UNIVERSITY OF CALIFORNIA, SAN DIEGO SCRIPPS INSTITUTION OF OCEANOGRAPHY

data report

CalCOFI Cruise 1804
5 - 27 April, 2018

CC Reference 19 - 02
13 Sep., 2019

UNIVERSITY OF CALIFORNIA, SAN DIEGO

SCRIPPS INSTITUTION OF OCEANOGRAPHY

LA JOLLA, CALIFORNIA 92093

PHYSICAL, CHEMICAL AND BIOLOGICAL DATA

CalCOFI Cruise 1804
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INTRODUCTION

The data presented in this report were collected during cruise 1804* of the California Cooperative Oceanic Fisheries Investigations (CalCOFI) program aboard the 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 Wildlife, and the Integrative Oceanography Division (IOD) at Scripps Institution of Oceanography (SIO). IOD contributes to this program by investigations of the physical, chemical and biological structure of the California Current. Data from the cruise were collected and processed by personnel of the Integrative Oceanography Division and the Southwest Fisheries Science Center. CalCOFI data presented in this report and collected on previous cruises can be accessed at http://www.calcofi.org.

STANDARD PROCEDURES

CTD/Rosette Cast Data

A Sea-Bird Electronics, Inc., Conductivity-Temperature-Depth (CTD) instrument (Seabird 911+, Serial number 3161-936) with a rosette was deployed at each station on this cruise. The rosette was equipped with 24 ten-liter plastic (PVC) bottles equipped with epoxy-coated springs and Viton O-rings. Each CTD/rosette cast usually sampled 20 depths to a maximum sampling depth of 515 meters, bottom depth permitting. Many 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 P158. Salinity values were calculated using the algorithms for the Practical Salinity Scale, 1978 (UNESCO, 1981a) and are reported to three decimal places, provided that accepted standards were met.

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

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

Nutrient samples were analyzed at sea using a QuAAtro continuous flow analyzer (SEAL Analytical). Dissolved silicate, nitrate, and nitrite were analyzed using a modification of the method described by Armstrong (1967) and Gordon et al. (1992). Phosphate was measured with a modification of the Murphy and Riley (1962) protocol and ammonium is analyzed using a modified fluorometric method described by Kerouel and Aminot (1997). Samples were collected in 45ml high-density polypropylene screw top tubes which were acid washed and rinsed with sample three times prior to filling. Standardizations and cadmium-reduction coil efficiency determinations were performed at the beginning of every run. Drift and baseline corrections were performed in each run using a high standard and blank respectively inserted before and after sample sets. A sample of reference material for nutrients in seawater (RMNS), produced by KANSO technos (www.kanso.co.jp) was included in every run and those data were monitored throughout the cruise and available to adjust values for nitrate, nitrite, phosphate, and silicate if appropriate. The mean values for NO_2 + NO_3, PO_4, and dissolved reactive silicate species (SIL) for the cruise were calculated and compared to certified manufacturer values (see table below). A separate reference sample was used to monitor ammonium stability throughout the cruise. Samples not analyzed immediately after collection were refrigerated and run the following day.

1804SH	**NO_2+NO_3 (µmol/L)**	**PO_4 (µmol/L)**	**SIL (µmol/L)**
Mean ± SD (n=34)	37.08 ± 0.19	2.60 ± 0.02	111.11 ± 0.88
Certified Value* (Lot CB)	36.65	2.58	111.82

*Converted from µmol/kg using assumed lab temperature of 20°C and salinity 34.374 provided by manufacturer.

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

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

Primary Productivity Sampling

Primary productivity samples were taken each day shortly before local apparent noon (LAN). Primary production was estimated from ^{14}C uptake using a simulated *in situ* technique. Light penetration was estimated from the Secchi depth (assuming that the 1% light level is three times the Secchi depth). The depths with ambient light intensities corresponding to light levels simulated by the on-deck incubators were identified and sampled on the rosette up-cast. Occasionally an extra bottle or two were tripped in addition to the usual 20 levels sampled in the combined rosette-productivity cast in order to maintain the normal sampling depth resolution. Triplicate samples (two light and one dark control) were drawn from each productivity sample depth into 250 ml polycarbonate incubation bottles. Samples were inoculated with a cruise average of 5.64 µCi of ^{14}C as $NaHCO_3$ (200µl of stock solution) prepared in a 0.3 g/liter solution of sodium carbonate (Fitzwater *et al*., 1982). Samples were incubated from LAN to civil twilight in seawater-cooled incubators with neutral-density screens which simulate *in situ* light levels. At the end of the incubation, the samples were filtered onto Millipore HA filters and placed in scintillation vials. One half ml of 10% HCl was added to each sample. The sample was then allowed to sit, without a cap, at room temperature for 12 hours (after Lean and Burnison, 1979). Following this, 10 ml of scintillation cocktail were added to each sample and the samples were returned to SIO where the radioactivity was determined with a scintillation counter. Salinity, oxygen, nutrients, chlorophyll-*a* and phaeopigments were determined from all rosette productivity bottles.

Macrozooplankton Net Tows

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

Ancillary Programs

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

1) Underway Data: Continuous near surface measurements of temperature, salinity and *in vivo* chlorophyll fluorescence were recorded from seawater pumped through the ship's uncontaminated seawater system. Water was drawn from a depth of approximately 3 meters. The data were logged in one-minute averages using a Sea-Bird Electronics, Inc., SBE-21 TSG Thermosalinographs and a Turner Designs Fluorometer Model 10-AU-005-CE.

2) ADCP: Continuous profiles of ocean currents and acoustic backscatter between 20 and 500 meters deep were measured along the shiptrack from a hull-mounted 150 kHz Acoustic Doppler Current Profiler (ADCP). The ADCP data were averaged over 3-minute intervals. Sixty 8-meter depth bins were recorded. (T. Chereskin, SIO)

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

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

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

6) Inorganic Carbon System: The CalCOFI group collected samples for the characterization of the inorganic carbon system at selected locations along the cruise track with 12 profile and 11 additional surface water stations. Total inorganic carbon and alkalinity will be measured which will allow the calculation of pH and pCO_2. The objectives of these measurements are first the long-term characterization of the inorganic carbon system and its response to changing ocean climate and second measurements of pH in the coastal zone in order to monitor the impact of 'corrosive' waters on benthic ecosystems in the Southern California Bight. (R. Goericke, SIO)

7) 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)

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

9) 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.

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.

Macrozooplankton Data

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

FOOTNOTES

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

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

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

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

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FIGURES

Cruise 1804

1. CalCOFI Cruise 1804 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

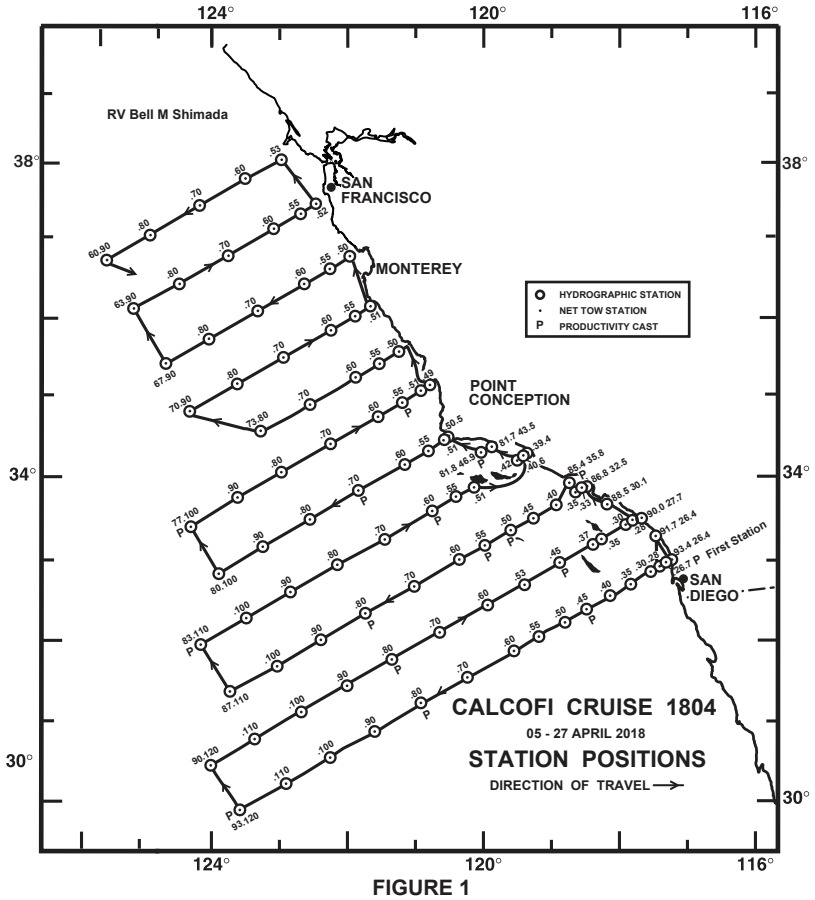

FIGURE 1

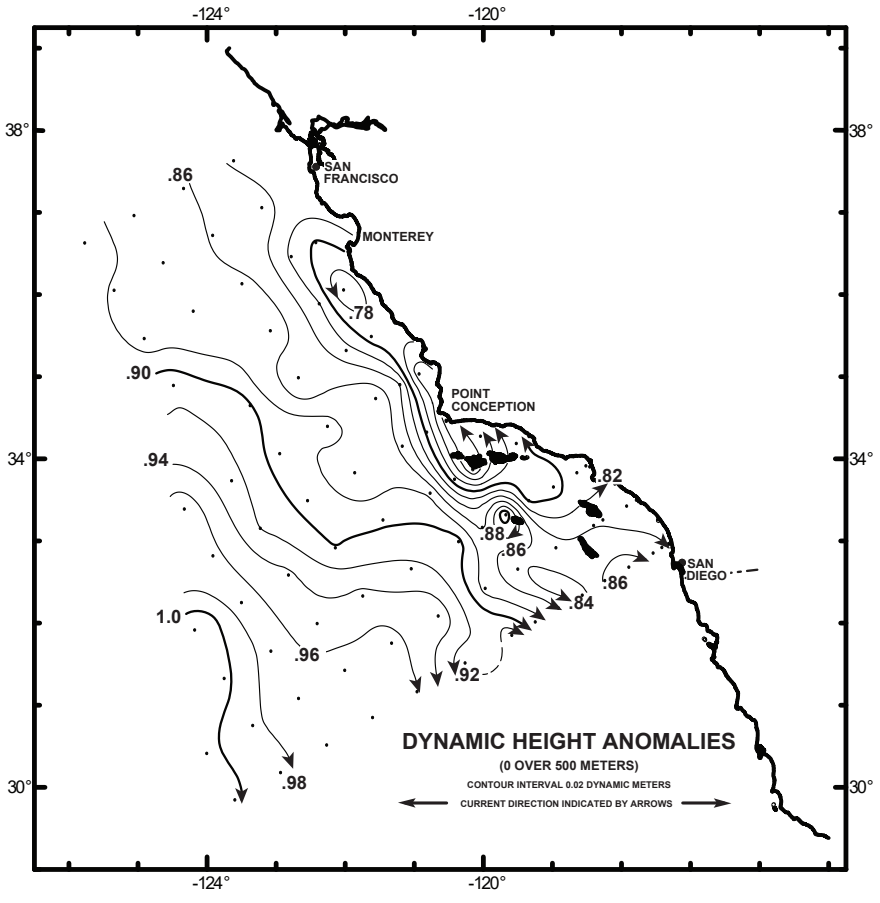

FIGURE 2

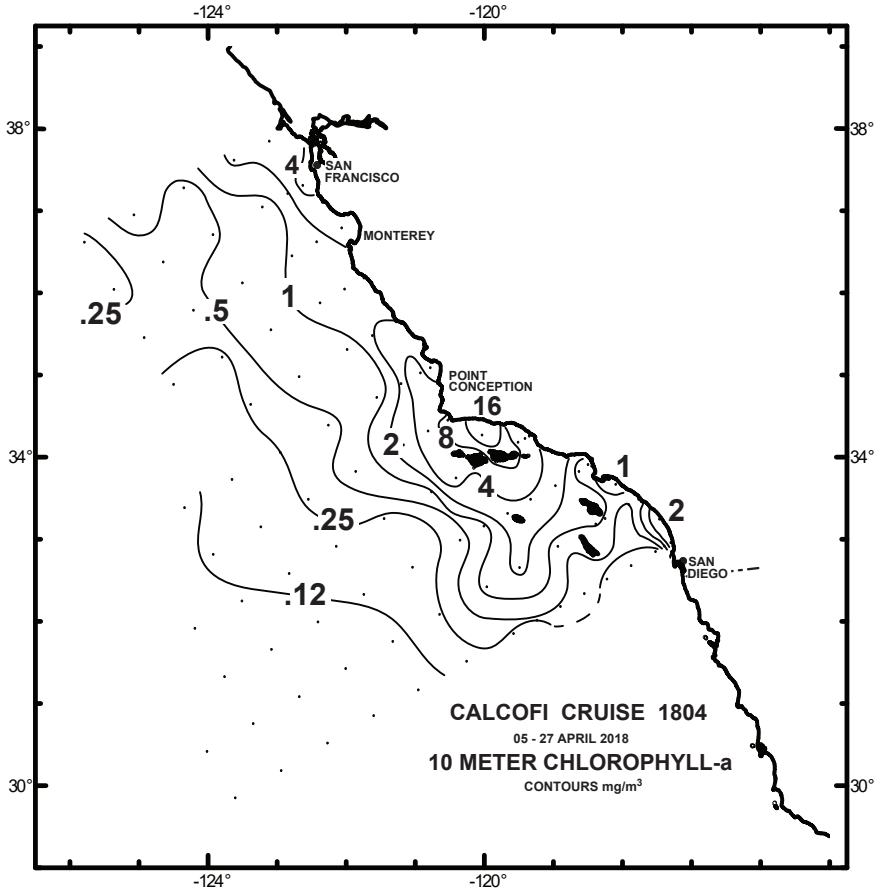

FIGURE 3A

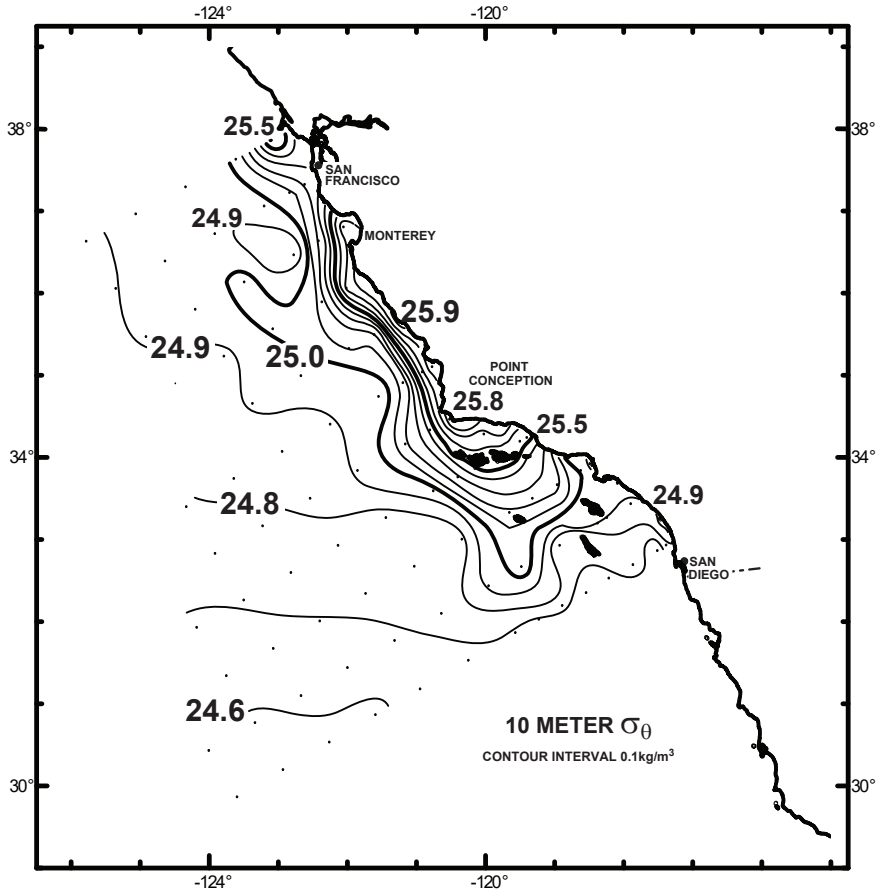

FIGURE 3B

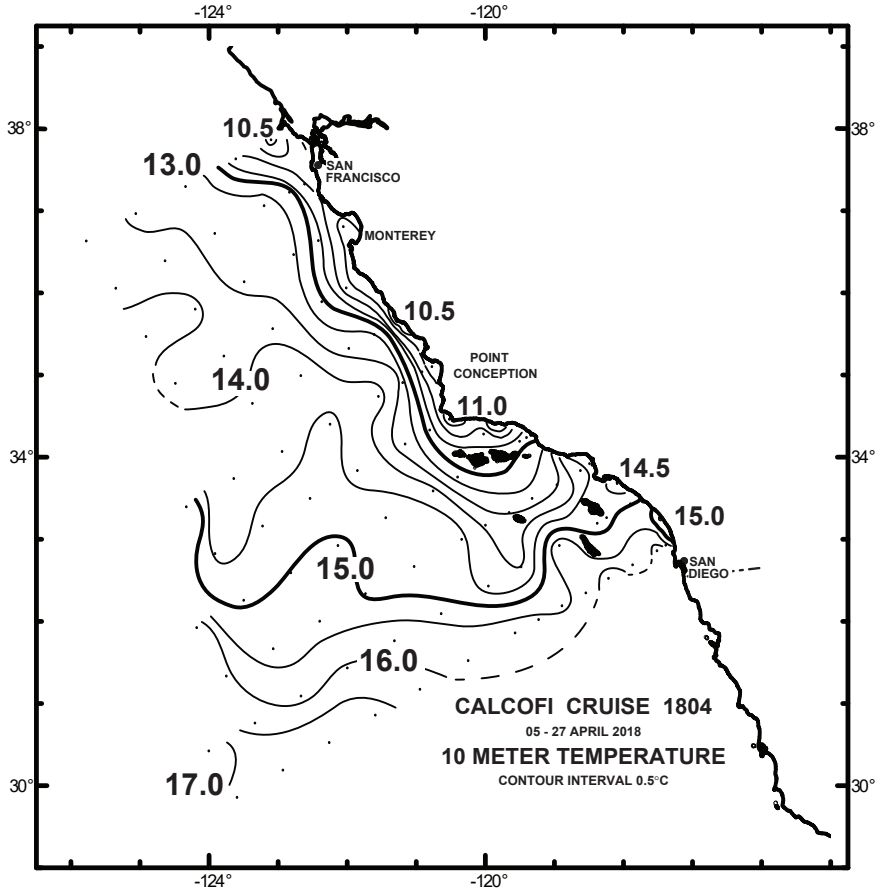

FIGURE 3C

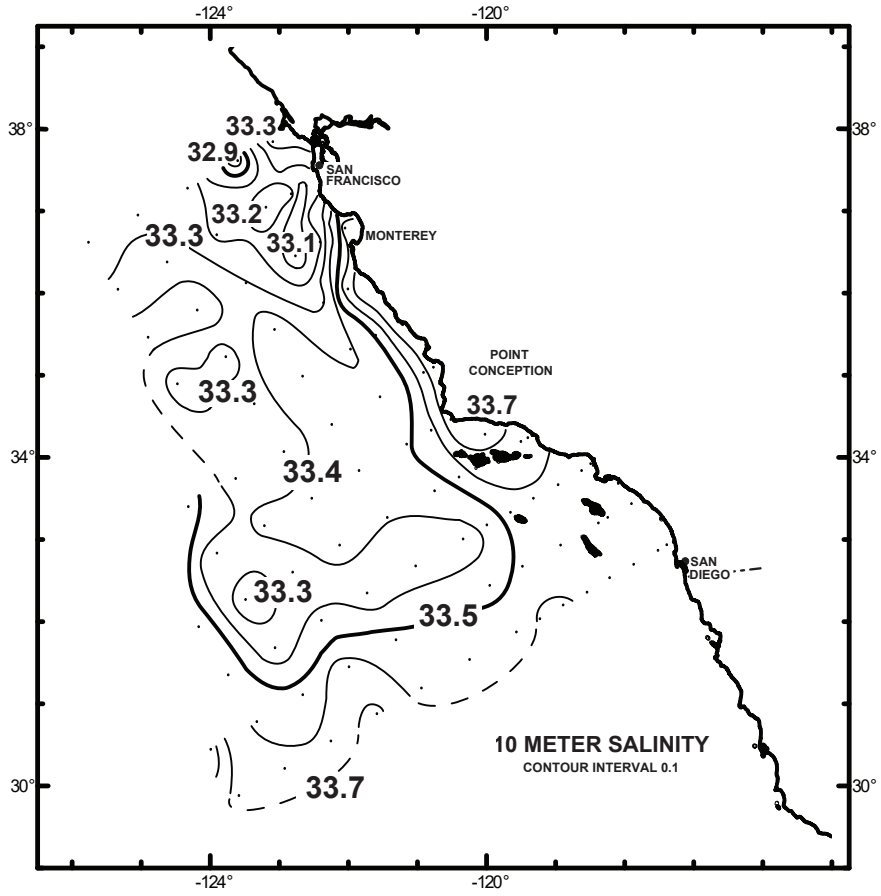

FIGURE 3D

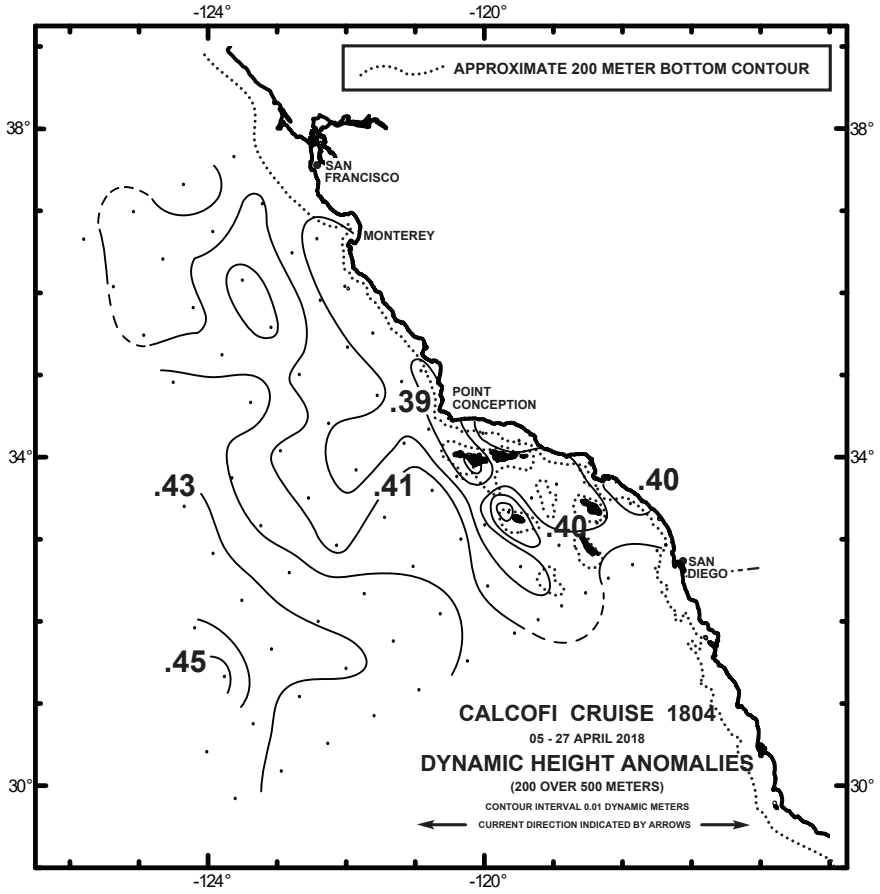

FIGURE 4A

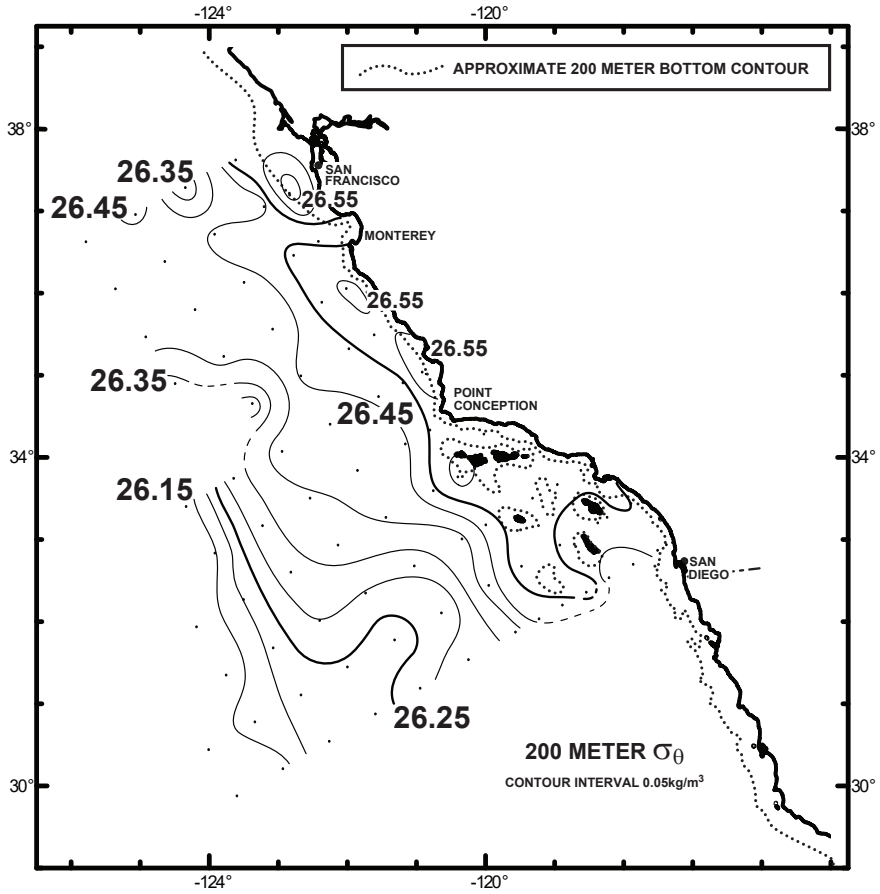

FIGURE 4B

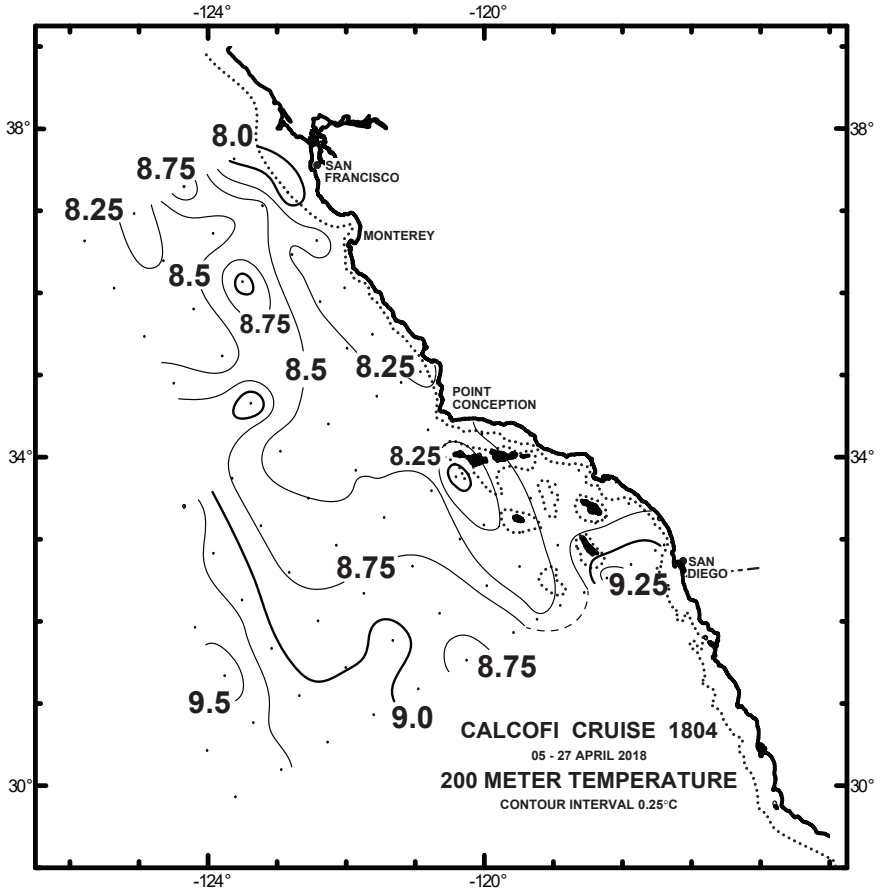

FIGURE 4C

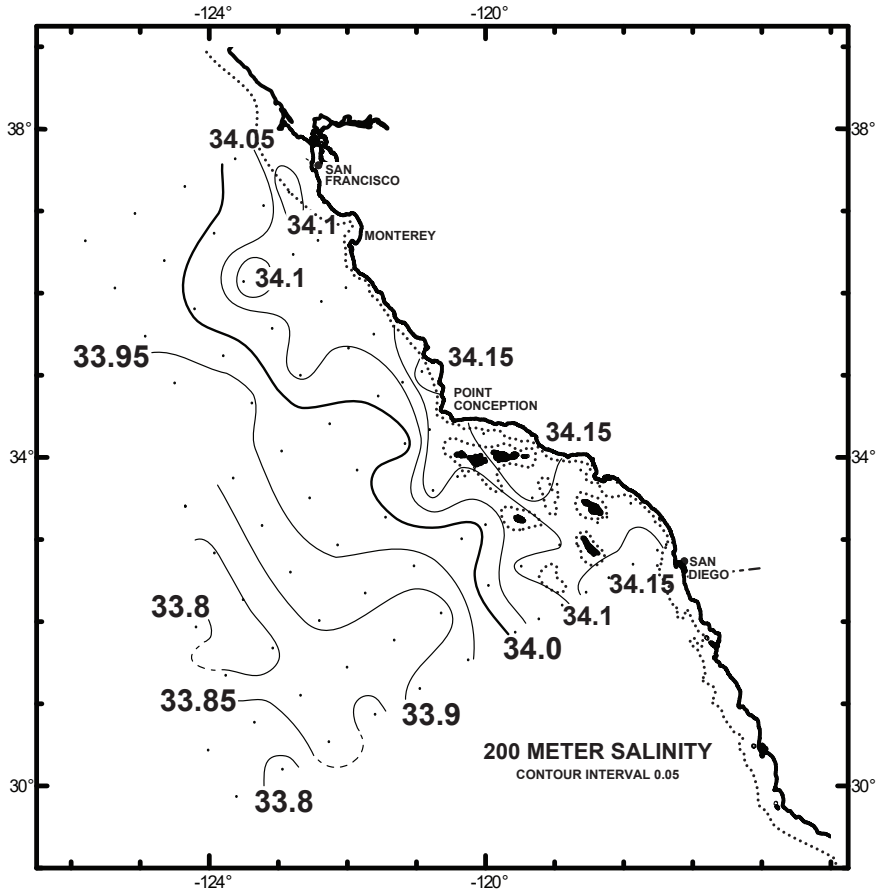

FIGURE 4D

CALCOFI CRUISE 1804

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POTENTIAL DENSITY (σ_θ) ALONG CALCOFI LINE 90

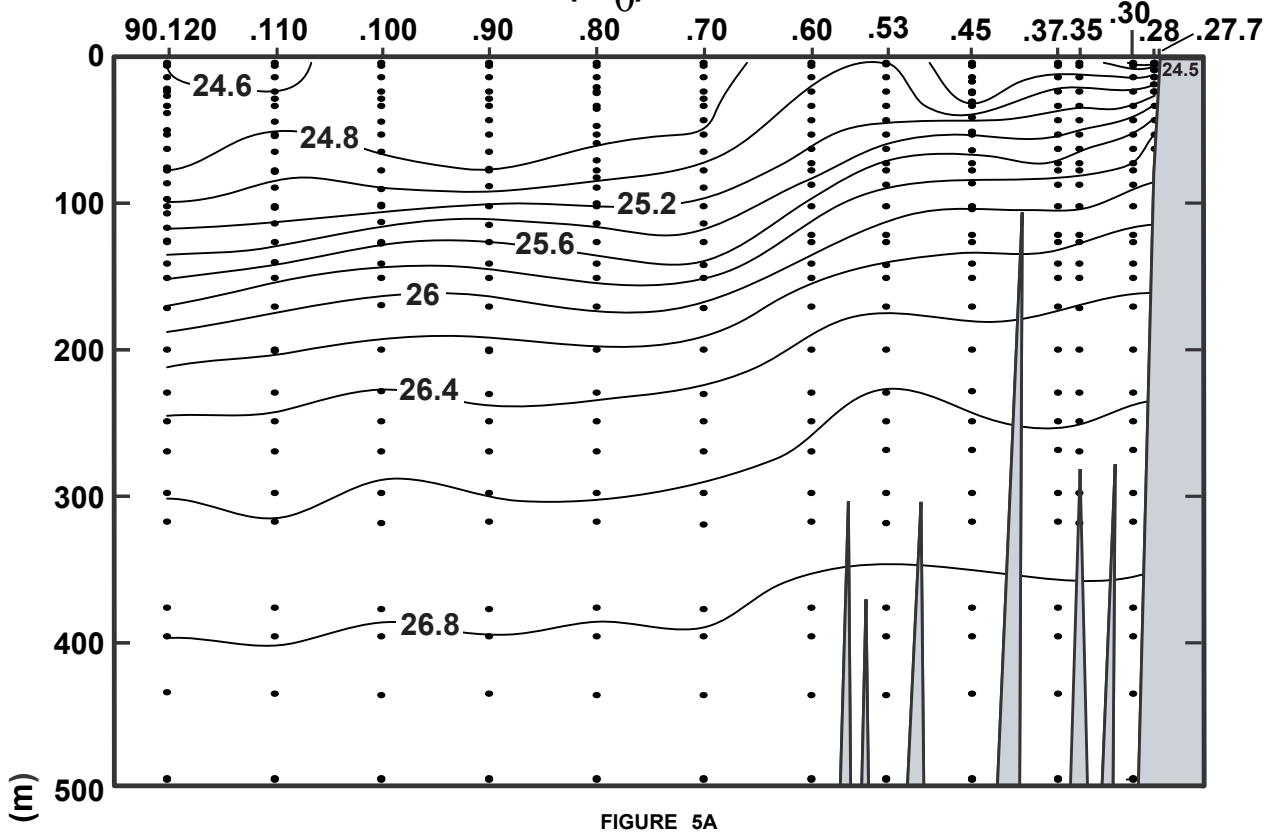

FIGURE 5A

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

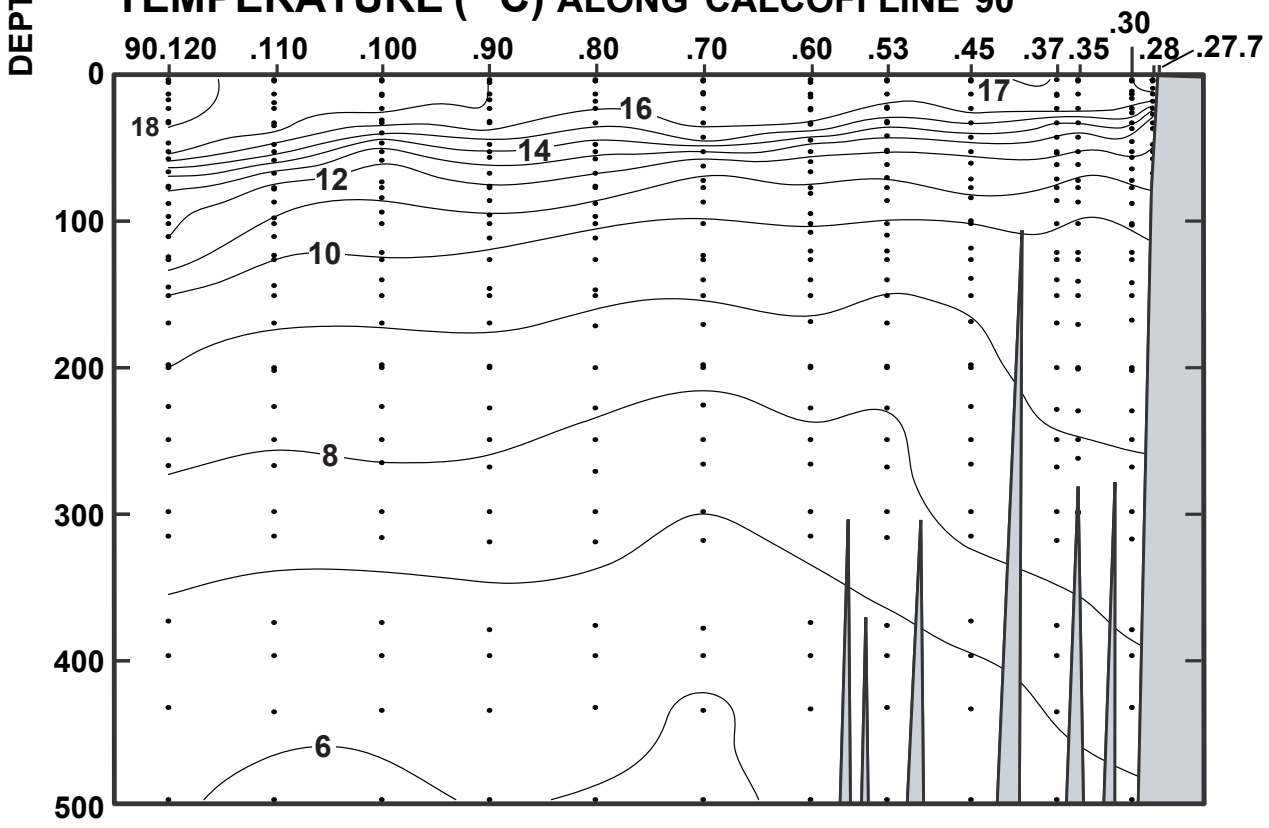

FIGURE 5B

CALCOFI CRUISE 1804

05 - 27 April 2018

SALINITY ALONG CALCOFI LINE 90

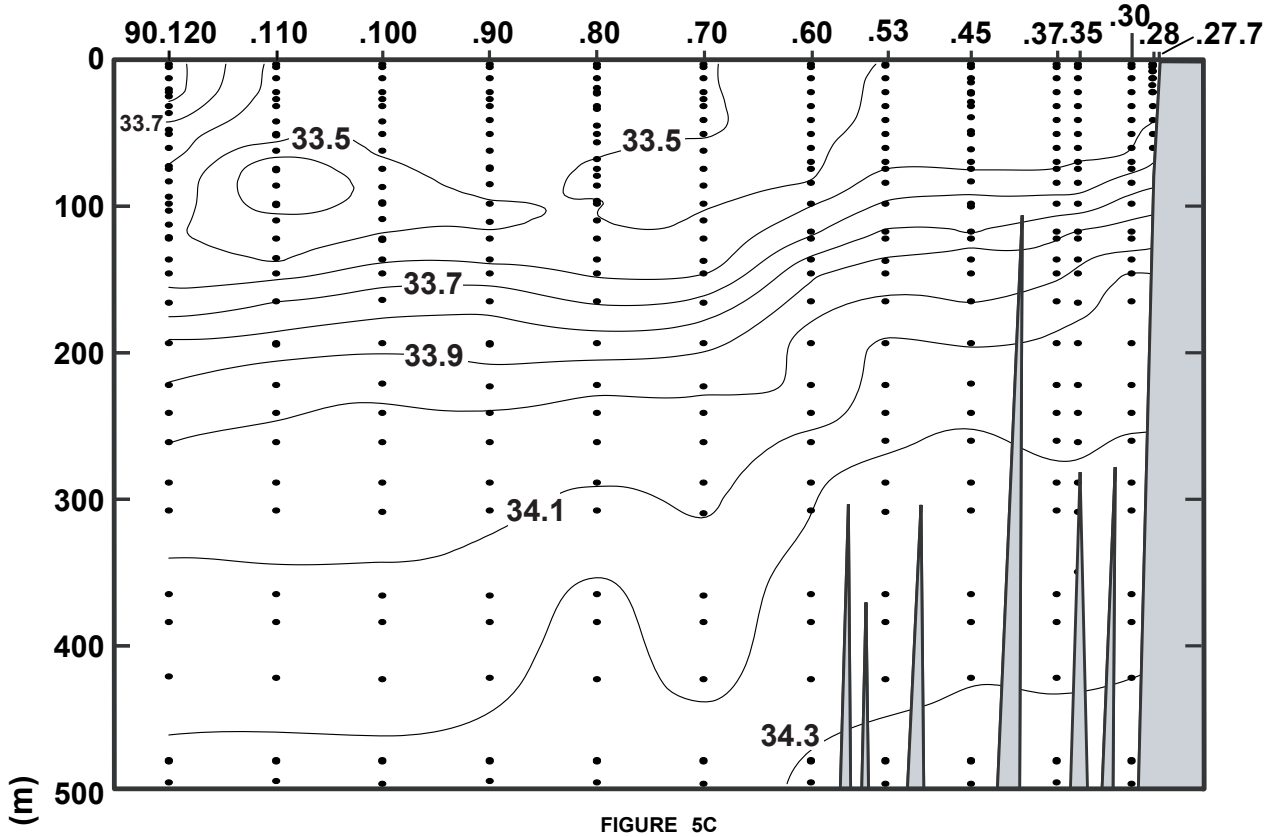

FIGURE 5C

SILICATE (μM/L) ALONG CALCOFI LINE 90

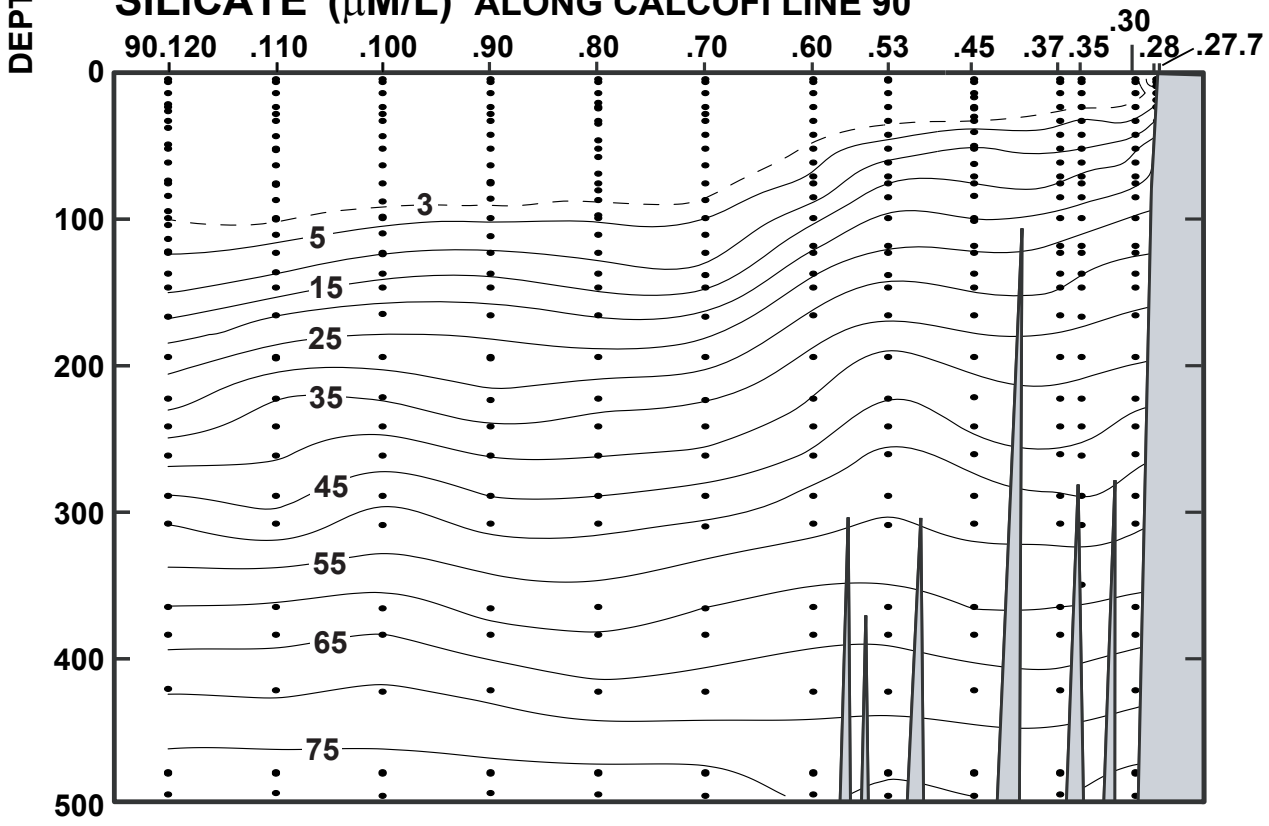

FIGURE 5D

CALCOFI CRUISE 1804

05 - 27 April 2018

NITRATE (μM/L) ALONG CALCOFI LINE 90

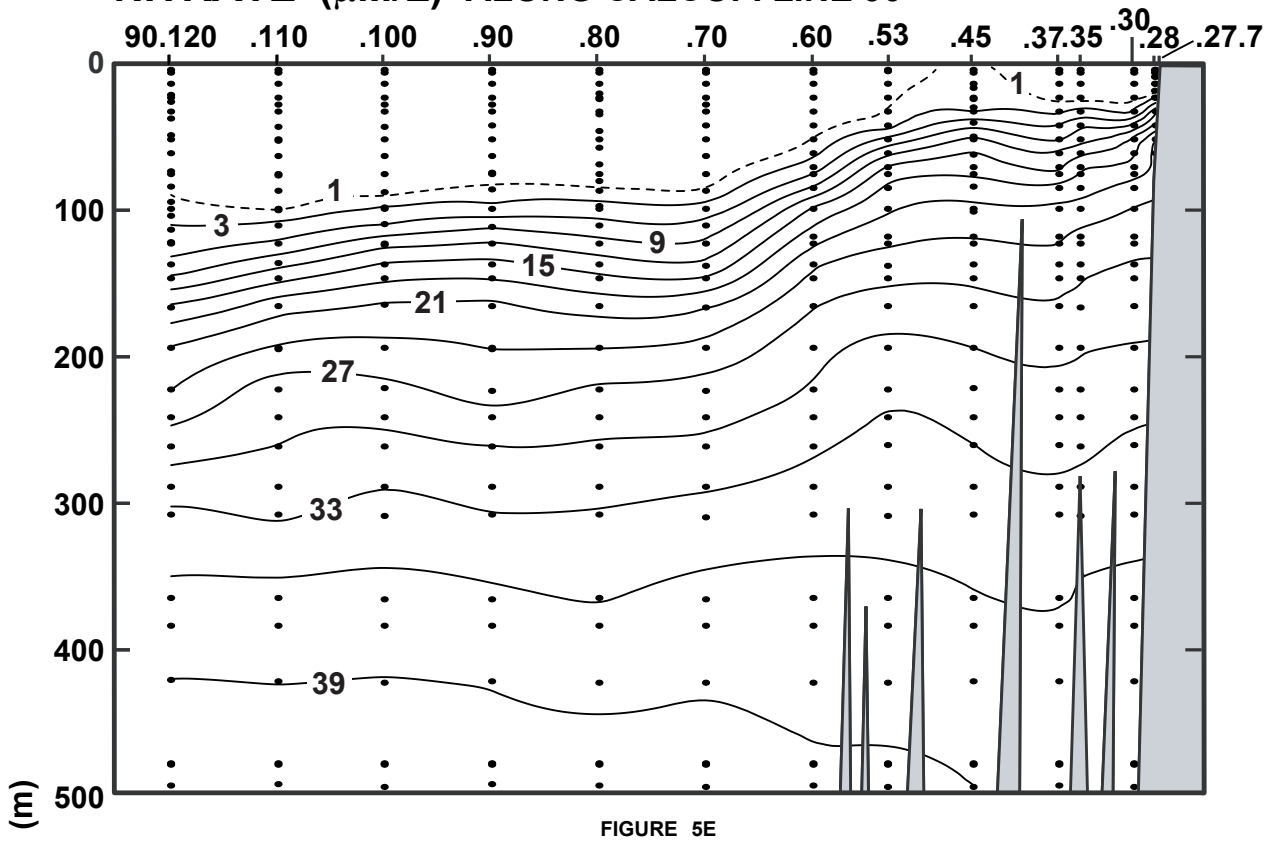

FIGURE 5E

PHOSPHATE (μM/L) ALONG CALCOFI LINE 90

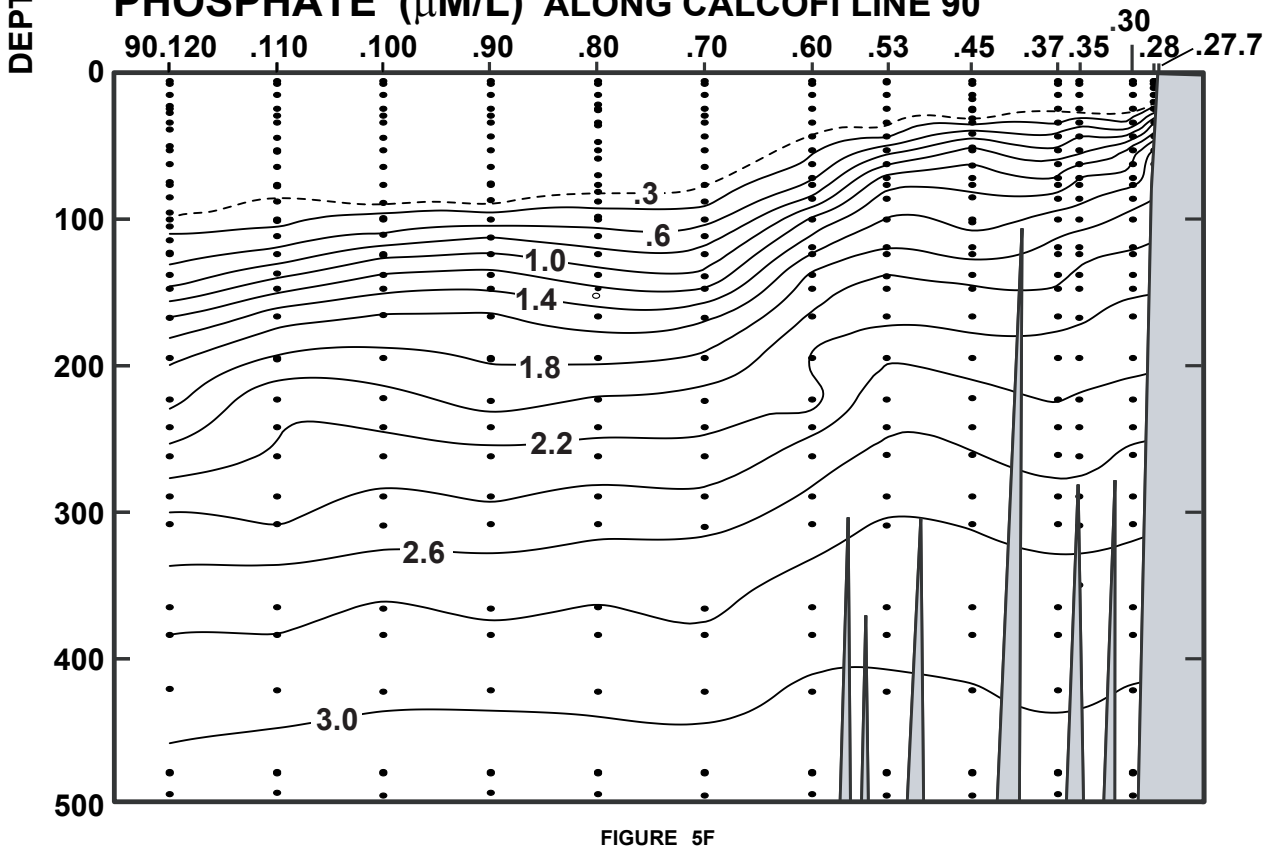

FIGURE 5F

CALCOFI CRUISE 1804

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

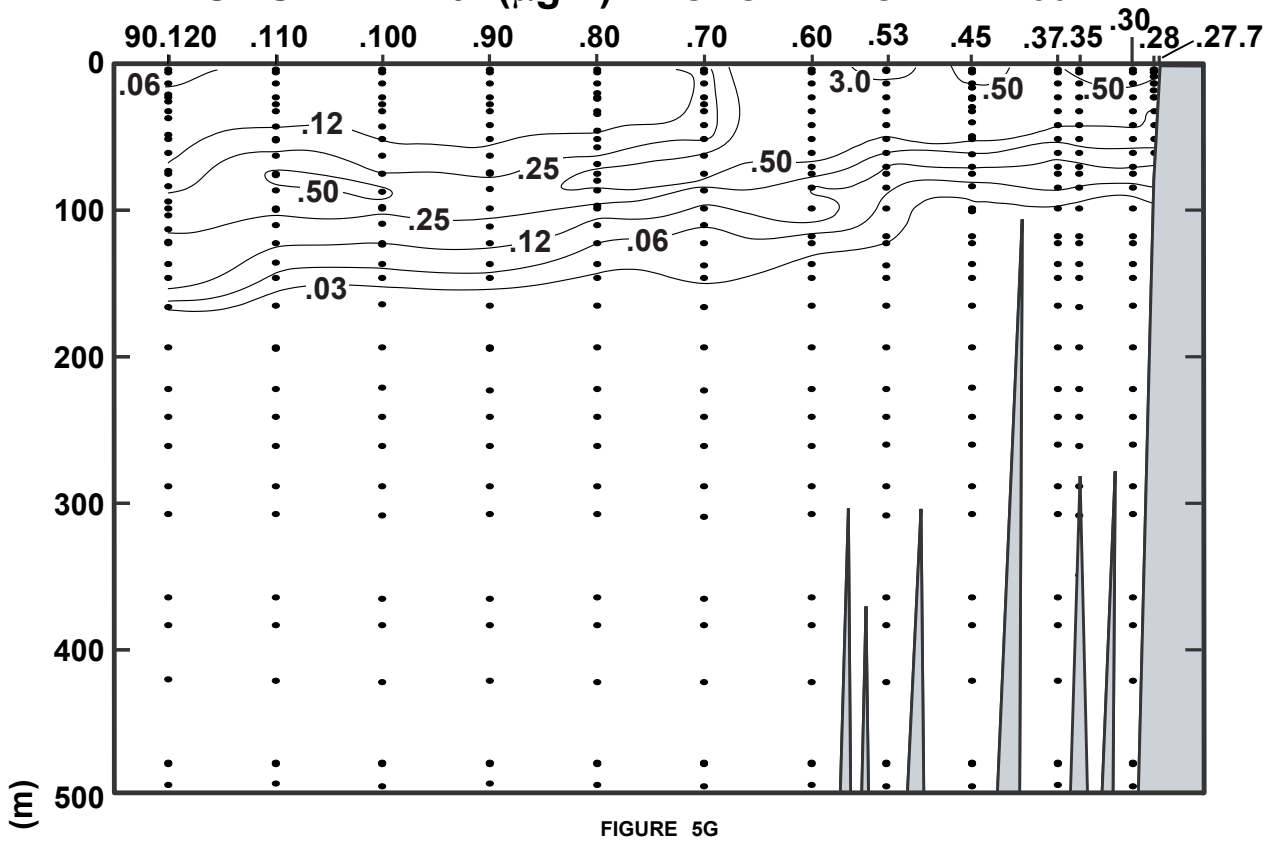

FIGURE 5G

OXYGEN SATURATION (%) ALONG CALCOFI LINE 90

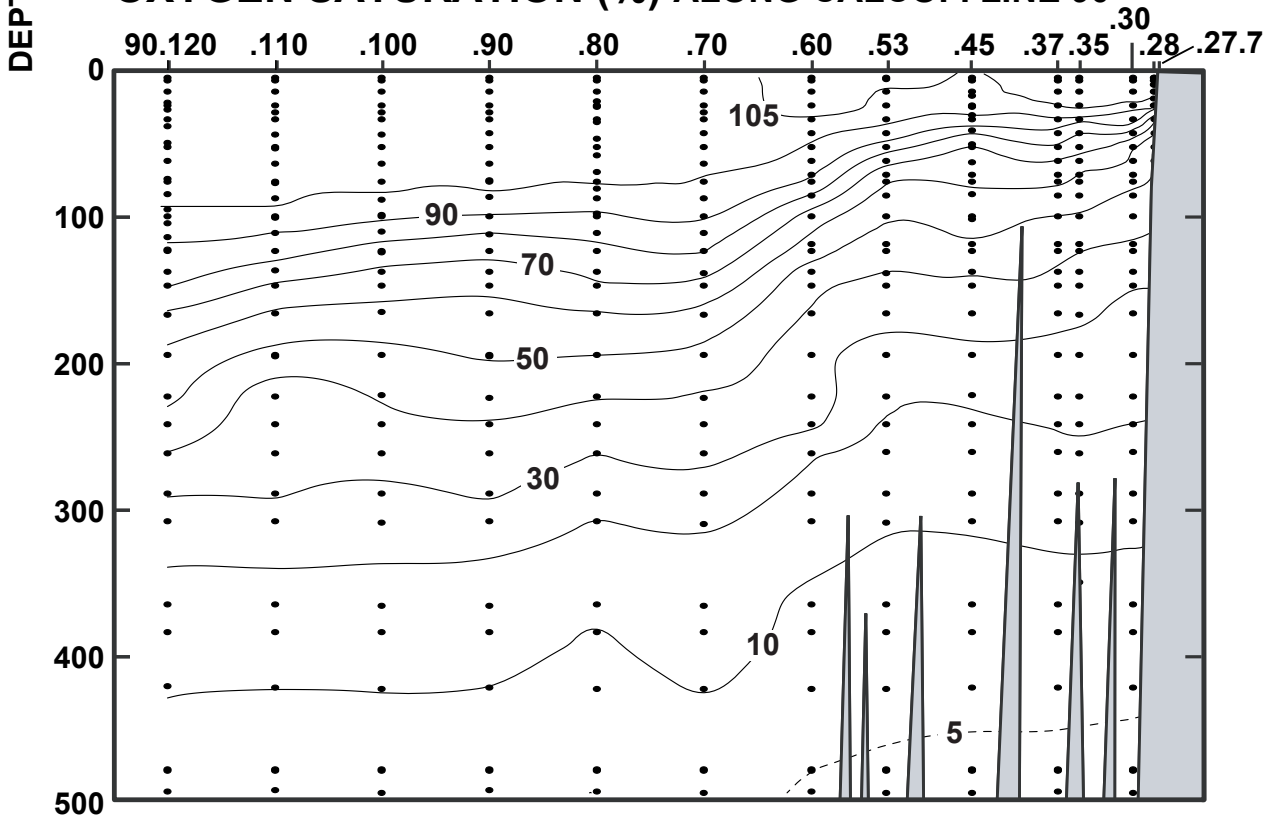

FIGURE 5H

CALCOFI CRUISE 1804

05 - 27 April 2018

OXYGEN (mL/L) ALONG CALCOFI LINE 90

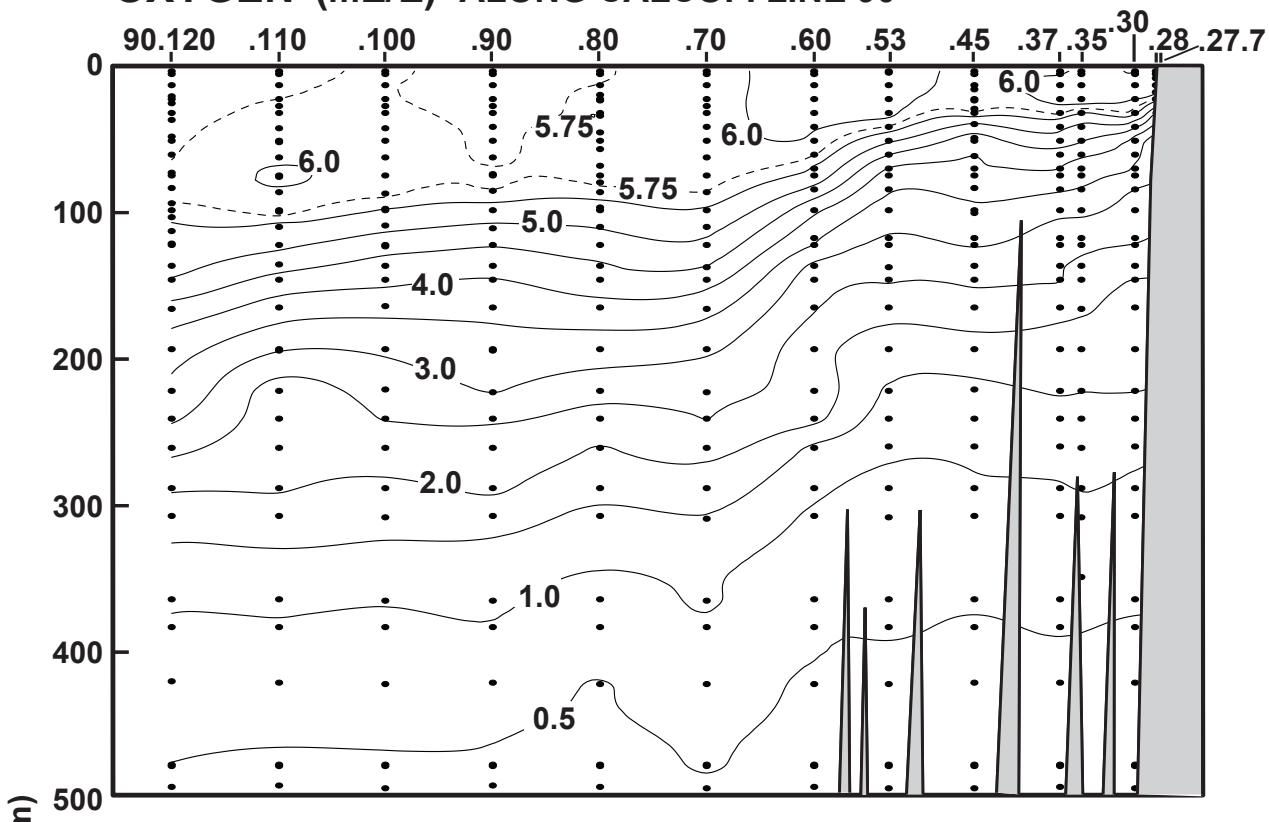

FIGURE 5I

NITRITE (μM/L) ALONG CALCOFI LINE 90

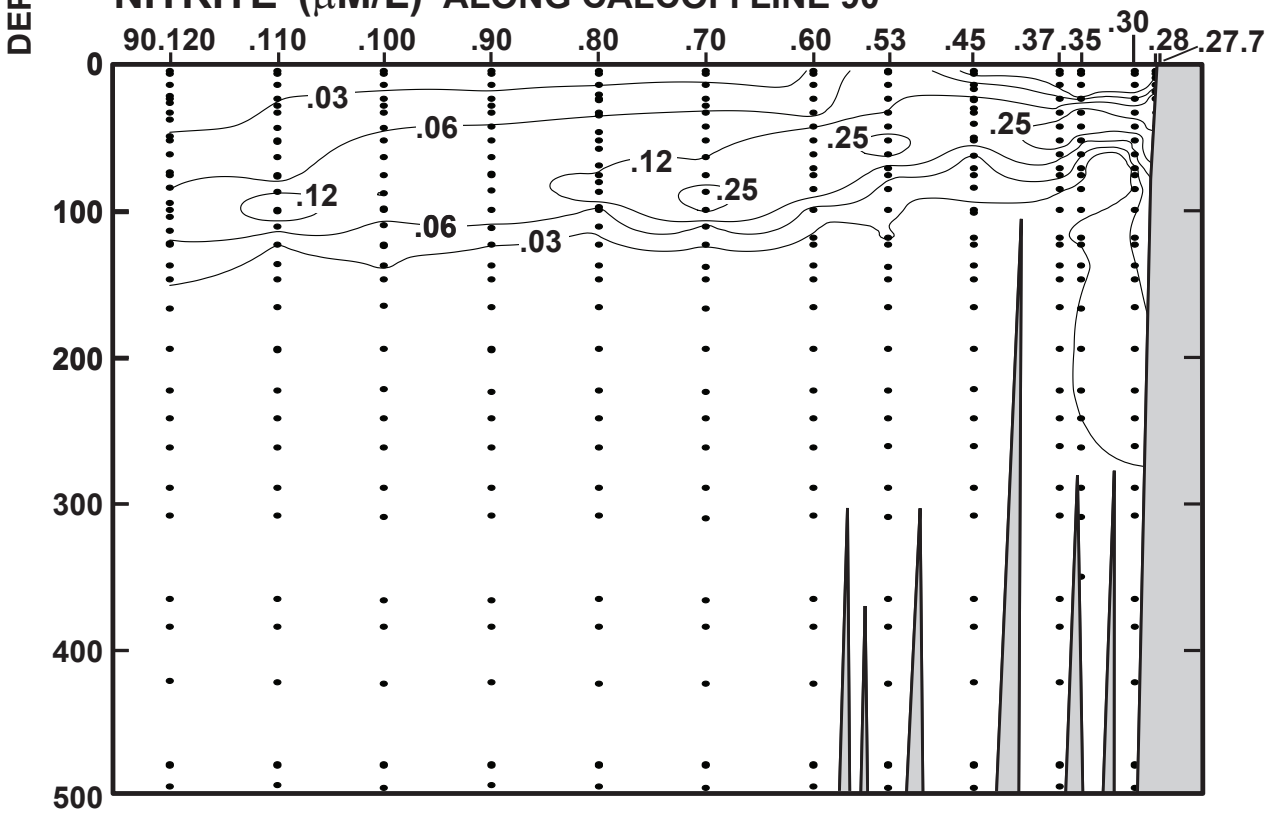

FIGURE 5J

PERSONNEL

CalCOFI Cruise 1804SH

SHIP'S COMMANDER

CDR. Paul Kunicki, NOAA ship *Bell M. Shimada*

PERSONNEL PARTICIPATING IN THE COLLECTION OF DATA

		Participating (Legs)
Overcash, Bryan (Chief Scientist)	Fishery Biologist, NMFS	1,2
Corbierre, Megan	Volunteer, SIO	1,2
Dovel, Shonna	Staff Research Associate, SIO	1
Faber, David	Staff Research Associate, SIO	1,2
Force, Michael	Bird Observer, FAIER	1,2
Gardner, Emily	Fishery Biologist, NMFS	1,2
Hays, Amy	Fishery Biologist, NMFS	1,2
Richardson, Parker	Volunteer, SIO	1,2
Schulberg, Anne	Scientist, JCVI	1
Schuller, Daniel	Staff Research Associate, SIO	1
Whitaker, Katherine	Marine Mammal Observer, SIO	1,2
Rodgers-Wolgast, Jennifer	Staff Research Associate, SIO	1,2
Wilkinson, James	Information Systems Analyst	1
Wolgast, David	Staff Research Associate, SIO	1

