

UNIVERSITY OF CALIFORNIA, SAN DIEGO SCRIPPS INSTITUTION OF OCEANOGRAPHY

data report

CalCOFI Cruise 1304
6– 30 April 2013

CC Reference 14 -06
27 June 2014

UNIVERSITY OF CALIFORNIA, SAN DIEGO
SCRIPPS INSTITUTION OF OCEANOGRAPHY
LA JOLLA, CALIFORNIA 92093-0227

PHYSICAL, CHEMICAL AND BIOLOGICAL DATA

CalCOFI Cruise 1304
6– 30 April 2013

CC Reference 14-06
27 June 2014

CONTENTS

Introduction	4
Literature Cited	9
CalCOFI Cruise 1304	
List of Figures	11
Personnel	22
Tabulated Rosette Cast Data	23
Tabulated Primary Productivity Data	55
Tabulated Macrozooplankton Data	58

INTRODUCTION

The data presented in this report were collected during cruise 1304* of the California Cooperative Oceanic Fisheries Investigations (CalCOFI) program aboard the NOAA vessel FSV *Bell M. Shimada*. 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 Game, 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 cruises 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.

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

Nutrient samples were analyzed at sea using a QuAAstro 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 11.03 μCi of ^{14}C as NaHCO_3 (50 μl 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) *Underway Data:* Continuous near surface measurements of temperature, salinity and *in vivo* chlorophyll fluorescence were recorded from seawater pumped through the ship's uncontaminated seawater system. Water was drawn from a depth of approximately 3 meters. The data were logged in one-minute averages using a Sea-Bird Electronics, Inc., SBE 45 MicroTSG and SBE-21 TSG Thermosalinographs and a Turner Designs Fluorometer Model 10-AU-005-CE.
- 2) *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. These additional samples, taken at all CalCOFI stations, are for measurements of particulate organic carbon and nitrogen, dissolved organic carbon and nitrogen, taxon-specific phytoplankton pigments, flow-cytometric counts of bacteria and picoautotrophs, microscopic counts of nano- microplankton, determination of mesozooplankton size structure using a Laser Optical Plankton Counter, and mesozooplankton community structure with a Planktonic Rate Processes in Oligotrophic Ocean Systems (PRPOOS) net. (M. Ohman, 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 7 stations at the ends and interspersed with current CalCOFI lines on the 20 m isobath with a standard set of CalCOFI observations. (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. Total inorganic carbon and alkalinity will be measured which will allow the calculation of pH and pCO₂. 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) *Nitrate Isotope:* Seawater samples are acquired using the CTD-rosette and shipped frozen to Princeton University. The nitrogen and oxygen isotopic composition of nitrate is measured using strains of denitrifying bacteria that reduce nitrate to N₂O. (P. Rafter, Princeton University)
- 7) *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)

8) MBARI scientists collect samples for analysis of TCO₂ (DIC+DOC), Nutrients (Phosphate, Silicate, Nitrate, Nitrite, and Ammonium), Chlorophyll, C₁₄ and N₁₅ Primary Production, and surface Phytoplankton samples of A*, HPLC, POC, FCM, and Quantitative Phytoplankton (QP) at stations occupied on CalCOFI lines 70, 66.7 and 63.3. From the underway surface water, pCO₂ and fluorometric samples are taken. These samples and the cruises they are collected on support the studies of physical, chemical and biological dynamics off the west coast of Central California and have resulted in a rich and consistent history of ocean dynamics, from seasonal variations to longterm trends, such as El Nino Southern Oscillation (ENSO) and the Pacific Decadal Oscillation (PDO). Cycles which have direct effects on the coastal marine life and economy. (F. Chavez, MBARI)

9) *Underway Sea Surface xCO₂:* Continuous measurements of the partial pressure of CO₂ were made from the ship's uncontaminated seawater system on CalCOFI lines 70, 66.7 and 63.3. The seawater was equilibrated in a diffusion chamber that was then analyzed with a Licor 6262 infrared CO₂/H₂O analyzer. One-minute averages were recorded and the mole fraction of CO₂ (xCO₂) at sea surface temperature was calculated. The system was calibrated with standard gases traceable to CMDL every two hours; at that time absolute zero and atmospheric samples were also collected. (G. Friederich, MBARI)

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 (cm³/1000m³ strained) and as the total volume minus the volume of larger organisms under the heading "Small." Tow times are given in local PST (+8) time.

FOOTNOTES

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

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

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

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

LITERATURE CITED

- Anderson, G. C., compiler, 1971. "Oxygen Analysis," Marine Technician's Handbook, SIO Ref. No. 71-8, Sea Grant Pub. No. 9.
- 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.
- Klein, H. T., 1973. A new technique for processing physical oceanographic data. SIO Ref. No. 73-14.
- Koroleff, F. 1969. Direct determination of ammonia in natural waters as Indophenol Blue. Int. Con. Explor. Sea, C.M. C: 9.
- Koroleff, F. 1970. The above paper revised, Int. Con. Explor. Sea, Information on techniques and methods for sea water analysis. Interlab Report No. 3, 19-22.
- Kramer, D., M. J. Kalin, E. G. Stevens, J. R. Thraikill 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.
- 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 1304

1. CalCOFI Cruise 1304 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.

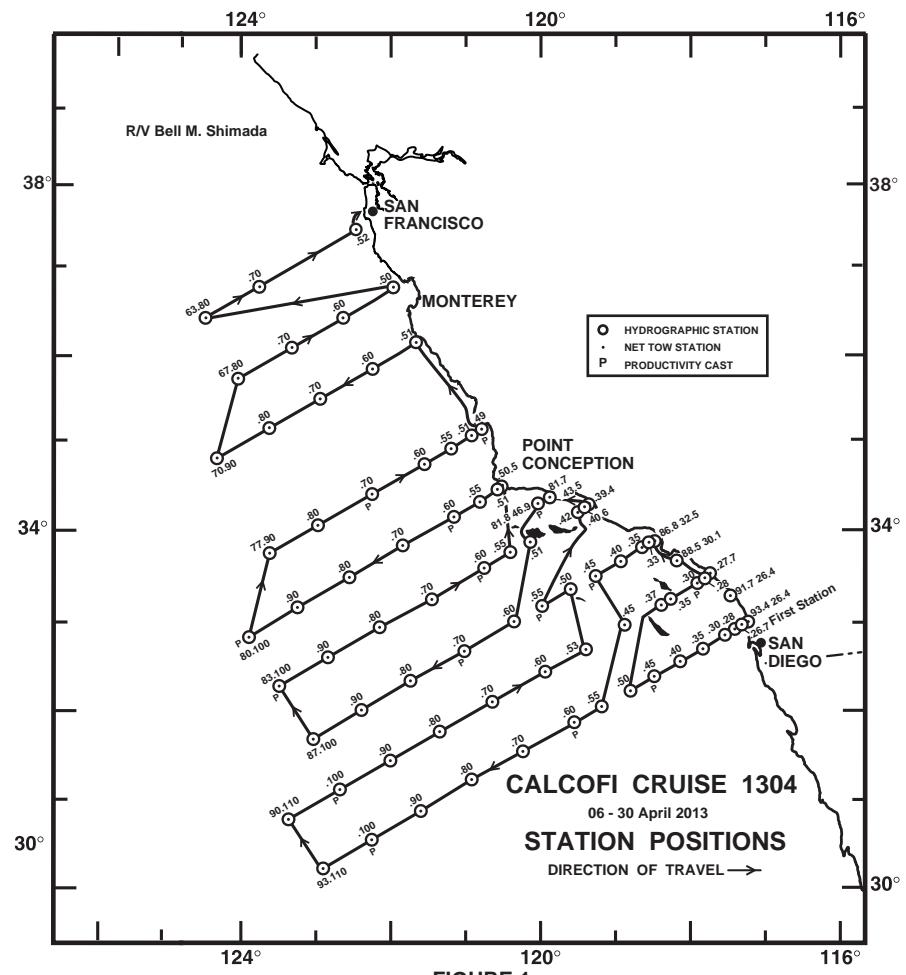


FIGURE 1

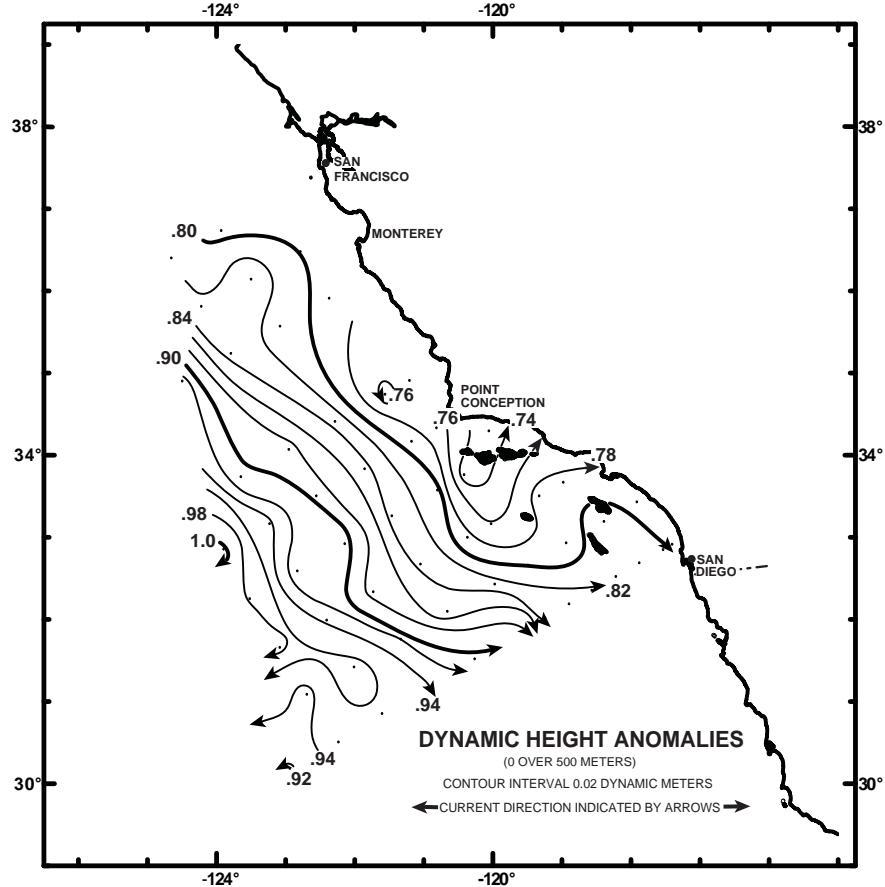


FIGURE 2

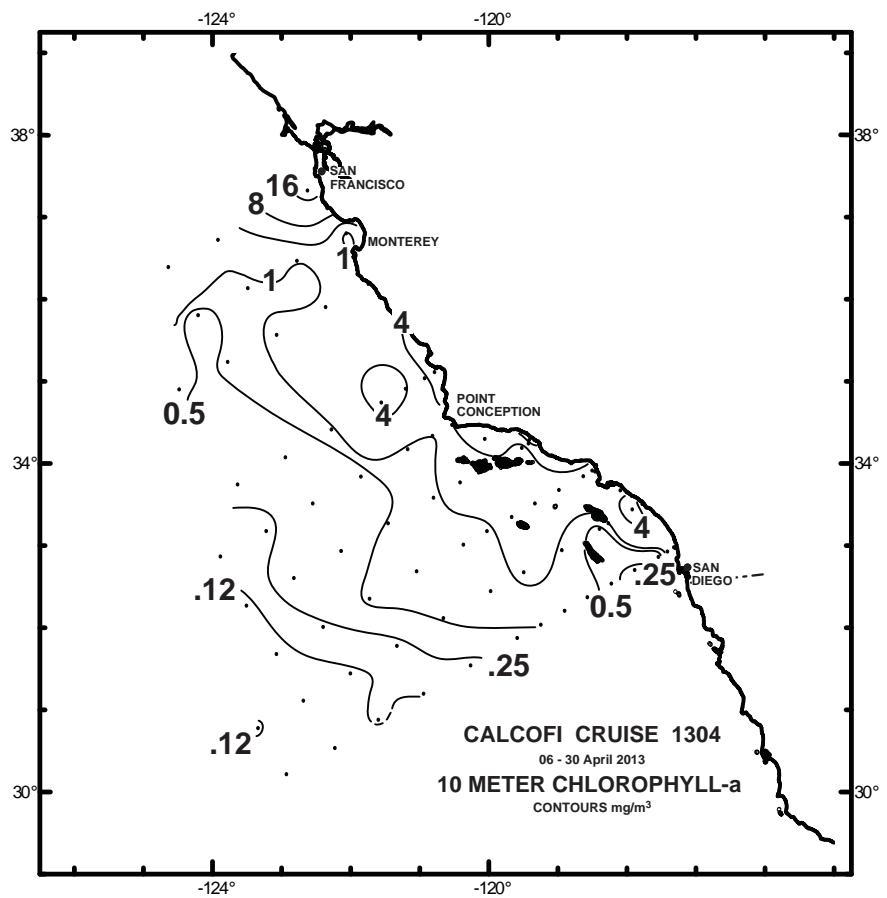


FIGURE 3A

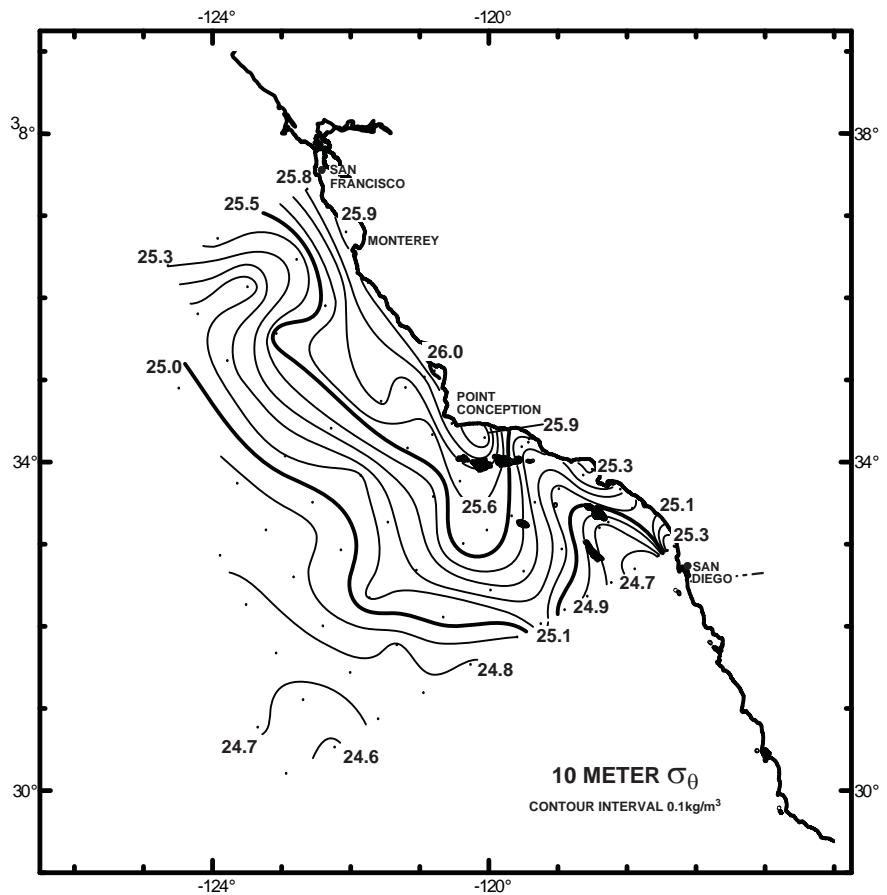


FIGURE 3B

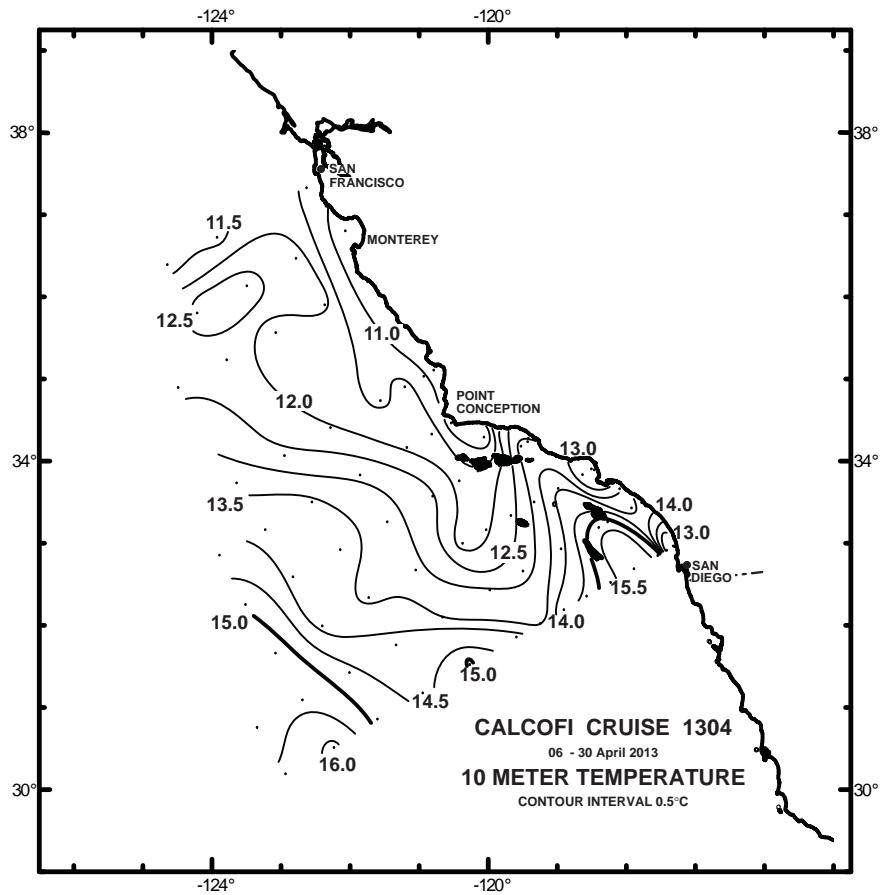


FIGURE 3C

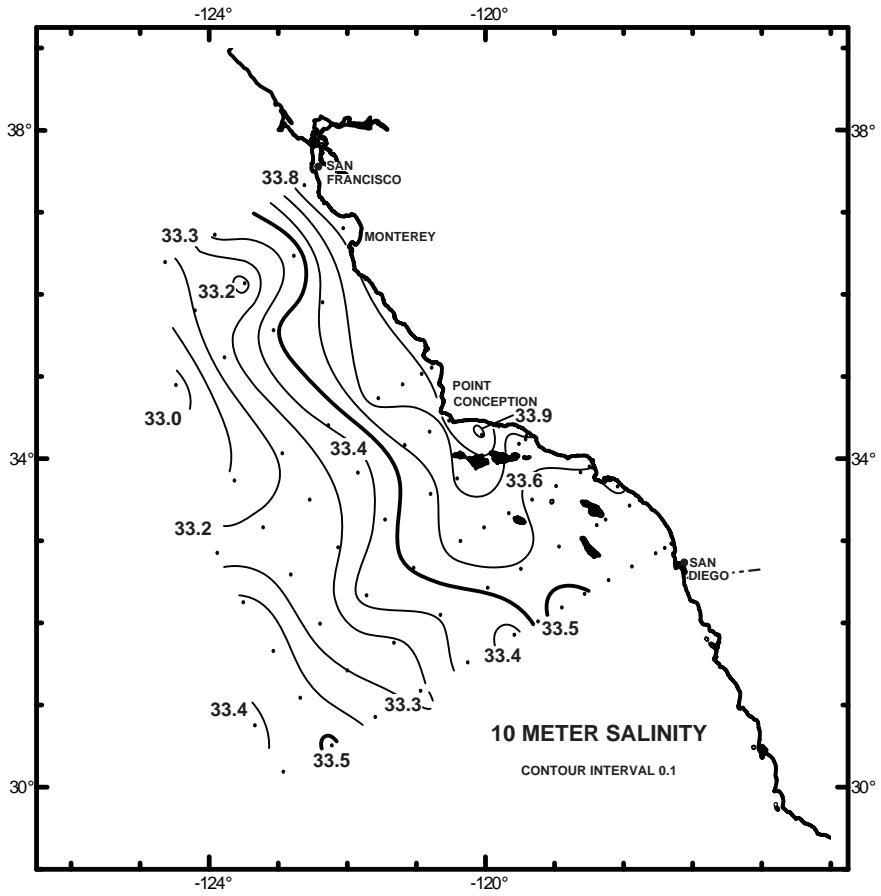


FIGURE 3D

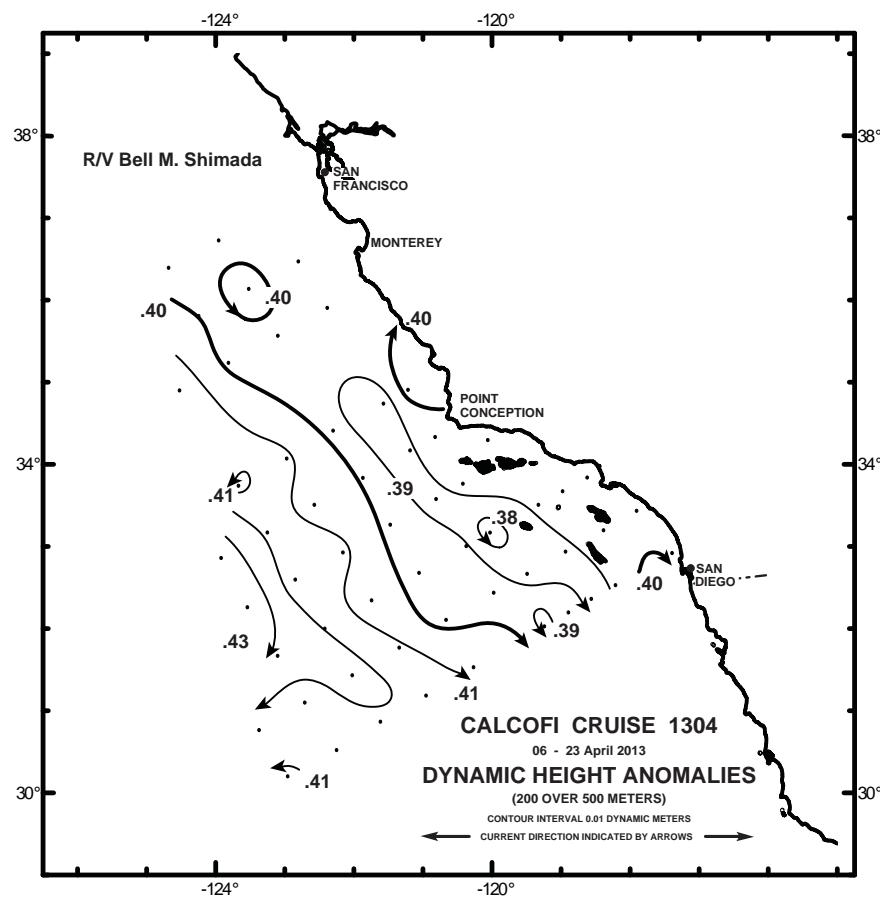


FIGURE 4A

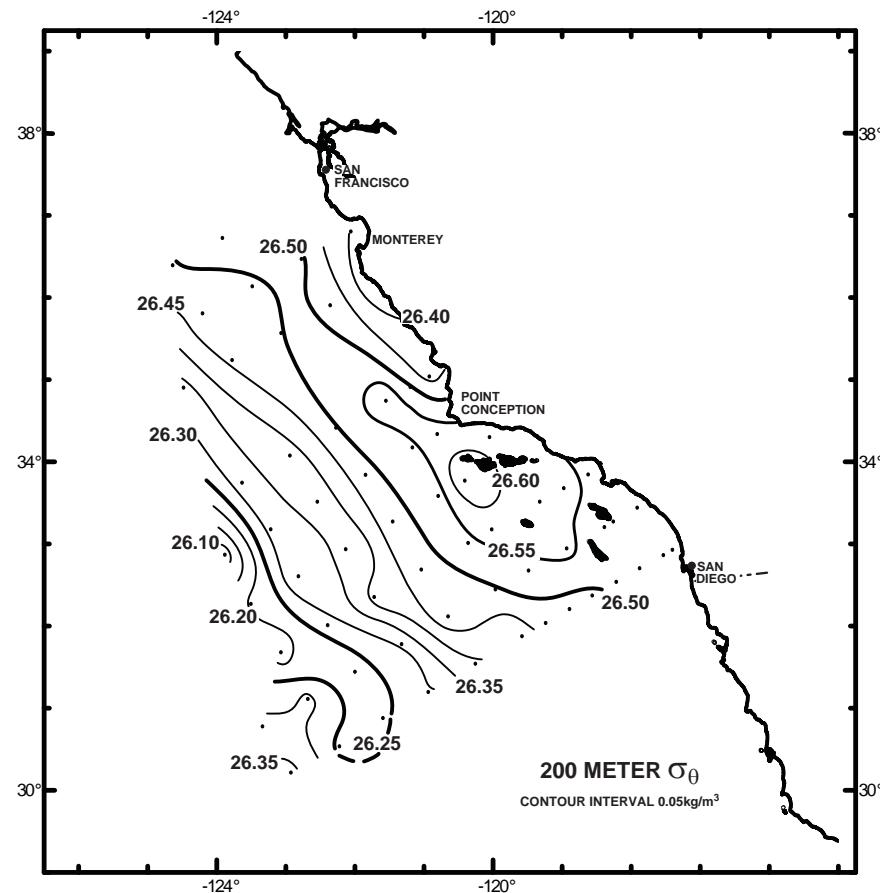


FIGURE 4B

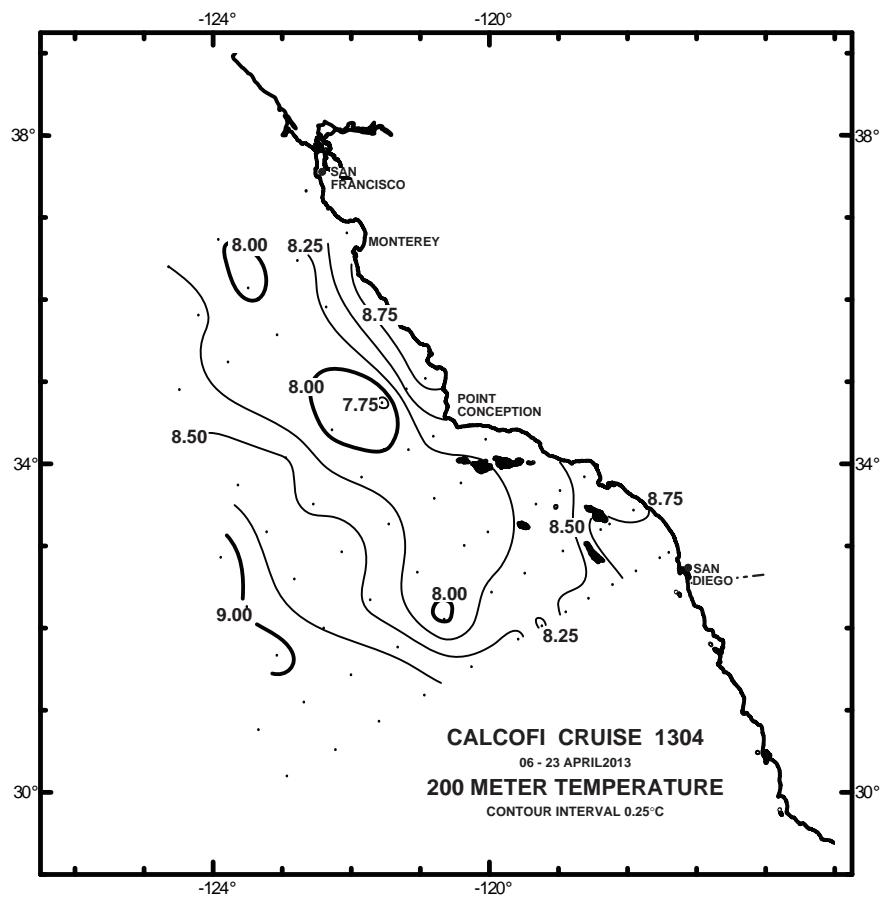


FIGURE 4C

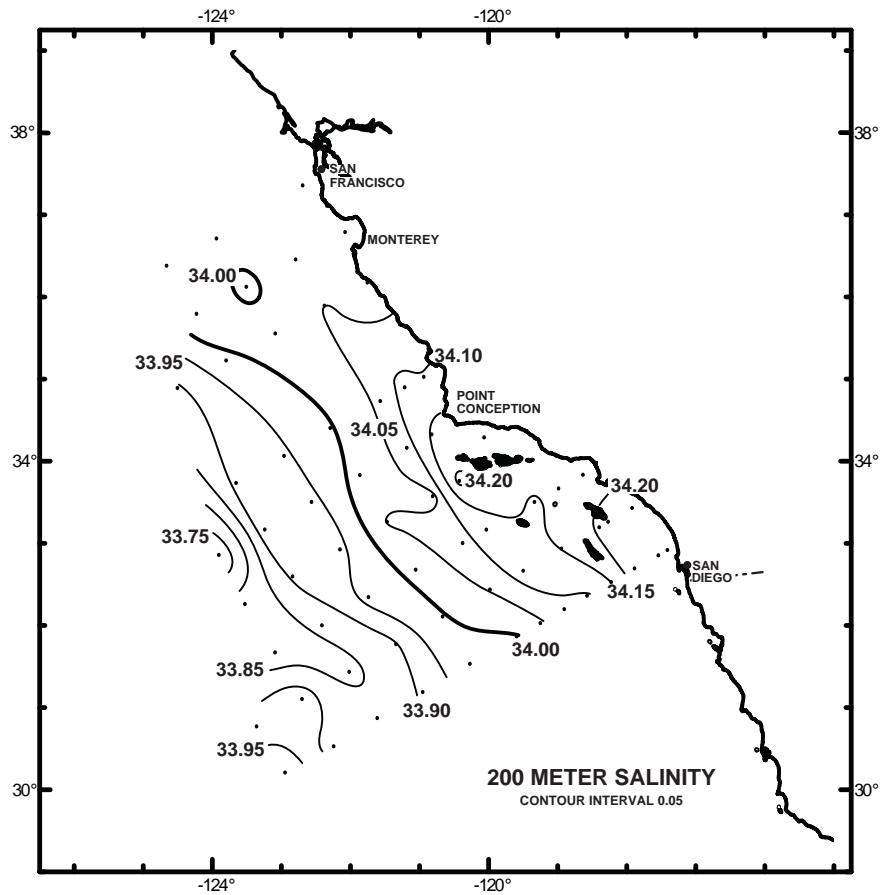
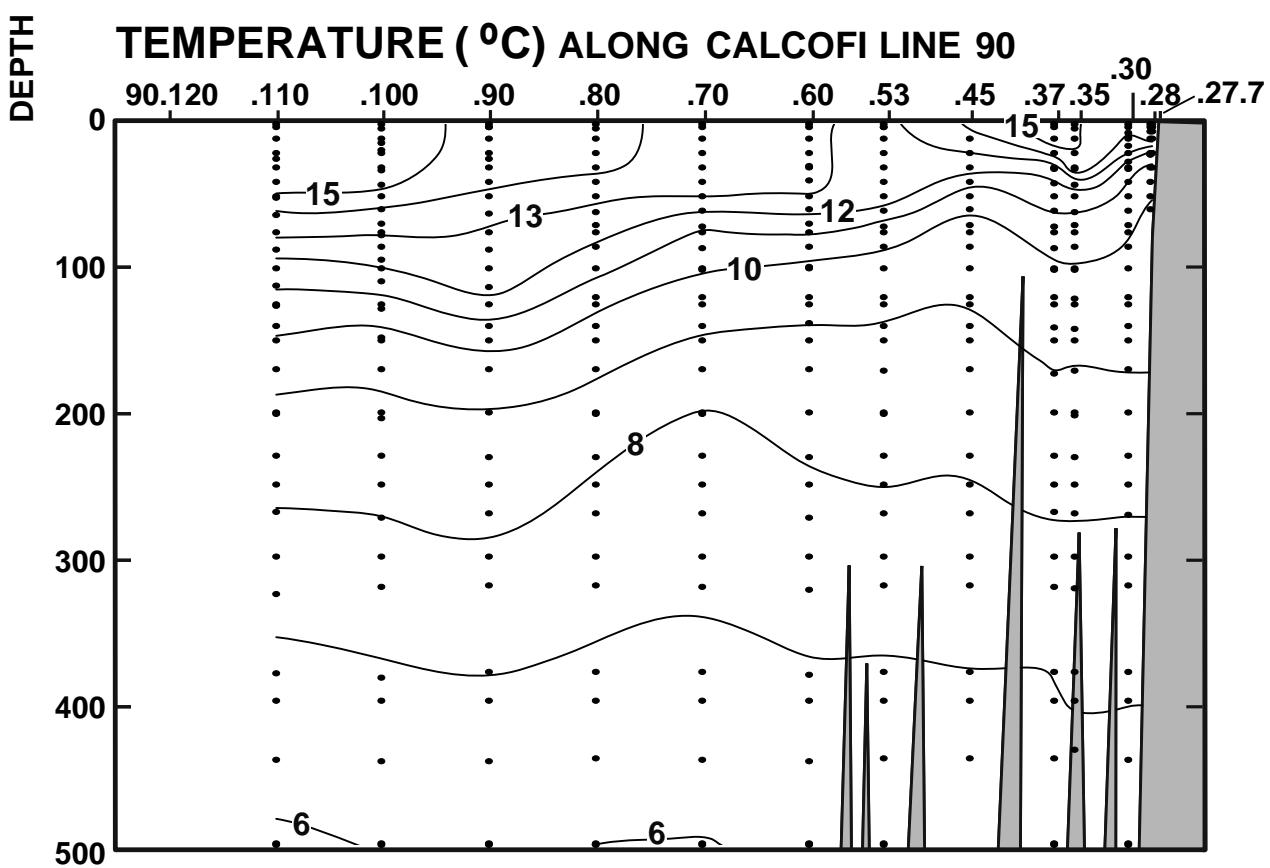
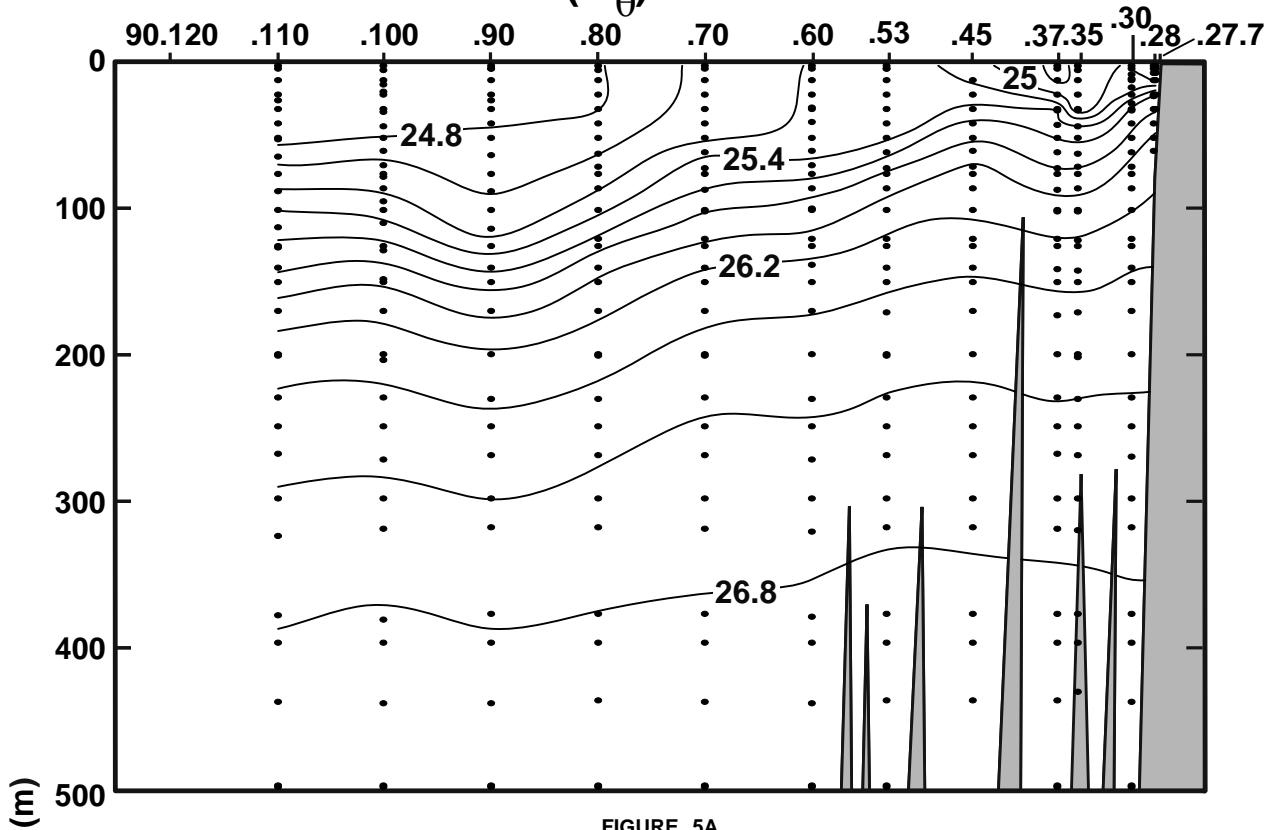


FIGURE 4D

CALCOFI CRUISE 1304

8 - 9, 10, 13 - 14 April 2013

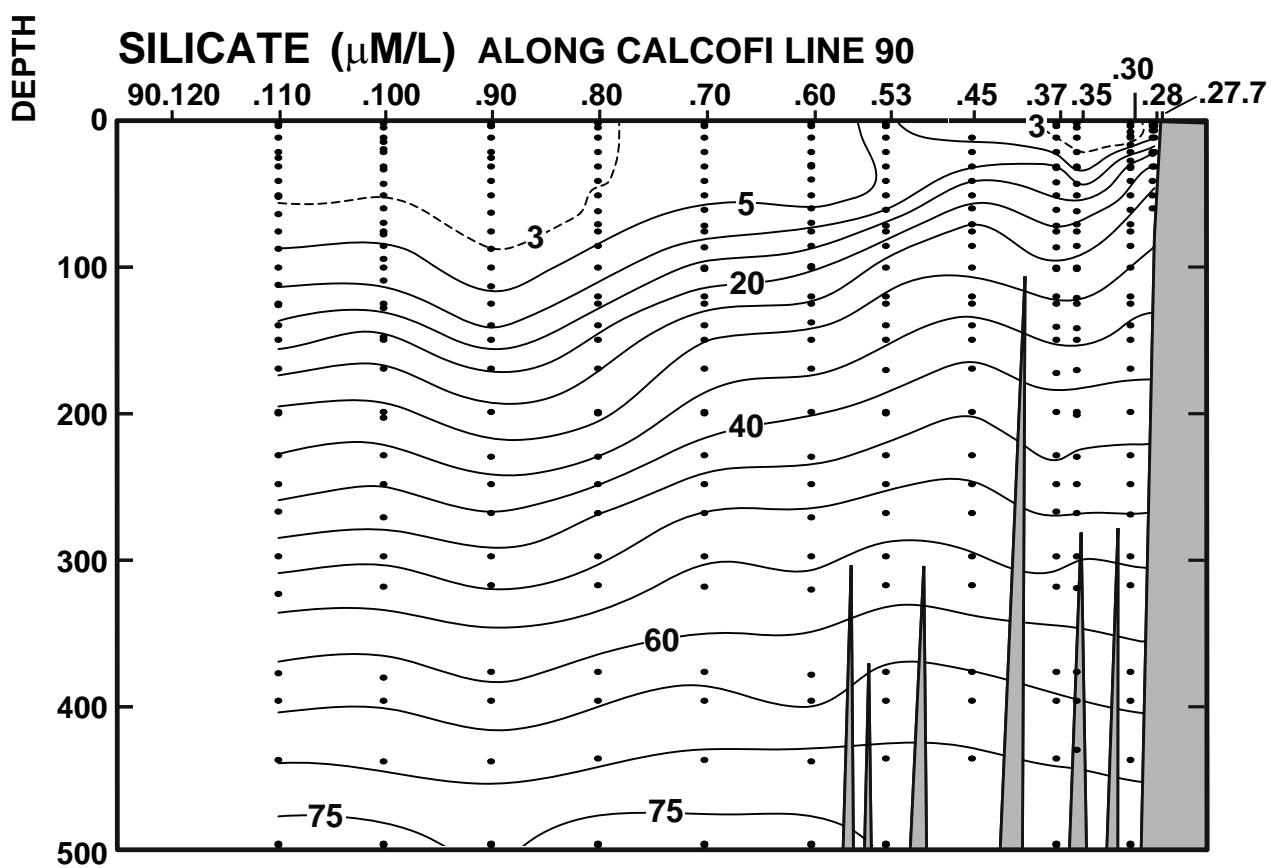
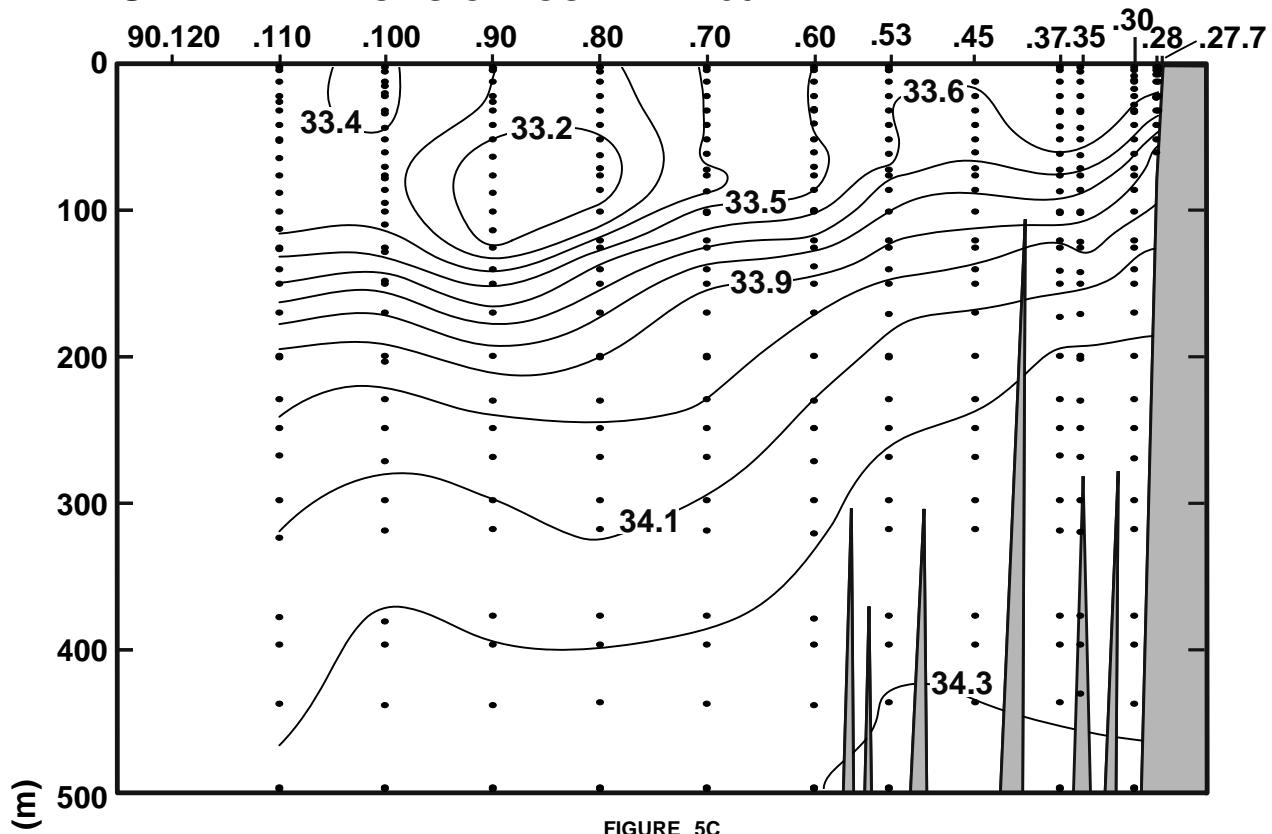
POTENTIAL DENSITY (σ_0) ALONG CALCOFI LINE 90



CALCOFI CRUISE 1304

06 - 08, 10, 13 - 14 April 2013

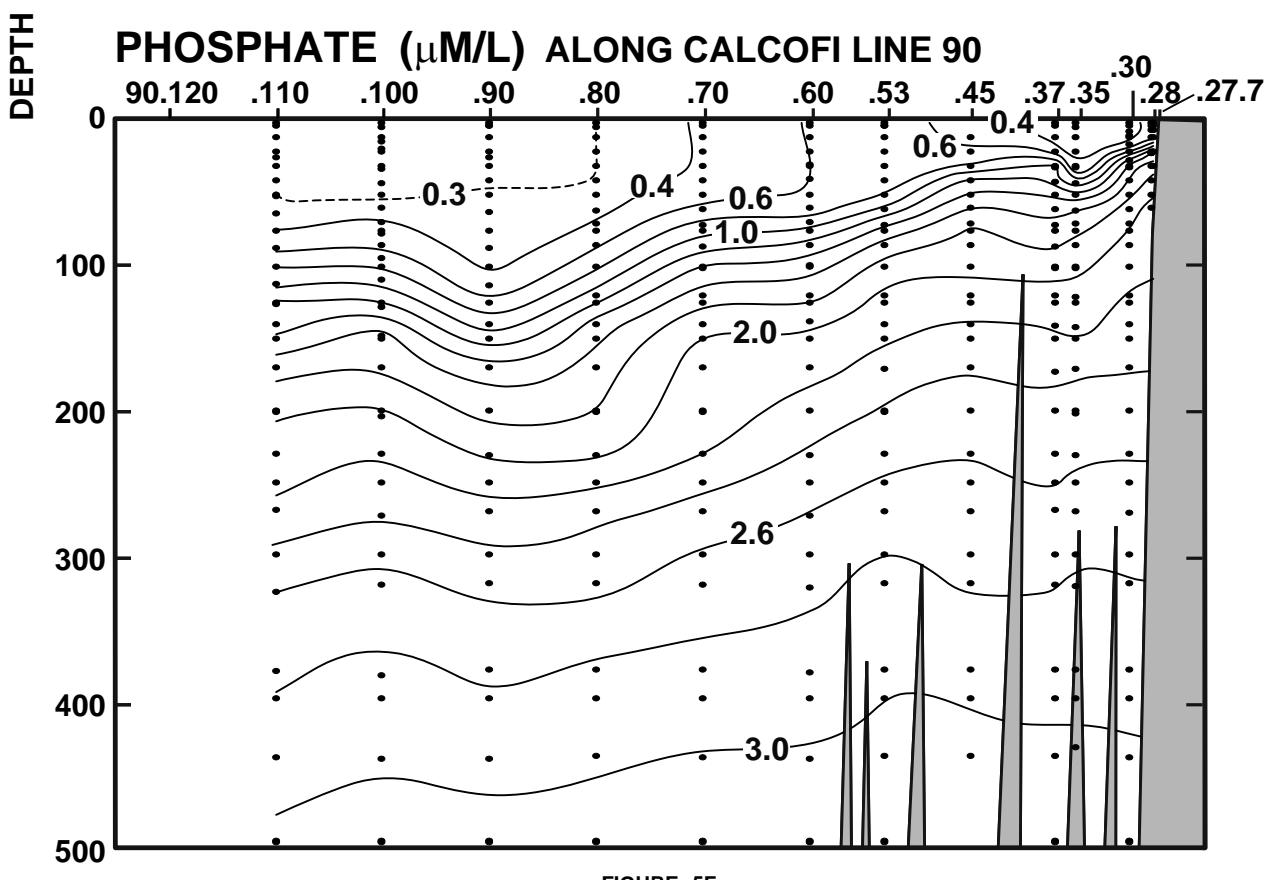
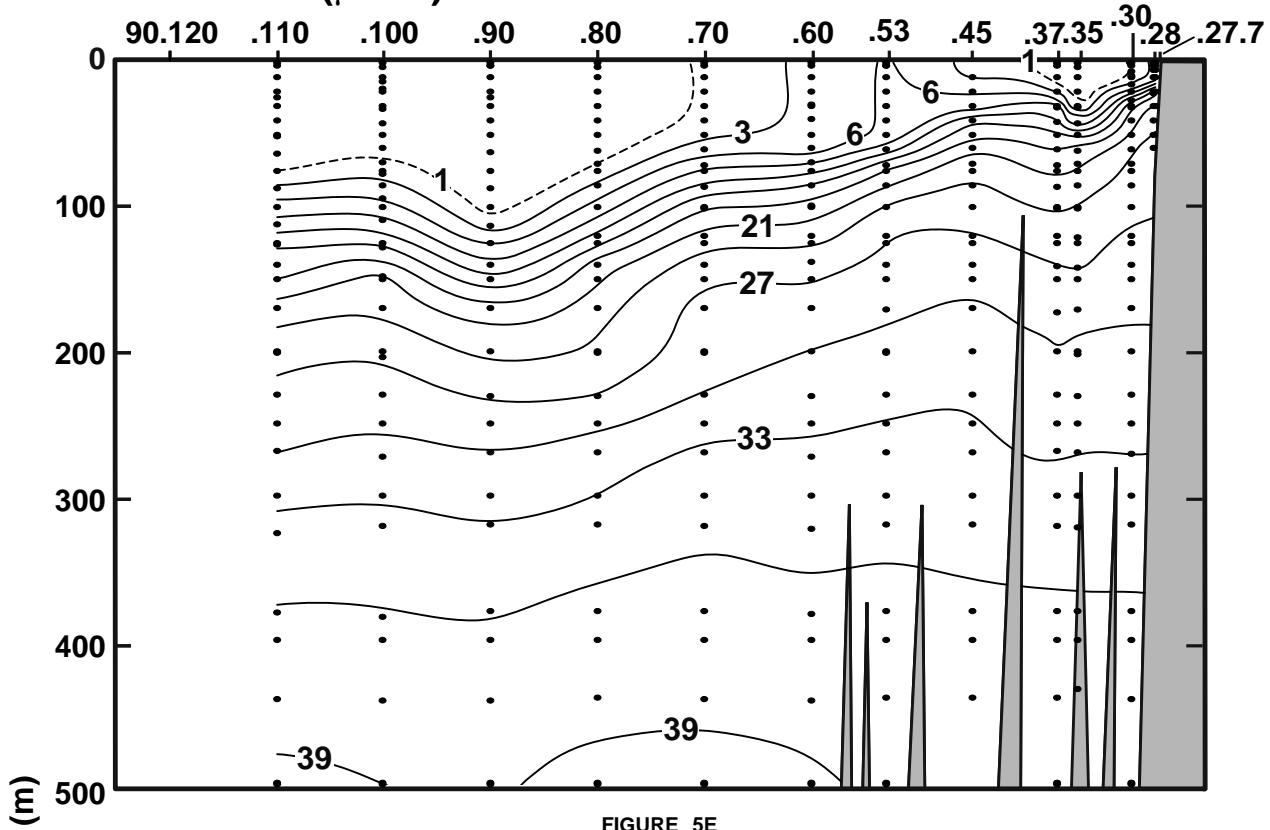
SALINITY ALONG CALCOFI LINE 90



