UNIVERSITY OF CALIFORNIA, SAN DIEGO

SCRIPPS INSTITUTION OF OCEANOGRAPHY

LA JOLLA, CALIFORNIA 92093-0227

PHYSICAL, CHEMICAL AND BIOLOGICAL DATA

CalCOFI Cruise 9901
9 – 29 January 1999

CalCOFI Cruise 9904
1 – 20 April 1999

SIO Reference 00-6
14 April 2000

Approved for distribution:

_____
Charles F. Kennel, Director

CONTENTS

INTRODUCTION

The data in this report were collected during cruises 9901* and 9904 of the California Cooperative Oceanic Fisheries Investigations (CalCOFI) program aboard the RV *Roger Revelle* of Scripps Institution of Oceanography, University of California, San Diego and the NOAA ship RV *David Starr Jordan*. 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 Marine Life Research Group (MLRG) at Scripps Institution of Oceanography (SIO). MLRG 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 Marine Life Research Group and the Southwest Fisheries Science Center. Volunteers and other SIO staff members 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 via the World Wide Web (http://www-mlrg.ucsd.edu/calcofi.html).

STANDARD PROCEDURES

CTD/Rosette Cast Data

At each station on these cruises a Sea-Bird Electronics, Inc., Conductivity-Temperature-Depth (CTD) instrument was deployed with a 24-place rosette. The rosette was equipped with 24 ten-liter plastic (PVC) bottles. The 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 within 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. The results were compared with the CTD salinity in order to verify that the rosette bottle did not mis-trip or leak. The salinometer was standardized before and after each group of samples with substandard seawater. Periodic checks on the conductivity of the substandard were made by comparison with IAPSO Standard Seawater batch P132 on cruise 9901 and P134 on cruise 9904. Salinity values have been calculated using the algorithms for the Practical Salinity Scale, 1978 (UNESCO, 1981a) and were reported to three decimal places, provided that accepted standards were met. If there was doubt concerning the accuracy of the analytical results the salinities were reported to two decimal places.

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).

Silicate, phosphate, nitrate and nitrite nutrients were determined at sea using an automated analyzer. The procedures used are similar to those described in Atlas *et al*. (1971).

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

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 with a cold extraction technique in 90% acetone (Venrick and Hayward, 1984), and the fluorescence determined before and after acidification with a Turner Designs fluorometer (Yentsch and Menzel, 1963; Holm-Hansen *et al*., 1965).

Evaluation of the water sample data involved comparisons with the CTD cast profiles, 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). Estimates of precision of the standard techniques are given in SIO (1991).

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 up rosette 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. The ten-liter bottles were equipped with epoxy-coated springs and Viton O-rings. 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 fluor 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 0.505µm 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) 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

On cruise 9904 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 which are not presented in this report. These programs include:

1) *Underway Data*. On both the cruises continuous near surface measurements of temperature, salinity and chlorophyll fluorescence were made from water pumped through the ship, and the data were logged at one-minute intervals. Pelagic fish eggs were collected underway with a separate large volume pump throughout the entire CalCOFI pattern. This pump drew a continuous sample of approximately 640 liters per minute, which was concentrated and then collected by a 505µm sieve. Samples were taken at intervals ranging from 10 to 30 minutes, depending on the sample concentration, for enumeration of all retained fish eggs. In an attempt to automate the analysis of egg pump samples, a video camera and computer were added to the system to count and classify sardine and anchovy eggs.

2) *ADCP*. Continuous profiles of ocean currents and acoustic backscatter between 20 and 400 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.

3) *Bio-optics*. On cruise 9901 *in-situ* measurements of apparent and inherent optical properties of seawater were obtained daily in the top 100 meters of the water column using a free-falling multi-channel environmental radiometer (MER). Daily on-deck measurements of polarized sky radiance were performed in support of NASA sponsored research using a SIMBAD radiometer. Water samples obtained from the CTD/Rosette casts, with concomitant MER deployments, were collected to determine particulate, detrital, and soluble absorption, particulate organic carbon concentrations and phytoplankton pigment concentrations using HPLC. Phycoerythrin concentrations and cyanobacteria samples collected from six depths on each station of line 83 and seven depths once per day on all other lines were analyzed using epifluorescence microscopy. Underway samples were obtained every two hours to determine both colored dissolved organic matter fluorescence and to collect additional cyanobacteria samples.

4) *MOCNESS net tows.* Vertically stratified zooplankton samples were collected on cruise 9901 using a Multiple Opening and Closing Net and Environmental Sensing System (MOCNESS) in the Santa Barbara Basin and other basin and non-basin locations to study the distribution of deep-dwelling, dormant copepods, *Calanus pacificus*.

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 cast. 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 also reported for most daylight stations on both cruises.

Observed data from individual CTD/rosette trip levels are interpolated and 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 also 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 have been presented to two significant digits (values <1.00) or one decimal (values >1.00). Precision of the higher production values may not warrant all of the digits presented. 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.

LITERATURE CITED

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

Atlas, E. L., J. C. Callaway, R. D. Tomlinson, L. I. Gordon, L. Barstow and P. K. Park, 1971. *A Practical Manual for Use of the Technicon™ AutoAnalyzer™ in Sea Water Nutrient Analysis*; Revised. Oregon State University Technical Report 215, Reference No. 71-22.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

FIGURES

Cruise 9901

1. CalCOFI Cruise 9904, 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.

CALCOFI CRUISE 9901

9 - 29 January 1999

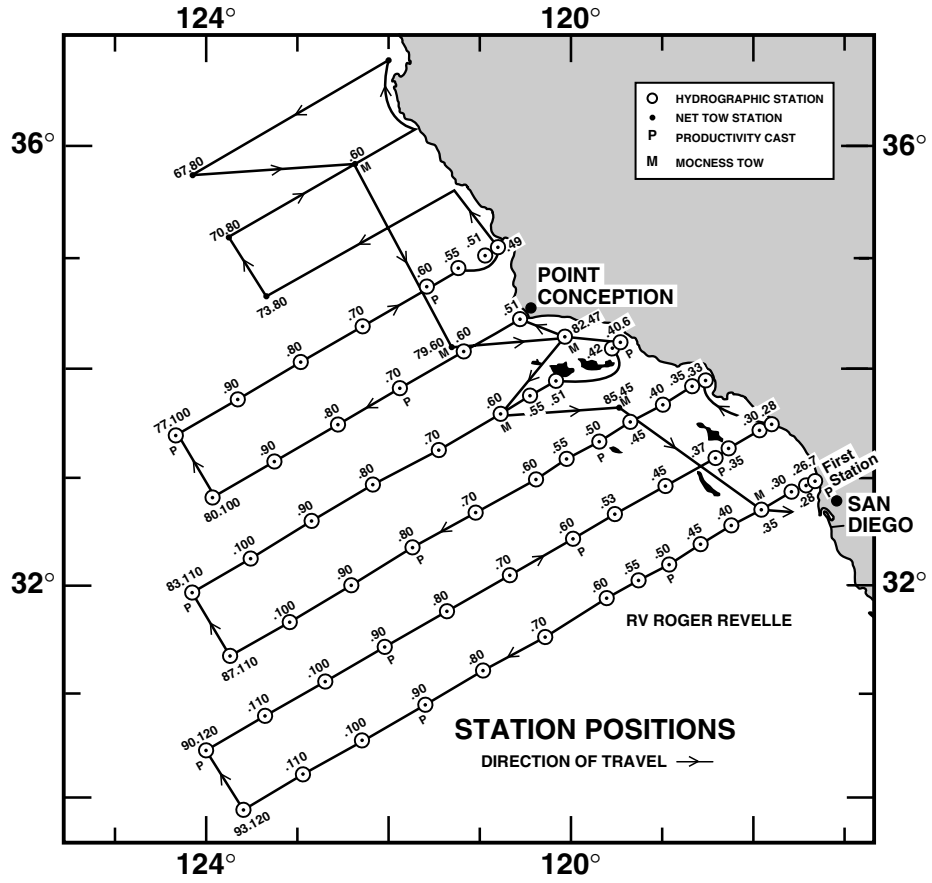


FIGURE 1

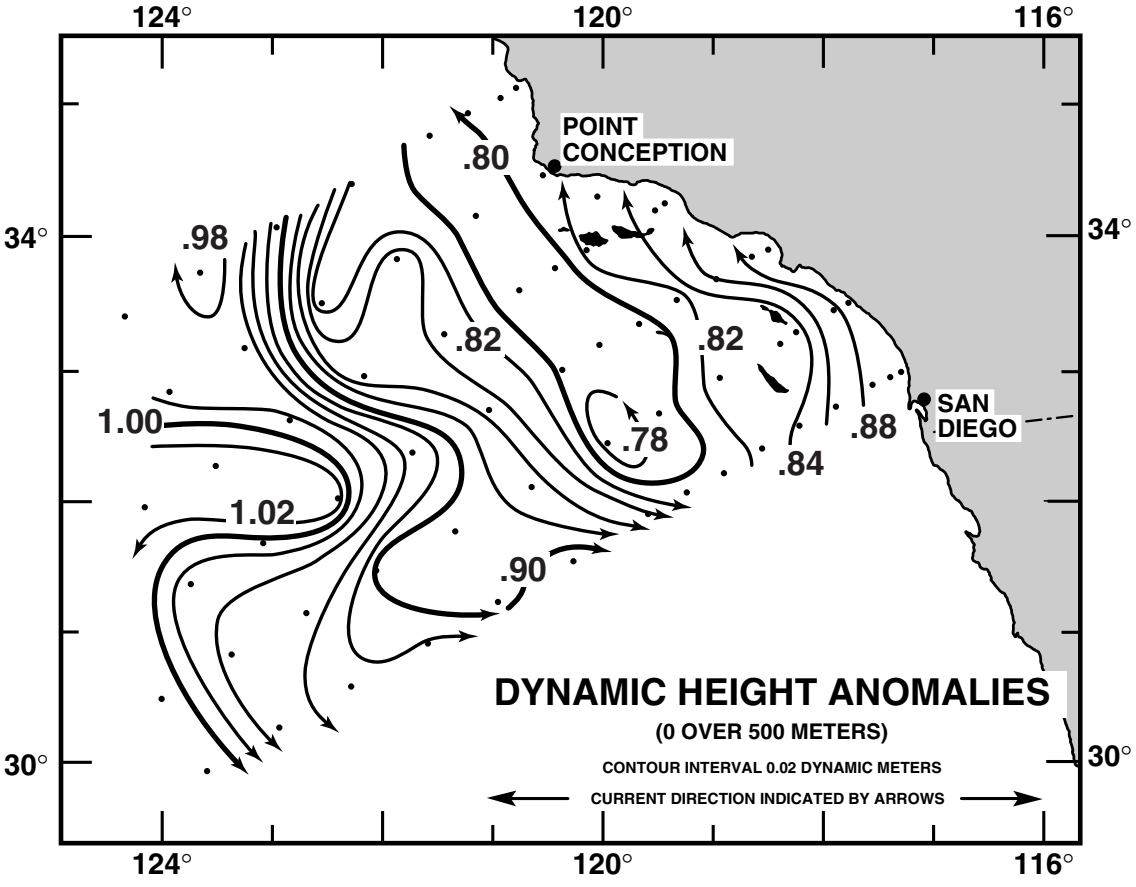


FIGURE 2

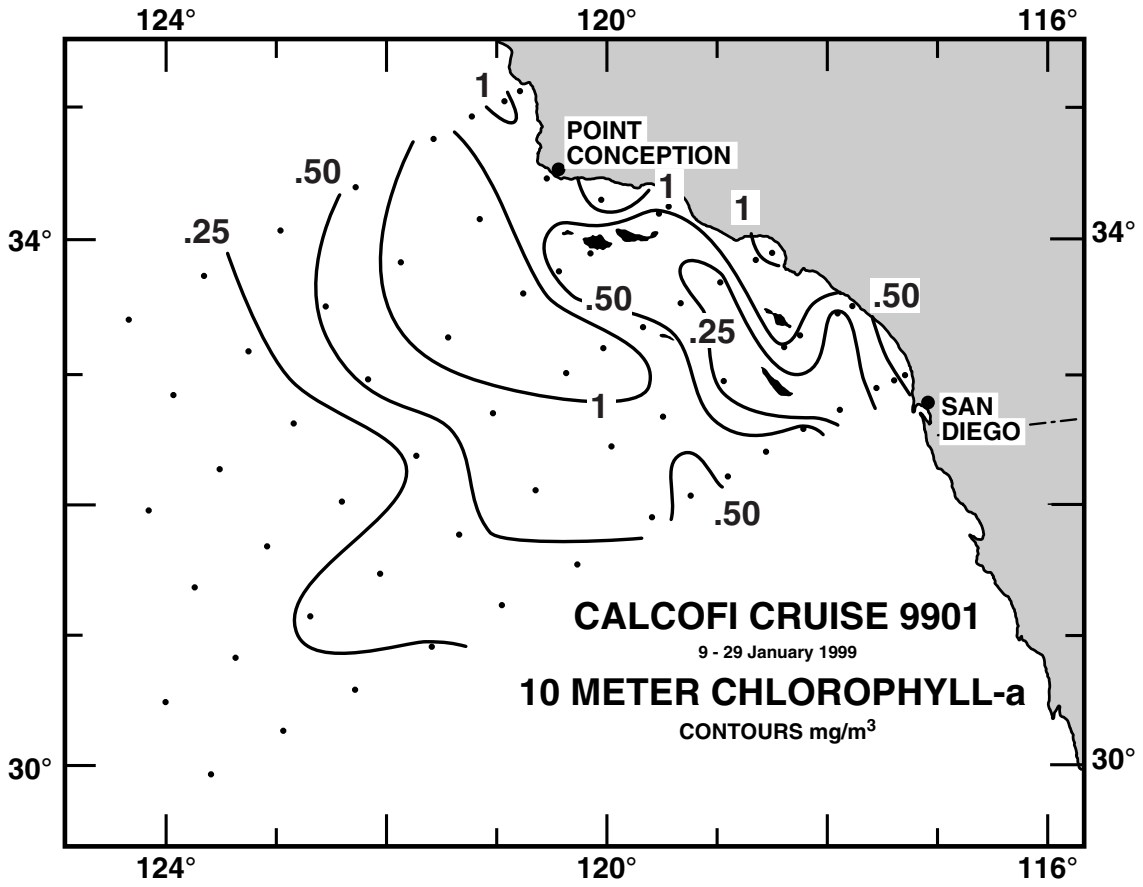


FIGURE 3A

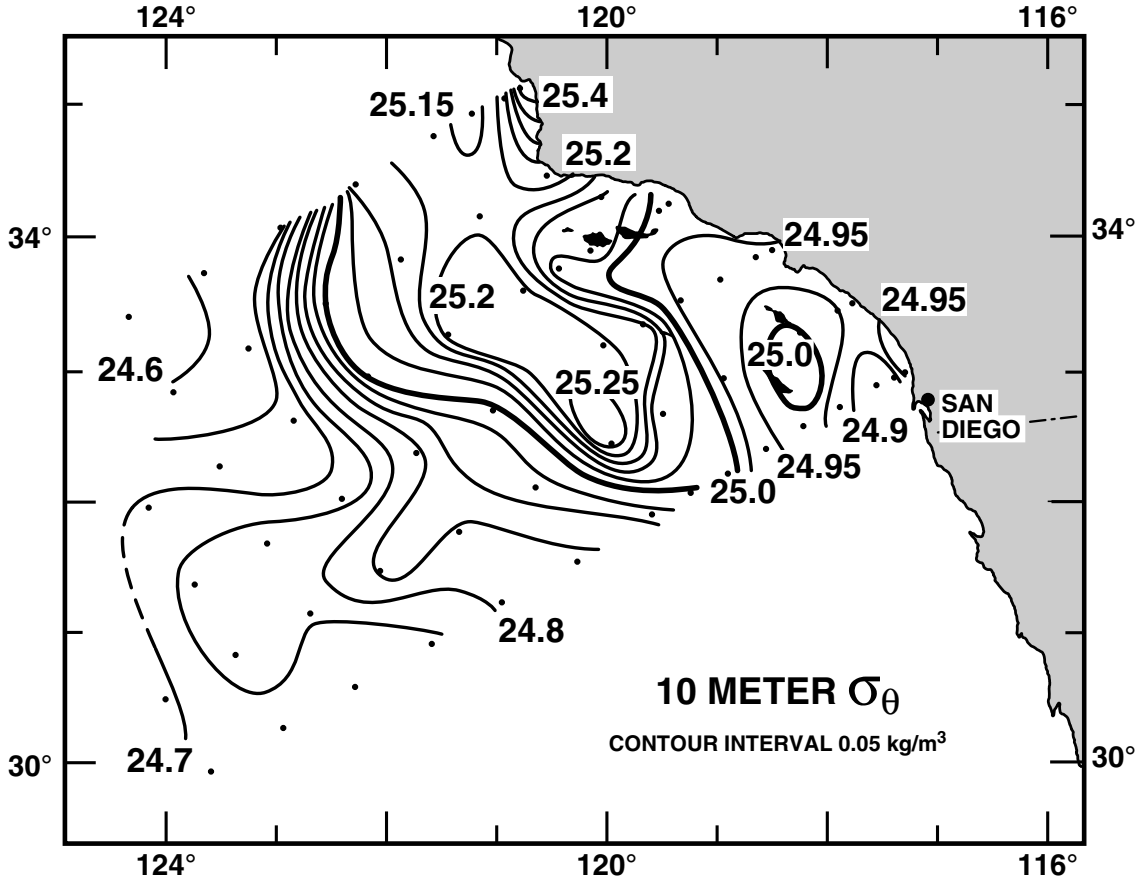
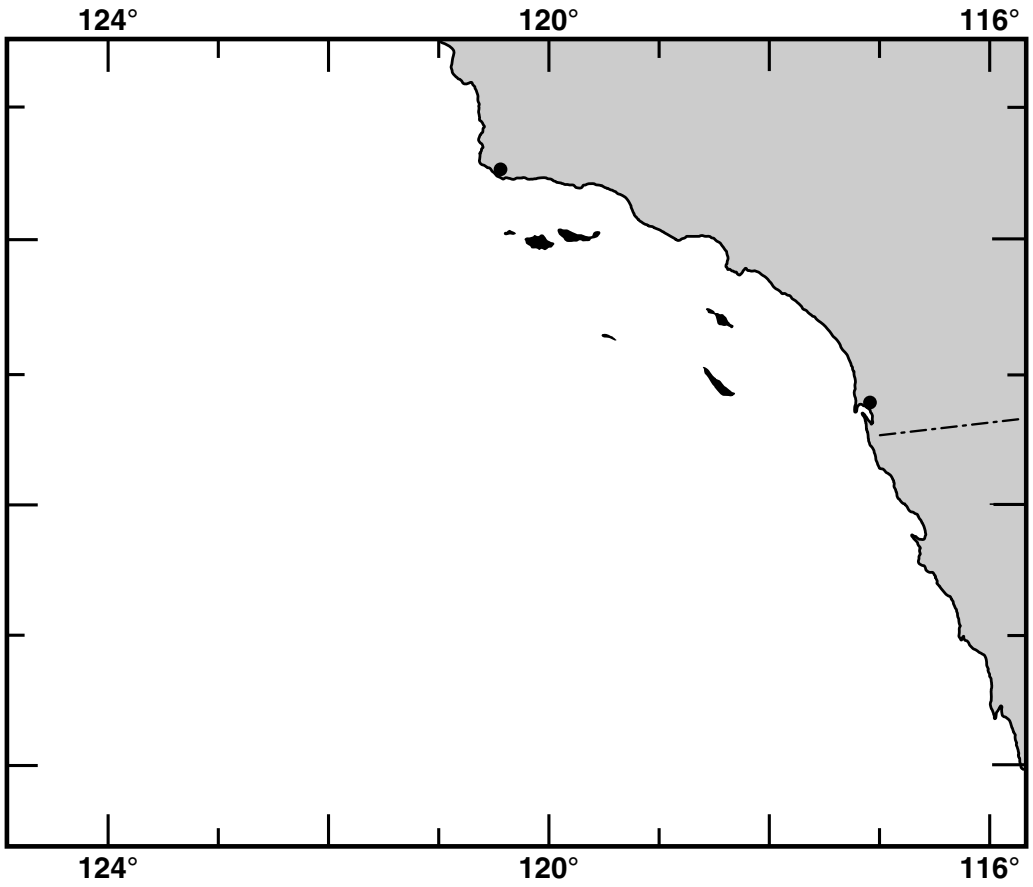


FIGURE 3B


124°
120°
116°
124°
120°
116°

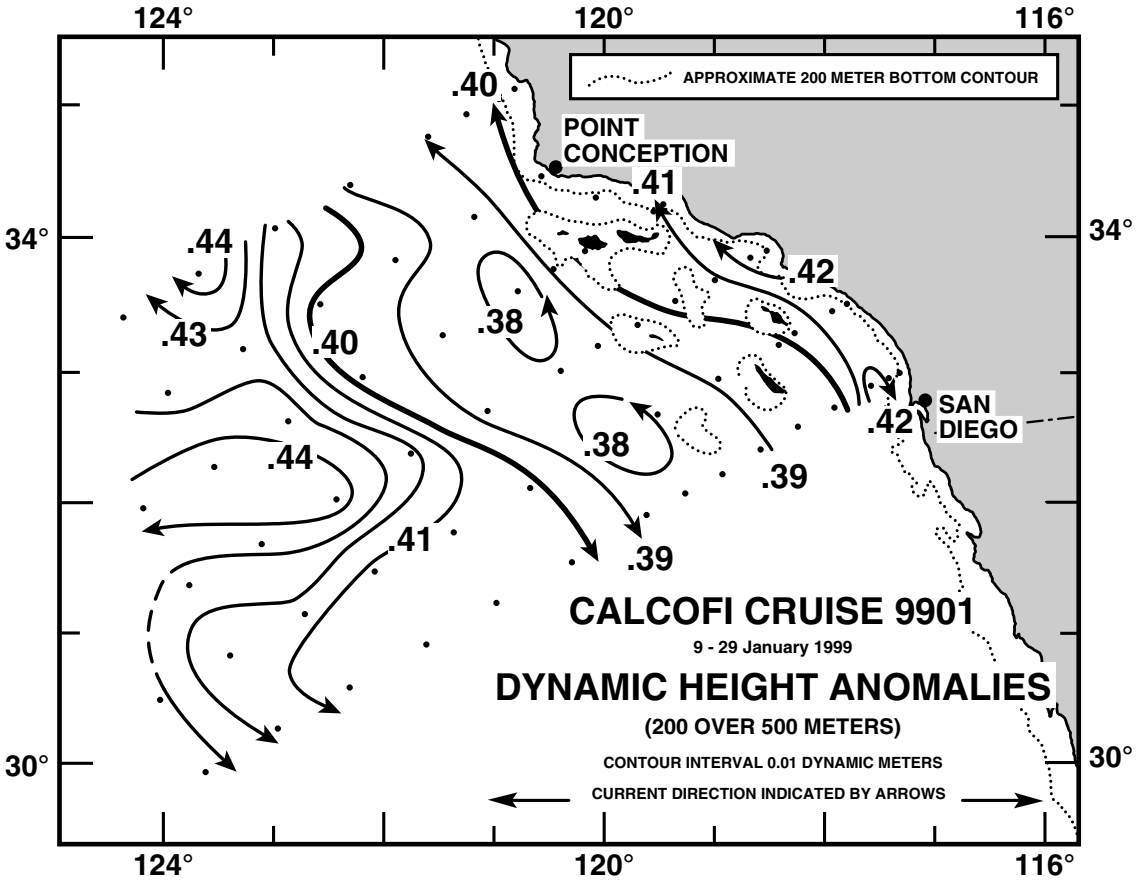


FIGURE 4A

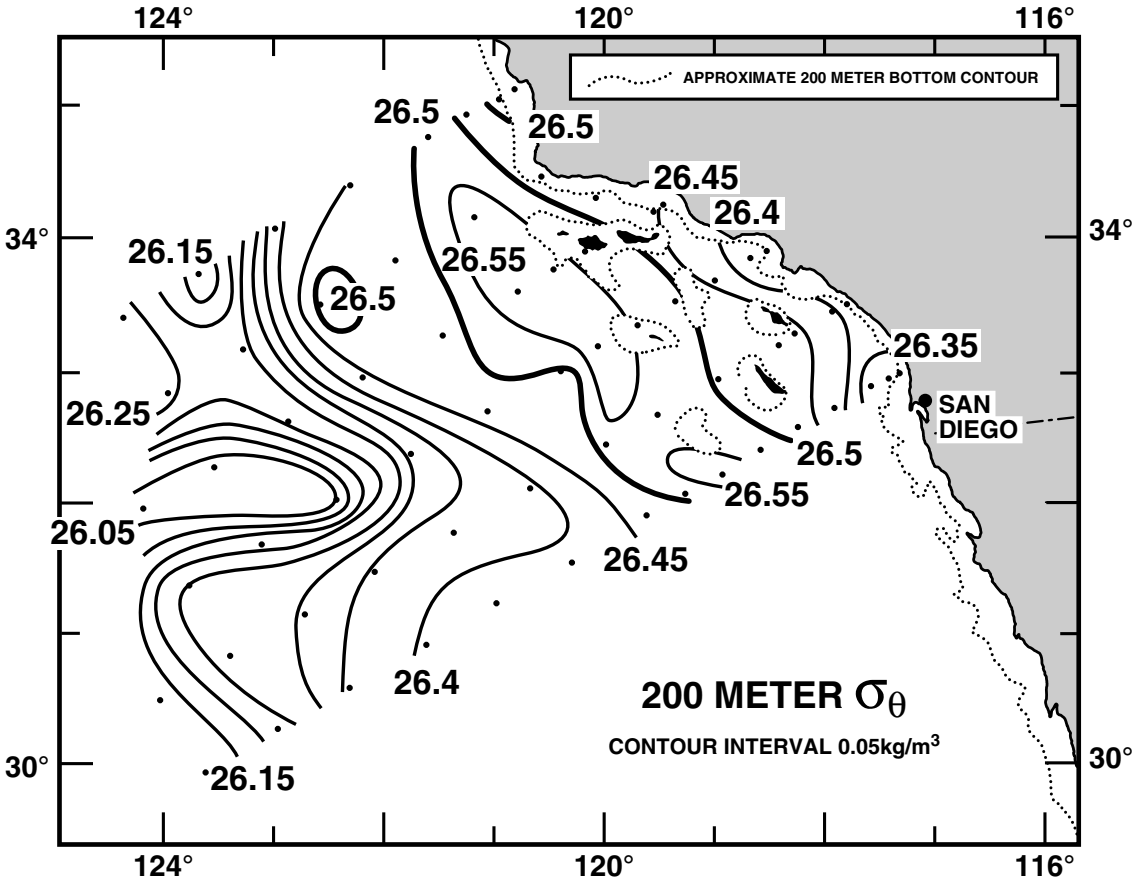


FIGURE 4B

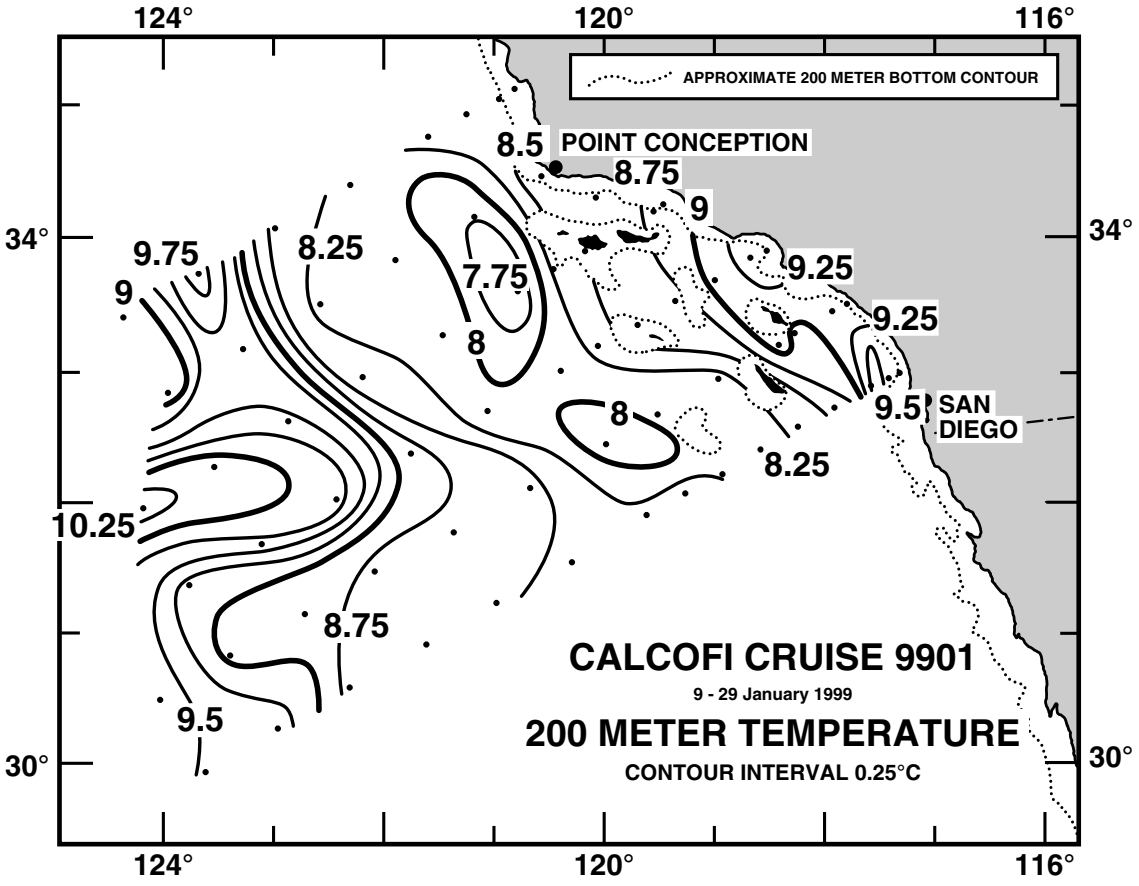


FIGURE 4C

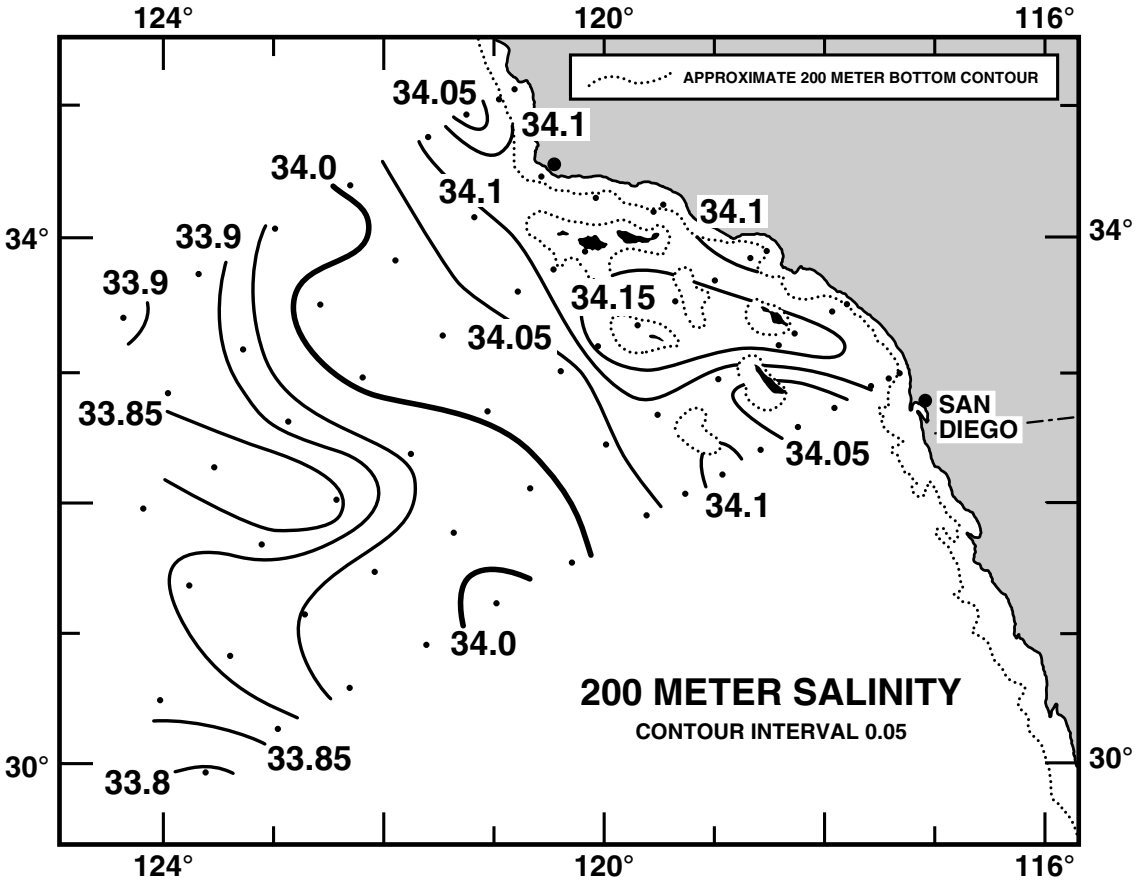


FIGURE 4D

CALCOFI CRUISE 9901

12 - 16 January 1999

POTENTIAL DENSITY (σ_θ) ALONG CALCOFI LINE 90

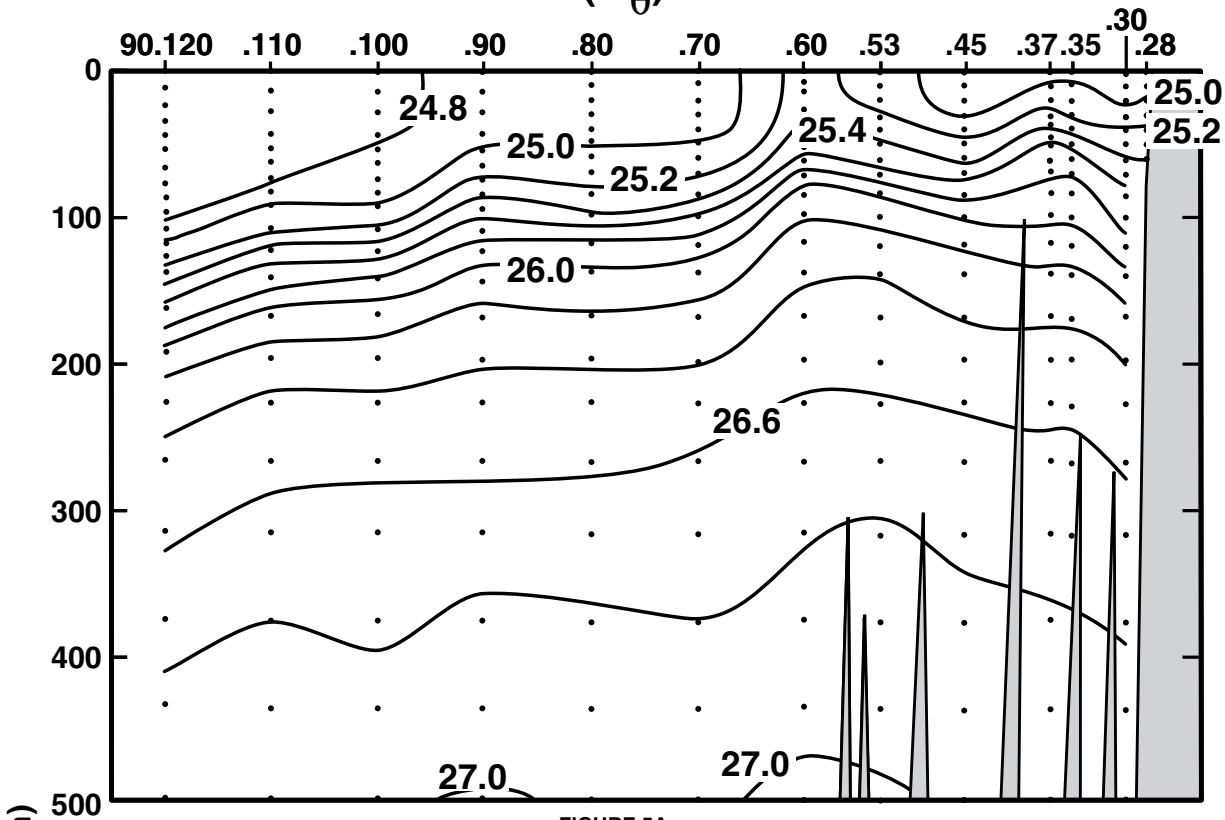


FIGURE 5A

TEMPERATURE (°C) ALONG CALCOFI LINE 90

DEPTH (m)

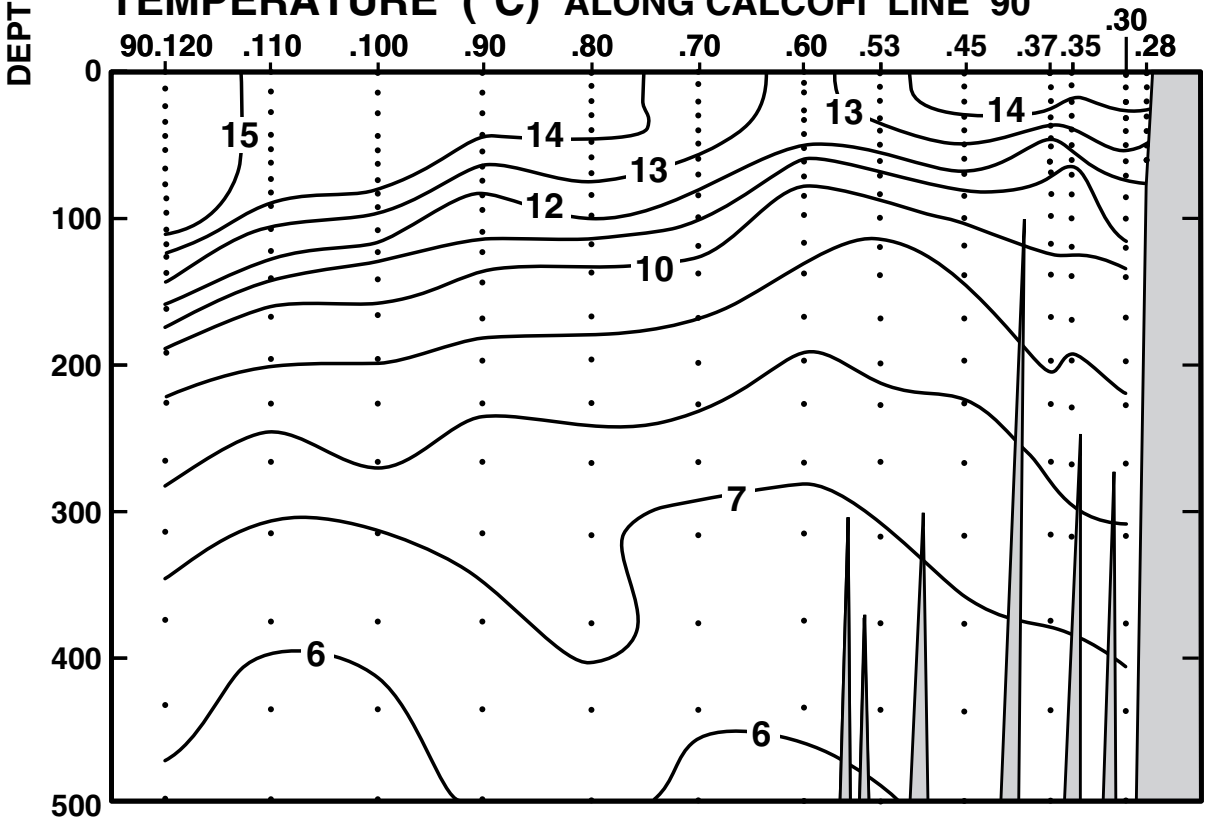


FIGURE 5B

CALCOFI CRUISE 9901

12 - 16 January 1999

SALINITY ALONG CALCOFI LINE 90

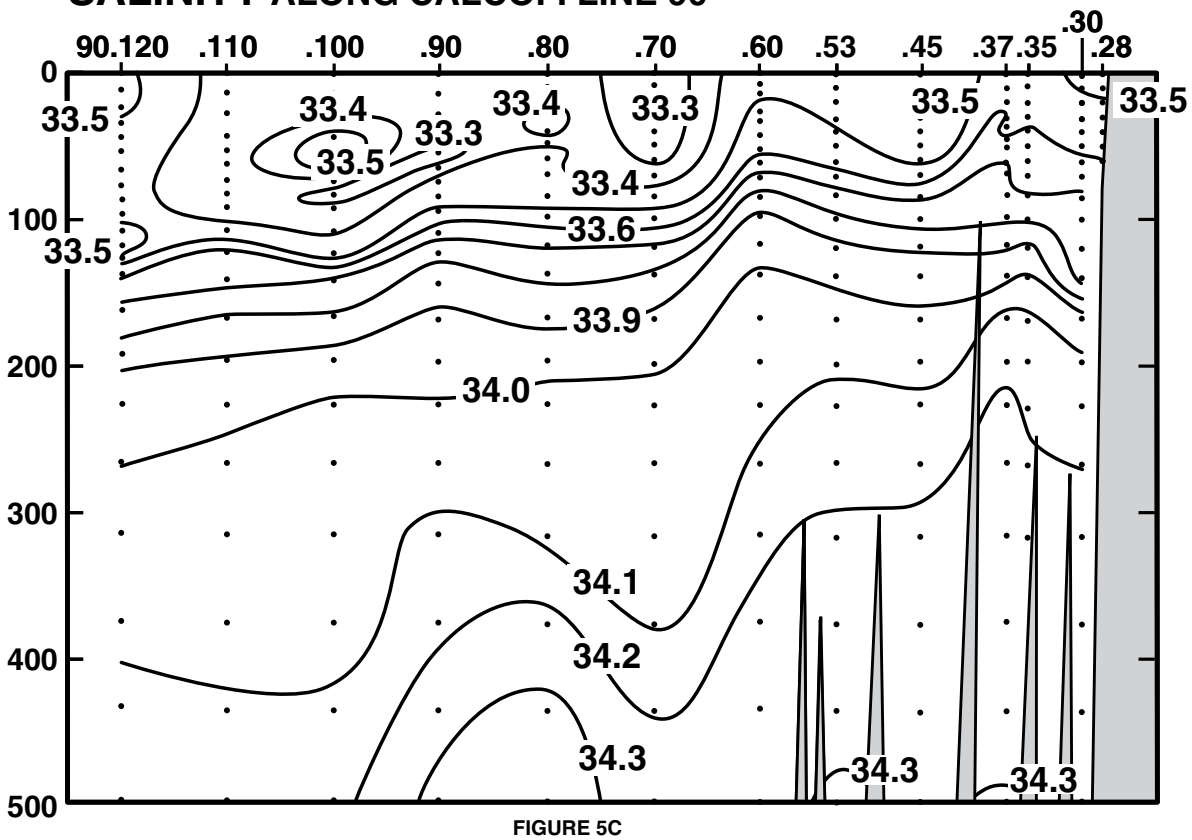


FIGURE 5C

SILICATE (μM/l) ALONG CALCOFI LINE 90

DEPTH (m)

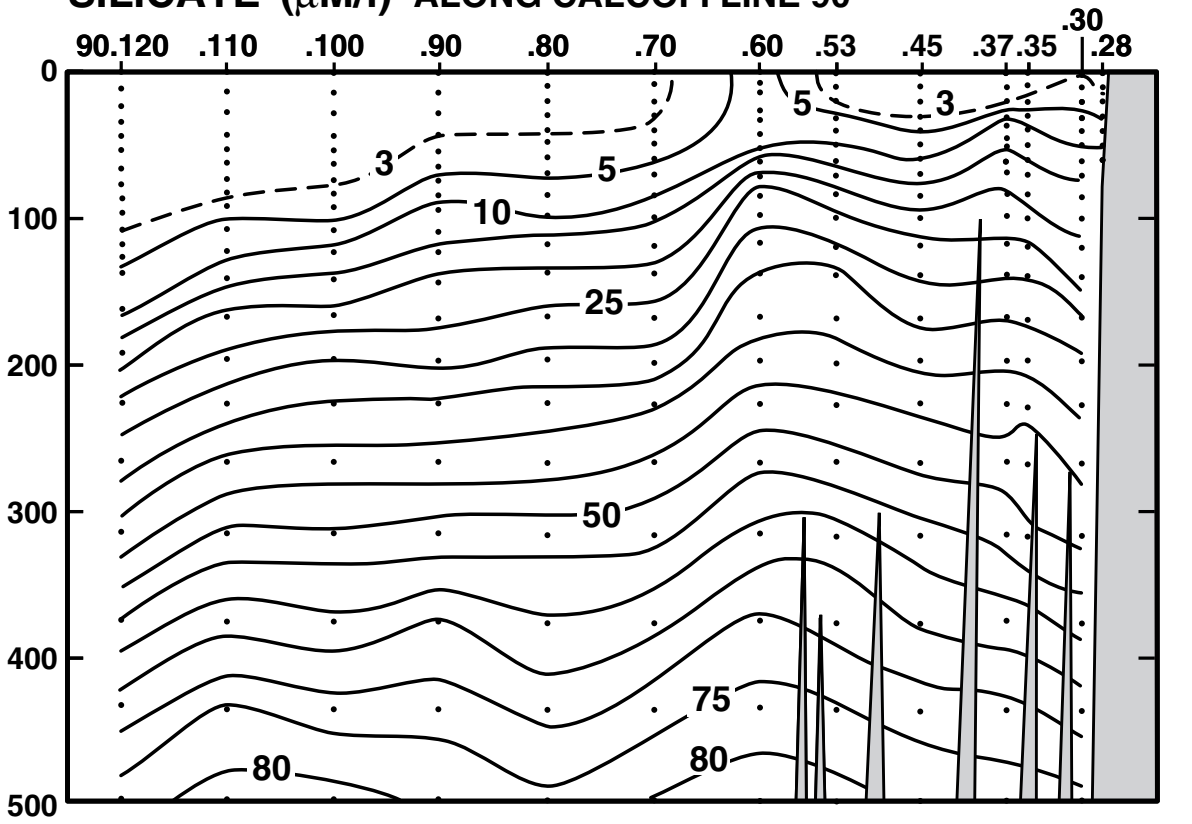


FIGURE 5D

CALCOFI CRUISE 9901

12 - 16 January 1999

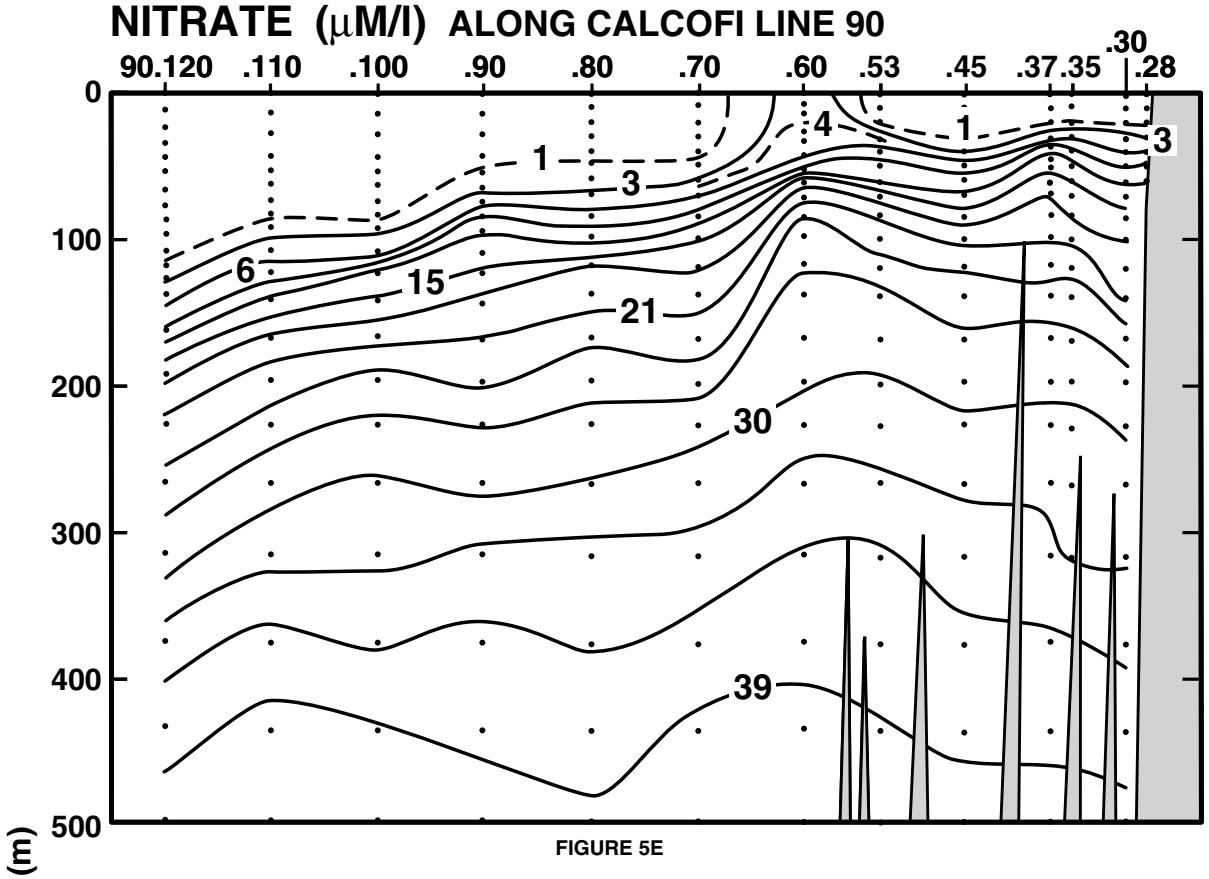


FIGURE 5E

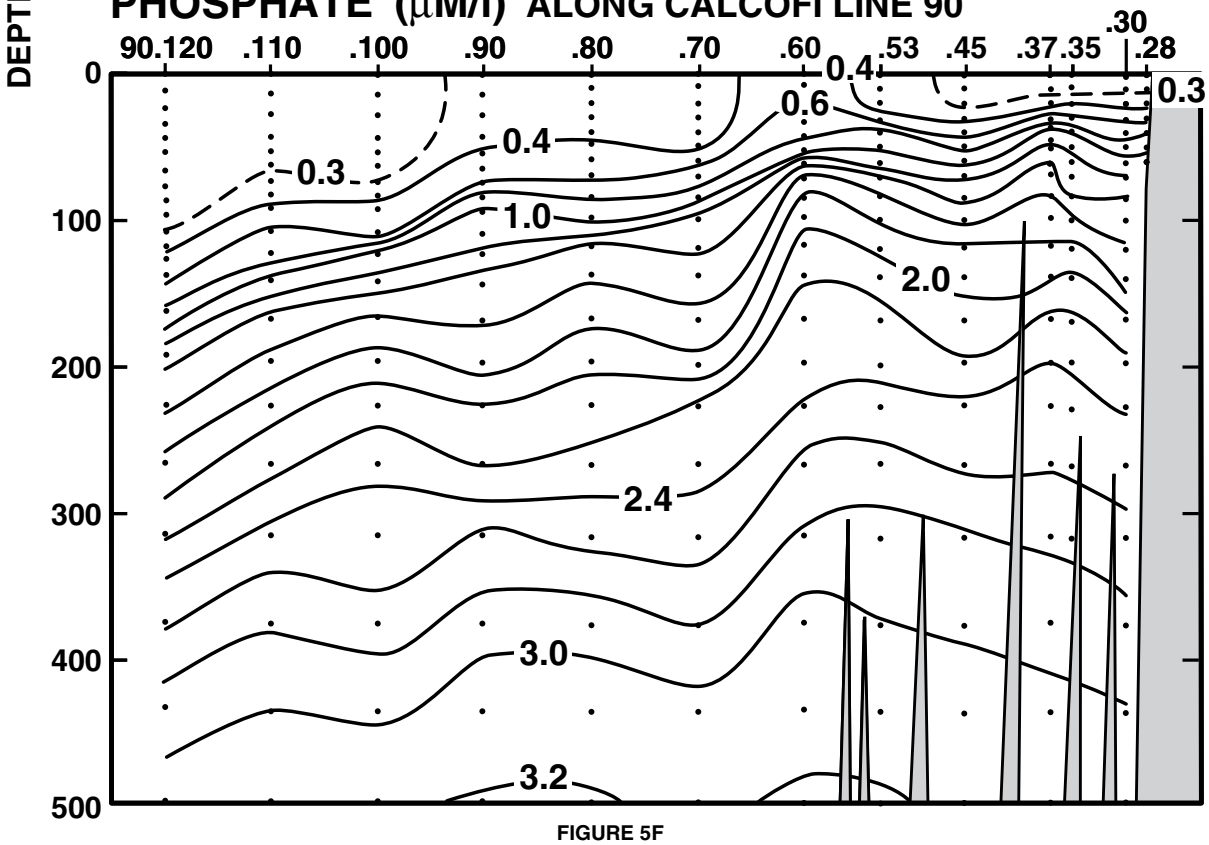


FIGURE 5F

CALCOFI CRUISE 9901

12 - 16 January 1999

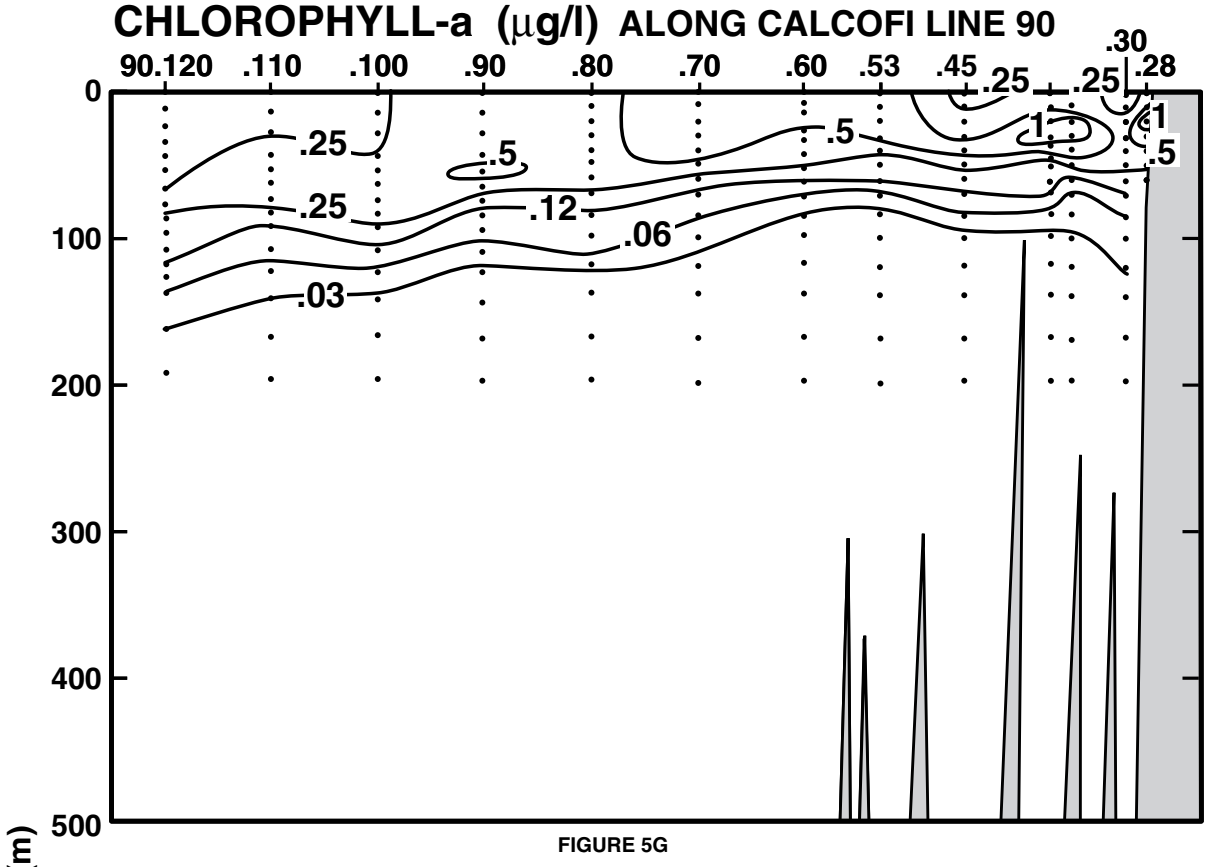


FIGURE 5G

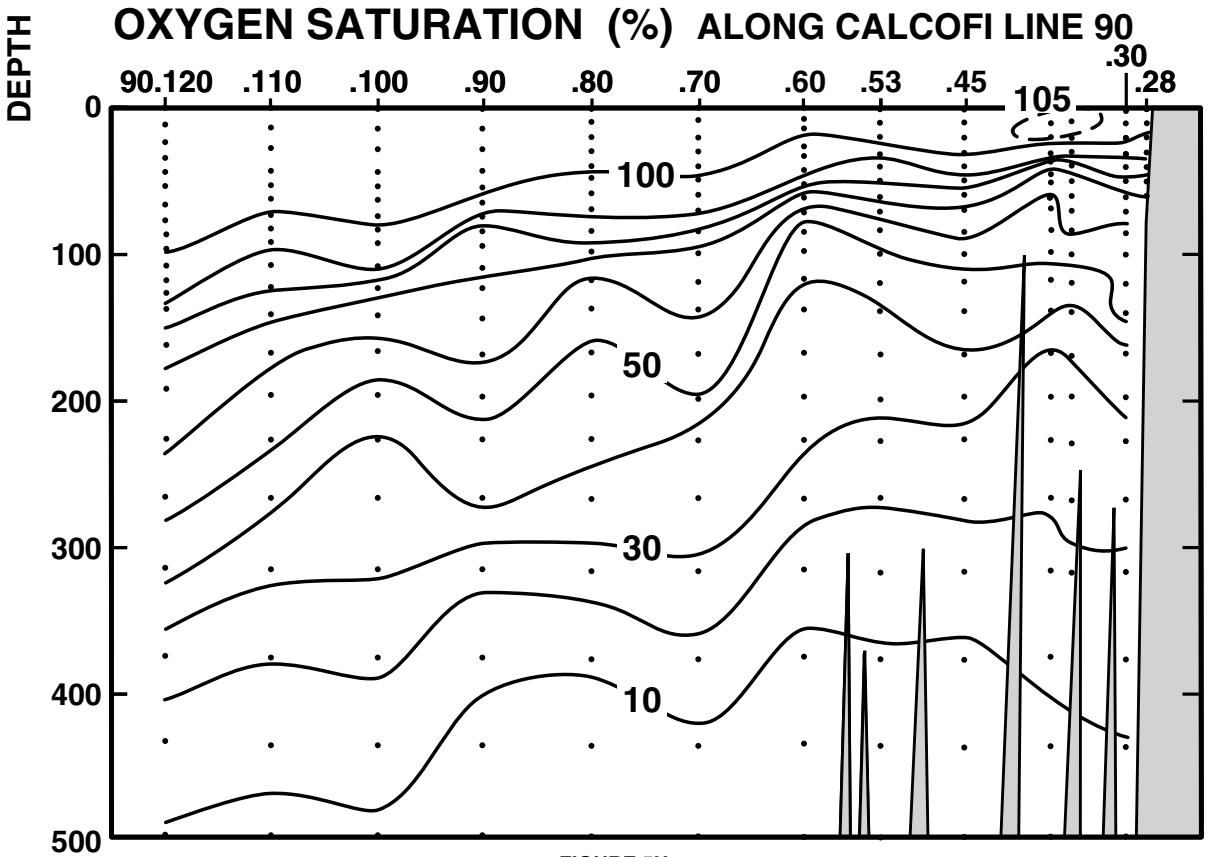


FIGURE 5H

CALCOFI CRUISE 9901

12 - 16 January 1999

OXYGEN (ml/l) ALONG CALCOFI LINE 90

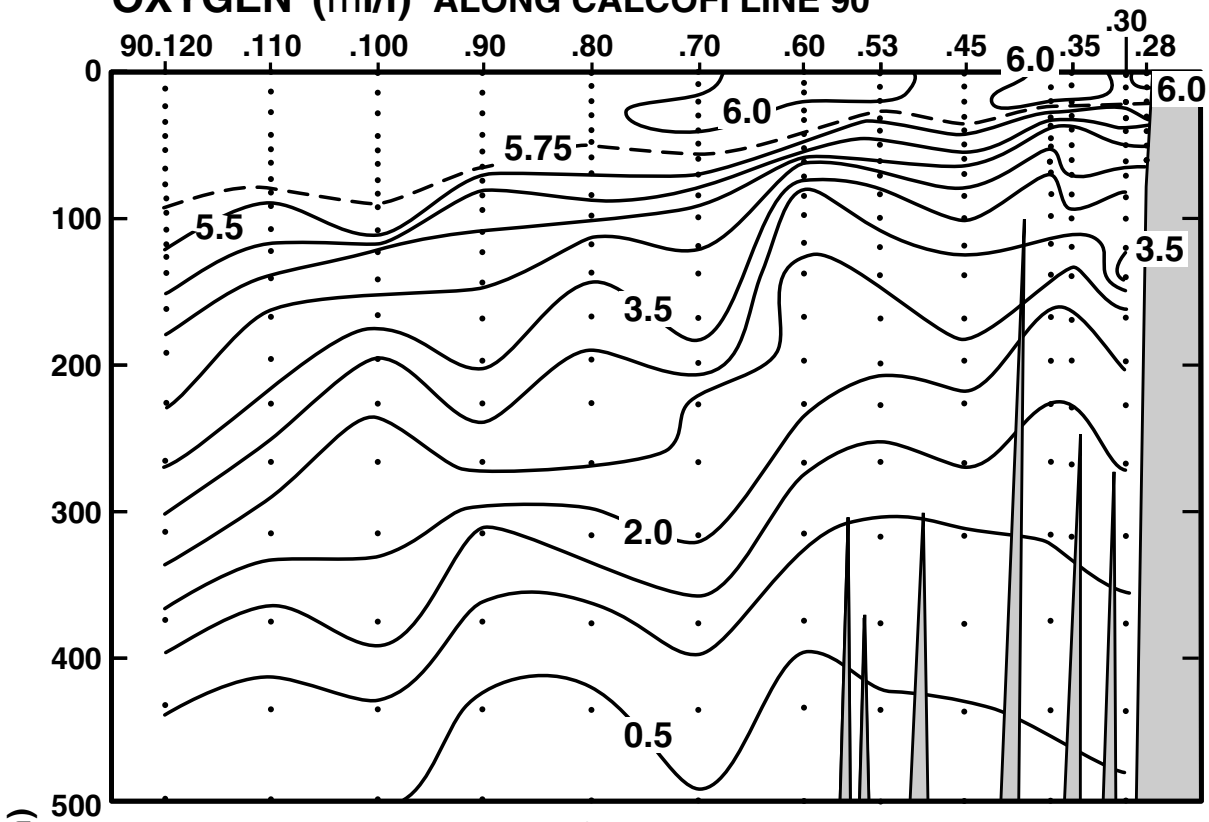


FIGURE 5I

NITRITE (μM/l) ALONG CALCOFI LINE 90

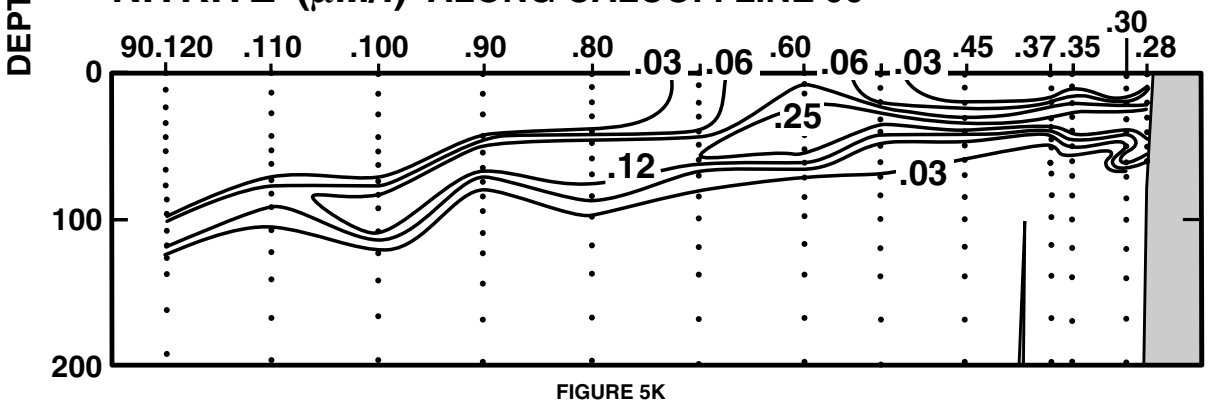


FIGURE 5K

PHAEOPIGMENTS (μg/l) ALONG CALCOFI LINE 90

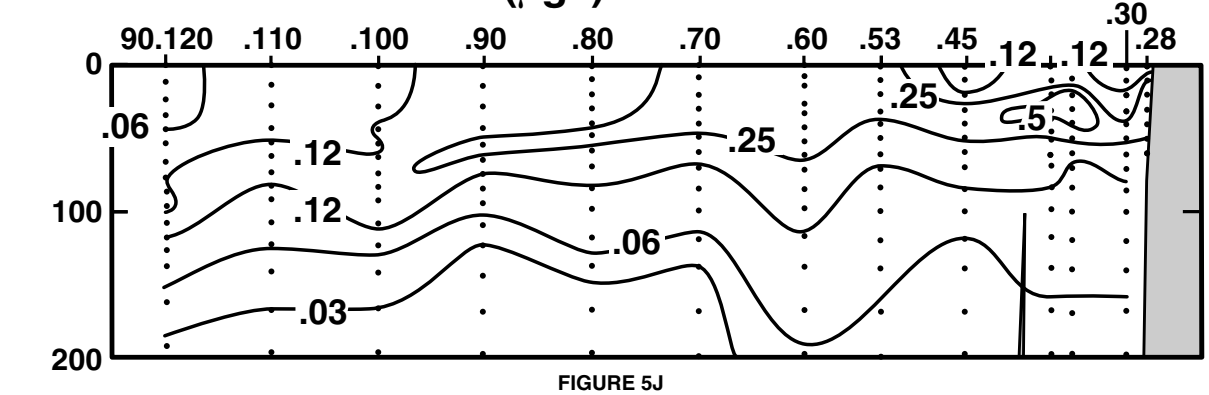


FIGURE 5J

PERSONNEL

CalCOFI Cruise 9901

SHIP'S CAPTAIN

Thomas J. Desjardins, RV *Roger Revelle*

PERSONNEL PARTICIPATING IN THE COLLECTION OF DATA

		Participation (Leg)
Thomas L. Hayward (Chief Scientist)	Research Oceanographer, SIO	1,2,3
Balzar, John	Correspondent, Los Angeles Times	2,3
Becker, Susan M.	Staff Research Associate, SIO	1,2,3
Bograd, Steven J.	Post Graduate Researcher, SIO	1,2,3
Checkley, David M.	Associate Professor, SIO	2
Cummings, Sherry L.	Staff Research Associate, SIO	1,2,3
Curtis, Katherine Alexandra	Graduate Student, SIO	1,2,3
Dotson, Ronald C.	Fishery Biologist, NMFS	1,2,3
Frame, Elizabeth R.	Graduate Student, SIO	1,2
Goericke, Ralf	Assistant Research Oceanographer	1
Green, Susan R.	Photographer, SIO	1
Griffith, David A.	Fishery Biologist, NMFS	1,2,3
Gruber, Dennis W.	Staff Research Associate, SIO	1,2,3
Hamilton, Susan C.	Volunteer	1
Horimoto, Naho	Visiting Scholar, SIO	1
Hays, Amy E.	Fishery Biologist, NMFS	1,2,3
Iwamoto, Sadahiro	Graduate Student, UCSD	2,3
Johnson, Catherine L.	Graduate Student, SIO	1,2,3
McCann Jr., Thomas J.	Volunteer	1
Mendez, Maria E.	Graduate Student, SIO	1,2
Mullin, Michael M.	Professor SIO, Director MLRG	1
Renger, Edward H.	Staff Research Associate, SIO	1,2,3
Santos, Maria	Biologist, AZTI Foundation, Spain	2,3
Silver, Marc C.	Computer Technician, SIO	1,2,3
Wilkinson, James R.	Programmer/Analyst, SIO	1,2,3
Wilson, Robert C.	Resident Technician, SIO	1,2,3
Wolgast, David M.	Staff Research Associate, SIO	1,2,3