Leg 1: San Diego to Monterey, California, 5-23 April, 2018
Leg 2: Monterey to San Francisco, California 23-27 April, 2018

RV BELL M SHIMADA CALCOFI CRUISE 1804 STATION 60.0 53.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
37 50.8 N	123 6.0 W	26/04/2018	0110 UTC	93 m	250 07 kn	300 05 10	1	1018.0 mb	11.6 C	9.2 C		7/8	ST	099

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0	10.83	10.83	33.127	25.348	261.6	0.000	6.23	272.2	99.2						2.88	0.68	0	
2	10.83	10.83	33.127	25.348	261.7	0.005	6.23	272.2	99.2						2.88	0.68	2	06
10	10.19	10.19	33.348 D	25.630	235.0	0.023	5.53	241.7	87.0						2.21	1.03	10	05
20 ISL	9.95 D	9.94	33.499 D	25.790	220.1	0.046	5.04 D	219.5 D	78.9						2.29	0.72	20	
21	9.92	9.92	33.484 D	25.783	220.8	0.048	5.05 D	219.7 D	79.0						2.30	0.69	21	04
30 ISL	9.84 D	9.84	33.578 D	25.870	212.8	0.067	4.76 D	207.2 D	74.4						1.78	0.58	30	
50	9.59	9.59	33.685	25.995	201.3	0.111	3.81 D	165.8 D	59.2						0.61	0.35	50	03
71	9.21	9.20	33.839 D	26.179	184.3	0.150	2.77	121.2	42.8						0.11	0.21	72	02
75 ISL	9.12 D	9.11	33.856 D	26.206	181.8	0.157	2.75 D	119.6 D	42.3						0.10	0.31	76	
80	9.01	9.00	33.882	26.245	178.1	0.168	2.48	108.3	38.1						0.08	0.44	81	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 1804 STATION 60.0 60.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
37 36.8 N	123 36.6 W	26/04/2018	0445 UTC	3282 m	320 03 kn			1018.4 mb	11.2 C	9.0 C				100

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0	11.90	11.90	32.842	24.932	301.2	0.000	6.88	300.7	111.9						1.36	0.45	0	
2	11.90	11.90	32.842	24.932	301.3	0.006	6.88	300.7	111.9						1.36	0.45	2	12
10	11.47	11.47	32.847 D	25.017	293.4	0.027	6.88	300.7	110.9						2.31	0.79	10	11
20	11.19	11.19	32.890 D	25.099	285.8	0.056	6.43	281.0	103.0						2.43	0.81	20	10
30 ISL	11.17 D	11.17	32.944 D	25.146	281.7	0.085	6.50 D	283.3 D	104.2						1.88	0.72	30	
50	11.06	11.05	33.177 D	25.348	262.9	0.140	5.67	247.9	90.8						0.78	0.56	50	09
70	10.19	10.18	33.524 D	25.771	223.1	0.189	4.30	187.8	67.7						0.11	0.20	71	08
75 ISL	10.24 D	10.23	33.589 D	25.814	219.2	0.200	4.05 D	176.2 D	63.8						0.11	0.20	76	
100	9.58	9.57	33.732	26.036	198.6	0.254	3.18	138.8	49.4						0.10	0.19	101	07
120	9.14	9.13	33.863 D	26.210	182.4	0.291	2.82	123.1	43.4						0.02	0.14	121	06
125 ISL	9.17 D	9.16	33.914 D	26.245	179.2	0.300	2.46 D	107.0 D	37.9						0.02	0.13	126	
140	8.80	8.79	33.940 D	26.324	171.9	0.327	2.58	112.9	39.5						0.01	0.10	141	05
150 ISL	8.57 D	8.55	33.946 D	26.366	168.0	0.344	2.61 D	113.6 D	39.7						0.01	0.09	151	
200	7.86	7.84	34.002 D	26.516	154.5	0.425	2.18	95.1	32.6						0.01	0.05	202	04
250 ISL	7.66 D	7.64	34.096 D	26.620	145.5	0.501	1.50 D	65.0 D	22.3								252	
270	7.50	7.47	34.108 D	26.654	142.6	0.530	1.35	58.9	20.1								272	03
300 ISL	7.22 D	7.19	34.103 D	26.689	139.6	0.573	1.29 D	55.9 D	19.0								303	
380	6.56	6.52	34.144 D	26.813	128.7	0.681	0.87	37.8	12.6								383	02
400 ISL	6.42 D	6.39	34.157 D	26.842	126.2	0.707	0.80 D	34.8 D	11.6								403	
500 ISL	5.82 D	5.77	34.199 D	26.953	116.5	0.829	0.51 D	22.3 D	7.3								504	
514	5.68	5.64	34.212	26.980	114.1	0.841	0.46	20.1	6.6								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 1804 STATION 60.0 70.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
37 16.6 N	124 20.1 W	26/04/2018	0939 UTC	3989 m	270 05 kn			1017.8 mb	11.9 C	9.3 C				101

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0	13.34	13.34	33.215	24.942	300.3	0.000	6.27	274.0	105.4						0.35	0.09	0	
3	13.34	13.34	33.215	24.943	300.3	0.009	6.27	274.0	105.4						0.35	0.09	3	12
10	13.38	13.38	33.245 D	24.959	299.0	0.026	6.27	274.1	105.5						0.36	0.11	10	11
20	12.92	12.92	33.225 D	25.036	292.0	0.056	6.33	276.7	105.5						0.51	0.17	20	10
30 ISL	12.77 D	12.77	33.242 D	25.078	288.2	0.085	6.36 D	277.2 D	105.7						0.59	0.22	30	
49	12.50	12.49	33.287 D	25.167	280.3	0.139	6.09 D	265.2 D	100.6						0.76	0.32	49	09
50 ISL	12.69 D	12.69	33.302 D	25.141	282.8	0.142	6.06 D	264.1 D	100.6						0.73	0.32	50	
70	10.72	10.71	33.387 D	25.573	242.0	0.195	5.28	230.6	84.0						0.18	0.21	71	08
75 ISL	10.54 D	10.53	33.431 D	25.638	235.9	0.207	5.06 D	220.2 D	80.2						0.16	0.20	76	
99	10.02	10.01	33.683	25.923	209.3	0.263	3.44	150.5	54.1						0.05	0.14	100	07
100 ISL	10.02 D	10.01	33.684 D	25.926	209.1	0.263	3.41 D	148.5 D	53.5						0.05	0.14	101	
120	9.86	9.84	33.748 D	26.003	202.2	0.304	2.86	124.8	44.7						0.02	0.14	121	06
125 ISL	9.81 D	9.79	33.766 D	26.026	200.2	0.315	2.77 D	120.7 D	43.4						0.02	0.14	126	
140	9.66	9.64	33.765 D	26.050	198.2	0.345	3.20	139.8	49.9						0.03	0.14	141	05
150 ISL	9.43 D	9.42	33.810 D	26.123	191.4	0.364	3.11 D	135.3 D	48.2						0.03	0.13	151	
200	9.01	8.99	33.958 D	26.307	174.9	0.457	2.18	95.2	33.5						0.01	0.08	202	04
250 ISL	8.19 D	8.17	34.055 D	26.511	156.2	0.540	1.94 D	84.6 D	29.4								252	
270	7.90	7.87	34.098 D	26.589	149.0	0.571	1.56	68.1	23.4								272	03
300 ISL	7.57 D	7.54	34.114 D	26.650	143.6	0.615	1.36 D	59.1 D	20.2								303	
380	6.73	6.69	34.142 D	26.789	131.2	0.726	0.92	40.2	13.4								383	02
400 ISL	6.59 D	6.55	34.155 D	26.819	128.5	0.752	0.82 D	35.8 D	12.0								403	
500 ISL	5.83 D	5.79	34.201 D	26.953	116.6	0.876	0.50 D	21.9 D	7.2								504	
517	5.73	5.68	34.208	26.971	114.9	0.893	0.50	21.9	7.2								522	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 1804 STATION 60.0 80.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
36 56.9 N	125 3.2 W	26/04/2018	1454	UTC	4296 m	150 03 kn	310 01 06	1	1018.0 mb	13.0 C	10.6 C		2/8	ST	102

DEPTH m		TEMP DEG C		POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		13.59		13.59	33.287	24.948	299.7	0.000	6.28	274.3	106.1						0.55	0.06	0	
2		13.59		13.59	33.287	24.948	299.8	0.006	6.28	274.3	106.1						0.55	0.06	2	12
10		13.33		13.33	33.280 D	24.996	295.4	0.027	6.26	273.8	105.3						0.65	0.07	10	11
20		13.20		13.19	33.280 D	25.023	293.2	0.057	6.21	271.5	104.1						0.97	0.20	20	10
30	ISL	13.17	D	13.16	33.280 D	25.030	292.8	0.086	6.15	D268.0	D103.1						0.81	0.19	30	
50		12.96		12.95	33.273 D	25.068	289.8	0.145	6.07	265.2	101.2						0.49	0.17	50	09
70		11.50		11.49	33.307 D	25.371	261.3	0.200	5.52	241.4	89.3						0.17	0.10	71	08
75	ISL	11.15	D	11.14	33.329 D	25.452	253.7	0.213	5.27	D229.6	D 84.6						0.15	0.09	76	
100		10.23		10.22	33.490	25.739	226.9	0.275	4.29	187.3	67.5						0.08	0.05	101	07
120		9.49		9.47	33.706 D	26.032	199.4	0.316	3.41	149.0	52.9						0.01	0.03	121	06
125	ISL	9.35	D	9.33	33.735 D	26.077	195.2	0.326	3.37	D146.6	D 52.1						0.01	0.03	126	
141		8.99		8.97	33.846 D	26.221	181.7	0.357	3.03	132.2	46.5						0.01	0.03	142	05
150	ISL	8.79	D	8.77	33.893 D	26.290	175.3	0.373	2.97	D129.1	D 45.4						0.01	0.03	151	
200		8.13		8.11	33.976 D	26.457	160.3	0.458	2.49	108.6	37.5						0.01	0.03	202	04
250	ISL	7.33	D	7.31	33.997 D	26.590	148.2	0.535	2.32	D100.9	D 34.3								252	
270		7.11		7.09	33.995 D	26.618	145.7	0.565	2.19	95.9	32.3								272	03
300	ISL	6.85	D	6.82	34.038 D	26.689	139.3	0.608	1.64	D 71.3	D 24.0								303	
380		6.34		6.30	34.112 D	26.817	128.2	0.716	0.90	39.3	13.0								383	02
400	ISL	6.23	D	6.19	34.131 D	26.846	125.6	0.742	0.81	D 35.1	D 11.7								403	
500	ISL	5.66	D	5.62	34.205 D	26.977	114.1	0.863	0.45	D 19.6	D 6.4								504	
514		5.61		5.57	34.208	26.986	113.4	0.875	0.41	18.0	5.9								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 1804 STATION 60.0 90.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
36 36.9 N	125 46.2 W	26/04/2018	2000	UTC	4507 m	260 06 kn	300 03 10	1	1018.2 mb	14.7 C	11.5 C		1/8	ST	103

DEPTH m		TEMP DEG C		POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		14.51		14.51	33.243	24.724	321.0	0.000	6.02	263.0	103.6						0.11	0.01	0	
3		14.51		14.50	33.243	24.724	321.1	0.010	6.02	263.0	103.6						0.11	0.01	3	12
10		13.79		13.79	33.241 D	24.872	307.3	0.027	6.06	264.9	102.8						0.15	0.02	10	11
20	ISL	13.66	D	13.66	33.253 D	24.908	304.1	0.058	6.05	D263.8	D102.4						0.18	0.04	20	
24		13.63		13.62	33.254 D	24.916	303.5	0.070	6.07	D264.3	D102.6						0.19	0.05	24	10
30	ISL	13.57	D	13.57	33.261 D	24.934	302.0	0.088	6.07	D264.3	D102.5						0.24	0.07	30	
50	ISL	13.46	D	13.46	33.266 D	24.961	300.0	0.149	6.11	D266.3	D103.0						0.40	0.13	50	
63		12.91		12.91	33.284 D	25.085	288.6	0.188	6.05	264.3	100.8						0.50	0.18	64	09
75	ISL	11.97	D	11.96	33.294 D	25.273	270.8	0.222	5.77	D251.3	D 94.2						0.34	0.15	76	
87		11.21		11.20	33.327 D	25.439	255.2	0.253	5.40	235.9	86.8						0.18	0.13	88	08
100	ISL	10.40	D	10.38	33.414 D	25.651	235.3	0.285	5.02	D218.7	D 79.4						0.08	0.07	101	
102		10.31		10.30	33.416	25.667	233.8	0.293	4.76	208.0	75.0						0.06	0.06	103	07
125	ISL	9.78	D	9.76	33.658 D	25.946	207.7	0.341	3.62	D157.4	D 56.4						0.01	0.03	126	
126		9.77		9.75	33.667 D	25.955	206.9	0.343	3.63	158.4	56.6						0.01	0.03	127	06
140		9.54		9.52	33.767 D	26.071	196.1	0.372	3.23	141.1	50.2						0.01	0.03	141	05
150	ISL	9.27	D	9.25	33.818 D	26.155	188.3	0.391	3.08	D134.0	D 47.6						0.01	0.03	151	
200	ISL	8.46	D	8.44	33.983 D	26.412	164.7	0.480	2.41	D104.7	D 36.5						0.00	0.04	202	
202		8.43		8.41	33.986 D	26.419	164.1	0.484	2.39	104.4	36.3						0.00	0.04	204	04
250	ISL	7.67	D	7.65	34.016 D	26.557	151.5	0.560	2.14	D 92.9	D 31.9								252	
269		7.43		7.41	34.019 D	26.594	148.2	0.589	2.02	88.4	30.0								271	03
300	ISL	7.03	D	7.00	34.023 D	26.652	143.0	0.634	1.93	D 84.1	D 28.4								302	
380		6.13		6.09	34.060 D	26.802	129.3	0.744	1.23	53.8	17.7								383	02
400	ISL	6.23	D	6.19	34.115 D	26.834	126.7	0.770	0.86	D 37.5	D 12.5								403	
500	ISL	5.54	D	5.49	34.180 D	26.972	114.4	0.892	0.49	D 21.5	D 7.0								504	
515		5.48		5.44	34.189	26.986	113.2	0.906	0.44	19.4	6.3								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 1804 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
37 18.4 N	122 37.0 W	25/04/2018	2004	UTC	93 m	210 01 kn	300 01 08	1	1019.7 mb	13.1 C	9.9 C		6/8	CU	098

DEPTH m		TEMP DEG C		POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		12.69		12.69	32.465	24.490	343.4	0.000	9.54	417.1	157.4						1.63	0.25	0	
2		12.69		12.69	32.465	24.490	343.4	0.007	9.54	417.1	157.4						1.63	0.25	2	06
10		11.43		11.43	33.040 D	25.173	278.6	0.029	8.03	350.8	129.4						5.02	0.66	10	05
20		10.55		10.55	33.477 D	25.670	231.6	0.054	4.20	183.4	66.6						30.07	4.04	20	04
30	ISL	9.92	D	9.92	33.734 D	25.978	202.5	0.076	2.83	D123.1	D 44.3						20.42	3.06	30	
50		9.00		9.00	33.915	26.270	175.2	0.117	1.98	86.3	30.4						1.12	1.11	50	03
71		8.83		8.82	33.959 D	26.332	169.7	0.151	1.52	66.4	23.3						0.46	1.62	72	02
75	ISL	8.82	D	8.81	33.960 D	26.335	169.4	0.158	1.48	D 64.4	D 22.7						0.44	1.63	76	
80		8.81		8.80	33.961	26.338	169.3	0.168	1.45	63.3	22.2						0.41	1.64	81	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 1804 STATION 63.3 55.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
37 12.5 N	122 50.0 W	25/04/2018	1702 UTC	303 m	280 01 kn	180 01 06	2	1019.3 mb	11.4 C	9.1 C		8/8	ST	097

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0	13.11	13.11	33.240	25.008	294.0	0.000	6.74	294.7	112.8						1.88	0.45	0	
2	13.11	13.11	33.240	25.008	294.1	0.006	6.74	294.7	112.8						1.88	0.45	2	10
10	12.76	12.76	33.234 D	25.073	288.1	0.027	6.71	293.0	111.4						1.57	0.57	10	09
20	12.61	12.61	33.234 D	25.104	285.5	0.056	6.61	288.9	109.4						1.67	0.63	20	08
30 ISL	12.50 D	12.49	33.253 D	25.140	282.3	0.084	6.42 D	279.8 D	106.1						1.63	0.49	30	
49	10.90	10.89	33.485 D	25.617	237.3	0.134	4.89	213.7	78.2						1.57	0.21	49	07
50 ISL	10.89 D	10.88	33.486 D	25.619	237.1	0.136	4.88 D	212.5 D	78.0						1.50	0.21	50	
70	10.31	10.31	33.561 D	25.778	222.5	0.182	4.07	177.6	64.2						0.16	0.13	71	06
75 ISL	9.92 D	9.91	33.654 D	25.918	209.2	0.193	3.60 D	156.7 D	56.4						0.14	0.13	76	
99	9.57	9.56	33.816	26.104	192.1	0.243	2.73	119.2	42.5						0.03	0.14	100	05
100 ISL	9.54 D	9.53	33.824 D	26.114	191.1	0.244	2.72 D	118.2 D	42.2						0.03	0.14	101	
120	9.04	9.02	33.920 D	26.271	176.5	0.281	2.39	104.4	36.8						0.02	0.21	121	04
125 ISL	8.89 D	8.87	33.958 D	26.325	171.5	0.290	2.15 D	93.7 D	33.0						0.02	0.20	126	
140	8.36	8.34	34.050 D	26.479	157.1	0.315	1.68	73.3	25.4						0.01	0.17	141	03
150 ISL	8.22 D	8.20	34.074 D	26.519	153.4	0.330	1.49 D	64.7 D	22.5						0.01	0.18	151	
200	7.78	7.76	34.118 D	26.620	144.7	0.405	1.32	57.7	19.8						0.02	0.21	202	02
250 ISL	7.47 D	7.45	34.134 D	26.677	140.0	0.477	1.18 D	51.2 D	17.5								252	
270	7.42	7.39	34.134	26.685	139.6	0.504	1.15	50.3	17.1								272	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 1804 STATION 63.3 60.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
37 2.6 N	123 12.0 W	25/04/2018	1324 UTC	2559 m	330 03 kn	310 03 08	2	1017.6 mb	10.9 C	8.9 C		8/8	ST	096

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0	13.62	13.62	33.319	24.967	297.9	0.000	6.21	271.4	105.1						0.43	0.11	0	
2	13.62	13.62	33.319	24.967	298.0	0.006	6.21	271.4	105.1						0.43	0.11	2	12
10	13.54	13.53	33.317 D	24.983	296.7	0.027	6.23	272.1	105.2						0.51	0.14	10	11
20	13.31	13.30	33.317 D	25.030	292.5	0.057	6.25	273.0	105.0						0.62	0.16	20	10
30 ISL	13.27 D	13.26	33.317 D	25.038	292.1	0.086	6.20 D	270.3 D	104.2						0.51	0.17	30	
50	11.94	11.94	33.386 D	25.349	262.9	0.142	5.51	240.9	90.1						0.31	0.18	50	09
70	10.36	10.35	33.542 D	25.756	224.6	0.191	4.27	186.4	67.4						0.19	0.20	71	08
75 ISL	10.48 D	10.47	33.638 D	25.809	219.6	0.203	4.11 D	178.7 D	65.1						0.16	0.20	76	
99	9.72	9.71	33.776	26.047	197.5	0.254	3.00	130.9	46.8						0.04	0.21	100	07
100 ISL	9.71 D	9.70	33.782 D	26.054	196.9	0.255	2.96 D	128.8 D	46.2						0.04	0.21	101	
121	9.54	9.52	33.852 D	26.137	189.4	0.296	2.45	106.8	38.0						0.03	0.20	122	06
125 ISL	9.52 D	9.50	33.853 D	26.142	189.1	0.304	2.45 D	106.6 D	38.1						0.03	0.21	126	
140	9.25	9.23	33.914 D	26.233	180.7	0.332	2.24	97.9	34.6						0.02	0.27	141	05
150 ISL	9.16 D	9.15	33.934 D	26.263	178.0	0.350	2.17 D	94.5 D	33.5						0.02	0.27	151	
200	8.61	8.59	34.033 D	26.429	163.2	0.436	1.90	83.1	29.0						0.02	0.27	202	04
250 ISL	8.10 D	8.08	34.092 D	26.553	152.1	0.515	1.59 D	69.1 D	23.9								252	
270	7.62	7.59	34.067 D	26.605	147.3	0.545	1.61	70.2	24.0								272	03
300 ISL	7.33 D	7.30	34.094 D	26.667	141.8	0.589	1.37 D	59.6 D	20.3								303	
380	6.69	6.65	34.150 D	26.801	130.0	0.699	0.88	38.3	12.8								383	02
400 ISL	6.46 D	6.42	34.157 D	26.837	126.7	0.725	0.78 D	34.0 D	11.4								403	
500 ISL	5.77 D	5.73	34.198 D	26.958	116.0	0.847	0.50 D	21.6 D	7.1								504	
514	5.72	5.68	34.203	26.969	115.2	0.859	0.46	20.3	6.6								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 1804 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
36 42.4 N	123 54.8 W	25/04/2018	0810 UTC	3882 m	330 03 kn			1017.7 mb	11.5 C	9.6 C				095

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0	13.26	13.26	33.150	24.910	303.3	0.000	6.34	276.9	106.3						0.46	0.14	0	
3	13.26	13.25	33.150	24.910	303.4	0.009	6.34	276.9	106.3						0.46	0.14	3	12
10	13.29	13.28	33.175 D	24.923	302.4	0.026	6.28	274.3	105.3						0.41	0.14	10	11
20	13.11	13.11	33.261 D	25.026	292.9	0.056	6.26	273.4	104.7						0.59	0.21	20	10
30 ISL	13.08 D	13.08	33.262 D	25.033	292.6	0.086	6.13 D	267.2 D	102.6						0.50	0.21	30	
50	12.17	12.16	33.322 D	25.257	271.7	0.143	5.71	249.6	93.7						0.32	0.19	50	09
70	10.79	10.78	33.336 D	25.522	246.9	0.195	5.09	222.5	81.1						0.18	0.11	71	08
75 ISL	10.57 D	10.56	33.370 D	25.586	240.9	0.207	4.98 D	216.9 D	79.0						0.15	0.10	76	
100	10.02	10.01	33.655	25.903	211.2	0.266	3.61	157.5	56.6						0.05	0.04	101	07
121	9.47	9.46	33.799 D	26.107	192.2	0.307	3.71	162.0	57.6						0.01	0.03	122	06
125 ISL	9.42 D	9.40	33.816 D	26.129	190.3	0.314	3.65 D	158.6 D	56.5						0.01	0.03	126	
140	9.13	9.12	33.882 D	26.227	181.2	0.342	3.15	137.4	48.5						0.01	0.03	141	05
150 ISL	8.95 D	8.94	33.916 D	26.282	176.2	0.360	2.99 D	130.1 D	45.9						0.01	0.03	151	
200 ISL	8.23 D	8.20	34.006 D	26.466	159.4	0.445	2.31 D	100.4 D	34.9						0.00	0.03	202	
201	8.22	8.20	34.007 D	26.467	159.3	0.447	2.31	100.9	34.9						0.00	0.03	203	04
250 ISL	7.53 D	7.50	34.040 D	26.596	147.7	0.522	1.90 D	82.7 D	28.3								252	
271	7.19	7.16	34.039 D	26.644	143.4	0.553	1.78	77.6	26.2								273	03
300 ISL	7.10 D	7.07	34.094 D	26.700	138.5	0.595	1.43 D	62.3 D	21.1								302	
380	6.27	6.23	34.121 D	26.833	126.6	0.702	0.89	38.8	12.8								383	02
400 ISL	6.18 D	6.15	34.136 D	26.856	124.6	0.727	0.81 D	35.3 D	11.7								403	
500 ISL	5.70 D	5.65	34.206 D	26.974	114.4	0.848	0.47 D	20.4 D	6.7								504	
515	5.65	5.61	34.212	26.984	113.7	0.862	0.43	18.7	6.1								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 1804 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
36 22.5 N	124 37.8 W	25/04/2018	0314	UTC	4150 m	270 06 kn	300 07 10	1	1016.8 mb	12.9 C	10.7 C		7/8	ST	094

DEPTH m		TEMP DEG C		POTTEMP DEG C		SALINITY		SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		13.91		13.91		33.337		24.922	302.2	0.000	6.09	266.3	103.7						0.26	0.04	0	
2		13.91		13.91		33.337		24.922	302.3	0.006	6.09	266.3	103.7						0.26	0.04	2	12
10	ISL	13.71	D	13.71		33.335	D	24.961	298.8	0.027	6.10	D265.7	D103.4						0.34	0.05	10	
11		13.71		13.70		33.336	D	24.963	298.6	0.030	6.12	267.4	103.7						0.35	0.05	11	11
20		13.66		13.66		33.334	D	24.971	298.1	0.057	6.18	269.8	104.6						0.39	0.10	20	10
30	ISL	13.47	D	13.47		33.327	D	25.005	295.2	0.087	6.13	D267.3	D103.5						0.43	0.11	30	
49		13.44		13.43		33.325	D	25.011	295.2	0.144	6.09	266.2	102.7						0.52	0.13	49	09
50	ISL	13.44	D	13.43		33.326	D	25.012	295.1	0.147	6.08	D264.7	D102.4						0.52	0.14	50	
69		12.58		12.57		33.404	D	25.242	273.7	0.201	5.67	247.8	93.9						0.47	0.25	70	08
75	ISL	11.87	D	11.86		33.314	D	25.308	267.5	0.218	5.66	D246.6	D 92.3						0.40	0.22	76	
100		10.34		10.33		33.369		25.625	237.7	0.282	4.82	210.4	76.0						0.11	0.08	101	07
120		9.79		9.78		33.571	D	25.875	214.3	0.327	4.05	177.0	63.2						0.03	0.04	121	06
125	ISL	9.70	D	9.68		33.624	D	25.933	208.9	0.337	3.97	D172.8	D 61.8						0.02	0.04	126	
140		9.36		9.35		33.740	D	26.079	195.3	0.368	3.58	156.4	55.4						0.01	0.04	141	05
150	ISL	9.17	D	9.16		33.804	D	26.160	187.8	0.387	3.46	D150.6	D 53.4						0.01	0.04	151	
200		8.24		8.22		33.967	D	26.433	162.6	0.475	2.73	119.2	41.3						0.00	0.03	202	04
250	ISL	7.56	D	7.53		33.998	D	26.559	151.3	0.555	2.34	D101.7	D 34.8								252	
270		7.26		7.23		34.010	D	26.610	146.6	0.585	2.19	95.5	32.3								272	03
300	ISL	6.94	D	6.91		34.031	D	26.672	141.0	0.628	1.80	D 78.1	D 26.3								302	
381		5.98		5.94		34.058	D	26.820	127.5	0.738	1.23	53.9	17.7								384	02
400	ISL	6.04	D	6.00		34.112	D	26.855	124.5	0.762	0.89	D 38.8	D 12.8								403	
500	ISL	5.40	D	5.36		34.183	D	26.991	112.5	0.882	0.48	D 20.8	D 6.8								504	
516		5.39		5.35		34.200		27.005	111.3	0.895	0.40	17.5	5.7								521	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 1804 STATION 63.3 90.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
36 2.4 N	125 20.6 W	24/04/2018	2155	UTC	4536 m	290 09 kn	320 04 07	2	1017.9 mb	13.8 C	11.1 C		8/8	SC	093

DEPTH m		TEMP DEG C		POTTEMP DEG C		SALINITY		SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		14.17		14.17		33.305		24.842	309.8	0.000	6.04	264.1	103.4						0.14	0.02	0	
2		14.17		14.17		33.305		24.842	309.9	0.006	6.04	264.1	103.4						0.14	0.02	2	12
10		13.94		13.94		33.304	D	24.891	305.4	0.028	6.05	264.3	103.0						0.14	0.02	10	11
20	ISL	13.77	D	13.77		33.307	D	24.928	302.3	0.058	6.04	D263.3	D102.5						0.17	0.04	20	
25		13.76		13.75		33.307	D	24.931	302.1	0.074	6.09	266.2	103.3						0.18	0.04	25	10
30	ISL	13.73	D	13.73		33.304	D	24.934	302.0	0.089	6.04	D263.2	D102.4						0.24	0.10	30	
50	ISL	12.37	D	12.37		33.219	D	25.138	283.0	0.148	6.35	D276.7	D104.6						0.46	0.30	50	
62		11.93		11.92		33.304	D	25.289	269.0	0.181	5.91	258.3	96.5						0.59	0.43	63	09
75	ISL	11.21	D	11.20		33.319	D	25.433	255.5	0.216	5.55	D241.7	D 89.2						0.37	0.26	76	
88		10.38		10.37		33.379	D	25.626	237.4	0.248	4.99	218.3	78.9						0.14	0.08	89	08
100	ISL	10.07	D	10.06		33.486	D	25.762	224.7	0.276	4.33	D188.4	D 67.9						0.06	0.05	101	
102		10.03		10.02		33.484		25.767	224.2	0.281	4.32	188.7	67.7						0.04	0.05	103	07
124		9.64		9.62		33.677	D	25.984	204.0	0.328	3.46	151.3	53.9						0.01	0.06	125	06
125	ISL	9.59	D	9.58		33.693	D	26.004	202.1	0.330	3.43	D149.1	D 53.3						0.01	0.06	126	
139		9.38		9.37		33.757	D	26.088	194.4	0.358	3.28	143.2	50.7						0.01	0.05	140	05
150	ISL	9.17	D	9.16		33.825	D	26.176	186.2	0.379	3.09	D134.6	D 47.7						0.00	0.04	151	
200	ISL	8.33	D	8.31		33.958	D	26.413	164.6	0.468	2.97	D129.1	D 44.9						0.00	0.04	202	
201		8.33		8.31		33.957	D	26.413	164.6	0.469	3.01	131.4	45.5						0.00	0.04	203	04
250	ISL	7.66	D	7.64		34.002	D	26.547	152.5	0.547	2.24	D 97.6	D 33.5								252	
269		7.36		7.34		34.009	D	26.596	148.0	0.576	2.08	90.8	30.8								271	03
300	ISL	6.93	D	6.90		34.005	D	26.652	142.9	0.622	2.02	D 87.9	D 29.6								302	
380		6.11		6.07		34.063	D	26.807	128.8	0.731	1.20	52.4	17.3								383	02
400	ISL	6.22	D	6.19		34.131	D	26.847	125.5	0.757	0.82	D 35.5	D 11.8								403	
500	ISL	5.33	D	5.29		34.162	D	26.982	113.2	0.878	0.55	D 24.0	D 7.8								504	
514		5.28		5.24		34.164		26.990	112.5	0.889	0.51	22.1	7.1								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 1804 STATION 66.7 50.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
36 47.3 N	122 3.3 W	23/04/2018	1831	UTC	212 m	260 04 kn	310 03 12	4	1017.6 mb	10.9 C	10.0 C		8/8	ST	087

DEPTH m		TEMP DEG C		POTTEMP DEG C		SALINITY		SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		11.07		11.07		33.677		25.733	225.1	0.000	4.93	215.4	79.2						2.42	0.51	0	
2		11.07		11.07		33.677		25.733	225.1	0.005	4.93	215.4	79.2						2.42	0.51	2	09
10		10.74		10.74		33.655	D	25.775	221.3	0.020	4.75	207.3	75.7						2.36	0.74	10	08
20		10.56		10.56		33.679	D	25.826	216.7	0.042	4.33	189.2	68.8						2.09	0.62	20	07
30	ISL	10.03	D	10.03		33.766	D	25.984	201.9	0.063	3.39	D147.6	D 53.3						1.44	0.48	30	
50		9.55		9.54		33.842	D	26.125	188.9	0.103	2.58	112.7	40.1						0.16	0.20	50	06
69		9.09		9.09		33.944	D	26.279	174.7	0.138	2.26	98.7	34.8						0.04	0.21	70	05
75	ISL	9.00	D	8.99		33.963	D	26.309	171.9	0.148	2.25	D 98.0	D 34.6						0.03	0.19	76	
100		8.85		8.84		34.000		26.363	167.4	0.192	2.21	96.5	33.9						0.01	0.13	101	04
120		8.68		8.67		34.028	D	26.411	163.2	0.224	2.09	91.4	32.0						0.01	0.13	121	03
125	ISL	8.65	D	8.64		34.032	D	26.420	162.5	0.232	1.97	D 85.6	D 30.0						0.01	0.14	126	
140		8.52		8.51		34.052	D	26.455	159.4	0.257	1.69	74.0	25.8						0.02	0.14	141	02
150	ISL	8.47	D	8.45		34.059	D	26.470	158.2	0.273	1.65	D 71.8	D 25.1						0.02	0.14	151	
185		8.16		8.14		34.096		26.547	151.5	0.327	1.44	62.7	21.7						0.01	0.12	187	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 1804 STATION 66.7 55.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
36 37.2 N	122 25.0 W	23/04/2018	2151	UTC	2899 m	280 07 kn	300 05 08	1	1017.2 mb	12.8 C	10.9 C		6/8	ST	088

DEPTH m		TEMP DEG C		POTTEMP DEG C		SALINITY		SIGMA THETA	SVA	DYN HT	OXYGEN ml/L		OXYGEN µmol/Kg		OXY PCT		SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		12.83		12.83		33.078		24.939	300.6	0.000	6.13		268.1		101.9							0.89	0.14	0	
2		12.83		12.83		33.078		24.939	300.7	0.006	6.13		268.1		101.9							0.89	0.14	2	12
9		12.22		12.22		33.136	D	25.102	285.3	0.027	6.09		266.3		100.0							1.44	0.24	9	11
10	ISL	12.15	D	12.15		33.165	D	25.137	282.1	0.027	6.03	D	262.7	D	98.8							1.47	0.22	10	
20		11.87		11.87		33.269	D	25.270	269.6	0.057	5.80		253.5		94.6							1.76	0.06	20	10
30	ISL	11.59	D	11.58		33.366	D	25.399	257.6	0.081	5.42	D	235.9	D	87.8							1.25	0.10	30	
50		10.43		10.43		33.614	D	25.799	220.1	0.131	3.82		166.8		60.5							0.23	0.19	50	09
71		9.80		9.79		33.752	D	26.014	200.1	0.175	3.07		134.1		48.0							0.03	0.13	72	08
75	ISL	9.71	D	9.71		33.770	D	26.043	197.4	0.181	3.01	D	131.2	D	47.0							0.03	0.12	76	
100		9.43		9.42		33.864		26.164	186.4	0.231	2.68		117.1		41.6							0.02	0.10	101	07
121		9.18		9.16		33.894	D	26.228	180.7	0.270	2.71		118.5		41.8							0.01	0.11	122	06
125	ISL	9.15	D	9.14		33.902	D	26.239	179.7	0.276	2.68	D	116.5	D	41.3							0.01	0.11	126	
140		8.99		8.98		33.952	D	26.304	173.9	0.303	2.48		108.2		38.1							0.01	0.09	141	05
150	ISL	8.85	D	8.83		33.983	D	26.351	169.6	0.320	2.29	D	99.5	D	35.0							0.01	0.09	151	
200		8.35		8.33		34.054	D	26.484	157.8	0.402	1.86		81.2		28.2							0.01	0.08	202	04
250	ISL	7.89	D	7.87		34.112	D	26.600	147.6	0.479	1.53	D	66.4	D	22.9									252	
269		7.73		7.70		34.135	D	26.643	143.8	0.506	1.30		56.8		19.4									271	03
300	ISL	7.41	D	7.38		34.181	D	26.725	136.4	0.551	0.92	D	40.1	D	13.7									302	
380		6.45		6.41		34.194	D	26.867	123.5	0.654	0.62		27.1		9.0									383	02
400	ISL	6.16	D	6.12		34.196	D	26.906	119.9	0.681	0.58	D	25.4	D	8.4									403	
500	ISL	5.53	D	5.49		34.232	D	27.014	110.4	0.797	0.39	D	16.9	D	5.5									504	
515		5.51		5.47		34.239		27.022	109.8	0.810	0.36		15.6		5.1									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 1804 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
36 27.0 N	122 46.4 W	24/04/2018	0116	UTC	2935 m	280 07 kn	320 06 11	2	1016.2 mb	12.3 C	10.7 C		8/8	ST	089

DEPTH m		TEMP DEG C		POTTEMP DEG C		SALINITY		SIGMA THETA	SVA	DYN HT	OXYGEN ml/L		OXYGEN µmol/Kg		OXY PCT		SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		13.45		13.45		33.006	D	24.760	317.7	0.000	6.53	D	284.5	D	109.8							1.40	0.61	0	
2		13.45		13.45		33.006	D	24.760	317.7	0.003	6.53	D	284.5	D	109.8							1.40	0.61	2	12
10		13.21		13.21		33.003	D	24.806	313.5	0.029	6.42		280.8		107.5							1.05	0.60	10	11
19		13.00		13.00		33.000	D	24.846	310.0	0.057	6.52		284.9		108.6							1.61	0.87	19	10
20	ISL	13.00	D	13.00		33.000	D	24.845	310.1	0.060	6.51	D	283.7	D	108.5							1.58	0.85	20	
30	ISL	12.71	D	12.71		33.109	D	24.988	296.8	0.091	6.40	D	278.7	D	106.0							1.22	0.71	30	
50		10.34		10.33		33.567	D	25.778	222.0	0.143	4.41	D	192.1	D	69.7							0.51	0.43	50	09
70		9.71		9.70		33.774	D	26.046	196.9	0.185	3.34		146.1		52.2							0.10	0.28	71	08
75	ISL	9.72	D	9.71		33.798	D	26.063	195.4	0.195	2.78	D	121.0	D	43.4							0.08	0.26	76	
100		9.35		9.34		33.870		26.181	184.8	0.244	2.47		108.0		38.3							0.03	0.19	101	07
121		8.94		8.92		33.932	D	26.296	174.2	0.281	2.29		100.1		35.2							0.02	0.20	122	06
125	ISL	8.90	D	8.88		33.938	D	26.307	173.2	0.288	2.30	D	99.9	D	35.2							0.02	0.19	126	
140		8.77		8.76		33.976	D	26.357	168.8	0.314	2.09		91.1		31.9							0.01	0.17	141	05
150	ISL	8.72	D	8.71		33.985	D	26.372	167.5	0.331	2.05	D	89.1	D	31.3							0.01	0.17	151	
200		8.21		8.19		34.076	D	26.524	154.0	0.412	1.68		73.2		25.3							0.01	0.13	202	04
250	ISL	7.81	D	7.79		34.107	D	26.608	146.8	0.488	1.46	D	63.3	D	21.8									252	
269		7.63		7.60		34.122	D	26.647	143.4	0.516	1.29		56.5		19.3									271	03
300	ISL	7.37	D	7.34		34.141	D	26.699	138.8	0.560	1.12	D	48.8	D	16.6									302	
381		6.75		6.71		34.172	D	26.810	129.2	0.669	0.81		35.3		11.8									384	02
400	ISL	6.62	D	6.58		34.181	D	26.835	127.0	0.694	0.75	D	32.5	D	10.9									403	
500	ISL	5.79	D	5.75		34.219	D	26.972	114.7	0.816	0.45	D	19.7	D	6.5									504	
514		5.71		5.67		34.222		26.985	113.6	0.828	0.42		18.1		5.9									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 1804 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
36 7.1 N	123 29.3 W	24/04/2018	0617	UTC	3562 m	300 08 kn			1017.8 mb	12.1 C	10.5 C				090

DEPTH m		TEMP DEG C		POTTEMP DEG C		SALINITY		SIGMA THETA	SVA	DYN HT	OXYGEN ml/L		OXYGEN µmol/Kg		OXY PCT		SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		13.39		13.39		33.311		25.007	294.1	0.000	6.26		273.6		105.4							0.91	0.06	0	
3		13.39		13.39		33.311		25.007	294.2	0.009	6.26		273.6		105.4							0.91	0.06	3	12
10		13.28		13.28		33.312	D	25.030	292.2	0.025	6.26		273.5		105.1							0.83	0.12	10	11
20		13.13		13.13		33.310	D	25.059	289.8	0.054	6.33		276.6		106.0							0.90	0.19	20	10
30	ISL	13.10	D	13.10		33.309	D	25.065	289.5	0.084	6.22	D	270.9	D	104.1							0.78	0.19	30	
49		12.08		12.08		33.516	D	25.424	255.8	0.136	5.07		221.6		83.2							0.57	0.19	49	09
50	ISL	12.04	D	12.03		33.520	D	25.436	254.7	0.139	4.98	D	216.7	D	81.5							0.55	0.19	50	
70		11.15		11.14		33.584	D	25.649	234.9	0.188	4.21		183.8		67.6							0.21	0.15	71	08
75	ISL	10.78	D	10.77		33.624	D	25.747	225.6	0.199	3.89	D	169.4	D	62.1							0.18	0.14	76	
100		10.11		10.10		33.718		25.937	208.1	0.257	3.09		135.2		48.7							0.04	0.09	101	07
120		9.80		9.79		33.831	D	26.078	195.1	0.294	2.59		113.0		40.5							0.02	0.10	121	06
125	ISL	9.68	D	9.67		33.860	D	26.120	191.2	0.304	2.53	D	109.9	D	39.4							0.02	0.10	126	
140		9.56		9.54		33.917	D	26.186	185.2	0.332	2.34		102.3		36.4							0.01	0.08	141	05
150	ISL	9.42	D	9.40		33.967	D	26.247	179.6	0.351	2.18	D	94.8	D	33.8							0.01	0.10	151	
200		9.14		9.12		34.108	D	26.405	165.7	0.438	1.62		70.9		25.1							0.01	0.21	202	04
250	ISL	8.84	D	8.81		34.182	D	26.511	156.6	0.519	1.23	D	53.7	D	18.9									252	
270		8.69		8.66		34.200	D	26.550	153.2	0.550	1.13		49.2		17.2									272	03
300	ISL	8.46	D	8.43		34.216	D	26.599	149.1	0.596	1.03	D	44.7	D	15.6									302	
380		7.57		7.53		34.236	D	26.748	135.9	0.711	0.70		30.7		10.5									383	02
400	ISL	7.30	D	7.26		34.232	D	26.783	132.7	0.738	0.68	D	29.7	D	10.1									403	
500	ISL	6.21	D	6.16		34.223	D	26.923	119.8	0.866	0.51	D	22.2	D	7.4									504	
518		6.09		6.05		34.231		26.945	118.0	0.885	0.45		19.5		6.4									523	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 1804 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
35 47.1 N	124 11.7 W	24/04/2018	1132	UTC	3952 m	310 06 kn			1016.5 mb	11.7 C	9.8 C				091

DEPTH m		TEMP DEG C		POTTEMP DEG C		SALINITY		SIGMA THETA	SVA	DYN HT	OXYGEN ml/L		OXYGEN µmol/Kg		OXY PCT		SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		14.15		14.15		33.498		24.996	295.2	0.000	6.03		263.4		103.2							0.52	0.07	0	
2		14.15		14.15		33.498		24.996	295.2	0.006	6.03		263.4		103.2							0.52	0.07	2	12
10		14.15		14.14		33.499	D	24.998	295.2	0.027	6.00		262.0		102.6							0.46	0.17	10	11
20		14.00		14.00		33.494	D	25.025	293.0	0.056	6.02		263.0		102.7							0.64	0.09	20	10
30	ISL	13.98	D	13.97		33.494	D	25.031	292.7	0.086	5.96	D	259.6	D	101.6							0.71	0.13	30	
50		12.15		12.14		33.532	D	25.425	255.8	0.141	5.01		218.7		82.2							0.85	0.20	50	09
71		11.04		11.03		33.608	D	25.689	231.1	0.193	4.07		177.8		65.3							0.15	0.13	72	08
75	ISL	10.85	D	10.85		33.628	D	25.737	226.6	0.202	3.90	D	169.9	D	62.3							0.13	0.13	76	
100		10.16		10.14		33.735		25.942	207.6	0.258	3.11		136.0		49.0							0.04	0.10	101	07
120		9.68		9.67		33.822	D	26.090	193.9	0.297	2.86		125.1		44.7							0.03	0.11	121	06
125	ISL	9.59	D	9.58		33.852	D	26.129	190.3	0.307	2.67	D	116.2	D	41.6							0.03	0.10	126	
141		9.15		9.13		33.897	D	26.235	180.4	0.337	2.70		117.7		41.6							0.02	0.08	142	05
150	ISL	9.00	D	8.98		33.917	D	26.276	176.8	0.353	2.88	D	125.1	D	44.2							0.02	0.07	151	
200	ISL	8.39	D	8.37		34.017	D	26.449	161.2	0.438	2.27	D	98.9	D	34.5							0.00	0.04	202	
202		8.34		8.32		34.021	D	26.461	160.1	0.441	2.29		100.0		34.7							0.00	0.04	204	04
250	ISL	7.85	D	7.83		34.071	D	26.574	150.0	0.516	1.75	D	76.3	D	26.3									252	
270		7.70		7.67		34.085	D	26.608	147.1	0.546	1.61		70.4		24.1									272	03
300	ISL	7.30	D	7.27		34.104	D	26.680	140.6	0.590	1.32	D	57.3	D	19.5									302	
379		6.70		6.67		34.164	D	26.810	129.1	0.697	0.80		35.1		11.7									382	02
400	ISL	6.50	D	6.46		34.167	D	26.840	126.4	0.724	0.73	D	31.8	D	10.6									403	
500	ISL	5.81	D	5.77		34.237	D	26.984	113.6	0.846	0.41	D	17.7	D	5.8									504	
515		5.75		5.71		34.246		26.999	112.4	0.859	0.38		16.6		5.4									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 1804 STATION 66.7 90.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
35 27.2 N	124 54.4 W	24/04/2018	1634	UTC	4394 m	310 09 kn	300 05 07	2	1018.1 mb	12.5 C	10.0 C		8/8	SC	092

DEPTH m		TEMP DEG C		POTTEMP DEG C		SALINITY		SIGMA THETA	SVA	DYN HT	OXYGEN ml/L		OXYGEN µmol/Kg		OXY PCT		SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		14.01		14.01		33.463		24.999	294.9	0.000	6.06		264.7		103.4							0.36	0.09	0	
2		14.01		14.00		33.463		24.999	294.9	0.006	6.06		264.7		103.4							0.36	0.09	2	12
10		14.00		14.00		33.462	D	25.000	295.1	0.027	6.05		264.4		103.2							0.37	0.09	10	11
20		14.00		13.99		33.462	D	25.001	295.3	0.056	6.06		264.7		103.3							0.36	0.13	20	10
30	ISL	13.80	D	13.79		33.458	D	25.040	291.9	0.086	6.08	D	264.7	D	103.2							0.46	0.17	30	
50		13.71		13.71		33.452	D	25.054	291.2	0.145	6.06		264.9		102.8							0.64	0.26	50	09
69		11.64		11.63		33.331	D	25.363	262.1	0.198	5.47		239.1		88.8							0.34	0.17	70	08
75	ISL	11.68	D	11.67		33.429	D	25.433	255.6	0.214	5.11	D	222.6	D	83.0							0.28	0.15	76	
100		10.16		10.15		33.517		25.772	223.7	0.275	4.09		178.6		64.3							0.06	0.06	101	07
120		9.53		9.52		33.708	D	26.026	199.9	0.316	3.59		157.0		55.8							0.01	0.06	121	06
125	ISL	9.39	D	9.37		33.748	D	26.081	194.8	0.326	3.46	D	150.4	D	53.5							0.01	0.06	126	
141		9.07		9.05		33.809	D	26.180	185.6	0.357	3.38		147.6		51.9							0.01	0.06	142	05
150	ISL	8.91	D	8.90		33.856	D	26.242	179.9	0.374	3.19	D	139.0	D	49.0							0.01	0.06	151	
200		8.22		8.20		33.958	D	26.429	163.0	0.460	2.84		124.0		42.9							0.01	0.06	202	04
250	ISL	7.45	D	7.43		33.990	D	26.567	150.5	0.539	2.42	D	105.2	D	35.9									252	
269		7.24		7.22		33.994	D	26.600	147.5	0.568	2.30		100.5		34.0									271	03
300	ISL	6.77	D	6.74		34.006	D	26.675	140.6	0.613	1.98	D	86.0	D	28.9									302	
380		6.12		6.08		34.094	D	26.831	126.6	0.720	1.00		43.6		14.4									383	02
400	ISL	6.03	D	5.99		34.117	D	26.861	124.0	0.746	0.84	D	36.5	D	12.1									403	
500	ISL	5.54	D	5.50		34.185	D	26.976	114.1	0.866	0.51	D	22.1	D	7.2									504	
515		5.45		5.41		34.193		26.993	112.5	0.879	0.46		20.1		6.5									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 1804 STATION 70.0 51.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
36 10.8 N	121 44.0 W	23/04/2018	1119	UTC	313 m	300 03 kn			1014.6 mb	10.8 C	9.8 C				086

DEPTH m		TEMP DEG C		POTTEMP DEG C		SALINITY		SIGMA THETA	SVA	DYN HT	OXYGEN ml/L		OXYGEN µmol/Kg		OXY PCT		SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		10.70		10.70		33.749		25.857	213.5	0.000	4.59		200.7		73.3							1.87	0.40	0	
2		10.70		10.70		33.749		25.855	213.5	0.004	4.59		200.7		73.3							1.87	0.40	2	10
10		10.36		10.36		33.760	D	25.923	207.2	0.021	3.87		169.0		61.2							1.82	0.64	10	09
20		9.84		9.84		33.814	D	26.053	195.1	0.041	3.23		141.2		50.6							1.58	0.71	20	08
30	ISL	9.82	D	9.81		33.835	D	26.075	193.3	0.059	3.28	D	142.7	D	51.3							1.25	0.58	30	
50		9.41		9.41		33.881	D	26.178	184.0	0.098	2.70		118.0		41.9							0.59	0.31	50	07
70		9.24		9.23		33.911	D	26.230	179.4	0.135	2.53		110.6		39.1							0.27	0.28	71	06
75	ISL	9.24	D	9.23		33.911	D	26.229	179.6	0.143	2.53	D	110.1	D	39.1							0.27	0.32	76	
100		9.01		9.00		33.953		26.300	173.4	0.188	2.33		101.5		35.8							0.24A	0.50A	101	05
120		8.72		8.71		34.009	D	26.390	165.2	0.222	2.06		89.9		31.5							0.05	0.26	121	04
125	ISL	8.67	D	8.66		34.017	D	26.405	163.9	0.230	2.02	D	88.1	D	30.9							0.04	0.25	126	
140		8.60		8.58		34.033	D	26.429	161.9	0.254	1.95		85.2		29.7							0.03	0.21	141	03
150	ISL	8.57	D	8.56		34.037	D	26.437	161.4	0.270	1.94	D	84.3	D	29.5							0.03	0.20	151	
200		8.21		8.19		34.102	D	26.544	152.1	0.349	1.50		65.6		22.7							0.02	0.16	202	02
250	ISL	8.09	D	8.06		34.117	D	26.576	150.0	0.426	1.40	D	60.9	D	21.1									252	
270		8.05		8.02		34.120		26.583	149.6	0.454	1.36		59.3		20.5									272	01

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

RV BELL M SHIMADA CALCOFI CRUISE 1804 STATION 70.0 55.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
36 2.7 N	122 0.8 W	23/04/2018	0808	UTC	1297 m	330 15 kn			1014.8 mb	11.5 C	10.3 C				085

DEPTH m		TEMP DEG C		POTTEMP DEG C		SALINITY		SIGMA THETA	SVA	DYN HT	OXYGEN ml/L		OXYGEN µmol/Kg		OXY PCT		SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		11.30		11.30		33.693		25.704	227.8	0.000	5.34		233.4		86.3							2.01	0.53	0	
2		11.30		11.30		33.693		25.704	227.9	0.005	5.34		233.4		86.3							2.01	0.53	2	12
10		11.17		11.17		33.699	D	25.733	225.3	0.021	5.14		224.6		82.8							1.87	0.42	10	11
20		11.08		11.07		33.704	D	25.754	223.6	0.043	5.00		218.5		80.4							1.48	0.50	20	10
30	ISL	10.78	D	10.78		33.726	D	25.824	217.2	0.065	4.72	D	205.4	D	75.3							1.62	0.48	30	
50		10.47		10.46		33.756	D	25.904	210.1	0.109	4.34		189.7		68.9							1.90	0.43	50	09
70		9.73		9.72		33.831	D	26.088	193.0	0.149	2.83		123.8		44.2							0.32	0.37	71	08
75	ISL	9.66	D	9.65		33.848	D	26.113	190.7	0.159	2.78	D	120.8	D	43.3							0.28	0.36	76	
100		9.16		9.15		33.933		26.261	177.1	0.206	2.49		108.7		38.4							0.06	0.33	101	07
120		8.88		8.86		33.978	D	26.342	169.8	0.240	2.32		101.5		35.6							0.02	0.31	121	06
125	ISL	8.86	D	8.85		33.993	D	26.355	168.6	0.249	2.23	D	96.8	D	34.1							0.02	0.30	126	
140		8.72		8.70		34.027	D	26.406	164.1	0.274	1.97		86.0		30.1							0.02	0.26	141	05
150	ISL	8.50	D	8.48		34.022	D	26.436	161.4	0.290	2.09	D	90.9	D	31.8							0.02	0.25	151	
200	ISL	8.07	D	8.05		34.099	D	26.562	150.3	0.369	1.60	D	69.7	D	24.1							0.01	0.22	202	
201		8.05		8.03		34.097	D	26.563	150.2	0.370	1.61		70.4		24.3							0.01	0.22	203	04
250	ISL	7.54	D	7.51		34.125	D	26.661	141.6	0.442	1.34	D	58.1	D	19.9									252	
271		7.35		7.32		34.151	D	26.708	137.4	0.472	1.17		51.3		17.4									273	03
300	ISL	7.09	D	7.07		34.173	D	26.763	132.6	0.511	0.91	D	39.5	D	13.4									302	
379		6.51		6.47		34.208	D	26.870	123.3	0.613	0.61		26.6		8.9									382	02
400	ISL	6.39	D	6.35		34.216	D	26.893	121.3	0.639	0.57	D	24.8	D	8.3									403	
500	ISL	5.97	D	5.93		34.260	D	26.982	114.0	0.758	0.38	D	16.6	D	5.5									504	
516		5.92		5.88		34.258		26.987	113.7	0.772	0.37		16.1		5.3									521	01
600	ISL	5.57	D	5.51		34.299	D	27.065	107.1	0.870	0.28	D	12.3	D	4.0									605	

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 1804 STATION 70.0 60.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
35 52.6 N	122 22.0 W	23/04/2018	0421	UTC	3019 m	330 18 kn			1014.7 mb	12.5 C	11.0 C				084

DEPTH m		TEMP DEG C		POTTEMP DEG C		SALINITY		SIGMA THETA	SVA	DYN HT	OXYGEN ml/L		OXYGEN µmol/Kg		OXY PCT		SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		12.64		12.64		33.288		25.138	281.7	0.000	6.22		271.7		103.0							1.40	0.57	0	
3		12.64		12.64		33.288		25.138	281.8	0.009	6.22		271.7		103.0							1.40	0.57	3	12
10		12.64		12.64		33.288	D	25.138	282.0	0.024	6.23		272.5		103.3							1.48	0.55	10	11
20		12.46		12.45		33.286	D	25.173	278.9	0.052	6.14		268.4		101.4							1.54	0.66	20	10
30	ISL	12.44	D	12.43		33.317	D	25.202	276.4	0.080	6.08	D	265.0	D	100.4							1.14	0.51	30	
50	ISL	11.81	D	11.80		33.485	D	25.452	253.1	0.134	5.20	D	226.6	D	84.8							0.35	0.23	50	
51		11.79		11.78		33.488	D	25.458	252.6	0.136	5.25		229.3		85.5							0.31	0.21	51	09
69		11.02		11.01		33.569	D	25.661	233.7	0.180	4.34		189.5		69.6							0.10	0.13	70	08
75	ISL	10.57	D	10.56		33.621	D	25.781	222.3	0.194	4.08	D	177.7	D	64.8							0.08	0.12	76	
100		9.74		9.72		33.774		26.043	197.9	0.250	3.05		133.3		47.6							0.02	0.10	101	07
120		9.28		9.27		33.871	D	26.193	184.0	0.286	2.81		122.6		43.4							0.01	0.08	121	06
125	ISL	9.24	D	9.22		33.882	D	26.210	182.5	0.295	2.79	D	121.6	D	43.1							0.01	0.07	126	
140		8.97		8.96		33.935	D	26.294	174.8	0.322	2.65		115.7		40.7							0.01	0.05	141	05
150	ISL	8.82	D	8.81		33.965	D	26.341	170.6	0.339	2.52	D	109.7	D	38.6							0.01	0.05	151	
200	ISL	8.18	D	8.16		34.071	D	26.524	154.0	0.421	1.82	D	79.4	D	27.5							0.01	0.04	202	
201		8.15		8.13		34.075	D	26.531	153.3	0.423	1.78		77.9		26.9							0.01	0.04	203	04
250	ISL	7.78	D	7.76		34.118	D	26.621	145.5	0.496	1.39	D	60.6	D	20.9									252	
270		7.56		7.54		34.130	D	26.662	141.9	0.525	1.24		54.0		18.4									272	03
300	ISL	7.32	D	7.29		34.141	D	26.706	138.1	0.568	1.11	D	48.2	D	16.4									302	
380		6.71		6.68		34.183	D	26.823	127.9	0.675	0.72		31.5		10.5									383	02
400	ISL	6.43	D	6.39		34.171	D	26.852	125.3	0.701	0.71	D	31.1	D	10.4									403	
500	ISL	5.84	D	5.80		34.211	D	26.960	115.9	0.822	0.48	D	20.8	D	6.8									504	
515		5.66		5.62		34.236		27.002	111.9	0.837	0.42		18.3		6.0									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 1804 STATION 70.0 70.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
35 32.9 N	123 4.6 W	22/04/2018	2212	UTC	3821 m	320 25 kn	310 08 08	1	1015.5 mb	14.0 C	11.8 C		3/8	CS	083

DEPTH m		TEMP DEG C		POTTEMP DEG C		SALINITY		SIGMA THETA	SVA	DYN HT	OXYGEN ml/L		OXYGEN µmol/Kg		OXY PCT		SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		13.88		13.88		33.465		25.026	292.3	0.000	6.10		266.8		103.9							0.59	0.17	0	
2		13.88		13.88		33.465		25.026	292.3	0.006	6.10		266.8		103.9							0.59	0.17	2	12
10		13.89		13.89		33.466	D	25.025	292.7	0.027	6.10		266.7		103.9							0.60	0.19	10	11
19		13.84		13.84		33.466	D	25.037	291.8	0.053	6.10		266.7		103.8							0.65	0.16	19	10
20	ISL	13.84	D	13.83		33.467	D	25.038	291.8	0.056	6.08	D	264.7	D	103.3							0.65	0.17	20	
30	ISL	13.76	D	13.76		33.468	D	25.055	290.5	0.085	6.09	D	265.3	D	103.4							0.68	0.20	30	
50	ISL	13.70	D	13.69		33.468	D	25.069	289.8	0.144	6.08	D	264.9	D	103.1							0.75	0.27	50	
51		13.70		13.69		33.468	D	25.069	289.8	0.147	6.09		266.0		103.2							0.75	0.28	51	09
70		12.01		12.00		33.498	D	25.424	256.4	0.199	5.17		226.0		84.6							0.47	0.29	71	08
75	ISL	11.82	D	11.81		33.530	D	25.486	250.6	0.212	4.89	D	213.0	D	79.7							0.40	0.25	76	
99		10.00		9.99		33.589		25.855	215.8	0.269	4.01		175.4		62.9							0.06	0.08	100	07
100	ISL	9.98	D	9.97		33.603	D	25.868	214.6	0.270	4.01	D	174.7	D	62.9							0.06	0.08	101	
120		9.83		9.81		33.788	D	26.039	198.8	0.312	2.92		127.4		45.6							0.02	0.12	121	06
125	ISL	9.75	D	9.73		33.806	D	26.067	196.2	0.322	2.89	D	125.7	D	45.1							0.02	0.12	126	
141		9.41		9.40		33.886	D	26.186	185.3	0.353	2.64		115.2		40.9							0.01	0.10	142	05
150	ISL	9.29	D	9.27		33.911	D	26.224	181.7	0.369	2.57	D	111.9	D	39.8							0.01	0.10	151	
200		8.69		8.67		34.026	D	26.411	164.9	0.457	2.10		91.9		32.1							0.01	0.08	202	04
250	ISL	7.97	D	7.94		34.090	D	26.572	150.3	0.536	1.64	D	71.1	D	24.6									252	
270		7.69		7.66		34.099	D	26.620	146.0	0.566	1.51		65.9		22.5									272	03
300	ISL	7.33	D	7.30		34.122	D	26.689	139.7	0.609	1.28	D	55.7	D	19.0									302	
380		6.66		6.63		34.157	D	26.810	129.1	0.715	0.85		37.2		12.4									383	02
400	ISL	6.53	D	6.49		34.168	D	26.836	138.4	0.742	0.77	D	33.5	D	11.2									403	
500	ISL	5.99	D	5.95		34.231	D	26.957	116.4	0.880	0.44	D	19.0	D	6.3									504	
516		5.94		5.90		34.243		26.973	115.1	0.887	0.40		17.7		5.8									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 1804 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
35 12.9 N	123 46.8 W	22/04/2018	1557	UTC	4069 m	340 25 kn	380 12 09	1	1018.1 mb	12.9 C	10.9 C		3/8	ST	082

DEPTH m		TEMP DEG C		POTTEMP DEG C		SALINITY		SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg		OXY PCT		SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		13.85		13.85		33.228		24.850	309.1	0.000	6.01	262.9		102.1							0.16	0.03	0	
3		13.85		13.85		33.228		24.850	309.1	0.009	6.01	262.9		102.1							0.16	0.03	3	12
9		13.85		13.84		33.226	D	24.850	309.4	0.024	6.02	263.3		102.3							0.15	0.04	9	11
10	ISL	13.85	D	13.84		33.226	D	24.849	309.4	0.027	6.01	D261.7		D102.0							0.15	0.04	10	
20	ISL	13.85	D	13.84		33.226	D	24.850	309.7	0.058	6.02	D262.1		D102.2							0.15	0.04	20	
25		13.84		13.84		33.226	D	24.850	309.8	0.073	6.02	263.2		102.2							0.15	0.04	25	10
30	ISL	13.85	D	13.84		33.226	D	24.850	310.0	0.089	6.01	D261.9		D102.1							0.21	0.08	30	
50	ISL	13.83	D	13.83		33.402	D	24.990	297.3	0.150	6.04	D263.0		D102.6							0.47	0.23	50	
61		13.93		13.93		33.591	D	25.116	285.7	0.183	5.92	258.8		101.0							0.61	0.32	62	09
75	ISL	11.99	D	11.98		33.273	D	25.255	272.6	0.222	6.15	D267.9		D100.5							0.45	0.26	76	
87		12.38		12.37		33.576	D	25.415	257.7	0.254	5.50	240.3		90.8							0.31	0.20	88	08
100	ISL	10.52	D	10.51		33.404	D	25.621	238.2	0.287	4.83	D210.1	D	76.5							0.11	0.09	101	
101		10.39		10.38		33.369		25.617	238.5	0.291	5.06	221.3		80.0							0.10	0.08	102	07
125		9.75		9.73		33.684	D	25.971	205.3	0.342	3.85	168.4		60.1							0.01	0.06	126	06
140		9.44		9.42		33.737	D	26.064	196.8	0.373	3.51	153.2		54.3							0.01	0.05	141	05
150	ISL	9.10	D	9.09		33.808	D	26.174	186.4	0.392	3.31	D143.8	D	50.9							0.01	0.05	151	
200	ISL	8.23	D	8.21		33.957	D	26.426	163.2	0.480	2.79	D121.4	D	42.1							0.00	0.04	202	
202		8.22		8.20		33.959	D	26.430	162.9	0.483	2.78	121.3		41.9							0.00	0.04	204	04
250	ISL	7.59	D	7.57		33.994	D	26.550	152.1	0.560	2.35	D102.3	D	35.0									252	
270		7.31		7.28		33.997	D	26.593	148.2	0.590	2.27	99.2		33.6									272	03
300	ISL	6.87	D	6.84		34.006	D	26.661	142.0	0.634	1.99	D 86.4	D	29.1									302	
380		6.05		6.02		34.040	D	26.796	129.8	0.743	1.38	60.1		19.8									383	02
400	ISL	5.98	D	5.94		34.078	D	26.836	126.3	0.769	1.12	D 48.7	D	16.1									403	
500	ISL	5.34	D	5.30		34.156	D	26.976	113.7	0.891	0.58	D 25.1	D	8.2									504	
516		5.29		5.25		34.176		26.998	111.8	0.906	0.50	22.0		7.1									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 1804 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
34 53.0 N	124 28.9 W	22/04/2018	0919	UTC	4323 m	350 23 kn			1019.4 mb	12.8 C	10.2 C				081

