7	D	4.9		70.0	2.96	36.9	0.02	0.00			504	
516		6.60		6.56	34.316	26.947	118.4	1.060	0.30		13.0		4.3		72.1	2.99	37.4	0.02	0.00			520	01

D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED O2;

RV OCEANUS CALCOFI CRUISE 1511 STATION 93.3 35.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
32 40.8 N	117 52.4 W	29/10/2015	1337 UTC	622 m	310 19 kn			1007.5 mb	21.0 C	19.3 C				006

DEPTH m		TEMP DEG C		POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L		OXYGEN µmol/Kg		OXY PCT		SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		22.13		22.13	33.540	23.074	478.4	0.000	5.14		224.5		102.5		2.3	0.28	0.0	0.01	0.21	0.21	0.05	0	
2		22.13		22.13	33.540	23.075	478.5	0.010	5.14		224.5		102.5		2.3	0.28	0.0	0.01	0.21	0.21	0.05	2	20
10		22.14		22.14	33.539	23.072	479.1	0.048	5.14		224.7		102.6		2.3	0.24	0.0	0.01	0.62	0.20	0.06	10	19
20		22.05		22.05	33.541	23.099	477.0	0.096	5.17		225.9		103.0		2.3	0.25	0.0	0.01	0.15	0.22	0.06	20	18
30		19.62		19.61	33.418	23.658	423.9	0.141	5.75		251.3		109.5		3.0	0.30	0.0	0.01	0.00	0.39	0.15	30	17
40		17.56		17.55	33.413	24.169	375.5	0.181	5.58		243.6		102.1		3.7	0.37	0.0	0.02	0.00	0.52	0.30	40	16
50		17.05		17.05	33.424	24.297	363.6	0.218	5.27		230.3		95.6		4.3	0.46	0.4	0.09	0.00	0.99	0.75	50	15
60		16.69		16.68	33.426	24.385	355.5	0.254	4.95		216.3		89.1		5.0	0.54	2.1	0.06	0.00	0.40	0.39	60	14
70		16.31		16.30	33.487	24.519	343.1	0.289	4.63		202.4		82.8		5.9	0.68	3.4	0.04	0.00	0.20	0.22	71	13
75	ISL	16.28	D	16.26	33.498	D 24.536	341.7	0.307	4.61	D	200.9	D	82.3		6.1	0.70	3.7	0.04	0.00	0.17	0.20	76	
85		15.65		15.63	33.463	24.652	330.9	0.340	4.61		201.3		81.3		6.3	0.73	4.2	0.04	0.00	0.12	0.17	86	12
100		14.31		14.29	33.548	25.008	297.3	0.387	4.11		179.7		70.7		8.7	0.96	7.4	0.04	0.00	0.06	0.11	101	11
121		12.42		12.41	33.683	25.493	251.4	0.444	3.16		138.1		52.3		15.3	1.41	14.9	0.02	0.00	0.02	0.06	122	10
125	ISL	12.08	D	12.06	33.681	D 25.557	245.3	0.456	3.30	D	143.7	D	54.1		16.5	1.48	15.9	0.02	0.00	0.02	0.06	126	
139		11.76		11.74	33.865	25.760	226.3	0.487	2.48		108.1		40.4		20.4	1.74	19.1	0.02	0.00	0.01	0.05	140	09
150	ISL	11.53	D	11.51	33.939	D 25.861	216.9	0.514	2.28	D	99.0	D	37.0		21.7	1.80	19.9	0.02	0.00	0.01	0.04	151	
170		11.29		11.27	33.985	25.940	209.9	0.554	2.16		94.2		34.9		24.0	1.90	21.4	0.02	0.03	0.01	0.03	171	08
200		10.46		10.44	34.165	D 26.229	183.0	0.616	1.86		81.4		29.6		28.8	2.10	23.9	0.02	0.01	0.00	0.03	202	07
230		10.09		10.06	34.227	26.343	172.8	0.667	1.41	D	61.4	D	22.3		33.4	2.27	25.7	0.02	0.00			232	06
250	ISL	9.56	D	9.53	34.251	D 26.451	162.7	0.704	1.39	D	60.4	D	21.7		36.2	2.33	26.9	0.02	0.00			252	
270		9.35		9.32	34.265	26.496	158.8	0.732	1.24		54.3		19.3		38.9	2.38	28.0	0.02	0.04			272	05
300	ISL	8.79	D	8.76	34.236	D 26.563	152.7	0.783	1.24	D	53.7	D	18.9		42.9	2.48	29.4	0.02	0.09			302	
320		8.56		8.53	34.254	26.614	148.2	0.809	1.08		47.3		16.5		45.5	2.54	30.4	0.02	0.12			323	04
380		8.08		8.05	34.264	26.695	141.3	0.896	0.82		35.7		12.3		51.2	2.63	32.0	0.02	0.14			383	03
400	ISL	7.95	D	7.91	34.285	D 26.732	138.1	0.929	0.70	D	30.6	D	10.6		53.5	2.69	32.7	0.02	0.14			403	
440		7.54		7.50	34.287	26.794	132.6	0.978	0.58		25.4		8.7		58.2	2.82	34.1	0.02	0.13			444	02
500	ISL	6.94	D	6.89	34.306	D 26.893	123.6	1.061	0.42	D	18.1	D	6.1		66.9	2.93	36.2	0.02				504	
515		6.77		6.72	34.309	26.918	121.3	1.073	0.34		14.7		4.9		69.1	2.96	36.7	0.02				519	01

D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED O2;

RV OCEANUS CALCOFI CRUISE 1511 STATION 93.3 40.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
32 30.8 N	118 12.9 W	29/10/2015	1807	UTC	1655 m	320	22 kn	320 06 06	0	1008.0 mb	21.4 c	18.0 c	22 m	0/8		007

DEPTH m		TEMP DEG C		POTTEMP DEG C		SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		22.36		22.36		33.575	23.036	482.1	0.000	5.05	220.6	101.3	2.0	0.26	0.0	0.01	0.00	0.18	0.02	0	
3	A	22.36		22.36		33.575	23.036	482.2	0.015	5.05	220.6	101.3	2.0	0.26	0.0	0.01	0.00	0.18	0.02	3	24
10		22.37		22.36		33.579	23.038	482.3	0.048	5.09	222.3	102.1	2.1	0.29	0.0	0.01	0.00	0.17	0.03	10	22
10		22.37		22.36		33.576	23.036	482.5	0.047											10	23
13	A	22.36		22.36		33.576	23.038	482.5	0.063	5.06	220.8	101.4	1.9	0.24	0.0	0.01	0.00	0.16	0.04	13	21
18	A	22.37		22.36		33.586	23.045	482.1	0.087	5.06	221.0	101.5	1.9	0.26	0.0	0.01	0.00	0.20	0.03	18	20
20	ISL	22.37	D	22.37		33.577	D 23.037	482.9	0.097	5.05	D220.5	D101.3	2.0	0.26	0.0	0.01	0.00	0.22	0.05	20	
30	ISL	22.28	D	22.27		33.574	D 23.062	480.9	0.146	5.08	D221.7	D101.6	2.0	0.27	0.0	0.01	0.00	0.30	0.14	30	
32	A	20.35		20.34		33.547	23.566	432.8	0.154	5.13	223.8	99.0	2.0	0.27	0.0	0.01	0.00	0.32	0.15	32	19
41		16.73		16.72		33.244	24.234	369.2	0.190	5.87	255.9	105.6	2.4	0.36	0.0	0.01	0.00	0.67	0.30	41	18
50		15.78		15.78		33.206	24.421	351.7	0.223	5.89	256.6	104.0	2.7	0.39	0.0	0.04	0.00	0.40	0.26	50	17
60	A	14.55		14.54		33.289	24.754	320.1	0.256	5.35	233.3	92.3	4.4	0.55	1.9	0.11	0.00	0.20	0.20	60	16
70		13.80		13.79		33.313	24.930	303.6	0.287	4.91	214.0	83.4	6.4	0.75	5.4	0.12	0.00	0.16	0.17	71	15
75	ISL	13.31	D	13.30		33.329	D 25.042	293.0	0.304	4.75	D206.9	D 79.8	7.1	0.80	6.5	0.08	0.00	0.15	0.16	76	
78	A	12.93		12.92		33.319	25.109	286.7	0.311	4.73	206.2	78.9	7.5	0.83	7.2	0.06	0.00	0.14	0.15	79	14
86		12.05		12.04		33.271	25.242	274.1	0.333	4.76	207.4	77.9	8.9	0.97	9.8	0.04	0.00	0.10	0.13	87	13
95		11.43		11.42		33.289	25.370	262.0	0.357	4.60	200.2	74.2	10.5	1.07	11.8	0.03	0.00	0.05	0.10	96	12
100	ISL	11.36	D	11.35		33.311	D 25.400	259.4	0.373	4.56	D198.4	D 73.5	11.7	1.13	12.9	0.03	0.00	0.05	0.09	101	
110		10.68		10.66		33.399	25.591	241.2	0.395	4.22	183.6	67.0	14.1	1.26	15.3	0.02	0.00	0.04	0.07	111	11
124		10.29		10.28		33.468	25.712	230.1	0.428	4.01	174.4	63.2	16.3	1.37	17.1	0.02	0.04	0.02	0.05	125	10
125	ISL	10.28	D	10.27		33.472	D 25.716	229.7	0.434	4.01	D174.5	D 63.2	16.5	1.38	17.3	0.02	0.00	0.02	0.05	126	
140		9.86		9.85		33.578	25.870	215.2	0.464	3.73	162.2	58.2	19.6	1.52	19.5	0.02	0.00	0.00	0.03	141	09
150	ISL	9.60	D	9.58		33.672	D 25.988	204.3	0.489	3.49	D151.7	D 54.2	22.1	1.61	21.0	0.02	0.00	0.00	0.03	151	
170		9.15		9.13		33.822	26.178	186.5	0.524	3.05	132.6	46.9	27.1	1.80	23.9	0.02	0.00	0.00	0.02	171	08
199		8.91		8.89		33.916	26.290	176.4	0.577	2.72	118.4	41.7	30.8	1.94	25.7	0.01	0.00			201	07
200	ISL	8.90	D	8.88		33.922	D 26.297	175.8	0.583	2.72	D118.3	D 41.7	30.9	1.95	25.8	0.01	0.00			202	
232		8.50		8.48		34.017	26.434	163.3	0.633	2.32	100.8	35.2	36.5	2.11	28.0	0.02	0.00			234	06
250	ISL	8.36	D	8.34		34.032	D 26.468	160.4	0.667	2.20	D 95.7	D 33.3	37.9	2.14	28.5	0.02	0.00			252	
270		8.28		8.25		34.046	26.491	158.5	0.694	2.14	93.1	32.4	39.5	2.17	29.0	0.02	0.01			272	05
300	ISL	7.94	D	7.90		34.099	D 26.585	150.0	0.746	1.79	D 77.7	D 26.8	45.3	2.34	31.0	0.02	0.00			302	
319		7.69		7.66		34.124	26.640	145.0	0.768	1.47	64.1	22.0	49.0	2.45	32.2	0.02	0.00			322	04
381		7.62		7.58		34.286	26.780	132.9	0.855	0.63	27.3	9.4	57.3	2.79	34.0	0.01	0.00			384	03
400	ISL	7.54	D	7.50		34.298	D 26.801	131.2	0.886	0.53	D 23.2	D 7.9	59.0	2.82	34.4	0.01	0.00			403	
439		7.25		7.21		34.301	26.846	127.4	0.930	0.46	20.1	6.8	62.5	2.87	35.3	0.01	0.00			443	02
500	ISL	6.83	D	6.79		34.309	D 26.910	121.9	1.014	0.36	D 15.8	D 5.3	67.9	2.95	36.6	0.01	0.00			504	
516		6.77		6.72		34.311	26.921	121.1	1.026	0.35	15.2	5.1	69.3	2.97	36.9	0.01	0.01			520	01

