UNIVERSITY OF CALIFORNIA, SAN DIEGO SCRIPPS INSTITUTION OF OCEANOGRAPHY

data report

CalCOFI Cruise 1404
28 March –18 April 2014

CC Reference 15 - 01
2 June 2015

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 4

Literature Cited 8

CalCOFI Cruise 1404

List of Figures 10

Personnel 21

Tabulated Rosette Cast Data 22

Tabulated Primary Productivity Data 50

Tabulated Macrozooplankton Data 53

INTRODUCTION

The data presented in this report were collected during cruise 1404* of the California Cooperative Oceanic Fisheries Investigations (CalCOFI) program aboard the Stabbert Maritime ship RV Ocean Starr. 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 P152. 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.

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* 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 corrections were performed in each run using a high standard 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 used to adjust values for nitrate, nitrite, phosphate, and silicate if appropriate. 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 9.481 µCi of ^{14}C as $NaHCO_3$ (50µl 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).

Avifauna Observations (Farallon Institute of Advanced Ecosystem Research)

Sea birds were counted within a 300-meter wide strip off to one side of the ship. Counts were made while underway between stations during periods of daylight. These counts were summed over 20 nautical mile (nm) intervals, or the distance between consecutive stations, whichever was less.

Ancillary Programs

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

1) 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)

2) 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)

3) 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 9 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)

4) Inorganic Carbon System: The CalCOFI group collected samples for the characterization of the inorganic carbon system at selected locations along the cruise track with 13 profile and 9 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)

5) 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)

6) *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 and chlorophyll max are collected along lines 80 and 90. (A. Allen, SIO and JCVI)

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 defined below each station, special notations are used for regularly occurring notations:

D: CTD value is listed in place of shipboard analyzed bottle data and is further defined as a footnote.

ISL: After a depth value indicates that this is an interpolated or extrapolated standard level, CTD values are used while nutrient and chlorophyll values are interpolated or extrapolated.

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

*: All nutrients values below detection limits have been zeroed.

REFERENCES

Anderson, G. C., compiler, 1971. "Oxygen Analysis," Marine Technician's Handbook, SIO Ref. No. 71-8, Sea Grant Pub. No. 9.

Armstrong, F.A.J., C. R. Stearns, and J. D. H. Strickland, 1967. The measurement of upwelling and subsequent biological processes by means of the Technicon Autoanalyzer and associated equipment, *Deep-Sea Res.*, 14: 381-389.

Carpenter, J. H., 1965. The Chesapeake Bay Institute technique for the Winkler dissolved oxygen method. *Limnol. Oceanogr., 10*: 141-143.

Carter, D. J. T., 1980. Echo-sounding correction tables. Third Edition. Hydrographic Department, Ministry of Defence, Taunton, U.K., NP 139: 150 pp.

Culberson, C. H. 1991. Dissolved oxygen. WHP Operations and Methods -- July 1991.

Fitzwater, S. E., G. A. Knauer and J. H. Martin, 1982. Metal contamination and its effect on primary production measurements. *Limnol. Oceanogr., 27*: 544-551.

Gordon, L. I., J. C. Jennings, Jr., A. A. Ross, and J. M. Krest, 1993. A suggested protocol for continuous flow automated analysis of seawater nutrients (phosphate, nitrate, nitrite and silicic acid) in the WOCE Hydrographic Program and the Joint Global Ocean Fluxes Study. WOCE Operations Manual, Part 3.1.3 "WHP Operations and Methods," *WHP Office Report WHPO 91-1*.

Holm-Hansen, O., C. J. Lorenzen, R. W. Holmes and J. D. H. Strickland, 1965. Fluorometric determination of chlorophyll. *J. Cons. perm. int. Explor. Mer, 30*: 3-15.

Kérouel, R. and A. Aminot, 1997. Fluorometric determination of ammonia in sea and estuarine waters by direct segmented flow analysis. *Marine Chemistry*, 57: 265-275.

Klein, H. T., 1973. A new technique for processing physical oceanographic data. SIO Ref. No. 73-14.

Kramer, D., M. J. Kalin, E. G. Stevens, J. R. Thrailkill and J. R. Zweifel, 1972. Collecting and processing data on fish eggs and larvae in the California Current region. *NOAA Technical Report NMFS CIRC-370:* 38 pp.

Lean, D. R. S. and B. K. Burnison, 1979. An evaluation of errors in the ^{14}C method of primary production measurement. *Limnol. Oceanogr., 24*: 917-928.

Murphy, J. and J. P. Riley, 1962. A modified single solution method for the determination of phosphate in natural waters. *Anal. Chim. Acta*, 27: 31-36.

Reid, J. L. and A. W. Mantyla, 1976. The effect of the geostrophic flow upon coastal sea elevations in the northern North Pacific Ocean. *J. Geophys. Res., 81:* 3100-3110.

Parsons, T. R., Y. Maita, C. M. Lalli, 1984. *A Manual of Chemical and Biological Methods for Seawater Analysis*. Pergamon Press Ltd., 3-28.

Saunders, P. M., 1981. Practical conversion of pressure to depth. *J. Phys. Oceanogr., 11*: 573-574.

Scripps Institution of Oceanography, University of California, 1991. Physical, Chemical and Biological Data, CalCOFI Cruises 9003 and 9004. SIO Ref. 91-4, 96 pp.

UNESCO, 1981, a. Background papers and supporting data on the Practical Salinity Scale, 1978. *UNESCO Tech. Pap. in Mar. Sci., No. 37*.

UNESCO, 1981, b. Background papers and supporting data on the International Equation of State 1980. *UNESCO Tech. Pap. in Mar. Sci., No. 38.*

Venrick, E. L. and T. L. Hayward, 1984. Determining chlorophyll on the 1984 CalCOFI surveys. *CalCOFI Rep., Vol. XXV*: 74-79.

Weiss, R. F., 1970. The solubility of nitrogen, oxygen and argon in water and seawater. *Deep-Sea Res., 17:* 721-735.

Yentsch, C. S. and D. W. Menzel, 1963. A method for the determination of phytoplankton, chlorophyll and phaeophytin by fluorescence. *Deep-Sea Res., 10:* 221-231.