CALCOFI CRUISE 1304

06 - 08, 10, 13-14 April 2013

NITRATE ($\mu\text{M/L}$) ALONG CALCOFI LINE 90



CALCOFI CRUISE 1304

06 - 08, 10, 13 - 14 April 2003

CHLOROPHYLL-a ($\mu\text{g/L}$) ALONG CALCOFI LINE 90

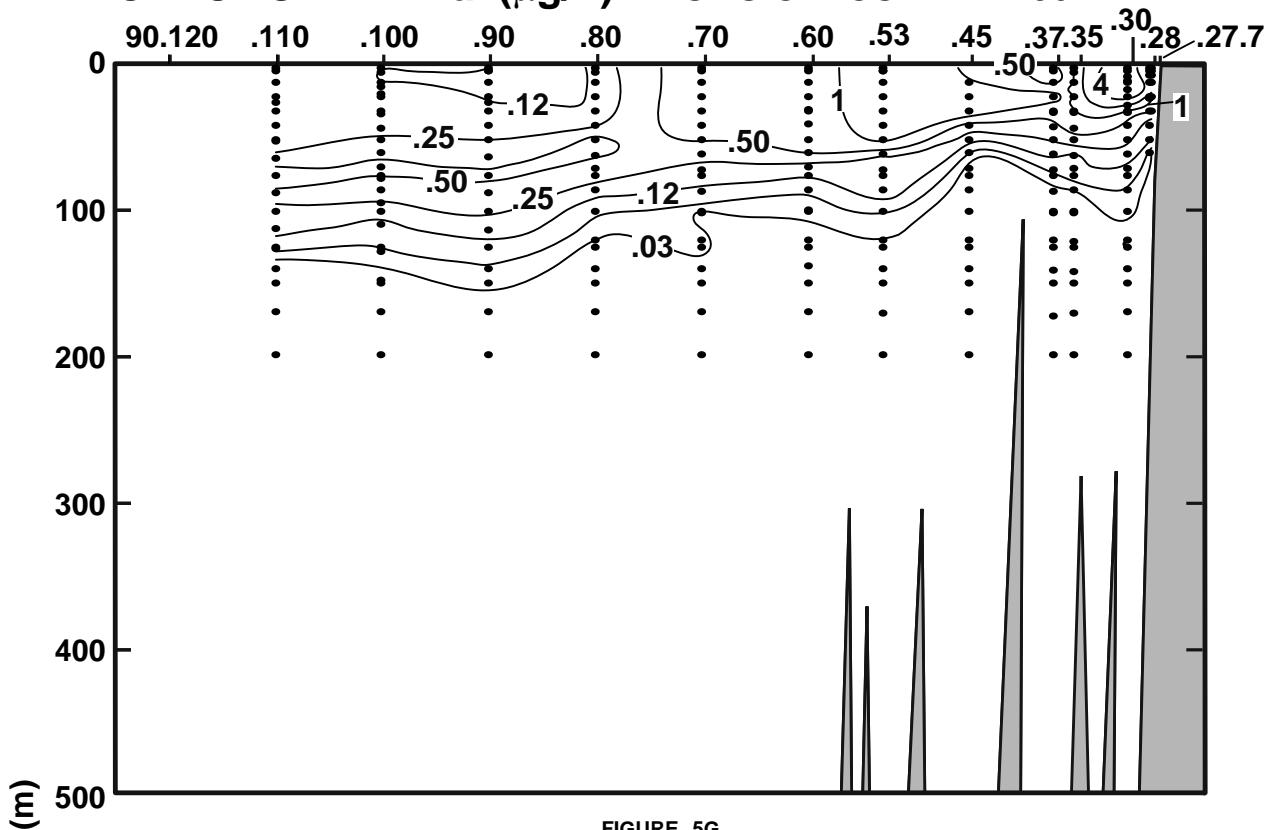


FIGURE 5G

OXYGEN SATURATION (%) ALONG CALCOFI LINE 90

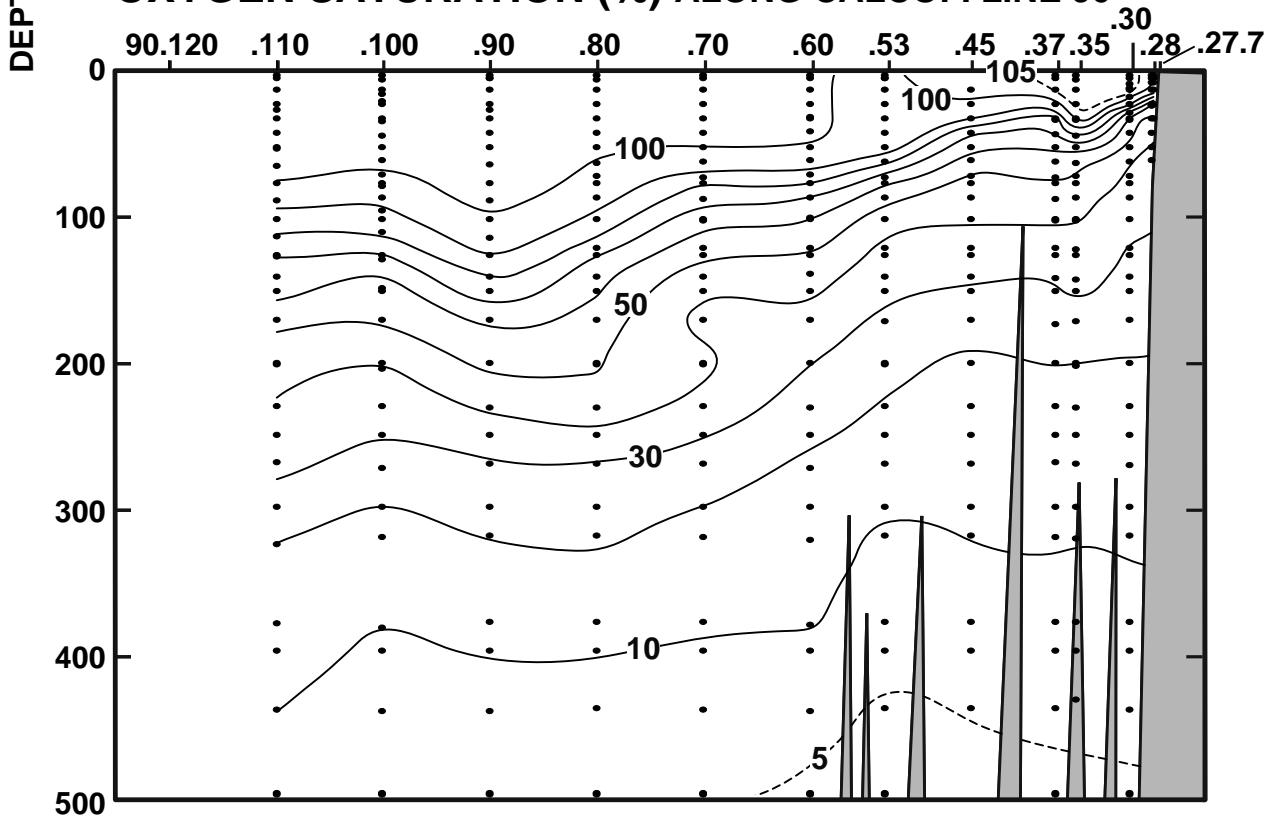


FIGURE 5H

CALCOFI CRUISE 1304

8 - 9, 10, 13 - 14 April 2013

OXYGEN (mL/L) ALONG CALCOFI LINE 90

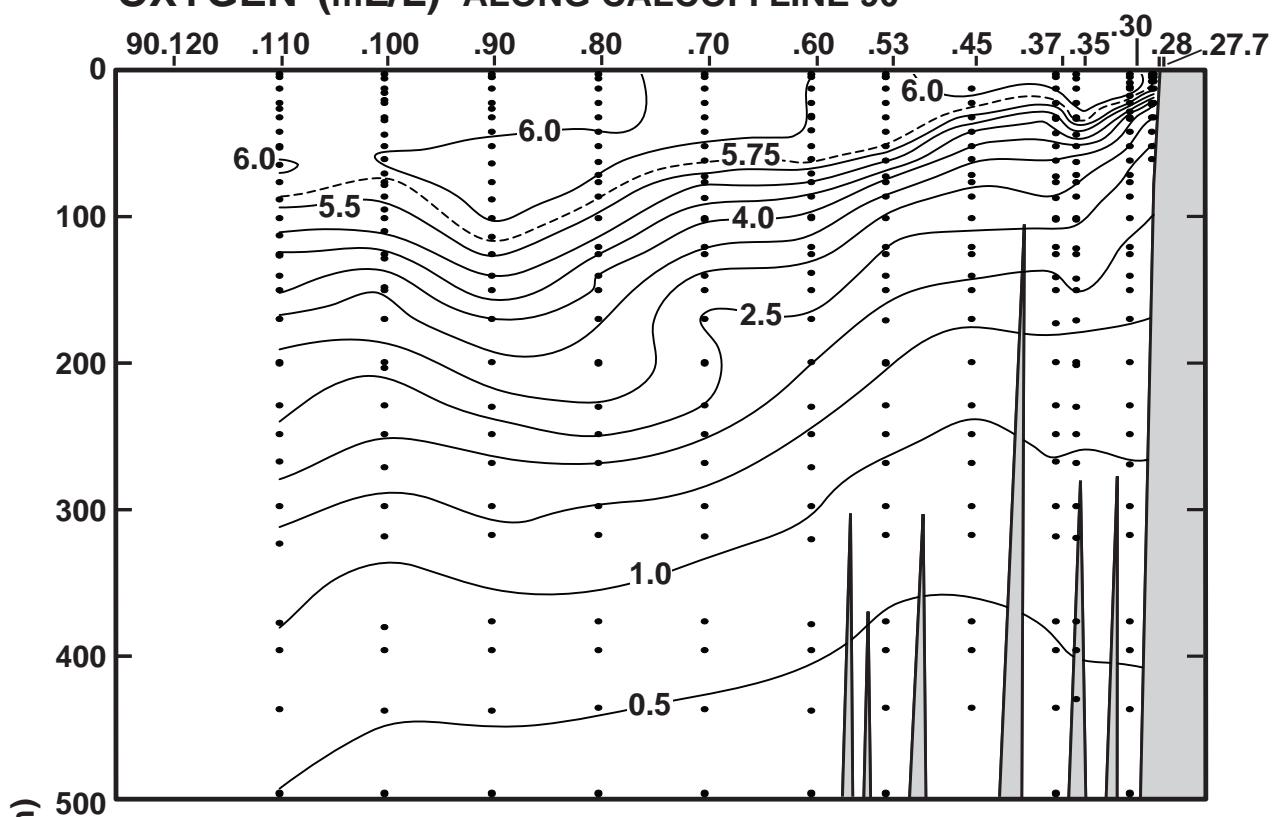


FIGURE 5I

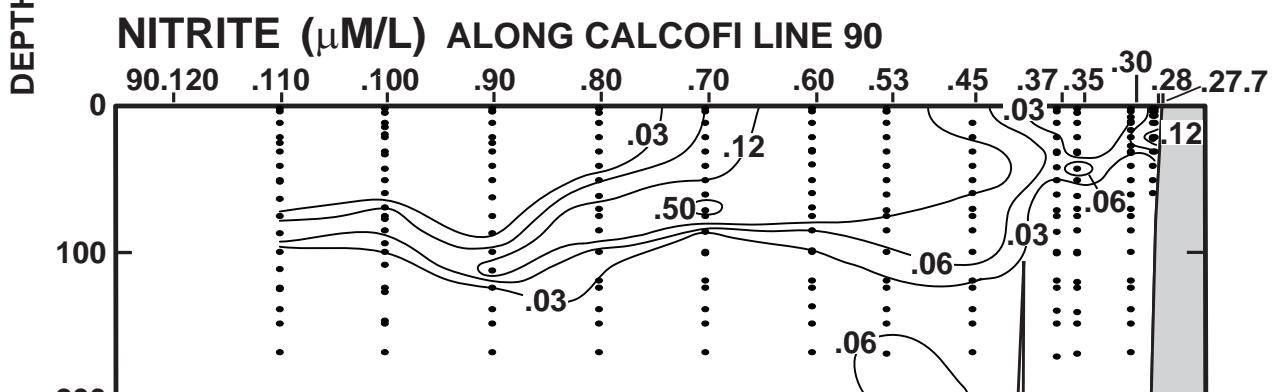


FIGURE 5J

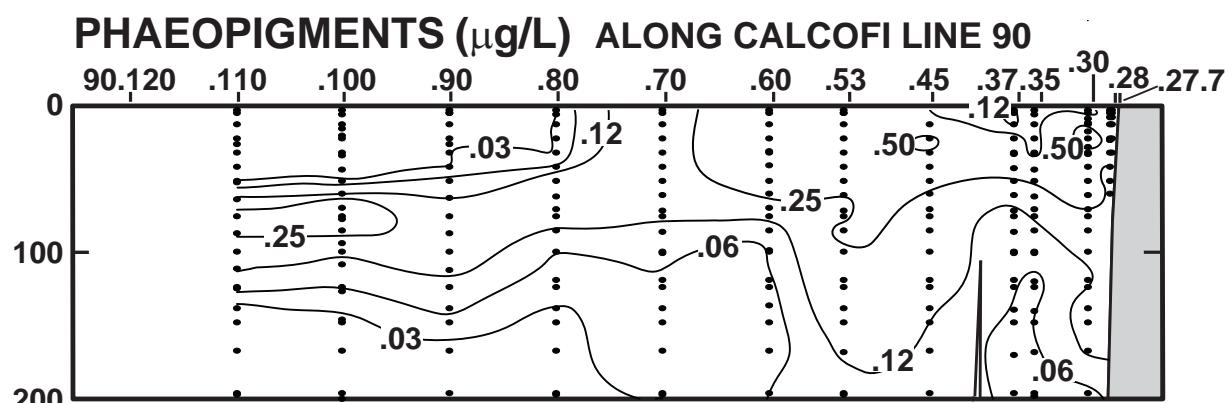


FIGURE 5K

PERSONNEL

CalCOFI Cruise 1304

SHIP'S CAPTAIN

Sirois, Scott, FSV Bell M. Shimada

PERSONNEL PARTICIPATING IN THE COLLECTION OF DATA

		Participating (Leg)
Hays, Amy (Chief Scientist)	Fishery Biologist, NMFS	1-2
Blum, Marguerite	Oceanographer, MBARI	2
Breese, Dawn	Bird Observer, FIAER	1
Debich, Amanda	Marine Mammal Acoustician, MPL	1-2
Dovel, Shonna	Staff Research Associate, SIO	1
Engel, Eric	Volunteer	1
Faber, David	Staff Research Associate, SIO	1-2
Jiorle, Ralph	Staff Research Associate, SIO	1
Kaminski, Marya	Volunteer	1
Manion, Sue	Fishery Biologist, NMFS	1-2
Renfree, Josiah	Fishery Acoustician	1-2
Rodgers-Wolgast, Jennifer	Staff Research Associate, SIO	1-2
Whitaker, Katherine	Marine Mammal Observer, MPL	1-2
Wilkinson, James	Staff Research Associate, SIO	1
Wolgast, David	Staff Research Associate, SIO	1

San Diego to Avila Beach, California, 6 - 23 April 2013

Avila Beach to San Francisco, California, 23 - 30 April 2013

RV BELL M SHIMADA

CALCOFI CRUISE 1304

STATION 63.3 52.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD			
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	THETA	SV	DYN	HT	OXYGEN	OXYGEN	OXY	SI03	P04	N03	N02	NH4	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C							ml/L	μmol/Kg	PCT	μM	μM	μM	μM	μM	μg/L	μg/L	db	
37	18.6 N	122 37.2 W	30/04/2013	0127	UTC	91 m	330	17 kn	320	05 05	1	1011.7 mb	12.9	C	11.4	C	4/8	CS	109	
0	11.47	11.47	33.869	25.810	217.8	0.000	7.76	337.8	125.9								22.06	1.64	0	
2	11.47	11.47	33.869	25.810	217.8	0.004	7.76	337.8	125.9								22.06	1.64	2	09
10	11.46	11.45	33.871	D 25.815	217.6	0.022	7.73	D 336.3	D 125.3								22.48	1.96	10	08
20	11.28	11.28	33.875	D 25.850	214.5	0.044	7.52	327.2	121.4								21.95	1.75	20	07
30	10.15	10.14	33.868	D 26.045	196.1	0.064	7.58	329.7	119.4								22.98	1.79	30	06
40	9.23	9.22	33.911	D 26.230	178.7	0.083	3.91	D 170.2	D 60.4								2.58	0.78	40	05
49	8.64	8.63	34.004	D 26.398	163.0	0.099	2.53	110.0	38.6								1.71	0.80	49	04
50	ISL	8.62 D	8.61	34.007	D 26.403	162.5	0.100	2.41	D 104.9	D 36.8							1.61	0.81	50	
61	8.40	8.39	34.031	D 26.454	157.8	0.118	1.94	84.4	29.4								0.50	0.86	62	03
70	8.37	8.36	34.034	D 26.462	157.3	0.132	1.83	79.4	27.7								0.45	1.07	71	02
75	ISL	8.36 D	8.36	34.035	D 26.464	157.2	0.140	1.85	D 80.6	D 28.1							0.46	1.03	76	
80	8.37	8.36	34.031	D 26.461	157.6	0.147	1.78	77.6	27.1								0.48	0.99	81	01

D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED 02;

RV BELL M SHIMADA

CALCOFI CRUISE 1304

STATION 63.3 70.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD				
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	THETA	SV	DYN	HT	OXYGEN	OXYGEN	OXY	SI03	P04	N03	N02	NH4	CHL-A	PHAEAO	PRES	SAMP	
m	DEG C	DEG C							ml/L	μmol/Kg	PCT	μM	μM	μM	μM	μM	μg/L	μg/L	db		
36	42.5 N	123 55.0 W	29/04/2013	0143	UTC	3907 m	330	23 kn	320	08 08	1	1016.7 mb	13.0	C	11.8	C	3/8	CS	106		
0	11.25	11.25	33.431	25.510	246.2	0.000	6.61	287.7	106.4								1.75	0.51	0		
2	11.25	11.25	33.431	25.510	246.3	0.005	6.61	287.7	106.4								1.75	0.51	2	12	
10	11.25	11.25	33.426	D 25.506	246.9	0.025	6.60	287.4	106.3								1.74	0.51	10	11	
20	11.26	11.25	33.426	D 25.505	247.2	0.050	6.60	287.4	106.3								1.73	0.49	20	10	
30	11.24	11.24	33.425	D 25.508	247.3	0.075	6.58	286.6	105.9								1.80	0.53	30	09	
50	10.48	10.48	33.557	D 25.745	225.1	0.122	5.55	241.4	87.9								0.44	0.44	50	08	
74	9.82	9.81	33.670	D 25.946	206.5	0.175	4.27	185.7	66.7								0.17	0.27	75	07	
75	ISL	9.65 D	9.65	33.694	D 25.993	202.1	0.177	3.89	D 169.4	D 60.6							0.17	0.27	76		
99	9.12	9.11	33.800	D 26.164	186.3	0.224	2.80	124.4	44.0								0.04	0.24	100	06	
100	ISL	9.07 D	9.06	33.827	D 26.193	183.6	0.225	2.68	D 116.6	D 41.2							0.04	0.23	101		
125	ISL	8.82 D	8.81	33.912	D 26.299	174.0	0.270	2.40	D 104.3	D 36.7							0.03	0.20	126		
150	8.41	8.40	33.947	D 26.390	165.7	0.313	2.56	111.5	38.9								0.03	0.16	151	05	
199	8.05	8.03	34.035	D 26.515	154.7	0.392	1.95	84.9	29.4								0.01	0.13	201	04	
200	ISL	8.01 D	7.99	34.037	D 26.522	154.1	0.394	1.93	D 84.1	D 29.1								0.01	0.13	202	
250	ISL	7.61 D	7.59	34.094	D 26.627	144.9	0.469	1.39	D 60.3	D 20.6										252	
300	7.29	7.26	34.132	D 26.703	138.4	0.541	1.05	D 46.6	D 15.9										302	03	
400	6.26	6.22	34.149	D 26.856	124.7	0.673	0.75	32.5	10.8										403	02	
500	ISL	5.82 D	5.77	34.229	D 26.977	114.3	0.794	0.40	D 17.6	D 5.8									504		
517	5.63	5.59	34.235	D 27.004	111.7	0.808	0.35	15.4	5.0										522	01	

D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED 02;

RV BELL M SHIMADA

CALCOFI CRUISE 1304

STATION 63.3 80.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD			
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	THETA	SV	DYN	HT	OXYGEN	OXYGEN	OXY	SI03	P04	N03	N02	NH4	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C							ml/L	μmol/Kg	PCT	μM	μM	μM	μM	μM	μg/L	μg/L	db	
36	22.5 N	124 38.2 W	28/04/2013	1916	UTC	4178 m	350	22 kn	340	06 07	1	1022.2 mb	12.8	C	11.3	C	9/9	0 m	105	
0	11.20	11.20	33.159	25.307	265.5	0.000	6.76	294.4	108.5								3.36	0.86	0	
2	11.20	11.20	33.159	25.307	265.6	0.005	6.76	294.4	108.5								3.36	0.86	2	12
9	11.21	11.21	33.161	D 25.307	265.8	0.024	6.77	294.9	108.7								3.55	0.89	9	11
10	ISL	11.20 D	11.20	33.161	D 25.309	265.7	0.027	6.77	D 293.3	D 108.1							3.54	0.89	10	
20	11.18	11.17	33.166	D 25.318	265.1	0.053	6.77	295.0	108.7								3.49	0.88	20	10
30	11.18	11.18	33.170	D 25.320	265.1	0.080	6.73	293.1	108.0								3.69	0.89	30	09
50	10.48	10.48	33.197	D 25.465	251.7	0.132	5.89	256.3	93.1								0.40	0.46	50	08
75	9.73	9.73	33.493	D 25.823	218.2	0.192	4.67	203.4	72.8								0.08	0.28	76	07
100	9.60	9.59	33.498	D 25.985	203.4	0.245	3.56	155.1	55.4								0.07	0.26	101	06
125	ISL	9.15 D	9.13	33.836	D 26.187	184.6	0.294	2.61	D 113.8	D 40.3							0.06	0.27	126	
150	ISL	8.88 D	8.87	33.954	D 26.323	172.3	0.339	2.05	D 89.4	D 31.5							0.04	0.28	151	
151	8.87	8.86	33.955	D 26.325	172.0	0.340	2.08	90.5	31.9								0.04	0.28	152	05
200	ISL	8.25 D	8.23	34.046	D 26.493	156.9	0.422	1.75	D 76.0	D 26.4							0.03	0.21	202	
250	ISL	7.64 D	7.62	34.065	D 26.599	147.5	0.498	1.56	D 67.8	D 23.2									252	
300	6.66	6																		

RV BELL M SHIMADA

CALCOFI CRUISE 1304

STATION 66.7 60.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD		
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SV	DYN	HT	OXYGEN	OXYGEN	OXY	S103	P04	N03	N02	NH4	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C		THETA				ml/L	μmol/Kg	PCT	μM	μM	μM	μM	μM	μg/L	μg/L	db	
0	12.36	12.36	33.408	25.285	267.7	0.000	6.46	281.4	106.5							1.01	0.32	0	
2	12.36	12.36	33.408	25.285	267.7	0.005	6.46	281.4	106.5							1.01	0.32	2 12	
4	12.35	12.35	33.410	25.288	267.5	0.011	6.44	280.6	106.2							0.98	0.29	4 11	
10	12.24	12.24	33.413	25.312	265.4	0.027	6.44	280.6	105.9							0.98	0.37	10 10	
19	11.47	11.46	33.473	25.504	247.3	0.050	6.25	272.1	101.1							1.44	0.67	19 09	
20 ISL	11.45 D	11.45	33.477	25.510	246.8	0.053	6.19	D269.7	D100.2							1.42	0.67	20	
30	11.23	11.23	33.494	25.563	242.0	0.077	6.11	266.1	98.4							1.30	0.61	30 08	
40	11.08	11.08	33.522	25.612	237.6	0.102	5.97	260.1	95.9							0.96	0.55	40 07	
50 ISL	10.85 D	10.85	33.572	25.692	230.2	0.125	5.81	D253.0	D92.8							0.65	0.43	50	
60	10.53	10.52	33.594	25.767	223.3	0.148	5.61	244.0	88.9							0.33	0.30	61 06	
75 ISL	10.37 D	10.36	33.610	25.807	219.8	0.182	5.35	D232.9	D84.6							0.24	0.27	76	
79	10.27	10.26	33.617	25.830	217.8	0.190	5.18	225.4	81.7							0.22	0.26	80 05	
99	9.78	9.77	33.820	26.071	195.2	0.232	4.38	190.6	68.4							0.44	0.38	100 04	
100 ISL	9.79 D	9.77	33.819	D 26.070	195.4	0.234	4.31	D187.6	D 67.4							0.43	0.38	101	
125 ISL	9.18 D	9.17	33.899	D 26.232	180.4	0.282	3.29	D143.3	D 50.8							0.30	0.32	126	
149	8.95	8.93	33.940	D 26.302	174.2	0.324	2.91	126.5	44.6							0.17	0.26	150 03	
150 ISL	8.93 D	8.91	33.941	D 26.305	173.9	0.326	2.88	D125.2	D 44.2							0.17	0.26	151	
199	8.10	8.08	34.035	D 26.507	155.5	0.408	1.94	D 84.6	D 29.3							0.01	0.11	201 02	
200 ISL	8.10 D	8.08	34.040	D 26.511	155.1	0.409	1.92	D 83.6	D 28.9							0.01	0.11	202	
250 ISL	7.57 D	7.55	34.091	D 26.629	144.6	0.485	1.40	D 60.9	D 20.9									252	
300 ISL	7.03 D	7.00	34.107	D 26.718	136.7	0.556	1.15	D 50.2	D 17.0									302	
400 ISL	6.38 D	6.34	34.181	D 26.867	123.8	0.687	0.62	D 27.0	D 9.0									403	
500 ISL	5.72 D	5.68	34.250	D 27.006	111.5	0.806	0.34	D 14.7	D 4.8									504	
514	5.67	5.63	34.249	27.011	111.1	0.825	0.34	D 14.8	D 4.8							519	01		

D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED 02;

RV BELL M SHIMADA

CALCOFI CRUISE 1304

STATION 66.7 70.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD		
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SV	DYN	HT	OXYGEN	OXYGEN	OXY	S103	P04	N03	N02	NH4	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C		THETA				ml/L	μmol/Kg	PCT	μM	μM	μM	μM	μM	μg/L	μg/L	db	
0	13.40	13.40	33.173	24.898	304.5	0.000	6.25	D272.1	D105.1							0.54	0.10	0	
2	13.40	13.40	33.173	24.898	304.5	0.006	6.25	D272.1	D105.1							0.54	0.10	2 12	
5	13.40	13.40	33.172	D 24.899	304.5	0.015	6.24	D271.7	D104.9							0.45	0.07	5 11	
10	12.94	12.94	33.182	D 24.997	295.3	0.031	6.25	D272.3	D104.1								10	10	
19	12.23	12.23	33.199	D 25.149	281.1	0.056	6.31	D274.9	D103.6							0.64	0.13	19 09	
20 ISL	12.20 D	12.19	33.222	D 25.173	278.9	0.059	6.31	D274.8	D103.5							0.65	0.14	20	
30	11.99	11.99	33.348	D 25.310	266.1	0.087	6.22	D270.8	D101.6							0.77	0.22	30 08	
40	11.80	11.80	33.382	D 25.372	260.5	0.113	6.17	268.7	100.5							0.63	0.20	40 07	
50 ISL	11.82 D	11.81	33.456	D 25.427	255.5	0.139	6.09	D265.2	D 99.3							0.52	0.24	50	
60	11.73	11.73	33.497	D 25.475	251.2	0.165	6.03	262.4	98.1							0.41	0.28	61 06	
75 ISL	11.52 D	11.51	33.563	D 25.567	242.9	0.202	5.97	D260.2	D 96.8							0.31	0.30	76	
80	11.11	11.10	33.526	D 25.612	238.6	0.214	5.74	250.0	92.2							0.28	0.31	81 05	
100	9.35	9.34	33.560	D 25.939	207.7	0.259	3.83	166.7	59.2							0.05	0.17	101 04	
125 ISL	9.19 D	9.18	33.757	D 26.119	191.2	0.310	3.12	D135.7	D 48.1							0.03	0.17	126	
150	8.78	8.76	33.864	D 26.269	177.3	0.356	2.85	124.0	43.6							0.02	0.16	151 03	
200	7.94	7.92	33.979	D 26.487	157.3	0.440	2.55	D110.9	D 38.3									202 02	
250 ISL	7.36 D	7.34	34.004	D 26.591	148.1	0.517	2.14	D 93.1	D 31.7									252	
300 ISL	6.87 D	6.84	34.030	D 26.680	140.2	0.590	1.70	D 74.1	D 24.9									302	
400 ISL	6.08 D	6.04	34.077	D 26.822	127.7	0.725	1.05	D 45.5	D 15.1									403	
500 ISL	5.36 D	5.32	34.146	D 26.966	114.8	0.848	0.63	D 27.3	D 8.9									504	
516	5.30	5.25	34.154	26.980	113.5	0.865	0.55	24.0	7.8									521 01	

D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED 02;

RV BELL M SHIMADA

CALCOFI CRUISE 1304

STATION 66.7 80.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD		
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SV	DYN	HT	OXYGEN	OXYGEN	OXY	S103	P04	N03	N02	NH4	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C		THETA				ml/L	μmol/Kg	PCT	μM	μM	μM	μM	μM	μg/L	μg/L	db	
0	13.09	13.09	33.207	24.986	296.1	0.000	6.28	273.8	105.1							0.41	0.10	0	
2 A	13.09	13.09	33.207	24.986	296.1	0.006	6.28	273.8	105.1							0.41	0.10	2 12	
5 A	13.06	13.06	33.207	D 24.993	295.6	0.015	6.30	274.4	105.2							0.44	0.10	5 11	
10 A	12.76	12.75	33.206	D 25.052	290.1	0.029	6.35	276.5	105.4							0.41	0.09	10 10	
20 A	12.19	12.19	33.211	D 25.165	279.6	0.058	6.28	273.5	103.0							0.47	0.16	20 09	
30 A	11.95	11.95	33.365	D 25.330	264.2	0.085	6.40	278.8	104.6							0.76	0.27	30 08	
40 A	11.41	11.41	33.371	D 25.435	254.4	0.111	6.28	273.5	101.4</td										

RV BELL M SHIMADA

CALCOFI CRUISE 1304

STATION 70.0 51.0

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

RV BELL M SHIMADA

CALCOFI CRUISE 1304

STATION 70.0 60.0

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

RV BELL M SHIMADA

CALCOFI CRUISE 1304

STATION 70.0 70.0

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

RV BELL M SHIMADA

CALCOFI CRUISE 1304

STATION 70.0 80.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD				
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXYGEN	OXY	SI03	P04	N03	N02	NH4	CHL-A	PHAEAO	PRES	SAMP	
m	DEG C	DEG C		THETA		ml/L	μmol/Kg	PCT	μM	μM	μM	μM	μM	μM	μg/L	μg/L	db		
35	13.1 N	123 46.6 W	25/04/2013	1631	UTC	4098 m	120	05 kn	120 01 06	2	1018.2	mb	13.9	C	13.1	C	16 m	7/8	ST 083
0	12.46	12.46	33.288	25.172	278.4	0.000	6.34	D306.9	D104.6							0.54	0.12	0	
2	12.46	12.46	33.288	25.173	278.4	0.006	6.34	D276.0	D104.6							0.54	0.12	2 13	
9	12.35	12.34	33.276	D 25.186	277.4	0.025	6.35	276.8	104.6							0.66	0.16	9 12	
10	ISL	12.34	D 12.33	33.275	D 25.187	277.3	0.028	6.37	D277.7	D104.9						0.68	0.16	10	
19	12.11	12.11	33.269	D 25.226	273.8	0.053	6.39	278.1	104.6							0.78	0.22	19 11	
20	ISL	12.10	D 12.10	33.270	D 25.228	273.6	0.056	6.37	D277.6	D104.4						0.78	0.22	20	
29	12.06	12.06	33.274	D 25.240	272.7	0.081	6.33	275.6	103.5							0.75	0.24	29 10	
30	ISL	12.06	D 12.06	33.277	D 25.241	272.6	0.083	6.32	D275.2	D103.4						0.75	0.25	30	
50	11.84	11.83	33.305	D 25.306	267.0	0.138	6.25	272.4	101.9							0.77	0.34	50 09	
74	10.45	10.44	33.387	D 25.619	237.7	0.199	5.53	240.8	87.5							0.12	0.20	75 08	
75	ISL	10.45	D 10.44	33.391	D 25.623	237.3	0.201	5.20	D226.4	D 82.2						0.12	0.20	76	
99	9.36	9.35	33.442	D 25.845	216.6	0.256	4.50	195.7	69.4							0.05	0.14	100 07	
100	ISL	9.33	D 9.32	33.459	D 25.863	214.9	0.258	4.46	D194.3	D 68.9						0.05	0.14	101	
125	ISL	8.80	D 8.78	33.636	D 26.087	194.1	0.310	4.22	D183.5	D 64.4						0.04	0.13	126	
150	8.60	8.58	33.835	D 26.274	176.8	0.356	3.34	D146.4	D 50.9						0.02	0.12	151 06		
200	8.02	8.00	33.974	D 26.472	158.8	0.441	2.68	116.7	40.3						0.02	0.15	202 05		
250	ISL	7.21	D 7.19	33.990	D 26.600	147.1	0.518	2.15	D 93.7	D 31.8								252	
300	6.60	6.57	34.011	D 26.701	138.0	0.590	1.75	76.0	25.4									302 04	
399	5.81	5.78	34.082	D 26.859	124.0	0.721	0.97	42.2	13.9									402 02	
400	ISL	5.81	D 5.77	34.077	D 26.856	124.2	0.722	0.95	D 41.2	D 13.5									403
500	ISL	5.30	D 5.25	34.167	D 26.990	112.4	0.842	0.54	D 23.3	D 7.6									504
515		5.29	5.25	34.192	27.011	110.6	0.853	0.46	20.1	6.5								519 01	

D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CTD 02;

RV BELL M SHIMADA

CALCOFI CRUISE 1304

STATION 70.0 90.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD				
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXYGEN	OXY	SI03	P04	N03	N02	NH4	CHL-A	PHAEAO	PRES	SAMP	
m	DEG C	DEG C		THETA		ml/L	μmol/Kg	PCT	μM	μM	μM	μM	μM	μM	μg/L	μg/L	db		
34	52.9 N	124 28.8 W	25/04/2013	2350	UTC	4347 m	110	07 kn	120 02 08	1	1019.6	mb	14.7	C	13.4	C	12 m	4/8	ST 091
0	13.33	13.33	32.951	24.740	319.5	0.000	6.33	275.8	106.2							0.57	0.10	0	
1	13.33	13.33	32.951	24.740	319.5	0.003	6.33	275.8	106.2							0.57	0.10	1 12	
9	12.45	12.45	32.947	D 24.911	303.5	0.028	6.38	277.8	105.0							0.63	0.11	9 11	
10	ISL	12.40	D 12.40	32.947	D 24.920	302.7	0.031	6.40	D278.8	D 105.3						0.64	0.12	10	
20	12.29	12.29	32.946	D 24.941	300.9	0.062	6.34	D276.3	D 104.1							0.76	0.19	20 10	
29	12.25	12.24	32.945	D 24.949	300.4	0.089	6.32	275.5	103.7							0.86	0.25	29 09	
30	ISL	12.23	D 12.23	32.946	D 24.952	300.1	0.092	6.33	D275.7	D 103.7						0.85	0.25	30	
50	11.84	11.84	32.950	D 25.029	293.3	0.152	6.23	271.6	101.3							0.67	0.26	50 08	
74	11.44	11.43	33.017	D 25.156	281.8	0.222	6.15	267.7	99.1							0.33	0.19	75 07	
75	ISL	11.44	D 11.43	33.017	D 25.156	281.9	0.224	6.10	D265.7	D 98.3						0.33	0.19	76	
99	11.16	11.14	33.170	D 25.327	266.2	0.290	5.76	250.8	92.4							0.23	0.16	100 06	
100	ISL	11.17	D 11.15	33.179	D 25.333	265.6	0.293	5.68	D247.6	D 91.2						0.23	0.16	101	
125	ISL	10.31	D 10.29	33.184	D 25.488	251.3	0.358	5.41	D235.8	D 85.3						0.13	0.12	126	
150	9.49	9.47	33.487	D 25.861	216.2	0.417	4.22	183.5	65.3							0.02	0.08	151 05	
200	8.46	8.44	33.891	D 26.340	171.5	0.515	3.66	159.1	55.5							0.02	0.06	202 04	
250	ISL	8.17	D 8.15	34.069	D 26.525	154.9	0.597	1.83	D 79.5	D 27.6									252
300	7.25	7.22	34.040	D 26.635	144.7	0.673	1.84	79.9	27.1									302 03	
400	6.43	6.39	34.095	D 26.792	130.9	0.812	1.05	45.8	15.3									403 02	
500	ISL	5.57	D 5.53	34.140	D 26.937	117.8	0.937	0.65	D 28.4	D 9.3									504
515		5.56	5.52	34.156	26.950	116.7	0.946	0.59	25.8	8.4								519 01	

D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED 02;

RV BELL M SHIMADA

CALCOFI CRUISE 1304

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				
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXYGEN	OXY	SI03	P04	N03	N02	NH4	CHL-A	PHAEAO	PRES	SAMP	
m	DEG C	DEG C		THETA		ml/L	μmol/Kg	PCT	μM	μM	μM	μM	μM	μM	μg/L	μg/L	db		
35	5.6 N	120 46.7 W	23/04/2013	1642	UTC	63 m	080	06 kn	340 01 08	4	1015.7	mb	12.5	C	11.3	C	05 m	0/8	071
0	11.13	11.13	33.868	25.872	211.9	0.000	5.24	228.3	84.5	20.0	1.34	16.0	0.17	0.18	12.78	0.54	0		
2	A	11.13	11.13	33.868	25.872	211.9	0.004	5.24	228.3	84.5	20.0	1.34	16.0	0.17	0.18	12.78	0.54	2 11	
3	A	11.09	11.09	33.867	25.878	211.3	0.006	5.25	228.6	84.5	20.4	1.38	16.2	0.17	0.23	11.76	1.43	3 10	
4	A	10.78	10.78	33.860	25.927	206.7	0.008	4.82	209.7	77.0	22.4	1.53	18.3	0.17	0.17	9.62	1.12	4 09	
8	A	10.33	10.33	33.865	26.009	199.0	0.017	4.38	190.6	69.3	24.2	1.69	20.2	0.16	0.14	7.45	0.87	8 08	
10	ISL	10.14	D 10.14	33.882	D 26.055	194.7	0.021	4.39	D191.1	D 69.2	24.1	1							

RV BELL M SHIMADA

CALCOFI CRUISE 1304

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			
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	THETA	SV	DYN HT	OXYGEN	OXYGEN	OXY	S103	P04	N03	N02	NH4	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C						ml/L	μmol/Kg	PCT	μM	μM	μM	μM	μM	μg/L	μg/L	db	
35	1.1 N	120 55.3 W	23/04/2013	0930	UTC	246 m	160 07 kn	6.04	262.9	98.0	16.6	1.31	14.1	0.19	0.23	4.42	0.92	0	
0	11.55	11.55	33.744	25.698	228.4	0.000	6.04	262.9	98.0	16.6	1.31	14.1	0.19	0.23	4.42	0.92	2	15	
2	11.55	11.55	33.744	25.698	228.4	0.005	6.04	262.9	98.0	16.6	1.31	14.1	0.19	0.23	4.42	0.92	2	15	
10	11.15	11.15	33.744	25.771	221.7	0.023	5.46	237.7	87.9	18.2	1.46	16.3	0.20	0.23	2.43	0.60	10	14	
20	10.88	10.88	33.763	25.835	215.9	0.045	5.12	222.8	81.9	19.9	1.58	17.8	0.21	0.20	1.96	0.64	20	13	
30	10.70	10.70	33.804	25.899	210.1	0.066	4.83	210.4	77.1	22.5	1.70	19.4	0.18	0.16	2.47	0.75	30	12	
40	10.30	10.30	33.848	26.003	200.4	0.086	4.12	179.3	65.1	25.4	1.85	21.9	0.18	0.17	2.38	0.65	40	11	
50	10.03	10.02	33.888	26.081	193.2	0.106	3.80	165.4	59.8	27.2	1.95	22.9	0.19	0.46	1.39	0.55	50	10	
60	9.93	9.93	33.917	26.121	189.7	0.125	3.76	163.5	58.9	28.3	1.98	23.2	0.18	0.66	1.65	0.77	60	09	
71	9.68	9.67	33.926	26.169	185.2	0.146	3.16	137.6	49.3	30.1	2.09	24.9	0.18	0.43	0.88	0.59	72	08	
75 ISL	9.65 D	9.64	33.935 D	26.181	184.2	0.154	2.96	0128.6 D	46.1	30.4	2.11	25.3	0.18	0.37	0.73	0.57	76		
86	9.60	9.59	33.939	26.193	183.3	0.173	2.85	124.1	44.4	31.2	2.17	26.3	0.17	0.19	0.31	0.50	87	07	
100	9.43	9.42	33.970	26.246	178.6	0.199	2.52	109.8	39.2	34.1	2.25	26.9	0.20	0.39	0.54	0.66	101	06	
120	9.23	9.22	34.001	26.303	173.6	0.234	2.05	89.0	31.6	38.1	2.39	28.1	0.25	0.61	0.42	0.84	121	05	
125 ISL	9.19 D	9.18	34.011 D	26.318	172.3	0.244	1.97	085.7 D	30.4	37.9	2.39	28.2	0.24	0.53	0.39	0.77	126		
139	9.20	9.18	34.021	26.325	172.0	0.267	1.88	81.7	29.0	37.5	2.40	28.5	0.21	0.31	0.29	0.58	140	04	
150 ISL	9.26 D	9.24	34.052 D	26.340	170.7	0.288	1.72	074.6 D	26.5	37.7	2.42	28.9	0.16	0.24	0.21	0.46	151		
173	8.98	8.96	34.094	26.418	163.8	0.324	1.55	67.5	23.9	37.9	2.45	29.7	0.04	0.10	0.02	0.21	174	03	
200 ISL	8.85 D	8.82	34.103 D	26.447	161.6	0.371	1.49	064.6 D	22.8	39.5	2.48	30.0	0.05	0.14	0.03	0.22	202		
202	8.83	8.81	34.099	26.447	161.6	0.371	1.48	64.4	22.7	39.7	2.48	30.0	0.05	0.14	0.03	0.23	204	02	
231	8.38	8.36	34.137	26.546	152.6	0.417	1.40	60.8 D	21.2	48.1	2.67	32.4	0.05	0.09		233	01		

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

RV BELL M SHIMADA

CALCOFI CRUISE 1304

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			
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	THETA	SV	DYN HT	OXYGEN	OXYGEN	OXY	S103	P04	N03	N02	NH4	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C						ml/L	μmol/Kg	PCT	μM	μM	μM	μM	μM	μg/L	μg/L	db	
34	53.4 N	121 11.8 W	23/04/2013	0550	UTC	560 m	150 03 kn	6.29	273.8	103.4	7.8	0.96	9.9	0.14	0.28	3.72	0.84	0	
0	12.15	12.15	33.711	25.560	241.5	0.000	6.29	273.8	103.4	7.8	0.96	9.9	0.14	0.28	3.72	0.84	1	21	
1	12.15	12.15	33.711	25.561	241.5	0.002	6.29	273.8	103.4	7.8	0.96	9.9	0.14	0.28	3.72	0.84	1	21	
10	11.60	11.60	33.714	25.666	231.7	0.024	5.89	256.6	95.8	10.5	1.12	11.9	0.14	0.13	4.82	0.85	10	20	
20	11.10	11.10	33.792	25.817	215.7	0.046	5.24	228.0	84.3	17.1	1.41	16.2	0.15	0.20	5.66	1.25	20	19	
30	10.53	10.53	33.844	25.960	204.3	0.067	4.60	200.2	73.1	22.5	1.74	20.1	0.19	0.79	1.20	0.73	30	18	
40	10.42	10.42	33.852	25.986	202.0	0.088	4.41	192.1	70.0	23.5	1.79	20.6	0.19	0.79	0.99	0.78	40	17	
50	10.39	10.39	33.859	25.997	201.3	0.108	4.30	187.3	68.2	24.3	1.82	21.2	0.20	0.83	0.73	0.65	50	16	
60	10.15	10.14	33.870	26.047	196.6	0.128	3.99	173.7	62.9	25.3	1.87	22.0	0.20	0.83	0.59	0.75	60	15	
70	9.51	9.50	33.869	26.154	186.7	0.147	2.71	117.9	42.1	28.9	2.02	25.7	0.13	0.15	0.17	0.58	71	14	
75 ISL	9.29 D	9.28	33.870 D	26.190	183.3	0.157	2.66	0115.7 D	41.1	29.3	2.03	26.0	0.10	0.11	0.13	0.50	76		
85	9.10	9.09	33.890	26.236	179.1	0.174	2.55	110.8	39.2	30.3	2.04	26.6	0.04	0.03	0.05	0.34	86	13	
100	8.99	8.98	33.955	26.321	171.4	0.202	2.23	97.2	33.4	32.9	2.13	27.7	0.06	0.09	0.04	0.37	101	11	
120	8.97	8.95	34.003	26.347	169.3	0.235	1.99	86.4	30.5	34.9	2.21	28.4	0.06	0.10	0.04	0.37	121	10	
125 ISL	8.94 D	8.92	34.024 D	26.368	167.4	0.244	1.95	084.7 D	29.9	35.4	2.23	28.6	0.06	0.11	0.03	0.35	126		
140	8.82	8.81	34.044	26.402	164.5	0.268	1.81	78.6	27.7	37.0	2.28	29.2	0.06	0.15	0.02	0.28	141	09	
150 ISL	8.81 D	8.79	34.058 D	26.416	163.4	0.286	1.76	76.5 D	26.9	37.7	2.31	29.5	0.07	0.15	0.02	0.25	151		
170	8.77	8.75	34.082	26.441	161.4	0.317	1.59	69.2	24.3	39.1	2.36	30.0	0.09	0.16	0.03	0.19	171	08	
200	8.55	8.53	34.122	26.508	155.7	0.364	1.33	58.0	20.3	42.5	2.47	31.0	0.09	0.09	0.07	0.25	202	07	
232	8.23	8.20	34.157	26.585	148.9	0.413	1.19	51.9	18.0	46.0	2.54	32.0	0.02	0.05		234	06		
250 ISL	8.02 D	8.00	34.168 D	26.625	145.3	0.442	1.10	47.8 D	16.5	47.5	2.57	32.5	0.02	0.05		252			
270	7.99	7.96	34.167	26.630	145.2	0.469	1.09	47.5	16.4	49.1	2.61	33.0	0.02	0.06		272	05		
300 ISL	7.71 D	7.68	34.246 D	26.828	128.2	0.650	0.58	25.4 D	8.6	63.0	2.87	36.9	0.01	0.13	0.04	0.384	303	04	
381	6.95	6.91	34.171	26.783	132.0	0.622	0.82	35.5	12.0	60.4	2.82	36.4	0.00	0.14		403			
441	6.56	6.52	34.220	26.874	124.0	0.698	0.51	22.2	7.4	68.5	2.97	37.9	0.02	0.12		445	02		
500 ISL	6.31 D	6.27	34.259 D	26.939	118.5	0.775	0.39	17.1 D	5.7	75.6	3.06	38.7	0.05	0.18		504			
515	6.14	6.10	34.274	26.972	115.4	0.787	0.34	14.7	4.9	77.5	3.08	38.9	0.06	0.20		519	01		

