UNIVERSITY OF CALIFORNIA, SAN DIEGO SCRIPPS INSTITUTION OF OCEANOGRAPHY

data report

CalCOFI Cruise 1704
28 March – 20 April, 2017

CC Reference 18 - 01
7 Feb., 2018

UNIVERSITY OF CALIFORNIA, SAN DIEGO

SCRIPPS INSTITUTION OF OCEANOGRAPHY

LA JOLLA, CALIFORNIA 92093

PHYSICAL, CHEMICAL AND BIOLOGICAL DATA

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INTRODUCTION

The data presented in this report were collected during cruise 1704* 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. Due to inclement weather, this cruise was broken up into 2 Legs. No water samples were taken during Leg II, only net tows and CTD profiles were performed yielding standard levels for several parameters. 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

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

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.

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.

1704SH	**NO_2+NO_3 (µmol/L)**	**PO_4 (µmol/L)**	**SIL (µmol/L)**
Mean ± SD (n=30)	36.78 ± .22	2.57 ± .02	111.03 ± .75
Certified Value* (Lot CB)	36.78	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 6.34 µCi of ^{14}C as $NaHCO_3$ (200µl of stock solution) prepared in a 0.3 g/liter solution of sodium carbonate (Fitzwater *et al*., 1982). Samples were incubated from LAN to civil twilight in seawater-cooled incubators with neutral-density screens which simulate *in situ* light levels. At the end of the incubation, the samples were filtered onto Millipore HA filters and placed in scintillation vials. One half ml of 10% HCl was added to each sample. The sample was then allowed to sit, without a cap, at room temperature for 12 hours (after Lean and Burnison, 1979). Following this, 10 ml of scintillation cocktail were added to each sample and the samples were returned to SIO where the radioactivity was determined with a scintillation counter. Salinity, oxygen, nutrients, chlorophyll-*a* and phaeopigments were determined from all rosette productivity bottles.

Macrozooplankton Net Tows

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

Ancillary Programs

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

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

2) *ADCP*: Continuously sample profiles of currents using the RDI/Teledyne Acoustic Doppler Current Profiler. This will be dependent on the ability to sync the ADCP's output with the EK60 and ME70. The EK60 and ME70 will hold priority over the ADCP. The ADCP raw data are collected and archived for potential data processing ashore. The National Centers for Environmental Information (NCEI) in collaboration with the E.Firing Acoustic Doppler Current Profiler (ADCP) Laboratory at the University of Hawaii have established the Joint Archive for Shipboard ADCP (JASADCP). The JASADCP is responsible for the acquisition, review, documentation, archival, and distribution of shipboard ADCP data sets, data may be accessed through their website (http://ilikai.soest.hawaii.edu/sadcp/index.html). Shipboard ADCP data is acquired by University of Hawaii Data Acquisition System (UDHAS) and uses Common Ocean Data Access System (CODAS) processing to incrementally build a dataset of averaged, edited ocean velocities for each ADCP and ping type specified. Processed data and plots are served on the shipboard network, and daily status summaries are emailed and available online (http://currents.soest.hawaii.edu/uhdas_fromships.html).

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

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

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

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

7) *Laser Optical Plankton Counter (LOPC)*: The instrumentation was assessed for the response to known types of zooplankton. The LOPC has been deployed in one side of the bongo net during its routine deployment on quarterly CalCOFI cruises since 2005. The LOPC is, in essence, a low-resolution line-scan camera. It generates coarse images of objects larger than about one millimeter that pass through it into the bongo net. On this cruise the plankton collected in the port side of the routine bongo deployment was inspected prior to its preservation in ethanol. Individual plankters of specific types were removed from samples. These were then passed through an LOPC in the laboratory equipped with a flow cell through which water moved at the same rate it moves through the LOPC in the bongo net in the sea. The response of the LOPC to each plankter was recorded. The types used included euphausiids, copepods, pteropods, pyrosome salps and radiolarians. The data will be analyzed ashore to develop rules with which to classify particles sensed and counted by the LOPC in the bongo net deployments in the sea over the past 11 years. This work will allow estimates of the distribution and abundance of euphausiids, large copepods and pelagic tunicates (salps and doliolids) in the CalCOFI region. (D. Checkley, SIO)

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

9) *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)

10) *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)

TABULATED DATA

CTD/Rosette Cast Data

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

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

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

Primary Productivity Data

In addition to the normal hydrographic data that are reported in the rosette cast data section, the tabulated data include: the *in situ* light levels at which the samples were collected, the uptake from each of the replicate light bottles, uptake 1 and uptake 2 (which have been corrected for dark uptake by subtracting the dark value), the mean of the two uptake values and the dark uptake. The uptake values are totals for the incubation period. Also shown are the times of LAN, civil twilight, and the value of the mean uptake integrated from the surface to the deepest sample, assuming the shallowest value continues to the surface and that negative values (when dark uptake exceeds light uptake) are zero. The uptake data are reported to two significant digits (values <1.00) or one decimal (values >1.00). Incubation time, LAN, and civil twilight are given in local Pacific Standard Time (PST); to convert to UTC, add eight hours to the PST time. Incubation light intensities are listed in a footnote at the bottom of each page.

Macrozooplankton Data

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

FOOTNOTES

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

D: CTD salinity value listed in place of normal shipboard salinity analysis.
ISL: After a depth value indicates that this is an interpolated or extrapolated standard level.
U: Uncertain value. Values which are not used in interpolation because they seem to be in error without apparent reason.

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FIGURES

Cruise 1704

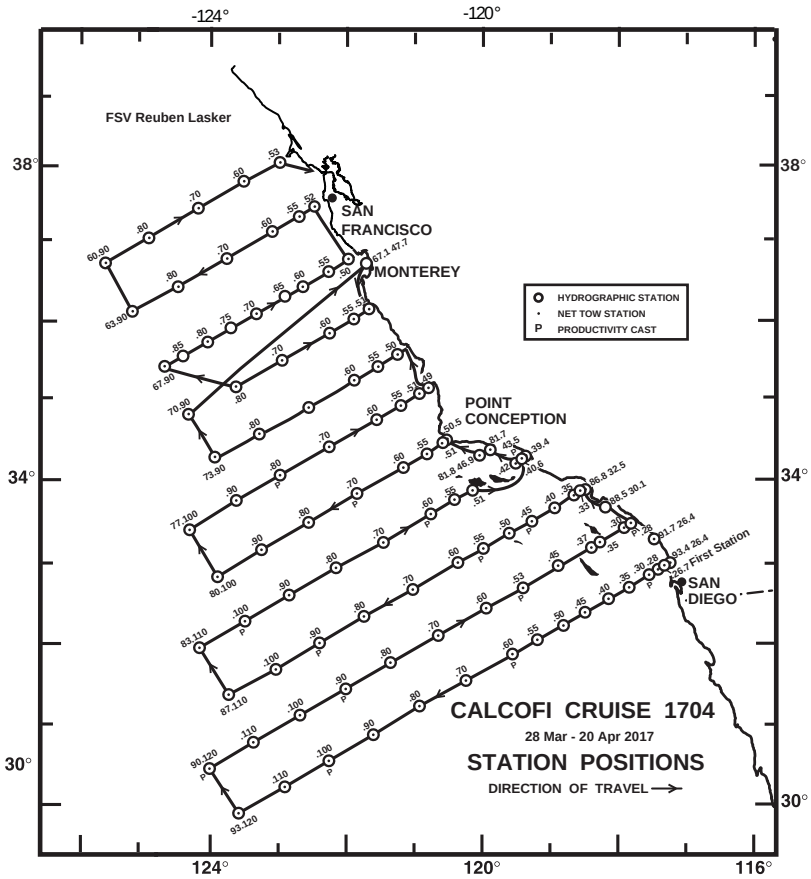
1. CalCOFI Cruise 1704 track and station positions.

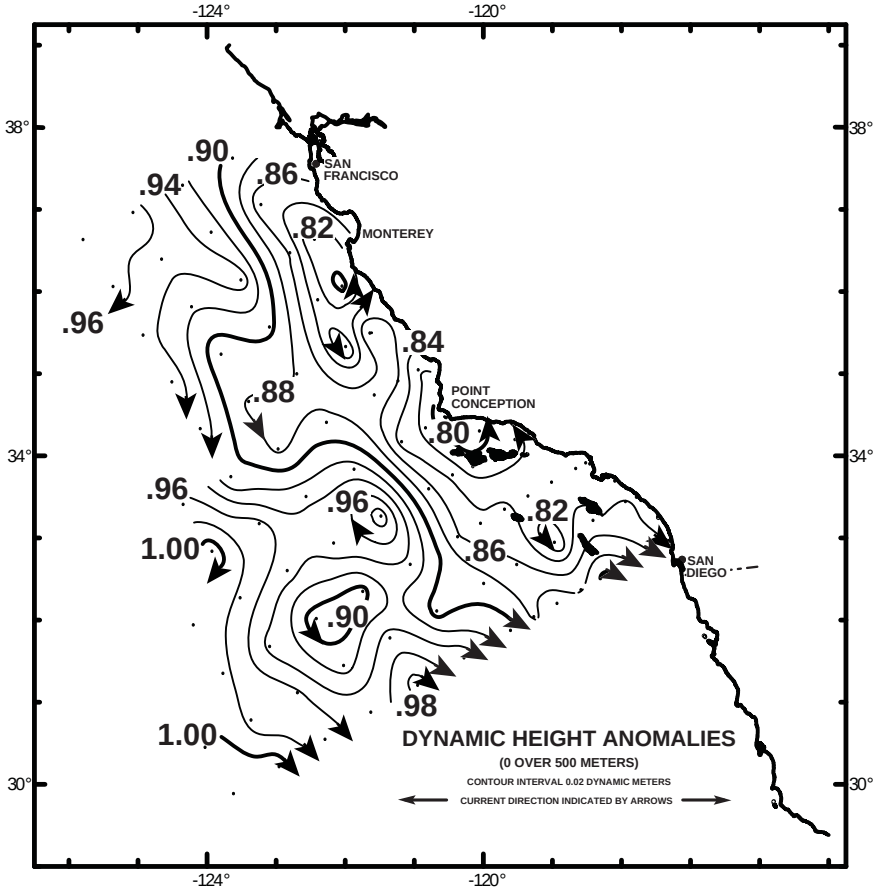
2. Horizontal distribution of dynamic height anomaly (0 over 500m). In areas shallower than 500 m, the dynamic heights were extrapolated on the basis of the offshore deeper steric height as described in Reid and Mantyla (1976).

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

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

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


FSV Reuben Lasker
SAN FRANCISCO
MONTEREY
POINT CONCEPTION
SAN DIEGO
First Station
HYDROGRAPHIC STATION
NET TOW STATION
PRODUCTIVITY CAST
CALCOFI CRUISE 1704
28 Mar - 20 Apr 2017
STATION POSITIONS
DIRECTION OF TRAVEL
-124°
-120°
124°
120°
116°
38°
34°
30°


SAN FRANCISCO
MONTEREY
POINT CONCEPTION
SAN DIEGO
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.96
.82
1.00
.86
.90
.98
1.00
DYNAMIC HEIGHT ANOMALIES
(0 OVER 500 METERS)
CONTOUR INTERVAL 0.02 DYNAMIC METERS
CURRENT DIRECTION INDICATED BY ARROWS
-124°
-120°
38°
34°
30°

FIGURE 2

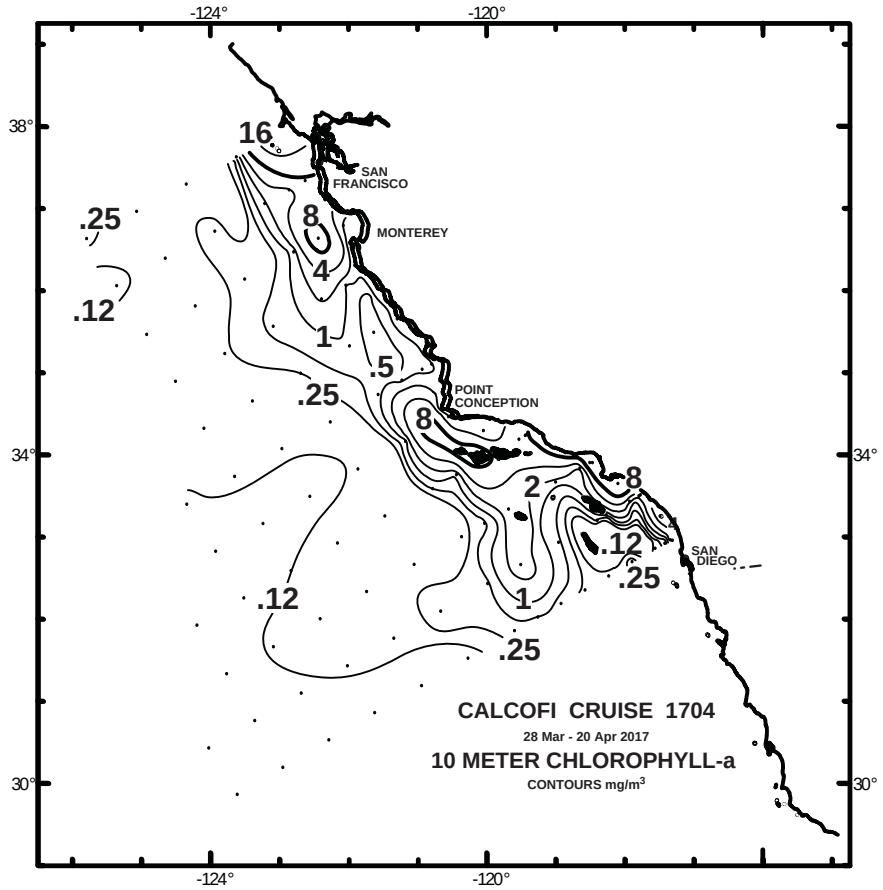

FIGURE 3A

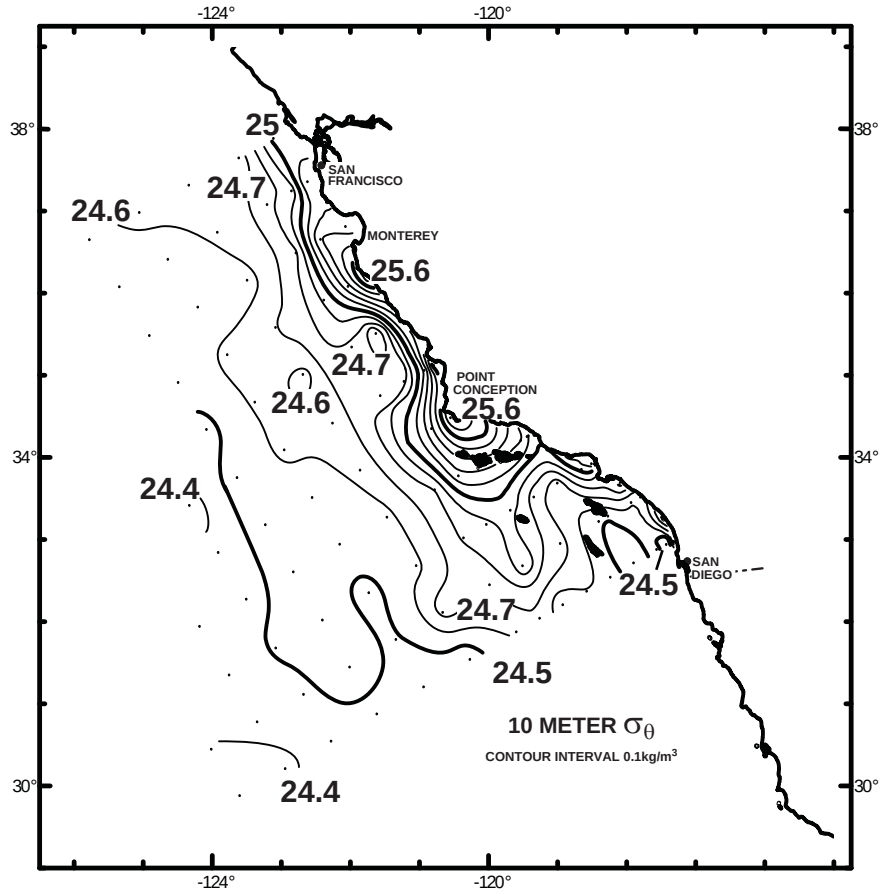

FIGURE 3B

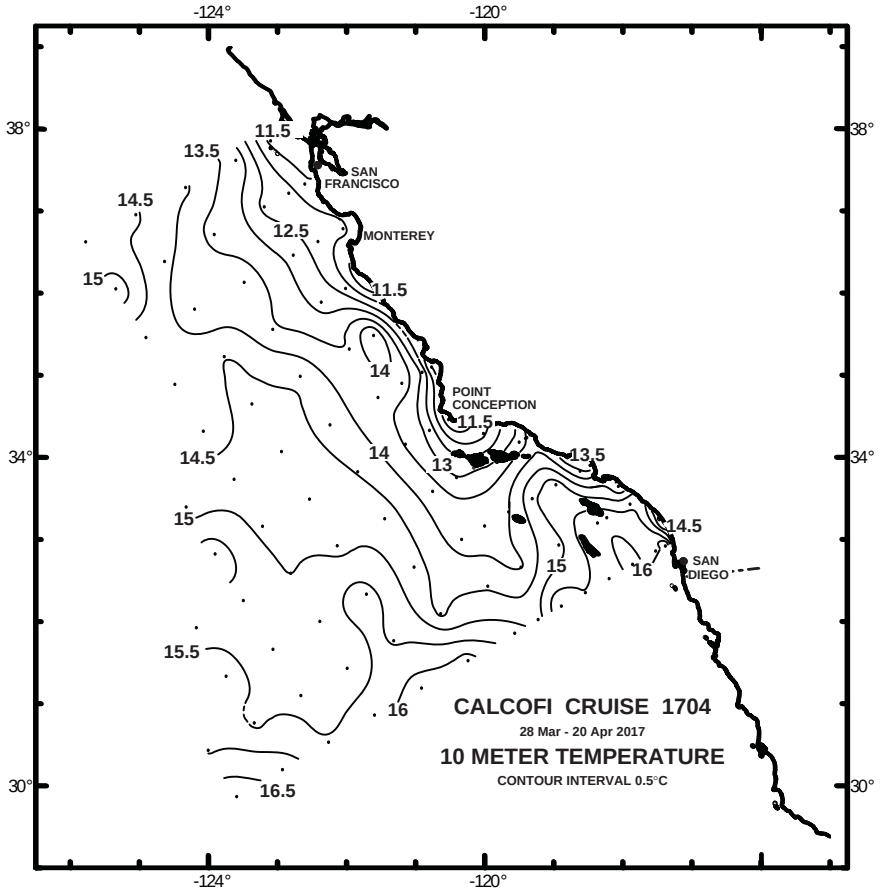

FIGURE 3C

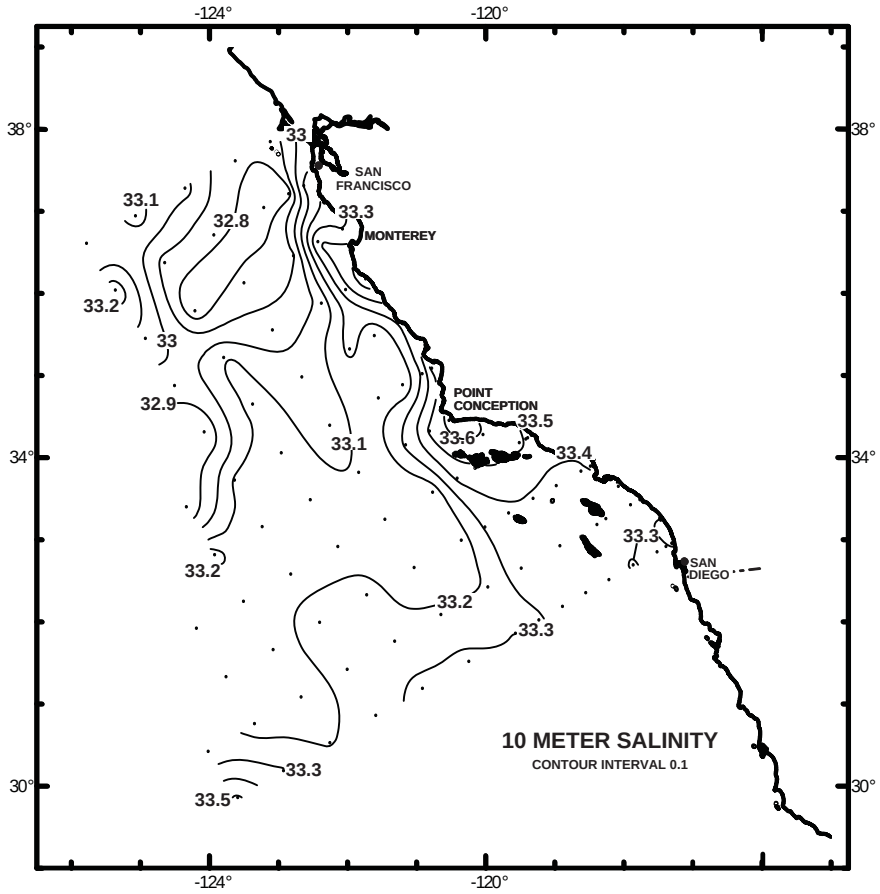

FIGURE 3D

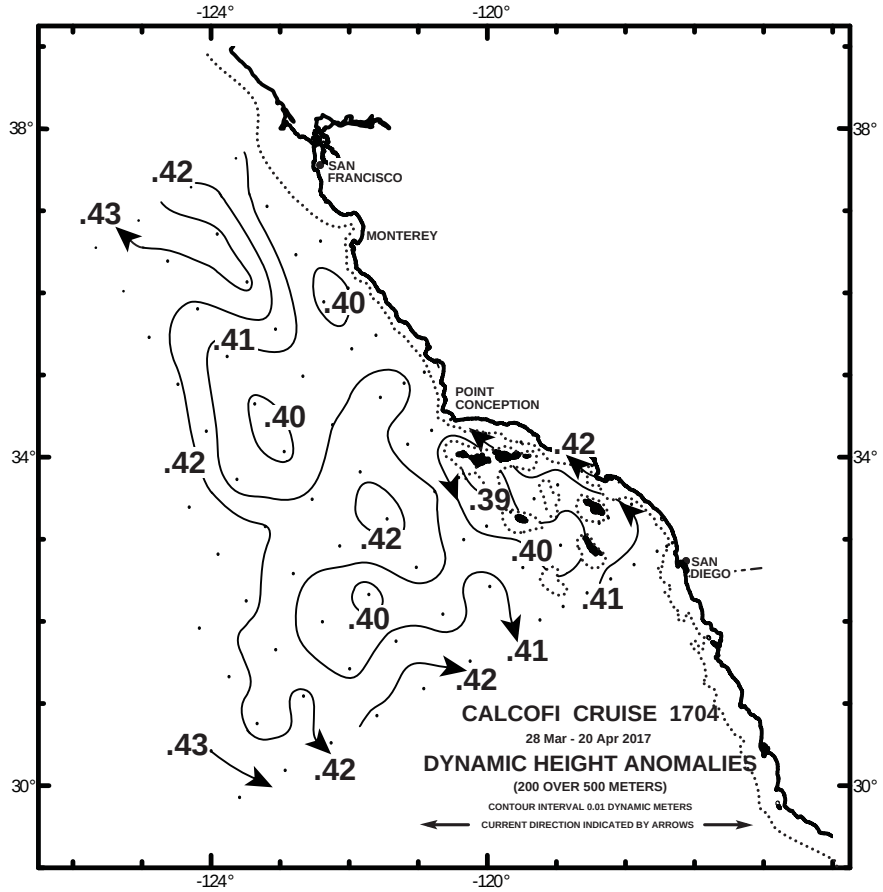

FIGURE 4A

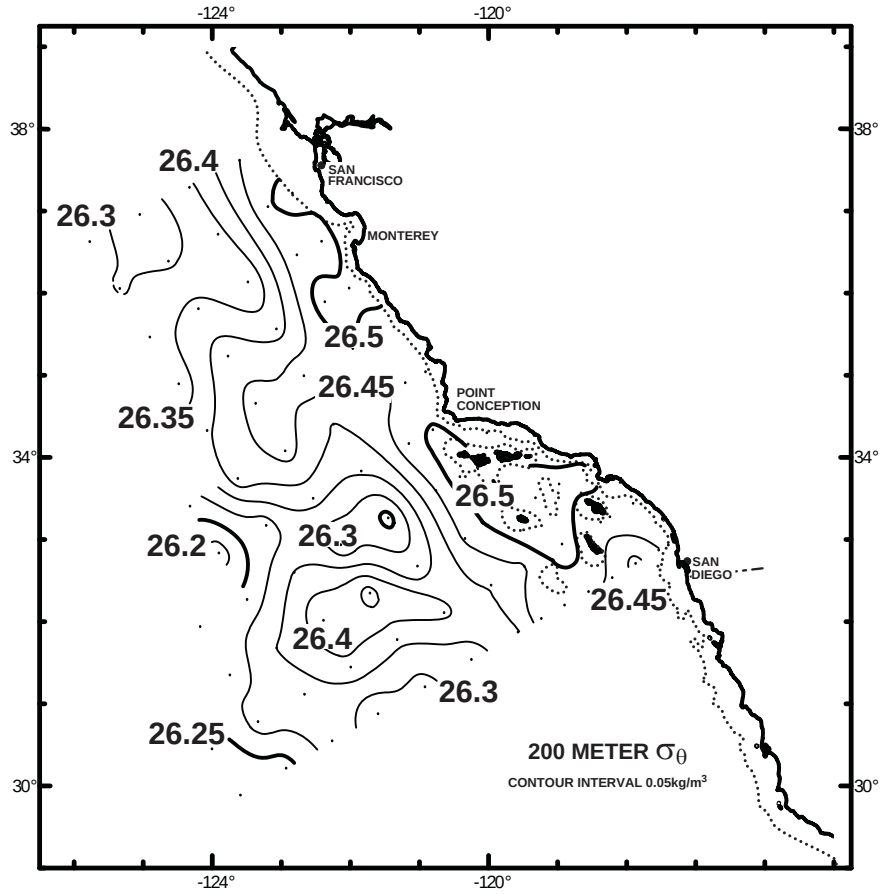

FIGURE 4B

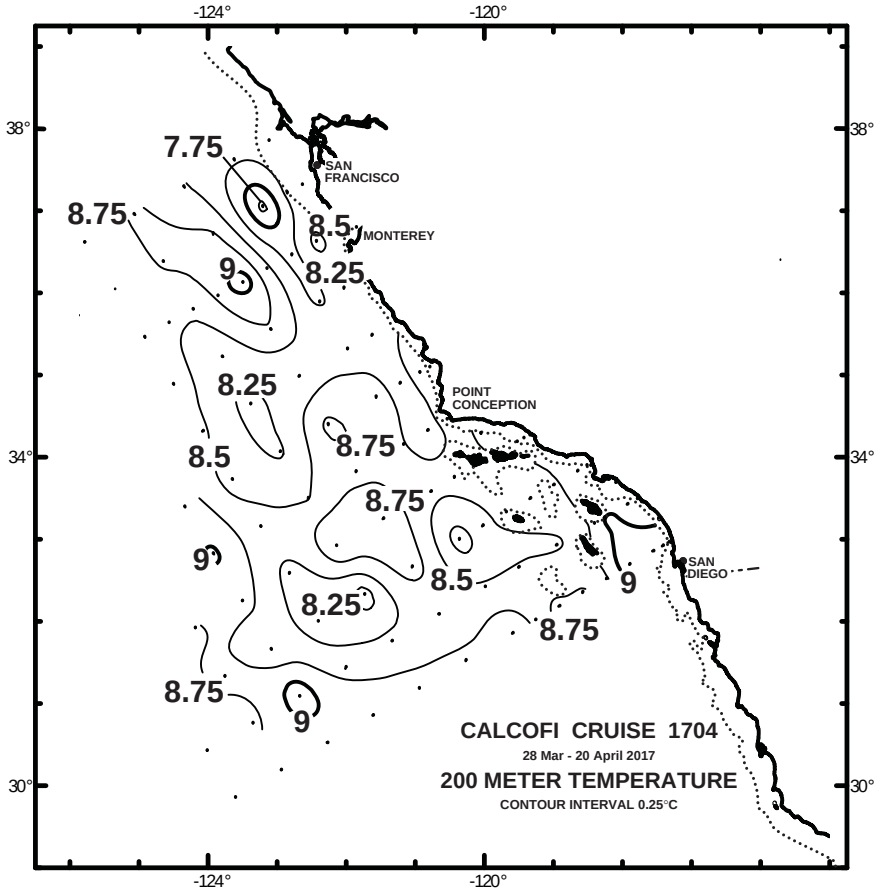

FIGURE 4C

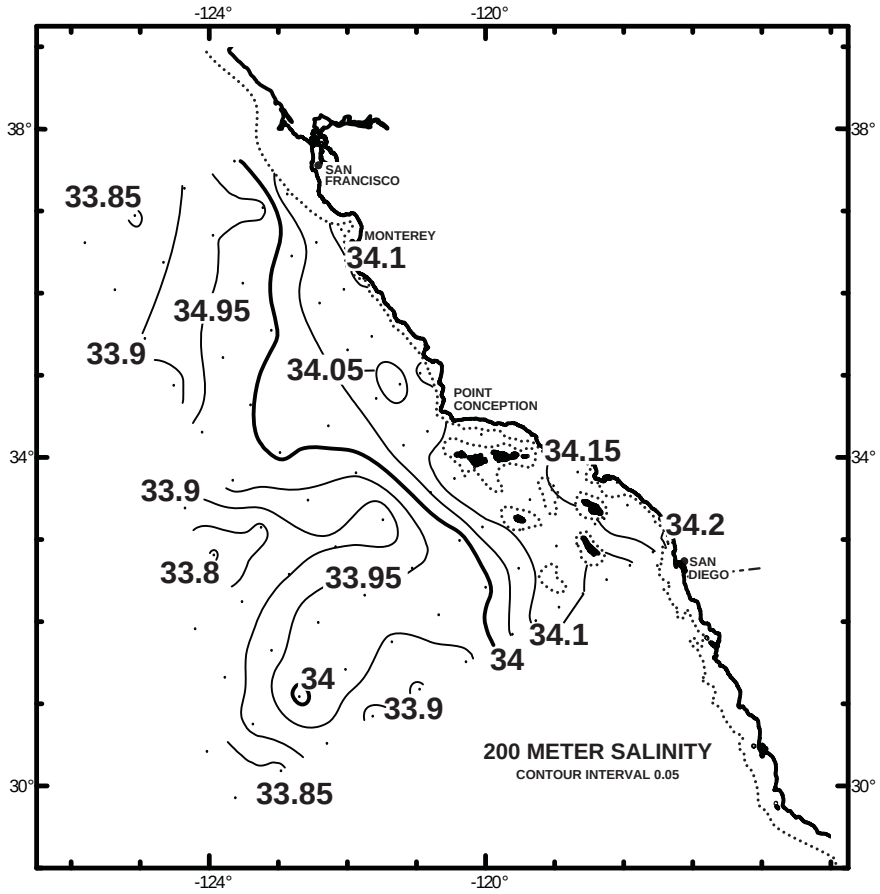

FIGURE 4D

CALCOFI CRUISE 1704

2 - 5 April 2017

POTENTIAL DENSITY (σ_θ) ALONG CALCOFI LINE 90

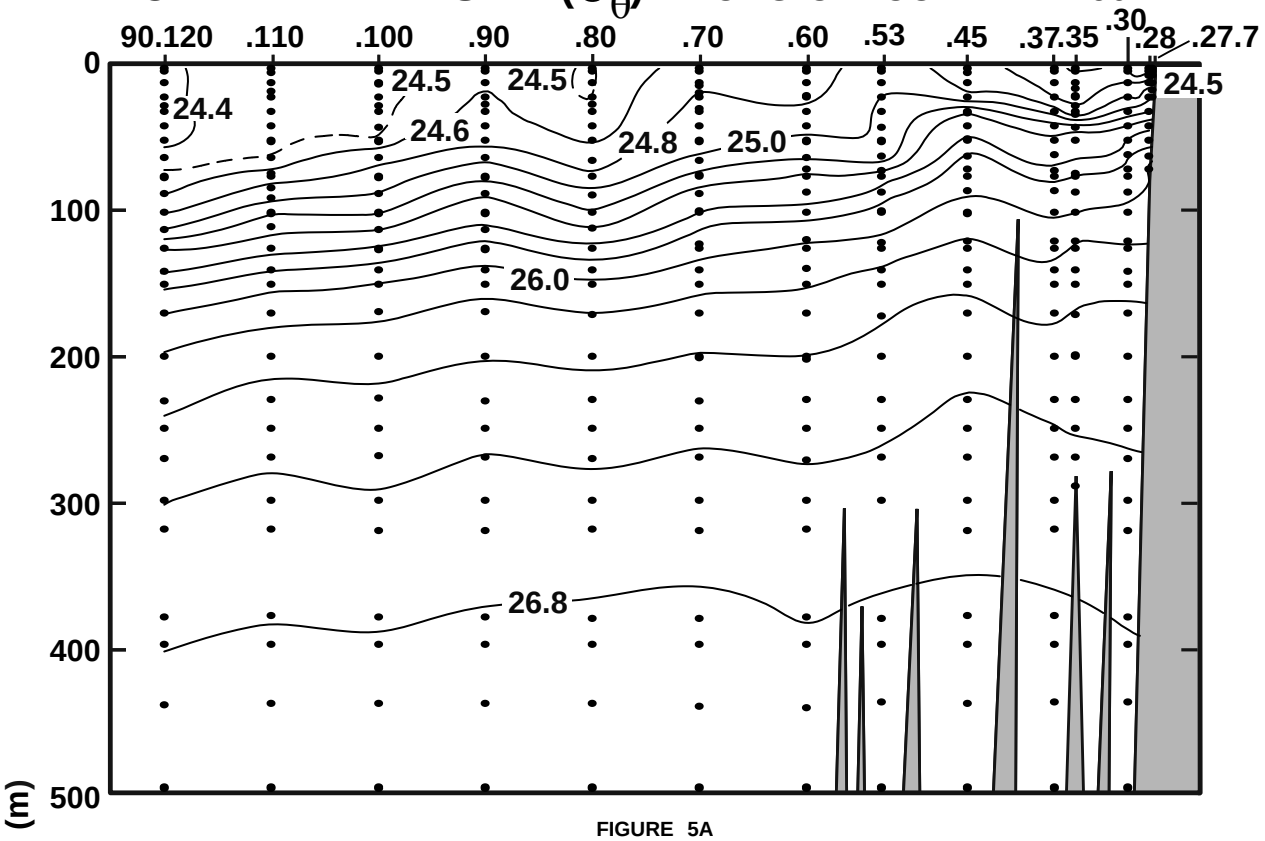

FIGURE 5A

TEMPERATURE (°C) ALONG CALCOFI LINE 90

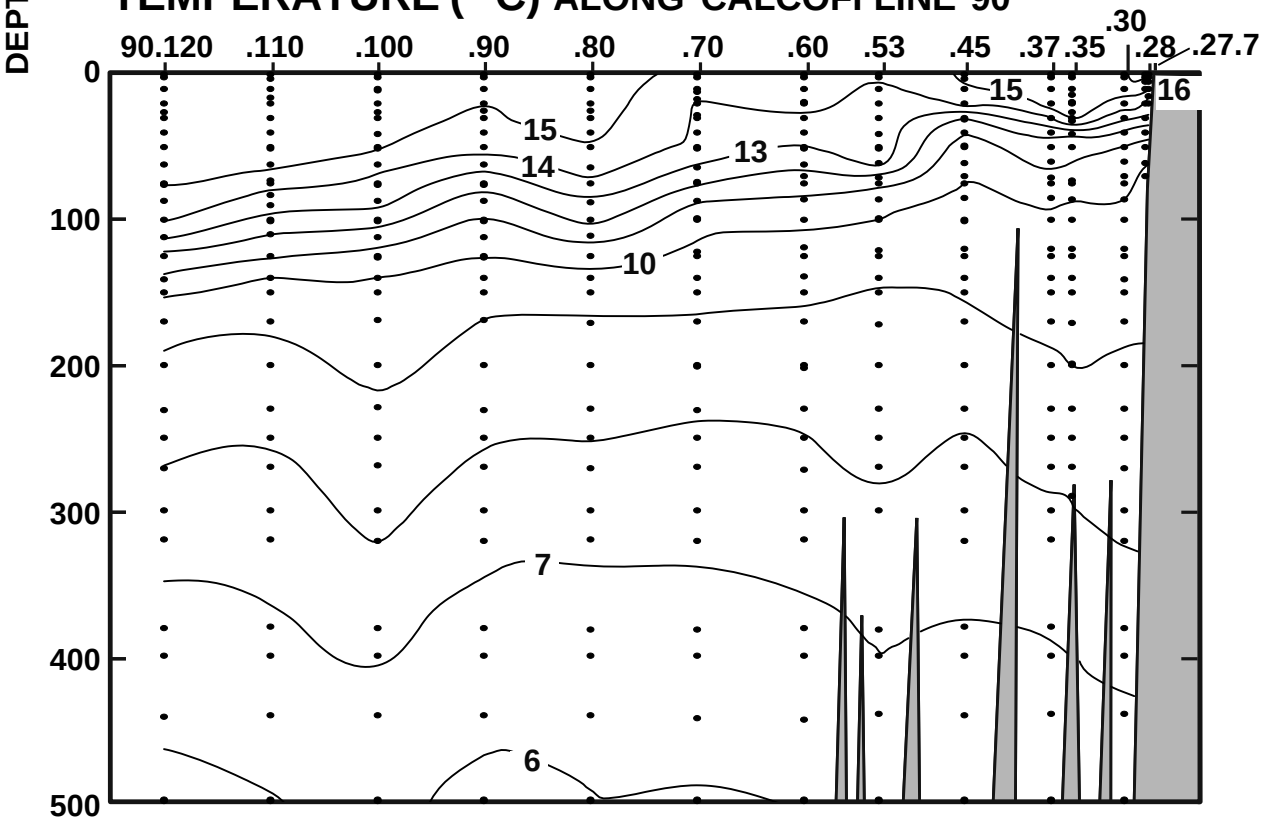

FIGURE 5B

CALCOFI CRUISE 1704

2 - 5 April 2017

SALINITY ALONG CALCOFI LINE 90

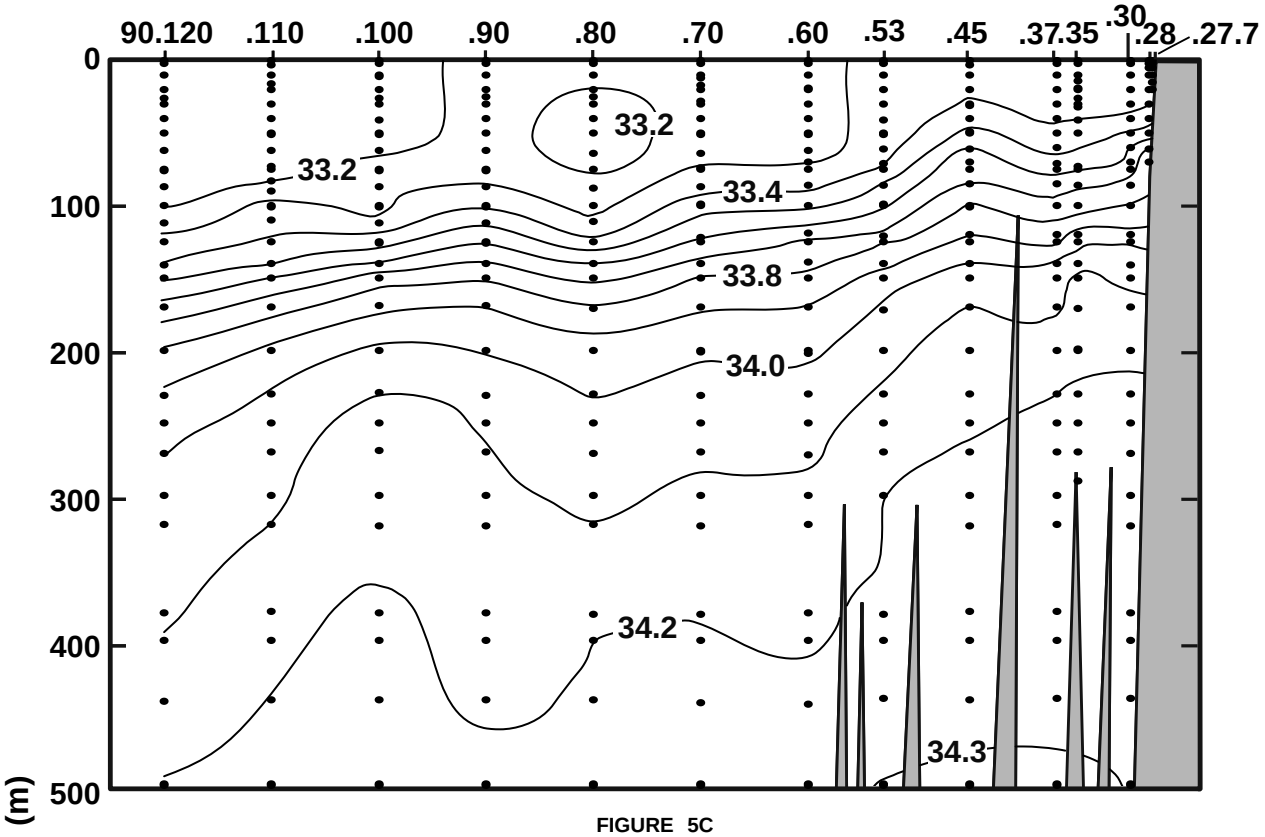

FIGURE 5C

SILICATE (μM/L) ALONG CALCOFI LINE 90

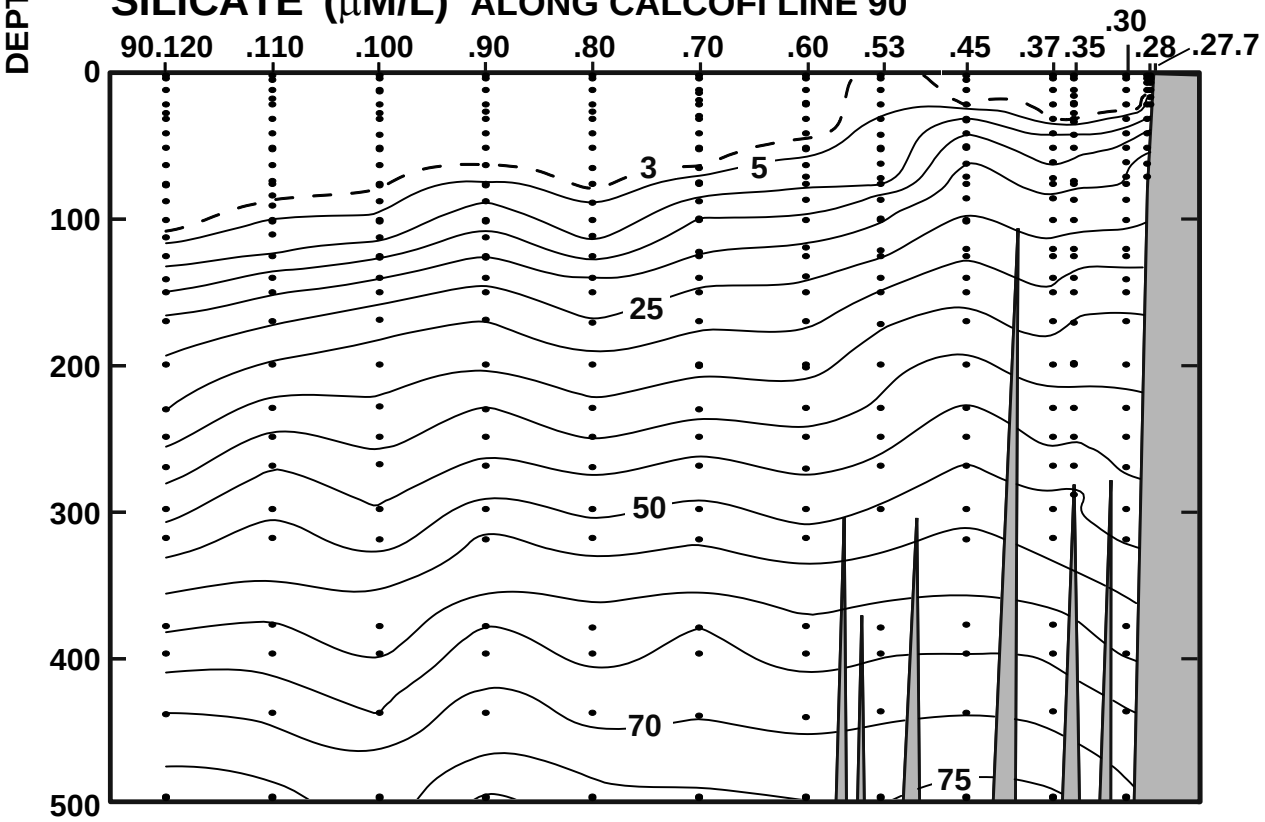

FIGURE 5D

CALCOFI CRUISE 1704

2 - 5 April 2017

NITRATE (μM/L) ALONG CALCOFI LINE 90

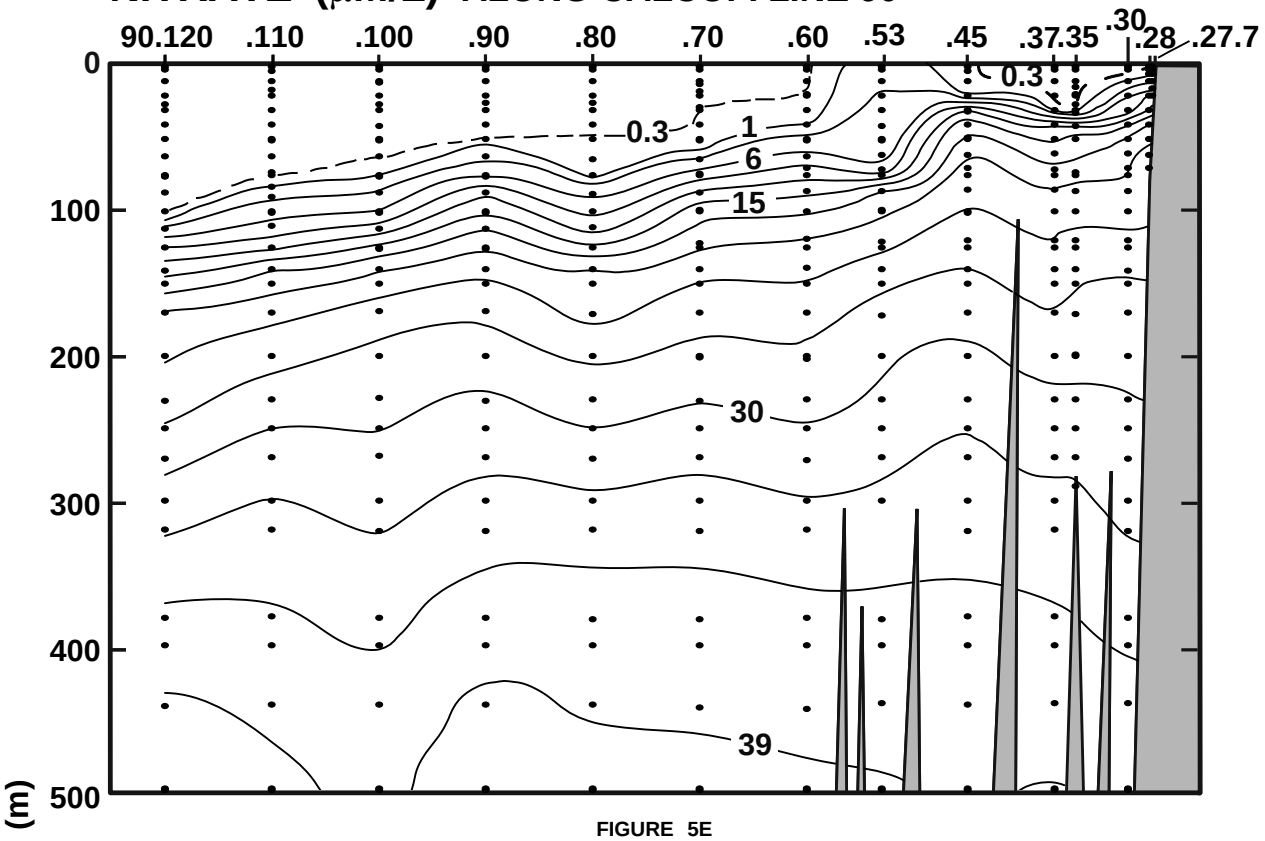

FIGURE 5E

PHOSPHATE (μM/L) ALONG CALCOFI LINE 90

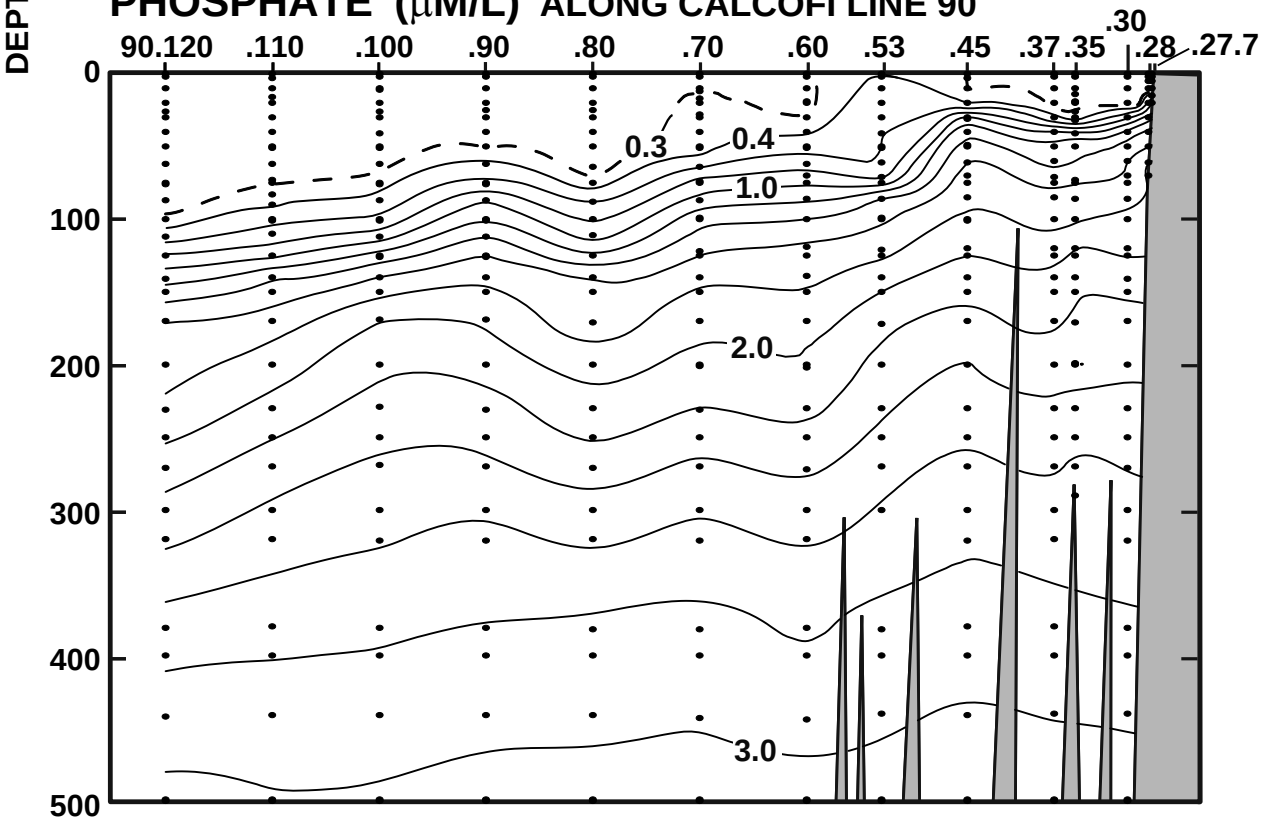

FIGURE 5F

CALCOFI CRUISE 1704

2 - 5 April 2017

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

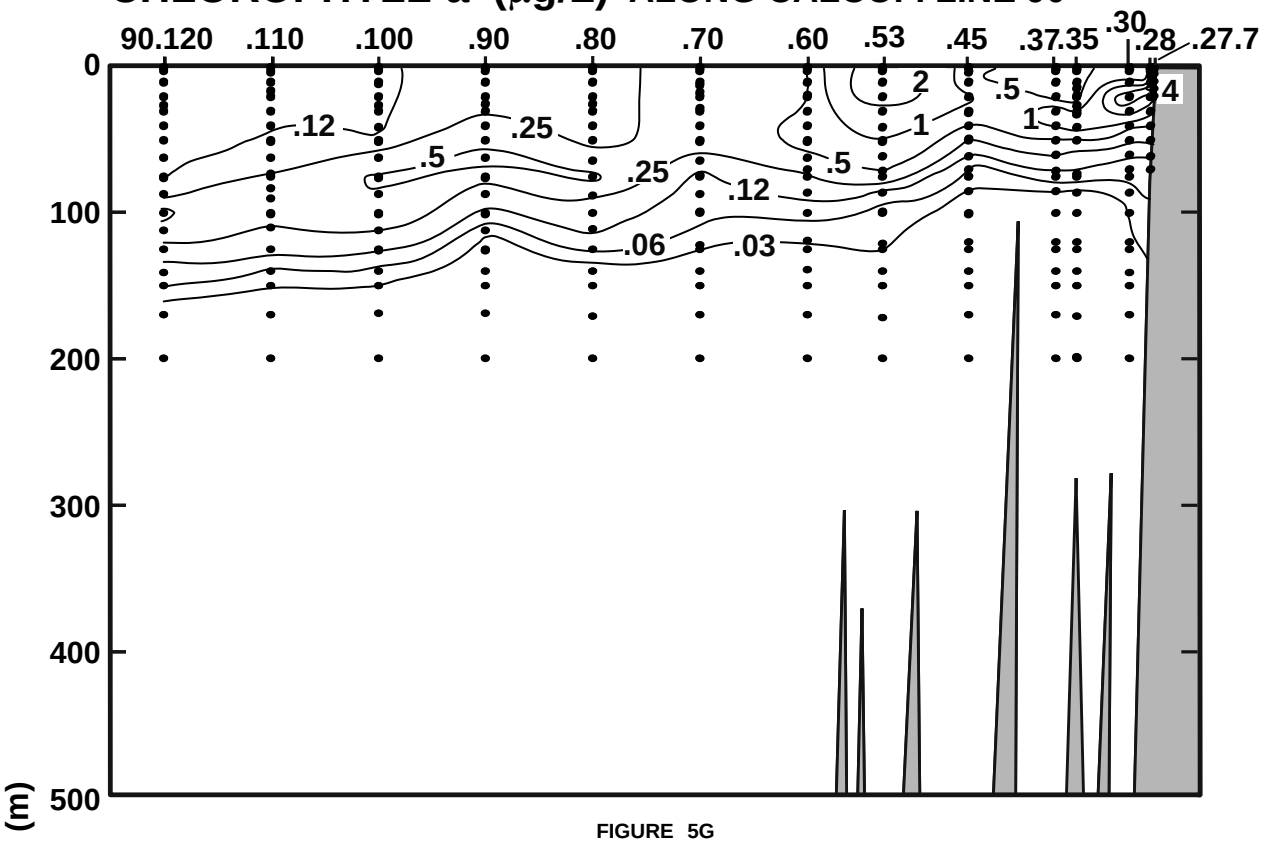

FIGURE 5G

OXYGEN SATURATION (%) ALONG CALCOFI LINE 90

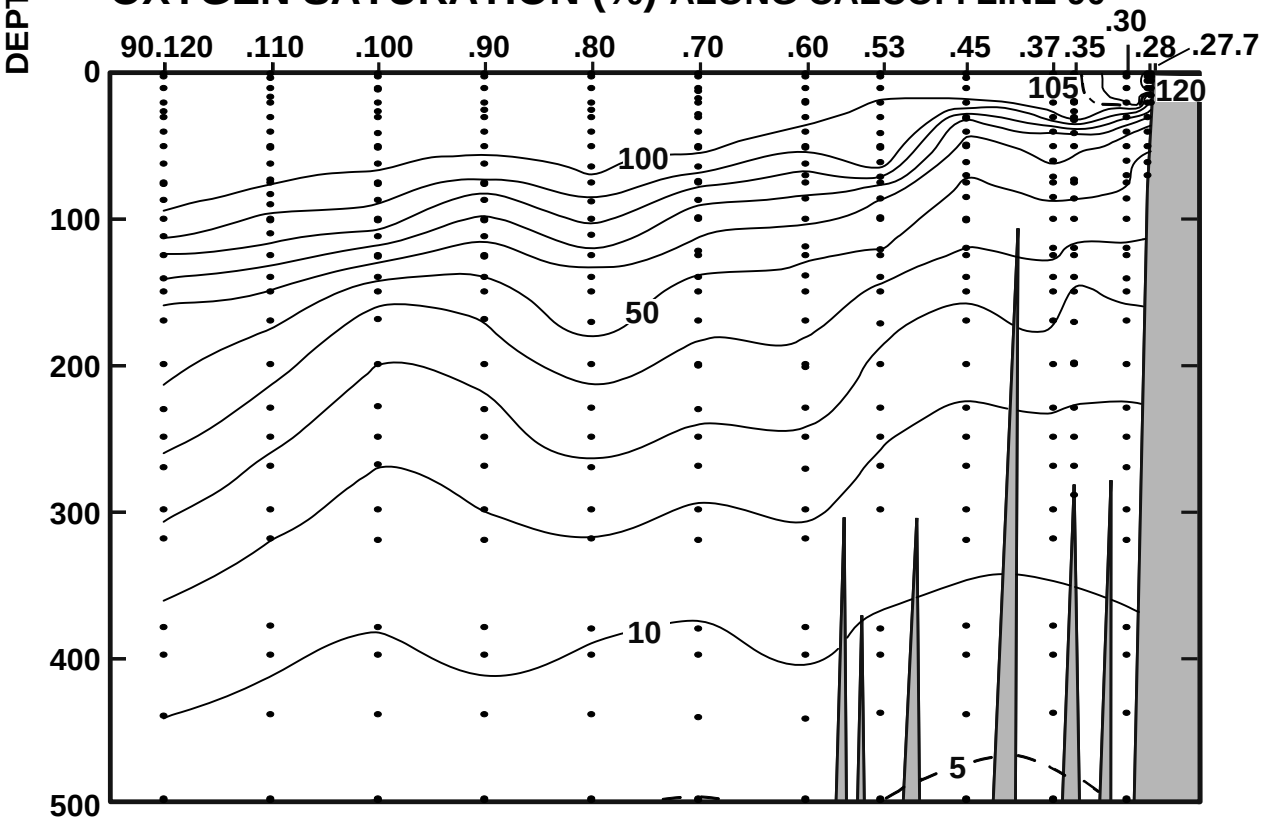

FIGURE 5H

CALCOFI CRUISE 1704

2 - 5 April 2017

OXYGEN (mL/L) ALONG CALCOFI LINE 90

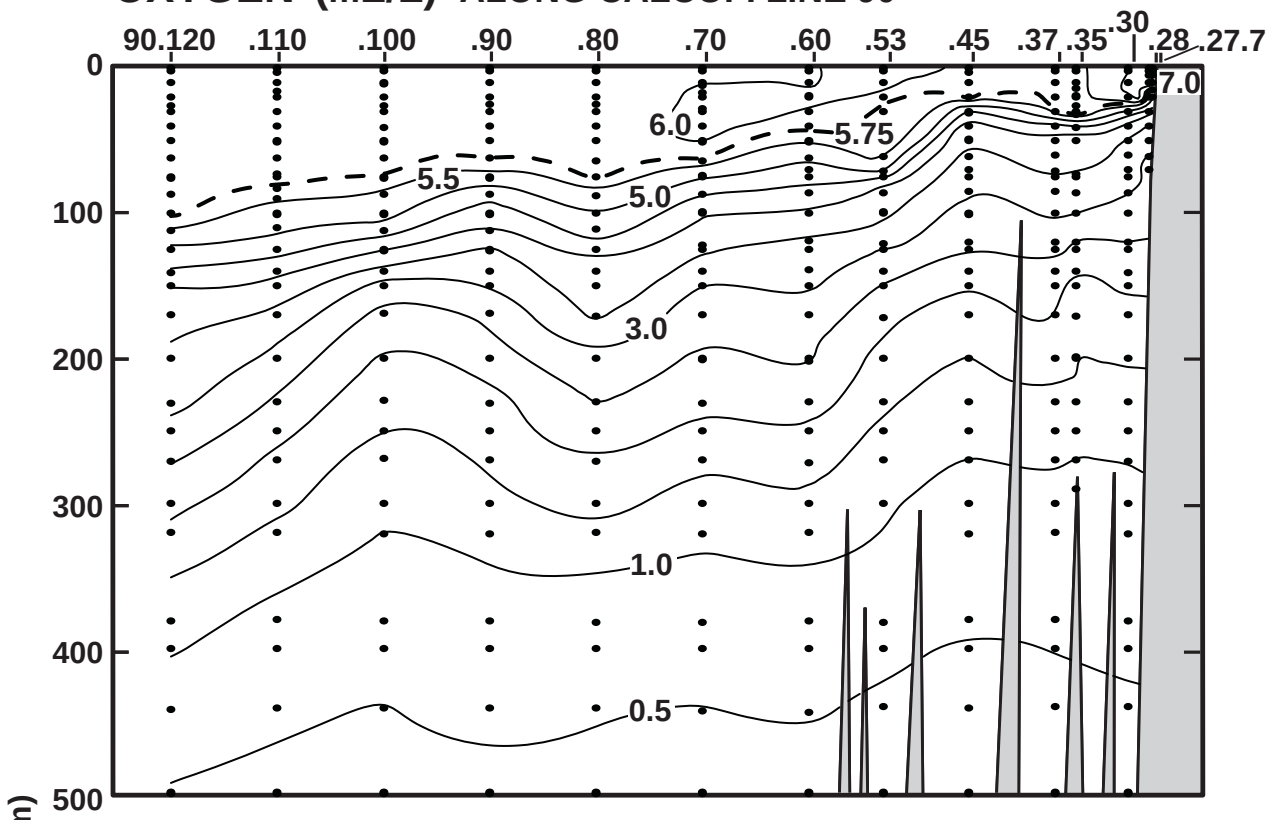

FIGURE 5I

NITRITE (μM/L) ALONG CALCOFI LINE 90

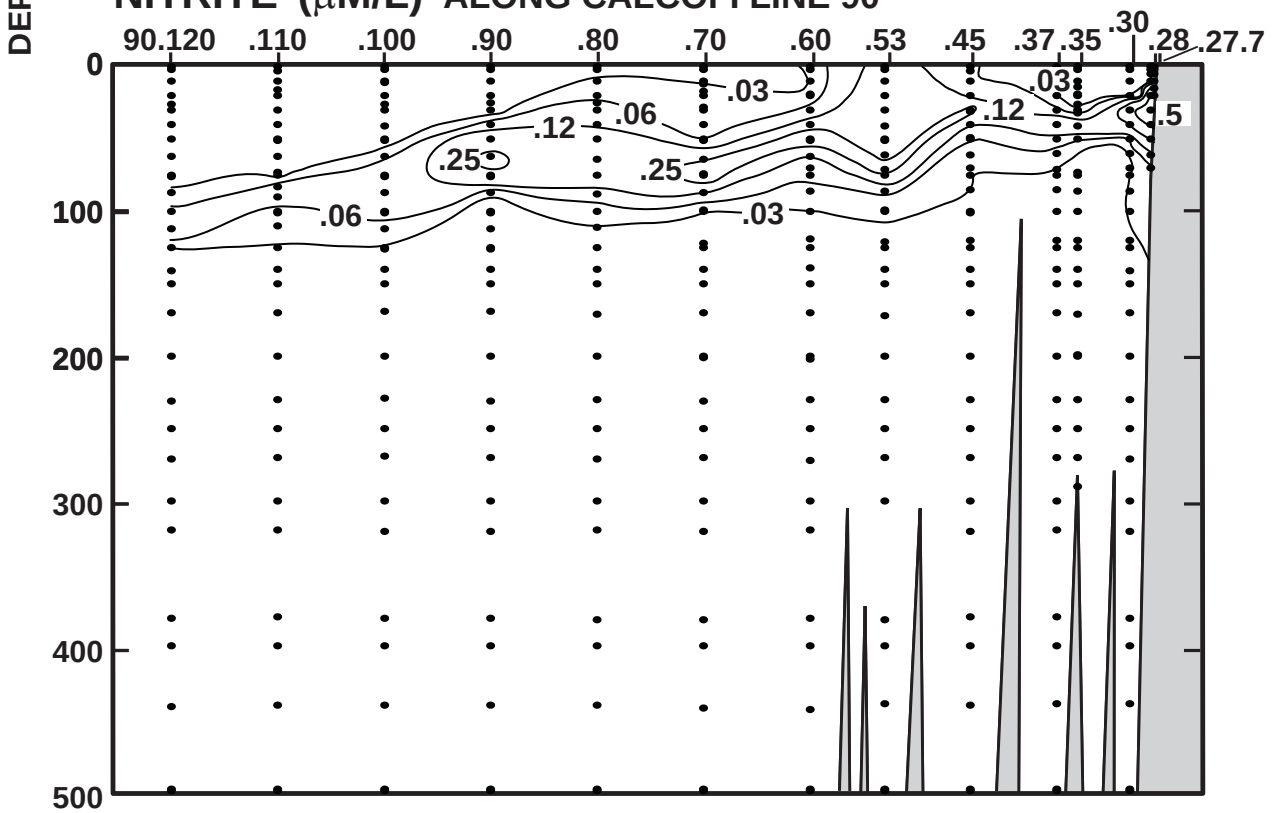

FIGURE 5J

PERSONNEL

CalCOFI Cruise 1704

SHIP'S COMMANDER

Paul Kunicki, NOAA Ship *Bell M. Shimada*

PERSONNEL PARTICIPATING IN THE COLLECTION OF DATA

		Participating (Legs)
Hays, Amy (Chief Scientist)	Fishery Biologist, NMFS	1-2
Dovel, Shonna	Staff Research Associate, SIO	1
Baran, Melody	Marine Mammal Observer, MPL	1-2
Guazzo, Regina	Marine Mammal Observer, MPL	1-2
Kacev, Dovi	J.Craig Vetner Institute	2
Ostresh, Stephanie	Volunteer	1-2
Overcash, Bryan	Fishery Biologist, NMFS	1-2
Roadman, Megan	Staff Research Associate, SIO	1
Rodgers-Wolgast, Jennifer	Staff Research Associate, SIO	1
Rosenthal, Hailey	Volunteer	1-2
Scheer, Matthias	Marine Mammal Observer, MPL	1-2
Schuller, Daniel	Staff Research Associate, SIO	1
Thompson, Luke	J.Craig Vetner Institute	2
Webb, Sophie	Bird Observer, FAIER	1
Wilkinson, James	Information Systems Analyst, SIO	1
Wolgast, David	Staff Research Associate, SIO	1
Zeigler, Lisa	J.Craig Vetner Institute	2