DEPTH m		TEMP DEG C		POTTEMP DEG C		SALINITY		SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg		OXY PCT		SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		13.80		13.80		33.237		24.866	307.6	0.000	6.06	264.9		102.9							0.14	0.03	0	
3		13.80		13.80		33.237		24.866	307.6	0.009	6.06	264.9		102.9							0.14	0.03	3	12
10		13.81		13.80		33.235	D	24.865	308.0	0.027	6.04	264.1		102.6							0.14	0.04	10	11
20	ISL	13.81	D	13.81		33.237	D	24.865	308.2	0.057	6.01	D262.1		D102.1							0.14	0.03	20	
25		13.82		13.81		33.237	D	24.865	308.4	0.073	6.05	264.2		102.6							0.14	0.03	25	10
30	ISL	13.81	D	13.81		33.236	D	24.866	308.5	0.088	6.02	D262.2		D102.1							0.18	0.06	30	
50	ISL	13.61	D	13.60		33.383	D	25.022	294.2	0.149	6.00	D261.6		D101.6							0.35	0.15	50	
62		13.17		13.17		33.354	D	25.087	288.3	0.185	5.96	260.5		99.9							0.46	0.21	63	09
75	ISL	12.86	D	12.85		33.412	D	25.195	278.4	0.222	5.75	D250.6	D	95.8							0.38	0.24	76	
87		12.21		12.20		33.427	D	25.333	265.5	0.255	5.53	241.7		90.9							0.32	0.27	88	08
100	ISL	11.72	D	11.71		33.528	D	25.503	249.6	0.288	5.30	D230.8	D	86.2							0.26	0.15	101	
102		11.58		11.57		33.526		25.528	247.3	0.296	5.24	228.9		84.9							0.25	0.13	103	07
125		10.63		10.61		33.634	D	25.783	223.4	0.348	4.80	209.8		76.3							0.06	0.06	126	06
140		9.92		9.90		33.635	D	25.906	211.9	0.381	4.27	186.6		66.9							0.02	0.04	141	05
150	ISL	9.58	D	9.57		33.704	D	26.015	201.6	0.401	3.70	D160.8	D	57.4							0.02	0.04	151	
200	ISL	8.71	D	8.69		33.928	D	26.331	172.5	0.496	3.55	D154.6	D	54.2							0.00	0.04	202	
202		8.69		8.67		33.930	D	26.336	172.0	0.499	3.55	155.1		54.2							0.00	0.04	204	04
250	ISL	7.79	D	7.76		33.977	D	26.509	156.1	0.579	2.71	D118.0	D	40.6									252	
270		7.61		7.58		33.993	D	26.548	152.7	0.610	2.47	108.0		36.8									272	03
300	ISL	7.27	D	7.24		34.024	D	26.620	146.2	0.655	2.03	D 88.5	D	30.1									302	
380		6.30		6.27		34.048	D	26.771	132.4	0.767	1.36	59.5		19.7									383	02
400	ISL	6.20	D	6.16		34.074	D	26.805	129.4	0.794	1.14	D 49.7	D	16.5									403	
500	ISL	5.47	D	5.42		34.157	D	26.963	115.2	0.917	0.61	D 26.6	D	8.7									504	
514		5.25		5.20		34.151		26.984	113.1	0.930	0.56	24.6		7.9									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 1804 STATION 73.3 50.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
35 38.7 N	121 15.7 W	21/04/2018	0619	UTC	37 m	300 06 kn			1021.3 mb	10.6 C	9.8 C				076

DEPTH m		TEMP DEG C		POTTEMP DEG C		SALINITY		SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg		OXY PCT		SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		10.26		10.26		33.817		25.984	201.2	0.000	4.20	183.5		66.4		24.3	1.72	21.3	0.22	0.16	1.93	0.40	0	
2		10.26		10.26		33.817		25.984	201.2	0.004	4.20	183.5		66.4		24.3	1.72	21.3	0.22	0.16	1.93	0.40	2	04
5		10.27		10.26		33.818	D	25.984	201.3	0.008	4.25	185.6		67.1		24.3	1.72	21.3	0.21	0.21	1.82	0.38	5	03
10		10.23		10.23		33.820	D	25.992	200.7	0.018	4.14	181.0		65.4		24.3	1.71	21.4	0.21	0.16	1.96	0.39	10	02
20		9.71		9.71		33.880		26.127	188.1	0.040	2.81	122.8		43.9		28.7	1.96	24.9	0.22	0.14	0.85	0.39	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 1804 STATION 73.3 55.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
35 28.7 N	121 36.6 W	21/04/2018	0937	UTC	984 m	330 23 kn			1019.7 mb	11.9 C	10.0 C				077

DEPTH		TEMP		POTTEMP		SALINITY		SIGMA	SVA	DYN HT	OXYGEN		OXYGEN		OXY		SIO3*	PO4*	NO3*	NO2*	NH4*	CHL-A	PHAEO	PRES	SAMP
m		DEG C		DEG C				THETA			ml/L		µmol/Kg		PCT		µM	µM	µM	µM	µM	µg/L	µg/L	db	
0		13.47		13.47		33.482		25.123	283.1	0.000	6.08		265.7		102.7		2.5	0.37	1.9	0.08	0.03	2.29	0.63	0	
2		13.47		13.47		33.482		25.123	283.1	0.006	6.08		265.7		102.7		2.5	0.37	1.9	0.08	0.00	2.29	0.63	2	12
10		13.48		13.47		33.481	D	25.122	283.5	0.026	6.09		266.2		102.9		2.3	0.35	1.7	0.07	0.00	1.95	0.27	10	11
20		13.19		13.19		33.497	D	25.192	277.1	0.054	6.03		263.2		101.1		3.0	0.41	2.6	0.10	0.00	2.45	0.69	20	10
30	ISL	11.93	D	11.92		33.551	D	25.479	250.0	0.080	6.03	D	262.7	D	98.6		7.3	0.70	6.8	0.14	0.00	3.63	0.71	30	
50		10.94		10.94		33.658	D	25.744	225.3	0.128	5.04		220.0		80.7		15.8	1.28	15.1	0.21	0.48	5.99	0.74	50	09
70		10.26		10.25		33.710	D	25.905	210.4	0.172	3.83		167.2		60.4		20.7	1.60	20.4	0.21	0.00	0.70	0.48	71	08
75	ISL	9.98	D	9.97		33.735	D	25.971	204.3	0.183	3.35	D	146.0	D	52.6		22.1	1.66	21.3	0.00	0.00	0.59	0.45	76	
100		9.28		9.26		33.899		26.215	181.5	0.233	2.61		113.8		40.3		28.8	1.98	26.2	0.00	0.00	0.03	0.27	101	07
120		8.91		8.90		33.970	D	26.331	170.9	0.267	2.37		103.4		36.3		32.1	2.10	27.8	0.00	0.00	0.07	0.34	121	06
125	ISL	8.80	D	8.78		33.984	D	26.359	168.3	0.275	2.38	D	103.7	D	36.5		32.6	2.11	28.0	0.00	0.00	0.06	0.33	126	
140		8.69		8.67		33.995	D	26.385	166.1	0.300	2.33		101.6		35.5		34.2	2.15	28.6	0.03	0.08	0.02	0.28	141	05
150	ISL	8.56	D	8.55		34.015	D	26.421	162.9	0.317	2.24	D	97.6	D	34.2		35.5	2.19	29.1	0.03	0.00	0.02	0.27	151	
200		8.05		8.03		34.076	D	26.547	151.7	0.396	1.82		79.6		27.4		42.1	2.38	31.7	0.03	0.00	0.02	0.24	202	04
250	ISL	7.68	D	7.65		34.157	D	26.666	141.2	0.470	1.19	D	51.6	D	17.7		49.1	2.60	33.7	0.00	0.00			252	
270		7.55		7.52		34.168	D	26.694	138.8	0.498	1.09		47.5		16.2		51.9	2.69	34.6	0.00	0.00			272	03
300	ISL	7.29	D	7.26		34.171	D	26.734	135.5	0.540	0.98	D	42.8	D	14.6		55.3	2.76	35.6	0.00	0.00			302	
379		6.73		6.69		34.210	D	26.843	126.0	0.644	0.65		28.6		9.6		64.2	2.93	38.3	0.00	0.00			382	02
400	ISL	6.59	D	6.55		34.221	D	26.870	123.7	0.670	0.59	D	25.7	D	8.6		66.5	2.97	38.7	0.00	0.00			403	
500	ISL	6.03	D	5.98		34.280	D	26.992	113.2	0.790	0.36	D	15.8	D	5.2		77.3	3.14	40.6	0.00	0.00			504	
514		5.93		5.88		34.286		27.009	111.7	0.802	0.33		14.2		4.7		78.9	3.16	40.9	0.00	0.00			518	01

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

RV BELL M SHIMADA CALCOFI CRUISE 1804 STATION 73.3 60.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
35 18.5 N	121 58.6 W	21/04/2018	1353	UTC	2478 m	340 23 kn	330 08 06	1	1019.8 mb	11.9 C	10.4 C		3/8	SC	078

DEPTH		TEMP		POTTEMP		SALINITY		SIGMA	SVA	DYN HT	OXYGEN		OXYGEN		OXY		SIO3*	PO4*	NO3*	NO2*	NH4*	CHL-A	PHAEO	PRES	SAMP
m		DEG C		DEG C				THETA			ml/L		µmol/Kg		PCT		µM	µM	µM	µM	µM	µg/L	µg/L	db	
0		13.12		13.12		33.395		25.127	282.7	0.000	6.16		269.3		103.2		2.6	0.41	1.8	0.13	0.26	0.45	0.17	0	
2		13.12		13.11		33.395		25.127	282.7	0.006	6.16		269.3		103.2		2.6	0.41	1.8	0.13	0.26	0.45	0.17	2	12
10		13.11		13.10		33.394	D	25.129	282.8	0.026	6.17		269.8		103.4		2.1	0.38	1.6	0.12	0.17	0.47	0.15	10	11
20		13.09		13.09		33.393	D	25.131	282.9	0.054	6.17		269.5		103.2		2.1	0.39	1.7	0.13	0.16	0.50	0.14	20	10
30	ISL	13.03	D	13.03		33.394	D	25.145	281.8	0.083	6.16	D	268.5	D	103.0		3.9	0.52	3.6	0.19	0.25	0.56	0.20	30	
50		12.18		12.17		33.463	D	25.365	261.5	0.137	5.37		234.9		88.3		7.4	0.79	7.5	0.32	0.43	0.68	0.34	50	09
70		10.51		10.50		33.604	D	25.778	222.5	0.186	3.63		158.8		57.6		16.9	1.46	19.1	0.05	0.00	0.10	0.13	71	08
75	ISL	10.42	D	10.41		33.623	D	25.809	219.6	0.197	3.53	D	153.9	D	55.9		18.2	1.52	19.9	0.05	0.00	0.09	0.13	76	
100		9.57		9.56		33.806		26.095	193.0	0.250	2.97		129.6		46.2		24.6	1.81	24.0	0.03	0.00	0.03	0.11	101	07
121		9.31		9.30		33.888	D	26.202	183.2	0.289	2.70		117.8		41.7		27.9	1.95	25.6	0.00	0.00	0.01	0.09	122	06
125	ISL	9.27	D	9.26		33.897	D	26.216	182.0	0.296	2.69	D	117.0	D	41.6		28.3	1.96	25.8	0.00	0.00	0.01	0.09	126	
140		9.14		9.12		33.921	D	26.257	178.4	0.324	2.61		113.9		40.2		29.6	2.00	26.7	0.03	0.00	0.02	0.10	141	05
150	ISL	8.99	D	8.97		33.952	D	26.305	174.0	0.341	2.44	D	106.2	D	37.5		31.1	2.05	27.3	0.03	0.00	0.01	0.09	151	
199		8.32		8.29		34.047	D	26.485	157.7	0.423	1.98		86.4		29.9		38.5	2.30	30.5	0.04	0.00	0.00	0.05	201	04
200	ISL	8.31	D	8.28		34.048	D	26.487	157.5	0.425	1.97	D	85.8	D	29.9		38.7	2.30	30.6	0.00	0.00			202	
250	ISL	7.83	D	7.81		34.117	D	26.613	146.3	0.502	1.48	D	64.5	D	22.2		46.5	2.53	33.1	0.00	0.00			252	
271		7.66		7.63		34.139	D	26.656	142.6	0.532	1.25		54.5		18.6		49.8	2.62	34.2	0.00	0.00			273	03
300	ISL	7.34	D	7.31		34.141	D	26.703	138.4	0.573	1.12	D	48.7	D	16.6		53.7	2.69	35.4	0.00	0.00			302	
381		6.55		6.52		34.162	D	26.828	127.3	0.682	0.78		33.9		11.3		64.4	2.90	38.6	0.00	0.00			384	02
400	ISL	6.65	D	6.61		34.221	D	26.862	124.5	0.706	0.58	D	25.1	D	8.4		66.9	2.94	39.0	0.00	0.00			403	
500	ISL	5.81	D	5.77		34.240	D	26.987	113.4	0.826	0.40	D	17.4	D	5.7		79.9	3.12	41.4	0.00	0.00			504	
515		5.62		5.58		34.233		27.004	111.7	0.839	0.38		16.4		5.3		81.9	3.15	41.7	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 1804 STATION 73.3 70.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
34 58.6 N	122 40.1 W	21/04/2018	1909	UTC	4062 m	350 23 kn	330 06 08	1	1021.0 mb	13.1 C	11.4 C		4/8	ST	079

DEPTH		TEMP		POTTEMP		SALINITY		SIGMA	SVA	DYN HT	OXYGEN		OXYGEN		OXY		SIO3*	PO4*	NO3*	NO2*	NH4*	CHL-A	PHAEO	PRES	SAMP
m		DEG C		DEG C				THETA			ml/L		µmol/Kg		PCT		µM	µM	µM	µM	µM	µg/L	µg/L	db	
0		14.28		14.28		33.474		24.950	299.5	0.000	6.01		262.9		103.2		1.0	0.26	0.2	0.02	0.00	1.36	0.25	0	
2		14.28		14.28		33.474		24.950	299.6	0.006	6.01		262.9		103.2		1.0	0.26	0.2	0.00	0.00	1.36	0.25	2	12
10		14.28		14.27		33.474	D	24.952	299.7	0.027	6.04		264.0		103.7		1.3	0.27	0.3	0.00	0.06	1.28	0.41	10	11
20		14.24		14.23		33.473	D	24.960	299.2	0.057	6.12		267.3		104.9		0.8	0.24	0.0	0.00	0.00	1.29	0.45	20	10
30	ISL	14.20	D	14.20		33.476	D	24.970	298.6	0.087	5.98	D	260.7	D	102.5		4.3	0.51	4.0	0.00	0.00	1.09	0.49	30	
50		11.45		11.44		33.581	D	25.593	239.7	0.142	4.76		208.1		77.1		11.2	1.05	12.1	0.31	0.00	0.70	0.58	50	09
70		10.45		10.44		33.687	D	25.853	215.4	0.188	3.42		149.5		54.2		19.7	1.60	20.5	0.04	0.00	0.15	0.19	71	08
75	ISL	10.30	D	10.30		33.701	D	25.889	212.0	0.198	3.25	D	141.5	D	51.4		20.5	1.64	21.0	0.04	0.00	0.13	0.20	76	
100		9.97		9.96		33.791		26.018	200.4	0.251	2.89		126.1		45.3		24.4	1.83	23.3	0.03	0.00	0.03	0.22	101	07
120		9.48		9.47		33.857	D	26.151	188.1	0.289	2.73		119.4		42.4		26.5	1.92	25.2	0.00	0.00	0.03	0.14	121	06
125	ISL	9.38	D	9.37		33.879	D	26.183	185.1	0.299	2.67	D	116.2	D	41.4		27.3	1.95	25.5	0.00	0.00	0.03	0.14	126	
138		9.27		9.25		33.916	D	26.231	180.8	0.323	2.53		110.5		39.1		29.3	2.01	26.4	0.00	0.00	0.02	0.16	139	05
150	ISL	9.06	D	9.05		33.951	D	26.292	175.2	0.344	2.44	D	106.1	D	37.5		30.9	2.06	27.1	0.00	0.00	0.03	0.14	151	
200		8.54		8.52		34.059	D	26.460	160.2	0.429	1.93		84.4		29.4		37.3	2.29	30.2	0.00	0.00	0.04	0.09	202	04
250	ISL	7.88	D	7.86		34.099	D	26.591	148.4	0.507	1.54	D	67.0	D	23.1		44.3	2.46	32.6	0.00	0.00			252	
269		7.68		7.65		34.105	D	26.626	145.3	0.535	1.46		63.6		21.7		47.0	2.53	33.5	0.03	0.00			271	03
300	ISL	7.29	D	7.27		34.108	D	26.684	140.2	0.579	1.32	D	57.5	D	19.5		51.4	2.62	34.7	0.00	0.00			302	
381		6.50		6.46		34.124	D	26.806	129.4	0.690	0.96		41.7		13.9		62.8	2.84	38.0	0.00	0.00			384	02
400	ISL	6.25	D	6.21		34.127	D	26.841	126.1	0.714	0.84	D	36.7	D	12.2		65.4	2.88	38.6	0.00	0.00			403	
500	ISL	5.82	D	5.77		34.231	D	26.979	114.1	0.835	0.42	D	18.1	D	6.0		79.2	3.12	41.4	0.00	0.00			504	
515		5.68		5.64		34.233		26.997	112.4	0.848	0.38		16.4		5.4		81.3	3.15	41.8	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 1804 STATION 73.3 80.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
34 38.3 N	123 22.1 W	22/04/2018	0059	UTC	4158 m	350 20 kn	350 08 10	1	1019.1 mb	13.8 C	11.7 C		3/8	ST	080

DEPTH m		TEMP DEG C	POTTEMP DEG C	SALINITY		SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg		OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		14.05	14.05	33.394		24.937	300.7	0.000	6.04	263.9		103.1	1.3	0.27	0.5	0.02	0.07	0.27	0.09	0	
2		14.05	14.04	33.394		24.937	300.8	0.006	6.04	263.9		103.1	1.3	0.27	0.5	0.00	0.07	0.27	0.09	2	12
10		14.05	14.05	33.395	D	24.938	301.0	0.027	6.03	263.7		103.0	0.8	0.25	0.0	0.00	0.00	0.26	0.08	10	11
20	ISL	14.05	D 14.05	33.395	D	24.938	301.3	0.058	6.04	D263.3	D	103.2	0.7	0.25	0.0	0.00	0.00	0.30	0.05	20	
25		14.04	14.03	33.405	D	24.949	300.4	0.073	6.03	263.7		103.0	0.6	0.25	0.0	0.00	0.00	0.32	0.03	25	10
30	ISL	14.03	D 14.03	33.412	D	24.956	299.9	0.088	6.04	D263.2	D	103.1	0.7	0.26	0.0	0.00	0.00	0.36	0.07	30	
50	ISL	13.86	D 13.85	33.414	D	24.994	296.9	0.148	6.05	D263.6	D	102.9	0.9	0.28	0.1	0.00	0.00	0.49	0.21	50	
62		13.35	13.34	33.345	D	25.045	292.3	0.184	6.09	266.1		102.4	1.1	0.29	0.1	0.08	0.08	0.57	0.29	63	09
75	ISL	12.33	D 12.32	33.322	D	25.227	275.3	0.221	5.76	D251.1	D	94.9	4.9	0.59	5.1	0.06	0.00	0.36	0.21	76	
87		11.97	11.96	33.506	D	25.439	255.4	0.253	4.92	215.1		80.5	8.4	0.87	9.8	0.04	0.00	0.17	0.14	88	08
100	ISL	11.07	D 11.06	33.551	D	25.640	236.5	0.285	4.33	D188.7	D	69.6	13.6	1.24	15.4	0.03	0.00	0.08	0.12	101	
102		11.03	11.02	33.568		25.659	234.7	0.291	3.99	174.2		63.9	14.4	1.30	16.2	0.03	0.00	0.07	0.12	103	07
125	ISL	10.25	D 10.23	33.694	D	25.896	212.6	0.341	3.20	D139.5	D	50.6	20.4	1.65	21.1	0.03	0.00	0.03	0.08	126	
126		10.22	10.21	33.699	D	25.904	211.9	0.344	3.22	140.6		50.7	20.6	1.67	21.4	0.03	0.00	0.02	0.08	127	06
142		9.92	9.90	33.769	D	26.011	202.0	0.377	2.93	128.0		45.9	22.9	1.79	23.3	0.00	0.00	0.02	0.08	143	05
150	ISL	9.74	D 9.72	33.819	D	26.080	195.6	0.393	2.76	D120.0	D	43.0	23.9	1.82	23.7	0.00	0.00	0.02	0.08	151	
200	ISL	9.11	D 9.09	33.943	D	26.280	177.5	0.487	2.52	D109.8	D	38.9	29.9	2.02	26.8	0.00	0.00	0.01	0.07	202	
201		9.11	9.09	33.943	D	26.281	177.4	0.489	2.51	109.7		38.7	30.0	2.02	26.8	0.00	0.00	0.01	0.07	203	04
250	ISL	8.45	D 8.42	34.031	D	26.453	161.8	0.573	2.25	D 98.0	D	34.2	36.8	2.17	29.7	0.00	0.00			252	
269		7.98	7.95	34.015	D	26.511	156.4	0.603	2.26	98.6		33.9	39.4	2.23	30.8	0.00	0.00			271	03
300	ISL	7.54	D 7.51	34.023	D	26.582	149.9	0.651	2.15	D 93.5	D	32.0	45.0	2.37	32.6	0.00	0.00			302	
382		6.55	6.52	34.074	D	26.759	133.8	0.768	1.22	53.3		17.8	59.8	2.73	37.3	0.00	0.00			385	02
400	ISL	6.43	D 6.40	34.092	D	26.789	131.2	0.792	1.07	D 46.3	D	15.4	63.0	2.78	37.9	0.00	0.00			403	
500	ISL	5.29	D 5.25	34.122	D	26.955	115.6	0.917	0.70	D 30.4	D	9.9	81.3	3.04	41.4	0.00	0.00			504	
515		5.19	5.14	34.130		26.974	113.9	0.930	0.64	27.9		9.0	84.1	3.08	41.9	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 1804 STATION 76.7 49.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
35 5.2 N	120 46.5 W	21/04/2018	0051	UTC	70 m	300 25 kn	300 05 08	1	1018.9 mb	11.4 C	10.3 C		1/8	ST	075

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0	10.65	10.65	33.752	25.867	212.3	0.000	4.58	200.0	72.9	20.1	1.53	18.1	0.21	0.20	2.84	0.56	0	
2	10.65	10.65	33.752	25.867	212.4	0.004	4.58	200.0	72.9	20.1	1.53	18.1	0.21	0.20	2.84	0.56	2	09
5	10.64	10.64	33.752	25.868	212.3	0.011	4.59	200.4	73.1	19.6	1.48	18.1	0.20	0.14	2.72	0.47	5	08
10	10.63	10.63	33.753	25.870	212.3	0.021	4.56	199.0	72.5	19.6	1.49	18.2	0.20	0.16	2.83	0.49	10	06
10	10.63	10.63	33.753	25.870	212.3	0.022											10	07
20	10.63	10.63	33.756	25.874	212.2	0.042	4.54	198.3	72.2	19.9	1.49	18.2	0.20	0.15	2.74	0.72	20	05
30	10.52	10.52	33.760	25.896	210.3	0.064	4.39	191.9	69.8	20.2	1.52	18.7	0.21	0.19	2.71	0.78	30	04
41	10.29	10.28	33.772	25.947	205.7	0.086	4.07	177.8	64.3	21.3	1.63	19.5	0.21	0.42	2.61	0.59	41	03
50	9.81	9.80	33.818	26.063	194.8	0.104	3.29	143.6	51.4	25.5	1.85	22.3	0.22	0.71	1.64	0.98	50	02
60	9.41	9.40	33.867	26.169	185.0	0.123	2.76	120.4	42.7	29.3	2.05	24.5	0.20	0.69	0.66	0.94	60	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 1804 STATION 76.7 51.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
35 1.4 N	120 55.1 W	20/04/2018	2210	UTC	238 m	310 20 kn	300 05 08	0	1020.1 mb	12.7 C	11.1 C	06 m	0/8		074

DEPTH m		TEMP DEG C	POTTEMP DEG C	SALINITY		SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg		OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		11.55	11.55	33.675		25.645	233.4	0.000	5.88	256.7		95.4	8.8	0.87	9.8	0.24	0.20	8.62	1.52	0	
2		11.55	11.55	33.675		25.645	233.5	0.005	5.88	256.7		95.4	8.8	0.87	9.8	0.24	0.20	8.62	1.52	2	16
10		11.39	11.38	33.679		25.678	230.5	0.023	5.77	252.0		93.3	10.8	1.01	10.9	0.24	0.21	8.59	1.01	10	14
10		11.39	11.38	33.680		25.679	230.5	0.023												10	15
20		11.23	11.22	33.686		25.713	227.5	0.046	5.41	236.2		87.2	12.6	0.94	12.4	0.23	0.45	6.62	1.04	20	13
30		10.45	10.44	33.732		25.887	211.1	0.068	3.94	D171.5	D	62.5	19.6	1.51	18.3	0.26	0.78	0.82	0.58	30	12
41		10.16	10.16	33.759		25.958	204.7	0.091	3.52	D153.2	D	55.4	21.4	1.65	20.7	0.26	0.25	0.42	0.37	41	11
50		9.71	9.70	33.760		26.034	197.6	0.109	3.22	140.7		50.3	22.4	1.73	22.3	0.13	0.10	0.23	0.40	50	10
60		9.58	9.58	33.800		26.086	192.8	0.129	3.00	D130.6	D	46.7	23.9	1.81	23.7	0.06	0.00	0.06	0.44	60	09
71		9.40	9.39	33.843		26.151	186.9	0.150	2.95	128.9		45.7	25.3	1.85	24.4	0.05	0.00	0.03	0.29	72	08
75	ISL	9.22	D 9.21	33.871	D	26.202	182.1	0.156	2.93	D127.6	D	45.3	26.1	1.88	24.8	0.05	0.00	0.03	0.29	76	
86		9.05	9.04	33.913		26.262	176.6	0.177	2.75	D119.5	D	42.3	28.1	1.95	25.9	0.06	0.00	0.02	0.28	87	07
100	ISL	8.85	D 8.84	33.974	D	26.342	169.4	0.200	2.42	D105.4	D	37.1	31.6	2.07	27.3	0.05	0.00	0.03	0.30	101	
101		8.82	8.81	33.979		26.351	168.5	0.203	2.40	105.0		36.8	31.8	2.08	27.4	0.05	0.00	0.03	0.30	102	06
118		8.76	8.74	34.000		26.377	166.4	0.231	2.29	100.2		35.1	33.0	2.14	28.1	0.05	0.00	0.04	0.38	119	05
125	ISL	8.60	D 8.58	34.044	D	26.437	160.8	0.242	2.15	D 93.4	D	32.7	35.3	2.22	28.8	0.06	0.00	0.04	0.38	126	
139		8.44	8.43	34.083		26.492	155.8	0.265	1.73	75.4		26.2	39.9	2.38	30.3	0.07	0.05	0.03	0.38	140	04
150	ISL	8.35	D 8.33	34.117	D	26.534	152.1	0.281	1.51	D 65.7	D	22.9	41.2	2.43	30.7	0.07	0.06	0.03	0.37	151	
170		8.26	8.24	34.130		26.557	150.2	0.312	1.42	D 61.7	D	21.5	43.6	2.52	31.3	0.07	0.07	0.02	0.35	171	03
200		8.10	8.08	34.167		26.612	145.6	0.357	1.21	53.0		18.3	46.9	2.62	32.4	0.06	0.05	0.02	0.28	202	02
220		7.97	7.95	34.175		26.637	143.5	0.386	1.13	49.1		16.9	48.5	2.65	32.9	0.05	0.00			222	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 1804 STATION 76.7 55.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
34 53.5 N	121 11.8 W	20/04/2018	1844 UTC	563 m	330 16 kn	340 05 08	1	1022.4 mb	13.5 C	12.7 C	11 m	7/8	SC	073

DEPTH m		TEMP DEG C		POTTEMP DEG C		SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg		OXY PCT		SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		13.50		13.50		33.467	25.107	284.6	0.000	6.12	267.5		103.4		2.1	0.35	1.2	0.11	0.21	1.36	0.37	0	
2	A	13.50		13.49		33.467	25.107	284.7	0.006	6.12	267.5		103.4		2.1	0.35	1.2	0.11	0.21	1.36	0.37	2	24
6	A	13.49		13.49		33.467	25.108	284.6	0.017	6.10	D265.9		D103.1		2.0	0.34	1.2	0.10	0.10	1.49	0.39	6	23
8	A	13.48		13.47		33.468	25.112	284.4	0.023	6.11	266.9		103.1		2.0	0.34	1.1	0.10	0.08	1.45	0.37	8	21
8		13.48		13.47		33.472	25.115	284.1	0.023													8	22
10	ISL	13.47	D	13.47		33.465	D 25.110	284.6	0.026	6.11	D266.3		D103.2		2.0	0.34	1.1	0.10	0.08	1.46	0.39	10	
17	A	13.44		13.44		33.467	25.119	284.0	0.048	6.10	D265.5		D102.8		2.0	0.34	1.2	0.09	0.09	1.50	0.46	17	20
20	ISL	13.41	D	13.41		33.464	D 25.122	283.7	0.054	6.08	D265.0		D102.6		2.0	0.34	1.2	0.09	0.10	1.56	0.45	20	
24		13.40		13.40		33.465	25.126	283.5	0.068	6.08	265.8		102.5		1.9	0.34	1.2	0.10	0.11	1.63	0.44	24	19
30	A	13.35		13.34		33.464	25.136	282.7	0.085	6.07	D264.5		D102.2		2.0	0.36	1.4	0.11	0.16	1.78	0.55	30	18
36	A	13.31		13.31		33.463	25.143	282.3	0.102	6.06	D263.8		D101.9		2.1	0.38	1.6	0.12	0.18	1.94	0.57	36	17
44		13.28		13.27		33.461	25.149	281.9	0.125	6.04	D262.9		D101.4		2.2	0.38	1.8	0.13	0.16	1.84	0.50	44	16
50		13.23		13.23		33.462	25.158	281.2	0.142	6.00	262.0		100.7		2.3	0.39	2.0	0.12	0.15	1.75	0.46	50	15
60		13.11		13.10		33.465	25.186	278.9	0.170	5.82	D253.7	D	97.5		3.0	0.43	2.7	0.12	0.12	1.30	0.40	60	14
70		12.96		12.95		33.458	25.210	276.8	0.197	5.71	D248.7	D	95.3		3.4	0.47	3.3	0.12	0.09	1.26	0.39	71	13
75	ISL	12.76	D	12.75		33.462	D 25.253	272.9	0.210	5.67	D247.1	D	94.3		5.8	0.65	6.2	0.12	0.00	0.97	0.33	76	
86		11.17		11.15		33.527	25.604	239.6	0.239	4.49	D195.5	D	72.2		11.2	1.05	12.5	0.10	0.00	0.33	0.21	87	12
100		10.69		10.68		33.551	25.706	230.1	0.272	4.16	182.0		66.3		13.8	1.23	15.6	0.05	0.00	0.15	0.15	101	11
120		9.31		9.29		33.801	26.135	189.6	0.314	3.25	142.1		50.3		23.9	1.74	23.6	0.00	0.00	0.02	0.05	121	10
125	ISL	8.95	D	8.93		33.888	D 26.260	177.7	0.322	3.05	D132.9	D	46.9		25.0	1.77	24.1	0.00	0.00	0.01	0.06	126	
140		8.87		8.86		33.898	26.280	176.1	0.350	2.99	130.8		45.9		28.4	1.87	25.6	0.00	0.00	0.01	0.06	141	09
150	ISL	8.78	D	8.77		33.928	D 26.318	172.7	0.367	2.87	D124.9	D	43.9		30.3	1.94	26.5	0.00	0.00	0.01	0.05	151	
169		8.43		8.41		33.989	26.421	163.2	0.400	2.55	D111.1	D	38.7		33.9	2.06	28.1	0.00	0.00	0.01	0.04	170	08
200		8.34		8.32		34.054	26.486	157.6	0.449	2.10	91.7		31.8		37.8	2.25	29.8	0.00	0.00	0.01	0.05	202	07
230		7.80		7.78		34.080	26.587	148.3	0.495	1.58	D 68.9	D	23.7		43.6	2.40	32.0	0.00	0.00			232	06
250	ISL	7.66	D	7.64		34.127	D 26.645	143.2	0.525	1.39	D 60.5	D	20.8		46.8	2.52	33.1	0.00	0.00			252	
270		7.50		7.47		34.143	26.681	140.0	0.553	1.24	53.9		18.4		50.1	2.63	34.2	0.00	0.00			272	05
300	ISL	7.41	D	7.38		34.188	D 26.730	135.9	0.595	0.94	D 40.9	D	14.0		54.0	2.73	35.1	0.00	0.00			302	
321		7.26		7.22		34.204	26.765	132.9	0.623	0.81	D 35.4	D	12.0		56.8	2.80	35.8	0.00	0.00			324	04
380		6.73		6.70		34.217	26.848	125.6	0.699	0.66	28.7		9.6		64.5	2.93	37.6	0.00	0.00			383	03
400	ISL	6.64	D	6.60		34.226	D 26.868	123.9	0.725	0.60	D 26.0	D	8.7		66.3	2.96	37.9	0.00	0.00			403	
440		6.39		6.35		34.242	26.915	119.9	0.773	0.50	D 21.8	D	7.3		69.8	3.02	38.7	0.00	0.00			444	02
500	ISL	5.83	D	5.78		34.297	D 27.030	109.3	0.844	0.31	D 13.5	D	4.5		82.0	3.17	39.8		0.00			504	
516		5.71		5.67		34.308	27.052	107.3	0.859	0.26	11.4		3.7		85.2	3.21	40.1	0.06	0.00			520	01

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

RV BELL M SHIMADA CALCOFI CRUISE 1804 STATION 76.7 60.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
34 43.4 N	121 32.9 W	20/04/2018	1443 UTC	940 m	340 19 kn	300 06 07	1	1021.9 mb	12.5 C	10.7 C	13 m	7/8	SC	072

DEPTH m		TEMP DEG C		POTTEMP DEG C		SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg		OXY PCT		SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		14.21		14.21		33.397	24.905	303.8	0.000	5.97	260.9		102.3		0.9	0.24	0.0	0.02	0.03	0.48	0.13	0	
2		14.21		14.21		33.397	24.905	303.9	0.006	5.97	260.9		102.3		0.9	0.24	0.0	0.00	0.00	0.48	0.13	2	23
10		14.21		14.21		33.396	24.905	304.2	0.030	5.98	261.3		102.4		1.0	0.23	0.0	0.00	0.00	0.48	0.13	10	22
20	ISL	14.21	D	14.21		33.396	D 24.905	304.5	0.058	5.96	D259.6		D102.1		0.9	0.23	0.0	0.00	0.00	0.47	0.12	20	
26		14.21		14.21		33.397	24.906	304.5	0.079	5.97	D259.9		D102.2		0.9	0.23	0.0	0.00	0.00	0.47	0.12	26	21
30	ISL	14.22	D	14.21		33.396	D 24.905	304.8	0.089	5.94	D258.8		D101.8		0.9	0.23	0.0	0.00	0.00	0.47	0.12	30	
40		14.22		14.21		33.397	24.907	304.9	0.122	5.96	D259.5		D102.0		0.8	0.22	0.0	0.00	0.00	0.49	0.13	40	20
50		14.21		14.20		33.397	24.908	305.1	0.152	5.98	261.3		102.4		0.7	0.22	0.0	0.00	0.00	0.47	0.12	50	19
63		13.15		13.14		33.373	25.107	286.5	0.191	5.75	D250.4	D	96.3		2.3	0.36	1.1	0.26	0.06	0.89	0.39	64	18
74		12.37		12.36		33.436	25.309	267.5	0.221	5.46	238.8		90.1		5.2	0.59	5.2	0.13	0.00	0.43	0.29	75	17
75	ISL	12.16	D	12.15		33.425	D 25.341	264.4	0.223	5.32	D231.6	D	87.3		5.6	0.62	5.7	0.13	0.00	0.41	0.28	76	
86		11.04		11.03		33.440	25.558	243.9	0.252	4.66	D203.1	D	74.7		9.4	0.95	11.2	0.03	0.00	0.16	0.15	87	16
100	ISL	10.43	D	10.41		33.569	D 25.766	224.3	0.283	3.95	D172.2	D	62.6		14.6	1.30	16.6	0.00	0.00	0.06	0.07	101	
101		10.36		10.35		33.565	25.775	223.6	0.287	4.00	174.9		63.2		15.0	1.33	17.0	0.00	0.00	0.06	0.07	102	15
112		10.06		10.04		33.628	25.876	214.1	0.311	3.67	D159.9	D	57.7		17.6	1.46	19.0	0.00	0.00	0.03	0.04	113	14
125	ISL	9.62	D	9.60		33.743	D 26.039	198.8	0.337	3.43	D149.4	D	53.4		21.6	1.64	21.7	0.00	0.00	0.01	0.04	126	
126		9.65		9.63		33.750	26.040	198.8	0.340	3.45	150.5		53.7		21.9	1.65	21.9	0.00	0.00	0.01	0.04	127	13
140		9.20		9.19		33.792	26.145	189.0	0.367	3.32	144.8		51.1		23.7	1.70	23.0	0.00	0.00	0.01	0.03	141	12
150	ISL	9.05	D	9.04		33.862	D 26.224	181.7	0.385	3.25	D141.4	D	50.0		25.2	1.74	23.7	0.00	0.00	0.01	0.03	151	
170		8.88		8.86		33.895	26.278	177.0	0.422	3.10	135.2		47.4		28.2	1.82	25.0	0.00	0.00	0.00	0.03	171	11
200		8.27		8.24		34.007	26.460	160.0	0.472	2.50	109.2		37.8		35.5	2.09	28.4	0.00	0.00	0.00	0.02	202	10
231		7.83		7.81		34.029	26.543	152.6	0.521	2.11	D 91.7	D	31.6		41.7	2.25	30.7	0.00	0.00			233	09
250	ISL	7.66	D	7.64		34.065	D 26.596	147.8	0.550	1.88	D 81.6	D	28.0		44.5	2.34	31.7	0.00	0.00			252	
270		7.52		7.49		34.071	26.622	145.6	0.579	1.73	75.4		25.7		47.5	2.43	32.8	0.00	0.00			272	08
300	ISL	7.25	D	7.22		34.085	D 26.671	141.3	0.623	1.49	D 64.7	D	22.0		52.1	2.57	34.4	0.00	0.00			302	
320		6.97		6.94		34.102	26.724	136.5	0.650	1.24	D 54.1	D	18.3		55.3	2.66	35.5	0.00	0.00			323	07
380		6.62		6.59		34.182	26.835	126.7	0.729	0.73	31.8		10.6		65.0	2.87	37.6	0.00	0.00			383	06
400	ISL	6.59	D	6.56		34.214	D 26.865	124.2	0.755	0.62	D 26.8	D	9.0		66.5	2.90	38.0	0.00	0.00			403	
440		6.40		6.36		34.223	26.898	121.5	0.803	0.55	D 23.7	D	7.9		69.5	2.97	38.8	0.00	0.00			444	05
500	ISL	6.05	D	6.01		34.269	D 26.980	114.4	0.876	0.38	D 16.6	D	5.5		75.9	3.08	39.8	0.00	0.00			504	
516		6.00		5.95		34.277	26.993	113.3	0.892	0.36	15.9		5.2		77.6	3.11	40.1	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;

RV BELL M SHIMADA CALCOFI CRUISE 1804 STATION 76.7 70.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
34 23.1 N	122 14.8 W	20/04/2018	0851	UTC	4017 m	340 21 kn			1021.8 mb	12.7 C	10.4 C				071

DEPTH m		TEMP DEG C		POTTEMP DEG C		SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L		OXYGEN µmol/Kg		OXY PCT		SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		14.62		14.62		33.448	24.859	308.2	0.000	5.94		259.5		102.6		1.7	0.23	0.0	0.02	0.05	0.31	0.08	0	
3		14.62		14.61		33.448	24.859	308.3	0.009	5.94		259.5		102.6		1.7	0.23	0.0	0.00	0.05	0.31	0.08	3	23
10		14.62		14.62		33.449	24.859	308.5	0.031	5.92		258.6		102.3		1.4	0.22	0.0	0.00	0.00	0.32	0.07	10	22
20	ISL	14.62	D	14.62		33.447	D 24.858	309.0	0.057	5.90	D	257.1	D	102.0		1.3	0.22	0.0	0.00	0.00	0.30	0.10	20	
25		14.63		14.62		33.449	24.860	308.9	0.077	5.92		258.6		102.3		1.2	0.22	0.0	0.00	0.00	0.29	0.11	25	21
30	ISL	14.62	D	14.62		33.446	D 24.858	309.2	0.089	5.88	D	256.2	D	101.6		1.2	0.22	0.0	0.00	0.00	0.30	0.10	30	
40		14.62		14.62		33.445	24.858	309.6	0.124	5.88	D	256.2	D	101.6		1.2	0.21	0.0	0.00	0.00	0.32	0.08	40	20
50		14.58		14.57		33.439	24.864	309.4	0.154	5.86	D	255.3	D	101.1		1.1	0.21	0.0	0.00	0.00	0.43	0.04	50	19
62		12.65		12.65		33.264	25.120	285.1	0.190	6.11		267.1		101.3		1.9	0.32	0.5	0.18	0.07	1.24	0.28	63	18
74		12.03		12.02		33.299	25.267	271.4	0.224	5.64	D	245.8	D	92.3		4.0	0.52	3.9	0.07	0.00	0.59	0.33	75	17
75	ISL	12.09	D	12.08		33.317	D 25.270	271.1	0.224	5.67	D	246.9	D	92.8		4.1	0.53	4.1	0.06	0.00	0.57	0.32	76	
86		11.62		11.61		33.335	25.372	261.7	0.256	5.50		240.2		89.1		5.2	0.68	5.9	0.03	0.00	0.26	0.17	87	16
100		10.63		10.62		33.438	25.629	237.4	0.291	4.83		210.9		76.6		9.5	0.95	11.3	0.00	0.00	0.06	0.08	101	15
111		10.06		10.04		33.537	25.805	220.8	0.316	4.17	D	181.7	D	65.5		15.0	1.30	16.6	0.00	0.00	0.04	0.05	112	14
125		9.74		9.73		33.679	25.968	205.6	0.346	3.72		162.6		58.1		19.8	1.53	20.3	0.00	0.00	0.01	0.04	126	13
141		9.33		9.32		33.813	26.141	189.5	0.377	3.26		142.6		50.5		24.7	1.74	23.4	0.00	0.00	0.00	0.04	142	12
150	ISL	9.15	D	9.13		33.867	D 26.214	182.7	0.392	3.03	D	131.7	D	46.6		26.2	1.78	24.1	0.00	0.00	0.00	0.04	151	
170		8.75		8.73		33.932	26.327	172.2	0.430	2.99	D	130.2	D	45.7		29.6	1.86	25.5	0.00	0.00	0.00	0.04	171	11
200		8.30		8.28		33.970	26.426	163.3	0.480	2.85		124.4		43.1		34.4	1.99	27.3	0.00	0.00	0.00	0.03	202	10
232		7.95		7.92		34.005	26.507	156.0	0.531	2.39	D	103.9	D	35.9		39.4	2.18	29.4	0.00	0.20			234	09
250	ISL	7.76	D	7.74		34.021	D 26.548	152.4	0.558	2.22	D	96.7	D	33.2		42.0	2.25	30.5	0.00	0.00			252	
269		7.55		7.52		34.030	26.586	149.1	0.587	2.06		90.2		30.7		44.8	2.33	31.8	0.00	0.00			271	08
300	ISL	7.17	D	7.14		34.057	D 26.660	142.3	0.632	1.70	D	73.8	D	25.0		49.5	2.47	33.4	0.00	0.00			302	
318		7.14		7.11		34.073	26.678	140.9	0.658	1.50	D	65.4	D	22.2		52.3	2.55	34.3	0.00	0.06			321	07
380		6.49		6.45		34.110	26.796	130.3	0.742	1.03		45.1		15.0		63.0	2.81	37.4	0.00	0.00			383	06
400	ISL	6.40	D	6.36		34.123	D 26.818	128.4	0.769	0.93	D	40.5	D	13.5		65.7	2.86	38.1	0.00	0.00			403	
439		6.10		6.06		34.165	26.889	122.0	0.817	0.62	D	27.1	D	9.0		71.1	2.96	39.4	0.00	0.00			443	05
500	ISL	5.85	D	5.80		34.224	D 26.969	115.0	0.890	0.44	D	19.0	D	6.2		77.8	3.08	40.5	0.00	0.00			504	
517		5.77		5.73		34.236	26.989	113.4	0.909	0.40		17.6		5.8		79.6	3.11	40.8	0.00	0.00			521	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 1804 STATION 76.7 80.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
34 3.2 N	122 56.4 W	20/04/2018	0331	UTC	4233 m	340 21 kn			1022.1 mb	12.9 C	9.9 C				070

DEPTH m		TEMP DEG C		POTTEMP DEG C		SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L		OXYGEN µmol/Kg		OXY PCT		SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		14.26		14.26		33.300	24.820	311.9	0.000	6.01		262.8		103.0		1.2	0.24	0.0	0.00	0.00	0.21	0.05	0	
3		14.27		14.27		33.300	24.819	312.1	0.009	6.01		262.8		103.1		1.2	0.24	0.0	0.00	0.00	0.21	0.05	3	20
10		14.27		14.27		33.301	24.820	312.2	0.031	6.04		263.9		103.5		1.1	0.23	0.0	0.00	0.00	0.21	0.04	10	19
20	ISL	14.27	D	14.27		33.300	D 24.819	312.6	0.058	6.05	D	263.5	D	103.7		1.1	0.24	0.0	0.00	0.00	0.21	0.04	20	
25		14.27		14.27		33.301	24.820	312.7	0.078	6.03		263.6		103.4		1.1	0.24	0.0	0.00	0.00	0.21	0.04	25	18
30	ISL	14.28	D	14.27		33.302	D 24.820	312.8	0.090	6.06	D	263.9	D	103.8		1.1	0.24	0.0	0.00	0.00	0.21	0.05	30	
40		14.28		14.28		33.302	24.819	313.2	0.125	6.03	D	262.7	D	103.4		1.1	0.23	0.0	0.00	0.00	0.21	0.05	40	17
50		13.78		13.77		33.270	24.899	305.9	0.156	6.15	D	267.8	D	104.3		1.3	0.24	0.0	0.00	0.00	0.30	0.10	50	16
62		12.39		12.38		33.267	25.173	280.0	0.191	6.05		264.5		99.7		2.5	0.36	1.1	0.30	0.00	0.82	0.35	63	15
75		12.36		12.35		33.379	25.267	271.5	0.227	5.69	D	247.6	D	93.7		4.7	0.54	4.5	0.06	0.00	0.32	0.20	76	14
87		11.24		11.23		33.413	25.500	249.4	0.258	5.20		227.4		83.8		7.4	0.78	8.3	0.00	0.00	0.12	0.10	88	13
100		10.41		10.40		33.388	25.628	237.4	0.290	4.87		212.9		77.0		9.9	1.00	11.8	0.00	0.00	0.07	0.08	101	12
112		10.07		10.05		33.521	25.791	222.2	0.318	4.28	D	186.3	D	67.2		15.1	1.29	16.6	0.00	0.00	0.02	0.05	113	11
125		9.79		9.77		33.668	25.953	207.1	0.346	3.67		160.2		57.3		19.9	1.55	20.5	0.00	0.00	0.01	0.06	126	10
140		9.46		9.44		33.766	26.084	194.9	0.376	3.32		144.9		51.4		23.3	1.71	22.8	0.00	0.00	0.01	0.04	141	09
150	ISL	9.30	D	9.28		33.841	D 26.169	187.0	0.392	3.17	D	137.7	D	48.9		25.4	1.77	23.8	0.00	0.00	0.01	0.04	151	
170		8.90		8.88		33.930	26.302	174.6	0.431	2.94	D	127.7	D	45.0		29.7	1.90	25.8	0.00	0.00	0.01	0.04	171	08
200		8.24		8.22		33.983	26.446	161.4	0.482	2.74		119.7		41.4		35.7	2.02	27.9	0.00	0.00	0.00	0.03	202	07
230		7.83		7.81		33.998	26.519	154.8	0.529	2.40	D	104.5	D	35.9		40.6	2.18	30.2	0.00	0.00			232	06
250	ISL	7.70	D	7.67		34.006	D 26.545	152.6	0.558	2.30	D	99.9	D	34.3		43.4	2.28	31.4	0.00	0.00			252	
270		7.48		7.45		34.024	26.591	148.5	0.590	1.99		86.9		29.5		46.2	2.37	32.5	0.00	0.00			272	05
300	ISL	7.10	D	7.07		34.030	D 26.649	143.3	0.633	1.81	D	78.7	D	26.6		50.5	2.47	33.8	0.00	0.00			302	
320		6.90		6.87		34.035	26.681	140.5	0.662	1.65	D	71.6	D	24.1		53.3	2.53	34.7	0.00	0.00			323	04
380		6.28		6.24		34.094	26.810	128.7	0.743	1.00		43.9		14.5		66.6	2.83	38.3	0.00	0.00			383	03
400	ISL	6.07	D	6.04		34.097	D 26.839	126.1	0.768	0.97	D	42.0	D	13.9		69.8	2.87	38.8	0.00	0.00			403	
440		5.61		5.58		34.101	26.899	120.5	0.818	0.86	D	37.2	D	12.2		76.2	2.94	39.9	0.00	0.00			444	02
500	ISL	5.37	D	5.33		34.179	D 26.991	112.4	0.888	0.51	D	22.2	D	7.2		84.1	3.08	41.4	0.00	0.00			504	
515		5.38		5.33		34.206	27.012	110.6	0.904	0.41		18.0		5.8		86.1	3.12	41.8	0.00	0.00			519	01

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

RV BELL M SHIMADA CALCOFI CRUISE 1804 STATION 76.7 90.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
33 43.5 N	123 38.3 W	19/04/2018	2148	UTC	4255 m	320 19 kn	310 05 06	1	1023.7 mb	14.1 C	10.6 C	19 m	1/8	ST	069

DEPTH m		TEMP DEG C	POTTEMP DEG C	SALINITY		SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		14.29	14.29	33.323		24.832	310.8	0.000	5.98	261.2	102.5	1.8	0.24	0.0	0.01	0.05	0.12	0.03	0	
2		14.29	14.29	33.323		24.832	310.8	0.006	5.98	261.2	102.5	1.8	0.24	0.0	0.00	0.05	0.12	0.03	2	20
10	ISL	14.26 D	14.26	33.317 D		24.833	311.0	0.028	5.94	D258.9	D101.9	1.7	0.23	0.0	0.00	0.00	0.12	0.02	10	
11		14.25	14.25	33.318		24.837	310.6	0.034	5.97	261.2	102.4	1.7	0.23	0.0	0.00	0.00	0.12	0.02	11	19
20	ISL	14.22 D	14.21	33.315 D		24.842	310.4	0.059	5.92	D257.9	D101.4	1.7	0.23	0.0	0.00	0.00	0.12	0.02	20	
25		14.22	14.21	33.324		24.850	309.9	0.078	5.96	260.5	102.1	1.7	0.23	0.0	0.00	0.00	0.12	0.02	25	18
30	ISL	14.21 D	14.21	33.320 D		24.847	310.3	0.091	5.92	D257.9	D101.4	1.7	0.23	0.0	0.00	0.00	0.12	0.03	30	
41		14.19	14.18	33.321		24.853	310.0	0.127	5.93	D258.3	D101.4	1.7	0.23	0.0	0.00	0.00	0.12	0.03	41	17
50		14.12	14.11	33.325		24.872	308.6	0.155	5.94	D258.9	D101.6	1.7	0.22	0.0	0.00	0.00	0.15	0.04	50	16
62		13.75	13.74	33.388		24.997	297.0	0.191	5.99	262.0	101.7	1.9	0.22	0.0	0.00	0.00	0.27	0.12	63	15
75		12.87	12.86	33.279		25.089	288.4	0.229	5.95	D259.3	D 99.1	2.5	0.35	1.1	0.25	0.00	0.60	0.35	76	14
87		12.50	12.48	33.517		25.348	264.2	0.263	5.54	242.1	91.6	4.0	0.46	3.7	0.05	0.00	0.29	0.23	88	13
100		11.85	11.83	33.468		25.433	256.3	0.296	5.35	233.8	87.2	5.2	0.59	5.6	0.03	0.00	0.16	0.17	101	12
112		11.31	11.30	33.438		25.509	249.3	0.327	5.20	D226.6	D 83.9	6.4	0.72	7.6	0.00	0.00	0.11	0.12	113	11
125		10.60	10.58	33.487		25.674	233.7	0.358	4.82	210.7	76.5	9.9	0.97	11.6	0.00	0.00	0.05	0.05	126	10
140		9.99	9.97	33.543		25.822	219.9	0.392	4.41	192.8	69.1	14.3	1.23	15.5	0.00	0.00	0.02	0.03	141	09
150	ISL	9.77 D	9.75	33.641 D		25.935	209.3	0.413	3.94	D171.5	D 61.5	17.3	1.35	17.6	0.00	0.00	0.01	0.04	151	
170		9.26	9.24	33.763		26.115	192.5	0.454	3.68	D160.0	D 56.8	23.2	1.60	21.9	0.00	0.00	0.00	0.04	171	08
200		8.67	8.65	33.912		26.325	173.0	0.509	3.43	149.9	52.3	29.3	1.76	24.6	0.00	0.00	0.00	0.03	202	07
230		8.22	8.19	33.957		26.430	163.4	0.559	3.28	D142.6	D 49.5	33.5	1.86	26.2	0.00	0.00			232	06
250	ISL	7.84 D	7.82	33.978 D		26.502	156.8	0.592	3.01	D130.8	D 45.0	37.5	1.98	27.7	0.00	0.00			252	
269		7.62	7.59	33.984		26.540	153.5	0.621	2.78	121.4	41.4	41.2	2.09	29.2	0.00	0.00			271	05
300	ISL	7.24 D	7.21	34.009 D		26.614	146.7	0.668	2.29	D 99.5	D 33.8	46.8	2.24	31.2	0.00	0.00			302	
321		6.89	6.86	33.998		26.653	143.2	0.698	2.17	D 94.2	D 31.7	50.7	2.34	32.5	0.00	0.00			324	04
381		6.36	6.32	34.052		26.767	132.9	0.781	1.39	60.6	20.1	61.9	2.67	36.8	0.00	0.00			384	03
400	ISL	6.15 D	6.11	34.084 D		26.819	128.0	0.807	1.11	D 48.4	D 16.0	65.3	2.75	37.7	0.00	0.00			403	
441		5.95	5.91	34.124		26.877	123.0	0.858	0.79	D 34.1	D 11.3	72.7	2.92	39.4	0.00	0.00			445	02
500	ISL	5.42 D	5.38	34.160 D		26.970	114.5	0.929	0.58	D 25.0	D 8.1	82.6	3.02	41.2	0.00	0.00			504	
515		5.22	5.18	34.138		26.976	113.8	0.945	0.62	27.3	8.8	85.1	3.04	41.7	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 1804 STATION 76.7 100.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
33 22.8 N	124 19.4 W	19/04/2018	1604	UTC	4590 m	340 14 kn	330 04 06	1	1023.1 mb	13.2 C	9.3 C	22 m	4/8	CU	068

DEPTH m		TEMP DEG C	POTTEMP DEG C	SALINITY		SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		15.43	15.43	33.591		24.792	314.5	0.000	5.78	252.6	101.6	1.8	0.19	0.0	0.01	0.02	0.10	0.02	0	
2	A	15.43	15.43	33.591		24.793	314.6	0.006	5.78	252.6	101.6	1.8	0.19	0.0	0.00	0.00	0.10	0.02	2	24
10		15.43	15.43	33.597		24.798	314.3	0.032	5.80	253.3	101.9	1.8	0.19	0.1	0.00	0.00	0.11	0.02	10	22
10		15.43	15.43	33.590		24.793	314.8	0.032											10	23
13	A	15.43	15.43	33.593		24.795	314.7	0.041	5.76	D251.1	D101.3	1.8	0.19	0.0	0.00	0.00	0.10	0.02	13	21
16	A	15.43	15.43	33.592		24.794	315.0	0.050	5.79	252.9	101.7	1.8	0.19	0.0	0.00	0.00	0.11	0.02	16	20
20	ISL	15.42 D	15.42	33.590 D		24.794	315.0	0.060	5.75	D250.8	D101.1	1.8	0.19	0.0	0.00	0.00	0.11	0.02	20	
30	ISL	15.43 D	15.42	33.591 D		24.794	315.4	0.092	5.75	D250.5	D101.1	1.8	0.19	0.0	0.00	0.00	0.11	0.02	30	
33	A	15.43	15.42	33.590		24.795	315.5	0.104	5.76	D250.8	D101.2	1.8	0.19	0.0	0.00	0.00	0.11	0.02	33	19
42		15.43	15.42	33.591		24.796	315.7	0.132	5.78	252.6	101.6	1.8	0.19	0.0	0.00	0.00	0.11	0.02	42	18
50	ISL	15.43 D	15.42	33.590 D		24.795	316.0	0.156	5.74	D250.3	D101.0	1.8	0.19	0.0	0.00	0.00	0.11	0.02	50	
51		15.42	15.42	33.590		24.796	315.9	0.161	5.75	D250.4	D101.0	1.8	0.19	0.0	0.00	0.00	0.11	0.02	51	17
60	A	15.43	15.42	33.589		24.795	316.3	0.189	5.80	253.5	101.9	1.8	0.19	0.0	0.00	0.00	0.11	0.02	60	16
74	A	14.17	14.16	33.427		24.942	302.7	0.233	5.91	D257.5	D101.1	2.0	0.23	0.0	0.00	0.00	0.33	0.20	75	15
75	ISL	14.14 D	14.13	33.429 D		24.949	302.0	0.234	5.88	D256.2	D100.6	2.0	0.24	0.0		0.00	0.34	0.21	76	
85		13.98	13.97	33.462		25.008	296.6	0.266	5.72	D249.1	D 97.5	2.4	0.29	0.4	0.23	0.00	0.44	0.34	86	13
85		13.98	13.97	33.452		25.000	297.4	0.266											86	14
95		14.13	14.11	33.618		25.099	288.4	0.295	5.65	247.0	96.8	2.6	0.29	1.0	0.22	0.00	0.29	0.26	96	12
100	ISL	13.65 D	13.64	33.628 D		25.205	278.4	0.308	5.56	D242.3	D 94.3	2.8	0.32	1.6	0.17	0.00	0.25	0.25	101	
110		12.69	12.68	33.651		25.414	258.6	0.336	5.52	D240.5	D 91.8	3.4	0.37	2.6	0.07	0.00	0.17	0.23	111	11
124		11.74	11.73	33.612		25.566	244.3	0.371	5.41	236.6	88.1	4.6	0.52	5.0	0.03	0.00	0.09	0.12	125	10
125	ISL	11.73 D	11.71	33.614 D		25.570	243.9	0.373	5.38	D234.4	D 87.6	4.6	0.53	5.1		0.00	0.09	0.12	126	
141		11.33	11.32	33.636		25.660	235.7	0.412	5.29	231.3	85.5	5.9	0.62	6.8	0.00	0.00	0.06	0.08	142	09
150	ISL	10.97 D	10.95	33.650 D		25.737	228.5	0.432	5.18	D225.6	D 83.0	8.5	0.79	9.4	0.00	0.00	0.04	0.06	151	
170		10.18	10.16	33.677		25.895	213.8	0.477	4.40	D191.6	D 69.3	14.3	1.16	15.2	0.00	0.00	0.01	0.02	171	08
200		9.53	9.51	33.848		26.138	191.1	0.538	4.00	174.9	62.2	20.8	1.42	19.5	0.00	0.00	0.00	0.02	202	07
230		8.70	8.68	33.936		26.339	172.3	0.592	3.11	D135.1	D 47.4	30.5	1.85	25.7	0.00	0.00			232	06
250	ISL	8.10 D	8.07	33.962 D		26.452	161.7	0.626	3.20	D139.3	D 48.2	34.0	1.90	26.5	0.00	0.00			252	
270		7.85	7.83	33.965		26.491	158.3	0.658	3.09	135.0	46.3	37.6	1.95	27.4	0.00	0.00			272	05
300	ISL	7.52 D	7.49	34.009 D		26.574	150.7	0.706	2.27	D 98.9	D 33.8	43.6	2.19	30.3	0.00	0.00			302	
321		7.34	7.31	34.019		26.608	147.8	0.736	2.07	D 90.2	D 30.7	47.9	2.35	32.3	0.00	0.00			324	04
379		6.48	6.44	34.007		26.716	137.7	0.818	1.87	81.8	27.2	57.8	2.52	34.9	0.00	0.00			382	03
400	ISL	6.29 D	6.25	34.039 D		26.766	133.1	0.849	1.56	D 67.6	D 22.5	61.4	2.61	35.9	0.00	0.00			403	
441		6.13	6.10	34.090		26.827	127.9	0.901	1.08	D 46.8	D 15.5	68.4	2.79	38.0	0.00	0.00			445	02
500	ISL	5.73 D	5.69	34.137 D		26.916	120.0	0.977	0.74	D 32.0	D 10.5	77.2	2.97	40.0	0.00	0.00			504	
517		5.60	5.55	34.161		26.950	116.8	0.994	0.60	26.1	8.5	79.7	3.02	40.6	0.00	0.00			521	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 1804 STATION 80.0 50.5

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
34 28.1 N	120 29.5 W	18/04/2018	0002	UTC	26 m	320 26 kn	280 04 06	0	1020.9 mb	12.8 C	9.4 C		0/8		060

DEPTH m		TEMP DEG C	POTTEMP DEG C	SALINITY		SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		10.83	10.83	33.783 D		25.859	213.1	0.000	4.59	200.6	73.4	18.7	1.43	16.8	0.24	0.42	7.33	1.26	0	
1		10.83	10.83	33.783 D		25.859	213.1	0.001	4.59	200.6	73.4	18.7	1.43	16.8	0.24	0.42	7.33	1.26	1	05
6		10.81	10.81	33.783		25.863	212.9	0.013	4.47	195.1	71.4	19.4	1.46	17.2	0.24	0.36	7.16	1.10	6	04
10		10.77	10.77	33.787		25.872	212.1	0.021	4.45	194.5	71.1	19.3	1.47	17.1	0.23	0.29	6.91	1.24	10	02
10		10.77	10.77	33.787		25.872	212.1	0.021											10	03
15		10.63	10.63	33.787		25.898	209.8	0.032	4.39	191.7	69.9	19.5	1.49	17.3	0.24	0.24	7.50	1.10	15	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 1804 STATION 80.0 51.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
34 26.8 N	120 31.4 W	18/04/2018	0050 UTC	76 m	330 22 kn	300 04 08	0	1021.0 mb	12.4 C	9.3 C	07 m	0/8		061

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0	10.95	10.95	33.771	25.828	216.0	0.000	4.77	208.5	76.5	17.2	1.37	15.9	0.25	0.18	8.23	0.74	0	
2	10.95	10.95	33.771	25.828	216.1	0.004	4.77	208.5	76.5	17.2	1.37	15.9	0.25	0.18	8.23	0.74	2	09
5	10.91	10.91	33.769	25.834	215.5	0.011	4.78	208.8	76.6	16.9	1.39	15.6	0.25	0.22	8.77	0.91	5	08
10	10.82	10.82	33.771	25.851	214.1	0.022	4.57	199.5	73.0	17.3	1.42	16.4	0.25	0.21	9.04	0.68	10	06
10	10.82	10.82	33.771	25.851	214.1	0.021											10	07
20	9.84	9.84	33.839	26.074	193.1	0.042	2.54	111.0	39.8	25.2	1.93	24.0	0.14	0.06	1.29	0.76	20	05
30	9.81	9.81	33.853	26.090	191.9	0.061	2.45	106.9	38.3	26.5	1.98	24.3	0.15	0.00	0.89	0.79	30	04
40	9.78	9.77	33.865	26.104	190.7	0.080	2.41	105.3	37.7	26.9	2.01	24.5	0.16	0.00	0.82	0.72	40	03
50	9.60	9.59	33.906	26.166	185.0	0.099	2.22	97.1	34.6	29.3	2.08	25.5	0.13	0.05	0.50	0.78	50	02
60	9.45	9.45	33.962	26.235	178.8	0.117	2.06	89.8	32.0	31.4	2.17	26.3	0.11	0.00	0.35	0.64	60	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 1804 STATION 80.0 55.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
34 18.9 N	120 48.4 W	18/04/2018	0348 UTC	832 m	340 23 kn			1020.1 mb	11.9 C	9.8 C				062