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

RV BELL M SHIMADA

CALCOFI CRUISE 1304

STATION 76.7 60.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD			
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	THETA	SV	DYN HT	OXYGEN	OXYGEN	OXY	S103	P04	N03	N02	NH4	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C						ml/L	μmol/Kg	PCT	μM	μM	μM	μM	μM	μg/L	μg/L	db	

<tbl_r cells="18" ix="1" maxcspan="2"

RV BELL M SHIMADA

CALCOFI CRUISE 1304

STATION 76.7 70.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD		
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	N03 µM	N02 µM	NH4 µM	CHL-A µg/L	PHAE0 µg/L	PRES db
34 23.6 N	122 16.4 W	22/04/2013	1658	UTC	3988 m	320 07 kn	290 03 08	0	1016.3 mb	13.4 C	13.0 C	20 m	0/8	0/8	064		
0	12.17	12.17	33.406	25.319	264.4	0.000	6.14	267.5	100.9	5.7	0.80	6.3	0.05	0.22	0.75	0.12	0
2 A	12.17	12.17	33.406	25.319	264.4	0.005	6.14	267.5	100.9	5.7	0.80	6.3	0.05	0.22	0.75	0.12	2 21
10 ISL	12.04 D	12.04	33.408 D	25.346	262.2	0.027	6.16	D268.5 D	100.9	5.7	0.80	6.2	0.05	0.20	0.82	0.12	10
13 A	12.04	12.04	33.409	25.347	262.1	0.034	6.15	267.7	100.6	5.7	0.80	6.2	0.05	0.19	0.85	0.12	13 20
16 A	12.05	12.05	33.416	25.350	261.9	0.042	6.14	267.6	100.6	5.7	0.80	6.3	0.05	0.21	0.78	0.13	16 19
20 ISL	12.06 D	12.05	33.415 D	25.350	262.1	0.053	6.16	D268.5 D	101.0	5.7	0.80	6.3	0.05	0.22	0.76	0.18	20
24	12.06	12.05	33.413	25.348	262.3	0.063	6.13	267.0	100.4	5.8	0.80	6.3	0.05	0.22	0.74	0.23	24 18
30 ISL	11.97 D	11.97	33.439 D	25.385	259.0	0.079	6.07	D264.5 D	99.3	6.1	0.85	6.8	0.05	0.32	0.75	0.21	30
32 A	11.97	11.96	33.437	25.383	259.2	0.084	6.05	263.6	98.9	6.2	0.86	7.0	0.05	0.35	0.76	0.20	32 17
40	11.93	11.93	33.436	25.390	258.8	0.105	6.05	263.6	98.9	6.1	0.86	7.0	0.05	0.34	0.79	0.22	40 16
50	11.83	11.83	33.436	25.409	257.3	0.131	5.95	259.0	96.9	6.7	0.89	7.5	0.05	0.35	0.60	0.19	50 15
58 A	11.94	11.93	33.509	25.446	253.9	0.151	5.98	260.3	97.7	6.9	0.93	8.0	0.05	0.56	0.62	0.14	58 14
69 A	11.82	11.81	33.506	25.467	252.2	0.179	5.94	258.7	96.9	7.0	0.95	8.2	0.05	0.57	0.62	0.19	70 13
75 ISL	11.66 D	11.65	33.480 D	25.477	251.4	0.195	5.86	D255.4 D	95.3	7.0	0.95	8.2	0.05	0.55	0.59	0.19	76
85	10.74	10.73	33.419 D	25.594	240.4	0.220	5.30	D230.6 D	84.3							86	12
100	9.52	9.51	33.502	25.866	214.6	0.253	4.23	184.3	65.6	17.8	1.54	18.3	0.00	0.08	0.04	0.07	101 11
120	9.09	9.08	33.712 D	26.099	192.9	0.295	3.80	165.2	58.4	22.4	1.76	21.6	0.00	0.09	0.02	0.06	121 10
125 ISL	9.10 D	9.09	33.737 D	26.118	191.2	0.305	3.65	D159.0 D	56.2	23.7	1.82	22.5	0.00	0.09	0.02	0.08	126
142	8.91	8.90	33.833	26.223	181.6	0.335	3.04	132.5	46.7	28.2	2.02	25.6	0.00	0.08	0.02	0.14	143 09
150 ISL	8.84 D	8.83	33.854 D	26.251	179.1	0.351	3.04	D132.2 D	46.5	29.5	2.05	26.1	0.00	0.08	0.02	0.12	151
171	8.45	8.44	33.950 D	26.387	166.5	0.388	2.77	120.6	42.1	32.8	2.14	27.3	0.00	0.08	0.01	0.08	172 08
200 ISL	7.93 D	7.91	33.992 D	26.499	156.2	0.435	2.53	D110.2 D	38.0	38.2	2.27	29.1	0.00	0.10	0.01	0.07	202
201	7.93	7.91	33.986	26.494	156.7	0.434	2.54	110.4	38.1	38.4	2.27	29.2	0.00	0.10	0.01	0.07	203 07
230	7.55	7.53	34.005	26.565	150.3	0.478	2.14	93.0	31.8	43.8	2.45	31.5	0.00	0.08		232 06	
250 ISL	7.33 D	7.30	34.036 D	26.621	145.2	0.511	1.87	D81.3 D	27.7	48.4	2.56	33.0	0.00	0.08		252	
270	6.87	6.85	34.030	26.679	139.8	0.536	1.71	74.4	25.1	53.1	2.67	34.4	0.00	0.07		272 05	
300 ISL	6.76 D	6.73	34.064 D	26.721	136.2	0.582	1.41	D61.2 D	20.6	57.5	2.78	35.7	0.00	0.09		302	
320	6.43	6.40	34.055	26.758	132.8	0.605	1.33	57.8	19.3	60.4	2.86	36.6	0.00	0.11		323 04	
381	6.05	6.02	34.097	26.841	125.6	0.683	0.92	39.8	13.2	69.2	3.03	38.9	0.00	0.12		384 03	
400 ISL	5.92 D	5.88	34.103 D	26.863	123.6	0.712	0.87	D38.0 D	12.5	71.3	3.07	39.3	0.00	0.12		403	
440	5.69	5.65	34.128	26.911	119.4	0.756	0.70	30.4	9.9	75.9	3.16	40.0	0.00	0.12		444 02	
500 ISL	5.40 D	5.35	34.199 D	27.004	111.2	0.831	0.45	D19.6 D	6.4	83.9	3.28	41.2	0.00	0.13		504	
515	5.37	5.33	34.206	27.013	110.5	0.842	0.39	17.1	5.5	85.9	3.31	41.5	0.00	0.13		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 BELL M SHIMADA

CALCOFI CRUISE 1304

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		
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	N03 µM	N02 µM	NH4 µM	CHL-A µg/L	PHAE0 µg/L	PRES db
34 3.2 N	122 56.4 W	22/04/2013	1015	UTC	4258 m	330 11 kn											063
0	12.55	12.55	33.213	25.097	285.5	0.000	6.23	271.4	103.0	3.5	0.52	2.2	0.10	0.29	0.62	0.12	0
3	12.55	12.55	33.213	25.098	285.6	0.009	6.23	271.4	103.0	3.5	0.52	2.2	0.10	0.29	0.62	0.12	3 20
10	12.55	12.55	33.212	25.096	285.9	0.029	6.19	269.7	102.4	3.5	0.51	2.2	0.10	0.24	0.45	0.10	10 19
20	12.54	12.54	33.217	25.102	285.6	0.057	6.20	270.0	102.4	3.6	0.52	2.3	0.10	0.26	0.46	0.10	20 18
30	12.47	12.46	33.227	25.126	283.7	0.086	6.19	269.7	102.2	3.7	0.54	2.6	0.10	0.24	0.64	0.18	30 17
40	12.41	12.40	33.244	25.150	281.6	0.114	6.15	268.0	101.4	3.9	0.57	3.0	0.11	0.40	0.64	0.18	40 16
50	12.40	12.39	33.277	25.179	279.1	0.142	6.15	268.0	101.4	4.1	0.60	3.4	0.12	0.36	0.56	0.15	50 15
61	12.21	12.21	33.395	25.306	267.4	0.172	6.04	263.1	99.3	4.8	0.73	4.6	0.20	0.85	0.41	0.23	61 14
71	12.19	12.18	33.469	25.369	261.6	0.199	6.00	261.5	98.6	5.3	0.80	5.5	0.21	1.02	0.28	0.16	72 13
75 ISL	12.16 D	12.15	33.482 D	25.385	260.3	0.210	5.93	D258.5 D	97.4	5.5	0.82	5.7	0.22	1.02	0.25	0.15	76
86	11.98	11.97	33.484	25.420	257.2	0.238	5.90	256.8	96.5	6.0	0.86	6.4	0.25	1.03	0.18	0.14	87 12
100	11.56	11.55	33.456	25.477	252.1	0.273	5.78	251.5	93.6	7.0	0.92	7.6	0.33	0.81	0.12	0.14	101 11
120	10.25	10.23	33.431	25.690	232.0	0.322	4.68	D203.6	73.7	14.0	1.33	15.3	0.03	0.10	0.05	0.14	121 10
125 ISL	10.06 D	10.05	33.481 D	25.761	225.3	0.335	4.46	D194.4 D	70.0	16.2	1.45	17.1	0.03	0.11	0.04	0.14	126
140	9.44	9.43	33.644	25.990	203.7	0.365	3.51	152.7	54.4	22.6	1.79	22.6	0.03	0.12	0.02	0.12	141 09
150 ISL	9.31 D	9.30	33.708 D	26.063	197.1	0.387	3.30	D143.7 D	51.0	24.2	1.84	23.4	0.03	0.13	0.02	0.11	151
170	8.95	8.93	33.826	26.214	183.1	0.423	3.16	137.7	48.5	27.4	1.93	25.1	0.03	0.16	0.01	0.10	171 08
200	8.50	8.48	33.936	26.370	168.7	0.476	2.80	121.8	42.6	32.4	2.06	27.3	0.02	0.18	0.01	0.09	202 07
230	8.10	8.07	33.973	26.460	160.5	0.525	2.59	112.7	39.0	36.4	2.17	28.8	0.02	0.16		232 06	
250 ISL	7.89 D	7.87	33.999 D	26.511	156.0	0.561	2.32	D101.1 D	34.8	39.8	2.25	29.9	0.02	0.14		252	
271	7.53	7.50	34.008	26.571	150.5	0.589	2.26	98.2	33.5	43.3	2.33	31.0	0.02	0.12		273 05</	

RV BELL M SHIMADA

CALCOFI CRUISE 1304

STATION 76.7 90.0

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	WIND ml/L	SPEED μmol/Kg	WEA	BAROMETER 1017.8 mb	DRY 13.5 C	WET 12.0 C	SECCHI	CLD	AMT	TYPE	ORD 062
0	13.33	13.33	33.110	24.865	307.7	0.000	6.13	267.0	102.9	2.7	0.32	0.1	0.00	0.10	0.37	0.08	0
2	13.33	13.33	33.110	24.865	307.7	0.006	6.13	267.0	102.9	2.7	0.32	0.1	0.00	0.10	0.37	0.08	2 20
10	13.33	13.32	33.110	24.865	307.9	0.031	6.12	266.6	102.8	2.7	0.32	0.1	0.00	0.11	0.36	0.08	10 19
20	13.31	13.31	33.113	24.871	307.7	0.062	6.11	266.4	102.6	2.7	0.33	0.0	0.00	0.08	0.38	0.08	20 18
30	13.29	13.29	33.118	24.879	307.2	0.092	6.12	266.6	102.7	2.7	0.33	0.0	0.00	0.09	0.39	0.09	30 17
40	13.19	13.19	33.134	24.913	304.3	0.123	6.13	267.2	102.7	2.6	0.33	0.0	0.00	0.06	0.48	0.12	40 16
50	12.88	12.87	33.134	24.975	298.6	0.153	6.14	267.6	102.2	2.4	0.37	0.2	0.03	0.23	0.78	0.23	50 15
60	12.86	12.85	33.138	24.983	298.1	0.183	6.13	267.0	101.9	2.6	0.38	0.4	0.04	0.36	0.63	0.22	60 14
70	12.49	12.48	33.101	25.026	294.3	0.212	6.09	265.3	100.4	3.0	0.42	0.7	0.11	0.46	0.43	0.20	71 13
75 ISL	11.90 D	11.89	33.158 D	25.182	279.4	0.229	6.03	D262.6	98.2	4.4	0.54	2.8	0.09	0.34	0.35	0.19	76
86	11.16	11.15	33.216	25.362	262.5	0.257	5.32	231.7	85.4	7.4	0.80	7.5	0.03	0.07	0.17	0.16	87 12
100	10.14	10.13	33.242	25.560	243.8	0.292	5.14	223.8	80.6	10.7	1.02	11.2	0.00	0.09	0.04	0.06	101 11
121	9.89	9.88	33.451	25.766	224.7	0.341	4.28	186.2	66.8	16.0	1.42	17.4	0.00	0.06	0.03	0.04	122 10
125 ISL	9.77 D	9.75	33.507 D	25.830	218.7	0.352	4.16	D181.3	64.9	17.0	1.46	18.1	0.00	0.06	0.03	0.04	126
140	9.32	9.30	33.658	26.022	200.7	0.382	3.88	168.8	59.9	21.0	1.60	20.7	0.00	0.08	0.01	0.02	141 09
150 ISL	9.21 D	9.19	33.740 D	26.104	193.1	0.404	3.72	D161.8 D	57.3	22.5	1.65	21.6	0.00	0.07	0.01	0.02	151
170	8.90	8.88	33.815	26.212	183.2	0.439	3.54	154.0	54.2	25.7	1.74	23.3	0.00	0.04	0.00	0.02	171 08
200	8.59	8.57	33.917	26.340	171.5	0.492	3.25	141.5	49.5	29.6	1.85	25.1	0.00	0.11	0.00	0.01	202 07
231	8.01	7.98	33.975	26.475	159.1	0.543	2.88	124.2	42.9	35.9	2.03	27.8	0.00	0.07			233 06
250 ISL	7.71 D	7.68	33.995 D	26.535	153.6	0.577	2.59	D112.5 D	38.6	40.2	2.16	29.5	0.00	0.08			252
270	7.39	7.36	34.010	26.593	148.3	0.603	2.23	97.1	33.1	44.6	2.29	31.3	0.00	0.10			272 05
300 ISL	7.15 D	7.12	34.032 D	26.644	143.9	0.651	1.87	D 81.3 D	27.6	50.2	2.45	33.4	0.00	0.09			302
321	6.87	6.84	34.044	26.693	139.4	0.677	1.59	69.0	23.2	54.2	2.57	34.8	0.00	0.09			324 04
380	6.40	6.37	34.120	26.815	128.4	0.756	0.93	40.3	13.4	64.7	2.84	38.0	0.00	0.14			383 03
400 ISL	6.32 D	6.29	34.132 D	26.835	126.7	0.787	0.82	D 35.8 D	11.9	68.4	2.88	38.4	0.00	0.15			403
440	5.66	5.62	34.104	26.897	120.8	0.831	0.85	36.8	12.0	75.7	2.95	39.3	0.00	0.16			444 02
500 ISL	5.31 D	5.27	34.152 D	26.977	113.7	0.908	0.61 D	26.6 D	8.6	81.2	2.97	39.8	0.00	0.12			504
515	5.27	5.23	34.160	26.988	112.7	0.918	0.55	23.7	7.7	82.6	2.97	39.9	0.00	0.11			519 01

D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED 02;

RV BELL M SHIMADA

CALCOFI CRUISE 1304

STATION 80.0 50.5

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	WIND ml/L	SPEED μmol/Kg	WEA	BAROMETER 1017.3 mb	DRY 12.2 C	WET 11.3 C	SECCHI	CLD	AMT	TYPE	ORD 054
2	11.07	11.07	33.827	25.850	214.0	0.004	4.70	205.1	75.6	17.1	1.31	15.9	0.11	0.18	8.37	0.51	2 06
6	11.07	11.07	33.829	25.853	213.9	0.006	4.64	202.7	74.7	17.4	1.32	15.9	0.12	0.24	7.86	0.51	6 05
10	11.07	11.07	33.830	25.853	213.9	0.015	4.67	203.6	75.0	20.4	1.35	15.9	0.11	0.24	7.81	0.64	10 03
10	11.07	11.07	33.838	25.859	213.3	0.015											10 04
21	10.87	10.87	33.846	25.902	209.6	0.038	4.24	185.0	67.9	17.3	1.52	17.7	0.11	0.43	5.05	0.58	21 02
30	10.76	10.76	33.859	25.932	207.0	0.057	4.09	178.6	65.4	21.8	1.62	18.9	0.11	0.49	4.81	0.48	30 01

D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED 02;

RV BELL M SHIMADA

CALCOFI CRUISE 1304

STATION 80.0 51.0

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	WIND ml/L	SPEED μmol/Kg	WEA	BAROMETER 1017.1 mb	DRY 12.2 C	WET 11.1 C	SECCHI	CLD	AMT	TYPE	ORD 055
0	10.70	10.70	33.866	25.945	204.9	0.000	4.22	183.7	67.3	22.7	1.72	19.8	0.11	0.72	1.94	0.39	0
2	10.70	10.70	33.866	25.945	204.9	0.004	4.22	183.7	67.3	22.7	1.72	19.8	0.11	0.72	1.94	0.39	2 09
5	10.71	10.71	33.865	25.943	205.2	0.010	4.24	184.5	67.7	22.7	1.71	19.6	0.11	0.72	2.07	0.38	5 08
10	10.72	10.72	33.858	25.936	206.0	0.021	4.20	182.8	67.0	22.5	1.70	19.4	0.11	0.76	2.01	0.41	10 06
11	10.72	10.72	33.860	25.938	205.8	0.022											10 07
20	10.69	10.69	33.866	25.949	205.1	0.041	4.17	181.4	66.5	22.8	1.72	19.6	0.11	0.80	1.78	0.28	20 05
30 ISL	10.58 D	10.58	33.883 D	25.981	202.3	0.062	4.09	D177.9 D	65.0	24.6	1.86	21.0	0.11	0.78	1.12	0.31	30
31	10.64	10.63	33.886	25.975	202.9	0.064	4.06	176.9	64.8	24.8	1.87	21.1	0.11	0.78	1.05	0.32	31 04
41	10.47	10.47	33.895	26.010	199.7	0.084	3.96	172.3	62.9	25.8	1.92	21.9	0.11	0.67	1.14	0.35	41 03
50 ISL	10.38 D	10.37	33.904 D	26.034	197.7	0.102	3.88	D169.1 D	61.6	26.4	1.93	22.3	0.11	0.51	1.46	0.30	50
51	10.35	10.34	33.904	26.039	197.2	0.104	3.86	168.2	61.2	26.5	1.93	22.3	0				

RV BELL M SHIMADA

CALCOFI CRUISE 1304

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		
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SV	DYN HT	OXYGEN	OXYGEN	OXY	SI03	P04	N03	N02	NH4	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C	THETA			ml/L	μmol/Kg	PCT	μM	μM	μM	μM	μM	μg/L	μg/L	db	056	
0	12.00	12.00	33.594	25.499	247.3	0.000	5.92	257.7	96.9	7.3	0.86	7.9	0.13	0.75	0.87	0.31	0	
2	12.00	11.99	33.594	25.499	247.4	0.005	5.92	257.7	96.9	7.3	0.86	7.9	0.13	0.75	0.87	0.31	2 22	
10	12.00	12.00	33.597	25.500	247.5	0.025	5.94	258.6	97.3	7.3	0.86	7.9	0.13	0.74	1.12	0.25	10 20	
10	12.00	12.00	33.597	25.501	247.4	0.026											10 21	
15	12.00	12.00	33.600	25.503	247.3	0.037	5.92	257.7	96.9	7.2	0.86	7.9	0.13	0.75	0.88	0.31	15 19	
20	ISL	11.97	D 11.97	33.597	D 25.506	247.1	0.050	5.88	D 255.9	D 96.2	7.3	0.86	7.9	0.13	0.76	0.79	0.30	20 18
21	11.92	11.91	33.603	25.522	245.7	0.052	5.88	256.2	96.2	7.3	0.86	7.9	0.13	0.76	0.77	0.30	21 18	
30	ISL	11.66	D 11.66	33.560	D 25.536	244.6	0.075	5.63	D 245.2	D 91.5	8.3	0.91	8.9	0.14	0.76	0.62	0.26	30
31	11.56	11.56	33.565	25.559	242.5	0.077	5.59	243.5	90.7	8.4	0.92	9.0	0.14	0.76	0.60	0.26	31 17	
41	10.74	10.74	33.571	25.711	228.2	0.100	4.70	204.8	75.0	14.3	1.28	14.9	0.12	0.72	0.30	0.21	41 16	
50	10.79	10.78	33.710	25.812	218.8	0.120	4.49	195.5	71.7	17.0	1.50	16.9	0.16	1.11	0.43	0.64	50 15	
60	10.42	10.42	33.732	25.892	211.4	0.142	4.00	174.0	63.3	19.7	1.60	18.9	0.15	0.78	0.41	0.49	60 14	
70	9.96	9.96	33.774	26.004	201.0	0.162	3.37	146.8	52.9	23.7	1.77	21.6	0.12	0.25	0.26	0.46	71 13	
75	ISL	9.60	D 9.59	33.811	D 26.093	192.5	0.173	3.02	D 131.6	D 47.1	25.3	1.84	22.9	0.10	0.19	0.20	0.45	76
86	9.22	9.21	33.854	26.189	183.6	0.193	2.64	115.0	40.8	28.8	1.98	25.6	0.05	0.05	0.07	0.42	87 12	
100	9.03	9.02	33.912	26.265	176.7	0.218	2.56	111.3	39.3	30.9	2.02	26.3	0.03	0.04	0.03	0.26	101 11	
120	8.98	8.97	33.987	26.333	170.7	0.253	2.14	93.2	32.9	34.1	2.16	27.6	0.03	0.04	0.03	0.27	121 10	
125	ISL	8.96	D 8.95	33.985	D 26.334	170.7	0.263	2.14	D 93.1	D 32.9	34.7	2.20	27.9	0.03	0.05	0.03	0.27	126
139	8.93	8.92	34.049	26.389	165.7	0.285	1.79	77.7	27.4	36.5	2.30	28.6	0.03	0.08	0.03	0.26	140 09	
150	ISL	8.85	D 8.83	34.069	D 26.418	163.2	0.305	1.69	D 73.4	D 25.9	38.2	2.36	29.0	0.03	0.08	0.03	0.25	151
170	8.60	8.58	34.116	26.495	156.3	0.335	1.43	62.3	21.8	41.3	2.46	29.7	0.04	0.08	0.03	0.24	171 08	
199	8.37	8.35	34.149	26.557	150.9	0.379	1.26	54.7	19.1	44.6	2.54	31.3	0.03	0.05	0.02	0.20	201 07	
200	ISL	8.37	D 8.35	34.155	D 26.561	150.5	0.383	1.22	D 53.0	D 18.5	44.7	2.54	31.3	0.03	0.05	0.02	0.19	202
230	8.17	8.14	34.181	26.613	146.2	0.425	1.11	48.1	16.7	47.4	2.64	32.0	0.03	0.03			232 06	
250	ISL	8.06	D 8.03	34.192	D 26.639	144.0	0.457	1.03	D 44.6	D 15.4	49.6	2.69	32.6	0.02	0.03			252
271	7.84	7.81	34.208	26.683	140.1	0.484	0.92	39.9	13.8	51.9	2.74	33.2	0.00	0.04			273 05	
300	ISL	7.62	D 7.59	34.228	D 26.732	135.9	0.528	0.78	D 33.9	D 11.6	55.2	2.82	34.0	0.00	0.05			302
320	7.49	7.46	34.235	26.756	133.9	0.551	0.72	31.2	10.7	57.4	2.87	34.5	0.00	0.06			323 04	
381	7.06	7.02	34.263	26.840	126.7	0.631	0.57	24.7	8.4	63.4	2.99	35.8	0.00	0.07			384 03	
400	ISL	6.85	D 6.82	34.232	D 26.845	126.4	0.660	0.58	D 25.4	D 8.6	65.4	3.02	36.3	0.00	0.08			403
442	6.60	6.56	34.262	26.903	121.3	0.707	0.46	20.1	6.7	69.8	3.09	37.3	0.00	0.11			446 02	
500	ISL	6.22	D 6.17	34.298	D 26.982	114.4	0.781	0.35	D 15.2	D 5.0	75.9	3.17	38.3	0.00	0.08			504
514	6.15	6.10	34.301	26.993	113.4	0.791	0.33	14.2	4.7	77.4	3.19	38.5	0.00	0.07			518 01	

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

RV BELL M SHIMADA

CALCOFI CRUISE 1304

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		
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SV	DYN HT	OXYGEN	OXYGEN	OXY	SI03	P04	N03	N02	NH4	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C	THETA			ml/L	μmol/Kg	PCT	μM	μM	μM	μM	μM	μg/L	μg/L	db	057	
0	11.88	11.88	33.594	25.521	245.2	0.000	5.86	255.1	95.7	7.5	0.92	8.6	0.18	0.98	0.77	0.28	0	
2 A	11.88	11.87	33.594	25.522	245.2	0.005	5.86	255.1	95.7	7.5	0.92	8.6	0.18	0.98	0.77	0.28	2 22	
10 A	11.86	11.86	33.607	25.534	244.3	0.025	5.85	254.8	95.6	7.5	0.92	8.6	0.18	1.00	0.79	0.28	10 20	
10	11.86	11.86	33.601	25.529	244.7	0.025											10 21	
14 A	11.87	11.86	33.595	25.525	245.2	0.034	5.86	255.3	95.8	7.4	0.91	8.6	0.18	0.96	0.79	0.27	14 19	
20	ISL	11.87	D 11.86	33.595	D 25.524	245.4	0.049	5.88	D 255.9	D 96.0	7.4	0.91	8.6	0.18	0.95	0.77	0.29	20 20
23	11.86	11.86	33.595	25.525	245.4	0.056	5.86	255.2	95.7	7.4	0.91	8.6	0.18	0.95	0.76	0.30	23 18	
30 A	11.86	11.86	33.596	25.527	245.5	0.074	5.85	254.7	95.5	7.4	0.92	8.6	0.18	0.98	0.75	0.30	30 17	
40	11.86	11.86	33.595	25.527	245.8	0.098	5.84	254.3	95.4	7.4	0.92	8.5	0.18	1.01	0.83	0.31	40 16	
50 ISL	11.86	D 11.86	33.596	D 25.527	246.0	0.124	5.86	D 255.0	D 95.6	7.4	0.92	8.6	0.18	1.03	0.80	0.30	50 15	
52 A	11.86	11.85	33.595	25.527	246.1	0.128	5.87	255.5	95.8	7.4	0.92	8.6	0.18	1.03	0.80	0.30	52 15	
62 A	11.41	11.40	33.570	25.592	240.1	0.152	5.59	243.4	90.4	8.4	0.97	9.4	0.18	0.97	0.52	0.26	63 14	
75	10.16	10.15	33.577	25.817	218.9	0.182	4.09	178.2	64.4	17.5	1.46	18.0	0.17	0.29	0.17	0.27	76 13	
85	10.25	10.24	33.685	D 25.886	212.6	0.205	3.93	171.1	62.0	18.7	1.56	19.1	0.19	0.34	0.23	0.40	86 12	
99	9.49	9.47	33.678	26.009	201.0	0.232	3.40	148.2	52.8	23.1	1.73	22.5	0.04	0.08	0.05	0.26	100 11	
100 ISL	9.47 D	9.46	33.688	D 26.019	200.1	0.236	3.39	D 147.3	D 52.5	23.4	1.74	22.6	0.04	0.08	0.05	0.25	101	
119	8.96	8.94	33.845	26.225	180.9	0.271	3.01	130.8	46.1	28.3	1.91	25.3	0.02	0.11	0.02	0.13	120 10	
125 ISL	8.90 D	8.88	33.862	D 26.248	178.8	0.284	3.00	D 130.3	D 45.9	29.5	1.96	25.8	0.02	0.11	0.02	0.14	126	
140	8.82	8.81	33.953	26.331	171.3	0.308	2.47	107.4	37.8	32.7	2.09	27.1	0.02	0.10	0.01	0.16	141 09	
150 ISL	8.66 D	8.65	33.994	D 26.388	166.0	0.327	2.19	D 95.3	D 33.4	34.4	2.16	27.9	0.02	0.12	0.01	0.14	151	
172	8.40	8.3																

RV BELL M SHIMADA

CALCOFI CRUISE 1304

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		
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXYGEN	OXY	SI03	P04	N03	N02	NH4	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C	THETA			ml/L	μmol/Kg	PCT	μM	μM	μM	μM	μM	μM	μg/L	μg/L	db	
0	12.95	12.95	33.320	25.103	284.9	0.000	6.09	265.9	101.7	3.9	0.54	2.6	0.10	0.26	0.30	0.08	0	
2	12.95	12.94	33.320	25.103	285.0	0.006	6.09	265.9	101.7	3.9	0.54	2.6	0.10	0.26	0.30	0.08	2 20	
9	12.91	12.91	33.326	25.115	284.1	0.026	6.08	265.4	101.4	3.9	0.54	2.5	0.10	0.24	0.31	0.08	9 19	
10 ISL	12.94 D	12.93	33.316 D	25.102	285.3	0.029	6.09	0265.4	0101.6	3.9	0.54	2.5	0.10	0.24	0.31	0.08	10	
20	12.67	12.67	33.299	25.141	281.9	0.057	6.05	264.1	100.4	4.0	0.55	2.6	0.11	0.19	0.32	0.10	20 18	
30 ISL	12.58 D	12.58	33.283 D	25.147	281.7	0.086	6.03	0262.7	099.8	4.0	0.56	2.7	0.13	0.21	0.32	0.12	30	
33	12.54	12.54	33.279	25.152	281.3	0.093	6.02	262.7	99.5	4.0	0.56	2.7	0.13	0.21	0.32	0.13	33 17	
39	12.24	12.24	33.250	25.187	278.0	0.110	5.94	259.1	97.5	4.4	0.58	3.1	0.15	0.13	0.32	0.16	39 16	
50	12.13	12.12	33.393	25.320	265.7	0.140	5.94	259.1	97.4	5.0	0.74	5.1	0.16	0.49	0.36	0.15	50 15	
60	12.25	12.24	33.473	25.361	262.1	0.167	6.04	263.5	99.4	5.0	0.77	5.1	0.18	0.77	0.37	0.17	60 14	
73	12.23	12.22	33.483	25.372	261.4	0.201	6.04	263.3	99.2	5.1	0.77	5.2	0.19	0.83	0.27	0.11	74 13	
75 ISL	12.22 D	12.21	33.489 D	25.378	260.9	0.208	5.99	0260.9	98.5	5.5	0.79	5.7	0.18	0.74	0.25	0.11	76	
85	11.33	11.32	33.359	25.444	254.8	0.232	5.48	239.0	88.3	7.6	0.88	8.0	0.12	0.31	0.16	0.12	86 12	
100	10.02	10.01	33.426	25.723	228.3	0.268	4.49	196.0	70.4	14.1	1.27	14.8	0.02	0.00	0.04	0.11	101 11	
120	9.24	9.22	33.693	26.061	196.5	0.310	3.84	167.4	59.2	21.6	1.63	20.5	0.00	0.00	0.02	0.06	121 10	
125 ISL	9.16 D	9.15	33.761 D	26.127	190.4	0.322	3.50	0152.2 D	53.9	23.2	1.71	21.7	0.00	0.00	0.02	0.06	126	
140	9.02	9.00	33.851	26.221	181.7	0.348	2.98	130.1	45.9	28.2	1.96	25.2	0.00	0.00	0.01	0.06	141 09	
150 ISL	8.87 D	8.85	33.920 D	26.299	174.5	0.368	2.69	0117.1 D	41.3	30.1	2.02	26.1	0.00	0.00	0.01	0.06	151	
172	8.62	8.60	33.978	26.383	166.9	0.403	2.41	104.9	36.7	34.4	2.15	28.1	0.00	0.00	0.01	0.06	173 08	
200 ISL	8.20 D	8.18	34.022 D	26.482	157.9	0.452	2.19	095.4 D	33.1	38.1	2.23	29.4	0.00	0.00	0.00	0.05	202	
203	8.18	8.16	34.021	26.485	157.7	0.453	2.20	95.9	33.2	38.5	2.24	29.5	0.00	0.00	0.00	0.04	205 07	
238	7.89	7.86	34.092	26.585	148.8	0.507	1.56	68.2	23.4	45.2	2.47	32.0	0.00	0.00		240 06		
250 ISL	7.66 D	7.63	34.082 D	26.611	146.4	0.529	1.61	070.0 D	24.0	46.6	2.49	32.2	0.00	0.00		252		
270	7.50	7.47	34.083	26.634	144.5	0.554	1.56	67.9	23.1	48.9	2.52	32.4	0.00	0.00		272 05		
300 ISL	7.13 D	7.10	34.093 D	26.695	139.0	0.601	1.36	059.2 D	20.0	53.7	2.63	34.2	0.00	0.00		302		
322	6.89	6.86	34.105	26.737	135.2	0.627	1.18	51.6	17.3	57.1	2.71	35.5	0.00	0.00		325 04		
381	6.34	6.30	34.123	26.826	127.3	0.704	0.87	38.0	12.6	66.6	2.91	37.8	0.00	0.00		384 03		
400 ISL	6.22 D	6.19	34.136 D	26.851	125.2	0.734	0.80	34.7 D	11.5							403		
437	6.16	6.12	34.181	26.895	121.5	0.780	0.60	026.0 D	8.6							441 02		
500 ISL	5.92 D	5.88	34.270 D	26.997	112.6	0.854	0.34	04.6 D	4.8							504		
516	5.78	5.74	34.292	27.032	109.4	0.865	0.27	11.8	3.9	82.8	3.16	39.8	0.00	0.00		520 01		

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

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD		
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXYGEN	OXY	SI03	P04	N03	N02	NH4	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C	THETA			ml/L	μmol/Kg	PCT	μM	μM	μM	μM	μM	μM	μg/L	μg/L	db	
0	13.61	13.61	33.261	24.923	302.1	0.000	6.06	264.1	102.5	3.3	0.35	0.0	0.00	0.06	0.46	0.12	0	
2	13.61	13.61	33.261	24.923	302.1	0.006	6.06	264.1	102.5	3.3	0.35	0.0	0.00	0.06	0.46	0.12	2 20	
10 ISL	13.62 D	13.62	33.266 D	24.927	302.0	0.031	6.05	0263.5	0102.3	3.3	0.34	0.1	0.00	0.03	0.43	0.12	10	
11	13.62	13.62	33.257	24.920	302.7	0.033	6.05	263.6	102.3	3.3	0.34	0.1	0.00	0.03	0.43	0.12	11 19	
20	13.61	13.61	33.257	24.921	302.9	0.061	6.03	262.9	102.0	3.3	0.35	0.0	0.00	0.00	0.45	0.12	20 18	
30	13.62	13.61	33.258	24.922	303.1	0.091	6.02	262.4	101.8	3.2	0.34	0.0	0.00	0.00	0.43	0.13	30 17	
40	13.61	13.60	33.254	24.922	303.5	0.121	6.04	263.1	102.1	3.2	0.34	0.0	0.00	0.00	0.44	0.13	40 16	
50	13.61	13.60	33.263	24.928	303.1	0.151	6.03	262.8	101.9	3.2	0.34	0.0	0.00	0.00	0.45	0.12	50 15	
60	13.12	13.11	33.216	24.991	297.4	0.181	5.78	252.0	96.8	4.4	0.52	2.5	0.08	0.02	0.40	0.22	60 14	
70	11.75	11.74	33.281	25.305	267.7	0.210	5.80	252.6	94.3	5.8	0.71	5.2	0.19	0.00	0.30	0.20	71 13	
75 ISL	11.61 D	11.60	33.311 D	25.355	263.0	0.224	5.78	0251.9 D	93.7	6.3	0.76	6.1	0.15	0.01	0.24	0.17	76	
84	11.34	11.33	33.307	25.402	258.8	0.247	5.47	238.3	88.2	7.2	0.86	7.8	0.07	0.02	0.13	0.11	85 12	
100 ISL	10.65 D	10.63	33.408 D	25.603	239.9	0.288	4.63	0201.5 D	73.5	11.2	1.12	12.4	0.03	0.00	0.08	0.08	101	
101	10.61	10.59	33.393	25.598	240.3	0.289	4.72	205.5	74.9	11.4	1.14	12.7	0.03	0.00	0.07	0.08	102 11	
120	9.81	9.79	33.551	25.858	216.0	0.332	4.03	175.3	62.9	17.6	1.51	18.5	0.03	0.00	0.02	0.04	121 10	
125 ISL	9.68 D	9.67	33.604 D	25.920	210.1	0.344	3.95	0172.0 D	61.5	18.7	1.56	19.3	0.03	0.00	0.02	0.04	126	
140	9.29	9.27	33.701	26.061	197.0	0.373	3.72	162.0	57.5	22.0	1.69	21.6	0.02	0.00	0.01	0.02	141 09	
150 ISL	9.09 D	9.07	33.769 D	26.146	189.1	0.394	3.45	0150.3 D	53.1	23.9	1.76	22.7	0.01	0.00	0.01	0.02	151	
171	8.80	8.78	33.863	26.265	178.1	0.431	3.22	140.1	49.2	27.9	1.91	24.9	0.00	0.00	0.00	0.02	172 08	
200	8.43	8.41	33.944	26.387	167.0	0.481	2.92	127.1	44.3	32.1	2.05	26.8	0.00	0.00	0.00	0.02	202 07	
230	7.87	7.85	33.979	26.498	156.8	0.530	2.67	116.3	40.1	38.1	2.18	28.9	0.00	0.00		232 06		
250 ISL	7.51 D	7.48	34.007 D	26.572	150.0	0.563	2.32	0101.1 D	34.5	42.6	2.33	30.6	0.00	0.00		252		
270	7.33	7.31	34.022	26.609	146.7	0.590	1.98	86.2	29.3	47.0	2.47	32.2	0.00	0.00		272 05		
300 ISL	7.17 D	7.14	34.074 D	26.674	141.0	0.636	1.4											

RV BELL M SHIMADA

CALCOFI CRUISE 1304

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		
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SV	DYN HT	OXYGEN	OXYGEN	OXY	SI03	P04	N03	N02	NH4	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C	THETA				ml/L	μmol/Kg	PCT	μM	μM	μM	μM	μM	μg/L	μg/L	db	
33	9.2 N	123 13.1 W	21/04/2013	1306	UTC	4254 m	330	20 kn									060	
0	13.96	13.96	33.238	24.835	310.5	0.000	6.01	262.4	102.3	2.8	0.30	0.0	0.00	0.05	0.22	0.06	0	
4	13.96	13.96	33.238	24.838	310.6	0.012	6.01	262.4	102.3	2.8	0.30	0.0	0.00	0.05	0.22	0.06	4 20	
10	13.96	13.95	33.241	24.838	310.5	0.031	5.97	261.0	101.7	2.8	0.29	0.0	0.00	0.03	0.22	0.04	10 19	
20	ISL	13.95	13.95	33.240 D	24.839	310.7	0.062	5.96	0259.6 D 101.4	2.8	0.30	0.0	0.00	0.01	0.22	0.05	20	
25	13.95	13.95	33.246	24.844	310.4	0.078	5.96	260.5	101.5	2.8	0.30	0.0	0.00	0.00	0.22	0.05	25 18	
30	ISL	13.95	13.95	33.239 D	24.839	311.1	0.094	5.96	0259.9 D 101.5	2.8	0.30	0.0	0.00	0.00	0.22	0.06	30	
40	13.96	13.95	33.248	24.845	310.7	0.124	5.98	261.4	101.9	2.8	0.29	0.0	0.00	0.00	0.21	0.07	40	
50	ISL	13.95	13.95	33.238 D	24.839	311.6	0.157	5.96	0259.9 D 101.5	2.7	0.29	0.0	0.00	0.03	0.23	0.05	50	
52	13.96	13.95	33.244	24.843	311.3	0.162	5.97	260.6	101.6	2.7	0.29	0.0	0.00	0.04	0.23	0.05	52 16	
62	13.76	13.75	33.234	24.876	308.5	0.193	5.97	260.7	101.2	2.8	0.29	0.0	0.00	0.06	0.22	0.06	63 15	
75	ISL	12.98	12.97	33.149 D	24.967	300.1	0.234	5.96	0259.7 D 99.4	2.9	0.32	0.0	0.04	0.04	0.36	0.17	76	
76	12.83	12.82	33.137 D	24.987	298.2	0.237	6.02	262.8	100.0	2.9	0.32	0.0	0.04	0.04	0.37	0.18	77 14	
88	12.25	12.23	33.153 D	25.113	286.5	0.272	5.95	259.9	97.6	3.9	0.48	1.8	0.31	0.02	0.31	0.19	89 13	
100	ISL	12.03	12.02	33.192 D	25.185	279.9	0.307	5.83	0253.9 D 95.3	4.0	0.53	2.4	0.15	0.21	0.27	0.12	101	
101	11.60	11.59	33.166	25.245	274.1	0.307	6.04	263.8	97.8	4.0	0.53	2.5	0.14	0.23	0.26	0.12	102 12	
112	11.09	11.08	33.186 D	25.352	264.1	0.339	5.58	243.6	89.3	6.5	0.71	6.1	0.04	0.00	0.08	0.08	113 11	
125	10.36	10.35	33.415 D	25.658	235.2	0.372	5.00	218.3	78.9	10.0	0.97	10.6	0.02	0.02	0.08	0.06	126 10	
140	10.05	10.03	33.474 D	25.758	226.0	0.407	4.59	200.3	72.0	13.5	1.21	14.4	0.00	0.00	0.04	0.02	141 09	
150	ISL	9.61	9.59	33.571 D	25.908	211.8	0.429	4.28	0186.2 D 66.5	16.0	1.34	16.4	0.00	0.00	0.03	0.02	151	
172	9.28	9.26	33.668	26.036	200.0	0.471	3.83	167.2	59.1	21.3	1.62	20.9	0.00	0.00	0.01	0.01	173 08	
199	8.73	8.70	33.902 D	26.308	174.6	0.525	3.08	134.5	47.0	29.4	1.91	25.3	0.00	0.00	0.01	0.02	201 07	
200	ISL	8.71	8.68	33.906 D	26.314	174.0	0.527	3.07	0133.7 D 46.9	29.5	1.91	25.3	0.00	0.00	0.01	0.02	202	
231	8.24	8.21	33.947	26.419	164.5	0.576	3.09	135.0	46.7	33.3	1.94	26.2	0.00	0.02			233 06	
250	ISL	7.91	7.88	33.986 D	26.499	157.2	0.610	2.57	0111.7 D 38.5	38.0	2.10	28.2	0.00	0.01			252	
271	7.61	7.59	33.996	26.549	152.6	0.639	2.26	98.6	33.6	43.1	2.28	30.5	0.00	0.00			273 05	
300	ISL	7.40	7.37	34.059 D	26.631	145.3	0.686	1.66	022.2 D 24.6	48.4	2.43	32.4	0.00	0.00			302	
321	7.08	7.04	34.039	26.660	142.6	0.712	1.64	71.4	24.1	52.2	2.54	33.7	0.00	0.00			324 04	
380	6.43	6.40	34.068	26.770	132.6	0.793	1.16	50.5	16.8	62.7	2.77	36.7	0.00	0.00			383 03	
400	ISL	6.28	6.24	34.094 D	26.811	129.0	0.824	1.02	044.2 D 14.7	65.0	2.84	37.2	0.00	0.00			403	
440	6.42	6.38	34.180	26.861	125.0	0.870	0.63	27.4	9.1	69.4	2.97	38.1	0.00	0.00			444 02	
500	ISL	5.75	5.70	34.234 D	26.989	113.0	0.947	0.40	17.2 D 5.7	79.9	3.10	39.4	0.00	0.00			504	
515	5.65	5.61	34.222	26.992	112.9	0.959	0.40	17.4	5.7	82.6	3.13	39.7	0.00	0.00			519 01	

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

RV BELL M SHIMADA

CALCOFI CRUISE 1304

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		
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SV	DYN HT	OXYGEN	OXYGEN	OXY	SI03	P04	N03	N02	NH4	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C	THETA				ml/L	μmol/Kg	PCT	μM	μM	μM	μM	μM	μg/L	μg/L	db	
32	50.6 N	123 52.9 W	21/04/2013	2012	UTC	4379 m	340	18 kn	350 07 06	2	1019.3	mb	14.0	C	12.7	C	19 m	8/8 ST 061
0	14.12	14.12	33.260	24.819	312.0	0.000	5.97	260.8	102.0	2.8	0.31	0.0	0.00	0.06	0.17	0.04	0	
2 A	14.12	14.12	33.260	24.819	312.0	0.006	5.97	260.8	102.0	2.8	0.31	0.0	0.00	0.06	0.17	0.04	2 22	
10	ISL	14.12	14.11	33.254 D	24.815	312.7	0.032	5.95	0259.4 D 101.7	2.8	0.31	0.0	0.00	0.03	0.17	0.04	10	
11	A	14.11	14.11	33.253	24.816	312.6	0.034	5.95	260.1	101.7	2.8	0.31	0.0	0.00	0.03	0.17	0.04	11 21
16	A	14.10	14.10	33.254	24.818	312.6	0.050	5.95	260.0	101.6	2.8	0.31	0.0	0.00	0.03	0.17	0.05	16 20
20	ISL	14.10	14.10	33.254 D	24.819	312.7	0.063	5.96	0259.7 D 101.8	2.8	0.31	0.0	0.00	0.03	0.17	0.05	20	
29	A	14.08	14.07	33.253	24.824	312.4	0.091	5.96	260.2	101.7	2.8	0.31	0.0	0.00	0.02	0.17	0.04	29 19
30	ISL	14.08	14.07	33.254 D	24.825	312.4	0.094	5.96	0259.6 D 101.7	2.8	0.31	0.0	0.00	0.02	0.17	0.04	30	
40	14.07	14.06	33.254 D	24.828	312.4	0.126	5.96	260.1	101.6	2.8	0.31	0.0	0.00	0.02	0.18	0.05	40 18	
47	14.06	14.06	33.254	24.828	312.6	0.147	5.96	260.2	101.6	2.8	0.31	0.0	0.00	0.02	0.19	0.05	47 17	
50	ISL	14.06	14.06	33.254 D	24.829	312.6	0.158	5.96	0259.7 D 101.7	2.7	0.31	0.0	0.00	0.02	0.19	0.05	50	
55	A	14.06	14.05	33.254	24.831	312.6	0.172	5.97	260.9	101.9	2.7	0.31	0.0	0.00	0.02	0.19	0.05	55 16
65	A	13.96	13.95	33.251	24.848	311.3	0.203	5.96	260.4	101.5	2.7	0.31	0.0	0.00	0.03	0.22	0.06	66 15
74	13.63	13.62	33.208	24.884	308.0	0.231	5.97	261.0	101.0	2.7	0.32	0.0	0.00	0.04	0.20B	0.26B	75 14	
75	ISL	13.60	13.59	33.201 D	24.883	308.2	0.236	6.00	0261.3 D 101.3	2.7	0.32	0.0	0.00	0.04	0.22	0.25	76	
85	13.55	13.54	33.195	24.889	307.9	0.265	5.99	261.6	101.0	2.7	0.33	0.0	0.00	0.09	0.36	0.14	86 13	
94	13.20	13.19	33.188	24.955	301.9	0.292	5.98	261.2	100.2	2.8	0.34	0.0	0.00	0.15	0.32	0.15	95 12	
100	ISL	13.07	13.05	33.172 D	24.970	300.5	0.313	5.98	0260.5 D 99.9	2.9	0.36	0.2	0.05	0.20	0.28	0.14	101	
109	12.74	12.73	33.135	25.005	297.4	0.337	5.96	260.4	98.9	3.1	0.40	0.4	0.12	0.28	0.22	0.1		