Leg 1: San Diego to Monterrey, California, 28 March – 14 April, 2017
Leg 2: Monterrey to San Francisco, California, 14 – 21 April, 2017

RV BELL M SHIMADA — CALCOFI CRUISE 1704 — 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 50.7 N	123 5.9 W	20/04/2017	0736 UTC	93 m	230 07 kn			1024.1 mb	12.9 C	12.2 C				104

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	13.63	13.63	28.365 D	21.140	663.6	0.000	7.59	332.6	124.6						8.43	0.83	0	
2	13.63	13.63	28.365 D	21.140	663.6	0.007	7.59	332.6	124.6						8.43	0.83	2	06
10	11.35	11.35	32.836 D	25.029	292.3	0.045	6.38	D278.0	D102.6						25.52	1.36	10	05
20 ISL	10.68 D	10.68	33.134 D	25.380	259.1	0.073	4.88	D212.5	D 77.4						7.15	0.91	20	
21	10.57	10.57	33.212 D	25.460	251.5	0.076	4.54	D197.9	D 72.0						5.32	0.87	21	04
30 ISL	10.03 D	10.02	33.508 D	25.785	220.9	0.097	3.99	D173.8	D 62.6						3.74	0.71	30	
50	9.37	9.37	33.716	26.055	195.6	0.145	3.04	132.9	47.1						0.24	0.35	50	03
70	8.98	8.97	33.837 D	26.213	181.0	0.177	2.78	121.3	42.6						0.17	0.39	71	02
75 ISL	8.97 D	8.96	33.840 D	26.217	180.7	0.186	2.74	D119.4	D 42.1						0.18	0.57	76	
81	8.93	8.92	33.869	26.246	178.1	0.202	2.68	117.0	41.1						0.20	0.78	82	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 1704 — 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 36.5 N	123 36.1 W	20/04/2017	0250 UTC	3233 m	190 14 kn	160 06 08	6	1022.5 mb	14.7 C	14.0 C		8/8	NS	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	13.40	13.40	32.838 D	24.640	329.0	0.000	6.33	276.6	106.3						0.68	0.06	0	
2	13.47	13.47	32.824	24.615	331.5	0.007	6.31	275.8	106.1						0.60	0.13	2	13
10	13.40	13.40	32.838 D	24.641	329.3	0.030	6.33	276.6	106.3	2.0A	0.28A	0.0A	0.00A	0.00A	0.68	0.06	10	12
20	12.69	12.69	32.839 D	24.782	316.1	0.063	6.37	D277.6	D105.3						0.68	0.20	20	10
30 ISL	12.59 D	12.58	32.844 D	24.806	314.1	0.094	6.31	D275.0	D104.2						0.82	0.25	30	
41	12.56	12.56	32.848 D	24.814	313.6	0.129	6.19	270.4	102.1	2.2	0.34	0.3	0.07	0.26	0.96	0.30	41	09
50 ISL	12.33 D	12.32	32.832 D	24.847	310.7	0.157	6.09	D265.3	D 99.9						0.71	0.25	50	
70	11.61	11.61	32.992 D	25.105	286.6	0.217	5.48	239.3	88.6						0.15	0.12	71	08
75 ISL	11.39 D	11.38	33.054 D	25.194	278.2	0.232	5.30	D230.7	D 85.3						0.12	0.12	76	
100	10.04	10.02	33.526	25.799	221.1	0.296	3.67	160.2	57.6						0.02	0.10	101	07
121	9.37	9.35	33.716 D	26.059	196.8	0.339	3.06	133.8	47.4						0.01	0.07	122	06
125 ISL	9.31 D	9.29	33.737 D	26.085	194.4	0.347	3.01	D130.8	D 46.4						0.01	0.07	126	
141	8.96	8.95	33.839 D	26.220	181.9	0.377	2.81	122.6	43.1	28.4	1.90	25.4	0.00	0.00	0.01	0.07	142	05
150 ISL	8.69 D	8.67	33.858 D	26.278	176.4	0.393	2.96	D128.8	D 45.2						0.01	0.07	151	
200 ISL	8.28 D	8.26	33.996 D	26.451	160.9	0.478	2.40	D104.4	D 36.3						0.03	0.08	202	
201	8.27	8.24	33.997 D	26.453	160.7	0.480	2.42	105.6	36.6						0.03	0.08	203	04
250 ISL	7.93 D	7.90	34.065 D	26.558	151.5	0.557	1.77	D 77.0	D 26.6								252	
271	7.90	7.87	34.098 D	26.589	149.1	0.589	1.51	65.8	22.6								273	03
300 ISL	7.60 D	7.57	34.105 D	26.638	144.8	0.632	1.42	D 61.8	D 21.2								303	
380	7.06	7.02	34.173 D	26.770	133.3	0.744	0.88	38.3	12.9								383	02
400 ISL	6.75 D	6.71	34.158 D	26.799	130.6	0.771	0.83	D 36.1	D 12.1								403	
500 ISL	5.90 D	5.86	34.176 D	26.925	119.3	0.897	0.58	D 25.3	D 8.3								504	
516	5.81	5.77	34.188	26.946	117.5	0.912	0.53	23.1	7.6	75.6	3.01	39.7	0.00	0.00			521	01

A) SELECTED NUTRIENTS DRAWN FROZEN AND RUN LATER FOR J.CRAIG VENTER INSTITUTE.
A) SELECTED NUTRIENTS DRAWN FROZEN AND RUN LATER FOR J.CRAIG VENTER INSTITUTE.
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 1704 — 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 16.7 N	124 19.6 W	19/04/2017	2119 UTC	3937 m	180 12 kn	220 04 06	1	1023.1 mb	17.5 C	16.0 C		4/8	SC	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	14.32	14.32	33.002 D	24.577	335.1	0.000	6.09	265.9	104.3						0.35	0.01	0	
2	14.32	14.32	33.002 D	24.577	335.1	0.003	6.09	265.9	104.3						0.35	0.01	2	12
9	14.30	14.30	33.003	24.582	334.8	0.030	6.07	265.2	103.9						0.27	0.04	9	13
20	13.78	13.78	33.066 D	24.739	320.2	0.063	6.09	265.9	103.2						0.34	0.07	20	10
30 ISL	13.58 D	13.58	33.036 D	24.758	318.8	0.095	6.10	265.8	102.9						0.55	0.19	30	
50	13.28	13.27	32.998 D	24.790	316.3	0.159	6.13	267.6	102.7						0.97	0.43	50	09
70	12.20	12.19	33.102 D	25.082	288.9	0.220	5.87	256.3	96.2						0.31	0.33	71	08
75 ISL	11.97 D	11.96	33.104 D	25.127	284.7	0.235	5.81	D253.3	D 94.8						0.28	0.31	76	
100	10.85	10.83	33.339	25.514	248.4	0.303	4.94	215.8	78.8						0.13	0.21	101	07
120	10.14	10.13	33.464 D	25.734	227.8	0.350	4.42	192.9	69.4						0.06	0.09	121	06
125 ISL	9.89 D	9.87	33.513 D	25.815	220.2	0.361	4.16	D181.0	D 65.0						0.05	0.09	126	
140	9.28	9.26	33.672 D	26.039	199.1	0.393	3.97	173.1	61.2						0.02	0.08	141	05
150 ISL	9.15 D	9.13	33.714 D	26.093	194.1	0.413	3.73	D162.5	D 57.5						0.02	0.08	151	
200	8.51	8.49	33.898 D	26.339	171.6	0.505	2.95	128.9	44.9						0.01	0.11	202	04
250 ISL	7.53 D	7.50	33.959 D	26.532	153.8	0.587	2.78	D121.0	D 41.4								252	
270	7.33	7.30	33.956 D	26.559	151.5	0.618	2.76	120.5	40.8								272	03
300 ISL	6.94 D	6.91	33.979 D	26.631	144.9	0.663	2.38	D103.7	D 35.0								303	
380	6.15	6.12	34.043 D	26.786	130.8	0.774	1.37	59.9	19.8								383	02
400 ISL	6.23 D	6.20	34.088 D	26.812	128.8	0.800	1.06	D 46.1	D 15.3								403	
500 ISL	5.95 D	5.91	34.231 D	26.962	115.9	0.924	0.42	D 18.4	D 6.1								504	
515	5.89	5.85	34.256	26.989	113.5	0.936	0.41	17.9	5.9								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 1704 — 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 56.7 N	125 2.8 W	19/04/2017	1616 UTC	4238 m	190 14 kn	260 04 08	0	1022.3 mb	14.8 C	13.8 C		0/8		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	14.58	14.58	33.153	24.638	329.2	0.000	5.89	257.2	101.5						0.12	0.02	0	
2	14.58	14.58	33.153	24.638	329.3	0.007	5.89	257.2	101.5						0.12	0.02	2	12
10	14.57	14.57	33.154 D	24.643	329.1	0.030	5.89	257.2	101.5	2.0A	0.23A	0.0A	0.00A	0.00A	0.11	0.02	10	11
20 ISL	14.39 D	14.39	33.162 D	24.687	325.2	0.063	5.89	D256.7	D101.1						0.11	0.02	20	
25	14.39	14.38	33.163 D	24.690	325.1	0.079	5.94	259.4	101.9						0.11	0.03	25	10
30 ISL	14.39 D	14.39	33.171 D	24.694	324.8	0.096	5.88	D256.4	D101.0						0.12	0.03	30	
50 ISL	14.38 D	14.38	33.186 D	24.709	324.1	0.161	5.89	D256.6	D101.1						0.16	0.05	50	
63	14.38	14.37	33.188 D	24.712	324.2	0.204	5.90	257.5	101.2						0.19	0.05	64	09
75 ISL	14.35 D	14.34	33.187 D	24.719	324.0	0.243	5.88	D256.2	D100.8						0.46	0.11	76	
85	13.78	13.77	33.146 D	24.805	315.9	0.275	5.95	259.8	100.8	2.0	0.26	0.0	0.00	0.00	0.69	0.16	86	08
100	12.29	12.28	33.252	25.182	280.2	0.321	5.37	234.6	88.3						0.33	0.27	101	07
125 ISL	11.01 D	11.00	33.394 D	25.528	247.7	0.387	4.22	D183.9	D 67.6						0.15	0.15	126	
126	10.99	10.98	33.399 D	25.536	247.0	0.389	4.25	185.6	68.0						0.14	0.14	127	06
141	10.09	10.07	33.526 D	25.793	222.7	0.425	3.93	171.7	61.7	17.2	1.39	17.9	0.00	0.00	0.03	0.08	142	05
150 ISL	9.68 D	9.67	33.599 D	25.917	211.0	0.444	3.62	D157.5	D 56.3						0.02	0.07	151	
200 ISL	8.78 D	8.75	33.837 D	26.250	180.2	0.543	3.61	D157.1	D 55.2						0.00	0.03	202	
202	8.78	8.76	33.846 D	26.257	179.6	0.546	3.60	157.2	55.0						0.00	0.02	204	04
250 ISL	8.27 D	8.25	33.960 D	26.424	164.4	0.630	3.10	D134.9	D 46.9								252	
272	8.02	7.99	33.996 D	26.491	158.4	0.665	2.63	114.8	39.5								274	03
300 ISL	7.53 D	7.50	34.033 D	26.591	149.1	0.709	2.19	D 95.1	D 32.5								303	
381	6.59	6.56	34.046 D	26.732	136.4	0.826	1.54	67.2	22.4								384	02
400 ISL	6.36 D	6.32	34.053 D	26.768	133.1	0.851	1.34	D 58.4	D 19.4								403	
500 ISL	5.54 D	5.49	34.119 D	26.924	118.9	0.979	0.75	D 32.4	D 10.6								504	
515	5.44	5.40	34.125 D	26.940	117.4	0.997	0.70	30.4	9.9	78.6	2.94	41.3	0.03	0.00			520	01

A) SELECTED NUTRIENTS DRAWN FROZEN AND RUN LATER FOR J.CRAIG VENTER INSTITUTE.
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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 1704 — 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	19/04/2017	1059 UTC	4550 m	180 11 kn			1021.2 mb	14.2 C	13.6 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	14.02	14.02	32.897	24.559	336.8	0.000	6.07	265.5	103.3						0.24	0.02	0	
3	14.02	14.02	32.897	24.559	336.9	0.010	6.07	265.5	103.3						0.24	0.02	3	12
10	14.01	14.01	32.898 D	24.563	336.7	0.029	6.08	265.6	103.3						0.29	0.02	10	11
20	13.98	13.98	33.037 D	24.676	326.2	0.062	6.02	263.2	102.4						0.21	0.04	20	10
30 ISL	13.84 D	13.84	33.010 D	24.684	325.7	0.095	6.01	D262.1	D102.0						0.28	0.06	30	
50	13.58	13.57	33.054 D	24.774	317.8	0.160	6.01	262.8	101.4						0.43	0.11	50	09
71	12.89	12.88	33.046 D	24.906	305.8	0.226	6.10	266.7	101.5						0.37	0.18	72	08
75 ISL	12.73 D	12.72	33.068 D	24.955	301.2	0.238	5.95	D259.1	D 98.6						0.35	0.18	76	
100 ISL	11.85 D	11.83	33.201 D	25.226	275.9	0.311	5.26	D229.0	D 85.6						0.24	0.22	101	
101	11.88	11.86	33.193	25.214	277.1	0.316	5.37	234.6	87.4						0.24	0.22	102	07
121	10.41	10.40	33.348 D	25.597	240.9	0.366	4.73	206.8	74.8						0.13	0.07	122	06
125 ISL	10.10 D	10.08	33.429 D	25.714	229.8	0.375	4.36	D189.8	D 68.4						0.11	0.06	126	
140	9.56	9.54	33.571 D	25.915	210.9	0.409	4.08	178.3	63.4						0.03	0.05	141	05
150 ISL	9.33 D	9.31	33.636 D	26.004	202.6	0.430	3.97	D172.7	D 61.3						0.03	0.05	151	
200 ISL	8.56 D	8.54	33.887 D	26.323	173.2	0.524	3.06	D133.2	D 46.6						0.00	0.05	202	
201	8.53	8.51	33.885 D	26.325	173.0	0.526	3.12	136.3	47.4						0.00	0.05	203	04
250 ISL	7.79 D	7.76	33.966 D	26.501	156.9	0.607	2.71	D117.7	D 40.5								252	
270	7.52	7.49	33.993 D	26.560	151.5	0.639	2.53	110.3	37.5								272	03
300 ISL	7.17 D	7.14	34.006 D	26.621	146.1	0.683	2.18	D 94.9	D 32.2								302	
380	6.03	6.00	34.007 D	26.772	132.0	0.796	1.51	66.1	21.7								383	02
400 ISL	5.86 D	5.83	34.019 D	26.803	129.2	0.822	1.34	D 58.1	D 19.1								403	
500 ISL	5.22 D	5.18	34.088 D	26.936	117.3	0.947	0.78	D 34.0	D 11.0								504	
516	5.12	5.08	34.108	26.964	114.8	0.962	0.66	28.9	9.3								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 1704 — 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 19.2 N	122 36.3 W	18/04/2017	0716 UTC	91 m	140 08 kn			1018.6 mb	12.1 C	12.0 C				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	11.81	11.81	33.040	25.103	284.9	0.000	6.95	303.5	112.9						10.91	0.39	0	
3	11.81	11.81	33.040	25.104	285.0	0.009	6.95	303.5	112.9						10.91	0.39	3	06
10	11.58	11.58	33.129	25.214	274.6	0.028	6.43	280.9	104.1	10.1A	0.74A	6.3A	0.17A	0.22A	6.24	1.27	10	05
20	11.40	11.40	33.246	25.339	263.1	0.055	6.16	268.9	99.3	8.9	0.76	6.6	0.16	0.63	9.03	0.74	20	04
30 ISL	10.64 D	10.63	33.490 D	25.666	232.2	0.076	4.25	D184.8	D 67.5						6.14	0.75	30	
50	9.45	9.45	33.779 D	26.092	192.1	0.119	2.75	120.0	42.6						0.37	0.77	50	03
71	9.18	9.18	33.876 D	26.212	181.2	0.158	2.16	94.3	33.3						0.44	1.47	72	02
75 ISL	9.17 D	9.16	33.880 D	26.216	180.8	0.166	2.17	D 94.2	D 33.4						0.43	1.33	76	
78	9.17	9.16	33.882 D	26.219	180.6	0.171	2.19	95.4	33.7						0.42	1.22	79	01

A) SELECTED NUTRIENTS DRAWN FROZEN AND RUN LATER FOR J.CRAIG VENTER INSTITUTE.
A) SELECTED NUTRIENTS DRAWN FROZEN AND RUN LATER FOR J.CRAIG VENTER INSTITUTE.
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 1704 — 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 50.2 W	18/04/2017	1005 UTC	301 m	150 09 kn			1017.2 mb	12.8 C	12.2 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	12.39	12.39	32.782	24.793	314.4	0.000	6.65	290.7	109.3						3.15	0.57	0	
2	12.39	12.39	32.782	24.793	314.5	0.006	6.65	290.7	109.3						3.15	0.57	2	10
10	12.23	12.23	32.791 D	24.831	311.2	0.028	6.43	281.2	105.4						3.33	0.17	10	09
20	11.72	11.72	32.902 D	25.013	294.1	0.059	5.89	257.3	95.5						1.14	0.48	20	08
30 ISL	10.87 D	10.87	33.336 D	25.505	247.5	0.086	4.65	D202.6 D	74.3						0.99	0.42	30	
50	10.43	10.43	33.497 D	25.707	228.7	0.134	4.45	194.6	70.5						0.69	0.32	50	07
70	9.85	9.84	33.602 D	25.888	211.9	0.179	4.02	175.4	62.8						0.37	0.33	71	06
75 ISL	9.77 D	9.76	33.617 D	25.913	209.6	0.189	3.80	D165.5 D	59.3						0.32	0.31	76	
100 ISL	9.12 D	9.11	33.827 D	26.184	184.4	0.239	2.74	D119.0 D	42.1						0.07	0.21	101	
101	9.08	9.07	33.818	26.184	184.4	0.242	2.79	121.8	42.9						0.06	0.21	102	05
120	8.98	8.97	33.949 D	26.303	173.5	0.275	2.26	98.5	34.7						0.05	0.14	121	04
125 ISL	8.97 D	8.95	33.954 D	26.309	173.0	0.283	2.22	D 96.7 D	34.1						0.05	0.13	126	
140	8.74	8.73	33.976 D	26.361	168.4	0.309	2.30	100.4	35.2						0.04	0.12	141	03
150 ISL	8.67 D	8.65	34.002 D	26.393	165.5	0.326	2.15	D 93.4 D	32.8						0.04	0.12	151	
200	8.31	8.29	34.096 D	26.524	154.0	0.407	1.54	67.3	23.3						0.04	0.14	202	02
250 ISL	7.76 D	7.74	34.142 D	26.642	143.6	0.482	1.19	D 51.9 D	17.8								252	
297	7.52	7.49	34.151	26.685	140.2	0.548	1.08	47.0	16.0								299	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 1704 — 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 2.5 N	123 11.5 W	18/04/2017	1334 UTC	2535 m	170 04 kn			1017.7 mb	12.9 C	12.3 C				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	12.43	12.43	32.749	24.761	317.5	0.000	6.42	280.5	105.5						1.68	0.56	0	
2	12.43	12.42	32.749	24.761	317.5	0.006	6.42	280.5	105.5						1.68	0.56	2	12
10	12.35	12.35	32.752 D	24.778	316.2	0.029	6.37	278.3	104.5						1.88	0.51	10	11
20	12.32	12.31	32.762 D	24.793	315.0	0.061	6.33	276.4	103.8						1.44	0.46	20	10
30 ISL	12.23 D	12.23	32.811 D	24.848	310.0	0.092	6.30	D274.7 D	103.2						1.13	0.45	30	
50 ISL	11.01 D	11.00	33.140 D	25.329	264.7	0.150	4.93	D214.6 D	78.8						0.49	0.42	50	
51	10.98	10.98	33.145 D	25.337	264.0	0.153	5.18	226.5	82.8						0.46	0.42	51	09
70	10.47	10.46	33.432 D	25.651	234.6	0.200	4.24	185.2	67.1						0.13	0.15	71	08
75 ISL	10.34 D	10.33	33.487 D	25.716	228.5	0.212	3.79	D164.9 D	59.8						0.12	0.14	76	
100	9.66	9.65	33.667	25.972	204.6	0.268	3.08	134.6	48.0						0.08	0.11	101	07
120	9.12	9.11	33.799 D	26.163	186.8	0.306	2.89	126.3	44.5						0.06	0.14	121	06
125 ISL	9.10 D	9.09	33.804 D	26.170	186.3	0.316	2.94	D127.7 D	45.2						0.06	0.12	126	
140	8.82	8.81	33.896 D	26.286	175.5	0.343	2.65	115.5	40.5						0.05	0.08	141	05
150 ISL	8.65 D	8.64	33.945 D	26.351	169.5	0.360	2.46	D107.0 D	37.5						0.05	0.09	151	
200	7.64	7.62	33.935 D	26.497	156.3	0.443	3.06	133.6	45.6						0.04	0.10	202	04
250 ISL	7.73 D	7.71	34.076 D	26.594	148.0	0.519	1.65	D 71.8 D	24.7								252	
270	7.49	7.47	34.065 D	26.621	145.7	0.549	1.69	D 73.3 D	25.0								272	03
300 ISL	7.24 D	7.21	34.127 D	26.705	138.1	0.592	1.17	D 50.9 D	17.3								303	
380	6.75	6.71	34.195 D	26.828	127.5	0.699	0.69	30.1	10.1								383	02
400 ISL	6.64 D	6.60	34.206 D	26.852	125.5	0.725	0.62	D 27.1 D	9.1								403	
500 ISL	5.95 D	5.90	34.258 D	26.984	113.8	0.845	0.37	D 16.2 D	5.3								504	
515	5.87	5.83	34.255	26.991	113.3	0.858	0.37	16.2	5.3								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 1704 — 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 42.3 N	123 54.8 W	18/04/2017	1851 UTC	3828 m	270 02 kn	260 04 08	1	1020.3 mb	14.5 C	12.9 C		1/8	SC	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	13.54	13.54	32.800	24.581	334.7	0.000	6.23	272.4	104.9						0.50	0.17	0	
2	13.54	13.54	32.800	24.581	334.7	0.007	6.23	272.4	104.9						0.50	0.17	2	12
10	13.25	13.25	32.804 D	24.644	329.0	0.030	6.23	272.1	104.2	1.5A	0.25A	0.0A	0.00A	0.00A	0.53	0.16	10	11
20 ISL	13.21 D	13.21	32.805 D	24.653	328.4	0.063	6.20	D270.4 D	103.7						0.77	0.23	20	
30 ISL	13.14 D	13.13	32.809 D	24.672	326.9	0.096	6.18	D269.4 D	103.2						1.01	0.29	30	
35	13.01	13.01	32.821 D	24.705	323.9	0.113	6.17	269.9	102.8	1.5	0.25	0.0	0.00	0.00	1.13	0.33	35	10
50 ISL	12.56 D	12.55	32.909 D	24.862	309.3	0.161	5.74	D250.3 D	94.8						0.29	0.24	50	
51	12.57	12.56	32.908 D	24.859	309.6	0.164	5.79	253.2	95.6						0.23	0.24	51	09
70	11.89	11.88	33.098 D	25.136	283.7	0.220	5.47	238.9	89.1						0.14	0.16	71	08
75 ISL	11.57 D	11.56	33.120 D	25.214	276.4	0.235	5.53	D240.9 D	89.5						0.13	0.17	76	
100	10.68	10.67	33.358	25.558	244.2	0.301	4.64	202.5	73.7						0.10	0.21	101	07
120	9.84	9.82	33.520 D	25.829	218.7	0.347	4.13	180.2	64.4						0.04	0.06	121	06
125 ISL	9.74 D	9.72	33.583 D	25.895	212.5	0.358	3.79	D165.1 D	59.1						0.03	0.07	126	
140	9.53	9.52	33.746 D	26.056	197.5	0.389	2.96	129.2	46.0	24.8	1.80	23.3	0.00	0.00	0.02	0.08	141	05
150 ISL	9.39 D	9.38	33.799 D	26.121	191.6	0.408	2.81	D122.2 D	43.5						0.02	0.08	151	
200 ISL	8.78 D	8.76	33.947 D	26.335	172.1	0.500	2.51	D109.1 D	38.4						0.02	0.09	202	
201	8.79	8.77	33.960 D	26.344	171.3	0.502	2.51	109.8	38.5						0.02	0.09	203	04
250 ISL	8.39 D	8.36	34.064 D	26.489	158.4	0.583	1.80	D 78.1 D	27.2								252	
270	8.26	8.23	34.095 D	26.533	154.6	0.615	1.64	71.4	24.8								272	03
300 ISL	7.81 D	7.78	34.095 D	26.600	148.5	0.661	1.57	D 68.4 D	23.5								302	
380	6.74	6.70	34.061 D	26.725	137.2	0.776	1.53	66.9	22.4								383	02
400 ISL	6.34 D	6.31	34.031 D	26.753	134.5	0.803	1.58	D 68.6 D	22.8								403	
500 ISL	5.65 D	5.61	34.116 D	26.907	120.6	0.932	0.81	D 35.4 D	11.6								504	
515	5.53	5.49	34.124	26.928	118.7	0.946	0.73	31.8	10.3	77.6	2.96	39.7	0.00	0.00			520	01

A) SELECTED NUTRIENTS DRAWN FROZEN AND RUN LATER FOR J.CRAIG VENTER INSTITUTE.
A) SELECTED NUTRIENTS DRAWN FROZEN AND RUN LATER FOR J.CRAIG VENTER INSTITUTE.
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 1704 — 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	19/04/2017	0000 UTC	4100 m	260 08 kn	220 04 09	1	1020.5 mb	16.8 C	15.2 C		1/8	CI	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	14.83	14.83	32.831	24.337	357.9	0.000	6.00	262.2	103.7						0.15	0.05	0	
2	14.83	14.83	32.831	24.338	357.9	0.007	6.00	262.2	103.7						0.15	0.05	2	12
10	14.11	14.11	32.863 D	24.515	341.3	0.032	6.03	263.7	102.8						0.15	0.04	10	11
20	14.03	14.03	32.898 D	24.558	337.5	0.066	6.04	264.1	102.8						0.20	0.08	20	10
30 ISL	14.05 D	14.05	33.001 D	24.634	330.6	0.100	6.05	263.8	103.1						0.30	0.13	30	
50	13.38	13.38	32.989 D	24.763	318.9	0.165	6.07	265.2	101.9						0.49	0.24	50	09
70	12.33	12.32	33.058 D	25.022	294.6	0.227	5.76	251.9	94.7						0.33	0.22	71	08
75 ISL	12.33 D	12.32	33.120 D	25.072	290.0	0.242	5.51	D240.1	D 90.6						0.30	0.21	76	
100	11.32	11.30	33.292	25.394	259.9	0.312	4.80	209.9	77.4						0.13	0.16	101	07
120	10.55	10.53	33.487 D	25.683	232.8	0.360	3.90	170.5	61.9						0.06	0.26	121	06
125 ISL	10.35 D	10.33	33.544 D	25.762	225.3	0.372	3.57	D155.5	D 56.4						0.05	0.23	126	
140	9.90	9.88	33.626 D	25.902	212.3	0.405	3.35	146.4	52.5						0.03	0.12	141	05
150 ISL	9.72 D	9.70	33.682 D	25.976	205.4	0.426	3.18	D138.4	D 49.6						0.02	0.11	151	
200	8.79	8.76	33.891 D	26.291	176.3	0.522	2.97	129.9	45.5						0.01	0.07	202	04
250 ISL	7.98 D	7.95	33.975 D	26.479	159.1	0.607	2.73	D118.9	D 41.1								252	
270	7.85	7.82	34.019 D	26.533	154.2	0.639	2.34	102.1	35.0								272	03
300 ISL	7.54 D	7.51	34.038 D	26.594	148.8	0.684	2.02	D 87.8	D 30.0								302	
380	6.30	6.27	34.045 D	26.768	132.7	0.798	1.56	68.1	22.5								383	02
400 ISL	6.14 D	6.10	34.058 D	26.800	129.9	0.825	1.26	D 54.9	D 18.2								403	
500 ISL	5.45 D	5.41	34.145 D	26.954	115.9	0.949	0.63	D 27.3	D 8.9								504	
515	5.38	5.33	34.154	26.971	114.5	0.962	0.57	24.7	8.0								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 1704 — 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 2.5 N	125 20.1 W	19/04/2017	0520 UTC	4484 m	200 09 kn			1022.3 mb	15.7 C	14.7 C				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	15.44	15.44	33.266	24.541	338.5	0.000	5.81	D253.0	D101.9						0.09	0.02	0	
2	15.44	15.44	33.266	24.541	338.6	0.007	5.81	D253.0	D101.9						0.09	0.02	2	12
10	15.43	15.43	33.267 D	24.544	338.6	0.031	5.83	254.6	102.2	2.0A	0.22A	0.0A	0.00A	0.00A	0.08	0.03	10	11
20 ISL	15.10 D	15.10	33.299 D	24.642	329.5	0.064	5.80	D252.8	D101.1						0.09	0.02	20	
26	15.09	15.09	33.302 D	24.645	329.4	0.084	5.81	254.0	101.3						0.09	0.02	26	10
30 ISL	15.09 D	15.08	33.301 D	24.647	329.4	0.098	5.80	D252.7	D101.0						0.13	0.03	30	
50 ISL	14.14 D	14.14	33.089 D	24.684	326.4	0.164	5.95	D259.5	D101.7						0.33	0.06	50	
70	13.18	13.17	33.110 D	24.899	306.4	0.227	6.03	263.6	100.9	2.1	0.25	0.1	0.00	0.00	0.52	0.09	71	09
75 ISL	12.76 D	12.75	33.101 D	24.973	299.4	0.243	6.02	D262.3	D 99.9						0.45	0.12	76	
87	12.12	12.10	33.035 D	25.046	292.7	0.279	6.04	263.9	98.8						0.29	0.22	88	08
100	12.10	12.09	33.124	25.119	286.2	0.317	5.87	256.6	96.1						0.23	0.16	101	07
125 ISL	11.19 D	11.18	33.362 D	25.472	253.1	0.384	5.20	D226.6	D 83.6						0.14	0.08	126	
126	11.18	11.16	33.365 D	25.477	252.7	0.386	5.23	228.4	84.0						0.13	0.08	127	06
140	10.39	10.38	33.430 D	25.665	234.9	0.421	4.80	209.7	75.8	11.3	1.01	12.4	0.03	0.00	0.11	0.03	141	05
150 ISL	10.03 D	10.02	33.501 D	25.782	224.0	0.444	4.32	D188.3	D 67.8						0.09	0.03	151	
200	8.58	8.56	33.853 D	26.293	176.0	0.545	3.71	161.9	56.4						0.00	0.03	202	04
250 ISL	7.81 D	7.78	33.949 D	26.484	158.5	0.629	3.10	D134.7	D 46.3								252	
270	7.51	7.48	33.963 D	26.539	153.5	0.661	3.00	131.2	44.6								272	03
300 ISL	7.13 D	7.10	33.974 D	26.601	147.9	0.706	2.64	D114.9	D 38.9								302	
380	6.20	6.16	33.998 D	26.745	134.8	0.820	1.76	76.7	25.3								383	02
400 ISL	5.97 D	5.94	34.006 D	26.780	131.6	0.847	1.55	D 67.6	D 22.3								403	
500 ISL	5.24 D	5.20	34.110 D	26.951	115.9	0.972	0.73	D 31.8	D 10.3								504	
515	5.15	5.11	34.118	26.969	114.4	0.985	0.69	30.2	9.7	83.5	3.01	40.9	0.00	0.00			519	01

A) SELECTED NUTRIENTS DRAWN FROZEN AND RUN LATER FOR J.CRAIG VENTER INSTITUTE.
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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 1704 — 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 46.5 N	122 3.2 W	15/04/2017	2127 UTC	406 m	300 12 kn	300 04 07	1	1016.8 mb	12.5 C	10.3 C		6/8	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	12.62	12.62	33.296	25.148	280.7	0.000	6.04	263.8	100.1						1.18	0.39	0	
2	12.62	12.62	33.296	25.148	280.8	0.006	6.04	263.8	100.1						1.18	0.39	2	12
10	12.16	12.15	33.296 D	25.237	272.5	0.025	6.07	265.0	99.5	12.1A	0.94A	9.2A	0.18A	0.40A	1.36	0.51	10	11
10	12.16	12.15	33.296 D	25.234	272.7	0.025	6.05	264.3	99.3	12.1	0.91	9.3	0.18	0.39	1.34	0.41	10	01
18	11.81	11.80	33.338 D	25.336	263.3	0.047	5.65	246.6	92.0	13.3	1.04	11.3	0.24	0.24	2.70	0.94	18	10
20 ISL	11.53 D	11.53	33.405 D	25.440	253.5	0.052	5.32	D231.6	D 86.1						2.55	0.89	20	
30 ISL	10.43 D	10.43	33.646 D	25.823	217.2	0.076	4.22	D183.6	D 66.8						1.79	0.68	30	
50	10.01	10.00	33.717 D	25.951	205.5	0.118	3.26	D142.0	D 51.2	24.2	1.78	22.6	0.36	0.00	0.26	0.26	50	09
50	10.01	10.00	33.717 D	25.947	205.8	0.118	3.32	145.0	52.2	24.1	1.78	22.6	0.35	0.00	0.28	0.28	50	02
70	9.45	9.44	33.839 D	26.140	187.9	0.158	2.91	127.0	45.1						0.10	0.20	71	08
75 ISL	9.37 D	9.36	33.857 D	26.167	185.5	0.167	2.70	D117.4	D 41.8						0.09	0.20	76	
100	8.99	8.98	33.965	26.312	172.2	0.214	2.15	94.0	33.1						0.07	0.21	101	07
119	8.88	8.87	33.994 D	26.354	168.6	0.245	2.03	88.4	31.1						0.02	0.15	120	06
125 ISL	8.81 D	8.79	34.008 D	26.376	166.6	0.255	1.94	D 84.6	D 29.8						0.03	0.17	126	
140	8.68	8.67	34.028 D	26.412	163.6	0.280	1.77	77.3	27.1						0.05	0.22	141	05
150 ISL	8.63 D	8.61	34.051 D	26.438	161.2	0.297	1.69	D 73.4	D 25.7						0.04	0.20	151	
200	8.29	8.26	34.115 D	26.543	152.2	0.376	1.45	63.1	21.9						0.02	0.08	202	04
250 ISL	7.70 D	7.67	34.159 D	26.666	141.3	0.450	1.10	D 47.6	D 16.4								252	
271	7.57	7.55	34.157	26.682	140.1	0.478	1.08	46.9	16.0								273	03

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RV BELL M SHIMADA — CALCOFI CRUISE 1704 — 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 37.1 N	122 24.9 W	18/04/2017	0142	UTC	2848 m	310 01 kn	230 03 06	2	1017.0 mb	12.1 C	11.2 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	12.40	12.40	33.398	25.270	269.1	0.000	7.61	332.5	125.6						12.02	1.79	0	
1	12.40	12.40	33.398	25.270	269.1	0.003	7.61	332.5	125.6						12.02	1.79	1	12
10	12.27	12.27	33.413 D	25.307	265.8	0.026	7.57	330.7	124.5	7.7A	0.66A	3.6A	0.20A	0.08A	12.31	1.86	10	11
20	11.83	11.83	33.471 D	25.435	253.9	0.052	6.16	268.9	100.4	12.8	1.00	10.0	0.22	0.29	7.78	1.12	20	10
30 ISL	11.78 D	11.77	33.479 D	25.452	252.6	0.077	5.88	D256.0	D 95.7						5.34	0.93	30	
50	9.98	9.98	33.699 D	25.941	206.5	0.124	3.21	140.3	50.4						0.45	0.55	50	09
70	9.72	9.71	33.769 D	26.041	197.4	0.164	2.96	129.3	46.2						0.15	0.47	71	08
75 ISL	9.63 D	9.62	33.800 D	26.080	193.8	0.174	2.85	D123.9	D 44.3						0.14	0.42	76	
100	9.36	9.35	33.854	26.167	186.1	0.222	2.56	111.9	39.7						0.10	0.21	101	07
120	9.23	9.22	33.902 D	26.226	180.9	0.259	2.42	105.4	37.3						0.08	0.42	121	06
125 ISL	9.21 D	9.20	33.907 D	26.234	180.3	0.268	2.36	D102.6	D 36.4						0.07	0.38	126	
140	9.01	8.99	33.928 D	26.283	175.9	0.295	2.42	105.6	37.2	31.5	2.03	26.4	0.07	0.00	0.05	0.27	141	05
150 ISL	8.86 D	8.84	33.943 D	26.318	172.7	0.312	2.49	D108.2	D 38.1						0.06	0.54	151	
200	8.59	8.57	34.065 D	26.458	160.4	0.396	1.67	72.7	25.4						0.11	1.89	202	04
250 ISL	8.06 D	8.04	34.141 D	26.598	147.9	0.474	1.25	D 54.4	D 18.8								252	
270	7.65	7.63	34.170 D	26.681	140.2	0.503	1.02	44.4	15.2								272	03
300 ISL	7.26 D	7.23	34.196 D	26.758	133.2	0.545	0.81	D 35.4	D 12.0								302	
380	6.83	6.79	34.213 D	26.833	127.2	0.650	0.67	29.2	9.8								383	02
400 ISL	6.69 D	6.66	34.217 D	26.854	125.4	0.675	0.62	D 27.1	D 9.1								403	
500 ISL	6.30 D	6.25	34.256 D	26.938	118.6	0.798	0.42	D 18.1	D 6.0								504	
515	6.21	6.17	34.270	26.961	116.6	0.811	0.38	16.7	5.5	76.5	3.05	38.2	0.00	0.00			520	01

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RV BELL M SHIMADA — CALCOFI CRUISE 1704 — 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 27.2 N	122 46.3 W	17/04/2017	2103	UTC	2896 m	170 01 kn	230 03 06	2	1017.4 mb	13.9 C	12.8 C		8/8	AS	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	12.98	12.98	32.885	24.759	317.7	0.000	6.35	277.6	105.8						1.13	0.31	0	
2	12.98	12.98	32.885	24.759	317.8	0.006	6.35	277.6	105.8						1.13	0.31	2	12
10	12.90	12.90	32.885 D	24.775	316.4	0.029	6.32	D275.6	D105.1	4.0A	0.35A	0.6A	0.06A	0.09A	1.22	0.35	10	11
20	12.86	12.86	32.884 D	24.782	316.1	0.061	6.35	277.6	105.5	3.5	0.33	0.5	0.06	0.08	1.25	0.37	20	10
30 ISL	12.83 D	12.83	32.887 D	24.792	315.4	0.092	6.23	D271.5	D103.4						0.95	0.36	30	
50	12.11	12.10	33.148 D	25.133	283.5	0.153	5.69	248.7	93.2						0.36	0.33	50	09
70	11.08	11.07	33.332 D	25.466	252.2	0.207	4.84	211.6	77.6						0.19	0.15	71	08
75 ISL	10.80 D	10.79	33.375 D	25.549	244.5	0.219	4.60	D200.1	D 73.3						0.16	0.14	76	
100	9.86	9.85	33.517	25.822	218.9	0.279	4.15	181.1	64.8						0.05	0.06	101	07
120	9.42	9.40	33.758 D	26.083	194.5	0.319	2.98	130.2	46.2						0.05	0.14	121	06
125 ISL	9.32 D	9.30	33.812 D	26.142	189.0	0.329	2.62	D113.9	D 40.5						0.04	0.12	126	
140	9.02	9.01	33.906 D	26.263	177.8	0.357	2.49	108.6	38.2	31.1	1.99	26.2	0.00	0.00	0.02	0.07	141	05
150 ISL	8.85 D	8.83	33.937 D	26.315	173.0	0.374	2.43	D105.6	D 37.2						0.02	0.08	151	
200	8.22	8.20	34.027 D	26.483	157.9	0.458	2.18	95.1	32.9						0.01	0.09	202	04
250 ISL	7.89 D	7.87	34.125 D	26.610	146.6	0.534	1.35	D 58.7	D 20.3								252	
270	7.63	7.61	34.130 D	26.652	142.9	0.564	1.24	D 54.1	D 18.6								272	03
300 ISL	7.24 D	7.21	34.123 D	26.703	138.4	0.606	1.20	D 52.2	D 17.8								302	
381	6.29	6.26	34.113 D	26.823	127.5	0.715	1.00	43.8	14.5								384	02
400 ISL	6.14 D	6.10	34.125 D	26.853	124.8	0.739	0.87	D 37.9	D 12.6								403	
500 ISL	5.26 D	5.22	34.154 D	26.984	112.9	0.859	0.55	D 24.1	D 7.8								504	
515	5.18	5.14	34.160	26.998	111.7	0.872	0.52	22.9	7.4	86.0	3.05	40.7	0.00	0.00			520	01

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RV BELL M SHIMADA — CALCOFI CRUISE 1704 — 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 7.3 N	123 28.9 W	17/04/2017	1558	UTC	3516 m	150 03 kn	220 03 06	2	1016.8 mb	14.5 C	13.9 C		8/8	SC	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	13.93	13.93	32.841	24.534	339.2	0.000	6.00	262.4	101.9						0.24	0.02	0	
2	13.93	13.93	32.841	24.534	339.2	0.007	6.00	262.4	101.9						0.24	0.02	2	12
10	13.94	13.93	32.861 D	24.549	338.0	0.031	6.03	263.4	102.3						0.25	0.05	10	11
20 ISL	13.92 D	13.92	32.999 D	24.660	327.8	0.064	6.03	262.8	102.4						0.28	0.05	20	
25	13.87	13.87	33.032 D	24.696	324.5	0.081	6.03	263.5	102.4						0.30	0.05	25	10
30 ISL	13.84 D	13.83	33.049 D	24.715	322.8	0.097	6.03	262.8	102.3						0.31	0.06	30	
50 ISL	13.77 D	13.76	33.039 D	24.724	322.6	0.162	6.02	D262.3	D101.9						0.36	0.12	50	
62	12.90	12.89	33.081 D	24.931	303.2	0.200	6.03	263.4	100.3						0.39	0.15	63	09
75 ISL	12.29 D	12.28	33.206 D	25.145	283.1	0.238	5.61	D244.6	D 92.3						0.35	0.17	76	
87	11.64	11.63	33.271 D	25.318	266.8	0.272	5.27	230.0	85.4						0.31	0.19	88	08
100	11.02	11.01	33.293	25.448	254.7	0.307	5.06	221.1	81.0						0.24	0.12	101	07
125	10.23	10.22	33.593 D	25.819	219.9	0.365	3.33	145.6	52.6						0.04	0.09	126	06
140	9.91	9.89	33.686 D	25.947	208.0	0.398	2.99	130.5	46.8						0.02	0.07	141	05
150 ISL	9.83 D	9.81	33.701 D	25.973	205.7	0.418	2.90	D126.0	D 45.3						0.02	0.07	151	
200	9.13	9.11	33.970 D	26.298	175.8	0.515	2.09	91.2	32.2						0.00	0.04	202	04
250 ISL	8.56 D	8.53	34.084 D	26.479	159.5	0.599	1.66	D 72.1	D 25.2								252	
270	8.30	8.27	34.082 D	26.517	156.1	0.631	1.67	72.9	25.3								272	03
300 ISL	8.05 D	8.02	34.123 D	26.586	150.0	0.677	1.41	D 61.3	D 21.2								302	
380	7.28	7.24	34.165 D	26.733	137.0	0.793	0.96	42.0	14.2								383	02
400 ISL	6.81 D	6.77	34.132 D	26.772	133.2	0.820	1.02	D 44.2	D 14.9								403	
500 ISL	5.88 D	5.83	34.188 D	26.937	118.1	0.947	0.56	D 24.2	D 8.0								504	
515	5.64	5.59	34.167 D	26.950	116.8	0.965	0.57	24.9	8.1								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 1704 — 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 47.7 N	124 11.8 W	17/04/2017	1040 UTC	3903 m	240 05 kn			1015.3 mb	14.9 C	13.9 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	13.56	13.56	32.739	24.530	339.5	0.000	6.14	268.4	103.4						0.20	0.04	0	
2	13.56	13.56	32.739	24.531	339.5	0.007	6.14	268.4	103.4						0.20	0.04	2	12
10	13.57	13.57	32.733 D	24.524	340.4	0.031	6.13	268.1	103.3	1.0A	0.24A	0.1A	0.00A	0.00A	0.18	0.05	10	11
20	13.58	13.58	32.734 D	24.524	340.7	0.065	6.13	267.9	103.3						0.18	0.06	20	10
30 ISL	13.58 D	13.58	32.734 D	24.525	340.9	0.100	6.11	D266.3	D102.9						0.26	0.07	30	
50 ISL	13.72 D	13.72	33.083 D	24.767	318.5	0.166	5.89	D256.9	D 99.8						0.43	0.08	50	
56	13.36	13.35	33.068 D	24.829	312.7	0.185	5.90	257.6	99.0	2.1	0.35	0.3	0.05	0.16	0.48	0.08	56	09
70	12.22	12.21	33.051 D	25.038	293.1	0.228	5.70	248.9	93.4						0.20	0.13	71	08
75 ISL	12.23 D	12.22	33.167 D	25.126	284.9	0.242	5.35	D233.2	D 87.9						0.21	0.15	76	
100	10.65	10.64	33.372	25.573	242.7	0.310	4.40	192.3	69.9						0.26	0.23	101	07
120	9.86	9.85	33.583 D	25.874	214.4	0.355	3.51	153.4	54.9						0.07	0.08	121	06
125 ISL	9.73 D	9.72	33.619 D	25.924	209.8	0.365	3.34	D145.4	D 52.1						0.06	0.08	126	
141	9.27	9.25	33.718 D	26.077	195.5	0.398	3.54	154.5	54.6	22.7	1.61	21.4	0.00	0.00	0.02	0.07	142	05
150 ISL	9.13 D	9.12	33.771 D	26.140	189.6	0.415	3.31	D144.2	D 51.0						0.01	0.07	151	
200	8.53	8.51	33.940 D	26.367	168.9	0.506	2.96	129.3	45.0						0.01	0.08	202	04
250 ISL	7.84 D	7.81	34.003 D	26.522	154.9	0.587	2.50	D108.7	D 37.4								252	
271	7.42	7.39	33.997 D	26.579	149.7	0.620	2.40	104.9	35.6								273	03
300 ISL	7.26 D	7.24	34.048 D	26.640	144.3	0.663	1.93	D 83.9	D 28.5								302	
381	6.37	6.34	34.082 D	26.789	130.9	0.775	1.23	53.6	17.8								384	02
400 ISL	6.03 D	6.00	34.059 D	26.814	128.4	0.800	1.22	D 52.8	D 17.4								403	
500 ISL	5.63 D	5.59	34.189 D	26.969	114.8	0.923	0.48	D 21.0	D 6.9								504	
516	5.49	5.44	34.187	26.984	113.4	0.937	0.46	19.9	6.5	81.2	3.05	40.6	0.00	0.00			520	01

A) SELECTED NUTRIENTS DRAWN FROZEN AND RUN LATER FOR J.CRAIG VENTER INSTITUTE.
A) SELECTED NUTRIENTS DRAWN FROZEN AND RUN LATER FOR J.CRAIG VENTER INSTITUTE.
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 1704 — 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 26.9 N	124 54.0 W	17/04/2017	0513 UTC	4337 m	270 03 kn			1015.6 mb	14.2 C	12.5 C				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	14.06	14.06	33.064	24.680	325.2	0.000	5.99	261.6	102.0						0.12	0.00	0	
2	14.06	14.06	33.064	24.680	325.3	0.007	5.99	261.6	102.0						0.12	0.00	2	12
10	14.04	14.04	33.061 D	24.681	325.4	0.030	5.96	260.6	101.6	1.8A	0.26A	0.1A	0.00A	0.00A	0.15	0.01	10	11
20 ISL	14.02 D	14.02	33.060 D	24.686	325.3	0.062	5.98	D260.7	D101.8						0.14	0.02	20	
25	13.99	13.99	33.059 D	24.691	325.0	0.079	5.99	261.8	102.0						0.14	0.02	25	10
30 ISL	13.96 D	13.96	33.057 D	24.696	324.6	0.095	5.98	D260.5	D101.6						0.17	0.03	30	
50 ISL	13.68 D	13.67	33.042 D	24.744	320.7	0.160	6.01	D262.0	D101.6						0.29	0.08	50	
75	13.06	13.04	33.020 D	24.853	311.0	0.240	5.99	D261.0	D 99.9	1.8	0.27	0.1	0.00	0.00	0.45	0.14	76	09
87	12.27	12.26	33.130 D	25.091	288.5	0.276	5.83	254.8	95.8						0.34	0.21	88	08
100	11.17	11.15	33.253 D	25.390	260.2	0.312	5.27	230.0	84.5						0.18	0.09	101	07
125	10.14	10.13	33.473 D	25.741	227.2	0.373	4.57	199.4	71.8						0.05	0.06	126	06
140	9.73	9.71	33.553 D	25.873	215.0	0.407	4.10	179.2	64.0	18.0	1.39	18.2	0.00	0.00	0.02	0.04	141	05
150 ISL	9.28 D	9.26	33.674 D	26.042	199.0	0.428	3.92	D170.6	D 60.5						0.02	0.04	151	
200	8.53	8.51	33.903 D	26.339	171.6	0.521	3.35	146.2	50.9						0.01	0.02	202	04
250 ISL	7.75 D	7.73	33.962 D	26.502	156.7	0.604	2.94	D128.0	D 44.0								252	
270	7.50	7.47	33.972 D	26.547	152.7	0.635	2.77	120.9	41.1								272	03
300 ISL	7.05 D	7.02	33.990 D	26.625	145.6	0.680	2.41	D104.8	D 35.4								302	
380	6.38	6.34	34.058 D	26.769	132.7	0.792	1.40	61.2	20.3								383	02
400 ISL	6.48 D	6.44	34.121 D	26.806	129.6	0.819	1.01	D 44.0	D 14.7								403	
500 ISL	5.56 D	5.52	34.162 D	26.955	116.0	0.943	0.60	D 26.0	D 8.5								504	
515	5.38	5.34	34.162	26.976	114.0	0.955	0.59	25.6	8.3	79.3	3.04	40.7	0.00	0.00			519	01

A) SELECTED NUTRIENTS DRAWN FROZEN AND RUN LATER FOR J.CRAIG VENTER INSTITUTE.
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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 1704 — 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 10.9 N	121 43.7 W	16/04/2017	0323 UTC	269 m	120 07 kn			1014.3 mb	12.1 C	10.5 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	11.24	11.24	33.553	25.606	237.2	0.000	4.87	212.5	78.4						0.65	0.24	0	
2	11.24	11.24	33.553	25.606	237.2	0.005	4.87	212.5	78.4						0.65	0.24	2	10
10	10.73	10.72	33.582 D	25.721	226.4	0.021	4.35	190.0	69.4	20.0A	1.50A	18.3A	0.30A	0.00A	0.59	0.29	10	09
20	10.41	10.41	33.638 D	25.820	217.3	0.043	4.06	177.3	64.3	21.8	1.60	20.1	0.34	0.06	0.57	0.38	20	08
30 ISL	10.10 D	10.09	33.685 D	25.910	208.9	0.065	3.42	D148.7	D 53.7						0.45	0.33	30	
50	9.68	9.68	33.769 D	26.046	196.4	0.106	3.06	133.7	47.7						0.23	0.24	50	07
70	9.56	9.55	33.796 D	26.089	192.9	0.145	2.92	127.6	45.5						0.17	0.28	71	06
75 ISL	9.51 D	9.50	33.803 D	26.102	191.7	0.155	2.87	D124.9	D 44.6						0.16	0.26	76	
100	9.21	9.20	33.884	26.215	181.5	0.202	2.55	111.3	39.4						0.07	0.17	101	05
120	8.95	8.93	33.947 D	26.306	173.2	0.237	2.40	104.6	36.8						0.06	0.10	121	04
125 ISL	8.91 D	8.90	33.955 D	26.318	172.2	0.246	2.32	D101.0	D 35.6								126	
139	8.86	8.85	33.978 D	26.344	170.0	0.270	2.23	97.4	34.2	34.7	2.17	28.5	0.16	0.00			140	03
150 ISL	8.80 D	8.78	34.001 D	26.373	167.5	0.289	2.03	D 88.4	D 31.1								151	
199	8.30	8.28	34.110 D	26.537	152.8	0.368	1.41	61.4	21.3								201	02
200 ISL	8.29 D	8.27	34.111 D	26.538	152.6	0.369	1.37	D 59.6	D 20.7								202	
250	8.16	8.14	34.128	26.573	150.4	0.445	1.30	56.9	19.7								252	01

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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 1704 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 2.8 N	122 1.0 W	16/04/2017	0634 UTC	1291 m	300 09 kn			1015.4 mb	11.8 C	10.7 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	12.26	12.26	33.366	25.271	269.0	0.000	5.69	248.5	93.6						0.89	0.35	0	
2	12.26	12.26	33.366	25.271	269.1	0.005	5.69	248.5	93.6						0.89	0.35	2	12
10	12.27	12.26	33.368 D	25.272	269.1	0.025	5.70	249.0	93.8						0.99	0.31	10	11
20	12.04	12.04	33.380 D	25.324	264.5	0.051	5.60	244.6	91.7						1.15	0.25	20	10
30 ISL	11.61 D	11.61	33.429 D	25.443	253.4	0.077	5.23	D227.8 D	84.9						0.82	0.26	30	
50	9.92	9.92	33.615 D	25.886	211.7	0.124	3.34	145.6	52.2						0.17	0.29	50	09
70	9.38	9.37	33.750 D	26.081	193.6	0.165	3.06	133.5	47.3						0.06	0.36	71	08
75 ISL	9.35 D	9.34	33.762 D	26.096	192.2	0.175	3.03	D131.7 D	46.8						0.06	0.35	76	
100 ISL	9.24 D	9.23	33.867 D	26.197	183.2	0.222	2.53	D109.9 D	39.0						0.05	0.26	101	
101	9.23	9.22	33.867	26.198	183.2	0.225	2.55	111.2	39.3						0.05	0.25	102	07
120	9.09	9.07	33.936 D	26.276	176.2	0.258	2.26	98.6	34.8						0.02	0.24	121	06
125 ISL	9.03 D	9.02	33.945 D	26.292	174.7	0.267	2.24	D 97.6 D	34.5						0.02	0.23	126	
141	8.86	8.85	33.984 D	26.349	169.6	0.295	2.17	94.8	33.3						0.02	0.21	142	05
150 ISL	8.76 D	8.75	34.002 D	26.379	166.9	0.310	2.07	D 89.9 D	31.6						0.02	0.20	151	
200	8.38	8.36	34.081 D	26.501	156.2	0.392	1.63	71.2	24.7						0.02	0.17	202	04
250 ISL	7.85 D	7.83	34.115 D	26.609	146.7	0.468	1.39	D 60.5 D	20.9								252	
271	7.68	7.66	34.135 D	26.649	143.2	0.499	1.26	55.0	18.8								273	03
300 ISL	7.31 D	7.28	34.140 D	26.706	138.1	0.540	1.10	D 47.7 D	16.2								302	
381	6.66	6.63	34.196 D	26.841	126.2	0.648	0.65	28.3	9.5								384	02
400 ISL	6.55 D	6.51	34.214 D	26.870	123.6	0.672	0.57	D 25.0 D	8.4								403	
500 ISL	6.04 D	6.00	34.287 D	26.995	112.9	0.791	0.33	D 14.4 D	4.8								504	
516	5.93	5.89	34.299	27.018	110.8	0.805	0.30	12.9	4.3								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 1704 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 52.8 N	122 22.1 W	16/04/2017	1000 UTC	3020 m	260 04 kn			1014.8 mb	13.0 C	11.3 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	12.76	12.76	33.031	24.915	302.8	0.000	6.37	278.3	105.7						2.07	0.68	0	
2	12.76	12.76	33.031	24.915	302.9	0.006	6.37	278.3	105.7						2.07	0.68	2	12
10	12.76	12.76	33.032 D	24.916	303.0	0.028	6.34	277.1	105.2						2.19	0.65	10	11
20	12.68	12.68	33.020 D	24.924	302.6	0.058	6.31	275.5	104.4						2.43	0.68	20	10
30 ISL	12.32 D	12.32	33.058 D	25.022	293.5	0.088	6.12	D266.8 D	100.6						1.75	0.52	30	
50	11.03	11.02	33.301 D	25.451	253.1	0.143	4.87	212.7	78.0						0.39	0.21	50	09
70	10.41	10.40	33.509 D	25.722	227.8	0.191	4.43	193.3	70.0						0.39	0.23	71	08
75 ISL	10.32 D	10.31	33.529 D	25.753	224.9	0.203	4.26	D185.5 D	67.3						0.34	0.23	76	
100	9.80	9.79	33.626	25.917	209.9	0.259	3.32	144.7	51.8						0.08	0.22	101	07
121	9.27	9.25	33.770 D	26.117	191.2	0.300	2.92	127.7	45.2						0.05	0.19	122	06
125 ISL	9.06 D	9.04	33.802 D	26.176	185.7	0.308	3.01	D131.0 D	46.3						0.05	0.19	126	
140	8.56	8.54	33.877 D	26.312	172.9	0.335	3.54	154.5	53.8						0.02	0.16	141	05
150 ISL	8.65 D	8.64	33.969 D	26.370	167.7	0.352	2.48	D107.9 D	37.8						0.02	0.15	151	
200	8.22	8.20	34.094 D	26.536	152.9	0.433	1.60	69.8	24.2						0.02	0.10	202	04
250 ISL	7.78 D	7.76	34.132 D	26.632	144.5	0.508	1.29	D 56.1 D	19.3								252	
272	7.70	7.67	34.173 D	26.677	140.6	0.539	1.03	45.1	15.4								274	03
300 ISL	7.47 D	7.44	34.188 D	26.721	136.8	0.579	0.90	D 38.9 D	13.3								302	
380	6.82	6.79	34.219 D	26.838	126.7	0.685	0.61	26.4	8.9								383	02
400 ISL	6.64 D	6.61	34.234 D	26.874	123.4	0.710	0.53	D 22.8 D	7.7								403	
500 ISL	6.04 D	6.00	34.284 D	26.993	113.1	0.830	0.32	D 14.1 D	4.7								504	
516	5.97	5.93	34.297	27.012	111.4	0.844	0.32	13.8	4.6								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 1704 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 4.1 W	16/04/2017	1517 UTC	3779 m	180 13 kn	220 03 06	2	1014.5 mb	13.9 C	12.0 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	13.49	13.49	32.941 D	24.701	323.2	0.000	6.17	269.6	103.9						0.57	0.10	0	
2	13.49	13.49	32.941 D	24.701	323.3	0.003	6.17	269.6	103.9						0.57	0.10	2	12
10	13.49	13.49	32.942 D	24.703	323.4	0.029	6.17	269.4	103.8						0.63	0.03	10	11
20 ISL	13.56 D	13.56	32.967 D	24.707	323.2	0.062	6.08	D265.0 D	102.5						0.60	0.05	20	
25	13.61	13.60	32.980 D	24.709	323.2	0.078	6.07	265.2	102.4						0.59	0.05	25	10
30 ISL	13.64 D	13.64	32.993 D	24.712	323.1	0.094	6.03	D262.8 D	101.8						0.58	0.08	30	
50 ISL	13.08 D	13.07	33.165 D	24.959	300.1	0.157	5.76	D251.2 D	96.3						0.54	0.17	50	
62	12.56	12.55	33.230 D	25.111	286.0	0.193	5.56	243.0	92.0						0.52	0.23	63	09
75 ISL	11.80 D	11.79	33.322 D	25.328	265.6	0.229	5.15	D224.1 D	83.8						0.36	0.17	76	
88	11.12	11.11	33.368 D	25.487	250.7	0.263	4.85	211.7	77.8						0.20	0.11	89	08
100 ISL	10.51 D	10.50	33.416 D	25.633	237.0	0.292	4.42	D192.3 D	70.0						0.12	0.07	101	
102	10.48	10.47	33.420 D	25.641	236.2	0.297	4.42	193.1	70.0						0.10	0.06	103	07
125	9.43	9.42	33.616 D	25.970	205.3	0.348	3.92	171.3	60.7						0.02	0.05	126	06
141	9.25	9.23	33.738 D	26.095	193.7	0.380	3.49	152.5	53.9						0.02	0.06	142	05
150 ISL	9.08 D	9.06	33.764 D	26.144	189.3	0.398	3.52	D153.1 D	54.1						0.02	0.06	151	
200 ISL	8.73 D	8.70	33.990 D	26.377	168.1	0.488	2.17	D 94.4 D	33.2						0.01	0.05	202	
202	8.65	8.63	33.980 D	26.381	167.7	0.491	2.34	102.2	35.7						0.01	0.05	204	04
250 ISL	8.10 D	8.07	34.064 D	26.532	154.1	0.569	1.85	D 80.4 D	27.8								252	
270	7.98	7.95	34.107 D	26.584	149.5	0.600	1.49	65.2	22.5								272	03
300 ISL	7.79 D	7.76	34.160 D	26.654	143.4	0.644	1.12	D 48.6 D	16.7								302	
380	6.21	6.18	34.041 D	26.777	131.8	0.755	1.45	63.5	21.0								383	02
400 ISL	6.07 D	6.04	34.059 D	26.809	128.9	0.781	1.25	D 54.3 D	18.0								403	
500 ISL	5.57 D	5.53	34.172 D	26.962	115.4	0.905	0.52	D 22.6 D	7.4								504	
516	5.48	5.43	34.176	26.976	114.2	0.919	0.50	21.8	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 1704 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 13.0 N	123 46.1 W	16/04/2017	2101	UTC	4018 m	180 21 kn	210 04 06	2	1014.0 mb	14.2 C	13.7 C		8/8	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	14.51	14.51	33.109	24.621	330.9	0.000	5.97	260.7	102.7						0.24	0.04	0	
2	14.51	14.51	33.109	24.621	330.9	0.007	5.97	260.7	102.7						0.24	0.04	2	12
10	14.51	14.50	33.105 D	24.619	331.4	0.030	5.96	260.3	102.5						0.25	0.05	10	11
20 ISL	14.50 D	14.50	33.105 D	24.619	331.6	0.063	5.96	260.0	102.6						0.25	0.05	20	
25	14.50	14.50	33.105 D	24.620	331.8	0.080	5.97	260.6	102.6						0.25	0.05	25	10
30 ISL	14.51 D	14.50	33.105 D	24.620	331.9	0.097	5.94	D259.0	D102.2						0.33	0.09	30	
50 ISL	14.03 D	14.03	33.144 D	24.750	320.1	0.163	5.98	D260.4	D101.8						0.63	0.24	50	
62	13.15	13.14	33.190 D	24.965	300.0	0.200	5.58	243.9	93.4						0.82	0.33	63	09
75 ISL	10.91 D	10.90	33.451 D	25.590	240.5	0.236	4.05	D176.5	D 64.8						0.48	0.22	76	
87	10.37	10.36	33.491 D	25.715	228.9	0.264	3.70	D161.2	D 58.5						0.16	0.11	88	08
100	9.90	9.89	33.584	25.867	214.6	0.294	3.51	153.1	54.8						0.03	0.09	101	07
125	9.32	9.31	33.715 D	26.065	196.3	0.345	3.35	146.3	51.8						0.01	0.06	126	06
140	8.98	8.96	33.786 D	26.176	186.0	0.374	3.43	149.9	52.7						0.01	0.05	141	05
150 ISL	8.84 D	8.82	33.825 D	26.229	181.1	0.392	3.35	D145.6	D 51.2						0.01	0.05	151	
200 ISL	8.30 D	8.27	33.977 D	26.432	162.7	0.479	2.67	D116.1	D 40.4						0.01	0.05	202	
201	8.23	8.21	33.971 D	26.438	162.1	0.480	2.75	120.0	41.5						0.01	0.05	203	04
250 ISL	7.44 D	7.42	33.998 D	26.575	149.6	0.557	2.40	D104.6	D 35.7								252	
272	7.17	7.15	33.996 D	26.611	146.5	0.590	2.27	98.9	33.4								274	03
300 ISL	6.81 D	6.78	34.009 D	26.672	140.9	0.631	1.99	D 86.4	D 29.1								302	
381	5.94	5.91	34.063 D	26.829	126.7	0.740	1.28	55.7	18.3								384	02
400 ISL	5.81 D	5.78	34.086 D	26.863	123.6	0.764	0.97	D 42.3	D 13.9								403	
500 ISL	5.52 D	5.48	34.209 D	26.997	112.0	0.883	0.42	D 18.1	D 5.9								504	
514	5.41	5.37	34.213	27.014	110.5	0.895	0.41	18.0	5.8								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 1704 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 52.7 N	124 28.9 W	15/04/2017	0004	UTC	4264 m	350 19 kn	360 06 05	1	1024.1 mb	13.6 C	10.7 C		3/8	SC	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	14.29	14.29	32.975	24.562	336.4	0.000	6.00	262.2	102.7						0.16	0.04	0	
2	14.29	14.29	32.975	24.562	336.5	0.007	6.00	262.2	102.7						0.16	0.04	2	13
10	14.28	14.28	32.961 D	24.554	337.6	0.031	6.01	262.5	102.8						0.16	0.04	10	12
20 ISL	14.27 D	14.26	32.963 D	24.560	337.3	0.064	6.00	261.6	102.6						0.17	0.04	20	
25	14.25	14.25	32.970 D	24.568	336.7	0.082	6.00	262.0	102.6						0.17	0.04	25	11
30 ISL	14.42 D	14.42	33.086 D	24.623	331.6	0.098	6.03	262.7	103.5						0.25	0.11	30	
50 ISL	13.45 D	13.45	32.960 D	24.726	322.3	0.164	6.11	D266.2	D102.7						0.56	0.41	50	
55	13.57	13.56	33.012 D	24.744	320.8	0.180	6.18	269.8	104.2						0.64	0.49	55	10
75 ISL	13.29 D	13.28	33.049 D	24.830	313.2	0.245	6.02	D262.5	D101.0						0.45	0.32	76	
87	12.49	12.47	33.061 D	24.996	297.6	0.282	5.78	252.5	95.3						0.34	0.22	88	08
100	11.90	11.89	33.119	25.152	283.0	0.320	5.43	237.3	88.5						0.19	0.19	101	07
125	10.66	10.64	33.499 D	25.673	233.8	0.384	3.77	164.4	59.9						0.05	0.10	126	06
140	9.65	9.63	33.571 D	25.900	212.4	0.418	4.01	175.0	62.4						0.01	0.04	141	05
150 ISL	9.44 D	9.43	33.622 D	25.974	205.5	0.439	3.97	D172.8	D 61.5						0.01	0.03	151	
200	8.65	8.63	33.893 D	26.313	174.1	0.535	3.20	139.5	48.7						0.00	0.02	202	04
250 ISL	7.96 D	7.94	33.995 D	26.498	157.3	0.618	2.65	D115.1	D 39.7								252	
271	7.43	7.41	33.969 D	26.554	152.1	0.651	2.78	121.2	41.2								273	03
300 ISL	7.03 D	7.00	33.986 D	26.623	145.7	0.695	2.40	D104.6	D 35.3								302	
380	6.55	6.51	34.115 D	26.792	130.7	0.806	1.05	45.7	15.2								383	02
400 ISL	6.46 D	6.42	34.121 D	26.809	129.3	0.832	0.97	D 42.2	D 14.1								403	
500 ISL	5.63 D	5.58	34.169 D	26.953	116.3	0.956	0.58	D 25.2	D 8.2								504	
516	5.53	5.49	34.171	26.966	115.2	0.971	0.55	24.0	7.8								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 1704 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 38.3 N	121 16.3 W	13/04/2017	1802	UTC	50 m	250 16 kn	290 03 08	5		13.0 C	12.0 C	10 m	5/8	CU	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	13.04	13.04	33.161	24.961	298.4	0.000	5.79	252.8	96.6	7.9	0.68	5.8	0.14	0.31	1.26	0.33	0	
2 A	13.04	13.04	33.161	24.962	298.5	0.006	5.79	252.8	96.6	7.9	0.68	5.8	0.14	0.31	1.26	0.33	2	08
6 A	12.58	12.58	33.249	25.120	283.5	0.018	5.62	245.5	93.0	10.9	0.86	8.9	0.20	0.33	1.41	0.51	6	07
9 A	12.37	12.36	33.300	25.201	275.9	0.026	5.54	242.0	91.3	12.3	0.96	10.5	0.22	0.39	1.32	0.61	9	06
10 ISL	12.35 D	12.35	33.299 D	25.203	275.8	0.026	5.52	D240.3	D 90.8	12.4	0.97	10.6	0.22	0.39	1.34	0.61	10	
15 A	12.26	12.26	33.308	25.227	273.6	0.043	5.50	240.4	90.5	12.6	0.99	11.0	0.23	0.39	1.44	0.62	15	04
15	12.26	12.26	33.314	25.231	273.2	0.043											15	05
20 ISL	12.06 D	12.05	33.392 D	25.331	263.8	0.053	5.39	D234.9	D 88.3	15.3	1.16	13.8	0.26	0.45	1.42	0.72	20	
22	11.99	11.98	33.431	25.374	259.8	0.061	5.34	233.1	87.3	16.4	1.23	15.0	0.28	0.48	1.41	0.76	22	03
28 A	11.15	11.15	33.580	25.644	234.2	0.076	4.45	194.5	71.6	20.2	1.47	18.9	0.32	0.49	0.85	0.58	28	02
30 ISL	11.15 D	11.14	33.587 D	25.651	233.6	0.078	4.45	D193.9	D 71.6	20.3	1.48	19.1	0.32	0.50	0.84	0.57	30	
35 A	11.09	11.08	33.599	25.671	231.8	0.092	4.38	191.4	70.4	20.5	1.50	19.5	0.32	0.53	0.81	0.56	35	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 1704 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 28.4 N	121 36.7 W	13/04/2017	2101	UTC	986 m	300 16 kn	290 03 07	1	1018.7 mb	14.8 C	12.7 C		6/8	SC	077