Leg 1: San Diego to Dana Point, Ca., 9 Jan. – 16 Jan., 1999
Leg 2: Dana Point to Port San Luis, Ca., 16 Jan. – 24 Jan., 1999
Leg 3: Port San Luis to San Diego, Ca., 24 Jan. - 29 Jan., 1999

RV ROGER REVELLE CALCOFI CRUISE 9901 STATION 77 49

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT	TYPE
35 5.3 N	120 46.6 W	25/01/99	0703 UTC	69 m	040	17 kn			1010.7 mb	10.2 C	6.9 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	12.40	12.40	33.590	25.418	255.0	0.000	5.22	86.2	10.1	0.86	8.1	0.24	0.68	0.40	0	
2		12.40	12.40	33.590	25.418	255.0	0.005	5.22	86.2	10.1	0.86	8.1	0.24	0.68	0.40	2	208
6		12.37	12.37	33.591	25.425	254.5	0.015	5.20	85.8	10.0	0.86	8.2	0.24	0.66	0.37	6	207
10	ISL	12.29	12.29	33.593	25.442	253.0	0.025	5.13	84.5	10.3	0.88	8.5	0.24	0.64	0.35	10	
11		12.27	12.27	33.594	25.447	252.6	0.028	5.11	84.2	10.4	0.89	8.6	0.24	0.63	0.35	11	206
20	ISL	12.22	12.22	33.597	25.459	251.6	0.051	5.05	83.1	10.7	0.92	9.0	0.23	0.62	0.35	20	
21		12.21	12.21	33.598	25.462	251.4	0.053	5.04	82.9	10.7	0.92	9.0	0.23	0.62	0.35	21	205
30	ISL	11.91	11.91	33.628	25.542	244.0	0.075	4.52	73.9	13.2	1.11	12.0	0.20	0.32	0.31	30	
31		11.87	11.87	33.632	25.552	243.0	0.078	4.46	72.9	13.5	1.13	12.4	0.20	0.29	0.30	31	204
41		11.66	11.65	33.659	25.613	237.5	0.102	4.31	70.1	14.8	1.21	13.4	0.21	0.23	0.24	41	203
50	ISL	11.28	11.27	33.711	25.723	227.2	0.123	3.87	62.5	18.0	1.41	16.1	0.21	0.17	0.29	50	
51		11.24	11.23	33.717	25.735	226.1	0.125	3.81	61.4	18.4	1.44	16.4	0.21	0.16	0.30	51	202
61		10.90	10.89	33.767	25.835	216.8	0.147	3.38	54.1	21.6	1.64	18.8	0.14	0.10	0.49	61	201

RV ROGER REVELLE CALCOFI CRUISE 9901 STATION 77 51

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT	TYPE
35 1.3 N	120 55.2 W	25/01/99	0915 UTC	242 m	050	08 kn			1010.0 mb	9.2 C	7.9 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	13.28	13.28	33.548	25.213	274.5	0.000	5.82	97.9	5.7	0.50	2.9	0.18	0.99	0.47	0	
2		13.28	13.28	33.548	25.213	274.6	0.005	5.82	97.9	5.7	0.50	2.9	0.18	0.99	0.47	2	215
10		13.14	13.14	33.551	25.244	271.9	0.027	5.82	97.6	6.1	0.54	3.4	0.19	1.02	0.45	10	214
20		12.87	12.87	33.564	25.307	266.1	0.054	5.59	93.2	7.5	0.69	5.4	0.24	0.82	0.42	20	213
30	ISL	12.65	12.65	33.577	25.361	261.2	0.081	5.30	88.0	8.7	0.79	7.0	0.27	0.59	0.32	30	
31		12.60	12.60	33.580	25.373	260.1	0.083	5.24	86.9	9.0	0.81	7.3	0.27	0.56	0.31	31	212
40		11.62	11.61	33.663	25.623	236.5	0.106	4.12	67.0	14.7	1.24	14.0	0.16	0.29	0.22	40	211
50		11.28	11.27	33.701	25.715	228.0	0.129	3.69	59.5	17.2	1.41	16.7	0.07	0.14	0.16	50	210
61		10.63	10.62	33.775	25.889	211.7	0.153	3.21	51.1	20.9	1.63	19.9	0.03	0.05	0.10	61	209
70		10.20	10.19	33.854	26.025	198.9	0.171	2.88	45.4	24.5	1.80	22.6	0.03	0.02	0.09	70	208
75	ISL	10.08	10.07	33.877	26.063	195.3	0.181	2.79	43.9	25.5	1.85	23.3	0.03	0.02	0.08	75	
84		9.97	9.96	33.898	26.099	192.2	0.199	2.72	42.7	26.5	1.89	23.8	0.03	0.01	0.07	84	207
100	ISL	9.84	9.83	33.913	26.132	189.3	0.229	2.66	41.7	27.4	1.93	24.3	0.03	0.01	0.07	101	
101		9.83	9.82	33.914	26.135	189.1	0.231	2.66	41.6	27.4	1.93	24.3	0.03	0.01	0.07	102	206
120		9.63	9.62	33.968	26.211	182.3	0.266	2.48	38.7	29.4	2.02	25.5	0.03	0.01	0.07	121	205
125	ISL	9.52	9.51	33.990	26.246	179.0	0.275	2.40	37.3	30.5	2.09	26.0	0.03	0.01	0.07	126	
139		9.22	9.20	34.048	26.340	170.3	0.300	2.19	33.8	33.6	2.26	27.5	0.03	0.00	0.06	140	204
150	ISL	9.10	9.08	34.060	26.369	167.7	0.318	2.17	33.5	34.5	2.25	27.9	0.03	0.00	0.06	151	
170		8.91	8.89	34.061	26.400	165.1	0.352	2.14	32.8	35.8	2.23	28.4	0.03	0.00	0.05	171	203
200		8.33	8.31	34.097	26.519	154.2	0.400	1.87	28.3	42.1	2.38	30.3	0.04	0.00	0.08	201	202
229		7.98	7.96	34.102	26.575	149.3	0.444	1.84	27.7	45.1	2.43	31.1	0.04			230	201

RV ROGER REVELLE CALCOFI CRUISE 9901 STATION 77 55

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT	TYPE
34 53.3 N	121 11.9 W	24/01/99	2212 UTC	563 m	360	18 kn	320 04 09	2	1014.0 mb	11.5 C	8.8 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	13.71	13.71	33.531	25.113	284.1	0.000	5.81	98.6	5.3	0.46	2.2	0.10	0.63	0.28	0	
2		13.71	13.71	33.531	25.113	284.1	0.006	5.81	98.6	5.3	0.46	2.2	0.10	0.63	0.28	2	220
10		13.71	13.71	33.531	25.113	284.3	0.028	5.78	98.1	5.2	0.45	2.3	0.10	0.62	0.27	10	219
20		13.70	13.70	33.532	25.116	284.3	0.057	5.77	97.9	5.1	0.45	2.3	0.10	0.62	0.28	20	218
30	ISL	13.29	13.29	33.546	25.210	275.6	0.085	5.50	92.5	6.8	0.61	4.6	0.16	0.59	0.38	30	
31		13.23	13.23	33.548	25.224	274.3	0.088	5.46	91.7	7.1	0.63	4.9	0.17	0.59	0.39	31	217
40		12.57	12.56	33.575	25.375	260.2	0.112	5.00	82.9	9.8	0.85	8.3	0.22	0.60	0.47	40	216
50		11.70	11.69	33.611	25.568	242.0	0.137	4.42	71.9	13.4	1.13	12.7	0.10	0.34	0.38	50	215
60		11.06	11.05	33.677	25.736	226.2	0.160	3.85	61.8	17.4	1.39	16.7	0.03	0.15	0.22	60	214
70		10.72	10.71	33.737	25.844	216.2	0.182	3.46	55.2	19.7	1.53	18.8	0.02	0.11	0.23	70	213
75	ISL	10.50	10.49	33.797	25.929	208.2	0.193	3.17	50.3	22.0	1.66	20.5	0.02	0.08	0.19	75	
85		10.10	10.09	33.913	26.088	193.2	0.213	2.64	41.6	26.6	1.90	23.7	0.01	0.02	0.09	85	212
100	ISL	9.88	9.87	33.957	26.160	186.7	0.241	2.41	37.8	29.1	2.01	25.2	0.01	0.02	0.09	101	
101		9.87	9.86	33.957	26.162	186.5	0.243	2.41	37.8	29.2	2.01	25.2	0.01	0.02	0.09	102	211
119		9.69	9.68	33.995	26.222	181.2	0.276	2.27	35.4	30.8	2.08	26.0	0.01	0.01	0.07	120	210
125	ISL	9.62	9.61	34.012	26.247	178.9	0.287	2.22	34.6	31.5	2.11	26.3	0.01	0.01	0.07	126	
139		9.44	9.42	34.049	26.305	173.6	0.312	2.12	32.9	33.3	2.17	27.1	0.01	0.01	0.07	140	209
150	ISL	9.28	9.26	34.072	26.350	169.6	0.331	2.06	31.9	34.9	2.22	27.8	0.01	0.01	0.07	151	
169		8.98	8.96	34.088	26.410	164.2	0.362	1.96	30.1	36.9	2.27	28.7	0.01	0.01	0.06	170	208
198		8.42	8.40	34.027	26.450	160.7	0.410	2.48	37.6	36.5	2.16	28.2	0.01	0.00	0.06	199	207
200	ISL	8.40	8.38	34.028	26.454	160.4	0.413	2.47	37.5	36.7	2.17	28.3	0.01			201	
229		8.14	8.12	34.078	26.533	153.4	0.458	2.14	32.3	41.5	2.32	30.1	0.01			230	206
250	ISL	7.89	7.86	34.121	26.604	146.9	0.490	1.78	26.7	46.4	2.48	31.8	0.01			252	
268		7.67	7.64	34.153	26.661	141.7	0.516	1.48	22.1	50.5	2.60	33.1	0.01			270	205
300	ISL	7.42	7.39	34.170	26.711	137.4	0.560	1.28	19.0	54.5	2.69	34.2	0.01			302	
318		7.28	7.25	34.168	26.729	135.8	0.585	1.23	18.2	56.3	2.72	34.6	0.01			320	204
378		6.46	6.43	34.156	26.831	126.5	0.664	1.01	14.7	66.1	2.88	37.5	0.01			381	203
400	ISL	6.29	6.25	34.164	26.860	123.9	0.691	0.91	13.2	69.0	2.93	38.2	0.01			403	
437		6.10	6.06	34.183	26.899	120.5	0.737	0.76	10.9	73.3	3.00	39.1	0.01			440	202
500	ISL	5.88	5.84	34.220	26.957	115.8	0.811	0.58	8.3	78.8	3.09	40.1	0.01			504	
516		5.83	5.79	34.229	26.970	114.6	0.829	0.53	7.6	80.2	3.11	40.4	0.01			520	201

RV ROGER REVELLE CALCOFI CRUISE 9901 STATION 77 60

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT	TYPE
34 43.3 N	121 32.9 W	24/01/99	1757 UTC	941 m	360 19 kn	360 04 07	1	1017.5 mb	11.1 C	7.4 C	13m	7/8	AS

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	13.44	13.44	33.549	25.181	277.5	0.000	6.09	102.8	4.4	0.43	1.3	0.06	1.23	0.54	0	
2	A	13.44	13.44	33.549	25.182	277.6	0.006	6.09	102.8	4.4	0.43	1.3	0.06	1.23	0.54	2	221
2		13.44	13.44	33.542	25.176	278.1	0.006									2	222
10	ISL	13.44	13.44	33.543	25.177	278.2	0.028	6.07	102.4	4.3	0.40	1.3	0.06	1.19	0.54	10	
11	A	13.44	13.44	33.542	25.176	278.3	0.031	6.07	102.4	4.3	0.40	1.3	0.06	1.18	0.54	11	220
20	A	13.43	13.43	33.543	25.179	278.3	0.056	6.07	102.4	4.3	0.41	1.4	0.07	1.18	0.58	20	219
29	A	13.06	13.06	33.549	25.258	271.0	0.080	5.99	100.3	5.3	0.53	2.9	0.15	0.90	0.60	29	218
30	ISL	13.05	13.05	33.549	25.260	270.8	0.083	5.99	100.3	5.3	0.53	3.0	0.16	0.88	0.60	30	
38	A	12.95	12.94	33.551	25.282	269.0	0.105	5.96	99.6	5.9	0.58	3.7	0.20	0.71	0.54	38	217
46		12.70	12.69	33.573	25.348	262.9	0.126	5.46	90.7	7.9	0.73	6.1	0.26	0.43	0.37	46	216
50	ISL	12.20	12.19	33.594	25.461	252.2	0.136	5.02	82.6	10.4	0.91	9.1	0.22	0.30	0.32	50	
54	A	11.63	11.62	33.623	25.591	239.9	0.146	4.56	74.1	13.2	1.11	12.5	0.15	0.19	0.28	54	215
62		10.82	10.81	33.687	25.787	221.4	0.165	3.84	61.3	18.3	1.42	17.5	0.03	0.10	0.21	62	214
70		10.52	10.51	33.711	25.858	214.8	0.182	3.64	57.8	20.1	1.52	19.0	0.03	0.09	0.20	70	213
75	ISL	10.28	10.27	33.746	25.927	208.3	0.193	3.46	54.7	21.8	1.61	20.3	0.03	0.07	0.19	75	
85		9.82	9.81	33.831	26.071	194.8	0.213	3.07	48.0	25.3	1.78	22.8	0.02	0.03	0.15	85	212
100		9.48	9.47	33.933	26.207	182.1	0.241	2.66	41.3	29.4	1.96	25.2	0.02	0.01	0.10	101	211
119		9.19	9.18	33.965	26.280	175.6	0.275	2.57	39.7	31.5	2.03	26.2	0.02	0.01	0.08	120	210
125	ISL	9.08	9.07	33.984	26.312	172.6	0.285	2.50	38.5	32.6	2.06	26.7	0.02	0.01	0.08	126	
138		8.85	8.84	34.026	26.382	166.2	0.307	2.33	35.7	34.9	2.14	27.8	0.02	0.01	0.07	139	209
150	ISL	8.77	8.75	34.044	26.409	163.9	0.327	2.24	34.3	36.0	2.18	28.3	0.02	0.01	0.06	151	
168		8.68	8.66	34.060	26.435	161.6	0.356	2.14	32.7	37.3	2.23	28.8	0.02	0.00	0.05	169	208
199		8.33	8.31	34.106	26.526	153.6	0.405	1.90	28.8	41.1	2.35	30.1	0.02	0.00	0.05	200	207
200	ISL	8.32	8.30	34.107	26.528	153.4	0.407	1.89	28.6	41.3	2.35	30.2	0.02			201	
228		8.03	8.01	34.133	26.592	147.7	0.449	1.68	25.3	45.7	2.47	31.6	0.02			229	206
250	ISL	7.71	7.69	34.139	26.644	143.0	0.481	1.57	23.5	49.2	2.55	32.6	0.01			252	
269		7.45	7.42	34.142	26.684	139.4	0.508	1.48	22.0	52.1	2.61	33.4	0.01			271	205
300	ISL	7.22	7.19	34.165	26.735	135.0	0.550	1.26	18.6	55.9	2.70	34.5	0.01			302	
318		7.10	7.07	34.177	26.761	132.7	0.574	1.14	16.8	58.1	2.75	35.2	0.01			320	204
378		6.39	6.36	34.158	26.842	125.4	0.652	0.93	13.5	67.2	2.90	37.7	0.01			381	203
400	ISL	6.24	6.20	34.172	26.873	122.7	0.679	0.82	11.8	70.1	2.95	38.4	0.01			403	
437		6.06	6.02	34.203	26.920	118.5	0.724	0.64	9.2	74.5	3.03	39.3	0.01			440	202
500	ISL	5.82	5.78	34.242	26.982	113.3	0.797	0.49	7.0	80.4	3.12	40.3	0.01			504	
517		5.76	5.72	34.252	26.997	112.1	0.816	0.45	6.4	82.0	3.15	40.6	0.01			521	201

A) PRIMARY PRODUCTIVITY SAMPLES WERE TAKEN FROM THESE LEVELS.

RV ROGER REVELLE CALCOFI CRUISE 9901 STATION 77 70

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT	TYPE
34 23.3 N	122 14.8 W	24/01/99	1221 UTC	4016 m	360 19 kn			1017.9 mb	11.0 C	8.0 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	12.14	12.14	33.161	25.135	281.9	0.000	6.23	102.1	6.2	0.58	3.6	0.18	0.70	0.30	0	
2		12.14	12.14	33.161	25.135	282.0	0.006	6.23	102.1	6.2	0.58	3.6	0.18	0.70	0.30	2	220
10		12.13	12.13	33.163	25.139	281.8	0.028	6.23	102.1	6.3	0.58	3.7	0.19	0.70	0.36	10	219
20		11.90	11.90	33.194	25.206	275.6	0.056	6.20	101.1	6.7	0.62	4.4	0.23	0.87	0.44	20	218
30		11.71	11.71	33.289	25.316	265.5	0.083	6.05	98.3	8.0	0.74	5.8	0.31	0.67	0.41	30	217
40		11.58	11.57	33.329	25.371	260.5	0.109	5.85	94.8	8.7	0.81	7.0	0.39	0.52	0.34	40	216
49		11.41	11.40	33.360	25.426	255.4	0.133	5.54	89.5	9.8	0.91	8.8	0.47	0.34	0.31	49	215
50	ISL	11.40	11.39	33.373	25.438	254.3	0.135	5.55	89.6	9.9	0.92	8.9	0.46	0.33	0.31	50	
60		11.33	11.32	33.498	25.548	244.0	0.160	5.61	90.5	11.0	1.01	10.6	0.30	0.25	0.28	60	214
70		11.04	11.03	33.532	25.627	236.8	0.184	5.10	81.8	13.6	1.17	13.3	0.05	0.13	0.20	70	213
75	ISL	10.89	10.88	33.550	25.668	233.0	0.196	4.78	76.4	15.1	1.26	14.8	0.04	0.10	0.18	75	
85		10.52	10.51	33.594	25.767	223.7	0.219	4.12	65.4	18.4	1.46	17.9	0.02	0.07	0.15	85	212
99		9.79	9.78	33.685	25.963	205.4	0.249	3.27	51.1	23.9	1.75	22.6	0.02	0.04	0.15	100	211
100	ISL	9.75	9.74	33.691	25.974	204.3	0.251	3.26	50.9	24.2	1.76	22.8	0.02	0.04	0.15	101	
120		9.27	9.26	33.800	26.138	189.1	0.290	2.99	46.2	27.9	1.89	24.9	0.01	0.01	0.10	121	210
125	ISL	9.21	9.20	33.824	26.166	186.4	0.300	2.90	44.8	28.7	1.92	25.3	0.01	0.01	0.10	126	
139		9.07	9.05	33.880	26.233	180.4	0.325	2.78	42.8	30.3	1.97	25.9	0.01	0.01	0.09	140	209
150	ISL	8.83	8.81	33.908	26.293	174.9	0.345	3.11	47.6	30.4	1.89	25.1	0.01	0.01	0.07	151	
170		8.39	8.37	33.948	26.392	165.7	0.379	3.68	55.8	30.6	1.76	24.0	0.02	0.00	0.04	171	208
199		8.11	8.09	34.009	26.482	157.5	0.426	2.90	43.7	36.8	2.04	27.6	0.02	0.00	0.04	200	207
200	ISL	8.10	8.08	34.012	26.486	157.2	0.427	2.86	43.1	37.1	2.05	27.7	0.02			201	
229		7.75	7.73	34.080	26.592	147.6	0.471	1.95	29.2	45.1	2.40	31.5	0.01			230	206
250	ISL	7.33	7.31	34.069	26.643	142.8	0.502	1.96	29.0	48.9	2.44	32.6	0.01			252	
268		6.98	6.95	34.053	26.679	139.5	0.527	1.96	28.8	51.6	2.48	33.1	0.01			270	205
300	ISL	6.76	6.73	34.085	26.734	134.6	0.571	1.60	23.4	56.6	2.63	34.7	0.01			302	
319		6.70	6.67	34.109	26.762	132.3	0.597	1.34	19.6	59.6	2.72	35.7	0.01			321	204
377		6.20	6.17	34.133	26.847	124.8	0.671	0.98	14.1	68.8	2.89	38.0	0.01			380	203
400	ISL	6.05	6.02	34.148	26.878	122.0	0.699	0.85	12.2	72.0	2.95	38.7	0.01			403	
438		5.84	5.80	34.175	26.926	117.8	0.745	0.66	9.4	76.8	3.03	39.6	0.01			441	202
500	ISL	5.54	5.50	34.213	26.993	112.0	0.816	0.48	6.8	84.0	3.13	41.0	0.01			504	
516		5.46	5.42	34.223	27.010	110.4	0.834	0.43	6.1	85.9	3.16	41.3	0.01			520	201

RV ROGER REVELLE CALCOFI CRUISE 9901 STATION 77 80

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT TYPE
34 3.3 N	122 56.5 W	24/01/99	0705 UTC	4231 m	350 10 kn			1018.8 mb	11.7 C	9.8 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	14.15	14.15	33.002	24.613	331.6	0.000	5.97	101.9	2.6	0.26	0.1	0.00	0.21	0.06	0	
1	14.15	14.15	33.002	24.613	331.6	0.003	5.97	101.9	2.6	0.26	0.1	0.00	0.21	0.06	1	220
10 ISL	14.16	14.16	33.004	24.613	331.9	0.033	5.96	101.7	2.5	0.26	0.1	0.00	0.22	0.07	10	
15	14.17	14.17	33.006	24.612	332.1	0.050	5.95	101.6	2.5	0.26	0.1	0.00	0.22	0.07	15	219
20 ISL	14.17	14.17	33.006	24.613	332.2	0.066	5.95	101.6	2.5	0.26	0.1	0.00	0.22	0.07	20	
30	14.17	14.17	33.006	24.613	332.5	0.100	5.95	101.6	2.5	0.26	0.1	0.00	0.23	0.08	30	218
45	13.44	13.43	32.925	24.700	324.6	0.149	5.98	100.5	2.7	0.31	0.2	0.06	0.43	0.20	45	217
50 ISL	12.93	12.92	32.893	24.777	317.3	0.165	6.01	99.9	3.2	0.37	0.7	0.23	0.36	0.18	50	
55	12.45	12.44	32.876	24.857	309.8	0.181	6.02	99.1	3.7	0.44	1.4	0.36	0.27	0.15	55	216
65	12.09	12.08	32.930	24.967	299.5	0.211	5.92	96.7	4.4	0.50	2.6	0.10	0.13	0.11	65	215
75	12.12	12.11	33.122	25.110	286.1	0.240	5.72	93.6	4.3	0.49	2.7	0.02	0.08	0.09	75	214
85	11.70	11.69	33.139	25.202	277.6	0.269	5.53	89.7	5.4	0.59	4.2	0.02	0.06	0.07	85	213
95	10.95	10.94	33.213	25.396	259.3	0.295	5.04	80.5	9.6	0.91	9.4	0.02	0.04	0.06	95	212
100 ISL	10.77	10.76	33.272	25.473	252.0	0.308	4.84	77.0	11.1	1.01	11.1	0.02	0.04	0.06	100	
110	10.51	10.50	33.399	25.618	238.5	0.333	4.51	71.4	13.6	1.16	13.8	0.01	0.03	0.05	111	211
125	9.90	9.89	33.566	25.852	216.4	0.367	4.20	65.7	17.8	1.38	17.5	0.01	0.01	0.03	126	210
145	9.49	9.47	33.739	26.055	197.5	0.408	4.13	64.1	20.4	1.46	19.3	0.01	0.01	0.03	146	209
150 ISL	9.36	9.34	33.776	26.105	192.8	0.418	4.09	63.3	21.5	1.49	19.9	0.01	0.01	0.03	151	
169	8.89	8.87	33.888	26.268	177.6	0.453	3.93	60.2	25.7	1.62	22.2	0.01	0.01	0.04	170	208
199	8.45	8.43	33.963	26.395	165.9	0.505	3.77	57.2	30.2	1.73	23.9	0.01	0.00	0.03	200	207
200 ISL	8.43	8.41	33.964	26.399	165.6	0.506	3.76	57.1	30.4	1.73	24.0	0.01			201	
228	8.01	7.99	33.985	26.479	158.4	0.552	3.47	52.2	35.2	1.88	26.1	0.01			229	206
250 ISL	7.72	7.70	34.001	26.534	153.4	0.586	2.88	43.0	40.2	2.11	28.9	0.00			251	
268	7.49	7.46	34.010	26.574	149.7	0.613	2.41	35.8	44.3	2.29	31.2	0.00			270	205
300 ISL	7.01	6.98	34.009	26.641	143.7	0.660	2.30	33.8	49.3	2.40	32.7	0.00			302	
319	6.75	6.72	34.008	26.675	140.5	0.687	2.24	32.7	52.0	2.44	33.2	0.00			321	204
378	6.27	6.24	34.046	26.769	132.2	0.768	1.57	22.7	62.0	2.69	36.5	0.01			380	203
400 ISL	6.09	6.06	34.059	26.802	129.2	0.796	1.37	19.7	66.0	2.78	37.6	0.01			403	
438	5.78	5.74	34.083	26.860	123.9	0.844	1.07	15.3	73.0	2.92	39.4	0.01			441	202
500 ISL	5.33	5.29	34.137	26.958	115.0	0.919	0.69	9.7	84.3	3.08	41.4	0.01			503	
514	5.23	5.19	34.150	26.980	113.0	0.934	0.61	8.6	86.9	3.12	41.9	0.01			518	201

RV ROGER REVELLE CALCOFI CRUISE 9901 STATION 77 90

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT TYPE
33 43.3 N	123 38.0 W	23/01/99	2322 UTC	4150 m	360 17 kn	330 03 08	5	1018.6 mb	12.4 C	11.8 C	19m	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	13.86	13.86	32.932	24.619	331.1	0.000	6.02	102.1	2.5	0.29	0.1	0.00	0.23	0.06	0	
2	13.86	13.86	32.932	24.619	331.1	0.007	6.02	102.1	2.5	0.29	0.1	0.00	0.23	0.06	2	220
10 ISL	13.87	13.87	32.933	24.618	331.4	0.033	6.02	102.1	2.4	0.29	0.1	0.00	0.22	0.06	10	
15	13.87	13.87	32.934	24.619	331.5	0.050	6.02	102.1	2.4	0.29	0.1	0.00	0.22	0.06	15	219
20 ISL	13.81	13.81	32.944	24.639	329.7	0.066	6.02	102.0	2.4	0.29	0.1	0.00	0.28	0.10	20	
30	13.67	13.67	32.964	24.683	325.8	0.099	6.01	101.5	2.3	0.29	0.1	0.00	0.41	0.18	30	218
45	13.57	13.56	32.966	24.706	324.1	0.148	5.96	100.5	2.3	0.31	0.2	0.03	0.49	0.23	45	217
50 ISL	13.44	13.43	32.962	24.729	321.9	0.164	5.95	100.0	2.4	0.33	0.3	0.09	0.42	0.21	50	
55	13.26	13.25	32.952	24.757	319.3	0.180	5.95	99.7	2.6	0.35	0.4	0.16	0.33	0.18	55	216
65	12.71	12.70	32.900	24.825	313.1	0.212	5.93	98.2	3.3	0.43	1.4	0.30	0.17	0.12	65	215
75	12.46	12.45	32.924	24.892	306.9	0.243	5.91	97.3	3.7	0.48	2.1	0.13	0.15	0.11	75	214
84	12.31	12.30	32.972	24.958	300.8	0.270	5.87	96.4	3.8	0.50	2.5	0.14	0.15	0.12	84	213
95	11.89	11.88	33.064	25.109	286.7	0.302	5.82	94.8	5.0	0.59	3.9	0.26	0.12	0.10	95	212
100 ISL	11.80	11.79	33.117	25.167	281.3	0.316	5.85	95.1	5.7	0.63	4.5	0.31	0.13	0.11	100	
110	11.70	11.69	33.227	25.271	271.6	0.344	5.89	95.6	7.0	0.72	5.6	0.40	0.14	0.13	111	211
125	11.52	11.50	33.373	25.418	258.0	0.384	5.77	93.4	8.5	0.84	7.3	0.48	0.11	0.12	126	210
144	11.01	10.99	33.589	25.679	233.6	0.430	3.56	57.1	17.5	1.47	18.0	0.03	0.02	0.07	145	209
150 ISL	10.83	10.81	33.636	25.747	227.2	0.444	3.43	54.8	19.2	1.57	19.5	0.03	0.01	0.07	151	
168	10.34	10.32	33.741	25.915	211.6	0.484	3.04	48.1	22.5	1.73	21.8	0.02	0.00	0.06	169	208
198	9.81	9.79	33.850	26.090	195.4	0.545	2.69	42.1	26.6	1.92	24.4	0.02	0.00	0.04	199	207
200 ISL	9.76	9.74	33.857	26.104	194.1	0.549	2.69	42.0	26.9	1.93	24.5	0.02			201	
229	9.09	9.07	33.944	26.281	177.6	0.603	2.65	40.8	31.0	2.02	26.4	0.01			230	206
250 ISL	8.67	8.64	33.994	26.387	167.9	0.639	2.56	39.1	34.1	2.09	27.5	0.01			251	
268	8.36	8.33	34.028	26.461	161.0	0.669	2.45	37.1	36.8	2.16	28.5	0.01			269	205
300 ISL	7.90	7.87	34.072	26.564	151.5	0.719	2.14	32.1	42.2	2.32	30.5	0.01			302	
318	7.69	7.66	34.089	26.609	147.5	0.745	1.95	29.1	45.2	2.41	31.6	0.01			320	204
377	7.19	7.15	34.120	26.705	139.0	0.830	1.53	22.6	53.6	2.62	34.1	0.01			379	203
400 ISL	6.94	6.90	34.126	26.744	135.5	0.862	1.36	20.0	57.6	2.70	35.2	0.01			402	
437	6.54	6.50	34.137	26.806	129.8	0.911	1.10	16.0	64.1	2.83	37.0	0.01			440	202
500 ISL	6.03	5.99	34.173	26.901	121.2	0.990	0.77	11.1	74.0	3.00	39.2	0.01			503	
513	5.92	5.88	34.181	26.921	119.3	1.005	0.70	10.0	76.1	3.04	39.7	0.01			516	201

RV ROGER REVELLE CALCOFI CRUISE 9901 STATION 77 100

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT	TYPE
33 23.3 N	124 19.4 W	23/01/99	1851 UTC	4546 m	360	23 kn	330 04 10	2	1020.5 mb	13.3 c	13.0 c	30m	8/8	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	15.53	15.53	33.307	24.552	337.5	0.000	5.79	101.8	2.5	0.31	1.1	0.00	0.11	0.04	0	
1	15.53	15.53	33.305	24.550	337.6	0.003									1	224
1	15.53	15.53	33.304	24.549	337.7	0.003									1	223
3 A	15.53	15.53	33.307	24.552	337.5	0.010	5.79	101.8	2.5	0.31	1.1	0.00	0.11	0.04	3	222
10 ISL	15.53	15.53	33.309	24.553	337.6	0.034	5.77	101.5	2.2	0.26	0.2	0.00	0.12	0.03	10	
11	15.53	15.53	33.309	24.553	337.6	0.037	5.77	101.5	2.2	0.25	0.1	0.00	0.12	0.03	11	221
20 ISL	15.53	15.53	33.313	24.557	337.6	0.068	5.79	101.8	2.2	0.25	0.1	0.00	0.12	0.03	20	
21 A	15.53	15.53	33.313	24.557	337.6	0.071	5.79	101.8	2.2	0.25	0.1	0.00	0.12	0.03	21	220
30 ISL	16.14	16.14	33.606	24.646	329.5	0.101	5.68	101.3	2.1	0.20	0.1	0.00	0.17	0.06	30	
31	16.17	16.17	33.631	24.658	328.3	0.104	5.67	101.2	2.1	0.20	0.1	0.00	0.18	0.07	31	219
43 A	14.38	14.37	33.231	24.743	320.5	0.143	5.96	102.3	2.5	0.29	0.1	0.01	0.52	0.21	43	218
50 ISL	13.46	13.45	33.108	24.838	311.6	0.165	6.06	102.0	2.9	0.34	0.2	0.04	0.65	0.29	50	
53	13.16	13.15	33.079	24.875	308.1	0.175	6.08	101.7	3.0	0.36	0.3	0.06	0.68	0.32	53	217
66 A	12.96	12.95	33.093	24.926	303.6	0.214	6.05	100.8	3.2	0.39	0.6	0.09	0.56	0.29	66	216
75 ISL	12.85	12.84	33.103	24.956	301.0	0.242	5.98	99.4	3.4	0.43	1.0	0.15	0.36	0.20	75	
76	12.84	12.83	33.104	24.958	300.7	0.245	5.97	99.2	3.4	0.43	1.1	0.16	0.34	0.19	76	215
85 A	12.66	12.65	33.101	24.991	297.8	0.271	5.91	97.8	4.0	0.49	2.1	0.26	0.22	0.15	85	214
97	12.22	12.21	33.131	25.099	287.8	0.307	5.77	94.7	5.4	0.61	4.3	0.16	0.13	0.12	97	213
100 ISL	12.11	12.10	33.157	25.140	283.9	0.315	5.66	92.6	6.1	0.67	5.3	0.12	0.12	0.12	100	
108	11.86	11.85	33.243	25.254	273.3	0.337	5.37	87.5	8.0	0.83	7.9	0.03	0.10	0.11	108	212
121 A	11.77	11.75	33.385	25.381	261.5	0.372	5.35	87.1	9.0	0.88	8.8	0.09	0.08	0.12	122	211
125 ISL	11.45	11.43	33.424	25.470	253.0	0.383	4.96	80.2	10.9	1.01	11.0	0.06	0.06	0.09	126	
132	10.87	10.85	33.488	25.625	238.4	0.400	4.27	68.2	14.2	1.24	14.8	0.01	0.03	0.05	133	210
145	10.65	10.63	33.577	25.733	228.4	0.430	4.21	67.0	15.1	1.28	15.6	0.01	0.03	0.05	146	209
150 ISL	10.43	10.41	33.615	25.801	222.0	0.441	4.11	65.1	16.4	1.34	16.7	0.01	0.03	0.05	151	
168	9.56	9.54	33.751	26.053	198.2	0.479	3.68	57.2	22.0	1.61	21.1	0.01	0.01	0.03	169	208
199	8.89	8.87	33.903	26.280	177.0	0.537	3.29	50.4	28.3	1.84	24.6	0.01	0.00	0.02	200	207
200 ISL	8.87	8.85	33.907	26.286	176.5	0.539	3.28	50.2	28.5	1.84	24.7	0.01			201	
229	8.44	8.42	34.000	26.426	163.6	0.588	3.14	47.7	33.1	1.94	26.1	0.01			230	206
250 ISL	8.12	8.09	34.017	26.488	158.0	0.622	3.12	47.0	35.7	1.99	26.9	0.01			251	
268	7.84	7.81	34.015	26.528	154.3	0.650	3.11	46.6	37.7	2.02	27.5	0.01			270	205
300 ISL	7.34	7.31	34.003	26.590	148.6	0.699	3.04	45.0	41.5	2.09	28.7	0.01			302	
317	7.09	7.06	33.997	26.621	145.9	0.724	3.00	44.1	43.9	2.15	29.5	0.01			319	204
376	6.46	6.43	34.039	26.739	135.1	0.807	1.97	28.6	55.7	2.55	34.3	0.01			378	203
400 ISL	6.27	6.23	34.055	26.776	131.8	0.839	1.67	24.1	60.2	2.67	35.8	0.01			403	
437	6.02	5.98	34.079	26.827	127.2	0.887	1.31	18.8	66.9	2.83	37.7	0.01			440	202
500 ISL	5.59	5.55	34.126	26.918	119.1	0.964	0.85	12.1	77.4	3.00	40.0	0.01			503	
514	5.50	5.46	34.137	26.938	117.3	0.981	0.75	10.6	79.7	3.04	40.5	0.01			517	201

A) PRIMARY PRODUCTIVITY SAMPLES WERE TAKEN FROM THESE LEVELS.

RV ROGER REVELLE CALCOFI CRUISE 9901 STATION 80 51

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT	TYPE
34 27.0 N	120 31.4 W	22/01/99	0658 UTC	75 m	320	21 kn			1023.5 mb	14.0 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	13.23	13.23	33.548	25.223	273.6	0.000	5.15	86.5	8.0	0.73	6.2	0.28	0.67	0.40	0	
2	13.23	13.23	33.548	25.223	273.6	0.005	5.15	86.5	8.0	0.73	6.2	0.28	0.67	0.40	2	208
6	13.24	13.24	33.548	25.221	273.9	0.016	5.17	86.9	7.9	0.73	6.1	0.28	0.66	0.38	6	207
10 ISL	13.18	13.18	33.558	25.241	272.1	0.027	5.08	85.3	8.2	0.76	6.6	0.27	0.63	0.36	10	
11	13.17	13.17	33.561	25.245	271.7	0.030	5.04	84.6	8.3	0.77	6.8	0.26	0.62	0.36	11	206
20 ISL	11.96	11.96	33.626	25.531	244.8	0.053	4.25	69.6	13.3	1.13	12.6	0.12	0.34	0.25	20	
21	11.81	11.81	33.636	25.566	241.4	0.056	4.15	67.7	14.0	1.18	13.3	0.10	0.30	0.24	21	205
30 ISL	11.57	11.57	33.688	25.652	233.5	0.077	3.66	59.4	16.6	1.37	15.9	0.04	0.12	0.16	30	
31	11.54	11.54	33.686	25.656	233.2	0.079	3.62	58.7	16.8	1.38	16.1	0.04	0.11	0.15	31	204
41	11.27	11.26	33.721	25.732	226.1	0.102	3.43	55.4	18.6	1.48	17.5	0.03	0.07	0.13	41	203
50 ISL	11.04	11.03	33.762	25.806	219.3	0.122	3.24	52.0	20.7	1.59	18.8	0.05	0.07	0.20	50	
52	11.00	10.99	33.770	25.819	218.1	0.127	3.21	51.5	21.1	1.61	19.0	0.05	0.07	0.22	52	202
62	10.96	10.95	33.778	25.833	217.0	0.149	3.18	51.0	21.4	1.63	19.2	0.05	0.07	0.21	62	201

RV ROGER REVELLE CALCOFI CRUISE 9901 STATION 80 60

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT	TYPE
34 9.0 N	121 9.0 W	22/01/99	1119 UTC	2187 m	360	19 kn			1023.0 mb	13.9 c	11.9 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	13.31	13.31	33.521	25.186	277.1	0.000	6.15	103.5	4.0	0.42	1.6	0.07	1.21	0.52	0	
3	13.31	13.31	33.521	25.186	277.1	0.008	6.15	103.5	4.0	0.42	1.6	0.07	1.21	0.52	3	220
10 ISL	13.29	13.29	33.522	25.191	276.9	0.028	6.15	103.5	4.1	0.43	1.6	0.07	1.18	0.55	10	
11	13.29	13.29	33.522	25.191	276.9	0.030	6.15	103.5	4.1	0.43	1.6	0.07	1.18	0.55	11	219
19	13.29	13.29	33.522	25.191	277.1	0.053	6.13	103.1	4.0	0.43	1.7	0.07	1.07	0.52	19	218
20 ISL	13.24	13.24	33.525	25.204	275.9	0.055	6.13	103.0	4.1	0.44	1.9	0.08	1.06	0.51	20	
30	12.66	12.66	33.562	25.347	262.5	0.082	5.99	99.5	6.3	0.64	4.5	0.21	0.83	0.43	30	217
41	12.17	12.16	33.601	25.472	250.9	0.111	5.51	90.6	9.0	0.85	7.7	0.37	0.36	0.30	41	216
50 ISL	11.07	11.06	33.683	25.739	225.7	0.132	4.04	64.9	16.9	1.35	16.1	0.10	0.18	0.25	50	
51	10.95	10.94	33.693	25.768	222.9	0.134	3.88	62.2	17.8	1.40	17.0	0.07	0.17	0.25	51	215
61	10.57	10.56	33.729	25.863	214.1	0.156	3.55	56.4	20.6	1.56	19.4	0.04	0.13	0.22	61	214
71	10.31	10.30	33.749	25.924	208.5	0.177	3.35	52.9	22.3	1.64	20.7	0.03	0.08	0.22	71	213
75 ISL	10.15	10.14	33.764	25.963	204.8	0.185	3.24	51.0	23.2	1.70	21.5	0.03	0.06	0.20	75	
86	9.70	9.69	33.813	26.077	194.2	0.207	2.97	46.3	25.9	1.84	23.6	0.02	0.02	0.15	86	212
100	9.32	9.31	33.875	26.188	183.9	0.234	2.90	44.9	28.4	1.90	24.8	0.02	0.01	0.14	101	211
120	9.08	9.07	33.910	26.254	178.0	0.270	2.85	43.9	30.5	1.95	25.7	0.02	0.01	0.14	121	210
125 ISL	8.98	8.97	33.924	26.281	175.5	0.279	2.81	43.2	31.2	1.97	26.0	0.02	0.01	0.14	126	
139	8.69	8.68	33.964	26.358	168.4	0.303	2.69	41.1	33.5	2.04	27.0	0.02	0.01	0.13	140	209
150 ISL	8.48	8.46	33.985	26.407	163.9	0.321	2.64	40.1	35.1	2.08	27.6	0.02	0.01	0.11	151	
168	8.18	8.16	34.014	26.475	157.7	0.350	2.53	38.2	37.9	2.16	28.7	0.02	0.00	0.07	169	208
199	7.76	7.74	34.074	26.585	147.7	0.398	2.04	30.5	44.5	2.38	31.0	0.03	0.00	0.06	200	207
200 ISL	7.75	7.73	34.075	26.587	147.5	0.399	2.03	30.4	44.6	2.38	31.0	0.03			201	
228	7.51	7.49	34.090	26.634	143.4	0.440	1.88	28.0	47.9	2.47	32.1	0.02			229	206
250 ISL	7.36	7.34	34.101	26.664	140.9	0.471	1.77	26.2	50.0	2.52	32.8	0.02			252	
269	7.24	7.21	34.112	26.690	138.7	0.498	1.65	24.4	51.9	2.57	33.4	0.02			271	205
300 ISL	7.05	7.02	34.139	26.738	134.5	0.540	1.35	19.9	56.4	2.68	34.8	0.01			302	
319	6.93	6.90	34.158	26.769	131.8	0.565	1.15	16.9	59.4	2.76	35.6	0.01			321	204
377	6.53	6.50	34.217	26.870	122.9	0.639	0.74	10.8	67.8	2.95	37.6	0.01			380	203
400 ISL	6.37	6.33	34.227	26.899	120.3	0.667	0.65	9.4	70.8	3.00	38.2	0.01			403	
438	6.11	6.07	34.239	26.942	116.5	0.712	0.55	7.9	75.5	3.06	39.2	0.01			441	202
500 ISL	5.77	5.73	34.269	27.009	110.7	0.782	0.39	5.6	82.7	3.17	40.6	0.01			504	
514	5.69	5.65	34.276	27.025	109.3	0.798	0.35	5.0	84.3	3.19	40.9	0.01			518	201

RV ROGER REVELLE CALCOFI CRUISE 9901 STATION 80 70

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT TYPE
33 49.0 N	121 50.6 W	22/01/99	1829 UTC	3628 m	330 13 kn	330 04 14	0	1026.0 mb	14.0 C	12.2 C	13m	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	13.00	13.00	33.324	25.095	285.7	0.000	6.25	104.4	4.4	0.42	1.6	0.13	1.24	0.53	0	
1	A	13.00	13.00	33.324	25.095	285.7	0.003	6.25	104.4	4.4	0.42	1.6	0.13	1.24	0.53	1	221
1		13.00	13.00	33.325	25.096	285.6	0.003									1	222
10	A	12.95	12.95	33.323	25.105	285.1	0.029	6.26	104.4	4.4	0.42	1.6	0.13	1.31	0.49	10	220
19	A	12.27	12.27	33.334	25.245	271.9	0.054	6.13	100.8	6.5	0.62	4.4	0.32	1.06	0.54	19	219
20	ISL	12.23	12.23	33.336	25.254	271.1	0.056	6.10	100.2	6.6	0.64	4.6	0.35	1.00	0.52	20	
28	A	12.01	12.01	33.351	25.308	266.2	0.078	5.92	96.8	7.3	0.73	5.8	0.50	0.54	0.34	28	218
30	ISL	11.97	11.97	33.351	25.315	265.5	0.083	5.91	96.6	7.5	0.75	6.1	0.49	0.53	0.34	30	
37	A	11.90	11.90	33.358	25.334	263.9	0.102	5.88	96.0	8.1	0.78	6.7	0.47	0.48	0.32	37	217
45		11.98	11.97	33.411	25.360	261.6	0.123	5.87	96.0	7.9	0.77	6.5	0.47	0.37	0.26	45	216
50	ISL	12.00	11.99	33.429	25.371	260.7	0.136	5.86	95.9	7.9	0.78	6.5	0.46	0.32	0.25	50	
53	A	12.03	12.02	33.444	25.377	260.3	0.144	5.86	95.9	7.9	0.78	6.5	0.46	0.30	0.25	53	215
62		12.32	12.31	33.555	25.408	257.5	0.167	5.98	98.6	6.7	0.71	5.2	0.33	0.34	0.28	62	214
70		12.23	12.22	33.571	25.438	254.9	0.187	5.96	98.1	6.8	0.73	5.5	0.35	0.29	0.27	70	213
75	ISL	12.16	12.15	33.563	25.445	254.3	0.200	5.87	96.4	7.2	0.76	6.0	0.47	0.25	0.25	75	
85		11.86	11.85	33.545	25.488	250.5	0.225	5.69	92.9	9.3	0.89	8.4	0.61	0.16	0.21	85	212
100		10.78	10.77	33.587	25.717	228.9	0.261	4.14	66.0	16.6	1.38	16.7	0.04	0.07	0.16	101	211
118		9.60	9.59	33.727	26.027	199.6	0.300	3.64	56.6	22.3	1.64	21.3	0.03	0.01	0.06	119	210
125	ISL	9.41	9.40	33.762	26.086	194.1	0.314	3.52	54.5	23.6	1.70	22.2	0.03	0.01	0.06	126	
140		9.20	9.18	33.820	26.165	186.9	0.342	3.32	51.2	25.9	1.78	23.6	0.02	0.01	0.05	141	209
150	ISL	8.99	8.97	33.871	26.239	180.0	0.361	3.18	48.8	28.1	1.85	24.7	0.02	0.01	0.05	151	
168		8.63	8.61	33.952	26.359	168.9	0.392	3.01	45.9	31.7	1.96	26.2	0.02	0.00	0.05	169	208
198		8.16	8.14	34.000	26.468	158.9	0.441	3.17	47.8	34.2	1.95	26.5	0.02	0.00	0.03	199	207
200	ISL	8.13	8.11	34.002	26.474	158.4	0.444	3.16	47.6	34.5	1.96	26.6	0.02			201	
228		7.78	7.76	34.027	26.546	151.9	0.488	2.81	42.0	39.8	2.13	28.8	0.01			229	206
250	ISL	7.66	7.64	34.054	26.584	148.6	0.521	2.43	36.2	43.1	2.27	30.3	0.01			251	
268		7.56	7.53	34.071	26.612	146.2	0.547	2.14	31.9	45.7	2.38	31.4	0.01			270	205
300	ISL	7.08	7.05	34.071	26.680	140.0	0.593	1.88	27.7	51.7	2.53	33.3	0.01			302	
317		6.78	6.75	34.065	26.716	136.6	0.617	1.79	26.2	55.0	2.59	34.3	0.01			319	204
377		5.97	5.94	34.050	26.810	128.0	0.696	1.46	20.9	65.7	2.77	37.3	0.01			379	203
400	ISL	5.78	5.75	34.060	26.842	125.1	0.725	1.31	18.7	69.6	2.84	38.3	0.01			403	
436		5.55	5.51	34.087	26.891	120.7	0.769	1.05	14.9	75.7	2.96	39.7	0.01			439	202
500	ISL	5.18	5.14	34.171	27.002	110.7	0.843	0.60	8.4	87.0	3.14	41.6	0.01			503	
516		5.09	5.05	34.192	27.029	108.2	0.861	0.49	6.9	89.8	3.18	42.1	0.01			520	201

A) PRIMARY PRODUCTIVITY SAMPLES WERE TAKEN FROM THESE LEVELS.