RV BELL M SHIMADA

CALCOFI CRUISE 1304

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		
DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN μmol/Kg	OXY PCT	SI03 μM	P04 μM	N03 μM	N02 μM	NH4 μM	CHL-A μg/L	PHAEAO μg/L	PRES db
0	12.19	12.19	33.747	25.580	239.6	0.000	5.55	241.9	91.4	7.9	0.89	8.1	0.16	0.85	8.87	2.12	0
2	12.19	12.19	33.747	25.580	239.7	0.005	5.55	241.9	91.4	7.9	0.89	8.1	0.16	0.85	8.87	2.12	2 07
5	12.19	12.19	33.746	25.580	239.7	0.012	5.55	241.9	91.4	7.9	0.87	8.1	0.16	1.01	9.02	1.93	5 06
10	12.20	12.20	33.746	25.578	240.0	0.024	5.55	241.6	91.3	7.8	0.87	8.1	0.16	0.85	9.01	1.86	10 05
20	11.74	11.73	33.746	25.666	232.0	0.048	4.82	209.9	78.6	11.6	1.11	11.2	0.16	0.95	4.75	1.29	20 04
30	10.54	10.54	33.813	25.934	206.7	0.070	2.85	123.9	45.2	24.9	1.85	21.6	0.27	0.45	0.47	0.62	30 03
40	10.41	10.41	33.831	25.971	203.4	0.090	2.57	112.0	40.8	27.2	1.90	22.0	0.27	0.75	0.52	0.53	40 02
50	10.35	10.35	33.835	25.985	202.4	0.110	2.56	111.5	40.5	27.7	1.94	22.3	0.25	0.71	0.45	0.54	50 01

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

RV BELL M SHIMADA

CALCOFI CRUISE 1304

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		
DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN μmol/Kg	OXY PCT	SI03 μM	P04 μM	N03 μM	N02 μM	NH4 μM	CHL-A μg/L	PHAEAO μg/L	PRES db
0	10.58	10.58	33.928	26.016	198.2	0.000	4.60	200.1	73.2	19.4	1.45	17.0	0.18	0.21	6.73	1.41	0
2 A	10.58	10.58	33.928	26.016	198.2	0.004	4.60	200.1	73.2	19.4	1.45	17.0	0.18	0.21	6.73	1.41	2 24
4 A	10.59	10.59	33.928	26.014	198.5	0.008	4.64	201.8	73.8	19.1	1.41	16.8	0.18	0.19	6.54	1.53	4 22
6 A	10.59	10.59	33.927	26.013	198.6	0.012	4.59	199.6	73.0	19.3	1.42	16.9	0.18	0.18	6.98	1.60	6 23
10 ISL	10.59	10.59	33.926	D 26.012	198.8	0.020	4.66	D 202.6	D 74.1	19.0	1.41	16.7	0.18	0.17	6.78	1.47	10
11 A	10.58	10.58	33.925	26.013	198.7	0.022	4.61	200.8	73.4	19.0	1.41	16.7	0.18	0.17	6.72	1.44	11 21
20 A	10.51	10.51	33.930	26.030	197.3	0.040	4.48	194.2	70.9	19.5	1.46	17.3	0.18	0.19	6.99	1.49	20 20
24 A	10.48	10.48	33.929	26.035	197.0	0.048	4.38	190.4	69.5	19.9	1.47	17.6	0.17	0.20	6.91	1.61	24 19
30 ISL	10.39	10.39	33.936	D 26.056	195.2	0.060	4.12	D 179.5	D 65.4	20.9	1.53	18.5	0.17	0.22	6.43	1.25	30
31	10.38	10.38	33.937	26.059	194.9	0.061	4.15	180.4	65.7	21.1	1.54	18.6	0.17	0.22	6.35	1.20	31 18
40	9.85	9.84	33.986	26.188	182.8	0.078	2.75	119.6	43.1	28.1	1.91	23.7	0.11	0.13	3.68	0.81	40 17
49	9.32	9.32	34.042	26.318	170.6	0.094	1.66	72.4	25.8	35.4	2.27	28.6	0.05	0.05	0.10	0.33	49 16
50 ISL	9.29	D 9.28	34.044	D 26.325	170.0	0.097	1.64	D 71.5	D 25.4	35.4	2.27	28.6	0.05	0.05	0.09	0.33	50
75	9.20	9.19	34.080	26.369	166.4	0.138	1.57	68.1	24.2	36.7	2.31	29.1	0.04	0.04	0.04	0.29	76 15
100	9.03	9.02	34.106	26.417	162.3	0.179	1.41	61.1	21.6	39.2	2.38	29.9	0.04	0.07	0.03	0.28	101 14
119	8.83	8.82	34.134	26.471	157.6	0.210	1.31	57.2	20.2	41.6	2.44	30.5	0.03	0.07	0.03	0.25	120 13
125 ISL	8.76	D 8.75	34.133	D 26.481	156.7	0.220	1.22	D 53.0	D 18.7	42.6	2.47	30.8	0.04	0.06	0.03	0.25	126
140	8.65	8.63	34.145	26.509	154.3	0.242	1.06	46.1	16.2	44.9	2.53	31.4	0.06	0.05	0.03	0.24	141 12
150 ISL	8.60	D 8.58	34.152	D 26.522	153.3	0.260	1.04	D 45.0	D 15.8	45.6	2.54	31.4	0.05	0.07	0.03	0.23	151
170	8.52	8.50	34.167	26.547	151.3	0.288	1.07	46.6	16.3	46.8	2.55	31.4	0.03	0.11	0.02	0.22	171 11
200	8.32	8.30	34.176	26.585	148.2	0.333	0.79	34.2	11.9	51.5	2.68	32.3	0.03	0.03	0.03	0.25	202 10
229	8.05	8.03	34.194	26.640	143.5	0.375	0.64	27.6	9.6	55.6	2.77	33.1	0.04	0.08		231 09	
250 ISL	7.89	D 7.86	34.204	D 26.673	140.7	0.408	0.52	D 22.5	D 7.8	58.8	2.84	33.3	0.03	0.07		252	
270	7.74	7.71	34.209	26.699	138.5	0.433	0.46	19.8	6.8	61.8	2.90	33.5	0.02	0.07		272 08	
300 ISL	7.55	D 7.52	34.215	D 26.731	135.9	0.478	0.42	D 18.4	D 6.3	63.6	2.92	33.7	0.03	0.07		302	
320	7.47	7.44	34.215	26.744	135.0	0.501	0.45	19.6	6.7	64.7	2.93	33.9	0.03	0.07		323 07	
380	6.98	6.94	34.237	26.831	127.4	0.580	0.24	10.4	3.5	76.8	3.14	33.0	0.02	0.08		383 06	
400 ISL	6.85	D 6.81	34.241	D 26.852	125.7	0.610	0.20	D 8.6	D 2.9	80.4	3.20	32.1	0.02	0.09		403	
439	6.72	6.67	34.247	26.875	124.0	0.654	0.12	5.2	1.7	87.5	3.33	30.2	0.02	0.10		443 04	
478	6.60	6.55	34.253	26.897	122.5	0.702	0.02	1.0	0.3	98.9	3.61	24.4	0.02	0.18		482 03	
500 ISL	6.55	D 6.50	34.251	D 26.902	122.3	0.735	0.08	D 3.4	D 1.2	101.8	3.71	22.5	0.02	0.12		504	
512	6.53	6.48	34.251	26.906	122.1	0.744	0.06	2.4	0.8	103.4	3.76	21.5	0.02	0.09		516 02	
566	6.42	6.36	34.256	26.925	121.0	0.809	0.21	9.3	3.1	88.6	3.28	32.5	0.05	0.05		571 05	
570	6.41	6.36	34.257	26.926	121.0	0.814	0.22	9.5	3.2	89.1	3.30	32.5	0.09	0.10		575 01	

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

RV BELL M SHIMADA

CALCOFI CRUISE 1304

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		
DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN μmol/Kg	OXY PCT	SI03 μM	P04 μM	N03 μM	N02 μM	NH4 μM	CHL-A μg/L	PHAEAO μg/L	PRES db
0	13.36	13.36	33.714	25.327	263.7	0.000	7.29	317.5	122.9	2.2	0.43	2.5	0.07	0.21	4.86	1.03	0
2	13.36	13.35	33.714	25.327	263.8	0.005	7.29	317.5	122.9	2.2	0.43	2.5	0.07	0.21	4.86	1.03	2 06
4	13.35	13.35	33.699	25.316	264.9	0.011	7.26	316.4	122.5	2.3	0.49	2.6	0.07	0.23	5.06	0.92	4 05
10	12.92	12.91	33.713	25.414	255.7	0.026	6.71	292.0	112.1	0.4	0.25	0.1	0.03	0.02	11.31	2.10	10 02
10	12.95	12.95	33.709	25.403	256.7	0.027											10 03
19	11.63	11.63	33.756	25.693	229.3	0.048	4.08	177.8	66.4	14.7	1.40	13.6	0.21	1.54	8.93	2.21	19 04
20 ISL	11.62	D 11.62	33.756	D 25.695	229.3	0.051	4.12	D 179.4	D 67.0								20

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

RV BELL M SHIMADA

CALCOFI CRUISE 1304

STATION 83.3 40.6

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET

RV BELL M SHIMADA

CALCOFI CRUISE 1304

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			
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SV	DYN HT	OXYGEN	OXYGEN	OXY	SI03	P04	N03	N02	NH4	CHL-A	PHAEAO	PRES SAMP	
m	DEG C	DEG C		THETA		ml/L	μmol/Kg	μmol/Kg	PCT	μM	μM	μM	μM	μM	μg/L	μg/L	db	
34	10.1 N	119 30.8 W	16/04/2013	0354	UTC	198 m	280	27 kn		1011.4 mb	12.7 C	9.8 C					037	
0	13.23	13.23	33.631	25.287	267.5	0.000	5.84	254.5	98.2	5.7	0.65	4.9	0.10	0.38	2.62	0.52	0	
1	13.23	13.23	33.631	25.287	267.5	0.003	5.84	254.5	98.2	5.7	0.65	4.9	0.10	0.38	2.62	0.52	1 15	
10	13.23	13.23	33.634	25.290	267.5	0.027	5.89	256.7	99.1	5.4	0.64	4.7	0.10	0.40	2.83	0.49	10 13	
10	13.23	13.23	33.635	25.290	267.4	0.028											10 14	
20	13.21	13.20	33.635	25.296	267.2	0.054	5.87	255.6	98.6	5.5	0.65	4.8	0.10	0.40	2.65	0.51	20 12	
30	12.48	12.48	33.620	25.428	254.9	0.080	4.77	207.9	79.0						1.41	0.72	30 11	
40	10.99	10.99	33.716	25.779	221.8	0.104	3.76	163.7	60.3	11.7	1.02	10.5	0.10	0.28	0.47	0.54	40 10	
50	10.51	10.50	33.782	25.916	208.9	0.125	3.12	136.0	49.6	18.5	1.48	16.9	0.11	0.58	0.31	0.57	50 09	
60	10.22	10.21	33.888	26.050	196.4	0.145	2.69	117.1	42.5	22.9	1.71	20.3	0.11	0.44	0.35	0.68	60 08	
70	9.86	9.85	33.941	26.151	187.0	0.165	2.31	100.5	36.2	26.9	1.89	22.2	0.20	0.74	0.16	0.49	71 07	
75	ISL	9.81 D	9.80	33.967 D	26.181	184.3	0.175	2.26	98.4 D	35.4	27.8	1.93	23.1	0.17	0.58	0.12	0.41	76
85	9.76	9.75	34.006	26.220	180.8	0.192	2.07	90.0	32.3	29.5	2.02	24.8	0.12	0.27	0.05	0.26	86 06	
100	9.55	9.54	34.058	26.296	173.9	0.219	1.90	82.9	29.7	30.5	2.11	26.1	0.03	0.03	0.03	0.20	101 05	
120	9.29	9.27	34.113	26.382	166.1	0.253	1.73	75.1	26.7	32.6	2.18	27.1	0.04	0.01	0.02	0.13	121 04	
125	ISL	9.20 D	9.18	34.124 D	26.405	164.0	0.262	1.71 D	74.5 D	26.5	33.8	2.22	27.6	0.04	0.01	0.02	0.14	126
141	9.00	8.98	34.140	26.450	160.1	0.287	1.60	69.5	24.6	37.4	2.33	29.0	0.04	0.01	0.02	0.17	142 03	
150	ISL	8.96 D	8.95	34.160 D	26.472	158.2	0.303	1.52 D	66.0 D	25.3	38.6	2.36	29.3	0.04	0.01	0.02	0.16	151
171	8.78	8.76	34.177	26.515	154.4	0.334	1.38	59.8	21.1	41.3	2.42	30.1	0.05	0.00	0.02	0.15	172 02	
191	8.75	8.73	34.179	26.521	154.3	0.365	1.38	59.9	21.1	41.7	2.43	30.4	0.06	0.14	0.03	0.19	193 01	

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

RV BELL M SHIMADA

CALCOFI CRUISE 1304

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			
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SV	DYN HT	OXYGEN	OXYGEN	OXY	SI03	P04	N03	N02	NH4	CHL-A	PHAEAO	PRES SAMP	
m	DEG C	DEG C		THETA		ml/L	μmol/Kg	μmol/Kg	PCT	μM	μM	μM	μM	μM	μg/L	μg/L	db	
33	52.0 N	120 8.3 W	17/04/2013	0048	UTC	151 m	320	30 kn	300 06 05	0	1016.1 mb	12.2 C	9.8 C				0/8 042	
0	11.61	11.61	33.734	25.678	230.3	0.000	5.06	220.2	82.2	16.1	1.28	14.0	0.13	0.25	1.99	0.44	0	
2	11.61	11.61	33.734	25.678	230.3	0.005	5.06	220.2	82.2	16.1	1.28	14.0	0.13	0.25	1.99	0.44	2 12	
10	11.60	11.60	33.735	25.682	230.2	0.023	5.01	218.3	81.5	16.1	1.26	13.9	0.13	0.27	2.06	0.46	10 11	
20	11.58	11.58	33.736	25.688	229.9	0.046	5.01	218.2	81.4	16.2	1.27	14.0	0.13	0.26	2.06	0.46	20 10	
30	11.51	11.51	33.749	25.710	228.0	0.069	4.95	215.4	80.3	16.6	1.29	14.3	0.13	0.29	2.55	0.58	30 09	
40	11.40	11.39	33.762	25.742	225.3	0.092	5.00	217.5	80.9	17.0	1.32	14.3	0.13	0.33	2.74	0.58	40 08	
50	11.23	11.23	33.781	25.787	221.2	0.114	4.88	212.4	78.7	17.9	1.38	15.1	0.13	0.41	2.62	0.64	50 07	
60	11.36	11.35	33.796	25.776	222.5	0.136	4.89	213.0 D	79.1	20.3	1.51	17.4	0.12	0.38	1.90	0.50	60 06	
70	11.19	11.18	33.783	25.797	220.8	0.158	4.83	210.5	77.9	18.0	1.39	15.2	0.13	0.41	2.53	0.68	71 05	
75	ISL	10.94 D	10.93	33.799 D	25.855	215.4	0.170	4.37	190.3 D	70.0	19.9	1.49	17.0	0.12	0.34	1.99	0.58	76
85	10.36	10.35	33.808	25.964	205.2	0.190	3.48	151.7	55.1	23.6	1.69	20.6	0.09	0.19	0.92	0.38	86 04	
100	10.37	10.36	33.816	25.968	205.2	0.221	3.44	149.7	54.5	23.9	1.73	20.8	0.09	0.22	0.89	0.38	101 03	
120	10.28	10.26	33.828	25.994	203.1	0.262	3.34	145.3	52.8	24.8	1.74	21.3	0.09	0.21	0.89	0.38	121 02	
125	ISL	10.24 D	10.22	33.827 D	26.001	202.6	0.274	3.32	144.4 D	52.4	24.9	1.75	21.3	0.09	0.22	0.88	0.38	126
140	10.17	10.15	33.830	26.015	201.6	0.302	3.30	143.8	52.1	24.9	1.76	21.4	0.09	0.23	0.82	0.36	141 01	

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

RV BELL M SHIMADA

CALCOFI CRUISE 1304

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		
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SV	DYN HT	OXYGEN	OXYGEN	OXY	SI03	P04	N03	N02	NH4	CHL-A	PHAEAO	PRES SAMP
m	DEG C	DEG C		THETA		ml/L	μmol/Kg	μmol/Kg	PCT	μM	μM	μM	μM	μM	μg/L	μg/L	db
33	44.8 N	120 24.5 W	20/04/2013	0042	UTC	966 m	320	19 kn	320 04 06	0	1018.3 mb	14.0 C	12.1 C				0/8 053
0	12.56	12.56	33.694	25.469	250.2	0.000	5.94	258.5	98.4	13.1	1.07	9.8	0.09	0.08	3.10	0.55	0
2	12.56	12.56	33.694	25.469	250.2	0.005	5.94	258.5	98.4	13.1	1.07	9.8	0.09	0.08	3.10	0.55	2 21
10	11.75	11.75	33.710	25.634	234.7	0.024	5.46	237.6	89.0	15.6	1.27	13.0	0.10	0.05	2.45	0.68	10 19
10	11.75	11.75	33.708	25.633	234.8	0.025											10 20
20	11.20	11.19	33.747	25.766	222.4	0.047	4.51	196.2	72.6	18.4	1.51	16.5	0.11	0.11	1.45	0.54	20 18
30	10.03	10.03	33.839	26.041	196.5	0.068	3.17	138.1	49.9	25.1	1.87	21.8	0.10	0.10	0.53	0.38	30 17
40	9.49	9.48	33.922	26.198	181.8	0.087	2.43	105.8	37.8	30.5	2.15	25.9	0.08	0.08	0.17	0.24	40 16
50	9.25	9.24	33.941	26.252	176.9	0.105	2.31	100.3	35.6	31.8	2.22	26.9	0.05	0.11	0.08	0.26	50 15
60	9.20	9.20	33.943	26.261	176.3	0.123	2.25	98.0	34.8	32.1	2.23	27.1	0.04	0.11	0.05	0.22	60 14
70	9.07	9.06	33.995	26.323	170.5	0.140	2.03	88.3	31.3	34.2	2						

RV BELL M SHIMADA

CALCOFI CRUISE 1304

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		
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXYGEN	OXY	SI03	P04	N03	N02	NH4	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C	THETA			ml/L	μmol/Kg	PCT	μM	μM	μM	μM	μM	μM	μg/L	μg/L	db	
33 33.6 N	120 47.6 W	19/04/2013	2002	UTC	2016 m	330 19 kn	330 04	06	0	1021.8 mb	13.8 C	12.1 C	14 m	0/8	0.35	0		
0	12.69	12.69	33.546	25.328	263.6	0.000	5.97	259.9	99.1	6.2	0.76	5.6	0.17	0.29	0.86	0.35	0	
2 A	12.69	12.69	33.546	25.328	263.6	0.005	5.97	259.9	99.1	6.2	0.76	5.6	0.17	0.29	0.86	0.35	2 22	
9 A	12.68	12.68	33.543	25.329	263.7	0.024	6.00	261.2	99.6	6.2	0.76	5.6	0.17	0.20	0.88	0.41	9 20	
9	12.68	12.68	33.544	25.329	263.7	0.024											9 21	
10 ISL	12.65 D	12.65	33.544	D 25.334	263.3	0.027	5.99	D 260.9	D 99.5	6.2	0.76	5.6	0.17	0.20	0.86	0.39	10	
12 A	12.65	12.65	33.544	25.334	263.3	0.032	5.97	260.0	99.1	6.2	0.76	5.6	0.17	0.21	0.82	0.37	12 19	
20 ISL	12.57 D	12.57	33.543	D 25.350	262.0	0.053	5.99	D 260.7	D 99.2	6.1	0.76	5.5	0.17	0.19	0.90	0.41	20	
22 A	12.57	12.57	33.551	25.357	261.4	0.058	5.95	259.3	98.7	6.1	0.76	5.5	0.17	0.19	0.92	0.41	22 18	
30 ISL	12.55 D	12.54	33.543	D 25.355	261.9	0.079	5.97	D 259.9	D 98.8	6.2	0.76	5.6	0.17	0.22	0.92	0.44	30	
32	12.53	12.52	33.549	25.364	261.1	0.084	5.94	258.7	98.3	6.2	0.76	5.6	0.17	0.23	0.92	0.45	32 17	
40 A	12.45	12.45	33.545	25.375	260.2	0.105	5.89	256.7	97.4	6.3	0.78	5.7	0.18	0.37	0.79	0.41	40 16	
50 A	12.31	12.30	33.546	25.404	257.8	0.131	5.79	252.3	95.5	6.8	0.85	6.4	0.25	0.68	0.50	0.28	50 15	
60	11.44	11.43	33.536	25.560	243.1	0.156	5.24	228.3	84.8	9.9	1.08	10.3	0.23	0.42	0.23	0.19	60 14	
71	11.40	11.39	33.561	25.587	240.8	0.182	5.03	218.8	81.2	11.8	1.20	12.3	0.16	0.38	0.24	0.19	72 13	
75 ISL	11.36 D	11.35	33.583	D 25.612	238.6	0.193	5.08	D 221.2	D 82.0	12.4	1.24	13.0	0.15	0.35	0.21	0.18	76	
85	10.49	10.48	33.596	D 25.776	223.1	0.217	4.59	199.9	72.8	14.0	1.33	14.6	0.14	0.28	0.14	0.16	86 12	
100	9.68	9.67	33.672	25.973	204.5	0.247	3.44	149.9	53.6	22.1	1.76	21.7	0.04	0.06	0.03	0.12	101 11	
120	9.26	9.24	33.804	26.146	188.5	0.287	3.03	131.7	46.8	26.2	1.93	24.3	0.04	0.12	0.01	0.10	121 10	
125 ISL	9.15 D	9.13	33.834	D 26.186	184.7	0.298	3.04	D 132.1	D 46.8	27.1	1.95	24.6	0.04	0.12	0.01	0.10	126	
140	8.84	8.82	33.901	26.288	175.3	0.323	2.89	125.7	44.2	29.9	2.00	25.3	0.04	0.10	0.01	0.09	141	
150 ISL	8.64 D	8.62	33.955	D 26.362	168.5	0.342	2.69	D 117.2	D 41.1	32.0	2.07	26.4	0.04	0.11	0.01	0.08	151	
170	8.35	8.33	33.996	26.438	161.6	0.373	2.41	104.7	36.5	36.3	2.21	28.5	0.03	0.12	0.01	0.08	171 08	
200 ISL	8.11 D	8.09	34.040	D 26.509	155.3	0.423	2.11	D 92.0	D 31.9	39.3	2.30	29.6	0.03	0.04	0.00	0.06	202	
201	8.14	8.12	34.028	26.497	155.6	0.422	2.24	97.4	33.8	39.4	2.30	29.6	0.03	0.04	0.00	0.06	203 07	
230	7.84	7.81	34.097	26.596	147.6	0.466	1.61	70.1	24.2	45.3	2.53	31.9	0.02	0.04			232 06	
250 ISL	7.60 D	7.57	34.103	D 26.635	144.1	0.499	1.46	D 63.7	D 21.8	48.2	2.63	32.8	0.02	0.09			252	
270	7.62	7.59	34.151	26.670	141.1	0.524	1.18	51.3	17.6	51.1	2.72	33.7	0.02	0.13			272 05	
300 ISL	7.38 D	7.35	34.192	D 26.738	135.2	0.569	0.92	D 40.1	D 13.7	56.6	2.85	35.0	0.02	0.11			302	
320	7.12	7.08	34.223	26.799	129.5	0.592	0.74	32.1	10.9	60.4	2.93	35.9	0.02	0.09			323 04	
379	6.73	6.70	34.265	26.885	122.1	0.666	0.47	20.2	6.8	66.8	3.07	37.2	0.02	0.12			382 03	
400 ISL	6.70 D	6.67	34.283	D 26.905	120.6	0.697	0.43	D 18.9	D 6.3	69.0	3.10	37.5	0.02	0.13			403	
440	6.37	6.33	34.295	26.959	115.8	0.739	0.33	14.4	4.8	73.2	3.17	38.2	0.03	0.15			444 02	
500 ISL	6.01 D	5.96	34.316	D 27.022	110.3	0.813	0.29	D 12.6	D 4.2	80.3	3.27	39.5	0.02	0.15			504	
515	5.92	5.87	34.320	27.037	109.0	0.823	0.27	11.6	3.8	82.0	3.30	39.8	0.02	0.15			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 BELL M SHIMADA

CALCOFI CRUISE 1304

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		
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXYGEN	OXY	SI03	P04	N03	N02	NH4	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C	THETA			ml/L	μmol/Kg	PCT	μM	μM	μM	μM	μM	μM	μg/L	μg/L	db	
33 14.9 N	121 27.1 W	19/04/2013	1352	UTC	3805 m	320 20 kn	320 04	06	2	1022.8 mb	12.4 C	12.1 C	8/8	SC	051			
0	13.33	13.33	33.466	25.139	281.5	0.000	6.03	262.8	101.5	4.3	0.49	2.3	0.10	0.08	0.71	0.10	0	
2	13.33	13.33	33.466	25.139	281.6	0.006	6.03	262.8	101.5	4.3	0.49	2.3	0.10	0.08	0.71	0.10	2 21	
10	13.34	13.34	33.488	25.154	280.4	0.028	6.04	263.1	101.7	4.3	0.49	2.2	0.10	0.08	0.63	0.11	10 19	
10	13.34	13.34	33.469	25.140	281.8	0.028											20 18	
20	13.32	13.31	33.470	25.146	281.5	0.056	6.04	262.9	101.5	4.3	0.49	2.3	0.10	0.08	0.60	0.17	20 18	
30	13.28	13.28	33.470	25.154	281.0	0.084	6.03	262.9	101.5	4.2	0.49	2.3	0.10	0.11	0.60	0.17	30 17	
40	13.21	13.21	33.463	25.163	280.5	0.113	6.02	262.2	101.0	4.2	0.50	2.3	0.10	0.15	0.63	0.13	40 16	
50	13.20	13.19	33.462	25.165	280.6	0.141	6.01	261.8	100.9	4.2	0.51	2.4	0.11	0.25	0.56	0.10	50 15	
61	11.88	11.87	33.489	D 25.442	254.4	0.171	5.88	256.1	96.0	4.6	0.57	3.1	0.16	0.39	0.37	0.11	61 14	
71	10.94	10.93	33.508	25.627	236.9	0.195	4.54	197.5	72.6	13.7	1.27	14.7	0.03	0.02	0.14	0.13	72 13	
75 ISL	10.82 D	10.81	33.597	D 25.719	228.2	0.205	4.39	D 191.2	D 70.1	15.0	1.35	15.8	0.03	0.02	0.12	0.13	76	
85	10.52	10.51	33.600	25.775	223.2	0.227	3.83	166.8	60.8	18.3	1.54	18.7	0.03	0.03	0.08	0.13	86 12	
100	10.16	10.15	33.683	25.901	211.5	0.259	3.28	142.6	51.6	21.8	1.72	21.6	0.03	0.08	0.07	0.13	101 11	
120	9.73	9.71	33.808	26.072	195.7	0.300	2.70	117.6	42.2	26.1	1.92	24.5	0.03	0.08	0.02	0.11	121 10	
125 ISL	9.61 D	9.60	33.826	D 26.105	192.6	0.311	2.67	D 116.3	D 41.6	27.1	1.95	24.9	0.03	0.09	0.02	0.12	126	
140	9.14	9.12	33.895	26.236	180.4	0.338	2.53	110.0	39.0	30.0	2.03	26.0	0.03	0.11	0.01	0.12	141 09	
150 ISL	9.07 D	9.05	33.931	D 26.275	176.8	0.357	2.38	D 103.5	D 36.6	31.7	2.08	26.9	0.03	0.11	0.01	0.13	151	
171	8.70	8.68	33.999	26.387	1													

RV BELL M SHIMADA

CALCOFI CRUISE 1304

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		
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXYGEN	OXY	SI03	P04	N03	N02	NH4	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C	THETA			ml/L	μmol/Kg	PCT	μM	μM	μM	μM	μM	μg/L	μg/L	db	050	
32	54.6 N	122 7.9 W	19/04/2013	0753	UTC	4210 m	350	23 kn										
0	13.69	13.69	33.267	24.913	303.0	0.000	6.02	262.4	102.0	3.2	0.33	0.1	0.02	0.11	0.36	0.11	0	
3	13.69	13.68	33.267	24.914	303.1	0.009	6.02	262.4	102.0	3.2	0.33	0.1	0.02	0.11	0.36	0.11	3	
10	13.69	13.69	33.274	24.919	302.8	0.030	6.02	262.5	102.0	3.2	0.32	0.0	0.02	0.09	0.35	0.10	10	
10	13.69	13.69	33.263	24.911	303.6	0.031											20	
20	ISL	13.70 D	13.70	33.284	D 24.925	302.6	0.061	6.03	D 262.7	D 102.1	3.3	0.33	0.0	0.02	0.10	0.37	0.11	20
26	13.70	13.69	33.295	24.934	301.9	0.079	6.00	261.4	101.6	3.3	0.33	0.0	0.02	0.10	0.38	0.12	26	
30	ISL	13.69 D	13.69	33.295	D 24.936	301.8	0.091	6.01	D 261.9	D 101.8	3.3	0.33	0.0	0.02	0.11	0.38	0.13	30
41	13.65	13.64	33.298	24.947	301.1	0.124	5.98	260.4	101.2	3.3	0.34	0.1	0.03	0.12	0.40	0.14	41	
50	13.44	13.44	33.265	24.964	299.7	0.151	6.01	261.8	101.2	3.3	0.34	0.2	0.03	0.12	0.41	0.12	50	
62	13.18	13.17	33.235	24.994	297.2	0.187	6.06	264.0	101.5	3.3	0.36	0.4	0.05	0.14	0.42	0.12	62	
75	ISL	12.83 D	12.82	33.282	D 25.100	287.4	0.226	5.88	D 256.4	D 97.9	4.0	0.43	1.3	0.16	0.34	0.26	0.12	76
76	12.50	12.49	33.309	25.185	279.3	0.230	5.92	257.9	97.8	4.0	0.44	1.4	0.17	0.35	0.25	0.12	77	
87	12.16	12.14	33.327	25.265	271.9	0.258	5.75	250.6	94.4	5.3	0.64	4.4	0.21	0.14	0.13	0.11	88	
100	11.80	11.78	33.356	25.356	263.6	0.293	5.55	241.9	90.4	6.4	0.76	6.6	0.13	0.09	0.09	0.09	101	
113	11.15	11.14	33.401	25.509	249.3	0.326	5.22	227.3	83.8	8.5	0.92	9.3	0.05	0.08	0.05	0.08	114	
125	10.39	10.38	33.455	25.684	232.7	0.355	4.44	193.2	70.1	13.7	1.24	14.8	0.02	0.10	0.03	0.06	126	
141	9.90	9.89	33.582	25.867	215.6	0.391	3.89	169.5	60.9	18.4	1.50	18.5	0.02	0.10	0.02	0.04	142	
150	ISL	9.75 D	9.74	33.661	D 25.954	207.5	0.413	3.59	D 156.4	D 56.0	20.8	1.61	20.3	0.02	0.10	0.02	0.04	151
171	9.29	9.27	33.802	26.141	190.1	0.452	3.04	132.1	46.9	26.4	1.87	24.4	0.02	0.09	0.01	0.04	172	
200	ISL	8.75 D	8.72	33.937	D 26.332	172.4	0.508	2.57	D 111.8	D 39.3	31.8	2.06	27.1	0.02	0.15	0.00	0.03	202
201	8.74	8.72	33.934	26.331	172.5	0.506	2.58	112.2	39.4	32.0	2.07	27.2	0.02	0.15	0.00	0.03	203	
230	8.29	8.26	34.012	26.463	160.4	0.554	2.23	97.1	33.8	37.1	2.20	29.2	0.00	0.09			232	
250	ISL	8.16 D	8.13	34.044	D 26.507	156.6	0.590	2.00	D 86.8	D 30.1	40.5	2.31	30.4	0.00	0.09			252
271	7.87	7.84	34.082	26.580	149.8	0.618	1.68	73.0	25.2	44.0	2.42	31.6	0.00	0.10			273	
300	ISL	7.53 D	7.50	34.109	D 26.651	143.4	0.665	1.35	D 58.7	D 20.1	49.4	2.57	33.3	0.00	0.11			302
320	7.45	7.42	34.157	26.701	139.1	0.689	1.07	46.5	15.9	53.1	2.67	34.4	0.00	0.12			323	
380	6.87	6.84	34.194	26.811	129.2	0.769	0.68	29.5	10.0	62.8	2.87	36.8	0.00	0.11			383	
400	ISL	6.75 D	6.71	34.202	D 26.835	127.2	0.801	0.64	D 27.6	D 9.3	64.6	2.91	37.2	0.01	0.12			403
441	6.47	6.43	34.224	26.889	122.5	0.846	0.50	21.7	7.3	68.4	2.98	38.0	0.02	0.14			445	
500	ISL	6.14 D	6.10	34.246	D 26.950	117.2	0.924	0.41	D 17.7	D 5.9	75.5	3.04	39.3	0.00	0.13			504
516	5.92	5.88	34.234	26.969	115.4	0.936	0.41	17.7	5.9	77.4	3.05	39.6	0.00	0.13			520	

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

RV BELL M SHIMADA

CALCOFI CRUISE 1304

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		
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXYGEN	OXY	SI03	P04	N03	N02	NH4	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C	THETA			ml/L	μmol/Kg	PCT	μM	μM	μM	μM	μM	μg/L	μg/L	db	049	
32	34.8 N	122 49.0 W	19/04/2013	0151	UTC	4298 m	350	17 kn	340 05 06	1	1025.0	mb	14.1	C	12.7	C	4/8	SC 049
0	13.81	13.81	33.265	24.886	305.6	0.000	6.07	264.3	103.0	3.1	0.36	0.2	0.00	0.07	0.48	0.09	0	
2	13.81	13.81	33.265	24.887	305.6	0.006	6.07	264.3	103.0	3.1	0.36	0.2	0.00	0.07	0.48	0.09	2	
10	13.81	13.81	33.264	24.886	306.0	0.031	6.07	264.5	103.0	3.0	0.35	0.1	0.00	0.04	0.47	0.10	19	
10	13.81	13.81	33.264	24.886	305.9	0.032											20	
20	13.68	13.68	33.251	24.902	304.7	0.061	6.06	264.0	102.6	3.0	0.35	0.0	0.00	0.06	0.44	0.10	18	
30	13.60	13.59	33.240	24.913	304.0	0.092	6.05	263.8	102.3	3.0	0.33	0.0	0.00	0.10	0.45	0.11	30	
40	13.56	13.55	33.231	24.913	304.2	0.122	6.05	263.5	102.1	3.0	0.34	0.1	0.00	0.12	0.46	0.13	40	
50	13.51	13.50	33.227	24.922	303.7	0.152	6.03	262.6	101.6						0.43	0.13	50	
60	13.32	13.31	33.230	24.962	300.2	0.183	6.01	261.7	100.9	3.1	0.35	0.2	0.03	0.19	0.36	0.13	60	
70	12.04	12.03	33.338	D 25.295	268.6	0.213	5.81	253.0	95.0	5.1	0.63	4.4	0.14	0.12	0.31	0.20	71	
75	ISL	11.90 D	11.89	33.399	D 25.369	261.7	0.226	5.76	D 251.0	D 94.1	5.8	0.72	5.7	0.17	0.19	0.24	0.17	76
85	11.59	11.58	33.434	25.453	254.0	0.250	5.46	237.6	88.5	7.4	0.89	8.2	0.24	0.33	0.11	0.11	86	
100	10.99	10.98	33.441	25.568	243.3	0.287	4.96	216.0	79.4	10.5	1.06	11.6	0.11	0.07	0.07	0.10	101	
120	9.92	9.90	33.476	25.781	223.2	0.334	4.37	190.4	68.4	15.2	1.35	16.4	0.00	0.17	0.02	0.03	121	
125	ISL	9.82 D	9.81	33.491	D 25.809	220.7	0.348	4.32	D 188.2	D 67.5	16.2	1.39	17.2	0.00	0.16	0.02	0.03	126
140	9.39	9.37	33.599	26.582	196.2	0.377	4.02	175.1	62.2	19.1	1.51	19.4	0.00	0.11	0.01	0.03	141	
150	ISL	9.10 D	9.08	33.712	D 26.099	193.5	0.400	3.93	D 171.0	D 60.4	21.1	1.57	20.4	0.00	0.11	0.01	0.03	151
171	8.86	8.85	33.819	26.221	182.4	0.437	3.62	157.3	55.3	25.3	1.69	22.5	0.00	0.11	0.00	0.02	172	
200	8.49	8.47	33.924	26.362	169.4	0.488	3.39	147.7	51.6	29.6	1.81	24.7	0.00	0.17	0.00	0.02	202	
230	8.13	8.11	33.966	26.450	161.5	0.537	3.01	131.1	45.4	34.4	1.97	26.9	0.00	0.04			232	
250	ISL	7.87 D	7.84	33.975	D 26.496	157.4	0.573	2.85	D 123.9	D 42.7	39.1	2.11	28.8	0.00	0.06			252
270	7.40	7.38	33.999</td															

RV BELL M SHIMADA

CALCOFI CRUISE 1304

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			
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SVA	DYN	HT	OXYGEN	OXYGEN	OXY	SIO3	P04	N03	N02	NH4	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C	THETA			ml/L	µmol/Kg	PCT	µM	µM	µM	µM	µM	µM	µM	µg/L	µg/L	db	
32 14.6 N	123 30.3 W	18/04/2013	1932	UTC	4148 m	350	17 kn	340	06	05	1	1026.8	mb	14.0	C	12.5	C	4/8	SC 048
0	14.95	14.95	33.427	24.770	316.6	0.000	5.82	253.6	101.2	2.8	0.28	0.0	0.00	0.09	0.12	0.01	0.01	0	
2 A	14.95	14.95	33.427	24.770	316.7	0.006	5.82	253.6	101.2	2.8	0.28	0.0	0.00	0.09	0.12	0.01	0.01	2 23	
10 ISL	14.94	D 14.94	33.426 D	24.772	316.8	0.032	5.84	D 255.3	D 101.9	2.8	0.28	0.0	0.00	0.08	0.12	0.01	0.01	10	
16 A	14.95	14.95	33.438	24.781	316.2	0.051	5.84	254.6	101.6	2.8	0.28	0.0	0.00	0.07	0.11	0.01	0.01	16 21	
16	14.95	14.95	33.427	24.772	317.0	0.051												16 22	
20 ISL	14.91	D 14.91	33.426 D	24.780	316.4	0.064	5.84	D 254.6	D 101.6	2.8	0.28	0.0	0.00	0.06	0.11	0.02	0.02	20	
22 A	14.92	14.92	33.438	24.786	315.8	0.070	5.88	256.1	102.2	2.8	0.28	0.0	0.00	0.06	0.11	0.02	0.02	22 20	
30 ISL	14.90	D 14.89	33.426 D	24.784	316.4	0.096	5.84	D 254.6	D 101.5	2.8	0.28	0.0	0.00	0.04	0.12	0.01	0.01	30	
32	14.89	14.89	33.426	24.785	316.3	0.101	5.83	254.0	101.3	2.8	0.28	0.0	0.00	0.04	0.12	0.01	0.01	32 19	
41 A	14.81	14.80	33.412	24.792	315.9	0.130	5.85	254.8	101.4	2.8	0.29	0.0	0.00	0.05	0.13	0.02	0.02	41 18	
50 ISL	14.34	D 14.33	33.341 D	24.838	311.8	0.159	5.93	D 258.5	D 101.8	2.8	0.30	0.0	0.00	0.07	0.20	0.02	0.02	50	
53	14.08	14.08	33.331	24.884	307.5	0.167	5.93	258.4	101.3	2.8	0.30	0.0	0.00	0.08	0.22	0.03	0.03	53 17	
66	13.40	13.39	33.246	24.958	300.7	0.207	6.01	261.7	101.1	3.0	0.32	0.0	0.00	0.10	0.39	0.07	0.07	67 16	
75 ISL	12.96	D 12.95	33.177 D	24.994	297.5	0.236	6.06	D 264.2	D 101.1	3.3	0.36	0.3	0.05	0.08	0.55	0.23	0.23	76	
76 A	12.92	12.91	33.171	24.998	297.2	0.236	6.03	262.8	100.5	3.3	0.36	0.3	0.05	0.08	0.57	0.25	0.25	77 15	
84	12.63	12.62	33.154	25.040	293.4	0.260	5.98	260.5	99.0	3.5	0.40	0.7	0.10	0.19	0.54	0.20	0.04	85 14	
90 A	12.38	12.37	33.127	25.067	290.9	0.278	6.00	261.2	98.7	3.6	0.42	0.9	0.14	0.28	0.44	0.19	0.13	91 13	
100	11.85	11.84	33.138	25.177	280.7	0.306	5.84	254.4	95.1	4.7	0.56	3.0	0.16	0.37	0.22	0.13	101 12		
110	11.46	11.45	33.251	25.336	265.7	0.333	5.39	234.6	87.0	6.9	0.73	6.5	0.04	0.08	0.14	0.09	0.09	111 11	
124	11.25	11.23	33.293	25.408	259.1	0.370	5.22	227.5	84.0	7.8	0.82	8.0	0.03	0.15	0.16	0.07	0.07	125 10	
125 ISL	11.27	D 11.25	33.293 D	25.405	259.5	0.376	5.24	D 228.3	D 84.3	8.0	0.83	8.2	0.03	0.15	0.15	0.07	0.07	126	
146	10.65	10.63	33.377	25.580	243.2	0.426	4.82	210.1	76.6	10.8	1.03	11.8	0.02	0.13	0.09	0.05	0.05	147 09	
150 ISL	10.62	D 10.60	33.381 D	25.588	242.5	0.439	4.82	D 209.7	D 76.4	12.1	1.10	13.0	0.02	0.12	0.08	0.04	0.04	151	
170	9.54	9.53	33.611	25.950	208.3	0.480	4.08	177.4	63.3	18.7	1.46	18.9	0.00	0.06	0.01	0.02	0.02	171 08	
200 ISL	8.97	D 8.95	33.829 D	26.213	183.8	0.543	3.59	D 156.0	D 55.0	24.9	1.68	22.6	0.00	0.06	0.00	0.03	0.03	202	
202	8.94	8.92	33.826	26.215	183.6	0.543	3.57	155.5	54.8	25.3	1.69	22.8	0.00	0.06	0.00	0.03	0.03	204 07	
230	8.64	8.61	33.913	26.332	173.0	0.593	3.29	143.1	50.1	29.3	1.83	24.8	0.00	0.07				232 06	
250 ISL	8.35	D 8.32	33.960 D	26.413	165.5	0.631	3.00	D 130.6	D 45.5	33.4	1.97	26.7	0.00	0.09				252	
271	8.10	8.07	33.995	26.478	159.6	0.661	2.55	111.0	38.4	37.6	2.12	28.7	0.00	0.12				273 05	
300 ISL	7.76	D 7.73	34.019 D	26.548	153.3	0.712	2.31	D 100.5	D 34.5	42.6	2.26	30.5	0.00	0.14				302	
320	7.53	7.50	34.031 D	26.590	149.6	0.742	2.06	D 89.8	D 37.8									323 04	
380	6.79	6.76	34.072	26.725	137.2	0.822	1.38	60.2	20.2	56.6	2.63	35.4	0.00	0.21				383 03	
400 ISL	6.52	D 6.48	34.078 D	26.767	133.3	0.856	1.27	D 55.3	D 18.5	60.4	2.70	36.3	0.00	0.20				403	
444	6.07	6.03	34.096	26.840	126.7	0.907	0.95	41.2	13.6	68.5	2.85	38.4	0.00	0.19				448 02	
500 ISL	5.67	D 5.63	34.146 D	26.929	118.6	0.983	0.67	D 29.3	D 9.6	77.1	2.97	39.8	0.00	0.14				504	
520	5.51	5.46	34.152	26.954	116.3	0.999	0.62	27.1	8.8	80.1	3.01	40.3	0.00	0.12				524 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 BELL M SHIMADA

CALCOFI CRUISE 1304

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			
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SVA	DYN	HT	OXYGEN	OXYGEN	OXY	SIO3	P04	N03	N02	NH4	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C	THETA			ml/L	µmol/Kg	PCT	µM	µM	µM	µM	µM	µM	µM	µg/L	µg/L	db	
33 53.5 N	118 29.6 W	10/04/2013	0734	UTC	56 m	350	09 kn											016	
0	14.24	14.24	33.598	25.055	289.6	0.000	5.93	258.4	101.8	3.3	0.35	1.6	0.08		3.98	0.93	0.93	0	
2	14.24	14.24	33.598	25.055	289.6	0.006	5.93	258.4	101.8	3.3	0.35	1.6	0.08		3.98	0.93	0.93	2 08	
5	14.21	14.21	33.602	25.064	288.9	0.015	5.91	257.5	101.4	3.4	0.37	1.6	0.08		4.29	0.78	0.78	5 07	
10 ISL	13.87	D 13.87	33.598	25.131	282.6	0.029	5.79	252.4	98.7	4.2	0.42	2.6	0.08		4.34	0.76	0.76	10 05	
11	13.87	13.87	33.602	25.134	282.3	0.030												10 06	
20	10.75	10.75	33.648	25.768	222.2	0.054	3.35	145.8	53.4	19.9	1.64	19.3	0.10		0.27	0.20	0.20	20 04	
30	10.36	10.36	33.629	25.821	217.4	0.076	2.82	122.9	44.6	25.8	2.17	22.5	0.26		0.13	0.22	0.22	30 03	
39	10.11	10.10	33.807	26.004	200.2	0.095	2.60	113.2	40.9	26.6	1.96	23.5	0.14		0.06	0.21	0.21	39 02	
46	9.95	9.95	33.868	D 26.078	193.3	0.109	2.34	D 107.9	D 36.7									46 01	
75 ISL	10.14	D 10.13	33.878 D	26.056	196.2	0.173	2.48	D 107.9	D 39.1	27.1	2.01	24.2	0.03		0.02	0.08	0.08	76	
85	9.77	9.76	33.949	26.173	185.2	0.191	2.21	96.1	34.5	29.7	2.10	25.7	0.04		0.02	0.09	0.09	86 12	
100	9.61	9.60	34.018	26.255	177.8	0.218	1.96	85.2	30.5	31.9	2.20	26.8	0.05		0.02	0.12	0.12	101 11	
120	9.31	9.29	34.111	26.377	166.6	0.252	1.73	75.5	24.3	24.1	1.88	22.6	0.03		0.01	0.07	0.07	121 10	
125 ISL	9.31	D 9.29	34.107 D	26.375	166.9	0.262	1.66	D 72.4	D 25.8	3									