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	14.63	14.63	33.078	24.571	335.7	0.000	5.97	260.7	102.9	1.7	0.26	0.1	0.00	0.02	0.19	0.04	0	
2	14.63	14.63	33.078	24.571	335.7	0.007	5.97	260.7	102.9	1.7	0.26	0.1	0.00	0.00	0.19	0.04	2	12
10	14.61	14.61	33.075 D	24.574	335.7	0.031	5.97	260.9	103.0	1.8	0.26	0.1	0.00	0.00	0.23	0.04	10	11
20 ISL	14.46 D	14.46	33.061 D	24.594	334.1	0.064	5.99	D261.3	D103.0	1.7	0.27	0.1	0.00	0.00	0.30	0.05	20	
25	14.35	14.35	33.048 D	24.607	333.0	0.081	6.03	263.3	103.3	1.6	0.27	0.1	0.00	0.00	0.34	0.06	25	10
30 ISL	14.29 D	14.28	33.047 D	24.621	331.8	0.098	6.03	D262.7	D103.2	2.0	0.31	0.5	0.00	0.00	0.39	0.10	30	
50 ISL	13.75 D	13.74	33.049 D	24.735	321.5	0.164	6.05	D263.5	D102.4	3.5	0.48	2.4	0.00	0.00	0.59	0.28	50	
62	12.72	12.71	33.254 D	25.100	287.1	0.201	5.57	243.4	92.5	4.4	0.58	3.5	0.32	0.31	0.71	0.38	63	09
75 ISL	11.15 D	11.14	33.449 D	25.545	244.8	0.235	4.15	D180.9	D 66.7	10.8	1.01	10.7	0.18	0.00	0.38	0.24	76	
87	10.61	10.60	33.514 D	25.692	231.1	0.264	3.70	161.6	58.8	16.7	1.41	17.3	0.06	0.00	0.08	0.10	88	08
100	10.27	10.25	33.634	25.844	216.9	0.295	3.30	143.9	52.0	20.0	1.58	20.1	0.00	0.00	0.05	0.10	101	07
125	9.55	9.54	33.798 D	26.093	193.7	0.346	2.76	120.3	42.8	25.9	1.88	24.3	0.00	0.00	0.03	0.09	126	06
140	9.25	9.23	33.885 D	26.211	182.8	0.374	2.60	113.4	40.1	28.5	1.92	25.7	0.00	0.00	0.02	0.08	141	05
150 ISL	9.03 D	9.02	33.912 D	26.266	177.7	0.392	2.48	D107.8	D 38.1	30.2	1.97	26.4	0.00	0.00	0.02	0.08	151	
200 ISL	8.39 D	8.37	34.055 D	26.480	158.2	0.477	1.81	D 78.9	D 27.5	38.3	2.22	30.4	0.00	0.00	0.01	0.06	202	
201	8.39	8.37	34.054 D	26.479	158.3	0.479	1.86	81.3	28.2	38.4	2.23	30.4	0.00	0.00	0.01	0.06	203	04
250 ISL	8.02 D	7.99	34.109 D	26.579	149.7	0.555	1.47	D 64.0	D 22.1	44.9	2.41	32.7	0.00	0.00			252	
270	7.83	7.80	34.131 D	26.624	145.7	0.584	1.31	57.3	19.7	47.5	2.48	33.7	0.00	0.00			272	03
300 ISL	7.57 D	7.54	34.159 D	26.684	140.4	0.628	1.08	D 46.9	D 16.1	51.8	2.58	35.1	0.00	0.00			302	
381	6.74	6.70	34.193 D	26.829	127.5	0.737	0.68	29.8	10.0	63.3	2.86	38.9	0.00	0.14			384	02
400 ISL	6.56 D	6.53	34.207 D	26.863	124.4	0.761	0.59	D 25.8	D 8.6	65.1	2.88	39.1	0.00	0.00			403	
500 ISL	6.10 D	6.05	34.247 D	26.957	116.5	0.883	0.41	D 17.7	D 5.9	74.7	3.01	40.6	0.00	0.00			504	
518	5.99	5.95	34.247	26.970	115.4	0.899	0.38	16.6	5.5	76.5	3.03	40.9	0.00	0.00			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 1704 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 18.6 N	121 57.8 W	14/04/2017	0037	UTC	2409 m	330 19 kn	290 05 06	1	1019.9 mb	13.6 C	11.1 C		4/8	SC	078

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	13.63	13.63	33.243	24.907	303.6	0.000	6.44	281.4	108.9	4.3	0.48	2.2	0.12	0.14	1.07	0.29	0	
2	13.63	13.63	33.243	24.907	303.6	0.006	6.44	281.4	108.9	4.3	0.48	2.2	0.12	0.14	1.07	0.29	2	12
10	13.52	13.52	33.228 D	24.917	303.0	0.028	6.46	282.0	108.9	4.3	0.48	2.3	0.12	0.09	0.94	0.30	10	11
20	12.46	12.46	33.285 D	25.171	279.0	0.057	6.05	264.4	99.9	6.6	0.66	4.9	0.18	0.24	0.77	0.65	20	10
30 ISL	11.47 D	11.47	33.436 D	25.474	250.5	0.083	5.29	D230.3	D 85.6	11.2	0.98	9.8	0.21	0.00	0.61	0.54	30	
50	10.29	10.28	33.610 D	25.820	218.0	0.131	3.78	165.0	59.7	20.5	1.62	19.7	0.28	0.00	0.29	0.32	50	09
70	9.75	9.74	33.729 D	26.004	200.9	0.173	2.87	125.3	44.8	24.7	1.83	23.8	0.05	0.00	0.07	0.22	71	08
75 ISL	9.65 D	9.64	33.758 D	26.045	197.2	0.183	2.73	D118.6	D 42.5	25.2	1.85	24.2	0.05	0.00	0.07	0.23	76	
100	9.41	9.40	33.819	26.131	189.5	0.233	2.50	108.9	38.7	27.8	1.93	25.8	0.03	0.00	0.05	0.27	101	07
120	9.08	9.07	33.870 D	26.225	180.9	0.269	2.69	117.5	41.4	28.4	1.88	25.5	0.00	0.00	0.03	0.25	121	06
125 ISL	9.01 D	9.00	33.882 D	26.246	179.0	0.278	2.67	D116.3	D 41.1	29.4	1.92	26.0	0.00	0.00	0.03	0.23	126	
140	8.87	8.86	33.958 D	26.327	171.6	0.305	2.33	101.6	35.7	32.4	2.04	27.6	0.00	0.00	0.02	0.18	141	05
150 ISL	8.68 D	8.66	33.987 D	26.381	166.7	0.322	2.34	D101.6	D 35.7	33.7	2.08	28.1	0.00	0.00	0.02	0.16	151	
200	8.32	8.30	34.065 D	26.498	156.5	0.403	1.79	78.3	27.2	39.8	2.26	30.6	0.00	0.00	0.01	0.07	202	04
250 ISL	7.91 D	7.88	34.130 D	26.612	146.4	0.479	1.32	D 57.5	D 19.8	46.6	2.45	33.2	0.00	0.00			252	
270	7.72	7.70	34.148 D	26.653	142.8	0.509	1.18	D 51.3	D 17.6	49.3	2.53	34.2	0.00	0.00			272	03
300 ISL	7.54 D	7.51	34.166 D	26.695	139.3	0.551	1.06	D 46.0	D 15.7	53.4	2.61	35.3	0.00	0.00			302	
381	6.63	6.59	34.185 D	26.836	126.6	0.660	0.69	30.1	10.0	64.7	2.84	38.2	0.00	0.00			384	02
400 ISL	6.50 D	6.47	34.188 D	26.855	125.0	0.684	0.64	D 28.0	D 9.3	66.8	2.87	38.5	0.00	0.00			403	
500 ISL	5.87 D	5.83	34.247 D	26.985	113.7	0.805	0.37	D 15.9	D 5.2	77.9	3.02	40.4	0.00	0.00			504	
516	5.79	5.75	34.301	27.038	108.8	0.819	0.36	15.6	5.1	79.7	3.04	40.7	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 1704 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 58.5 N	122 40.3 W	14/04/2017	0624	UTC	4007 m	350 22 kn			1022.2 mb	12.6 C	10.5 C				079

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	14.48	14.48	33.045	24.578	335.0	0.000	6.03	263.3	103.6	2.1	0.28	0.0	0.00	0.00	0.22	0.09	0	
2	14.48	14.48	33.045	24.578	335.0	0.007	6.03	263.3	103.6	2.1	0.28	0.0	0.00	0.00	0.22	0.09	2	12
10 ISL	14.48 D	14.48	33.049 D	24.581	335.0	0.030	5.99	D261.2	D103.0	1.9	0.25	0.0	0.00	0.00	0.22	0.07	10	
11	14.49	14.49	33.048 D	24.578	335.3	0.034	6.04	263.8	103.8	1.9	0.25	0.0	0.00	0.00	0.22	0.07	11	11
20	14.47	14.47	33.048 D	24.582	335.2	0.064	5.99	D261.0	D102.9	1.9	0.25	0.0	0.00	0.00	0.20	0.07	20	10
30 ISL	13.88 D	13.87	33.081 D	24.733	321.2	0.097	6.09	D265.2	D103.3	2.3	0.32	0.6	0.00	0.00	0.36	0.13	30	
50	13.16	13.15	33.204 D	24.973	298.8	0.160	5.73	250.1	95.9	3.1	0.46	1.9	0.26	0.18	0.67	0.25	50	09
70	11.89	11.88	33.269 D	25.269	271.1	0.217	5.00	218.4	81.5	7.1	0.77	7.7	0.17	0.00	0.31	0.21	71	08
75 ISL	11.32 D	11.31	33.325 D	25.418	256.9	0.231	4.93	D214.8	D 79.5	8.5	0.85	9.1	0.15	0.00	0.27	0.19	76	
100 ISL	10.20 D	10.18	33.471 D	25.730	227.8	0.292	4.12	D179.2	D 64.8	15.4	1.26	15.8	0.04	0.00	0.07	0.09	101	
101	10.17	10.16	33.466	25.729	227.8	0.295	4.14	180.7	65.1	15.7	1.28	16.0	0.03	0.00	0.06	0.08	102	07
120	9.34	9.32	33.723 D	26.069	195.8	0.334	3.34	145.7	51.6	23.3	1.66	22.0	0.00	0.00	0.01	0.06	121	06
125 ISL	9.25 D	9.23	33.744 D	26.100	192.9	0.344	3.31	D144.1	D 51.1	24.6	1.72	22.7	0.00	0.00	0.01	0.07	126	
140	9.15	9.13	33.894 D	26.234	180.6	0.372	2.67	116.4	41.1	28.6	1.90	25.1	0.00	0.00	0.02	0.10	141	05
150 ISL	8.93 D	8.91	33.906 D	26.278	176.5	0.390	2.87	D124.8	D 44.0	30.2	1.93	25.6	0.00	0.00	0.01	0.10	151	
200	8.25	8.23	34.031 D	26.482	158.0	0.475	2.29	100.1	34.7	37.8	2.10	28.3	0.00	0.00	0.00	0.08	202	04
250 ISL	8.09 D	8.06	34.142 D	26.594	148.3	0.552	1.39	D 60.6	D 21.0	45.3	2.30	31.1	0.00	0.00			252	
271	7.39	7.36	34.070 D	26.640	143.9	0.583	1.75	76.4	26.0	48.5	2.39	32.2	0.00	0.00			273	03
300 ISL	7.52 D	7.49	34.161 D	26.694	139.4	0.624	1.06	D 45.9	D 15.7	52.2	2.50	33.5	0.00	0.00			302	
377	6.81	6.78	34.194 D	26.819	128.4	0.728	0.71	31.0	10.4	62.3	2.79	36.7	0.00	0.00			380	02
400 ISL	6.68 D	6.64	34.205 D	26.846	126.1	0.758	0.63	D 27.4	D 9.2	65.1	2.84	37.3	0.00	0.00			403	
500 ISL	6.07 D	6.02	34.287 D	26.992	113.2	0.879	0.33	D 14.4	D 4.8	77.2	3.04	39.6	0.00	0.00			504	
514	5.89	5.84	34.280	27.009	111.6	0.891	0.31	13.7	4.5	78.9	3.07	40.0	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 1704 — 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 38.4 N	123 22.1 W	14/04/2017	1206 UTC	4099 m	350 20 kn			1022.4 mb	12.9 C	9.8 C				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	14.65	14.65	33.128	24.605	332.4	0.000	5.98	261.2	103.2	1.5	0.26	0.0	0.00	0.00	0.20	0.01	0	
2	14.65	14.65	33.128	24.605	332.4	0.007	5.98	261.2	103.2	1.5	0.26	0.0	0.00	0.00	0.20	0.01	2	12
10	14.65	14.65	33.131 D	24.608	332.4	0.030	5.95	259.7	102.6	1.3	0.25	0.0	0.00	0.00	0.18	0.02	10	11
20 ISL	14.62 D	14.62	33.132 D	24.616	332.0	0.063	5.94	D258.7	D102.4	1.3	0.25	0.0	0.00	0.00	0.17	0.03	20	
26	14.49	14.48	33.126 D	24.639	329.9	0.084	5.96	260.2	102.4	1.3	0.25	0.0	0.00	0.00	0.17	0.03	26	10
30 ISL	14.36 D	14.35	33.127 D	24.668	327.3	0.097	5.97	D260.1	D102.4	1.6	0.28	0.3	0.00	0.00	0.27	0.05	30	
50 ISL	14.29 D	14.28	33.126 D	24.682	326.6	0.163	5.95	D259.3	D101.9	3.1	0.42	1.8	0.00	0.00	0.73	0.18	50	
62	12.70	12.69	33.204 D	25.065	290.4	0.200	5.58	243.8	92.6	4.0	0.51	2.7	0.16	0.00	1.01	0.25	63	09
75 ISL	11.05 D	11.04	33.383 D	25.511	248.0	0.235	4.16	D181.2	D 66.7	9.9	0.94	9.9	0.10	0.00	0.67	0.18	76	
88	10.44	10.43	33.460 D	25.679	232.3	0.267	3.88	169.3	61.3	15.9	1.36	17.1	0.03	0.00	0.32	0.11	89	08
100 ISL	10.00 D	9.98	33.530 D	25.809	220.2	0.294	3.69	D160.7	D 57.9	18.3	1.48	19.2	0.00	0.00	0.14	0.10	101	
102	9.99	9.98	33.533	25.813	219.9	0.300	3.64	158.7	57.0	18.7	1.50	19.5	0.00	0.00	0.11	0.10	103	07
125	9.37	9.36	33.696 D	26.042	198.5	0.347	3.24	141.5	50.1	23.9	1.72	22.9	0.00	0.00	0.02	0.06	126	06
140	9.04	9.02	33.789 D	26.169	186.7	0.376	3.14	137.0	48.2	26.5	1.77	24.2	0.00	0.00	0.01	0.05	141	05
150 ISL	8.82 D	8.80	33.831 D	26.237	180.4	0.395	3.20	D139.1	D 48.9	28.1	1.81	24.9	0.00	0.00	0.01	0.05	151	
200 ISL	8.17 D	8.15	33.998 D	26.468	159.3	0.480	2.70	D117.5	D 40.7	36.2	2.03	28.1	0.00	0.00	0.01	0.04	202	
203	8.13	8.11	33.998 D	26.473	158.8	0.485	2.55	111.2	38.4	36.7	2.04	28.3	0.00	0.00	0.01	0.04	205	04
250 ISL	7.49 D	7.47	34.042 D	26.602	147.1	0.558	1.99	D 86.4	D 29.5	45.1	2.26	31.5	0.00	0.00			252	
270	7.26	7.24	34.048 D	26.640	143.8	0.587	1.85	80.5	27.3	48.7	2.36	32.9	0.00	0.00			272	03
300 ISL	6.84 D	6.81	34.057 D	26.705	137.8	0.629	1.56	D 67.8	D 22.8	54.0	2.49	34.5	0.00	0.00			302	
380	6.12	6.09	34.113 D	26.845	125.3	0.736	0.85	37.2	12.3	68.1	2.82	38.9	0.00	0.00			383	02
400 ISL	6.06 D	6.02	34.139 D	26.874	122.8	0.761	0.76	D 33.0	D 10.9	70.6	2.86	39.3	0.00	0.00			403	
500 ISL	5.38 D	5.34	34.202 D	27.007	110.9	0.879	0.43	D 18.7	D 6.1	83.1	3.04	41.4	0.00	0.00			504	
518	5.38	5.34	34.234	27.033	108.7	0.894	0.33	14.5	4.7	85.3	3.07	41.7	0.00	0.00			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 1704 — STATION 73.3 90.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
34 18.4 N	124 4.3 W	14/04/2017	1803 UTC	3149 m	360 23 kn	320 03 05	1	1024.6 mb	13.8 C	10.3 C		4/8	CU	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	14.16	14.16	32.795	24.452	347.0	0.000	5.99	261.2	102.1	2.8	0.24	0.0	0.00	0.02	0.16	0.08	0	
2	14.16	14.15	32.795	24.452	347.0	0.007	5.99	261.2	102.1	2.8	0.24	0.0	0.00	0.00	0.16	0.08	2	12
10 ISL	14.15 D	14.15	32.796 D	24.455	347.0	0.032	6.00	261.7	102.3	2.6	0.22	0.0	0.00	0.00	0.18	0.03	10	
11	14.15	14.15	32.795 D	24.454	347.1	0.035	6.01	261.8	102.4	2.5	0.22	0.0	0.00	0.00	0.19	0.02	11	11
20 ISL	14.23 D	14.22	32.839 D	24.472	345.6	0.066	5.97	D260.4	D102.0	2.1	0.21	0.0	0.00	0.00	0.15	0.03	20	
25	14.58	14.58	33.177 D	24.659	328.0	0.084	5.91	257.7	101.9	1.8	0.20	0.0	0.00	0.00	0.13	0.03	25	10
30 ISL	14.50 D	14.50	33.194 D	24.690	325.3	0.100	5.90	D257.2	D101.5	1.8	0.20	0.0	0.00	0.00	0.16	0.05	30	
50 ISL	14.33 D	14.32	33.204 D	24.735	321.6	0.165	5.89	D256.7	D101.0	1.9	0.21	0.0	0.00	0.00	0.27	0.12	50	
62	13.58	13.57	33.207 D	24.893	306.9	0.203	5.94	258.9	100.3	1.9	0.21	0.0	0.00	0.00	0.34	0.16	63	09
75 ISL	13.14 D	13.13	33.188 D	24.967	300.1	0.243	5.94	D259.0	D 99.5	4.1	0.46	3.3		0.00	0.28	0.11	76	
87	11.67	11.66	33.214 D	25.268	271.6	0.277	5.24	228.3	85.0	6.1	0.69	6.4	0.07	0.15	0.23	0.06	88	08
100 ISL	11.18 D	11.16	33.362 D	25.473	252.3	0.312	4.46	D194.2	D 71.6	10.5	1.00	11.5	0.03	0.00	0.12	0.12	101	
102	10.99	10.98	33.359	25.504	249.4	0.318	4.54	197.6	72.6	11.2	1.05	12.2	0.03	0.00	0.11	0.12	103	07
125 ISL	10.07 D	10.06	33.502 D	25.776	223.9	0.371	4.45	D193.6	D 69.8	14.4	1.15	14.8		0.00	0.04	0.05	126	
126	10.05	10.03	33.504 D	25.781	223.4	0.374	4.48	195.0	70.3	14.6	1.15	15.0	0.00	0.00	0.03	0.05	127	06
140	9.69	9.67	33.558 D	25.884	213.9	0.405	4.17	181.6	65.0	17.7	1.34	17.8	0.00	0.00	0.02	0.07	141	05
150 ISL	9.38 D	9.37	33.640 D	25.998	203.2	0.426	3.91	D170.3	D 60.5	20.2	1.44	19.3	0.00	0.00	0.02	0.06	151	
200 ISL	8.50 D	8.48	33.966 D	26.393	166.5	0.519	2.62	D114.0	D 39.8	33.0	1.94	26.9	0.00	0.00	0.01	0.04	202	
203	8.47	8.45	33.973 D	26.403	165.6	0.524	2.57	111.7	39.0	33.7	1.97	27.3	0.00	0.00	0.01	0.04	205	04
250 ISL	8.04 D	8.01	34.019 D	26.506	156.6	0.600	2.26	D 98.2	D 33.9	40.7	2.15	30.0	0.00	0.00			252	
270	7.63	7.60	34.052 D	26.592	148.6	0.631	2.19	95.1	32.6	43.7	2.22	31.2	0.00	0.08			272	03
300 ISL	7.40 D	7.37	34.089 D	26.654	143.1	0.675	1.51	D 65.9	D 22.5	48.5	2.35	32.8	0.00	0.00			302	
381	6.57	6.54	34.123 D	26.795	130.5	0.787	0.99	42.9	14.4	61.6	2.71	37.2	0.00	0.00			384	02
400 ISL	6.31 D	6.27	34.121 D	26.828	127.3	0.812	0.89	D 38.5	D 12.8	64.8	2.75	37.9	0.00	0.00			403	
500 ISL	5.35 D	5.31	34.153 D	26.972	114.1	0.933	0.58	D 25.1	D 8.1	81.3	2.95	41.4	0.00	0.00			504	
515	5.29	5.25	34.162	26.987	112.8	0.946	0.52	22.8	7.4	83.7	2.98	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 1704 — STATION 76.7 49.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
35 5.3 N	120 46.4 W	13/04/2017	1300 UTC	67 m	120 12 kn			1015.4 mb	13.3 C	12.4 C				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	12.08	12.08	33.496	25.406	256.1	0.000	5.36	234.0	87.9	14.4	1.11	10.9	0.22	0.17	1.02	0.40	0	
2	12.08	12.08	33.496	25.406	256.2	0.005	5.36	234.0	87.9	14.4	1.11	10.9	0.22	0.17	1.02	0.40	2	08
5	12.10	12.10	33.501	25.408	256.1	0.013	5.24	229.0	86.0	14.7	1.13	11.9	0.22	0.15	1.00	0.43	5	07
10	11.36	11.36	33.534	25.570	240.8	0.025	4.74	206.9	76.5	15.7	1.25	14.5	0.28	0.15	0.96	0.35	10	05
10	11.36	11.36	33.533	25.570	240.8	0.026											10	06
20	10.85	10.84	33.570	25.691	229.6	0.049	4.14	181.0	66.2	17.8	1.43	17.3	0.31	0.15	0.75	0.55	20	04
30	10.66	10.66	33.629	25.770	222.3	0.071	3.98	173.7	63.3	20.3	1.51	18.9	0.26	0.32	0.93	0.46	30	03
40	10.14	10.14	33.653	25.878	212.2	0.093	3.44	150.3	54.2	21.6	1.64	21.2	0.20	0.22	0.51	0.36	40	02
50	10.02	10.02	33.679	25.919	208.5	0.114	3.25	142.1	51.1	23.3	1.72	22.2	0.22	0.37	0.39	0.45	50	01

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

RV BELL M SHIMADA — CALCOFI CRUISE 1704 — STATION 76.7 51.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME UTC	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
35 1.5 N	120 54.6 W	13/04/2017	1047		230 m	150 10 kn			1016.0 mb	14.9 C	13.0 C				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	13.13	13.13	33.309	25.057	289.3	0.000	5.95	259.9	99.6	7.7	0.67	4.9	0.18	0.22	0.79	0.46	0	
3	13.13	13.13	33.309	25.057	289.4	0.009	5.95	259.9	99.6	7.7	0.67	4.9	0.18	0.22	0.79	0.46	3	16
10	12.99	12.99	33.314	25.090	286.5	0.029	5.94	259.5	99.2	7.9	0.68	5.9	0.18	0.18	0.78	0.52	10	14
10	12.99	12.99	33.318	25.092	286.3	0.029											10	15
20	12.30	12.30	33.388	25.282	268.5	0.057	5.66	247.2	93.2	10.2	0.87	9.0	0.20	0.12	1.00	0.59	20	13
30	11.86	11.86	33.393	25.368	260.5	0.083	5.19	226.5	84.6	10.4	0.96	10.7	0.34	0.19	0.96	0.62	30	12
40	10.93	10.93	33.467	25.596	239.1	0.108	4.30	187.7	68.7	14.6	1.31	16.6	0.46	0.31	0.64	0.37	40	11
50	10.75	10.74	33.559	25.700	229.4	0.132	4.20	183.3	66.9	17.4	1.45	18.8	0.44	0.16	0.35	0.42	50	10
60	10.50	10.49	33.614	25.788	221.3	0.154	3.82	166.8	60.6	19.4	1.57	21.0	0.46	0.06	0.26	0.33	60	09
70	10.19	10.18	33.631	25.854	215.3	0.176	3.55	155.0	55.9	20.3	1.62	22.2	0.33	0.00	0.17	0.27	71	08
75 ISL	10.13 D	10.12	33.648 D	25.878	213.1	0.183	3.40	D147.9 D	53.4	21.5	1.68	23.1	0.24	0.00	0.13	0.22	76	
85	9.74	9.73	33.715	25.996	202.0	0.207	2.98	130.0	46.5	23.9	1.80	24.9	0.06	0.00	0.05	0.10	86	07
100	9.64	9.63	33.745	26.036	198.6	0.237	2.90	126.7	45.2	24.8	1.83	25.5	0.05	0.00	0.05	0.17	101	06
120	9.32	9.30	33.871	26.188	184.5	0.276	2.54	110.7	39.2	28.3	1.97	27.6	0.03	0.00	0.02	0.13	121	05
125 ISL	9.31 D	9.30	33.890 D	26.204	183.1	0.282	2.50	D108.8 D	38.7	29.0	1.99	27.8	0.03	0.00	0.02	0.13	126	
141	9.14	9.12	33.952	26.281	176.1	0.313	2.30	100.5	35.5	31.2	2.07	28.8	0.04	0.00	0.02	0.14	142	04
150 ISL	9.10 D	9.08	33.967 D	26.299	174.6	0.327	2.26	D 98.5 D	34.9	31.9	2.10	29.1	0.04	0.00	0.02	0.13	151	
171	9.04	9.02	34.012	26.345	170.7	0.365	2.04	89.2	31.5	33.7	2.16	30.0	0.05	0.00	0.02	0.11	172	03
200	8.67	8.65	34.112	26.481	158.3	0.413	1.62	70.7	24.7	38.9	2.35	32.0	0.05	0.00	0.01	0.13	202	02
210	8.47	8.44	34.139	26.534	153.3	0.429	1.39	60.7	21.1	42.8	2.46	33.1	0.07	0.12			212	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 1704 — STATION 76.7 55.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME UTC	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
34 53.5 N	121 12.3 W	13/04/2017	0737		556 m	140 09 kn			1016.3 mb	14.2 C	13.7 C				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	14.10	14.10	33.086	24.689	324.4	0.000	6.05	264.2	103.1	2.0	0.27	0.0	0.02	0.03	0.33	0.12	0	
2	14.10	14.10	33.086	24.689	324.5	0.007	6.05	264.2	103.1	2.0	0.27	0.0	0.00	0.00	0.33	0.12	2	21
10	13.82	13.82	33.098	24.756	318.4	0.032	6.08	265.7	103.1	2.4	0.30	0.3	0.05	0.00	0.69	0.26	10	19
10	13.82	13.82	33.096	24.754	318.5	0.032											10	20
20	13.22	13.21	33.212	24.967	298.5	0.063	6.01	262.5	100.7	4.8	0.49	2.9	0.16	0.00	1.43	0.56	20	18
30	13.11	13.11	33.229	25.001	295.5	0.093	5.99	261.7	100.2	5.2	0.54	3.5	0.17	0.00	1.22	0.73	30	17
40	13.01	13.00	33.237	25.028	293.3	0.122	5.97	260.9	99.7	5.4	0.55	3.8	0.17	0.00	1.19	0.85	40	16
50	12.09	12.09	33.310	25.262	271.2	0.150	5.50	240.2	90.0	8.6	0.85	8.2	0.29	0.22	0.88	0.48	50	15
60	11.60	11.59	33.364	25.397	258.6	0.177	5.06	221.1	82.1	10.6	1.03	11.0	0.37	0.27	0.69	0.37	60	14
70	10.87	10.86	33.438	25.585	240.9	0.202	4.10	179.3	65.5	14.3	1.28	15.3	0.14	0.00	0.16	0.20	71	13
75 ISL	10.75 D	10.74	33.462 D	25.626	237.1	0.212	4.03	D175.5 D	64.2	15.1	1.32	15.9	0.12	0.00	0.13	0.24	76	
85	10.47	10.46	33.495	25.701	230.2	0.237	3.83	167.4	60.7	16.5	1.39	17.0	0.08	0.00	0.09	0.31	86	12
100 ISL	10.04 D	10.03	33.618 D	25.870	214.4	0.269	3.32	D144.7 D	52.2	20.6	1.59	19.9	0.03	0.00	0.05	0.15	101	
101	10.02	10.01	33.619	25.874	214.0	0.273	3.33	145.5	52.3	20.9	1.60	20.1	0.03	0.00	0.04	0.14	102	11
120	9.61	9.60	33.764	26.057	197.0	0.312	2.80	122.5	43.6	25.3	1.82	23.1	0.00	0.00	0.02	0.11	121	10
125 ISL	9.54 D	9.52	33.794 D	26.092	193.8	0.320	2.66	D115.7 D	41.3	26.3	1.85	23.5	0.00	0.00	0.02	0.11	126	
141	9.14	9.13	33.882	26.225	181.4	0.352	2.51	109.6	38.7	29.5	1.96	25.1	0.00	0.00	0.02	0.11	142	09
150 ISL	9.06 D	9.05	33.914 D	26.263	178.0	0.367	2.46	D106.9 D	37.8	30.6	1.98	25.6	0.00	0.00	0.02	0.10	151	
170	8.70	8.68	33.959	26.356	169.5	0.403	2.42	105.8	37.0	32.9	2.03	26.7	0.00	0.00	0.02	0.10	171	08
200	8.33	8.31	34.031	26.470	159.2	0.452	2.01	87.6	30.4	38.0	2.20	28.7	0.00	0.00	0.01	0.08	202	07
230	8.20	8.18	34.057	26.510	155.9	0.499	1.82	79.7	27.6	40.3	2.27	29.6	0.00	0.00			232	06
250 ISL	8.06 D	8.03	34.086 D	26.556	151.9	0.530	1.66	D 72.1 D	25.0	42.7	2.35	30.4	0.00	0.00			252	
270	7.90	7.87	34.098	26.589	149.0	0.560	1.51	65.8	22.6	45.1	2.42	31.2	0.00	0.00			272	05
300 ISL	7.52 D	7.49	34.118 D	26.660	142.6	0.604	1.31	D 56.8 D	19.4	50.0	2.53	32.6	0.00	0.00			302	
321	7.31	7.28	34.140	26.707	138.4	0.633	1.12	49.0	16.6	53.5	2.61	33.5	0.00	0.00			324	04
380	6.88	6.84	34.182	26.801	130.2	0.713	0.78	34.2	11.5	61.7	2.79	35.4	0.00	0.00			383	03
400 ISL	6.81 D	6.77	34.216 D	26.837	127.0	0.740	0.65	D 28.1 D	9.4	63.9	2.84	35.8	0.00	0.00			403	
440	6.61	6.57	34.239	26.883	123.2	0.789	0.51	22.3	7.5	68.4	2.93	36.6	0.00	0.00			444	02
500 ISL	6.20 D	6.15	34.271 D	26.963	116.1	0.863	0.38	D 16.6 D	5.5	74.9	3.03	37.8	0.00	0.00			504	
515	6.15	6.10	34.272	26.970	115.6	0.878	0.37	15.9	5.3	76.5	3.05	38.1	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 1704 — STATION 76.7 60.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME UTC	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
34 43.1 N	121 32.9 W	13/04/2017	0356		938 m	170 07 kn			1016.9 mb	15.4 C	14.7 C				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	13.65	13.65	33.156	24.835	310.5	0.000	6.11	266.7	103.2	3.1	0.36	1.0	0.09	0.03	0.72	0.35	0	
2	13.65	13.65	33.156	24.835	310.5	0.006	6.11	266.7	103.2	3.1	0.36	1.0	0.09	0.00	0.72	0.35	2	20
10	13.55	13.55	33.141	24.843	310.0	0.031	6.07	265.1	102.4	3.2	0.39	1.3	0.10	0.00	0.79	0.40	10	19
20	13.23	13.23	33.153	24.919	303.1	0.062	5.99	261.8	100.5	3.6	0.43	1.9	0.12	0.09	0.89	0.43	20	18
30	13.00	12.99	33.197	24.999	295.7	0.092	5.80	253.3	96.7	4.9	0.56	3.7	0.18	0.23	0.58	0.42	30	17
40	12.70	12.69	33.242	25.094	287.0	0.121	5.66	247.1	93.8	6.0	0.65	5.1	0.21	0.25	0.52	0.34	40	16
49	12.19	12.18	33.331	25.260	271.4	0.146	5.16	225.3	84.7	8.9	0.89	8.6	0.32	0.15	0.42	0.46	49	15
50 ISL	12.09 D	12.09	33.346 D	25.290	268.6	0.147	5.04	D219.7 D	82.6	9.4	0.92	9.1	0.31	0.00	0.41	0.45	50	
60	11.32	11.31	33.474	25.534	245.6	0.174	4.27	186.4	68.8	14.1	1.23	14.2	0.29	0.00	0.38	0.35	60	14
70	11.12	11.11	33.496	25.587	240.8	0.199	4.10	179.1	65.9	14.9	1.30	15.2	0.29	0.00	0.34	0.29	71	13
75 ISL	10.77 D	10.76	33.553 D	25.694	230.7	0.209	3.96	D172.6 D	63.2	16.0	1.37	16.3	0.24	0.00	0.32	0.27	76	
85	10.56	10.55	33.571	25.745	226.1	0.233	3.60	157.3	57.2	18.1	1.50	18.4	0.13	0.00	0.28	0.24	86	12
100 ISL	10.26 D	10.24	33.685 D	25.886	212.9	0.265	3.24	D141.2 D	51.2	21.7	1.67	20.8	0.17	0.00	0.29	0.31	101	
101	10.25	10.24	33.680	25.883	213.3	0.268	3.30	143.9	52.0	21.9	1.68	20.9	0.17	0.00	0.29	0.31	102	11
120	10.04	10.03	33.739	25.966	205.8	0.308	3.06	133.8	48.1	24.0	1.78	22.2	0.15	0.00	0.29	0.33	121	10
125 ISL	10.00 D	9.98	33.741 D	25.974	205.1	0.317	3.00	D130.5 D	47.0	24.7	1.81	22.7	0.12	0.00	0.24	0.30	126	
140	9.57	9.55	33.819	26.107	192.7	0.348	2.66	116.3	41.4	26.7	1.91	24.1	0.04	0.00	0.09	0.20	141	09
150 ISL	9.32 D	9.31	33.922 D	26.228	181.4	0.366	2.39	D103.8 D	36.9	28.8	1.98	25.1	0.03	0.00	0.06	0.17	151	
170	9.08	9.06	34.001	26.330	172.0	0.403	2.11	92.0	32.4	33.2	2.12	27.1	0.00	0.00	0.02	0.12	171	08
200	8.71	8.68	34.061	26.436	162.5	0.453	1.85	80.6	28.2	37.2	2.24	29.0	0.00	0.00	0.01	0.12	202	07
230	8.33	8.30	34.086	26.515	155.5	0.501	1.67	73.1	25.3	40.8	2.33	30.4	0.00	0.00			232	06
250 ISL	8.12 D	8.10	34.131 D	26.581	149.5	0.531	1.48	D 64.6 D	22.4	43.8	2.41	31.3	0.01	0.00			252	
271	7.98	7.95	34.152	26.619	146.3	0.562	1.27	55.3	19.0	47.0	2.50	32.2	0.00	0.00			273	05
300 ISL	7.88 D	7.85	34.183 D	26.659	143.0	0.604	1.11	D 48.5 D	16.7	50.0	2.57	33.1	0.01	0.00			302	
322	7.59	7.56	34.177	26.697	139.6	0.636	1.04	45.4	15.5	52.4	2.63	33.8	0.00	0.00			325	04
381	7.11	7.08	34.166	26.756	134.6	0.717	0.92	40.2	13.6	57.3	2.72	35.4	0.00	0.00			384	03
400 ISL	6.96 D	6.93	34.182 D	26.789	131.7	0.743	0.81	D 35.4 D	11.9	59.6	2.77	35.9	0.01	0.00			403	
440	6.80	6.76	34.223	26.845	127.0	0.794	0.61	26.6	8.9	64.6	2.88	37.0	0.00	0.00			444	02
500 ISL	6.38 D	6.33	34.271 D	26.940	118.5	0.869	0.42	D 18.1 D	6.0	73.8	3.01	38.5	0.01	0.00			504	
516	6.14	6.09	34.280	26.978	114.8	0.886	0.36	15.6	5.1	76.3	3.05	38.9	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 1704 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 14.5 W	12/04/2017	2226	UTC	3962 m	190 06 kn	250 06 08	1	1017.2 mb	17.1 C	15.0 C	23 m	2/8	CS	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	14.64	14.64	33.069	24.561	336.5	0.000	5.97	260.9	103.0	1.7	0.25	0.0	0.01	0.01	0.20	0.05	0	
2	14.64	14.64	33.069	24.561	336.6	0.007	5.97	260.9	103.0	1.7	0.25	0.0	0.00	0.00	0.20	0.05	2	20
10	14.28	14.27	33.059	24.631	330.2	0.033	6.02	262.9	103.0	1.7	0.25	0.0	0.00	0.00	0.20	0.05	10	19
20	13.92	13.92	33.038	24.689	325.0	0.066	6.06	265.0	103.0	1.8	0.25	0.0	0.00	0.00	0.38	0.11	20	18
30	13.75	13.75	33.014	24.706	323.6	0.099	6.14	268.2	103.9	2.6	0.28	0.1	0.05	0.00	0.77	0.40	30	17
40	13.66	13.65	33.104	24.796	315.5	0.131	6.08	265.6	102.8	3.2	0.35	1.0	0.08	0.09	0.57	0.36	40	16
50	13.32	13.31	33.283 D	25.003	295.9	0.159	5.98	D260.6	D100.5								50	15
59	12.82	12.81	33.396	25.189	278.5	0.187	5.71	249.6	95.1	6.3	0.70	6.1	0.22	0.44	0.17	0.29	59	14
70	12.01	12.00	33.418	25.362	262.2	0.217	5.24	229.0	85.8	8.1	0.89	8.7	0.37	0.68	0.19	0.20	71	13
75 ISL	11.43 D	11.42	33.457 D	25.500	249.2	0.228	4.79	D208.6 D	77.4	10.3	1.03	11.3	0.34	0.00	0.18	0.20	76	
84	10.96	10.95	33.484	25.607	239.2	0.252	4.13	180.3	66.1	14.2	1.29	15.8	0.30	0.00	0.16	0.19	85	12
98	10.45	10.43	33.588	25.778	223.2	0.284	3.44	150.2	54.4	18.7	1.56	20.0	0.05	0.00	0.07	0.15	99	11
100 ISL	10.06 D	10.05	33.640 D	25.884	213.1	0.287	3.24	D141.1 D	50.9	19.2	1.58	20.3	0.05	0.00	0.07	0.15	101	
121	9.80	9.78	33.752	26.016	200.9	0.332	2.83	123.6	44.2	24.3	1.81	23.5	0.03	0.00	0.03	0.14	122	10
125 ISL	9.81 D	9.79	33.804 D	26.055	197.4	0.339	2.58	D112.2 D	40.3	25.1	1.85	24.0	0.03	0.00	0.03	0.13	126	
140	9.49	9.47	33.888	26.175	186.3	0.369	2.41	105.3	37.5	28.3	1.98	25.7	0.00	0.00	0.03	0.10	141	09
150 ISL	9.40 D	9.39	33.910 D	26.205	183.6	0.387	2.35	D102.4 D	36.5	29.5	2.02	26.3	0.02	0.00	0.02	0.10	151	
170	9.14	9.12	33.975	26.299	175.0	0.423	2.17	94.9	33.5	31.8	2.09	27.4	0.00	0.00	0.02	0.10	171	08
200	8.83	8.81	34.036	26.397	166.3	0.475	1.95	85.1	29.9	35.1	2.19	28.7	0.00	0.00	0.02	0.09	202	07
229	8.43	8.40	34.074	26.490	157.9	0.522	1.88	82.0	28.5	38.7	2.26	30.2	0.00	0.00			231	06
250 ISL	8.08 D	8.06	34.109 D	26.570	150.6	0.554	1.62	D 70.6 D	24.4	42.8	2.38	31.6	0.02	0.00			252	
269	7.90	7.88	34.144	26.624	145.7	0.582	1.33	58.1	20.0	46.4	2.49	32.8	0.00	0.00			271	05
300 ISL	7.60 D	7.57	34.170 D	26.689	140.0	0.627	1.08	D 47.1 D	16.1	50.8	2.60	33.9	0.01	0.00			302	
320	7.51	7.48	34.193	26.720	137.3	0.654	0.96	41.8	14.2	53.6	2.67	34.6	0.00	0.00			323	04
382	7.09	7.06	34.220	26.801	130.4	0.737	0.71	31.0	10.5	60.4	2.80	36.2	0.00	0.00			385	03
400 ISL	6.95 D	6.91	34.225 D	26.826	128.2	0.763	0.65	D 28.1 D	9.5	62.6	2.84	36.7	0.01	0.00			403	
440	6.63	6.59	34.259	26.896	122.0	0.810	0.50	21.8	7.3	67.3	2.94	38.0	0.00	0.00			444	02
500 ISL	6.17 D	6.12	34.279 D	26.974	115.1	0.885	0.36	D 15.7 D	5.2	74.1	3.03	39.4	0.01	0.00			504	
517	6.09	6.04	34.291	26.993	113.5	0.900	0.33	14.4	4.8	76.0	3.06	39.8	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 1704 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 3.6 N	122 56.5 W	12/04/2017	1703	UTC	4179 m	270 09 kn	250 05 07	1	1017.2 mb	16.0 C	14.2 C	26 m	6/8	ST	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	14.95	14.95	33.129	24.542	338.4	0.000	5.93	259.1	102.9	1.3	0.26	0.0	0.01	0.01	0.12	0.02	0	
2 A	14.95	14.95	33.129	24.542	338.5	0.007	5.93	259.1	102.9	1.3	0.26	0.0	0.00	0.00	0.12	0.02	2	24
10	14.63	14.62	33.132	24.614	331.8	0.034	5.97	261.2	103.0	1.3	0.26	0.0	0.00	0.00	0.14	0.02	10	22
10	14.63	14.62	33.131	24.613	331.9	0.033											10	23
16 A	14.52	14.52	33.129	24.635	330.1	0.054	5.98	261.4	102.9	1.3	0.28	0.1	0.00	0.10	0.17	0.03	16	21
20 ISL	14.51 D	14.51	33.125 D	24.634	330.3	0.064	6.00	261.3	103.2	1.3	0.27	0.0	0.00	0.00	0.21	0.03	20	
23 A	14.49	14.49	33.129	24.641	329.7	0.077	6.01	262.8	103.3	1.3	0.27	0.0	0.00	0.00	0.23	0.03	23	20
30 ISL	14.48 D	14.48	33.125 D	24.640	330.0	0.097	5.99	261.1	103.0	1.3	0.26	0.0	0.00	0.00	0.25	0.04	30	
40 A	14.38	14.38	33.129	24.665	328.0	0.133	5.96	260.9	102.4	1.3	0.25	0.0	0.00	0.00	0.27	0.06	40	19
50	14.07	14.07	33.127	24.728	322.2	0.165	5.98	261.7	102.0	1.5	0.27	0.0	0.00	0.00	0.43	0.13	50	18
62	12.59	12.58	33.209	25.089	288.1	0.202	5.43	237.4	89.8	4.9	0.59	4.3	0.17	0.00	0.78	0.36	63	17
73 A	11.11	11.10	33.332	25.461	252.7	0.231	4.58	200.2	73.4	10.5	1.04	12.2	0.08	0.00	0.50	0.41	74	15
73	11.11	11.10	33.310	25.444	254.4	0.231											74	16
75 ISL	11.00 D	10.99	33.368 D	25.508	248.3	0.235	4.40	D191.6 D	70.4	11.2	1.09	13.0	0.07	0.00	0.45	0.38	76	
82	10.53	10.52	33.408	25.623	237.5	0.254	4.13	180.5	65.4	13.9	1.26	15.9	0.04	0.00	0.29	0.27	83	14
91 A	10.16	10.14	33.491	25.751	225.5	0.274	3.91	171.1	61.5	16.9	1.41	18.5	0.00	0.00	0.09	0.08	92	13
100	9.95	9.93	33.578	25.855	215.8	0.294	3.52	154.0	55.2	19.5	1.57	20.7	0.00	0.00	0.10	0.10	101	12
110	9.57	9.56	33.659	25.980	204.1	0.315	3.29	143.9	51.2	22.5	1.70	22.7	0.00	0.00	0.02	0.05	111	11
125	9.28	9.27	33.731	26.084	194.5	0.345	3.18	138.9	49.1	24.4	1.76	24.0	0.00	0.00	0.02	0.03	126	10
140	9.03	9.02	33.815	26.190	184.7	0.374	3.00	131.0	46.1	27.3	1.85	25.3	0.00	0.00	0.01	0.03	141	09
150 ISL	8.89 D	8.87	33.871 D	26.257	178.5	0.391	2.88	D125.2 D	44.1	28.7	1.89	25.9	0.01	0.00	0.01	0.03	151	
171	8.66	8.64	33.945	26.351	169.9	0.428	2.68	117.3	40.9	31.7	1.98	27.3	0.00	0.00	0.01	0.02	172	08
200 ISL	8.21 D	8.18	34.012 D	26.474	158.7	0.476	2.33	D101.3 D	35.2	36.6	2.11	29.0	0.01	0.00	0.01	0.03	202	
201	8.19	8.17	34.006	26.471	159.0	0.478	2.41	105.3	36.4	36.8	2.11	29.0	0.00	0.00	0.01	0.03	203	07
230	7.71	7.69	34.027	26.558	151.0	0.523	2.21	96.6	33.0	42.0	2.24	30.9	0.00	0.00			232	06
250 ISL	7.40 D	7.37	34.020 D	26.598	147.4	0.553	2.17	D 94.2 D	32.1	45.8	2.33	32.1	0.01	0.00			252	
270	7.18	7.15	34.051	26.654	142.4	0.581	1.85	80.8	27.3	49.7	2.41	33.4	0.00	0.00			272	05
300 ISL	6.57 D	6.55	34.029 D	26.718	136.4	0.625	1.74	D 75.6 D	25.3	55.8	2.53	35.2	0.01	0.00			302	
321	6.38	6.35	34.049	26.761	132.5	0.651	1.47	64.2	21.3	60.0	2.61	36.4	0.00	0.00			324	04
380	5.78	5.75	34.056	26.842	125.3	0.727	1.17	51.3	16.7	69.0	2.78	38.8	0.00	0.00			383	03
400 ISL	5.65 D	5.61	34.065 D	26.866	123.1	0.755	1.08	D 47.1 D	15.4	72.2	2.84	39.5	0.01	0.00			403	
441	5.36	5.33	34.099	26.928	117.6	0.801	0.79	34.4	11.1	78.7	2.95	40.9	0.00	0.00			445	02
500 ISL	5.19 D	5.15	34.173 D	27.008	110.6	0.873	0.50	D 21.6 D	7.0	85.7	3.07	42.0	0.01	0.00			504	
515	5.11	5.07	34.187	27.027	108.8	0.885	0.44	19.0	6.1	87.5	3.10	42.3	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 1704 STATION 76.7 90.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
33 43.3 N	123 37.6 W	12/04/2017	1149 UTC	4220 m	320 07 kn			1015.9 mb	15.8 C	15.0 C				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	14.87	14.87	33.110	24.543	338.3	0.000	5.93	259.6	102.9	1.6	0.27	0.0	0.01	0.00	0.16	0.04	0	
2	14.87	14.87	33.110	24.543	338.3	0.007	5.93	259.6	102.9	1.6	0.27	0.0	0.00	0.00	0.16	0.04	2	20
10	14.86	14.85	33.112	24.549	338.0	0.034	5.95	260.2	103.1	1.5	0.25	0.0	0.00	0.00	0.15	0.03	10	19
20 ISL	14.39 D	14.39	33.126 D	24.660	327.8	0.064	6.01	261.9	103.1	1.5	0.26	0.0	0.01	0.00	0.18	0.04	20	
21	14.40	14.40	33.119	24.652	328.5	0.071	6.01	263.0	103.3	1.5	0.26	0.0	0.00	0.00	0.18	0.04	21	18
30	14.28	14.28	33.116	24.675	326.6	0.100	6.00	262.2	102.7	1.5	0.26	0.0	0.00	0.00	0.25	0.06	30	17
40	14.25	14.25	33.116	24.682	326.3	0.133	6.02	263.1	103.0	1.5	0.25	0.0	0.00	0.00	0.27	0.10	40	16
50	14.11	14.10	33.120	24.716	323.4	0.165	6.02	263.2	102.7	1.5	0.25	0.0	0.00	0.00	0.30	0.13	50	15
60	13.56	13.55	33.143	24.847	311.1	0.197	5.85	256.0	98.7	2.6	0.37	1.1	0.29	0.00	0.53	0.22	60	14
69	12.61	12.60	33.196	25.077	289.4	0.224	5.37	234.7	88.8	5.2	0.66	5.8	0.16	0.11	0.33	0.21	70	13
75 ISL	12.18 D	12.17	33.242 D	25.194	278.4	0.239	5.09	D221.8	D 83.5	6.9	0.78	8.0	0.12	0.00	0.24	0.19	76	
84	11.61	11.59	33.312	25.356	263.1	0.265	4.65	203.4	75.4	9.5	0.95	11.2	0.05	0.00	0.12	0.15	85	12
100	10.59	10.58	33.435	25.634	236.9	0.305	4.04	176.8	64.2	14.6	1.28	16.5	0.03	0.00	0.03	0.09	101	11
121	9.64	9.62	33.580	25.908	211.1	0.352	3.65	159.5	56.7	19.8	1.53	20.6	0.00	0.00	0.03	0.07	122	10
125 ISL	9.39 D	9.38	33.693 D	26.037	199.0	0.359	3.44	D149.6	D 53.2	21.1	1.58	21.3	0.02	0.00	0.03	0.07	126	
139	9.13	9.12	33.759	26.130	190.3	0.388	3.24	141.8	49.9	25.5	1.74	23.8	0.00	0.00	0.01	0.05	140	09
150 ISL	9.01 D	8.99	33.831 D	26.207	183.3	0.407	3.09	D134.3	D 47.4	27.1	1.79	24.7	0.01	0.00	0.01	0.05	151	
170	8.72	8.70	33.904	26.310	173.8	0.445	2.87	125.4	43.8	30.0	1.88	26.2	0.00	0.00	0.01	0.04	171	08
200	8.35	8.33	33.987	26.433	162.7	0.495	2.42	105.9	36.7	35.0	2.07	28.8	0.00	0.00	0.01	0.04	202	07
232	7.93	7.91	34.030	26.529	154.0	0.546	2.19	95.5	32.8	41.0	2.21	30.4	0.00	0.00			234	06
250 ISL	7.54 D	7.51	34.023 D	26.581	149.2	0.572	2.19	D 95.3	D 32.6	43.7	2.27	31.4	0.01	0.00			252	
271	7.37	7.35	34.037	26.616	146.1	0.604	1.94	84.8	28.8	46.9	2.34	32.5	0.00	0.00			273	05
300 ISL	7.08 D	7.05	34.049 D	26.667	141.6	0.645	1.72	D 75.0	D 25.4	51.8	2.47	34.0	0.01	0.00			302	
320	6.97	6.94	34.079	26.705	138.3	0.673	1.42	62.0	20.8	55.2	2.56	35.0	0.00	0.00			323	04
381	6.45	6.41	34.132	26.818	128.2	0.755	0.92	40.1	13.3	64.8	2.79	37.7	0.00	0.00			384	03
400 ISL	6.44 D	6.41	34.171 D	26.851	125.4	0.780	0.72	D 31.4	D 10.5	68.1	2.84	38.5	0.01	0.00			403	
440	5.68	5.64	34.130	26.914	119.2	0.829	0.71	31.1	10.1	75.3	2.94	40.2	0.00	0.00			444	02
500 ISL	5.33 D	5.28	34.177 D	26.995	112.0	0.899	0.49	D 21.4	D 7.0	82.5	3.04	41.5	0.01	0.00			504	
516	5.25	5.21	34.182	27.008	110.9	0.916	0.45	19.7	6.4	84.4	3.07	41.8	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 1704 STATION 76.7 100.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
33 23.0 N	124 19.2 W	12/04/2017	0620 UTC	4507 m	220 10 kn			1017.6 mb	16.3 C	15.7 C				068

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0	14.73	14.73	32.798	24.334	358.3	0.000	5.93	259.4	102.3	2.6	0.24	0.0	0.01	0.02	0.12	0.03	0	
2	14.73	14.73	32.798	24.334	358.3	0.007	5.93	259.4	102.3	2.6	0.24	0.0	0.00	0.00	0.12	0.03	2	20
10	14.71	14.71	32.797	24.338	358.2	0.036	5.94	259.6	102.4	2.6	0.24	0.0	0.00	0.00	0.12	0.02	10	19
20 ISL	14.47 D	14.47	32.793 D	24.385	353.9	0.068	5.96	260.1	102.3	2.7	0.24	0.0	0.00	0.00	0.13	0.03	20	
25	14.41	14.41	32.795	24.400	352.7	0.089	5.97	261.1	102.3	2.7	0.24	0.0	0.00	0.00	0.13	0.03	25	18
30 ISL	14.37 D	14.36	32.799 D	24.413	351.6	0.104	5.96	260.4	102.1	2.5	0.24	0.0	0.00	0.00	0.16	0.04	30	
41	14.19	14.19	33.132	24.707	323.9	0.143	5.93	259.4	101.4	2.0	0.24	0.0	0.00	0.00	0.23	0.07	41	17
50	14.01	14.00	33.131	24.746	320.6	0.172	5.93	259.4	101.1	1.9	0.24	0.0	0.00	0.00	0.24	0.10	50	16
62	13.29	13.28	33.116	24.880	308.0	0.210	5.94	259.6	99.6	2.0	0.27	0.0	0.00	0.00	0.47	0.26	63	15
75 ISL	12.16 D	12.15	33.015 D	25.022	294.7	0.248	5.92	255.5	96.9	3.7	0.47	2.3	0.00	0.00	0.28	0.18	76	
76	12.13	12.12	33.015	25.027	294.3	0.252	5.91	258.5	96.8	3.8	0.48	2.5	0.50	0.00	0.27	0.18	77	14
87	12.56	12.54	33.209	25.097	288.0	0.284	5.48	239.7	90.7	4.6	0.50	4.0	0.10	0.00	0.24	0.23	88	13
100 ISL	12.08 D	12.06	33.327 D	25.281	270.8	0.319	5.23	216.9	85.6	6.0	0.61	6.1	0.05	0.00	0.19	0.15	101	
101	11.96	11.95	33.319	25.297	269.3	0.323	5.21	227.7	85.1	6.1	0.62	6.3	0.04	0.00	0.19	0.15	102	12
113	10.89	10.88	33.343	25.509	249.1	0.354	4.88	213.2	77.9	9.8	0.91	10.8	0.00	0.00	0.08	0.07	114	11
124	10.66	10.65	33.410	25.603	240.5	0.381	4.57	199.9	72.7	12.5	1.10	13.9	0.00	0.00	0.05	0.05	125	10
125 ISL	10.64 D	10.63	33.413 D	25.608	240.0	0.382	4.52	D197.0	D 71.9	12.8	1.11	14.1	0.00	0.00	0.05	0.05	126	
141	9.77	9.76	33.490	25.817	220.3	0.420	4.16	181.8	64.8	17.1	1.35	17.8	0.00	0.00	0.02	0.04	142	09
150 ISL	9.71 D	9.70	33.552 D	25.875	215.0	0.439	4.03	D175.6	D 62.8	19.4	1.47	19.5	0.00	0.00	0.02	0.04	151	
170	9.36	9.34	33.713	26.060	197.8	0.481	3.26	142.6	50.5	24.4	1.74	23.4	0.00	0.00	0.01	0.04	171	08
199	8.86	8.84	33.866	26.259	179.3	0.536	3.03	132.2	46.4	29.0	1.86	25.5	0.00	0.00	0.01	0.04	201	07
200 ISL	8.86 D	8.83	33.882 D	26.272	178.1	0.537	2.99	D129.9	D 45.7	29.1	1.87	25.6	0.00	0.00			202	
230	8.79	8.76	34.001	26.377	168.8	0.590	2.18	95.0	33.3	34.4	2.13	28.5	0.00	0.00			232	06
250 ISL	8.28 D	8.26	33.992 D	26.448	162.2	0.623	2.52	D109.8	D 38.2	36.6	2.09	28.7	0.00	0.00			252	
271	7.82	7.79	33.971	26.501	157.3	0.657	2.79	121.9	41.7	39.0	2.05	28.9	0.00	0.00			273	05
300 ISL	7.33 D	7.30	34.004 D	26.597	148.4	0.702	2.26	D 98.2	D 33.4	45.6	2.24	31.4	0.00	0.00			302	
320	7.05	7.01	34.015	26.645	144.0	0.730	2.02	88.0	29.6	50.2	2.37	33.1	0.00	0.00			323	04
382	6.51	6.47	34.073	26.764	133.3	0.816	1.25	54.4	18.1	61.1	2.69	37.1	0.00	0.00			385	03
400 ISL	6.28 D	6.25	34.071 D	26.792	130.8	0.842	1.19	D 51.5	D 17.1	64.3	2.74	37.8	0.00	0.00			403	
440	5.93	5.89	34.100	26.860	124.6	0.891	0.89	39.0	12.8	71.5	2.86	39.5	0.00	0.00			444	02
500 ISL	5.56 D	5.51	34.169 D	26.961	115.4	0.966	0.54	D 23.5	D 7.7	81.6	3.03	41.2	0.00	0.00			504	
516	5.37	5.33	34.175	26.989	112.8	0.981	0.51	22.1	7.1	84.3	3.07	41.7	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 1704 STATION 80.0 50.5

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
34 27.8 N	120 29.7 W	10/04/2017	1622 UTC	39 m	070 07 kn	330 03 03	0	1018.8 mb	14.0 C	11.3 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	11.05	11.05	33.656	25.720	226.3	0.000	4.07	177.7	65.3	19.9	1.61	18.5	0.30	0.30	1.12	0.90	0	
2	11.05	11.05	33.656	25.720	226.3	0.005	4.07	177.7	65.3	19.9	1.61	18.5	0.30	0.30	1.12	0.90	2	06
5	11.05	11.05	33.654	25.719	226.5	0.011	4.07	177.5	65.3	19.5	1.59	18.4	0.29	0.26	1.14	0.88	5	05
10	10.93	10.93	33.655	25.742	224.5	0.023	3.92	171.2	62.8	19.8	1.62	18.6	0.28	0.25	1.24	0.98	10	03
10	10.93	10.93	33.655	25.742	224.5	0.023											10	04
15	10.86	10.86	33.665	25.761	222.8	0.034	3.50	153.0	56.0	20.5	1.66	19.6	0.25	0.20	1.06	0.85	15	02
20 ISL	10.67 D	10.67	33.679 D	25.806	218.6	0.043	3.14	D136.6	D 50.0	21.3	1.72	20.5	0.22	0.13	0.81	0.85	20	
25	10.66	10.65	33.691	25.819	217.6	0.056	2.90	126.8	46.2	22.1	1.77	21.4	0.20	0.06	0.55	0.84	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 1704 — 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 26.9 N	120 31.7 W	10/04/2017	1714 UTC	75 m	300 15 kn	300 05 10	0	1019.0 mb	13.4 C	11.2 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	11.20	11.20	33.630	25.673	230.7	0.000	4.04	176.3	65.0	18.4	1.48	17.8	0.28	0.10	1.69	0.39	0	
2 A	11.20	11.20	33.630	25.673	230.8	0.005	4.04	176.3	65.0	18.4	1.48	17.8	0.28	0.10	1.69	0.39	2	12
4 A	11.18	11.18	33.627	25.675	230.7	0.009	4.03	176.0	64.9	18.2	1.46	17.8	0.27	0.14	1.64	0.34	4	11
6 A	11.16	11.16	33.628	25.679	230.3	0.014	4.02	175.6	64.7	18.2	1.49	18.0	0.27	0.14	1.62	0.34	6	10
10 ISL	11.11 D	11.11	33.633 D	25.692	229.2	0.021	3.92	D170.6 D	63.0	18.3	1.51	18.2	0.27	0.09	1.69	0.42	10	
11 A	11.06	11.05	33.633	25.702	228.3	0.025	3.91	170.6	62.7	18.3	1.51	18.2	0.27	0.08	1.70	0.44	11	07
11	11.06	11.05	33.632	25.701	228.3	0.026											11	09
11	11.06	11.05	33.633	25.702	228.3	0.025											11	08
20 A	10.43	10.43	33.684	25.851	214.3	0.045	3.10	135.5	49.2	21.0	1.66	21.1	0.25	0.06	0.72	0.39	20	06
24 A	10.29	10.29	33.717	25.902	209.6	0.054	2.93	127.9	46.3	22.5	1.75	22.4	0.19	0.00	0.40	0.29	24	05
30 ISL	10.09 D	10.08	33.764 D	25.974	202.8	0.064	2.67	D116.3 D	42.0	23.9	1.82	23.4	0.14	0.00	0.22	0.26	30	
32	10.08	10.07	33.764	25.976	202.8	0.070	2.67	116.4	41.9	24.3	1.84	23.8	0.12	0.00	0.16	0.25	32	04
40	10.06	10.05	33.770	25.984	202.2	0.087	2.65	115.6	41.6	24.3	1.85	24.0	0.12	0.00	0.16	0.27	40	03
50	9.93	9.93	33.799	26.028	198.3	0.107	2.57	112.0	40.2	25.2	1.89	24.5	0.11	0.13	0.12	0.25	50	02
60	9.91	9.90	33.817	26.046	196.7	0.126	2.52	110.2	39.6	26.1	1.94	24.9	0.12	0.21	0.11	0.29	60	01