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0	12.29	12.29	33.565	25.421	254.7	0.000	6.00	262.2	98.9	5.2	0.68	6.4	0.22	0.45	5.93	1.31	0	
3	12.29	12.29	33.565	25.421	254.8	0.008	6.00	262.2	98.9	5.2	0.68	6.4	0.22	0.45	5.93	1.31	3	23
10	12.29	12.29	33.565	25.421	255.0	0.025	5.97	260.8	98.4	5.1	0.65	6.3	0.21	0.41	5.89	1.54	10	21
10	12.29	12.29	33.563	25.419	255.2	0.024											10	22
15	12.29	12.28	33.563	25.420	255.2	0.038	5.97	D260.0 D	98.3	5.2	0.64	6.5	0.21	0.22	6.04	1.67	15	20
20	12.23	12.22	33.565	25.434	254.1	0.051	6.00	262.3	98.8	4.9	0.63	6.3	0.21	0.22	6.20	1.30	20	18
20	12.23	12.22	33.566	25.434	254.1	0.050											20	19
30	11.97	11.96	33.554	25.475	250.4	0.076	5.19	D225.8 D	84.8	8.3	0.84	8.8	0.22	0.37	3.41	0.88	30	17
40	11.77	11.76	33.571	25.525	245.9	0.101	4.98	D216.7 D	81.1	11.0	1.00	10.9	0.22	0.59	1.79	1.04	40	16
49	11.17	11.16	33.599	25.658	233.5	0.123	4.35	190.2	70.0	14.7	1.26	15.0	0.18	0.35	1.02	0.72	49	15
50 ISL	10.90 D	10.90	33.617 D	25.719	227.7	0.122	4.15	D180.5 D	66.3	14.9	1.27	15.2	0.17	0.00	0.95	0.69	50	
61	10.65	10.64	33.639	25.781	222.0	0.150	3.78	D164.8 D	60.2	17.3	1.42	17.9	0.07	0.00	0.21	0.40	61	14
70	10.35	10.34	33.680	25.864	214.3	0.169	3.59	156.7	56.7	19.1	1.54	19.7	0.04	0.00	0.08	0.29	71	13
75 ISL	10.19 D	10.18	33.698 D	25.907	210.3	0.178	3.54	D154.1 D	55.8	19.6	1.57	20.1	0.04	0.00	0.08	0.28	76	
85	10.13	10.12	33.728	25.941	207.3	0.201	3.38	D147.0 D	53.2	20.6	1.63	20.7	0.04	0.00	0.07	0.25	86	12
100	9.81	9.80	33.777	26.033	198.9	0.231	3.12	136.2	48.8	23.7	1.75	22.6	0.09	0.00	0.11	0.28	101	11
120	9.39	9.37	33.878	26.183	185.0	0.270	2.71	118.6	42.1	28.0	1.94	25.3	0.07	0.00	0.10	0.38	121	10
125 ISL	9.48 D	9.47	33.916 D	26.197	183.8	0.277	2.37	D103.3 D	36.9	28.7	1.98	25.6	0.07	0.00	0.10	0.39	126	
140	9.26	9.25	33.949	26.258	178.3	0.306	2.32	101.5	35.9	30.8	2.08	26.6	0.06	0.00	0.09	0.40	141	09
150 ISL	9.09 D	9.07	33.962 D	26.297	174.8	0.322	2.38	D103.6 D	36.7	32.7	2.13	27.4	0.00	0.00	0.07	0.37	151	
170	8.63	8.61	34.045	26.434	162.0	0.357	2.02	D 88.0 D	30.8	36.6	2.24	29.1	0.00	0.00	0.04	0.30	171	08
200	8.51	8.49	34.106	26.501	156.3	0.405	1.68	73.5	25.6						0.04	0.44	202	07
230	8.23	8.21	34.151	26.580	149.3	0.451	1.36	D 59.2 D	20.6	44.6	2.52	31.8	0.00	0.00			232	06
250 ISL	8.01 D	7.98	34.191 D	26.645	143.4	0.480	1.16	D 50.3 D	17.4	47.5	2.61	32.8	0.00	0.00			252	
270	7.87	7.84	34.210	26.681	140.3	0.509	0.98	42.8	14.7	50.3	2.69	33.9	0.00	0.00			272	05
300 ISL	7.63 D	7.60	34.227 D	26.730	136.1	0.550	0.84	D 36.5 D	12.5	55.0	2.79	34.9	0.00	0.00			302	
320	7.35	7.32	34.247	26.785	131.0	0.577	0.68	D 29.6 D	10.1	58.1	2.85	35.6	0.00	0.00			323	04
381	6.73	6.69	34.255	26.878	122.8	0.654	0.53	23.0	7.7	65.7	2.97	37.7	0.00	0.00			384	03
400 ISL	6.57 D	6.54	34.268 D	26.910	120.0	0.679	0.46	D 20.2 D	6.8	67.5	2.99	38.1	0.00	0.00			403	
440	6.44	6.40	34.272	26.932	118.4	0.725	0.43	D 18.8 D	6.3	71.2	3.02	38.8	0.00	0.00			444	02
500 ISL	6.06 D	6.02	34.293 D	26.997	112.7	0.797	0.35	D 15.0 D	5.0	78.2	3.11	40.4	0.00	0.00			504	
516	5.87	5.83	34.302	27.029	109.8	0.812	0.29	12.8	4.2	80.0	3.14	40.8	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;

RV BELL M SHIMADA CALCOFI CRUISE 1804 STATION 80.0 60.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
34 8.7 N	121 9.7 W	18/04/2018	0736 UTC	2200 m	340 24 kn			1019.0 mb	12.4 C	9.8 C				063

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0	13.05	13.05	33.496	25.218	274.0	0.000	6.11	267.0	102.3	2.1	0.39	2.6	0.18	0.25	2.95	0.75	0	
2	13.05	13.05	33.496	25.218	274.0	0.006	6.11	267.0	102.3	2.1	0.39	2.6	0.18	0.25	2.95	0.75	2	21
9	13.05	13.05	33.497	25.220	274.1	0.025	6.11	266.9	102.2	2.0	0.39	2.5	0.18	0.23	2.90	0.71	9	19
9	13.05	13.05	33.498	25.220	274.1	0.025											9	20
10 ISL	13.05 D	13.05	33.496 D	25.219	274.2	0.025	6.10	D265.8 D	102.1	2.0	0.39	2.5	0.18	0.23	2.93	0.72	10	
20	13.04	13.04	33.500	25.224	274.1	0.055	6.12	267.5	102.4	2.0	0.40	2.5	0.18	0.27	3.23	0.82	20	18
30	13.04	13.04	33.497	25.222	274.5	0.082	6.11	D266.2 D	102.3	2.0	0.39	2.6	0.18	0.22	3.23	0.74	30	17
40	13.03	13.03	33.499	25.226	274.5	0.110	6.11	D266.3 D	102.3	2.0	0.40	2.6	0.18	0.23	3.04	1.01	40	16
50	12.91	12.90	33.510	25.259	271.6	0.137	6.15	268.6	102.6	1.9	0.40	2.8	0.18	0.28	3.82	1.10	50	15
60	12.77	12.77	33.522	25.296	268.3	0.164	6.10	D265.6 D	101.5	2.2	0.43	3.4	0.18	0.39	4.82	0.92	60	14
70	12.55	12.54	33.534	25.350	263.5	0.191	6.03	263.5	99.8	3.0	0.51	4.2	0.19	0.62	5.32	1.08	71	13
75 ISL	12.44 D	12.43	33.539 D	25.374	261.3	0.203	5.84	D254.4 D	96.5	5.2	0.65	6.2	0.19	0.68	4.17	0.94	76	
85	11.82	11.81	33.569	25.516	248.0	0.229	5.08	D221.3 D	82.9	9.6	0.93	10.1	0.19	0.80	1.87	0.67	86	12
100	10.72	10.70	33.602	25.742	226.7	0.265	4.09	178.5	65.1	14.6	1.27	15.9	0.09	0.11	0.44	0.32	101	11
121	9.77	9.76	33.717	25.993	203.1	0.310	3.51	153.3	54.8	21.0	1.60	21.4	0.04	0.00	0.05	0.11	122	10
125 ISL	9.72 D	9.71	33.747 D	26.026	200.1	0.317	3.42	D148.7 D	53.3	21.7	1.63	21.8	0.03	0.00	0.04	0.11	126	
140	9.35	9.34	33.805	26.131	190.3	0.347	3.30	144.0	51.0	24.2	1.73	23.5	0.03	0.00	0.03	0.10	141	09
150 ISL	9.10 D	9.08	33.857 D	26.213	182.7	0.365	3.24	D140.8 D	49.8	25.8	1.77	24.2	0.00	0.00	0.03	0.10	151	
170	8.72	8.70	33.911	26.315	173.4	0.402	3.00	D130.4 D	45.8	28.8	1.85	25.7	0.00	0.07	0.02	0.12	171	08
200 ISL	8.31 D	8.29	33.978 D	26.432	162.8	0.452	2.68	D116.6 D	40.6	34.4	2.06	28.2	0.00	0.00	0.02	0.06	202	
202	8.26	8.23	33.983	26.444	161.6	0.455	2.68	116.9	40.4	34.7	2.07	28.4	0.00	0.00	0.02	0.06	204	07
231	7.84	7.82	34.012	26.528	154.0	0.501	2.31	D100.4 D	34.6	40.5	2.21	30.4	0.00	0.00			233	06
250 ISL	7.61 D	7.59	34.028 D	26.574	149.8	0.530	2.14	D 93.2 D	31.9	43.1	2.28	31.3	0.00	0.00			252	
268	7.43	7.40	34.032	26.604	147.2	0.557	2.04	89.0	30.2	45.6	2.35	32.2	0.00	0.00			270	05
300 ISL	6.88 D	6.86	34.074 D	26.713	137.1	0.603	1.46	D 63.4 D	21.4	52.6	2.55	34.7	0.00	0.00			302	
321	6.75	6.72	34.089	26.743	134.5	0.631	1.27	D 55.1 D	18.5	57.2	2.68	36.3	0.00	0.00			324	04
381	6.46	6.42	34.149	26.830	127.0	0.709	0.84	36.8	12.2	64.1	2.86	38.1	0.00	0.00			384	03
400 ISL	6.35 D	6.31	34.164 D	26.857	124.7	0.735	0.72	D 31.1 D	10.4	66.2	2.91	38.5	0.00	0.00			403	
441	6.22	6.18	34.215	26.914	119.8	0.783	0.53	D 22.9 D	7.6	70.8	3.01	39.3	0.00	0.00			445	02
500 ISL	6.05 D	6.00	34.285 D	26.993	113.1	0.855	0.35	D 15.1 D	5.0	76.2	3.11	40.1	0.00	0.00			504	
515	5.99	5.95	34.298	27.010	111.6	0.869	0.32	14.0	4.6	77.6	3.13	40.3	0.00	0.00			519	01

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

RV BELL M SHIMADA CALCOFI CRUISE 1804 STATION 80.0 70.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
33 49.3 N	121 51.1 W	18/04/2018	1530 UTC	3642 m	330 20 kn	290 05 10	1	1020.4 mb	12.5 C	9.5 C	12 m	2/8	ST	064

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0	14.22	14.22	33.480	24.966	298.0	0.000	6.03	263.4	103.3	1.2	0.23	0.1	0.02	0.07	0.71	0.21	0	
3 A	14.22	14.22	33.480	24.967	298.0	0.009	6.03	263.4	103.3	1.2	0.23	0.1	0.00	0.07	0.71	0.21	3	24
6 A	14.22	14.22	33.483	24.970	297.8	0.018	5.99	D261.1	D102.7	1.2	0.22	0.2	0.00	0.00	0.75	0.21	6	23
9 A	14.22	14.22	33.480	24.968	298.1	0.027	6.04	264.1	103.6	1.2	0.22	0.2	0.00	0.00	0.76	0.18	9	21
9	14.22	14.22	33.480	24.968	298.1	0.026											9	22
10 ISL	14.22 D	14.22	33.480 D	24.968	298.1	0.026	6.00	D261.5	D102.9	1.2	0.22	0.1	0.00	0.00	0.76	0.18	10	
18 A	14.22	14.22	33.479	24.968	298.4	0.054	6.04	263.9	103.5	1.2	0.23	0.1	0.00	0.00	0.74	0.15	18	20
20 ISL	14.22 D	14.22	33.480 D	24.968	298.4	0.056	6.01	D261.8	D103.0	1.2	0.23	0.1	0.00	0.00	0.75	0.15	20	
26	14.22	14.21	33.483	24.972	298.3	0.078	6.01	D261.7	D102.9	1.2	0.22	0.1	0.00	0.00	0.75	0.17	26	19
30 ISL	14.22 D	14.22	33.480 D	24.969	298.7	0.086	5.96	D259.6	D102.1	1.2	0.22	0.1	0.00	0.00	0.73	0.18	30	
33 A	14.22	14.21	33.485	24.974	298.3	0.098	5.99	D261.2	D102.7	1.2	0.22	0.1	0.00	0.00	0.72	0.19	33	18
41 A	14.07	14.06	33.468	24.993	296.7	0.122	5.91	D257.6	D101.0	1.4	0.27	0.2	0.06	0.17	0.67	0.22	41	16
41	14.07	14.06	33.467	24.992	296.8	0.122											41	17
50 ISL	13.41 D	13.40	33.448 D	25.112	285.6	0.145	5.65	D246.1	D 95.2	3.1	0.40	1.9	0.23	0.19	0.51	0.27	50	
51	13.35	13.35	33.453	25.127	284.2	0.151	5.66	247.3	95.3	3.3	0.41	2.1	0.25	0.19	0.49B	0.27B	51	15
60	12.22	12.21	33.475	25.367	261.6	0.176	4.90	D213.5	D 80.6	7.8	0.79	8.6	0.07	0.00	0.26	0.23	60	14
69	11.83	11.82	33.496	25.456	253.3	0.199	4.82	210.5	78.6	9.1	0.89	9.9	0.05	0.00	0.22	0.17	70	13
75 ISL	11.42 D	11.41	33.527 D	25.557	243.8	0.211	4.49	D195.5	D 72.6	10.7	1.01	11.8	0.04	0.00	0.17	0.14	76	
85	11.02	11.01	33.555	25.651	235.1	0.238	4.18	D181.9	D 67.0	13.4	1.20	14.8	0.03	0.00	0.10	0.10	86	12
100	10.39	10.38	33.648	25.834	217.9	0.272	3.64	158.9	57.6	18.6	1.50	19.1	0.03	0.00	0.07	0.10	101	11
119	10.01	10.00	33.729	25.962	206.1	0.312	3.26	142.3	51.1	22.0	1.68	21.7	0.00	0.00	0.03	0.09	120	10
125 ISL	9.84 D	9.82	33.767 D	26.021	200.6	0.322	3.19	D138.8	D 49.9	23.2	1.73	22.4	0.00	0.00	0.02	0.09	126	
139	9.58	9.56	33.833	26.116	191.8	0.352	2.88	125.8	44.8	26.1	1.86	24.2	0.00	0.00	0.02	0.09	140	09
150 ISL	9.35 D	9.33	33.897 D	26.204	183.7	0.370	2.73	D118.7	D 42.2	27.7	1.91	25.0	0.00	0.00	0.02	0.08	151	
168	9.01	8.99	33.933	26.288	176.0	0.405	2.65	D115.3	D 40.7	30.1	1.99	26.3	0.00	0.00	0.01	0.06	169	08
200	8.50	8.48	33.992	26.414	164.5	0.460	2.51	109.6	38.2	34.7	2.10	28.3	0.00	0.00	0.01	0.05	202	07
230	7.85	7.82	34.015	26.530	153.8	0.507	2.25	D 97.8	D 33.7	40.9	2.23	30.7	0.00	0.00			232	06
250 ISL	7.73 D	7.71	34.030 D	26.559	151.4	0.536	2.15	D 93.3	D 32.0	44.6	2.34	32.0	0.00	0.00			252	
269	7.36	7.33	34.049	26.627	145.0	0.566	1.83	80.0	27.1	48.2	2.44	33.3	0.00	0.00			271	05
300 ISL	7.02 D	6.99	34.090 D	26.708	137.7	0.609	1.38	D 59.9	D 20.2	55.1	2.62	35.5	0.00	0.00			302	
320	6.67	6.64	34.094	26.759	133.0	0.637	1.17	D 51.1	D 17.1	59.6	2.73	37.0	0.00	0.00			323	04
380	6.37	6.34	34.145	26.839	126.1	0.715	0.79	34.4	11.4	66.6	2.88	38.9	0.00	0.00			383	03
400 ISL	6.31 D	6.27	34.169 D	26.866	123.8	0.740	0.71	D 30.8	D 10.3	69.1	2.93	39.3	0.00	0.00			403	
440	6.08	6.04	34.214	26.931	118.1	0.788	0.50	D 21.6	D 7.2	74.1	3.04	40.1	0.00	0.00			444	02
500 ISL	5.82 D	5.78	34.254 D	26.996	112.5	0.858	0.37	D 16.1	D 5.3	80.0	3.12	41.0	0.00	0.00			504	
515	5.76	5.71	34.258	27.008	111.5	0.874	0.34	14.9	4.9	81.4	3.14	41.2	0.00	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;

RV BELL M SHIMADA CALCOFI CRUISE 1804 STATION 80.0 80.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
33 29.0 N	122 32.2 W	18/04/2018	2004 UTC	3982 m	330 20 kn	300 02 04	1	1021.5 mb	12.9 C	9.1 C	19 m	4/8	ST	065

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0	14.79	14.79	33.460	24.831	310.8	0.000	5.95	259.9	103.1	1.4	0.23	0.0	0.02	0.06	0.32	0.07	0	
2	14.79	14.79	33.460	24.831	310.9	0.006	5.95	259.9	103.1	1.4	0.23	0.0	0.00	0.06	0.32	0.07	2	22
10	14.78	14.77	33.460	24.834	310.9	0.031	5.94	259.6	103.0	1.3	0.22	0.0	0.00	0.00			10	20
10	14.78	14.77	33.459	24.834	310.9	0.031											10	21
20 ISL	14.73 D	14.72	33.454 D	24.841	310.5	0.059	5.92	D257.8	D102.4	1.3	0.23	0.0	0.00	0.00			20	
25	14.71	14.71	33.455	24.845	310.4	0.078	5.91	D257.7	D102.4	1.3	0.23	0.0	0.00	0.00	0.31	0.08	25	19
30 ISL	14.71 D	14.70	33.453 D	24.845	310.5	0.091	5.92	D258.1	D102.5	1.3	0.23	0.0	0.00	0.00	0.32	0.08	30	
40	14.70	14.69	33.453	24.848	310.5	0.124	5.90	D257.2	D102.1	1.3	0.22	0.0	0.00	0.00	0.36	0.08	40	18
50	14.26	14.26	33.448	24.937	302.4	0.155	5.95	D259.1	D102.0	1.1	0.23	0.0	0.00	0.00	0.66	0.27	50	17
62	13.45	13.44	33.429	25.090	288.1	0.190	5.75	251.3	97.0	2.9	0.36	1.0	0.12	0.14	0.80	0.40	63	15
63	13.45	13.44	33.433	25.093	287.9	0.192											63	16
75	12.10	12.09	33.420	25.347	263.8	0.226	5.05	D219.8	D 82.7	6.2	0.70	6.8	0.16	0.00	0.46	0.40	76	14
87	11.28	11.27	33.441	25.516	248.0	0.257	4.79	209.3	77.2	8.6	0.90	10.3	0.08	0.00	0.26	0.32	88	13
100	10.82	10.81	33.500	25.644	236.0	0.288	4.28	186.9	68.2	12.2	1.17	14.5	0.05	0.00	0.15	0.13	101	12
112	10.43	10.41	33.595	25.787	222.7	0.316	3.89	D169.5	D 61.6	16.0	1.36	17.7	0.04	0.00	0.06	0.08	113	11
125	10.00	9.99	33.663	25.913	210.9	0.344	3.49	152.5	54.8	19.8	1.60	20.9	0.03	0.00	0.04	0.06	126	10
139	9.65	9.64	33.741	26.032	199.8	0.373	3.19	139.4	49.7	23.4	1.74	23.2	0.00	0.00	0.03	0.06	140	09
150 ISL	9.35 D	9.33	33.815 D	26.140	189.7	0.394	3.09	D134.4	D 47.8	25.2	1.78	23.8	0.00	0.00	0.03	0.05	151	
169	8.92	8.90	33.888	26.266	178.1	0.429	3.10	D134.7	D 47.5	28.3	1.84	24.9	0.00	0.00	0.02	0.05	170	08
199	8.52	8.50	33.953	26.380	167.7	0.481	2.85	124.7	43.4	32.7	1.97	26.8	0.00	0.00	0.01	0.04	201	07
200 ISL	8.52 D	8.50	33.957 D	26.384	167.4	0.483	2.84	D123.7	D 43.2	32.9	1.98	26.8	0.00	0.00			202	
230	7.98	7.96	33.999	26.497	157.0	0.532	2.47	D107.4	D 37.1	38.2	2.14	29.4	0.00	0.00			232	06
250 ISL	7.66 D	7.63	34.024 D	26.565	150.8	0.563	2.22	D 96.5	D 33.1	42.8	2.27	31.1	0.00	0.00			252	
270	7.35	7.32	34.037	26.620	145.7	0.592	1.94	84.8	28.7	47.5	2.40	32.8	0.00	0.00			272	05
300 ISL	7.04 D	7.01	34.047 D	26.671	141.2	0.636	1.72	D 74.7	D 25.2	51.9	2.50	34.3	0.00	0.00			302	
320	6.85	6.82	34.049	26.699	138.8	0.663	1.56	D 67.9	D 22.9	54.8	2.57	35.2	0.00	0.00			323	04
381	6.32	6.29	34.097	26.807	129.1	0.745	1.10	48.0	15.9	63.4	2.78	37.6	0.00	0.00			384	03
400 ISL	6.23 D	6.20	34.121 D	26.838	126.4	0.771	0.93	D 40.3	D 13.4	66.5	2.84	38.3	0.00	0.00			403	
441	5.87	5.83	34.138	26.898	121.0	0.820	0.76	D 33.0	D 10.8	73.1	2.97	39.8	0.00	0.00			445	02
500 ISL	5.62 D	5.58	34.202 D	26.979	113.8	0.892	0.48	D 21.1	D 6.9	80.1	3.08	41.1	0.00	0.00			504	
514	5.60	5.55	34.209	26.988	113.2	0.906	0.43	18.9	6.2	81.7	3.10	41.4	0.00	0.00			518	01

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

RV BELL M SHIMADA CALCOFI CRUISE 1804 STATION 80.0 90.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
33 8.8 N	123 13.3 W	19/04/2018	0128	UTC	4233 m	270 10 kn	320 04 10	0	1019.1 mb	14.4 C	10.4 C	15 m	0/8		066

DEPTH m		TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		15.03	15.03	33.428	24.754	318.2	0.000	5.92	258.6	103.1	1.7	0.22	0.0	0.02	0.04	0.16	0.03	0	
2		15.03	15.03	33.428	24.754	318.3	0.006	5.92	258.6	103.1	1.7	0.22	0.0	0.00	0.00	0.16	0.03	2	20
10		15.03	15.03	33.428	24.755	318.5	0.032	5.91	258.3	103.0	1.6	0.22	0.0	0.00	0.00	0.15	0.03	10	19
20	ISL	14.91 D	14.91	33.441 D	24.792	315.2	0.061	5.91 D	257.6 D	102.7	1.5	0.21	0.0	0.00	0.00	0.16	0.03	20	
25		14.90	14.90	33.446	24.798	314.8	0.079	5.90	258.0	102.6	1.4	0.21	0.0	0.00	0.00	0.17	0.03	25	18
30	ISL	14.90 D	14.89	33.445 D	24.798	315.0	0.093	5.88 D	256.2 D	102.1	1.4	0.21	0.0	0.00	0.00	0.18	0.04	30	
40		14.89	14.89	33.448	24.803	314.9	0.127	5.89 D	256.6 D	102.3	1.3	0.21	0.0	0.00	0.00	0.20	0.05	40	17
50		13.32	13.31	33.309	25.023	294.1	0.157	6.18 D	269.4 D	103.9	1.4	0.25	0.0	0.00	0.00	0.51	0.26	50	16
62		12.63	12.62	33.241	25.107	286.4	0.192	6.08	265.6	100.6	2.3	0.34	0.7	0.24	0.00	0.82	0.51	63	15
75	ISL	12.56 D	12.55	33.370 D	25.221	275.8	0.227	5.73 D	249.5 D	94.8	3.4	0.45	2.9	0.20	0.00	0.33	0.27	76	
76		12.58	12.57	33.360	25.209	277.1	0.231	5.69 D	248.0 D	94.2	3.4	0.46	3.1	0.20	0.00	0.29	0.25	77	14
88		11.67	11.66	33.368	25.388	260.2	0.263	5.42	236.9	88.0	5.3	0.64	6.0	0.03	0.00	0.16	0.16	89	13
100	ISL	11.08 D	11.06	33.391 D	25.514	248.4	0.293	5.02 D	218.6 D	80.5	7.4	0.83	9.0	0.03	0.00	0.10	0.10	101	
101		11.05	11.04	33.385	25.513	248.5	0.297	5.06	221.0	81.1	7.6	0.85	9.2	0.03	0.00	0.09	0.10	102	12
112		10.75	10.74	33.456	25.622	238.4	0.323	4.63 D	201.4 D	73.7	10.7	1.05	12.7	0.00	0.00	0.07	0.08	113	11
125	ISL	10.32 D	10.31	33.520 D	25.747	226.7	0.353	4.28 D	186.3 D	67.5	13.3	1.23	15.6	0.00	0.00	0.04	0.06	126	
126		10.31	10.30	33.518	25.747	226.7	0.356	4.30	187.9	67.8	13.5	1.24	15.8	0.00	0.18	0.04	0.05	127	10
141		9.99	9.97	33.627	25.888	213.7	0.389	3.95	172.6	61.9	16.9	1.41	18.7	0.00	0.00	0.01	0.05	142	09
150	ISL	9.75 D	9.73	33.707 D	25.990	204.1	0.407	3.81 D	165.7 D	59.4	18.8	1.49	19.9	0.00	0.00	0.01	0.04	151	
170		9.41	9.39	33.786	26.108	193.3	0.448	3.45 D	150.0 D	53.4	23.0	1.66	22.4	0.00	0.00	0.01	0.04	171	08
200	ISL	8.75 D	8.73	33.932 D	26.328	172.8	0.502	2.81 D	122.1 D	42.9	30.1	1.93	26.3	0.00	0.00	0.00	0.03	202	
202		8.73	8.70	33.931	26.331	172.5	0.506	2.80	122.2	42.7	30.6	1.95	26.6	0.00	0.00	0.00	0.03	204	07
230		8.26	8.23	33.983	26.444	162.2	0.553	2.49 D	108.4 D	37.7	35.2	2.10	28.8	0.00	0.00			232	06
250	ISL	7.92 D	7.90	34.010 D	26.515	155.6	0.585	2.38 D	103.4 D	35.7	38.8	2.18	30.0	0.00	0.00			252	
270		7.68	7.65	34.021	26.560	151.6	0.616	2.21	96.4	32.9	42.4	2.26	31.2	0.00	0.00			272	05
300	ISL	7.18 D	7.15	34.033 D	26.641	144.1	0.661	1.97 D	85.8 D	29.1	47.9	2.39	33.0	0.00	0.00			302	
320		6.98	6.95	34.038	26.672	141.4	0.689	1.79 D	77.7 D	26.2	51.5	2.48	34.2	0.00	0.00			323	04
381		6.14	6.10	34.058	26.799	129.6	0.772	1.28	55.8	18.4	64.3	2.74	37.6	0.00	0.00			384	03
400	ISL	6.04 D	6.01	34.085 D	26.833	126.6	0.797	1.07 D	46.6 D	15.4	66.6	2.80	38.2	0.00	0.00			403	
441		5.92	5.88	34.126	26.882	122.5	0.847	0.80 D	34.9 D	11.5	71.5	2.92	39.6	0.00	0.00			445	02
500	ISL	5.66 D	5.62	34.211 D	26.982	113.6	0.919	0.45 D	19.7 D	6.5	80.0	3.09	41.0	0.00	0.00			504	
516		5.59	5.55	34.234	27.009	111.2	0.935	0.39	17.2	5.6	82.3	3.13	41.3	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;

RV BELL M SHIMADA CALCOFI CRUISE 1804 STATION 80.0 100.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
32 48.7 N	123 54.5 W	19/04/2018	0652	UTC	4346 m	330 19 kn			1019.8 mb	13.2 C	10.8 C				067

DEPTH m		TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		14.44	14.44	33.326	24.802	313.6	0.000	5.99	261.9	103.1	1.7	0.24	0.1	0.00	0.02	0.14	0.03	0	
3		14.44	14.44	33.326	24.803	313.7	0.009	5.99	261.9	103.1	1.7	0.24	0.1	0.00	0.00	0.14	0.03	3	22
10	ISL	14.44 D	14.44	33.323 D	24.800	314.1	0.027	5.92 D	257.9 D	101.8	1.7	0.24	0.1	0.00	0.00	0.15	0.03	10	
11		14.44	14.44	33.323	24.799	314.2	0.035	5.95	260.1	102.4	1.7	0.24	0.1	0.00	0.00	0.15	0.03	11	20
11		14.44	14.44	33.324	24.800	314.1	0.033											11	21
20	ISL	14.43 D	14.43	33.321 D	24.801	314.4	0.058	5.92 D	258.1 D	101.9	1.8	0.24	0.0	0.00	0.00	0.14	0.04	20	
25		14.26	14.25	33.312	24.832	311.6	0.079	5.94	259.8	101.9	1.8	0.24	0.0	0.00	0.00	0.13	0.04	25	19
30	ISL	14.24 D	14.23	33.296 D	24.823	312.6	0.090	5.94 D	258.7 D	101.7	1.8	0.24	0.0	0.00	0.00	0.14	0.04	30	
40		14.20	14.20	33.294	24.829	312.3	0.125	5.96 D	259.9 D	102.1	1.9	0.24	0.1	0.00	0.00	0.17	0.04	40	18
50		14.20	14.19	33.293	24.832	312.4	0.157	5.94 D	258.8 D	101.6	1.9	0.24	0.1	0.00	0.00	0.20	0.05	50	17
62		14.16	14.16	33.297	24.841	311.8	0.194	5.97	261.0	102.1	1.8	0.24	0.0	0.00	0.06	0.25	0.10	62	16
75		14.41	14.40	33.560	24.995	297.7	0.234	5.75 D	250.7 D	99.1	2.3	0.24	0.1	0.04	0.06	0.47	0.46	76	15
87		14.42	14.41	33.668	25.075	290.4	0.269	5.67	247.6	97.6	2.5	0.25	0.5	0.20	0.00	0.46	0.32	88	13
87		14.42	14.41	33.669	25.076	290.4	0.269											88	14
100		12.88	12.87	33.495	25.256	273.3	0.306	5.70	249.2	95.0	3.4	0.39	2.6	0.09	0.00	0.23	0.24	101	12
112		12.29	12.27	33.515	25.388	261.1	0.338	5.55 D	241.8 D	91.4	4.1	0.45	3.6	0.03	0.00	0.18	0.14	113	11
125		11.47	11.45	33.460	25.498	250.7	0.371	5.49	240.0	88.8	5.0	0.55	5.1	0.00	0.00	0.12	0.10	126	10
141		10.61	10.59	33.412	25.614	239.8	0.410	5.00	218.4	79.3	9.0	0.91	10.5	0.00	0.00	0.04	0.05	142	09
150	ISL	10.29 D	10.27	33.508 D	25.744	227.6	0.431	4.35 D	189.4 D	68.6	12.1	1.08	13.2	0.00	0.00	0.03	0.04	151	
171		9.71	9.69	33.678	25.975	206.0	0.477	3.91 D	170.0 D	60.9	19.2	1.47	19.5	0.00	0.00	0.00	0.03	172	08
199		9.22	9.20	33.844	26.185	186.5	0.532	3.41	149.1	52.7	25.1	1.70	23.3	0.00	0.00	0.00	0.02	201	07
200	ISL	9.21 D	9.19	33.845 D	26.188	186.3	0.534	3.40 D	148.0 D	52.5	25.2	1.70	23.3	0.00	0.00			202	
231		8.67	8.64	33.942	26.349	171.4	0.589	3.50 D	152.3 D	53.4	28.8	1.72	24.2	0.00	0.00			233	06
250	ISL	8.31 D	8.29	33.972 D	26.427	164.2	0.622	3.32 D	144.4 D	50.2	33.6	1.91	26.5	0.00	0.00			252	
269		7.99	7.96	33.998	26.498	157.7	0.652	2.58	112.9	38.8	38.4	2.10	28.9	0.00	0.00			271	05
300	ISL	7.49 D	7.46	34.026 D	26.591	149.1	0.700	2.14 D	93.2 D	31.8	45.5	2.29	31.6	0.00	0.00			302	
320		7.03	7.00	34.024	26.654	143.2	0.729	1.89 D	82.1 D	27.8	50.0	2.41	33.4	0.00	0.00			323	04
380		6.54	6.50	34.082	26.767	133.0	0.811	1.22	53.4	17.7	60.8	2.72	36.8	0.00	0.08			383	03
400	ISL	6.43 D	6.40	34.092 D	26.789	131.2	0.840	1.15 D	50.0 D	16.7	63.7	2.76	37.5	0.00	0.00			403	
440		5.98	5.94	34.096	26.851	125.5	0.889	0.98 D	42.7 D	14.1	69.5	2.84	38.9	0.00	0.00			444	02
500	ISL	5.65 D	5.60	34.165 D	26.947	116.9	0.965	0.62 D	26.9 D	8.8	78.5	3.01	40.6	0.00	0.00			504	
516		5.48	5.44	34.169	26.970	114.7	0.981	0.56	24.5	8.0	80.9	3.05	41.1	0.00	0.07			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 1804 STATION 81.7 43.5

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
34 24.2 N	119 48.0 W	17/04/2018	1612	UTC	22 m	300 09 kn	270 01 04	0	1023.1 mb	12.0 C	6.6 C		0/8		058

DEPTH m		TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		10.51	10.51	33.710	25.858	213.2	0.000	3.64	159.2	57.9	18.1	1.55	19.1	0.19	0.36	2.50	0.66	0	
2		10.51	10.51	33.710	25.858	213.2	0.004	3.64	159.2	57.9	18.1	1.55	19.1	0.19	0.36	2.50	0.66	2	04
5		10.52	10.52	33.712	25.858	213.3	0.011	3.55	155.0	56.3	18.5	1.57	20.1	0.18	0.40	2.98	0.71	5	03
10		10.40	10.40	33.713	25.879	211.4	0.021	3.38	147.8	53.6	19.3	1.62	20.5	0.18	0.18	2.83	0.56	10	02
15		10.26	10.26	33.726	25.914	208.2	0.032	3.08	134.4	48.6	20.6	1.69	21.5	0.16	0.10	2.42	0.80	15	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 1804 STATION 81.8 46.9

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
34 16.0 N	120 1.7 W	17/04/2018	1825 UTC	582 m	300 18 kn	270 04 08	0	1023.3 mb	11.9 C	8.3 C	04 m	0/8		059

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0	11.87	11.87	33.758	25.650	233.0	0.000	6.88	300.4	112.5	2.1	0.28	1.2	0.08	0.17	21.63	1.45	0	
2 A	11.87	11.87	33.758	25.650	233.0	0.005	6.88	300.4	112.5	2.1	0.28	1.2	0.08	0.17	21.63	1.45	2	24
3 A	11.88	11.87	33.758	25.648	233.2	0.007	6.89	300.8	112.6	2.1	0.26	1.1	0.08	0.21	21.94	1.77	3	23
6 A	11.86	11.86	33.757	25.652	232.9	0.014	6.85	299.1	111.9	2.0	0.26	1.1	0.07	0.16	20.65	2.40	6	22
10 ISL	11.81 D	11.81	33.757 D	25.660	232.3	0.021	6.73 D	293.2 D	110.0	2.2	0.28	1.1	0.07	0.22	21.80	2.03	10	
11 A	11.81	11.80	33.760	25.664	231.9	0.026	6.80	296.9	111.0	2.2	0.28	1.1	0.07	0.24	22.09	1.94	11	20
11	11.81	11.80	33.760	25.663	232.0	0.025											11	21
14 A	11.62	11.62	33.763	25.701	228.5	0.033	6.44	281.1	104.7	2.9	0.37	3.1	0.09	0.29	21.81	1.93	14	19
20 ISL	11.17 D	11.17	33.793 D	25.807	218.6	0.044	5.69 D	247.7 D	91.7	9.8	0.90	10.0	0.12	0.41	15.68	2.32	20	
22	10.73	10.73	33.802	25.891	210.6	0.050	4.30	187.9	68.7						13.63	2.45	22	18
30	10.13	10.13	33.830	26.017	198.8	0.067	2.98	130.3	47.0	21.4	1.78	21.4	0.17	0.61	6.38	2.40	30	17
40	9.56	9.56	33.873	26.146	186.7	0.086	2.57	112.4	40.0	27.3	1.97	24.8	0.18	0.05	1.20	1.05	40	16
50	9.31	9.30	33.913	26.220	179.9	0.104	2.50	109.3	38.7	29.0	2.03	25.7	0.17	0.00	0.33	0.58	50	15
70	9.22	9.21	33.977	26.285	174.2	0.140	2.13	93.0	32.9	32.2	2.15	27.1	0.07	0.08	0.10	0.39	71	14
75 ISL	9.13 D	9.13	33.999 D	26.316	171.4	0.147	2.05 D	89.0 D	31.5	33.0	2.18	27.4	0.08	0.00	0.09	0.37	76	
85	9.04	9.03	34.016	26.344	168.9	0.165	1.93	84.3	29.7	34.4	2.25	27.9	0.10	0.00	0.07	0.33	86	13
100	8.94	8.93	34.042	26.382	165.6	0.190	1.90	82.9	29.1	35.5	2.26	28.1	0.17	0.00	0.04	0.24	101	12
125 ISL	8.94 D	8.93	34.102 D	26.428	161.7	0.230	1.56 D	67.7 D	23.9	37.8	2.36	29.3	0.06	0.00	0.04	0.26	126	
130	8.93	8.92	34.113	26.439	160.8	0.239	1.51	66.1	23.3	38.2	2.38	29.6	0.04	0.00	0.03	0.26	131	11
150 ISL	8.80 D	8.78	34.135 D	26.478	157.5	0.270	1.35 D	58.7 D	20.7	40.7	2.45	29.9	0.00	0.00	0.03	0.22	151	
170	8.69	8.67	34.149	26.507	155.2	0.303	1.23	53.6	18.8	43.1	2.51	30.3	0.00	0.00	0.03	0.19	171	10
200	8.55	8.53	34.164	26.541	152.5	0.349	1.06	46.3	16.2	46.0	2.58	31.0	0.00	0.00	0.02	0.19	202	09
250 ISL	8.11 D	8.09	34.197 D	26.634	144.5	0.423	0.70 D	30.4 D	10.5	52.5	2.74	32.6	0.00	0.00			252	
270	7.91	7.88	34.201	26.669	141.5	0.452	0.65	28.3	9.7	55.2	2.81	33.2	0.00	0.00			272	08
300 ISL	7.66 D	7.63	34.213 D	26.715	137.5	0.494	0.52 D	22.4 D	7.7	60.4	2.89	33.4	0.00	0.00			302	
320	7.48	7.45	34.217	26.743	135.1	0.521	0.45	19.6	6.7	63.8	2.94	33.5	0.00	0.00			323	07
380	7.13	7.09	34.230	26.805	130.1	0.601	0.33	14.5	4.9	70.1	3.04	33.6	0.00	0.00			383	06
400 ISL	7.04 D	7.00	34.233 D	26.820	128.9	0.628	0.30 D	13.0 D	4.4	74.0	3.09	32.8	0.00	0.00			403	
440	6.78	6.74	34.245	26.865	125.0	0.677	0.21	9.0	3.0	81.9	3.19	31.3	0.00	0.00			444	05
479	6.65	6.61	34.249	26.886	123.6	0.726	0.09	3.7	1.3	90.9	3.35	26.7	0.00	0.00			483	04
500 ISL	6.60 D	6.56	34.250 D	26.894	123.2	0.755	0.09 D	4.1 D	1.4	92.8	3.36	26.5	0.00	0.00			504	
516	6.57	6.52	34.250	26.899	122.9	0.771	0.07	3.0	1.0	94.3	3.36	26.4	0.00	0.00			520	03
569	6.52	6.46	34.250	26.907	122.9	0.837	0.03	1.1	0.4	97.4	3.34	25.7	0.03	1.05			574	02
575	6.52	6.46	34.252	26.908	122.9	0.844	0.04	1.5	0.5	98.3	3.36	25.9	0.00	1.00			580	01

A) PRIMARY PRODUCTIVITY SAMPLES WERE TAKEN FROM THESE LEVELS.
B) SANTA BARBARA BASIN STATION.
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 1804 STATION 83.3 39.4

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
34 15.1 N	119 20.8 W	17/04/2018	1302 UTC	23 m	060 05 kn	270 03 06	1	1021.9 mb	9.6 C	6.5 C		1/8	SC	057

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0	12.19	12.19	33.662	25.514	245.9	0.000	5.08	222.1	83.6	10.9	0.98	9.9	0.33	0.87	4.00	0.91	0	
2	12.19	12.19	33.662	25.514	245.9	0.005	5.08	222.1	83.6	10.9	0.98	9.9	0.33	0.87	4.00	0.91	2	05
5	12.21	12.21	33.661	25.510	246.4	0.012	5.07	221.5	83.5	10.9	0.97	9.7	0.33	0.87	3.86	0.96	5	04
10	12.17	12.17	33.663	25.519	245.7	0.025	5.06	220.8	83.1	10.9	0.96	9.9	0.32	0.83	4.02	0.92	10	02
10	12.17	12.17	33.661	25.517	245.9	0.024											10	03
15	11.75	11.75	33.662	25.598	238.3	0.037	4.58	200.1	74.7	12.0	1.07	11.4	0.28	1.00	4.38	1.13	15	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 1804 STATION 83.3 40.6

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
34 13.4 N	119 24.5 W	17/04/2018	1128 UTC	34 m	300 15 kn			1021.0 mb	11.1 C	7.9 C				056

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0	12.03	12.03	33.646	25.532	244.1	0.000	5.37	234.6	88.0	7.3	0.80	7.8	0.22	0.65	6.94	0.46	0	
2	12.03	12.03	33.646	25.533	244.2	0.005	5.37	234.6	88.0	7.3	0.80	7.8	0.22	0.65	6.94	0.46	2	07
5	12.03	12.03	33.647	25.533	244.2	0.012	5.35	233.6	87.7	7.3	0.81	7.8	0.22	0.65	6.50	1.26	5	06
10	12.03	12.03	33.647	25.534	244.3	0.024	5.33	232.7	87.3	7.5	0.80	8.0	0.22	0.65	6.42	0.99	10	04
10	12.03	12.03	33.645 D	25.530	244.6	0.022											10	05
15	11.97	11.97	33.649	25.547	243.1	0.037	5.28	230.7	86.5	7.7	0.83	8.2	0.22	0.67	6.45	1.18	15	03
20	11.70	11.70	33.687	25.627	235.7	0.049	4.77 D	207.7 D	77.7	13.0	1.23	12.9	0.23	1.03	4.77	1.65	20	02
25	10.48	10.47	33.729	25.879	211.8	0.060	3.31	144.7	52.6	20.0	1.65	19.2	0.21	0.57	2.02	1.24	25	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 1804 STATION 83.3 42.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
34 10.7 N	119 30.5 W	17/04/2018	0849	UTC	135 m	300 20 kn			1021.0 mb	11.2 C	8.2 C				055

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0	12.48	12.48	33.659	25.456	251.4	0.000	5.89	257.3	97.5	5.3	0.64	4.7	0.17	0.76	5.06	1.44	0	
3	12.48	12.48	33.659	25.456	251.4	0.008	5.89	257.3	97.5	5.3	0.64	4.7	0.17	0.76	5.06	1.44	3	13
10	12.48	12.48	33.659	25.457	251.6	0.025	5.83	254.9	96.6	5.3	0.69	4.8	0.17	0.75	4.77	1.71	10	11
10	12.48	12.48	33.659	25.457	251.5	0.025											10	12
20	12.47	12.47	33.660	25.460	251.6	0.050	5.80	253.5	96.0	5.4	0.64	4.9	0.16	0.79	5.75	0.77	20	10
30 ISL	12.41 D	12.41	33.660 D	25.472	250.7	0.072	5.71 D	248.5 D	94.3	5.7	0.69	5.0	0.17	0.93	4.75	1.91	30	
31	12.36	12.36	33.660	25.482	249.8	0.078	5.73	250.5	94.7	5.7	0.69	5.0	0.17	0.94	4.65	2.03	31	09
40	12.02	12.01	33.670	25.555	243.1	0.100	5.62	245.3	92.0	6.2	0.78	5.7	0.20	1.65	6.36	2.65	40	08
50	11.50	11.49	33.691	25.669	232.5	0.124	4.48	195.5	72.6	12.4	1.19	12.0	0.24	1.51	5.19	2.39	50	07
60	10.53	10.52	33.727	25.870	213.5	0.146	3.59	157.0	57.1	18.6	1.49	17.5	0.15	0.66	1.42	1.44	60	06
70	9.77	9.76	33.813	26.066	195.0	0.167	2.75	120.3	43.0	25.0	1.85	23.5	0.10	0.10	0.37	0.94	71	05
75 ISL	9.69 D	9.68	33.845 D	26.106	191.4	0.174	2.68 D	116.6 D	41.8	25.9	1.88	23.9	0.09	0.00	0.30	0.79	76	
84	9.63	9.62	33.874	26.138	188.5	0.193	2.59	113.1	40.3	27.4	1.93	24.8	0.07	0.00	0.19	0.52	85	04
100	9.26	9.25	33.998	26.296	173.8	0.222	2.17	94.6	33.5	32.3	2.13	27.1	0.07	0.00	0.13	0.47	101	03
120	9.11	9.10	34.021	26.339	170.2	0.257	2.14	93.3	32.9	33.2	2.15	27.6	0.05	0.00	0.08	0.30	121	02
125 ISL	9.11 D	9.09	34.022 D	26.340	170.2	0.263	2.13 D	92.7 D	32.9	33.6	2.16	27.6	0.05	0.00	0.08	0.29	126	
130	9.10	9.08	34.027	26.345	169.8	0.274	2.09	91.3	32.2	33.9	2.17	27.7	0.05	0.00	0.08	0.27	131	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 1804 STATION 83.3 51.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
33 52.4 N	120 8.1 W	17/04/2018	0311	UTC	106 m	320 23 kn			1019.9 mb	11.5 C	8.4 C				054

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0	12.52	12.52	33.650	25.442	252.7	0.000	5.59	244.2	92.6	8.1	0.75	6.7	0.20	0.72	3.70	1.01	0	
2	12.52	12.52	33.650	25.442	252.7	0.005	5.59	244.2	92.6	8.1	0.75	6.7	0.20	0.72	3.70	1.01	2	11
10	12.23	12.22	33.662	25.508	246.7	0.025	5.40	235.9	88.9	9.1	0.81	7.8	0.20	0.55	3.65	1.19	10	09
10	12.23	12.22	33.662	25.508	246.7	0.026											10	10
20	11.06	11.05	33.733	25.780	221.1	0.049	3.86	168.7	62.0	17.8	1.41	16.0	0.20	0.54	2.23	1.57	20	08
30	10.40	10.39	33.792	25.943	205.8	0.070	3.20	139.8	50.7	22.5	1.69	20.2	0.18	0.44	1.58	1.51	30	07
40	9.89	9.88	33.869	26.090	192.1	0.090	2.80	122.4	43.9	26.9	1.90	22.8	0.15	0.54	1.47	1.82	40	06
50	9.52	9.51	33.918	26.189	182.8	0.108	2.44	106.6	38.0	30.2	2.04	24.9	0.12	0.27	0.77	1.89	50	05
60	9.14	9.13	33.983	26.303	172.3	0.126	2.13	93.2	32.9	33.6	2.18	27.0	0.11	0.14	0.39	1.35	60	04
70	8.97	8.96	34.026	26.362	166.8	0.143	1.97	86.0	30.3	35.9	2.25	28.0	0.10	0.10	0.22	0.87	71	03
75 ISL	8.93 D	8.92	34.045 D	26.384	164.9	0.150	1.90 D	82.7 D	29.2	36.4	2.27	28.2	0.10	0.09	0.22	0.89	76	
85	8.88	8.87	34.054	26.400	163.6	0.168	1.85	80.6	28.3	37.5	2.31	28.5	0.10	0.06	0.22	0.91	86	02
96	8.87	8.85	34.083	26.425	161.4	0.186	1.81	79.1	27.8	38.2	2.33	28.9	0.09	0.06	0.19	0.87	97	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 1804 STATION 83.3 55.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
33 44.6 N	120 24.3 W	16/04/2018	2334	UTC	963 m	320 20 kn	300 07 10	1	1019.0 mb	13.7 C	10.4 C	07 m	4/8	CU	053

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0	13.13	13.13	33.533	25.231	272.8	0.000	6.44	281.5	108.1	1.6	0.41	2.5	0.20	0.16	5.25	0.96	0	
2	13.13	13.13	33.533	25.231	272.8	0.006	6.44	281.5	108.1	1.6	0.41	2.5	0.20	0.16	5.25	0.96	2	21
10	12.86	12.86	33.535	25.286	267.9	0.027	6.31	275.6	105.2	3.0	0.48	3.6	0.21	0.26	5.56	1.11	10	19
10	12.86	12.86	33.534	25.285	267.9	0.027											10	20
20	11.75	11.74	33.641	25.583	239.9	0.053	5.71	249.3	93.0	10.0	0.91	9.7	0.26	0.81	5.96	1.26	20	18
30	11.64	11.64	33.650	25.609	237.6	0.076	5.32 D	231.7 D	86.5	11.1	1.00	10.9	0.25	0.97	5.48	1.32	30	17
40	11.59	11.58	33.652	25.621	236.7	0.100	5.32 D	231.4 D	86.3	11.3	1.03	11.1	0.24	1.10	5.13	1.11	40	16
50	11.50	11.49	33.669	25.652	234.1	0.124	5.27	230.2	85.4	11.8	1.07	11.6	0.25	1.24	5.10	1.15	50	15
60	11.15	11.15	33.701	25.739	226.0	0.147	4.84 D	210.7 D	77.9	12.3	1.07	10.8	0.25	2.08	2.16	0.92	60	14
70	10.24	10.23	33.677	25.882	212.6	0.169	3.97	173.4	62.6	17.8	1.50	18.4	0.11	0.72	1.45	0.95	71	13
75 ISL	10.08 D	10.07	33.703 D	25.929	208.2	0.178	3.39 D	147.4 D	53.2	19.5	1.58	19.7	0.10	0.72	1.01	0.80	76	
85	9.79	9.78	33.765	26.027	199.1	0.199	2.96 D	128.7 D	46.2	22.7	1.75	22.4	0.07	0.71	0.14	0.48	86	12
100	9.31	9.30	33.867	26.186	184.3	0.228	2.85	124.3	44.0	27.2	1.88	24.5	0.12	0.05	0.06	0.35	101	11
120	9.08	9.06	33.940	26.281	175.7	0.264	2.59	113.2	39.9	30.0	2.00	26.1	0.04	0.08	0.10	0.41	121	10
125 ISL	8.94 D	8.92	33.924 D	26.290	174.9	0.272	2.72 D	118.5 D	41.8	30.3	1.99	26.1	0.04	0.07	0.09	0.38	126	
140	8.62	8.61	33.941	26.353	169.1	0.299	2.86	124.9	43.6	31.0	1.95	26.2	0.03	0.05	0.04	0.29	141	09
150 ISL	8.53 D	8.52	33.969 D	26.388	165.9	0.315	2.70 D	117.3 D	41.0	33.0	2.02	27.2	0.00	0.00	0.03	0.26	151	
170	8.28	8.26	34.026	26.473	158.2	0.348	2.28 D	99.4 D	34.6	36.9	2.16	29.1	0.00	0.00	0.02	0.20	171	08
200 ISL	7.77 D	7.75	34.063 D	26.578	148.6	0.394	1.94 D	84.4 D	29.0	43.5	2.34	31.4	0.00	0.00	0.01	0.13	202	
201	7.75	7.73	34.071	26.587	147.8	0.395	1.94	84.7	29.0	43.7	2.35	31.5	0.00	0.00	0.01	0.13	203	07
230	7.45	7.42	34.079	26.637	143.4	0.438	1.68 D	73.3 D	25.0	47.7	2.47	33.2	0.00	0.00			232	06
250 ISL	7.31 D	7.29	34.093 D	26.668	140.8	0.467	1.52 D	66.2 D	22.5	50.0	2.55	33.8	0.00	0.00			252	
270	7.32	7.30	34.135	26.700	138.1	0.494	1.27	55.2	18.7	52.3	2.62	34.5	0.00	0.00			272	05
300 ISL	7.26 D	7.23	34.151 D	26.722	136.6	0.536	1.13 D	49.2 D	16.7	54.7	2.69	35.1	0.00	0.00			302	
320	7.18	7.15	34.176	26.754	133.9	0.562	0.95 D	41.5 D	14.1	56.3	2.74	35.6	0.00	0.00			323	04
380	6.93	6.90	34.245	26.843	126.3	0.640	0.61	26.5	8.9	61.9	2.90	37.0	0.00	0.00			383	03
400 ISL	6.90 D	6.86	34.260 D	26.860	125.0	0.668	0.53 D	23.2 D	7.8	64.5	2.94	37.4	0.00	0.00			403	
440	6.56	6.52	34.280	26.921	119.5	0.714	0.43 D	18.6 D	6.2	69.8	3.01	38.3	0.00	0.00			444	02
500 ISL	6.09 D	6.04	34.301 D	27.001	112.4	0.787	0.33 D	14.5 D	4.8	76.1	3.11	39.9	0.00	0.00			504	
515	6.02	5.97	34.314	27.020	110.8	0.800	0.35	15.1	5.0	77.7	3.13	40.3	0.00	0.05			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 1804 STATION 83.3 60.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
33 34.5 N	120 45.5 W	16/04/2018	1923	UTC	1399 m	290 16 kn	300 05 10	1	1019.5 mb	14.8 C	10.1 C	14 m	3/8	SC	052

DEPTH m		TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg		OXY PCT		SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		14.33	14.33	33.489	24.951	299.5	0.000	5.98	D260.5	D	102.7		2.9	0.32	1.2	0.03	0.03	0.64	0.14	0	
2	A	14.33	14.33	33.489	24.951	299.5	0.006	5.98	D260.5	D	102.7		2.9	0.32	1.2	0.03	0.00	0.64	0.14	2	24
8	A	14.32	14.32	33.468	24.937	301.0	0.024	5.99	D261.1	D	103.0		1.3	0.24	0.2	0.00	0.00	0.62	0.11	8	23
9		14.32	14.32	33.465	24.936	301.2	0.028													9	22
10	A	14.28	14.27	33.469	24.948	300.0	0.030	6.02	263.0		103.3		1.3	0.24	0.1	0.00	0.00	0.65	0.13	10	21
20	ISL	14.14	D 14.14	33.470	D 24.977	297.6	0.057	6.05	D263.5	D	103.5		1.3	0.25	0.3	0.00	0.00	0.84	0.20	20	
21		14.12	14.11	33.472	D 24.984	297.0	0.061	6.04	D263.0	D	103.2									21	20
30	ISL	14.04	D 14.03	33.476	D 25.004	295.3	0.087	6.05	D263.7	D	103.4		1.3	0.27	0.5	0.00	0.00	1.03	0.27	30	
31	A	14.03	14.02	33.479	25.008	295.0	0.093	6.03	263.6		103.0		1.3	0.27	0.6	0.08	0.17	1.05	0.28	31	19
38	A	13.81	13.80	33.476	25.052	291.0	0.113	5.88	D256.2	D	99.9		1.5	0.28	0.5	0.10	0.20	0.95	0.40	38	17
38		13.81	13.80	33.475	25.051	291.1	0.113													38	18
47	A	13.34	13.34	33.467	25.140	282.9	0.139	5.73	250.5		96.5		3.6	0.45	2.6	0.34	0.31	0.51	0.27	47	16
50	ISL	13.21	D 13.20	33.466	D 25.167	280.4	0.146	5.56	D242.1	D	93.3		4.2	0.48	3.0	0.39	0.24	0.42	0.28	50	
53		13.07	13.06	33.468	25.196	277.7	0.156	5.44	D236.8	D	91.0		4.7	0.51	3.4	0.44	0.17	0.34	0.28	53	15
60		12.82	12.81	33.471	25.248	272.9	0.175	5.32	232.5		88.5		5.6	0.61	5.2	0.37	0.00	0.26	0.22	60	14
68		12.44	12.43	33.484	25.332	265.1	0.196	5.12	D223.1	D	84.6		7.1	0.73	7.5	0.12	0.00	0.18	0.18	69	13
75	ISL	11.86	D 11.85	33.462	D 25.425	256.3	0.214	5.01	D218.2	D	81.8		9.4	0.90	10.1	0.09	0.00	0.15	0.16	76	
85		11.24	11.23	33.553	25.610	239.0	0.239	4.29	187.4		69.1		12.6	1.14	13.7	0.04	0.00	0.10	0.12	86	12
100		10.74	10.73	33.630	25.759	225.1	0.274	3.77	164.8		60.1		17.0	1.42	17.8	0.03	0.00	0.06	0.12	101	11
119		10.07	10.05	33.731	25.955	206.8	0.315	3.24	D140.8	D	50.9		21.8	1.67	21.3	0.00	0.00	0.03	0.08	120	10
125	ISL	9.91	D 9.89	33.788	D 26.026	200.1	0.327	3.03	D131.8	D	47.4		23.5	1.75	22.3	0.00	0.00	0.03	0.09	126	
139		9.55	9.54	33.868	26.147	188.9	0.354	2.68	117.1		41.7		27.5	1.94	24.6	0.00	0.00	0.02	0.09	140	09
150	ISL	9.39	D 9.38	33.952	D 26.240	180.3	0.375	2.33	D101.4	D	36.1		30.6	2.07	26.2	0.00	0.00	0.02	0.09	151	
168		8.97	8.95	34.062	26.394	165.9	0.406	1.86	D 81.1	D	28.6		35.5	2.28	28.9	0.00	0.00	0.01	0.09	169	08
200		8.72	8.69	34.140	26.496	156.8	0.458	1.47	64.1		22.4		40.2	2.44	30.4	0.00	0.00	0.01	0.07	202	07
231		8.54	8.51	34.167	26.547	152.6	0.506	1.32	D 57.3	D	20.1		42.3	2.50	31.2	0.00	0.00			233	06
250	ISL	8.38	D 8.35	34.195	D 26.592	148.6	0.535	1.18	D 51.5	D	18.0		44.8	2.56	31.9	0.00	0.00			252	
269		8.23	8.20	34.209	26.627	145.6	0.562	1.06	46.3		16.0		47.2	2.62	32.6	0.00	0.00			271	05
300	ISL	8.11	D 8.08	34.222	D 26.655	143.5	0.609	0.98	D 42.7	D	14.8		48.7	2.66	33.1	0.00	0.00			302	
320		8.03	7.99	34.226	26.672	142.2	0.636	0.92	D 40.1	D	13.9		49.8	2.69	33.5	0.00	0.00			323	04
381		7.55	7.51	34.252	26.763	134.4	0.720	0.70	30.4		10.4		56.1	2.82	35.1	0.00	0.00			384	03
400	ISL	7.47	D 7.43	34.253	D 26.776	133.4	0.748	0.67	D 29.3	D	10.0		57.8	2.85	35.5	0.00	0.00			403	
441		7.12	7.08	34.260	26.831	128.7	0.799	0.59	D 25.5	D	8.6		61.5	2.90	36.3	0.00	0.06			445	02
500	ISL	6.52	D 6.47	34.278	D 26.928	119.9	0.877	0.43	D 18.6	D	6.2		69.5	3.01	38.4	0.00	0.00			504	
515		6.43	6.38	34.291	26.950	117.9	0.890	0.42	18.3		6.1		71.5	3.04	38.9	0.00	0.00			519	01

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

RV BELL M SHIMADA CALCOFI CRUISE 1804 STATION 83.3 70.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
33 14.9 N	121 26.5 W	16/04/2018	1326	UTC	3800 m	310 17 kn	320 05 06	1	1017.7 mb	13.3 C	9.7 C		3/8	SC	051

DEPTH m		TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg		OXY PCT		SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		14.90	14.90	33.404	24.765	317.1	0.000	5.89	257.7		102.4		1.7	0.24	0.2	0.02	0.03	0.18	0.04	0	
3		14.90	14.89	33.404	24.766	317.2	0.010	5.89	257.7		102.4		1.7	0.24	0.2	0.00	0.00	0.18	0.04	3	24
10		14.98	14.98	33.403	24.746	319.3	0.032	5.90	257.7		102.6		1.5	0.23	0.2	0.00	0.00	0.17	0.04	10	22
10		14.98	14.98	33.405	24.748	319.1	0.032													10	23
20	ISL	14.97	D 14.97	33.417	D 24.760	318.3	0.059	5.89	D256.7	D	102.5		1.5	0.22	0.1	0.00	0.00	0.17	0.04	20	
25		14.93	14.93	33.408	24.762	318.3	0.080	5.88	257.2		102.3		1.5	0.22	0.1	0.00	0.00	0.17	0.04	25	21
30	ISL	14.99	D 14.99	33.423	D 24.761	318.6	0.091	5.87	D255.9	D	102.2		1.5	0.22	0.1	0.00	0.00	0.17	0.04	30	
40		15.04	15.03	33.404	24.738	321.1	0.128	5.88	D256.3	D	102.5		1.5	0.23	0.0	0.00	0.00	0.17	0.04	40	20
50		15.10	15.09	33.473	24.777	317.7	0.160	5.85	D254.8	D	102.0		1.7	0.22	0.1	0.00	0.00	0.22	0.05	50	19
62		13.25	13.24	33.382	25.094	287.7	0.196	5.89	257.5		98.9		3.0	0.35	0.8	0.06	0.00	1.00	0.63	63	18
74		12.14	12.13	33.431	25.348	263.7	0.229	5.17	D225.2	D	84.9		6.2	0.69	7.1	0.05	0.00	0.41	0.42	75	17
75	ISL	12.05	D 12.04	33.434	D 25.368	261.9	0.228	5.21	D227.0	D	85.3		6.3	0.70	7.3	0.05	0.00	0.40	0.40	76	
87		11.41	11.39	33.454	25.503	249.2	0.262	4.88	213.2		78.8		8.4	0.88	10.1	0.04	0.00	0.22	0.23	88	16
100		10.82	10.81	33.508	25.650	235.4	0.294	4.37	191.1		69.8		12.0	1.14	14.2	0.03	0.00	0.11	0.13	101	15
113		10.49	10.48	33.555	25.744	226.7	0.324	3.75	D163.4	D	59.5		14.4	1.28	16.4	0.00	0.00	0.07	0.08	114	14
125		9.75	9.73	33.703	25.987	203.8	0.350	3.36	146.9		52.4		21.3	1.65	21.7	0.00	0.00	0.02	0.05	126	13
141		9.38	9.36	33.795	26.119	191.5	0.381	3.08	134.4		47.6		24.7	1.80	24.1	0.00	0.00	0.01	0.05	142	12
150	ISL	9.20	D 9.18	33.850	D 26.192	184.8	0.395	2.99	D130.0	D	46.1		25.9	1.82	24.5	0.00	0.00	0.01	0.04	151	
170		8.91	8.89	33.903	26.279	176.8	0.434	2.98	D129.8	D	45.8		28.6	1.86	25.4	0.00	0.00	0.01	0.04	171	11
199		8.52	8.50	33.994	26.412	164.7	0.484	2.46	107.3		37.4		34.4	2.08	28.2	0.00	0.00	0.00	0.03	201	10
200	ISL	8.51	D 8.49	33.997	D 26.416	164.3	0.483	2.47	D107.5	D	37.6		34.5	2.08	28.3	0.00	0.00			202	
230		8.19	8.17	34.030	26.490	157.7	0.534	2.11	D 91.8	D	31.9		38.6	2.22	29.9	0.00	0.00			232	09
250	ISL	7.96	D 7.93	34.063	D 26.552	152.1	0.563	1.93	D 84.1	D	29.1		42.1	2.29	31.0	0.00	0.00			252	
270		7.48	7.46	34.042	26.604	147.3	0.595	1.96	85.5		29.1		45.7	2.35	32.2	0.00	0.00			272	08
300	ISL	7.05	D 7.02	34.040	D 26.664	141.9	0.637	1.79	D 78.0	D	26.4		50.6	2.48	33.8	0.00	0.00			302	
320		7.11	7.08	34.069	26.680	140.8	0.667	1.38	D 60.2	D	20.4		53.8	2.56	34.9	0.00	0.00			323	07
380		6.65	6.62	34.134	26.794	130.6	0.748	0.94	41.0		13.7		61.8	2.79	37.1	0.00	0.00			383	06
400	ISL	6.54	D 6.50	34.152	D 26.822	128.1	0.773	0.83	D 35.9	D	12.0		64.2	2.84	37.8	0.00	0.00			403	
440		6.17	6.13	34.152	26.871	123.8	0.825	0.72	D 31.3	D	10.4		69.0	2.93	39.2	0.00	0.00			444	05
500	ISL	5.79	D 5.74	34.220	D 26.974	114.6	0.896	0.44	D 19.0	D	6.2		78.8	3.07	40.8	0.00	0.00			504	
515		5.68	5.64	34.239	27.002	112.0	0.913	0.37	16.0		5.2		81.3	3.10	41.1	0.00	0.00			519	02
516		5.69	5.64	34.235	26.998	112.4	0.914													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 1804 STATION 83.3 80.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
32 54.6 N	122 8.0 W	16/04/2018	0737 UTC	4184 m	320 19 kn			1017.2 mb	13.2 C	11.6 C				050