FIGURES

Cruise 1404

1. CalCOFI Cruise 1404 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.

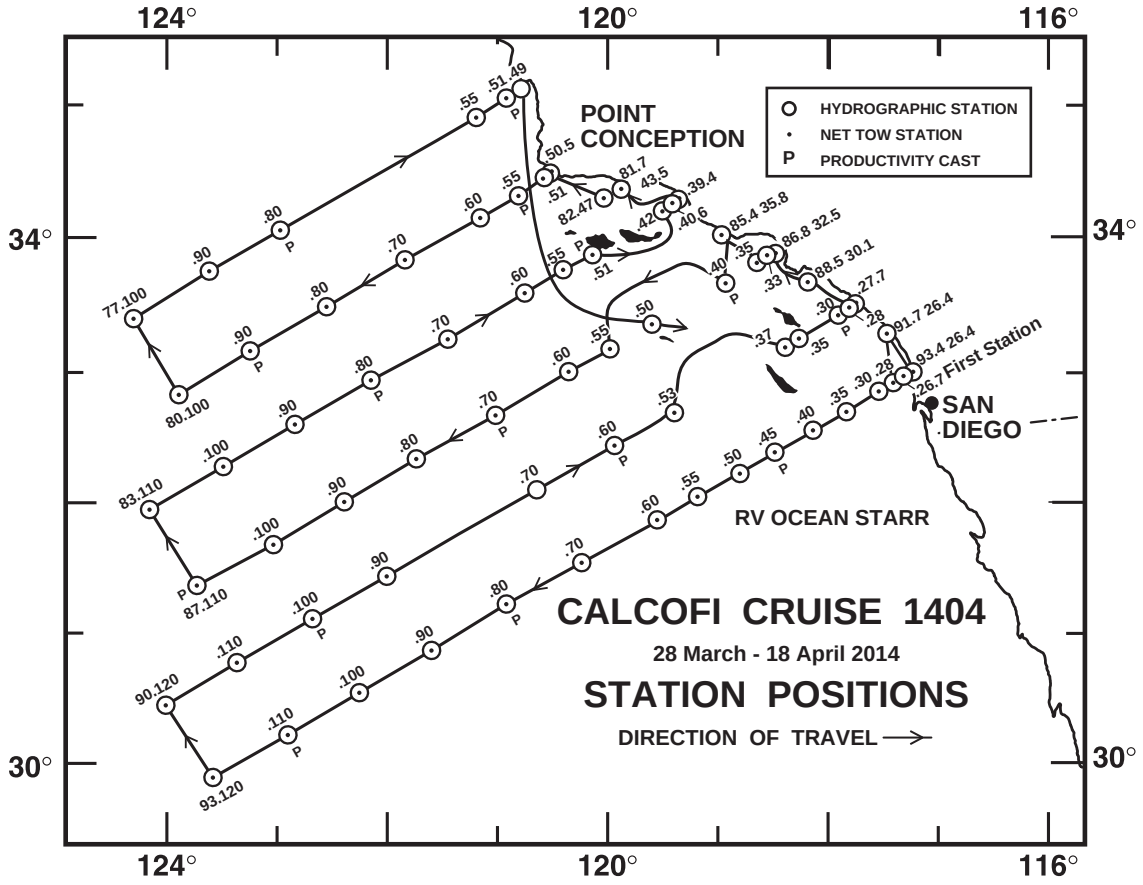

FIGURE 1

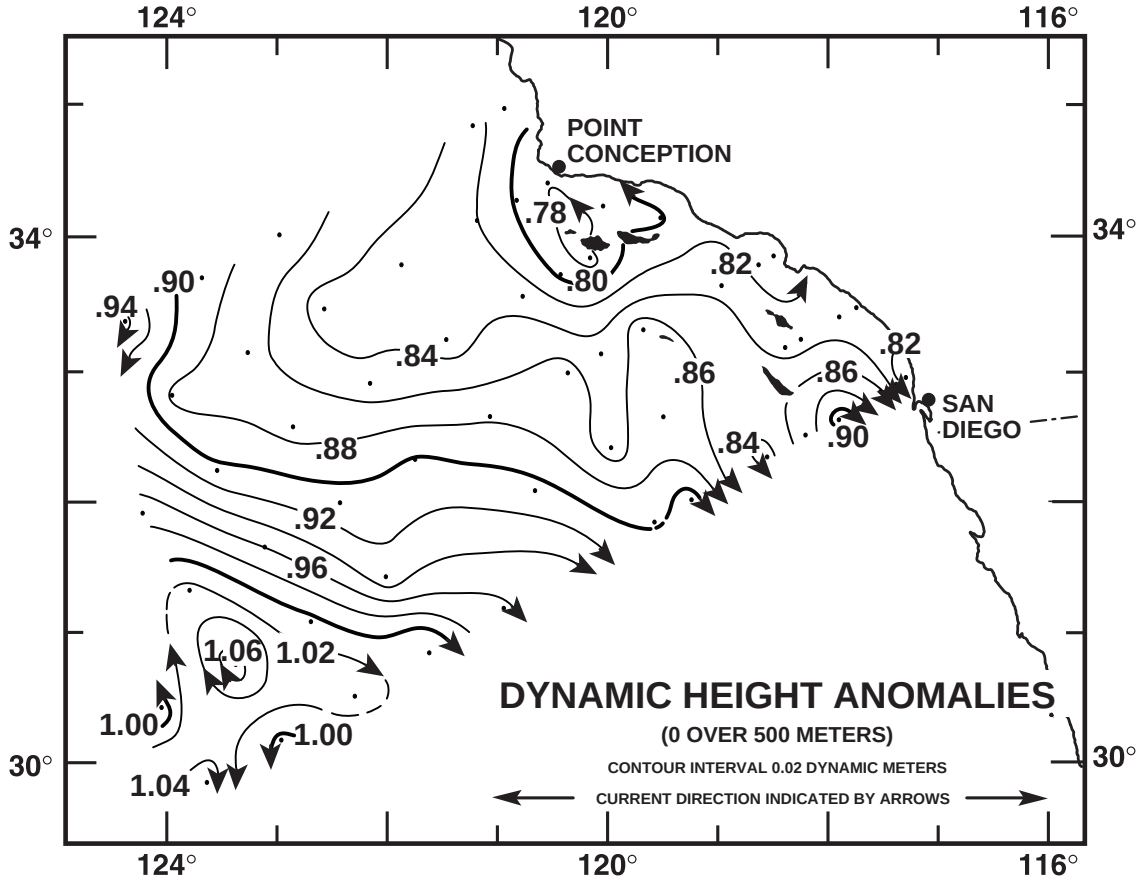

FIGURE 2

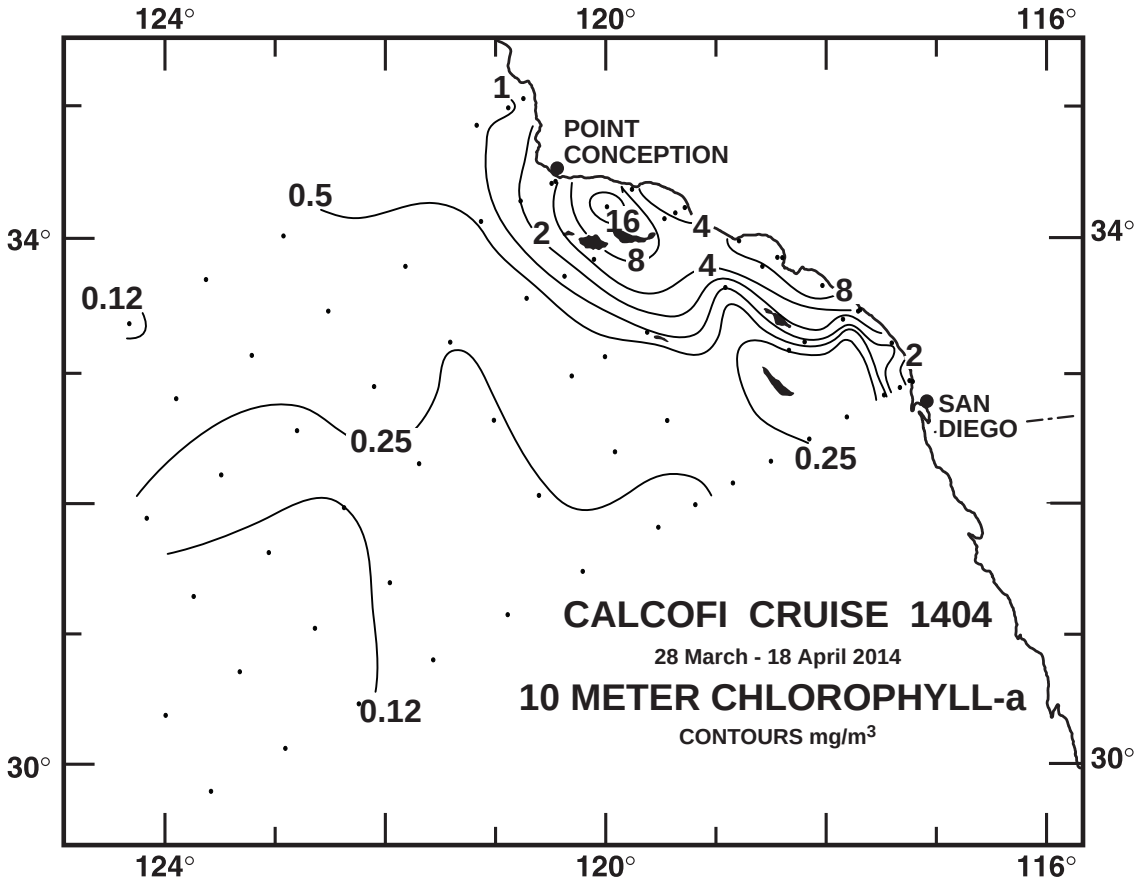

FIGURE 3A

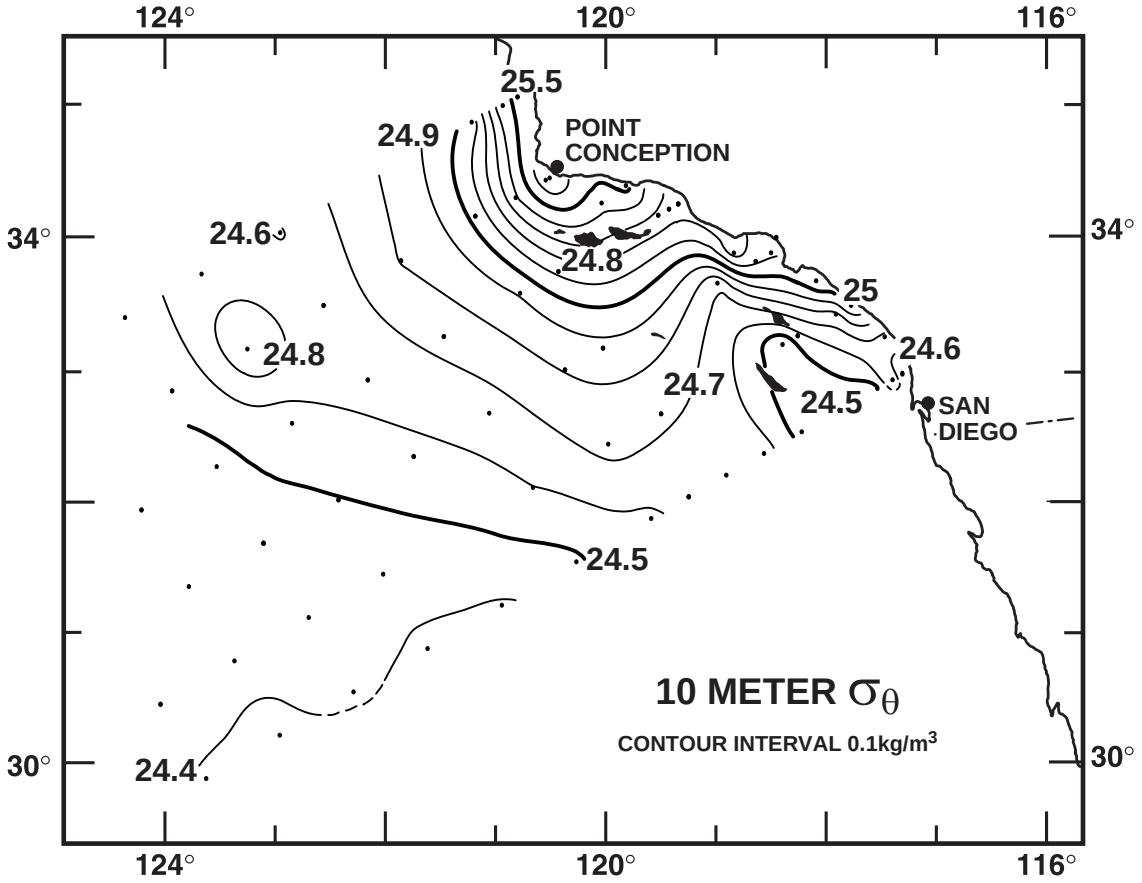

FIGURE 3B

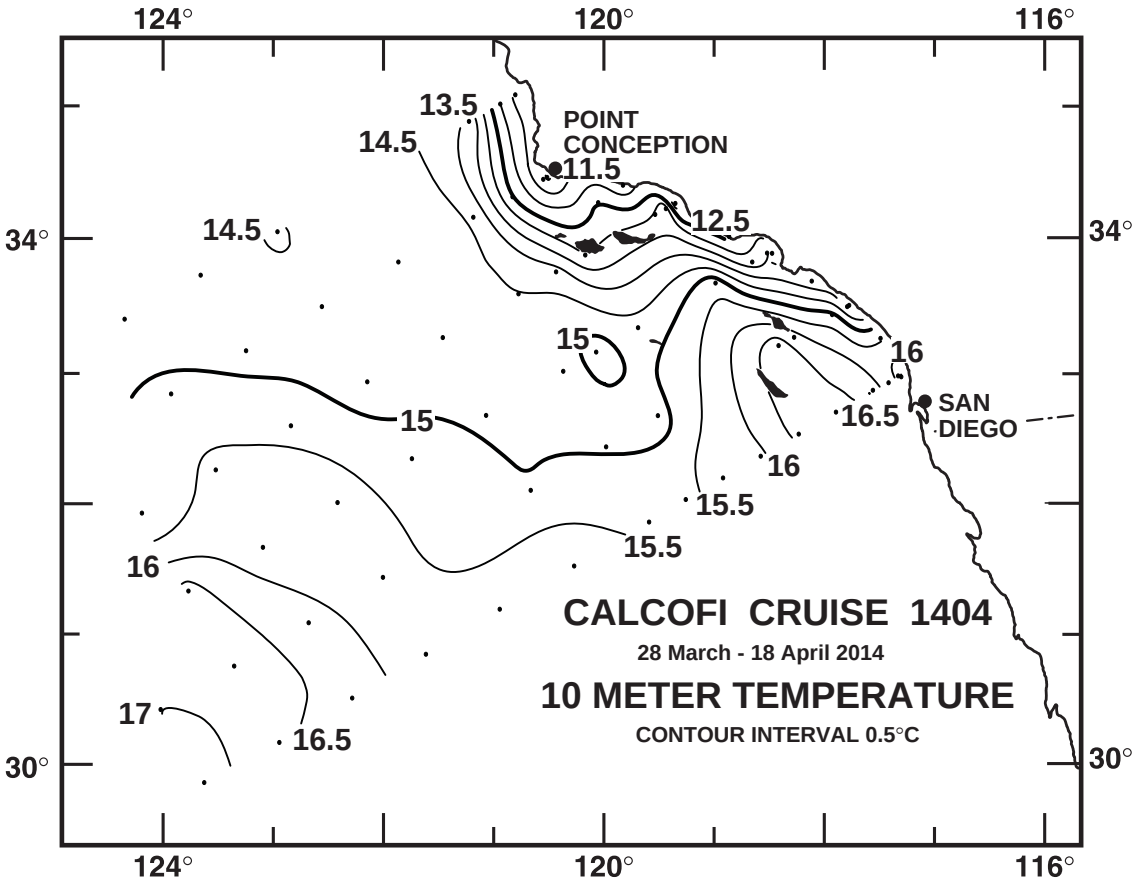

FIGURE 3C

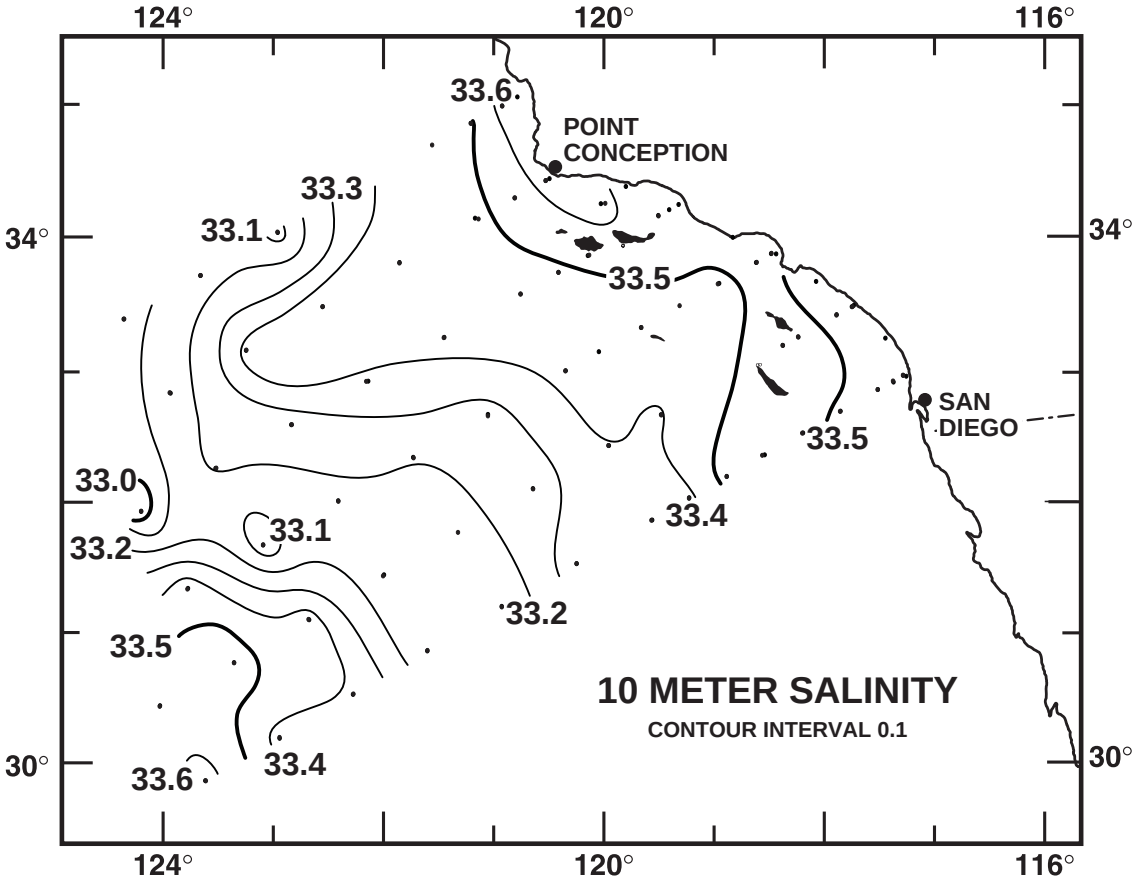

FIGURE 3D

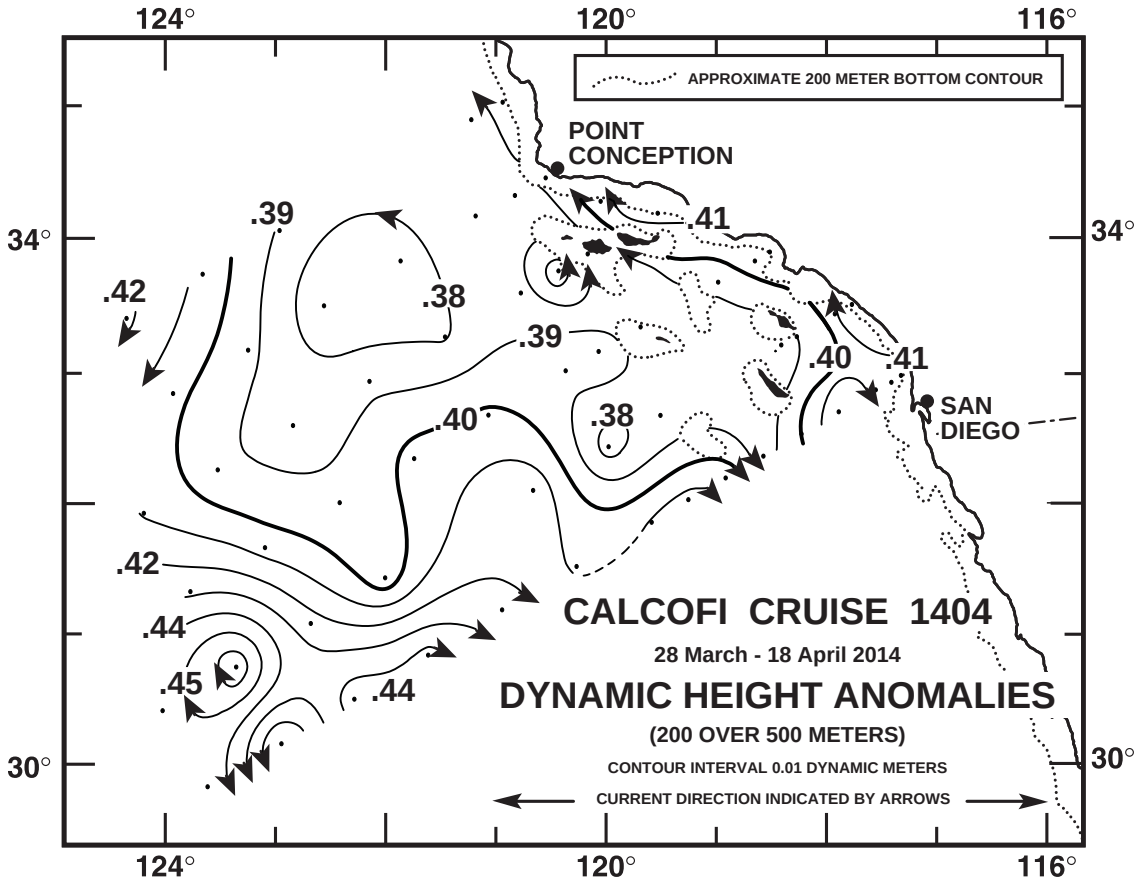

FIGURE 4A

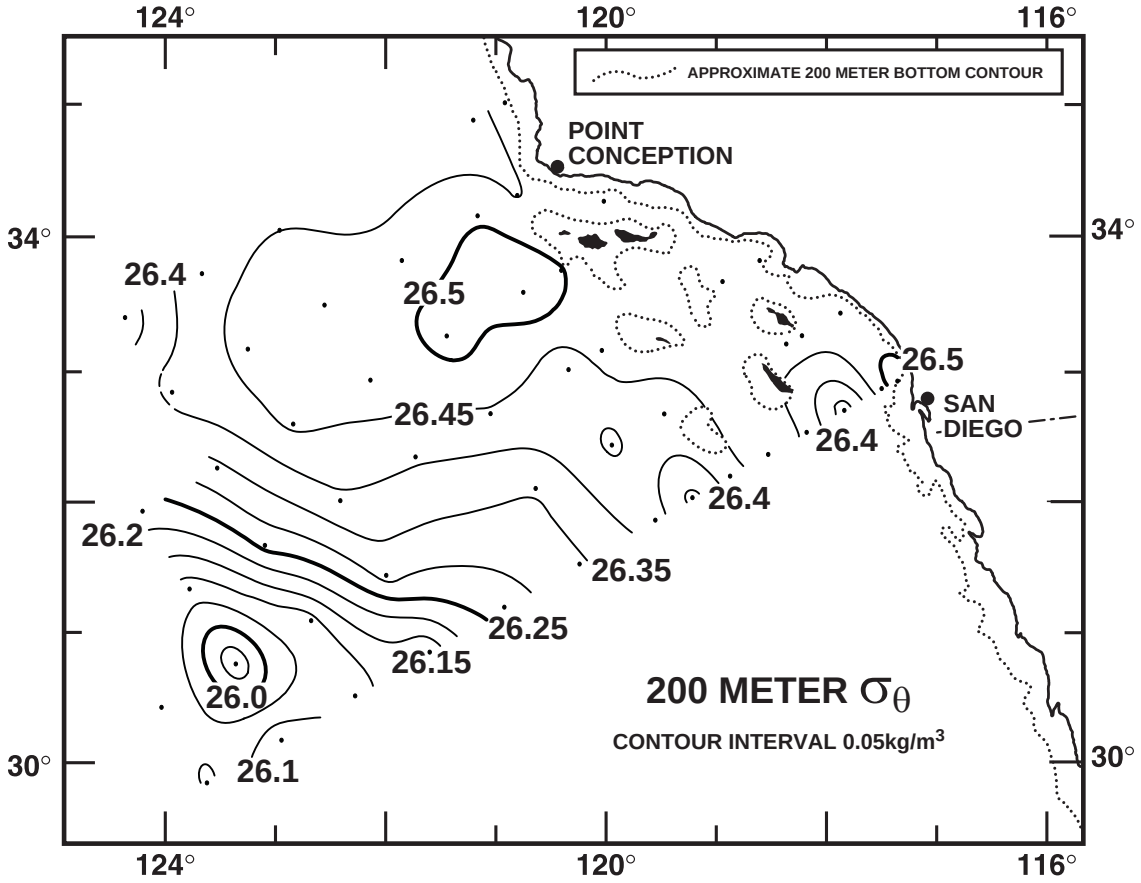

FIGURE 4B

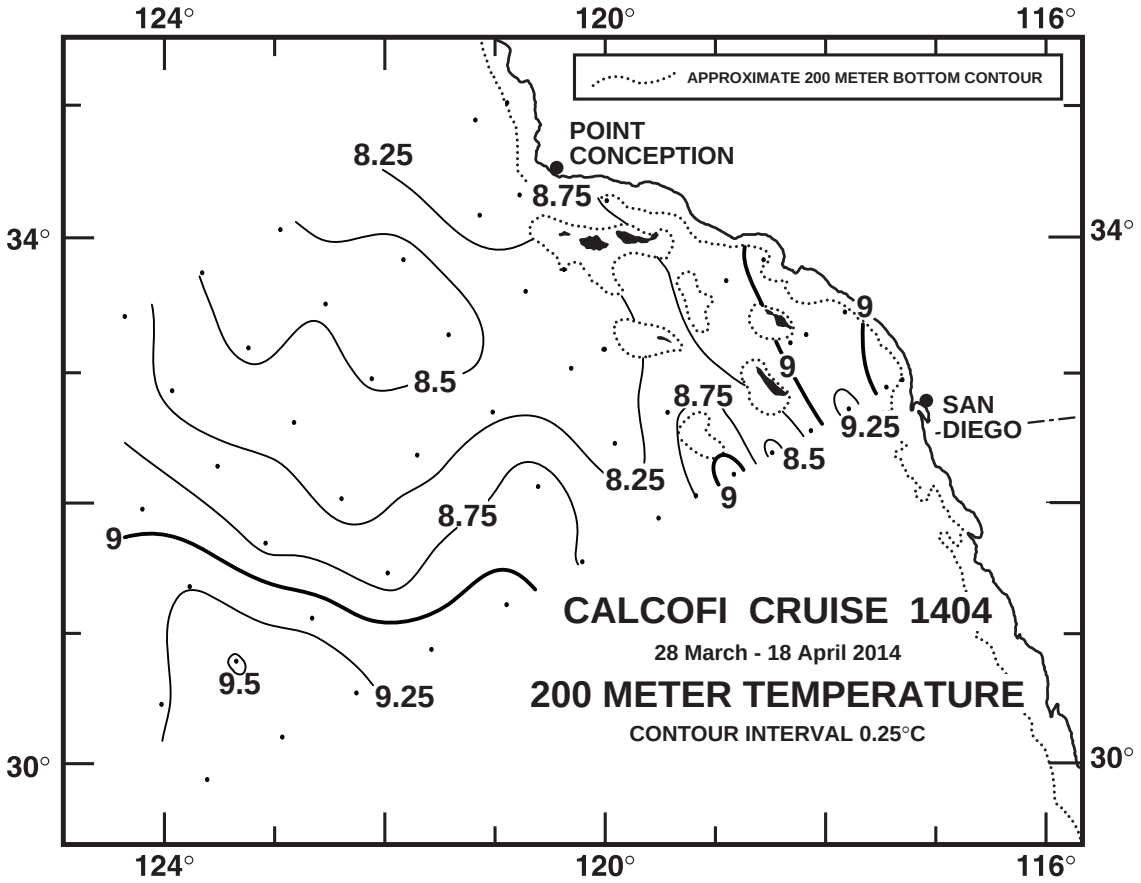

FIGURE 4C

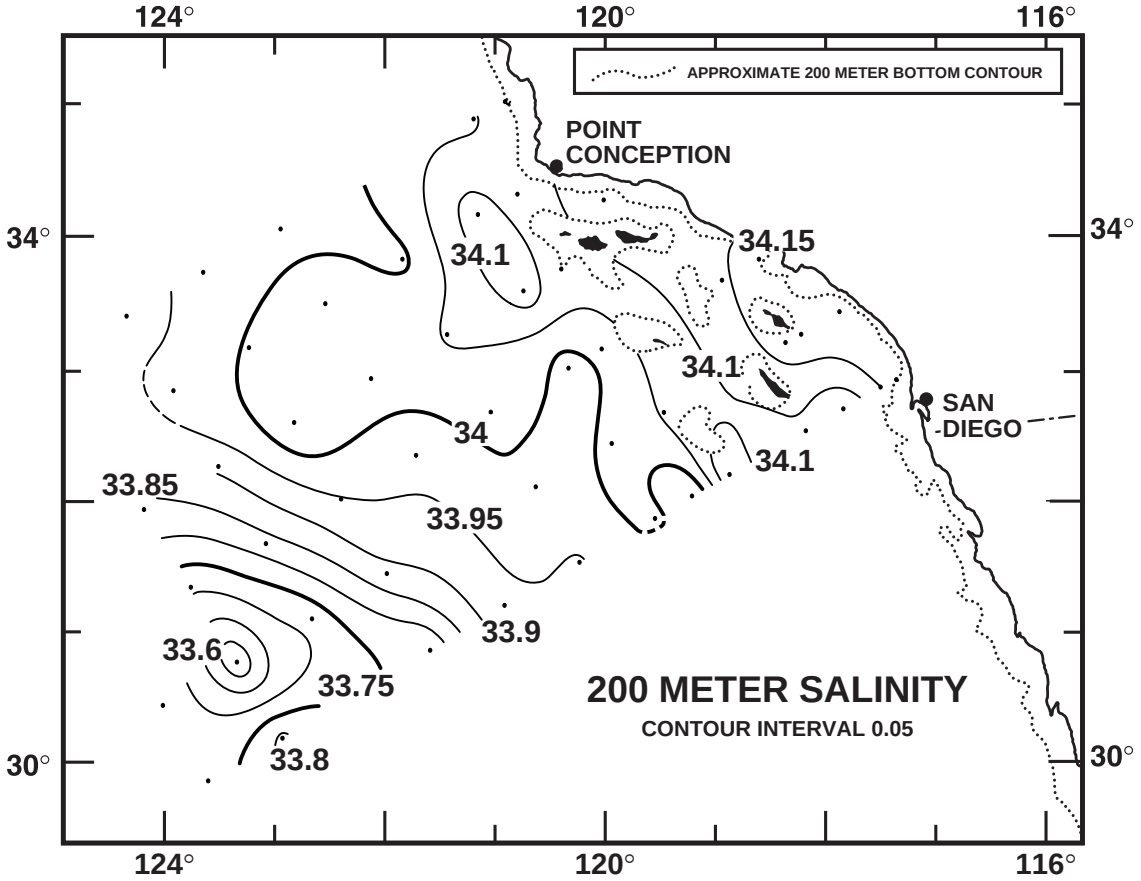

FIGURE 4D

CALCOFI CRUISE 1404

28 March - 18 April 2014

POTENTIAL DENSITY (σ_θ) ALONG CALCOFI LINE 90

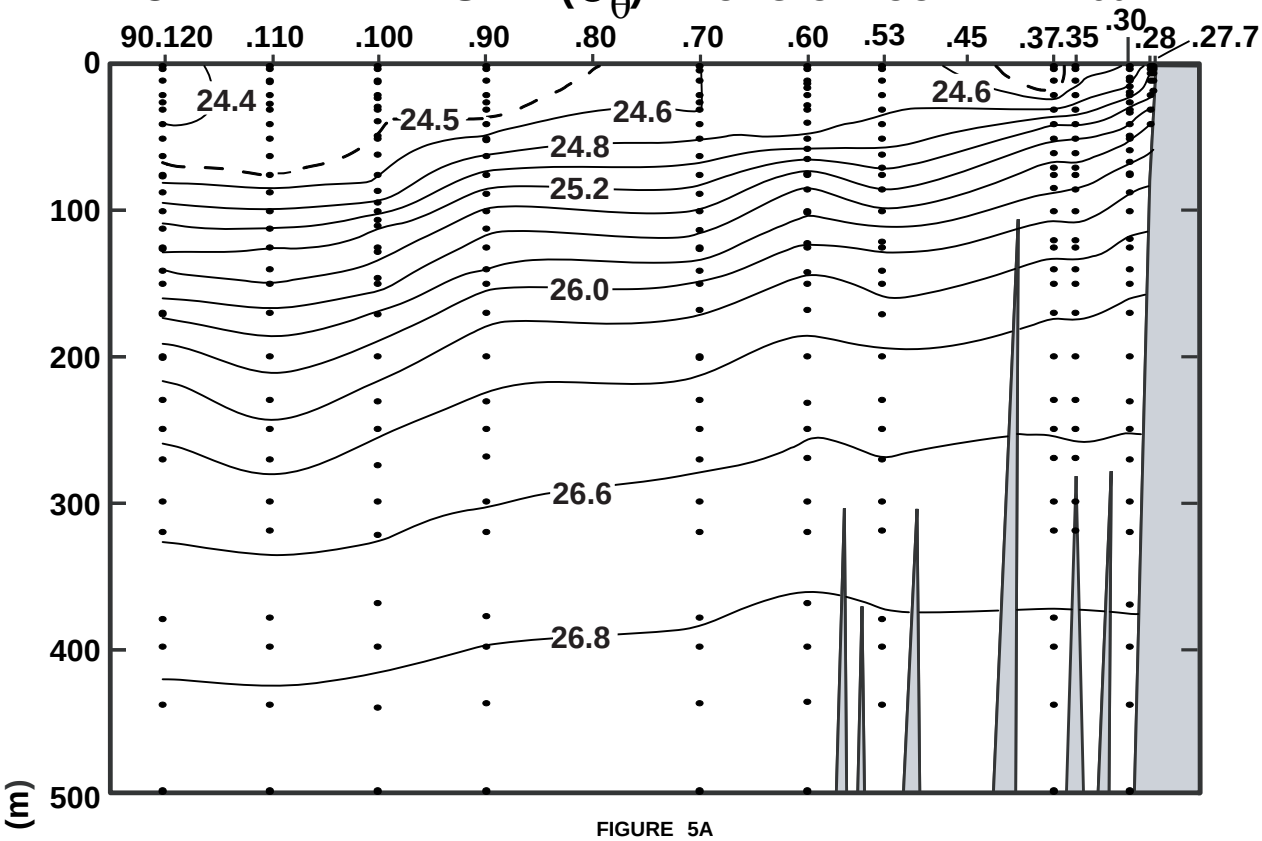

FIGURE 5A

TEMPERATURE (°C) ALONG CALCOFI LINE 90

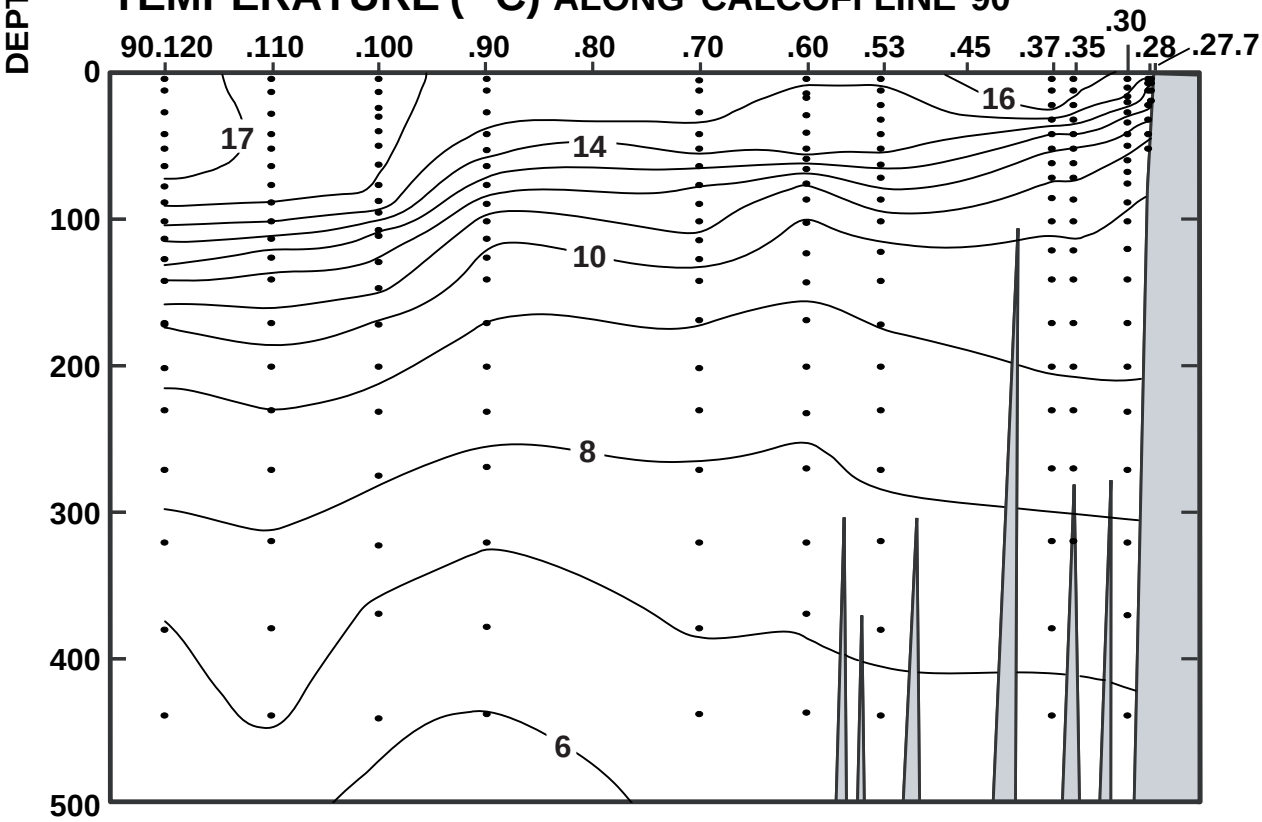

FIGURE 5B

CALCOFI CRUISE 1404

28 March - 18 April 2014

SALINITY ALONG CALCOFI LINE 90

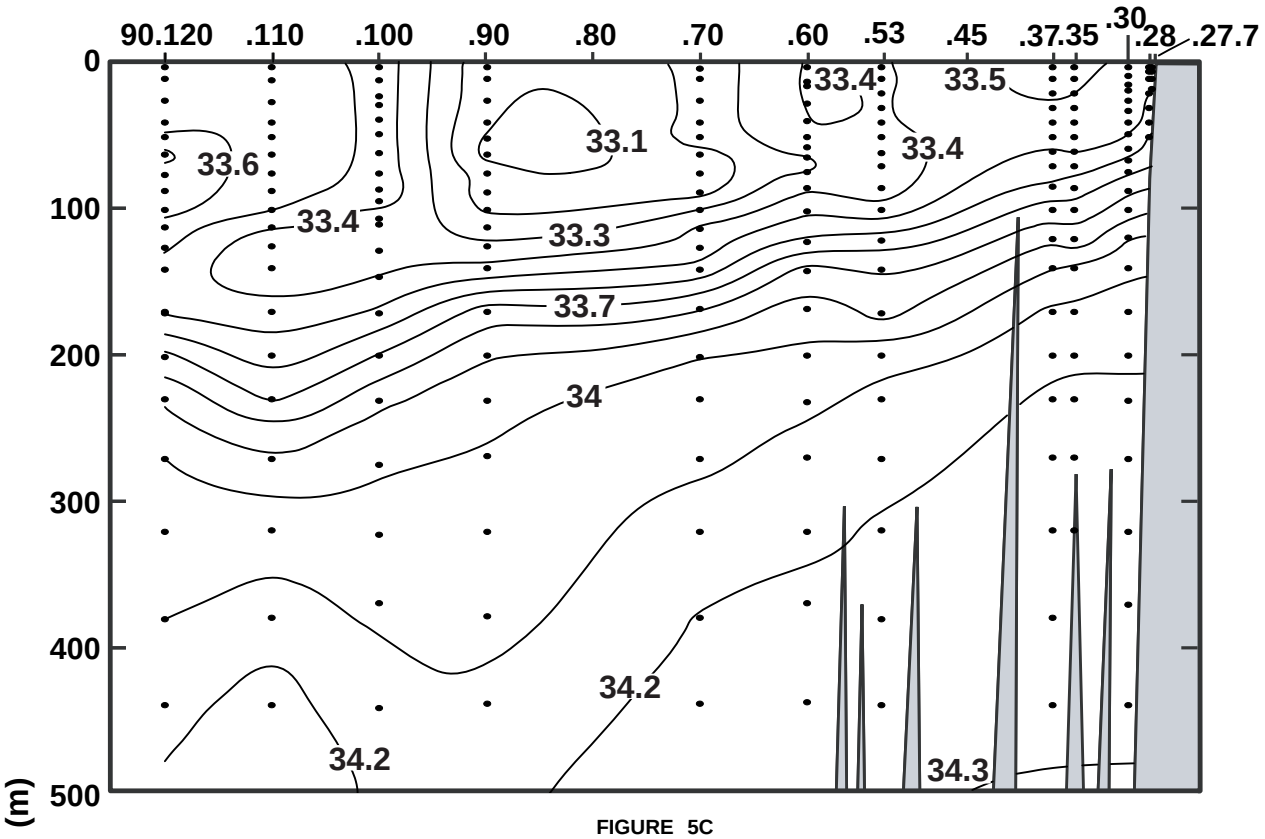

FIGURE 5C

SILICATE (μM/L) ALONG CALCOFI LINE 90

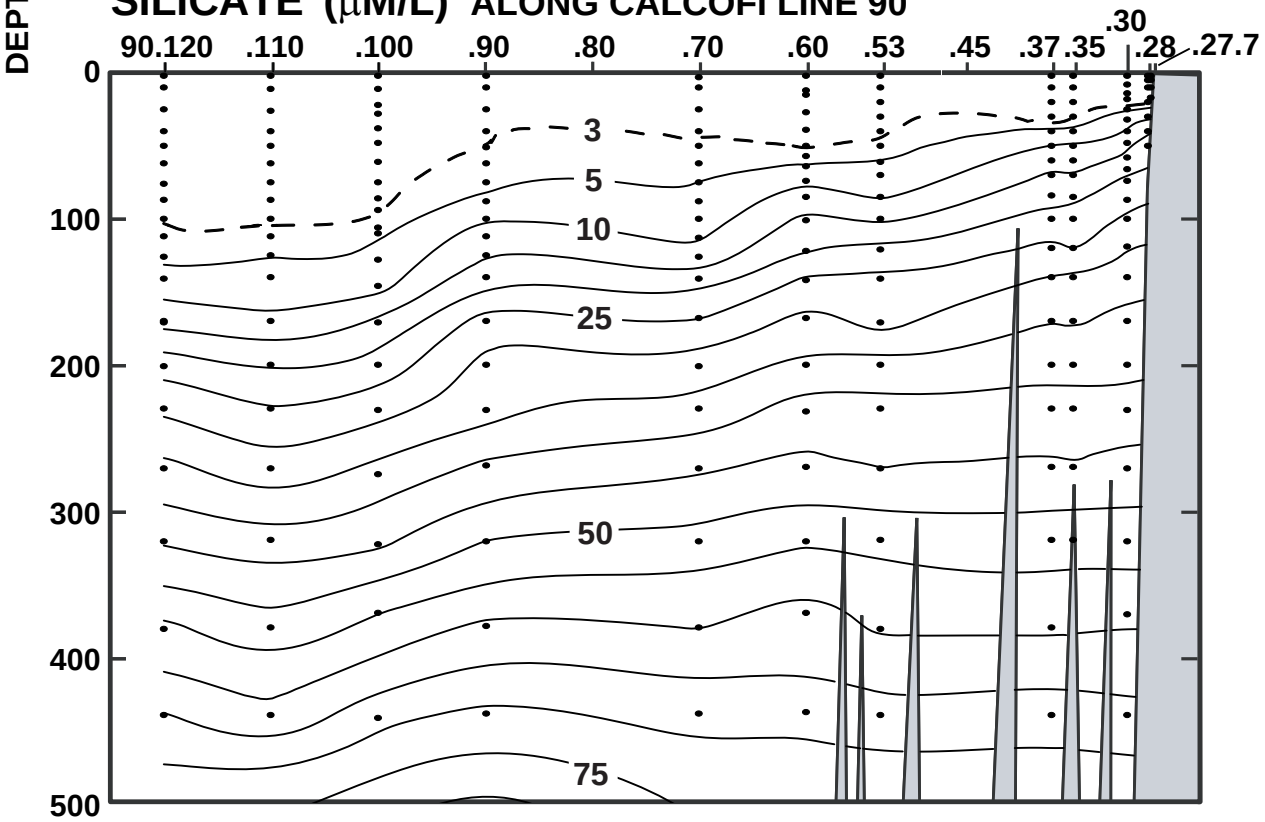

FIGURE 5D

CALCOFI CRUISE 1404

28 March - 18 April 2014

NITRATE (μM/L) ALONG CALCOFI LINE 90

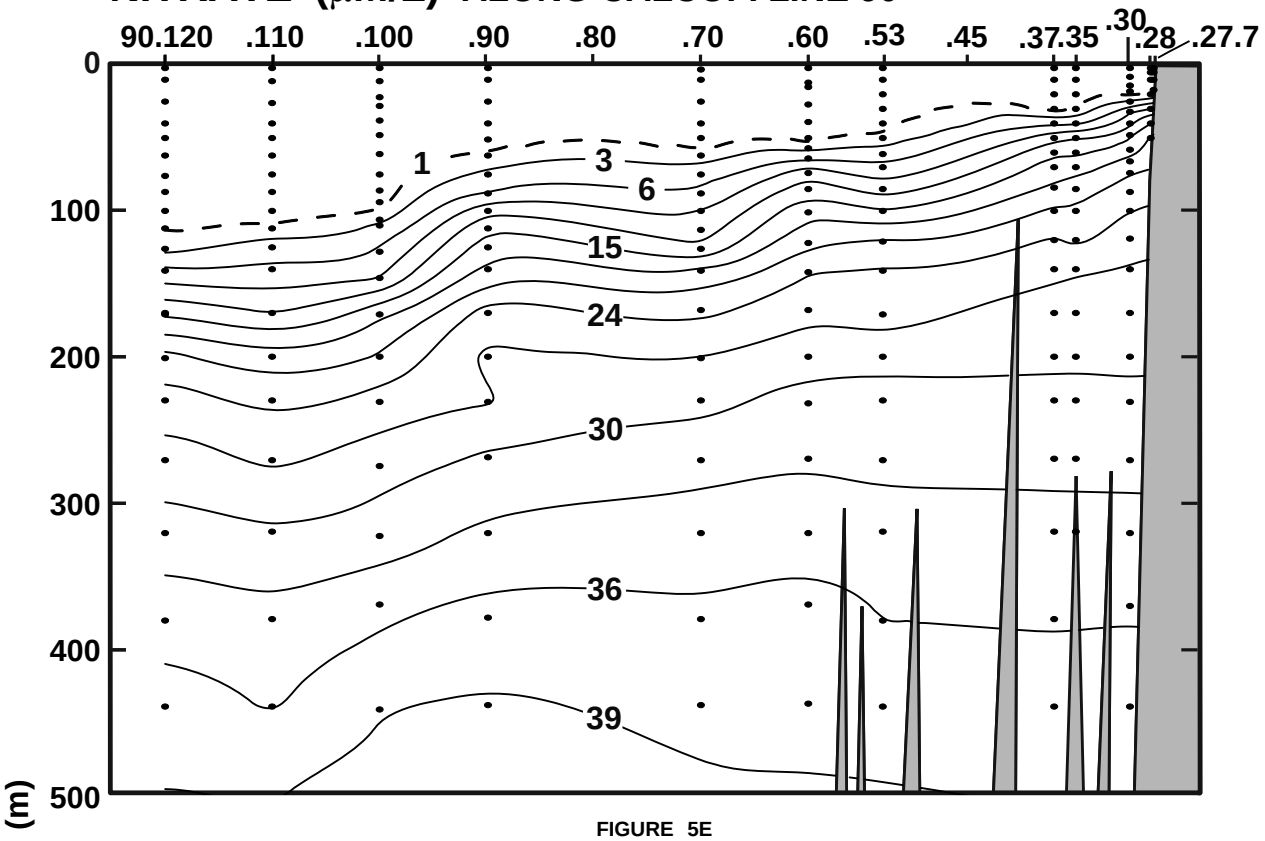

FIGURE 5E

PHOSPHATE (μM/L) ALONG CALCOFI LINE 90

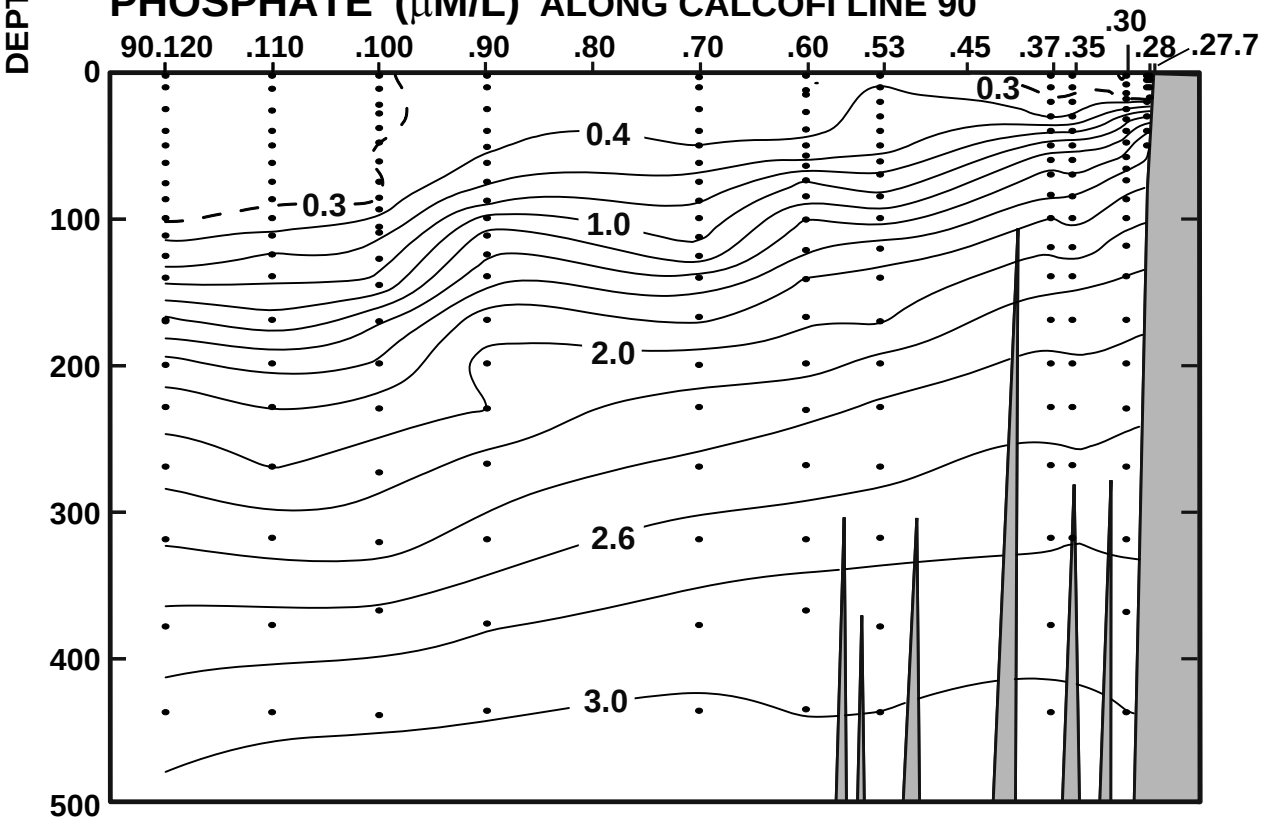

FIGURE 5F

CALCOFI CRUISE 1404

28 March - 18 April 2014

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

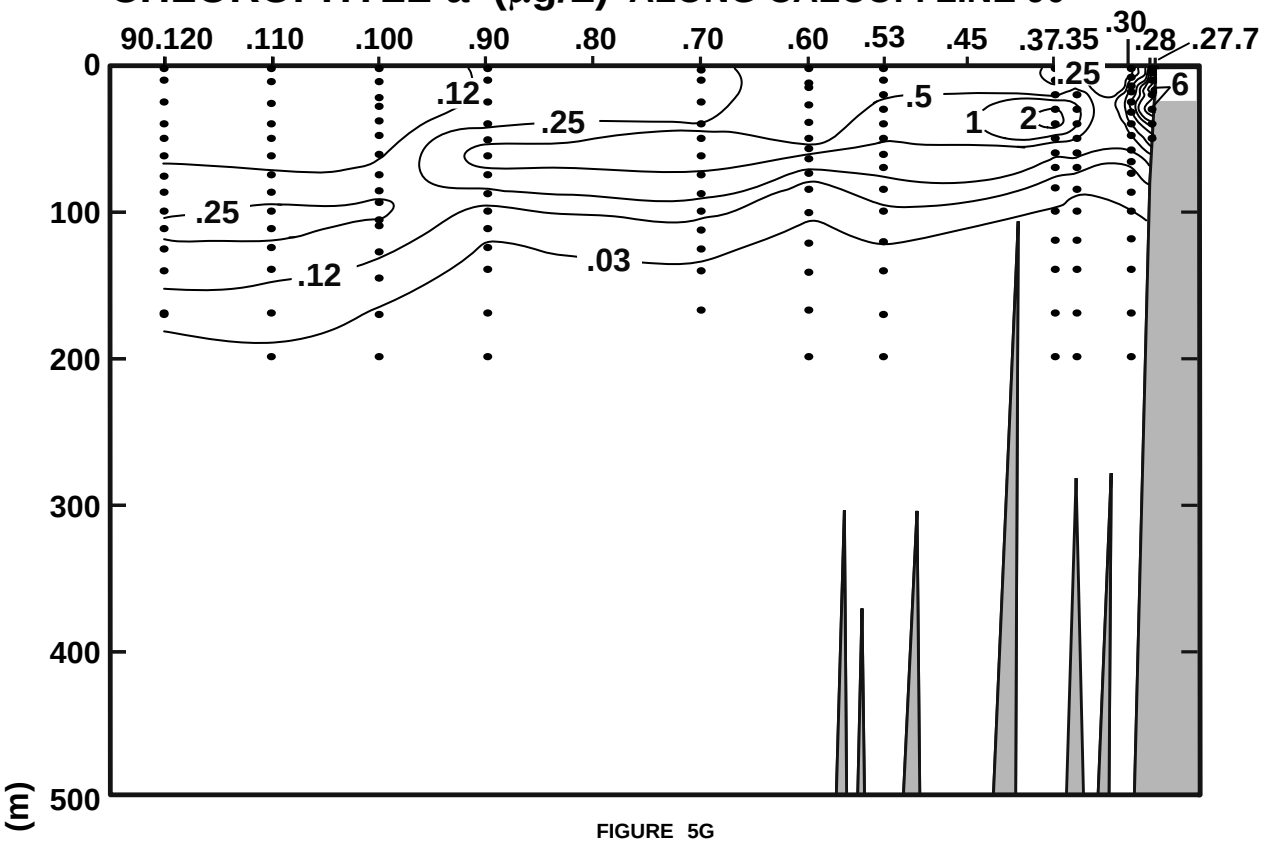

FIGURE 5G

OXYGEN SATURATION (%) ALONG CALCOFI LINE 90

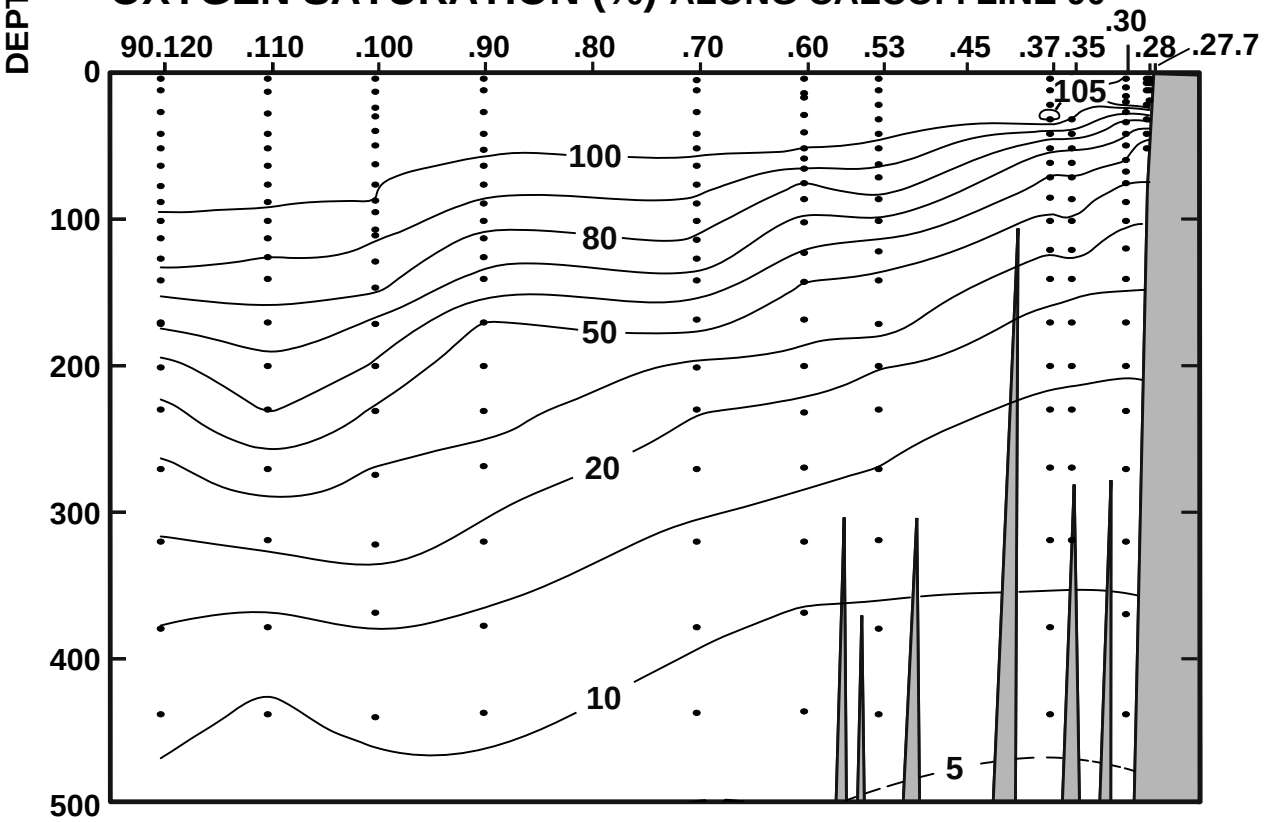

FIGURE 5H

CALCOFI CRUISE 1404

28 March - 18 April 2014

OXYGEN (mL/L) ALONG CALCOFI LINE 90

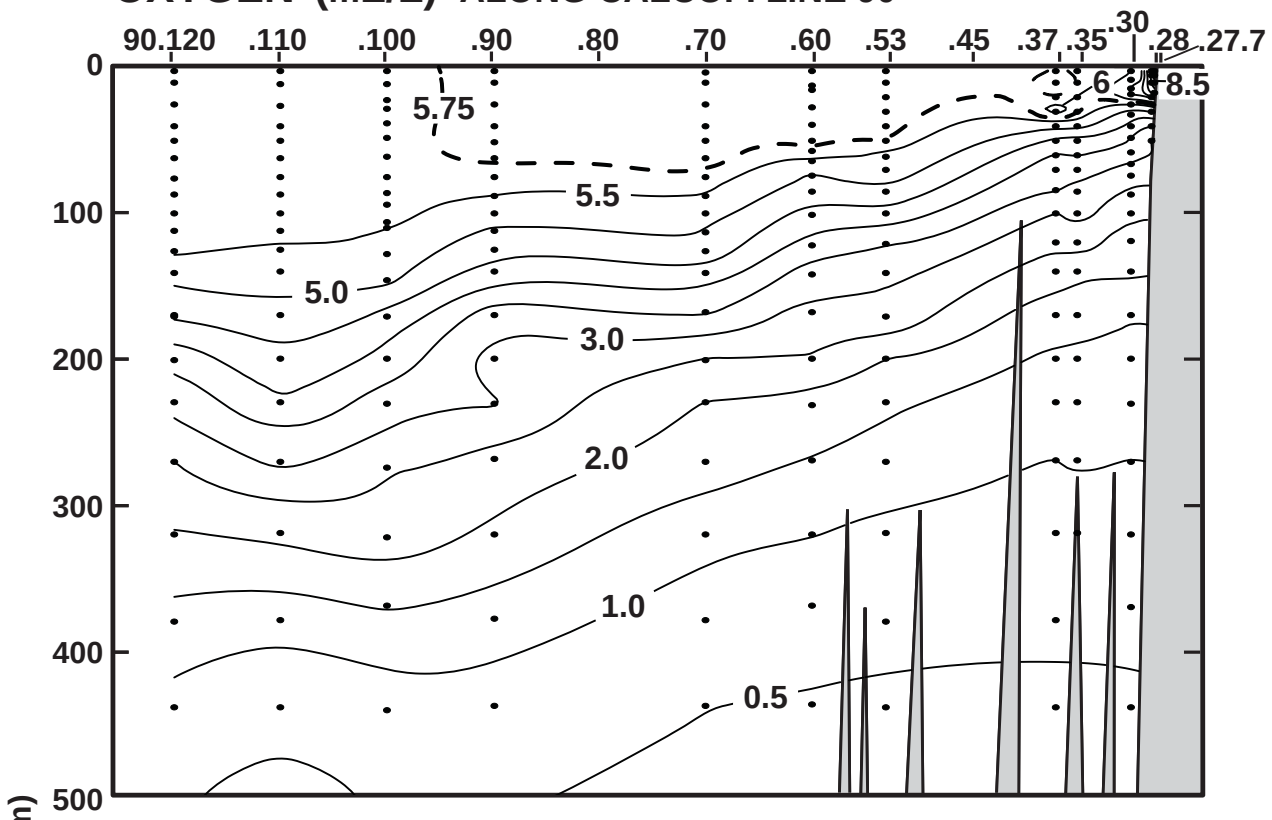

FIGURE 5I

NITRITE (μM/L) ALONG CALCOFI LINE 90

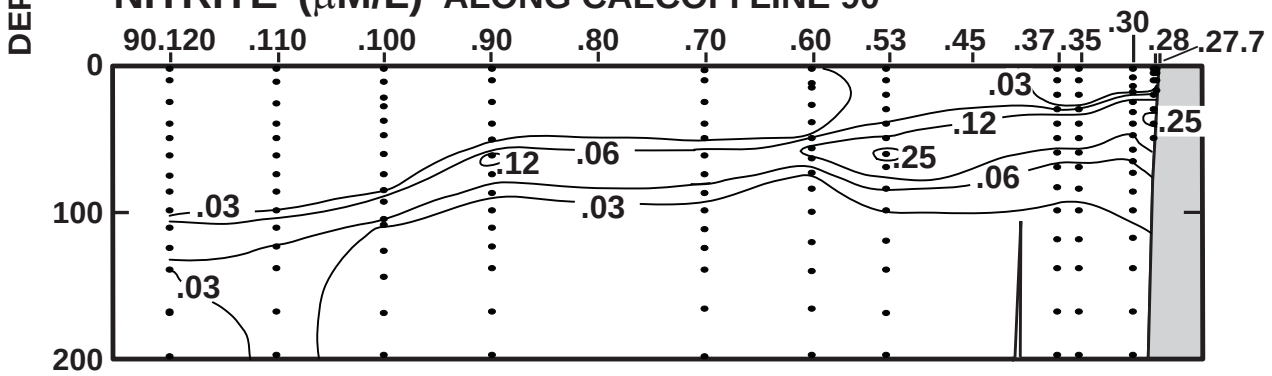

FIGURE 5J

PHAEOPIGMENTS (μg/L) ALONG CALCOFI LINE 90

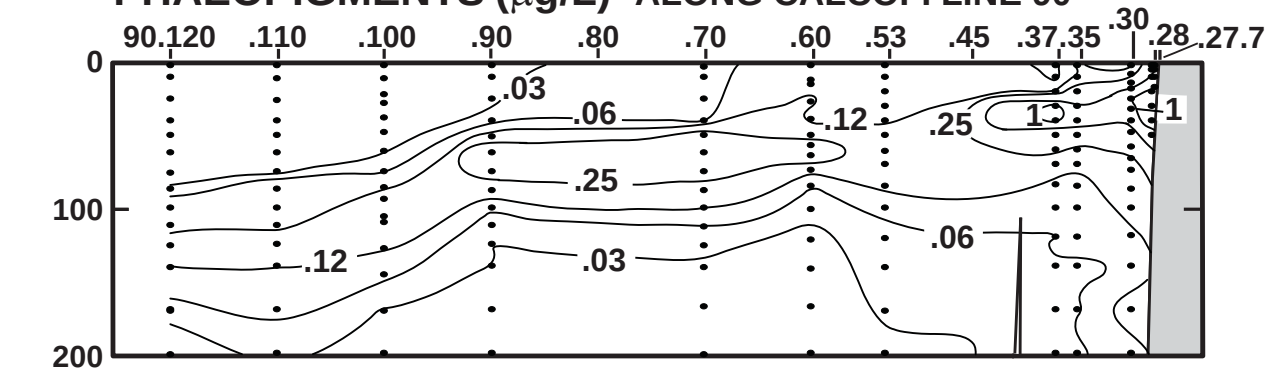

FIGURE 5K

PERSONNEL

CalCOFI Cruise 1404

SHIP'S CAPTAIN

Hanson, Bud, FV Ocean Starr

PERSONNEL PARTICIPATING IN THE COLLECTION OF DATA

Hays, Amy (Chief Scientist)	Fishery Biologist, NMFS
Breese, Dawn	Bird Observer, FIAER
Debich, Amanda	Marine Mammal Acoustician, MPL
Ekern, Lindsey	Staff Research Associate, SIO
Faber, David	Staff Research Associate, SIO
Gilmore, Kelsey	Volunteer
Manion, Sue	Fishery Biologist, NMFS
Overcash, Bryan	Fishery Biologist, NMFS
Roadman, Megan	Staff Research Associate, SIO
Rodgers-Wolgast, Jennifer	Staff Research Associate, SIO
Schnurle, Kirsten	Fishery Volunteer
Snouffer, Brian	Volunteer
Whitaker, Katherine	Marine Mammal Observer, MPL
Wilkinson, James	Staff Research Associate, SIO
Wolgast, David	Staff Research Associate, SIO

San Diego to San Diego, California, 28 March - 18 April, 2014

RV OCEAN STARR — CALCOFI CRUISE 1404 — 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 5.5 N	120 46.6 W	16/04/2014	2325 UTC	68 m	340 32 kn	330 07 05	0	1010.0 mb	15.1 C	12.8 C		0/8		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	11.31	11.31	33.608	25.637	234.2	0.000	4.53	197.6	73.1	18.8	1.51	17.8	0.23	0.18	0.87	0.52	0	
2	11.31	11.31	33.608	25.637	234.3	0.005	4.53	197.6	73.1	18.8	1.51	17.8	0.23	0.18	0.87	0.52	2	09
5	11.33	11.32	33.606	25.632	234.8	0.012	4.51	196.7	72.8	18.7	1.49	17.2	0.20	0.04	0.85	0.54	5	08
10	11.33	11.33	33.604	25.630	235.1	0.023	4.55	198.4	73.4	18.6	1.48	17.3	0.21	0.12	0.88	0.55	10	06
10	11.33	11.33	33.606	25.632	235.0	0.024											10	07
20	11.21	11.21	33.611	25.658	232.7	0.047	4.41	192.3	71.0	18.9	1.49	17.5	0.22	0.01	0.87	0.51	20	05
30	11.06	11.05	33.677	25.737	225.4	0.070	4.14	180.7	66.5	21.6	1.61	19.3	0.22	0.05	0.80	0.46	30	04
39	10.83	10.83	33.692	25.789	220.7	0.090	3.89	169.9	62.2	22.5	1.66	19.6	0.22	0.05	0.72	0.50	39	03
50	10.13	10.12	33.758	25.963	204.4	0.113	3.04	132.8	47.9	25.5	1.87	22.9	0.16	0.06	0.35	0.35	50	02
60	9.55	9.54	33.845	26.128	188.9	0.133	2.50	109.0	38.9	30.2	2.05	25.8	0.18	0.08	0.13	0.30	60	01

D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T;

RV OCEAN STARR — CALCOFI CRUISE 1404 — 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 54.8 W	16/04/2014	1842 UTC	228 m	340 09 kn	300 05 07	0	1015.0 mb	15.4 C	13.9 C	13 m	0/8		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	12.45	12.45	33.561	25.385	258.1	0.000	5.51	240.7	91.1	15.6	1.18	11.8	0.24	0.04	1.00	0.63	0	
2 A	12.45	12.45	33.561	25.386	258.1	0.005	5.51	240.7	91.1	15.6	1.18	11.8	0.24	0.04	1.00	0.63	2	20
8	12.19	12.14	33.600	25.475	249.8	0.021											8	18
9 A	12.06	12.06	33.608	25.497	247.8	0.023	5.28	230.7	86.6	17.9	1.28	13.7	0.23	0.03	1.15	0.66	9	17
9	12.06	12.13	33.608	25.484	249.0	0.023											9	19
10 ISL	12.00 D	12.00	33.624 D	25.522	245.4	0.008	5.23	D227.8 D	85.7	18.3	1.30	14.0	0.23	0.03	1.19	0.71	10	
12 A	12.05	12.05	33.628	25.514	246.2	0.030	5.17	225.6	84.7	19.0	1.35	14.5	0.23	0.04	1.26	0.81	12	16
20 A	11.80	11.80	33.648	25.577	240.4	0.050	4.93	215.2	80.4	20.0	1.42	15.1	0.24	0.05	1.39	0.60	20	14
21	11.80	11.80	33.647	25.578	240.4	0.052											21	15
29	11.12	11.12	33.644	25.700	229.0	0.071	4.20	183.5	67.6	20.4	1.54	17.6	0.25	0.13	0.74	0.55	29	13
30 ISL	11.09 D	11.08	33.641 D	25.703	228.7	0.045	4.09	D178.2 D	65.8	20.3	1.55	17.8	0.23	0.12	0.69	0.52	30	
38 A	10.55	10.55	33.601	25.767	222.8	0.091	3.68	160.7	58.4	19.3	1.63	19.4	0.10	0.03	0.27	0.30	38	12
48 A	10.28	10.27	33.686	25.880	212.2	0.113	3.17	138.3	50.0	22.4	1.78	21.6	0.13	0.11	0.13	0.17	48	11
50 ISL	10.24 D	10.24	33.683 D	25.885	211.8	0.089	3.26	D142.0 D	51.5	22.7	1.80	21.8	0.13	0.12	0.12	0.16	50	
53	10.19	10.18	33.703	25.910	209.5	0.124	3.09	135.0	48.7	23.2	1.82	22.1	0.13	0.14	0.11	0.16	53	10
60	9.95	9.94	33.745	25.983	202.7	0.138	2.90	126.6	45.5	24.6	1.89	23.4	0.10	0.02	0.07	0.15	60	09
70	9.85	9.84	33.765	26.015	199.9	0.158	2.82	123.0	44.1	25.3	1.93	23.8	0.08	0.01	0.05	0.17	71	08
75 ISL	9.81 D	9.80	33.778 D	26.034	198.2	0.141	2.80	D121.9 D	43.8	26.0	1.95	24.1	0.07	0.01	0.05	0.17	76	
85	9.66	9.65	33.817	26.088	193.3	0.188	2.63	114.8	41.0	27.3	1.99	24.7	0.05	0.00	0.05	0.17	86	07
100	9.59	9.58	33.828	26.109	191.6	0.217	2.59	112.9	40.2	28.1	2.02	25.1	0.08	0.02	0.06	0.18	101	06
119	9.23	9.22	33.924	26.243	179.3	0.252	2.23	97.3	34.4	31.5	2.15	26.9	0.17	0.11	0.05	0.24	120	05
125 ISL	9.09 D	9.08	33.952 D	26.288	175.1	0.235	2.16	D 94.2 D	33.3	32.5	2.18	27.4	0.15	0.11	0.05	0.24	126	
140	8.92	8.90	34.026	26.373	167.3	0.288	2.01	87.7	30.8	34.9	2.25	28.5	0.09	0.12	0.03	0.22	141	04
150 ISL	8.97 D	8.96	34.063 D	26.394	165.5	0.278	1.71	D 74.5 D	26.3	36.9	2.33	29.1	0.13	0.11	0.03	0.23	151	
168	8.83	8.81	34.095	26.443	161.3	0.334	1.43	62.4	21.9	40.4	2.47	30.1	0.19	0.08	0.02	0.25	169	03
200	8.58	8.56	34.103	26.488	157.5	0.385	1.38	60.3	21.0	43.2	2.56	30.8	0.22	0.49	0.02	0.28	202	02
220	8.34	8.32	34.132 D	26.547	152.2	0.390	1.31	D 57.2 D	19.9								222	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 OCEAN STARR — CALCOFI CRUISE 1404 — 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 53.4 N	121 11.8 W	16/04/2014	1446 UTC	556 m	330 25 kn	280 08 09	1	1014.0 mb	13.8 C	12.6 C	12 m	7/8	ST	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	13.91	13.91	33.481	25.032	291.7	0.000	5.81	253.8	99.0	5.2	0.54	2.3	0.14	0.05	0.83	0.36	0	
2	13.91	13.91	33.481	25.032	291.7	0.006	5.81	253.8	99.0	5.2	0.54	2.3	0.14	0.05	0.83	0.36	2	21
9	13.90	13.90	33.480	25.035	291.7	0.027											9	20
10	13.91	13.91	33.489	25.040	291.3	0.029	5.81	253.8	99.0	5.2	0.53	2.3	0.13	0.06	0.80	0.32	10	19
20	13.83	13.82	33.481	25.052	290.5	0.058	5.80	253.4	98.6	5.2	0.56	2.4	0.13	0.07	0.84	0.33	20	18
29	13.71	13.70	33.485	25.080	288.1	0.084	5.63	246.1	95.6	6.1	0.63	3.5	0.17	0.08	0.69	0.31	29	17
30 ISL	13.71 D	13.70	33.481 D	25.076	288.4	0.076	5.60	D243.8 D	94.9	6.1	0.63	3.5	0.17	0.08	0.69	0.31	30	
40	13.63	13.63	33.483	25.093	287.1	0.116	5.53	241.7	93.7	6.4	0.66	4.0	0.18	0.05	0.64	0.30	40	16
50	12.06	12.05	33.530	25.440	254.3	0.143	4.52	197.4	74.1	12.5	1.18	12.0	0.26	0.04	0.62	0.29	50	15
60	11.38	11.37	33.575	25.601	239.2	0.168	4.15	181.3	67.1	14.9	1.34	14.4	0.25	0.04	0.31	0.31	60	14
70	10.76	10.75	33.634	25.758	224.5	0.191	3.56	155.5	56.8	18.8	1.59	18.5	0.09	0.05	0.19	0.28	71	13
75 ISL	10.62 D	10.61	33.652 D	25.797	220.8	0.192	3.41	D148.2 D	54.2	19.3	1.63	19.1	0.07	0.04	0.16	0.27	76	
86	10.35	10.34	33.654	25.846	216.4	0.226	3.31	144.6	52.3	20.5	1.71	20.3	0.03	0.02	0.11	0.24	87	12
100	9.81	9.80	33.729	25.995	202.5	0.255	3.00	131.0	46.9	24.2	1.87	23.1	0.02	0.01	0.05	0.25	101	11
120	9.50	9.48	33.877	26.164	186.8	0.294	2.41	105.2	37.4	29.4	2.09	25.8	0.03	0.00	0.03	0.17	121	10
125 ISL	9.33 D	9.32	33.890 D	26.200	183.5	0.293	2.39	D103.9 D	37.0	29.9	2.10	26.2	0.03	0.01	0.02	0.17	126	
139	9.12	9.10	33.917	26.257	178.3	0.329	2.35	102.6	36.2	31.3	2.13	27.2	0.05	0.03	0.02	0.15	140	09
150 ISL	9.01 D	9.00	33.945 D	26.296	174.9	0.338	2.33	D101.4 D	35.8	32.2	2.16	27.6	0.05	0.03	0.01	0.15	151	
171	8.85	8.84	33.986	26.353	169.8	0.384	2.19	95.7	33.6	34.0	2.22	28.3	0.05	0.02	0.01	0.15	172	08
200	8.72	8.70	34.043	26.419	164.2	0.433	1.95	85.1	29.8	36.7	2.31	29.2	0.03	0.06	0.00	0.17	202	07
230	8.46	8.44	34.100	26.505	156.5	0.481	1.61	70.2	24.4	40.8	2.44	30.9	0.06	0.04			232	06
250 ISL	8.22 D	8.20	34.127 D	26.563	151.3	0.503	1.44	D 62.8 D	21.8	43.7	2.53	31.9	0.04	0.03			252	
270	8.03	8.00	34.160	26.618	146.4	0.542	1.23	53.8	18.6	46.7	2.61	32.8	0.02	0.01			272	05
300 ISL	7.60 D	7.57	34.174 D	26.692	139.7	0.577	1.07	D 46.5 D	15.9	52.2	2.74	34.3	0.01	0.01			302	
320	7.34	7.31	34.181	26.736	135.7	0.612	0.90	39.4	13.4	55.8	2.82	35.3	0.00	0.01			323	04
380	6.89	6.85	34.221	26.831	127.4	0.691	0.62	27.2	9.1	63.6	2.97	37.0	0.01	0.02			383	03
400 ISL	6.79 D	6.75	34.232 D	26.853	125.5	0.709	0.56	D 24.2 D	8.2	65.2	2.99	37.5	0.01	0.02			403	
440	6.48	6.44	34.223	26.888	122.6	0.766	0.52	22.8	7.6	68.3	3.04	38.5	0.00	0.02			444	02
500 ISL	6.15 D	6.11	34.266 D	26.965	115.9	0.832	0.35	D 15.3 D	5.1	80.3	3.19	39.4	0.05	0.01			504	
517	5.95	5.91	34.292	27.011	111.5	0.857	0.25	10.9	3.6	83.7	3.23	39.6	0.06	0.01			521	01

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

RV OCEAN STARR CALCOFI CRUISE 1404 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 3.1 N	122 56.1 W	15/04/2014	2011 UTC	4227 m	340 25 kn	340 09 06	1	1022.0 mb	15.0 C	13.9 C	14 m	6/8	ST	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	14.45	14.45	33.051	24.588	334.0	0.000	5.99	261.7	102.9	3.4	0.35	0.0	0.00	0.07	0.26	0.06	0	
3 A	14.45	14.45	33.051	24.588	334.1	0.010	5.99	261.7	102.9	3.4	0.35	0.0	0.00	0.07	0.26	0.06	3	23
10 A	14.45	14.45	33.051	24.588	334.3	0.033	5.98	261.2	102.7	3.4	0.36	0.0	0.00	0.08	0.26	0.06	10	21
10	14.45	14.45	33.052	24.588	334.3	0.034											10	22
14 A	14.43	14.43	33.053	24.595	333.8	0.047	5.99	261.6	102.8	3.4	0.36	0.0	0.00	0.03	0.25	0.07	14	20
20 ISL	14.43 D	14.43	33.051 D	24.594	334.1	0.060	6.01	D262.1	D103.2	3.4	0.37	0.0	0.00	0.04	0.25	0.06	20	
22 A	14.42	14.42	33.064	24.606	333.0	0.073	5.98	261.3	102.7	3.4	0.37	0.0	0.00	0.04	0.25	0.06	22	19
30 ISL	14.37 D	14.36	33.124 D	24.664	327.8	0.094	6.05	D263.6	D103.7	3.4	0.35	0.0	0.00	0.04	0.36	0.11	30	
32	14.27	14.26	33.198	24.742	320.4	0.106	6.07	265.0	103.9	3.4	0.35	0.0	0.00	0.04	0.39	0.12	32	18
40 A	14.14	14.13	33.241	24.802	314.8	0.132	6.02	263.1	102.9	3.5	0.37	0.0	0.00	0.05	0.80	0.32	40	16
40	14.14	14.13	33.241	24.802	314.8	0.130											40	17
50 ISL	13.93 D	13.92	33.280 D	24.876	308.1	0.142	5.96	D259.8	D101.5	3.4	0.41	0.0	0.02	0.30	0.75	0.41	50	
51 A	13.92	13.91	33.273	24.872	308.5	0.166	5.94	259.6	101.1	3.4	0.41	0.0	0.02	0.33	0.74	0.41	51	15
61	13.10	13.09	33.317	25.073	289.6	0.196	5.69	248.5	95.2	4.6	0.60	2.9	0.36	0.24	0.21	0.17	61	14
68	12.52	12.51	33.316	25.186	279.0	0.216	5.60	244.6	92.6	5.1	0.66	4.2	0.25	0.08	0.15	0.16	69	13
75 ISL	11.76 D	11.75	33.189 D	25.232	274.7	0.215	5.49	D239.1	D 89.2	6.2	0.77	6.2	0.17	0.07	0.14	0.15	76	
87	10.64	10.63	33.218 D	25.455	253.6	0.246	5.28	230.5	83.7	8.2	0.97	9.7	0.03	0.05	0.12	0.13	88	12
100	9.91	9.90	33.328	25.665	233.8	0.299	4.63	202.4	72.4	13.9	1.34	15.5	0.01	0.09	0.04	0.08	101	11
120	9.47	9.45	33.505	25.877	214.0	0.344	4.13	180.4	64.0	19.3	1.63	19.2	0.01	0.07	0.02	0.04	121	10
125 ISL	9.44 D	9.42	33.514 D	25.889	213.0	0.334	4.09	D178.1	D 63.3	20.6	1.68	20.4	0.01	0.06	0.01	0.04	126	
139	9.17	9.16	33.669	26.054	197.6	0.383	3.50	153.0	53.9	24.3	1.82	23.6	0.00	0.03	0.01	0.04	140	09
150 ISL	8.98 D	8.96	33.765 D	26.159	187.8	0.384	3.30	D143.8	D 50.7	26.7	1.89	24.8	0.01	0.04	0.01	0.04	151	
176	8.53	8.51	33.924	26.354	169.7	0.451	2.77	121.1	42.2	32.5	2.05	27.5	0.01	0.07	0.00	0.03	177	08
200	8.19	8.16	33.981	26.452	160.8	0.491	2.56	112.0	38.7	36.5	2.12	28.7	0.00	0.03	0.00	0.02	202	07
230	7.89	7.87	34.014	26.522	154.5	0.538	2.37	103.4	35.5	40.3	2.20	30.1	0.00	0.05			232	06
250 ISL	7.63 D	7.60	34.012 D	26.559	151.3	0.550	2.20	D 95.5	D 32.7	43.0	2.29	31.2	0.00	0.04			252	
268	7.46	7.44	34.024	26.593	148.3	0.595	2.02	88.3	30.0	45.5	2.37	32.1	0.00	0.03			270	05
300 ISL	7.20 D	7.17	34.066 D	26.663	142.1	0.624	1.50	D 65.1	D 22.1	51.2	2.55	34.1	0.00	0.04			302	
320	7.11	7.08	34.098	26.702	138.6	0.670	1.22	53.3	18.0	54.7	2.67	35.3	0.00	0.04			323	04
369	6.68	6.65	34.134	26.788	131.0	0.736	0.83	D 36.1	D 12.1	62.0	2.85	37.3	0.00	0.05			372	03
400 ISL	6.36 D	6.32	34.141 D	26.838	126.5	0.759	0.76	D 32.9	D 10.9	66.5	2.93	37.6	0.00	0.05			403	
442	6.09	6.06	34.182	26.904	120.6	0.828	0.57	25.0	8.2	72.7	3.04	37.9	0.00	0.06			446	02
500 ISL	5.68 D	5.63	34.215 D	26.983	113.5	0.880	0.40	D 17.6	D 5.8	80.5	3.14	40.2	0.00	0.09			504	
514	5.61	5.56	34.221	26.996	112.4	0.912	0.38	16.8	5.5	82.4	3.16	40.8	0.00	0.10			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 STA-CORRECTED O2;

RV OCEAN STARR CALCOFI CRUISE 1404 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 43.3 N	123 37.9 W	15/04/2014	1212 UTC	4192 m	310 19 kn			1024.0 mb	13.7 C	12.0 C				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	14.51	14.51	33.126	24.632	329.8	0.000	5.97	260.9	102.8	3.3	0.36	0.1	0.00	0.06	0.27	0.08	0	
3	14.51	14.51	33.126	24.632	329.9	0.010	5.97	260.9	102.8	3.3	0.36	0.1	0.00	0.06	0.27	0.08	3	20
10	14.51	14.51	33.124	24.631	330.2	0.033	5.95	259.8	102.3	3.3	0.35	0.0	0.00	0.02	0.26	0.07	10	19
20	14.53	14.53	33.142	24.641	329.6	0.066	5.93	259.1	102.1	3.3	0.35	0.0	0.00	0.05	0.26	0.07	20	18
30	14.48	14.48	33.249	24.736	320.9	0.099	5.99	261.6	103.1	3.6	0.35	0.0	0.00	0.10	0.43	0.14	30	17
40	14.36	14.35	33.255	24.768	318.2	0.131	5.95	259.7	102.1	3.6	0.37	0.0	0.00	0.20	0.69	0.27	40	16
50	13.74	13.74	33.259	24.898	306.0	0.162	5.83	254.5	98.8	3.8	0.43	0.5	0.10	0.16	0.82	0.42	50	15
60	13.26	13.25	33.299	25.027	294.0	0.192	5.63	246.1	94.6	4.6	0.57	2.7	0.33	0.13	0.39	0.23	60	14
70	12.10	12.09	33.202	25.178	279.8	0.220	5.43	237.2	88.9	5.8	0.77	6.4	0.03	0.04	0.23	0.22	71	13
75 ISL	11.76 D	11.75	33.226 D	25.260	272.0	0.236	5.31	D231.1	D 86.2	7.4	0.90	8.5	0.02	0.03	0.18	0.17	76	
85	11.13	11.11	33.319	25.448	254.3	0.261	4.76	207.7	76.3	10.6	1.16	12.7	0.01	0.02	0.08	0.08	86	12
100 ISL	9.88 D	9.87	33.459 D	25.773	223.5	0.299	4.11	D178.8	D 64.2	16.7	1.52	18.6	0.00	0.02	0.03	0.04	101	
101	9.75	9.74	33.455	25.792	221.8	0.299	4.10	179.2	64.0	17.1	1.54	19.0	0.00	0.02	0.03	0.04	102	11
120	9.26	9.25	33.585	25.973	204.9	0.339	3.90	170.0	60.1	21.1	1.66	21.4	0.00	0.03	0.01	0.03	121	10
125 ISL	9.20 D	9.18	33.637 D	26.024	200.1	0.352	3.80	D165.4	D 58.6	22.1	1.70	22.0	0.00	0.03	0.01	0.03	126	
140	8.97	8.96	33.755	26.152	188.2	0.378	3.48	151.8	53.3	25.0	1.81	23.9	0.01	0.04	0.01	0.03	141	09
150 ISL	8.85 D	8.83	33.818 D	26.222	181.8	0.400	3.34	D145.2	D 51.1	26.5	1.83	24.4	0.01	0.05	0.01	0.02	151	
170	8.54	8.52	33.900	26.335	171.4	0.432	3.23	141.0	49.1	29.5	1.87	25.4	0.01	0.08	0.00	0.02	171	08
200	8.23	8.21	33.965	26.433	162.6	0.482	2.84	124.1	42.9	34.0	2.03	27.6	0.01	0.02	0.00	0.02	202	07
230	7.85	7.83	34.012	26.526	154.1	0.530	2.34	102.0	35.0	40.3	2.24	30.1	0.01	0.02			232	06
250 ISL	7.74 D	7.72	34.054 D	26.576	149.7	0.564	1.82	D 79.3	D 27.2	43.6	2.38	31.7	0.00	0.03			252	
270	7.61	7.58	34.084	26.619	146.0	0.590	1.54	67.2	23.0	46.9	2.52	33.2	0.00	0.03			272	05
300 ISL	7.39 D	7.36	34.102 D	26.666	142.0	0.637	1.39	D 60.3	D 20.6	51.5	2.64	34.6	0.00	0.02			302	
320	7.15	7.12	34.141	26.730	136.1	0.661	1.03	44.8	15.2	54.6	2.72	35.5	0.00	0.01			323	04
380	6.82	6.78	34.203	26.826	127.8	0.740	0.66	28.6	9.6	62.3	2.90	37.2	0.01	0.03			383	03
400 ISL	6.62 D	6.59	34.224 D	26.868	123.9	0.771	0.55	D 23.8	D 8.0	64.9	2.94	37.7	0.00	0.02			403	
440	6.39	6.35	34.246	26.917	119.7	0.814	0.44	19.0	6.3	70.1	3.03	38.7	0.00	0.01			444	02
500 ISL	6.06 D	6.02	34.279 D	26.986	113.7	0.890	0.32	D 13.7	D 4.5	73.0	3.07	39.2	0.00	0.03			504	
513	5.98	5.94	34.269	26.989	113.6	0.899	0.35	15.3	5.1	73.6	3.08	39.3	0.00	0.03			517	01

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

RV OCEAN STARR CALCOFI CRUISE 1404 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 19.3 W	15/04/2014	0543	UTC	3761 m	340 19 kn			1029.9 mb	14.9 C	12.7 C				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	14.57	14.57	33.001	24.523	340.2	0.000	5.95	259.9	102.5	3.0	0.37	0.0	0.01	0.04	0.22	0.05	0	
2	14.57	14.57	33.001	24.524	340.2	0.007	5.95	259.9	102.5	3.0	0.37	0.0	0.01	0.04	0.22	0.05	2	20
10	14.58	14.58	33.004	24.525	340.3	0.034	5.94	259.1	102.2	3.0	0.36	0.0	0.02	0.02	0.21	0.04	10	19
20	14.58	14.58	33.007	24.528	340.4	0.068	5.92	258.6	102.0	3.0	0.37	0.0	0.01	0.02	0.22	0.05	20	18
30	14.53	14.52	33.015	24.545	339.0	0.102	5.94	259.4	102.2	3.0	0.36	0.0	0.02	0.02	0.23	0.06	30	17
40	14.37	14.36	33.052	24.608	333.3	0.136	6.03	263.1	103.4	3.2	0.36	0.0	0.02	0.03	0.51	0.17	40	16
50	14.23	14.23	33.186	24.740	321.1	0.168	6.00	262.0	102.7	3.3	0.36	0.0	0.02	0.03	0.84	0.39	50	15
60	13.53	13.53	33.194	24.891	306.9	0.200	5.85	255.4	98.7	3.7	0.47	0.6	0.18	0.34	0.76	0.50	60	14
70	13.27	13.26	33.248	24.987	298.1	0.230	5.63	245.9	94.5	4.0	0.51	2.6	0.35	0.03	0.42	0.31	71	13
75 ISL	12.86 D	12.85	33.224 D	25.049	292.3	0.247	5.56	D242.2 D	92.5	4.5	0.58	3.8	0.26	0.02	0.36	0.28	76	
86	11.85	11.84	33.188	25.214	276.7	0.276	5.42	236.5	88.2	5.5	0.74	6.4	0.06	0.01	0.23	0.20	87	12
100	11.04	11.03	33.211	25.381	261.1	0.314	5.12	223.4	81.9	8.4	0.88	10.0	0.03	0.02	0.13	0.11	101	11
120	9.73	9.72	33.369	25.727	228.3	0.363	4.51	197.0	70.3	15.2	1.32	17.0	0.02	0.04	0.03	0.03	121	10
125 ISL	9.69 D	9.67	33.446 D	25.796	221.9	0.376	4.35	D189.3 D	67.7	16.5	1.38	18.0	0.02	0.04	0.03	0.03	126	
140	9.53	9.52	33.600	25.941	208.4	0.406	3.85	168.2	59.8	20.2	1.54	20.8	0.02	0.04	0.02	0.02	141	09
150 ISL	9.26 D	9.24	33.660 D	26.033	199.8	0.429	3.72	D161.8 D	57.4	22.0	1.61	21.9	0.02	0.04	0.01	0.02	151	
170	8.96	8.94	33.760	26.159	188.2	0.465	3.46	150.8	53.0	25.6	1.74	24.2	0.02	0.03	0.01	0.03	171	08
200	8.64	8.62	33.896	26.316	173.8	0.520	3.24	141.4	49.4	28.8	1.80	25.4	0.02	0.03	0.00	0.02	202	07
230	8.20	8.18	33.964	26.438	162.7	0.570	2.94	128.3	44.4	33.8	1.95	27.5	0.02	0.01			232	06
250 ISL	7.84 D	7.82	34.007 D	26.524	154.7	0.606	2.45	D106.6 D	36.7	38.8	2.15	29.7	0.01	0.03			252	
270	7.67	7.64	34.036	26.573	150.4	0.632	2.04	89.1	30.5	43.9	2.34	31.8	0.01	0.04			272	05
300 ISL	7.39 D	7.36	34.077 D	26.646	143.8	0.681	1.54	D 67.0 D	22.8	49.4	2.53	33.9	0.01	0.03			302	
320	7.26	7.23	34.123	26.701	138.9	0.705	1.18	51.6	17.5	53.1	2.65	35.3	0.01	0.03			323	04
381	6.92	6.89	34.178	26.792	131.1	0.787	0.81	35.2	11.9	60.1	2.90	37.1	0.02	0.04			384	03
400 ISL	6.84 D	6.80	34.193 D	26.816	129.1	0.818	0.71	D 30.7 D	10.3	62.4	2.95	37.6	0.02	0.04			403	
440	6.55	6.51	34.214	26.870	124.3	0.863	0.56	24.5	8.2	67.1	3.05	38.5	0.02	0.04			444	02
500 ISL	6.18 D	6.13	34.266 D	26.961	116.2	0.942	0.37	D 16.0 D	5.3	74.4	3.12	40.3	0.01	0.10			504	
514	6.11	6.06	34.282	26.983	114.3	0.951	0.32	13.9	4.6	76.2	3.14	40.7	0.01	0.11			518	01

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

RV OCEAN STARR CALCOFI CRUISE 1404 STATION 80.0 50.5

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
34 27.9 N	120 29.3 W	13/04/2014	1300	UTC	22 m	330 10 kn			1020.0 mb	13.0 C	11.0 C				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	11.37	11.37	33.654	25.661	231.9	0.000	4.68	204.3	75.6	11.9	1.28	12.4	0.17	0.61	4.74	0.81	0	
2	11.37	11.37	33.654	25.661	231.9	0.005	4.68	204.3	75.6	11.9	1.28	12.4	0.17	0.61	4.74	0.81	2	04
5	11.31	11.31	33.654	25.673	230.9	0.012	4.60	200.7	74.2	12.2	1.28	12.7	0.18	0.77	4.76	0.75	5	03
10	10.89	10.88	33.656	25.751	223.6	0.023	3.77	164.6	60.3	14.8	1.51	16.2	0.20	0.75	3.40	0.71	10	02
14	10.53	10.53	33.674	25.827	216.5	0.032	3.05	133.3	48.4	17.6	1.78	19.6	0.21	0.56	2.46	0.68	14	01

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

RV OCEAN STARR CALCOFI CRUISE 1404 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 27.0 N	120 31.4 W	13/04/2014	1355	UTC	74 m	330 10 kn	340 01 04	2	1020.0 mb	12.8 C	11.0 C	10 m	7/8	ST	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	11.39	11.39	33.615	25.627	235.1	0.000	4.77	208.2	77.1	10.2	1.19	12.2	0.16	0.45	2.57	0.45	0	
2	11.39	11.39	33.615	25.627	235.2	0.005	4.77	208.2	77.1	10.2	1.19	12.2	0.16	0.45	2.57	0.45	2	09
5	11.38	11.38	33.617	25.630	235.0	0.012	4.77	208.3	77.1	10.1	1.19	12.2	0.16	0.44	2.75	0.51	5	08
10	11.12	11.12	33.621	25.682	230.2	0.023	4.26	186.2	68.5	11.8	1.33	14.2	0.17	0.45	3.25	0.60	10	07
20	10.77	10.77	33.640	25.759	223.1	0.046	3.67	160.1	58.5	14.6	1.52	16.9	0.18	0.38	3.42	0.80	20	06
30	10.54	10.53	33.655	25.811	218.4	0.068	3.36	146.8	53.4	16.5	1.62	18.7	0.17	0.33	3.03	0.59	30	05
40	10.08	10.07	33.746	25.962	204.2	0.089	2.66	116.3	41.9	23.0	1.90	22.4	0.19	0.26	1.54	0.54	40	04
50	9.82	9.81	33.832	26.073	194.0	0.109	2.45	106.8	38.3	27.5	2.00	24.3	0.14	0.17	0.91	0.67	50	02
60	9.89	9.89	33.816	26.048	196.5	0.129	2.50	109.0	39.1	26.7	1.98	24.0	0.14	0.13	0.95	0.51	60	01

