UNIVERSITY OF CALIFORNIA, SAN DIEGO SCRIPPS INSTITUTION OF OCEANOGRAPHY

data report

PHYSICAL, CHEMICAL AND BIOLOGICAL DATA

CalCOFI Cruise 0304
3 – 19 April 2003

CC Reference 06-04
25 January 2006

UNIVERSITY OF CALIFORNIA, SAN DIEGO

SCRIPPS INSTITUTION OF OCEANOGRAPHY

LA JOLLA, CALIFORNIA 92093-0227

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INTRODUCTION

The data presented in this report were collected during the 0304* cruise of the California Cooperative Oceanic Fisheries Investigations (CalCOFI) program aboard the aboard the RV *Roger Revelle* of Scripps Institution of Oceanography, University of California, San Diego. The CalCOFI program was organized in the late 1940's to study the causes of variations in population size of fishes of importance to the State of California. It is carried out by NOAA's National Marine Fisheries Service Southwest Fisheries Science Center, the California Department of Fish and Game, and the Integrative Oceanography Division (IOD) at Scripps Institution of Oceanography (SIO). IOD contributes to this program by investigations of the physical, chemical and biological structure of the California Current. Data from the cruises were collected and processed by personnel of the Integrative Oceanography Division and the Southwest Fisheries Science Center. Other SIO staff members and volunteers also assisted in the collection of data and chemical analyses at sea. 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 1049) with a rosette was deployed at each station on these cruises. 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 525 meters, bottom depth permitting. Occasional stations have multiple bottles tripped at the same depth to provide more water for ancillary programs. 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 have been 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 P140. 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 samples were collected in calibrated 100 ml iodine flasks, allowing at least 200% overflow. The dissolved oxygen samples were analyzed at sea by the Winkler method, as modified by Carpenter (1965), using the equipment and procedure outlined by Anderson (1971). Percent oxygen saturation was calculated from the equations of Weiss (1970).

Nutrient samples were analyzed at sea by the Scripps Ocean Data Facility for dissolved silicate, phosphate, nitrate and nitrite using procedures similar to those described in Gordon et al., 1993. Samples were collected in 45 ml high-density polypropylene screw-capped tubes which were rinsed three times prior to filling. Standardizations were done at the beginning and end of each group of samples with a set of mid-concentration range standards prepared fresh for each run. Samples not analyzed immediately after collection were refrigerated and run the

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

following day. Sets of six different concentration standards were analyzed periodically to determine the deviation from linearity as a function of concentration, for the silicate, nitrate and phosphate analyses. Final sample concentrations were corrected for deviations from linearity using a second order polynomial.

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 10 µCi of ^{14}C as $NaHCO_3$ (200 µl of 50 µCi/ml stock) 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). An Optical Plankton Counter (OPC, Dave Checkley, SIO) was routinely used in one side of the paired bongo net frame. The purpose of the OPC is to obtain information on the vertical distributions of size categories of zooplankton, using data from the counter, without affecting the ongoing time series of data obtained from the catches of the integrative bongo net.

Avifauna Observations (Point Reys Bird Observatory)

Sea birds were counted within a 300-meter wide strip off to one side of the ship. Counts were made while underway between stations during periods of daylight. These counts were summed over 20 nautical mile (nm) intervals, or the distance between consecutive stations, whichever was less. Included at the end of this report are individual maps of the most numerous bird species (individuals/nm).

Ancillary Programs

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

1) *Underway Data*. Continuous near surface measurements of temperature, salinity and *in vivo* chlorophyll fluorescence were recorded from seawater pumped through the ship's uncontaminated seawater system. Water was drawn from a depth of approximately 3 meters. The data were logged in one-minute averages using a Sea-Bird Electronics, Inc., SBE 45 MicroTSG Thermosalinograph and a Wetlabs Wetstar fluorometer.

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

3) *Taxon-specific pigments.* Water samples were collected from a depth of 10 m for the analysis of taxon-specific pigments (chlorophylls and carotenoids) by high-pressure liquid chromatography. (R. Goericke, SIO)

4) *Trace metals*. Seawater samples from the surface and at depth were obtained for iron analysis (dissolved and total iron) at 33 stations using a trace metal-clean pole sampler and trace metal-clean GO-flo bottles. Iron addition incubations were also performed at 15 stations to assay for iron limitation in the phytoplankton community. (K. Barbeau, SIO)

5) *Phytoplankton community structure*. Phytoplankton community structure was studied on samples collected from the mixed layer at a range of stations spanning nearshore eutrophic to offshore oligotrophic. Community structure was characterized using the size-fractionation of Chl a (GF/F and 1, 3, 5, 8, 20 um nucleopore filters) and analysis of taxon-specific pigments by HPLC. (Ralf Goericke, SIO)

6) *FlowCAM*. A new imaging flow cytometer, the FlowCAM, was used to analyze the composition of the phytoplankton and microzooplankton assemblage along CalCOFI line 77. Seawater was collected from a series of depths in the euphotic zone at the most inshore stations (51 and 55) and from two depths (10-15 m and the depth of the fluorescence maximum) at the more offshore stations. Vertical and cross-shore patterns of microplankton abundance and composition were analyzed from digital imagery, fluorescence, and side light scatter. (M.D. Ohman, SIO)

7) *Organic carbon.* At each station several samples were drawn from the CTD for total organic carbon concentration profiles. Size- and chemically-fractionated DOC samples were also drawn at several surface and deep (1000 m) sites to isolate colored dissolved organic matter (CDOM) for an investigation of chemical composition and both the extent and mechanism of CDOM photoreactivity. everal solid phase extracts from filtered seawater were taken for chemical and isotope analysis of dissolved organic carbon. (L. Aluwihare, SIO)

8) *Bio-optics.* Apparent inherent optical properties of the top 100 meters of the water column were measured daily with a multi-spectral free fall radiometer. Backscattering properties of the top 300 meters of seawater were also measured daily with a 6-channel backscattering meter. Water samples obtained from the CTD/rosette cast were analyzed for determination of absorption by particulate, detrital and soluble materials, HPLC determination of algal pigments. Water samples were also collected and analyzed for particulate organic carbon and particulate size distribution. Short-term photosynthesis-irradiance (P vs E) response was also determined for samples incubated with 14C sodium bicarbonate. Datasets of spectral solar irradiance, water leaving radiance and aerosol optical thickness were acquired during daylight hours en route and on stations using hand held SIMBADA radiometer, TriOS hyperspectral radiometer from JAXA of Japan, Portable Radiation Package (PRP) radiometer from NASA, for the calibration of the post Japanese satellite ocean color sensor Global Imager (GLI). (G. Mitchell, SIO)

9) *Temperature-dependent development of sardine and anchovy eggs*. Sardine and anchovy eggs were colelcted using 303 um bongo nets. Three tows were conducted. Eggs were incubated at 10 different temperatures. Development stage was recorded using microscope visualization, and observed several times per day until hatching. The objective was to determine whether sardine and anchovy eggs have differential rates of development under different temperature regimes. (S. Glaser, SIO)

10) *Microbial Diversity.* Water was collected from the surface and five meters depth at select stations to analyze temporal spatial patterns in bacterial community composition via the molecular fingerprinting technique ARISA (automated rRNA intergenic spacer assay). DNA from these samples was also used to investigate the abundance of aerobic anoxygenic phototrophic bacteria via quantitative PCR (QPCR). Finally, ~100L of near surface seawater was collected from station 87.110 and used in a mesocosm experiment which investigated the impact of light removal on bacterial community composition. (Mike Schwalbach, Univ.So.Cal.)

11) *Bioluminscence*. A small bioluminescence (BL) bathyphotometer (BP), developed at UCSB, was suspended at a depth of 10 meters for approximately 10 minutes during nighttime hydrocast stations. The BP was suspended off the port side of the ship directly opposite the starboard-side CTD which was deployed simultaneously. In order to avoid BL photoinhibitory effects, only CTD stations occurring between 3 hours after sunset (approximately 9PM LT) and 3 hours before dawn (approximately 3AM LT) were sampled for BL. Water was pumped through the BP at approximately 300ml/sec. Organisms were stimulated for BL by the pump impeller

and the resulting BL was recorded in an integrating chamber immediately downstream. BL intensity values (photons/sec) were recorded every second. (D. Neilson, SIO)