RV BELL M SHIMADA

CALCOFI CRUISE 1304

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			
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SV	DYN HT	OXYGEN	OXYGEN	OXY	SI03	P04	N03	N02	NH4	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C	THETA			ml/L	μmol/Kg	PCT	μM	μM	μM	μM	μM	μM	μg/L	μg/L	db	
33 39.3 N	118 58.5 W	10/04/2013	1353	UTC	733 m	300 07 kn	280 02 07	0	1018.2 mb	14.9 C	13.2 C	0/8	0/8	0/8	0/8	0/8	018	
0	14.52	14.52	33.556	24.963	298.3	0.000	6.15	267.9	106.1	3.7	0.34	0.0	0.00	0.07	2.56	0.33	0	
2	14.52	14.51	33.556	24.964	298.3	0.006	6.15	267.9	106.1	3.7	0.34	0.0	0.00	0.07	2.56	0.33	2 24	
10	14.06	14.06	33.564	25.066	288.8	0.030	5.80	252.6	99.1	5.6	0.55	3.2	0.05	0.14	2.32	0.41	10 23	
20	12.45	12.45	33.581	25.402	257.1	0.057	5.13	223.4	84.8	9.8	0.90	8.7	0.09	0.13	1.25	0.38	20 22	
30	11.11	11.11	33.586	25.657	233.1	0.081	4.20	183.0	67.5	15.5	1.30	15.2	0.07	0.08	0.48	0.29	30 21	
41	10.52	10.51	33.590	25.764	223.1	0.106	3.96	172.5	62.9	17.9	1.43	17.5	0.04	0.05	0.18	0.21	41 20	
50	10.15	10.15	33.654	25.877	212.5	0.126	3.50	152.2	55.0	20.8	1.61	20.2	0.03	0.08	0.08	0.15	50 19	
61	10.25	10.24	33.777	25.957	205.3	0.149	2.89	125.7	45.6	23.8	1.78	22.1	0.03	0.13	0.05	0.13	61 18	
70	10.15	10.14	33.799	25.991	202.2	0.167	2.78	121.0	43.8	24.8	1.84	22.8	0.03	0.12	0.03	0.08	71 17	
75 ISL	10.05 D	10.05	33.807 D	26.014	200.1	0.179	2.75	d119.5 D	43.2	25.4	1.87	23.2	0.03	0.11	0.03	0.09	76	
85	9.95	9.94	33.850	26.067	195.4	0.197	2.58	112.4	40.5	26.6	1.93	23.9	0.02	0.10	0.02	0.10	86 16	
100 ISL	9.59 D	9.58	33.913 D	26.176	185.3	0.227	2.38	d103.6 D	37.1	29.5	2.02	25.4	0.00	0.07	0.02	0.09	101	
101	9.56	9.55	33.919	26.185	184.4	0.228	2.37	103.1	36.9	29.7	2.03	25.5	0.00	0.07	0.02	0.09	102 15	
120	9.28	9.26	33.971	26.273	176.4	0.262	2.14	93.1	33.1	33.0	2.13	27.0	0.00	0.10	0.01	0.10	121 14	
125 ISL	9.31 D	9.29	33.985 D	26.279	176.0	0.273	2.12	d92.2 D	32.8	33.5	2.15	27.3	0.01	0.09	0.01	0.10	126	
140	9.07	9.05	34.008	26.336	170.9	0.297	1.97	85.8	30.4	35.1	2.19	28.0	0.02	0.07	0.01	0.09	141 13	
150 ISL	9.02 D	9.01	34.029 D	26.359	168.9	0.316	1.91	d83.2 D	29.4	36.3	2.24	28.4	0.03	0.07	0.01	0.09	151	
171	8.84	8.82	34.097	26.443	161.3	0.348	1.65	71.7	25.3	38.8	2.33	29.3	0.04	0.08	0.01	0.08	172 12	
200	8.32	8.30	34.162 D	26.573	149.4	0.396	1.22 D	53.3 D	18.6								202 11	
230	8.22	8.20	34.177	26.602	147.2	0.438	1.16	50.3	17.5	46.8	2.55	32.1	0.00	0.09			232 10	
250 ISL	8.03 D	8.00	34.197 D	26.647	143.3	0.471	1.02 D	44.2 D	15.3	49.9	2.63	32.9	0.00	0.10			252	
270	7.83	7.80	34.219	26.694	139.1	0.495	0.85	36.9	12.7	53.0	2.70	33.7	0.00	0.11			272 09	
300 ISL	7.70 D	7.67	34.232 D	26.724	136.7	0.541	0.76	d33.2 D	11.4	55.8	2.75	34.3	0.00	0.11			302	
320	7.51	7.48	34.249	26.765	133.1	0.564	0.67	29.0	9.9	57.6	2.79	34.7	0.00	0.11			323 08	
380	7.02	6.98	34.279	26.858	124.9	0.641	0.47	20.2	6.8	64.7	2.93	36.4	0.00	0.12			383 07	
400 ISL	6.89 D	6.85	34.290 D	26.885	122.6	0.671	0.40 D	17.4 D	5.9	67.0	2.96	36.7	0.00	0.12			403	
440	6.66	6.61	34.305	26.929	118.9	0.714	0.32	14.1	4.7	71.7	3.03	37.4	0.00	0.12			444 06	
480	6.50	6.45	34.318	26.961	116.4	0.761	0.26	11.5	3.8	75.1	3.07	37.9	0.00	0.10			484 05	
500 ISL	6.38 D	6.33	34.322 D	26.980	114.7	0.791	0.25 D	10.8 D	3.6	77.0	3.10	38.3	0.00	0.08			504	
516	6.22	6.18	34.333	27.009	112.1	0.802	0.23	10.2	3.4	78.5	3.12	38.6	0.00	0.06			520 04	
600 ISL	5.61 D	5.55	34.373 D	27.119	102.1	0.900	0.14 D	5.9 D	1.9	92.7	3.21	38.8	0.00	0.07			605	
615	5.53	5.48	34.383	27.136	100.6	0.908	0.13	5.8	1.9	95.3	3.23	38.8	0.00	0.07			620 03	
700 ISL	5.29 D	5.23	34.393 D	27.174	97.8	1.001	0.12 D	5.0 D	1.6	102.6	3.31	37.4	0.00	0.13			706	
714	5.27	5.21	34.395	27.179	97.5	1.006	0.09	3.7	1.2	103.8	3.32	37.2	0.00	0.14			720 02	
720	5.26	5.20	34.395	27.180	97.5	1.011	0.09	4.1	1.3	104.1	3.34	37.3	0.00	0.15			726 01	

D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED 02;

RV BELL M SHIMADA

CALCOFI CRUISE 1304

STATION 86.7 45.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD			
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SV	DYN HT	OXYGEN	OXYGEN	OXY	SI03	P04	N03	N02	NH4	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C	THETA			ml/L	μmol/Kg	PCT	μM	μM	μM	μM	μM	μM	μg/L	μg/L	db	
33 29.4 N	119 19.4 W	10/04/2013	1808	UTC	1647 m	320 08 kn	300 02 08	0	1020.3 mb	14.8 C	13.1 C	08 m	0/8	0/8	0/8	0/8	019	
0	13.33	13.33	33.553	25.208	275.0	0.000	6.00	261.3	101.0	6.1	0.62	4.4	0.09	0.15	2.14	0.49	0	
2 A	13.33	13.32	33.553	25.208	275.0	0.006	6.00	261.3	101.0	6.1	0.62	4.4	0.09	0.15	2.14	0.49	2 24	
5 A	13.21	13.21	33.557	25.234	272.6	0.014	6.02	262.4	101.2	6.0	0.63	4.3	0.08	0.21	2.36	0.57	5 23	
7 A	13.17	13.17	33.553	25.240	272.2	0.019	6.02	262.2	101.0	6.0	0.62	4.3	0.09	0.20	2.35	0.64	7 22	
10 ISL	13.11 D	13.11	33.553 D	25.250	271.3	0.028	6.04 d263.3	d101.3	6.1	0.63	4.4	0.09	0.19	2.51	0.65	10		
13	13.09	13.09	33.554	25.256	270.8	0.035											13 21	
14 A	13.08	13.08	33.553	25.257	270.7	0.038	5.95	259.3	99.7	6.2	0.64	4.5	0.09	0.17	2.73	0.66	14 20	
20 ISL	13.00 D	13.00	33.555 D	25.275	269.2	0.055	5.88	d256.2	98.4	6.7	0.67	5.1	0.09	0.15	2.80	0.70	20	
23 A	12.96	12.96	33.556	25.284	268.5	0.062	5.79	252.3	96.8	7.0	0.69	5.4	0.09	0.14	2.84	0.72	23 19	
28 A	12.63	12.62	33.557	25.350	262.2	0.076	5.60	243.9	92.9	7.8	0.73	6.5	0.09	0.20	2.08	0.65	28 18	
30 ISL	12.52 D	12.52	33.559 D	25.373	260.2	0.081	5.49	d239.2	90.9	8.8	0.81	7.5	0.10	0.21	1.77	0.58	30	
33	12.26	12.26	33.556	25.420	255.7	0.089	5.23	227.6	86.0	10.2	0.92	9.1	0.11	0.23	1.29	0.47	33 17	
40	11.68	11.67	33.562	25.535	244.9	0.106	4.78	208.1	77.7	12.6	1.08	11.9	0.11	0.14	0.79	0.31	40 16	
50 ISL	10.42 D	10.41	33.630 D	25.813	218.7	0.130	3.69	d160.7 D	58.4	18.8	1.48	18.3	0.05	0.17	0.15	0.15	50	
51	10.37	10.37	33.641 D	25.829	217.1	0.133	3.49	d152.0 D	55.2	19.4	1.52	18.9	0.04	0.17	0.09	0.13	51 15	
60	10.08	10.07	33.740	25.957	205.2	0.151	2.99	129.9	46.9	23.6	1.78	22.3	0.03	0.15	0.03	0.10	60 14	
71	10.04	10.03	33.754	25.976	203.6	0.173	2.94	127.8	46.1	23.9	1.81	22.5	0.03	0.10	0.02</td			

RV BELL M SHIMADA

CALCOFI CRUISE 1304

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	
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	THETA	SVA	DYN HT	OXYGEN	OXYGEN	OXY	N03	N02	NH4	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C				73 m	320 25 kn	ml/L	μmol/Kg	PCT	SI03	PO4	μM	μM	μM	μg/L	db
0	12.51	12.51	33.659	25.451	251.8	0.000	5.75	250.2	95.2	9.9	0.86	8.0	0.12	0.17	2.70	0.79	0
3	12.51	12.50	33.659	25.452	251.9	0.008	5.75	250.2	95.2	9.9	0.86	8.0	0.12	0.17	2.70	0.79	3 10
5	12.52	12.52	33.658	25.449	252.2	0.013	5.72	249.2	94.8	10.0	0.86	8.1	0.12	0.12	2.83	0.73	5 09
10	12.44	12.43	33.669	25.473	250.1	0.025	5.76	251.0	95.3	9.8	0.85	7.9	0.12	0.14	2.76	0.74	10 08
10	12.42	12.42	33.656	25.467	250.6	0.025	5.05	219.8	82.5	14.2	1.18	12.4	0.16	0.33	1.45	0.70	20 06
20	11.89	11.89	33.711	25.610	237.3	0.050	4.55	D198.1	D 73.5	16.6	1.33	14.7	0.18	0.50	0.79	0.55	30
30	ISL	11.31	D 11.30	33.744	D 25.744	224.8	0.073	3.78	D164.5	D 60.4	16.8	1.35	14.9	0.18	0.52	0.72	0.54
31	10.77	10.77	33.791	D 25.876	212.2	0.075	2.80	121.8	43.8	28.1	1.92	24.0	0.13	0.17	0.17	0.30	41 04
41	9.81	9.80	33.873	26.106	190.5	0.095	2.41	104.8	37.3	31.5	2.07	26.2	0.11	0.18	0.09	0.28	49 03
49	9.39	9.39	33.921	26.212	180.7	0.110	2.42	D105.4	D 37.6	31.7	2.07	26.3	0.11	0.18	0.09	0.28	50
50	ISL	9.39	D 9.39	33.919	D 26.211	180.8	0.113	2.27	98.7	35.0	33.3	2.11	27.0	0.10	0.13	0.06	0.26
60	9.20	9.19	33.939	26.258	176.5	0.130	2.27	98.7	35.0	33.3	2.11	27.0	0.10	0.11	0.07	0.22	60 02
69	9.20	9.19	33.940	26.260	176.6	0.145	2.27	98.8	35.1	33.3	2.12	27.0	0.10	0.11	0.07	0.22	70 01

D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED 02;

RV BELL M SHIMADA

CALCOFI CRUISE 1304

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		
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	THETA	SVA	DYN HT	OXYGEN	OXYGEN	OXY	N03	N02	NH4	CHL-A	PHAEAO	PRES	SAMP	
m	DEG C	DEG C				1201 m	320 25 kn	ml/L	μmol/Kg	PCT	SI03	PO4	μM	μM	μM	μg/L	db	
0	11.92	11.92	33.676	25.577	239.9	0.000	5.75	250.4	94.1	10.4	1.05	10.0	0.15	0.86	0.68	0.58	0	
2	A	11.92	11.92	33.676	25.577	240.0	0.005	5.75	250.4	94.1	10.4	1.05	10.0	0.15	0.86	0.58	2 22	
9	11.91	11.91	33.675	25.578	240.1	0.021	5.74	249.9	93.9	10.6	1.07	10.1	0.16	0.85	0.69	0.60	9 20	
9	A	11.91	11.91	33.679	25.581	239.8	0.022	5.74	249.9	93.9	10.6	1.07	10.1	0.16	0.85	0.71	0.60	
10	ISL	11.91	D 11.91	33.674	D 25.577	240.1	0.024	5.76	D251.0	D 94.3	10.6	1.07	10.1	0.16	0.85	0.69	10	
13	A	11.91	11.91	33.675	25.578	240.2	0.031	5.75	250.4	94.0	10.6	1.08	10.1	0.16	0.86	0.62	0.59	
20	ISL	11.91	D 11.90	33.674	D 25.579	240.3	0.048	5.76	D250.9	D 94.2	10.6	1.09	10.1	0.16	0.86	0.64	0.54	
24	A	11.91	11.90	33.674	25.579	240.4	0.058	5.73	249.7	93.8	10.6	1.09	10.1	0.16	0.86	0.66	0.51	
30	ISL	11.88	D 11.87	33.675	D 25.585	240.4	0.073	5.74	D249.8	D 93.8	10.6	1.09	10.2	0.16	0.93	0.64	0.60	
35	11.87	11.87	33.676	25.587	239.9	0.084	5.72	249.2	93.5	10.7	1.09	10.2	0.16	0.98	0.63	0.68	35 17	
45	A	11.75	11.75	33.677	25.611	237.9	0.108	5.54	241.0	90.2	11.1	1.12	10.7	0.17	1.03	0.52	0.70	
50	ISL	11.22	D 11.22	33.696	D 25.723	227.4	0.121	5.20	D226.4	D 83.8	15.2	1.34	14.3	0.23	0.96	0.36	0.77	50
52	A	10.98	10.97	33.695	25.767	223.2	0.124	4.31	187.6	69.1	16.9	1.43	15.7	0.26	0.93	0.30	0.80	
60	10.18	10.17	33.740	25.941	206.7	0.141	3.14	136.5	49.4	23.4	1.76	22.0	0.17	0.14	0.13	0.77	60 14	
71	9.96	9.96	33.781	D 26.010	200.5	0.165	2.89	D125.6	D 45.3	26.0	1.88	23.6	0.10	0.10	0.48	0.72	13	
75	ISL	9.89	D 9.88	33.816	D 26.049	196.8	0.173	2.84	D123.7	D 44.5	26.4	1.90	23.8	0.10	0.11	0.48	0.76	
88	9.78	9.77	33.848	26.094	192.8	0.197	2.61	113.4	40.7	27.4	1.95	24.4	0.08	0.16	0.48	0.89	12	
100	9.49	9.48	33.897	26.179	184.9	0.220	2.35	102.3	36.5	29.9	2.04	26.0	0.06	0.16	0.40	0.40	101 10	
122	9.29	9.28	33.934	26.242	179.4	0.260	2.21	96.2	34.2	31.7	2.11	27.0	0.07	0.12	0.03	0.29	123 11	
125	ISL	9.26	D 9.24	33.937	D 26.249	178.8	0.267	2.21	D 96.0	D 34.1	31.9	2.11	27.1	0.07	0.12	0.02	0.29	
140	8.93	8.92	33.942	26.306	173.7	0.291	2.29	99.5	35.1	32.7	2.10	27.3	0.09	0.10	0.02	0.24	141 09	
150	ISL	8.75	D 8.73	33.984	D 26.367	168.0	0.311	2.17	D 94.4	D 33.2	34.3	2.14	28.0	0.08	0.09	0.01	0.23	
169	8.55	8.53	34.025	26.431	162.3	0.340	1.97	85.6	30.0	37.5	2.23	29.3	0.06	0.08	0.01	0.19	170 08	
200	8.10	8.07	34.119	26.574	149.2	0.388	1.45	63.0	21.8	44.8	2.47	31.9	0.03	0.21	0.01	0.13	202 07	
230	7.66	7.64	34.168	26.677	139.8	0.432	1.11	48.3	16.6	51.1	2.63	33.6	0.00	0.07			232 06	
250	ISL	7.51	D 7.48	34.197	D 26.723	135.8	0.462	0.98	D 42.6	D 14.6	53.5	2.70	34.2	0.00	0.08			252
275	7.39	7.36	34.216	26.755	133.1	0.493	0.80	34.7	11.8	56.5	2.78	35.0	0.00	0.09			277 05	
300	ISL	7.26	D 7.23	34.252	D 26.802	129.0	0.529	0.61	D 26.4	D 9.0	59.0	2.84	35.6	0.00	0.15			302
320	7.17	7.14	34.255	D 26.817	127.9	0.555	0.58	25.3	8.6	61.1	2.88	36.0	0.00	0.19			323 04	
382	6.65	6.62	34.285	26.912	119.5	0.628	0.44	19.0	6.4	69.1	3.00	37.5	0.00	0.27			385 03	
400	ISL	6.46	D 6.43	34.291	D 26.942	116.8	0.654	0.36	D 15.7	D 5.2	71.0	3.03	37.8	0.00	0.20			403
443	6.25	6.21	34.311	26.987	113.0	0.699	0.28	12.0	4.0	75.6	3.09	38.6	0.00	0.03			447 02	
500	ISL	5.89	D 5.85	34.334	D 27.051	107.5	0.767	0.24	D 10.6	D 3.5	81.3	3.13	39.5	0.00	0.04			504
523	5.85	5.80	34.341	27.063	106.6	0.786	0.21	9.2	3.0	83.6	3.15	39.8	0.00	0.04			527 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 02;

RV BELL M SHIMADA

CALCOFI CRUISE 1304

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	
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	THETA	SVA	DYN HT	OXYGEN	OXYGEN	OXY	N03	N02	NH4	CHL-A	PHAEAO	PRES	SAMP</

RV BELL M SHIMADA

CALCOFI CRUISE 1304

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		
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXYGEN	OXY	SI03	P04	N03	N02	NH4	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C	THETA			ml/L	μmol/Kg	PCT	μM	μM	μM	μM	μM	μM	μg/L	μg/L	db	
32	39.7 N	121 2.3 W	17/04/2013	1720	UTC	3805 m	350	22 kn	340 10 07 0	1023.1	mb	14.4	C	13.0	C	15 m	0/8	044
0	13.15	13.15	33.504	25.205	275.2	0.000	6.03	262.6	101.1	4.6	0.58	3.3	0.13	0.17	0.72	0.22	0	
2 A	13.15	13.15	33.504	25.205	275.3	0.006	6.03	262.6	101.1	4.6	0.58	3.3	0.13	0.17	0.72	0.22	2 22	
10 ISL	13.15 D	13.14	33.503 D	25.206	275.5	0.028	6.04	0263.0	0101.2	4.6	0.58	3.2	0.13	0.17	0.67	0.24	10	
11 A	13.14	13.14	33.504	25.207	275.4	0.030	6.05	263.4	101.4	4.6	0.58	3.2	0.13	0.17	0.66	0.25	11 20	
12	13.13	13.13	33.503	25.208	275.3	0.032											12 21	
14 A	13.15	13.15	33.506	25.207	275.5	0.039	6.02	262.3	101.0	4.5	0.58	3.2	0.13	0.18	0.74	0.16	14 19	
20 ISL	13.14 D	13.14	33.504 D	25.207	275.7	0.055	6.03	0262.6	0101.1	4.6	0.58	3.3	0.13	0.20	0.76	0.13	20	
24 A	13.12	13.12	33.517	25.222	274.4	0.066	6.01	261.9	100.8	4.6	0.58	3.3	0.13	0.21	0.78	0.11	24 18	
30 ISL	13.10 D	13.09	33.508 D	25.220	274.8	0.083	6.02	0262.1	0100.8	4.7	0.60	3.5	0.14	0.27	0.73	0.15	30	
34	13.07	13.06	33.518	25.234	275.3	0.094	5.98	260.7	100.2	4.8	0.62	3.7	0.14	0.31	0.70	0.18	34 17	
44 A	12.95	12.95	33.528	25.265	270.9	0.121	5.93	258.1	99.0	5.2	0.69	4.4	0.15	0.59	0.55	0.26	44 16	
50 ISL	12.95 D	12.94	33.528 D	25.266	270.9	0.138	5.94	0258.6	099.1	5.2	0.68	4.4	0.15	0.57	0.63	0.16	50	
52 A	12.94	12.93	33.534	25.272	270.4	0.143	5.91	257.3	98.6	5.3	0.68	4.4	0.15	0.56	0.66	0.13	52 15	
61	12.57	12.56	33.519	25.335	264.7	0.167	5.84	254.2	96.7	5.6	0.71	5.0	0.17	0.47	0.50	0.17	61 14	
70	11.98	11.98	33.485	25.420	256.8	0.190	5.35	232.8	87.5	8.1	0.89	8.2	0.17	0.27	0.28	0.15	71 13	
75 ISL	11.56 D	11.55	33.454 D	25.475	251.6	0.204	5.23	0227.7 D	84.7	9.3	0.96	9.6	0.13	0.20	0.23	0.16	76	
86	10.95	10.94	33.443	25.576	242.1	0.230	4.70	204.8	75.2	12.0	1.11	12.6	0.04	0.06	0.12	0.17	87 12	
100	10.22	10.21	33.543 D	25.781	222.9	0.264	4.32	188.0	68.0	15.0	1.31	15.6	0.04	0.03	0.07	0.13	101 11	
121	9.58	9.57	33.688	26.002	202.3	0.307	3.36	146.3	52.3	22.6	1.73	22.2	0.03	0.06	0.03	0.09	122 10	
125 ISL	9.50 D	9.49	33.719 D	26.039	198.8	0.317	3.30	0143.6 D	51.2	23.4	1.75	22.6	0.03	0.06	0.03	0.09	126	
138	9.31	9.29	33.787	26.125	190.9	0.341	3.12	135.6	48.2	25.8	1.83	24.0	0.02	0.06	0.02	0.07	139 09	
150 ISL	9.05 D	9.03	33.890 D	26.246	179.6	0.365	2.68	0116.8 D	41.3	28.5	1.91	25.3	0.01	0.08	0.01	0.07	151	
170	8.64	8.62	33.957	26.364	168.7	0.398	2.54	110.6	38.7	33.1	2.05	27.5	0.00	0.10	0.00	0.07	171 08	
200 ISL	8.15 D	8.13	34.014 D	26.484	157.7	0.450	2.38	0103.4 D	35.8	37.7	2.15	28.9	0.00	0.04	0.01	0.05	202	
202	8.12	8.10	34.019	26.492	157.0	0.450	2.35	102.4	35.5	38.0	2.16	29.0	0.00	0.04	0.01	0.05	204 07	
229	7.83	7.81	34.041	26.552	151.7	0.491	2.07	89.9	31.0	42.5	2.28	30.6	0.00	0.02			231 06	
250 ISL	7.68 D	7.66	34.063 D	26.592	148.2	0.527	1.84	079.9 D	27.4	45.9	2.38	31.8	0.00	0.04			252	
270	7.37	7.34	34.077	26.648	143.1	0.552	1.61	70.1	23.9	49.2	2.48	33.0	0.00	0.05			272 05	
300 ISL	7.14 D	7.11	34.099 D	26.697	138.8	0.599	1.33	057.9 D	19.6	53.6	2.60	34.4	0.00	0.05			302	
319	6.99	6.96	34.114	26.732	135.8	0.620	1.16	50.6	17.1	56.3	2.67	35.3	0.00	0.05			322 04	
380	6.54	6.51	34.171	26.837	126.5	0.700	0.73	31.9	10.7	64.7	2.87	37.4	0.00	0.07			383 03	
400 ISL	6.34 D	6.31	34.191 D	26.878	122.7	0.731	0.62	26.9 D	9.0	67.7	2.91	38.0	0.00	0.07			403	
441	6.08	6.04	34.205	26.925	118.6	0.775	0.50	21.8	7.2	73.9	3.00	39.2	0.00	0.08			445 02	
500 ISL	5.73 D	5.69	34.250 D	27.004	111.7	0.849	0.36	015.7 D	5.1	80.6	3.10	40.2	0.00	0.10			504	
515	5.69	5.65	34.266	27.022	110.1	0.859	0.32	14.0	4.6	82.2	3.12	40.5	0.00	0.10			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 BELL M SHIMADA

CALCOFI CRUISE 1304

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		
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXYGEN	OXY	SI03	P04	N03	N02	NH4	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C	THETA			ml/L	μmol/Kg	PCT	μM	μM	μM	μM	μM	μM	μg/L	μg/L	db	
32	19.6 N	121 43.2 W	18/04/2013	0048	UTC	4005 m	330	22 kn	340 06 06 0	1022.7	mb	13.4	C	11.5	C	0/8	045	
0	13.39	13.39	33.451	25.115	283.8	0.000	6.06	265.0	102.0	4.3	0.46	1.9	0.10	0.13	0.66	0.17	0	
2	13.39	13.39	33.451	25.115	283.9	0.006	6.06	263.8	102.0	4.3	0.46	1.9	0.10	0.13	0.66	0.17	2 20	
10	13.39	13.39	33.452	25.117	283.9	0.028	6.06	264.0	102.1	4.3	0.44	1.8	0.10	0.12	0.64	0.18	10 19	
20	13.38	13.38	33.458	25.125	283.5	0.057	6.05	263.7	102.0	4.3	0.42	1.8	0.09	0.12	0.65	0.17	20 18	
30	13.35	13.34	33.455	25.129	283.4	0.085	6.05	263.5	101.8	4.2	0.40	1.8	0.09	0.17	0.61	0.18	30 17	
40	13.31	13.30	33.449	25.133	283.3	0.113	6.04	263.0	101.5	4.2	0.38	1.8	0.09	0.15	0.62	0.20	40 16	
50	13.25	13.25	33.446	25.142	282.7	0.142	6.03	262.9	101.4	4.3	0.37	1.8	0.09	0.22	0.65	0.20	50 15	
60	13.24	13.24	33.447	25.145	282.8	0.170	6.01	262.0	101.0	4.3	0.36	1.9	0.10	0.24	0.65	0.30	60 14	
70	13.23	13.22	33.446	25.149	282.7	0.198	5.99	260.9	100.6	4.3	0.33	1.9	0.10	0.20	0.59	0.19	71 13	
75 ISL	12.96 D	12.95	33.444 D	25.200	278.0	0.214	5.96	0259.7 D	99.5	6.3	0.52	5.0	0.09	0.16	0.43	0.15	76	
85	11.01	11.00	33.366	25.506	248.8	0.239	4.86	211.4	77.7	10.3	0.89	11.2	0.06	0.07	0.11	0.09	86 12	
100 ISL	10.54 D	10.52	33.457 D	25.660	234.4	0.277	4.38	0190.7 D	69.4	13.8	1.12	14.9	0.03	0.08	0.06	0.07	101	
101	10.54	10.52	33.464	25.666	233.9	0.277	4.37	190.2	69.3	14.0	1.13	15.1	0.03	0.08	0.06	0.07	102 11	
120	9.72	9.71	33.589	25.901	211.8	0.319	3.92	170.6	61.1	18.8	1.37	19.2	0.02	0.13	0.03	0.04	121 10	
125 ISL	9.55 D	9.53	33.649 D	25.977	204.7	0.333	3.83	0166.8 D	59.5	20.1	1.43	20.1	0.02	0.12	0.03	0.04	126	
140	9.34	9.32	33.741	26.084	194.8	0.360	3.34	145.5	51.7	24.0	1.59	22.9	0.00	0.07	0.01			

RV BELL M SHIMADA

CALCOFI CRUISE 1304

STATION 86.7 90.0

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	WIND ml/L	OXYGEN μmol/Kg	OXY	SI03 μM	PO4 μM	NO3 μM	NO2 μM	NH4 μM	CHL-A μg/L	PHAEAO μg/L	PRES db	STATION	86.7	90.0	ORD 046
0	13.77	13.77	33.216	24.856	308.5	0.000	6.00	261.5	101.8	3.0	0.33	0.1	0.00	0.19	0.24	0.07	0				
3	13.77	13.77	33.216	24.856	308.6	0.009	6.00	261.5	101.8	3.0	0.33	0.1	0.00	0.19	0.24	0.07	3	22			
10	13.78	13.78	33.218	24.857	308.7	0.031	6.01	261.7	101.9	2.9	0.32	0.0	0.00	0.12	0.23	0.09	10	20			
11	13.78	13.78	33.216	24.855	308.9	0.033											11	21			
20	ISL	13.78	D	13.78	33.216	D	24.855	309.2	0.062	6.02	D262.5	D102.2	2.9	0.33	0.1	0.00	0.39	0.23	0.08	20	
25	13.79	13.78	33.219	24.858	309.1	0.077	6.01	261.8	101.9	2.9	0.33	0.2	0.00	0.52	0.23	0.07	25	19			
30	ISL	13.77	D	13.77	33.216	D	24.858	309.2	0.093	6.02	D262.5	D102.2	2.9	0.33	0.1	0.00	0.38	0.23	0.08	30	
40	13.78	13.77	33.219	24.860	309.3	0.124	6.00	261.6	101.8	2.9	0.32	0.0	0.00	0.10	0.24	0.10	40	18			
50	13.73	13.72	33.217	24.870	308.7	0.155	6.01	262.0	101.9	2.9	0.32	0.0	0.00	0.13	0.26	0.08	50	17			
62	13.70	13.69	33.220	24.878	308.3	0.192	6.00	261.4	101.6	3.0	0.32	0.0	0.00	0.16	0.31	0.10	62	16			
75	12.48	12.47	33.130	25.051	292.0	0.231	5.96	259.5	98.3	3.6	0.43	1.2	0.13	0.24	0.47	0.25	76	14			
87	11.92	11.91	33.130	25.156	282.3	0.265	5.98	260.6	97.5	4.2	0.52	2.2	0.15	0.32	0.29	0.18	88	13			
100	11.40	11.38	33.177	25.290	269.8	0.301	5.63	245.4	90.8	6.4	0.71	5.8	0.04	0.07	0.09	0.08	101	12			
112	10.90	10.89	33.268	25.450	254.8	0.333	5.22	227.3	83.3	8.6	0.88	8.9	0.02	0.09	0.04	0.05	113	11			
125	10.30	10.29	33.334	25.605	240.2	0.365	4.87	211.9	76.7	11.2	1.07	12.1	0.02	0.11	0.03	0.04	126	10			
140	9.88	9.86	33.384	25.717	229.8	0.400	4.57	198.9	71.4	14.5	1.27	15.2	0.02	0.13	0.02	0.03	141	09			
150	ISL	9.59	D	9.58	33.570	D	25.909	211.7	0.425	4.22	D183.8	D 65.6	17.1	1.38	17.1	0.02	0.13	0.01	0.03	151	
171	9.11	9.09	33.730	26.113	192.7	0.465	3.86	167.8	59.3	22.4	1.60	21.2	0.02	0.14	0.01	0.02	172	08			
200	8.74	8.71	33.858	26.273	178.0	0.519	3.67	159.8	56.1	26.2	1.69	23.7	0.02	0.22	0.00	0.02	202	07			
231	8.39	8.36	33.949	26.398	166.6	0.572	3.08	133.8	46.6	32.1	1.93	26.0	0.00	0.08			233	06			
250	ISL	8.10	D	8.08	33.977	D	26.463	160.7	0.607	2.82	D122.7	D 42.5	36.5	2.12	28.4	0.00	0.08		252		
271	7.99	7.96	34.046	26.535	154.2	0.636	1.89	82.1	28.4	41.4	2.33	31.1	0.00	0.08			273	05			
300	ISL	7.33	D	7.30	34.010	D	26.601	148.0	0.684	2.18	D 95.0	D 32.3	46.4	2.37	32.0	0.00	0.09		302		
320	6.93	6.90	34.011	26.657	142.7	0.709	2.05	89.0	30.0	49.8	2.39	32.6	0.00	0.09			323	04			
382	6.38	6.34	34.089	26.793	130.4	0.794	1.11	48.4	16.1	63.2	2.75	37.1	0.00	0.11			385	03			
400	ISL	6.28	D	6.24	34.117	D	26.828	127.3	0.822	0.89	D 38.6	D 12.8	65.4	2.81	37.6	0.00	0.12		403		
440	6.14	6.10	34.160	26.882	122.8	0.867	0.70	30.6	10.1	70.3	2.93	38.6	0.00	0.15			444	02			
500	ISL	5.70	D	5.66	34.183	D	26.955	116.2	0.945	0.56	D 24.5	D 8.0	77.3	3.03	39.9	0.00	0.16		504		
515	5.69	5.65	34.198	26.968	115.1	0.956	0.51	22.0	7.2	79.0	3.05	40.2	0.00	0.16			519	01			

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

RV BELL M SHIMADA

CALCOFI CRUISE 1304

STATION 86.7 100.0

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	WIND ml/L	OXYGEN μmol/Kg	OXY	SI03 μM	PO4 μM	NO3 μM	NO2 μM	NH4 μM	CHL-A μg/L	PHAEAO μg/L	PRES db	STATION	86.7	100.0	ORD 047
0	15.34	15.34	33.497	24.741	319.4	0.000	5.78	252.0	101.4	2.8	0.28	0.0	0.00	0.07	0.10	0.03	0				
2	15.34	15.33	33.497	24.741	319.5	0.006	5.78	252.0	101.4	2.8	0.28	0.0	0.00	0.07	0.10	0.03	2	21			
10	ISL	15.35	D	15.35	33.491	D	24.728	321.0	0.032	5.79	D252.3	D 101.6	2.7	0.28	0.0	0.00	0.04	0.10	0.03	10	
10	15.35	15.35	33.493	24.734	320.4	0.033													10	20	
11	15.35	15.35	33.490	24.733	320.6	0.035	5.78	252.1	101.5	2.7	0.28	0.0	0.00	0.06	0.10	0.03	11	19			
20	ISL	15.35	D	15.35	33.492	D	24.729	321.3	0.064	5.79	D252.3	D 101.5	2.7	0.28	0.0	0.00	0.04	0.10	0.02	20	
25	15.36	15.36	33.493	24.734	320.9	0.080	5.78	252.1	101.5	2.7	0.28	0.0	0.00	0.05	0.10	0.01	25	18			
30	ISL	15.36	D	15.36	33.492	D	24.729	321.6	0.097	5.78	D251.7	D 101.3	2.7	0.28	0.0	0.00	0.05	0.10	0.02	30	
40	15.35	15.34	33.490	24.735	321.3	0.128	5.77	251.6	101.2	2.7	0.28	0.0	0.00	0.06	0.10	0.02	40	17			
50	ISL	15.36	D	15.35	33.485	D	24.730	322.1	0.162	5.78	D251.8	D 101.3	2.7	0.27	0.0	0.00	0.09	0.10	0.02	50	
51	15.36	15.35	33.484	24.729	322.3	0.164	5.78	251.7	101.3	2.7	0.27	0.0	0.00	0.10	0.11	0.02	51	16			
63	14.97	14.96	33.433	D	24.776	318.2	0.204	5.78	252.0	100.6								64	15		
75	13.66	13.65	33.240	24.901	306.5	0.240	6.05	263.4	102.3	2.9	0.31	0.0	0.00	0.12	0.25	0.10	76	14			
88	13.36	13.35	33.219	24.947	302.5	0.279	6.02	262.4	101.2	2.9	0.32	0.0	0.00	0.06	0.36	0.21	89	13			
100	ISL	13.30	D	13.29	33.231	D	24.969	300.7	0.318	5.93	D258.5	D 99.6	3.0	0.35	0.1	0.04	0.09	0.53	0.28	101	
101	13.30	13.28	33.231	24.970	300.6	0.319	5.93	258.3	99.5	3.0	0.35	0.1	0.04	0.09	0.55	0.28	102	12			
115	12.73	12.71	33.211	25.067	291.7	0.360	5.81	253.0	96.3	3.5	0.45	1.3	0.18	0.12	0.29	0.21	116	11			
125	ISL	11.89	D	11.87	33.233	D	25.244	274.9	0.391	5.56	D242.4	D 90.7	5.1	0.60	4.1	0.03	0.11	0.19	0.14	126	
126	11.80	11.78	33.220	25.251	274.3	0.391	5.54	241.3	90.1	5.3	0.61	4.4	0.02	0.11	0.18						

RV BELL M SHIMADA

CALCOFI CRUISE 1304

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		
DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN $\mu\text{mol/Kg}$	OXY PCT	SI03 μM	P04 μM	N03 μM	N02 μM	NH4 μM	CHL-A $\mu\text{g/L}$	PHAEAO $\mu\text{g/L}$	PRES db
0	13.68	13.68	33.614	25.183	277.3	0.000	5.63	245.4	95.6	6.6	0.61	5.2	0.07	0.50	2.96	0.51	0
1	13.68	13.68	33.614	25.183	277.3	0.003	5.63	245.4	95.6	6.6	0.61	5.2	0.07	0.50	2.96	0.51	1 04
5	13.66	13.66	33.614	25.187	277.1	0.014	5.64	245.8	95.7	6.5	0.60	5.2	0.07	0.49	3.04	0.52	5 03
10	13.46	13.46	33.622	25.235	272.7	0.028	5.30	231.1	89.6	8.3	0.73	7.1	0.08	0.55	3.49	0.58	10 02
20	10.74	10.73	33.702	25.813	218.0	0.052	2.60	113.4	41.5	24.1	1.86	23.6	0.18	1.43	0.83	0.75	20 01

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

RV BELL M SHIMADA

CALCOFI CRUISE 1304

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		
DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN $\mu\text{mol/Kg}$	OXY PCT	SI03 μM	P04 μM	N03 μM	N02 μM	NH4 μM	CHL-A $\mu\text{g/L}$	PHAEAO $\mu\text{g/L}$	PRES db
0	14.92	14.92	33.567	24.886	305.7	0.000	5.69	248.0	99.0	4.9	0.54	4.2	0.08	0.16	1.79	0.36	0
2	14.92	14.92	33.567	24.886	305.7	0.006	5.69	248.0	99.0	4.9	0.54	4.2	0.08	0.16	1.79	0.36	2 05
5	14.78	14.77	33.566	24.916	302.9	0.015	5.77	251.4	100.1	4.4	0.50	3.6	0.08	0.26	2.24	0.39	5 04
10	14.75	14.75	33.568	24.923	302.4	0.030	5.77	251.2	100.0	4.2	0.49	3.4	0.10	0.31	3.23	0.44	10 03
20	11.36	11.36	33.613	25.632	235.2	0.057	3.55	154.5	57.3	15.9	1.45	18.0	0.10	0.14	0.92	0.49	20 02
30	10.94	10.93	33.659	25.745	224.7	0.080	3.16	137.8	50.7	19.9	1.67	20.1	0.08	0.20	0.63	0.56	30 01

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

RV BELL M SHIMADA

CALCOFI CRUISE 1304

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		
DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN $\mu\text{mol/Kg}$	OXY PCT	SI03 μM	P04 μM	N03 μM	N02 μM	NH4 μM	CHL-A $\mu\text{g/L}$	PHAEAO $\mu\text{g/L}$	PRES db
0	15.38	15.38	33.569	24.786	315.1	0.000	5.76	251.1	101.2	4.1	0.49	3.5	0.06	0.24	1.87	0.37	0
2	15.38	15.38	33.569	24.786	315.2	0.006	5.76	251.1	101.2	4.1	0.49	3.5	0.06	0.24	1.87	0.37	2 09
5	14.81	14.81	33.561	24.905	304.0	0.016	5.74	250.2	99.7	4.2	0.48	3.4	0.06	0.16	1.88	0.26	5 08
10	14.29	14.29	33.563	25.018	293.4	0.031	5.73	249.5	98.4	4.6	0.51	3.7	0.08	0.15	2.58	0.09	10 07
20	11.76	11.75	33.610	D 25.557	242.3	0.058	3.67	D 159.7	D 59.8	12.7	1.23	13.9	0.21	0.60	1.51	0.47	20
21	11.56	11.55	33.623	25.604	237.9	0.060	3.53	D 153.5	D 57.2	13.5	1.30	14.9	0.22	0.64	1.41	0.51	21 06
21	11.56	11.55	33.608	25.593	239.0	0.060	3.53	D 153.5	D 57.2	13.5	1.30	14.9	0.22	0.64	1.41	0.51	21 05
30	10.76	10.75	33.686	25.797	219.7	0.080	2.78	120.8	44.3	21.4	1.75	23.0	0.00	0.10	0.38	0.36	30 04
40	10.41	10.41	33.756	25.912	209.0	0.102	2.75	119.5	43.5	23.5	1.84	22.7	0.02	0.14	0.18	0.19	40 03
50	10.08	10.07	33.848	26.041	197.0	0.122	2.46	106.9	38.7	26.3	1.96	24.2	0.02	0.11	0.13	0.19	50 02
59	9.85	9.85	33.946	26.156	186.3	0.139	2.20	95.7	34.5	29.3	2.09	25.7	0.02	0.29	0.04	0.19	59 01

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

RV BELL M SHIMADA

CALCOFI CRUISE 1304

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		
DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN $\mu\text{mol/Kg}$	OXY PCT	SI03 μM	P04 μM	N03 μM	N02 μM	NH4 μM	CHL-A $\mu\text{g/L}$	PHAEAO $\mu\text{g/L}$	PRES db
0	14.22	14.22	33.566	25.033	291.6	0.000	6.23	271.6	106.9	2.0	0.34	1.3	0.03	0.11	5.70	0.21	0
2	A 14.22	14.22	33.566	25.033	291.7	0.006	6.23	271.6	106.9	2.0	0.34	1.3	0.03	0.11	5.70	0.21	2 23
6	A 14.09	14.09	33.564	25.060	289.3	0.017	6.31	274.8	107.9	1.9	0.35	1.0	0.03	0.12	6.14	0.30	6 22
9	A 13.86	13.86	33.563	25.107	284.9	0.026	6.30	274.3	107.2	2.0	0.36	1.2	0.03	0.18	7.50	0.49	9 20
9	A 13.86	13.86	33.563	25.107	284.9	0.027	6.30	274.3	107.2	2.0	0.36	1.2	0.03	0.18	7.50	0.49	9 21
10	ISL 13.83	13.83	33.563	D 25.114	284.3	0.029	6.35	D 276.4	D 108.0	2.1	0.37	1.4	0.03	0.18	7.55	0.51	10
15	A 13.72	13.72	33.566	25.138	282.1	0.043	6.03	262.7	102.4	2.6	0.41	2.2	0.04	0.17	7.78	0.59	15 19
20	ISL 13.50	D 13.49	33.593	D 25.205	275.8	0.057	5.71	D 248.7	D 96.5	7.6	0.80	7.7	0.05	0.17	5.03	0.56	20
26	A 11.74	11.73	33.588	25.544	243.7	0.073	4.09	177.9	66.5	13.6	1.26	14.4	0.06	0.17	1.74	0.52	26 18
30	ISL 11.35	D 11.35	33.606	D 25.628	235.8	0.083	3.68	D 160.1	D 59.4	16.0	1.43	17.0	0.04	0.11	0.95	0.50	30
31	A 11.28	11.28	33.609	25.643	234.4	0.085	3.60	156.6	58.0	16.6	1.47	17.7	0.04	0.09	0.75	0.50	31 17
40	10.94	10.93	33.651	25.738	225.6	0.105	3.28	142.8	52.5	19.1	1.63	19.9	0.00	0.11	0.43	0.31	40 16
50	10.69	10.68	33.699	D 25.820	218.0	0.129	3.00	130.4	47.7	21.2	1.74	21.4	0.00	0.07	0.29	0.33	50 15
60	10.34	10.33	33.782	25.946	206.3	0.149	2.60	113.1	41.1	24.3	1.90	23.4	0.00	0.06	0.20	0.46	60 14
70	10.11	10.10	33.856	D 26.044	197.2	0.170	2.44	106.1	38.4	26.0	1.98	24.4	0.00	0.11	0.10	0.23	71 13
75	ISL 10.05	D 10.04	33.882	D 26.074	194.5	0.180	2.43	D 105.6	D 38.1	26.7	2.01	24.7	0.00	0.10	0.08	0.22	76
85	9.95	9.94	33.923	26.123	190.1	0.198	2.27	98.8	35.6	28.3	2.06	25.2	0.00	0.07	0.06	0.19	86 12
100	9.74	9.73	33.979	26.202	182.8	0.226	2.11	91.9	33.0	30.1	2.12	26.1	0.00	0.08	0.04	0.15	101 11
120	9.49	9.48	34.071	26.316	172.4	0.262	1.90	82.6	29.5	33.2</							

RV BELL M SHIMADA

CALCOFI CRUISE 1304

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		
DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN μmol/Kg	OXY PCT	SI03 μM	P04 μM	N03 μM	N02 μM	NH4 μM	CHL-A μg/L	PHAE0 μg/L	PRES db
0	15.09	15.09	33.554	24.838	310.1	0.000	6.15	268.1	107.4	2.9	0.34	0.0	0.00	0.18	0.94	0.20	0
3	15.09	15.09	33.554	24.839	310.2	0.009	6.15	268.1	107.4	2.9	0.34	0.0	0.00	0.18	0.94	0.20	3 20
10	15.09	15.08	33.551	24.838	310.6	0.031	6.11	266.0	106.6	2.9	0.34	0.0	0.00	0.13	0.94	0.22	10 18
10	15.09	15.08	33.550	24.838	310.6	0.032											10 19
20	15.08	15.08	33.551	24.839	310.8	0.062	6.11	266.0	106.6	2.9	0.34	0.0	0.00	0.13	0.93	0.21	20 17
30	ISL 15.04 D	15.04	33.551 D	24.849	310.2	0.094	6.12	0266.8	0106.8	2.9	0.34	0.0	0.00	0.14	0.95	0.21	30
31	15.06	15.06	33.551	24.844	310.7	0.096	6.16	268.6	107.5	2.9	0.34	0.0	0.00	0.14	0.95	0.21	31 16
42	12.21	12.21	33.532	25.411	256.8	0.127	4.85	211.3	79.8	8.5	0.89	7.9	0.11	0.27	0.65	0.37	42 15
50	11.82	11.81	33.561	25.508	247.8	0.148	4.01	174.6	65.4	13.0	1.26	13.8	0.04	0.17	0.36	0.28	50 14
61	10.96	10.95	33.631	25.720	227.9	0.174	3.21	139.6	51.4	18.5	1.62	19.6	0.02	0.12	0.09	0.17	61 13
70	10.80	10.79	33.666	25.775	222.8	0.194	3.10	135.1	49.6	20.0	1.68	20.4	0.00	0.17	0.12	0.15	71 12
75	ISL 10.62 D	10.61	33.729 D	25.856	215.2	0.206	3.09	0134.4	049.1	21.3	1.74	21.2	0.00	0.17	0.09	0.13	76
85	10.30	10.29	33.780	25.953	206.2	0.226	2.70	117.5	42.7	23.9	1.87	22.9	0.00	0.16	0.03	0.10	86 11
100	ISL 9.94 D	9.93	33.856 D	26.073	195.1	0.258	2.62	0113.9 D	041.1	26.2	1.95	24.1	0.00	0.22	0.01	0.07	101
101	9.92	9.91	33.858	26.079	194.6	0.258	2.60	113.0	40.7	26.4	1.95	24.2	0.00	0.22	0.01	0.06	102 10
121	9.61	9.60	33.964	26.213	182.3	0.296	2.35	102.4	36.7	29.7	2.06	25.9	0.00	0.11	0.01	0.05	122 09
125	ISL 9.61 D	9.59	33.967 D	26.216	182.1	0.305	2.36	0102.8 D	036.8	30.1	2.08	26.1	0.00	0.12	0.01	0.05	126
142	9.46	9.45	34.027	26.287	175.7	0.334	2.15	93.6	33.4	31.8	2.14	26.8	0.00	0.14	0.01	0.06	143 08
150	ISL 9.36 D	9.34	34.090 D	26.353	169.5	0.349	2.06	089.8 D	032.0	33.8	2.21	27.6	0.00	0.17	0.01	0.06	151
171	8.92	8.90	34.153	26.473	158.5	0.382	1.58	68.8	24.3	39.0	2.38	29.6	0.00	0.24	0.01	0.05	172 07
200	ISL 8.77 D	8.75	34.208 D	26.540	152.7	0.429	1.30	056.6 D	019.9	42.1	2.49	30.4	0.00	0.22	0.01	0.05	202
202	8.76	8.74	34.209	26.543	152.5	0.430	1.30	56.3	19.8	42.3	2.50	30.5	0.00	0.22	0.01	0.05	204 06
231	8.39	8.37	34.212	26.603	147.2	0.474	1.13	49.1	17.1	45.8	2.58	31.7	0.00	0.37			233 05
250	ISL 8.23 D	8.21	34.223 D	26.636	144.4	0.504	1.03	045.0 D	015.6	47.8	2.63	32.3	0.00	0.38			252
270	8.06	8.03	34.222	26.662	142.2	0.530	0.95	41.5	14.4	50.0	2.68	33.0	0.00	0.40			272 04
300	ISL 7.78 D	7.75	34.233 D	26.713	137.8	0.576	0.86	037.4 D	012.9	54.9	2.78	34.3	0.00	0.29			302
322	7.42	7.38	34.248	26.777	131.9	0.602	0.68	29.5	10.1	58.5	2.85	35.3	0.00	0.21			325 03
380	7.18	7.14	34.260	26.821	128.6	0.677	0.56	24.3	8.3	62.2	2.92	36.2	0.00	0.16			383 02
400	ISL 7.13 D	7.09	34.263 D	26.831	128.0	0.707	0.54	023.7 D	08.0	65.1	2.96	36.8	0.00	0.17			403
434	6.72	6.68	34.286	26.905	121.1	0.745	0.38	16.3	5.5	69.9	3.04	37.8	0.00	0.19			438 01