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

RV BELL M SHIMADA — CALCOFI CRUISE 1704 — STATION 80.0 55.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
34 19.0 N	120 48.3 W	10/04/2017	2012 UTC	813 m	320 23 kn	310 06 06	0	1018.8 mb	14.0 C	12.0 C	06 m	0/8		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	12.81	12.81	33.516	25.281	268.0	0.000	6.36	277.9	105.9	5.5	0.34	3.7	0.16	0.06	11.97	0.54	0	
2	12.81	12.81	33.516	25.281	268.1	0.005	6.36	277.9	105.9	5.5	0.34	3.7	0.16	0.06	11.97	0.54	2	23
10	12.82	12.82	33.517	25.281	268.3	0.027	6.37	278.3	106.1	5.3	0.33	3.6	0.15	0.00	11.98	0.52	10	20
10	12.82	12.82	33.516	25.281	268.4	0.028											10	22
11	12.79	12.79	33.516	25.286	267.9	0.029											11	21
20	12.77	12.77	33.515	25.290	267.8	0.054	6.23	272.1	103.6	5.3	0.37	4.0	0.15	0.00	11.47	0.66	20	18
20	12.77	12.77	33.519	25.292	267.6	0.055											20	19
30	12.52	12.52	33.514	25.337	263.6	0.080	5.95	259.8	98.4	7.8	0.60	6.4	0.16	0.20	7.31	0.74	30	17
40	12.28	12.27	33.521	25.390	258.8	0.106	5.74	250.6	94.4	10.1	0.75	8.6	0.20	0.25	5.24	0.59	40	16
50	11.21	11.20	33.569	25.627	236.5	0.131	4.63	202.4	74.6	16.3	1.35	16.1	0.36	0.17	0.57	0.52	50	15
61	10.96	10.95	33.578	25.679	231.7	0.157	4.34	189.5	69.5	17.1	1.38	16.9	0.29	0.17	0.53	0.53	61	14
70	10.22	10.21	33.618	25.839	216.7	0.177	3.36	146.7	53.0	19.9	1.62	20.4	0.16	0.00	0.17	0.25	71	13
75 ISL	10.07 D	10.06	33.672 D	25.906	210.4	0.186	3.09	D134.4 D	48.5	21.4	1.69	21.4	0.13	0.00	0.13	0.22	76	
85	9.84	9.83	33.740	25.998	201.9	0.209	2.83	123.7	44.3	24.3	1.82	23.3	0.06	0.00	0.05	0.16	86	12
100	9.63	9.62	33.806	26.085	193.9	0.238	2.66	116.0	41.4	26.3	1.90	24.4	0.04	0.00	0.04	0.16	101	11
120	9.14	9.12	33.883	26.226	180.8	0.276	2.60	113.6	40.1	29.2	1.97	26.0	0.03	0.00	0.03	0.16	121	10
125 ISL	9.07 D	9.06	33.893 D	26.245	179.2	0.284	2.60	D113.2 D	40.0	29.9	1.99	26.3	0.03	0.00	0.03	0.15	126	
140	8.86	8.84	33.946	26.321	172.2	0.311	2.42	105.9	37.1	32.0	2.05	27.3	0.03	0.00	0.02	0.12	141	09
150 ISL	8.83 D	8.81	33.962 D	26.339	170.7	0.327	2.36	D102.6 D	36.1	33.3	2.09	27.8	0.03	0.00	0.03	0.11	151	
171	8.53	8.51	34.021	26.431	162.4	0.363	2.12	92.4	32.2	36.1	2.18	28.9	0.03	0.00	0.03	0.09	172	08
200 ISL	8.31 D	8.28	34.071 D	26.505	155.8	0.409	1.79	D 77.9 D	27.1	39.8	2.30	30.4	0.03	0.00	0.02	0.08	202	
201	8.30	8.28	34.071	26.505	155.8	0.411	1.80	78.6	27.3	39.9	2.30	30.5	0.03	0.00	0.02	0.08	203	07
231	8.04	8.01	34.104	26.572	150.0	0.457	1.56	67.9	23.4	43.8	2.42	31.8	0.03	0.00			233	06
250 ISL	7.89 D	7.87	34.125 D	26.610	146.6	0.485	1.39	D 60.5 D	20.9	46.1	2.49	32.5	0.03	0.00			252	
271	7.79	7.76	34.151	26.646	143.6	0.515	1.22	53.4	18.3	48.7	2.56	33.2	0.03	0.00			273	05
300 ISL	7.57 D	7.54	34.180 D	26.702	138.7	0.557	1.03	D 44.8 D	15.3	52.0	2.65	34.2	0.00	0.00			302	
321	7.44	7.41	34.193	26.731	136.2	0.585	0.91	39.8	13.5	54.4	2.71	34.8	0.00	0.00			324	04
382	7.02	6.99	34.242	26.828	127.8	0.666	0.62	27.0	9.1	61.8	2.87	36.3	0.00	0.00			385	03
400 ISL	6.92 D	6.89	34.253 D	26.851	125.8	0.690	0.57	D 24.9 D	8.4	63.7	2.90	36.8	0.00	0.00			403	
439	6.61	6.57	34.260	26.899	121.6	0.737	0.50	21.8	7.3	67.9	2.96	37.9	0.00	0.00			443	02
500 ISL	6.33 D	6.28	34.268 D	26.944	118.1	0.813	0.41	D 18.0 D	6.0	73.8	3.05	38.9	0.00	0.00			504	
517	6.18	6.13	34.288	26.980	114.8	0.829	0.36	15.6	5.2	75.4	3.07	39.3	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 1704 — 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 8.9 N	121 9.1 W	11/04/2017	0107 UTC	2155 m	310 23 kn	310 06 07	0	1017.3 mb	14.1 C	12.9 C	12 m	0/8		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	13.45	13.45	33.318	25.000	294.8	0.000	5.99	261.9	101.0	4.5	0.51	3.3	0.16	0.07	0.86	0.47	0	
2	13.45	13.45	33.318	25.000	294.8	0.006	5.99	261.9	101.0	4.5	0.51	3.3	0.16	0.07	0.86	0.47	2	21
10	13.46	13.46	33.317	24.998	295.2	0.030	5.98	261.5	100.9	4.3	0.50	3.2	0.16	0.00	0.77	0.53	10	19
10	13.46	13.46	33.317	24.999	295.2	0.030											10	20
20	13.42	13.41	33.317	25.008	294.6	0.059	5.98	261.4	100.8	4.3	0.50	3.2	0.16	0.00	0.75	0.55	20	18
30 ISL	13.40 D	13.39	33.314 D	25.009	294.8	0.086	6.00	261.3	101.0	4.3	0.51	3.3	0.16	0.00	0.75	0.58	30	
31	13.41	13.41	33.315	25.007	295.0	0.091	6.00	262.1	101.0	4.3	0.51	3.3	0.16	0.00	0.75	0.58	31	17
40	12.88	12.87	33.437	25.209	276.1	0.117	5.70	249.1	95.0	7.2	0.76	7.0	0.25	0.34	0.46	0.44	40	16
50	11.99	11.98	33.436	25.380	260.0	0.144	5.08	221.9	83.1	8.9	0.93	9.3	0.36	0.50	0.30	0.32	50	15
60	10.59	10.58	33.458	25.651	234.4	0.169	4.13	180.3	65.5	14.6	1.28	16.0	0.12	0.00	0.15	0.11	60	14
70	10.20	10.19	33.493	25.745	225.6	0.192	4.01	175.3	63.1	16.2	1.35	17.4	0.06	0.00	0.11	0.07	71	13
75 ISL	9.94 D	9.93	33.567 D	25.846	216.1	0.201	3.78	D164.7 D	59.2	17.7	1.41	18.4	0.05	0.00	0.08	0.07	76	
86	9.51	9.50	33.644	25.979	203.6	0.226	3.75	163.9	58.2	20.9	1.54	20.6	0.03	0.00	0.02	0.07	87	12
100	9.27	9.26	33.698	26.059	196.3	0.254	3.49	152.5	53.9	23.0	1.66	22.2	0.03	0.00	0.01	0.06	101	11
120	9.34	9.33	33.883	26.193	184.0	0.292	2.52	110.1	39.0	28.6	1.97	25.6	0.00	0.00	0.02	0.09	121	10
125 ISL	9.36 D	9.35	33.918 D	26.218	181.8	0.300	2.40	D104.6 D	37.2	29.5	2.01	26.0	0.02	0.00	0.02	0.10	126	
140	9.14	9.12	33.978	26.301	174.2	0.328	2.18	95.0	33.5	32.3	2.12	27.3	0.00	0.00	0.02	0.12	141	09
150 ISL	9.07 D	9.06	34.006 D	26.334	171.3	0.344	2.08	D 90.6 D	32.1	33.3	2.15	27.6	0.02	0.00	0.02	0.11	151	
170	8.93	8.91	34.046	26.389	166.5	0.379	1.95	85.2	30.0	35.2	2.22	28.4	0.00	0.00	0.01	0.09	171	08
200	8.51	8.49	34.094	26.491	157.2	0.428	1.69	73.8	25.7	39.4	2.33	30.1	0.00	0.00	0.01	0.09	202	07
230	8.17	8.14	34.117	26.563	150.8	0.474	1.51	65.9	22.8	43.4	2.43	31.5	0.00	0.00			232	06
250 ISL	8.05 D	8.02	34.130 D	26.591	148.5	0.504	1.40	D 61.1 D	21.1	45.6	2.49	32.2	0.00	0.00			252	
270	7.91	7.88	34.154	26.631	145.0	0.533	1.24	54.0	18.6	47.8	2.55	32.9	0.00	0.00			272	05
300 ISL	7.73 D	7.70	34.181 D	26.680	140.9	0.577	1.05	D 45.5 D	15.7	51.4	2.63	33.9	0.00	0.00			302	
320	7.50	7.47	34.191	26.721	137.2	0.604	0.95	41.4	14.1	53.8	2.69	34.6	0.00	0.00			323	04
380	6.93	6.89	34.215	26.821	128.4	0.684	0.68	29.8	10.0	61.6	2.85	36.7	0.00	0.00			383	03
400 ISL	6.78 D	6.74	34.220 D	26.845	126.3	0.711	0.61	D 26.6 D	9.0	64.2	2.89	37.2	0.00	0.00			403	
439	6.50	6.46	34.250	26.905	120.9	0.757	0.47	20.4	6.8	69.1	2.98	38.3	0.00	0.00			443	02
500 ISL	6.10 D	6.05	34.293 D	26.993	113.1	0.831	0.35	D 15.2 D	5.0	76.5	3.08	39.5	0.00	0.00			504	
516	6.00	5.95	34.303	27.014	111.3	0.846	0.32	13.9	4.6	78.5	3.11	39.8	0.00	0.00			520	01

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

RV BELL M SHIMADA CALCOFI CRUISE 1704 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 48.7 N	121 50.4 W	11/04/2017	0642 UTC	3572 m	310 19 kn			1018.5 mb	14.4 C	13.4 C				064

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0	14.47	14.47	33.106	24.627	330.3	0.000	5.95	259.8	102.2	1.9	0.26	0.0	0.00	0.00	0.15	0.02	0	
2	14.47	14.47	33.106	24.627	330.3	0.007	5.95	259.8	102.2	1.9	0.26	0.0	0.00	0.00	0.15	0.02	2	22
10	14.47	14.47	33.106	24.626	330.7	0.033	5.94	259.7	102.2	1.8	0.26	0.0	0.00	0.00	0.18	0.03	10	20
10	14.47	14.47	33.107	24.627	330.6	0.032											10	21
20 ISL	14.47 D	14.47	33.107 D	24.627	330.9	0.063	5.94	D258.7	D102.1	1.8	0.25	0.0	0.00	0.00	0.17	0.04	20	
25	14.47	14.47	33.105	24.627	331.1	0.083	5.95	260.1	102.3	1.8	0.25	0.0	0.00	0.00	0.17	0.04	25	19
30 ISL	14.47 D	14.47	33.107 D	24.628	331.2	0.097	5.95	259.3	102.3	1.9	0.25	0.0	0.00	0.00	0.17	0.04	30	
40	14.47	14.47	33.105	24.627	331.5	0.132	5.94	259.7	102.1	2.0	0.25	0.0	0.00	0.00	0.16	0.03	40	18
50	14.00	13.99	33.096	24.720	323.0	0.165	5.98	261.4	101.8	2.0	0.24	0.0	0.00	0.00	0.19	0.06	50	17
62	12.68	12.67	33.025	24.930	303.2	0.203	6.11	266.9	101.1	2.5	0.29	0.3	0.03	0.00	0.49	0.34	63	16
74	12.28	12.27	33.045	25.022	294.7	0.239											75	15
75	12.27	12.26	33.052	25.030	294.0	0.242	5.88	257.0	96.5	3.9	0.46	2.8	0.31	0.00	0.40	0.36	76	14
86	11.69	11.68	33.232	25.279	270.5	0.273	5.26	230.0	85.4	6.4	0.65	6.6	0.04	0.00	0.31	0.33	87	13
100	10.81	10.80	33.349	25.528	247.0	0.309	4.75	207.5	75.7	10.9	0.98	12.0	0.03	0.00	0.13	0.10	101	12
112	10.29	10.27	33.424	25.678	232.9	0.338	4.45	194.6	70.2	14.2	1.18	15.2	0.00	0.00	0.07	0.06	113	11
124	10.04	10.03	33.476	25.761	225.3	0.365	4.29	187.5	67.3	16.1	1.28	17.0	0.00	0.00	0.04	0.04	125	10
125 ISL	10.03 D	10.02	33.485 D	25.768	224.6	0.366	4.23	D184.2	D 66.4	16.4	1.30	17.2	0.01	0.00	0.04	0.04	126	
140	9.42	9.40	33.633	25.986	204.1	0.399	3.87	169.2	60.0	21.2	1.52	20.7	0.00	0.00	0.01	0.04	141	09
150 ISL	9.27 D	9.25	33.726 D	26.083	195.1	0.419	3.53	D153.4	D 54.4	23.9	1.66	22.6	0.01	0.00	0.01	0.04	151	
169	9.05	9.03	33.850	26.216	182.9	0.455	2.79	121.7	42.9	29.1	1.92	26.3	0.00	0.00	0.01	0.03	170	08
200 ISL	8.67 D	8.65	33.956 D	26.359	169.8	0.510	2.60	D113.1	D 39.7	32.6	2.01	27.5	0.00	0.00	0.01	0.03	202	
201	8.70	8.68	33.950	26.350	170.7	0.512	2.58	112.6	39.4	32.7	2.01	27.6	0.00	0.00	0.01	0.03	203	07
229	8.14	8.12	33.981	26.460	160.6	0.558	2.76	120.3	41.5	35.9	2.02	28.2	0.00	0.00			231	06
250 ISL	7.83 D	7.81	34.008 D	26.527	154.4	0.592	2.48	D107.7	D 37.1	40.0	2.11	29.6	0.00	0.00			252	
270	7.45	7.42	34.007	26.582	149.4	0.622	2.42	105.5	35.9	43.9	2.19	30.9	0.00	0.00			272	05
300 ISL	7.09 D	7.06	34.021 D	26.644	143.8	0.667	2.06	D 89.8	D 30.4	48.9	2.36	32.8	0.00	0.00			302	
320	7.06	7.03	34.048	26.670	141.7	0.694	1.76	77.0	25.9	52.3	2.47	34.0	0.00	0.00			323	04
379	6.49	6.46	34.080	26.772	132.5	0.775	1.22	53.1	17.7	62.1	2.71	37.2	0.00	0.00			382	03
400 ISL	6.15 D	6.11	34.059 D	26.799	129.9	0.805	1.24	D 53.8	D 17.8	65.5	2.76	38.1	0.00	0.00			403	
441	5.84	5.80	34.085	26.859	124.5	0.854	0.95	41.4	13.5	72.2	2.87	39.8	0.00	0.00			445	02
500 ISL	5.64 D	5.60	34.172 D	26.953	116.3	0.929	0.54	D 23.5	D 7.7	78.4	3.05	41.0	0.00	0.00			504	
515	5.67	5.63	34.208	26.979	114.2	0.942	0.45	19.4	6.3	79.9	3.09	41.3	0.00	0.00			519	01

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

RV BELL M SHIMADA CALCOFI CRUISE 1704 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 28.7 N	122 32.2 W	11/04/2017	1216 UTC	3939 m	300 13 kn			1017.6 mb	14.5 C	13.3 C				065

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0	14.88	14.88	33.130	24.558	336.9	0.000	5.86	256.3	101.6	1.9	0.24	0.0	0.00	0.02	0.10	0.03	0	
2	14.88	14.87	33.130	24.558	336.9	0.007	5.86	256.3	101.6	1.9	0.24	0.0	0.00	0.00	0.10	0.03	2	22
10	14.88	14.87	33.127	24.557	337.3	0.034	5.86	256.4	101.7	1.8	0.22	0.0	0.00	0.00	0.10	0.02	10	20
10	14.88	14.87	33.127	24.557	337.3	0.033											10	21
20 ISL	14.88 D	14.88	33.130 D	24.559	337.5	0.064	5.86	255.4	101.6	1.8	0.21	0.0	0.00	0.00	0.10	0.03	20	
26	14.88	14.88	33.127	24.557	337.8	0.088	5.85	256.0	101.5	1.8	0.21	0.0	0.00	0.00	0.10	0.03	26	19
30 ISL	14.80 D	14.80	33.137 D	24.582	335.6	0.099	5.87	256.0	101.7	1.8	0.22	0.0	0.00	0.00	0.11	0.03	30	
40	14.52	14.51	33.124	24.633	331.0	0.135	5.93	259.1	102.0	1.6	0.23	0.0	0.00	0.00	0.13	0.03	40	18
50	14.18	14.17	33.105	24.690	325.9	0.167	6.01	262.5	102.6	1.6	0.24	0.0	0.00	0.00	0.17	0.07	50	17
63	13.46	13.45	33.099	24.832	312.6	0.209	6.02	263.3	101.4	1.8	0.23	0.0	0.00	0.00	0.26	0.17	64	16
74	12.80	12.79	33.131	24.988	298.0	0.242											75	15
75 ISL	12.77 D	12.76	33.141 D	25.004	296.6	0.244	5.80	252.6	96.2	2.8	0.34	1.5	0.19	0.00	0.33	0.29	76	
76	12.72	12.71	33.135	25.009	296.1	0.249	5.78	252.6	95.8	2.9	0.35	1.6	0.21	0.00	0.34	0.30	77	14
88	12.16	12.15	33.168	25.141	283.7	0.283	5.50	240.3	90.1	4.8	0.55	4.9	0.08	0.00	0.28	0.22	89	13
100 ISL	11.54 D	11.53	33.295 D	25.355	263.6	0.315	4.87	212.2	78.9	8.6	0.88	10.0	0.04	0.00	0.18	0.14	101	
101	11.38	11.36	33.295	25.385	260.8	0.319	4.82	210.8	77.8	9.0	0.91	10.5	0.03	0.00	0.17	0.14	102	12
112	10.78	10.77	33.373	25.552	245.0	0.347	4.41	192.6	70.2	12.5	1.14	14.3	0.00	0.00	0.09	0.10	113	11
125 ISL	10.05 D	10.04	33.485 D	25.766	224.9	0.376	4.23	D184.0	D 66.3	15.5	1.26	16.6	0.02	0.00	0.03	0.05	126	
126	10.00	9.99	33.477	25.768	224.7	0.380	4.23	185.1	66.4	15.7	1.27	16.8	0.00	0.00	0.02	0.05	127	10
141	9.52	9.50	33.566	25.918	210.6	0.412	4.06	177.2	62.9	18.5	1.42	19.1	0.00	0.00	0.01	0.03	142	09
150 ISL	9.24 D	9.22	33.695 D	26.065	196.8	0.429	3.76	D163.5	D 57.9	20.9	1.52	20.6	0.00	0.00	0.01	0.03	151	
171	8.98	8.96	33.819	26.204	184.0	0.471	3.25	141.8	49.8	26.6	1.76	24.3	0.00	0.00	0.01	0.02	172	08
200	8.48	8.46	33.933	26.371	168.6	0.522	2.99	130.5	45.4	31.6	1.91	26.5	0.00	0.00	0.01	0.02	202	07
230	8.04	8.02	33.993	26.484	158.2	0.571	2.52	110.3	38.0	37.6	2.09	29.1	0.00	0.00			232	06
250 ISL	7.80 D	7.78	34.009 D	26.532	154.0	0.602	2.39	D104.0	D 35.8	40.9	2.16	30.2	0.00	0.00			252	
271	7.40	7.37	34.012	26.593	148.4	0.634	2.31	100.7	34.2	44.4	2.23	31.3	0.00	0.00			273	05
300 ISL	7.05 D	7.02	34.026 D	26.653	142.9	0.676	1.99	D 86.7	D 29.3	50.1	2.39	33.4	0.00	0.00			302	
320	6.82	6.79	34.040	26.695	139.1	0.705	1.67	73.0	24.5	54.1	2.50	34.9	0.00	0.00			323	04
380	6.27	6.24	34.079	26.799	129.8	0.785	1.11	48.3	16.0	64.1	2.76	38.0	0.00	0.00			383	03
400 ISL	6.19 D	6.15	34.115 D	26.839	126.2	0.812	0.89	D 38.8	D 12.9	66.8	2.82	38.6	0.00	0.00			403	
440	5.89	5.85	34.134	26.892	121.5	0.861	0.72	31.6	10.4	72.4	2.93	39.8	0.00	0.00			444	02
500 ISL	5.70 D	5.66	34.195 D	26.964	115.3	0.934	0.48	D 20.7	D 6.8	77.9	3.06	40.9	0.00	0.00			504	
516	5.63	5.58	34.222	26.995	112.5	0.950	0.39	17.0	5.5	79.3	3.10	41.2	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 1704 — STATION 80.0 90.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
33 8.9 N	123 13.0 W	11/04/2017	1828 UTC	4176 m	220 12 kn	290 06 10	0	1019.0 mb	15.8 C	14.0 C	22 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	14.98	14.98	33.096	24.509	341.5	0.000	5.91	258.3	102.6	1.5	0.25	0.0	0.01	0.01	0.11	0.02	0	
2 A	14.98	14.98	33.096	24.509	341.6	0.007	5.91	258.3	102.6	1.5	0.25	0.0	0.00	0.00	0.11	0.02	2	23
10 ISL	14.88 D	14.87	33.133 D	24.561	336.9	0.031	5.94	258.8	102.9	1.5	0.24	0.0	0.00	0.00	0.11	0.02	10	
13 A	14.74	14.74	33.118	24.579	335.3	0.044	5.95	260.1	102.8	1.5	0.24	0.0	0.00	0.00	0.11	0.02	13	21
13	14.74	14.74	33.118	24.579	335.2	0.043											13	22
19 A	14.65	14.65	33.114	24.595	333.9	0.064	5.94	259.9	102.6	1.8	0.24	0.0	0.00	0.00	0.13	0.03	19	20
20 ISL	14.65 D	14.64	33.119 D	24.600	333.5	0.064	5.95	259.3	102.6	1.8	0.24	0.0	0.00	0.00	0.14	0.03	20	
26	14.45	14.44	33.110	24.636	330.3	0.087	5.98	261.2	102.7	1.8	0.26	0.0	0.00	0.00	0.16	0.04	26	19
30 ISL	14.38 D	14.37	33.110 D	24.650	329.0	0.098	5.98	260.7	102.6	1.6	0.26	0.0	0.00	0.00	0.17	0.05	30	
34 A	14.34	14.33	33.113	24.662	328.0	0.114	5.99	261.8	102.7	1.5	0.25	0.0	0.00	0.00	0.17	0.05	34	18
43	14.21	14.20	33.104	24.682	326.4	0.143	6.02	263.0	102.9	1.4	0.25	0.0	0.00	0.00	0.17	0.04	43	17
50 ISL	14.16 D	14.16	33.112 D	24.698	325.1	0.164	6.03	262.6	102.9	1.5	0.26	0.0	0.01	0.00	0.18	0.06	50	
52	14.04	14.04	33.102	24.715	323.5	0.172	6.03	263.6	102.7	1.5	0.26	0.0	0.00	0.00	0.18	0.07	52	16
62 A	13.94	13.93	33.107	24.741	321.3	0.205	6.01	262.9	102.3	1.7	0.26	0.0	0.00	0.00	0.27	0.14	63	15
75 ISL	13.52 D	13.51	33.081 D	24.808	315.3	0.244	6.07	264.5	102.3	1.9	0.29	0.0	0.07	0.00	0.34	0.21	76	
76	13.47	13.46	33.075	24.813	314.8	0.250											77	14
77 A	13.44	13.43	33.076	24.820	314.2	0.252	6.08	265.8	102.3	1.9	0.30	0.0	0.08	0.09	0.35	0.22	78	13
88	13.07	13.06	33.118	24.928	304.2	0.286	5.96	260.7	99.6	2.7	0.40	0.9	0.51	0.00	0.27	0.23	89	12
100 ISL	12.48 D	12.47	33.193 D	25.100	288.1	0.321	5.56	242.4	91.8	4.2	0.49	3.8	0.14	0.00	0.18	0.21	101	
101	12.48	12.47	33.190	25.098	288.3	0.325	5.53	241.8	91.3	4.3	0.50	4.1	0.11	0.00	0.17	0.21	102	11
119	11.43	11.42	33.330	25.403	259.5	0.374	5.04	220.4	81.4	8.0	0.78	8.9	0.00	0.00	0.10	0.09	120	10
125 ISL	11.01 D	11.00	33.366 D	25.507	249.7	0.389	4.84	D210.6	D 77.4	9.4	0.87	10.4	0.02	0.00	0.08	0.07	126	
140	10.37	10.36	33.450	25.685	233.0	0.426	4.57	199.7	72.2	13.1	1.10	14.2	0.00	0.00	0.03	0.03	141	09
150 ISL	9.90 D	9.88	33.534 D	25.830	219.3	0.448	4.37	D190.3	D 68.4	16.1	1.25	16.6	0.02	0.00	0.02	0.02	151	
170	9.27	9.25	33.664	26.035	200.1	0.490	3.77	164.9	58.3	22.0	1.56	21.5	0.00	0.00	0.01	0.02	171	08
200 ISL	8.64 D	8.62	33.837 D	26.270	178.2	0.547	3.69	D160.5	D 56.2	26.6	1.64	23.1	0.00	0.00	0.00	0.02	202	
201	8.63	8.60	33.822	26.261	179.1	0.549	3.75	164.0	57.1	26.7	1.64	23.2	0.00	0.00	0.00	0.02	203	07
231	8.34	8.32	33.942	26.399	166.4	0.601	3.04	132.9	46.0	33.0	1.91	26.8	0.00	0.00			233	06
250 ISL	7.86 D	7.84	33.967 D	26.491	157.9	0.632	2.77	D120.5	D 41.5	37.8	2.05	28.8	0.00	0.00			252	
270	7.59	7.56	34.007	26.562	151.3	0.663	2.34	102.1	34.8	42.9	2.20	30.8	0.00	0.00			272	05
300 ISL	7.02 D	6.99	33.999 D	26.635	144.6	0.708	2.22	D 96.4	D 32.6	48.5	2.32	32.6	0.00	0.00			302	
320	6.82	6.79	34.008	26.670	141.5	0.735	2.04	89.1	29.8	52.3	2.40	33.7	0.00	0.00			323	04
381	6.56	6.52	34.102	26.780	131.8	0.819	1.10	48.0	16.0	61.8	2.73	37.3	0.00	0.00			384	03
400 ISL	6.47 D	6.44	34.129 D	26.813	128.9	0.846	0.95	D 41.1	D 13.7	65.1	2.78	38.0	0.00	0.00			403	
441	5.82	5.78	34.117	26.887	121.9	0.896	0.84	36.7	12.0	72.3	2.90	39.5	0.00	0.00			445	02
500 ISL	5.50 D	5.46	34.180 D	26.977	113.9	0.968	0.51	D 22.0	D 7.2	81.0	3.04	41.2	0.00	0.00			504	
512	5.46	5.42	34.186	26.986	113.1	0.979	0.46	19.9	6.5	82.8	3.07	41.6	0.00	0.00			516	01

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

RV BELL M SHIMADA — CALCOFI CRUISE 1704 — 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 54.1 W	12/04/2017	0023 UTC	4290 m	190 16 kn	260 04 07	1	1017.6 mb	16.8 C	15.3 C	26 m	7/8	SC	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	15.94	15.94	33.226	24.397	352.2	0.000	5.76	251.7	102.0	1.7	0.22	0.0	0.01	0.00	0.06	0.02	0	
2	15.94	15.94	33.226	24.398	352.2	0.007	5.76	251.7	102.0	1.7	0.22	0.0	0.00	0.00	0.06	0.02	2	22
10	15.86	15.86	33.223	24.414	350.9	0.035	5.79	253.1	102.4	1.5	0.21	0.0	0.00	0.00	0.08	0.01	10	20
10	15.86	15.86	33.222	24.414	351.0	0.035											10	21
20 ISL	15.58 D	15.57	33.178 D	24.443	348.5	0.067	5.79	D252.5	D101.9	1.4	0.20	0.0	0.01	0.00	0.08	0.01	20	
25	15.40	15.39	33.179	24.484	344.8	0.087	5.82	254.3	101.9	1.4	0.20	0.0	0.00	0.00	0.07	0.01	25	19
30 ISL	15.39 D	15.38	33.166 D	24.477	345.6	0.102	5.81	D253.3	D101.8	1.5	0.21	0.0	0.00	0.00	0.08	0.01	30	
40	15.37	15.36	33.164	24.480	345.6	0.139	5.81	253.8	101.7	1.5	0.22	0.0	0.00	0.00	0.08	0.01	40	18
50	15.21	15.21	33.150	24.504	343.7	0.174	5.86	256.3	102.3	1.6	0.20	0.0	0.00	0.00	0.09	0.03	50	17
62	14.92	14.91	33.133	24.555	339.1	0.215	5.88	257.0	102.0	1.6	0.21	0.0	0.00	0.00	0.10	0.02	62	16
75	14.83	14.82	33.136	24.577	337.5	0.259	5.89	257.4	102.0	1.6	0.22	0.0	0.00	0.00	0.11	0.02	76	15
87	14.54	14.53	33.133	24.638	332.1	0.299	5.90	258.0	101.6	1.5	0.21	0.0	0.00	0.00	0.19	0.06	88	14
99	13.43	13.42	33.078	24.824	314.5	0.339											100	13
100	13.42	13.41	33.077	24.826	314.3	0.341	5.95	259.9	100.0	1.7	0.27	0.2	0.05	0.00	0.41	0.22	101	12
112	13.34	13.32	33.185	24.927	305.1	0.378	5.65	246.8	94.9	2.8	0.37	1.7	0.12	0.00	0.34	0.31	113	11
125 ISL	11.97 D	11.95	33.313 D	25.292	270.4	0.415	4.93	D214.7	D 80.5	6.6	0.71	7.7	0.05	0.00	0.21	0.20	126	
126	11.91	11.90	33.306	25.296	270.0	0.418	4.99	218.0	81.4	6.9	0.74	8.1	0.04	0.00	0.20	0.19	127	10
141	11.45	11.43	33.337	25.406	259.9	0.458	4.78	209.1	77.3	8.8	0.88	10.3	0.03	0.00	0.14	0.14	142	09
150 ISL	10.69 D	10.67	33.414 D	25.603	241.1	0.480	4.52	D196.7	D 71.8	11.5	1.03	12.8	0.02	0.00	0.10	0.11	151	
170	9.75	9.73	33.563	25.879	215.1	0.526	4.17	182.0	64.9	17.4	1.35	18.2	0.00	0.00	0.02	0.03	171	08
200 ISL	9.05 D	9.03	33.787 D	26.167	188.1	0.587	3.29	D143.0	D 50.5	25.1	1.72	23.7	0.00	0.00	0.00	0.02	202	
201	9.02	9.00	33.783	26.170	187.9	0.589	3.31	144.4	50.8	25.4	1.73	23.9	0.00	0.00	0.00	0.02	203	07
231	8.62	8.59	33.917	26.338	172.4	0.643	2.97	129.5	45.2	30.3	1.87	26.1	0.00	0.00			233	06
250 ISL	8.27 D	8.24	33.978 D	26.439	163.1	0.675	2.70	D117.4	D 40.8	34.9	2.00	27.9	0.00	0.00			252	
271	7.82	7.79	34.010	26.531	154.4	0.708	2.37	103.7	35.5	39.9	2.15	30.0	0.00	0.00			273	05
300 ISL	7.45 D	7.42	34.041 D	26.610	147.3	0.752	1.92	D 83.4	D 28.5	46.0	2.34	32.3	0.00	0.00			302	
322	7.22	7.19	34.068	26.663	142.5	0.784	1.56	68.3	23.1	50.6	2.48	34.0	0.00	0.00			325	04
380	6.79	6.75	34.141	26.781	132.0	0.863	0.91	39.8	13.3	59.5	2.75	36.9	0.00	0.00			383	03
400 ISL	6.57 D	6.53	34.157 D	26.823	128.1	0.891	0.76	D 33.1	D 11.1	62.8	2.81	37.6	0.00	0.00			403	
440	6.31	6.27	34.197	26.889	122.3	0.940	0.58	25.2	8.4	69.2	2.92	39.0	0.00	0.00			444	02
500 ISL	5.95 D	5.90	34.223 D	26.956	116.4	1.014	0.44	D 19.2	D 6.3	76.1	3.01	40.2	0.00	0.00			504	
516	5.83	5.79	34.229	26.975	114.7	1.030	0.40	17.5	5.7	77.9	3.04	40.5	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 1704 — 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 23.9 N	119 48.1 W	10/04/2017	0916 UTC	39 m	130 01 kn			1017.3 mb	12.9 C	10.9 C				058

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0	12.90	12.90	33.507	25.257	270.4	0.000	5.12	223.6	85.4	10.2	0.86	8.1	0.48	0.25	3.28	0.64	0	
3	12.90	12.90	33.507	25.257	270.4	0.008	5.12	223.6	85.4	10.2	0.86	8.1	0.48	0.25	3.28	0.64	3	05
5	12.91	12.91	33.507	25.255	270.6	0.014	5.18	226.1	86.4	9.8	0.84	7.9	0.47	0.24	3.37	0.64	5	04
10	12.42	12.42	33.515	25.357	261.1	0.027	4.71	205.8	77.8	11.7	0.97	10.1	0.53	0.34	2.70	0.70	10	03
20	11.82	11.82	33.565	25.510	246.8	0.052	3.72	162.7	60.8	16.8	1.40	14.6	0.68	0.22	1.23	0.66	20	02
25	11.42	11.41	33.570	25.588	239.5	0.064	3.38	147.6	54.7	18.4	1.53	16.4	0.71	0.09	0.81	0.64	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 1704 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 16.7 N	120 1.4 W	10/04/2017	1120	UTC	571 m	300 09 kn			1017.2 mb	13.3 C	11.9 C				059

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0	11.89	11.89	33.597	25.522	245.2	0.000	5.49	240.0	89.8	16.2	1.09	12.2	0.25	0.10	2.53	0.74	0	
2	11.89	11.89	33.597	25.522	245.2	0.005	5.49	240.0	89.8	16.2	1.09	12.2	0.25	0.10	2.53	0.74	2	24
10	11.89	11.89	33.596	25.521	245.5	0.025	5.44	237.8	89.0	16.2	1.08	12.2	0.25	0.11	2.77	0.80	10	23
20	10.83	10.83	33.645	25.752	223.8	0.048	3.84	167.6	61.3	19.7	1.54	18.9	0.33	0.15	1.07	0.56	20	22
30	10.52	10.52	33.660	25.818	217.7	0.070	3.38	147.6	53.7	21.3	1.66	20.7	0.30	0.00	0.65	0.38	30	21
40	10.21	10.21	33.706	25.907	209.5	0.092	3.15	137.5	49.6	23.1	1.74	21.9	0.22	0.00	0.46	0.28	40	20
49	10.11	10.11	33.723	25.938	206.7	0.110	3.03	132.2	47.6	23.8	1.79	22.6	0.18	0.00	0.23	0.23	49	19
50 ISL	10.11 D	10.11	33.730 D	25.944	206.2	0.111	2.99	D130.1 D	47.0	24.1	1.81	22.8	0.17	0.00	0.23	0.23	50	
60	9.76	9.75	33.841	26.090	192.5	0.132	2.51	109.5	39.2	27.3	1.96	24.8	0.04	0.00	0.17	0.28	60	18
70	9.60	9.59	33.891	26.156	186.5	0.151	2.36	103.0	36.7	29.0	2.02	25.6	0.04	0.00	0.11	0.22	71	17
75 ISL	9.55 D	9.55	33.927 D	26.192	183.2	0.159	2.20	D 95.9 D	34.3	29.7	2.05	25.9	0.03	0.00	0.10	0.21	76	
85	9.49	9.48	33.944	26.217	181.1	0.179	2.16	94.4	33.6	31.0	2.10	26.5	0.03	0.00	0.09	0.19	86	16
100	9.47	9.46	33.963	26.234	179.8	0.206	2.13	92.8	33.0	31.1	2.10	26.6	0.03	0.00	0.09	0.18	101	15
120	9.41	9.40	34.042	26.306	173.4	0.241	2.00	87.5	31.1	32.3	2.15	27.0	0.03	0.00	0.06	0.14	121	14
125 ISL	9.39 D	9.38	34.057 D	26.322	171.9	0.249	1.93	D 83.8 D	29.9	32.8	2.17	27.2	0.03	0.00	0.05	0.14	126	
140	9.30	9.28	34.074	26.350	169.6	0.276	1.85	80.6	28.6	34.1	2.22	27.6	0.04	0.00	0.05	0.15	141	13
150 ISL	9.25 D	9.23	34.093 D	26.373	167.6	0.292	1.77	D 76.8 D	27.3	35.2	2.25	28.0	0.03	0.00	0.05	0.14	151	
170	9.07	9.05	34.118	26.422	163.3	0.326	1.63	71.0	25.1	37.4	2.31	28.8	0.00	0.00	0.05	0.12	171	12
200	8.82	8.80	34.133	26.475	158.9	0.374	1.43	62.4	21.9	40.4	2.39	29.8	0.00	0.00	0.09	0.14	202	11
231	8.55	8.53	34.149	26.530	154.3	0.422	1.20	52.5	18.3	44.5	2.50	30.9	0.00	0.00			233	10
250 ISL	8.29 D	8.26	34.163 D	26.582	149.6	0.452	1.00	D 43.4 D	15.1	47.3	2.56	31.6	0.00	0.00			252	
270	8.17	8.14	34.168	26.603	147.9	0.481	0.94	40.9	14.2	50.3	2.63	32.4	0.00	0.00			272	09
300 ISL	7.95 D	7.92	34.185 D	26.650	143.9	0.526	0.89	D 38.7 D	13.4	51.9	2.65	33.2	0.00	0.00			302	
320	7.70	7.67	34.176	26.680	141.3	0.554	0.97	42.4	14.5	53.0	2.66	33.8	0.00	0.00			323	08
380	7.36	7.32	34.210	26.757	134.8	0.636	0.64	27.9	9.5	61.9	2.84	34.4	0.00	0.00			383	07
400 ISL	7.17 D	7.13	34.223 D	26.794	131.5	0.665	0.52	D 22.8 D	7.7	66.3	2.91	34.1	0.00	0.00			403	
440	6.92	6.88	34.237	26.841	127.5	0.715	0.30	12.9	4.3	75.2	3.05	33.5	0.00	0.00			444	06
480	6.70	6.65	34.250	26.881	124.1	0.765	0.08	3.3	1.1	88.2	3.23	30.2	0.00	0.00			484	05
500 ISL	6.65 D	6.60	34.254 D	26.891	123.4	0.793	0.04	D 1.6 D	0.5	95.1	3.37	26.0	0.00	0.00			504	
515	6.61	6.56	34.253	26.896	123.2	0.809	0.02	1.0	0.3	100.3	3.48	22.8	0.00	0.10			519	04
535	6.59	6.54	34.254	26.900	123.1	0.833	0.01	0.3	0.1	105.1	3.63	19.1	0.00	0.28			540	03
555	6.58	6.53	34.254	26.902	123.3	0.858	0.02	0.7	0.2	106.0	3.64	18.6	0.00	0.21			560	02
560	6.58	6.53	34.255	26.903	123.3	0.864	0.01	0.2	0.1	106.3	3.68	18.5	0.00	0.21			565	01

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

RV BELL M SHIMADA CALCOFI CRUISE 1704 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 13.7 N	119 23.8 W	10/04/2017	0638	UTC	31 m	250 12 kn			1017.8 mb	12.9 C	10.9 C				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	14.16	14.16	33.475	24.976	297.0	0.000	6.70	292.7	114.7	2.5	0.21	0.1	0.04	0.03	9.28	0.15	0	
2	14.16	14.16	33.475	24.976	297.1	0.006	6.70	292.7	114.7	2.5	0.21	0.1	0.04	0.00	9.28	0.15	2	05
5	14.14	14.14	33.478	24.983	296.6	0.015	6.70	292.7	114.7	2.4	0.21	0.1	0.04	0.00	8.97	0.50	5	04
10	14.02	14.01	33.477	25.008	294.3	0.030	6.59	287.9	112.5	2.9	0.24	0.8	0.07	0.00	9.12	0.50	10	02
10	14.02	14.01	33.478	25.009	294.2	0.031											10	03
20	12.97	12.97	33.500	25.238	272.7	0.058	5.32	232.2	88.8	9.2	0.74	7.3	0.32	0.28	5.12	0.60	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 1704 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 13.3 N	119 25.1 W	10/04/2017	0509	UTC	39 m	250 12 kn			1017.8 mb	12.9 C	10.9 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	13.47	13.47	33.492	25.133	282.2	0.000	6.13	267.8	103.5	6.9	0.54	4.3	0.21	0.18	5.42	0.60	0	
2	13.47	13.46	33.492	25.133	282.2	0.006	6.13	267.8	103.5	6.9	0.54	4.3	0.21	0.18	5.42	0.60	2	06
5	13.44	13.44	33.492	25.137	281.8	0.014	6.14	268.1	103.5	6.6	0.50	4.1	0.20	0.00	5.19	0.78	5	05
10	13.31	13.31	33.494	25.166	279.3	0.028	5.95	260.0	100.2	7.7	0.60	5.3	0.23	0.12	4.89	0.52	10	03
10	13.31	13.31	33.496	25.167	279.2	0.029											10	04
20	12.94	12.94	33.504	25.247	271.8	0.056	5.47	239.1	91.4	9.7	0.78	7.4	0.29	0.30	3.06	0.77	20	02
30 ISL	12.56 D	12.56	33.521 D	25.335	263.8	0.080	4.98	D217.0 D	82.5	11.6	1.00	10.0	0.38	0.51	2.55	0.67	30	
31	12.57	12.57	33.524	25.335	263.8	0.085	4.83	210.9	80.0	11.8	1.02	10.3	0.38	0.53	2.50	0.66	31	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 1704 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 10.4 N	119 30.6 W	10/04/2017	0237	UTC	175 m	250 18 kn	230 03 08	1	1017.3 mb	14.2 C	12.8 C		4/8	CS	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	13.19	13.19	33.519	25.209	274.9	0.000	6.34	276.9	106.4	8.6	0.68	6.6	0.26	0.04	5.25	0.53	0	
2	13.19	13.19	33.519	25.209	275.0	0.006	6.34	276.9	106.4	8.6	0.68	6.6	0.26	0.00	5.25	0.53	2	14
10	13.20	13.19	33.518	25.207	275.4	0.028	6.58	287.3	110.4	7.7	0.58	5.6	0.25	0.00	6.56	0.96	10	12
10	13.20	13.19	33.519	25.208	275.3	0.028											10	13
20	12.77	12.77	33.516	25.290	267.8	0.055	6.49	283.3	108.0	7.9	0.56	5.9	0.20	0.00	9.36	0.99	20	11
30	12.45	12.44	33.533	25.367	260.7	0.081	5.69	248.5	94.1	11.0	0.89	9.6	0.21	0.43	3.78	0.42	30	10
42	11.44	11.43	33.598	25.607	238.2	0.111	4.10	179.0	66.4	17.0	1.38	15.9	0.43	0.45	0.90	0.46	42	09
50 ISL	11.17 D	11.16	33.627 D	25.679	231.5	0.128	3.92	170.6	63.1	18.1	1.46	17.3	0.49	0.25	0.96	0.45	50	
51	11.10	11.10	33.621	25.686	230.8	0.132	3.90	170.2	62.6	18.2	1.47	17.5	0.50	0.22	0.96	0.45	51	08
60	10.56	10.56	33.668	25.818	218.4	0.152	3.05	133.0	48.4	20.8	1.69	21.3	0.18	0.00	0.49	0.55	60	07
72	10.11	10.10	33.799	25.998	201.6	0.177	2.73	119.2	43.0	24.6	1.81	23.0	0.14	0.00	0.19	0.29	73	06
75 ISL	10.02 D	10.01	33.836 D	26.043	197.4	0.182	2.65	D115.2 D	41.6	25.6	1.86	23.6	0.11	0.00	0.20	0.31	76	
84	9.71	9.70	33.930	26.169	185.6	0.201	2.35	102.6	36.7	28.5	2.00	25.5	0.05	0.00	0.25	0.39	85	05
100 ISL	9.44 D	9.43	34.043 D	26.302	173.3	0.228	2.07	D 90.1 D	32.2	31.4	2.12	26.8	0.02	0.00	0.14	0.18	101	
101	9.43	9.42	34.041	26.301	173.4	0.231	2.06	90.1	32.1	31.6	2.13	26.9	0.00	0.00	0.14	0.17	102	04
120	9.23	9.21	34.120	26.397	164.7	0.263	1.75	76.3	27.1	35.2	2.24	28.2	0.04	0.00	0.17	0.18	121	03
125 ISL	9.20 D	9.18	34.132 D	26.412	163.4	0.271	1.77	D 77.2 D	27.4	35.5	2.25	28.3	0.03	0.00	0.16	0.17	126	
140	9.17	9.15	34.146	26.429	162.1	0.296	1.67	73.0	25.8	36.1	2.29	28.7	0.00	0.00	0.14	0.13	141	02
150 ISL	9.12 D	9.10	34.163 D	26.449	160.4	0.311	1.61	D 70.2 D	24.9	36.7	2.32	28.8	0.02	0.00	0.12	0.14	151	
161	9.12	9.11	34.162	26.448	160.8	0.330	1.61	70.2	24.8	37.3	2.35	28.9	0.03	0.00	0.10	0.15	162	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 1704 — 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 52.8 N	120 8.3 W	09/04/2017	2057	UTC	97 m	300 20 kn	300 06 07	0	1019.6 mb	14.0 C	11.4 C	07 m	0/8		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	12.93	12.93	33.485	25.234	272.5	0.000	5.90	257.8	98.5	6.4	0.56	5.8	0.18	0.10	8.82	0.49	0	
2	12.93	12.93	33.485	25.234	272.5	0.005	5.90	257.8	98.5	6.4	0.56	5.8	0.18	0.10	8.82	0.49	2	11
10	12.92	12.91	33.484	25.236	272.6	0.027	5.88	256.9	98.1	5.9	0.56	5.6	0.18	0.07	9.28	0.33	10	09
10	12.92	12.91	33.483	25.236	272.6	0.028											10	10
20 ISL	12.51 D	12.51	33.511 D	25.338	263.2	0.052	5.55	241.5	91.8	8.1	0.71	8.0	0.20	0.20	7.84	0.33	20	
21	12.51	12.51	33.509	25.336	263.4	0.057	5.51	240.8	91.2	8.4	0.72	8.2	0.21	0.21	7.69	0.33	21	08
30	12.44	12.43	33.515	25.355	261.9	0.080	5.40	235.8	89.2	8.8	0.86	8.8	0.21	0.33	6.81	0.25	30	07
40	12.44	12.43	33.519	25.359	261.8	0.106	5.38	235.2	88.9	9.1	0.77	8.9	0.21	0.23	6.40	0.56	40	06
50	12.43	12.42	33.524	25.365	261.5	0.133	5.24	229.1	86.6	9.6	0.81	9.4	0.21	0.21	5.97	0.06	50	05
60	11.96	11.95	33.560 D	25.483	250.5	0.157	4.78	D208.0 D	78.1								60	04
71	11.88	11.87	33.564	25.500	249.2	0.186	4.71	205.6	76.8	12.7	1.03	12.1	0.21	0.18	4.60	0.21	72	03
75 ISL	11.73 D	11.72	33.588 D	25.547	244.7	0.194	4.59	D199.8 D	74.7	13.8	1.11	13.0	0.20	0.17	4.08	0.31	76	
80	11.47	11.46	33.604	25.607	239.2	0.208	4.32	188.7	69.9	15.1	1.21	14.1	0.20	0.15	3.43	0.44	81	02
90	11.42	11.41	33.634	25.640	236.3	0.232	4.07	177.6	65.8	16.9	1.29	15.6	0.19	0.12	2.70	0.50	91	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 1704 — 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 24.8 W	09/04/2017	1706	UTC	938 m	310 26 kn	320 05 05	2	1019.4 mb	12.2 C	10.9 C	13 m	8/8	AS	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	13.01	13.01	33.417	25.166	279.0	0.000	5.78	D251.6 D	96.5	6.4	0.70	6.1	0.21	0.36	1.05	0.42	0	
3 A	13.01	13.01	33.417	25.166	279.1	0.008	5.78	D251.6 D	96.5	6.4	0.70	6.1	0.21	0.36	1.05	0.42	3	24
8 A	13.00	13.00	33.418	25.169	279.0	0.022	5.81	253.8	97.1	6.5	0.70	6.1	0.20	0.38	0.93	0.35	8	23
10 ISL	13.00 D	13.00	33.419 D	25.169	279.0	0.024	5.79	252.2	96.7	6.5	0.70	6.2	0.20	0.38	0.93	0.34	10	
11	12.99	12.99	33.419	25.171	278.9	0.032											11	21
12 A	13.00	12.99	33.419	25.171	278.9	0.034	5.77	252.1	96.4	6.5	0.70	6.2	0.20	0.38	0.92	0.34	12	20
12	13.00	12.99	33.419	25.170	278.9	0.032											12	22
20 A	13.00	12.99	33.419	25.171	279.1	0.056	5.78	252.3	96.5	6.6	0.71	6.2	0.20	0.38	1.00	0.33	20	19
27	12.99	12.99	33.419	25.172	279.2	0.075	5.75	251.4	96.1	6.6	0.71	6.2	0.20	0.39	1.00	0.32	27	18
30 ISL	13.00 D	12.99	33.420 D	25.172	279.3	0.080	5.78	251.7	96.5	6.6	0.71	6.2	0.20	0.39	0.99	0.33	30	
37 A	12.99	12.98	33.421	25.175	279.2	0.103	5.74	D250.0 D	95.9	6.6	0.71	6.3	0.20	0.39	0.96	0.34	37	17
44 A	12.98	12.98	33.422	25.177	279.2	0.123	5.75	251.2	96.0	6.5	0.71	6.3	0.20	0.41	0.96	0.35	44	16
50 ISL	12.97 D	12.96	33.422 D	25.180	279.1	0.136	5.71	D248.8 D	95.4	6.6	0.73	6.4	0.21	0.45	0.90	0.37	50	
52	12.97	12.96	33.423	25.182	279.0	0.145	5.74	250.8	95.9	6.7	0.73	6.4	0.21	0.46	0.88	0.37	52	15
60	12.95	12.94	33.423	25.185	278.9	0.167	5.73	250.1	95.6	6.9	0.73	6.5	0.21	0.44	0.82	0.36	60	14
71	12.83	12.82	33.424	25.210	276.9	0.198	5.61	245.3	93.5	7.2	0.76	6.9	0.24	0.46	0.75	0.35	72	13
75 ISL	12.37 D	12.36	33.426 D	25.300	268.3	0.206	5.41	D235.5 D	89.1	8.6	0.88	8.8	0.30	0.38	0.58	0.31	76	
84	11.07	11.06	33.425	25.541	245.5	0.232	4.40	192.3	70.6	11.9	1.15	13.1	0.45	0.20	0.21	0.21	85	12
100	9.71	9.70	33.656	25.955	206.3	0.268	3.36	147.0	52.4	22.2	1.66	22.0	0.05	0.00	0.06	0.11	101	11
120	9.28	9.26	33.803	26.141	188.9	0.308	2.91	127.0	44.9	26.4	1.86	24.6	0.04	0.00	0.04	0.11	121	10
125 ISL	9.30 D	9.28	33.885 D	26.202	183.3	0.314	2.67	D116.0 D	41.2	27.6	1.92	25.1	0.04	0.00	0.04	0.11	126	
140	9.30	9.28	33.984	26.280	176.2	0.344	2.28	99.5	35.2	31.0	2.08	26.6	0.03	0.00	0.04	0.11	141	09
150 ISL	9.28 D	9.27	34.024 D	26.314	173.2	0.359	2.12	D 92.3 D	32.8	32.1	2.12	27.1	0.03	0.00	0.05	0.10	151	
171	9.05	9.03	34.057	26.378	167.6	0.398	1.97	85.8	30.3	34.5	2.19	28.0	0.03	0.00	0.05	0.09	172	08
200 ISL	8.61 D	8.58	34.160 D	26.529	153.7	0.442	1.44	D 62.5 D	21.9	40.8	2.39	30.5	0.03	0.00	0.03	0.06	202	
204	8.50	8.47	34.160	26.546	152.1	0.450	1.42	61.9	21.5	41.7	2.42	30.9	0.03	0.00	0.03	0.05	206	07
229	8.19	8.17	34.156	26.590	148.3	0.488	1.34	58.5	20.3	44.4	2.47	31.7	0.00	0.00			231	06
250 ISL	7.95 D	7.93	34.179 D	26.644	143.5	0.517	1.13	D 49.1 D	17.0	47.8	2.55	32.8	0.01	0.00			252	
267	7.72	7.69	34.185	26.683	140.0	0.543	1.07	46.6	16.0	50.6	2.61	33.7	0.00	0.00			269	05
300 ISL	7.46 D	7.43	34.216 D	26.746	134.5	0.587	0.84	D 36.5 D	12.5	54.8	2.71	34.8	0.01	0.00			302	
320	7.25	7.22	34.230	26.786	130.9	0.615	0.75	32.8	11.1	57.4	2.77	35.5	0.00	0.00			323	04
382	6.85	6.82	34.256	26.863	124.3	0.694	0.56	24.6	8.2	64.0	2.89	36.9	0.00	0.00			385	03
400 ISL	6.78 D	6.74	34.266 D	26.882	122.8	0.716	0.51	D 22.1 D	7.4	65.9	2.92	37.3	0.00	0.00			403	
439	6.55	6.51	34.282	26.925	119.1	0.763	0.42	18.4	6.1	70.1	2.98	38.2	0.00	0.00			443	02
500 ISL	6.26 D	6.22	34.298 D	26.976	114.9	0.836	0.36	D 15.4 D	5.1	74.7	3.05	39.2	0.01	0.00			504	
520	6.15	6.10	34.300	26.992	113.6	0.858	0.32	14.1	4.6	76.2	3.07	39.6	0.00	0.00			524	01

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

RV BELL M SHIMADA — CALCOFI CRUISE 1704 — 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 34.4 N	120 45.6 W	09/04/2017	1158	UTC	1414 m	330 25 kn			1018.6 mb	12.8 C	10.9 C				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	13.75	13.75	33.128	24.793	314.5	0.000	6.01	262.8	101.9	3.7	0.38	1.3	0.09	0.09	0.50	0.25	0	
3	13.75	13.75	33.128	24.793	314.6	0.009	6.01	262.8	101.9	3.7	0.38	1.3	0.09	0.09	0.50	0.25	3	21
10	13.76	13.76	33.129	24.792	314.9	0.031	6.01	262.4	101.8	3.0	0.36	1.0	0.09	0.08	0.49	0.28	10	19
10	13.76	13.76	33.129	24.792	314.9	0.031											10	20
20	13.74	13.74	33.130	24.797	314.7	0.063	6.01	262.4	101.7	3.0	0.36	1.0	0.08	0.06	0.50	0.25	20	18
30 ISL	13.18 D	13.18	33.189 D	24.956	299.8	0.090	5.93	258.5	99.4	4.5	0.51	2.9	0.16	0.18	0.59	0.32	30	
31	13.13	13.13	33.191	24.967	298.8	0.097	5.93	258.9	99.2	4.7	0.52	3.1	0.16	0.19	0.60	0.32	31	17
40	12.99	12.99	33.238	25.032	292.9	0.123	5.86	255.9	97.7	5.3	0.58	3.9	0.19	0.38	0.63	0.28	40	16
50	12.55	12.55	33.277	25.149	282.1	0.152	5.68	248.3	94.0	5.3	0.67	5.1	0.20	0.37	0.26	0.25	50	15
61	12.20	12.19	33.276	25.216	275.9	0.183	5.25	229.3	86.2	6.3	0.74	7.4	0.18	0.22	0.28	0.26	61	14
70	11.80	11.79	33.440	25.420	256.7	0.207	4.70	205.3	76.6	9.8	1.03	10.8	0.36	0.54	0.16	0.18	71	13
75 ISL	10.71 D	10.70	33.398 D	25.583	241.2	0.216	4.48	D195.1 D	71.3	11.4	1.10	12.4	0.25	0.00	0.12	0.14	76	
85	10.27	10.26	33.440	25.692	231.0	0.243	4.34	189.6	68.4	14.5	1.23	15.6	0.04	0.00	0.05	0.07	86	12
100 ISL	9.67 D	9.65	33.610 D	25.927	208.9	0.273	3.75	D163.2 D	58.4	19.5	1.49	19.7	0.03	0.00	0.02	0.06	101	
101	9.65	9.64	33.606	25.926	209.0	0.278	3.82	166.7	59.4	19.9	1.51	19.9	0.03	0.00	0.01	0.06	102	11
120	9.48	9.46	33.783	26.093	193.5	0.316	3.01	131.6	46.8	25.6	1.81	24.3	0.03	0.07	0.02	0.09	121	10
125 ISL	9.53 D	9.52	33.865 D	26.149	188.4	0.323	2.57	D111.7 D	39.9	26.7	1.88	24.8	0.03	0.00	0.02	0.09	126	
140	9.36	9.34	33.920	26.220	181.9	0.354	2.34	102.0	36.2	30.2	2.07	26.5	0.00	0.00	0.02	0.11	141	09
150 ISL	9.32 D	9.31	33.947 D	26.248	179.5	0.369	2.22	D 96.8 D	34.4	31.2	2.11	27.0	0.02	0.00	0.02	0.11	151	
170	9.14	9.12	34.014	26.331	172.1	0.407	2.03	88.6	31.3	33.3	2.20	28.0	0.00	0.00	0.02	0.12	171	08
199	8.61	8.58	34.048	26.441	162.0	0.455	2.00	87.4	30.5	36.9	2.23	29.4	0.00	0.00	0.01	0.10	201	07
200 ISL	8.57 D	8.55	34.052 D	26.450	161.1	0.455	1.97	D 85.6 D	30.0	37.0	2.23	29.4	0.02	0.00			202	
232	8.32	8.30	34.093	26.521	155.0	0.507	1.73	75.4	26.2	40.5	2.35	31.1	0.00	0.00			234	06
250 ISL	8.08 D	8.06	34.084 D	26.550	152.4	0.533	1.72	D 75.0 D	26.0	42.5	2.40	31.8	0.01	0.00			252	
269	7.95	7.92	34.104	26.586	149.3	0.564	1.56	68.1	23.4	44.6	2.45	32.5	0.00	0.00			271	05
300 ISL	7.75 D	7.72	34.154 D	26.655	143.3	0.608	1.19	D 51.9 D	17.8	49.0	2.56	33.7	0.01	0.00			302	
320	7.54	7.51	34.151	26.683	140.8	0.638	1.12	48.8	16.7	51.8	2.63	34.5	0.00	0.00			323	04
382	6.89	6.86	34.196	26.810	129.4	0.722	0.73	32.0	10.8	61.3	2.85	37.0	0.00	0.00			385	03
400 ISL	6.75 D	6.71	34.211 D	26.841	126.6	0.745	0.64	D 27.7 D	9.3	63.6	2.89	37.5	0.01	0.00			403	
440	6.44	6.40	34.226	26.895	121.8	0.794	0.51	22.0	7.3	68.8	2.98	38.7	0.00	0.00			444	02
500 ISL	5.82 D	5.77	34.239 D	26.985	113.6	0.866	0.38	D 16.7 D	5.5	77.3	3.09	40.3	0.01	0.00			504	
514	5.89	5.85	34.276	27.006	111.9	0.880	0.32	13.8	4.5	79.3	3.12	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 1704 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 14.4 N	121 27.0 W	09/04/2017	0415 UTC	3755 m	340 26 kn			1020.9 mb	14.0 C	10.8 C				051

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0	14.80	14.80	33.114	24.562	336.5	0.000	5.86	256.0	101.5	1.7	0.24	0.0	0.01	0.00	0.11	0.01	0	
2	14.80	14.80	33.114	24.562	336.6	0.007	5.86	256.0	101.5	1.7	0.24	0.0	0.00	0.00	0.11	0.01	2	21
10	14.81	14.81	33.123	24.568	336.2	0.034	5.89	257.5	102.0	1.7	0.25	0.0	0.00	0.00	0.10	0.02	10	19
10	14.81	14.81	33.115	24.562	336.8	0.035											10	20
20 ISL	14.82 D	14.81	33.114 D	24.560	337.3	0.064	5.88	D256.4	D101.8	1.7	0.25	0.0	0.00	0.00	0.11	0.02	20	
25	14.81	14.81	33.113	24.560	337.5	0.084	5.89	257.2	101.9	1.7	0.25	0.0	0.00	0.00	0.11	0.02	25	18
30 ISL	14.81 D	14.81	33.115 D	24.562	337.5	0.099	5.88	D256.5	D101.9	1.7	0.25	0.0	0.00	0.00	0.11	0.02	30	
40	14.80	14.79	33.113	24.564	337.6	0.135	5.89	257.4	102.0	1.7	0.25	0.0	0.00	0.00	0.11	0.02	40	17
50	14.69	14.68	33.108	24.584	336.0	0.169	5.88	257.0	101.6	1.7	0.23	0.0	0.00	0.00	0.11	0.03	50	16
62	14.47	14.46	33.102	24.627	332.3	0.209	5.92	258.5	101.7	1.7	0.27	0.0	0.00	0.00	0.22	0.06	63	15
75 ISL	14.37 D	14.36	33.106 D	24.651	330.4	0.250	5.91	D257.8	D101.4	1.7	0.26	0.0	0.00	0.00	0.28	0.10	76	
76	14.27	14.26	33.103	24.670	328.6	0.255	5.94	259.4	101.6	1.7	0.26	0.0	0.00	0.00	0.28	0.10	77	14
88	13.58	13.57	33.103	24.812	315.3	0.294	5.94	259.3	100.2	2.1	0.31	0.4	0.10	0.00	0.49	0.27	89	13
100	13.33	13.32	33.216	24.952	302.4	0.331	5.71	249.3	95.9	3.3	0.51	2.4	0.72	0.00	0.27	0.22	101	12
112	12.61	12.59	33.199	25.081	290.3	0.366	5.49	239.8	90.8	4.3	0.52	4.0	0.09	0.00	0.23	0.22	113	11
125 ISL	11.74 D	11.73	33.290 D	25.316	268.1	0.402	5.14	D223.7	D 83.5	6.7	0.70	7.3	0.03	0.00	0.15	0.14	126	
126	11.68	11.67	33.282	25.320	267.7	0.406	5.15	224.9	83.6	6.9	0.71	7.6	0.03	0.00	0.14	0.13	127	10
139	10.70	10.68	33.393	25.584	242.7	0.439	4.69	204.7	74.5	11.8	1.05	12.9	0.00	0.00	0.05	0.05	140	09
150 ISL	10.24 D	10.23	33.478 D	25.729	229.0	0.464	4.49	D195.5	D 70.7	13.8	1.16	14.6	0.02	0.00	0.04	0.04	151	
169	9.76	9.74	33.560	25.875	215.4	0.507	4.29	187.5	67.0	17.3	1.34	17.5	0.00	0.00	0.01	0.03	170	08
200 ISL	9.00 D	8.98	33.853 D	26.227	182.4	0.569	3.94	D171.3	D 60.5	22.5	1.50	20.7	0.01	0.00	0.00	0.02	202	
201	8.97	8.95	33.796	26.187	186.2	0.571	4.00	174.8	61.4	22.7	1.51	20.8	0.00	0.00	0.00	0.02	203	07
231	8.40	8.37	33.935	26.385	167.8	0.625	3.49	152.2	52.8	31.1	1.79	25.0	0.00	0.00			233	06
250 ISL	7.91 D	7.89	33.954 D	26.473	159.6	0.655	3.11	D135.1	D 46.6	36.3	1.98	27.4	0.01	0.00			252	
271	7.61	7.58	33.988	26.544	153.1	0.688	2.59	112.9	38.5	42.0	2.18	30.1	0.00	0.00			273	05
300 ISL	7.15 D	7.12	34.006 D	26.624	145.7	0.732	2.21	D 96.1	D 32.6	47.9	2.33	32.1	0.01	0.00			302	
319	6.89	6.86	34.007	26.659	142.5	0.759	2.05	89.4	30.0	51.7	2.43	33.4	0.00	0.00			322	04
382	6.37	6.33	34.054	26.767	132.9	0.846	1.37	59.8	19.8	61.6	2.71	37.0	0.00	0.00			385	03
400 ISL	6.27 D	6.24	34.078 D	26.799	130.1	0.870	1.13	D 49.1	D 16.3	64.8	2.79	37.8	0.01	0.00			403	
438	5.98	5.94	34.120	26.869	123.7	0.918	0.81	35.3	11.6	71.5	2.95	39.5	0.00	0.00			442	02
500 ISL	5.89 D	5.84	34.206 D	26.951	116.9	0.994	0.48	D 20.8	D 6.9	78.1	3.11	40.5	0.01	0.00			504	
517	5.83	5.79	34.239	26.984	113.9	1.012	0.38	16.5	5.4	80.0	3.15	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 1704 STATION 83.3 80.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
32 54.7 N	122 8.2 W	08/04/2017	1935 UTC	4127 m	320 15 kn	310 08 08	1	1022.4 mb	16.8 C	13.8 C	24 m	2/8	SC	050