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 0304

1. CalCOFI Cruise 0304 track and station positions.

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

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

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

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

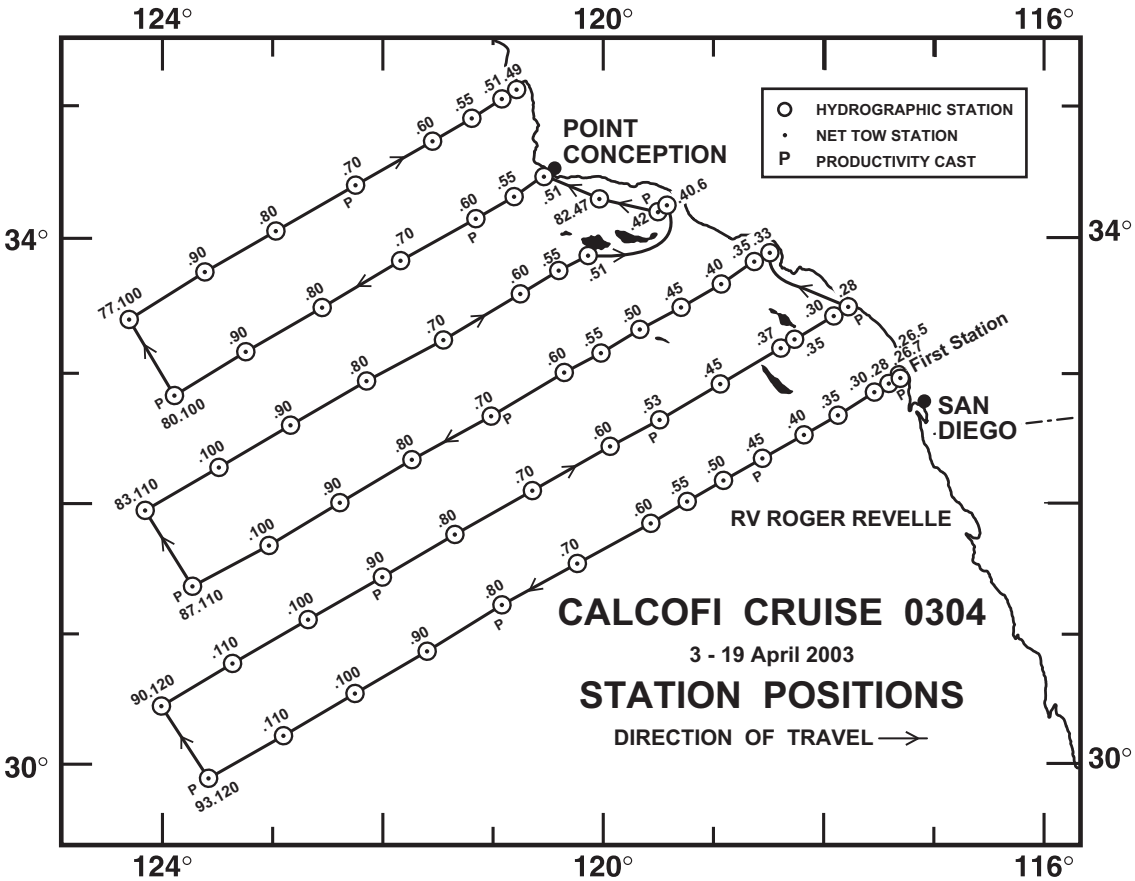


FIGURE 1

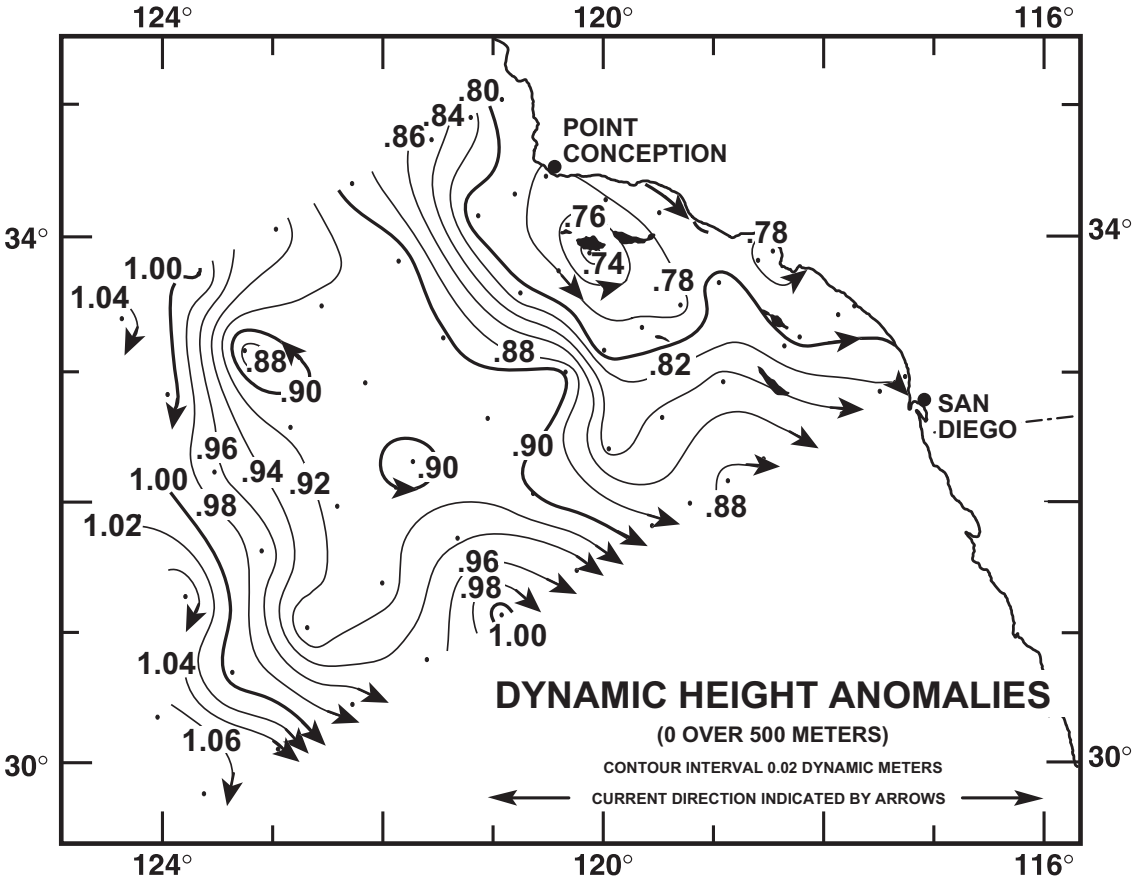


FIGURE 2

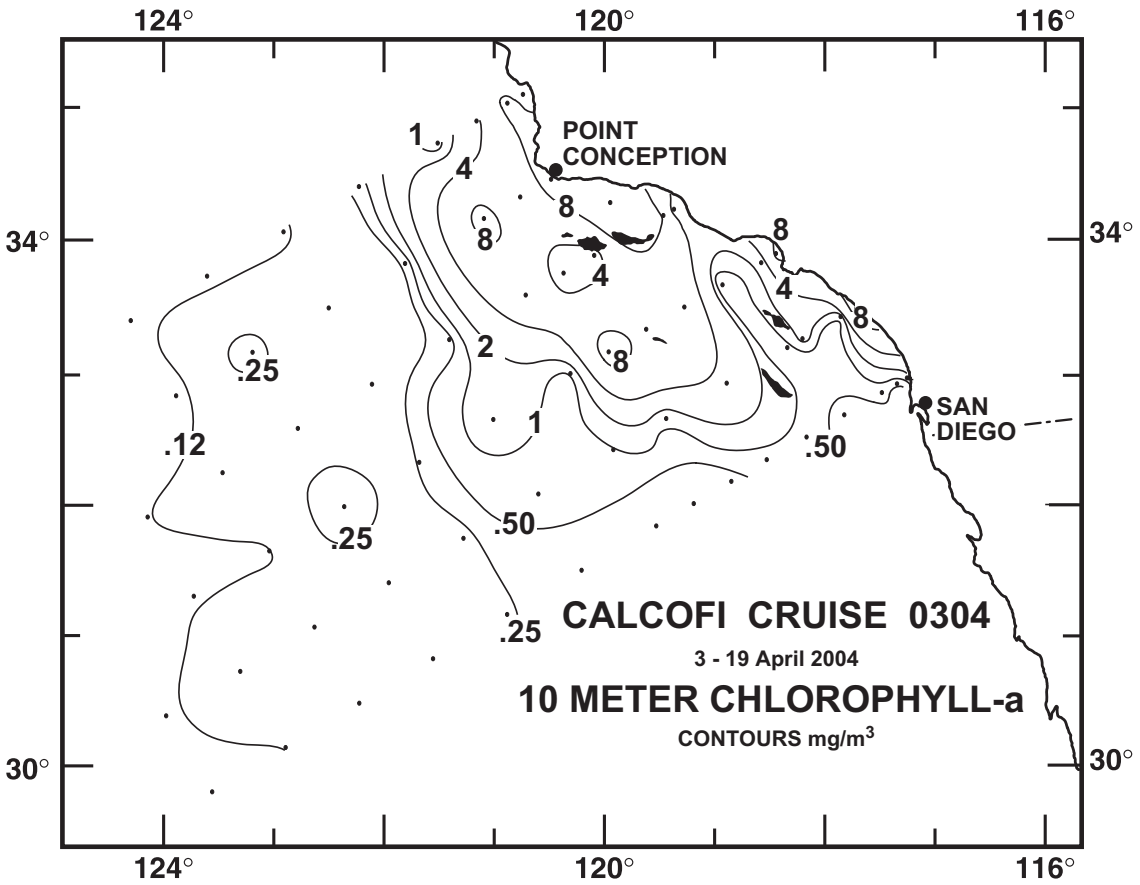


FIGURE 3A

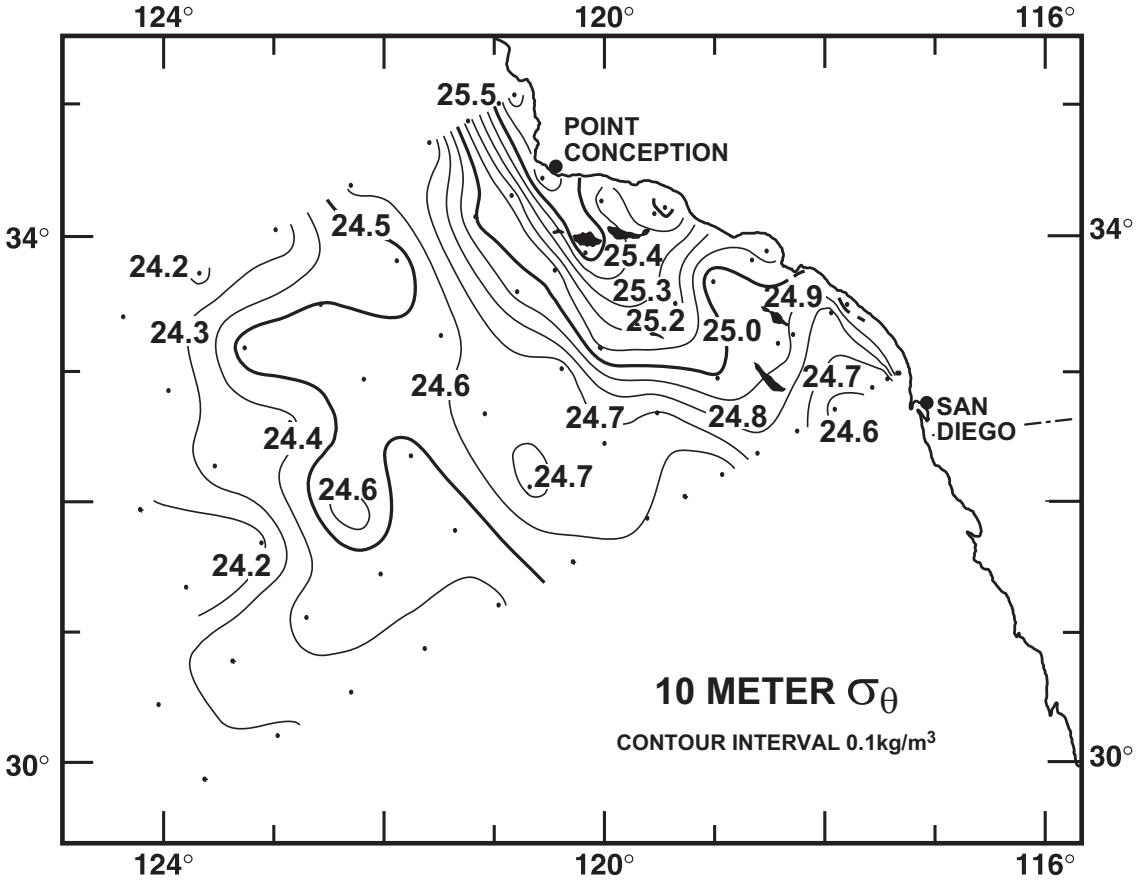


FIGURE 3B

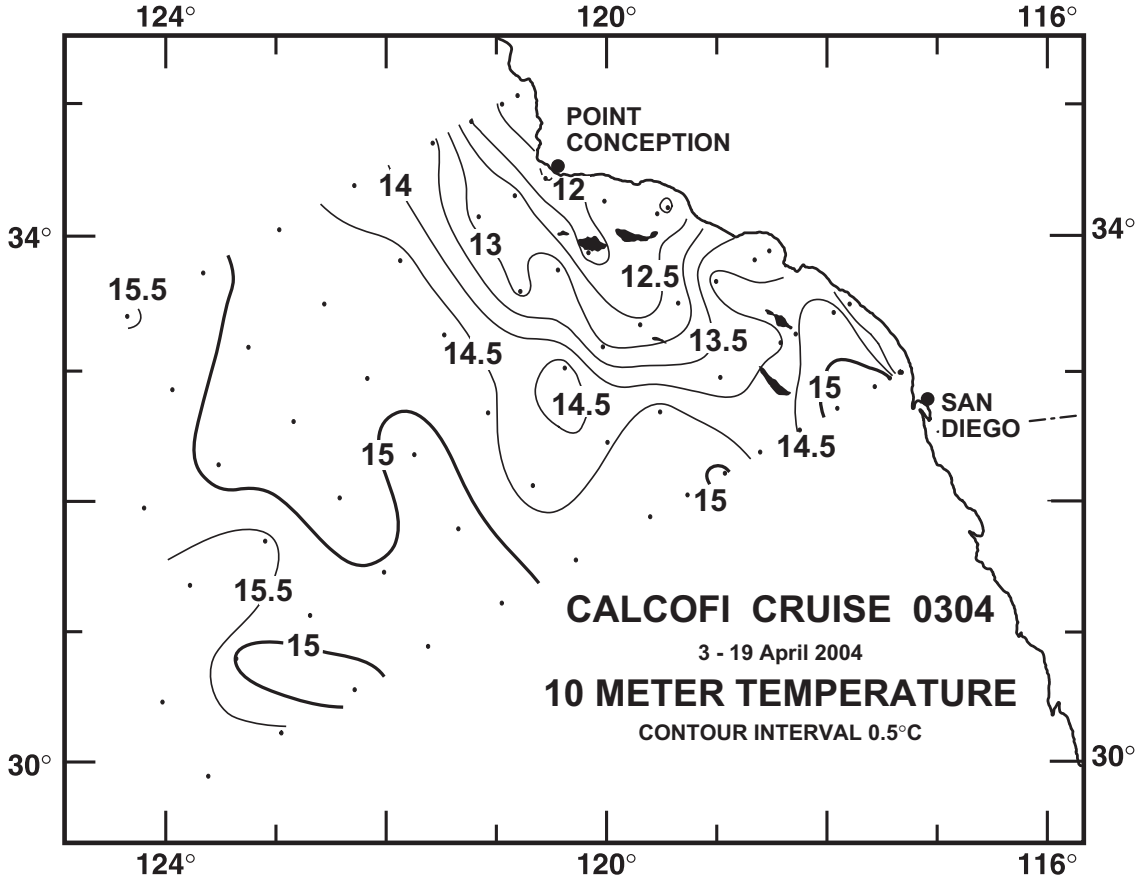


FIGURE 3C

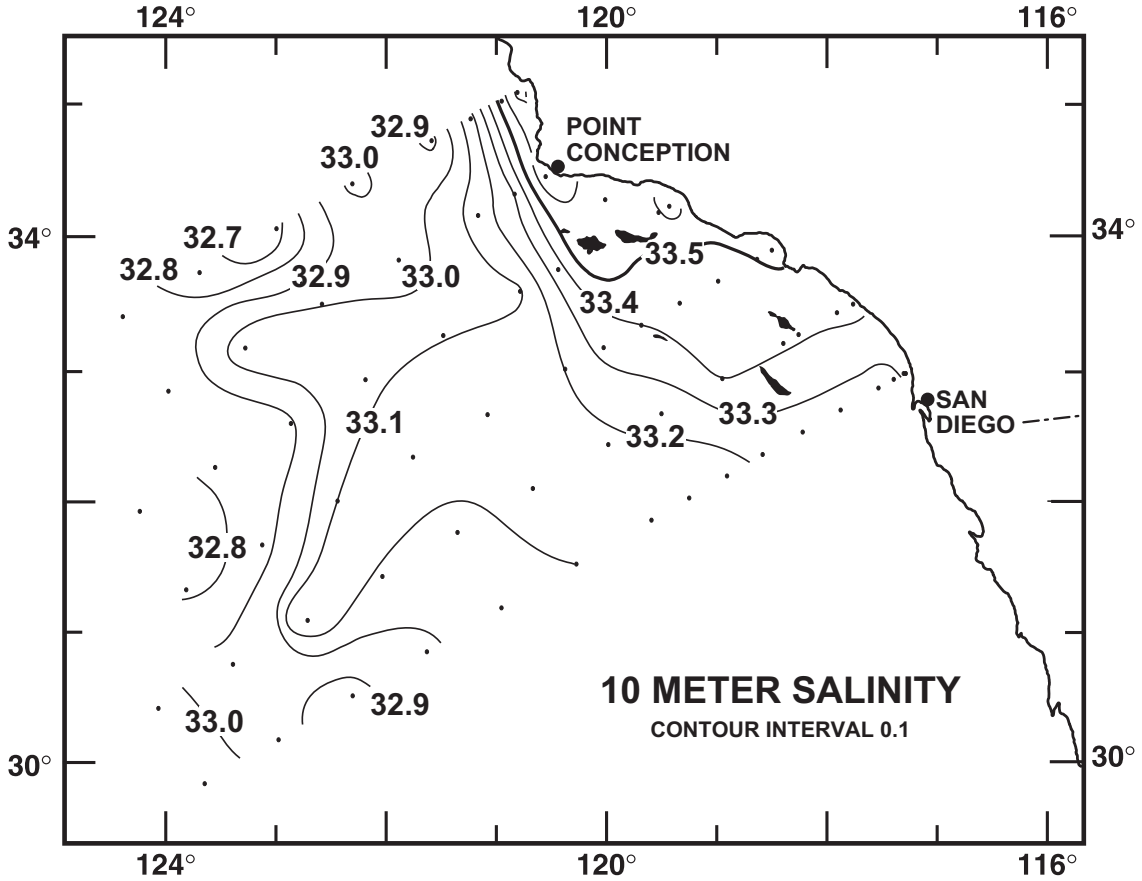


FIGURE 3D

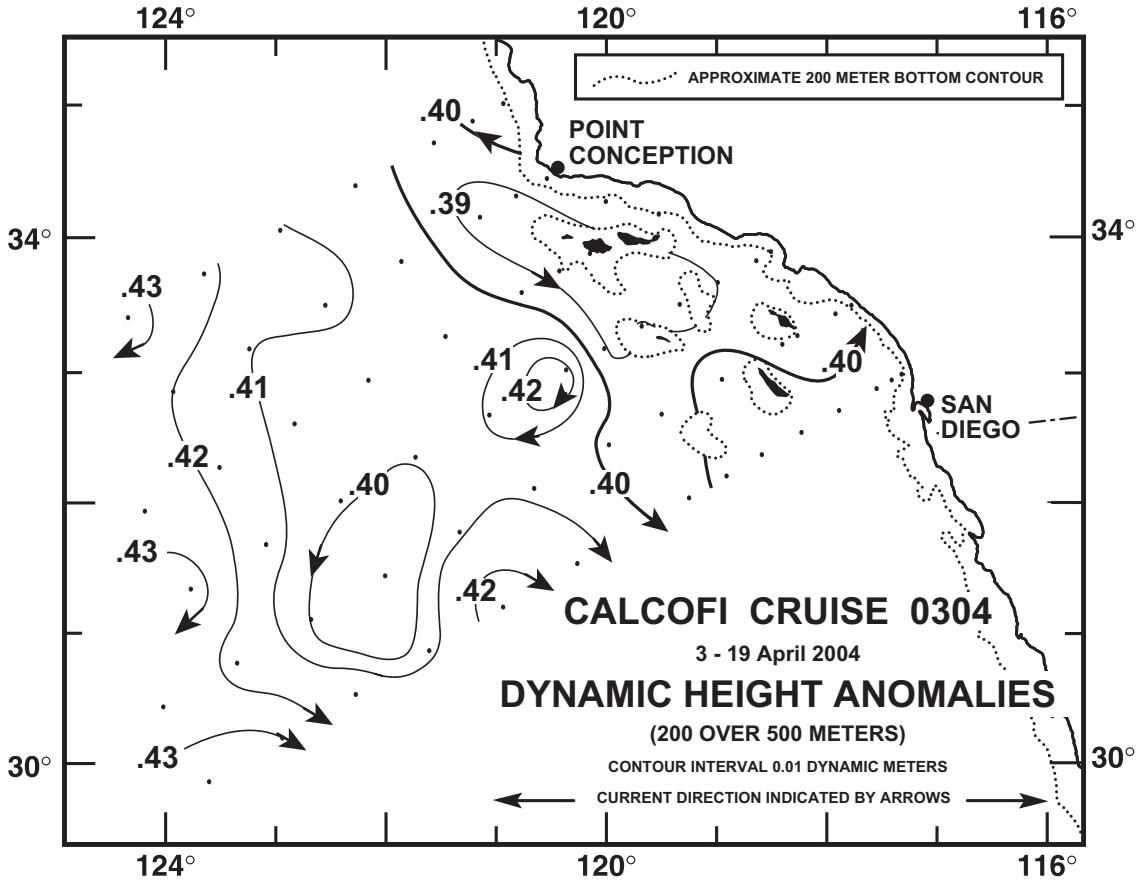


FIGURE 4A

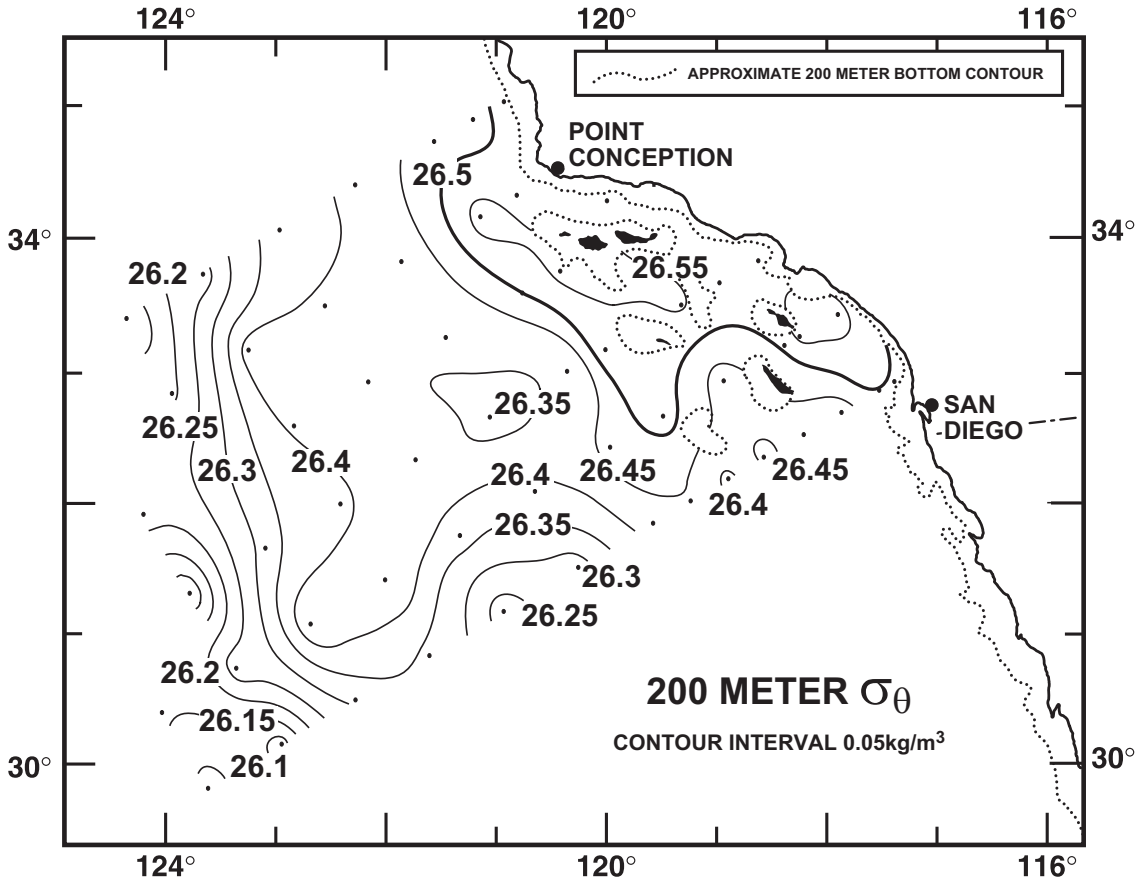


FIGURE 4B

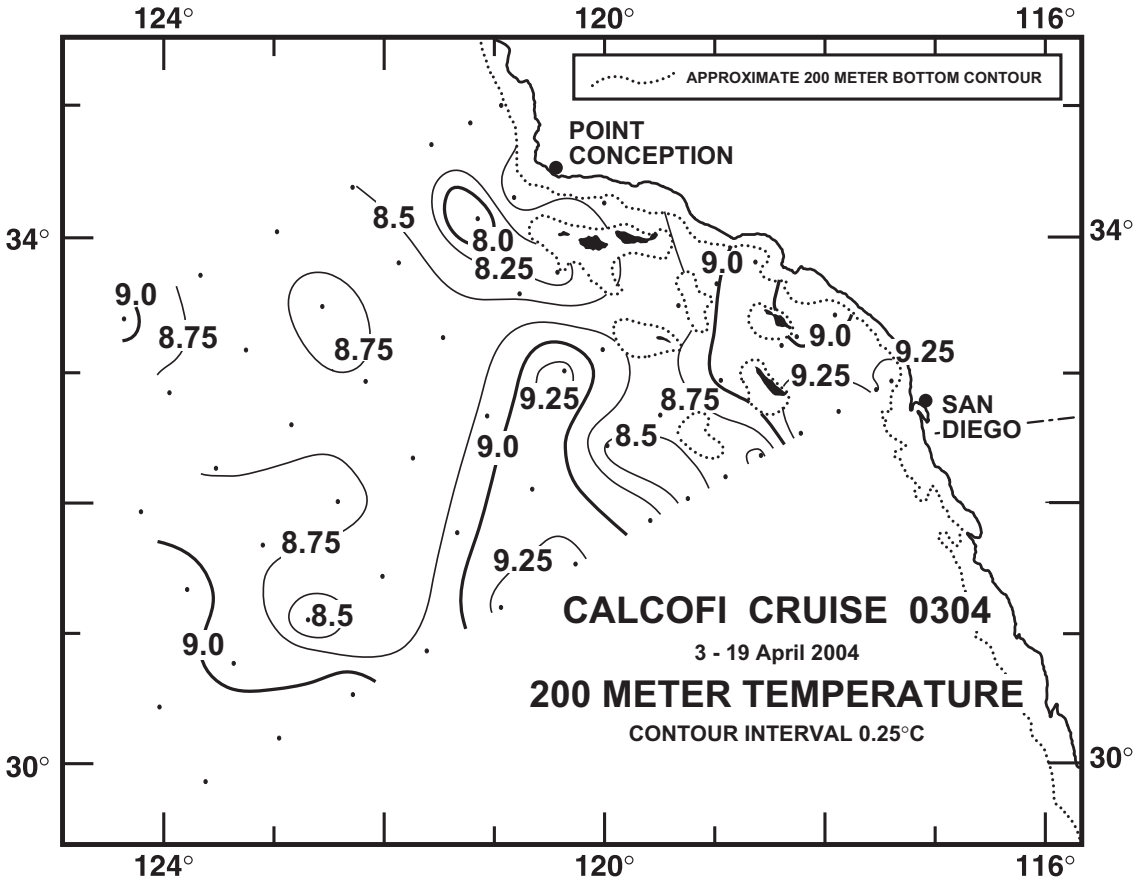


FIGURE 4C

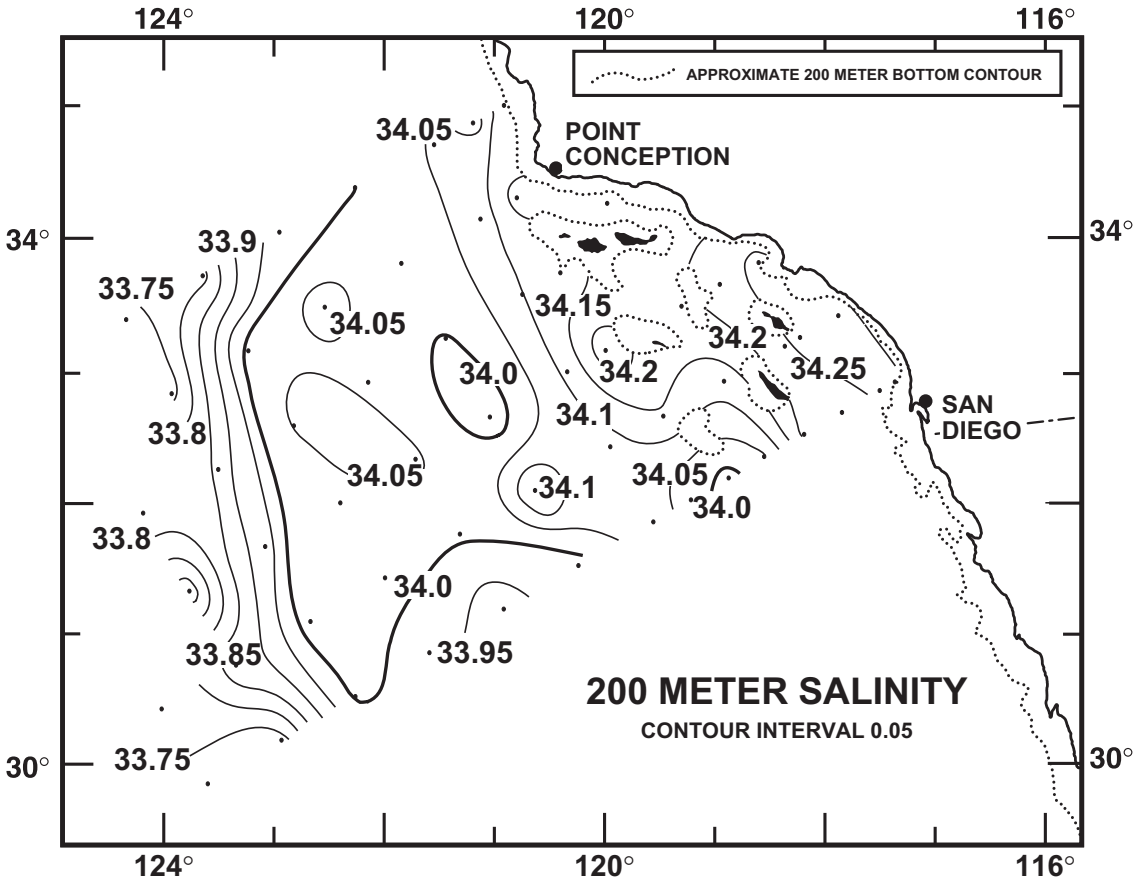


FIGURE 4D

CALCOFI CRUISE 0304

8 - 10 April 2003

POTENTIAL DENSITY (σ_θ) ALONG CALCOFI LINE 90

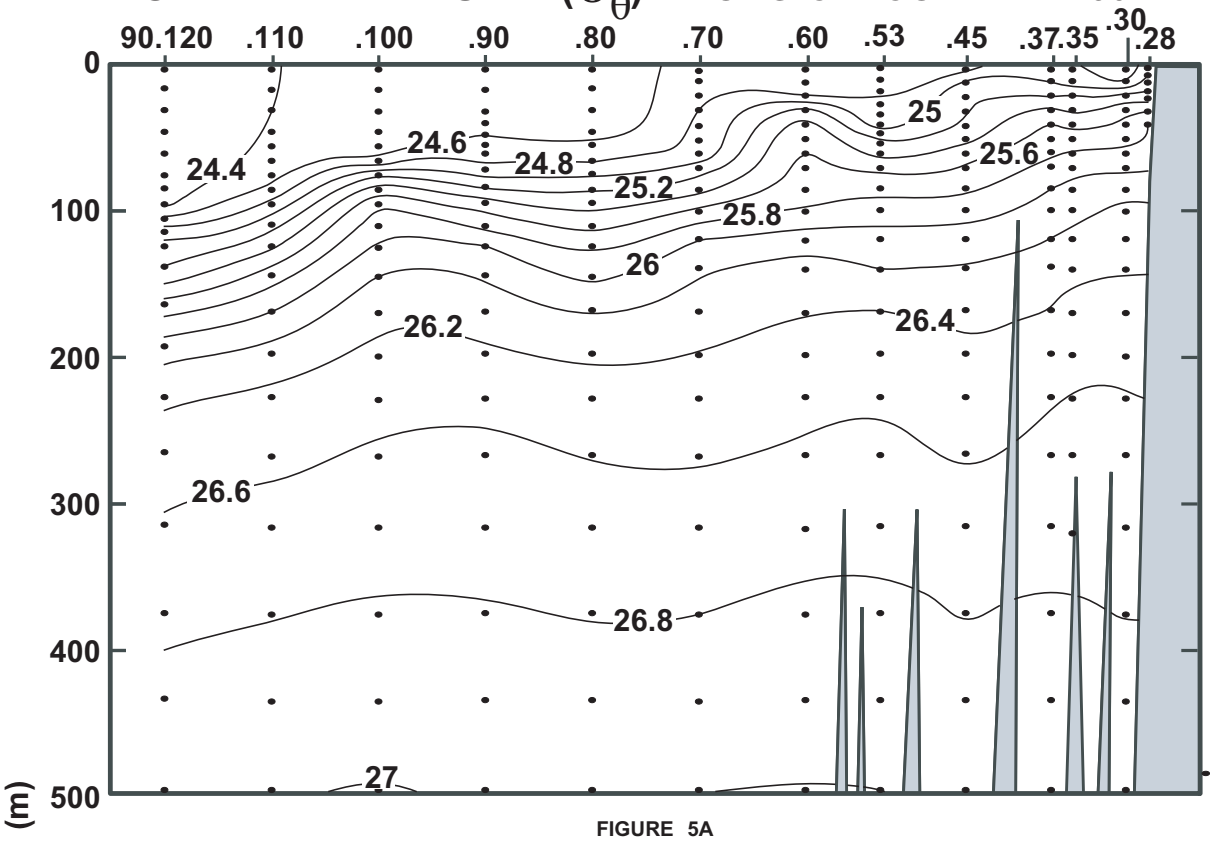


FIGURE 5A

TEMPERATURE (°C) ALONG CALCOFI LINE 90

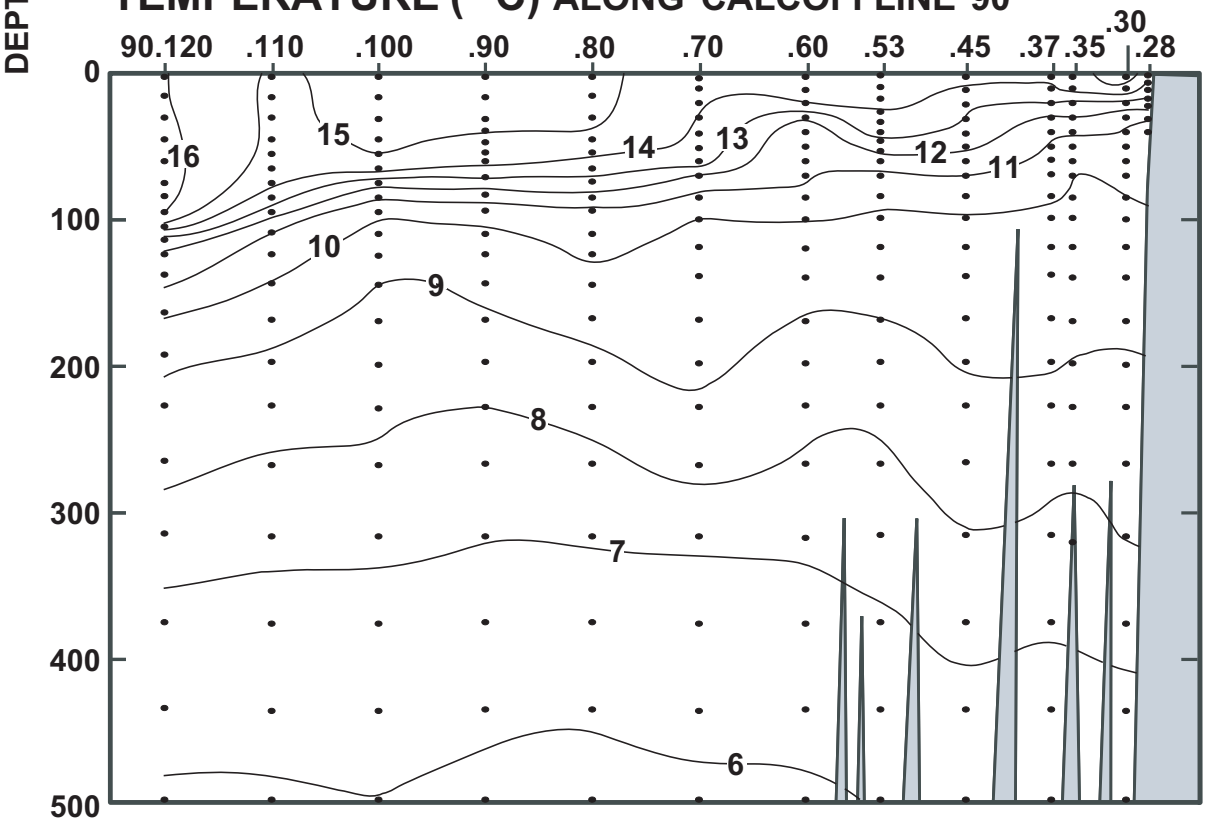


FIGURE 5B

CALCOFI CRUISE 0304

8 - 10 April 2003

SALINITY ALONG CALCOFI LINE 90

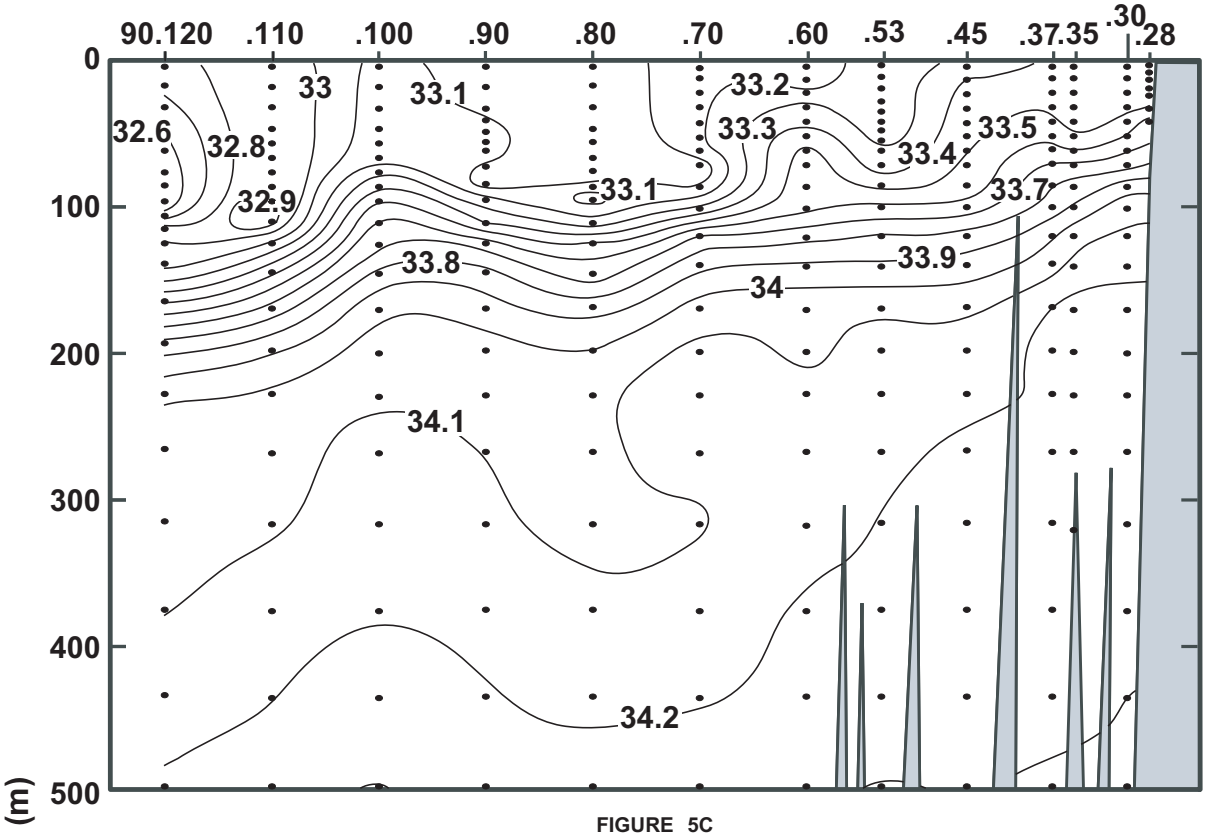


FIGURE 5C

SILICATE (μM/L) ALONG CALCOFI LINE 90

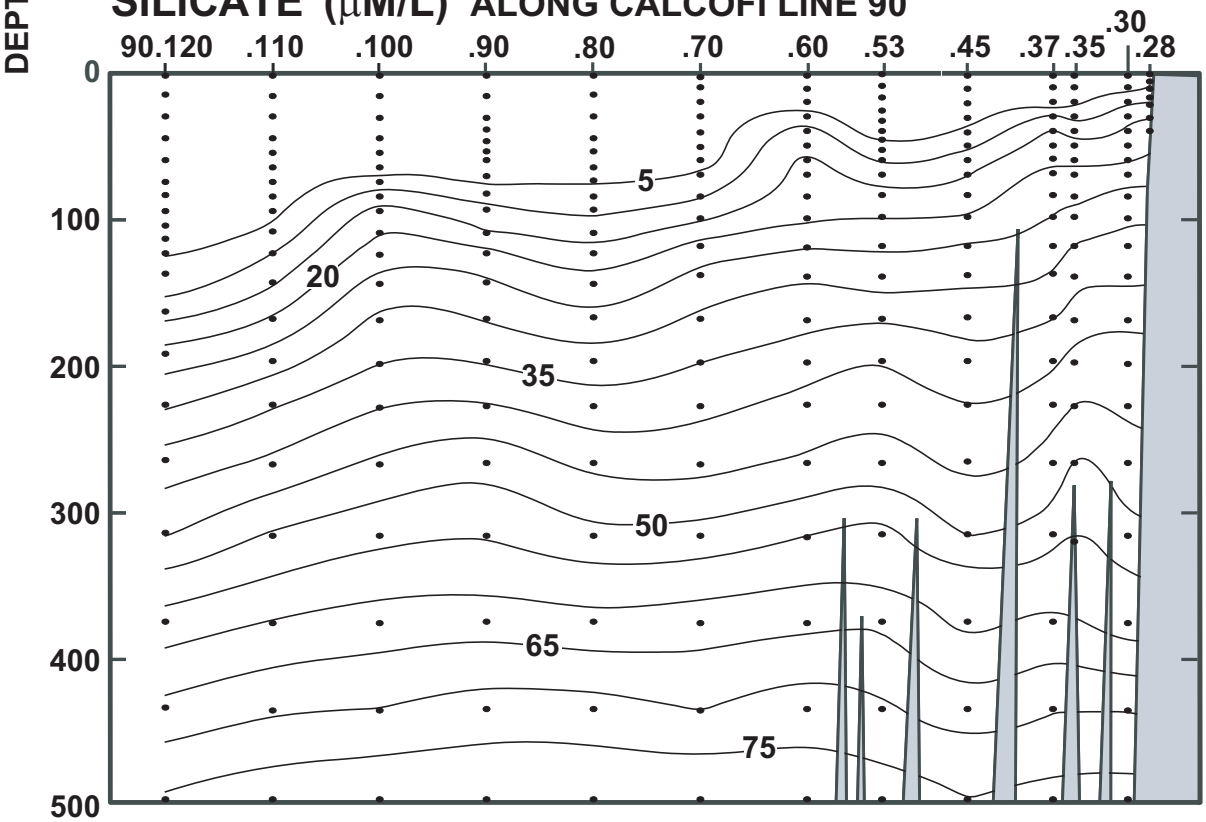


FIGURE 5D

CALCOFI CRUISE 0304

8 - 10 April 2003

NITRATE (μM/l) ALONG CALCOFI LINE 90

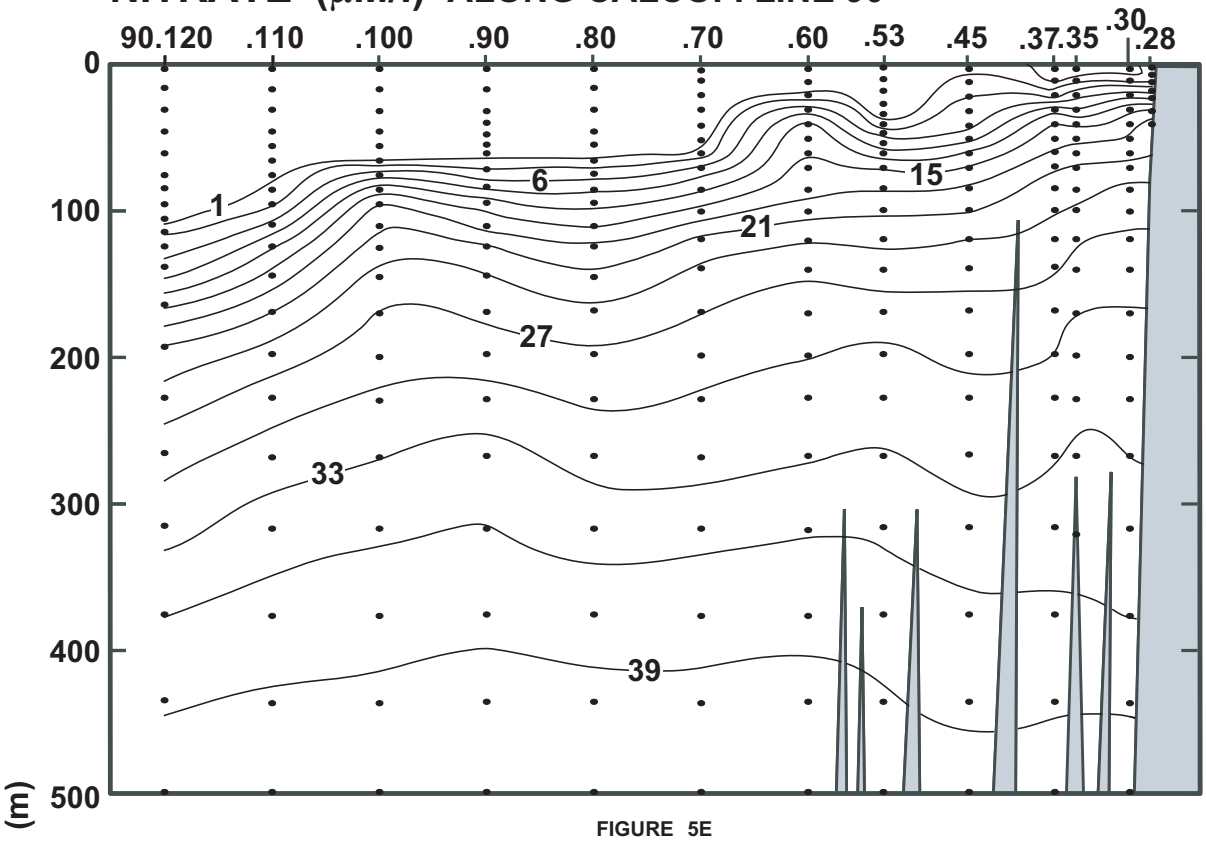


FIGURE 5E

PHOSPHATE (μM/l) ALONG CALCOFI LINE 90

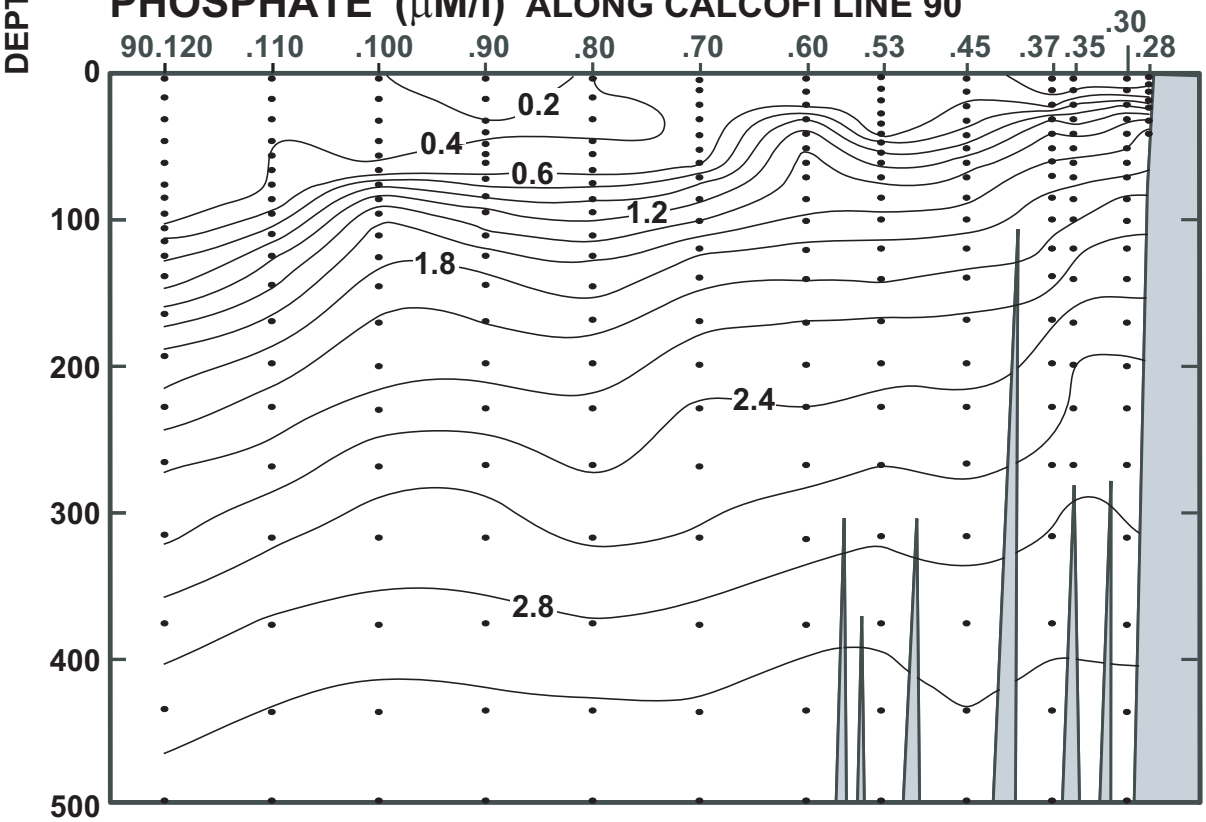


FIGURE 5F

CALCOFI CRUISE 0304

8 - 10 April 2003

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

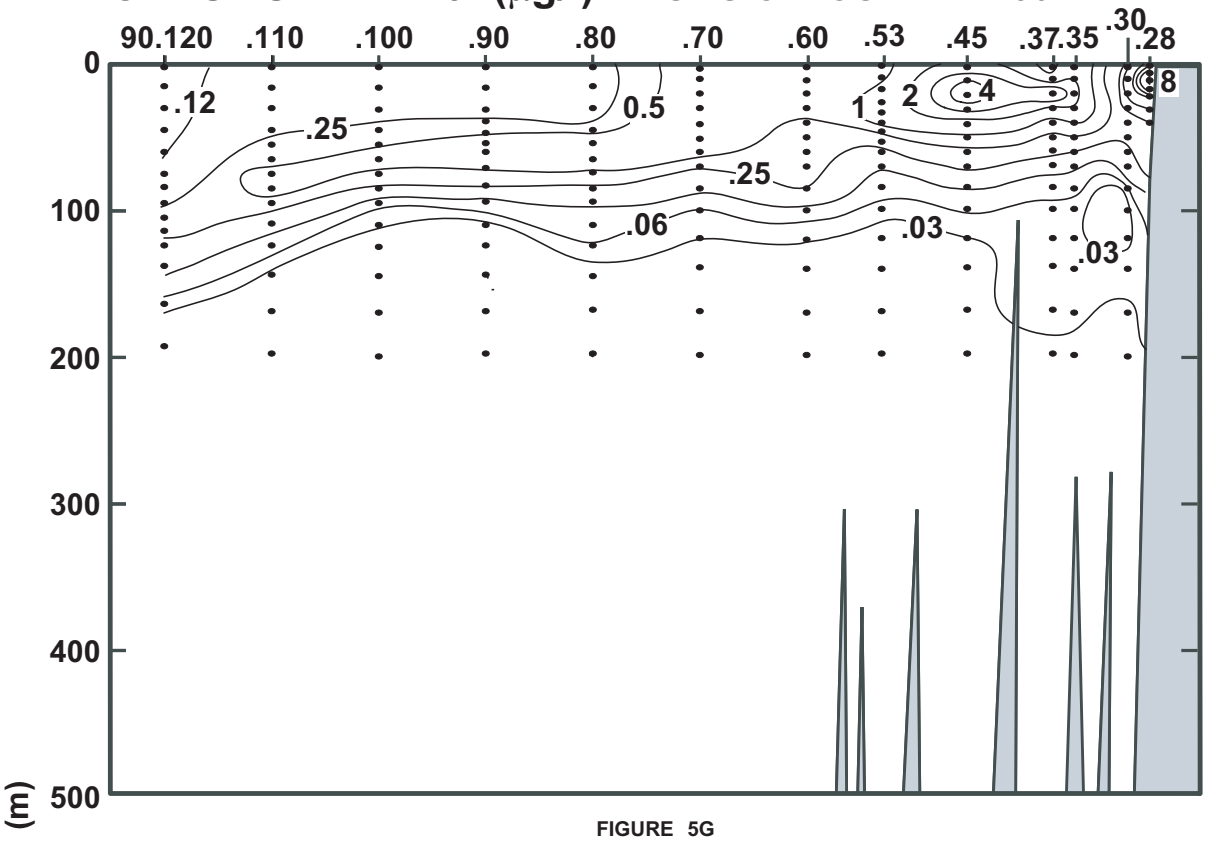


FIGURE 5G

OXYGEN SATURATION (%) ALONG CALCOFI LINE 90

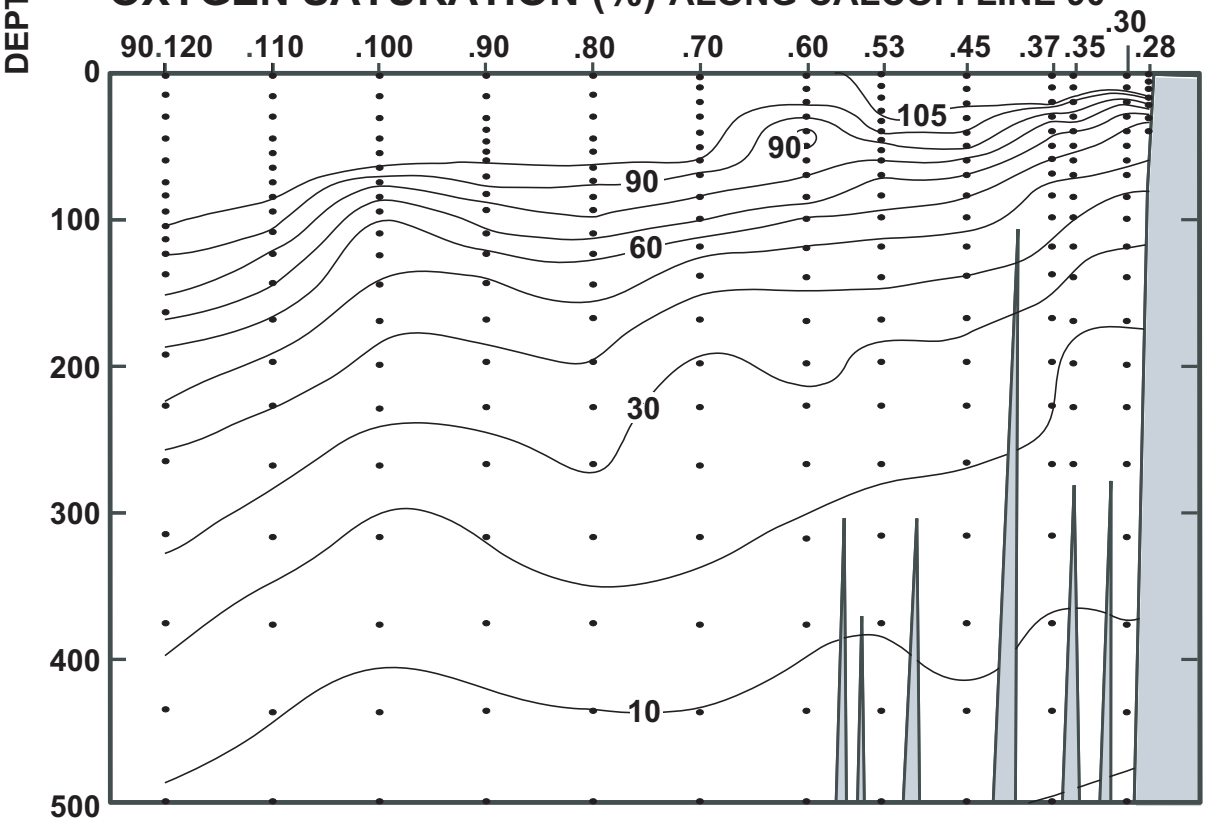


FIGURE 5H

CALCOFI CRUISE 0304

8 - 10 April 2003

OXYGEN (mL/L) ALONG CALCOFI LINE 90

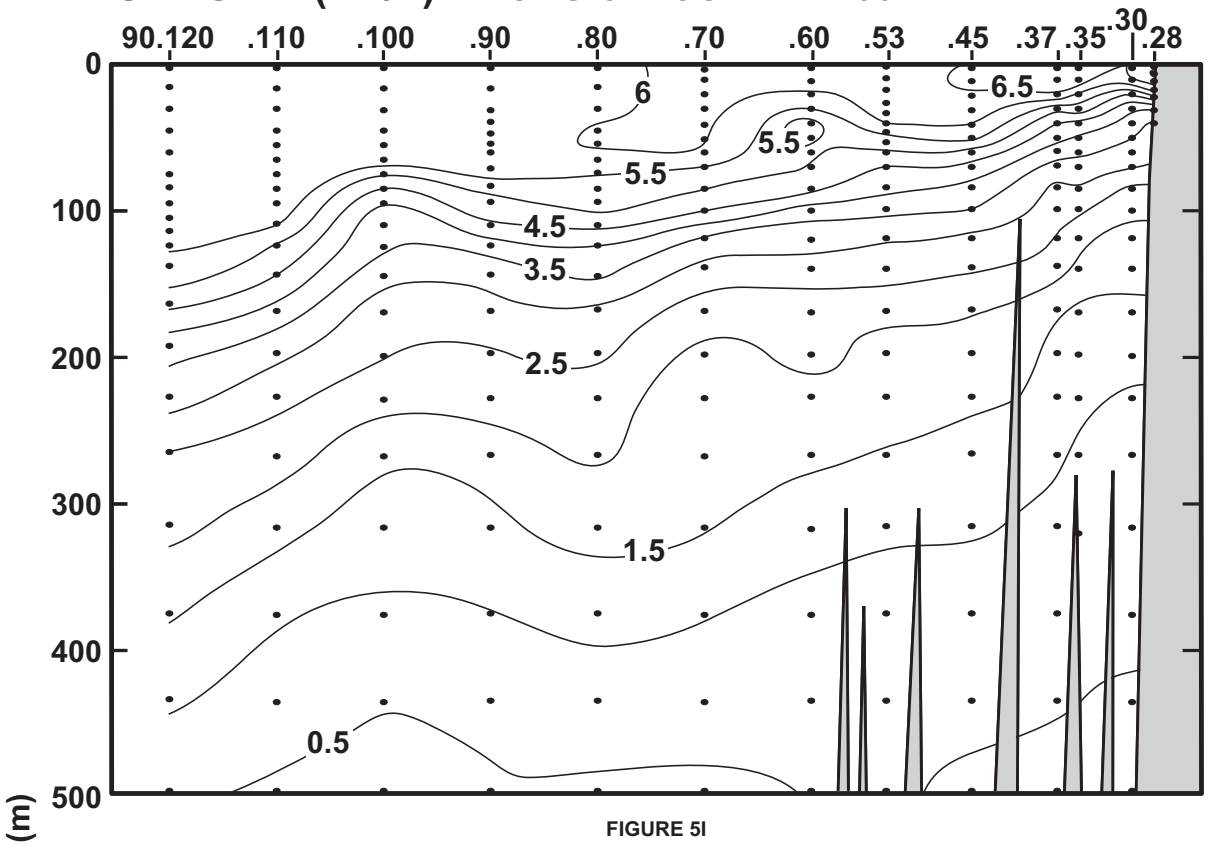


FIGURE 5I

NITRITE (μM/L) ALONG CALCOFI LINE 90

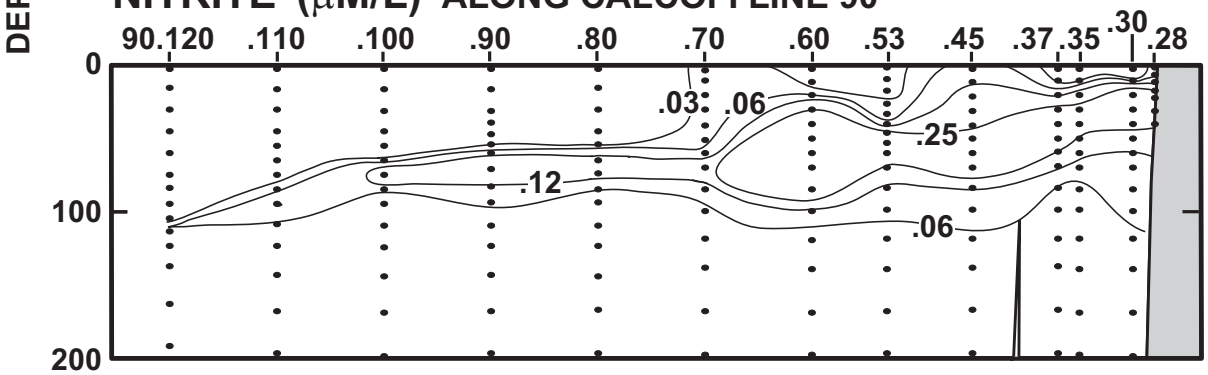


FIGURE 5J

PHAEOPIGMENTS (μg/L) ALONG CALCOFI LINE 90

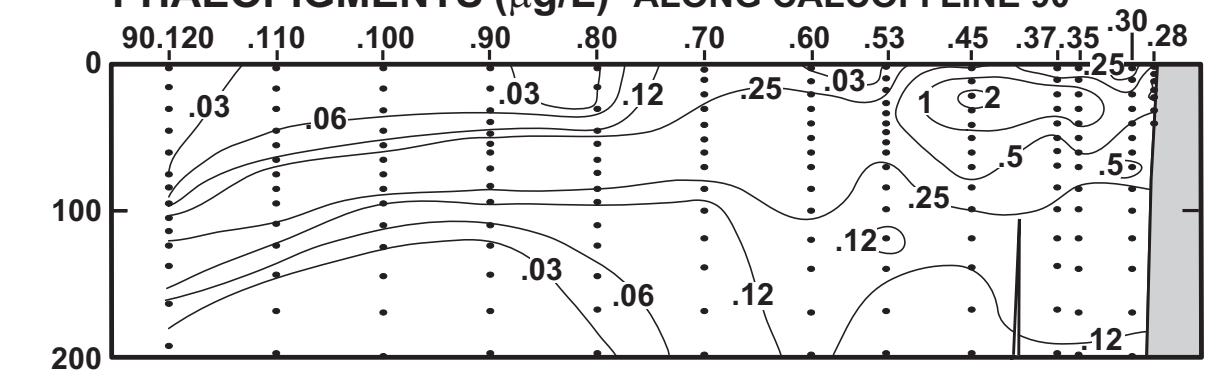


FIGURE 5K

PERSONNEL

CalCOFI Cruise 0304

SHIP'S CAPTAIN

Thomas J. Desjardins, RV *Roger Revelle*

PERSONNEL PARTICIPATING IN THE COLLECTION OF DATA

		Participating (Legs)
Venrick, Elizabeth L. (Chief Scientist)	Research Oceanographer, SIO	1,2,3
Aluwihare, Lihini L.	Assistant Professor, SIO	1
Barbeau, Katherine A.	Assistant Professor, SIO	1,2
Becker, Susan M.	Staff Research Associate, SIO	1,2,3
Brown, Adam C.	Seabird Biologist, Pt. Reyes Bird Observatory	
Chereskin, Teresa K.	Research Oceanographer, SIO	1,2
Chih-hao, Hsieh	Graduate Student, SIO	1,2
De Jesus, Roman P.	Graduate Student, SIO	1,2,3
Davis, Geoffrey A.	Programmer Analyst, SIO	2,3
Dotson, Ronald C.	Fishery Biologist, NMFS	1,2,3
Frame, Elizabeth	Graduate Student, SIO	3
Giles, Alma D.	Volunteer	1,2
Glaser, Sarah	Graduate Student, SIO	1
Goericke, Ralf	Associate Researcher, SIO	1,2
Hays, Amy E.	Fishery Biologist, NMFS	1,2,3
Hodges, Benjamin	Graduate Student, SIO	3
King, Andrew L.	Graduate Student, SIO	1,2,3
Klinke, Jochen	Associate Specialist, SIO	3
McCann, Sherry L.	Staff Research Associate, SIO	1,2,3
Mendez, Jeffrey M.	Graduate Student, Caltech	1,2
Mizohata, Kohei	Graduate Student, Hokkaido University, Japan	1,2
Nash, J. Madeleine	Writer, Science Magazine	3
Neilson, Douglas J.	Project Scientist, SIO	1,2,3
Ohman, Mark D.	Professor, SIO	3
Passalacqua, Gino A.	Assistant Scientist, FOPCA-UNFU, Peru	1,2,3
Pennycook, Jean	Teacher, Fresno Unified School District	3
Pillard, Eugene G.	Resident Technician, SIO	1,2,3
Powell, Jesse R.	Staff Research Associate, SIO	1,2
Quiel, Barry S.	Programmer Analyst, SIO	1,2
Regier, Lloyd A.	Engineer, SIO	3
Rudnick, Daniel L.	Professor, SIO	3
Sheldon, Jennifer L.	Scientific Aid, CDFG	1,2,3
Schuller, Daniel G.	Staff Research Associate, SIO	1
Schwalbach, Mike S.	Graduate Student, USC	2
Wang, Haili	Post Graduate Researcher, SIO	1,2
Wilkinson, James R.	Programmer Analyst, SIO	1,2,3
Wolgast, David M.	Staff Research Associate, SIO	1,2,3

Leg 1: San Diego to Dana Point, California, 4 – 10 April, 2003
Leg 2: Dana Point to Avila Beach, California, 10 – 19 April, 2003
Leg 3: Avila Beach to San Diego, California, 19 – 24 April , 2003

RV ROGER REVELLE CALCOFI CRUISE 0304 STATION 77 49

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE
35 5.3 N	120 46.6 W	19/04/03	1205	UTC	73 m	280	02 kn			1016.0 mb	11.5 C	10.0 C				

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	11.25	11.25	33.734	25.745	223.9	0.000	5.59	90.2	9.2	1.15	10.7	0.21	6.18	2.66	0	
2	11.25	11.25	33.734	25.745	223.9	0.004	5.59	90.2	9.2	1.15	10.7	0.21	6.18	2.66	2	209
6	11.25	11.25	33.733	25.745	224.1	0.013	5.59	90.2	9.1	1.14	10.6	0.22	6.73	2.90	6	208
10 ISL	11.25	11.25	33.732	25.744	224.3	0.022	5.61	90.5	9.0	1.14	10.5	0.21	6.78	3.16	10	
11	11.25	11.25	33.732	25.744	224.3	0.025	5.61	90.5	9.0	1.14	10.5	0.21	6.79	3.22	11	206
20 ISL	11.18	11.18	33.736	25.760	223.0	0.045	5.47	88.1	10.1	1.37	11.2	0.22	6.51	3.16	20	
21	11.17	11.17	33.737	25.762	222.8	0.047	5.44	87.6	10.3	1.40	11.4	0.22	6.48	3.15	21	205
30 ISL	10.93	10.93	33.751	25.817	217.8	0.067	5.05	80.9	13.4	1.42	13.7	0.24	4.49	2.35	30	
31	10.90	10.90	33.753	25.823	217.2	0.069	5.01	80.2	13.7	1.42	14.0	0.25	4.19	2.25	31	204
40	9.81	9.81	33.891	26.119	189.2	0.087	2.67	41.8	29.1	2.13	24.4	0.36	1.22	1.87	40	203
50 ISL	9.74	9.73	33.918	26.152	186.3	0.106	2.42	37.8	31.4	2.21	25.1	0.37	1.33	2.27	50	
51	9.73	9.72	33.921	26.156	186.0	0.108	2.39	37.3	31.6	2.22	25.2	0.37	1.34	2.32	51	202
61	9.72	9.71	33.924	26.160	185.8	0.127	2.37	37.0	31.9	2.24	25.3	0.37	1.40	2.20	61	201

RV ROGER REVELLE CALCOFI CRUISE 0304 STATION 77 51

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE
35 1.3 N	120 55.1 W	19/04/03	0832	UTC	248 m	330	15 kn			1016.4 mb	11.7 C	10.2 C				

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	11.39	11.39	33.543	25.571	240.4	0.000	6.07	98.1	7.4	0.92	9.3	0.19	9.06	2.72	0	
2	11.39	11.39	33.543	25.571	240.5	0.005	6.07	98.1	7.4	0.92	9.3	0.19	9.06	2.72	2	215
10 ISL	11.40	11.40	33.544	25.570	240.8	0.024	6.08	98.3	7.4	0.93	9.2	0.19	9.09	2.74	10	
11	11.40	11.40	33.544	25.570	240.8	0.026	6.08	98.3	7.4	0.93	9.2	0.19	9.09	2.74	11	214
20 ISL	11.31	11.31	33.548	25.590	239.1	0.048	5.88	94.9	8.8	1.01	10.4	0.19	7.87	2.44	20	
21	11.30	11.30	33.549	25.593	238.9	0.050	5.86	94.5	8.9	1.02	10.5	0.19	7.73	2.41	21	213
30 ISL	10.14	10.14	33.659	25.882	211.5	0.071	4.07	64.1	20.8	1.69	20.1	0.25	1.23	1.10	30	
31	10.01	10.01	33.674	25.916	208.4	0.073	3.87	60.7	22.2	1.76	21.2	0.26	0.54	0.95	31	212
41	9.94	9.94	33.773	26.005	200.1	0.093	3.50	54.9	24.9	1.89	22.8	0.32	0.41	0.65	41	211
50	9.90	9.89	33.867	26.085	192.7	0.111	3.00	47.0	27.0	2.00	23.9	0.29	0.46	0.67	50	210
60	9.77	9.76	33.941	26.165	185.3	0.130	2.47	38.6	28.9	2.10	25.4	0.20	0.35	0.68	60	209
71	9.75	9.74	33.959	26.183	183.9	0.150	2.36	36.9	29.4	2.12	25.6	0.18	0.29	0.60	71	208
75 ISL	9.72	9.71	33.973	26.199	182.4	0.157	2.28	35.6	29.9	2.14	25.9	0.16	0.26	0.66	75	
86	9.65	9.64	34.011	26.240	178.7	0.177	2.09	32.6	31.1	2.19	26.6	0.09	0.20	0.80	86	207
100	9.63	9.62	34.022	26.252	177.9	0.202	2.03	31.7	31.5	2.20	26.9	0.06	0.17	0.56	101	206
120	9.44	9.43	34.064	26.317	172.2	0.237	1.90	29.5	33.5	2.26	27.7	0.04	0.12	0.53	121	205
125 ISL	9.40	9.39	34.072	26.330	171.0	0.246	1.87	29.0	33.9	2.27	27.9	0.04	0.11	0.51	126	
140	9.28	9.26	34.089	26.363	168.2	0.271	1.81	28.0	35.1	2.31	28.5	0.04	0.08	0.47	141	204
150 ISL	9.23	9.21	34.094	26.375	167.2	0.288	1.81	28.0	35.5	2.32	28.7	0.04	0.08	0.49	151	
170	9.07	9.05	34.102	26.407	164.5	0.321	1.80	27.7	36.7	2.34	29.2	0.03	0.08	0.52	171	203
200 ISL	8.45	8.43	34.132	26.528	153.4	0.369	1.67	25.4	42.3	2.46	31.0	0.04	0.08	0.37	201	
201	8.43	8.41	34.133	26.532	153.1	0.370	1.66	25.2	42.5	2.46	31.1	0.04	0.08	0.37	202	202
233	8.18	8.16	34.157	26.589	148.2	0.419	1.46	22.1	46.2	2.56	32.1	0.05			234	201

RV ROGER REVELLE CALCOFI CRUISE 0304 STATION 77 55

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE
34 53.3 N	121 11.8 W	19/04/03	0350	UTC	568 m	330	30 kn			1015.2 mb	12.5 C	10.7 C				

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	11.99	11.99	33.163	25.165	279.1	0.000	6.23	101.7	3.7	0.79	6.4	0.15	3.43	1.09	0	
2	11.99	11.99	33.163	25.165	279.1	0.006	6.23	101.7	3.7	0.79	6.4	0.15	3.43	1.09	2	220
10 ISL	11.99	11.99	33.158	25.161	279.7	0.028	6.20	101.3	3.7	0.78	6.4	0.14	3.44	1.02	10	
11	11.99	11.99	33.157	25.161	279.8	0.031	6.19	101.1	3.7	0.78	6.4	0.14	3.44	1.02	11	219
20	11.99	11.99	33.164	25.166	279.4	0.056	6.19	101.1	3.6	0.77	6.4	0.14	3.39	1.29	20	218
30	11.99	11.99	33.247	25.231	273.5	0.084	6.26	102.3	3.6	0.79	6.4	0.15	4.42	1.15	30	217
39	11.81	11.81	33.510	25.469	251.1	0.107	6.33	103.2	4.5	0.85	7.2	0.18	7.36	2.19	39	216
50 ISL	11.78	11.77	33.525	25.486	249.7	0.135	6.29	102.5	4.9	0.87	7.4	0.18	6.98	2.09	50	
51	11.78	11.77	33.526	25.487	249.7	0.137	6.29	102.5	4.9	0.87	7.4	0.18	6.95	2.08	51	215
59	11.73	11.72	33.553	25.518	247.0	0.157	6.10	99.3	5.9	0.93	8.0	0.20	5.75	2.11	59	214
70	11.43	11.42	33.640	25.641	235.5	0.184	5.73	92.7	9.8	1.14	10.4	0.24	3.70	1.59	70	213
75 ISL	11.17	11.16	33.659	25.703	229.7	0.195	5.33	85.8	12.3	1.30	12.6	0.27	2.93	1.50	75	
85	10.60	10.59	33.686	25.825	218.2	0.218	4.42	70.3	17.7	1.62	17.5	0.34	1.71	1.37	85	212
99	9.93	9.92	33.743	25.984	203.3	0.247	3.39	53.1	23.9	1.93	23.2	0.41	0.78	0.98	100	211
100 ISL	9.90	9.89	33.748	25.993	202.5	0.249	3.35	52.5	24.2	1.93	23.4	0.40	0.77	0.98	101	
119	9.59	9.58	33.844	26.120	190.8	0.287	2.82	43.9	27.4	2.02	25.3	0.08	0.49	0.89	120	210
125 ISL	9.58	9.57	33.875	26.146	188.5	0.298	2.69	41.9	28.2	2.05	25.7	0.07	0.45	0.86	126	
139	9.56	9.54	33.940	26.201	183.6	0.324	2.43	37.8	30.0	2.11	26.5	0.05	0.37	0.77	140	209
150 ISL	9.38	9.36	33.981	26.262	177.9	0.344	2.26	35.0	31.7	2.16	27.3	0.04	0.29	0.64	151	
169	8.97	8.95	34.028	26.365	168.4	0.377	2.09	32.1	34.5	2.22	28.6	0.02	0.18	0.42	170	208
199	8.35	8.33	34.033	26.465	159.3	0.426	2.25	34.1	37.1	2.24	30.0	0.01	0.12	0.29	200	207
200 ISL	8.33	8.31	34.034	26.469	158.9	0.427	2.24	33.9	37.3	2.24	30.1	0.01			201	
228	7.88	7.86	34.064	26.560	150.6	0.471	2.03	30.4	42.7	2.36	31.7	0.01			229	206
250 ISL	7.65	7.63	34.066	26.595	147.5	0.504	1.97	29.4	45.0	2.40	32.3	0.01			252	
268	7.49	7.46	34.061	26.615	145.9	0.530	1.93	28.7	46.5	2.43	32.7	0.01			270	205
300 ISL	7.08	7.05	34.059	26.671	140.9	0.576	1.79	26.3	50.8	2.53	34.0	0.00			302	
318	6.87	6.84	34.064	26.703	137.9	0.601	1.67	24.5	53.4	2.59	34.8	0.00			320	204
378	6.64	6.61	34.143	26.797	129.8	0.681	1.05	15.3	61.7	2.82	36.8	0.00			381	203
400 ISL	6.44	6.40	34.147	26.827	127.2	0.710	0.95	13.8	65.0	2.88	37.7	0.00			403	
437	6.09	6.05	34.154	26.878	122.6	0.756	0.82	11.8	70.6	2.96	39.0	0.00			440	202
500 ISL	5.83	5.79	34.242	26.980	113.5	0.830	0.49	7.0	80.0	3.11	40.2	0.01			504	
516	5.76	5.72	34.265	27.008	111.1	0.848	0.40	5.7	82.4	3.15	40.5	0.01			520	201

RV ROGER REVELLE CALCOFI CRUISE 0304 STATION 77 60

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE
34 43.3 N	121 32.9 W	18/04/03	2336 UTC	948 m	330 32 kn	330 06 08	1	1016.2 mb	14.2 C	11.0 C	09m	4/8	CU

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	13.67	13.67	32.867	24.607	332.2	0.000	6.15	103.9	1.9	0.40	0.2	0.03	0.63	0.27	0	
2	13.67	13.67	32.867	24.608	332.2	0.007	6.15	103.9	1.9	0.40	0.2	0.03	0.63	0.27	2	220
10	13.67	13.67	32.867	24.608	332.4	0.033	6.14	103.7	1.7	0.40	0.1	0.03	0.62	0.24	10	219
20 ISL	13.62	13.62	32.866	24.617	331.8	0.066	6.15	103.7	1.9	0.41	0.2	0.04	0.62	0.27	20	
21	13.62	13.62	32.866	24.617	331.8	0.070	6.15	103.7	1.9	0.41	0.2	0.04	0.62	0.27	21	218
30 ISL	12.79	12.79	32.887	24.799	314.7	0.099	6.05	100.3	2.5	0.57	1.8	0.30	0.75	0.38	30	
31	12.68	12.68	32.891	24.823	312.4	0.102	6.04	99.9	2.6	0.59	2.0	0.32	0.75	0.39	31	217
41	12.03	12.02	32.952	24.995	296.3	0.132	5.98	97.6	3.8	0.77	4.4	0.20	0.39	0.51	41	216
50 ISL	11.78	11.77	33.067	25.131	283.6	0.159	5.95	96.7	3.3	0.86	4.8	0.18	0.36	0.73	50	
51	11.75	11.74	33.081	25.147	282.0	0.161	5.95	96.6	3.2	0.88	4.9	0.18	0.36	0.74	51	215
61	11.04	11.03	33.209	25.376	260.4	0.188	4.63	74.1	11.4	1.28	13.9	0.06	0.20	0.45	61	214
69	10.73	10.72	33.318	25.516	247.3	0.209	4.35	69.2	13.6	1.40	15.9	0.06	0.17 A	0.50 A	69	213
75 ISL	10.41	10.40	33.398	25.633	236.2	0.223	4.12	65.1	15.7	1.51	17.7	0.06	0.13	0.44	75	
84	9.97	9.96	33.500	25.788	221.7	0.244	3.83	60.0	18.6	1.65	20.0	0.05	0.07	0.30	84	212
99	9.75	9.74	33.584	25.890	212.2	0.276	3.61	56.3	20.6	1.72	21.4	0.03	0.04	0.23	99	211
100 ISL	9.74	9.73	33.592	25.898	211.5	0.279	3.59	56.0	20.8	1.73	21.5	0.03	0.04	0.23	100	
119	9.47	9.46	33.756	26.071	195.4	0.317	3.21	49.8	24.9	1.90	24.2	0.02	0.03 A	0.22 A	120	210
125 ISL	9.37	9.36	33.800	26.122	190.7	0.329	3.04	47.1	26.3	1.95	25.0	0.02	0.03	0.22	126	
139	9.13	9.11	33.887	26.229	180.8	0.355	2.67	41.1	29.3	2.05	26.6	0.01	0.02	0.21	140	209
150 ISL	8.97	8.95	33.937	26.293	174.8	0.374	2.56	39.3	31.0	2.09	27.4	0.01	0.02	0.18	151	
168	8.73	8.71	33.996	26.377	167.1	0.405	2.48	37.9	33.5	2.15	28.5	0.01	0.01	0.14	169	208
199	8.42	8.40	34.054	26.471	158.8	0.456	2.12	32.2	38.2	2.30	30.3	0.01	0.01	0.12	200	207
200 ISL	8.41	8.39	34.055	26.474	158.5	0.457	2.11	32.0	38.3	2.30	30.3	0.01			201	
228	8.07	8.05	34.073	26.539	152.7	0.501	1.96	29.5	42.1	2.38	31.6	0.01			229	206
250 ISL	7.79	7.77	34.080	26.586	148.5	0.534	1.87	28.0	44.9	2.45	32.6	0.01			252	
268	7.57	7.54	34.088	26.624	145.1	0.560	1.77	26.4	47.6	2.51	33.4	0.01			270	205
300 ISL	7.20	7.17	34.128	26.708	137.4	0.606	1.41	20.8	54.5	2.68	35.0	0.01			302	
316	7.03	7.00	34.151	26.750	133.6	0.627	1.22	17.9	58.2	2.77	35.8	0.01			318	204
377	6.48	6.45	34.214	26.874	122.4	0.705	0.73	10.6	69.4	3.00	38.2	0.00			379	203
400 ISL	6.31	6.27	34.220	26.901	120.1	0.733	0.64	9.3	71.8	3.04	38.8	0.00			403	
437	6.08	6.04	34.225	26.935	117.2	0.777	0.55	7.9	75.0	3.08	39.7	0.00			440	202
500 ISL	5.80	5.76	34.270	27.006	111.0	0.849	0.36	5.1	82.0	3.18	41.0	0.00			504	
517	5.73	5.69	34.283	27.025	109.4	0.868	0.31	4.4	83.9	3.21	41.3	0.00			521	201

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

RV ROGER REVELLE CALCOFI CRUISE 0304 STATION 77 70

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE
34 23.7 N	122 15.6 W	18/04/03	1832 UTC	4012 m	350 21 kn	350 06 09	1	1019.4 mb	14.0 C	11.9 C	16m	2/8	CU

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	14.19	14.19	33.024	24.622	330.8	0.000	6.06	103.5	2.1	0.39	0.0	0.00	0.28	0.10	0	
2 A	14.19	14.19	33.024	24.622	330.9	0.007	6.06	103.5	2.1	0.39	0.0	0.00	0.28	0.10	2	220
2	14.19	14.19	33.026	24.623	330.7	0.007									2	221
10 ISL	14.18	14.18	33.025	24.625	330.8	0.033	6.08	103.9	2.1	0.39	0.0	0.00	0.28	0.10	10	
12 A	14.17	14.17	33.025	24.627	330.6	0.040	6.08	103.8	2.1	0.39	0.0	0.00	0.28	0.10	12	219
20 ISL	14.13	14.13	33.030	24.639	329.7	0.066	6.09	103.9	2.0	0.39	0.0	0.00	0.33	0.13	20	
23 A	14.11	14.11	33.032	24.645	329.2	0.076	6.09	103.9	2.0	0.39	0.0	0.00	0.35	0.14	23	218
30 ISL	13.85	13.85	33.051	24.714	322.9	0.099	6.11	103.7	2.1	0.40	0.0	0.01	0.67	0.31	30	
34 A	13.70	13.70	33.062	24.753	319.2	0.112	6.12	103.5	2.2	0.40	0.0	0.02	0.83	0.40	34	217
44 A	13.64	13.63	33.074	24.775	317.4	0.143	6.00	101.4	2.3	0.45	0.3	0.08	0.71	0.38	44	216
50 ISL	13.52	13.51	33.065	24.792	315.9	0.162	5.94	100.1	2.4	0.48	0.5	0.20	0.57	0.32	50	
52	13.46	13.45	33.062	24.802	315.0	0.169	5.92	99.6	2.4	0.50	0.7	0.25	0.52	0.30	52	215
61 A	13.09	13.08	33.069	24.882	307.7	0.197	5.75	96.0	3.2	0.63	2.5	0.49	0.29	0.23	61	214
70	11.19	11.18	33.057	25.231	274.4	0.223	5.10	81.8	8.8	1.10	11.0	0.04	0.17	0.20	70	213
75 ISL	10.58	10.57	33.109	25.379	260.4	0.236	4.91	77.7	11.0	1.24	13.6	0.03	0.12	0.16	75	
85	9.92	9.91	33.250	25.601	239.4	0.261	4.67	72.9	14.2	1.40	16.4	0.02	0.05	0.09	85	212
99	9.66	9.65	33.432	25.786	222.0	0.294	4.22	65.6	17.4	1.55	19.1	0.01	0.02	0.06	99	211
100 ISL	9.64	9.63	33.444	25.799	220.9	0.296	4.19	65.1	17.7	1.56	19.3	0.01	0.02	0.06	100	
119	9.32	9.31	33.646	26.009	201.2	0.336	3.64	56.2	22.5	1.75	22.6	0.01	0.01	0.04	120	210
125 ISL	9.24	9.23	33.696	26.061	196.4	0.348	3.49	53.8	23.7	1.80	23.4	0.01	0.01	0.04	126	
140	9.07	9.05	33.797	26.168	186.6	0.377	3.18	48.9	26.4	1.89	25.0	0.01	0.00	0.04	141	209
150 ISL	8.95	8.93	33.848	26.227	181.1	0.395	3.07	47.1	27.9	1.93	25.8	0.01	0.00	0.04	151	
169	8.74	8.72	33.920	26.316	172.9	0.429	2.91	44.5	30.6	2.00	26.9	0.01	0.00	0.04	170	208
199	8.51	8.49	33.997	26.413	164.3	0.479	2.58	39.2	34.6	2.11	28.6	0.01	0.00	0.03	200	207
200 ISL	8.50	8.48	33.999	26.416	164.0	0.481	2.57	39.1	34.7	2.11	28.7	0.01			201	
229	8.18	8.16	34.038	26.495	156.9	0.527	2.32	35.0	38.6	2.22	30.3	0.01			230	206
250 ISL	7.91	7.88	34.050	26.545	152.5	0.560	2.17	32.6	41.8	2.30	31.5	0.00			251	
268	7.65	7.62	34.055	26.587	148.6	0.587	2.04	30.4	44.7	2.38	32.5	0.00			270	205
300 ISL	7.14	7.11	34.066	26.668	141.2	0.633	1.76	25.9	50.5	2.52	34.2	0.00			302	
317	6.89	6.86	34.072	26.707	137.6	0.657	1.61	23.6	53.6	2.59	35.1	0.00			319	204
377	6.42	6.39	34.101	26.793	130.0	0.737	1.16	16.8	62.7	2.80	37.7	0.00			379	203
400 ISL	6.22	6.18	34.114	26.829	126.7	0.767	1.02	14.7	66.6	2.87	38.6	0.00			403	
436	5.93	5.89	34.138	26.885	121.7	0.812	0.82	11.7	72.5	2.97	39.8	0.00			439	202
500 ISL	5.66	5.62	34.197	26.966	114.7	0.887	0.54	7.7	80.4	3.09	40.9	0.00			503	
515	5.60	5.56	34.211	26.984	113.0	0.904	0.48	6.8	82.3	3.12	41.2	0.00			519	201

A) PRIMARY PRODUCTIVITY SAMPLES WERE TAKEN FROM THESE LEVELS.