A) PRIMARY PRODUCTIVITY SAMPLES WERE TAKEN FROM THESE LEVELS.
D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED O2;

RV OCEANUS CALCOFI CRUISE 1511 STATION 93.3 45.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
32 20.8 N	118 33.2 W	29/10/2015	2340	UTC	1353 m	320	25 kn	300 08 07	0	1006.5 mb	20.3 c	17.7 c		0/8		008

DEPTH m		TEMP DEG C		POTTEMP DEG C		SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		22.19		22.19		33.573	23.082	477.7	0.000	5.10	222.9	101.9	2.0	0.30	0.0	0.01	0.00	0.18	0.04	0	
2		22.19		22.19		33.573	23.082	477.8	0.010	5.10	222.9	101.9	2.0	0.30	0.0	0.01	0.00	0.18	0.04	2	21
10		21.93		21.92		33.574	23.158	470.9	0.048	5.10	222.9	101.4	1.9	0.26	0.0	0.01	0.00	0.18	0.04	10	19
10		21.93		21.92		33.553	23.142	472.4	0.048											10	20
20		17.35		17.34		33.228	24.076	383.6	0.090	6.00	262.4	109.4	2.0	0.31	0.0	0.01	0.00	0.27	0.11	20	18
30	ISL	15.92	D	15.91		33.208	D 24.391	353.9	0.128	6.02	260.8	106.7	2.3	0.36	0.0	0.01	0.00	0.33	0.23	30	
31		15.69		15.68		33.192	24.431	350.1	0.131	6.03	263.3	106.2	2.4	0.36	0.0	0.01	0.00	0.34	0.24	31	17
40		14.52		14.51		33.181	24.676	326.9	0.161	5.80	253.7	99.9	3.2	0.45	0.5	0.06	0.00	0.43	0.35	40	16
50		13.57		13.56		33.177	24.870	308.6	0.193	5.51	240.9	93.0	4.6	0.61	3.0	0.18	0.00	0.34	0.36	50	15
60		12.71		12.70		33.219	D 25.074	289.4	0.224	5.18	D225.5	D 85.9								60	14
71		12.13		12.12		33.239	25.202	277.5	0.254	4.84	211.4	79.3	8.6	0.96	9.5	0.06	0.00	0.15	0.28	72	13
75	ISL	12.04	D	12.03		33.247	D 25.225	275.4	0.267	4.81	D209.4	D 78.6	8.8	0.98	9.8	0.05	0.00	0.15	0.27	76	
84		11.75		11.74		33.252	25.282	270.2	0.290	4.74	207.0	77.0	9.4	1.02	10.5	0.05	0.00	0.14	0.26	85	12
100	ISL	10.63	D	10.61		33.357	D 25.567	243.3	0.333	4.31	D187.6	D 68.4	13.3	1.26	14.5	0.03	0.00	0.08	0.13	101	
101		10.56		10.55		33.342	25.567	243.3	0.333	4.34	189.9	68.9	13.5	1.27	14.8	0.03	0.43	0.08	0.12	102	11
120		10.13		10.12		33.470	25.740	227.2	0.378	4.01	175.0	62.9	16.9	1.41	17.5	0.02	0.00	0.04	0.07	121	10
125	ISL	10.06	D	10.04		33.500	D 25.776	223.9	0.391	3.98	D173.4	D 62.5	17.4	1.43	17.9	0.02	0.00	0.04	0.07	126	
141		9.79		9.78		33.556	25.865	215.8	0.425	3.79	165.6	59.1	19.2	1.49	19.2	0.02	0.00	0.02	0.05	142	09
150	ISL	9.57	D	9.56		33.661	D 25.983	204.7	0.446	3.59	D156.4	D 55.9	21.0	1.56	20.3	0.02	0.00	0.02	0.05	151	
170		9.23		9.21		33.767	26.122	191.8	0.484	3.31	144.5	51.0	25.1	1.71	22.7	0.02	0.00	0.00	0.03	171	08
200		8.80		8.78		33.929	26.317	173.8	0.538	2.68	117.0	41.0	31.7	1.95	26.0	0.02	0.00	0.00	0.02	202	07
230		8.61		8.59		34.002	26.405	166.1	0.589	2.36	103.3	36.0	35.4	2.06	27.5	0.01	0.00			232	06
250	ISL	8.73	D	8.71		34.125	D 26.484	159.1	0.624	1.90	D 82.6	D 29.0	39.0	2.22	28.6	0.01	0.00			252	
271		8.58		8.55		34.200	26.567	151.6	0.655	1.39	60.7	21.2	42.8	2.39	29.7	0.02	0.00			273	05
300	ISL	8.15	D	8.12		34.183	D 26.619	147.0	0.701	1.35	D 58.6	D 20.3	45.8	2.45	30.8	0.02	0.00			302	
319		8.03		8.00		34.183	26.637	145.5	0.726	1.27	55.4	19.1	47.8	2.49	31.5	0.02	0.00			322	04
380		7.72		7.68		34.255	26.741	136.6	0.812	0.78	34.3	11.7	53.8	2.69	33.2	0.01	0.00			383	03
400	ISL	7.46	D	7.42		34.254	D 26.779	133.2	0.843	0.74	D 32.2	D 11.0	57.8	2.75	34.2	0.01	0.00			403	
439		6.98		6.94		34.290	26.874	124.4	0.889	0.45	19.7	6.6	65.5	2.87	36.2	0.01	0.00			443	02
500	ISL	6.45	D	6.41		34.313	D 26.963	116.4	0.967	0.33	D 14.1	D 4.7	73.7	3.00	37.8	0.01	0.00			504	
515		6.36		6.31		34.317	26.979	115.0	0.980	0.29	12.7	4.2	75.7	3.03	38.2	0.01	0.00			519	01

D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED O2;

RV OCEANUS CALCOFI CRUISE 1511 STATION 93.3 45.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
32 20.8 N	118 33.3 W	13/11/2015	0250	UTC	1348 m	330	13 kn			1013.9 mb	18.1 c	14.1 c				070

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0	19.35	19.35	33.356 D	23.678	420.8	0.000	5.36	D234.0	D101.6								0	
10	19.35	19.35	33.357 D	23.679	421.1	0.043	5.37	D234.2	D101.7								10	
20	19.31	19.30	33.352 D	23.687	420.7	0.085	5.37	D234.4	D101.7								20	
30	19.26	19.25	33.370 D	23.714	418.6	0.127	5.37	D234.3	D101.6								30	
50	15.32	15.32	33.029 D	24.387	354.9	0.208	5.92	D258.2	D103.5								50	
75	12.81	12.80	33.083 D	24.949	301.8	0.288	5.36	D233.7	D 89.1								76	
100	11.69	11.67	33.251 D	25.294	269.4	0.361	4.74	D206.5	D 77.0								101	
125	10.26	10.24	33.446 D	25.701	231.1	0.424	4.07	D177.3	D 64.2								126	
150	9.77	9.75	33.613 D	25.913	211.4	0.480	3.68	D160.4	D 57.5								151	
200	9.39	9.37	33.937 D	26.231	182.3	0.579	2.63	D114.4	D 40.7								202	
250	8.72	8.70	34.087 D	26.455	161.8	0.665	2.03	D 88.4	D 31.1								252	
300	8.24	8.21	34.194 D	26.614	147.5	0.743	1.33	D 57.9	D 20.1								302	
400	7.47	7.43	34.277 D	26.795	131.7	0.884	0.62	D 27.1	D 9.3								403	

D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED O2;

RV OCEANUS CALCOFI CRUISE 1511 STATION 93.3 50.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
32 10.8 N	118 53.6 W	12/11/2015	2242 UTC	1469 m	350 11 kn	330 03 07	1	1014.7 mb	18.4 C	14.5 C	33 m	3/8	CS	069