RV ROGER REVELLE CALCOFI CRUISE 9901 STATION 80 80

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT TYPE
33 29.0 N	122 32.0 W	22/01/99	2252 UTC	3994 m	320 10 kn	280 05 10	0	1023.5 mb	14.1 C	12.3 C	16m	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	12.98	12.98	33.125	24.945	300.0	0.000	6.23	103.9	5.6	0.54	3.3	0.12	0.70	0.26	0	
2		12.98	12.98	33.125	24.945	300.1	0.006	6.23	103.9	5.6	0.54	3.3	0.12	0.70	0.26	2	220
10	ISL	12.68	12.68	33.142	25.017	293.4	0.030	6.21	102.9	5.9	0.57	3.7	0.14	0.70	0.23	10	
11		12.61	12.61	33.148	25.036	291.7	0.033	6.21	102.7	5.9	0.57	3.7	0.14	0.70	0.23	11	219
20	ISL	11.83	11.83	33.283	25.289	267.8	0.058	6.16	100.3	7.9	0.74	6.2	0.25	1.15	0.47	20	
21		11.75	11.75	33.299	25.316	265.3	0.061	6.15	100.0	8.1	0.76	6.5	0.27	1.19	0.50	21	218
30		11.48	11.48	33.363	25.416	256.0	0.084	5.92	95.8	9.0	0.86	8.0	0.41	0.68	0.42	30	217
40		11.43	11.43	33.412	25.463	251.7	0.109	5.81	93.9	9.8	0.91	8.6	0.52	0.32	0.26	40	216
49		11.43	11.42	33.465	25.504	248.0	0.132	5.66	91.5	10.6	0.97	9.7	0.58	0.29	0.28	49	215
50	ISL	11.41	11.40	33.467	25.510	247.5	0.134	5.62	90.8	10.7	0.98	9.9	0.56	0.28	0.28	50	
59		11.21	11.20	33.478	25.555	243.4	0.156	5.22	84.0	12.2	1.08	11.8	0.35	0.18	0.24	59	214
70		10.94	10.93	33.531	25.644	235.1	0.183	4.70	75.2	14.9	1.25	14.8	0.14	0.11	0.19	70	213
75	ISL	10.72	10.71	33.518	25.673	232.5	0.194	4.59	73.1	15.1	1.26	15.2	0.10	0.09	0.16	75	
85		10.23	10.22	33.503	25.746	225.7	0.217	4.36	68.7	15.9	1.30	16.0	0.06	0.05	0.11	85	212
99		9.73	9.72	33.636	25.934	208.0	0.248	3.65	56.9	21.8	1.61	20.8	0.02	0.01	0.05	100	211
100	ISL	9.70	9.69	33.646	25.947	206.8	0.250	3.62	56.4	22.1	1.62	21.0	0.02	0.01	0.05	101	
119		9.21	9.20	33.818	26.161	186.8	0.287	3.20	49.4	27.1	1.83	24.1	0.02	0.01	0.05	120	210
125	ISL	9.16	9.15	33.853	26.197	183.5	0.298	3.04	46.9	28.3	1.89	24.8	0.02	0.01	0.06	126	
139		9.08	9.06	33.914	26.258	178.0	0.324	2.72	41.9	30.7	2.00	26.2	0.02	0.01	0.08	140	209
150	ISL	8.95	8.93	33.953	26.309	173.3	0.343	2.59	39.8	32.2	2.05	27.0	0.02	0.01	0.07	151	
169		8.67	8.65	34.003	26.392	165.7	0.375	2.47	37.7	34.5	2.12	28.0	0.02	0.00	0.04	170	208
198		8.21	8.19	34.047	26.497	156.2	0.422	2.35	35.5	38.9	2.22	29.3	0.02	0.00	0.03	199	207
200	ISL	8.18	8.16	34.049	26.503	155.6	0.425	2.34	35.3	39.2	2.23	29.4	0.02			201	
229		7.79	7.77	34.069	26.577	149.0	0.469	2.17	32.5	43.8	2.34	30.9	0.01			230	206
250	ISL	7.46	7.44	34.068	26.624	144.7	0.500	2.08	30.9	47.1	2.41	31.9	0.01			252	
270		7.17	7.14	34.066	26.663	141.2	0.528	1.98	29.2	50.2	2.47	32.8	0.02			272	205
300	ISL	6.90	6.87	34.086	26.716	136.4	0.570	1.71	25.1	54.7	2.59	34.2	0.02			302	
318		6.76	6.73	34.098	26.745	133.9	0.594	1.53	22.4	57.4	2.66	35.1	0.02			320	204
377		6.16	6.13	34.102	26.827	126.6	0.671	1.16	16.7	67.3	2.85	38.0	0.02			379	203
400	ISL	5.90	5.87	34.103	26.861	123.5	0.700	1.05	15.0	71.2	2.91	38.9	0.02			403	
437		5.51	5.47	34.112	26.916	118.4	0.745	0.90	12.8	77.5	2.99	40.1	0.02			440	202
500	ISL	5.15	5.11	34.164	27.000	110.8	0.817	0.62	8.7	87.3	3.13	41.8	0.02			503	
515		5.06	5.02	34.177	27.021	108.9	0.833	0.55	7.7	89.6	3.16	42.2	0.02			519	201

RV ROGER REVELLE CALCOFI CRUISE 9901 STATION 80 90

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT TYPE
33 9.0 N	123 13.3 W	23/01/99	0406 UTC	4244 m	250 05 kn			1023.0 mb	14.2 C	13.3 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	13.96	13.96	32.952	24.614	331.6	0.000	6.01	102.2	2.7	0.29	0.1	0.00	0.23	0.08	0	
1	13.96	13.96	32.952	24.614	331.6	0.003	6.01	102.2	2.7	0.29	0.1	0.00	0.23	0.08	1	220
10 ISL	13.89	13.89	32.950	24.627	330.6	0.033	6.02	102.2	2.6	0.29	0.1	0.00	0.23	0.09	10	
15	13.84	13.84	32.948	24.636	329.9	0.050	6.02	102.1	2.6	0.29	0.1	0.00	0.23	0.10	15	219
20 ISL	13.80	13.80	32.944	24.641	329.5	0.066	6.02	102.0	2.6	0.29	0.1	0.00	0.24	0.10	20	
30	13.77	13.77	32.948	24.651	328.9	0.099	6.02	101.9	2.5	0.29	0.1	0.00	0.26	0.10	30	218
45	13.89	13.88	33.006	24.671	327.4	0.148	5.98	101.5	2.4	0.28	0.1	0.00	0.38	0.17	45	217
50 ISL	13.74	13.73	32.988	24.688	325.9	0.165	5.99	101.4	2.4	0.29	0.1	0.01	0.47	0.23	50	
55	13.56	13.55	32.967	24.709	324.0	0.181	5.99	101.0	2.5	0.30	0.2	0.03	0.54	0.28	55	216
65	13.35	13.34	32.971	24.754	319.9	0.213	5.96	100.0	2.7	0.34	0.3	0.08	0.44	0.23	65	215
75	12.73	12.72	32.953	24.863	309.8	0.245	6.00	99.4	3.1	0.40	1.0	0.16	0.33	0.18	75	214
84	12.54	12.53	33.060	24.983	298.6	0.272	5.76	95.1	3.6	0.47	2.2	0.09	0.10	0.10	84	213
95	12.09	12.08	33.061	25.069	290.5	0.304	5.93	97.0	4.3	0.53	2.9	0.16	0.22	0.15	95	212
100 ISL	11.82	11.81	33.098	25.149	283.1	0.319	5.67	92.2	5.5	0.63	4.6	0.12	0.17	0.13	100	
109	11.32	11.31	33.195	25.316	267.3	0.343	5.05	81.3	8.3	0.86	8.5	0.02	0.04	0.07	109	211
124	10.61	10.60	33.388	25.592	241.3	0.382	4.47	70.9	13.4	1.18	13.9	0.01	0.03	0.06	125	210
125 ISL	10.57	10.56	33.405	25.612	239.4	0.384	4.40	69.8	13.9	1.21	14.4	0.01	0.03	0.06	126	
144	9.96	9.94	33.703	25.949	207.6	0.426	3.24	50.8	23.2	1.72	22.0	0.01	0.01	0.07	145	209
150 ISL	9.85	9.83	33.745	26.000	202.9	0.439	3.09	48.3	24.6	1.79	23.0	0.01	0.01	0.07	151	
169	9.62	9.60	33.815	26.094	194.4	0.476	2.87	44.7	26.9	1.89	24.4	0.01	0.01	0.08	170	208
199	9.32	9.30	33.932	26.234	181.5	0.533	2.49	38.5	30.5	2.04	26.4	0.01	0.00	0.04	200	207
200 ISL	9.30	9.28	33.935	26.240	181.0	0.535	2.48	38.4	30.6	2.04	26.5	0.01			201	
229	8.74	8.72	34.012	26.390	167.2	0.585	2.36	36.1	35.0	2.16	28.2	0.01			230	206
250 ISL	8.46	8.43	34.051	26.464	160.5	0.620	2.20	33.4	38.1	2.25	29.3	0.01			251	
268	8.23	8.20	34.070	26.514	156.0	0.648	2.09	31.6	40.7	2.31	30.2	0.01			270	205
300 ISL	7.66	7.63	34.057	26.588	149.1	0.697	2.17	32.4	44.6	2.35	31.2	0.01			302	
318	7.36	7.33	34.046	26.622	146.0	0.723	2.21	32.7	46.8	2.38	31.8	0.01			320	204
378	6.84	6.80	34.099	26.736	135.8	0.808	1.50	22.0	56.8	2.66	35.1	0.01			380	203
400 ISL	6.47	6.43	34.082	26.772	132.4	0.837	1.43	20.7	61.1	2.73	36.3	0.01			403	
438	5.85	5.81	34.059	26.833	126.6	0.887	1.34	19.2	68.7	2.83	38.2	0.01			441	202
500 ISL	5.53	5.49	34.142	26.938	117.1	0.962	0.78	11.1	79.7	3.05	40.5	0.01			503	
514	5.46	5.42	34.161	26.961	115.0	0.978	0.65	9.2	82.2	3.10	41.0	0.01			517	201

RV ROGER REVELLE CALCOFI CRUISE 9901 STATION 80 100

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT TYPE
32 49.0 N	123 54.4 W	23/01/99	0912 UTC	4390 m	200 12 kn			1021.5 mb	14.9 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	14.69	14.69	33.126	24.595	333.4	0.000	5.90	101.9	2.4	0.27	0.1	0.00	0.15	0.04	0	
1	14.69	14.69	33.126	24.595	333.4	0.003	5.90	101.9	2.4	0.27	0.1	0.00	0.15	0.04	1	220
10 ISL	14.68	14.68	33.130	24.600	333.1	0.033	5.89	101.7	2.4	0.27	0.1	0.00	0.16	0.06	10	
15	14.67	14.67	33.132	24.604	332.9	0.050	5.89	101.7	2.4	0.27	0.1	0.00	0.17	0.07	15	219
20 ISL	14.63	14.63	33.136	24.616	331.9	0.067	5.90	101.8	2.3	0.27	0.1	0.00	0.19	0.08	20	
29	14.57	14.57	33.154	24.643	329.6	0.096	5.93	102.2	2.3	0.27	0.1	0.00	0.25	0.09	29	218
30 ISL	14.52	14.52	33.143	24.645	329.4	0.100	5.94	102.2	2.3	0.27	0.1	0.00	0.26	0.09	30	
44	14.03	14.02	33.102	24.716	323.0	0.145	6.04	102.9	2.6	0.30	0.1	0.00	0.38	0.14	44	217
50 ISL	14.24	14.23	33.273	24.805	314.8	0.164	5.93	101.6	2.7	0.30	0.1	0.03	0.51	0.21	50	
54	14.35	14.34	33.376	24.861	309.5	0.177	5.86	100.6	2.8	0.30	0.2	0.05	0.57	0.26	54	216
64	13.81	13.80	33.285	24.904	305.7	0.208	5.90	100.2	2.9	0.33	0.5	0.08	0.49	0.28	64	215
75	13.40	13.39	33.189	24.913	305.1	0.241	5.96	100.3	3.0	0.36	0.5	0.08	0.46	0.25	75	214
84	13.16	13.15	33.166	24.943	302.4	0.269	5.79	96.9	3.4	0.44	1.7	0.22	0.21	0.15	84	213
93	12.57	12.56	33.210	25.093	288.3	0.295	5.53	91.4	5.0	0.58	4.0	0.12	0.15	0.13	93	212
100 ISL	12.24	12.23	33.220	25.165	281.7	0.315	5.57	91.5	6.1	0.66	5.2	0.19	0.16	0.14	100	
108	11.96	11.95	33.239	25.232	275.4	0.337	5.65	92.2	7.4	0.75	6.5	0.28	0.17	0.15	108	211
124	11.55	11.53	33.396	25.430	256.8	0.380	5.29	85.7	10.8	1.00	10.7	0.07	0.07	0.13	125	210
125 ISL	11.52	11.50	33.406	25.444	255.6	0.383	5.25	85.0	10.9	1.01	10.9	0.07	0.07	0.13	126	
144	10.77	10.75	33.589	25.721	229.5	0.429	4.35	69.4	13.9	1.18	14.3	0.02	0.03	0.06	145	209
150 ISL	10.46	10.44	33.631	25.808	221.3	0.442	4.07	64.5	16.2	1.31	16.3	0.02	0.02	0.05	151	
167	9.64	9.62	33.731	26.025	200.9	0.478	3.46	53.9	23.0	1.67	21.8	0.01	0.00	0.03	168	208
199	8.91	8.89	33.878	26.257	179.2	0.539	3.54	54.3	27.2	1.74	23.5	0.01	0.00	0.02	200	207
200 ISL	8.89	8.87	33.882	26.264	178.6	0.541	3.53	54.1	27.4	1.75	23.6	0.01			201	
227	8.41	8.39	33.969	26.406	165.4	0.587	3.13	47.5	32.8	1.93	26.3	0.01			228	206
250 ISL	8.00	7.97	34.004	26.496	157.2	0.624	2.89	43.4	37.2	2.06	28.1	0.01			251	
268	7.70	7.67	34.016	26.549	152.3	0.652	2.73	40.7	40.5	2.15	29.3	0.01			269	205
300 ISL	7.20	7.17	34.019	26.623	145.5	0.700	2.45	36.1	46.3	2.30	31.3	0.01			302	
318	6.95	6.92	34.017	26.656	142.5	0.726	2.29	33.6	49.5	2.38	32.3	0.01			320	204
376	6.30	6.27	34.031	26.753	133.6	0.806	1.78	25.7	59.6	2.62	35.5	0.01			378	203
400 ISL	6.02	5.99	34.035	26.792	130.0	0.837	1.58	22.7	64.5	2.71	36.8	0.01			402	
437	5.62	5.58	34.044	26.849	124.8	0.885	1.30	18.5	71.9	2.84	38.6	0.01			440	202
500 ISL	5.23	5.19	34.074	26.919	118.5	0.961	0.97	13.7	81.2	2.99	40.6	0.01			503	
515	5.14	5.10	34.082	26.936	117.0	0.979	0.89	12.5	83.4	3.02	41.1	0.01			518	201

RV ROGER REVELLE CALCOFI CRUISE 9901 STATION 82 47

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT	TYPE
34 16.5 N	120 1.5 W	21/01/99	2335 UTC	577 m	310 22 kn	310 04 05	1	1020.1 mb	15.5 C	13.1 C		2/8	CC

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	13.83	13.83	33.524	25.082	286.9	0.000	5.68	96.6	5.2	0.50	2.7	0.12	0.92	0.40	0	
1	A	13.83	13.83	33.524	25.083	286.9	0.003	5.68	96.6	5.2	0.50	2.7	0.12	0.92	0.40	1	224
10		13.84	13.84	33.522	25.079	287.5	0.029	5.69	96.8	5.3	0.50	2.7	0.13	1.14	0.46	10	223
20		13.85	13.85	33.522	25.077	288.0	0.057	5.69	96.8	5.3	0.50	2.7	0.13	1.11	0.43	20	222
30		13.81	13.81	33.517	25.082	287.8	0.086	5.63	95.7	5.3	0.51	2.9	0.11	1.11	0.47	30	221
40		13.06	13.05	33.569	25.274	269.8	0.114	5.00	83.7	8.1	0.77	7.0	0.37	0.55	0.30	40	220
50		12.42	12.41	33.604	25.427	255.5	0.140	4.53	74.9	11.0	1.00	10.5	0.30	0.27	0.22	50	219
60		11.66	11.65	33.668	25.620	237.3	0.165	3.83	62.3	15.5	1.30	15.1	0.06	0.17	0.17	60	218
70		10.88	10.87	33.767	25.839	216.7	0.188	3.32	53.1	20.2	1.57	19.0	0.03	0.07	0.14	70	217
75	ISL	10.60	10.59	33.811	25.922	208.8	0.198	3.11	49.5	22.0	1.67	20.5	0.03	0.04	0.12	75	
84		10.24	10.23	33.878	26.037	198.1	0.217	2.81	44.4	24.7	1.82	22.6	0.02	0.02	0.08	84	216
100	ISL	10.01	10.00	33.956	26.137	188.9	0.248	2.48	39.0	27.9	1.98	24.6	0.02	0.01	0.07	101	
101		10.00	9.99	33.960	26.142	188.4	0.250	2.46	38.7	28.1	1.99	24.7	0.02	0.01	0.07	102	215
119		9.52	9.51	34.061	26.301	173.6	0.282	2.00	31.1	33.0	2.20	27.4	0.02	0.01	0.06	120	214
125	ISL	9.37	9.36	34.064	26.328	171.2	0.292	1.99	30.9	34.0	2.23	27.9	0.02	0.01	0.06	126	
138		9.10	9.09	34.054	26.364	167.9	0.315	1.96	30.2	35.5	2.25	28.5	0.01	0.01	0.07	139	213
150	ISL	8.96	8.94	34.058	26.390	165.7	0.335	1.92	29.5	36.7	2.28	28.9	0.01	0.01	0.06	151	
169		8.82	8.80	34.074	26.425	162.7	0.366	1.84	28.2	38.5	2.32	29.4	0.02	0.01	0.05	170	212
198		8.66	8.64	34.114	26.481	157.9	0.412	1.64	25.0	41.3	2.41	30.2	0.02	0.01	0.05	199	211
200	ISL	8.64	8.62	34.116	26.486	157.5	0.415	1.62	24.7	41.6	2.42	30.3	0.02			201	
229		8.37	8.35	34.135	26.543	152.5	0.460	1.39	21.1	46.5	2.54	31.1	0.01			230	210
250	ISL	8.22	8.19	34.147	26.575	149.8	0.492	1.30	19.7	48.2	2.58	31.8	0.01			252	
269		8.08	8.05	34.156	26.603	147.4	0.520	1.24	18.7	49.7	2.62	32.4	0.01			271	209
300	ISL	7.71	7.68	34.170	26.669	141.5	0.565	1.06	15.8	55.1	2.73	33.6	0.01			302	
318		7.49	7.46	34.177	26.706	138.1	0.590	0.95	14.1	58.5	2.80	34.2	0.01			320	208
378		6.93	6.89	34.192	26.797	130.1	0.671	0.75	11.0	66.9	2.93	35.5	0.01			381	207
400	ISL	6.74	6.70	34.200	26.829	127.3	0.699	0.62	9.1	71.2	3.01	35.5	0.01			403	
437		6.46	6.42	34.215	26.878	122.9	0.745	0.40	5.8	78.7	3.15	35.5	0.01			440	206
500	ISL	6.23	6.19	34.231	26.922	119.5	0.822	0.14	2.0	89.1	3.29	33.8	0.01			504	
511		6.22	6.17	34.232	26.924	119.5	0.835	0.12	1.7	90.2	3.30	33.4	0.01			515	205
527		6.21	6.16	34.233	26.926	119.5	0.854	0.11	1.6	90.8	3.30	33.0	0.01			531	204
543		6.20	6.15	34.237	26.931	119.2	0.873	0.18	2.6	88.9	3.26	34.0	0.01			547	203
559		6.19	6.14	34.243	26.937	118.9	0.892	0.17	2.5	90.1	3.27	33.5	0.01			563	202
565		6.19	6.14	34.239	26.934	119.3	0.899	0.18	2.6	89.9	3.27	33.6	0.02			569	201

A) SANTA BARBARA BASIN STATION.

RV ROGER REVELLE CALCOFI CRUISE 9901 STATION 83 40.6

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT	TYPE
34 13.5 N	119 24.7 W	21/01/99	1847 UTC	36 m	300 31 kn	290 04 04	1	1020.2 mb	14.8 C	11.5 C	11m	2/8	CS

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	14.22	14.22	33.495	24.979	296.8	0.000	5.81	99.6	3.5	0.37	1.0	0.07	0.63	0.27	0	
2	A	14.22	14.22	33.495	24.979	296.8	0.006	5.81	99.6	3.5	0.37	1.0	0.07	0.63	0.27	2	205
3		14.22	14.22	33.495	24.979	296.8	0.009									3	206
8	A	14.22	14.22	33.495	24.979	297.0	0.024	5.84	100.1	3.4	0.36	1.0	0.07	0.59	0.33	8	204
10	ISL	14.21	14.21	33.496	24.982	296.8	0.030	5.83	99.9	3.4	0.36	1.0	0.08	0.61	0.32	10	
16	A	14.19	14.19	33.497	24.987	296.4	0.047	5.80	99.4	3.5	0.36	1.1	0.09	0.67	0.27	16	203
20	ISL	14.10	14.10	33.505	25.012	294.2	0.059	5.74	98.2	3.7	0.38	1.5	0.12	0.62	0.28	20	
24	A	13.96	13.96	33.515	25.049	290.8	0.071	5.59	95.3	4.3	0.45	1.9	0.17	0.54	0.28	24	202
30	ISL	13.62	13.62	33.527	25.129	283.4	0.088	5.05	85.5	6.5	0.69	5.2	0.26	0.41	0.30	30	
31	A	13.56	13.56	33.529	25.142	282.1	0.091	4.96	83.9	6.9	0.73	5.8	0.27	0.39	0.30	31	201

A) PRIMARY PRODUCTIVITY SAMPLES WERE TAKEN FROM THESE LEVELS.

RV ROGER REVELLE CALCOFI CRUISE 9901 STATION 83 42

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT	TYPE
34 10.7 N	119 30.5 W	21/01/99	1446 UTC	137 m	350 26 kn			1019.9 mb	14.1 C	11.5 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	14.20	14.20	33.497	24.985	296.2	0.000	5.77	98.9	3.2	0.35	1.1	0.08	0.47	0.21	0	
3		14.20	14.20	33.497	24.985	296.3	0.009	5.77	98.9	3.2	0.35	1.1	0.08	0.47	0.21	3	212
10	ISL	14.20	14.20	33.495	24.984	296.6	0.030	5.75	98.5	3.3	0.36	1.1	0.08	0.47	0.22	10	
11		14.20	14.20	33.495	24.984	296.7	0.033	5.75	98.5	3.3	0.36	1.1	0.08	0.47	0.22	11	211
20		14.08	14.08	33.506	25.017	293.7	0.059	5.64	96.4	3.9	0.42	1.9	0.16	0.45	0.21	20	210
30		13.66	13.66	33.522	25.117	284.5	0.088	5.31	90.0	5.6	0.56	4.1	0.20	0.36	0.19	30	209
41		13.41	13.40	33.525	25.170	279.7	0.119	5.09	85.8	6.3	0.65	5.3	0.32	0.37	0.23	41	208
50		13.24	13.23	33.545	25.220	275.2	0.144	5.06	85.0	7.3	0.69	6.0	0.19	0.26	0.17	50	207
60		12.69	12.68	33.564	25.344	263.7	0.171	4.74	78.8	9.1	0.84	8.3	0.15	0.21	0.18	60	206
70		11.81	11.80	33.660	25.586	240.8	0.196	3.71	60.5	14.9	1.29	15.2	0.01	0.08	0.13	70	205
75	ISL	11.35	11.34	33.676	25.684	231.6	0.208	3.58	57.8	16.0	1.36	16.3	0.01	0.06	0.12	75	
80		10.94	10.93	33.693	25.771	223.4	0.219	3.54	56.7	16.9	1.41	16.9	0.01	0.05	0.11	80	204
94		10.45	10.44	33.833	25.966	205.1	0.249	2.98	47.3	22.7	1.73	21.2	0.02	0.02	0.09	94	203
100	ISL	10.27	10.26	33.873	26.028	199.3	0.262	2.82	44.6	24.3	1.81	22.3	0.02	0.01	0.08	101	
109		10.05	10.04	33.920	26.103	192.4	0.279	2.64	41.5	26.2	1.89	23.6	0.01	0.01	0.07	110	202
125	ISL	9.82	9.81	33.989	26.196	183.9	0.309	2.38	37.3	29.2	2.03	25.3	0.02	0.01	0.06	126	
129		9.76	9.75	34.006	26.219	181.7	0.317	2.31	36.1	29.9	2.06	25.7	0.02	0.01	0.06	130	201

RV ROGER REVELLE CALCOFI CRUISE 9901 STATION 83 51

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT	TYPE
33 52.7 N	120 8.0 W	21/01/99	0817 UTC	101 m	300 24 kn			1021.1 mb	15.2 C	14.1 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	14.09	14.09	33.517	25.023	292.6	0.000	5.63	96.3	4.4	0.43	2.1	0.07	0.46	0.19	0	
2	14.09	14.09	33.517	25.023	292.6	0.006	5.63	96.3	4.4	0.43	2.1	0.07	0.46	0.19	2	210
10 ISL	13.89	13.89	33.519	25.067	288.7	0.029	5.50	93.7	5.3	0.50	3.2	0.08	0.45	0.21	10	
11	13.85	13.85	33.520	25.076	287.9	0.032	5.48	93.3	5.5	0.51	3.4	0.08	0.45	0.21	11	209
20 ISL	13.59	13.59	33.536	25.141	281.9	0.058	5.27	89.2	6.5	0.61	4.7	0.11	0.41	0.22	20	
21	13.56	13.56	33.538	25.149	281.2	0.060	5.24	88.6	6.6	0.62	4.9	0.11	0.41	0.22	21	208
30	13.31	13.31	33.558	25.215	275.1	0.085	5.04	84.8	8.0	0.72	6.3	0.10	0.39	0.22	30	207
40	13.18	13.17	33.565	25.247	272.3	0.113	4.96	83.3	8.5	0.76	6.9	0.09	0.40	0.23	40	206
49	13.11	13.10	33.569	25.264	271.0	0.137	4.95	83.0	8.8	0.77	7.2	0.09	0.39	0.24	49	205
50 ISL	13.06	13.05	33.569	25.274	270.0	0.140	4.91	82.2	9.0	0.79	7.5	0.09	0.38	0.24	50	
58	12.50	12.49	33.591	25.401	258.1	0.161	4.45	73.7	11.1	0.98	10.4	0.10	0.31	0.21	58	204
70	11.52	11.51	33.714	25.682	231.6	0.191	3.74	60.7	17.4	1.35	15.9	0.07	0.18	0.16	70	203
75 ISL	10.90	10.89	33.780	25.845	216.2	0.202	3.36	53.8	20.6	1.53	18.5	0.06	0.12	0.14	75	
80	10.36	10.35	33.840	25.987	202.8	0.212	3.04	48.1	23.4	1.69	20.8	0.05	0.06	0.12	80	202
94	10.30	10.29	33.869	26.020	199.9	0.240	2.95	46.6	24.9	1.78	22.0	0.04	0.04	0.11	94	201

RV ROGER REVELLE CALCOFI CRUISE 9901 STATION 83 55

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT	TYPE
33 44.7 N	120 24.6 W	21/01/99	0439 UTC	969 m	260 12 kn			1020.9 mb	14.1 C	13.6 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	14.15	14.15	33.507	25.003	294.5	0.000	5.95	101.9	3.7	0.35	0.9	0.03	0.39	0.15	0	
2	14.15	14.15	33.507	25.003	294.5	0.006	5.95	101.9	3.7	0.35	0.9	0.03	0.39	0.15	2	220
10 ISL	14.14	14.14	33.507	25.005	294.6	0.029	5.95	101.9	3.7	0.35	0.9	0.03	0.37	0.15	10	
11	14.14	14.14	33.507	25.005	294.6	0.032	5.95	101.9	3.7	0.35	0.9	0.03	0.37	0.15	11	219
20	13.94	13.94	33.515	25.053	290.3	0.059	5.94	101.3	3.8	0.46	1.2	0.04	0.44	0.19	20	218
30	12.93	12.93	33.549	25.284	268.5	0.087	5.53	92.3	7.1	0.63	5.2	0.17	0.60	0.34	30	217
41	11.75	11.74	33.615	25.562	242.4	0.115	4.71	76.7	12.6	1.04	11.4	0.21	0.52	0.36	41	216
50	10.81	10.80	33.683	25.785	221.3	0.136	3.89	62.1	18.4	1.39	17.3	0.06	0.26	0.28	50	215
60	10.29	10.28	33.748	25.927	208.0	0.157	3.45	54.5	22.3	1.60	20.4	0.02	0.14	0.20	60	214
71	9.93	9.92	33.796	26.025	198.8	0.179	3.21	50.3	24.8	1.72	22.1	0.01	0.05	0.18	71	213
75 ISL	9.85	9.84	33.804	26.045	197.0	0.187	3.18	49.8	25.3	1.74	22.4	0.01	0.05	0.17	75	
85	9.67	9.66	33.826	26.092	192.7	0.207	3.10	48.3	26.5	1.79	23.2	0.02	0.04	0.14	85	212
99	9.39	9.38	33.905	26.200	182.7	0.233	2.74	42.5	30.0	1.95	25.0	0.01	0.01	0.12	100	211
100 ISL	9.38	9.37	33.907	26.203	182.4	0.235	2.73	42.3	30.1	1.95	25.1	0.01	0.01	0.12	101	
120	9.23	9.22	33.940	26.254	178.0	0.271	2.62	40.5	31.7	2.00	25.9	0.01	0.01	0.10	121	210
125 ISL	9.23	9.22	33.963	26.272	176.4	0.280	2.53	39.1	32.1	2.03	26.2	0.01	0.01	0.09	126	
140	9.23	9.21	34.035	26.328	171.4	0.306	2.24	34.6	33.4	2.14	27.2	0.01	0.01	0.08	141	209
150 ISL	9.11	9.09	34.053	26.362	168.4	0.323	2.16	33.3	34.5	2.18	27.7	0.01	0.01	0.08	151	
169	8.78	8.76	34.071	26.428	162.4	0.354	2.07	31.7	37.2	2.25	28.7	0.01	0.00	0.07	170	208
200	8.27	8.25	34.130	26.553	150.9	0.403	1.74	26.3	42.9	2.42	30.9	0.01	0.00	0.05	201	207
229	7.95	7.93	34.156	26.622	144.8	0.446	1.50	22.5	47.4	2.54	32.3	0.01			230	206
250 ISL	7.69	7.67	34.169	26.671	140.5	0.476	1.36	20.3	50.9	2.62	33.3	0.01			252	
269	7.48	7.45	34.179	26.709	137.1	0.502	1.25	18.6	53.9	2.68	34.1	0.01			271	205
300 ISL	7.26	7.23	34.191	26.750	133.6	0.544	1.11	16.4	57.0	2.76	34.9	0.01			302	
319	7.17	7.14	34.197	26.767	132.2	0.569	1.04	15.4	58.5	2.80	35.3	0.01			321	204
378	6.91	6.87	34.220	26.822	127.8	0.646	0.84	12.3	63.4	2.89	36.6	0.01			381	203
400 ISL	6.79	6.75	34.229	26.845	125.8	0.674	0.76	11.1	65.5	2.93	37.2	0.01			403	
438	6.56	6.52	34.245	26.889	122.0	0.721	0.63	9.2	69.3	3.01	38.1	0.01			441	202
500 ISL	6.21	6.17	34.268	26.953	116.5	0.795	0.49	7.1	75.6	3.11	39.2	0.01			504	
515	6.13	6.08	34.274	26.969	115.2	0.812	0.46	6.6	77.1	3.13	39.5	0.01			519	201

RV ROGER REVELLE CALCOFI CRUISE 9901 STATION 83 60

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT	TYPE
33 34.7 N	120 45.3 W	21/01/99	0037 UTC	1375 m	280 17 kn	270 07 09	1	1020.8 mb	15.2 C	13.9 C		6/8	CS

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	13.20	13.20	33.550	25.230	272.8	0.000	6.27	105.3	4.9	0.49	2.6	0.10	1.70	0.60	0	
1	13.20	13.20	33.550	25.230	272.9	0.003	6.27	105.3	4.9	0.49	2.6	0.10	1.70	0.60	1	220
10	13.19	13.19	33.550	25.233	272.9	0.027	6.28	105.4	4.7	0.49	2.6	0.10	1.64	0.61	10	219
20	12.94	12.94	33.545	25.279	268.8	0.054	6.30	105.2	4.8	0.50	2.8	0.12	2.03	0.84	20	218
30	12.68	12.68	33.537	25.324	264.8	0.081	6.27	104.1	5.3	0.55	3.5	0.16	1.91	0.93	30	217
40	12.52	12.51	33.539	25.357	261.9	0.107	6.11	101.1	5.6	0.62	4.3	0.25	1.34	0.86	40	216
50	12.50	12.49	33.559	25.376	260.3	0.133	6.01	99.5	5.8	0.65	4.5	0.26	1.00	0.74	50	215
60	12.36	12.35	33.576	25.417	256.7	0.159	5.89	97.2	6.1	0.71	5.2	0.33	0.34	0.35	60	214
70	11.26	11.25	33.639	25.671	232.6	0.184	4.31	69.5	15.2	1.26	14.9	0.06	0.07	0.28	70	213
75 ISL	10.81	10.80	33.676	25.780	222.3	0.195	3.89	62.1	18.2	1.42	17.6	0.05	0.06	0.26	75	
85	10.12	10.11	33.748	25.956	205.7	0.217	3.44	54.1	22.2	1.62	20.6	0.02	0.04	0.23	85	212
99	9.69	9.68	33.823	26.087	193.5	0.245	3.10	48.4	25.5	1.78	23.0	0.02	0.02	0.20	100	211
100 ISL	9.66	9.65	33.828	26.096	192.7	0.246	3.09	48.2	25.7	1.79	23.1	0.02	0.02	0.20	101	
119	9.11	9.10	33.911	26.250	178.3	0.282	2.87	44.2	29.9	1.92	25.3	0.02	0.01	0.12	120	210
125 ISL	8.96	8.95	33.939	26.296	174.1	0.292	2.77	42.5	31.4	1.98	26.0	0.02	0.01	0.11	126	
139	8.63	8.62	33.996	26.393	165.1	0.316	2.54	38.7	34.9	2.10	27.6	0.02	0.01	0.10	140	209
150 ISL	8.39	8.37	34.018	26.447	160.1	0.334	2.46	37.3	37.0	2.15	28.4	0.02	0.01	0.08	151	
169	8.04	8.02	34.037	26.514	153.9	0.364	2.38	35.8	40.2	2.22	29.5	0.02	0.00	0.06	170	208
199	7.69	7.67	34.067	26.590	147.2	0.409	2.11	31.5	44.8	2.35	31.1	0.01	0.00	0.05	200	207
200 ISL	7.68	7.66	34.068	26.592	147.0	0.410	2.10	31.3	45.0	2.35	31.2	0.01			201	
228	7.42	7.40	34.096	26.651	141.8	0.451	1.80	26.7	49.4	2.49	32.6	0.01			229	206
250 ISL	7.16	7.14	34.106	26.696	137.8	0.482	1.62	23.9	53.1	2.58	33.8	0.01			252	
268	6.97	6.94	34.114	26.729	134.9	0.506	1.49	21.9	56.0	2.65	34.7	0.01			270	205
300 ISL	6.80	6.77	34.145	26.776	130.7	0.549	1.22	17.8	60.0	2.76	35.9	0.01			302	
318	6.74	6.71	34.164	26.800	128.8	0.572	1.08	15.8	62.1	2.82	36.4	0.01			320	204
377	6.45	6.42	34.218	26.881	121.7	0.646	0.71	10.3	69.2	2.98	38.1	0.01			380	203
400 ISL	6.34	6.30	34.243	26.916	118.7	0.673	0.58	8.4	72.1	3.03	38.7	0.01			403	
437	6.17	6.13	34.279	26.966	114.3	0.717	0.42	6.1	76.5	3.11	39.5	0.01			440	202
500 ISL	5.84	5.80	34.300	27.025	109.3	0.787	0.35	5.0	82.5	3.18	40.6	0.01			504	
515	5.76	5.72	34.305	27.039	108.1	0.803	0.33	4.7	83.9	3.20	40.9	0.01			519	201

RV ROGER REVELLE CALCOFI CRUISE 9901 STATION 83 70

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT	TYPE
33 14.7 N	121 26.6 W	20/01/99	2018 UTC	3803 m	290 15 kn	260 05 06	1	1022.9 mb	15.1 C	14.1 C	11m	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	12.69	12.69	33.377	25.197	276.0	0.000	6.35	105.4	5.8	0.51	2.8	0.17	1.49	0.50	0	
1		12.70	12.70	33.378	25.196	276.1	0.003									1	222
2		12.70	12.70	33.376	25.194	276.3	0.006									2	221
2		12.69	12.69	33.377	25.197	276.1	0.006	6.35	105.4	5.8	0.51	2.8	0.17	1.49	0.50	2	220
10	ISL	12.65	12.65	33.378	25.206	275.4	0.028	6.34	105.1	5.8	0.50	2.8	0.18	1.64	0.60	10	
11		12.64	12.64	33.379	25.209	275.2	0.030	6.34	105.1	5.8	0.50	2.8	0.18	1.66	0.62	11	219
20	ISL	12.57	12.57	33.396	25.236	272.9	0.055	6.31	104.5	5.9	0.53	3.2	0.22	1.48	0.62	20	
21		12.56	12.56	33.398	25.239	272.6	0.058	6.31	104.5	5.9	0.53	3.2	0.22	1.45	0.62	21	218
30	ISL	12.44	12.44	33.399	25.263	270.5	0.082	6.25	103.2	6.0	0.55	3.5	0.24	1.36	0.67	30	
31		12.42	12.42	33.399	25.267	270.1	0.085	6.24	103.0	6.0	0.55	3.6	0.24	1.34	0.67	31	217
40		12.28	12.27	33.401	25.296	267.7	0.109	6.03	99.2	6.5	0.63	4.6	0.39	0.82	0.54	40	216
50		12.22	12.21	33.436	25.335	264.2	0.136	5.84	96.0	7.0	0.71	5.8	0.51	0.40	0.30	50	215
61		12.17	12.16	33.497	25.392	259.1	0.164	5.89	96.8	7.6	0.75	6.2	0.44	0.38	0.30	61	214
71		12.07	12.06	33.540	25.444	254.3	0.190	5.84	95.7	7.9	0.80	6.7	0.46	0.30	0.27	71	213
75	ISL	12.04	12.03	33.553	25.460	252.9	0.200	5.78	94.7	8.1	0.83	7.1	0.47	0.27	0.28	75	
84		11.88	11.87	33.585	25.515	247.9	0.223	5.46	89.2	9.7	0.94	9.0	0.50	0.19	0.30	84	212
100		10.88	10.87	33.680	25.772	223.7	0.261	3.94	63.0	17.9	1.39	17.1	0.04	0.07	0.25	101	211
119		9.61	9.60	33.755	26.047	197.7	0.301	3.34	52.0	23.5	1.70	22.2	0.03	0.03	0.17	120	210
125	ISL	9.36	9.35	33.800	26.123	190.5	0.312	3.24	50.2	25.2	1.76	23.3	0.03	0.02	0.13	126	
139		8.96	8.95	33.904	26.269	176.9	0.338	3.08	47.3	28.7	1.87	25.1	0.02	0.01	0.06	140	209
150	ISL	8.75	8.73	33.952	26.340	170.4	0.357	2.95	45.1	30.9	1.94	26.1	0.02	0.01	0.06	151	
169		8.51	8.49	33.998	26.413	163.7	0.389	2.79	42.4	33.8	2.02	27.1	0.02	0.01	0.07	170	208
200		8.20	8.18	34.016	26.475	158.3	0.439	2.80	42.3	36.3	2.07	27.9	0.01	0.00	0.04	201	207
227		7.95	7.93	34.025	26.519	154.5	0.481	2.68	40.2	38.8	2.13	28.9	0.01			228	206
250	ISL	7.69	7.67	34.048	26.575	149.4	0.516	2.40	35.8	42.8	2.26	30.4	0.01			251	
268		7.47	7.44	34.072	26.626	144.8	0.542	2.13	31.6	46.5	2.38	31.7	0.01			270	205
300	ISL	7.13	7.10	34.117	26.709	137.3	0.587	1.61	23.7	53.4	2.58	34.0	0.01			302	
318		6.95	6.92	34.142	26.754	133.2	0.612	1.33	19.5	57.4	2.69	35.2	0.01			320	204
378		6.32	6.29	34.202	26.886	121.2	0.688	0.74	10.7	70.4	2.96	38.5	0.01			380	203
400	ISL	6.18	6.14	34.224	26.921	118.0	0.714	0.61	8.8	73.5	3.03	39.1	0.01			403	
437		6.00	5.96	34.258	26.971	113.7	0.757	0.45	6.5	77.6	3.11	39.9	0.01			440	202
500	ISL	5.69	5.65	34.291	27.036	108.1	0.827	0.35	5.0	84.3	3.18	41.0	0.01			503	
515		5.62	5.58	34.299	27.052	106.8	0.843	0.33	4.7	85.9	3.20	41.2	0.01			519	201

RV ROGER REVELLE CALCOFI CRUISE 9901 STATION 83 80

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT	TYPE
32 54.7 N	122 7.7 W	20/01/99	1135 UTC	4186 m	280 18 kn			1021.5 mb	14.4 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	12.58	12.58	33.108	25.010	293.8	0.000	6.12	101.2	4.6	0.51	2.1	0.15	0.55	0.25	0	
1		12.58	12.58	33.108	25.010	293.8	0.003	6.12	101.2	4.6	0.51	2.1	0.15	0.55	0.25	1	220
10		12.51	12.51	33.107	25.023	292.8	0.029	6.12	101.0	4.5	0.48	2.1	0.15	0.62	0.31	10	219
20		12.33	12.33	33.142	25.085	287.2	0.058	6.15	101.2	4.9	0.49	2.5	0.16	0.95	0.53	20	218
30	ISL	12.18	12.18	33.136	25.109	285.2	0.087	6.08	99.7	5.3	0.54	3.1	0.21	0.92	0.54	30	
31		12.16	12.16	33.135	25.112	284.9	0.090	6.07	99.5	5.3	0.55	3.2	0.22	0.92	0.54	31	217
40		11.94	11.93	33.137	25.155	281.0	0.115	5.93	96.7	6.0	0.63	4.5	0.32	0.42	0.26	40	216
50		11.88	11.87	33.194	25.211	276.0	0.143	5.78	94.2	6.7	0.69	5.5	0.28	0.28	0.21	50	215
61		11.57	11.56	33.283	25.338	264.1	0.173	5.63	91.2	9.5	0.89	8.8	0.28	0.28	0.24	61	214
70		11.74	11.73	33.399	25.396	258.8	0.196	5.48	89.1	9.4	0.89	8.9	0.26	0.22	0.22	70	213
75	ISL	11.65	11.64	33.429	25.437	255.1	0.209	5.22	84.8	10.1	0.95	10.0	0.19	0.17	0.20	75	
85		11.23	11.22	33.483	25.555	244.0	0.234	4.52	72.8	13.0	1.16	13.6	0.03	0.08	0.15	85	212
100		10.36	10.35	33.661	25.848	216.4	0.269	3.37	53.3	21.3	1.63	20.6	0.01	0.03	0.12	100	211
120		9.94	9.93	33.759	25.996	202.7	0.311	2.99	46.9	25.0	1.80	23.0	0.01	0.01	0.11	121	210
125	ISL	9.71	9.70	33.776	26.047	197.9	0.321	3.07	47.9	25.5	1.80	23.2	0.01	0.01	0.10	126	
140		9.06	9.04	33.829	26.194	184.0	0.349	3.32	51.1	26.9	1.79	23.8	0.01	0.00	0.06	141	209
150	ISL	8.97	8.95	33.891	26.257	178.2	0.367	3.14	48.2	28.7	1.87	24.9	0.01	0.00	0.06	151	
169		8.81	8.79	33.963	26.339	170.8	0.401	2.66	40.7	32.5	2.04	27.0	0.01	0.00	0.05	170	208
198		8.40	8.38	34.008	26.438	161.9	0.449	2.51	38.1	36.8	2.15	28.4	0.01	0.00	0.04	199	207
200	ISL	8.37	8.35	34.011	26.445	161.2	0.452	2.50	37.9	37.0	2.15	28.5	0.01			201	
228		7.98	7.96	34.040	26.526	153.8	0.496	2.41	36.2	40.2	2.21	29.5	0.01			229	206
250	ISL	7.53	7.51	34.037	26.590	148.0	0.529	2.48	36.9	43.4	2.24	30.2	0.00			251	
269		7.14	7.11	34.029	26.638	143.5	0.557	2.52	37.1	46.4	2.28	30.9	0.00			271	205
300	ISL	6.75	6.72	34.029	26.692	138.7	0.601	2.25	32.9	51.6	2.41	32.7	0.00			302	
317		6.58	6.55	34.031	26.716	136.5	0.624	2.04	29.7	54.7	2.50	33.9	0.00			319	204
379		5.85	5.82	34.061	26.834	125.7	0.705	1.31	18.7	68.2	2.80	37.9	0.00			381	203
400	ISL	5.68	5.65	34.071	26.863	123.1	0.732	1.15	16.4	71.9	2.87	38.9	0.00			403	
437		5.44	5.40	34.092	26.908	119.0	0.776	0.92	13.0	77.8	2.98	40.4	0.00			440	202
500	ISL	5.12	5.08	34.150	26.992	111.5	0.849	0.58	8.2	87.8	3.12	41.8	0.00			503	
514		5.05	5.01	34.163	27.011	109.8	0.864	0.51	7.2	90.0	3.15	42.1	0.00			518	201

RV ROGER REVELLE CALCOFI CRUISE 9901 STATION 83 90

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT	TYPE
32 34.7 N	122 48.7 W	20/01/99	0621 UTC	4279 m	260	19 kn			1021.7 mb	16.5 C	15.2 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	15.26	15.26	33.376	24.664	326.7	0.000	5.81	101.7	2.4	0.24	0.1	0.00	0.13	0.05	0	
2		15.26	15.26	33.376	24.664	326.8	0.007	5.81	101.7	2.4	0.24	0.1	0.00	0.13	0.05	2	220
10	ISL	15.25	15.25	33.375	24.666	326.9	0.033	5.80	101.5	2.4	0.23	0.1	0.00	0.13	0.04	10	
16		15.25	15.25	33.375	24.666	327.0	0.052	5.80	101.5	2.4	0.23	0.1	0.00	0.14	0.04	16	219
20	ISL	15.18	15.18	33.365	24.674	326.4	0.065	5.81	101.5	2.4	0.23	0.1	0.00	0.14	0.04	20	
30		15.00	15.00	33.344	24.697	324.5	0.098	5.82	101.3	2.3	0.24	0.1	0.00	0.15	0.05	30	218
45		15.01	15.00	33.362	24.709	323.8	0.147	5.82	101.3	2.2	0.24	0.1	0.00	0.22	0.09	45	217
50	ISL	14.92	14.91	33.346	24.717	323.3	0.163	5.84	101.5	2.2	0.25	0.1	0.00	0.30	0.15	50	
55		14.83	14.82	33.338	24.730	322.1	0.179	5.85	101.4	2.3	0.25	0.1	0.00	0.39	0.21	55	216
64		13.65	13.64	33.084	24.781	317.4	0.208	6.00	101.4	2.4	0.31	0.1	0.01	0.53	0.30	64	215
74		13.51	13.50	33.082	24.808	315.1	0.239	5.93	99.9	2.7	0.34	0.3	0.11	0.50	0.28	74	214
75	ISL	13.51	13.50	33.092	24.816	314.4	0.242	5.92	99.8	2.7	0.34	0.4	0.13	0.48	0.27	75	
84		13.49	13.48	33.179	24.887	307.8	0.270	5.84	98.4	3.0	0.38	0.9	0.24	0.25	0.17	84	213
95		13.56	13.55	33.247	24.926	304.4	0.304	5.85	98.8	3.1	0.37	0.8	0.20	0.19	0.14	95	212
100	ISL	13.67	13.66	33.334	24.971	300.3	0.319	5.77	97.7	3.2	0.37	1.0	0.15	0.17	0.14	100	
109		13.79	13.77	33.498	25.074	290.8	0.346	5.58	94.8	3.3	0.36	1.6	0.07	0.15	0.14	109	211
124		13.36	13.34	33.615	25.252	274.2	0.388	5.32	89.6	4.8	0.47	3.6	0.02	0.08	0.08	125	210
125	ISL	13.32	13.30	33.628	25.270	272.5	0.391	5.30	89.2	4.9	0.48	3.8	0.02	0.08	0.08	126	
145		12.30	12.28	33.841	25.636	238.1	0.442	4.86	80.2	8.3	0.72	8.4	0.01	0.03	0.04	146	209
150	ISL	11.86	11.84	33.845	25.723	229.9	0.454	4.75	77.7	9.6	0.81	9.9	0.01	0.02	0.03	151	
169		10.28	10.26	33.837	26.000	203.5	0.495	4.41	69.7	15.8	1.20	15.8	0.00	0.01	0.02	170	208
199		9.60	9.58	33.946	26.200	185.0	0.553	4.43	69.0	30.0	1.86	25.1	0.00	0.00	0.02	200	207
200	ISL	9.57	9.55	33.947	26.205	184.4	0.555	4.39	68.3	30.0	1.86	25.1	0.00			201	
229		8.78	8.76	33.970	26.350	170.9	0.606	3.20	48.9	30.1	1.86	25.2	0.00			230	206
250	ISL	8.43	8.40	33.988	26.419	164.7	0.642	3.35	50.8	31.2	1.84	25.3	0.00			251	
268		8.20	8.17	34.002	26.465	160.5	0.671	3.48	52.5	33.1	1.83	25.4	0.00			269	205
300	ISL	7.75	7.72	34.022	26.547	153.0	0.721	2.98	44.5	39.1	2.06	28.2	0.00			302	
318		7.50	7.47	34.032	26.591	149.0	0.748	2.59	38.5	43.2	2.22	30.1	0.00			320	204
378		6.61	6.58	34.059	26.735	135.7	0.834	1.73	25.2	56.8	2.59	35.0	0.00			380	203
400	ISL	6.36	6.32	34.063	26.771	132.4	0.863	1.55	22.4	60.8	2.68	36.2	0.00			402	
438		6.01	5.97	34.073	26.824	127.6	0.913	1.30	18.7	67.0	2.80	37.8	0.00			441	202
500	ISL	5.64	5.60	34.119	26.906	120.2	0.989	0.90	12.8	76.2	2.97	40.0	0.00			503	
514		5.56	5.52	34.129	26.924	118.6	1.006	0.81	11.5	78.3	3.01	40.5	0.00			517	201

RV ROGER REVELLE CALCOFI CRUISE 9901 STATION 83 100

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT	TYPE
32 14.7 N	123 29.5 W	20/01/99	0042 UTC	4161 m	250	16 kn	250 08 08	1	1022.1 mb	16.7 C	15.5 C		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	15.16	15.16	33.348	24.665	326.7	0.000	5.82	101.6	2.2	0.25	0.1	0.00	0.11	0.03	0	
2		15.16	15.16	33.348	24.665	326.8	0.007	5.82	101.6	2.2	0.25	0.1	0.00	0.11	0.03	2	220
10	ISL	15.19	15.19	33.383	24.685	325.0	0.033	5.81	101.5	2.1	0.25	0.1	0.00	0.12	0.04	10	
15		15.23	15.23	33.419	24.704	323.4	0.049	5.80	101.4	2.0	0.24	0.1	0.00	0.12	0.04	15	219
20	ISL	15.29	15.29	33.453	24.718	322.3	0.065	5.78	101.2	2.0	0.23	0.1	0.00	0.12	0.04	20	
29		15.43	15.43	33.524	24.742	320.3	0.094	5.75	101.0	2.0	0.22	0.1	0.00	0.12	0.04	29	218
30	ISL	15.46	15.46	33.534	24.743	320.2	0.097	5.74	100.9	2.0	0.22	0.1	0.00	0.12	0.04	30	
45		15.83	15.82	33.675	24.769	318.2	0.145	5.68	100.7	2.0	0.20	0.0	0.00	0.20	0.08	45	217
50	ISL	15.89	15.88	33.695	24.771	318.1	0.161	5.68	100.8	2.0	0.19	0.0	0.00	0.21	0.09	50	
55		15.97	15.96	33.721	24.774	318.1	0.177	5.69	101.2	2.0	0.19	0.0	0.00	0.22	0.10	55	216
64		16.27	16.26	33.831	24.790	316.8	0.205	5.62	100.6	2.0	0.18	0.0	0.00	0.23	0.10	64	215
74		16.29	16.28	33.834	24.788	317.4	0.237	5.62	100.6	2.0	0.18	0.1	0.00	0.22	0.09	74	214
75	ISL	16.31	16.30	33.840	24.788	317.4	0.240	5.62	100.7	2.0	0.18	0.1	0.00	0.22	0.09	75	
85		16.55	16.54	33.920	24.795	317.2	0.272	5.58	100.5	1.9	0.16	0.0	0.00	0.22	0.12	85	213
94		16.76	16.74	33.986	24.797	317.3	0.301	5.55	100.4	1.9	0.16	0.1	0.00	0.20	0.12	94	212
100	ISL	16.66	16.64	33.977	24.814	315.9	0.319	5.52	99.6	2.0	0.16	0.2	0.03	0.19	0.12	100	
109		16.52	16.50	34.007	24.870	310.8	0.348	5.49	98.8	2.2	0.18	0.3	0.07	0.17	0.13	109	211
124		15.00	14.98	33.834	25.078	291.2	0.393	5.53	96.5	2.8	0.25	0.8	0.09	0.15	0.14	125	210
125	ISL	14.97	14.95	33.840	25.089	290.1	0.396	5.52	96.3	2.8	0.25	0.8	0.09	0.15	0.14	126	
144		14.38	14.36	33.965	25.313	269.4	0.449	5.21	89.8	4.0	0.37	2.9	0.02	0.06	0.06	145	209
150	ISL	13.74	13.72	33.901	25.397	261.3	0.465	5.10	86.8	5.2	0.48	4.5	0.02	0.05	0.06	151	
170		11.47	11.45	33.695	25.679	234.4	0.514	4.74	76.8	10.0	0.88	10.4	0.01	0.03	0.04	171	208
199		10.19	10.17	33.831	26.011	203.1	0.578	4.30	67.8	16.6	1.26	16.6	0.01	0.01	0.02	200	207
200	ISL	10.15	10.13	33.835	26.021	202.1	0.580	4.28	67.4	16.9	1.27	16.8	0.01			201	
228		9.22	9.19	33.924	26.245	181.1	0.634	3.70	57.1	24.7	1.63	22.0	0.00			229	206
250	ISL	8.75	8.72	33.972	26.357	170.7	0.672	3.57	54.6	28.4	1.74	23.8	0.00			251	
268		8.45	8.42	33.998	26.424	164.6	0.702	3.51	53.3	30.9	1.80	24.7	0.00			269	205
300	ISL	7.94	7.91	34.016	26.515	156.2	0.754	3.03	45.5	37.1	2.03	27.6	0.00			302	
318		7.68	7.65	34.019	26.555	152.5	0.782	2.73	40.7	40.7	2.16	29.3	0.00			320	204
378		6.83	6.79	34.039	26.690	140.1	0.869	2.12	31.0	51.2	2.46	33.1	0.00			380	203
400	ISL	6.59	6.55	34.048	26.729	136.5	0.900	1.88	27.3	55.2	2.56	34.5	0.00			402	
438		6.22	6.18	34.067	26.793	130.7	0.951	1.48	21.3	62.5	2.73	36.7	0.00			441	202
500	ISL	5.67	5.63	34.121	26.904	120.4	1.028	0.93	13.2	75.5	2.97	39.7	0.00			503	
514		5.55	5.51	34.134	26.929	118.1	1.045	0.80	11.4	78.4	3.03	40.4	0.00			517	201

RV ROGER REVELLE CALCOFI CRUISE 9901 STATION 83 110

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT	TYPE
31 54.7 N	124 10.2 W	19/01/99	1800 UTC	4204 m	250	15 kn	280 08 12	1	1023.0 mb	16.5 c	15.0 c	38m	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	15.41	15.41	33.495	24.723	321.2	0.000	5.75	101.0	2.2	0.23	0.1	0.00	0.12	0.04	0	
2		15.41	15.41	33.496	24.724	321.1	0.006									2	224
3	A	15.41	15.41	33.495	24.723	321.2	0.010	5.75	101.0	2.2	0.23	0.1	0.00	0.12	0.04	3	223
10	ISL	15.42	15.42	33.496	24.722	321.6	0.032	5.78	101.5	2.1	0.23	0.1	0.00	0.12	0.04	10	
16		15.42	15.42	33.497	24.723	321.7	0.051	5.79	101.7	2.1	0.22	0.1	0.00	0.12	0.04	16	222
20	ISL	15.50	15.50	33.534	24.734	320.8	0.064	5.77	101.5	2.1	0.21	0.1	0.00	0.12	0.04	20	
28	A	15.70	15.70	33.619	24.755	319.0	0.090	5.71	100.9	2.1	0.20	0.1	0.00	0.13	0.05	28	221
30	ISL	15.74	15.74	33.635	24.758	318.7	0.096	5.71	101.0	2.1	0.20	0.1	0.00	0.14	0.05	30	
42		15.90	15.89	33.694	24.768	318.2	0.134	5.70	101.2	2.1	0.19	0.1	0.00	0.17	0.07	42	220
50	ISL	15.88	15.87	33.687	24.767	318.5	0.160	5.69	101.0	2.1	0.20	0.1	0.01	0.18	0.08	50	
55	A	15.87	15.86	33.682	24.766	318.8	0.176	5.68	100.8	2.1	0.20	0.1	0.01	0.19	0.09	55	219
64		15.89	15.88	33.689	24.767	319.0	0.205	5.67	100.6	2.1	0.20	0.1	0.01	0.19	0.08	64	218
71		15.91	15.90	33.693	24.766	319.3	0.227	5.68	100.9	2.0	0.20	0.1	0.01	0.20	0.09	71	217
75	ISL	15.65	15.64	33.635	24.780	318.1	0.240	5.69	100.5	2.0	0.22	0.1	0.02	0.19	0.09	75	
83	A	15.09	15.08	33.507	24.805	315.9	0.265	5.72	99.8	2.1	0.26	0.1	0.04	0.17	0.09	83	216
91		15.00	14.99	33.469	24.796	317.0	0.290	5.72	99.6	2.1	0.27	0.1	0.04	0.17	0.10	91	215
98		15.03	15.02	33.477	24.795	317.2	0.313	5.73	99.8	2.1	0.27	0.1	0.04	0.17	0.10	98	214
100	ISL	15.40	15.38	33.594	24.805	316.5	0.319	5.68	99.8	2.1	0.25	0.1	0.04	0.17	0.10	100	
106	A	16.52	16.50	33.965	24.837	313.8	0.338	5.52	99.4	2.0	0.18	0.1	0.03	0.15	0.10	106	213
120		15.41	15.39	33.700	24.885	309.5	0.381	5.62	98.8	2.2	0.24	0.3	0.13	0.11	0.09	121	212
125	ISL	15.22	15.20	33.757	24.971	301.5	0.397	5.57	97.6	2.5	0.25	0.6	0.12	0.11	0.10	126	
131		14.97	14.95	33.836	25.086	290.6	0.414	5.50	95.9	2.9	0.27	1.1	0.09	0.10	0.10	132	211
143		13.90	13.88	33.738	25.238	276.3	0.448	5.42	92.4	3.7	0.35	2.2	0.02	0.07	0.08	144	210
150	ISL	13.43	13.41	33.719	25.319	268.6	0.468	5.26	88.8	4.9	0.46	3.9	0.01	0.05	0.06	151	
152	A	13.29	13.27	33.716	25.345	266.2	0.473	5.20	87.5	5.3	0.50	4.5	0.01	0.05	0.06	153	209
173		11.18	11.16	33.713	25.745	228.0	0.525	4.62	74.4	11.6	0.98	12.2	0.01	0.02	0.04	174	208
195		10.47	10.45	33.866	25.990	205.1	0.572	4.59	72.8	14.5	1.10	14.6	0.00	0.01	0.02	196	207
200	ISL	10.28	10.26	33.893	26.044	200.0	0.583	4.56	72.1	15.6	1.15	15.4	0.00			201	
227		9.34	9.31	33.994	26.280	177.8	0.634	4.28	66.3	22.2	1.41	19.7	0.00			228	206
250	ISL	8.82	8.79	34.017	26.381	168.5	0.673	3.97	60.8	27.1	1.59	22.3	0.00			251	
266		8.52	8.49	34.014	26.426	164.4	0.700	3.76	57.2	30.2	1.70	23.7	0.00			267	205
300	ISL	7.82	7.79	34.013	26.530	154.7	0.754	3.46	51.8	36.5	1.89	26.4	0.00			302	
318		7.47	7.44	34.010	26.578	150.2	0.782	3.29	48.8	39.8	1.99	27.8	0.00			320	204
378		6.54	6.51	34.011	26.706	138.3	0.868	2.34	34.0	52.9	2.40	33.0	0.00			380	203
400	ISL	6.36	6.32	34.026	26.742	135.1	0.898	1.99	28.8	57.3	2.54	34.7	0.00			402	
435		6.13	6.09	34.057	26.796	130.3	0.945	1.48	21.3	64.0	2.73	37.0	0.00			438	202
500	ISL	5.62	5.58	34.110	26.902	120.6	1.026	0.95	13.5	76.2	2.96	39.8	0.00			503	
516		5.49	5.45	34.123	26.928	118.2	1.045	0.82	11.6	79.2	3.02	40.5	0.00			519	201

A) PRIMARY PRODUCTIVITY SAMPLES WERE TAKEN FROM THESE LEVELS.