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

RV OCEAN STARR — CALCOFI CRUISE 1404 — 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	13/04/2014	1710 UTC	653 m	360 10 kn	340 02 06	2	1025.0 mb	13.9 C	12.4 C	12 m	8/8	ST	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	12.48	12.48	33.570	25.388	257.9	0.000	5.55	242.2	91.7	13.9	1.01	9.7	0.23	0.09	2.22	0.70	0	
2 A	12.48	12.48	33.570	25.388	257.9	0.005	5.55	242.2	91.7	13.9	1.01	9.7	0.23	0.09	2.22	0.70	2	24
8 A	12.48	12.47	33.570	25.388	258.1	0.021	5.54	241.8	91.6	13.9	0.99	9.8	0.23	0.30	2.34	0.71	8	23
10 ISL	12.46 D	12.46	33.569 D	25.391	257.8	0.026	5.54	241.1	91.6	13.9	0.98	9.7	0.24	0.17	2.16	0.74	10	
11 A	12.45	12.45	33.569	25.393	257.7	0.029	5.54	241.8	91.5	13.9	0.98	9.7	0.24	0.10	2.07	0.76	11	21
11	12.45	12.45	33.569	25.393	257.7	0.028											11	22
20 A	12.07	12.06	33.565	25.463	251.3	0.051	5.28	230.7	86.6	14.8	1.07	10.9	0.27	0.10	0.96	0.75	20	20
26	11.88	11.87	33.575	25.508	247.2	0.066	4.78	208.9	78.1	15.7	1.21	13.0	0.34	0.29	0.45	0.48	26	19
30 ISL	11.84 D	11.84	33.571 D	25.512	246.9	0.065	4.74	D206.3 D	77.3	15.6	1.24	13.3	0.35	0.38	0.40	0.42	30	
34 A	11.71	11.70	33.572	25.538	244.6	0.086	4.63	202.1	75.3	15.5	1.26	13.6	0.36	0.46	0.35	0.37	34	18
44 A	10.98	10.98	33.688 D	25.759	223.7	0.099	4.66	203.3	74.6	15.8	1.25	13.5	0.38	0.52	0.37	0.35	44	17
50 ISL	10.96 D	10.96	33.689 D	25.763	223.5	0.112	4.63	D201.7 D	74.3	16.0	1.37	14.7	0.32	1.02	2.80	0.95	50	
52	10.96	10.95	33.690	25.765	223.3	0.128	4.56	199.2	73.1	16.1	1.41	15.1	0.30	1.18	3.61	1.14	52	15
52	10.96	10.95	33.689	25.765	223.4	0.128											52	16
60	10.87	10.86	33.691	25.783	221.9	0.145	4.39	191.8	70.3	17.0	1.47	15.9	0.29	1.10	3.89	1.30	60	14
75	10.05	10.04	33.626	25.874	213.4	0.178	3.45	150.6	54.2	20.3	1.67	21.0	0.11	0.09	0.54	0.74	76	13
85	9.86	9.85	33.708	25.970	204.5	0.199	3.15	137.7	49.3	22.8	1.76	22.2	0.06	0.07			86	12
100	9.55	9.53	33.741	26.049	197.3	0.229	3.04	132.8	47.3	24.3	1.85	23.2	0.14	0.28	0.20	0.47	101	11
121	9.38	9.36	33.914	26.212	182.3	0.269	2.39	104.3	37.0	29.8	2.04	26.0	0.04	0.13	0.05	0.18	122	10
125 ISL	9.27 D	9.26	33.935 D	26.246	179.1	0.257	2.36	D102.7 D	36.5	30.1	2.05	26.2	0.04	0.11	0.05	0.20	126	
140	9.17	9.16	33.964	26.285	175.7	0.303	2.31	100.9	35.7	31.0	2.09	26.9	0.03	0.05	0.05	0.28	141	09
150 ISL	9.15 D	9.13	33.997 D	26.314	173.2	0.301	2.17	D 94.5 D	33.5	32.3	2.14	27.4	0.03	0.05	0.04	0.25	151	
171	8.96	8.94	34.043	26.382	167.2	0.356	1.98	86.5	30.5	34.8	2.23	28.5	0.03	0.04	0.04	0.17	172	08
200	8.67	8.65	34.067	26.446	161.6	0.404	1.84	80.2	28.0	37.4	2.30	29.5	0.05	0.07	0.04	0.18	202	07
230	8.47	8.45	34.143	26.537	153.5	0.451	1.42	62.2	21.7	42.1	2.46	31.1	0.02	0.02			232	06
250 ISL	8.13 D	8.11	34.143 D	26.589	148.8	0.464	1.42	D 61.6 D	21.4	44.5	2.53	31.8	0.02	0.03			252	
281	8.07	8.04	34.194	26.640	144.6	0.526	1.05	45.8	15.8	48.1	2.63	33.0	0.01	0.04			283	05
300 ISL	7.90 D	7.87	34.200 D	26.670	142.0	0.537	0.98	D 42.5 D	14.7	50.3	2.67	33.7	0.01	0.07			302	
321	7.69	7.65	34.205	26.705	138.9	0.583	0.91	39.7	13.6	52.8	2.71	34.4	0.00	0.11			324	04
370	7.25	7.21	34.230	26.788	131.6	0.649	0.69	30.2	10.2	58.9	2.85	36.0	0.01	0.03			373	03
400 ISL	6.99 D	6.96	34.244 D	26.834	127.5	0.673	0.57	D 24.9 D	8.4	62.0	2.90	36.7	0.00	0.03			403	
440	6.74	6.70	34.249	26.874	124.2	0.739	0.52	22.7	7.6	66.1	2.97	37.7	0.00	0.03			444	02
500 ISL	6.22 D	6.17	34.244 D	26.939	118.4	0.797	0.42	D 18.1 D	6.0	73.5	3.08	39.4	0.01	0.05			504	
514	6.08	6.04	34.242	26.955	116.9	0.828	0.41	17.7	5.8	75.2	3.10	39.8	0.01	0.05			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 OCEAN STARR — CALCOFI CRUISE 1404 — 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 9.7 N	121 9.5 W	13/04/2014	2209 UTC	2193 m	340 18 kn	340 02 06	2	1021.0 mb	15.1 C	13.3 C	14 m	8/8	ST	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	14.49	14.49	33.455	24.891	305.1	0.000	5.96	260.5	102.8	3.6	0.42	0.3	0.05	0.12	0.64	0.15	0	
2	14.49	14.49	33.455	24.891	305.2	0.006	5.96	260.5	102.8	3.6	0.42	0.3	0.05	0.12	0.64	0.15	2	22
10	14.44	14.43	33.468	24.914	303.3	0.030	5.99	261.8	103.2	3.7	0.42	0.3	0.06	0.13	0.51	0.20	10	20
10	14.44	14.43	33.455	24.903	304.3	0.031											10	21
20	13.79	13.79	33.474	25.054	290.3	0.060	5.94	259.6	101.0	4.5	0.54	1.9	0.11	0.33	0.56	0.27	20	19
30	13.61	13.61	33.511	25.119	284.4	0.089	6.04	263.8	102.3	2.6	0.52	1.7	0.09	0.67	0.56	0.29	30	18
40	13.02	13.01	33.511	25.239	273.2	0.117	5.67	247.9	94.9	9.4	0.87	6.8	0.19	0.66	0.34	0.46	40	17
50	11.81	11.80	33.536	25.491	249.4	0.143	4.86	212.1	79.2	11.3	1.12	10.3	0.18	1.12	0.37	0.38	50	16
60	11.14	11.13	33.554	25.627	236.7	0.167	4.24	185.3	68.2	14.5	1.37	14.3	0.19	0.91	0.37	0.45	60	15
70	10.33	10.32	33.590	25.797	220.6	0.190	3.57	155.7	56.3	18.9	1.63	19.6	0.09	0.05	0.27	0.49	71	13
70	10.33	10.32	33.591	25.799	220.5	0.190											71	14
75 ISL	10.07 D	10.06	33.627 D	25.872	213.6	0.182	3.41	D148.4 D	53.5	20.5	1.70	20.5	0.08	0.05	0.24	0.48	76	
87	9.84	9.83	33.752	26.008	200.9	0.226	2.99	130.7	46.8	24.3	1.86	22.8	0.08	0.04	0.17	0.48	88	12
100 ISL	9.57 D	9.55	33.871 D	26.147	188.0	0.232	2.55	D110.8 D	39.6	28.1	2.01	24.9	0.05	0.04	0.09	0.30	101	
101	9.56	9.55	33.879	26.154	187.4	0.253	2.54	110.7	39.4	28.4	2.02	25.1	0.04	0.04	0.08	0.28	102	11
119	9.42	9.41	33.934	26.220	181.5	0.286	2.29	100.0	35.6	30.6	2.14	26.4	0.04	0.06	0.08	0.27	120	10
125 ISL	9.38 D	9.36	33.958 D	26.247	179.1	0.279	2.24	D 97.5 D	34.7	31.3	2.17	26.7	0.04	0.05	0.07	0.27	126	
140	9.24	9.23	34.008	26.308	173.6	0.324	2.06	90.1	31.9	33.2	2.23	27.6	0.03	0.03	0.06	0.27	141	09
150 ISL	9.17 D	9.15	34.033 D	26.340	170.7	0.323	1.93	D 84.1 D	29.8	34.5	2.27	28.2	0.03	0.03	0.06	0.24	151	
170	8.95	8.93	34.094	26.423	163.3	0.374	1.68	73.3	25.8	37.2	2.35	29.3	0.03	0.04	0.04	0.18	171	08
200	8.68	8.65	34.134	26.498	156.7	0.422	1.53	66.8	23.4	40.6	2.44	30.4	0.03	0.03	0.02	0.12	202	07
230	8.52	8.50	34.162	26.545	152.8	0.469	1.31	57.2	19.9	42.8	2.52	31.2	0.03	0.02			232	06
250 ISL	8.39 D	8.37	34.181 D	26.579	149.9	0.482	1.20	D 52.0 D	18.1	44.9	2.58	31.8	0.03	0.01			252	
271	8.23	8.20	34.198	26.618	146.5	0.530	1.07	46.6	16.2	47.1	2.64	32.5	0.03	0.00			273	05
300 ISL	8.09 D	8.05	34.210 D	26.650	143.9	0.556	0.96	D 41.8 D	14.5	48.9	2.68	33.0	0.03	0.02			302	
320	8.03	8.00	34.226	26.671	142.3	0.601	0.94	40.9	14.1	50.2	2.71	33.4	0.03	0.03			323	04
380	7.53	7.49	34.215	26.737	136.9	0.684	0.84	36.5	12.4	55.2	2.81	34.9	0.02	0.03			383	03
400 ISL	7.34 D	7.30	34.226 D	26.773	133.6	0.697	0.71	D 31.1 D	10.6	59.3	2.88	35.9	0.02	0.05			403	
440	6.63	6.58	34.244	26.885	123.0	0.763	0.52	22.8	7.6	67.4	3.01	37.8	0.02	0.10			444	02
500 ISL	6.22 D	6.17	34.295 D	26.979	114.6	0.820	0.34	D 14.8 D	4.9	75.2	3.13	39.3	0.02	0.04			504	
516	6.12	6.08	34.302	26.997	113.1	0.852	0.34	14.7	4.8	77.3	3.16	39.7	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 OCEAN STARR CALCOFI CRUISE 1404 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 49.3 N	121 50.3 W	14/04/2014	0418	UTC	3614 m	340 20 kn			1024.0 mb	15.0 C	12.5 C				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	14.77	14.77	33.421	24.805	313.4	0.000	5.97	260.5	103.4	3.0	0.37	0.0	0.02	0.06	0.33	0.07	0	
2	14.77	14.77	33.421	24.805	313.4	0.006	5.97	260.5	103.4	3.0	0.37	0.0	0.02	0.06	0.33	0.07	2	22
10	14.76	14.76	33.432	24.816	312.6	0.031	5.99	261.6	103.9	3.0	0.36	0.0	0.02	0.06	0.34	0.10	10	20
10	14.76	14.76	33.421	24.808	313.4	0.031											10	21
20	14.77	14.76	33.420	24.807	313.8	0.063	6.00	262.0	104.0	3.0	0.48	0.0	0.02	0.08	0.38	0.02	20	19
30	14.58	14.58	33.414	24.842	310.8	0.094	5.95	259.8	102.7	3.0	0.43	0.0	0.01	0.09	0.40	0.10	30	18
40	14.04	14.03	33.396	24.943	301.5	0.125	5.94	259.5	101.4	3.2	0.48	0.2	0.03	0.06	0.75	0.29	40	16
40	14.04	14.03	33.399	24.945	301.3	0.126											40	17
50 ISL	12.87 D	12.87	33.355 D	25.147	282.2	0.124	5.44	D236.9 D	90.6	5.0	0.73	4.8	0.08	0.10	0.52	0.21	50	
51	12.80	12.79	33.359	25.165	280.6	0.157	5.43	237.3	90.4	5.2	0.76	5.3	0.08	0.10	0.49	0.21	51	15
60	11.90	11.90	33.340	25.321	265.8	0.181	5.11	223.3	83.4	7.6	0.95	8.7	0.06	0.08	0.26	0.14	60	14
70	11.10	11.09	33.450	25.554	243.9	0.207	4.38	191.1	70.3	12.7	1.29	14.6	0.04	0.06	0.13	0.15	71	13
75 ISL	10.51 D	10.50	33.479 D	25.681	231.9	0.190	4.23	D184.3 D	67.1	14.4	1.38	16.2	0.03	0.05	0.10	0.13	76	
84	10.45	10.44	33.542	25.740	226.5	0.239	3.75	163.6	59.4	17.5	1.54	19.0	0.03	0.04	0.05	0.09	85	12
100	9.82	9.80	33.627	25.915	210.1	0.274	3.40	148.5	53.1	21.2	1.75	22.4	0.03	0.03	0.02	0.07	101	11
121	9.16	9.14	33.747	26.117	191.3	0.316	3.03	132.4	46.7	26.2	1.95	25.7	0.02	0.07	0.01	0.04	122	10
125 ISL	9.10 D	9.09	33.776 D	26.148	188.3	0.296	2.99	D130.3 D	46.1	26.9	1.97	26.0	0.02	0.06	0.01	0.04	126	
140	8.89	8.88	33.847	26.238	180.1	0.351	2.78	121.5	42.7	29.2	2.05	27.1	0.02	0.04	0.01	0.05	141	09
150 ISL	8.74 D	8.73	33.892 D	26.296	174.7	0.341	2.68	D116.8 D	41.0	30.6	2.07	27.6	0.02	0.06	0.01	0.04	151	
170	8.45	8.44	33.948	26.385	166.6	0.403	2.56	111.8	38.9	33.4	2.11	28.5	0.02	0.10	0.01	0.03	171	08
200	8.13	8.11	33.989	26.467	159.3	0.452	2.36	102.9	35.5	37.0	2.18	29.6	0.02	0.04	0.01	0.03	202	07
231	7.60	7.58	34.020	26.569	150.0	0.500	2.06	89.9	30.7	43.7	2.35	31.9	0.02	0.03			233	06
250 ISL	7.41 D	7.38	34.043 D	26.615	145.8	0.501	1.81	D 78.9 D	26.9	47.1	2.45	33.1	0.01	0.05			252	
271	7.14	7.12	34.052	26.660	141.8	0.558	1.59	69.6	23.5	50.9	2.56	34.4	0.01	0.07			273	05
300 ISL	7.01 D	6.98	34.080 D	26.701	138.3	0.573	1.30	D 56.6 D	19.1	54.6	2.68	35.6	0.01	0.06			302	
320	6.89	6.86	34.107	26.738	135.1	0.626	1.09	47.3	15.9	57.2	2.76	36.4	0.01	0.06			323	04
380	6.55	6.51	34.164	26.831	127.1	0.705	0.70	30.5	10.2	65.0	2.93	38.1	0.01	0.06			383	03
400 ISL	6.35 D	6.31	34.171 D	26.863	124.1	0.705	0.66	D 28.7 D	9.5	67.9	2.97	38.6	0.01	0.05			403	
439	6.12	6.08	34.213	26.926	118.5	0.777	0.48	20.9	6.9	73.4	3.06	39.6	0.01	0.02			443	02
500 ISL	5.78 D	5.73	34.274 D	27.018	110.4	0.824	0.29	D 12.8 D	4.2	81.2	3.18	40.6	0.01	0.14			504	
513	5.70	5.65	34.283	27.035	108.9	0.861	0.28	12.3	4.0	82.8	3.21	40.8	0.01	0.17			517	01

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

RV OCEAN STARR CALCOFI CRUISE 1404 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 31.9 W	14/04/2014	1040	UTC	3995 m	360 18 kn			1025.0 mb	13.4 C	12.1 C				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	14.61	14.61	33.466	24.875	306.7	0.000	5.98	261.0	103.3	3.5	0.36	0.1	0.03	0.11	0.36	0.09	0	
2	14.61	14.61	33.466	24.875	306.7	0.006	5.98	261.0	103.3	3.5	0.36	0.1	0.03	0.11	0.36	0.09	2	22
10	14.61	14.61	33.466	24.875	307.0	0.031	5.96	260.2	103.0	3.5	0.36	0.0	0.02	0.11	0.37	0.10	10	20
10	14.61	14.61	33.466	24.875	307.0	0.030											10	21
20	14.61	14.60	33.472	24.881	306.8	0.061	5.97	260.8	103.2	3.6	0.36	0.0	0.02	0.11	0.37	0.12	20	19
30	14.19	14.18	33.476	24.973	298.3	0.092	6.06	264.5	103.8	4.3	0.41	0.3	0.08	0.37	0.57	0.32	30	18
39	14.13	14.12	33.471	24.982	297.7	0.120											39	17
40	14.11	14.10	33.478	24.991	296.9	0.121	5.96	260.2	102.0	4.4	0.45	0.7	0.11	0.32	0.74	0.38	40	16
50	13.67	13.66	33.474	25.081	288.6	0.151	5.79	252.7	98.1	5.3	0.53	2.0	0.33	0.34	0.62	0.37	50	15
60	12.48	12.48	33.460	25.304	267.5	0.179	5.12	223.4	84.6	8.8	0.91	8.5	0.15	0.08	0.46	0.36	60	14
70	11.46	11.45	33.449	25.489	250.1	0.204	4.64	202.6	75.1	10.8	1.13	12.3	0.10	0.03	0.22	0.21	71	13
75 ISL	11.25 D	11.24	33.485 D	25.554	244.0	0.188	4.31	D187.6 D	69.4	12.5	1.23	13.9	0.08	0.03	0.17	0.19	76	
85	10.86	10.85	33.521	25.653	234.8	0.241	3.95	172.2	63.0	15.7	1.43	17.2	0.03	0.02	0.06	0.16	86	12
100	10.17	10.15	33.690	25.905	211.1	0.274	3.20	139.5	50.4	22.3	1.74	21.5	0.03	0.03	0.03	0.14	101	11
120	9.32	9.31	33.676	26.034	199.1	0.315	3.28	143.1	50.7	24.2	1.87	24.2	0.03	0.02	0.01	0.06	121	10
125 ISL	9.29 D	9.28	33.730 D	26.082	194.7	0.297	3.09	D134.4 D	47.7	25.2	1.90	24.7	0.03	0.03	0.01	0.06	126	
140	8.97	8.95	33.821	26.205	183.2	0.353	2.77	121.1	42.6	28.1	1.98	26.3	0.02	0.04	0.01	0.07	141	09
150 ISL	8.87 D	8.85	33.898 D	26.282	176.1	0.343	2.59	D112.8 D	39.7	30.0	2.03	27.1	0.02	0.04	0.01	0.07	151	
170	8.58	8.56	33.961	26.376	167.5	0.406	2.36	102.8	35.9	33.9	2.12	28.6	0.02	0.04	0.01	0.05	171	08
200	8.25	8.22	34.031	26.482	157.9	0.454	1.98	86.5	30.0	38.8	2.29	30.4	0.02	0.02	0.01	0.05	202	07
230	8.00	7.98	34.091	26.567	150.4	0.501	1.53	66.6	23.0	44.2	2.47	32.2	0.02	0.00			232	06
250 ISL	7.82 D	7.79	34.115 D	26.614	146.3	0.504	1.32	D 57.5 D	19.8	47.0	2.54	33.1	0.02	0.01			252	
270	7.57	7.55	34.124	26.656	142.5	0.559	1.24	53.9	18.4	49.7	2.61	33.9	0.02	0.01			272	05
300 ISL	7.20 D	7.17	34.119 D	26.706	138.1	0.575	1.15	D 50.2 D	17.0	54.4	2.68	35.2	0.01	0.00			302	
320	6.89	6.86	34.101	26.734	135.5	0.629	1.13	49.1	16.5	57.4	2.72	36.1	0.01	0.00			323	04
380	6.50	6.47	34.165	26.838	126.4	0.707	0.69	29.9	10.0	66.1	2.94	38.1	0.01	0.03			383	03
400 ISL	6.52 D	6.48	34.215 D	26.875	123.2	0.707	0.50	D 21.6 D	7.2	68.3	2.98	38.4	0.01	0.03			403	
440	6.30	6.26	34.251	26.933	118.1	0.781	0.38	16.6	5.5	72.7	3.05	38.9	0.02	0.02			444	02
500 ISL	5.99 D	5.94	34.277 D	26.994	112.9	0.826	0.28	D 12.1 D	4.0	79.4	3.14	40.1	0.01	0.02			504	
514	5.87	5.83	34.287	27.017	110.8	0.866	0.26	11.2	3.7	81.0	3.16	40.4	0.00	0.02			518	01

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

RV OCEAN STARR — CALCOFI CRUISE 1404 — 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 8.9 N	123 13.2 W	14/04/2014	1707	UTC	4221 m	320 09 kn	340 05 09	2	1026.0 mb	14.9 C	12.8 C	19 m	8/8	ST	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	14.76	14.76	33.436	24.818	312.1	0.000	5.91	258.2	102.5	3.2	0.35	0.0	0.03	0.04	0.32	0.11	0	
2 A	14.76	14.76	33.436	24.818	312.1	0.006	5.91	258.2	102.5	3.2	0.35	0.0	0.03	0.04	0.32	0.11	2	24
10	14.76	14.76	33.432	24.817	312.6	0.031	5.94	259.6	103.0	3.2	0.38	0.0	0.00	0.02	0.32	0.08	10	23
13 A	14.76	14.76	33.431	24.817	312.7	0.041	5.93	259.0	102.8	3.2	0.35	0.0	0.01	0.02	0.31	0.10	13	22
17 A	14.75	14.75	33.432	24.819	312.6	0.053	5.92	258.5	102.6	3.2	0.35	0.0	0.01	0.04	0.32	0.07	17	21
20 ISL	14.75 D	14.75	33.430 D	24.818	312.8	0.063	5.91	D257.7	D102.4	3.2	0.35	0.0	0.01	0.05	0.33	0.08	20	
30 ISL	14.74 D	14.73	33.428 D	24.819	313.0	0.095	5.91	D257.7	D102.4	3.2	0.35	0.0	0.01	0.10	0.35	0.09	30	
32 A	14.73	14.73	33.429	24.821	312.8	0.100	5.91	257.9	102.3	3.2	0.35	0.0	0.01	0.11	0.35	0.09	32	20
42	14.56	14.56	33.398	24.834	311.9	0.131	5.91	258.2	102.0	3.3	0.39	0.1	0.08	0.15	0.55	0.21	42	19
50 ISL	13.89 D	13.88	33.380 D	24.961	300.0	0.157	5.84	D254.6	D 99.4	3.2	0.44	0.6	0.26	0.18	0.62	0.29	50	
54 A	13.80	13.79	33.383	24.983	298.0	0.168	5.79	252.8	98.3	3.2	0.47	0.8	0.35	0.20	0.65	0.33	54	17
54	13.80	13.79	33.385	24.985	297.9	0.168											54	18
62	12.68	12.67	33.289	25.134	283.8	0.191	5.51	240.5	91.3	5.0	0.67	4.6	0.22	0.07	0.34	0.23	63	16
70 A	11.99	11.98	33.261	25.245	273.4	0.213	5.36	234.0	87.5	6.2	0.79	7.1	0.06	0.01	0.23	0.14	71	15
74	11.82	11.81	33.278	25.290	269.2	0.224	5.22	227.7	84.9	7.2	0.89	8.6	0.04	0.05	0.17	0.11	75	14
75 ISL	11.80 D	11.79	33.289 D	25.302	268.0	0.216	5.12	D223.1	D 83.4	7.5	0.92	9.1	0.04	0.05	0.16	0.10	76	
85	10.82	10.81	33.327	25.509	248.5	0.253	4.70	205.1	74.9	11.1	1.19	13.7	0.03	0.02	0.07	0.06	86	13
94	10.07	10.06	33.382	25.681	232.2	0.274	4.32	188.7	67.8	15.1	1.41	15.3	0.05	0.06	0.04	0.04	95	12
100 ISL	9.89 D	9.88	33.414 D	25.736	227.1	0.278	4.27	D186.0	D 66.8	17.0	1.49	17.3	0.05	0.06	0.03	0.04	101	
110	9.49	9.47	33.543	25.903	211.3	0.310	3.84	167.6	59.5	20.1	1.63	20.5	0.07	0.06	0.02	0.03	111	11
125 ISL	9.06 D	9.05	33.713 D	26.106	192.4	0.331	3.45	150.2	53.0	24.7	1.78	23.8	0.04	0.02	0.01	0.03	126	
126	9.03	9.01	33.705	26.104	192.5	0.342	3.42	149.5	52.6	25.0	1.79	24.0	0.03	0.02	0.01	0.03	127	10
144	8.76	8.74	33.838	26.252	178.8	0.376	3.08	134.5	47.1	28.9	1.92	26.0	0.02	0.03	0.01	0.03	145	09
150 ISL	8.66 D	8.64	33.881 D	26.301	174.2	0.377	2.99	D129.9	D 45.5	29.7	1.94	26.3	0.02	0.03	0.01	0.02	151	
170	8.47	8.45	33.936	26.373	167.8	0.421	2.77	120.7	42.0	32.4	2.00	27.5	0.02	0.04	0.00	0.02	171	08
200	8.17	8.15	34.003	26.472	158.8	0.470	2.49	108.8	37.6	36.6	2.12	29.1	0.02	0.02	0.00	0.02	202	07
230	7.83	7.80	34.030	26.545	152.4	0.516	2.09	91.4	31.4	41.7	2.26	31.2	0.02	0.05			232	06
250 ISL	7.77 D	7.74	34.094 D	26.604	147.1	0.538	1.49	D 64.8	D 22.3	45.3	2.42	32.7	0.02	0.05			252	
270	7.64	7.61	34.118	26.642	143.8	0.575	1.20	52.2	17.9	49.0	2.58	34.1	0.01	0.05			272	05
300 ISL	7.44 D	7.41	34.157 D	26.702	138.5	0.610	0.93	D 40.3	D 13.8	52.7	2.66	35.1	0.01	0.03			302	
320	7.30	7.27	34.153	26.719	137.3	0.645	0.92	39.9	13.5	55.2	2.71	35.7	0.01	0.01			323	04
380	6.76	6.72	34.214	26.842	126.2	0.724	0.54	23.5	7.9	65.1	2.93	37.7	0.01	0.04			383	03
400 ISL	6.64 D	6.61	34.222 D	26.865	124.3	0.742	0.49	D 21.2	D 7.1	67.0	2.96	38.1	0.01	0.04			403	
441	6.40	6.36	34.242	26.913	120.1	0.799	0.40	17.6	5.8	71.1	3.01	38.9	0.00	0.03			445	02
500 ISL	6.04 D	6.00	34.274 D	26.986	113.8	0.863	0.31	D 13.4	D 4.4	77.7	3.09	40.0	0.01	0.02			504	
515	5.94	5.90	34.272	26.996	112.9	0.885	0.31	13.4	4.4	79.4	3.11	40.3	0.01	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 OCEAN STARR — CALCOFI CRUISE 1404 — 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 49.2 N	123 54.0 W	14/04/2014	2321	UTC	4293 m	360 19 kn	360 03 06	2	1027.0 mb	16.0 C	14.0 C	18 m	8/8	ST	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	15.19	15.19	33.159	24.512	341.2	0.000	5.88	256.6	102.6	3.0	0.37	0.4	0.01	0.18	0.25	0.03	0	
2	15.19	15.19	33.159	24.512	341.3	0.007	5.88	256.6	102.6	3.0	0.37	0.4	0.01	0.18	0.25	0.03	2	22
9	15.19	15.18	33.159	24.514	341.4	0.031											9	21
10	15.18	15.17	33.156	24.514	341.4	0.034	5.91	258.2	103.2	3.0	0.35	0.2	0.00	0.16	0.30	0.01	10	20
20	15.19	15.18	33.198	24.545	338.8	0.068	5.86	255.8	102.3	3.1	0.36	0.2	0.00	0.19	0.29	0.03	20	19
30 ISL	15.16 D	15.15	33.244 D	24.588	335.0	0.089	5.87	D256.0	D102.5	3.2	0.36	0.1	0.00	0.16	0.33	0.03	30	
31	15.15	15.15	33.252	24.594	334.5	0.105	5.87	256.3	102.4	3.2	0.36	0.1	0.00	0.16	0.33	0.03	31	18
40	15.11	15.11	33.256	24.607	333.5	0.135	5.87	256.2	102.3	3.2	0.45	0.1	0.00	0.29	0.36	0.01	40	17
50	15.04	15.03	33.251	24.620	332.6	0.169	5.86	255.6	101.9	3.2	0.36	0.0	0.00	0.09	0.40	0.07	50	15
51	14.78	14.77	33.250	24.674	327.5	0.171											51	16
60	12.91	12.90	33.112	24.953	301.0	0.200	5.81	253.5	96.7	4.0	0.56	1.8	0.20	0.21	0.94	0.43	60	14
71	11.88	11.87	33.135	25.168	280.7	0.232	5.59	243.9	91.0	5.8	0.75	6.3	0.06	0.10	0.41	0.12	72	13
75 ISL	11.63 D	11.62	33.169 D	25.241	273.9	0.215	5.50	D239.6	D 89.1	6.8	0.83	7.5	0.04	0.10	0.33	0.11	76	
84	10.94	10.93	33.194	25.384	260.4	0.267	5.27	229.8	84.1	8.9	1.00	10.3	0.01	0.11	0.14	0.06	85	12
100	10.36	10.35	33.331	25.593	240.8	0.307	4.82	210.5	76.1	12.6	1.24	14.2	0.00	0.15	0.06	0.03	101	11
120	9.55	9.53	33.437	25.811	220.3	0.353	4.32	188.3	66.9	17.6	1.49	18.6	0.00	0.07	0.02	0.02	121	10
125 ISL	9.40 D	9.39	33.523 D	25.902	211.7	0.337	4.10	D178.4	D 63.4	18.9	1.55	19.6	0.00	0.07	0.02	0.02	126	
140	9.36	9.34	33.716	26.061	197.0	0.395	3.66	159.6	56.6	22.9	1.74	22.5	0.00	0.06	0.01	0.02	141	09
150 ISL	9.16 D	9.15	33.831 D	26.182	185.7	0.387	3.20	D139.1	D 49.3	25.2	1.81	23.5	0.00	0.09	0.01	0.02	151	
170	8.81	8.79	33.934	26.320	172.9	0.450	2.99	130.6	45.8	29.6	1.96	25.5	0.00	0.14	0.00	0.02	171	08
200 ISL	8.42 D	8.40	33.992 D	26.425	163.4	0.474	2.72	D118.4	D 41.3	33.8	2.08	27.2	0.00	0.20	0.00	0.01	202	
201	8.41	8.39	33.992	26.427	163.2	0.502	2.74	119.4	41.5	34.0	2.08	27.3	0.00	0.20	0.00	0.01	203	07
230	7.83	7.81	34.029	26.543	152.5	0.548	2.13	92.7	31.8	41.5	2.40	30.7	0.00	0.21			232	06
250 ISL	7.68 D	7.65	34.054 D	26.585	148.8	0.552	1.80	D 78.3	D 26.9	45.0	2.48	32.1	0.01	0.14			252	
269	7.52	7.49	34.084	26.632	144.7	0.606	1.53	66.5	22.7	48.3	2.55	33.4	0.01	0.07			271	05
300 ISL	7.33 D	7.30	34.133 D	26.698	138.9	0.624	1.14	D 49.4	D 16.8	52.9	2.68	34.7	0.01	0.08			302	
318	7.19	7.16	34.151	26.732	135.9	0.674	1.00	43.5	14.7	55.5	2.76	35.5	0.00	0.08			321	04
381	6.78	6.75	34.195	26.824	127.9	0.757	0.68	29.7	10.0	63.0	2.92	37.2	0.00	0.04			384	03
400 ISL	6.58 D	6.55	34.207 D	26.860	124.6	0.757	0.60	D 26.2	D 8.8	65.8	2.97	37.8	0.00	0.07			403	
441	6.24	6.20	34.229	26.923	119.0	0.831	0.49	21.3	7.1	71.9	3.07	39.0	0.00	0.14			445	02
500 ISL	5.91 D	5.86	34.272 D	27.000	112.3	0.877	0.33	D 14.4	D 4.8	78.4	3.19	40.3	0.00	0.11			504	
516	5.83	5.79	34.281	27.016	110.9	0.917	0.32	14.1	4.6	80.1	3.22	40.6	0.00	0.10			520	01

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

RV OCEAN STARR — CALCOFI CRUISE 1404 — 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 24.3 N	119 48.0 W	13/04/2014	0525	UTC	21 m	010 08 kn			1018.0 mb	13.7 C	11.9 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	13.29	13.29	33.541	25.204	275.3	0.000	6.92	302.4	116.5	1.4	0.33	0.5	0.04	0.11	2.11	0.20	0	
2	13.29	13.29	33.541	25.204	275.4	0.006	6.92	302.4	116.5	1.4	0.33	0.5	0.04	0.11	2.11	0.20	2	05
5	13.05	13.05	33.540	25.253	270.8	0.014	6.85	299.1	114.6	1.6	0.35	0.7	0.06	0.13	2.19	0.24	5	04
10	11.62	11.62	33.558	25.541	243.6	0.027	4.21	183.7	68.3	6.7	1.23	10.4	0.31	2.05	2.34	0.40	10	03
15	11.18	11.18	33.575	25.635	234.8	0.039	3.72	162.3	59.8	10.3	1.45	14.1	0.31	1.74	2.48	0.41	15	01
15	11.18	11.18	33.582	25.640	234.3	0.038											15	02

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

RV OCEAN STARR CALCOFI CRUISE 1404 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 1.5 W	13/04/2014	0727	UTC	572 m	290 05 kn			1018.5 mb	13.9 C	12.0 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	12.53	12.53	33.642	25.435	253.4	0.000	7.31	319.3	121.2	0.6	0.24	0.3	0.03	0.05	20.78	2.21	0	
2	12.53	12.53	33.642	25.435	253.5	0.005	7.31	319.3	121.2	0.6	0.24	0.3	0.03	0.05	20.78	2.21	2	24
10	12.53	12.53	33.640	25.433	253.9	0.025	7.33	320.0	121.4	0.7	0.24	0.4	0.02	0.10	21.52	2.27	10	23
20	11.18	11.17	33.705	25.737	225.2	0.049	4.43	193.2	71.3	16.9	1.48	14.7	0.23	1.71	5.80	1.66	20	22
30	10.52	10.51	33.712	25.860	213.8	0.071	3.44	150.2	54.6	21.7	1.72	19.8	0.22	0.34	1.11	1.03	30	21
40	10.00	9.99	33.690	25.931	207.2	0.092	3.27	142.7	51.3	22.4	1.77	21.8	0.10	0.08	0.50	0.76	40	20
50	9.59	9.58	33.728	26.030	198.0	0.113	3.09	135.0	48.1	24.1	1.86	23.3	0.03	0.03	0.20	0.60	50	19
60	9.51	9.51	33.811	26.107	190.9	0.132	2.89	126.4	45.0	25.7	1.89	24.0	0.04	0.05	0.13	0.46	60	18
70	9.50	9.50	33.854	26.142	187.8	0.151	2.59	113.0	40.2	27.8	1.99	24.8	0.07	0.01	0.12	0.44	71	17
75 ISL	9.55 D	9.54	33.902 D	26.173	184.9	0.162	2.28 D	99.0 D	35.4	29.0	2.03	25.3	0.06	0.03	0.12	0.45	76	
85	9.49	9.48	33.923	26.199	182.8	0.179	2.11	92.1	32.8	31.3	2.12	26.2	0.04	0.06	0.13	0.48	86	16
100	9.42	9.41	33.968	26.246	178.6	0.206	1.98	86.3	30.7	32.3	2.18	26.9	0.04	0.01	0.10	0.37	101	15
120	9.32	9.30	34.013	26.299	174.0	0.241	1.87	81.5	28.9	33.2	2.24	27.6	0.02	0.02	0.06	0.33	121	14
125 ISL	9.24 D	9.22	34.024 D	26.321	172.0	0.252	1.90 D	82.6 D	29.4	33.9	2.26	27.9	0.02	0.02	0.05	0.31	126	
140	9.12	9.11	34.058	26.366	168.0	0.275	1.71	74.5	26.3	35.7	2.31	28.6	0.02	0.03	0.04	0.24	141	13
150 ISL	9.06 D	9.04	34.089 D	26.401	164.9	0.294	1.54 D	66.8 D	23.7	37.3	2.36	29.0	0.02	0.02	0.06	0.23	151	
170	8.92	8.90	34.128	26.453	160.3	0.324	1.36	59.2	20.8	40.3	2.45	29.7	0.02	0.01	0.10	0.21	171	12
200	8.78	8.76	34.158	26.501	156.4	0.372	1.17	50.8	17.8	43.4	2.53	30.4	0.01	0.02	0.05	0.21	202	11
230	8.48	8.46	34.173	26.559	151.4	0.418	0.98	42.5	14.8	47.1	2.64	31.6	0.03	0.03			232	10
250 ISL	8.35 D	8.32	34.178 D	26.584	149.4	0.452	0.83 D	36.2 D	12.6	49.7	2.70	32.1	0.03	0.03			252	
270	8.20	8.17	34.191	26.617	146.5	0.478	0.71	31.0	10.7	52.2	2.75	32.6	0.03	0.02			272	09
300 ISL	7.95 D	7.91	34.203 D	26.665	142.4	0.526	0.59 D	25.6 D	8.8	56.9	2.84	32.9	0.03	0.01			302	
321	7.78	7.75	34.213	26.698	139.6	0.551	0.46	19.9	6.8	60.2	2.91	33.1	0.03	0.01			324	08
380	7.20	7.16	34.231	26.795	131.0	0.630	0.30	13.1	4.5	70.2	3.07	33.3	0.02	0.00			383	07
400 ISL	7.05 D	7.01	34.237 D	26.822	128.8	0.662	0.17 D	7.2 D	2.4	75.8	3.17	32.0	0.02	0.01			403	
440	6.78	6.74	34.244	26.865	125.1	0.707	0.05	2.2	0.8	87.0	3.38	29.3	0.02	0.04			444	06
480	6.66	6.61	34.255	26.890	123.2	0.757	0.03	1.3	0.4	94.8	3.57	25.2	0.02	0.07			484	05
500 ISL	6.64 D	6.59	34.255 D	26.893	123.2	0.788	0.07 D	3.0 D	1.0	96.9	3.58	24.1	0.03	0.04			504	
515	6.61	6.56	34.254	26.897	123.1	0.800	0.05	2.0	0.7	98.5	3.59	23.2	0.03	0.01			519	04
532	6.59	6.54	34.251	26.897	123.3	0.821	0.05	2.1	0.7	101.7	3.68	20.7	0.03	0.00			537	03
560	6.44	6.39	34.236	26.906	122.7	0.855	0.29	12.5	4.2	82.8	3.23	34.0	0.16	0.19			565	02
564	6.44	6.39	34.236	26.906	122.8	0.860	0.29	12.7	4.2	83.2	3.22	34.0	0.16	0.17			569	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 OCEAN STARR CALCOFI CRUISE 1404 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 16.0 N	119 19.5 W	13/04/2014	0220	UTC	18 m	350 20 kn	350 01 07	0	1017.0 mb	14.2 C	12.0 C		0/8		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	12.97	12.97	33.556	25.280	268.1	0.000	5.63	245.6	94.0	5.1	0.76	5.1	0.18	0.75	2.95	0.15	0	
2	12.97	12.97	33.556	25.281	268.1	0.005	5.63	245.6	94.0	5.1	0.76	5.1	0.18	0.75	2.95	0.15	2	06
5	12.93	12.93	33.555	25.288	267.5	0.013	5.57	242.9	92.9	5.3	0.76	5.3	0.19	0.79	2.72	0.37	5	05
10	11.20	11.19	33.592	25.645	233.7	0.026	3.28	143.4	52.9	11.2	1.55	16.2	0.31	1.36	2.58	0.48	10	02
14	10.95	10.95	33.601	25.696	228.9	0.035	3.08	134.4	49.3	13.1	1.70	17.8	0.32	1.51	5.34	1.21	14	01

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

RV OCEAN STARR CALCOFI CRUISE 1404 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 13.6 N	119 24.6 W	13/04/2014	0035	UTC	32 m	340 19 kn	340 01 08	0	1014.0 mb	15.0 C	12.9 C	08 m	0/8		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	14.15	14.15	33.559	25.043	290.7	0.000	7.20	314.4	123.4	0.4	0.17	0.1	0.02	0.03	3.53	0.21	0	
2	14.15	14.15	33.559	25.043	290.7	0.006	7.20	314.4	123.4	0.4	0.17	0.1	0.02	0.03	3.53	0.21	2	07
5	14.14	14.14	33.559	25.046	290.6	0.015	7.19	313.9	123.1	0.4	0.18	0.0	0.02	0.00	3.30	0.37	5	06
10	13.49	13.49	33.555	25.177	278.2	0.029	7.40	322.9	125.0	0.4	0.17	0.0	0.02	0.00	3.93	0.11	10	04
10	13.49	13.49	33.556	25.178	278.2	0.028											10	05
15	11.70	11.70	33.559	25.526	245.1	0.042	5.06	220.9	82.3	7.7	1.09	9.5	0.29	1.18	3.74	0.14	15	03
20	11.32	11.32	33.581	25.614	236.9	0.054	4.16	181.7	67.2	15.2	1.42	14.6	0.42	0.84	1.42	0.60	20	02
28	10.95	10.95	33.618	25.710	227.9	0.073	3.15	137.6	50.5	17.3	1.74	17.5	0.31	1.96	1.82	0.86	28	01

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

RV OCEAN STARR CALCOFI CRUISE 1404 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 11.0 N	119 30.5 W	12/04/2014	2228	UTC	109 m	340 16 kn	340 01 07	0	1014.5 mb	13.9 C	11.9 C	07 m	0/8		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	13.71	13.71	33.575	25.146	280.9	0.000	7.43	324.4	126.1	0.2	0.15	0.0	0.02	0.06	3.43	0.82	0	
2	13.71	13.71	33.575	25.146	281.0	0.006	7.43	324.4	126.1	0.2	0.15	0.0	0.02	0.06	3.43	0.82	2	12
5	13.65	13.65	33.575	25.158	279.9	0.014	7.44	324.7	126.1	0.2	0.14	0.0	0.02	0.04	3.86	0.81	5	11
10	13.01	13.01	33.585	25.296	266.9	0.028	7.41	323.5	124.0	0.4	0.24	0.0	0.03	0.12	7.87	1.33	10	09
10	13.01	13.01	33.584	25.296	266.9	0.028											10	10
20	11.84	11.83	33.616	25.547	243.3	0.053	5.42	236.6	88.5	7.6	1.02	8.2	0.17	1.70	5.42	3.21	20	08
30	11.34	11.34	33.592	25.620	236.6	0.077	4.80	209.6	77.5	13.0	1.30	12.9	0.25	1.16	1.46	1.67	30	07
40	10.57	10.56	33.625	25.783	221.3	0.100	3.41	148.9	54.2	19.9	1.67	19.4	0.28	0.40	0.48	1.38	40	06
50	10.34	10.33	33.666	25.856	214.6	0.122	3.04	132.6	48.0	21.8	1.78	21.1	0.27	0.26	0.34	0.93	50	05
60	10.06	10.05	33.738	25.959	205.0	0.143	2.65	115.6	41.6	25.0	1.91	23.2	0.23	0.22	0.27	0.88	60	04
75	9.78	9.77	33.792	26.049	196.8	0.173	2.62	114.4	40.9	26.3	1.96	24.3	0.12	0.08	0.16	0.96	76	03
85	9.74	9.73	33.836	26.090	193.1	0.193	2.47	107.8	38.6	27.7	2.04	24.9	0.09	0.09	0.17	0.60	86	02
95	9.59	9.58	33.899	26.164	186.3	0.212	2.37	103.4	36.9	29.1	2.08	25.7	0.08	0.11	0.11	0.42	96	01