DEPTH m		TEMP DEG C		POTTEMP DEG C	SALINITY		SIGMA THETA	SVA	DYN HT	OXYGEN ml/L		OXYGEN µmol/Kg		OXY PCT		SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		19.43		19.43	33.420		23.706	418.1	0.000	5.35		233.6		101.5		1.7	0.31	0.0	0.01	0.00	0.17	0.05	0	
2		19.43		19.43	33.420		23.706	418.2	0.008	5.35		233.6		101.5		1.7	0.31	0.0	0.01	0.00	0.17	0.05	2	20
10		19.44		19.43	33.420		23.706	418.5	0.042	5.34		233.3		101.3		1.7	0.28	0.0	0.01	0.00	0.17	0.05	10	19
20	ISL	19.38	D	19.38	33.419	D	23.719	417.7	0.084	5.36	D	233.7	D	101.5		1.7	0.29	0.0	0.01	0.00	0.19	0.05	20	
26		19.38		19.37	33.423		23.724	417.4	0.109	5.34		233.5		101.3		1.7	0.29	0.0	0.01	0.00	0.20	0.05	26	18
30	ISL	19.37	D	19.36	33.426	D	23.729	417.1	0.126	5.34	D	233.0	D	101.3		1.8	0.31	0.0	0.01	0.00	0.24	0.08	30	
40		16.73		16.72	33.184		24.188	373.5	0.165	5.79		252.8		104.1		2.2	0.35	0.0	0.01	0.00	0.35	0.16	40	17
50		14.71		14.70	33.125		24.594	335.0	0.201	5.94		259.5		102.6		3.3	0.46	0.5	0.05	0.15	0.44	0.31	50	16
62		12.92		12.92	33.157		24.985	298.0	0.239	5.35		233.9		89.2		6.3	0.75	5.5	0.18	0.00	0.32	0.32	62	15
75		12.06		12.05	33.144		25.141	283.4	0.277	5.08		221.8		83.0		7.8	0.90	8.4	0.09	0.03	0.23	0.21	76	14
87		11.39		11.38	33.208		25.314	267.1	0.310	4.81		210.0		77.5		9.9	1.06	10.9	0.06	0.00	0.18	0.22	88	13
100		10.22		10.20	33.346		25.628	237.4	0.342	4.34		189.6		68.3		14.4	1.29	15.6	0.02	0.00	0.08	0.12	101	12
112		9.91		9.90	33.441		25.755	225.6	0.370	4.13		180.2		64.5		17.2	1.41	17.9	0.02	0.00	0.05	0.08	113	11
125		9.82		9.80	33.553		25.858	216.1	0.399	3.83		167.2		59.8		19.5	1.53	19.4	0.02	0.04	0.03	0.05	126	10
140		9.54		9.53	33.743		26.052	198.0	0.430	3.28		143.2		50.9		24.1	1.71	22.3	0.02	0.00	0.01	0.04	141	09
150	ISL	9.57	D	9.55	33.834	D	26.119	191.8	0.451	3.08	D	134.1	D	47.9		25.7	1.78	23.2	0.02	0.00	0.01	0.04	151	
170		9.42		9.40	33.932		26.221	182.6	0.487	2.66		116.1		41.2		29.0	1.91	24.9	0.01	0.00	0.00	0.03	171	08
200		9.01		8.99	33.998		26.340	171.8	0.540	2.44		106.4		37.5		32.9	2.02	26.7	0.02	0.00	0.00	0.03	202	07
230		9.03		9.01	34.114		26.428	164.1	0.591	1.95		85.2		30.1		36.2	2.19	27.8	0.01	0.10			232	06
250	ISL	9.02	D	8.99	34.196	D	26.494	158.3	0.625	1.61	D	70.0	D	24.8		39.3	2.30	28.9	0.02	0.00			252	
269		8.59		8.56	34.194		26.560	152.2	0.653	1.43		62.6		21.9		42.3	2.41	29.9	0.02	0.00			271	05
300	ISL	8.27	D	8.24	34.237	D	26.643	144.8	0.701	1.10	D	47.9	D	16.7		47.4	2.51	31.6	0.02	0.00			302	
320		7.84		7.81	34.208		26.685	140.9	0.728	1.11		48.5		16.6		50.8	2.57	32.7	0.02	0.00			323	04
380		7.47		7.44	34.280		26.796	131.2	0.810	0.60		26.0		8.9		59.4	2.80	34.8	0.02	0.04			383	03
400	ISL	7.38	D	7.34	34.284	D	26.813	129.9	0.839	0.55	D	23.8	D	8.1		61.4	2.84	35.4	0.02	0.00			403	
441		7.05		7.01	34.300		26.873	124.7	0.888	0.43		19.0		6.4		65.3	2.91	36.5	0.02	0.00			445	02
500	ISL	6.64	D	6.59	34.307	D	26.934	119.4	0.964	0.36	D	15.6	D	5.2		71.2	2.98	37.7	0.02	0.00			504	
515		6.58		6.54	34.312		26.946	118.5	0.978	0.34		15.0		5.0		72.7	3.00	38.0	0.02	0.03			519	01

D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED O2;

RV OCEANUS CALCOFI CRUISE 1511 STATION 93.3 55.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
32 0.8 N	119 14.1 W	30/10/2015	1445 UTC	1596 m	350 20 kn	360 05 05	0	1010.3 mb	20.3 C	17.1 C	25 m	0/8		009

DEPTH m		TEMP DEG C		POTTEMP DEG C	SALINITY		SIGMA THETA	SVA	DYN HT	OXYGEN ml/L		OXYGEN µmol/Kg		OXY PCT		SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		20.55		20.55	33.426		23.417	445.7	0.000	5.27		230.3		102.1		1.7	0.28	0.0	0.01	0.00	0.19	0.05	0	
2		20.55		20.55	33.426		23.417	445.7	0.009	5.27		230.3		102.1		1.7	0.28	0.0	0.01	0.00	0.19	0.05	2	21
10		20.56		20.55	33.425		23.417	446.1	0.045	5.24		229.0		101.5		1.6	0.29	0.0	0.01	0.06	0.19	0.05	10	19
10		20.56		20.55	33.429		23.419	445.9	0.044														10	20
20	ISL	20.56	D	20.56	33.425	D	23.416	446.6	0.090	5.23	D	228.2	D	101.4		1.6	0.29	0.0	0.01	0.00	0.19	0.05	20	
26		20.56		20.55	33.433		23.424	446.1	0.116	5.24		229.0		101.5		1.6	0.29	0.0	0.01	0.00	0.19	0.05	26	18
30	ISL	20.55	D	20.55	33.424	D	23.418	446.9	0.135	5.22	D	228.0	D	101.2		1.6	0.29	0.0	0.01	0.00	0.19	0.06	30	
40		19.98		19.97	33.418		23.566	433.1	0.178	5.27		230.4		101.0		1.7	0.29	0.0	0.01	0.00	0.20	0.06	40	17
50	ISL	16.56	D	16.55	33.285	D	24.306	362.7	0.220	6.17	D	269.0	D	110.7		3.1	0.37	0.0	0.01	0.00	0.35	0.15	50	
51		16.35		16.34	33.282		24.352	358.3	0.221	6.18		270.0		110.4		3.2	0.38	0.0	0.01	0.00	0.36	0.16	51	16
62		13.57		13.57	33.237		24.916	304.6	0.258	5.57		243.3		94.0		5.4	0.62	2.9	0.21	0.00	0.59	0.53	62	15
74		11.81		11.80	33.275		25.289	269.2	0.292	4.73		206.7		77.0		9.4	0.99	10.0	0.07	0.00	0.21	0.26	75	14
75	ISL	11.85	D	11.84	33.286	D	25.290	269.2	0.297	4.65	D	202.4	D	75.7		9.6	1.00	10.2	0.07	0.00	0.21	0.25	76	
87		11.50		11.49	33.321		25.383	260.6	0.327	4.49		196.0		72.5		11.2	1.11	12.2	0.04	0.00	0.15	0.21	88	13
100		10.74		10.73	33.423		25.597	240.5	0.359	4.14		181.1		66.0		14.1	1.28	14.9	0.03	0.00	0.10	0.12	101	12
113		10.17		10.15	33.519		25.772	224.0	0.390	3.85		168.4		60.6		17.5	1.44	17.9	0.02	0.00	0.04	0.08	114	11
125		9.97		9.95	33.727		25.968	205.6	0.415	3.26		142.3		51.1		22.0	1.66	20.7	0.02	0.00	0.01	0.04	126	10
140		9.85		9.83	33.823		26.064	196.8	0.446	2.92		127.7		45.7		24.7	1.82	22.4	0.02	0.01	0.01	0.04	141	09
150	ISL	9.80	D	9.79	33.892	D	26.126	191.3	0.467	2.73	D	119.0	D	42.8		26.2	1.86	23.2	0.02	0.00	0.01	0.04	151	
170		9.27		9.25	33.949		26.258	179.0	0.502	2.60		113.7		40.2		29.4	1.95	24.7	0.02	0.00	0.00	0.03	171	08
200		8.79		8.77	34.023		26.393	166.7	0.554	2.38		104.1		36.5		34.1	2.06	26.8	0.02	0.01	0.00	0.03	202	07
232		8.42		8.40	34.072		26.489	158.1	0.606	2.07	D	90.0	D	31.4		38.7	2.21	28.6	0.02	0.05			234	06
250	ISL	8.31	D	8.28	34.087	D	26.519	155.5	0.637	1.94	D	84.6	D	29.4		41.7	2.29	29.6	0.02	0.04			252	
270		7.96		7.94	34.112		26.590	148.9	0.665	1.69		73.7		25.4		45.0	2.38	30.7	0.02	0.03			272	05
300	ISL	7.79	D	7.76	34.149	D	26.645	144.2	0.712	1.35	D	58.6	D	20.2		47.9	2.49	31.7	0.02	0.06			302	
321		7.69		7.66	34.152		26.662	142.9	0.739	1.27		55.5		19.0		50.0	2.56	32.4	0.02	0.08			324	04
379		7.19		7.16	34.179		26.756	134.7	0.820	1.03		45.0		15.2		57.2	2.69	34.3	0.02	0.04			382	03
400	ISL	7.05	D	7.01	34.187	D	26.783	132.4	0.852	0.90	D	39.2	D	13.2		60.0	2.77	35.1	0.01	0.04			403	
440		6.68		6.64	34.220		26.859	125.5	0.899	0.66		28.6		9.6		65.4	2.92	36.5	0.01	0.05			444	02
500	ISL	6.25	D	6.20	34.258	D	26.946	117.7	0.978	0.45	D	19.7	D	6.5		73.1	3.01	38.0	0.02	0.00			504	
515		6.29		6.24	34.292	D	26.968	116.0	0.995	0.35		15.3		5.1		75.1	3.03	38.3	0.02	0.00			519	01

D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED O2;

RV OCEANUS CALCOFI CRUISE 1511 STATION 93.3 60.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
31 50.8 N	119 34.3 W	30/10/2015	1927 UTC	1938 m	350 15 kn	320 04 00	0	1012.6 mb	20.1 C	17.4 C	28 m	0/8		010