RV ROGER REVELLE CALCOFI CRUISE 9901 STATION 87 33

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT	TYPE
33 53.4 N	118 29.4 W	16/01/99	2316 UTC	56 m	210	05 kn	260 05 06	1	1016.1 mb	16.1 c	15.8 c	13m	6/8	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	14.51	14.51	33.503	24.924	302.0	0.000	6.13	105.7	2.7	0.24	0.1	0.04	1.26	0.44	0	
2		14.51	14.51	33.503	24.924	302.1	0.006	6.13	105.7	2.7	0.24	0.1	0.04	1.26	0.44	2	207
2		14.52	14.52													2	208
6		14.43	14.43	33.494	24.934	301.2	0.018	6.08	104.7	2.6	0.25	0.1	0.01	1.12	0.42	6	206
10	ISL	14.40	14.40	33.501	24.946	300.2	0.030	6.13	105.5	2.6	0.24	0.1	0.01	1.38	0.50	10	
11		14.40	14.40	33.504	24.948	300.0	0.033	6.15	105.8	2.6	0.24	0.1	0.01	1.46	0.52	11	205
20	ISL	14.30	14.30	33.502	24.968	298.4	0.060	6.04	103.7	2.9	0.27	0.4	0.05	1.10	0.59	20	
21		14.28	14.28	33.501	24.972	298.1	0.063	6.03	103.5	2.9	0.27	0.4	0.06	1.02	0.60	21	204
30	ISL	13.94	13.94	33.486	25.031	292.7	0.090	5.50	93.7	4.6	0.55	2.1	0.36	0.45	0.43	30	
31		13.90	13.90	33.485	25.039	292.0	0.093	5.44	92.6	4.8	0.58	2.3	0.40	0.39	0.41	31	203
41		13.73	13.72	33.499	25.085	287.9	0.122	5.07	86.0	6.1	0.68	4.0	0.63	0.28	0.33	41	202
50	ISL	13.46	13.45	33.518	25.155	281.4	0.147	4.65	78.5	8.3	0.88	6.1	0.82	0.17	0.37	50	
51		13.43	13.42	33.520	25.162	280.7	0.150	4.60	77.6	8.5	0.90	6.3	0.84	0.16	0.37	51	201

RV ROGER REVELLE CALCOFI CRUISE 9901 STATION 87 35

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT	TYPE
33 49.5 N	118 37.7 W	17/01/99	0207 UTC	646 m	230	01 kn			1017.0 mb	16.8 c	14.3 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	14.43	14.43	33.475	24.919	302.5	0.000	5.92	101.9	3.1	0.32	0.5	0.05	0.96	0.43	0	
2		14.43	14.43	33.475	24.919	302.5	0.006	5.92	101.9	3.1	0.32	0.5	0.05	0.96	0.43	2	220
10		14.36	14.36	33.468	24.929	301.8	0.030	5.80	99.7	3.6	0.36	0.8	0.09	0.94	0.45	10	219
20		14.23	14.23	33.468	24.957	299.5	0.060	5.60	96.0	4.2	0.44	1.3	0.20	0.77	0.41	20	218
30		13.98	13.98	33.491	25.027	293.1	0.090	5.47	93.3	4.8	0.51	2.2	0.34	0.55	0.32	30	217
40		13.73	13.72	33.536	25.113	285.1	0.119	5.41	91.8	5.0	0.53	2.9	0.60	0.50	0.37	40	216
50		13.26	13.25	33.557	25.225	274.7	0.147	4.86	81.7	7.8	0.77	6.9	0.09	0.33	0.29	50	215
60		12.41	12.40	33.564	25.398	258.5	0.173	4.47	73.8	10.4	0.97	10.2	0.03	0.18	0.20	60	214
70		11.92	11.91	33.632	25.544	244.8	0.199	3.87	63.3	14.1	1.24	14.2	0.01	0.09	0.13	70	213
75	ISL	11.77	11.76	33.659	25.593	240.2	0.211	3.67	59.8	15.4	1.33	15.5	0.01	0.08	0.11	75	
85		11.48	11.47	33.698	25.677	232.5	0.234	3.45	55.9	17.4	1.45	17.1	0.01	0.06	0.09	85	212
99		10.80	10.79	33.724	25.820	219.1	0.266	3.51	56.1	18.9	1.52	18.4	0.01	0.04	0.08	99	211
100	ISL	10.78	10.77	33.727	25.826	218.6	0.268	3.50	55.9	19.0	1.53	18.5	0.01	0.04	0.08	101	
119		10.50	10.49	33.801	25.933	208.8	0.309	3.13	49.7	22.1	1.70	20.7	0.02	0.02	0.07	120	210
125	ISL	10.38	10.37	33.835	25.980	204.4	0.321	2.99	47.4	23.3	1.76	21.5	0.02	0.02	0.07	126	
139		10.10	10.08	33.910	26.087	194.5	0.349	2.72	42.8	26.1	1.89	23.3	0.01	0.01	0.06	140	209
150	ISL	9.89	9.87	33.934	26.141	189.5	0.370	2.68	42.0	27.2	1.93	24.0	0.01	0.01	0.06	151	
170		9.59	9.57	33.966	26.217	182.8	0.407	2.65	41.3	28.9	1.99	24.8	0.01	0.01	0.05	171	208
198		9.39	9.37	34.073	26.333	172.2	0.457	2.16	33.5	33.2	2.19	27.0	0.01	0.00	0.07	199	207
200	ISL	9.38	9.36	34.077	26.338	171.8	0.461	2.14	33.2	33.4	2.20	27.1	0.01			201	
228		9.24	9.21	34.116	26.392	167.2	0.508	1.88	29.1	36.1	2.30	28.3	0.01			229	206
250	ISL	8.98	8.95	34.151	26.461	161.0	0.544	1.72	26.5	38.9	2.38	29.3	0.01			251	
268		8.72	8.69	34.175	26.521	155.5	0.573	1.62	24.8	41.3	2.45	30.1	0.01			270	205
300	ISL	8.28	8.25	34.183	26.595	148.9	0.621	1.50	22.7	45.5	2.54	31.4	0.00			302	
317		8.05	8.02	34.181	26.628	145.9	0.646	1.44	21.7	47.7	2.58	32.1	0.00			319	204
378		7.44	7.40	34.193	26.727	137.2	0.733	1.16	17.2	54.6	2.73	34.1	0.00			380	203
400	ISL	7.15	7.11	34.211	26.782	132.1	0.762	0.97	14.3	59.5	2.83	35.3	0.00			403	
437		6.70	6.66	34.248	26.873	123.7	0.810	0.64	9.3	68.1	3.01	37.3	0.01			440	202
500	ISL	6.28	6.24	34.298	26.968	115.2	0.885	0.39	5.6	78.0	3.16	38.7	0.01			503	
514		6.19	6.14	34.310	26.989	113.3	0.901	0.33	4.8	80.2	3.19	39.0	0.01			518	201

RV ROGER REVELLE CALCOFI CRUISE 9901 STATION 87 40

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT TYPE
33 39.4 N	118 58.5 W	17/01/99	1146 UTC	752 m	050 05 kn			1019.2 mb	14.8 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	14.52	14.52	33.508	24.926	301.8	0.000	6.00	103.5	2.7	0.28	0.1	0.00	0.20	0.07	0	
1	14.52	14.52	33.508	24.926	301.9	0.003	6.00	103.5	2.7	0.28	0.1	0.00	0.20	0.07	1	220
10	14.52	14.52	33.508	24.926	302.1	0.030	5.95	102.6	2.7	0.28	0.1	0.00	0.21	0.08	10	219
20	14.48	14.48	33.508	24.935	301.6	0.060	5.98	103.1	2.8	0.28	0.1	0.00	0.30	0.10	20	218
30	14.42	14.42	33.508	24.948	300.6	0.090	5.95	102.4	2.9	0.28	0.1	0.01	0.47	0.18	30	217
40	14.12	14.11	33.503	25.007	295.2	0.120	5.68	97.2	3.8	0.41	1.5	0.18	0.50	0.24	40	216
50	13.57	13.56	33.545	25.153	281.6	0.149	5.29	89.5	6.1	0.60	4.2	0.40	0.31	0.19	50	215
60	12.69	12.68	33.575	25.352	262.9	0.176	4.54	75.4	10.1	0.94	9.8	0.04	0.26	0.22	60	214
70	12.13	12.12	33.603	25.482	250.7	0.202	4.20	69.0	12.4	1.11	12.5	0.02	0.16	0.18	70	213
75 ISL	11.84	11.83	33.636	25.562	243.2	0.214	3.94	64.3	14.2	1.23	14.3	0.01	0.11	0.14	75	
84	11.38	11.37	33.700	25.697	230.5	0.236	3.51	56.8	17.4	1.44	17.2	0.01	0.04	0.08	84	212
100	10.97	10.96	33.746	25.807	220.4	0.272	3.34	53.5	19.6	1.55	19.0	0.01	0.05	0.14	100	211
118	10.27	10.26	33.850	26.011	201.3	0.310	3.01	47.6	24.1	1.77	22.2	0.01	0.02	0.09	119	210
125 ISL	9.98	9.97	33.877	26.081	194.7	0.324	2.95	46.3	25.6	1.82	23.1	0.01	0.01	0.08	126	
139	9.49	9.47	33.928	26.203	183.4	0.350	2.82	43.8	28.4	1.92	24.7	0.01	0.01	0.06	140	209
150 ISL	9.45	9.43	33.997	26.263	177.8	0.370	2.55	39.6	30.7	2.03	25.9	0.02	0.01	0.06	151	
169	9.37	9.35	34.073	26.336	171.3	0.403	2.07	32.1	34.2	2.21	27.6	0.03	0.01	0.07	170	208
198	9.14	9.12	34.136	26.423	163.6	0.452	1.86	28.7	36.7	2.31	28.8	0.01	0.00	0.04	199	207
200 ISL	9.12	9.10	34.139	26.429	163.1	0.455	1.85	28.5	36.9	2.32	28.9	0.01			201	
228	8.74	8.72	34.175	26.517	155.1	0.499	1.68	25.7	40.4	2.41	30.1	0.01			229	206
250 ISL	8.44	8.41	34.187	26.573	150.1	0.533	1.56	23.7	43.9	2.49	31.1	0.01			251	
267	8.20	8.17	34.190	26.612	146.6	0.558	1.48	22.4	46.7	2.55	31.9	0.01			269	205
300 ISL	7.72	7.69	34.185	26.679	140.5	0.606	1.34	20.0	51.8	2.65	33.4	0.01			302	
317	7.49	7.46	34.183	26.711	137.7	0.629	1.26	18.7	54.2	2.69	34.1	0.01			319	204
376	7.05	7.01	34.218	26.801	129.8	0.708	0.94	13.8	61.5	2.85	36.1	0.01			378	203
400 ISL	6.88	6.84	34.233	26.836	126.7	0.739	0.82	12.0	64.6	2.91	36.8	0.01			403	
436	6.64	6.60	34.255	26.886	122.3	0.784	0.65	9.5	69.1	3.00	37.7	0.01			439	202
500 ISL	6.32	6.27	34.295	26.961	116.0	0.860	0.43	6.2	76.5	3.13	38.8	0.01			503	
515	6.25	6.20	34.305	26.978	114.5	0.877	0.38	5.5	78.2	3.16	39.1	0.01			519	201

RV ROGER REVELLE CALCOFI CRUISE 9901 STATION 87 45

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT TYPE
33 29.4 N	119 19.1 W	17/01/99	1430 UTC	1641 m	040 12 kn			1019.6 mb	14.0 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	14.33	14.33	33.464	24.932	301.2	0.000	5.92	101.7	2.0	0.29	0.2	0.01	0.27	0.09	0	
1	14.33	14.33	33.464	24.932	301.3	0.003	5.92	101.7	2.0	0.29	0.2	0.01	0.27	0.09	1	220
10	14.33	14.33	33.465	24.933	301.4	0.030	5.94	102.1	2.0	0.29	0.2	0.01	0.30	0.10	10	219
20	14.22	14.22	33.469	24.960	299.2	0.060	5.81	99.6	2.6	0.35	0.8	0.03	0.39	0.15	20	218
30	12.34	12.34	33.518	25.375	259.9	0.088	4.39	72.4	11.6	1.01	11.0	0.04	0.24	0.21	30	217
40	11.39	11.39	33.581	25.602	238.5	0.113	4.04	65.3	14.9	1.24	14.8	0.02	0.10	0.14	40	216
50 ISL	10.88	10.87	33.635	25.735	226.0	0.136	3.93	62.9	16.5	1.32	16.3	0.02	0.05	0.10	50	
51	10.85	10.84	33.640	25.745	225.1	0.139	3.92	62.7	16.6	1.33	16.4	0.02	0.05	0.10	51	215
60	10.56	10.55	33.696	25.839	216.3	0.158	3.64	57.8	19.1	1.46	18.4	0.01	0.03	0.10	60	214
70	10.14	10.13	33.767	25.967	204.3	0.179	3.28	51.7	22.4	1.64	21.0	0.01	0.02	0.08	70	213
75 ISL	10.01	10.00	33.807	26.021	199.4	0.190	3.15	49.5	23.6	1.70	21.8	0.01	0.02	0.07	75	
84	9.87	9.86	33.877	26.099	192.1	0.207	2.96	46.4	25.3	1.79	22.8	0.02	0.01	0.06	84	212
100	9.76	9.75	33.963	26.185	184.3	0.237	2.58	40.3	28.2	1.94	24.7	0.01	0.01	0.04	101	211
119	9.52	9.51	34.014	26.265	177.1	0.272	2.37	36.9	30.9	2.05	26.1	0.01	0.01	0.04	120	210
125 ISL	9.45	9.44	34.035	26.293	174.5	0.282	2.29	35.6	31.7	2.09	26.5	0.01	0.01	0.04	126	
139	9.27	9.25	34.082	26.359	168.5	0.306	2.11	32.7	33.7	2.17	27.5	0.01	0.01	0.05	140	209
150 ISL	9.12	9.10	34.102	26.399	164.9	0.324	2.02	31.2	35.3	2.22	28.1	0.01	0.01	0.05	151	
169	8.88	8.86	34.125	26.455	159.9	0.355	1.89	29.0	37.8	2.29	29.0	0.02	0.00	0.04	170	208
199	8.64	8.62	34.164	26.524	153.9	0.402	1.63	24.9	41.0	2.40	30.1	0.02	0.00	0.04	200	207
200 ISL	8.63	8.61	34.165	26.526	153.7	0.404	1.62	24.7	41.1	2.40	30.1	0.02			201	
228	8.25	8.23	34.173	26.591	147.9	0.446	1.49	22.5	45.2	2.49	31.4	0.01			229	206
250 ISL	8.04	8.01	34.178	26.626	144.8	0.478	1.42	21.4	47.6	2.54	32.0	0.01			252	
268	7.89	7.86	34.182	26.652	142.7	0.504	1.36	20.4	49.5	2.58	32.5	0.01			270	205
300 ISL	7.52	7.49	34.190	26.712	137.3	0.549	1.18	17.6	54.4	2.68	33.9	0.01			302	
318	7.34	7.31	34.195	26.742	134.7	0.574	1.08	16.0	57.0	2.73	34.6	0.01			320	204
377	7.13	7.09	34.210	26.784	131.5	0.652	0.91	13.4	60.7	2.83	35.7	0.01			379	203
400 ISL	7.02	6.98	34.221	26.808	129.5	0.682	0.82	12.1	62.7	2.87	36.2	0.01			403	
437	6.81	6.77	34.244	26.855	125.5	0.729	0.66	9.7	66.9	2.95	37.1	0.01			440	202
500 ISL	6.27	6.23	34.303	26.973	114.7	0.805	0.40	5.8	78.0	3.11	38.7	0.01			504	
516	6.13	6.08	34.318	27.003	112.0	0.823	0.34	4.9	80.8	3.15	39.1	0.01			520	201

RV ROGER REVELLE CALCOFI CRUISE 9901 STATION 87 50

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT	TYPE
33 19.4 N	119 39.8 W	17/01/99	1821 UTC	82 m	050 09 kn	360 02 06	1	1021.2 mb	14.2 C	13.3 C	17m	5/8	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	13.61	13.61	33.516	25.121	283.2	0.000	5.92	100.2	4.2	0.43	2.1	0.07	0.46	0.18	0	
2	A	13.61	13.61	33.516	25.121	283.3	0.006	5.92	100.2	4.2	0.43	2.1	0.07	0.46	0.18	2	207
2		13.61	13.61	33.516	25.121	283.3	0.006									2	208
10	ISL	13.46	13.46	33.521	25.156	280.2	0.028	5.93	100.1	4.5	0.45	2.4	0.08	0.59	0.28	10	
13	A	13.40	13.40	33.523	25.170	279.0	0.037	5.93	100.0	4.6	0.46	2.5	0.08	0.63	0.33	13	206
20	ISL	12.59	12.59	33.550	25.351	261.9	0.056	5.41	89.7	8.2	0.73	6.6	0.13	0.54	0.31	20	
25	A	11.96	11.96	33.579	25.494	248.4	0.068	4.95	81.0	11.2	0.96	10.0	0.16	0.43	0.30	25	205
30	ISL	11.62	11.62	33.605	25.578	240.5	0.081	4.55	73.9	13.3	1.12	12.4	0.16	0.32	0.25	30	
38	A	11.29	11.29	33.641	25.666	232.3	0.099	4.07	65.7	15.8	1.29	15.0	0.14	0.17	0.19	38	204
49	A	11.10	11.09	33.674	25.727	226.8	0.125	3.95	63.5	17.2	1.37	16.1	0.15	0.13	0.21	49	203
50	ISL	11.08	11.07	33.676	25.732	226.4	0.127	3.93	63.1	17.3	1.38	16.2	0.15	0.13	0.21	50	
59		10.92	10.91	33.697	25.777	222.3	0.147	3.74	59.9	18.5	1.44	17.2	0.13	0.09	0.19	59	202
70	A	10.76	10.75	33.716	25.820	218.4	0.171	3.64	58.1	19.2	1.48	18.0	0.12	0.08	0.18	70	201

A) PRIMARY PRODUCTIVITY SAMPLES WERE TAKEN FROM THESE LEVELS.

RV ROGER REVELLE CALCOFI CRUISE 9901 STATION 87 55

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT	TYPE
33 9.4 N	120 0.3 W	17/01/99	2154 UTC	1204 m	310 21 kn	330 08 07	2	1021.1 mb	13.9 C	12.8 C	08m	8/8	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	13.09	13.09	33.490	25.206	275.2	0.000	6.17	103.3	3.8	0.43	1.6	0.09	1.31	0.47	0	
1		13.09	13.09	33.490	25.206	275.2	0.003	6.17	103.3	3.8	0.43	1.6	0.09	1.31	0.47	1	221
10		13.09	13.09	33.490	25.206	275.4	0.028	6.17	103.3	3.8	0.43	1.6	0.09	1.30	0.48	10	220
20		13.04	13.04	33.490	25.216	274.7	0.055	6.13	102.6	3.8	0.44	1.7	0.09	1.29	0.54	20	219
30	ISL	12.99	12.99	33.489	25.226	274.1	0.082	6.10	101.9	3.7	0.44	1.8	0.09	1.33	0.59	30	
31		12.99	12.99	33.489	25.226	274.1	0.085	6.10	101.9	3.7	0.44	1.8	0.09	1.33	0.59	31	218
40		12.96	12.95	33.493	25.235	273.5	0.110	6.08	101.5	4.0	0.47	2.1	0.11	1.12	0.54	40	216
40		12.97	12.96	33.491	25.232	273.8	0.110	6.09	101.7	3.9	0.45	1.9	0.10	1.18	0.54	40	217
50		12.18	12.17	33.545	25.427	255.4	0.136	5.60	92.0	7.3	0.76	6.3	0.31	0.44	0.43	50	215
60		11.63	11.62	33.605	25.577	241.4	0.161	5.03	81.7	10.9	1.02	10.3	0.41	0.18	0.31	60	214
70		11.23	11.22	33.617	25.659	233.7	0.185	4.34	69.9	14.0	1.21	14.2	0.14	0.09	0.17	70	213
75	ISL	10.96	10.95	33.647	25.731	227.0	0.196	4.04	64.7	16.1	1.33	16.2	0.07	0.07	0.16	75	
85		10.37	10.36	33.726	25.896	211.5	0.218	3.56	56.3	20.5	1.56	19.8	0.02	0.04	0.13	85	212
100		9.51	9.50	33.839	26.129	189.5	0.248	3.11	48.3	26.1	1.80	23.6	0.01	0.01	0.10	101	211
119		8.92	8.91	33.934	26.298	173.7	0.283	2.82	43.3	30.8	1.97	26.0	0.01	0.01	0.07	120	210
125	ISL	8.84	8.83	33.956	26.328	171.0	0.293	2.72	41.7	32.1	2.01	26.5	0.01	0.01	0.07	126	
138		8.74	8.73	33.999	26.378	166.5	0.315	2.51	38.4	34.6	2.10	27.4	0.01	0.00	0.07	139	209
150	ISL	8.69	8.67	34.046	26.423	162.5	0.335	2.28	34.8	36.3	2.18	28.2	0.01	0.00	0.06	151	
170		8.64	8.62	34.117	26.486	156.9	0.367	1.92	29.3	38.8	2.31	29.4	0.02	0.00	0.04	171	208
199		8.44	8.42	34.172	26.561	150.3	0.411	1.62	24.6	42.5	2.44	30.7	0.02	0.00	0.03	200	207
200	ISL	8.43	8.41	34.173	26.563	150.1	0.413	1.61	24.5	42.6	2.44	30.7	0.02			201	
229		8.07	8.05	34.192	26.633	143.9	0.456	1.43	21.6	47.0	2.56	32.1	0.01			230	206
250	ISL	7.74	7.72	34.185	26.676	140.0	0.485	1.35	20.2	50.4	2.62	33.1	0.01			252	
269		7.45	7.42	34.178	26.712	136.7	0.512	1.28	19.0	53.5	2.67	34.0	0.01			271	205
300	ISL	7.17	7.14	34.196	26.766	132.0	0.553	1.06	15.6	58.0	2.78	35.3	0.01			302	
319		7.06	7.03	34.211	26.793	129.6	0.578	0.93	13.7	60.4	2.84	35.9	0.01			321	204
378		6.79	6.75	34.238	26.852	124.8	0.653	0.73	10.7	65.4	2.94	37.1	0.01			380	203
400	ISL	6.70	6.66	34.247	26.872	123.2	0.680	0.66	9.6	67.2	2.97	37.5	0.01			403	
437		6.54	6.50	34.263	26.906	120.4	0.726	0.55	8.0	70.3	3.03	38.2	0.01			440	202
500	ISL	6.22	6.18	34.300	26.977	114.3	0.800	0.37	5.3	76.4	3.14	39.6	0.00			503	
514		6.15	6.10	34.309	26.994	112.9	0.815	0.33	4.8	77.8	3.16	39.9	0.00			518	201

RV ROGER REVELLE CALCOFI CRUISE 9901 STATION 87 60

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT	TYPE
32 59.4 N	120 21.0 W	18/01/99	0138 UTC	721 m	310 09 kn	310 08 10	4	1018.9 mb	13.8 C	12.8 C		8/8	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	13.02	13.02	33.523	25.245	271.4	0.000	6.01	100.5	6.0	0.54	3.3	0.11	1.05	0.52	0	
1		13.02	13.02	33.523	25.245	271.4	0.003	6.01	100.5	6.0	0.54	3.3	0.11	1.05	0.52	1	220
10	ISL	13.02	13.02	33.523	25.246	271.7	0.027	6.00	100.4	5.8	0.53	3.2	0.11	1.08	0.50	10	
11		13.02	13.02	33.523	25.246	271.7	0.030	6.00	100.4	5.8	0.53	3.2	0.11	1.09	0.50	11	219
20		12.91	12.91	33.522	25.267	269.9	0.054	5.74 U	95.8 U	6.2	0.55	3.6	0.12	1.15	0.56	20	218
30		12.75	12.75	33.520	25.297	267.3	0.081	5.90	98.1	6.6	0.59	4.2	0.14	1.15	0.60	30	217
41		12.58	12.57	33.526	25.335	264.0	0.110	5.65	93.6	7.6	0.69	5.7	0.20	0.73	0.49	41	216
50		11.99	11.98	33.567	25.480	250.4	0.133	4.89	80.1	11.4	0.97	10.2	0.18	0.33	0.30	50	215
61		11.52	11.51	33.597	25.591	240.1	0.160	4.46	72.3	13.6	1.15	13.2	0.07	0.15	0.20	61	214
70		10.61	10.60	33.679	25.818	218.6	0.181	3.76	59.8	18.7	1.45	18.1	0.02	0.05	0.13	70	213
75	ISL	10.33	10.32	33.728	25.904	210.5	0.192	3.50	55.3	21.1	1.57	19.9	0.02	0.04	0.13	75	
84		10.01	10.00	33.804	26.018	199.8	0.210	3.17	49.8	24.6	1.73	22.2	0.01	0.03	0.16	84	212
99		9.52	9.51	33.876	26.156	186.9	0.239	2.86	44.5	28.3	1.89	24.6	0.01	0.02	0.13	100	211
100	ISL	9.49	9.48	33.879	26.164	186.3	0.241	2.85	44.3	28.5	1.90	24.7	0.01	0.02	0.13	101	
120		9.06	9.05	33.929	26.272	176.3	0.277	2.73	42.0	31.1	1.99	26.1	0.01	0.01	0.12	121	210
125	ISL	8.98	8.97	33.939	26.293	174.4	0.286	2.72	41.8	31.7	2.01	26.3	0.01	0.01	0.11	126	
139		8.79	8.78	33.961	26.340	170.1	0.310	2.69	41.2	33.1	2.04	26.9	0.01	0.01	0.09	140	209
150	ISL	8.64	8.62	33.976	26.375	167.0	0.329	2.66	40.6	34.2	2.07	27.4	0.01	0.01	0.08	151	
169		8.42	8.40	33.998	26.427	162.4	0.360	2.61	39.6	35.9	2.11	28.1	0.02	0.00	0.07	170	208
199		8.21	8.19	34.022	26.478	158.0	0.408	2.52	38.1	38.1	2.17	28.8	0.02	0.00	0.01	200	207
200	ISL	8.19	8.17	34.023	26.482	157.7	0.410	2.52	38.0	38.2	2.17	28.9	0.02			201	
229		7.70	7.68	34.048	26.574	149.2	0.454	2.31	34.5	43.1	2.30	30.6	0.02			230	206
250	ISL	7.45	7.43	34.070	26.627	144.4	0.485	2.07	30.7	47.0	2.41	31.9	0.01			252	
269		7.26	7.23	34.091	26.670	140.5	0.512	1.81	26.8	50.8	2.52	33.1	0.01			271	205
300	ISL	6.92	6.89	34.131	26.749	133.4	0.555	1.37	20.1	57.7	2.70	35.2	0.01			302	
318		6.74	6.71	34.153	26.791	129.6	0.578	1.14	16.7	61.4	2.79	36.3	0.01			320	204
377		6.44	6.41	34.188	26.859	123.8	0.653	0.83	12.0	68.0	2.94	38.0	0.01			379	203
400	ISL	6.33	6.29	34.200	26.883	121.8	0.681	0.73	10.6	70.4	2.99	38.6	0.01			403	
438		6.12	6.08	34.225	26.930	117.7	0.727	0.58	8.4	74.8	3.06	39.5	0.01			441	202
500	ISL	5.62	5.58	34.293	27.047	107.0	0.796	0.35	5.0	85.8	3.21	41.3	0.01			503	
515		5.50	5.46	34.310	27.075	104.4	0.812	0.30	4.3	88.5	3.25	41.7	0.01			519	201

RV ROGER REVELLE CALCOFI CRUISE 9901 STATION 87 70

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT TYPE
32 39.4 N	121 2.0 W	18/01/99	0757 UTC	3794 m	310 11 kn			1023.0 mb	13.1 C	12.5 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	13.48	13.48	33.306	24.985	296.2	0.000	6.13	103.4	3.6	0.34	0.5	0.04	0.76	0.31	0	
2	13.48	13.48	33.306	24.985	296.2	0.006	6.13	103.4	3.6	0.34	0.5	0.04	0.76	0.31	2	220
10 ISL	13.48	13.48	33.304	24.984	296.6	0.030	6.14	103.6	3.5	0.35	0.5	0.05	0.70	0.37	10	
11	13.48	13.48	33.304	24.984	296.6	0.033	6.14	103.6	3.5	0.35	0.5	0.05	0.69	0.38	11	219
20 ISL	13.29	13.29	33.299	25.019	293.5	0.059	6.14	103.1	3.6	0.35	0.6	0.05	0.82	0.39	20	
21	13.27	13.27	33.299	25.023	293.2	0.062	6.14	103.1	3.6	0.35	0.6	0.05	0.84	0.39	21	218
30 ISL	13.27	13.27	33.301	25.025	293.2	0.088	6.11	102.6	3.6	0.35	0.7	0.06	0.86	0.37	30	
31	13.27	13.27	33.301	25.025	293.3	0.091	6.11	102.6	3.6	0.35	0.7	0.06	0.86	0.37	31	217
41	12.91	12.90	33.328	25.117	284.7	0.120	5.87	97.8	4.5	0.50	2.7	0.25	0.62	0.34	41	216
49	12.69	12.68	33.364	25.188	278.2	0.143	5.76	95.6	5.4	0.59	4.0	0.26	0.40	0.25	49	215
50 ISL	12.66	12.65	33.366	25.196	277.5	0.146	5.71	94.7	5.6	0.61	4.3	0.24	0.37	0.24	50	
60	12.26	12.25	33.389	25.291	268.6	0.173	5.17	85.0	7.6	0.79	7.5	0.05	0.13	0.13	60	214
70	11.81	11.80	33.444	25.418	256.7	0.199	4.73	77.1	10.2	0.97	10.5	0.02	0.09	0.10	70	213
75 ISL	11.72	11.71	33.472	25.457	253.1	0.212	4.66	75.8	10.6	0.99	10.9	0.02	0.09	0.10	75	
85	11.55	11.54	33.533	25.536	245.9	0.237	4.58	74.3	11.1	1.01	11.5	0.02	0.08	0.10	85	212
100	10.80	10.79	33.657	25.768	224.1	0.272	4.26	68.0	14.7	1.21	15.0	0.01	0.04	0.06	100	211
120	9.78	9.77	33.744	26.011	201.2	0.315	3.82	59.7	20.2	1.51	19.6	0.01	0.01	0.04	121	210
125 ISL	9.57	9.56	33.776	26.070	195.6	0.325	3.70	57.5	21.9	1.59	20.8	0.01	0.01	0.04	126	
138	9.13	9.12	33.857	26.205	183.0	0.349	3.40	52.4	26.2	1.76	23.5	0.01	0.00	0.03	139	209
150 ISL	8.90	8.88	33.906	26.280	176.1	0.371	3.24	49.7	28.6	1.85	24.8	0.01	0.00	0.02	151	
168	8.64	8.62	33.953	26.358	169.0	0.402	3.08	47.0	31.3	1.92	25.8	0.01	0.00	0.02	169	208
198	8.05	8.03	34.003	26.487	157.1	0.451	2.89	43.5	36.5	2.05	27.8	0.01	0.00	0.02	199	207
200 ISL	8.02	8.00	34.005	26.493	156.5	0.454	2.87	43.2	36.8	2.06	27.9	0.01			201	
229	7.67	7.65	34.031	26.565	150.1	0.498	2.56	38.2	41.7	2.21	29.8	0.01			230	206
250 ISL	7.40	7.38	34.046	26.615	145.5	0.529	2.30	34.1	45.3	2.32	31.1	0.01			251	
267	7.20	7.17	34.056	26.651	142.3	0.554	2.10	31.0	48.2	2.41	32.2	0.01			269	205
300 ISL	6.87	6.84	34.067	26.706	137.5	0.600	1.78	26.1	54.0	2.55	34.2	0.00			302	
318	6.73	6.70	34.076	26.732	135.2	0.624	1.61	23.5	56.9	2.62	35.1	0.00			320	204
378	6.47	6.44	34.163	26.835	126.1	0.703	1.01	14.7	63.9	2.85	37.0	0.00			380	203
400 ISL	6.11	6.07	34.141	26.865	123.3	0.730	0.94	13.5	68.9	2.91	38.2	0.00			403	
438	5.49	5.45	34.105	26.913	118.6	0.776	0.87	12.3	77.8	2.99	40.3	0.00			441	202
500 ISL	5.40	5.36	34.194	26.995	111.6	0.848	0.49	6.9	85.1	3.14	41.4	0.00			503	
514	5.38	5.34	34.214	27.013	110.1	0.863	0.40	5.7	86.8	3.18	41.7	0.00			518	201

RV ROGER REVELLE CALCOFI CRUISE 9901 STATION 87 80

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT TYPE
32 20.1 N	121 43.4 W	18/01/99	1830 UTC	3953 m	240 06 kn	280 01 06	2	1024.9 mb	15.1 C	14.8 C	30m	8/8 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	14.46	14.46	33.264	24.750	318.6	0.000	5.88	101.2	2.5	0.30	0.2	0.02	0.23	0.06	0	
1	14.47	14.47	33.265	24.749	318.7	0.003									1	222
2 A	14.46	14.46	33.264	24.750	318.6	0.006	5.88	101.2	2.5	0.30	0.2	0.02	0.23	0.06	2	221
10 ISL	13.98	13.98	33.215	24.813	312.8	0.032	5.94	101.2	2.9	0.35	0.6	0.04	0.27	0.08	10	
12	13.82	13.82	33.199	24.834	310.9	0.038	5.96	101.2	3.0	0.37	0.7	0.05	0.28	0.09	12	220
20 ISL	13.48	13.48	33.168	24.879	306.8	0.063	5.99	100.9	3.2	0.39	0.9	0.07	0.31	0.10	20	
22 A	13.42	13.42	33.163	24.887	306.1	0.069	5.99	100.8	3.2	0.39	0.9	0.07	0.32	0.10	22	219
30 ISL	13.22	13.22	33.160	24.925	302.7	0.093	6.01	100.7	3.3	0.40	1.1	0.08	0.42	0.15	30	
31	13.20	13.20	33.160	24.929	302.3	0.096	6.01	100.7	3.3	0.40	1.1	0.08	0.43	0.16	31	218
42 A	13.03	13.02	33.142	24.950	300.7	0.129	6.05	101.0	3.5	0.41	1.3	0.09	0.61	0.27	42	217
50 ISL	12.99	12.98	33.153	24.966	299.3	0.153	6.03	100.6	3.6	0.42	1.4	0.10	0.52	0.25	50	
54	12.98	12.97	33.165	24.978	298.4	0.165	6.02	100.4	3.6	0.43	1.4	0.10	0.44	0.24	54	216
65 A	12.96	12.95	33.223	25.027	294.0	0.198	5.86	97.7	3.9	0.46	2.0	0.13	0.31	0.18	65	215
74	12.53	12.52	33.212	25.102	286.9	0.224	5.79	95.7	5.1	0.56	3.5	0.27	0.26	0.16	74	214
75 ISL	12.56	12.55	33.222	25.104	286.8	0.227	5.79	95.7	5.1	0.56	3.5	0.27	0.26	0.16	75	
84 A	13.06	13.05	33.368	25.120	285.6	0.253	5.71	95.5	5.0	0.53	3.6	0.25	0.23	0.16	84	213
96	13.74	13.73	33.651	25.202	278.3	0.286	5.29	89.9	4.7	0.47	3.7	0.03	0.11	0.09	96	212
100 ISL	13.79	13.78	33.719	25.244	274.4	0.297	5.28	89.8	4.7	0.45	3.6	0.03	0.09	0.09	100	
106	13.87	13.85	33.822	25.308	268.6	0.314	5.26	89.7	4.6	0.44	3.5	0.02	0.08	0.08	106	211
120 A	13.03	13.01	33.743	25.417	258.4	0.351	5.18	86.8	5.4	0.52	4.7	0.02	0.06	0.06	121	210
125 ISL	12.47	12.45	33.704	25.497	250.8	0.363	5.01	82.9	7.2	0.66	6.8	0.02	0.05	0.05	126	
139	10.89	10.87	33.652	25.749	226.8	0.397	4.51	72.1	12.9	1.09	13.4	0.01	0.03	0.04	140	209
150 ISL	10.30	10.28	33.742	25.922	210.5	0.421	4.48	70.8	15.3	1.16	15.6	0.01	0.02	0.03	151	
168	9.78	9.76	33.921	26.150	189.1	0.457	4.43	69.3	18.2	1.28	17.4	0.00	0.00	0.01	169	208
199	8.95	8.93	33.960	26.315	173.7	0.513	4.01	61.6	25.1	1.55	21.3	0.00	0.00	0.02	200	207
200 ISL	8.93	8.91	33.961	26.319	173.4	0.515	4.00	61.4	25.3	1.56	21.4	0.00			201	
228	8.40	8.38	33.988	26.423	163.9	0.562	3.68	55.8	30.5	1.75	24.1	0.00			229	206
250 ISL	7.99	7.96	33.999	26.493	157.4	0.597	3.52	52.9	34.6	1.86	25.8	0.00			251	
268	7.67	7.64	34.003	26.543	152.8	0.625	3.39	50.6	38.0	1.94	27.0	0.00			270	205
300 ISL	7.16	7.13	33.999	26.612	146.5	0.673	3.06	45.1	43.6	2.11	29.2	0.00			302	
317	6.92	6.89	33.996	26.643	143.6	0.698	2.85	41.8	46.6	2.21	30.4	0.00			319	204
376	6.19	6.16	34.018	26.757	133.2	0.779	1.99	28.7	58.8	2.59	34.8	0.00			378	203
400 ISL	6.00	5.97	34.034	26.794	129.9	0.811	1.70	24.4	63.4	2.70	36.3	0.00			403	
438	5.79	5.75	34.066	26.846	125.3	0.859	1.29	18.4	70.2	2.85	38.3	0.00			441	202
500 ISL	5.56	5.52	34.138	26.931	117.8	0.935	0.78	11.1	79.2	3.04	40.5	0.00			503	
515	5.50	5.46	34.156	26.953	115.9	0.952	0.66	9.4	81.4	3.08	41.0	0.00			518	201

A) PRIMARY PRODUCTIVITY SAMPLES WERE TAKEN FROM THESE LEVELS.

RV ROGER REVELLE CALCOFI CRUISE 9901 STATION 87 90

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT	TYPE
31 59.4 N	122 23.6 W	19/01/99	0142	UTC	4089 m	240	05 kn	300 02 07	1	1022.7 mb	16.3 C	14.0 C		7/8	CS

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	15.39	15.39	33.500	24.731	320.4	0.000	5.77	101.3	2.6	0.23	0.1	0.00	0.15	0.05	0	
2		15.39	15.39	33.500	24.731	320.4	0.006	5.77	101.3	2.6	0.23	0.1	0.00	0.15	0.05	2	220
10	ISL	15.31	15.31	33.479	24.733	320.5	0.032	5.78	101.3	2.5	0.23	0.1	0.00	0.15	0.05	10	
15		15.25	15.25	33.466	24.736	320.4	0.048	5.79	101.3	2.4	0.23	0.1	0.00	0.15	0.05	15	219
20	ISL	15.27	15.27	33.477	24.740	320.1	0.064	5.78	101.2	2.4	0.23	0.1	0.00	0.15	0.06	20	
30		15.33	15.33	33.507	24.751	319.4	0.096	5.76	101.0	2.5	0.22	0.1	0.00	0.16	0.07	30	218
45		15.32	15.31	33.511	24.756	319.3	0.144	5.76	101.0	2.4	0.22	0.1	0.00	0.22	0.09	45	217
50	ISL	15.34	15.33	33.516	24.756	319.5	0.160	5.77	101.2	2.3	0.22	0.1	0.00	0.24	0.10	50	
55		15.35	15.34	33.520	24.757	319.6	0.176	5.77	101.2	2.3	0.22	0.1	0.00	0.25	0.11	55	216
65		15.34	15.33	33.516	24.757	320.0	0.208	5.74	100.7	2.3	0.22	0.1	0.00	0.26	0.11	65	215
75		15.39	15.38	33.532	24.758	320.1	0.240	5.73	100.6	2.2	0.22	0.1	0.00	0.23	0.11	75	214
85		15.53	15.52	33.582	24.766	319.7	0.272	5.71	100.6	2.2	0.21	0.1	0.00	0.21	0.11	85	213
95		15.62	15.61	33.614	24.771	319.6	0.304	5.71	100.8	2.2	0.20	0.1	0.00	0.21	0.09	95	212
100	ISL	15.47	15.45	33.583	24.781	318.8	0.320	5.72	100.6	2.2	0.21	0.1	0.01	0.20	0.09	100	
110		15.05	15.03	33.492	24.803	316.9	0.352	5.73	99.9	2.3	0.25	0.2	0.03	0.17	0.09	110	211
125		14.68	14.66	33.690	25.036	295.1	0.397	5.61	97.2	2.9	0.26	0.7	0.15	0.14	0.12	126	210
145		13.58	13.56	33.743	25.307	269.7	0.454	5.29	89.6	4.6	0.43	3.3	0.02	0.06	0.07	146	209
150	ISL	13.13	13.11	33.711	25.373	263.4	0.467	5.14	86.2	5.8	0.54	4.9	0.02	0.06	0.06	151	
170		11.33	11.31	33.608	25.636	238.4	0.517	4.50	72.6	11.7	1.03	12.2	0.01	0.04	0.05	171	208
200		9.84	9.82	33.802	26.048	199.5	0.583	3.93	61.5	19.6	1.45	19.0	0.00	0.01	0.02	201	207
228		9.26	9.23	33.931	26.244	181.2	0.636	3.90	60.3	23.8	1.56	21.1	0.00			229	206
250	ISL	8.71	8.68	33.979	26.369	169.6	0.675	3.61	55.1	28.8	1.73	23.6	0.00			251	
268		8.26	8.23	33.998	26.453	161.7	0.705	3.31	50.0	33.2	1.89	25.8	0.00			269	205
300	ISL	7.66	7.63	34.012	26.552	152.5	0.755	2.93	43.7	39.5	2.10	28.5	0.00			302	
318		7.38	7.35	34.013	26.593	148.7	0.782	2.73	40.4	42.9	2.20	29.8	0.00			320	204
377		6.56	6.53	34.031	26.719	137.1	0.867	2.02	29.4	55.0	2.52	34.0	0.00			379	203
400	ISL	6.31	6.27	34.040	26.759	133.4	0.898	1.80	26.0	59.2	2.62	35.3	0.00			402	
437		5.97	5.93	34.061	26.819	127.9	0.946	1.47	21.1	65.8	2.76	37.2	0.00			440	202
500	ISL	5.60	5.56	34.124	26.915	119.3	1.024	0.89	12.7	77.0	2.98	39.9	0.00			503	
514		5.52	5.48	34.138	26.936	117.5	1.040	0.76	10.8	79.5	3.03	40.5	0.00			517	201

RV ROGER REVELLE CALCOFI CRUISE 9901 STATION 87 100

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT	TYPE
31 39.4 N	123 4.2 W	19/01/99	0703	UTC	4124 m	250	07 kn			1023.2 mb	16.2 C	14.8 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	15.31	15.31	33.525	24.768	316.9	0.000	5.79	101.5	2.3	0.23	0.1	0.00	0.15	0.05	0	
1		15.31	15.31	33.525	24.768	316.9	0.003	5.79	101.5	2.3	0.23	0.1	0.00	0.15	0.05	1	220
10	ISL	15.30	15.30	33.523	24.769	317.1	0.032	5.78	101.3	2.3	0.23	0.1	0.00	0.15	0.05	10	
15		15.30	15.30	33.522	24.768	317.3	0.048	5.78	101.3	2.3	0.23	0.1	0.00	0.15	0.06	15	219
20	ISL	15.29	15.29	33.524	24.772	317.1	0.063	5.79	101.5	2.3	0.23	0.1	0.00	0.16	0.07	20	
30		15.25	15.25	33.526	24.783	316.4	0.095	5.81	101.7	2.2	0.23	0.1	0.00	0.19	0.08	30	218
45		15.10	15.09	33.505	24.800	315.2	0.142	5.84	101.9	2.3	0.23	0.1	0.00	0.28	0.10	45	217
50	ISL	15.02	15.01	33.485	24.802	315.1	0.158	5.85	101.9	2.4	0.23	0.1	0.00	0.28	0.10	50	
55		14.93	14.92	33.463	24.805	315.0	0.174	5.86	101.9	2.4	0.24	0.1	0.00	0.28	0.10	55	216
65		14.78	14.77	33.431	24.813	314.5	0.205	5.84	101.2	2.3	0.25	0.1	0.00	0.37	0.16	65	215
75		14.65	14.64	33.408	24.823	313.8	0.237	5.88	101.6	2.4	0.26	0.1	0.00	0.41	0.18	75	214
85		14.23	14.22	33.383	24.893	307.4	0.268	5.82	99.7	2.7	0.31	0.6	0.07	0.29	0.16	85	213
94		13.72	13.71	33.302	24.936	303.5	0.295	5.83	98.8	3.0	0.38	0.8	0.17	0.31	0.19	94	212
100	ISL	13.43	13.42	33.291	24.987	298.8	0.313	5.82	98.0	3.5	0.43	1.4	0.20	0.28	0.18	100	
110		13.20	13.18	33.358	25.085	289.7	0.343	5.75	96.4	4.1	0.46	2.4	0.25	0.20	0.15	110	211
124		13.71	13.69	33.653	25.210	278.3	0.383	5.55	94.2	3.6	0.36	1.9	0.09	0.13	0.12	125	210
125	ISL	13.69	13.67	33.656	25.217	277.7	0.385	5.53	93.8	3.7	0.37	2.0	0.08	0.13	0.12	126	
144		12.71	12.69	33.624	25.388	261.7	0.437	5.17	85.9	6.2	0.60	5.6	0.03	0.06	0.08	145	209
150	ISL	12.35	12.33	33.654	25.481	252.9	0.452	5.07	83.7	7.2	0.68	7.0	0.02	0.05	0.07	151	
170		11.12	11.10	33.783	25.811	221.8	0.500	4.66	75.0	11.7	0.98	12.2	0.01	0.02	0.04	171	208
199		9.54	9.52	33.868	26.149	189.8	0.559	3.73	58.0	22.5	1.58	20.8	0.00	0.00	0.02	200	207
200	ISL	9.51	9.49	33.871	26.156	189.1	0.561	3.71	57.6	22.7	1.59	21.0	0.00			201	
229		8.96	8.94	33.955	26.310	174.8	0.614	3.36	51.6	28.2	1.78	24.0	0.00			230	206
250	ISL	8.51	8.48	33.986	26.405	166.0	0.650	3.24	49.3	31.8	1.88	25.6	0.00			251	
269		8.15	8.12	34.005	26.474	159.6	0.681	3.12	47.0	34.9	1.96	26.8	0.00			270	205
300	ISL	7.82	7.79	34.035	26.547	153.1	0.729	2.67	40.0	39.9	2.16	29.0	0.00			302	
317		7.70	7.67	34.052	26.578	150.4	0.755	2.37	35.4	42.7	2.28	30.2	0.00			319	204
377		7.20	7.16	34.152	26.728	136.8	0.841	1.36	20.1	54.7	2.68	34.3	0.00			379	203
400	ISL	7.10	7.06	34.184	26.768	133.4	0.872	1.11	16.4	57.9	2.78	35.3	0.00			402	
436		6.94	6.90	34.224	26.822	128.8	0.919	0.82	12.0	62.5	2.91	36.5	0.00			439	202
500	ISL	6.40	6.35	34.249	26.914	120.4	0.999	0.56	8.1	71.5	3.07	38.6	0.00			503	
514		6.28	6.23	34.255	26.934	118.6	1.016	0.50	7.2	73.5	3.10	39.0	0.00			517	201

RV ROGER REVELLE CALCOFI CRUISE 9901 STATION 87 110

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT	TYPE
31 19.4 N	123 44.6 W	19/01/99	1218 UTC	4024 m	220	09 kn			1022.5 mb	15.8 C	14.5 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	15.07	15.07	33.461	24.771	316.5	0.000	5.84	101.8	2.4	0.24	0.1	0.00	0.16	0.05	0	
2		15.07	15.07	33.461	24.771	316.6	0.006	5.84	101.8	2.4	0.24	0.1	0.00	0.16	0.05	2	220
10	ISL	15.04	15.04	33.461	24.778	316.2	0.032	5.83	101.6	2.4	0.24	0.1	0.00	0.16	0.05	10	
15		15.01	15.01	33.459	24.783	315.9	0.047	5.83	101.5	2.4	0.24	0.1	0.00	0.16	0.06	15	219
20	ISL	14.97	14.97	33.455	24.789	315.5	0.063	5.86	102.0	2.4	0.24	0.1	0.00	0.17	0.06	20	
30		14.86	14.86	33.444	24.805	314.3	0.095	5.93	103.0	2.5	0.25	0.1	0.00	0.22	0.08	30	218
44		14.63	14.62	33.420	24.836	311.7	0.139	5.89	101.8	2.6	0.26	0.1	0.00	0.36	0.16	44	217
50	ISL	14.63	14.62	33.420	24.836	311.9	0.157	5.89	101.8	2.5	0.26	0.1	0.00	0.36	0.16	50	
56		14.62	14.61	33.418	24.837	312.0	0.176	5.66 U	97.8 U	2.5	0.26	0.1	0.00	0.35	0.16	56	216
66		14.45	14.44	33.405	24.863	309.7	0.207	5.88	101.2	2.6	0.28	0.1	0.00	0.43	0.22	66	215
74		14.43	14.42	33.406	24.868	309.5	0.232	5.87	101.0	2.7	0.29	0.1	0.01	0.39	0.19	74	214
75	ISL	14.42	14.41	33.404	24.869	309.5	0.235	5.87	101.0	2.7	0.29	0.1	0.01	0.39	0.19	75	
84		14.29	14.28	33.391	24.887	308.0	0.263	5.88	100.9	2.7	0.30	0.3	0.02	0.39	0.21	84	213
95		13.50	13.49	33.303	24.982	299.1	0.296	5.86	98.8	3.5	0.39	1.2	0.13	0.32	0.24	95	212
100	ISL	13.31	13.30	33.328	25.039	293.8	0.311	5.71	96.0	4.0	0.44	2.1	0.10	0.24	0.20	100	
109		13.08	13.07	33.414	25.152	283.3	0.337	5.39	90.2	5.0	0.52	3.8	0.03	0.11	0.12	109	211
121		12.69	12.67	33.525	25.315	268.0	0.370	5.14	85.4	6.5	0.62	5.7	0.02	0.07	0.08	122	210
125	ISL	12.51	12.49	33.543	25.364	263.4	0.381	5.04	83.4	7.2	0.67	6.6	0.02	0.06	0.07	126	
144		11.50	11.48	33.607	25.604	240.8	0.428	4.54	73.6	11.6	1.00	11.8	0.01	0.04	0.06	145	209
150	ISL	11.09	11.07	33.646	25.709	230.9	0.443	4.36	70.0	13.6	1.12	13.7	0.01	0.03	0.05	151	
167		10.02	10.00	33.766	25.989	204.4	0.480	3.88	60.9	19.6	1.45	18.9	0.01	0.01	0.03	168	208
198		9.11	9.09	33.902	26.245	180.5	0.539	3.23	49.7	27.8	1.81	24.0	0.00	0.00	0.02	199	207
200	ISL	9.08	9.06	33.909	26.255	179.5	0.543	3.20	49.3	28.1	1.83	24.2	0.00			201	
226		8.81	8.79	33.976	26.350	170.9	0.588	2.86	43.8	31.9	1.97	26.1	0.00			227	206
250	ISL	8.29	8.26	34.002	26.451	161.6	0.628	2.84	43.0	35.8	2.04	27.5	0.00			251	
268		7.87	7.84	34.012	26.521	155.0	0.657	2.83	42.4	38.9	2.09	28.4	0.00			269	205
300	ISL	7.42	7.39	34.028	26.599	147.9	0.705	2.51	37.2	44.5	2.25	30.5	0.00			302	
318		7.22	7.19	34.035	26.633	144.9	0.732	2.28	33.7	47.8	2.35	31.7	0.00			320	204
376		6.61	6.58	34.067	26.741	135.0	0.813	1.62	23.6	58.7	2.64	35.3	0.00			378	203
400	ISL	6.50	6.46	34.098	26.780	131.6	0.845	1.33	19.3	62.6	2.75	36.5	0.00			402	
437		6.36	6.32	34.149	26.839	126.5	0.893	0.93	13.5	68.2	2.90	38.0	0.00			440	202
500	ISL	5.93	5.89	34.206	26.940	117.5	0.969	0.56	8.0	77.9	3.08	40.0	0.00			503	
515		5.83	5.79	34.220	26.963	115.3	0.987	0.47	6.7	80.2	3.12	40.5	0.00			518	201

RV ROGER REVELLE CALCOFI CRUISE 9901 STATION 90 28

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT	TYPE
33 29.1 N	117 46.1 W	16/01/99	1231 UTC	66 m	080	05 kn			1015.1 mb	13.2 C	12.5 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	14.47	14.47	33.486	24.919	302.5	0.000	6.01	103.6	2.6	0.28	0.1	0.00	0.31	0.09	0	
2		14.47	14.47	33.486	24.919	302.5	0.006	6.01	103.6	2.6	0.28	0.1	0.00	0.31	0.09	2	207
10		14.44	14.44	33.491	24.930	301.7	0.030	6.01	103.5	2.6	0.27	0.1	0.00	0.35	0.13	10	206
20		14.09	14.09	33.507	25.016	293.8	0.060	5.82	99.5	3.4	0.34	0.7	0.11	1.06	0.46	20	205
30		13.75	13.75	33.516	25.094	286.7	0.089	5.57	94.6	4.6	0.50	2.0	0.30	0.81	0.44	30	204
40		13.33	13.32	33.543	25.200	276.8	0.117	4.99	84.0	7.4	0.74	5.7	0.42	0.39	0.31	40	203
50		12.83	12.82	33.570	25.321	265.6	0.144	4.54	75.7	9.7	0.93	9.0	0.18	0.28	0.25	50	202
60		12.60	12.59	33.601	25.390	259.3	0.171	4.23	70.2	11.5	1.06	11.1	0.11	0.17	0.20	60	201

RV ROGER REVELLE CALCOFI CRUISE 9901 STATION 90 30

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT	TYPE
33 25.1 N	117 54.3 W	16/01/99	0257 UTC	617 m	160	05 kn			1015.5 mb	16.0 C	14.8 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	14.62	14.62	33.492	24.892	305.0	0.000	5.95	102.8	3.0	0.29	0.0	0.01	0.17	0.06	0	
1		14.62	14.62	33.492	24.892	305.1	0.003	5.95	102.8	3.0	0.29	0.0	0.01	0.17	0.06	1	220
10		14.37	14.37	33.498	24.950	299.8	0.030	5.96	102.5	3.0	0.29	0.0	0.01	0.19	0.09	10	219
20		14.31	14.31	33.531	24.988	296.5	0.060	5.90	101.4	3.5	0.30	0.1	0.03	0.26	0.14	20	218
30		13.73	13.73	33.560	25.132	283.1	0.089	5.37	91.2	6.1	0.56	3.1	0.46	0.30	0.21	30	217
40		13.44	13.43	33.574	25.202	276.7	0.117	5.00	84.4	7.7	0.73	5.7	0.23	0.33	0.25	40	216
50		13.15	13.14	33.584	25.268	270.6	0.144	4.68	78.5	9.1	0.86	7.8	0.04	0.32	0.29	50	215
60		12.59	12.58	33.616	25.403	258.0	0.171	4.16	69.0	12.0	1.08	11.3	0.14	0.15	0.18	60	214
70		12.14	12.13	33.644	25.512	247.9	0.196	3.93	64.6	13.7	1.20	13.1	0.02	0.11	0.14	70	213
75	ISL	11.99	11.98	33.665	25.557	243.7	0.208	3.77	61.8	14.8	1.27	14.1	0.02	0.09	0.13	75	
85		11.74	11.73	33.704	25.634	236.6	0.232	3.49	56.9	16.8	1.41	16.0	0.02	0.06	0.11	85	212
100		11.38	11.37	33.731	25.721	228.6	0.267	3.33	53.9	18.4	1.50	17.5	0.01	0.04	0.09	101	211
120		10.89	10.88	33.790	25.856	216.2	0.312	3.17	50.7	20.4	1.62	19.3	0.01	0.04	0.09	121	210
125	ISL	10.62	10.61	33.785	25.900	212.1	0.323	3.29	52.4	20.6	1.62	19.5	0.01	0.03	0.09	126	
140		9.86	9.84	33.791	26.034	199.4	0.353	3.56	55.7	22.0	1.62	20.5	0.01	0.01	0.07	141	209
150	ISL	9.80	9.78	33.886	26.119	191.6	0.373	3.15	49.3	24.8	1.78	22.4	0.01	0.01	0.06	151	
168		9.70	9.68	34.034	26.251	179.4	0.406	2.24	35.0	30.5	2.11	25.9	0.01	0.01	0.05	169	208
198		9.15	9.13	34.107	26.399	165.9	0.458	2.08	32.1	35.2	2.25	28.0	0.01	0.00	0.04	199	207
200	ISL	9.13	9.11	34.112	26.406	165.3	0.461	2.06	31.8	35.5	2.26	28.1	0.01			201	
228		8.90	8.88	34.168	26.487	158.1	0.507	1.74	26.7	38.9	2.39	29.4	0.01			229	206
250	ISL	8.66	8.63	34.188	26.540	153.3	0.541	1.62	24.7	41.3	2.46	30.3	0.00			251	
268		8.46	8.43	34.197	26.578	150.0	0.568	1.56	23.7	43.3	2.51	30.9	0.00			270	205
300	ISL	8.13	8.10	34.210	26.639	144.6	0.615	1.38	20.8	47.1	2.61	32.0	0.00			302	
318		7.95	7.92	34.215	26.670	141.9	0.641	1.27	19.1	49.4	2.67	32.7	0.00			320	204
378		7.29	7.25	34.228	26.776	132.5	0.724	0.91	13.5	58.7	2.86	35.4	0.00			380	203
400	ISL	7.05	7.01	34.231	26.812	129.2	0.752	0.81	11.9	61.9	2.92	36.2	0.00			403	
438		6.68	6.64	34.241	26.870	124.0	0.800	0.67	9.8	67.3	3.01	37.5	0.00			441	202
500	ISL	6.24	6.20	34.285	26.963	115.6	0.875	0.43	6.2	76.8	3.16	39.4	0.00			503	
515		6.13	6.08	34.296	26.986	113.6	0.892	0.37	5.3	79.1	3.20	39.9	0.00			519	201

RV ROGER REVELLE CALCOFI CRUISE 9901 STATION 90 35

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT	TYPE
33 15.1 N	118 15.1 W	15/01/99	2256 UTC	335 m	290 02 kn	260 01 06	1	1016.0 mb	16.8 C	15.2 C	15m	3/8	CC

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	14.34	14.34	33.543	24.991	295.7	0.000	6.20	106.6	1.9	0.29	0.1	0.00	0.40	0.15	0	
1		14.34	14.34	33.543	24.991	295.7	0.003	6.20	106.6	1.9	0.29	0.1	0.00	0.40	0.15	1	217
10		14.24	14.24	33.545	25.014	293.8	0.029	6.19	106.2	1.8	0.29	0.1	0.00	0.42	0.16	10	216
20		13.90	13.90	33.556	25.093	286.5	0.058	6.01	102.4	3.1	0.37	0.9	0.10	1.62	0.65	20	215
30		13.45	13.45	33.558	25.187	277.8	0.087	5.38	90.8	5.6	0.60	4.0	0.34	1.04	0.52	30	214
40		12.76	12.75	33.610	25.365	261.1	0.114	4.40	73.2	10.7	1.00	10.3	0.26	0.71	0.52	40	213
50		12.17	12.16	33.635	25.499	248.6	0.139	4.09	67.2	12.8	1.16	12.9	0.09	0.41	0.37	50	212
60		11.14	11.13	33.635	25.689	230.6	0.163	4.11	66.1	14.5	1.24	14.8	0.02	0.11	0.16	60	211
70		10.72	10.71	33.672	25.793	221.0	0.186	4.01	63.9	16.6	1.34	16.6	0.02	0.06	0.11	70	210
75	ISL	10.59	10.58	33.682	25.824	218.2	0.197	4.00	63.6	17.1	1.36	17.0	0.02	0.06	0.11	75	
84		10.43	10.42	33.702	25.867	214.2	0.216	3.93	62.3	17.9	1.41	17.6	0.01	0.05	0.11	84	209
100		10.14	10.13	33.781	25.979	203.9	0.250	3.44	54.2	21.6	1.62	20.4	0.01	0.02	0.09	101	208
120		10.05	10.04	33.903	26.090	193.8	0.289	2.83	44.5	25.5	1.86	23.1	0.01	0.01	0.07	121	207
125	ISL	9.97	9.96	33.932	26.126	190.5	0.299	2.71	42.6	26.6	1.91	23.7	0.01			126	
140		9.72	9.70	34.012	26.230	180.8	0.327	2.42	37.8	29.8	2.05	25.5	0.01			141	206
150	ISL	9.60	9.58	34.058	26.286	175.7	0.345	2.23	34.8	31.5	2.13	26.4	0.01			151	
170		9.38	9.36	34.124	26.374	167.7	0.379	1.94	30.1	34.5	2.26	27.7	0.01			171	205
198		8.96	8.94	34.152	26.464	159.6	0.425	1.88	28.9	37.9	2.34	28.9	0.01			199	204
200	ISL	8.92	8.90	34.155	26.473	158.8	0.428	1.86	28.6	38.3	2.35	29.0	0.01			201	
229		8.43	8.41	34.195	26.581	149.0	0.473	1.50	22.8	44.2	2.52	31.0	0.01			230	203
250	ISL	8.27	8.24	34.203	26.612	146.4	0.504	1.46	22.1	46.1	2.56	31.6	0.01			252	
269		8.18	8.15	34.204	26.626	145.3	0.531	1.42	21.5	47.2	2.58	31.9	0.01			271	202
300	ISL	8.00	7.97	34.212	26.660	142.6	0.576	1.33	20.0	49.4	2.64	32.5	0.01			302	
319		7.89	7.86	34.217	26.680	140.9	0.603	1.27	19.1	50.7	2.68	32.9	0.01			321	201

RV ROGER REVELLE CALCOFI CRUISE 9901 STATION 90 37

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT	TYPE
33 11.1 N	118 23.2 W	15/01/99	1858 UTC	1176 m	250 06 kn	260 03 05	1	1019.1 mb	15.8 C	15.2 C	14m	5/8	CC

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	14.41	14.41	33.524	24.961	298.5	0.000	6.06	104.3	2.2	0.29	0.1	0.01	0.29	0.13	0	
1	A	14.41	14.41	33.524	24.961	298.5	0.003	6.06	104.3	2.2	0.29	0.1	0.01	0.29	0.13	1	221
1		14.41	14.41	33.524	24.961	298.5	0.003									1	222
10	A	14.15	14.15	33.556	25.041	291.2	0.030	6.21	106.4	2.1	0.29	0.1	0.00	0.50	0.20	10	220
19	A	14.06	14.06	33.566	25.068	288.9	0.056	6.24	106.7	2.1	0.30	0.1	0.00	0.66	0.29	19	219
20	ISL	14.01	14.01	33.571	25.082	287.5	0.059	6.21	106.1	2.3	0.32	0.3	0.02	0.79	0.34	20	
30	A	13.27	13.27	33.606	25.261	270.8	0.086	5.49	92.4	6.0	0.64	4.3	0.24	1.56	0.68	30	218
37	A	12.58	12.58	33.593	25.387	258.9	0.105	4.53	75.1	10.2	0.96	9.6	0.26	0.61	0.43	37	217
45		11.93	11.92	33.611	25.525	246.0	0.125	4.04	66.1	13.7	1.19	13.5	0.04	0.25	0.33	45	216
50	ISL	11.65	11.64	33.626	25.589	240.0	0.137	4.02	65.4	14.3	1.23	14.3	0.03	0.22	0.26	50	
52	A	11.56	11.55	33.634	25.612	237.8	0.142	4.01	65.1	14.5	1.24	14.5	0.03	0.21	0.23	52	215
62		11.37	11.36	33.700	25.698	229.9	0.165	3.55	57.4	17.1	1.42	16.8	0.02	0.14	0.20	62	214
69		11.14	11.13	33.711	25.749	225.2	0.181	3.53	56.8	17.8	1.46	17.5	0.02	0.12	0.16	69	213
75	ISL	10.97	10.96	33.734	25.797	220.7	0.195	3.44	55.2	18.8	1.52	18.3	0.02	0.09	0.14	75	
84		10.73	10.72	33.770	25.868	214.2	0.214	3.30	52.6	20.4	1.60	19.5	0.02	0.05	0.12	84	212
99		10.30	10.29	33.789	25.958	205.9	0.246	3.33	52.6	21.7	1.63	20.5	0.01	0.02	0.08	100	211
100	ISL	10.29	10.28	33.793	25.963	205.5	0.248	3.31	52.3	21.8	1.64	20.6	0.01	0.02	0.08	101	
118		10.10	10.09	33.883	26.066	196.1	0.284	2.91	45.8	25.0	1.82	22.8	0.01	0.02	0.07	119	210
125	ISL	9.97	9.96	33.914	26.112	191.8	0.298	2.81	44.1	26.2	1.88	23.5	0.01	0.02	0.08	126	
139		9.71	9.69	33.977	26.205	183.2	0.324	2.60	40.6	28.8	1.99	24.9	0.01	0.01	0.09	140	209
150	ISL	9.61	9.59	34.038	26.269	177.3	0.344	2.33	36.3	31.1	2.10	26.1	0.01	0.01	0.08	151	
168		9.48	9.46	34.127	26.360	169.1	0.375	1.90	29.5	34.6	2.26	27.8	0.01	0.00	0.05	169	208
198		9.07	9.05	34.188	26.475	158.7	0.424	1.65	25.4	39.0	2.40	29.4	0.01	0.00	0.06	199	207
200	ISL	9.04	9.02	34.190	26.481	158.1	0.427	1.64	25.3	39.3	2.41	29.5	0.01			201	
228		8.67	8.65	34.210	26.556	151.5	0.471	1.50	22.9	42.6	2.50	30.5	0.01			229	206
250	ISL	8.37	8.34	34.208	26.600	147.5	0.503	1.45	22.0	45.0	2.55	31.3	0.01			252	
267		8.15	8.12	34.206	26.632	144.7	0.528	1.40	21.1	46.9	2.58	31.9	0.01			269	205
300	ISL	7.85	7.82	34.225	26.692	139.4	0.575	1.17	17.5	51.6	2.70	33.3	0.01			302	
318		7.70	7.67	34.236	26.723	136.7	0.600	1.04	15.5	54.4	2.77	34.1	0.01			320	204
377		7.01	6.97	34.238	26.822	127.8	0.678	0.79	11.6	63.1	2.92	36.6	0.01			379	203
400	ISL	6.80	6.76	34.245	26.857	124.7	0.707	0.70	10.2	66.3	2.98	37.4	0.01			403	
437		6.50	6.46	34.262	26.910	120.0	0.752	0.56	8.1	71.3	3.06	38.4	0.01			440	202
500	ISL	6.13	6.09	34.305	26.993	112.7	0.826	0.37	5.3	78.8	3.17	39.9	0.00			503	
515		6.04	5.99	34.315	27.012	111.0	0.842	0.33	4.7	80.6	3.20	40.3	0.00			519	201

A) PRIMARY PRODUCTIVITY SAMPLES WERE TAKEN FROM THESE LEVELS.