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

RV OCEAN STARR — CALCOFI CRUISE 1404 — 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 52.5 N	120 8.5 W	12/04/2014	1721 UTC	110 m	310 17 kn	290 03 09	1	1017.0 mb	14.9 C	12.8 C	10 m	7/8	SC	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	13.00	13.00	33.533	25.256	270.4	0.000	6.10	266.5	102.1	3.7	0.56	2.7	0.08	0.52	3.85	1.32	0	
2 A	13.00	13.00	33.533	25.256	270.4	0.005	6.10	266.5	102.0	3.7	0.56	2.7	0.08	0.52	3.85	1.32	2	16
7 A	13.00	13.00	33.529	25.254	270.8	0.019	6.11	266.7	102.1	3.5	0.55	2.6	0.08	0.45	3.61	1.54	7	15
9 A	12.99	12.99	33.530	25.257	270.5	0.024	6.11	267.0	102.2	3.5	0.54	2.7	0.06	0.46	3.69	1.76	9	12
9	12.99	12.99	33.534	25.260	270.3	0.025											9	14
9	12.99	12.99	33.530	25.257	270.6	0.025											9	13
10 ISL	13.00 D	12.99	33.529 D	25.256	270.7	0.019	6.06	D263.8	D101.3	3.6	0.55	2.8	0.06	0.49	3.70	1.71	10	
16 A	12.87	12.87	33.533	25.284	268.2	0.043	5.99	261.4	99.8	4.0	0.60	3.2	0.09	0.68	3.76	1.46	16	10
16	12.87	12.87	33.533	25.284	268.2	0.043											16	11
20 ISL	12.87 D	12.86	33.535 D	25.286	268.1	0.041	5.97	D259.8	D 99.5	3.9	0.60	3.2	0.09	0.73	3.77	1.51	20	
22	12.85	12.85	33.538	25.292	267.6	0.059	6.02	262.7	100.3	3.9	0.60	3.2	0.09	0.75	3.78	1.54	22	09
29 A	12.49	12.49	33.545	25.367	260.7	0.078	5.61	245.0	92.8	6.2	0.78	5.4	0.11	1.25	2.90	1.92	29	08
30 ISL	12.30 D	12.30	33.546 D	25.404	257.2	0.067	5.05	D219.9	D 83.2	7.1	0.84	6.3	0.12	1.22	2.67	1.79	30	
37 A	11.49	11.49	33.553	25.562	242.3	0.098	4.32	188.8	70.0	13.6	1.26	12.7	0.16	1.02	1.08	0.86	37	07
44	11.36	11.35	33.561	25.593	239.6	0.115	4.22	184.1	68.1	14.1	1.31	13.5	0.15	0.99	1.08	0.76	44	06
50 ISL	11.09 D	11.08	33.583 D	25.659	233.4	0.116	4.01	D174.5	D 64.4	15.8	1.43	15.3	0.14	0.77	0.82	0.76	50	
51	11.03	11.02	33.586	25.672	232.1	0.131	3.94	172.1	63.2	16.1	1.45	15.6	0.14	0.73	0.78	0.76	51	05
60	10.97	10.96	33.593	25.688	230.9	0.152	3.88	169.2	62.1	16.5	1.46	16.0	0.14	0.69	0.84	0.81	60	04
75 ISL	10.64 D	10.63	33.653 D	25.794	221.2	0.174	3.52	D153.1	D 56.0	19.5	1.60	18.1	0.14	0.72	0.90	1.74	76	
76	10.60	10.59	33.654	25.801	220.5	0.188	3.54	154.4	56.2	19.7	1.61	18.2	0.14	0.72	0.91	1.80	77	03
83	10.26	10.25	33.731	25.920	209.3	0.203	3.14	136.9	49.5	23.4	1.77	20.7	0.12	0.63	0.85	2.08	84	02
100 ISL	9.73 D	9.72	33.841 D	26.097	192.8	0.225	2.63	D114.5	D 41.1	27.9	1.98	23.7	0.09	0.38	0.66	1.89	101	
101	9.73	9.72	33.841	26.096	192.9	0.239	2.65	115.6	41.4	28.1	1.99	23.9	0.09	0.36	0.64	1.88	102	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 OCEAN STARR — CALCOFI CRUISE 1404 — 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 44.8 N	120 24.4 W	12/04/2014	1214 UTC	982 m	320 19 kn			1015.5 mb	13.6 C	11.9 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	14.23	14.23	33.477	24.964	298.2	0.000	5.95	259.9	102.0	1.8	0.43	0.8	0.06	0.18	1.01	0.42	0	
3	14.23	14.23	33.477	24.964	298.3	0.009	5.95	259.9	102.0	1.8	0.43	0.8	0.06	0.18	1.01	0.42	3	22
10	14.27	14.26	33.476	24.955	299.3	0.030	5.98	261.0	102.5	1.9	0.42	0.7	0.06	0.16	0.98	0.36	10	20
10	14.27	14.26	33.476	24.955	299.3	0.030											10	21
20	14.21	14.21	33.488	24.977	297.6	0.060	5.98	261.0	102.5	1.6	0.42	0.6	0.06	0.19	1.04	0.38	20	18
30	14.20	14.19	33.474	24.970	298.6	0.089	5.87	256.3	100.6	2.3	0.46	1.2	0.10	0.15	1.04	0.41	30	17
40	12.16	12.15	33.477	25.379	259.9	0.117	4.65	203.0	76.3	10.3	1.06	10.3	0.21	0.02	0.58	0.33	40	16
50	11.60	11.59	33.492	25.496	249.0	0.143	4.32	188.8	70.1	12.8	1.23	13.2	0.12	0.02	0.37	0.29	50	15
60	10.97	10.96	33.537	25.646	234.9	0.167	3.94	172.1	63.1	15.9	1.43	16.2	0.07	0.01	0.25	0.24	60	14
70	10.55	10.54	33.570	25.745	225.6	0.190	3.73	162.9	59.2	17.8	1.54	18.1	0.06	0.01	0.16	0.14	71	13
75 ISL	10.22 D	10.22	33.597 D	25.822	218.4	0.173	3.65	D158.8	D 57.5	19.5	1.62	19.4	0.05	0.01	0.11	0.12	76	
85	9.72	9.71	33.692	25.981	203.5	0.222	3.28	143.1	51.1	22.9	1.78	22.0	0.03	0.02	0.03	0.07	86	12
100	9.26	9.25	33.765	26.113	191.2	0.252	3.10	135.4	47.9	25.5	1.86	23.7	0.02	0.00	0.01	0.07	101	11
120	8.97	8.96	33.890	26.258	177.8	0.289	2.72	118.7	41.8	30.0	2.00	25.9	0.02	0.02	0.01	0.07	121	10
125 ISL	8.83 D	8.81	33.910 D	26.297	174.2	0.270	2.69	D116.9	D 41.1	30.7	2.03	26.3	0.02	0.02	0.01	0.07	126	
140	8.67	8.66	33.952	26.354	169.0	0.323	2.59	113.1	39.5	33.0	2.11	27.3	0.02	0.03	0.01	0.09	141	09
150 ISL	8.61 D	8.60	33.965 D	26.374	167.3	0.313	2.44	D106.3	D 37.2	34.3	2.15	27.9	0.02	0.03	0.01	0.08	151	
170	8.40	8.38	34.005	26.438	161.6	0.373	2.22	97.0	33.7	36.8	2.22	29.1	0.03	0.03	0.01	0.05	171	08
200	8.31	8.29	34.069	26.502	156.1	0.421	1.79	78.1	27.1	40.9	2.37	30.2	0.02	0.03	0.01	0.06	202	07
230	8.31	8.29	34.195	26.602	147.3	0.466	1.13	49.4	17.1	45.9	2.60	31.6	0.03	0.01			232	06
250 ISL	8.12 D	8.10	34.201 D	26.636	144.3	0.469	1.03	D 44.6	D 15.5	48.2	2.67	32.2	0.03	0.02			252	
270	7.99	7.97	34.216	26.668	141.7	0.524	0.91	39.9	13.8	50.5	2.73	32.8	0.03	0.02			272	05
300 ISL	7.72 D	7.69	34.231 D	26.720	137.1	0.540	0.78	D 34.0	D 11.7	54.0	2.79	33.8	0.03	0.01			302	
321	7.53	7.49	34.234	26.751	134.5	0.594	0.74	32.1	11.0	56.3	2.84	34.5	0.03	0.00			324	04
381	7.13	7.10	34.253	26.822	128.4	0.673	0.59	25.6	8.7	62.1	2.93	35.9	0.02	0.02			384	03
400 ISL	7.02 D	6.98	34.261 D	26.844	126.6	0.673	0.53	D 22.9	D 7.7	63.5	2.96	36.2	0.02	0.01			403	
440	6.85	6.81	34.270	26.875	124.2	0.747	0.48	20.7	7.0	66.5	3.02	36.9	0.01	0.00			444	02
500 ISL	6.38 D	6.33	34.287 D	26.952	117.4	0.796	0.37	D 16.1	D 5.4	74.0	3.12	38.6	0.01	0.03			504	
515	6.24	6.19	34.298	26.979	114.9	0.837	0.33	14.4	4.8	75.9	3.15	39.0	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 OCEAN STARR — CALCOFI CRUISE 1404 — 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 34.8 N	120 44.9 W	12/04/2014	0717 UTC	1346 m	320 18 kn			1018.0 mb	14.8 C	12.4 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	14.52	14.52	33.484	24.908	303.5	0.000	5.93	259.0	102.3	1.4	0.40	0.2	0.04	0.38	0.27	0.03	0	
2	14.52	14.52	33.484	24.908	303.6	0.006	5.93	259.0	102.3	1.4	0.40	0.2	0.04	0.38	0.27	0.03	2	21
9	14.51	14.51	33.483	24.909	303.8	0.028											9	20
10	14.51	14.51	33.484	24.909	303.8	0.030	5.94	259.3	102.4	1.4	0.40	0.2	0.04	0.38	0.26	0.06	10	19
20	14.32	14.32	33.485	24.952	300.0	0.061	5.98	261.0	102.7	1.3	0.40	0.1	0.03	0.48	0.31	0.08	20	18
30	14.15	14.15	33.486	24.988	296.8	0.090	6.00	262.2	102.8	1.3	0.40	0.1	0.04	0.50	0.33	0.08	30	17
40	14.00	13.99	33.488	25.022	294.0	0.120	5.98	261.1	102.0	1.6	0.43	0.4	0.04	0.60	0.40	0.11	40	16
50 ISL	13.77 D	13.76	33.491 D	25.073	289.4	0.138	5.82	D253.7	D 98.9	2.3	0.50	1.0	0.07	0.85	0.29	0.21	50	
51	13.73	13.73	33.489	25.078	288.9	0.152	5.82	254.2	98.8	2.3	0.51	1.1	0.07	0.88	0.28	0.22	51	15
60	12.60	12.59	33.486	25.303	267.7	0.177	5.19	226.4	85.9	6.2	0.80	5.3	0.24	0.87	0.28	0.20	60	14
70	11.02	11.01	33.531	25.633	236.4	0.202	3.89	170.0	62.4	15.6	1.40	16.0	0.25	0.11	0.31	0.31	71	13
75 ISL	10.46 D	10.45	33.529 D	25.729	227.3	0.203	3.77	D164.2	D 59.7	16.5	1.45	17.0	0.19	0.08	0.28	0.30	76	
85	10.31	10.30	33.549	25.771	223.5	0.236	3.70	161.6	58.4	18.2	1.55	19.1	0.08	0.02	0.22	0.26	86	12
100	9.59	9.57	33.699	26.009	201.1	0.268	3.18	138.7	49.4	23.8	1.82	23.3	0.06	0.06	0.05	0.19	101	11
120	9.48	9.47	33.883	26.171	186.2	0.307	2.55	111.3	39.6	28.7	2.02	25.3	0.03	0.03	0.02	0.13	121	10
125 ISL	9.41 D	9.40	33.912 D	26.205	183.1	0.306	2.49	D108.5	D 38.7	29.6	2.05	25.7	0.03	0.03	0.02	0.13	126	
140	9.20	9.19	33.970	26.284	175.8	0.343	2.25	98.1	34.7	32.1	2.14	26.9	0.03	0.03	0.02	0.13	141	09
150 ISL	9.03 D	9.01	34.015 D	26.347	170.0	0.351	2.12	D 92.2	D 32.6	33.9	2.19	27.7	0.02	0.03	0.01	0.12	151	
170	8.75	8.73	34.060	26.427	162.8	0.394	1.87	81.7	28.6	37.4	2.29	29.2	0.02	0.03	0.01	0.11	171	08
200	8.36	8.34	34.136	26.547	151.8	0.441	1.45	63.5	22.1	43.2	2.48	31.1	0.01	0.00	0.00	0.08	202	07
231	8.04	8.01	34.148	26.606	146.7	0.487	1.31	57.1	19.7	47.0	2.55	32.4	0.02	0.04			233	06
250 ISL	7.84 D	7.82	34.143 D	26.631	144.6	0.506	1.28	D 55.6	D 19.2	49.2	2.60	33.1	0.01	0.02			252	
270	7.59	7.57	34.154	26.677	140.5	0.543	1.13	49.2	16.8	51.5	2.65	33.9	0.01	0.00			272	05
300 ISL	7.42 D	7.39	34.168 D	26.713	137.5	0.577	1.01	D 43.9	D 15.0	54.5	2.72	34.6	0.01	0.01			302	
320	7.33	7.30	34.190	26.744	134.9	0.612	0.88	38.5	13.1	56.5	2.76	35.0	0.01	0.02			323	04
381	6.97	6.94	34.222	26.820	128.5	0.692	0.68	29.5	9.9	62.2	2.89	36.5	0.01	0.05			384	03
400 ISL	6.92 D	6.88	34.246 D	26.847	126.2	0.710	0.55	D 23.7	D 8.0	64.7	2.94	37.0	0.01	0.04			403	
440	6.55	6.51	34.261	26.908	120.7	0.766	0.46	20.1	6.7	70.0	3.03	38.1	0.01	0.03			444	02
500 ISL	6.17 D	6.12	34.280 D	26.974	115.0	0.831	0.34	D 14.9	D 5.0	76.1	3.12	39.3	0.01	0.05			504	
515	6.08	6.04	34.281	26.986	114.0	0.854	0.34	14.8	4.9	77.7	3.14	39.6	0.02	0.05			519	01

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

RV OCEAN STARR — CALCOFI CRUISE 1404 — 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 14.9 N	121 26.1 W	12/04/2014	0052	UTC	3778 m	320 18 kn	350 02 05	2	1027.0 mb	14.9 C	13.1 C		8/8	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	14.84	14.84	33.447	24.810	312.8	0.000	5.95	259.8	103.3	2.9	0.36	0.0	0.01	0.04	0.29	0.05	0	
2	14.84	14.84	33.447	24.810	312.9	0.006	5.95	259.8	103.3	2.9	0.36	0.0	0.01	0.04	0.29	0.05	2	21
10	14.80	14.80	33.444	24.816	312.6	0.031	5.99	261.5	103.9	2.8	0.49	0.0	0.02	0.11	0.25	0.07	10	19
10	14.80	14.80	33.450	24.821	312.2	0.030											10	20
20	14.61	14.61	33.460	24.870	307.8	0.062	6.00	261.9	103.6	2.1	0.42	0.0	0.04	0.06	0.69	0.15	20	18
30	14.39	14.38	33.451	24.912	304.1	0.093	5.97	260.7	102.7	2.2	0.41	0.1	0.07	0.29	0.68	0.09	30	17
40	14.24	14.23	33.462	24.952	300.6	0.123	6.04	263.6	103.5	1.6	0.40	0.2	0.07	0.28	0.74	0.19	40	16
50 ISL	14.08 D	14.07	33.458 D	24.983	298.0	0.139	5.84	D254.5	D 99.8	2.0	0.46	0.7	0.12	0.57	0.46	0.19	50	
51	13.99	13.98	33.459	25.002	296.2	0.156	5.88	256.6	100.3	2.1	0.47	0.7	0.13	0.60	0.43	0.19	51	15
61	12.04	12.03	33.368	25.317	266.3	0.184	5.02	219.2	82.2	7.6	0.93	9.0	0.09	0.06	0.23	0.18	61	14
70	11.23	11.22	33.378	25.475	251.4	0.207	4.63	202.0	74.4	11.1	1.20	13.2	0.06	0.06	0.13	0.12	71	13
75 ISL	10.73 D	10.72	33.414 D	25.592	240.3	0.206	4.35	D189.6	D 69.3	12.9	1.31	14.9	0.05	0.06	0.11	0.12	76	
85	10.14	10.13	33.482	25.747	225.7	0.243	4.01	174.9	63.0	16.7	1.52	18.4	0.04	0.05	0.07	0.10	86	12
100	9.63	9.61	33.625	25.945	207.2	0.276	3.50	153.0	54.5	21.5	1.73	21.9	0.02	0.04	0.03	0.07	101	11
121	9.06	9.04	33.821	26.191	184.2	0.317	2.87	125.3	44.2	27.8	1.95	25.5	0.03	0.02	0.02	0.06	122	10
125 ISL	9.02 D	9.00	33.851 D	26.220	181.5	0.310	2.80	D121.9	D 43.0	28.6	1.98	25.9	0.02	0.02	0.02	0.06	126	
140	8.73	8.72	33.917	26.318	172.5	0.350	2.58	112.5	39.4	31.7	2.07	27.2	0.01	0.04	0.02	0.08	141	09
150 ISL	8.67 D	8.66	33.946 D	26.350	169.6	0.354	2.49	D108.4	D 38.0	33.2	2.11	27.8	0.01	0.04	0.01	0.08	151	
171	8.40	8.38	34.008	26.441	161.3	0.402	2.22	96.8	33.6	36.5	2.20	29.0	0.01	0.04	0.01	0.06	172	08
200	8.07	8.05	34.057	26.528	153.5	0.448	1.84	80.4	27.7	41.7	2.37	31.0	0.02	0.05	0.01	0.06	202	07
230	7.74	7.72	34.081	26.597	147.4	0.493	1.51	65.8	22.5	46.5	2.51	32.8	0.03	0.07			232	06
250 ISL	7.50 D	7.47	34.098 D	26.646	143.0	0.510	1.36	D 59.2	D 20.2	49.9	2.60	33.7	0.02	0.05			252	
269	7.31	7.28	34.112	26.684	139.6	0.549	1.21	53.0	18.0	53.2	2.68	34.6	0.02	0.04			271	05
300 ISL	7.05 D	7.02	34.131 D	26.735	135.2	0.580	0.99	D 43.2	D 14.6	56.8	2.77	35.6	0.01	0.04			302	
320	6.92	6.89	34.135	26.756	133.4	0.618	0.92	40.3	13.6	59.1	2.83	36.2	0.01	0.04			323	04
381	6.46	6.42	34.174	26.850	125.1	0.697	0.65	28.4	9.5	67.4	2.96	38.0	0.02	0.05			384	03
400 ISL	6.32 D	6.28	34.199 D	26.888	121.7	0.710	0.52	D 22.8	D 7.6	70.1	3.01	38.4	0.02	0.05			403	
441	6.06	6.02	34.233	26.949	116.3	0.770	0.41	17.8	5.9	76.0	3.12	39.4	0.02	0.05			445	02
500 ISL	5.77 D	5.73	34.280 D	27.023	109.9	0.827	0.27	D 11.9	D 3.9	81.6	3.18	40.1	0.02	0.07			504	
515	5.80	5.76	34.308	27.042	108.4	0.853	0.25	10.8	3.5	83.0	3.20	40.3	0.03	0.07			519	01

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

RV OCEAN STARR — CALCOFI CRUISE 1404 — 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 7.2 W	11/04/2014	1827	UTC	4171 m	270 18 kn	270 02 04	1	1020.0 mb	14.9 C	13.2 C	15 m	7/8	ST	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	14.79	14.79	33.405	24.790	314.8	0.000	5.97	260.9	103.5	3.2	0.38	0.0	0.02	0.16	0.34	0.09	0	
2 A	14.79	14.78	33.405	24.790	314.9	0.006	5.97	260.9	103.5	3.2	0.38	0.0	0.02	0.16	0.34	0.09	2	24
10 A	14.54	14.54	33.393	24.833	311.0	0.031	6.00	262.2	103.5	3.3	0.35	0.0	0.01	1.03	0.36	0.11	10	21
10	14.54	14.54	33.397	24.836	310.8	0.030											10	23
10	14.54	14.54	33.396	24.835	310.8	0.030											10	22
14 A	14.43	14.43	33.373	24.841	310.4	0.044	6.06	264.6	104.2	3.2	0.36	0.0	0.01	0.34	0.41	0.13	14	20
20 ISL	14.31 D	14.31	33.366 D	24.862	308.5	0.057	6.05	D263.5	D103.8	3.2	0.37	0.0	0.02	0.28	0.52	0.20	20	
24 A	14.29	14.28	33.367	24.868	308.1	0.075	6.04	264.0	103.7	3.2	0.37	0.0	0.02	0.24	0.60	0.24	24	19
30 ISL	14.25 D	14.24	33.368 D	24.877	307.5	0.088	5.99	D260.9	D102.6	3.2	0.39	0.1	0.04	0.26	0.81	0.33	30	
34	14.24	14.23	33.372	24.883	307.0	0.105	5.92	258.4	101.4	3.2	0.40	0.1	0.06	0.27	0.95	0.39	34	18
44 A	14.10	14.09	33.376	24.916	304.2	0.136	5.87	256.6	100.4	3.3	0.42	0.3	0.10	0.34	0.62	0.31	44	16
50 ISL	13.67 D	13.66	33.381 D	25.008	295.6	0.140	5.74	D250.2	D 97.3	4.2	0.56	2.5	0.20	0.21	0.41	0.23	50	
54 A	13.12	13.11	33.358	25.101	286.7	0.166	5.54	242.0	92.7	4.7	0.65	3.9	0.27	0.12	0.27	0.18	54	15
62	12.44	12.43	33.353	25.231	274.6	0.188	5.42	236.8	89.5	5.7	0.74	5.8	0.07	0.05	0.18	0.13	62	14
70	11.61	11.60	33.346	25.380	260.5	0.210	5.08	221.9	82.4	8.6	1.01	10.3	0.04	0.13	0.08	0.07	71	13
75 ISL	10.64 D	10.63	33.360 D	25.566	242.8	0.208	4.83	D210.4	D 76.7	11.2	1.18	12.9	0.03	0.14	0.06	0.06	76	
86	10.00	9.99	33.436	25.736	226.8	0.248	4.15	181.3	65.0	16.7	1.54	18.7	0.02	0.15	0.02	0.04	87	12
100	9.70	9.69	33.518	25.849	216.3	0.279	3.78	165.0	58.8	19.5	1.69	21.1	0.02	0.05	0.02	0.04	101	11
120	9.29	9.28	33.704	26.062	196.5	0.320	3.14	137.3	48.6	24.8	1.91	24.7	0.01	0.04	0.01	0.03	121	10
125 ISL	9.21 D	9.19	33.757 D	26.116	191.4	0.317	3.01	D131.2	D 46.5	25.9	1.95	25.3	0.01	0.04	0.01	0.03	126	
140	8.96	8.95	33.857	26.234	180.5	0.358	2.65	115.7	40.7	29.3	2.06	27.1	0.01	0.05	0.01	0.04	141	09
150 ISL	8.86 D	8.84	33.896 D	26.281	176.2	0.363	2.56	D111.2	D 39.1	30.7	2.10	27.7	0.00	0.05	0.00	0.03	151	
170	8.64	8.62	33.956	26.363	168.8	0.410	2.28	99.4	34.7	33.5	2.18	28.9	0.00	0.04	0.00	0.03	171	08
200	8.22	8.20	34.031	26.486	157.6	0.459	1.92	84.0	29.1	39.2	2.34	30.9	0.01	0.16	0.00	0.03	202	07
233	7.77	7.74	34.059	26.576	149.4	0.510	1.72	75.0	25.7	44.0	2.43	32.3	0.01	0.04			235	06
250 ISL	7.54 D	7.52	34.053 D	26.604	147.0	0.523	1.71	D 74.4	D 25.4	46.3	2.56	33.1	0.00	0.07			252	
271	7.51	7.48	34.099	26.646	143.4	0.566	1.32	57.4	19.6	49.1	2.72	34.0	0.00	0.10			273	05
300 ISL	7.20 D	7.17	34.115 D	26.702	138.4	0.595	1.15	D 50.2	D 17.0	52.8	2.73	35.0	0.01	0.04			302	
321	7.06	7.03	34.117	26.724	136.6	0.635	1.10	47.9	16.1	55.5	2.73	35.7	0.01	0.00			324	04
382	6.69	6.65	34.186	26.830	127.3	0.716	0.64	27.8	9.3	64.0	2.95	37.8	0.00	0.06			385	03
400 ISL	6.55 D	6.51	34.207 D	26.864	124.2	0.728	0.58	D 25.2	D 8.4	66.2	2.99	38.2	0.01	0.06			403	
441	6.30	6.26	34.236	26.921	119.3	0.788	0.44	19.0	6.3	71.3	3.07	39.0	0.01	0.06			445	02
500 ISL	5.96 D	5.92	34.277 D	26.997	112.6	0.847	0.30	D 13.2	D 4.4	78.0	3.17	40.1	0.01	0.03			504	
514	5.88	5.83	34.278	27.009	111.6	0.872	0.28	12.4	4.1	79.6	3.19	40.3	0.01	0.02			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 OCEAN STARR CALCOFI CRUISE 1404 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 48.8 W	11/04/2014	1123	UTC	4239 m	360 10 kn			1022.0 mb	14.2 C	12.9 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	15.49	15.49	33.255	24.520	340.4	0.000	5.81	253.9	102.1	3.0	0.34	0.0	0.01	0.01	0.16	0.03	0	
2	15.49	15.49	33.255	24.521	340.5	0.007	5.81	253.9	102.1	3.0	0.34	0.0	0.01	0.01	0.16	0.03	2	21
9	15.47	15.47	33.255	24.525	340.3	0.031											9	20
10	15.47	15.47	33.255	24.525	340.3	0.034	5.81	253.8	102.0	3.0	0.34	0.0	0.01	0.01	0.16	0.03	10	19
20	15.47	15.47	33.258	24.529	340.3	0.068	5.81	253.8	102.0	3.0	0.35	0.0	0.01	0.00	0.16	0.04	20	18
30	15.12	15.11	33.266	24.613	332.6	0.102	5.89	257.2	102.7	3.2	0.35	0.0	0.02	0.01	0.29	0.07	30	17
40	14.81	14.81	33.272	24.684	326.2	0.135	5.93	259.2	102.8	3.4	0.36	0.0	0.01	0.02	0.34	0.08	40	16
50	13.34	13.33	33.147	24.895	306.3	0.166	6.04	263.9	101.5	3.8	0.45	0.6	0.05	0.01	1.21	0.52	50	15
60	12.93	12.92	33.214	25.027	293.9	0.196	5.66	247.4	94.4	4.2	0.59	3.0	0.19	0.02	0.62	0.44	60	14
70	12.05	12.05	33.217	25.198	277.8	0.225	5.41	236.2	88.4	5.7	0.78	6.2	0.06	0.00	0.28	0.23	71	13
75 ISL	11.52 D	11.51	33.243 D	25.317	266.6	0.226	5.24	D228.2 D	84.7	6.7	0.83	7.3	0.05	0.00	0.23	0.19	76	
85	11.02	11.01	33.310	25.461	253.1	0.264	5.16	225.4	82.6	8.5	0.93	9.5	0.03	0.00	0.13	0.10	86	12
100	9.96	9.94	33.391	25.707	229.8	0.301	4.49	195.9	70.2	15.0	1.37	16.3	0.02	0.01	0.04	0.04	101	11
120	9.40	9.39	33.670	26.017	200.7	0.344	3.57	155.9	55.3	22.4	1.73	22.0	0.01	0.01	0.01	0.02	121	10
125 ISL	9.31 D	9.29	33.722 D	26.073	195.5	0.342	3.38	D147.0 D	52.2	23.4	1.77	22.6	0.02	0.01	0.01	0.02	126	
140	9.11	9.09	33.797	26.164	187.1	0.382	3.10	135.1	47.7	26.4	1.89	24.5	0.02	0.02	0.01	0.03	141	09
150 ISL	9.00 D	8.99	33.867 D	26.236	180.5	0.390	2.80	D121.9 D	43.0	28.1	1.96	25.4	0.02	0.02	0.01	0.03	151	
170	8.81	8.79	33.933	26.319	173.0	0.436	2.54	110.8	38.9	31.5	2.09	27.2	0.02	0.01	0.00	0.02	171	08
200	8.50	8.47	34.052	26.461	160.1	0.486	1.92	83.7	29.2	37.5	2.31	29.7	0.02	0.00	0.00	0.02	202	07
230	8.14	8.11	34.098 D	26.552	151.9	0.523	1.57	D 68.3 D	23.7								232	06
250 ISL	7.85 D	7.82	34.116 D	26.610	146.6	0.553	1.41	D 61.3 D	21.1	45.4	2.52	32.1	0.02	0.00			252	
270	7.72	7.69	34.141 D	26.648	143.3	0.582	1.20	D 52.2 D	17.9								272	05
300 ISL	7.47 D	7.44	34.174 D	26.712	137.7	0.625	0.95	D 41.5 D	14.2	53.4	2.74	34.5	0.01	0.00			302	
320	7.32	7.29	34.196	26.749	134.4	0.661	0.80	35.0	11.9	56.5	2.82	35.4	0.01	0.00			323	04
380	6.72	6.68	34.237	26.866	123.9	0.739	0.52	22.6	7.6	66.0	2.99	37.6	0.01	0.01			383	03
400 ISL	6.53 D	6.50	34.246 D	26.898	121.1	0.755	0.44	D 19.2 D	6.4	68.6	3.03	38.1	0.01	0.01			403	
440	6.27	6.23	34.268	26.950	116.5	0.811	0.37	16.3	5.4	73.7	3.10	39.1	0.01	0.00			444	02
500 ISL	5.88 D	5.83	34.303 D	27.028	109.6	0.871	0.27	D 11.6 D	3.8	80.6	3.20	40.3	0.01	0.00			504	
515	5.81	5.76	34.311	27.044	108.2	0.895	0.25	10.8	3.5	82.3	3.22	40.6	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 OCEAN STARR CALCOFI CRUISE 1404 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 14.6 N	123 29.7 W	11/04/2014	0502	UTC	4089 m	340 10 kn			1023.5 mb	14.0 C	13.0 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	15.62	15.62	33.211	24.458	346.4	0.000	5.81	254.0	102.4	3.0	0.35	0.1	0.02	0.09	0.14	0.02	0	
2	15.62	15.62	33.211	24.458	346.5	0.007	5.81	254.0	102.4	3.0	0.35	0.1	0.02	0.09	0.14	0.02	2	21
10	15.63	15.63	33.214	24.459	346.7	0.035	5.82	254.3	102.5	3.0	0.34	0.0	0.02	0.08	0.14	0.03	10	19
11	15.63	15.63	33.214	24.459	346.6	0.036											10	20
20 ISL	15.62 D	15.62	33.249 D	24.488	344.2	0.052	5.81	D253.4 D	102.4	3.0	0.33	0.0	0.01	0.05	0.16	0.01	20	
24	15.60	15.60	33.256	24.498	343.4	0.083	5.82	254.1	102.4	3.1	0.32	0.0	0.01	0.04	0.17	0.00	24	18
30 ISL	15.49 D	15.49	33.258 D	24.525	341.1	0.087	5.84	D254.4 D	102.6	3.1	0.33	0.0	0.02	0.15	0.25	0.01	30	
40	15.11	15.10	33.260	24.610	333.2	0.137	5.89	257.4	102.7	3.1	0.35	0.0	0.02	0.32	0.39	0.02	40	17
50	14.43	14.42	33.264	24.760	319.2	0.170	5.97	260.7	102.6	3.3	0.38	0.0	0.02	0.22	0.69	0.31	50	16
62	13.26	13.25	33.217	24.965	300.0	0.207	5.79	253.0	97.2	3.8	0.51	1.7	0.14	0.03	1.03	0.48	62	15
75	12.09	12.08	33.218	25.193	278.5	0.245	5.55	242.7	90.9	5.2	0.69	5.3	0.09	0.03	0.45	0.26	76	14
87	11.20	11.19	33.217	25.356	263.1	0.277	5.30	231.5	85.1	7.8	0.93	9.2	0.04	0.09	0.22	0.10	88	13
100	10.50	10.49	33.347	25.581	241.9	0.310	4.98	217.7	78.9	10.6	1.05	11.9	0.02	0.05	0.10	0.04	101	12
112	10.15	10.14	33.371	25.659	234.7	0.338	4.85	211.7	76.1	12.1	1.13	13.5	0.03	0.00	0.07	0.03	113	11
125	9.75	9.74	33.430	25.772	224.2	0.368	4.54	198.4	70.8	15.4	1.34	16.6	0.02	0.05	0.03	0.02	126	10
140	9.38	9.37	33.544	25.922	210.2	0.401	4.12	179.7	63.6	19.9	1.58	20.2	0.03	0.03	0.01	0.02	141	09
150 ISL	9.12 D	9.10	33.701 D	26.088	194.5	0.407	3.86	D167.8 D	59.3	21.6	1.62	21.2	0.02	0.03	0.01	0.02	151	
170	8.88	8.86	33.806	26.209	183.5	0.459	3.69	161.0	56.5	25.1	1.71	23.1	0.01	0.02	0.00	0.02	171	08
200	8.57	8.55	33.909	26.338	171.8	0.512	3.08	134.5	46.9	30.8	1.95	26.5	0.01	0.05	0.00	0.01	202	07
230	8.00	7.98	33.983	26.482	158.4	0.562	2.59	113.2	39.0	37.4	2.12	29.2	0.02	0.02			232	06
250 ISL	7.61 D	7.59	34.001 D	26.553	151.8	0.580	2.42	D105.1 D	36.0	41.8	2.23	30.7	0.02	0.01			252	
270	7.29	7.26	34.013	26.609	146.7	0.623	2.19	95.4	32.3	46.2	2.33	32.1	0.02	0.00			272	05
300 ISL	7.09 D	7.06	34.067 D	26.679	140.5	0.653	1.65	D 71.9 D	24.3	51.8	2.55	34.1	0.02	0.02			302	
320	7.12	7.09	34.125	26.722	136.8	0.693	1.19	52.0	17.6	55.6	2.69	35.4	0.02	0.03			323	04
380	6.58	6.55	34.174	26.834	126.8	0.772	0.76	33.0	11.0	64.8	2.89	37.8	0.02	0.01			383	03
400 ISL	6.29 D	6.25	34.161 D	26.863	124.1	0.786	0.73	D 31.7 D	10.5	67.7	2.94	38.4	0.01	0.02			403	
440	6.04	6.01	34.198	26.923	118.8	0.846	0.54	23.7	7.8	73.6	3.05	39.7	0.01	0.05			444	02
500 ISL	5.73 D	5.68	34.254 D	27.008	111.3	0.904	0.33	D 14.4 D	4.7								504	
515	5.63	5.58	34.263 D	27.028	109.5	0.921	0.31	D 13.5 D	4.4								519	01

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

RV OCEAN STARR CALCOFI CRUISE 1404 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 54.9 N	124 9.9 W	10/04/2014	2315	UTC	4089 m	300 10 kn	290 01 08	1	1024.0 mb	17.0 C	14.8 C	27 m	1/8	ST	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	15.03	15.03	32.945	24.384	353.5	0.000	5.88	257.0	102.2	2.7	0.44	0.1	0.01	0.66	0.11	0.02	0	
2	15.03	15.03	32.945	24.384	353.5	0.007	5.88	257.0	102.2	2.7	0.44	0.1	0.01	0.66	0.11	0.02	2	24
10 ISL	14.90 D	14.90	32.941 D	24.408	351.5	0.036	5.87	D256.0	D101.7	2.7	0.37	0.0	0.01	0.31	0.12	0.03	10	
10	14.90	14.90	32.942	24.409	351.4	0.036											10	23
11	14.89	14.89	32.942	24.411	351.2	0.039	5.90	257.6	102.1	2.7	0.36	0.0	0.01	0.27	0.12	0.03	11	22
20 ISL	14.83 D	14.83	32.936 D	24.420	350.7	0.069	5.89	D256.9	D101.9	2.7	0.40	0.0	0.01	0.24	0.15	0.03	20	
25	14.83	14.83	32.942	24.425	350.4	0.088	5.90	257.6	102.0	2.8	0.42	0.0	0.01	0.23	0.16	0.03	25	21
30 ISL	14.81 D	14.81	32.944 D	24.430	350.0	0.105	5.88	D256.2	D101.6	2.7	0.40	0.0	0.01	0.16	0.18	0.04	30	
40	14.73	14.73	32.946	24.449	348.5	0.140	5.91	258.4	102.1	2.7	0.36	0.0	0.01	0.02	0.22	0.07	40	20
50	14.94	14.93	33.034	24.474	346.5	0.175	5.88	257.1	102.1	2.8	0.39	0.0	0.01	0.25	0.25	0.07	50	19
62	14.20	14.19	32.931	24.552	339.4	0.216	5.98	261.2	102.1	2.8	0.38	0.0	0.02	0.11	0.38	0.17	62	18
75	14.18	14.16	33.172	24.744	321.5	0.259	5.91	258.2	101.0	3.2	0.44	0.0	0.03	0.16	0.61	0.29	76	14
87	13.56	13.55	33.173	24.871	309.7	0.297	5.76	251.6	97.2	3.7	0.49	1.3	0.21	0.21	0.38	0.28	88	13
100	12.77	12.76	33.188	25.040	293.9	0.336	5.68	248.0	94.3	4.3	0.60	3.1	0.30	0.22	0.29	0.20	101	12
112	11.94	11.92	33.196	25.206	278.2	0.371	5.49	239.8	89.6	5.5	0.77	6.1	0.04	0.07	0.16	0.15	113	11
125 ISL	10.87 D	10.85	33.236 D	25.431	256.9	0.387	5.24	D228.1 D	83.5	9.1	1.01	10.3	0.03	0.08	0.07	0.06	126	
126	11.35	11.34	33.435 D	25.299	269.5	0.408	5.28	230.7	85.1	9.3	1.03	10.6	0.03	0.08	0.06	0.06	127	10
140	10.58	10.57	33.511	25.696	232.1	0.443	4.92	214.6	78.0	10.3	0.97	10.9	0.02	0.08	0.04	0.04	141	09
150 ISL	9.99 D	9.97	33.550 D	25.828	219.6	0.447	4.62	D200.9 D	72.3	13.2	1.14	13.6	0.02	0.11	0.03	0.03	151	
170	9.45	9.43	33.674	26.015	202.1	0.508	4.17	182.0	64.6	19.1	1.47	18.9	0.02	0.17	0.01	0.02	171	08
200	8.93	8.91	33.837	26.225	182.6	0.566	3.55	154.8	54.4	25.7	1.75	23.2	0.01	0.07	0.00	0.01	202	07
231	8.41	8.38	33.949	26.395	166.9	0.620	3.09	135.0	46.9	31.9	1.93	26.1	0.02	0.04			233	06
250 ISL	8.04 D	8.01	33.983 D	26.477	159.3	0.633	2.76	D120.0 D	41.5	35.9	2.07	28.0	0.02	0.03			252	
271	7.81	7.78	33.998	26.524	155.2	0.684	2.40	104.8	35.9	40.4	2.22	30.1	0.02	0.01			273	05
300 ISL	7.42 D	7.39	34.012 D	26.591	149.1	0.711	2.12	D 92.2 D	31.4	46.0	2.37	32.1	0.02	0.08			302	
320	7.12	7.09	34.021	26.639	144.6	0.757	1.88	82.0	27.7	49.8	2.48	33.4	0.02	0.13			323	04
381	6.60	6.56	34.100	26.773	132.5	0.842	1.07	46.6	15.5	61.3	2.80	37.0	0.02	0.06			384	03
400 ISL	6.44 D	6.40	34.114 D	26.806	129.6	0.851	0.98	D 42.8 D	14.3	64.0	2.85	37.6	0.02	0.09			403	
439	6.26	6.22	34.157	26.864	124.6	0.916	0.68	29.7	9.8	69.4	2.96	38.8	0.02	0.16			443	02
500 ISL	5.82 D	5.78	34.212 D	26.963	115.6	0.975	0.43	D 18.6 D	6.1	79.6	3.09	40.7	0.02	0.06			504	
514	5.52	5.48	34.186	26.979	113.9	1.006	0.48	20.9	6.8	82.0	3.12	41.1	0.02	0.04			518	01

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

RV OCEAN STARR CALCOFI CRUISE 1404 STATION 85.4 35.8

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
34 0.9 N	118 50.2 W	08/04/2014	1240	UTC	20 m	360 01 kn			1024.0 mb	14.0 C	11.8 C				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	12.42	12.42	33.549	25.383	258.4	0.000	5.94	259.3	98.1	5.6	0.61	4.3	0.13	0.45	12.54	1.43	0	
2	12.42	12.42	33.549	25.383	258.4	0.005	5.94	259.3	98.1	5.6	0.61	4.3	0.13	0.45	12.54	1.43	2	05
5	12.41	12.41	33.557	25.391	257.8	0.013	5.98	261.3	98.8	5.3	0.66	4.0	0.13	0.45	12.28	1.30	5	04
10	12.24	12.24	33.578	25.440	253.2	0.026	5.68	248.0	93.5	6.2	0.73	5.4	0.14	0.53	13.85	1.36	10	02
10	12.24	12.24	33.579	25.441	253.1	0.026											10	03
15	12.07	12.06	33.590	25.483	249.2	0.038	5.39	235.4	88.4	7.3	0.85	7.0	0.17	0.60	14.74	1.38	15	01

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

RV OCEAN STARR CALCOFI CRUISE 1404 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 29.5 W	08/04/2014	0602	UTC	58 m	360 01 kn			1024.0 mb	15.1 C	14.2 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	14.64	14.64	33.485	24.882	306.0	0.000	7.71	336.8	133.3	0.2	0.12	0.1	0.02	0.00	5.05	0.68	0	
2	14.64	14.64	33.485	24.882	306.1	0.006	7.71	336.8	133.3	0.2	0.12	0.1	0.02	0.00	5.05	0.68	2	08
5	14.20	14.20	33.489	24.979	297.0	0.015	7.37	321.6	126.2	0.4	0.17	0.1	0.02	0.00	9.22	1.33	5	07
10	13.55	13.55	33.502	25.123	283.4	0.030	6.72	293.5	113.7	1.0	0.29	0.1	0.02	0.00	14.87	2.05	10	06
15	12.93	12.93	33.515	25.257	270.8	0.044	5.97	260.7	99.7	2.8	0.53	2.3	0.07	0.11	19.78	2.59	15	05
20	11.71	11.71	33.547	25.516	246.2	0.056	4.44	193.9	72.3	12.4	1.20	12.7	0.20	0.54	6.74	1.45	20	04
30	11.24	11.23	33.572	25.623	236.3	0.081	4.02	175.3	64.7	15.3	1.40	15.6	0.20	0.48	2.48	0.98	30	03
40	10.73	10.72	33.599	25.735	225.8	0.104	3.58	156.2	57.0	17.8	1.59	18.1	0.25	1.66	1.14	0.64	40	02
50	10.28	10.27	33.738	25.921	208.4	0.125	2.82	123.1	44.5	23.5	1.89	23.0	0.33	2.26	0.37	0.38	50	01

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

RV OCEAN STARR — CALCOFI CRUISE 1404 — 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 49.3 N	118 37.6 W	08/04/2014	0825	UTC	651 m	160 08 kn			1024.5 mb	15.1 C	14.1 C				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	14.18	14.18	33.524	25.009	294.0	0.000	7.81	341.3	133.9	0.8	0.20	0.1	0.02	0.31	4.15	0.29	0	
2	14.18	14.18	33.524	25.009	294.0	0.006	7.81	341.3	133.9	0.8	0.20	0.1	0.02	0.31	4.15	0.29	2	21
10	13.20	13.20	33.525	25.212	274.9	0.029	8.18	357.4	137.4	1.0	0.23	0.0	0.01	0.04	4.04	0.19	10	19
10	13.20	13.20	33.525	25.212	274.9	0.029											10	20
20	12.63	12.62	33.522	25.323	264.6	0.056	5.78	252.4	95.9	5.3	0.67	5.1	0.10	0.61	11.61	1.18	20	18
30	11.79	11.79	33.550	25.504	247.6	0.081	4.31	188.3	70.2	13.0	1.25	12.7	0.27	0.43	4.80	1.15	30	17
40	11.02	11.01	33.534	25.633	235.6	0.106	3.89	169.9	62.4	15.2	1.42	15.9	0.10	0.07	1.74	0.78	40	16
50	10.60	10.60	33.603	25.760	223.7	0.129	3.57	155.9	56.7	17.6	1.56	18.1	0.06	0.04	2.27	1.19	50	15
60	10.34	10.34	33.654	25.846	215.8	0.151	3.37	147.4	53.3	19.4	1.66	19.5	0.05	0.02	2.06	0.78	60	14
70	10.05	10.04	33.767	25.983	202.9	0.171	2.92	127.5	45.9	23.5	1.86	22.3	0.03	0.05	0.60	0.35	71	13
75 ISL	10.00 D	9.99	33.823 D	26.036	198.1	0.169	2.80	D121.7 D	43.9	24.4	1.90	22.8	0.03	0.06	0.49	0.31	76	
85	9.87	9.86	33.850	26.078	194.2	0.201	2.63	114.8	41.2	26.1	1.98	23.9	0.03	0.09	0.25	0.21	86	12
100	9.80	9.78	33.917	26.145	188.3	0.230	2.41	105.2	37.7	27.8	2.05	24.9	0.04	0.12	0.10	0.18	101	11
120	9.70	9.68	33.963	26.198	183.7	0.267	2.26	98.6	35.3	29.4	2.12	25.7	0.03	0.04	0.06	0.14	121	10
125 ISL	9.66 D	9.64	33.970 D	26.210	182.6	0.264	2.23	D 97.2 D	34.9	30.0	2.14	26.0	0.04	0.05	0.05	0.15	126	
140	9.45	9.43	34.015	26.281	176.2	0.303	2.03	88.7	31.5	31.8	2.21	26.9	0.05	0.07	0.04	0.17	141	09
150 ISL	9.32 D	9.30	34.044 D	26.324	172.3	0.309	2.02	D 88.0 D	31.3	33.1	2.26	27.4	0.04	0.09	0.04	0.15	151	
170	9.29	9.27	34.132	26.398	165.8	0.354	1.60	70.0	24.8	35.7	2.37	28.5	0.03	0.14	0.03	0.10	171	08
200	9.06	9.04	34.184	26.476	158.9	0.403	1.36	59.2	20.9	38.9	2.48	29.6	0.03	0.18	0.02	0.09	202	07
230	8.78	8.75	34.211	26.543	153.1	0.450	1.19	51.9	18.2	42.4	2.56	30.7	0.02	0.03			232	06
250 ISL	8.62 D	8.60	34.221 D	26.576	150.3	0.470	1.10	D 47.8 D	16.8	44.1	2.60	31.3	0.02	0.03			252	
270	8.40	8.37	34.233	26.621	146.4	0.510	1.04	45.3	15.8	45.8	2.64	31.8	0.02	0.02			272	05
300 ISL	8.20 D	8.17	34.225 D	26.645	144.5	0.544	0.99	D 42.9 D	14.9	48.6	2.71	32.6	0.02	0.06			302	
320	8.04	8.01	34.222	26.666	142.8	0.582	0.89	38.9	13.4	50.5	2.75	33.2	0.03	0.08			323	04
380	7.51	7.47	34.253	26.770	133.7	0.665	0.65	28.4	9.7	57.6	2.89	35.1	0.02	0.06			383	03
400 ISL	7.37 D	7.33	34.260 D	26.796	131.5	0.683	0.58	D 25.2 D	8.6	59.1	2.91	35.5	0.02	0.05			403	
440	7.20	7.15	34.270	26.829	129.0	0.744	0.51	22.4	7.6	62.3	2.96	36.3	0.03	0.03			444	02
500 ISL	6.79 D	6.75	34.297 D	26.906	122.2	0.812	0.35	D 15.1 D	5.1	70.7	3.08	37.6	0.03	0.07			504	
515	6.62	6.57	34.306	26.937	119.4	0.837	0.30	12.9	4.3	72.8	3.11	37.9	0.03	0.08			519	01

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

RV OCEAN STARR — CALCOFI CRUISE 1404 — 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 39.7 N	118 57.6 W	08/04/2014	1901	UTC	888 m	260 01 kn	220 01 03	1	1026.8 mb	17.6 C	16.8 C		1/8	CI	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	15.83	15.83	33.473	24.613	331.7	0.000	6.12	267.3	108.4	0.2	0.28	0.0	0.06	0.07	0.49	0.22	0	
2 A	15.83	15.83	33.473	24.613	331.7	0.007	6.12	267.3	108.4	0.2	0.28	0.0	0.06	0.07	0.49	0.22	2	24
8 A	15.42	15.42	33.470	24.702	323.5	0.026	6.21	271.2	109.0	0.2	0.29	0.0	0.01	0.05	0.58	0.29	8	23
10 ISL	15.34 D	15.34	33.467 D	24.717	322.1	0.033	6.18	D269.4 D	108.4	0.2	0.28	0.0	0.02	0.04	0.55	0.27	10	
10	15.34	15.34	33.469	24.719	321.9	0.034											10	22
11 A	15.31	15.31	33.469	24.726	321.2	0.036	6.22	271.7	109.0	0.2	0.28	0.0	0.02	0.04	0.54	0.25	11	21
19 A	14.94	14.93	33.464	24.804	314.1	0.062	6.39	279.2	111.2	0.4	0.28	0.0	0.00	0.03	0.86	0.51	19	20
20 ISL	14.93 D	14.92	33.464 D	24.806	313.9	0.063	6.34	D276.3 D	110.3	0.5	0.29	0.0	0.01	0.04	0.95	0.58	20	
26	14.43	14.42	33.456	24.907	304.5	0.083	6.03	263.5	103.8	1.1	0.37	0.0	0.02	0.11	1.52	1.00	26	19
30 ISL	14.29 D	14.29	33.454 D	24.934	302.0	0.094	5.87	D255.6 D	100.7	2.4	0.47	1.3	0.06	0.28	1.98	1.22	30	
34 A	13.88	13.88	33.447	25.015	294.4	0.107	5.57	243.1	94.7	3.7	0.57	2.5	0.10	0.44	2.44	1.45	34	17
34	13.88	13.88	33.449	25.016	294.3	0.108											34	18
44 A	11.89	11.88	33.478	25.431	254.9	0.135	4.41	192.8	72.1	11.2	1.14	11.5	0.17	0.23	0.47	0.40	44	16
50 ISL	11.48 D	11.48	33.487 D	25.513	247.3	0.134	4.25	D184.9 D	68.7	12.4	1.22	13.0	0.15	0.12	0.32	0.32	50	
52	11.44	11.43	33.488	25.522	246.5	0.155	4.20	183.3	67.9	12.8	1.25	13.5	0.14	0.08	0.28	0.29	52	15
60	11.37	11.36	33.482	25.531	245.9	0.174	4.19	183.1	67.7	13.0	1.25	13.8	0.12	0.08	0.24	0.25	60	14
70	10.99	10.98	33.492	25.607	238.8	0.199	4.07	177.8	65.2	14.1	1.32	15.1	0.07	0.05	0.17	0.21	71	13
75 ISL	10.83 D	10.82	33.567 D	25.694	230.6	0.195	3.86	D168.1 D	61.6	15.8	1.41	16.5	0.05	0.04	0.14	0.17	76	
85	10.48	10.47	33.654	25.823	218.6	0.233	3.42	149.5	54.3	19.3	1.60	19.3	0.02	0.03	0.08	0.11	86	12
100	10.13	10.11	33.726	25.940	207.8	0.265	3.15	137.7	49.6	22.0	1.73	21.3	0.02	0.04	0.04	0.08	101	11
120	9.91	9.89	33.774	26.015	201.1	0.306	2.98	130.3	46.7	23.8	1.80	22.6	0.02	0.03	0.03	0.07	121	10
125 ISL	9.78 D	9.76	33.813 D	26.067	196.2	0.301	2.90	D126.1 D	45.3	25.0	1.86	23.3	0.02	0.03	0.03	0.08	126	
140	9.63	9.62	33.929	26.182	185.6	0.344	2.36	103.1	36.8	28.6	2.05	25.5	0.02	0.03	0.03	0.12	141	09
150 ISL	9.53 D	9.51	33.973 D	26.234	180.9	0.348	2.23	D 96.9 D	34.6	30.2	2.10	26.3	0.02	0.03	0.03	0.11	151	
170	9.28	9.26	34.060	26.344	170.8	0.398	1.91	83.5	29.6	33.4	2.21	27.8	0.00	0.03	0.03	0.08	171	08
200	8.92	8.90	34.141	26.466	159.8	0.447	1.57	68.7	24.2	38.0	2.36	29.6	0.01	0.06	0.03	0.03	202	07
230	8.56	8.54	34.191	26.561	151.3	0.494	1.25	54.5	19.0	42.9	2.50	31.1	0.01	0.08			232	06
250 ISL	8.34 D	8.32	34.202 D	26.604	147.5	0.511	1.11	D 48.1 D	16.8	45.0	2.54	31.8	0.02	0.05			252	
271	8.20	8.17	34.213	26.635	144.9	0.555	1.04	45.2	15.7	47.3	2.59	32.5	0.02	0.01			273	05
300 ISL	7.89 D	7.86	34.234 D	26.698	139.4	0.583	0.84	D 36.3 D	12.5	51.4	2.69	33.7	0.02	0.05			302	
320	7.72	7.69	34.248	26.734	136.2	0.623	0.74	32.4	11.1	54.2	2.76	34.5	0.01	0.07			323	04
380	7.26	7.22	34.272	26.819	128.8	0.703	0.51	22.3	7.6	61.0	2.95	36.1	0.01	0.13			383	03
400 ISL	7.10 D	7.06	34.280 D	26.849	126.3	0.717	0.44	D 19.0 D	6.4	63.4	2.99	36.6	0.01	0.10			403	
440	6.82	6.77	34.293	26.899	122.0	0.778	0.36	15.6	5.2	68.1	3.06	37.5	0.00	0.05			444	02
500 ISL	6.41 D	6.36	34.318 D	26.973	115.5	0.839	0.24	D 10.5 D	3.5	76.1	3.14	38.5	0.01	0.04			504	
514	6.30	6.25	34.324	26.992	113.7	0.865	0.23	10.2	3.4	78.0	3.16	38.7	0.02	0.04			518	01
600 ISL	5.81 D	5.76	34.357 D	27.082	105.9	0.951	0.15 D	6.4 D	2.1								605	
700 ISL	5.47 D	5.41	34.380 D	27.143	101.0	1.055	0.15 D	6.5 D	2.1								706	

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 OCEAN STARR — CALCOFI CRUISE 1404 — 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	17/04/2014	1235	UTC	76 m	080 03 kn			1012.5 mb	14.7 C	13.3 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	14.68	14.68	33.435	24.836	310.4	0.000	5.89	257.1	101.9	2.3	0.41	0.6	0.09	0.05	0.41	0.10	0	
2	14.68	14.67	33.435	24.836	310.4	0.006	5.89	257.1	101.9	2.3	0.41	0.6	0.09	0.05	0.41	0.10	2	10
5	14.67	14.67	33.430	24.835	310.6	0.016	5.87	256.2	101.5	2.3	0.41	0.7	0.06	0.05	0.38	0.11	5	09
10	14.67	14.67	33.431	24.835	310.8	0.031	5.88	256.6	101.7	2.3	0.42	0.7	0.04	0.07	0.39	0.10	10	07
10	14.67	14.67	33.431	24.835	310.8	0.030											10	08
20	14.35	14.35	33.441	24.911	303.9	0.062	5.80	253.3	99.7	2.7	0.45	1.2	0.06	0.14	0.44	0.15	20	06
30	13.21	13.20	33.448	25.152	281.2	0.091	5.22	227.9	87.6	6.7	0.76	5.8	0.19	0.30	0.50	0.26	30	05
40	13.05	13.04	33.453	25.187	278.2	0.119	5.14	224.4	86.0	7.4	0.80	6.5	0.20	0.32	0.45	0.36	40	04
50	12.91	12.91	33.456	25.217	275.6	0.147	5.13	223.7	85.5	7.6	0.82	6.8	0.21	0.30	0.45	0.27	50	03
60	11.83	11.82	33.486	25.448	253.8	0.173	4.59	200.4	74.9	11.7	1.09	11.2	0.20	0.23	0.28	0.29	60	02
69	10.19	10.18	33.631	25.854	215.2	0.194	3.51	153.3	55.3	21.1	1.62	20.1	0.10	0.07	0.06	0.20	70	01