DEPTH m		TEMP DEG C		POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L		OXYGEN µmol/Kg		OXY PCT		SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		20.68		20.68	33.426	23.383	448.9	0.000	5.24		228.9		101.7		1.6	0.37	0.0	0.01	0.00	0.15	0.05	0	
3	A	20.68		20.68	33.426	23.384	449.0	0.014	5.24		228.9		101.7		1.6	0.37	0.0	0.01	0.00	0.15	0.05	3	24
10		20.67		20.67	33.422	23.383	449.3	0.045	5.26		229.7		102.1		1.6	0.26	0.0	0.01	0.04	0.15	0.04	10	22
10		20.67		20.67	33.425	23.386	449.1	0.044														10	23
17	A	20.65		20.65	33.423	23.390	449.0	0.076	5.26		229.7		102.0		1.6	0.29	0.0	0.01	1.00	0.16	0.04	17	21
20	ISL	20.65	D	20.65	33.423	D 23.391	449.0	0.090	5.23	D	228.3	D	101.6		1.6	0.27	0.0	0.01	0.00	0.16	0.04	20	
22	A	20.64		20.63	33.423	23.395	448.8	0.099	5.25		229.4		101.9		1.6	0.25	0.0	0.01	0.00	0.16	0.05	22	20
30	ISL	20.64	D	20.63	33.423	D 23.396	449.0	0.136	5.23	D	228.0	D	101.4		1.6	0.26	0.0	0.01	0.00	0.16	0.04	30	
32		20.62		20.61	33.422	23.401	448.6	0.144	5.25		229.5		101.9		1.6	0.26	0.0	0.01	0.00	0.17	0.04	32	19
41	A	17.82		17.82	33.311	24.026	389.1	0.181	5.78		252.5		106.3		2.4	0.31	0.0	0.01	0.00	0.26	0.10	41	18
50	ISL	15.23	D	15.22	33.117	D 24.475	346.5	0.216	6.15	D	268.1	D	107.4		3.5	0.42	0.8	0.06	0.00	0.50	0.34	50	
53		14.22		14.21	33.130	24.700	325.0	0.224	5.86		256.0		100.2		3.9	0.46	1.0	0.08	0.00	0.58	0.42	53	17
64		13.02		13.01	33.205	25.003	296.3	0.259	5.29		231.4		88.4		5.4	0.64	4.2	0.16	0.01	0.32	0.29	65	16
66		12.83		12.82	33.205	25.039	292.9	0.264	5.28		230.8		87.8		6.5	0.73	5.4	0.20	0.00	0.36	0.33	67	15
75	ISL	12.24	D	12.23	33.265	D 25.201	277.7	0.292	4.79	D	208.8	D	78.7		8.6	0.91	8.7	0.10	0.00	0.24	0.25	76	
76	A	11.85		11.84	33.268	25.277	270.5	0.293	4.80		209.8		78.2		8.8	0.93	9.1	0.09	0.00	0.22	0.25	77	14
89		11.31		11.30	33.346	25.437	255.6	0.327	4.40		192.3		70.9		11.7	1.14	12.8	0.04	0.00	0.14	0.19	90	13
100	A	10.28		10.27	33.374	25.640	236.3	0.354	4.29		187.4		67.6		13.8	1.26	15.0	0.03	0.00	0.08	0.15	101	12
112		10.04		10.03	33.428	25.722	228.7	0.382	4.16		181.7		65.2		16.4	1.39	17.1	0.02	0.00	0.05	0.09	113	11
125		10.02		10.00	33.479	25.766	224.8	0.411	4.00		174.7		62.7		17.5	1.44	17.8	0.02	0.00	0.04	0.08	126	10
140		9.62		9.61	33.639	25.958	206.9	0.444	3.59		156.9		55.9		21.3	1.61	20.6	0.02	0.03	0.02	0.05	141	09
150	ISL	9.54	D	9.53	33.760	D 26.066	196.9	0.467	3.25	D	141.3	D	50.4		23.9	1.71	22.0	0.02	0.07	0.01	0.04	151	
170		9.18		9.16	33.908	26.241	180.6	0.502	2.79		121.8		43.0		29.1	1.90	24.7	0.01	0.14	0.00	0.03	171	08
199		8.89		8.87	34.038	26.388	167.1	0.553	2.32		101.4		35.6		34.1	2.06	26.8	0.01	0.02	0.00	0.03	201	07
200	ISL	8.85	D	8.83	34.047	D 26.402	165.8	0.557	2.30	D	100.1	D	35.3		34.3	2.06	26.9	0.01	0.00			202	
230		8.48		8.46	34.082	26.488	158.2	0.603	1.98	D	86.3	D	30.2		38.8	2.21	28.7	0.01	0.00			232	06
250	ISL	8.33	D	8.31	34.121	D 26.542	153.3	0.637	1.79	D	77.9	D	27.1		41.6	2.30	29.7	0.01	0.00			252	
270		8.13		8.10	34.134	26.583	149.8	0.665	1.58		68.8		23.8		44.4	2.39	30.7	0.01	0.02			272	05
300	ISL	7.80	D	7.77	34.152	D 26.646	144.2	0.712	1.36	D	59.2	D	20.4		48.1	2.53	31.8	0.01	0.07			302	
320		7.87		7.83	34.210	26.682	141.2	0.737	1.06		46.1		15.8		50.5	2.63	32.5	0.02	0.10			323	04
381		7.48		7.44	34.268	26.786	132.2	0.820	0.66		29.0		9.9		58.2	2.81	34.5	0.01	0.00			384	03
400	ISL	7.15	D	7.11	34.262	D 26.828	128.3	0.850	0.61	D	26.5	D	9.0		60.4	2.85	35.0	0.01	0.00			403	
439		7.03		6.99	34.291	26.868	125.1	0.894	0.45		19.5		6.6		64.8	2.94	36.1	0.01	0.00			443	02
500	ISL	6.40	D	6.35	34.286	D 26.949	117.6	0.975	0.38	D	16.5	D	5.5		73.2	3.01	38.0	0.01	0.00			504	
515		6.24		6.19	34.287	26.971	115.7	0.985	0.39		16.8		5.6		75.3	3.03	38.5	0.01	0.00			519	01

A) PRIMARY PRODUCTIVITY SAMPLES WERE TAKEN FROM THESE LEVELS.
D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED O2;

RV OCEANUS CALCOFI CRUISE 1511 STATION 93.3 70.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
31 30.8 N	120 14.8 W	31/10/2015	0131 UTC	3951 m	340 18 kn	330 05 05	0	1011.8 mb	19.5 C	18.2 C		0/8		011

DEPTH m		TEMP DEG C		POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L		OXYGEN µmol/Kg		OXY PCT		SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		20.14		20.14	33.229	23.377	449.5	0.000	5.27		230.6		101.3		1.6	0.30	0.0	0.01	0.00	0.11	0.03	0	
2		20.14		20.14	33.229	23.377	449.6	0.009	5.27		230.6		101.3		1.6	0.30	0.0	0.01	0.00	0.11	0.03	2	20
10		20.15		20.14	33.230	23.376	450.0	0.045	5.28		231.0		101.5		1.7	0.29	0.0	0.01	0.00	0.11	0.03	10	19
20	ISL	20.14	D	20.14	33.239	D 23.385	449.6	0.090	5.28	D	230.3	D	101.4		1.6	0.28	0.0	0.01	0.00	0.11	0.03	20	
25		20.14		20.13	33.234	23.383	450.0	0.113	5.28		231.0		101.5		1.6	0.28	0.0	0.01	0.00	0.12	0.03	25	18
30	ISL	20.12	D	20.11	33.244	D 23.396	448.9	0.136	5.27	D	230.2	D	101.3		1.7	0.28	0.0	0.01	0.00	0.13	0.04	30	
40		17.51		17.51	33.125	23.959	395.5	0.178	5.97		261.2		109.1		2.1	0.28	0.0	0.01	0.00	0.16	0.05	40	17
50		16.64		16.63	33.122	24.162	376.4	0.216	5.96		260.4		106.9		2.2	0.26	0.0	0.01	0.00	0.20	0.09	50	16
62		15.85		15.84	33.026	24.269	366.5	0.261	6.00		262.5		106.0		2.3	0.29	0.0	0.01	0.00	0.21	0.13	62	15
75		14.46		14.45	33.012	24.560	339.1	0.307	5.82		254.5		100.0		2.8	0.40	0.1	0.02	0.02	0.25	0.15	76	14
87		12.61		12.60	33.044	24.958	301.2	0.345	5.50		240.3		90.9		4.5	0.62	3.2	0.25	0.00	0.21	0.15	88	13
100	ISL	12.14	D	12.13	33.103	D 25.095	288.5	0.385	5.14	D	223.8	D	84.1		7.5	0.89	8.2	0.06	0.00	0.15	0.15	101	
101		11.91		11.90	33.094	25.131	285.0	0.386	5.11		223.4		83.3		7.7	0.91	8.6	0.05	0.00	0.15	0.15	102	12
112		10.95		10.94	33.184	25.375	261.9	0.416	4.80		210.0		76.7		10.6	1.12	12.1	0.03	0.00	0.11	0.16	113	11
125		10.33		10.31	33.219	25.512	249.0	0.450	4.66		203.8		73.5		12.9	1.24	14.3	0.03	0.00	0.09	0.10	126	10
142		9.63		9.62	33.364	25.741	227.5	0.490	4.28		187.1		66.5		17.5	1.44	17.9	0.03	0.00	0.04	0.09	143	09
150	ISL	9.49	D	9.47	33.438	D 25.822	219.9	0.510	4.13	D	179.9	D	64.0		18.9	1.50	18.9	0.02	0.00	0.03	0.07	151	
170		9.18		9.17	33.555	25.964	206.8	0.551	3.73		163.1		57.5		22.5	1.65	21.3	0.02	0.00	0.01	0.03	171	08
200		8.86		8.84	33.827	26.228	182.3	0.609	2.99		130.8		45.8		29.1	1.88	25.1	0.02	0.00	0.00	0.02	202	07
230		8.58		8.55	33.953	26.372	169.1	0.662	2.58		112.6		39.2		34.0	2.02	27.1	0.02	0.00			232	06
250	ISL	8.31	D	8.28	34.007	D 26.456	161.5	0.697	2.37	D	102.9	D	35.8		37.6	2.14	28.4	0.02	0.00			252	
270		8.11		8.08	34.043	26.515	156.1	0.727	2.06		89.9		31.0		41.2	2.25	29.7	0.02	0.00			272	05
300	ISL	7.70	D	7.67	34.083	D 26.607	147.8	0.774	1.66	D	72.3	D	24.8		47.1	2.41	31.7	0.01	0.00			302	
319		7.47		7.43	34.095	26.650	143.8	0.800	1.46		63.8		21.7		50.7	2.51	32.9	0.01	0.00			322	04
380		6.78		6.74	34.164	26.800	130.2	0.884	0.82		35.8		12.0		62.8	2.79	36.2	0.01	0.00			383	03
400	ISL	6.64	D	6.60	34.185	D 26.836	127.0	0.912	0.70	D	30.4	D	10.2		65.6	2.85	36.8	0.01	0.00			403	
440		6.34		6.30	34.216	26.900	121.2	0.959	0.52		22.7		7.5		71.2	2.97	38.0	0.02	0.02			444	02
500	ISL	5.96	D	5.92	34.257	D 26.981	114.1	1.034	0.37	D	15.9	D	5.3		79.0	3.06	39.2	0.02	0.04			504	
516		5.86		5.82	34.260	26.996	112.8	1.048	0.35		15.2		5.0		81.0	3.08	39.6	0.02	0.04			520	01

D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED O2;

RV OCEANUS CALCOFI CRUISE 1511 STATION 93.3 80.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
31 10.8 N	120 55.2 W	31/10/2015	0740 UTC	3827 m	340 14 kn			1014.3 mb	19.3 C	17.9 C				012