RV ROGER REVELLE CALCOFI CRUISE 0304 STATION 77 80

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT TYPE
34 3.3 N	122 56.5 W	18/04/03	1020 UTC	4237 m	350 19 kn			1018.9 mb	12.9 C	10.4 C		

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	14.77	14.77	32.645	24.207	370.3	0.000	5.92	102.1	1.4	0.42	0.1	0.00	0.12	0.03	0	
2	14.77	14.77	32.645	24.207	370.4	0.007	5.92	102.1	1.4	0.42	0.1	0.00	0.12	0.03	2	220
10 ISL	14.77	14.77	32.644	24.207	370.6	0.037	5.92	102.1	1.4	0.42	0.1	0.00	0.11	0.03	10	
14	14.77	14.77	32.643	24.206	370.8	0.052	5.92	102.1	1.4	0.42	0.1	0.00	0.11	0.03	14	219
20 ISL	14.74	14.74	32.638	24.209	370.7	0.074	5.93	102.2	1.4	0.42	0.1	0.00	0.11	0.03	20	
30	14.68	14.68	32.629	24.215	370.4	0.111	5.94	102.2	1.4	0.42	0.0	0.00	0.14	0.04	30	218
45	14.10	14.09	32.638	24.344	358.5	0.166	6.05	102.9	1.8	0.42	0.0	0.00	0.23	0.08	45	217
50 ISL	13.87	13.86	32.687	24.429	350.5	0.184	6.07	102.8	1.9	0.43	0.0	0.00	0.28	0.13	50	
55	13.62	13.61	32.735	24.517	342.2	0.201	6.09	102.6	2.0	0.43	0.0	0.01	0.35	0.18	55	216
65	13.09	13.08	32.747	24.633	331.5	0.235	5.96	99.3	2.4	0.52	1.1	0.21	0.54	0.30	65	215
74	12.65	12.64	32.820	24.775	318.1	0.264	5.84	96.5	3.2	0.60	2.6	0.16	0.37	0.25	74	214
75 ISL	12.50	12.49	32.812	24.798	315.9	0.267	5.82	95.9	3.4	0.63	3.0	0.15	0.36	0.25	75	
85	10.77	10.76	32.730	25.051	291.8	0.297	5.67	89.9	6.4	0.95	8.0	0.04	0.26	0.18	85	213
94	9.42	9.41	32.771	25.309	267.2	0.323	5.56	85.6	10.4	1.18	12.0	0.01	0.08	0.06	94	212
100 ISL	9.42	9.41	32.891	25.402	258.4	0.338	5.45	84.0	11.4	1.20	13.0	0.01	0.06	0.06	100	
110	9.43	9.42	33.033	25.512	248.2	0.364	5.24	80.9	12.2	1.23	13.6	0.01	0.04	0.05	110	211
125	9.09	9.08	33.247	25.734	227.4	0.399	4.93	75.6	14.9	1.33	15.7	0.01	0.02	0.02	126	210
145	9.03	9.01	33.619	26.035	199.3	0.442	3.68	56.5	23.8	1.79	23.1	0.01	0.01	0.04	146	209
150 ISL	8.99	8.97	33.674	26.084	194.6	0.452	3.50	53.7	25.3	1.85	24.1	0.01	0.01	0.04	151	
169	8.81	8.79	33.817	26.225	181.6	0.488	3.05	46.6	29.3	1.99	26.2	0.00	0.00	0.03	170	208
199	8.61	8.59	33.960	26.368	168.6	0.540	2.55	38.8	33.4	2.12	28.4	0.00	0.00	0.03	200	207
200 ISL	8.60	8.58	33.963	26.372	168.2	0.542	2.54	38.7	33.6	2.12	28.5	0.00			201	
229	8.15	8.13	34.032	26.495	156.9	0.589	2.34	35.3	38.6	2.23	30.0	0.00			230	206
250 ISL	7.94	7.91	34.057	26.546	152.4	0.621	2.15	32.3	41.5	2.31	31.0	0.00			251	
269	7.78	7.75	34.068	26.578	149.5	0.650	1.98	29.6	43.9	2.38	31.8	0.00			271	205
300 ISL	7.42	7.39	34.077	26.637	144.3	0.696	1.80	26.7	48.0	2.48	33.1	0.00			302	
319	7.20	7.17	34.083	26.673	141.1	0.723	1.68	24.8	50.7	2.55	33.9	0.00			321	204
378	6.69	6.66	34.149	26.795	130.1	0.803	1.02	14.9	61.9	2.84	36.7	0.00			380	203
400 ISL	6.46	6.42	34.152	26.828	127.1	0.831	0.92	13.4	65.4	2.90	37.6	0.00			403	
438	6.09	6.05	34.154	26.878	122.6	0.878	0.81	11.7	70.9	2.97	38.9	0.00			441	202
500 ISL	5.78	5.74	34.211	26.962	115.1	0.952	0.52	7.4	79.2	3.11	40.4	0.00			503	
515	5.71	5.67	34.225	26.982	113.4	0.969	0.45	6.4	81.2	3.14	40.8	0.00			519	201

RV ROGER REVELLE CALCOFI CRUISE 0304 STATION 77 90

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT TYPE
33 43.3 N	123 38.0 W	18/04/03	0435 UTC	4259 m	350 20 kn			1019.2 mb	14.0 C	10.9 C		

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	15.29	15.29	32.742	24.170	373.9	0.000	5.84	101.9	1.4	0.40	0.1	0.00	0.09	0.02	0	
2	15.29	15.29	32.742	24.170	373.9	0.007	5.84	101.9	1.4	0.40	0.1	0.00	0.09	0.02	2	220
10 ISL	15.30	15.30	32.742	24.168	374.4	0.037	5.85	102.0	1.3	0.40	0.1	0.00	0.08	0.02	10	
15	15.30	15.30	32.742	24.168	374.5	0.056	5.85	102.0	1.3	0.40	0.1	0.00	0.08	0.02	15	219
20 ISL	15.28	15.28	32.741	24.172	374.3	0.075	5.85	102.0	1.3	0.40	0.1	0.00	0.08	0.02	20	
30	15.24	15.24	32.740	24.180	373.8	0.112	5.84	101.7	1.4	0.40	0.0	0.00	0.09	0.02	30	218
45	14.91	14.90	32.709	24.228	369.6	0.168	5.90	102.1	1.3	0.41	0.1	0.00	0.11	0.03	45	217
50 ISL	14.66	14.65	32.660	24.244	368.3	0.186	5.96	102.6	1.4	0.41	0.1	0.00	0.23	0.09	50	
55	14.42	14.41	32.633	24.273	365.5	0.205	6.00	102.7	1.5	0.41	0.1	0.00	0.34 A	0.15 A	55	216
64	14.25	14.24	32.744	24.395	354.2	0.237	5.98	102.1	1.7	0.41	0.1	0.00	0.30	0.20	64	215
74	13.16	13.15	32.870	24.714	324.0	0.271	5.88	98.2	2.7	0.52	1.2	0.05	0.37	0.27	74	214
75 ISL	13.09	13.08	32.873	24.730	322.4	0.274	5.88	98.1	2.7	0.53	1.3	0.05	0.37	0.28	75	
84	12.51	12.50	32.868	24.840	312.2	0.303	5.87	96.7	3.1	0.58	2.1	0.08	0.39	0.34	84	213
94	11.55	11.54	32.851	25.006	296.4	0.333	5.76	93.0	4.4	0.72	4.7	0.08	0.31	0.32	94	212
100 ISL	11.18	11.17	32.849	25.072	290.3	0.351	5.68	91.0	5.2	0.80	6.0	0.06	0.26	0.27	100	
109	10.78	10.77	32.872	25.160	282.0	0.377	5.57	88.4	6.3	0.90	7.6	0.02	0.19	0.19	109	211
124	10.31	10.30	33.015	25.353	263.9	0.418	5.45	85.7	7.6	0.94	9.0	0.02	0.10	0.11	125	210
125 ISL	10.27	10.26	33.025	25.367	262.5	0.420	5.44	85.5	7.8	0.95	9.2	0.02	0.10	0.11	126	
145	9.48	9.46	33.257	25.680	233.0	0.470	5.07	78.4	12.6	1.21	13.9	0.01	0.03	0.04	146	209
150 ISL	9.33	9.31	33.326	25.758	225.7	0.481	4.87	75.1	14.5	1.30	15.5	0.01	0.02	0.04	151	
169	8.88	8.86	33.570	26.020	201.0	0.522	4.19	64.1	21.0	1.61	20.5	0.00	0.00	0.02	170	208
199	8.63	8.61	33.771	26.217	182.9	0.579	4.22	64.2	23.3	1.58	20.9	0.00	0.00	0.02	200	207
200 ISL	8.63	8.61	33.779	26.223	182.3	0.581	4.21	64.1	23.5	1.58	21.0	0.00			201	
227	8.48	8.46	33.957	26.386	167.3	0.628	3.68	55.9	28.9	1.75	23.8	0.00			228	206
250 ISL	8.19	8.16	34.016	26.477	159.0	0.666	3.01	45.4	35.1	2.01	27.4	0.00			251	
267	7.93	7.90	34.030	26.527	154.5	0.693	2.53	38.0	39.7	2.20	29.9	0.00			268	205
300 ISL	7.39	7.36	34.043	26.615	146.4	0.742	2.15	31.9	46.3	2.38	32.4	0.00			302	
318	7.12	7.09	34.045	26.654	142.8	0.768	2.03	29.9	49.4	2.45	33.2	0.00			320	204
376	6.68	6.65	34.094	26.753	134.0	0.849	1.38	20.1	58.2	2.72	35.9	0.00			378	203
400 ISL	6.56	6.52	34.121	26.791	130.7	0.880	1.15	16.7	61.7	2.82	36.8	0.00			402	
436	6.38	6.34	34.160	26.845	125.9	0.926	0.86	12.5	66.9	2.94	38.1	0.00			439	202
500 ISL	5.91	5.87	34.194	26.933	118.1	1.005	0.59	8.5	76.2	3.07	40.0	0.00			503	
514	5.81	5.77	34.202	26.952	116.4	1.021	0.53	7.6	78.2	3.10	40.4	0.00			517	201

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

RV ROGER REVELLE CALCOFI CRUISE 0304 STATION 77 100

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE
33 23.3 N	124 19.4 W	17/04/03	2244 UTC	4549 m	350 19 kn	350 07 06	1	1018.8 mb	15.2 C	11.2 C	35m	4/8	CU

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	15.51	15.51	32.847	24.202	370.8	0.000	5.84	102.4	1.3	0.39	0.0	0.00	0.08	0.02	0	
2	15.51	15.51	32.847	24.202	370.8	0.007	5.84	102.4	1.3	0.39	0.0	0.00	0.08	0.02	2	220
10 ISL	15.52	15.52	32.846	24.199	371.3	0.037	5.84	102.4	1.3	0.39	0.1	0.00	0.08	0.02	10	
15	15.52	15.52	32.846	24.200	371.5	0.056	5.83	102.2	1.3	0.39	0.1	0.00	0.08	0.02	15	219
20 ISL	15.51	15.51	32.846	24.202	371.4	0.074	5.82	102.0	1.3	0.39	0.1	0.00	0.08	0.02	20	
30	15.49	15.49	32.852	24.211	370.8	0.111	5.80	101.6	1.3	0.39	0.1	0.00	0.09	0.02	30	218
45	15.48	15.47	32.884	24.239	368.7	0.167	5.82	102.0	1.2	0.38	0.1	0.00	0.14	0.04	45	217
50 ISL	15.45	15.44	32.885	24.246	368.1	0.185	5.82	101.9	1.2	0.38	0.1	0.00	0.15	0.05	50	
59	15.40	15.39	32.881	24.254	367.6	0.218	5.82	101.8	1.2	0.38	0.0	0.00	0.17	0.06	59	216
74	15.33	15.32	32.877	24.267	366.8	0.273	5.85	102.2	1.2	0.38	0.1	0.00	0.20	0.06	74	215
75 ISL	15.31	15.30	32.881	24.275	366.1	0.277	5.85	102.1	1.2	0.38	0.1	0.00	0.21	0.06	75	
84	14.97	14.96	32.911	24.372	357.1	0.310	5.85	101.5	1.5	0.38	0.1	0.00	0.30	0.15	84	214
95	13.92	13.91	32.910	24.592	336.2	0.348	5.92	100.5	2.2	0.43	0.2	0.01	0.45	0.40	95	213
100 ISL	13.34	13.33	32.893	24.697	326.3	0.364	5.91	99.1	2.6	0.48	0.8	0.04	0.43	0.42	100	
104	12.86	12.85	32.879	24.781	318.3	0.377	5.89	97.8	2.9	0.53	1.4	0.06	0.41	0.44	104	212
114	11.81	11.80	32.856	24.963	301.1	0.408	5.82	94.5	3.9	0.65	3.4	0.10	0.27	0.34	114	211
124	11.57	11.55	32.948	25.079	290.2	0.438	5.71	92.3	4.1	0.66	4.0	0.09	0.18	0.32	125	210
125 ISL	11.51	11.49	32.950	25.091	289.1	0.441	5.70	92.0	4.2	0.67	4.2	0.09	0.17	0.31	126	
139	10.50	10.48	32.962	25.279	271.2	0.480	5.57	87.9	6.7	0.87	7.8	0.04	0.11	0.13	140	209
150 ISL	9.90	9.88	33.022	25.427	257.2	0.509	5.36	83.6	9.5	1.06	11.0	0.03	0.07	0.06	151	
164	9.37	9.35	33.157	25.620	239.1	0.544	4.98	76.8	13.5	1.30	14.9	0.02	0.03	0.03	165	208
193	9.18	9.16	33.634	26.024	201.3	0.608	3.92	60.4	20.9	1.64	20.9	0.02	0.00	0.02	194	207
200 ISL	9.12	9.10	33.712	26.094	194.7	0.621	3.72	57.2	22.6	1.70	22.0	0.02			201	
228	8.82	8.80	33.924	26.308	174.9	0.673	3.08	47.1	29.1	1.91	25.5	0.02			229	206
250 ISL	8.50	8.47	33.997	26.415	165.1	0.711	2.77	42.1	33.8	2.05	27.6	0.02			251	
268	8.23	8.20	34.021	26.475	159.6	0.740	2.59	39.1	37.2	2.14	28.9	0.02			269	205
300 ISL	7.87	7.84	34.049	26.551	152.8	0.790	2.29	34.3	41.8	2.27	30.7	0.02			302	
318	7.67	7.64	34.053	26.583	149.9	0.817	2.14	31.9	44.2	2.34	31.5	0.02			320	204
377	6.89	6.85	34.069	26.705	138.7	0.902	1.57	23.0	54.7	2.62	35.0	0.02			379	203
400 ISL	6.63	6.59	34.093	26.759	133.7	0.933	1.37	20.0	59.5	2.73	36.3	0.02			402	
436	6.26	6.22	34.135	26.841	126.2	0.980	1.09	15.7	66.9	2.89	38.2	0.02			439	202
500 ISL	5.80	5.76	34.171	26.928	118.4	1.058	0.70	10.0	76.9	3.04	40.1	0.02			503	
515	5.69	5.65	34.180	26.949	116.5	1.076	0.61	8.7	79.2	3.07	40.5	0.02			518	201

RV ROGER REVELLE CALCOFI CRUISE 0304 STATION 80 51

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE
34 27.0 N	120 31.4 W	16/04/03	0804 UTC	82 m	050 04 kn			1019.4 mb	12.8 C	10.7 C			

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	12.28	12.28	33.648	25.486	248.5	0.000	7.87	129.7	0.6	0.35	0.3	0.05	33.34	-3.89	0	
2	12.28	12.28	33.648	25.487	248.5	0.005	7.87	129.7	0.6	0.35	0.3	0.05	33.34	-3.89	2	208
5	11.81	11.81	33.672	25.594	238.4	0.012	6.41	104.6	5.9	0.87	6.7	0.17	13.59	3.25	5	207
10 ISL	11.42	11.42	33.691	25.681	230.2	0.024	5.99	97.0	9.9	1.05	9.3	0.20	10.40	3.26	10	
15	11.27	11.27	33.697	25.713	227.3	0.035	5.57	89.9	11.2	1.23	11.9	0.24	7.21	3.27	15	206
20 ISL	11.14	11.14	33.702	25.741	224.8	0.047	5.34	85.9	12.7	1.32	13.1	0.26	5.49	3.16	20	
25	11.02	11.02	33.713	25.771	222.1	0.058	5.07	81.4	14.4	1.41	14.2	0.27	4.38	3.06	25	205
30 ISL	10.80	10.80	33.750	25.839	215.7	0.069	4.52	72.2	17.6	1.57	16.5	0.28	3.56	2.59	30	
35	10.59	10.59	33.789	25.906	209.4	0.079	3.97	63.2	20.7	1.72	18.8	0.29	2.92	2.09	35	204
45	10.38	10.37	33.819	25.966	203.9	0.100	3.55	56.2	23.1	1.82	20.7	0.29	1.58	1.68	45	203
50 ISL	10.32	10.31	33.823	25.980	202.7	0.110	3.43	54.3	23.7	1.84	21.2	0.28	1.25	1.60	50	
55	10.26	10.25	33.830	25.996	201.3	0.120	3.31	52.3	24.3	1.87	21.8	0.28	1.02	1.50	55	202
67	9.92	9.91	33.902	26.110	190.7	0.144	2.68	42.0	27.6	2.04	24.3	0.20	0.43	0.80	67	201

RV ROGER REVELLE CALCOFI CRUISE 0304 STATION 80 55

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE
34 19.0 N	120 48.1 W	16/04/03	1054 UTC	828 m	160 06 kn			1017.7 mb	12.2 C	10.8 C			

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	13.32	13.32	33.315	25.025	292.4	0.000	7.18	120.7	0.1	0.31	1.4	0.06	2.55	0.48	0	
2	13.32	13.32	33.315	25.025	292.5	0.006	7.18	120.7	0.1	0.31	1.4	0.06	2.55	0.48	2	220
10	12.73	12.73	33.295	25.126	283.0	0.029	7.42	123.2	0.1	0.30	1.3	0.07	4.31	1.00	10	219
20	12.16	12.16	33.331	25.264	270.2	0.057	7.25	119.0	0.3	0.40	2.4	0.09	8.28	2.73	20	218
30	11.37	11.37	33.396	25.461	251.6	0.083	5.35	86.3	7.3	1.18	10.3	0.24	5.38	3.12	30	217
40	11.12	11.12	33.519	25.602	238.4	0.107	5.06	81.3	12.2	1.42	13.3	0.27	3.60	2.30	40	216
50	10.45	10.44	33.539	25.736	225.9	0.130	4.21	66.7	18.5	1.69	18.7	0.34	1.32	1.63	50	215
60	10.12	10.11	33.617	25.853	214.9	0.152	3.83	60.2	21.1	1.78	20.8	0.37	1.02	1.72	60	214
70	10.10	10.09	33.704	25.925	208.4	0.174	3.89	61.2	23.1	1.83	21.5	0.49	0.68	1.26	70	213
75 ISL	10.03	10.02	33.727	25.955	205.6	0.184	3.77	59.2	23.8	1.86	22.0	0.47	0.58	1.10	75	
85	9.86	9.85	33.769	26.016	200.0	0.204	3.40	53.2	25.2	1.93	23.3	0.43	0.48	0.95	85	212
100	9.64	9.63	33.878	26.138	188.7	0.233	2.76	43.0	28.4	2.06	25.5	0.16	0.43	1.20	101	211
120	9.32	9.31	33.928	26.230	180.3	0.270	2.51	38.9	29.9	2.12	26.4	0.11	0.21 A	0.64 A	121	210
125 ISL	9.23	9.22	33.962	26.271	176.5	0.279	2.39	36.9	31.1	2.15	26.9	0.09	0.18	0.58	126	
140	9.01	8.99	34.069	26.390	165.5	0.305	2.01	30.9	35.0	2.27	28.5	0.04	0.14	0.48	141	209
150 ISL	8.97	8.95	34.116	26.434	161.6	0.321	1.80	27.7	36.9	2.35	29.2	0.04	0.11	0.43	151	
170	8.93	8.91	34.170	26.483	157.3	0.353	1.51	23.2	39.5	2.46	30.1	0.03	0.08	0.37	171	208
199	8.65	8.63	34.173	26.529	153.4	0.398	1.52	23.2	41.1	2.48	30.8	0.02	0.06	0.37	200	207
200 ISL	8.64	8.62	34.174	26.531	153.2	0.400	1.51	23.1	41.2	2.48	30.8	0.02			201	
229	8.29	8.27	34.207	26.611	146.0	0.443	1.30	19.7	45.4	2.59	32.1	0.03			230	206
250 ISL	8.10	8.07	34.224	26.654	142.3	0.473	1.16	17.5	48.0	2.66	32.8	0.03			252	
269	7.91	7.88	34.226	26.684	139.7	0.500	1.07	16.1	50.3	2.72	33.5	0.03			271	205
300 ISL	7.31	7.28	34.169	26.725	135.9	0.543	1.15	17.0	54.9	2.76	35.0	0.02			302	
319	6.97	6.94	34.139	26.749	133.7	0.568	1.19	17.5	57.8	2.78	35.9	0.02			321	204
377	6.79	6.75	34.234	26.849	125.1	0.643	0.69	10.1	65.5	2.98	37.3	0.02			380	203
400 ISL	6.64	6.60	34.246	26.879	122.5	0.672	0.61	8.9	67.9	3.02	37.8	0.02			403	
437	6.34	6.30	34.248	26.920	118.9	0.717	0.54	7.8	71.8	3.07	38.7	0.01			440	202
500 ISL	5.73	5.69	34.227	26.981	113.3	0.790	0.45	6.4	80.3	3.14	40.6	0.00			504	
515	5.59	5.55	34.223	26.995	112.0	0.807	0.43	6.1	82.3	3.16	41.1	0.00			519	201

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

RV ROGER REVELLE CALCOFI CRUISE 0304 STATION 80 60

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE
34 9.3 N	121 7.8 W	16/04/03	1756 UTC	2086 m	130 07 kn	090 03 07	1	1017.0 mb	13.3 C	12.3 C	06m	2/8	CU

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	13.27	13.27	33.170	24.922	302.2	0.000	7.58	127.2	0.1	0.23	0.1	0.01	6.65	0.96	0	
1 B	13.27	13.27	33.170	24.922	302.2	0.003	7.58	127.2	0.1	0.23	0.1	0.01	6.65	0.96	1	223
2	13.24	13.24	33.170	24.928	301.6	0.006									2	224
4 B	13.11	13.11	33.170	24.954	299.2	0.012	7.65	127.9	0.1	0.28	0.0	0.01	7.27	1.05	4	222
9 B	12.80	12.80	33.170	25.016	293.5	0.027	7.73	128.4	0.1	0.25	0.0	0.01	9.84	0.86	9	221
10 ISL	12.76	12.76	33.170	25.023	292.8	0.030	7.69	127.7	0.1	0.27	0.1	0.01	10.01	1.14	10	
13 B	12.57	12.57	33.180	25.068	288.6	0.039	7.42	122.7	0.2	0.35	0.4	0.02	10.86	2.08	13	220
16 B	12.10	12.10	33.212	25.183	277.8	0.047	6.86	112.3	0.5	0.44	2.5	0.07	13.43	2.49	16	219
20 ISL	11.50	11.50	33.323	25.380	259.1	0.058	5.92	95.8	6.3	0.90	8.2	0.16	8.62	2.06	20	
23 B	11.14	11.14	33.407	25.511	246.7	0.065	5.28	84.8	11.4	1.28	12.5	0.22	3.38	1.48	23	218
30 ISL	10.93	10.93	33.420	25.559	242.3	0.082	4.79	76.6	14.0	1.40	14.7	0.26	1.67	0.72	30	
32	10.87	10.87	33.424	25.573	241.1	0.087	4.76	76.0	14.7	1.43	15.3	0.27	1.18 A	0.58 A	32	217
40	10.69	10.69	33.445	25.621	236.6	0.106	4.54	72.2	15.5	1.48	16.3	0.25	1.00 A	0.56 A	40	216
49	10.98	10.97	33.643	25.724	227.1	0.127	4.99	80.0	14.9	1.52	14.2	0.31	1.72	1.10	49	215
50 ISL	10.96	10.95	33.647	25.731	226.5	0.130	4.97	79.6	15.2	1.53	14.4	0.32	1.71	1.10	50	
60	10.54	10.53	33.630	25.792	220.9	0.152	4.44	70.5	19.0	1.66	17.9	0.40	1.20 A	1.13 A	60	214
70	10.01	10.00	33.665	25.910	209.8	0.173	3.83	60.1	22.7	1.82	21.9	0.52	0.63	0.87	70	213
75 ISL	9.85	9.84	33.701	25.965	204.7	0.184	3.59	56.2	24.0	1.88	23.1	0.46	0.61	0.86	75	
83	9.66	9.65	33.766	26.047	197.0	0.200	3.26	50.8	25.7	1.96	24.5	0.31	0.59	0.85	83	212
99	9.25	9.24	33.865	26.192	183.5	0.230	2.70	41.7	28.4	2.04	26.3	0.07	0.18	0.62	100	211
100 ISL	9.24	9.23	33.869	26.196	183.1	0.232	2.69	41.6	28.5	2.04	26.4	0.07	0.18	0.62	101	
119	9.13	9.12	33.928	26.260	177.4	0.266	2.52	38.8	30.2	2.10	27.1	0.05	0.15	0.55	120	210
125 ISL	9.06	9.05	33.960	26.297	174.1	0.277	2.43	37.4	31.3	2.13	27.5	0.05	0.13	0.47	126	
139	8.86	8.85	34.033	26.386	165.8	0.301	2.21	33.9	34.3	2.21	28.6	0.04	0.09	0.30	140	209
150 ISL	8.69	8.67	34.064	26.437	161.2	0.319	2.09	31.9	36.4	2.26	29.4	0.04	0.07	0.33	151	
169	8.36	8.34	34.087	26.506	154.9	0.349	1.97	29.9	39.6	2.34	30.7	0.04	0.06	0.43	170	208
198	7.83	7.81	34.075	26.576	148.6	0.393	2.00	30.0	42.7	2.39	31.9	0.04	0.03	0.26	199	207
200 ISL	7.81	7.79	34.074	26.578	148.4	0.396	2.00	29.9	42.9	2.39	31.9	0.04			201	
228	7.58	7.56	34.072	26.610	145.8	0.437	1.95	29.0	45.6	2.44	32.7	0.04			229	206
250 ISL	7.36	7.34	34.096	26.660	141.3	0.468	1.70	25.2	49.4	2.55	33.9	0.03			252	
267	7.18	7.15	34.117	26.702	137.5	0.492	1.48	21.8	52.5	2.65	34.9	0.03			269	205
300 ISL	6.84	6.81	34.120	26.751	133.1	0.537	1.29	18.9	57.2	2.75	36.4	0.03			302	
317	6.68	6.65	34.120	26.773	131.2	0.559	1.21	17.6	59.5	2.79	37.0	0.03			319	204
377	6.36	6.33	34.189	26.870	122.7	0.635	0.74	10.7	67.8	2.99	38.9	0.03			380	203
400 ISL	6.18	6.14	34.195	26.898	120.2	0.663	0.74	10.7	70.8	3.03	39.6	0.03			403	
437	5.91	5.87	34.202	26.938	116.7	0.707	0.73	10.5	75.3	3.09	40.5	0.03			440	202
500 ISL	5.68	5.64	34.261	27.014	110.2	0.779	0.41	5.8	81.8	3.19	41.6	0.04			504	
514	5.63	5.59	34.274	27.031	108.7	0.794	0.34	4.8	83.3	3.21	41.8	0.04			518	201

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

B) PRIMARY PRODUCTIVITY SAMPLES WERE TAKEN FROM THESE LEVELS.

RV ROGER REVELLE CALCOFI CRUISE 0304 STATION 80 70

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE
33 49.0 N	121 50.6 W	16/04/03	2251	UTC	3619 m	130 06 kn	300 03 08	1	1014.6 mb	16.2 C	13.6 C	25m	4/8	CU

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	14.86	14.86	32.918	24.398	352.1	0.000	5.99	103.7	1.6	0.40	0.0	0.00	0.13	0.04	0	
2	14.86	14.86	32.918	24.398	352.1	0.007	5.99	103.7	1.6	0.40	0.0	0.00	0.13	0.04	2	222
5	14.70	14.70	32.921	24.435	348.7	0.018	6.02	103.9	1.6	0.40	0.0	0.00			5	221
5	14.73	14.73	32.920	24.428	349.4	0.018	6.02	103.9	1.6	0.41	0.0	0.00	0.14	0.04	5	220
10	14.69	14.69	32.922	24.438	348.6	0.035	5.98	103.1	1.6	0.40	0.0	0.00	0.14	0.03	10	219
20	14.39	14.39	32.939	24.515	341.6	0.070	6.00	102.9	1.5	0.40	0.0	0.00	0.15	0.03	20	218
30	14.21	14.21	32.959	24.568	336.7	0.103	6.08	103.9					0.22	0.07	30	217
39	13.90	13.89	32.981	24.650	329.2	0.133	6.07	103.1	1.7	0.42	0.1	0.03	0.29	0.12	39	216
50 ISL	13.16	13.15	32.947	24.773	317.7	0.169	5.87	98.1	2.6	0.57	1.8	0.22	0.61	0.31	50	
51	13.06	13.05	32.941	24.788	316.3	0.172	5.85	97.6	2.7	0.59	2.0	0.23	0.64	0.33	51	215
60	11.80	11.79	32.854	24.962	299.9	0.200	5.71	92.7	4.8	0.81	5.4	0.14	0.66	0.41	60	214
70	11.25	11.24	32.889	25.089	287.9	0.229	5.57	89.4	6.0	0.91	7.1	0.18	0.39	0.37	70	213
75 ISL	11.29	11.28	33.012	25.178	279.6	0.243	5.31	85.3	7.5	1.01	8.9	0.17	0.33	0.37	75	
85	11.46	11.45	33.274	25.351	263.4	0.271	4.79	77.4	10.7	1.22	12.6	0.13	0.28	0.36	85	212
100	10.95	10.94	33.348	25.501	249.5	0.309	4.69	75.0	13.5	1.37	15.2	0.15			100	211
120	9.57	9.56	33.416	25.789	222.2	0.356	4.25	65.9	17.8	1.58	19.1	0.10	0.03	0.07	121	210
125 ISL	9.61	9.60	33.503	25.851	216.5	0.367	3.97	61.7	19.1	1.65	20.1	0.10	0.03	0.08	126	
138	9.71	9.69	33.708	25.995	203.1	0.394	3.25	50.7	22.6	1.82	22.7	0.10	0.02	0.09	139	209
150 ISL	9.47	9.45	33.804	26.109	192.5	0.418	3.00	46.6	25.2	1.91	24.4	0.10	0.01	0.08	151	
168	8.99	8.97	33.886	26.251	179.3	0.452	2.84	43.6	28.7	2.01	26.3	0.10	0.01	0.06	169	208
198	8.70	8.68	34.024	26.405	165.2	0.503	2.33	35.6	34.2	2.19	29.0	0.10	0.01	0.06	199	207
200 ISL	8.67	8.65	34.028	26.412	164.4	0.507	2.31	35.3	34.5	2.20	29.1	0.10			201	
228	8.22	8.20	34.057	26.504	156.1	0.551	2.14	32.3	39.1	2.30	30.8	0.09			229	206
250 ISL	7.96	7.93	34.074	26.557	151.4	0.585	2.00	30.0	42.2	2.38	31.9	0.09			251	
268	7.79	7.76	34.085	26.590	148.4	0.612	1.88	28.1	44.5	2.45	32.7	0.10			270	205
300 ISL	7.50	7.47	34.107	26.650	143.2	0.659	1.62	24.1	48.5	2.56	33.9	0.10			302	
318	7.36	7.33	34.121	26.681	140.4	0.684	1.47	21.8	50.8	2.63	34.6	0.10			320	204
377	6.93	6.89	34.181	26.788	130.9	0.765	0.97	14.2	60.0	2.86	37.1	0.10			379	203
400 ISL	6.76	6.72	34.198	26.825	127.7	0.794	0.84	12.3	63.2	2.93	37.8	0.10			403	
436	6.49	6.45	34.219	26.878	123.0	0.839	0.68	9.9	68.0	3.02	38.8	0.10			439	202
500 ISL	6.00	5.96	34.235	26.954	116.2	0.916	0.50	7.2	76.6	3.13	40.6	0.09			503	
515	5.89	5.85	34.239	26.971	114.7	0.933	0.46	6.6	78.6	3.15	41.0	0.09			519	201

RV ROGER REVELLE CALCOFI CRUISE 0304 STATION 80 80

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE
33 29.0 N	122 32.0 W	17/04/03	0424	UTC	3745 m	340 06 kn			1013.3 mb	13.8 C	11.3 C			

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	14.75	14.75	33.005	24.489	343.5	0.000	5.99	103.5	2.0	0.39	0.1	0.00	0.20	0.06	0	
2	14.75	14.75	33.005	24.489	343.5	0.007	5.99	103.5	2.0	0.39	0.1	0.00	0.20	0.06	2	220
10	14.69	14.69	33.018	24.512	341.5	0.034	6.02	103.9	2.0	0.39	0.0	0.00	0.19	0.07	10	219
20	14.42	14.42	33.036	24.583	335.0	0.068	6.06	104.0	1.9	0.39	0.0	0.00	0.21	0.08	20	218
30	14.16	14.16	33.113	24.698	324.4	0.101	6.05	103.3	2.0	0.41	0.0	0.01	0.35	0.17	30	217
40	13.77	13.76	33.076	24.750	319.7	0.133	6.14	104.0	2.3	0.41	0.0	0.03	0.56	0.35	40	216
50	13.55	13.54	33.083	24.800	315.2	0.165	5.92	99.8	2.5	0.50	0.8	0.17	0.70	0.39	50	215
60	12.86	12.85	33.021	24.890	306.8	0.196	5.81	96.5	3.7	0.65	3.1	0.31	0.41	0.30	60	214
70	12.05	12.04	33.005	25.033	293.4	0.226	5.58	91.1	5.3	0.83	6.3	0.23	0.26	0.26	70	213
75 ISL	11.50	11.49	33.010	25.138	283.4	0.241	5.43	87.7	6.9	0.96	8.5	0.15	0.20	0.22	75	
84	10.70	10.69	33.080	25.336	264.7	0.265	5.08	80.6	10.2	1.19	12.3	0.03	0.12	0.16	84	212
99	10.82	10.81	33.410	25.572	242.6	0.303	4.17	66.5	14.7	1.44	16.5	0.02	0.06	0.14	99	211
100 ISL	10.79	10.78	33.419	25.584	241.5	0.306	4.14	66.0	14.9	1.45	16.7	0.02	0.06	0.14	100	
119	10.08	10.07	33.527	25.791	222.1	0.350	3.76	59.0	18.5	1.64	19.9	0.02	0.04	0.13	120	210
125 ISL	9.89	9.88	33.581	25.865	215.2	0.363	3.61	56.5	20.1	1.71	21.0	0.02	0.04	0.14	126	
139	9.50	9.48	33.712	26.032	199.5	0.392	3.28	50.9	23.8	1.85	23.4	0.01	0.05	0.17	140	209
150 ISL	9.29	9.27	33.789	26.127	190.7	0.413	3.10	47.9	25.8	1.91	24.6	0.01	0.04	0.16	151	
169	9.06	9.04	33.899	26.250	179.4	0.449	2.79	42.9	29.0	2.00	26.1	0.01	0.02	0.13	170	208
199	8.89	8.87	34.061	26.404	165.3	0.500	2.07	31.8	35.4	2.26	29.0	0.01	0.01	0.10	200	207
200 ISL	8.87	8.85	34.062	26.408	165.0	0.502	2.07	31.7	35.5	2.26	29.1	0.01			201	
228	8.37	8.35	34.051	26.477	158.7	0.547			37.9	2.26	30.1	0.01			229	206
250 ISL	8.11	8.08	34.071	26.532	153.8	0.582	1.97	29.7	40.8	2.33	31.0	0.01			251	
268	7.91	7.88	34.089	26.576	149.9	0.609	1.93	29.0	43.5	2.41	31.7	0.01			270	205
300 ISL	7.39	7.36	34.079	26.643	143.7	0.656	1.85	27.4	48.5	2.50	33.3	0.00			302	
317	7.14	7.11	34.076	26.676	140.7	0.680	1.77	26.1	51.1	2.55	34.1	0.00			319	204
377	6.94	6.90	34.160	26.770	132.6	0.762	1.09	16.0	59.3	2.82	36.2	0.00			379	203
400 ISL	6.70	6.66	34.172	26.812	128.8	0.792	0.94	13.7	63.2	2.90	37.2	0.00			403	
436	6.30	6.26	34.184	26.875	123.1	0.837	0.77	11.1	69.4	3.00	38.7	0.00			439	202
500 ISL	5.89	5.85	34.229	26.963	115.2	0.914	0.47	6.7	78.6	3.12	40.3	0.00			503	
514	5.80	5.76	34.239	26.982	113.5	0.930	0.41	5.9	80.6	3.15	40.6	0.00			518	201

RV ROGER REVELLE CALCOFI CRUISE 0304 STATION 80 90

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE
33 9.0 N	123 13.3 W	17/04/03	1037	UTC	4236 m	340 08 kn			1013.0 mb	12.2 C	10.7 C			

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	14.60	14.60	33.064	24.566	336.1	0.000	6.01	103.6	1.9	0.38	0.0	0.00	0.24	0.08	0	
2	14.60	14.60	33.064	24.566	336.1	0.007	6.01	103.6	1.9	0.38	0.0	0.00	0.24	0.08	2	220
10	14.61	14.61	33.068	24.568	336.2	0.034	6.02	103.8	1.7	0.38	0.0	0.00	0.25	0.06	10	219
20	14.56	14.56	33.078	24.586	334.8	0.067	6.05	104.2	1.5	0.37	0.0	0.00	0.28	0.07	20	218
30	13.91	13.91	33.126	24.759	318.5	0.100	6.20	105.4	0.7	0.35	0.1	0.00	0.32	0.17	30	217
40	12.62	12.61	33.097	24.995	296.3	0.131	5.69	94.1	4.0	0.75	4.7	0.32	1.04	0.59	40	216
50	11.74	11.73	33.183	25.228	274.3	0.159	5.11	83.0	8.5	1.12	10.5	0.35	0.37	0.41	50	215
60	11.15	11.14	33.244	25.383	259.7	0.186	4.70	75.4	11.2	1.26	13.6	0.07	0.23	0.31	60	214
70	10.55	10.54	33.330	25.556	243.4	0.211	4.33	68.6	14.1	1.43	16.4	0.03	0.16	0.23	70	213
75 ISL	10.34	10.33	33.370	25.624	237.1	0.223	4.20	66.3	15.4	1.50	17.5	0.03	0.13	0.20	75	
84	10.03	10.02	33.440	25.731	227.1	0.244	4.01	62.9	17.5	1.59	19.2	0.03	0.09	0.16	84	212
99	9.60	9.59	33.553	25.891	212.1	0.277	3.77	58.6	20.3	1.69	21.2	0.02	0.04	0.14	99	211
100 ISL	9.58	9.57	33.562	25.901	211.2	0.279	3.75	58.3	20.5	1.70	21.4	0.02	0.04	0.14	100	
119	9.31	9.30	33.727	26.074	195.1	0.318	3.25	50.2	24.8	1.87	24.1	0.01	0.02	0.13	120	210
125 ISL	9.27	9.26	33.769	26.114	191.5	0.329	3.10	47.9	25.9	1.92	24.7	0.01	0.02	0.12	126	
140	9.19	9.17	33.860	26.198	183.7	0.357	2.76	42.6	28.3	2.01	26.0	0.01	0.02	0.11	141	209
150 ISL	9.14	9.12	33.914	26.248	179.2	0.375	2.60	40.1	29.6	2.06	26.6	0.01	0.02	0.10	151	
169	9.01	8.99	33.991	26.330	171.8	0.409	2.41	37.1	31.7	2.12	27.5	0.01	0.01	0.09	170	208
199	8.64	8.62	34.031	26.419	163.7	0.459	2.31	35.2	35.1	2.19	28.9	0.01	0.01	0.09	200	207
200 ISL	8.63	8.61	34.033	26.422	163.5	0.461	2.30	35.1	35.2	2.19	28.9	0.01			201	
229	8.45	8.43	34.085	26.491	157.4	0.507	1.99	30.2	38.9	2.31	30.2	0.01			230	206
250 ISL	8.18	8.15	34.103	26.547	152.5	0.540	1.84	27.8	41.8	2.39	31.2	0.01			251	
269	7.92	7.89	34.114	26.594	148.2	0.568	1.71	25.7	44.5	2.47	32.1	0.01			271	205
300 ISL	7.62	7.59	34.137	26.656	142.7	0.613	1.45	21.6	49.2	2.59	33.4	0.00			302	
318	7.46	7.43	34.148	26.688	139.8	0.639	1.31	19.5	52.0	2.65	34.1	0.00			320	204
378	6.78	6.74	34.161	26.793	130.4	0.720	0.99	14.5	61.2	2.83	36.6	0.00			380	203
400 ISL	6.63	6.59	34.175	26.824	127.6	0.748	0.88	12.8	64.1	2.89	37.2	0.00			403	
438	6.38	6.34	34.199	26.876	123.0	0.796	0.70	10.1	69.1	2.98	38.2	0.00			441	202
500 ISL	5.80	5.76	34.220	26.967	114.7	0.870	0.48	6.9	79.4	3.11	40.4	0.00			503	
513	5.68	5.64	34.225	26.986	113.0	0.884	0.43	6.1	81.6	3.14	40.9	0.00			517	201

RV ROGER REVELLE CALCOFI CRUISE 0304 STATION 80 100

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE
32 49.4 N	123 54.8 W	17/04/03	1741	UTC	4355 m	340 18 kn	330 03 06	1	1017.1 mb	15.1 C	13.0 C	30m	7/8	NS

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	15.51	15.51	32.838	24.195	371.4	0.000	5.86	102.7	1.3	0.39	0.1	0.00	0.08	0.02	0	
2 B	15.51	15.51	32.838	24.195	371.5	0.007	5.86	102.7	1.3	0.39	0.1	0.00	0.08	0.02	2	222
10 ISL	15.48	15.48	32.837	24.201	371.2	0.037	5.84	102.3	1.2	0.39	0.1	0.00	0.08	0.01	10	
12	15.47	15.47	32.837	24.204	371.0	0.045	5.83	102.1	1.2	0.39	0.1	0.00	0.08	0.01	12	221
20 ISL	15.44	15.44	32.833	24.207	370.9	0.074	5.84	102.2	1.2	0.39	0.1	0.00	0.09	0.02	20	
22 B	15.43	15.43	32.832	24.209	370.8	0.082	5.85	102.4	1.2	0.39	0.1	0.00	0.09	0.02	22	220
30 ISL	15.41	15.41	32.831	24.213	370.7	0.111	5.86	102.5	1.2	0.39	0.1	0.00	0.10	0.02	30	
32	15.40	15.40	32.831	24.215	370.5	0.119	5.87	102.6	1.2	0.39	0.1	0.00	0.10	0.02	32	219
43 B	14.97	14.96	32.760	24.254	367.1	0.159	5.93	102.8	1.3	0.40	0.1	0.00	0.12	0.03	43	218
50 ISL	14.96	14.95	32.767	24.262	366.5	0.185	5.92	102.6	1.3	0.40	0.1	0.00	0.15	0.05	50	
53	14.95	14.94	32.767	24.264	366.4	0.196	5.91	102.4	1.3	0.40	0.1	0.00	0.16	0.06	53	217
63 B	14.95	14.94	32.775	24.271	366.1	0.233	5.90	102.2	1.2	0.40	0.0	0.00	0.23	0.09	63	216
73	14.58	14.57	32.851	24.408	353.2	0.269	5.89	101.3	1.3	0.41	0.0	0.00	0.30	0.33	73	215
75 ISL	14.22	14.21	32.862	24.493	345.2	0.276	5.89	100.6	1.6	0.44	0.3	0.03	0.33	0.38	75	
81 B	13.06	13.05	32.893	24.752	320.5	0.296	5.87	97.9	2.7	0.55	1.6	0.11	0.39	0.46	81	214
92	12.06	12.05	32.904	24.953	301.5	0.330	5.81	94.9	3.8	0.64	3.3	0.08	0.28	0.26	92	213
100 ISL	11.51	11.50	32.912	25.061	291.3	0.353	5.74	92.6	4.5	0.71	4.6	0.05	0.26	0.27	100	
104	11.28	11.27	32.919	25.108	286.9	0.365	5.70	91.5	4.9	0.74	5.3	0.04	0.25	0.28	104	212
114 B	10.79	10.78	32.963	25.229	275.5	0.393	5.59	88.8	5.9	0.81	6.8	0.03	0.11	0.18	114	211
124	10.16	10.15	32.961	25.336	265.4	0.420	5.50	86.2	7.8	0.95	9.0	0.02	0.08	0.11	125	210
125 ISL	10.13	10.12	32.962	25.342	264.9	0.423	5.49	86.0	7.9	0.96	9.1	0.02	0.08	0.11	126	
139	9.77	9.75	33.014	25.443	255.5	0.459	5.41	84.1	9.5	1.06	11.0	0.02	0.05 A	0.08 A	140	209
150 ISL	9.36	9.34	33.109	25.583	242.2	0.487	5.28	81.4	11.6	1.16	12.9	0.02	0.03	0.06	151	
164	8.88	8.86	33.271	25.786	223.1	0.519	5.06	77.2	14.8	1.30	15.5	0.01	0.01	0.03	165	208
193	8.66	8.64	33.656	26.122	191.8	0.579	4.43	67.4	21.1	1.53	19.8	0.01	0.00	0.01	194	207
200 ISL	8.63	8.61	33.733	26.187	185.7	0.593	4.20	63.9	23.1	1.61	21.1	0.01			201	
227	8.48	8.46	33.954	26.384	167.5	0.640	3.30	50.1	31.0	1.90	25.8	0.00			228	206
250 ISL	8.13	8.10	34.026	26.494	157.4	0.678	2.78	41.9	37.0	2.10	28.7	0.00			251	
268	7.82	7.79	34.044	26.554	151.9	0.705	2.46	36.8	41.3	2.23	30.4	0.00			269	205
300 ISL	7.39	7.36	34.067	26.634	144.6	0.753	2.01	29.8	47.4	2.43	32.7	0.00			302	
317	7.19	7.16	34.071	26.665	141.8	0.777	1.82	26.9	50.3	2.52	33.7	0.00			319	204
377	6.59	6.56	34.100	26.770	132.4	0.859	1.29	18.8	60.1	2.77	36.7	0.00			379	203
400 ISL	6.40	6.36	34.112	26.805	129.2	0.890	1.14	16.5	63.5	2.84	37.6	0.00			402	
436	6.14	6.10	34.133	26.855	124.8	0.935	0.93	13.4	68.7	2.93	38.9	0.00			439	202
500 ISL	5.73	5.69	34.179	26.943	116.9	1.013	0.61	8.7	78.4	3.08	40.7	0.00			503	
515	5.63	5.59	34.190	26.964	115.0	1.030	0.54	7.7	80.7	3.11	41.1	0.00			518	201

A) FIRST FLUOROMETER READING NOT RECORDED, CHLOROPHYLL AND PHAEOPIGMENT CALCULATED WITH ASSUMED ACID RATIO INTERPOLATED FROM ADJACENT LEVELS.

B) PRIMARY PRODUCTIVITY SAMPLES WERE TAKEN FROM THESE LEVELS.

RV ROGER REVELLE CALCOFI CRUISE 0304 STATION 82 47

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE
34 16.5 N	119 59.3 W	16/04/03	0216	UTC	574 m	270	15 kn	270 03 05	1	1018.4 mb	13.8 C	10.9 C		1/8	CU

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	12.37	12.37	33.489	25.346	261.9	0.000	7.49	123.6	0.2	0.40	1.4	0.09	12.60	3.24	0	
2 A	12.37	12.37	33.489	25.346	261.9	0.005	7.49	123.6	0.2	0.40	1.4	0.09	12.60	3.24	2	224
10	12.33	12.33	33.490	25.355	261.3	0.026	7.43	122.5	0.3	0.42	1.7	0.11	13.01	3.21	10	223
19	11.88	11.88	33.520	25.463	251.2	0.049	6.55	107.0	2.6	0.75	5.5	0.14	11.85	3.25	19	222
20 ISL	11.82	11.82	33.527	25.480	249.6	0.052	6.44	105.0	3.4	0.81	6.1	0.15	11.35	3.18	20	
30	11.33	11.33	33.603	25.629	235.6	0.076	5.53	89.3	11.5	1.32	12.0	0.22	5.95	2.20	30	221
40	11.14	11.14	33.651	25.701	229.0	0.099	5.08	81.7	15.9	1.47	14.6	0.26	3.15	1.37	40	220
50	10.79	10.78	33.732	25.827	217.3	0.122	4.29	68.5	20.5	1.68	18.7	0.29	1.19	0.85	50	219
60	10.03	10.02	33.843	26.045	196.7	0.142	3.11	48.9	25.5	1.96	23.4	0.22	0.64	0.59	60	218
69	9.65	9.64	33.912	26.163	185.7	0.159	2.65	41.3	28.1	2.05	25.1	0.14	0.38	0.51	69	217
75 ISL	9.62	9.61	33.938	26.188	183.4	0.171	2.52	39.3	28.7	2.08	25.6	0.10	0.28	0.47	75	
85	9.56	9.55	33.948	26.206	181.9	0.189	2.41	37.5	29.3	2.11	26.0	0.05	0.19	0.42	85	216
99	9.40	9.39	34.013	26.283	174.9	0.214	2.10	32.6	32.1	2.21	27.1	0.06	0.08	0.35	100	215
100 ISL	9.39	9.38	34.017	26.288	174.5	0.216	2.08	32.3	32.3	2.22	27.2	0.06	0.08	0.35	101	
118	9.25	9.24	34.076	26.357	168.2	0.246	1.85	28.6	34.8	2.31	28.3	0.06	0.06	0.40	119	214
125 ISL	9.24	9.23	34.089	26.369	167.3	0.258	1.81	28.0	35.0	2.33	28.4	0.05	0.05	0.37	126	
138	9.23	9.21	34.109	26.386	165.9	0.280	1.76	27.2	35.4	2.35	28.6	0.03	0.04	0.30	139	213
150 ISL	9.11	9.09	34.133	26.425	162.5	0.299	1.63	25.1	37.2	2.40	29.3	0.03	0.04	0.28	151	
169	8.87	8.85	34.163	26.486	156.9	0.330	1.41	21.6	40.6	2.50	30.5	0.02	0.03	0.25	170	212
198	8.54	8.52	34.168	26.542	152.1	0.375	1.23	18.7	44.5	2.60	31.5	0.03	0.04	0.37	199	211
200 ISL	8.52	8.50	34.168	26.545	151.8	0.378	1.22	18.6	44.7	2.61	31.6	0.03			201	
228	8.32	8.30	34.170	26.578	149.2	0.420	1.09	16.5	47.7	2.68	32.5	0.04			229	210
250 ISL	8.15	8.12	34.172	26.605	146.9	0.452	1.07	16.2	50.1	2.71	32.8	0.03			252	
267	8.01	7.98	34.175	26.629	144.9	0.477	1.05	15.8	52.1	2.73	33.0	0.02			269	209
300 ISL	7.70	7.67	34.189	26.686	139.9	0.524	0.87	13.0	56.7	2.84	33.8	0.01			302	
317	7.53	7.50	34.199	26.718	137.0	0.548	0.75	11.2	59.8	2.91	34.2	0.01			319	208
377	6.90	6.86	34.233	26.833	126.7	0.627	0.40	5.9	76.9	3.21	33.6	0.01			380	207
400 ISL	6.76	6.72	34.238	26.856	124.7	0.656	0.29	4.2	83.4	3.31	32.3	0.01			403	
436	6.61	6.57	34.242	26.880	122.9	0.700	0.17	2.5	92.7	3.44	29.7	0.00			439	206
476	6.52	6.48	34.245	26.895	122.0	0.749	0.15	2.2	100.7	3.58	26.6	0.00			479	205
500 ISL	6.46	6.41	34.251	26.908	121.1	0.778	0.27	3.9	90.6	3.41	31.3	0.00			504	
511	6.42	6.37	34.255	26.916	120.4	0.792	0.33	4.8	85.2	3.32	33.9	0.00			515	204
535	6.28	6.23	34.264	26.942	118.2	0.820	0.34	4.9	81.2	3.24	36.6	0.01			539	203
555	6.24	6.19	34.269	26.951	117.6	0.844	0.32	4.6	82.8	3.28	36.7	0.15			559	202
559	6.24	6.19	34.269	26.951	117.6	0.849	0.34	4.9	83.0	3.28	36.7	0.19			563	201

A) SANTA BARBARA BASIN STATION.