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

RV OCEAN STARR CALCOFI CRUISE 1404 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 8.3 N	120 2.6 W	09/04/2014	0445	UTC	1139 m	320 18 kn			1023.0 mb	13.3 C	13.0 C				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	15.28	15.28	33.467	24.729	320.5	0.000	5.89	257.3	103.2	2.4	0.38	0.1	0.04	0.13	0.30	0.05	0	
2	15.28	15.28	33.467	24.730	320.6	0.006	5.89	257.3	103.2	2.4	0.38	0.1	0.04	0.13	0.30	0.05	2	22
10	15.27	15.26	33.462	24.729	320.9	0.032	5.92	258.4	103.6	2.4	0.38	0.1	0.03	0.14	0.31	0.04	10	20
10	15.27	15.26	33.461	24.729	320.9	0.032											10	21
20	14.60	14.60	33.456	24.869	307.9	0.064	5.97	260.8	103.2	2.4	0.38	0.2	0.04	0.07	0.38	0.08	20	19
30	14.41	14.40	33.460	24.915	303.9	0.094	5.91	258.3	101.8	2.4	0.41	0.4	0.06	0.05	0.56	0.20	30	18
39	14.42	14.41	33.456	24.910	304.6	0.122	5.90	257.4	101.4	2.4	0.41	0.6	0.08	0.22	0.66	0.21	39	17
50	13.66	13.65	33.437	25.054	291.2	0.154	5.55	242.3	94.0	4.2	0.61	3.4	0.25	0.22	0.49	0.22	50	16
60	13.02	13.02	33.427	25.174	280.0	0.183	5.21	227.3	87.0	6.5	0.80	6.3	0.18	0.11	0.45	0.36	60	15
70	11.23	11.22	33.444	25.527	246.5	0.209	4.31	188.3	69.4	13.0	1.30	14.7	0.04	0.14	0.16	0.17	71	14
75 ISL	10.87 D	10.86	33.469 D	25.610	238.6	0.207	4.09	D178.1 D	65.3	15.0	1.39	16.3	0.04	0.10	0.13	0.17	76	
86	10.13	10.12	33.595	25.837	217.2	0.246	3.62	158.0	56.9	19.4	1.60	19.9	0.02	0.01	0.07	0.17	87	13
100	9.86	9.85	33.677	25.947	207.1	0.276	3.34	146.0	52.3	22.1	1.71	21.7	0.03	0.04	0.04	0.10	101	12
113	9.60	9.59	33.723	26.026	199.8	0.303	3.21	140.0	49.9	23.7	1.79	22.8	0.02	0.04	0.03	0.09	114	11
124	9.44	9.43	33.791	26.106	192.4	0.324	2.95	128.9	45.8	25.9	1.88	24.1	0.02	0.08	0.02	0.07	125	10
125 ISL	9.43 D	9.42	33.800 D	26.114	191.7	0.312	2.93	D127.5 D	45.4	26.0	1.88	24.1	0.02	0.08	0.02	0.07	126	
140	9.32	9.30	33.824	26.152	188.4	0.355	2.87	125.2	44.4	27.1	1.92	24.7	0.02	0.03	0.02	0.07	141	09
150 ISL	9.11 D	9.09	33.884 D	26.232	181.0	0.360	2.70	D117.3 D	41.5	28.9	1.98	25.7	0.02	0.04	0.01	0.07	151	
171	8.67	8.65	33.959	26.361	169.0	0.410	2.48	108.3	37.9	32.6	2.11	27.7	0.01	0.06	0.01	0.07	172	08
200 ISL	8.24 D	8.22	34.016 D	26.471	158.9	0.444	2.18	D 95.0 D	33.0	37.7	2.23	29.8	0.02	0.27	0.00	0.03	202	
201	8.22	8.20	34.016	26.475	158.6	0.459	2.19	95.7	33.1	37.8	2.23	29.9	0.02	0.28	0.00	0.03	203	07
230	7.87	7.85	34.054	26.556	151.3	0.504	1.90	82.8	28.4	42.8	2.38	31.5	0.02	0.06			232	06
250 ISL	7.62 D	7.60	34.069 D	26.605	146.9	0.521	1.73	D 75.1 D	25.7	45.7	2.47	32.4	0.01	0.07			252	
270	7.61	7.59	34.121	26.647	143.3	0.563	1.39	60.8	20.8	48.5	2.56	33.2	0.01	0.07			272	05
300 ISL	7.46 D	7.43	34.164 D	26.703	138.5	0.593	1.06	D 46.2 D	15.8	53.3	2.68	34.7	0.01	0.05			302	
321	7.09	7.06	34.150	26.746	134.6	0.634	0.99	43.3	14.6	56.7	2.76	35.7	0.01	0.03			324	04
380	6.70	6.66	34.209	26.846	125.8	0.710	0.67	29.1	9.7	64.5	2.92	37.4	0.01	0.04			383	03
400 ISL	6.69 D	6.66	34.211 D	26.849	125.8	0.725	0.64	D 27.7 D	9.3	66.6	2.96	37.8	0.01	0.08			403	
441	6.31	6.27	34.241	26.923	119.0	0.786	0.49	21.3	7.1	70.9	3.04	38.7	0.02	0.16			445	02
500 ISL	6.03 D	5.98	34.303 D	27.010	111.5	0.844	0.31	D 13.4 D	4.4	77.3	3.15	39.8	0.02	0.14			504	
513	6.01	5.97	34.317	27.023	110.4	0.868	0.28	12.1	4.0	78.7	3.17	40.0	0.02	0.13			517	01

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

RV OCEAN STARR CALCOFI CRUISE 1404 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 59.5 N	120 20.5 W	09/04/2014	0913	UTC	713 m	320 17 kn			1027.0 mb	13.4 C	12.9 C				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	14.72	14.72	33.427	24.820	311.9	0.000	5.95	259.8	103.0	2.8	0.39	0.1	0.02	0.07	0.52	0.12	0	
2	14.72	14.72	33.427	24.820	312.0	0.006	5.95	259.8	103.0	2.8	0.39	0.1	0.02	0.07	0.52	0.12	2	21
10	14.60	14.60	33.426	24.846	309.8	0.031	5.94	259.6	102.7	2.8	0.40	0.1	0.02	0.20	0.52	0.14	10	19
10	14.60	14.60	33.425	24.845	309.9	0.030											10	20
20	14.42	14.42	33.400	24.865	308.2	0.062	5.91	258.3	101.7	3.0	0.39	0.2	0.04	0.14	0.62	0.21	20	18
30	14.35	14.34	33.419	24.895	305.7	0.093	5.89	257.0	101.1	2.9	0.40	0.4	0.05	0.31	0.74	0.24	30	17
39	14.33	14.33	33.429	24.907	304.9	0.120	5.86	255.7	100.6	2.8	0.42	0.5	0.06	0.57	0.57	0.21	39	16
50	14.27	14.26	33.438	24.928	303.3	0.154	5.84	255.2	100.2	2.7	0.44	0.6	0.05	0.25	0.49	0.21	50	15
60	13.99	13.98	33.410	24.965	300.0	0.184	5.75	251.0	98.0	3.2	0.48	1.6	0.09	0.24	0.41	0.20	60	14
70	12.91	12.90	33.328	25.121	285.3	0.213	5.47	238.8	91.1	5.0	0.71	5.0	0.11	0.26	0.32	0.26	71	13
75 ISL	11.84 D	11.83	33.267 D	25.276	270.5	0.213	5.26	D229.2 D	85.7	6.8	0.85	7.4	0.09	0.19	0.26	0.21	76	
86	10.79	10.78	33.279	25.477	251.6	0.256	4.79	209.1	76.2	10.6	1.16	12.8	0.03	0.04	0.14	0.11	87	12
100 ISL	10.09 D	10.07	33.387 D	25.682	232.2	0.276	4.43	D192.8 D	69.5	15.0	1.39	16.8	0.01	0.04	0.06	0.05	101	
101	10.02	10.01	33.399	25.703	230.2	0.292	4.34	189.7	68.1	15.3	1.41	17.1	0.01	0.04	0.05	0.04	102	11
120	9.42	9.40	33.640	25.991	203.2	0.333	3.65	159.4	56.5	21.7	1.70	21.8	0.01	0.12	0.02	0.02	121	10
125 ISL	9.40 D	9.39	33.650 D	26.001	202.4	0.330	3.63	D158.1 D	56.2	22.4	1.73	22.3	0.01	0.09	0.02	0.03	126	
140	9.13	9.12	33.756	26.128	190.6	0.373	3.31	144.7	51.0	24.7	1.81	23.8	0.01	0.01	0.01	0.03	141	09
150 ISL	8.99 D	8.97	33.829 D	26.209	183.1	0.379	3.14	D136.5 D	48.2	26.4	1.84	24.4	0.00	0.03	0.01	0.03	151	
170	8.64	8.62	33.914	26.330	171.9	0.427	3.09	134.8	47.1	29.7	1.91	25.6	0.00	0.07	0.00	0.03	171	08
200	8.41	8.39	33.970	26.410	164.9	0.478	2.71	118.2	41.1	33.6	2.06	27.5	0.01	0.03	0.00	0.02	202	07
230	8.00	7.97	34.027	26.518	155.1	0.526	2.16	94.1	32.4	40.0	2.29	30.4	0.01	0.03			232	06
250 ISL	7.65 D	7.63	34.035 D	26.574	149.9	0.544	1.97	D 85.6 D	29.3	43.1	2.37	31.5	0.01	0.03			252	
270	7.48	7.45	34.043	26.605	147.2	0.586	1.87	81.7	27.8	46.2	2.44	32.5	0.00	0.02			272	05
300 ISL	7.18 D	7.15	34.090 D	26.686	139.9	0.618	1.41	D 61.1 D	20.7	52.1	2.61	34.4	0.00	0.03			302	
320	6.98	6.95	34.107	26.727	136.2	0.656	1.17	50.9	17.1	56.0	2.72	35.7	0.00	0.03			323	04
380	6.75	6.72	34.208	26.838	126.6	0.735	0.68	29.7	10.0	63.1	2.92	37.2	0.00	0.03			383	03
400 ISL	6.34 D	6.31	34.181 D	26.871	123.4	0.750	0.66	D 28.5 D	9.5	66.3	2.97	37.9	0.00	0.03			403	
441	6.18	6.14	34.233	26.934	117.9	0.810	0.47	20.5	6.8	73.0	3.08	39.2	0.00	0.03			445	02
500 ISL	5.86 D	5.81	34.278 D	27.011	111.1	0.869	0.31	D 13.5 D	4.4	79.6	3.19	40.3	0.00	0.09			504	
514	5.78	5.74	34.291	27.031	109.4	0.893	0.30	13.0	4.2	81.2	3.21	40.6	0.00	0.10			518	01

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

RV OCEAN STARR CALCOFI CRUISE 1404 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 2.5 W	09/04/2014	1729 UTC	3756 m	360 18 kn	320 04 09	2	1024.5 mb	14.9 C	13.9 C	18 m	8/8	ST	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	14.97	14.97	33.263	24.640	329.0	0.000	5.91	258.0	102.7	3.2	0.35	0.0	0.02	0.04	0.22	0.08	0	
2 A	14.97	14.97	33.263	24.640	329.1	0.007	5.91	258.0	102.7	3.2	0.35	0.0	0.02	0.04	0.22	0.08	2	24
10 ISL	14.92 D	14.92	33.261 D	24.650	328.4	0.033	5.92	258.0	102.8	3.2	0.35	0.0	0.02	0.10	0.23	0.07	10	
12 A	14.89	14.89	33.261	24.658	327.8	0.040	5.92	258.7	102.8	3.2	0.35	0.0	0.02	0.11	0.23	0.07	12	22
12	14.89	14.89	33.263	24.659	327.7	0.039											12	23
16 A	14.88	14.88	33.260	24.657	327.9	0.053	5.92	258.5	102.7	3.2	0.35	0.0	0.01	0.03	0.24	0.06	16	21
20 ISL	14.81 D	14.81	33.282 D	24.690	324.9	0.060	5.96	259.9	103.3	3.3	0.36	0.0	0.01	0.09	0.30	0.08	20	
22	14.79	14.79	33.286	24.698	324.3	0.072	5.99	261.4	103.7	3.3	0.37	0.0	0.01	0.12	0.33	0.09	22	20
29 A	14.44	14.43	33.269	24.760	318.5	0.095	5.99	261.6	103.0	3.4	0.37	0.0	0.01	0.12	0.43	0.21	29	19
30 ISL	14.42 D	14.42	33.252 D	24.750	319.5	0.092	5.97	D260.1	D102.6	3.4	0.37	0.0	0.01	0.12	0.46	0.22	30	
40	14.08	14.08	33.228	24.804	314.7	0.130	6.00	261.8	102.3	3.4	0.39	0.1	0.02	0.14	0.78	0.34	40	18
50 ISL	13.76 D	13.75	33.195 D	24.846	310.9	0.156	5.92	D258.1	D100.4	3.6	0.44	0.6	0.06	0.09	0.89	0.42	50	
52 A	13.70	13.69	33.196	24.859	309.8	0.167	5.91	257.9	100.0	3.6	0.45	0.7	0.07	0.08	0.91	0.44	52	17
58	13.47	13.46	33.187	24.899	306.1	0.186	5.86	255.9	98.7	3.7	0.48	1.2	0.10	0.14	0.79	0.49	58	15
58	13.47	13.46	33.186	24.899	306.1	0.184											58	16
66 A	13.15	13.14	33.251	25.012	295.6	0.210	5.66	247.1	94.8	4.1	0.58	2.8	0.18	0.06	0.54	0.33	67	14
75 ISL	12.25 D	12.24	33.311 D	25.234	274.6	0.218	5.32	D231.5 D	87.4	5.9	0.78	6.8	0.06	0.04	0.23	0.16	76	
76	12.28	12.27	33.315	25.231	274.9	0.238	5.31	231.9	87.4	6.1	0.80	7.2	0.04	0.04	0.20	0.14	77	13
85	11.49	11.48	33.326	25.388	260.1	0.262	5.06	220.8	81.8	8.8	1.02	10.6	0.03	0.01	0.11	0.09	86	12
100	10.54	10.53	33.358	25.583	241.7	0.300	4.55	198.5	72.0	12.9	1.30	15.3	0.03	0.03	0.06	0.06	101	11
120	9.70	9.69	33.583	25.900	211.9	0.345	3.56	155.4	55.4	20.8	1.73	22.2	0.02	0.05	0.02	0.04	121	10
125 ISL	9.66 D	9.64	33.598 D	25.919	210.2	0.339	3.51	D152.8 D	54.6	21.7	1.77	22.7	0.02	0.07	0.02	0.04	126	
140	9.39	9.37	33.696	26.041	198.9	0.387	3.15	137.6	48.8	24.1	1.88	24.3	0.02	0.14	0.01	0.04	141	09
150 ISL	9.10 D	9.08	33.830 D	26.192	184.7	0.389	3.12	D135.6 D	48.0	26.4	1.93	25.2	0.02	0.11	0.01	0.03	151	
170	8.78	8.76	33.928	26.319	173.0	0.442	2.64	115.0	40.3	30.9	2.03	27.0	0.02	0.05	0.00	0.02	171	08
200 ISL	8.44 D	8.42	34.020 D	26.445	161.6	0.476	2.10	D 91.2 D	31.8	36.0	2.18	29.1	0.02	0.03	0.00	0.02	202	
201	8.45	8.43	34.013	26.438	162.2	0.493	2.23	97.1	33.8	36.1	2.19	29.2	0.02	0.03	0.00	0.02	203	07
230	8.01	7.98	34.067	26.547	152.2	0.539	1.80	78.4	27.0	41.9	2.38	31.5	0.02	0.06			232	06
250 ISL	7.82 D	7.79	34.081 D	26.587	148.8	0.554	1.63	D 71.0 D	24.5	44.7	2.45	32.5	0.02	0.06			252	
271	7.67	7.64	34.105	26.628	145.2	0.600	1.39	60.7	20.8	47.6	2.53	33.5	0.02	0.06			273	05
300 ISL	7.45 D	7.42	34.142 D	26.689	139.8	0.626	1.10	D 47.9 D	16.4	52.2	2.65	34.7	0.01	0.04			302	
320	7.25	7.22	34.164	26.734	135.8	0.669	0.96	41.8	14.2	55.4	2.74	35.6	0.01	0.03			323	04
371	6.82	6.79	34.202	26.824	127.8	0.736	0.65	28.2	9.4	62.5	2.90	37.3	0.02	0.01			374	03
400 ISL	6.55 D	6.52	34.214 D	26.869	123.7	0.759	0.54	D 23.3 D	7.8	66.7	2.96	38.2	0.02	0.02			403	
441	6.16	6.12	34.221	26.926	118.6	0.822	0.46	20.2	6.7	72.6	3.05	39.4	0.02	0.04			445	02
500 ISL	5.84 D	5.80	34.256 D	26.996	112.6	0.878	0.32	D 14.0 D	4.6	79.6	3.13	40.4	0.01	0.03			504	
515	5.76	5.71	34.268	27.016	110.8	0.907	0.29	12.6	4.1	81.3	3.15	40.7	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; PRIMARY CRUISE-CORRECTED O2;

RV OCEAN STARR CALCOFI CRUISE 1404 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 19.7 N	121 42.9 W	09/04/2014	2242 UTC	3988 m	330 18 kn	320 02 06	1	1022.5 mb	16.1 C	15.0 C	20 m	5/8	SC	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	15.69	15.69	33.191	24.428	349.2	0.000	5.82	254.2	102.6	3.1		0.1	0.00	0.23	0.14	0.03	0	
2	15.69	15.69	33.191	24.428	349.3	0.007	5.82	254.2	102.6	3.1		0.1	0.00	0.23	0.14	0.03	2	21
10	15.40	15.40	33.198	24.498	343.0	0.035	5.84	255.1	102.3	3.0	0.33	0.0	0.00	0.07	0.16	0.03	10	19
10	15.40	15.40	33.198	24.497	343.0	0.033											10	20
20 ISL	15.38 D	15.38	33.202 D	24.505	342.5	0.052	5.84	D254.5	D102.3	3.0	0.33	0.0	0.01	0.08	0.20	0.04	20	
25	15.36	15.36	33.203	24.510	342.3	0.086	5.84	255.0	102.2	3.0	0.33	0.0	0.00	0.08	0.22	0.05	25	18
30 ISL	15.33 D	15.32	33.204 D	24.519	341.6	0.087	5.85	D255.0	D102.4	3.0	0.34	0.0	0.01	0.15	0.24	0.06	30	
40	15.31	15.30	33.206	24.525	341.3	0.137	5.84	D254.4	D102.1	3.0	0.37	0.0	0.00	0.30	0.30	0.09	40	17
50	15.15	15.14	33.198	24.555	338.8	0.171	5.84	255.3	101.9	3.0	0.39	0.0	0.00	0.08	0.47	0.18	50	16
62	13.30	13.29	33.153	24.906	305.6	0.210	5.86	256.0	98.4	4.0	0.55	1.6	0.09	0.16	0.66	0.36	62	15
75	12.30	12.29	33.138	25.091	288.2	0.249	5.66	247.3	93.0	4.9	0.67	4.3	0.09	0.05	0.40	0.30	76	14
87	11.47	11.46	33.178	25.277	270.7	0.282	5.44	237.6	87.8	7.0	0.86	7.7	0.03	0.03	0.13	0.10	88	13
100	10.68	10.67	33.240	25.465	252.9	0.316	5.08	222.0	80.7	10.2	1.11	11.7	0.02	0.03	0.07	0.06	101	12
112	9.78	9.77	33.371	25.722	228.7	0.345	4.56	199.0	71.0	15.5	1.42	16.6	0.02	0.02	0.02	0.03	113	11
125	9.42	9.41	33.510	25.888	213.1	0.374	4.15	181.4	64.3	19.5	1.59	19.7	0.00	0.05	0.01	0.03	126	10
140	9.18	9.16	33.614	26.009	201.8	0.405	3.81	166.2	58.6	22.5	1.76	21.8	0.00	0.04	0.01	0.03	141	09
150 ISL	8.94 D	8.92	33.757 D	26.159	187.7	0.410	3.44	D149.8 D	52.8	24.6	1.82	22.9	0.01	0.04	0.01	0.02	151	
171	8.73	8.71	33.854	26.270	177.6	0.463	3.21	140.3	49.0	28.9	1.96	25.2	0.01	0.03	0.00	0.02	172	08
200 ISL	8.36 D	8.34	33.957 D	26.407	165.1	0.499	2.91	D126.7 D	44.1	33.6	2.08	27.1	0.01	0.04	0.00	0.02	202	
201	8.37	8.34	33.960	26.409	165.0	0.515	2.83	123.6	42.9	33.8	2.08	27.2	0.01	0.04	0.00	0.02	203	07
230	7.84	7.82	33.986	26.508	155.8	0.561	2.86	124.7	42.7	38.0	2.10	27.9	0.01	0.08			232	06
250 ISL	7.55 D	7.52	34.005 D	26.565	150.6	0.578	2.33	D101.2 D	34.6	42.7	2.26	30.0	0.01	0.06			252	
272	7.23	7.21	34.021	26.623	145.4	0.625	1.99	86.7	29.3	47.9	2.43	32.4	0.00	0.04			274	05
300 ISL	6.99 D	6.96	34.045 D	26.677	140.6	0.651	1.69	D 73.6 D	24.8	52.3	2.54	33.8	0.01	0.02			302	
320	6.76	6.73	34.045	26.707	137.9	0.693	1.57	68.4	22.9	55.5	2.62	34.7	0.01	0.01			323	04
381	6.14	6.11	34.097	26.830	126.8	0.773	0.98	42.6	14.1	67.7	2.90	38.0	0.00	0.04			384	03
400 ISL	6.03 D	5.99	34.107 D	26.853	124.8	0.785	0.91	D 39.5 D	13.1	70.9	2.96	38.6	0.01	0.04			403	
440	5.72	5.68	34.160	26.934	117.4	0.845	0.61	26.7	8.7	77.6	3.08	39.9	0.00	0.04			444	02
500 ISL	5.83 D	5.78	34.278 D	27.015	110.8	0.903	0.32	D 13.9 D	4.6	81.7	3.18	40.2	0.01	0.04			504	
515	5.74	5.70	34.284	27.030	109.4	0.931	0.30	13.2	4.3	82.7	3.20	40.3	0.00	0.04			519	01

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

RV OCEAN STARR CALCOFI CRUISE 1404 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 59.7 N	122 23.4 W	10/04/2014	0435	UTC	4094 m	340 16 kn			1027.0 mb	14.2 C	13.1 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	15.82	15.82	33.157	24.371	354.7	0.000	5.77	252.3	102.0	3.1	0.34	0.1	0.02	0.06	0.13	0.02	0	
2	15.82	15.82	33.157	24.371	354.7	0.007	5.77	252.3	102.0	3.1	0.34	0.1	0.02	0.06	0.13	0.02	2	21
10	15.76	15.76	33.156	24.384	353.7	0.035	5.79	253.1	102.2	3.0	0.36	0.0	0.01	0.14	0.12	0.03	10	19
10	15.76	15.76	33.156	24.385	353.7	0.035											10	20
20 ISL	15.55 D	15.55	33.152 D	24.429	349.8	0.053	5.81	D253.5	D102.2	3.0	0.35	0.0	0.01	0.07	0.17	0.06	20	
25	15.47	15.47	33.153	24.447	348.2	0.088	5.83	254.6	102.2	3.0	0.34	0.0	0.01	0.04	0.19	0.08	25	18
30 ISL	15.41 D	15.41	33.153 D	24.461	347.1	0.089	5.82	D253.8	D102.0	3.0	0.34	0.0	0.01	0.05	0.20	0.07	30	
40	15.35	15.34	33.147	24.470	346.6	0.140	5.84	255.2	102.2	3.0	0.33	0.0	0.01	0.06	0.22	0.06	40	17
50	15.29	15.29	33.153	24.488	345.2	0.175	5.83	254.7	101.9	3.1	0.34	0.0	0.01	0.12	0.33	0.07	50	16
62	13.25	13.24	33.127	24.897	306.4	0.214	6.16	269.2	103.3	3.7	0.43	0.1	0.02	0.04	1.44	0.67	62	15
75 ISL	12.25 D	12.24	33.099 D	25.071	290.1	0.237	5.82	D253.7	D 95.6	4.9	0.63	3.5	0.13	0.05	1.14	0.68	76	
76	12.08	12.07	33.099	25.102	287.1	0.256	5.81	253.9	95.0	5.0	0.65	3.8	0.14	0.05	1.11	0.68	77	14
87	11.28	11.27	33.149	25.289	269.5	0.286	5.52	241.3	88.8	7.1	0.87	8.0	0.05	0.05	0.28	0.32	88	13
100	10.32	10.31	33.235	25.523	247.4	0.320	5.06	221.3	79.8	11.2	1.15	12.9	0.02	0.01	0.08	0.06	101	12
112	9.84	9.83	33.344	25.690	231.7	0.349	4.62	201.7	72.0	14.9	1.47	16.2	0.02	0.09	0.03	0.04	113	11
125	9.45	9.44	33.490	25.869	214.9	0.378	4.14	181.0	64.1	19.1	1.57	19.6	0.02	0.02	0.01	0.02	126	10
141	9.15	9.14	33.651	26.043	198.7	0.411	3.76	164.1	57.8	23.2	1.71	22.2	0.02	0.01	0.01	0.02	142	09
150 ISL	9.00 D	8.98	33.738 D	26.135	190.0	0.413	3.45	D150.2	D 53.0	25.2	1.78	23.4	0.02	0.02	0.01	0.02	151	
170	8.71	8.69	33.846	26.266	178.0	0.465	3.06	133.8	46.7	29.7	1.95	26.0	0.02	0.03	0.00	0.02	171	08
200	8.42	8.40	33.946	26.390	166.8	0.517	3.11	136.0	47.2	32.0	1.91	25.9	0.02	0.04	0.00	0.01	202	07
231	7.96	7.94	33.982	26.487	158.0	0.567	2.94	128.5	44.2	36.4	2.00	27.3	0.02	0.01			233	06
250 ISL	7.74 D	7.71	33.991 D	26.527	154.4	0.583	2.70	D117.6	D 40.4	40.7	2.14	29.2	0.02	0.01			252	
271	7.38	7.35	34.011	26.595	148.1	0.628	2.18	95.1	32.3	45.5	2.29	31.4	0.02	0.00			273	05
300 ISL	7.03 D	7.00	34.026 D	26.656	142.6	0.658	1.95	D 85.0	D 28.7	50.6	2.43	33.1	0.02	0.01			302	
320	6.81	6.78	34.038	26.695	139.1	0.699	1.71	74.5	24.9	54.1	2.53	34.2	0.02	0.01			323	04
380	6.26	6.23	34.095	26.812	128.5	0.779	1.04	45.2	15.0	65.6	2.81	37.6	0.02	0.03			383	03
400 ISL	6.03 D	5.99	34.116 D	26.860	124.1	0.792	0.83	D 36.3	D 12.0	69.5	2.88	38.3	0.01	0.03			403	
440	5.72	5.68	34.150	26.926	118.1	0.853	0.63	27.6	9.0	77.1	3.02	39.7	0.01	0.02			444	02
500 ISL	5.37 D	5.33	34.211 D	27.016	110.0	0.910	0.39	D 16.9	D 5.5	86.0	3.12	41.1	0.01	0.04			504	
515	5.23	5.19	34.205	27.028	108.9	0.938	0.41	18.0	5.8	88.2	3.14	41.4	0.01	0.05			519	01

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

RV OCEAN STARR CALCOFI CRUISE 1404 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 39.3 N	123 4.0 W	10/04/2014	1041	UTC	4141 m	340 10 kn			1023.5 mb	14.4 C	12.9 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	15.67	15.67	33.056	24.327	358.9	0.000	5.78	252.3	101.7	2.6	0.33	0.0	0.01	0.19	0.08	0.02	0	
2	15.67	15.67	33.056	24.327	358.9	0.007	5.78	252.3	101.7	2.6	0.33	0.0	0.01	0.19	0.08	0.02	2	24
10	15.66	15.66	33.044	24.320	359.9	0.036	5.79	252.8	101.9	2.5	0.34	0.0	0.01	0.09	0.08	0.01	10	19
10	15.66	15.66	33.048	24.324	359.5	0.036											10	20
20 ISL	15.43 D	15.42	33.026 D	24.360	356.4	0.054	5.80	D252.8	D101.6	2.5	0.34	0.0	0.01	0.07	0.09	0.03	20	
25	15.31	15.31	33.026	24.386	354.1	0.090	5.82	254.1	101.7	2.5	0.34	0.0	0.01	0.06	0.09	0.03	25	18
30 ISL	15.18 D	15.18	33.016 D	24.405	352.4	0.090	5.81	D253.2	D101.2	2.6	0.33	0.0	0.01	0.07	0.11	0.03	30	
40	15.00	15.00	33.017	24.446	348.9	0.142	5.85	255.3	101.5	2.6	0.32	0.0	0.00	0.09	0.15	0.03	40	17
50	14.71	14.70	33.014	24.507	343.4	0.177	5.87	256.6	101.4	2.6	0.33	0.0	0.00	0.06	0.22	0.07	50	16
62	14.24	14.23	33.013	24.607	334.1	0.218	5.91	258.1	101.1	2.8	0.37	0.0	0.01	0.01	0.50	0.27	62	15
75 ISL	14.21 D	14.20	33.300 D	24.835	312.8	0.244	5.72	D249.3	D 97.9	3.0	0.39	0.7	0.05	0.05	0.41	0.18	76	
76	14.10	14.09	33.310	24.865	310.0	0.263	5.74	250.6	98.0	3.0	0.39	0.7	0.05	0.05	0.41	0.17	77	14
87	12.27	12.26	33.161	25.115	286.2	0.296	5.58	243.5	91.6	4.6	0.63	4.3	0.07	0.10	0.29	0.17	88	13
100	11.87	11.86	33.243	25.255	273.2	0.332	5.38	235.1	87.7	5.8	0.73	6.2	0.06	0.04	0.20	0.15	101	12
112	11.20	11.19	33.285	25.409	258.7	0.364	5.19	226.5	83.3	7.5	0.87	8.6	0.04	0.04	0.13	0.13	113	11
125	10.69	10.67	33.388	25.582	242.5	0.397	4.91	214.3	78.0	10.6	1.04	11.8	0.02	0.05	0.06	0.08	126	10
140	10.22	10.20	33.478	25.732	228.5	0.432	4.74	206.9	74.6	12.8	1.14	13.6	0.02	0.05	0.04	0.04	141	09
150 ISL	10.13 D	10.11	33.498 D	25.763	225.7	0.440	4.62	D201.2	D 72.6	16.7	1.37	17.0	0.02	0.04	0.03	0.03	151	
170	9.29	9.27	33.689	26.052	198.5	0.497	3.32	144.8	51.2	24.4	1.83	23.7	0.02	0.01	0.01	0.02	171	08
200	8.66	8.64	33.834	26.266	178.6	0.554	3.14	137.0	47.8	29.5	1.92	26.0	0.01	0.06	0.00	0.02	202	07
230	8.22	8.19	33.954	26.428	163.7	0.605	2.94	128.3	44.4	33.5	1.97	27.0	0.02	0.01			232	06
250 ISL	8.01 D	7.98	33.984 D	26.483	158.7	0.623	2.66	D115.9	D 40.0	37.4	2.09	28.6	0.01	0.01			252	
270	7.65	7.63	34.000	26.547	152.8	0.668	2.42	105.5	36.0	41.2	2.21	30.1	0.01	0.00			272	05
300 ISL	7.22 D	7.19	34.022 D	26.626	145.5	0.700	1.96	D 85.1	D 28.9	47.6	2.37	32.4	0.01	0.01			302	
320	6.90	6.87	34.030	26.677	140.9	0.741	1.75	76.5	25.7	51.8	2.48	33.9	0.01	0.01			323	04
380	6.39	6.36	34.086	26.789	130.8	0.823	1.10	48.1	16.0	63.0	2.77	37.3	0.01	0.00			383	03
400 ISL	6.29 D	6.25	34.106 D	26.819	128.2	0.837	0.94	D 40.9	D 13.6	66.0	2.83	37.9	0.00	0.00			403	
440	5.97	5.93	34.134	26.882	122.5	0.899	0.74	32.2	10.6	72.0	2.94	39.1	0.00	0.01			444	02
500 ISL	5.56 D	5.52	34.177 D	26.966	115.0	0.960	0.52	D 22.7	D 7.4	80.8	3.09	40.5	0.00	0.01			504	
515	5.48	5.44	34.192	26.988	113.0	0.987	0.46	20.0	6.5	82.9	3.13	40.8	0.00	0.01			519	01

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

RV OCEAN STARR — CALCOFI CRUISE 1404 — 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	10/04/2014	1757	UTC	3987 m	020 17 kn	010 02 03	2	1025.0 mb	15.1 C	13.8 C	35 m	8/8	ST	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	16.74	16.74	33.467	24.400	351.9	0.000	5.61	244.9	101.1	2.4	0.48	0.1	0.01	0.50	0.06	0.01	0	
2 A	16.74	16.74	33.467	24.400	352.0	0.007	5.61	244.9	101.1	2.4	0.48	0.1	0.01	0.50	0.06	0.01	2	24
10 ISL	16.72 D	16.72	33.468 D	24.405	351.8	0.036	5.57	D242.9	D100.4	2.4	0.36	0.1	0.01	0.19	0.07	0.01	10	
13	16.72	16.72	33.467	24.405	351.9	0.046	5.63	245.6	101.4	2.4	0.31	0.1	0.01	0.07	0.07	0.01	13	21
13	16.72	16.72	33.467	24.405	351.9	0.046											13	23
13	16.72	16.72	33.467	24.405	351.9	0.047											13	22
20 ISL	16.45 D	16.45	33.469 D	24.469	346.0	0.058	5.65	D246.3	D101.3	2.4	0.32	0.0	0.01	0.18	0.07	0.01	20	
24 A	16.42	16.42	33.466	24.474	345.8	0.084	5.68	248.0	101.7	2.4	0.33	0.0	0.01	0.24	0.07	0.01	24	20
30 ISL	16.40 D	16.40	33.465 D	24.479	345.5	0.093	5.62	D245.0	D100.7	2.4	0.33	0.1	0.00	0.21	0.07	0.02	30	
32 A	16.42	16.41	33.469	24.478	345.7	0.112	5.66	246.9	101.3	2.4	0.33	0.1	0.00	0.20	0.07	0.02	32	19
44	16.40	16.39	33.472	24.485	345.4	0.153	5.64	246.2	101.0	2.4	0.31	0.0	0.00	0.04	0.09	0.02	44	18
50 ISL	16.39 D	16.38	33.471 D	24.487	345.4	0.163	5.60	D244.2	D100.3	2.4	0.31	0.0	0.00	0.06	0.09	0.02	50	
56 A	16.37	16.36	33.470	24.491	345.2	0.195	5.64	246.3	100.9	2.4	0.30	0.0	0.00	0.08	0.10	0.02	56	17
71	16.05	16.04	33.460	24.558	339.4	0.246	5.67	247.4	100.8	2.4	0.29	0.1	0.00	0.06	0.17	0.06	72	16
75 ISL	16.04 D	16.03	33.469 D	24.567	338.6	0.249	5.64	D245.7	D100.2	2.4	0.31	0.1	0.00	0.09	0.18	0.08	76	
86	15.36	15.34	33.429	24.690	327.2	0.296	5.67	247.5	99.4	2.5	0.35	0.0	0.00	0.17	0.20	0.13	87	15
100 A	14.81	14.79	33.402	24.789	318.1	0.341	5.66	247.3	98.2	2.9	0.37	0.4	0.05	0.04	0.22	0.13	101	13
100	14.81	14.79	33.402	24.790	318.1	0.342											101	14
108	14.12	14.11	33.388	24.923	305.5	0.366	5.61	244.9	95.9	3.3	0.44	1.3	0.10	0.05	0.22	0.13	109	12
120	13.15	13.13	33.345	25.088	289.9	0.402	5.54	242.0	92.8	4.1	0.54	2.9	0.06	0.04	0.20	0.13	121	11
125 ISL	12.92 D	12.90	33.327 D	25.121	287.0	0.394	5.51	D239.9	D 91.8	4.3	0.57	3.3	0.06	0.05	0.20	0.13	126	
128 A	12.92	12.90	33.326	25.119	287.2	0.425	5.51	240.5	91.8	4.4	0.58	3.5	0.05	0.05	0.19	0.12	129	10
145	11.65	11.63	33.311	25.350	265.3	0.472	5.23	228.2	84.8	7.0	0.80	7.4	0.02	0.06	0.13	0.11	146	09
150 ISL	11.48 D	11.46	33.316 D	25.384	262.2	0.464	5.19	D225.8	D 83.8	8.0	0.86	8.5	0.02	0.05	0.11	0.10	151	
171	10.35	10.33	33.482	25.715	230.9	0.537	4.74	207.1	74.9	12.2	1.11	13.1	0.01	0.03	0.03	0.04	172	08
200	9.26	9.24	33.708	26.072	197.2	0.599	4.05	177.0	62.6	20.9	1.62	20.1	0.01	0.03	0.00	0.02	202	07
231	8.79	8.77	33.884	26.285	177.5	0.657	3.51	153.1	53.6	27.0	1.78	23.6	0.01	0.03			233	06
250 ISL	8.53 D	8.50	33.942 D	26.372	169.6	0.670	3.39	D147.6	D 51.6	30.0	1.85	24.8	0.01	0.02			252	
271	8.24	8.21	33.969	26.437	163.6	0.725	3.14	137.1	47.5	33.4	1.93	26.2	0.01	0.00			273	05
300 ISL	7.93 D	7.90	34.001 D	26.508	157.2	0.752	2.56	D111.2	D 38.3	39.7	2.16	29.0	0.01	0.02			302	
320	7.55	7.51	34.018	26.578	150.8	0.803	2.23	97.5	33.2	44.0	2.32	31.0	0.01	0.03			323	04
371	7.13	7.10	34.069	26.677	141.9	0.877	1.50	65.7	22.2	52.5	2.60	34.4	0.01	0.02			374	03
400 ISL	6.78 D	6.74	34.091 D	26.743	135.9	0.899	1.25	D 54.3	D 18.2	57.9	2.73	35.8	0.01	0.04			403	
440	6.50	6.46	34.144	26.823	128.7	0.970	0.83	36.3	12.1	65.5	2.90	37.8	0.00	0.06			444	02
500 ISL	5.79 D	5.74	34.169 D	26.933	118.4	1.027	0.62	D 26.8	D 8.8	76.6	3.08	39.9	0.01	0.05			504	
512	5.66	5.62	34.172	26.951	116.7	1.059	0.57	24.8	8.1	78.9	3.11	40.3	0.01	0.05			516	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 OCEAN STARR — CALCOFI CRUISE 1404 — 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 26.8 W	08/04/2014	0508	UTC	28 m	060 07 kn			1024.5 mb	17.1 C	15.2 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	15.77	15.77	33.487	24.636	329.4	0.000	7.57	330.7	133.9	0.2	0.11	0.0	0.04	0.00	4.13	0.32	0	
2	15.77	15.77	33.487	24.636	329.5	0.007	7.57	330.7	133.9	0.2	0.11	0.0	0.04	0.00	4.13	0.32	2	05
5	14.95	14.95	33.486	24.816	312.4	0.016	7.66	334.6	133.3	0.2	0.08	0.0	0.03	0.00	4.31	0.42	5	04
10	13.09	13.09	33.505	25.218	274.3	0.031	6.15	268.7	103.0	3.8	0.49	2.7	0.15	0.14	15.91	1.64	10	03
15	11.95	11.95	33.543	25.468	250.7	0.044	4.44	193.9	72.6	12.2	1.21	12.3	0.31	1.59	8.85	0.99	15	02
20	11.83	11.83	33.554	25.499	247.8	0.057	4.20	183.3	68.5	13.3	1.30	13.8	0.41	2.03	7.76	1.15	20	01

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

RV OCEAN STARR — CALCOFI CRUISE 1404 — 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 40.6 N	118 5.2 W	08/04/2014	0133	UTC	21 m	330 15 kn	330 02 05	0	1022.0 mb	18.3 C	13.9 C		0/8		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	14.14	14.14	33.464	24.971	297.5	0.000	9.27	404.9	158.7	4.6	0.75	7.8	0.33	0.66	9.21	0.52	0	
2	14.14	14.14	33.464	24.971	297.6	0.006	9.27	404.9	158.7	4.6	0.75	7.8	0.33	0.66	9.21	0.52	2	04
5	14.02	14.02	33.464	24.997	295.2	0.015	9.27	404.7	158.2	0.3	0.10	0.0	0.03	0.06	9.74	0.58	5	03
10	13.62	13.62	33.467	25.081	287.4	0.030	9.08	396.7	153.8	0.2	0.09	0.0	0.04	0.03	12.29	0.79	10	02
15	11.84	11.83	33.504	25.459	251.5	0.043	5.35	233.6	87.2	0.2	0.08	0.1	0.03	0.05	24.28	2.56	15	01

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

RV OCEAN STARR — CALCOFI CRUISE 1404 — 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	07/04/2014	2238	UTC	25 m	330 10 kn	330 01 06	0	1022.0 mb	21.2 C	17.9 C		0/8		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	14.78	14.78	33.484	24.851	308.9	0.000	8.86	387.1	153.7	0.2	0.08	0.0	0.02	0.05	4.04	0.33	0	
2	14.78	14.78	33.484	24.851	309.0	0.006	8.86	387.1	153.7	0.2	0.08	0.0	0.02	0.05	4.04	0.33	2	04
5	13.89	13.89	33.480	25.036	291.5	0.015	9.43	411.8	160.6	0.2	0.10	0.1	0.03	0.07	6.79	0.48	5	03
10	13.45	13.45	33.472	25.120	283.6	0.030	8.66	378.4	146.2	0.2	0.13	0.0	0.03	0.05	6.85	0.62	10	02
17	13.27	13.27	33.495	25.174	278.7	0.049	7.86	343.2	132.1	0.5	0.18	0.0	0.04	0.04	9.54	0.85	17	01

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

RV OCEAN STARR — CALCOFI CRUISE 1404 — 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 29.0 N	117 45.9 W	07/04/2014	2048	UTC	60 m	330 04 kn	340 01 07	0	1024.0 mb	22.9 C	18.0 C	12 m	0/8		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	14.44	14.44	33.502	24.938	300.7	0.000	7.25	316.4	124.8	0.9	0.23	0.0	0.02	0.16	2.08	0.41	0	
2	14.44	14.44	33.502	24.938	300.7	0.006	7.25	316.4	124.8	0.9	0.23	0.0	0.02	0.16	2.08	0.41	2	07
5	14.23	14.23	33.505	24.985	296.4	0.015	7.15	312.3	122.6	0.8	0.23	0.0	0.01	0.06	2.08	0.44	5	06
10	14.03	14.03	33.501	25.023	292.9	0.030	7.40	323.1	126.4	0.9	0.21	0.0	0.02	0.06	2.98	0.46	10	05
20	13.35	13.35	33.505	25.167	279.5	0.058	6.36	277.8	107.1	2.4	0.41	0.7	0.04	0.17	4.99	1.16	20	04
30	12.10	12.10	33.533	25.432	254.5	0.085	5.00	218.3	82.0	8.9	1.02	9.5	0.24	0.79	9.05	1.64	30	03
40	11.15	11.15	33.550	25.621	236.8	0.110	3.88	169.2	62.3	14.5	1.41	15.6	0.27	0.46	3.55	1.55	40	02
50	10.70	10.69	33.612	25.751	224.6	0.133	3.41	149.0	54.4	18.2	1.61	18.7	0.22	0.32	1.42	0.72	50	01

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

RV OCEAN STARR — CALCOFI CRUISE 1404 — 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 25.3 N	117 54.1 W	07/04/2014	1758	UTC	611 m	360 01 kn	260 01 06	0	1026.5 mb	20.3 C	17.9 C	20 m	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	15.82	15.82	33.492	24.629	330.1	0.000	5.92	258.7	104.8	1.5	0.31	0.2	0.01	0.18	0.28	0.08	0	
2 A	15.82	15.82	33.492	24.629	330.1	0.007	5.92	258.7	104.8	1.5	0.31	0.2	0.01	0.18	0.28	0.08	2	24
8	15.36	15.36	33.488	24.729	320.9	0.026	6.21	271.5	109.0	1.0	0.29	0.1	0.00	0.08	0.48	0.21	8	22
8	15.36	15.36	33.488	24.729	320.9	0.027											8	23
10 ISL	15.22 D	15.22	33.490 D	24.761	317.9	0.030	6.19	D269.6	D108.2	0.9	0.29	0.1	0.00	0.08	0.56	0.26	10	
14 A	14.95	14.95	33.485	24.816	312.8	0.045	6.47	282.9	112.6	0.7	0.29	0.1	0.00	0.08	0.71	0.34	14	21
18 A	14.60	14.60	33.476	24.885	306.3	0.058	6.61	288.8	114.1	0.7	0.26	0.0	0.01	0.03	0.89	0.46	18	20
20 ISL	14.26 D	14.26	33.459 D	24.944	300.8	0.061	6.59	D287.2	D113.1	1.7	0.36	0.8	0.05	0.06	1.19	0.61	20	
25	13.35	13.35	33.435	25.112	284.9	0.078	5.46	238.8	92.0	4.2	0.61	2.8	0.16	0.15	1.95	0.98	25	19
30 ISL	12.65 D	12.64	33.425 D	25.244	272.4	0.090	4.89	D213.1	D 81.1	7.3	0.85	7.1	0.21	0.15	1.46	0.84	30	
32 A	12.46	12.46	33.430	25.284	268.6	0.098	4.66	203.6	76.9	8.5	0.95	8.8	0.23	0.15	1.26	0.78	32	18
40	11.99	11.98	33.437	25.380	259.7	0.119	4.42	193.1	72.3	10.0	1.08	10.8	0.22	0.13	0.85	0.53	40	17
48	11.37	11.36	33.497	25.542	244.5	0.139	4.04	176.7	65.3	13.2	1.27	14.2	0.09	0.05	0.44	0.38	48	16
50 ISL	11.28 D	11.27	33.516 D	25.572	241.7	0.142	4.04	D175.7	D 65.0	13.7	1.30	14.7	0.09	0.04	0.42	0.37	50	
58 A	10.83	10.82	33.554	25.683	231.3	0.163	3.79	165.6	60.5	15.9	1.42	16.7	0.08	0.02	0.34	0.32	58	15
66	10.56	10.56	33.619	25.781	222.2	0.181	3.46	151.2	55.0	18.6	1.58	18.9	0.06	0.04	0.14	0.23	67	14
74 A	10.23	10.22	33.685	25.889	212.0	0.198	3.17	138.4	50.0	21.1	1.70	20.8	0.05	0.04	0.10	0.18	75	13
75 ISL	10.22 D	10.21	33.710 D	25.911	210.0	0.198	3.09	D134.6	D 48.8	21.3	1.71	20.9	0.04	0.04	0.10	0.17	76	
87	10.06	10.05	33.786	25.997	202.0	0.225	2.91	126.9	45.7	23.6	1.83	22.5	0.03	0.04	0.06	0.15	88	12
100	9.91	9.90	33.854	26.076	194.8	0.251	2.63	115.0	41.3	25.7	1.93	23.9	0.04	0.04	0.04	0.17	101	11
119	9.74	9.72	33.999	26.219	181.7	0.287	2.17	94.7	33.9	29.7	2.11	25.9	0.02	0.04	0.02	0.10	120	10
125 ISL	9.64 D	9.62	34.015 D	26.248	179.0	0.296	2.15	D 93.4	D 33.5	30.5	2.14	26.3	0.02	0.03	0.02	0.09	126	
140	9.50	9.48	34.074	26.319	172.7	0.324	2.09	91.3	32.5	32.6	2.20	27.2	0.02	0.01	0.01	0.07	141	09
150 ISL	9.37 D	9.35	34.127 D	26.381	166.9	0.340	1.71	D 74.4	D 26.5	33.9	2.26	27.8	0.02	0.02	0.01	0.10	151	
170	9.24	9.22	34.153	26.422	163.4	0.374	1.53	66.9	23.7	36.6	2.37	28.9	0.02	0.05	0.02	0.16	171	08
200	9.08	9.06	34.185	26.475	159.1	0.422	1.34	58.6	20.7	38.8	2.44	29.6	0.03	0.09	0.01	0.10	202	07
231	8.82	8.80	34.213	26.538	153.6	0.471	1.18	51.6	18.1	41.7	2.58	30.4	0.04	0.07			233	06
250 ISL	8.53 D	8.50	34.230 D	26.597	148.3	0.500	1.04	D 45.1	D 15.8	44.4	2.61	31.3	0.03	0.07			252	
271	8.35	8.32	34.233	26.628	145.7	0.530	0.99	43.2	15.0	47.3	2.65	32.2	0.02	0.08			273	05
300 ISL	8.00 D	7.97	34.231 D	26.680	141.1	0.573	0.92	D 39.9	D 13.8	50.2	2.71	33.2	0.02	0.08			302	
321	7.85	7.82	34.241	26.709	138.6	0.601	0.82	35.8	12.3	52.3	2.76	33.9	0.01	0.08			324	04
371	7.37	7.33	34.255	26.791	131.4	0.669	0.61	26.8	9.1	59.0	2.89	35.7	0.01	0.08			374	03
400 ISL	7.13 D	7.09	34.266 D	26.833	127.7	0.708	0.51	D 22.3	D 7.6	62.1	2.94	36.4	0.01	0.08			403	
440	6.86	6.82	34.278	26.880	123.7	0.757	0.43	18.8	6.3	66.3	3.00	37.3	0.01	0.07			444	02
500 ISL	6.43 D	6.38	34.308 D	26.963	116.4	0.832	0.28	D 12.3	D 4.1	73.9	3.12	38.6	0.01	0.14			504	
515	6.31	6.27	34.316	26.984	114.5	0.846	0.25	11.0	3.6	75.8	3.15	38.9	0.01	0.16			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 OCEAN STARR — CALCOFI CRUISE 1404 — 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 15.0 N	118 14.8 W	07/04/2014	1342	UTC	339 m	360 01 kn	270 01 04	0	1023.3 mb	16.6 C	15.9 C	20 m	0/8		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	16.20	16.20	33.521	24.566	336.1	0.000	5.77	251.9	102.9	2.2	0.29	0.3	0.01	0.01	0.41	0.14	0	
2	16.20	16.20	33.521	24.566	336.2	0.007	5.77	251.9	102.9	2.2	0.29	0.3	0.01	0.01	0.41	0.14	2	18
10	16.18	16.17	33.521	24.571	335.9	0.034	5.77	251.9	102.8	2.2	0.29	0.3	0.00	0.01	0.42	0.13	10	16
10	16.18	16.17	33.521	24.572	335.9	0.033											10	17
20	15.48	15.47	33.496	24.710	323.1	0.067	5.83	255.0	102.6	2.3	0.32	0.3	0.02	0.12	0.82	0.42	20	15
30	14.55	14.54	33.464	24.888	306.4	0.098	5.80	253.3	100.0	2.7	0.41	1.0	0.04	0.08	1.09	0.43	30	14
40	13.01	13.00	33.432	25.179	278.9	0.127	5.16	225.4	86.2	5.9	0.76	5.3	0.25	0.15	0.96	0.47	40	13
50	11.95	11.95	33.450	25.398	258.3	0.154	4.31	188.1	70.4	10.7	1.13	12.1	0.20	0.02	0.49	0.36	50	12
60	11.50	11.49	33.496	25.518	247.1	0.180	4.03	176.0	65.2	12.9	1.26	14.4	0.10	0.01	0.33	0.23	60	11
70	11.12	11.11	33.550	25.629	236.7	0.204	3.75	164.0	60.3	15.2	1.39	16.5	0.05	0.01	0.19	0.15	71	10
75 ISL	10.99 D	10.98	33.578 D	25.674	232.6	0.200	3.69	D160.5	D 59.1	16.5	1.46	17.5	0.05	0.01	0.15	0.13	76	
85	10.59	10.58	33.655	25.805	220.4	0.238	3.34	145.8	53.0	19.1	1.60	19.6	0.05	0.01	0.06	0.08	86	09
100	10.22	10.21	33.727	25.925	209.3	0.270	3.21	140.3	50.6	21.5	1.73	21.4	0.02	0.04	0.02	0.06	101	08
120	9.96	9.95	33.823	26.044	198.3	0.311	2.80	122.3	43.9	24.4	1.86	23.4	0.02	0.03	0.02	0.12	121	07
125 ISL	9.91 D	9.90	33.893 D	26.108	192.4	0.306	2.62	D114.0	D 41.1	26.0	1.93	24.2	0.02	0.03	0.02	0.10	126	
140	9.60	9.59	34.014	26.254	178.8	0.349	2.10	91.7	32.7	30.6	2.13	26.6	0.01	0.02	0.01	0.05	141	06
150 ISL	9.51 D	9.50	34.047 D	26.295	175.2	0.352	2.02	D 87.7	D 31.4	31.8	2.17	27.1	0.01	0.02	0.01	0.05	151	
170	9.32	9.30	34.112	26.378	167.7	0.401	1.79	78.3	27.8	34.3	2.26	28.1	0.00	0.01	0.01	0.05	171	05
200	9.06	9.04	34.184	26.476	158.9	0.450	1.42	62.0	21.9	38.2	2.41	29.6	0.00	0.02	0.00	0.05	202	04
230	8.80	8.77	34.215	26.544	153.1	0.496	1.22	53.2	18.7	41.5	2.50	30.7	0.00	0.01			232	03
250 ISL	8.59 D	8.57	34.225 D	26.583	149.6	0.513	1.13	D 49.3	D 17.3	43.3	2.55	31.3	0.01	0.02			252	
270	8.44	8.41	34.227	26.610	147.4	0.556	1.06	46.3	16.1	45.1	2.60	31.9	0.02	0.03			272	02
300 ISL	8.20 D	8.17	34.230 D	26.648	144.3	0.588	0.95	D 41.1	D 14.3	50.0	2.72	33.3	0.03	0.13			302	
320	7.77	7.73	34.241	26.722	137.3	0.628	0.77	33.7	11.5	53.4	2.80	34.3	0.03	0.19			323	01