RV ROGER REVELLE CALCOFI CRUISE 9901 STATION 90 45

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT	TYPE
32 55.2 N	118 56.2 W	15/01/99	0316 UTC	1696 m	130 09 kn			1020.2 mb	17.1 C	15.5 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	14.43	14.43	33.475	24.919	302.5	0.000	5.92	101.9	2.3	0.29	0.1	0.01	0.22	0.08	0	
1		14.43	14.43	33.475	24.919	302.5	0.003	5.92	101.9	2.3	0.29	0.1	0.01	0.22	0.08	1	220
10		14.37	14.37	33.475	24.932	301.5	0.030	5.93	102.0	2.2	0.29	0.1	0.01	0.24	0.10	10	219
20		14.37	14.37	33.477	24.934	301.6	0.060	5.91	101.6	2.1	0.29	0.1	0.01	0.28	0.12	20	218
30		13.90	13.90	33.431	24.997	295.9	0.090	5.92	100.8	3.0	0.36	0.7	0.11	0.45	0.24	30	217
40		13.35	13.34	33.415	25.097	286.6	0.119	5.71	96.1	4.3	0.51	2.7	0.32	0.54	0.31	40	216
50		12.87	12.86	33.446	25.217	275.5	0.147	5.17	86.2	6.9	0.73	6.4	0.05	0.33	0.27	50	215
60		12.31	12.30	33.492	25.361	262.0	0.174	4.69	77.3	9.8	0.92	9.6	0.03	0.19	0.19	60	214
70		11.81	11.80	33.541	25.494	249.5	0.200	4.28	69.8	12.6	1.11	12.7	0.02	0.12	0.15	70	213
75	ISL	11.46	11.45	33.578	25.587	240.7	0.212	4.15	67.2	13.8	1.19	14.0	0.02	0.10	0.14	75	
85		10.76	10.75	33.661	25.778	222.8	0.235	3.95	63.0	16.4	1.33	16.3	0.01	0.06	0.12	85	212
100		10.03	10.02	33.765	25.985	203.3	0.267	3.58	56.2	21.1	1.57	20.0	0.01	0.02	0.06	100	211
119		9.40	9.39	33.881	26.180	185.1	0.304	3.08	47.7	26.9	1.83	23.7	0.00	0.01	0.06	120	210
125	ISL	9.29	9.28	33.902	26.214	181.9	0.315	3.01	46.6	27.8	1.87	24.2	0.00	0.01	0.06	126	
139		9.11	9.09	33.938	26.272	176.7	0.340	2.92	45.0	29.4	1.93	25.0	0.00	0.01	0.05	140	209
150	ISL	8.96	8.94	33.967	26.318	172.5	0.360	2.81	43.2	31.0	1.99	25.8	0.00	0.01	0.05	151	
169		8.70	8.68	34.010	26.393	165.7	0.392	2.61	39.9	34.0	2.09	27.2	0.00	0.00	0.04	170	208
198		8.27	8.25	34.049	26.490	156.9	0.438	2.40	36.3	38.4	2.21	28.8	0.00	0.00	0.04	199	207
200	ISL	8.25	8.23	34.054	26.497	156.3	0.442	2.36	35.7	38.8	2.22	29.0	0.00			201	
228		7.99	7.97	34.119	26.587	148.1	0.484	1.84	27.7	44.2	2.43	31.0	0.00			229	206
250	ISL	7.82	7.80	34.141	26.630	144.4	0.516	1.65	24.7	47.2	2.52	32.0	0.00			251	
268		7.70	7.67	34.154	26.658	142.0	0.542	1.53	22.9	49.5	2.58	32.7	0.00			270	205
300	ISL	7.50	7.47	34.199	26.722	136.4	0.587	1.17	17.4	54.3	2.73	34.1	0.00			302	
318		7.38	7.35	34.224	26.759	133.1	0.611	0.98	14.5	57.0	2.81	34.8	0.00			320	204
378		6.92	6.88	34.261	26.853	124.9	0.688	0.64	9.4	64.5	2.98	36.7	0.00			380	203
400	ISL	6.72	6.68	34.265	26.883	122.2	0.715	0.57	8.3	67.6	3.03	37.4	0.00			403	
438		6.40	6.36	34.270	26.930	118.0	0.761	0.49	7.1	72.7	3.09	38.6	0.00			441	202
500	ISL	6.10	6.06	34.296	26.990	113.0	0.833	0.37	5.3	79.1	3.18	39.7	0.00			503	
515		6.03	5.98	34.303	27.004	111.7	0.850	0.34	4.9	80.6	3.20	40.0	0.00			519	201

RV ROGER REVELLE CALCOFI CRUISE 9901 STATION 90 53

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT	TYPE
32 39.1 N	119 28.9 W	14/01/99	2232 UTC	1186 m	340 08 kn	330 02 08	1	1021.0 mb	18.6 C	17.2 C		2/8	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	13.80	13.80	33.486	25.059	289.1	0.000	6.06	103.0	2.3	0.33	0.4	0.04	0.75	0.31	0	
1		13.80	13.80	33.486	25.059	289.2	0.003	6.06	103.0	2.3	0.33	0.4	0.04	0.75	0.31	1	220
10		13.76	13.76	33.486	25.068	288.6	0.029	6.04	102.6	2.3	0.33	0.4	0.04	0.75	0.30	10	219
20		13.74	13.74	33.486	25.072	288.5	0.058	6.04	102.5	2.3	0.33	0.5	0.04	0.76	0.30	20	218
30	ISL	13.08	13.08	33.481	25.202	276.4	0.086	5.75	96.3	4.9	0.54	3.3	0.27	0.59	0.33	30	
31		13.00	13.00	33.481	25.218	274.9	0.089	5.70	95.3	5.2	0.57	3.7	0.29	0.56	0.33	31	217
40		12.46	12.45	33.502	25.340	263.5	0.113	5.13	84.8	8.3	0.83	8.2	0.15	0.27	0.22	40	216
50		12.14	12.13	33.517	25.413	256.8	0.139	4.92	80.8	9.8	0.93	9.6	0.06	0.18	0.20	50	215
61		11.84	11.83	33.550	25.495	249.2	0.167	4.54	74.1	12.4	1.09	12.0	0.04	0.13	0.16	61	214
71		10.90	10.89	33.634	25.732	226.9	0.191	3.87	61.9	17.4	1.40	17.0	0.03	0.05	0.11	71	213
75	ISL	10.59	10.58	33.669	25.813	219.1	0.200	3.72	59.1	18.9	1.48	18.3	0.03	0.04	0.10	75	
84		10.05	10.04	33.742	25.963	205.0	0.219	3.49	54.8	21.7	1.62	20.4	0.02	0.02	0.09	84	212
99		9.67	9.66	33.820	26.088	193.4	0.249	3.19	49.7	25.6	1.78	22.9	0.03	0.01	0.07	100	211
100	ISL	9.63	9.62	33.825	26.098	192.5	0.250	3.18	49.5	25.8	1.79	23.0	0.03	0.01	0.07	101	
119		8.89	8.88	33.917	26.290	174.5	0.285	2.93	44.9	30.2	1.94	25.3	0.03	0.00	0.07	120	210
125	ISL	8.76	8.75	33.938	26.327	171.1	0.296	2.82	43.1	32.0	2.00	26.0	0.02	0.00	0.07	126	
139		8.55	8.54	33.979	26.391	165.2	0.319	2.58	39.3	35.7	2.13	27.6	0.01	0.00	0.08	140	209
150	ISL	8.46	8.44	34.009	26.429	161.8	0.337	2.42	36.8	37.1	2.19	28.3	0.01	0.00	0.07	151	
169		8.35	8.33	34.049	26.477	157.6	0.368	2.23	33.8	38.6	2.26	29.1	0.01	0.00	0.05	170	208
200		8.08	8.06	34.080	26.543	151.8	0.416	2.15	32.4	41.9	2.33	30.1	0.02	0.00	0.03	201	207
228		7.90	7.88	34.127	26.607	146.2	0.457	1.78	26.7	46.2	2.48	31.7	0.03			229	206
250	ISL	7.71	7.69	34.154	26.656	141.9	0.489	1.56	23.3	49.4	2.58	32.7	0.02			252	
268		7.53	7.50	34.172	26.696	138.3	0.514	1.39	20.7	52.3	2.66	33.6	0.01			270	205
300	ISL	7.16	7.13	34.205	26.775	131.2	0.557	1.04	15.3	59.1	2.83	35.5	0.01			302	
318		6.96	6.93	34.221	26.815	127.5	0.581	0.87	12.8	62.8	2.91	36.5	0.01			320	204
378		6.61	6.58	34.239	26.877	122.3	0.655	0.66	9.6	68.7	3.01	37.8	0.01			380	203
400	ISL	6.48	6.44	34.254	26.906	119.8	0.682	0.58	8.4	71.3	3.06	38.3	0.01			403	
437		6.27	6.23	34.281	26.955	115.5	0.726	0.47	6.8	75.6	3.13	39.2	0.01			440	202
500	ISL	5.98	5.94	34.306	27.012	110.7	0.797	0.35	5.0	81.5	3.21	40.3	0.01			503	
514		5.91	5.87	34.312	27.026	109.5	0.812	0.32	4.6	82.8	3.23	40.5	0.01			518	201

RV ROGER REVELLE CALCOFI CRUISE 9901 STATION 90 60

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT	TYPE
32 25.1 N	119 57.6 W	14/01/99	1807 UTC	873 m	320 15 kn		2	1022.0 mb	11.9 C	11.8 C	19m	8/8	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	12.67	12.67	33.484	25.284	267.7	0.000	6.26	103.9	5.6	0.57	3.5	0.11	0.65	0.33	0	
1	A	12.67	12.67	33.484	25.284	267.8	0.003	6.26	103.9	5.6	0.57	3.5	0.11	0.65	0.33	1	221
1		12.67	12.67	33.484	25.284	267.8	0.003									1	222
8		12.62	12.62	33.484	25.294	267.0	0.021	6.12	101.5	5.6	0.57	3.5	0.12	0.75	0.40	8	220
10	ISL	12.62	12.62	33.484	25.294	267.1	0.027	6.12	101.5	5.6	0.57	3.5	0.12	0.75	0.42	10	
15	A	12.62	12.62	33.485	25.295	267.1	0.040	6.12	101.5	5.6	0.57	3.5	0.12	0.76	0.46	15	219
20	ISL	12.53	12.53	33.511	25.333	263.6	0.053	6.04	100.0	5.6	0.62	3.9	0.18	0.61	0.45	20	
27	A	12.39	12.39	33.549	25.389	258.4	0.072	5.93	97.9	5.5	0.69	4.5	0.26	0.40	0.41	27	218
30	ISL	12.37	12.37	33.552	25.396	257.9	0.079	5.92	97.7	5.5	0.70	4.6	0.26	0.40	0.41	30	
34		12.35	12.35	33.552	25.399	257.7	0.090	5.90	97.3	5.5	0.70	4.7	0.27	0.39	0.42	34	217
42	A	12.29	12.28	33.557	25.415	256.4	0.110	5.82	95.9	5.9	0.74	5.1	0.28	0.33	0.43	42	216
50	ISL	11.92	11.91	33.566	25.492	249.2	0.130	5.35	87.5	8.8	0.92	8.3	0.32	0.25	0.39	50	
52	A	11.78	11.77	33.571	25.522	246.4	0.135	5.18	84.4	9.9	0.99	9.5	0.33	0.23	0.38	52	215
62		10.77	10.76	33.629	25.750	224.8	0.159	4.00	63.8	17.2	1.40	16.9	0.13	0.10	0.29	62	214
72	A	10.08	10.07	33.717	25.938	207.1	0.181	3.53	55.5	21.2	1.61	20.3	0.03	0.05	0.19	72	213
75	ISL	10.00	9.99	33.756	25.982	203.0	0.187	3.34	52.4	22.6	1.68	21.3	0.03	0.04	0.19	75	
85		9.87	9.86	33.874	26.097	192.4	0.207	2.81	44.0	26.9	1.89	23.9	0.02	0.03	0.17	85	212
99		9.49	9.48	33.918	26.194	183.3	0.233	2.68	41.6	29.2	1.97	25.1	0.02	0.02	0.17	100	211
100	ISL	9.47	9.46	33.921	26.200	182.8	0.235	2.68	41.6	29.3	1.97	25.2	0.02	0.02	0.17	101	
118		9.10	9.09	33.966	26.295	174.1	0.267	2.61	40.2	31.9	2.05	26.4	0.02	0.01	0.11	119	210
125	ISL	9.03	9.02	33.985	26.321	171.7	0.279	2.50	38.5	33.0	2.10	26.9	0.02	0.01	0.11	126	
138		8.92	8.91	34.017	26.364	167.9	0.301	2.29	35.2	35.0	2.18	27.8	0.02	0.01	0.11	139	209
150	ISL	8.74	8.72	34.035	26.406	164.1	0.321	2.27	34.7	36.6	2.22	28.4	0.02	0.01	0.10	151	
168		8.42	8.40	34.050	26.468	158.5	0.350	2.24	34.0	38.6	2.25	29.0	0.02	0.01	0.09	169	208
198		7.90	7.88	34.047	26.543	151.7	0.396	2.44	36.6	41.2	2.25	29.7	0.01	0.00	0.05	199	207
200	ISL	7.87	7.85	34.048	26.549	151.2	0.399	2.43	36.4	41.5	2.26	29.8	0.01			201	
228		7.47	7.45	34.072	26.625	144.2	0.441	2.11	31.3	46.8	2.41	31.6	0.01			229	206
250	ISL	7.25	7.23	34.098	26.677	139.6	0.472	1.81	26.8	51.1	2.54	33.1	0.01			252	
268		7.11	7.08	34.121	26.715	136.2	0.497	1.56	23.0	54.5	2.64	34.2	0.01			270	205
300	ISL	6.90	6.87	34.152	26.768	131.5	0.540	1.24	18.2	59.3	2.77	35.6	0.01			302	
317		6.81	6.78	34.168	26.793	129.4	0.562	1.09	16.0	61.7	2.83	36.2	0.01			319	204
377		6.47	6.44	34.252	26.906	119.5	0.637	0.56	8.1	71.1	3.06	38.4	0.01			379	203
400	ISL	6.37	6.33	34.270	26.933	117.1	0.664	0.47	6.8	73.4	3.11	38.9	0.01			403	
436		6.20	6.16	34.286	26.968	114.2	0.705	0.40	5.8	76.5	3.16	39.6	0.01			439	202
500	ISL	5.74	5.70	34.287	27.027	109.0	0.777	0.34	4.9	83.9	3.22	40.9	0.01			503	
515		5.63	5.59	34.288	27.042	107.7	0.793	0.33	4.7	85.6	3.23	41.2	0.01			519	201

A) PRIMARY PRODUCTIVITY SAMPLES WERE TAKEN FROM THESE LEVELS.

RV ROGER REVELLE CALCOFI CRUISE 9901 STATION 90 70

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT	TYPE
32 5.1 N	120 38.3 W	14/01/99	0645 UTC	3817 m	360 20 kn			1023.1 mb	12.8 C	11.9 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	13.69	13.69	33.288	24.929	301.6	0.000	5.98	101.3	2.9	0.34	0.4	0.05	0.65	0.31	0	
1		13.69	13.69	33.288	24.929	301.6	0.003	5.98	101.3	2.9	0.34	0.4	0.05	0.65	0.31	1	220
10		13.69	13.69	33.288	24.929	301.8	0.030	5.98	101.3	2.9	0.33	0.4	0.05	0.67	0.30	10	219
20		13.59	13.59	33.280	24.944	300.7	0.060	6.01	101.6	2.9	0.34	0.4	0.04	0.70	0.34	20	218
30		13.42	13.42	33.270	24.970	298.4	0.090	6.05	101.9	3.0	0.35	0.4	0.04	0.77	0.33	30	217
40		13.41	13.40	33.270	24.973	298.5	0.120	6.11	102.9	3.0	0.35	0.5	0.05	0.73	0.32	40	216
50		13.28	13.27	33.284	25.010	295.2	0.150	5.91	99.2	3.2	0.39	1.1	0.13	0.48	0.22	50	215
60		12.82	12.81	33.278	25.097	287.2	0.179	5.74	95.5	4.3	0.53	3.0	0.25	0.15	0.14	60	214
70		12.55	12.54	33.321	25.183	279.2	0.207	5.52	91.3	5.7	0.67	5.4	0.05	0.09	0.11	70	213
75	ISL	12.35	12.34	33.346	25.241	273.8	0.221	5.33	87.8	6.8	0.75	6.8	0.04	0.08	0.10	75	
85		11.88	11.87	33.409	25.379	260.9	0.248	4.90	79.9	9.4	0.93	9.8	0.02	0.06	0.08	85	212
100		11.06	11.05	33.545	25.635	236.8	0.285	4.24	68.0	14.2	1.23	14.7	0.01	0.04	0.07	100	211
120		10.27	10.26	33.721 D	25.910	210.9	0.330	4.03	63.6	17.7	1.38	17.6	0.01	0.02	0.05	121	210
125	ISL	10.07	10.06	33.748	25.965	205.7	0.340	4.00	62.9	18.6	1.41	18.2	0.01	0.02	0.04	126	
139		9.55	9.53	33.809	26.100	193.1	0.368	3.92	60.9	21.0	1.50	19.7	0.01	0.01	0.03	140	209
150	ISL	9.30	9.28	33.860	26.180	185.6	0.389	3.87	59.8	22.8	1.56	20.7	0.01	0.01	0.02	151	
169		9.00	8.98	33.933	26.286	175.9	0.423	3.73	57.3	25.9	1.67	22.4	0.01	0.00	0.02	170	208
199		8.57	8.55	33.980	26.390	166.5	0.475	3.26	49.6	31.3	1.88	25.4	0.01	0.00	0.02	200	207
200	ISL	8.55	8.53	33.982	26.395	166.1	0.476	3.23	49.1	31.6	1.89	25.6	0.01			201	
228		8.05	8.03	34.040	26.516	154.9	0.521	2.40	36.1	39.7	2.23	29.6	0.01			229	206
250	ISL	7.65	7.63	34.039	26.574	149.6	0.555	2.43	36.2	43.1	2.27	30.6	0.00			251	
268		7.35	7.32	34.028	26.608	146.4	0.581	2.46	36.4	45.3	2.30	30.9	0.00			270	205
300	ISL	6.89	6.86	34.033	26.676	140.2	0.627	2.21	32.4	50.8	2.43	32.6	0.00			302	
318		6.68	6.65	34.041	26.711	137.1	0.652	2.01	29.3	54.1	2.52	33.7	0.00			320	204
378		6.34	6.31	34.098	26.801	129.2	0.732	1.28	18.5	64.3	2.80	37.2	0.00			380	203
400	ISL	6.24	6.20	34.136	26.844	125.4	0.760	1.02	14.7	68.1	2.90	38.1	0.00			403	
438		6.09	6.05	34.198	26.913	119.3	0.807	0.64	9.2	74.1	3.05	39.4	0.00			441	202
500	ISL	5.81	5.77	34.231	26.974	114.0	0.879	0.48	6.9	80.3	3.15	40.5	0.00			503	
514		5.75	5.71	34.239	26.988	112.8	0.895	0.45	6.4	81.7	3.17	40.8	0.00			517	201

RV ROGER REVELLE CALCOFI CRUISE 9901 STATION 90 80

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT	TYPE
31 45.1 N	121 18.9 W	13/01/99	2252 UTC	3642 m	340 23 kn	330 05 06	1	1022.0 mb	13.9 C	13.2 C	13m	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	14.34	14.34	33.355	24.846	309.5	0.000	5.97	102.5	2.7	0.30	0.1	0.00	0.41	0.17	0	
2		14.34	14.34	33.355	24.846	309.5	0.006	5.97	102.5	2.7	0.30	0.1	0.00	0.41	0.17	2	220
10		14.33	14.33	33.356	24.849	309.4	0.031	5.98	102.7	2.6	0.30	0.1	0.00	0.46	0.19	10	219
20		14.34	14.34	33.358	24.849	309.8	0.062	5.95	102.2	2.6	0.30	0.1	0.00	0.45	0.17	20	218
30		14.45	14.45	33.401	24.859	309.1	0.093	5.95	102.4	2.6	0.30	0.1	0.01	0.48	0.18	30	217
40		14.51	14.50	33.439	24.876	307.8	0.124	5.89	101.5	2.5	0.31	0.2	0.02	0.45	0.17	40	216
49		13.71	13.70	33.354	24.977	298.3	0.151	5.77	97.8	3.4	0.42	1.4	0.19	0.47	0.29	49	215
50	ISL	13.72	13.71	33.368	24.986	297.5	0.154	5.75	97.5	3.4	0.42	1.5	0.19	0.46	0.29	50	
59		13.78	13.77	33.482	25.062	290.5	0.180	5.62	95.5	3.7	0.41	2.0	0.16	0.32	0.22	59	214
70		13.21	13.20	33.414	25.125	284.8	0.212	5.51	92.5	4.6	0.54	3.6	0.16	0.23	0.16	70	213
75	ISL	13.02	13.01	33.414	25.163	281.3	0.226	5.43	90.8	5.2	0.61	4.5	0.13	0.18	0.14	75	
85		12.70	12.69	33.447	25.252	273.1	0.254	5.19	86.2	6.8	0.74	6.6	0.07	0.09	0.11	85	212
99		12.22	12.21	33.534	25.412	258.1	0.291	4.65	76.5	9.6	0.93	9.9	0.03	0.09	0.11	99	211
100	ISL	12.14	12.13	33.542	25.433	256.1	0.294	4.60	75.5	10.0	0.96	10.3	0.03	0.09	0.11	100	
119		10.60	10.59	33.699	25.836	218.0	0.339	3.76	59.8	17.9	1.45	18.0	0.01	0.04	0.08	120	210
125	ISL	10.33	10.32	33.727	25.905	211.6	0.352	3.74	59.1	19.1	1.50	18.9	0.01	0.03	0.07	126	
139		9.89	9.87	33.773	26.015	201.2	0.381	3.69	57.8	21.0	1.56	19.9	0.01	0.01	0.04	140	209
150	ISL	9.62	9.60	33.811	26.090	194.3	0.402	3.47	54.0	22.8	1.63	21.0	0.01	0.01	0.02	151	
169		9.23	9.21	33.876	26.205	183.7	0.438	3.07	47.4	26.1	1.76	23.0	0.01	0.00	0.01	170	208
198		8.67	8.65	33.988	26.381	167.4	0.489	2.98	45.5	32.1	1.97	26.0	0.01	0.00	0.03	199	207
200	ISL	8.64	8.62	33.991	26.388	166.7	0.492	2.97	45.3	32.4	1.98	26.1	0.01			201	
228		8.19	8.17	34.017	26.477	158.6	0.538	2.84	42.9	36.8	2.09	27.8	0.01			229	206
250	ISL	7.86	7.84	34.029	26.536	153.3	0.572	2.68	40.2	40.1	2.18	29.0	0.00			251	
268		7.61	7.58	34.038	26.579	149.4	0.600	2.51	37.4	42.9	2.27	30.1	0.00			270	205
300	ISL	7.22	7.19	34.063	26.654	142.5	0.646	2.08	30.7	49.3	2.46	32.5	0.00			302	
318		7.08	7.05	34.088	26.694	139.0	0.672	1.79	26.3	52.8	2.57	33.7	0.00			320	204
378		7.26	7.22	34.274	26.816	128.6	0.752	0.71	10.5	60.3	2.93	35.7	0.00			380	203
400	ISL	7.11	7.07	34.296	26.854	125.2	0.780	0.56	8.3	63.4	3.01	36.5	0.00			403	
437		6.76	6.72	34.309	26.913	120.0	0.825	0.44	6.4	68.7	3.10	37.7	0.01			440	202
500	ISL	6.35	6.30	34.342	26.994	112.9	0.898	0.30	4.3	76.3	3.21	39.4	0.00			503	
513		6.27	6.22	34.349	27.010	111.5	0.913	0.27	3.9	77.9	3.23	39.7	0.00			516	201

RV ROGER REVELLE CALCOFI CRUISE 9901 STATION 90 90

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT	TYPE
31 25.6 N	122 1.0 W	13/01/99	1809 UTC	3838 m	350 18 kn	350 05 05	1	1013.3 mb	14.0 C	13.5 C	20m	5/8	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	14.16	14.16	33.346	24.876	306.5	0.000	5.97	102.1	2.9	0.33	0.2	0.01	0.39	0.17	0	
1	A	14.16	14.16	33.346	24.877	306.5	0.003	5.97	102.1	2.9	0.33	0.2	0.01	0.39	0.17	1	220
1		14.12	14.12	33.338	24.879	306.3	0.003									1	221
10	ISL	14.12	14.12	33.337	24.878	306.7	0.031	5.96	101.9	2.9	0.32	0.1	0.01	0.40	0.17	10	
15	A	14.09	14.09	33.330	24.879	306.7	0.046	5.96	101.8	2.9	0.32	0.1	0.01	0.41	0.17	15	219
20	ISL	14.08	14.08	33.327	24.879	306.9	0.061	5.97	102.0	2.9	0.32	0.1	0.01	0.42	0.16	20	
28	A	14.06	14.06	33.324	24.881	306.9	0.086	5.99	102.2	2.9	0.32	0.1	0.01	0.44	0.15	28	218
30	ISL	14.06	14.06	33.326	24.883	306.8	0.092	5.99	102.2	2.9	0.32	0.1	0.01	0.44	0.15	30	
43	A	14.04	14.03	33.337	24.896	305.9	0.132	5.98	102.0	2.8	0.33	0.2	0.01	0.45	0.18	43	217
50	ISL	13.57	13.56	33.300	24.964	299.6	0.153	5.97	100.9	3.1	0.38	0.6	0.08	0.50	0.25	50	
55	A	13.21	13.20	33.278	25.020	294.4	0.168	5.97	100.1	3.5	0.42	1.1	0.14	0.51	0.28	55	216
66		12.95	12.94	33.303	25.091	287.9	0.200	5.77	96.2	4.4	0.51	2.6	0.22	0.33	0.20	66	215
75	A	12.89	12.88	33.458	25.223	275.6	0.225	5.39	89.9	5.3	0.57	4.2	0.04	0.14	0.12	75	214
85		11.87	11.86	33.395	25.370	261.7	0.252	4.87	79.4	8.9	0.88	8.9	0.02	0.10	0.09	85	213
95		11.51	11.50	33.504	25.521	247.5	0.278	4.63	75.0	11.2	1.02	11.5	0.01	0.07	0.07	95	212
100	ISL	11.39	11.38	33.552	25.580	242.0	0.290	4.57	73.8	11.8	1.05	12.1	0.01	0.06	0.06	100	
110		11.12	11.11	33.646	25.703	230.6	0.313	4.50	72.3	12.9	1.10	13.1	0.01	0.05	0.05	111	211
124		10.43	10.42	33.787	25.934	208.7	0.344	4.35	68.9	16.0	1.24	15.7	0.01	0.02	0.03	125	210
125	ISL	10.39	10.38	33.791	25.944	207.8	0.346	4.33	68.6	16.2	1.25	15.9	0.01	0.02	0.03	126	
145		9.68	9.66	33.838	26.101	193.2	0.386	4.02	62.7	20.7	1.48	19.3	0.01	0.01	0.02	146	209
150	ISL	9.58	9.56	33.861	26.136	190.0	0.396	4.00	62.2	21.4	1.50	19.7	0.01	0.01	0.02	151	
169		9.28	9.26	33.943	26.249	179.5	0.431	3.94	60.9	24.0	1.57	21.0	0.01	0.00	0.02	170	208
199		8.68	8.66	33.991	26.382	167.3	0.483	3.66	55.9	29.4	1.75	23.6	0.01	0.00	0.02	200	207
200	ISL	8.66	8.64	33.992	26.386	167.0	0.485	3.64	55.5	29.6	1.76	23.7	0.01			201	
227		8.08	8.06	34.001	26.481	158.2	0.529	3.11	46.8	35.7	2.00	26.9	0.01			228	206
250	ISL	7.68	7.66	34.000	26.539	152.9	0.564	2.95	44.0	39.7	2.11	28.4	0.00			251	
268		7.46	7.43	34.011	26.579	149.2	0.592	2.81	41.7	42.6	2.19	29.4	0.00			270	205
300	ISL	7.45	7.42	34.109	26.658	142.3	0.638	1.94	28.8	48.9	2.48	32.1	0.00			302	
317		7.45	7.42	34.160	26.699	138.8	0.662	1.45	21.5	52.4	2.64	33.5	0.00			319	204
377		6.74	6.71	34.195	26.825	127.3	0.742	0.90	13.2	65.3	2.93	37.1	0.00			379	203
400	ISL	6.63	6.59	34.229	26.867	123.6	0.771	0.70	10.2	68.3	3.01	37.8	0.00			403	
437		6.50	6.46	34.284	26.928	118.3	0.816	0.45	6.5	72.2	3.11	38.5	0.00			440	202
500	ISL	6.09	6.05	34.315	27.006	111.4	0.888	0.33	4.8	79.8	3.21	40.0	0.00			503	
516		5.99	5.94	34.323	27.025	109.7	0.906	0.30	4.3	81.7	3.24	40.4	0.00			519	201

A) PRIMARY PRODUCTIVITY SAMPLES WERE TAKEN FROM THESE LEVELS.

RV ROGER REVELLE CALCOFI CRUISE 9901 STATION 90 100

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT	TYPE
31 5.1 N	122 39.8 W	13/01/99	0921 UTC	3996 m	350 16 kn			1022.7 mb	12.5 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	14.86	14.86	33.380	24.754	318.2	0.000	5.83	101.2	2.5	0.27	0.1	0.00	0.25	0.09	0	
2		14.86	14.86	33.380	24.754	318.2	0.006	5.83	101.2	2.5	0.27	0.1	0.00	0.25	0.09	2	220
10	ISL	14.86	14.86	33.379	24.754	318.5	0.032	5.83	101.2	2.6	0.26	0.1	0.00	0.25	0.09	10	
15		14.86	14.86	33.379	24.754	318.7	0.048	5.83	101.2	2.6	0.26	0.1	0.00	0.25	0.09	15	219
20	ISL	14.88	14.88	33.386	24.755	318.7	0.064	5.82	101.1	2.6	0.26	0.1	0.00	0.25	0.09	20	
30		14.92	14.92	33.400	24.758	318.8	0.096	5.81	101.0	2.5	0.26	0.1	0.00	0.25	0.09	30	218
45		15.21	15.20	33.531	24.796	315.6	0.143	5.79	101.3	2.5	0.24	0.1	0.00	0.25	0.13	45	217
50	ISL	15.24	15.23	33.545	24.800	315.3	0.159	5.78	101.2	2.5	0.24	0.1	0.00	0.26	0.12	50	
55		15.26	15.25	33.557	24.805	315.0	0.175	5.78	101.2	2.5	0.24	0.1	0.00	0.28	0.11	55	216
65		15.16	15.15	33.541	24.815	314.4	0.206	5.77	100.8	2.6	0.25	0.1	0.00	0.32	0.13	65	215
75		14.33	14.32	33.352	24.848	311.5	0.237	5.87	100.8	2.8	0.30	0.3	0.03	0.41	0.18	75	214
85		13.57	13.56	33.239	24.918	305.0	0.268	5.89	99.5	3.3	0.38	0.9	0.10	0.42	0.23	85	213
94		13.15	13.14	33.311	25.058	291.8	0.295	5.74	96.1	4.3	0.47	2.4	0.20	0.23	0.16	94	212
100	ISL	12.99	12.98	33.343	25.115	286.6	0.312	5.66	94.5	4.7	0.51	2.7	0.17	0.17	0.14	100	
110		12.60	12.59	33.386	25.224	276.3	0.341	5.53	91.6	5.4	0.58	4.2	0.13	0.13	0.13	110	211
125		11.11	11.09	33.481	25.576	242.9	0.380	4.42	71.0	13.1	1.15	13.2	0.01	0.05	0.07	126	210
144		10.51	10.49	33.726	25.873	215.0	0.423	4.33	68.7	15.6	1.24	15.4	0.01	0.02	0.04	145	209
150	ISL	10.28	10.26	33.756	25.936	209.1	0.436	4.18	66.0	17.2	1.32	16.7	0.01	0.02	0.04	151	
168		9.64	9.62	33.805	26.082	195.4	0.472	3.65	56.9	22.6	1.61	20.8	0.01	0.01	0.03	169	208
198		9.03	9.01	33.953	26.297	175.5	0.528	3.00	46.1	30.0	1.93	25.1	0.01	0.00	0.02	199	207
200	ISL	9.00	8.98	33.959	26.307	174.6	0.531	2.97	45.6	30.4	1.95	25.3	0.01			201	
229		8.59	8.57	34.021	26.420	164.3	0.580	2.59	39.5	35.2	2.13	27.6	0.00			230	206
250	ISL	8.31	8.28	34.064	26.496	157.3	0.614	2.30	34.8	39.1	2.26	29.1	0.00			251	
269		8.02	7.99	34.089	26.560	151.5	0.644	2.10	31.6	42.6	2.36	30.3	0.00			270	205
300	ISL	7.36	7.33	34.067	26.638	144.2	0.689	2.12	31.4	47.6	2.42	31.8	0.00			302	
318		6.98	6.95	34.046	26.674	140.8	0.715	2.13	31.3	50.5	2.45	32.6	0.00			320	204
378		6.30	6.27	34.046	26.765	132.5	0.797	1.69	24.4	61.1	2.68	35.8	0.00			380	203
400	ISL	6.14	6.10	34.068	26.803	129.1	0.826	1.42	20.4	65.3	2.79	37.1	0.00			402	
438		5.91	5.87	34.116	26.870	123.1	0.874	0.97	13.9	72.4	2.96	39.1	0.00			441	202
500	ISL	5.56	5.52	34.183	26.967	114.4	0.947	0.61	8.7	82.1	3.13	40.8	0.00			503	
515		5.47	5.43	34.200	26.991	112.2	0.964	0.52	7.4	84.5	3.17	41.2	0.00			518	201

RV ROGER REVELLE CALCOFI CRUISE 9901 STATION 90 110

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT	TYPE
30 45.1 N	123 19.9 W	13/01/99	0309 UTC	4015 m	340 20 kn			1022.9 mb	14.0 C	12.8 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	14.78	14.78	33.375	24.768	316.9	0.000	5.86	101.5	2.8	0.29	0.1	0.00	0.24	0.09	0	
1		14.78	14.78	33.375	24.768	316.9	0.003	5.86	101.5	2.8	0.29	0.1	0.00	0.24	0.09	1	220
10	ISL	14.79	14.79	33.375	24.766	317.4	0.032	5.86	101.6	2.7	0.29	0.1	0.00	0.25	0.09	10	
15		14.79	14.79	33.375	24.766	317.5	0.048	5.86	101.6	2.7	0.29	0.1	0.00	0.25	0.09	15	219
20	ISL	14.79	14.79	33.375	24.766	317.6	0.063	5.85	101.4	2.7	0.29	0.1	0.00	0.24	0.09	20	
29		14.79	14.79	33.375	24.766	317.9	0.092	5.84	101.2	2.6	0.29	0.1	0.00	0.24	0.10	29	218
30	ISL	14.79	14.79	33.375	24.766	317.9	0.095	5.84	101.2	2.6	0.29	0.1	0.00	0.24	0.10	30	
45		14.77	14.76	33.382	24.776	317.4	0.143	5.84	101.2	2.6	0.29	0.1	0.00	0.30	0.10	45	217
50	ISL	14.77	14.76	33.383	24.777	317.5	0.159	5.85	101.3	2.5	0.29	0.1	0.00	0.32	0.12	50	
54		14.77	14.76	33.383	24.778	317.6	0.171	5.85	101.3	2.5	0.29	0.1	0.00	0.33	0.13	54	216
64		14.75	14.74	33.382	24.781	317.5	0.203	5.82	100.8	2.5	0.29	0.1	0.00	0.37	0.15	64	215
74		14.68	14.67	33.376	24.792	316.8	0.235	5.78	99.9	2.5	0.31	0.1	0.03	0.34	0.22	74	214
75	ISL	14.66	14.65	33.375	24.796	316.4	0.238	5.78	99.9	2.5	0.31	0.1	0.04	0.32	0.21	75	
84		14.52	14.51	33.365	24.818	314.6	0.266	5.73	98.7	2.6	0.33	0.3	0.09	0.17	0.11	84	213
94		13.60	13.59	33.387	25.026	294.9	0.297	5.48	92.7	4.1	0.46	2.4	0.06	0.10	0.09	94	212
100	ISL	13.25	13.24	33.384	25.095	288.5	0.314	5.35	89.8	4.9	0.53	3.4	0.04	0.08	0.09	100	
109		12.85	12.84	33.409	25.194	279.3	0.340	5.18	86.3	6.0	0.62	4.9	0.02	0.07	0.08	109	211
124		12.22	12.20	33.644	25.498	250.6	0.380	4.94	81.3	8.1	0.73	7.5	0.01	0.05	0.06	125	210
125	ISL	12.16	12.14	33.648	25.512	249.2	0.382	4.92	80.9	8.3	0.75	7.8	0.01	0.05	0.06	126	
144		10.98	10.96	33.665	25.743	227.5	0.428	4.45	71.3	13.4	1.11	13.5	0.01	0.03	0.05	145	209
150	ISL	10.60	10.58	33.695	25.834	218.9	0.441	4.31	68.5	15.3	1.22	15.2	0.01	0.02	0.05	151	
169		9.60	9.58	33.810	26.093	194.4	0.480	3.95	61.5	21.0	1.50	19.6	0.00	0.01	0.03	170	208
199		9.02	9.00	33.912	26.267	178.4	0.536	3.74	57.5	26.0	1.67	22.2	0.00	0.00	0.02	200	207
200	ISL	9.00	8.98	33.915	26.272	177.9	0.538	3.73	57.3	26.2	1.68	22.3	0.00			201	
228		8.33	8.31	33.987	26.433	162.9	0.586	3.37	51.0	32.7	1.88	25.4	0.00			229	206
250	ISL	7.92	7.89	34.006	26.509	155.9	0.621	3.08	46.2	37.4	2.03	27.4	0.00			251	
268		7.63	7.60	34.011	26.555	151.6	0.648	2.85	42.5	41.0	2.15	28.9	0.00			269	205
300	ISL	7.13	7.10	34.028	26.639	143.9	0.696	2.44	35.9	47.3	2.35	31.4	0.00			302	
318		6.88	6.85	34.037	26.681	140.1	0.721	2.21	32.4	50.9	2.45	32.7	0.00			320	204
378		6.19	6.16	34.072	26.800	129.2	0.802	1.41	20.3	64.7	2.78	37.0	0.00			380	203
400	ISL	5.98	5.95	34.085	26.837	125.8	0.830	1.21	17.4	69.0	2.87	38.2	0.00			402	
437		5.70	5.66	34.112	26.893	120.7	0.876	0.93	13.3	75.5	3.00	39.7	0.00			440	202
500	ISL	5.51	5.47	34.198	26.985	112.7	0.949	0.54	7.7	83.8	3.16	41.2	0.00			503	
514		5.47	5.43	34.217	27.005	110.9	0.965	0.45	6.4	85.6	3.20	41.5	0.00			517	201

RV ROGER REVELLE CALCOFI CRUISE 9901 STATION 90 120

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT	TYPE
30 25.1 N	123 59.9 W	12/01/99	1802 UTC	4228 m	360 09 kn	340 03 04	1	1022.8 mb	15.1 C	14.5 C	32m	2/8	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	15.57	15.57	33.503	24.694	323.9	0.000	5.75	101.3	2.5	0.24	0.0	0.00	0.15	0.05	0	
1	A	15.57	15.57	33.503	24.694	324.0	0.003	5.75	101.3	2.5	0.24	0.0	0.00	0.15	0.05	1	222
1		15.56	15.56	33.503	24.696	323.8	0.003									1	223
10	ISL	15.56	15.56	33.504	24.697	323.9	0.032	5.76	101.5	2.5	0.24	0.0	0.00	0.16	0.05	10	
13		15.55	15.55	33.505	24.700	323.7	0.042	5.76	101.4	2.5	0.24	0.0	0.00	0.16	0.05	13	221
20	ISL	15.54	15.54	33.506	24.703	323.7	0.065	5.76	101.4	2.5	0.24	0.0	0.00	0.16	0.06	20	
25	A	15.54	15.54	33.505	24.703	323.9	0.081	5.75	101.2	2.5	0.24	0.0	0.00	0.16	0.06	25	220
30	ISL	15.53	15.53	33.503	24.703	323.9	0.097	5.74	101.1	2.5	0.25	0.0	0.00	0.16	0.05	30	
35		15.52	15.51	33.499	24.703	324.1	0.113	5.74	101.0	2.4	0.25	0.0	0.00	0.16	0.05	35	219
45	A	15.47	15.46	33.487	24.705	324.3	0.146	5.76	101.3	2.3	0.24	0.0	0.00	0.17	0.06	45	218
50	ISL	15.32	15.31	33.449	24.709	324.0	0.162	5.78	101.3	2.3	0.24	0.0	0.00	0.19	0.07	50	
55		15.18	15.17	33.413	24.712	323.9	0.178	5.80	101.3	2.3	0.25	0.0	0.00	0.21	0.08	55	217
67	A	15.19	15.18	33.422	24.717	323.8	0.217	5.79	101.2	2.3	0.25	0.0	0.00	0.25	0.10	67	216
75	ISL	15.18	15.17	33.421	24.719	323.8	0.243	5.78	101.0	2.3	0.25	0.0	0.00	0.27	0.12	75	
78		15.18	15.17	33.420	24.718	324.0	0.253	5.78	101.0	2.3	0.25	0.0	0.00	0.27	0.12	78	215
88	A	15.16	15.15	33.421	24.724	323.8	0.285	5.78	100.9	2.4	0.26	0.0	0.00	0.24	0.11	88	214
98		15.09	15.08	33.416	24.735	322.9	0.317	5.74	100.1	2.4	0.27	0.1	0.02	0.17	0.11	98	213
100	ISL	15.08	15.06	33.439	24.755	321.1	0.324	5.73	99.9	2.5	0.27	0.1	0.04	0.17	0.12	100	
109		15.06	15.04	33.585	24.872	310.2	0.352	5.66	98.7	2.9	0.28	0.4	0.11	0.19	0.14	109	212
120	A	14.20	14.18	33.565	25.041	294.4	0.385	5.60	96.0	3.6	0.34	1.2	0.08	0.12	0.12	121	211
125	ISL	13.85	13.83	33.520	25.079	290.8	0.400	5.51	93.7	4.1	0.40	2.0	0.04	0.10	0.10	126	
128		13.67	13.65	33.499	25.100	288.9	0.409	5.45	92.4	4.4	0.43	2.5	0.02	0.09	0.09	129	210
139		13.34	13.32	33.587	25.235	276.3	0.440	5.32	89.6	5.2	0.50	3.6	0.01	0.06	0.07	140	209
150	ISL	12.79	12.77	33.659	25.400	260.7	0.469	5.11	85.1	6.7	0.62	5.7	0.01	0.04	0.06	151	
164		11.91	11.89	33.734	25.627	239.3	0.504	4.82	78.8	9.5	0.82	9.2	0.01	0.03	0.05	165	208
194		9.84	9.82	33.852	26.087	195.7	0.570	4.32	67.6	18.8	1.34	17.6	0.00	0.01	0.02	195	207
200	ISL	9.62	9.60	33.878	26.143	190.3	0.581	4.26	66.3	20.2	1.39	18.5	0.00			201	
228		8.96	8.94	33.971	26.323	173.6	0.632	4.04	62.0	25.7	1.57	21.3	0.00			229	206
250	ISL	8.59	8.56	33.995	26.400	166.6	0.670	3.79	57.7	29.6	1.71	23.3	0.00			251	
267		8.35	8.32	33.999	26.440	163.0	0.698	3.57	54.1	32.5	1.82	24.7	0.00			268	205
300	ISL	7.77	7.74	34.008	26.533	154.4	0.750	3.11	46.5	38.6	2.05	27.6	0.00			302	
317		7.48	7.45	34.013	26.579	150.1	0.776	2.85	42.3	42.0	2.17	29.1	0.00			319	204
377		6.66	6.63	34.054	26.724	136.7	0.862	1.89	27.5	56.0	2.58	34.3	0.00			379	203
400	ISL	6.51	6.47	34.092	26.774	132.2	0.893	1.51	21.9	60.8	2.72	35.8	0.00			402	
436		6.33	6.29	34.150	26.844	126.0	0.939	1.01	14.6	67.7	2.91	37.7	0.00			439	202
500	ISL	5.78	5.74	34.177	26.935	117.7	1.017	0.68	9.7	78.6	3.08	40.1	0.00			503	
515		5.65	5.61	34.184	26.957	115.7	1.035	0.60	8.5	81.1	3.12	40.7	0.00			518	201

A) PRIMARY PRODUCTIVITY SAMPLES WERE TAKEN FROM THESE LEVELS.

RV ROGER REVELLE CALCOFI CRUISE 9901 STATION 93 26.7

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT	TYPE
32 57.4 N	117 18.3 W	09/01/99	1949 UTC	64 m	210 05 kn	270 01 15	1	1022.0 mb	16.5 C	13.0 C	15m	3/8	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	14.19	14.19	33.486	24.978	296.8	0.000	5.99	102.6	3.6	0.32	0.7	0.07	1.05	0.56	0	
1	A	14.19	14.19	33.486	24.978	296.9	0.003	5.99	102.6	3.6	0.32	0.7	0.07	1.05	0.56	1	207
10	ISL	14.14	14.14	33.485	24.988	296.2	0.030	5.94	101.7	3.7	0.33	0.9	0.09	1.00	0.61	10	
12	A	14.12	14.12	33.484	24.992	295.9	0.036	5.93	101.5	3.7	0.33	0.9	0.09	0.98	0.62	12	206
20	ISL	14.06	14.06	33.475	24.998	295.6	0.059	5.74	98.1	4.4	0.42	1.9	0.18	0.94	0.59	20	
21	A	14.05	14.05	33.472	24.997	295.6	0.062	5.71	97.5	4.5	0.43	2.0	0.19	0.93	0.59	21	205
30	ISL	13.75	13.75	33.479	25.065	289.4	0.089	5.44	92.4	5.5	0.53	3.4	0.28	0.76	0.58	30	
32	A	13.68	13.68	33.484	25.083	287.8	0.094	5.38	91.2	5.7	0.55	3.7	0.30	0.71	0.58	32	204
41	A	13.55	13.54	33.530	25.146	282.1	0.120	5.24	88.6	6.7	0.62	4.4	0.37	0.41	0.42	41	203
49		13.53	13.52	33.555	25.169	280.1	0.142	5.14	86.9	7.3	0.69	4.9	0.36	0.27	0.36	49	202
50	ISL	13.52	13.51	33.556	25.172	279.8	0.145	5.14	86.9	7.4	0.69	5.0	0.36	0.27	0.37	50	
57	A	13.49	13.48	33.559	25.181	279.2	0.165	5.11	86.3	7.8	0.71	5.4	0.39	0.24	0.40	57	201

A) PRIMARY PRODUCTIVITY SAMPLES WERE TAKEN FROM THESE LEVELS.

RV ROGER REVELLE CALCOFI CRUISE 9901 STATION 93 28

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT	TYPE
32 54.8 N	117 23.7 W	09/01/99	2219 UTC	645 m	280 12 kn	270 01 15	1	1020.0 mb	17.8 C	13.0 C	21m	3/8	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	14.75	14.75	33.469	24.847	309.4	0.000	5.92	102.6	3.0	0.31	0.0	0.01	0.25	0.08	0	
1		14.74	14.74	33.468	24.848	309.3	0.003									1	221
1		14.75	14.75	33.469	24.847	309.4	0.003	5.92	102.6	3.0	0.31	0.0	0.01	0.25	0.08	1	220
10	ISL	14.51	14.51	33.469	24.898	304.8	0.031	5.90	101.7	2.7	0.29	0.0	0.01	0.32	0.11	10	
11		14.48	14.48	33.469	24.904	304.2	0.034	5.90	101.7	2.7	0.29	0.0	0.01	0.33	0.12	11	219
19		14.43	14.43	33.459	24.908	304.1	0.058	5.91	101.7	2.8	0.30	0.1	0.03	0.41	0.15	19	218
20	ISL	14.41	14.41	33.458	24.911	303.8	0.061	5.90	101.5	2.8	0.31	0.2	0.04	0.42	0.16	20	
30		14.15	14.15	33.453	24.962	299.3	0.091	5.71	97.7	3.7	0.40	1.4	0.11	0.53	0.29	30	217
39		13.74	13.73	33.470	25.060	290.1	0.118	5.44	92.3	5.3	0.53	3.2	0.20	0.50	0.35	39	216
49		13.41	13.40	33.555	25.193	277.7	0.146	5.06	85.3	7.5	0.69	5.6	0.27	0.27	0.32	49	215
50	ISL	13.36	13.35	33.561	25.208	276.3	0.149	5.00	84.2	7.8	0.72	6.0	0.26	0.26	0.32	50	
60		12.94	12.93	33.606	25.327	265.3	0.176	4.45	74.3	10.6	0.95	9.5	0.08	0.20	0.28	60	214
69		12.79	12.78	33.625	25.372	261.3	0.200	4.29	71.5	11.7	1.02	10.6	0.03	0.18	0.27	69	213
75	ISL	12.60	12.59	33.630	25.413	257.5	0.215	4.18	69.3	12.3	1.07	11.4	0.03	0.16	0.25	75	
85		12.17	12.16	33.651	25.512	248.3	0.241	3.91	64.3	14.1	1.20	13.3	0.02	0.12	0.20	85	212
99		11.35	11.34	33.749	25.741	226.7	0.274	3.26	52.7	19.4	1.53	18.0	0.01	0.05	0.11	99	211
100	ISL	11.32	11.31	33.754	25.750	225.8	0.276	3.23	52.2	19.6	1.54	18.2	0.01	0.05	0.11	100	
119		10.89	10.88	33.830	25.887	213.2	0.318	2.90	46.4	22.7	1.71	20.6	0.01	0.02	0.08	120	210
125	ISL	10.72	10.70	33.851	25.934	208.9	0.331	2.85	45.5	23.5	1.75	21.2	0.01	0.02	0.07	126	
139		10.34	10.32	33.898	26.037	199.4	0.359	2.76	43.7	25.3	1.84	22.6	0.01	0.01	0.06	140	209
150	ISL	10.14	10.12	33.940	26.104	193.2	0.381	2.62	41.3	26.9	1.92	23.6	0.01	0.01	0.05	151	
169		9.88	9.86	34.010	26.203	184.2	0.417	2.36	37.0	29.7	2.05	25.2	0.01	0.01	0.05	170	208
199		9.48	9.46	34.102	26.341	171.5	0.470	2.02	31.4	34.0	2.22	27.2	0.01	0.00	0.04	200	207
200	ISL	9.47	9.45	34.104	26.345	171.2	0.472	2.01	31.2	34.1	2.22	27.3	0.01			201	
229		9.21	9.18	34.152	26.425	164.1	0.520	1.87	28.9	37.0	2.33	28.5	0.00			230	206
250	ISL	9.01	8.98	34.184	26.482	159.0	0.554	1.71	26.3	39.3	2.40	29.3	0.00			251	
268		8.82	8.79	34.203	26.527	155.0	0.582	1.57	24.1	41.5	2.46	29.9	0.00			270	205
300	ISL	8.35	8.32	34.204	26.601	148.4	0.631	1.48	22.4	45.6	2.54	31.2	0.00			302	
317		8.08	8.05	34.201	26.640	144.9	0.656	1.43	21.6	48.1	2.58	32.0	0.00			319	204
378		7.29	7.25	34.226	26.774	132.6	0.740	0.96	14.2	58.8	2.82	35.1	0.00			380	203
400	ISL	7.01	6.97	34.235	26.820	128.4	0.769	0.81	11.9	63.1	2.90	36.2	0.00			403	
437		6.58	6.54	34.253	26.893	121.7	0.815	0.60	8.7	70.0	3.03	37.8	0.00			440	202
500	ISL	6.11	6.07	34.291	26.984	113.5	0.890	0.40	5.8	78.9	3.16	39.5	0.01			503	
513		6.01	5.96	34.299	27.003	111.7	0.904	0.36	5.2	80.7	3.19	39.9	0.01			517	201

RV ROGER REVELLE CALCOFI CRUISE 9901 STATION 93 30

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT	TYPE
32 50.8 N	117 31.9 W	10/01/99	0124 UTC	854 m	340 10 kn			1020.2 mb	16.6 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	14.61	14.61	33.453	24.864	307.7	0.000	5.95	102.8	2.7	0.30	0.0	0.00	0.25	0.08	0	
2		14.61	14.61	33.453	24.864	307.8	0.006	5.95	102.8	2.7	0.30	0.0	0.00	0.25	0.08	2	220
10		14.55	14.55	33.447	24.873	307.2	0.031	5.96	102.8	2.7	0.30	0.1	0.00	0.42	0.16	10	219
20		13.97	13.97	33.439	24.988	296.4	0.061	5.63	96.0	4.4	0.45	1.8	0.13	0.77	0.42	20	218
30		13.57	13.57	33.477	25.100	286.1	0.090	5.29	89.5	6.0	0.60	4.0	0.19	0.49	0.31	30	217
40		13.59	13.58	33.563	25.163	280.4	0.118	5.14	87.0	7.4	0.67	5.0	0.35	0.36	0.35	40	216
50		13.11	13.10	33.601	25.289	268.6	0.146	4.56	76.5	10.2	0.90	8.7	0.11	0.27	0.28	50	215
60		12.81	12.80	33.615	25.360	262.2	0.172	4.29	71.5	11.6	1.02	10.4	0.05	0.18	0.21	60	214
70		12.38	12.37	33.645	25.467	252.2	0.198	3.97	65.6	13.8	1.18	12.7	0.03	0.12	0.16	70	213
75	ISL	12.18	12.17	33.664	25.520	247.3	0.211	3.83	63.0	15.0	1.26	13.8	0.03	0.10	0.15	75	
85		11.83	11.82	33.701	25.615	238.4	0.235	3.59	58.6	17.1	1.39	15.8	0.02	0.07	0.13	85	212
100		11.41	11.40	33.743	25.725	228.2	0.270	3.27	52.9	19.2	1.53	17.8	0.01	0.05	0.11	100	211
120		10.98	10.97	33.807	25.853	216.5	0.314	2.98	47.8	21.8	1.69	20.0	0.01	0.03	0.08	121	210
125	ISL	10.88	10.86	33.826	25.886	213.5	0.325	2.90	46.4	22.5	1.73	20.6	0.01	0.02	0.08	126	
139		10.59	10.57	33.881	25.980	204.8	0.354	2.71	43.1	24.6	1.84	22.1	0.01	0.01	0.07	140	209
150	ISL	10.33	10.31	33.922	26.057	197.7	0.377	2.61	41.3	26.2	1.91	23.2	0.01	0.01	0.06	151	
169		9.92	9.90	33.993	26.183	186.1	0.413	2.44	38.3	28.9	2.02	24.8	0.01	0.01	0.05	170	208
199		9.53	9.51	34.108	26.338	171.9	0.467	2.00	31.1	33.8	2.24	27.2	0.01	0.00	0.04	200	207
200	ISL	9.52	9.50	34.110	26.341	171.6	0.468	1.99	31.0	33.9	2.24	27.2	0.01			201	
229		9.30	9.27	34.144	26.404	166.1	0.517	1.83	28.3	36.5	2.33	28.3	0.01			230	206
250	ISL	9.03	9.00	34.175	26.472	160.0	0.552	1.67	25.7	39.2	2.41	29.2	0.00			251	
268		8.78	8.75	34.198	26.530	154.8	0.580	1.54	23.6	41.6	2.48	30.0	0.00			270	205
300	ISL	8.37	8.34	34.201	26.596	148.9	0.628	1.46	22.2	45.1	2.56	31.1	0.00			302	
317		8.16	8.13	34.200	26.627	146.1	0.654	1.41	21.3	47.2	2.60	31.7	0.00			319	204
377		7.43	7.39	34.253	26.776	132.6	0.737	0.82	12.2	58.6	2.89	35.0	0.00			379	203
400	ISL	7.13	7.09	34.262	26.825	128.0	0.767	0.69	10.2	62.7	2.97	36.1	0.00			403	
437		6.71	6.67	34.273	26.891	122.0	0.813	0.54	7.9	68.7	3.07	37.5	0.00			440	202
500	ISL	6.34	6.29	34.293	26.956	116.4	0.888	0.40	5.8	75.2	3.17	38.9	0.00			503	
516		6.25	6.20	34.298	26.972	115.0	0.907	0.37	5.3	76.8	3.19	39.3	0.00			520	201

RV ROGER REVELLE CALCOFI CRUISE 9901 STATION 93 35

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT TYPE
32 40.8 N	117 52.4 W	10/01/99	0539 UTC	621 m	340 05 kn			1020.0 mb	17.1 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	14.62	14.62	33.507	24.904	304.0	0.000	5.88	101.6	2.8	0.28	0.1	0.00	0.16	0.06	0	
2	14.62	14.62	33.508	24.904	303.9	0.006									2	222
2	14.62	14.62	33.507	24.904	304.0	0.006	5.88	101.6	2.8	0.28	0.1	0.00	0.16	0.06	2	221
10	14.61	14.61	33.507	24.906	304.0	0.030	5.88	101.6	2.8	0.28	0.1	0.00	0.17	0.07	10	220
20	14.60	14.60	33.507	24.909	304.1	0.061	5.89	101.8	2.8	0.28	0.1	0.00	0.16	0.07	20	219
30	14.55	14.55	33.511	24.923	303.0	0.091	5.87	101.3	2.9	0.29	0.1	0.01	0.34	0.17	30	218
40	14.09	14.08	33.525	25.031	293.0	0.121	5.65	96.6	4.1	0.40	1.5	0.16	0.57	0.35	40	216
40	14.16	14.15	33.526	25.017	294.3	0.121									40	217
50	13.64	13.63	33.542	25.137	283.2	0.150	5.22	88.5	6.4	0.60	4.3	0.25	0.45	0.35	50	215
60	13.18	13.17	33.567	25.249	272.7	0.178	4.68	78.6	9.3	0.83	7.9	0.13	0.41	0.44	60	214
70	12.03	12.02	33.642	25.531	246.0	0.204	3.78	62.0	15.1	1.25	14.3	0.02	0.16	0.22	70	213
75 ISL	11.95	11.94	33.655	25.556	243.8	0.216	3.72	60.9	15.6	1.28	14.8	0.02	0.15	0.21	75	
85	11.79	11.78	33.680	25.606	239.3	0.240	3.60	58.7	16.7	1.35	15.8	0.01	0.12	0.19	85	212
100	11.18	11.17	33.733	25.759	225.0	0.275	3.35	53.9	19.6	1.50	18.1	0.01	0.06	0.13	100	211
119	10.18	10.17	33.730	25.932	208.7	0.316	3.80	59.9	19.9	1.46	18.6	0.01	0.02	0.08	120	210
125 ISL	9.94	9.93	33.759	25.996	202.8	0.328	3.70	58.0	21.4	1.53	19.6	0.01	0.01	0.07	126	
140	9.47	9.45	33.849	26.144	188.9	0.358	3.30	51.2	25.9	1.74	22.6	0.01	0.00	0.04	141	209
150 ISL	9.25	9.23	33.893	26.214	182.4	0.376	3.14	48.5	28.0	1.83	23.8	0.01	0.00	0.04	151	
169	8.95	8.93	33.958	26.313	173.3	0.410	2.90	44.5	31.4	1.95	25.5	0.01	0.00	0.04	170	208
200	8.54	8.52	34.023	26.429	162.9	0.462	2.61	39.7	36.2	2.11	27.6	0.00	0.00	0.03	201	207
230	8.35	8.33	34.108	26.525	154.3	0.510	2.08	31.5	40.9	2.31	29.4	0.00			231	206
250 ISL	8.12	8.09	34.135	26.581	149.2	0.540	1.84	27.8	44.6	2.43	30.7	0.00			251	
268	7.89	7.86	34.151	26.628	145.0	0.567	1.66	24.9	47.9	2.52	31.8	0.00			270	205
300 ISL	7.60	7.57	34.190	26.701	138.4	0.612	1.32	19.7	52.6	2.66	33.2	0.00			302	
319	7.46	7.43	34.212	26.738	135.1	0.638	1.13	16.8	55.1	2.73	33.9	0.00			321	204
378	7.16	7.12	34.265	26.823	127.9	0.715	0.69	10.2	62.8	2.94	35.9	0.00			380	203
400 ISL	6.93	6.89	34.271	26.859	124.6	0.743	0.59	8.7	66.3	3.00	36.8	0.00			403	
437	6.52	6.48	34.279	26.921	119.0	0.788	0.47	6.8	72.2	3.08	38.2	0.00			440	202
500 ISL	6.11	6.07	34.313	27.002	111.9	0.861	0.33	4.8	80.0	3.19	39.8	0.00			503	
516	6.01	5.96	34.322	27.022	110.1	0.879	0.29	4.2	82.0	3.22	40.2	0.00			520	201