DEPTH m		TEMP DEG C		POTTEMP DEG C		SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg		OXY PCT		SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		20.19		20.19		33.252	23.381	449.1	0.000	5.30	231.6		101.8		1.5	0.27	0.0	0.01	0.03	0.13	0.04	0	
2		20.19		20.18		33.252	23.382	449.1	0.009	5.30	231.6		101.8		1.5	0.27	0.0	0.01	0.03	0.13	0.04	2	20
10		20.19		20.19		33.253	23.381	449.5	0.045	5.26	229.9		101.1		1.4	0.27	0.0	0.01	0.04	0.13	0.03	10	19
20	ISL	20.17	D	20.17	D	33.252	23.388	449.3	0.090	5.25	D229.2	D	101.0		1.4	0.26	0.0	0.01	0.06	0.14	0.04	20	
25		20.17		20.17		33.252	23.387	449.6	0.112	5.26	230.1		101.2		1.4	0.26	0.0	0.01	0.07	0.14	0.04	25	18
30	ISL	20.17	D	20.16	D	33.251	23.388	449.7	0.135	5.25	D229.2	D	100.9		1.5	0.26	0.0	0.01	0.00	0.14	0.04	30	
40		19.91		19.90		33.248	23.455	443.7	0.180	5.29	231.5		101.2		1.5	0.26	0.0	0.01	0.00	0.15	0.04	40	17
50	ISL	17.52	D	17.51	D	33.102	23.940	397.6	0.223	5.96	D259.9	D	108.8		2.0	0.28	0.0	0.01	0.00	0.19	0.07	50	
51		17.40		17.39		33.081	23.953	396.5	0.226	5.98	261.3		108.9		2.1	0.28	0.0	0.01	0.02	0.20	0.07	51	16
62		16.49		16.48		33.048	24.141	378.8	0.268	5.97	261.2		106.9		2.1	0.29	0.0	0.01	0.03	0.22	0.11	62	15
75	ISL	15.27	D	15.26	D	33.032	24.402	354.2	0.317	5.89	D256.8	D	102.9		2.3	0.36	0.0	0.01	0.17	0.22	0.17	76	
76		15.24		15.22		33.004	24.388	355.6	0.320	5.91	258.5		103.1		2.3	0.37	0.0	0.01	0.18	0.22	0.17	77	14
87		13.85		13.84		33.024	24.697	326.3	0.357	5.81	254.0		98.5		3.0	0.45	0.1	0.02	0.12	0.22	0.19	88	13
100		12.75		12.73		33.037	24.928	304.5	0.398	5.38	235.2		89.2		5.4	0.71	4.8	0.20	0.03	0.19	0.22	101	12
111		11.53		11.51		33.080	25.191	279.5	0.430	5.09	222.5		82.2		8.0	1.16	9.0	0.05		0.12	0.19	112	11
125	ISL	10.44	D	10.43	D	33.271	25.533	247.1	0.468	4.56	D198.6	D	72.1		12.8	1.25	14.2	0.02	0.02	0.08	0.12	126	
126		10.44		10.42		33.256	25.522	248.2	0.470	4.54	198.6		71.8		13.2	1.26	14.6	0.02	0.02	0.08	0.11	127	10
139		9.99		9.98		33.325	25.651	236.1	0.501	4.36	190.6		68.2		15.3	1.37	16.4	0.02	0.05	0.06	0.08	140	09
150	ISL	9.77	D	9.75	D	33.458	25.793	222.8	0.528	4.15	D180.5	D	64.6		18.3	1.49	18.4	0.02	0.00	0.04	0.06	151	
170		9.31		9.29		33.655	26.022	201.4	0.569	3.39	148.1		52.3		23.8	1.72	22.3	0.01	0.00	0.00	0.02	171	08
200		8.72		8.70		33.904	26.311	174.4	0.625	2.71	118.4		41.4		32.1	1.98	26.4	0.01	0.00	0.00	0.02	202	07
230		8.32		8.29		33.978	26.431	163.4	0.676	2.47	107.8		37.3									232	06
250	ISL	8.09	D	8.06	D	34.022	26.501	157.1	0.709	2.22	D 96.7	D	33.5		40.3	2.19	28.9	0.01	0.00			252	
270		7.79		7.77		34.026	26.547	152.9	0.739	2.02	88.3		30.2		43.6	2.27	30.0	0.01	0.00			272	05
300	ISL	7.55	D	7.52	D	34.066	26.615	146.9	0.786	1.72	D 74.8	D	25.6		48.4	2.42	32.0	0.01	0.00			302	
320		7.30		7.27		34.077	26.659	142.9	0.814	1.46	63.7		21.6		51.6	2.52	33.4	0.01	0.00			323	04
380		6.85		6.81		34.139	26.771	132.9	0.896	0.90	39.3		13.2		61.2	2.76	35.9	0.01	0.00			383	03
400	ISL	6.81	D	6.77	D	34.180	26.809	129.7	0.924	0.76	D 33.0	D	11.1		64.0	2.82	36.5	0.01	0.00			403	
440		6.41		6.37		34.184	26.865	124.6	0.974	0.60	26.1		8.7		69.8	2.94	37.8	0.01	0.02			444	02
500	ISL	6.05	D	6.01	D	34.244	26.960	116.2	1.048	0.43	D 18.5	D	6.1		76.6	3.04	38.9	0.01	0.04			504	
516		6.01		5.97		34.244	26.965	115.9	1.065	0.37	16.1		5.3		78.4	3.07	39.2	0.01	0.04			520	01

D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED O2;

RV OCEANUS CALCOFI CRUISE 1511 STATION 93.3 90.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
30 50.8 N	121 35.3 W	31/10/2015	1323 UTC	4093 m	360 14 kn			1015.4 mb	19.3 C	18.4 C				013

DEPTH m		TEMP DEG C		POTTEMP DEG C		SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg		OXY PCT		SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		20.10		20.10		33.259	23.409	446.5	0.000	5.28	230.6		101.3		1.7	0.26	0.0	0.01	0.00	0.13	0.04	0	
2		20.10		20.10		33.259	23.409	446.6	0.009	5.28	230.6		101.3		1.7	0.26	0.0	0.01	0.00	0.13	0.04	2	20
10		20.10		20.10		33.259	23.410	446.8	0.045	5.27	230.1		101.1		1.7	0.26	0.0	0.01	0.01	0.13	0.04	10	19
20	ISL	20.10	D	20.10	D	33.259	23.410	447.2	0.090	5.26	D229.4	D	100.9		1.7	0.27	0.0	0.01	0.00	0.13	0.04	20	
25		20.11		20.10		33.260	23.411	447.3	0.112	5.26	230.1		101.1		1.7	0.27	0.0	0.01	0.00	0.12	0.04	25	18
30	ISL	20.11	D	20.10	D	33.259	23.410	447.6	0.135	5.27	D229.9	D	101.1		1.7	0.27	0.0	0.01	0.00	0.12	0.04	30	
40		20.11		20.10		33.259	23.411	447.9	0.179	5.31	232.1		101.9		1.7	0.27	0.0	0.01	0.00	0.13	0.04	40	17
50		20.06		20.05		33.259	23.424	447.1	0.224	5.28	230.6		101.2		1.7	0.26	0.0	0.01	0.00	0.13	0.04	50	16
62		17.28		17.27		33.134	24.022	390.2	0.274	5.94	259.6		108.0		2.1	0.25	0.0	0.01	0.00	0.18	0.07	62	15
75		15.78		15.77		33.115	24.353	358.9	0.323	5.86	256.3		103.5		2.3	0.30	0.0	0.01	0.20	0.22	0.18	76	14
88		14.42		14.40		33.104	24.641	331.8	0.367	5.76	251.9		98.9		2.8	0.38	0.1	0.03	0.10	0.23	0.24	89	13
100		13.12		13.11		33.118	24.917	305.6	0.406	5.46	238.5		91.2		4.9	0.56	3.0	0.22	0.00	0.18	0.20	101	12
113		11.45		11.44		33.123	25.238	275.0	0.443	5.13	224.0		82.7		8.2	0.89	8.8	0.03	0.00	0.10	0.19	114	11
124		10.68		10.67		33.176	25.417	258.1	0.473	4.84	211.5		76.8		11.3	1.12	12.7	0.02	0.00	0.09	0.12	125	10
125	ISL	10.55	D	10.54	D	33.219	25.473	252.8	0.479	4.71	D205.0	D	74.5		11.5	1.13	12.8	0.02	0.00	0.09	0.12	126	
140		9.96		9.94		33.278	25.620	239.0	0.512	4.61	201.5		72.1		14.4	1.28	15.4	0.02	0.01	0.06	0.09	141	09
150	ISL	9.69	D	9.68	D	33.395	25.756	226.3	0.539	4.25	D185.2	D	66.2		17.4	1.41	17.5	0.02	0.10	0.04	0.07	151	
170		9.13		9.11		33.638	26.037	199.9	0.578	3.70	161.6		56.9		23.3	1.68	21.7	0.01	0.27	0.01	0.02	171	08
200		8.77		8.75		33.843	26.255	179.7	0.635	2.99	130.8		45.8		29.3	1.88	25.1	0.01	0.09	0.00	0.02	202	07
230		8.37		8.34		33.974	26.421	164.4	0.687	2.72	118.9		41.2									232	06
250	ISL	8.10	D	8.07	D	34.007	26.487	158.4	0.723	2.36	D102.5	D	35.5		38.8	2.15	28.8	0.01	0.14			252	
270		7.83		7.81		34.033	26.547	153.0	0.750	2.10	91.9		31.5		42.6	2.26	30.3	0.01	0.16			272	05
300	ISL	7.47	D	7.44	D	34.064	26.624	146.0	0.800	1.71	D 74.5	D	25.4		48.2	2.41	32.2	0.01	0.10			302	
320		7.28		7.25		34.082	26.666	142.2	0.824	1.49	64.9		22.0		51.9	2.51	33.5	0.01	0.06			323	04
380		6.60		6.56		34.127	26.795	130.5	0.906	0.93	40.5		13.5		63.3	2.80	36.6	0.01	0.36			383	03
400	ISL	6.54	D	6.50	D	34.155	26.826	127.8	0.937	0.79	D 34.3	D	11.5		66.4	2.85	37.2	0.01	0.26			403	
440		6.12		6.08		34.168	26.890	121.9	0.982	0.63	27.7		9.1		72.7	2.96	38.6	0.01	0.06			444	02
500	ISL	5.69	D	5.65	D	34.214	26.980	113.8	1.059	0.43	D 18.5	D	6.1		80.6	3.07	39.7	0.01	0.06			504	
514		5.70		5.66		34.229	26.991	113.0	1.068	0.38	16.8		5.5		82.4	3.10	40.0	0.01	0.06			518	01

D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED O2;

RV OCEANUS CALCOFI CRUISE 1511 STATION 93.4 26.4

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
32 57.0 N	117 16.7 W	29/10/2015	0315 UTC	20 m	200 05 kn			1009.1 mb	21.8 C	20.0 C				002

DEPTH m		TEMP DEG C		POTTEMP DEG C		SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg		OXY PCT		SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		21.48		21.48		33.480	23.208	465.7	0.000	5.35	234.0		105.6		2.6	0.29	0.0	0.02	0.00	0.49	0.22	0	
1		21.48		21.48		33.480	23.208	465.7	0.005	5.35	234.0		105.6		2.6	0.29	0.0	0.02	0.00	0.49	0.22	1	04
5		21.55		21.55		33.482	23.192	467.4	0.023	5.37	234.5		105.9		3.1	0.31	0.0	0.03	0.00	0.51	0.22	5	03
10		19.64		19.64		33.428	23.657	423.1	0.046	5.61	245.1		106.9		2.5	0.29	0.0	0.02	0.00	1.09	0.57	10	02
14		19.13		19.13		33.428	23.790	410.7	0.062	5.58	243.7		105.2		3.1	0.35	0.0	0.04	0.03	1.11	0.57	14	01