DEPTH m		TEMP DEG C		POTTEMP DEG C		SALINITY		SIGMA THETA	SVA	DYN HT	OXYGEN ml/L		OXYGEN µmol/Kg		OXY PCT		SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		15.12		15.12		33.454		24.755	318.1	0.000	5.85		255.6		102.1		1.7	0.23	0.0	0.00	0.00	0.13	0.04	0	
2		15.12		15.12		33.454		24.755	318.1	0.006	5.85		255.6		102.1		1.7	0.23	0.0	0.00	0.00	0.13	0.04	2	21
10		15.12		15.12		33.455		24.755	318.4	0.032	5.86		256.0		102.3		1.5	0.24	0.0	0.00	0.00	0.14	0.03	10	19
10		15.12		15.12		33.459		24.759	318.1	0.032														10	20
20	ISL	15.12	D	15.11		33.452	D	24.756	318.7	0.061	5.86	D	255.2	D	102.2		1.6	0.23	0.0	0.00	0.00	0.14	0.04	20	
25		15.08		15.08		33.458		24.768	317.7	0.080	5.86		256.1		102.2		1.7	0.23	0.0	0.00	0.00	0.14	0.04	25	18
30	ISL	15.04	D	15.04		33.456	D	24.775	317.2	0.093	5.83	D	254.1	D	101.6		1.8	0.23	0.0	0.00	0.00	0.17	0.05	30	
40		14.97		14.97		33.467		24.800	315.2	0.127	5.84	D	254.6	D	101.7		1.8	0.23	0.0	0.00	0.00	0.22	0.07	40	17
50		14.82		14.81		33.462		24.830	312.6	0.159	5.87	D	255.7	D	101.8		1.7	0.24	0.0	0.00	0.00	0.30	0.10	50	16
62		13.42		13.41		33.441		25.105	286.6	0.195	5.87		256.5		98.9		2.8	0.33	0.5	0.11	0.00	1.23	0.64	62	15
75		12.64		12.63		33.442		25.261	272.1	0.231	5.26	D	229.1	D	87.2		5.3	0.61	5.6	0.06	0.00	0.69	0.49	76	14
87		11.88		11.87		33.429		25.396	259.4	0.263	4.95		216.2		80.7		7.4	0.81	8.7	0.04	0.00	0.40	0.44	88	13
100		11.01		10.99		33.485		25.600	240.3	0.295	4.30		187.8		68.8		11.9	1.16	14.2	0.03	0.00	0.21	0.19	101	12
112		10.50		10.49		33.563		25.749	226.3	0.323	3.98	D	173.3	D	63.1		14.9	1.35	17.0	0.00	0.00	0.09	0.09	113	11
125		10.13		10.11		33.638	D	25.873	214.7	0.351	3.79	D	164.9	D	59.6									126	10
139		9.68		9.67		33.723		26.013	201.6	0.381	3.53		154.3		55.0		21.2	1.60	21.3	0.00	0.00	0.01	0.04	140	09
150	ISL	9.46	D	9.44		33.775	D	26.091	194.4	0.403	3.37	D	146.7	D	52.3		23.1	1.67	22.4	0.00	0.00	0.01	0.04	151	
172		9.03		9.02		33.874		26.237	180.9	0.444	3.12	D	136.0	D	48.0		27.0	1.81	24.7	0.00	0.00	0.01	0.04	173	08
200		8.54		8.52		33.962		26.384	167.4	0.493	2.88		125.9		43.8		32.1	1.95	26.8	0.00	0.00	0.01	0.03	202	07
231		7.89		7.87		34.000		26.511	155.6	0.543	2.55	D	110.8	D	38.2		38.8	2.13	29.1	0.00	0.00			233	06
250	ISL	7.49	D	7.47		34.007	D	26.575	149.7	0.573	2.39	D	104.2	D	35.6		42.7	2.24	30.7	0.00	0.00			252	
270		7.34		7.31		34.032		26.617	146.0	0.601	2.05		89.6		30.4		46.8	2.36	32.3	0.00	0.00			272	05
300	ISL	7.11	D	7.08		34.073	D	26.682	140.2	0.646	1.53	D	66.6	D	22.6		51.8	2.51	34.1	0.00	0.00			302	
321		6.86		6.83		34.078		26.720	136.8	0.674	1.39	D	60.4	D	20.3		55.2	2.62	35.4	0.00	0.00			324	04
382		6.25		6.21		34.103		26.821	127.7	0.754	1.01		44.3		14.6		65.2	2.82	38.0	0.00	0.00			385	03
400	ISL	6.22	D	6.18		34.133	D	26.848	125.4	0.780	0.84	D	36.6	D	12.1		67.3	2.86	38.5	0.00	0.00			403	
439		6.03		5.99		34.163		26.898	121.1	0.825	0.65	D	28.1	D	9.3		71.8	2.95	39.6	0.00	0.00			443	02
500	ISL	5.72	D	5.68		34.239	D	26.997	112.3	0.900	0.38	D	16.4	D	5.4									504	
515		5.63		5.59		34.248	D	27.015	110.7	0.917	0.35	D	15.3	D	5.0									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 1804 STATION 83.3 90.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
32 34.7 N	122 48.8 W	16/04/2018	0220 UTC	4266 m	290 11 kn	300 06 10	1	1016.6 mb	14.6 C	12.0 C		3/8	ST	049

DEPTH m		TEMP DEG C		POTTEMP DEG C		SALINITY		SIGMA THETA	SVA	DYN HT	OXYGEN ml/L		OXYGEN µmol/Kg		OXY PCT		SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		14.83		14.83		33.315		24.711	322.3	0.000	5.90		258.0		102.4		1.5	0.24	0.0	0.01	0.00	0.12	0.02	0	
2		14.83		14.83		33.315		24.711	322.3	0.006	5.90		258.0		102.4		1.5	0.24	0.0	0.00	0.00	0.12	0.02	2	21
10		14.58		14.58		33.328		24.775	316.5	0.032	5.92		258.8		102.1		1.5	0.23	0.1	0.00	0.00	0.13	0.03	10	19
10		14.58		14.58		33.315		24.765	317.5	0.030														10	20
20	ISL	14.46	D	14.64		33.303	D	24.744	356.9	0.068	5.96	D	259.6	D	102.9		1.5	0.24	0.0	0.00	0.00	0.16	0.03	20	
26		14.40		14.39		33.297		24.791	315.5	0.083	5.96		260.6		102.5		1.5	0.24	0.0	0.00	0.00	0.17	0.03	26	18
30	ISL	14.38	D	14.37		33.296	D	24.794	315.3	0.102	5.98	D	260.8	D	102.8		1.5	0.24	0.0	0.00	0.00	0.17	0.03	30	
40		14.36		14.35		33.298		24.800	315.1	0.127	5.97	D	260.1	D	102.5		1.5	0.24	0.0	0.00	0.00	0.16	0.04	40	17
50	ISL	13.68	D	13.68		33.244	D	24.899	305.9	0.165	6.06	D	264.2	D	102.6		1.7	0.24	0.0	0.00	0.00	0.23	0.06	50	
51		13.58		13.57		33.251		24.927	303.3	0.161	6.08	D	264.7	D	102.6		1.7	0.24	0.0	0.00	0.00	0.24	0.06	51	16
63		13.41		13.40		33.243		24.954	301.0	0.197	6.04		264.1		101.7		1.8	0.25	0.1	0.00	0.00	0.39	0.22	64	15
75	ISL	13.19	D	13.18		33.280	D	25.028	294.4	0.240	5.99	D	260.8	D	100.3		2.1	0.31	0.6	0.00	0.00	0.66	0.31	76	
76		13.20		13.19		33.271		25.019	295.3	0.236	5.99	D	260.9	D	100.4		2.1	0.31	0.6	0.18	0.00	0.68	0.31	77	14
87		12.22		12.21		33.265		25.204	277.7	0.267	5.93		259.3		97.4		3.5	0.45	2.5	0.29	0.20	0.28	0.23	88	13
100		11.75		11.73		33.338		25.351	264.1	0.303	5.58		244.1		90.8		5.6	0.64	5.9	0.00	0.00	0.10	0.08	101	12
112		11.10		11.09		33.347		25.475	252.4	0.334	5.30	D	230.7	D	85.0		6.6	0.75	7.8	0.03	0.00	0.07	0.08	113	11
125		10.81		10.80		33.426		25.589	241.9	0.366	4.93		215.5		78.6		9.5	0.95	11.0	0.00	0.00	0.05	0.05	126	10
141		10.08		10.07		33.526		25.792	222.7	0.403	4.40		192.3		69.1		14.1	1.23	15.5	0.00	0.00	0.02	0.05	142	09
150	ISL	9.85	D	9.83		33.648	D	25.927	210.1	0.431	3.98	D	173.2	D	62.2		17.0	1.36	17.7	0.00	0.00	0.02	0.04	151	
170		9.28		9.26		33.832		26.165	187.8	0.462	3.49	D	151.7	D	53.9		23.6	1.65	22.6	0.00	0.00	0.00	0.03	171	08
200		8.71		8.69		33.924		26.328	172.7	0.517	2.98		130.2		45.5		30.3	1.91	25.9	0.00	0.00	0.00	0.03	202	07
230		8.17		8.14		33.990		26.464	160.3	0.566	2.64	D	114.6	D	39.8		36.3	2.08	28.5	0.00	0.00			232	06
250	ISL	7.88	D	7.86		34.025	D	26.533	153.9	0.607	2.30	D	100.0	D	34.5		40.3	2.21	30.1	0.00	0.00			252	
270		7.68		7.65		34.046		26.580	149.7	0.628	2.01		88.0		30.1		44.3	2.34	31.8	0.00	0.00			272	05
300	ISL	7.30	D	7.27		34.058	D	26.643	144.1	0.682	1.82	D	79.1	D	26.9		48.7	2.44	33.1	0.00	0.00			302	
320		7.07		7.04		34.054		26.672	141.5	0.701	1.70	D	74.1	D	25.1		51.6	2.50	34.0	0.00	0.00			323	04
381		6.71		6.67		34.111		26.768	133.1	0.785	1.12		49.0		16.4		59.8	2.74	36.7	0.00	0.00			384	03
400	ISL	6.36	D	6.32		34.090	D	26.797	130.3	0.820	1.18	D	51.3	D	17.1		62.9	2.79	37.3	0.00	0.00			403	
441		6.13		6.09		34.136		26.864	124.5	0.861	0.82		35.7		11.8		69.6	2.91	38.8	0.00	0.00			445	02
500	ISL	5.92	D	5.88		34.210	D	26.949	117.1	0.945	0.50	D	21.7	D	7.2									504	
516		5.79		5.74		34.206	D	26.963	115.8	0.964	0.50	D	21.7	D	7.1									520	01

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

RV BELL M SHIMADA CALCOFI CRUISE 1804 STATION 83.3 100.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
32 14.6 N	123 29.7 W	15/04/2018	2050 UTC	4156 m	310 10 kn	320 08 13	1	1019.4 mb	15.0 C	12.7 C	21 m	5/8	SC	048

DEPTH m		TEMP DEG C		POTTEMP DEG C		SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		14.68		14.68		33.287	24.720	321.4	0.000	5.94	259.7	102.7	1.7	0.24	0.0	0.01	0.00	0.12	0.02	0	
2		14.68		14.68		33.287	24.721	321.4	0.006	5.94	259.7	102.7	1.7	0.24	0.0	0.00	0.00	0.12	0.02	2	21
10		14.57		14.57		33.286	24.744	319.5	0.032	5.95	259.9	102.6	1.7	0.24	0.0	0.00	0.00	0.11	0.02	10	19
10		14.57		14.57		33.287	24.745	319.4	0.032											10	20
20	ISL	14.54	D	14.53		33.291	D 24.757	318.6	0.061	5.96	D259.7	D102.7	1.7	0.24	0.0	0.00	0.00	0.11	0.03	20	
25		14.53		14.53		33.292	24.758	318.6	0.080	5.95	259.9	102.4	1.7	0.24	0.0	0.00	0.07	0.11	0.03	25	18
30	ISL	14.53	D	14.52	D	33.292	D 24.760	318.6	0.093	5.93	D258.6	D102.2	1.7	0.24	0.0	0.00	0.00	0.12	0.03	30	
40		14.50		14.49		33.301	24.773	317.7	0.128	5.93	D258.6	D102.2	1.7	0.23	0.0	0.00	0.00	0.14	0.03	40	17
50		14.42		14.41		33.309	24.796	315.8	0.159	5.95	D259.3	D102.3	1.7	0.23	0.1	0.00	0.00	0.21	0.05	50	16
62		13.95		13.94		33.341	24.919	304.4	0.196	5.97	260.8	101.6	1.8	0.23	0.0	0.00	0.00	0.27	0.11	62	15
75	ISL	13.56	D	13.55	D	33.286	D 24.959	301.0	0.234	6.00	D261.5	D101.4	1.9	0.24	0.1	0.00	0.00	0.51	0.29	76	
76		13.57		13.56		33.286	24.956	301.3	0.239	5.99	D261.1	D101.2	1.9	0.24	0.1	0.03	0.00	0.53	0.31	77	14
87		13.00		12.99		33.258	25.049	292.7	0.271	6.01	262.5	100.2	1.9	0.29	0.3	0.12	0.07	0.51	0.29	88	13
99		12.31		12.29		33.223	25.157	282.6	0.306	5.92	258.7	97.3	3.2	0.43	2.3	0.25	0.00	0.23	0.18	100	12
100	ISL	12.31	D	12.29		33.225	D 25.159	282.5	0.308	5.93	D258.4	D 97.5	3.2	0.44	2.5	0.24	0.00	0.22	0.17	101	
112		11.97		11.96		33.255	25.245	274.5	0.342	5.82	D253.7	D 95.1	3.8	0.52	4.1	0.04	0.00	0.12	0.10	113	11
124		11.57		11.55		33.363	25.405	259.6	0.374	5.40	236.0	87.5	5.9	0.68	6.7	0.00	0.00	0.07	0.08	125	10
125	ISL	11.56	D	11.54	D	33.363	D 25.406	259.5	0.376	5.48	D238.8	D 88.8	6.0	0.68	6.8	0.00	0.00	0.07	0.08	126	
140		11.25		11.23		33.496	25.566	244.5	0.415	5.16	225.5	83.1	6.9	0.74	8.2	0.00	0.00	0.07	0.08	141	09
150	ISL	10.62	D	10.61	D	33.500	D 25.680	233.8	0.439	4.92	D214.4	D 78.2	10.7	0.97	11.8	0.00	0.00	0.05	0.06	151	
169		9.97		9.95		33.678	25.931	210.2	0.480	3.97	D172.7	D 62.2	17.9	1.41	18.8	0.00	0.00	0.01	0.03	170	08
200		9.20		9.18		33.850	26.194	185.7	0.541	3.43	149.7	52.9	24.7	1.69	23.1	0.00	0.00	0.00	0.03	202	07
230		8.67		8.64		33.937	26.346	171.7	0.595	3.04	D132.2	D 46.3	30.3	1.88	26.0	0.00	0.00			232	06
250	ISL	8.36	D	8.34	D	33.972	D 26.420	164.9	0.631	2.81	D122.3	D 42.6	33.6	1.99	27.3	0.00	0.00			252	
269		8.09		8.07		33.994	26.478	159.6	0.660	2.59	113.4	39.1	36.7	2.09	28.6	0.00	0.00			271	05
300	ISL	7.56	D	7.53	D	34.037	D 26.590	149.3	0.710	2.11	D 91.7	D 31.4	43.7	2.29	31.2	0.00	0.00			302	
323		7.22		7.19		34.052	26.650	143.7	0.741	1.79	D 77.9	D 26.4	48.8	2.43	33.1	0.00	0.00			326	04
381		6.61		6.58		34.099	26.771	132.7	0.822	1.17	50.9	17.0	59.2	2.71	36.8	0.00	0.00			384	03
400	ISL	6.54	D	6.50	D	34.123	D 26.800	130.2	0.850	0.98	D 42.8	D 14.3	62.2	2.79	37.5	0.00	0.00			403	
440		6.34		6.30		34.189	26.878	123.3	0.897	0.62	D 27.1	D 9.0	68.4	2.95	38.9	0.00	0.00			444	02
500	ISL	5.81	D	5.77	D	34.193	D 26.949	116.9	0.974	0.51	D 22.1	D 7.3	76.0	3.05	40.5	0.00	0.00			504	
515		5.78		5.73		34.210	26.967	115.4	0.986	0.45	19.6	6.4	77.9	3.07	40.9	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 1804 STATION 83.3 110.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
31 54.6 N	124 10.4 W	15/04/2018	1600 UTC	4210 m	340 15 kn	320 02 10	2	1020.3 mb	14.9 C	12.8 C	26 m	8/8	SC	047

DEPTH m		TEMP DEG C		POTTEMP DEG C		SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		16.10		16.10		33.595	24.645	328.5	0.000	5.72	250.0	101.9	2.0	0.20	0.1	0.01	0.00	0.09	0.02	0	
3	A	16.10		16.10		33.595	24.646	328.6	0.010	5.72	250.0	101.9	2.0	0.20	0.1	0.00	0.00	0.09	0.02	3	24
10		16.08		16.08		33.593	24.648	328.6	0.033	5.72	250.1	101.9	1.9	0.21	0.2	0.00	0.05	0.09	0.02	10	22
10		16.08		16.08		33.594	24.649	328.5	0.033											10	23
15	A	16.08		16.08		33.592	24.648	328.8	0.049	5.70	D248.4	D101.5	1.9	0.22	0.4	0.00	0.15	0.09	0.02	15	21
19	A	16.08		16.08		33.594	24.650	328.7	0.063	5.71	249.5	101.6	1.9	0.20	0.1	0.00	0.06	0.09	0.04	19	20
20	ISL	16.08	D	16.07		33.591	D 24.649	328.9	0.061	5.69	D248.2	D101.4	1.9	0.20	0.1	0.00	0.00	0.09	0.04	20	
30		16.05		16.05		33.587	24.652	328.9	0.099	5.71	D248.7	D101.5	2.0	0.21	0.1	0.00	0.00	0.10	0.02	30	19
40	A	16.05		16.04		33.582	24.650	329.5	0.132	5.71	249.8	101.7	1.9	0.20	0.0	0.00	0.00	0.09	0.02	40	18
50		16.03		16.03		33.587	24.658	329.2	0.165	5.71	D248.8	D101.6	1.9	0.21	0.2	0.00	0.05	0.09	0.02	50	17
60		15.63		15.62		33.564	24.730	322.5	0.197	5.75	D250.5	D101.4	1.9	0.21	0.1	0.00	0.00	0.14	0.03	60	16
71	A	15.43		15.42		33.538	24.757	320.3	0.233	5.78	D251.9	D101.6	1.9	0.21	0.1	0.00	0.00	0.16	0.06	72	15
75	ISL	15.38	D	15.37	D	33.533	D 24.763	319.9	0.242	5.79	D252.3	D101.6	1.9	0.21	0.1	0.00	0.00	0.17	0.06	76	
80		15.36		15.35		33.532	24.768	319.6	0.261	5.78	D252.0	D101.5	2.0	0.21	0.1	0.00	0.00	0.17	0.06	81	14
88	A	15.13		15.12		33.536	24.822	314.7	0.287	5.80	253.6	101.3	1.9	0.22	0.0	0.00	0.00	0.23	0.10	89	13
98		15.06		15.04		33.528	24.833	314.0	0.318	5.78	252.5	100.7	2.0	0.22	0.1	0.00	0.00	0.26	0.17	99	12
100	ISL	14.74	D	14.72	D	33.508	D 24.885	309.0	0.322	5.80	D252.9	D100.5	2.1	0.23	0.1	0.00	0.00	0.27	0.19	101	
111		14.17		14.15		33.469	24.976	300.6	0.358	5.76	D251.0	D 98.6	2.5	0.27	0.3	0.09	0.00	0.35	0.27	112	11
125		13.34		13.32		33.501	25.172	282.2	0.399	5.48	239.5	92.2	3.8	0.42	3.0	0.13	0.00	0.24	0.26	126	10
141		11.91		11.89		33.526	25.468	254.1	0.442	5.21	227.6	85.0	5.5	0.58	5.5	0.05	0.00	0.17	0.19	142	09
150	ISL	11.74	D	11.72	D	33.547	D 25.517	249.7	0.462	5.00	D217.9	D 81.5	8.1	0.76	8.4	0.00	0.00	0.13	0.15	151	
170		10.54		10.52		33.617	25.788	224.1	0.511	4.37	D190.3	D 69.4	13.8	1.16	14.8	0.00	0.00	0.03	0.05	171	08
200		9.41		9.38		33.764	26.093	195.3	0.574	3.53	154.2	54.7	23.0	1.65	22.1	0.00	0.00	0.00	0.03	202	07
230		8.71		8.69		33.914	26.321	174.1	0.630	2.99	D129.9	D 45.6	30.0	1.91	26.1	0.00	0.00			232	06
250	ISL	8.50	D	8.48	D	33.962	D 26.391	167.7	0.663	2.75	D119.7	D 41.8	34.2	2.05	27.8	0.00	0.00			252	
270		8.14		8.12		34.016	26.488	158.7	0.697	2.35	102.8	35.5	38.3	2.18	29.5	0.00	0.00			272	05
300	ISL	7.77	D	7.74	D	34.041	D 26.563	151.9	0.743	2.08	D 90.4	D 31.1	43.0	2.30	31.2	0.00	0.00			302	
320		7.53		7.50		34.049	26.605	148.2	0.773	1.88	D 81.9	D 28.0	46.1	2.38	32.4	0.00	0.00			323	04
381		6.97		6.93		34.093	26.719	138.0	0.861	1.31	57.4	19.3	55.2	2.64	35.6	0.00	0.00			384	03
400	ISL	6.77	D	6.73	D	34.113	D 26.761	134.2	0.887	1.11	D 48.4	D 16.3	58.1	2.71	36.4	0.00	0.00			403	
440		6.57		6.53		34.150	26.819	129.2	0.939	0.83	D 36.0	D 12.0	64.1	2.86	38.1	0.00	0.00			444	02
500	ISL	6.23	D	6.18	D	34.214	D 26.914	120.8	1.016	0.54	D 23.6	D 7.8	72.1	3.00	39.4	0.00	0.00			504	
516		6.10		6.05		34.226	26.941	118.3	1.033	0.47	20.7	6.8	74.2	3.04	39.7	0.00	0.00			520	01

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

RV BELL M SHIMADA CALCOFI CRUISE 1804 STATION 85.4 35.8

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
34 0.1 N	118 50.1 W	12/04/2018	0250 UTC	49 m	270 26 kn			1012.7 mb	14.2 C	11.7 C				036

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0	14.57	14.57	33.553	24.949	299.6	0.000	6.17	269.4	106.5	7.2	0.35	1.4	0.14	0.14	2.57	0.60	0	
1	14.57	14.57	33.553	24.949	299.6	0.003	6.17	269.4	106.5	7.2	0.35	1.4	0.14	0.14	2.57	0.60	1	07
5	14.58	14.58	33.554	24.948	299.9	0.015	6.17	269.5	106.6	7.2	0.38	1.5	0.13	0.08	2.71	0.61	5	06
10	14.57	14.57	33.554	24.952	299.7	0.030	6.17	269.7	106.6	7.1	0.34	1.5	0.13	0.07	2.54	0.72	10	04
10	14.57	14.57	33.553	24.951	299.8	0.030											10	05
20	12.90	12.90	33.554	25.294	267.4	0.058	5.00	218.4	83.4	8.8	0.78	7.4	0.53	0.37	1.25	0.49	20	03
30	11.81	11.80	33.595	25.536	244.6	0.084	4.00	174.7	65.2	14.4	1.24	13.3	0.42	0.89	0.62	0.48	30	02
40	10.96	10.96	33.631	25.719	227.4	0.108	3.53	154.1	56.5	17.5	1.47	17.7	0.21	0.25	0.34	0.29	40	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 1804 STATION 86.7 33.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
33 54.4 N	118 29.9 W	11/04/2018	1833 UTC	55 m	230 07 kn	230 03 06	1	1015.8 mb	16.4 C	14.6 C	13 m	1/8	CS	033

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0	15.29	15.29	33.571	24.808	313.0	0.000	5.99	261.6	105.0	3.1	0.22	0.0	0.00	0.00	0.38	0.08	0	
2 A	15.29	15.29	33.571	24.808	313.1	0.006	5.99	261.6	105.0	3.1	0.22	0.0	0.00	0.00	0.38	0.08	2	10
8 A	14.99	14.98	33.561	24.867	307.7	0.025	6.11	267.1	106.5	3.1	0.22	0.0	0.00	0.00	0.63	0.17	8	09
9 A	14.79	14.79	33.561	24.909	303.8	0.028	6.10	266.6	105.9	3.1	0.22	0.0	0.00	0.00	0.60	0.14	9	06
9	14.79	14.79	33.559	24.907	303.9	0.027											9	08
9	14.79	14.79	33.562	24.910	303.7	0.027											9	07
10 ISL	14.93 D	14.93	33.567 D	24.883	306.2	0.028	6.04	D263.0	D105.0	3.3	0.24	0.2		0.00	0.67	0.17	10	
20 A	13.75	13.75	33.549	25.119	284.1	0.061	5.78	252.4	98.1	4.8	0.41	2.2	0.22	0.00	1.37	0.44	20	05
28	13.10	13.10	33.545	25.247	272.1	0.083	5.31	231.9	88.9	7.0	0.63	5.2	0.41	0.00	1.62	0.48	28	03
28	13.10	13.10	33.543	25.246	272.2	0.083											28	04
30 ISL	12.95 D	12.94	33.554 D	25.286	268.5	0.086	5.42	D236.1	D 90.5	8.0	0.72	6.7	0.41	0.00	1.51	0.46	30	
35 A	12.26	12.25	33.561	25.424	255.4	0.101	4.50	196.6	74.1	10.5	0.96	10.4	0.38	0.06	1.23	0.42	35	02
45 A	11.42	11.41	33.594	25.608	238.1	0.126	3.78	165.0	61.1	16.1	1.36	14.8	0.44	2.07	0.61	0.42	45	01

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

RV BELL M SHIMADA CALCOFI CRUISE 1804 STATION 86.7 35.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
33 49.3 N	118 37.7 W	11/04/2018	2320 UTC	673 m	280 08 kn	270 03 05	1	1013.7 mb	16.7 C	14.0 C	11 m	1/8	CS	035

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0	16.28	16.28	33.566	24.582	334.6	0.000	6.08	265.5	108.7	2.4	0.22	0.0	0.01	0.02	0.39	0.08	0	
2	16.28	16.28	33.566	24.582	334.7	0.007	6.08	265.5	108.7	2.4	0.22	0.0	0.00	0.00	0.39	0.08	2	21
10	14.32	14.32	33.552	25.002	294.9	0.032	6.36	277.9	109.3	5.1	0.27	0.4	0.07	0.00	0.61	0.17	10	19
10	14.32	14.32	33.548	24.999	295.2	0.032											10	20
20	13.32	13.32	33.556	25.212	275.2	0.060	5.52	241.1	92.9	6.7	0.59	4.5	0.52	0.30	0.70	0.45	20	18
30	12.61	12.60	33.550	25.349	262.4	0.087	4.63	D201.7	D 76.8	8.5	0.85	8.6	0.54	0.00	0.77	0.32	30	17
40	11.61	11.60	33.566	25.551	243.4	0.113	4.07	D177.1	D 66.0	13.1	1.19	14.2	0.10	0.00	0.52	0.20	40	16
50	11.14	11.14	33.587	25.652	234.0	0.137	3.77	164.9	60.7	15.0	1.34	15.6	0.06	0.00	0.24	0.18	50	15
60	10.65	10.64	33.640	25.782	221.9	0.159	3.52	D153.3	D 56.0	17.7	1.52	18.8	0.05	0.00	0.14	0.14	60	14
71	10.03	10.02	33.750	25.974	203.9	0.183	3.06	133.7	48.1	22.1	1.75	21.8	0.04	0.00	0.04	0.09	72	13
75 ISL	9.95 D	9.94	33.782 D	26.013	200.2	0.189	3.02	D131.5	D 47.4	22.5	1.76	22.0	0.04	0.00	0.05	0.10	76	
84	9.85	9.84	33.803 D	26.046	197.3	0.207	2.89	D125.6	D 45.2	23.6	1.78	22.4	0.04	0.00	0.08	0.12	85	12
100	9.60	9.59	33.868	26.138	188.8	0.240	2.71	118.3	42.2	26.4	1.92	24.5	0.00	0.00	0.02	0.06	101	11
120	9.29	9.28	33.948	26.252	178.5	0.276	2.49	108.7	38.5	29.5	2.03	25.9	0.00	0.00	0.01	0.08	121	10
125 ISL	9.22 D	9.20	33.956 D	26.270	176.8	0.284	2.48	D108.1	D 38.4	29.9	2.05	26.1	0.00	0.00	0.01	0.07	126	
140	9.13	9.12	33.980	26.304	173.9	0.312	2.37	103.4	36.5	31.1	2.09	26.8	0.00	0.00	0.01	0.06	141	09
150 ISL	9.09 D	9.07	33.986 D	26.316	173.0	0.328	2.35	D102.3	D 36.2	32.4	2.13	27.4	0.00	0.00	0.01	0.06	151	
170	8.84	8.82	34.054	26.408	164.6	0.363	2.06	D 89.5	D 31.5	35.0	2.22	28.6	0.00	0.00	0.01	0.05	171	08
200	8.54	8.52	34.136	26.520	154.5	0.410	1.69	74.0	25.8	40.0	2.37	30.2	0.00	0.00	0.01	0.04	202	07
230	8.34	8.31	34.161	26.572	150.1	0.456	1.41	D 61.2	D 21.3	42.9	2.49	31.3	0.00	0.00			232	06
250 ISL	8.19 D	8.16	34.182 D	26.611	146.7	0.486	1.24	D 54.1	D 18.8	45.6	2.56	32.2	0.00	0.00			252	
270	7.99	7.97	34.194	26.650	143.3	0.515	1.13	49.5	17.1	48.3	2.62	33.1	0.00	0.00			272	05
300 ISL	7.84 D	7.81	34.236 D	26.706	138.5	0.558	0.88	D 38.3	D 13.2	52.3	2.73	34.1	0.00	0.00			302	
320	7.64	7.60	34.250	26.748	134.8	0.585	0.74	D 32.1	D 11.0	55.0	2.80	34.8	0.00	0.00			323	04
380	7.12	7.08	34.275	26.841	126.6	0.663	0.53	23.0	7.8	62.4	2.94	36.6	0.00	0.00			383	03
400 ISL	6.94 D	6.90	34.285 D	26.874	123.7	0.690	0.45	D 19.6 D	6.6	64.8	2.98	37.1	0.00	0.00			403	
440	6.65	6.61	34.299	26.925	119.3	0.737	0.35	D 15.1 D	5.1	69.7	3.05	38.1	0.00	0.00			444	02
500 ISL	6.22 D	6.18	34.328 D	27.005	112.2	0.809	0.26	D 11.2 D	3.7	77.2	3.14	39.1	0.00	0.00			504	
516	6.14	6.10	34.335	27.021	110.9	0.824	0.25	11.0	3.6	79.1	3.16	39.3	0.00	0.00			520	01

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

RV BELL M SHIMADA CALCOFI CRUISE 1804 STATION 86.7 40.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
33 38.9 N	118 58.1 W	12/04/2018	0608	UTC	748 m	290	25 kn			1015.1 mb	13.8 C	10.6 C				037

DEPTH m		TEMP DEG C	POTTEMP DEG C	SALINITY		SIGMA THETA	SVA	DYN HT	OXYGEN ml/L		OXYGEN µmol/Kg		OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		13.26	13.26	33.577		25.239	272.1	0.000	5.92		258.5		99.5	6.1	0.55	4.0	0.27	0.24	2.57	0.77	0	
2		13.26	13.26	33.577		25.239	272.1	0.005	5.92		258.5		99.5	6.1	0.55	4.0	0.27	0.24	2.57	0.77	2	21
10		13.26	13.26	33.577		25.239	272.3	0.027	5.92		258.8		99.6	5.9	0.54	4.0	0.27	0.20	2.47	0.80	10	19
10		13.26	13.26	33.579		25.241	272.2	0.025					93.2								10	20
20		13.14	13.14	33.574		25.262	270.5	0.054	5.76		251.5		96.6	6.4	0.58	4.7	0.31	0.22	2.46	0.72	20	18
30	ISL	12.17	D 12.17	33.583	D	25.458	252.0	0.078	4.53	D	197.4	D	74.5	10.9	0.95	10.2	0.24	0.00	2.55	0.59	30	
31		12.06	12.06	33.577		25.474	250.5	0.083	4.42	D	192.3	D	72.4						2.56	0.58	31	17
40		11.22	11.21	33.636		25.676	231.5	0.105	3.80	D	165.6	D	61.3	15.5	1.31	15.7	0.16	0.00	0.83	0.54	40	16
50		10.77	10.76	33.678		25.790	220.9	0.127	3.50		152.9		55.9	18.5	1.49	18.2	0.07	0.00	0.51	0.36	50	15
60		10.37	10.36	33.720		25.892	211.4	0.149	3.20	D	139.4	D	50.7	20.8	1.64	20.6	0.04	0.00	0.44	0.28	60	14
70		10.09	10.08	33.779		25.986	202.7	0.170	2.88		126.0		45.4	23.5	1.80	22.5	0.04	0.00	0.31	0.30	71	13
75	ISL	10.05	D 10.04	33.785	D	25.998	201.7	0.178	2.87	D	124.7	D	45.0	24.3	1.82	22.9	0.04	0.00	0.29	0.29	76	
85		9.78	9.77	33.832		26.080	194.0	0.199	2.72	D	118.3	D	42.5	25.8	1.87	23.6	0.04	0.00	0.27	0.25	86	12
100	ISL	9.54	D 9.53	33.890	D	26.166	186.2	0.227	2.55	D	110.8	D	39.6	27.9	1.96	24.8	0.03	0.00	0.23	0.21	101	
101		9.52	9.50	33.889		26.169	185.9	0.230	2.55		111.6		39.7	28.0	1.97	24.9	0.03	0.00	0.23	0.21	102	11
120		9.30	9.28	33.952		26.254	178.2	0.264	2.32		101.5		36.0	30.7	2.08	26.2	0.03	0.00	0.09	0.14	121	10
125	ISL	9.25	D 9.23	33.978	D	26.284	175.5	0.272	2.30	D	100.2	D	35.6	31.0	2.09	26.4		0.00	0.08	0.13	126	
140		9.10	9.09	33.998		26.322	172.2	0.300	2.27		99.2		35.0	32.1	2.12	27.0	0.00	0.05	0.05	0.13	141	09
150	ISL	9.02	D 9.01	34.010	D	26.345	170.2	0.316	2.26	D	98.4	D	34.8	33.2	2.16	27.5	0.00	0.00	0.05	0.13	151	
170		8.85	8.83	34.060		26.412	164.2	0.350	2.00	D	87.0	D	30.6	35.5	2.23	28.4	0.00	0.00	0.05	0.12	171	08
200		8.58	8.56	34.142		26.518	154.7	0.398	1.62		70.6		24.7	40.5	2.39	30.2	0.00	0.00	0.04	0.11	202	07
230		8.32	8.30	34.187		26.594	148.0	0.443	1.24	D	53.8	D	18.8	44.7	2.56	31.7	0.00	0.00			232	06
250	ISL	8.12	D 8.09	34.208	D	26.642	143.8	0.473	1.09	D	47.5	D	16.5	47.9	2.63	32.6	0.00	0.00			252	
270		7.90	7.88	34.234		26.695	139.1	0.501	0.93		40.6		14.0	51.1	2.70	33.5	0.00	0.00			272	05
300	ISL	7.65	D 7.62	34.245	D	26.742	135.0	0.543	0.77	D	33.5	D	11.5	55.1	2.78	34.4	0.00	0.00			302	
319		7.48	7.45	34.253		26.772	132.3	0.567	0.67	D	29.1	D	9.9	57.7	2.83	35.0	0.00	0.00			322	04
380		6.98	6.94	34.283		26.867	124.1	0.645	0.46		20.0		6.7	64.9	2.98	36.8	0.00	0.00			383	03
400	ISL	6.81	D 6.77	34.294	D	26.898	121.3	0.673	0.41	D	17.7	D	6.0	67.3	3.01	37.2	0.00	0.00			403	
440		6.55	6.51	34.306		26.943	117.4	0.718	0.34	D	14.7	D	4.9	71.9	3.07	37.9	0.00	0.00			444	02
500	ISL	6.25	D 6.21	34.329	D	27.002	112.5	0.790	0.27	D	11.8	D	3.9	78.8	3.15	38.4	0.00	0.00			504	
516		6.15	6.10	34.335		27.021	110.9	0.805	0.27		11.9		3.9	80.6	3.17	38.5	0.00	0.00			520	01
600	ISL	5.68	D 5.63	34.366	D	27.104	103.6	0.899	0.20	D	8.7	D	2.9								605	

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 1804 STATION 86.7 45.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
33 29.0 N	119 19.6 W	12/04/2018	1119	UTC	1629 m	300	22 kn			1016.4 mb	12.8 C	11.7 C				038

DEPTH m		TEMP DEG C	POTTEMP DEG C	SALINITY		SIGMA THETA	SVA	DYN HT	OXYGEN ml/L		OXYGEN µmol/Kg		OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		13.23	13.23	33.582		25.250	271.0	0.000	5.82		254.1		97.8	5.5	0.53	4.2	0.27	0.21	4.22	0.87	0	
3		13.23	13.23	33.582		25.250	271.1	0.008	5.82		254.1		97.8	5.5	0.53	4.2	0.27	0.21	4.22	0.87	3	21
10		13.23	13.22	33.581		25.250	271.3	0.027	5.83		254.7		98.0	5.3	0.52	4.0	0.27	0.20	4.00	0.99	10	19
10		13.23	13.22	33.593		25.259	270.5	0.026													10	20
20		13.22	13.22	33.581		25.251	271.5	0.054	5.82		254.2		97.8	5.2	0.54	4.0	0.26	0.21	4.29	1.11	20	18
30		13.19	13.18	33.580		25.257	271.2	0.081	5.80	D	252.8	D	97.4	5.2	0.53	4.2	0.27	0.22	4.33	0.99	30	17
40		12.67	12.67	33.579		25.359	261.8	0.108	5.05	D	219.8	D	83.8	7.4	0.74	6.9	0.32	0.19	2.03	0.85	40	16
50		11.59	11.59	33.604		25.584	240.6	0.133	3.95		172.4		64.1	13.2	1.22	14.4	0.08	0.00	0.16	0.29	50	15
60		10.94	10.94	33.633		25.724	227.4	0.156	3.63	D	157.8	D	58.1	16.2	1.41	17.3	0.04	0.00	0.10	0.22	60	14
70		10.26	10.25	33.720		25.911	209.8	0.178	3.15		137.4		49.7	20.7	1.65	20.8	0.04	0.00	0.05	0.20	71	13
75	ISL	10.06	D 10.05	33.758	D	25.974	203.9	0.186	3.01	D	131.1	D	47.4	21.6	1.70	21.4	0.04	0.00	0.04	0.17	76	
85		9.90	9.89	33.781		26.021	199.7	0.209	2.90	D	126.2	D	45.4	23.4	1.79	22.7	0.04	0.00	0.03	0.10	86	12
100		9.67	9.66	33.849		26.112	191.4	0.238	2.68		117.0		41.8	26.2	1.93	24.1	0.04	0.00	0.02	0.12	101	11
120		9.42	9.40	33.921	D	26.210	182.4	0.274	2.51	D	109.1	D	38.9								121	10
125	ISL	9.38	D 9.37	33.932	D	26.225	181.1	0.283	2.48	D	108.1	D	38.5	30.1	2.06	26.0		0.00	0.02	0.12	126	
140		9.11	9.09	34.026		26.343	170.2	0.313	2.23		97.4		34.4	32.4	2.13	27.1	0.00	0.06	0.02	0.12	141	09
150	ISL	8.96	D 8.94	34.055	D	26.390	165.9	0.326	2.14	D	92.9	D	32.8	34.3	2.20	27.9	0.00	0.00	0.02	0.12	151	
171		8.67	8.65	34.120		26.487	157.1	0.363	1.76	D	76.6	D	26.9	38.3	2.34	29.5	0.00	0.00	0.01	0.11	172	08
200	ISL	8.52	D 8.50	34.165	D	26.547	152.0	0.406	1.41	D	61.5	D	21.5	41.5	2.47	30.7	0.00	0.00	0.01	0.07	202	
202		8.50	8.48	34.169		26.552	151.5	0.411	1.40		61.0		21.3	41.7	2.48	30.8	0.00	0.00	0.01	0.07	204	07
232		8.22	8.19	34.208		26.627	144.9	0.456	1.16	D	50.3	D	17.5	46.1	2.59	31.9	0.00	0.00			234	06
250	ISL	8.05	D 8.03	34.213	D	26.656	142.4	0.480	1.06	D	46.1	D	16.0	48.2	2.64	32.6	0.00	0.00			252	
273		7.89	7.87	34.240		26.701	138.5	0.514	0.89		38.9		13.4	50.8	2.70	33.4	0.00	0.00			275	05
300	ISL	7.68	D 7.65	34.246	D	26.738	135.3	0.550	0.78	D	33.7	D	11.6	54.4	2.78	34.4	0.00	0.00			302	
319		7.52	7.48	34.259		26.772	132.4	0.576	0.67	D	29.3	D	10.0	56.9	2.84	35.1	0.00	0.00			322	04
380		6.95	6.92	34.287		26.874	123.4	0.654	0.45		19.7		6.6	65.4	2.98	36.9	0.00	0.00			383	03
400	ISL	6.79	D 6.75	34.298	D	26.905	120.6	0.679	0.40	D	17.6	D	5.9	68.0	3.02	37.2	0.00	0.00			403	
440		6.52	6.47	34.317		26.957	116.1	0.726	0.32	D	13.9	D	4.7	73.2	3.09	37.9	0.00	0.00			444	02
500	ISL	6.17	D 6.13	34.335	D	27.016	111.1	0.795	0.26	D	11.1	D	3.7	80.5	3.17	38.6	0.00	0.00			504	
512		6.10	6.06	34.339		27.029	110.0	0.807	0.24		10.4		3.4	82.0	3.18	38.8	0.00	0.00			516	01

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

RV BELL M SHIMADA CALCOFI CRUISE 1804 STATION 86.7 50.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
33 18.7 N	119 39.5 W	12/04/2018	1535 UTC	75 m	330 31 kn	300 10 06	0	1018.7 mb	12.3 C	9.2 C	09 m	0/8		039

DEPTH m		TEMP DEG C		POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		13.34		13.34	33.551	25.204	275.4	0.000	5.96	260.4	100.4	5.4	0.48	3.3	0.19	0.15	3.09	0.84	0	
2	A	13.34		13.34	33.551	25.204	275.4	0.006	5.96	260.4	100.4	5.4	0.48	3.3	0.19	0.15	3.09	0.84	2	11
5	A	13.34		13.34	33.551	25.204	275.5	0.014	5.95	260.0	100.2	5.4	0.46	3.2	0.19	0.09	3.01	0.77	5	10
8	A	13.34		13.34	33.553	25.205	275.5	0.022	5.95	260.1	100.3	4.1	0.45	3.2	0.18	0.08	3.16	0.60	8	09
10	ISL	13.34	D	13.34	33.550 D	25.203	275.7	0.025	5.96	D259.7	D100.4	4.4	0.46	3.2	0.18	0.08	3.14	0.64	10	
14	A	13.34		13.34	33.552	25.204	275.7	0.039	5.94	259.6	100.1	5.1	0.47	3.1	0.18	0.08	3.11	0.72	14	06
15		13.34		13.34	33.553	25.206	275.6	0.040											14	08
14		13.34		13.34	33.552	25.205	275.7	0.040											14	07
20	ISL	13.35	D	13.35	33.550 D	25.202	276.2	0.053	5.97	D259.9	D100.5	5.1	0.47	3.1	0.18	0.08	3.08	0.75	20	
24	A	13.35		13.34	33.552	25.203	276.2	0.066	5.97	260.9	100.6	5.1	0.47	3.1	0.18	0.08	3.07	0.77	24	05
30	A	13.32		13.32	33.551	25.209	275.8	0.083	5.92	258.8	99.7	5.1	0.47	3.2	0.18	0.11	2.98	0.72	30	04
40		12.96		12.95	33.544	25.277	269.6	0.110	5.90	257.5	98.5	5.2	0.48	3.5	0.19	0.13	2.72	0.66	40	03
50		11.55		11.54	33.509	25.518	246.9	0.136	4.70	205.3	76.2	9.7	0.99	10.9	0.10	0.00	0.51	0.56	50	02
63		10.86		10.86	33.590	25.705	229.3	0.167	4.18	182.5	66.8	14.2	1.23	14.5	0.14	0.07	0.20	0.42	64	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 1804 STATION 86.7 55.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
33 9.4 N	120 0.0 W	13/04/2018	2014 UTC	1205 m	330 19 kn	310 05 09	0	1024.7 mb	13.1 C	10.6 C	15 m	0/8		040

DEPTH m		TEMP DEG C		POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		14.01		14.01	33.417	24.963	298.3	0.000	5.95	260.0	101.5	2.0	0.28	0.6	0.05	0.06	0.62	0.19	0	
2	A	14.01		14.01	33.417	24.963	298.3	0.006	5.95	260.0	101.5	2.0	0.28	0.6	0.05	0.06	0.62	0.19	2	24
9	A	13.99		13.99	33.418	24.968	298.1	0.027	5.98	261.2	101.9						0.64	0.18	9	23
10	ISL	13.97	D	13.96	33.414 D	24.970	297.9	0.027	5.89	D256.7	D100.4	2.0	0.28	0.5	0.05	0.00	0.63	0.18	10	
11	A	13.92		13.92	33.415	24.980	297.0	0.033	5.95	259.9	101.3	2.0	0.28	0.5	0.05	0.00	0.63	0.18	11	20
11		13.92		13.92	33.417	24.982	296.9	0.034											11	22
11		13.92		13.92	33.415	24.980	297.1	0.033											11	21
20	ISL	13.65	D	13.65	33.405 D	25.028	292.7	0.057	5.92	D258.0	D100.3	2.1	0.31	0.7	0.07	0.00	0.81	0.24	20	
23	A	13.58		13.58	33.409	25.045	291.2	0.068	5.94	D258.7	D100.4	2.2	0.32	0.8	0.08	0.00	0.87	0.26	23	19
30	ISL	13.56	D	13.55	33.411 D	25.053	290.7	0.086	5.91	D257.5	D 99.9	2.1	0.32	0.8	0.09	0.00	0.96	0.32	30	
32		13.55		13.55	33.414	25.056	290.4	0.094	5.92	D257.8	D100.0	2.1	0.32	0.8	0.10	0.05	0.98	0.34	32	18
41	A	13.57		13.56	33.423	25.060	290.3	0.121	5.88	D256.0	D 99.4	2.1	0.31	0.9	0.10	0.07	1.01	0.33	41	16
41		13.57		13.56	33.424	25.061	290.2	0.120											41	17
50	ISL	13.60	D	13.59	33.433 D	25.063	290.3	0.145	5.94	D258.6	D100.4	2.2	0.33	1.1	0.11	0.08	1.04	0.36	50	
52	A	13.35		13.34	33.434	25.114	285.5	0.152	5.92	258.7	99.6	2.2	0.33	1.1	0.11	0.08	1.05	0.37	52	15
60		13.09		13.08	33.444	25.174	280.0	0.175	5.55	D241.6	D 92.9	3.7	0.46	3.3	0.08	0.00	0.76	0.34	60	14
71		12.25		12.24	33.452	25.343	264.1	0.205	5.31	232.0	87.3	5.2	0.59	5.3	0.05	0.00	0.39	0.29	72	13
75	ISL	11.83	D	11.82	33.455 D	25.425	256.3	0.214	5.08	D221.1	D 82.8	5.9	0.65	6.3	0.04	0.00	0.32	0.24	76	
84		11.59		11.58	33.460	25.475	251.8	0.238	4.98	D217.0	D 80.8	7.5	0.78	8.5	0.03	0.00	0.14	0.13	85	12
99		10.45		10.44	33.557	25.753	225.6	0.274	4.24	185.4	67.2	14.0	1.25	15.8	0.03	0.00	0.04	0.06	100	11
100	ISL	10.44	D	10.43	33.570 D	25.765	224.5	0.275	4.15	D180.8	D 65.8	14.3	1.26	16.0	0.00	0.00	0.04	0.05	101	
120		9.55		9.53	33.706	26.022	200.3	0.319	3.68	161.0	57.2	20.3	1.55	20.3	0.00	0.00	0.01	0.02	121	10
125	ISL	9.41	D	9.39	33.785 D	26.106	192.4	0.328	3.52	D153.2	D 54.5	21.6	1.61	21.2	0.00	0.00	0.01	0.03	126	
140		9.14		9.13	33.829	26.184	185.3	0.357	3.20	140.0	49.4	25.6	1.79	23.9	0.00	0.00	0.01	0.03	141	09
150	ISL	8.94	D	8.93	33.896 D	26.268	177.4	0.374	3.03	D132.0	D 46.6	27.7	1.86	24.9	0.00	0.00	0.01	0.03	151	
171		8.70		8.68	33.959	26.356	169.5	0.412	2.61	D113.6	D 39.9	32.2	2.02	27.2	0.00	0.00	0.00	0.03	172	08
200		8.21		8.19	33.997	26.462	159.9	0.460	2.56	111.7	38.6	36.5	2.12	28.5	0.00	0.00	0.01	0.02	202	07
230		7.79		7.77	34.028	26.548	152.1	0.507	2.13	D 92.7	D 31.9	41.8	2.24	30.5	0.00	0.00			232	06
250	ISL	7.74	D	7.71	34.102 D	26.614	146.2	0.536	1.73	D 75.3	D 25.9	45.3	2.41	31.8	0.00	0.00			252	
270		7.71		7.68	34.155	26.661	142.1	0.566	1.30	56.7	19.4	48.7	2.58	33.1	0.00	0.00			272	05
300	ISL	7.52	D	7.49	34.179 D	26.707	138.1	0.608	1.06	D 46.1	D 15.8	52.6	2.69	34.1	0.00	0.00			302	
320		7.48		7.45	34.216	26.743	135.1	0.635	0.85	D 36.8	D 12.6	55.2	2.77	34.8	0.00	0.00			323	04
380		6.90		6.87	34.279	26.874	123.4	0.712	0.49	21.2	7.1	65.6	2.96	37.0	0.00	0.00			383	03
400	ISL	6.81	D	6.78	34.284 D	26.891	122.0	0.738	0.46	D 20.1	D 6.8	67.5	2.99	37.4	0.00	0.00			403	
439		6.52		6.48	34.293	26.938	117.9	0.783	0.39	D 17.1	D 5.7	71.2	3.06	38.2	0.00	0.00			443	02
500	ISL	6.14	D	6.10	34.300 D	26.993	113.2	0.857	0.33	D 14.4	D 4.8	75.6	3.10	39.5	0.00	0.00			504	
515		6.11		6.07	34.303	26.999	112.8	0.871	0.32	14.0	4.6	76.6	3.11	39.8	0.00	0.00			519	01

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

RV BELL M SHIMADA CALCOFI CRUISE 1804 STATION 86.7 60.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
32 59.1 N	120 20.7 W	14/04/2018	0050 UTC	735 m	340 20 kn	320 08 13	0	1023.3 mb	14.3 C	11.4 C	15 m	0/8		041

DEPTH m		TEMP DEG C		POTTEMP DEG C		SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg		OXY PCT		SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		14.67		14.67		33.358	24.778	315.9	0.000	6.00	262.0		103.6		1.5	0.23	0.0	0.02	0.01	0.22	0.04	0	
2		14.67		14.67		33.358	24.778	316.0	0.006	6.00	262.0		103.6		1.5	0.23	0.0	0.00	0.00	0.22	0.04	2	21
10		14.67		14.67		33.355	24.776	316.5	0.032	5.94	259.5		102.7		1.4	0.23	0.0	0.00	0.00	0.20	0.06	10	19
10		14.67		14.67		33.357	24.777	316.3	0.031													10	20
20	ISL	14.67	D	14.67		33.353	D 24.775	316.9	0.061	5.88	D256.2		D101.6		1.4	0.24	0.0	0.00	0.00	0.22	0.08	20	
25		14.66		14.66		33.355	24.779	316.7	0.079	5.92	258.9		102.4		1.4	0.24	0.0	0.00	0.00	0.22	0.08	25	18
30	ISL	14.67	D	14.66		33.355	D 24.778	316.8	0.093	5.87	D256.0		D101.5		1.4	0.24	0.0	0.00	0.00	0.22	0.08	30	
40		14.63		14.62		33.360	24.790	316.0	0.127	5.88	D256.1		D101.5		1.4	0.23	0.0	0.00	0.00	0.23	0.07	40	17
50	ISL	13.86	D	13.85		33.355	D 24.948	301.2	0.156	5.96	D259.8		D101.4		1.6	0.25	0.0	0.00	0.00	0.43	0.20	50	
51		13.52		13.51		33.366	25.027	293.8	0.160	5.96	D259.6		D100.6		1.6	0.25	0.0	0.00	0.00	0.45	0.22	51	16
63		12.89		12.88		33.376	25.161	281.3	0.195	5.87	256.3		97.8		3.3	0.41	1.7	0.44	0.05	0.60	0.45	64	15
75		12.84		12.83		33.445	25.225	275.5	0.228	5.67	D247.1		D 94.5		4.2	0.48	3.0	0.55	0.00	0.25	0.25	76	14
87		11.94		11.93		33.428	25.385	260.5	0.260	5.22	228.1		85.3		6.0	0.68	6.5	0.03	0.00	0.12	0.13	88	13
100	ISL	11.20	D	11.19		33.468	D 25.551	245.0	0.293	4.78	D208.2		D 76.9		8.2	0.88	9.8	0.03	0.00	0.08	0.09	101	
101		11.20		11.19		33.447	25.535	246.4	0.296	4.87	213.0		78.4		8.4	0.89	10.0	0.03	0.00	0.07	0.09	102	12
111		10.74		10.72		33.554	25.701	230.8	0.320	4.36	D189.9		D 69.5		12.1	1.12	13.7	0.00	0.00	0.05	0.06	112	11
125		10.29		10.27		33.601	25.816	220.2	0.351	3.96	173.2		62.6		16.2	1.40	17.9	0.00	0.00	0.02	0.04	126	10
141		9.76		9.75		33.706	25.987	204.2	0.385	3.68	160.6		57.4		20.1	1.56	20.4	0.00	0.00	0.01	0.03	142	09
150	ISL	9.49	D	9.47		33.781	D 26.091	194.4	0.403	3.45	D150.2		D 53.6		22.5	1.65	21.7	0.00	0.00	0.01	0.03	151	
170		8.90		8.88		33.886	26.267	178.0	0.441	2.95	D128.4		D 45.2		27.9	1.86	24.8	0.00	0.00	0.01	0.02	171	08
200	ISL	8.56	D	8.54		33.955	D 26.375	168.2	0.493	2.73	D118.7		D 41.5		32.5	1.98	26.8	0.00	0.00	0.00	0.03	202	
201		8.56		8.54		33.955	26.375	168.3	0.495	2.80	122.1		42.5		32.7	1.98	26.8	0.00	0.00	0.00	0.03	203	07
229		8.18		8.16		34.006	26.474	159.3	0.540	2.44	D106.1		D 36.8		36.8	2.16	28.9	0.00	0.11			231	06
250	ISL	7.75	D	7.72		34.042	D 26.566	150.7	0.573	2.03	D 88.4		D 30.4		41.5	2.29	30.2	0.00	0.00			252	
270		7.53		7.50		34.062	26.614	146.4	0.603	1.81	79.1		27.0		45.9	2.42	31.4	0.00	0.00			272	05
300	ISL	7.24	D	7.21		34.099	D 26.684	140.1	0.647	1.40	D 60.9		D 20.7		50.7	2.55	33.6	0.00	0.00			302	
320		7.08		7.04		34.100	26.708	138.1	0.674	1.29	D 56.2		D 19.0		53.9	2.64	35.1	0.00	0.00			323	04
380		6.93		6.90		34.197	26.805	129.9	0.754	0.78	34.1		11.5		59.6	2.86	36.4	0.00	0.00			383	03
400	ISL	6.96	D	6.92		34.220	D 26.820	128.8	0.782	0.68	D 29.8		D 10.1		61.2	2.88	36.7	0.00	0.00			403	
437		6.84		6.80		34.237	26.851	126.4	0.827	0.59	D 25.4		D 8.6		64.1	2.93	37.1	0.00	0.00			441	02
500	ISL	5.99	D	5.95		34.239	D 26.964	115.8	0.907	0.42	D 18.3		D 6.0		76.5	3.09	40.0	0.00	0.00			504	
514		5.78		5.73		34.227	26.980	114.1	0.920	0.41	17.9		5.9		79.2	3.13	40.7	0.00	0.00			518	01

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

RV BELL M SHIMADA CALCOFI CRUISE 1804 STATION 86.7 70.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
32 39.3 N	121 1.9 W	14/04/2018	0741 UTC	3797 m	340 21 kn			1024.2 mb	14.3 C	12.4 C				042

DEPTH m		TEMP DEG C		POTTEMP DEG C		SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg		OXY PCT		SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		14.68		14.68		33.314	24.742	319.3	0.000	5.92	258.8		102.4		1.6	0.23	0.0	0.02	0.04	0.15	0.04	0	
2		14.68		14.68		33.314	24.742	319.4	0.006	5.92	258.8		102.4		1.6	0.23	0.0	0.00	0.00	0.15	0.04	2	21
9		14.68		14.68		33.326	24.752	318.7	0.030													9	20
10		14.69		14.68		33.316	24.743	319.6	0.032	5.93	258.8		102.4		1.7	0.22	0.0	0.00	0.00	0.15	0.04	10	19
20	ISL	14.69	D	14.68		33.314	D 24.742	320.0	0.061	5.89	D256.5		D101.8		1.7	0.23	0.0	0.00	0.00	0.16	0.04	20	
24		14.69		14.69		33.316	24.743	320.0	0.077	5.92	258.7		102.4		1.7	0.24	0.0	0.00	0.00	0.16	0.05	24	18
30	ISL	14.69	D	14.69		33.315	D 24.742	320.3	0.093	5.89	D256.7		D101.8		1.7	0.24	0.0	0.00	0.00	0.16	0.04	30	
40		14.69		14.69		33.315	24.743	320.6	0.128	5.90	D257.0		D101.9		1.6	0.24	0.0	0.00	0.00	0.16	0.04	40	17
49		14.68		14.67		33.312	24.745	320.7	0.157	5.83	D254.3		D100.8		1.5	0.24	0.0	0.00	0.00	0.16	0.04	49	16
50	ISL	14.67	D	14.66		33.311	D 24.746	320.6	0.158	5.86	D255.4		D101.3		1.6	0.24	0.0	0.00	0.00	0.20	0.06	50	
61		13.22		13.21		33.308	25.042	292.6	0.194	6.12	267.2		102.6		2.0	0.26	0.0	0.00	0.00	0.62	0.27	61	15
75		12.90		12.89		33.399	25.177	280.2	0.234	5.79	D252.1		D 96.5		3.6	0.43	2.0	0.49	0.00	0.55	0.41	76	14
86		12.61		12.59		33.418	25.250	273.5	0.264	5.53	241.4		91.6		4.9	0.56	4.7	0.04	0.00	0.33	0.28	87	13
100		11.42		11.41		33.478	25.519	248.0	0.301	5.09	222.2		82.2		7.0	0.75	8.1	0.03	0.00	0.13	0.13	101	12
112		10.86		10.84		33.457	25.604	240.1	0.330	4.89	D213.1		D 78.1		8.2	0.85	9.7	0.03	0.00	0.10	0.09	113	11
125	ISL	10.29	D	10.28		33.568	D 25.790	222.7	0.360	4.28	D186.3		D 67.5		13.6	1.19	15.0	0.00	0.00	0.03	0.04	126	
126		10.26		10.25		33.563	25.791	222.6	0.362	4.36	190.6		68.8		14.0	1.22	15.4	0.00	0.00	0.03	0.04	127	10
142		9.94		9.92		33.671	25.930	209.6	0.397	3.71	162.1		58.2		19.2	1.52	20.0	0.00	0.00	0.01	0.04	143	09
150	ISL	9.69	D	9.67		33.732	D 26.020	201.2	0.413	3.56	D154.8		D 55.4		21.0	1.59	21.1	0.00	0.00	0.01	0.04	151	
168		9.28		9.27		33.824	26.158	188.4	0.449	3.24	D141.2		D 50.1		25.1	1.75	23.7	0.00	0.00	0.00	0.04	169	08
200		8.80		8.77		33.922	26.313	174.2	0.507	3.23	140.9		49.3		29.1	1.81	24.9	0.00	0.00	0.00	0.03	202	07
230		8.18		8.15		33.985	26.458	160.8	0.557	2.66	D115.7		D 40.1		35.4	2.03	27.9	0.00	0.00			232	06
250	ISL	8.02	D	7.99		34.015	D 26.506	156.6	0.589	2.40	D104.5		D 36.1		39.4	2.16	29.6	0.00	0.00			252	
269		7.69		7.66		34.034	26.568	150.8	0.618	2.13	92.9		31.8		43.2	2.28	31.2	0.00	0.00			271	05
300	ISL	7.48	D	7.45		34.070	D 26.628	145.6	0.665	1.72	D 74.8		D 25.6		47.6	2.43	32.7	0.00	0.00			302	
319		7.35		7.32		34.084	26.657	143.1	0.691	1.57	D 68.1		D 23.2		50.4	2.52	33.7	0.00	0.00			322	04
379		6.70		6.67		34.118	26.774	132.5	0.774	1.06	46.4		15.5		60.3	2.75	36.9	0.00	0.00			382	03
400	ISL	6.47	D	6.43		34.140	D 26.823	128.0	0.803	0.86	D 37.4		D 12.5		64.4	2.82	37.8	0.00	0.00			403	
441		6.07		6.03		34.177	26.903	120.7	0.853	0.61	D 26.3		D 8.7		72.4	2.97	39.5	0.00	0.00			445	02
500	ISL	5.82	D	5.77		34.239	D 26.985	113.5	0.925	0.39	D 17.1		D 5.6									504	
516		5.76		5.72		34.248	D 26.999	112.4	0.943	0.37	D 15.9		D 5.2									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 1804 STATION 86.7 80.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
32 19.5 N	121 44.1 W	14/04/2018	1713	UTC	4053 m	350 16 kn	320 06 09	0	1024.1 mb	15.4 C	13.3 C	20 m	0/8		043

DEPTH m		TEMP DEG C		POTTEMP DEG C		SALINITY		SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg		OXY PCT		SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		14.62		14.62		33.301		24.744	319.1	0.000	5.95	260.0		102.7		1.3	0.23	0.0	0.02	0.04	0.17	0.05	0	
2	A	14.62		14.62		33.301		24.744	319.2	0.006	5.95	260.0		102.7		1.3	0.23	0.0	0.00	0.00	0.17	0.05	2	24
10	ISL	14.62	D	14.61		33.300	D	24.746	319.3	0.029	5.90	D257.2	D	101.9		1.4	0.23	0.0	0.00	0.00	0.18	0.04	10	
12	A	14.60		14.60		33.301		24.751	318.9	0.038	5.94	259.6		102.5		1.4	0.23	0.0	0.00	0.00	0.18	0.04	12	22
12		14.60		14.60		33.301		24.751	318.9	0.039													12	23
15	A	14.56		14.56		33.300		24.757	318.4	0.048	5.90	D257.3	D	101.8		1.5	0.23	0.0	0.00	0.00	0.18	0.04	15	21
20	ISL	14.56	D	14.56		33.298	D	24.756	318.7	0.061	5.90	D257.2	D	101.8		1.5	0.23	0.0	0.00	0.00	0.18	0.04	20	
30	A	14.56		14.55		33.299		24.758	318.7	0.096	5.94	259.5		102.4		1.4	0.22	0.0	0.00	0.00	0.19	0.04	30	20
38		14.56		14.55		33.298		24.758	319.0	0.121	5.91	D257.4	D	101.8		1.3	0.23	0.0	0.00	0.00	0.19	0.05	38	19
46		14.56		14.55		33.299		24.760	319.2	0.147	5.90	D257.0	D	101.7		1.3	0.23	0.0	0.00	0.00	0.19	0.05	46	18
50	ISL	14.56	D	14.55		33.298	D	24.759	319.3	0.158	5.91	D257.4	D	101.8		1.3	0.23	0.0	0.00	0.00	0.20	0.05	50	
55	A	14.56		14.55		33.301		24.761	319.3	0.175	5.88	D256.3	D	101.4		1.3	0.23	0.0	0.00	0.00	0.21	0.05	55	17
63		14.54		14.53		33.496		24.916	304.8	0.200	5.93	258.9		102.3		1.8	0.21	0.0	0.00	0.00	0.31	0.12	64	16
68	A	14.40		14.39		33.495		24.945	302.2	0.216	5.86	D255.4	D	100.9		1.9	0.22	0.0	0.00	0.00	0.44	0.24	69	15
75	ISL	13.93	D	13.92		33.419	D	24.984	298.6	0.235	5.92	D257.8	D	100.8		1.9	0.24	0.0	0.00	0.00	0.58	0.36	76	
76		13.67		13.66		33.432		25.048	292.5	0.240	5.92	D258.0	D	100.3		1.9	0.24	0.0	0.00	0.00	0.60	0.38	77	14
85		12.77		12.76		33.258		25.095	288.2	0.266	5.97	261.0		99.2		2.4	0.36	1.0	0.26	0.13	0.56	0.35	86	13
96		12.63		12.62		33.408		25.238	274.9	0.297	5.42	D236.2	D	89.9		3.7	0.47	3.3	0.14	0.00	0.36	0.37	97	12
100	ISL	12.22	D	12.21		33.420	D	25.325	266.6	0.306	5.37	D234.0	D	88.3		4.9	0.57	5.0	0.00	0.00	0.28	0.29	101	
111		11.25		11.24		33.469		25.543	246.0	0.336	4.94	215.7		79.5		8.3	0.86	9.8	0.00	0.00	0.04	0.07	112	11
125		10.81		10.79		33.537		25.677	233.5	0.369	4.58	200.0		73.1		11.3	1.07	13.2	0.00	0.00	0.03	0.05	126	10
140		10.09		10.07		33.637		25.878	214.6	0.403	3.89	170.0		61.2		17.2	1.42	18.8	0.00	0.00	0.01	0.04	141	09
150	ISL	9.91	D	9.89		33.688	D	25.949	208.0	0.424	3.65	D158.9	D	57.2		19.3	1.51	20.2	0.00	0.00	0.01	0.04	151	
171		9.41		9.39		33.784		26.107	193.4	0.466	3.34	D145.3	D	51.7		23.8	1.71	23.3	0.00	0.00	0.00	0.03	172	08
200	ISL	8.89	D	8.86		33.920	D	26.298	175.7	0.520	3.19	D138.8	D	48.9		28.3	1.82	25.3	0.00	0.00	0.00	0.02	202	
201		8.88		8.85		33.920		26.299	175.6	0.522	3.22	140.6		49.3		28.4	1.82	25.4	0.00	0.00	0.00	0.02	203	07
230		8.56		8.54		33.962		26.381	168.3	0.571	3.02	D131.5	D	46.0		31.4	1.90	26.6	0.00	0.00			232	06
250	ISL	8.17	D	8.14		33.986	D	26.461	160.9	0.605	2.92	D127.2	D	44.1		35.3	2.01	28.2	0.00	0.00			252	
270		7.80		7.77		34.000		26.526	154.9	0.636	2.64	115.4		39.5		39.3	2.12	29.8	0.00	0.00			272	05
300	ISL	7.41	D	7.39		34.043	D	26.615	146.7	0.682	1.97	D 85.7	D	29.2		45.7	2.33	32.5	0.00	0.00			302	
319		7.21		7.18		34.047		26.648	143.8	0.709	1.81	D 78.8	D	26.7		49.7	2.46	34.2	0.00	0.00			322	04
380		6.52		6.49		34.066		26.756	134.0	0.794	1.40	60.9		20.3		58.9	2.66	37.2	0.00	0.00			383	03
400	ISL	6.40	D	6.36		34.095	D	26.796	130.5	0.823	1.16	D 50.2	D	16.7		62.1	2.74	38.0	0.00	0.00			403	
440		6.12		6.08		34.131		26.861	124.6	0.871	0.87	D 37.6	D	12.5		68.7	2.90	39.8	0.00	0.00			444	01
500	ISL	5.66	D	5.62		34.164	D	26.944	117.1	0.947	0.62	D 27.0	D	8.8		77.9	3.02	41.5	0.00	0.00			504	
515		5.49		5.45		34.172		26.972	114.6	0.961	0.58	25.4		8.2		80.2	3.05	42.0	0.00	0.00			519	02