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0	14.82	14.82	33.124	24.566	336.1	0.000	5.92	258.7	102.5	1.2	0.24	0.0	0.01	0.00	0.15	0.03	0	
3 A	14.82	14.82	33.124	24.566	336.2	0.010	5.92	258.7	102.5	1.2	0.24	0.0	0.00	0.00	0.15	0.03	3	24
10	14.81	14.81	33.124	24.569	336.2	0.034	5.94	259.7	102.9	1.3	0.24	0.0	0.00	0.00	0.16	0.03	10	22
10	14.81	14.81	33.124	24.568	336.2	0.034											10	23
14 A	14.81	14.80	33.123	24.568	336.3	0.047	5.91	258.3	102.3	1.2	0.24	0.0	0.00	0.00	0.18	0.02	14	21
20 ISL	14.76 D	14.76	33.123 D	24.579	335.5	0.063	5.92	D257.9	D102.3	1.1	0.23	0.0	0.00	0.00	0.19	0.02	20	
21 A	14.77	14.76	33.123	24.578	335.6	0.071	5.92	258.8	102.4	1.1	0.23	0.0	0.00	0.00	0.19	0.02	21	20
30 ISL	14.52 D	14.51	33.119 D	24.628	331.2	0.096	5.96	D260.0	D102.6	1.1	0.23	0.0	0.00	0.00	0.20	0.03	30	
37 A	14.50	14.49	33.117	24.631	331.1	0.124	5.95	260.3	102.4	1.1	0.23	0.0	0.00	0.00	0.20	0.04	37	19
48	14.29	14.28	33.133	24.688	326.0	0.160	6.00	262.1	102.7	1.1	0.24	0.0	0.00	0.00	0.37	0.10	48	18
50 ISL	14.28 D	14.27	33.125 D	24.684	326.5	0.163	5.99	D261.2	D102.6	1.1	0.24	0.0	0.00	0.00	0.41	0.12	50	
57	14.12	14.12	33.134	24.724	322.9	0.189	6.07	265.5	103.7	1.1	0.25	0.0	0.00	0.00	0.54	0.18	57	17
68 A	13.83	13.82	33.162	24.808	315.2	0.224	6.01	262.7	102.0	1.4	0.29	0.1	0.07	0.00	0.58	0.36	69	15
68	13.83	13.82	33.160	24.806	315.3	0.225											69	16
75 ISL	13.75 D	13.74	33.184 D	24.840	312.3	0.243	5.90	257.0	99.9	1.8	0.33	0.7	0.14	0.00	0.51	0.36	76	
76	13.73	13.72	33.183	24.843	312.0	0.249	5.88	257.1	99.6	1.9	0.34	0.8	0.15	0.00	0.50	0.36	77	14
83 A	13.53	13.52	33.210	24.906	306.3	0.271	5.61	245.4	94.7	2.8	0.44	2.2	0.23	0.00	0.42	0.29	84	13
100 ISL	12.36 D	12.35	33.283 D	25.193	279.2	0.318	4.97	D216.4	D 81.8	6.3	0.76	7.6	0.11	0.00	0.22	0.24	101	
101	12.28	12.27	33.278	25.204	278.2	0.324	5.00	218.4	82.1	6.5	0.78	8.0	0.11	0.00	0.21	0.23	102	12
110	11.40	11.38	33.345	25.421	257.6	0.348	4.56	199.2	73.6	10.1	1.03	12.1	0.07	0.00	0.12	0.12	111	11
125 ISL	10.79 D	10.77	33.441 D	25.605	240.4	0.383	4.01	D174.6	D 63.9	13.4	1.25	15.5	0.03	0.00	0.09	0.09	126	
126	10.74	10.73	33.420	25.597	241.1	0.388	4.09	178.9	65.1	13.6	1.26	15.8	0.03	0.00	0.08	0.09	127	10
140	9.93	9.91	33.544	25.833	218.8	0.420	3.82	166.9	59.8	18.0	1.47	19.4	0.00	0.00	0.03	0.05	141	09
150 ISL	9.66 D	9.64	33.634 D	25.948	208.0	0.439	3.54	D154.3	D 55.2	19.9	1.56	20.7	0.02	0.00	0.02	0.04	151	
170	9.46	9.44	33.721	26.049	198.9	0.482	3.15	137.6	48.8	23.5	1.75	23.4	0.00	0.00	0.01	0.04	171	08
200	9.05	9.02	33.894	26.252	180.1	0.539	2.62	114.4	40.3	29.1	1.95	26.3	0.00	0.00	0.01	0.04	202	07
231	8.63	8.60	33.976	26.383	168.2	0.593	2.42	105.8	36.9	32.8	2.04	27.9	0.00	0.00			233	06
250 ISL	8.35 D	8.32	34.014 D	26.456	161.5	0.623	2.26	D 98.3	D 34.2	37.1	2.15	29.4	0.01	0.00			252	
270	7.93	7.90	34.055	26.550	152.7	0.656	1.95	85.3	29.3	41.7	2.27	31.0	0.00	0.00			272	05
300 ISL	7.45 D	7.42	34.084 D	26.642	144.2	0.699	1.62	D 70.3	D 24.0	47.2	2.43	33.0	0.01	0.00			302	
322	7.28	7.25	34.104	26.682	140.7	0.731	1.36	59.4	20.1	51.3	2.54	34.5	0.00	0.12			325	04
380	6.46	6.42	34.100	26.792	130.7	0.810	1.06	46.5	15.4	61.5	2.71	37.3	0.00	0.10			383	03
400 ISL	6.35 D	6.31	34.120 D	26.822	128.0	0.836	0.91	D 39.8	D 13.2	64.4	2.77	38.0	0.01	0.09			403	
441	6.06	6.02	34.152	26.885	122.3	0.887	0.69	29.9	9.9	70.4	2.89	39.4	0.00	0.07			445	02
500 ISL	5.77 D	5.72	34.203 D	26.963	115.6	0.959	0.47	D 20.4	D 6.7	76.5	3.00	40.1	0.01	0.00			504	
525	5.73	5.69	34.231	26.990	113.4	0.986	0.39	17.0	5.6	79.1	3.05	40.5	0.00	0.00			529	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 1704 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 34.5 N	122 48.6 W	08/04/2017	1123 UTC	4210 m	320 20 kn			1018.1 mb	14.9 C	12.1 C				049

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0	14.97	14.97	33.123	24.533	339.2	0.000	5.87	256.5	101.9	2.0	0.25	0.0	0.01	0.01	0.12	0.03	0	
3	14.97	14.97	33.123	24.533	339.3	0.010	5.87	256.5	101.9	2.0	0.25	0.0	0.00	0.00	0.12	0.03	3	22
10	14.98	14.98	33.120	24.529	340.0	0.034	5.89	257.7	102.4	1.6	0.23	0.0	0.00	0.00	0.12	0.02	10	20
10	14.98	14.98	33.115	24.525	340.3	0.032											10	21
20 ISL	14.57 D	14.56	33.118 D	24.617	331.9	0.063	5.94	D258.8	D102.3	1.5	0.24	0.0	0.00	0.00	0.14	0.04	20	
25	14.54	14.53	33.114	24.619	331.8	0.084	5.93	259.4	102.1	1.5	0.24	0.0	0.00	0.00	0.15	0.05	25	19
30 ISL	14.52 D	14.52	33.114 D	24.623	331.6	0.096	5.95	D259.3	D102.4	1.5	0.24	0.0	0.00	0.00	0.16	0.05	30	
40	14.49	14.48	33.115	24.631	331.2	0.134	5.92	258.8	101.8	1.5	0.23	0.0	0.00	0.00	0.19	0.06	40	18
50	14.47	14.46	33.114	24.635	331.1	0.167	5.93	259.0	101.9	1.4	0.24	0.0	0.00	0.00	0.21	0.06	50	17
62	14.41	14.40	33.116	24.650	330.1	0.207	5.92	258.6	101.6	1.4	0.24	0.0	0.00	0.00	0.36	0.17	62	16
75 ISL	13.66 D	13.65	33.232 D	24.895	307.0	0.245	5.55	D241.8	D 93.9	3.1	0.44	2.4	0.25	0.00	0.41	0.31	76	
76	13.56	13.55	33.228	24.914	305.3	0.251	5.58	243.9	94.2	3.2	0.45	2.6	0.27	0.00	0.41	0.32	77	15
88	12.85	12.84	33.223	25.052	292.4	0.287	5.43	237.2	90.3	4.6	0.57	4.7	0.20	0.00	0.25	0.26	89	14
100	11.98	11.96	33.250	25.240	274.7	0.321	5.20	227.1	84.9	6.1	0.67	6.9	0.04	0.00	0.20	0.22	101	13
114	11.40	11.39	33.306	25.390	260.7	0.359	4.83	211.2	78.0	8.9	0.89	10.4	0.03	0.00	0.11	0.13	115	12
125	10.89	10.88	33.364	25.526	247.8	0.387	4.50	196.9	71.9	11.3	1.07	13.3	0.00	0.00	0.07	0.07	126	10
140	10.17	10.15	33.512	25.768	225.1	0.422	3.84	167.7	60.4	17.2	1.42	18.8	0.00	0.00	0.02	0.05	141	09
150 ISL	9.64 D	9.62	33.631 D	25.950	207.9	0.441	3.64	D158.3	D 56.6	19.5	1.50	20.3	0.01	0.00	0.02	0.04	151	
170	9.14	9.12	33.749	26.122	191.8	0.484	3.44	150.3	53.0	24.0	1.67	23.3	0.00	0.00	0.00	0.02	171	08
200	8.42	8.40	33.898	26.353	170.3	0.539	3.51	153.5	53.3	29.1	1.72	24.8	0.00	0.00	0.00	0.02	202	07
230	8.13	8.11	33.979	26.460	160.6	0.588	2.89	126.4	43.6	34.9	1.95	27.9	0.00	0.00			232	06
250 ISL	8.02 D	7.99	34.011 D	26.502	156.9	0.618	2.43	D105.6	D 36.5	39.1	2.11	30.0	0.01	0.00			252	
269	7.70	7.67	34.037	26.569	150.7	0.649	2.04	88.9	30.4	43.0	2.26	31.9	0.00	0.00			271	05
300 ISL	7.28 D	7.25	34.061 D	26.648	143.5	0.694	1.66	D 72.3	D 24.6	48.8	2.43	34.0	0.01	0.00			302	
321	7.05	7.02	34.079	26.695	139.3	0.725	1.40	61.2	20.6	52.8	2.54	35.4	0.00	0.00			324	04
381	6.69	6.65	34.158	26.807	129.5	0.805	0.83	36.1	12.1	61.3	2.77	37.9	0.00	0.00			384	03
400 ISL	6.59 D	6.55	34.184 D	26.842	126.4	0.830	0.67	D 29.3	D 9.8	63.4	2.82	38.4	0.01	0.00			403	
440	6.39	6.35	34.216	26.893	122.0	0.879	0.52	22.6	7.5	67.8	2.94	39.5	0.00	0.00			444	02
500 ISL	5.87 D	5.82	34.221 D	26.965	115.5	0.952	0.45	D 19.5	D 6.4	75.6	3.04	40.7	0.01	0.00			504	
515	5.89	5.85	34.251	26.986	113.8	0.967	0.37	16.0	5.2	77.5	3.06	41.0	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 1704 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 29.6 W	08/04/2017	0527 UTC	4110 m	230 10 kn			1017.1 mb	16.4 C	15.2 C				048

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0	15.28	15.28	33.112	24.456	346.6	0.000	5.83	254.7	101.8	1.8	0.23	0.0	0.01	0.00	0.08	0.01	0	
2	15.28	15.28	33.112	24.456	346.6	0.007	5.83	254.7	101.8	1.8	0.23	0.0	0.00	0.00	0.08	0.01	2	21
10	15.27	15.27	33.114	24.461	346.4	0.035	5.84	255.1	102.0	1.8	0.22	0.0	0.00	0.00	0.08	0.01	10	19
10	15.27	15.27	33.113	24.460	346.5	0.034											10	20
20 ISL	14.99 D	14.99	33.116 D	24.523	340.8	0.066	5.88	256.1	102.1	1.7	0.23	0.0	0.00	0.00	0.09	0.02	20	
25	14.78	14.78	33.112	24.565	337.0	0.086	5.90	257.7	102.0	1.7	0.24	0.0	0.00	0.00	0.09	0.02	25	18
30 ISL	14.75 D	14.75	33.113 D	24.574	336.4	0.100	5.91	D257.5	D102.1	1.7	0.24	0.0	0.00	0.00	0.10	0.02	30	
40	14.71	14.70	33.112	24.582	335.9	0.136	5.88	257.1	101.6	1.7	0.23	0.0	0.00	0.00	0.10	0.02	40	17
50 ISL	14.63 D	14.62	33.110 D	24.599	334.6	0.168	5.89	D256.6	D101.5	1.7	0.22	0.0	0.00	0.00	0.13	0.03	50	
52	14.60	14.60	33.107	24.602	334.4	0.177	5.89	257.5	101.6	1.7	0.22	0.0	0.00	0.00	0.13	0.04	52	16
62	14.13	14.12	33.084	24.685	326.7	0.210	5.94	259.8	101.4	1.8	0.24	0.0	0.00	0.00	0.23	0.10	62	15
75	13.66	13.65	33.079	24.777	318.2	0.252	5.93	259.3	100.3	1.9	0.26	0.0	0.00	0.00	0.43	0.21	76	14
88	13.20	13.19	33.100	24.887	308.1	0.292	5.87	256.5	98.3	2.3	0.32	0.8	0.16	0.00	0.51	0.27	89	13
99	13.07	13.06	33.117	24.927	304.7	0.326	5.82	254.4	97.2	2.5	0.37	1.3	0.27	0.07	0.45	0.33	100	12
100 ISL	13.03 D	13.02	33.137 D	24.949	302.5	0.328	5.76	D251.0	D 96.1	2.7	0.38	1.5	0.26	0.00	0.44	0.32	101	
112	12.31	12.30	33.215	25.150	283.7	0.364	5.42	237.0	89.2	4.5	0.53	4.5	0.08	0.00	0.28	0.22	113	11
125 ISL	11.36 D	11.34	33.324 D	25.413	258.8	0.399	4.71	D205.2	D 76.0	8.7	0.82	9.5	0.05	0.00	0.17	0.15	126	
126	11.22	11.20	33.324 D	25.438	256.4	0.401	4.71	D205.3	D 75.8								127	10
141	10.36	10.34	33.415	25.660	235.4	0.439	4.32	188.8	68.2	13.9	1.18	15.7	0.00	0.00	0.04	0.06	142	09
150 ISL	9.84 D	9.82	33.542 D	25.847	217.7	0.459	4.15	D180.5	D 64.8	16.6	1.31	17.6	0.00	0.00	0.03	0.05	151	
169	9.17	9.15	33.691	26.072	196.5	0.499	3.67	160.5	56.6	22.2	1.58	21.6	0.00	0.00	0.01	0.02	170	08
200	8.87	8.85	33.876	26.266	178.7	0.557	2.91	127.3	44.6	28.9	1.86	25.9	0.00	0.00	0.00	0.03	202	07
230	8.45	8.42	33.990	26.421	164.5	0.609	2.42	105.6	36.7	35.0	2.08	28.6	0.00	0.00			232	06
250 ISL	8.29 D	8.27	34.013 D	26.463	160.8	0.641	2.29	D 99.7	D 34.7	37.4	2.15	29.5	0.01	0.00			252	
269	8.10	8.07	34.034	26.509	156.7	0.672	2.12	92.6	31.9	39.7	2.21	30.3	0.00	0.00			271	05
300 ISL	7.66 D	7.63	34.071 D	26.603	148.1	0.719	1.74	D 75.7	D 26.0	45.5	2.38	32.1	0.01	0.00			302	
319	7.47	7.44	34.090	26.645	144.3	0.747	1.48	64.7	22.0	49.0	2.49	33.3	0.00	0.00			322	04
381	6.79	6.75	34.126	26.769	133.1	0.833	0.98	42.7	14.3	58.8	2.73	36.9	0.00	0.00			384	03
400 ISL	6.61 D	6.57	34.155 D	26.816	128.8	0.858	0.83	D 35.9	D 12.0	61.8	2.79	37.5	0.01	0.00			403	
439	6.31	6.27	34.182	26.876	123.5	0.907	0.62	27.3	9.0	68.0	2.91	38.9	0.00	0.00			443	02
500 ISL	5.90 D	5.86	34.242 D	26.977	114.4	0.981	0.40	D 17.3	D 5.7	77.1	3.05	40.3	0.01	0.00			504	
515	5.82	5.78	34.254	26.997	112.7	0.997	0.34	14.8	4.8	79.4	3.09	40.7	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 1704 STATION 83.3 110.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
31 54.7 N	124 10.3 W	07/04/2017	2353 UTC	4138 m	240 07 kn	280 07 09	1	1014.6 mb	17.0 C	16.0 C	26 m	7/8	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	15.38	15.38	33.108	24.431	349.0	0.000	5.87	256.6	102.8	1.7	0.23	0.0	0.01	0.01	0.11	0.01	0	
2	15.38	15.38	33.108	24.431	349.0	0.007	5.87	256.6	102.8	1.7	0.23	0.0	0.00	0.00	0.11	0.01	2	21
10	15.33	15.33	33.109	24.444	348.1	0.035	5.85	255.8	102.4	1.5	0.22	0.0	0.00	0.00	0.11	0.02	10	19
10	15.33	15.33	33.111	24.445	348.0	0.036											10	20
20 ISL	14.95 D	14.95	33.115 D	24.531	340.1	0.066	5.86	255.4	101.7	1.5	0.21	0.0	0.01	0.00	0.12	0.03	20	
26	14.93	14.92	33.114	24.536	339.8	0.090	5.86	256.2	101.7	1.5	0.21	0.0	0.00	0.00	0.12	0.03	26	18
30 ISL	14.91 D	14.91	33.113 D	24.539	339.7	0.100	5.89	D256.6	D102.1	1.5	0.21	0.0	0.01	0.00	0.12	0.03	30	
41	14.88	14.88	33.111	24.544	339.5	0.141	5.87	256.5	101.7	1.5	0.21	0.0	0.00	0.00	0.14	0.03	41	17
50 ISL	14.85 D	14.84	33.111 D	24.553	339.0	0.169	5.88	D256.1	D101.8	1.5	0.21	0.0	0.01	0.00	0.16	0.04	50	
51	14.85	14.84	33.109	24.551	339.2	0.175	5.87	256.7	101.7	1.5	0.21	0.0	0.00	0.00	0.16	0.04	51	16
63	14.80	14.79	33.115	24.567	338.1	0.215	5.88	256.9	101.7	1.5	0.22	0.0	0.00	0.10	0.19	0.05	64	15
75 ISL	14.59 D	14.58	33.137 D	24.628	332.6	0.254	5.85	D254.9	D100.8	1.5	0.22	0.0	0.01	0.00	0.35	0.17	76	
76	14.49	14.47	33.120	24.638	331.6	0.259	5.87	256.7	101.0	1.6	0.22	0.0	0.00	0.00	0.36	0.18	77	14
88	13.48	13.47	33.208	24.915	305.5	0.297	5.57	243.3	93.8	3.0	0.41	2.2	0.08	0.00	0.51	0.48	89	13
100 ISL	12.90 D	12.89	33.272 D	25.080	290.1	0.331	5.15	D224.2	D 85.7	4.3	0.54	4.5	0.10	0.00	0.43	0.51	101	
101	12.69	12.68	33.261	25.112	287.0	0.336	5.30	231.4	87.8	4.4	0.55	4.7	0.10	0.00	0.43	0.51	102	12
113	12.11	12.10	33.278	25.237	275.4	0.369	5.04	220.3	82.6	6.4	0.71	7.4	0.04	0.00	0.24	0.39	114	11
125 ISL	11.22 D	11.21	33.354 D	25.460	254.3	0.400	4.63	D201.6	D 74.4	10.1	0.96	11.3	0.03	0.00	0.16	0.24	126	
126	11.06	11.04	33.357 D	25.492	251.2	0.403											127	10
140	10.20	10.18	33.439	25.706	230.9	0.437	4.24	185.4	66.8	14.7	1.28	16.3	0.00	0.00	0.06	0.06	141	09
150 ISL	9.79 D	9.77	33.544 D	25.857	216.7	0.459	3.90	D169.9	D 60.9	17.2	1.39	18.1	0.02	0.00	0.05	0.05	151	
172	9.14	9.12	33.672	26.062	197.5	0.506	3.56	155.5	54.8	22.6	1.63	22.1	0.00	0.00	0.01	0.02	173	08
200 ISL	8.73 D	8.71	33.874 D	26.285	176.8	0.557	3.13	D136.2	D 47.8	28.4	1.79	25.0	0.01	0.00	0.00	0.03	202	
201	8.73	8.71	33.872	26.284	177.0	0.560	3.17	138.4	48.4	28.6	1.80	25.1	0.00	0.00	0.00	0.03	203	07
232	8.33	8.30	33.966	26.421	164.4	0.613	2.64	115.3	40.0	33.9	1.99	27.6	0.00	0.00			234	06
250 ISL	8.16 D	8.14	33.999 D	26.471	159.9	0.641	2.46	D107.0	D 37.1	37.1	2.08	28.9	0.01	0.00			252	
271	7.83	7.81	34.020	26.536	154.0	0.675	2.22	97.1	33.3	40.9	2.19	30.5	0.00	0.00			273	05
300 ISL	7.49 D	7.46	34.056 D	26.616	146.7	0.718	1.78	D 77.4	D 26.4	46.8	2.37	32.5	0.01	0.00			302	
320	7.23	7.20	34.076	26.667	142.1	0.748	1.51	66.1	22.3	50.8	2.49	33.9	0.00	0.00			323	04
380	6.73	6.69	34.141	26.789	131.2	0.830	0.90	39.2	13.1	61.2	2.76	37.1	0.00	0.00			383	03
400 ISL	6.51 D	6.48	34.163 D	26.835	127.0	0.856	0.72	D 31.3	D 10.5	64.7	2.83	37.8	0.01	0.00			403	
441	6.12	6.08	34.191	26.909	120.2	0.906	0.54	23.6	7.8	72.0	2.97	39.2	0.00	0.00			445	02
500 ISL	5.75 D	5.71	34.255 D	27.006	111.5	0.976	0.35	D 15.0	D 4.9	80.3	3.06	40.4	0.01	0.00			504	
516	5.62	5.57	34.252	27.020	110.2	0.993	0.33	14.2	4.6	82.5	3.09	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 1704 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 0.6 N	118 50.3 W	05/04/2017	0916 UTC	40 m	360 08 kn			1017.4 mb	14.9 C	14.0 C				033

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0	14.56	14.56	33.393	24.828	311.1	0.000	6.39	279.4	110.3	2.4	0.26	0.6	0.07		3.98	0.74	0	
3	14.56	14.56	33.393	24.828	311.2	0.009	6.39	279.4	110.3	2.4	0.26	0.6	0.07		3.98	0.74	3	06
5	14.75	14.75	33.392	24.787	315.2	0.016	6.36	277.9	110.1	2.4	0.25	0.7	0.07		3.94	0.68	5	05
10	13.03	13.03	33.408	25.155	280.3	0.031	5.62	245.7	94.0	4.8	0.49	5.1	0.24		8.52	1.08	10	03
10	13.03	13.03	33.406	25.153	280.5	0.031											10	04
20	12.29	12.29	33.449	25.330	263.9	0.058	4.70	205.2	77.3	9.9	0.97	11.6	0.47		3.35	0.68	20	02
25	12.28	12.27	33.453	25.337	263.4	0.071	4.53	198.0	74.6	10.9	1.05	12.6	0.50		2.95	0.72	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 1704 STATION 86.7 33.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
33 53.4 N	118 29.0 W	05/04/2017	1655 UTC	56 m	230 04 kn	270 02 08	1	1017.6 mb	16.9 C	16.2 C	07 m	3/8	AC	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	14.53	14.53	33.396	24.837	310.2	0.000	7.66	334.6	132.0	0.1	0.06	0.0	0.01		3.89	0.34	0	
2 A	14.53	14.53	33.396	24.838	310.3	0.006	7.66	334.6	132.0	0.0	0.06	0.0	0.00		3.89	0.34	2	09
4 A	14.39	14.39	33.395	24.866	307.6	0.012	7.54	329.4	129.6	1.3	0.14	0.3	0.05		4.88	0.60	4	08
5 A	13.64	13.64	33.393	25.020	293.0	0.015	7.52	328.7	127.4	0.9	0.11	0.1	0.04		5.08	0.57	5	07
9 A	12.79	12.78	33.408	25.203	275.7	0.027	5.46	238.7	90.9	5.9	0.55	6.7	0.28		11.97	0.94	9	05
9	12.79	12.78	33.404	25.200	276.0	0.027											9	06
10 ISL	12.97 D	12.97	33.411 D	25.169	279.0	0.027	5.59	D243.7	D 93.4	6.1	0.58	7.0	0.28		11.38	0.91	10	
17 A	12.59	12.59	33.414 D	25.246	271.8	0.046	4.79	D208.7	D 79.4								17	04
20 ISL	12.56 D	12.55	33.417 D	25.255	271.0	0.054	4.77	D207.7	D 78.9	8.7	0.90	9.9	0.28		5.51	0.57	20	
21 A	12.35	12.34	33.410	25.290	267.8	0.060	4.64	202.7	76.4	9.0	0.93	10.2	0.29		4.93	0.54	21	03
30	11.73	11.73	33.432	25.423	255.3	0.083	4.09	178.5	66.5	12.3	1.21	14.0	0.33		1.87	0.47	30	02
45	11.03	11.03	33.483	25.591	239.7	0.120	3.34	145.7	53.5	18.5	1.75	18.7	0.39		0.67	0.38	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 CRUISE-CORRECTED O2;

RV BELL M SHIMADA CALCOFI CRUISE 1704 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	05/04/2017	1149 UTC	664 m	260 05 kn			1016.9 mb	14.9 C	14.0 C				034

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0	14.99	14.99	33.363	24.713	322.1	0.000	6.27	274.1	109.1	2.2	0.26	0.1	0.03		1.45	0.33	0	
2	14.99	14.99	33.363	24.713	322.1	0.006	6.27	274.1	109.1	2.2	0.26	0.1	0.03		1.45	0.33	2	21
10	13.57	13.56	33.380	25.026	292.6	0.031	5.32	232.7	90.0	5.7	0.64	5.0	0.19		1.41	0.48	10	19
10	13.57	13.56	33.371	25.019	293.3	0.031											10	20
20	12.81	12.81	33.400	25.193	277.0	0.060	4.75	207.8	79.1	8.6	0.91	9.3	0.29		1.78	0.53	20	18
30	12.35	12.35	33.417	25.295	267.5	0.087	4.44	194.0	73.2	10.3	1.03	11.5	0.37		1.64	0.51	30	17
40	11.34	11.33	33.502	25.551	243.4	0.112	3.38	147.8	54.6	15.8	1.48	18.3	0.54		0.58	0.48	40	16
50	10.67	10.67	33.573	25.725	227.1	0.136	3.30	144.0	52.5	18.3	1.59	19.8	0.03		0.19	0.21	50	15
60	10.45	10.45	33.617	25.797	220.4	0.158	3.20	139.8	50.7	19.6	1.65	20.7	0.00		0.12	0.16	60	14
70	10.25	10.24	33.657	25.864	214.3	0.180	3.10	135.6	49.0	20.8	1.71	21.5	0.00		0.09	0.14	71	13
75 ISL	10.21 D	10.20	33.685 D	25.893	211.7	0.189	3.04	D132.3	D 47.9	22.3	1.78	22.3	0.03		0.10	0.17	76	
85	10.02	10.01	33.790	26.008	201.0	0.211	2.57	112.1	40.3	25.2	1.91	23.9	0.06		0.10	0.24	86	12
100	9.88	9.86	33.846	26.076	194.8	0.241	2.52	110.2	39.5	26.3	1.94	24.3	0.03		0.07	0.14	101	11
120	9.56	9.55	33.996	26.246	179.1	0.278	2.17	94.6	33.7	30.5	2.10	26.2	0.00		0.04	0.11	121	10
125 ISL	9.48 D	9.47	34.034 D	26.289	175.1	0.286	2.03 D	88.4 D	31.6	31.2	2.12	26.4	0.00		0.04	0.11	126	
141	9.38	9.36	34.076	26.339	170.7	0.315	1.88	82.3	29.2	33.3	2.20	27.3	0.00		0.03	0.12	142	09
150 ISL	9.29 D	9.28	34.123 D	26.390	166.1	0.329	1.76 D	76.5 D	27.2	34.5	2.24	27.7	0.00		0.03	0.10	151	
170	9.20	9.18	34.174	26.445	161.2	0.363	1.56	68.1	24.1	37.1	2.34	28.7	0.00		0.02	0.08	171	08
200	8.97	8.95	34.204	26.507	156.0	0.411	1.39	60.5	21.3	39.8	2.43	29.6	0.00		0.03	0.14	202	07
230	8.75	8.72	34.232	26.565	151.0	0.457	1.07	46.7	16.4	42.6	2.52	30.6	0.00				232	06
250 ISL	8.65 D	8.63	34.241 D	26.587	149.3	0.487	1.14 D	49.4 D	17.4	43.8	2.55	31.0	0.00				252	
271	8.53	8.50	34.251	26.615	147.0	0.518	1.06	46.3	16.2	45.0	2.58	31.3	0.00				273	05
300 ISL	8.27 D	8.24	34.255 D	26.657	143.4	0.561	0.96 D	41.8 D	14.5	47.9	2.65	32.2	0.00				302	
321	8.10	8.07	34.259	26.687	140.9	0.590	0.87	37.8	13.1	50.0	2.70	32.9	0.00				324	04
380	7.67	7.64	34.265	26.756	135.2	0.671	0.72	31.5	10.8	54.8	2.79	34.5	0.00				383	03
400 ISL	7.64 D	7.60	34.262 D	26.759	135.2	0.700	0.71 D	31.1 D	10.7	56.8	2.82	35.0	0.00				403	
442	7.19	7.15	34.265	26.825	129.3	0.754	0.57	24.8	8.4	60.9	2.89	36.3	0.00				446	02
500 ISL	6.67 D	6.62	34.279 D	26.909	121.8	0.830	0.44 D	19.1 D	6.4	68.9	3.02	38.0	0.00				504	
516	6.51	6.46	34.291	26.939	119.0	0.846	0.37	16.1	5.4	71.1	3.05	38.5	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 1704 STATION 86.7 40.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
33 39.2 N	118 58.7 W	05/04/2017	2137 UTC	713 m	250 10 kn	240 02 10	1	1017.0 mb	16.9 C	15.3 C	19 m	3/8	CS	037

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0	16.33	16.33	33.354	24.409	351.1	0.000	6.10	266.5	109.0	1.8	0.23	0.0	0.00		0.52	0.12	0	
2	16.33	16.33	33.354	24.409	351.2	0.007	6.10	266.5	109.0	1.8	0.23	0.0	0.00		0.52	0.12	2	21
10	15.34	15.34	33.360	24.636	329.8	0.034	6.41	280.1	112.3	1.1	0.21	0.0	0.00		1.16	0.25	10	19
10	15.34	15.34	33.362	24.637	329.7	0.034											10	20
20	14.26	14.26	33.355	24.864	308.3	0.066	5.97	260.9	102.4	3.2	0.40	1.5	0.10		2.60	0.53	20	18
30	13.56	13.56	33.360	25.012	294.5	0.096	5.33	232.9	90.1	5.7	0.62	5.1	0.19		2.01	0.65	30	17
40	12.26	12.25	33.394	25.295	267.8	0.124	4.48	195.8	73.7	10.3	1.04	11.4	0.26		0.75	0.49	40	16
50	11.55	11.54	33.429	25.456	252.7	0.150	4.10	179.0	66.4	12.7	1.22	14.1	0.16		0.49	0.42	50	15
61	10.88	10.87	33.479	25.616	237.7	0.177	3.79	165.5	60.5	15.7	1.38	17.3	0.07		0.23	0.22	61	14
70	10.45	10.45	33.573	25.763	223.9	0.198	3.40	148.4	53.8	18.5	1.55	19.8	0.03		0.12	0.16	71	13
75 ISL	10.32 D	10.31	33.646 D	25.844	216.4	0.207	3.17	D138.1	D 50.1	19.8	1.62	20.6	0.03		0.09	0.14	76	
85	10.11	10.10	33.717	25.936	207.8	0.231	2.96	129.3	46.6	22.3	1.75	22.2	0.00		0.03	0.09	86	12
100 ISL	9.82 D	9.81	33.809 D	26.056	196.7	0.259	2.82	D122.7	D 44.1	24.2	1.83	23.4	0.01		0.02	0.06	101	
101	9.80	9.79	33.808	26.059	196.5	0.263	2.82	123.2	44.1	24.3	1.83	23.5	0.00		0.02	0.06	102	11
121	9.55	9.53	33.913	26.183	185.1	0.301	2.56	111.7	39.8	27.4	1.95	25.0	0.00		0.02	0.07	122	10
125 ISL	9.47 D	9.45	33.972 D	26.242	179.5	0.306	2.45	D106.8	D 38.1	28.4	1.99	25.4	0.01		0.02	0.07	126	
140	9.27	9.25	34.036	26.326	171.9	0.335	2.15	94.0	33.3	32.2	2.12	26.8	0.00		0.02	0.09	141	09
150 ISL	9.23 D	9.22	34.070 D	26.358	169.1	0.350	2.02 D	87.7 D	31.2	33.2	2.16	27.3	0.00		0.02	0.07	151	
171	9.02	9.00	34.096	26.413	164.2	0.387	1.87	81.5	28.7	35.2	2.23	28.4	0.00		0.01	0.04	172	08
200	8.69	8.66	34.155	26.513	155.2	0.433	1.52	66.5	23.3	39.5	2.36	30.0	0.00		0.01	0.04	202	07
230	8.43	8.40	34.185	26.577	149.7	0.479	1.28	56.1	19.5	43.6	2.46	31.1	0.00				232	06
250 ISL	8.31 D	8.28	34.203 D	26.609	147.0	0.508	1.20 D	52.0 D	18.1	45.4	2.52	31.7	0.00				252	
269	8.19	8.16	34.210	26.634	145.0	0.537	1.10	48.2	16.7	47.2	2.57	32.3	0.00				271	05
300 ISL	7.79 D	7.76	34.238 D	26.716	137.6	0.580	0.87 D	37.8 D	13.0	51.6	2.68	33.6	0.00				302	
320	7.60	7.56	34.249	26.753	134.3	0.608	0.76	33.0	11.3	54.4	2.75	34.5	0.00				323	04
381	7.10	7.06	34.261	26.834	127.3	0.687	0.56	24.6	8.3	61.7	2.87	36.2	0.00				384	03
400 ISL	6.95 D	6.92	34.268 D	26.859	125.1	0.712	0.52 D	22.8 D	7.7	63.7	2.90	36.6	0.00				403	
442	6.70	6.66	34.279	26.902	121.5	0.763	0.50	21.8	7.3	68.0	2.96	37.5	0.00				446	02
500 ISL	6.29 D	6.24	34.308 D	26.981	114.6	0.834	0.32 D	14.0 D	4.6	75.2	3.06	38.5	0.00				504	
517	6.25	6.20	34.313	26.991	113.9	0.851	0.29	12.5	4.2	77.4	3.09	38.8	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 1704 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 29.1 N	119 19.2 W	06/04/2017	0126 UTC	1613 m	280 12 kn	270 02 12	1	1015.8 mb	14.6 C	13.2 C	10 m	6/8	CS	038

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0	14.99	14.99	33.389	24.732	320.3	0.000	6.24	272.8	108.7	3.3	0.33	1.1	0.10		1.94	0.57	0	
1	14.99	14.99	33.389	24.732	320.3	0.003	6.24	272.8	108.7	3.3	0.33	1.1	0.10		1.94	0.57	1	21
10	14.91	14.91	33.386	24.748	319.1	0.032	6.26	273.3	108.7	3.0	0.32	1.0	0.10		1.90	0.42	10	19
10	14.91	14.91	33.385	24.747	319.2	0.033											10	20
20	14.54	14.53	33.383	24.827	311.9	0.064	6.22	271.7	107.2	3.0	0.34	1.4	0.11		1.94	0.38	20	18
30	13.76	13.75	33.383	24.990	296.6	0.094	6.01	262.7	102.1	3.5	0.39	2.5	0.15		2.55	0.69	30	17
40	12.02	12.01	33.453	25.387	259.1	0.122	4.37	190.9	71.5	11.8	1.10	12.4	0.43		0.73	0.48	40	16
50	11.07	11.07	33.507	25.602	238.8	0.147	3.85	168.1	61.8	15.6	1.35	16.6	0.20		0.31	0.30	50	15
60	10.59	10.58	33.577	25.743	225.6	0.170	3.46	151.1	54.9	18.6	1.52	19.2	0.10		0.17	0.21	60	14
71	10.12	10.11	33.647	25.878	213.0	0.194	3.22	140.4	50.6	21.3	1.65	21.1	0.06		0.08	0.16	72	13
75 ISL	10.00 D	9.99	33.702 D	25.941	207.0	0.202	3.03	D132.0 D	47.6	22.4	1.70	21.8	0.05		0.07	0.15	76	
85	9.78	9.77	33.762	26.026	199.2	0.223	2.80	122.4	43.8	25.0	1.83	23.6	0.04		0.03	0.11	86	12
100	9.56	9.55	33.843	26.125	190.1	0.252	2.58	112.8	40.2	27.3	1.93	24.8	0.05		0.03	0.10	101	11
120	9.28	9.27	33.938	26.246	179.0	0.289	2.29	100.0	35.4	30.9	2.06	26.5	0.03		0.01	0.08	121	10
125 ISL	9.25 D	9.24	33.951 D	26.261	177.7	0.298	2.27 D	98.7 D	35.1	31.2	2.07	26.7	0.03		0.01	0.08	126	
140	9.17	9.15	33.986	26.303	174.0	0.324	2.15	93.7	33.1	32.2	2.11	27.3	0.00		0.01	0.08	141	09
150 ISL	9.09 D	9.07	34.015 D	26.339	170.8	0.342	2.10 D	91.2 D	32.3	33.3	2.15	27.6	0.00		0.01	0.07	151	
170	8.98	8.96	34.076	26.404	165.1	0.375	1.87	81.8	28.8	35.7	2.23	28.4	0.00		0.01	0.06	171	08
200	8.69	8.67	34.122	26.487	157.7	0.423	1.60	69.9	24.5	39.4	2.35	29.9	0.00		0.01	0.06	202	07
230	8.50	8.48	34.164	26.549	152.4	0.470	1.38	60.2	21.0	42.3	2.44	30.8	0.00				232	06
250 ISL	8.25 D	8.22	34.183 D	26.603	147.5	0.502	1.22 D	53.3 D	18.5	44.6	2.50	31.5	0.00				252	
271	8.16	8.13	34.205	26.635	144.9	0.531	1.12	48.7	16.8	47.0	2.56	32.2	0.00				273	05
300 ISL	7.94 D	7.91	34.207 D	26.669	142.0	0.575	1.02 D	44.3 D	15.3	49.7	2.63	33.1	0.00				302	
321	7.84	7.81	34.233	26.705	139.0	0.602	0.90	39.2	13.5	51.7	2.68	33.7	0.00				324	04
380	7.24	7.20	34.248	26.804	130.3	0.681	0.63	27.6	9.3	59.8	2.83	35.8	0.00				383	03
400 ISL	7.08 D	7.04	34.260 D	26.836	127.5	0.711	0.56 D	24.5 D	8.3	61.8	2.87	36.2	0.01				403	
440	6.87	6.82	34.269	26.873	124.4	0.757	0.49	21.2	7.1	65.6	2.94	37.0	0.00				444	02
500 ISL	6.44 D	6.40	34.300 D	26.955	117.2	0.835	0.36 D	15.4 D	5.2	73.9	3.05	38.0	0.00				504	
517	6.32	6.27	34.306	26.976	115.3	0.850	0.33	14.4	4.8	76.2	3.08	38.3	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 1704 STATION 86.7 50.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
33 19.4 N	119 39.6 W	06/04/2017	0512 UTC	80 m	280 07 kn			1016.5 mb	14.8 C	14.0 C				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	14.10	14.10	33.379	24.914	303.0	0.000	6.24	272.5	106.6	4.7	0.51	3.5	0.16	0.43	1.02	0.10	0	
2	14.10	14.10	33.379	24.914	303.0	0.006	6.24	272.5	106.6	4.7	0.51	3.5	0.16	0.43	1.02	0.10	2	10
5	14.08	14.08	33.377	24.918	302.7	0.015	6.20	271.1	106.0	4.6	0.50	3.5	0.16	0.39	1.03	0.11	5	09
10	13.97	13.97	33.378	24.940	300.8	0.030	6.22	272.0	106.1	4.6	0.52	3.6	0.16	0.39	1.18	0.09	10	07
10	13.97	13.97	33.376	24.939	300.9	0.031											10	08
20	13.81	13.80	33.367	24.967	298.5	0.060	6.17	269.8	104.9	4.4	0.50	3.5	0.16	0.36	1.17	0.13	20	06
30	13.01	13.01	33.362	25.124	283.8	0.089	5.67	247.7	94.7	5.6	0.65	5.5	0.21	0.55	0.89	0.38	30	05
40	12.50	12.49	33.404	25.257	271.5	0.117	5.30	231.6	87.6	8.5	0.85	8.5	0.28	0.54	0.71	0.39	40	04
50	11.03	11.03	33.455	25.569	241.9	0.143	4.33	189.0	69.3	13.7	1.23	14.6	0.25	0.13	0.35	0.26	50	03
60	10.63	10.62	33.593	25.749	225.0	0.166	3.67	160.2	58.3	19.1	1.51	18.7	0.18	0.14	0.20	0.23	60	02
70	10.12	10.11	33.657	25.886	212.2	0.188	3.31	144.6	52.1	22.0	1.68	21.4	0.13	0.09	0.11	0.20	71	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 1704 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 9.1 N	120 0.5 W	06/04/2017	0928 UTC	1198 m	210 06 kn			1015.8 mb	14.0 C	13.2 C				040

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0	14.27	14.27	33.309	24.826	311.4	0.000	6.01	262.6	103.0	2.7	0.41	1.8	0.11	0.14	0.36	0.21	0	
3	14.27	14.27	33.309	24.826	311.5	0.009	6.01	262.6	103.0	2.7	0.41	1.8	0.11	0.14	0.36	0.21	3	21
10	14.10	14.10	33.310	24.861	308.3	0.031	6.00	262.4	102.6	2.5	0.41	1.7	0.10	0.13	0.34	0.23	10	19
10	14.10	14.10	33.309	24.860	308.4	0.031											10	20
20	13.86	13.85	33.322	24.922	302.8	0.062	6.00	262.3	102.0	2.5	0.40	1.9	0.10	0.10	0.44	0.39	20	18
30	13.68	13.68	33.332	24.966	299.0	0.092	5.99	261.7	101.4	2.4	0.43	2.2	0.12	0.19	0.58	0.53	30	17
40	13.53	13.52	33.338	25.003	295.7	0.121	5.86	255.9	98.9	2.7	0.54	2.7	0.14	0.76	0.45	0.37	40	16
50	12.47	12.46	33.299	25.183	278.8	0.150	5.41	236.6	89.4	5.2	0.65	5.7	0.18	0.46	0.32	0.24	50	15
60	11.16	11.15	33.347	25.463	252.2	0.177	4.75	207.4	76.2	10.3	0.99	11.5	0.18	0.07	0.14	0.11	60	14
70	10.54	10.53	33.406	25.619	237.6	0.201	4.48	195.8	71.0	13.1	1.15	14.5	0.07	0.00	0.10	0.10	71	13
75 ISL	10.49 D	10.48	33.431 D	25.647	235.1	0.210	4.32	D188.0 D	68.4	14.5	1.24	15.8	0.07	0.00	0.08	0.10	76	
85	10.32	10.31	33.518	25.743	226.1	0.236	3.86	168.6	60.9	17.3	1.42	18.4	0.07	0.00	0.05	0.11	86	12
100	9.82	9.81	33.643	25.926	209.0	0.269	3.35	146.2	52.3	21.6	1.66	21.8	0.04	0.00	0.02	0.18	101	11
121	9.40	9.38	33.778	26.102	192.7	0.311	2.93	127.9	45.4	26.0	1.84	24.6	0.00	0.00	0.01	0.07	122	10
125 ISL	9.35 D	9.34	33.802 D	26.129	190.2	0.316	2.90	D126.1 D	44.8	26.8	1.87	25.0	0.00	0.00	0.01	0.08	126	
139	9.09	9.07	33.885	26.236	180.3	0.344	2.62	114.3	40.3	29.5	1.98	26.6	0.00	0.00	0.01	0.08	140	09
150 ISL	8.95 D	8.94	33.929 D	26.292	175.2	0.362	2.56	D111.3 D	39.3	31.1	2.04	27.2	0.00	0.00	0.01	0.08	151	
170	8.68	8.66	33.993	26.386	166.6	0.398	2.25	98.4	34.4	34.1	2.14	28.4	0.00	0.00	0.01	0.06	171	08
199	8.38	8.36	34.086	26.505	155.8	0.445	1.79	78.1	27.1	40.0	2.31	30.7	0.00	0.00	0.01	0.05	201	07
200 ISL	8.39 D	8.37	34.087 D	26.504	155.9	0.444	1.74 D	75.7 D	26.4	40.1	2.32	30.8	0.00	0.00			202	
230	8.04	8.02	34.135	26.596	147.7	0.492	1.45	63.1	21.8	44.8	2.47	32.4	0.00	0.00			232	06
250 ISL	7.95 D	7.92	34.144 D	26.617	146.0	0.520	1.34 D	58.4 D	20.2	47.0	2.53	33.0	0.00	0.00			252	
270	7.80	7.77	34.170	26.660	142.2	0.550	1.18	51.6	17.7	49.2	2.58	33.6	0.00	0.00			272	05
300 ISL	7.55 D	7.52	34.201 D	26.721	136.9	0.591	0.95 D	41.1 D	14.1	52.8	2.66	34.5	0.00	0.00			302	
320	7.42	7.39	34.222 D	26.756	133.8	0.618	0.81 D	35.3 D	12.1								323	04
380	6.96	6.92	34.241	26.837	126.9	0.698	0.61	26.4	8.9	62.4	2.87	36.9	0.00	0.00			383	03
400 ISL	6.93 D	6.89	34.251 D	26.849	126.1	0.723	0.57 D	24.8 D	8.4	64.9	2.91	37.5	0.00	0.00			403	
440	6.52	6.48	34.280	26.927	118.9	0.772	0.41	17.8	6.0	70.0	2.99	38.5	0.00	0.00			444	02
500 ISL	6.11 D	6.06	34.316 D	27.010	111.6	0.842	0.31 D	13.4 D	4.4	76.8	3.08	39.9	0.00	0.00			504	
516	6.07	6.02	34.317	27.016	111.2	0.859	0.30	12.9	4.2	78.6	3.11	40.2	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 1704 STATION 86.7 60.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
32 59.3 N	120 20.4 W	06/04/2017	1317 UTC	712 m	260 05 kn			1015.5 mb	14.0 C	13.0 C				041

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0	14.01	14.01	33.123	24.735	320.0	0.000	6.03	263.7	102.7	1.8	0.29	0.0	0.03	0.16	0.15	0.05	0	
2	14.01	14.01	33.123	24.735	320.0	0.006	6.03	263.7	102.7	1.8	0.29	0.0	0.03	0.16	0.15	0.05	2	21
10	13.76	13.75	33.161	24.818	312.4	0.032	6.00	262.1	101.6	2.0	0.34	0.6	0.08	0.20	0.23	0.07	10	19
10	13.76	13.75	33.165	24.821	312.2	0.033											10	20
20	13.50	13.50	33.232	24.925	302.5	0.062	5.98	261.2	100.8	2.5	0.41	1.7	0.12	0.22	0.36	0.18	20	18
30	13.34	13.33	33.238	24.963	299.2	0.093	5.99	261.7	100.6	2.8	0.42	2.0	0.14	0.16	0.38	0.19	30	17
40	13.27	13.26	33.267	25.000	295.9	0.122	5.94	259.7	99.8	3.2	0.45	2.6	0.14	0.15	0.47	0.32	40	16
50	13.16	13.15	33.282	25.034	293.0	0.152	5.83	254.8	97.7	3.6	0.50	3.3	0.15	0.29	0.42	0.32	50	15
60	13.05	13.04	33.353	25.112	285.9	0.181	5.79	253.1	96.8	4.2	0.61	4.7	0.17	0.60	0.42	0.33	60	14
70	12.04	12.03	33.277	25.247	273.2	0.209	5.29	231.3	86.6	5.8	0.69	6.7	0.14	0.18	0.24	0.25	71	13
75 ISL	11.59 D	11.58	33.292 D	25.344	264.1	0.220	5.08	D221.1 D	82.2	8.2	0.84	9.3	0.11	0.00	0.21	0.22	76	
85	10.52	10.51	33.406	25.622	237.7	0.247	4.38	191.3	69.4	12.9	1.15	14.6	0.06	0.00	0.14	0.14	86	12
100	9.65	9.64	33.568	25.896	211.8	0.281	4.04	176.5	62.8	18.2	1.40	18.9	0.00	0.00	0.03	0.09	101	11
120	9.25	9.24	33.766	26.117	191.2	0.321	3.32	145.0	51.2	24.3	1.70	23.2	0.00	0.00	0.03	0.07	121	10
125 ISL	9.16 D	9.15	33.814 D	26.168	186.5	0.329	3.12	D135.6 D	48.0	25.1	1.73	23.6	0.00	0.00	0.02	0.07	126	
141	8.96	8.94	33.865	26.241	179.8	0.360	3.01	131.5	46.2	27.9	1.83	25.2	0.00	0.00	0.02	0.06	142	09
150 ISL	8.81 D	8.79	33.887 D	26.282	176.1	0.375	3.06	D133.0 D	46.8	29.2	1.88	25.9	0.00	0.00	0.01	0.06	151	
171	8.71	8.70	33.957	26.352	169.9	0.412	2.58	112.7	39.4	32.2	1.99	27.5	0.00	0.00	0.01	0.06	172	08
200 ISL	8.10 D	8.08	33.973 D	26.459	160.1	0.459	2.86	D124.5 D	43.1	35.5	1.97	27.8	0.00	0.00	0.01	0.05	202	
202	8.08	8.06	33.971	26.460	160.0	0.463	2.87	125.2	43.1	35.7	1.97	27.8	0.00	0.00	0.01	0.05	204	07
232	7.97	7.94	34.052	26.542	152.8	0.510	2.05	89.4	30.8	41.6	2.25	30.7	0.00	0.00			234	06
250 ISL	8.05 D	8.02	34.130 D	26.591	148.5	0.537	1.48	D 64.3 D	22.3	45.2	2.39	32.1	0.00	0.00			252	
272	7.75	7.72	34.168	26.665	141.7	0.570	1.17	51.0	17.5	49.5	2.56	33.8	0.00	0.00			274	05
300 ISL	7.56 D	7.53	34.193 D	26.712	137.7	0.609	0.97	D 42.2 D	14.5	53.1	2.65	34.6	0.00	0.00			302	
322	7.39	7.36	34.211	26.752	134.3	0.639	0.82	35.7	12.1	55.9	2.72	35.3	0.00	0.00			325	04
380	7.04	7.01	34.238	26.823	128.3	0.715	0.63	27.3	9.2	60.9	2.83	36.7	0.00	0.00			383	03
400 ISL	6.86 D	6.82	34.256 D	26.862	124.8	0.741	0.54	D 23.4 D	7.9	63.7	2.88	37.3	0.00	0.00			403	
442	6.58	6.54	34.287	26.926	119.2	0.791	0.40	17.4	5.8	69.5	2.98	38.4	0.00	0.00			446	02
500 ISL	6.16 D	6.12	34.319 D	27.005	112.1	0.861	0.29	D 12.6 D	4.2	76.0	3.06	39.6	0.00	0.00			504	
515	6.12	6.07	34.325	27.016	111.2	0.875	0.27	11.8	3.9	77.7	3.08	39.9	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 1704 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 39.0 N	121 1.6 W	06/04/2017	1857 UTC	3748 m	180 05 kn	280 03 10	1	1016.9 mb	17.0 C	15.1 C	27 m	4/8	CS	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	15.12	15.12	33.105	24.485	343.8	0.000	5.93	259.2	103.3	1.7	0.25	0.0	0.00	0.08	0.15	0.04	0	
2 A	15.12	15.12	33.105	24.485	343.9	0.007	5.93	259.2	103.3	1.7	0.25	0.0	0.00	0.08	0.15	0.04	2	24
10 ISL	14.71 D	14.71	33.101 D	24.573	335.8	0.031	5.94	259.0	102.6	1.7	0.25	0.0	0.00	0.00	0.15	0.03	10	
10	14.71	14.71	33.105	24.576	335.5	0.035											10	23
11	14.64	14.64	33.103	24.589	334.3	0.037	5.94	259.9	102.5	1.7	0.25	0.0	0.00	0.00	0.15	0.03	11	22
16 A	14.50	14.50	33.108	24.621	331.4	0.054	5.95	260.1	102.3	1.6	0.24	0.0	0.00	0.00	0.13	0.03	16	21
20 ISL	14.36 D	14.36	33.101 D	24.646	329.1	0.064	6.00	D261.3 D	102.8	1.7	0.25	0.0	0.00	0.00	0.14	0.04	20	
24 A	14.31	14.31	33.099	24.655	328.3	0.080	6.00	262.3	102.8	1.7	0.25	0.0	0.00	0.00	0.15	0.04	24	20
30 ISL	14.28 D	14.27	33.099 D	24.663	327.8	0.097	6.00	D261.5 D	102.7	1.7	0.24	0.0	0.00	0.00	0.16	0.05	30	
32	14.27	14.26	33.099	24.665	327.6	0.107	5.97	261.0	102.2	1.7	0.24	0.0	0.00	0.00	0.16	0.06	32	19
42 A	14.17	14.17	33.098	24.685	326.1	0.139	5.98	261.4	102.1	1.6	0.25	0.0	0.00	0.00	0.19	0.06	42	18
50 ISL	14.12 D	14.11	33.097 D	24.695	325.4	0.163	5.99	D261.2 D	102.3	1.6	0.25	0.0	0.00	0.00	0.25	0.10	50	
54	14.02	14.02	33.099	24.717	323.4	0.178	6.00	262.3	102.1	1.6	0.25	0.0	0.00	0.00	0.29	0.12	54	17
63	13.58	13.57	33.099	24.809	314.9	0.207	5.97	261.1	100.8	2.0	0.29	0.3	0.08	0.00	0.47	0.26	64	15
63	13.58	13.57	33.097	24.807	315.0	0.208											64	16
75 ISL	13.16 D	13.15	33.190 D	24.963	300.5	0.242	5.80	252.7	97.1	2.8	0.43	1.9	0.34	0.00	0.39	0.36	76	
76 A	13.03	13.02	33.177	24.980	298.9	0.247	5.79	252.9	96.6	2.9	0.44	2.1	0.37	0.09	0.39	0.37	77	14
85	12.49	12.48	33.252	25.144	283.5	0.273	5.29	231.5	87.4	5.6	0.67	6.1	0.27	0.00	0.20	0.19	86	13
95 A	11.90	11.88	33.283	25.281	270.7	0.301	4.97	217.2	81.0	7.6	0.82	8.7	0.10	0.00	0.15	0.16	96	12
100 ISL	11.44 D	11.42	33.343 D	25.412	258.2	0.313	4.78	D208.3 D	77.3	9.0	0.91	10.2	0.07	0.00	0.13	0.14	101	
109	11.27	11.25	33.359	25.456	254.3	0.338	4.44	194.3	71.5	11.5	1.08	13.1	0.04	0.00	0.09	0.11	110	11
124	10.26	10.25	33.584	25.807	221.0	0.373	3.47	151.6	54.7	19.5	1.58	20.3	0.00	0.00	0.02	0.05	125	10
125 ISL	10.08 D	10.06	33.607 D	25.857	216.2	0.374	3.44	D149.8 D	54.1	19.6	1.59	20.4	0.00	0.00	0.02	0.05	126	
141	9.87	9.86	33.641	25.918	210.8	0.410	3.29	143.9	51.5	21.5	1.67	21.7	0.00	0.00	0.01	0.05	142	09
150 ISL	9.54 D	9.53	33.727 D	26.040	199.3	0.427	3.12	D135.8 D	48.5	23.3	1.74	22.8	0.00	0.00	0.01	0.05	151	
170	9.22	9.20	33.832	26.174	186.9	0.467	2.84	124.1	43.8	27.3	1.88	25.1	0.00	0.00	0.00	0.04	171	08
200	8.88	8.85	33.949	26.322	173.4	0.521	2.47	107.8	37.8	31.6	2.04	27.1	0.00	0.00	0.01	0.04	202	07
231	8.49	8.46	34.055	26.466	160.2	0.573	1.97	86.3	30.0	37.3	2.23	29.6	0.00	0.00			233	06
250 ISL	8.18 D	8.15	34.087 D	26.539	153.6	0.603	1.77	D 77.1 D	26.8	40.6	2.34	30.7	0.00	0.00			252	
271	8.08	8.05	34.138	26.593	148.8	0.634	1.43	62.4	21.5	44.2	2.46	31.9	0.00	0.00			273	05
300 ISL	7.85 D	7.82	34.175 D	26.657	143.2	0.677	1.15	D 50.2 D	17.3	48.0	2.57	33.0	0.00	0.00			302	
319	7.71	7.68	34.186	26.687	140.6	0.704	1.04	45.4	15.5	50.5	2.64	33.7	0.00	0.00			322	04
380	7.07	7.03	34.228	26.812	129.3	0.786	0.67	29.4	9.9	59.9	2.84	36.3	0.00	0.00			383	03
400 ISL	6.96 D	6.92	34.245 D	26.841	126.9	0.813	0.59	D 25.7 D	8.7	62.0	2.88	36.8	0.00	0.00			403	
441	6.69	6.65	34.267	26.895	122.2	0.863	0.47	20.7	6.9	66.4	2.96	37.9	0.00	0.00			445	02
500 ISL	6.30 D	6.26	34.300 D	26.973	115.3	0.935	0.34	D 14.7 D	4.9	73.7	3.07	39.2	0.00	0.00			504	
516	6.15	6.10	34.305	26.997	113.1	0.951	0.31	13.6	4.5	75.7	3.10	39.5	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 1704 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 19.2 N	121 42.9 W	07/04/2017	0050 UTC	3999 m	210 12 kn	230 04 08	1	1014.8 mb	16.8 C	15.7 C	23 m	5/8	SC	043

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0	15.87	15.87	33.253	24.434	348.7	0.000	5.81	254.0	102.8	1.5	0.27	0.0	0.00	0.03	0.12	0.02	0	
2	15.87	15.87	33.253	24.434	348.8	0.007	5.81	254.0	102.8	1.5	0.27	0.0	0.00	0.00	0.12	0.02	2	21
10	15.78	15.78	33.257	24.458	346.7	0.035	5.83	254.7	102.9	1.4	0.26	0.0	0.00	0.00	0.11	0.02	10	19
11	15.66	15.66	33.258	24.485	344.2	0.038											11	20
20 ISL	15.43 D	15.43	33.278 D	24.552	338.1	0.066	5.86	D255.6	D102.9	1.4	0.27	0.0	0.00	0.00	0.15	0.03	20	
26	15.38	15.37	33.278	24.565	337.1	0.089	5.86	256.0	102.6	1.4	0.27	0.0	0.00	0.00	0.17	0.03	26	18
30 ISL	15.31 D	15.30	33.273 D	24.576	336.2	0.100	5.87	D255.9	D102.7	1.4	0.27	0.0	0.00	0.00	0.21	0.05	30	
40	15.03	15.02	33.265	24.632	331.2	0.136	5.92	258.8	103.0	1.5	0.26	0.0	0.00	0.00	0.28	0.09	40	17
49	15.00	15.00	33.277	24.647	330.0	0.166	5.90	258.0	102.6	1.5	0.27	0.0	0.00	0.00	0.38	0.16	49	16
50 ISL	14.99 D	14.98	33.281 D	24.654	329.4	0.167	5.88	D256.5	D102.3	1.6	0.28	0.1	0.02	0.00	0.40	0.18	50	
62	14.02	14.02	33.289	24.865	309.6	0.208	5.73	250.4	97.6	2.6	0.38	1.2	0.13	0.00	0.68	0.36	62	15
74	12.40	12.39	33.318	25.212	276.7	0.243	4.73	206.9	78.0	7.7	0.87	9.3	0.16	0.00	0.40	0.47	75	14
75 ISL	12.23 D	12.22	33.327 D	25.251	273.0	0.243	4.55	D198.2	D 74.8	8.0	0.90	9.7	0.15	0.00	0.39	0.46	76	
87	11.15	11.14	33.375	25.488	250.6	0.277	4.16	181.9	66.8	12.0	1.20	14.7	0.05	0.00	0.22	0.36	88	13
100 ISL	10.61 D	10.60	33.446 D	25.639	236.4	0.307	3.87	D168.3	D 61.4	14.7	1.35	17.2	0.03	0.00	0.14	0.17	101	
102	10.59	10.58	33.439	25.637	236.7	0.313	3.87	169.0	61.4	15.1	1.37	17.5	0.00	0.00	0.13	0.15	103	12
112	10.13	10.12	33.527	25.785	222.8	0.336	3.62	158.3	56.9	18.1	1.54	20.0	0.00	0.00	0.06	0.07	113	11
125	9.82	9.80	33.602	25.896	212.4	0.365	3.49	152.4	54.4	20.3	1.63	21.4	0.00	0.00	0.03	0.03	126	10
140	9.27	9.25	33.683	26.050	198.0	0.396	3.38	147.7	52.2	22.6	1.69	22.4	0.00	0.00	0.01	0.02	141	09
150 ISL	9.05 D	9.04	33.790 D	26.167	187.1	0.413	3.30	D143.6	D 50.7	24.7	1.72	23.1	0.00	0.00	0.01	0.02	151	
170	8.63	8.62	33.903	26.322	172.6	0.451	3.33	145.4	50.7	28.9	1.78	24.6	0.00	0.00	0.00	0.02	171	08
200	8.10	8.08	34.003	26.482	157.8	0.501	2.49	109.0	37.6	36.9	2.10	28.7	0.00	0.00	0.00	0.02	202	07
230	7.68	7.66	34.027	26.563	150.6	0.547	2.24	97.7	33.4	42.1	2.23	30.6	0.00	0.00			232	06
250 ISL	7.46 D	7.44	34.058 D	26.619	145.5	0.576	1.83	D 79.7	D 27.2	46.0	2.34	31.9	0.00	0.00			252	
271	7.06	7.04	34.049	26.668	141.0	0.607	1.78	78.0	26.2	50.0	2.45	33.3	0.00	0.00			273	05
300 ISL	6.77 D	6.74	34.057 D	26.715	136.8	0.647	1.57	D 68.5	D 23.0	55.4	2.54	34.8	0.00	0.00			302	
320	6.40	6.37	34.041	26.752	133.4	0.675	1.54	67.2	22.3	59.1	2.60	35.7	0.00	0.00			323	04
381	6.11	6.07	34.131	26.862	123.7	0.753	0.82	35.6	11.7	68.7	2.89	38.8	0.00	0.00			384	03
400 ISL	6.13 D	6.10	34.171 D	26.890	121.4	0.777	0.66	D 28.5	D 9.5	70.0	2.93	38.9	0.00	0.00			403	
441	6.17	6.13	34.243	26.942	117.1	0.825	0.42	18.5	6.1	72.8	3.03	39.1	0.00	0.00			445	02
500 ISL	5.87 D	5.83	34.273 D	27.005	111.7	0.894	0.32	D 14.1	D 4.6	79.1	3.11	40.1	0.00	0.00			504	
517	5.74	5.70	34.277	27.024	110.0	0.912	0.31	13.3	4.4	81.0	3.13	40.4	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 1704 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 59.3 N	122 23.3 W	07/04/2017	0614 UTC	4055 m	220 13 kn			1016.6 mb	15.9 C	15.0 C				044