D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED O2;

RV OCEANUS — CALCOFI CRUISE 1511 — STATION 76.7 49.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD
35 5.3 N	120 46.6 W	08/11/2015	1352 UTC		1145 - 1735 PST	1147 PST	1730 PST	592.4 mg C/m2	051

DEPTH m	TEMP DEG C	SALINITY	SIGMA THETA	OXYGEN ml/L	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	LIGHT PCT	UPTAKE (mg C/m3) 1	2	MEAN	DARK
2	16.08	33.275	24.403	5.75	102.2	2.8	0.35	0.1	0.04	0.02	2.39	0.62		49.8	49.6	49.7	0.33
6	16.09	33.277	24.404	5.78	102.7	2.8	0.34	0.1	0.04	0.02	2.28	0.57		38.9	41.0	40.0	0.31
7	16.09	33.270	24.397	5.75	102.3	2.8	0.38	0.1	0.04	0.02	2.27	0.53		33.9	34.1	34.0	0.37
10	16.08	33.279	24.406	5.75	102.1	2.8	0.36	0.1	0.04	0.03	2.28	0.57					
13	16.04	33.274	24.414	5.77	102.4	2.8	0.36	0.1	0.04	0.03	2.41	0.60		19.4	16.5	17.9	0.32
25	15.50	33.274	24.535	5.76	101.3	3.1	0.38	0.4	0.05	0.12	3.43	0.72		1.6	0.97	1.3	0.28
31	15.21	33.270	24.595	5.71	99.8	4.0	0.45	0.9	0.12	0.20	4.03	0.71		0.62	0.68	0.65	0.30

RV OCEANUS — CALCOFI CRUISE 1511 — STATION 76.7 80.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD
34 3.3 N	122 56.5 W	07/11/2015	1724 UTC	21 m	1145 - 1740 PST	1155 PST	1737 PST	192.6 mg C/m2	046

DEPTH m	TEMP DEG C	SALINITY	SIGMA THETA	OXYGEN ml/L	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	LIGHT PCT	UPTAKE (mg C/m3) 1	2	MEAN	DARK
3	17.77	33.334	24.054	5.50	101.2	1.6	0.26	0.0	0.01	0.00	0.29	0.10	80. A	4.6	4.6	4.6	0.67
13	17.77	33.313	24.039	5.51	101.3	1.6	0.27	0.0	0.01	0.00	0.28	0.09	39.	4.5	4.6	4.5	0.55
17	17.76	33.313	24.040	5.53	101.6	1.6	0.30	0.0	0.01	0.00	0.30	0.10	29.	4.8	4.9	4.9	0.58
24	17.77	33.316	24.042	5.52	101.4	1.6	0.27	0.0	0.01	0.00	0.28	0.09					
30	17.75	33.314	24.045	5.51	101.2	1.6	0.29	0.0	0.01	0.01	0.28	0.09	11.	3.3	3.4	3.3	0.64
40	14.50	33.092	24.611	6.00	103.1	2.8	0.38	0.0	0.02	0.00	0.61	0.30					
49	13.98	33.156	24.770	5.78	98.4	3.5	0.48	0.9	0.06	0.05	0.50	0.33					
56	13.00	33.128	24.946	5.50	91.7	5.1	0.65	4.2	0.20	0.00	0.40	0.32	1.7	0.77	0.57	0.67	0.64
66	12.29	33.174	25.120	5.08	83.5	6.9	0.88	8.1	0.16	0.00	0.32	0.31					
75	10.96	33.172	25.363	4.90	78.3	10.3	1.07	12.2	0.04	0.02	0.20	0.19	0.42	0.24	0.30	0.27	0.47

RV OCEANUS — CALCOFI CRUISE 1511 — STATION 80.0 55.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD
34 19.0 N	120 48.1 W	05/11/2015	1754 UTC	15 m	1145 - 1740 PST	1147 PST	1734 PST	869.9 mg C/m2	038

DEPTH m	TEMP DEG C	SALINITY	SIGMA THETA	OXYGEN ml/L	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	LIGHT PCT	UPTAKE (mg C/m3) 1	2	MEAN	DARK
3	17.07	33.355	24.236	5.65	102.4	2.9	0.35	0.0	0.02	0.00	1.61	0.39	74. A	27.9	28.0	27.9	0.67
9	17.04	33.354	24.245	5.65	102.3	2.9	0.34	0.0	0.02	0.00	1.62	0.44	40.	28.7	31.0	29.9	0.65
12	17.03	33.354	24.246	5.63	102.0	2.8	0.33	0.0	0.02	0.00	1.66	0.44	29.	26.9	27.6	27.3	0.49
22	17.00	33.354	24.254	5.62	101.8	2.8	0.33	0.0	0.02	0.00	1.78	0.43	11.	24.0	23.5	23.8	0.55
32	14.55	33.296	24.758	5.20	89.6	6.3	0.65	4.0	0.16	0.09	1.24	0.45					
42	12.80	33.338	25.148	4.92	81.7	9.6	0.93	8.7	0.17	0.03	0.72	0.45	1.4	2.2	2.1	2.1	0.39
52	11.69	33.429	25.430	4.05	65.9	13.5	1.20	13.6	0.07	0.00	0.42	0.21	0.49	0.36	0.37	0.36	0.35

RV OCEANUS — CALCOFI CRUISE 1511 — STATION 80.0 90.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD
33 9.0 N	123 13.3 W	06/11/2015	1736 UTC	25 m	1145 - 1745 PST	1156 PST	1746 PST	235.7 mg C/m2	042

DEPTH m	TEMP DEG C	SALINITY	SIGMA THETA	OXYGEN ml/L	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	LIGHT PCT	UPTAKE (mg C/m3) 1	2	MEAN	DARK
3	17.71	33.292	24.036	5.54	101.6	1.6	0.27	0.0	0.02	0.07	0.26	0.06	83. A	4.2	4.2	4.2	0.52
10	17.71	33.291	24.035	5.54	101.7	1.6	0.27	0.0	0.01	0.00	0.24	0.07					
15	17.71	33.292	24.036	5.57	102.2	1.6	0.27	0.0	0.01	0.00	0.23	0.07	40.	4.0	4.2	4.1	0.59
20	17.70	33.292	24.041	5.56D	102.0	1.6	0.27	0.0	0.01	0.00	0.26	0.07	29.	4.3	4.4	4.3	0.62
37	15.59	33.220	24.475	5.65	99.4	1.8	0.27	0.0	0.01	0.00	0.28	0.10	10.	3.8	3.9	3.9	0.55
47	14.30	32.899	24.506	6.05	103.5	2.7	0.35	0.0	0.01	0.04	0.33	0.26					
58	14.36	33.180	24.711	5.79	99.3	3.3	0.29	0.1	0.04	0.01	0.28	0.24					
68	12.90	33.159	24.990	5.50	91.6	4.9	0.48	2.7	0.16	0.00	0.25	0.25	1.5	0.85	0.68	0.77	0.44
78	12.08	33.136	25.131	5.35	87.5	6.5	0.69	5.7	0.09	0.00	0.19	0.25					
89	11.27	33.141	25.284	5.01	80.6	9.1	0.98	10.4	0.04	0.00	0.16	0.19	0.42	0.31	0.22	0.26	0.37

RV OCEANUS — CALCOFI CRUISE 1511 — STATION 83.3 42.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD
34 10.7 N	119 30.5 W	04/11/2015	1746 UTC	21 m	1136 - 1745 PST	1142 PST	1730 PST	482.6 mg C/m2	034

DEPTH m	TEMP DEG C	SALINITY	SIGMA THETA	OXYGEN ml/L	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	LIGHT PCT	UPTAKE (mg C/m3) 1	2	MEAN	DARK
3	18.88	33.398	23.829	5.43	102.0	2.2	0.30	0.0	0.01	0.00	0.45	0.18	80.	11.8	12.7	12.3	0.48
13	18.89	33.389	23.821	5.43	102.0	2.2	0.31	0.0	0.01	0.00	0.45	0.17	39.	11.9	11.7	11.8	0.48
17	18.88	33.390	23.823	5.43	102.0	2.2	0.30	0.0	0.01	0.00	0.51	0.20	29.	12.4	12.7	12.5	0.47
24	18.81	33.385	23.838	5.45	102.1	2.2	0.30	0.0	0.01	0.00	0.52	0.19					
31	18.46	33.337	23.890	5.49	102.3	2.1	0.31	0.0	0.01	0.00	0.50	0.22	10.	9.3	9.4	9.4	0.31
40	17.08	33.246	24.154	5.63	102.0	1.9	0.32	0.0	0.02	0.02	0.78	0.55					
49	15.26	33.304	24.613	5.44	95.2	4.0	0.49	0.5	0.13	0.00	0.79	0.53		2.4	2.8	2.6	0.30
76	12.36	33.450	25.321	4.02	66.3	11.2	1.16	11.7	0.03	0.00	0.06	0.10	0.39	0.29	0.02	0.16	0.37

A) INCUBATION LIGHT INTENSITIES WERE 58.7, 38.7, 29.2, 10.7, 1.51, 0.43 PERCENT RESPECTIVELY.

RV OCEANUS CALCOFI CRUISE 1511 STATION 83.3 80.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD
32 54.7 N	122 7.7 W	09/11/2015	1826 UTC	46 m	1150 - 1745 PST	1152 PST	1741 PST	202.7 mg C/m2	056

DEPTH m	TEMP DEG C	SALINITY	SIGMA THETA	OXYGEN ml/L	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	LIGHT PCT	UPTAKE (mg C/m3) 1	2	MEAN	DARK
3	19.19	33.387	23.743	5.38	101.5	2.0	0.25	0.0	0.01	0.00	0.13	0.03	90. A	2.1	1.7	1.9	0.21
15	19.18	33.379	23.739	5.38	101.6	2.3	0.25	0.0	0.01	0.00	0.11	0.03	61.	2.1	2.2	2.1	0.16
36	19.18	33.379	23.741	5.37	101.4	2.0	0.25	0.0	0.02	0.00	0.12	0.03	30.	2.1	2.1	2.1	0.17
47	19.14	33.376	23.750	5.38	101.5	2.0	0.25	0.0	0.02	0.00	0.13	0.03					
57	16.91	33.159	24.128	5.98	107.9	2.3	0.25	0.0	0.01	0.00	0.19	0.06					
66	16.14	33.116	24.273	5.96	106.0	2.4	0.26	0.0	0.01	0.00	0.18	0.08	11.	2.0	1.8	1.9	0.16
87	14.83	33.127	24.571	5.83	101.0	2.9	0.31	0.0	0.01	0.01	0.24	0.18					
107	11.96	33.181	25.191	5.32	86.9	6.1	0.67	4.8	0.13	0.04	0.18	0.16					
126	10.51	33.295	25.539	4.52	71.6	12.7	1.25	14.5	0.03	0.00	0.08	0.10	1.5	0.32	0.19	0.25	0.19
137	9.93	33.321	25.658	4.55	71.0	15.0	1.31	15.7	0.02	0.00	0.05	0.07					
150	9.55	33.426	25.803	4.30	66.7	17.6	1.43	18.0	0.02	0.00	0.03	0.04					
163	9.30	33.541	25.934	4.14	63.8	20.0	1.48	19.4	0.02	0.00	0.01	0.05	0.43	0.01	0.01	0.01	0.15