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 1804 STATION 86.7 90.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
31 59.4 N	122 23.8 W	14/04/2018	2203	UTC	4091 m	360 18 kn	320 06 10	0	1023.4 mb	15.4 C	14.7 C	20 m	0/8		044

DEPTH m		TEMP DEG C		POTTEMP DEG C		SALINITY		SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg		OXY PCT		SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		15.36		15.36		33.429		24.684	324.9	0.000	5.84	255.3		102.5		1.7	0.22	0.0	0.01	0.03	0.10	0.02	0	
2		15.36		15.36		33.429		24.684	325.0	0.007	5.84	255.3		102.5		1.7	0.22	0.0	0.00	0.00	0.10	0.02	2	21
10		15.31		15.31		33.429		24.695	324.2	0.033	5.84	255.1		102.3		1.7	0.22	0.0	0.00	0.00	0.11	0.02	10	19
10		15.31		15.31		33.445		24.707	323.0	0.033													10	20
20	ISL	15.15	D	15.14		33.431	D	24.733	320.9	0.062	5.82	D253.6	D	101.6		1.7	0.22	0.0	0.00	0.00	0.11	0.03	20	
25		15.13		15.13		33.431		24.736	320.8	0.081	5.84	255.2		101.9		1.7	0.22	0.0	0.00	0.06	0.11	0.03	25	18
30	ISL	15.12	D	15.12		33.430	D	24.738	320.7	0.094	5.81	D253.2	D	101.4		1.7	0.22	0.0	0.00	0.00	0.12	0.03	30	
41		15.11		15.10		33.429	D	24.741	320.8	0.130	5.84	D		101.8									41	17
50		15.01		15.01		33.420	D	24.755	319.7	0.159	5.83	D254.3	D	101.6		1.6	0.21	0.0	0.00	0.00	0.15	0.04	50	16
62		14.27		14.26		33.401		24.899	306.3	0.199	5.93	259.2		101.7		1.9	0.24	0.0	0.00	0.00	0.36	0.20	62	15
75		13.48		13.47		33.317		24.999	297.2	0.238	5.96	D259.8	D	100.5		2.1	0.28	0.2	0.06	0.00	0.64	0.48	76	14
87		13.05		13.04		33.309		25.077	290.0	0.273	5.91	258.4		98.8		2.5	0.37	0.8	0.35	0.32	0.44	0.35	88	13
100		12.82		12.81		33.400		25.195	279.2	0.310	5.61	245.2		93.4		4.0	0.50	3.4	0.17	0.11	0.20	0.15	101	12
113		11.70		11.68		33.418		25.423	257.5	0.345	5.15	D224.2	D	83.7		5.9	0.67	6.7	0.03	0.00	0.14	0.11	114	11
125	ISL	10.96	D	10.94		33.526	D	25.641	237.0	0.374	4.48	D195.1	D	71.7		11.1	1.06	13.0	0.00	0.00	0.08	0.10	126	
126		10.93		10.91		33.520		25.643	236.8	0.377	4.44	194.2		71.0		11.5	1.09	13.5	0.00	0.00	0.07	0.10	127	10
141		10.15		10.14		33.621		25.856	216.8	0.411	4.12	180.2		64.9		16.0	1.33	17.5	0.00	0.00	0.01	0.03	142	09
150	ISL	9.88	D	9.86		33.686	D	25.952	207.7	0.430	3.69	D160.5	D	57.7		18.5	1.45	19.3	0.00	0.00	0.01	0.03	151	
171		9.37		9.35		33.809		26.133	190.9	0.472	3.31	D144.2	D	51.3		24.4	1.72	23.4	0.00	0.00	0.01	0.03	172	08
200	ISL	8.82	D	8.80		33.913	D	26.302	175.3	0.525	3.01	D130.9	D	46.0		29.1	1.88	25.6	0.00	0.00	0.00	0.02	202	
201		8.80		8.78		33.912		26.304	175.0	0.527	3.00	131.2		45.9		29.3	1.89	25.7	0.00	0.00	0.00	0.02	203	07
230		8.43		8.40		33.988		26.422	164.3	0.576	2.53	D110.0	D	38.4		34.5	2.07	28.1	0.00	0.00			232	06
250	ISL	8.18	D	8.15		34.029	D	26.493	157.9	0.609	2.26	D 98.1	D	34.0		37.8	2.17	29.5	0.00	0.00			252	
270		7.91		7.89		34.037		26.538	153.8	0.640	2.10	91.8		31.5		41.2	2.27	30.8	0.00	0.00			272	05
300	ISL	7.59	D	7.56		34.068	D	26.610	147.4	0.686	1.77	D 76.8	D	26.3		47.0	2.44	32.9	0.00	0.00			302	
320		7.33		7.30		34.095		26.668	142.0	0.714	1.43	D 62.0	D	21.1		50.9	2.55	34.3	0.00	0.00			323	04
381		6.84		6.80		34.139		26.773	132.8	0.798	0.95	41.6		14.0		59.6	2.76	37.0	0.00	0.00			384	03
400	ISL	6.65	D	6.61		34.147	D	26.804	130.0	0.825	0.85	D 37.0	D	12.4		62.4	2.82	37.7	0.00	0.00			403	
440		6.26		6.22		34.168		26.872	123.8	0.873	0.66	D 28.6	D	9.5		68.4	2.94	39.2	0.00	0.00			444	02
500	ISL	5.83	D	5.78		34.208	D	26.959	116.0	0.948	0.48	D 21.0	D	6.9		76.7	3.06	40.6	0.00	0.00			504	
516		5.74		5.69		34.214		26.975	114.6	0.964	0.42	18.3		6.0		78.9	3.09	40.9	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;

RV BELL M SHIMADA CALCOFI CRUISE 1804 STATION 86.7 100.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
31 39.3 N	123 4.1 W	15/04/2018	0338	UTC	4028 m	010 17 kn			1022.1 mb	14.1 C	12.7 C				045

DEPTH m		TEMP DEG C		POTTEMP DEG C		SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg		OXY PCT		SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		15.24		15.24		33.336	24.638	329.3	0.000	5.92	258.6		103.5		1.5	0.24	0.2	0.00	0.00	0.12	0.01	0	
2		15.24		15.24		33.336	24.638	329.3	0.007	5.92	258.6		103.5		1.5	0.24	0.2	0.00	0.00	0.12	0.01	2	21
10		15.25		15.24		33.334	24.636	329.8	0.033	5.87	256.7		102.7		1.5	0.23	0.1	0.00	0.00	0.11	0.02	10	19
10		15.25		15.24		33.336	24.637	329.7	0.033													10	20
20	ISL	15.21	D	15.21		33.347	D 24.654	328.4	0.063	5.89	D256.7		D102.9		1.6	0.23	0.1	0.00	0.00	0.11	0.02	20	
25		15.16		15.16		33.361	24.676	326.5	0.082	5.86	256.1		102.3		1.6	0.23	0.1	0.00	0.00	0.12	0.03	25	18
30	ISL	15.17	D	15.16		33.362	D 24.676	326.6	0.096	5.87	D255.6		D102.4		1.6	0.23	0.1	0.00	0.00	0.12	0.03	30	
40		15.17		15.16		33.364	24.679	326.7	0.131	5.87	D255.9		D102.5		1.6	0.23	0.1	0.00	0.00	0.13	0.03	40	17
50		15.15		15.14		33.364	24.682	326.7	0.164	5.87	D255.8		D102.5		1.6	0.23	0.0	0.00	0.00	0.13	0.03	50	16
62		14.22		14.21		33.321	24.849	311.1	0.202	6.01	262.6		102.9		1.7	0.23	0.1	0.00	0.00	0.26	0.07	62	15
75	ISL	13.92	D	13.91		33.369	D 24.949	301.9	0.240	6.00	D261.3		D102.1		2.0	0.25	0.1	0.00	0.00	0.52	0.35	76	
76		13.82		13.81		33.374	24.974	299.7	0.245	5.99	D260.9		D101.7		2.0	0.25	0.1	0.00	0.00	0.54	0.37	77	14
87		13.19		13.18		33.287	25.034	294.2	0.278	6.03	263.6		101.1		2.2	0.31	0.2	0.07	0.00	0.66	0.52	88	13
100		13.03		13.01		33.406	D 25.159	282.6	0.314	5.57	D242.7		D 93.1									101	12
112		12.47		12.46		33.444	25.298	269.6	0.348	5.28	230.6		87.2		5.3	0.60	5.8	0.06	0.00	0.20	0.22	113	11
125		11.79		11.77		33.427	25.414	258.8	0.383	5.13	224.4		83.6		6.6	0.72	7.6	0.03	0.00	0.11	0.13	126	10
140		10.89		10.87		33.469	25.609	240.3	0.420	4.83	211.0		77.1		9.8	0.97	11.4	0.00	0.00	0.04	0.06	141	09
150	ISL	10.56	D	10.54		33.549	D 25.730	229.0	0.444	4.38	D190.8	D	69.6		13.4	1.16	14.4	0.00	0.00	0.03	0.05	151	
170		9.69		9.67		33.696	25.993	204.2	0.487	3.73	D162.2	D	58.1		20.5	1.54	20.5	0.00	0.00	0.01	0.03	171	08
200		9.04		9.02		33.839	26.211	184.0	0.545	3.25	142.2		50.0		26.4	1.78	24.0	0.00	0.00	0.00	0.02	202	07
231		8.64		8.62		33.955	26.364	170.0	0.600	2.78	D121.1	D	42.4		32.2	1.98	26.8	0.00	0.00			233	06
250	ISL	8.30	D	8.28		34.013	D 26.461	160.9	0.633	2.46	D107.0	D	37.2		36.1	2.11	28.4	0.00	0.00			252	
271		8.07		8.04		34.042	26.520	155.7	0.665	2.13	93.0		32.1		40.3	2.25	30.3	0.00	0.00			273	05
300	ISL	7.71	D	7.68		34.065	D 26.591	149.2	0.711	1.88	D 81.8	D	28.1		44.7	2.39	31.9	0.00	0.00			302	
320		7.56		7.53		34.099	26.640	144.9	0.739	1.54	D 66.9	D	22.9		47.8	2.49	33.1	0.00	0.00			323	04
380		6.82		6.79		34.128	26.766	133.4	0.822	1.05	45.8		15.4		59.0	2.73	36.4	0.00	0.00			383	03
400	ISL	6.61	D	6.57		34.140	D 26.804	129.9	0.851	0.92	D 39.8	D	13.3		62.0	2.79	37.1	0.00	0.00			403	
440		6.35		6.31		34.177	26.868	124.3	0.899	0.67	D 29.2	D	9.7		68.2	2.92	38.5	0.00	0.00			444	02
500	ISL	5.98	D	5.94		34.219	D 26.948	117.2	0.975	0.48	D 21.0	D	6.9		74.8	3.03	39.9	0.00	0.00			504	
516		5.94		5.89		34.228	26.962	116.1	0.990	0.45	19.4		6.4		76.5	3.06	40.3	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;

RV BELL M SHIMADA CALCOFI CRUISE 1804 STATION 86.7 110.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
31 19.3 N	123 44.8 W	15/04/2018	0847	UTC	3851 m	010 13 kn			1021.2 mb	14.2 C	12.6 C				046

DEPTH m		TEMP DEG C		POTTEMP DEG C		SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg		OXY PCT		SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		16.04		16.04		33.576	24.645	328.6	0.000	5.72	250.0		101.7		1.7	0.20	0.1	0.01	0.00	0.07	0.02	0	
2		16.04		16.04		33.576	24.645	328.7	0.007	5.72	250.0		101.7		1.7	0.20	0.1	0.00	0.00	0.07	0.02	2	21
9		16.05		16.04		33.576	24.644	329.0	0.027				95.5									9	20
10		16.05		16.04		33.576	24.643	329.1	0.033	5.73	250.3		101.9		1.7	0.20	0.0	0.00	0.00	0.09	0.01	10	19
20	ISL	16.03	D	16.02		33.575	D 24.648	329.0	0.063	5.77	D251.6		D102.7		1.7	0.20	0.0	0.00	0.00	0.08	0.01	20	
25		15.96		15.96		33.571	24.660	328.0	0.082	5.74	250.8		101.9		1.7	0.20	0.0	0.00	0.00	0.08	0.02	25	18
30	ISL	15.95	D	15.94		33.568	D 24.662	328.0	0.096	5.81	D253.1		D103.1		1.7	0.20	0.0	0.00	0.00	0.08	0.02	30	
39		15.94		15.93		33.567	24.663	328.2	0.128	5.79	D252.4		D102.8		1.7	0.20	0.0	0.00	0.00	0.15	0.08	39	17
50		15.69		15.69		33.555	24.709	324.2	0.164	5.82	D253.6		D102.8		1.7	0.20	0.0	0.00	0.00	0.12	0.03	50	16
62		15.21		15.20		33.523	24.792	316.7	0.203	5.84	255.4		102.2		1.7	0.20	0.0	0.00	0.00	0.16	0.05	62	15
75		14.88		14.87		33.502	24.849	311.6	0.243	5.90	D257.3		D102.6		1.8	0.22	0.0	0.00	0.00	0.23	0.10	76	14
87		14.08		14.06		33.428	24.962	301.1	0.280	5.91	258.3		100.9		1.9	0.25	0.0	0.00	0.00	0.41	0.18	88	13
100		13.51		13.50		33.390	25.049	293.2	0.319	5.83	254.9		98.4		2.2	0.29	0.5	0.16	0.00	0.55A	0.39A	101	12
112		13.06		13.04		33.437	25.178	281.2	0.353	5.33	D232.1	D	89.1		3.8	0.44	3.0	0.06	0.05	0.19	0.21	113	11
125		11.64		11.62		33.457	25.465	253.9	0.388	5.18	226.4		84.1		5.2	0.60	5.7	0.03	0.00	0.27	0.24	126	10
139		10.83		10.81		33.538	25.674	234.2	0.422	4.03	176.0		64.2		13.7	1.24	15.6	0.00	0.00	0.05	0.05	140	09
150	ISL	10.47	D	10.46		33.647	D 25.821	220.4	0.447	3.00	D130.4	D	47.5		16.9	1.46	18.3	0.00	0.00	0.03	0.04	151	
170		10.13		10.11		33.730	25.945	209.0	0.491	2.71	D118.0	D	42.7		22.7	1.85	23.2	0.00	0.00	0.01	0.03	171	08
200		9.79		9.76		33.859	26.105	194.4	0.551	2.32	101.5		36.3		26.5	2.00	24.4	0.00	0.00	0.01	0.03	202	07
230		9.45		9.43		34.001	26.271	179.2	0.607	1.96	D 85.4	D	30.5		31.1	2.17	27.4	0.00	0.00			232	06
250	ISL	9.21	D	9.19		34.057	D 26.354	171.6	0.643	1.86	D 80.9	D	28.7		33.5	2.23	28.1	0.00	0.00			252	
270		8.90		8.87		34.083	26.425	165.2	0.676	1.79	78.3		27.5		36.0	2.28	28.9	0.00	0.00			272	05
300	ISL	8.69	D	8.66		34.144	D 26.506	158.0	0.726	1.47	D 63.9	D	22.4		39.2	2.27	30.0	0.00	0.00			302	
320		7.87		7.84		34.042	26.550	153.6	0.757	2.15	D 93.5	D	32.2		41.4	2.27	30.7	0.00	0.00			323	04
382		7.29		7.25		34.116	26.693	140.8	0.849	1.28	55.8		18.9		51.9	2.61	34.5	0.00	0.00			385	03
400	ISL	7.07	D	7.03		34.136	D 26.739	136.5	0.874	1.12	D 48.8	D	16.5		55.8	2.69	35.5	0.00	0.00			403	
439		6.56		6.52		34.155	26.823	128.7	0.925	0.83	D 36.3	D	12.1		64.1	2.85	37.6	0.00	0.00			443	02
500	ISL	6.10	D	6.05		34.203	D 26.922	119.9	1.003	0.55	D 23.9	D	7.9		72.6	3.00	39.5	0.00	0.00			504	
516		5.98		5.93		34.209	26.943	118.0	1.020	0.48	21.0		6.9		74.9	3.04	40.0	0.00	0.00			520	01

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

RV BELL M SHIMADA CALCOFI CRUISE 1804 STATION 86.8 32.5

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
33 53.1 N	118 26.7 W	11/04/2018	2143	UTC	30 m	200 03 kn	220 03 10	1	1013.9 mb	18.3 C	15.1 C		1/8	CS	034

DEPTH m		TEMP DEG C		POTTEMP DEG C		SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg		OXY PCT		SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		16.60		16.60		33.571	24.513	341.2	0.000	6.02	263.0		108.3		3.1	0.23	0.3	0.00	0.26	0.33	0.06	0	
2		16.60		16.60		33.571	24.513	341.2	0.007	6.02	263.0		108.3		3.1	0.23	0.3	0.00	0.26	0.33	0.06	2	05
5		16.04		16.04		33.567	24.638	329.4	0.017	6.12	267.2		108.8		3.4	0.22	0.3	0.00	0.22	0.43	0.09	5	04
10		15.05		15.05		33.550	24.845	309.9	0.033	6.44	281.2		112.3		5.6	0.22	0.4	0.00	0.12	1.33	0.37	10	03
15		14.70		14.69		33.547	24.919	303.0	0.048	6.37	278.3		110.3		6.2	0.25	0.6	0.04	0.15	2.54	0.60	15	02
20	ISL	13.47	D	13.47		33.565	D 25.188	277.5	0.060	5.46	D237.7	D	92.2		9.1	0.63	5.2	0.30	1.15	1.70	0.61	20	
24		12.75		12.74		33.566	25.333	263.8	0.074	4.57	199.5		76.0		11.4	0.93	8.8	0.50	1.95	1.02	0.62	24	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 1804 STATION 88.5 30.1

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
33 39.9 N	118 5.9 W	11/04/2018	1335 UTC	26 m	240 05 kn	240 02 06	0	1014.0 mb	15.4 C	14.2 C		0/8		032

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0	15.93	15.93	33.542	24.644	328.7	0.000	6.30	275.2	111.8	2.8	0.15	0.3	0.02	0.27	0.66	0.16	0	
2	15.93	15.93	33.542	24.644	328.8	0.007	6.30	275.2	111.8	2.8	0.15	0.3	0.00	0.27	0.66	0.16	2	05
5	15.85	15.85	33.542	24.661	327.2	0.016	6.30	275.1	111.6	2.6	0.14	0.3	0.00	0.07	0.69	0.15	5	04
10	14.37	14.37	33.546	24.987	296.4	0.032	6.02	262.9	103.5	4.4	0.30	0.8	0.10	0.46	1.63	0.35	10	03
15	13.95	13.95	33.528	25.062	289.3	0.047	5.54	242.2	94.5	6.3	0.49	2.9	0.26	0.91	1.39	0.48	15	02
20	13.30	13.29	33.526	25.194	277.0	0.061	5.17	226.1	87.1	8.1	0.65	4.8	0.41	1.12	2.53	0.53	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 1804 STATION 90.0 27.7

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
33 28.2 N	117 44.1 W	11/04/2018	0921 UTC	30 m	050 01 kn			1014.2 mb	16.2 C	15.1 C				030

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0	16.71	16.71	33.560	24.477	344.6	0.000	6.17	269.7	111.3	3.9	0.17	0.6	0.02	0.67	0.32	0.08	0	
2	16.71	16.71	33.560	24.477	344.6	0.007	6.17	269.7	111.3	3.9	0.17	0.6	0.00	0.67	0.32	0.08	2	05
5	16.07	16.07	33.560	24.626	330.6	0.017	6.15	268.8	109.5	3.2	0.18	0.2	0.00	0.00	0.34	0.11	5	04
10	15.63	15.62	33.563	24.728	321.0	0.033	6.19	270.5	109.2	3.0	0.19	0.0	0.00	0.05	0.63	0.13	10	03
15	14.36	14.35	33.544	24.989	296.3	0.049	6.09	266.2	104.8	4.4	0.27	0.6	0.09	0.18	1.81	0.39	15	02
20	14.71	14.70	33.543	24.914	303.6	0.064	5.98	261.1	103.5	4.5	0.30	1.3	0.13	0.18	1.35	0.36	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 1804 STATION 90.0 28.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
33 29.0 N	117 46.1 W	11/04/2018	1020 UTC	70 m	110 04 kn			1013.8 mb	15.6 C	14.3 C				031

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0	16.80	16.80	33.554	24.452	347.0	0.000	6.15	268.9	111.1	2.1	0.14	0.0	0.01	0.00	0.48	0.10	0	
1	16.80	16.80	33.554	24.452	347.0	0.004	6.15	268.9	111.1	2.1	0.14	0.0	0.00	0.00	0.48	0.10	1	08
5	15.48	15.48	33.553	24.751	318.6	0.017	6.22	271.8	109.4	2.8	0.18	0.0	0.00	0.00	0.48	0.13	5	07
10	14.69	14.69	33.542	24.917	303.0	0.032	6.21	271.1	107.4	3.6	0.24	0.2	0.05	0.00	0.81	0.19	10	06
20	13.18	13.18	33.544	25.231	273.4	0.061	5.42	236.6	90.9	5.8	0.55	4.5	0.36	0.00	1.18	0.45	20	05
30	12.06	12.06	33.560	25.462	251.7	0.087	4.33	189.3	71.0	10.9	1.03	11.7	0.23	0.00	0.41	0.16	30	04
40	11.16	11.16	33.591	25.652	233.8	0.112	3.75	163.8	60.3	14.9	1.32	16.2	0.14	0.00	0.48	0.17	40	03
50	10.47	10.46	33.668	25.834	216.7	0.134	3.14	137.0	49.7	19.8	1.65	21.2	0.48	0.07	0.42	0.29	50	02
60	10.36	10.35	33.679	25.862	214.3	0.156	3.05	133.3	48.3	21.4	1.79	22.2	0.48	0.70	0.15	0.37	60	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 1804 STATION 90.0 30.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
33 25.0 N	117 54.4 W	11/04/2018	0627 UTC	612 m	200 01 kn			1014.9 mb	16.4 C	14.7 C				029

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0	16.75	16.75	33.575	24.479	344.4	0.000	5.95	259.9	107.3	2.9	0.20	0.1	0.01	0.14	0.31	0.06	0	
2	16.75	16.75	33.575	24.479	344.4	0.007	5.95	259.9	107.3	2.9	0.20	0.1	0.00	0.14	0.31	0.06	2	21
10	14.99	14.98	33.563	24.869	307.6	0.033	6.15	268.9	107.1	2.8	0.20	0.1	0.00	0.09	0.32	0.08	10	19
10	14.99	14.98	33.568	24.872	307.3	0.034											10	20
20	14.22	14.22	33.548	25.021	293.4	0.063	5.96	260.6	102.2	3.4	0.30	0.8	0.06	0.31	1.00	0.27	20	18
30	13.86	13.85	33.545	25.095	286.7	0.092	5.80	D252.7 D	98.7	4.3	0.39	2.2	0.16	0.27	0.68	0.21	30	17
40	12.55	12.55	33.543	25.355	262.2	0.119	4.67	D203.5 D	77.4	9.1	0.87	9.3	0.37	0.08	0.54	0.14	40	16
50	11.36	11.35	33.563	25.595	239.5	0.145	3.81	166.7	61.6	14.4	1.29	15.8	0.11	0.00	0.33	0.21	50	15
60	11.03	11.02	33.588	25.675	232.1	0.168	3.71	D161.5 D	59.5	15.8	1.36	17.0	0.08	0.00	0.24	0.16	60	14
70	10.57	10.56	33.642	25.797	220.7	0.191	3.46	151.4	55.0	18.3	1.51	19.1	0.04	0.00	0.12	0.12	71	13
75 ISL	10.43 D	10.42	33.676 D	25.848	216.0	0.200	3.41	D148.6 D	54.1	19.6	1.58	20.1	0.04	0.00	0.10	0.11	76	
85	9.98	9.97	33.754	25.986	203.0	0.223	2.96	D128.8 D	46.4	22.2	1.73	22.2	0.03	0.00	0.05	0.10	86	12
100	9.72	9.71	33.844	26.100	192.5	0.252	2.80	122.3	43.7	25.5	1.86	24.2	0.00	0.00	0.01	0.06	101	11
120	9.38	9.36	33.944	26.235	180.1	0.290	2.55	111.2	39.5	28.9	1.99	26.0	0.00	0.00	0.01	0.06	121	10
125 ISL	9.36 D	9.34	33.960 D	26.251	178.6	0.297	2.49	D108.3 D	38.6	29.6	2.02	26.3	0.00	0.00	0.01	0.06	126	
140	9.28	9.26	34.019	26.311	173.3	0.325	2.26	98.6	34.9	31.6	2.10	27.2	0.00	0.00	0.00	0.06	141	09
150 ISL	9.39 D	9.37	34.110 D	26.365	168.5	0.341	1.97 D	85.6 D	30.5	32.9	2.16	27.6	0.00	0.00	0.00	0.06	151	
170	9.24	9.22	34.156	26.425	163.2	0.376	1.70 D	74.1 D	26.4	35.5	2.29	28.5	0.00	0.00	0.01	0.06	171	08
200	8.64	8.62	34.137	26.506	155.9	0.424	1.69	74.0	25.9	39.3	2.35	30.2	0.00	0.00	0.01	0.05	202	07
230	8.22	8.19	34.149	26.580	149.3	0.469	1.51 D	65.6 D	22.8	44.0	2.46	31.9	0.00	0.00			232	06
250 ISL	7.93 D	7.91	34.165 D	26.636	144.2	0.499	1.33 D	57.6 D	19.9	46.6	2.55	32.7	0.00	0.00			252	
270	7.94	7.91	34.214	26.673	141.1	0.527	1.05	46.0	15.8	49.3	2.64	33.5	0.00	0.00			272	05
300 ISL	7.75 D	7.72	34.227 D	26.713	137.8	0.570	0.92 D	40.0 D	13.8	52.4	2.72	34.4	0.00	0.00			302	
320	7.62	7.59	34.260	26.757	133.9	0.596	0.72 D	31.3 D	10.7	54.6	2.78	35.0	0.00	0.00			323	04
380	7.21	7.17	34.280	26.833	127.5	0.674	0.54	23.5	8.0	61.4	2.91	36.9	0.00	0.00			383	03
400 ISL	7.03 D	6.99	34.290 D	26.866	124.5	0.702	0.47 D	20.3 D	6.9	63.9	2.94	37.4	0.00	0.00			403	
440	6.69	6.65	34.300	26.920	119.8	0.748	0.38 D	16.4 D	5.5	68.8	3.01	38.4	0.00	0.00			444	02
500 ISL	6.24 D	6.19	34.325 D	27.001	112.6	0.821	0.27 D	11.9 D	4.0	76.0	3.11	38.7	0.00	0.00			504	
516	6.14	6.10	34.336	27.022	110.8	0.836	0.24	10.6	3.5	77.9	3.14	38.8	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;

RV BELL M SHIMADA CALCOFI CRUISE 1804 STATION 90.0 35.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
33 14.9 N	118 15.0 W	11/04/2018	0234	UTC	356 m	270 16 kn	250 04 07	1	1014.5 mb	16.5 C	15.6 C		3/8	CS	028

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0	15.97	15.97	33.579	24.661	327.0	0.000	6.09	266.2	108.2	0.9	0.15	0.1	0.02		0.36	0.09	0	
2	15.97	15.97	33.579	24.661	327.1	0.007	6.09	266.2	108.2	0.9	0.15	0.1	0.00		0.36	0.09	2	19
10	14.89	14.89	33.559	24.886	306.0	0.032	6.29	275.2	109.4	1.6	0.17	0.1	0.00		0.62	0.20	10	17
10	14.89	14.89	33.560	24.886	305.9	0.032											10	18
20	14.41	14.41	33.556	24.987	296.6	0.062	6.28	274.8	108.2	2.9	0.19	0.1	0.03		0.71	0.30	20	16
30	13.32	13.31	33.550	25.208	275.9	0.091	5.44	D237.2 D	91.6	5.6	0.53	4.2	0.36		0.80	0.38	30	15
40	12.50	12.50	33.523	25.349	262.7	0.117	4.78	D208.2 D	79.1	8.1	0.83	8.9	0.43		0.51	0.27	40	14
50	11.79	11.78	33.502	25.468	251.6	0.143	4.54	198.6	74.0	9.5	0.94	10.9	0.11		0.38	0.38	50	13
60	11.10	11.09	33.546	25.629	236.5	0.168	4.09	D178.3 D	65.8	12.9	1.20	14.6	0.06		0.19	0.21	60	12
70	10.71	10.70	33.607	25.746	225.5	0.191	3.68	160.7	58.6	16.2	1.42	17.7	0.04		0.10	0.14	71	11
75 ISL	10.62 D	10.61	33.620 D	25.772	223.2	0.200	3.68	D160.3 D	58.5	17.1	1.47	18.4	0.04		0.09	0.13	76	
85	10.42	10.41	33.654 D	25.833	217.6	0.223	3.47	D150.9 D	54.9								86	10
100	10.03	10.02	33.734	25.962	205.7	0.256	3.17	138.5	49.7	21.8	1.70	21.9	0.03		0.02	0.09	101	09
120	9.56	9.55	33.905	26.175	185.8	0.295	2.61	114.0	40.6	26.6	1.93	24.9	0.04		0.01	0.06	121	08
125 ISL	9.41 D	9.40	33.943 D	26.229	180.8	0.303	2.59	D112.8 D	40.2	27.5	1.96	25.3	0.03		0.01	0.06	126	
140	9.24	9.22	33.990	26.294	174.9	0.331	2.40	104.8	37.1	30.2	2.04	26.3	0.03		0.01	0.06	141	07
150 ISL	9.17 D	9.15	34.014 D	26.325	172.2	0.348	2.33	D101.5 D	36.0	31.3	2.08	26.9	0.00		0.01	0.06	151	
171	8.93	8.91	34.060	26.400	165.5	0.384	2.11	D 91.6 D	32.3	33.6	2.17	28.2	0.00		0.01	0.06	172	06
200	8.67	8.65	34.132	26.497	156.7	0.430	1.70	74.4	26.0	37.9	2.32	29.8	0.03		0.01	0.07	202	05
230	8.33	8.30	34.150	26.565	150.8	0.477	1.50	D 65.1 D	22.7	41.6	2.42	30.9	0.03				232	04
250 ISL	8.26 D	8.23	34.162 D	26.585	149.3	0.507	1.42	D 61.8 D	21.5	43.4	2.47	31.7	0.03				252	
271	8.10	8.08	34.184	26.626	145.7	0.537	1.25	54.5	18.8	45.3	2.53	32.5	0.03				273	03
300 ISL	7.88 D	7.85	34.208 D	26.678	141.2	0.580	1.05	D 45.5 D	15.7	49.3	2.64	33.6	0.00				302	
321	7.70	7.67	34.235	26.727	136.9	0.608	0.84	36.7	12.6	52.2	2.72	34.4	0.00				324	02
364	7.35	7.31	34.265	26.801	130.3	0.666	0.62	26.9	9.1	57.9	2.85	36.0	0.00				367	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 1804 STATION 90.0 37.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
33 10.8 N	118 23.2 W	10/04/2018	2337	UTC	1177 m	270 05 kn	270 03 07	1	1014.9 mb	18.2 C	15.9 C	11 m	4/8	CS	027

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0	16.23	16.23	33.578	24.603	332.6	0.000	5.93	259.2	105.9	1.1	0.22	0.3	0.02		0.59	0.11	0	
2	16.23	16.23	33.578	24.603	332.6	0.007	5.93	259.2	105.9	1.1	0.22	0.3	0.02		0.59	0.11	2	22
10	14.65	14.65	33.556	24.936	301.2	0.032	6.25	273.4	108.2	1.9	0.00	0.1	0.00		1.25	0.30	10	20
10	14.65	14.65	33.555	24.936	301.2	0.032											10	23
20	14.18	14.18	33.549	25.030	292.6	0.062	6.11	267.1	104.7	2.6	0.26	0.5	0.07		1.82	0.46	20	18
20	14.18	14.18	33.547	25.029	292.6	0.061											20	19
30	13.81	13.80	33.547	25.106	285.6	0.091	5.83	D254.0 D	99.1	3.9	0.37	2.3	0.14		1.37	0.48	30	17
40	13.03	13.02	33.542	25.261	271.2	0.119	5.15	D224.5 D	86.2	6.6	0.66	6.2	0.30		0.52	0.31	40	16
50	12.53	12.52	33.554	25.368	261.2	0.145	4.80	209.9	79.5	8.5	0.82	8.4	0.43		0.24	0.20	50	15
60	11.72	11.71	33.550	25.519	247.0	0.171	4.25	D185.2 D	69.2	11.5	1.08	12.7	0.15		0.14	0.23	60	14
70	11.41	11.40	33.563	25.587	240.8	0.195	4.02	175.6	64.9	13.1	1.20	14.2	0.09		0.11	0.14	71	13
75 ISL	10.69 D	10.68	33.610 D	25.752	225.1	0.205	3.87	D168.5 D	61.6	14.7	1.29	15.8	0.07		0.09	0.14	76	
85	10.40	10.39	33.641	25.827	218.2	0.229	3.55	D154.7 D	56.2	17.8	1.48	18.9	0.03		0.07	0.12	86	12
100	9.96	9.95	33.751	25.988	203.2	0.260	3.10	135.6	48.7	21.9	1.69	21.7	0.03		0.03	0.08	101	11
120	9.68	9.66	33.865	26.124	190.7	0.300	2.73	119.4	42.6	25.5	1.85	23.6	0.00		0.02	0.06	121	10
125 ISL	9.60 D	9.58	33.893 D	26.160	187.4	0.308	2.72	D118.6 D	42.4	26.1	1.88	24.0	0.00		0.01	0.06	126	
140	9.33	9.31	33.945	26.244	179.6	0.337	2.53	110.7	39.2	27.8	1.95	25.3	0.00		0.01	0.06	141	09
150 ISL	9.10 D	9.08	33.975 D	26.305	174.0	0.353	2.54	D110.4 D	39.1	29.5	2.01	25.9	0.00		0.01	0.06	151	
170	8.99	8.98	34.054	26.384	166.9	0.389	2.14	D 93.2 D	32.9	32.9	2.14	27.2	0.00		0.00	0.05	171	08
200	8.67	8.65	34.113	26.482	158.2	0.438	1.77	77.1	27.0	37.4	2.28	29.1	0.00		0.00	0.05	202	07
230	8.36	8.34	34.141 D	26.552	152.0	0.484	1.54	D 66.8 D	23.3	41.1	2.39	30.6	0.00				232	06
250 ISL	8.23 D	8.20	34.168 D	26.595	148.3	0.514	1.35	D 58.6 D	20.4	43.3	2.46	31.2	0.00				252	
270	8.10	8.07	34.183	26.626	145.7	0.545	1.22	53.3	18.4	45.5	2.52	31.8	0.00				272	05
300 ISL	7.76 D	7.73	34.218 D	26.704	138.6	0.587	0.94	D 40.9 D	14.1	50.6	2.65	33.3	0.00				302	
320	7.55	7.51	34.241	26.753	134.2	0.615	0.78	D 33.8 D	11.6	54.0	2.73	34.4	0.00				323	04
380	7.17	7.13	34.268	26.829	127.8	0.693	0.56	24.4	8.3	60.0	2.85	35.8	0.00				383	03
400 ISL	7.03 D	6.99	34.274 D	26.854	125.7	0.719	0.53	D 23.0 D	7.8	62.1	2.89	36.2	0.00				403	
440	6.75	6.71	34.293	26.907	121.1	0.768	0.41	D 18.0 D	6.1	66.4	2.96	37.0	0.00				444	02
500 ISL	6.34 D	6.29	34.318 D	26.982	114.5	0.840	0.31	D 13.4 D	4.5	73.0	3.03	37.3	0.00				504	
515	6.26	6.21	34.323	26.997	113.2	0.856	0.30	13.0	4.3	74.6	3.05	37.4	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 1804 STATION 90.0 45.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
32 54.6 N	118 56.0 W	10/04/2018	1807	UTC	1689 m	270 09 kn	240 04 07	1	1017.0 mb	17.0 C	14.7 C	18 m	2/8	CS	026

DEPTH m		TEMP DEG C		POTTEMP DEG C		SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg		OXY PCT		SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		16.26		16.26		33.596	24.610	331.9	0.000	5.82	254.6		104.0		0.6	0.20	1.7	0.01		0.50	0.13	0	
2	A	16.26		16.26		33.596	24.610	332.0	0.007	5.82	254.6		104.0		0.6	0.20	1.7	0.00		0.50	0.13	2	24
10	A	15.88		15.88		33.593	24.694	324.3	0.033	5.87	256.8		104.1		0.6	0.22	1.8	0.00		0.49	0.12	10	21
11		15.88		15.88		33.592	24.693	324.3	0.035													10	23
10		15.88		15.88		33.594	24.695	324.1	0.034											0.49	0.12	10	22
13	A	15.74		15.74		33.590	24.723	321.6	0.043	5.92	D257.8		D104.6		0.6	0.20	1.6	0.00		0.53	0.14	13	20
20	ISL	15.66	D	15.66		33.590	D 24.741	320.1	0.062	5.92	D257.8		D104.5		0.5	0.21	1.4	0.00		0.60	0.17	20	
21		15.65		15.65		33.591	24.745	319.8	0.068	5.89	257.4		103.9		0.5	0.21	1.4	0.00		0.61	0.17	21	19
27	A	15.62		15.61		33.590	24.752	319.3	0.088	5.85	255.9		103.2		0.6	0.20	1.4	0.00		0.75	0.23	27	18
30	ISL	15.49	D	15.49		33.591	D 24.780	316.7	0.094	5.81	D253.3		D102.3		2.1	0.34	3.0	0.00		0.88	0.35	30	
38		13.08		13.07		33.510	25.225	274.5	0.121	4.90	D213.2	D	82.0		6.2	0.70	7.3	0.24		1.22	0.66	38	16
38		13.08		13.07		33.515	25.230	274.0	0.121											1.28	0.70	38	17
48	A	12.31		12.30		33.492	25.362	261.7	0.148	4.30	187.9		70.8		10.1	1.01	11.9	0.17		0.61	0.56	48	15
50	ISL	11.88	D	11.88		33.507	D 25.455	252.9	0.150	4.26	D185.3	D	69.5		10.6	1.04	12.5	0.15		0.55	0.53	50	
61	A	11.32		11.32		33.535	25.580	241.2	0.180	3.97	173.4		64.0		13.2	1.22	15.6	0.05		0.20	0.33	61	14
70		11.02		11.01		33.564	25.658	234.0	0.201	4.00	D174.3	D	64.2		14.4	1.28	16.3	0.04		0.13	0.20	71	13
75	ISL	10.84	D	10.83		33.594	D 25.714	228.8	0.211	3.89	D169.2	D	62.1		14.9	1.34	17.5	0.04		0.10	0.17	76	
84		10.18		10.17		33.657	25.876	213.5	0.233	3.66	D159.4	D	57.7		15.9	1.44	19.6	0.04		0.05	0.12	85	12
100	ISL	9.77	D	9.75		33.729	D 26.003	201.8	0.264	3.44	D149.8	D	53.7		19.6	1.54	21.5	0.00		0.03	0.09	101	
102		9.75		9.74		33.729	26.005	201.5	0.270	3.42	149.4		53.3							0.03	0.08	103	11
120		9.51		9.50		33.782	26.087	194.2	0.306	3.21	D139.7	D	49.9		24.2	1.66	23.9	0.00		0.02	0.08	121	10
125	ISL	9.44	D	9.42		33.875	D 26.172	186.2	0.314	3.05	D132.5	D	47.2		25.2	1.74	24.4	0.00		0.02	0.07	126	
140		9.35		9.33		33.928	26.229	181.1	0.343	2.59	113.1		40.1		28.1	1.96	25.9	0.00		0.01	0.05	141	09
150	ISL	9.16	D	9.14		33.948	D 26.274	176.9	0.359	2.57	D111.7	D	39.6		29.5	2.01	26.6	0.00		0.01	0.05	151	
170		8.92		8.90		33.994	26.349	170.2	0.396	2.34	D101.7	D	35.9		32.3	2.12	27.9	0.00		0.01	0.05	171	08
200		8.64		8.61		34.091	26.470	159.3	0.445	1.81	79.3		27.7		38.0	2.30	30.0	0.00		0.01	0.04	202	07
229		8.50		8.48		34.165	26.550	152.2	0.491	1.40	D 61.0	D	21.3		41.7	2.47	31.4	0.00				231	06
250	ISL	8.25	D	8.22		34.187	D 26.606	147.2	0.521	1.25	D 54.5	D	18.9		44.2	2.54	32.3	0.00				252	
270		8.15		8.12		34.212	26.641	144.3	0.551	1.07	46.6		16.1		46.6	2.61	33.0	0.00				272	05
300	ISL	7.89	D	7.86		34.222	D 26.687	140.3	0.594	0.97	D 42.1	D	14.5		50.5	2.72	33.9	0.00				302	
320		7.75		7.72		34.260	26.738	135.8	0.621	0.72	D 31.5	D	10.8		53.1	2.79	34.5	0.00				323	04
380		7.28		7.24		34.279	26.822	128.6	0.700	0.53	23.2		7.9		59.8	2.90	36.1	0.00				383	03
400	ISL	7.08	D	7.04		34.286	D 26.857	125.5	0.727	0.47	D 20.6	D	7.0		62.4	2.94	36.6	0.00				403	
440		6.77		6.73		34.299	26.909	120.9	0.775	0.39	D 16.8	D	5.7		67.4	3.01	37.6	0.00				444	02
500	ISL	6.41	D	6.36		34.322	D 26.976	115.1	0.848	0.30	D 13.1	D	4.4		73.4	3.09	38.7	0.00				504	
516		6.31		6.26		34.321	26.988	114.2	0.864	0.30	12.9		4.3		74.9	3.11	39.0	0.00				520	01

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

RV BELL M SHIMADA CALCOFI CRUISE 1804 STATION 90.0 53.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
32 39.1 N	119 29.1 W	10/04/2018	1230	UTC	1320 m	280 09 kn			1015.6 mb	14.1 C	12.9 C				025

DEPTH m		TEMP DEG C		POTTEMP DEG C		SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg		OXY PCT		SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		14.16		14.16		33.507	25.001	294.7	0.000	6.24	272.8		106.8		2.3	0.24	0.3	0.09		3.22	0.47	0	
1		14.16		14.16		33.507	25.001	294.7	0.003	6.24	272.8		106.8		2.3	0.24	0.3	0.09		3.22	0.47	1	22
10		13.87		13.86		33.527	25.078	287.7	0.029	6.13	268.0		104.3		2.4	0.28	0.7	0.11		2.45	0.47	10	20
10		13.87		13.86		33.526	25.077	287.8	0.029													10	21
20		13.86		13.85		33.528	25.081	287.7	0.058	6.10	266.6		103.7		2.5	0.29	0.8	0.11		2.28	0.51	20	19
30		13.83		13.83		33.529	25.088	287.4	0.087	6.12	D266.8		D104.2		2.6	0.28	0.9	0.12		2.44	0.46	30	17
30		13.83		13.83		33.530	25.088	287.4	0.086													30	18
40		13.58		13.57		33.527	25.138	282.8	0.115	5.76	D250.9	D	97.4		3.3	0.36	1.8	0.15		1.51	0.42	40	16
50		12.75		12.74		33.534	25.310	266.7	0.143	5.07	221.9		84.4		7.2	0.72	6.9	0.33		0.28	0.22	50	15
60		11.91		11.90		33.544	25.479	250.9	0.169	4.51	D196.2	D	73.6		10.5	0.98	11.3	0.28		0.18	0.19	60	14
70		11.12		11.11		33.572	25.645	235.2	0.193	3.94	172.4		63.4		14.4	1.26	15.5	0.08		0.12	0.17	71	13
75	ISL	10.90	D	10.89		33.602	D 25.708	229.3	0.204	3.79	D164.8	D	60.6		15.6	1.34	16.5	0.07		0.10	0.15	76	
85		10.55		10.54		33.645	25.804	220.4	0.227	3.55	D154.7	D	56.4		18.0	1.49	18.7	0.04		0.07	0.12	86	12
100		10.23		10.22		33.709	25.908	210.8	0.259	3.23	141.1		50.9		20.8	1.61	20.6	0.04		0.05	0.10	101	11
120		9.75		9.74		33.810	26.070	195.9	0.300	2.95	128.9		46.1		24.8	1.79	23.0	0.03		0.04	0.08	121	10
125	ISL	9.69	D	9.68		33.823	D 26.089	194.1	0.310	2.91	D126.6	D	45.4		25.8	1.84	23.6	0.00		0.03	0.08	126	
141		9.26		9.24		33.913	26.231	180.9	0.340	2.56	112.0		39.6		29.3	2.01	25.8	0.00		0.02	0.07	142	09
150	ISL	9.10	D	9.09		33.953	D 26.287	175.7	0.357	2.55	D111.0	D	39.3		30.8	2.05	26.5	0.00		0.01	0.07	151	
170		8.84		8.82		34.013	26.377	167.5	0.390	2.18	D 94.9	D	33.4		34.2	2.15	28.1	0.00		0.01	0.05	171	08
200		8.28		8.26		34.112	26.541	152.4	0.438	1.69	73.7		25.5		41.2	2.39	31.0	0.00		0.00	0.04	202	07
230		7.98		7.96		34.137	26.606	146.7	0.483	1.42	D 61.9	D	21.4		45.3	2.51	32.5	0.00				232	06
250	ISL	7.76	D	7.74		34.169	D 26.664	141.5	0.514	1.25	D 54.6	D	18.8		47.9	2.58	33.2	0.00				252	
270		7.69		7.66		34.180	26.684	139.9	0.540	1.10	48.2		16.5		50.5	2.65	33.9	0.00				272	05
300	ISL	7.53	D	7.50		34.234	D 26.750	134.2	0.583	0.84	D 36.4	D	12.5		53.6	2.75	34.5	0.00				302	
321		7.51		7.48		34.251	26.766	133.0	0.610	0.70	D 30.5	D	10.4		55.7	2.82	35.0	0.00				324	04
380		7.01		6.98		34.259	26.843	126.4	0.686	0.56	24.5		8.2		62.2	2.93	37.0	0.00				383	03
400	ISL	6.94	D	6.90		34.264	D 26.857	125.3	0.714	0.54	D 23.6	D	8.0		64.3	2.96	37.4	0.00				403	
441		6.62		6.58		34.280	26.914	120.3	0.762	0.43	D 18.6	D	6.2		68.6	3.02	38.2	0.00				445	02
500	ISL	6.22	D	6.18		34.314	D 26.994	113.2	0.834	0.32	D 13.9	D	4.6		74.6	3.11	39.4	0.00				504	
516		6.16		6.11		34.317	27.005	112.3	0.849	0.30	13.2		4.3		76.3	3.13	39.7	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 1804 STATION 90.0 60.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
32 25.0 N	119 57.6 W	10/04/2018	0734	UTC	880 m	330 11 kn			1016.8 mb	14.6 C	13.7 C				024

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0	14.26	14.26	33.449	24.933	301.0	0.000	6.23	272.1	106.8	2.3	0.24	0.0	0.03		1.67	0.19	0	
2	14.26	14.26	33.449	24.935	301.1	0.006	6.23	272.1	106.8	2.3	0.24	0.0	0.03		1.67	0.19	2	20
10	14.19	14.18	33.448	24.950	299.8	0.030	6.19	270.6	106.0	2.1	0.23	0.0	0.00		1.30	0.24	10	19
20	13.85	13.85	33.447	25.020	293.5	0.060	6.31	D274.9	D107.3	2.2	0.24	0.0	0.00		1.50	0.20	20	18
30	13.72	13.72	33.448	25.048	291.2	0.089	6.15	269.0	104.4	2.3	0.26	0.0	0.04		1.13	0.39	30	17
40	13.46	13.45	33.460	25.111	285.4	0.118	6.02	D262.1	D101.5	2.7	0.30	0.4	0.12		0.63A	0.26A	40	16
50	13.24	13.23	33.482	25.173	279.8	0.146	5.96	D259.7	D100.1	3.5	0.38	1.1	0.19		0.95	0.49	50	15
60	13.08	13.07	33.485	25.207	276.8	0.174	5.80	253.5	97.1	4.3	0.44	2.2	0.21		0.69	0.48	60	14
70	12.73	12.72	33.483	25.276	270.5	0.201	5.44	D236.7	D 90.3	5.3	0.57	4.6	0.23		0.40	0.48	71	13
75 ISL	12.59 D	12.58	33.485 D	25.305	267.9	0.213	5.37	D233.7	D 88.9	6.4	0.66	6.1	0.21		0.30	0.39	76	
85	11.77	11.76	33.500	25.473	252.1	0.241	4.86	212.6	79.2	8.6	0.83	9.3	0.17		0.10	0.20	86	12
100	10.81	10.79	33.592	25.719	228.9	0.277	4.09	178.6	65.3	14.5	1.25	15.6	0.04		0.21	0.31	101	11
120	10.26	10.25	33.680	25.882	213.8	0.321	3.57	155.8	56.3	19.1	1.53	19.6	0.03		0.05	0.13	121	10
125 ISL	10.18 D	10.17	33.711 D	25.919	210.4	0.330	3.51	D152.7	D 55.3	20.6	1.61	20.6			0.04	0.13	126	
140	9.77	9.75	33.817	26.073	196.0	0.362	2.87	125.3	44.8	25.2	1.84	23.5	0.00		0.03	0.12	141	09
150 ISL	9.35 D	9.34	33.883 D	26.192	184.8	0.380	2.71	D117.9	D 42.0	27.2	1.90	24.7	0.00		0.02	0.12	151	
170	8.91	8.89	33.950	26.316	173.3	0.417	2.54	D110.4	D 38.9	31.2	2.03	26.9	0.00		0.01	0.11	171	08
200	8.58	8.56	34.040	26.439	162.2	0.468	2.15	94.0	32.8	36.5	2.21	29.1	0.00		0.01	0.08	202	07
230	7.83	7.81	34.012	26.529	153.9	0.515	2.32	D101.0	D 34.8	39.9	2.19	30.1	0.00				232	06
250 ISL	7.69 D	7.66	34.030 D	26.565	150.8	0.545	2.16	D 94.1	D 32.3	42.7	2.35	31.3	0.00				252	
271	7.98	7.96	34.146	26.614	146.7	0.576	1.39	60.8	20.9	45.7	2.51	32.6	0.00				273	05
300 ISL	7.71 D	7.68	34.189 D	26.688	140.2	0.619	1.11	D 48.3	D 16.6	50.3	2.63	33.9	0.00				302	
320	7.45	7.42	34.199	26.734	135.9	0.645	0.91	D 39.6	D 13.5	53.5	2.72	34.8	0.00				323	04
380	7.03	6.99	34.267	26.848	125.9	0.724	0.53	23.0	7.7	62.1	2.92	37.0	0.00				383	03
400 ISL	6.98 D	6.94	34.271 D	26.858	125.3	0.751	0.52	D 22.7	D 7.7	64.0	2.96	37.3	0.00				403	
441	6.73	6.69	34.294	26.911	120.7	0.799	0.41	D 17.9	D 6.0	68.0	3.03	38.0	0.00				445	02
500 ISL	6.42 D	6.37	34.310 D	26.965	116.2	0.872	0.34	D 14.9	D 5.0	72.8	3.09	39.1	0.00				504	
515	6.36	6.32	34.320	26.981	114.8	0.886	0.31	13.6	4.5	74.0	3.10	39.4	0.00				519	01

A) FIRST 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 STA-CORRECTED O2;

RV BELL M SHIMADA CALCOFI CRUISE 1804 STATION 90.0 70.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
32 4.9 N	120 38.5 W	10/04/2018	0157	UTC	3818 m	320 16 kn	280 05 07	1	1014.4 mb	15.5 C	14.0 C		3/8	AS	023

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0	15.47	15.47	33.510	24.721	321.3	0.000	5.82	254.3	102.3	2.0	0.22	0.1	0.02		0.16	0.03	0	
2	15.47	15.47	33.510	24.722	321.4	0.006	5.82	254.3	102.3	2.0	0.22	0.1	0.00		0.16	0.03	2	22
10	15.44	15.43	33.510	24.729	320.9	0.032	5.80	253.5	102.0	1.7	0.21	0.0	0.00		0.17	0.04	10	20
10	15.44	15.43	33.510	24.729	320.9	0.032											10	21
20 ISL	15.30 D	15.30	33.513 D	24.763	318.1	0.061	5.87	D255.8	D102.9	1.6	0.20	0.0	0.00		0.17	0.04	20	
25	15.29	15.28	33.518	24.769	317.6	0.080	5.85	255.7	102.6	1.6	0.20	0.0	0.00		0.17	0.04	25	19
30 ISL	15.28 D	15.28	33.515 D	24.768	317.9	0.093	5.86	D255.2	D102.6	1.6	0.20	0.0	0.00		0.17	0.04	30	
40	15.27	15.27	33.523	24.778	317.3	0.128	5.86	D255.3	D102.6	1.5	0.21	0.0	0.00		0.18	0.04	40	18
50	15.16	15.15	33.515	24.796	315.9	0.159	5.87	D255.6	D102.5	1.5	0.20	0.0	0.00		0.20	0.05	50	17
62	14.14	14.13	33.457	24.971	299.5	0.196	5.94	259.6	101.6	1.9	0.24	0.0	0.00		0.61	0.24	62	15
62	14.14	14.13	33.457	24.971	299.5	0.196											62	16
75	13.88	13.86	33.462	25.030	294.3	0.235	5.84	D254.6	D 99.5	2.3	0.30	0.2	0.13		0.55	0.25	76	14
87	13.64	13.63	33.468	25.084	289.5	0.270	5.76	251.9	97.6	2.9	0.35	0.8	0.33		0.16	0.15	88	13
100	13.03	13.01	33.492	25.226	276.2	0.307	5.45	238.2	91.2	4.8	0.54	4.3	0.28		0.11	0.10	101	12
112	12.48	12.47	33.511	25.347	265.0	0.339	5.15	D224.1	D 85.1	6.7	0.71	7.2	0.04		0.06	0.10	113	11
125	12.03	12.01	33.527	25.447	255.7	0.373	4.91	214.6	80.4	8.6	0.87	9.6	0.03		0.05	0.07	126	10
141	11.13	11.11	33.540	25.621	239.3	0.412	4.48	195.6	71.9	11.3	1.05	12.8	0.03		0.05	0.07	142	09
150 ISL	10.59 D	10.57	33.595 D	25.761	226.1	0.433	4.21	D183.3	D 66.9	14.3	1.21	15.3	0.00		0.04	0.06	151	
171	9.54	9.52	33.727	26.041	199.7	0.478	3.67	D159.6	D 57.0	21.1	1.57	20.9	0.00		0.01	0.04	172	08
200	8.98	8.95	33.871	26.245	180.8	0.533	3.11	135.9	47.8	27.7	1.83	24.8	0.00		0.00	0.02	202	07
231	8.42	8.39	33.992	26.427	163.9	0.587	2.56	D111.3	D 38.8	34.9	2.08	28.2	0.00				233	06
250 ISL	8.20 D	8.17	34.014 D	26.478	159.4	0.618	2.51	D109.2	D 37.9	37.8	2.17	29.3	0.00				252	
271	7.92	7.90	34.036	26.536	154.0	0.650	2.18	95.4	32.8	40.9	2.27	30.6	0.00				273	05
300 ISL	7.58 D	7.55	34.076 D	26.619	146.5	0.696	1.78	D 77.5	D 26.5	46.9	2.43	32.7	0.00				302	
322	7.20	7.17	34.091	26.684	140.5	0.726	1.47	D 63.8	D 21.6	51.5	2.56	34.3	0.00				325	04
381	6.70	6.66	34.121	26.777	132.3	0.806	1.06	46.4	15.5	60.1	2.77	37.0	0.00				384	03
400 ISL	6.58 D	6.55	34.131 D	26.801	130.2	0.834	0.97	D 42.0	D 14.0	62.3	2.82	37.6	0.00				403	
441	6.27	6.23	34.158	26.863	124.7	0.883	0.74	D 32.2	D 10.7	67.1	2.93	38.9	0.00				445	02
500 ISL	5.90 D	5.85	34.212 D	26.954	116.5	0.958	0.53	D 23.2	D 7.7	75.9	3.07	40.2	0.00				504	
516	5.83	5.79	34.236	26.981	114.1	0.973	0.45	19.6	6.4	78.3	3.11	40.6	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 1804 STATION 90.0 80.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
31 45.1 N	121 19.0 W	09/04/2018	2015 UTC	3669 m	340 12 kn	300 06 07	0	1015.9 mb	16.6 C	13.9 C	29 m			022

DEPTH m		TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		16.01	16.01	33.561	24.640	329.1	0.000	5.74	250.9	102.1	2.0	0.22	0.0	0.02		0.09	0.02	0	
2	A	16.01	16.01	33.561	24.640	329.1	0.007	5.74	250.9	102.1	2.0	0.22	0.0	0.00		0.09	0.02	2	24
10		15.90	15.90	33.562	24.665	327.0	0.033	5.75	251.1	102.0	1.9	0.22	0.0	0.00		0.09	0.02	10	22
10		15.90	15.90	33.563	24.666	326.9	0.033											10	23
17	A	15.86	15.86	33.564	24.676	326.3	0.056	5.78	D251.8	D102.4	1.9	0.21	0.0	0.00		0.10	0.02	17	21
20	ISL	15.85 D	15.85	33.562 D	24.676	326.3	0.063	5.79	D252.3	D102.6	1.9	0.21	0.0	0.00		0.10	0.02	20	
21	A	15.85	15.85	33.565	24.680	326.0	0.069	5.79	D252.5	D102.7	1.9	0.21	0.0	0.00		0.10	0.02	21	20
30	ISL	15.84 D	15.83	33.562 D	24.681	326.2	0.096	5.77	D251.4	D102.2	1.9	0.22	0.0	0.00		0.10	0.02	30	
32		15.84	15.83	33.566	24.684	325.9	0.105	5.73	250.2	101.5	1.9	0.22	0.0	0.00		0.10	0.02	32	19
44	A	15.83	15.82	33.564	24.686	326.2	0.144	5.79	D252.1	D102.5	1.9	0.21	0.0	0.00		0.11	0.02	44	18
50	ISL	15.44 D	15.43	33.533 D	24.749	320.4	0.161	5.85	D254.9	D102.8	1.9	0.22	0.0	0.00		0.15	0.05	50	
56		15.19	15.18	33.526	24.799	315.8	0.182	5.88	D256.2	D102.8	1.9	0.22	0.0	0.00		0.19	0.07	56	17
68		14.75	14.74	33.499	24.875	309.0	0.220	5.90	257.8	102.2	2.0	0.23	0.0	0.00		0.31	0.17	69	16
75	ISL	14.29 D	14.28	33.472 D	24.951	301.9	0.240	5.85	D255.0	D100.4	2.2	0.27	0.2	0.00		0.50	0.37	76	
80	A	14.06	14.05	33.477	25.004	297.0	0.256	5.79	253.0	98.9	2.4	0.29	0.3	0.13		0.63	0.51	81	14
80		14.06	14.05	33.477	25.003	297.0	0.255											81	15
87		14.05	14.03	33.477	25.007	296.9	0.277	5.68	248.0	96.9	2.7	0.33	0.9	0.25		0.43	0.39	88	13
98	A	13.06	13.05	33.507	25.231	275.7	0.308	5.32	D231.6	D 89.0	4.3	0.49	4.1	0.05		0.17	0.29	99	12
100	ISL	13.04 D	13.02	33.502 D	25.231	275.7	0.313	5.23	D228.0	D 87.6	4.6	0.52	4.5	0.05		0.16	0.27	101	
112		12.30	12.29	33.501	25.373	262.4	0.346	5.03	D218.9	D 82.8	6.4	0.68	7.1	0.03		0.10	0.15	113	11
125		11.61	11.59	33.513	25.514	249.2	0.379	4.76	208.1	77.3	8.8	0.86	10.0	0.03		0.06	0.09	126	10
140		10.96	10.94	33.550	25.661	235.4	0.416	4.43	193.5	70.9	12.1	1.08	13.6	0.00		0.04	0.05	141	09
150	ISL	10.61 D	10.59	33.586 D	25.751	227.1	0.439	4.39	D191.2	D 69.8	14.6	1.22	15.6	0.00		0.03	0.04	151	
170		9.87	9.85	33.687	25.956	207.9	0.482	3.79	D164.8	D 59.2	19.7	1.49	19.8	0.00		0.01	0.02	171	08
200		9.11	9.09	33.843	26.202	184.9	0.541	3.26	142.3	50.1	26.3	1.76	23.9	0.00		0.00	0.02	202	07
230		8.58	8.55	33.979	26.393	167.2	0.594	2.67	D116.1	D 40.6	33.5	2.02	27.5	0.00				232	06
250	ISL	8.43 D	8.41	34.033 D	26.457	161.4	0.629	2.29	D 99.6	D 34.8	36.6	2.15	28.9	0.00				252	
271		8.25	8.22	34.077	26.520	155.8	0.660	1.97	86.2	29.9	39.9	2.29	30.4	0.00				273	05
300	ISL	7.87 D	7.84	34.092 D	26.589	149.6	0.707	1.79	D 77.7	D 26.8	45.0	2.45	32.1	0.00				302	
320		7.75	7.72	34.158	26.659	143.3	0.733	1.29	D 56.3	D 19.4	48.5	2.56	33.2	0.00				323	04
380		7.27	7.23	34.232	26.787	131.9	0.816	0.73	31.7	10.7	57.4	2.81	35.9	0.00				383	03
400	ISL	7.13 D	7.09	34.243 D	26.816	129.4	0.846	0.65	D 28.4	D 9.6	60.3	2.86	36.5	0.00				403	
441		6.74	6.70	34.267	26.888	122.8	0.893	0.47	D 20.6	D 6.9	66.1	2.96	37.9	0.00				445	02
500	ISL	6.32 D	6.27	34.287 D	26.961	116.5	0.969	0.36	D 15.7	D 5.2								504	
515		6.27	6.22	34.294 D	26.972	115.6	0.987	0.34	D 15.0	D 5.0								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 1804 STATION 90.0 90.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
31 25.3 N	121 59.8 W	09/04/2018	1420 UTC	3804 m	340 20 kn	320 09 07	0	1016.6 mb	14.4 C	12.8 C		0/8		021

DEPTH m		TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		16.11	16.11	33.594	24.641	328.9	0.000	5.71	249.4	101.7						0.10	0.02	0	
2		16.11	16.11	33.594	24.642	329.0	0.007	5.71	249.4	101.7						0.10	0.02	2	22
10		16.11	16.11	33.615	24.659	327.6	0.033	5.70	249.0	101.6	1.7	0.15	0.0	0.00		0.11	0.03	10	20
11		16.11	16.11	33.600	24.647	328.8	0.037											11	21
20	ISL	16.12 D	16.11	33.592 D	24.641	329.7	0.063	5.73	D249.8	D102.1	1.7	0.20	0.0	0.00		0.11	0.02	20	
25		16.12	16.12	33.593	24.641	329.8	0.082	5.71	249.3	101.7	1.7	0.22	0.0	0.04		0.11	0.02	25	23
30	ISL	16.12 D	16.12	33.594 D	24.641	330.0	0.096	5.72	D249.2	D101.9	1.7	0.22	0.0	0.00		0.11	0.02	30	
40		16.13	16.12	33.597	24.643	330.2	0.132	5.74	D250.1	D102.3	1.8	0.22	0.0	0.00		0.11	0.02	40	18
50		16.13	16.12	33.598	24.645	330.3	0.165	5.73	D249.8	D102.1	1.7	0.21	0.0	0.00		0.10	0.02	50	17
62		16.04	16.03	33.654	24.708	324.8	0.204	5.70	249.1	101.5	1.7	0.19	0.0	0.00		0.13	0.04	62	16
74		15.39	15.38	33.560	24.782	318.1	0.243	5.78	D251.9	D101.5	1.7	0.21	0.0	0.00		0.17	0.05	75	15
75	ISL	15.30 D	15.29	33.552 D	24.795	316.8	0.244	5.81	D253.0	D101.7	1.7	0.21	0.0	0.00		0.19	0.07	76	
86		14.73	14.72	33.519	24.894	307.7	0.280	5.76	251.5	99.7	1.9	0.25	0.0	0.00		0.42	0.26	87	13
87		14.58	14.56	33.519	24.927	304.5	0.284											88	14
100		13.03	13.01	33.497	25.229	276.0	0.321	5.32	232.5	89.0	4.2	0.49	3.7	0.10		0.33	0.25	101	12
113		11.67	11.65	33.478	25.475	252.6	0.355	4.87	D211.9	D 79.1	7.7	0.81	8.8	0.05		0.19	0.16	114	11
125		11.15	11.13	33.527	25.608	240.2	0.385	4.53	197.9	72.8	10.7	1.01	12.2	0.03		0.14	0.13	126	10
140		10.47	10.45	33.579	25.768	225.1	0.420	4.18	182.7	66.3	14.6	1.26	15.9	0.00		0.08	0.07	141	09
150	ISL	10.13 D	10.12	33.647 D	25.879	214.7	0.442	3.98	D173.3	D 62.6	17.4	1.38	17.8	0.00		0.05	0.06	151	
170		9.39	9.38	33.768	26.097	194.3	0.483	3.63	D157.9	D 56.2	22.8	1.63	21.7	0.00		0.01	0.03	171	08
200	ISL	9.00 D	8.98	33.863 D	26.235	181.7	0.540	3.32	D144.6	D 51.0	26.6	1.78	23.9	0.00		0.00	0.03	202	
201		8.99	8.97	33.858	26.232	182.0	0.541	3.29	143.9	50.6	26.7	1.78	24.0	0.00		0.00	0.03	203	07
231		8.59	8.56	33.936	26.357	170.6	0.594	3.03	D131.7	D 46.1	31.1	1.93	25.8	0.00				233	06
250	ISL	8.33 D	8.30	34.006 D	26.452	161.8	0.626	2.58	D112.0	D 39.0	35.2	2.09	27.8	0.00				252	
271		8.07	8.04	34.037	26.516	156.1	0.659	2.22	97.1	33.5	39.8	2.26	30.1	0.00				273	05
300	ISL	7.56 D	7.53	34.035 D	26.589	149.3	0.705	2.09	D 90.9	D 31.1	44.9	2.38	31.8	0.00				302	
320		7.47	7.44	34.069	26.628	145.9	0.733	1.76	D 76.5	D 26.1	48.4	2.47	33.1	0.00				323	04
381		6.86	6.82	34.121	26.755	134.5	0.818	1.10	48.1	16.1	58.4	2.77	36.5	0.00				384	03
400	ISL	6.62 D	6.58	34.131 D	26.796	130.7	0.846	0.98	D 42.7	D 14.3	61.7	2.83	37.3	0.00				403	
440		6.29	6.25	34.165	26.866	124.4	0.894	0.69	D 30.1	D 10.0	68.7	2.96	38.9	0.00				444	02
500	ISL	5.96 D	5.92	34.221 D	26.953	116.7	0.971	0.47	D 20.4	D 6.7	76.3	3.11	40.2	0.00				504	
514		5.92	5.87	34.244	26.977	114.6	0.983	0.41	18.1	5.9	78.0	3.14	40.6	0.00				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 1804 STATION 90.0 100.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
31 4.8 N	122 40.0 W	09/04/2018	0724	UTC	4014 m	010 20 kn			1019.6 mb	14.2 C	12.2 C				020