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0	15.56	15.56	33.275	24.519	340.6	0.000	5.85	255.6	102.9	2.1	0.28	0.0	0.01	0.02	0.17	0.03	0	
2	15.56	15.56	33.275	24.519	340.6	0.007	5.85	255.6	102.9	2.1	0.28	0.0	0.00	0.00	0.17	0.03	2	21
10	15.54	15.53	33.277	24.528	340.0	0.034	5.85	255.9	102.9	2.0	0.29	0.0	0.00	0.00	0.17	0.03	10	19
10	15.54	15.53	33.275	24.526	340.2	0.034											10	20
20	15.16	15.16	33.272	24.607	332.9	0.068	5.90	257.8	102.9	2.0	0.28	0.0	0.00	0.00	0.21	0.04	20	18
30	15.07	15.07	33.271	24.626	331.3	0.101	5.90	258.1	102.8	2.0	0.29	0.0	0.00	0.00	0.25	0.07	30	17
40	15.04	15.03	33.270	24.634	330.9	0.134	5.89	257.7	102.6	2.0	0.28	0.0	0.00	0.00	0.30	0.09	40	16
50 ISL	14.72 D	14.71	33.243 D	24.682	326.7	0.165	5.92	D257.8	D102.3	2.0	0.29	0.0	0.02	0.00	0.56	0.22	50	
51	14.69	14.68	33.244	24.690	326.0	0.170	5.92	259.0	102.4	2.0	0.29	0.0	0.00	0.00	0.58	0.23	51	15
60	12.73	12.73	33.301	25.133	283.8	0.198	5.03	219.9	83.5	7.0	0.80	7.9	0.12	0.00	0.64	0.55	60	14
71	11.36	11.35	33.355	25.434	255.4	0.227	4.37	191.0	70.5	11.2	1.12	13.1	0.04	0.00	0.31	0.30	72	13
75 ISL	11.12 D	11.11	33.382 D	25.499	249.3	0.236	4.25	D185.0	D 68.2	12.2	1.18	14.1	0.03	0.00	0.26	0.24	76	
85	10.61	10.59	33.439	25.634	236.6	0.262	4.02	175.9	63.9	15.0	1.33	16.7	0.00	0.00	0.13	0.10	86	12
100 ISL	10.16 D	10.15	33.594 D	25.831	218.1	0.294	3.35	D145.8	D 52.7	19.8	1.62	20.6	0.01	0.00	0.04	0.06	101	
101	10.12	10.11	33.592	25.837	217.6	0.298	3.37	147.2	52.9	20.1	1.64	20.8	0.00	0.00	0.04	0.06	102	11
121	9.50	9.48	33.726	26.045	198.1	0.340	3.11	136.1	48.3	24.2	1.79	23.4	0.00	0.00	0.01	0.04	122	10
125 ISL	9.37 D	9.36	33.750 D	26.085	194.4	0.346	3.16	D137.3	D 48.8	24.4	1.79	23.5	0.01	0.00	0.01	0.04	126	
140	9.23	9.21	33.764	26.120	191.4	0.377	3.21	140.5	49.6	24.9	1.77	23.8	0.00	0.00	0.01	0.03	141	09
150 ISL	8.95 D	8.94	33.877 D	26.252	179.0	0.394	2.98	D129.7	D 45.8	27.1	1.81	24.6	0.01	0.00	0.01	0.03	151	
170	8.52	8.50	33.933	26.364	168.7	0.431	3.02	132.1	46.0	31.4	1.90	26.2	0.00	0.00	0.00	0.03	171	08
200 ISL	8.32 D	8.29	33.995 D	26.444	161.6	0.479	2.52	D109.8	D 38.2	35.7	2.07	28.3	0.00	0.00	0.00	0.03	202	
201	8.31	8.29	33.996	26.445	161.5	0.482	2.52	110.1	38.1	35.8	2.08	28.4	0.00	0.00	0.00	0.03	203	07
229	7.91	7.88	34.026	26.530	153.8	0.526	2.24	98.0	33.6	40.9	2.21	30.2	0.00	0.00			231	06
250 ISL	7.67 D	7.64	34.049 D	26.583	149.0	0.557	1.97	D 85.5	D 29.3	44.3	2.32	31.6	0.01	0.00			252	
270	7.46	7.43	34.066	26.627	145.1	0.587	1.73	75.4	25.6	47.6	2.43	32.9	0.00	0.00			272	05
300 ISL	7.23 D	7.20	34.110 D	26.693	139.2	0.630	1.29	D 56.0	D 19.0	52.1	2.56	34.4	0.01	0.00			302	
321	7.02	6.99	34.102	26.717	137.2	0.659	1.35	59.0	19.8	55.3	2.65	35.5	0.00	0.00			324	04
380	6.67	6.64	34.181	26.827	127.5	0.737	0.69	30.2	10.1	63.3	2.87	37.7	0.00	0.00			383	03
400 ISL	6.53 D	6.49	34.213 D	26.872	123.5	0.763	0.56	D 24.4	D 8.2	66.0	2.92	38.2	0.00	0.00			403	
441	6.27	6.23	34.233	26.922	119.1	0.812	0.45	19.6	6.5	71.7	3.02	39.2	0.00	0.00			445	02
500 ISL	5.87 D	5.82	34.268 D	27.002	112.0	0.882	0.33	D 14.4	D 4.7	77.1	3.12	40.4	0.00	0.00			504	
517	5.77	5.72	34.274	27.019	110.5	0.899	0.30	13.1	4.3	78.6	3.15	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 1704 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 39.0 N	123 3.9 W	07/04/2017	1148	UTC	4039 m	210 13 kn			1014.9 mb	16.1 C	15.3 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	15.21	15.21	33.167	24.515	341.0	0.000	5.86	256.3	102.4	1.9	0.25	0.0	0.00	0.04	0.13	0.03	0	
2	15.21	15.21	33.167	24.515	341.0	0.007	5.86	256.3	102.4	1.9	0.25	0.0	0.00	0.00	0.13	0.03	2	21
10	15.21	15.21	33.166	24.515	341.3	0.034	5.85	255.7	102.1	1.6	0.25	0.0	0.00	0.00	0.13	0.04	10	19
11	15.21	15.21	33.166	24.515	341.4	0.037											11	20
20 ISL	14.89 D	14.89	33.134 D	24.559	337.4	0.065	5.89	D256.5	D102.1	1.5	0.24	0.0	0.00	0.00	0.13	0.03	20	
26	14.87	14.87	33.166	24.589	334.8	0.088	5.89	257.5	102.1	1.5	0.24	0.0	0.00	0.00	0.13	0.03	26	18
30 ISL	14.84 D	14.83	33.171 D	24.600	333.8	0.099	5.90	D257.0	D102.2	1.4	0.24	0.0	0.00	0.00	0.14	0.03	30	
40	14.73	14.73	33.169	24.621	332.2	0.135	5.94	259.9	102.8	1.4	0.23	0.0	0.00	0.00	0.17	0.05	40	17
50 ISL	14.41 D	14.40	33.162 D	24.685	326.3	0.166	5.90	257.2	101.3	1.5	0.25	0.0	0.00	0.00	0.32	0.14	50	
51	14.47	14.46	33.158	24.670	327.8	0.171	5.90	257.8	101.4	1.5	0.25	0.0	0.00	0.00	0.33	0.15	51	16
61	13.72	13.71	33.178	24.841	311.8	0.203	5.76	252.0	97.6	2.2	0.33	0.8	0.14	0.00	0.47	0.34	61	15
74	13.06	13.05	33.208	24.997	297.2	0.243	5.43	237.3	90.7	4.2	0.52	4.1	0.08	0.00	0.35	0.30	75	14
75 ISL	13.05 D	13.03	33.220 D	25.010	296.0	0.244	5.37	D234.0	D 89.7	4.3	0.53	4.3	0.08	0.00	0.34	0.29	76	
88	12.46	12.44	33.263 D	25.159	282.1	0.282	5.13	D223.6	D 84.7								89	13
100 ISL	11.59 D	11.57	33.322 D	25.368	262.4	0.315	4.73	D205.9	D 76.6	8.7	0.90	10.2	0.03	0.00	0.17	0.20	101	
101	11.49	11.48	33.318	25.382	261.1	0.318	4.77	208.4	77.1	8.8	0.91	10.4	0.03	0.00	0.16	0.20	102	12
111	10.87	10.86	33.363	25.529	247.3	0.344	4.41	192.6	70.3	12.3	1.13	14.1	0.00	0.00	0.10	0.12	112	11
125	10.05	10.04	33.495	25.773	224.1	0.377	4.14	181.1	65.0	16.3	1.34	17.4	0.00	0.00	0.03	0.05	126	10
141	9.42	9.40	33.587	25.950	207.5	0.411	3.76	164.4	58.2	20.5	1.56	20.8	0.00	0.00	0.01	0.03	142	09
150 ISL	9.28 D	9.26	33.672 D	26.039	199.3	0.429	3.63	D157.9	D 56.0	22.2	1.62	21.7	0.01	0.00	0.01	0.03	151	
171	8.97	8.95	33.800	26.190	185.3	0.470	3.32	144.9	50.9	26.3	1.75	24.0	0.00	0.00	0.00	0.02	172	08
200 ISL	8.54 D	8.52	33.922 D	26.352	170.4	0.522	3.02	D131.3	D 45.9	30.6	1.88	25.7	0.00	0.00	0.00	0.02	202	
201	8.53	8.51	33.917	26.350	170.6	0.524	3.07	134.2	46.7	30.8	1.88	25.8	0.00	0.00	0.00	0.02	203	07
231	8.11	8.08	33.991	26.472	159.4	0.573	2.61	113.9	39.3	36.8	2.06	28.7	0.00	0.00			233	06
250 ISL	7.91 D	7.88	34.035 D	26.537	153.5	0.603	2.20	D 95.5	D 32.9	40.8	2.19	30.2	0.00	0.00			252	
272	7.54	7.51	34.049	26.602	147.6	0.636	1.90	82.9	28.2	45.4	2.34	31.9	0.00	0.00			274	05
300 ISL	7.33 D	7.30	34.084 D	26.660	142.4	0.677	1.50	D 65.3	D 22.2	50.2	2.49	33.7	0.00	0.00			302	
322	7.05	7.02	34.098	26.709	138.0	0.708	1.29	56.4	19.0	54.0	2.60	35.1	0.00	0.00			325	04
379	6.57	6.54	34.141	26.809	129.1	0.784	0.85	36.9	12.3	63.5	2.82	37.7	0.00	0.00			382	03
400 ISL	6.53 D	6.50	34.167 D	26.836	126.9	0.812	0.73	D 31.9	D 10.7	66.5	2.88	38.3	0.00	0.00			403	
440	6.11	6.07	34.181	26.902	120.8	0.861	0.58	25.2	8.3	72.1	2.98	39.5	0.00	0.00			444	02
500 ISL	5.86 D	5.82	34.225 D	26.968	115.2	0.934	0.44	D 19.0	D 6.2	77.4	3.07	40.2	0.00	0.00			504	
516	5.87	5.83	34.254	26.991	113.3	0.949	0.34	14.8	4.9	78.8	3.10	40.4	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 1704 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 19.2 N	123 44.5 W	07/04/2017	1757	UTC	3806 m	210 12 kn	290 09 09	1	1016.7 mb	16.2 C	15.4 C	29 m	5/8	AS	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	15.79	15.79	33.175	24.393	352.6	0.000	5.77	252.2	101.9	1.7	0.23	0.0	0.00	0.00	0.07	0.04	0	
2 A	15.79	15.79	33.175	24.393	352.6	0.007	5.77	252.2	101.9	1.7	0.23	0.0	0.00	0.00	0.07	0.04	2	24
9	15.74	15.74	33.175	24.403	351.9	0.032	5.77	252.3	101.8	1.7	0.22	0.0	0.00	0.00	0.07	0.02	9	22
10 ISL	15.75 D	15.75	33.174 D	24.402	352.1	0.032	5.77	251.5	101.8	1.8	0.22	0.0	0.00	0.00	0.07	0.02	10	
10	15.75	15.75	33.174	24.402	352.1	0.034											10	23
18 A	15.77	15.77	33.198	24.415	351.1	0.063	5.75	251.5	101.6	1.8	0.22	0.0	0.00	0.00	0.07	0.01	18	21
20 ISL	15.78 D	15.78	33.217 D	24.428	349.9	0.067	5.77	D251.5	D101.9	1.8	0.22	0.0	0.00	0.00	0.07	0.01	20	
25 A	15.55	15.55	33.204	24.470	346.1	0.088	5.82	254.5	102.4	1.8	0.22	0.0	0.00	0.00	0.08	0.01	25	20
30 ISL	15.51 D	15.51	33.198 D	24.473	346.0	0.102	5.80	D252.9	D101.9	1.8	0.22	0.0	0.00	0.00	0.08	0.01	30	
37	15.40	15.40	33.172	24.479	345.7	0.129	5.80	253.7	101.7	1.7	0.21	0.0	0.00	0.00	0.08	0.02	37	19
45 A	15.39	15.38	33.186	24.493	344.6	0.157	5.77	252.3	101.1	1.8	0.22	0.0	0.00	0.00	0.07	0.01	45	18
50 ISL	15.40 D	15.39	33.176 D	24.484	345.7	0.172	5.80	D252.9	D101.7	1.8	0.22	0.0	0.00	0.00	0.09	0.02	50	
57	15.39	15.38	33.187	24.494	344.9	0.198	5.80	253.4	101.6	1.8	0.22	0.0	0.00	0.00	0.12	0.03	57	17
70	15.18	15.17	33.183	24.538	341.1	0.243	5.85	255.6	102.0	1.8	0.23	0.0	0.00	0.00	0.15	0.04	71	16
75 ISL	15.10 D	15.09	33.236 D	24.596	335.8	0.258	5.79	D252.5	D100.9	2.0	0.23	0.0	0.00	0.00	0.20	0.10	76	
81 A	15.03	15.02	33.298	24.659	329.9	0.280	5.75	251.3	100.0	2.3	0.23	0.0	0.00	0.00	0.27	0.18	82	14
82	14.92	14.91	33.299	24.683	327.6	0.282											83	15
92	14.15	14.13	33.353	24.890	308.1	0.315	5.61	245.3	96.0	2.7	0.28	0.7	0.05	0.00	0.38	0.35	93	13
100 ISL	13.37 D	13.36	33.284 D	24.996	298.1	0.338	5.45	D237.4	D 91.6	3.8	0.42	2.8	0.09	0.00	0.34	0.28	101	
101 A	13.36	13.35	33.306	25.015	296.4	0.342	5.46	238.5	91.8	3.9	0.44	3.1	0.09	0.00	0.34	0.27	102	12
112	12.63	12.61	33.345	25.190	279.9	0.374	5.24	229.1	86.8	5.4	0.57	5.4	0.05	0.00	0.24	0.24	113	11
124	11.39	11.38	33.346	25.423	257.8	0.406	4.93	215.6	79.6	8.0	0.81	9.0	0.03	0.00	0.17	0.12	125	10
125 ISL	11.08 D	11.06	33.385 D	25.510	249.5	0.408	4.86	D211.8	D 78.0	8.3	0.83	9.4	0.03	0.00	0.17	0.12	126	
140	10.62	10.60	33.439	25.634	237.9	0.445	4.42	193.0	70.1	13.4	1.17	14.9	0.00	0.00	0.07	0.06	141	09
150 ISL	10.22 D	10.20	33.504 D	25.753	226.7	0.468	4.34	D188.9	D 68.3	15.7	1.27	16.6	0.00	0.00	0.05	0.05	151	
170	9.43	9.41	33.679	26.022	201.4	0.511	3.99	174.6	61.9	20.4	1.46	19.9	0.00	0.00	0.00	0.04	171	08
200 ISL	8.78 D	8.76	33.856 D	26.264	178.9	0.569	3.22	D140.0	D 49.2	27.7	1.78	24.6	0.00	0.00	0.00	0.04	202	
201	8.75	8.73	33.855	26.267	178.6	0.570	3.25	141.9	49.6	28.0	1.79	24.7	0.00	0.00	0.00	0.04	203	07
230	8.53	8.51	33.975	26.396	166.8	0.620	2.54	110.8	38.6	33.6	2.04	27.9	0.00	0.00			232	06
250 ISL	8.27 D	8.24	34.011 D	26.465	160.6	0.654	2.41	D104.7	D 36.4	36.9	2.13	29.1	0.00	0.00			252	
270	8.00	7.97	34.047	26.534	154.3	0.684	2.14	93.5	32.2	40.2	2.21	30.3	0.00	0.00			272	05
300 ISL	7.75 D	7.72	34.100 D	26.613	147.2	0.731	1.55	D 67.2	D 23.1	45.8	2.40	32.3	0.00	0.00			302	
321	7.59	7.56	34.126	26.657	143.4	0.760	1.29	56.4	19.3	49.7	2.54	33.7	0.00	0.00			324	04
380	6.95	6.91	34.158	26.773	132.9	0.842	0.92	40.1	13.5	58.5	2.74	36.4	0.00	0.00			383	03
400 ISL	6.76 D	6.73	34.182 D	26.817	128.9	0.871	0.78	D 33.7	D 11.3	61.8	2.80	37.2	0.01	0.00			403	
440	6.30	6.26	34.178	26.876	123.5	0.919	0.63	27.7	9.2	68.4	2.92	38.8	0.00	0.00			444	02
500 ISL	5.86 D	5.82	34.221 D	26.965	115.5	0.994	0.44	D 18.9	D 6.2	76.8	3.04	40.2	0.00	0.00			504	
514	5.80	5.75	34.233	26.983	113.9	1.006	0.39	16.8	5.5	78.7	3.07	40.6	0.00	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 1704 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 53.4 N	118 26.7 W	05/04/2017	1515	UTC	28 m	270 02 kn	270 02 08	1	1017.0 mb	15.9 C	15.0 C		3/8	AC	035

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0	15.08	15.08	33.385	24.710	322.4	0.000	7.04	307.7	122.8	0.9	0.12	0.0	0.03		2.29	0.37	0	
2	15.08	15.08	33.385	24.710	322.4	0.006	7.04	307.7	122.8	0.9	0.12	0.0	0.03		2.29	0.37	2	04
5	15.05	15.05	33.386	24.718	321.8	0.016	7.09	310.0	123.6	0.9	0.12	0.0	0.00		2.45	0.35	5	03
10	14.92	14.92	33.388	24.749	319.0	0.032	7.15	312.2	124.2	0.8	0.15	0.0	0.00		3.39	0.25	10	02
15	14.86	14.85	33.388	24.762	317.9	0.048	7.20	314.6	124.9	0.8	0.19	0.0	0.00		3.76	0.34	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 1704 — 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 38.1 N	118 4.6 W	05/04/2017	0404	UTC	31 m	270 12 kn			1016.7 mb	14.7 C	13.6 C				032

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0	15.18	15.18	33.363	24.672	326.0	0.000	7.30	318.9	127.4	1.0	0.07	0.0	0.02		4.79	0.69	0	
2	15.18	15.17	33.363	24.673	326.0	0.007	7.30	318.9	127.4	1.0	0.07	0.0	0.00		4.79	0.69	2	05
5	15.17	15.17	33.362	24.674	326.0	0.016	7.36	321.8	128.6	0.8	0.07	0.0	0.00		5.06	0.22	5	04
10	13.92	13.92	33.364	24.941	300.7	0.032	6.01	262.5	102.2	2.0	0.26	1.9	0.15		18.76	1.24	10	03
15	12.81	12.81	33.386	25.181	278.0	0.047	4.44	194.2	74.0	8.5	0.96	10.5	0.62		4.21	0.54	15	02
20	12.64	12.64	33.390	25.218	274.6	0.060	4.31	188.4	71.5	9.4	1.00	11.4	0.65		2.86	0.52	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 1704 — STATION 90.0 27.7

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
33 29.7 N	117 45.1 W	05/04/2017	0150	UTC	28 m	310 07 kn	270 01 09	1	1015.6 mb	15.4 C	13.4 C		4/8	CS	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	16.19	16.19	33.368	24.452	347.0	0.000	6.91	301.9	123.1	1.6	0.16	0.1	0.03		1.84	0.39	0	
2	16.19	16.18	33.368	24.452	347.1	0.007	6.91	301.9	123.1	1.6	0.16	0.1	0.03		1.84	0.39	2	05
5	15.68	15.68	33.368	24.566	336.3	0.017	7.06	308.4	124.5	1.1	0.13	0.0	0.00		2.11	0.19	5	04
10	15.17	15.17	33.359	24.672	326.4	0.034	7.12	311.1	124.3	1.7	0.17	0.0	0.05		3.56	0.93	10	03
15	14.06	14.06	33.354	24.904	304.4	0.050	5.42	236.8	92.5	6.2	0.53	4.4	0.34		5.40	0.77	15	02
20	13.24	13.24	33.378	25.090	286.8	0.064	4.48	195.8	75.2	9.5	0.96	10.5	0.71		1.68	0.67	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 1704 — STATION 90.0 28.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
33 29.1 N	117 46.3 W	04/04/2017	2349	UTC	78 m	270 09 kn	280 01 08	1	1015.5 mb	16.8 C	14.0 C	13 m	4/8	CS	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	16.26	16.26	33.368	24.435	348.6	0.000	6.74	294.4	120.2	0.7	0.21	0.0	0.02		0.89	0.14	0	
2	16.26	16.25	33.368	24.435	348.6	0.007	6.74	294.4	120.2	0.7	0.21	0.0	0.00		0.89	0.14	2	09
5	16.23	16.23	33.369	24.442	348.1	0.018	6.73	294.2	120.1	0.3	0.18	0.0	0.00		0.88	0.12	5	08
10	15.43	15.43	33.364	24.619	331.4	0.035	6.96	304.2	122.2	0.2	0.17	0.0	0.00		1.20	0.22	10	07
20	14.96	14.96	33.360	24.718	322.3	0.067	7.08	309.3	123.1	0.5	0.21	0.0	0.03		3.04	0.62	20	06
30	12.86	12.86	33.393	25.178	278.7	0.097	4.20	183.7	70.0	10.3	1.10	12.6	0.84		1.02	0.59	30	05
40	11.28	11.27	33.479	25.544	244.1	0.123	3.44	150.2	55.4	16.0	1.48	18.5	0.56		0.45	0.43	40	04
50	10.78	10.77	33.522	25.667	232.6	0.147	3.33	145.4	53.0	18.5	1.58	20.1	0.27		0.29	0.35	50	03
61	9.99	9.99	33.732	25.965	204.4	0.171	2.92	127.4	45.8	23.1	1.83	22.6	0.09		0.13	0.18	61	02
70	9.86	9.85	33.799	26.041	197.4	0.189	2.77	121.0	43.4	24.7	1.85	23.6	0.05		0.08	0.17	71	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 1704 — STATION 90.0 30.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
33 25.1 N	117 54.4 W	04/04/2017	2057	UTC	601 m	250 06 kn	280 03 07	1	1016.3 mb	16.7 C	14.5 C	16 m	1/8	CU	029

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0	15.84	15.84	33.348	24.514	341.0	0.000	6.45	281.7	114.1	1.3	0.19	0.0	0.02	0.00	0.90	0.19	0	
2	15.84	15.84	33.348	24.515	341.1	0.007	6.45	281.7	114.1	1.3	0.19	0.0	0.00	0.00	0.90	0.19	2	21
10	15.42	15.42	33.346	24.607	332.6	0.034	6.58	287.6	115.5	1.0	0.18	0.0	0.00	0.00	1.46	0.27	10	19
11	15.24	15.24	33.346	24.646	328.9	0.036											11	20
20	14.39	14.39	33.346	24.830	311.6	0.066	6.39	279.3	109.8	1.1	0.20	0.0	0.03	0.00	4.45	0.75	20	18
30	13.18	13.17	33.352	25.083	287.7	0.096	4.86	212.5	81.5	6.4	0.75	6.8	0.39	0.06	2.40	0.60	30	17
40	11.81	11.80	33.431	25.409	257.0	0.123	3.83	167.2	62.3	12.2	1.25	14.7	0.24	0.00	0.54	0.40	40	16
50	10.93	10.92	33.514	25.634	235.8	0.148	3.44	150.5	55.1	16.2	1.48	18.4	0.05	0.00	0.28	0.27	50	15
60	10.56	10.56	33.572	25.744	225.5	0.171	3.36	146.8	53.3	18.2	1.56	19.6	0.03	0.00	0.14	0.16	60	14
70	10.28	10.27	33.614	25.825	218.0	0.193	3.30	144.2	52.1	19.6	1.62	20.5	0.03	0.00	0.09	0.13	71	13
75 ISL	10.24 D	10.23	33.645 D	25.856	215.2	0.202	3.26	D141.8 D	51.4	20.5	1.66	21.0	0.03	0.00	0.07	0.12	76	
86	10.02	10.01	33.737	25.966	204.9	0.227	3.01	131.4	47.2	22.5	1.75	22.1	0.00	0.00	0.05	0.09	87	12
100	10.01	9.99	33.806	26.023	199.9	0.255	2.81	122.9	44.2	23.9	1.84	22.8	0.00	0.00	0.03	0.07	101	11
120	9.61	9.60	33.920	26.178	185.6	0.294	2.52	110.3	39.3	27.3	1.95	24.6	0.00	0.00	0.02	0.06	121	10
125 ISL	9.69 D	9.67	33.993 D	26.223	181.4	0.301	2.34	D101.7 D	36.5	28.3	1.99	25.1	0.02	0.00	0.02	0.06	126	
141	9.32	9.31	34.040	26.320	172.5	0.332	2.17	94.6	33.6	31.5	2.11	26.8	0.00	0.00	0.01	0.04	142	09
150 ISL	9.25 D	9.23	34.049 D	26.340	170.8	0.345	2.16	D 94.2 D	33.5	32.9	2.16	27.2	0.01	0.00	0.01	0.04	151	
170	9.12	9.10	34.147	26.438	161.9	0.380	1.73	75.3	26.6	35.8	2.27	28.3	0.00	0.00	0.00	0.03	171	08
200	8.86	8.84	34.173	26.500	156.6	0.428	1.57	68.5	24.1	38.5	2.35	29.2	0.00	0.00	0.00	0.03	202	07
230	8.78	8.76	34.225	26.554	152.1	0.474	1.27	55.3	19.4	41.2	2.47	30.1	0.00	0.00			232	06
250 ISL	8.71 D	8.68	34.232 D	26.571	150.8	0.504	1.22	D 52.9 D	18.6	42.6	2.53	30.5	0.01	0.00			252	
271	8.61	8.58	34.264	26.613	147.3	0.536	1.01	43.9	15.4	44.2	2.59	31.0	0.00	0.00			273	05
300 ISL	8.23 D	8.19	34.251 D	26.661	143.0	0.578	0.97	D 42.0 D	14.6	47.3	2.64	32.0	0.01	0.00			302	
321	8.05	8.02	34.251	26.688	140.8	0.607	0.88	38.5	13.3	49.5	2.67	32.8	0.00	0.00			324	04
381	7.48	7.45	34.273	26.789	131.9	0.689	0.63	27.3	9.3	56.8	2.84	35.0	0.00	0.00			384	03
400 ISL	7.36 D	7.32	34.276 D	26.810	130.2	0.716	0.59	D 25.8 D	8.8	59.5	2.89	35.7	0.01	0.00			403	
440	6.83	6.79	34.283	26.888	122.9	0.765	0.44	19.1	6.4	65.2	2.98	37.0	0.00	0.00			444	02
500 ISL	6.45 D	6.41	34.299 D	26.953	117.4	0.840	0.36	D 15.5 D	5.2	70.7	3.07	38.2	0.01	0.00			504	
516	6.42	6.38	34.300	26.957	117.2	0.856	0.33	14.5	4.8	72.1	3.09	38.5	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 1704 STATION 90.0 35.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
33 15.2 N	118 14.6 W	04/04/2017	1648 UTC	305 m	050 02 kn	270 03 09	2	1016.9 mb	15.2 C	13.9 C	21 m	8/8	ST	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	15.91	15.91	33.351	24.500	342.4	0.000	5.86	256.2	103.9	2.1	0.29	0.0	0.00	0.00	0.27	0.06	0	
2 A	15.91	15.91	33.351	24.500	342.4	0.007	5.86	256.2	103.9	2.1	0.29	0.0	0.00	0.00	0.27	0.06	2	21
10 ISL	15.86 D	15.86	33.352 D	24.513	341.5	0.031	5.86	255.6	103.8	2.2	0.28	0.0	0.01	0.00	0.27	0.07	10	
13	15.85	15.85	33.348	24.513	341.6	0.046											13	20
14 A	15.84	15.84	33.349	24.515	341.4	0.048	5.86	256.3	103.8	2.2	0.28	0.0	0.00	0.00	0.27	0.08	14	18
14	15.84	15.84	33.350	24.516	341.4	0.046											14	19
19 A	15.82	15.82	33.348	24.521	341.1	0.065	5.87	256.6	103.8	2.2	0.29	0.0	0.00	0.00	0.30	0.08	19	17
20 ISL	15.82 D	15.81	33.351 D	24.523	340.9	0.065	5.91	D257.4	D104.5	2.2	0.29	0.0	0.01	0.00	0.34	0.09	20	
26	15.41	15.41	33.337	24.603	333.5	0.088	5.99	261.8	105.1	2.3	0.30	0.0	0.00	0.00	0.59	0.14	26	16
30 ISL	15.28 D	15.27	33.342 D	24.636	330.5	0.099	5.99	D261.2	D104.9	2.7	0.33	0.3	0.03	0.00	1.03	0.28	30	
32 A	15.01	15.01	33.342	24.695	324.9	0.108	5.88	256.8	102.3	2.9	0.34	0.5	0.04	0.00	1.25	0.36	32	15
41	12.11	12.10	33.405	25.332	264.3	0.135	4.25	185.9	69.7	10.6	1.10	12.3	0.20	0.00	1.18	0.66	41	13
41	12.11	12.10	33.399	25.328	264.7	0.136											41	14
50	11.30	11.30	33.466	25.529	245.7	0.158	3.82	166.9	61.6	14.2	1.33	16.1	0.06	0.00	0.40	0.31	50	12
60 A	11.01	11.00	33.489	25.601	239.2	0.181	3.70	161.9	59.3	15.5	1.41	17.4	0.04	0.00	0.23	0.25	60	11
73 A	10.35	10.34	33.581	25.787	221.7	0.212	3.46	151.1	54.7	18.8	1.57	20.0	0.00	0.00	0.10	0.11	74	10
75 ISL	10.32 D	10.31	33.590 D	25.801	220.4	0.215	3.44	D149.8 D	54.3	19.3	1.59	20.3	0.00	0.00	0.09	0.10	76	
86	9.98	9.97	33.688	25.935	207.9	0.240	3.18	139.1	49.9	21.8	1.71	21.9	0.00	0.00	0.02	0.06	87	09
100	9.92	9.91	33.753	25.997	202.4	0.269	3.01	131.4	47.1	23.1	1.78	22.8	0.00	0.00	0.01	0.05	101	08
120	9.62	9.61	33.954	26.204	183.1	0.307	2.44	106.6	38.0	28.3	2.01	25.4	0.00	0.00	0.01	0.03	121	07
125 ISL	9.62 D	9.61	33.980 D	26.224	181.4	0.316	2.39	D104.1 D	37.3	28.9	2.04	25.6	0.00	0.00	0.01	0.04	126	
140	9.63	9.62	34.070	26.293	175.1	0.343	2.07	90.5	32.3	30.9	2.12	26.3	0.00	0.00	0.01	0.05	141	06
150 ISL	9.61 D	9.59	34.130 D	26.344	170.5	0.360	1.82	D 79.0 D	28.3	32.5	2.19	26.9	0.00	0.00	0.01	0.12	151	
171	9.33	9.31	34.179	26.430	162.8	0.396	1.59	69.5	24.7	35.9	2.33	28.2	0.00	0.00	0.01	0.26	172	05
199	9.06	9.04	34.208	26.495	157.1	0.440	1.45	63.4	22.4	38.5	2.40	29.3	0.00	0.00	0.00	0.04	201	04
200 ISL	9.05 D	9.03	34.203 D	26.493	157.3	0.442	1.47	D 63.9 D	22.6	38.6	2.40	29.3	0.00	0.00			202	
230	8.69	8.66	34.215	26.561	151.4	0.488	1.27	55.6	19.5	42.0	2.47	30.7	0.00	0.00			232	03
250 ISL	8.55 D	8.52	34.219 D	26.586	149.3	0.519	1.23	D 53.6 D	18.8	44.9	2.56	31.6	0.00	0.00			252	
270	8.26	8.23	34.242	26.648	143.7	0.547	0.97	42.1	14.6	47.8	2.65	32.5	0.00	0.00			272	02
290	7.99	7.96	34.250	26.696	139.4	0.576	0.85	37.3	12.9	50.9	2.70	33.5	0.00	0.00			292	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 1704 STATION 90.0 37.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
33 11.3 N	118 22.6 W	04/04/2017	1356 UTC	1159 m	080 07 kn	270 04 10	2	1015.4 mb	13.9 C	12.9 C	18 m	8/8	ST	027

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0	15.87	15.87	33.353	24.511	341.4	0.000	5.84	255.4	103.5	2.2	0.28	0.0	0.00	0.00	0.30	0.08	0	
2	15.87	15.87	33.353	24.511	341.4	0.007	5.84	255.4	103.5	2.2	0.28	0.0	0.00	0.00	0.30	0.08	2	22
10	15.84	15.84	33.351	24.517	341.2	0.034	5.86	256.0	103.7	1.9	0.26	0.0	0.00	0.00	0.30	0.10	10	20
10	15.84	15.84	33.352	24.517	341.1	0.035											10	21
20	15.49	15.49	33.345	24.590	334.5	0.068	5.89	257.6	103.6	2.0	0.26	0.0	0.00	0.00	0.35	0.12	20	19
30	13.86	13.86	33.339	24.935	301.9	0.100	5.65	246.8	96.0	2.6	0.42	1.1	0.07	0.00	1.53	0.20	30	18
40	12.31	12.30	33.387	25.281	269.2	0.128	4.23	184.8	69.6	9.9	1.06	11.6	0.20	0.00	1.00	0.68	40	16
40	12.31	12.30	33.388	25.282	269.1	0.128											40	17
50	11.70	11.69	33.416	25.419	256.3	0.155	3.93	171.8	63.9	12.4	1.23	14.5	0.09	0.00	0.42	0.47	50	15
60	11.40	11.39	33.463	25.510	247.9	0.180	3.81	166.7	61.6	14.3	1.32	16.0	0.05	0.00	0.26	0.33	60	14
71	10.62	10.62	33.543	25.711	228.9	0.206	3.51	153.3	55.8	17.5	1.50	18.8	0.03	0.00	0.11	0.11	72	13
75 ISL	10.59 D	10.58	33.556 D	25.727	227.5	0.213	3.49	D152.1 D	55.5	18.4	1.55	19.4	0.03	0.00	0.09	0.10	76	
85	10.15	10.14	33.657	25.882	212.9	0.237	3.21	140.4	50.6	20.5	1.66	21.0	0.00	0.00	0.03	0.08	86	12
100	9.95	9.94	33.713	25.959	205.9	0.268	3.08	134.4	48.2	22.3	1.72	22.1	0.00	0.00	0.02	0.05	101	11
120	9.68	9.67	33.848	26.110	192.0	0.308	2.73	119.1	42.5	25.9	1.87	24.0	0.00	0.00	0.01	0.04	121	10
125 ISL	9.67 D	9.65	33.878 D	26.137	189.6	0.317	2.68	D116.7 D	41.8	26.8	1.92	24.4	0.00	0.00	0.01	0.04	126	
140	9.76	9.75	34.013	26.227	181.4	0.346	2.22	96.8	34.7	29.3	2.05	25.5	0.00	0.00	0.01	0.05	141	09
150 ISL	9.71 D	9.69	34.049 D	26.264	178.1	0.363	2.22	D 96.5 D	34.7	30.3	2.07	25.9	0.00	0.00	0.01	0.04	151	
170	9.30	9.28	34.059	26.340	171.3	0.399	2.11	92.1	32.6	32.3	2.12	26.9	0.00	0.00	0.00	0.03	171	08
200	8.79	8.76	34.114	26.465	159.8	0.448	1.94	84.9	29.8	36.6	2.21	28.4	0.00	0.00	0.00	0.03	202	07
230	8.64	8.61	34.199	26.556	151.8	0.495	1.35	58.9	20.6	41.8	2.43	30.3	0.00	0.00			232	06
250 ISL	8.41 D	8.38	34.218 D	26.606	147.3	0.525	1.19	D 51.7 D	18.1	43.9	2.49	31.0	0.00	0.00			252	
270	8.33	8.30	34.224	26.624	146.0	0.555	1.09	47.8	16.6	46.0	2.55	31.7	0.00	0.00			272	05
300 ISL	7.95 D	7.92	34.250 D	26.702	139.0	0.598	0.88	D 38.1 D	13.2	50.2	2.65	33.1	0.00	0.00			302	
320	7.68	7.65	34.245	26.737	135.9	0.625	0.78	34.2	11.7	53.0	2.72	34.0	0.00	0.00			323	04
380	7.08	7.05	34.257	26.833	127.4	0.704	0.55	23.9	8.0	62.2	2.87	36.4	0.00	0.00			383	03
400 ISL	6.89 D	6.86	34.265 D	26.865	124.5	0.730	0.51	D 22.2 D	7.5	64.4	2.91	36.8	0.00	0.00			403	
440	6.64	6.60	34.285	26.916	120.1	0.778	0.39	17.0	5.7	68.8	2.99	37.7	0.00	0.00			444	02
500 ISL	6.26 D	6.22	34.313 D	26.988	113.8	0.850	0.31	D 13.6 D	4.5	76.0	3.08	39.2	0.00	0.00			504	
517	6.14	6.09	34.318	27.008	112.1	0.868	0.27	11.7	3.9	78.0	3.10	39.6	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 1704 — STATION 90.0 45.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
32 55.2 N	118 56.2 W	04/04/2017	0826 UTC	1672 m	180 03 kn			1014.8 mb	13.9 C	12.3 C				026

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0	15.12	15.12	33.373	24.693	324.0	0.000	5.93	259.2	103.5	2.3	0.30	0.5	0.07	0.06	0.66	0.16	0	
3	15.12	15.12	33.373	24.693	324.1	0.010	5.93	259.2	103.5	2.3	0.30	0.5	0.07	0.06	0.66	0.16	3	21
10	14.85	14.85	33.366	24.745	319.3	0.032	5.94	259.5	103.0	2.2	0.30	0.3	0.06	0.00	0.58	0.22	10	19
10	14.85	14.85	33.371	24.750	318.9	0.032											10	20
20	14.46	14.46	33.366	24.830	311.6	0.064	5.88	256.8	101.2	2.3	0.35	1.1	0.11	0.08	1.12	0.32	20	18
30 ISL	11.90 D	11.89	33.422 D	25.385	259.0	0.088	4.47	194.7	73.0	10.4	1.02	11.6	0.25	0.00	0.76	0.41	30	
31	11.87	11.87	33.415	25.384	259.1	0.095	4.33	189.1	70.6	11.2	1.09	12.7	0.26	0.00	0.73	0.42	31	17
40	11.01	11.00	33.470	25.585	240.1	0.117	3.84	167.6	61.5	15.0	1.34	16.6	0.11	0.00	0.46	0.29	40	16
49	10.71	10.70	33.515	25.673	231.9	0.139	3.61	157.7	57.5	17.1	1.46	18.5	0.06	0.00	0.25	0.21	49	15
50 ISL	10.62 D	10.62	33.537 D	25.706	228.9	0.137	3.61	D157.3 D	57.4	17.4	1.47	18.6	0.06	0.00	0.24	0.20	50	
61	10.24	10.24	33.609	25.827	217.6	0.166	3.29	143.8	51.9	20.2	1.61	20.8	0.04	0.00	0.10	0.12	61	14
70	10.07	10.07	33.650	25.888	211.9	0.185	3.18	138.8	49.9	21.6	1.68	21.6	0.03	0.00	0.05	0.10	71	13
75 ISL	9.99 D	9.98	33.670 D	25.920	209.1	0.191	3.15	D137.3 D	49.5	22.0	1.70	22.0	0.03	0.00	0.05	0.09	76	
85	9.85	9.84	33.698	25.964	205.1	0.216	3.06	133.7	47.9	22.6	1.75	22.7	0.00	0.00	0.03	0.07	86	12
100 ISL	9.50 D	9.49	33.813 D	26.112	191.4	0.242	2.81	D122.1 D	43.6	25.7	1.84	24.2	0.02	0.00	0.01	0.05	101	
101	9.50	9.49	33.807	26.107	191.8	0.248	2.81	122.9	43.7	25.9	1.85	24.3	0.00	0.00	0.01	0.05	102	11
120	9.30	9.29	33.900	26.213	182.2	0.283	2.57	112.3	39.8	28.9	1.97	25.6	0.00	0.00	0.01	0.05	121	10
125 ISL	9.27 D	9.26	33.916 D	26.230	180.6	0.289	2.54	D110.6 D	39.3	29.6	2.00	26.0	0.02	0.00	0.01	0.05	126	
140	9.13	9.12	34.003	26.322	172.2	0.319	2.23	97.3	34.4	31.8	2.09	27.1	0.00	0.00	0.01	0.05	141	09
150 ISL	9.06 D	9.04	34.054 D	26.374	167.5	0.333	2.04	D 88.8 D	31.4	33.5	2.15	27.7	0.02	0.00	0.01	0.05	151	
170	8.80	8.78	34.103	26.453	160.3	0.369	1.78	77.8	27.3	36.7	2.27	29.0	0.00	0.00	0.01	0.04	171	08
200	8.45	8.43	34.148	26.544	152.2	0.416	1.49	64.9	22.6	41.4	2.41	30.8	0.00	0.00	0.01	0.04	202	07
230	8.10	8.07	34.174	26.618	145.6	0.460	1.27	55.5	19.2	45.4	2.51	32.1	0.00	0.00			232	06
250 ISL	7.96 D	7.94	34.191 D	26.651	142.8	0.487	1.15	D 50.0 D	17.3	47.8	2.58	32.9	0.02	0.00			252	
270	7.77	7.75	34.205	26.691	139.3	0.517	0.99	43.2	14.8	50.2	2.64	33.7	0.00	0.00			272	05
300 ISL	7.57 D	7.54	34.226 D	26.737	135.3	0.557	0.85	D 36.9 D	12.7	53.7	2.73	34.5	0.02	0.00			302	
321	7.43	7.40	34.231	26.762	133.3	0.587	0.75	32.9	11.2	56.1	2.79	35.1	0.00	0.00			324	04
380	6.95	6.91	34.256	26.850	125.6	0.663	0.55	24.0	8.1	62.6	2.90	37.0	0.00	0.00			383	03
400 ISL	6.79 D	6.75	34.269 D	26.882	122.8	0.687	0.48	D 20.9 D	7.0	64.9	2.94	37.5	0.01	0.00			403	
441	6.54	6.50	34.282	26.927	119.0	0.738	0.39	17.0	5.7	69.8	3.02	38.4	0.00	0.00			445	02
500 ISL	6.21 D	6.17	34.311 D	26.993	113.3	0.806	0.30	D 13.1 D	4.4	76.8	3.10	38.6	0.01	0.00			504	
516	6.18	6.13	34.321	27.005	112.4	0.824	0.26	11.4	3.8	78.7	3.12	38.7	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 1704 — STATION 90.0 53.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
32 39.0 N	119 29.0 W	04/04/2017	0313 UTC	1301 m	300 12 kn			1013.8 mb	12.7 C	11.1 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	14.04	14.04	33.371	24.920	302.4	0.000	6.09	266.0	103.9	3.7	0.42	2.1	0.15	0.03	2.70	0.46	0	
2	14.04	14.04	33.371	24.920	302.4	0.006	6.09	266.0	103.9	3.7	0.42	2.1	0.15	0.00	2.70	0.46	2	21
10	13.90	13.90	33.379	24.957	299.2	0.030	6.08	265.6	103.5	4.1	0.45	2.5	0.16	0.00	3.00	0.43	10	19
11	13.90	13.90	33.379	24.957	299.2	0.032											10	20
20	13.65	13.65	33.377	25.006	294.8	0.060	5.87	256.3	99.3	4.6	0.51	3.4	0.17	0.15	2.97	0.38	20	18
30	13.51	13.50	33.370	25.031	292.8	0.089	5.62	245.7	94.9	5.1	0.57	4.2	0.20	0.35	1.22	0.40	30	17
41	13.50	13.50	33.370	25.033	292.9	0.121	5.65	246.7	95.3	5.2	0.59	4.3	0.20	0.36	1.03	0.34	41	16
50 ISL	13.49 D	13.48	33.371 D	25.037	292.7	0.146	5.62	D245.0 D	94.9	5.3	0.59	4.3	0.20	0.36	1.01	0.34	50	
51	13.49	13.49	33.370	25.035	293.0	0.151	5.60	244.7	94.5	5.3	0.59	4.4	0.20	0.36	1.01	0.34	51	15
61	13.37	13.37	33.374	25.063	290.7	0.180	5.54	242.0	93.2	5.8	0.62	5.0	0.23	0.38	0.64	0.30	61	14
71	11.62	11.61	33.373	25.400	258.6	0.207	5.26	229.9	85.4	7.1	0.73	6.8	0.29	0.28	0.50	0.33	72	13
75 ISL	11.30 D	11.29	33.414 D	25.490	250.1	0.216	4.34	D189.0 D	69.9	9.9	0.92	9.9	0.23	0.00	0.38	0.28	76	
86	10.30	10.29	33.509	25.740	226.4	0.244	3.79	165.7	59.9	17.3	1.44	18.5	0.07	0.00	0.07	0.13	87	12
99	10.04	10.03	33.565	25.829	218.2	0.273	3.59	156.9	56.4	19.4	1.55	20.2	0.04	0.00	0.06	0.10	100	11
100 ISL	10.00 D	9.99	33.582 D	25.849	216.4	0.274	3.60	D156.8 D	56.5	19.6	1.56	20.3	0.04	0.00	0.06	0.10	101	
121	9.47	9.45	33.712	26.040	198.6	0.319	3.26	142.2	50.5	23.7	1.73	23.0	0.00	0.00	0.03	0.09	122	10
125 ISL	9.35 D	9.33	33.802 D	26.129	190.2	0.325	2.94	D127.9 D	45.5	24.7	1.77	23.5	0.02	0.00	0.03	0.08	126	
140	9.18	9.17	33.864	26.204	183.4	0.355	2.73	119.2	42.1	28.3	1.93	25.5	0.00	0.00	0.02	0.05	141	09
150 ISL	8.92 D	8.90	33.955 D	26.319	172.7	0.371	2.46	D106.9 D	37.7	30.2	2.00	26.4	0.01	0.00	0.02	0.05	151	
172	8.81	8.79	34.015	26.383	167.0	0.411	2.13	92.8	32.5	34.5	2.15	28.4	0.00	0.00	0.01	0.05	173	08
200	8.67	8.65	34.067	26.446	161.6	0.457	1.82	79.6	27.8	38.3	2.27	29.6	0.00	0.00	0.01	0.05	202	07
230	8.53	8.51	34.116	26.507	156.4	0.504	1.59	69.6	24.3	40.7	2.37	30.5	0.00	0.00			232	06
250 ISL	8.31 D	8.29	34.154 D	26.571	150.6	0.534	1.38	D 60.0 D	20.9	43.3	2.45	31.4	0.02	0.00			252	
270	8.17	8.14	34.182	26.614	146.8	0.565	1.23	53.8	18.6	46.0	2.53	32.3	0.00	0.00			272	05
300 ISL	7.88 D	7.85	34.199 D	26.672	141.8	0.608	1.06	D 46.2 D	16.0	50.5	2.62	33.5	0.01	0.00			302	
321	7.59	7.56	34.224 D	26.733	136.2	0.637	0.84	D 36.5 D	12.5								324	04
382	7.06	7.02	34.251	26.831	127.6	0.718	0.59	25.7	8.7	62.7	2.88	36.6	0.00	0.00			385	03
400 ISL	7.00 D	6.97	34.257 D	26.844	126.6	0.741	0.57	D 24.9 D	8.4	64.7	2.91	37.0	0.01	0.00			403	
440	6.69	6.65	34.276	26.901	121.6	0.790	0.43	18.6	6.2	69.1	2.97	37.7	0.00	0.00			444	02
500 ISL	6.36 D	6.31	34.304 D	26.968	115.8	0.863	0.35	D 15.1 D	5.0	74.6	3.07	39.3	0.01	0.00			504	
515	6.19	6.15	34.309	26.994	113.4	0.879	0.30	13.2	4.4	76.0	3.10	39.7	0.00	0.00			519	01

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

RV BELL M SHIMADA — CALCOFI CRUISE 1704 — STATION 90.0 60.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
32 25.1 N	119 57.7 W	03/04/2017	2230 UTC	858 m	310 16 kn	300 05 06	2	1013.9 mb	14.7 C	13.2 C	16 m	8/8	ST	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	14.47	14.47	33.210	24.707	322.6	0.000	5.97	260.7	102.6	1.9	0.29	0.2	0.04	0.04	0.49	0.16	0	
2	14.47	14.46	33.210	24.708	322.7	0.007	5.97	260.7	102.6	1.9	0.29	0.2	0.04	0.00	0.49	0.16	2	20
10	14.45	14.45	33.211	24.711	322.6	0.032	5.99	261.7	103.0	1.5	0.28	0.0	0.03	0.00	0.43	0.18	10	19
19	14.28	14.28	33.211	24.748	319.3	0.061	6.01	262.5	102.9	1.5	0.28	0.0	0.04	0.00	0.47	0.22	19	18
20 ISL	14.19 D	14.18	33.216 D	24.771	317.2	0.061	6.01	261.7	102.7	1.6	0.28	0.1	0.04	0.00	0.48	0.24	20	
30	13.90	13.89	33.218	24.834	311.5	0.096	6.01	262.5	102.1	1.7	0.30	0.4	0.07	0.00	0.58	0.40	30	17
40	13.50	13.49	33.217	24.915	304.0	0.127	5.82	254.4	98.1	2.5	0.40	1.6	0.16	0.00	0.70	0.52	40	16
50 ISL	12.86 D	12.85	33.242 D	25.062	290.3	0.154	5.55	241.7	92.3	4.0	0.53	3.6	0.37	0.00	0.65	0.46	50	
51	13.00	13.00	33.229	25.024	294.0	0.159	5.52	241.3	92.1	4.1	0.54	3.8	0.39	0.00	0.65	0.46	51	15
62	12.22	12.21	33.242	25.186	278.8	0.191	5.10	222.8	83.7	6.0	0.71	7.0	0.09	0.00	0.38	0.33	62	14
70	11.77	11.76	33.285	25.304	267.7	0.213	4.79	209.1	77.8	8.1	0.88	9.7	0.09	0.00	0.27	0.34	71	13
75 ISL	11.23 D	11.22	33.346 D	25.451	253.8	0.224	4.70	D204.6 D	75.5	9.4	0.97	11.1	0.07	0.00	0.24	0.29	76	
86	10.96	10.95	33.368	25.516	247.9	0.254	4.30	187.9	68.7	12.1	1.16	14.2	0.04	0.00	0.15	0.20	87	12
100	10.30	10.29	33.477	25.717	229.0	0.287	3.93	171.7	62.0	16.1	1.40	17.6	0.00	0.00	0.08	0.11	101	11
119	9.59	9.57	33.647	25.969	205.3	0.328	3.44	150.3	53.5	20.7	1.63	21.0	0.00	0.00	0.03	0.06	120	10
125 ISL	9.48 D	9.47	33.725 D	26.048	198.0	0.338	3.28	D142.6 D	50.8	21.8	1.67	21.7	0.02	0.00	0.03	0.05	126	
139	9.29	9.27	33.769	26.114	192.0	0.368	3.16	138.0	48.8	24.5	1.75	23.2	0.00	0.00	0.02	0.03	140	09
150 ISL	9.12 D	9.11	33.824 D	26.183	185.6	0.387	3.07	D133.8 D	47.3	26.1	1.81	24.1	0.01	0.00	0.01	0.03	151	
170	8.89	8.87	33.902	26.282	176.5	0.425	2.79	122.0	42.8	29.1	1.91	25.7	0.00	0.00	0.00	0.02	171	08
200 ISL	8.53 D	8.51	33.984 D	26.403	165.6	0.475	2.54	D110.4 D	38.6	33.2	2.01	27.3	0.01	0.00	0.00	0.02	202	
202	8.52	8.49	33.983	26.404	165.5	0.480	2.52	110.1	38.3	33.5	2.02	27.4	0.00	0.00	0.00	0.02	204	07
230	8.18	8.15	34.030	26.493	157.5	0.525	2.23	97.2	33.6	38.0	2.15	29.0	0.00	0.00			232	06
250 ISL	7.96 D	7.93	34.065 D	26.554	152.0	0.555	1.92	D 83.5 D	28.8	41.0	2.25	30.2	0.01	0.00			252	
272	7.78	7.75	34.082	26.593	148.6	0.589	1.67	72.9	25.0	44.2	2.37	31.7	0.00	0.00			274	05
300 ISL	7.52 D	7.49	34.103 D	26.647	143.8	0.629	1.44	D 62.5 D	21.4	48.3	2.49	33.1	0.01	0.00			302	
320	7.35	7.32	34.116	26.683	140.7	0.658	1.26	55.1	18.7	51.3	2.57	34.1	0.00	0.00			323	04
381	6.80	6.77	34.158	26.792	131.0	0.741	0.82	35.9	12.0	60.6	2.77	36.5	0.00	0.00			384	03
400 ISL	6.72 D	6.68	34.180 D	26.821	128.5	0.766	0.74	D 32.2 D	10.8	62.9	2.82	37.0	0.01	0.00			403	
444	6.40	6.36	34.213	26.889	122.4	0.821	0.53	23.3	7.7	68.4	2.93	38.3	0.00	0.00			448	02
500 ISL	6.06 D	6.01	34.260 D	26.972	115.1	0.889	0.38	D 16.3 D	5.4	74.8	3.05	39.4	0.01	0.00			504	
520	5.92	5.87	34.274	27.001	112.5	0.911	0.32	13.9	4.6	77.1	3.09	39.8	0.00	0.00			524	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 1704 — 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	03/04/2017	1626 UTC	3766 m	300 13 kn	270 08 12	2	1015.1 mb	14.2 C	13.0 C	18 m	8/8	ST	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	14.83	14.83	33.228	24.644	328.6	0.000	5.89	257.3	102.0	1.6	0.30	0.0	0.00	0.00	0.45	0.15	0	
2 A	14.83	14.82	33.228	24.645	328.7	0.007	5.89	257.3	102.0	1.6	0.30	0.0	0.00	0.00	0.45	0.15	2	22
10 ISL	14.38 D	14.38	33.226 D	24.739	319.9	0.030	5.99	260.9	102.8	1.5	0.30	0.1	0.03	0.00	0.39	0.21	10	
11	14.26	14.25	33.223	24.762	317.8	0.037											11	21
12 A	14.23	14.22	33.223	24.768	317.2	0.039	6.01	262.7	102.9	1.4	0.30	0.1	0.03	0.00	0.37	0.22	12	20
17 A	14.07	14.07	33.221	24.800	314.4	0.055	6.05	264.5	103.3	1.4	0.32	0.1	0.03	0.00	0.41	0.28	17	19
20 ISL	13.93 D	13.93	33.221 D	24.828	311.7	0.061	6.04	263.4	102.8	1.4	0.33	0.2	0.03	0.00	0.41	0.30	20	
28 A	13.92	13.92	33.219	24.830	311.8	0.089	6.02	263.0	102.4	1.4	0.34	0.2	0.04	0.11	0.42	0.35	28	17
28	13.92	13.92	33.221	24.832	311.7	0.088											28	18
30 ISL	13.92 D	13.91	33.222 D	24.833	311.6	0.093	6.02	262.3	102.4	1.4	0.34	0.2	0.04	0.11	0.43	0.36	30	
40	13.88	13.88	33.220	24.839	311.3	0.127	6.03	263.3	102.4	1.5	0.32	0.3	0.05	0.11	0.45	0.39	40	16
50 ISL	13.87 D	13.86	33.223 D	24.845	311.1	0.156	6.03	D262.7 D	102.4	1.5	0.35	0.3	0.05	0.18	0.38	0.37	50	
51 A	13.85	13.84	33.220	24.847	310.9	0.161	6.00	262.2	101.9	1.5	0.35	0.3	0.05	0.19	0.38	0.37	51	15
64 A	12.82	12.81	33.265	25.089	288.1	0.200	5.71	249.7	95.0	3.2	0.58	3.1	0.21	1.04	0.15	0.14	65	14
74	12.20	12.19	33.307	25.241	273.9	0.228	5.09	222.3	83.5	6.6	0.86	7.3	0.39	1.08	0.11	0.11	75	13
75 ISL	12.15 D	12.14	33.319 D	25.259	272.2	0.229	5.03	D219.1 D	82.5	6.9	0.88	7.7	0.37	0.00	0.11	0.11	76	
87	11.08	11.07	33.357	25.487	250.7	0.262	4.52	197.7	72.5	11.1	1.06	12.5	0.10	0.00	0.11	0.12	88	12
99	10.33	10.32	33.448	25.688	231.7	0.291	4.09	178.6	64.5	15.1	1.33	16.8	0.03	0.00	0.08	0.09	100	11
100 ISL	10.28 D	10.27	33.468 D	25.713	229.3	0.292	4.05	D176.1 D	63.8	15.3	1.34	16.9	0.03	0.00	0.08	0.08	101	
122	9.83	9.81	33.586	25.882	213.7	0.342	3.64	158.8	56.8	19.6	1.57	20.2	0.00	0.00	0.04	0.05	123	10
125 ISL	9.71 D	9.70	33.621 D	25.929	209.3	0.347	3.60	D156.8 D	56.1	20.3	1.60	20.7	0.02	0.00	0.03	0.05	126	
140	9.38	9.36	33.722	26.062	196.9	0.379	3.18	139.1	49.3	23.8	1.75	23.1	0.00	0.00	0.01	0.03	141	09
150 ISL	9.21 D	9.19	33.814 D	26.162	187.6	0.397	3.00	D130.6 D	46.3	25.6	1.82	24.1	0.02	0.00	0.01	0.03	151	
170	8.94	8.92	33.888	26.263	178.3	0.435	2.71	118.5	41.6	29.2	1.95	26.0	0.00	0.00	0.00	0.02	171	08
200 ISL	8.52 D	8.50	33.994 D	26.412	164.7	0.486	2.39	D103.9 D	36.3	33.9	2.08	28.0	0.02	0.00	0.00	0.02	202	
201	8.51	8.49	33.992	26.412	164.8	0.488	2.39	104.4	36.3	34.0	2.08	28.1	0.00	0.00	0.00	0.02	203	07
231	8.08	8.06	34.034	26.511	155.8	0.536	2.11	92.2	31.8	38.8	2.21	29.9	0.00	0.00			233	06
250 ISL	7.88 D	7.86	34.067 D	26.566	150.8	0.565	1.87	D 81.1 D	28.0	42.5	2.32	31.2	0.01	0.00			252	
270	7.68	7.65	34.092	26.616	146.3	0.595	1.57	68.7	23.5	46.4	2.44	32.5	0.00	0.00			272	05
300 ISL	7.40 D	7.37	34.120 D	26.679	140.8	0.638	1.29	D 55.9 D	19.1	51.2	2.58	34.0	0.01	0.00			302	
321	7.15	7.12	34.147	26.734	135.7	0.667	1.06	46.1	15.6	54.6	2.67	35.0	0.00	0.00			324	04
382	6.58	6.54	34.198	26.854	124.9	0.747	0.64	27.9	9.3	65.1	2.89	37.6	0.00	0.00			385	03
400 ISL	6.50 D	6.47	34.206 D	26.870	123.7	0.770	0.59	D 25.4 D	8.5	66.5	2.92	37.9	0.01	0.00			403	
443	6.30	6.26	34.226	26.913	120.0	0.822	0.49	21.3	7.1	69.8	2.99	38.7	0.00	0.00			447	02
500 ISL	5.91 D	5.87	34.266 D	26.995	112.8	0.890	0.34	D 14.9 D	4.9	75.9	3.09	39.8	0.01	0.00			504	
514	5.85	5.81	34.277	27.011	111.4	0.904	0.30	13.2	4.3	77.3	3.12	40.1	0.00	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 1704 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 45.2 N	121 19.2 W	03/04/2017	1024 UTC	3652 m	330 14 kn			1014.9 mb	14.0 C	13.1 C				022

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0	15.42	15.42	33.201	24.494	343.0	0.000	5.79	253.3	101.6	1.7	0.23	0.0	0.00	0.00	0.13	0.02	0	
2	15.42	15.42	33.201	24.494	343.1	0.007	5.79	253.3	101.6	1.7	0.23	0.0	0.00	0.00	0.13	0.02	2	20
10	15.42	15.42	33.200	24.494	343.3	0.034	5.79	252.9	101.4	1.5	0.22	0.0	0.00	0.00	0.12	0.03	10	19
20 ISL	15.43 D	15.42	33.201 D	24.494	343.6	0.066	5.80	252.7	101.7	1.5	0.22	0.0	0.00	0.00	0.13	0.03	20	
25	15.30	15.29	33.192	24.516	341.7	0.086	5.80	253.7	101.5	1.5	0.22	0.0	0.00	0.00	0.13	0.03	25	18
30 ISL	15.19 D	15.19	33.178 D	24.528	340.7	0.100	5.87	D255.8	D102.4	1.5	0.22	0.0	0.00	0.00	0.14	0.03	30	
40	15.16	15.15	33.174	24.533	340.6	0.137	5.87	256.6	102.4	1.5	0.22	0.0	0.00	0.00	0.15	0.04	40	17
50	14.92	14.91	33.162	24.576	336.8	0.171	5.87	256.5	101.8	1.5	0.23	0.0	0.00	0.00	0.22	0.06	50	16
64	14.30	14.29	33.189	24.731	322.4	0.217	5.94	259.7	101.8	1.7	0.24	0.0	0.00	0.00	0.32	0.16	65	15
75	13.85	13.84	33.191	24.825	313.8	0.252	5.79	253.0	98.3	2.3	0.34	0.8	0.19	0.00	0.56	0.39	76	14
88	12.69	12.68	33.239	25.095	288.3	0.291	5.30	231.6	87.8	5.0	0.60	5.4	0.08	0.00	0.26	0.28	89	13
100	12.29	12.28	33.282	25.206	278.0	0.325	4.96	216.8	81.6	7.2	0.78	8.3	0.04	0.00	0.17	0.19	101	12
111	11.31	11.30	33.305	25.405	259.1	0.355	4.77	208.4	76.8	9.0	0.91	10.5	0.03	0.00	0.14	0.17	112	11
125	10.48	10.46	33.424	25.646	236.4	0.389	4.24	185.5	67.2	13.9	1.23	15.6	0.00	0.00	0.07	0.08	126	10
140	9.71	9.69	33.608	25.919	210.5	0.423	3.52	153.9	54.9	20.3	1.60	21.1	0.00	0.00	0.01	0.04	141	09
150 ISL	9.33 D	9.31	33.675 D	26.034	199.8	0.443	3.68	D160.1 D	56.9	21.9	1.62	21.7	0.00	0.00	0.01	0.03	151	
171	8.92	8.90	33.811	26.206	183.8	0.484	3.58	156.6	54.9	25.2	1.65	22.9	0.00	0.00	0.00	0.02	172	08
200	8.58	8.56	33.940	26.361	169.6	0.535	2.86	124.9	43.5	31.7	1.92	26.5	0.00	0.00	0.01	0.02	202	07
230	8.27	8.25	33.995	26.451	161.5	0.584	2.51	109.7	38.0	35.7	2.05	28.4	0.00	0.00			232	06
250 ISL	8.04 D	8.01	34.024 D	26.509	156.2	0.617	2.35	D102.0 D	35.3	39.7	2.18	30.0	0.00	0.00			252	
271	7.74	7.71	34.056	26.579	149.8	0.648	1.89	82.6	28.2	43.9	2.31	31.7	0.00	0.00			273	05
300 ISL	7.37 D	7.34	34.072 D	26.645	143.9	0.692	1.70	D 73.8 D	25.1	48.8	2.46	33.3	0.00	0.00			302	
320	7.21	7.18	34.102	26.691	139.8	0.719	1.34	58.7	19.8	52.2	2.56	34.4	0.00	0.00			323	04
382	6.74	6.71	34.182	26.819	128.4	0.802	0.73	32.1	10.7	61.2	2.83	37.2	0.00	0.00			385	03
400 ISL	6.70 D	6.67	34.201 D	26.839	126.7	0.828	0.65	D 28.1 D	9.5	63.3	2.87	37.6	0.00	0.00			403	
441	6.48	6.44	34.223	26.887	122.7	0.876	0.53	D 22.9 D	7.7	67.9	2.95	38.5	0.00	0.00			445	02
500 ISL	5.99 D	5.94	34.265 D	26.985	113.8	0.950	0.38	D 16.4 D	5.4	76.0	3.06	39.9	0.00	0.00			504	
516	5.92	5.88	34.276	27.002	112.3	0.964	0.32	14.0	4.6	78.2	3.09	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 1704 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 25.0 N	121 59.6 W	03/04/2017	0434 UTC	3819 m	340 13 kn			1017.6 mb	15.0 C	13.2 C				021

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0	15.02	15.02	33.227	24.602	332.7	0.000	5.87	256.7	102.2	1.7	0.27	0.0	0.00	0.00	0.19	0.04	0	
2	15.02	15.02	33.227	24.602	332.8	0.007	5.87	256.7	102.2	1.7	0.27	0.0	0.00	0.00	0.19	0.04	2	22
10	15.03	15.03	33.227	24.601	333.1	0.033	5.91	258.3	102.8	1.7	0.27	0.0	0.00	0.00	0.21	0.02	10	20
10	15.03	15.03	33.225	24.600	333.2	0.034											10	21
20 ISL	15.02 D	15.01	33.227 D	24.604	333.1	0.064	5.89	256.6	102.4	1.6	0.27	0.0	0.00	0.00	0.22	0.05	20	
25	14.93	14.93	33.222	24.619	331.9	0.083	5.87	256.7	102.0	1.6	0.27	0.0	0.00	0.00	0.23	0.06	25	19
30 ISL	14.91 D	14.91	33.223 D	24.624	331.5	0.097	5.88	256.2	102.0	1.6	0.27	0.0	0.00	0.00	0.25	0.07	30	
40	14.87	14.86	33.225	24.636	330.8	0.133	5.89	257.2	102.1	1.6	0.28	0.0	0.00	0.00	0.28	0.09	40	18
50	14.52	14.51	33.222	24.709	324.1	0.166	5.92	258.5	101.8	1.6	0.28	0.0	0.00	0.00	0.38	0.15	50	17
62	13.26	13.25	33.220	24.968	299.7	0.203	5.75	251.3	96.4	3.1	0.47	2.3	0.28	0.00	0.64	0.47	62	15
63	13.23	13.22	33.226	24.978	298.8	0.205											63	16
75 ISL	12.47 D	12.46	33.229 D	25.128	284.7	0.239	5.38	234.2	88.7	5.2	0.64	5.4	0.23	0.00	0.31	0.25	76	
76	12.34	12.33	33.229	25.154	282.3	0.244	5.35	233.7	88.0	5.4	0.65	5.7	0.22	0.00	0.28	0.24	77	14
87	11.53	11.52	33.321	25.378	261.1	0.274	4.59	200.5	74.3	10.1	1.00	11.6	0.03	0.00	0.17	0.15	88	13
100 ISL	10.97 D	10.95	33.388 D	25.532	246.7	0.305	4.33	188.4	69.2	12.5	1.17	14.2	0.02	0.00	0.10	0.09	101	
101	10.88	10.87	33.385	25.544	245.6	0.309	4.31	188.2	68.7	12.7	1.18	14.4	0.00	0.00	0.10	0.08	102	12
112	10.27	10.25	33.489	25.732	227.9	0.335	3.95	172.7	62.3	16.8	1.40	18.0	0.00	0.00	0.03	0.05	113	11
125 ISL	10.07 D	10.06	33.595 D	25.848	217.0	0.363	3.44	D149.7 D	54.0	19.9	1.60	20.5	0.00	0.00	0.02	0.04	126	
126	10.01	10.00	33.596	25.859	216.0	0.367	3.43	150.0	53.9	20.1	1.61	20.7	0.00	0.00	0.02	0.04	127	10
140	9.46	9.44	33.711	26.041	198.9	0.396	3.23	141.0	50.0	23.8	1.75	23.2	0.00	0.00	0.01	0.03	141	09
150 ISL	9.27 D	9.25	33.788 D	26.132	190.5	0.414	3.05	D132.5 D	47.0	25.9	1.83	24.3	0.00	0.00	0.01	0.03	151	
169	8.99	8.97	33.896	26.261	178.6	0.450	2.63	114.8	40.4	29.9	1.97	26.4	0.00	0.00	0.00	0.02	170	08
200	8.66	8.64	33.990	26.388	167.1	0.504	2.26	98.9	34.5	34.3	2.12	28.6	0.00	0.00	0.00	0.02	202	07
231	8.27	8.25	34.077	26.516	155.4	0.554	1.80	78.6	27.2	40.4	2.30	30.5	0.00	0.00			233	06
250 ISL	8.09 D	8.06	34.086 D	26.551	152.3	0.583	1.74	D 75.9 D	26.3	43.1	2.36	31.4	0.00	0.00			252	
270	7.81	7.79	34.105	26.607	147.3	0.613	1.57	68.6	23.5	45.9	2.43	32.4	0.00	0.00			272	05
300 ISL	7.34 D	7.31	34.104 D	26.675	141.1	0.657	1.37	D 59.6 D	20.3	51.8	2.57	34.1	0.00	0.00			302	
321	7.12	7.09	34.128	26.724	136.6	0.685	1.12	48.9	16.5	55.9	2.66	35.4	0.00	0.00			324	04
381	6.43	6.39	34.124	26.814	128.5	0.765	0.91	39.7	13.2	65.1	2.81	37.8	0.00	0.00			384	03
400 ISL	6.29 D	6.25	34.152 D	26.855	124.8	0.791	0.77	D 33.4 D	11.1	67.8	2.86	38.4	0.00	0.00			403	
441	5.96	5.92	34.157	26.902	120.7	0.839	0.63	27.7	9.1	73.6	2.96	39.8	0.00	0.00			445	02
500 ISL	5.64 D	5.60	34.225 D	26.996	112.3	0.911	0.40	D 17.6 D	5.8	80.7	3.07	41.0	0.00	0.00			504	
517	5.46	5.42	34.229	27.020	110.0	0.927	0.36	15.8	5.1	82.7	3.10	41.4	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 1704 STATION 90.0 100.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
31 5.1 N	122 39.7 W	02/04/2017	2253 UTC	3963 m	340 14 kn	330 06 07	2	1018.1 mb	15.9 C	14.7 C	24 m	8/8	SC	020