RV OCEANUS CALCOFI CRUISE 1511 STATION 86.7 33.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD
33 53.4 N	118 29.4 W	03/11/2015	1749 UTC	31 m	1140 - 1730 PST	1137 PST	1728 PST	247.9 mg C/m2	028

DEPTH m	TEMP DEG C	SALINITY	SIGMA THETA	OXYGEN ml/L	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	LIGHT PCT	UPTAKE (mg C/m3) 1	2	MEAN	DARK
19	18.20	33.321	23.941	5.75	106.5	2.0	0.27	0.0	0.00	0.00	0.36	0.14	39.	7.8	7.3	7.6	0.63
2	20.20	33.447	23.526	5.43	104.6	1.7	0.24	0.0	0.00	0.00	0.28	0.09	91.	8.1	8.1	8.1	0.53
10	19.98	33.428	23.571	5.47	104.8	1.8	0.25	0.0	0.00	0.00	0.28	0.12					
25	17.27	33.243	24.106	5.89	107.2	2.6	0.33	0.0	0.00	0.00	0.43	0.22	29.	7.6	8.1	7.8	0.41
35	16.05	33.246	24.392	5.62	99.9	3.6	0.42	0.6	0.21	0.00	0.51	0.33					
45	15.17	33.282	24.616	5.24	91.5	5.0	0.57	2.4	0.38	0.00	0.33	0.30	11.	3.5	3.5	3.5	0.39
51	14.96	33.319	24.689	4.90	85.2	6.6	0.70	4.1	0.31	0.00	0.23	0.31	8.0	0.76	0.69	0.72	0.41

RV OCEANUS CALCOFI CRUISE 1511 STATION 86.7 70.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD
32 39.4 N	121 2.0 W	11/11/2015	1813 UTC	26 m	1150 - 1730 PST	1148 PST	1728 PST	216.1 mg C/m2	064

DEPTH m	TEMP DEG C	SALINITY	SIGMA THETA	OXYGEN ml/L	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	LIGHT PCT	UPTAKE (mg C/m3) 1	2	MEAN	DARK
2	18.38	33.314	23.888	5.46	101.5	1.6	0.28	0.0	0.02	0.00	0.19	0.06	89. A	4.0	4.0	4.0	0.32
10	18.38	33.304	23.882	5.47	101.8	1.6	0.27	0.0	0.02	0.01	0.18	0.06					
15	18.38	33.303	23.882	5.47	101.7	1.5	0.29	0.0	0.02	0.02	0.19	0.06	41.	3.6	3.7	3.7	0.26
21	18.38	33.309	23.887	5.48	101.9	1.5	0.28	0.0	0.02	0.00	0.20	0.06	29.	4.3	3.7	4.0	0.25
39	18.29	33.313	23.914	5.45	101.2	1.5	0.28	0.0	0.02	0.00	0.19	0.07	10.0	3.2	2.9	3.0	0.30
50	15.18	33.153	24.513	6.00	104.6	2.0	0.34	0.0	0.01	0.01	0.29	0.19					
61	13.97	33.151	24.768	5.70	97.0	3.7	0.44	1.0	0.10	0.00	0.37	0.31					
71	12.32	33.145	25.093	5.38	88.5	5.6	0.63	4.4	0.15	0.00	0.23	0.36	1.5	0.91	0.67	0.79	0.27
82	11.02	33.155	25.338	4.97	79.5	9.4	0.97	10.5	0.03	0.00	0.16	0.18					
92	10.62	33.201	25.446	4.79	76.0	11.3	1.11	12.7	0.03	0.00	0.12	0.15	0.44	0.17	0.19	0.18	0.20

RV OCEANUS CALCOFI CRUISE 1511 STATION 86.7 110.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD
31 19.4 N	123 44.6 W	10/11/2015	1742 UTC	35 m	1200 - 1739 PST	1159 PST	1737 PST	142.9 mg C/m2	060

DEPTH m	TEMP DEG C	SALINITY	SIGMA THETA	OXYGEN ml/L	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	LIGHT PCT	UPTAKE (mg C/m3) 1	2	MEAN	DARK
2	19.91	33.489	23.634	5.29	101.3	2.0	0.26	0.0	0.01		0.12	0.06	92. A	1.9	2.0	2.0	0.17
13	19.91	33.480	23.628	5.28	101.2	2.0	0.24	0.0	0.01	0.00	0.14	0.02					
22	19.91	33.487	23.635	5.30	101.5	2.0	0.26	0.0	0.01	0.00	0.12	0.02	38.	1.8	1.6	1.7	0.15
27	19.91	33.491	23.638	5.29	101.4	2.0	0.25	0.0	0.00	0.00	0.11	0.03	31.	1.8	1.9	1.9	0.15
40	19.91	33.482	23.633	5.30	101.4	2.0	0.25	0.0	0.00	0.00	0.12	0.03					
51	19.90	33.480	23.635	5.29	101.3	2.0	0.25	0.0	0.00	0.00	0.22	0.07	11.	1.5	1.4	1.4	0.15
67	17.73	33.342	24.075	5.81	106.7	2.2	0.24	0.0	0.00	0.00	0.22	0.23					
81	17.04	33.383	24.271	5.73	103.9	2.3	0.25	0.0	0.00	0.00	0.21	0.20					
96	16.02	33.394	24.515	5.57	99.0	2.7	0.30	0.2	0.06	0.00	0.20	0.23	1.5	0.63	0.50	0.56	0.13
104	15.44	33.360	24.619	5.51	96.7	3.1	0.34	0.5	0.13	0.00	0.21	0.15					
115	14.09	33.304	24.866	5.43	92.6	3.8	0.44	1.6	0.19	0.00	0.16	0.14					
122	13.37	33.225	24.952	5.36	90.1	4.6	0.56	3.3	0.05	0.00	0.13	0.10	0.47	0.08	0.10	0.09	0.15

RV OCEANUS CALCOFI CRUISE 1511 STATION 90.0 45.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD
32 55.1 N	118 56.3 W	02/11/2015	1733 UTC	26 m	1145 - 1730 PST	1139 PST	1726 PST	294.9 mg C/m2	020

DEPTH m	TEMP DEG C	SALINITY	SIGMA THETA	OXYGEN ml/L	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	LIGHT PCT	UPTAKE (mg C/m3) 1	2	MEAN	DARK
3	20.90	33.485	23.369	5.20	101.3	1.7	0.24	0.1	0.01	0.00	0.18	0.04	84. A	5.1	4.9	5.0	0.31
10	20.90	33.484	23.370	5.17	100.9	1.7	0.25	0.1	0.01	0.01	0.18	0.05					
16	20.87	33.482	23.377	5.22	101.7	1.7	0.26	0.1	0.01	0.01	0.18	0.05	39.	4.4	5.1	4.8	0.29
21	20.41	33.426	23.456	5.27	101.8	1.6	0.27	0.1	0.01	0.01	0.20	0.05	29.	4.9	4.9	4.9	0.31
32	19.03	33.309	23.725	5.50	103.5	1.3	0.29	0.1	0.01	0.01	0.27	0.11					
38	16.62	33.171	24.204	5.87	105.4	1.4	0.33	0.0	0.01	0.02	0.39	0.22	11.	5.4	5.5	5.4	0.40
55	13.01	33.148	24.960	5.37	89.6	5.5	0.65	4.5	0.27	0.02	0.73	0.40					
72	11.45	33.314	25.386	4.48	72.3	11.9	1.12	12.2	0.09	0.02	0.12	0.15	1.4	0.36	0.48	0.42	0.30
82	11.21	33.360	25.466	4.32	69.5	13.0	1.19	13.5	0.05	0.00	0.09	0.13					
92	10.90	33.416	25.565	4.13	65.9	14.6	1.29	15.0	0.03	0.00	0.07	0.11	0.44	0.11	0.04	0.07	0.27

A) INCUBATION LIGHT INTENSITIES WERE 58.7, 38.7, 29.2, 10.7, 1.51, 0.43 PERCENT RESPECTIVELY.

RV OCEANUS CALCOFI CRUISE 1511 STATION 90.0 70.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD
32 5.1 N	120 38.3 W	01/11/2015	1646 UTC	31 m	1145 - 1737 PST	1146 PST	1737 PST	224.7 mg C/m2	017

DEPTH m	TEMP DEG C	SALINITY	SIGMA THETA	OXYGEN ml/L	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	LIGHT PCT	UPTAKE (mg C/m3) 1	2	MEAN	DARK
3	19.90	33.290	23.487	5.28	101.1	1.4	0.28	0.0	0.01	0.02	0.14	0.01	86. A	3.2	3.3	3.2	0.37
11	19.89	33.289	23.488	5.29	101.2	1.5	0.28	0.0	0.01	0.03	0.13	0.03					
19	19.81	33.304	23.521	5.29	101.0	1.5	0.27	0.0	0.01	0.02	0.17	0.00	39.	2.9	3.7	3.3	0.30
25	19.81	33.304	23.523	5.29	101.1	1.5	0.26	0.0	0.01	0.01	0.21	0.01	29.	3.1	3.1	3.1	0.50
35	19.01	33.288	23.714	5.42	102.0	1.6	0.27	0.0	0.01	0.01	0.32	0.01					
45	16.23	33.116	24.251	5.95	105.9	2.2	0.27	0.0	0.01	0.02	0.41	0.05	11.	3.3	2.7	3.0	0.32
58	15.60	33.106	24.385	5.90	103.8	2.4	0.29	0.0	0.01	0.02	0.35	0.18					
71	14.09	33.110	24.713	5.75	98.0	3.2	0.45	0.6	0.09	0.03	0.39	0.18					
86	12.55	33.122	25.031	5.31	87.7	6.2	0.71	5.4	0.09	0.02	0.24	0.13	1.4	0.65	0.68	0.67	0.27
93	11.83	33.124	25.168	5.22	84.9	6.8	0.78	6.6	0.07	0.02	0.21	0.17					
101	10.89	33.130	25.343	5.02	80.0	9.6	1.01	10.6	0.03	0.01	0.16	0.10					
110	10.33	33.165	25.468	4.90	77.2	11.3	1.13	12.4	0.03	0.05	0.12	0.12	0.43	0.02	0.04	0.03	0.37

RV OCEANUS CALCOFI CRUISE 1511 STATION 93.3 40.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD
32 30.8 N	118 12.9 W	29/10/2015	1807 UTC	22 m	1230 - 1745 PST	1137 PST	1734 PST	162.4 mg C/m2	007