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

RV OCEAN STARR CALCOFI CRUISE 1404 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 11.2 N	118 23.3 W	07/04/2014	1033 UTC	1164 m	310 05 kn			1022.5 mb	16.7 C	15.4 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	16.84	16.84	33.552	24.442	347.9	0.000	5.72	249.8	103.3	2.4	0.29	0.0	0.02	0.05	0.23	0.05	0	
2	16.84	16.84	33.552	24.442	348.0	0.007	5.72	249.8	103.3	2.4	0.29	0.0	0.02	0.05	0.23	0.05	2	22
10	16.81	16.81	33.551	24.448	347.7	0.035	5.70	248.9	102.9	2.4	0.29	0.0	0.01	0.00	0.22	0.05	10	20
10	16.81	16.81	33.551	24.448	347.7	0.033											10	21
20	16.50	16.49	33.545	24.517	341.5	0.069	5.72	250.0	102.7	2.5	0.31	0.0	0.01	0.01	0.25	0.07	20	19
30	14.88	14.88	33.447	24.803	314.5	0.102	6.24	272.8	108.4	0.9	0.34	0.0	0.03	0.01	2.19	1.17	30	18
40	12.87	12.86	33.425	25.202	276.7	0.132	5.10	222.7	84.9	5.9	0.78	5.4	0.26	0.12	2.61	1.12	40	16
50	12.13	12.12	33.455	25.368	261.2	0.159	4.40	192.2	72.2	10.2	1.09	10.9	0.23	0.02	0.60	0.39	50	15
60	11.45	11.44	33.511	25.539	245.1	0.184	3.97	173.4	64.2	13.2	1.30	14.3	0.07	0.04	0.28	0.28	60	14
70	11.06	11.05	33.563	25.650	234.7	0.208	3.70	161.5	59.3	15.6	1.45	16.5	0.06	0.01	0.16	0.17	71	13
75 ISL	10.86 D	10.85	33.582 D	25.701	230.0	0.189	3.72	D161.8 D	59.4	16.3	1.49	17.2	0.05	0.01	0.13	0.15	76	
84	10.66	10.65	33.614	25.761	224.5	0.240	3.53	154.1	56.1	17.7	1.57	18.4	0.04	0.01	0.08	0.11	85	12
100	10.18	10.16	33.761	25.959	206.0	0.274	2.97	129.7	46.8	22.2	1.81	21.5	0.03	0.01	0.02	0.07	101	11
120	9.77	9.76	33.888	26.127	190.5	0.314	2.59	113.2	40.5	26.6	1.98	24.3	0.02	0.01	0.01	0.06	121	10
125 ISL	9.73 D	9.71	33.927 D	26.164	187.0	0.294	2.54	D110.7 D	39.7	27.5	2.02	24.8	0.03	0.01	0.01	0.06	126	
140	9.59	9.57	33.996	26.242	179.9	0.351	2.27	99.1	35.3	30.2	2.12	26.2	0.03	0.01	0.01	0.06	141	09
150 ISL	9.36 D	9.34	34.003 D	26.285	176.0	0.339	2.29	D 99.7 D	35.5	31.8	2.19	26.9	0.03	0.01	0.01	0.06	151	
170	9.28	9.26	34.120	26.391	166.4	0.403	1.72	75.3	26.7	34.9	2.33	28.3	0.01	0.00	0.00	0.05	171	08
200	9.06	9.04	34.184	26.477	158.9	0.452	1.41	61.6	21.7	38.6	2.45	29.5	0.03	0.02	0.00	0.04	202	07
230	8.70	8.68	34.211	26.555	151.9	0.498	1.21	52.9	18.5	42.0	2.54	30.7	0.03	0.02			232	06
250 ISL	8.53 D	8.51	34.224 D	26.592	148.7	0.500	1.09	D 47.2 D	16.5	44.4	2.60	31.5	0.05	0.07			252	
270	8.27	8.25	34.225	26.633	145.2	0.558	0.99	43.4	15.1	46.8	2.66	32.3	0.06	0.12			272	05
300 ISL	8.04 D	8.01	34.238 D	26.679	141.3	0.573	0.88	D 38.2 D	13.2	49.9	2.73	33.2	0.03	0.07			302	
320	7.80	7.77	34.236	26.713	138.2	0.629	0.84	36.6	12.5	52.0	2.77	33.8	0.01	0.03			323	04
380	7.27	7.23	34.260	26.809	129.8	0.709	0.60	26.2	8.9	59.3	2.92	35.7	0.02	0.02			383	03
400 ISL	7.15 D	7.11	34.265 D	26.830	128.0	0.708	0.53	D 23.2 D	7.9	62.1	2.97	36.4	0.02	0.02			403	
440	6.71	6.67	34.282	26.904	121.3	0.785	0.41	17.7	5.9	67.7	3.06	37.7	0.02	0.01			444	02
500 ISL	6.35 D	6.30	34.305 D	26.971	115.6	0.831	0.30	D 13.2 D	4.4	74.0	3.15	38.8	0.02	0.02			504	
514	6.28	6.23	34.313	26.987	114.2	0.872	0.27	11.7	3.9	75.5	3.17	39.0	0.02	0.02			518	01

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

RV OCEAN STARR CALCOFI CRUISE 1404 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 39.3 N	119 29.0 W	07/04/2014	0100 UTC	1313 m	320 14 kn	320 04 06	0	1024.0 mb	16.8 C	14.9 C	20 m	0/8		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	15.31	15.31	33.394	24.668	326.4	0.000	5.85	255.7	102.5	2.9	0.40	0.5	0.05	0.09	0.36	0.08	0	
2	15.31	15.31	33.394	24.668	326.4	0.007	5.85	255.7	102.5	2.9	0.40	0.5	0.05	0.09	0.36	0.08	2	22
10	14.77	14.77	33.391	24.782	315.8	0.032	5.92	258.8	102.6	2.9	0.40	0.5	0.04	0.03	0.41	0.09	10	20
10	14.77	14.77	33.391	24.783	315.8	0.033											10	21
20	14.74	14.73	33.396	24.794	315.0	0.064	5.89	257.5	102.0	2.8	0.42	0.5	0.04	0.12	0.47	0.07	20	19
30	14.72	14.71	33.397	24.800	314.8	0.095	5.88	256.9	101.7	2.8	0.41	0.4	0.05	0.07	0.56	0.06	30	17
30	14.72	14.71	33.397	24.800	314.8	0.096											30	18
40	14.70	14.70	33.398	24.804	314.8	0.127	5.85	255.8	101.3	2.8	0.45	0.5	0.06	0.20	0.59	0.10	40	16
50	14.30	14.29	33.386	24.882	307.6	0.158	5.74	251.0	98.5	3.3	0.48	1.4	0.12	0.17	0.51	0.17	50	15
61	13.17	13.16	33.356	25.090	288.0	0.191	5.37	234.7	90.0	5.2	0.71	4.7	0.33	0.13	0.42	0.22	61	14
70	12.55	12.54	33.337	25.197	278.1	0.216	5.32	232.5	88.0	6.5	0.81	6.8	0.18	0.05	0.31	0.20	71	13
75 ISL	12.34 D	12.33	33.332 D	25.233	274.7	0.200	5.14	D224.0 D	84.7	7.5	0.88	8.1	0.14	0.05	0.27	0.18	76	
85	11.52	11.51	33.347	25.399	259.0	0.257	4.84	211.6	78.3	9.6	1.03	10.7	0.06	0.05	0.18	0.14	86	12
100	10.65	10.64	33.436	25.624	237.9	0.294	4.33	189.2	68.8	14.1	1.31	15.3	0.03	0.04	0.11	0.08	101	11
121	9.74	9.73	33.650	25.946	207.6	0.341	3.53	154.2	55.0	21.3	1.69	21.3	0.02	0.17	0.03	0.04	122	10
125 ISL	9.71 D	9.70	33.662 D	25.961	206.3	0.320	3.54	D154.2 D	55.2	22.2	1.72	21.9	0.02	0.14	0.03	0.04	126	
141	9.32	9.30	33.783	26.120	191.4	0.381	3.14	137.2	48.6	26.0	1.85	24.2	0.02	0.02	0.02	0.05	142	09
150 ISL	9.22 D	9.21	33.819 D	26.163	187.5	0.369	2.98	D129.8 D	46.0	26.7	1.89	24.6	0.02	0.10	0.02	0.04	151	
171	9.05	9.03	33.865	26.227	181.8	0.437	2.89	126.0	44.4	28.4	1.98	25.6	0.02	0.29	0.01	0.04	172	08
200	8.71	8.69	34.058	26.433	162.8	0.487	2.00	87.3	30.5	36.6	2.26	29.1	0.02	0.09	0.00	0.03	202	07
230	8.38	8.35	34.126	26.539	153.3	0.534	1.60	69.9	24.3	41.5	2.43	30.9	0.03	0.03			232	06
250 ISL	8.28 D	8.25	34.158 D	26.579	149.8	0.537	1.39	D 60.6 D	21.1	43.1	2.48	31.4	0.03	0.03			252	
271	8.18	8.16	34.166	26.600	148.2	0.596	1.32	57.4	19.9	44.9	2.54	32.0	0.03	0.02			273	05
300 ISL	7.96 D	7.93	34.189 D	26.652	143.7	0.611	1.09	D 47.5 D	16.4	49.8	2.66	33.5	0.02	0.01			302	
320	7.66	7.62	34.217	26.718	137.6	0.666	0.87	38.0	13.0	53.1	2.74	34.5	0.02	0.01			323	04
381	7.25	7.22	34.254	26.806	130.1	0.748	0.61	26.8	9.1	59.5	2.90	36.0	0.02	0.06			384	03
400 ISL	7.14 D	7.10	34.264 D	26.831	128.0	0.746	0.54	D 23.6 D	8.0	61.7	2.93	36.5	0.02	0.05			403	
440	6.78	6.74	34.275	26.890	122.8	0.822	0.45	19.7	6.6	66.4	3.00	37.6	0.01	0.04			444	02
500 ISL	6.32 D	6.27	34.295 D	26.967	115.9	0.869	0.34	D 14.8 D	4.9								504	
514	6.12	6.08	34.307 D	27.001	112.6	0.885	0.30	D 13.1 D	4.3								518	01

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

RV OCEAN STARR — CALCOFI CRUISE 1404 — 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 57.2 W	06/04/2014	1917	UTC	871 m	340 16 kn	350 07 09	0	1029.0 mb	18.9 C	16.5 C	17 m	0/8		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	15.06	15.06	33.408	24.733	320.2	0.000	5.86	256.1	102.2	2.5	0.40	0.0	0.03	0.34	0.34	0.10	0	
2 A	15.06	15.06	33.408	24.733	320.3	0.006	5.86	256.1	102.2	2.5	0.40	0.0	0.03	0.34	0.34	0.10	2	24
10 ISL	14.96 D	14.96	33.406 D	24.754	318.5	0.032	5.86	D255.3	D101.9	2.5	0.40	0.0	0.01	0.15	0.33	0.10	10	
12 A	14.93	14.92	33.408	24.762	317.8	0.038	5.89	257.2	102.4	2.5	0.40	0.0	0.01	0.10	0.33	0.10	12	22
12	14.93	14.92	33.410	24.764	317.7	0.038											12	23
15 A	14.86	14.86	33.407	24.776	316.6	0.048	5.87	256.5	101.9	2.5	0.37	0.0	0.02	0.26	0.34	0.11	15	21
20 ISL	14.84 D	14.84	33.405 D	24.779	316.5	0.059	5.88	D256.4	D102.1	2.5	0.37	0.0	0.02	0.17	0.36	0.12	20	
27 A	14.81	14.81	33.403	24.784	316.2	0.086	5.89	257.2	102.1	2.5	0.37	0.0	0.01	0.05	0.39	0.13	27	20
30 ISL	14.81 D	14.81	33.402 D	24.783	316.4	0.091	5.87	D255.8	D101.8	2.5	0.37	0.0	0.01	0.08	0.38	0.13	30	
39	14.78	14.78	33.400	24.789	316.2	0.124	5.85	255.6	101.4	2.5	0.38	0.0	0.02	0.17	0.34	0.12	39	19
50 A	14.69	14.68	33.392	24.804	315.1	0.159	5.81	253.8	100.5	2.7	0.43	0.2	0.03	0.37	0.31	0.14	50	17
50	14.69	14.68	33.383	24.796	315.8	0.157											50	18
57	13.50	13.49	33.332	25.005	296.0	0.180	5.69	248.6	96.0	3.9	0.53	2.3	0.17	0.07	0.64	0.38	57	16
64 A	12.40	12.39	33.296	25.193	278.2	0.200	5.45	238.1	89.9	5.1	0.69	5.2	0.11	0.04	0.46	0.38	65	15
74	11.04	11.04	33.333 D	25.442	254.6	0.227	4.95	216.2	79.3	9.1	1.00	10.9	0.02	0.05	0.17	0.14	75	14
75 ISL	11.02 D	11.01	33.342 D	25.484	250.6	0.215	5.04	D219.3	D 80.6	9.4	1.01	11.1	0.02	0.05	0.16	0.13	76	
85	10.48	10.47	33.389	25.616	238.3	0.253	4.79	209.3	75.9	11.9	1.11	13.1	0.02	0.02	0.07	0.06	86	12
100 ISL	9.91 D	9.90	33.491 D	25.792	221.7	0.257	4.31	D187.8	D 67.5	15.9	1.39	16.9	0.01	0.09	0.04	0.04	101	
101	9.91	9.90	33.486	25.788	222.1	0.290	4.30	188.0	67.3	16.2	1.41	17.2	0.01	0.09	0.04	0.04	102	11
122	9.64	9.62	33.624	25.943	207.9	0.335	3.81	166.3	59.2	19.7	1.57	20.1	0.02	0.00	0.02	0.02	123	10
125 ISL	9.48 D	9.46	33.733 D	26.055	197.3	0.310	3.43	D149.4	D 53.2	20.6	1.61	20.7	0.02	0.00	0.02	0.02	126	
142	9.20	9.19	33.842	26.184	185.3	0.374	3.24	141.5	50.0	25.8	1.81	23.8	0.01	0.02	0.01	0.02	143	09
150 ISL	9.12 D	9.10	33.904 D	26.246	179.6	0.357	3.10	D134.7	D 47.7	27.4	1.86	24.6	0.01	0.02	0.00	0.01	151	
168	8.79	8.77	33.968	26.349	170.1	0.420	2.79	122.0	42.7	31.1	1.97	26.3	0.01	0.03	0.00	0.01	169	08
200	8.32	8.30	34.018	26.462	159.9	0.473	2.46	107.5	37.3	36.3	2.12	28.5	0.03	0.06	0.00	0.01	202	07
232	8.02	7.99	34.078	26.554	151.6	0.523	1.82	79.3	27.3	42.4	2.36	31.3	0.02	0.06			234	06
250 ISL	7.90 D	7.88	34.108 D	26.595	148.1	0.519	1.65	D 71.6	D 24.7	44.3	2.43	31.9	0.02	0.05			252	
270	7.85	7.82	34.120	26.614	146.7	0.579	1.48	64.7	22.2	46.5	2.50	32.6	0.02	0.03			272	05
300 ISL	7.68 D	7.65	34.156 D	26.666	142.2	0.593	1.19	D 51.6	D 17.7	51.2	2.62	34.1	0.01	0.03			302	
321	7.35	7.32	34.162	26.719	137.3	0.652	1.02	44.4	15.1	54.5	2.70	35.2	0.01	0.03			324	04
370	7.03	6.99	34.229	26.817	128.6	0.717	0.65	28.3	9.6	61.6	2.90	36.6	0.01	0.00			373	03
400 ISL	6.74 D	6.70	34.237 D	26.864	124.5	0.726	0.56	D 24.1	D 8.1	64.7	2.94	37.3	0.01	0.01			403	
438	6.55	6.51	34.251	26.901	121.4	0.802	0.48	21.1	7.0	68.6	2.99	38.2	0.01	0.03			442	02
500 ISL	6.18 D	6.14	34.275 D	26.968	115.6	0.848	0.37	D 16.1	D 5.3	74.8	3.05	39.4	0.01	0.07			504	
516	6.10	6.06	34.283	26.985	114.2	0.893	0.34	15.0	5.0	76.4	3.07	39.7	0.01	0.08			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 OCEAN STARR — CALCOFI CRUISE 1404 — 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 5.3 N	120 38.2 W	06/04/2014	1216	UTC	3791 m	330 28 kn			1025.0 mb	15.0 C	13.5 C				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	15.03	15.03	33.229	24.601	332.8	0.000	5.85	255.4	101.8	3.0	0.34	0.1	0.01	0.08	0.21	0.05	0	
3	15.03	15.03	33.229	24.601	332.8	0.010	5.85	255.4	101.8	3.0	0.34	0.1	0.01	0.08	0.21	0.05	3	22
9	15.03	15.03	33.235	24.606	332.6	0.031											9	21
10	15.03	15.03	33.233	24.605	332.7	0.033	5.88	256.7	102.3	2.9	0.35	0.1	0.00	0.07	0.22	0.05	10	20
20 ISL	15.04 D	15.03	33.228 D	24.600	333.5	0.055	5.87	D256.0	D102.2	2.9	0.34	0.0	0.00	0.05	0.21	0.05	20	
25	15.03	15.03	33.233	24.605	333.2	0.083	5.85	255.5	101.8	2.9	0.34	0.0	0.00	0.04	0.21	0.05	25	19
30 ISL	15.03 D	15.02	33.227 D	24.602	333.7	0.089	5.86	D255.6	D102.0	2.9	0.34	0.0	0.00	0.04	0.22	0.05	30	
40	14.96	14.95	33.228	24.619	332.4	0.133	5.84	255.2	101.5	2.9	0.34	0.0	0.00	0.05	0.23	0.05	40	18
50	14.38	14.38	33.304	24.800	315.4	0.166	5.90	257.9	101.4	3.1	0.40	0.3	0.02	0.10	0.88	0.32	50	17
62	13.10	13.09	33.128	24.928	303.5	0.203	5.88	257.0	98.3	3.8	0.50	1.6	0.08	0.09	0.75	0.40	62	16
74	12.03	12.02	33.106	25.117	285.6	0.239											75	15
75	12.02	12.01	33.106	25.119	285.5	0.241	5.64	246.6	92.2	5.0	0.69	5.0	0.08	0.05	0.48	0.30	76	14
88	11.52	11.51	33.166	25.259	272.5	0.277	5.49	239.8	88.7	6.0	0.78	6.6	0.04	0.06	0.29	0.21	89	13
100	11.27	11.26	33.306	25.412	258.2	0.309	5.14	224.6	82.7	8.1	0.91	9.2	0.02	0.05	0.15	0.12	101	12
113	10.84	10.82	33.421	25.580	242.4	0.342	4.97	217.0	79.3	9.6	0.97	10.7	0.01	0.05	0.08	0.06	114	11
125 ISL	10.41 D	10.40	33.447 D	25.675	233.6	0.342	4.81	D209.2	D 76.0	11.5	1.08	12.6	0.01	0.06	0.05	0.04	126	
126	10.33	10.32	33.446	25.687	232.4	0.373	4.81	210.2	76.0	11.7	1.09	12.8	0.01	0.06	0.05	0.04	127	10
141	9.50	9.48	33.537	25.898	212.5	0.406	4.25	185.8	65.9	18.0	1.47	18.7	0.01	0.03	0.02	0.02	142	09
150 ISL	9.30 D	9.28	33.655 D	26.023	200.8	0.396	3.96	D172.5	D 61.2	20.3	1.56	20.2	0.01	0.03	0.01	0.02	151	
168	9.04	9.02	33.792	26.172	186.9	0.459	3.56	155.5	54.7	24.8	1.75	23.1	0.01	0.03	0.01	0.02	169	08
200 ISL	8.92 D	8.89	33.996 D	26.352	170.6	0.489	2.48	D107.9	D 38.1	32.0	2.09	27.0	0.01	0.05	0.00	0.02	202	
201	8.91	8.89	33.996	26.352	170.6	0.518	2.46	107.6	37.8	32.3	2.10	27.1	0.01	0.05	0.00	0.02	203	07
230	8.77	8.74	34.079	26.442	162.7	0.567	1.99	86.9	30.5	36.4	2.27	29.0	0.02	0.02			232	06
250 ISL	8.58 D	8.55	34.091 D	26.481	159.3	0.572	1.94	D 84.5	D 29.6	40.2	2.35	30.4	0.01	0.02			252	
271	7.90	7.87	34.082	26.576	150.3	0.631	1.75	76.4	26.3	44.3	2.44	31.9	0.01	0.03			273	05
300 ISL	7.67 D	7.64	34.129 D	26.647	143.9	0.647	1.36	D 59.3	D 20.3	48.5	2.58	33.3	0.01	0.04			302	
321	7.55	7.52	34.153	26.684	140.8	0.704	1.16	50.6	17.3	51.5	2.68	34.3	0.01	0.04			324	04
380	7.08	7.05	34.205	26.791	131.3	0.784	0.74	32.5	11.0	59.8	2.88	36.4	0.01	0.03			383	03
400 ISL	7.02 D	6.98	34.228 D	26.819	129.0	0.785	0.64	D 27.9	D 9.4	62.5	2.93	37.0	0.01	0.04			403	
439	6.57	6.53	34.244	26.892	122.2	0.859	0.51	22.2	7.4	67.7	3.03	38.1	0.01	0.06			443	02
500 ISL	6.31 D	6.27	34.297 D	26.969	115.7	0.907	0.33	D 14.5	D 4.8	73.8	3.13	39.1	0.01	0.05			504	
511	6.23	6.18	34.312	26.992	113.6	0.944	0.31	13.5	4.5	74.9	3.15	39.3	0.01	0.05			515	01

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

RV OCEAN STARR CALCOFI CRUISE 1404 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 25.6 N	121 58.7 W	06/04/2014	0006	UTC	3869 m	330 25 kn	330 09 07	1	1031.0 mb	15.0 C	13.0 C	15 m	6/8	CU	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	15.50	15.50	33.138	24.428	349.3	0.000	5.82	254.1	102.2	3.0	0.34	0.3	0.01	0.20	0.13	0.02	0	
2	15.50	15.50	33.138	24.428	349.3	0.007	5.82	254.1	102.2	3.0	0.34	0.3	0.01	0.20	0.13	0.02	2	22
10	15.51	15.50	33.136	24.426	349.8	0.035	5.86	255.8	102.8	3.0	0.35	0.1	0.00	0.03	0.14	0.02	10	20
10	15.51	15.50	33.136	24.426	349.8	0.034											10	21
20 ISL	15.50 D	15.50	33.135 D	24.426	350.1	0.053	5.83	D254.3	D102.4	3.0	0.34	0.0	0.00	0.04	0.13	0.02	20	
25	15.51	15.51	33.136	24.426	350.3	0.088	5.83	254.6	102.4	3.0	0.33	0.0	0.00	0.04	0.13	0.02	25	19
30 ISL	15.50 D	15.49	33.135 D	24.428	350.3	0.088	5.84	D254.6	D102.5	3.0	0.34	0.0	0.00	0.04	0.16	0.03	30	
40	14.80	14.79	33.112	24.563	337.7	0.139	5.86	255.8	101.4	3.0	0.35	0.0	0.00	0.05	0.20	0.04	40	18
50 ISL	14.54 D	14.53	33.096 D	24.607	333.8	0.157	5.95	D259.1	D102.3	3.0	0.36	0.0	0.01	0.03	0.39	0.14	50	
51	14.46	14.45	33.089	24.619	332.7	0.176	5.93	259.0	101.9	3.0	0.36	0.0	0.01	0.03	0.41	0.14	51	17
61	13.54	13.53	33.069	24.794	316.2	0.209											61	16
62	13.41	13.40	33.063	24.815	314.2	0.212	5.79	253.0	97.4	3.5	0.48	1.4	0.14	0.09	0.72	0.40	62	15
75	12.66	12.65	33.174	25.049	292.3	0.251	5.62	245.4	93.1	4.3	0.58	3.6	0.08	0.05	0.38	0.31	76	14
88	11.48	11.47	33.155	25.257	272.6	0.288	5.50	240.0	88.8	5.7	0.73	6.0	0.03	0.05	0.21	0.17	89	13
100	10.67	10.66	33.187	25.426	256.7	0.320	5.31	232.0	84.3	9.4	1.06	11.0	0.02	0.05	0.08	0.06	101	12
112	10.19	10.18	33.265	25.570	243.2	0.350	4.92	214.8	77.3	12.3	1.26	14.2	0.01	0.10	0.04	0.04	113	11
125	9.85	9.84	33.315	25.666	234.3	0.381	4.66	203.5	72.7	14.7	1.38	16.4	0.01	0.04	0.02	0.03	126	10
140	9.63	9.62	33.432	25.794	222.4	0.415	4.34	189.6	67.5	17.5	1.51	18.6	0.03	0.03	0.01	0.03	141	09
150 ISL	9.29 D	9.27	33.569 D	25.958	207.0	0.405	4.11	D178.8 D	63.4	20.7	1.65	20.8	0.02	0.03	0.01	0.03	151	
170	8.97	8.96	33.752	26.151	189.0	0.476	3.23	140.9	49.5	27.1	1.93	25.3	0.01	0.04	0.00	0.02	171	08
200	8.59	8.57	33.891	26.321	173.4	0.531	2.82	122.9	42.9	31.7	2.07	27.5	0.01	0.05	0.00	0.02	202	07
231	8.29	8.27	33.959	26.420	164.4	0.583	3.04	132.6	45.9	33.2	1.99	26.8	0.00	0.06			233	06
250 ISL	8.04 D	8.01	33.981 D	26.476	159.4	0.584	2.95	D128.1 D	44.3	37.0	2.13	28.6	0.01	0.06			252	
269	7.79	7.76	34.005	26.531	154.4	0.644	2.35	102.5	35.1	40.9	2.27	30.4	0.02	0.06			271	05
300 ISL	7.44 D	7.41	34.013 D	26.588	149.3	0.661	2.11	D 91.7 D	31.3	46.4	2.40	32.3	0.02	0.05			302	
321	7.03	7.00	34.019	26.650	143.5	0.721	1.90	83.0	28.0	50.1	2.48	33.6	0.02	0.05			324	04
379	6.48	6.44	34.066	26.763	133.4	0.802	1.22	53.4	17.8	60.9	2.78	37.1	0.01	0.06			382	03
400 ISL	6.28 D	6.24	34.084 D	26.802	129.8	0.801	1.06	D 46.3 D	15.4	64.4	2.85	37.9	0.01	0.05			403	
439	5.98	5.94	34.114	26.865	124.1	0.879	0.84	36.5	12.0	71.0	2.98	39.3	0.02	0.03			443	02
500 ISL	5.45 D	5.41	34.160 D	26.967	114.8	0.924	0.56	D 24.4 D	8.0	81.0	3.12	40.9	0.03	0.05			504	
514	5.37	5.33	34.172	26.985	113.1	0.968	0.52	22.5	7.3	83.3	3.15	41.3	0.03	0.05			518	01

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

RV OCEAN STARR CALCOFI CRUISE 1404 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 4.9 N	122 39.1 W	05/04/2014	1712	UTC	4135 m	320 22 kn	320 05 07	1	1029.0 mb	15.8 C	13.0 C	30 m	2/8	ST	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	16.29	16.29	33.454	24.493	343.0	0.000	5.65	246.7	100.9	2.4	0.30	0.2	0.01	0.52	0.07	0.01	0	
2 A	16.29	16.29	33.454	24.494	343.1	0.007	5.65	246.7	100.9	2.4	0.30	0.2	0.01	0.52	0.07	0.01	2	24
10 ISL	16.29 D	16.28	33.452 D	24.494	343.3	0.035	5.66	D246.8	D101.1	2.4	0.29	0.1	0.01	0.31	0.07	0.01	10	
11	16.29	16.28	33.454	24.495	343.2	0.038	5.65	246.6	100.9	2.4	0.29	0.1	0.01	0.28	0.07	0.01	11	22
11	16.29	16.28	33.455	24.496	343.1	0.037											11	23
20 ISL	16.29 D	16.28	33.452 D	24.494	343.7	0.054	5.66	D246.6	D101.1	2.4	0.29	0.0	0.01	0.16	0.06	0.01	20	
22 A	16.29	16.28	33.453	24.495	343.6	0.076	5.65	246.8	101.0	2.4	0.29	0.0	0.01	0.13	0.06	0.01	22	21
28 A	16.28	16.28	33.454	24.497	343.7	0.096	5.64	246.4	100.8	2.4	0.29	0.0	0.01	0.04	0.07	0.01	28	20
30 ISL	16.28 D	16.28	33.453 D	24.496	343.8	0.088	5.65	D246.4	D101.0	2.4	0.29	0.0	0.01	0.05	0.07	0.01	30	
38	16.29	16.28	33.454	24.497	344.0	0.131	5.65	246.8	101.0	2.4	0.29	0.0	0.01	0.10	0.07	0.01	38	19
48 A	16.28	16.27	33.455	24.500	344.1	0.165	5.65	246.5	100.8	2.3	0.30	0.0	0.01	0.13	0.08	0.01	48	18
50 ISL	16.27 D	16.27	33.455 D	24.502	344.0	0.158	5.68	D247.4	D101.4	2.3	0.30	0.0	0.01	0.15	0.08	0.02	50	
61	16.15	16.14	33.460	24.534	341.3	0.210	5.67	247.5	101.0	2.4	0.31	0.0	0.01	0.27	0.10	0.03	61	17
75	15.88	15.87	33.454	24.592	336.2	0.257	5.65	246.6	100.1	2.4	0.29	0.0	0.00	0.08	0.15	0.06	76	16
86 A	15.73	15.72	33.483	24.648	331.3	0.294	5.67	247.6	100.2	2.5	0.29	0.0	0.01	0.09	0.18	0.10	87	15
94	14.79	14.78	33.449	24.828	314.2	0.320	5.63	245.7	97.5	2.8	0.35	0.3	0.09	0.08	0.28	0.22	95	14
100 ISL	14.00 D	13.98	33.384 D	24.946	303.1	0.325	5.74	D249.9 D	97.8	3.3	0.42	1.3	0.08	0.11	0.27	0.20	101	
105	13.09	13.08	33.337	25.092	289.1	0.352											106	13
106	13.04	13.03	33.335	25.100	288.3	0.356	5.59	244.2	93.4	3.7	0.49	2.3	0.08	0.13	0.26	0.18	107	12
110 A	12.79	12.78	33.379	25.185	280.3	0.367	5.48	239.2	91.0	4.5	0.55	3.6	0.03	0.05	0.20	0.20	111	11
125 ISL	12.06 D	12.05	33.356 D	25.308	269.0	0.387	5.38	D234.3 D	88.1	6.0	0.69	6.0	0.02	0.03	0.15	0.14	126	
128	11.88	11.86	33.357	25.342	265.7	0.416	5.32	232.2	86.7	6.3	0.72	6.5	0.02	0.02	0.14	0.13	129	10
146	11.20	11.18	33.403	25.503	250.7	0.463	5.11	223.2	82.2	8.2	0.86	8.9	0.02	0.11	0.08	0.07	147	09
150 ISL	11.13 D	11.11	33.409 D	25.521	249.1	0.452	5.10	D221.9 D	81.8	9.5	0.94	10.2	0.02	0.10	0.07	0.06	151	
171	9.86	9.84	33.522	25.828	219.9	0.522	4.34	189.4	67.8	16.1	1.38	17.3	0.01	0.07	0.02	0.03	172	08
200	9.21	9.19	33.708	26.081	196.4	0.582	3.83	167.2	59.0	21.8	1.62	21.3	0.01	0.07	0.00	0.01	202	07
231	8.74	8.71	33.880	26.290	177.0	0.640	3.20	139.6	48.8	28.3	1.88	25.2	0.01	0.07			233	06
250 ISL	8.49 D	8.46	33.940 D	26.376	169.1	0.654	3.00	D130.6 D	45.6	32.1	1.99	26.8	0.01	0.07			252	
275	8.09	8.06	33.994	26.478	159.7	0.714	2.55	111.2	38.4	37.1	2.14	28.9	0.02	0.08			277	05
300 ISL	7.78 D	7.75	34.023 D	26.548	153.3	0.735	2.20	D 95.8 D	32.9	40.8	2.23	30.2	0.01	0.06			302	
323	7.47	7.44	34.015	26.587	149.9	0.788	2.28	99.3	33.8	44.2	2.32	31.3	0.01	0.05			326	04
370	6.83	6.79	34.058	26.710	138.6	0.856	1.55	67.7	22.7	54.9	2.62	35.1	0.02	0.07			373	03
400 ISL	6.51 D	6.47	34.069 D	26.762	133.8	0.880	1.27	D 55.4 D	18.5	60.6	2.76	36.7	0.01	0.09			403	
442	6.10	6.06	34.116	26.851	125.6	0.952	0.87	37.8	12.5	68.6	2.96	38.9	0.01	0.12			446	02
500 ISL	5.65 D	5.61	34.157 D	26.940	117.6	1.006	0.64	D 27.8 D	9.1	77.4	3.09	40.4	0.01	0.10			504	
516	5.58	5.53	34.172	26.961	115.7	1.041	0.55	24.0	7.8	79.8	3.12	40.8	0.02	0.09			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 OCEAN STARR CALCOFI CRUISE 1404 STATION 90.0 110.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
30 45.2 N	123 19.7 W	05/04/2014	1026	UTC	4009 m	340 19 kn			1030.1 mb	15.0 C	12.1 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	16.89	16.89	33.578	24.450	347.1	0.000	5.58	243.4	100.9	2.3	0.28	0.0	0.01	0.04	0.07	0.01	0	
2	16.89	16.89	33.578	24.450	347.2	0.007	5.58	243.4	100.9	2.3	0.28	0.0	0.01	0.04	0.07	0.01	2	20
10 ISL	16.90 D	16.89	33.571 D	24.444	348.1	0.035	5.60	D244.1	D101.3	2.3	0.28	0.0	0.00	0.06	0.07	0.01	10	
11	16.89	16.89	33.579	24.451	347.5	0.038	5.59	244.0	101.1	2.3	0.28	0.0	0.00	0.06	0.07	0.01	11	19
20 ISL	16.90 D	16.90	33.571 D	24.444	348.5	0.070	5.60	D244.1	D101.3	2.3	0.29	0.0	0.00	0.05	0.07	0.01	20	
26	16.90	16.89	33.571	24.445	348.6	0.090	5.59	243.9	101.1	2.3	0.29	0.0	0.01	0.05	0.07	0.01	26	18
30 ISL	16.90 D	16.89	33.571 D	24.445	348.7	0.105	5.60	D244.1	D101.3	2.3	0.29	0.0	0.01	0.08	0.07	0.01	30	
40	16.89	16.89	33.572	24.448	348.9	0.139	5.59	244.1	101.2	2.3	0.29	0.0	0.01	0.16	0.07	0.01	40	17
50	16.85	16.84	33.568	24.456	348.4	0.174	5.60	D244.3	D101.3	2.3	0.29	0.0	0.01	0.13	0.08	0.01	50	16
62	16.79	16.78	33.559	24.464	348.1	0.216	5.61	244.7	101.2	2.3	0.29	0.0	0.01	0.06	0.11	0.01	62	15
75	16.61	16.60	33.529	24.483	346.8	0.261	5.61	244.9	100.9	2.3	0.29	0.0	0.01	0.09	0.12	0.02	76	14
87	15.99	15.98	33.548	24.640	332.1	0.302	5.65	246.5	100.3	2.5	0.29	0.0	0.01	0.03	0.18	0.11	88	13
100	15.03	15.02	33.505	24.819	315.3	0.344	5.67	247.7	98.9	2.8	0.33	0.1	0.03	0.04	0.29	0.12	101	12
112	13.81	13.80	33.411	25.005	297.8	0.381	5.61	245.1	95.4	3.4	0.42	1.4	0.09	0.05	0.30	0.10	113	11
125	12.42	12.40	33.304	25.199	279.4	0.418	5.44	237.7	89.8	4.9	0.62	4.4	0.06	0.04	0.22	0.16	126	10
140	11.82	11.81	33.326	25.329	267.2	0.459	5.26	229.6	85.6	6.4	0.75	6.7	0.04	0.03	0.14	0.12	141	09
150 ISL	11.61 D	11.59	33.362 D	25.397	261.0	0.490	5.22	D227.3 D	84.6	8.0	0.86	8.5	0.04	0.03	0.12	0.11	151	
170	10.66	10.64	33.448	25.635	238.5	0.536	4.80	209.7	76.3	11.2	1.07	12.0	0.04	0.04	0.07	0.07	171	08
200	9.54	9.52	33.549	25.902	213.5	0.603	4.38	191.0	67.9	19.6	1.53	19.2	0.04	0.04	0.02	0.04	202	07
230	9.00	8.97	33.689	26.100	195.1	0.665	3.96	173.0	60.8	25.2	1.79	23.2	0.04	0.05			232	06
250 ISL	8.73 D	8.70	33.806 D	26.234	182.7	0.708	3.74	D162.6 D	57.0	28.4	1.89	24.8	0.03	0.04			252	
271	8.57	8.54	33.912	26.342	172.8	0.740	3.10	135.1	47.1	31.7	1.99	26.5	0.02	0.03			273	05
300 ISL	8.28 D	8.25	34.023 D	26.474	160.7	0.794	2.48	D107.9 D	37.5	37.7	2.18	28.7	0.02	0.05			302	
320	7.95	7.92	34.053	26.546	154.1	0.820	2.11	92.2	31.7	41.8	2.31	30.3	0.02	0.07			323	04
380	7.61	7.57	34.174	26.694	141.0	0.908	1.16	50.5	17.3	51.3	2.67	33.6	0.03	0.03			383	03
400 ISL	7.49 D	7.45	34.196 D	26.727	138.1	0.944	0.98	D 42.8 D	14.6	54.5	2.76	34.3	0.02	0.03			403	
440	7.26	7.21	34.283	26.830	128.9	0.990	0.52	22.8	7.7	60.7	2.94	35.8	0.01	0.03			444	02
500 ISL	6.50 D	6.46	34.311 D	26.955	117.2	1.072	0.30	D 13.1 D	4.4	72.3	3.12	38.4	0.01	0.01			504	
515	6.27	6.22	34.313	26.988	114.1	1.081	0.28	12.4	4.1	75.2	3.16	39.0	0.01	0.01			519	01

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

RV OCEAN STARR CALCOFI CRUISE 1404 STATION 90.0 120.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
30 25.4 N	123 59.7 W	05/04/2014	0355	UTC	4094 m	360 20 kn			1028.0 mb	15.2 C	12.0 C				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	17.01	17.01	33.528	24.384	353.4	0.000	5.58	243.4	101.1	2.3	0.30	0.1	0.02	0.46	0.07	0.00	0	
2	17.01	17.01	33.528	24.384	353.5	0.007	5.58	243.4	101.1	2.3	0.30	0.1	0.02	0.46	0.07	0.00	2	23
10	17.01	17.00	33.523	24.382	354.0	0.035	5.59	243.8	101.3	2.3	0.29	0.1	0.00	0.07	0.08	0.01	10	21
10	17.01	17.00	33.521	24.380	354.2	0.037											10	22
20 ISL	17.02 D	17.01	33.521 D	24.378	354.7	0.054	5.59	D243.8	D101.4	2.3	0.31	0.1	0.00	0.14	0.07	0.01	20	
25	17.04	17.04	33.532	24.381	354.7	0.089	5.61	244.6	101.7	2.3	0.32	0.1	0.01	0.18	0.07	0.01	25	20
30 ISL	17.06 D	17.06	33.556 D	24.395	353.5	0.089	5.59	D243.7	D101.5	2.3	0.30	0.1	0.01	0.17	0.07	0.01	30	
40	17.10	17.09	33.571	24.398	353.6	0.142	5.58	243.4	101.3	2.2	0.27	0.0	0.00	0.16	0.08	0.00	40	19
50	17.12	17.11	33.613	24.426	351.3	0.177	5.57	243.0	101.2	2.2	0.26	0.0	0.00	0.12	0.09	0.01	50	18
62	17.26	17.25	33.732	24.485	346.2	0.219	5.55	242.2	101.2	2.3	0.26	0.0	0.00	0.24	0.12	0.02	62	17
75 ISL	16.87 D	16.85	33.671 D	24.532	342.1	0.248	5.61	D244.7	D101.6	2.3	0.26	0.0	0.02	0.11	0.13	0.00	76	
76	16.83	16.82	33.655	24.528	342.5	0.267	5.59	243.8	101.0	2.4	0.26	0.0	0.02	0.10	0.13	0.00	77	16
87	16.15	16.13	33.681	24.707	325.8	0.304	5.64	246.0	100.6	2.6	0.25	0.0	0.00	0.04	0.18	0.04	88	15
100	15.29	15.28	33.652	24.876	310.0	0.345	5.66	247.0	99.3	2.9	0.28	0.0	0.00	0.10	0.24	0.09	101	14
112	14.05	14.03	33.537	25.053	293.3	0.381	5.56	242.7	95.0	3.4	0.38	0.9	0.09	0.12	0.27	0.10	113	12
112	14.05	14.03	33.540	25.056	293.0	0.382											113	13
125 ISL	13.60 D	13.58	33.518 D	25.133	286.0	0.385	5.48	D238.6 D	92.7	4.0	0.46	2.1	0.10	0.13	0.23	0.14	126	
126	13.42	13.40	33.517	25.169	282.6	0.422	5.57	243.0	93.9	4.0	0.47	2.2	0.10	0.13	0.23	0.15	127	11
141	11.93	11.91	33.452	25.407	259.9	0.462	5.16	225.3	84.3	6.8	0.73	6.7	0.03	0.03	0.18	0.12	142	10
150 ISL	11.62 D	11.60	33.459 D	25.470	254.1	0.452	5.11	D222.5 D	82.9	8.9	0.89	9.1	0.03	0.05	0.14	0.09	151	
170	10.28	10.26	33.490	25.732	229.2	0.534	4.61	201.2	72.7	13.6	1.24	14.5	0.02	0.10	0.05	0.04	171	08
171	10.05	10.03	33.491	25.772	225.3	0.536	4.56	199.0	71.5	13.6	1.22	14.6	0.01	0.12	0.05	0.04	172	09
200 ISL	9.21 D	9.18	33.736 D	26.103	194.3	0.564	3.66	D159.4 D	56.5	22.8	1.67	21.9	0.00	0.02	0.01	0.01	202	
201	9.20	9.18	33.732	26.100	194.6	0.599	3.65	159.3	56.3	23.1	1.69	22.1	0.00	0.02	0.00	0.01	203	07
230	8.77	8.75	33.891	26.294	176.7	0.652	3.11	135.6	47.5	29.1	1.90	25.2	0.00	0.12			232	06
250 ISL	8.61 D	8.58	33.933 D	26.352	171.4	0.656	2.94	D127.9 D	44.8	32.7	2.02	26.8	0.00	0.16			252	
271	8.26	8.23	34.000	26.458	161.6	0.722	2.50	108.9	37.7	36.5	2.14	28.5	0.01	0.20			273	05
300 ISL	7.96 D	7.93	34.048 D	26.541	154.1	0.737	2.12	D 92.1 D	31.8	41.1	2.28	30.2	0.00	0.11			302	
321	7.70	7.67	34.055	26.585	150.2	0.800	1.96	85.7	29.3	44.5	2.38	31.4	0.00	0.04			324	04
381	6.91	6.87	34.098	26.731	136.8	0.886	1.34	58.7	19.7	56.3	2.67	35.1	0.01	0.02			384	03
400 ISL	6.74 D	6.71	34.116 D	26.768	133.5	0.882	1.21	D 52.5 D	17.6	59.2	2.74	35.8	0.01	0.02			403	
440	6.45	6.41	34.145	26.830	128.0	0.964	0.90	39.3	13.1	65.3	2.88	37.4	0.01	0.01			444	02
500 ISL	5.87 D	5.83	34.201 D	26.949	117.0	1.009	0.56	D 24.2 D	8.0	74.7	3.03	39.3	0.01	0.00			504	
514	5.86	5.82	34.204	26.952	116.9	1.054	0.54	23.7	7.8	76.8	3.07	39.7	0.00	0.00			518	01

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

RV OCEAN STARR CALCOFI CRUISE 1404 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 14.5 N	117 27.8 W	29/03/2014	0801	UTC	21 m	020 05 kn			1027.5 mb	15.4 C	13.8 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	15.75	15.75	33.452	24.615	331.4	0.000	5.74	250.7	101.5	4.8	0.35	1.2	0.15	0.14	0.88	0.26	0	
2	15.75	15.75	33.452	24.615	331.5	0.007	5.74	250.7	101.5	4.8	0.35	1.2	0.15	0.14	0.88	0.26	2	04
5	15.74	15.74	33.451	24.616	331.5	0.017	5.73	250.3	101.2	4.9	0.36	1.2	0.16	0.16	0.91	0.25	5	03
10	15.46	15.46	33.451	24.678	325.8	0.033	5.73	250.1	100.6	4.9	0.35	1.3	0.17	0.21	0.83	0.26	10	02
15	12.81	12.81	33.422	25.210	275.3	0.048	5.01	218.9	83.4	8.1	0.82	7.4	0.79	0.19	1.11	0.33	15	01

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

RV OCEAN STARR CALCOFI CRUISE 1404 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 18.2 W	29/03/2014	0319	UTC	61 m	310 05 kn			1027.0 mb	17.1 C	14.8 C				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	16.30	16.30	33.458	24.494	343.0	0.000	6.11	266.3	109.2	4.4	0.28	0.4	0.08	0.36	2.10	0.63	0	
2	16.30	16.30	33.458	24.494	343.0	0.007	6.11	266.3	109.2	4.4	0.28	0.4	0.08	0.36	2.10	0.63	2	08
4	16.30	16.30	33.459	24.495	343.0	0.014	6.05	263.7	108.1	4.5	0.29	0.5	0.06	0.30	2.12	0.63	4	07
10	16.30	16.30	33.458	24.495	343.2	0.034	6.05	263.8	108.2	4.4	0.27	0.3	0.06	0.22	2.13	0.66	10	06
20	13.50	13.50	33.435	25.081	287.6	0.066	5.95	259.1	100.4	5.0	0.37	0.3	0.05	0.35	2.30	0.81	20	05
30	11.64	11.64	33.500	25.493	248.7	0.093	3.80	165.5	61.7	14.0	1.35	15.5	0.07	0.27	0.54	0.36	30	04
40	11.06	11.06	33.581	25.661	232.9	0.117	3.46	150.8	55.6	17.2	1.52	17.9	0.11	0.22	0.23	0.24	40	03
49	10.69	10.69	33.662	25.790	220.9	0.137	3.17	138.2	50.6	19.9	1.67	20.0	0.19	0.33	0.08	0.14	49	02
50 ISL	10.67 D	10.66	33.673 D	25.804	219.6	0.141	3.15	D137.2 D	50.2	20.1	1.69	20.2	0.21	0.33	0.07	0.14	50	
55	10.56	10.56	33.701	25.844	215.9	0.150	3.01	131.1	47.9	21.2	1.77	21.1	0.33	0.30	0.04	0.14	55	01

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

RV OCEAN STARR CALCOFI CRUISE 1404 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 54.3 N	117 23.4 W	02/04/2014	0030	UTC	551 m	300 14 kn	300 02 04	1	1022.0 mb	16.9 C	12.8 C		1/8	CU	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	15.70	15.70	33.466	24.637	329.3	0.000	6.35	277.0	112.1	2.0	0.30	0.2	0.02	0.10	2.05	0.38	0	
2	15.70	15.69	33.466	24.637	329.4	0.007	6.35	277.0	112.1	2.0	0.30	0.2	0.02	0.10	2.05	0.38	2	20
10	15.37	15.36	33.460	24.706	323.1	0.033	6.47	282.3	113.5	2.1	0.30	0.0	0.01	0.03	2.15	0.42	10	19
20	15.04	15.03	33.458	24.778	316.6	0.065	6.37	278.0	111.0	2.2	0.32	0.0	0.01	0.10	3.46	0.74	20	18
30	12.77	12.76	33.408	25.208	275.9	0.094	5.20	227.0	86.5	6.5	0.74	5.1	0.22	0.27	0.98	0.40	30	17
40	11.76	11.75	33.444	25.428	255.1	0.121	4.33	189.2	70.6	12.0	1.18	13.6	1.05	0.28	1.25	0.46	40	16
50	11.18	11.17	33.520	25.593	239.6	0.146	3.69	161.1	59.4	15.3	1.45	18.1	0.13	0.08	0.40	0.20	50	15
60	10.78	10.77	33.627	25.748	225.2	0.169	3.36	146.6	53.6	18.3	1.63	19.5	0.04	0.23	0.11	0.11	60	14
70	10.65	10.64	33.689	25.820	218.5	0.191	3.14	137.2	50.0	19.9	1.71	20.2	0.03	0.14	0.06	0.07	71	13
75 ISL	10.53 D	10.52	33.735 D	25.878	213.2	0.203	3.10	D134.9 D	49.2	21.4	1.79	21.3	0.02	0.14	0.05	0.07	76	
85	10.29	10.28	33.848	26.007	201.1	0.223	2.57	112.1	40.6	24.5	1.95	23.5	0.02	0.13	0.01	0.06	86	12
100	10.07	10.06	33.927	26.106	192.0	0.252	2.30	100.1	36.1	27.0	2.04	25.0	0.01	0.06	0.01	0.05	101	11
120	9.60	9.59	33.991	26.235	180.1	0.289	2.22	97.0	34.7	29.5	2.13	26.6	0.01	0.09	0.00	0.04	121	10
125 ISL	9.52 D	9.51	34.020 D	26.272	176.7	0.300	2.22	D 96.8 D	34.6	30.2	2.15	26.9	0.01	0.11	0.00	0.04	126	
140	9.21	9.20	34.052	26.347	169.9	0.324	2.07	90.5	32.1	32.2	2.20	27.8	0.01	0.18	0.00	0.04	141	09
150 ISL	9.09 D	9.07	34.052 D	26.367	168.1	0.343	2.15	D 93.4 D	33.1	33.5	2.23	28.3	0.02	0.15	0.00	0.04	151	
170	8.84	8.82	34.093	26.439	161.6	0.374	1.90	83.0	29.2	36.1	2.30	29.4	0.02	0.08	0.00	0.04	171	08
200	8.78	8.76	34.194	26.529	153.8	0.421	1.34	58.6	20.6	40.6	2.50	31.0	0.03	0.13	0.00	0.03	202	07
230	8.62	8.59	34.224	26.578	149.7	0.467	1.15	50.0	17.5	43.3	2.60	31.6	0.04	0.19			232	06
250 ISL	8.44 D	8.41	34.234 D	26.614	146.6	0.500	1.06	D 46.1 D	16.1	45.5	2.65	32.5	0.03	0.16			252	
270	8.25	8.22	34.246	26.654	143.2	0.525	0.93	40.5	14.1	47.6	2.69	33.3	0.02	0.12			272	05
300 ISL	8.08 D	8.05	34.255 D	26.686	140.5	0.572	0.87	D 37.8 D	13.1	51.0	2.76	34.1	0.01	0.11			302	
320	7.73	7.70	34.243	26.729	136.7	0.596	0.79	34.3	11.8	53.2	2.81	34.7	0.01	0.10			323	04
380	7.22	7.18	34.261	26.817	129.0	0.675	0.57	25.0	8.5	60.1	2.93	36.6	0.01	0.23			383	03
400 ISL	6.96 D	6.93	34.265 D	26.855	125.5	0.706	0.54	D 23.5 D	8.0	62.4	2.97	37.2	0.01	0.24			403	
440	6.76	6.72	34.282	26.898	122.0	0.750	0.42	18.2	6.1	66.9	3.04	38.3	0.01	0.25			444	02
500 ISL	6.34 D	6.29	34.315 D	26.980	114.7	0.828	0.28	D 12.3 D	4.1	75.5	3.18	39.4	0.02	0.38			504	
514	6.23	6.19	34.333	27.007	112.2	0.837	0.23	9.9	3.3	77.5	3.21	39.6	0.03	0.41			518	01