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0	15.43	15.43	33.150	24.453	346.9	0.000	5.81	254.0	101.9	1.7	0.23	0.0	0.01	0.00	0.10	0.02	0	
2	15.43	15.43	33.150	24.453	347.0	0.007	5.81	254.0	101.9	1.7	0.23	0.0	0.00	0.00	0.10	0.02	2	20
10 ISL	15.42 D	15.42	33.147 D	24.453	347.2	0.032	5.81	253.2	101.8	1.6	0.23	0.1	0.01	0.00	0.10	0.02	10	
11	15.43	15.43	33.150	24.453	347.2	0.038	5.81	253.9	101.8	1.6	0.23	0.1	0.00	0.00	0.10	0.02	11	19
20 ISL	15.36 D	15.35	33.146 D	24.467	346.2	0.066	5.80	252.7	101.5	1.6	0.23	0.0	0.01	0.00	0.10	0.02	20	
26	15.31	15.30	33.152	24.484	344.8	0.090	5.79	253.1	101.2	1.6	0.23	0.0	0.00	0.00	0.10	0.02	26	18
30 ISL	15.29 D	15.29	33.145 D	24.481	345.2	0.101	5.81	253.1	101.5	1.6	0.23	0.0	0.01	0.00	0.10	0.02	30	
41	15.27	15.27	33.142	24.484	345.3	0.142	5.85	255.9	102.3	1.5	0.23	0.0	0.00	0.00	0.11	0.02	41	17
50 ISL	15.16 D	15.15	33.144 D	24.511	343.0	0.171	5.84	254.4	101.8	1.5	0.22	0.0	0.01	0.00	0.14	0.03	50	
51	15.17	15.16	33.140	24.505	343.6	0.176	5.83	255.1	101.7	1.5	0.22	0.0	0.00	0.00	0.14	0.03	51	16
62	14.23	14.22	33.177	24.736	321.9	0.213	5.94	259.8	101.7	2.0	0.27	0.0	0.00	0.00	0.37	0.19	62	15
75 ISL	13.76 D	13.75	33.255 D	24.894	307.2	0.252	5.71	248.6	96.7	2.7	0.35	1.1	0.07	0.00	0.53	0.30	76	
76	13.74	13.72	33.237	24.885	308.1	0.257	5.69	248.6	96.4	2.8	0.36	1.2	0.08	0.00	0.54	0.31	77	14
87	13.38	13.36	33.296	25.003	297.1	0.290	5.43	237.5	91.4	3.9	0.46	3.2	0.11	0.00	0.47	0.26	88	13
100 ISL	12.36 D	12.35	33.276 D	25.187	279.7	0.326	5.15	D224.5	D 84.9	5.8	0.65	6.2	0.07	0.00	0.40	0.28	101	
101	12.36	12.34	33.275	25.188	279.7	0.331	5.17	225.9	85.1	5.9	0.66	6.5	0.07	0.00	0.39	0.28	102	12
112	11.44	11.42	33.318	25.393	260.3	0.360	4.74	207.3	76.6	9.0	0.91	10.4	0.05	0.00	0.24	0.28	113	11
125 ISL	10.69 D	10.67	33.473 D	25.648	236.3	0.391	3.96	D172.6	D 63.0	14.5	1.28	15.9	0.03	0.00	0.13	0.13	126	
126	10.63	10.61	33.463	25.650	236.0	0.395	4.00	174.6	63.5	15.0	1.31	16.3	0.03	0.00	0.12	0.12	127	10
140	9.96	9.94	33.598	25.870	215.3	0.427	3.36	146.7	52.6	19.9	1.61	20.7	0.00	0.00	0.05	0.05	141	09
150 ISL	9.86 D	9.84	33.761 D	26.014	201.9	0.446	2.79	D121.2	D 43.6	22.6	1.74	22.3	0.00	0.00	0.03	0.04	151	
169	9.57	9.55	33.870	26.148	189.5	0.486	2.38	104.0	37.0	27.7	1.99	25.4	0.00	0.00	0.01	0.02	170	08
200	9.22	9.19	34.020	26.324	173.4	0.542	1.94	84.7	29.9	32.3	2.16	27.7	0.00	0.00	0.00	0.02	202	07
229	8.96	8.94	34.097	26.425	164.3	0.591	1.68	73.3	25.8	35.7	2.27	29.0	0.00	0.00			231	06
250 ISL	8.80 D	8.78	34.135 D	26.481	159.4	0.623	1.51	D 65.7	D 23.1	38.6	2.35	29.9	0.00	0.00			252	
269	8.60	8.57	34.165	26.537	154.4	0.655	1.32	57.6	20.1	41.3	2.43	30.6	0.00	0.00			271	05
300 ISL	8.24 D	8.21	34.191 D	26.612	147.7	0.700	1.12	D 48.5	D 16.9	45.1	2.52	32.0	0.00	0.00			302	
321	8.04	8.01	34.199	26.648	144.5	0.732	0.99	43.2	14.9	47.7	2.58	32.8	0.00	0.00			324	04
381	7.34	7.30	34.233	26.778	132.9	0.815	0.69	30.2	10.2	56.8	2.77	35.2	0.00	0.00			384	03
400 ISL	7.12 D	7.08	34.241 D	26.816	129.4	0.840	0.61	D 26.4	D 9.0	59.4	2.81	35.8	0.00	0.00			403	
441	6.81	6.77	34.259	26.873	124.4	0.892	0.49	21.4	7.2	64.8	2.90	37.0	0.00	0.00			445	02
500 ISL	6.36 D	6.32	34.294 D	26.960	116.6	0.964	0.35	D 15.1	D 5.0	71.9	3.02	38.2	0.00	0.00			504	
515	6.32	6.27	34.298	26.969	116.0	0.981	0.30	13.2	4.4	73.6	3.05	38.5	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 1704 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 20.1 W	02/04/2017	1708 UTC	3963 m	360 12 kn	330 06 10	2	1020.2 mb	16.0 C	15.0 C	25 m	6/8	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	15.40	15.40	33.153	24.461	346.1	0.000	5.81	253.9	101.8	2.0	0.25	0.1	0.00	0.00	0.10	0.02	0	
3 A	15.40	15.40	33.153	24.461	346.2	0.010	5.81	253.9	101.8	2.0	0.25	0.1	0.00	0.00	0.10	0.02	3	24
10	15.39	15.38	33.151	24.464	346.1	0.035	5.84	255.3	102.3	2.0	0.26	0.1	0.00	0.00	0.11	0.03	10	22
10	15.39	15.38	33.151	24.465	346.1	0.036											10	23
16 A	15.39	15.39	33.153	24.465	346.3	0.055	5.82	254.2	101.9	1.9	0.24	0.0	0.00	0.00	0.10	0.02	16	21
20 ISL	15.38 D	15.38	33.152 D	24.467	346.2	0.064	5.82	253.5	101.9	1.9	0.24	0.0	0.00	0.00	0.11	0.02	20	
23	15.38	15.38	33.152 D	24.467	346.3	0.075											23	20
30 ISL	15.38 D	15.37	33.152 D	24.468	346.5	0.099	5.82	253.5	101.9	1.9	0.24	0.0	0.00	0.00	0.11	0.02	30	
40 A	15.37	15.37	33.150	24.468	346.8	0.138	5.82	254.3	101.8	1.8	0.24	0.1	0.00	0.00	0.12	0.02	40	19
50 ISL	15.34 D	15.33	33.148 D	24.475	346.4	0.169	5.80	252.9	101.5	1.7	0.25	0.0	0.00	0.00	0.13	0.03	50	
51	15.33	15.32	33.146	24.475	346.4	0.177	5.80	253.6	101.5	1.7	0.25	0.0	0.00	0.00	0.13	0.03	51	18
62	15.18	15.17	33.141	24.504	344.1	0.215	5.86	256.0	102.2	1.7	0.24	0.0	0.00	0.00	0.16	0.05	62	17
73 A	14.59	14.58	33.129	24.624	333.0	0.252	5.94	259.5	102.3	1.7	0.27	0.0	0.00	0.00	0.25	0.10	74	16
75 ISL	14.38 D	14.37	33.166 D	24.696	326.1	0.255	5.88	256.4	101.0	1.9	0.29	0.3	0.02	0.00	0.29	0.14	76	
83	13.68	13.67	33.202	24.869	309.8	0.284	5.67	248.1	96.0	2.7	0.37	1.5	0.08	0.00	0.45	0.29	84	15
90 A	13.43	13.42	33.215	24.930	304.2	0.305	5.57	243.6	93.8	3.4	0.38	2.4	0.10	0.00	0.40	0.30	91	13
90	13.43	13.42	33.207	24.924	304.8	0.305											91	14
100 ISL	12.68 D	12.66	33.351 D	25.185	280.1	0.332	5.27	D229.6	D 87.4	5.2	0.55	4.9	0.04	0.00	0.31	0.21	101	
101	12.64	12.63	33.353	25.193	279.3	0.338	5.24	228.9	86.8	5.4	0.57	5.1	0.03	0.00	0.30	0.20	102	12
110	11.99	11.98	33.365	25.327	266.7	0.362	5.11	223.1	83.5	6.7	0.67	6.8	0.00	0.00	0.24	0.17	111	11
125	11.14	11.13	33.413	25.520	248.5	0.401	4.71	205.8	75.6	10.4	0.95	11.2	0.00	0.00	0.15	0.12	126	10
140	9.96	9.94	33.485	25.783	223.6	0.436	4.10	179.2	64.2	17.1	1.38	17.9	0.00	0.00	0.05	0.06	141	09
150 ISL	9.53 D	9.51	33.606 D	25.948	208.0	0.455	3.85	D167.7	D 59.8	19.5	1.48	19.6	0.00	0.00	0.03	0.05	151	
170	9.16	9.14	33.755	26.124	191.6	0.498	3.39	148.2	52.2	24.5	1.69	22.9	0.00	0.00	0.00	0.02	171	08
200	8.69	8.67	33.922	26.330	172.5	0.553	2.88	125.8	43.9	30.5	1.88	25.9	0.00	0.00	0.00	0.02	202	07
230	8.28	8.26	34.007	26.460	160.7	0.603	2.43	106.1	36.7	36.7	2.07	28.5	0.00	0.00			232	06
250 ISL	8.15 D	8.13	34.036 D	26.502	157.0	0.632	2.17	D 94.4	D 32.7	40.8	2.19	30.0	0.00	0.00			252	
270	7.73	7.70	34.058	26.582	149.5	0.665	1.88	81.9	28.0	44.9	2.31	31.5	0.00	0.00			272	05
300 ISL	7.45 D	7.42	34.077 D	26.637	144.8	0.708	1.65	D 71.8	D 24.5	49.1	2.43	33.1	0.00	0.00			302	
320	7.24	7.21	34.100	26.685	140.4	0.738	1.37	59.6	20.2	52.0	2.51	34.1	0.00	0.00			323	04
380	6.83	6.79	34.161	26.791	131.0	0.819	0.85	37.3	12.5	60.4	2.74	36.4	0.00	0.00			383	03
400 ISL	6.68 D	6.65	34.175 D	26.822	128.4	0.845	0.76	D 33.2	D 11.1	63.2	2.79	37.1	0.00	0.00			403	
441	6.39	6.35	34.203	26.884	122.9	0.897	0.58	25.2	8.4	69.1	2.90	38.4	0.00	0.00			445	02
500 ISL	5.94 D	5.89	34.231 D	26.965	115.6	0.968	0.43	D 18.9	D 6.2	76.7	3.01	39.9	0.00	0.00			504	
515	5.86	5.82	34.244	26.984	113.9	0.984	0.40	17.3	5.7	78.7	3.04	40.2	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 1704 STATION 90.0 120.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
30 25.1 N	124 0.0 W	02/04/2017	1046 UTC	4238 m	350 17 kn			1019.6 mb	15.1 C	13.4 C				018

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0	15.93	15.93	33.215	24.391	352.7	0.000	5.71	249.8	101.2	1.5	0.29	0.0	0.02	0.22	0.08	0.01	0	
2	15.93	15.93	33.215	24.392	352.8	0.007	5.71	249.8	101.2	1.5	0.29	0.0	0.00	0.22	0.08	0.01	2	22
10	15.93	15.93	33.214	24.391	353.1	0.035	5.76	251.6	102.0	1.6	0.25	0.0	0.00	0.14	0.08	0.01	10	20
10	15.93	15.93	33.215	24.392	353.1	0.036											10	21
20 ISL	15.94 D	15.93	33.216 D	24.392	353.4	0.067	5.73	249.8	101.5	1.6	0.24	0.0	0.00	0.00	0.08	0.01	20	
26	15.94	15.93	33.225	24.399	352.9	0.092	5.71	249.8	101.2	1.6	0.24	0.0	0.00	0.00	0.07	0.01	26	19
30 ISL	15.94 D	15.93	33.216 D	24.392	353.7	0.103	5.71	249.1	101.2	1.5	0.24	0.0	0.00	0.00	0.08	0.01	30	
40	15.94	15.93	33.216	24.393	354.0	0.141	5.71	249.6	101.2	1.4	0.24	0.0	0.00	0.00	0.09	0.00	40	18
50	15.94	15.93	33.215	24.392	354.4	0.177	5.72	249.8	101.3	1.4	0.27	0.0	0.00	0.00	0.08	0.01	50	17
62	15.82	15.81	33.208	24.414	352.7	0.219	5.74	250.9	101.4	1.3	0.25	0.0	0.00	0.00	0.09	0.02	62	16
75 ISL	14.98 D	14.97	33.136 D	24.544	340.6	0.262	5.84	254.7	101.5	1.3	0.24	0.0	0.00	0.00	0.12	0.04	76	
76	14.97	14.96	33.135	24.545	340.6	0.268	5.85	255.8	101.6	1.3	0.24	0.0	0.00	0.00	0.12	0.04	77	15
87	14.80	14.79	33.128	24.578	337.8	0.305	5.85	255.7	101.2	1.4	0.25	0.0	0.00	0.00	0.18	0.06	88	14
100	14.08	14.06	33.198	24.786	318.3	0.348	5.81	254.0	99.1	1.9	0.32	0.2	0.07	0.00	0.55	0.36	101	12
100	14.08	14.06	33.201	24.788	318.1	0.348											101	13
112	13.16	13.14	33.228	24.996	298.5	0.385	5.46	238.7	91.4	3.6	0.50	3.4	0.11	0.07	0.41	0.31	113	11
125	11.63	11.61	33.356	25.388	261.2	0.421	4.86	212.5	78.9	8.1	0.83	9.2	0.03	0.00	0.16	0.20	126	10
141	10.84	10.82	33.399	25.564	244.6	0.461	4.43	193.5	70.6	12.4	1.13	14.0	0.00	0.00	0.09	0.10	142	09
150 ISL	10.15 D	10.14	33.488 D	25.752	226.8	0.482	3.99	D173.6 D	62.7	15.1	1.28	16.2	0.00	0.00	0.06	0.08	151	
170	9.36	9.34	33.632	25.996	203.8	0.526	3.68	160.9	56.9	21.2	1.60	21.3	0.00	0.00	0.01	0.02	171	08
200	8.85	8.83	33.813	26.219	183.1	0.584	3.40	148.7	52.1	25.9	1.72	23.7	0.00	0.00	0.00	0.02	202	07
231	8.53	8.51	33.917	26.351	171.1	0.639	3.15	137.6	47.9	29.9	1.84	25.6	0.00	0.00			233	06
250 ISL	8.26 D	8.23	33.975 D	26.439	163.1	0.670	2.81	D122.2 D	42.5	33.6	1.97	27.3	0.00	0.00			252	
271	7.98	7.95	33.998	26.498	157.7	0.705	2.53	110.4	38.0	37.5	2.11	29.1	0.00	0.00			273	05
300 ISL	7.50 D	7.47	34.033 D	26.596	148.6	0.749	2.11	D 91.6 D	31.3	43.1	2.26	31.2	0.00	0.00			302	
320	7.33	7.29	34.035	26.622	146.4	0.779	1.92	83.8	28.4	47.0	2.36	32.7	0.00	0.00			323	04
381	6.63	6.60	34.087	26.759	133.9	0.864	1.18	51.7	17.2	59.2	2.69	36.6	0.00	0.00			384	03
400 ISL	6.50 D	6.46	34.105 D	26.791	131.1	0.890	1.05	D 45.8 D	15.3	62.6	2.76	37.5	0.00	0.00			403	
442	6.13	6.09	34.137	26.864	124.4	0.943	0.70	30.5	10.1	70.2	2.92	39.5	0.00	0.00			446	02
500 ISL	5.75 D	5.71	34.207 D	26.968	115.1	1.014	0.48	D 20.7 D	6.8	78.1	3.05	40.8	0.00	0.00			504	
515	5.67	5.62	34.227	26.994	112.7	1.030	0.39	16.9	5.5	80.1	3.08	41.1	0.00	0.00			519	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 1704 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 14.3 N	117 28.0 W	29/03/2017	0905 UTC	22 m	070 07 kn			1015.9 mb	14.2 C	11.4 C				003

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0	15.57	15.57	33.291	24.530	339.6	0.000	6.20	271.4	109.2	3.2	0.29	0.3	0.07	0.05	2.36	0.54	0	
2	15.57	15.57	33.291	24.530	339.6	0.007	6.20	271.4	109.2	3.2	0.29	0.3	0.07	0.00	2.36	0.54	2	05
5	15.11	15.11	33.284	24.626	330.5	0.017	6.08	265.8	105.9	3.6	0.30	0.2	0.08	0.00	4.26	0.68	5	04
10	13.79	13.79	33.293	24.912	303.4	0.033	5.15	225.3	87.4	4.9	0.55	2.4	0.38	0.00	5.93	1.03	10	02
10	13.79	13.79	33.297	24.915	303.1	0.033											10	03
20	12.95	12.95	33.338	25.117	284.2	0.062	4.39	192.1	73.3	8.5	0.97	9.5	0.65	0.51	1.33	0.81	20	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 1704 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 56.9 N	117 19.0 W	29/03/2017	0408 UTC	215 m	100 04 kn			1015.6 mb	16.1 C	12.6 C				001

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0	16.90	16.90	33.285	24.222	368.9	0.000	5.98	261.7	108.1	1.4	0.22	0.1	0.00	0.03	0.27	0.04	0	
2	16.90	16.90	33.285	24.222	368.9	0.007	5.98	261.7	108.1	1.4	0.22	0.1	0.00	0.00	0.27	0.04	2	14
10	15.65	15.64	33.277	24.503	342.4	0.036	6.12	267.7	107.8	1.7	0.20	0.0	0.00	0.00	0.78	0.13	10	13
20	12.79	12.78	33.336	25.148	281.3	0.067	4.77	208.5	79.3	7.7	0.85	8.3	0.37	0.00	1.29	0.62	20	12
30	11.62	11.62	33.403	25.421	255.5	0.094	4.08	178.3	66.1	12.6	1.21	14.5	0.10	0.00	0.37	0.31	30	11
40	10.62	10.62	33.537	25.705	228.7	0.118	3.48	152.0	55.2	17.5	1.51	19.1	0.04	0.00	0.13	0.13	40	10
50	10.22	10.21	33.622	25.842	215.9	0.140	3.15	137.6	49.6	20.7	1.67	21.5	0.04	0.00	0.03	0.06	50	09
60	9.86	9.85	33.733	25.989	202.1	0.161	2.97	129.7	46.4	23.3	1.77	23.0	0.03	0.16	0.02	0.08	60	08
70	9.71	9.71	33.818	26.080	193.7	0.181	2.78	121.5	43.4	25.2	1.84	24.1	0.00	0.00	0.01	0.05	71	07
75 ISL	9.74 D	9.73	33.853 D	26.103	191.6	0.187	2.75	D119.8 D	43.0	25.8	1.87	24.3	0.01	0.00	0.01	0.05	76	
86	9.76	9.75	33.914	26.148	187.7	0.212	2.50	109.4	39.1	27.0	1.93	24.9	0.00	0.12	0.01	0.05	87	06
100	9.67	9.66	33.942	26.186	184.4	0.238	2.43	106.2	37.9	27.7	1.96	25.3	0.00	0.00	0.01	0.05	101	05
120	9.59	9.57	34.008	26.251	178.7	0.274	2.20	96.3	34.3	29.9	2.06	26.2	0.00	0.00	0.01	0.05	121	04
125 ISL	9.57 D	9.56	34.029 D	26.270	176.9	0.280	2.23	D 96.8 D	34.7	30.5	2.09	26.4	0.03	0.00	0.01	0.05	126	
140	9.59	9.58	34.101	26.323	172.2	0.309	1.85	80.9	28.8	32.4	2.18	27.2	0.03	0.00	0.01	0.06	141	03
150 ISL	9.59 D	9.58	34.137 D	26.352	169.8	0.323	1.79	D 77.9 D	27.9	33.4	2.21	27.6	0.03	0.00	0.01	0.06	151	
170	9.35	9.34	34.161	26.410	164.6	0.360	1.62	70.8	25.1	35.5	2.28	28.4	0.03	0.00	0.01	0.05	171	02
200 ISL	9.08 D	9.06	34.229 D	26.510	155.8	0.405	1.34	D 58.2 D	20.6	39.7	2.43	29.8	0.04	0.00	0.01	0.07	202	
202	9.07	9.05	34.226	26.509	155.9	0.411	1.28	55.9	19.7	39.9	2.44	29.9	0.04	0.07	0.01	0.07	204	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 1704 STATION 93.3 28.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
32 54.5 N	117 23.8 W	29/03/2017	1134 UTC	595 m	030 05 kn			1015.6 mb	15.8 C	13.4 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	16.57	16.57	33.307	24.317	359.8	0.000	5.89	257.8	105.8	1.3	0.20	0.0	0.03	0.00	0.24	0.06	0	
2	16.57	16.57	33.307	24.317	359.9	0.007	5.89	257.8	105.8	1.3	0.20	0.0	0.03	0.00	0.24	0.06	2	20
10	16.48	16.48	33.318	24.346	357.4	0.036	5.88	257.1	105.3	1.6	0.22	0.0	0.03	0.00	0.21	0.05	10	19
20	14.25	14.24	33.326	24.844	310.2	0.069	6.08	266.1	104.3	2.1	0.28	0.0	0.03	0.00	0.25	0.10	20	18
30	13.30	13.29	33.318	25.033	292.5	0.099	5.31	232.1	89.2	5.4	0.62	5.0	0.27	0.00	0.66	0.45	30	17
40	12.03	12.02	33.373	25.324	265.1	0.127	4.36	190.6	71.3	10.4	1.05	11.9	0.18	0.00	0.41	0.25	40	16
50	11.02	11.01	33.484	25.594	239.5	0.153	3.73	163.0	59.7	15.2	1.37	17.0	0.08	0.00	0.17	0.13	50	15
60	10.63	10.62	33.550	25.715	228.3	0.176	3.44	150.5	54.7	17.7	1.53	19.1	0.07	0.00	0.10	0.10	60	14
70	10.30	10.29	33.625	25.830	217.5	0.198	3.25	141.9	51.2	19.2	1.61	20.5	0.06	0.00	0.05	0.08	71	13
75 ISL	10.23 D	10.22	33.658 D	25.869	213.9	0.206	3.24	D141.0 D	51.1	20.2	1.65	21.1	0.06	0.00	0.04	0.07	76	
85	10.02	10.01	33.725	25.957	205.8	0.230	2.99	130.6	46.9	22.2	1.74	22.5	0.06	0.00	0.01	0.05	86	12
100	9.62	9.61	33.769	26.059	196.4	0.260	2.85	124.7	44.4	24.6	1.81	23.8	0.05	0.00	0.01	0.04	101	11
120	9.48	9.47	33.907	26.189	184.4	0.298	2.55	111.5	39.6	27.8	1.95	25.4	0.05	0.00	0.01	0.03	121	10
125 ISL	9.56 D	9.54	33.988 D	26.241	179.7	0.305	2.37	D103.0 D	36.8	28.6	1.99	25.6	0.05	0.00	0.01	0.04	126	
140	9.64	9.62	34.050	26.276	176.7	0.335	2.05	89.7	32.0	30.8	2.09	26.4	0.05	0.00	0.01	0.05	141	09
150 ISL	9.60 D	9.58	34.084 D	26.310	173.8	0.350	2.01	D 87.3 D	31.3	31.9	2.15	26.8	0.06	0.00	0.01	0.05	151	
170	9.51	9.49	34.139	26.368	168.7	0.386	1.62	71.0	25.3	34.1	2.27	27.7	0.06	0.00	0.01	0.04	171	08
200	9.10	9.08	34.178	26.466	159.9	0.436	1.48	64.8	22.9	37.8	2.35	29.2	0.06	0.00	0.01	0.03	202	07
228	9.08	9.06	34.245	26.522	155.2	0.480	1.21	52.9	18.7	39.9	2.44	29.7	0.06	0.00			230	06
250 ISL	8.85 D	8.82	34.239 D	26.555	152.4	0.511	1.21	D 52.8 D	18.6	41.7	2.45	30.5	0.06	0.00			252	
270	8.52	8.49	34.206	26.581	150.2	0.544	1.35	58.9	20.5	43.3	2.46	31.2	0.06	0.00			272	05
300 ISL	8.57 D	8.54	34.295 D	26.643	145.0	0.586	0.91	D 39.6 D	13.9	46.3	2.60	31.9	0.06	0.00			302	
320	8.38	8.34	34.319	26.692	140.6	0.617	0.68	29.8	10.4	48.3	2.69	32.5	0.06	0.00			323	04
380	7.45	7.41	34.268	26.791	131.7	0.699	0.62	27.0	9.2	57.5	2.80	35.5	0.06	0.00			383	03
400 ISL	7.31 D	7.27	34.279 D	26.819	129.3	0.724	0.58	D 25.1 D	8.6	59.6	2.84	36.1	0.06	0.00			403	
440	6.99	6.95	34.284	26.868	125.0	0.776	0.45	19.5	6.6	63.8	2.92	37.1	0.06	0.00			444	02
500 ISL	6.47 D	6.43	34.314 D	26.962	116.6	0.848	0.33	D 14.2 D	4.8	72.2	3.03	38.9	0.07	0.00			504	
522	6.26	6.21	34.317	26.992	113.8	0.874	0.27	11.9	3.9	75.3	3.07	39.6	0.07	0.00			526	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 1704 STATION 93.3 30.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
32 50.8 N	117 32.2 W	29/03/2017	1422 UTC	851 m	360 05 kn	280 04 06	0	1016.4 mb	16.2 C	14.4 C	21 m	0/8		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	16.45	16.45	33.366	24.389	353.0	0.000	5.77	251.6	103.4	2.1	0.26	0.0	0.00	0.00	0.23	0.03	0	
3	16.45	16.45	33.366	24.389	353.1	0.011	5.77	251.6	103.4	2.1	0.26	0.0	0.00	0.00	0.23	0.03	3	20
10	15.62	15.62	33.349	24.564	336.6	0.035	5.83	254.3	102.8	2.2	0.27	0.1	0.00	0.00	0.18	0.03	10	19
20	13.93	13.93	33.340	24.921	302.9	0.067	5.91	257.6	100.6	3.2	0.38	1.2	0.08	0.00	0.49	0.19	20	18
30 ISL	13.02 D	13.01	33.344 D	25.109	285.3	0.091	4.98	D217.0 D	83.2	5.8	0.65	5.4	0.29	0.00	0.98	0.48	30	
31	13.01	13.01	33.332	25.101	286.1	0.099	5.14	224.0	85.9	6.1	0.68	5.8	0.31	0.00	1.02	0.51	31	17
40	12.47	12.46	33.366	25.233	273.7	0.124	4.67	203.2	77.1	8.7	0.90	9.5	0.23	0.00	0.99	0.57	40	16
50	11.47	11.46	33.407	25.453	253.0	0.151	4.14	180.1	66.9	12.3	1.18	14.2	0.09	0.00	0.50	0.35	50	15
60	11.12	11.12	33.455	25.554	243.7	0.175	3.81	166.1	61.2	14.0	1.32	16.1	0.04	0.00	0.30	0.33	60	14
71	10.47	10.46	33.512	25.714	228.6	0.201	3.56	154.8	56.3	17.7	1.50	19.1	0.00	0.00	0.08	0.09	72	13
75 ISL	10.42 D	10.41	33.550 D	25.751	225.1	0.206	3.61	D157.0 D	57.1	18.3	1.53	19.5	0.02	0.00	0.06	0.08	76	
85	10.11	10.10	33.617	25.857	215.3	0.233	3.38	146.9	53.1	19.8	1.60	20.7	0.00	0.00	0.03	0.06	86	12
100	9.77	9.76	33.694	25.975	204.4	0.264	3.18	138.4	49.7	22.2	1.70	22.3	0.00	0.00	0.01	0.04	101	11
120	9.53	9.52	33.809	26.105	192.5	0.304	2.91	126.4	45.2	25.1	1.82	24.1	0.00	0.00	0.01	0.02	121	10
125 ISL	9.49 D	9.47	33.809 D	26.112	191.9	0.310	2.95	D128.4 D	45.8	25.7	1.84	24.3	0.00	0.00	0.01	0.03	126	
140	9.27	9.25	33.883	26.206	183.3	0.341	2.78	120.8	42.9	27.4	1.88	25.2	0.00	0.00	0.00	0.03	141	09
150 ISL	9.14 D	9.12	33.931 D	26.265	177.9	0.356	2.67	D116.4 D	41.2	28.9	1.94	25.7	0.00	0.00	0.00	0.03	151	
170	9.04	9.02	34.036	26.363	168.9	0.394	2.34	102.0	36.1	31.9	2.06	26.9	0.00	0.00	0.00	0.02	171	08
200 ISL	9.05 D	9.03	34.144 D	26.447	161.7	0.441	1.94	D 84.5 D	29.9	35.3	2.18	27.9	0.00	0.00	0.00	0.02	202	
201	9.08	9.05	34.167	26.462	160.3	0.445	1.94	84.4	29.9	35.4	2.18	27.9	0.00	0.00	0.00	0.02	203	07
230	8.82	8.80	34.206	26.533	154.1	0.491	1.52	66.0	23.2	39.2	2.34	29.4	0.00	0.00			232	06
250 ISL	8.58 D	8.55	34.189 D	26.557	152.1	0.520	1.47	D 64.0 D	22.4	41.5	2.44	30.1	0.00	0.00			252	
270	8.74	8.71	34.285	26.608	147.8	0.551	0.97	42.3	14.9	43.8	2.53	30.8	0.00	0.00			272	05
300 ISL	8.59 D	8.56	34.284 D	26.633	146.0	0.595	0.91	D 39.8 D	13.9	46.0	2.57	31.8	0.00	0.00			302	
321	8.12	8.09	34.265	26.689	140.8	0.625	0.92	39.9	13.9	47.6	2.60	32.5	0.00	0.00			324	04
380	7.45	7.41	34.257	26.781	132.6	0.706	0.62	26.8	9.1	56.9	2.79	35.2	0.00	0.00			383	03
400 ISL	7.22 D	7.18	34.277 D	26.830	128.2	0.732	0.56	D 24.5 D	8.3	59.2	2.83	35.9	0.00	0.00			403	
440	6.95	6.91	34.294	26.881	123.8	0.782	0.43	18.7	6.3	63.8	2.92	37.1	0.00	0.00			444	02
500 ISL	6.56 D	6.51	34.311 D	26.948	118.0	0.857	0.35	D 15.4 D	5.1	69.9	3.01	38.4	0.00	0.00			504	
515	6.49	6.45	34.315	26.960	117.0	0.872	0.31	13.6	4.6	71.5	3.03	38.7	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 1704 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 41.0 N	117 52.2 W	29/03/2017	1828 UTC	609 m	330 04 kn	280 03 06	0	1018.1 mb	17.3 C	16.2 C	19 m	0/8		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	17.12	17.12	33.306	24.188	372.1	0.000	5.94	259.7	107.7	2.5	0.23	0.0	0.03	0.00	0.34	0.05	0	
2 A	17.12	17.12	33.306	24.188	372.2	0.007	5.94	259.7	107.7	2.5	0.23	0.0	0.03	0.00	0.34	0.05	2	23
10 ISL	16.14 D	16.14	33.288 D	24.400	352.2	0.033	5.93	258.5	105.5	2.3	0.21	0.0	0.02	0.00	0.37	0.07	10	
11 A	16.12	16.12	33.305	24.418	350.6	0.040	5.93	259.3	105.5	2.2	0.21	0.0	0.00	0.00	0.38	0.07	11	21
11	16.12	16.12	33.289	24.406	351.7	0.038											11	22
17 A	15.87	15.87	33.288 D	24.463	346.5	0.058	5.98	261.7	105.9	2.2	0.22	0.0	0.00	0.00	0.50	0.11	17	20
20 ISL	15.75 D	15.74	33.288 D	24.491	343.9	0.068	5.97	260.3	105.5	2.2	0.23	0.0	0.02	0.00	0.53	0.14	20	
29 A	15.44	15.44	33.318 D	24.582	335.6	0.099	5.93	259.5	104.1	2.0	0.26	0.0	0.00	0.00	0.63	0.21	29	19
30 ISL	15.42 D	15.41	33.319 D	24.588	335.0	0.102	5.93	258.7	104.2	2.1	0.26	0.0	0.02	0.00	0.66	0.23	30	
37	14.82	14.81	33.366 D	24.755	319.3	0.126	5.94	259.8	103.0	2.2	0.28	0.0	0.03	0.00	0.87	0.33	37	17
37	14.82	14.81	33.366 D	24.751	319.5	0.126											37	18
45	12.77	12.76	33.358 D	25.170	279.9	0.150	4.69	205.2	78.0	7.6	0.83	8.3	0.25	0.00	0.84	0.48	45	16
50 ISL	12.09 D	12.08	33.401 D	25.334	264.4	0.163	4.41	D192.1 D	72.3	9.5	0.99	11.0	0.16	0.00	0.62	0.42	50	
54 A	11.97	11.96	33.408 D	25.362	261.9	0.174	4.06	177.6	66.4	11.0	1.12	13.0	0.08	0.00	0.44	0.38	54	15
66 A	11.29	11.28	33.435	25.508	248.1	0.206	3.89	170.1	62.7	13.0	1.26	15.2	0.04	0.00	0.25	0.31	67	14
75 ISL	10.71 D	10.70	33.513 D	25.672	232.7	0.226	3.74	D162.7 D	59.5	15.5	1.41	17.6	0.04	0.00	0.14	0.18	76	
77	10.59	10.58	33.581 D	25.747	225.7	0.231	3.64	159.1	57.8	16.0	1.44	18.2	0.03	0.00	0.12	0.15	78	13
86	10.32	10.31	33.600	25.808	220.0	0.252	3.34	146.2	52.8	18.9	1.54	20.0	0.00	0.00	0.05	0.08	87	12
100 ISL	10.22 D	10.21	33.663 D	25.875	214.0	0.282	3.21	D139.5 D	50.5	20.2	1.62	21.1	0.03	0.00	0.03	0.06	101	
101	10.22	10.21	33.662	25.875	214.0	0.285	3.15	137.9	49.7	20.3	1.63	21.2	0.03	0.00	0.03	0.06	102	11
121	9.96	9.95	33.845 D	26.062	196.7	0.325	2.86	124.9	44.8	23.2	1.76	22.7	0.00	0.00	0.02	0.05	122	10
125 ISL	9.93 D	9.92	33.855 D	26.075	195.6	0.333	2.76	D120.1 D	43.3	23.9	1.79	23.1	0.02	0.00	0.01	0.05	126	
140	9.65	9.64	33.921 D	26.173	186.5	0.362	2.57	112.3	40.1	26.5	1.89	24.4	0.00	0.00	0.01	0.04	141	09
150 ISL	9.54 D	9.52	33.943 D	26.210	183.2	0.380	2.54	D110.7 D	39.6	27.6	1.93	25.0	0.00	0.00	0.01	0.03	151	
171	9.36	9.34	34.008 D	26.291	175.9	0.419	2.27	99.1	35.1	30.0	2.02	26.1	0.00	0.00	0.00	0.03	172	08
200	9.21	9.18	34.090	26.380	168.1	0.468	1.95	85.3	30.2	33.4	2.13	27.5	0.00	0.00	0.00	0.03	202	07
229	8.97	8.95	34.223	26.522	155.2	0.515	1.31	57.2	20.1	39.3	2.39	29.5	0.00	0.00			231	06
250 ISL	8.81 D	8.79	34.276 D	26.589	149.2	0.548	1.14	D 49.5 D	17.4	41.7	2.47	30.2	0.00	0.00			252	
271	8.64	8.61	34.279	26.619	146.7	0.578	0.96	41.8	14.6	44.2	2.54	30.9	0.00	0.00			273	05
300 ISL	8.33 D	8.30	34.284 D	26.672	142.1	0.621	0.84	D 36.5 D	12.7	47.0	2.60	31.8	0.00	0.00			302	
319	8.22	8.18	34.292	26.695	140.2	0.647	0.76	33.0	11.4	48.9	2.64	32.4	0.00	0.00			322	04
379	7.45	7.41	34.306	26.820	128.9	0.728	0.60	26.1	8.9	56.2	2.78	35.0	0.00	0.00			382	03
400 ISL	7.33 D	7.29	34.297 D	26.830	128.3	0.758	0.52	D 22.7 D	7.7	58.5	2.82	35.6	0.00	0.00			403	
442	6.95	6.91	34.302 D	26.887	123.2	0.811	0.42	18.2	6.1	63.1	2.90	36.8	0.00	0.00			446	02
500 ISL	6.60 D	6.56	34.313 D	26.944	118.5	0.882	0.35	D 15.3 D	5.1	69.3	2.98	38.0	0.00	0.00			504	
518	6.48	6.43	34.315	26.963	116.8	0.898	0.31	13.6	4.5	71.2	3.01	38.4	0.00	0.00			522	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 1704 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 30.6 N	118 12.5 W	29/03/2017	2341 UTC	1660 m	280 08 kn	280 04 06	1	1016.6 mb	17.4 C	16.8 C	25 m	1/8	CS	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	16.64	16.64	33.378	24.354	356.3	0.000	5.77	252.1	103.8	1.4	0.25	0.0	0.00	0.00	0.17	0.03	0	
2	16.64	16.64	33.378	24.354	356.4	0.007	5.77	252.1	103.8	1.4	0.25	0.0	0.00	0.00	0.17	0.03	2	21
10	15.69	15.69	33.377	24.571	336.0	0.035	5.82	254.2	102.6	1.4	0.25	0.0	0.00	0.00	0.19	0.06	10	19
10	15.69	15.69	33.375	24.569	336.1	0.035											10	20
20	15.63	15.63	33.381	24.588	334.7	0.068	5.83	254.8	102.8	1.1	0.25	0.0	0.00	0.00	0.25	0.05	20	18
30	15.52	15.52	33.370	24.605	333.4	0.102	5.83	254.7	102.5	1.1	0.25	0.0	0.00	0.00	0.33	0.10	30	17
40	15.25	15.24	33.358	24.656	328.9	0.135	5.79	253.2	101.3	1.4	0.28	0.0	0.03	0.00	0.55	0.20	40	16
50	14.76	14.75	33.354	24.758	319.4	0.167	5.63	246.0	97.5	2.3	0.36	1.1	0.10	0.00	0.69	0.28	50	15
61	14.09	14.08	33.347	24.895	306.7	0.202	5.49	240.1	93.8	3.2	0.45	2.3	0.18	0.00	0.61	0.33	61	14
70	13.13	13.12	33.352	25.094	287.9	0.228	4.87	213.0	81.6	6.4	0.75	7.0	0.32	0.00	0.38	0.28	71	13
75 ISL	12.76 D	12.75	33.358 D	25.173	280.4	0.241	4.72	D205.5 D	78.4	8.1	0.88	9.1	0.23	0.00	0.31	0.24	76	
85	11.78	11.77	33.408	25.398	259.2	0.270	4.16	181.6	67.7	11.5	1.13	13.3	0.06	0.00	0.16	0.15	86	12
100	10.73	10.72	33.523	25.677	232.8	0.306	3.64	158.9	57.9	16.4	1.42	18.0	0.03	0.00	0.06	0.07	101	11
121	9.99	9.97	33.681	25.930	209.2	0.353	3.18	139.0	49.9	21.3	1.65	21.5	0.00	0.00	0.02	0.04	122	10
125 ISL	9.77 D	9.75	33.741 D	26.012	201.4	0.360	3.13	D136.1 D	48.8	22.2	1.69	22.1	0.02	0.00	0.01	0.04	126	
139	9.56	9.54	33.827	26.115	192.0	0.389	2.77	121.2	43.1	25.4	1.82	24.2	0.00	0.00	0.01	0.03	140	09
150 ISL	9.28 D	9.26	33.919 D	26.233	180.9	0.409	2.55	D110.9 D	39.4	28.0	1.91	25.3	0.02	0.00	0.01	0.03	151	
169	9.05	9.03	34.017	26.346	170.5	0.443	2.17	94.8	33.4	32.4	2.07	27.3	0.00	0.00	0.00	0.03	170	08
200	8.71	8.69	34.069	26.442	162.0	0.494	1.88	81.9	28.7	36.4	2.21	29.1	0.00	0.00	0.00	0.03	202	07
231	8.57	8.55	34.137	26.518	155.4	0.544	1.63	71.1	24.8	38.6	2.28	29.7	0.00	0.00			233	06
250 ISL	8.43 D	8.40	34.165 D	26.562	151.5	0.573	1.46	D 63.3 D	22.1	41.3	2.38	30.5	0.00	0.00			252	
271	8.33	8.30	34.212	26.614	146.9	0.604	1.19	51.9	18.0	44.3	2.48	31.5	0.00	0.00			273	05
300 ISL	8.11 D	8.08	34.228 D	26.661	143.0	0.647	1.04	D 45.4 D	15.7	47.0	2.55	32.4	0.00	0.00			302	
321	7.94	7.90	34.228	26.687	140.8	0.676	0.96	41.7	14.4	49.0	2.60	33.1	0.00	0.00			324	04
380	7.41	7.37	34.263	26.792	131.6	0.756	0.66	28.9	9.8	57.0	2.75	35.1	0.00	0.00			383	03
400 ISL	7.26 D	7.22	34.273 D	26.821	129.1	0.785	0.58	D 25.4 D	8.6	59.4	2.81	35.8	0.00	0.00			403	
441	6.88	6.83	34.295	26.891	122.7	0.834	0.42	18.5	6.2	64.5	2.92	37.1	0.00	0.00			445	02
500 ISL	6.30 D	6.26	34.322 D	26.990	113.7	0.907	0.31	D 13.3 D	4.4	72.3	3.01	38.7	0.00	0.00			504	
516	6.26	6.21	34.328	27.001	112.9	0.922	0.28	12.2	4.0	74.4	3.04	39.2	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 1704 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 20.4 N	118 33.1 W	30/03/2017	0338	UTC	1396 m	300 10 kn			1016.7 mb	16.0 C	15.1 C				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	33.369	24.503	342.1	0.000	5.78	252.5	102.5	1.7	0.30	0.0	0.02	0.08	0.22	0.04	0	
2	15.96	15.96	33.369	24.503	342.2	0.007	5.78	252.5	102.5	1.7	0.30	0.0	0.00	0.08	0.22	0.04	2	21
10 ISL	15.51 D	15.51	33.358 D	24.597	333.5	0.031	5.81	253.1	102.1	1.7	0.28	0.0	0.01	0.00	0.21	0.06	10	
10	15.51	15.51	33.360	24.598	333.4	0.034											10	20
11	15.50	15.49	33.360	24.601	333.2	0.037	5.81	253.9	102.1	1.7	0.28	0.0	0.00	0.00	0.21	0.06	11	19
20	15.40	15.40	33.354	24.618	331.8	0.067	5.81	254.1	102.0	1.7	0.27	0.0	0.00	0.00	0.26	0.07	20	18
30 ISL	15.30 D	15.29	33.350 D	24.638	330.2	0.097	5.82	253.5	101.8	1.8	0.29	0.1	0.01	0.00	0.42	0.14	30	
31	15.23	15.22	33.350	24.653	328.8	0.104	5.82	254.3	101.7	1.8	0.29	0.1	0.00	0.00	0.44	0.15	31	17
40	15.13	15.13	33.350	24.675	327.1	0.133	5.79	253.0	101.0	2.1	0.31	0.3	0.03	0.00	0.54	0.16	40	16
50 ISL	13.27 D	13.26	33.353 D	25.067	289.9	0.162	4.72	D205.4 D	79.2	7.0	0.77	7.2	0.10	0.00	0.84	0.48	50	
51	13.17	13.16	33.361	25.094	287.4	0.167	4.66	203.7	78.1	7.4	0.82	7.9	0.11	0.00	0.87	0.52	51	15
60	11.88	11.87	33.386	25.362	262.0	0.191	4.16	182.0	67.9	11.4	1.13	13.1	0.04	0.00	0.24	0.34	60	14
69	11.11	11.10	33.452	25.554	243.8	0.214	3.85	168.4	61.9	14.6	1.34	16.6	0.00	0.00	0.13	0.19	70	13
75 ISL	10.96 D	10.95	33.469 D	25.594	240.1	0.227	3.84	D167.1 D	61.4	15.5	1.39	17.5	0.02	0.00	0.11	0.17	76	
85	10.56	10.55	33.523	25.706	229.7	0.252	3.60	157.4	57.2	17.2	1.46	18.9	0.00	0.00	0.08	0.13	86	12
100 ISL	10.26 D	10.25	33.624 D	25.838	217.5	0.284	3.33	D144.9 D	52.5	19.9	1.60	20.5	0.01	0.00	0.03	0.08	101	
102	10.12	10.10	33.637	25.873	214.2	0.290	3.30	144.1	51.9	20.2	1.62	20.8	0.00	0.00	0.02	0.07	103	11
121	9.66	9.65	33.818	26.090	193.9	0.329	2.83	123.8	44.2	25.0	1.82	23.8	0.00	0.00	0.01	0.04	122	10
125 ISL	9.61 D	9.59	33.843 D	26.119	191.3	0.335	2.84	D123.4 D	44.2	25.5	1.84	24.1	0.01	0.00	0.01	0.04	126	
143	9.45	9.44	33.910	26.197	184.2	0.370	2.62	114.3	40.6	27.9	1.92	25.2	0.00	0.00	0.01	0.04	144	09
150 ISL	9.42 D	9.40	33.923 D	26.213	182.9	0.382	2.59	D112.6 D	40.1	29.1	1.96	25.7	0.01	0.00	0.01	0.04	151	
171	9.05	9.03	34.032	26.358	169.5	0.420	2.23	97.3	34.3	32.6	2.07	27.3	0.00	0.00	0.01	0.03	172	08
200	8.78	8.75	34.102	26.457	160.6	0.468	1.87	81.8	28.7	36.9	2.24	29.2	0.00	0.00	0.00	0.03	202	07
228	8.55	8.52	34.145	26.527	154.4	0.512	1.58	69.0	24.1	40.6	2.35	30.4	0.00	0.00			230	06
250 ISL	8.43 D	8.41	34.165 D	26.561	151.6	0.546	1.48	D 64.2 D	22.4	42.7	2.42	31.0	0.01	0.00			252	
269	8.32	8.30	34.200	26.606	147.7	0.574	1.27	55.3	19.2	44.4	2.48	31.5	0.00	0.00			271	05
300 ISL	7.92 D	7.89	34.191 D	26.660	142.9	0.620	1.11	D 48.2 D	16.7	48.5	2.58	32.9	0.01	0.00			302	
321	7.76	7.73	34.203	26.693	140.1	0.649	1.00	43.6	14.9	51.3	2.64	33.8	0.00	0.00			324	04
382	7.25	7.21	34.278	26.825	128.3	0.730	0.58	25.2	8.5	59.5	2.86	35.9	0.00	0.00			385	03
400 ISL	7.10 D	7.06	34.279 D	26.848	126.3	0.756	0.53	D 23.1 D	7.8	61.8	2.89	36.4	0.01	0.00			403	
440	6.81	6.76	34.287	26.895	122.2	0.803	0.43	18.9	6.3	66.8	2.96	37.5	0.00	0.00			444	02
500 ISL	6.26 D	6.22	34.309 D	26.985	114.1	0.878	0.33	D 14.2 D	4.7	74.9	3.06	39.0	0.01	0.00			504	
515	6.18	6.14	34.321	27.005	112.4	0.891	0.28	12.3	4.1	77.0	3.09	39.3	0.00	0.00			519	01

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

RV BELL M SHIMADA CALCOFI CRUISE 1704 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 10.5 N	118 54.0 W	30/03/2017	0708	UTC	1456 m	290 15 kn			1017.4 mb	15.2 C	14.0 C				009

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0	16.08	16.08	33.404	24.503	342.1	0.000	5.71	249.7	101.6	2.3	0.29	0.1	0.03	0.00	0.27	0.06	0	
2	16.08	16.08	33.404	24.503	342.2	0.007	5.71	249.7	101.6	2.3	0.29	0.1	0.03	0.00	0.27	0.06	2	20
10	16.08	16.07	33.404	24.505	342.3	0.034	5.71	249.7	101.6	1.8	0.27	0.0	0.00	0.00	0.27	0.06	10	19
20 ISL	15.86 D	15.85	33.404 D	24.555	337.8	0.065	5.73	249.8	101.5	1.6	0.28	0.0	0.02	0.00	0.30	0.08	20	
25	15.84	15.84	33.413	24.565	337.1	0.085	5.74	250.8	101.6	1.6	0.28	0.0	0.00	0.00	0.31	0.09	25	18
30 ISL	15.84 D	15.84	33.404 D	24.559	337.8	0.099	5.77	D251.6 D	102.2	1.5	0.28	0.0	0.01	0.00	0.34	0.10	30	
40	15.80	15.80	33.403	24.567	337.4	0.136	5.75	251.2	101.7	1.5	0.27	0.0	0.00	0.00	0.39	0.10	40	17
50	15.71	15.71	33.401	24.586	335.9	0.169	5.73	250.6	101.2	1.6	0.28	0.0	0.00	0.00	0.50	0.14	50	16
62	14.21	14.20	33.382	24.898	306.4	0.208	5.40	236.0	92.5	3.4	0.46	2.2	0.09	0.00	0.80	0.32	62	15
75 ISL	11.67 D	11.66	33.417 D	25.424	256.4	0.243	4.03	D175.5 D	65.5	11.8	1.15	13.2	0.05	0.00	0.36	0.27	76	
76	11.61	11.60	33.416	25.436	255.4	0.247	4.01	175.3	65.1	12.5	1.20	14.1	0.05	0.00	0.33	0.27	77	14
87	11.25	11.24	33.454	25.531	246.5	0.275	3.83	167.4	61.7	14.0	1.31	15.7	0.04	0.00	0.22	0.21	88	13
99	10.79	10.78	33.486	25.639	236.5	0.304	3.73	162.8	59.4	15.7	1.39	17.5	0.03	0.00	0.13	0.13	100	12
100 ISL	10.75 D	10.74	33.497 D	25.654	235.0	0.305	3.73	D162.4 D	59.4	16.0	1.40	17.7	0.03	0.00	0.12	0.13	101	
112	10.21	10.19	33.582	25.815	220.0	0.333	3.43	149.8	54.0	19.3	1.56	20.3	0.00	0.00	0.05	0.10	113	11
125 ISL	9.65 D	9.64	33.731 D	26.024	200.2	0.360	3.07	D133.4 D	47.7	22.8	1.72	22.7	0.02	0.00	0.01	0.05	126	
126	9.64	9.62	33.720	26.018	200.9	0.363	3.08	134.4	47.9	23.1	1.73	22.9	0.00	0.00	0.01	0.04	127	10
141	9.43	9.41	33.877	26.175	186.2	0.392	2.70	117.9	41.9	27.0	1.88	24.8	0.00	0.00	0.00	0.05	142	09
150 ISL	9.39 D	9.37	33.911 D	26.209	183.2	0.408	2.61	D113.7 D	40.5	28.4	1.94	25.4	0.02	0.00	0.00	0.05	151	
170	9.17	9.15	34.019	26.329	172.2	0.444	2.25	98.1	34.7	31.6	2.06	26.8	0.00	0.00	0.00	0.03	171	08
200	8.78	8.76	34.136	26.483	158.1	0.494	1.72	74.9	26.3	38.1	2.25	29.3	0.00	0.00	0.00	0.03	202	07
230	8.51	8.48	34.181	26.562	151.2	0.540	1.41	61.6	21.5	41.7	2.40	30.6	0.00	0.00			232	06
250 ISL	8.42 D	8.39	34.213 D	26.601	147.8	0.570	1.24	D 54.0 D	18.9	43.9	2.45	31.4	0.01	0.00			252	
270	8.10	8.07	34.185	26.628	145.5	0.600	1.23	53.8	18.6	46.2	2.49	32.2	0.00	0.00			272	05
300 ISL	7.92 D	7.89	34.225 D	26.686	140.5	0.643	0.98	D 42.5 D	14.7	50.0	2.58	33.4	0.01	0.00			302	
320	7.64	7.61	34.207	26.712	138.1	0.671	0.93	40.6	13.9	52.6	2.64	34.2	0.00	0.00			323	04
381	7.00	6.96	34.255	26.843	126.4	0.752	0.55	24.2	8.1	62.9	2.85	36.6	0.00	0.00			384	03
400 ISL	6.89 D	6.85	34.261 D	26.862	124.7	0.777	0.53	D 22.9 D	7.7	65.5	2.89	37.1	0.01	0.00			403	
440	6.53	6.49	34.287	26.931	118.6	0.824	0.40	17.5	5.9	70.9	2.98	38.2	0.00	0.00			444	02
500 ISL	6.27 D	6.22	34.308 D	26.983	114.3	0.896	0.32	D 13.8 D	4.6	75.5	3.04	38.9	0.01	0.00			504	
521	6.20	6.15	34.313	26.997	113.3	0.918	0.28	12.4	4.1	77.0	3.06	39.1	0.00	0.00			525	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 1704 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 0.7 N	119 14.1 W	30/03/2017	1042 UTC	1556 m	310 15 kn			1015.6 mb	15.1 C	13.8 C				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	14.82	14.82	33.267	24.675	325.7	0.000	5.90	257.7	102.2	1.4	0.26	0.0	0.03	0.01	0.45	0.12	0	
3	14.82	14.82	33.267	24.676	325.8	0.010	5.90	257.7	102.2	1.4	0.26	0.0	0.03	0.00	0.45	0.12	3	21
10	14.81	14.81	33.267	24.678	325.8	0.033	5.87	256.7	101.8	1.3	0.26	0.0	0.00	0.00	0.46	0.14	10	19
10	14.81	14.81	33.266	24.678	325.8	0.033											10	20
20 ISL	14.80 D	14.79	33.265 D	24.681	325.8	0.061	5.88	256.1	101.8	1.4	0.27	0.0	0.02	0.00	0.51	0.15	20	
21	14.76	14.76	33.266	24.689	325.1	0.069	5.88	256.9	101.7	1.4	0.27	0.0	0.03	0.00	0.52	0.15	21	18
30	14.55	14.54	33.272	24.740	320.5	0.098	5.92	258.9	102.1	1.6	0.27	0.0	0.03	0.00	0.69	0.31	30	17
40	14.08	14.08	33.280	24.843	310.9	0.129	5.53	241.6	94.4	3.0	0.44	2.2	0.11	0.00	0.64	0.32	40	16
50 ISL	13.59 D	13.59	33.291 D	24.954	300.7	0.156	5.37	D233.9 D	90.7	4.3	0.55	4.0	0.15	0.00	0.56	0.35	50	
51	13.57	13.56	33.290	24.957	300.4	0.163	5.32	232.4	89.8	4.4	0.56	4.2	0.16	0.00	0.56	0.35	51	15
60	12.70	12.69	33.322	25.156	281.6	0.189	4.82	210.7	80.0	7.2	0.81	8.1	0.17	0.00	0.42	0.34	60	14
70	11.83	11.82	33.357	25.349	263.4	0.216	4.38	191.3	71.3	10.1	1.04	12.0	0.06	0.00	0.24	0.27	71	13
75 ISL	11.45 D	11.44	33.407 D	25.458	253.1	0.226	4.25	D185.2 D	68.8	11.7	1.14	13.5	0.05	0.00	0.19	0.22	76	
86	10.86	10.85	33.476	25.617	238.2	0.256	3.80	166.1	60.7	15.1	1.36	17.0	0.03	0.00	0.09	0.11	87	12
100 ISL	10.32 D	10.31	33.581 D	25.793	221.8	0.285	3.49	D152.1 D	55.2	18.6	1.54	19.6	0.02	0.00	0.04	0.07	101	
101	10.32	10.31	33.582	25.794	221.7	0.291	3.44	150.4	54.4	18.8	1.55	19.8	0.00	0.00	0.04	0.06	102	11
121	9.95	9.93	33.644	25.907	211.4	0.334	3.30	144.1	51.7	20.8	1.63	21.3	0.00	0.00	0.02	0.05	122	10
125 ISL	9.70 D	9.68	33.735 D	26.020	200.7	0.339	3.20	D139.1 D	49.8	22.0	1.68	22.0	0.02	0.00	0.02	0.05	126	
140	9.47	9.45	33.868	26.162	187.5	0.372	2.70	118.1	42.0	26.5	1.88	24.6	0.00	0.00	0.01	0.04	141	09
150 ISL	9.30 D	9.29	33.906 D	26.219	182.3	0.387	2.66	D115.6 D	41.1	28.4	1.94	25.4	0.02	0.00	0.01	0.03	151	
171	9.09	9.07	34.033	26.353	169.9	0.427	2.20	96.2	33.9	32.4	2.07	27.0	0.00	0.00	0.00	0.02	172	08
200 ISL	8.70 D	8.68	34.115 D	26.480	158.4	0.473	1.82	D 79.1 D	27.8	36.8	2.22	29.0	0.02	0.00	0.00	0.03	202	
201	8.71	8.68	34.108	26.473	159.1	0.476	1.83	79.8	27.9	37.0	2.22	29.0	0.00	0.00	0.00	0.03	203	07
230	8.44	8.42	34.162	26.557	151.6	0.521	1.49	65.3	22.7	41.6	2.37	30.5	0.00	0.00			232	06
250 ISL	8.31 D	8.29	34.183 D	26.594	148.4	0.550	1.35	D 58.8 D	20.5	43.9	2.44	31.4	0.02	0.00			252	
271	8.04	8.01	34.185	26.637	144.6	0.582	1.23	53.7	18.5	46.3	2.51	32.3	0.00	0.00			273	05
300 ISL	7.91 D	7.88	34.227 D	26.689	140.1	0.623	0.99	D 43.0 D	14.9	50.3	2.60	33.4	0.02	0.00			302	
320	7.65	7.62	34.227	26.727	136.7	0.652	0.86	37.5	12.8	53.0	2.67	34.1	0.00	0.00			323	04
380	7.09	7.05	34.254	26.830	127.7	0.731	0.58	25.4	8.6	61.0	2.84	36.3	0.00	0.00			383	03
400 ISL	6.91 D	6.87	34.254 D	26.854	125.6	0.756	0.57	D 24.7 D	8.3	63.7	2.89	36.9	0.01	0.00			403	
442	6.51	6.47	34.279	26.928	118.9	0.808	0.41	17.9	6.0	69.5	2.98	38.2	0.00	0.00			446	02
500 ISL	6.28 D	6.23	34.305 D	26.980	114.7	0.876	0.33	D 14.4 D	4.8	73.2	3.03	39.0	0.01	0.00			504	
518	6.26	6.22	34.305	26.981	114.7	0.896	0.31	13.6	4.5	74.4	3.05	39.3	0.00	0.00			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 1704 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 50.7 N	119 34.4 W	30/03/2017	1434 UTC	1752 m	320 24 kn	290 08 09	1	1015.9 mb	14.9 C	14.0 C	15 m	3/8	ST	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	15.26	15.26	33.302	24.607	332.2	0.000	5.85	255.8	102.4	1.6	0.27	0.0	0.03	0.00	0.35	0.09	0	
3	15.26	15.26	33.302	24.607	332.3	0.010	5.85	255.8	102.4	1.6	0.27	0.0	0.03	0.00	0.35	0.09	3	20
10	15.25	15.25	33.302	24.610	332.3	0.033	5.84	255.2	102.1	1.7	0.27	0.0	0.00	0.00	0.37	0.08	10	19
20 ISL	15.27 D	15.27	33.302 D	24.607	332.9	0.062	5.84	254.4	102.1	1.6	0.27	0.0	0.02	0.00	0.36	0.08	20	
26	15.27	15.27	33.307	24.610	332.8	0.087	5.84	255.1	102.1	1.5	0.27	0.0	0.00	0.00	0.35	0.08	26	18
30 ISL	15.26 D	15.25	33.302 D	24.610	333.0	0.096	5.83	254.0	101.9	1.5	0.27	0.0	0.02	0.00	0.39	0.08	30	
39	15.23	15.23	33.301	24.615	332.7	0.130	5.81	254.0	101.5	1.5	0.28	0.0	0.00	0.00	0.47	0.07	39	17
50 ISL	15.20 D	15.19	33.301 D	24.623	332.4	0.163	5.80	252.6	101.2	1.6	0.28	0.0	0.02	0.00	0.56	0.10	50	
51	15.20	15.19	33.301	24.624	332.3	0.170	5.80	253.3	101.2	1.6	0.28	0.0	0.00	0.00	0.57	0.11	51	16
62	14.25	14.25	33.312	24.834	312.5	0.205	5.62	245.5	96.2	2.8	0.40	1.6	0.14	0.00	0.90	0.31	62	15
74	12.71	12.70	33.308	25.144	283.2	0.241	5.06	221.1	83.9	6.1	0.72	6.5	0.21	0.00	0.63	0.54	75	14
75 ISL	12.43 D	12.42	33.324 D	25.210	276.9	0.240	4.92	D214.5 D	81.2	6.5	0.75	7.0	0.20	0.00	0.60	0.52	76	
87	11.52	11.51	33.365	25.413	257.8	0.276	4.30	187.9	69.6	11.2	1.11	13.0	0.06	0.00	0.23	0.24	88	13
100	10.35	10.34	33.529	25.749	225.9	0.307	3.65	159.3	57.6	17.5	1.48	19.0	0.03	0.00	0.07	0.09	101	12
112	10.28	10.27	33.548	25.776	223.7	0.334	3.57	156.0	56.3	18.3	1.53	19.6	0.03	0.00	0.05	0.07	113	11
125	9.92	9.90	33.658	25.923	209.9	0.362	3.28	143.3	51.3	21.1	1.66	21.6	0.00	0.00	0.02	0.05	126	10
140	9.63	9.61	33.789	26.074	195.8	0.393	2.92	127.7	45.5	24.6	1.81	23.7	0.00	0.00	0.02	0.05	141	09
150 ISL	9.47 D	9.46	33.887 D	26.176	186.4	0.409	2.73	D118.9 D	42.4	26.0	1.87	24.4	0.02	0.00	0.01	0.04	151	
172	9.35	9.33	33.952	26.248	180.1	0.453	2.47	107.9	38.3	29.0	1.99	25.9	0.00	0.00	0.00	0.03	173	08
200	8.95	8.92	34.057	26.395	166.5	0.501	2.09	91.2	32.1	34.0	2.14	28.0	0.00	0.00	0.00	0.03	202	07
230	8.60	8.57	34.138	26.514	155.7	0.550	1.66	72.3	25.2	39.2	2.30	29.9	0.00	0.00			232	06
250 ISL	8.42 D	8.40	34.177 D	26.572	150.6	0.578	1.47	D 64.0 D	22.4	42.1	2.41	30.8	0.02	0.00			252	
270	8.30	8.27	34.219	26.624	146.0	0.610	1.20	52.4	18.2	44.9	2.51	31.7	0.00	0.00			272	05
300 ISL	8.00 D	7.97	34.213 D	26.665	142.5	0.652	1.05	D 45.7 D	15.8	48.9	2.61	33.1	0.02	0.00			302	
320	7.75	7.71	34.216	26.705	138.9	0.681	0.92	40.3	13.8	51.5	2.67	34.0	0.00	0.00			323	04
381	7.32	7.28	34.254	26.798	130.9	0.763	0.65	28.5	9.7	58.2	2.79	35.6	0.00	0.00			384	03
400 ISL	7.14 D	7.10	34.261 D	26.828	128.2	0.788	0.60	D 26.1 D	8.9	60.4	2.84	36.1	0.02	0.00			403	
440	6.86	6.82	34.284	26.885	123.3	0.838	0.45	19.7	6.6	65.0	2.93	37.3	0.00	0.00			444	02
500 ISL	6.28 D	6.24	34.315 D	26.987	114.0	0.911	0.33	D 14.3 D	4.7	73.3	3.06	39.1	0.02	0.00			504	
517	6.19	6.14	34.321	27.005	112.5	0.929	0.27	12.0	4.0	75.6	3.10	39.6	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 1704 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 14.8 W	30/03/2017	2118 UTC	3884 m	320 25 kn	320 12 09	1	1017.1 mb	15.6 C	14.7 C		5/8	SC	012