RV ROGER REVELLE CALCOFI CRUISE 0304 STATION 83 40.6

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE
34 13.5 N	119 24.7 W	15/04/03	2223	UTC	38 m	270	14 kn	270 03 05	1	1019.9 mb	14.5 C	11.2 C	10m	1/8	CU

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	13.40	13.40	33.639	25.259	270.1	0.000	7.33	123.7	1.5	0.36	1.9	0.06	2.23	0.37	0	
2	13.40	13.40	33.639	25.259	270.2	0.005	7.33	123.7	1.5	0.36	1.9	0.06	2.23	0.37	2	206
2	13.41	13.41	33.638	25.256	270.4	0.005									2	207
5	13.27	13.27	33.639	25.286	267.8	0.013	7.33	123.3	1.6	0.35	1.9	0.06	2.49	0.31	5	205
10	11.81	11.81	33.648	25.576	240.3	0.026	6.00	97.9	11.4	1.10	10.2	0.24	2.51	0.78	10	204
15	11.10	11.10	33.679	25.730	225.7	0.038	4.78	76.8	17.7	1.54	15.9	0.35	0.85	0.76	15	203
20	10.81	10.81	33.697	25.796	219.6	0.049	3.72	59.4	13.8	1.67	17.4	0.22	2.91	1.49	20	202
26	10.63	10.63	33.713	25.840	215.5	0.062	3.43	54.6	16.6	1.75	18.8	0.22	2.36	1.58	26	201

RV ROGER REVELLE CALCOFI CRUISE 0304 STATION 83 42

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE
34 10.7 N	119 30.5 W	15/04/03	1833	UTC	144 m	270	13 kn	250 02 07	1	1020.1 mb	14.0 C	10.3 C	08m	2/8	CU

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	12.33	12.33	33.594	25.435	253.4	0.000	6.58	108.5	7.5	0.74	6.9	0.17	7.32	1.59	0	
1 B	12.33	12.33	33.594	25.435	253.4	0.003	6.58	108.5	7.5	0.74	6.9	0.17	7.32	1.59	1	216
1	12.33	12.33	33.593	25.434	253.5	0.003									1	217
4	12.33	12.33	33.594	25.435	253.5	0.010	6.60	108.9	7.5	0.76	6.8	0.17	7.45	1.46	4	214
5	12.32	12.32	33.593	25.436	253.4	0.013	6.62	109.2	7.6	0.73	6.9	0.18	7.86	1.36	5	215
6 B	12.27	12.27	33.593	25.446	252.5	0.015	6.63	109.2	7.5	0.76	6.7	0.17	7.53	1.55	6	213
10 ISL	12.21	12.21	33.593	25.457	251.5	0.025	6.57	108.1	7.7	0.76	6.9	0.17	8.10	1.51	10	
11 B	12.20	12.20	33.593	25.459	251.3	0.028	6.56	107.9	7.7	0.76	7.0	0.17	8.23	1.50	11	212
17 B	12.05	12.05	33.597	25.491	248.5	0.043	6.20	101.7	8.7	0.89	8.4	0.18	7.70	1.46	17	211
20 ISL	12.00	12.00	33.601	25.504	247.4	0.050	6.13	100.4	9.1	0.93	8.8	0.19	6.98	1.48	20	
22 B	11.98	11.98	33.603	25.509	246.9	0.055	6.10	99.9	9.3	0.95	9.0	0.19	6.51	1.50	22	210
30 ISL	11.96	11.96	33.598	25.509	247.1	0.075	6.02	98.5	9.2	0.97	9.2	0.19	6.30	1.81	30	
31 B	11.96	11.96	33.598	25.509	247.1	0.077	6.00	98.2	9.2	0.97	9.2	0.19	6.30	1.84	31	209
40	11.64	11.63	33.595	25.567	241.9	0.099	5.43	88.3	10.2	1.14	11.1	0.21	4.35	1.53	40	208
49	11.20	11.19	33.594	25.646	234.5	0.121	4.68	75.3	13.9	1.39	14.5	0.23	1.79 A	1.12 A	49	207
50 ISL	11.13	11.12	33.596	25.661	233.1	0.123	4.57	73.5	14.3	1.42	14.9	0.23	1.64	1.08	50	
59	10.55	10.54	33.626	25.787	221.3	0.144	3.70	58.7	18.0	1.61	18.6	0.18	0.84	0.86	59	206
69	10.20	10.19	33.685	25.893	211.4	0.165	3.36	53.0	20.8	1.72	20.8	0.11	0.26	0.89	69	205
75 ISL	10.12	10.11	33.770	25.973	203.9	0.178	3.04	47.9	22.5	1.82	22.1	0.08	0.32	0.82	75	
84	10.07	10.06	33.901	26.084	193.6	0.196	2.57	40.4	24.7	1.96	23.8	0.06	0.42	0.68	84	204
99	9.96	9.95	33.989	26.172	185.6	0.224	2.25	35.3	27.3	2.08	25.2	0.04	0.50	0.57	100	203
100 ISL	9.96	9.95	33.989	26.172	185.6	0.226	2.25	35.3	27.4	2.08	25.2	0.04	0.49	0.55	101	
114	9.91	9.90	33.997	26.187	184.5	0.252	2.23	35.0	28.3	2.10	25.5	0.04	0.29	0.38	115	202
125 ISL	9.90	9.89	34.006	26.195	183.9	0.272	2.19	34.4	28.7	2.11	25.6	0.04	0.30	0.42	126	
129	9.89	9.88	34.010	26.200	183.5	0.279	2.18	34.2	28.8	2.11	25.7	0.04	0.30	0.44	130	201

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

B) PRIMARY PRODUCTIVITY SAMPLES WERE TAKEN FROM THESE LEVELS.

RV ROGER REVELLE CALCOFI CRUISE 0304 STATION 83 51

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT TYPE
33 52.7 N	120 8.0 W	15/04/03	1233 UTC	104 m	330 18 kn			1015.8 mb	11.1 C	9.5 C		

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	11.85	11.85	33.606	25.535	243.9	0.000	5.33	87.0	11.1	1.17	11.0	0.21	2.74	1.91	0	
2	11.85	11.85	33.606	25.535	243.9	0.005	5.33	87.0	11.1	1.17	11.0	0.21	2.74	1.91	2	212
10 ISL	11.77	11.77	33.609	25.553	242.4	0.024	5.19	84.6	12.0	1.21	11.7	0.21	2.76	1.61	10	
11	11.76	11.76	33.609	25.555	242.3	0.027	5.17	84.3	12.1	1.22	11.8	0.21	2.76	1.56	11	209
20	10.89	10.89	33.721	25.800	219.2	0.048	4.18	66.9	18.8	1.58	17.0	0.20	1.11	1.36	20	208
30	10.32	10.32	33.824	25.980	202.2	0.069	3.21	50.8	24.0	1.84	21.3	0.16	0.53	1.02	30	207
40	10.03	10.03	33.886	26.078	193.1	0.088	2.81	44.2	26.5	1.96	23.1	0.13	0.32	0.70	40	206
50 ISL	9.76	9.75	33.971	26.190	182.7	0.107	2.34	36.6	29.8	2.11	25.3	0.10	0.18	0.57	50	
51	9.73	9.72	33.980	26.202	181.6	0.109	2.30	35.9	30.1	2.12	25.5	0.10	0.17	0.57	51	205
61	9.51	9.50	34.058	26.300	172.5	0.127	1.98	30.8	33.5	2.24	27.1	0.09	0.11	0.54	61	204
71	9.48	9.47	34.064	26.309	171.8	0.144	1.96	30.5	33.8	2.26	27.3	0.09	0.08	0.49	71	203
75 ISL	9.48	9.47	34.067	26.312	171.7	0.151	1.95	30.3	34.0	2.26	27.4	0.09	0.08	0.46	75	
81	9.46	9.45	34.074	26.321	171.0	0.161	1.92	29.8	34.4	2.27	27.5	0.09	0.08	0.41	81	202
91	9.37	9.36	34.090	26.348	168.6	0.178	1.82	28.2	35.4	2.31	27.9	0.08	0.08	0.39	92	201

RV ROGER REVELLE CALCOFI CRUISE 0304 STATION 83 55

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT TYPE
33 44.7 N	120 24.6 W	15/04/03	0845 UTC	970 m	320 22 kn			1015.1 mb	11.8 C	9.9 C		

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	13.33	13.33	33.356	25.054	289.6	0.000	6.79	114.2	0.3	0.35	0.8	0.06	2.88	0.86	0	
2	13.33	13.33	33.356	25.054	289.7	0.006	6.79	114.2	0.3	0.35	0.8	0.06	2.88	0.86	2	221
10	13.33	13.33	33.356	25.055	289.9	0.029	6.79	114.2	0.3	0.36	0.8	0.06	2.63	0.72	10	219
20	12.85	12.85	33.504	25.265	270.1	0.057	6.65	110.8	1.1	0.65	3.1	0.14	3.18	2.16	20	218
30	12.15	12.15	33.559	25.443	253.4	0.083	5.62	92.3	6.4	1.06	8.1	0.22	3.57	2.26	30	217
40	11.81	11.80	33.569	25.515	246.8	0.108	5.13	83.7	9.4	1.19	10.4	0.25	2.54 A	2.21 A	40	216
50	10.77	10.76	33.677	25.788	221.0	0.132	3.57	57.0	18.7	1.63	18.2	0.24	0.82	1.01	50	215
60	10.52	10.51	33.765	25.900	210.5	0.153	3.55	56.4	22.1	1.78	19.8	0.26	0.57	0.89	60	214
70	10.29	10.28	33.829	25.990	202.2	0.174	3.14	49.6	24.3	1.88	21.6	0.24	0.40	0.77	70	213
75 ISL	10.13	10.12	33.866	26.046	197.0	0.184	2.89	45.5	25.8	1.95	22.8	0.20	0.33	0.68	75	
85	9.82	9.81	33.927	26.146	187.6	0.203	2.48	38.8	28.3	2.06	24.9	0.12	0.22	0.51	85	212
100	9.56	9.55	33.934	26.195	183.3	0.231	2.48	38.6	29.3	2.08	25.5	0.05	0.14	0.47	101	211
119	8.83	8.82	33.910	26.294	174.1	0.265	2.78	42.6	30.4	2.05	26.9	0.02	0.07 A	0.23 A	120	210
125 ISL	8.74	8.73	33.928	26.322	171.6	0.275	2.75	42.0	31.2	2.06	27.3	0.02	0.07	0.23	126	
139	8.61	8.60	33.982	26.385	165.9	0.299	2.58	39.3	33.6	2.12	28.3	0.01	0.06	0.23	140	209
150 ISL	8.45	8.43	34.008	26.430	161.7	0.317	2.46	37.4	35.6	2.17	29.1	0.01	0.05	0.21	151	
169	8.21	8.19	34.044	26.495	155.9	0.347	2.24	33.8	38.9	2.27	30.3	0.01	0.04	0.19	170	208
199	8.09	8.07	34.107	26.562	150.0	0.393	1.95	29.4	42.2	2.39	30.9	0.01	0.05	0.21	200	207
200 ISL	8.08	8.06	34.108	26.565	149.8	0.394	1.94	29.2	42.4	2.40	31.0	0.01			201	
229	7.81	7.79	34.137	26.628	144.2	0.437	1.59	23.8	47.0	2.55	32.6	0.01			230	206
250 ISL	7.77	7.75	34.174	26.663	141.2	0.467	1.34	20.1	49.3	2.64	33.2	0.01			252	
268	7.73	7.70	34.200	26.689	139.0	0.492	1.17	17.5	51.2	2.70	33.7	0.01			270	205
300 ISL	7.31	7.28	34.194	26.745	134.1	0.536	1.05	15.5	55.6	2.78	35.0	0.01			302	
318	7.05	7.02	34.184	26.773	131.5	0.560	1.01	14.9	58.2	2.82	35.7	0.01			320	204
378	6.63	6.60	34.205	26.847	125.1	0.637	0.75	10.9	65.2	2.97	37.6	0.00			381	203
400 ISL	6.44	6.40	34.209	26.876	122.6	0.664	0.73	10.6	68.1	3.01	38.3	0.00			403	
438	6.13	6.09	34.218	26.923	118.4	0.710	0.70	10.1	73.2	3.07	39.4	0.00			441	202
500 ISL	5.78	5.74	34.244	26.988	112.7	0.781	0.43	6.1	80.4	3.16	40.6	0.00			504	
515	5.69	5.65	34.251	27.005	111.2	0.798	0.36	5.1	82.2	3.18	40.9	0.00			519	201

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

RV ROGER REVELLE CALCOFI CRUISE 0304 STATION 83 60

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE
33 34.8 N	120 45.1 W	15/04/03	0352 UTC	1298 m	320 20 kn			1013.2 mb	13.0 C	10.4 C			

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	13.27	13.27	33.056	24.834	310.6	0.000	7.85	131.6	0.2	0.27	0.1	0.01	6.02	2.17	0	
2	13.27	13.27	33.056	24.834	310.6	0.006	7.85	131.6	0.2	0.27	0.1	0.01	6.02	2.17	2	220
10	12.84	12.84	33.084	24.941	300.6	0.031	7.27	120.8	2.0	0.47	2.3	0.07	6.12	1.81	10	219
20	11.27	11.27	33.240	25.358	261.2	0.059	4.92	79.2	10.9	1.22	12.6	0.23	1.08 A	0.45 A	20	218
30	10.93	10.93	33.346	25.501	247.8	0.084	4.60	73.5	13.4	1.37	15.1	0.12	0.70	0.40	30	217
40	10.55	10.55	33.410	25.618	236.9	0.108	4.24	67.2	15.6	1.51	17.4	0.11	0.24	0.47	40	216
50	10.61	10.60	33.504	25.681	231.1	0.132	4.60	73.1	18.1	1.57	18.0	0.55	0.26	0.46	50	215
59	9.82	9.81	33.526	25.833	216.8	0.152	3.87	60.4	19.1	1.68	20.5	0.03	0.08	0.23	59	214
70	9.71	9.70	33.586	25.898	210.9	0.176	3.70	57.7	20.5	1.73	21.2	0.02	0.06	0.20	70	213
75 ISL	9.66	9.65	33.630	25.941	206.9	0.186	3.58	55.7	21.2	1.75	21.6	0.02	0.06	0.18	75	
84	9.56	9.55	33.705	26.016	199.9	0.204	3.38	52.5	22.6	1.79	22.4	0.02	0.05	0.16	84	212
99	9.32	9.31	33.743	26.085	193.7	0.234	3.22	49.8	24.9	1.89	24.0	0.02	0.04	0.17	100	211
100 ISL	9.32	9.31	33.747	26.088	193.4	0.236	3.20	49.5	25.0	1.90	24.1	0.02	0.04	0.17	101	
119	9.34	9.33	33.834	26.153	187.6	0.272	2.87	44.4	27.0	1.99	25.3	0.02	0.06	0.23	120	210
125 ISL	9.22	9.21	33.851	26.186	184.6	0.283	2.87	44.3	27.7	2.00	25.7	0.02	0.06	0.21	126	
140	8.88	8.87	33.895	26.275	176.4	0.310	2.87	44.0	29.8	2.03	26.7	0.01	0.04	0.13	141	209
150 ISL	8.80	8.78	33.948	26.329	171.4	0.328	2.69	41.2	31.5	2.09	27.4	0.01	0.03	0.13	151	
168	8.72	8.70	34.040	26.413	163.7	0.358	2.31	35.3	34.7	2.20	28.7	0.01	0.02	0.12	169	208
198	8.49	8.47	34.099	26.496	156.4	0.406	2.00	30.4	38.8	2.33	30.1	0.01	0.03	0.13	199	207
200 ISL	8.46	8.44	34.100	26.501	156.0	0.409	1.99	30.2	39.1	2.34	30.2	0.01			201	
228	7.99	7.97	34.105	26.576	149.2	0.452	1.90	28.6	43.2	2.42	31.5	0.01			229	206
250 ISL	7.73	7.71	34.115	26.622	145.0	0.484	1.75	26.2	46.3	2.50	32.4	0.01			252	
268	7.57	7.54	34.126	26.654	142.3	0.510	1.60	23.8	48.7	2.57	33.1	0.01			270	205
300 ISL	7.36	7.33	34.157	26.709	137.5	0.555	1.32	19.6	52.8	2.70	34.3	0.00			302	
317	7.26	7.23	34.171	26.734	135.3	0.578	1.18	17.5	55.0	2.76	34.9	0.00			319	204
377	6.65	6.62	34.167	26.815	128.2	0.657	0.94	13.7	63.0	2.90	37.2	0.00			379	203
400 ISL	6.47	6.43	34.179	26.848	125.2	0.686	0.83	12.0	66.1	2.96	37.9	0.00			403	
437	6.22	6.18	34.203	26.900	120.6	0.731	0.67	9.7	71.0	3.05	38.9	0.00			440	202
500 ISL	5.86	5.82	34.234	26.970	114.5	0.805	0.49	7.0	78.7	3.15	40.3	0.00			504	
515	5.77	5.73	34.241	26.987	113.0	0.823	0.45	6.4	80.5	3.17	40.6	0.00			519	201

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

RV ROGER REVELLE CALCOFI CRUISE 0304 STATION 83 70

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE
33 14.7 N	121 26.6 W	14/04/03	2217 UTC	3804 m	290 12 kn	290 06 05	2	1012.9 mb	14.5 C	11.0 C	13m	8/8	SC

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	14.86	14.86	33.108	24.545	338.1	0.000	6.01	104.1	1.8	0.41	0.1	0.00	0.29	0.08	0	
2	14.86	14.86	33.108	24.545	338.2	0.007	6.01	104.1	1.8	0.41	0.1	0.00	0.29	0.08	2	222
5	14.86	14.86	33.107	24.544	338.3	0.017	6.04	104.7	1.8	0.40	0.1	0.00	0.29	0.07	5	221
5	14.86	14.86	33.107	24.544	338.3	0.017	6.07	105.2	1.7	0.40	0.1	0.00	0.29	0.06	5	220
10	14.86	14.86	33.105	24.543	338.6	0.034	6.10	105.7	1.8	0.40	0.0	0.00	0.28	0.08	10	219
19	14.72	14.72	33.119	24.584	335.0	0.064	6.10	105.4	1.8	0.40	0.1	0.00	0.42	0.12	19	218
20 ISL	14.68	14.68	33.117	24.591	334.3	0.067	6.10	105.3	1.8	0.40	0.1	0.00	0.42	0.12	20	
30	14.27	14.27	33.117	24.678	326.3	0.101	6.12	104.8	1.8	0.40	0.1	0.00	0.44	0.13	30	217
40	14.20	14.19	33.188	24.747	320.0	0.133	6.25	106.9	1.5	0.40	0.0	0.00	0.62	0.24	40	216
50	13.79	13.78	33.140	24.795	315.6	0.165	6.03	102.2	1.7	0.48	0.8	0.09	0.78 A	0.34 A	50	215
59	13.66	13.65	33.168	24.844	311.3	0.193	5.90	99.8	2.0	0.54	1.4	0.13	0.60	0.28	59	214
70	12.64	12.63	33.195	25.068	290.1	0.226	5.56	92.1	4.9	0.83	5.7	0.36	0.30	0.27	70	213
75 ISL	12.02	12.01	33.211	25.198	277.8	0.240	5.31	86.8	7.1	0.98	8.5	0.29	0.22	0.24	75	
85	10.93	10.92	33.267	25.441	254.8	0.267	4.77	76.2	11.4	1.26	13.7	0.08	0.13	0.17	85	212
99	10.51	10.50	33.394	25.614	238.6	0.301	4.23	67.0	14.7	1.46	17.2	0.03	0.07	0.14	99	211
100 ISL	10.48	10.47	33.402	25.625	237.6	0.304	4.21	66.6	14.9	1.47	17.4	0.03	0.07	0.14	100	
120	9.86	9.85	33.557	25.851	216.4	0.349	3.79	59.2	19.3	1.67	20.8	0.03	0.02	0.08	121	210
125 ISL	9.72	9.71	33.604	25.911	210.7	0.360	3.65	56.9	20.6	1.72	21.7	0.03	0.02	0.08	126	
139	9.39	9.37	33.731	26.065	196.4	0.388	3.28	50.8	24.1	1.86	23.9	0.03	0.02	0.07	140	209
150 ISL	9.23	9.21	33.806	26.149	188.6	0.409	3.10	47.8	26.0	1.92	24.9	0.03	0.02	0.07	151	
169	9.02	9.00	33.902	26.258	178.6	0.444	2.88	44.3	28.8	1.99	26.2	0.03	0.01	0.06	170	208
199	8.57	8.55	33.995	26.402	165.4	0.496	2.53	38.5	34.0	2.14	28.9	0.03	0.01	0.05	200	207
200 ISL	8.56	8.54	33.997	26.405	165.1	0.498	2.52	38.4	34.2	2.14	29.0	0.03			201	
229	8.20	8.18	34.040	26.494	157.1	0.544	2.32	35.0	38.6	2.26	30.6	0.03			230	206
250 ISL	7.91	7.88	34.058	26.551	151.9	0.577	2.13	32.0	42.0	2.35	31.8	0.03			251	
268	7.66	7.63	34.068	26.596	147.8	0.604	1.97	29.4	44.9	2.43	32.7	0.03			270	205
300 ISL	7.25	7.22	34.081	26.664	141.6	0.650	1.76	26.0	50.1	2.55	34.3	0.02			302	
318	7.03	7.00	34.085	26.698	138.5	0.675	1.65	24.3	53.0	2.62	35.1	0.02			320	204
377	6.37	6.34	34.095	26.795	129.8	0.754	1.21	17.5	62.7	2.82	37.7	0.02			379	203
400 ISL	6.17	6.13	34.110	26.832	126.4	0.784	1.08	15.6	66.7	2.89	38.6	0.02			403	
437	5.89	5.85	34.142	26.893	120.9	0.830	0.90	12.9	73.0	3.00	39.8	0.02			440	202
500 ISL	5.53	5.49	34.203	26.986	112.6	0.903	0.56	8.0	82.7	3.13	41.4	0.02			503	
514	5.45	5.41	34.217	27.007	110.7	0.919	0.49	6.9	84.9	3.16	41.8	0.02			518	201

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

RV ROGER REVELLE CALCOFI CRUISE 0304 STATION 83 80

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE
32 54.6 N	122 8.5 W	14/04/03	1756 UTC	4189 m	260 09 kn	240 05 12	5	1014.9 mb	12.4 C	10.8 C	18m	8/8	SC

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	14.79	14.79	33.078	24.536	338.9	0.000			1.8	0.40	0.0	0.00	0.21	0.03	0	
1	14.79	14.79	33.078	24.536	338.9	0.003			1.8	0.40	0.0	0.00	0.21	0.03	1	220
1	14.80	14.80	33.071	24.529	339.6	0.003									1	221
10 ISL	14.76	14.76	33.081	24.546	338.3	0.034			1.8	0.40	0.0	0.00	0.22	0.04	10	
14	14.75	14.75	33.082	24.549	338.2	0.047	6.01	103.9	1.8	0.40	0.0	0.00	0.22	0.04	14	219
20	14.70	14.70	33.094	24.569	336.4	0.068	6.02	104.0	1.8	0.39	0.0	0.00	0.23	0.05	20	218
26	14.53	14.53	33.110	24.617	332.0	0.088	6.01	103.4	1.8	0.39	0.0	0.00	0.26	0.07	26	217
30 ISL	14.48	14.48	33.110	24.628	331.1	0.101	6.01	103.3	1.8	0.39	0.0	0.00	0.27	0.08	30	
38	14.40	14.39	33.103	24.640	330.2	0.127	6.00	103.0	1.9	0.39	0.0	0.00	0.34	0.12	38	216
49	14.18	14.17	33.098	24.682	326.4	0.164	6.00	102.5	1.8	0.41	0.0	0.02	0.58	0.20	49	215
50 ISL	14.14	14.13	33.103	24.695	325.3	0.167	6.00	102.4	1.9	0.41	0.1	0.04	0.61	0.23	50	
59	13.46	13.45	33.120	24.847	310.9	0.195	5.97	100.5	2.6	0.51	1.1	0.17	0.75	0.42	59	214
69	11.94	11.93	33.027	25.070	289.8	0.225	5.38	87.7	6.0	0.91	7.7	0.08	0.40	0.36	69	213
75 ISL	11.39	11.38	33.134	25.255	272.3	0.242	4.92	79.3	9.1	1.13	11.4	0.06	0.28	0.29	75	
85	10.85	10.84	33.355	25.523	246.9	0.268	4.29	68.4	13.7	1.41	16.1	0.04	0.18	0.18	85	212
100	10.48	10.47	33.401	25.624	237.6	0.305	4.17	66.0	15.1	1.49	17.3	0.03	0.12	0.14	100	211
120	9.81	9.80	33.585	25.881	213.5	0.350	3.67	57.3	20.2	1.71	21.3	0.03	0.03	0.08	121	210
125 ISL	9.69	9.68	33.626	25.933	208.6	0.360	3.55	55.3	21.3	1.76	22.1	0.03	0.03	0.08	126	
140	9.40	9.38	33.739	26.069	196.0	0.391	3.21	49.7	24.5	1.88	24.0	0.02	0.03	0.08	141	209
150 ISL	9.25	9.23	33.815	26.153	188.2	0.410	2.97	45.9	26.7	1.96	25.2	0.02	0.03	0.08	151	
169	9.03	9.01	33.936	26.283	176.2	0.444	2.59	39.8	30.4	2.08	27.2	0.02	0.02	0.07	170	208
199	8.75	8.73	34.031	26.402	165.4	0.496	2.32	35.5	34.5	2.20	28.8	0.02	0.02	0.06	200	207
200 ISL	8.73	8.71	34.032	26.406	165.0	0.497	2.32	35.5	34.6	2.20	28.9	0.02			201	
229	8.24	8.22	34.050	26.496	156.9	0.544	2.23	33.7	39.0	2.28	30.7	0.02			230	206
250 ISL	7.87	7.85	34.056	26.556	151.4	0.576	2.11	31.6	42.8	2.36	31.9	0.02			251	
269	7.55	7.52	34.060	26.605	146.9	0.605	1.98	29.5	46.3	2.44	32.9	0.02			271	205
300 ISL	7.11	7.08	34.065	26.671	140.9	0.649	1.72	25.3	51.4	2.56	34.5	0.02			302	
317	6.90	6.87	34.069	26.703	138.0	0.673	1.58	23.2	54.2	2.63	35.4	0.02			319	204
376	6.31	6.28	34.099	26.806	128.7	0.752	1.16	16.8	64.1	2.84	37.9	0.02			378	203
400 ISL	6.14	6.10	34.111	26.837	125.9	0.782	1.06	15.3	67.4	2.90	38.7	0.02			403	
438	5.91	5.87	34.133	26.884	121.8	0.829	0.92	13.2	72.6	2.99	39.8	0.02			441	202
500 ISL	5.48	5.44	34.190	26.982	112.9	0.902	0.57	8.1	82.9	3.14	41.6	0.02			503	
512	5.40	5.36	34.202	27.001	111.2	0.916	0.50	7.1	84.9	3.17	41.9	0.02			515	201

RV ROGER REVELLE CALCOFI CRUISE 0304 STATION 83 90

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE
32 34.7 N	122 48.7 W	14/04/03	1046 UTC	4275 m	340 05 kn			1013.4 mb	14.1 C	10.1 C			

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	14.79	14.79	32.854	24.364	355.4	0.000	5.91	102.1	1.5	0.41	0.0	0.00	0.17	0.05	0	
1	14.79	14.79	32.854	24.364	355.4	0.004	5.91	102.1	1.5	0.41	0.0	0.00	0.17	0.05	1	220
10	14.80	14.80	32.867	24.372	354.9	0.036	5.93	102.5	1.5	0.41	0.0	0.00	0.16	0.03	10	219
20	14.52	14.52	32.925	24.477	345.2	0.071	5.97	102.6	1.5	0.41	0.0	0.00	0.22	0.05	20	218
29	14.35	14.35	32.942	24.526	340.8	0.101	6.01	103.0					0.29	0.10	29	217
30 ISL	14.31	14.31	32.941	24.533	340.1	0.105	6.02	103.0	1.6	0.42	0.0	0.01	0.31	0.11	30	
39	13.93	13.92	32.941	24.613	332.8	0.135	6.07	103.1	1.7	0.42	0.0	0.02	0.52	0.20	39	216
50	13.66	13.65	32.989	24.705	324.2	0.171	6.08	102.7	1.6	0.45	0.4	0.06	0.63	0.34	50	215
59	12.92	12.91	32.916	24.797	315.7	0.200	5.82	96.8	2.9	0.59	2.2	0.20	0.55	0.36	59	214
69	11.99	11.98	32.914	24.973	299.0	0.231	5.65	92.1	4.5	0.79	5.4	0.11	0.35	0.31	69	213
75 ISL	11.63	11.62	32.909	25.036	293.1	0.248	5.59	90.4	5.2	0.85	6.5	0.08	0.31	0.31	75	
84	11.14	11.13	32.901	25.119	285.4	0.275	5.50	88.0	6.7	0.95	8.3	0.06	0.28	0.31	84	212
99	10.78	10.77	33.245	25.450	254.2	0.315	4.61	73.4	12.2	1.33	14.7	0.03	0.11	0.20	99	211
100 ISL	10.72	10.71	33.260	25.473	252.1	0.318	4.58	72.8	12.5	1.35	15.0	0.03	0.10	0.19	100	
120	9.68	9.67	33.514	25.848	216.7	0.364	3.95	61.5	19.0	1.63	19.9	0.01	0.02	0.05	121	210
125 ISL	9.64	9.63	33.604	25.925	209.5	0.375	3.67	57.1	20.8	1.71	21.2	0.01	0.02	0.06	126	
138	9.53	9.51	33.794	26.091	193.9	0.401	2.97	46.1	25.2	1.91	24.2	0.01	0.01	0.09	139	209
150 ISL	9.42	9.40	33.880	26.177	186.0	0.424	2.69	41.7	27.3	2.00	25.5	0.01	0.00	0.08	151	
168	9.22	9.20	33.944	26.259	178.5	0.457	2.51	38.8	29.5	2.08	26.6	0.01	0.00	0.05	169	208
198	8.71	8.69	34.052	26.425	163.2	0.508	2.16	33.0	35.4	2.24	29.2	0.00	0.00	0.05	199	207
200 ISL	8.69	8.67	34.056	26.431	162.7	0.511	2.14	32.7	35.7	2.25	29.3	0.00			201	
229	8.42	8.40	34.090	26.500	156.6	0.558	1.95	29.6	38.9	2.35	30.5	0.00			230	206
250 ISL	8.20	8.17	34.101	26.542	152.9	0.590	1.85	27.9	41.7	2.41	31.5	0.00			251	
269	7.95	7.92	34.102	26.580	149.5	0.619	1.78	26.7	44.6	2.47	32.4	0.00			271	205
300 ISL	7.31	7.28	34.079	26.654	142.6	0.664	1.70	25.2	50.2	2.56	34.1	0.00			302	
318	6.94	6.91	34.067	26.696	138.7	0.690	1.64	24.1	53.6	2.62	35.1	0.00			320	204
377	6.36	6.33	34.099	26.799	129.4	0.769	1.14	16.5	63.7	2.85	37.8	0.00			379	203
400 ISL	6.19	6.15	34.113	26.832	126.4	0.798	1.01	14.6	67.0	2.92	38.6	0.00			403	
437	5.96	5.92	34.139	26.882	122.0	0.844	0.83	11.9	72.1	3.01	39.6	0.00			440	202
500 ISL	5.61	5.57	34.194	26.969	114.3	0.918	0.51	7.3	81.2	3.14	41.1	0.00			503	
514	5.53	5.49	34.206	26.989	112.5	0.934	0.44	6.2	83.2	3.17	41.4	0.00			517	201

RV ROGER REVELLE CALCOFI CRUISE 0304 STATION 83 100

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE
32 14.7 N	123 29.6 W	14/04/03	0431	UTC	4154 m	310 06 kn			1014.5 mb	15.1 C	11.1 C			

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	14.89	14.89	32.810	24.308	360.6	0.000	5.96	103.2	1.6	0.41	0.1	0.00	0.15	0.04	0	
2	14.89	14.89	32.810	24.309	360.7	0.007	5.96	103.2	1.6	0.41	0.1	0.00	0.15	0.04	2	220
10 ISL	14.72	14.72	32.818	24.351	356.8	0.036	5.99	103.3	1.6	0.40	0.1	0.00	0.17	0.05	10	
11	14.69	14.69	32.821	24.360	356.0	0.039	5.99	103.3	1.6	0.40	0.1	0.00	0.17	0.05	11	219
20 ISL	14.42	14.42	32.874	24.458	346.9	0.071	6.01	103.1	1.7	0.41	0.0	0.00	0.22	0.07	20	
21	14.39	14.39	32.879	24.469	346.0	0.075	6.01	103.0	1.7	0.41	0.0	0.00	0.23	0.07	21	218
30	14.20	14.20	32.869	24.501	343.2	0.106	6.04	103.1	1.7	0.41	0.0	0.00	0.33	0.13	30	217
41	14.13	14.12	32.887	24.530	340.7	0.143	5.99	102.1	1.7	0.41	0.0	0.00	0.39	0.19	41	216
50	14.06	14.05	32.978	24.615	332.9	0.174	5.98	101.9	1.8	0.42	0.0	0.02	0.44	0.21	50	215
61	13.51	13.50	32.946	24.703	324.7	0.210	5.86	98.7	2.2	0.51	1.0	0.19	0.38	0.33	61	214
70	12.95	12.94	32.978	24.839	311.9	0.238	5.85	97.4	2.8	0.62	2.7	0.19	0.26	0.22	70	213
75 ISL	12.55	12.54	32.973	24.913	305.0	0.254	5.82	96.1	3.2	0.64	3.2	0.16	0.24	0.23	75	
85	11.75	11.74	32.946	25.043	292.7	0.284	5.75	93.3	4.1	0.67	4.0	0.08	0.22	0.29	85	212
99	10.94	10.93	32.917	25.167	281.1	0.324	5.66	90.2	5.4	0.81	6.2	0.03	0.14	0.21	99	211
100 ISL	10.87	10.86	32.917	25.179	280.0	0.327	5.65	89.9	5.6	0.82	6.4	0.03	0.14	0.20	100	
119	9.60	9.59	33.011	25.468	252.7	0.377	5.33	82.5	10.3	1.11	11.8	0.01	0.06	0.06	120	210
125 ISL	9.34	9.33	33.092	25.573	242.7	0.392	5.16	79.5	12.3	1.22	13.7	0.01	0.04	0.05	126	
139	8.95	8.94	33.312	25.807	220.7	0.425	4.70	71.9	17.1	1.46	17.7	0.00	0.01	0.03	140	209
150 ISL	8.97	8.95	33.487	25.941	208.2	0.448	4.28	65.5	20.0	1.60	20.0	0.00	0.01	0.03	151	
168	9.00	8.98	33.701	26.104	193.1	0.484	3.67	56.3	23.9	1.77	22.8	0.00	0.01	0.03	169	208
198	8.73	8.71	33.865	26.275	177.4	0.540	3.32	50.7	28.2	1.88	25.0	0.00	0.00	0.02	199	207
200 ISL	8.71	8.69	33.876	26.287	176.3	0.543	3.28	50.1	28.6	1.89	25.2	0.00			201	
229	8.45	8.43	34.006	26.429	163.3	0.593	2.72	41.3	34.4	2.09	28.0	0.00			230	206
250 ISL	8.20	8.17	34.042	26.496	157.3	0.626	2.46	37.1	38.2	2.20	29.6	0.00			251	
267	7.98	7.95	34.054	26.538	153.5	0.653	2.28	34.3	41.1	2.29	30.7	0.00			268	205
300 ISL	7.54	7.51	34.076	26.620	146.0	0.702	1.91	28.4	46.9	2.47	32.7	0.00			302	
318	7.30	7.27	34.084	26.660	142.4	0.728	1.72	25.4	50.1	2.56	33.7	0.00			320	204
377	6.58	6.55	34.109	26.778	131.5	0.809	1.22	17.7	60.9	2.81	36.8	0.00			379	203
400 ISL	6.37	6.33	34.120	26.815	128.3	0.839	1.07	15.5	64.6	2.88	37.8	0.00			402	
436	6.09	6.05	34.140	26.867	123.6	0.884	0.86	12.4	70.1	2.97	39.0	0.00			439	202
500 ISL	5.76	5.72	34.201	26.957	115.6	0.961	0.54	7.7	79.0	3.12	40.5	0.00			503	
515	5.68	5.64	34.215	26.978	113.8	0.978	0.47	6.7	81.1	3.15	40.9	0.00			518	201

RV ROGER REVELLE CALCOFI CRUISE 0304 STATION 83 110

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE
31 54.7 N	124 10.2 W	13/04/03	2312	UTC	4205 m	310 02 kn	300 08 09	1	1013.7 mb	17.1 C	11.9 C	32m	2/8	SC

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	15.72	15.72	32.799	24.119	378.7	0.000	5.87	103.3	1.1	0.40	0.1	0.00	0.10	0.02	0	
2	15.72	15.72	32.799	24.119	378.8	0.008	5.87	103.3	1.1	0.40	0.1	0.00	0.10	0.02	2	220
10 ISL	15.45	15.45	32.793	24.174	373.8	0.038	5.90	103.3	1.2	0.40	0.0	0.00	0.10	0.02	10	
15	15.23	15.23	32.790	24.220	369.5	0.056	5.92	103.1	1.2	0.40	0.0	0.00	0.11	0.02	15	219
20 ISL	15.14	15.14	32.795	24.244	367.4	0.075	5.93	103.1	1.2	0.40	0.0	0.00	0.12	0.02	20	
30	15.02	15.02	32.807	24.279	364.3	0.111	5.93	102.9	1.3	0.40	0.1	0.00	0.14	0.04	30	218
45	14.80	14.79	32.802	24.323	360.6	0.166	5.96	102.9	1.2	0.40	0.1	0.00	0.21	0.08	45	217
50 ISL	14.55	14.54	32.827	24.396	353.8	0.183	5.96	102.4	1.2	0.41	0.0	0.00	0.29	0.17	50	
54	14.35	14.34	32.850	24.456	348.2	0.198	5.96	102.0	1.3	0.42	0.0	0.00	0.37	0.25	54	216
64	14.08	14.07	32.894	24.546	339.8	0.232	5.92	100.8	1.5	0.46	0.2	0.05	0.61	0.48	64	215
75	13.56	13.55	32.904	24.660	329.2	0.269	5.86	98.7	2.0	0.52	1.0	0.14	0.50	0.53	75	214
85	13.07	13.06	32.895	24.752	320.7	0.301	5.85	97.6	2.5	0.58	2.1	0.17	0.35	0.51	85	213
95	12.16	12.15	32.838	24.883	308.2	0.333	5.74	93.9	3.7	0.72	4.1	0.06	0.23	0.38	95	212
100 ISL	11.79	11.78	32.820	24.938	303.1	0.348	5.71	92.6	4.2	0.77	5.0	0.05	0.20	0.33	100	
109	11.25	11.24	32.810	25.029	294.5	0.375	5.66	90.8	5.1	0.85	6.4	0.03	0.17	0.25	109	211
124	10.71	10.70	32.868	25.170	281.4	0.418	5.50	87.2	6.9	1.00	8.9	0.02	0.10	0.17	125	210
125 ISL	10.69	10.68	32.877	25.180	280.4	0.421	5.48	86.8	7.0	1.01	9.1	0.02	0.10	0.16	126	
144	10.22	10.20	33.098	25.433	256.6	0.472	5.10	80.1	10.3	1.18	12.6	0.01	0.06	0.06	145	209
150 ISL	9.99	9.97	33.177	25.534	247.2	0.487	4.95	77.4	11.8	1.26	14.0	0.01	0.05	0.04	151	
167	9.38	9.36	33.414	25.819	220.3	0.527	4.46	68.9	16.9	1.50	18.1	0.00	0.01	0.02	168	208
196	8.96	8.94	33.809	26.195	185.0	0.585	3.35	51.4	26.3	1.85	24.3	0.00	0.00	0.02	197	207
200 ISL	8.92	8.90	33.840	26.226	182.2	0.593	3.25	49.8	27.2	1.88	24.8	0.00			201	
226	8.65	8.63	33.967	26.368	169.1	0.638	2.82	43.0	32.0	2.04	27.2	0.00			227	206
250 ISL	8.36	8.33	34.019	26.454	161.3	0.678	2.61	39.5	35.8	2.13	28.7	0.00			251	
268	8.11	8.08	34.034	26.503	156.8	0.707	2.50	37.7	38.6	2.19	29.7	0.00			269	205
300 ISL	7.60	7.57	34.049	26.590	148.9	0.756	2.22	33.1	44.4	2.35	31.6	0.00			302	
318	7.31	7.28	34.053	26.634	144.8	0.782	2.05	30.3	47.7	2.44	32.7	0.00			320	204
377	6.62	6.59	34.081	26.751	134.1	0.864	1.51	22.0	57.5	2.69	35.8	0.00			379	203
400 ISL	6.42	6.38	34.101	26.793	130.3	0.895	1.31	19.0	61.6	2.78	36.9	0.00			402	
437	6.15	6.11	34.134	26.854	124.8	0.942	1.01	14.5	67.9	2.92	38.5	0.00			440	202
500 ISL	5.78	5.74	34.174	26.933	117.9	1.018	0.68	9.7	76.9	3.11	40.3	0.00			503	
515	5.69	5.65	34.184	26.952	116.2	1.036	0.60	8.5	79.0	3.15	40.7	0.00			518	201

RV ROGER REVELLE CALCOFI CRUISE 0304 STATION 87 33

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE
33 53.5 N	118 29.4 W	11/04/03	0035	UTC	62 m	260	06 kn	260 01 07	4	1014.1 mb	16.1 C	14.2 C	05m	7/8	CI

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	13.66	13.66	33.541	25.130	282.4	0.000	8.15	138.2	0.4	0.20	0.2	0.02	8.87	1.36	0	
2	13.66	13.66	33.541	25.130	282.4	0.006	8.15	138.2	0.4	0.20	0.2	0.02	8.87	1.36	2	207
6	13.66	13.66	33.542	25.131	282.4	0.017	8.12	137.7	0.4	0.20	0.2	0.01	9.07	1.20	6	206
10	13.53	13.53	33.545	25.160	279.8	0.028	8.01	135.4	0.6	0.24	0.1	0.03	9.12	1.43	10	205
20	11.60	11.60	33.554	25.542	243.7	0.054	4.68	76.0	9.9	1.29	11.3	0.29	8.22	2.87	20	204
30	11.02	11.02	33.629	25.705	228.4	0.078	3.53	56.6	14.3	1.64	17.1	0.34	7.26	0.65	30	203
40	10.66	10.66	33.716	25.837	216.1	0.100	2.86	45.5	18.4	1.89	19.9	0.40	6.79	3.34	40	202
50 ISL	10.44	10.43	33.775	25.922	208.3	0.121	2.53	40.1	21.9	2.01	21.5	0.38	5.48	3.85	50	
52	10.40	10.39	33.787	25.938	206.8	0.126	2.46	39.0	22.6	2.04	21.8	0.37	5.22	3.95	52	201

RV ROGER REVELLE CALCOFI CRUISE 0304 STATION 87 35

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE
33 49.4 N	118 37.4 W	11/04/03	0317	UTC	628 m	350	06 kn			1014.2 mb	15.0 C	13.8 C			

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	14.74	14.74	33.479	24.856	308.4	0.000	7.37	127.7	0.4	0.24	0.1	0.00	0.89	0.16	0	
2	14.74	14.74	33.479	24.856	308.5	0.006	7.37	127.7	0.4	0.24	0.1	0.00	0.89	0.16	2	220
9	14.01	14.01	33.495	25.023	292.8	0.027	7.37	125.8	0.7	0.31	0.2	0.02	2.32	0.35	9	219
10 ISL	13.80	13.80	33.494	25.066	288.8	0.030	7.09	120.5	1.6	0.40	1.3	0.07	2.39	0.47	10	
20	11.72	11.72	33.519	25.492	248.4	0.057	4.00	65.1	12.6	1.38	14.2	0.59	3.05	1.80	20	218
29	10.95	10.95	33.592	25.689	229.9	0.079	3.42	54.8	16.9	1.61	18.4	0.49	2.42	2.47	29	217
30 ISL	10.90	10.90	33.600	25.704	228.5	0.081	3.39	54.2	17.2	1.62	18.6	0.45	2.28	2.36	30	
39	10.61	10.61	33.674	25.813	218.3	0.101	3.23	51.4	19.4	1.70	20.1	0.14	1.06	1.14	39	216
49	10.39	10.38	33.780	25.934	207.1	0.122	2.91	46.1	21.9	1.82	21.7	0.07	0.74	0.94	49	215
50 ISL	10.37	10.36	33.789	25.945	206.1	0.124	2.88	45.6	22.1	1.83	21.8	0.07	0.74	0.93	50	
59	10.23	10.22	33.853	26.019	199.2	0.142	2.68	42.3	23.8	1.90	22.9	0.05	0.73	0.85	59	214
69	10.16	10.15	33.895	26.064	195.2	0.162	2.59	40.8	24.9	1.95	23.5	0.03	0.49	0.61	69	213
75 ISL	10.14	10.13	33.931	26.095	192.3	0.174	2.47	38.9	25.8	1.99	24.0	0.02	0.42	0.51	75	
84	10.09	10.08	33.985	26.146	187.7	0.191	2.29	36.1	27.2	2.06	24.8	0.02	0.37	0.41	84	212
99	9.88	9.87	34.043	26.227	180.3	0.219	2.14	33.6	29.3	2.13	25.8	0.02	0.29	0.41	100	211
100 ISL	9.86	9.85	34.048	26.234	179.6	0.220	2.13	33.4	29.5	2.14	25.9	0.02	0.29	0.41	101	
119	9.52	9.51	34.130	26.355	168.5	0.253	1.86	29.0	33.1	2.26	27.6	0.04	0.35	0.38	120	210
125 ISL	9.47	9.46	34.146	26.376	166.6	0.263	1.80	28.0	33.8	2.29	27.9	0.04	0.31	0.36	126	
139	9.39	9.37	34.176	26.413	163.4	0.287	1.67	25.9	35.3	2.34	28.5	0.02	0.20	0.31	140	209
150 ISL	9.32	9.30	34.204	26.446	160.5	0.304	1.51	23.4	36.9	2.40	29.0	0.01	0.15	0.30	151	
169	9.22	9.20	34.245	26.495	156.2	0.334	1.26	19.5	39.3	2.50	29.8	0.00	0.09	0.29	170	208
199	9.08	9.06	34.269	26.537	152.9	0.381	1.16	17.9	40.7	2.55	30.3	0.01	0.07	0.20	200	207
200 ISL	9.07	9.05	34.269	26.538	152.7	0.382	1.16	17.9	40.8	2.55	30.3	0.01			201	
228	8.81	8.79	34.277	26.586	148.6	0.425	1.05	16.1	43.5	2.61	31.1	0.01			229	206
250 ISL	8.51	8.48	34.278	26.634	144.4	0.457	0.95	14.5	46.3	2.67	32.0	0.00			252	
268	8.26	8.23	34.277	26.672	141.1	0.482	0.87	13.2	48.7	2.73	32.8	0.00			270	205
300 ISL	7.89	7.86	34.277	26.727	136.2	0.527	0.76	11.4	53.0	2.81	33.9	0.00			302	
318	7.71	7.68	34.278	26.754	133.8	0.551	0.71	10.6	55.4	2.85	34.5	0.00			320	204
377	7.21	7.17	34.285	26.832	127.1	0.628	0.56	8.3	62.2	2.96	36.2	0.00			380	203
400 ISL	7.04	7.00	34.290	26.859	124.7	0.657	0.51	7.5	64.8	3.00	36.7	0.00			403	
437	6.77	6.73	34.300	26.904	120.8	0.702	0.44	6.4	69.1	3.05	37.5	0.00			440	202
500 ISL	6.31	6.26	34.323	26.984	113.8	0.776	0.30	4.3	77.3	3.15	38.8	0.00			504	
515	6.20	6.15	34.329	27.003	112.0	0.793	0.27	3.9	79.2	3.18	39.1	0.00			519	201

RV ROGER REVELLE CALCOFI CRUISE 0304 STATION 87 40

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE
33 39.4 N	118 58.4 W	11/04/03	0734	UTC	755 m	300	12 kn			1015.5 mb	15.3 C	14.0 C			

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	14.43	14.43	33.395	24.858	308.3	0.000	6.03	103.8	3.8	0.60	2.1	0.11	0.55	0.14	0	
2	14.43	14.43	33.395	24.858	308.4	0.006	6.03	103.8	3.8	0.60	2.1	0.11	0.55	0.14	2	220
10	14.27	14.27	33.393	24.890	305.5	0.031	6.05	103.8	3.9	0.59	2.1	0.12	0.63	0.17	10	219
20	13.30	13.30	33.413	25.105	285.3	0.060	6.33	106.4	1.2	0.53	2.4	0.21	3.03	1.01	20	218
30	12.74	12.74	33.422	25.223	274.3	0.088	5.40	89.7	5.7	0.86	6.5	0.40	2.42	0.88	30	217
40	12.30	12.29	33.442	25.324	265.0	0.115	4.98	82.0	8.4	1.02	8.9	0.53	0.89	0.47	40	216
50	12.10	12.09	33.453	25.371	260.8	0.142	4.77	78.2	9.9	1.11	10.3	0.57	0.43	0.29	50	215
59	11.27	11.26	33.539	25.591	240.0	0.164	4.09	65.9	14.6	1.40	15.4	0.35	0.44	0.38	59	214
69	10.66	10.65	33.659	25.793	220.9	0.187	3.51	55.9	18.7	1.61	18.9	0.11	0.31	0.35	69	213
75 ISL	10.45	10.44	33.724	25.881	212.7	0.200	3.22	51.0	20.6	1.71	20.4	0.08	0.24	0.31	75	
85	10.24	10.23	33.807	25.982	203.3	0.221	2.88	45.5	23.0	1.84	22.2	0.02	0.16	0.25	85	212
100	10.02	10.01	33.854	26.056	196.6	0.251	2.75	43.2	24.7	1.90	23.3	0.02	0.17	0.26	101	211
119	9.79	9.78	34.015	26.221	181.3	0.287	2.18	34.1	29.4	2.11	25.9	0.01	0.06	0.16	120	210
125 ISL	9.73	9.72	34.049	26.257	178.0	0.298	2.04	31.9	30.6	2.16	26.5	0.01	0.06	0.15	126	
139	9.61	9.59	34.106	26.322	172.1	0.322	1.80	28.1	33.0	2.26	27.6	0.01	0.05	0.14	140	209
150 ISL	9.49	9.47	34.129	26.360	168.7	0.341	1.74	27.1	34.2	2.30	28.1	0.01	0.05	0.15	151	
168	9.28	9.26	34.155	26.415	163.8	0.371	1.68	26.0	35.9	2.34	28.8	0.00	0.05	0.16	169	208
198	9.02	9.00	34.224	26.511	155.2	0.419	1.35	20.8	40.1	2.48	30.1	0.01	0.01	0.09	199	207
200 ISL	9.00	8.98	34.226	26.516	154.8	0.422	1.35	20.8	40.3	2.48	30.2	0.01			201	
228	8.66	8.64	34.237	26.578	149.3	0.464	1.30	19.9	43.0	2.55	31.0	0.00			229	206
250 ISL	8.45	8.42	34.257	26.627	145.0	0.497	1.10	16.7	46.4	2.64	32.0	0.00			252	
268	8.27	8.24	34.272	26.666	141.6	0.522	0.91	13.8	49.5	2.72	32.9	0.01			270	205
300 ISL	7.79	7.76	34.278	26.742	134.6	0.567	0.75	11.2	55.0	2.83	34.4	0.00			302	
318	7.53	7.50	34.278	26.780	131.2	0.591	0.70	10.4	57.9	2.88	35.2	0.00			320	204
377	7.08	7.04	34.287	26.851	125.1	0.666	0.54	8.0	63.9	2.98	36.7	0.00			379	203
400 ISL	6.90	6.86	34.294	26.882	122.5	0.695	0.48	7.0	66.8	3.02	37.3	0.00			403	
437	6.62	6.58	34.306	26.929	118.3	0.739	0.39	5.7	71.6	3.08	38.2	0.00			440	202
500 ISL	6.26	6.22	34.324	26.991	113.0	0.812	0.30	4.3	78.3	3.15	39.2	0.00			504	
515	6.18	6.13	34.328	27.005	111.9	0.829	0.28	4.0	79.9	3.17	39.4	0.00			519	201