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

RV BELL M SHIMADA

CALCOFI CRUISE 1304

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		
DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN μmol/Kg	OXY PCT	SI03 μM	P04 μM	N03 μM	N02 μM	NH4 μM	CHL-A μg/L	PHAE0 μg/L	PRES db
0	15.46	15.46	33.561	24.762	317.4	0.000	6.03	263.0	106.1	2.8	0.33	0.1	0.00	0.04	0.41	0.11	0
2	15.46	15.46	33.561	24.762	317.5	0.006	6.03	263.0	106.1	2.8	0.33	0.1	0.00	0.04	0.41	0.11	2 20
10	15.47	15.46	33.555	24.757	318.2	0.032	6.03	262.7	106.0	2.8	0.33	0.1	0.00	0.03	0.42	0.10	10 19
20	14.38	14.38	33.562 D	24.998	295.6	0.063	5.70	248.2	98.0	5.1	0.52	2.7	0.04	0.05	1.18	0.32	20 18
30	ISL 12.14 D	12.13	33.517 D	25.413	256.3	0.091	4.68	0203.8 D	076.8	10.5	1.01	10.2	0.05	0.06	0.63	0.35	30
31	12.13	12.13	33.517	25.415	256.1	0.093	4.51	196.2	74.0	11.0	1.06	11.0	0.05	0.06	0.57	0.35	31 17
41	11.87	11.87	33.532	25.475	250.7	0.118	4.30	187.3	70.2	12.0	1.15	12.5	0.04	0.06	0.42	0.32	41 16
50	11.40	11.39	33.553	25.580	241.0	0.140	3.82	166.1	61.7	15.0	1.37	15.8	0.02	0.04	0.26	0.22	50 15
60	11.06	11.05	33.606	25.682	231.4	0.164	3.50	152.6	56.2	17.3	1.51	17.8	0.00	0.09	0.15	0.14	60 14
71	10.74	10.73	33.669	25.789	221.5	0.189	3.21	139.6	51.1	19.7	1.65	19.8	0.00	0.01	0.07	0.11	72 13
75	ISL 10.55 D	10.55	33.712 D	25.855	215.3	0.199	3.05	0132.7 D	048.4	20.6	1.68	20.4	0.00	0.01	0.06	0.10	76
86	10.10	10.09	33.754	25.966	205.0	0.220	3.04	132.2	47.8	22.9	1.78	22.1	0.00	0.02	0.02	0.07	87 12
100	ISL 9.97 D	9.96	33.863 D	26.073	195.1	0.250	2.60	0113.1 D	040.8	25.5	1.91	23.6	0.00	0.07	0.02	0.08	101
101	9.94	9.93	33.842	26.062	196.2	0.250	2.61	113.8	41.0	25.6	1.92	23.7	0.00	0.07	0.02	0.08	102 11
120	9.72	9.71	33.974	26.202	183.3	0.286	2.23	97.1	34.9	29.6	2.08	25.7	0.00	0.04	0.01	0.07	121 10
125	ISL 9.61 D	9.60	34.045 D	26.276	176.4	0.297	2.13	092.6 D	033.2	30.4	2.11	26.0	0.00	0.05	0.01	0.07	126
141	9.48	9.46	34.081	26.327	171.9	0.323	1.96	85.2	30.4	32.9	2.19	27.1	0.00	0.08	0.01	0.06	142 09
150	ISL 9.27 D	9.25	34.084 D	26.363	168.6	0.341	1.87	081.3 D	028.9	34.3	2.23	27.6	0.00	0.08	0.01	0.05	151
173	9.00	8.98	34.149	26.457	160.1	0.376	1.65	71.6	25.3	37.9	2.33	29.0	0.00	0.09	0.00	0.04	174 08
200	8.90	8.88	34.210	26.522	154.5	0.419	1.32	57.6	20.3	40.9	2.46	30.0	0.00	0.09	0.00	0.05	202 07
230	8.55	8.52	34.227	26.592	148.4	0.464	1.20	52.3	18.3	44.2	2.53	30.9	0.00	0.02			232 06
250	ISL 8.38 D	8.36	34.246 D	26.633	144.8	0.497	1.05	045.5 D	015.9	46.8	2.59	31.8	0.00	0.03			252
269	8.08	8.05	34.230	26.665	142.0	0.521	1.01	43.8	15.2	49.2	2.64	32.6	0.00	0.04			271 05
300	ISL 7.71 D	7.68	34.235 D	26.724	136.7	0.568	0.89	038.5 D	013.2	53.2	2.72	33.7	0.00	0.04			302
321	7.55	7.52	34.247	26.757	133.9	0.592	0.76	33.0	11.3	55.9	2.78	34.5	0.00	0.04			324 04
380	7.00	6.97	34.268	26.852	125.5	0.669	0.52	2									

RV BELL M SHIMADA

CALCOFI CRUISE 1304

STATION 90.0 45.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD			
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXYGEN	OXY	SI03	P04	N03	N02	NH4	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C		THETA			ml/L	µmol/Kg	PCT	µM	µM	µM	µM	µM	µg/L	µg/L	db	
32 55.2 N	118 56.0 W	11/04/2013	0209	UTC	1711 m	280 11 kn	260 03 07	0	1017.1 mb	16.0 C	13.6 C	0/8	020					
0	14.13	14.13	33.593	25.074	287.7	0.000	6.09	265.2	104.2						0.92	0.25	0	
1	14.13	14.13	33.593	25.074	287.8	0.003	6.09	265.2	104.2						0.92	0.25	1 21	
10	13.70	13.70	33.590	25.160	279.8	0.028	6.17	268.6	104.7	3.9	0.47	2.6	0.08	0.05	0.98	0.28	10 20	
20	12.91	12.91	33.615	25.340	263.1	0.056	5.84	254.2	97.4	7.5	0.69	5.8	0.11	0.12	1.76	0.55	20 18	
20	12.91	12.91	33.610	25.336	263.4	0.056											20 19	
30	12.56	12.55	33.609	25.404	257.2	0.082	5.54	241.4	91.9	7.9	0.78	6.9	0.15	0.25	1.42	0.49	30 17	
40	11.20	11.20	33.624	25.670	232.1	0.106	4.39	191.2	70.7	15.5	1.26	14.2	0.24	0.34	0.33	0.31	40 16	
50	10.67	10.67	33.634	25.773	222.6	0.129	4.01	174.6	63.8	18.2	1.41	16.9	0.25	0.16	0.15	0.28	50 15	
59	10.19	10.18	33.664	25.879	212.6	0.148	3.58	155.6	56.3	21.4	1.59	19.8	0.10	0.04	0.06	0.24	59 14	
70	9.62	9.61	33.740	26.035	198.0	0.171	3.14	136.9	48.9	25.3	1.78	22.9	0.09	0.09	0.02	0.19	71 13	
75 ISL	9.58 D	9.57	33.756 D	26.054	196.3	0.182	3.07	0133.5 D	47.7	26.1	1.81	23.3	0.10	0.08	0.02	0.19	76	
85	9.40	9.39	33.799	26.117	190.5	0.200	2.89	125.7	44.7	27.7	1.86	24.2	0.11	0.05	0.02	0.20	86 12	
100	9.28	9.27	33.845	26.172	185.6	0.228	2.69	116.9	41.5	29.4	1.94	25.3	0.09	0.02	0.02	0.18	101 11	
120	9.08	9.07	33.935	26.276	176.1	0.265	2.30	99.9	35.4	32.8	2.09	27.2	0.03	0.26	0.02	0.17	121 10	
125 ISL	9.05 D	9.04	33.951 D	26.293	174.6	0.275	2.26	098.3 D	34.8	33.6	2.12	27.6	0.03	0.21	0.02	0.16	126	
140	8.80	8.79	34.010	26.379	166.7	0.299	2.03	88.3	31.1	36.0	2.21	28.6	0.03	0.07	0.01	0.13	141 09	
150 ISL	8.77 D	8.76	34.049 D	26.414	163.6	0.318	1.92 D	83.7 D	29.4	37.6	2.27	29.2	0.03	0.07	0.01	0.12	151	
170	8.56	8.54	34.099	26.488	156.9	0.347	1.56	67.7	23.7	40.9	2.38	30.4	0.04	0.07	0.01	0.11	171 08	
200	8.31	8.29	34.152	26.568	149.8	0.393	1.21	52.7	18.4	45.0	2.51	31.7	0.06	0.09	0.01	0.10	202 07	
230	8.12	8.10	34.188	26.625	145.0	0.438	1.03	44.6	15.5	48.3	2.59	32.7	0.04	0.10			232 06	
250 ISL	7.95 D	7.92	34.209 D	26.669	141.1	0.470	0.94 D	41.1 D	14.2	50.5	2.64	33.2	0.02	0.08			252	
270	7.76	7.74	34.220	26.704	138.1	0.494	0.87	37.8	13.0	52.6	2.68	33.6	0.00	0.05			272 05	
300 ISL	7.62 D	7.59	34.238 D	26.741	135.1	0.539	0.74 D	32.2 D	11.1	55.3	2.73	34.3	0.00	0.06			302	
320	7.46	7.42	34.240	26.765	133.0	0.562	0.70	30.5	10.4	57.1	2.77	34.7	0.00	0.07			323 04	
380	6.99	6.96	34.284	26.866	124.2	0.639	0.44	19.0	6.4	65.0	2.97	36.5	0.00	0.09			383 03	
400 ISL	6.83 D	6.79	34.285 D	26.889	122.2	0.669	0.42 D	18.4 D	6.2	66.9	2.99	36.9	0.00	0.08			403	
440	6.60	6.56	34.300	26.933	118.5	0.712	0.36	15.8	5.3	70.6	3.02	37.6	0.00	0.05			444 02	
500 ISL	6.28 D	6.23	34.323 D	26.994	113.3	0.788	0.27	11.6 D	3.9								504	
515	6.19	6.14	34.328 D	27.010	111.9	0.805	0.28 D	12.1 D	4.0								519 01	

D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED 02;

RV BELL M SHIMADA

CALCOFI CRUISE 1304

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			
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXYGEN	OXY	SI03	P04	N03	N02	NH4	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C		THETA			ml/L	µmol/Kg	PCT	µM	µM	µM	µM	µM	µg/L	µg/L	db	
32 39.0 N	119 29.1 W	15/04/2013	0228	UTC	1322 m	300 14 kn	320 07 07	1	1011.9 mb	13.0 C	11.8 C	4/8	034					
0	12.76	12.76	33.592	25.350	261.5	0.000	5.91	257.6	98.4	5.3	0.77	6.3	0.16	0.34	1.31	0.43	0	
2	12.76	12.76	33.592	25.350	261.6	0.004									1.31	0.43	2 23	
2	12.76	12.76	33.592	25.350	261.6	0.005	5.91	257.6	98.4	5.3	0.77	6.3	0.16	0.34	1.31	0.43	2 22	
10	12.77	12.76	33.592	25.350	261.8	0.026	5.90	256.9	98.2	5.3	0.76	6.3	0.15	0.28	1.36	0.45	10 21	
20	12.76	12.76	33.592	25.351	262.0	0.052	5.90	256.8	98.1	5.3	0.76	6.3	0.15	0.30	1.34	0.49	20 20	
30	12.76	12.76	33.603	25.360	261.4	0.079	5.88	256.1	97.9	5.4	0.77	6.4	0.15	0.34	1.32	0.43	30 18	
30	12.76	12.76	33.593	25.353	262.1	0.079											30 19	
40	12.75	12.75	33.592	25.354	262.3	0.105	5.87	255.6	97.7	5.4	0.76	6.3	0.16	0.37	1.27	0.41	40 17	
50	12.64	12.63	33.591	25.376	260.5	0.131	5.88	256.0	97.6	5.5	0.77	6.4	0.16	0.39	1.22	0.44	50 15	
50	12.63	12.62	33.584	25.372	260.8	0.131											50 16	
60	11.66	11.65	33.580	25.553	243.8	0.156	5.05	219.8	82.1	10.0	1.05	10.4	0.20	0.79	0.23	0.24	60 14	
71	10.61	10.60	33.607	25.764	223.9	0.182	4.13	179.6	65.6	16.9	1.39	16.9	0.13	0.07	0.16	0.22	72 13	
75 ISL	10.46 D	10.45	33.707 D	25.867	214.1	0.192	3.87	0168.4 D	61.3	18.5	1.47	18.1	0.12	0.06	0.16	0.23	76	
85	10.19	10.18	33.740	25.940	207.5	0.212	3.39	147.4	53.4	22.6	1.67	21.0	0.09	0.04	0.18	0.28	86 12	
100	9.51	9.50	33.805	26.104	192.1	0.242	2.85	124.0	44.3	26.8	1.88	24.3	0.04	0.03	0.06	0.24	101 11	
120	9.17	9.15	33.896	26.231	180.4	0.279	2.46	107.0	37.9	30.7	2.04	26.8	0.03	0.06	0.03	0.20	121 10	
125 ISL	9.13 D	9.12	33.908 D	26.246	179.0	0.290	2.43 D	105.9 D	37.5	31.2	2.06	27.0	0.03	0.07	0.02	0.20	126	
140	8.99	8.97	33.946	26.299	174.3	0.314	2.29	99.7	35.2	32.6	2.11	27.7	0.04	0.09	0.01	0.18	141 09	
150 ISL	8.86 D	8.85	34.023 D	26.380	166.8	0.334	2.13	92.7 D	32.7	34.2	2.17	28.2	0.05	0.16	0.01	0.16	151	
171	8.80	8.78	34.088	26.442	161.4	0.366	1.77	76.9	27.1	37.4	2.30	29.3	0.08	0.32	0.01	0.13	172 08	
200 ISL	8.38 D	8.36	34.125 D	26.535	153.0	0.415	1.53 D	66.4 D	23.1	41.9	2.41	31.0	0.07	0.18	0.01	0.11	202	
201	8.38	8.36	34.121	26.533	153.2	0.413	1.55	67.4	23.5	42.1	2.41	31.1	0.07	0.18	0.01	0.11	203 07	
230	8.15	8.13	34.172	26.608	146.6	0.457	1.26	54.9	19.1	46.1	2.54	32.2	0.04	0.05			232 06	
250 ISL	8.04 D	8.01	34.187 D	26.638	144.1	0.489	1.17 D	51.0 D	17.7	49.3	2.62	33.1	0.04	0.05	</td			

RV BELL M SHIMADA

CALCOFI CRUISE 1304

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		
DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN μmol/Kg	OXY PCT	SiO3 μM	P04 μM	N03 μM	N02 μM	NH4 μM	CHL-A μg/L	PHAEAO μg/L	PRES db
0	13.09	13.09	33.500	25.215	274.4	0.000	6.00	261.2	100.4	4.8	0.62	3.8	0.18	0.28	0.78	0.32	0
2	13.09	13.09	33.500	25.215	274.4	0.006	6.00	261.2	100.4	4.8	0.62	3.8	0.18	0.28	0.78	0.32	2 20
10	13.09	13.08	33.509	25.222	274.0	0.027	5.99	261.1	100.4	4.8	0.60	3.7	0.17	0.24	0.74	0.31	10 19
20	13.08	13.08	33.510	25.224	274.0	0.055	5.99	261.0	100.3	4.8	0.60	3.7	0.17	0.24	0.72	0.32	20 18
29	13.07	13.07	33.501	25.220	274.7	0.080	5.99	260.9	100.3	4.8	0.61	3.7	0.18	0.28	0.69	0.32	29 17
30 ISL	13.07 D	13.06	33.500 D	25.220	274.8	0.083	6.00	261.9	101.0	4.8	0.61	3.7	0.18	0.28	0.69	0.32	30
39	13.05	13.05	33.502	25.225	274.6	0.107	5.98	260.4	100.0	4.8	0.61	3.7	0.18	0.32	0.65	0.33	39 16
50	13.04	13.03	33.500	25.227	274.7	0.137	5.96	259.6	99.7	4.8	0.62	3.8	0.18	0.31	0.59	0.31	50 15
59	12.36	12.35	33.422 D	25.299	268.0	0.163	5.92	257.8	97.6	4.8	0.62	3.8	0.19	0.37	0.53	0.30	59 14
69	11.34	11.33	33.418	25.487	250.3	0.187	5.31	231.2	85.6	8.7	0.92	8.8	0.27	0.13	0.17	0.18	70 13
75 ISL	11.24 D	11.23	33.424 D	25.509	248.3	0.204	5.00	0217.8	80.5	10.9	1.05	11.3	0.18	0.10	0.13	0.14	76
85	10.21	10.20	33.480	25.733	227.1	0.226	4.40	191.7	69.3	14.5	1.27	15.4	0.04	0.05	0.07	0.08	86 12
99	9.93	9.92	33.583	25.862	215.1	0.257	3.88	169.0	60.8	18.4	1.50	18.9	0.03	0.05	0.04	0.06	100 11
100 ISL	9.92 D	9.91	33.586 D	25.865	214.8	0.261	3.87	02168.6	60.6	18.7	1.51	19.1	0.03	0.05	0.04	0.06	101
120	9.49	9.47	33.716	26.039	198.7	0.300	3.35	145.9	52.0	23.4	1.73	22.5	0.03	0.09	0.02	0.05	121 10
125 ISL	9.33 D	9.32	33.784 D	26.117	191.3	0.313	3.14	0236.5 D	48.5	25.1	1.80	23.5	0.03	0.09	0.01	0.05	126
138	9.01	8.99	33.881	26.246	179.3	0.334	2.80	212.7	43.0	29.6	1.97	26.1	0.03	0.08	0.01	0.04	139 08
150 ISL	8.85 D	8.84	33.912 D	26.294	174.9	0.358	2.71	02118.1 D	41.6	31.2	2.02	26.8	0.03	0.10	0.01	0.04	151
170	8.59	8.58	33.978	26.387	166.5	0.390	2.48	108.0	37.8	34.0	2.10	27.9	0.03	0.12	0.00	0.03	171 07
200	8.29	8.26	34.053	26.494	156.9	0.438	2.00	87.2	30.3	39.5	2.29	30.1	0.03	0.13	0.01	0.06	202 09
231	8.10	8.08	34.101	26.559	151.2	0.486	1.66	72.0	25.0	43.9	2.42	31.5	0.02	0.03			233 06
250 ISL	7.86 D	7.84	34.128 D	26.617	146.0	0.518	1.45	0263.1 D	21.7	47.0	2.51	32.5	0.02	0.04			252
273	7.64	7.61	34.155	26.671	141.2	0.547	1.20	52.0	17.8	50.8	2.61	33.6	0.02	0.05			275 05
300 ISL	7.41 D	7.38	34.178 D	26.722	136.7	0.589	1.01	0 D 43.9 D	15.0	53.7	2.68	34.4	0.02	0.07			302
323	7.33	7.29	34.186	26.742	135.2	0.616	0.93	40.6	13.8	56.1	2.74	35.0	0.02	0.08			326 04
382	6.97	6.93	34.222	26.820	128.5	0.694	0.71	31.0	10.5	61.1	2.85	36.2	0.03	0.10			385 03
400 ISL	6.94 D	6.90	34.260 D	26.855	125.5	0.722	0.53	023.2 D	7.8	64.1	2.90	36.8	0.03	0.09			403
442	6.44	6.40	34.262	26.923	119.2	0.768	0.43	18.5	6.2	71.1	3.02	38.3	0.02	0.07			446 02
500 ISL	6.10 D	6.06	34.298 D	26.996	112.9	0.842	0.33	0 D 14.1 D	4.7	77.3	3.09	39.4	0.03	0.15			504
513	6.02	5.98	34.294	27.003	112.3	0.850	0.32	13.8	4.6	78.7	3.11	39.7	0.03	0.17			517 01

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

RV BELL M SHIMADA

CALCOFI CRUISE 1304

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		
DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN μmol/Kg	OXY PCT	SiO3 μM	P04 μM	N03 μM	N02 μM	NH4 μM	CHL-A μg/L	PHAEAO μg/L	PRES db
0	13.49	13.49	33.410	25.063	288.8	0.000	6.10	265.6	102.9	3.6	0.42	1.2	0.06	0.14	0.71	0.22	0
2	13.49	13.49	33.410	25.063	288.8	0.006	6.10	265.6	102.9	3.6	0.42	1.2	0.06	0.14	0.71	0.22	2 20
10	13.50	13.50	33.405	25.060	289.4	0.029	6.05	263.5	102.1	3.6	0.42	1.2	0.06	0.11	0.66	0.21	10 19
20	13.50	13.50	33.405	25.060	289.7	0.058	6.05	263.7	102.2	3.6	0.42	1.2	0.07	0.13	0.71	0.21	20 18
30	13.49	13.49	33.406	25.062	289.8	0.087	6.06	264.1	102.3	3.6	0.42	1.3	0.08	0.11	0.69	0.21	30 17
40	13.48	13.47	33.407	25.066	289.7	0.116	6.05	263.4	102.0	3.6	0.43	1.3	0.07	0.15	0.66	0.23	40 16
50	13.10	13.10	33.407	25.142	282.8	0.145	5.99	260.9	100.3	3.9	0.51	2.1	0.11	0.40	0.51	0.23	50 15
60	12.00	12.00	33.421 D	25.366	261.6	0.173	5.81	252.9	95.0	5.0	0.65	4.3	0.21	0.51	0.34	0.19	60 14
71	11.18	11.17	33.399 D	25.500	249.0	0.201	5.47	238.1	87.9	7.6	0.88	8.0	0.32	0.24	0.17	0.16	72 13
75 ISL	10.87 D	10.86	33.358 D	25.524	246.8	0.211	4.98	0216.7 D	79.4	8.7	0.94	9.3	0.23	0.19	0.15	0.14	76
86	10.57	10.56	33.386	25.598	240.0	0.237	4.70	204.4	74.5	11.6	1.12	12.9	0.00	0.06	0.11	0.08	87 12
100 ISL	10.08 D	10.07	33.540 D	25.803	220.7	0.270	4.03	02175.2 D	63.2	16.7	1.42	17.7	0.00	0.04	0.03	0.07	101
101	10.05	10.04	33.530	25.800	221.1	0.271	4.02	174.9	63.0	17.0	1.44	18.0	0.00	0.04	0.02	0.07	102 11
120	9.59	9.58	33.664	25.981	204.2	0.311	3.51	152.7	54.6	22.1	1.69	21.9	0.00	0.09	0.05	0.06	121 10
125 ISL	9.47 D	9.45	33.702 D	26.032	199.5	0.323	3.39	02147.5 D	52.6	23.6	1.75	22.8	0.00	0.11	0.04	0.06	126
140	9.08	9.06	33.830	26.194	184.3	0.350	2.91	126.7	44.8	28.1	1.94	25.6	0.00	0.16	0.01	0.06	141 09
150 ISL	8.95 D	8.93	33.886 D	26.259	178.3	0.371	2.71	02117.8 D	41.6	29.8	2.00	26.4	0.00	0.13	0.01	0.06	151
170	8.77	8.75	33.964	26.349	170.2	0.403	2.42	105.5	37.1	33.2	2.11	27.9	0.00	0.06	0.01	0.06	171 08
200 ISL	7.95 D	7.93	33.985 D	26.490	157.0	0.455	2.80	02127.1 D	42.0	37.1	2.06	28.2	0.00	0.10	0.00	0.04	202
201	7.93	7.91	33.982	26.491	157.0	0.454	2.78	121.1	41.8	37.2	2.06	28.2	0.00	0.10	0.00	0.03	203 07
230	7.53	7.51	33.998	26.561	150.7	0.499	2.49	108.3	37.0	42.7	2.20	30.2	0.00	0.03			232 06
250 ISL	7.27 D	7.24	34.026 D	26.621	145.2	0.532	2.06	089.6 D	30.4	46.7	2.34	31.9	0.00	0.05			252
270	7.17	7.15	34.055	26.658	142.0	0.557	1.71	74.3	25.2	50.6	2.48	33.5	0.00	0.07			272 05
300 ISL	7.11 D	7.08	34.099 D	26.701	138.4	0.603	1.36	059.2 D	20.0	54.5	2.62	34.8	0.00	0.08			302
321	7.06	7.03	34.138	26.739	135.1	0.628	1.06	46.1	15.6	57.1	2.71	35.7	0.00	0.08			324 04
380	6.73	6.69	34.190	26.828	127.5	0.705	0.74</td										

RV BELL M SHIMADA

CALCOFI CRUISE 1304

STATION 90.0 80.0

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	WIND SPEED m/L μmol/Kg	WAVES	WEA	BAROMETER 1015.5 mb	DRY 13.3 C	WET 12.0 C	SECCHI		CLD AMT	TYPE	ORD 031	
													OXYGEN ml/L	OXYGEN μmol/Kg	OXY PCT	S103 μM	P04 μM	N03 μM
0	14.33	14.33	33.276	24.786	315.1	0.000	5.93	258.3	101.7	2.9	0.30	0.1	0.00	0.05	0.14	0.03	0	
3	14.33	14.33	33.276	24.787	315.2	0.010	5.93	258.3	101.7	2.9	0.30	0.1	0.00	0.05	0.14	0.03	3	20
10	14.34	14.33	33.268	24.780	316.1	0.032	5.94	258.9	101.9	2.9	0.30	0.0	0.00	0.00	0.14	0.04	10	19
20	14.33	14.33	33.262	24.777	316.6	0.063	5.93	258.3	101.7	2.9	0.30	0.0	0.00	0.02	0.14	0.04	20	18
30	14.32	14.31	33.262	24.781	316.6	0.095	5.91	257.7	101.4	2.9	0.30	0.0	0.00	0.04	0.14	0.03	30	17
40	13.59	13.59	33.208	D 24.889	306.5	0.127	6.02	262.3	101.7	2.9	0.30	0.0	0.00	0.07	0.19	0.06	40	16
50	13.15	13.15	33.197	24.969	299.2	0.156	6.01	261.7	100.6	3.2	0.35	0.1	0.06	0.07	0.58	0.23	50	15
61	12.85	12.84	33.146	24.990	297.4	0.189	6.02	262.3	100.1	3.2	0.36	0.3	0.08	0.16	0.52	0.25	61	14
70	12.56	12.55	33.139	25.042	292.8	0.216	6.00	261.3	99.1	3.5	0.40	0.6	0.16	0.30	0.41	0.20	71	13
75 ISL	12.20	D 12.19	33.130	D 25.104	287.0	0.232	5.97	D 260.0	D 97.9	4.0	0.45	1.5	0.19	0.20	0.32	0.17	76	
85	11.93	11.92	33.156	25.175	280.4	0.259	5.79	252.2	94.4	5.0	0.56	3.4	0.26	0.00	0.15	0.11	86	12
100	11.31	11.29	33.241	25.356	263.5	0.300	5.43	236.5	87.4	7.3	0.76	7.1	0.03	0.04	0.07	0.06	101	11
120	10.38	10.37	33.364	25.615	239.1	0.350	4.77	207.6	75.3	11.7	1.09	12.7	0.03	0.06	0.03	0.04	121	10
125 ISL	10.10	D 10.09	33.513	D 25.779	223.6	0.364	4.48	D 195.1	D 70.4	13.6	1.19	14.4	0.03	0.06	0.02	0.03	126	
140	9.66	9.64	33.625	25.941	208.4	0.394	3.96	172.2	61.6	19.3	1.49	19.4	0.03	0.05	0.01	0.03	141	09
150 ISL	9.44	D 9.43	33.688	D 26.025	200.6	0.417	3.96	D 172.2	D 61.3	21.1	1.56	20.5	0.03	0.05	0.01	0.02	151	
170	9.10	9.08	33.789	26.161	188.1	0.453	3.54	154.1	54.5	24.7	1.70	22.8	0.02	0.05	0.00	0.02	171	08
200 ISL	8.70	D 8.67	33.898	D 26.310	174.4	0.511	3.29	D 143.2	D 50.2	28.6	1.80	24.5	0.02	0.08	0.00	0.02	202	
201	8.68	8.66	33.899	26.313	174.2	0.509	3.34	145.5	51.0	28.7	1.80	24.6	0.02	0.08	0.00	0.02	203	07
231	8.18	8.16	33.975	26.450	161.6	0.560	2.97	129.0	44.7	34.8	1.98	27.1	0.00	0.01		233	06	
250 ISL	7.83	D 7.81	34.002	D 26.522	154.9	0.594	2.54	D 110.3	D 38.0	39.7	2.16	29.3	0.00	0.02		252		
270	7.69	7.67	34.054	26.584	149.4	0.620	1.95	85.0	29.2	44.9	2.35	31.6	0.00	0.04		272	05	
300 ISL	7.58	D 7.55	34.107	D 26.643	144.3	0.669	1.47	D 64.0	D 21.9	49.0	2.46	33.0	0.00	0.03		302		
320	7.25	7.21	34.084	26.672	141.6	0.693	1.50	65.3	22.2	51.8	2.54	34.0	0.00	0.03		323	04	
380	6.87	6.83	34.184	26.804	129.9	0.774	0.79	34.5	11.6	62.0	2.83	36.8	0.00	0.06		383	03	
400 ISL	6.70	D 6.66	34.197	D 26.837	126.9	0.806	0.72	D 31.4	D 10.5	64.4	2.88	37.3	0.01	0.06		403		
440	6.51	6.47	34.238	26.895	121.9	0.850	0.52	22.5	7.5	69.2	2.97	38.2	0.02	0.06		446	02	
500 ISL	6.00	D 5.96	34.275	D 26.991	113.2	0.927	0.35	D 15.2	D 5.0	78.7	3.08	40.0	0.02	0.09		504		
515	5.82	5.78	34.281	27.017	110.7	0.937	0.42	18.1	5.9	81.0	3.11	40.4	0.02	0.10		519	01	

D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED 02;

RV BELL M SHIMADA

CALCOFI CRUISE 1304

STATION 90.0 90.0

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	WIND SPEED m/L μmol/Kg	WAVES	WEA	BAROMETER 1014.9 mb	DRY 14.5 C	WET 12.8 C	SECCHI		CLD AMT	TYPE	ORD 7/8 SC 030	
													OXYGEN ml/L	OXYGEN μmol/Kg	OXY PCT	S103 μM	P04 μM	N03 μM
0	14.70	14.70	33.300	24.726	320.9	0.000	5.92	258.2	102.5	2.8	0.29	0.0	0.00	0.03	0.12	0.02	0	
2	14.70	14.70	33.299	24.726	320.9	0.005	5.92	258.2	102.5	2.8	0.29	0.0	0.00	0.03	0.12	0.02	2	23
2	14.70	14.70	33.300	24.726	320.9	0.006	5.92	258.2	102.5	2.8	0.29	0.0	0.00	0.05	0.12	0.02	10	21
10	14.71	14.70	33.300	24.726	321.2	0.032	5.89	256.8	101.9	2.8	0.29	0.0	0.00	0.05	0.12	0.02		
20 ISL	14.69	D 14.69	33.297	D 24.727	321.4	0.065	5.93	D 258.3	D 102.5	2.8	0.29	0.0	0.00	0.05	0.12	0.03	20	
24	14.65	14.65	33.291	24.731	321.1	0.077	5.91	257.6	102.1	2.8	0.29	0.0	0.00	0.05	0.12	0.03	24	20
30 ISL	14.63	D 14.62	33.286	D 24.734	321.1	0.097	5.94	D 258.8	D 102.5	2.8	0.29	0.0	0.00	0.07	0.13	0.03	30	
40	14.46	14.45	33.261	24.751	319.8	0.128	5.93	258.4	102.0	2.8	0.29	0.0	0.00	0.10	0.15	0.03	40	19
50	13.31	13.31	33.207	24.906	305.2	0.160	6.08	264.9	102.1	2.8	0.31	0.0	0.00	0.09	0.24	0.07	50	17
50	13.31	13.31	33.208	24.946	301.4	0.161											50	18
62	13.08	13.07	33.117	24.924	303.9	0.196	6.21	270.5	103.7	2.7	0.31	0.0	0.00	0.08	0.38	0.11	62	16
75	12.94	12.93	33.144	24.973	299.5	0.235	6.16	268.3	102.6	2.8	0.32	0.0	0.00	0.14	0.55	0.22	76	15
87	12.77	12.75	33.126	24.992	298.0	0.271	6.07	264.6	100.8	3.0	0.35	0.1	0.02	0.28	0.37	0.19	88	14
100	12.62	12.61	33.124	25.019	295.8	0.310	6.04	263.0	99.9	3.3	0.38	0.4	0.07	0.40	0.27	0.16	101	12
100	12.62	12.61	33.123	25.019	295.8	0.311											101	13
113	12.45	12.43	33.158	25.080	290.3	0.348	5.83	254.2	96.2	4.0	0.46	1.8	0.17	0.23	0.20	0.15	114	11
125	11.49	11.47	33.193	25.287	270.8	0.381	5.56	242.0	89.8	6.3	0.67	5.6	0.02	0.08	0.07	0.07	126	10
140	10.86	10.84	33.388	D 25.551	245.8	0.423	5.00	217.7	79.8	9.3	0.91	9.9	0.00	0.08	0.06	0.07	141	09
150 ISL	10.30	D 10.28	33.476	D 25.717	230.2	0.447	4.84	D 210.9	D 76.4	12.5	1.10	12.9	0.00	0.10	0.04	0.05	151	
170	9.69	9.67	33.624	25.936	209.7	0.488	3.98	173.3	62.0	19.0	1.47	19.0	0.00	0.13	0.01	0.02	171	08
200	8.95	8.93	33.838	26.222	182.9	0.547	3.43	149.3	52.6	25.9	1.72	23.2	0.00	0.15	0.00	0.02	202	07
231	8.63	8.61	33.961	26.370	169.3	0.												

RV BELL M SHIMADA

CALCOFI CRUISE 1304

STATION 90.0 100.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD	
31	5.0 N	122 40.8 W	13/04/2013	1729	UTC	3987 m	350 18 kn	350 05 07	1	1016.7 mb	14.4 C	12.6 C	21 m	6/8	SC	029	
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXYGEN	OXY	SI03	P04	N03	N02	NH4	CHL-A	PHAEAO	PRES SAMP
m	DEG C	DEG C	THETA			ml/L μ mol/Kg	PCT	μ M	μ M	μ M	μ M	μ M	μ M	μ g/L	μ g/L	db	
0	15.32	15.32	33.411	24.677	325.5	0.000	5.81	253.1	101.8	2.9	0.30	0.0	0.00	0.26	0.12	0.03	0
3 A	15.32	15.32	33.411	24.678	325.6	0.010	5.81	253.1	101.8	2.9	0.30	0.0	0.00	0.26	0.12	0.03	3 22
10 ISL	15.32 D	15.32	33.409 D	24.677	325.9	0.033	5.84	0254.6	0102.4	2.9	0.29	0.0	0.00	0.12	0.12	0.03	10
13 A	15.33	15.32	33.410	24.677	326.0	0.042	5.80	252.8	101.7	2.9	0.29	0.0	0.00	0.06	0.12	0.03	13 21
18 A	15.33	15.33	33.410	24.676	326.3	0.059	5.81	253.2	101.8	2.9	0.28	0.0	0.00	0.06	0.14	0.01	18 20
20 ISL	15.33 D	15.33	33.409 D	24.676	326.3	0.066	5.83	0254.0	0102.1	2.9	0.28	0.0	0.00	0.06	0.14	0.02	20
30 ISL	15.33 D	15.32	33.409 D	24.677	326.5	0.099	5.83	0254.0	0102.1	2.9	0.28	0.0	0.00	0.07	0.13	0.02	30
32 A	15.31	15.31	33.410	24.681	326.2	0.104	5.81	253.2	101.8	2.9	0.28	0.0	0.00	0.07	0.13	0.02	32 19
42	15.26	15.25	33.410	24.694	325.3	0.137	5.82	253.7	101.9	2.9	0.28	0.0	0.00	0.08	0.15	0.02	42 18
50	14.59	14.59	33.377	24.812	314.3	0.163	5.96	259.6	102.8	3.0	0.29	0.0	0.00	0.08	0.28	0.03	50 17
59 A	13.86	13.85	33.356	24.950	301.4	0.190	6.07	264.5	103.2	3.2	0.31	0.0	0.00	0.08	0.38	0.12	59 16
69 A	13.35	13.34	33.336	25.039	293.2	0.220	5.80	252.6	97.5	3.9	0.43	1.5	0.06	0.08	0.65	0.43	70 15
75 ISL	13.08 D	13.07	33.334 D	25.092	288.3	0.239	5.69	0247.8	095.1	4.3	0.48	2.4	0.08	0.10	0.52	0.41	76
77	12.96	12.95	33.339	25.120	285.6	0.243	5.66	246.6	94.4	4.4	0.50	2.7	0.08	0.10	0.48	0.41	78 14
85	12.71	12.70	33.336	25.165	281.5	0.266	5.54	241.4	92.0	5.2	0.57	3.9	0.07	0.08	0.39	0.29	86 13
94	12.29	12.27	33.349	25.258	272.8	0.291	5.40	235.2	88.8	6.3	0.68	5.8	0.03	0.08	0.23	0.19	95 12
100 ISL	11.98 D	11.97	33.370 D	25.332	265.9	0.309	5.41	0235.8	088.5	7.5	0.78	7.3	0.03	0.09	0.17	0.15	101
109	11.61	11.59	33.405	25.429	256.8	0.330	5.07	220.9	82.3	9.2	0.92	9.5	0.02	0.11	0.09	0.08	110 11
125 ISL	10.57 D	10.55	33.461 D	25.659	235.2	0.372	4.36	0189.9	069.2	13.3	1.21	14.4	0.02	0.09	0.06	0.06	126
128	10.42	10.40	33.467	25.690	232.2	0.377	4.31	187.7	68.2	14.1	1.27	15.3	0.02	0.09	0.06	0.06	129 10
148	9.70	9.68	33.663	25.964	206.5	0.421	3.49	151.7	54.3	21.6	1.67	21.4	0.00	0.12	0.01	0.02	149 09
150 ISL	9.67 D	9.66	33.670 D	25.974	205.6	0.428	3.51	0152.7	054.6	22.0	1.68	21.6	0.00	0.12	0.01	0.02	151
170	9.16	9.14	33.794	26.154	188.7	0.464	3.32	144.6	51.2	25.7	1.77	23.3	0.00	0.08	0.01	0.02	171 08
200 ISL	8.86 D	8.83	33.945 D	26.322	173.4	0.522	2.68	0116.5	041.0	31.5	2.01	26.3	0.00	0.09	0.00	0.02	202
204	8.84	8.81	33.960	26.337	172.1	0.525	2.55	110.9	39.0	32.3	2.04	26.7	0.00	0.09	0.00	0.02	206 07
230	8.54	8.51	34.023	26.433	163.3	0.569	2.21	96.2	33.6	36.4	2.18	28.4	0.00	0.09			232 06
250 ISL	8.36 D	8.33	34.056 D	26.487	158.5	0.606	2.01	087.3	30.4	39.8	2.27	29.6	0.00	0.09			252
273	7.97	7.94	34.081	26.565	151.4	0.637	1.77	76.8	26.5	43.6	2.38	31.0	0.00	0.09			275 05
300 ISL	7.75 D	7.72	34.144 D	26.646	144.1	0.682	1.32	057.3	019.7	48.9	2.54	32.6	0.00	0.11			302
321	7.49	7.46	34.167	26.703	139.0	0.706	1.06	46.1	15.8	53.0	2.67	33.9	0.00	0.12			324 04
384	6.89	6.86	34.214	26.824	128.1	0.790	0.67	29.1	9.8	62.8	2.87	36.2	0.00	0.13			387 03
400 ISL	6.80 D	6.76	34.224 D	26.846	126.2	0.817	0.63	027.4	09.2	64.6	2.90	36.6	0.00	0.14			403
442	6.48	6.44	34.231	26.894	122.0	0.863	0.52	22.8	7.6	69.3	2.99	37.6	0.00	0.18			446 02
500 ISL	6.07 D	6.02	34.275 D	26.983	114.1	0.939	0.36	015.4	5.1	77.3	3.07	39.0	0.00	0.10			504
512	5.92	5.88	34.268	26.995	112.9	0.945	0.35	15.3	5.0	79.0	3.09	39.3	0.00	0.08			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 BELL M SHIMADA

CALCOFI CRUISE 1304

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	44.9 N	123 20.2 W	13/04/2013	1025	UTC	4042 m	350 17 kn	350 06 07	1	1016.2 mb	12.9 C	12.3 C	21 m	6/8	SC	028	
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXYGEN	OXY	SI03	P04	N03	N02	NH4	CHL-A	PHAEAO	PRES SAMP
m	DEG C	DEG C	THETA			ml/L μ mol/Kg	PCT	μ M	μ M	μ M	μ M	μ M	μ M	μ g/L	μ g/L	db	
0	15.02	15.02	33.380	24.719	321.5	0.000	5.85	255.1	101.9	2.9	0.30	0.0	0.00	0.10	0.13	0.03	0
2	15.02	15.02	33.380	24.719	321.6	0.006	5.85	255.1	101.9	2.9	0.30	0.0	0.00	0.10	0.13	0.03	2 20
10	15.02	15.02	33.377	24.717	322.0	0.032	5.86	255.2	102.0	2.9	0.29	0.0	0.00	0.08	0.13	0.03	10 19
20 ISL	15.03 D	15.02	33.379 D	24.719	322.2	0.065	5.86	0255.4	0102.1	2.9	0.30	0.0	0.00	0.07	0.13	0.03	20
24	15.02	15.02	33.384	24.724	321.9	0.077	5.85	255.1	101.9	2.9	0.30	0.0	0.00	0.06	0.14	0.03	24 18
30 ISL	15.03 D	15.02	33.379 D	24.719	322.5	0.097	5.85	0255.0	0101.9	2.9	0.30	0.0	0.00	0.06	0.14	0.03	30
40	15.03	15.02	33.378	24.719	322.8	0.129	5.85	254.7	101.8	2.9	0.30	0.0	0.00	0.07	0.14	0.03	40 17
50 ISL	15.02 D	15.01	33.379 D	24.722	323.0	0.162	5.86	0255.4	0102.1	2.9	0.30	0.0	0.00	0.09	0.13	0.03	50 17
51	15.03	15.02	33.379	24.721	323.1	0.164	5.86	255.2	102.0	2.9	0.30	0.0	0.00	0.09	0.13	0.03	51 16
63	13.69	13.68	33.323	24.960	306.0	0.202	6.06	264.2	102.7	3.2	0.32	0.0	0.00	0.08	0.31	0.13	63 15
75	13.25	13.24	33.321	25.046	292.6	0.237	5.93	258.4	99.5	3.8	0.40	0.9	0.04	0.13	0.66	0.32	76 14
87	12.45	12.43	33.340	25.220	276.3	0.271	5.73	249.5	94.5	4.9	0.55	3.4	0.11	0.08	0.45	0.28	88 13
100	11.50	11.49	33.341	25.398	259.5	0.306	5.20	226.3	84.1	7.7	0.80	7.7	0.00	0.10	0.12	0.12	101 12
112	11.09	11.07	33.377	25.501	249.9	0.337	4.96	216.1	79.6	9.4	0.94	9.9	0.00	0.07	0.15	0.13	113 11
125 ISL	10.68 D	10.67	33.466 D	25.643	236.7	0.371	4.46	0194.1	070.9	13.5	1.23	14.5	0.00	0.			