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0	16.26	16.26	33.330	24.406	351.3	0.000	5.68	248.2	101.3	1.5	0.20	0.0	0.02	0.00	0.08	0.01	0	
2	16.26	16.25	33.330	24.407	351.4	0.007	5.68	248.2	101.3	1.5	0.20	0.0	0.00	0.00	0.08	0.01	2	20
10 ISL	16.26 D	16.25	33.325 D	24.403	352.0	0.032	5.69	D248.1	D101.5	1.4	0.20	0.0	0.02	0.00	0.08	0.01	10	
11	16.25	16.25	33.326	24.405	351.9	0.039	5.69	D248.1	D101.5	1.4	0.20	0.0	0.00	0.00	0.08	0.01	11	19
20 ISL	16.26 D	16.26	33.325 D	24.403	352.4	0.067	5.69	D248.2	D101.6	1.4	0.20	0.0	0.01	0.00	0.08	0.01	20	
25	16.25	16.24	33.329	24.409	351.9	0.088	5.68	248.2	101.3	1.4	0.20	0.0	0.00	0.00	0.08	0.01	25	18
30 ISL	16.24 D	16.23	33.328 D	24.411	351.9	0.103	5.69	D247.9	D101.4	1.4	0.20	0.0	0.01	0.00	0.08	0.01	30	
41	16.24	16.24	33.332	24.413	352.1	0.144	5.70	249.0	101.6	1.4	0.21	0.0	0.00	0.00	0.09	0.01	41	17
50 ISL	16.24 D	16.23	33.345 D	24.424	351.4	0.174	5.68	D247.5	D101.2	1.4	0.21	0.0	0.01	0.00	0.10	0.02	50	
51	16.16	16.16	33.342	24.440	349.9	0.180	5.66	247.5	100.9	1.4	0.21	0.0	0.00	0.00	0.10	0.02	51	16
61	14.45	14.45	33.213	24.716	323.8	0.213	5.82	254.6	100.1	1.9	0.28	0.0	0.00	0.00	0.41	0.21	61	15
75	13.92	13.91	33.296	24.891	307.5	0.257	5.45	238.0	92.7	3.5	0.43	2.3	0.09	0.00	0.46	0.27	76	14
89	12.47	12.46	33.342	25.217	276.6	0.298	5.12	223.9	84.6	5.5	0.62	5.7	0.08	0.00	0.40	0.36	90	13
99	11.70	11.69	33.343	25.363	262.9	0.325	4.70	205.4	76.4	8.5	0.87	9.8	0.04	0.00	0.31	0.23	100	12
100 ISL	11.54 D	11.53	33.354 D	25.401	259.2	0.327	4.71	D205.1	D 76.2	8.8	0.89	10.1	0.04	0.00	0.30	0.22	101	
112	10.68	10.67	33.396	25.588	241.6	0.358	4.40	192.4	70.0	12.7	1.16	14.2	0.03	0.00	0.16	0.13	113	11
124	10.16	10.14	33.465	25.732	228.1	0.386	4.02	175.5	63.2	15.7	1.35	17.2	0.00	0.00	0.09	0.09	125	10
125 ISL	10.14 D	10.12	33.476 D	25.745	226.9	0.388	4.10	D178.5	D 64.4	16.0	1.36	17.4	0.02	0.00	0.09	0.09	126	
140	9.64	9.62	33.596	25.922	210.3	0.421	3.70	161.6	57.5	19.6	1.53	20.3	0.00	0.00	0.04	0.04	141	09
150 ISL	9.36 D	9.34	33.729 D	26.071	196.2	0.441	3.34	D145.2	D 51.6	21.4	1.60	21.4	0.02	0.00	0.03	0.04	151	
171	9.24	9.22	33.786	26.136	190.5	0.483	3.13	136.9	48.4	25.1	1.76	23.6	0.00	0.00	0.01	0.02	172	08
200	8.82	8.79	33.926	26.313	174.2	0.536	2.71	118.5	41.5	30.3	1.94	26.3	0.00	0.00	0.00	0.02	202	07
229	8.41	8.38	33.997	26.433	163.3	0.585	2.47	107.7	37.4	34.6	2.06	28.2	0.00	0.00			231	06
250 ISL	8.16 D	8.14	34.029 D	26.495	157.7	0.618	2.33	D101.4	D 35.2	37.8	2.15	29.3	0.02	0.00			252	
271	7.92	7.89	34.056	26.553	152.4	0.651	2.04	89.0	30.6	41.1	2.23	30.4	0.00	0.00			273	05
300 ISL	7.65 D	7.62	34.084 D	26.615	146.9	0.695	1.77	D 77.0	D 26.4	45.7	2.36	32.1	0.02	0.00			302	
320	7.40	7.37	34.105	26.667	142.2	0.724	1.51	65.9	22.4	48.9	2.45	33.2	0.00	0.00			323	04
381	6.92	6.88	34.158	26.777	132.5	0.807	0.98	42.9	14.4	57.7	2.72	36.1	0.00	0.06			384	03
400 ISL	6.77 D	6.73	34.179 D	26.813	129.2	0.833	0.84	D 36.4	D 12.2	60.5	2.77	36.7	0.01	0.00			403	
440	6.43	6.39	34.203	26.878	123.5	0.883	0.67	D 29.1	D 9.7	66.4	2.87	37.8	0.00	0.00			444	02
500 ISL	6.06 D	6.01	34.256 D	26.969	115.4	0.956	0.50	D 21.7	D 7.2	74.1	3.01	39.5	0.01	0.00			504	
514	5.99	5.94	34.264	26.984	114.0	0.971	0.52	22.6	7.4	75.8	3.04	39.9	0.00	0.00			518	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 1704 STATION 93.3 80.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
31 10.6 N	120 55.1 W	31/03/2017	1700 UTC	3778 m	300 26 kn	330 12 11	0	1016.1 mb	14.8 C	13.0 C		0/8		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	16.27	16.27	33.339	24.409	351.0	0.000	5.65	246.8	100.8	1.7	0.23	0.0	0.00	0.00	0.09	0.02	0	
4 A	16.27	16.27	33.339	24.410	351.1	0.014	5.65	246.8	100.8	1.7	0.23	0.0	0.00	0.00	0.09	0.02	4	24
10	16.26	16.26	33.337	24.410	351.3	0.035	5.66	247.3	101.0	1.7	0.22	0.0	0.00	0.00	0.08	0.02	10	22
10	16.26	16.26	33.337	24.411	351.3	0.034											10	23
17 A	16.27	16.27	33.336	24.409	351.7	0.060	5.65	247.0	100.9	1.6	0.24	0.0	0.00	0.00	0.09	0.01	17	21
20 ISL	16.27 D	16.27	33.336 D	24.409	351.8	0.064	5.65	246.4	100.9	1.6	0.23	0.0	0.00	0.00	0.09	0.01	20	
23 A	16.28	16.27	33.339	24.409	351.8	0.081	5.65	247.0	100.9	1.6	0.22	0.0	0.00	0.00	0.09	0.02	23	20
30 ISL	16.28 D	16.27	33.337 D	24.409	352.2	0.099	5.65	246.4	100.9	1.6	0.22	0.0	0.00	0.00	0.09	0.01	30	
41 A	16.28	16.27	33.339	24.412	352.3	0.144	5.65	247.0	100.9	1.6	0.23	0.0	0.00	0.00	0.09	0.01	41	19
50 ISL	16.27 D	16.26	33.336 D	24.411	352.7	0.170	5.74	D250.3	D102.5	1.6	0.25	0.0	0.00	0.00	0.08	0.02	50	
51	16.27	16.26	33.337	24.412	352.6	0.179	5.66	247.4	101.0	1.6	0.25	0.0	0.00	0.00	0.08	0.02	51	18
65	15.96	15.95	33.321	24.471	347.4	0.228	5.67	247.7	100.5	1.6	0.23	0.0	0.00	0.00	0.10	0.02	66	17
74 A	15.00	14.99	33.233	24.615	333.9	0.259	5.79	252.8	100.6	1.7	0.27	0.0	0.00	0.00	0.19	0.07	75	16
75 ISL	14.86 D	14.85	33.225 D	24.639	331.6	0.257	5.88	D256.2	D101.9	1.7	0.27	0.0	0.00	0.00	0.20	0.08	76	
84	14.50	14.49	33.231	24.722	324.0	0.292	5.85	255.6	100.7	1.8	0.28	0.0	0.00	0.00	0.30	0.15	85	15
91 A	13.98	13.96	33.240	24.838	313.0	0.314	5.74	250.7	97.7	2.2	0.33	0.4	0.04	0.00	0.47	0.27	92	14
100 ISL	13.11 D	13.10	33.296 D	25.057	292.3	0.337	5.33	D232.3	D 89.2	4.1	0.50	3.7	0.08	0.00	0.38	0.26	101	
102	13.04	13.03	33.302	25.075	290.6	0.347	5.26	229.8	87.9	4.5	0.54	4.4	0.09	0.00	0.37	0.26	103	12
102	13.04	13.03	33.301	25.074	290.7	0.349											103	13
109	12.77	12.75	33.328	25.150	283.7	0.368	5.18	226.4	86.1	5.1	0.59	5.3	0.07	0.00	0.30	0.20	110	11
125 ISL	11.50 D	11.49	33.320 D	25.383	261.6	0.407	4.66	D203.0	D 75.4	8.9	0.94	10.7	0.03	0.00	0.18	0.15	126	
126	11.42	11.41	33.316	25.395	260.5	0.414	4.68	204.6	75.6	9.2	0.96	11.1	0.03	0.00	0.17	0.15	127	10
140	10.23	10.22	33.472	25.725	229.2	0.448	4.04	176.5	63.6	16.0	1.38	17.5	0.00	0.00	0.08	0.07	141	09
150 ISL	9.77 D	9.75	33.546 D	25.862	216.3	0.466	3.97	D172.7	D 61.9	17.9	1.45	18.7	0.02	0.00	0.06	0.06	151	
172	9.29	9.27	33.682	26.046	199.1	0.516	3.63	158.7	56.1	22.0	1.61	21.5	0.00	0.00	0.01	0.03	173	08
198	8.91	8.89	33.891	26.270	178.3	0.565	2.90	126.5	44.4	28.9	1.90	25.6	0.00	0.00	0.00	0.03	200	07
200 ISL	8.87 D	8.85	33.891 D	26.277	177.6	0.566	2.92	D127.2	D 44.8	29.2	1.91	25.7	0.01	0.00			202	
230	8.46	8.44	33.994	26.422	164.4	0.620	2.44	106.7	37.1	34.3	2.09	28.2	0.00	0.00			232	06
250 ISL	8.18 D	8.16	34.036 D	26.497	157.5	0.650	2.25	D 97.8	D 33.9	37.4	2.19	29.5	0.01	0.00			252	
269	8.00	7.97	34.060	26.545	153.2	0.682	2.01	87.8	30.2	40.3	2.28	30.6	0.00	0.00			271	05
300 ISL	7.78 D	7.75	34.087 D	26.599	148.6	0.727	1.77	D 76.8	D 26.4	44.7	2.40	32.2	0.01	0.00			302	
321	7.56	7.52	34.109	26.648	144.1	0.759	1.47	64.1	21.9	47.7	2.48	33.3	0.00	0.00			324	04
381	6.94	6.90	34.153	26.770	133.2	0.843	0.98	42.9	14.4	57.4	2.74	36.2	0.00	0.00			384	03
400 ISL	6.78 D	6.74	34.161 D	26.797	130.8	0.867	0.89	D 38.7	D 13.0	60.0	2.79	36.8	0.01	0.00			403	
442	6.47	6.43	34.190	26.863	124.9	0.921	0.68	29.7	9.9	65.6	2.89	38.1	0.00	0.00			446	02
500 ISL	6.01 D	5.96	34.228 D	26.953	116.8	0.992	0.49	D 21.3	D 7.0	74.1	3.02	39.7	0.01	0.00			504	
526	5.84	5.79	34.249	26.991	113.4	1.021	0.39	17.1	5.6	78.0	3.08	40.4	0.00	0.00			530	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 1704 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 35.9 W	01/04/2017	0924 UTC	4058 m	350 20 kn			1015.9 mb	15.0 C	13.0 C				014

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0	15.86	15.86	33.250	24.433	348.8	0.000	5.74	251.0	101.6	1.7	0.25	0.0	0.00	0.00	0.10	0.02	0	
2	15.86	15.86	33.250	24.433	348.8	0.007	5.74	251.0	101.6	1.7	0.25	0.0	0.00	0.00	0.10	0.02	2	20
10	15.87	15.86	33.251	24.435	349.0	0.035	5.72	250.2	101.3	1.6	0.25	0.0	0.00	0.00	0.10	0.02	10	19
20 ISL	15.87 D	15.87	33.248 D	24.432	349.6	0.067	5.73	249.8	101.4	1.6	0.25	0.0	0.00	0.00	0.10	0.02	20	
26	15.87	15.87	33.249	24.433	349.7	0.091	5.73	250.7	101.5	1.6	0.25	0.0	0.00	0.00	0.11	0.02	26	18
30 ISL	15.87 D	15.87	33.248 D	24.431	350.0	0.102	5.73	249.9	101.4	1.6	0.25	0.0	0.00	0.00	0.10	0.02	30	
40	15.87	15.87	33.248	24.433	350.2	0.140	5.73	250.3	101.3	1.6	0.25	0.0	0.00	0.00	0.10	0.02	40	17
50 ISL	15.85 D	15.84	33.245 D	24.436	350.3	0.173	5.73	249.7	101.3	1.6	0.26	0.0	0.00	0.00	0.11	0.02	50	
51	15.80	15.79	33.246	24.449	349.0	0.178	5.73	250.4	101.2	1.6	0.26	0.0	0.00	0.00	0.11	0.02	51	16
61	14.36	14.35	33.207	24.731	322.3	0.212	5.94	259.5	101.9	2.2	0.30	0.0	0.00	0.00	0.37	0.23	61	15
75	13.61	13.60	33.223	24.899	306.7	0.256	5.59	244.3	94.5	3.5	0.45	2.4	0.10	0.00	0.57	0.51	76	14
88	12.25	12.24	33.233	25.174	280.7	0.294	5.13	224.2	84.3	5.9	0.72	6.9	0.04	0.00	0.25	0.28	89	13
100	11.43	11.42	33.305 D	25.384	260.9	0.325	4.80	D209.1	D 77.5								101	12
112	10.81	10.80	33.363	25.539	246.3	0.357	4.41	193.0	70.4	12.4	1.16	14.1	0.00	0.00	0.10	0.11	113	11
125 ISL	10.12 D	10.10	33.488 D	25.757	225.7	0.387	4.03	D175.5	D 63.3	15.3	1.33	16.8	0.02	0.00	0.05	0.07	126	
126	10.15	10.13	33.449	25.721	229.2	0.390	4.12	180.0	64.7	15.5	1.34	17.1	0.00	0.00	0.05	0.07	127	10
140	9.60	9.58	33.595	25.928	209.7	0.421	3.77	164.7	58.6	20.3	1.55	20.4	0.00	0.00	0.02	0.03	141	09
150 ISL	9.35 D	9.33	33.698 D	26.049	198.4	0.441	3.61	D157.0	D 55.8	22.5	1.64	21.7	0.01	0.00	0.02	0.04	151	
171	9.15	9.13	33.824	26.180	186.4	0.482	3.03	132.3	46.6	27.1	1.84	24.7	0.00	0.00	0.00	0.04	172	08
200 ISL	8.99 D	8.96	33.877 D	26.248	180.5	0.535	2.86	D124.5	D 43.9	28.4	1.89	25.5	0.01	0.00	0.00	0.02	202	
201	8.97	8.94	33.871	26.247	180.6	0.537	2.89	126.2	44.3	28.5	1.89	25.5	0.00	0.00	0.00	0.02	203	07
230	8.47	8.45	34.009	26.432	163.4	0.587	2.31	100.9	35.1	35.8	2.11	28.8	0.00	0.00			232	06
250 ISL	8.16 D	8.13	34.050 D	26.512	156.1	0.619	2.09	D 90.7	D 31.5	39.7	2.22	30.2	0.01	0.00			252	
270	7.89	7.86	34.071	26.569	150.9	0.650	1.82	79.6	27.3	43.6	2.33	31.6	0.00	0.00			272	05
300 ISL	7.54 D	7.51	34.099 D	26.641	144.4	0.695	1.48	D 64.3	D 22.0	49.2	2.47	33.3	0.01	0.00			302	
320	7.30	7.27	34.111	26.685	140.4	0.723	1.32	57.8	19.6	52.9	2.57	34.5	0.00	0.00			323	04
382	6.95	6.91	34.157	26.772	133.0	0.807	0.97	42.2	14.2	58.4	2.75	36.3	0.00	0.00			385	03
400 ISL	6.85 D	6.81	34.169 D	26.795	131.1	0.833	0.85	D 36.9	D 12.4	61.1	2.80	36.9	0.01	0.00			403	
442	6.52	6.48	34.216	26.876	123.8	0.885	0.61	26.6	8.9	67.6	2.93	38.2	0.00	0.00			446	02
500 ISL	6.09 D	6.04	34.250 D	26.960	116.2	0.957	0.41	D 17.7	D 5.8	75.5	3.05	39.6	0.01	0.00			504	
519	6.05	6.01	34.275	26.984	114.2	0.976	0.35	15.1	5.0	78.1	3.09	40.1	0.00	0.00			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 1704 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 30.9 N	122 15.7 W	01/04/2017	0922 UTC	4106 m	320 11 kn	300 06 11	1	1018.1 mb	15.7 C	14.2 C	26 m	4/8	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	15.52	15.52	33.193	24.466	345.6	0.000	5.76	251.8	101.2	1.5	0.24	0.0	0.02	0.05	0.09	0.02	0	
3 A	15.52	15.52	33.193	24.466	345.7	0.010	5.76	251.8	101.2	1.5	0.24	0.0	0.00	0.00	0.09	0.02	3	24
10	15.51	15.51	33.192	24.468	345.8	0.035	5.75	251.6	101.0	1.3	0.25	0.0	0.00	0.00	0.10	0.02	10	22
10	15.51	15.51	33.191	24.467	345.9	0.035											10	23
17 A	15.50	15.50	33.190	24.469	345.9	0.059	5.76	251.9	101.2	1.4	0.25	0.0	0.00	0.00	0.10	0.02	17	21
20 ISL	15.50 D	15.50	33.191 D	24.470	345.9	0.064	5.80	D252.8	D101.9	1.4	0.24	0.0	0.00	0.00	0.11	0.02	20	
23 A	15.50	15.50	33.191	24.470	346.0	0.080	5.81	254.0	102.0	1.4	0.23	0.0	0.00	0.00	0.11	0.02	23	20
30 ISL	15.50 D	15.50	33.192 D	24.471	346.1	0.099	5.78	D252.1	D101.6	1.4	0.23	0.0	0.00	0.00	0.11	0.02	30	
40 A	15.50	15.49	33.193	24.474	346.3	0.138	5.77	252.4	101.3	1.4	0.24	0.0	0.00	0.00	0.10	0.02	40	19
50 ISL	15.49 D	15.48	33.192 D	24.475	346.5	0.169	5.78	D251.8	D101.4	1.3	0.26	0.0	0.00	0.00	0.11	0.02	50	
53	15.49	15.48	33.192	24.475	346.6	0.183	5.77	252.5	101.3	1.3	0.26	0.0	0.00	0.00	0.11	0.02	53	18
64	15.34	15.33	33.183	24.502	344.4	0.221	5.79	253.2	101.3	1.3	0.24	0.0	0.00	0.00	0.12	0.03	65	17
74 A	14.37	14.36	33.174	24.704	325.3	0.255	5.92	259.2	101.6	1.4	0.27	0.0	0.00	0.00	0.30	0.13	75	16
75 ISL	14.36 D	14.35	33.175 D	24.708	325.0	0.255	5.93	D258.5	D101.7	1.4	0.27	0.0	0.00	0.00	0.32	0.15	76	
82	14.17	14.16	33.233	24.791	317.2	0.281	5.89	257.7	100.7	1.4	0.29	0.0	0.00	0.00	0.42	0.29	83	14
82	14.17	14.16	33.231	24.790	317.3	0.280											83	15
90 A	13.53	13.51	33.187	24.889	308.1	0.306	5.70	249.3	96.1	2.3	0.39	1.1	0.19	0.00	0.50	0.40	91	13
100	12.82	12.80	33.209	25.048	293.1	0.336	5.39	235.8	89.6	4.0	0.53	4.1	0.12	0.00	0.33	0.28	101	12
108	12.36	12.35	33.242	25.161	282.5	0.359	5.16	226.0	85.0	5.5	0.66	6.3	0.07	0.00	0.22	0.25	109	11
125 ISL	11.16 D	11.14	33.357 D	25.475	252.8	0.402	4.52	D196.9	D 72.6	10.4	1.00	11.9	0.03	0.00	0.11	0.12	126	
126	11.11	11.10	33.356	25.482	252.2	0.407	4.56	199.5	73.2	10.7	1.02	12.3	0.03	0.00	0.11	0.11	127	10
143	10.05	10.03	33.501	25.779	224.0	0.447	4.10	179.4	64.3	16.0	1.35	17.5	0.00	0.00	0.04	0.04	144	09
150 ISL	9.80 D	9.79	33.556 D	25.863	216.1	0.461	3.95	D172.1	D 61.7	17.9	1.44	18.8	0.00	0.00	0.03	0.04	151	
170	9.23	9.21	33.705	26.074	196.4	0.504	3.47	151.7	53.5	23.3	1.68	22.6	0.00	0.00	0.01	0.02	171	08
199	8.77	8.75	33.911	26.309	174.6	0.558	2.83	124.0	43.3	29.8	1.93	26.2	0.00	0.00	0.00	0.02	201	07
200 ISL	8.76 D	8.74	33.919 D	26.316	173.9	0.558	2.83	D122.9	D 43.2	29.9	1.94	26.3	0.00	0.00			202	
232	8.40	8.37	34.010	26.444	162.3	0.613	2.27	99.6	34.4	35.3	2.14	28.8	0.00	0.00			234	06
250 ISL	8.17 D	8.14	34.044 D	26.505	156.7	0.641	2.17	D 94.3	D 32.7	38.9	2.25	30.2	0.00	0.00			252	
273	7.87	7.85	34.081	26.579	150.0	0.677	1.71	75.1	25.6	43.4	2.38	31.9	0.00	0.00			275	05
300 ISL	7.59 D	7.56	34.127 D	26.656	143.0	0.717	1.34	D 58.2	D 19.9	48.3	2.52	33.3	0.00	0.00			302	
320	7.43	7.40	34.147	26.696	139.5	0.745	1.12	49.0	16.6	51.9	2.63	34.4	0.00	0.00			323	04
381	7.03	6.99	34.207	26.800	130.4	0.827	0.68	29.7	10.0	59.6	2.84	36.7	0.00	0.00			384	03
400 ISL	6.81 D	6.77	34.220 D	26.840	126.8	0.853	0.62	D 26.9	D 9.1	62.4	2.88	37.3	0.00	0.00			403	
440	6.53	6.48	34.232	26.888	122.6	0.902	0.49	21.4	7.1	68.3	2.97	38.4	0.00	0.00			444	02
500 ISL	6.11 D	6.07	34.258 D	26.963	116.0	0.976	0.41	D 17.6	D 5.8	74.7	3.08	39.7	0.00	0.00			504	
514	6.06	6.01	34.273	26.982	114.4	0.989	0.35	15.6	5.0	76.2	3.10	40.0	0.00	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 STA-CORRECTED O2;

RV BELL M SHIMADA — CALCOFI CRUISE 1704 — 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 10.9 N	122 55.7 W	01/04/2017	2259	UTC	3755 m	340 15 kn	290 08 08	1	1017.4 mb	16.0 C	14.7 C	36 m	6/8	SC	016

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0	16.38	16.38	33.310	24.363	355.4	0.000	5.69	248.6	101.7	1.7	0.22	0.0	0.00	0.00	0.07	0.01	0	
3	16.38	16.38	33.310	24.363	355.5	0.011	5.69	248.6	101.7	1.7	0.22	0.0	0.00	0.00	0.07	0.01	3	20
10	16.38	16.37	33.310	24.364	355.7	0.036	5.69	248.7	101.8	1.6	0.22	0.0	0.00	0.00	0.07	0.01	10	19
20 ISL	16.31 D	16.30	33.310 D	24.380	354.5	0.066	5.69	248.0	101.6	1.6	0.22	0.0	0.00	0.00	0.08	0.01	20	
26	16.27	16.26	33.309	24.390	353.8	0.092	5.69	248.6	101.5	1.5	0.22	0.0	0.00	0.00	0.08	0.01	26	18
30 ISL	16.24 D	16.24	33.308 D	24.394	353.5	0.102	5.69	248.2	101.5	1.5	0.22	0.0	0.00	0.00	0.08	0.01	30	
39	16.24	16.23	33.308	24.396	353.7	0.138	5.71	249.3	101.7	1.6	0.22	0.0	0.00	0.00	0.08	0.02	39	17
50 ISL	16.23 D	16.22	33.308 D	24.398	353.8	0.173	5.72	249.2	101.9	1.5	0.21	0.0	0.00	0.00	0.08	0.01	50	
51	16.23	16.22	33.309	24.400	353.7	0.181	5.72	249.9	102.0	1.5	0.21	0.0	0.00	0.00	0.08	0.01	51	16
61	16.23	16.22	33.307	24.399	354.1	0.216	5.73	250.5	102.2	1.5	0.22	0.0	0.00	0.00	0.09	0.01	61	15
75	16.21	16.20	33.315	24.410	353.6	0.266	5.70	249.3	101.7	1.5	0.22	0.0	0.00	0.00	0.10	0.02	76	14
88	15.35	15.34	33.449	24.706	325.7	0.310	5.66	247.3	99.2	2.2	0.23	0.0	0.00	0.00	0.32	0.20	89	13
100 ISL	14.49 D	14.47	33.497 D	24.931	304.6	0.344	5.44	D237.2	D 93.8	3.2	0.35	1.6	0.09	0.00	0.37	0.24	101	
101	14.47	14.45	33.501	24.938	304.0	0.351	5.44	237.6	93.7	3.3	0.36	1.7	0.10	0.00	0.38	0.25	102	12
113	12.87	12.85	33.403	25.189	280.1	0.386	5.35	233.9	89.2	4.0	0.47	3.4	0.07	0.00	0.34	0.21	114	11
125	12.08	12.06	33.390	25.331	266.7	0.418	5.07	221.5	83.0	6.7	0.70	7.1	0.03	0.00	0.20	0.13	126	10
141	11.29	11.28	33.442	25.517	249.3	0.460	4.86	212.2	78.3	8.6	0.83	9.4	0.00	0.00	0.14	0.10	142	09
150 ISL	10.70 D	10.68	33.496 D	25.665	235.3	0.480	4.55	D198.2	D 72.4	12.2	1.05	12.7	0.02	0.00	0.10	0.07	151	
170	9.51	9.49	33.615	25.959	207.4	0.526	3.83	167.2	59.3	20.1	1.55	20.2	0.00	0.00	0.02	0.03	171	08
200 ISL	8.95 D	8.93	33.832 D	26.218	183.3	0.583	3.29	D143.1	D 50.4	26.2	1.79	23.9	0.01	0.00	0.00	0.02	202	
201	8.95	8.93	33.828	26.215	183.6	0.586	3.27	143.0	50.2	26.4	1.80	24.1	0.00	0.00	0.00	0.02	203	07
229	8.64	8.62	33.953	26.362	170.1	0.636	2.76	120.6	42.1	31.2	2.00	26.7	0.00	0.00			231	06
250 ISL	8.29 D	8.26	34.000 D	26.453	161.7	0.670	2.61	D113.6	D 39.5	36.0	2.14	28.7	0.01	0.00			252	
269	8.02	7.99	34.044	26.528	154.8	0.701	2.07	90.5	31.1	40.4	2.27	30.4	0.00	0.00			271	05
300 ISL	7.75 D	7.72	34.080 D	26.596	148.8	0.748	1.68	D 72.9	D 25.0	45.1	2.43	32.1	0.01	0.00			302	
321	7.63	7.60	34.116	26.644	144.6	0.778	1.43	62.6	21.4	48.3	2.54	33.2	0.00	0.00			324	04
380	6.99	6.95	34.153	26.764	133.8	0.861	0.95	41.3	13.9	58.0	2.78	36.2	0.00	0.00			383	03
400 ISL	6.69 D	6.65	34.153 D	26.804	130.1	0.888	0.88	D 38.2	D 12.8	61.4	2.84	37.1	0.01	0.00			403	
440	6.27	6.23	34.173	26.875	123.5	0.937	0.65	28.5	9.4	68.0	2.96	38.8	0.00	0.00			444	02
500 ISL	6.02 D	5.98	34.248 D	26.967	115.5	1.012	0.41	D 18.0	D 6.0	75.4	3.08	39.8	0.01	0.00			504	
517	5.90	5.86	34.256	26.988	113.6	1.029	0.39	17.1	5.6	77.5	3.12	40.1	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 1704 — 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 51.2 N	123 35.4 W	02/04/2017	0445	UTC	4049 m	360 15 kn			1019.3 mb	15.8 C	14.2 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	16.91	16.91	33.520	24.401	351.9	0.000	5.60	244.7	101.3	1.9	0.21	0.0	0.00	0.00	0.07	0.01	0	
3	16.91	16.91	33.520	24.401	351.9	0.011	5.60	244.7	101.3	1.9	0.21	0.0	0.00	0.00	0.07	0.01	3	20
10 ISL	16.91 D	16.91	33.519 D	24.401	352.2	0.030	5.61	244.7	101.5	1.9	0.19	0.0	0.00	0.00	0.06	0.01	10	
11	16.91	16.91	33.520	24.401	352.2	0.039	5.61	245.3	101.6	1.9	0.19	0.0	0.00	0.00	0.06	0.01	11	19
20 ISL	16.90 D	16.89	33.518 D	24.403	352.3	0.066	5.61	244.7	101.5	1.9	0.20	0.0	0.00	0.00	0.06	0.01	20	
26	16.86	16.86	33.514	24.409	352.1	0.092	5.61	245.2	101.4	1.8	0.21	0.0	0.00	0.00	0.06	0.01	26	18
30 ISL	16.86 D	16.86	33.512 D	24.408	352.3	0.101	5.62	244.9	101.5	1.8	0.21	0.0	0.00	0.00	0.06	0.01	30	
41	16.75	16.74	33.497	24.423	351.2	0.144	5.64	246.3	101.6	1.8	0.20	0.0	0.00	0.00	0.06	0.01	41	17
50	16.72	16.71	33.488	24.425	351.4	0.176	5.70	248.9	102.6	1.8	0.18	0.0	0.00	0.00	0.07	0.01	50	16
62	16.35	16.34	33.441	24.475	347.0	0.218	5.68	248.4	101.6	1.8	0.21	0.0	0.00	0.00	0.08	0.01	62	15
75 ISL	15.07 D	15.06	33.152 D	24.538	341.2	0.259	5.83	254.1	101.5	1.7	0.24	0.0	0.00	0.00	0.17	0.05	76	
76	15.06	15.05	33.152	24.541	341.0	0.266	5.84	255.3	101.6	1.6	0.24	0.0	0.00	0.00	0.17	0.05	77	14
87	14.69	14.68	33.148	24.616	334.1	0.303	5.83	254.8	100.7	1.7	0.25	0.0	0.00	0.00	0.24	0.14	88	13
100	14.06	14.05	33.301	24.868	310.5	0.345	5.60	244.8	95.6	2.8	0.34	1.2	0.10	0.00	0.30	0.16	101	12
113	13.94	13.93	33.554	25.088	289.9	0.384	5.25	229.3	89.4	4.4	0.44	3.4	0.08	0.00	0.29	0.14	114	11
125 ISL	12.98 D	12.96	33.539 D	25.273	272.5	0.416	5.11	D222.6	D 85.4	6.1	0.59	5.8	0.04	0.00	0.18	0.20	126	
126	12.69	12.68	33.533	25.324	267.6	0.420	5.07	221.4	84.1	6.2	0.60	6.0	0.04	0.00	0.17	0.20	127	10
140	11.79	11.77	33.496	25.468	254.0	0.457	4.87	212.7	79.3	8.7	0.81	9.3	0.00	0.00	0.12	0.11	141	09
150 ISL	10.89 D	10.87	33.485 D	25.622	239.4	0.480	4.56	D198.7	D 72.9	11.7	0.99	12.2	0.02	0.00	0.09	0.08	151	
170	9.75	9.73	33.610	25.916	211.6	0.526	4.18	182.8	65.2	17.8	1.35	18.0	0.00	0.00	0.02	0.02	171	08
200 ISL	8.97 D	8.95	33.824 D	26.210	184.1	0.585	3.54	D153.9	D 54.3	24.6	1.64	22.7	0.00	0.00	0.00	0.01	202	
202	8.97	8.95	33.819	26.206	184.5	0.589	3.54	154.6	54.3	25.1	1.66	23.0	0.00	0.00	0.00	0.01	204	07
230	8.62	8.59	33.914	26.335	172.7	0.639	3.29	143.6	50.1	29.4	1.78	24.9	0.00	0.00			232	06
250 ISL	8.26 D	8.23	33.969 D	26.434	163.5	0.673	3.14	D136.5	D 47.4	33.1	1.89	26.5	0.00	0.00			252	
270	8.05	8.02	33.989	26.480	159.4	0.705	2.81	122.6	42.2	36.8	1.99	28.0	0.00	0.00			272	05
300 ISL	7.55 D	7.52	34.019 D	26.578	150.4	0.752	2.27	D 98.9	D 33.8	42.8	2.19	30.8	0.00	0.00			302	
320	7.30	7.27	34.034	26.626	146.0	0.782	2.00	87.3	29.6	46.9	2.33	32.7	0.00	0.00			322	04
382	6.66	6.63	34.082	26.751	134.7	0.869	1.26	55.0	18.3	58.7	2.65	36.4	0.00	0.00			385	03
400 ISL	6.54 D	6.50	34.092 D	26.775	132.6	0.894	1.13	D 49.2	D 16.5	61.4	2.72	37.2	0.00	0.00			403	
439	6.28	6.24	34.151	26.856	125.3	0.943	0.74	32.5	10.8	67.2	2.88	39.0	0.00	0.00			443	02
500 ISL	5.87 D	5.82	34.220 D	26.964	115.6	1.019	0.45	D 19.6	D 6.4	76.3	3.04	40.4	0.00	0.00			504	
517	5.82	5.77	34.229	26.977	114.5	1.036	0.41	17.8	5.8	78.9	3.08	40.7	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 1704 — 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 56.7 N	117 17.2 W	29/03/2017	0626	UTC	37 m	100 07 kn			1016.3 mb	14.3 C	9.2 C				002

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0	16.00	16.00	33.269	24.418	350.2	0.000	6.57	287.4	116.6	3.4	0.24	0.3	0.03	0.00	2.38	0.20	0	
2	16.00	16.00	33.269	24.418	350.3	0.007	6.57	287.4	116.6	3.4	0.24	0.3	0.03	0.00	2.38	0.20	2	05
5	15.53	15.53	33.270	24.524	340.3	0.017	6.52	285.0	114.6	3.2	0.27	0.0	0.03	0.00	3.41	0.70	5	04
10	14.27	14.27	33.298	24.817	312.5	0.034	5.78	252.9	99.1	4.5	0.37	0.1	0.06	0.00	3.78	1.21	10	03
20	12.15	12.14	33.417	25.334	263.6	0.063	3.62	158.4	59.4	13.7	1.39	14.8	0.60	1.36	0.58	0.86	20	02
30	10.93	10.92	33.530	25.646	234.1	0.087	3.12	136.5	49.9	18.4	1.70	20.0	0.49	0.43	0.21	0.77	30	01

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

RV BELL M SHIMADA — CALCOFI CRUISE 1704 — STATION 73.3 50.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD
35 38.3 N	121 16.3 W	13/04/2017	1802 UTC	10 m	1205 - 1905 PST	1205 PST	1902 PST	751.7 mg C/m2	076

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	13.04	33.161	24.962	5.79	96.6	7.9	0.68	5.8	0.14	0.31	1.26	0.33	74. A	19.7	18.3	19.0	0.25
6	12.58	33.249	25.120	5.62	93.0	10.9	0.86	8.9	0.20	0.33	1.41	0.51	40.	36.0	31.2	33.6	0.35
9	12.37	33.300	25.201	5.54	91.3	12.3	0.96	10.5	0.22	0.39	1.32	0.61	25.	55.6	47.4	51.5	0.39
15	12.26	33.308	25.227	5.50	90.5	12.6	0.99	11.0	0.23	0.39	1.44	0.62	10.	33.5	26.1	29.8	0.30
22	11.99	33.431	25.374	5.34	87.3	16.4	1.23	15.0	0.28	0.48	1.41	0.76					
28	11.15	33.580	25.644	4.45	71.6	20.2	1.47	18.9	0.32	0.49	0.85	0.58	1.4	4.3	3.4	3.9	0.19
35	11.09	33.599	25.671	4.38	70.4	20.5	1.50	19.5	0.32	0.53	0.81	0.56	0.46	1.2	1.3	1.3	0.23

RV BELL M SHIMADA — CALCOFI CRUISE 1704 — STATION 76.7 80.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD
34 3.6 N	122 56.5 W	12/04/2017	1703 UTC	26 m	1210 - 1920 PST	1212 PST	1935 PST	325.5 mg C/m2	070

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	14.95	33.129	24.542	5.93	102.9	1.3	0.26	0.0	0.00	0.00	0.12	0.02	89. A	4.4	2.6	3.5	0.17
10	14.63	33.132	24.614	5.97	103.0	1.3	0.26	0.0	0.00	0.00	0.14	0.02					
16	14.52	33.129	24.635	5.98	102.9	1.3	0.28	0.1	0.00	0.10	0.17	0.03	39.	4.4	3.5	4.0	0.21
23	14.49	33.129	24.641	6.01	103.3	1.3	0.27	0.0	0.00	0.00	0.23	0.03	26.	7.8	5.8	6.8	0.21
40	14.38	33.129	24.665	5.96	102.4	1.3	0.25	0.0	0.00	0.00	0.27	0.06	9.4	4.2	3.9	4.0	0.16
50	14.07	33.127	24.728	5.98	102.0	1.5	0.27	0.0	0.00	0.00	0.43	0.13					
62	12.59	33.209	25.089	5.43	89.8	4.9	0.59	4.3	0.17	0.00	0.78	0.36					
73	11.11	33.332	25.461	4.58	73.4	10.5	1.04	12.2	0.08	0.00	0.50	0.41	1.3	2.8	2.5	2.6	0.08
82	10.53	33.408	25.623	4.13	65.4	13.9	1.26	15.9	0.04	0.00	0.29	0.27					
91	10.16	33.491	25.751	3.91	61.5	16.9	1.41	18.5	0.00	0.00	0.09	0.08	0.46	0.30	0.44	0.37	0.06

RV BELL M SHIMADA — CALCOFI CRUISE 1704 — STATION 80.0 51.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD
34 26.9 N	120 31.7 W	10/04/2017	1714 UTC	07 m	1200 - 1855 PST	1203 PST	1858 PST	637.1 mg C/m2	061

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	11.20	33.630	25.673	4.04	65.0	18.4	1.48	17.8	0.28	0.10	1.69	0.39	64. A	46.0	49.9	48.0	0.49
4	11.18	33.627	25.675	4.03	64.9	18.2	1.46	17.8	0.27	0.14	1.64	0.34	42.	50.6	51.5	51.1	0.33
6	11.16	33.628	25.679	4.02	64.7	18.2	1.49	18.0	0.27	0.14	1.62	0.34	27.	39.8	52.8	46.3	0.31
11	11.06	33.633	25.702	3.91	62.7	18.3	1.51	18.2	0.27	0.08	1.70	0.44	9.0	32.7	29.6	31.2	0.31
20	10.43	33.684	25.851	3.10	49.2	21.0	1.66	21.1	0.25	0.06	0.72	0.39	1.2	1.7	1.4	1.6	0.20
24	10.29	33.717	25.902	2.93	46.3	22.5	1.75	22.4	0.19	0.00	0.40	0.29	0.52	0.35	0.36	0.36	0.16

RV BELL M SHIMADA — CALCOFI CRUISE 1704 — STATION 80.0 90.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD
33 8.9 N	123 13.0 W	11/04/2017	1828 UTC	22 m	1215 - 1910 PST	1214 PST	1908 PST	183.1 mg C/m2	066

DEPTH m	TEMP DEG C	SALINITY	SIGMA THETA	OXYGEN ml/L	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	LIGHT PCT	UPTAKE (mg C/m3) 1	2	MEAN	DARK
2	14.98	33.096	24.509	5.91	102.6	1.5	0.25	0.0	0.00	0.00	0.11	0.02	87. A	2.6	2.6	2.6	0.13
13	14.74	33.118	24.579	5.95	102.8	1.5	0.24	0.0	0.00	0.00	0.11	0.02	40.	2.8	2.9	2.9	0.17
19	14.65	33.114	24.595	5.94	102.6	1.8	0.24	0.0	0.00	0.00	0.13	0.03	27.	3.7	3.7	3.7	0.16
26	14.45	33.110	24.636	5.98	102.7	1.8	0.26	0.0	0.00	0.00	0.16	0.04					
34	14.34	33.113	24.662	5.99	102.7	1.5	0.25	0.0	0.00	0.00	0.17	0.05	9.3	3.6	3.3	3.5	0.12
43	14.21	33.104	24.682	6.02	102.9	1.4	0.25	0.0	0.00	0.00	0.17	0.04					
52	14.04	33.102	24.715	6.03	102.7	1.5	0.26	0.0	0.00	0.00	0.18	0.07					
62	13.94	33.107	24.741	6.01	102.3	1.7	0.26	0.0	0.00	0.00	0.27	0.14	1.3	1.1	0.91	1.0	0.13
77	13.44	33.076	24.820	6.08	102.3	1.9	0.30	0.0	0.08	0.09	0.35	0.22	0.46	0.57	0.59	0.58	0.13

RV BELL M SHIMADA — CALCOFI CRUISE 1704 — STATION 83.3 55.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD
33 44.6 N	120 24.8 W	09/04/2017	1706 UTC	13 m	1205 - 1940 PST	1203 PST	1851 PST	508.1 mg C/m2	053

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	13.01	33.417	25.166	5.85D	97.8	6.4	0.70	6.1	0.21	0.36	1.05	0.42	70. A	13.3	14.6	13.9	0.26
8	13.00	33.418	25.169	5.81	97.1	6.5	0.70	6.1	0.20	0.38	0.93	0.35	39.	21.2	21.0	21.1	0.25
12	13.00	33.419	25.171	5.77	96.4	6.5	0.70	6.2	0.20	0.38	0.92	0.34	24.	19.0	20.0	19.5	0.24
20	13.00	33.419	25.171	5.78	96.5	6.6	0.71	6.2	0.20	0.38	1.00	0.33	9.4	16.1	15.1	15.6	0.22
27	12.99	33.419	25.172	5.75	96.1	6.6	0.71	6.2	0.20	0.39	1.00	0.32					
37	12.99	33.421	25.175	5.81D	97.1	6.6	0.71	6.3	0.20	0.39	0.96	0.34	1.3	2.0	1.7	1.9	0.18
44	12.98	33.422	25.177	5.75	96.0	6.5	0.71	6.3	0.20	0.41	0.96	0.35	0.55	0.57	0.54	0.56	0.18

A) INCUBATION LIGHT INTENSITIES WERE 93.0, 39.6, 25.8, 9.34, 1.31, 0.48 PERCENT RESPECTIVELY.

RV BELL M SHIMADA — CALCOFI CRUISE 1704 — STATION 83.3 80.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD
32 54.7 N	122 8.2 W	08/04/2017	1935 UTC	24 m	1235 - 1910 PST	1210 PST	1857 PST	186.7 mg C/m2	050

DEPTH m	TEMP DEG C	SALINITY	SIGMA THETA	OXYGEN ml/L	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	LIGHT PCT	UPTAKE (mg C/m3) 1	2	MEAN	DARK
3	14.82	33.124	24.566	5.92	102.5	1.2	0.24	0.0	0.00	0.00	0.15	0.03	83. A	2.1	2.2	2.1	0.13
10	14.81	33.124	24.569	5.94	102.9	1.3	0.24	0.0	0.00	0.00	0.16	0.03					
14	14.81	33.123	24.568	5.91	102.3	1.2	0.24	0.0	0.00	0.00	0.18	0.02	41.	1.1	3.3	2.2	0.16
21	14.77	33.123	24.578	5.92	102.4	1.1	0.23	0.0	0.00	0.00	0.19	0.02	26.	3.3	3.4	3.3	0.13
37	14.50	33.117	24.631	5.95	102.4	1.1	0.23	0.0	0.00	0.00	0.20	0.04	9.4	2.8	2.6	2.7	0.18
48	14.29	33.133	24.688	6.00	102.7	1.1	0.24	0.0	0.00	0.00	0.37	0.10					
57	14.12	33.134	24.724	6.07	103.7	1.1	0.25	0.0	0.00	0.00	0.54	0.18					
68	13.83	33.162	24.808	6.01	102.0	1.4	0.29	0.1	0.07	0.00	0.58	0.36	1.3	1.9	1.8	1.9	0.11
76	13.73	33.183	24.843	5.88	99.6	1.9	0.34	0.8	0.15	0.00	0.50	0.36					
83	13.53	33.210	24.906	5.61	94.7	2.8	0.44	2.2	0.23	0.00	0.42	0.29	0.49	0.40	0.57	0.49	0.06

RV BELL M SHIMADA — CALCOFI CRUISE 1704 — STATION 86.7 33.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD
33 53.4 N	118 29.0 W	05/04/2017	1655 UTC	07 m	1155 - 1900 PST	1156 PST	1846 PST	1741.8 mg C/m2	036

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	14.53	33.396	24.838	7.66	132.0	0.0	0.06	0.0	0.00		3.89	0.34	64. A	48.8	46.7	47.8	0.74
4	14.39	33.395	24.866	7.54	129.6	1.3	0.14	0.3	0.05		4.88	0.60	42.	88.1	98.0	93.0	1.2
5	13.64	33.393	25.020	7.52	127.4	0.9	0.11	0.1	0.04		5.08	0.57	33.	124.1	96.5	110.3	0.93
9	12.79	33.408	25.203	5.46	90.9	5.9	0.55	6.7	0.28		11.97	0.94	14.	155.7	166.6	161.1	0.63
17	12.59	33.414D	25.246	4.79D	79.4								2.4	37.1	31.9	34.5	0.51
21	12.35	33.410	25.290	4.64	76.4	9.0	0.93	10.2	0.29		4.93	0.54	1.0	4.4	5.4	4.9	0.50

RV BELL M SHIMADA — CALCOFI CRUISE 1704 — STATION 86.7 70.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD
32 39.0 N	121 1.6 W	06/04/2017	1857 UTC	27 m	1210 - 1855 PST	1206 PST	1855 PST	227.0 mg C/m2	042

DEPTH m	TEMP DEG C	SALINITY	SIGMA THETA	OXYGEN ml/L	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	LIGHT PCT	UPTAKE (mg C/m3) 1	2	MEAN	DARK
2	15.12	33.105	24.485	5.93	103.3	1.7	0.25	0.0	0.00	0.08	0.15	0.04	89. A	2.8	2.7	2.8	0.09
11	14.64	33.103	24.589	5.94	102.5	1.7	0.25	0.0	0.00	0.00	0.15	0.03					
16	14.50	33.108	24.621	5.95	102.3	1.6	0.24	0.0	0.00	0.00	0.13	0.03	40.	2.3	3.2	2.8	0.22
24	14.31	33.099	24.655	6.00	102.8	1.7	0.25	0.0	0.00	0.00	0.15	0.04	26.	3.5	3.3	3.4	0.18
32	14.27	33.099	24.665	5.97	102.2	1.7	0.24	0.0	0.00	0.00	0.16	0.06					
42	14.17	33.098	24.685	5.98	102.1	1.6	0.25	0.0	0.00	0.00	0.19	0.06	9.2	2.7	2.7	2.7	0.20
54	14.02	33.099	24.717	6.00	102.1	1.6	0.25	0.0	0.00	0.00	0.29	0.12					
63	13.58	33.099	24.809	5.97	100.8	2.0	0.29	0.3	0.08	0.00	0.47	0.26					
76	13.03	33.177	24.980	5.79	96.6	2.9	0.44	2.1	0.37	0.09	0.39	0.37	1.3	2.2	2.0	2.1	0.10
85	12.49	33.252	25.144	5.29	87.4	5.6	0.67	6.1	0.27	0.00	0.20	0.19					
95	11.90	33.283	25.281	4.97	81.0	7.6	0.82	8.7	0.10	0.00	0.15	0.16	0.45	0.31	0.36	0.34	0.06

RV BELL M SHIMADA — CALCOFI CRUISE 1704 — STATION 86.7 110.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD
31 19.2 N	123 44.5 W	07/04/2017	1757 UTC	29 m	1215 - 1900 PST	1217 PST	1905 PST	99.3 mg C/m2	046

DEPTH m	TEMP DEG C	SALINITY	SIGMA THETA	OXYGEN ml/L	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	LIGHT PCT	UPTAKE (mg C/m3) 1	2	MEAN	DARK
2	15.79	33.175	24.393	5.77	101.9	1.7	0.23	0.0	0.00	0.00	0.07	0.04	90. A	1.6	1.7	1.6	0.09
9	15.74	33.175	24.403	5.77	101.8	1.7	0.22	0.0	0.00	0.00	0.07	0.02					
18	15.77	33.198	24.415	5.75	101.6	1.8	0.22	0.0	0.00	0.00	0.07	0.01	39.	1.8	1.8	1.8	0.09
25	15.55	33.204	24.470	5.82	102.4	1.8	0.22	0.0	0.00	0.00	0.08	0.01	27.	1.5	1.6	1.6	0.13
37	15.40	33.172	24.479	5.80	101.7	1.7	0.21	0.0	0.00	0.00	0.08	0.02					
45	15.39	33.186	24.493	5.77	101.1	1.8	0.22	0.0	0.00	0.00	0.07	0.01	9.2	0.87	0.82	0.84	0.07
57	15.39	33.187	24.494	5.80	101.6	1.8	0.22	0.0	0.00	0.00	0.12	0.03					
70	15.18	33.183	24.538	5.85	102.0	1.8	0.23	0.0	0.00	0.00	0.15	0.04					
81	15.03	33.298	24.659	5.75	100.0	2.3	0.23	0.0	0.00	0.00	0.27	0.18	1.4	0.56	0.43	0.49	0.08
92	14.15	33.353	24.890	5.61	96.0	2.7	0.28	0.7	0.05	0.00	0.38	0.35					
101	13.36	33.306	25.015	5.46	91.8	3.9	0.44	3.1	0.09	0.00	0.34	0.27	0.48	0.42	0.42	0.42	0.05

RV BELL M SHIMADA — CALCOFI CRUISE 1704 — STATION 90.0 35.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD
33 15.2 N	118 14.6 W	04/04/2017	1648 UTC	21 m	1155 - 1839 PST	1156 PST	1839 PST	548.6 mg C/m2	028

DEPTH m	TEMP DEG C	SALINITY	SIGMA THETA	OXYGEN ml/L	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	LIGHT PCT	UPTAKE (mg C/m3) 1	2	MEAN	DARK
2	15.91	33.351	24.500	5.86	103.9	2.1	0.29	0.0	0.00	0.00	0.27	0.06	86.	5.1	5.3	5.2	0.24
14	15.84	33.349	24.515	5.86	103.8	2.2	0.28	0.0	0.00	0.00	0.27	0.08	36.	6.8	6.8	6.8	0.16
19	15.82	33.348	24.521	5.87	103.8	2.2	0.29	0.0	0.00	0.00	0.30	0.08	25.	7.5	7.6	7.6	0.19
26	15.41	33.337	24.603	5.99	105.1	2.3	0.30	0.0	0.00	0.00	0.59	0.14					
32	15.01	33.342	24.695	5.88	102.3	2.9	0.34	0.5	0.04	0.00	1.25	0.36	9.6	17.7	17.6	17.7	0.20
41	12.11	33.405	25.332	4.25	69.7	10.6	1.10	12.3	0.20	0.00	1.18	0.66					
50	11.30	33.466	25.529	3.82	61.6	14.2	1.33	16.1	0.06	0.00	0.40	0.31					
73	10.35	33.581	25.787	3.46	54.7	18.8	1.57	20.0	0.00	0.00	0.10	0.11	0.48	0.14	0.55	0.34	0.03

A) INCUBATION LIGHT INTENSITIES WERE 93.0, 39.6, 25.8, 9.34, 1.31, 0.48 PERCENT RESPECTIVELY.

RV BELL M SHIMADA — CALCOFI CRUISE 1704 — STATION 90.0 70.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD
32 4.9 N	120 38.5 W	03/04/2017	1626 UTC	18 m	1205 - 1845 PST	1206 PST	1845 PST	441.6 mg C/m2	023

DEPTH m	TEMP DEG C	SALINITY	SIGMA THETA	OXYGEN ml/L	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	LIGHT PCT	UPTAKE (mg C/m3) 1	2	MEAN	DARK
2	14.83	33.228	24.645	5.89	102.0	1.6	0.30	0.0	0.00	0.00	0.45	0.15	84. A	11.4	12.4	11.9	0.10
12	14.23	33.223	24.768	6.01	102.9	1.4	0.30	0.1	0.03	0.00	0.37	0.22	36.	12.0	12.3	12.1	0.17
17	14.07	33.221	24.800	6.05	103.3	1.4	0.32	0.1	0.03	0.00	0.41	0.28	23.	13.2	13.5	13.4	0.12
28	13.92	33.219	24.830	6.02	102.4	1.4	0.34	0.2	0.04	0.11	0.42	0.35	9.2	8.4	7.9	8.2	0.16
40	13.88	33.220	24.839	6.03	102.4	1.5	0.32	0.3	0.05	0.11	0.45	0.39					
51	13.85	33.220	24.847	6.00	101.9	1.5	0.35	0.3	0.05	0.19	0.38	0.37	1.3	1.2	1.0	1.1	0.12
64	12.82	33.265	25.089	5.71	95.0	3.2	0.58	3.1	0.21	1.04	0.15	0.14	0.43	0.14	0.15	0.14	0.07

RV BELL M SHIMADA — CALCOFI CRUISE 1704 — STATION 90.0 110.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD
30 45.0 N	123 20.1 W	02/04/2017	1708 UTC	25 m	1215 - 1900 PST	1217 PST	1855 PST	94.3 mg C/m2	019

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	15.40	33.153	24.461	5.81	101.8	2.0	0.25	0.1	0.00	0.00	0.10	0.02	83. A	1.7	1.7	1.7	0.04
10	15.39	33.151	24.464	5.84	102.3	2.0	0.26	0.1	0.00	0.00	0.11	0.03					
16	15.39	33.153	24.465	5.82	101.9	1.9	0.24	0.0	0.00	0.00	0.10	0.02	37.	2.0	1.9	1.9	0.05
40	15.37	33.150	24.468	5.82	101.8	1.8	0.24	0.1	0.00	0.00	0.12	0.02	8.6	1.2	1.1	1.2	0.06
51	15.33	33.146	24.475	5.80	101.5	1.7	0.25	0.0	0.00	0.00	0.13	0.03					
62	15.18	33.141	24.504	5.86	102.2	1.7	0.24	0.0	0.00	0.00	0.16	0.05					
73	14.59	33.129	24.624	5.94	102.3	1.7	0.27	0.0	0.00	0.00	0.25	0.10	1.1	0.37	0.30	0.34	0.05
83	13.68	33.202	24.869	5.67	96.0	2.7	0.37	1.5	0.08	0.00	0.45	0.29					
90	13.43	33.215	24.930	5.57	93.8	3.4	0.38	2.4	0.10	0.00	0.40	0.30	0.40	0.34	0.35	0.35	0.05

RV BELL M SHIMADA — CALCOFI CRUISE 1704 — STATION 93.3 35.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD
32 41.0 N	117 52.2 W	29/03/2017	1828 UTC	19 m	1208 - 1850 PST	1256 PST	1912 PST	521.2 mg C/m2	006

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	17.12	33.306	24.188	5.94	107.7	2.5	0.23	0.0	0.03	0.00	0.34	0.05	85. A	6.5	6.5	6.5	0.17
11	16.12	33.305	24.418	5.93	105.5	2.2	0.21	0.0	0.00	0.00	0.38	0.07	41.	9.6	11.6	10.6	0.33
17	15.87	33.288D	24.463	5.98	105.9	2.2	0.22	0.0	0.00	0.00	0.50	0.11	25.	10.8	10.5	10.7	0.17
29	15.44	33.318D	24.582	5.93	104.1	2.0	0.26	0.0	0.00	0.00	0.63	0.21	9.6	14.3	13.6	14.0	0.28
37	14.82	33.366D	24.755	5.94	103.0	2.2	0.28	0.0	0.03	0.00	0.87	0.33					
45	12.77	33.358D	25.170	4.69	78.0	7.6	0.83	8.3	0.25	0.00	0.84	0.48					
54	11.97	33.408D	25.362	4.06	66.4	11.0	1.12	13.0	0.08	0.00	0.44	0.38	1.3	2.2	2.1	2.2	0.07
66	11.29	33.435	25.508	3.89	62.7	13.0	1.26	15.2	0.04	0.00	0.25	0.31	0.48	0.88	0.81	0.84	0.03

RV BELL M SHIMADA — CALCOFI CRUISE 1704 — STATION 93.3 80.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD
31 10.6 N	120 55.1 W	31/03/2017	1700 UTC		1213 - 1900 PST	1208 PST	1849 PST	96.6 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
4	16.27	33.339	24.410	5.65	100.8	1.7	0.23	0.0	0.00	0.00	0.09	0.02		0.95	1.0	0.98	0.07
10	16.26	33.337	24.410	5.66	101.0	1.7	0.22	0.0	0.00	0.00	0.08	0.02					
17	16.27	33.336	24.409	5.65	100.9	1.6	0.24	0.0	0.00	0.00	0.09	0.01		1.5	1.5	1.5	0.05
23	16.28	33.339	24.409	5.65	100.9	1.6	0.22	0.0	0.00	0.00	0.09	0.02		1.6	1.6	1.6	0.09
41	16.28	33.339	24.412	5.65	100.9	1.6	0.23	0.0	0.00	0.00	0.09	0.01		1.3	1.3	1.3	0.06
51	16.27	33.337	24.412	5.66	101.0	1.6	0.25	0.0	0.00	0.00	0.08	0.02					
65	15.96	33.321	24.471	5.67	100.5	1.6	0.23	0.0	0.00	0.00	0.10	0.02					
74	15.00	33.233	24.615	5.79	100.6	1.7	0.27	0.0	0.00	0.00	0.19	0.07		0.65	0.46	0.56	0.05
84	14.50	33.231	24.722	5.85	100.7	1.8	0.28	0.0	0.00	0.00	0.30	0.15					
91	13.98	33.240	24.838	5.74	97.7	2.2	0.33	0.4	0.04	0.00	0.47	0.27		0.57	0.66	0.61	0.05

RV BELL M SHIMADA — CALCOFI CRUISE 1704 — STATION 93.3 100.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD
30 30.9 N	122 15.7 W	01/04/2017	0922 UTC	26 m	1213 - 1900 PST	1213 PST	1855 PST	133.9 mg C/m2	015

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	15.52	33.193	24.466	5.76	101.2	1.5	0.24	0.0	0.00	0.00	0.09	0.02	84. A	1.6	1.6	1.6	0.07
10	15.51	33.192	24.468	5.75	101.0	1.3	0.25	0.0	0.00	0.00	0.10	0.02					
17	15.50	33.190	24.469	5.76	101.2	1.4	0.25	0.0	0.00	0.00	0.10	0.02	37.	2.1	2.0	2.0	0.10
23	15.50	33.191	24.470	5.81	102.0	1.4	0.23	0.0	0.00	0.00	0.11	0.02	26.	2.5	2.4	2.5	0.07
40	15.50	33.193	24.474	5.77	101.3	1.4	0.24	0.0	0.00	0.00	0.10	0.02	9.4	1.7	1.7	1.7	0.08
53	15.49	33.192	24.475	5.77	101.3	1.3	0.26	0.0	0.00	0.00	0.11	0.02					
64	15.34	33.183	24.502	5.79	101.3	1.3	0.24	0.0	0.00	0.00	0.12	0.03					
74	14.37	33.174	24.704	5.92	101.6	1.4	0.27	0.0	0.00	0.00	0.30	0.13	1.3	0.90	0.73	0.81	0.05
82	14.17	33.233	24.791	5.89	100.7	1.4	0.29	0.0	0.00	0.00	0.42	0.29					
90	13.53	33.187	24.889	5.70	96.1	2.3	0.39	1.1	0.19	0.00	0.50	0.40	0.49	0.73	0.72	0.72	0.03

A) INCUBATION LIGHT INTENSITIES WERE 93.0, 39.6, 25.8, 9.34, 1.31, 0.48 PERCENT RESPECTIVELY.

MACROZOOPLANKTON BIOMASS
Net Mesh Size: 0.505mm

Line	Sta.	Latitude N	Longitude W	Date Mo/Day	Time (PST) Start	Time (PST) End	Water Volume Strained (m^3)	Max. Tow Depth (m)	Volume per 1000 m^3 Strained Total (cm^3)	Volume per 1000 m^3 Strained Small (cm^3)
60.0	53.0	37 50.8	123 06.0	04/20	0018	0024	129	67	101	101
60.0	60.0	37 36.6	123 36.4	04/19	1955	2016	444	210	176	90
60.0	70.0	37 16.8	124 19.8	04/19	1422	1443	435	210	30	30
60.0	80.0	36 56.8	125 03.1	04/19	0909	0930	480	211	19	19
60.0	90.0	36 36.8	125 46.3	04/19	0402	0423	456	212	99	77
63.3	52.0	37 19.2	122 36.3	04/18	0002	0008	122	55	776	417
63.3	55.0	37 12.6	122 50.1	04/18	0257	0318	478	192	40	40
63.3	60.0	37 02.5	123 11.7	04/18	0628	0649	409	208	49	49
63.3	70.0	36 42.5	123 54.8	04/18	1150	1211	441	208	424	50
63.3	80.0	36 22.5	124 37.9	04/18	1653	1714	435	207	930	57
63.3	90.0	36 02.6	125 20.5	04/18	2224	2245	480	209	110	46
66.7	50.0	36 46.6	122 03.1	04/15	1410	1431	427	210	80	80
66.7	55.0	36 37.1	122 24.9	04/17	1839	1900	451	206	528	138
66.7	60.0	36 27.1	122 46.3	04/17	1414	1435	430	211	58	58
66.7	70.0	36 07.2	123 28.9	04/17	0853	0914	445	205	29	29
66.7	80.0	35 47.2	124 11.7	04/17	0339	0400	424	210	269	177
66.7	90.0	35 27.2	124 54.2	04/16	2211	2232	437	212	217	183
70.0	51.0	36 10.9	121 43.6	04/15	2014	2035	440	202	624	148
70.0	55.0	36 02.9	122 00.6	04/15	2337	2358	407	214	381	229
70.0	60.0	35 52.9	122 22.1	04/16	0304	0325	411	207	114	114
70.0	70.0	35 32.9	123 04.4	04/16	0811	0832	449	201	33	33
70.0	80.0	35 13.1	123 46.5	04/16	1401	1422	415	212	891	123
70.0	90.0	34 52.8	124 28.7	04/14	1701	1722	429	210	629	210
73.3	50.0	35 38.4	121 16.1	04/13	1042	1048	140	45	72	72
73.3	55.0	35 28.6	121 36.6	04/13	1356	1417	444	206	1586	167
73.3	60.0	35 18.6	121 57.7	04/13	1734	1755	428	209	428	171
73.3	70.0	34 58.5	122 40.1	04/13	2321	2343	486	204	617	109
73.3	80.0	34 38.5	123 21.9	04/14	0517	0538	439	208	933	39
73.3	90.0	34 18.5	124 03.8	04/14	1102	1123	421	212	76	14
76.7	49.0	35 05.3	120 46.5	04/13	0544	0549	126	38	805	104
76.7	51.0	35 01.3	120 54.9	04/13	0333	0352	408	190	255	120
76.7	55.0	34 53.3	121 12.0	04/13	0041	0102	413	212	685	87
76.7	60.0	34 43.3	121 32.8	04/12	2055	2116	464	211	831	82
76.7	70.0	34 23.3	122 14.7	04/12	1536	1557	485	212	225	39
76.7	80.0	34 03.4	122 56.5	04/12	1022	1044	456	211	821	24
76.7	90.0	33 43.3	123 37.9	04/12	0448	0509	447	212	652	52
76.7	100.0	33 23.3	124 19.3	04/11	2332	2353	415	212	715	101
80.0	50.5	34 27.8	120 29.7	04/10	0837	0839	59	26	34	34
80.0	51.0	34 27.0	120 31.4	04/10	1009	1015	134	64	15	15
80.0	55.0	34 19.0	120 48.0	04/10	1330	1351	408	208	235	206
80.0	60.0	34 09.0	121 09.0	04/10	1828	1849	442	210	161	120
80.0	70.0	33 48.9	121 50.5	04/11	0004	0025	407	213	676	59
80.0	80.0	33 28.9	122 32.0	04/11	0539	0600	453	209	455	53
80.0	90.0	33 08.9	123 13.1	04/11	1148	1209	465	210	764	32
80.0	100.0	32 48.8	123 54.4	04/11	1747	1808	463	210	50	13
81.7	43.5	34 23.9	119 48.1	04/10	0127	0130	65	26	77	77
81.8	46.9	34 16.5	120 01.6	04/10	0445	0506	418	212	77	48
83.3	39.4	34 13.5	119 23.7	04/09	2251	2253	59	19	34	34
83.3	40.6	34 13.3	119 25.0	04/09	2152	2157	110	43	163	91
83.3	42.0	34 10.5	119 30.6	04/09	1945	2006	449	200	116	116
83.3	51.0	33 52.8	120 08.1	04/09	1353	1404	221	105	63	63
83.3	55.0	33 44.5	120 24.2	04/09	1029	1050	472	220	66	32
83.3	60.0	33 34.6	120 45.4	04/09	0445	0507	457	214	190	55
83.3	70.0	33 14.7	121 26.6	04/08	2118	2139	466	205	479	49
83.3	80.0	32 54.7	122 07.9	04/08	1404	1425	482	214	482	52
83.3	90.0	32 34.7	122 48.6	04/08	0434	0455	418	219	481	38
83.3	100.0	32 14.7	123 29.5	04/07	2236	2257	443	210	1242	54
83.3	110.0	31 54.7	124 10.3	04/07	1655	1716	437	203	57	18
85.4	35.8	34 00.7	118 50.3	04/05	0128	0131	72	25	139	139
86.7	33.0	33 53.4	118 29.0	04/05	0809	0813	82	28	171	171
86.7	35.0	33 49.4	118 37.7	04/05	0510	0531	386	209	47	47
86.7	40.0	33 39.4	118 58.7	04/05	1503	1523	425	209	28	28
86.7	45.0	33 29.4	119 19.2	04/05	1845	1906	447	202	523	119
86.7	50.0	33 19.4	119 39.8	04/05	2159	2205	121	54	182	182
86.7	55.0	33 09.3	120 00.3	04/06	0223	0244	418	199	1779	249
86.7	60.0	32 59.4	120 20.9	04/06	0637	0658	393	206	150	89
86.7	70.0	32 39.3	121 01.9	04/06	1226	1247	405	221	37	37
86.7	80.0	32 19.3	121 42.9	04/06	1805	1826	431	210	107	23
86.7	90.0	31 59.4	122 23.6	04/06	2326	2347	439	207	672	57
86.7	100.0	31 39.3	123 04.3	04/07	0448	0509	423	213	1051	54
86.7	110.0	31 19.3	123 44.5	04/07	1101	1122	422	213	69	14
86.8	32.5	33 53.3	118 26.7	04/05	0730	0732	62	11	113	113
88.5	30.1	33 38.2	118 04.6	04/04	2019	2021	54	20	92	92
90.0	27.7	33 29.8	117 45.1	04/04	1800	1802	45	17	22	22
90.0	28.0	33 29.1	117 46.3	04/04	1640	1701	417	209	53	53
90.0	30.0	33 25.1	117 54.5	04/04	1422	1443	436	210	34	34
90.0	35.0	33 15.1	118 14.7	04/04	1018	1039	387	207	52	16
90.0	37.0	33 11.1	118 22.9	04/04	0718	0739	437	197	14	14
90.0	45.0	32 55.2	118 56.2	04/04	0158	0219	428	196	505	44
90.0	53.0	32 38.9	119 29.1	04/03	2036	2057	457	214	271	59
90.0	60.0	32 25.1	119 57.5	04/03	1554	1615	465	212	108	75
90.0	70.0	32 05.1	120 38.3	04/03	0954	1015	468	193	220	94
90.0	80.0	31 45.2	121 19.0	04/03	0400	0420	445	206	429	27
90.0	90.0	31 25.1	121 59.4	04/02	2202	2223	449	207	1106	53
90.0	100.0	31 05.2	122 39.7	04/02	1617	1638	468	206	30	23
90.0	110.0	30 45.0	123 19.9	04/02	1035	1056	462	212	19	19
90.0	120.0	30 25.1	123 59.8	04/02	0408	0429	421	202	55	24
91.7	26.4	33 14.4	117 28.0	03/29	0117	0119	46	18	173	173
93.3	26.7	32 57.5	117 19.1	03/28	2111	2129	355	169	164	34
93.3	28.0	32 54.7	117 23.7	03/29	0445	0506	425	206	120	31
93.3	30.0	32 50.8	117 32.0	03/29	0742	0803	430	206	42	21
93.3	35.0	32 40.8	117 52.5	03/29	1135	1156	436	193	11	11
93.3	40.0	32 30.8	118 12.7	03/29	1704	1725	475	212	240	40
93.3	45.0	32 20.8	118 33.2	03/29	2047	2107	487	210	436	51
93.3	50.0	32 10.8	118 53.8	03/30	0020	0041	498	190	118	38
93.3	55.0	32 00.7	119 14.1	03/30	0356	0417	440	208	109	30
93.3	60.0	31 50.8	119 34.3	03/30	0758	0820	457	203	66	37
93.3	70.0	31 30.8	120 14.8	03/30	1413	1435	452	205	22	7
93.3	90.0	30 50.9	121 35.7	04/01	0238	0259	442	222	174	20
93.3	100.0	30 30.9	122 15.5	04/01	1038	1059	469	213	15	15
93.3	110.0	30 10.8	122 55.5	04/01	1611	1632	503	215	8	8
93.3	120.0	29 51.0	123 35.2	04/01	2144	2205	473	204	19	19
93.4	26.4	32 56.7	117 17.2	03/28	2241	2244	70	24	86	86