RV ROGER REVELLE CALCOFI CRUISE 0304 STATION 87 45

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE
33 29.4 N	119 19.1 W	11/04/03	1120 UTC	1649 m	300 11 kn			1015.4 mb	13.8 C	13.1 C			

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	12.73	12.73	33.427	25.228	273.1	0.000	6.74	112.0	1.5	0.57	3.3	0.11	9.17	2.74	0	
2	12.73	12.73	33.427	25.228	273.1	0.005	6.74	112.0	1.5	0.57	3.3	0.11	9.17	2.74	2	222
10 ISL	12.57	12.57	33.410	25.246	271.6	0.027	6.38	105.6	3.6	0.66	5.1	0.14	6.14	2.50	10	
11	12.55	12.55	33.408	25.249	271.4	0.030	6.30	104.3	4.1	0.69	5.5	0.15	5.59	2.47	11	219
20 ISL	11.79	11.79	33.422	25.404	256.8	0.054	5.49	89.4	10.1	1.10	10.5	0.24	1.49	1.11	20	
21	11.70	11.70	33.426	25.424	255.0	0.056	5.41	88.0	10.7	1.15	11.0	0.25	1.14	0.97	21	218
30	11.31	11.31	33.459	25.521	245.9	0.079	5.17	83.4	12.3	1.27	13.0	0.27	1.04	0.91	30	217
40	10.64	10.64	33.513	25.682	230.8	0.103	4.51	71.7	16.4	1.49	16.8	0.24	0.70	0.81	40	216
50	10.02	10.01	33.639	25.887	211.5	0.125	3.67	57.6	21.5	1.73	20.9	0.17	0.31	0.76	50	215
60	9.90	9.89	33.700	25.955	205.2	0.146	3.39	53.1	23.2	1.80	22.0	0.12	0.22	0.59	60	214
70	9.88	9.87	33.768	26.012	200.1	0.166	3.16	49.5	24.6	1.87	22.7	0.08	0.19	0.48	70	213
75 ISL	9.86	9.85	33.807	26.046	197.0	0.176	2.99	46.8	25.4	1.91	23.3	0.06	0.17	0.43	75	
85	9.81	9.80	33.878	26.110	191.1	0.195	2.67	41.8	27.0	2.00	24.4	0.04	0.13 A	0.36 A	85	212
100	9.74	9.73	33.941	26.171	185.6	0.223	2.42	37.8	28.6	2.07	25.3	0.03	0.10	0.32	101	211
120	9.56	9.55	34.021	26.264	177.2	0.260	2.18	33.9	30.9	2.16	26.5	0.03	0.07	0.24	121	210
125 ISL	9.50	9.49	34.045	26.292	174.6	0.269	2.11	32.8	31.7	2.19	26.9	0.03	0.06	0.20	126	
140	9.32	9.30	34.114	26.376	167.0	0.294	1.90	29.4	34.3	2.28	28.1	0.03	0.04	0.10	141	209
150 ISL	9.23	9.21	34.150	26.419	163.1	0.311	1.76	27.2	35.8	2.33	28.7	0.03	0.03	0.11	151	
170	9.03	9.01	34.196	26.487	156.9	0.343	1.53	23.6	38.6	2.43	29.7	0.03	0.02	0.13	171	208
200	8.56	8.54	34.197	26.562	150.3	0.389	1.41	21.5	43.2	2.53	31.3	0.02	0.01	0.12	201	207
229	8.26	8.24	34.242	26.643	143.0	0.431	1.09	16.5	47.8	2.67	32.6	0.02			230	206
250 ISL	8.13	8.10	34.259	26.677	140.2	0.461	0.95	14.3	49.9	2.74	33.2	0.02			252	
268	8.02	7.99	34.267	26.699	138.3	0.486	0.87	13.1	51.6	2.78	33.6	0.02			270	205
300 ISL	7.65	7.62	34.276	26.761	132.8	0.529	0.73	10.9	56.3	2.87	34.8	0.02			302	
318	7.42	7.39	34.279	26.797	129.6	0.553	0.67	10.0	59.2	2.91	35.5	0.02			320	204
377	6.88	6.84	34.294	26.884	121.8	0.627	0.50	7.3	66.8	3.03	37.3	0.02			380	203
400 ISL	6.71	6.67	34.300	26.912	119.4	0.655	0.48	7.0	69.4	3.07	37.8	0.02			403	
438	6.47	6.43	34.310	26.952	116.0	0.700	0.46	6.7	73.7	3.12	38.6	0.03			441	202
500 ISL	6.11	6.07	34.330	27.015	110.6	0.770	0.32	4.6	81.0	3.19	39.4	0.02			504	
514	6.03	5.98	34.335	27.029	109.4	0.785	0.29	4.2	82.7	3.21	39.6	0.02			518	201

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

RV ROGER REVELLE CALCOFI CRUISE 0304 STATION 87 50

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE
33 19.4 N	119 39.8 W	11/04/03	1500 UTC	85 m	320 10 kn	330 02 05	1	1016.9 mb	12.7 C	12.1 C	05m	5/8	ST

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	12.66	12.66	33.390	25.213	274.5	0.000	6.63	110.0	1.3	0.57	3.9	0.18	10.35	1.49	0	
2	12.66	12.66	33.390	25.213	274.5	0.005	6.63	110.0	1.3	0.57	3.9	0.18	10.35	1.49	2	211
6	12.66	12.66	33.390	25.213	274.6	0.016	6.61	109.7	1.2	0.60	3.9	0.18	10.02	1.45	6	210
10 ISL	12.52	12.52	33.389	25.240	272.2	0.027	6.49	107.3	2.1	0.68	5.0	0.19	7.77	1.32	10	
11	12.47	12.47	33.387	25.248	271.5	0.030	6.44	106.4	2.4	0.71	5.4	0.20	7.10	1.29	11	207
20 ISL	11.74	11.74	33.329	25.341	262.8	0.054	5.56	90.4	6.8	1.00	9.4	0.25	3.58	1.46	20	
21	11.64	11.64	33.326	25.357	261.3	0.057	5.44	88.3	7.5	1.04	9.9	0.25	3.28	1.47	21	206
30 ISL	10.75	10.75	33.442	25.608	237.7	0.079	4.58	73.0	15.0	1.41	15.9	0.20	0.57	0.66	30	
31	10.67	10.67	33.458	25.634	235.2	0.082	4.51	71.7	15.7	1.45	16.5	0.19	0.36	0.56	31	205
41	10.58	10.58	33.501	25.684	230.7	0.105	4.39	69.7	17.3	1.55	17.8	0.27	0.37	0.56	41	204
50 ISL	10.30	10.29	33.566	25.783	221.4	0.125	4.15	65.5	19.3	1.63	19.3	0.30	0.29	0.64	50	
51	10.27	10.26	33.573	25.793	220.4	0.127	4.12	65.0	19.5	1.64	19.4	0.30	0.28	0.65	51	203
61	10.22	10.21	33.596	25.820	218.1	0.149	3.95	62.3	20.2	1.68	19.8	0.26	0.25	0.63	61	202
73	10.16	10.15	33.615	25.845	216.0	0.175	3.81	60.0	20.9	1.72	20.3	0.24	0.03	1.01	73	201

RV ROGER REVELLE CALCOFI CRUISE 0304 STATION 87 55

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT TYPE
33 9.2 N	120 0.1 W	12/04/03	0424 UTC	1216 m	270 06 kn			1014.8 mb	14.8 C	13.2 C		

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	13.49	13.49	33.223	24.919	302.5	0.000	6.55	110.4	0.6	0.47	2.3	0.11	2.99	0.38	0	
2	13.49	13.49	33.223	24.919	302.5	0.006	6.55	110.4	0.6	0.47	2.3	0.11	2.99	0.38	2	220
10 ISL	12.95	12.95	33.340	25.118	283.8	0.030	7.45	124.3	0.3	0.40	0.9	0.08	10.07	2.69	10	
11	12.86	12.86	33.363	25.153	280.5	0.032	7.57	126.1	0.3	0.40	0.7	0.08	11.44	3.07	11	219
20	12.56	12.56	33.553	25.359	261.1	0.057	7.17	118.8	0.7	0.58	1.6	0.06	23.72	4.83	20	218
30	11.88	11.88	33.553	25.489	249.0	0.082	6.28	102.6	5.5	0.92	7.0	0.15	13.52	2.80	30	217
40	11.19	11.19	33.526	25.595	239.1	0.107	5.15	82.9	13.0	1.35	13.6	0.25	1.60	1.51	40	216
50	10.99	10.98	33.562	25.659	233.2	0.130	4.93	79.0	15.1	1.43	15.1	0.22	1.36	1.06	50	215
60	10.56	10.55	33.561	25.734	226.3	0.153	4.52	71.7	17.1	1.53	17.1	0.17	0.93	0.94	60	214
70	9.75	9.74	33.546	25.860	214.5	0.175	3.89	60.7	20.0	1.68	20.6	0.07	0.42	0.61	70	213
75 ISL	9.76	9.75	33.618	25.915	209.4	0.186	3.68	57.4	21.5	1.74	21.6	0.09	0.37	0.59	75	
85	9.78	9.77	33.750	26.015	200.1	0.206	3.29	51.4	24.3	1.86	22.9	0.15	0.28	0.56	85	212
99	9.80	9.79	33.915	26.141	188.5	0.234	2.54	39.7	27.9	2.02	24.8	0.08	0.23	0.54	100	211
100 ISL	9.79	9.78	33.922	26.148	187.8	0.235	2.51	39.3	28.1	2.03	24.9	0.08	0.23	0.55	101	
125	9.51	9.50	34.042	26.288	175.0	0.281	2.09	32.5	31.9	2.18	27.0	0.04	0.16	0.65	126	210
147	9.27	9.25	34.124	26.392	165.6	0.318	1.78	27.6	35.8	2.33	28.7	0.02	0.08	0.43	148	209
150 ISL	9.24	9.22	34.137	26.407	164.2	0.323	1.72	26.6	36.3	2.35	28.9	0.02	0.07	0.41	151	
172	9.07	9.05	34.215	26.496	156.2	0.358	1.35	20.8	39.6	2.48	30.0	0.02	0.05	0.30	173	208
200 ISL	8.89	8.87	34.237	26.542	152.3	0.402	1.23	18.9	41.9	2.54	30.6	0.01	0.05	0.39	201	
203	8.87	8.85	34.237	26.545	152.1	0.406	1.23	18.9	42.1	2.54	30.7	0.01	0.05	0.40	204	207
234	8.60	8.58	34.253	26.600	147.3	0.453	1.09	16.6	45.1	2.63	31.6	0.01			235	206
250 ISL	8.29	8.26	34.225	26.626	145.0	0.476	1.17	17.7	46.8	2.63	32.2	0.01			252	
272	7.81	7.78	34.184	26.665	141.4	0.507	1.28	19.2	49.5	2.64	33.1	0.01			274	205
300 ISL	7.38	7.35	34.185	26.728	135.7	0.546	1.16	17.2	54.5	2.72	34.5	0.02			302	
320	7.12	7.09	34.195	26.772	131.6	0.573	1.02	15.0	58.4	2.80	35.6	0.02			322	204
380	6.42	6.39	34.190	26.863	123.4	0.650	0.74	10.7	68.0	3.01	38.1	0.00			383	203
400 ISL	6.26	6.22	34.196	26.889	121.2	0.674	0.68	9.8	70.5	3.03	38.7	0.00			403	
433	6.05	6.01	34.210	26.927	117.8	0.713	0.59	8.5	74.4	3.06	39.5	0.00			436	202
500 ISL	5.71	5.67	34.253	27.004	111.1	0.790	0.40	5.7	82.3	3.16	40.8	0.00			504	
511	5.65	5.61	34.260	27.017	110.0	0.802	0.37	5.3	83.6	3.18	41.0	0.00			515	201

RV ROGER REVELLE CALCOFI CRUISE 0304 STATION 87 60

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT TYPE
32 59.4 N	120 20.9 W	12/04/03	0854 UTC	724 m	310 04 kn			1014.9 mb	14.2 C	12.4 C		

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	14.74	14.74	33.202	24.643	328.8	0.000	6.10	105.5	1.7	0.41	0.1	0.00	0.71	0.15	0	
2	14.74	14.74	33.202	24.643	328.8	0.007	6.10	105.5	1.7	0.41	0.1	0.00	0.71	0.15	2	220
10	14.75	14.75	33.201	24.640	329.3	0.033	6.11	105.7	1.7	0.41	0.1	0.00	0.69	0.18	10	219
20	14.56	14.56	33.200	24.680	325.8	0.066	6.14	105.8	1.7	0.41	0.1	0.00	0.81	0.18	20	218
30	14.00	14.00	33.190	24.790	315.6	0.098	6.05	103.1	2.3	0.46	0.7	0.04	1.28	0.44	30	217
40	13.61	13.60	33.192	24.872	308.1	0.129	5.96	100.7	3.0	0.55	1.8	0.10	0.82	0.37	40	216
50	13.59	13.58	33.192	24.876	307.9	0.160	5.94	100.3	3.0	0.57	1.9	0.10	0.55	0.34	50	215
60	12.53	12.52	33.223	25.110	285.8	0.189	5.48	90.5	6.2	0.87	6.6	0.36	0.21	0.21	60	214
69	12.27	12.26	33.291	25.213	276.2	0.215	5.45	89.6	7.8	0.98	8.2	0.38	0.19	0.19	69	213
75 ISL	12.04	12.03	33.319	25.278	270.2	0.231	5.32	87.0	8.9	1.06	9.6	0.35	0.17	0.19	75	
85	11.48	11.47	33.380	25.430	255.9	0.257	4.86	78.6	11.7	1.23	12.9	0.30	0.13	0.20	85	212
100	10.03	10.02	33.594	25.851	216.0	0.293	3.59	56.3	19.5	1.67	20.3	0.03	0.05	0.14	100	211
120	10.03	10.02	33.816	26.025	199.9	0.334	2.82	44.3	23.9	1.89	23.2	0.01	0.04	0.12	121	210
125 ISL	10.00	9.99	33.858	26.063	196.5	0.344	2.66	41.8	24.9	1.94	23.8	0.01	0.03	0.11	126	
140	9.88	9.86	33.957	26.161	187.5	0.373	2.29	35.9	27.6	2.07	25.4	0.02	0.02	0.09	141	209
150 ISL	9.80	9.78	33.999	26.207	183.3	0.392	2.15	33.6	28.8	2.12	26.1	0.02	0.02	0.08	151	
169	9.65	9.63	34.051	26.273	177.4	0.426	2.00	31.2	30.7	2.19	27.0	0.02	0.02	0.08	170	208
199	9.38	9.36	34.110	26.364	169.3	0.478	1.84	28.5	33.6	2.28	28.3	0.01	0.00	0.07	200	207
200 ISL	9.37	9.35	34.112	26.367	169.0	0.480	1.83	28.4	33.7	2.28	28.3	0.01			201	
229	9.16	9.13	34.153	26.434	163.2	0.528	1.65	25.5	36.5	2.37	29.4	0.01			230	206
250 ISL	8.95	8.92	34.174	26.484	158.8	0.562	1.55	23.8	38.7	2.43	30.1	0.00			251	
269	8.75	8.72	34.188	26.526	155.0	0.591	1.46	22.3	40.7	2.48	30.8	0.00			271	205
300 ISL	8.45	8.42	34.207	26.588	149.6	0.639	1.30	19.8	44.0	2.56	31.8	0.00			302	
319	8.22	8.19	34.212	26.627	146.2	0.667	1.21	18.3	46.6	2.61	32.5	0.00			321	204
378	6.96	6.92	34.181	26.784	131.3	0.749	0.98	14.4	59.5	2.82	36.2	0.00			380	203
400 ISL	6.80	6.76	34.183	26.808	129.3	0.777	0.93	13.6	61.4	2.85	36.7	0.00			403	
438	6.68	6.64	34.192	26.831	127.6	0.826	0.86	12.5	63.6	2.89	37.2	0.00			441	202
500 ISL	6.34	6.29	34.204	26.886	123.0	0.904	0.66	9.6	70.0	3.00	38.7	0.00			503	
514	6.26	6.21	34.207	26.899	121.9	0.921	0.62	9.0	71.4	3.02	39.0	0.00			518	201

RV ROGER REVELLE CALCOFI CRUISE 0304 STATION 87 70

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE
32 38.7 N	121 2.7 W	12/04/03	1806 UTC	3731 m	030 12 kn	240 06 09	5	1015.4 mb	15.3 C	14.8 C	08m	6/8	SC

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	14.63	14.63	33.193	24.659	327.2	0.000	6.38	110.1	2.7	0.43	0.1	0.01			0	
1	14.67	14.67	33.191	24.649	328.2	0.003									1	223
2 A	14.63	14.63	33.193	24.659	327.3	0.007	6.38	110.1	2.7	0.43	0.1	0.01			2	222
6 A	14.55	14.55	33.198	24.680	325.4	0.020	6.40	110.3	2.6	0.42	0.1	0.01	1.64	0.28	6	221
10 ISL	14.50	14.50	33.200	24.693	324.3	0.033	6.43	110.7	2.6	0.42	0.1	0.01	1.71	0.27	10	
11 A	14.49	14.49	33.201	24.696	324.1	0.036	6.43	110.6	2.6	0.42	0.1	0.01	1.73	0.27	11	220
17 A	13.92	13.92	33.199	24.813	313.0	0.055	6.38	108.5	2.7	0.45	0.5	0.03	1.92	0.44	17	219
20 ISL	13.85	13.85	33.199	24.828	311.7	0.064	6.34	107.7	2.6	0.46	0.6	0.03	1.86	0.45	20	
22 A	13.83	13.83	33.199	24.832	311.4	0.071	6.31	107.1	2.6	0.47	0.7	0.03	1.82	0.46	22	218
30 ISL	13.60	13.60	33.198	24.878	307.2	0.095	6.06	102.4	2.7	0.54	1.7	0.07	1.27	0.47	30	
31 A	13.57	13.57	33.198	24.885	306.6	0.098	6.03	101.8	2.7	0.55	1.8	0.08	1.20	0.47	31	217
40	13.54	13.53	33.199	24.892	306.2	0.126	6.05	102.1	2.8	0.55	1.8	0.08	1.14	0.50	40	216
50	13.44	13.43	33.196	24.910	304.7	0.156	6.00	101.0	3.0	0.59	2.1	0.11	0.53	0.32	50	215
60	12.98	12.97	33.195	25.001	296.3	0.187	5.83	97.2	4.1	0.70	3.6	0.21	0.33	0.26	60	214
71	11.94	11.93	33.234	25.231	274.5	0.218	5.16	84.2	8.2	1.04	9.6	0.43	0.15	0.19	71	213
75 ISL	11.68	11.67	33.275	25.311	267.0	0.229	5.09	82.6	9.9	1.14	11.3	0.45	0.15	0.20	75	
84	11.22	11.21	33.373	25.472	251.9	0.252	5.02	80.7	13.3	1.32	14.2	0.50	0.14	0.21	84	212
98	10.66	10.65	33.446	25.628	237.3	0.286	4.56	72.5	15.8	1.46	17.0	0.23	0.15	0.22	98	211
100 ISL	10.64	10.63	33.448	25.633	236.8	0.291	4.55	72.3	15.9	1.47	17.1	0.23	0.15	0.22	100	
119	10.50	10.49	33.464	25.670	233.7	0.336	4.45	70.5	16.6	1.51	17.6	0.18	0.11	0.20	120	210
125 ISL	10.35	10.34	33.496	25.721	229.0	0.350	4.27	67.4	17.3	1.55	18.3	0.13	0.10	0.18	126	
140	9.94	9.92	33.600	25.872	214.9	0.383	3.75	58.7	19.6	1.66	20.4	0.02	0.06	0.14	141	209
150 ISL	9.75	9.73	33.681	25.967	206.0	0.404	3.51	54.8	21.4	1.73	21.6	0.02	0.04	0.11	151	
170	9.41	9.39	33.831	26.140	189.9	0.444	3.13	48.5	25.3	1.86	23.9	0.01	0.02	0.07	171	208
199	8.81	8.79	33.953	26.332	172.1	0.496	2.76	42.2	30.5	2.02	26.6	0.01	0.01	0.04	200	207
200 ISL	8.79	8.77	33.957	26.338	171.5	0.498	2.74	41.9	30.7	2.03	26.7	0.01			201	
228	8.35	8.33	34.041	26.472	159.2	0.544	2.25	34.1	37.0	2.24	29.6	0.01			229	206
250 ISL	8.00	7.97	34.053	26.534	153.5	0.579	2.24	33.7	40.4	2.29	30.6	0.00			251	
269	7.73	7.70	34.054	26.575	149.9	0.607	2.24	33.5	42.9	2.32	31.2	0.00			271	205
300 ISL	7.47	7.44	34.094	26.644	143.7	0.653	1.88	27.9	47.9	2.47	32.7	0.00			302	
319	7.35	7.32	34.123	26.684	140.2	0.680	1.60	23.7	50.9	2.58	33.7	0.00			321	204
377	7.00	6.96	34.185	26.782	131.6	0.759	1.00	14.7	59.2	2.83	36.2	0.00			379	203
400 ISL	6.86	6.82	34.216	26.826	127.7	0.788	0.82	12.0	62.7	2.91	36.9	0.00			403	
437	6.60	6.56	34.257	26.893	121.7	0.835	0.59	8.6	68.2	3.02	38.0	0.00			440	202
500 ISL	6.04	6.00	34.256	26.965	115.2	0.909	0.47	6.8	76.9	3.12	40.0	0.00			503	
517	5.89	5.85	34.256	26.984	113.4	0.929	0.44	6.3	79.3	3.15	40.5	0.00			521	201

A) PRIMARY PRODUCTIVITY SAMPLES WERE TAKEN FROM THESE LEVELS.

RV ROGER REVELLE CALCOFI CRUISE 0304 STATION 87 80

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE
32 19.4 N	121 42.9 W	12/04/03	2236 UTC	4088 m	200 14 kn	280 04 07	1	1014.0 mb	17.2 C	14.8 C	18m	4/8	SC

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	15.47	15.47	33.152	24.446	347.6	0.000	6.01	105.5	1.5	0.41	0.0	0.00	0.22	0.04	0	
2	15.47	15.47	33.152	24.446	347.6	0.007	6.01	105.5	1.5	0.41	0.0	0.00	0.22	0.04	2	220
10	15.35	15.35	33.150	24.471	345.5	0.035	5.98	104.7	1.5	0.41	0.0	0.00	0.23	0.05	10	219
20	14.73	14.73	33.138	24.596	333.8	0.069	6.00	103.7	1.5	0.42	0.0	0.00	0.33	0.12	20	218
30	14.45	14.45	33.153	24.668	327.3	0.102	6.08	104.5	1.5	0.41	0.0	0.00	0.70	0.27	30	217
39	14.19	14.18	33.154	24.723	322.3	0.131	5.95	101.7	1.6	0.46	0.4	0.05	0.90	0.32	39	216
50	13.43	13.42	33.135	24.865	309.0	0.166	5.84	98.3	2.4	0.58	1.7	0.21	0.57	0.29	50	215
60	13.00	12.99	33.114	24.934	302.6	0.196	5.69	94.9	3.6	0.68	3.5	0.35	0.33	0.24	60	214
70	12.44	12.43	33.095	25.029	293.8	0.226	5.43	89.5	5.8	0.84	6.6	0.26	0.24	0.23	70	213
75 ISL	11.87	11.86	33.107	25.146	282.8	0.240	5.24	85.3	7.3	0.97	8.8	0.18	0.20	0.25	75	
84	10.88	10.87	33.166	25.371	261.4	0.265	4.90	78.1	10.1	1.19	12.6	0.04	0.14	0.27	84	212
99	10.50	10.49	33.329	25.565	243.3	0.303	4.50	71.2	13.3	1.36	15.7	0.02	0.09	0.13	99	211
100 ISL	10.45	10.44	33.335	25.578	242.0	0.305	4.49	71.0	13.5	1.37	15.9	0.02	0.09	0.12	100	
120	9.57	9.56	33.466	25.828	218.5	0.351	4.19	65.0	18.2	1.58	19.6	0.02	0.02	0.04	121	210
125 ISL	9.46	9.45	33.522	25.890	212.7	0.362	4.03	62.4	19.6	1.64	20.6	0.02	0.02	0.04	126	
139	9.26	9.24	33.686	26.051	197.7	0.391	3.53	54.5	23.6	1.80	23.2	0.01	0.01	0.04	140	209
150 ISL	9.05	9.03	33.787	26.163	187.2	0.412	3.24	49.8	26.6	1.90	24.9	0.01	0.01	0.04	151	
169	8.74	8.72	33.924	26.319	172.7	0.446	2.84	43.4	31.1	2.03	27.2	0.01	0.01	0.04	170	208
199	8.59	8.57	34.055	26.446	161.2	0.496	2.35	35.8	35.8	2.18	28.8	0.01	0.01	0.05	200	207
200 ISL	8.58	8.56	34.058	26.450	160.8	0.498	2.33	35.5	36.0	2.19	28.9	0.01			201	
229	8.31	8.29	34.111	26.533	153.4	0.543	1.95	29.5	40.3	2.34	30.5	0.01			230	206
250 ISL	8.03	8.00	34.117	26.580	149.2	0.575	1.84	27.7	43.4	2.42	31.6	0.00			251	
268	7.78	7.75	34.116	26.616	146.0	0.602	1.78	26.6	46.0	2.48	32.4	0.00			270	205
300 ISL	7.47	7.44	34.136	26.677	140.6	0.648	1.53	22.7	50.5	2.60	33.8	0.00			302	
318	7.32	7.29	34.150	26.709	137.7	0.673	1.37	20.3	53.0	2.67	34.5	0.00			320	204
377	6.77	6.74	34.182	26.811	128.7	0.751	0.93	13.6	62.1	2.87	37.1	0.00			379	203
400 ISL	6.61	6.57	34.204	26.850	125.2	0.780	0.79	11.5	65.5	2.94	37.8	0.00			403	
437	6.38	6.34	34.240	26.909	120.0	0.826	0.61	8.8	70.8	3.04	38.8	0.00			440	202
500 ISL	5.98	5.94	34.281	26.993	112.5	0.899	0.38	5.5	78.7	3.16	40.3	0.00			503	
515	5.88	5.84	34.291	27.013	110.7	0.916	0.32	4.6	80.6	3.19	40.6	0.00			518	201

RV ROGER REVELLE CALCOFI CRUISE 0304 STATION 87 90

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT TYPE
31 59.4 N	122 23.6 W	13/04/03	0400 UTC	4087 m	190 11 kn			1013.7 mb	16.1 C	13.9 C		

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	15.00	15.00	33.088	24.499	342.5	0.000	6.03	104.8	2.1	0.41	0.0	0.00	0.30	0.07	0	
3	15.00	15.00	33.088	24.499	342.6	0.010	6.03	104.8	2.1	0.41	0.0	0.00	0.30	0.07	3	220
10	14.48	14.48	33.116	24.632	330.1	0.034	6.14	105.6	2.2	0.41	0.0	0.00	0.33	0.11	10	219
20 ISL	14.32	14.32	33.123	24.672	326.6	0.067	6.15	105.4	2.2	0.41	0.0	0.00	0.43	0.12	20	
21	14.30	14.30	33.124	24.677	326.2	0.070	6.15	105.4	2.2	0.41	0.0	0.00	0.44	0.12	21	218
30	14.23	14.23	33.125	24.692	324.9	0.099	6.16	105.4	2.1	0.40	0.0	0.00	0.49	0.19	30	217
41	14.16	14.15	33.132	24.713	323.3	0.135	6.09	104.0	2.2	0.41	0.0	0.00	0.71	0.27	41	216
49	13.97	13.96	33.139	24.758	319.3	0.161	5.94	101.1	2.2	0.48	0.4	0.05	0.78	0.36	49	215
50 ISL	13.96	13.95	33.140	24.760	319.0	0.164	5.93	100.9	2.2	0.48	0.4	0.05	0.76	0.35	50	
61	13.80	13.79	33.155	24.805	315.0	0.199	5.86	99.4	2.3	0.52	0.8	0.08	0.41	0.24	61	214
70	13.46	13.45	33.167	24.884	307.7	0.227	5.83	98.2	2.7	0.59	1.8	0.16	0.28	0.20	70	213
75 ISL	13.04	13.03	33.152	24.956	300.9	0.242	5.67	94.7	3.8	0.69	3.6	0.18	0.22	0.18	75	
86	11.84	11.83	33.106	25.151	282.5	0.274	5.27	85.7	7.1	0.96	8.5	0.23	0.13	0.15	86	212
99	10.28	10.27	33.073	25.403	258.6	0.309	5.03	79.1	11.1	1.23	13.1	0.03	0.10	0.13	99	211
100 ISL	10.26	10.25	33.096	25.424	256.6	0.312	4.99	78.5	11.5	1.25	13.5	0.03	0.10	0.13	100	
119	9.80	9.79	33.478	25.800	221.2	0.357	4.10	64.0	17.8	1.57	19.1	0.01	0.03	0.06	120	210
125 ISL	9.72	9.71	33.556	25.874	214.3	0.370	3.87	60.3	19.3	1.64	20.2	0.01	0.02	0.05	126	
139	9.58	9.56	33.693	26.004	202.2	0.399	3.43	53.3	22.2	1.76	22.1	0.00	0.01	0.04	140	209
150 ISL	9.45	9.43	33.782	26.095	193.8	0.421	3.17	49.2	24.4	1.85	23.4	0.00	0.01	0.04	151	
170	9.22	9.20	33.909	26.232	181.1	0.459	2.79	43.1	28.2	1.98	25.5	0.00	0.01	0.04	171	208
198	8.89	8.87	34.039	26.387	166.9	0.507	2.36	36.2	33.4	2.15	27.8	0.00	0.01	0.04	199	207
200 ISL	8.85	8.83	34.043	26.396	166.1	0.511	2.36	36.2	33.7	2.16	27.9	0.00			201	
228	8.31	8.29	34.070	26.501	156.4	0.556	2.32	35.1	38.2	2.24	29.6	0.00			229	206
250 ISL	7.89	7.86	34.077	26.569	150.2	0.590	2.11	31.6	42.7	2.35	31.2	0.00			251	
268	7.61	7.58	34.085	26.616	145.9	0.616	1.88	28.0	46.4	2.45	32.5	0.00			270	205
300 ISL	7.41	7.38	34.131	26.681	140.1	0.662	1.47	21.8	51.0	2.61	34.0	0.00			302	
318	7.34	7.31	34.159	26.714	137.4	0.687	1.25	18.5	53.3	2.70	34.6	0.00			320	204
376	6.88	6.84	34.210	26.818	128.1	0.764	0.80	11.7	62.1	2.90	36.8	0.00			378	203
400 ISL	6.73	6.69	34.224	26.849	125.3	0.794	0.73	10.7	65.0	2.96	37.4	0.00			403	
437	6.50	6.46	34.243	26.895	121.4	0.840	0.66	9.6	69.3	3.03	38.3	0.00			440	202
500 ISL	6.05	6.01	34.282	26.985	113.4	0.914	0.40	5.8	77.9	3.15	39.9	0.00			503	
516	5.94	5.89	34.292	27.007	111.4	0.932	0.33	4.7	80.1	3.18	40.3	0.00			519	201

RV ROGER REVELLE CALCOFI CRUISE 0304 STATION 87 100

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT TYPE
31 39.4 N	123 4.2 W	13/04/03	1027 UTC	4139 m	310 14 kn			1012.0 mb	15.1 C	14.2 C		

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	15.65	15.65	32.835	24.162	374.6	0.000	5.81	102.1	1.2	0.39	0.1	0.00	0.10	0.02	0	
2	15.65	15.65	32.835	24.162	374.7	0.007	5.81	102.1	1.2	0.39	0.1	0.00	0.10	0.02	2	220
10 ISL	15.65	15.65	32.835	24.162	374.9	0.037	5.82	102.3	1.2	0.39	0.1	0.00	0.10	0.02	10	
16	15.65	15.65	32.835	24.162	375.1	0.060	5.83	102.5	1.2	0.39	0.1	0.00	0.10	0.02	16	219
20 ISL	15.47	15.47	32.827	24.196	372.0	0.075	5.85	102.4	1.2	0.39	0.1	0.00	0.11	0.02	20	
30	14.98	14.98	32.813	24.292	363.0	0.112	5.91	102.5	1.3	0.40	0.1	0.00	0.14	0.04	30	218
45	14.65	14.64	32.843	24.387	354.5	0.165	5.94	102.3	1.3	0.41	0.1	0.00	0.23	0.09	45	217
50 ISL	14.53	14.52	32.861	24.426	350.9	0.183	5.97	102.6	1.4	0.40	0.1	0.00	0.25	0.08	50	
54	14.45	14.44	32.879	24.457	348.0	0.197	5.99	102.8	1.5	0.40	0.1	0.00	0.26	0.08	54	216
64	14.46	14.45	32.930	24.495	344.8	0.232	5.97	102.5	1.5	0.41	0.1	0.00	0.33	0.13	64	215
75	13.96	13.95	32.956	24.619	333.2	0.269	5.93	100.8	1.6	0.44	0.4	0.04	0.40	0.27	75	214
85	12.48	12.47	32.875	24.851	311.1	0.301	5.79	95.4	3.3	0.66	3.3	0.12	0.28	0.31	85	213
95	11.74	11.73	32.834	24.958	301.0	0.332	5.72	92.7	4.0	0.75	4.7	0.06	0.24	0.26	95	212
100 ISL	11.26	11.25	32.837	25.048	292.5	0.347	5.69	91.3	5.0	0.83	6.1	0.04	0.19	0.22	100	
110	10.30	10.29	32.847	25.223	275.9	0.375	5.50	86.4	7.9	1.03	9.7	0.01	0.09	0.13	110	211
124	10.02	10.01	33.249	25.584	241.8	0.411	4.77	74.7	12.8	1.33	15.2	0.01	0.03	0.04	125	210
125 ISL	10.00	9.99	33.263	25.599	240.5	0.414	4.74	74.2	13.0	1.34	15.4	0.01	0.03	0.04	126	
145	9.58	9.56	33.448	25.813	220.5	0.460	4.35	67.5	16.8	1.49	18.3	0.01	0.01	0.03	146	209
150 ISL	9.46	9.44	33.518	25.887	213.5	0.471	4.17	64.6	18.4	1.55	19.4	0.01	0.01	0.03	151	
169	9.08	9.06	33.769	26.145	189.3	0.509	3.47	53.4	24.4	1.77	23.2	0.00	0.01	0.03	170	208
198	8.84	8.82	33.925	26.305	174.6	0.562	3.00	45.9	29.3	1.94	25.8	0.00	0.01	0.01	199	207
200 ISL	8.82	8.80	33.933	26.315	173.8	0.565	2.97	45.5	29.6	1.95	26.0	0.00			201	
229	8.46	8.44	34.015	26.435	162.8	0.614	2.64	40.1	34.6	2.10	28.1	0.00			230	206
250 ISL	8.15	8.12	34.039	26.501	156.8	0.648	2.44	36.8	38.2	2.20	29.6	0.00			251	
269	7.85	7.82	34.048	26.552	152.0	0.677	2.26	33.9	41.7	2.29	30.9	0.00			270	205
300 ISL	7.37	7.34	34.068	26.637	144.2	0.723	1.88	27.9	48.2	2.48	33.2	0.00			302	
317	7.13	7.10	34.078	26.679	140.4	0.747	1.68	24.8	51.7	2.58	34.3	0.00			319	204
379	6.56	6.53	34.120	26.790	130.5	0.831	1.17	17.0	61.1	2.80	36.9	0.00			381	203
400 ISL	6.39	6.35	34.130	26.820	127.8	0.858	1.10	15.9	64.5	2.87	37.7	0.00			402	
439	6.11	6.07	34.153	26.875	122.9	0.907	0.97	14.0	70.5	2.98	39.1	0.00			442	202
500 ISL	5.89	5.85	34.226	26.960	115.4	0.980	0.50	7.2	77.9	3.12	40.3	0.00			503	
513	5.84	5.80	34.242	26.979	113.8	0.995	0.40	5.7	79.5	3.15	40.5	0.00			516	201

RV ROGER REVELLE CALCOFI CRUISE 0304 STATION 87 110

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE
31 19.0 N	123 45.2 W	13/04/03	1755 UTC	3957 m	340 11 kn	320 07 07	2	1014.7 mb	14.1 C	13.2 C	24m	8/8	SC

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	15.74	15.74	32.808	24.121	378.5	0.000	5.84	102.8	1.1	0.40	0.1	0.00	0.11	0.02	0	
1	15.74	15.74	32.808	24.121	378.5	0.004									1	222
2 A	15.74	15.74	32.808	24.121	378.6	0.008	5.84	102.8	1.1	0.40	0.1	0.00	0.11	0.02	2	221
10 ISL	15.57	15.57	32.796	24.150	376.1	0.038	5.88	103.2	1.1	0.40	0.1	0.00	0.11	0.02	10	
18 A	15.32	15.32	32.781	24.194	372.1	0.068	5.93	103.5	1.2	0.41	0.1	0.00	0.12	0.02	18	220
20 ISL	15.28	15.28	32.779	24.201	371.5	0.075	5.93	103.4	1.2	0.41	0.1	0.00	0.12	0.02	20	
30 ISL	15.10	15.10	32.775	24.237	368.3	0.112	5.94	103.2	1.3	0.41	0.0	0.00	0.13	0.03	30	
34 A	15.04	15.03	32.775	24.250	367.2	0.127	5.94	103.1	1.3	0.41	0.0	0.00	0.13	0.04	34	219
50 ISL	14.93	14.92	32.790	24.286	364.2	0.185	5.99	103.7	1.3	0.40	0.0	0.00	0.18	0.05	50	
51 A	14.93	14.92	32.791	24.287	364.2	0.189	5.99	103.7	1.3	0.40	0.0	0.00	0.19	0.05	51	218
66 A	14.79	14.78	32.793	24.319	361.6	0.243	5.97	103.1	1.2	0.40	0.0	0.00	0.31	0.13	66	217
74	14.59	14.58	32.802	24.369	357.0	0.272	5.99	103.0	1.3	0.41	0.0	0.00	0.40	0.26	74	216
75 ISL	14.57	14.56	32.804	24.374	356.5	0.276	5.99	103.0	1.3	0.41	0.0	0.00	0.40	0.27	75	
84	14.41	14.40	32.834	24.432	351.3	0.308	6.00	102.8	1.4	0.43	0.1	0.00	0.38	0.32	84	215
91 A	14.23	14.22	32.872	24.499	345.1	0.332	5.98	102.1	1.6	0.44	0.2	0.02	0.37	0.30	91	214
97	13.85	13.84	32.873	24.578	337.6	0.352	5.91	100.1	1.8	0.48	0.5	0.07	0.36	0.34	97	213
100 ISL	13.50	13.49	32.866	24.644	331.4	0.362	5.90	99.3	2.1	0.51	0.9	0.09	0.34	0.34	100	
105	12.90	12.89	32.855	24.755	320.9	0.379	5.88	97.7	2.7	0.57	1.8	0.11	0.29	0.34	105	212
113	12.28	12.27	32.848	24.869	310.1	0.404	5.79	94.9	3.5	0.68	3.4	0.12	0.22	0.29	113	211
125	11.41	11.39	32.800	24.993	298.4	0.441	5.80	93.3	4.5	0.78	5.1	0.04	0.17	0.23	126	210
139	10.48	10.46	32.838	25.186	280.1	0.481	5.60	88.3	7.0	0.98	8.7	0.02	0.10	0.13	140	209
150 ISL	10.18	10.16	33.032	25.389	261.0	0.511	5.22	81.9	10.0	1.16	12.0	0.02	0.06	0.08	151	
164	9.99	9.97	33.320	25.646	236.9	0.546	4.67	73.1	14.1	1.38	16.0	0.01	0.03	0.05	165	208
194	9.24	9.22	33.605	25.991	204.4	0.612	3.98	61.4	20.7	1.65	20.9	0.01	0.01	0.02	195	207
200 ISL	9.17	9.15	33.661	26.047	199.3	0.624	3.82	58.8	22.0	1.70	21.8	0.01			201	
229	8.88	8.86	33.888	26.271	178.5	0.679	3.13	48.0	28.4	1.92	25.4	0.00			230	206
250 ISL	8.55	8.52	33.977	26.392	167.3	0.715	2.82	42.9	32.9	2.04	27.5	0.00			251	
268	8.25	8.22	34.021	26.472	159.9	0.744	2.62	39.6	36.5	2.13	29.0	0.00			269	205
300 ISL	7.79	7.76	34.049	26.563	151.6	0.794	2.34	35.0	41.8	2.28	31.0	0.00			302	
318	7.54	7.51	34.050	26.599	148.3	0.821	2.20	32.7	44.7	2.36	31.9	0.00			320	204
379	6.65	6.62	34.076	26.743	135.0	0.908	1.60	23.3	56.6	2.65	35.7	0.00			381	203
400 ISL	6.45	6.41	34.088	26.779	131.7	0.936	1.42	20.6	60.3	2.74	36.7	0.00			402	
434	6.19	6.15	34.109	26.829	127.2	0.980	1.15	16.6	66.0	2.86	38.1	0.00			437	202
500 ISL	5.73	5.69	34.166	26.933	117.9	1.061	0.73	10.4	77.3	3.06	40.5	0.00			503	
515	5.62	5.58	34.179	26.957	115.7	1.078	0.64	9.1	79.9	3.10	41.1	0.00			518	201

A) PRIMARY PRODUCTIVITY SAMPLES WERE TAKEN FROM THESE LEVELS.

RV ROGER REVELLE CALCOFI CRUISE 0304 STATION 90 28

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE
33 29.0 N	117 45.6 W	10/04/03	1843 UTC	56 m	030 07 kn	130 01 07	0	1014.8 mb	16.0 C	14.0 C	08m	0/8	

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	14.52	14.52	33.420	24.858	308.3	0.000	6.87	118.5	3.8	0.36	0.4	0.05	5.22	0.51	0	
1 A	14.52	14.52	33.420	24.858	308.3	0.003	6.87	118.5	3.8	0.36	0.4	0.05	5.22	0.51	1	207
1	14.55	14.55	33.419	24.851	309.0	0.003									1	208
6 A	13.83	13.83	33.432	25.011	293.9	0.018	7.15	121.6	4.4	0.37	0.4	0.06	10.56	0.82	6	206
10 ISL	13.44	13.44	33.433	25.092	286.3	0.030	6.82	115.0	5.2	0.46	0.8	0.08	13.42	1.06	10	
11 A	13.36	13.36	33.433	25.108	284.8	0.033	6.71	113.0	5.5	0.49	1.1	0.09	13.74	1.10	11	205
17 A	12.94	12.94	33.449	25.204	275.8	0.049	6.27	104.7	8.2	0.67	4.7	0.25	10.03	1.05	17	204
20 ISL	12.68	12.68	33.458	25.262	270.3	0.058	5.74	95.3	9.8	0.83	6.9	0.35	6.80	1.14	20	
22 A	12.48	12.48	33.465	25.307	266.2	0.063	5.34	88.3	10.9	0.94	8.5	0.40	4.67	1.18	22	203
30 ISL	11.23	11.23	33.502	25.569	241.4	0.083	4.08	65.7	14.2	1.38	14.9	0.37	1.00	0.58	30	
31 A	11.08	11.08	33.510	25.602	238.2	0.086	3.95	63.4	14.6	1.43	15.6	0.37	0.84	0.49	31	202
40	10.55	10.55	33.645	25.801	219.5	0.106	3.36	53.4	19.1	1.70	19.7	0.27	0.43	0.30	40	201

A) PRIMARY PRODUCTIVITY SAMPLES WERE TAKEN FROM THESE LEVELS.