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

RV OCEAN STARR CALCOFI CRUISE 1404 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 50.9 N	117 31.9 W	02/04/2014	0346	UTC	848 m	330 12 kn			1020.0 mb	14.9 C	11.9 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	16.53	16.53	33.492	24.469	345.4	0.000	5.83	254.5	104.7	2.0	0.29	0.0	0.01	0.12	0.23	0.01	0	
2	16.53	16.53	33.492	24.469	345.4	0.007	5.83	254.5	104.7	2.0	0.29	0.0	0.01	0.12	0.23	0.01	2	20
10	16.51	16.51	33.492	24.473	345.3	0.035	5.81	253.7	104.3	2.0	0.29	0.0	0.00	0.12	0.23	0.00	10	19
20	16.12	16.12	33.487	24.559	337.5	0.069	5.84	255.1	104.1	2.2	0.32	0.0	0.01	0.31	0.23	0.01	20	18
30	14.70	14.70	33.428	24.826	312.3	0.101	6.04	263.7	104.6	2.6	0.38	0.0	0.02	0.10	0.29	0.07	30	17
40	13.28	13.28	33.414	25.110	285.5	0.131	5.27	230.1	88.6	5.7	0.70	4.5	0.40	0.14	0.86	0.24	40	16
50	12.51	12.50	33.419	25.268	270.7	0.159	4.72	206.1	78.1	8.5	0.95	9.3	0.36	0.12	0.62	0.13	50	15
60	11.66	11.66	33.459	25.459	252.7	0.185	4.26	186.0	69.2	11.7	1.19	13.3	0.09	0.08	0.28	0.17	60	14
71	11.12	11.11	33.494	25.584	241.0	0.212	4.02	175.4	64.5	14.0	1.33	15.6	0.06	0.10	0.23	0.16	72	13
75 ISL	10.99 D	10.98	33.525 D	25.634	236.4	0.223	3.95	D172.1 D	63.3	15.4	1.41	16.7	0.05	0.10	0.18	0.14	76	
85	10.68	10.67	33.641	25.778	222.9	0.245	3.34	145.8	53.2	18.8	1.62	19.5	0.04	0.09	0.07	0.10	86	12
100	10.50	10.49	33.769	25.909	210.9	0.277	2.87	125.4	45.6	22.2	1.80	21.7	0.03	0.06	0.02	0.06	101	11
121	10.14	10.13	33.896	26.071	195.9	0.320	2.42	105.7	38.2	26.0	1.98	24.3	0.03	0.12	0.01	0.06	122	10
125 ISL	10.06 D	10.05	33.933 D	26.114	191.9	0.330	2.39	D103.9 D	37.6	26.5	2.00	24.6	0.02	0.12	0.01	0.06	126	
141	9.73	9.71	33.973	26.201	183.9	0.358	2.34	102.2	36.6	28.8	2.07	25.8	0.02	0.11	0.01	0.04	142	09
150 ISL	9.59 D	9.57	34.026 D	26.266	177.9	0.377	2.07	D 90.2 D	32.3	30.2	2.11	26.5	0.02	0.13	0.00	0.04	151	
169	9.12	9.10	34.049	26.360	169.2	0.407	2.15	93.6	33.1	33.2	2.18	28.0	0.02	0.17	0.00	0.04	170	08
200	8.85	8.82	34.149	26.483	158.2	0.458	1.63	70.9	24.9	38.3	2.36	29.8	0.02	0.13	0.01	0.03	202	07
229	8.69	8.66	34.219	26.564	151.1	0.503	1.21	52.6	18.4	42.5	2.53	31.1	0.02	0.08			231	06
250 ISL	8.48 D	8.45	34.231 D	26.606	147.4	0.538	1.08	D 47.0 D	16.5	45.1	2.60	31.9	0.02	0.11			252	
270	8.24	8.21	34.239	26.649	143.6	0.563	0.97	42.3	14.7	47.6	2.66	32.6	0.02	0.14			272	05
300 ISL	7.98 D	7.95	34.239 D	26.689	140.3	0.610	0.89	D 38.7 D	13.4	51.2	2.72	33.7	0.01	0.20			302	
321	7.70	7.67	34.240	26.730	136.6	0.635	0.78	34.2	11.7	53.7	2.76	34.5	0.01	0.25			324	04
381	7.11	7.07	34.263	26.833	127.4	0.714	0.54	23.5	8.0	61.6	2.92	36.7	0.02	0.12			384	03
400 ISL	7.06 D	7.02	34.271 D	26.847	126.4	0.744	0.50	D 21.7 D	7.3	63.5	2.95	37.1	0.02	0.14			403	
440	6.79	6.75	34.287	26.898	122.0	0.788	0.39	16.8	5.6	67.3	3.02	37.8	0.01	0.18			444	02
500 ISL	6.44 D	6.40	34.309 D	26.962	116.6	0.866	0.29	D 12.7 D	4.2	74.4	3.11	39.1	0.00	0.15			504	
516	6.28	6.23	34.322	26.994	113.6	0.878	0.25	10.9	3.6	76.3	3.14	39.4	0.00	0.14			520	01

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

RV OCEAN STARR CALCOFI CRUISE 1404 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 40.9 N	117 52.0 W	02/04/2014	0756	UTC	628 m	270 15 kn			1020.0 mb	15.1 C	12.0 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	16.56	16.56	33.493	24.462	346.0	0.000	5.77	252.0	103.7	1.9	0.29	0.2	0.01	0.18	0.27	0.01	0	
2	16.56	16.56	33.493	24.462	346.1	0.007	5.77	252.0	103.7	1.9	0.29	0.2	0.01	0.18	0.27	0.01	2	20
10	16.56	16.56	33.494	24.463	346.3	0.035	5.77	252.2	103.7	1.9	0.28	0.1	0.00	0.43	0.25	0.03	10	19
20	16.43	16.43	33.494	24.493	343.8	0.069	5.81	253.8	104.1	1.9	0.30	0.0	0.01	0.40	0.26	0.04	20	18
30 ISL	15.75 D	15.75	33.451 D	24.615	332.5	0.104	6.00	D261.4	D106.0	2.4	0.32	0.0	0.01	0.34	0.28	0.03	30	
31	15.65	15.65	33.454	24.639	330.2	0.106	5.93	259.2	104.7	2.5	0.32	0.0	0.01	0.33	0.29	0.03	31	17
40	13.85	13.84	33.423	25.003	295.7	0.134	5.76	251.6	97.9	3.9	0.47	0.8	0.14	0.66	0.91	0.30	40	16
50	12.62	12.61	33.411	25.239	273.4	0.163	4.76	207.7	78.8	7.6	0.90	8.7	0.43	0.73	0.73	0.22	50	15
60	12.02	12.01	33.428	25.368	261.4	0.190	4.46	194.7	73.0	9.4	1.08	11.0	0.17	0.93	0.57	0.20	60	14
69	11.69	11.68	33.454	25.451	253.7	0.213	4.23	184.8	68.8	11.2	1.19	13.0	0.06	0.55	0.35	0.19	70	13
75 ISL	11.42 D	11.41	33.492 D	25.529	246.4	0.229	4.11	D178.8 D	66.4	12.5	1.27	14.3	0.05	0.51	0.28	0.16	76	
86	11.00	10.99	33.546	25.647	235.4	0.254	3.81	166.4	61.1	14.8	1.41	16.7	0.03	0.44	0.14	0.11	87	12
100	10.56	10.55	33.627	25.789	222.2	0.286	3.49	152.4	55.4	18.0	1.57	19.3	0.02	0.29	0.07	0.08	101	11
120	10.38	10.37	33.778	25.938	208.6	0.329	2.87	125.2	45.4	22.5	1.81	21.8	0.00	0.39	0.02	0.06	121	10
125 ISL	10.21 D	10.19	33.854 D	26.028	200.1	0.342	2.75	D119.9 D	43.5	23.3	1.84	22.3	0.01	0.47	0.02	0.06	126	
139	10.04	10.03	33.871	26.069	196.5	0.367	2.59	113.1	40.7	25.5	1.93	23.7	0.01	0.68	0.01	0.05	140	09
150 ISL	9.88 D	9.86	33.920 D	26.135	190.4	0.391	2.49	D108.2 D	39.0	26.8	1.99	24.6	0.01	0.74	0.01	0.05	151	
170	9.87	9.85	33.998	26.199	184.8	0.426	2.17	94.6	34.0	29.2	2.11	26.1	0.00	0.84	0.01	0.04	171	08
199	9.40	9.38	34.043	26.312	174.6	0.478	2.07	90.4	32.1	32.0	2.17	27.4	0.00	0.62	0.01	0.06	201	07
200 ISL	9.39 D	9.37	34.051 D	26.320	173.9	0.483	2.08	D 90.3 D	32.2	32.1	2.18	27.4	0.00	0.61			202	
230	9.33	9.31	34.172	26.425	164.6	0.531	1.64	71.4	25.4	35.8	2.34	28.4	0.00	0.27			232	06
250 ISL	9.13 D	9.10	34.230 D	26.503	157.5	0.567	1.31	D 57.1 D	20.3	38.7	2.45	29.5	0.01	0.40			252	
270	8.95	8.92	34.260	26.556	152.9	0.594	1.09	47.7	16.8	41.6	2.55	30.6	0.01	0.53			272	05
300 ISL	8.49 D	8.46	34.281 D	26.644	144.9	0.643	0.86	D 37.5 D	13.1	46.1	2.65	31.8	0.00	0.58			302	
320	8.21	8.17	34.273	26.682	141.5	0.667	0.80	34.9	12.1	49.1	2.72	32.6	0.00	0.62			323	04
380	7.37	7.33	34.278	26.809	129.9	0.749	0.58	25.1	8.5	58.7	2.88	35.7	0.01	0.87			383	03
400 ISL	7.18 D	7.14	34.281 D	26.838	127.3	0.780	0.51	D 22.1 D	7.5	61.5	2.93	36.5	0.00	0.85			403	
440	6.75	6.71	34.293	26.907	121.1	0.824	0.41	17.7	5.9	67.2	3.02	38.0	0.00	0.82			444	02
500 ISL	6.38 D	6.33	34.314 D	26.974	115.3	0.902	0.30	D 12.9 D	4.3	74.3	3.12	39.3	0.00	0.47			504	
515	6.22	6.18	34.322	27.001	112.8	0.912	0.26	11.5	3.8	76.0	3.15	39.6	0.00	0.38			519	01

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

RV OCEAN STARR CALCOFI CRUISE 1404 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 30.9 N	118 12.3 W	02/04/2014	1221	UTC	1609 m	300 25 kn			1017.0 mb	14.4 C	11.9 C				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	16.62	16.62	33.513	24.462	346.0	0.000	5.71	249.5	102.8	2.3	0.29	0.0	0.01	0.39	0.23	0.04	0	
2	16.62	16.62	33.513	24.462	346.1	0.007	5.71	249.5	102.8	2.3	0.29	0.0	0.01	0.39	0.23	0.04	2	21
9	16.64	16.64	33.507	24.455	347.1	0.032											9	20
10	16.64	16.64	33.512	24.459	346.7	0.035	5.71	249.3	102.7	2.3	0.30	0.0	0.01	1.19	0.23	0.03	10	19
20	16.64	16.63	33.505	24.455	347.4	0.069	5.72	249.7	102.9	2.3	0.29	0.0	0.00	0.34	0.23	0.04	20	18
30	15.08	15.08	33.473	24.780	316.7	0.103	5.86	255.8	102.2	2.9	0.32	0.0	0.01	0.31	0.40	0.04	30	17
40	14.58	14.57	33.428	24.854	309.9	0.134	5.83	254.8	100.7	3.6	0.40	0.6	0.02	0.58	0.73	0.06	40	16
50	13.48	13.48	33.374	25.040	292.5	0.164	5.63	245.8	94.9	4.8	0.55	2.6	0.08	0.58	0.81	0.09	50	15
60	12.48	12.47	33.365	25.231	274.5	0.192	5.14	224.7	85.0	7.0	0.79	6.6	0.18	0.56	0.75	0.20	60	14
70	11.56	11.55	33.395	25.428	255.9	0.219	4.62	201.9	74.9	10.0	1.06	11.4	0.13	0.36	0.40	0.21	71	13
75 ISL	11.03 D	11.02	33.450 D	25.567	242.8	0.219	4.54	D197.7 D	72.7	12.1	1.19	13.4	0.09	0.40	0.33	0.18	76	
86	10.84	10.83	33.588	25.709	229.5	0.257	3.64	158.8	58.1	16.5	1.48	17.7	0.01	0.50	0.16	0.10	87	12
100	10.07	10.06	33.697	25.928	209.0	0.288	3.33	145.5	52.4	20.7	1.65	21.0	0.02	0.18	0.03	0.05	101	11
119	9.61	9.59	33.692	26.001	202.3	0.327	3.63	158.6	56.5	21.1	1.62	21.3	0.03	0.83	0.01	0.04	120	10
125 ISL	9.60 D	9.59	33.743 D	26.042	198.6	0.328	3.45	D150.1 D	53.7	22.8	1.70	22.3	0.03	0.72	0.01	0.04	126	
139	9.41	9.40	33.861	26.166	187.1	0.366	2.91	126.9	45.1	26.5	1.87	24.6	0.02	0.46	0.00	0.03	140	09
150 ISL	9.25 D	9.23	33.938 D	26.253	179.0	0.375	2.69	D117.0 D	41.5	28.1	1.93	25.4	0.03	0.41	0.00	0.03	151	
171	9.07	9.05	33.987	26.321	173.0	0.423	2.48	108.3	38.2	31.1	2.05	27.0	0.03	0.30	0.00	0.03	172	08
200	8.84	8.82	34.096	26.442	162.0	0.472	2.00	87.2	30.6	36.2	2.24	28.8	0.01	0.69	0.00	0.03	202	07
230	8.54	8.51	34.148	26.531	154.1	0.519	1.64	71.6	25.0	40.5	2.39	30.6	0.02	0.51			232	06
250 ISL	8.36 D	8.33	34.165 D	26.573	150.5	0.540	1.49	D 64.9 D	22.6	42.9	2.49	31.3	0.03	0.76			252	
270	8.37	8.34	34.224	26.617	146.7	0.579	1.14	49.9	17.4	45.3	2.58	32.0	0.04	1.01			272	05
300 ISL	8.06 D	8.03	34.249 D	26.685	140.7	0.613	0.92	D 40.1 D	13.9	49.3	2.67	33.2	0.03	0.79			302	
321	7.85	7.81	34.248	26.715	138.0	0.652	0.81	35.4	12.2	52.1	2.74	34.1	0.02	0.63			324	04
382	7.35	7.31	34.269	26.804	130.4	0.734	0.60	26.0	8.8	58.9	2.87	36.1	0.02	0.53			385	03
400 ISL	7.32 D	7.28	34.277 D	26.815	129.6	0.749	0.54	D 23.6 D	8.1	60.8	2.90	36.5	0.02	0.71			403	
440	6.85	6.81	34.279	26.882	123.5	0.808	0.47	20.5	6.9	65.1	2.97	37.5	0.01	1.11			444	02
500 ISL	6.37 D	6.33	34.297 D	26.961	116.5	0.873	0.35	D 15.4 D	5.1	72.0	3.07	39.2	0.02	0.86			504	
511	6.36	6.31	34.299	26.965	116.3	0.892	0.34	14.9	4.9	73.2	3.09	39.5	0.03	0.82			515	01

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

RV OCEAN STARR CALCOFI CRUISE 1404 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 33.0 W	02/04/2014	1747 UTC	1372 m	330 20 kn	280 07 10	1	1026.5 mb	16.2 C	13.5 C	17 m	3/8	CU	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	15.91	15.91	33.554	24.658	327.4	0.000	5.75	251.2	102.1	2.8	0.32	0.0	0.02	0.41	0.37	0.06	0	
2 A	15.91	15.90	33.554	24.658	327.4	0.007	5.73	251.2	102.1	2.8	0.32	0.0	0.02	0.41	0.37	0.06	2	24
10 ISL	15.91 D	15.90	33.550 D	24.655	328.0	0.033	5.74	250.1	101.8	2.7	0.33	0.1	0.01	0.28	0.36	0.05	10	
12 A	15.89	15.89	33.551	24.659	327.7	0.039	5.73	250.4	101.7	2.7	0.33	0.1	0.01	0.25	0.36	0.05	12	21
12	15.89	15.89	33.552	24.660	327.6	0.039											12	23
12	15.89	15.89	33.552	24.660	327.6	0.039											12	22
15 A	15.90	15.89	33.551	24.659	327.8	0.049	5.75	251.1	102.0	2.7	0.33	0.0	0.00	0.64	0.39	0.06	15	20
20 ISL	15.87 D	15.87	33.548 D	24.663	327.6	0.061	5.75	250.5	101.9	2.8	0.33	0.0	0.01	0.52	0.41	0.07	20	
27	15.80	15.79	33.550	24.682	326.0	0.089											27	19
28 A	15.71	15.71	33.551	24.701	324.2	0.092	5.75	251.0	101.6	2.8	0.33	0.0	0.01	0.34	0.45	0.08	28	18
30 ISL	15.56 D	15.55	33.532 D	24.721	322.4	0.081	5.79	D252.3	D102.0	3.0	0.35	0.2	0.02	0.37	0.55	0.13	30	
39	13.67	13.67	33.470	25.076	288.8	0.126	5.73	250.1	97.1	4.0	0.44	0.9	0.05	0.51	0.99	0.33	39	17
50 A	11.64	11.63	33.483	25.482	250.3	0.155	4.85	211.7	78.7	8.6	0.88	8.5	0.11	0.30	0.55	0.28	50	16
57	11.58	11.57	33.473	25.484	250.2	0.173	4.23	184.7	68.6	12.0	1.20	13.3	0.14	0.61	0.45	0.35	57	15
64 A	10.95	10.94	33.560	25.667	232.9	0.190	3.75	163.6	60.0	15.6	1.42	16.8	0.06	0.48	0.20	0.19	65	14
75	10.79	10.78	33.622	25.743	226.0	0.215	3.46	150.9	55.1	17.8	1.55	18.5	0.04	0.65	0.14	0.13	76	13
84	10.77	10.76	33.639	25.761	224.5	0.235	3.39	147.9	54.0	18.4	1.57	19.0	0.04	0.68	0.12	0.14	85	12
100 ISL	10.29 D	10.27	33.798 D	25.969	205.1	0.254	2.79	D121.5 D	44.1	23.3	1.81	22.7	0.02	0.57	0.03	0.07	101	
101	10.28	10.27	33.801	25.972	204.8	0.272	2.76	120.6	43.6	23.6	1.83	22.9	0.02	0.56	0.02	0.06	102	11
120	9.98	9.97	33.883	26.088	194.2	0.310	2.51	109.6	39.4	26.3	1.96	24.3	0.04	0.68	0.01	0.07	121	10
125 ISL	9.46 D	9.45	33.836 D	26.137	189.5	0.304	2.81	D122.4 D	43.6	27.2	1.99	24.9	0.04	0.57	0.01	0.07	126	
140	9.54	9.52	33.984	26.241	180.0	0.347	2.22	97.0	34.6	29.7	2.08	26.5	0.03	0.24	0.01	0.06	141	09
150 ISL	9.03 D	9.01	33.959 D	26.304	174.1	0.350	2.53	D110.0 D	38.9	31.4	2.10	27.2	0.03	0.34	0.01	0.05	151	
170	8.62	8.60	34.001	26.401	165.2	0.398	2.30	100.2	35.0	34.8	2.14	28.7	0.03	0.55	0.00	0.04	171	08
200	8.39	8.37	34.066	26.488	157.4	0.447	1.95	85.3	29.6	39.1	2.28	30.3	0.02	0.44	0.00	0.03	202	07
228	8.42	8.39	34.151	26.552	152.0	0.490	1.49	65.2	22.7	42.5	2.44	31.5	0.02	0.37			230	06
250 ISL	8.44 D	8.42	34.224 D	26.606	147.4	0.509	1.24	D 53.9 D	18.8	45.0	2.52	32.1	0.02	0.49			252	
270	8.08	8.06	34.218	26.655	142.9	0.552	1.08	47.1	16.3	47.2	2.60	32.7	0.02	0.59			272	05
300 ISL	7.77 D	7.74	34.229 D	26.711	138.0	0.581	0.91	D 39.7 D	13.7	52.2	2.70	34.3	0.01	0.54			302	
320	7.55	7.52	34.242	26.754	134.2	0.621	0.74	32.5	11.1	55.6	2.77	35.4	0.01	0.51			323	04
380	6.97	6.94	34.257	26.847	126.0	0.699	0.56	24.6	8.3	62.8	2.91	37.4	0.02	0.17			383	03
400 ISL	6.77 D	6.73	34.256 D	26.874	123.5	0.713	0.51	D 22.4 D	7.5	65.1	2.94	37.8	0.02	0.18			403	
439	6.57	6.53	34.278	26.919	119.7	0.772	0.42	18.1	6.1	69.4	3.00	38.7	0.02	0.21			443	02
500 ISL	6.21 D	6.17	34.311 D	26.992	113.4	0.832	0.31	D 13.3 D	4.4	75.9	3.10	39.7	0.01	0.23			504	
515	6.15	6.10	34.317	27.006	112.3	0.860	0.28	12.3	4.1	77.5	3.12	40.0	0.00	0.23			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 OCEAN STARR CALCOFI CRUISE 1404 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 10.9 N	118 53.5 W	02/04/2014	2220 UTC	1462 m	330 20 kn	300 05 06	1	1022.0 mb	17.6 C	12.9 C	17 m	4/8	AC	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	16.03	16.03	33.543	24.620	330.9	0.000	5.80	253.1	103.1	2.7	0.32	0.2	0.01	0.19	0.31	0.05	0	
1	16.03	16.03	33.543	24.620	331.0	0.003	5.80	253.1	103.1	2.7	0.32	0.2	0.01	0.19	0.31	0.05	1	20
10	16.04	16.04	33.538	24.616	331.7	0.033	5.76	251.5	102.4	2.7	0.32	0.0	0.02	0.22	0.29	0.05	10	19
20	15.95	15.95	33.535	24.634	330.3	0.066	5.76	251.5	102.3	2.7	0.32	0.0	0.01	0.16	0.32	0.06	20	18
30	15.36	15.36	33.519	24.754	319.2	0.099	5.77	251.9	101.2	3.2	0.35	0.3	0.04	0.28	0.77	0.16	30	17
40	12.94	12.94	33.462	25.216	275.4	0.128	5.30	231.4	88.4	6.9	0.72	4.7	0.14	0.09	1.70	0.57	40	16
50 ISL	11.91 D	11.90	33.477 D	25.427	255.5	0.156	4.38	D190.7 D	71.5	10.7	1.10	11.2	0.22	0.12	0.96	0.41	50	
51	11.88	11.87	33.482	25.436	254.7	0.158	4.30	188.0	70.3	11.1	1.14	11.9	0.22	0.12	0.88	0.39	51	15
59	11.42	11.41	33.545	25.571	242.0	0.177	3.83	167.3	61.9	14.3	1.35	15.3	0.10	0.14	0.60	0.34	59	14
73	10.90	10.89	33.607	25.713	228.8	0.210	3.53	154.0	56.4	16.9	1.50	17.8	0.05	0.11	0.28	0.22	74	13
75 ISL	10.72 D	10.71	33.650 D	25.777	222.7	0.216	3.50	D152.4 D	55.8	17.6	1.54	18.3	0.05	0.14	0.24	0.20	76	
85	10.55	10.54	33.724	25.865	214.6	0.237	3.02	131.9	48.0	21.0	1.72	20.8	0.03	0.26	0.07	0.10	86	12
100 ISL	10.14 D	10.13	33.852 D	26.036	198.7	0.270	2.63	D114.3 D	41.4	24.5	1.89	23.0	0.01	0.14	0.04	0.07	101	
103	10.02	10.01	33.855	26.059	196.6	0.274	2.59	113.1	40.7	25.2	1.92	23.4	0.01	0.11	0.03	0.07	104	11
121	9.69	9.68	33.924	26.168	186.6	0.308	2.46	107.5	38.4	27.6	2.00	25.0	0.02	0.16	0.01	0.04	122	10
125 ISL	9.56 D	9.55	33.930 D	26.194	184.1	0.318	2.50	D109.0 D	39.0	28.3	2.03	25.3	0.02	0.16	0.01	0.04	126	
139	9.59	9.58	34.011	26.253	178.9	0.341	2.17	94.9	33.9	30.7	2.12	26.4	0.02	0.17	0.01	0.04	140	09
150 ISL	9.60 D	9.58	34.079 D	26.307	174.1	0.363	1.90	D 82.6 D	29.6	31.9	2.18	26.8	0.02	0.19	0.01	0.04	151	
170	9.53	9.51	34.139	26.365	169.0	0.395	1.70	74.1	26.4	34.1	2.29	27.5	0.02	0.24	0.01	0.04	171	08
199	9.21	9.19	34.152	26.427	163.6	0.443	1.62	70.8	25.1	36.3	2.34	28.3	0.04	0.19	0.01	0.04	201	07
200 ISL	9.20 D	9.18	34.153 D	26.430	163.4	0.448	1.63	D 70.7 D	25.1	36.4	2.34	28.4	0.04	0.19			202	
230	8.82	8.79	34.173	26.508	156.5	0.493	1.46	63.6	22.3	40.0	2.42	29.9	0.03	0.20			232	06
250 ISL	8.26 D	8.23	34.123 D	26.555	152.1	0.527	1.53	D 66.4 D	23.1	43.6	2.50	31.3	0.03	0.23			252	
270	8.01	7.98	34.168	26.627	145.5	0.553	1.21	52.9	18.2	47.3	2.58	32.7	0.02	0.25			272	05
300 ISL	7.79 D	7.76	34.186 D	26.674	141.5	0.601	1.06	D 46.2 D	15.9	50.6	2.68	33.3	0.02	0.20			302	
320	7.70	7.67	34.220	26.714	138.0	0.624	0.87	37.8	12.9	52.8	2.74	33.7	0.01	0.17			323	04
383	6.93	6.90	34.235	26.835	127.1	0.708	0.62	27.1	9.1	62.6	2.90	36.8	0.02	0.16			386	03
400 ISL	6.65 D	6.61	34.225 D	26.866	124.2	0.735	0.60	D 26.2 D	8.8	64.4	2.93	36.9	0.02	0.18			403	
437	6.56	6.52	34.247	26.896	121.8	0.775	0.52	22.6	7.5	68.1	3.00	37.1	0.03	0.23			441	02
500 ISL	6.29 D	6.24	34.286 D	26.964	116.1	0.856	0.35	D 15.1 D	5.0	72.0	3.07	38.5	0.02	0.30			504	
516	6.24	6.19	34.298	26.979	114.9	0.868	0.33	14.6	4.8	73.0	3.09	38.8	0.01	0.32			520	01

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

RV OCEAN STARR CALCOFI CRUISE 1404 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 1.1 N	119 13.8 W	03/04/2014	0242 UTC	1581 m	310 18 kn	310 09 08	1	1025.0 mb	14.1 C	12.0 C		4/8	SC	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	15.27	15.27	33.386	24.671	326.1	0.000	5.85	255.5	102.4						0.18	0.03	0	
2	15.27	15.26	33.386	24.671	326.2	0.007	5.85	255.5	102.4						0.18	0.03	2	21
9	15.27	15.27	33.388	24.672	326.3	0.029	5.87	256.3	102.7	2.9	0.23	0.1	0.02	0.19	0.19	0.04	9	22
9	15.27	15.27	33.390	24.673	326.2	0.028											9	20
10 ISL	15.27 D	15.27	33.382 D	24.667	326.8	0.031	5.86	255.6	102.6	2.9	0.25	0.1	0.02	0.18	0.19	0.04	10	
20 ISL	15.27 D	15.27	33.383 D	24.669	327.0	0.064	5.85	254.8	102.3	2.9	0.44	0.0	0.01	0.08	0.22	0.01	20	
21	15.28	15.27	33.398	24.680	326.0	0.069	5.84	255.2	102.3	2.9	0.46	0.0	0.01	0.07	0.23	0.01	21	18
30	15.22	15.22	33.393	24.688	325.5	0.098	5.86	256.0	102.5	2.9	0.44	0.0	0.00	0.07	0.23	0.02	30	17
40	14.58	14.57	33.399	24.832	312.1	0.130	6.00	262.2	103.6	2.9	0.46	0.0	0.00	0.10	0.48	0.05	40	16
50	14.15	14.14	33.369	24.900	305.9	0.161	5.90	257.8	101.0	3.2	0.46	0.6	0.15	0.06	0.91	0.37	50	15
60	13.55	13.54	33.335	24.996	297.0	0.191	5.66	247.4	95.7	3.7	0.51	2.1	0.63	0.21	0.65	0.36	60	14
72	12.55	12.54	33.294	25.164	281.2	0.226	5.42	236.7	89.6	5.0	0.56	5.1	0.17	0.03	0.49	0.29	73	13
75 ISL	12.20 D	12.19	33.247 D	25.194	278.4	0.234	5.40	D235.3	D 88.6	5.5	0.59	5.9	0.14	0.03	0.44	0.25	76	
85	11.53	11.52	33.219 D	25.297	268.7	0.262	5.17	225.9	83.7	7.3	0.71	8.6	0.05	0.03	0.27	0.15	86	12
99	10.32	10.30	33.328	25.598	240.3	0.297	4.68	204.2	73.7	12.5	0.91	14.3	0.03	0.02	0.10	0.05	100	11
100 ISL	10.25 D	10.24	33.399 D	25.663	234.0	0.300	4.54	D197.6	D 71.5	12.7	0.92	14.5	0.03	0.02	0.10	0.04	101	
121	9.93	9.91	33.578	25.859	215.9	0.347	3.90	170.3	61.0	18.4	1.18	19.3	0.01	0.02	0.03	0.03	122	10
125 ISL	9.82 D	9.81	33.595 D	25.889	213.1	0.356	3.91	D170.1	D 61.0	19.3	1.25	19.8	0.02	0.02	0.02	0.03	126	
139	9.35	9.34	33.698	26.048	198.3	0.384	3.66	160.1	56.7	22.4	1.49	21.7	0.04	0.03	0.01	0.02	140	09
150 ISL	9.42 D	9.40	33.771 D	26.094	194.1	0.406	3.30	D143.8	D 51.2	24.9	1.55	23.2	0.03	0.04	0.01	0.02	151	
169	9.06	9.04	33.921	26.270	177.7	0.441	2.78	121.4	42.8	29.3	1.66	25.9	0.01	0.07	0.00	0.02	170	08
200 ISL	8.75 D	8.73	33.938 D	26.333	172.3	0.497	2.81	D122.1	D 42.9	31.1	1.92	26.5	0.00	0.02	0.00	0.01	202	
201	8.74	8.71	33.938	26.335	172.1	0.497	2.77	121.1	42.4	31.2	1.93	26.5	0.00	0.02	0.00	0.01	203	07
232	8.31	8.28	33.994	26.445	162.1	0.549	2.48	108.1	37.5	36.1	1.95	28.7	0.02	0.04			234	06
250 ISL	8.06 D	8.03	34.025 D	26.507	156.5	0.580	2.21	D 96.3	D 33.3	40.0	2.02	30.3	0.02	0.04			252	
269	7.82	7.80	34.059	26.569	150.9	0.606	1.83	79.8	27.4	44.0	2.09	32.0	0.03	0.03			271	05
300 ISL	7.49 D	7.46	34.105 D	26.654	143.2	0.655	1.38	D 60.1	D 20.5	49.6	2.26	34.0	0.03	0.05			302	
318	7.29	7.26	34.124	26.698	139.2	0.677	1.20	52.5	17.8	52.9	2.36	35.1	0.03	0.06			321	04
381	6.68	6.65	34.165	26.814	128.7	0.762	0.79	34.4	11.5	63.3	2.61	36.7	0.01	0.08			384	03
400 ISL	6.50 D	6.46	34.168 D	26.840	126.4	0.790	0.73	D 31.9	D 10.7	66.2	2.69	37.7	0.02	0.07			403	
438	6.14	6.10	34.197	26.910	120.0	0.833	0.56	24.6	8.1	71.8	2.85	39.8	0.02	0.06			442	02
500 ISL	5.79 D	5.74	34.266 D	27.010	111.2	0.910	0.35	D 15.1	D 5.0	80.5	2.94	40.7	0.00	0.12			504	
514	5.68	5.64	34.277	27.032	109.2	0.920	0.32	13.9	4.5	82.5	2.96	40.9	0.00	0.13			518	01

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

RV OCEAN STARR CALCOFI CRUISE 1404 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 33.8 W	03/04/2014	0716 UTC	1897 m	330 17 kn			1025.5 mb	14.3 C	11.2 C				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	15.46	15.46	33.330	24.586	334.2	0.000	5.78	252.6	101.6	2.8	0.32	0.0	0.00	0.03	0.15	0.03	0	
3	15.46	15.45	33.330	24.586	334.3	0.010	5.78	252.6	101.6	2.8	0.32	0.0	0.00	0.03	0.15	0.03	3	20
10	15.47	15.47	33.338	24.589	334.3	0.033	5.80	253.1	101.8	2.8	0.32	0.0	0.00	0.03	0.17	0.01	10	19
20	15.47	15.46	33.329	24.584	335.0	0.067	5.80	253.1	101.8	2.8	0.32	0.0	0.00	0.03	0.15	0.02	20	18
30	15.45	15.44	33.327	24.587	335.1	0.100	5.80	253.4	101.8	2.8	0.33	0.0	0.00	0.07	0.15	0.03	30	17
40	14.55	14.55	33.319	24.775	317.5	0.133	5.92	258.7	102.1	2.9	0.36	0.0	0.01	0.05	0.28	0.10	40	16
50	12.82	12.81	33.283	25.102	286.6	0.163	5.55	242.6	92.4	4.3	0.58	3.1	0.20	0.01	0.60	0.46	50	15
61	12.38	12.37	33.269	25.176	279.7	0.194	5.31	232.1	87.6	5.6	0.73	5.9	0.02	0.04	0.29	0.27	61	14
70	11.88	11.87	33.253 D	25.259	272.0	0.221	5.29	D230.5	D 86.2								71	13
75 ISL	11.43 D	11.42	33.261 D	25.348	263.6	0.234	5.22	D227.5	D 84.3	8.4	0.94	9.4	0.02	0.04	0.19	0.17	76	
85	10.77	10.76	33.306	25.502	249.2	0.258	4.83	210.9	76.9	10.4	1.09	11.9	0.01	0.04	0.11	0.10	86	12
100	10.35	10.34	33.434	25.674	233.1	0.294	4.43	193.5	69.9	14.0	1.29	15.3	0.01	0.02	0.06	0.04	101	11
121	9.63	9.61	33.642	25.959	206.4	0.340	3.74	163.3	58.2	20.4	1.60	20.6	0.02	0.01	0.02	0.02	122	10
125 ISL	9.50 D	9.49	33.700 D	26.024	200.2	0.351	3.49	D152.0	D 54.2	21.3	1.65	21.3	0.02	0.01	0.02	0.02	126	
142	9.47	9.46	33.767	26.082	195.1	0.382	3.04	132.8	47.2	25.3	1.86	24.2	0.02	0.01	0.01	0.02	143	09
150 ISL	9.24 D	9.22	33.821 D	26.162	187.6	0.400	2.95	D128.3	D 45.5	27.3	1.92	25.1	0.02	0.02	0.01	0.03	151	
172	8.71	8.70	33.957	26.352	169.9	0.437	2.50	109.1	38.2	32.8	2.10	27.6	0.02	0.06	0.01	0.03	173	08
199	8.57	8.55	34.013	26.419	164.1	0.482	2.17	94.9	33.1	36.5	2.21	29.0	0.02	0.02	0.00	0.04	201	07
200 ISL	8.57 D	8.55	34.016 D	26.422	163.8	0.487	2.18	D 94.9	D 33.2	36.6	2.22	29.1	0.02	0.02			202	
230	8.39	8.37	34.087	26.506	156.4	0.531	1.74	76.1	26.4	40.6	2.37	31.0	0.01	0.03			232	06
250 ISL	8.20 D	8.18	34.135 D	26.572	150.4	0.566	1.47	D 64.0	D 22.2	43.7	2.47	31.9	0.01	0.03			252	
270	8.00	7.97	34.147	26.612	146.9	0.592	1.33	57.9	19.9	46.7	2.56	32.8	0.01	0.03			272	05
300 ISL	7.61 D	7.58	34.160 D	26.681	140.7	0.640	1.17	D 51.0	D 17.5	51.0	2.64	33.9	0.01	0.02			302	
320	7.40	7.37	34.162	26.711	138.1	0.663	1.07	46.6	15.8	53.9	2.70	34.6	0.00	0.02			323	04
381	6.80	6.77	34.171	26.803	130.0	0.745	0.83	36.4	12.2	61.6	2.84	37.0	0.01	0.02			384	03
400 ISL	6.56 D	6.52	34.161 D	26.827	127.8	0.775	0.77	D 33.7	D 11.3	64.4	2.89	37.6	0.01	0.02			403	
441	6.26	6.22	34.193	26.892	122.0	0.820	0.60	26.1	8.6	70.4	2.99	39.0	0.01	0.02			445	02
500 ISL	5.97 D	5.92	34.238 D	26.966	115.5	0.898	0.42	D 18.1	D 6.0	77.0	3.11	40.2	0.01	0.03			504	
512	5.89	5.85	34.248	26.983	114.0	0.904	0.38	16.8	5.5	78.3	3.13	40.5	0.01	0.03			516	01

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

RV OCEAN STARR — CALCOFI CRUISE 1404 — 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 14.6 W	03/04/2014	1417	UTC	3937 m	340 17 kn	360 06 10	1	1025.0 mb	14.2 C	11.2 C	25 m	4/8	SC	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	16.05	16.05	33.364	24.478	344.5	0.000	5.75	250.9	102.2	2.6	0.34	0.0	0.02	0.04	0.13	0.02	0	
2	16.05	16.05	33.364	24.478	344.5	0.007	5.75	250.9	102.2	2.6	0.34	0.0	0.02	0.04	0.13	0.02	2	20
10	16.05	16.05	33.365	24.481	344.6	0.035	5.70	248.8	101.3	2.5	0.34	0.0	0.02	0.12	0.13	0.02	10	19
20 ISL	16.05 D	16.05	33.365 D	24.481	344.9	0.069	5.70	248.5	101.3	2.5	0.33	0.0	0.02	0.07	0.12	0.15	20	
25	16.05	16.05	33.365 D	24.481	345.1	0.087	5.70	248.9	101.4	2.5	0.33	0.0	0.02	0.05	0.12	0.22	25	18
30 ISL	16.05 D	16.05	33.364 D	24.481	345.3	0.104	5.70	248.6	101.4	2.5	0.33	0.0	0.02	0.05	0.13	0.15	30	
40	16.05	16.04	33.366	24.484	345.3	0.138	5.71	249.1	101.4	2.5	0.32	0.0	0.02	0.05	0.13	0.02	40	17
50	16.03	16.02	33.367	24.491	345.0	0.172	5.72	249.8	101.7	2.5	0.32	0.0	0.02	0.03	0.17	0.03	50	16
62	14.26	14.25	33.309	24.830	312.9	0.212	5.92	258.5	101.5	2.8	0.36	0.0	0.03	0.03	0.38	0.17	62	15
75 ISL	12.89 D	12.88	33.245 D	25.060	291.3	0.253	5.67	D247.1	D 94.4	4.1	0.55	2.8	0.09	0.03	0.59	0.47	76	
76	12.80	12.79	33.256	25.086	288.8	0.254	5.60	244.4	93.1	4.2	0.56	3.0	0.10	0.03	0.61	0.49	77	14
87	12.24	12.22	33.229	25.175	280.6	0.285	5.44	237.3	89.2	5.1	0.69	5.1	0.08	0.10	0.44	0.35	88	13
100	11.72	11.71	33.267	25.300	268.9	0.321	5.11	223.1	83.0	7.1	0.88	8.1	0.05	0.02	0.24	0.22	101	12
112	11.16	11.14	33.307	25.435	256.3	0.353	4.94	215.8	79.4	8.5	0.97	9.9	0.03	0.01	0.16	0.17	113	11
125 ISL	10.27 D	10.25	33.457 D	25.707	230.5	0.387	4.45	D193.5	D 70.1	13.8	1.29	14.8	0.03	0.01	0.07	0.06	126	
126	10.27	10.25	33.448	25.700	231.2	0.387	4.42	192.9	69.7	14.2	1.31	15.2	0.03	0.01	0.06	0.05	127	10
140	9.67	9.65	33.584	25.907	211.7	0.418	3.99	174.3	62.2	18.7	1.53	19.0	0.02	0.02	0.02	0.02	141	09
150 ISL	9.36 D	9.35	33.706 D	26.053	198.0	0.441	3.89	D169.5	D 60.3	20.8	1.60	20.3	0.02	0.02	0.01	0.02	151	
170	9.04	9.02	33.805	26.183	186.0	0.476	3.48	151.7	53.4	24.9	1.74	22.9	0.03	0.02	0.00	0.01	171	08
200 ISL	8.72 D	8.69	33.944 D	26.343	171.4	0.534	3.15	D137.2	D 48.2	29.9	1.88	24.7	0.02	0.01	0.00	0.01	202	
201	8.67	8.65	33.944	26.349	170.7	0.532	3.14	137.1	47.9	30.1	1.88	24.8	0.02	0.01	0.00	0.01	203	07
230	8.35	8.32	34.052	26.485	158.4	0.579	2.32	101.4	35.2	37.6	2.20	28.8	0.03	0.01			232	06
250 ISL	8.10 D	8.07	34.084 D	26.548	152.6	0.615	2.15	D 93.4	D 32.3	41.6	2.26	30.2	0.02	0.01			252	
271	7.31	7.28	34.012	26.606	147.1	0.642	2.22	97.0	32.9	45.7	2.32	31.7	0.02	0.01			273	05
300 ISL	7.00 D	6.97	34.057 D	26.683	140.0	0.688	1.72	D 74.8	D 25.3	51.5	2.53	33.7	0.02	0.02			302	
320	6.93	6.90	34.093	26.722	136.6	0.711	1.32	57.7	19.4	55.6	2.67	35.1	0.02	0.02			323	04
381	6.66	6.63	34.159	26.811	129.0	0.792	0.86	37.4	12.5	62.9	2.87	37.3	0.01	0.02			384	03
400 ISL	6.52 D	6.48	34.183 D	26.850	125.6	0.822	0.72	D 31.4	D 10.5	66.1	2.93	38.0	0.01	0.02			403	
440	6.11	6.07	34.203	26.918	119.3	0.866	0.55	24.0	7.9	72.9	3.05	39.5	0.02	0.02			444	02
500 ISL	5.99 D	5.94	34.263 D	26.983	114.0	0.942	0.40	D 17.5	D 5.8	76.8	3.13	39.8	0.01	0.00			504	
516	6.00	5.96	34.279	26.994	113.1	0.954	0.34	14.8	4.9	77.8	3.15	39.9	0.01	0.00			520	01

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

RV OCEAN STARR — CALCOFI CRUISE 1404 — 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 11.1 N	120 55.1 W	03/04/2014	2052	UTC	3806 m	330 08 kn	330 05 08	1	1024.0 mb	16.9 C	12.9 C	22 m	7/8	ST	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	15.72	15.72	33.105	24.354	356.3	0.000	5.80	253.4	102.3	2.9	0.35	0.0	0.01	0.42	0.11	0.02	0	
2 A	15.72	15.72	33.105	24.355	356.3	0.007	5.80	253.4	102.3	2.9	0.35	0.0	0.01	0.42	0.11	0.02	2	24
10	15.56	15.56	33.102	24.389	353.3	0.036	5.84	254.9	102.6	2.9	0.34	0.0	0.01	0.15	0.12	0.02	10	23
14 A	15.53	15.53	33.102	24.394	352.9	0.050	5.82	254.3	102.2	2.9	0.35	0.0	0.01	0.09	0.12	0.02	14	22
20 A	15.51	15.51	33.103	24.400	352.6	0.071	5.80	253.4	101.8	2.9	0.35	0.0	0.01	0.08	0.13	0.02	20	21
30 ISL	15.47 D	15.46	33.103 D	24.411	351.9	0.107	5.86	D255.3	D102.7	2.9	0.34	0.0	0.00	0.19	0.14	0.03	30	
35 A	15.42	15.41	33.108	24.425	350.7	0.124	5.82	254.0	101.9	2.9	0.34	0.0	0.00	0.25	0.15	0.03	35	20
44	15.41	15.40	33.130	24.446	349.0	0.155	5.82	254.4	102.0	2.8	0.33	0.0	0.01	0.05	0.16	0.03	44	19
50 ISL	15.14 D	15.14	33.151 D	24.520	342.2	0.177	5.90	D257.1	D102.8	2.8	0.36	0.0	0.00	0.07	0.24	0.07	50	
54	15.12	15.11	33.165	24.535	340.8	0.190	5.84	255.3	101.8	2.8	0.38	0.0	0.00	0.09	0.29	0.10	54	18
62	15.21	15.20	33.292	24.616	333.5	0.218											62	17
64 A	14.87	14.86	33.282	24.681	327.3	0.223	5.74	250.8	99.6	2.7	0.34	0.0	0.02	0.08	0.59	0.28	65	16
72	14.57	14.56	33.278	24.741	321.8	0.249	5.71	249.4	98.5	2.9	0.37	0.3	0.08	0.07	0.66	0.36	73	15
75 ISL	14.15 D	14.14	33.211 D	24.779	318.2	0.244	5.82	D253.7	D 99.5	3.2	0.43	1.0	0.12	0.08	0.55	0.31	76	
81 A	13.09	13.08	33.191	24.979	299.2	0.277	5.65	246.9	94.5	3.9	0.54	2.5	0.18	0.09	0.32	0.21	82	14
87	12.89	12.88	33.193	25.019	295.5	0.295	5.65	246.7	94.0	4.1	0.57	3.0	0.16	0.13	0.27	0.17	88	13
96	12.10	12.09	33.175	25.158	282.3	0.321	5.58	243.6	91.3	4.6	0.64	4.3	0.09	0.03	0.22	0.15	97	12
100 ISL	11.76 D	11.75	33.139 D	25.194	279.0	0.318	5.60	D244.1	D 91.0	5.4	0.71	5.4	0.07	0.04	0.18	0.13	101	
110	11.37	11.36	33.194	25.308	268.3	0.360	5.39	235.2	86.8	7.4	0.89	8.3	0.02	0.08	0.09	0.07	111	11
124	10.62	10.60	33.351	25.565	244.1	0.396	4.95	216.1	78.5	10.7	1.06	11.8	0.03	0.03	0.04	0.04	125	10
125 ISL	10.63 D	10.62	33.394 D	25.595	241.2	0.384	4.99	D217.2	D 79.2	10.9	1.07	12.0	0.03	0.03	0.03	0.04	126	
146	9.86	9.84	33.466	25.784	223.6	0.447	4.61	201.3	72.0	15.1	1.31	15.8	0.02	0.04	0.02	0.02	147	09
150 ISL	9.64 D	9.62	33.511 D	25.855	216.8	0.442	4.41	D191.9	D 68.6	16.1	1.36	16.7	0.02	0.04	0.02	0.02	151	
169	9.43	9.41	33.661	26.008	202.7	0.495	3.86	168.4	59.8	21.3	1.62	21.1	0.02	0.03	0.01	0.02	170	08
200 ISL	9.20 D	9.18	33.943 D	26.265	178.9	0.541	2.66	D115.8	D 41.1	29.0	1.99	25.5	0.01	0.01	0.00	0.02	202	
201	9.20	9.18	33.950	26.271	178.4	0.556	2.66	116.0	41.0	29.3	2.00	25.6	0.01	0.01	0.00	0.02	203	07
230	8.48	8.46	34.002	26.426	164.0	0.606	2.57	112.3	39.1	33.4	2.08	27.5	0.01	0.03			232	06
250 ISL	8.19 D	8.16	34.014 D	26.479	159.2	0.626	2.59	D112.8	D 39.1	36.2	2.19	28.4	0.01	0.06			252	
273	7.94	7.91	34.044 D	26.514	156.2	0.675	2.33	101.7	35.0	39.3	2.32	29.4	0.01	0.09			275	05
300 ISL	7.36 D	7.34	34.047 D	26.626	145.7	0.703	1.90	D 82.6	D 28.1	44.6	2.45	31.3	0.01	0.08			302	
322	7.24	7.21	34.082 D	26.672	141.7	0.735	1.50	D 65.1	D 22.1								325	04
380	6.83	6.80	34.148	26.780	132.1	0.826	0.91	39.7	13.3	60.4	2.84	36.9	0.01	0.06			383	03
400 ISL	6.76 D	6.72	34.172 D	26.809	129.7	0.841	0.77	D 33.4	D 11.2	62.9	2.89	37.3	0.01	0.05			403	
440	6.49	6.45	34.207	26.874	123.8	0.903	0.57	25.1	8.3	67.9	2.99	38.2	0.02	0.04			444	02
500 ISL	6.10 D	6.06	34.235 D	26.947	117.5	0.965	0.44	D 19.0	D 6.3	75.2	3.12	39.9	0.02	0.21			504	
516	5.94	5.89	34.238	26.970	115.3	0.994	0.41	17.8	5.9	77.1	3.15	40.3	0.02	0.26			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 OCEAN STARR CALCOFI CRUISE 1404 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 50.6 N	121 35.3 W	04/04/2014	0307	UTC	4089 m	330 05 kn			1020.0 mb	14.8 C	11.1 C				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	15.69	15.69	33.100	24.356	356.1	0.000	5.83	254.4	102.6	2.8	0.33	0.1	0.01	0.42	0.12	0.01	0	
1	15.69	15.69	33.100	24.356	356.1	0.004	5.83	254.4	102.6	2.8	0.33	0.1	0.01	0.42	0.12	0.01	1	20
10	15.69	15.69	33.103	24.360	356.0	0.036	5.81	253.8	102.4	2.8	0.34	0.0	0.00	0.33	0.10	0.01	10	19
20 ISL	15.50 D	15.50	33.113 D	24.410	351.7	0.071	5.79	252.5	101.7	2.7	0.33	0.0	0.00	0.22	0.12	0.01	20	
25	15.58	15.58	33.139	24.413	351.6	0.089	5.78	252.5	101.7	2.7	0.33	0.0	0.00	0.16	0.13	0.01	25	18
30 ISL	15.83 D	15.83	33.255 D	24.446	348.5	0.107	5.74	250.3	101.5	2.7	0.32	0.0	0.00	0.19	0.11	0.01	30	
40	16.23	16.23	33.483	24.532	340.7	0.141	5.66	247.2	101.1	2.5	0.30	0.0	0.00	0.25	0.08	0.01	40	17
50	16.19	16.18	33.476	24.538	340.6	0.175	5.70	D248.4	D101.6	2.5	0.30	0.0	0.01	0.20	0.10	0.00	50	16
62	16.16	16.15	33.480	24.547	340.1	0.216	5.66	247.1	100.9	2.5	0.30	0.0	0.01	0.11	0.11	0.01	62	15
75 ISL	16.09 D	16.08	33.479 D	24.564	339.0	0.261	5.68	D247.6	D101.1	2.5	0.30	0.0	0.00	0.25	0.17	0.02	76	
76	16.09	16.08	33.489	24.571	338.4	0.263	5.66	246.9	100.7	2.5	0.30	0.0	0.00	0.26	0.17	0.02	77	14
88	15.53	15.52	33.441	24.660	330.1	0.303	5.68	247.9	99.9	2.8	0.32	0.0	0.01	0.17	0.21	0.13	89	13
100 ISL	14.27 D	14.25	33.404 D	24.905	307.0	0.344	5.71	D248.6	D 97.8	3.3	0.39	0.7	0.11	0.14	0.28	0.15	101	
101	14.23	14.21	33.405	24.914	306.2	0.344	5.66	247.1	97.0	3.4	0.40	0.8	0.11	0.14	0.29	0.15	102	12
112	13.41	13.39	33.348	25.039	294.4	0.377	5.62	245.5	94.7	3.8	0.48	1.8	0.11	0.16	0.28	0.17	113	11
125	12.52	12.51	33.306	25.181	281.1	0.415	5.49	239.5	90.7	4.9	0.61	4.1	0.06	0.21	0.26	0.15	126	10
140	11.62	11.60	33.345	25.382	262.1	0.456	5.24	228.7	84.9	7.1	0.80	7.3	0.02	0.34	0.13	0.07	141	09
150 ISL	11.17 D	11.15	33.359 D	25.474	253.5	0.485	5.15	D224.2	D 82.7	9.5	0.95	9.9	0.02	0.31	0.09	0.06	151	
169	10.06	10.04	33.461	25.747	227.7	0.527	4.67	203.7	73.2	14.0	1.24	14.8	0.03	0.24	0.03	0.03	170	08
200	9.24	9.22	33.749	26.107	193.9	0.592	3.98	173.6	61.4	21.6	1.55	20.4	0.02	0.03	0.00	0.01	202	07
229	8.76	8.74	33.905	26.306	175.5	0.646	3.06	133.6	46.8	29.8	1.91	25.3	0.00	0.08			231	06
250 ISL	8.42 D	8.40	33.970 D	26.409	166.0	0.687	2.83	D123.0	D 42.9	34.3	2.06	27.5	0.00	0.09			252	
271	8.08	8.05	34.016	26.498	157.8	0.716	2.38	103.9	35.9	38.8	2.21	29.6	0.01	0.10			273	05
300 ISL	7.63 D	7.60	34.048 D	26.589	149.4	0.766	2.01	D 87.4	D 29.9	43.6	2.33	31.4	0.01	0.15			302	
320	7.54	7.50	34.061	26.613	147.4	0.790	1.87	81.4	27.7	46.8	2.42	32.6	0.01	0.19			323	04
380	7.02	6.98	34.104	26.721	137.9	0.876	1.31	57.3	19.3	55.6	2.68	35.1	0.02	0.34			383	03
400 ISL	6.84 D	6.80	34.125 D	26.761	134.2	0.910	1.13	D 49.2	D 16.6	59.3	2.76	36.1	0.02	0.32			403	
440	6.41	6.37	34.161	26.847	126.3	0.955	0.81	35.1	11.7	66.6	2.93	38.2	0.01	0.29			444	02
500 ISL	5.95 D	5.90	34.214 D	26.949	117.1	1.036	0.53	D 23.2	D 7.7								504	
518	5.94	5.90	34.240 D	26.970	115.3	1.057	0.45	D 19.6	D 6.5								522	01