RV ROGER REVELLE CALCOFI CRUISE 9901 STATION 93 40

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT TYPE
32 30.8 N	118 12.8 W	10/01/99	1003 UTC	1655 m	350 09 kn			1019.7 mb	15.0 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	14.32	14.32	33.454	24.926	301.8	0.000	6.03	103.6	2.6	0.31	0.0	0.00	0.35	0.11	0	
2	14.32	14.32	33.454	24.926	301.8	0.006	6.03	103.6	2.6	0.31	0.0	0.00	0.35	0.11	2	220
10	14.13	14.13	33.447	24.961	298.8	0.030	6.03	103.2	2.6	0.32	0.1	0.01	0.58	0.23	10	219
20	13.85	13.85	33.439	25.013	294.1	0.060	5.95	101.2	3.2	0.38	0.7	0.08	1.00	0.46	20	218
30	13.33	13.33	33.439	25.119	284.2	0.089	5.69	95.7	4.6	0.50	2.5	0.24	0.73	0.40	30	217
40	13.10	13.09	33.448	25.173	279.5	0.117	5.31	88.9	6.4	0.67	5.4	0.10	0.23	0.21	40	216
50	12.87	12.86	33.513	25.269	270.6	0.144	5.02	83.7	7.3	0.73	6.7	0.05	0.20	0.22	50	215
60	12.72	12.71	33.533	25.314	266.5	0.171	4.75	79.0	9.2	0.85	8.9	0.03	0.16	0.21	60	214
70	11.63	11.62	33.605	25.577	241.6	0.197	4.40	71.5	12.7	1.09	12.7	0.02	0.08	0.13	70	213
75 ISL	11.30	11.29	33.623	25.651	234.6	0.208	4.24	68.4	14.2	1.19	14.2	0.02	0.06	0.11	75	
85	10.86	10.85	33.647	25.749	225.5	0.231	4.02	64.3	16.6	1.33	16.3	0.01	0.03	0.09	85	212
100	10.38	10.37	33.704	25.878	213.6	0.264	4.00	63.3	17.9	1.37	17.3	0.01	0.03	0.07	100	211
120	9.89	9.88	33.765	26.009	201.5	0.306	3.89	60.9	20.4	1.49	19.3	0.01	0.01	0.05	121	210
125 ISL	9.74	9.73	33.787	26.051	197.5	0.316	3.79	59.2	21.6	1.54	20.0	0.01	0.01	0.05	126	
140	9.32	9.30	33.857	26.175	186.0	0.345	3.44	53.2	25.4	1.71	22.3	0.01	0.00	0.04	141	209
150 ISL	9.09	9.07	33.904	26.249	179.1	0.363	3.26	50.2	27.7	1.81	23.7	0.01	0.00	0.04	151	
170	8.72	8.70	33.983	26.369	168.0	0.398	2.94	44.9	32.0	1.98	26.1	0.00	0.00	0.04	171	208
199	8.30	8.28	34.041	26.479	157.9	0.445	2.53	38.3	37.8	2.18	28.5	0.00	0.00	0.04	200	207
200 ISL	8.30	8.28	34.044	26.481	157.7	0.446	2.51	38.0	37.9	2.19	28.6	0.00			201	
229	8.19	8.17	34.108	26.549	151.9	0.491	2.05	31.0	41.9	2.36	30.1	0.00			230	206
250 ISL	7.94	7.91	34.125	26.599	147.3	0.523	1.83	27.5	45.4	2.45	31.3	0.00			251	
269	7.69	7.66	34.136	26.645	143.2	0.550	1.68	25.1	48.5	2.53	32.3	0.00			271	205
300 ISL	7.47	7.44	34.182	26.713	137.2	0.594	1.42	21.1	52.6	2.65	33.6	0.00			302	
319	7.36	7.33	34.210	26.751	133.9	0.620	1.26	18.7	55.0	2.73	34.3	0.00			321	204
378	6.94	6.90	34.252	26.843	125.8	0.696	0.72	10.6	64.6	2.98	36.7	0.00			380	203
400 ISL	6.74	6.70	34.264	26.880	122.5	0.723	0.61	8.9	67.7	3.04	37.5	0.00			403	
437	6.41	6.37	34.281	26.937	117.3	0.768	0.48	7.0	72.3	3.12	38.6	0.00			440	202
500 ISL	6.12	6.08	34.304	26.993	112.6	0.840	0.34	4.9	78.0	3.19	39.7	0.00			503	
516	6.05	6.00	34.310	27.007	111.5	0.858	0.31	4.5	79.4	3.21	40.0	0.00			520	201

RV ROGER REVELLE CALCOFI CRUISE 9901 STATION 93 45

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT	TYPE
32 20.8 N	118 33.3 W	10/01/99	1405 UTC	1347 m	360 07 kn			1018.3 mb	15.0 C	12.3 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	14.20	14.20	33.448	24.947	299.8	0.000	6.02	103.1	2.7	0.31	0.0	0.00	0.65	0.25	0	
2		14.20	14.20	33.448 D	24.947	299.9	0.006	6.02	103.1	2.7	0.31	0.0	0.00	0.65	0.25	2	221
10		14.19	14.19	33.447	24.948	300.0	0.030	6.02	103.1	2.6	0.31	0.0	0.00	0.67	0.24	10	220
20		14.16	14.16	33.451	24.958	299.3	0.060	6.01	102.9	2.6	0.31	0.1	0.00	0.77	0.33	20	219
29		13.88	13.88	33.446	25.013	294.4	0.087									29	218
29		13.90	13.90	33.445	25.008	294.9	0.087	5.81	98.9	3.4	0.40	1.1	0.10	1.01	0.54	29	217
30	ISL	13.87	13.87	33.444	25.013	294.4	0.090	5.79	98.5	3.5	0.41	1.2	0.11	1.01	0.57	30	
40		13.57	13.56	33.439	25.071	289.1	0.119	5.59	94.5	4.7	0.51	2.8	0.16	0.82	0.70	40	216
49		13.23	13.22	33.432	25.135	283.3	0.145	5.34	89.7	6.0	0.64	4.8	0.11	0.57	0.47	49	215
50	ISL	13.15	13.14	33.434	25.152	281.7	0.147	5.28	88.5	6.4	0.67	5.3	0.10	0.53	0.44	50	
64		11.88	11.87	33.504	25.452	253.4	0.185	4.46	72.8	12.1	1.07	11.9	0.02	0.08	0.13	64	214
75	ISL	11.11	11.10	33.582	25.654	234.4	0.212	4.14	66.5	14.6	1.23	14.5	0.01	0.05	0.11	75	
79		10.81	10.80	33.622	25.738	226.4	0.221	4.01	64.0	16.0	1.31	15.7	0.01	0.04	0.10	79	213
84		10.33	10.32	33.692	25.877	213.3	0.232	3.71	58.6	19.5	1.49	18.6	0.01	0.02	0.08	84	212
99		9.72	9.71	33.796	26.061	196.0	0.263	3.48	54.3	23.2	1.65	21.2	0.01	0.01	0.05	99	211
100	ISL	9.69	9.68	33.800	26.069	195.3	0.265	3.49	54.4	23.3	1.65	21.3	0.01	0.01	0.05	100	
119		9.19	9.18	33.867	26.203	182.8	0.300	3.59	55.4	25.4	1.69	22.2	0.01	0.00	0.03	120	210
125	ISL	9.04	9.03	33.898	26.251	178.3	0.311	3.45	53.1	27.2	1.76	23.1	0.01	0.00	0.03	126	
139		8.74	8.73	33.969	26.354	168.8	0.336	3.03	46.3	31.7	1.96	25.5	0.01	0.00	0.03	140	209
150	ISL	8.62	8.60	34.000	26.397	164.9	0.354	2.81	42.8	33.8	2.05	26.6	0.01	0.00	0.03	151	
169		8.48	8.46	34.031	26.443	160.8	0.385	2.54	38.6	36.6	2.15	27.8	0.01	0.00	0.03	170	208
199		8.11	8.09	34.068	26.529	153.2	0.432	2.32	35.0	40.9	2.29	29.5	0.01	0.00	0.03	200	207
200	ISL	8.09	8.07	34.068	26.532	152.9	0.433	2.31	34.8	41.1	2.29	29.6	0.01			201	
228		7.66	7.64	34.082	26.606	146.1	0.475	2.05	30.6	45.9	2.41	31.2	0.00			229	206
250	ISL	7.59	7.57	34.139	26.661	141.3	0.507	1.67	24.9	49.8	2.55	32.5	0.00			251	
268		7.54	7.51	34.177	26.699	138.0	0.532	1.37	20.4	52.7	2.67	33.5	0.00			270	205
300	ISL	7.40	7.37	34.203	26.739	134.6	0.576	1.13	16.8	56.2	2.77	34.5	0.00			302	
318		7.29	7.26	34.208	26.759	133.0	0.600	1.06	15.7	58.0	2.81	34.9	0.00			320	204
378		6.78	6.74	34.233	26.849	125.0	0.677	0.77	11.3	65.7	2.98	36.9	0.00			380	203
400	ISL	6.66	6.62	34.246	26.876	122.8	0.705	0.67	9.8	68.0	3.03	37.5	0.00			403	
436		6.48	6.44	34.268	26.918	119.2	0.748	0.53	7.7	71.7	3.11	38.4	0.00			439	202
500	ISL	6.08	6.04	34.307	27.001	111.9	0.822	0.38	5.5	79.2	3.22	39.9	0.00			503	
515		5.99	5.94	34.317	27.020	110.2	0.839	0.35	5.0	81.0	3.24	40.2	0.00			519	201

RV ROGER REVELLE CALCOFI CRUISE 9901 STATION 93 50

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT	TYPE
32 10.8 N	118 53.6 W	10/01/99	1816 UTC	1468 m	310 08 kn	280 01 05	1	1020.1 mb	16.0 C	13.7 C	17m	5/8	CS

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	14.02	14.02	33.482	25.011	293.7	0.000	5.99	102.3	1.6	0.31	0.1	0.01	0.78	0.34	0	
1		14.02	14.02	33.481	25.010	293.9	0.003									1	221
1	A	14.02	14.02	33.482	25.011	293.8	0.003	5.99	102.3	1.6	0.31	0.1	0.01	0.78	0.34	1	220
10	ISL	14.01	14.01	33.483	25.014	293.7	0.029	5.98	102.1	1.6	0.31	0.1	0.01	0.77	0.34	10	
13	A	14.00	14.00	33.483	25.016	293.6	0.038	5.97	101.9	1.6	0.31	0.1	0.01	0.77	0.34	13	219
20	ISL	13.99	13.99	33.481	25.017	293.8	0.059	5.95	101.5	1.7	0.32	0.2	0.02	0.82	0.40	20	
24	A	13.98	13.98	33.480	25.018	293.7	0.070	5.94	101.3	1.8	0.33	0.2	0.02	0.85	0.42	24	218
30	ISL	13.61	13.61	33.483	25.097	286.4	0.088	5.55	94.0	4.2	0.49	2.7	0.05	0.63	0.36	30	
36	A	13.13	13.13	33.491	25.200	276.8	0.105	5.09	85.3	7.0	0.68	5.7	0.08	0.37	0.27	36	217
47	A	12.35	12.34	33.514	25.370	260.8	0.134	4.57	75.4	10.6	0.94	9.9	0.05	0.17	0.16	47	216
50	ISL	12.14	12.13	33.526	25.420	256.1	0.142	4.46	73.2	11.4	1.00	10.9	0.04	0.16	0.17	50	
55		11.80	11.79	33.550	25.502	248.4	0.155	4.29	69.9	12.8	1.09	12.5	0.02	0.15	0.19	55	215
64	A	11.24	11.23	33.607	25.650	234.5	0.176	3.95	63.7	16.1	1.31	15.7	0.02	0.09	0.16	64	214
74		10.79	10.78	33.659	25.771	223.2	0.199	3.70	59.1	18.5	1.43	17.5	0.01	0.06	0.14	74	213
75	ISL	10.72	10.71	33.668	25.790	221.4	0.202	3.66	58.3	18.9	1.45	17.8	0.01	0.06	0.14	75	
84		10.09	10.08	33.753	25.965	204.9	0.221	3.35	52.7	22.1	1.63	20.3	0.01	0.02	0.10	84	212
100		9.77	9.76	33.841	26.088	193.5	0.253	3.10	48.4	25.5	1.79	22.8	0.01	0.01	0.07	101	211
119		9.20	9.19	33.947	26.264	177.0	0.288	2.80	43.2	30.4	1.97	25.3	0.01	0.00	0.05	120	210
125	ISL	9.08	9.07	33.976	26.306	173.2	0.298	2.67	41.1	31.8	2.03	26.0	0.01	0.00	0.05	126	
140		8.85	8.84	34.032	26.386	165.8	0.324	2.38	36.5	34.7	2.16	27.5	0.00	0.00	0.05	141	209
150	ISL	8.75	8.73	34.046	26.413	163.4	0.340	2.36	36.1	35.8	2.19	28.0	0.00	0.00	0.05	151	
170		8.58	8.56	34.061	26.452	160.1	0.373	2.31	35.2	37.8	2.23	28.6	0.00	0.00	0.06	171	208
199		8.23	8.21	34.117	26.549	151.3	0.418	1.93	29.2	42.8	2.39	30.3	0.00	0.00	0.04	200	207
200	ISL	8.22	8.20	34.118	26.552	151.1	0.419	1.92	29.0	42.9	2.39	30.3	0.00			201	
228		8.06	8.04	34.141	26.594	147.5	0.461	1.79	27.0	45.5	2.47	31.2	0.00			229	206
250	ISL	7.78	7.76	34.161	26.651	142.3	0.493	1.56	23.4	49.5	2.58	32.4	0.00			251	
270		7.51	7.48	34.178	26.704	137.6	0.521	1.34	19.9	53.6	2.69	33.6	0.00			272	205
300	ISL	7.22	7.19	34.195	26.758	132.7	0.561	1.11	16.4	58.3	2.80	35.0	0.00			302	
317		7.09	7.06	34.205	26.784	130.5	0.584	1.00	14.7	60.7	2.86	35.7	0.00			319	204
377		6.74	6.71	34.268	26.882	121.9	0.659	0.59	8.6	68.2	3.04	37.4	0.00			379	203
400	ISL	6.60	6.56	34.280	26.911	119.4	0.687	0.50	7.3	70.6	3.09	38.0	0.00			403	
438		6.36	6.32	34.293	26.953	115.8	0.732	0.41	5.9	74.7	3.17	39.0	0.00			441	202
500	ISL	5.92	5.88	34.315	27.027	109.2	0.802	0.32	4.6	82.7	3.25	40.4	0.00			503	
516		5.81	5.77	34.321	27.046	107.6	0.819	0.30	4.3	84.8	3.27	40.8	0.00			520	201

A) PRIMARY PRODUCTIVITY SAMPLES WERE TAKEN FROM THESE LEVELS.

RV ROGER REVELLE CALCOFI CRUISE 9901 STATION 93 55

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT	TYPE
32 0.8 N	119 14.0 W	10/01/99	2237 UTC	1589 m	300 05 kn	280 01 07	1	1019.0 mb	16.6 C	15.1 C		6/8	CS

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	14.21	14.21	33.477	24.967	297.9	0.000	5.98	102.5	2.5	0.33	0.2	0.01	0.27	0.08	0	
1		14.21	14.21	33.477	24.967	297.9	0.003	5.98	102.5	2.5	0.33	0.2	0.01	0.27	0.08	1	220
10		14.15	14.15	33.477	24.980	297.0	0.030	5.97	102.2	2.5	0.32	0.2	0.01	0.28	0.09	10	219
20	ISL	13.99	13.99	33.475	25.012	294.2	0.059	5.97	101.9	2.5	0.32	0.2	0.01	0.39	0.14	20	
21		13.97	13.97	33.474	25.016	293.9	0.062	5.97	101.8	2.5	0.32	0.2	0.01	0.40	0.15	21	218
30		13.62	13.62	33.460	25.077	288.3	0.088	5.93	100.4	3.3	0.39	1.3	0.10	0.40	0.22	30	217
41		12.89	12.88	33.444	25.211	275.8	0.119	5.63	93.9	5.7	0.62	4.0	0.37	0.47	0.31	41	216
50		12.04	12.03	33.510	25.426	255.5	0.143	4.69	76.8	11.0	0.99	10.5	0.08	0.23	0.21	50	215
60		11.35	11.34	33.580	25.609	238.3	0.168	4.00	64.6	15.5	1.28	15.1	0.02	0.11	0.16	60	214
71		11.02	11.01	33.629	25.706	229.3	0.194	3.82	61.3	17.3	1.39	16.8	0.02	0.08	0.15	71	213
75	ISL	10.79	10.78	33.651	25.764	223.8	0.203	3.79	60.5	18.2	1.44	17.6	0.02	0.06	0.14	75	
84		10.25	10.24	33.705	25.900	211.0	0.222	3.71	58.5	20.5	1.54	19.3	0.01	0.03	0.10	84	212
99		9.71	9.70	33.782	26.052	196.9	0.253	3.46	54.0	24.2	1.68	21.6	0.01	0.01	0.07	99	211
100	ISL	9.69	9.68	33.785	26.057	196.4	0.255	3.45	53.8	24.3	1.68	21.7	0.01	0.01	0.07	101	
119		9.37	9.36	33.846	26.158	187.2	0.291	3.28	50.8	26.4	1.79	23.0	0.01	0.01	0.06	120	210
125	ISL	9.31	9.30	33.891	26.203	183.0	0.303	3.08	47.7	28.0	1.87	23.9	0.01	0.01	0.06	126	
139		9.20	9.18	33.996	26.303	173.8	0.328	2.59	40.0	31.9	2.06	26.1	0.01	0.01	0.06	140	209
150	ISL	9.05	9.03	34.026	26.350	169.5	0.346	2.44	37.6	33.5	2.13	26.9	0.01	0.01	0.05	151	
169		8.77	8.75	34.044	26.409	164.2	0.378	2.34	35.8	35.5	2.19	27.7	0.00	0.00	0.04	170	208
199		8.38	8.36	34.090	26.505	155.5	0.426	2.11	32.0	40.3	2.33	29.5	0.01	0.00	0.04	200	207
200	ISL	8.37	8.35	34.092	26.509	155.2	0.428	2.10	31.8	40.4	2.33	29.5	0.01			201	
229		8.24	8.22	34.151	26.575	149.4	0.472	1.75	26.5	44.0	2.44	30.9	0.01			230	206
250	ISL	8.02	7.99	34.174	26.626	144.8	0.503	1.54	23.2	47.4	2.55	31.9	0.00			251	
267		7.81	7.78	34.186	26.667	141.2	0.527	1.39	20.8	50.4	2.65	32.7	0.00			269	205
300	ISL	7.42	7.39	34.206	26.739	134.7	0.572	1.11	16.5	56.6	2.79	34.4	0.00			302	
318		7.22	7.19	34.214	26.774	131.6	0.596	0.98	14.5	59.8	2.86	35.3	0.00			320	204
377		6.74	6.71	34.236	26.857	124.3	0.672	0.71	10.4	67.4	3.01	37.3	0.00			379	203
400	ISL	6.59	6.55	34.251	26.889	121.5	0.700	0.61	8.9	70.1	3.06	37.9	0.00			403	
437		6.36	6.32	34.276	26.940	117.0	0.744	0.46	6.7	74.7	3.13	38.8	0.00			440	202
500	ISL	5.88	5.84	34.312	27.030	108.9	0.815	0.33	4.7	84.2	3.24	40.4	0.00			503	
514		5.77	5.73	34.320	27.050	107.1	0.831	0.30	4.3	86.3	3.27	40.8	0.00			518	201

RV ROGER REVELLE CALCOFI CRUISE 9901 STATION 93 60

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT	TYPE
31 50.7 N	119 34.2 W	11/01/99	0233 UTC	1812 m	00 kn			1017.4 mb	15.6 C	14.5 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	14.35	14.35	33.369	24.854	308.6	0.000	5.95	102.2	3.2	0.31	0.1	0.01	0.50	0.15	0	
2		14.35	14.35	33.369	24.854	308.7	0.006	5.95	102.2	3.2	0.31	0.1	0.01	0.50	0.15	2	220
10	ISL	14.08	14.08	33.359	24.904	304.2	0.031	5.97	102.0	3.3	0.32	0.2	0.01	0.53	0.17	10	
11		14.03	14.03	33.357	24.912	303.4	0.034	5.97	101.9	3.3	0.32	0.2	0.01	0.53	0.18	11	219
20		13.84	13.84	33.340	24.939	301.2	0.061	5.96	101.3	3.5	0.34	0.4	0.04	0.68	0.23	20	218
30		13.61	13.61	33.317	24.968	298.6	0.091	5.92	100.1	3.7	0.37	0.9	0.09	0.63	0.25	30	217
40		13.04	13.03	33.259	25.038	292.2	0.120	5.73	95.7	4.6	0.50	2.5	0.29	0.27	0.17	40	216
49		13.05	13.04	33.327	25.089	287.6	0.147	5.48	91.6	5.3	0.56	3.8	0.13	0.18	0.13	49	215
50	ISL	13.03	13.02	33.332	25.097	286.9	0.149	5.45	91.1	5.4	0.57	4.0	0.12	0.17	0.13	50	
59		12.81	12.80	33.380	25.178	279.4	0.175	5.19	86.3	6.7	0.68	5.8	0.04	0.11	0.12	59	214
69		12.63	12.62	33.482	25.292	268.8	0.202	4.87	80.8	8.5	0.82	8.1	0.02	0.10	0.12	69	213
75	ISL	12.49	12.48	33.509	25.340	264.4	0.218	4.74	78.4	9.3	0.88	9.0	0.01	0.10	0.12	75	
85		12.16	12.15	33.534	25.423	256.7	0.244	4.56	74.9	10.6	0.97	10.5	0.01	0.09	0.13	85	212
100		11.38	11.37	33.595	25.616	238.6	0.282	4.24	68.5	13.7	1.17	13.7	0.01	0.06	0.08	100	211
119		10.34	10.33	33.731	25.906	211.3	0.324	3.83	60.6	19.0	1.45	18.2	0.00	0.03	0.04	120	210
125	ISL	10.05	10.04	33.763	25.980	204.3	0.337	3.73	58.6	20.6	1.52	19.4	0.00	0.03	0.04	126	
140		9.45	9.43	33.831	26.133	190.0	0.366	3.53	54.8	24.3	1.68	21.9	0.01	0.02	0.05	141	209
150	ISL	9.18	9.16	33.870	26.208	183.0	0.385	3.43	52.9	26.2	1.75	22.9	0.01	0.01	0.04	151	
169		8.80	8.78	33.937	26.320	172.6	0.419	3.20	49.0	29.8	1.87	24.5	0.00	0.00	0.02	170	208
198		8.34	8.32	34.038	26.471	158.7	0.467	2.60	39.4	37.2	2.15	28.0	0.00	0.00	0.02	199	207
200	ISL	8.32	8.30	34.046	26.480	157.9	0.470	2.54	38.5	37.7	2.17	28.2	0.00			201	
228		8.08	8.06	34.134	26.586	148.3	0.513	1.86	28.0	44.0	2.42	30.7	0.00			229	206
250	ISL	7.73	7.71	34.128	26.633	144.1	0.545	1.79	26.8	47.7	2.50	31.9	0.00			251	
268		7.44	7.41	34.112	26.662	141.5	0.571	1.74	25.8	50.4	2.54	32.7	0.00			270	205
300	ISL	7.12	7.09	34.143	26.731	135.2	0.615	1.37	20.2	56.4	2.70	34.5	0.00			302	
318		6.99	6.96	34.169	26.770	131.8	0.639	1.14	16.8	59.7	2.80	35.5	0.00			320	204
377		6.68	6.65	34.239	26.868	123.2	0.714	0.67	9.8	67.3	3.00	37.4	0.00			379	203
400	ISL	6.47	6.43	34.243	26.899	120.4	0.742	0.58	8.4	70.8	3.05	38.2	0.00			403	
437		6.14	6.10	34.246	26.944	116.4	0.786	0.49	7.1	76.0	3.12	39.4	0.00			440	202
500	ISL	5.97	5.93	34.303	27.011	110.7	0.858	0.33	4.7	81.5	3.23	40.3	0.00			503	
514		5.93	5.89	34.316	27.027	109.5	0.873	0.29	4.2	82.7	3.25	40.5	0.00			518	201

RV ROGER REVELLE CALCOFI CRUISE 9901 STATION 93 70

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT TYPE
31 30.8 N	120 14.8 W	11/01/99	0808 UTC	3284 m	280 10 kn			1019.0 mb	15.3 C	14.8 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	14.56	14.56	33.399	24.833	310.7	0.000	5.89	101.6	2.8	0.30	0.0	0.00	0.36	0.15	0	
1	14.56	14.56	33.398	24.832	310.8	0.003									1	222
2	14.56	14.56	33.399	24.833	310.7	0.006	5.89	101.6	2.8	0.30	0.0	0.00	0.36	0.15	2	221
10 ISL	14.55	14.55	33.397	24.834	310.9	0.031	5.88	101.4	2.7	0.30	0.0	0.00	0.38	0.16	10	
15	14.54	14.54	33.396	24.835	310.9	0.047	5.87	101.2	2.6	0.30	0.0	0.00	0.40	0.16	15	220
20 ISL	14.54	14.54	33.396	24.836	311.0	0.062	5.87	101.2	2.6	0.30	0.0	0.00	0.43	0.17	20	
30	14.54	14.54	33.397	24.837	311.2	0.093	5.87	101.2	2.7	0.30	0.0	0.00	0.47	0.20	30	219
45	14.53	14.52	33.396	24.839	311.5	0.140	5.84	100.7	2.6	0.30	0.1	0.00	0.47	0.21	45	217
45	14.53	14.52	33.397	24.839	311.4	0.140									45	218
50 ISL	14.53	14.52	33.399	24.841	311.4	0.156	5.84	100.7	2.6	0.30	0.1	0.01	0.44	0.21	50	
55	14.53	14.52	33.402	24.844	311.3	0.171	5.84	100.7	2.6	0.30	0.1	0.01	0.42	0.20	55	216
65	14.53	14.52	33.398	24.841	311.9	0.202	5.83	100.5	2.6	0.30	0.1	0.01	0.42	0.19	65	215
75	14.44	14.43	33.395	24.858	310.5	0.233	5.77	99.3	2.9	0.33	0.5	0.04	0.25	0.12	75	214
85	14.02	14.01	33.378	24.933	303.6	0.264	5.59	95.4	3.6	0.42	1.7	0.15	0.14	0.10	85	213
94	13.20	13.19	33.452	25.157	282.4	0.290	5.17	86.7	6.1	0.64	5.1	0.14	0.09	0.11	94	212
100 ISL	12.54	12.53	33.507	25.330	266.0	0.307	4.81	79.6	8.6	0.83	8.2	0.10	0.08	0.10	100	
110	11.52	11.51	33.596	25.591	241.2	0.332	4.29	69.5	12.7	1.11	13.0	0.02			110	211
125	10.72	10.71	33.673	25.795	222.1	0.367	4.13	65.8	16.6	1.32	16.5	0.01	0.04	0.06	126	210
145	9.67	9.65	33.815	26.085	194.7	0.409	3.67	57.2	22.9	1.61	20.9	0.01			146	209
150 ISL	9.53	9.51	33.833	26.122	191.3	0.418	3.61	56.1	23.7	1.65	21.4	0.01	0.01	0.04	151	
169	9.16	9.14	33.879	26.218	182.4	0.454	3.44	53.0	26.3	1.75	22.9	0.01	0.00	0.03	170	208
199	8.48	8.46	33.990	26.412	164.4	0.506	3.00	45.6	33.3	1.99	26.3	0.00	0.00	0.04	200	207
200 ISL	8.47	8.45	33.992	26.415	164.1	0.508	2.99	45.4	33.4	1.99	26.4	0.00			201	
229	8.16	8.14	34.024	26.487	157.7	0.554	2.73	41.2	37.5	2.13	28.0	0.00			230	206
250 ISL	7.86	7.84	34.065	26.564	150.6	0.587	2.32	34.8	42.7	2.30	30.0	0.00			251	
268	7.63	7.60	34.104	26.628	144.7	0.613	1.95	29.1	47.2	2.45	31.6	0.00			270	204
300 ISL	7.60	7.57	34.161	26.678	140.6	0.659	1.54	23.0	50.8	2.60	32.8	0.00			302	
317	7.59	7.56	34.182	26.696	139.2	0.683	1.37	20.4	52.3	2.66	33.3	0.00			319	205
378	6.94	6.90	34.248	26.840	126.1	0.763	0.79	11.6	64.2	2.95	36.5	0.00			380	203
400 ISL	6.78	6.74	34.261	26.872	123.3	0.791	0.66	9.7	67.2	3.01	37.3	0.00			402	
438	6.53	6.49	34.277	26.918	119.3	0.837	0.51	7.4	71.7	3.08	38.3	0.00			441	202
500 ISL	6.13	6.09	34.307	26.994	112.6	0.909	0.35	5.0	78.9	3.19	39.8	0.00			503	
513	6.05	6.00	34.313	27.009	111.2	0.923	0.32	4.6	80.4	3.21	40.1	0.00			516	201

RV ROGER REVELLE CALCOFI CRUISE 9901 STATION 93 80

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT TYPE
31 10.8 N	120 55.2 W	11/01/99	1332 UTC	3826 m	290 12 kn			1017.6 mb	15.0 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	15.02	15.02	33.510	24.820	311.9	0.000	5.78	100.7	2.9	0.29	0.0	0.01	0.38	0.17	0	
2	15.02	15.02	33.510	24.820	312.0	0.006	5.78	100.7	2.9	0.29	0.0	0.01	0.38	0.17	2	220
10 ISL	15.02	15.02	33.511	24.821	312.1	0.031	5.79	100.9	2.9	0.29	0.1	0.00	0.37	0.15	10	
15	15.02	15.02	33.512	24.822	312.2	0.047	5.79	100.9	2.9	0.29	0.1	0.00	0.37	0.14	15	219
20 ISL	15.02	15.02	33.511	24.821	312.4	0.062	5.79	100.9	2.9	0.29	0.1	0.00	0.37	0.14	20	
30	15.03	15.03	33.510	24.819	313.0	0.094	5.78	100.7	2.8	0.29	0.1	0.00	0.38	0.15	30	218
45	15.05	15.04	33.517	24.820	313.3	0.141	5.78	100.8	2.8	0.29	0.1	0.00	0.39	0.15	45	217
50 ISL	14.95	14.94	33.495	24.825	312.9	0.156	5.79	100.7	2.7	0.29	0.1	0.00	0.38	0.14	50	
55	14.82	14.81	33.469	24.833	312.3	0.172	5.81	100.8	2.7	0.29	0.1	0.00	0.37	0.14	55	216
65	14.61	14.60	33.431	24.849	311.1	0.203	5.83	100.7	2.7	0.31	0.2	0.02	0.35	0.14	65	215
74	14.37	14.36	33.410	24.884	308.0	0.231	5.87	100.9	3.0	0.34	0.5	0.03	0.30	0.14	74	214
75 ISL	14.16	14.15	33.421	24.937	303.0	0.234	5.75	98.4	3.7	0.40	1.4	0.03	0.28	0.14	75	
84	12.16	12.15	33.561	25.444	254.7	0.259	4.60	75.6	10.2	0.95	10.2	0.02	0.13	0.16	84	213
94	11.51	11.50	33.603	25.598	240.2	0.284	4.32	70.0	12.8	1.12	13.0	0.01	0.09	0.12	94	212
100 ISL	11.25	11.24	33.628	25.665	233.9	0.298	4.17	67.2	14.1	1.21	14.3	0.01	0.08	0.11	100	
109	10.90	10.89	33.667	25.758	225.2	0.319	3.97	63.5	16.1	1.32	16.0	0.01	0.06	0.09	109	211
124	10.18	10.17	33.739	25.940	208.2	0.351	3.75	59.1	19.8	1.50	18.9	0.01	0.02	0.07	125	210
125 ISL	10.14	10.13	33.745	25.951	207.1	0.353	3.72	58.6	20.1	1.52	19.1	0.01	0.02	0.07	126	
144	9.42	9.40	33.860	26.161	187.4	0.391	3.19	49.5	26.3	1.81	23.2	0.01	0.01	0.04	145	209
150 ISL	9.27	9.25	33.884	26.204	183.4	0.402	3.12	48.2	27.5	1.86	23.9	0.01	0.01	0.04	151	
169	8.92	8.90	33.940	26.304	174.2	0.436	2.99	45.9	30.6	1.95	25.2	0.00	0.00	0.05	170	208
198	8.52	8.50	34.010	26.421	163.5	0.485	2.75	41.8	35.0	2.10	27.0	0.00	0.00	0.04	199	207
200 ISL	8.51	8.49	34.015	26.427	163.0	0.488	2.72	41.4	35.3	2.11	27.1	0.00			201	
228	8.41	8.39	34.085	26.497	156.8	0.533	2.24	34.0	39.1	2.28	28.8	0.00			229	206
250 ISL	8.32	8.29	34.132	26.548	152.4	0.567	1.90	28.8	42.6	2.42	30.2	0.00			251	
269	8.19	8.16	34.159	26.589	148.8	0.596	1.67	25.2	45.5	2.52	31.2	0.00			271	205
300 ISL	7.74	7.71	34.151	26.650	143.3	0.641	1.62	24.2	49.1	2.59	32.3	0.00			302	
316	7.48	7.45	34.140	26.679	140.7	0.664	1.60	23.8	51.1	2.62	32.8	0.00			318	204
377	6.77	6.74	34.157	26.791	130.5	0.746	1.15	16.8	62.4	2.85	36.1	0.00			379	203
400 ISL	6.61	6.57	34.188	26.837	126.4	0.776	0.93	13.5	66.2	2.94	37.1	0.00			403	
437	6.40	6.36	34.241	26.907	120.2	0.821	0.60	8.7	72.0	3.08	38.4	0.00			440	202
500 ISL	5.93	5.89	34.286	27.003	111.5	0.894	0.37	5.3	81.3	3.22	40.1	0.00			503	
515	5.82	5.78	34.297	27.025	109.5	0.911	0.31	4.4	83.5	3.25	40.5	0.00			518	201

RV ROGER REVELLE CALCOFI CRUISE 9901 STATION 93 90

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT	TYPE
30 50.8 N	121 35.4 W	11/01/99	1906 UTC	4111 m	310 12 kn	290 02 09	1	1019.9 mb	15.1 C	13.8 C	28m	4/8	CS

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	14.96	14.96	33.358	24.716	321.8	0.000	5.84	101.6	2.5	0.28	0.1	0.00	0.25	0.08	0	
1	A	14.96	14.96	33.358	24.716	321.9	0.003	5.84	101.6	2.5	0.28	0.1	0.00	0.25	0.08	1	223
1		14.95	14.95	33.359	24.719	321.6	0.003									1	224
10		14.90	14.90	33.356	24.727	321.0	0.032	5.85	101.6	2.5	0.28	0.1	0.00	0.23	0.08	10	222
20	A	14.88	14.88	33.357	24.733	320.8	0.064			2.4	0.28	0.1	0.00	0.25	0.10	20	221
30		14.87	14.87	33.354	24.733	321.1	0.096	5.85	101.5	2.4	0.28	0.1	0.00	0.27	0.10	30	220
38	A	14.86	14.85	33.352	24.734	321.2	0.122	5.84	101.3	2.4	0.28	0.1	0.00	0.31	0.12	38	219
49		14.85	14.84	33.350	24.735	321.5	0.157	5.82	101.0	2.4	0.28	0.1	0.00	0.36	0.16	49	218
50	ISL	14.85	14.84	33.350	24.735	321.5	0.161	5.82	101.0	2.4	0.28	0.1	0.00	0.36	0.16	50	
60	A	14.79	14.78	33.352	24.750	320.4	0.193	5.80	100.5	2.4	0.29	0.2	0.02	0.32	0.14	60	217
67		14.74	14.73	33.367	24.772	318.5	0.215	5.79	100.2	2.5	0.30	0.2	0.03	0.30	0.14	67	216
75	ISL	14.72	14.71	33.401	24.803	315.8	0.240	5.77	99.9	2.5	0.30	0.2	0.03	0.26	0.12	75	
77	A	14.72	14.71	33.416	24.814	314.7	0.247	5.76	99.7	2.5	0.30	0.2	0.03	0.25	0.12	77	215
86		14.23	14.22	33.426	24.926	304.3	0.275	5.64	96.7	3.3	0.36	1.2	0.09	0.18	0.14	86	214
97		13.28	13.27	33.485	25.167	281.6	0.307	5.34	89.8	5.1	0.51	3.7	0.02	0.12	0.13	97	213
100	ISL	13.09	13.08	33.484	25.204	278.1	0.315	5.21	87.2	5.8	0.58	4.7	0.02	0.12	0.13	100	
105	A	12.75	12.74	33.484	25.271	271.8	0.329	4.98	82.8	7.3	0.72	6.6	0.02	0.11	0.12	105	212
116		11.53	11.52	33.565	25.565	243.8	0.357	4.46	72.3	11.8	1.04	11.9	0.01	0.07	0.09	117	211
124		10.96	10.94	33.639	25.726	228.6	0.376	4.16	66.6	15.1	1.25	15.1	0.01	0.05	0.07	125	210
125	ISL	10.91	10.89	33.646	25.740	227.3	0.378	4.13	66.1	15.4	1.27	15.4	0.01	0.05	0.07	126	
143		10.18	10.16	33.736	25.938	208.8	0.418	3.74	58.9	19.8	1.50	19.0	0.01	0.02	0.04	144	209
150	ISL	9.97	9.95	33.767	25.998	203.2	0.432	3.63	56.9	21.2	1.57	20.0	0.01	0.02	0.03	151	
167		9.52	9.50	33.840	26.129	190.9	0.466	3.42	53.1	24.5	1.71	22.1	0.01	0.01	0.02	168	208
196		8.57	8.55	33.979	26.389	166.5	0.517	3.09	47.0	32.5	1.95	25.8	0.00	0.00	0.02	197	207
200	ISL	8.51	8.49	33.988	26.406	165.0	0.524	3.05	46.4	33.2	1.97	26.1	0.00			201	
227		8.21	8.19	34.021	26.477	158.6	0.568	2.76	41.7	37.0	2.11	27.7	0.00			228	206
250	ISL	7.90	7.87	34.052	26.548	152.2	0.604	2.42	36.3	41.6	2.27	29.5	0.00			251	
268		7.67	7.64	34.077	26.601	147.3	0.630	2.14	31.9	45.4	2.39	30.9	0.00			269	205
300	ISL	7.39	7.36	34.121	26.676	140.6	0.677	1.71	25.4	50.9	2.57	32.8	0.00			302	
318		7.26	7.23	34.143	26.712	137.4	0.702	1.50	22.2	53.8	2.66	33.7	0.00			320	204
377		6.74	6.71	34.178	26.812	128.6	0.780	1.01	14.8	63.1	2.88	36.5	0.00			379	203
400	ISL	6.63	6.59	34.210	26.852	125.0	0.809	0.81	11.8	66.6	2.97	37.3	0.00			402	
437		6.47	6.43	34.262	26.914	119.6	0.854	0.53	7.7	72.1	3.10	38.5	0.00			440	202
500	ISL	5.95	5.91	34.292	27.005	111.3	0.927	0.37	5.3	80.7	3.22	40.2	0.00			503	
515		5.83	5.79	34.300	27.027	109.4	0.944	0.33	4.7	82.7	3.25	40.6	0.00			518	201

A) PRIMARY PRODUCTIVITY SAMPLES WERE TAKEN FROM THESE LEVELS.

RV ROGER REVELLE CALCOFI CRUISE 9901 STATION 93 100

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT	TYPE
30 30.8 N	122 15.5 W	12/01/99	0117 UTC	4158 m	340 18 kn	180 02 07	1	1018.7 mb	15.0 C	13.8 C		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	15.02	15.02	33.377	24.717	321.7	0.000	5.82	101.3	2.7	0.27	0.1	0.00	0.20	0.07	0	
1		15.02	15.02	33.377	24.717	321.7	0.003	5.82	101.3	2.7	0.27	0.1	0.00	0.20	0.07	1	220
10	ISL	15.02	15.02	33.377	24.718	322.0	0.032	5.82	101.3	2.6	0.28	0.1	0.00	0.19	0.07	10	
15		15.02	15.02	33.377	24.718	322.1	0.048	5.82	101.3	2.6	0.28	0.1	0.00	0.19	0.07	15	219
20	ISL	15.02	15.02	33.377	24.718	322.2	0.064	5.82	101.3	2.6	0.28	0.1	0.00	0.20	0.08	20	
30		15.01	15.01	33.376	24.720	322.4	0.097	5.82	101.3	2.6	0.27	0.1	0.00	0.22	0.09	30	218
45		14.96	14.95	33.376	24.731	321.7	0.145	5.82	101.2	2.5	0.28	0.1	0.00	0.27	0.11	45	217
50	ISL	14.95	14.94	33.375	24.733	321.7	0.161	5.81	101.0	2.6	0.28	0.1	0.00	0.28	0.12	50	
55		14.94	14.93	33.374	24.734	321.8	0.177	5.80	100.8	2.6	0.28	0.1	0.00	0.29	0.13	55	216
64		14.90	14.89	33.371	24.741	321.4	0.206	5.79	100.6	2.5	0.28	0.1	0.00	0.29	0.13	64	215
74		14.78	14.77	33.358	24.757	320.1	0.238	5.79	100.3	2.5	0.28	0.1	0.01	0.31	0.18	74	214
75	ISL	14.64	14.63	33.354	24.784	317.6	0.241	5.76	99.5	2.7	0.30	0.3	0.01	0.30	0.18	75	
84		13.28	13.27	33.344	25.057	291.6	0.269	5.41	90.9	4.8	0.50	3.1	0.02	0.17	0.20	84	213
94		12.52	12.51	33.424	25.269	271.6	0.297	5.13	84.8	6.7	0.66	5.7	0.01	0.11	0.15	94	212
100	ISL	12.17	12.16	33.464	25.367	262.4	0.313	4.95	81.3	8.0	0.76	7.4	0.01	0.09	0.12	100	
109		11.72	11.71	33.518	25.494	250.5	0.336	4.70	76.5	10.2	0.92	10.0	0.01	0.07	0.09	109	211
124		10.96	10.94	33.614	25.707	230.5	0.372	4.35	69.7	14.1	1.17	14.1	0.00	0.04	0.06	125	210
125	ISL	10.90	10.88	33.620	25.722	229.0	0.374	4.32	69.1	14.4	1.19	14.4	0.00	0.04	0.06	126	
143		9.83	9.81	33.723	25.986	204.1	0.413	3.85	60.2	20.4	1.52	19.5	0.00	0.01	0.03	144	209
150	ISL	9.59	9.57	33.770	26.063	196.9	0.427	3.63	56.5	22.8	1.63	21.1	0.00	0.01	0.03	151	
169		9.16	9.14	33.883	26.221	182.1	0.463	3.11	48.0	28.3	1.87	24.5	0.00	0.00	0.02	170	208
198		8.63	8.61	33.965	26.369	168.5	0.514	2.97	45.3	32.5	1.98	26.2	0.00	0.00	0.03	199	207
200	ISL	8.61	8.59	33.968	26.375	168.0	0.518	2.97	45.3	32.7	1.98	26.3	0.00			201	
227		8.32	8.30	34.000	26.444	161.8	0.562	2.92	44.2	35.3	2.03	27.1	0.00			228	206
250	ISL	7.94	7.91	34.015	26.513	155.5	0.599	2.82	42.3	38.9	2.11	28.3	0.00			251	
267		7.62	7.59	34.023	26.566	150.6	0.625	2.71	40.4	42.1	2.19	29.4	0.00			268	205
300	ISL	7.03	7.00	34.033	26.657	142.2	0.673	2.35	34.5	49.4	2.38	31.8	0.00			302	
317		6.76	6.73	34.040	26.699	138.2	0.697	2.13	31.1	53.3	2.48	33.1	0.00			319	204
378		6.22	6.19	34.090	26.810	128.2	0.778	1.29	18.6	65.7	2.81	37.2	0.00			380	203
400	ISL	5.95	5.92	34.099	26.851	124.4	0.806	1.11	15.9	69.6	2.88	38.3	0.00			402	
436		5.57	5.53	34.121	26.916	118.4	0.849	0.89	12.6	75.2	2.98	39.6	0.00			439	202
500	ISL	5.62	5.58	34.224	26.992	112.1	0.923	0.51	7.3	82.2	3.14	40.8	0.00			503	
515		5.63	5.59	34.248	27.010	110.7	0.940	0.42	6.0	83.9	3.18	41.1	0.00			518	201

RV ROGER REVELLE CALCOFI CRUISE 9901 STATION 93 110

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT TYPE
30 10.8 N	122 55.4 W	12/01/99	0647 UTC	3652 m	340 17 kn			1021.0 mb	14.5 C	13.5 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	15.26	15.26	33.459	24.728	320.7	0.000	5.79	101.4	2.5	0.26	0.1	0.00	0.14	0.04	0	
2	15.26	15.26	33.459	24.728	320.7	0.006	5.79	101.4	2.5	0.26	0.1	0.00	0.14	0.04	2	220
10 ISL	15.26	15.26	33.458	24.728	321.0	0.032	5.79	101.4	2.5	0.25	0.1	0.00	0.14	0.04	10	
14	15.25	15.25	33.457	24.729	321.0	0.045	5.79	101.3	2.5	0.25	0.1	0.00	0.14	0.04	14	219
20 ISL	15.23	15.23	33.453	24.731	321.0	0.064	5.79	101.3	2.5	0.25	0.1	0.00	0.14	0.04	20	
29	15.21	15.21	33.451	24.734	321.0	0.093	5.79	101.2	2.5	0.25	0.1	0.00	0.15	0.05	29	218
30 ISL	15.20	15.20	33.448	24.734	321.0	0.096	5.79	101.2	2.5	0.25	0.1	0.00	0.15	0.05	30	
45	14.93	14.92	33.394	24.751	319.8	0.144	5.82	101.2	2.5	0.27	0.1	0.00	0.21	0.08	45	217
50 ISL	14.84	14.83	33.379	24.759	319.2	0.160	5.83	101.1	2.6	0.28	0.1	0.00	0.25	0.11	50	
54	14.78	14.77	33.369	24.765	318.8	0.173	5.83	101.0	2.6	0.28	0.1	0.00	0.28	0.13	54	216
65	14.73	14.72	33.362	24.770	318.6	0.208	5.81	100.6	2.6	0.29	0.0	0.00	0.31	0.14	65	215
74	14.72	14.71	33.370	24.779	318.0	0.237	5.77	99.8	2.5	0.30	0.1	0.03	0.32	0.15	74	214
75 ISL	14.69	14.68	33.373	24.788	317.2	0.240	5.76	99.6	2.5	0.30	0.2	0.05	0.31	0.15	75	
84	14.27	14.26	33.411	24.906	306.1	0.268	5.63	96.6	3.3	0.35	1.0	0.20	0.21	0.12	84	213
94	13.40	13.39	33.470	25.131	284.9	0.298	5.46	92.0	4.5	0.44	2.5	0.04	0.13	0.13	94	212
100 ISL	13.13	13.12	33.496	25.205	278.0	0.314	5.33	89.3	5.2	0.50	3.6	0.03	0.11	0.12	100	
109	12.87	12.86	33.528	25.282	270.9	0.339	5.15	85.9	6.2	0.60	5.2	0.02	0.09	0.10	109	211
124	12.41	12.39	33.584	25.415	258.5	0.379	4.96	81.9	7.8	0.72	7.2	0.01	0.07	0.09	125	210
125 ISL	12.34	12.32	33.586	25.430	257.1	0.381	4.93	81.3	8.1	0.74	7.5	0.01	0.07	0.09	126	
144	10.85	10.83	33.635	25.743	227.5	0.427	4.32	69.0	14.5	1.20	14.6	0.00	0.03	0.05	145	209
150 ISL	10.54	10.52	33.659	25.816	220.6	0.441	4.15	65.9	16.2	1.31	16.2	0.00	0.02	0.04	151	
169	9.84	9.82	33.742	26.000	203.3	0.481	3.74	58.5	21.0	1.56	20.1	0.00	0.01	0.03	170	208
199	9.13	9.11	33.880	26.224	182.4	0.539	3.54	54.5	26.1	1.72	22.9	0.00	0.00	0.02	200	207
200 ISL	9.11	9.09	33.884	26.230	181.8	0.541	3.54	54.5	26.2	1.72	22.9	0.00			201	
229	8.66	8.64	33.966	26.366	169.4	0.592	3.56	54.3	29.5	1.77	23.9	0.00			230	206
250 ISL	8.18	8.15	33.992	26.459	160.7	0.626	3.32	50.1	34.0	1.91	25.9	0.00			251	
267	7.79	7.76	34.003	26.526	154.5	0.653	3.05	45.6	38.2	2.04	27.8	0.00			268	205
300 ISL	7.26	7.23	34.019	26.614	146.3	0.703	2.60	38.4	45.2	2.27	30.6	0.00			302	
317	7.03	7.00	34.025	26.651	143.0	0.727	2.36	34.7	48.8	2.38	31.9	0.00			319	204
377	6.24	6.21	34.061	26.785	130.6	0.810	1.52	21.9	63.1	2.74	36.6	0.00			379	203
400 ISL	6.10	6.06	34.093	26.828	126.8	0.839	1.24	17.8	67.4	2.85	37.8	0.00			402	
437	5.95	5.91	34.150	26.892	121.1	0.885	0.86	12.3	73.4	3.00	39.3	0.00			440	202
500 ISL	5.71	5.67	34.222	26.979	113.4	0.959	0.51	7.3	81.8	3.16	40.9	0.00			503	
514	5.66	5.62	34.238	26.998	111.8	0.975	0.43	6.1	83.7	3.19	41.2	0.00			517	201

RV ROGER REVELLE CALCOFI CRUISE 9901 STATION 93 120

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT TYPE
29 50.8 N	123 35.2 W	12/01/99	1217 UTC	4065 m	320 15 kn			1022.0 mb	14.5 C	12.5 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	15.18	15.18	33.441	24.732	320.3	0.000	5.80	101.4	2.6	0.24	0.1	0.00	0.17	0.06	0	
2	15.18	15.18	33.441	24.732	320.4	0.006									2	222
2	15.18	15.18	33.441	24.732	320.4	0.006	5.80	101.4	2.6	0.24	0.1	0.00	0.17	0.06	2	221
10 ISL	15.18	15.18	33.441	24.732	320.6	0.032	5.81	101.5	2.5	0.23	0.1	0.00	0.17	0.06	10	
15	15.18	15.18	33.441	24.732	320.7	0.048	5.81	101.5	2.5	0.23	0.1	0.00	0.17	0.06	15	220
20 ISL	15.18	15.18	33.441	24.732	320.9	0.064	5.80	101.4	2.5	0.23	0.1	0.00	0.17	0.06	20	
30	15.19	15.19	33.441	24.731	321.3	0.096	5.78	101.0	2.4	0.23	0.1	0.00	0.17	0.06	30	219
45	15.19	15.18	33.441	24.731	321.8	0.144	5.79	101.2	2.5	0.23	0.1	0.00	0.17	0.06	45	218
50 ISL	15.19	15.18	33.440	24.730	322.0	0.161	5.79	101.2	2.5	0.23	0.1	0.00	0.18	0.06	50	
60	15.18	15.17	33.439	24.732	322.1	0.193	5.78	101.0	2.4	0.22	0.1	0.00	0.21	0.08	60	217
74	15.09	15.08	33.423	24.740	321.8	0.238									74	216
75	15.08	15.07	33.424	24.743	321.5	0.241	5.78	100.8	2.5	0.23	0.0	0.00	0.28	0.12	75	215
84	14.85	14.84	33.383	24.761	320.0	0.270	5.82	101.0	2.5	0.24	0.0	0.00	0.24	0.10	84	214
95	14.83	14.82	33.391	24.772	319.3	0.305	5.77	100.1	2.5	0.25	0.1	0.03	0.21	0.14	95	213
100 ISL	14.81	14.80	33.392	24.777	319.0	0.321	5.77	100.0	2.5	0.25	0.1	0.03	0.21	0.13	100	
105	14.78	14.76	33.391	24.783	318.5	0.337	5.77	100.0	2.5	0.25	0.1	0.03	0.21	0.12	105	212
115	14.69	14.67	33.472	24.865	311.0	0.368	5.68	98.3	2.9	0.32	0.5	0.15	0.13	0.09	115	211
124	15.17	15.15	33.863	25.063	292.6	0.396	5.51	96.5	3.3	0.27	0.8	0.08	0.14	0.12	125	210
125 ISL	15.14	15.12	33.873	25.078	291.3	0.399	5.51	96.4	3.3	0.28	0.9	0.07	0.14	0.12	126	
140	14.02	14.00	33.787	25.250	275.0	0.441	5.43	92.8	4.0	0.35	2.0	0.02	0.07	0.08	141	209
150 ISL	12.92	12.90	33.713	25.416	259.2	0.468	5.12	85.5	6.7	0.59	5.6	0.02	0.05	0.06	151	
164	11.38	11.36	33.649	25.659	236.1	0.502	4.59	74.2	11.8	1.00	11.8	0.01	0.04	0.05	165	208
192	9.71	9.69	33.757	26.034	200.6	0.564	3.77	58.8	21.4	1.56	20.3	0.00	0.01	0.03	193	207
200 ISL	9.47	9.45	33.798	26.105	193.9	0.579	3.74	58.0	23.0	1.59	21.3	0.00			201	
228	8.96	8.94	33.924	26.286	177.1	0.631	3.64	55.9	27.0	1.71	23.0	0.00			229	206
250 ISL	8.59	8.56	33.971	26.381	168.3	0.669	3.52	53.6	30.5	1.81	24.5	0.00			251	
268	8.30	8.27	33.992	26.442	162.8	0.699	3.36	50.8	33.6	1.91	25.8	0.00			269	205
300 ISL	7.71	7.68	34.023	26.554	152.4	0.749	2.80	41.8	41.0	2.16	29.0	0.00			302	
316	7.44	7.41	34.036	26.603	147.8	0.773	2.49	36.9	44.8	2.29	30.6	0.00			318	204
377	6.90	6.86	34.090	26.721	137.3	0.860	1.70	24.9	55.8	2.63	34.4	0.00			379	203
400 ISL	6.71	6.67	34.113	26.765	133.3	0.892	1.44	21.0	59.7	2.74	35.6	0.00			402	
435	6.42	6.38	34.145	26.828	127.5	0.937	1.09	15.8	65.7	2.89	37.3	0.00			438	202
500 ISL	5.82	5.78	34.183	26.935	117.7	1.017	0.69	9.9	77.9	3.08	40.1	0.00			503	
514	5.69	5.65	34.192	26.958	115.6	1.033	0.60	8.6	80.5	3.12	40.7	0.00			517	201

PRIMARY PRODUCTIVITY CASTS

RV ROGER REVELLE — CALCOFI CRUISE 9901 — STATION 77 60

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	FOREL	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE
34 43.3 N	121 32.9 W	24/ 1/99	1757 UTC	13 m		1216 - 1755 PST	1218 PST	1751 PST	392.3 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
2	13.44	33.549	25.182	6.09	102.8	4.4	0.43	1.3	0.06	1.23	0.54	79. A	16.8	18.1	17.5	0.09
11	13.44	33.542	25.176	6.07	102.4	4.3	0.40	1.3	0.06	1.18	0.54	27.	18.5	18.5	18.5	0.10
20	13.43	33.543	25.179	6.07	102.4	4.3	0.41	1.4	0.07	1.18	0.58	9.4	8.4	8.4	8.4	0.09
29	13.06	33.549	25.258	5.99	100.3	5.3	0.53	2.9	0.15	0.90	0.60	3.3	2.8	2.9	2.9	0.06
38	12.95	33.551	25.282	5.96	99.6	5.9	0.58	3.7	0.20	0.71	0.54	1.1	0.81	0.84	0.83	0.05
46	12.70	33.573	25.348	5.46	90.7	7.9	0.73	6.1	0.26	0.43	0.37					
54	11.63	33.623	25.591	4.56	74.1	13.2	1.11	12.5	0.15	0.19	0.28	0.17	0.00	0.01	0.00	0.04

RV ROGER REVELLE — CALCOFI CRUISE 9901 — STATION 77 100

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	FOREL	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE
33 23.3 N	124 19.4 W	23/ 1/99	1851 UTC	30 m		1230 - 1800 PST	1229 PST	1803 PST	122.9 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
3	15.53	33.307	24.552	5.79	101.8	2.5	0.31	1.1	0.00	0.11	0.04	86. A	1.2	1.5	1.4	0.06
11	15.53	33.309	24.553	5.77	101.5	2.2	0.25	0.1	0.00	0.12	0.03					
21	15.53	33.313	24.557	5.79	101.8	2.2	0.25	0.1	0.00	0.12	0.03	34.	0.99	1.0	1.0	0.07
31	16.17	33.631	24.658	5.67	101.2	2.1	0.20	0.1	0.00	0.18	0.07					
43	14.38	33.231	24.743	5.96	102.3	2.5	0.29	0.1	0.01	0.52	0.21	11.	2.5	2.4	2.5	0.05
53	13.16	33.079	24.875	6.08	101.7	3.0	0.36	0.3	0.06	0.68	0.32					
66	12.96	33.093	24.926	6.05	100.8	3.2	0.39	0.6	0.09	0.56	0.29	3.4	1.2	1.3	1.2	0.03
76	12.84	33.104	24.958	5.97	99.2	3.4	0.43	1.1	0.16	0.34	0.19					
85	12.66	33.101	24.991	5.91	97.8	4.0	0.49	2.1	0.26	0.22	0.15	1.3	0.17	0.17	0.17	0.03
97	12.22	33.131	25.099	5.77	94.7	5.4	0.61	4.3	0.16	0.13	0.12					
108	11.86	33.243	25.254	5.37	87.5	8.0	0.83	7.9	0.03	0.10	0.11					
121	11.77	33.385	25.381	5.35	87.1	9.0	0.88	8.8	0.09	0.08	0.12	0.20	0.00	0.00	0.00	0.01

RV ROGER REVELLE — CALCOFI CRUISE 9901 — STATION 80 70

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	FOREL	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE
33 49.0 N	121 50.6 W	22/ 1/99	1829 UTC	13 m		1218 - 1803 PST	1218 PST	1800 PST	300.0 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
1	13.00	33.324	25.095	6.25	104.4	4.4	0.42	1.6	0.13	1.24	0.53	89. A	14.7	15.3	15.0	0.16
10	12.95	33.323	25.105	6.26	104.4	4.4	0.42	1.6	0.13	1.31	0.49	31.	16.4	15.9	16.2	0.19
19	12.27	33.334	25.245	6.13	100.8	6.5	0.62	4.4	0.32	1.06	0.54	11.	6.0	6.1	6.1	0.11
28	12.01	33.351	25.308	5.92	96.8	7.3	0.73	5.8	0.50	0.54	0.34	3.7	1.5	1.6	1.5	0.06
37	11.90	33.358	25.334	5.88	96.0	8.1	0.78	6.7	0.47	0.48	0.32	1.3	0.28	0.24	0.26	0.05
45	11.98	33.411	25.360	5.87	96.0	7.9	0.77	6.5	0.47	0.37	0.26					
53	12.03	33.444	25.377	5.86	95.9	7.9	0.78	6.5	0.46	0.30	0.25	0.19	0.00	0.00	0.00	0.04

RV ROGER REVELLE — CALCOFI CRUISE 9901 — STATION 83 40.6

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	FOREL	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE
34 13.5 N	119 24.7 W	21/ 1/99	1847 UTC	11 m		1212 - 1750 PST	1209 PST	1744 PST	177.8 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	14.22	33.495	24.979	5.81	99.6	3.5	0.37	1.0	0.07	0.63	0.27	76. A	13.3	11.6	12.4	0.06
8	14.22	33.495	24.979	5.84	100.1	3.4	0.36	1.0	0.07	0.59	0.33	33.	11.9	11.1	11.5	0.08
16	14.19	33.497	24.987	5.80	99.4	3.5	0.36	1.1	0.09	0.67	0.27	11.	3.0	3.2	3.1	0.07
24	13.96	33.515	25.049	5.59	95.3	4.3	0.45	1.9	0.17	0.54	0.28	3.5	1.2	1.3	1.3	0.06
31	13.56	33.529	25.142	4.96	83.9	6.9	0.73	5.8	0.27	0.39	0.30	1.3	0.20	0.24	0.22	0.06

RV ROGER REVELLE — CALCOFI CRUISE 9901 — STATION 83 110

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	FOREL	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE
31 54.7 N	124 10.2 W	19/ 1/99	1800 UTC	38 m		1225 - 1803 PST	1228 PST	1803 PST	116.0 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
3	15.41	33.495	24.723	5.75	101.0	2.2	0.23	0.1	0.00	0.12	0.04	89. A	1.5	1.5	1.5	0.06
16	15.42	33.497	24.723	5.79	101.7	2.1	0.22	0.1	0.00	0.12	0.04					
28	15.70	33.619	24.755	5.71	100.9	2.1	0.20	0.1	0.00	0.13	0.05	32.	1.5	1.4	1.4	0.06
42	15.90	33.694	24.768	5.70	101.2	2.1	0.19	0.1	0.00	0.17	0.07					
55	15.87	33.682	24.766	5.68	100.8	2.1	0.20	0.1	0.01	0.19	0.09	11.	1.3	1.3	1.3	0.02
64	15.89	33.689	24.767	5.67	100.6	2.1	0.20	0.1	0.01	0.19	0.08					
71	15.91	33.693	24.766	5.68	100.9	2.0	0.20	0.1	0.01	0.20	0.09					
83	15.09	33.507	24.805	5.72	99.8	2.1	0.26	0.1	0.04	0.17	0.09	3.5	0.56	0.56	0.56	0.02
91	15.00	33.469	24.796	5.72	99.6	2.1	0.27	0.1	0.04	0.17	0.10					
98	15.03	33.477	24.795	5.73	99.8	2.1	0.27	0.1	0.04	0.17	0.10					
106	16.52	33.965	24.837	5.52	99.4	2.0	0.18	0.1	0.03	0.15	0.10	1.4	0.18	0.20	0.19	0.01
120	15.41	33.700	24.885	5.62	98.8	2.2	0.24	0.3	0.13	0.11	0.09					
131	14.97	33.836	25.086	5.50	95.9	2.9	0.27	1.1	0.09	0.10	0.10					
143	13.90	33.738	25.238	5.42	92.4	3.7	0.35	2.2	0.02	0.07	0.08					
152	13.29	33.716	25.345	5.20	87.5	5.3	0.50	4.5	0.01	0.05	0.06	0.22	0.00	-0.01	-0.01	0.01

A) INCUBATION LIGHT INTENSITIES WERE 90, 32, 11, 3.5, 1.3, 0.20 PERCENT RESPECTIVELY.