DEPTH m	TEMP DEG C	SALINITY	SIGMA THETA	OXYGEN ml/L	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	LIGHT PCT	UPTAKE (mg C/m3) 1	2	MEAN	DARK
3	22.36	33.575	23.036	5.05	101.3	2.0	0.26	0.0	0.01	0.00	0.18	0.02	81. A	4.0	3.9	3.9	0.32
10	22.37	33.579	23.038	5.09	102.1	2.1	0.29	0.0	0.01	0.00	0.17	0.03					
13	22.36	33.576	23.038	5.06	101.4	1.9	0.24	0.0	0.01	0.00	0.16	0.04	40.	1.5	2.9	2.2	0.35
18	22.37	33.586	23.045	5.06	101.5	1.9	0.26	0.0	0.01	0.00	0.20	0.03	28.	3.3	3.0	3.1	0.37
32	20.35	33.547	23.566	5.13	99.0	2.0	0.27	0.0	0.01	0.00	0.32	0.15	11.	2.8	2.5	2.7	0.31
41	16.73	33.244	24.234	5.87	105.6	2.4	0.36	0.0	0.01	0.00	0.67	0.30					
50	15.78	33.206	24.421	5.89	104.0	2.7	0.39	0.0	0.04	0.00	0.40	0.26					
60	14.55	33.289	24.754	5.35	92.3	4.4	0.55	1.9	0.11	0.00	0.20	0.20	1.5	1.2	1.1	1.1	0.27
70	13.80	33.313	24.930	4.91	83.4	6.4	0.75	5.4	0.12	0.00	0.16	0.17					
78	12.93	33.319	25.109	4.73	78.9	7.5	0.83	7.2	0.06	0.00	0.14	0.15	0.43	0.21	0.26	0.23	0.26

RV OCEANUS CALCOFI CRUISE 1511 STATION 93.3 60.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD
31 50.8 N	119 34.3 W	30/10/2015	1927 UTC	28 m	1235 - 1800 PST	1142 PST	1739 PST	204.2 mg C/m2	010

DEPTH m	TEMP DEG C	SALINITY	SIGMA THETA	OXYGEN ml/L	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	LIGHT PCT	UPTAKE (mg C/m3) 1	2	MEAN	DARK
3	20.68	33.426	23.384	5.24	101.7	1.6	0.37	0.0	0.01	0.00	0.15	0.05	85. A	3.0	3.1	3.0	0.43
10	20.67	33.422	23.383	5.26	102.1	1.6	0.26	0.0	0.01	0.04	0.15	0.04					
17	20.65	33.423	23.390	5.26	102.0	1.6	0.29	0.0	0.01	1.00	0.16	0.04	39.	2.6	2.6	2.6	0.56
22	20.64	33.423	23.395	5.25	101.9	1.6	0.25	0.0	0.01	0.00	0.16	0.05	30.	3.5	2.8	3.1	0.46
32	20.62	33.422	23.401	5.25	101.9	1.6	0.26	0.0	0.01	0.00	0.17	0.04					
41	17.82	33.311	24.026	5.78	106.3	2.4	0.31	0.0	0.01	0.00	0.26	0.10	11.	3.3	3.4	3.3	0.36
53	14.22	33.130	24.700	5.86	100.2	3.9	0.46	1.0	0.08	0.00	0.58	0.42					
64	13.02	33.205	25.003	5.29	88.4	5.4	0.64	4.2	0.16	0.01	0.32	0.29					
66	12.83	33.205	25.039	5.28	87.8	6.5	0.73	5.4	0.20	0.00	0.36	0.33					
76	11.85	33.268	25.277	4.80	78.2	8.8	0.93	9.1	0.09	0.00	0.22	0.25	1.6	0.69	0.67	0.68	0.37
89	11.31	33.346	25.437	4.40	70.9	11.7	1.14	12.8	0.04	0.00	0.14	0.19					
100	10.28	33.374	25.640	4.29	67.6	13.8	1.26	15.0	0.03	0.00	0.08	0.15	0.42	0.13	0.11	0.12	0.33

A) INCUBATION LIGHT INTENSITIES WERE 58.7, 38.7, 29.2, 10.7, 1.51, 0.43 PERCENT RESPECTIVELY.

CalCOFI Cruise 1511

MACROZOOPLANKTON BIOMASS
Net Mesh Size: 0.505mm

Line	Sta.	Latitude N	Longitude W	Date Mo/Day	Time (PST) Start	Time (PST) End	Water Volume Strained (m^3)	Max. Tow Depth (m)	Volume per 1000 m^3 Strained Total (cm^3)	Volume per 1000 m^3 Strained Small (cm^3)
76.7	49.0	35 05.3	120 46.6	11/08	0649	0654	129	41	109	109
76.7	51.0	35 01.3	120 55.1	11/08	0420	0441	462	171	89	43
76.7	55.0	34 53.3	121 11.9	11/08	0103	0125	409	210	56	56
76.7	60.0	34 43.3	121 32.9	11/07	2109	2131	422	214	69	69
76.7	70.0	34 23.3	122 14.7	11/07	1518	1540	478	202	46	36
76.7	80.0	34 03.3	122 56.5	11/07	0833	0855	378	218	21	21
76.7	90.0	33 43.3	123 38.0	11/07	0341	0404	413	207	56	56
76.7	100.0	33 23.3	124 19.4	11/06	2151	2213	453	208	35	35
80.0	51.0	34 27.0	120 31.5	11/05	0746	0752	124	40	64	64
80.0	55.0	34 19.0	120 48.1	11/05	1129	1151	448	199	13	13
80.0	60.0	34 09.1	121 09.0	11/05	1546	1608	457	208	35	35
80.0	70.0	33 49.0	121 50.6	11/05	2137	2159	504	211	48	48
80.0	80.0	33 29.0	122 32.0	11/06	0328	0350	446	205	45	45
80.0	90.0	33 09.0	123 13.3	11/06	0843	0905	409	211	27	27
80.0	100.0	32 49.0	123 54.4	11/06	1558	1619	455	207	51	51
81.7	43.5	34 24.2	119 48.0	11/04	0717	0719	51	12	20	20
81.8	46.9	34 16.4	120 01.6	11/04	1839	1901	417	212	26	26
83.3	39.4	34 15.9	119 19.7	11/04	0404	0406	56	10	36	36
83.3	40.6	34 13.0	119 24.6	11/04	1318	1321	70	28	28	28
83.3	42.0	34 10.7	119 30.5	11/04	1112	1124	236	114	8	8
83.3	51.0	33 52.7	120 08.0	11/08	1605	1614	182	88	22	22
83.3	55.0	33 44.7	120 24.6	11/08	1944	2006	417	211	34	34
83.3	60.0	33 34.7	120 45.3	11/08	2342	0004	380	213	66	66
83.3	70.0	33 14.7	121 26.5	11/09	0550	0612	439	209	46	46
83.3	80.0	32 54.7	122 07.7	11/09	1142	1204	431	206	42	19
83.3	90.0	32 34.7	122 48.9	11/09	1720	1742	442	210	104	27
83.3	100.0	32 14.7	123 29.5	11/09	2303	2325	422	213	90	52
83.3	110.0	31 54.7	124 10.2	11/10	0448	0510	412	204	46	29
86.7	33.0	33 53.4	118 29.4	11/03	1054	1058	82	34	49	49
86.7	35.0	33 49.4	118 37.7	11/03	1332	1354	458	204	15	4
86.7	40.0	33 39.3	118 58.4	11/03	1758	1820	413	218	24	24
86.7	45.0	33 29.4	119 19.1	11/12	0511	0533	395	208	28	28
86.7	50.0	33 19.4	119 39.8	11/12	0128	0134	120	54	75	50
86.7	55.0	33 09.4	120 00.4	11/11	2158	2219	397	212	50	50
86.7	60.0	32 59.4	120 20.9	11/11	1749	1811	394	213	51	46
86.7	70.0	32 39.4	121 02.0	11/11	1142	1204	433	204	23	23
86.7	80.0	32 19.4	121 42.9	11/11	0447	0508	422	207	38	38
86.7	90.0	31 59.4	122 23.6	11/10	2238	2259	464	210	19	19
86.7	100.0	31 39.4	123 04.2	11/10	1644	1705	455	206	11	11
86.7	110.0	31 19.4	123 44.6	11/10	1052	1114	422	211	9	9
86.8	32.5	33 53.3	118 26.7	11/03	0847	0849	43	14	47	47
88.5	30.1	33 40.4	118 05.1	11/03	0445	0446	38	14	186	186
90.0	27.7	33 29.6	117 44.8	11/03	0212	0213	38	15	160	160
90.0	28.0	33 29.1	117 46.1	11/03	0100	0109	226	87	27	27
90.0	30.0	33 25.1	117 54.3	11/02	2233	2255	426	209	91	28
90.0	35.0	33 15.1	118 15.0	11/02	1813	1834	475	202	97	17
90.0	37.0	33 11.0	118 23.2	11/02	1511	1532	412	214	12	12
90.0	45.0	32 55.1	118 56.3	11/02	0824	0846	432	206	32	32
90.0	53.0	32 39.1	119 28.9	11/02	0306	0328	510	207	77	77
90.0	60.0	32 25.1	119 57.5	11/01	1753	1814	423	212	31	31
90.0	70.0	32 05.1	120 38.3	11/01	1028	1050	413	201	22	22
90.0	80.0	31 45.1	121 18.9	11/01	0411	0432	444	188	29	29
90.0	90.0	31 25.1	121 59.4	10/31	2223	2244	402	211	30	30
90.0	100.0	31 05.1	122 39.1	10/31	1409	1431	422	212	26	26
91.7	26.4	33 14.8	117 27.8	10/28	1643	1645	44	15	45	45
93.3	26.7	32 57.4	117 18.3	10/28	2106	2117	268	104	37	37
93.3	28.0	32 54.8	117 23.7	10/28	2324	2346	460	216	63	22
93.3	30.0	32 50.8	117 31.9	10/29	0221	0242	480	201	94	17
93.3	35.0	32 40.7	117 52.4	10/29	0707	0729	443	206	5	5
93.3	40.0	32 30.8	118 12.8	10/29	1150	1211	497	191	14	10
93.3	45.0	32 20.8	118 33.2	11/12	1922	1944	431	214	49	49
93.3	50.0	32 10.8	118 53.6	11/12	1546	1607	440	203	34	34
93.3	55.0	32 00.8	119 14.1	10/30	0830	0852	433	212	14	14
93.3	60.0	31 50.8	119 34.3	10/30	1238	1300	475	192	21	21
93.3	70.0	31 30.8	120 14.8	10/30	1852	1913	384	226	31	31
93.3	80.0	31 10.8	120 55.2	10/31	0047	0108	431	199	33	33
93.3	90.0	30 50.8	121 35.3	10/31	0640	0701	377	213	21	21
93.4	26.4	32 57.0	117 16.8	10/28	1930	1932	53	14	38	38