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

RV OCEAN STARR CALCOFI CRUISE 1404 STATION 93.3 100.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
30 30.6 N	122 15.4 W	04/04/2014	0922	UTC	4126 m	300 10 kn			1023.5 mb	16.0 C	12.1 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	16.52	16.52	33.404	24.403	351.6	0.000	5.63	245.8	101.0	2.4	0.29	0.0	0.05	0.11	0.07	0.01	0	
2	16.52	16.51	33.404	24.403	351.7	0.007	5.63	245.8	101.0	2.4	0.29	0.0	0.05	0.11	0.07	0.01	2	20
10	16.49	16.49	33.399	24.405	351.8	0.035	5.63	246.1	101.0	2.4	0.30	0.0	0.00	0.10	0.07	0.01	10	19
20 ISL	16.42 D	16.41	33.393 D	24.419	350.9	0.071	5.67	D247.1	D101.5	2.4	0.29	0.0	0.00	0.09	0.08	0.01	20	
25	16.41	16.40	33.395	24.423	350.6	0.088	5.64	246.3	101.0	2.4	0.29	0.0	0.00	0.08	0.08	0.01	25	18
30 ISL	16.41 D	16.40	33.392 D	24.421	351.0	0.106	5.67	D247.3	D101.5	2.4	0.29	0.0	0.00	0.08	0.08	0.01	30	
41	16.40	16.39	33.393	24.425	351.0	0.144	5.64	246.3	100.9	2.4	0.29	0.0	0.00	0.08	0.08	0.01	41	17
50 ISL	16.38 D	16.37	33.392 D	24.429	350.9	0.177	5.68	D247.5	D101.6	2.4	0.29	0.0	0.00	0.07	0.08	0.01	50	
51	16.37	16.37	33.392	24.430	350.9	0.179	5.65	246.7	101.1	2.4	0.29	0.0	0.00	0.07	0.08	0.01	51	16
62	16.17	16.16	33.396	24.481	346.4	0.217	5.67	247.8	101.1	2.4	0.29	0.0	0.00	0.08	0.11	0.03	62	15
75 ISL	15.70 D	15.69	33.401 D	24.590	336.4	0.264	5.75	D250.5	D101.4	2.5	0.30	0.0	0.00	0.08	0.20	0.08	76	
76	15.70	15.69	33.403	24.593	336.2	0.265	5.69	248.6	100.5	2.5	0.30	0.0	0.00	0.08	0.20	0.09	77	14
86	15.39	15.38	33.400	24.659	330.2	0.298	5.72	249.9	100.4	2.6	0.31	0.0	0.00	0.11	0.29	0.17	87	13
100	14.23	14.22	33.340	24.863	311.0	0.343	5.69	248.3	97.4	3.1	0.40	0.8	0.12	0.06	0.30	0.25	101	12
112	13.84	13.83	33.415	25.002	298.1	0.380	5.61	245.0	95.4	3.5	0.42	1.6	0.11	0.10	0.25	0.19	113	11
125	13.31	13.29	33.423	25.117	287.4	0.418	5.53	241.3	92.9	4.0	0.48	2.7	0.07	0.10	0.22	0.20	126	10
140	11.99	11.97	33.408	25.362	264.1	0.459	5.27	230.2	86.2	6.3	0.71	6.2	0.03	0.31	0.17	0.11	141	09
150 ISL	11.45 D	11.43	33.402 D	25.458	255.2	0.489	5.21	D226.7	D 84.1	8.4	0.85	8.7	0.02	0.37	0.12	0.09	151	
170	10.25	10.23	33.466	25.719	230.4	0.534	4.74	206.8	74.6	12.5	1.14	13.6	0.02	0.48	0.03	0.03	171	08
200	9.32	9.29	33.712	26.067	197.7	0.598	3.92	171.0	60.6	21.0	1.59	20.4	0.01	0.07	0.00	0.02	202	07
230	8.73	8.70	33.891	26.300	176.0	0.654	3.28	143.0	50.0	28.2	1.85	25.0	0.00	0.33			232	06
250 ISL	8.39 D	8.37	33.960 D	26.407	166.2	0.693	2.89	D125.9	D 43.9	32.7	2.00	26.9	0.00	0.23			252	
270	8.11	8.08	33.997	26.479	159.6	0.721	2.59	113.2	39.1	37.2	2.14	28.8	0.00	0.12			272	05
300 ISL	7.73 D	7.70	33.998 D	26.536	154.4	0.773	2.64	D114.7	D 39.4	41.6	2.25	30.5	0.00	0.28			302	
320	7.47	7.44	34.020	26.590	149.6	0.798	2.23	97.2	33.1	44.6	2.33	31.6	0.00	0.38			323	04
380	6.89	6.85	34.098	26.734	136.5	0.884	1.20	52.2	17.5	57.2	2.74	36.1	0.00	0.33			383	03
400 ISL	6.72 D	6.68	34.117 D	26.772	133.1	0.918	1.01	D 44.1	D 14.8	60.2	2.81	36.9	0.00	0.36			403	
440	6.49	6.45	34.164	26.840	127.1	0.963	0.72	31.6	10.5	66.1	2.96	38.4	0.00	0.43			444	02
500 ISL	6.10 D	6.05	34.230 D	26.943	117.9	1.044	0.42	D 18.2	D 6.0	72.6	3.09	39.7	0.01	0.53			504	
515	6.01	5.97	34.225	26.950	117.3	1.054	0.43	18.9	6.2	74.2	3.12	40.0	0.01	0.56			519	01

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

RV OCEAN STARR — CALCOFI CRUISE 1404 — STATION 93.3 110.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
30 10.4 N	122 55.1 W	04/04/2014	1636 UTC	2597 m	330 09 kn	310 04 07	1	1028.0 mb	16.5 C	14.2 C	44 m	6/8	SC	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	16.64	16.64	33.370	24.349	356.8	0.000	5.67	247.8	102.0	2.5	0.31	0.1	0.02	0.23	0.08	0.01	0	
2 A	16.64	16.64	33.370	24.349	356.9	0.007	5.67	247.8	102.0	2.5	0.31	0.1	0.02	0.23	0.08	0.01	2	23
10 ISL	16.61 D	16.61	33.369 D	24.355	356.6	0.036	5.66	D246.8	D101.7	2.5	0.31	0.0	0.02	0.33	0.08	0.01	10	
16	16.60	16.60	33.369	24.357	356.6	0.057	5.64	246.4	101.4	2.5	0.31	0.0	0.02	0.41	0.08	0.01	16	21
16	16.60	16.60	33.370	24.358	356.5	0.056											16	22
20 ISL	16.60 D	16.59	33.369 D	24.359	356.6	0.065	5.68	D247.6	D102.1	2.5	0.31	0.0	0.02	0.31	0.08	0.01	20	
30 ISL	16.57 D	16.57	33.369 D	24.365	356.3	0.101	5.68	D247.4	D101.9	2.5	0.31	0.0	0.01	0.05	0.09	0.01	30	
31 A	16.57	16.57	33.369	24.365	356.4	0.111	5.67	247.5	101.8	2.5	0.31	0.0	0.01	0.02	0.09	0.01	31	20
40 A	16.56	16.55	33.374	24.373	355.9	0.143	5.64	246.5	101.3	2.5	0.31	0.0	0.01	0.06	0.09	0.01	40	19
50	16.29	16.28	33.361	24.426	351.3	0.178	5.68	248.2	101.5	2.4	0.28	0.0	0.02	0.05	0.11	0.02	50	18
60	15.92	15.91	33.329	24.486	345.8	0.213	5.75	251.2	101.9	2.5	0.31	0.0	0.01	0.03	0.14	0.04	60	17
71 A	15.57	15.56	33.341	24.574	337.8	0.251	5.79	253.0	101.9	2.5	0.31	0.0	0.00	0.06	0.16	0.04	72	16
75 ISL	15.39 D	15.38	33.310 D	24.590	336.4	0.259	5.85	D255.2	D102.6	2.6	0.32	0.0	0.00	0.05	0.19	0.07	76	
88	14.82	14.81	33.282	24.693	326.9	0.307	5.81	253.8	100.7	2.7	0.35	0.0	0.00	0.03	0.26	0.14	89	15
100 ISL	13.96 D	13.95	33.278 D	24.871	310.2	0.341	5.77	D251.4	D 98.2	3.4	0.45	1.5	0.10	0.04	0.27	0.18	101	
107	13.06	13.04	33.246	25.030	295.1	0.367	5.67	247.7	94.7	3.8	0.51	2.3	0.16	0.04	0.28	0.20	108	13
107	13.06	13.04	33.244	25.028	295.2	0.367											108	14
125 ISL	11.91 D	11.89	33.223 D	25.233	276.0	0.387	5.51	D239.8	D 89.8	5.6	0.71	5.7	0.04	0.03	0.15	0.17	126	
126 A	11.80	11.79	33.227	25.256	273.8	0.421	5.43	237.2	88.4	5.7	0.72	5.9	0.03	0.03	0.15	0.17	127	12
137	11.24	11.22	33.292	25.410	259.3	0.450	5.18	226.1	83.2	7.7	0.86	8.5	0.02	0.03	0.10	0.08	138	11
150	10.57	10.55	33.407	25.617	239.8	0.482	4.71	205.6	74.7	11.9	1.14	13.1	0.02	0.05	0.05	0.05	151	10
162 A	10.10	10.08	33.558	25.816	221.0	0.510	4.07	177.6	63.9	16.5	1.41	17.4	0.01	0.04	0.02	0.03	163	09
182	9.63	9.61	33.699	26.005	203.4	0.552	3.57	155.9	55.6	21.3	1.64	21.0	0.00	0.02	0.01	0.02	183	08
200	9.35	9.32	33.815	26.143	190.6	0.588	3.18	138.7	49.2	25.2	1.81	23.5	0.00	0.04	0.00	0.02	202	07
231	8.83	8.80	33.973	26.349	171.5	0.644	2.76	120.3	42.2	31.3	1.99	26.3	0.00	0.04			233	06
250 ISL	8.83 D	8.80	34.058 D	26.416	165.5	0.646	2.34	D101.6	D 35.8	34.3	2.10	27.6	0.00	0.04			252	
270	8.47	8.44	34.061	26.475	160.2	0.709	2.17	94.8	33.0	37.4	2.22	28.9	0.01	0.05			272	05
300 ISL	8.06 D	8.03	34.099 D	26.566	151.9	0.726	1.84	D 79.9	D 27.7	42.7	2.37	30.8	0.00	0.04			302	
321	7.89	7.85	34.126	26.614	147.6	0.787	1.54	67.2	23.1	46.5	2.48	32.1	0.00	0.03			324	04
382	7.00	6.96	34.147	26.757	134.5	0.873	1.11	48.3	16.3	57.8	2.73	35.6	0.00	0.06			385	03
400 ISL	6.61 D	6.57	34.130 D	26.796	130.7	0.869	1.04	D 45.4	D 15.2	60.3	2.78	36.1	0.00	0.06			403	
439	6.33	6.29	34.154 D	26.852	125.7	0.919	0.87	D 37.6	D 12.5								443	02
500 ISL	6.04 D	5.99	34.220 D	26.943	117.8	0.994	0.55	D 24.1	D 8.0	73.9	3.03	39.0	0.00	0.03			504	
516	5.98	5.93	34.232	26.960	116.3	1.074	0.50	21.9	7.2	76.1	3.07	39.5	0.00	0.03			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 OCEAN STARR — CALCOFI CRUISE 1404 — STATION 93.3 120.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
29 50.9 N	123 35.2 W	04/04/2014	2133 UTC	4246 m	360 18 kn	340 05 06	2	1026.7 mb	16.9 C	13.9 C	39 m	8/8	SC	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	17.41	17.41	33.652	24.383	353.5	0.000	5.61	245.0	102.6	2.3	0.30	0.1	0.01	0.10	0.06	0.01	0	
2	17.41	17.41	33.652	24.383	353.6	0.007	5.61	245.0	102.6	2.3	0.30	0.1	0.01	0.10	0.06	0.01	2	20
10 ISL	17.40 D	17.40	33.653 D	24.387	353.5	0.036	5.56	D242.3	D101.6	2.3	0.28	0.0	0.00	0.06	0.06	0.01	10	
11	17.40	17.40	33.661	24.393	353.0	0.039	5.54	241.9	101.3	2.3	0.28	0.0	0.00	0.05	0.06	0.01	11	19
20 ISL	17.39 D	17.39	33.674 D	24.406	352.1	0.071	5.54	D241.3	D101.2	2.3	0.27	0.0	0.00	0.05	0.06	0.01	20	
26	17.39	17.38	33.681	24.413	351.7	0.092	5.53	241.5	101.1	2.3	0.27	0.0	0.00	0.05	0.07	0.01	26	18
30 ISL	17.39 D	17.39	33.678 D	24.411	352.0	0.107	5.54	D241.5	D101.3	2.3	0.27	0.0	0.00	0.05	0.07	0.01	30	
40	17.39	17.39	33.686	24.417	351.9	0.141	5.53	241.6	101.2	2.3	0.28	0.0	0.00	0.05	0.07	0.01	40	17
50	17.38	17.38	33.689	24.422	351.7	0.176	5.53	241.5	101.1	2.3	0.27	0.0	0.00	0.04	0.08	0.01	50	16
62	17.29	17.28	33.693	24.449	349.6	0.218	5.55	242.3	101.2	2.2	0.27	0.0	0.00	0.04	0.11	0.02	62	15
75 ISL	16.98 D	16.97	33.654 D	24.492	345.9	0.266	5.61	D244.5	D101.7	2.3	0.27	0.0	0.00	0.03	0.13	0.03	76	
76	16.99	16.98	33.647	24.485	346.7	0.267	5.58	243.8	101.2	2.3	0.27	0.0	0.00	0.03	0.13	0.03	77	14
88	16.98	16.96	33.883	24.670	329.5	0.308	5.54	242.0	100.6	2.4	0.24	0.0	0.00	0.06	0.17	0.08	89	13
100	15.15	15.14	33.637	24.895	308.1	0.346	5.66	247.1	98.9	2.8	0.29	0.0	0.00	0.04	0.23	0.13	101	12
113	14.01	13.99	33.583	25.098	289.1	0.385	5.53	241.5	94.4	3.6	0.40	1.1	0.07	0.09	0.23	0.15	114	11
125 ISL	13.42 D	13.40	33.537 D	25.183	281.2	0.423	5.40	D235.2	D 91.1	4.4	0.50	2.8	0.08	0.07	0.23	0.17	126	
126	13.26	13.25	33.544	25.220	277.7	0.422	5.37	234.4	90.2	4.5	0.51	2.9	0.08	0.07	0.23	0.18	127	10
139	12.05	12.04	33.388	25.335	266.7	0.457	5.28	230.4	86.4	6.2	0.70	6.0	0.02	0.02	0.18	0.17	140	09
150 ISL	11.43 D	11.41	33.420 D	25.475	253.5	0.491	5.17	D225.0	D 83.5	8.4	0.85	8.5	0.01	0.02	0.13	0.12	151	
172	10.47	10.45	33.568	25.760	226.7	0.539	4.53	197.9	71.8	13.0	1.15	13.6	0.01	0.03	0.03	0.03	173	08
200	9.50	9.48	33.706	26.032	201.2	0.598	3.88	169.5	60.2	20.4	1.56	19.8	0.00	0.09	0.01	0.01	202	07
232	8.75	8.73	33.893	26.298	176.3	0.659	3.25	142.0	49.7	28.5	1.87	24.6	0.00	0.06			234	06
250 ISL	8.52 D	8.49	33.965 D	26.391	167.7	0.696	2.87	D124.7	D 43.6	32.3	2.00	26.4	0.00	0.04			252	
271	8.26	8.23	34.001	26.460	161.5	0.724	2.53	110.3	38.2	36.7	2.15	28.4	0.01	0.01			273	05
300 ISL	7.91 D	7.87	34.053 D	26.553	153.0	0.777	2.12	D 92.2	D 31.8	42.4	2.33	30.5	0.00	0.03			302	
322	7.60	7.57	34.075	26.615	147.3	0.803	1.83	79.9	27.3	46.8	2.46	32.1	0.00	0.05			325	04
380	6.92	6.88	34.103	26.734	136.5	0.885	1.31	57.2	19.2	56.9	2.71	35.3	0.00	0.05			383	03
400 ISL	6.62 D	6.59	34.103 D	26.773	132.9	0.920	1.22	D 53.0	D 17.7	60.3	2.78	36.2	0.00	0.06			403	
442	6.27	6.23	34.139	26.848	126.1	0.967	0.91	39.9	13.2	67.6	2.92	38.0	0.00	0.07			446	02
500 ISL	5.88 D	5.84	34.195 D	26.942	117.6	1.046	0.60	D 26.1	D 8.6	76.0	3.06	39.6	0.00	0.05			504	
516	5.78	5.73	34.206	26.964	115.7	1.056	0.54	23.4	7.6	78.4	3.10	40.0	0.00	0.05			520	01

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

RV OCEAN STARR — CALCOFI CRUISE 1404 — 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 16.5 W	29/03/2014	0505 UTC	15 m	310 06 kn			1027.0 mb	16.7 C	14.1 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	17.02	17.02	33.469	24.335	358.1	0.000	5.88	256.8	106.6	4.0	0.29	0.2	0.06	0.26	1.00	0.30	0	
1	17.02	17.02	33.469	24.335	358.2	0.004	5.88	256.8	106.6	4.0	0.29	0.2	0.06	0.26	1.00	0.30	1	03
4	17.02	17.02	33.470	24.336	358.2	0.014	5.89	257.3	106.8	4.1	0.28	0.2	0.05	0.27	0.96	0.29	4	02
10	16.60	16.60	33.468	24.433	349.2	0.036	5.91	258.4	106.3	4.2	0.30	0.3	0.05	0.27	1.22	0.35	10	01

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

RV OCEAN STARR — CALCOFI CRUISE 1404 — STATION 76.7 51.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD
35 1.3 N	120 54.8 W	16/04/2014	1842 UTC	13 m	1205 - 1905 PST	1205 PST	1904 PST	950.0 mg C/m2	068

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	12.45	33.561	25.386	5.51	91.1	15.6	1.18	11.8	0.24	0.04	1.00	0.63	79. A	41.4	38.8	40.1	0.31
9	12.06	33.608	25.497	5.28	86.6	17.9	1.28	13.7	0.23	0.03	1.15	0.66	35.	40.5	0.23	20.4	0.42
12	12.05	33.628	25.514	5.17	84.7	19.0	1.35	14.5	0.23	0.04	1.26	0.81	24.	36.7	21.7	29.2	0.48
20	11.80	33.648	25.577	4.93	80.4	20.0	1.42	15.1	0.24	0.05	1.39	0.60	9.4	34.4	33.8	34.1	0.33
29	11.12	33.644	25.700	4.20	67.6	20.4	1.54	17.6	0.25	0.13	0.74	0.55					
38	10.55	33.601	25.767	3.68	58.4	19.3	1.63	19.4	0.10	0.03	0.27	0.30	1.1	2.1	1.1	1.6	0.21
48	10.28	33.686	25.880	3.17	50.0	22.4	1.78	21.6	0.13	0.11	0.13	0.17	0.35	0.18	0.37	0.27	0.25

RV OCEAN STARR — CALCOFI CRUISE 1404 — STATION 76.7 80.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD
34 3.1 N	122 56.1 W	15/04/2014	2011 UTC	14 m	1317 - 1913 PST	1212 PST	1909 PST	126.5 mg C/m2	066

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	14.45	33.051	24.588	5.99	102.9	3.4	0.35	0.0	0.00	0.07	0.26	0.06	72. A	3.8	3.6	3.7	0.25
10	14.45	33.051	24.588	5.98	102.7	3.4	0.36	0.0	0.00	0.08	0.26	0.06	33.	3.7	3.8	3.8	0.31
14	14.43	33.053	24.595	5.99	102.8	3.4	0.36	0.0	0.00	0.03	0.25	0.07	22.	3.4	3.4	3.4	0.28
22	14.42	33.064	24.606	5.98	102.7	3.4	0.37	0.0	0.00	0.04	0.25	0.06	9.0	2.3	2.2	2.3	0.82
32	14.27	33.198	24.742	6.07	103.9	3.4	0.35	0.0	0.00	0.04	0.39	0.12					
40	14.14	33.241	24.802	6.02	102.9	3.5	0.37	0.0	0.00	0.05	0.80	0.32	1.2	2.3	1.4	1.9	0.35
51	13.92	33.273	24.872	5.94	101.1	3.4	0.41	0.0	0.02	0.33	0.74	0.41	0.37	0.87	0.81	0.84	0.29

RV OCEAN STARR — CALCOFI CRUISE 1404 — 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	13/04/2014	1710 UTC	12 m	1204 - 1902 PST	1202 PST	1857 PST	1678.3 mg C/m2	058

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	12.48	33.570	25.388	5.55	91.7	13.9	1.01	9.7	0.23	0.09	2.22	0.70	77. A	101.4	91.2	96.3	0.41
8	12.48	33.570	25.388	5.54	91.6	13.9	0.99	9.8	0.23	0.30	2.34	0.71	36.	89.8	92.3	91.1	0.38
11	12.45	33.569	25.393	5.54	91.5	13.9	0.98	9.7	0.24	0.10	2.07	0.76	24.	74.9	90.4	82.7	0.46
20	12.07	33.565	25.463	5.28	86.6	14.8	1.07	10.9	0.27	0.10	0.96	0.75	7.7	23.2	25.4	24.3	0.53
26	11.88	33.575	25.508	4.78	78.1	15.7	1.21	13.0	0.34	0.29	0.45	0.48					
34	11.71	33.572	25.538	4.63	75.3	15.5	1.26	13.6	0.36	0.46	0.35	0.37	1.3	0.88	0.50	0.69	0.76
44	10.98	33.578	25.674	4.66	74.6	15.8	1.25	13.5	0.38	0.52	0.37	0.35	0.36	0.45	0.82	0.63	0.25

RV OCEAN STARR — CALCOFI CRUISE 1404 — STATION 80.0 90.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD
33 8.9 N	123 13.2 W	14/04/2014	1707 UTC	19 m	1213 - 1910 PST	1213 PST	1908 PST	332.5 mg C/m2	062

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	14.76	33.436	24.818	5.91	102.5	3.2	0.35	0.0	0.03	0.04	0.32	0.11	85. A	9.2	8.7	8.9	0.33
10	14.76	33.432	24.817	5.94	103.0	3.2	0.38	0.0	0.00	0.02	0.32	0.08					
13	14.76	33.431	24.817	5.93	102.8	3.2	0.35	0.0	0.01	0.02	0.31	0.10	35.	6.4	6.1	6.2	3.3
17	14.75	33.432	24.819	5.92	102.6	3.2	0.35	0.0	0.01	0.04	0.32	0.07	25.	7.9	8.3	8.1	0.28
32	14.73	33.429	24.821	5.91	102.3	3.2	0.35	0.0	0.01	0.11	0.35	0.09	7.5	6.6	5.9	6.2	0.33
42	14.56	33.398	24.834	5.91	102.0	3.3	0.39	0.1	0.08	0.15	0.55	0.21					
54	13.80	33.383	24.983	5.79	98.3	3.2	0.47	0.8	0.35	0.20	0.65	0.33	1.3	1.6	1.0	1.3	0.71
62	12.68	33.289	25.134	5.51	91.3	5.0	0.67	4.6	0.22	0.07	0.34	0.23					
70	11.99	33.261	25.245	5.36	87.5	6.2	0.79	7.1	0.06	0.01	0.23	0.14	0.35	0.28	0.25	0.26	0.33

RV OCEAN STARR — CALCOFI CRUISE 1404 — STATION 83.3 51.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD
33 52.5 N	120 8.5 W	12/04/2014	1721 UTC	10 m	1201 - 1853 PST	1201 PST	1855 PST	1888.4 mg C/m2	050

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	13.00	33.533	25.256	6.10	102.0	3.7	0.56	2.7	0.08	0.52	3.85	1.32	74. A	118.5	75.5	97.0	2.0
7	13.00	33.529	25.254	6.11	102.1	3.5	0.55	2.6	0.08	0.45	3.61	1.54	34.	138.2	90.4	114.3	0.53
9	12.99	33.530	25.257	6.11	102.2	3.5	0.54	2.7	0.06	0.46	3.69	1.76	25.	75.1	82.8	78.9	0.45
16	12.87	33.533	25.284	5.99	99.8	4.0	0.60	3.2	0.09	0.68	3.76	1.46	8.6	60.7	60.3	60.5	0.82
22	12.85	33.538	25.292	6.02	100.3	3.9	0.60	3.2	0.09	0.75	3.78	1.54					
29	12.49	33.545	25.367	5.61	92.8	6.2	0.78	5.4	0.11	1.25	2.90	1.92	1.2	9.4	7.2	8.3	0.43
37	11.49	33.553	25.562	4.32	70.0	13.6	1.26	12.7	0.16	1.02	1.08	0.86	0.34	1.0	1.1	1.1	0.31

A) INCUBATION LIGHT INTENSITIES WERE 57, 35, 25, 8.5, 1.24, 0.35 PERCENT RESPECTIVELY.

RV OCEAN STARR — CALCOFI CRUISE 1404 — 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 7.2 W	11/04/2014	1827 UTC	15 m	1210 - 1907 PST	1210 PST	1905 PST	384.6 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
2	14.79	33.405	24.790	5.97	103.5	3.2	0.38	0.0	0.02	0.16	0.34	0.09	81. A	10.9	11.8	11.3	0.34
10	14.54	33.393	24.833	6.00	103.5	3.3	0.35	0.0	0.01	1.03	0.36	0.11	36.	12.8	10.8	11.8	0.49
14	14.43	33.373	24.841	6.06	104.2	3.2	0.36	0.0	0.01	0.34	0.41	0.13	24.	8.7	9.7	9.2	0.38
24	14.29	33.367	24.868	6.04	103.7	3.2	0.37	0.0	0.02	0.24	0.60	0.24	8.6	10.4	9.6	10.0	0.48
34	14.24	33.372	24.883	5.92	101.4	3.2	0.40	0.1	0.06	0.27	0.95	0.39					
44	14.10	33.376	24.916	5.87	100.4	3.3	0.42	0.3	0.10	0.34	0.62	0.31	1.1	2.1	1.8	2.0	0.33
54	13.12	33.358	25.101	5.54	92.7	4.7	0.65	3.9	0.27	0.12	0.27	0.18	0.40	0.25	0.42	0.33	0.22

RV OCEAN STARR — CALCOFI CRUISE 1404 — STATION 86.7 40.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD
33 39.7 N	118 57.6 W	08/04/2014	1901 UTC		1216 - 1855 PST	1158 PST	1847 PST	635.7 mg C/m2	035

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	15.83	33.473	24.613	6.12	108.4	0.2	0.28	0.0	0.06	0.07	0.49	0.22		12.1	16.1	14.1	0.48
8	15.42	33.470	24.702	6.21	109.0	0.2	0.29	0.0	0.01	0.05	0.58	0.29		26.5	26.5	26.5	0.53
11	15.31	33.469	24.726	6.22	109.0	0.2	0.28	0.0	0.02	0.04	0.54	0.25		23.7	22.8	23.3	0.48
19	14.94	33.464	24.804	6.39	111.2	0.4	0.28	0.0	0.00	0.03	0.86	0.51		20.3	19.3	19.8	0.63
26	14.43	33.456	24.907	6.03	103.8	1.1	0.37	0.0	0.02	0.11	1.52	1.00					
34	13.88	33.447	25.015	5.57	94.7	3.7	0.57	2.5	0.10	0.44	2.44	1.45		7.8	6.2	7.0	0.57
44	11.89	33.478	25.431	4.41	72.1	11.2	1.14	11.5	0.17	0.23	0.47	0.40		0.49	0.61	0.55	0.17

RV OCEAN STARR — CALCOFI CRUISE 1404 — 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 2.5 W	09/04/2014	1729 UTC	18 m	1210 - 1900 PST	1206 PST	1855 PST	312.0 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
2	14.97	33.263	24.640	5.91	102.7	3.2	0.35	0.0	0.02	0.04	0.22	0.08	84. A	3.8	4.0	3.9	0.50
12	14.89	33.261	24.658	5.92	102.8	3.2	0.35	0.0	0.02	0.11	0.23	0.07	36.	5.4	5.0	5.2	0.34
16	14.88	33.260	24.657	5.92	102.7	3.2	0.35	0.0	0.01	0.03	0.24	0.06	26.	4.2	4.6	4.4	0.24
22	14.79	33.286	24.698	5.99	103.7	3.3	0.37	0.0	0.01	0.12	0.33	0.09					
29	14.44	33.269	24.760	5.99	103.0	3.4	0.37	0.0	0.01	0.12	0.43	0.21	8.4	7.2	7.2	7.2	0.34
40	14.08	33.228	24.804	6.00	102.3	3.4	0.39	0.1	0.02	0.14	0.78	0.34					
52	13.70	33.196	24.859	5.91	100.0	3.6	0.45	0.7	0.07	0.08	0.91	0.44	1.2	4.0	4.0	4.0	0.21
58	13.47	33.187	24.899	5.86	98.7	3.7	0.48	1.2	0.10	0.14	0.79	0.49					
66	13.15	33.251	25.012	5.66	94.8	4.1	0.58	2.8	0.18	0.06	0.54	0.33	0.36	0.86	1.1	0.96	0.18

RV OCEAN STARR — CALCOFI CRUISE 1404 — 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	10/04/2014	1757 UTC	35 m	1219 - 1805 PST	1216 PST	1805 PST	145.9 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
2	16.74	33.467	24.400	5.61	101.1	2.4	0.48	0.1	0.01	0.50	0.06	0.01	92. A	1.4	1.5	1.4	0.24
13	16.72	33.467	24.405	5.63	101.4	2.4	0.31	0.1	0.01	0.07	0.07	0.01					
24	16.42	33.466	24.474	5.68	101.7	2.4	0.33	0.0	0.01	0.24	0.07	0.01	35.	1.6	1.4	1.5	0.19
32	16.42	33.469	24.478	5.66	101.3	2.4	0.33	0.1	0.00	0.20	0.07	0.02	25.	1.3	1.5	1.4	0.16
44	16.40	33.472	24.485	5.64	101.0	2.4	0.31	0.0	0.00	0.04	0.09	0.02					
56	16.37	33.470	24.491	5.64	100.9	2.4	0.30	0.0	0.00	0.08	0.10	0.02	8.6	1.5	1.5	1.5	0.17
71	16.05	33.460	24.558	5.67	100.8	2.4	0.29	0.1	0.00	0.06	0.17	0.06					
86	15.36	33.429	24.690	5.67	99.4	2.5	0.35	0.0	0.00	0.17	0.20	0.13					
100	14.81	33.402	24.789	5.66	98.2	2.9	0.37	0.4	0.05	0.04	0.22	0.13	1.2	0.73	0.87	0.80	0.10
108	14.12	33.388	24.923	5.61	95.9	3.3	0.44	1.3	0.10	0.05	0.22	0.13					
120	13.15	33.345	25.088	5.54	92.8	4.1	0.54	2.9	0.06	0.04	0.20	0.13					
128	12.92	33.326	25.119	5.51	91.8	4.4	0.58	3.5	0.05	0.05	0.19	0.12	0.36	0.27	0.27	0.27	0.13

RV OCEAN STARR — CALCOFI CRUISE 1404 — STATION 90.0 30.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD
33 25.3 N	117 54.1 W	07/04/2014	1758 UTC	20 m	1200 - 1844 PST	1154 PST	1842 PST	816.5 mg C/m2	027

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	15.82	33.492	24.629	5.92	104.8	1.5	0.31	0.2	0.01	0.18	0.28	0.08	86. A	11.3	8.6	10.0	0.46
8	15.36	33.488	24.729	6.21	109.0	1.0	0.29	0.1	0.00	0.08	0.48	0.21					
14	14.95	33.485	24.816	6.47	112.6	0.7	0.29	0.1	0.00	0.08	0.71	0.34	34.	27.1	26.7	26.9	0.46
18	14.60	33.476	24.885	6.61	114.1	0.7	0.26	0.0	0.01	0.03	0.89	0.46	25.	18.0	27.0	22.5	0.48
25	13.35	33.435	25.112	5.46	92.0	4.2	0.61	2.8	0.16	0.15	1.95	0.98					
32	12.46	33.430	25.284	4.66	76.9	8.5	0.95	8.8	0.23	0.15	1.26	0.78	8.6	14.3	15.2	14.7	0.20
40	11.99	33.437	25.380	4.42	72.3	10.0	1.08	10.8	0.22	0.13	0.85	0.53					
48	11.37	33.497	25.542	4.04	65.3	13.2	1.27	14.2	0.09	0.05	0.44	0.38					
58	10.83	33.554	25.683	3.79	60.5	15.9	1.42	16.7	0.08	0.02	0.34	0.32	1.2	1.2	0.99	1.1	0.13
66	10.56	33.619	25.781	3.46	55.0	18.6	1.58	18.9	0.06	0.04	0.14	0.23					
74	10.23	33.685	25.889	3.17	50.0	21.1	1.70	20.8	0.05	0.04	0.10	0.18	0.34	0.18	0.15	0.17	0.16

A) INCUBATION LIGHT INTENSITIES WERE 57, 35, 25, 8.5, 1.24, 0.35 PERCENT RESPECTIVELY.

RV OCEAN STARR CALCOFI CRUISE 1404 STATION 90.0 60.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD
32 25.1 N	119 57.2 W	06/04/2014	1917 UTC	17 m	1230 - 1847 PST	1202 PST	1848 PST	369.5 mg C/m2	023

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	15.06	33.408	24.733	5.86	102.2	2.5	0.40	0.0	0.03	0.34	0.34	0.10	83. A	7.0	6.7	6.9	0.23
12	14.93	33.408	24.762	5.89	102.4	2.5	0.40	0.0	0.01	0.10	0.33	0.10	34.	8.1	8.7	8.4	0.32
15	14.86	33.407	24.776	5.87	101.9	2.5	0.37	0.0	0.02	0.26	0.34	0.11	26.	7.8	7.6	7.7	0.27
27	14.81	33.403	24.784	5.89	102.1	2.5	0.37	0.0	0.01	0.05	0.39	0.13	8.7	7.5	8.2	7.9	0.24
39	14.78	33.400	24.789	5.85	101.4	2.5	0.38	0.0	0.02	0.17	0.34	0.12					
50	14.69	33.392	24.804	5.81	100.5	2.7	0.43	0.2	0.03	0.37	0.31	0.14	1.1	1.8	5.4	3.6	0.15
57	13.50	33.332	25.005	5.69	96.0	3.9	0.53	2.3	0.17	0.07	0.64	0.38					
64	12.40	33.296	25.193	5.45	89.9	5.1	0.69	5.2	0.11	0.04	0.46	0.38	0.31	0.75	0.78	0.76	0.17

RV OCEAN STARR CALCOFI CRUISE 1404 STATION 90.0 100.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD
31 4.9 N	122 39.1 W	05/04/2014	1712 UTC	30 m	1216 - 1855 PST	1213 PST	1857 PST	89.4 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
2	16.29	33.454	24.494	5.65	100.9	2.4	0.30	0.2	0.01	0.52	0.07	0.01	90. A	0.89	0.99	0.94	0.17
11	16.29	33.454	24.495	5.65	100.9	2.4	0.29	0.1	0.01	0.28	0.07	0.01					
22	16.29	33.453	24.495	5.65	101.0	2.4	0.29	0.0	0.01	0.13	0.06	0.01	32.	1.2	1.3	1.3	0.11
28	16.28	33.454	24.497	5.64	100.8	2.4	0.29	0.0	0.01	0.04	0.07	0.01	24.	1.1	1.1	1.1	0.11
38	16.29	33.454	24.497	5.65	101.0	2.4	0.29	0.0	0.01	0.10	0.07	0.01					
48	16.28	33.455	24.500	5.65	100.8	2.3	0.30	0.0	0.01	0.13	0.08	0.01	8.6	0.97	1.2	1.1	0.11
61	16.15	33.460	24.534	5.67	101.0	2.4	0.31	0.0	0.01	0.27	0.10	0.03					
75	15.88	33.454	24.592	5.65	100.1	2.4	0.29	0.0	0.00	0.08	0.15	0.06					
86	15.73	33.483	24.648	5.67	100.2	2.5	0.29	0.0	0.01	0.09	0.18	0.10	1.2	0.48	0.36	0.42	0.15
94	14.79	33.449	24.828	5.63	97.5	2.8	0.35	0.3	0.09	0.08	0.28	0.22					
106	13.04	33.335	25.100	5.59	93.4	3.7	0.49	2.3	0.08	0.13	0.26	0.18					
110	12.79	33.379	25.185	5.48	91.0	4.5	0.55	3.6	0.03	0.05	0.20	0.20	0.36	0.43	0.05	0.24	0.09

RV OCEAN STARR CALCOFI CRUISE 1404 STATION 93.3 45.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD
32 20.8 N	118 33.0 W	02/04/2014	1747 UTC	17 m	1300 - 1942 PST	1258 PST	1940 PST	359.6 mg C/m2	008

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	15.91	33.554	24.658	5.75	102.1	2.8	0.32	0.0	0.02	0.41	0.37	0.06	83. A	7.5	7.8	7.7	0.30
12	15.89	33.551	24.659	5.73	101.7	2.7	0.33	0.1	0.01	0.25	0.36	0.05	34.	8.2	10.1	9.1	0.21
15	15.90	33.551	24.659	5.75	102.0	2.7	0.33	0.0	0.00	0.64	0.39	0.06	26.	7.4	7.5	7.4	0.35
28	15.71	33.551	24.701	5.75	101.6	2.8	0.33	0.0	0.01	0.34	0.45	0.08	8.0	8.1	8.8	8.4	0.22
39	13.67	33.470	25.076	5.73	97.1	4.0	0.44	0.9	0.05	0.51	0.99	0.33					
50	11.64	33.483	25.482	4.85	78.7	8.6	0.88	8.5	0.11	0.30	0.55	0.28	1.1	1.9	2.2	2.1	0.12
57	11.58	33.473	25.484	4.23	68.6	12.0	1.20	13.3	0.14	0.61	0.45	0.35					
64	10.95	33.560	25.667	3.75	60.0	15.6	1.42	16.8	0.06	0.48	0.20	0.19	0.31	0.26	0.34	0.30	0.16

RV OCEAN STARR CALCOFI CRUISE 1404 STATION 93.3 80.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD
31 11.1 N	120 55.1 W	03/04/2014	2052 UTC	22 m	1358 - 1853 PST	1207 PST	1849 PST	69.1 mg C/m2	013

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	15.72	33.105	24.355	5.80	102.3	2.9	0.35	0.0	0.01	0.42	0.11	0.02	87. A	0.92	0.88	0.90	0.53
10	15.56	33.102	24.389	5.84	102.6	2.9	0.34	0.0	0.01	0.15	0.12	0.02					
14	15.53	33.102	24.394	5.82	102.2	2.9	0.35	0.0	0.01	0.09	0.12	0.02	38.	1.1	1.3	1.2	0.21
20	15.51	33.103	24.400	5.80	101.8	2.9	0.35	0.0	0.01	0.08	0.13	0.02	25.	1.1	1.0	1.1	0.21
35	15.42	33.108	24.425	5.82	101.9	2.9	0.34	0.0	0.00	0.25	0.15	0.03	8.7	0.95	0.88	0.92	0.22
44	15.41	33.130	24.446	5.82	102.0	2.8	0.33	0.0	0.01	0.05	0.16	0.03					
54	15.12	33.165	24.535	5.84	101.8	2.8	0.38	0.0	0.00	0.09	0.29	0.10					
64	14.87	33.282	24.681	5.74	99.6	2.7	0.34	0.0	0.02	0.08	0.59	0.28	1.1	0.79	0.82	0.80	0.18
72	14.57	33.278	24.741	5.71	98.5	2.9	0.37	0.3	0.08	0.07	0.66	0.36					
81	13.09	33.191	24.979	5.65	94.5	3.9	0.54	2.5	0.18	0.09	0.32	0.21	0.35	0.23	0.19	0.21	0.11

RV OCEAN STARR CALCOFI CRUISE 1404 STATION 93.3 110.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD
30 10.4 N	122 55.1 W	04/04/2014	1636 UTC	44 m	1213 - 1857 PST	1215 PST	1857 PST	195.7 mg C/m2	016

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	16.64	33.370	24.349	5.67	102.0	2.5	0.31	0.1	0.02	0.23	0.08	0.01	93. A	1.8	1.7	1.7	0.26
16	16.60	33.369	24.357	5.64	101.4	2.5	0.31	0.0	0.02	0.41	0.08	0.01					
31	16.57	33.369	24.365	5.67	101.8	2.5	0.31	0.0	0.01	0.02	0.09	0.01	34.	1.9	2.3	2.1	0.15
40	16.56	33.374	24.373	5.64	101.3	2.5	0.31	0.0	0.01	0.06	0.09	0.01	25.	1.7	2.1	1.9	0.18
50	16.29	33.361	24.426	5.68	101.5	2.4	0.28	0.0	0.02	0.05	0.11	0.02					
60	15.92	33.329	24.486	5.75	101.9	2.5	0.31	0.0	0.01	0.03	0.14	0.04					
71	15.57	33.341	24.574	5.79	101.9	2.5	0.31	0.0	0.00	0.06	0.16	0.04	8.4	1.6	1.5	1.5	0.68
88	14.82	33.282	24.693	5.81	100.7	2.7	0.35	0.0	0.00	0.03	0.26	0.14					
107	13.06	33.246	25.030	5.67	94.7	3.8	0.51	2.3	0.16	0.04	0.28	0.20					
126	11.80	33.227	25.256	5.43	88.4	5.7	0.72	5.9	0.03	0.03	0.15	0.17	1.2	0.54	0.48	0.51	0.10
137	11.24	33.292	25.410	5.18	83.2	7.7	0.86	8.5	0.02	0.03	0.10	0.08					
150	10.57	33.407	25.617	4.71	74.7	11.9	1.14	13.1	0.02	0.05	0.05	0.05					
162	10.10	33.558	25.816	4.07	63.9	16.5	1.41	17.4	0.01	0.04	0.02	0.03	0.35	0.02	0.07	0.04	0.08

A) INCUBATION LIGHT INTENSITIES WERE 57, 35, 25, 8.5, 1.24, 0.35 PERCENT RESPECTIVELY.

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	51.0	35 01.2	120 54.8	04/16	1141	1202	452	214	27	27
76.7	90.0	33 43.3	123 38.1	04/15	0628	0649	424	212	33	33
76.7	100.0	33 23.3	124 19.3	04/14	2257	2318	428	213	129	96
80.0	50.5	34 28.0	120 29.3	04/13	0515	0517	39	13	1371	1371
80.0	51.0	34 27.0	120 31.4	04/13	0652	0658	110	55	273	273
80.0	55.0	34 19.0	120 48.2	04/13	1042	1103	373	210	196	196
80.0	60.0	34 09.4	121 09.3	04/13	1536	1557	415	195	159	159
80.0	70.0	33 49.1	121 50.6	04/13	2151	2212	390	211	415	415
80.0	80.0	33 29.0	122 32.0	04/14	0410	0430	394	213	180	180
80.0	90.0	33 08.9	123 13.3	04/14	1035	1057	407	213	82	62
80.0	100.0	32 49.0	123 54.4	04/14	1641	1702	383	219	26	26
81.7	43.5	34 24.3	119 48.0	04/12	2137	2139	54	10	149	149
81.8	46.9	34 16.5	120 01.5	04/13	0108	0129	366	203	207	164
82.2	44.5	34 17.4	119 48.8	04/28	0041	0103	385	207	228	156
83.3	39.4	34 15.9	119 19.7	04/12	1832	1834	46	15	110	110
83.3	40.6	34 13.6	119 24.7	04/12	1728	1731	72	19	279	279
83.3	40.6	34 13.5	119 24.5	04/28	0754	0757	42	27	1127	1127
83.3	42.0	34 10.8	119 30.5	04/12	1531	1540	166	77	842	325
83.3	51.0	33 52.4	120 08.5	04/12	0835	0842	150	67	360	360
83.3	55.0	33 44.8	120 24.6	04/12	0543	0605	380	216	105	105
83.3	60.0	33 34.8	120 45.3	04/12	0118	0139	409	203	362	313
83.3	70.0	33 14.6	121 26.5	04/11	1820	1841	411	210	204	204
83.3	80.0	32 54.6	122 07.8	04/11	1131	1153	395	215	63	63
83.3	90.0	32 34.8	122 48.6	04/11	0440	0501	396	204	58	58
83.3	100.0	32 14.8	123 29.6	04/10	2214	2235	389	213	103	41
83.3	110.0	31 54.8	124 10.1	04/10	1621	1643	396	211	712	51
85.4	35.8	34 01.2	118 50.0	04/08	0455	0457	43	11	508	508
86.7	33.0	33 53.4	118 29.4	04/07	2259	2304	92	43	586	586
86.7	33.0	33 53.1	118 29.4	04/25	1912	1917	93	39	281	281
86.7	35.0	33 49.2	118 37.8	04/08	0204	0224	374	200	254	224
86.7	40.0	33 39.6	118 57.6	04/08	0942	1003	395	205	144	104
86.7	40.0	33 39.4	118 58.5	04/27	1007	1028	370	214	198	198
86.7	55.0	33 08.2	120 02.9	04/08	2226	2247	388	207	260	260
86.7	60.0	32 59.4	120 21.0	04/09	0358	0420	405	207	153	129
86.7	70.0	32 39.6	121 02.3	04/09	0831	0853	408	204	34	34
86.7	80.0	32 19.4	121 43.0	04/09	1551	1612	398	212	48	25
86.7	90.0	31 59.4	122 23.7	04/09	2149	2210	369	207	152	84
86.7	100.0	31 39.6	123 04.2	04/10	0400	0421	380	211	268	45
86.7	110.0	31 19.2	123 44.4	04/10	0855	0917	401	208	17	17
86.8	32.5	33 53.3	118 26.7	04/07	2122	2125	61	18	591	591
88.5	30.1	33 40.5	118 05.1	04/07	1745	1747	48	13	436	436
90.0	27.7	33 29.7	117 44.8	04/07	1455	1457	43	9	793	793
90.0	28.0	33 29.1	117 46.0	04/07	1346	1351	99	37	463	463
90.0	30.0	33 25.2	117 54.0	04/07	1124	1146	388	200	111	111
90.0	30.0	33 25.0	117 54.3	04/25	1201	1222	369	207	62	62
90.0	35.0	33 15.1	118 15.0	04/07	0701	0723	401	207	120	120
90.0	37.0	33 11.4	118 23.2	04/07	0403	0424	389	199	206	159
90.0	53.0	32 39.1	119 28.9	04/06	1833	1854	406	208	86	86
90.0	90.0	31 25.4	121 59.4	04/05	1704	1726	495	176	16	16
90.0	100.0	31 04.8	122 39.6	04/05	1051	1112	427	209	14	14
90.0	110.0	30 45.0	123 19.8	04/05	0355	0416	427	204	28	28
90.0	120.0	30 25.1	123 60.0	04/04	2129	2149	387	209	23	23
91.7	26.4	33 14.6	117 27.9	03/29	0025	0027	53	15	264	264
93.3	26.7	32 57.4	117 18.3	03/28	2023	2027	99	41	745	745
93.3	28.0	32 54.5	117 23.6	04/01	1808	1825	380	186	74	74
93.3	30.0	32 50.8	117 31.9	04/01	2102	2117	333	186	87	87
93.3	30.0	32 50.7	117 31.9	04/23	1440	1500	381	211	131	66
93.3	35.0	32 40.8	117 52.4	04/02	0120	0135	309	208	120	120
93.3	40.0	32 30.6	118 12.6	04/02	0551	0605	335	198	256	194
93.3	40.0	32 30.8	118 12.8	04/24	0022	0044	422	209	185	185
93.3	45.0	32 20.4	118 32.4	04/02	1121	1144	434	209	97	81
93.3	50.0	32 10.8	118 53.7	04/02	1540	1602	458	194	90	90
93.3	50.0	32 10.9	118 53.7	04/24	0945	1007	398	210	186	186
93.3	55.0	32 00.9	119 14.0	04/02	2007	2028	431	201	81	81
93.3	60.0	31 50.8	119 34.2	04/03	0114	0134	400	207	83	83
93.3	60.0	31 50.9	119 34.3	04/24	1514	1535	450	188	18	18
93.3	70.0	31 30.6	120 15.0	04/03	0737	0759	423	207	26	26
93.3	80.0	31 10.9	120 55.3	04/03	1400	1422	422	208	36	36
93.3	90.0	30 50.7	121 35.4	04/03	2020	2043	417	209	31	31
93.3	100.0	30 30.6	122 15.6	04/04	0237	0258	403	209	30	30
93.3	110.0	30 10.2	122 55.2	04/04	0725	0746	396	213	33	33
93.3	120.0	29 50.9	123 35.4	04/04	1446	1508	460	184	35	35
93.4	26.4	32 57.0	117 16.5	03/28	2123	2124	32	12	381	381