PRIMARY PRODUCTIVITY CASTS

RV ROGER REVELLE — CALCOFI CRUISE 9901 — STATION 87 50

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	FOREL	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE
33 19.4 N	119 39.8 W	17/ 1/99	1821 UTC	17 m		1206 - 1755 PST	1209 PST	1755 PST	300.8 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	13.61	33.516	25.121	5.92	100.2	4.2	0.43	2.1	0.07	0.46	0.18	83. A	11.1	10.6	10.9	0.09
13	13.40	33.523	25.170	5.93	100.0	4.6	0.46	2.5	0.08	0.63	0.33	31.	13.0	12.4	12.7	0.10
25	11.96	33.579	25.494	4.95	81.0	11.2	0.96	10.0	0.16	0.43	0.30	10.	4.9	4.9	4.9	0.10
38	11.29	33.641	25.666	4.07	65.7	15.8	1.29	15.0	0.14	0.17	0.19	3.2	0.73	0.75	0.74	0.05
49	11.10	33.674	25.727	3.95	63.5	17.2	1.37	16.1	0.15	0.13	0.21	1.2	0.19	0.16	0.18	0.06
59	10.92	33.697	25.777	3.74	59.9	18.5	1.44	17.2	0.13	0.09	0.19					
70	10.76	33.716	25.820	3.64	58.1	19.2	1.48	18.0	0.12	0.08	0.18	0.18	0.00	0.01	0.00	0.06

RV ROGER REVELLE — CALCOFI CRUISE 9901 — STATION 87 80

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	FOREL	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE
32 20.1 N	121 43.4 W	18/ 1/99	1830 UTC	30 m		1214 - 1757 PST	1217 PST	1757 PST	303.6 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	14.46	33.264	24.750	5.88	101.2	2.5	0.30	0.2	0.02	0.23	0.06	90. A	4.3	4.1	4.2	0.03
12	13.82	33.199	24.834	5.96	101.2	3.0	0.37	0.7	0.05	0.28	0.09					
22	13.42	33.163	24.887	5.99	100.8	3.2	0.39	0.9	0.07	0.32	0.10	32.	6.3	5.9	6.1	0.06
31	13.20	33.160	24.929	6.01	100.7	3.3	0.40	1.1	0.08	0.43	0.16					
42	13.03	33.142	24.950	6.05	101.0	3.5	0.41	1.3	0.09	0.61	0.27	12.	4.8	4.8	4.8	0.02
54	12.98	33.165	24.978	6.02	100.4	3.6	0.43	1.4	0.10	0.44	0.24					
65	12.96	33.223	25.027	5.86	97.7	3.9	0.46	2.0	0.13	0.31	0.18	3.6	1.1	1.1	1.1	0.01
74	12.53	33.212	25.102	5.79	95.7	5.1	0.56	3.5	0.27	0.26	0.16					
84	13.06	33.368	25.120	5.71	95.5	5.0	0.53	3.6	0.25	0.23	0.16	1.4	0.19	0.17	0.18	0.02
96	13.74	33.651	25.202	5.29	89.9	4.7	0.47	3.7	0.03	0.11	0.09					
106	13.87	33.822	25.308	5.26	89.7	4.6	0.44	3.5	0.02	0.08	0.08					
120	13.03	33.743	25.417	5.18	86.8	5.4	0.52	4.7	0.02	0.06	0.06	0.22	0.00	0.00	0.00	0.00

RV ROGER REVELLE — CALCOFI CRUISE 9901 — STATION 90 37

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	FOREL	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE
33 11.1 N	118 23.2 W	15/ 1/99	1858 UTC	14 m		1208 - 1750 PST	1203 PST	1736 PST	223.3 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	14.41	33.524	24.961	6.06	104.3	2.2	0.29	0.1	0.01	0.29	0.13	90. A	6.2	6.5	6.3	0.07
10	14.15	33.556	25.041	6.21	106.4	2.1	0.29	0.1	0.00	0.50	0.20	33.	8.2	8.2	8.2	0.14
19	14.06	33.566	25.068	6.24	106.7	2.1	0.30	0.1	0.00	0.66	0.29	12.	5.7	5.5	5.6	0.13
30	13.27	33.606	25.261	5.49	92.4	6.0	0.64	4.3	0.24	1.56	0.68	3.7	5.8	5.6	5.7	0.05
37	12.58	33.593	25.387	4.53	75.1	10.2	0.96	9.6	0.26	0.61	0.43	1.7	0.71	0.62	0.67	0.02
45	11.93	33.611	25.525	4.04	66.1	13.7	1.19	13.5	0.04	0.25	0.33					
52	11.56	33.634	25.612	4.01	65.1	14.5	1.24	14.5	0.03	0.21	0.23	0.33	0.03	0.04	0.03	0.00
62	11.37	33.700	25.698	3.55	57.4	17.1	1.42	16.8	0.02	0.14	0.20					

RV ROGER REVELLE — CALCOFI CRUISE 9901 — STATION 90 60

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	FOREL	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE
32 25.1 N	119 57.6 W	14/ 1/99	1807 UTC	19 m		1209 - 1755 PST	1209 PST	1741 PST	280.0 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
1	12.67	33.484	25.284	6.26	103.9	5.6	0.57	3.5	0.11	0.65	0.33	92. A	6.2	6.2	6.2	0.06
8	12.62	33.484	25.294	6.12	101.5	5.6	0.57	3.5	0.12	0.75	0.40					
15	12.62	33.485	25.295	6.12	101.5	5.6	0.57	3.5	0.12	0.76	0.46	30.	11.8	11.9	11.8	0.09
27	12.39	33.549	25.389	5.93	97.9	5.5	0.69	4.5	0.26	0.40	0.41	11.	3.7	3.7	3.7	0.04
34	12.35	33.552	25.399	5.90	97.3	5.5	0.70	4.7	0.27	0.39	0.42					
42	12.29	33.557	25.415	5.82	95.9	5.9	0.74	5.1	0.28	0.33	0.43	3.4	1.7	1.8	1.8	0.03
52	11.78	33.571	25.522	5.18	84.4	9.9	0.99	9.5	0.33	0.23	0.38	1.5	0.28	0.34	0.31	0.04
62	10.77	33.629	25.750	4.00	63.8	17.2	1.40	16.9	0.13	0.10	0.29					
72	10.08	33.717	25.938	3.53	55.5	21.2	1.61	20.3	0.03	0.05	0.19	0.30	0.00	-0.01	-0.01	0.02

RV ROGER REVELLE — CALCOFI CRUISE 9901 — STATION 90 90

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	FOREL	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE
31 25.6 N	122 1.0 W	13/ 1/99	1809 UTC	20 m		1217 - 1755 PST	1217 PST	1749 PST	176.4 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
1	14.16	33.346	24.877	5.97	102.1	2.9	0.33	0.2	0.01	0.39	0.17	93. A	4.1	4.0	4.0	0.04
15	14.09	33.330	24.879	5.96	101.8	2.9	0.32	0.1	0.01	0.41	0.17	32.	5.3	5.3	5.3	0.04
28	14.06	33.324	24.881	5.99	102.2	2.9	0.32	0.1	0.01	0.44	0.15	12.	3.3	3.3	3.3	0.03
43	14.04	33.337	24.896	5.98	102.0	2.8	0.33	0.2	0.01	0.45	0.18	3.7	1.3	1.4	1.4	0.03
55	13.21	33.278	25.020	5.97	100.1	3.5	0.42	1.1	0.14	0.51	0.28	1.5	0.47	0.47	0.47	0.01
66	12.95	33.303	25.091	5.77	96.2	4.4	0.51	2.6	0.22	0.33	0.20					
75	12.89	33.458	25.223	5.39	89.9	5.3	0.57	4.2	0.04	0.14	0.12	0.32	0.02	0.02	0.02	0.01

A) INCUBATION LIGHT INTENSITIES WERE 90, 32, 11, 3.5, 1.3, 0.20 PERCENT RESPECTIVELY.

PRIMARY PRODUCTIVITY CASTS

RV ROGER REVELLE — CALCOFI CRUISE 9901 — STATION 90 120

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	FOREL	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE
30 25.1 N	123 59.9 W	12/ 1/99	1802 UTC	32 m		1223 - 1800 PST	1223 PST	1756 PST	103.9 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
1	15.57	33.503	24.694	5.75	101.3	2.5	0.24	0.0	0.00	0.15	0.05	95. A	1.4	1.3	1.3	0.03
13	15.55	33.505	24.700	5.76	101.4	2.5	0.24	0.0	0.00	0.16	0.05					
25	15.54	33.505	24.703	5.75	101.2	2.5	0.24	0.0	0.00	0.16	0.06	30.	1.9	1.6	1.7	0.03
35	15.52	33.499	24.703	5.74	101.0	2.4	0.25	0.0	0.00	0.16	0.05					
45	15.47	33.487	24.705	5.76	101.3	2.3	0.24	0.0	0.00	0.17	0.06	12.	1.2	1.2	1.2	0.03
55	15.18	33.413	24.712	5.80	101.3	2.3	0.25	0.0	0.00	0.21	0.08					
67	15.19	33.422	24.717	5.79	101.2	2.3	0.25	0.0	0.00	0.25	0.10	4.0	0.78	0.88	0.83	0.01
78	15.18	33.420	24.718	5.78	101.0	2.3	0.25	0.0	0.00	0.27	0.12					
88	15.16	33.421	24.724	5.78	100.9	2.4	0.26	0.0	0.00	0.24	0.11	1.5	0.26	0.22	0.24	0.00
98	15.09	33.416	24.735	5.74	100.1	2.4	0.27	0.1	0.02	0.17	0.11					
109	15.06	33.585	24.872	5.66	98.7	2.9	0.28	0.4	0.11	0.19	0.14					
120	14.20	33.565	25.041	5.60	96.0	3.6	0.34	1.2	0.08	0.12	0.12	0.32	0.01	0.02	0.01	0.00

RV ROGER REVELLE — CALCOFI CRUISE 9901 — 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	9/ 1/99	1949 UTC	15 m		1230 - 1730 PST	1156 PST	1727 PST	207.8 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	14.19	33.486	24.978	5.99	102.6	3.6	0.32	0.7	0.07	1.05	0.56	90. A	15.9	14.2	15.0	0.11
12	14.12	33.484	24.992	5.93	101.5	3.7	0.33	0.9	0.09	0.98	0.62	29.	7.0	6.4	6.7	0.08
21	14.05	33.472	24.997	5.71	97.5	4.5	0.43	2.0	0.19	0.93	0.59	12.	3.2	3.1	3.1	0.03
32	13.68	33.484	25.083	5.38	91.2	5.7	0.55	3.7	0.30	0.71	0.58	3.8	1.0	1.0	1.0	0.02
41	13.55	33.530	25.146	5.24	88.6	6.7	0.62	4.4	0.37	0.41	0.42	1.5	0.15	0.21	0.18	0.04
49	13.53	33.555	25.169	5.14	86.9	7.3	0.69	4.9	0.36	0.27	0.36					
57	13.49	33.559	25.181	5.11	86.3	7.8	0.71	5.4	0.39	0.24	0.40	0.29	0.02	0.01	0.01	0.05

RV ROGER REVELLE — CALCOFI CRUISE 9901 — STATION 93 50

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	FOREL	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE
32 10.8 N	118 53.6 W	10/ 1/99	1816 UTC	17 m		1207 - 1752 PST	1203 PST	1747 PST	236.8 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	14.02	33.482	25.011	5.99	102.3	1.6	0.31	0.1	0.01	0.78	0.34	91. A	9.1	8.9	9.0	0.09
13	14.00	33.483	25.016	5.97	101.9	1.6	0.31	0.1	0.01	0.77	0.34	31.	9.1	9.0	9.0	0.10
24	13.98	33.480	25.018	5.94	101.3	1.8	0.33	0.2	0.02	0.85	0.42	11.	5.1	4.7	4.9	0.06
36	13.13	33.491	25.200	5.09	85.3	7.0	0.68	5.7	0.08	0.37	0.27	3.9	0.95	1.0	0.99	0.02
47	12.35	33.514	25.370	4.57	75.4	10.6	0.94	9.9	0.05	0.17	0.16	1.4	0.17	0.18	0.18	0.02
55	11.80	33.550	25.502	4.29	69.9	12.8	1.09	12.5	0.02	0.15	0.19					
64	11.24	33.607	25.650	3.95	63.7	16.1	1.31	15.7	0.02	0.09	0.16	0.31	0.00	0.00	0.00	0.01

RV ROGER REVELLE — CALCOFI CRUISE 9901 — STATION 93 90

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	FOREL	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE
30 50.8 N	121 35.4 W	11/ 1/99	1906 UTC	28 m		1212 - 1756 PST	1214 PST	1753 PST	118.9 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
1	14.96	33.358	24.716	5.84	101.6	2.5	0.28	0.1	0.00	0.25	0.08	95. A	2.7	2.4	2.6	0.04
10	14.90	33.356	24.727	5.85	101.6	2.5	0.28	0.1	0.00	0.23	0.08					
20	14.88	33.357	24.733			2.4	0.28	0.1	0.00	0.25	0.10	33.	2.6	2.5	2.5	0.05
30	14.87	33.354	24.733	5.85	101.5	2.4	0.28	0.1	0.00	0.27	0.10					
38	14.86	33.352	24.734	5.84	101.3	2.4	0.28	0.1	0.00	0.31	0.12	12.	1.4	1.4	1.4	0.03
49	14.85	33.350	24.735	5.82	101.0	2.4	0.28	0.1	0.00	0.36	0.16					
60	14.79	33.352	24.750	5.80	100.5	2.4	0.29	0.2	0.02	0.32	0.14	3.7	0.65	0.71	0.68	0.00
67	14.74	33.367	24.772	5.79	100.2	2.5	0.30	0.2	0.03	0.30	0.14					
77	14.72	33.416	24.814	5.76	99.7	2.5	0.30	0.2	0.03	0.25	0.12	1.5	0.17	0.18	0.18	0.00
86	14.23	33.426	24.926	5.64	96.7	3.3	0.36	1.2	0.09	0.18	0.14					
97	13.28	33.485	25.167	5.34	89.8	5.1	0.51	3.7	0.02	0.12	0.13					
105	12.75	33.484	25.271	4.98	82.8	7.3	0.72	6.6	0.02	0.11	0.12	0.32	-0.01	0.00	0.00	0.01

A) INCUBATION LIGHT INTENSITIES WERE 90, 32, 11, 3.5, 1.3, 0.20 PERCENT RESPECTIVELY.

CalCOFI Cruise 9901

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 05.2	120 47.5	01/24	2355	0003	151	72	2556	106
77	51	35 01.4	120 55.9	01/25	0218	0240	467	201	118	118
77	55	34 53.6	121 12.5	01/24	1519	1538	399	203	356	356
77	60	34 43.6	121 33.4	01/24	1131	1153	433	218	168	168
77	70	34 23.8	122 14.8	01/24	0535	0558	435	202	759	214
77	80	34 03.5	122 56.6	01/24	0008	0030	431	207	325	325
77	90	33 43.3	123 38.0	01/23	1616	1639	472	219	53	53
77	100	33 22.2	124 19.0	01/23	0832	0854	480	200	25	25
80	51	34 27.0	120 32.2	01/21	2347	2354	167	69	84	84
80	60	34 09.5	121 09.4	01/22	0429	0452	464	202	451	252
80	70	33 49.5	121 51.1	01/22	0850	0911	437	211	121	121
80	80	33 29.0	122 32.6	01/22	1557	1618	437	198	309	309
80	90	33 08.8	123 14.6	01/22	2115	2138	480	201	137	137
80	100	32 48.3	123 54.3	01/23	0221	0244	485	206	97	97
82	47	34 16.5	120 02.7	01/21	1656	1717	474	211	49	49
83	40.6	34 13.4	119 24.9	01/21	0858	0901	63	22	110	110
83	42	34 10.7	119 31.3	01/21	0736	0753	627	155	34	34
83	51	33 52.5	120 08.8	01/21	0115	0126	223	96	152	152
83	55	33 44.4	120 25.5	01/20	2153	2215	420	223	186	186
83	60	33 34.6	120 46.1	01/20	1757	1818	435	205	184	184
83	70	33 14.3	121 27.4	01/20	0915	0937	450	205	255	255
83	80	32 54.6	122 08.0	01/20	0444	0507	436	217	216	216
83	90	32 34.2	122 49.1	01/19	2328	2350	466	212	88	88
83	100	32 14.4	123 30.4	01/19	1754	1820	533	207	32	32
83	110	31 54.8	124 09.6	01/19	1159	1221	472	204	34	34
87	33	33 53.1	118 30.2	01/16	1636	1642	132	47	175	175
87	35	33 49.4	118 38.7	01/16	1920	1942	445	213	74	74
87	40	33 40.0	118 58.5	01/17	0242	0304	430	207	595	595
87	45	33 29.6	119 19.7	01/17	0746	0807	419	215	952	546
87	50	33 19.4	119 40.6	01/17	1135	1142	144	60	166	166
87	55	33 09.4	120 00.8	01/17	1503	1524	436	210	358	358
87	60	32 59.4	120 21.6	01/17	1944	2006	432	219	148	148
87	70	32 39.7	121 02.3	01/18	0107	0129	449	203	218	218
87	80	32 19.7	121 43.1	01/18	1150	1212	413	204	220	220
87	90	31 59.6	122 24.5	01/18	1856	1918	444	209	131	131
87	100	31 39.1	123 04.9	01/19	0014	0038	480	206	92	92
87	110	31 19.4	123 44.1	01/19	0527	0551	533	177	154	154
90	28	33 29.2	117 46.7	01/16	0520	0530	215	86	116	116
90	30	33 25.7	117 55.0	01/15	2014	2035	428	206	376	376
90	35	33 14.9	118 16.3	01/15	1610	1632	446	209	218	218
90	37	33 10.9	118 23.9	01/15	1304	1326	452	203	113	113
90	45	32 55.7	118 56.7	01/14	2033	2055	446	212	343	343
90	53	32 39.6	119 29.3	01/14	1541	1603	430	210	137	137
90	60	32 25.4	119 57.7	01/14	0425	0447	447	203	217	217
90	70	32 05.4	120 38.8	01/13	2359	2421	462	206	199	199
90	80	31 45.7	121 19.2	01/13	1603	1624	465	209	174	95
90	90	31 25.6	122 01.0	01/13	0826	0847	406	224	52	52
90	100	31 05.5	122 40.5	01/13	0235	0256	421	223	100	100
90	110	30 45.5	123 20.3	01/12	2014	2036	571	222	33	33
90	120	30 25.5	124 00.7	01/12	1122	1144	443	208	18	18
93	26.7	32 56.6	117 18.6	01/09	1248	1252	108	54	37	37
93	28	32 54.6	117 24.3	01/09	1545	1606	404	218	136	136
93	30	32 51.4	117 32.1	01/09	1900	1922	434	217	97	97
93	35	32 39.6	117 54.6	01/09	2333	2355	439	204	1984	1984
93	40	32 31.2	118 13.6	01/10	0327	0350	447	219	154	154
93	45	32 21.2	118 34.2	01/10	0729	0750	508	185	153	153
93	50	32 11.0	118 54.2	01/10	1132	1153	481	171	1039	1039
93	55	32 00.5	119 14.5	01/10	1559	1621	429	205	1043	1043
93	60	31 51.0	119 34.6	01/10	2003	2024	410	214	305	305
93	70	31 30.6	120 15.5	01/11	0131	0154	437	213	172	172
93	80	31 10.8	120 56.1	01/11	0645	0708	477	196	96	96
93	90	30 50.7	121 36.3	01/11	1313	1335	455	210	33	33
93	100	30 31.1	122 16.0	01/11	1822	1845	472	212	40	40
93	110	30 10.9	122 56.0	01/12	0002	0026	468	215	100	100
93	120	29 51.2	123 35.4	01/12	0532	0554	439	195	46	46

PERSONNEL

CalCOFI Cruise 9904

SHIP'S CAPTAIN

John E. Herring, RV *David Starr Jordan*

PERSONNEL PARTICIPATING IN THE COLLECTION OF DATA

Dotson, Ronald C. (Chief Scientist)	Fishery Biologist, NMFS
Becker, Susan M.	Staff Research Associate, SIO
Gruber, Dennis W.	Staff Research Associate, SIO
Hays, Amy E.	Fishery Biologist, NMFS
Hyrenbach, K. David	Graduate Student, SIO
Ireson, Kirk J.	Staff Research Associate, SIO
Iwamoto, Sadahiro	Graduate Student, UCSD
Ramirez, Fernando	Staff Research Associate, SIO
Ramon, Darlene A.	Fishery Biologist, NMFS
Renger, Edward H.	Staff Research Associate, SIO
Wilkinson, James R.	Programmer/Analyst, SIO

FIGURES

Cruise 9904

1. CalCOFI Cruise 9904, 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.

CALCOFI CRUISE 9904

1 - 20 April 1999

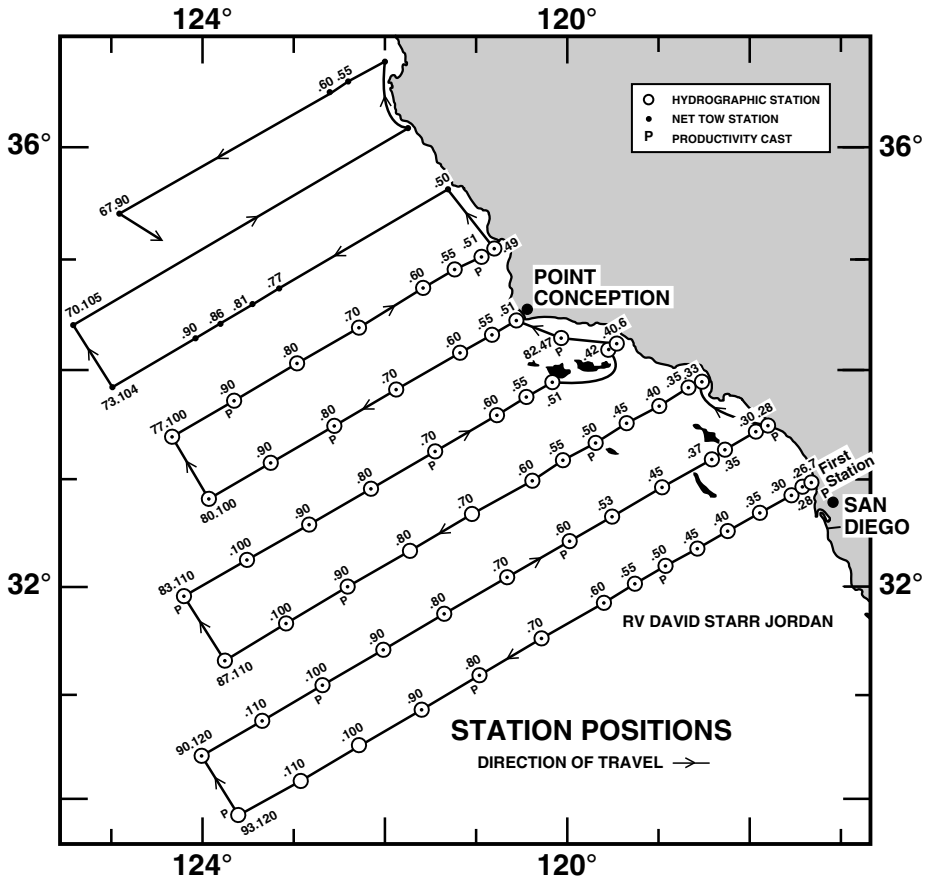


FIGURE 1

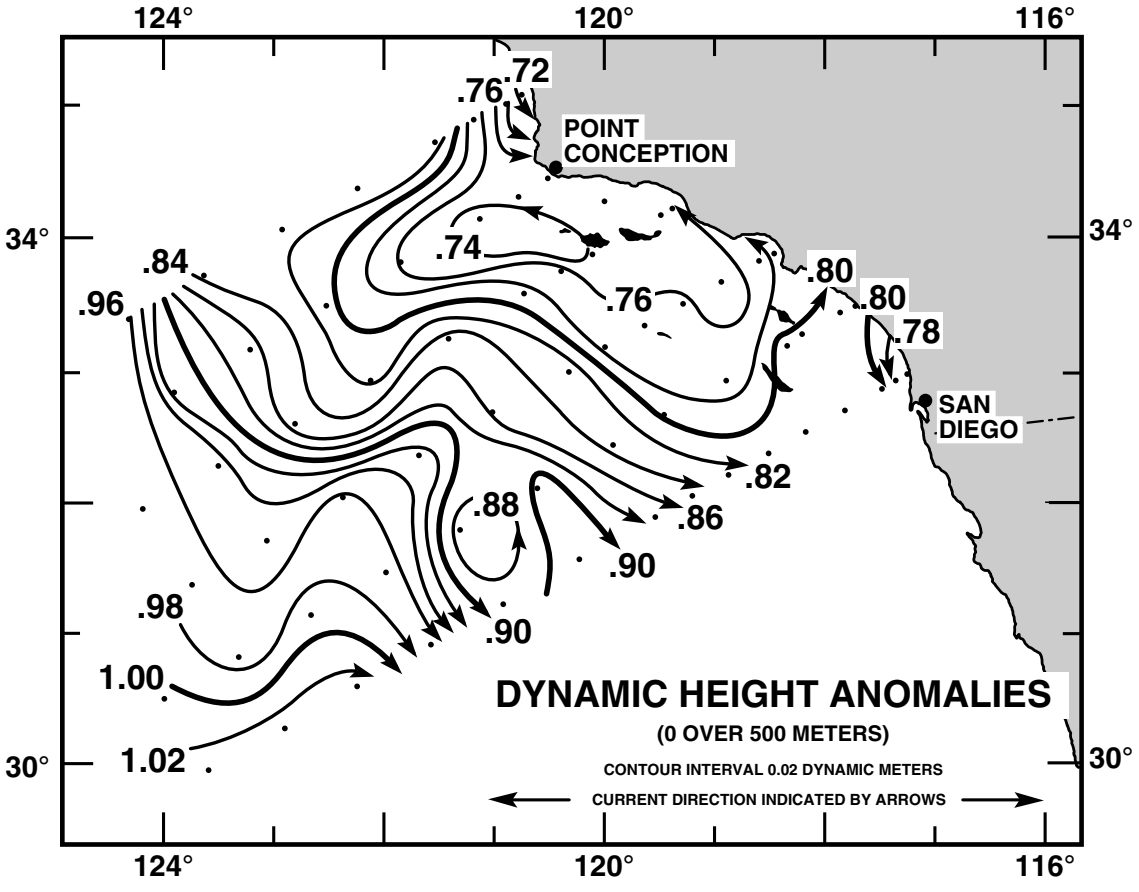


FIGURE 2

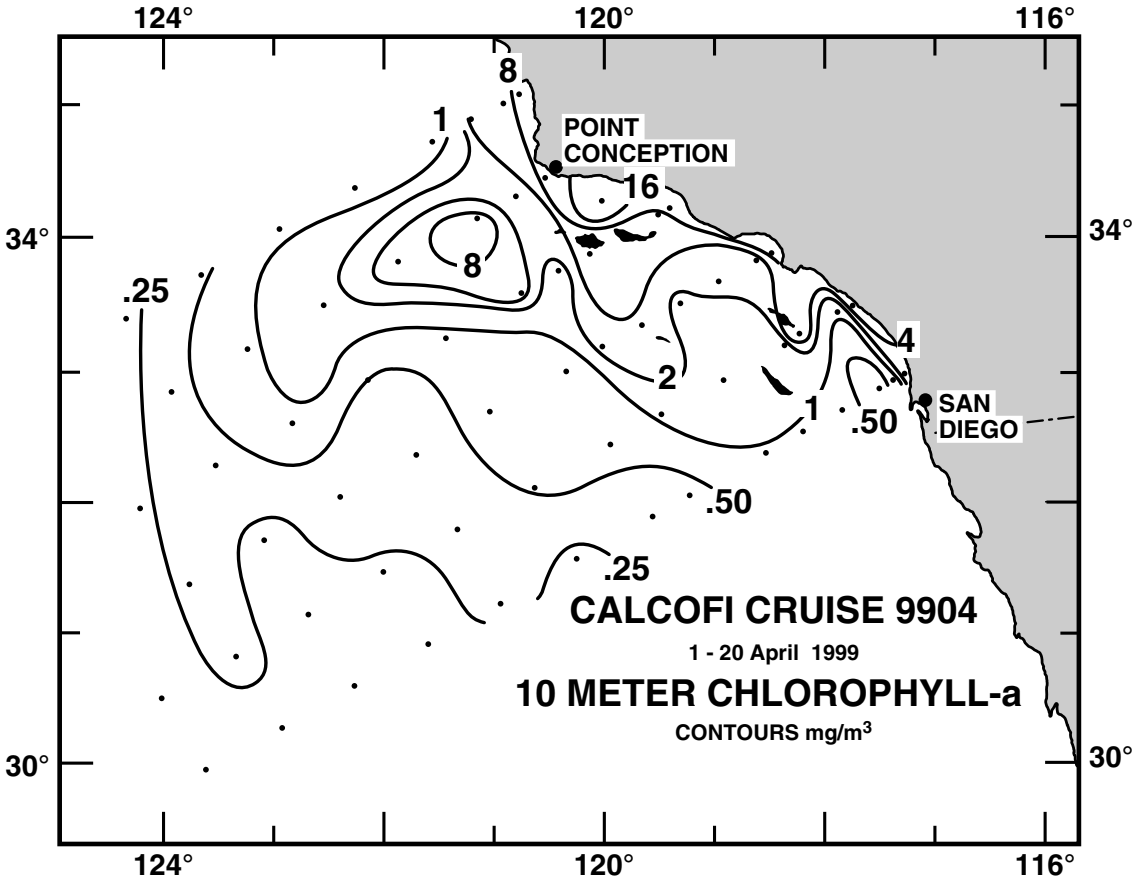


FIGURE 3A

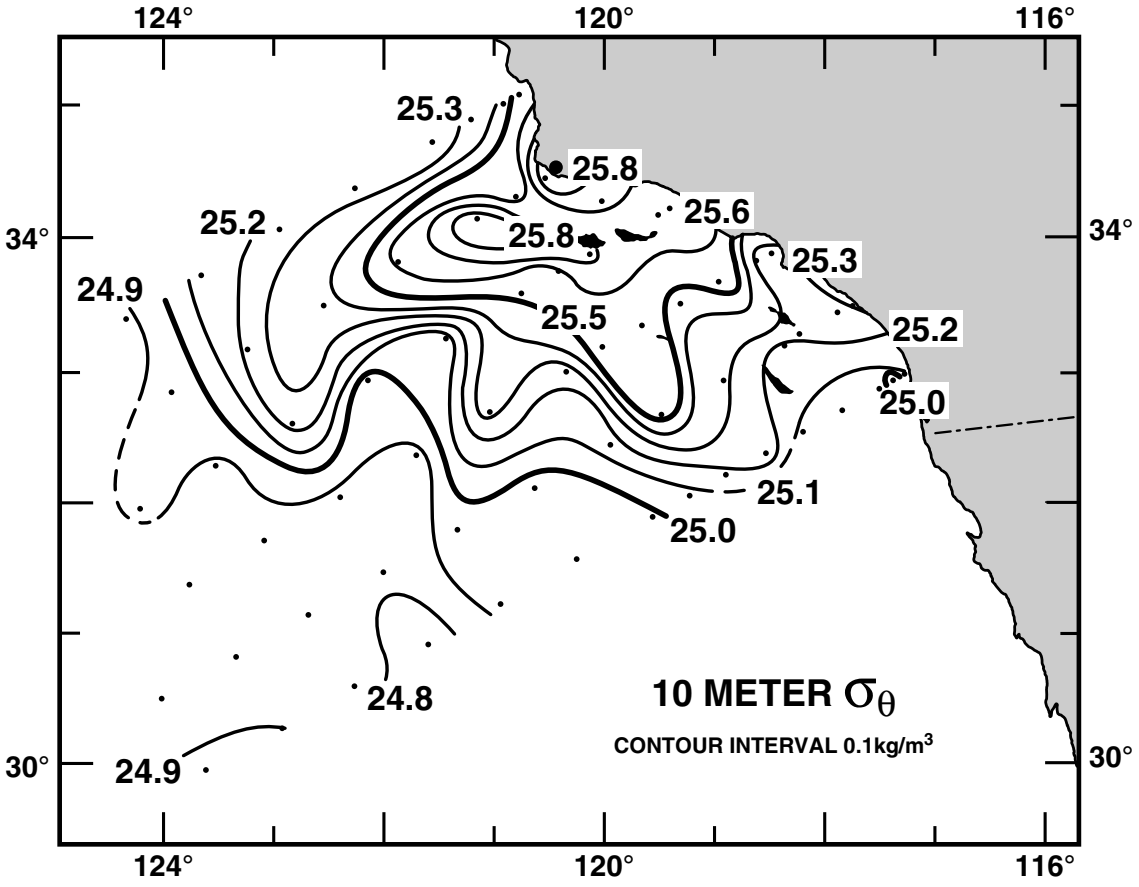


FIGURE 3B

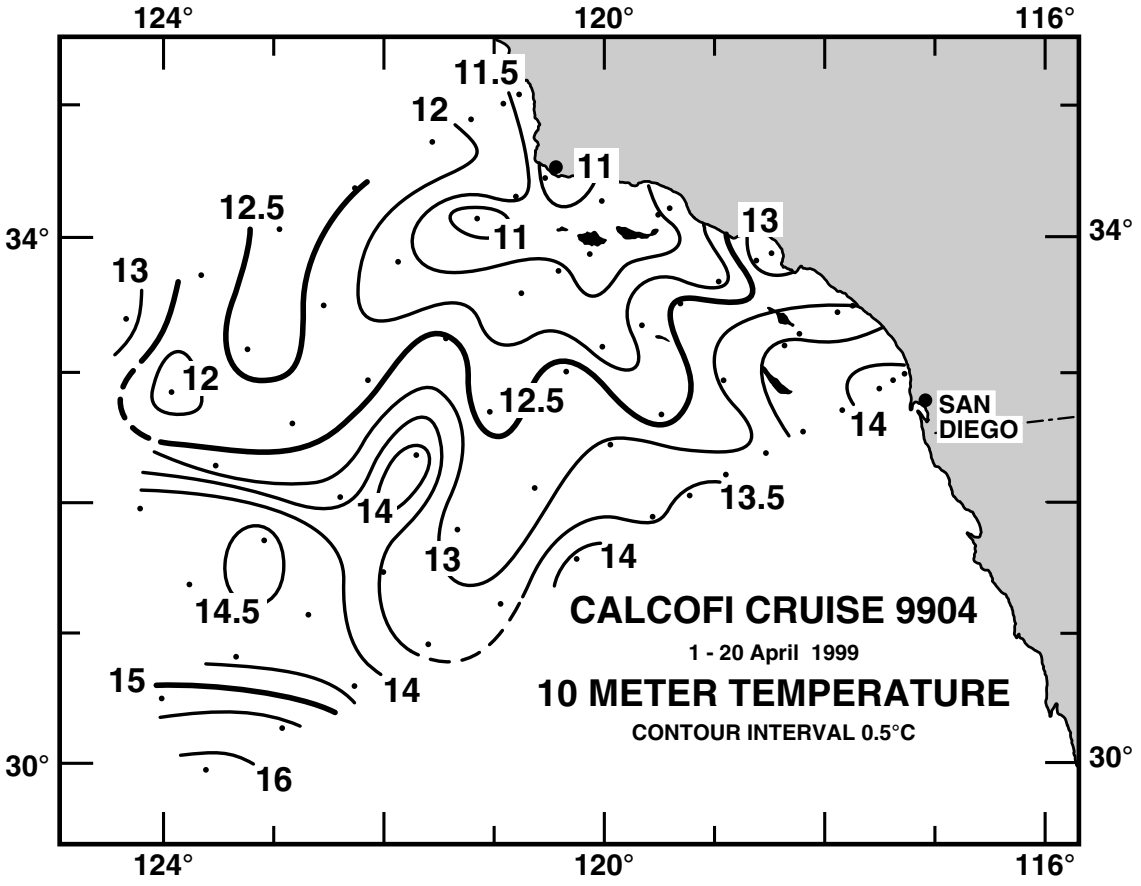


FIGURE 3C

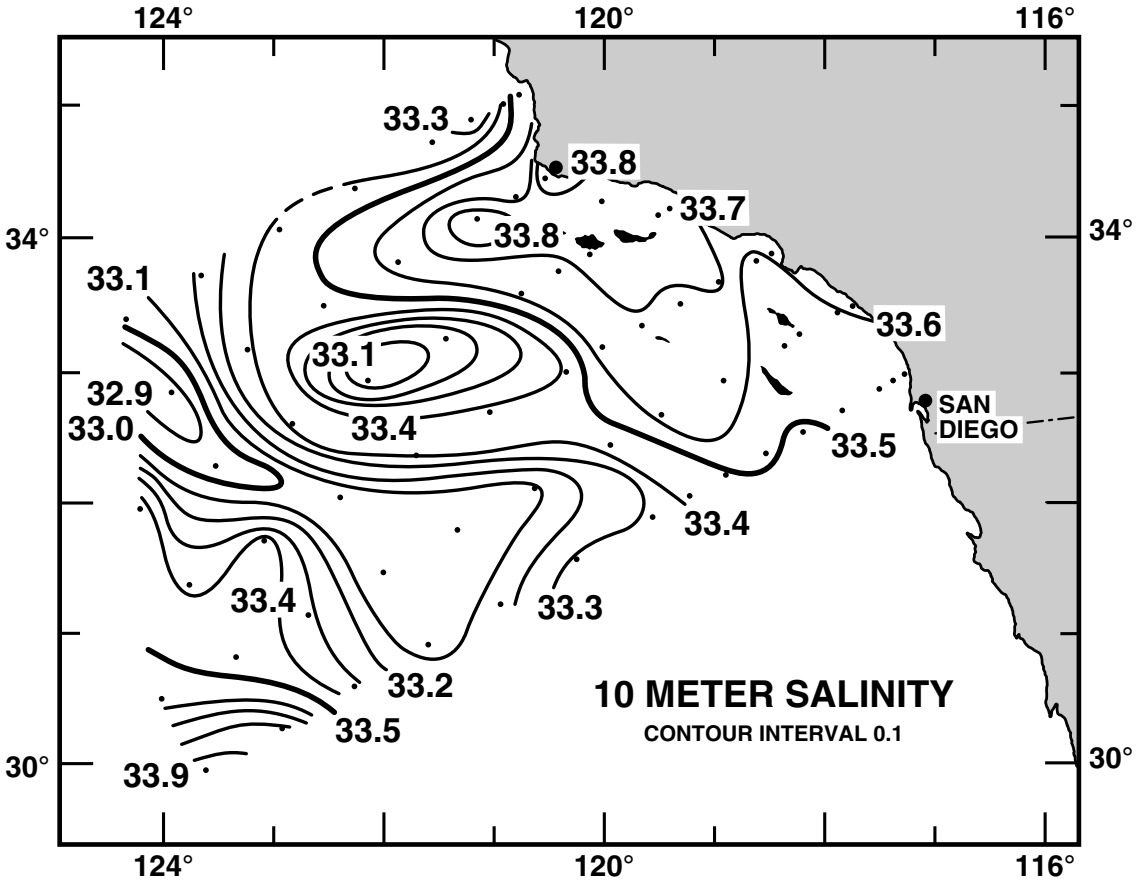


FIGURE 3D

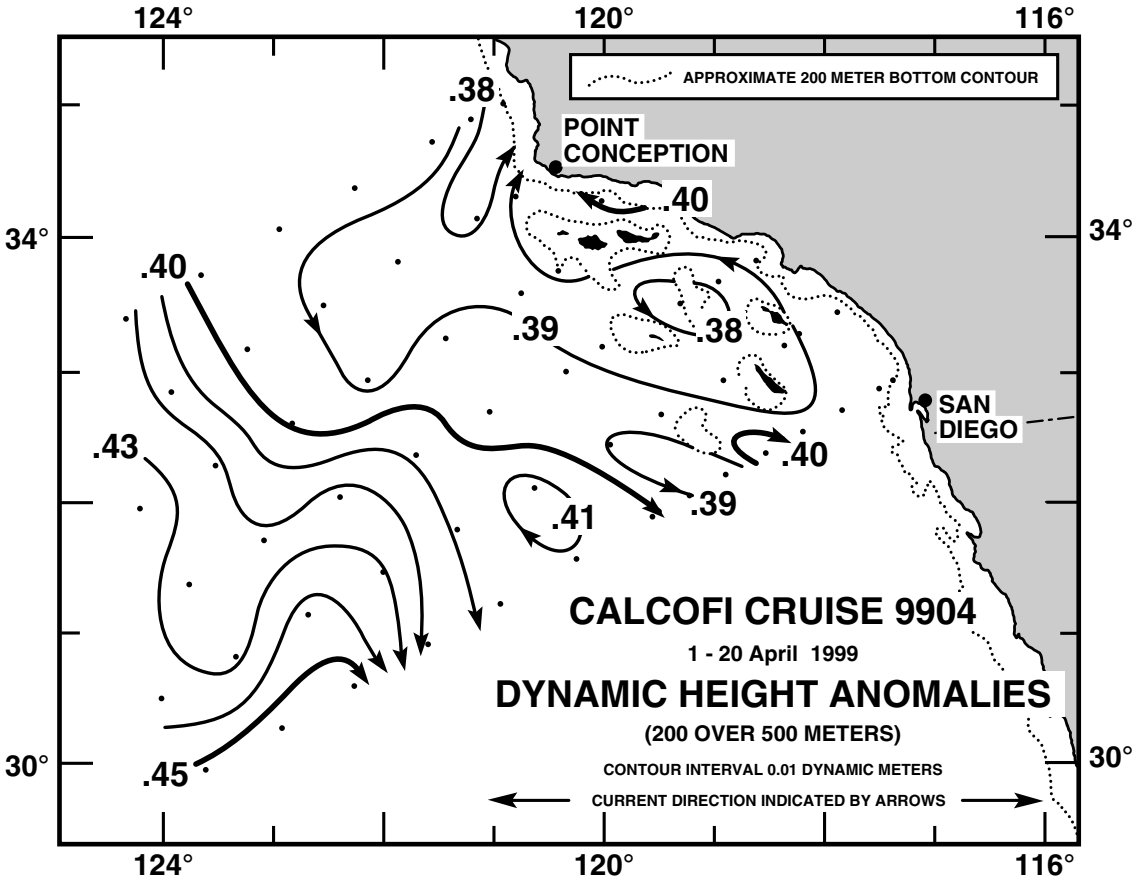


FIGURE 4A

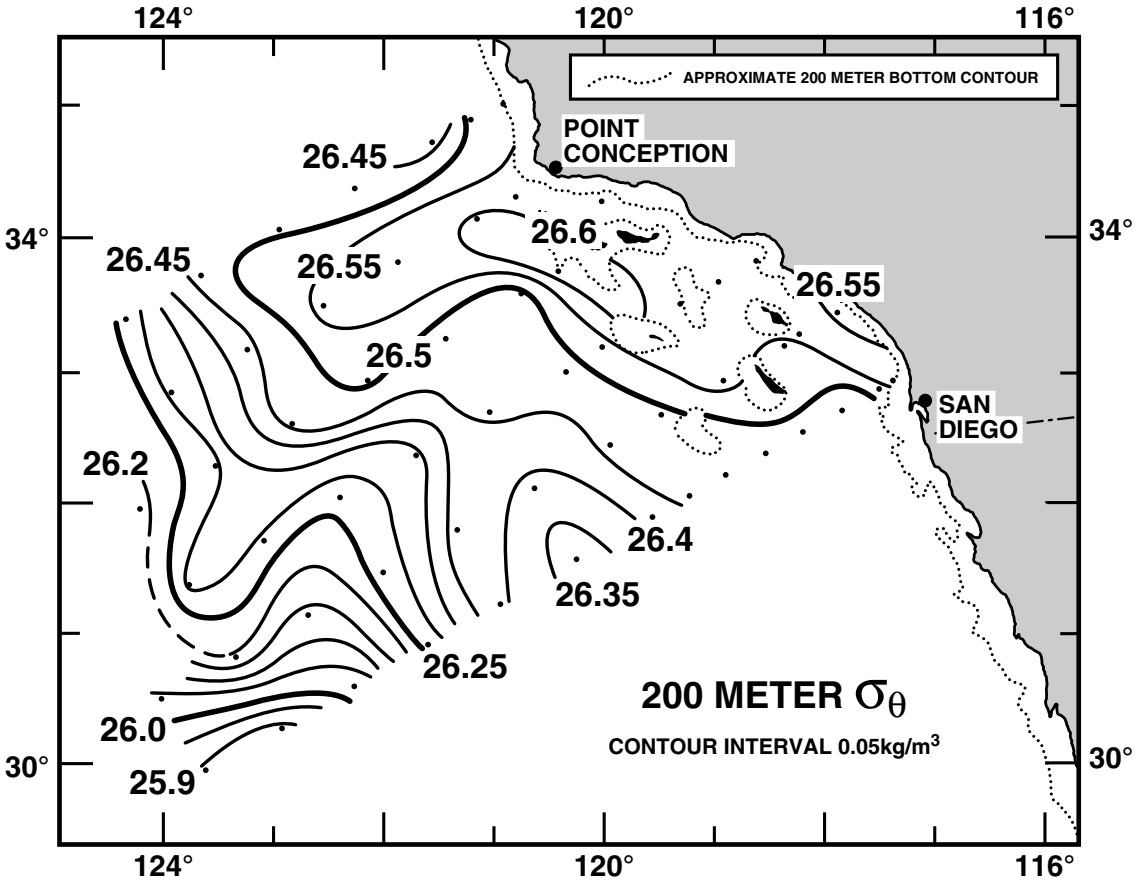


FIGURE 4B

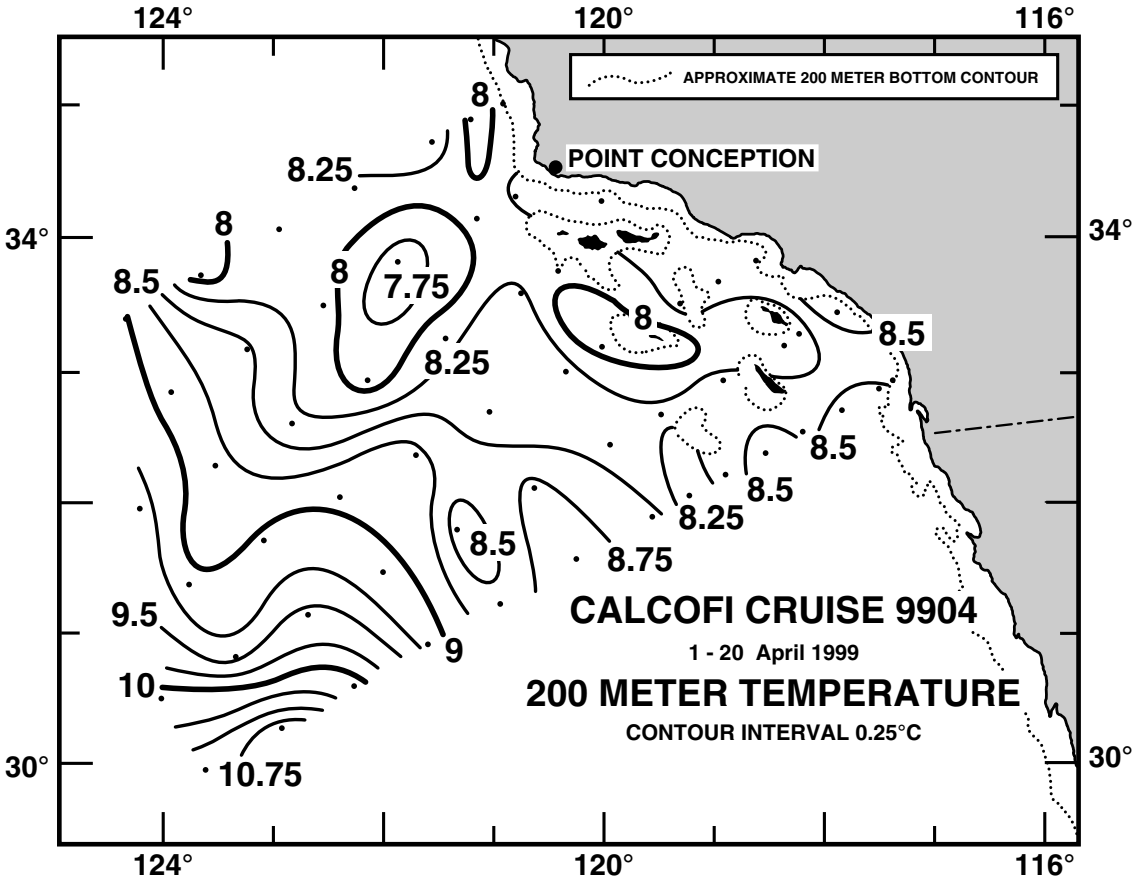


FIGURE 4C

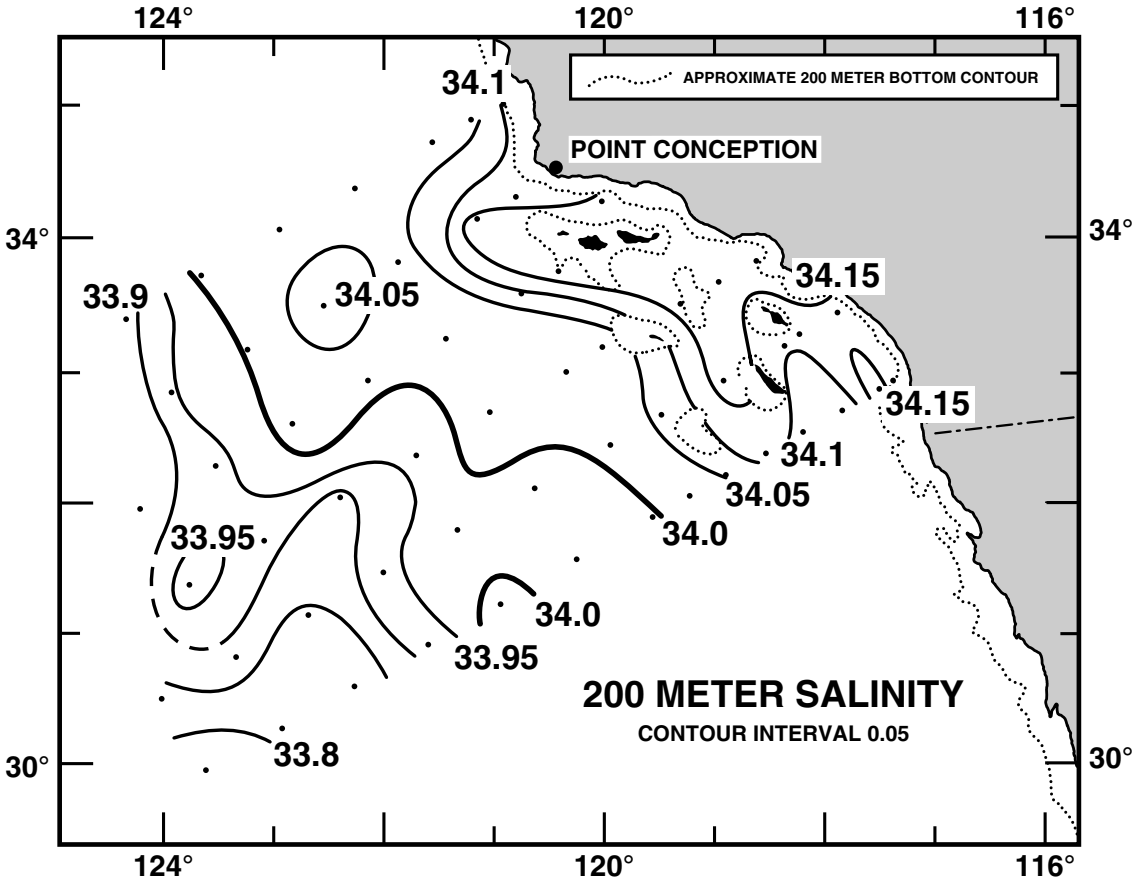


FIGURE 4D

CALCOFI CRUISE 9904

5 - 7 April 1999

POTENTIAL DENSITY (σ_θ) ALONG CALCOFI LINE 90

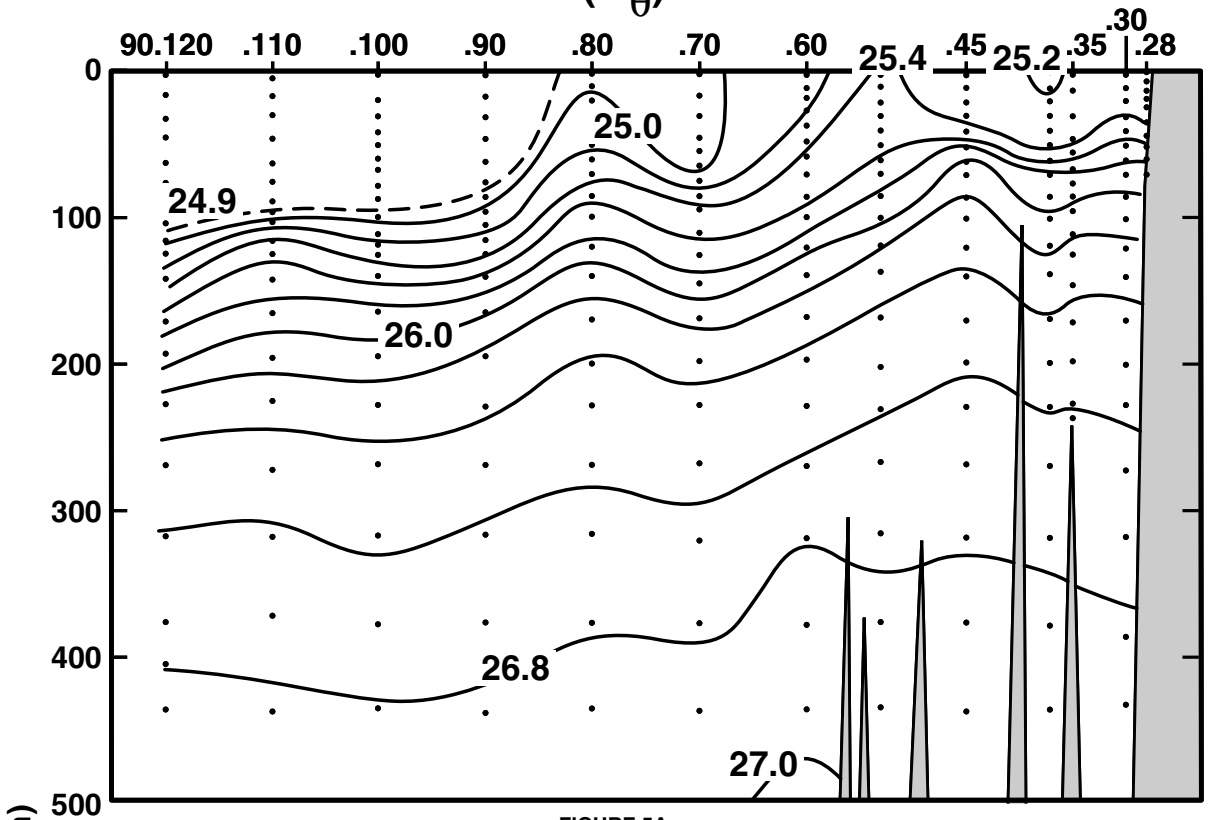


FIGURE 5A

TEMPERATURE (°C) ALONG CALCOFI LINE 90

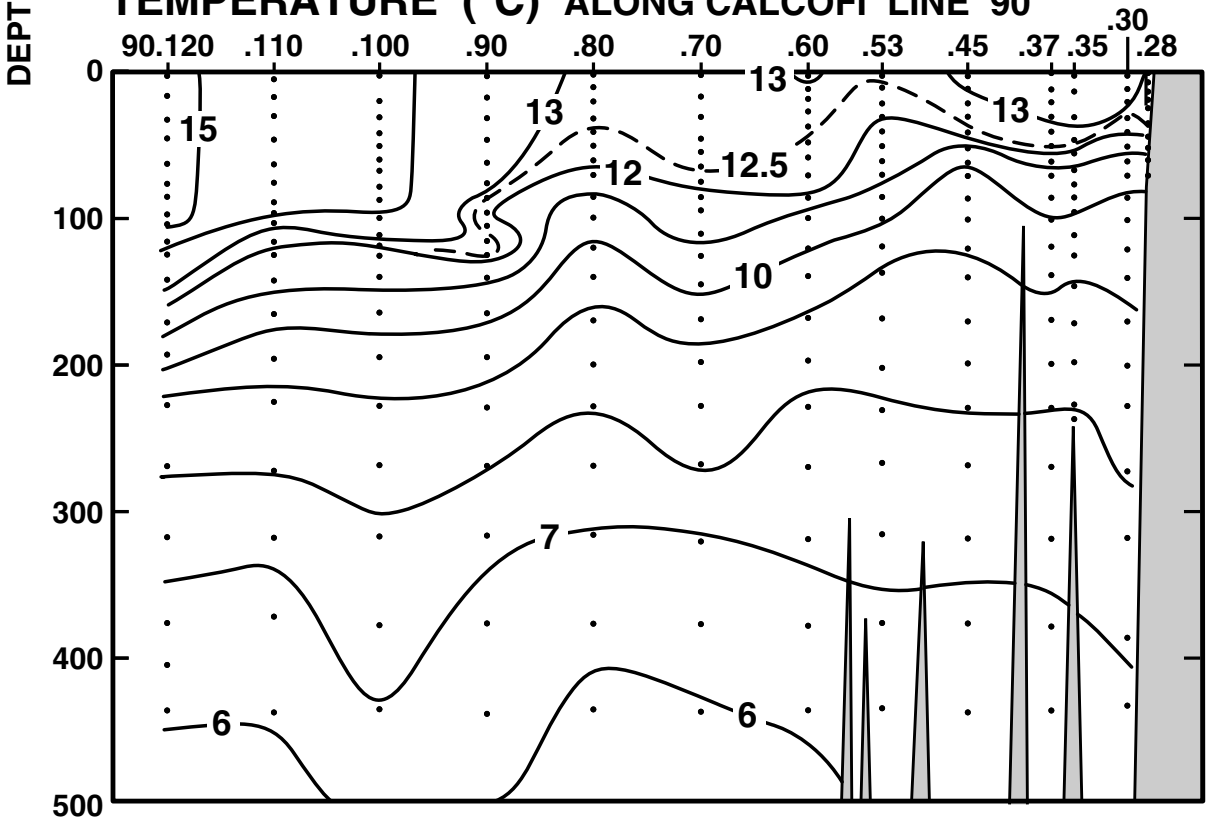


FIGURE 5B

CALCOFI CRUISE 9904

5 - 7 April 1999

SALINITY ALONG CALCOFI LINE 90

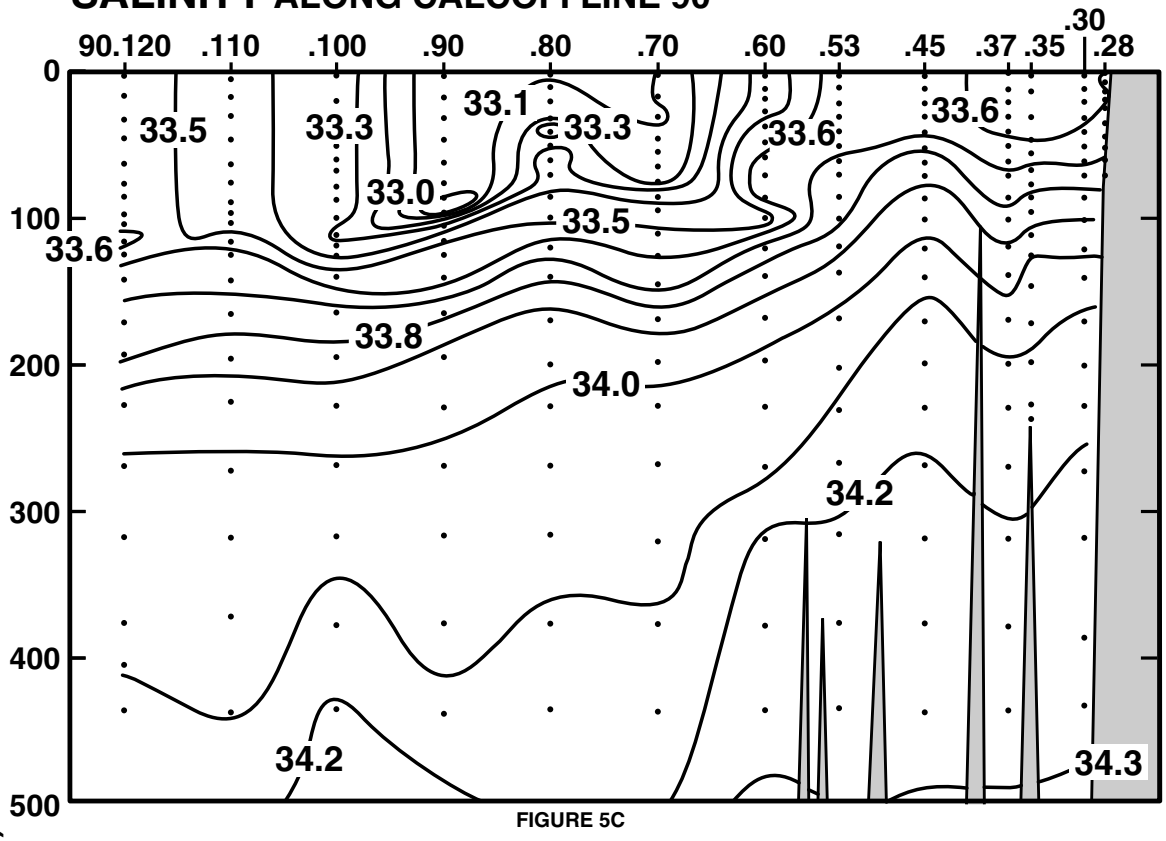


FIGURE 5C

DEPTH (m)