DEPTH m		TEMP DEG C		POTTEMP DEG C		SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg		OXY PCT		SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		15.86		15.86		33.546	24.663	326.9	0.000	5.77	252.1		102.3		1.9	0.22	0.0	0.02		0.10	0.02	0	
2		15.86		15.86		33.546	24.663	327.0	0.007	5.77	252.1		102.3		1.9	0.22	0.0	0.00		0.10	0.02	2	20
10		15.86		15.86		33.545	24.661	327.4	0.033	5.75	251.0		101.9		1.9	0.22	0.0	0.00		0.09	0.02	10	19
20	ISL	15.86	D	15.86	D	33.545	24.662	327.7	0.063	5.76	D251.1	D	102.1		1.9	0.22	0.0	0.00		0.09	0.02	20	
25		15.86		15.85		33.550	24.668	327.3	0.082	5.75	251.3		102.0		1.8	0.22	0.0	0.00		0.10	0.02	25	18
30	ISL	15.85	D	15.84		33.544	D 24.665	327.7	0.096	5.78	D251.9	D	102.4		1.9	0.22	0.0	0.00		0.10	0.02	30	
41		15.77		15.76		33.543	24.683	326.4	0.134	5.79	D252.2	D	102.4		1.9	0.22	0.0	0.00		0.09	0.02	41	17
50		15.45		15.44		33.532	24.746	320.7	0.163	5.85	D254.7	D	102.7		1.9	0.22	0.0	0.00		0.12	0.03	50	16
62		15.25		15.24		33.522	24.783	317.6	0.202	5.87	256.4		102.8		1.9	0.22	0.0	0.00		0.13	0.04	62	15
75		14.57		14.55		33.462	24.885	308.2	0.242	5.93	D258.5	D	102.4		1.9	0.23	0.0	0.00		0.24	0.12	76	14
88		13.99		13.98		33.424	24.977	299.7	0.282	5.83	254.9		99.5		2.3	0.28	0.2	0.12		0.62	0.47	89	13
99		13.12		13.10		33.442	25.169	281.6	0.314	5.49	240.0		92.0		3.9	0.46	3.2	0.10		0.31	0.26	100	12
100	ISL	13.08	D	13.07	D	33.448	D 25.180	280.6	0.316	5.50	D239.4	D	92.0		4.1	0.47	3.4	0.10		0.30	0.25	101	
111		12.29		12.28		33.454	25.339	265.7	0.347	5.16	D224.9	D	85.0		5.6	0.61	5.8	0.05		0.17	0.16	112	11
125	ISL	11.17	D	11.16	D	33.522	D 25.600	241.0	0.382	4.69	D204.4	D	75.5		10.0	0.95	11.1	0.03		0.12	0.13	126	
126		11.14		11.13		33.520	25.603	240.6	0.385	4.67	204.0		75.0		10.3	0.97	11.4	0.03		0.12	0.12	127	10
140		10.56		10.54		33.585	25.758	226.1	0.417	4.31	188.2		68.4		14.3	1.21	15.3	0.03		0.07	0.07	141	09
150	ISL	10.09	D	10.07	D	33.647	D 25.887	214.0	0.439	4.14	D180.1	D	65.0		17.0	1.35	17.4	0.00		0.05	0.10	151	
169		9.58		9.56		33.747	26.051	198.7	0.479	3.68	D160.0	D	57.1		22.2	1.61	21.3	0.00		0.01	0.17	170	08
200		9.06		9.04		33.868	26.229	182.3	0.538	3.09	134.7		47.5		27.9	1.85	24.7	0.00		0.00	0.03	202	07
229		8.46		8.43		33.985	26.416	164.9	0.588	2.69	D117.1	D	40.9		34.5	2.06	27.6	0.00				231	06
250	ISL	8.11	D	8.08		34.006	D 26.485	158.6	0.623	2.53	D110.2	D	38.1		38.8	2.18	29.3	0.00				252	
271		7.80		7.77		34.029	26.549	152.7	0.655	2.19	95.7		32.8		43.1	2.30	31.0	0.00				273	05
300	ISL	7.31	D	7.28	D	34.046	D 26.632	145.1	0.700	1.92	D 83.7	D	28.5		48.7	2.43	32.9	0.00				302	
321		7.15		7.12		34.066	26.671	141.6	0.728	1.65	D 71.8	D	24.3		52.8	2.53	34.2	0.00				324	04
381		6.64		6.60		34.124	26.787	131.2	0.810	1.04	45.2		15.1		62.4	2.83	37.3	0.00				384	03
400	ISL	6.43	D	6.39		34.139	D 26.826	127.7	0.838	0.86	D 37.3	D	12.4		65.1	2.87	37.9	0.00				403	
441		6.26		6.22		34.162	26.867	124.3	0.886	0.71	D 30.7	D	10.2		70.8	2.97	39.1	0.00				445	02
500	ISL	5.91	D	5.86	D	34.218	D 26.957	116.3	0.961	0.46	D 20.0	D	6.6									504	
516		5.84		5.79		34.236	D 26.981	114.2	0.980	0.41	D 17.7	D	5.8									520	01

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

RV BELL M SHIMADA CALCOFI CRUISE 1804 STATION 90.0 110.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
30 45.0 N	123 19.9 W	09/04/2018	0056	UTC	4012 m	010 25 kn	350 08 10	1	1019.7 mb	15.2 C	11.7 C	22 m	2/8	ST	019

DEPTH m		TEMP DEG C		POTTEMP DEG C		SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg		OXY PCT		SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		16.33		16.33		33.571	24.575	335.3	0.000	5.72	250.0		102.4		1.9	0.22	0.0	0.01		0.08	0.01	0	
2		16.33		16.33		33.571	24.575	335.3	0.007	5.72	250.0		102.4		1.9	0.22	0.0	0.00		0.08	0.01	2	20
10		16.33		16.33		33.571	24.574	335.7	0.034	5.70	249.2		102.1		2.2	0.23	0.1	0.03		0.08	0.02	10	22
20	ISL	16.33	D	16.32		33.571	D 24.576	335.9	0.064	5.75	D250.8	D	103.0		1.9	0.22	0.0	0.00		0.08	0.02	20	
25		16.15		16.14		33.564	24.613	332.5	0.084	5.78	252.3		103.0		1.7	0.21	0.0	0.00		0.08	0.02	25	18
30	ISL	15.60	D	15.59		33.542	D 24.719	322.6	0.098	5.83	D253.9	D	102.7		1.7	0.21	0.0	0.00		0.09	0.02	30	
41		15.43		15.42		33.544	24.759	319.1	0.135	5.85	D255.1	D	102.9		1.7	0.20	0.0	0.00		0.11	0.03	41	17
50	ISL	15.17	D	15.16		33.526	D 24.804	315.1	0.162	5.89	D256.8	D	103.0		1.8	0.21	0.0	0.00		0.16	0.05	50	
51		15.03		15.02		33.530	24.837	312.0	0.167	5.91	D257.7	D	103.1		1.8	0.21	0.0	0.00		0.17	0.06	51	16
62		14.41		14.40		33.460	24.916	304.8	0.201	5.94	259.3		102.1		1.6	0.21	0.0	0.00		0.28	0.15	62	15
75	ISL	13.47	D	13.46		33.297	D 24.985	298.5	0.239	6.07	D264.4	D	102.3		1.9	0.26	0.0	0.00		0.55	0.44	76	
76		13.46		13.45		33.300	24.990	298.0	0.243	6.06	D264.0	D	102.1		1.9	0.26	0.0	0.03		0.57	0.46	77	14
87		13.35		13.34		33.331	25.037	293.9	0.276	5.96	260.2		100.2		2.2	0.31	0.3	0.12		0.43	0.38	88	13
100	ISL	13.24	D	13.22	D	33.348	D 25.072	290.9	0.313	5.95	D259.3	D	99.9		2.4	0.34	0.7	0.19		0.29	0.30	101	
101		13.27		13.26		33.343	25.061	292.0	0.316	5.91	258.0		99.2		2.5	0.34	0.7	0.20		0.28	0.29	102	12
112		12.76		12.75		33.443	25.240	275.2	0.348	5.35	D233.1	D	89.0		4.3	0.50	3.9	0.07		0.19	0.19	113	11
125		12.33		12.31		33.467	25.343	265.6	0.383	5.11	223.4		84.2		6.0	0.66	6.5	0.03		0.13	0.14	126	10
139		11.17		11.16		33.478	25.566	244.5	0.419	4.71	205.9		75.8		9.6	0.94	11.0	0.00		0.08	0.08	140	09
150	ISL	10.45	D	10.44		33.571	D 25.766	225.6	0.445	4.33	D188.7	D	68.6		13.3	1.14	14.1	0.00		0.05	0.06	151	
170		9.81		9.79		33.699	25.974	206.1	0.488	3.75	D163.2	D	58.6		20.2	1.51	19.9	0.00		0.01	0.03	171	08
200	ISL	9.27	D	9.25		33.837	D 26.171	187.8	0.548	3.05	D132.9	D	47.2		27.1	1.82	24.3	0.00		0.00	0.02	202	
201		9.26		9.23		33.840	26.177	187.4	0.549	3.01	131.3		46.4		27.4	1.83	24.4	0.00		0.00	0.02	203	07
230		8.71		8.68		33.977	26.370	169.4	0.600	2.21	D 96.2	D	33.8		35.5	2.16	28.6	0.00				232	06
250	ISL	8.56	D	8.53		33.990	D 26.405	166.4	0.635	2.31	D100.3	D	35.1		37.4	2.19	29.3	0.00				252	
271		8.14		8.11		34.022	26.494	158.2	0.668	2.18	95.1		32.8		39.4	2.22	30.0	0.00				273	05
300	ISL	7.87	D	7.83		34.041	D 26.550	153.3	0.715	2.03	D 88.5	D	30.5		43.5	2.32	31.5	0.00				302	
320		7.56		7.53		34.052	26.602	148.4	0.743	1.88	D 81.7	D	27.9		46.3	2.39	32.5	0.00				323	04
380		6.80		6.76		34.119	26.762	133.8	0.828	1.08	47.4		15.9		60.6	2.74	36.7	0.00				383	03
400	ISL	6.71	D	6.67		34.131	D 26.784	132.0	0.858	0.97	D 42.1	D	14.1		63.4	2.80	37.4	0.00				403	
440		6.35		6.31		34.163	26.857	125.3	0.906	0.70	D 30.3	D	10.1		69.1	2.93	38.9	0.00				444	02
500	ISL	5.99	D	5.94		34.221	D 26.950	117.1	0.983	0.45	D 19.7	D	6.5		76.8	3.06	40.3	0.00				504	
514		5.92		5.87		34.234	26.969	115.4	0.995	0.41	17.9		5.9		78.6	3.09	40.7	0.00				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 1804 STATION 90.0 120.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
30 24.6 N	123 59.9 W	08/04/2018	1845 UTC	4215 m	010 16 kn	330 08 10	1	1023.0 mb	15.7 C	12.4 C	31 m	4/8	ST	018

DEPTH m		TEMP DEG C		POTTEMP DEG C		SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		17.10		17.10		33.838	24.600	332.9	0.000	5.58	243.7	101.5	2.0	0.19	0.0	0.01		0.06	0.02	0	
2	A	17.10		17.10		33.838	24.600	332.9	0.007	5.58	243.7	101.5	2.0	0.19	0.0	0.00		0.06	0.02	2	24
10		17.09		17.09		33.836	24.602	333.0	0.033	5.59	244.0	101.7	1.9	0.17	0.0	0.00		0.06	0.02	10	22
18	A	17.09		17.09		33.841	24.605	333.1	0.060	5.62	D245.0	D102.3	1.9	0.17	0.0	0.00		0.06	0.01	18	21
20	ISL	17.09	D	17.08		33.839	D 24.605	333.2	0.064	5.63	D245.3	D102.4	1.9	0.17	0.0	0.00		0.06	0.01	20	
23	A	17.06		17.06		33.841	24.613	332.5	0.077	5.59	244.0	101.6	1.9	0.17	0.0	0.00		0.06	0.01	23	20
30	ISL	16.81	D	16.80		33.766	D 24.615	332.5	0.097	5.63	D245.4	D101.8	1.9	0.18	0.0	0.00		0.06	0.02	30	
35		16.46		16.46		33.697	24.643	330.1	0.117	5.70	D248.3	D102.3	1.9	0.18	0.0	0.00		0.06	0.02	35	19
47	A	16.31		16.30		33.652	24.644	330.4	0.156	5.68	247.9	101.6	1.9	0.18	0.0	0.00		0.07	0.01	47	18
50	ISL	16.28	D	16.27		33.641	D 24.644	330.5	0.164	5.72	D249.4	D102.3	1.9	0.18	0.0	0.00		0.08	0.02	50	
60		16.08		16.07		33.654	24.699	325.5	0.199	5.73	D249.6	D102.0	1.9	0.17	0.0	0.00		0.10	0.03	60	17
73		15.46		15.45		33.595	24.794	316.9	0.241	5.79	252.8	101.8	1.9	0.20	0.0	0.00		0.13	0.05	74	16
75	ISL	15.38	D	15.37		33.576	D 24.797	316.7	0.246	5.80	D252.8	D101.9	1.9	0.20	0.0	0.00		0.14	0.06	76	
84	A	15.17		15.16		33.561	24.832	313.7	0.275	5.80	D252.7	D101.4	1.7	0.19	0.0	0.00		0.18	0.08	85	15
95		14.73		14.71		33.577	24.940	303.6	0.309	5.75	D250.7	D 99.7						0.33	0.25	96	14
100	ISL	14.04	D	14.03		33.553	D 25.067	291.6	0.324	5.65	D246.3	D 96.6	2.9	0.29	1.5	0.00		0.32	0.24	101	
105	A	13.87		13.85		33.550	25.101	288.5	0.339	5.54	242.0	94.3	3.3	0.32	2.0	0.06		0.31	0.22	106	12
105		13.87		13.85		33.549	25.100	288.5	0.338											106	13
115		13.31		13.29		33.523	25.195	279.7	0.367	5.43	D236.6	D 91.3	4.2	0.47	3.5	0.07		0.26	0.27	116	11
124		12.92		12.91		33.511	25.262	273.5	0.392	5.30	231.3	88.4	4.8	0.54	4.7	0.06		0.23	0.25	125	10
125	ISL	12.82	D	12.80		33.516	D 25.286	271.2	0.395	5.32	D231.8	D 88.6	4.9	0.55	4.8	0.00		0.23	0.25	126	
140		12.00		11.98		33.560	25.478	253.2	0.434	5.14	224.4	84.1	6.3	0.65	6.7	0.00		0.24	0.22	141	09
150	ISL	11.43	D	11.41		33.568	D 25.590	242.7	0.459	4.99	D217.1	D 80.6	9.0	0.83	9.6	0.00		0.18	0.17	151	
171		10.46		10.44		33.635	25.814	221.5	0.507	4.32	D187.9	D 68.4	14.6	1.21	15.6	0.00		0.03	0.06	172	08
200		9.44		9.42		33.815	26.127	192.2	0.567	3.72	162.5	57.7	22.6	1.56	21.2	0.00		0.00	0.02	202	07
230		8.83		8.80		33.905	26.296	176.5	0.623	3.43	D149.0	D 52.4	27.8	1.74	24.0	0.00				232	06
250	ISL	8.32	D	8.29		33.969	D 26.424	164.4	0.659	3.08	D133.8	D 46.6	32.9	1.90	26.3	0.00				252	
271		8.01		7.98		33.999	26.495	158.0	0.691	2.64	115.4	39.7	38.2	2.07	28.6	0.00				273	05
300	ISL	7.61	D	7.58		34.045	D 26.589	149.3	0.738	2.06	D 89.7	D 30.7	45.2	2.31	31.6	0.00				302	
320		7.36		7.33		34.075	26.649	143.9	0.765	1.68	D 73.1	D 24.9	50.0	2.47	33.6	0.00				323	04
380		6.75		6.71		34.124	26.772	132.7	0.848	1.05	46.0	15.4	60.1	2.75	37.0	0.00				383	03
400	ISL	6.61	D	6.57		34.131	D 26.798	130.6	0.878	0.95	D 41.5	D 13.9	63.3	2.80	37.7	0.00				403	
439		6.28		6.24		34.165	26.867	124.3	0.924	0.73	D 31.5	D 10.5	69.5	2.91	39.0	0.00				443	02
500	ISL	5.97	D	5.93		34.217	D 26.949	117.1	1.003	0.49	D 21.1	D 7.0	77.3	3.05	40.4	0.00				504	
515		5.86		5.82		34.235	26.977	114.6	1.015	0.42	18.5	6.1	79.2	3.08	40.7	0.00				519	01

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

RV BELL M SHIMADA CALCOFI CRUISE 1804 STATION 91.7 26.4

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
33 14.5 N	117 28.0 W	06/04/2018	0057 UTC	26 m	270 06 kn	260 01 06	1	1015.9 mb	15.8 C	13.1 C		4/8	CU	003

DEPTH m		TEMP DEG C		POTTEMP DEG C		SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		15.73		15.73		33.503	24.657	327.4	0.000	6.94	302.8	122.7	0.6	0.16	0.0	0.04	0.20	2.54	0.44	0	
2		15.73		15.73		33.503	24.657	327.5	0.007	6.94	302.8	122.7	0.6	0.16	0.0	0.04	0.20	2.54	0.44	2	05
5		15.64		15.64		33.506	24.680	325.4	0.016	6.96	303.5	122.7	0.9	0.13	0.0	0.03	0.06	2.45	0.47	5	04
10		14.39		14.38		33.526	24.968	298.1	0.032	6.19	270.0	106.5	4.4	0.29	1.1	0.17	0.31	3.79	1.15	10	02
10		14.39		14.38		33.525	24.968	298.2	0.032											10	03
16		13.64		13.63		33.537	25.133	282.6	0.049	5.37	234.2	91.0	6.6	0.52	3.1	0.32	0.96	2.64	1.07	16	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 1804 STATION 93.3 26.7

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
32 57.3 N	117 18.2 W	05/04/2018	2042 UTC	66 m	260 05 kn	270 01 06	1	1017.0 mb	16.6 C	13.5 C	07 m	4/8	CU	001

DEPTH m		TEMP DEG C		POTTEMP DEG C		SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		15.86		15.86		33.500	24.626	330.3	0.000	6.91	301.3	122.4	1.1	0.12	0.0	0.03	0.17	2.86	0.51	0	
2	A	15.86		15.86		33.500	24.627	330.4	0.007	6.91	301.3	122.4	1.1	0.12	0.0	0.03	0.17	2.86	0.51	2	11
4	A	16.13		16.13		33.518	24.579	335.0	0.013	6.90	301.2	123.0	1.1	0.15	0.0	0.00	0.17	2.79	0.52	4	10
5	A	15.89		15.89		33.507	24.626	330.6	0.017	6.86	299.4	121.7	1.2	0.16	0.0	0.00	0.05	2.79	0.49	5	09
10	A	14.43		14.43		33.522	24.957	299.2	0.032	6.48	282.6	111.5	2.5	0.26	0.2	0.06	0.32	3.91	0.95	10	07
11		14.09		14.09		33.519	25.025	292.8	0.034											11	08
19	A	12.47		12.47		33.530	25.360	261.1	0.057	4.98	217.1	82.3	7.2	0.82	7.6	0.52	0.63	1.15	0.63	19	06
20	ISL	12.33	D	12.33		33.543	D 25.396	257.7	0.057	4.67	D203.4	D 77.0	7.7	0.87	8.5	0.52	0.59	1.12	0.57	20	
24	A	11.99		11.99		33.550	25.466	251.1	0.070	4.24	185.0	69.4	10.0	1.09	11.9	0.55	0.42	1.03	0.32	24	05
30	ISL	11.83	D	11.83		33.555	D 25.500	248.0	0.083	4.20	D182.8	D 68.5	10.6	1.15	12.9	0.47	0.28	0.78	0.35	30	
32		11.79		11.79		33.557	25.510	247.1	0.090	4.08	177.9	66.5	10.8	1.17	13.2	0.45	0.23	0.70	0.36	32	04
40		11.39		11.39		33.581	25.602	238.5	0.110	3.85	167.9	62.2	12.8	1.29	15.3	0.17	0.09	0.47	0.29	40	03
50		11.05		11.04		33.598	25.678	231.6	0.133	3.66	159.6	58.7	14.6	1.41	17.0	0.13	0.10	0.27	0.21	50	02
55		10.99		10.99		33.608	25.696	230.0	0.145	3.55	155.0	56.9	15.4	1.46	17.6	0.17	0.12	0.22	0.22	55	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;

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
32 54.9 N	117 23.8 W	06/04/2018	0321	UTC	651 m	270 05 kn			1015.6 mb	14.9 C	13.1 C				004

DEPTH m		TEMP DEG C		POTTEMP DEG C		SALINITY		SIGMA THETA	SVA	DYN HT	OXYGEN ml/L		OXYGEN µmol/Kg		OXY PCT		SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		16.59		16.59		33.596		24.535	339.1	0.000	5.79		252.6		104.2		0.0	0.21	0.0	0.01	0.14	0.25	0.05	0	
2		16.59		16.59		33.596		24.535	339.2	0.007	5.79		252.6		104.2		0.0	0.21	0.0	0.00	0.14	0.25	0.05	2	20
10		16.13		16.13		33.587		24.632	330.2	0.034	5.83		254.3		104.0		0.0	0.21	0.0	0.00	0.00	0.26	0.04	10	19
20		15.27		15.27		33.554		24.801	314.4	0.066	5.95		259.4		104.2		0.0	0.23	0.0	0.00	0.00	0.32	0.11	20	18
30		13.85		13.85		33.531		25.085	287.6	0.096	5.66	D	246.6	D	96.3		2.1	0.42	1.8	0.14	0.21	0.82	0.16	30	17
40		12.91		12.91		33.508		25.258	271.4	0.124	4.82	D	209.7	D	80.4		5.8	0.79	7.4	0.33	0.17	0.47	0.24	40	16
50		11.57		11.57		33.544		25.541	244.7	0.150	3.98		173.6		64.6		11.1	1.21	14.1	0.25	0.17	0.33	0.22	50	15
60		11.06		11.05		33.600		25.678	231.8	0.174	3.60	D	156.8	D	57.8		14.5	1.42	17.5	0.59	0.27	0.31	0.19	60	14
70		10.65		10.64		33.634		25.777	222.6	0.196	3.40		148.4		54.1		16.2	1.52	19.0	0.54	0.08	0.22	0.21	71	13
75	ISL	10.43	D	10.42		33.677	D	25.849	215.9	0.205	3.33	D	144.8	D	52.7		17.7	1.61	19.9	0.00	0.00	0.16	0.17	76	
85		10.28		10.27		33.754		25.935	208.0	0.228	2.92	D	127.1	D	46.1		20.7	1.78	21.8	0.00	0.00	0.04	0.10	86	12
99		10.00		9.98		33.835		26.047	197.5	0.257	2.70		117.6		42.3		22.9	1.89	23.4	0.00	0.00	0.03	0.10	100	11
100	ISL	9.95	D	9.94		33.856	D	26.072	195.3	0.257	2.69	D	117.2	D	42.3		23.0	1.90	23.5	0.00	0.00	0.03	0.10	101	
120		9.65		9.63		33.940		26.188	184.6	0.297	2.45		106.8		38.2		26.1	2.03	25.1	0.00	0.00	0.02	0.10	121	10
125	ISL	9.59	D	9.58		33.948	D	26.204	183.2	0.305	2.47	D	107.5	D	38.5		26.7	2.04	25.4	0.00	0.00	0.02	0.10	126	
141		9.34		9.32		33.999		26.285	175.8	0.335	2.33		101.6		36.1		28.6	2.09	26.4	0.00	0.00	0.01	0.09	142	09
150	ISL	9.27	D	9.25		34.053	D	26.339	170.9	0.349	2.17	D	94.6	D	33.6		29.6	2.14	26.8	0.00	0.00	0.01	0.09	151	
170		9.18		9.16		34.089		26.382	167.2	0.385	1.98	D	86.2	D	30.6		31.8	2.24	27.7	0.00	0.00	0.01	0.07	171	08
200	ISL	8.90	D	8.88		34.121	D	26.453	161.1	0.433	1.82	D	79.2	D	27.9		34.8	2.32	28.9	0.00	0.00	0.01	0.08	202	
201		8.90		8.88		34.123		26.455	160.9	0.435	1.80		78.6		27.7		34.9	2.32	28.9	0.00	0.00	0.01	0.08	203	07
231		8.75		8.73		34.166		26.512	156.1	0.483	1.61	D	69.9	D	24.6		37.5	2.40	29.9	0.00	0.00			233	06
250	ISL	8.70	D	8.68		34.189	D	26.538	153.9	0.512	1.46	D	63.4	D	22.3		39.1	2.46	30.4	0.00	0.00			252	
271		8.50		8.47		34.206		26.584	149.9	0.544	1.30		56.8		19.8		40.9	2.53	31.1	0.00	0.00			273	05
300	ISL	8.18	D	8.15		34.216	D	26.640	145.0	0.588	1.14	D	49.6	D	17.2		44.8	2.64	32.5	0.00	0.00			302	
320		7.93		7.90		34.234		26.692	140.3	0.615	0.97	D	42.0	D	14.5		47.5	2.72	33.4	0.00	0.00			323	04
380		7.45		7.41		34.245		26.772	133.5	0.698	0.73		31.7		10.8		53.7	2.84	35.4	0.00	0.00			383	03
400	ISL	7.34	D	7.30		34.264	D	26.803	130.8	0.726	0.63	D	27.5	D	9.4		56.2	2.89	35.9	0.00	0.00			403	
440		7.01		6.97		34.287		26.867	125.2	0.775	0.47	D	20.5	D	6.9		61.2	3.00	37.0	0.00	0.00			444	02
500	ISL	6.46	D	6.42		34.321	D	26.968	116.0	0.851	0.32	D	13.9	D	4.6		69.6	3.12	38.8	0.00	0.00			504	
515		6.32		6.27		34.324		26.990	114.0	0.865	0.29		12.6		4.2		71.7	3.15	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;

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
32 50.8 N	117 31.4 W	06/04/2018	0556	UTC	819 m	310 07 kn			1016.6 mb	14.8 C	12.8 C				005

DEPTH m		TEMP DEG C		POTTEMP DEG C		SALINITY		SIGMA THETA	SVA	DYN HT	OXYGEN ml/L		OXYGEN µmol/Kg		OXY PCT		SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		16.40		16.40		33.594		24.576	335.1	0.000	5.83		254.3		104.5		0.7	0.19	0.0	0.00	0.00	0.20	0.04	0	
2		16.40		16.40		33.594		24.576	335.2	0.007	5.83		254.3		104.5		0.7	0.19	0.0	0.00	0.00	0.20	0.04	2	20
10		16.32		16.32		33.592		24.594	333.8	0.034	5.80		252.8		103.7		0.6	0.20	0.0	0.00	0.00	0.20	0.04	10	19
20		15.96		15.96		33.587		24.672	326.7	0.067	5.83		254.2		103.5		0.6	0.20	0.0	0.00	0.00	0.21	0.06	20	18
30		14.77		14.76		33.543		24.902	305.1	0.098	6.04	D	263.3	D	104.8		1.6	0.24	0.0	0.00	0.00	0.44	0.20	30	17
40		12.93		12.93		33.460		25.216	275.4	0.127	4.54	D	197.6	D	75.7		6.8	0.79	7.3	0.23	0.00	0.88	0.58	40	16
50		11.97		11.96		33.495		25.429	255.3	0.154	4.12		179.8		67.4		11.1	1.09	12.5	0.05	0.00	0.49	0.39	50	15
60		11.47		11.47		33.536		25.553	243.8	0.179	3.90	D	169.7	D	63.1		13.4	1.26	15.1	0.03	0.00	0.25	0.21	60	14
70		10.98		10.97		33.591		25.685	231.4	0.202	3.54		154.5		56.8		15.8	1.42	17.5	0.00	0.00	0.15	0.17	71	13
75	ISL	10.68	D	10.67		33.653	D	25.787	221.8	0.212	3.37	D	146.8	D	53.7		17.8	1.52	18.9	0.00	0.00	0.11	0.14	76	
85		10.24		10.23		33.745		25.936	207.8	0.235	3.01	D	131.1	D	47.5		21.8	1.72	21.7	0.00	0.00	0.03	0.09	86	12
100		10.06		10.05		33.802		26.010	201.1	0.266	2.81		122.7		44.2		23.4	1.81	22.9	0.00	0.00	0.01	0.08	101	11
120		9.74		9.72		33.864		26.113	191.7	0.305	2.73		118.9		42.6		25.4	1.89	24.1	0.00	0.00	0.01	0.07	121	10
125	ISL	9.71	D	9.69		33.888	D	26.138	189.5	0.314	2.72	D	118.2	D	42.4		25.9	1.91	24.4	0.00	0.00	0.01	0.07	126	
140		9.55		9.54		33.927		26.194	184.4	0.343	2.56		111.7		39.9		27.4	1.97	25.2	0.00	0.00	0.01	0.06	141	09
150	ISL	9.54	D	9.52		34.016	D	26.267	177.8	0.360	2.33	D	101.5	D	36.3		29.2	2.06	25.9	0.00	0.00	0.00	0.06	151	
170		9.51		9.50		34.135		26.364	169.0	0.396	1.86	D	80.7	D	28.9		32.9	2.23	27.3	0.00	0.00	0.00	0.06	171	08
200		9.20		9.18		34.183		26.454	161.1	0.445	1.60		69.8		24.8		36.5	2.33	28.6	0.00	0.00	0.01	0.05	202	07
231		8.74		8.71		34.200		26.541	153.3	0.494	1.40	D	60.8	D	21.4		41.2	2.44	30.3	0.00	0.00			233	06
250	ISL	8.41	D	8.38		34.188	D	26.583	149.5	0.523	1.35	D	58.6	D	20.5		43.4	2.48	31.2	0.00	0.00			252	
271		8.12		8.10		34.173		26.614	146.8	0.554	1.34		58.3		20.2		45.8	2.52	32.2	0.00	0.00			273	05
300	ISL	7.88	D	7.85		34.201	D	26.674	141.6	0.597	1.10	D	47.7	D	16.5		49.6	2.62	33.3	0.00	0.00			302	
321		7.72		7.69		34.219		26.711	138.3	0.625	0.94	D	40.8	D	14.0		52.3	2.69	34.2	0.00	0.00			324	04
381		7.31		7.27		34.262		26.805	130.3	0.706	0.67		29.4		10.0		58.5	2.82	35.8	0.00	0.00			384	03
400	ISL	7.11	D	7.07		34.266	D	26.836	127.5	0.733	0.58	D	25.2	D	8.5		61.1	2.87	36.4	0.00	0.00			403	
440		6.83		6.78		34.290		26.895	122.3	0.780	0.46	D	19.9	D	6.7		66.6	2.96	37.7	0.00	0.00			444	02
500	ISL	6.44	D	6.40		34.317	D	26.968	116.0	0.856	0.32	D	14.1	D	4.7					0.00	0.00			504	
515		6.34		6.29		34.321	D	26.984	114.5	0.873	0.30	D	13.1	D	4.4									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 1804 STATION 93.3 35.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
32 40.5 N	117 52.5 W	06/04/2018	0934	UTC	613 m	270	05 kn			1015.3 mb	14.7 C	12.3 C				006

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0	15.76	15.76	33.584	24.713	322.1	0.000	5.88	256.3	104.0	1.0	0.20	0.0	0.02	0.12	0.26	0.05	0	
2	15.76	15.76	33.584	24.713	322.2	0.006	5.88	256.3	104.0	1.0	0.20	0.0	0.00	0.12	0.26	0.05	2	20
10	15.54	15.54	33.578	24.758	318.2	0.032	5.90	257.2	103.9	0.7	0.20	0.0	0.00	0.06	0.23	0.08	10	19
20	14.99	14.99	33.565	24.869	307.9	0.063	5.90	257.4	102.8	1.0	0.22	0.0	0.03	0.11	0.29	0.14	20	18
30	14.20	14.20	33.537	25.017	294.1	0.093	5.66	D246.6 D	97.0	2.4	0.35	1.4	0.17	0.20	0.52	0.27	30	17
40	13.92	13.92	33.531	25.071	289.3	0.123	5.45	D237.4 D	92.9	3.0	0.42	2.3	0.26	0.21	0.61	0.25	40	16
50	12.92	12.91	33.522	25.267	270.8	0.151	4.77	208.0	79.6	6.8	0.77	7.4	0.51	0.00	0.47	0.27	50	15
60	11.90	11.90	33.507	25.451	253.5	0.177	4.13	D179.7 D	67.4	10.7	1.08	12.3	0.16	0.05	0.34	0.31	60	14
70	11.54	11.53	33.523	25.532	246.0	0.202	3.89	169.6	63.0	12.6	1.21	14.3	0.08	0.00	0.23	0.24	71	13
75 ISL	11.36 D	11.35	33.544 D	25.582	241.4	0.212	3.81	D165.9 D	61.5	14.1	1.30	15.7	0.06	0.00	0.20	0.22	76	
85	10.80	10.78	33.621	25.742	226.3	0.237	3.40	D148.0 D	54.2	17.1	1.48	18.6	0.04	0.00	0.14	0.19	86	12
100	10.39	10.38	33.701	25.876	213.9	0.270	3.06	133.5	48.4	20.2	1.65	21.1	0.08	0.00	0.07	0.14	101	11
119	9.82	9.81	33.857	26.095	193.5	0.309	2.69	117.5	42.1	24.9	1.87	23.6	0.03	0.00	0.02	0.09	120	10
125 ISL	9.76 D	9.74	33.889 D	26.130	190.3	0.320	2.64	D115.1 D	41.3	25.7	1.90	24.0	0.00	0.00	0.02	0.09	126	
139	9.68	9.66	33.950	26.191	184.7	0.347	2.45	106.6	38.2	27.7	1.98	25.0	0.00	0.00	0.02	0.08	140	09
150 ISL	9.57 D	9.55	34.012 D	26.258	178.6	0.366	2.29	D 99.6 D	35.7	28.8	2.03	25.5	0.00	0.00	0.02	0.08	151	
170	9.54	9.52	34.060	26.302	175.0	0.402	2.11	D 91.8 D	32.9	30.9	2.12	26.5	0.00	0.00	0.01	0.07	171	08
200	9.23	9.21	34.155	26.427	163.6	0.453	1.70	74.3	26.3	35.8	2.28	28.2	0.00	0.00	0.01	0.06	202	07
230	8.87	8.84	34.203	26.523	155.0	0.501	1.44	D 62.5 D	22.0	40.2	2.41	29.8	0.00	0.00			232	06
250 ISL	8.60 D	8.57	34.214 D	26.575	150.4	0.532	1.28	D 55.5 D	19.5	42.4	2.46	30.5	0.00	0.00			252	
270	8.44	8.41	34.220	26.604	148.0	0.562	1.21	52.7	18.4	44.7	2.51	31.3	0.00	0.00			272	05
300 ISL	8.14 D	8.10	34.228 D	26.657	143.4	0.606	1.06	D 46.3 D	16.1	48.0	2.58	32.4	0.00	0.00			302	
320	8.01	7.98	34.235	26.681	141.4	0.634	0.98	D 42.5 D	14.7	50.2	2.63	33.1	0.00	0.00			323	04
380	7.43	7.39	34.261	26.787	132.1	0.716	0.72	31.2	10.6	58.7	2.81	35.3	0.00	0.00			383	03
400 ISL	7.31 D	7.27	34.262 D	26.805	130.6	0.744	0.64	D 28.0 D	9.5	60.4	2.85	35.9	0.00	0.00			403	
442	6.95	6.91	34.289	26.878	124.1	0.795	0.48	D 20.9 D	7.1	64.0	2.94	37.2	0.00	0.00			446	02
500 ISL	6.49 D	6.45	34.314 D	26.959	116.9	0.869	0.35	D 15.2 D	5.1	72.1	3.04	38.8	0.00	0.00			504	
515	6.37	6.32	34.320	26.980	115.0	0.883	0.32	14.1	4.7	74.3	3.06	39.2	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 1804 STATION 93.3 40.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
32 30.7 N	118 13.4 W	06/04/2018	1354	UTC	1653 m	320	19 kn			1014.8 mb	14.4 C	12.6 C	18 m			007

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0	16.06	16.06	33.573	24.637	329.3	0.000	5.79	252.4	103.0	0.3	0.21	0.0	0.03	0.02	0.24	0.07	0	
2	16.06	16.06	33.573	24.637	329.4	0.007	5.79	252.4	103.0	0.3	0.21	0.0	0.03	0.00	0.24	0.07	2	21
10	16.06	16.06	33.571	24.636	329.8	0.033	5.78	252.2	102.9	0.5	0.22	0.0	0.03	0.08	0.24	0.06	10	19
10	16.06	16.06	33.575	24.639	329.5	0.033											10	20
20	16.06	16.06	33.574	24.640	329.8	0.066	5.78	252.2	102.9	0.4	0.22	0.0	0.03	0.00	0.25	0.08	20	18
30	14.75	14.75	33.539	24.902	305.1	0.098	5.89	D256.8 D	102.2	2.0	0.29	0.0	0.06	0.00	0.90	0.29	30	17
41	13.31	13.31	33.511	25.180	278.9	0.130	5.09	D221.9 D	85.7	4.8	0.58	3.7	0.24	0.00	0.92	0.41	41	16
50	12.28	12.27	33.497	25.373	260.7	0.154	4.32	188.6	71.2	9.1	1.01	10.3	0.41	0.07	0.55	0.30	50	15
60	11.46	11.45	33.533	25.554	243.7	0.179	3.85	D167.8 D	62.4	13.0	1.29	14.9	0.16	0.13	0.32	0.29	60	14
70	10.87	10.86	33.601	25.713	228.7	0.203	3.45	150.6	55.2	16.5	1.51	17.9	0.07	0.14	0.18	0.21	71	13
75 ISL	10.70 D	10.69	33.638 D	25.771	223.3	0.212	3.50	D152.4 D	55.8	17.8	1.57	18.8	0.08	0.14	0.14	0.19	76	
85	10.45	10.44	33.689	25.856	215.5	0.236	3.13	D136.4 D	49.6	20.2	1.70	20.6	0.11	0.13	0.07	0.15	86	12
100	10.07	10.06	33.772	25.985	203.5	0.268	2.92	127.2	45.9	23.0	1.82	22.3	0.09	0.08	0.03	0.11	101	11
120	9.81	9.79	33.870	26.107	192.3	0.307	2.65	115.6	41.4	26.3	1.96	24.0	0.05	0.08	0.01	0.07	121	10
125 ISL	9.77 D	9.76	33.879 D	26.120	191.2	0.316	2.67	D116.0 D	41.7	27.0	1.99	24.3	0.05	0.08	0.01	0.07	126	
141	9.62	9.60	33.960	26.209	183.1	0.347	2.41	104.9	37.5	29.2	2.08	25.3	0.05	0.07	0.01	0.07	142	09
150 ISL	9.53 D	9.51	34.007 D	26.261	178.4	0.362	2.33	D101.3 D	36.2	30.5	2.13	25.9	0.05	0.08	0.01	0.07	151	
170	9.43	9.41	34.084	26.338	171.5	0.398	2.01	D 87.4 D	31.2	33.3	2.25	27.0	0.05	0.09	0.01	0.06	171	08
200 ISL	9.41 D	9.39	34.178 D	26.416	164.8	0.448	1.66	D 72.4 D	25.8	35.7	2.38	28.0	0.05	0.10	0.01	0.06	202	
201	9.34	9.32	34.178	26.426	163.8	0.450	1.65	72.2	25.7	35.8	2.38	28.0	0.05	0.10	0.01	0.06	203	07
231	9.21	9.19	34.244	26.501	157.4	0.498	1.26	D 54.6 D	19.4	42.4	2.57	30.2	0.05				233	06
250 ISL	8.97 D	8.94	34.244 D	26.540	154.0	0.528	1.26	D 54.6 D	19.3	43.2	2.57	30.5	0.04				252	
271	8.62	8.59	34.216	26.573	151.0	0.560	1.29	56.1	19.6	44.1	2.58	30.9	0.04				273	05
300 ISL	8.13 D	8.10	34.203 D	26.638	145.2	0.604	1.18	D 51.2 D	17.8	48.8	2.63	32.5	0.00				302	
322	7.85	7.81	34.218	26.692	140.2	0.634	0.99	D 43.2 D	14.9	52.3	2.66	33.7	0.00				325	04
381	7.39	7.35	34.252	26.786	132.1	0.715	0.70	30.6	10.4	59.7	2.82	35.5	0.00				384	03
400 ISL	7.16 D	7.12	34.270 D	26.832	127.9	0.741	0.58	D 25.0 D	8.5	62.6	2.88	36.3	0.00				403	
440	6.76	6.72	34.311	26.920	119.9	0.789	0.37	D 16.2 D	5.5	68.7	3.02	38.0	0.00				444	02
500 ISL	6.45 D	6.40	34.329 D	26.977	115.1	0.862	0.30	D 13.1 D	4.4	74.2	3.08	39.0	0.00				504	
514	6.42	6.37	34.329	26.982	114.9	0.876	0.31	13.3	4.4	75.5	3.09	39.2	0.00				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 1804 STATION 93.3 45.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
32 20.1 N	118 33.1 W	06/04/2018	1759	UTC	1400 m	320 17 kn	290 06 10	1	1016.9 mb	14.4 C	13.0 C	20 m	5/8	CU	008

DEPTH m		TEMP DEG C		POTTEMP DEG C		SALINITY		SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg		OXY PCT		SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		15.96		15.96		33.571		24.658	327.2	0.000	5.78	252.2		102.7		1.1	0.22	0.0	0.03		0.31	0.10	0	
2	A	15.96		15.96		33.571		24.660	327.3	0.007	5.78	252.2		102.7		1.1	0.22	0.0	0.03		0.31	0.10	2	24
10	ISL	15.95	D	15.95		33.569	D	24.660	327.5	0.030	5.79	D252.4	D	102.8		1.2	0.24	0.0	0.03		0.30	0.11	10	
12	A	15.93		15.93		33.570		24.665	327.1	0.039	5.77	251.9		102.5		1.2	0.25	0.1	0.03		0.30	0.11	12	22
12		15.93		15.93		33.570		24.665	327.1	0.036				96.7									12	23
15	A	15.83		15.83		33.568		24.686	325.2	0.049	5.79	D252.4	D	102.6		1.2	0.24	0.1	0.03		0.32	0.12	15	21
20	ISL	13.98	D	13.98		33.516	D	25.046	291.0	0.062	5.49	D239.2	D	93.7		1.2	0.23	0.1			0.58	0.22	20	
22		13.78		13.77		33.512		25.086	287.3	0.070	5.36	234.0		91.1		1.1	0.23	0.1	0.00		0.69	0.26	22	20
30	A	12.91		12.90		33.504	D	25.255	271.4	0.093	5.00	D217.8	D	83.4		4.6	0.51	3.5	0.21				30	19
38		12.48		12.47		33.502		25.337	263.8	0.114	4.58	D199.4	D	75.7		8.1	0.88	8.9	0.42		0.55	0.27	38	18
46		11.49		11.48		33.527		25.542	244.4	0.134	3.85	D167.5	D	62.3		12.9	1.25	14.8	0.19		0.38	0.27	46	17
50	ISL	11.44	D	11.43		33.541	D	25.563	242.5	0.142	3.82	D166.2	D	61.7		13.5	1.29	15.5	0.16		0.27	0.22	50	
55	A	11.23		11.23		33.556		25.612	238.0	0.156	3.68	160.3		59.2		14.3	1.34	16.3	0.12		0.13	0.17	55	16
61		11.00		11.00		33.592		25.681	231.5	0.170	3.51	D152.9	D	56.3		16.0	1.45	17.9	0.07		0.17	0.24	61	15
68	A	10.75		10.74		33.629		25.756	224.6	0.186	3.37	D146.6	D	53.7		17.5	1.53	19.1	0.06		0.16	0.16	69	14
75	ISL	10.60	D	10.59		33.658	D	25.805	220.1	0.200	3.27	D142.5	D	52.0		18.6	1.59	19.9	0.05		0.10	0.19	76	
76		10.60		10.59		33.658		25.806	220.0	0.204	3.24	141.3		51.5		18.8	1.60	20.0	0.05		0.09	0.19	77	13
85		10.44		10.43		33.695		25.862	214.9	0.223	3.14	D136.7	D	49.8		19.9	1.66	20.8	0.06		0.06	0.10	86	12
100	ISL	10.23	D	10.22		33.783	D	25.967	205.3	0.254	2.80	D122.0	D	44.2		23.1	1.82	22.7	0.04		0.03	0.09	101	
101		10.31		10.30		33.792		25.960	206.0	0.257	2.75	120.1		43.5		23.3	1.83	22.8	0.03		0.03	0.09	102	11
120		9.86		9.85		33.864		26.093	193.6	0.295	2.67	116.5		41.8		25.4	1.91	24.2	0.00		0.01	0.07	121	10
125	ISL	9.80	D	9.79		33.877	D	26.114	191.8	0.304	2.67	D116.0	D	41.7		26.0	1.93	24.5	0.00		0.01	0.07	126	
141		9.58		9.56		33.934		26.196	184.4	0.335	2.49	108.7		38.8		27.9	1.98	25.4	0.00		0.01	0.07	142	09
150	ISL	9.38	D	9.37		34.020	D	26.295	175.1	0.350	2.31	D100.6	D	35.8		29.9	2.05	26.3	0.00		0.01	0.06	151	
171		9.10		9.08		34.087		26.394	166.0	0.387	1.99	D 86.8	D	30.7		34.4	2.21	28.2	0.00		0.00	0.05	172	08
200	ISL	8.62	D	8.60		34.162	D	26.528	153.8	0.433	1.56	D 67.8	D	23.8		40.9	2.41	30.5	0.00		0.00	0.04	202	
201		8.62		8.60		34.163		26.529	153.7	0.435	1.53	66.7		23.3		41.1	2.42	30.6	0.00		0.00	0.04	203	07
234		8.40		8.38		34.190		26.585	149.0	0.485	1.33	D 57.9	D	20.2		44.2	2.51	31.7	0.00				236	06
250	ISL	8.30	D	8.27		34.192	D	26.603	147.6	0.509	1.29	D 56.0	D	19.5		46.7	2.57	32.4	0.00				252	
268		8.02		7.99		34.211		26.660	142.4	0.535	1.08	47.0		16.2		49.6	2.63	33.3	0.00				270	05
300	ISL	7.77	D	7.74		34.225	D	26.709	138.2	0.581	0.94	D 40.8	D	14.0		53.2	2.70	34.3	0.00				302	
324		7.54		7.51		34.236		26.750	134.5	0.612	0.81	D 35.3	D	12.1		56.0	2.76	35.1	0.00				327	04
384		7.13		7.10		34.265		26.831	127.6	0.691	0.59	25.6		8.7		61.5	2.88	36.9	0.00				387	03
400	ISL	7.08	D	7.04		34.275	D	26.847	126.4	0.713	0.55	D 23.8	D	8.1		63.4	2.92	37.2	0.00				403	
442		6.74		6.70		34.302		26.915	120.4	0.763	0.40	D 17.4	D	5.9		68.5	3.01	38.2	0.00				446	02
500	ISL	6.32	D	6.28		34.315	D	26.982	114.5	0.834	0.34	D 14.6	D	4.9					0.00				504	
514		6.25		6.20		34.320	D	26.996	113.3	0.850	0.32	D 14.0	D	5.7					0.00				518	01

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

RV BELL M SHIMADA CALCOFI CRUISE 1804 STATION 93.3 50.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
32 10.6 N	118 53.8 W	06/04/2018	2206	UTC	1468 m	320 17 kn	290 05 06	2	1016.2 mb	15.2 C	14.0 C	13 m	8/8	ST	009

DEPTH m		TEMP DEG C		POTTEMP DEG C		SALINITY		SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg		OXY PCT		SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		15.51		15.51		33.626		24.802	313.6	0.000	5.88	256.5		103.6		0.4	0.19	0.0	0.02		0.51	0.12	0	
2		15.51		15.51		33.626		24.802	313.7	0.006	5.88	256.5		103.6		0.4	0.19	0.0	0.00		0.51	0.12	2	20
10		15.50		15.50		33.622		24.802	314.0	0.031	5.88	256.6		103.6		0.3	0.19	0.0	0.00		0.48	0.15	10	19
20		15.44		15.44		33.622		24.816	313.0	0.063	5.92	258.3		104.1		0.2	0.20	0.0	0.00		0.53	0.14	20	18
30		15.35		15.35		33.612		24.827	312.3	0.094	5.89	D256.8	D	103.4		0.2	0.19	0.0	0.00		0.53	0.18	30	17
40		15.29		15.28		33.606		24.838	311.6	0.125	5.90	D257.1	D	103.4		0.7	0.22	0.0	0.03		0.69	0.21	40	16
50		13.43		13.42		33.548		25.185	278.7	0.155	5.01	218.4		84.5		6.4	0.64	5.8	0.28		0.52	0.31	50	15
60		11.99		11.98		33.540		25.461	252.6	0.181	4.40	D191.5	D	72.0		11.0	0.99	11.4	0.25		0.34	0.30	60	14
70		11.15		11.14		33.557		25.628	236.8	0.206	4.12	179.7		66.2		13.8	1.19	14.7	0.08		0.18	0.26	71	13
75	ISL	10.73	D	10.72		33.585	D	25.725	227.7	0.216	4.06	D177.0	D	64.8		14.8	1.25	15.7	0.06		0.15	0.23	76	
85		10.61		10.60		33.611		25.766	224.0	0.240	3.85	D167.5	D	61.2		16.8	1.37	17.5	0.04		0.10	0.16	86	12
100		9.93		9.92		33.698		25.951	206.7	0.272	3.46	150.8		54.2		21.0	1.58	20.6	0.04		0.06	0.09	101	11
120		9.63		9.62		33.758		26.049	197.8	0.313	3.33	145.3		51.9		23.5	1.67	22.2	0.03		0.02	0.06	121	10
125	ISL	9.58	D	9.57		33.767	D	26.065	196.4	0.322	3.37	D146.5	D	52.3		23.9	1.68	22.4	0.03		0.02	0.06	126	
140		9.32		9.30		33.809		26.139	189.6	0.351	3.33	145.4		51.6		25.1	1.72	23.1	0.03		0.01	0.05	141	09
150	ISL	8.96	D	8.94		33.888	D	26.260	178.3	0.369	3.23	D140.5	D	49.6		27.6	1.81	24.3	0.03		0.01	0.04	151	
171		8.77		8.75		33.966		26.350	170.1	0.407	2.66	D115.7	D	40.7		32.9	2.01	26.9	0.03		0.00	0.04	172	08
200		8.54		8.52		34.067		26.466	159.6	0.455	2.02	88.2		30.8		38.6	2.24	29.5	0.00		0.00	0.03	202	07
231		8.33		8.30		34.131		26.549	152.3	0.503	1.60	D 69.7	D	24.3		43.0	2.40	31.3	0.00				233	06
250	ISL	8.14	D	8.11		34.163	D	26.604	147.3	0.532	1.35	D 58.6	D	20.3		46.3	2.50	32.3	0.00				252	
270		7.94		7.91		34.194		26.658	142.5	0.560	1.11	48.4		16.7		49.7	2.61	33.5	0.00				272	05
300	ISL	7.82	D	7.79		34.207	D	26.686	140.4	0.604	1.03	D 44.6	D	15.4		52.0	2.67	34.1	0.00				302	
322		7.70		7.67		34.217		26.712	138.2	0.633	0.90	D 39.2	D	13.5		53.7	2.72	34.6	0.00				325	04
381		7.10		7.06		34.262		26.834	127.3	0.712	0.57	25.0		8.5		63.7	2.90	36.9	0.00				384	03
400	ISL	6.90	D	6.86		34.276	D	26.872	123.9	0.738	0.49	D 21.1	D	7.1		65.7	2.93	37.3	0.00				403	
440		6.74		6.70		34.287		26.904	121.3	0.785	0.42	D 18.3	D	6.1		69.8	3.00	38.3	0.00				444	02
500	ISL	6.44	D	6.39		34.307	D	26.961	116.6	0.859	0.35	D 15.0	D	5.0		71.7	3.05	38.8	0.00				504	
516		6.35		6.30		34.301		26.968	116.1	0.875	0.36	15.6		5.2		72.3	3.06	38.9	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 1804 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 0.5 N	119 14.0 W	07/04/2018	0148	UTC	1589 m	300 18 kn	290 04 05	2	1016.1 mb	15.4 C	14.3 C		8/8	ST	010

DEPTH m		TEMP DEG C		POTTEMP DEG C		SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg		OXY PCT		SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		15.92		15.92		33.604	24.693	324.0	0.000	5.72	249.8		101.6		1.3	0.25	0.0	0.02		0.11	0.03	0	
2		15.92		15.92		33.604	24.693	324.0	0.007	5.72	249.8		101.6		1.3	0.25	0.0	0.00		0.11	0.03	2	21
10		15.92		15.91		33.604	24.695	324.2	0.032	5.72	249.9		101.6		1.3	0.20	0.0	0.00		0.11	0.04	10	19
10		15.92		15.91		33.604	24.695	324.2	0.032													10	20
20	ISL	15.89	D	15.88		33.601	D 24.699	324.1	0.062	5.76	D251.1		D102.2		1.2	0.19	0.0	0.00		0.11	0.04	20	
25		15.86		15.86		33.604	24.707	323.5	0.081	5.73	250.3		101.7		1.2	0.19	0.0	0.00		0.11	0.04	25	18
30	ISL	15.85	D	15.84		33.599	D 24.707	323.7	0.095	5.76	D251.1		D102.1		1.2	0.19	0.0	0.00		0.13	0.05	30	
40		15.66		15.65		33.588	24.742	320.8	0.129	5.79	D252.5		D102.3		1.2	0.20	0.0	0.00		0.15	0.06	40	17
50		14.96		14.95		33.538	24.859	309.9	0.161	5.83	254.4		101.4		1.3	0.23	0.0	0.00		0.44	0.23	50	16
62		14.50		14.49		33.516	24.940	302.5	0.198	5.78	D251.9	D	99.7		1.7	0.26	0.2	0.08		0.69	0.39	62	15
75		13.05		13.04		33.478	25.209	277.1	0.235	5.25	229.2		87.8		4.4	0.57	4.9	0.12		0.39	0.33	76	14
87		12.01		11.99		33.478	25.411	258.1	0.267	4.85	D211.2	D	79.4		7.3	0.79	8.7	0.04		0.17	0.20	88	13
100		11.57		11.56		33.515	25.521	247.9	0.300	4.58	199.8		74.2		9.5	0.95	11.1	0.04		0.11	0.14	101	12
112		10.69		10.68		33.584	25.733	227.8	0.329	4.05	D176.3	D	64.5		14.7	1.27	16.0	0.00		0.05	0.08	113	11
125		9.74		9.72		33.719	26.001	202.5	0.357	3.55	155.1		55.4		21.1	1.58	21.1	0.00		0.01	0.04	126	10
140		9.25		9.24		33.826	D 26.163	187.3	0.386	3.33	145.2		51.4		25.1	1.72	23.3	0.00		0.00	0.03	141	09
150	ISL	9.13	D	9.12		33.861	D 26.211	183.0	0.404	3.26	D141.9	D	50.2		27.6	1.83	24.7	0.00		0.00	0.03	151	
170		8.91		8.89		33.968	26.331	171.9	0.439	2.51	D109.3	D	38.5		32.6	2.05	27.4	0.00		0.00	0.03	171	08
200		8.49		8.47		34.086	26.488	157.5	0.489	1.87	81.8		28.5		39.4	2.29	30.0	0.00		0.00	0.03	202	07
230		8.20		8.18		34.149	26.583	149.0	0.535	1.42	D 61.6	D	21.4		44.4	2.46	32.0	0.00				232	06
250	ISL	8.10	D	8.08		34.172	D 26.616	146.2	0.566	1.30	D 56.4	D	19.5		46.9	2.53	32.7	0.00				252	
270		7.94		7.91		34.195	26.660	142.4	0.593	1.13	49.1		16.9		49.3	2.60	33.4	0.00				272	05
300	ISL	7.69	D	7.66		34.233	D 26.726	136.5	0.637	0.84	D 36.5	D	12.5		53.9	2.71	34.6	0.00				302	
320		7.54		7.51		34.246	26.758	133.8	0.662	0.73	D 31.8	D	10.9		57.0	2.78	35.3	0.00				323	04
380		7.18		7.15		34.270	26.828	127.9	0.740	0.57	24.7		8.3		62.6	2.96	36.7	0.00				383	03
400	ISL	6.98	D	6.94		34.271	D 26.858	125.2	0.769	0.51	D 22.3	D	7.5		64.8	2.97	37.3	0.00				403	
440		6.70		6.66		34.286	26.908	120.9	0.815	0.42	D 18.4	D	6.2		69.2	3.00	38.4	0.00				444	02
500	ISL	6.34	D	6.30		34.308	D 26.974	115.3	0.891	0.32	D 14.1	D	4.7		74.7	3.07	39.4	0.00				504	
515		6.32		6.28		34.312	26.980	114.9	0.903	0.31	13.6		4.5		76.1	3.09	39.7	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 1804 STATION 93.3 60.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
31 50.8 N	119 34.4 W	07/04/2018	0523	UTC	1884 m	280 11 kn			1017.5 mb	15.4 C	14.7 C				011

DEPTH m		TEMP DEG C		POTTEMP DEG C		SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg		OXY PCT		SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		15.98		15.98		33.593	24.670	326.2	0.000	5.73	250.3		101.9		1.9	0.21	0.0	0.01		0.12	0.03	0	
2		15.98		15.98		33.593	24.670	326.2	0.007	5.73	250.3		101.9		1.9	0.21	0.0	0.00		0.12	0.03	2	20
10		15.98		15.98		33.592	24.671	326.5	0.033	5.73	250.2		101.8		1.9	0.22	0.0	0.00		0.12	0.03	10	19
20	ISL	15.98	D	15.97		33.594	D 24.673	326.6	0.062	5.75	D250.7		D102.2		1.9	0.21	0.0	0.00		0.13	0.03	20	
25		15.94		15.93		33.591	24.681	326.0	0.082	5.73	250.2		101.8		1.9	0.21	0.0	0.00		0.13	0.04	25	18
30	ISL	15.93	D	15.92		33.593	D 24.685	325.8	0.095	5.76	D250.9		D102.2		1.9	0.21	0.0	0.00		0.13	0.04	30	
40		15.85		15.85		33.585	24.696	325.1	0.131	5.76	D251.2		D102.2		1.9	0.21	0.0	0.00		0.15	0.04	40	17
50		15.41		15.40		33.554	24.772	318.2	0.163	5.83	D254.3		D102.5		1.7	0.22	0.0	0.00		0.22	0.08	50	16
62		14.94		14.93		33.534	24.859	310.3	0.200	5.82	254.2		101.3		1.6	0.23	0.0	0.00		0.46	0.29	62	15
75		13.44		13.43		33.483	25.134	284.3	0.239	5.36	D233.4	D	90.4		4.3	0.50	3.5	0.20		0.42	0.45	76	14
87		12.37		12.36		33.482	25.344	264.5	0.272	5.02	219.3		82.9		6.5	0.70	7.0	0.06		0.20	0.23	88	13
100		11.22		11.20		33.532	D 25.599	240.4	0.303	4.34	189.5		69.8		11.8	1.10	13.2	0.02		0.11	0.12	101	12
112		10.66		10.64		33.575	25.732	228.0	0.333	4.09	D177.9	D	65.0		14.2	1.24	15.5	0.00		0.07	0.08	113	11
125		10.26		10.25		33.626	25.841	217.9	0.362	3.96	D172.4	D	62.5		16.9	1.38	17.7	0.00		0.04	0.07	126	10
140		9.94		9.93		33.672	25.930	209.6	0.394	3.76	164.4		59.0		18.8	1.48	19.3	0.00		0.03	0.05	141	09
150	ISL	9.61	D	9.59		33.756	D 26.051	198.2	0.414	3.49	D152.0	D	54.3		21.9	1.63	21.2	0.00		0.02	0.04	151	
170		9.26		9.24		33.900	26.223	182.3	0.452	2.79	D121.5	D	43.1		28.0	1.93	25.0	0.00		0.00	0.03	171	08
200		9.02		9.00		34.010	26.346	171.2	0.505	2.33	101.7		35.8		31.9	2.09	27.0	0.00		0.00	0.03	202	07
230		8.73		8.71		34.091	26.456	161.3	0.555	1.88	D 81.8	D	28.8		36.0	2.24	28.7	0.00				232	06
250	ISL	8.57	D	8.54		34.144	D 26.523	155.3	0.587	1.66	D 72.2	D	25.3		39.1	2.35	29.8	0.00				252	
270		8.30		8.27		34.158	26.577	150.5	0.618	1.49	64.9		22.5		42.2	2.45	31.0	0.00				272	05
300	ISL	7.98	D	7.95		34.180	D 26.642	144.6	0.663	1.28	D 55.8	D	19.3		45.7	2.53	32.2	0.00				302	
320		7.80		7.77		34.175	26.665	142.7	0.691	1.19	D 51.8	D	17.8		48.0	2.58	33.0	0.00				323	04
380		7.03		6.99		34.205	26.799	130.6	0.773	0.83	36.1		12.2		58.7	2.80	35.9	0.00				383	03
400	ISL	6.52	D	6.48		34.156	D 26.829	127.5	0.800	0.82	D 35.7	D	11.9		61.5	2.85	36.8	0.00				403	
440		6.26		6.22		34.175	26.878	123.3	0.848	0.69	D 30.1	D	10.0		67.3	2.94	38.6	0.00				444	02
500	ISL	6.16	D	6.12		34.265	D 26.963	116.0	0.923	0.41	D 17.9	D	5.9					0.00				504	
516		6.10		6.05		34.279	D 26.982	114.4	0.942	0.37	D 16.1	D	5.3					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 1804 | STATION 93.3 70.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
31 30.6 N	120 15.1 W	07/04/2018	1038 UTC	3935 m	280 10 kn			1016.3 mb	15.6 C	15.4 C				012

DEPTH m		TEMP DEG C		POTTEMP DEG C		SALINITY		SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg		OXY PCT		SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		16.02		16.02		33.599		24.665	326.6	0.000	5.72	249.6		101.7		1.8	0.22	0.0	0.02		0.11	0.02	0	
2		16.02		16.02		33.599		24.666	326.7	0.007	5.72	249.6		101.7		1.8	0.22	0.0	0.00		0.11	0.02	2	20
10		16.03		16.02		33.604		24.670	326.5	0.033	5.71	249.4		101.6		1.8	0.21	0.0	0.00		0.11	0.02	10	19
20	ISL	16.00	D	15.99		33.598	D	24.672	326.7	0.063	5.78	D252.0		D102.8		1.7	0.21	0.0	0.00		0.11	0.03	20	
25		15.88		15.87		33.600		24.701	324.1	0.082	5.73	250.2		101.6		1.7	0.21	0.0	0.00		0.11	0.04	25	18
30	ISL	15.78	D	15.77		33.590	D	24.716	322.9	0.095	5.80	D252.7		D102.7		1.7	0.22	0.0	0.00		0.18	0.07	30	
40		14.96		14.96		33.534		24.854	310.0	0.129	5.94	D258.7		D103.3		1.8	0.23	0.0	0.00		0.31	0.14	40	17
50		14.21		14.21		33.515		24.999	296.5	0.160	5.83	D253.8	D	99.9		2.3	0.31	0.6	0.08		0.79	0.42	50	16
62		13.56		13.55		33.491		25.115	285.8	0.195	5.46	238.4		92.3		3.9	0.48	3.1	0.29		0.66	0.47	62	15
75		12.08		12.07		33.474		25.393	259.5	0.230	4.83	D210.5	D	79.2		7.7	0.80	8.6	0.06		0.31	0.33	76	14
87		11.27		11.26		33.510		25.571	242.8	0.260	4.40	192.2		70.9		11.1	1.05	12.7	0.04		0.14	0.17	88	13
100		10.88		10.87		33.552		25.674	233.2	0.291	4.13	180.2		66.0		13.6	1.22	15.2	0.03		0.09	0.12	101	12
112		10.37		10.35		33.616		25.814	220.1	0.318	3.85	D167.7	D	60.9		16.7	1.41	17.9	0.00		0.05	0.08	113	11
125		10.09		10.07		33.661		25.897	212.4	0.346	3.65	159.4		57.4		18.7	1.50	19.5	0.00		0.03	0.06	126	10
140		9.62		9.61		33.765		26.056	197.6	0.377	3.31	144.3		51.5		22.6	1.69	22.2	0.00		0.01	0.04	141	09
150	ISL	9.57	D	9.55		33.777	D	26.075	196.0	0.397	3.31	D144.0	D	51.4		24.1	1.74	22.9	0.00		0.01	0.04	151	
170		9.05		9.03		33.872		26.233	181.2	0.434	3.11	D135.3	D	47.8		27.2	1.84	24.4	0.00		0.01	0.04	171	08
200		8.67		8.65		33.947		26.352	170.4	0.487	2.92	127.4		44.5		30.6	1.91	25.9	0.00		0.00	0.03	202	07
230		8.24		8.21		34.016		26.473	159.4	0.537	2.39	D104.1	D	36.2		36.3	2.12	28.8	0.00				232	06
250	ISL	8.05	D	8.02		34.048	D	26.528	154.5	0.569	2.13	D 92.7	D	32.1		39.8	2.24	30.0	0.00				252	
270		7.94		7.91		34.090		26.576	150.3	0.598	1.83	79.9		27.5		43.2	2.36	31.2	0.00				272	05
300	ISL	7.55	D	7.52		34.091	D	26.634	145.1	0.645	1.68	D 73.3	D	25.1		48.2	2.47	33.0	0.00				302	
320		7.24		7.20		34.099		26.685	140.4	0.671	1.47	D 64.0	D	21.7		51.4	2.55	34.1	0.00				323	04
380		6.84		6.81		34.131		26.765	133.5	0.753	1.05	45.9		15.4		59.0	2.73	36.5	0.00				383	03
400	ISL	6.73	D	6.70		34.185	D	26.824	128.2	0.782	0.80	D 34.8	D	11.7		62.2	2.80	37.1	0.00				403	
441		6.37		6.33		34.209		26.890	122.2	0.832	0.60	D 26.1	D	8.7		68.5	2.95	38.6	0.00				445	02
500	ISL	6.07	D	6.03		34.267	D	26.976	114.7	0.905	0.40	D 17.2	D	5.7									504	
515		5.91		5.86		34.281	D	27.008	111.7	0.922	0.35	D 15.4	D	5.1									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 1804 | STATION 93.3 80.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
31 9.6 N	120 56.9 W	07/04/2018	1702 UTC	3872 m	300 13 kn	280 02 07	4	1017.5 mb	16.4 C	16.3 C	29 m	8/8	ST	013