RV ROGER REVELLE CALCOFI CRUISE 0304 STATION 90 30

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT TYPE
33 25.1 N	117 54.3 W	10/04/03	1257 UTC	624 m	160 11 kn			1011.7 mb	14.3 C	13.2 C		

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	15.44	15.44	33.414	24.654	327.7	0.000	6.48	113.8	2.4	0.34	0.1	0.00	0.51	0.13	0	
2	15.44	15.44	33.414	24.654	327.8	0.007	6.48	113.8	2.4	0.34	0.1	0.00	0.51	0.13	2	220
10	15.03	15.03	33.410	24.741	319.7	0.032	6.47	112.7	3.1	0.38	0.3	0.02	0.59	0.19	10	219
20	12.54	12.54	33.450	25.283	268.3	0.062	4.90	81.1	9.3	1.01	8.0	0.48	0.54	0.40	20	218
30	11.35	11.35	33.467	25.520	246.0	0.088	4.09	66.0	13.2	1.36	14.3	0.39	0.61	0.82	30	217
40	10.96	10.96	33.545	25.651	233.8	0.112	3.78	60.5	15.7	1.50	16.7	0.30	0.38	0.42	40	216
50	10.77	10.76	33.604	25.731	226.4	0.135	3.52	56.1	17.2	1.59	18.2	0.18	0.30	0.43	50	215
60	10.45	10.44	33.697	25.859	214.4	0.157	3.26	51.7	19.7	1.71	20.2	0.11	0.17	0.35	60	214
70	10.17	10.16	33.760	25.957	205.4	0.178	3.08	48.5	22.0	1.80	21.8	0.09	0.19	0.60	70	213
75 ISL	10.09	10.08	33.826	26.022	199.3	0.188	2.85	44.9	23.7	1.88	22.9	0.09	0.14	0.50	75	
85	9.99	9.98	33.962	26.145	187.8	0.207	2.38	37.4	27.0	2.04	25.0	0.08	0.04	0.20	85	212
100	9.88	9.87	34.065	26.244	178.7	0.235	2.07	32.5	29.4	2.16	26.4	0.07	0.03	0.12	101	211
119	9.76	9.75	34.117	26.305	173.3	0.268	1.93	30.2	31.4	2.23	27.3		0.02	0.13	120	210
125 ISL	9.71	9.70	34.132	26.326	171.5	0.278	1.88	29.4	32.1	2.25	27.6		0.03	0.17	126	
140	9.55	9.53	34.169	26.381	166.5	0.304	1.74	27.1	33.9	2.32	28.5		0.05	0.25	141	209
150 ISL	9.41	9.39	34.196	26.426	162.5	0.320	1.62	25.2	35.5	2.38	29.1		0.04	0.23	151	
170	9.14	9.12	34.245	26.508	155.0	0.352	1.36	21.0	38.8	2.49	30.2		0.02	0.15	171	208
200	8.93	8.91	34.282	26.571	149.6	0.398	1.05	16.1	42.5	2.62	31.5		0.02	0.07	201	207
229	8.81	8.79	34.299	26.604	147.0	0.441	0.99	15.2	44.0	2.65	32.0				230	206
250 ISL	8.64	8.61	34.296	26.628	145.0	0.471	0.94	14.4	45.6	2.69	32.5				252	
268	8.48	8.45	34.290	26.648	143.4	0.497	0.90	13.7	47.2	2.72	32.9				270	205
300 ISL	8.21	8.18	34.288	26.688	140.0	0.543	0.83	12.6	49.9	2.78	33.7				302	
318	8.06	8.03	34.287	26.710	138.2	0.568	0.79	11.9	51.5	2.81	34.2				320	204
378	7.48	7.44	34.283	26.792	131.1	0.648	0.67	10.0	57.6	2.91	35.9				381	203
400 ISL	7.16	7.12	34.288	26.841	126.5	0.677	0.57	8.4	62.0	2.98	37.0				403	
438	6.64	6.60	34.301	26.923	118.9	0.723	0.40	5.8	69.9	3.10	38.8				441	202
500 ISL	6.24	6.20	34.321	26.991	113.0	0.795	0.30	4.3	77.3	3.19	40.2				504	
515	6.14	6.09	34.326	27.008	111.5	0.812	0.27	3.9	79.1	3.21	40.6				519	201

RV ROGER REVELLE CALCOFI CRUISE 0304 STATION 90 35

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT TYPE
33 15.1 N	118 15.0 W	10/04/03	0910 UTC	332 m	350 14 kn			1012.1 mb	13.9 C	12.9 C		

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	14.46	14.46	33.413	24.865	307.6	0.000	6.76	116.4	1.8	0.35	0.1	0.01	2.05	0.56	0	
2	14.46	14.46	33.413	24.865	307.7	0.006	6.76	116.4	1.8	0.35	0.1	0.01	2.05	0.56	2	217
10	14.44	14.44	33.412	24.869	307.5	0.031	6.74	116.0	2.0	0.35	0.1	0.01	2.21	0.58	10	216
20	12.67	12.67	33.408	25.226	273.8	0.060	5.85	97.1	4.0	0.85	5.3	0.18	2.33	1.39	20	215
30	12.08	12.08	33.420	25.348	262.4	0.087	5.38	88.2	8.1	1.08	8.8	0.28	1.97	1.36	30	214
40	11.19	11.19	33.461	25.544	243.9	0.112	4.32	69.5	13.3	1.36	14.3	0.31	1.10	1.14	40	213
50	10.53	10.52	33.501	25.693	230.0	0.136	3.96	62.8	16.2	1.51	17.2	0.22	0.48	0.74	50	212
60	10.23	10.22	33.600	25.821	218.0	0.158	3.63	57.2	18.7	1.64	19.4	0.14	0.26	0.56	60	211
70	9.97	9.96	33.720	25.959	205.1	0.179	3.26	51.1	21.6	1.76	21.4		0.13	0.29	70	210
75 ISL	9.95	9.94	33.759	25.993	202.0	0.189	3.17	49.7	22.4	1.79	21.9		0.12	0.27	75	
85	9.92	9.91	33.809	26.037	198.0	0.209	3.01	47.2	23.7	1.85	22.7		0.09	0.23	85	209
99	9.88	9.87	33.917	26.129	189.6	0.237	2.61	40.9	26.3	1.98	24.3		0.06	0.17	100	208
100 ISL	9.87	9.86	33.925	26.137	188.9	0.238	2.58	40.4	26.5	1.99	24.4		0.06	0.17	101	
119	9.67	9.66	34.056	26.273	176.4	0.273	2.12	33.1	30.4	2.17	26.7		0.05	0.21	120	207
125 ISL	9.65	9.64	34.082	26.297	174.2	0.284	2.02	31.5	31.2	2.21	27.1		0.05	0.20	126	
140	9.61	9.59	34.133	26.343	170.1	0.309	1.81	28.2	33.2	2.29	28.0		0.05	0.16	141	206
150 ISL	9.48	9.46	34.170	26.394	165.5	0.326	1.65	25.7	35.0	2.36	28.7		0.05	0.19	151	
170	9.17	9.15	34.232	26.493	156.4	0.358	1.35	20.9	38.7	2.49	30.1		0.04	0.23	171	205
199	8.92	8.90	34.269	26.562	150.4	0.403	1.11	17.1	42.5	2.62	31.4		0.02	0.09	200	204
200 ISL	8.91	8.89	34.269	26.564	150.2	0.404	1.11	17.1	42.6	2.62	31.4				201	
229	8.52	8.50	34.263	26.620	145.3	0.447	1.08	16.5	45.6	2.67	32.2				230	203
250 ISL	8.26	8.23	34.268	26.664	141.4	0.477	0.98	14.8	48.5	2.73	33.1				252	
268	8.06	8.03	34.273	26.698	138.4	0.503	0.88	13.3	51.1	2.79	33.9				270	202
300 ISL	7.76	7.73	34.269	26.740	134.9	0.546	0.80	12.0	54.4	2.85	34.8				302	
322	7.56	7.53	34.267	26.767	132.5	0.576	0.75	11.2	56.7	2.89	35.5				324	201

RV ROGER REVELLE CALCOFI CRUISE 0304 STATION 90 37

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE
33 11.1 N	118 23.2 W	10/04/03	0602 UTC	1183 m	340 12 kn			1012.5 mb	14.2 C	13.0 C			

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	14.07	14.07	33.413	24.947	299.8	0.000	6.85	117.0	0.3	0.34	0.1	0.02	0.67	0.19	0	
2	14.07	14.07	33.413	24.947	299.9	0.006	6.85	117.0	0.3	0.34	0.1	0.02	0.67	0.19	2	223
10	13.88	13.88	33.413	24.987	296.3	0.030	6.93	117.9	0.4	0.32	0.0	0.02	1.13	0.38	10	220
20	13.02	13.02	33.439	25.181	278.1	0.059	6.50	108.7	1.0	0.51	1.5	0.09	4.51	1.83	20	219
30	11.85	11.85	33.486	25.443	253.4	0.085	5.12	83.5	11.4	1.21	11.1	0.31	1.67 A	1.10 A	30	217
40	11.11	11.11	33.533	25.615	237.2	0.110	4.48	72.0	15.6	1.42	15.3	0.39	0.56	0.54	40	216
50	10.95	10.94	33.574	25.676	231.7	0.133	4.14	66.3	16.9	1.51	16.9	0.40	0.44	0.45	50	215
59	10.74	10.73	33.631	25.757	224.1	0.154	3.75	59.8	18.8	1.60	18.2	0.25	0.29	0.39	59	214
69	10.47	10.46	33.702	25.860	214.6	0.176	3.34	53.0	21.1	1.73	20.4	0.13	0.16	0.38	69	213
75 ISL	10.32	10.31	33.747	25.921	208.9	0.188	3.12	49.3	22.5	1.80	21.5	0.09	0.12	0.36	75	
84	10.12	10.11	33.804	26.000	201.6	0.207	2.88	45.3	24.3	1.87	22.7	0.05	0.08	0.31	84	212
99	9.79	9.78	33.840	26.084	193.9	0.236	2.84	44.4	25.1	1.91	23.7	0.06	0.05	0.23	100	211
100 ISL	9.79	9.78	33.847	26.089	193.4	0.238	2.82	44.1	25.2	1.92	23.8		0.05	0.23	101	
119	9.76	9.75	33.986	26.203	183.0	0.274	2.47	38.6	27.6	2.03	25.1		0.05	0.17	120	210
125 ISL	9.68	9.67	34.009	26.234	180.1	0.285	2.41	37.6	28.4	2.05	25.5		0.05	0.15	126	
138	9.52	9.50	34.051	26.294	174.7	0.308	2.29	35.6	30.2	2.11	26.4		0.05	0.12	139	209
150 ISL	9.53	9.51	34.113	26.341	170.5	0.329	2.03	31.6	31.9	2.20	27.3		0.05	0.15	151	
168	9.56	9.54	34.199	26.404	165.0	0.359	1.63	25.4	34.4	2.35	28.5		0.05	0.20	169	208
198	9.17	9.15	34.240	26.500	156.4	0.407	1.38	21.3	38.6	2.47	29.9				199	207
200 ISL	9.13	9.11	34.239	26.505	155.9	0.410	1.38	21.3	38.9	2.47	30.0				201	
228	8.56	8.54	34.216	26.577	149.4	0.453	1.40	21.3	42.4	2.52	31.2				229	206
250 ISL	8.33	8.30	34.228	26.622	145.4	0.485	1.28	19.4	44.9	2.59	31.9				252	
268	8.21	8.18	34.245	26.654	142.7	0.511	1.15	17.4	46.8	2.66	32.5				270	205
300 ISL	7.96	7.93	34.267	26.709	137.9	0.556	0.92	13.8	50.4	2.76	33.7				302	
317	7.82	7.79	34.275	26.736	135.6	0.580	0.81	12.1	52.5	2.81	34.3				319	204
377	7.12	7.08	34.269	26.832	127.0	0.658	0.63	9.3	61.3	2.95	36.7				379	203
400 ISL	6.87	6.83	34.268	26.865	124.0	0.687	0.60	8.8	64.6	3.00	37.6				403	
437	6.51	6.47	34.272	26.917	119.3	0.732	0.55	8.0	69.7	3.07	38.8				440	202
500 ISL	6.16	6.12	34.314	26.996	112.4	0.805	0.33	4.8	77.1	3.18	40.0				503	
514	6.08	6.03	34.324	27.014	110.8	0.821	0.28	4.0	78.7	3.20	40.3				518	201

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

RV ROGER REVELLE CALCOFI CRUISE 0304 STATION 90 45

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE
32 55.1 N	118 56.1 W	10/04/03	0026 UTC	1705 m	270 13 kn	280 02 05	1	1010.6 mb	15.1 C	14.0 C	08m	1/8	ST

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	14.74	14.74	33.321	24.734	320.0	0.000	6.52	112.9	1.5	0.49	0.9	0.08	2.09	0.44	0	
2	14.74	14.74	33.321	24.735	320.1	0.006	6.52	112.9	1.5	0.49	0.9	0.08	2.09	0.44	2	220
10 ISL	13.76	13.76	33.394	24.997	295.4	0.031	6.75	114.6	1.0	0.51	1.2	0.11	3.78	1.07	10	
11	13.60	13.60	33.406	25.039	291.4	0.034	6.77	114.5	0.9	0.51	1.2	0.11	4.05	1.19	11	219
20 ISL	13.11	13.11	33.430	25.156	280.5	0.060	6.30	105.5	1.9	0.65	2.8	0.16	4.78	2.38	20	
21	13.09	13.09	33.430	25.160	280.1	0.062	6.24	104.5	2.1	0.67	3.0	0.16	4.86	2.48	21	218
30 ISL	12.99	12.99	33.432	25.182	278.3	0.088	6.28	104.9	3.1	0.71	3.5	0.17	3.50	2.00	30	
31	12.98	12.98	33.432	25.184	278.1	0.090	6.29	105.1	3.3	0.72	3.6	0.17	3.28	1.90	31	217
41	12.72	12.71	33.438	25.240	273.0	0.118	5.97	99.2	6.3	0.90	5.3	0.23	1.30	1.17	41	216
50	12.23	12.22	33.442	25.337	263.9	0.142	5.68	93.4	8.7	1.06	8.0	0.30	0.79	0.78	50	215
60	11.43	11.42	33.506	25.536	245.2	0.168	4.76	77.0	13.1	1.33	12.8	0.40	0.35	0.54	60	214
70	11.03	11.02	33.516	25.617	237.8	0.192	4.37	70.1	14.8	1.43	15.2	0.39	0.29	0.57	70	213
75 ISL	10.74	10.73	33.515	25.667	233.0	0.204	4.16	66.3	15.7	1.48	16.5	0.30	0.23	0.54	75	
84	10.25	10.24	33.530	25.764	224.0	0.224	3.83	60.4	17.5	1.56	18.5	0.12	0.13	0.45	84	212
99	9.97	9.96	33.643	25.900	211.4	0.257	3.52	55.2	20.3	1.69	20.7	0.10	0.07	0.25	99	211
100 ISL	9.95	9.94	33.653	25.911	210.3	0.259	3.49	54.7	20.6	1.70	20.9		0.07	0.24	101	
119	9.65	9.64	33.843	26.110	191.8	0.297	2.88	44.9	25.5	1.92	24.0		0.03	0.19	120	210
125 ISL	9.59	9.58	33.876	26.145	188.5	0.308	2.77	43.1	26.5	1.96	24.6		0.02	0.17	126	
139	9.48	9.46	33.936	26.211	182.6	0.334	2.58	40.1	28.4	2.03	25.6		0.02	0.12	140	209
150 ISL	9.39	9.37	33.995	26.271	177.1	0.354	2.36	36.6	30.4	2.11	26.6		0.02	0.11	151	
168	9.26	9.24	34.077	26.357	169.3	0.385	2.05	31.7	33.4	2.23	28.1		0.02	0.10	169	208
198	9.10	9.08	34.115	26.413	164.5	0.435	1.88	29.0	35.9	2.31	29.2		0.01	0.08	199	207
200 ISL	9.08	9.06	34.119	26.419	164.0	0.439	1.86	28.7	36.2	2.32	29.3				201	
228	8.78	8.76	34.176	26.512	155.7	0.483	1.58	24.2	40.1	2.45	30.8				229	206
250 ISL	8.67	8.64	34.204	26.551	152.3	0.517	1.43	21.8	42.0	2.52	31.4				251	
267	8.58	8.55	34.218	26.576	150.2	0.543	1.34	20.4	43.3	2.56	31.8				269	205
300 ISL	8.18	8.15	34.233	26.649	143.7	0.592	1.17	17.7	47.4	2.65	33.1				302	
317	7.95	7.92	34.237	26.687	140.3	0.616	1.09	16.4	49.8	2.70	33.8				319	204
377	7.31	7.27	34.251	26.791	131.0	0.697	0.82	12.1	58.7	2.88	36.3				379	203
400 ISL	7.10	7.06	34.254	26.823	128.2	0.727	0.75	11.1	61.7	2.93	37.0				403	
437	6.78	6.74	34.260	26.872	123.9	0.774	0.64	9.4	66.5	3.00	38.1				440	202
500 ISL	6.30	6.25	34.294	26.962	115.8	0.849	0.41	5.9	75.1	3.12	40.0				503	
515	6.19	6.14	34.302	26.983	113.9	0.866	0.35	5.1	77.2	3.15	40.5				519	201

RV ROGER REVELLE — CALCOFI CRUISE 0304 — STATION 90 53

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT TYPE
32 39.1 N	119 28.9 W	09/04/03	1804 UTC	1323 m	310 14 kn	300 03 05	0	1014.0 mb	15.1 C	13.5 C	12m	0/8

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	14.90	14.90	33.230	24.630	330.0	0.000	6.06	105.2	1.8	0.43	0.2	0.02	0.76	0.13	0	
1 B	14.90	14.90	33.230	24.630	330.0	0.003	6.06	105.2	1.8	0.43	0.2	0.02	0.76 A	0.13 A	1	223
1	14.90	14.90	33.231	24.631	329.9	0.003									1	224
9 B	14.84	14.84	33.232	24.645	328.9	0.030	6.11	105.9	1.6	0.42	0.2	0.02	0.77 A	0.14 A	9	222
10 ISL	14.78	14.78	33.233	24.658	327.6	0.033	6.13	106.1	1.5	0.42	0.2	0.02	0.81	0.14	10	
17 B	14.32	14.32	33.237	24.759	318.2	0.056	6.25	107.2	0.8	0.40	0.1	0.01	1.14	0.20	17	221
20 ISL	14.15	14.15	33.239	24.797	314.7	0.065	6.24	106.7	0.8	0.41	0.2	0.02	1.22	0.24	20	
26 B	13.92	13.92	33.241	24.846	310.2	0.084	6.19	105.3	0.8	0.44	0.4	0.04	1.33	0.32	26	220
30 ISL	13.88	13.88	33.239	24.853	309.6	0.096	6.16	104.7	0.9	0.45	0.5	0.04	1.39	0.38	30	
33 B	13.87	13.87	33.239	24.855	309.5	0.105	6.14	104.3	0.9	0.46	0.6	0.04	1.41	0.41	33	219
40	13.79	13.78	33.249	24.879	307.4	0.127	6.11	103.7	0.8	0.46	0.6	0.05	1.39	0.40	40	218
46 B	12.45	12.44	33.258	25.152	281.4	0.145	5.50	90.7	5.3	0.89	5.4	0.31	0.45	0.30	46	217
50 ISL	12.20	12.19	33.271	25.210	276.0	0.156	5.34	87.7	6.4	0.97	6.6	0.34	0.36	0.29	50	
53	12.14	12.13	33.282	25.230	274.2	0.164	5.27	86.4	6.9	0.99	7.2	0.37	0.29	0.29	53	216
60	11.71	11.70	33.318	25.339	264.0	0.183	4.93	80.1	9.4	1.14	10.1	0.42	0.19	0.31	60	215
70	10.67	10.66	33.352	25.552	243.8	0.208	4.45	70.7	13.1	1.35	14.9	0.19	0.13	0.22	70	214
75 ISL	10.42	10.41	33.392	25.627	236.8	0.220	4.33	68.4	14.3	1.41	16.1	0.16	0.11	0.20	75	
84	10.19	10.18	33.477	25.733	226.9	0.241	4.16	65.5	16.1	1.50	17.6	0.10	0.09	0.19	84	213
99	9.89	9.88	33.620	25.895	211.8	0.274	3.66	57.3	19.7	1.65	20.3		0.04	0.13	99	211
100 ISL	9.88	9.87	33.631	25.905	210.8	0.276	3.62	56.6	20.0	1.66	20.5		0.04	0.13	100	
119	9.70	9.69	33.815	26.079	194.7	0.315	3.05	47.6	24.4	1.86	23.3		0.02	0.11	120	210
125 ISL	9.63	9.62	33.848	26.117	191.2	0.326	2.95	46.0	25.3	1.90	23.9		0.02	0.12	126	
140	9.44	9.42	33.914	26.200	183.7	0.354	2.75	42.7	27.4	1.98	25.3		0.02	0.13	141	209
150 ISL	9.29	9.27	33.976	26.273	176.9	0.372	2.54	39.3	29.7	2.06	26.4		0.02	0.12	151	
169	8.98	8.96	34.084	26.407	164.4	0.405	2.14	32.9	34.5	2.22	28.5		0.01	0.10	170	208
198	8.57	8.55	34.147	26.521	154.1	0.451	1.78	27.1	40.0	2.40	30.6		0.01	0.10	199	207
200 ISL	8.54	8.52	34.147	26.526	153.7	0.454	1.78	27.1	40.2	2.40	30.7				201	
228	8.19	8.17	34.137	26.571	149.7	0.497	1.83	27.6	42.6	2.43	31.5				229	206
250 ISL	7.98	7.95	34.154	26.616	145.7	0.529	1.64	24.7	45.3	2.52	32.4				251	
268	7.82	7.79	34.173	26.655	142.3	0.555	1.43	21.4	47.9	2.60	33.3				270	205
300 ISL	7.47	7.44	34.196	26.724	136.1	0.600	1.18	17.5	53.4	2.73	34.9				302	
317	7.29	7.26	34.207	26.758	133.1	0.623	1.07	15.8	56.4	2.79	35.7				319	204
377	6.84	6.80	34.243	26.849	125.1	0.700	0.71	10.4	64.3	2.96	37.7				379	203
400 ISL	6.69	6.65	34.254	26.878	122.6	0.728	0.64	9.3	66.9	3.01	38.4				403	
437	6.46	6.42	34.271	26.923	118.7	0.773	0.57	8.3	71.0	3.07	39.3				440	202
500 ISL	6.06	6.02	34.306	27.002	111.7	0.846	0.56	8.1	78.4	3.16	40.7				503	
515	5.97	5.92	34.314	27.020	110.1	0.862	0.56	8.0	80.2	3.18	41.0				519	201

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

B) PRIMARY PRODUCTIVITY SAMPLES WERE TAKEN FROM THESE LEVELS.

RV ROGER REVELLE — CALCOFI CRUISE 0304 — STATION 90 60

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT TYPE
32 25.1 N	119 57.6 W	09/04/03	1257 UTC	2651 m	290 10 kn			1013.1 mb	14.1 C	13.0 C		

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	14.45	14.45	33.183	24.690	324.3	0.000	6.05	104.0	1.8	0.45	0.3	0.02	0.93	0.11	0	
2	14.45	14.45	33.183	24.690	324.4	0.006	6.05	104.0	1.8	0.45	0.3	0.02	0.93	0.11	2	220
10 ISL	14.42	14.42	33.183	24.696	324.0	0.032	6.07	104.3	1.8	0.45	0.3	0.02	0.89	0.16	10	
11	14.42	14.42	33.183	24.696	324.0	0.036	6.07	104.3	1.8	0.45	0.3	0.02	0.89 A	0.17 A	11	219
20	14.16	14.16	33.198	24.763	317.9	0.065	6.00	102.6	1.9	0.48	0.7	0.04	0.97	0.26	20	218
30	12.12	12.12	33.350	25.286	268.3	0.094	5.55	91.0	7.1	1.03	7.7	0.28	0.79	0.50	30	217
40	11.22	11.22	33.356	25.457	252.2	0.120	4.78	76.9	11.7	1.27	12.9	0.30	0.37	0.41	40	216
50	11.10	11.09	33.470	25.568	241.9	0.145	4.99	80.1	14.5	1.40	14.5	0.35	0.34	0.41	50	215
60	11.13	11.12	33.526	25.606	238.5	0.169	5.06	81.3	15.6	1.45	15.1	0.41	0.37	0.38	60	214
70	11.05	11.04	33.538	25.630	236.5	0.192	4.97	79.7	16.3	1.46	15.4	0.42	0.29	0.38	70	213
75 ISL	11.02	11.01	33.542	25.639	235.8	0.204	4.93	79.0	16.5	1.47	15.7	0.42	0.28	0.38	75	
85	10.85	10.84	33.551	25.676	232.4	0.228	4.70	75.1	17.1	1.51	16.7	0.41	0.26	0.39	85	212
100	10.05	10.04	33.573	25.832	217.8	0.261	3.72	58.4	19.1	1.64	19.9	0.09	0.09	0.29	100	211
120	9.35	9.34	33.776	26.106	192.1	0.302	3.19	49.4	24.8	1.86	23.8		0.03	0.19	121	210
125 ISL	9.24	9.23	33.816	26.155	187.5	0.312	3.09	47.7	26.0	1.90	24.5		0.03	0.17	126	
140	9.01	8.99	33.916	26.270	176.8	0.339	2.83	43.5	29.2	1.99	26.3		0.02	0.13	141	209
150 ISL	8.99	8.97	33.976	26.321	172.2	0.357	2.59	39.8	30.9	2.07	27.2		0.02	0.14	151	
170	8.98	8.96	34.062	26.390	166.1	0.390	2.19	33.7	33.8	2.21	28.5		0.01	0.15	171	208
199	8.51	8.49	34.077	26.475	158.4	0.437	2.19	33.3	37.1	2.26	29.8		0.02	0.13	200	207
200 ISL	8.50	8.48	34.078	26.478	158.2	0.439	2.18	33.2	37.3	2.26	29.9				201	
228	8.21	8.19	34.116	26.552	151.6	0.482	1.87	28.3	41.7	2.40	31.4				229	206
250 ISL	8.04	8.01	34.136	26.593	148.0	0.515	1.72	25.9	43.9	2.47	32.1				251	
268	7.89	7.86	34.146	26.624	145.3	0.542	1.61	24.2	45.8	2.53	32.7				270	205
300 ISL	7.40	7.37	34.149	26.697	138.6	0.587	1.38	20.5	51.5	2.66	34.6				302	
319	7.12	7.09	34.153	26.739	134.7	0.613	1.23	18.1	55.2	2.74	35.8				321	204
378	6.79	6.75	34.225	26.842	125.8	0.690	0.75	11.0	63.8	2.96	37.9				380	203
400 ISL	6.55	6.51	34.224	26.873	122.9	0.717	0.69	10.0	67.2	3.00	38.8				403	
437	6.15	6.11	34.219	26.922	118.5	0.762	0.58	8.4	72.9	3.08	40.3				440	202
500 ISL	5.84	5.80	34.278	27.008	110.9	0.834									503	
515	5.77	5.73	34.292 D	27.028	109.2	0.851									519	201

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

RV ROGER REVELLE CALCOFI CRUISE 0304 STATION 90 70

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE
32 5.1 N	120 38.3 W	09/04/03	0657 UTC	3819 m	320 10 kn			1015.7 mb	14.8 C	13.1 C			

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	14.23	14.23	33.177	24.731	320.3	0.000	6.08	104.1	2.0	0.46	0.5	0.04	0.72	0.21	0	
3	14.23	14.23	33.177	24.731	320.4	0.010	6.08	104.1	2.0	0.46	0.5	0.04	0.72	0.21	3	220
10	14.23	14.23	33.177	24.732	320.6	0.032	6.05	103.5	2.0	0.45	0.5	0.04	0.70	0.19	10	219
20	14.08	14.08	33.181	24.766	317.6	0.064	6.07	103.6	2.1	0.46	0.5	0.04	0.66	0.20	20	218
30	13.89	13.89	33.183	24.807	313.9	0.096	6.05	102.8	2.1	0.47	0.6	0.04	0.73	0.29	30	217
41	13.86	13.85	33.185	24.816	313.5	0.130	6.03	102.4	2.2	0.47	0.6	0.05	0.88	0.31	41	216
50 ISL	13.85	13.84	33.185	24.818	313.5	0.158	6.04	102.6	2.1	0.47	0.6	0.05	0.82	0.33	50	
51	13.85	13.84	33.185	24.818	313.5	0.161	6.04	102.6	2.1	0.47	0.6	0.05	0.81	0.33	51	215
60	13.73	13.72	33.176	24.836	312.1	0.190	5.97	101.1	2.3	0.51	1.0	0.07	0.61	0.25	60	214
70	11.76	11.75	33.038	25.112	285.8	0.219	5.38	87.4	6.0	0.91	6.9	0.20	0.27	0.35	70	213
75 ISL	11.31	11.30	33.039	25.195	277.9	0.234	5.23	84.1	7.3	1.02	8.8	0.17	0.20	0.31	75	
85	10.82	10.81	33.110	25.338	264.5	0.261	5.02	79.9	9.6	1.16	11.6	0.07	0.14	0.17	85	212
100	9.94	9.93	33.323	25.655	234.6	0.298	4.58	71.6	14.1	1.40	16.1	0.05	0.05	0.07	100	211
119	9.73	9.72	33.711	25.993	202.9	0.340	3.36	52.4	21.7	1.75	21.7		0.03	0.10	120	210
125 ISL	9.63	9.62	33.772	26.057	196.9	0.352	3.18	49.5	23.3	1.82	22.7		0.03	0.10	126	
139	9.44	9.42	33.865	26.161	187.3	0.379	2.90	45.0	26.1	1.93	24.4		0.02	0.09	140	209
150 ISL	9.46	9.44	33.943	26.219	182.0	0.399	2.62	40.7	28.0	2.02	25.5		0.02	0.09	151	
169	9.50	9.48	34.045	26.293	175.5	0.433	2.20	34.2	30.9	2.16	26.9		0.02	0.09	170	208
199	9.21	9.19	34.132	26.409	165.0	0.484	1.85	28.6	35.0	2.31	28.8		0.01	0.08	200	207
200 ISL	9.20	9.18	34.134	26.412	164.7	0.486	1.84	28.4	35.1	2.31	28.9				201	
229	8.94	8.92	34.184	26.493	157.5	0.532	1.56	24.0	38.8	2.43	30.3				230	206
250 ISL	8.68	8.65	34.194	26.542	153.2	0.565	1.54	23.5	41.2	2.48	31.1				251	
269	8.37	8.34	34.185	26.583	149.5	0.594	1.52	23.1	43.5	2.52	31.8				271	205
300 ISL	7.61	7.58	34.125	26.648	143.4	0.639	1.53	22.8	48.7	2.58	33.8				302	
318	7.17	7.14	34.094	26.686	139.8	0.665	1.54	22.7	52.0	2.62	35.1				320	204
378	6.57	6.54	34.135	26.800	129.5	0.745	1.03	15.0	62.6	2.86	38.0				380	203
400 ISL	6.46	6.42	34.154	26.830	126.9	0.774	0.89	12.9	65.4	2.93	38.6				403	
438	6.30	6.26	34.192	26.881	122.5	0.821	0.68	9.8	70.0	3.02	39.5				441	202
500 ISL	5.89	5.85	34.272	26.997	112.0	0.894	0.43	6.2	78.9	3.15	41.1				503	
515	5.79	5.75	34.292	27.025	109.4	0.910	0.37	5.3	81.1	3.18	41.5				518	201

RV ROGER REVELLE CALCOFI CRUISE 0304 STATION 90 80

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE
31 45.1 N	121 18.9 W	09/04/03	0147 UTC	3686 m	340 14 kn	330 04 06	2	1016.3 mb	15.2 C	13.3 C		8/8	SC

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	15.22	15.22	33.025	24.403	351.7	0.000	5.90	102.9	1.5	0.40	0.0	0.00	0.14	0.02	0	
2	15.22	15.22	33.025	24.403	351.7	0.007	5.90	102.9	1.5	0.40	0.0	0.00	0.14	0.02	2	220
10 ISL	15.21	15.21	33.022	24.403	351.9	0.035	5.91	103.1	1.4	0.40	0.0	0.00	0.13	0.03	10	
15	15.19	15.19	33.018	24.404	352.0	0.053	5.91	103.0	1.4	0.40	0.0	0.00	0.13	0.03	15	219
20 ISL	15.17	15.17	33.020	24.410	351.5	0.070	5.90	102.8	1.4	0.40	0.0	0.00	0.14	0.03	20	
30	15.11	15.11	33.031	24.432	349.7	0.105	5.89	102.5	1.4	0.40	0.0	0.00	0.15	0.03	30	218
45	14.94	14.93	33.061	24.493	344.4	0.157	6.01	104.3	1.5	0.40	0.0	0.00	0.28	0.09	45	217
50 ISL	14.42	14.41	33.043	24.590	335.3	0.174	6.02	103.3	1.7	0.43	0.1	0.01	0.70	0.29	50	
54	13.99	13.98	33.032	24.671	327.6	0.188	6.02	102.4	1.9	0.45	0.1	0.01	1.01	0.44	54	216
65	13.59	13.58	33.060	24.775	318.0	0.223	5.92	99.9	2.2	0.52	1.0	0.20	0.88	0.50	65	215
74	12.62	12.61	33.056	24.964	300.1	0.251	5.55	91.8	4.3	0.75	4.6	0.12	0.41	0.38	74	214
75 ISL	12.54	12.53	33.064	24.986	298.1	0.254	5.51	91.0	4.6	0.77	5.0	0.11	0.38	0.37	75	
85	11.70	11.69	33.126	25.192	278.6	0.283	5.19	84.2	7.6	0.99	8.7	0.05	0.20	0.25	85	213
94	10.74	10.73	33.077	25.326	265.8	0.307	5.12	81.3	9.2	1.13	11.1	0.04	0.14	0.13	94	212
100 ISL	10.56	10.55	33.139	25.406	258.3	0.323	5.04	79.8	10.3	1.20	12.4	0.04	0.11	0.11	100	
110	10.26	10.25	33.248	25.543	245.5	0.348	4.76	74.9	12.6	1.32	14.7	0.03	0.08	0.08	110	211
124	10.17	10.16	33.519	25.770	224.3	0.381	3.90	61.4	17.5	1.57	18.7		0.06	0.08	125	210
125 ISL	10.15	10.14	33.528	25.780	223.3	0.383	3.88	61.0	17.7	1.58	18.9		0.06	0.08	126	
145	9.60	9.58	33.646	25.964	206.1	0.426	3.60	56.0	21.4	1.72	21.5		0.01	0.04	146	209
150 ISL	9.51	9.49	33.690	26.014	201.5	0.437	3.45	53.5	22.5	1.77	22.2		0.01	0.04	151	
168	9.24	9.22	33.849	26.182	185.9	0.471	2.92	45.1	26.3	1.93	24.6		0.01	0.04	169	208
198	8.83	8.81	34.001	26.366	168.8	0.525	2.62	40.1	32.0	2.08	27.4		0.00	0.02	199	207
200 ISL	8.81	8.79	34.008	26.375	168.1	0.528	2.60	39.8	32.3	2.09	27.6				201	
229	8.44	8.42	34.074	26.484	158.1	0.575	2.27	34.5	37.2	2.24	29.5				230	206
250 ISL	8.03	8.00	34.074	26.546	152.4	0.608	2.15	32.3	40.7	2.31	30.8				251	
268	7.67	7.64	34.064	26.591	148.3	0.635	2.08	31.0	43.7	2.37	31.9				269	205
300 ISL	7.27	7.24	34.070	26.653	142.7	0.682	1.88	27.8	48.6	2.50	33.5				302	
318	7.09	7.06	34.077	26.684	140.0	0.707	1.74	25.6	51.4	2.57	34.4				320	204
377	6.53	6.50	34.113	26.788	130.6	0.787	1.19	17.3	61.4	2.81	37.5				379	203
400 ISL	6.34	6.30	34.136	26.831	126.7	0.816	1.00	14.5	65.5	2.89	38.4				402	
437	6.06	6.02	34.176	26.899	120.6	0.862	0.69	9.9	72.0	3.03	39.9				440	202
500 ISL	5.73	5.69	34.234	26.986	112.8	0.936									503	
514	5.66	5.62	34.247 D	27.005	111.1	0.951									517	201

RV ROGER REVELLE CALCOFI CRUISE 0304 STATION 90 90

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE
31 25.1 N	121 59.4 W	08/04/03	1830 UTC	3860 m	340 11 kn	320 03 06	1	1018.8 mb	16.2 C	14.0 C	22m	7/8	SC

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	15.10	15.10	33.041	24.441	348.0	0.000	5.98	104.1	1.4	0.41	0.0	0.00	0.15	0.04	0	
2 A	15.10	15.10	33.041	24.441	348.1	0.007	5.98	104.1	1.4	0.41	0.0	0.00	0.15	0.04	2	221
2	15.11	15.11	33.041	24.439	348.3	0.007									2	222
10 ISL	15.06	15.06	33.038	24.448	347.7	0.035	5.96	103.6	1.3	0.42	0.0	0.00	0.17	0.04	10	
16 A	15.03	15.03	33.038	24.454	347.2	0.056	5.95	103.4	1.3	0.43	0.0	0.00	0.19	0.04	16	220
20 ISL	15.03	15.03	33.042	24.458	347.0	0.070	5.95	103.4	1.3	0.42	0.0	0.00	0.19	0.04	20	
30 ISL	15.03	15.03	33.064	24.475	345.7	0.104	5.96	103.6	1.3	0.40	0.0	0.00	0.19	0.05	30	
31 A	15.03	15.03	33.067	24.477	345.5	0.108	5.96	103.6	1.3	0.40	0.0	0.00	0.19	0.05	31	219
39	15.04	15.03	33.116	24.513	342.3	0.135	5.95	103.5	1.4	0.40	0.0	0.00	0.24	0.08	39	218
47 A	14.71	14.70	33.132	24.597	334.6	0.162	6.00	103.7	1.4	0.40	0.0	0.00	0.41	0.15	47	217
50 ISL	14.57	14.56	33.126	24.622	332.2	0.172	5.99	103.2	1.5	0.41	0.0	0.01	0.59	0.25	50	
54	14.41	14.40	33.120	24.651	329.5	0.185	5.96	102.3	1.6	0.42	0.0	0.02	0.80	0.39	54	216
60 A	14.30	14.29	33.137	24.688	326.2	0.205	5.90	101.1	1.7	0.44	0.1	0.06	0.85	0.44	60	215
71	13.18	13.17	33.096	24.885	307.6	0.240	5.64	94.4	3.6	0.67	2.9	0.27	0.54	0.44	71	214
75 ISL	12.55	12.54	33.049	24.972	299.4	0.252	5.57	92.0	4.5	0.77	4.5	0.22	0.42	0.40	75	
83 A	11.37	11.36	33.018	25.168	280.7	0.275	5.35	86.1	7.0	0.97	8.1	0.07	0.21	0.28	83	213
94	10.61	10.60	33.258	25.490	250.3	0.305	4.70	74.5	11.8	1.27	13.6	0.06	0.10	0.14	94	212
100 ISL	10.26	10.25	33.314	25.594	240.5	0.319	4.61	72.6	13.1	1.34	15.0	0.06	0.06	0.09	100	
110	9.78	9.77	33.395	25.738	226.9	0.343	4.48	69.8	15.3	1.43	16.7	0.06	0.02	0.05	110	211
124	9.33	9.32	33.650	26.011	201.2	0.373	3.75	58.0	21.6	1.69	21.4		0.00	0.02	125	210
125 ISL	9.32	9.31	33.662	26.022	200.2	0.375	3.71	57.3	21.9	1.70	21.6		0.00	0.02	126	
144	9.19	9.17	33.828	26.173	186.2	0.411	3.15	48.6	25.6	1.86	24.1		0.00	0.03	145	209
150 ISL	9.13	9.11	33.862	26.209	182.9	0.422	3.07	47.3	26.6	1.90	24.7		0.00	0.03	151	
169	8.91	8.89	33.941	26.306	174.0	0.456	2.88	44.2	29.6	1.99	26.3		0.00	0.02	170	208
198	8.65	8.63	34.042	26.426	163.1	0.505	2.45	37.4	34.5	2.14	28.5		0.00	0.03	199	207
200 ISL	8.61	8.59	34.044	26.434	162.3	0.508	2.44	37.2	34.9	2.15	28.7				201	
229	8.00	7.98	34.058	26.538	152.8	0.554	2.24	33.7	40.4	2.29	31.1				230	206
250 ISL	7.67	7.65	34.078	26.602	146.9	0.586	1.96	29.2	44.8	2.42	32.8				251	
268	7.44	7.41	34.096	26.649	142.7	0.612	1.71	25.4	48.3	2.53	34.1				270	205
300 ISL	7.15	7.12	34.111	26.702	138.0	0.657	1.48	21.8	52.6	2.64	35.5				302	
318	7.03	7.00	34.118	26.724	136.1	0.681	1.38	20.3	54.7	2.68	36.1				320	204
377	6.62	6.59	34.164	26.816	128.0	0.759	0.97	14.1	62.8	2.87	38.1				379	203
400 ISL	6.43	6.39	34.180	26.854	124.6	0.788	0.82	11.9	66.5	2.94	39.0				402	
437	6.14	6.10	34.203	26.910	119.6	0.833	0.62	8.9	72.2	3.04	40.3				440	202
500 ISL	5.75	5.71	34.223	26.975	113.9	0.907	0.49	7.0	79.6	3.13	41.8				503	
515	5.66	5.62	34.228	26.990	112.5	0.924	0.46	6.6	81.4	3.15	42.1				518	201

A) PRIMARY PRODUCTIVITY SAMPLES WERE TAKEN FROM THESE LEVELS.

RV ROGER REVELLE CALCOFI CRUISE 0304 STATION 90 100

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE
31 5.1 N	122 39.7 W	08/04/03	1257 UTC	4020 m	050 14 kn			1017.9 mb	14.2 C	12.0 C			

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	15.31	15.31	33.130	24.464	345.8	0.000	5.86	102.5	1.3	0.40	0.0	0.00	0.16	0.04	0	
2	15.31	15.31	33.130	24.464	345.9	0.007	5.86	102.5	1.3	0.40	0.0	0.00	0.16	0.04	2	220
10 ISL	15.32	15.32	33.131	24.463	346.2	0.035	5.85	102.3	1.3	0.39	0.0	0.00	0.16	0.03	10	
16	15.32	15.32	33.131	24.463	346.4	0.055	5.85	102.3	1.3	0.39	0.0	0.00	0.17	0.03	16	219
20 ISL	15.31	15.31	33.131	24.465	346.3	0.069	5.85	102.3	1.3	0.39	0.0	0.00	0.17	0.03	20	
30 ISL	15.30	15.30	33.143	24.477	345.5	0.104	5.86	102.5	1.3	0.39	0.0	0.00	0.18	0.05	30	
31	15.30	15.30	33.145	24.479	345.4	0.107	5.86	102.5	1.3	0.39	0.0	0.00	0.18	0.05	31	218
45	15.11	15.10	33.156	24.529	341.0	0.155	5.89	102.6	1.4	0.39	0.0	0.00	0.28	0.09	45	217
50 ISL	15.10	15.09	33.156	24.531	340.9	0.172	5.89	102.6	1.4	0.39	0.0	0.00	0.31	0.11	50	
55	15.09	15.08	33.155	24.533	340.9	0.189	5.89	102.6	1.4	0.39	0.0	0.00	0.33	0.12	55	216
65	14.56	14.55	33.137	24.633	331.6	0.223	5.88	101.3	1.7	0.42	0.2	0.03	0.85	0.39	65	215
75	12.29	12.28	33.281	25.202	277.5	0.254	5.00	82.2	7.6	0.97	8.1	0.20	0.40	0.52	75	214
85	11.18	11.17	33.387	25.490	250.2	0.280	4.46	71.7	12.2	1.28	13.8	0.06	0.20	0.34	85	213
95	10.06	10.05	33.480	25.757	224.8	0.304	4.05	63.6	16.6	1.52	18.1	0.04	0.06	0.10	95	212
100 ISL	10.02	10.01	33.552	25.820	218.9	0.315	3.85	60.4	17.9	1.59	19.2	0.04	0.05	0.09	100	
110	9.93	9.92	33.628	25.895	212.0	0.336	3.56	55.8	19.8	1.67	20.6	0.03	0.04	0.07	110	211
125	9.32	9.31	33.679	26.035	198.9	0.367	3.57	55.2	22.5	1.75	22.5		0.01	0.03	126	210
145	8.99	8.97	33.828	26.205	183.1	0.405	3.18	48.8	26.9	1.89	25.1		0.00	0.03	146	209
150 ISL	8.96	8.94	33.865	26.239	180.0	0.414	3.07	47.1	27.8	1.92	25.6		0.00	0.03	151	
170	8.85	8.83	33.987	26.352	169.7	0.449	2.68	41.1	31.1	2.03	27.2		0.00	0.02	171	208
200	8.46	8.44	34.033	26.449	160.9	0.499	2.52	38.3	35.0	2.12	28.6		0.00	0.03	201	207
230	8.12	8.10	34.078	26.536	153.1	0.546	2.18	32.9	39.9	2.28	30.6				231	206
250 ISL	8.01	7.98	34.119	26.584	148.8	0.576	1.86	28.0	43.0	2.41	31.8				251	
269	7.90	7.87	34.152	26.627	145.1	0.604	1.57	23.6	46.0	2.52	32.9				271	205
300 ISL	7.49	7.46	34.159	26.692	139.2	0.648	1.34	19.9	50.9	2.64	34.5				302	
318	7.24	7.21	34.156	26.725	136.2	0.673	1.26	18.6	53.7	2.69	35.4				320	204
378	6.73	6.70	34.189	26.822	127.6	0.752	0.87	12.7	62.3	2.88	37.8				380	203
400 ISL	6.63	6.59	34.217	26.857	124.5	0.780	0.73	10.6	65.2	2.95	38.5				402	
438	6.46	6.42	34.267	26.919	119.0	0.826	0.51	7.4	70.2	3.07	39.5				441	202
500 ISL	5.99	5.95	34.305	27.010	110.9	0.897	0.35	5.0	79.0	3.17	41.2				503	
515	5.88	5.84	34.315	27.032	108.9	0.914	0.31	4.4	81.1	3.19	41.6				518	201

RV ROGER REVELLE CALCOFI CRUISE 0304 STATION 90 110

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT TYPE
30 45.1 N	123 20.0 W	08/04/03	0728 UTC	4022 m	340 15 kn			1020.0 mb	14.5 C	12.0 C		

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	14.91	14.91	32.925	24.393	352.6	0.000	5.93	102.7	1.5	0.40	0.1	0.00	0.17	0.04	0	
2	14.91	14.91	32.925	24.393	352.7	0.007	5.93	102.7	1.5	0.40	0.1	0.00	0.17	0.04	2	220
10 ISL	14.91	14.91	32.922	24.391	353.1	0.035	5.92	102.6	1.4	0.40	0.0	0.00	0.17	0.04	10	
16	14.91	14.91	32.921	24.390	353.3	0.056	5.92	102.6	1.4	0.40	0.0	0.00	0.17	0.05	16	219
20 ISL	14.91	14.91	32.924	24.393	353.2	0.071	5.92	102.6	1.4	0.40	0.0	0.00	0.18	0.05	20	
30	14.92	14.92	32.934	24.399	352.9	0.106	5.93	102.8	1.4	0.40	0.0	0.00	0.20	0.06	30	218
45	14.85	14.84	32.934	24.414	351.9	0.159	5.95	103.0	1.3	0.40	0.0	0.00	0.24	0.06	45	217
50 ISL	14.82	14.81	32.931	24.418	351.6	0.176	5.95	102.9	1.2	0.40	0.0	0.00	0.25	0.07	50	
55	14.78	14.77	32.926	24.423	351.3	0.194	5.95	102.8	1.2	0.40	0.0	0.00	0.27	0.08	55	216
65	14.63	14.62	32.908	24.442	349.8	0.229	5.97	102.8	1.2	0.40	0.0	0.00	0.33	0.12	65	215
75	14.14	14.13	32.907	24.544	340.3	0.264	5.98	102.0	1.3	0.41	0.0	0.00	0.64	0.34	75	214
85	13.77	13.76	32.952	24.655	330.0	0.297	5.96	100.9	2.6	0.44	0.2	0.06	0.65	0.42	85	213
95	12.46	12.45	32.887	24.864	310.1	0.329	5.79	95.3	3.9	0.64	2.6	0.13	0.35	0.41	95	212
100 ISL	11.83	11.82	32.860	24.962	300.8	0.344	5.74	93.2	4.6	0.73	4.0	0.10	0.26	0.34	100	
109	10.95	10.94	32.868	25.127	285.1	0.371	5.60	89.2	6.2	0.88	6.7	0.05	0.16 A	0.20 A	109	211
124	10.74	10.73	33.120	25.361	263.2	0.412	4.94	78.5	10.0	1.17	11.7		0.08	0.10	125	210
125 ISL	10.70	10.69	33.134	25.379	261.6	0.414	4.91	78.0	10.2	1.18	11.9		0.08	0.10	126	
144	9.94	9.92	33.378	25.699	231.4	0.461	4.53	70.8	14.4	1.37	15.9		0.02	0.03	145	209
150 ISL	9.77	9.75	33.445	25.779	223.8	0.475	4.37	68.1	15.8	1.44	17.2		0.01	0.03	151	
169	9.35	9.33	33.634	25.996	203.5	0.515	3.83	59.2	20.5	1.64	21.0		0.00	0.01	170	208
198	8.88	8.86	33.885	26.268	178.2	0.571	3.14	48.1	27.6	1.89	25.2		0.00	0.01	199	207
200 ISL	8.85	8.83	33.897	26.282	176.9	0.574	3.10	47.5	28.1	1.90	25.5				201	
228	8.41	8.39	34.014	26.442	162.1	0.622	2.67	40.5	34.5	2.09	28.5				229	206
250 ISL	8.12	8.09	34.041	26.507	156.2	0.657	2.44	36.8	38.2	2.20	30.1				251	
269	7.88	7.85	34.046	26.547	152.6	0.686	2.27	34.0	41.2	2.29	31.3				270	205
300 ISL	7.42	7.39	34.072	26.634	144.6	0.732	1.89	28.0	47.2	2.47	33.5				302	
318	7.18	7.15	34.088	26.680	140.4	0.758	1.66	24.5	50.7	2.57	34.7				320	204
378	6.73	6.70	34.152	26.792	130.4	0.839	1.06	15.5	60.4	2.83	37.3				380	203
400 ISL	6.56	6.52	34.167	26.827	127.3	0.867	0.92	13.4	63.8	2.90	38.1				402	
438	6.27	6.23	34.192	26.885	122.1	0.915	0.73	10.5	69.4	3.01	39.4				441	202
500 ISL	5.88	5.84	34.249	26.980	113.6	0.988	0.44	6.3	78.5	3.15	41.3				503	
515	5.79	5.75	34.263	27.002	111.6	1.005	0.37	5.3	80.7	3.18	41.7				518	201

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

RV ROGER REVELLE CALCOFI CRUISE 0304 STATION 90 120

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT TYPE
30 25.1 N	124 0.2 W	08/04/03	0034 UTC	4251 m	350 17 kn	350 04 05	2	1019.7 mb	16.2 C	13.8 C	24m	8/8 CU

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	16.04	16.04	33.070	24.255	365.7	0.000	5.76	102.2	0.9	0.38	0.0	0.00	0.08	0.01	0	
2	16.04	16.04	33.070	24.255	365.8	0.007	5.76	102.2	0.9	0.38	0.0	0.00	0.08	0.01	2	220
10 ISL	16.04	16.04	33.071	24.256	365.9	0.037	5.79	102.7	0.8	0.38	0.0	0.00	0.08	0.01	10	
15	16.04	16.04	33.072	24.257	366.0	0.055	5.80	102.9	0.8	0.38	0.0	0.00	0.08	0.01	15	219
20 ISL	16.06	16.06	33.091	24.268	365.2	0.073	5.78	102.6	0.8	0.38	0.0	0.00	0.08	0.01	20	
30	16.12	16.12	33.138	24.291	363.3	0.110	5.73	101.8	0.8	0.37	0.0	0.00	0.09	0.02	30	218
45	16.23	16.22	33.187	24.304	362.5	0.164	5.71	101.7	0.9	0.37	0.0	0.00	0.11	0.02	45	217
50 ISL	16.28	16.27	33.205	24.306	362.4	0.182	5.70	101.7	0.9	0.37	0.0	0.00	0.11	0.02	50	
60	16.38	16.37	33.235	24.307	362.7	0.218	5.69	101.7	0.8	0.37	0.0	0.00	0.11	0.02	60	216
75	16.40	16.39	33.248	24.313	362.6	0.273	5.72	102.3	0.8	0.36	0.0	0.00	0.13	0.03	75	215
84	16.39	16.38	33.260	24.325	361.8	0.305	5.70	101.9	0.9	0.36	0.0	0.00	0.16	0.04	84	214
95	16.30	16.28	33.270	24.353	359.4	0.345	5.69	101.5	0.9	0.36	0.0	0.00	0.20	0.07	95	213
100 ISL	15.54	15.52	33.224	24.489	346.5	0.363	5.76	101.2	1.2	0.39	0.0	0.00	0.27	0.18	100	
105	14.52	14.50	33.150	24.653	330.9	0.380	5.81	100.0	1.7	0.42	0.0	0.00	0.33	0.28	105	212
114	12.46	12.45	32.943	24.908	306.4	0.408	5.72	94.2	3.5	0.66	2.6	0.10	0.29	0.27	114	211
124	11.87	11.85	33.006	25.068	291.3	0.438	5.54	90.1	4.8	0.77	4.8		0.21	0.24	124	210
125 ISL	11.83	11.81	33.010	25.079	290.3	0.441	5.53	89.9	4.9	0.78	4.9		0.21	0.24	125	
138	11.44	11.42	33.065	25.194	279.6	0.478	5.41	87.2	6.2	0.88	6.8		0.16	0.23	139	209
150 ISL	10.85	10.83	33.197	25.402	259.9	0.511	5.10	81.3	8.9	1.05	10.1		0.10	0.15	151	
164	10.13	10.11	33.388	25.675	234.1	0.545	4.63	72.7	13.0	1.28	14.4		0.04	0.05	165	208
193	9.24	9.22	33.729	26.088	195.2	0.607	3.72	57.4	21.8	1.66	21.2		0.00	0.02	194	207
200 ISL	9.11	9.09	33.791	26.158	188.7	0.621	3.60	55.4	23.5	1.71	22.2				201	
228	8.75	8.73	33.974	26.358	170.2	0.671	3.23	49.4	29.3	1.87	25.1				229	206
250 ISL	8.49	8.46	34.048	26.457	161.1	0.708	2.79	42.4	33.9	2.05	27.4				251	
266	8.30	8.27	34.074	26.506	156.6	0.733	2.49	37.7	37.0	2.17	28.8				267	205
300 ISL	7.81	7.78	34.083	26.586	149.4	0.785	2.25	33.7	42.1	2.31	30.8				302	
316	7.57	7.54	34.076	26.616	146.7	0.809	2.19	32.6	44.5	2.36	31.6				318	204
377	6.68	6.65	34.096	26.755	133.8	0.894	1.56	22.7	57.0	2.68	35.9				379	203
400 ISL	6.50	6.46	34.118	26.796	130.1	0.925	1.37	19.9	60.8	2.78	37.1				402	
436	6.30	6.26	34.156	26.853	125.1	0.971	1.09	15.8	66.2	2.91	38.6				439	202
500 ISL	5.89	5.85	34.211	26.949	116.5	1.048	0.61	8.7	75.8	3.08	40.9				503	
514	5.80	5.76	34.223	26.969	114.7	1.064	0.51	7.3	77.9	3.12	41.4				517	201

RV ROGER REVELLE — CALCOFI CRUISE 0304 — STATION 93 26.5

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE
32 57.4 N	117 17.2 W	04/04/03	2155 UTC	32 m			1					3/8	SC

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	15.37	15.37	33.351	24.621	330.9	0.000	6.17	108.2	6.9	0.40	0.9	0.08	1.20	0.24	0	
1	15.37	15.37	33.351	24.621	330.9	0.003	6.17	108.2	6.9	0.40	0.9	0.08	1.20	0.24	1	205
5	15.31	15.31	33.351	24.634	329.8	0.017	6.17	108.1	6.8	0.40	0.9	0.08	1.22	0.27	5	204
10	13.51	13.51	33.375	25.033	291.9	0.032	5.65	95.4	8.2	0.60	3.5	0.24	1.60	0.52	10	203
15	11.85	11.85	33.477	25.435	253.7	0.046	4.06	66.2	13.2	1.35	13.6	0.89	1.16	0.55	15	202
20	11.54	11.54	33.575	25.569	241.1	0.058	3.42	55.5	16.2	1.55	17.4	0.66	0.66	0.53	20	201

RV ROGER REVELLE — CALCOFI CRUISE 0304 — STATION 93 26.7

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE
32 57.4 N	117 18.3 W	04/04/03	1928 UTC	69 m	200 05 kn	230 02 06	1	1018.6 mb	15.1 C	12.0 C	12m	6/8	SC

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	15.10	15.10	33.342	24.673	325.9	0.000	6.20	108.1	6.7	0.38	0.7	0.05	0.75	-0.04	0	
2 A	15.10	15.10	33.342	24.673	326.0	0.007	6.20	108.1	6.7	0.38	0.7	0.05	0.75	-0.04	2	209
2	15.10	15.10	33.342	24.673	326.0	0.007									2	210
9 A	13.27	13.27	33.306	25.028	292.4	0.028	5.93	99.6	5.5	0.62	3.2	0.11	1.11	0.57	9	208
10 ISL	13.10	13.10	33.315	25.069	288.5	0.031	5.81	97.2	6.0	0.67	4.0	0.15	1.09	0.56	10	
17 A	12.16	12.16	33.418	25.331	263.7	0.050	4.74	77.8	10.8	1.09	10.5	0.41	0.93	0.49	17	207
20 ISL	11.66	11.66	33.472	25.467	250.9	0.058	4.25	69.1	13.1	1.28	13.6	0.43	0.78	0.44	20	
26 A	10.90	10.90	33.586	25.693	229.4	0.073	3.44	55.0	17.0	1.58	18.5	0.47	0.49	0.36	26	206
30 ISL	10.89	10.89	33.661	25.754	223.8	0.082	3.19	51.0	18.3	1.67	19.7	0.30	0.39	0.34	30	
33 A	10.88	10.88	33.691	25.779	221.5	0.088	3.10	49.6	18.9	1.70	20.1	0.17	0.35	0.33	33	205
40	10.59	10.59	33.715	25.849	215.0	0.104	3.10	49.3	19.7	1.72	20.3	0.09	0.35	0.29	40	204
46 A	10.54	10.53	33.720	25.861	213.9	0.116	3.14 U	49.9U	20.0	1.72	20.5	0.12	0.31	0.33	46	203
50 ISL	10.57	10.56	33.737	25.870	213.2	0.125	3.02	48.0	20.5	1.74	20.8	0.16	0.28	0.35	50	
53	10.60	10.59	33.754	25.878	212.5	0.131	2.96	47.1	21.0	1.77	21.1	0.20	0.26	0.36	53	202
60	10.60	10.59	33.790	25.906	210.0	0.146	2.74	43.6	22.1	1.83	21.7	0.32	0.22	0.39	60	201

A) PRIMARY PRODUCTIVITY SAMPLES WERE TAKEN FROM THESE LEVELS.