RV BELL M SHIMADA

CALCOFI CRUISE 1304

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		
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXYGEN	OXY	SI03	P04	N03	N02	NH4	CHL-A	PHAEAO	PRES SAMP
m	DEG C	DEG C	THETA			ml/L	μmol/Kg	PCT	μM	μM	μM	μM	μM	μM	μg/L	μg/L	db
32 57.3 N	117 18.5 W	07/04/2013	0147	UTC	74 m	260	03 kn	280	03 06	1	1015.9	mb	16.8	C	15.2	C	2/8 SC 001
0	14.71	14.71	33.570	24.934	301.1	0.000	6.05	263.6	104.8	8.9	0.63	5.2	0.10	0.27	3.62	0.69	0
2	14.71	14.70	33.570	24.934	301.1	0.006	6.05	263.6	104.8	8.9	0.63	5.2	0.10	0.27	3.62	0.69	2 09
5	14.28	14.28	33.568	25.023	292.8	0.015	5.88	256.4	101.1	9.8	0.69	5.8	0.11	0.13	3.13	0.90	5 08
10	12.09	12.09	33.566	25.459	251.4	0.029	4.81	209.6	79.0	12.1	1.01	10.0	0.15	0.26	2.33	1.08	10 07
20	11.12	11.12	33.618	25.680	230.7	0.053	3.36	146.2	54.0	18.0	1.56	19.0	0.10	0.24	1.12	0.49	20 06
30	10.86	10.85	33.656	25.756	223.6	0.075	2.99	130.0	47.7	20.2	1.71	20.5	0.12	0.58	0.78	0.49	30 05
40	10.51	10.51	33.735	25.879	212.2	0.097	2.55	111.1	40.5	23.8	1.89	23.2	0.09	0.63	0.25	0.27	40 04
50	10.36	10.36	33.801	25.956	205.1	0.118	2.34	101.7	37.0	26.1	1.99	24.3	0.04	0.49	0.14	0.25	50 03
59	10.00	9.99	33.909	26.103	191.4	0.136	2.08	90.4	32.7	29.5	2.11	25.7	0.06	0.12	0.05	0.21	59 02
69	9.87	9.86	33.971	D 26.174	184.8	0.155	2.01	D 87.6	D 31.6								70 01

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

RV BELL M SHIMADA

CALCOFI CRUISE 1304

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		
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXYGEN	OXY	SI03	P04	N03	N02	NH4	CHL-A	PHAEAO	PRES SAMP
m	DEG C	DEG C	THETA			ml/L	μmol/Kg	PCT	μM	μM	μM	μM	μM	μM	μg/L	μg/L	db
32 54.2 N	117 24.1 W	07/04/2013	0455	UTC	571 m	240	02 kn	1016.5	mb	16.3	C	14.4	C	003			
0	15.64	15.64	33.570	24.729	320.6	0.000	6.39	278.3	112.7	1.7	0.27	0.1	0.00	0.09	1.03	0.17	0
2	15.64	15.64	33.570	24.729	320.7	0.006	6.39	278.3	112.7	1.7	0.27	0.1	0.00	0.09	1.03	0.17	2 20
10	12.40	12.39	33.567	25.402	256.8	0.030	6.64	289.2	109.7	1.6	0.25	0.3	0.00	0.09	3.46	0.14	10 19
20	11.69	11.69	33.595	25.557	242.3	0.055	4.31	187.6	70.1	13.8	1.20	13.4	0.14	0.13	2.45	0.64	20 18
30	11.39	11.39	33.618	25.630	235.6	0.078	3.60	156.9	58.3	17.0	1.45	17.2	0.13	0.14	1.46	0.85	30 17
40	10.97	10.96	33.651	25.733	226.0	0.102	3.15	137.0	50.4	19.2	1.63	19.8	0.09	0.54	1.23	0.56	40 16
50	10.80	10.79	33.686	25.791	220.9	0.124	2.87	D 125.0	D 45.8	21.1	1.76	21.5	0.04	0.22	0.93	0.27	50 15
60	10.64	10.64	33.720	25.845	216.0	0.146	2.69	117.2	42.9	22.6	1.82	22.5	0.04	0.27	0.67	0.27	60 14
70	10.28	10.28	33.768	25.945	206.6	0.167	2.39	100.8	37.8	25.2	1.97	24.7	0.19	1.39	0.15	0.19	71 13
75 ISL	10.21 D	10.21	33.815	D 25.993	202.1	0.178	2.28	D 99.3	D 36.0	26.1	2.00	25.0	0.18	1.36	0.11	0.15	76
85	10.04	10.03	33.868	26.066	195.5	0.197	2.25	97.8	35.3	27.7	2.06	25.5	0.16	1.30	0.03	0.08	86 12
100	9.79	9.78	34.011	26.220	181.2	0.225	2.06	89.6	32.2	30.7	2.15	26.3	0.01	0.38	0.02	0.10	101 11
120	9.52	9.51	34.038	26.285	175.4	0.261	2.08	90.6	32.4	32.0	2.16	26.9	0.01	0.39	0.01	0.10	121 10
125 ISL	9.49 D	9.47	34.054	D 26.304	173.7	0.271	2.05	D 89.1	D 31.8	32.5	2.18	27.1	0.01	0.37	0.01	0.10	126
140	9.32	9.31	34.097	26.365	168.2	0.295	1.94	84.4	30.1	34.1	2.22	27.7	0.01	0.30	0.02	0.09	141 09
150 ISL	9.35 D	9.33	34.159	D 26.409	164.3	0.314	1.64	D 71.4	D 25.5	35.7	2.28	28.3	0.02	0.34	0.01	0.08	151
170	9.06	9.04	34.180	26.472	158.6	0.344	1.44	62.6	22.2	39.1	2.41	29.6	0.03	0.41	0.01	0.07	171 08
200 ISL	8.92 D	8.90	34.227	D 26.533	153.5	0.393	1.19	D 51.7	D 18.3	41.9	2.51	30.3	0.02	0.24	0.02	0.04	202
201	8.92	8.90	34.227	26.533	153.5	0.392	1.19	51.7	18.3	42.0	2.51	30.3	0.02	0.23	0.02	0.04	203 07
230	8.66	8.63	34.249	26.592	148.4	0.436	1.05	45.6	16.0	44.7	2.58	31.1	0.00	0.13			232 06
250 ISL	8.47 D	8.44	34.247	D 26.620	146.1	0.469	1.01	D 44.0	D 15.4	47.0	2.63	31.8	0.00	0.10			252
270	8.22	8.19	34.260	26.669	141.7	0.494	0.89	38.8	13.5	49.2	2.68	32.5	0.00	0.06			272 05
300 ISL	8.00 D	7.97	34.265	D 26.706	138.7	0.540	0.81	D 35.3	D 12.2	52.6	2.74	33.3	0.01	0.04			302
321	7.77	7.74	34.260	26.736	136.0	0.565	0.74	32.3	11.1	55.0	2.78	33.8	0.02	0.02			324 04
380	7.14	7.10	34.260	26.827	128.0	0.643	0.57	24.8	8.4	62.3	2.90	36.2	0.00	0.05			383 03
400 ISL	6.96 D	6.92	34.273	D 26.862	124.9	0.673	0.49	D 21.5	D 7.3	65.0	2.95	36.8	0.00	0.06			403
440	6.65	6.61	34.296	26.923	119.5	0.717	0.35	15.2	5.1	70.2	3.04	37.9	0.00	0.09			444 02
500 ISL	6.24 D	6.19	34.323	D 26.999	112.8	0.793	0.27	D 11.7	D 3.9	76.7	3.12	39.0	0.00	0.02			504
515	6.16	6.12	34.326	27.011	111.8	0.804	0.24	10.6	3.5	78.4	3.14	39.3	0.00	0.00			519 01

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

RV BELL M SHIMADA

CALCOFI CRUISE 1304

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		
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXYGEN	OXY	SI03	P04	N03	N02	NH4	CHL-A	PHAEAO	PRES SAMP
m	DEG C	DEG C	THETA			ml/L	μmol/Kg	PCT	μM	μM	μM	μM	μM	μM	μg/L	μg/L	db
32 50.3 N	117 32.0 W	07/04/2013	0724	UTC	861 m	330	02 kn	1016.0	mb	15.1	C	14.9	C	004			
0	16.03	16.03	33.557	24.633	329.7	0.000	6.07	264.4	107.9	2.3	0.35	0.1	0.00	0.23	0.07	0	
3	16.03	16.03	33.557	24.633	329.8	0.010	6.07	264.4	107.9	2.3	0.35	0.1	0.00	0.23	0.07	3 20	
10	15.86	15.86	33.554	24.669	326.6	0.033	6.13	267.0	108.6	2.2	0.32	0.0	0.00	0.24	0.05	10 19	
20	14.65	14.64	33.561	24.941	301.0	0.064	6.46	281.5	111.8	2.0	0.29	0.0	0.00	0.33	0.13	20 18	
30	12.55	12.54	33.544	25.356	261.8	0.092	5.42	236.2	89.8	7.8	0.76	6.3	0.12	1.02	0.62	30 17	
41	11.58	11.58	33.563														

RV BELL M SHIMADA

CALCOFI CRUISE 1304

STATION 93.3 35.0

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	WIND SPEED ml/L μmol/Kg	WAVES PCT	WEA	BAROMETER 1013.8 mb	DRY 16.0 C	WET 15.1 C	SECCHI	CLD	AMT	TYPE	ORD 005
0	15.98	15.98	33.576	24.658	327.3	0.000	6.05	263.6	107.5	2.3	0.29	0.0	0.00	0.29	0.08	0	
3	15.98	15.98	33.576	24.658	327.4	0.010	6.05	263.6	107.5	2.3	0.29	0.0	0.00	0.29	0.08	3	20
10	15.98	15.98	33.583	24.664	327.2	0.033	6.05	263.8	107.6	2.3	0.30	0.0	0.00	0.26	0.09	10	19
19	15.97	15.97	33.580	24.664	327.4	0.062	6.04	263.1	107.3	2.3	0.29	0.0	0.00	0.28	0.09	19	18
20	ISL	15.97 D	15.96	33.577 D	24.663	327.6	0.066	6.04	D263.1	D107.2	2.7	0.32	0.4	0.01	0.35	0.11	20
30	13.70	13.70	33.555	25.134	283.0	0.096	5.65	246.0	95.8	6.5	0.64	4.6	0.08	1.09	0.30	30	17
40	11.28	11.28	33.612	25.647	234.3	0.122	3.38	147.0	54.4	14.5	1.47	18.3	0.10	2.72	0.40	40	16
50	10.78	10.78	33.691	25.797	220.2	0.145	2.87	124.8	45.8	20.3	1.74	21.7	0.05	0.65	0.23	50	15
60	10.35	10.35	33.700	25.880	212.5	0.166	3.10	134.9	49.0	21.5	1.73	21.4	0.02	0.13	0.13	60	14
70	10.07	10.06	33.871	26.062	195.5	0.187	2.49	D108.3 D	39.2	26.7	1.98	24.4	0.00	0.07	0.15	71	13
75	ISL	9.99 D	9.98	33.896 D	26.095	192.4	0.198	2.43	D105.9 D	38.2	27.6	2.01	24.8	0.00	0.05	0.13	76
85	9.74	9.73	33.960	26.186	184.0	0.215	2.31	100.5	36.1	29.4	2.06	25.6	0.00	0.02	0.08	86	12
100	ISL	9.66 D	9.65	34.011 D	26.241	179.2	0.244	2.17	D94.2 D	33.8	30.9	2.13	26.3	0.00	0.02	0.09	101
101	9.66	9.64	34.013	26.243	179.0	0.244	2.13	92.5	33.2	31.0	2.13	26.3	0.00	0.02	0.09	102	11
120	9.55	9.54	34.064	26.301	173.9	0.278	1.94	84.6	30.3	32.8	2.20	27.2	0.00	0.03	0.11	121	
125	ISL	9.52 D	9.51	34.077 D	26.317	172.5	0.289	1.91	D83.1 D	29.7	33.3	2.21	27.4	0.00	0.02	0.11	126
140	9.35	9.34	34.107	26.368	168.0	0.312	1.87	81.3	29.0	34.6	2.25	27.8	0.00	0.02	0.10	141	09
150	ISL	9.34 D	9.32	34.134 D	26.391	165.9	0.331	1.76	D76.4 D	27.2	35.9	2.30	28.2	0.00	0.02	0.09	151
170	9.13	9.11	34.183	26.464	159.4	0.361	1.50	65.4	23.2	38.4	2.39	29.1	0.00	0.01	0.07	171	08
200	8.89	8.87	34.233	26.542	152.6	0.408	1.23	53.6	18.9	42.2	2.51	30.3	0.00	0.01	0.06	202	07
230	8.67	8.64	34.244	26.587	148.9	0.453	1.11	48.4	17.0	44.4	2.57	31.0	0.00			232	06
250	ISL	8.53 D	8.50	34.254 D	26.617	146.4	0.486	1.02	D44.3 D	15.5	46.4	2.62	31.6	0.00			252
270	8.27	8.24	34.246	26.650	143.6	0.512	0.98	42.5	14.8	48.4	2.66	32.2	0.00			272	05
300	ISL	7.94 D	7.91	34.244 D	26.698	139.3	0.558	0.90	D39.3 D	13.6	52.9	2.74	33.5	0.00			302
320	7.62	7.59	34.257	26.756	134.0	0.581	0.74	32.4	11.1	55.9	2.80	34.4	0.00			323	04
380	7.23	7.19	34.280	26.831	127.7	0.660	0.57	24.8	8.4	61.3	2.91	35.8	0.00			383	03
400	ISL	7.17 D	7.13	34.276 D	26.836	127.5	0.691	0.56	D24.3 D	8.2	63.2	2.94	36.3	0.00			403
440	6.84	6.79	34.284	26.888	122.9	0.735	0.44	19.2	6.5	67.0	3.00	37.2	0.00			444	02
500	ISL	6.47 D	6.43	34.304 D	26.954	117.3	0.815	0.35	D15.3 D	5.1	73.1	3.09	38.5	0.00			504
516	6.37	6.32	34.316	26.977	115.3	0.826	0.31	13.3	4.4	74.8	3.11	38.8	0.00			520	01

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

RV BELL M SHIMADA

CALCOFI CRUISE 1304

STATION 93.3 40.0

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	WIND SPEED ml/L μmol/Kg	WAVES PCT	WEA	BAROMETER 1014.6 mb	DRY 15.1 C	WET 14.0 C	SECCHI	CLD	AMT	TYPE	ORD 006
0	15.31	15.31	33.530	24.773	316.4	0.000	6.05	263.8	106.1	2.6	0.39	0.0	0.00	0.43	0.12	0	
3	15.31	15.31	33.530	24.773	316.5	0.010	6.05	263.8	106.1	2.6	0.39	0.0	0.00	0.43	0.12	3	21
9	15.30	15.30	33.532	24.776	316.4	0.030								9			20
10	15.29	15.29	33.533	24.780	316.1	0.032	6.04	263.1	105.8	2.6	0.32	0.0	0.00	0.47	0.07	10	19
20	15.05	15.05	33.527	24.828	311.9	0.063	6.04	263.0	105.3	2.8	0.33	0.0	0.00	0.54	0.14	20	18
29	13.49	13.48	33.478	25.119	284.4	0.090	6.02	262.2	101.6	4.2	0.52	2.4	0.05	1.13	0.35	29	17
30	ISL	13.09 D	13.08	33.474 D	25.195	277.1	0.093	6.08	D265.0 D	101.9	4.5	0.55	2.8	0.06	1.16	0.35	30
39	12.47	12.46	33.494	25.333	264.2	0.117	5.34	D232.4 D	88.2	6.7	0.78	6.2	0.11	1.40	0.37	39	16
49	11.95	11.95	33.490	25.428	255.4	0.143	4.96	D216.0 D	81.1	9.9	1.00	10.2	0.03	0.44	0.29	49	15
50	ISL	11.86 D	11.85	33.496 D	25.451	253.3	0.147	4.74	D206.6 D	77.4	10.4	1.04	10.8	0.03	0.41	0.27	50
58	10.95	10.95	33.540	25.650	234.4	0.165	4.08	177.7	65.4	14.8	1.36	16.0	0.00	0.17	0.16	58	14
68	10.78	10.77	33.556	25.694	230.5	0.188	3.92	170.6	62.5	15.6	1.41	16.7	0.00	0.16	0.11	69	13
75	ISL	10.47 D	10.46	33.634 D	25.809	219.7	0.206	3.74	D162.9 D	59.3	17.1	1.50	18.0	0.00	0.11	0.10	76
84	10.39	10.38	33.648	25.834	217.5	0.224	3.45	150.3	54.6	19.1	1.61	19.7	0.00	0.06	0.08	85	12
100	9.76	9.75	33.781	26.045	197.8	0.257	2.98	129.5	46.5	23.9	1.84	23.1	0.00	0.02	0.04	101	11
118	9.54	9.52	33.915	26.187	184.7	0.291	2.56	111.5	39.8	27.9	2.00	25.2	0.00	0.01	0.03	119	10
125	ISL	9.43 D	9.41	33.944 D	26.228	180.9	0.306	2.50	D108.7 D	38.8	29.0	2.04	25.8	0.00	0.01	0.04	126
139	9.21	9.19	34.005	26.311	173.2	0.329	2.28	99.1	35.2	31.1	2.11	26.9	0.00	0.01	0.04	140	09
150	ISL	9.04 D	9.03	34.039 D	26.364	168.4	0.350	2.22	D96.6 D	34.2	32.6	2.16	27.5	0.00	0.00	0.04	151
170	8.86	8.84	34.090	26.433	162.3	0.381	1.96	85.2	30.0	35.4	2.26	28.7	0.00	0.00	0.03	171	08
199	8.54	8.52	34.146	26.528	153.8	0.427	1.66	72.1	25.3	40.2	2.39	29.8	0.00	0.00	0.03	201	07
200	ISL	8.62 D	8.60	34.149 D	26.518	154.7	0.431	1.57	D68.4 D	24.0	40.3	2.39	29.8	0.00	0.00	0.02	202
229	8.30	8.28	34.173	26.586	148.8	0.472	1.42	62.0	21.6	43.9	2.49	31.2	0.00			231	06
250	ISL	8.08 D	8.05	34.188 D	26.632	144.7	0.507										

RV BELL M SHIMADA

CALCOFI CRUISE 1304

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		
DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN μmol/Kg	OXY PCT	SI03 μM	P04 μM	N03 μM	N02 μM	NH4 μM	CHL-A μg/L	PHAEAO μg/L	PRES db
32 20.7 N	118 33.8 W	07/04/2013	1902	UTC	1384 m	300 15 kn	290 06 06	1	1015.6 mb	15.0 C	13.9 C	10 m	3/8	ST	007		
0	14.67	14.67	33.490	24.880	306.2	0.000	6.14	267.5	106.2	2.1	0.30	0.0	0.03	0.81	0.05	0	
2 A	14.67	14.67	33.490	24.880	306.3	0.006	6.14	267.5	106.2	2.1	0.30	0.0	0.03	0.81	0.05	2 24	
7 A	14.67	14.67	33.490	24.880	306.4	0.021	6.13	267.0	106.0	2.2	0.34	0.0	0.03	0.88B	0.01B	7 23	
9 A	14.66	14.66	33.490	24.882	306.3	0.028	6.11	266.1	105.6	2.2	0.35	0.1	0.00	0.78	0.13	9 21	
10	14.65	14.65	33.491	24.886	305.9	0.029										10 22	
10 ISL	14.65 D	14.65	33.489 D	24.885	306.1	0.031	6.16	D268.3	D106.5	2.2	0.35	0.1	0.00	0.77	0.13	10	
17 A	14.46	14.45	33.492	24.928	302.2	0.052	6.12	266.8	105.5	2.1	0.34	0.0	0.00	0.76	0.14	17 20	
20 ISL	14.37 D	14.36	33.486 D	24.942	300.9	0.061	6.22	D271.2	D107.0	2.0	0.34	0.0	0.00	0.92	0.09	20	
23	14.13	14.13	33.490	24.995	296.0	0.070	6.19	269.7	105.9	2.0	0.34	0.0	0.00	1.07	0.05	23 19	
30 A	12.67	12.67	33.474	25.277	269.3	0.090	6.10	265.6	101.2	3.1	0.51	2.2	0.03	1.30	0.20	30 18	
35 A	12.48	12.48	33.456	25.301	267.2	0.103	6.03	262.6	99.7	3.5	0.57	2.9	0.04	1.27	0.30	35 17	
40	12.59	12.58	33.505	25.319	265.6	0.116	5.94	258.8	98.5	3.9	0.71	3.9	0.04	1.14	0.44	40 16	
50 ISL	12.55 D	12.54	33.539 D	25.353	262.6	0.144	5.84	D254.5 D	96.8	4.3	0.78	4.5	0.05	0.77	0.49	50	
51	12.55	12.54	33.539	25.353	262.6	0.145	5.82	253.4	96.4	4.3	0.79	4.6	0.05	0.73	0.49	51 15	
58	11.80	11.79	33.479	25.449	253.7	0.163	5.37	234.1	87.6	8.5	0.90	8.5	0.05	0.32	0.34	58 14	
71	10.88	10.87	33.492	25.627	236.9	0.195	4.60	200.4	73.5	13.8	1.19	13.8	0.00	0.13	0.20	72 13	
75 ISL	10.72 D	10.71	33.552 D	25.702	229.9	0.206	4.30	D187.1 D	68.5	14.8	1.26	14.9	0.00	0.12	0.19	76	
87	10.25	10.24	33.608	25.826	218.3	0.233	3.89	169.2	61.3	17.9	1.46	18.0	0.00	0.09	0.18	88 12	
100 ISL	9.85 D	9.83	33.672 D	25.945	207.3	0.261	3.43	D150.2 D	54.0	21.5	1.65	20.9	0.00	0.05	0.15	101	
102	9.73	9.72	33.705 D	25.991	202.9	0.265	3.43	149.3	53.5	22.1	1.68	21.4	0.00	0.05	0.15	103 11	
120	9.51	9.50	33.834	26.127	190.4	0.299	2.81	122.4	43.7	27.0	1.92	24.5	0.00	0.04	0.08	121 10	
125 ISL	9.41 D	9.39	33.884 D	26.184	185.0	0.311	2.66	D115.9 D	41.3	28.1	1.95	25.1	0.00	0.03	0.08	126	
140	8.85	8.83	33.943	26.320	172.3	0.335	2.57	111.9	39.4	31.4	2.04	26.8	0.00	0.02	0.07	141 09	
150 ISL	9.06 D	9.05	34.037 D	26.360	168.8	0.355	2.15	D 93.7 D	33.2	32.6	2.10	27.3	0.00	0.01	0.07	151	
172	8.98	8.96	34.060	26.391	166.4	0.389	2.02	88.0	31.1	35.1	2.22	28.3	0.00	0.01	0.06	173 08	
198	8.65	8.63	34.106	26.479	158.4	0.431	1.80	78.2	27.4	38.6	2.33	29.5	0.00	0.01	0.04	200 07	
200 ISL	8.54 D	8.51	34.096 D	26.490	157.4	0.438	1.81	D 78.9 D	27.6	39.0	2.33	29.6	0.00	0.01	0.04	202	
232	7.73	7.70	34.078	26.597	147.4	0.483	1.81	78.6	27.0	45.5	2.41	31.8	0.00			234 06	
250 ISL	7.72 D	7.69	34.133 D	26.642	143.5	0.513	1.40	D 60.9 D	20.9	48.8	2.57	32.8	0.00			252	
270	7.77	7.74	34.228	26.709	137.6	0.537	0.87	37.8	13.0	52.4	2.74	34.0	0.00			272 05	
300 ISL	7.55 D	7.52	34.246 D	26.756	133.6	0.583	0.68	D 29.4 D	10.1	56.7	2.82	34.9	0.00			302	
318	7.41	7.38	34.259	26.787	130.9	0.602	0.57	24.9	8.5	59.2	2.87	35.5	0.00			321 04	
381	7.01	6.97	34.288	26.867	124.1	0.682	0.40	17.6	5.9	65.6	3.00	36.8	0.00			384 03	
400 ISL	6.78 D	6.74	34.294 D	26.903	120.8	0.711	0.38	D 16.6 D	5.6	67.9	3.03	37.3	0.00			403	
440	6.49	6.45	34.304	26.950	116.7	0.753	0.32	13.7	4.6	72.7	3.08	38.4	0.00			444 02	
500 ISL	6.23 D	6.18	34.321 D	26.999	112.8	0.829	0.28	D 12.2 D	4.1	77.6	3.14	39.2	0.00			504	
515	6.14	6.09	34.327	27.015	111.4	0.839	0.26	11.5	3.8	78.8	3.15	39.4	0.00			519 01	

A) PRIMARY PRODUCTIVITY SAMPLES WERE TAKEN FROM THESE LEVELS.

B) SECOND FLUOROMETER READING NOT RECORDED CHLOROPHYLL AND PHAEOPIGMENT CALCULATED WITH ASSUMED ACID RATIO INTERPOLATED FROM ADJACENT LEVELS

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

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD		
DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN μmol/Kg	OXY PCT	SI03 μM	P04 μM	N03 μM	N02 μM	NH4 μM	CHL-A μg/L	PHAEAO μg/L	PRES db
32 10.8 N	118 53.5 W	08/04/2013	0045	UTC	1468 m	320 22 kn	310 07 06	0	1013.3 mb	14.7 C	13.2 C	0/8	008				
0	14.33	14.33	33.445	24.917	302.7	0.000	6.09	265.2	104.6	3.4	0.37	0.3	0.00	0.07	0.72	0.17	
2	14.33	14.33	33.445	24.917	302.8	0.006	6.09	265.2	104.6	3.4	0.37	0.3	0.00	0.07	0.72	0.17	
10	14.32	14.32	33.440	24.915	303.1	0.030	6.10	265.9	104.8	3.4	0.35	0.2	0.00	0.04	0.69	0.17	
20 ISL	14.32 D	14.31	33.444 D	24.920	303.0	0.061	6.13	D266.9	D105.2	3.4	0.36	0.2	0.00	0.05	0.77	0.17	
21	14.31	14.31	33.450	24.927	302.4	0.064	6.09	265.4	104.6	3.3	0.36	0.2	0.00	0.05	0.78	0.17	
30	14.20	14.20	33.444	24.945	300.9	0.091	6.09	265.2	104.3	3.3	0.35	0.2	0.00	0.05	0.81	0.18	
40	13.92	13.91	33.436	24.998	296.2	0.121	6.04	263.2	102.9	3.6	0.38	0.8	0.03	0.05	0.88	0.26	
49	13.04	13.03	33.424	25.168	280.3	0.147	5.79	252.2	96.8	5.0	0.54	3.0	0.10	0.11	0.78	0.38	
50 ISL	13.08 D	13.07	33.433 D	25.166	280.4	0.151	5.70	D248.4 D	95.5	5.4	0.58	3.6	0.09	0.11	0.73	0.37	
59	11.93	11.92	33.433	25.389	259.4	0.174	5.11	222.6	83.5	8.9	0.89	8.9	0.03	0.08	0.29	0.23	
70	10.76	10.75	33.516 D	25.666	233.1	0.202	4.39	191.3	70.0	13.6	1.23	14.3	0.00	0.01	0.10	0.11	
75 ISL	10.68 D	10.67	33.522 D	25.686	231.4	0.214	4.19	D182.3 D	66.6	14.4	1.28	15.1	0.00	0.02	0.09	0.10	
85	10.55	10.54	33.537	25.720	228.4	0.235	4.04	176.0	64.1	16.0	1.39	16.8	0.00	0.03	0.06	0.08	
100	10.02	10.00	33.737 D	25.967	205.2	0.270	3.25	141.6	51.1	21.8	1.71	21.3	0.00	0.05	0.02	0.06	
120	9.55	9.53	33.861	26.143	188.9	0.307	2.72	118.5	42.3	27.2	1.94	24.7	0.00	0.04	0.01	0.05	
125 ISL	9.40 D	9.39	33.882 D	26.184	185.1	0.319	2.68	D116.7 D	41.6	28.3	1.97	25.2	0.00	0.05	0.01	0.04	
140	8.90	8.88	33.938	26.308	173.5	0.343	2.66	115.6	40.7	31.5	2.04	26.8	0.00	0.08	0.00	0.03	
150 ISL	8.77 D	8.76	33.954 D	26.340	170.6	0.363	2.60	D113.2 D	39.8	32.7	2.08	27.3	0.00	0.07	0.00	0.03	
170	8.61	8.59	34.005	26.406	164.7	0.394	2.34	101.8	35.7	35.2	2.15	28.3	0.00	0.06	0.00	0.03	
200	8.59	8.57	34.090	26.477	158.6	0.443	1.86	80.8	28.3	3							

RV BELL M SHIMADA

CALCOFI CRUISE 1304

STATION 93.3 55.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD		
32° 0.6 N	119° 14.2 W	11/04/2013	1024	UTC	1596 m	300 15 kn			1016.3 mb	14.4 C	13.1 C					021		
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SV	DYN HT	OXYGEN	OXYGEN	OXY	SI03	P04	N03	N02	NH4	CHL-A	PHAEAO	PRES SAMP	
m	DEG C	DEG C	THETA				ml/L	μmol/Kg	PCT	μM	μM	μM	μM	μM	μg/L	μg/L	db	
0	13.46	13.46	33.529	25.162	279.4	0.000	5.95	259.1	100.4	4.1	0.61	3.5	0.09	0.53	0.50	0.17	0	
2	13.46	13.46	33.529	25.162	279.4	0.006	5.95	259.1	100.4	4.1	0.61	3.5	0.09	0.53	0.50	0.17	2 23	
10	13.45	13.45	33.534	25.168	279.1	0.028	5.96	259.4	100.5	4.1	0.61	3.5	0.10	0.40	0.59	0.21	10 21	
10	13.45	13.45	33.530	25.165	279.4	0.029											10 22	
20	ISL	13.24 D	13.23	33.557 D	25.230	273.5	0.056	6.02	0262.4 D	101.2	4.2	0.62	3.6	0.11	0.49	0.55	0.22	20
25	13.19	13.19	33.559	25.240	272.7	0.069	5.99	261.1	100.7	4.2	0.63	3.6	0.12	0.53	0.53	0.23	25 20	
30	ISL	13.15 D	13.15	33.551 D	25.242	272.6	0.083	5.93	0258.4 D	99.5	4.2	0.63	3.6	0.12	0.54	0.65	0.27	30
41	13.13	13.12	33.552	25.249	272.3	0.113	5.90	257.1	99.0	4.3	0.64	3.7	0.12	0.55	0.92	0.36	41 19	
50	13.08	13.08	33.561	25.265	271.0	0.137	5.92	257.7	99.1	4.2	0.65	3.7	0.12	0.68	0.80	0.39	50 18	
63	13.03	13.02	33.555	25.271	270.9	0.173	5.85	254.7	97.9	4.4	0.66	3.8	0.13	0.83	0.62	0.31	64 17	
75	ISL	12.89 D	12.87	33.545 D	25.293	269.1	0.206	5.78	0251.8 D	96.4	4.9	0.70	4.4	0.12	0.87	0.44	0.26	76
76	12.87	12.86	33.544	25.295	268.9	0.208	5.77	251.5	96.3	4.9	0.70	4.5	0.12	0.87	0.43	0.26	77 16	
87	12.13	12.12	33.516	25.417	257.5	0.237	5.55	241.8	91.1	6.5	0.79	6.2	0.13	0.69	0.33	0.25	88 15	
100	10.14	10.13	33.511	25.770	223.9	0.268	4.29	186.9	67.5	15.7	1.34	16.3	0.02	0.08	0.06	0.07	101 14	
112	9.79	9.77	33.604	25.902	211.5	0.294	3.89	169.4	60.8	19.1	1.52	19.3	0.02	0.10	0.04	0.06	113 12	
125	ISL	9.22 D	9.20	33.810 D	26.157	187.6	0.322	3.04	0132.4 D	46.9	25.7	1.85	24.0	0.02	0.07	0.02	0.06	126
126	9.19	9.18	33.788	26.144	188.8	0.322	3.09	134.4	47.6	26.2	1.87	24.4	0.02	0.07	0.01	0.06	127 10	
141	8.90	8.88	33.900	26.278	176.3	0.349	2.75	119.6	42.1	30.5	1.96	26.4	0.02	0.07	0.01	0.04	142 09	
150	ISL	8.86 D	8.85	33.920 D	26.300	174.4	0.367	2.72	0118.5 D	41.7	31.6	2.00	26.9	0.02	0.07	0.01	0.04	151
171	8.59	8.57	33.974	26.385	166.7	0.401	2.53	109.9	38.5	34.2	2.10	27.9	0.02	0.07	0.01	0.03	172 08	
200	ISL	8.19 D	8.17	34.043 D	26.500	156.2	0.451	2.07	090.2 D	31.3	39.9	2.28	30.1	0.00	0.08	0.01	0.04	202
201	8.18	8.16	34.042	26.501	156.1	0.449	2.09	91.0	31.6	40.1	2.29	30.2	0.00	0.08	0.01	0.04	203 07	
230	7.87	7.85	34.095	26.589	148.2	0.493	1.63	70.8	24.4	45.9	2.48	32.3	0.00	0.09			232 06	
250	ISL	7.81 D	7.79	34.115 D	26.614	146.2	0.526	1.49	044.7 D	22.3	49.2	2.56	33.3	0.00	0.08			252
271	7.42	7.39	34.128	26.680	140.1	0.553	1.26	54.6	18.6	52.7	2.64	34.3	0.00	0.07			273 05	
300	ISL	7.07 D	7.04	34.140 D	26.739	134.8	0.597	1.06	46.2 D	15.6	57.0	2.73	35.5	0.00	0.08			302
318	6.97	6.94	34.160	26.770	132.1	0.617	0.97	42.3	14.3	59.7	2.79	36.2	0.00	0.09			321 04	
381	6.76	6.73	34.262	26.880	122.7	0.697	0.50	21.9	7.4	66.8	2.98	37.3	0.00	0.08			384 03	
400	ISL	6.55 D	6.51	34.267 D	26.912	119.7	0.725	0.45	019.5 D	6.5	69.0	3.01	37.8	0.00	0.08			403
439	6.35	6.31	34.292	26.958	115.8	0.766	0.36	15.8	5.3	73.7	3.08	38.8	0.00	0.09			443 02	
500	ISL	6.07 D	6.02	34.314 D	27.013	111.2	0.842	0.29	012.4 D	4.1	78.0	3.14	39.5	0.00	0.10			504
515	6.05	6.00	34.315	27.017	111.1	0.852	0.27	11.7	3.9	79.1	3.15	39.7	0.00	0.10			519 01	

D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED 02;

RV BELL M SHIMADA

CALCOFI CRUISE 1304

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 50.9 N	119 34.8 W	11/04/2013	1513	UTC	1845 m	320 19 kn	320 04 06	2	1016.3 mb	14.0 C	13.0 C	16 m	8/8	SC	022			
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SV	DYN HT	OXYGEN	OXYGEN	OXY	SI03	P04	N03	N02	NH4	CHL-A	PHAEAO	PRES SAMP	
m	DEG C	DEG C	THETA				ml/L	μmol/Kg	PCT	μM	μM	μM	μM	μM	μg/L	μg/L	db	
0	14.18	14.18	33.358	24.883	305.9	0.000	5.99	261.0	102.5	3.4	0.33	0.1	0.03	0.05	0.46	0.16	0	
1 A	14.18	14.17	33.358	24.883	306.0	0.003	5.99	261.0	102.5	3.4	0.33	0.1	0.03	0.05	0.46	0.16	1 21	
10 A	14.16	14.16	33.358	24.886	306.0	0.031	6.00	261.5	102.7	3.3	0.33	0.1	0.02	0.02	0.47	0.14	10 20	
14 A	14.15	14.15	33.358	24.888	305.8	0.043	6.02	262.2	102.9	3.4	0.33	0.1	0.03	0.03	0.48	0.12	14 19	
20	ISL	14.14 D	14.14	33.359 D	24.891	305.8	0.061	6.00	0261.6 D	102.7	3.4	0.34	0.2	0.03	0.03	0.49	0.12	20
25 A	14.08	14.08	33.372	24.914	303.7	0.076	6.00	261.5	102.5	3.4	0.34	0.2	0.03	0.03	0.50	0.12	25 18	
30	ISL	14.03 D	14.03	33.384 D	24.934	302.0	0.092	6.06	0263.9 D	103.4	3.4	0.34	0.3	0.03	0.03	0.53	0.14	30
36	14.01	14.00	33.396	24.949	300.8	0.110	6.04	263.1	103.0	3.4	0.35	0.4	0.02	0.04	0.57	0.15	36 17	
47 A	13.92	13.91	33.389	24.963	299.7	0.143	6.05	263.4	102.9	3.4	0.36	0.4	0.04	0.05	0.85	0.16	47 16	
50	ISL	13.91 D	13.91	33.388 D	24.963	299.8	0.153	6.05	0263.5 D	103.0	3.4	0.36	0.4	0.04	0.05	0.80	0.18	50
55 A	13.91	13.90	33.389	24.966	299.8	0.167	6.03	262.7	102.6	3.4	0.36	0.4	0.03	0.05	0.73	0.20	55 15	
62	13.89	13.88	33.398	24.976	299.0	0.188	6.03	262.6	102.5	3.4	0.37	0.5	0.04	0.11	0.64	0.18	62 14	
70	13.50	13.49	33.376	25.039	293.2	0.211	5.97	259.9	100.7	3.5	0.38	0.7	0.05	0.15	0.46	0.18	71 13	
75	ISL	13.02 D	13.01	33.342 D	25.109	286.6	0.227	5.86	0255.3 D	97.9	4.2	0.46	1.9	0.10	0.15	0.38	0.18	76
85	12.44	12.42	33.340	25.222	276.1	0.254	5.66	246.4	93.3	5.5	0.62	4.3	0.19	0.15	0.23	0.18	86 12	
100	11.29	11.27	33.417	25.496	250.1	0.293	4.87	212.1	78.5	9.6	0.95	10.3	0.03	0.00	0.14	0.10	101 11	
120	10.00	9.99	33.548	25.823	219.3	0.340	4.12	179.5	64.7	16.9	1.41	17.6	0.02	0.00	0.03	0.03	121 10	
125	ISL	9.70 D	9.69	33.644 D	25.948	207.5	0.354	3.74	0162.8 D	58.3	18.8	1.51	19.0	0.02	0.00	0.02	0.03	126
141	9.41	9.40	33.766	26.091	194.2	0.383	3.18	138.5	49.3	24.9	1.81							

RV BELL M SHIMADA

CALCOFI CRUISE 1304

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		
DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN μmol/Kg	OXY PCT	SI03 μM	P04 μM	N03 μM	N02 μM	NH4 μM	CHL-A μg/L	PHAE0 μg/L	PRES db	
31	30.8 N	120 15.3 W	11/04/2013	2116	UTC	3962 m	310	23 kn	320 07 07	0	1015.7 mb	14.8 C	12.9 C	14 m	0/8	023		
0	15.06	15.06	33.457	24.769	316.8	0.000	5.87	255.7	102.3	3.1	0.31	0.0	0.00	0.00	0.21	0.06	0	
2	15.06	15.06	33.457	24.769	316.8	0.006	5.87	255.7	102.3	3.1	0.31	0.0	0.00	0.00	0.21	0.06	2 20	
10	15.06	15.06	33.454	24.769	317.1	0.032	5.87	255.8	102.4	3.0	0.31	0.1	0.00	0.00	0.20	0.05	10 19	
20	ISL	15.04 D	15.04	33.452	24.773	317.1	0.064	5.88	0256.2	0102.5	3.0	0.30	0.0	0.00	0.00	0.21	0.06	20
24	15.02	15.02	33.454	24.778	316.7	0.076	5.86	255.4	102.1	3.0	0.30	0.0	0.00	0.00	0.21	0.06	24 18	
30	ISL	14.98 D	14.97	33.452	24.787	316.1	0.096	5.87	0255.9	0102.2	3.0	0.30	0.0	0.00	0.00	0.23	0.06	30
40	14.90	14.89	33.451	24.803	314.9	0.127	5.88	256.4	102.3	3.0	0.30	0.0	0.00	0.00	0.26	0.07	40 17	
50	ISL	14.85 D	14.84	33.449	24.813	314.2	0.159	5.88	0256.4	0102.1	3.0	0.30	0.0	0.00	0.00	0.31	0.09	50
51	14.85	14.84	33.450	24.814	314.2	0.161	5.88	256.2	102.1	3.0	0.30	0.0	0.00	0.00	0.31	0.10	51 16	
61	14.83	14.82	33.449	24.818	314.1	0.193	5.89	256.5	102.1	3.0	0.32	0.0	0.00	0.07	0.36	0.12	61 15	
75	ISL	13.64 D	13.63	33.404	25.032	294.0	0.237	5.86	0255.1	0099.1	3.6	0.40	1.0	0.00	0.03	0.57	0.36	76
76	13.44	13.43	33.396	25.068	290.6	0.238	5.84	254.6	98.5	3.7	0.41	1.1	0.00	0.03	0.59	0.37	77 14	
86	12.79	12.77	33.372	25.179	280.2	0.267	5.54	241.4	92.1	5.1	0.61	4.0	0.12	0.03	0.37	0.30	87 13	
98	11.97	11.96	33.369	25.333	265.7	0.299	5.15	224.4	84.2	7.3	0.83	7.7	0.03	0.02	0.22	0.20	99 12	
100	ISL	11.75 D	11.73	33.384	25.387	260.7	0.307	5.10	0222.0	082.9	8.1	0.88	8.6	0.03	0.02	0.20	0.18	101
112	10.70	10.69	33.462	25.636	237.0	0.335	4.54	197.6	72.2	12.6	1.18	13.7	0.02	0.05	0.07	0.06	113 11	
125	10.07	10.05	33.563	25.824	219.4	0.364	4.01	174.4	62.9	17.3	1.46	18.0	0.02	0.13	0.03	0.04	126 10	
142	9.61	9.59	33.662	25.978	205.0	0.400	3.62	157.4	56.2	21.4	1.64	21.2	0.00	0.00	0.01	0.03	143 09	
150	ISL	9.43 D	9.42	33.722	26.054	198.0	0.419	3.42	0148.8	053.0	23.3	1.72	22.3	0.00	0.00	0.01	0.03	151
170	9.15	9.13	33.847	26.198	184.6	0.455	2.92	127.2	45.0	27.9	1.92	25.2	0.00	0.00	0.00	0.02	171 08	
200	ISL	8.65 D	8.63	33.997	26.395	166.4	0.511	2.38	0103.3	036.2	34.4	2.13	28.1	0.00	0.00	0.00	0.02	202
201	8.65	8.63	33.997	26.395	166.4	0.509	2.40	104.3	36.6	34.7	2.14	28.2	0.00	0.00	0.00	0.02	203 07	
231	8.14	8.12	34.068	26.528	154.2	0.557	2.00	87.0	30.2	40.9	2.32	30.6	0.00	0.00			233 06	
250	ISL	8.02 D	8.00	34.060	26.540	153.3	0.591	1.91	083.2	028.8	43.3	2.38	31.4	0.00	0.00			252
273	7.73	7.70	34.077	26.597	148.2	0.621	1.72	74.9	25.7	46.1	2.45	32.3	0.00	0.00			275 05	
300	ISL	7.39 D	7.37	34.100	26.663	142.2	0.665	1.42	061.6	021.0	51.1	2.58	33.9	0.00	0.00			302
320	7.18	7.15	34.115	26.705	138.4	0.689	1.23	53.3	18.1	54.8	2.67	35.1	0.00	0.00			323 04	
381	6.72	6.68	34.159	26.804	129.8	0.770	0.84	36.6	12.3	62.9	2.85	37.2	0.00	0.04			384 03	
400	ISL	6.61 D	6.57	34.176	26.833	127.2	0.801	0.75	032.7	011.0	65.3	2.89	37.7	0.00	0.03			403
442	6.30	6.26	34.208	26.899	121.3	0.847	0.57	24.7	8.2	70.8	2.99	38.8	0.00	0.00			446 02	
500	ISL	6.00 D	5.95	34.256	26.977	114.6	0.922	0.38	016.5	05.4	78.2	3.08	40.0	0.00	0.00			504
513	5.86	5.81	34.259	26.996	112.8	0.930	0.37	15.9	5.2	79.8	3.10	40.3	0.00	0.00			517 01	

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

RV BELL M SHIMADA

CALCOFI CRUISE 1304

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		
DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN μmol/Kg	OXY PCT	SI03 μM	P04 μM	N03 μM	N02 μM	NH4 μM	CHL-A μg/L	PHAE0 μg/L	PRES db	
31	10.1 N	120 56.2 W	12/04/2013	0458	UTC	3927 m	320	24 kn	320 07 07	1014.4 mb	13.8 C	11.6 C	14 m	0/8	024			
0	14.31	14.31	33.289	24.800	313.8	0.000	6.01	261.9	103.1	3.2	0.31	0.1	0.00	0.08	0.19	0.05	0	
2	14.31	14.31	33.289	24.800	313.9	0.006	6.01	261.9	103.1	3.2	0.31	0.1	0.00	0.08	0.19	0.05	2 20	
10	14.32	14.32	33.293	24.802	313.9	0.031	5.99	261.2	102.9	3.2	0.31	0.0	0.00	0.03	0.17	0.05	10 19	
20	ISL	14.32 D	14.32	33.287	24.799	314.6	0.063	5.97	0260.3	0102.5	3.1	0.30	0.0	0.00	0.02	0.17	0.06	20
24	14.29	14.29	33.289	24.806	314.0	0.075	5.98	260.5	102.5	3.1	0.30	0.0	0.00	0.02	0.17	0.06	24 18	
30	ISL	14.28 D	14.27	33.284	24.806	314.2	0.095	5.98	0260.5	0102.5	3.2	0.30	0.0	0.00	0.03	0.19	0.07	30
40	14.09	14.09	33.279	24.841	311.1	0.126	6.01	262.1	102.7	3.2	0.31	0.0	0.00	0.05	0.21	0.08	40 17	
50	13.96	13.95	33.277	24.869	308.9	0.157	6.05	263.4	102.9	3.3	0.31	0.0	0.00	0.08	0.39	0.08	50 16	
60	13.94	13.93	33.277	24.873	308.8	0.187	6.01	262.0	102.3	3.3	0.32	0.0	0.00	0.06	0.40	0.17	60 15	
75	ISL	12.93 D	12.92	33.310	25.102	287.3	0.234	6.11	0266.2	0101.9	4.0	0.44	1.3	0.09	0.28	0.46	0.23	76
76	12.91	12.90	33.310	25.106	286.9	0.235	6.09	265.5	101.5	4.0	0.45	1.4	0.10	0.29	0.46	0.24	77 14	
86	12.66	12.65	33.336	25.175	280.6	0.263	5.97	260.1	99.0	4.7	0.52	2.2	0.19	0.51	0.33	0.18	87 13	
99	12.35	12.33	33.387	25.276	271.3	0.299	5.96	259.7	98.2	4.7	0.64	3.8	0.17	0.70	0.16	0.12	100 12	
100	ISL	12.28 D	12.27	33.382	25.285	270.5	0.304	5.95	0259.2	097.9	4.9	0.65	4.1	0.17	0.66	0.16	0.12	101
112	11.78	11.77	33.376	25.375	262.1	0.334	5.43	236.6	88.4	7.3	0.80	7.2	0.18	0.17	0.13	0.15	113 11	
125	10.95	10.93	33.404	25.547	245.9	0.367	4.98	217.0	79.7	10.4	1.00	10.9	0.09	0.09	0.10	0.10	126 10	
140	10.02	10.00	33.500	25.784	223.5	0.402	4.31	187.5	67.5	15.5	1.33	16.3	0.03	0.00	0.05	0.06	141 09	
150	ISL	9.74 D	9.73	33.591	25.900	212.6	0.427	3.95	0172.0	061.6	17.4	1.41	17.7	0.03	0.01	0.03	0.05	151
171	9.28	9.26	33.697	26.060	197.7	0.467	3.87	168.6	59.8	21.5	1.57	20.5	0.02	0.03	0.01	0.03	172 08	
200	ISL	8.90 D	8.88	33.907	26.286	176.8	0.525	2.78	0121.1	042.6	30.0	1.97	25.9	0.00	0.05	0.01	0.03	202
201	8.89	8.87	33.905	26.285	176.9	0.523	2.80	122.0	43.0	30.3	1.98	26.1	0.00					

RV BELL M SHIMADA

CALCOFI CRUISE 1304

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		
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXYGEN	OXY	SI03	P04	N03	N02	NH4	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C	THETA			ml/L	μmol/Kg	μM	PCT	μM	μM	μM	μM	μg/L	μg/L	db	025	
30	51.0 N	121 35.6 W	12/04/2013	1158	UTC	4145 m	350	29 kn										
0	14.79	14.79	33.365	24.757	317.9	0.000	5.89	256.6	102.0	2.9	0.29	0.0	0.00	0.03	0.15	0.04	0	
3	14.79	14.79	33.365	24.757	318.0	0.010	5.89	256.6	102.0	2.9	0.29	0.0	0.00	0.03	0.15	0.04	3 20	
10	14.80	14.79	33.360	24.753	318.6	0.032	5.88	256.4	102.0	2.9	0.28	0.0	0.00	0.06	0.14	0.04	10 19	
20	ISL	14.80 D	14.79	33.359	D 24.753	319.0	0.064	5.87	D 255.8	D 101.7	2.9	0.28	0.0	0.00	0.05	0.15	0.04	20
26	14.80	14.80	33.361	24.754	319.1	0.083	5.88	256.2	101.9	2.9	0.28	0.0	0.00	0.05	0.15	0.05	26 18	
30	ISL	14.80 D	14.80	33.358	D 24.752	319.4	0.096	5.91	D 257.4	D 102.4	2.9	0.28	0.0	0.00	0.04	0.15	0.05	30
41	14.80	14.80	33.359	24.753	319.6	0.131	5.89	256.7	102.1	2.9	0.27	0.0	0.00	0.02	0.15	0.04	41 17	
50	14.76	14.75	33.359	24.763	318.9	0.159	5.89	256.6	102.0	2.8	0.27	0.0	0.00	0.06	0.15	0.05	50 16	
62	14.12	14.11	33.342	24.886	307.6	0.197	5.98	260.6	102.2	2.8	0.27	0.0	0.00	0.03	0.21	0.07	62 15	
75	ISL	13.93 D	13.92	33.329	D 24.915	305.2	0.239	5.93	D 258.5	D 101.0	3.1	0.31	0.1	0.03	0.00	0.57	0.40	76
76	13.87	13.86	33.335	24.932	303.6	0.240	5.90	257.0	100.3	3.1	0.31	0.1	0.03	0.00	0.60	0.43	77 14	
87	13.40	13.39	33.327	25.022	295.3	0.273	5.85	254.9	98.5	3.5	0.35	0.8	0.14	0.03	0.48	0.36	88 13	
100	ISL	13.02 D	13.01	33.358	D 25.123	286.0	0.313	5.79	D 252.2	D 96.7	4.4	0.47	2.4	0.37	0.00	0.24	0.16	101
101	12.94	12.92	33.361	25.142	284.3	0.313	5.76	251.0	96.1	4.5	0.48	2.5	0.39	0.00	0.23	0.15	102 12	
113	11.82	11.81	33.302	25.310	268.3	0.347	5.34	232.6	87.0	6.2	0.65	6.0	0.03	0.06	0.15	0.16	114 11	
125	ISL	10.90 D	10.88	33.393	D 25.548	245.8	0.381	4.93	D 214.6	D 78.7	9.0	0.87	9.9	0.00	0.00	0.09	0.08	126
126	10.88	10.87	33.384	25.544	246.1	0.380	4.96	215.8	79.1	9.3	0.89	10.2	0.00	0.00	0.09	0.07	127 10	
142	10.40	10.38	33.456	25.685	233.1	0.418	4.69	204.0	74.1	12.1	1.07	13.2	0.00	0.02	0.05	0.04	143 09	
150	ISL	10.04 D	10.02	33.513	D 25.791	223.1	0.440	4.60	D 200.1	D 72.1	14.4	1.21	15.3	0.00	0.02	0.04	0.04	151
172	9.52	9.50	33.675	26.004	203.2	0.483	3.66	159.2	56.8	20.8	1.58	20.9	0.00	0.02	0.01	0.02	173 08	
200	8.94	8.92	33.873	26.252	180.1	0.537	3.03	132.0	46.5	27.9	1.85	25.0	0.00	0.05	0.00	0.02	202 07	
228	8.56	8.53	33.983	26.399	166.6	0.586	2.52	109.5	38.3	33.6	2.05	27.7	0.00	0.08			230 06	
250	ISL	8.30 D	8.28	34.060	D 26.498	157.4	0.626	2.00	D 87.1	D 30.3	38.0	2.21	29.4	0.00	0.05			252
269	8.09	8.06	34.089	26.553	152.5	0.651	1.80	78.3	27.1	41.8	2.34	30.9	0.00	0.03			271 05	
300	ISL	7.55 D	7.52	34.110	D 26.648	143.7	0.702	1.43	D 62.1	D 21.2	47.7	2.49	32.8	0.00	0.05			302
322	7.40	7.36	34.127	26.685	140.6	0.728	1.24	53.9	18.4	51.9	2.60	34.2	0.00	0.07			325 04	
381	7.09	7.05	34.215	26.799	130.6	0.808	0.72	31.5	10.7	59.7	2.83	36.1	0.00	0.04			384 03	
400	ISL	6.94 D	6.90	34.226	D 26.827	128.1	0.839	0.63	D 28.2	D 9.5	61.7	2.87	36.5	0.00	0.04			403
440	6.68	6.64	34.243	26.877	123.8	0.883	0.54	23.7	7.9	65.9	2.94	37.4	0.00	0.03			444 02	
500	ISL	6.22 D	6.18	34.276	D 26.964	116.0	0.962	0.38	D 16.4	D 5.4	74.0	3.06	38.9	0.00	0.07			504
517	6.12	6.07	34.280	26.980	114.6	0.974	0.35	15.2	5.0	76.4	3.09	39.3	0.00	0.08			521 01	