DEPTH m		TEMP DEG C		POTTEMP DEG C		SALINITY		SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg		OXY PCT		SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		16.10		16.10		33.575		24.630	330.0	0.000	5.72	249.7		101.9		2.0	0.24	0.0			0.09	0.02	0	
2	A	16.10		16.10		33.575		24.630	330.0	0.007	5.72	249.7		101.9		2.0	0.24	0.0	0.00		0.09	0.02	2	24
10		16.09		16.09		33.574		24.632	330.2	0.033	5.71	249.5		101.8		2.0	0.24	0.0	0.00		0.09	0.02	10	22
10		16.09		16.09		33.575		24.633	330.1	0.033													10	23
17	A	16.05		16.05		33.578		24.644	329.3	0.056	5.75	D250.4		D102.3		2.1	0.23	0.0	0.00		0.09	0.02	17	21
20	ISL	16.03	D	16.03		33.572	D	24.645	329.3	0.063	5.74	D250.0		D102.0		2.0	0.24	0.0	0.00		0.08	0.02	20	
21	A	15.95		15.95		33.576		24.666	327.3	0.069	5.72	249.9		101.7		2.0	0.24	0.0	0.00		0.08	0.02	21	20
30	ISL	15.76	D	15.76		33.567	D	24.701	324.2	0.096	5.76	D251.0		D101.9		2.0	0.24	0.0	0.00		0.09	0.02	30	
32		15.76		15.75		33.568		24.704	324.0	0.105	5.77	D251.3		D102.0		2.0	0.24	0.0	0.00		0.09	0.02	32	19
44	A	15.66		15.65		33.566		24.726	322.4	0.144	5.77	D251.5		D101.9		2.0	0.23	0.0	0.00		0.11	0.03	44	18
50	ISL	15.62	D	15.61		33.558	D	24.729	322.3	0.161	5.78	D251.8		D101.9		2.0	0.24	0.0	0.00		0.13	0.04	50	
56		15.59		15.58		33.560		24.736	321.8	0.183	5.73	250.2		101.0		2.0	0.24	0.0	0.00		0.14	0.04	56	17
68		15.31		15.30		33.539		24.783	317.7	0.221	5.79	D252.4		D101.5		2.1	0.25	0.0	0.00		0.23	0.12	69	16
75	ISL	14.68	D	14.67		33.503	D	24.892	307.5	0.241	5.75	D250.7	D	99.5		2.3	0.29	0.3			0.32	0.23	76	
78	A	14.48		14.47		33.492		24.928	304.2	0.252	5.72	249.9		98.6		2.4	0.30	0.4	0.14		0.36	0.28	79	14
79		14.48		14.47		33.493		24.928	304.2	0.254													79	15
89		14.05		14.04		33.479		25.007	296.9	0.285	5.86	D255.1		D100.0		2.6	0.32	0.5	0.10		0.32	0.20	90	13
98	A	13.84		13.82		33.470		25.045	293.6	0.312	5.87	256.1		99.7		2.8	0.35	0.5	0.14		0.32	0.23	99	12
100	ISL	13.80	D	13.78		33.474	D	25.056	292.5	0.317	5.86	D255.2	D	99.5		3.0	0.37	1.0	0.15		0.30	0.22	101	
112		13.17		13.16		33.472		25.182	280.8	0.352	5.43	D236.6	D	91.1		4.4	0.51	3.7	0.18		0.18	0.18	113	11
125		11.77		11.76		33.486		25.462	254.2	0.387	4.93	215.2		80.2		7.6	0.79	8.4	0.05		0.09	0.13	126	10
140		10.79		10.77		33.571		25.707	231.1	0.423	4.35	189.9		69.4		13.1	1.15	14.3	0.03		0.05	0.06	141	09
150	ISL	10.12	D	10.10		33.648	D	25.883	214.4	0.446	4.02	D174.9	D	63.2		16.8	1.33	17.0	0.00		0.04	0.05	151	
171		9.32		9.30		33.798		26.132	191.0	0.488	3.43	D149.4	D	53.1		24.4	1.72	22.7	0.00		0.01	0.03	172	08
200		8.91		8.88		33.928		26.301	175.4	0.541	2.82	123.2		43.3		30.3	1.96	26.0	0.00		0.00	0.03	202	07
230		8.66		8.64		33.983		26.383	168.2	0.593	2.55	D111.1	D	39.0		33.6	2.07	27.5	0.00				232	06
250	ISL	8.42	D	8.39		34.020	D	26.450	162.1	0.627	2.39	D103.9	D	36.2		36.9	2.19	28.8	0.00				252	
271		8.21		8.18		34.073		26.523	155.4	0.659	1.94	84.8		29.3		40.3	2.31	30.3	0.00				273	05
300	ISL	7.70	D	7.67		34.084	D	26.607	147.7	0.705	1.77	D 77.1	D	26.5		46.3	2.46	32.3	0.00				302	
320		7.46		7.42		34.116		26.668	142.2	0.732	1.43	D 62.2	D	21.2		50.4	2.56	33.7	0.00				323	04
380		6.65		6.61		34.144		26.802	129.9	0.813	0.89	38.8		13.0		62.0	2.82	37.5	0.00				383	03
400	ISL	6.53	D	6.50		34.169	D	26.837	126.8	0.843	0.76	D 32.8	D	11.0		64.8	2.88	38.0	0.00				403	
440		6.29		6.25		34.223		26.912	120.0	0.888	0.52	D 22.4	D	7.5		70.3	2.99	39.0	0.00				444	02
500	ISL	6.20	D	6.16		34.294	D	26.981	114.4	0.963	0.33	D 14.4	D	4.8		74.6	3.09	39.6	0.00				504	
515		6.11		6.07		34.305		27.001	112.7	0.976	0.31	13.5		4.5		75.7	3.12	39.8	0.00				519	01

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

RV BELL M SHIMADA CALCOFI CRUISE 1804 STATION 93.3 90.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
30 50.8 N	121 35.6 W	07/04/2018	2123	UTC	4104 m	350	15 kn	310 02 05	2	1018.8 mb	17.4 C	16.7 C	25 m	8/8	ST	014

DEPTH m		TEMP DEG C		POTTEMP DEG C		SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg		OXY PCT		SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		16.98		16.98		33.717	24.536	339.0	0.000	5.61	245.0		101.8		1.9	0.20	0.0	0.02		0.08	0.02	0	
2		16.98		16.98		33.717	24.536	339.1	0.007	5.61	245.0		101.8		1.9	0.20	0.0	0.00		0.08	0.02	2	20
10		16.94		16.94		33.712	24.542	338.8	0.034	5.61	245.1		101.8		1.8	0.20	0.0	0.00		0.08	0.02	10	19
20	ISL	16.70	D	16.69		33.667	D 24.565	336.9	0.065	5.67	D247.3		D102.3		1.9	0.21	0.0	0.00		0.09	0.02	20	
25		16.43		16.43		33.627	24.596	334.2	0.085	5.67	247.4		101.6		1.9	0.21	0.0	0.00		0.09	0.02	25	18
30	ISL	16.22	D	16.21		33.623	D 24.642	329.9	0.098	5.75	D250.6		D102.7		1.9	0.21	0.0	0.00		0.10	0.02	30	
40		16.09		16.08		33.599	24.654	329.2	0.134	5.75	D250.5		D102.4		1.9	0.21	0.0	0.00		0.10	0.03	40	17
50		16.04		16.03		33.597	24.664	328.5	0.167	5.77	D251.4		D102.6		1.8	0.21	0.0	0.00		0.11	0.03	50	16
62		15.92		15.91		33.615	24.706	325.0	0.206	5.77	251.8		102.4		1.8	0.22	0.0	0.00		0.14	0.04	62	15
75		15.44		15.43		33.570	24.779	318.4	0.248	5.77	D251.6		D101.5		1.8	0.22	0.0	0.00		0.20	0.08	76	14
87		15.20		15.19		33.583	24.842	312.7	0.286	5.71	249.5		100.0		2.0	0.23	0.0	0.00		0.29	0.18	88	13
100		13.99		13.97		33.518	25.051	293.0	0.325	5.50	240.1		93.8		3.1	0.37	1.8	0.12		0.36	0.22	101	12
112		13.39		13.37		33.500	25.161	282.9	0.360	5.38	D234.5	D	90.7		3.7	0.45	3.1	0.11		0.30	0.21	113	11
124		13.04		13.02		33.615	25.321	268.0	0.393	5.13	224.2		85.9		5.0	0.54	4.9	0.05		0.19	0.25	125	10
125	ISL	12.77	D	12.76		33.627	D 25.382	262.1	0.395	5.20	D226.5	D	86.6		5.3	0.56	5.3	0.05		0.19	0.25	126	
140		11.46		11.44		33.506	25.537	247.4	0.434	4.70	205.2		76.0		9.1	0.91	10.5	0.03		0.13	0.15	141	09
150	ISL	10.90	D	10.88		33.562	D 25.680	233.9	0.458	4.55	D198.0	D	72.7		12.1	1.08	13.2	0.00		0.09	0.12	151	
170		10.00		9.98		33.676	25.926	210.8	0.503	3.95	D171.7	D	61.9		18.1	1.43	18.7	0.00		0.02	0.05	171	08
200		9.10		9.08		33.835	D 26.198	185.3	0.563	3.41	149.0		52.5		25.1	1.72	23.2	0.00		0.00	0.02	202	07
229		8.56		8.53		33.962	26.382	168.2	0.613	3.03	D131.8	D	46.1		31.3	1.91	26.0	0.00				231	06
250	ISL	8.25	D	8.23		33.987	D 26.449	162.1	0.650	2.79	D121.3	D	42.1		35.0	2.05	27.8	0.00				252	
270		8.05		8.03		34.027	26.510	156.6	0.680	2.33	101.5		35.0		38.5	2.18	29.5	0.00				272	05
300	ISL	7.67	D	7.64		34.065	D 26.596	148.8	0.728	1.91	D 82.9	D	28.4		44.0	2.35	31.5	0.00				302	
320		7.48		7.45		34.079	26.636	145.2	0.755	1.66	D 72.4	D	24.7		47.7	2.46	32.9	0.00				323	04
380		6.60		6.57		34.114	26.784	131.5	0.838	1.10	48.2		16.1		60.3	2.75	36.8	0.00				383	03
400	ISL	6.43	D	6.39		34.122	D 26.813	128.9	0.868	0.98	D 42.6	D	14.2		63.8	2.81	37.5	0.00				403	
440		6.08		6.04		34.186	26.909	120.1	0.914	0.67	D 29.3	D	9.7		70.9	2.94	39.0	0.00				444	02
500	ISL	5.79	D	5.74		34.203	D 26.960	115.8	0.990	0.52	D 22.8	D	7.5		76.5	3.03	40.2	0.00				504	
515		5.73		5.68		34.206	26.970	115.1	1.002	0.54	23.5		7.7		77.9	3.05	40.5	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 1804 STATION 93.3 100.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
30 30.8 N	122 15.5 W	08/04/2018	0246	UTC	4159 m	360	12 kn	310 02 06	1	1019.2 mb	16.3 C	15.2 C		3/8	ST	015

DEPTH m		TEMP DEG C		POTTEMP DEG C		SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg		OXY PCT		SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		16.83		16.83		33.635	24.507	341.7	0.000	5.64	246.2		101.9		2.0	0.22	0.0	0.01		0.09	0.02	0	
3		16.83		16.83		33.635	24.507	341.8	0.010	5.64	246.2		101.9		2.0	0.22	0.0	0.00		0.09	0.02	3	20
10		16.71		16.71		33.630	24.532	339.7	0.034	5.67	247.4		102.2		2.0	0.21	0.0	0.00		0.08	0.02	10	19
20	ISL	16.47	D	16.47		33.620	D 24.581	335.4	0.063	5.72	D249.3		D102.7		2.0	0.21	0.0	0.00		0.09	0.02	20	
25		16.36		16.35		33.618	24.606	333.2	0.085	5.71	249.4		102.3		2.0	0.21	0.0	0.00		0.09	0.02	25	18
30	ISL	16.24	D	16.24		33.600	D 24.619	332.1	0.097	5.77	D251.3		D103.0		2.0	0.21	0.0	0.00		0.10	0.02	30	
40		15.60		15.59		33.525	24.706	324.1	0.134	5.87	D255.8		D103.5		2.0	0.21	0.0	0.00		0.10	0.03	40	17
50		15.50		15.49		33.537	24.740	321.3	0.167	5.87	D255.7		D103.3		2.0	0.22	0.0	0.00		0.12	0.04	50	16
62		15.09		15.08		33.526	24.821	313.9	0.205	5.84	255.2		101.9		2.1	0.22	0.0	0.00		0.17	0.06	62	15
75		14.75		14.73		33.498	24.874	309.2	0.245	5.91	D257.4		D102.4		2.2	0.22	0.0	0.00		0.22	0.11	76	14
87		13.92		13.91		33.459	25.019	295.7	0.282	5.77	252.1		98.3		2.7	0.30	0.7	0.08		0.57	0.40	88	13
100		13.28		13.27		33.462	25.152	283.3	0.319	5.59	244.1		93.9		3.8	0.42	2.5	0.20		0.35	0.29	101	12
112		12.44		12.43		33.474	25.326	266.9	0.352	5.15	D224.5	D	85.1		4.9	0.54	4.7	0.05		0.26	0.26	113	11
125		11.74		11.73		33.495	25.474	253.0	0.386	4.85	211.7		78.9		8.1	0.81	9.1	0.04		0.13	0.19	126	10
140		10.83		10.82		33.590	25.713	230.5	0.422	4.24	185.1		67.7		14.4	1.21	15.5	0.00		0.07	0.07	141	09
150	ISL	10.33	D	10.31		33.616	D 25.822	220.3	0.443	4.11	D178.9	D	64.9		16.8	1.33	17.2	0.00		0.05	0.06	151	
170		9.52		9.50		33.745	26.059	198.0	0.486	3.65	D158.7	D	56.6		21.7	1.58	20.7	0.00		0.01	0.03	171	08
200		9.00		8.97		33.865	26.237	181.5	0.543	3.15	137.6		48.4		28.1	1.83	24.8	0.00		0.00	0.02	202	07
230		8.53		8.51		33.945	26.373	169.1	0.596	2.93	D127.6	D	44.6		32.0	1.96	26.6	0.00				232	06
250	ISL	8.35	D	8.33		33.979	D 26.427	164.2	0.629	2.82	D122.7	D	42.7		35.6	2.07	28.3	0.00				252	
270		8.04		8.01		34.013	26.502	157.3	0.661	2.38	104.1		35.9		39.2	2.18	29.9	0.00				272	05
300	ISL	7.55	D	7.52		34.040	D 26.595	148.8	0.707	2.05	D 89.3	D	30.5		46.0	2.35	32.2	0.00				302	
320		7.25		7.22		34.056	26.649	143.8	0.736	1.72	D 75.0	D	25.5		50.6	2.47	33.7	0.00				323	04
381		6.44		6.40		34.099	26.794	130.4	0.820	1.09	47.6		15.8		63.1	2.79	37.7	0.00				384	03
400	ISL	6.28	D	6.24		34.110	D 26.823	127.8	0.846	1.00	D 43.3	D	14.4		65.9	2.84	38.3	0.00				403	
440		6.02		5.98		34.146	26.885	122.4	0.895	0.76	D 33.2	D	11.0		71.7	2.94	39.6	0.00				444	02
500	ISL	5.93	D	5.88		34.254	D 26.984	113.8	0.968	0.40	D 17.5	D	5.8		76.5	3.06	40.3	0.00				504	
516		5.88		5.83		34.251	26.988	113.6	0.984	0.42	18.2		6.0		77.8	3.09	40.5	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 1804 STATION 93.3 110.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
30 10.7 N	122 55.7 W	08/04/2018	0754	UTC	3708 m	010 14 kn			1021.4 mb	15.8 C	13.7 C				016

DEPTH m		TEMP DEG C		POTTEMP DEG C		SALINITY		SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg		OXY PCT		SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		16.87		16.87		33.640		24.501	342.3	0.000	5.63	245.9		101.9		1.9	0.19	0.0	0.02		0.08	0.00	0	
2		16.87		16.87		33.640		24.502	342.3	0.007	5.63	245.9		101.9		1.9	0.19	0.0	0.00		0.08	0.00	2	20
10		16.87		16.87		33.639		24.501	342.6	0.034	5.62	245.6		101.7		1.8	0.18	0.0	0.00		0.06	0.01	10	19
20	ISL	16.72	D	16.72		33.636	D	24.535	339.8	0.065	5.70	D248.3		D102.8		1.7	0.17	0.0	0.00		0.06	0.01	20	
25		16.49		16.49		33.627		24.582	335.5	0.085	5.67	247.6		101.8		1.7	0.17	0.0	0.00		0.07	0.01	25	18
30	ISL	16.12	D	16.12		33.602	D	24.648	329.3	0.099	5.75	D250.6		D102.5		1.7	0.17	0.0	0.00		0.09	0.01	30	
39		15.81		15.81		33.566		24.691	325.6	0.131	5.79	D252.3		D102.5		1.7	0.18	0.0	0.00		0.12	0.00	39	17
50		15.61		15.60		33.541		24.717	323.5	0.167	5.81	D253.3		D102.5		1.7	0.19	0.0	0.00		0.12	0.04	50	16
62		15.45		15.44		33.528		24.745	321.2	0.206	5.79	253.0		101.8		1.7	0.19	0.0	0.00		0.22	0.02	62	15
74		15.31		15.30		33.512		24.762	319.9	0.244	5.84	D254.3		D102.3		1.7	0.20	0.0	0.00		0.25	0.10	75	14
75	ISL	15.30	D	15.28		33.512	D	24.766	319.6	0.246	5.84	D254.6		D102.3		1.7	0.20	0.0	0.00		0.26	0.11	76	
86		15.13		15.12		33.508		24.800	316.7	0.282	5.79	253.0		101.2		1.7	0.20	0.0	0.00		0.36	0.16	87	13
100		14.55		14.53		33.504		24.924	305.3	0.326	5.75	251.2		99.2		2.1	0.23	0.0	0.05		0.32	0.32	101	12
113		13.40		13.38		33.497		25.156	283.3	0.364	5.47	D238.3	D	92.2		3.5	0.39	2.5	0.12		0.23	0.27	114	11
125		13.06		13.04		33.487		25.217	277.8	0.398	5.31	232.0		88.9		4.5	0.49	4.2	0.09		0.21	0.26	126	10
140		11.79		11.78		33.488		25.461	254.7	0.438	4.88	213.2		79.5		7.6	0.77	8.7	0.03		0.13	0.13	141	09
150	ISL	10.83	D	10.81		33.570	D	25.700	232.0	0.462	4.55	D198.2	D	72.7		10.8	0.96	11.7	0.00		0.09	0.09	151	
170		10.04		10.02		33.641		25.890	214.1	0.507	4.00	D174.3	D	62.9		17.1	1.35	17.9	0.00		0.01	0.03	171	08
200		9.36		9.34		33.785		26.116	193.1	0.568	3.47	151.7		53.8		23.5	1.67	22.4	0.00		0.00	0.02	202	07
230		8.39		8.37		33.970		26.413	165.2	0.622	2.75	D119.8	D	41.7		33.9	2.01	27.5	0.00				232	06
250	ISL	8.23	D	8.20		33.998	D	26.462	160.9	0.655	2.60	D113.0	D	39.2		37.4	2.12	28.9	0.00				252	
269		7.90		7.87		34.022		26.529	154.7	0.685	2.30	100.5		34.5		40.7	2.22	30.3	0.00				271	05
300	ISL	7.52	D	7.49		34.053	D	26.609	147.4	0.732	1.92	D 83.7	D	28.6		46.8	2.39	32.5	0.00				302	
320		7.18		7.15		34.067		26.668	142.0	0.760	1.62	D 70.6	D	23.9		50.8	2.50	34.0	0.00				322	04
380		6.59		6.56		34.106		26.779	131.9	0.843	1.08	47.3		15.8		60.9	2.76	37.0	0.00				383	03
400	ISL	6.39	D	6.36		34.118	D	26.814	128.7	0.871	0.97	D 42.1	D	14.0		63.7	2.83	37.7	0.00				403	
440		6.25		6.21		34.172		26.876	123.4	0.919	0.67	D 29.3	D	9.7		69.4	2.96	39.1	0.00				444	02
500	ISL	5.76	D	5.71		34.203	D	26.964	115.4	0.994	0.52	D 22.8	D	7.5		76.9	3.06	40.3	0.00				504	
517		5.77		5.72		34.223		26.979	114.2	1.010	0.45	19.6		6.4		79.1	3.09	40.7	0.00				521	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 1804 STATION 93.3 120.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
29 50.8 N	123 35.5 W	08/04/2018	1314	UTC	4062 m	010 15 kn			1021.3 mb	15.4 C	12.2 C				017

DEPTH m		TEMP DEG C		POTTEMP DEG C		SALINITY		SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg		OXY PCT		SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		16.87		16.87		33.632	D	24.496	342.8	0.000	5.65	D246.3		D102.2									0	
2		16.87		16.87		33.632	D	24.496	342.8	0.003	5.65	D246.3		D102.2									2	20
10		16.87		16.87		33.636		24.500	342.8	0.034	5.65	246.9		102.3		2.2	0.20	0.1	0.03		0.08	0.02	10	19
20	ISL	16.47	D	16.47		33.615	D	24.576	335.8	0.065	5.72	D249.4		D102.7		1.9	0.20	0.0	0.00		0.08	0.02	20	
25		16.29		16.29		33.616		24.620	331.8	0.085	5.72	249.9		102.4		1.7	0.20	0.0	0.00		0.08	0.02	25	18
30	ISL	16.20	D	16.20		33.611	D	24.636	330.5	0.099	5.75	D250.6		D102.6		1.7	0.19	0.0	0.00		0.09	0.02	30	
40		16.09		16.08		33.615		24.666	328.0	0.134	5.74	D250.1		D102.2		1.5	0.18	0.0	0.00		0.11	0.03	40	17
50		16.05		16.04		33.617		24.677	327.3	0.167	5.73	D249.8		D102.0		1.5	0.19	0.0	0.00		0.14	0.04	50	16
62		15.99		15.98		33.605		24.682	327.2	0.206	5.70	248.9		101.3		1.5	0.18	0.0	0.00		0.19	0.08	62	15
75		15.77		15.76		33.597		24.727	323.4	0.249	5.74	D250.0		D101.5		1.5	0.19	0.0	0.00		0.24	0.11	76	14
87		15.59		15.58		33.585		24.758	320.9	0.287	5.70	249.1		100.6		1.5	0.19	0.0	0.00		0.25	0.19	88	13
100		15.94		15.92		33.822		24.863	311.3	0.329	5.56	242.9		98.9		1.8	0.17	0.0	0.00		0.26	0.21	101	12
113		14.03		14.01		33.651		25.146	284.5	0.367	5.41	D235.5	D	92.4		3.2	0.34	2.1	0.10		0.25	0.17	114	11
125	ISL	12.64	D	12.63		33.514	D	25.319	268.0	0.400	5.19	D226.1	D	86.1		5.0	0.55	5.3	0.04		0.18	0.15	126	
126		12.61		12.59		33.518		25.329	267.1	0.403	5.16	225.3		85.5		5.2	0.57	5.5	0.04		0.18	0.15	127	10
140		11.79		11.77		33.643		25.582	243.3	0.439	4.91	214.6		80.1		6.9	0.68	7.6	0.03		0.11	0.11	141	09
150	ISL	11.11	D	11.09		33.559	D	25.641	237.7	0.463	4.65	D202.5	D	74.7		10.1	0.90	10.9	0.00		0.08	0.08	151	
171		10.13		10.11		33.644		25.879	215.3	0.509	4.03	D175.3	D	63.3		16.8	1.36	17.9	0.00		0.02	0.03	172	08
200	ISL	9.26	D	9.24		33.802	D	26.146	190.3	0.570	3.52	D153.4	D	54.4		23.5	1.65	22.3	0.00		0.00	0.04	202	
202		9.21		9.19		33.809		26.159	189.1	0.572	3.50	153.0		54.0		23.9	1.67	22.6	0.00		0.00	0.04	204	07
232		8.70		8.67		33.926		26.333	173.0	0.626	3.18	D138.6	D	48.6		29.5	1.83	25.1	0.00				234	06
250	ISL	8.35	D	8.32		33.969	D	26.419	164.9	0.659	2.96	D128.9	D	44.9		33.1	1.95	26.7	0.00				252	
271		8.05		8.02		34.003		26.491	158.4	0.691	2.63	114.7		39.5		37.2	2.09	28.6	0.00				273	05
300	ISL	7.67	D	7.64		34.036	D	26.574	150.9	0.739	2.11	D 91.9	D	31.5		42.8	2.28	31.0	0.00				302	
320		7.46		7.43		34.065		26.627	146.1	0.765	1.86	D 81.0	D	27.7		46.7	2.41	32.6	0.00				322	04
381		6.85		6.82		34.114		26.750	135.0	0.851	1.14	49.9		16.7		57.5	2.71	36.2	0.00				384	03
400	ISL	6.74	D	6.70		34.131	D	26.780	132.3	0.881	0.99	D 43.0	D	14.4		60.4	2.78	36.9	0.00				403	
440		6.39		6.35		34.177		26.862	124.9	0.928	0.68	D 29.7	D	9.9		66.6	2.94	38.5	0.00				444	02
500	ISL	5.97	D	5.93		34.220	D	26.951	117.0	1.006	0.46	D 20.0	D	6.6		75.2	3.07	39.9	0.00				504	
515		5.91		5.86		34.240		26.975	114.8	1.017	0.43	18.8		6.2		77.3	3.10	40.2	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 1804 STATION 93.4 26.4

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
32 56.9 N	117 16.9 W	05/04/2018	2228	UTC	25 m	290 06 kn	280 01 06	1	1016.7 mb	17.4 C	13.7 C		6/8	CU	002

DEPTH m		TEMP DEG C		POTTEMP DEG C		SALINITY		SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg		OXY PCT		SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0		15.85		15.85		33.508		24.634	329.6	0.000	6.67	291.1		118.2		1.3	0.17	0.0	0.03	0.08	3.65	0.36	0	
2		15.85		15.85		33.508		24.635	329.6	0.007	6.67	291.1		118.2		1.3	0.17	0.0	0.03	0.08	3.65	0.36	2	04
5		15.49		15.49		33.531		24.733	320.4	0.016	6.67	291.0		117.4		1.9	0.19	0.0	0.04	0.00	2.38	0.44	5	03
10		15.19		15.19		33.529		24.797	314.4	0.032	6.39	278.9		111.8		2.6	0.23	0.2	0.07	0.09	3.31	0.67	10	02
17		14.63		14.63		33.526		24.918	303.2	0.054	6.23	272.0		107.8		3.5	0.36	0.9	0.14	0.36	3.48	1.00	17	01

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

PRIMARY PRODUCTIVITY CASTS

RV BELL M SHIMADA — CALCOFI CRUISE 1804 — STATION 76.7 55.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD
34 53.5 N	121 11.8 W	20/04/2018	1844 UTC	11 m	1200 - 1909 PST	1204 PST	1909 PST	688.8 mg C/m2	073

DEPTH	TEMP	SALINITY	SIGMA	OXYGEN	OXY	SIO3*	PO4*	NO3*	NO2*	NH4*	CHL-A	PHAEO	LIGHT	UPTAKE (mg C/m3)			
m	DEG C		THETA	ml/L	PCT	µM	µM	µM	µM	µM	µg/L	µg/L	PCT	1	2	MEAN	DARK
2	13.50	33.467	25.107	6.12	103.4	2.1	0.35	1.2	0.11	0.21	1.36	0.37	76. A	19.0	23.5	21.2	0.37
6	13.49	33.467	25.108	6.10D	103.1	2.0	0.34	1.2	0.10	0.10	1.49	0.39	43.	26.5	32.3	29.4	0.41
8	13.48	33.468	25.112	6.11	103.1	2.0	0.34	1.1	0.10	0.08	1.45	0.37	33.	30.4	29.5	29.9	0.68
17	13.44	33.467	25.119	6.10D	102.8	2.0	0.34	1.2	0.09	0.09	1.50	0.46	9.3	26.5	26.1	26.3	0.42
24	13.40	33.465	25.126	6.08	102.5	1.9	0.34	1.2	0.10	0.11	1.63	0.44					
30	13.35	33.464	25.136	6.07D	102.2	2.0	0.36	1.4	0.11	0.16	1.78	0.55	1.5	6.7	5.1	5.9	0.29
36	13.31	33.463	25.143	6.06D	101.9	2.1	0.38	1.6	0.12	0.18	1.94	0.57	0.66	2.0	2.1	2.0	0.30

RV BELL M SHIMADA — CALCOFI CRUISE 1804 — STATION 76.7 100.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD
33 22.8 N	124 19.4 W	19/04/2018	1604 UTC	22 m	1207 - 1910 PST	1210 PST	1908 PST	92.9 mg C/m2	068

DEPTH	TEMP	SALINITY	SIGMA	OXYGEN	OXY	SIO3*	PO4*	NO3*	NO2*	NH4*	CHL-A	PHAEO	LIGHT	UPTAKE (mg C/m3)			
m	DEG C		THETA	ml/L	PCT	µM	µM	µM	µM	µM	µg/L	µg/L	PCT	1	2	MEAN	DARK
2	15.43	33.591	24.793	5.78	101.6	1.8	0.19	0.0	0.00	0.00	0.10	0.02	87. A	0.65	0.62	0.63	0.18
10	15.43	33.597	24.798	5.80	101.9	1.8	0.19	0.1	0.00	0.00	0.11	0.02					
13	15.43	33.593	24.795	5.76D	101.3	1.8	0.19	0.0	0.00	0.00	0.10	0.02	40.	1.7	2.1	1.9	0.08
16	15.43	33.592	24.794	5.79	101.7	1.8	0.19	0.0	0.00	0.00	0.11	0.02	33.	2.0	2.3	2.1	0.20
33	15.43	33.590	24.795	5.76D	101.2	1.8	0.19	0.0	0.00	0.00	0.11	0.02	10.	2.1	2.0	2.0	0.12
42	15.43	33.591	24.796	5.78	101.6	1.8	0.19	0.0	0.00	0.00	0.11	0.02					
51	15.42	33.590	24.796	5.75D	101.0	1.8	0.19	0.0	0.00	0.00	0.11	0.02					
60	15.43	33.589	24.795	5.80	101.9	1.8	0.19	0.0	0.00	0.00	0.11	0.02	1.5	0.30	0.32	0.31	0.14
74	14.17	33.427	24.942	5.91D	101.1	2.0	0.23	0.0	0.00	0.00	0.33	0.20	0.57	0.39	0.34	0.37	0.13

RV BELL M SHIMADA — CALCOFI CRUISE 1804 — STATION 80.0 70.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD
33 49.3 N	121 51.1 W	18/04/2018	1530 UTC	12 m	1202 - 1912 PST	1208 PST	1907 PST	392.4 mg C/m2	064

DEPTH	TEMP	SALINITY	SIGMA	OXYGEN	OXY	SIO3*	PO4*	NO3*	NO2*	NH4*	CHL-A	PHAEO	LIGHT	UPTAKE (mg C/m3)			
m	DEG C		THETA	ml/L	PCT	µM	µM	µM	µM	µM	µg/L	µg/L	PCT	1	2	MEAN	DARK
3	14.22	33.480	24.967	6.03	103.3	1.2	0.23	0.1	0.00	0.07	0.71	0.21	68. A	5.0	5.9	5.5	0.36
6	14.22	33.483	24.970	5.99D	102.7	1.2	0.22	0.2	0.00	0.00	0.75	0.21	46.	19.3	15.6	17.4	0.65
9	14.22	33.480	24.968	6.04	103.6	1.2	0.22	0.2	0.00	0.00	0.76	0.18	32.	15.4	17.9	16.7	0.47
18	14.22	33.479	24.968	6.04	103.5	1.2	0.23	0.1	0.00	0.00	0.74	0.15	10.	16.2	14.9	15.6	0.50
26	14.22	33.483	24.972	6.01D	102.9	1.2	0.22	0.1	0.00	0.00	0.75	0.17					
33	14.22	33.485	24.974	5.99D	102.7	1.2	0.22	0.1	0.00	0.00	0.72	0.19	1.5	2.5	2.0	2.2	0.37
41	14.07	33.468	24.993	5.91D	101.0	1.4	0.27	0.2	0.06	0.17	0.67	0.22	0.53	0.64	0.84	0.74	0.31

RV BELL M SHIMADA — CALCOFI CRUISE 1804 — STATION 81.8 46.9

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD
34 16.0 N	120 1.7 W	17/04/2018	1825 UTC	04 m	1200 - 1905 PST	1200 PST	1903 PST	2225.1 mg C/m2	059

DEPTH	TEMP	SALINITY	SIGMA	OXYGEN	OXY	SIO3*	PO4*	NO3*	NO2*	NH4*	CHL-A	PHAEO	LIGHT	UPTAKE (mg C/m3)			
m	DEG C		THETA	ml/L	PCT	µM	µM	µM	µM	µM	µg/L	µg/L	PCT	1	2	MEAN	DARK
2	11.87	33.758	25.650	6.88	112.5	2.1	0.28	1.2	0.08	0.17	21.63	1.45	46.	247.4	416.4	331.9	1.3
3	11.88	33.758	25.648	6.89	112.6	2.1	0.26	1.1	0.08	0.21	21.94	1.77	32.	291.7	275.3	283.5	1.1
6	11.86	33.757	25.652	6.85	111.9	2.0	0.26	1.1	0.07	0.16	20.65	2.40	10.	243.7	226.5	235.1	1.3
11	11.81	33.760	25.664	6.80	111.0	2.2	0.28	1.1	0.07	0.24	22.09	1.94	1.5	45.9	54.3	50.1	1.1
14	11.62	33.763	25.701	6.44	104.7	2.9	0.37	3.1	0.09	0.29	21.81	1.93	0.46	12.4	13.5	13.0	0.80

RV BELL M SHIMADA — CALCOFI CRUISE 1804 — STATION 83.3 60.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD
33 34.5 N	120 45.5 W	16/04/2018	1923 UTC	14 m	1230 - 1857 PST	1203 PST	1856 PST	234.7 mg C/m2	052

DEPTH	TEMP	SALINITY	SIGMA	OXYGEN	OXY	SIO3*	PO4*	NO3*	NO2*	NH4*	CHL-A	PHAEO	LIGHT	UPTAKE (mg C/m3)			
m	DEG C		THETA	ml/L	PCT	µM	µM	µM	µM	µM	µg/L	µg/L	PCT	1	2	MEAN	DARK
2	14.33	33.489	24.951	5.98D	102.7	2.9	0.32	1.2	0.03	0.00	0.64	0.14	80. A	0.43	0.72	0.57	0.31
8	14.32	33.468	24.937	5.99D	103.0	1.3	0.24	0.2	0.00	0.00	0.62	0.11	42.	10.5	12.5	11.5	0.22
10	14.28	33.469	24.948	6.02	103.3	1.3	0.24	0.1	0.00	0.00	0.65	0.13	33.	13.4	12.5	12.9	0.19
31	14.03	33.479	25.008	6.03	103.0	1.3	0.27	0.6	0.08	0.17	1.05	0.28	3.3				
38	13.81	33.476	25.052	5.88D	99.9	1.5	0.28	0.5	0.10	0.20	0.95	0.40	1.6	4.7	3.7	4.2	0.16
47	13.34	33.467	25.140	5.73	96.5	3.6	0.45	2.6	0.34	0.31	0.51	0.27	0.58	0.93	0.75	0.84	0.18

RV BELL M SHIMADA CALCOFI CRUISE 1804 STATION 83.3 110.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD
31 54.6 N	124 10.4 W	15/04/2018	1600 UTC	26 m	1212 - 1907 PST	1218 PST	1859 PST	105.7 mg C/m2	047

DEPTH m	TEMP DEG C	SALINITY	SIGMA THETA	OXYGEN ml/L	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	LIGHT PCT	UPTAKE (mg C/m3) 1	2	MEAN	DARK
3	16.10	33.595	24.646	5.72	101.9	2.0	0.20	0.1	0.00	0.00	0.09	0.02	84. A	0.94	0.94	0.94	0.05
10	16.08	33.593	24.648	5.72	101.9	1.9	0.21	0.2	0.00	0.05	0.09	0.02					
15	16.08	33.592	24.648	5.70D	101.5	1.9	0.22	0.4	0.00	0.15	0.09	0.02	41.	1.6	1.7	1.7	0.08
19	16.08	33.594	24.650	5.71	101.6	1.9	0.20	0.1	0.00	0.06	0.09	0.04	33.	2.3	2.2	2.2	0.09
30	16.05	33.587	24.652	5.71D	101.5	2.0	0.21	0.1	0.00	0.00	0.10	0.02					
40	16.05	33.582	24.650	5.71	101.7	1.9	0.20	0.0	0.00	0.00	0.09	0.02	9.4	1.9	1.5	1.7	0.10
50	16.03	33.587	24.658	5.71D	101.6	1.9	0.21	0.2	0.00	0.05	0.09	0.02					
60	15.63	33.564	24.730	5.75D	101.4	1.9	0.21	0.1	0.00	0.00	0.14	0.03					
71	15.43	33.538	24.757	5.78D	101.6	1.9	0.21	0.1	0.00	0.00	0.16	0.06	1.5	0.47	0.43	0.45	0.12
80	15.36	33.532	24.768	5.78D	101.5	2.0	0.21	0.1	0.00	0.00	0.17	0.06					
88	15.13	33.536	24.822	5.80	101.3	1.9	0.22	0.0	0.00	0.00	0.23	0.10	0.55	0.21	0.18	0.19	0.06

RV BELL M SHIMADA CALCOFI CRUISE 1804 STATION 86.7 33.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD
33 54.4 N	118 29.9 W	11/04/2018	1833 UTC	13 m	1152 - 1852 PST	1155 PST	1850 PST	756.9 mg C/m2	033

DEPTH m	TEMP DEG C	SALINITY	SIGMA THETA	OXYGEN ml/L	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	LIGHT PCT	UPTAKE (mg C/m3) 1	2	MEAN	DARK
2	15.29	33.571	24.808	5.99	105.0	3.1	0.22	0.0	0.00	0.00	0.38	0.08	79. A	11.9	11.0	11.5	0.61
8	14.99	33.561	24.867	6.11	106.5	3.1	0.22	0.0	0.00	0.00	0.63	0.17	39.	18.5	21.3	19.9	0.42
9	14.79	33.561	24.909	6.10	105.9	3.1	0.22	0.0	0.00	0.00	0.60	0.14	35.	20.6	17.0	18.8	0.38
20	13.75	33.549	25.119	5.78	98.1	4.8	0.41	2.2	0.22	0.00	1.37	0.44	9.4	33.1	32.2	32.6	0.38
28	13.10	33.545	25.247	5.31	88.9	7.0	0.63	5.2	0.41	0.00	1.62	0.48					
35	12.26	33.561	25.424	4.50	74.1	10.5	0.96	10.4	0.38	0.06	1.23	0.42	1.6	7.2	6.5	6.9	0.36
45	11.42	33.594	25.608	3.78	61.1	16.1	1.36	14.8	0.44	2.07	0.61	0.42	0.49	1.4	1.2	1.3	0.25

RV BELL M SHIMADA CALCOFI CRUISE 1804 STATION 86.7 50.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD
33 18.7 N	119 39.5 W	12/04/2018	1535 UTC	09 m	1155 - 1852 PST	1200 PST	1852 PST	969.0 mg C/m2	039

DEPTH m	TEMP DEG C	SALINITY	SIGMA THETA	OXYGEN ml/L	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	LIGHT PCT	UPTAKE (mg C/m3) 1	2	MEAN	DARK
2	13.34	33.551	25.204	5.96	100.4	5.4	0.48	3.3	0.19	0.15	3.09	0.84	71. A	15.8	20.5	18.2	0.27
5	13.34	33.551	25.204	5.95	100.2	5.4	0.46	3.2	0.19	0.09	3.01	0.77	43.	45.3	48.3	46.8	0.43
8	13.34	33.553	25.205	5.95	100.3	4.1	0.45	3.2	0.18	0.08	3.16	0.60	26.	65.2	65.7	65.5	1.1
14	13.34	33.552	25.204	5.94	100.1	5.1	0.47	3.1	0.18	0.08	3.11	0.72	9.2	48.6	49.3	48.9	0.46
24	13.35	33.552	25.203	5.97	100.6	5.1	0.47	3.1	0.18	0.08	3.07	0.77	1.7	9.6	8.8	9.2	0.38
30	13.32	33.551	25.209	5.92	99.7	5.1	0.47	3.2	0.18	0.11	2.98	0.72	0.60	1.9	1.7	1.8	0.33

RV BELL M SHIMADA CALCOFI CRUISE 1804 STATION 86.7 55.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD
33 9.4 N	120 0.0 W	13/04/2018	2014 UTC	15 m	1313 - 1856 PST	1200 PST	1856 PST	338.3 mg C/m2	040

DEPTH m	TEMP DEG C	SALINITY	SIGMA THETA	OXYGEN ml/L	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	LIGHT PCT	UPTAKE (mg C/m3) 1	2	MEAN	DARK
2	14.01	33.417	24.963	5.95	101.5	2.0	0.28	0.6	0.05	0.06	0.62	0.19	81. A	5.6	8.6	7.1	0.24
9	13.99	33.418	24.968	5.98	101.9						0.64	0.18	40.	8.5	10.6	9.6	0.33
11	13.92	33.415	24.980	5.95	101.3	2.0	0.28	0.5	0.05	0.00	0.63	0.18	32.	10.3	9.7	10.0	0.21
23	13.58	33.409	25.045	5.94D	100.4	2.2	0.32	0.8	0.08	0.00	0.87	0.26	9.5	10.9	9.1	10.0	0.21
32	13.55	33.414	25.056	5.92D	100.0	2.1	0.32	0.8	0.10	0.05	0.98	0.34					
41	13.57	33.423	25.060	5.88D	99.4	2.1	0.31	0.9	0.10	0.07	1.01	0.33	1.5	2.4	2.0	2.2	0.28
52	13.35	33.434	25.114	5.92	99.6	2.2	0.33	1.1	0.11	0.08	1.05	0.37	0.49	0.68	0.74	0.71	0.19

RV BELL M SHIMADA CALCOFI CRUISE 1804 STATION 86.7 80.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD
32 19.5 N	121 44.1 W	14/04/2018	1713 UTC	20 m	1203 - 1907 PST	1208 PST	1907 PST	145.1 mg C/m2	043

DEPTH m	TEMP DEG C	SALINITY	SIGMA THETA	OXYGEN ml/L	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	LIGHT PCT	UPTAKE (mg C/m3) 1	2	MEAN	DARK
2	14.62	33.301	24.744	5.95	102.7	1.3	0.23	0.0	0.00	0.00	0.17	0.05	86. A	2.5	2.6	2.6	0.14
12	14.60	33.301	24.751	5.94	102.5	1.4	0.23	0.0	0.00	0.00	0.18	0.04	40.	3.3	3.9	3.6	0.15
15	14.56	33.300	24.757	5.90D	101.8	1.5	0.23	0.0	0.00	0.00	0.18	0.04	32.	3.7	3.7	3.7	0.22
30	14.56	33.299	24.758	5.94	102.4	1.4	0.22	0.0	0.00	0.00	0.19	0.04	10.	3.1	2.9	3.0	0.31
38	14.56	33.298	24.758	5.91D	101.8	1.3	0.23	0.0	0.00	0.00	0.19	0.05					
46	14.56	33.299	24.760	5.90D	101.7	1.3	0.23	0.0	0.00	0.00	0.19	0.05					
55	14.56	33.301	24.761	5.88D	101.4	1.3	0.23	0.0	0.00	0.00	0.21	0.05	1.5	0.42	0.35	0.39	0.18
63	14.54	33.496	24.916	5.93	102.3	1.8	0.21	0.0	0.00	0.00	0.31	0.12					
68	14.40	33.495	24.945	5.86D	100.9	1.9	0.22	0.0	0.00	0.00	0.44	0.24	0.54	0.34	0.34	0.34	0.10

RV BELL M SHIMADA CALCOFI CRUISE 1804 STATION 90.0 45.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD
32 54.6 N	118 56.0 W	10/04/2018	1807 UTC	18 m	1155 - 1845 PST	1157 PST	1844 PST	411.5 mg C/m2	026

DEPTH m	TEMP DEG C	SALINITY	SIGMA THETA	OXYGEN ml/L	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	LIGHT PCT	UPTAKE (mg C/m3) 1	2	MEAN	DARK
2	16.26	33.596	24.610	5.82	104.0	0.6	0.20	1.7	0.00		0.50	0.13	84. A	13.2	10.7	12.0	0.20
10	15.88	33.593	24.694	5.87	104.1	0.6	0.22	1.8	0.00		0.49	0.12	43.	7.9	8.0	7.9	0.27
13	15.74	33.590	24.723	5.92D	104.6	0.6	0.20	1.6	0.00		0.53	0.14	33.	10.1	8.1	9.1	0.23
21	15.65	33.591	24.745	5.89	103.9	0.5	0.21	1.4	0.00		0.61	0.17					
27	15.62	33.590	24.752	5.85	103.2	0.6	0.20	1.4	0.00		0.75	0.23	10.	10.8	10.1	10.5	0.30
38	13.08	33.510	25.225	4.90D	82.0	6.2	0.70	7.3	0.24		1.22	0.66					
48	12.31	33.492	25.362	4.30	70.8	10.1	1.01	11.9	0.17		0.61	0.56	1.7	2.1	1.8	1.9	0.07
61	11.32	33.535	25.580	3.97	64.0	13.2	1.22	15.6	0.05		0.20	0.33	0.55	0.40	0.35	0.37	0.04

RV BELL M SHIMADA CALCOFI CRUISE 1804 STATION 90.0 80.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD
31 45.1 N	121 19.0 W	09/04/2018	2015 UTC	29 m	1318 - 1850 PST	1207 PST	1850 PST	178.1 mg C/m2	022

DEPTH m	TEMP DEG C	SALINITY	SIGMA THETA	OXYGEN ml/L	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	LIGHT PCT	UPTAKE (mg C/m3) 1	2	MEAN	DARK
2	16.01	33.561	24.640	5.74	102.1	2.0	0.22	0.0	0.00		0.09	0.02	90. A	1.3	1.4	1.3	0.09
10	15.90	33.562	24.665	5.75	102.0	1.9	0.22	0.0	0.00		0.09	0.02					
17	15.86	33.564	24.676	5.78D	102.4	1.9	0.21	0.0	0.00		0.10	0.02	41.	1.6	1.9	1.7	0.12
21	15.85	33.565	24.680	5.79D	102.7	1.9	0.21	0.0	0.00		0.10	0.02	33.	1.8	2.2	2.0	0.10
32	15.84	33.566	24.684	5.73	101.5	1.9	0.22	0.0	0.00		0.10	0.02					
44	15.83	33.564	24.686	5.79D	102.5	1.9	0.21	0.0	0.00		0.11	0.02	9.7	1.2	1.4	1.3	0.14
56	15.19	33.526	24.799	5.88D	102.8	1.9	0.22	0.0	0.00		0.19	0.07					
68	14.75	33.499	24.875	5.90	102.2	2.0	0.23	0.0	0.00		0.31	0.17					
80	14.06	33.477	25.004	5.79	98.9	2.4	0.29	0.3	0.13		0.63	0.51	1.4	3.1	2.7	2.9	0.13
87	14.05	33.477	25.007	5.68	96.9	2.7	0.33	0.9	0.25		0.43	0.39					
98	13.06	33.507	25.231	5.32D	89.0	4.3	0.49	4.1	0.05		0.17	0.29	0.56	0.57	0.54	0.56	0.00

RV BELL M SHIMADA CALCOFI CRUISE 1804 STATION 90.0 120.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD
30 24.6 N	123 59.9 W	08/04/2018	1845 UTC	31 m	1218 - 1859 PST	1218 PST	1859 PST	126.7 mg C/m2	018

DEPTH m	TEMP DEG C	SALINITY	SIGMA THETA	OXYGEN ml/L	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	LIGHT PCT	UPTAKE (mg C/m3) 1	2	MEAN	DARK
2	17.10	33.838	24.600	5.58	101.5	2.0	0.19	0.0	0.00		0.06	0.02	91. A	1.0	1.2	1.1	0.05
10	17.09	33.836	24.602	5.59	101.7	1.9	0.17	0.0	0.00		0.06	0.02					
18	17.09	33.841	24.605	5.62D	102.3	1.9	0.17	0.0	0.00		0.06	0.01	41.	1.5	1.7	1.6	0.08
23	17.06	33.841	24.613	5.59	101.6	1.9	0.17	0.0	0.00		0.06	0.01	32.	1.7	1.6	1.7	0.05
35	16.46	33.697	24.643	5.70D	102.3	1.9	0.18	0.0	0.00		0.06	0.02					
47	16.31	33.652	24.644	5.68	101.6	1.9	0.18	0.0	0.00		0.07	0.01	9.8	1.1	1.5	1.3	0.17
60	16.08	33.654	24.699	5.73D	102.0	1.9	0.17	0.0	0.00		0.10	0.03					
73	15.46	33.595	24.794	5.79	101.8	1.9	0.20	0.0	0.00		0.13	0.05					
84	15.17	33.561	24.832	5.80D	101.4	1.7	0.19	0.0	0.00		0.18	0.08	1.6	0.97	0.82	0.90	0.02
95	14.73	33.577	24.940	5.75D	99.7						0.33	0.25					
105	13.87	33.550	25.101	5.54	94.3	3.3	0.32	2.0	0.06		0.31	0.22	0.55	0.82	1.0	0.92	

RV BELL M SHIMADA CALCOFI CRUISE 1804 STATION 93.3 26.7

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD
32 57.3 N	117 18.2 W	05/04/2018	2042 UTC	07 m	1320 - 1838 PST	1152 PST	1837 PST	587.1 mg C/m2	001

DEPTH m	TEMP DEG C	SALINITY	SIGMA THETA	OXYGEN ml/L	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	LIGHT PCT	UPTAKE (mg C/m3) 1	2	MEAN	DARK
2	15.86	33.500	24.627	6.91	122.4	1.1	0.12	0.0	0.03	0.17	2.86	0.51	64. A	37.4	34.0	35.7	0.71
4	16.13	33.518	24.579	6.90	123.0	1.1	0.15	0.0	0.00	0.17	2.79	0.52	42.	44.6	48.7	46.6	0.70
5	15.89	33.507	24.626	6.86	121.7	1.2	0.16	0.0	0.00	0.05	2.79	0.49	33.	38.8	46.5	42.7	0.76
10	14.43	33.522	24.957	6.48	111.5	2.5	0.26	0.2	0.06	0.32	3.91	0.95	11.	39.6	37.9	38.8	0.93
19	12.47	33.530	25.360	4.98	82.3	7.2	0.82	7.6	0.52	0.63	1.15	0.63	1.6	2.2	0.51	1.4	0.26
24	11.99	33.550	25.466	4.24	69.4	10.0	1.09	11.9	0.55	0.42	1.03	0.32	0.52	0.47	0.43	0.45	0.17

RV BELL M SHIMADA CALCOFI CRUISE 1804 STATION 93.3 45.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD
32 20.1 N	118 33.1 W	06/04/2018	1759 UTC	20 m	1155 - 1845 PST	1156 PST	1845 PST	427.0 mg C/m2	008

DEPTH m	TEMP DEG C	SALINITY	SIGMA THETA	OXYGEN ml/L	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	LIGHT PCT	UPTAKE (mg C/m3) 1	2	MEAN	DARK
2	15.96	33.571	24.660	5.78	102.7	1.1	0.22	0.0	0.03		0.31	0.10	86. A	10.3	10.6	10.5	0.13
12	15.93	33.570	24.665	5.77	102.5	1.2	0.25	0.1	0.03		0.30	0.11	40.	11.0	10.9	10.9	0.14
15	15.83	33.568	24.686	5.79D	102.6	1.2	0.24	0.1	0.03		0.32	0.12	32.	11.5	12.7	12.1	0.12
22	13.78	33.512	25.086	5.36	91.1	1.1	0.23	0.1	0.00		0.69	0.26					
30	12.91	33.504D	25.255	5.00D	83.4	4.6	0.51	3.5	0.21				10.	8.1	7.1	7.6	0.15
38	12.48	33.502	25.337	4.58D	75.7	8.1	0.88	8.9	0.42		0.55	0.27					
46	11.49	33.527	25.542	3.85D	62.3	12.9	1.25	14.8	0.19		0.38	0.27					
55	11.23	33.556	25.612	3.68	59.2	14.3	1.34	16.3	0.12		0.13	0.17	1.5	1.0	1.0	1.0	0.04
61	11.00	33.592	25.681	3.51D	56.3	16.0	1.45	17.9	0.07		0.17	0.24					
68	10.75	33.629	25.756	3.37D	53.7	17.5	1.53	19.1	0.06		0.16	0.16	0.54	0.27	0.24	0.25	0.01

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD
31 9.6 N	120 56.9 W	07/04/2018	1702 UTC	29 m	1205 - 1856 PST	1206 PST	1856 PST	173.6 mg C/m2	013

DEPTH m	TEMP DEG C	SALINITY	SIGMA THETA	OXYGEN ml/L	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	LIGHT PCT	UPTAKE (mg C/m3) 1	2	MEAN	DARK
2	16.10	33.575	24.630	5.72	101.9	2.0	0.24	0.0	0.00		0.09	0.02	90. A	2.5	2.8	2.7	0.06
10	16.09	33.574	24.632	5.71	101.8	2.0	0.24	0.0	0.00		0.09	0.02					
17	16.05	33.578	24.644	5.75D	102.3	2.1	0.23	0.0	0.00		0.09	0.02	41.	2.8	2.4	2.6	0.06
21	15.95	33.576	24.666	5.72	101.7	2.0	0.24	0.0	0.00		0.08	0.02	33.	4.4	2.4	3.4	0.06
32	15.76	33.568	24.704	5.77D	102.0	2.0	0.24	0.0	0.00		0.09	0.02					
44	15.66	33.566	24.726	5.77D	101.9	2.0	0.23	0.0	0.00		0.11	0.03	9.7	1.5	1.5	1.5	0.04
56	15.59	33.560	24.736	5.73	101.0	2.0	0.24	0.0	0.00		0.14	0.04					
68	15.31	33.539	24.783	5.79D	101.5	2.1	0.25	0.0	0.00		0.23	0.12					
78	14.48	33.492	24.928	5.72	98.6	2.4	0.30	0.4	0.14		0.36	0.28	1.6	1.0	1.3	1.1	0.03
89	14.05	33.479	25.007	5.86D	100.0	2.6	0.32	0.5	0.10		0.32	0.20					
98	13.84	33.470	25.045	5.87	99.7	2.8	0.35	0.5	0.14		0.32	0.23	0.56	0.33	0.43	0.38	0.10

A) INCUBATION LIGHT INTENSITIES WERE 61.1, 41.1, 32.7, 9.7, 1.52, 0.56 PERCENT RESPECTIVELY.

CalCOFI Cruise 1804SH

MACROZOOPLANKTON BIOMASS
Net Mesh Size: 0.505mm

Line	Sta.	Latitude N	Longitude W	Date Mo/Day	Time (PST) Start	Time (PST) End	Water Volume Strained (m^3)	Max. Tow Depth (m)	Volume per 1000 m^3 Strained Total (cm^3)	Volume per 1000 m^3 Strained Small (cm^3)
60.0	53.0	37 50.7	123 06.0	04/25	1748	1755	161	68	31	31
60.0	60.0	37 36.8	123 36.4	04/25	2135	2156	433	205	129	129
60.0	70.0	37 16.8	124 19.9	04/26	0235	0256	391	211	133	133
60.0	80.0	36 56.8	125 03.1	04/26	0742	0803	434	211	124	124
60.0	90.0	36 36.9	125 46.2	04/26	1243	1304	439	208	82	82
63.3	52.0	37 18.2	122 37.2	04/25	1243	1251	142	66	513	513
63.3	55.0	37 12.5	122 50.0	04/25	0953	1014	449	209	65	65
63.3	60.0	37 02.5	123 11.8	04/25	0620	0640	432	210	90	90
63.3	70.0	36 42.5	123 54.8	04/25	0104	0125	427	212	166	166
63.3	80.0	36 22.5	124 37.7	04/24	1958	2019	420	212	74	74
63.3	90.0	36 02.5	125 20.4	04/24	1443	1504	446	209	63	63
66.7	50.0	36 47.2	122 03.4	04/23	1116	1137	453	202	40	40
66.7	55.0	36 37.2	122 24.7	04/23	1443	1504	443	210	18	18
66.7	60.0	36 27.0	122 46.3	04/23	1809	1830	448	210	100	100
66.7	70.0	36 07.2	123 29.1	04/23	2314	2335	450	209	229	229
66.7	80.0	35 47.2	124 11.5	04/24	0422	0442	427	208	197	197
66.7	90.0	35 27.2	124 54.2	04/24	0928	0949	434	212	92	92
70.0	51.0	36 10.8	121 43.9	04/23	0411	0432	430	214	181	181
70.0	55.0	36 02.8	122 00.6	04/23	0100	0121	402	214	477	427
70.0	60.0	35 52.7	122 21.8	04/22	2112	2133	434	211	65	65
70.0	70.0	35 32.8	123 04.4	04/22	1450	1511	459	212	113	87
70.0	80.0	35 12.9	123 46.7	04/22	0852	0914	438	214	62	62
70.0	90.0	34 52.9	124 28.6	04/22	0155	0216	485	206	80	80
73.3	50.0	35 38.6	121 15.8	04/20	2254	2257	75	25	80	80
73.3	55.0	35 28.6	121 36.4	04/21	0232	0253	425	205	193	193
73.3	60.0	35 18.5	121 57.7	04/21	0630	0651	455	207	83	83
73.3	70.0	34 58.6	122 39.8	04/21	1207	1228	443	210	420	47
73.3	80.0	34 38.5	123 21.8	04/21	1745	1806	432	219	162	44
76.7	49.0	35 05.2	120 46.5	04/20	1713	1719	132	52	197	197
76.7	51.0	35 01.3	120 55.0	04/20	1446	1507	463	211	41	41
76.7	55.0	34 53.4	121 11.9	04/20	1154	1215	448	204	54	54
76.7	60.0	34 43.3	121 32.8	04/20	0739	0800	431	213	32	32
76.7	70.0	34 23.2	122 14.7	04/20	0140	0201	446	218	78	78
76.7	80.0	34 03.2	122 56.5	04/19	2004	2025	424	221	40	40
76.7	90.0	33 43.4	123 38.0	04/19	1451	1512	441	211	14	14
76.7	100.0	33 22.9	124 19.2	04/19	0656	0717	417	213	7	7
80.0	50.5	34 28.1	120 29.4	04/17	1610	1612	52	16	19	19
80.0	51.0	34 26.9	120 31.4	04/17	1741	1748	181	75	133	133
80.0	55.0	34 20.0	120 48.3	04/17	2100	2121	443	217	65	65
80.0	60.0	34 08.9	121 08.9	04/18	0116	0137	466	217	107	107
80.0	70.0	33 49.3	121 51.2	04/18	0635	0656	417	211	98	98
80.0	80.0	33 29.0	122 32.0	04/18	1323	1344	433	206	95	95
80.0	90.0	33 09.0	123 13.3	04/18	1840	1901	462	203	45	45
80.0	100.0	32 48.9	123 54.3	04/19	0015	0036	439	216	39	39
81.7	43.5	34 24.2	119 47.9	04/17	0823	0824	43	13	116	116
81.8	46.9	34 16.3	120 01.5	04/17	1154	1215	429	212	107	107
83.3	39.4	34 15.3	119 19.9	04/17	0512	0513	43	12	71	71
83.3	40.6	34 13.5	119 24.6	04/17	0414	0417	69	26	232	232
83.3	42.0	34 10.7	119 30.4	04/17	0157	0214	326	178	200	181
83.3	51.0	33 52.6	120 07.9	04/16	1957	2008	243	110	313	313
83.3	55.0	33 44.7	120 24.5	04/16	1651	1712	400	204	102	102
83.3	60.0	33 34.6	120 45.4	04/16	1245	1306	426	214	66	66
83.3	70.0	33 14.8	121 26.5	04/16	0655	0716	461	206	20	20
83.3	80.0	32 54.6	122 07.7	04/16	0047	0108	467	214	360	126
83.3	90.0	32 34.6	122 48.7	04/15	1914	1935	420	215	33	33
83.3	100.0	32 14.8	123 29.5	04/15	1355	1416	440	207	16	16
83.3	110.0	31 54.6	124 10.1	04/15	0646	0707	432	215	23	23
85.4	35.8	34 01.3	118 50.0	04/11	1900	1904	94	42	1343	1162
86.7	33.0	33 54.5	118 29.9	04/11	1122	1126	88	37	329	329
86.7	35.0	33 49.3	118 37.7	04/11	1635	1656	456	196	197	197
86.7	40.0	33 39.4	118 58.1	04/11	2331	2351	418	217	155	155
86.7	50.0	33 18.9	119 39.5	04/13	0916	0921	129	51	77	77
86.7	55.0	33 09.7	120 00.2	04/13	1330	1351	408	215	56	56
86.7	60.0	32 59.2	120 20.7	04/13	1812	1833	428	212	35	35
86.7	70.0	32 39.4	121 01.9	04/14	0111	0132	453	214	60	60
86.7	80.0	32 19.4	121 44.1	04/14	0810	0832	475	212	42	42
86.7	90.0	31 59.4	122 23.5	04/14	1504	1525	454	202	11	11
86.7	100.0	31 39.4	123 03.7	04/14	2033	2054	431	212	32	32
86.7	110.0	31 19.3	123 44.5	04/15	0151	0212	442	213	27	27
86.8	32.5	33 53.2	118 26.7	04/11	1352	1354	48	23	607	607
88.5	30.1	33 39.9	118 05.9	04/11	0548	0549	40	12	451	451
90.0	27.7	33 28.3	117 44.1	04/11	0134	0136	54	19	373	373
90.0	28	33 29.0	117 46.1	04/11	0315	0322	141	59	448	448
90.0	30	33 25.0	117 54.5	04/10	2348	0009	424	208	273	198
90.0	35.0	33 15.1	118 15.0	04/10	1946	2007	420	205	62	48
90.0	37.0	33 10.9	118 23.3	04/10	1653	1714	450	202	40	40
90.0	53.0	32 39.1	119 29.0	04/10	0601	0623	459	205	248	59
90.0	60.0	32 25.0	119 57.6	04/10	0102	0123	425	213	155	99
90.0	70.0	32 05.0	120 38.0	04/09	1911	1932	437	214	87	87
90.0	80.0	31 45.0	121 18.9	04/09	1330	1351	448	207	56	56
90.0	90.0	31 25.0	121 59.4	04/09	0744	0805	455	215	46	46
90.0	100.0	31 04.9	122 39.7	04/09	0100	0121	451	215	20	20
90.0	110.0	30 44.9	123 19.9	04/08	1817	1838	439	211	14	14
90.0	120.0	30 24.5	123 59.4	04/08	1207	1228	442	205	11	11
91.7	26.4	33 14.6	117 27.9	04/05	1707	1709	52	15	96	96
93.3	26.7	32 57.6	117 18.3	04/05	1330	1347	392	171	250	250
93.3	28.0	32 55.1	117 23.9	04/05	2024	2045	427	203	66	66
93.3	30.0	32 50.9	117 31.4	04/05	2257	2318	429	201	63	63
93.3	35.0	32 40.7	117 52.5	04/06	0246	0309	435	212	99	87
93.3	40.0	32 30.8	118 12.8	04/06	0658	0719	430	219	33	33
93.3	45.0	32 20.5	118 32.8	04/06	1122	1143	462	205	17	17
93.3	50.0	32 10.8	118 53.5	04/06	1514	1535	434	211	240	46
93.3	55.0	32 00.8	119 13.9	04/06	1850	1911	440	213	45	45
93.3	60.0	31 50.9	119 34.3	04/06	2221	2242	445	213	70	45
93.3	70.0	31 30.8	120 14.9	04/07	0350	0411	413	212	58	58
93.3	80.0	31 10.1	120 56.7	04/07	0807	0828	421	211	40	40
93.3	90.0	30 50.8	121 35.4	04/07	1430	1451	455	204	11	11
93.3	100.0	30 30.8	122 15.4	04/07	1938	1959	411	216	22	22
93.3	110.0	30 10.8	122 55.4	04/08	0055	0116	430	210	33	33
93.3	120.0	29 50.8	123 35.3	04/08	0621	0642	432	210	23	23
93.4	26.4	32 57.0	117 17.0	04/05	1438	1440	60	13	217	217