RV ROGER REVELLE — CALCOFI CRUISE 0304 — STATION 93 28

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE
32 54.8 N	117 23.7 W	04/04/03	2315 UTC	655 m	290 11 kn	270 02 05	1	1016.5 mb	14.3 C	11.2 C		1/8	SC

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	15.51	15.51	33.264	24.523	340.2	0.000	6.01	105.6	2.9	0.41	0.0	0.00	0.27	0.12	0	
2	15.51	15.51	33.264	24.523	340.3	0.007	6.01	105.6	2.9	0.41	0.0	0.00	0.27	0.12	2	220
10	15.29	15.29	33.263	24.571	335.9	0.034	6.02	105.3	3.2	0.42	0.2	0.01	0.35	0.18	10	219
19	12.76	12.76	33.318	25.138	282.1	0.062	5.24	87.1	7.7	0.88	7.2	0.19	1.20 A	0.74 A	19	218
20 ISL	12.60	12.60	33.332	25.180	278.1	0.064	5.12	84.8	8.2	0.93	7.9	0.19	1.19	0.72	20	
30	11.68	11.68	33.468	25.460	251.7	0.091	4.09	66.5	12.2	1.29	13.6	0.20	0.79	0.37	30	217
40	11.57	11.56	33.539	25.536	244.8	0.116	3.80	61.6	13.5	1.39	15.2	0.17	0.62	0.30	40	216
49	11.24	11.23	33.610	25.652	234.0	0.137	3.55	57.2	15.4	1.50	16.9	0.08	0.46	0.25	49	215
50 ISL	11.18	11.17	33.618	25.669	232.4	0.140	3.53	56.8	15.7	1.52	17.2	0.07	0.43	0.24	50	
60	10.62	10.61	33.692	25.826	217.6	0.162	3.30	52.5	18.8	1.66	19.5	0.03	0.14	0.12	60	214
69	10.49	10.48	33.755	25.898	211.0	0.181	3.09	49.0	20.4	1.74	20.5	0.02	0.09	0.09	69	213
75 ISL	10.42	10.41	33.805	25.949	206.2	0.194	2.93	46.4	21.6	1.79	21.3	0.02	0.07	0.08	75	
85	10.31	10.30	33.883	26.029	198.9	0.214	2.68	42.4	23.5	1.88	22.7	0.02	0.05	0.06	85	212
99	10.08	10.07	33.956	26.125	190.0	0.241	2.46	38.7	26.1	1.98	24.2	0.01	0.03	0.06	100	211
100 ISL	10.08	10.07	33.961	26.130	189.6	0.243	2.44	38.4	26.2	1.99	24.3	0.01	0.03	0.06	101	
120	10.02	10.01	34.041	26.203	183.1	0.281	2.14	33.7	28.2	2.09	25.6	0.01	0.03	0.06	121	210
125 ISL	9.96	9.95	34.060	26.228	180.9	0.290	2.09	32.8	28.9	2.11	25.9	0.01	0.03	0.06	126	
138	9.81	9.79	34.106	26.289	175.3	0.313	1.98	31.0	30.8	2.18	26.6	0.01	0.03	0.06	139	209
150 ISL	9.73	9.71	34.147	26.334	171.2	0.334	1.82	28.5	32.4	2.24	27.3	0.01	0.03	0.07	151	
168	9.64	9.62	34.202	26.393	166.0	0.364	1.56	24.4	34.6	2.34	28.4	0.01	0.02	0.07	169	208
198	9.41	9.39	34.268	26.483	158.1	0.413	1.23	19.1	38.4	2.49	29.7	0.01	0.01	0.05	199	207
200 ISL	9.39	9.37	34.270	26.488	157.7	0.416	1.22	19.0	38.6	2.50	29.8	0.01			201	
228	9.12	9.10	34.283	26.542	153.0	0.459	1.10	17.0	41.0	2.56	30.6	0.01			229	206
250 ISL	8.90	8.87	34.289	26.582	149.5	0.493	1.01	15.5	43.3	2.62	31.3	0.01			252	
268	8.70	8.67	34.290	26.614	146.7	0.519	0.95	14.5	45.4	2.66	31.8	0.01			270	205
300 ISL	8.27	8.24	34.284	26.676	141.2	0.565	0.86	13.0	49.2	2.73	32.8	0.01			302	
318	8.03	8.00	34.280	26.709	138.3	0.590	0.81	12.2	51.4	2.77	33.4	0.01			320	204
378	7.38	7.34	34.278	26.802	130.0	0.671	0.64	9.5	58.5	2.89	35.5	0.01			380	203
400 ISL	7.17	7.13	34.282	26.835	127.1	0.699	0.56	8.3	61.9	2.95	36.3	0.01			403	
436	6.86	6.82	34.292	26.886	122.6	0.744	0.45	6.6	67.3	3.03	37.5	0.00			439	202
500 ISL	6.54	6.49	34.307	26.941	118.0	0.821	0.35	5.1	72.6	3.09	38.5	0.01			503	
516	6.46	6.41	34.311	26.955	116.9	0.840	0.33	4.8	73.9	3.11	38.8	0.01			520	201

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

RV ROGER REVELLE CALCOFI CRUISE 0304 STATION 93 30

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT TYPE
32 50.8 N	117 31.9 W	05/04/03	0241	UTC	854 m	300 13 kn			1015.7 mb	15.0 C	11.6 C		

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	15.22	15.22	33.297	24.612	331.7	0.000	6.14	107.3	3.8	0.42	0.0	0.00	0.65	0.34	0	
3	15.22	15.22	33.297	24.612	331.8	0.010	6.14	107.3	3.8	0.42	0.0	0.00	0.65	0.34	3	220
10	15.21	15.21	33.296	24.614	331.8	0.033	6.15	107.4					0.65	0.34	10	219
20	12.53	12.53	33.214	25.102	285.6	0.064	5.65	93.4	6.0	0.75	4.8	0.13	0.49	0.20	20	218
30	11.89	11.89	33.357	25.335	263.6	0.092	4.71	76.8	9.4	1.10	10.4	0.19	0.95	0.47	30	217
40	11.63	11.62	33.483	25.481	250.0	0.117	4.07	66.1	12.3	1.32	13.8	0.19	0.89	0.40	40	216
50	11.31	11.30	33.556	25.597	239.2	0.142	3.69	59.5	14.5	1.46	16.1	0.11	0.56	0.27	50	215
60	11.08	11.07	33.677	25.733	226.5	0.165	3.22	51.7	17.4	1.63	18.5	0.06	0.29	0.22	60	214
70	10.87	10.86	33.739	25.819	218.6	0.187	3.08	49.3	19.0	1.70	19.7	0.04	0.20	0.13	70	213
75 ISL	10.74	10.73	33.783	25.876	213.2	0.198	2.95	47.1	20.2	1.76	20.6	0.03	0.14	0.10	75	
84	10.51	10.50	33.865	25.980	203.5	0.217	2.70	42.9	22.5	1.86	22.1	0.02	0.06	0.08	84	212
99	10.30	10.29	33.962	26.093	193.1	0.246	2.43	38.4	25.3	1.98	23.7	0.02	0.03	0.09	100	211
100 ISL	10.28	10.27	33.967	26.100	192.5	0.248	2.42	38.3	25.5	1.99	23.8	0.02	0.03	0.09	101	
119	9.98	9.97	34.049	26.215	181.9	0.284	2.17	34.1	28.5	2.10	25.6	0.02	0.02	0.08	120	210
125 ISL	9.92	9.91	34.078	26.248	178.9	0.295	2.04	32.0	29.6	2.15	26.2	0.03	0.02	0.09	126	
139	9.81	9.79	34.143	26.318	172.6	0.319	1.74	27.3	32.3	2.27	27.4	0.05	0.02	0.11	140	209
150 ISL	9.71	9.69	34.185	26.367	168.1	0.338	1.58	24.7	34.0	2.34	28.1	0.04	0.02	0.09	151	
169	9.53	9.51	34.239	26.440	161.6	0.369	1.39	21.7	36.6	2.43	29.1	0.02	0.01	0.05	170	208
199	9.24	9.22	34.268	26.510	155.4	0.417	1.15	17.8	39.8	2.54	30.2	0.04	0.01	0.05	200	207
200 ISL	9.23	9.21	34.268	26.512	155.3	0.419	1.15	17.8	39.9	2.54	30.2	0.04			201	
228	9.07	9.05	34.279	26.547	152.5	0.462	1.07	16.5	41.7	2.58	30.7	0.03			229	206
250 ISL	8.93	8.90	34.285	26.574	150.3	0.495	1.03	15.8	43.1	2.62	31.1	0.02			252	
268	8.78	8.75	34.288	26.600	148.1	0.522	0.99	15.2	44.5	2.65	31.5	0.02			270	205
300 ISL	8.31	8.28	34.286	26.672	141.7	0.568	0.87	13.2	49.0	2.74	32.9	0.01			302	
318	8.03	8.00	34.284	26.712	138.0	0.593	0.80	12.1	51.8	2.79	33.8	0.01			320	204
377	7.42	7.38	34.284	26.801	130.1	0.672	0.63	9.4	58.7	2.90	35.5	0.01			379	203
400 ISL	7.20	7.16	34.287	26.835	127.1	0.702	0.56	8.3	61.9	2.95	36.3	0.01			403	
438	6.88	6.84	34.294	26.885	122.8	0.750	0.46	6.7	67.1	3.03	37.5	0.01			441	202
500 ISL	6.54	6.49	34.306	26.941	118.1	0.824	0.36	5.2	72.6	3.10	38.6	0.01			503	
515	6.46	6.41	34.309	26.954	117.0	0.842	0.33	4.8	73.9	3.12	38.9	0.01			519	201

RV ROGER REVELLE CALCOFI CRUISE 0304 STATION 93 35

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT TYPE
32 40.8 N	117 52.3 W	05/04/03	0713	UTC	627 m	300 21 kn			1015.4 mb	14.2 C	11.2 C		

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	15.38	15.38	33.261	24.549	337.7	0.000	5.95	104.3	2.6	0.40	0.0	0.00	0.28	0.11	0	
2	15.38	15.38	33.261	24.549	337.7	0.007	5.95	104.3	2.6	0.40	0.0	0.00	0.28	0.11	2	220
10	15.37	15.37	33.260	24.551	337.8	0.034	5.96	104.4	2.8	0.41	0.0	0.00	0.28	0.12	10	219
20	14.09	14.09	33.253	24.820	312.5	0.066	6.15	105.0	3.4	0.48	0.7	0.04	0.68	0.37	20	218
30	12.18	12.18	33.319	25.251	271.6	0.095	5.03	82.6	7.5	1.00	8.5	0.18	2.47	1.11	30	217
40	11.66	11.65	33.436	25.439	253.9	0.122	4.23	68.7	12.0	1.29	13.1	0.24	0.91	0.57	40	216
49	11.36	11.35	33.531	25.568	241.9	0.144	3.79	61.2	14.7	1.43	15.2	0.12	0.50	0.39	49	215
50 ISL	11.33	11.32	33.539	25.580	240.8	0.147	3.76	60.7	14.9	1.44	15.4	0.12	0.49	0.38	50	
70	10.98	10.97	33.665	25.741	225.9	0.193	3.28	52.6	18.5	1.63	18.6	0.04	0.22	0.23	70	214
75 ISL	10.94	10.93	33.690	25.768	223.5	0.204	3.19	51.1	19.1	1.67	18.9	0.03	0.20	0.22	75	
80	10.89	10.88	33.721	25.801	220.5	0.216	3.08	49.3	20.0	1.72	19.4	0.03	0.18 A	0.20 A	80	213
85	10.82	10.81	33.769	25.851	215.8	0.226	2.91	46.5	21.6	1.79	20.5	0.02	0.13	0.15	85	212
99	10.49	10.48	33.807	25.939	207.8	0.256	2.87	45.6	23.0	1.83	21.4	0.02	0.07	0.12	99	211
100 ISL	10.47	10.46	33.813	25.947	207.0	0.258	2.86	45.4	23.2	1.84	21.5	0.02	0.07	0.12	101	
119	10.06	10.05	33.927	26.107	192.2	0.296	2.56	40.3	27.2	1.98	24.0	0.02	0.05	0.09	120	210
125 ISL	9.98	9.97	33.952	26.140	189.2	0.308	2.49	39.1	28.1	2.02	24.5	0.02	0.05	0.09	126	
139	9.83	9.81	34.001	26.203	183.4	0.334	2.35	36.8	29.9	2.09	25.4	0.01	0.04	0.08	140	209
150 ISL	9.69	9.67	34.034	26.253	178.9	0.354	2.25	35.1	31.4	2.14	26.1	0.01	0.03	0.07	151	
169	9.51	9.49	34.090	26.327	172.3	0.387	2.06	32.1	33.8	2.22	27.1	0.01	0.02	0.06	170	208
199	9.51	9.49	34.202	26.415	164.6	0.437	1.60	24.9	37.5	2.39	28.6	0.00	0.01	0.05	200	207
200 ISL	9.50	9.48	34.204	26.418	164.3	0.439	1.59	24.7	37.6	2.39	28.6	0.00			201	
228	9.19	9.16	34.234	26.492	157.7	0.484	1.43	22.1	40.7	2.48	29.6	0.00			229	206
250 ISL	8.85	8.82	34.235	26.547	152.8	0.518	1.38	21.2	43.7	2.53	30.5	0.01			251	
268	8.56	8.53	34.234	26.592	148.7	0.545	1.33	20.3	46.4	2.58	31.3	0.01			270	205
300 ISL	8.21	8.18	34.265	26.670	141.8	0.592	1.02	15.4	51.2	2.72	32.8	0.00			302	
318	8.03	8.00	34.283	26.711	138.1	0.617	0.84	12.7	54.0	2.80	33.6	0.00			320	204
378	7.18	7.14	34.279	26.831	127.1	0.697	0.60	8.9	64.8	2.97	36.4	0.00			380	203
400 ISL	6.97	6.93	34.283	26.863	124.3	0.724	0.55	8.1	67.7	3.02	37.2	0.00			403	
436	6.70	6.66	34.293	26.908	120.3	0.768	0.49	7.2	72.1	3.08	38.2	0.00			439	202
500 ISL	6.26	6.22	34.319	26.987	113.4	0.843	0.33	4.8	80.4	3.19	39.5	0.00			503	
515	6.16	6.11	34.325	27.005	111.8	0.860	0.29	4.2	82.3	3.21	39.8	0.00			519	201

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

RV ROGER REVELLE CALCOFI CRUISE 0304 STATION 93 40

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT TYPE
32 30.8 N	118 12.8 W	05/04/03	1202 UTC	1661 m	330 23 kn			1015.1 mb	12.5 C	10.0 C		

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	14.52	14.52	33.259	24.734	320.1	0.000	6.06	104.4	2.6	0.46	0.6	0.04	0.69	0.26	0	
2	14.52	14.52	33.259	24.734	320.2	0.006	6.06	104.4	2.6	0.46	0.6	0.04	0.69	0.26	2	220
10	14.52	14.52	33.258	24.733	320.5	0.032	6.06	104.4	2.7	0.46	0.6	0.04	0.71	0.27	10	219
20	14.53	14.53	33.259	24.732	320.9	0.064	6.06	104.4	2.6	0.46	0.6	0.04	0.82	0.28	20	218
30	13.97	13.97	33.268	24.857	309.3	0.096	5.84	99.5	3.7	0.57	2.2	0.08	0.82	0.44	30	217
40	12.46	12.45	33.334	25.209	275.9	0.125	4.86	80.2	7.8	0.98	8.5	0.23	0.90	0.54	40	216
50	11.90	11.89	33.377	25.349	262.8	0.152	4.48	73.1	9.9	1.15	11.3	0.22	0.64	0.49	50	215
60	11.58	11.57	33.525	25.524	246.4	0.177	3.79	61.5	13.3	1.39	15.1	0.19	0.37	0.30	60	214
70	11.24	11.23	33.576	25.626	236.9	0.201	3.62	58.3	15.1	1.48	16.7	0.11	0.25	0.26	70	213
75 ISL	11.02	11.01	33.595	25.680	231.9	0.213	3.57	57.2	16.0	1.52	17.5	0.08	0.20	0.22	75	
85	10.61	10.60	33.635	25.784	222.2	0.236	3.48	55.3	18.0	1.60	18.9	0.04	0.13	0.14	85	212
100	10.28	10.27	33.728 D	25.914	210.1	0.268									100	211
120	10.08	10.07	33.928	26.104	192.5	0.309	2.57	40.5	25.2	1.94	23.8	0.01	0.02	0.08	121	210
125 ISL	10.03	10.02	33.950	26.130	190.1	0.318	2.52	39.6	25.8	1.96	24.1	0.01	0.02	0.07	126	
140	9.89	9.87	33.991	26.186	185.1	0.346	2.39	37.5	27.5	2.02	25.0	0.01	0.01	0.06	141	209
150 ISL	9.77	9.75	34.028	26.235	180.7	0.365	2.29	35.8	28.9	2.07	25.7	0.01	0.01	0.06	151	
170	9.55	9.53	34.104	26.331	171.9	0.400	2.04	31.8	31.8	2.18	27.1	0.01	0.01	0.05	171	208
200	9.43	9.41	34.212	26.436	162.6	0.450	1.53	23.8	35.9	2.37	28.8	0.01	0.01	0.09	201	207
229	9.05	9.03	34.268	26.541	153.0	0.496	1.21	18.7	40.6	2.52	30.4	0.01			230	206
250 ISL	8.82	8.79	34.277	26.585	149.2	0.527	1.16	17.8	42.6	2.57	31.1	0.01			251	
269	8.63	8.60	34.272	26.611	147.0	0.556	1.11	16.9	44.0	2.59	31.5	0.01			271	205
300 ISL	8.26	8.23	34.249	26.650	143.7	0.601	1.11	16.8	46.7	2.62	32.3	0.00			302	
318	8.05	8.02	34.237	26.672	141.8	0.626	1.11	16.7	48.6	2.65	32.8	0.00			320	204
378	7.47	7.43	34.277	26.789	131.4	0.708	0.67	10.0	57.6	2.86	35.3	0.00			380	203
400 ISL	7.25	7.21	34.285	26.826	128.0	0.737	0.67	9.9	60.7	2.91	36.1	0.00			403	
438	6.90	6.86	34.294	26.882	123.0	0.785	0.66	9.7	65.8	2.99	37.3	0.00			441	202
500 ISL	6.48	6.43	34.311	26.952	116.9	0.859	0.40	5.8	73.1	3.07	38.7	0.00			503	
514	6.38	6.33	34.315	26.969	115.5	0.875	0.34	4.9	74.7	3.09	39.0	0.00			518	201

RV ROGER REVELLE CALCOFI CRUISE 0304 STATION 93 45

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT TYPE
32 20.6 N	118 34.4 W	05/04/03	1804 UTC	1441 m	330 21 kn	300 08 08	0	1017.9 mb	13.2 C	10.8 C	17m	0/8

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	14.28	14.28	33.233	24.764	317.2	0.000	6.09	104.4	1.6	0.45	0.6	0.04	0.61	0.20	0	
1 A	14.28	14.28	33.233	24.764	317.2	0.003	6.09	104.4	1.6	0.45	0.6	0.04	0.61	0.20	1	220
1	14.29	14.29	33.231	24.761	317.6	0.003									1	221
10 ISL	14.29	14.29	33.231	24.761	317.8	0.032	6.04	103.5	1.6	0.46	0.6	0.04	0.60	0.20	10	
12 A	14.29	14.29	33.231	24.761	317.9	0.038	6.02	103.2	1.6	0.46	0.6	0.04	0.59	0.20	12	219
20 ISL	14.28	14.28	33.230	24.762	318.0	0.064	6.02	103.2	1.6	0.45	0.6	0.04	0.56	0.22	20	
24 A	14.28	14.28	33.230	24.763	318.1	0.076	6.02	103.2	1.6	0.45	0.6	0.04	0.55	0.23	24	218
30 ISL	14.26	14.26	33.232	24.768	317.7	0.095	6.02	103.1	1.6	0.45	0.6	0.04	0.56	0.22	30	
36 A	14.24	14.23	33.233	24.774	317.4	0.114	6.01	102.9	1.6	0.46	0.7	0.04	0.56	0.20	36	217
46 A	14.17	14.16	33.232	24.788	316.3	0.146	5.99	102.4	1.7	0.47	0.9	0.05	0.58	0.21	46	216
50 ISL	14.09	14.08	33.222	24.797	315.5	0.159	5.99	102.2	1.8	0.49	1.1	0.05	0.58	0.25	50	
55	13.98	13.97	33.210	24.811	314.4	0.174	5.98	101.8	2.0	0.51	1.4	0.06	0.60	0.31	55	215
64 A	13.03	13.02	33.245	25.030	293.6	0.202	5.45	91.0	5.3	0.79	5.4	0.22	0.69	0.44	64	214
75	11.52	11.51	33.316	25.373	261.1	0.232	4.62	74.8	10.5	1.18	12.1	0.14	0.36	0.34	75	213
85	10.90	10.89	33.452	25.590	240.6	0.257	4.10	65.5	13.7	1.39	15.7	0.06	0.32	0.31	85	212
99	9.85	9.84	33.546	25.844	216.6	0.289	3.97	62.0	18.2	1.57	19.4	0.02	0.19	0.15	99	211
100 ISL	9.82	9.81	33.553	25.854	215.6	0.292	3.95	61.7	18.4	1.58	19.5	0.02	0.19	0.15	100	
119	9.48	9.47	33.674	26.005	201.6	0.331	3.60	55.8	21.5	1.70	21.5	0.02	0.17	0.21	120	210
125 ISL	9.38	9.37	33.715	26.054	197.2	0.343	3.49	54.0	22.7	1.74	22.2	0.02	0.14	0.19	126	
139	9.17	9.15	33.809	26.161	187.2	0.370	3.23	49.8	25.5	1.84	23.9	0.01	0.07	0.11	140	209
150 ISL	9.04	9.02	33.884	26.241	179.8	0.390	3.03	46.6	27.8	1.91	25.0	0.01	0.06	0.08	151	
169	8.82	8.80	33.989	26.358	169.0	0.423	2.74	42.0	31.5	2.03	26.7	0.01	0.03	0.06	170	208
198	8.44	8.42	34.041	26.458	160.0	0.471	2.49	37.8	35.8	2.15	28.6	0.00	0.03	0.06	199	207
200 ISL	8.41	8.39	34.043	26.464	159.4	0.474	2.48	37.6	36.1	2.16	28.7	0.00			201	
227	8.04	8.02	34.072	26.543	152.3	0.516	2.26	34.0	39.9	2.26	30.1	0.00			228	206
250 ISL	8.01	7.98	34.129	26.592	148.0	0.551	1.91	28.7	43.1	2.39	31.0	0.00			251	
267	7.98	7.95	34.164	26.625	145.3	0.576	1.64	24.7	45.5	2.49	31.6	0.00			269	205
300 ISL	7.69	7.66	34.179	26.679	140.5	0.623	1.36	20.3	50.2	2.62	33.1	0.00			302	
317	7.51	7.48	34.180	26.706	138.2	0.647	1.26	18.7	52.6	2.68	33.9	0.00			319	204
377	7.15	7.11	34.244	26.808	129.3	0.727	0.81	12.0	59.8	2.87	35.8	0.00			379	203
400 ISL	6.99	6.95	34.252	26.836	126.8	0.756	0.72	10.6	62.3	2.92	36.5	0.00			403	
437	6.72	6.68	34.259	26.879	123.1	0.803	0.60	8.8	66.6	2.99	37.5	0.00			440	202
500 ISL	6.17	6.13	34.291	26.977	114.3	0.877	0.38	5.5	76.2	3.13	39.5	0.00			503	
515	6.04	5.99	34.299	27.000	112.2	0.894	0.33	4.7	78.5	3.16	40.0	0.00			519	201

A) PRIMARY PRODUCTIVITY SAMPLES WERE TAKEN FROM THESE LEVELS.

RV ROGER REVELLE CALCOFI CRUISE 0304 STATION 93 50

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT TYPE
32 10.8 N	118 53.6 W	05/04/03	2224 UTC	1473 m	330 23 kn	300 06 08	0	1017.2 mb	14.1 C	11.2 C	15m	0/8

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	15.10	15.10	33.133	24.512	341.2	0.000	5.92	103.1	1.3	0.41	0.1	0.00	0.24	0.05	0	
2	15.10	15.10	33.133	24.512	341.3	0.007	5.92	103.1	1.3	0.41	0.1	0.00	0.24	0.05	2	220
10	15.10	15.10	33.133	24.512	341.5	0.034	5.93	103.3	1.3	0.41	0.0	0.00	0.26	0.05	10	219
20	15.10	15.10	33.133	24.513	341.8	0.068	5.93	103.3	1.4	0.41	0.0	0.00	0.25	0.05	20	218
30	14.72	14.72	33.138	24.599	333.9	0.102	6.05	104.6	1.5	0.42	0.1	0.01	0.45	0.13	30	217
40	13.77	13.76	33.215	24.857	309.5	0.134	5.97	101.2	2.2	0.55	1.7	0.08	0.92	0.40	40	216
50	13.06	13.05	33.169	24.965	299.5	0.165	5.76	96.2	3.5	0.69	3.5	0.14	0.63	0.46	50	215
60	11.50	11.49	33.068	25.183	278.8	0.194	5.26	84.9	7.3	0.99	9.0	0.10	0.37	0.45	60	214
70	10.80	10.79	33.230	25.435	255.0	0.220	4.82	76.8	10.5	1.20	12.8	0.03	0.17	0.28	70	213
75 ISL	10.74	10.73	33.294	25.495	249.4	0.233	4.74	75.4	11.4	1.26	13.8	0.03	0.14	0.24	75	
84	10.63	10.62	33.357	25.564	243.1	0.255	4.65	73.8	12.7	1.32	14.8	0.02	0.10	0.19	84	212
98	10.30	10.29	33.453	25.696	230.8	0.288	4.28	67.5	14.9	1.40	16.5	0.01	0.07	0.11	98	211
100 ISL	10.22	10.21	33.473	25.725	228.0	0.293	4.23	66.6	15.4	1.42	16.9	0.01	0.06	0.10	100	
118	9.56	9.55	33.647	25.971	204.9	0.332	3.85	59.8	19.5	1.58	19.9	0.01	0.02	0.05	119	210
125 ISL	9.41	9.40	33.679	26.021	200.3	0.346	3.80	58.8	20.5	1.61	20.5	0.01	0.02	0.04	126	
139	9.20	9.18	33.729	26.094	193.6	0.374	3.69	56.9	22.4	1.67	21.7	0.00	0.01	0.03	140	209
150 ISL	9.06	9.04	33.796	26.169	186.7	0.394	3.42	52.6	24.8	1.77	23.3	0.00	0.01	0.03	151	
168	8.88	8.86	33.901	26.280	176.5	0.427	2.96	45.4	28.8	1.93	25.7	0.00	0.00	0.03	169	208
199	8.61	8.59	33.978	26.382	167.2	0.480	2.73	41.6	32.5	2.04	27.4	0.00	0.00	0.03	200	207
200 ISL	8.60	8.58	33.981	26.386	166.9	0.482	2.72	41.4	32.6	2.04	27.4	0.00			201	
227	8.32	8.30	34.041	26.477	158.7	0.526	2.54	38.5	36.4	2.14	28.7	0.00			228	206
250 ISL	7.94	7.91	34.064	26.552	151.8	0.562	2.26	33.9	41.0	2.27	30.4	0.00			251	
268	7.65	7.62	34.078	26.605	146.9	0.589	2.01	30.0	44.9	2.38	31.8	0.00			270	205
300 ISL	7.35	7.32	34.129	26.688	139.4	0.634	1.54	22.8	51.4	2.58	33.6	0.00			302	
317	7.26	7.23	34.158	26.724	136.3	0.658	1.31	19.4	54.3	2.67	34.4	0.00			319	204
377	7.22	7.18	34.248	26.801	130.0	0.738	0.78	11.5	59.4	2.87	35.7	0.00			379	203
400 ISL	6.94	6.90	34.248	26.840	126.4	0.767	0.70	10.3	63.0	2.93	36.7	0.00			403	
436	6.43	6.39	34.238	26.901	120.8	0.812	0.62	9.0	69.4	3.00	38.3	0.00			439	202
500 ISL	5.82	5.78	34.256	26.993	112.3	0.886	0.39	5.6	80.2	3.13	40.5	0.00			503	
515	5.68	5.64	34.261	27.014	110.3	0.903	0.34	4.8	82.7	3.16	41.0	0.00			518	201

RV ROGER REVELLE CALCOFI CRUISE 0304 STATION 93 55

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT TYPE
32 0.8 N	119 14.0 W	06/04/03	0249 UTC	1595 m	330 28 kn			1018.3 mb	13.8 C	10.8 C		

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	14.86	14.86	33.137	24.567	336.0	0.000	5.98	103.6	1.6	0.42	0.1	0.00	0.43	0.09	0	
4	14.86	14.86	33.137	24.567	336.1	0.013	5.98	103.6	1.6	0.42	0.1	0.00	0.43	0.09	4	220
10 ISL	14.87	14.87	33.137	24.565	336.5	0.034	5.97	103.5	1.6	0.41	0.1	0.00	0.42	0.09	10	
11	14.87	14.87	33.137	24.565	336.5	0.037	5.97	103.5	1.6	0.41	0.1	0.00	0.42	0.09	11	219
20	14.87	14.87	33.137	24.565	336.7	0.067	5.96	103.3	1.5	0.42	0.1	0.00	0.44	0.14	20	218
30	14.49	14.49	33.161	24.665	327.5	0.100	6.03	103.7	1.8	0.44	0.4	0.02	0.56	0.17	30	217
40	13.49	13.48	33.231	24.927	302.9	0.132	5.87	99.0	3.6	0.62	3.0	0.13	0.92	0.47	40	216
50	12.59	12.58	33.255	25.123	284.3	0.161	5.37	88.9	6.2	0.85	6.5	0.31	0.48	0.31	50	215
60	11.68	11.67	33.278	25.313	266.4	0.189	4.85	78.7	9.6	1.10	11.1	0.12	0.23	0.21	60	214
70	11.06	11.05	33.269	25.419	256.5	0.215	4.73	75.8	10.8	1.21	12.9	0.07	0.22	0.23	70	213
75 ISL	10.78	10.77	33.318	25.507	248.3	0.228	4.57	72.8	12.2	1.29	14.4	0.05	0.19	0.20	75	
84	10.39	10.38	33.432	25.663	233.5	0.249	4.25	67.2	14.7	1.43	16.8	0.03	0.12	0.14	84	212
99	10.23	10.22	33.549	25.782	222.6	0.284	3.99	62.9	16.2	1.51	17.9	0.02	0.08	0.11	99	211
100 ISL	10.20	10.19	33.554	25.791	221.7	0.286	3.99	62.8	16.3	1.51	18.0	0.02	0.08	0.11	100	
119	9.55	9.54	33.639	25.967	205.3	0.326	3.94	61.2	19.0	1.56	19.6	0.02	0.03	0.05	120	210
125 ISL	9.40	9.39	33.680	26.023	200.1	0.339	3.85	59.6	20.3	1.61	20.4	0.01	0.03	0.05	126	
139	9.13	9.11	33.778	26.143	188.9	0.366	3.56	54.8	23.6	1.73	22.5	0.00	0.02	0.06	140	209
150 ISL	9.00	8.98	33.845	26.217	182.1	0.386	3.31	50.8	26.0	1.82	24.0	0.00	0.02	0.05	151	
168	8.83	8.81	33.932	26.312	173.4	0.418	2.95	45.2	29.7	1.95	26.1	0.00	0.01	0.04	169	208
199	8.38	8.36	34.009	26.442	161.5	0.470	2.68	40.6	34.7	2.08	28.3	0.01	0.00	0.03	200	207
200 ISL	8.37	8.35	34.011	26.445	161.2	0.472	2.67	40.5	34.9	2.08	28.4	0.01			201	
228	8.07	8.05	34.044	26.516	154.8	0.516	2.38	35.8	39.1	2.22	30.1	0.00			229	206
250 ISL	7.80	7.78	34.065	26.573	149.8	0.549	2.16	32.3	42.6	2.33	31.3	0.00			251	
269	7.54	7.51	34.080	26.622	145.3	0.577	1.96	29.2	45.9	2.42	32.4	0.00			271	205
300 ISL	7.06	7.03	34.104	26.709	137.3	0.621	1.63	24.0	52.8	2.59	34.4	0.00			302	
318	6.81	6.78	34.118	26.754	133.1	0.646	1.44	21.1	56.8	2.68	35.4	0.00			320	204
378	6.37	6.34	34.157	26.844	125.2	0.723	0.96	13.9	65.8	2.88	37.2	0.00			380	203
400 ISL	6.26	6.22	34.181	26.877	122.3	0.750									403	
438	6.11	6.07	34.221 D	26.928	117.9	0.796									441	202
500 ISL	5.85	5.81	34.254	26.988	112.8	0.867									503	
515	5.79	5.75	34.262 D	27.001	111.7	0.884									519	201

RV ROGER REVELLE CALCOFI CRUISE 0304 STATION 93 60

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT TYPE
31 50.7 N	119 34.3 W	06/04/03	0708	UTC	1894 m	340 25 kn			1019.6 mb	13.4 C	10.8 C		

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	14.83	14.83	33.167	24.596	333.2	0.000	5.98	103.6	1.9	0.42	0.0	0.00	0.38	0.10	0	
3	14.83	14.83	33.167	24.597	333.3	0.010	5.98	103.6	1.9	0.42	0.0	0.00	0.38 A	0.10 A	3	220
10	14.83	14.83	33.167	24.597	333.5	0.033	5.99	103.8	1.9	0.41	0.0	0.00	0.46	0.12	10	219
20	14.85	14.85	33.166	24.592	334.2	0.067	5.98	103.6	1.8	0.41	0.0	0.00	0.46	0.12	20	218
30	14.12	14.12	33.175	24.754	319.1	0.099	5.99	102.3	2.6	0.49	0.8	0.04	0.55	0.22	30	217
40	13.93	13.92	33.188	24.803	314.6	0.131	6.00	102.1	2.4	0.51	1.0	0.07	0.57	0.25	40	216
50	13.89	13.88	33.185	24.810	314.3	0.163	5.97	101.5	2.5	0.53	1.2	0.07	0.53	0.24	50	215
60	13.60	13.59	33.167	24.855	310.2	0.194	5.84	98.6	3.2	0.59	2.0	0.11	0.46	0.26	60	214
70	12.65	12.64	33.241	25.101	286.9	0.224	5.41	89.6	6.4	0.85	6.4	0.33	0.40	0.30	70	213
75 ISL	11.99	11.98	33.283	25.260	271.9	0.238	5.07	82.8	8.8	1.03	9.5	0.25	0.30	0.25	75	
84	10.88	10.87	33.377	25.535	245.8	0.261	4.46	71.2	13.3	1.33	14.9	0.04	0.11	0.13	84	212
99	10.14	10.13	33.552	25.800	220.9	0.296	3.94	62.0	18.1	1.57	18.9	0.03	0.04	0.08	99	211
100 ISL	10.12	10.11	33.556	25.807	220.3	0.298	3.93	61.8	18.2	1.58	19.0	0.03	0.04	0.08	100	
119	9.93	9.92	33.619	25.888	212.9	0.339	3.77	59.0	19.8	1.65	20.2	0.02	0.03	0.07	120	210
125 ISL	9.76	9.75	33.665	25.952	206.9	0.352	3.66	57.1	21.1	1.69	21.1	0.02	0.02	0.07	126	
138	9.42	9.40	33.783	26.101	193.0	0.378	3.35	51.9	24.4	1.81	23.1	0.02	0.01	0.06	139	209
150 ISL	9.40	9.38	33.905	26.199	183.9	0.400	2.91	45.1	27.4	1.95	24.7	0.02	0.01	0.05	151	
168	9.38	9.36	34.040	26.309	173.9	0.433	2.32	36.0	31.2	2.13	26.7	0.02	0.01	0.05	169	208
198	8.96	8.94	34.094	26.419	163.9	0.483	2.19	33.7	34.6	2.23	28.2	0.01	0.01	0.05	199	207
200 ISL	8.91	8.89	34.092	26.425	163.3	0.487	2.21	33.9	34.8	2.23	28.3	0.01			201	
228	8.25	8.23	34.066	26.507	155.8	0.531	2.38	36.0	38.5	2.23	29.6	0.01			229	206
250 ISL	8.00	7.97	34.089	26.562	150.9	0.565	2.14	32.2	42.1	2.34	31.0	0.01			251	
268	7.84	7.81	34.113	26.605	147.1	0.592	1.86	27.9	45.4	2.46	32.2	0.01			270	205
300 ISL	7.30	7.27	34.119	26.687	139.5	0.638	1.56	23.1	51.8	2.62	34.3	0.01			302	
317	7.01	6.98	34.121	26.729	135.6	0.661	1.42	20.9	55.1	2.69	35.3	0.01			319	204
377	6.51	6.48	34.161	26.829	126.8	0.740	0.99	14.4	64.4	2.89	37.7	0.01			379	203
400 ISL	6.38	6.34	34.180	26.861	123.9	0.769	0.89	12.9	67.3	2.95	38.3	0.01			403	
436	6.20	6.16	34.208	26.906	120.0	0.812			71.4	3.02	39.1	0.01			439	202
500 ISL	5.85	5.81	34.250	26.984	113.1	0.887	0.47	6.7	78.8	3.13	40.5	0.01			503	
516	5.76	5.72	34.261	27.004	111.4	0.905	0.40	5.7	80.7	3.16	40.9	0.01			519	201

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

RV ROGER REVELLE CALCOFI CRUISE 0304 STATION 93 70

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT TYPE
31 30.7 N	120 14.8 W	06/04/03	1251	UTC	3945 m	340 23 kn			1019.0 mb	13.1 C	10.7 C		

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	14.86	14.86	33.099	24.538	338.8	0.000	5.90	102.2	1.4	0.41	0.0	0.00			0	
2	14.86	14.86	33.099	24.538	338.9	0.007	5.90	102.2	1.4	0.41	0.0	0.00			2	220
10 ISL	14.86	14.86	33.099	24.538	339.1	0.034	5.90	102.2	1.4	0.41	0.0	0.00			10	
15	14.86	14.86	33.099	24.538	339.2	0.051	5.90	102.2	1.4	0.41	0.0	0.00			15	219
20 ISL	14.86	14.86	33.100	24.539	339.3	0.068	5.90	102.2	1.4	0.41	0.0	0.00			20	
30 ISL	14.86	14.86	33.102	24.541	339.4	0.102	5.90	102.2	1.3	0.41	0.0	0.00			30	
31	14.86	14.86	33.102	24.541	339.4	0.105	5.90	102.2	1.3	0.41	0.0	0.00			31	218
45	14.81	14.80	33.111	24.559	338.1	0.153	5.90	102.1	1.3	0.42	0.0	0.00			45	217
50 ISL	14.77	14.76	33.111	24.568	337.4	0.169	5.90	102.0	1.4	0.44	0.0	0.01			50	
56	14.66	14.65	33.118	24.597	334.8	0.190	5.90	101.8	1.5	0.46	0.1	0.02			56	216
64	14.36	14.35	33.152	24.687	326.5	0.216	5.87	100.7	1.9	0.47	0.3	0.04			64	215
75	13.89	13.88	33.118	24.759	319.9	0.252	5.83	99.0	2.3	0.53	1.1	0.10			75	214
85	12.16	12.15	32.951	24.971	299.7	0.283	5.61	91.8	4.6	0.77	4.8	0.23			85	213
95	11.33	11.32	33.066	25.213	276.7	0.311	5.18	83.3	7.7	1.03	9.3	0.07			95	212
100 ISL	10.99	10.98	33.127	25.322	266.5	0.325	5.00	79.9	9.2	1.13	11.1	0.06			100	
110	10.49	10.48	33.249	25.504	249.2	0.351	4.69	74.2	11.9	1.29	14.1	0.03			110	211
125	10.21	10.20	33.423	25.688	232.1	0.387	4.24	66.7	15.2	1.45	16.9	0.02			126	210
144	9.69	9.67	33.523	25.853	216.6	0.430	4.08	63.5	17.9	1.55	19.0	0.01			145	209
150 ISL	9.59	9.57	33.579	25.914	211.0	0.442	4.00	62.1	18.8	1.58	19.5	0.01			151	
170	9.40	9.38	33.777	26.100	193.7	0.483	3.62	56.1	22.2	1.68	21.4	0.02			171	208
200	9.32	9.30	33.980	26.272	178.0	0.539	2.81	43.5	28.1	1.96	25.2	0.01			201	207
229	8.73	8.71	34.017	26.395	166.7	0.589	3.62	55.3	28.6	1.73	23.5	0.02			230	206
250 ISL	8.26	8.23	34.032	26.479	158.9	0.623	3.24	49.0	34.0	1.91	26.2	0.02			251	
270	7.82	7.79	34.040	26.551	152.2	0.654	2.64	39.5	40.3	2.17	29.6	0.01			271	205
300 ISL	7.23	7.20	34.036	26.632	144.7	0.698	2.33	34.4	46.8	2.34	32.0	0.01			302	
319	6.91	6.88	34.033	26.674	140.8	0.726	2.21	32.4	50.5	2.42	33.1	0.01			321	204
379	6.26	6.23	34.062	26.783	130.9	0.807	1.56	22.5	61.7	2.71	36.8	0.01			381	203
400 ISL	6.23	6.19	34.106	26.822	127.5	0.834	1.28	18.5	65.0	2.82	37.7	0.01			402	
438	6.18	6.14	34.179	26.886	121.9	0.882	0.81	11.7	70.5	2.99	39.1	0.01			441	202
500 ISL	5.85	5.81	34.229	26.968	114.7	0.955	0.50	7.2	78.2	3.13	40.7	0.01			503	
514	5.78	5.74	34.240	26.985	113.2	0.971	0.43	6.1	79.9	3.16	41.0	0.01			517	201

RV ROGER REVELLE CALCOFI CRUISE 0304 STATION 93 80

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE
31 10.8 N	120 55.2 W	06/04/03	1835 UTC	3829 m	340 19 kn	310 06 07	1	1021.6 mb	15.4 C	12.9 C	24m	5/8	CU

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	15.33	15.33	33.032	24.384	353.4	0.000	5.85	102.3	1.1	0.40	0.0	0.00	0.13	0.03	0	
2	15.33	15.33	33.032	24.384	353.5	0.007									2	222
2 A	15.33	15.33	33.032	24.384	353.5	0.007	5.85	102.3	1.1	0.40	0.0	0.00	0.13	0.03	2	221
10 ISL	15.33	15.33	33.032	24.384	353.7	0.035	5.85	102.3	1.1	0.40	0.0	0.00	0.13	0.04	10	
18 A	15.33	15.33	33.033 D	24.385	353.9	0.064	5.85	102.3	1.1	0.40	0.0	0.00	0.14	0.04	18	220
20 ISL	15.33	15.33	33.033	24.385	353.9	0.071	5.85	102.3	1.1	0.40	0.0	0.00	0.14	0.04	20	
30 ISL	15.33	15.33	33.034	24.387	354.1	0.106	5.85	102.3	1.2	0.39	0.0	0.00	0.14	0.03	30	
34 A	15.33	15.32	33.034	24.387	354.2	0.120	5.85	102.3	1.2	0.39	0.0	0.00	0.14	0.03	34	219
50 ISL	15.33	15.32	33.031	24.385	354.9	0.177	5.87	102.6	1.1	0.39	0.0	0.00	0.14	0.03	50	
51 A	15.33	15.32	33.031	24.385	354.9	0.181	5.87	102.6	1.1	0.39	0.0	0.00	0.14	0.03	51	218
66 A	15.27	15.26	33.029	24.397	354.2	0.234	5.87	102.5	1.1	0.39	0.0	0.00	0.17	0.05	66	217
75	14.85	14.84	33.017	24.479	346.6	0.265	5.90	102.1	1.2	0.40	0.0	0.00	0.32	0.17	75	216
84	14.40	14.39	33.042	24.594	335.9	0.296	5.93	101.7	1.5	0.42	0.0	0.01	0.57	0.38	84	215
92 A	13.77	13.76	33.033	24.718	324.2	0.322	5.77	97.7	2.4	0.53	1.0	0.13	0.39	0.40	92	214
98	12.33	12.32	32.918	24.913	305.5	0.341	5.71	93.8	4.1	0.72	4.0	0.06	0.28	0.38	98	213
100 ISL	12.07	12.06	32.895	24.944	302.5	0.347	5.70	93.1	4.4	0.75	4.5	0.06	0.25	0.39	100	
105	11.67	11.66	32.871	25.000	297.3	0.362	5.65	91.5	4.9	0.80	5.3	0.06	0.20	0.41	105	212
114	11.25	11.24	32.973	25.156	282.6	0.388	5.44	87.3	6.5	0.93	7.8	0.04	0.14	0.24	114	211
123	10.82	10.81	33.107	25.336	265.5	0.413	5.20	82.8	8.6	1.06	10.5	0.03	0.09	0.13	124	210
125 ISL	10.73	10.72	33.124	25.365	262.8	0.418	5.16	82.0	9.0	1.09	11.0	0.03	0.08	0.12	126	
139	10.19	10.17	33.222	25.535	246.9	0.454	4.89	76.8	12.0	1.26	14.0	0.02	0.05	0.06	140	209
150 ISL	9.87	9.85	33.356	25.693	232.0	0.480	4.57	71.3	14.8	1.40	16.5	0.02	0.03	0.03	151	
163	9.60	9.58	33.530	25.874	215.0	0.509	4.14	64.3	18.3	1.55	19.2	0.02	0.01	0.02	164	208
193	9.40	9.38	33.851	26.158	188.7	0.570	3.18	49.3	25.2	1.82	23.7	0.02	0.00	0.02	194	207
200 ISL	9.36	9.34	33.911	26.212	183.7	0.583	2.99	46.3	26.7	1.88	24.5	0.02			201	
229	9.09	9.07	34.075	26.384	167.9	0.634	2.52	38.8	31.9	2.07	26.9	0.02			230	206
250 ISL	8.67	8.64	34.071	26.447	162.2	0.669	2.80	42.7	33.6	2.03	26.8	0.02			251	
268	8.26	8.23	34.040	26.485	158.6	0.698	3.08	46.6	35.0	1.98	26.6	0.02			269	205
300 ISL	7.69	7.66	34.042	26.571	150.7	0.747	2.76	41.2	41.0	2.15	29.3	0.01			302	
318	7.41	7.38	34.049	26.617	146.5	0.774	2.45	36.3	44.9	2.28	31.2	0.01			320	204
377	6.64	6.61	34.068	26.738	135.4	0.857	1.75	25.5	55.9	2.58	35.0	0.02			379	203
400 ISL	6.39	6.35	34.071	26.773	132.2	0.888	1.62	23.5	59.9	2.67	36.3	0.02			402	
437	6.03	5.99	34.082	26.828	127.1	0.936	1.43	20.5	66.2	2.80	38.1	0.01			440	202
500 ISL	5.60	5.56	34.150	26.936	117.4	1.013	0.82	11.7	77.8	3.01	40.5	0.02			503	
515	5.50	5.46	34.167	26.961	115.1	1.030	0.68	9.6	80.5	3.06	41.1	0.02			518	201

A) PRIMARY PRODUCTIVITY SAMPLES WERE TAKEN FROM THESE LEVELS.