D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED 02;

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD		
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXYGEN	OXY	SI03	P04	N03	N02	NH4	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C	THETA			ml/L	μmol/Kg	μM	PCT	μM	μM	μM	μM	μg/L	μg/L	db	026	
30	30.3 N	122 13.4 W	12/04/2013	1948	UTC	4017 m	330	24 kn	350 12 08	2	1015.9 mb	14.7	C 12.4	C 22	m	8/8	SC 026	
0	16.16	16.16	33.525	24.579	334.9	0.000	5.69	247.9	101.4	2.7	0.28	0.2	0.00	0.12	0.09	0.01	0	
2	A	16.16	16.16	33.525	24.579	334.9	0.007	5.69	247.9	101.4	2.7	0.28	0.2	0.00	0.12	0.09	0.01	2 21
10	ISL	16.15 D	16.15	33.522	D 24.578	335.3	0.034	5.68	D 247.7	D 101.3	2.7	0.28	0.1	0.00	0.06	0.09	0.01	10
14	A	16.16	16.15	33.534	24.587	334.6	0.047	5.70	D 248.3	D 101.6	2.7	0.28	0.0	0.00	0.03	0.09	0.01	14 20
18	A	16.16	16.16	33.527	24.580	335.4	0.060	5.69	247.9	101.4	2.7	0.28	0.0	0.00	0.04	0.09	0.01	18 19
20	ISL	16.16 D	16.16	33.524	D 24.578	335.7	0.067	5.69	D 248.2	D 101.5	2.7	0.28	0.0	0.00	0.05	0.09	0.01	20
30	ISL	16.17 D	16.16	33.524	D 24.578	336.0	0.101	5.70	D 248.2	D 101.5	2.7	0.28	0.0	0.00	0.10	0.09	0.01	30
34	A	16.16	16.16	33.525	24.580	336.0	0.114	5.69	248.1	101.5	2.7	0.28	0.0	0.00	0.12	0.08	0.02	34 18
45	A	16.15	16.15	33.526	24.583	336.1	0.151	5.70	248.3	101.5	2.6	0.28	0.0	0.00	0.07	0.09	0.00	45 17
50	ISL	16.10 D	16.09	33.519	D 24.591	335.5	0.169	5.69	D 248.1	D 101.4	2.7	0.28	0.0	0.00	0.07	0.10	0.01	50
56	A	15.01	15.00	33.474	24.799	315.8	0.187	5.77	251.4	100.5	2.7	0.28	0.0	0.00	0.07	0.11	0.03	56 16
66	A	14.58	14.57	33.359	24.802	315.8	0.219	5.94	258.8	102.5	2.9	0.30	0.0	0.00	0.08	0.16	0.01	67 15
75	ISL	14.42 D	14.41	33.363	D 24.840	312.4	0.249	5.94	D 258.9	D 102.2	2.9	0.29	0.0	0.00	0.01	0.24	0.04	76 14
76	A	14.42	14.41	33.366	24.842	312.2	0.250	5.94	258.7	102.1	2.9	0.29	0.0	0.00	0.00	0.24	0.05	77 14
87	13.53	13.51	33.426	25.073	290.5	0.283	5.61	244.3	94.7	4.1	0.46	2.3	0.06	0.03	0.45	0.15	88 13	
95	12.92	12.91	33.375	25.156	282.7	0.306	5.46	237.9	91.1	5.2	0.60	4.3	0.08	0.04	0.35	0.22	96 12	
100	ISL	12.51 D	12.50	33.372	D 25.233	275.4	0.323	5.35	D 233.0	D 88.4	5.4	0.62	4.6	0.06	0.07	0.31	0.19	101
111	11.81	11.80	33.355	25.353	264.2	0.355	5.05	D 220.1	D 82.3								112 11	
124	11.17	11.15	33.400	25.505	249.9	0.383	4.77	207.6	76.6	10.2	1.04	11.5	0.02	0.04	0.17	0.15	125 10	
145	10.25	10.23	33.543	25.778	224.3	0.433	4.12	179.2	64.9	16.1	1.38	17.1	0.00	0.06	0.05	0.04	146 09	
150	ISL	10.05 D																

RV BELL M SHIMADA

CALCOFI CRUISE 1304

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			
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SV	DYN HT	OXYGEN	OXYGEN	OXY	SI03	P04	N03	N02	NH4	CHL-A	PHAEAO	PRES	SAMP	
m	DEG C	DEG C	THETA			ml/L	μmol/Kg	PCT	μM	μM	μM	μM	μM	μg/L	μg/L	db			
0	15.63	15.63	33.417	24.613	331.6	0.000	5.81	253.2	102.4	2.9	0.29	0.1	0.00	0.03	0.10	0.02	0		
2	15.63	15.63	33.417	24.613	331.6	0.007	5.81	253.2	102.4	2.9	0.29	0.1	0.00	0.03	0.10	0.02	2	20	
10	15.64	15.64	33.419	24.614	331.8	0.033	5.79	252.4	102.1	2.9	0.29	0.0	0.00	0.02	0.09	0.02	10	19	
20	ISL	15.64	D 15.64	33.411 D	24.609	332.7	0.067	5.79	D 252.2	D 102.0	2.9	0.29	0.0	0.00	0.02	0.09	0.02	20	
25	15.63	15.62	33.413	24.613	332.5	0.083	5.78	251.9	101.9	2.9	0.29	0.0	0.00	0.02	0.10	0.01	25	18	
30	ISL	15.55	D 15.55	33.411 D	24.629	331.2	0.100	5.80	D 252.6	D 102.0	2.9	0.29	0.0	0.00	0.01	0.13	0.03	30	
40	14.28	14.28	33.366	24.869	308.5	0.132	6.01	262.0	103.1	3.0	0.30	0.0	0.00	0.00	0.19	0.06	40	17	
50	14.06	14.05	33.353	24.905	305.4	0.162	6.03	262.9	103.0	3.1	0.30	0.0	0.00	0.05	0.30	0.12	50	16	
62	13.58	13.57	33.348	25.002	296.5	0.198	5.94	258.7	100.4	3.5	0.36	0.4	0.08	0.06	0.93	0.43	62	15	
75	12.78	12.77	33.351	25.163	281.5	0.236	5.69	248.1	94.7	5.0	0.55	3.2	0.31	0.00	0.43	0.31	76	14	
88	11.94	11.92	33.334	25.312	267.5	0.272	5.37	233.8	87.6	6.5	0.71	6.3	0.04	0.00	0.24	0.18	89	13	
100	ISL	11.30	D 11.29	33.369 D	25.457	253.9	0.305	5.01	D 218.1	D 80.7	8.5	0.87	9.0	0.03	0.04	0.15	0.11	101	
101	11.28	11.27	33.368	25.459	253.8	0.305	5.07	D 220.6	81.6	8.7	0.88	9.2	0.03	0.04	0.14	0.10	102	12	
112	10.79	10.77	33.430	25.596	240.8	0.333	4.63	201.6	73.8	11.9	1.13	13.0	0.03	0.03	0.07	0.06	113	11	
125	ISL	10.29	D 10.28	33.511 D	25.745	226.9	0.366	4.19	D 182.6	D 66.2	15.2	1.33	16.3	0.02	0.04	0.04	0.04	126	
126	10.25	10.24	33.514	25.755	226.0	0.365	4.18	181.9	65.8	15.5	1.34	16.5	0.02	0.04	0.04	0.03	127	10	
140	9.75	9.73	33.570	25.883	214.0	0.396	4.07	177.1	63.4	17.9	1.44	18.3	0.02	0.08	0.02	0.03	141	09	
150	ISL	9.56	D 9.54	33.689 D	26.007	202.4	0.420	3.59	D 156.4	D 55.8	20.7	1.57	20.2	0.02	0.10	0.01	0.03	151	
170	9.16	9.15	33.824	26.177	186.6	0.456	3.10	134.9	47.8	26.3	1.83	24.1	0.03	0.14	0.00	0.02	171	08	
200	8.78	8.76	33.989	26.368	169.0	0.509	2.42	105.3	37.0	33.5	2.10	27.6	0.03	0.16	0.00	0.02	202	07	
230	8.24	8.21	34.033	26.487	158.1	0.558	2.20	95.7	33.3	38.4	2.20	29.4	0.00	0.02			232	06	
250	ISL	7.99	D 7.96	34.072 D	26.555	151.9	0.593	1.83	D 79.4	D 27.4	43.1	2.34	31.1	0.00	0.04			252	
270	7.60	7.57	34.089	26.625	145.4	0.619	1.59	69.2	23.7	47.8	2.47	32.8	0.00	0.05			272	05	
300	ISL	7.34	D 7.31	34.111 D	26.680	140.6	0.667	1.30	D 56.5	D 19.2	51.9	2.58	34.1	0.00	0.06			302	
320	7.17	7.14	34.121	26.712	137.8	0.690	1.16	50.6	17.2	54.7	2.66	35.0	0.00	0.06			322	04	
381	6.64	6.61	34.156	26.812	128.9	0.771	0.84	36.5	12.2	63.5	2.84	37.2	0.00	0.12			384	03	
400	ISL	6.53	D 6.49	34.162 D	26.832	127.2	0.801	0.76	D 33.2	D 11.1	65.7	2.88	37.6	0.01	0.11			403	
441	6.24	6.20	34.180	26.885	122.6	0.846	0.64	28.0	9.3	70.4	2.97	38.6	0.02	0.10			445	02	
500	ISL	5.88	D 5.84	34.232 D	26.971	114.9	0.924	0.43	D 18.6	D 6.1	77.9	3.05	39.8	0.02	0.14			504	
516	5.78	5.73	34.233	26.985	113.7	0.935	0.42	18.1	5.9	79.9	3.07	40.1	0.02	0.15			520	01	

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

RV BELL M SHIMADA

CALCOFI CRUISE 1304

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		
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SV	DYN HT	OXYGEN	OXYGEN	OXY	SI03	P04	N03	N02	NH4	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C	THETA			ml/L	μmol/Kg	PCT	μM	μM	μM	μM	μM	μg/L	μg/L	db		
0	15.41	15.41	33.575	24.784	315.4	0.000	5.89	256.6	103.5	8.9	0.62	4.4	0.09	0.41	1.76	0.54	0	
1	15.41	15.41	33.575	24.784	315.4	0.003	5.89	256.6	103.5	8.9	0.62	4.4	0.09	0.41	1.76	0.54	1	05
5	14.75	14.75	33.573	24.926	301.9	0.016	5.84	254.5	101.3	9.2	0.66	4.8	0.09	0.29	2.33	0.68	5	04
10	13.67	13.67	33.572	25.153	280.5	0.030	5.38	234.2	91.2	10.8	0.81	7.3	0.12	0.25	2.34	1.01	10	03
20	11.63	11.62	33.598	25.572	240.9	0.056	3.66	159.5	59.5	16.4	1.42	16.4	0.19	0.35	1.26	0.82	20	02
30	11.21	11.20	33.640	25.681	230.8	0.080	3.21	139.6	51.7	19.2	1.62	19.2	0.17	0.35	1.12	0.75	30	01

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

A) INCUBATION LIGHT INTENSITIES WERE PERCENT RESPECTIVELY.

PRIMARY PRODUCTIVITY CASTS

RV BELL M SHIMADA

CALCOFI CRUISE 1304

STATION 76.7 49.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD									
DEPTH	TEMP	SALINITY	SIGMA	OXYGEN	OXY	SI03	P04	N03	N02	NH4	CHL-A	PHAE0	LIGHT	UPTAKE (mg C/m3)	1	2	MEAN	DARK
m	DEG C	THETA	ML/L	PCT	μM	μM	μM	μM	μM	μM	μg/L	μg/L	PCT	1	2	MEAN	DARK	
2	11.13	33.868	25.872	5.24	84.5	20.0	1.34	16.0	0.17	0.18	12.78	0.54	54. A	268.9	223.7	246.3	1.1	
3	11.09	33.867	25.878	5.25	84.5	20.4	1.38	16.2	0.17	0.23	11.76	1.43	40.	259.2	255.2	257.2	0.52	
4	10.78	33.860	25.927	4.82	77.0	22.4	1.53	18.3	0.17	0.17	9.62	1.12	29.	191.7	189.3	190.5	0.40	
8	10.33	33.865	26.009	4.38	69.3	24.2	1.69	20.2	0.16	0.14	7.45	0.87	8.6	112.7	116.3	114.5	0.45	
16	10.12	33.883	26.061	4.25	66.9	24.0	1.67	20.1	0.16	0.15	10.13	1.29	0.74	10.6	24.9	17.7	0.48	
18	10.12	33.892	26.068	4.30	67.8	24.1	1.67	19.9	0.16	0.16	10.44	1.42	0.40	9.7	10.9	10.3	0.47	

RV BELL M SHIMADA

CALCOFI CRUISE 1304

STATION 76.7 70.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD									
DEPTH	TEMP	SALINITY	SIGMA	OXYGEN	OXY	SI03	P04	N03	N02	NH4	CHL-A	PHAE0	LIGHT	UPTAKE (mg C/m3)	1	2	MEAN	DARK
m	DEG C	THETA	ML/L	PCT	μM	μM	μM	μM	μM	μM	μg/L	μg/L	PCT	1	2	MEAN	DARK	
2	12.17	33.406	25.319	6.14	100.9	5.7	0.80	6.3	0.05	0.22	0.75	0.12	86. A	14.9	14.0	14.4	0.14	
13	12.04	33.409	25.347	6.15	100.6	5.7	0.80	6.2	0.05	0.19	0.85	0.12	37.	17.1	16.4	16.7	0.46	
16	12.05	33.416	25.350	6.14	100.6	5.7	0.80	6.3	0.05	0.21	0.78	0.13	29.	16.5	16.4	16.4	0.18	
24	12.06	33.413	25.348	6.13	100.4	5.8	0.80	6.3	0.05	0.22	0.74	0.23						
32	11.97	33.437	25.383	6.05	98.9	6.2	0.86	7.0	0.05	0.35	0.76	0.20	8.6	10.2	9.9	10.1	0.16	
40	11.93	33.436	25.390	6.05	98.9	6.1	0.86	7.0	0.05	0.34	0.79	0.22						
50	11.83	33.436	25.409	5.95	96.9	6.7	0.89	7.5	0.05	0.35	0.60	0.19						
58	11.94	33.509	25.446	5.98	97.7	6.9	0.93	8.0	0.05	0.56	0.62	0.14	1.2	1.5	1.5	1.5	0.18	
69	11.82	33.506	25.467	5.94	96.9	7.0	0.95	8.2	0.05	0.57	0.62	0.19	0.50	0.55	0.54	0.54	0.15	

RV BELL M SHIMADA

CALCOFI CRUISE 1304

STATION 80.0 60.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD									
DEPTH	TEMP	SALINITY	SIGMA	OXYGEN	OXY	SI03	P04	N03	N02	NH4	CHL-A	PHAE0	LIGHT	UPTAKE (mg C/m3)	1	2	MEAN	DARK
m	DEG C	THETA	ML/L	PCT	μM	μM	μM	μM	μM	μM	μg/L	μg/L	PCT	1	2	MEAN	DARK	
2	11.88	33.594	25.522	5.86	95.7	7.5	0.92	8.6	0.18	0.98	0.77	0.28	84. A	12.5	12.6	12.6	0.17	
10	11.86	33.607	25.534	5.85	95.6	7.5	0.92	8.6	0.18	1.00	0.79	0.28	43.	15.9	15.9	15.9	0.23	
14	11.87	33.595	25.525	5.86	95.8	7.4	0.91	8.6	0.18	0.96	0.79	0.27	30.	14.4	13.4	13.9	0.19	
23	11.86	33.595	25.525	5.86	95.7	7.4	0.91	8.6	0.18	0.95	0.76	0.30						
30	11.86	33.596	25.527	5.85	95.5	7.4	0.92	8.6	0.18	0.98	0.75	0.30	7.7	12.8	12.1	12.4	0.17	
40	11.86	33.595	25.527	5.84	95.4	7.4	0.92	8.5	0.18	1.01	0.83	0.31						
52	11.86	33.595	25.527	5.87	95.8	7.4	0.92	8.6	0.18	1.03	0.80	0.30	1.2	1.6	1.6	1.6	0.17	
62	11.41	33.570	25.592	5.59	90.4	8.4	0.97	9.4	0.18	0.97	0.52	0.26	0.51	0.61	0.48	0.55	0.12	

RV BELL M SHIMADA

CALCOFI CRUISE 1304

STATION 80.0 100.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD									
DEPTH	TEMP	SALINITY	SIGMA	OXYGEN	OXY	SI03	P04	N03	N02	NH4	CHL-A	PHAE0	LIGHT	UPTAKE (mg C/m3)	1	2	MEAN	DARK
m	DEG C	THETA	ML/L	PCT	μM	μM	μM	μM	μM	μM	μg/L	μg/L	PCT	1	2	MEAN	DARK	
2	14.12	33.260	24.819	5.97	102.0	2.8	0.31	0.0	0.00	0.06	0.17	0.04	85. A	2.3	2.4	2.3	0.11	
11	14.11	33.253	24.816	5.95	101.7	2.8	0.31	0.0	0.00	0.03	0.17	0.04	41.	2.3	2.3	2.3	0.15	
16	14.10	33.254	24.818	5.95	101.6	2.8	0.31	0.0	0.00	0.03	0.17	0.05	27.	2.2	2.1	2.1	0.14	
29	14.08	33.253	24.824	5.96	101.7	2.8	0.31	0.0	0.00	0.02	0.17	0.04	9.6	1.4	1.3	1.4	0.25	
40	14.07	33.254	24.828	5.96	101.6	2.8	0.31	0.0	0.00	0.02	0.18	0.05						
47	14.06	33.254	24.828	5.96	101.6	2.8	0.31	0.0	0.00	0.02	0.19	0.05						
55	14.06	33.254	24.831	5.97	101.9	2.7	0.31	0.0	0.00	0.02	0.19	0.05	1.2	0.11	0.15	0.13	0.14	
65	13.96	33.251	24.848	5.96	101.5	2.7	0.31	0.0	0.00	0.03	0.22	0.06	0.52	0.03	0.14	0.09	0.17	

RV BELL M SHIMADA

CALCOFI CRUISE 1304

STATION 81.8 46.9

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD									
DEPTH	TEMP	SALINITY	SIGMA	OXYGEN	OXY	SI03	P04	N03	N02	NH4	CHL-A	PHAE0	LIGHT	UPTAKE (mg C/m3)	1	2	MEAN	DARK
m	DEG C	THETA	ML/L	PCT	μM	μM	μM	μM	μM	μM	μg/L	μg/L	PCT	1	2	MEAN	DARK	
2	10.58	33.928	26.016	4.60	73.2	19.4	1.45	17.0	0.18	0.21	6.73	1.41	64. A	135.9	146.6	141.3	0.42	
6	10.59	33.927	26.013	4.59	73.0	19.3	1.42	16.9	0.18	0.18	6.98	1.60	27.	128.5	130.1	129.3	0.63	
4	10.59	33.928	26.014	4.64	73.8	19.1	1.41	16.8	0.18	0.19	6.54	1.53	42.	154.3	153.8	154.0	0.58	
11	10.58	33.925	26.013	4.61	73.4	19.0	1.41	16.7	0.18	0.17	6.72	1.44	9.0	139.6	130.2	134.9	0.46	
20	10.51	33.930	26.030	4.46	70.9	19.5	1.46	17.3	0.18	0.19	6.99	1.49	1.2	14.9	14.1	14.5	0.37	
24	10.48	33.929	26.035	4.38	69.5	19.9	1.47	17.6	0.17	0.20	6.91	1.61	0.52	8.1	8.4	8.3	0.44	

A) INCUBATION LIGHT INTENSITIES WERE 58.6, 38.0, 27.0, 8.68, 1.11, 0.49 PERCENT RESPECTIVELY.

RV BELL M SHIMADA

CALCOFI CRUISE 1304

STATION 83.3 60.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD
33 33.6 N	120 47.6 W	19/04/2013	2002 UTC	14 m	1254 - 1905 PST	1202 PST	1904 PST	590.0 mg C/m ²	052

DEPTH	TEMP	SALINITY	SIGMA	OXYGEN	OXY	SI03	P04	N03	N02	NH4	CHL-A	PHAE0	LIGHT	UPTAKE (mg C/m ³)			
m	DEG C	THETA	ml/L	PCT	μM	μM	μM	μM	μM	μM	μg/L	μg/L	PCT	1	2	MEAN	DARK
2	12.69	33.546	25.328	5.97	99.1	6.2	0.76	5.6	0.17	0.29	0.86	0.35	80. A	18.8	18.0	18.4	0.28
9	12.68	33.543	25.329	6.00	99.6	6.2	0.76	5.6	0.17	0.20	0.88	0.41	37.	20.0	20.6	20.3	0.17
12	12.65	33.544	25.334	5.97	99.1	6.2	0.76	5.6	0.17	0.21	0.82	0.37	27.	18.9	19.3	19.1	0.23
22	12.57	33.551	25.357	5.95	98.7	6.1	0.76	5.5	0.17	0.19	0.92	0.41	9.0	15.7	15.7	15.7	0.30
32	12.53	33.549	25.364	5.94	98.3	6.2	0.76	5.6	0.17	0.23	0.92	0.45					
40	12.45	33.545	25.375	5.89	97.4	6.3	0.78	5.7	0.18	0.37	0.79	0.41	1.2	2.5	3.2	2.8	0.16
50	12.31	33.546	25.404	5.79	95.5	6.8	0.85	6.4	0.25	0.68	0.50	0.28	0.42	0.79	0.77	0.78	0.19

RV BELL M SHIMADA

CALCOFI CRUISE 1304

STATION 83.3 100.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD
32 14.6 N	123 30.3 W	18/04/2013	1932 UTC	26 m	1240 - 1910 PST	1213 PST	1909 PST	147.8 mg C/m ²	048

DEPTH	TEMP	SALINITY	SIGMA	OXYGEN	OXY	SI03	P04	N03	N02	NH4	CHL-A	PHAE0	LIGHT	UPTAKE (mg C/m ³)			
m	DEG C	THETA	ml/L	PCT	μM	μM	μM	μM	μM	μM	μg/L	μg/L	PCT	1	2	MEAN	DARK
2	14.95	33.427	24.770	5.82	101.2	2.8	0.28	0.0	0.00	0.09	0.12	0.01	89. A	2.0	1.5	1.7	0.21
16	14.95	33.438	24.781	5.84	101.6	2.8	0.28	0.0	0.00	0.07	0.11	0.01	39.	1.7	1.6	1.6	0.14
22	14.92	33.438	24.786	5.88	102.2	2.8	0.28	0.0	0.00	0.06	0.11	0.02	27.	1.5	1.5	1.5	0.20
32	14.89	33.426	24.785	5.83	101.3	2.8	0.28	0.0	0.00	0.04	0.12	0.01					
41	14.81	33.412	24.792	5.85	101.4	2.8	0.29	0.0	0.00	0.05	0.13	0.02	8.9	1.5	1.6	1.5	0.22
53	14.08	33.331	24.884	5.93	101.3	2.8	0.30	0.0	0.00	0.08	0.22	0.03					
66	13.40	33.246	24.958	6.01	101.1	3.0	0.32	0.0	0.00	0.10	0.39	0.07					
76	12.92	33.171	24.998	6.03	100.5	3.3	0.36	0.3	0.05	0.08	0.57	0.25	1.1	2.0	2.0	2.0	0.14
84	12.63	33.154	25.040	5.98	99.0	3.5	0.40	0.7	0.10	0.19	0.54	0.20					
90	12.38	33.127	25.067	6.00	98.7	3.6	0.42	0.9	0.14	0.28	0.44	0.19	0.49	0.90	1.0	0.96	0.10

RV BELL M SHIMADA

CALCOFI CRUISE 1304

STATION 86.7 45.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD
33 29.4 N	119 19.4 W	10/04/2013	1808 UTC	08 m	1155 - 1850 PST	1158 PST	1848 PST	1067.7 mg C/m ²	019

DEPTH	TEMP	SALINITY	SIGMA	OXYGEN	OXY	SI03	P04	N03	N02	NH4	CHL-A	PHAE0	LIGHT	UPTAKE (mg C/m ³)			
m	DEG C	THETA	ml/L	PCT	μM	μM	μM	μM	μM	μM	μg/L	μg/L	PCT	1	2	MEAN	DARK
2	13.33	33.553	25.208	6.00	101.0	6.1	0.62	4.4	0.09	0.15	2.14	0.49	68. A	53.7	54.4	54.1	0.47
5	13.21	33.557	25.234	6.02	101.2	6.0	0.63	4.3	0.08	0.21	2.36	0.57	38.	60.8	58.9	59.8	0.46
7	13.17	33.553	25.240	6.02	101.0	6.0	0.62	4.3	0.09	0.20	2.35	0.64	26.	51.4	50.2	50.8	0.46
14	13.08	33.553	25.257	5.95	99.7	6.2	0.64	4.5	0.09	0.17	2.73	0.66	6.8	51.8	53.7	52.8	0.44
23	12.96	33.556	25.284	5.79	96.8	7.0	0.69	5.4	0.09	0.14	2.84	0.72	1.2	10.3	10.4	10.4	0.26
28	12.63	33.557	25.350	5.60	92.9	7.8	0.73	6.5	0.09	0.20	2.08	0.65	0.46	1.9	2.5	2.2	0.22

RV BELL M SHIMADA

CALCOFI CRUISE 1304

STATION 86.7 55.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD
33 9.1 N	120 1.1 W	15/04/2013	1641 UTC	15 m	1200 - 1858 PST	1200 PST	1856 PST	459.3 mg C/m ²	036

DEPTH	TEMP	SALINITY	SIGMA	OXYGEN	OXY	SI03	P04	N03	N02	NH4	CHL-A	PHAE0	LIGHT	UPTAKE (mg C/m ³)			
m	DEG C	THETA	ml/L	PCT	μM	μM	μM	μM	μM	μM	μg/L	μg/L	PCT	1	2	MEAN	DARK
2	11.92	33.676	25.577	5.75	94.1	10.4	1.05	10.0	0.15	0.86	0.68	0.58	81. A	14.9	13.1	14.0	0.25
9	11.91	33.679	25.581	5.74	93.9	10.6	1.07	10.1	0.16	0.85	0.71	0.60	40.	14.9	16.6	15.8	0.22
13	11.91	33.675	25.578	5.75	94.0	10.6	1.08	10.1	0.16	0.86	0.62	0.59	26.	13.1	13.1	13.1	0.35
24	11.91	33.674	25.579	5.73	93.8	10.6	1.09	10.1	0.16	0.86	0.66	0.51	8.6	10.9	11.4	11.2	0.38
35	11.87	33.676	25.587	5.72	93.5	10.7	1.09	10.2	0.16	0.98	0.63	0.68					
45	11.75	33.677	25.611	5.54	90.2	11.1	1.12	10.7	0.17	1.03	0.52	0.70	1.00	1.4	1.2	1.3	0.19
52	10.98	33.695	25.767	4.31	69.1	16.9	1.43	15.7	0.26	0.93	0.30	0.80	0.49	0.29	0.33	0.31	0.22

RV BELL M SHIMADA

CALCOFI CRUISE 1304

STATION 86.7 70.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD
32 39.7 N	121 2.3 W	17/04/2013	1720 UTC	15 m	1210 - 1903 PST	1204 PST	1904 PST	553.7 mg C/m ²	044

DEPTH	TEMP	SALINITY	SIGMA	OXYGEN	OXY	SI03	P04	N03	N02	NH4	CHL-A	PHAE0	LIGHT	UPTAKE (mg C/m ³)			
m	DEG C	THETA	ml/L	PCT	μM	μM	μM	μM	μM	μM	μg/L	μg/L	PCT	1	2	MEAN	DARK
2	13.15	33.504	25.205	6.03	101.1	4.6	0.58	3.3	0.13	0.17	0.72	0.22	81. A	15.2	12.7	13.9	0.19
11	13.14	33.504	25.207	6.05	101.4	4.6	0.58	3.2	0.13	0.17	0.66	0.25	32.	19.4	17.4	18.4	0.17
14	13.15	33.506	25.207	6.02	101.0	4.5	0.58	3.2	0.13	0.18	0.74	0.16	24.	15.7	14.8	15.2	0.18
24	13.12	33.517	25.222	6.01	100.8	4.6	0.58	3.3	0.13	0.21	0.78	0.11	8.6	14.3	15.0	14.7	0.19
34	13.07	33.518	25.234	5.98	100.2	4.8	0.62	3.7	0.14	0.31	0.70	0.18					
44	12.96	33.528	25.265	5.93	99.0	5.2	0.69	4.4	0.15	0.59	0.55	0.26	1.1	2.0	2.2	2.1	0.16
52	12.94	33.534	25.272	5.91	98.6	5.3	0.68	4.4	0.15	0.56	0.66	0.13	0.49	0.94	1.1	1.0	0.12

A) INCUBATION LIGHT INTENSITIES WERE 58.6, 38.0, 27.0, 8.68, 1.11, 0.49 PERCENT RESPECTIVELY.

RV BELL M SHIMADA CALCOFI CRUISE 1304 STATION 90.0 30.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD
33 25.0 N	117 54.7 W	09/04/2013	1956 UTC	09 m	1250 - 1850 PST	1153 PST	1845 PST	2938.3 mg C/m ²	011

DEPTH	TEMP	SALINITY	SIGMA	OXYGEN	OXY	SI03	P04	N03	N02	NH4	chl-a	phaeo	light	UPTAKE (mg C/m ³)			
m	deg c	theta	ml/l	pct	μM	μM	μM	μM	μM	μM	μg/L	μg/L	pct	1	2	mean	dark
2	14.22	33.566	25.033	6.23	106.9	2.0	0.34	1.3	0.03	0.11	5.70	0.21	71. A	143.1	135.9	139.5	2.7
6	14.09	33.564	25.060	6.31	107.9	1.9	0.35	1.0	0.03	0.12	6.14	0.30	36.	142.5	167.8	155.1	0.71
9	13.86	33.563	25.107	6.30	107.2	2.0	0.36	1.2	0.03	0.18	7.50	0.49	22.	147.0	135.9	141.4	0.80
15	13.72	33.566	25.138	6.03	102.4	2.6	0.41	2.2	0.04	0.17	7.78	0.59	7.7	123.7	150.3	137.0	0.59
26	11.74	33.588	25.544	4.09	66.5	13.6	1.26	14.4	0.06	0.17	1.74	0.52	1.2	4.4	4.2	4.3	0.28
31	11.28	33.609	25.643	3.60	58.0	16.6	1.47	17.7	0.04	0.09	0.75	0.50	0.51	0.64	0.85	0.75	0.23

RV BELL M SHIMADA CALCOFI CRUISE 1304 STATION 90.0 100.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD
31 5.0 N	122 40.8 W	13/04/2013	1729 UTC	21 m	1210 - 1900 PST	1211 PST	1900 PST	112.1 mg C/m ²	029

DEPTH	TEMP	SALINITY	SIGMA	OXYGEN	OXY	SI03	P04	N03	N02	NH4	chl-a	phaeo	light	UPTAKE (mg C/m ³)			
m	deg c	theta	ml/l	pct	μM	μM	μM	μM	μM	μM	μg/L	μg/L	pct	1	2	mean	dark
3	15.32	33.411	24.678	5.81	101.8	2.9	0.30	0.0	0.00	0.26	0.12	0.03	80. A	2.6	2.5	2.5	0.14
13	15.33	33.410	24.677	5.80	101.7	2.9	0.29	0.0	0.00	0.06	0.12	0.03	39.	2.5	2.3	2.4	0.12
18	15.33	33.410	24.676	5.81	101.8	2.9	0.28	0.0	0.00	0.06	0.14	0.01	27.	2.4	2.6	2.5	0.10
32	15.31	33.410	24.681	5.81	101.8	2.9	0.28	0.0	0.00	0.07	0.13	0.02	9.6	1.6	2.0	1.8	0.14
42	15.26	33.410	24.694	5.82	101.9	2.9	0.28	0.0	0.00	0.08	0.15	0.02					
50	14.59	33.377	24.812	5.96	102.8	3.0	0.29	0.0	0.00	0.08	0.28	0.03					
59	13.86	33.356	24.950	6.07	103.2	3.2	0.31	0.0	0.00	0.08	0.38	0.12	1.3	0.49	0.65	0.57	0.20
69	13.35	33.336	25.039	5.80	97.5	3.9	0.43	1.5	0.06	0.08	0.65	0.43	0.64	0.78	0.70	0.74	0.21

RV BELL M SHIMADA CALCOFI CRUISE 1304 STATION 93.3 45.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD
32 20.7 N	118 33.8 W	07/04/2013	1902 UTC	10 m	1217 - 1852 PST	1156 PST	1845 PST	356.4 mg C/m ²	007

DEPTH	TEMP	SALINITY	SIGMA	OXYGEN	OXY	SI03	P04	N03	N02	NH4	chl-a	phaeo	light	UPTAKE (mg C/m ³)			
m	deg c	theta	ml/l	pct	μM	μM	μM	μM	μM	μM	μg/L	μg/L	pct	1	2	mean	dark
2	14.67	33.490	24.880	6.14	106.2	2.1	0.30	0.0	0.03		0.81	0.05	74. A	14.3	15.8	15.0	0.28
7	14.67	33.490	24.880	6.13	106.0	2.2	0.34	0.0	0.03		0.88	0.01	34.	15.1	14.1	14.6	0.42
9	14.66	33.490	24.882	6.11	105.6	2.2	0.35	0.1	0.00		0.78	0.13	25.	12.7	12.7	12.7	0.10
17	14.46	33.492	24.928	6.12	105.5	2.1	0.34	0.0	0.00		0.76	0.14	7.4	12.2	12.6	12.4	0.27
23	14.13	33.490	24.995	6.19	105.9	2.0	0.34	0.0	0.00		1.07	0.05					
30	12.67	33.474	25.277	6.10	101.2	3.1	0.51	2.2	0.03		1.30	0.20	1.00	4.6	4.2	4.4	0.37
35	12.48	33.456	25.301	6.03	99.7	3.5	0.57	2.9	0.04		1.27	0.30	0.46	1.8	1.4	1.6	0.36

RV BELL M SHIMADA CALCOFI CRUISE 1304 STATION 93.3 60.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD
31 50.9 N	119 34.8 W	11/04/2013	1513 UTC	16 m	1159 - 1855 PST	1159 PST	1854 PST	322.1 mg C/m ²	022

DEPTH	TEMP	SALINITY	SIGMA	OXYGEN	OXY	SI03	P04	N03	N02	NH4	chl-a	phaeo	light	UPTAKE (mg C/m ³)			
m	deg c	theta	ml/l	pct	μM	μM	μM	μM	μM	μM	μg/L	μg/L	pct	1	2	mean	dark
1	14.18	33.358	24.883	5.99	102.5	3.4	0.33	0.1	0.03	0.05	0.46	0.16	91. A	6.6	6.9	6.7	0.17
10	14.16	33.358	24.886	6.00	102.7	3.3	0.33	0.1	0.02	0.02	0.47	0.14	38.	9.7	9.2	9.4	0.26
14	14.15	33.358	24.888	6.02	102.9	3.4	0.33	0.1	0.03	0.03	0.48	0.12	26.	8.4	8.1	8.2	0.25
25	14.08	33.372	24.914	6.00	102.5	3.4	0.34	0.2	0.03	0.03	0.50	0.12	9.1	8.0	8.0	8.0	0.18
36	14.01	33.396	24.949	6.04	103.0	3.4	0.35	0.4	0.02	0.04	0.57	0.15					
47	13.92	33.389	24.963	6.05	102.9	3.4	0.36	0.4	0.04	0.05	0.85	0.16	1.1	1.8	1.8	1.8	0.40
55	13.91	33.389	24.966	6.03	102.6	3.4	0.36	0.4	0.03	0.05	0.73	0.20	0.51	0.68	0.79	0.73	0.19

RV BELL M SHIMADA CALCOFI CRUISE 1304 STATION 93.3 100.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD
30 30.3 N	122 13.4 W	12/04/2013	1948 UTC	22 m	1250 - 1900 PST	1210 PST	1902 PST	74.7 mg C/m ²	026

DEPTH	TEMP	SALINITY	SIGMA	OXYGEN	OXY	SI03	P04	N03	N02	NH4	chl-a	phaeo	light	UPTAKE (mg C/m ³)			
m	deg c	theta	ml/l	pct	μM	μM	μM	μM	μM	μM	μg/L	μg/L	pct	1	2	mean	dark
2	16.16	33.525	24.579	5.69	101.4	2.7	0.28	0.2	0.00	0.12	0.09	0.01	87. A	1.7	1.6	1.7	0.14
14	16.16	33.534	24.587	5.70D	103.7	2.7	0.28	0.0	0.00	0.03	0.09	0.01	38.	2.1	1.8	2.0	0.09
18	16.16	33.527	24.580	5.69	101.4	2.7	0.28	0.0	0.00	0.04	0.09	0.01	28.	1.3	1.3	1.3	0.16
34	16.16	33.525	24.580	5.69	101.5	2.7	0.28	0.0	0.00	0.12	0.08	0.02	9.3	0.70	0.65	0.67	0.17
45	16.15	33.526	24.583	5.70	101.5	2.6	0.28	0.0	0.00	0.07	0.09	0.00					
56	15.01	33.474	24.799	5.77	100.5	2.7	0.28	0.0	0.00	0.07	0.11	0.03					
66	14.58	33.359	24.802	5.94	102.5	2.9	0.30	0.0	0.00	0.08	0.16	0.01	1.00	0.05	1.5	0.75	0.21
76	14.42	33.366	24.842	5.94	102.1	2.9	0.29	0.0	0.00	0.00	0.24	0.05	0.50	0.17	0.13	0.15	0.17

A) INCUBATION LIGHT INTENSITIES WERE 58.6, 38.0, 27.0, 8.68, 1.11, 0.49 PERCENT RESPECTIVELY.

CalCOFI Cruise 1304SH

MACROZOOPLANKTON BIOMASS

Net Mesh Size: 0.505mm

Line	Sta.	Latitude N	Longitude W	Date Mo/Day	Time (PST)		Water Volume Strained (m ³)	Max. Tow Depth (m)	Volume per 1000 m ³ Strained	
					Start	End			Total (cm ³)	Small (cm ³)
63.3	52.0	37 18.6	122 37.1	04/29	1751	1758	164	69	110	110
63.3	70.0	36 42.5	123 54.9	04/28	1820	1841	467	207	144	144
63.3	80.0	36 22.6	124 37.9	04/28	1157	1217	410	208	156	156
64.0	52.7	37 09.7	122 35.1	04/30	0021	0030	204	88	686	686
65.0	69.3	36 26.3	123 39.0	04/27	2125	2145	425	202	275	245
66.7	50.0	36 47.2	122 03.6	04/27	0940	1001	448	205	36	36
66.7	60.0	36 27.2	122 46.4	04/26	1840	1901	509	197	63	49
66.7	70.0	36 07.2	123 29.2	04/26	1302	1323	464	196	91	91
66.7	80.0	35 47.1	124 12.0	04/26	0631	0651	325	216	206	206
67.6	60.4	36 17.1	122 41.6	04/27	0017	0037	476	213	124	124
68.4	84.1	35 21.4	124 16.0	04/26	0050	0110	369	210	301	301
70.0	51.0	36 10.2	121 44.6	04/24	0452	0512	426	208	150	150
70.0	60.0	35 53.0	122 21.6	04/24	1055	1115	434	207	141	108
70.0	70.0	35 32.9	123 04.3	04/24	1714	1734	425	201	280	280
70.0	74.8	35 23.2	123 24.7	04/24	2120	2140	378	199	313	313
70.0	80.0	35 13.1	123 46.6	04/25	0905	0925	342	206	263	263
70.0	90.0	34 53.0	124 28.7	04/25	1629	1649	406	194	49	49
76.7	49.0	35 05.4	120 46.7	04/23	0925	0929	85	32	152	152
76.7	51.0	35 01.2	120 55.2	04/23	0220	0237	388	172	235	235
76.7	55.0	34 53.3	121 12.0	04/22	2250	2310	473	210	152	152
76.7	60.0	34 43.4	121 32.9	04/22	1623	1643	420	207	248	248
76.7	70.0	34 23.3	122 15.1	04/22	0806	0826	428	213	110	89
76.7	80.0	34 03.2	122 56.4	04/22	0315	0335	402	215	92	92
76.7	90.0	33 43.1	123 37.9	04/21	2130	2150	438	200	43	43
80.0	50.5	34 27.6	120 29.9	04/19	2311	2313	59	19	67	67
80.0	51.0	34 27.0	120 31.4	04/20	0049	0055	134	59	187	187
80.0	55.0	34 19.0	120 48.0	04/20	0428	0448	477	208	199	199
80.0	60.0	34 09.0	121 08.8	04/20	0724	0745	466	218	56	56
80.0	70.0	33 49.2	121 50.5	04/20	1509	1529	448	215	56	56
80.0	80.0	33 29.3	122 32.2	04/20	2317	2337	484	215	76	76
80.0	90.0	33 09.1	123 13.1	04/21	0631	0651	501	198	24	24
80.0	100.0	32 50.4	123 52.6	04/21	1344	1405	471	211	38	38
81.7	43.5	34 22.8	119 48.1	04/16	0328	0334	135	48	192	192
81.8	46.9	34 16.5	120 00.6	04/16	0820	0842	500	212	80	80
83.3	39.4	34 15.6	119 24.5	04/15	2332	2334	58	18	515	515
83.3	40.6	34 13.4	119 25.0	04/15	2216	2218	54	20	738	738
83.3	42.0	34 10.4	119 30.7	04/15	2026	2046	484	211	128	128
83.3	55.0	33 44.8	120 24.3	04/19	1742	1802	449	213	89	89
83.3	60.0	33 34.6	120 47.4	04/19	1315	1336	413	208	75	75
83.3	70.0	33 14.7	121 26.7	04/19	0700	0721	465	210	77	77
83.3	80.0	32 54.6	122 07.6	04/19	0103	0123	485	218	169	169
83.3	90.0	32 34.7	122 48.9	04/18	1851	1912	454	207	55	55
83.3	100.0	32 14.5	123 29.8	04/18	1244	1305	491	195	37	37
86.7	33.0	33 53.4	118 29.3	04/10	0014	0018	94	34	417	417
86.7	35.0	33 49.4	118 37.6	04/10	0257	0318	447	204	165	165
86.7	40.0	33 39.3	118 58.5	04/10	0719	0739	457	202	160	160
86.7	45.0	33 29.5	119 19.1	04/10	1129	1149	445	204	94	94
86.7	50.0	33 19.4	119 39.6	04/15	0440	0448	174	62	92	92
86.7	55.0	33 09.5	120 00.4	04/15	0955	1016	496	204	293	293
86.7	60.0	32 59.3	120 21.2	04/17	0216	0237	536	219	306	306
86.7	70.0	32 39.5	121 01.8	04/17	1040	1060	452	214	117	117
86.7	80.0	32 19.4	121 43.0	04/17	1750	1810	469	216	79	79
86.7	90.0	31 59.2	122 23.3	04/17	2337	2358	472	218	64	64
86.7	100.0	31 39.0	123 04.0	04/18	0551	0611	513	213	66	66
86.8	32.5	33 52.8	118 27.3	04/09	2251	2254	53	19	1966	1966
88.5	30.1	33 38.9	118 05.1	04/09	1921	1923	63	16	726	726
90.0	27.7	33 29.5	117 45.3	04/09	1645	1648	70	24	86	86
90.0	28.0	33 29.0	117 46.1	04/09	1548	1554	118	56	271	271
90.0	30.0	33 25.1	117 54.5	04/09	1322	1342	430	205	121	121
90.0	35.0	33 15.0	118 15.0	04/09	846	0906	467	200	148	103
90.0	45.0	32 55.2	118 56.0	04/10	1930	1951	412	201	163	163
90.0	53.0	32 38.9	119 29.0	04/14	1946	2007	421	201	221	221
90.0	60.0	32 25.0	119 57.6	04/14	1440	1500	427	217	52	52
90.0	70.0	32 05.4	120 38.8	04/14	0650	0711	526	203	48	48
90.0	80.0	31 45.1	121 19.3	04/14	0012	0032	449	221	58	58
90.0	90.0	31 25.0	121 59.7	04/13	1755	1815	423	208	156	132
90.0	100.0	31 04.9	122 40.0	04/13	1101	1121	507	193	59	59
90.0	110.0	30 44.9	123 19.8	04/13	0350	0411	439	214	55	39
93.3	26.7	32 57.4	117 18.5	04/06	1838	1858	416	207	183	183
93.3	28.0	32 54.4	117 24.0	04/06	2204	2224	470	210	141	141
93.3	30.0	32 50.7	117 31.9	04/07	0040	0101	433	213	69	69
93.3	35.0	32 40.8	117 52.3	04/07	0422	0442	465	207	123	123
93.3	40.0	32 30.9	118 12.7	04/07	0814	0835	446	211	81	63
93.3	45.0	32 20.8	118 33.2	04/07	1328	1347	466	204	129	129
93.3	50.0	32 10.9	118 53.3	04/07	1751	1811	430	215	79	79
93.3	55.0	32 00.8	119 14.1	04/11	0335	0356	461	208	217	217
93.3	60.0	31 50.9	119 33.6	04/11	0614	0634	443	218	178	178
93.3	70.0	31 30.9	120 15.0	04/11	1416	1436	493	191	53	53
93.3	80.0	31 10.7	120 55.5	04/11	2151	2211	570	196	123	123
93.3	90.0	30 51.0	121 35.3	04/12	0457	0517	523	212	54	54
93.3	100.0	30 30.0	122 13.2	04/12	1255	1316	534	211	17	17
93.3	110.0	30 10.9	122 55.1	04/12	2112	2132	494	195	45	45
93.4	26.4	32 56.9	117 17.5	04/06	1946	1949	58	21	2465	2465