RV ROGER REVELLE CALCOFI CRUISE 0304 STATION 93 90

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE
30 50.8 N	121 35.4 W	07/04/03	0046 UTC	4103 m	340 30 kn	340 08 05	2	1019.9 mb	15.1 C	12.1 C		8/8	SC

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	15.27	15.27	32.982	24.359	355.9	0.000	5.87	102.5	1.0	0.40	0.1	0.00	0.15	0.03	0	
3	15.27	15.27	32.982	24.359	355.9	0.011	5.87	102.5	1.0	0.40	0.1	0.00	0.15	0.03	3	220
10 ISL	15.27	15.27	32.982	24.359	356.1	0.036	5.88	102.7	1.0	0.40	0.1	0.00	0.15	0.03	10	
15	15.27	15.27	32.982	24.359	356.3	0.053	5.89	102.8	1.0	0.40	0.1	0.00	0.15	0.03	15	219
20 ISL	15.27	15.27	32.982	24.359	356.4	0.071	5.89	102.8	1.0	0.40	0.1	0.00	0.15	0.03	20	
30	15.27	15.27	32.983	24.360	356.6	0.107	5.89	102.8	1.0	0.40	0.1	0.00	0.15	0.03	30	218
45	15.15	15.14	32.980	24.385	354.7	0.160	5.90	102.7	1.0	0.40	0.1	0.00	0.16	0.04	45	217
50 ISL	14.98	14.97	32.983	24.424	351.1	0.178	5.96	103.4	1.1	0.40	0.1	0.00	0.21	0.06	50	
56	14.70	14.69	33.000	24.497	344.3	0.199	6.02	103.9	1.3	0.41	0.0	0.00	0.33	0.11	56	216
64	14.26	14.25	33.067	24.642	330.7	0.226	6.04	103.3	1.5	0.42	0.0	0.00	0.68	0.29	64	215
74	12.64	12.63	32.911	24.848	311.2	0.258	5.76	95.2	3.1	0.67	3.0	0.15	0.46	0.43	74	214
75 ISL	12.52	12.51	32.900	24.862	309.8	0.261	5.75	94.8	3.2	0.69	3.2	0.14	0.44	0.43	75	
84	11.69	11.68	32.850	24.980	298.7	0.288	5.67	91.8	4.4	0.81	5.2	0.05	0.32	0.39	84	213
94	11.16	11.15	32.923	25.132	284.3	0.317	5.46	87.4	6.6	0.97	8.1	0.03	0.20	0.22	94	212
100 ISL	10.88	10.87	33.006	25.247	273.5	0.334	5.31	84.6	7.8	1.05	9.7	0.02	0.14	0.16	100	
109	10.52	10.51	33.146	25.419	257.3	0.358	5.07	80.2	9.8	1.16	11.9	0.02	0.07	0.10	109	211
124	10.15	10.14	33.342	25.635	237.0	0.395	4.60	72.3	13.7	1.38	15.8	0.01	0.03	0.05	125	210
125 ISL	10.12	10.11	33.350	25.646	236.0	0.398	4.58	71.9	13.9	1.39	16.0	0.01	0.03	0.05	126	
144	9.54	9.52	33.489	25.851	216.8	0.441	4.26	66.1	17.6	1.54	18.8	0.01	0.04	0.04	145	209
150 ISL	9.42	9.40	33.551	25.919	210.4	0.453	4.10	63.4	19.0	1.60	19.8	0.01	0.03	0.03	151	
168	9.16	9.14	33.736	26.106	193.0	0.490	3.61	55.6	23.4	1.77	22.7	0.01	0.01	0.02	169	208
198	8.77	8.75	33.939	26.327	172.5	0.544	3.12	47.7	29.6	1.96	25.8	0.01	0.00	0.02	199	207
200 ISL	8.76	8.74	33.951	26.338	171.5	0.548	3.09	47.2	30.0	1.97	25.9	0.01			201	
228	8.57	8.55	34.078	26.468	159.7	0.594	2.66	40.5	34.9	2.13	27.7	0.01			229	206
250 ISL	8.19	8.16	34.097	26.540	153.0	0.629	2.47	37.3	38.7	2.24	29.1	0.01			251	
268	7.82	7.79	34.087	26.587	148.7	0.656	2.37	35.5	41.8	2.32	30.3	0.01			269	205
300 ISL	7.18	7.15	34.058	26.656	142.3	0.702	2.24	33.0	47.8	2.44	32.4	0.01			302	
318	6.87	6.84	34.046	26.689	139.3	0.728	2.13	31.2	51.3	2.51	33.6	0.01			320	204
377	6.50	6.47	34.123	26.800	129.4	0.807	1.25	18.2	62.6	2.87	37.3	0.01			379	203
400 ISL	6.41	6.37	34.154	26.836	126.3	0.836	1.02	14.8	65.6	2.96	38.0	0.01			402	
437	6.31	6.27	34.206	26.891	121.6	0.882	0.73	10.6	69.6	3.07	38.9	0.01			440	202
500 ISL	6.15	6.11	34.310	26.994	112.6	0.956	0.33	4.8	76.9	3.24	40.5	0.01			503	
514	6.11	6.06	34.333	27.018	110.5	0.972	0.24	3.5	78.5	3.28	40.8	0.01			517	201

RV ROGER REVELLE CALCOFI CRUISE 0304 STATION 93 100

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT TYPE
30 30.8 N	122 15.4 W	07/04/03	0700 UTC	4245 m	350 22 kn			1020.8 mb	15.1 C	12.2 C		

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	14.85	14.85	32.824	24.328	358.8	0.000	5.94	102.7	1.3	0.42	0.2	0.00	0.13	0.03	0	
2	14.85	14.85	32.824	24.328	358.8	0.007	5.94	102.7	1.3	0.42	0.2	0.00	0.13	0.03	2	220
10 ISL	14.85	14.85	32.824	24.328	359.0	0.036	5.96	103.1	1.3	0.41	0.1	0.00	0.13	0.03	10	
16	14.85	14.85	32.824	24.328	359.2	0.057	5.97	103.2	1.3	0.41	0.1	0.00	0.13	0.03	16	219
20 ISL	14.85	14.85	32.824	24.328	359.3	0.072	5.96	103.1	1.3	0.41	0.1	0.00	0.13	0.03	20	
30 ISL	14.85	14.85	32.823	24.328	359.7	0.108	5.94	102.7	1.3	0.41	0.1	0.00	0.14	0.03	30	
31	14.85	14.85	32.823	24.328	359.7	0.111	5.94	102.7	1.3	0.41	0.1	0.00	0.14	0.03	31	218
46	14.70	14.69	32.823	24.361	357.0	0.165	5.97	102.9	1.3	0.41	0.1	0.00	0.19	0.06	46	217
50 ISL	14.53	14.52	32.827	24.400	353.4	0.179	5.98	102.7	1.4	0.41	0.1	0.00	0.26	0.11	50	
56	14.26	14.25	32.857	24.480	345.9	0.200	5.99	102.4	1.5	0.42	0.1	0.00	0.41	0.22	56	216
65	14.06	14.05	32.995	24.628	332.0	0.231	5.96	101.5	1.7	0.45	0.2	0.03	0.67	0.43	65	215
75 ISL	13.72	13.71	33.006	24.707	324.8	0.264	5.92	100.1	2.0	0.48	0.7	0.10	0.62	0.46	75	
76	13.66	13.65	33.000	24.714	324.0	0.267	5.91	99.8	2.0	0.49	0.7	0.11	0.61	0.46	76	214
85	12.66	12.65	32.927	24.856	310.6	0.295	5.80	95.9	3.0	0.62	2.6	0.16	0.49	0.49	85	213
95	11.64	11.63	32.894	25.023	294.8	0.326	5.58	90.3	5.2	0.86	6.3	0.05	0.26	0.36	95	212
100 ISL	11.24	11.23	32.892	25.094	288.1	0.340	5.52	88.5	6.1	0.93	7.6	0.05	0.20	0.30	100	
109	10.74	10.73	32.946	25.225	275.8	0.366	5.36	85.1	7.9	1.05	9.8	0.04	0.15	0.21	109	211
125	10.63	10.62	33.306	25.525	247.7	0.408	4.56	72.4	12.5	1.33	14.7	0.03	0.11	0.15	126	210
144	10.07	10.05	33.502	25.774	224.3	0.452	4.04	63.4	16.8	1.53	18.4	0.02	0.07	0.10	145	209
150 ISL	9.81	9.79	33.555	25.859	216.3	0.466	3.94	61.5	18.4	1.59	19.5	0.02	0.05	0.08	151	
169	9.12	9.10	33.720	26.100	193.6	0.505	3.59	55.2	23.7	1.79	22.8	0.02	0.01	0.03	170	208
199	9.24	9.22	34.004	26.304	175.0	0.560	2.44	37.7	30.6	2.09	26.7	0.01	0.01	0.03	200	207
200 ISL	9.23	9.21	34.007	26.308	174.6	0.562	2.44	37.7	30.7	2.09	26.8	0.01			201	
229	8.89	8.87	34.047	26.393	166.9	0.611	2.33	35.7	33.8	2.17	28.3	0.01			230	206
250 ISL	8.50	8.47	34.062	26.466	160.3	0.645	2.22	33.8	37.1	2.24	29.7	0.02			251	
269	8.13	8.10	34.072	26.530	154.3	0.675	2.09	31.5	40.5	2.32	31.0	0.02			270	205
300 ISL	7.65	7.62	34.095	26.619	146.2	0.722	1.80	26.8	46.2	2.47	32.9	0.01			302	
318	7.42	7.39	34.110	26.664	142.1	0.748	1.61	23.9	49.6	2.56	33.9	0.01			320	204
378	6.85	6.81	34.179	26.797	130.0	0.829	0.99	14.5	60.3	2.84	36.8	0.02			380	203
400 ISL	6.56	6.52	34.171	26.830	127.0	0.858	0.89	12.9	64.3	2.90	37.9	0.02			402	
437	6.11	6.07	34.159	26.879	122.4	0.904	0.78	11.2	70.6	2.99	39.6	0.02			440	202
500 ISL	5.84	5.80	34.240	26.978	113.7	0.978	0.45	6.4	78.9	3.14	41.0	0.02			503	
515	5.77	5.73	34.259	27.001	111.6	0.995	0.37	5.3	80.9	3.17	41.3	0.02			518	201

RV ROGER REVELLE CALCOFI CRUISE 0304 STATION 93 110

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT TYPE
30 10.8 N	122 55.4 W	07/04/03	1229 UTC	3680 m	080 21 kn			1019.8 mb	14.3 C	12.2 C		

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	15.60	15.60	32.976	24.281	363.2	0.000	5.82	102.3	1.1	0.40	0.0	0.00	0.12	0.03	0	
2	15.60	15.60	32.976	24.281	363.3	0.007	5.82	102.3	1.1	0.40	0.0	0.00	0.12	0.03	2	220
10 ISL	15.61	15.61	32.977	24.280	363.6	0.036	5.82	102.3	1.0	0.40	0.0	0.00	0.12	0.03	10	
15	15.61	15.61	32.977	24.281	363.8	0.055	5.82	102.3	0.9	0.40	0.0	0.00	0.12	0.03	15	219
20 ISL	15.61	15.61	32.977	24.281	363.9	0.073	5.81	102.1	0.9	0.40	0.0	0.00	0.12	0.03	20	
30	15.61	15.61	32.978	24.282	364.1	0.109	5.80	101.9	1.0	0.39	0.0	0.00	0.13	0.03	30	218
45	15.61	15.60	32.984	24.287	364.1	0.164	5.81	102.1	0.9	0.39	0.0	0.00	0.12	0.03	45	217
50 ISL	15.61	15.60	32.984	24.287	364.2	0.182	5.81	102.1	0.9	0.39	0.0	0.00	0.13	0.03	50	
60	15.61	15.60	32.983	24.287	364.5	0.218	5.81	102.1	1.0	0.39	0.0	0.00	0.15	0.04	60	216
75	15.68	15.67	33.024	24.303	363.5	0.273	5.79	101.9	0.9	0.39	0.0	0.00	0.22	0.08	75	215
85	15.63	15.62	33.133	24.398	354.7	0.309	5.76	101.4	1.2	0.40	0.0	0.00	0.30	0.17	85	214
95	14.21	14.20	32.976	24.583	337.2	0.343	5.88	100.4	1.7	0.47	0.1	0.01	0.44	0.43	95	213
100 ISL	13.47	13.46	32.918	24.690	327.0	0.360	5.86	98.6	2.3	0.55	0.8	0.05	0.42	0.44	100	
105	12.80	12.79	32.878	24.792	317.3	0.376	5.85	97.0	3.0	0.63	1.7	0.09	0.40	0.44	105	212
115	11.94	11.93	32.856	24.939	303.4	0.407	5.74	93.4	4.1	0.75	3.8	0.07	0.28	0.41	115	211
125	11.45	11.43	32.920	25.079	290.2	0.437	5.53	89.1	5.6	0.87	6.4		0.16	0.29	125	210
140	11.08	11.06	33.039	25.238	275.3	0.479	5.32	85.1	7.3	0.99	8.7		0.12	0.16	141	209
150 ISL	10.73	10.71	33.150	25.386	261.4	0.506	5.09	80.9	9.2	1.11	11.0		0.08	0.10	151	
165	10.17	10.15	33.334	25.626	238.8	0.544	4.67	73.4	12.7	1.30	14.7		0.03	0.05	166	208
195	9.34	9.32	33.668	26.025	201.3	0.610	3.74	57.8	21.0	1.66	21.2		0.00	0.02	196	207
200 ISL	9.26	9.24	33.713	26.073	196.9	0.620	3.62	55.9	22.1	1.70	22.0				201	
230	8.87	8.85	33.917	26.295	176.2	0.676	3.06	46.9	28.6	1.92	25.6				231	206
250 ISL	8.51	8.48	33.992	26.410	165.6	0.710	2.75	41.8	33.2	2.05	27.8				251	
269	8.15	8.12	34.032	26.496	157.6	0.740	2.52	38.0	37.4	2.16	29.5				270	205
300 ISL	7.64	7.61	34.054	26.588	149.1	0.788	2.37	35.3	42.4	2.28	31.1				302	
319	7.36	7.33	34.054	26.628	145.4	0.816	2.30	34.1	45.2	2.34	31.9				321	204
378	6.66	6.63	34.079	26.744	134.8	0.899	1.66	24.2	56.4	2.63	35.5				380	203
400 ISL	6.47	6.43	34.102	26.787	130.9	0.928	1.40	20.3	60.8	2.74	36.8				402	
439	6.19	6.15	34.150	26.862	124.2	0.978	0.97	14.0	68.5	2.92	38.9				442	202
500 ISL	5.80	5.76	34.219	26.966	114.8	1.051	0.55	7.9	78.7	3.14	41.1				503	
515	5.70	5.66	34.237	26.993	112.4	1.068	0.45	6.4	81.2	3.20	41.6				518	201

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE
29 50.8 N	123 35.2 W	07/04/03	1840 UTC	4125 m	110 19 kn	110 05 06	1	1021.9 mb	15.8 C	13.0 C	29m	5/8	CU

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	15.78	15.78	33.003	24.262	365.0	0.000	5.83	102.8	0.8	0.39	0.1	0.00	0.08	0.02	0	
2	15.78	15.78	33.002	24.261	365.2	0.007									2	224
2 A	15.78	15.78	33.003	24.262	365.1	0.007	5.83	102.8	0.8	0.39	0.1	0.00	0.08	0.02	2	223
10 ISL	15.77	15.77	33.003	24.265	365.1	0.037	5.81	102.5	0.7	0.39	0.0	0.00	0.11	0.02	10	
11	15.77	15.77	33.003	24.265	365.1	0.040	5.81	102.5	0.7	0.39	0.0	0.00	0.11	0.02	11	222
20 ISL	15.76	15.76	33.004	24.268	365.1	0.073	5.82	102.6	0.7	0.39	0.1	0.00	0.11	0.02	20	
21 A	15.76	15.76	33.004	24.268	365.1	0.077	5.82	102.6	0.7	0.39	0.1	0.00	0.11	0.02	21	221
30 ISL	15.77	15.77	33.009	24.270	365.2	0.110	5.81	102.5	0.7	0.39	0.1	0.00	0.12	0.02	30	
31	15.77	15.77	33.010	24.271	365.2	0.113	5.81	102.5	0.7	0.39	0.1	0.00	0.12	0.02	31	220
41 A	15.83	15.82	33.043	24.283	364.3	0.150	5.79	102.3	0.7	0.38	0.1	0.00	0.12	0.03	41	219
50 ISL	15.97	15.96	33.101	24.297	363.3	0.182	5.76	102.0	0.7	0.38	0.0	0.00	0.14	0.05	50	
52	16.00	15.99	33.114	24.300	363.1	0.190	5.76	102.1	0.7	0.38	0.0	0.00	0.15	0.05	52	218
61 A	16.05	16.04	33.145	24.313	362.2	0.222	5.76	102.2	0.7	0.37	0.1	0.00	0.19	0.06	61	217
69	16.04	16.03	33.164	24.330	360.8	0.251	5.73	101.7	0.8	0.37	0.1	0.00	0.23	0.07	69	216
75 ISL	15.98	15.97	33.160	24.341	359.9	0.273	5.74	101.7	0.8	0.38	0.0	0.00	0.24	0.10	75	
79 A	15.88	15.87	33.152	24.357	358.5	0.287	5.74	101.5	0.8	0.39	0.0	0.00	0.26	0.13	79	215
89	15.36	15.35	33.133	24.458	349.1	0.323	5.79	101.3	1.2	0.41	0.0	0.00	0.37	0.31	89	214
100 ISL	13.74	13.73	32.995	24.695	326.6	0.360	5.88	99.5	2.1	0.50	0.4	0.04	0.41	0.44	100	
101	13.59	13.58	32.982	24.715	324.6	0.363	5.89	99.3	2.2	0.51	0.5	0.04	0.41	0.45	101	213
110 A	12.86	12.85	32.916	24.810	315.7	0.392	5.86	97.3	2.8	0.60	1.5	0.08	0.36	0.42	110	212
117	12.14	12.12	32.881	24.921	305.2	0.414	5.76	94.2	3.6	0.70	3.2	0.09	0.29	0.36	117	211
124	11.90	11.88	32.915	24.992	298.5	0.435	5.67	92.3	4.3	0.76	4.2		0.11	0.31	124	210
125 ISL	11.85	11.83	32.921	25.006	297.2	0.438	5.65	91.8	4.4	0.77	4.4		0.11	0.30	125	
139	11.16	11.14	33.039	25.224	276.7	0.478	5.37	86.1	6.5	0.94	7.8		0.08	0.12	140	209
150 ISL	10.65	10.63	33.197	25.437	256.6	0.507	5.16	81.9	8.6	1.04	10.1		0.06	0.05	151	
164	10.08	10.06	33.407	25.698	231.9	0.541	4.88	76.6	11.6	1.16	12.9		0.04	0.02	165	208
194	9.32	9.30	33.661	26.022	201.5	0.606	4.22	65.2	19.2	1.54	19.4		0.02	0.02	195	207
200 ISL	9.25	9.23	33.714	26.075	196.6	0.618	4.04	62.3	20.6	1.60	20.4				201	
229	9.03	9.01	33.931	26.281	177.7	0.673	3.20	49.2	27.1	1.84	24.3				230	206
250 ISL	8.76	8.73	34.020	26.393	167.3	0.709	2.82	43.1	31.7	2.01	26.7				251	
268	8.50	8.47	34.063	26.467	160.5	0.738	2.59	39.4	35.3	2.13	28.4				269	205
300 ISL	8.08	8.05	34.084	26.547	153.2	0.789	2.28	34.3	39.9	2.27	30.3				302	
318	7.82	7.79	34.079	26.582	150.1	0.816	2.14	32.0	42.4	2.33	31.2				320	204
377	6.67	6.64	34.096	26.756	133.7	0.900	1.63	23.8	55.4	2.62	35.3				379	203
400 ISL	6.44	6.40	34.109	26.797	130.0	0.930	1.44	20.9	59.9	2.72	36.6				402	
437	6.19	6.15	34.134	26.849	125.3	0.977	1.13	16.3	66.8	2.87	38.5				440	202
500 ISL	5.76	5.72	34.197	26.953	115.9	1.053	0.64	9.1	77.6	3.07	41.0				503	
514	5.66	5.62	34.211	26.977	113.8	1.069	0.53	7.5	80.0	3.11	41.5				517	201

A) PRIMARY PRODUCTIVITY SAMPLES WERE TAKEN FROM THESE LEVELS.

PRIMARY PRODUCTIVITY CASTS

RV ROGER REVELLE — CALCOFI CRUISE 0304 — STATION 77 70

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	FOREL	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE
34 23.7 N	122 15.6 W	18/04/03	1832 UTC	16 m		1207 - 1835 PST	1208 PST	1905 PST	254.9 mg C/m2

DEPTH m	TEMP DEG C	SALINITY	SIGMA THETA	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	LIGHT PCT	UPTAKE (mg C/m3) 1	2	MEAN	DARK
2	14.19	33.024	24.622	6.06	103.5	2.1	0.39	0.0	0.00	0.28	0.10	83. A	3.1	2.8	3.0	0.12
12	14.17	33.025	24.627	6.08	103.8	2.1	0.39	0.0	0.00	0.28	0.10	32.	6.7	6.5	6.6	0.14
23	14.11	33.032	24.645	6.09	103.9	2.0	0.39	0.0	0.00	0.35	0.14	11.	5.8	5.9	5.8	0.13
34	13.70	33.062	24.753	6.12	103.5	2.2	0.40	0.0	0.02	0.83	0.40	3.8	6.1	6.8	6.4	0.18
44	13.64	33.074	24.775	6.00	101.4	2.3	0.45	0.3	0.08	0.71	0.38	1.5	2.4	2.3	2.4	0.08
52	13.46	33.062	24.802	5.92	99.6	2.4	0.50	0.7	0.25	0.52	0.30					
61	13.09	33.069	24.882	5.75	96.0	3.2	0.63	2.5	0.49	0.29	0.23	0.29	0.11	0.16	0.14	0.09

RV ROGER REVELLE — CALCOFI CRUISE 0304 — STATION 80 60

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	FOREL	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE
34 9.3 N	121 7.8 W	16/04/03	1756 UTC	6 m		1203 - 1902 PST	1205 PST	1903 PST	844.3 mg C/m2

DEPTH m	TEMP DEG C	SALINITY	SIGMA THETA	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	LIGHT PCT	UPTAKE (mg C/m3) 1	2	MEAN	DARK
1	13.27	33.170	24.922	7.58	127.2	0.1	0.23	0.1	0.01	6.65	0.96	77. A	57.2	45.7	51.4	0.58
4	13.11	33.170	24.954	7.65	127.9	0.1	0.28	0.0	0.01	7.27	1.05	36.	68.6	48.8	58.7	0.47
9	12.80	33.170	25.016	7.73	128.4	0.1	0.25	0.0	0.01	9.84	0.86	10.	46.0	56.8	51.4	0.65
13	12.57	33.180	25.068	7.42	122.7	0.2	0.35	0.4	0.02	10.86	2.08	3.6	42.6	46.3	44.4	0.57
16	12.10	33.212	25.183	6.86	112.3	0.5	0.44	2.5	0.07	13.43	2.49	1.7	20.9	16.5	18.6	0.68
23	11.14	33.407	25.511	5.28	84.8	11.4	1.28	12.5	0.22	3.38	1.48	0.28	0.24	0.53	0.38	0.34

RV ROGER REVELLE — CALCOFI CRUISE 0304 — STATION 80 100

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	FOREL	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE
32 49.4 N	123 54.8 W	17/04/03	1741 UTC	30 m		1220 - 1910 PST	1216 PST	1913 PST	152.7 mg C/m2

DEPTH m	TEMP DEG C	SALINITY	SIGMA THETA	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	LIGHT PCT	UPTAKE (mg C/m3) 1	2	MEAN	DARK
2	15.51	32.838	24.195	5.86	102.7	1.3	0.39	0.1	0.00	0.08	0.02	90. A	1.3	0.99	1.1	0.13
12	15.47	32.837	24.204	5.83	102.1	1.2	0.39	0.1	0.00	0.08	0.01					
22	15.43	32.832	24.209	5.85	102.4	1.2	0.39	0.1	0.00	0.09	0.02	32.	2.2	1.9	2.0	0.07
32	15.40	32.831	24.215	5.87	102.6	1.2	0.39	0.1	0.00	0.10	0.02					
43	14.97	32.760	24.254	5.93	102.8	1.3	0.40	0.1	0.00	0.12	0.03	11.	1.5	1.4	1.5	0.22
53	14.95	32.767	24.264	5.91	102.4	1.3	0.40	0.1	0.00	0.16	0.06					
63	14.95	32.775	24.271	5.90	102.2	1.2	0.40	0.0	0.00	0.23	0.09	4.0	1.4	1.6	1.5	0.11
73	14.58	32.851	24.408	5.89	101.3	1.3	0.41	0.0	0.00	0.30	0.33					
81	13.06	32.893	24.752	5.87	97.9	2.7	0.55	1.6	0.11	0.39	0.46	1.6	1.4	1.6	1.5	0.04
92	12.06	32.904	24.953	5.81	94.9	3.8	0.64	3.3	0.08	0.28	0.26					
104	11.28	32.919	25.108	5.70	91.5	4.9	0.74	5.3	0.04	0.25	0.28					
114	10.79	32.963	25.229	5.59	88.8	5.9	0.81	6.8	0.03	0.11	0.18	0.29	0.06	0.07	0.06	0.04

RV ROGER REVELLE — CALCOFI CRUISE 0304 — STATION 83 42

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	FOREL	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE
34 10.7 N	119 30.5 W	15/04/03	1833 UTC	8 m		1202 - 1853 PST	1158 PST	1857 PST	2284.7 mg C/m2

DEPTH m	TEMP DEG C	SALINITY	SIGMA THETA	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	LIGHT PCT	UPTAKE (mg C/m3) 1	2	MEAN	DARK
1	12.33	33.594	25.435	6.58	108.5	7.5	0.74	6.9	0.17	7.32	1.59	83. A	80.9	89.9	85.4	0.53
4	12.33	33.594	25.435	6.60	108.9	7.5	0.76	6.8	0.17	7.45	1.46					
6	12.27	33.593	25.446	6.63	109.2	7.5	0.76	6.7	0.17	7.53	1.55	32.	147.7	142.7	145.2	0.66
11	12.20	33.593	25.459	6.56	107.9	7.7	0.76	7.0	0.17	8.23	1.50	12.	137.2	135.0	136.1	0.59
17	12.05	33.597	25.491	6.20	101.7	8.7	0.89	8.4	0.18	7.70	1.46	3.8	68.8	67.2	68.0	0.28
22	11.98	33.603	25.509	6.10	99.9	9.3	0.95	9.0	0.19	6.51	1.50	1.5	19.6		19.6	0.01
31	11.96	33.598	25.509	6.00	98.2	9.2	0.97	9.2	0.19	6.30	1.84	0.26	0.00	0.00	0.00	0.01

A) INCUBATION LIGHT INTENSITIES WERE 92, 36, 7.0, 3.2, 1.0, 0.16 PERCENT RESPECTIVELY.

PRIMARY PRODUCTIVITY CASTS

RV ROGER REVELLE — CALCOFI CRUISE 0304 — STATION 87 70

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	FOREL	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE
32 38.7 N	121 2.7 W	12/04/03	1806 UTC	8 m		1205 - 1909 PST	1205 PST	1903 PST	530.2 mg C/m2

DEPTH m	TEMP DEG C	SALINITY	SIGMA THETA	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	LIGHT PCT	UPTAKE (mg C/m3) 1	2	MEAN	DARK
2	14.63	33.193	24.659	6.38	110.1	2.7	0.43	0.1	0.01			68. A	22.7	22.9	22.8	0.44
6	14.55	33.198	24.680	6.40	110.3	2.6	0.42	0.1	0.01	1.64	0.28	32.	31.7	30.5	31.1	0.43
11	14.49	33.201	24.696	6.43	110.6	2.6	0.42	0.1	0.01	1.73	0.27	12.	28.9	27.3	28.1	0.38
17	13.92	33.199	24.813	6.38	108.5	2.7	0.45	0.5	0.03	1.92	0.44	3.8	15.1	16.8	16.0	0.21
22	13.83	33.199	24.832	6.31	107.1	2.6	0.47	0.7	0.03	1.82	0.46	1.5	9.1	6.4	7.8	0.17
31	13.57	33.198	24.885	6.03	101.8	2.7	0.55	1.8	0.08	1.20	0.47	0.26	0.44	0.40	0.42	0.16

RV ROGER REVELLE — CALCOFI CRUISE 0304 — STATION 87 110

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	FOREL	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE
31 19.0 N	123 45.2 W	13/04/03	1755 UTC	24 m		1217 - 1905 PST	1216 PST	1903 PST	136.7 mg C/m2

DEPTH m	TEMP DEG C	SALINITY	SIGMA THETA	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	LIGHT PCT	UPTAKE (mg C/m3) 1	2	MEAN	DARK
2	15.74	32.808	24.121	5.84	102.8	1.1	0.40	0.1	0.00	0.11	0.02	88. A	1.5	1.5	1.5	0.09
18	15.32	32.781	24.194	5.93	103.5	1.2	0.41	0.1	0.00	0.12	0.02	32.	2.9	2.6	2.8	0.12
34	15.04	32.775	24.250	5.94	103.1	1.3	0.41	0.0	0.00	0.13	0.04	11.	2.0	2.0	2.0	0.14
51	14.93	32.791	24.287	5.99	103.7	1.3	0.40	0.0	0.00	0.19	0.05	3.8	1.2	1.5	1.4	0.17
66	14.79	32.793	24.319	5.97	103.1	1.2	0.40	0.0	0.00	0.31	0.13	1.5	1.1	0.95	1.0	0.10
74	14.59	32.802	24.369	5.99	103.0	1.3	0.41	0.0	0.00	0.40	0.26					
84	14.41	32.834	24.432	6.00	102.8	1.4	0.43	0.1	0.00	0.38	0.32					
91	14.23	32.872	24.499	5.98	102.1	1.6	0.44	0.2	0.02	0.37	0.30	0.30	0.12	0.12	0.12	0.03

RV ROGER REVELLE — CALCOFI CRUISE 0304 — STATION 90 28

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	FOREL	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE
33 29.0 N	117 45.6 W	10/04/03	1843 UTC	8 m		1205 - 1842 PST	1152 PST	1845 PST	2308.1 mg C/m2

DEPTH m	TEMP DEG C	SALINITY	SIGMA THETA	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	LIGHT PCT	UPTAKE (mg C/m3) 1	2	MEAN	DARK
1	14.52	33.420	24.858	6.87	118.5	3.8	0.36	0.4	0.05	5.22	0.51	83. A	93.3	89.9	91.6	0.70
6	13.83	33.432	25.011	7.15	121.6	4.4	0.37	0.4	0.06	10.56	0.82	32.	179.8	212.3	196.0	1.0
11	13.36	33.433	25.108	6.71	113.0	5.5	0.49	1.1	0.09	13.74	1.10	12.	125.8	116.0	120.9	1.9
17	12.94	33.449	25.204	6.27	104.7	8.2	0.67	4.7	0.25	10.03	1.05	3.8	47.1	56.1	51.6	0.87
22	12.48	33.465	25.307	5.34	88.3	10.9	0.94	8.5	0.40	4.67	1.18	1.5	9.2	7.3	8.3	0.17
31	11.08	33.510	25.602	3.95	63.4	14.6	1.43	15.6	0.37	0.84	0.49	0.26	0.15	0.15	0.15	0.07
40	10.55	33.645	25.801	3.36	53.4	19.1	1.70	19.7	0.27	0.43	0.30					

RV ROGER REVELLE — CALCOFI CRUISE 0304 — STATION 90 53

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	FOREL	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE
32 39.1 N	119 28.9 W	09/04/03	1804 UTC	12 m		1205 - 1847 PST	1200 PST	1845 PST	507.8 mg C/m2

DEPTH m	TEMP DEG C	SALINITY	SIGMA THETA	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	LIGHT PCT	UPTAKE (mg C/m3) 1	2	MEAN	DARK
1	14.90	33.230	24.630	6.06	105.2	1.8	0.43	0.2	0.02	0.76 B	0.13 B	88. A	15.0	15.7	15.4	0.14
9	14.84	33.232	24.645	6.11	105.9	1.6	0.42	0.2	0.02	0.77 B	0.14 B	32.	19.6	20.2	19.9	0.12
17	14.32	33.237	24.759	6.25	107.2	0.8	0.40	0.1	0.01	1.14	0.20	11.	16.5	17.4	16.9	0.16
26	13.92	33.241	24.846	6.19	105.3	0.8	0.44	0.4	0.04	1.33	0.32	3.6	10.8	11.3	11.0	0.14
33	13.87	33.239	24.855	6.14	104.3	0.9	0.46	0.6	0.04	1.41	0.41	1.5	4.1	3.8	3.9	0.11
40	13.79	33.249	24.879	6.11	103.7	0.8	0.46	0.6	0.05	1.39	0.40					
46	12.45	33.258	25.152	5.50	90.7	5.3	0.89	5.4	0.31	0.45	0.30	0.28	0.15	0.16	0.15	0.06

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

RV ROGER REVELLE — CALCOFI CRUISE 0304 — STATION 90 90

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	FOREL	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE
31 25.1 N	121 59.4 W	08/04/03	1830 UTC	22 m		1200 - 1845 PST	1210 PST	1854 PST	170.8 mg C/m2

DEPTH m	TEMP DEG C	SALINITY	SIGMA THETA	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	LIGHT PCT	UPTAKE (mg C/m3) 1	2	MEAN	DARK
2	15.10	33.041	24.441	5.98	104.1	1.4	0.41	0.0	0.00	0.15	0.04	87. A	1.6	1.5	1.6	0.17
16	15.03	33.038	24.454	5.95	103.4	1.3	0.43	0.0	0.00	0.19	0.04	33.	2.7	2.6	2.6	0.12
31	15.03	33.067	24.477	5.96	103.6	1.3	0.40	0.0	0.00	0.19	0.05	11.	2.1	2.1	2.1	0.11
39	15.04	33.116	24.513	5.95	103.5	1.4	0.40	0.0	0.00	0.24	0.08					
47	14.71	33.132	24.597	6.00	103.7	1.4	0.40	0.0	0.00	0.41	0.15	3.8	2.4	2.5	2.4	0.14
54	14.41	33.120	24.651	5.96	102.3	1.6	0.42	0.0	0.02	0.80	0.39					
60	14.30	33.137	24.688	5.90	101.1	1.7	0.44	0.1	0.06	0.85	0.44	1.5	3.0	2.6	2.8	0.08
71	13.18	33.096	24.885	5.64	94.4	3.6	0.67	2.9	0.27	0.54	0.44					
83	11.37	33.018	25.168	5.35	86.1	7.0	0.97	8.1	0.07	0.21	0.28	0.31	0.08	0.09	0.08	0.03

A) INCUBATION LIGHT INTENSITIES WERE 92, 36, 7.0, 3.2, 1.0, 0.16 PERCENT RESPECTIVELY.

PRIMARY PRODUCTIVITY CASTS

RV ROGER REVELLE — CALCOFI CRUISE 0304 — STATION 93 26.7

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	FOREL	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE
32 57.4 N	117 18.3 W	04/04/03	1928 UTC	12 m		1222 - 1835 PST	1152 PST	1838 PST	456.0 mg C/m2

DEPTH m	TEMP DEG C	SALINITY	SIGMA THETA	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	LIGHT PCT	UPTAKE (mg C/m3) 1	2	MEAN	DARK
2	15.10	33.342	24.673	6.20	108.1	6.7	0.38	0.7	0.05	0.75	-0.04	77. A	14.9	17.3	16.1	0.32
9	13.27	33.306	25.028	5.93	99.6	5.5	0.62	3.2	0.11	1.11	0.57	32.	27.5	25.5	26.5	0.16
17	12.16	33.418	25.331	4.74	77.8	10.8	1.09	10.5	0.41	0.93	0.49	11.	14.4	14.0	14.2	0.12
26	10.90	33.586	25.693	3.44	55.0	17.0	1.58	18.5	0.47	0.49	0.36	3.6	4.3	3.5	3.9	0.12
33	10.88	33.691	25.779	3.10	49.6	18.9	1.70	20.1	0.17	0.35	0.33	1.5	1.5	1.7	1.6	0.09
40	10.59	33.715	25.849	3.10	49.3	19.7	1.72	20.3	0.09	0.35	0.29					
46	10.54	33.720	25.861	3.14 U	49.9 U	20.0	1.72	20.5	0.12	0.31	0.33	0.28	0.13	0.11	0.12	0.06

RV ROGER REVELLE — CALCOFI CRUISE 0304 — STATION 93 45

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	FOREL	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE
32 20.6 N	118 34.4 W	05/04/03	1804 UTC	17 m		1150 - 1843 PST	1157 PST	1843 PST	443.7 mg C/m2

DEPTH m	TEMP DEG C	SALINITY	SIGMA THETA	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	LIGHT PCT	UPTAKE (mg C/m3) 1	2	MEAN	DARK
1	14.28	33.233	24.764	6.09	104.4	1.6	0.45	0.6	0.04	0.61	0.20	91. A	6.4	5.5	6.0	0.10
12	14.29	33.231	24.761	6.02	103.2	1.6	0.46	0.6	0.04	0.59	0.20	34.	14.1	13.7	13.9	0.09
24	14.28	33.230	24.763	6.02	103.2	1.6	0.45	0.6	0.04	0.55	0.23	11.	12.5	12.1	12.3	0.13
36	14.24	33.233	24.774	6.01	102.9	1.6	0.46	0.7	0.04	0.56	0.20	3.9	5.0	5.2	5.1	0.12
46	14.17	33.232	24.788	5.99	102.4	1.7	0.47	0.9	0.05	0.58	0.21	1.6	2.6	2.7	2.7	0.09
55	13.98	33.210	24.811	5.98	101.8	2.0	0.51	1.4	0.06	0.60	0.31					
64	13.03	33.245	25.030	5.45	91.0	5.3	0.79	5.4	0.22	0.69	0.44	0.31	0.39	0.35	0.37	0.04

RV ROGER REVELLE — CALCOFI CRUISE 0304 — STATION 93 80

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	FOREL	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE
31 10.8 N	120 55.2 W	06/04/03	1835 UTC	24 m		1205 - 1850 PST	1207 PST	1852 PST	81.8 mg C/m2

DEPTH m	TEMP DEG C	SALINITY	SIGMA THETA	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	LIGHT PCT	UPTAKE (mg C/m3) 1	2	MEAN	DARK
2	15.33	33.032	24.384	5.85	102.3	1.1	0.40	0.0	0.00	0.13	0.03	88. A	0.71	0.67	0.69	0.11
18	15.33	33.033D	24.385	5.85	102.3	1.1	0.40	0.0	0.00	0.14	0.04	32.	1.9	1.9	1.9	0.10
34	15.33	33.034	24.387	5.85	102.3	1.2	0.39	0.0	0.00	0.14	0.03	11.	1.4	1.4	1.4	0.08
51	15.33	33.031	24.385	5.87	102.6	1.1	0.39	0.0	0.00	0.14	0.03	3.8	0.61	0.67	0.64	0.08
66	15.27	33.029	24.397	5.87	102.5	1.1	0.39	0.0	0.00	0.17	0.05	1.5	0.37	0.39	0.38	0.10
75	14.85	33.017	24.479	5.90	102.1	1.2	0.40	0.0	0.00	0.32	0.17					
84	14.40	33.042	24.594	5.93	101.7	1.5	0.42	0.0	0.01	0.57	0.38					
92	13.77	33.033	24.718	5.77	97.7	2.4	0.53	1.0	0.13	0.39	0.40	0.28	0.25	0.27	0.26	0.04

RV ROGER REVELLE — CALCOFI CRUISE 0304 — STATION 93 120

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	FOREL	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE
29 50.8 N	123 35.2 W	07/04/03	1840 UTC	29 m		1207 - 1859 PST	1216 PST	1902 PST	108.4 mg C/m2

DEPTH m	TEMP DEG C	SALINITY	SIGMA THETA	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	LIGHT PCT	UPTAKE (mg C/m3) 1	2	MEAN	DARK
2	15.78	33.003	24.262	5.83	102.8	0.8	0.39	0.1	0.00	0.08	0.02	90. A	1.1	0.94	1.0	0.08
11	15.77	33.003	24.265	5.81	102.5	0.7	0.39	0.0	0.00	0.11	0.02					
21	15.76	33.004	24.268	5.82	102.6	0.7	0.39	0.1	0.00	0.11	0.02	33.	1.7	1.8	1.8	0.10
31	15.77	33.010	24.271	5.81	102.5	0.7	0.39	0.1	0.00	0.12	0.02					
41	15.83	33.043	24.283	5.79	102.3	0.7	0.38	0.1	0.00	0.12	0.03	11.	1.3	1.3	1.3	0.08
52	16.00	33.114	24.300	5.76	102.1	0.7	0.38	0.0	0.00	0.15	0.05					
61	16.05	33.145	24.313	5.76	102.2	0.7	0.37	0.1	0.00	0.19	0.06	4.0	0.85	0.97	0.91	0.10
69	16.04	33.164	24.330	5.73	101.7	0.8	0.37	0.1	0.00	0.23	0.07					
79	15.88	33.152	24.357	5.74	101.5	0.8	0.39	0.0	0.00	0.26	0.13	1.5	0.62	0.73	0.68	0.05
89	15.36	33.133	24.458	5.79	101.3	1.2	0.41	0.0	0.00	0.37	0.31					
101	13.59	32.982	24.715	5.89	99.3	2.2	0.51	0.5	0.04	0.41	0.45					
110	12.86	32.916	24.810	5.86	97.3	2.8	0.60	1.5	0.08	0.36	0.42	0.30	0.12	0.11	0.12	0.04

A) INCUBATION LIGHT INTENSITIES WERE 92, 36, 7.0, 3.2, 1.0, 0.16 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)
77	49	35 05.5	120 46.8	04/19	0507	0512	105	44	1905	1229
77	51	35 01.6	120 55.5	04/19	0233	0254	437	213	96	96
77	55	34 53.5	121 12.2	04/18	2153	2215	487	207	170	170
77	60	34 43.1	121 33.2	04/18	1658	1720	468	211	53	53
77	70	34 23.4	122 15.0	04/18	0855	0917	478	200	59	59
77	80	34 03.5	122 56.8	04/18	0348	0410	426	218	38	38
77	90	33 43.5	123 38.2	04/17	2205	2227	476	214	31	31
77	100	33 23.6	124 19.9	04/17	1624	1646	457	215	26	26
80	51	34 26.9	120 32.2	04/16	0058	0105	162	56	384	384
80	55	34 19.0	120 48.5	04/16	0412	0433	421	212	242	242
80	60	34 09.0	121 07.8	04/16	0823	0845	476	179	259	259
80	70	33 48.7	121 50.0	04/16	1615	1637	477	198	46	46
80	80	33 29.5	122 32.4	04/16	2131	2153	469	199	134	134
80	90	33 09.1	123 13.9	04/17	0343	0405	443	214	156	156
80	100	32 49.1	123 54.5	04/17	0753	0814	438	217	25	25
82	47	34 16.3	119 59.5	04/15	2042	2104	496	191	172	172
83	40.6	34 13.2	119 24.9	04/15	1508	1512	77	29	323	323
83	42	34 10.5	119 31.0	04/15	1242	1260	360	169	70	70
83	51	33 52.7	120 08.3	04/15	0529	0539	206	90	247	247
83	55	33 44.1	120 25.3	04/15	0211	0233	479	205	146	136
83	60	33 34.8	120 45.5	04/14	2201	2223	475	197	114	114
83	70	33 14.4	121 27.0	04/14	1537	1559	458	218	65	65
83	80	32 54.7	122 08.1	04/14	0807	0828	491	193	63	63
83	90	32 34.6	122 49.0	04/14	0355	0417	456	208	138	138
83	100	32 14.9	123 29.8	04/13	2144	2207	481	206	62	62
83	110	31 55.0	124 10.8	04/13	1623	1644	453	215	22	22
87	33	33 53.4	118 29.8	04/10	1755	1801	109	48	1123	1123
87	35	33 49.2	118 37.9	04/10	2033	2055	454	190	390	390
87	40	33 39.4	118 59.2	04/11	0051	0113	406	206	256	256
87	45	33 29.5	119 19.5	04/11	0435	0457	424	214	198	198
87	50	33 19.6	119 40.6	04/11	0755	0803	162	68	388	388
87	55	33 07.3	120 01.8	04/11	2228	2250	462	191	154	154
87	60	32 58.8	120 20.0	04/12	0212	0234	515	185	118	118
87	70	32 39.2	121 02.2	04/12	0641	0704	448	225	165	165
87	80	32 19.0	121 42.7	04/12	1550	1611	470	204	51	51
87	90	31 58.9	122 23.8	04/12	2112	2136	528	221	112	112
87	100	31 39.1	123 03.8	04/13	0343	0406	511	217	43	43
87	110	31 19.3	123 44.7	04/13	0834	0856	481	197	46	46
90	28	33 29.1	117 45.8	04/10	0845	0851	128	55	642	642
90	30	33 24.8	117 54.1	04/10	0611	0632	423	210	182	182
90	35	33 14.7	118 15.3	04/10	0219	0241	459	204	183	183
90	37	33 11.1	118 23.6	04/09	2324	2347	475	191	255	255
90	45	32 55.2	118 57.1	04/09	1812	1834	435	208	165	165
90	53	32 39.0	119 29.3	04/09	1254	1316	436	209	112	112
90	60	32 25.2	119 58.1	04/09	0608	0630	464	203	65	65
90	70	32 05.2	120 39.6	04/09	0044	0106	456	210	107	107
90	80	31 45.5	121 19.1	04/08	1854	1916	446	215	36	36
90	90	31 25.6	121 59.9	04/08	1341	1403	457	212	33	33
90	100	31 05.6	122 40.0	04/08	0601	0623	472	202	36	36
90	110	30 45.5	123 20.7	04/08	0043	0105	492	206	47	47
90	120	30 25.6	123 59.9	04/07	1753	1815	484	205	21	21
93	26.7	32 56.9	117 18.2	04/04	1301	1312	251	104	68	68
93	28	32 54.8	117 24.1	04/04	1705	1727	492	198	65	65
93	30	32 50.8	117 32.4	04/04	2014	2035	442	218	115	115
93	35	32 40.2	117 53.1	04/05	0044	0105	480	206	81	81
93	40	32 30.8	118 13.2	04/05	0528	0549	471	207	76	76
93	45	32 20.6	118 33.8	04/05	0830	0854	532	214	49	49
93	50	32 10.8	118 53.9	04/05	1601	1623	528	192	27	27
93	55	32 00.9	119 14.6	04/05	2024	2046	492	224	51	51
93	60	31 50.7	119 35.0	04/06	0032	0054	507	200	73	73
93	70	31 30.9	120 14.9	04/06	0614	0636	481	201	21	21
93	80	31 11.8	120 56.2	04/06	1230	1253	653	205	12	12
93	90	30 51.4	121 35.9	04/06	1848	1910	556	198	31	31
93	100	30 31.3	122 15.4	04/07	0017	0039	525	207	111	111
93	110	30 11.2	122 55.5	04/07	0549	0611	476	202	17	17
93	120	29 51.3	123 35.4	04/07	1200	1222	481	205	17	17

FIGURES

Avifauna Observations

CalCOFI Cruise 0304

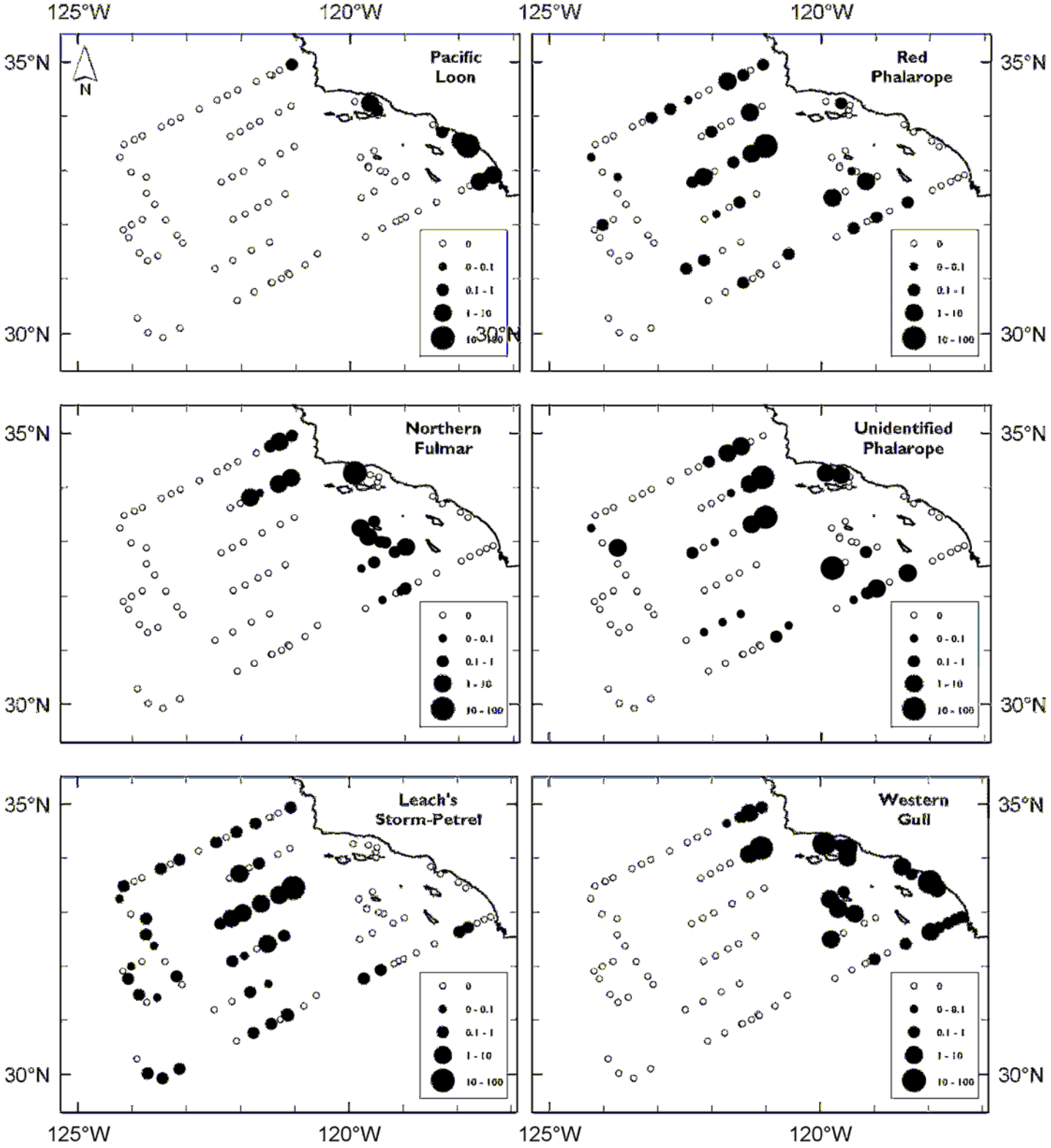
1a. Pacific Loon distribution.

1b. Red Phalarope distribution.

1c. Northern Fulmar distribution.

1d. Unidentified Phalarope distribution.

1e. Leach's Storm-Petrel distribution.

1f. Western Gull distribution.

CalCOFI Cruise 0304RR