SILICATE (μM/l) ALONG CALCOFI LINE 90

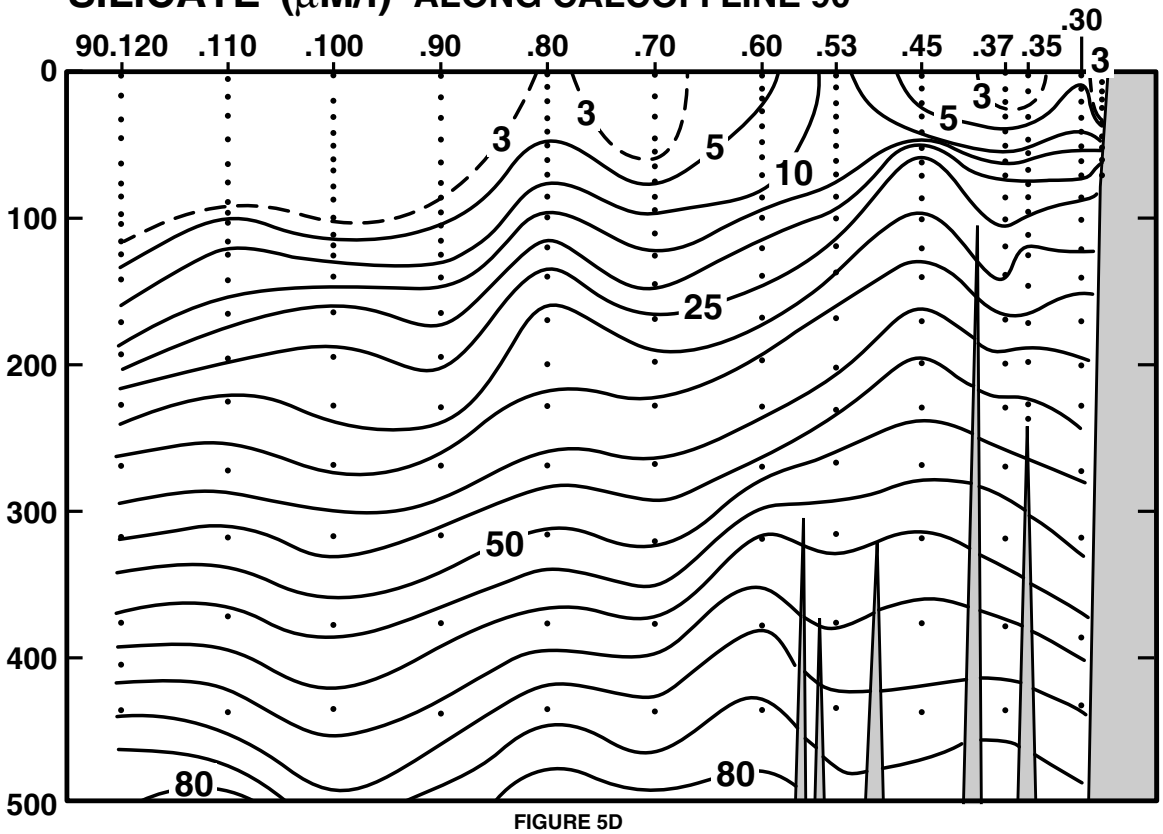


FIGURE 5D

CALCOFI CRUISE 9904

5 - 7 April 1999

NITRATE (μM/l) ALONG CALCOFI LINE 90

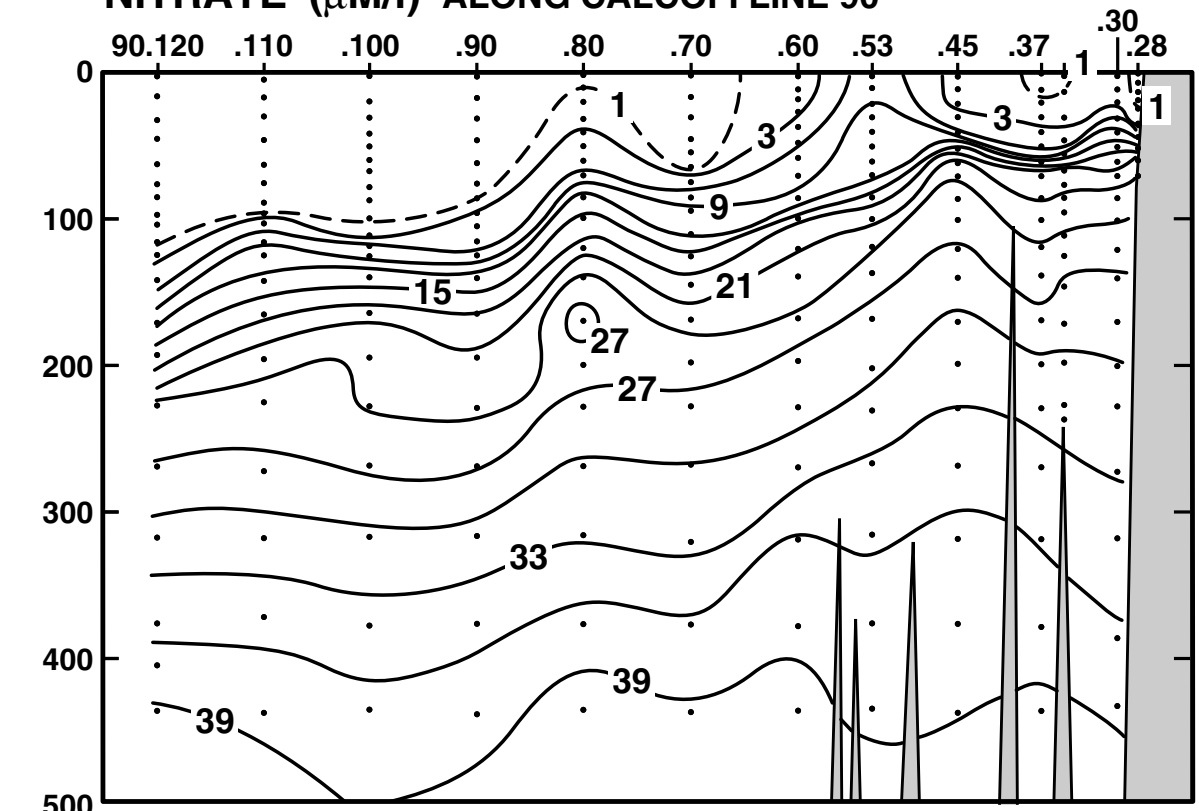


FIGURE 5E

PHOSPHATE (μM/l) ALONG CALCOFI LINE 90

DEPTH (m)

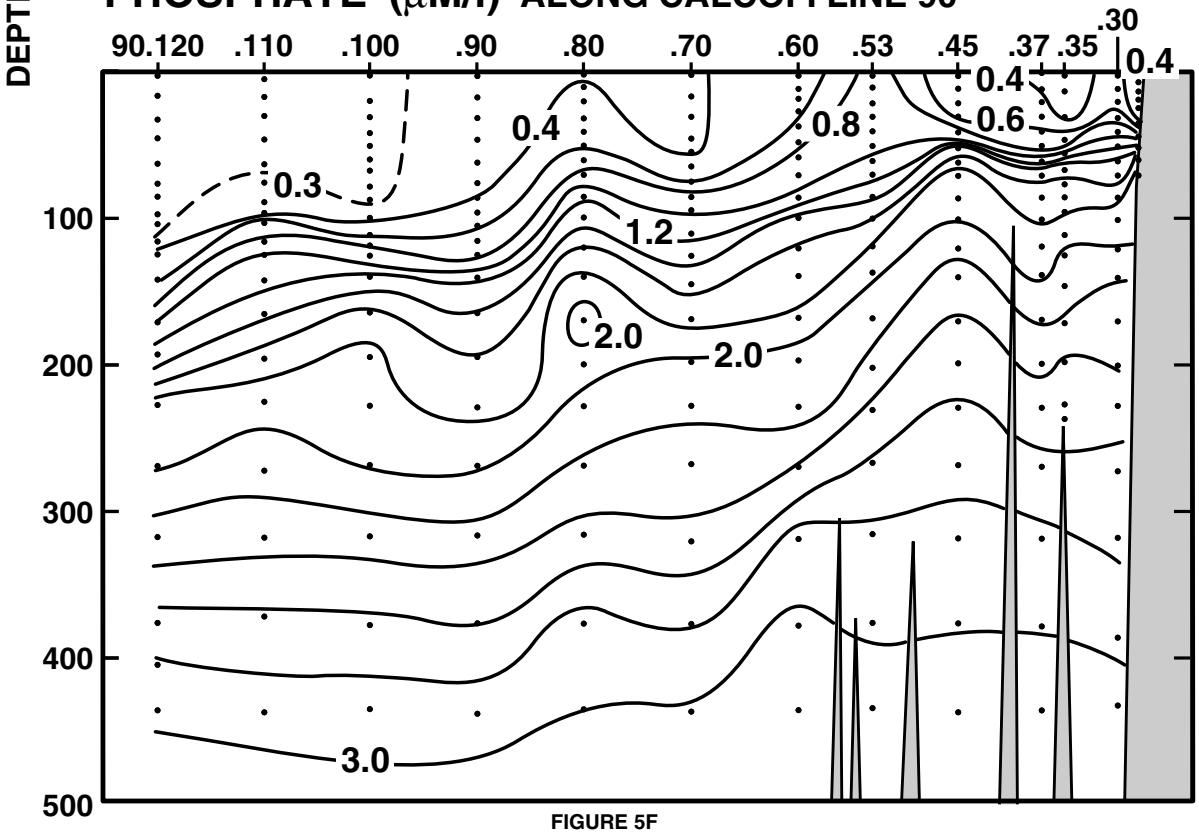


FIGURE 5F

CALCOFI CRUISE 9904

5 - 7 April 1999

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

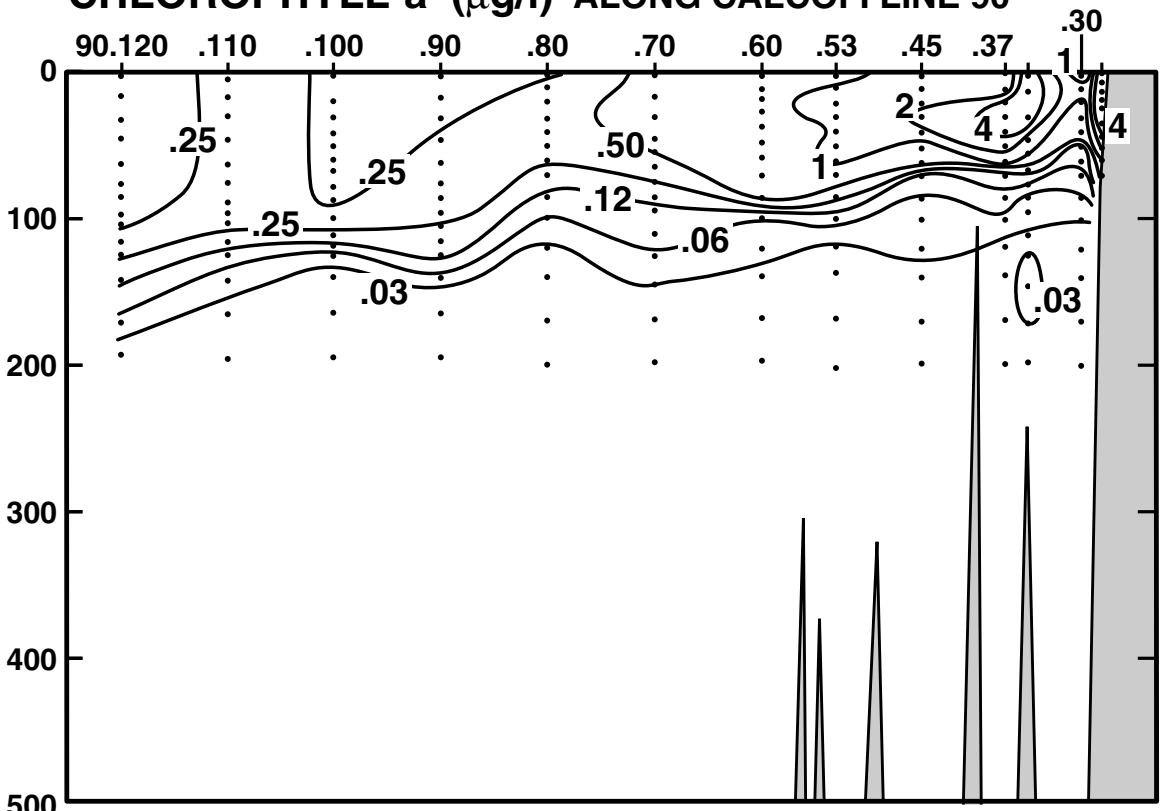


FIGURE 5G

OXYGEN SATURATION (%) ALONG CALCOFI LINE 90

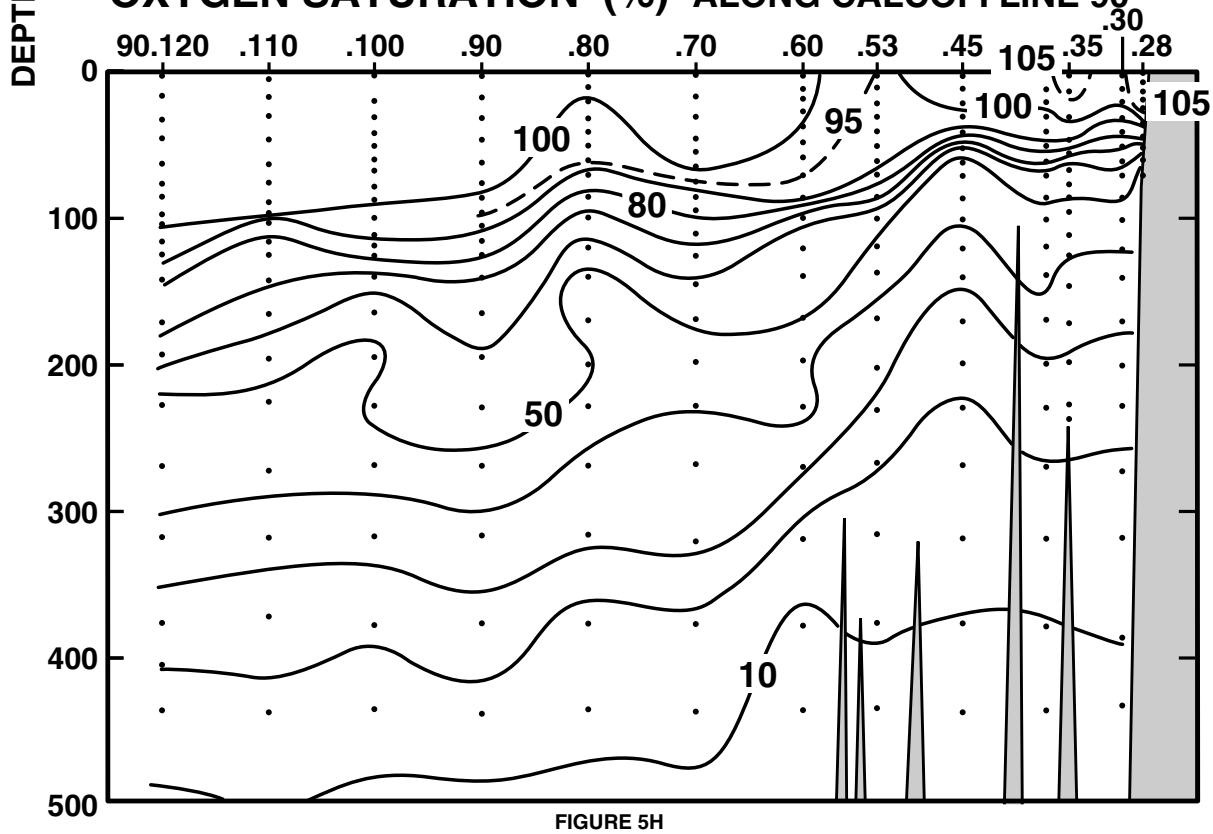


FIGURE 5H

CALCOFI CRUISE 9904

5 - 7 April 1999

OXYGEN (ml/l) ALONG CALCOFI LINE 90

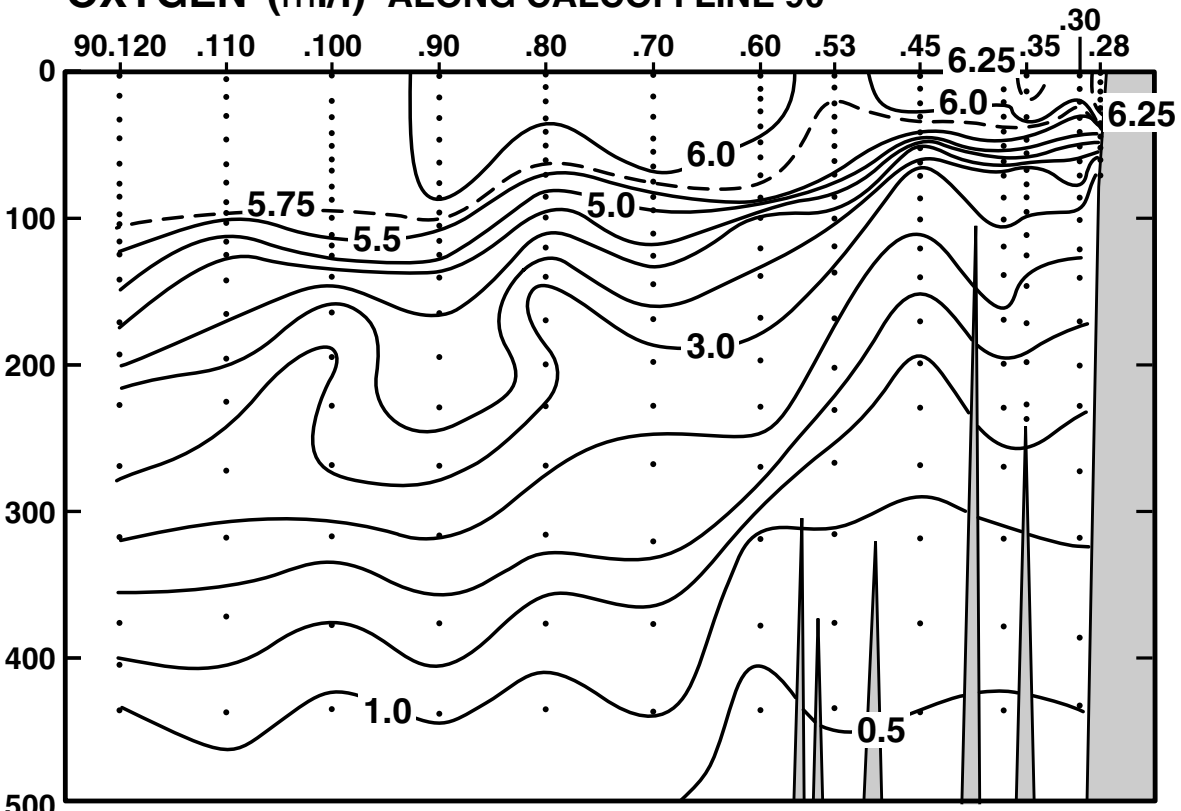


FIGURE 5I

NITRITE (μM/l) ALONG CALCOFI LINE 90

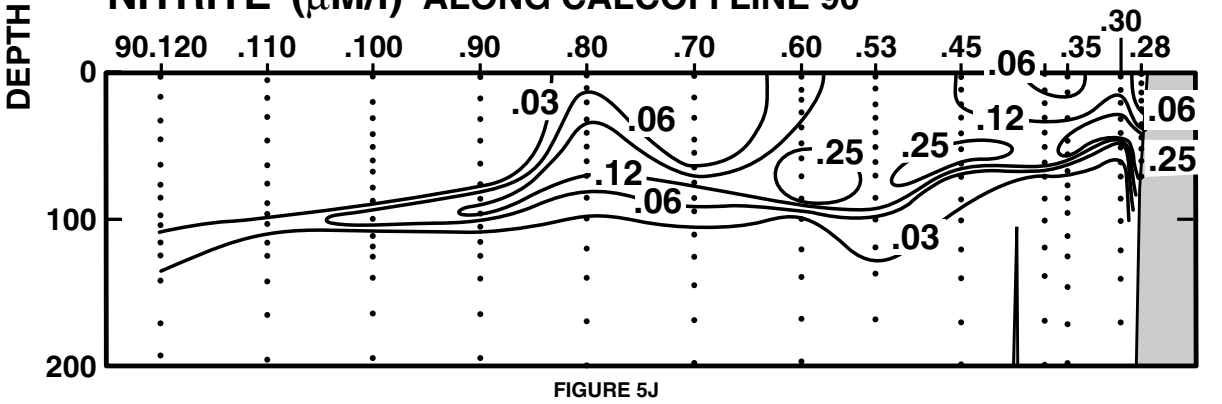


FIGURE 5J

PHAEOPIGMENTS (μg/l) ALONG CALCOFI LINE 90

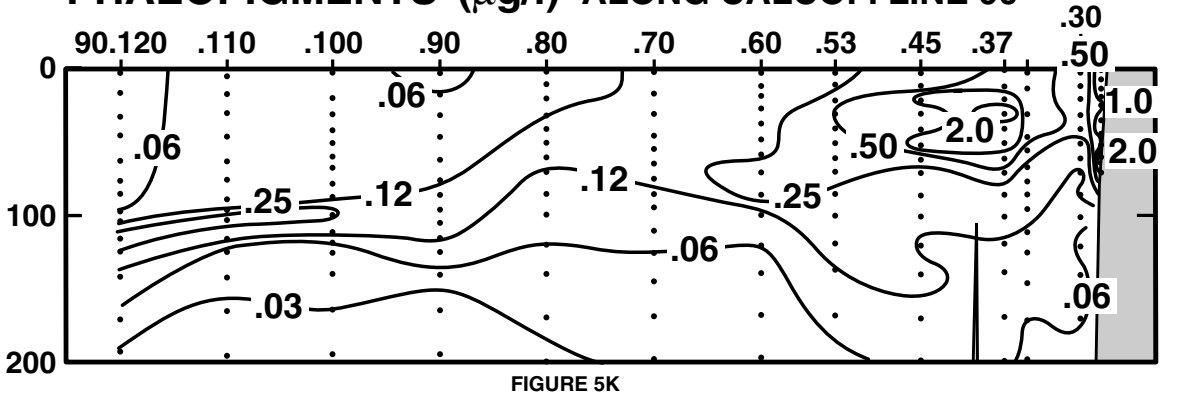


FIGURE 5K

RV DAVID STARR JORDAN CALCOFI CRUISE 9904 STATION 77 49

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT	TYPE
35 5.4 N	120 46.4 W	15/04/99	2252 UTC	67 m	300 08 kn	330 01 08	4	1016.9 mb	13.0 C	13.0 C	5m	8/8	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	12.12	12.12	33.489	25.394	257.3	0.000	6.95	114.1	1.8	0.53	4.3	0.22	6.62	2.10	0	
1	12.12	12.12	33.489	25.394	257.3	0.003	6.95	114.1	1.8	0.53	4.3	0.22	6.62	2.10	1	208
7	11.46	11.46	33.544	25.559	241.7	0.018	6.75	109.3	3.4	0.67	6.4	0.25	9.79	2.19	7	207
10 ISL	11.41	11.41	33.558	25.579	239.9	0.025	6.71	108.5	3.1	0.69	6.7	0.24	11.97	2.74	10	
11	11.40	11.40	33.557	25.580	239.8	0.027	6.70	108.3	3.0	0.69	6.7	0.24	12.61 A	2.93 A	11	206
20 ISL	11.31	11.31	33.587	25.620	236.2	0.049	6.73	108.6	3.7	0.73	7.1	0.23	11.40	2.69	20	
21	11.29	11.29	33.592	25.628	235.6	0.051	6.73	108.6	3.8	0.73	7.2	0.23	11.27	2.66	21	205
30 ISL	10.86	10.86	33.690	25.781	221.2	0.072	5.95	95.2	13.5	1.12	13.0	0.24	7.32	1.57	30	
31	10.81	10.81	33.701	25.799	219.5	0.074	5.85	93.5	14.6	1.17	13.7	0.24	6.89	1.44	31	204
41	10.56	10.56	33.736	25.870	213.0	0.095	5.35	85.0	17.8	1.34	15.9	0.24	5.86	0.91	41	203
50 ISL	9.95	9.94	33.802	26.026	198.3	0.114	3.97	62.3	24.7	1.76	21.6	0.24	1.18	0.46	50	
51	9.88	9.87	33.809	26.044	196.7	0.116	3.82	59.8	25.4	1.80	22.2	0.24	0.71	0.43	51	202
59	9.62	9.61	33.841	26.112	190.3	0.131	3.49	54.4	27.7	1.88	23.0	0.19	0.93	0.64	59	201

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

RV DAVID STARR JORDAN CALCOFI CRUISE 9904 STATION 77 51

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT	TYPE
35 1.3 N	120 55.2 W	15/04/99	1915 UTC	242 m	240 06 kn	100 01 09	4	1016.5 mb	13.0 C	12.3 C	9m	8/8	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	12.38	12.38	33.448	25.312	265.1	0.000	6.86	113.2	1.0	0.46	2.9	0.20	4.69	0.64	0	
1 B	12.38	12.38	33.448	25.312	265.1	0.003	6.86	113.2	1.0	0.46	2.9	0.20	4.69	0.64	1	217
7 B	12.01	12.01	33.462	25.394	257.5	0.018	6.77	110.8	1.6	0.53	3.8	0.22	5.37	0.52	7	216
10 ISL	11.85	11.85	33.468	25.428	254.3	0.026	6.73	109.8	1.6	0.54	4.2	0.22	5.82	1.02	10	
14 B	11.69	11.69	33.473	25.462	251.2	0.036	6.68	108.6	1.6	0.55	4.5	0.21	6.35	1.75	14	215
20 B	11.65	11.65	33.470	25.467	250.8	0.051	6.60	107.2	1.6	0.58	4.6	0.21	6.62	2.04	20	214
26 B	11.56	11.56	33.475	25.488	249.0	0.066	6.50	105.4	2.6	0.62	5.3	0.22	6.75	1.35	26	213
30 ISL	11.42	11.42	33.484	25.521	246.0	0.076	6.37	103.0	4.7	0.72	6.6	0.22	6.54	1.37	30	
37 B	11.15	11.15	33.507	25.587	239.8	0.093	6.05	97.2	8.9	0.94	9.2	0.23	5.64	1.41	37	212
44	10.99	10.98	33.535	25.638	235.1	0.110	5.64	90.4	11.9	1.08	11.4	0.23	4.08	1.42	44	211
50	10.63	10.62	33.650	25.791	220.7	0.123	3.92	62.4	19.1	1.50	18.5	0.11	0.63	0.74	50	210
60	10.36	10.35	33.685	25.865	213.8	0.145	3.71	58.7	20.3	1.55	19.5	0.07	0.28	0.40	60	209
69	9.85	9.84	33.735	25.991	202.0	0.164	3.41	53.4	23.8	1.71	22.0	0.10	0.34	0.43	69	208
75 ISL	9.66	9.65	33.775	26.054	196.1	0.176	3.34	52.0	25.4	1.77	23.0	0.10	0.32	0.49	75	
85	9.47	9.46	33.834	26.131	189.0	0.195	3.27	50.8	27.2	1.84	24.0	0.11	0.24	0.55	85	207
99	9.25	9.24	33.874	26.199	182.9	0.221	3.02	46.7	29.1	1.91	25.1	0.08	0.15	0.40	100	206
100 ISL	9.22	9.21	33.878	26.207	182.1	0.223	3.00	46.3	29.3	1.92	25.2	0.08	0.14	0.40	101	
119	8.76	8.75	33.955	26.340	169.8	0.256	2.67	40.8	33.1	2.04	27.2	0.04	0.08	0.37	120	205
125 ISL	8.70	8.69	33.965	26.357	168.2	0.266	2.63	40.2	33.6	2.06	27.5	0.04	0.08	0.34	126	
139	8.61	8.60	33.984	26.386	165.7	0.290	2.55	38.9	34.8	2.10	27.9	0.03	0.08	0.25	140	204
150 ISL	8.50	8.48	34.018	26.430	161.8	0.308	2.34	35.6	37.1	2.19	28.7	0.03	0.07	0.21	151	
169	8.33	8.31	34.076	26.502	155.3	0.338	1.96	29.7	41.4	2.34	30.1	0.03	0.06	0.17	170	203
199	8.18	8.16	34.101	26.544	151.7	0.384	1.77	26.7	44.8	2.44	31.0	0.06	0.07 A	0.21 A	200	202
200 ISL	8.17	8.15	34.103	26.547	151.4	0.385	1.76	26.6	45.0	2.45	31.1	0.06			201	
229	7.75	7.73	34.155	26.651	142.0	0.428	1.35	20.2	52.2	2.64	33.1	0.06			230	201

A) FIRST FLUOROMETER READING NOT RECORDED, CHLOROPHYLL AND PHAEOPIGMENT CALCULATED WITH ASSUMED ACID RATIO EXTRAPOLATED FROM PREVIOUS LEVEL.
B) PRIMARY PRODUCTIVITY SAMPLES WERE TAKEN FROM THESE LEVELS.

RV DAVID STARR JORDAN CALCOFI CRUISE 9904 STATION 77 55

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT	TYPE
34 53.5 N	121 11.8 W	15/04/99	1554 UTC	563 m	330 01 kn	330 01 08	1	1016.6 mb	14.2 C	13.0 C	9m	2/8	CS

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	12.32	12.32	33.378	25.269	269.2	0.000	6.54	107.7	2.5	0.48	2.3	0.14	3.73	1.04	0	
1	12.32	12.32	33.378	25.269	269.2	0.003	6.54	107.7	2.5	0.48	2.3	0.14	3.73	1.04	1	220
10 ISL	11.52	11.52	33.282	25.345	262.2	0.027	6.86	111.0	1.8	0.48	2.5	0.14	4.11	0.76	10	
11	11.41	11.41	33.271	25.356	261.2	0.029	6.89	111.2	1.7	0.48	2.5	0.14	4.20	0.73	11	219
20 ISL	11.22	11.22	33.300	25.413	255.9	0.052	6.42	103.2	6.2	0.69	5.4	0.18	5.44	2.99	20	
21	11.21	11.21	33.307	25.421	255.3	0.055	6.35	102.1	6.9	0.72	5.8	0.18	5.55	3.22	21	218
30 ISL	10.93	10.93	33.353	25.507	247.3	0.078	6.20	99.1	11.8	0.93	9.0	0.21	5.10	2.09	30	
31	10.90	10.90	33.359	25.517	246.3	0.080	6.18	98.7	12.2	0.95	9.3	0.21	5.05	1.88	31	217
41	10.90	10.90	33.432	25.574	241.1	0.105	5.72	91.4	12.9	1.06	10.6	0.22	2.87	1.10	41	216
50 ISL	11.04	11.03	33.528	25.624	236.6	0.126	5.62	90.1	12.4	1.12	11.4	0.27	1.44	0.81	50	
51	11.05	11.04	33.538	25.630	236.1	0.128	5.61	90.0	12.3	1.13	11.5	0.27	1.32	0.79	51	215
61	10.79	10.78	33.596	25.721	227.6	0.152	5.33	85.1	15.9	1.30	14.2	0.28	0.78	0.37	61	214
71	10.48	10.47	33.639	25.809	219.4	0.174	4.61	73.1	19.0	1.48	17.4	0.26	0.25	0.25	71	213
75 ISL	10.37	10.36	33.672	25.854	215.3	0.183	4.23	66.9	20.3	1.55	18.8	0.20	0.21	0.24	75	
85	10.07	10.06	33.752	25.968	204.6	0.204	3.41	53.6	23.2	1.71	21.8	0.03	0.10	0.23	85	212
99	9.58	9.57	33.797	26.085	193.7	0.231	3.07	47.8	26.1	1.82	23.9	0.02	0.06	0.18	100	211
100 ISL	9.55	9.54	33.801	26.093	193.0	0.233	3.06	47.6	26.3	1.83	24.0	0.02	0.06	0.18	101	
120	9.03	9.02	33.891	26.247	178.6	0.271	2.92	44.9	29.8	1.94	25.7	0.02	0.04	0.12	121	210
125 ISL	8.95	8.94	33.907	26.273	176.3	0.279	2.92	44.8	30.4	1.96	25.9	0.02	0.04	0.12	126	
140	8.75	8.74	33.946	26.335	170.7	0.305	2.92	44.6	32.0	1.99	26.4	0.02	0.04	0.12	141	209
150 ISL	8.62	8.60	33.967	26.371	167.3	0.322	2.86	43.6	33.3	2.02	26.9	0.02	0.04	0.10	151	
170	8.34	8.32	33.995	26.437	161.5	0.355	2.76	41.8	35.9	2.08	27.8	0.01	0.05	0.06	171	208
199	7.86	7.84	34.008	26.519	154.0	0.401	2.84	42.6	39.2	2.11	28.5	0.01	0.04	0.05	200	207
200 ISL	7.84	7.82	34.009	26.522	153.7	0.403	2.83	42.4	39.4	2.12	28.6	0.01			201	
230	7.20	7.18	34.033	26.633	143.4	0.447	2.30	33.9	47.3	2.36	31.7	0.01			231	206
250 ISL	7.02	7.00	34.046	26.668	140.3	0.475	2.06	30.3	50.7	2.46	32.9	0.01			252	
270	6.91	6.88	34.059	26.693	138.1	0.503	1.86	27.3	53.5	2.54	33.8	0.01			272	205
300 ISL	6.69	6.66	34.088	26.746	133.5	0.544	1.51	22.0	58.8	2.68	35.4	0.01			302	
319	6.56	6.53	34.109	26.780	130.5	0.569	1.31	19.1	62.0	2.77	36.4	0.01			321	204
378	6.32	6.29	34.173	26.863	123.4	0.644	0.85	12.3	69.5	2.96	38.3	0.01			381	203

RV DAVID STARR JORDAN CALCOFI CRUISE 9904 STATION 77 60

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT TYPE
34 43.5 N	121 32.6 W	15/04/99	1229 UTC	920 m	340 08 kn			1015.0 mb	13.0 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	12.48	12.48	33.398	25.254	270.6	0.000	6.21	102.6	4.4	0.53	3.1	0.16	0.64	0.12	0	
2		12.48	12.48	33.398	25.254	270.6	0.005	6.21	102.6	4.4	0.53	3.1	0.16	0.64	0.12	2	220
10		12.47	12.47	33.400	25.258	270.5	0.027	6.21	102.6	4.4	0.53	3.1	0.16	0.58	0.16	10	219
20	ISL	12.31	12.31	33.400	25.289	267.8	0.054	6.25	102.9	4.6	0.52	3.0	0.16	0.66	0.15	20	
21		12.29	12.29	33.400	25.293	267.5	0.057	6.25	102.9	4.6	0.52	3.0	0.16	0.68	0.15	21	218
30		12.25	12.25	33.399	25.300	267.0	0.081	6.25	102.8	4.6	0.52	3.1	0.16	0.82	0.20	30	217
41		12.08	12.07	33.395	25.329	264.5	0.110	6.06	99.3	5.3	0.60	3.9	0.23	0.57	0.19	41	216
50	ISL	11.85	11.84	33.452	25.417	256.4	0.133	5.77	94.1	6.9	0.78	6.3	0.43	0.26	0.12	50	
51		11.82	11.81	33.461	25.429	255.2	0.136	5.73	93.4	7.1	0.80	6.6	0.45	0.23	0.11	51	215
60		11.48	11.47	33.553	25.564	242.6	0.158	5.38	87.1	9.8	1.02	10.2	0.33	0.12	0.11	60	214
70		11.07	11.06	33.601	25.676	232.2	0.182	4.60	73.8	14.9	1.27	14.9	0.21	0.07	0.09	70	213
75	ISL	10.94	10.93	33.622	25.715	228.5	0.194	4.44	71.1	16.3	1.34	16.1	0.20	0.07	0.10	75	
85		10.72	10.71	33.666	25.789	221.7	0.216	4.22	67.3	18.3	1.45	17.7	0.18	0.06	0.12	85	212
100	ISL	10.20	10.19	33.750	25.944	207.2	0.248	3.55	56.0	22.8	1.68	21.3	0.02	0.04	0.11	101	
101		10.17	10.16	33.755	25.953	206.4	0.250	3.51	55.3	23.1	1.69	21.5	0.01	0.04	0.11	102	211
121		9.68	9.67	33.802	26.073	195.4	0.291	3.11	48.5	26.1	1.83	23.7	0.02	0.04	0.12	122	210
125	ISL	9.59	9.58	33.814	26.097	193.1	0.298	3.07	47.8	26.6	1.86	24.0	0.02	0.04	0.11	126	
139		9.29	9.27	33.857	26.180	185.5	0.325	2.98	46.1	28.4	1.94	25.0	0.01	0.03	0.09	140	209
150	ISL	9.07	9.05	33.896	26.245	179.4	0.345	2.89	44.5	30.1	1.98	25.8	0.01	0.02	0.08	151	
170		8.72	8.70	33.958	26.349	169.8	0.380	2.75	42.0	33.1	2.04	27.1	0.01	0.01	0.07	171	208
199		8.36	8.34	33.999	26.437	161.9	0.428	2.67	40.5	36.0	2.14	28.2	0.00	0.01	0.14	200	207
200	ISL	8.34	8.32	34.000	26.441	161.6	0.430	2.66	40.3	36.2	2.15	28.3	0.00			201	
231		7.81	7.79	34.033	26.546	152.0	0.478	2.47	37.0	41.8	2.30	30.0	0.00			232	206
250	ISL	7.50	7.48	34.029	26.588	148.2	0.507	2.47	36.7	44.3	2.34	30.6	0.00			252	
272		7.15	7.12	34.018	26.628	144.5	0.539	2.46	36.3	47.3	2.38	31.3	0.00			274	205
300	ISL	6.74	6.71	34.018	26.684	139.4	0.579	2.20	32.1	52.9	2.51	33.1	0.00			302	
323		6.46	6.43	34.030	26.731	135.1	0.610	1.89	27.4	58.0	2.63	34.8	0.00			325	204
377		6.15	6.12	34.113	26.837	125.6	0.681	1.06	15.3	68.9	2.92	38.2	0.00			380	203
400	ISL	6.09	6.05	34.139	26.865	123.2	0.709	0.90	12.9	71.5	2.98	38.8	0.00			403	
437		5.98	5.94	34.171	26.905	119.9	0.754	0.75	10.8	74.9	3.03	39.4	0.00			440	202
500	ISL	5.53	5.49	34.202	26.985	112.7	0.827	0.56	8.0	83.5	3.15	41.3	0.00			504	
505		5.49	5.45	34.204	26.992	112.1	0.833	0.55	7.8	84.2	3.16	41.4	0.00			509	201

RV DAVID STARR JORDAN CALCOFI CRUISE 9904 STATION 77 70

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT TYPE
34 23.4 N	122 14.5 W	15/04/99	0649 UTC	4013 m	340 07 kn			1016.5 mb	13.0 C	11.9 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	12.52	12.52	33.409	25.255	270.5	0.000	6.25	103.4	4.9	0.56	3.3	0.13	0.58	0.12	0	
2		12.52	12.52	33.409	25.255	270.6	0.005	6.25	103.4	4.9	0.56	3.3	0.13	0.58	0.12	2	220
10	ISL	12.50	12.50	33.414	25.263	270.0	0.027	6.25	103.3	4.8	0.55	3.3	0.13	0.58	0.13	10	
11		12.50	12.50	33.415	25.264	270.0	0.030	6.25	103.3	4.8	0.55	3.3	0.13	0.58	0.13	11	219
20	ISL	12.27	12.27	33.417	25.310	265.8	0.054	6.29	103.5	4.8	0.57	3.4	0.14	0.64	0.19	20	
21		12.24	12.24	33.417	25.315	265.3	0.056	6.29	103.4	4.8	0.57	3.4	0.14	0.65	0.20	21	218
30	ISL	12.20	12.20	33.417	25.323	264.8	0.080	6.26	102.9	4.7	0.57	3.5	0.14	0.86	0.25	30	
31		12.20	12.20	33.417	25.323	264.8	0.083	6.26	102.9	4.7	0.57	3.5	0.14	0.87	0.25	31	217
41		12.02	12.01	33.430	25.368	260.8	0.109	6.07	99.4	5.0	0.66	4.5	0.19	0.47	0.21	41	216
50		11.98	11.97	33.464	25.402	257.8	0.133	5.96	97.5	5.7	0.72	5.2	0.22	0.53	0.28	50	215
61		11.79	11.78	33.498	25.464	252.1	0.161	5.82	94.8	6.8	0.83	6.5	0.26	0.27	0.22	61	214
71		11.32	11.31	33.556	25.596	239.8	0.185	4.96	80.0	12.7	1.13	12.2	0.41	0.13	0.14	71	213
75	ISL	11.14	11.13	33.589	25.654	234.4	0.195	4.69	75.4	14.7	1.24	14.1	0.35	0.12	0.15	75	
86		10.67	10.66	33.666	25.797	220.9	0.220	4.12	65.6	18.8	1.47	18.1	0.12	0.08	0.18	86	212
100		10.12	10.11	33.674	25.899	211.5	0.250	3.75	59.0	21.1	1.59	20.2	0.04	0.05	0.14	101	211
120		9.59	9.58	33.774	26.066	196.0	0.291	3.34	52.0	25.0	1.75	22.8	0.02	0.03	0.12	121	210
125	ISL	9.47	9.46	33.799	26.105	192.4	0.301	3.27	50.7	25.9	1.78	23.4	0.02	0.03	0.12	126	
139		9.18	9.16	33.864	26.203	183.3	0.327	3.09	47.7	28.4	1.86	24.8	0.02	0.03	0.14	140	209
150	ISL	9.04	9.02	33.899	26.253	178.7	0.347	2.94	45.2	29.9	1.92	25.7	0.02	0.03	0.16	151	
170		8.80	8.78	33.946	26.328	172.0	0.382	2.72	41.6	32.6	2.03	27.1	0.02	0.02	0.17	171	208
200		8.22	8.20	34.013	26.469	158.8	0.431	2.57	38.8	37.8	2.16	29.0	0.02	0.01	0.10	201	207
228		7.82	7.80	34.032	26.544	152.1	0.475	2.43	36.4	41.7	2.26	30.2	0.02			229	206
250	ISL	7.55	7.53	34.046	26.594	147.6	0.508	2.26	33.6	45.0	2.35	31.3	0.02			252	
268		7.35	7.32	34.059	26.633	144.1	0.534	2.08	30.8	48.0	2.43	32.3	0.02			270	205
300	ISL	7.00	6.97	34.089	26.705	137.6	0.579	1.66	24.4	54.4	2.61	34.4	0.01			302	
319		6.82	6.79	34.107	26.744	134.1	0.605	1.41	20.6	58.2	2.72	35.6	0.01			321	204
377		6.39	6.36	34.148	26.834	126.1	0.681	0.97	14.1	67.1	2.92	38.0	0.01			379	203
400	ISL	6.21	6.17	34.150	26.859	123.9	0.709	0.89	12.8	70.0	2.97	38.7	0.01			403	
435		5.96	5.92	34.157	26.896	120.6	0.752	0.78	11.2	74.0	3.04	39.7	0.00			438	202
500	ISL	5.75	5.71	34.241	26.990	112.5	0.828	0.44	6.3	81.9	3.19	40.9	0.00			504	
512		5.71	5.67	34.257	27.007	111.0	0.841	0.38	5.4	83.3	3.22	41.1	0.00			516	201

RV DAVID STARR JORDAN CALCOFI CRUISE 9904 STATION 77 80

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT	TYPE
34 3.5 N	122 56.4 W	15/04/99	0106 UTC	4228 m	340 15 kn	320 04 07	0	1018.1 mb	13.9 C	12.5 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	12.63	12.63	33.446	25.262	269.8	0.000	6.31	104.6	4.6	0.59	3.8	0.15	0.96	0.15	0	
2		12.63	12.63	33.446	25.262	269.9	0.005	6.31	104.6	4.6	0.59	3.8	0.15	0.96	0.15	2	220
10	ISL	12.57	12.57	33.446	25.274	268.9	0.027	6.31	104.5	4.5	0.58	3.8	0.15	0.97	0.16	10	
11		12.55	12.55	33.446	25.278	268.6	0.030	6.31	104.5	4.5	0.58	3.8	0.15	0.97	0.16	11	219
20	ISL	12.28	12.28	33.445	25.329	263.9	0.054	6.35	104.5	4.3	0.58	3.6	0.15	1.05	0.24	20	
21		12.25	12.25	33.445	25.335	263.4	0.056	6.35	104.5	4.3	0.58	3.6	0.15	1.06	0.25	21	218
30	ISL	12.21	12.21	33.444	25.342	263.0	0.080	6.32	103.9	4.3	0.58	3.7	0.15	1.20	0.35	30	
31		12.21	12.21	33.444	25.342	263.0	0.083	6.32	103.9	4.3	0.58	3.7	0.15	1.21	0.36	31	217
41		12.20	12.19	33.460	25.357	261.9	0.109	6.28	103.2	4.3	0.60	3.8	0.15	1.14	0.35	41	216
50	ISL	12.05	12.04	33.477	25.399	258.1	0.132	6.08	99.6	5.1	0.69	4.9	0.21	0.82	0.39	50	
51		12.03	12.02	33.479	25.404	257.6	0.135	6.05	99.1	5.3	0.70	5.1	0.22	0.78	0.39	51	215
60		11.89	11.88	33.514	25.458	252.7	0.158	5.61	91.6	7.8	0.85	7.7	0.32	0.41	0.25	60	214
70		11.50	11.49	33.544	25.553	243.8	0.183	5.03	81.5	11.3	1.06	11.4	0.24	0.20	0.15	70	213
75	ISL	11.33	11.32	33.546	25.586	240.8	0.195	4.83	77.9	12.6	1.13	12.7	0.19	0.14	0.13	75	
85		10.95	10.94	33.563	25.668	233.2	0.218	4.44	71.1	15.3	1.28	15.1	0.09	0.08	0.11	85	212
100		10.20	10.19	33.691	25.898	211.6	0.252	3.50	55.2	21.5	1.62	20.5	0.04	0.03	0.09	101	211
120		9.53	9.52	33.817	26.109	191.8	0.292	3.10	48.2	26.2	1.82	23.7	0.03	0.02	0.07	121	210
125	ISL	9.43	9.42	33.833	26.138	189.2	0.302	3.09	47.9	26.8	1.84	24.0	0.03	0.02	0.07	126	
140		9.19	9.17	33.869	26.205	183.1	0.330	3.06	47.2	28.2	1.87	24.7	0.03	0.02	0.07	141	209
150	ISL	9.01	8.99	33.906	26.263	177.7	0.348	2.97	45.6	29.8	1.92	25.5	0.03	0.02	0.07	151	
170		8.64	8.62	33.976	26.376	167.3	0.382	2.75	41.9	33.6	2.04	27.1	0.03	0.02	0.08	171	208
200		8.13	8.11	34.029	26.495	156.3	0.431	2.52	38.0	38.9	2.17	29.0	0.02	0.02	0.06	201	207
229		7.89	7.87	34.073	26.566	150.1	0.475	2.10	31.5	43.6	2.35	30.9	0.02			230	206
250	ISL	7.86	7.84	34.107	26.597	147.5	0.506	1.83	27.4	45.9	2.46	31.7	0.02			252	
268		7.82	7.79	34.134	26.624	145.2	0.533	1.61	24.1	47.9	2.54	32.4	0.02			270	205
300	ISL	7.44	7.41	34.169	26.707	137.7	0.578	1.25	18.6	54.2	2.70	34.2	0.02			302	
318		7.19	7.16	34.185	26.755	133.3	0.602	1.07	15.8	58.0	2.79	35.3	0.02			320	204
378		6.70	6.67	34.227	26.855	124.4	0.680	0.69	10.1	66.9	2.98	37.6	0.02			380	203
400	ISL	6.51	6.47	34.238	26.890	121.4	0.707	0.60	8.7	70.2	3.03	38.3	0.02			403	
437		6.22	6.18	34.254	26.940	116.8	0.751	0.49	7.1	75.5	3.11	39.3	0.02			440	202
500	ISL	5.87	5.83	34.286	27.010	110.7	0.822	0.36	5.2	82.1	3.19	40.6	0.02			504	
512		5.80	5.76	34.292	27.024	109.5	0.836	0.33	4.7	83.3	3.21	40.9	0.02			516	201

RV DAVID STARR JORDAN CALCOFI CRUISE 9904 STATION 77 90

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT	TYPE
33 43.3 N	123 38.0 W	14/04/99	1924 UTC	4139 m	340 14 kn	330 04 08	0	1022.6 mb	14.8 C	12.9 C	21m	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	12.42	12.42	33.233	25.138	281.7	0.000	6.23	102.7	4.0	0.51	2.2	0.09	0.49	0.12	0	
2	A	12.42	12.42	33.233	25.138	281.7	0.006	6.23	102.7	4.0	0.51	2.2	0.09	0.49	0.12	2	221
10	ISL	12.34	12.34	33.228	25.149	280.8	0.028	6.25	102.9	4.0	0.49	2.2	0.09	0.46	0.11	10	
15	A	12.26	12.26	33.228	25.165	279.5	0.042	6.26	102.9	4.1	0.48	2.2	0.09	0.45	0.11	15	220
20	ISL	12.19	12.19	33.244	25.191	277.1	0.056	6.26	102.7	4.2	0.50	2.5	0.10	0.49	0.13	20	
30	ISL	12.07	12.07	33.277	25.239	272.8	0.084	6.24	102.2	4.3	0.54	3.0	0.13	0.59	0.17	30	
31	A	12.06	12.06	33.281	25.244	272.3	0.086	6.24	102.1	4.3	0.55	3.1	0.13	0.60	0.17	31	219
44	A	11.98	11.97	33.284	25.262	271.0	0.122	6.22	101.6	4.3	0.57	3.4	0.14	0.60	0.18	44	218
50	ISL	11.99	11.98	33.289	25.264	270.9	0.138	6.21	101.5	4.4	0.57	3.4	0.15	0.56	0.20	50	
52		11.99	11.98	33.290	25.265	270.9	0.143	6.21	101.5	4.4	0.57	3.4	0.15	0.55	0.21	52	217
59	A	11.94	11.93	33.304	25.285	269.1	0.162	6.11	99.8	4.8	0.61	3.9	0.17	0.53	0.28	59	216
68		11.64	11.63	33.396	25.413	257.2	0.186	5.63	91.4	7.9	0.83	7.4	0.27	0.27	0.14	68	215
75	ISL	11.35	11.34	33.435	25.496	249.4	0.204	5.28	85.2	10.5	0.99	10.1	0.27	0.21	0.12	75	
77		11.24	11.23	33.447	25.525	246.6	0.209	5.15	82.9	11.5	1.04	11.0	0.27	0.20	0.11	77	214
85	A	10.61	10.60	33.542	25.711	229.1	0.228	4.31	68.5	17.2	1.39	16.6	0.08	0.15	0.10	85	213
94		10.19	10.18	33.631	25.853	215.7	0.248	3.71	58.4	21.0	1.59	20.0	0.05	0.09	0.07	94	212
100	ISL	9.97	9.96	33.649	25.904	210.9	0.260	3.64	57.1	22.1	1.64	20.9	0.05	0.07	0.07	101	
109		9.68	9.67	33.665	25.965	205.3	0.279	3.53	55.0	23.1	1.68	21.5	0.05	0.05	0.07	110	211
124		9.13	9.12	33.778	26.143	188.6	0.309	3.31	51.0	26.8	1.82	23.9	0.03	0.03	0.04	125	210
125	ISL	9.11	9.10	33.783	26.150	187.9	0.311	3.30	50.8	27.0	1.83	24.0	0.03	0.03	0.04	126	
144		8.79	8.77	33.858	26.260	177.9	0.345	3.13	47.9	29.9	1.91	25.5	0.03	0.02	0.04	145	209
150	ISL	8.71	8.69	33.888	26.296	174.5	0.356	3.05	46.6	31.0	1.95	26.0	0.03	0.02	0.04	151	
169		8.46	8.44	33.971	26.399	165.0	0.388	2.80	42.5	34.5	2.06	27.6	0.02	0.01	0.04	170	208
200		7.99	7.97	34.003	26.495	156.3	0.438	2.64	39.7	38.5	2.16	29.1	0.02	0.01	0.04	201	207
229		7.56	7.54	34.014	26.567	149.8	0.482	2.58	38.4	43.0	2.24	30.3	0.02			230	206
250	ISL	7.21	7.19	34.009	26.613	145.6	0.513	2.51	37.0	46.5	2.31	31.3	0.02			252	
270		6.90	6.87	34.004	26.651	142.1	0.542	2.39	35.0	49.8	2.38	32.3	0.02			272	205
300	ISL	6.61	6.58	34.017	26.701	137.7	0.584	2.06	30.0	54.5	2.52	34.1	0.02			302	
319		6.48	6.45	34.033	26.731	135.1	0.610	1.81	26.3	57.7	2.62	35.3	0.02			321	204
379		6.09	6.06	34.117	26.848	124.6	0.688	1.01	14.5	69.9	2.92	38.7	0.02			381	203
400	ISL	6.01	5.98	34.145	26.880	121.7	0.714	0.86	12.3	72.5	2.98	39.3	0.02			403	
433		5.90	5.86	34.182	26.924	118.0	0.753	0.71	10.2	75.9	3.06	39.9	0.02			436	202
500	ISL	5.50	5.46	34.210	26.995	111.7	0.830	0.51	7.2	84.0	3.17	41.4	0.01			503	
511		5.44	5.40	34.215	27.007	110.7	0.842	0.48	6.8	85.3	3.19	41.6	0.01			515	201

A) PRIMARY PRODUCTIVITY SAMPLES WERE TAKEN FROM THESE LEVELS.

RV DAVID STARR JORDAN CALCOFI CRUISE 9904 STATION 77 100

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT	TYPE
33 23.2 N	124 19.1 W	14/04/99	1333 UTC		350 20 kn	330 06 07	1	1024.5 mb	12.9 C	11.0 C		2/8	AC

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	13.10	13.10	33.076	24.883	305.9	0.000	6.12	102.3	2.9	0.30	0.0	0.00	0.23	0.05	0	
3	13.10	13.10	33.076	24.884	305.9	0.009	6.12	102.3	2.9	0.30	0.0	0.00	0.23	0.05	3	220
10 ISL	13.11	13.11	33.076	24.882	306.3	0.031	6.10	101.9	2.8	0.30	0.0	0.00	0.23	0.05	10	
15	13.11	13.11	33.076	24.882	306.4	0.046	6.08	101.6	2.8	0.30	0.0	0.00	0.23	0.06	15	219
20 ISL	13.28	13.28	33.124	24.885	306.2	0.061	6.05	101.5	2.8	0.29	0.0	0.00	0.23	0.06	20	
30	13.65	13.65	33.234	24.896	305.5	0.092	6.00	101.5	2.8	0.28	0.0	0.00	0.24	0.07	30	218
46	13.80	13.79	33.289	24.908	304.8	0.141	5.98	101.5	2.8	0.27	0.0	0.00	0.27	0.07	46	217
50 ISL	13.84	13.83	33.302	24.910	304.7	0.153	5.97	101.4	2.8	0.27	0.0	0.00	0.29	0.08	50	
60	13.90	13.89	33.325	24.916	304.5	0.183	5.93	100.9	2.8	0.27	0.0	0.00	0.33	0.10	60	216
74	13.90	13.89	33.324	24.916	304.9	0.226	5.84	99.3	2.7	0.27	0.0	0.00	0.39	0.11	74	215
75 ISL	13.90	13.89	33.325	24.917	304.9	0.229	5.85	99.5	2.7	0.27	0.0	0.00	0.39	0.11	75	
86	13.91	13.90	33.331	24.919	304.9	0.263	5.95	101.2	2.7	0.27	0.0	0.00	0.39	0.12	86	214
95	13.92	13.91	33.331	24.917	305.3	0.290	5.92	100.7	2.7	0.27	0.0	0.00	0.36	0.11	95	213
100 ISL	14.34	14.33	33.598	25.036	294.3	0.305	5.68	97.7	3.3	0.31	0.9	0.08	0.29	0.16	100	
103	14.50	14.48	33.746	25.117	286.7	0.314	5.52	95.3	3.7	0.35	1.6	0.13	0.25	0.19	103	212
113	13.10	13.08	33.536	25.243	274.8	0.342	5.23	87.6	5.4	0.55	4.3	0.06	0.19	0.15	114	211
123	11.54	11.52	33.363	25.407	259.1	0.368	4.72	76.4	10.0	0.96	10.2	0.02	0.13	0.12	124	210
125 ISL	11.56	11.54	33.401	25.433	256.7	0.374	4.72	76.5	10.0	0.95	10.1	0.02	0.12	0.11	126	
139	11.71	11.69	33.648	25.597	241.4	0.408	4.76	77.5	9.8	0.88	9.7	0.02	0.06	0.05	140	209
150 ISL	11.03	11.01	33.693	25.756	226.4	0.434	4.44	71.2	13.5	1.10	13.2	0.02	0.03	0.04	151	
167	9.73	9.71	33.706	25.990	204.2	0.471	3.84	59.9	20.6	1.53	19.7	0.01	0.01	0.02	168	208
198	9.05	9.03	33.882	26.239	181.0	0.531	3.46	53.2	26.9	1.77	23.5	0.01	0.01	0.02	199	207
200 ISL	9.01	8.99	33.890	26.251	179.9	0.534	3.47	53.3	27.2	1.77	23.6	0.01			201	
230	8.43	8.41	33.968	26.403	165.8	0.586	3.62	54.9	31.3	1.81	24.7	0.01			231	206
250 ISL	8.12	8.09	33.992	26.468	159.8	0.619	3.44	51.8	34.5	1.90	26.0	0.01			251	
272	7.79	7.76	34.002	26.525	154.7	0.653	3.15	47.1	38.3	2.03	27.7	0.00			274	205
300 ISL	7.31	7.28	33.997	26.590	148.7	0.696	2.90	42.9	43.3	2.17	29.6	0.00			302	
320	6.99	6.96	33.993	26.631	144.9	0.725	2.69	39.5	47.0	2.28	31.0	0.00			322	204
378	6.44	6.41	34.045	26.746	134.5	0.806	1.71	24.8	59.1	2.66	35.7	0.00			380	203
400 ISL	6.37	6.33	34.077	26.781	131.5	0.835	1.42	20.6	62.5	2.76	36.8	0.00			403	
436	6.25	6.21	34.123	26.833	126.9	0.882	1.04	15.0	67.8	2.90	38.1	0.01			439	202
500 ISL	5.58	5.54	34.139	26.929	118.0	0.960	0.75	10.7	79.0	3.07	40.6	0.01			503	
505	5.53	5.49	34.140	26.936	117.3	0.966	0.73	10.4	79.9	3.08	40.8	0.01			508	201

RV DAVID STARR JORDAN CALCOFI CRUISE 9904 STATION 80 51

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT	TYPE
34 27.2 N	120 31.5 W	12/04/99	2330 UTC	71 m	320 17 kn	310 03 08	1	1020.9 mb	13.9 C	11.5 C	7m	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	11.09	11.09	33.806	25.830	215.8	0.000	5.84	93.9	13.2	1.10	11.5	0.29	9.70	1.95	0	
1	11.09	11.09	33.806	25.830	215.8	0.002	5.84	93.9	13.2	1.10	11.5	0.29	9.70	1.95	1	208
7	11.05	11.05	33.806	25.837	215.3	0.015	5.83	93.7	13.0	1.09	11.4	0.30	9.26	2.34	7	207
10 ISL	10.96	10.96	33.804	25.852	214.0	0.022	5.78	92.7	12.7	1.09	11.3	0.30	10.40	2.41	10	
12	10.89	10.89	33.803	25.864	212.9	0.026	5.72	91.6	12.6	1.09	11.3	0.29	11.14	2.46	12	206
20 ISL	10.63	10.63	33.809	25.914	208.3	0.043	5.12	81.5	14.4	1.22	13.6	0.27	9.15	1.76	20	
22	10.57	10.57	33.813 D	25.928	207.0	0.047	4.94	78.6	15.2	1.27	14.5	0.26	8.18	1.53	22	205
30	10.35	10.35	33.842	25.989	201.4	0.063	4.39	69.5	18.3	1.49	17.6	0.25	5.41	1.03	30	204
41	10.23	10.23	33.854	26.019	198.8	0.085	4.12	65.1	20.4	1.60	18.9	0.24	4.72	1.14	41	203
50 ISL	10.15	10.14	33.867	26.043	196.7	0.103	3.97	62.6	21.6	1.65	19.5	0.22	4.74	1.44	50	
52	10.12	10.11	33.872	26.052	195.9	0.107	3.92	61.8	22.0	1.67	19.7	0.22	4.75	1.50	52	202
61	9.86	9.85	33.917	26.131	188.5	0.124	3.42	53.6	25.9	1.82	21.5	0.20	3.32	1.52	61	201

RV DAVID STARR JORDAN CALCOFI CRUISE 9904 STATION 80 55

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT	TYPE
34 19.3 N	120 47.9 W	13/04/99	0253 UTC	745 m	340 18 kn	340 03 09	1	1021.5 mb	12.0 C	10.6 C		4/8	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	11.81	11.81	33.675	25.596	238.0	0.000	6.35	103.6	11.6	0.95	9.8	0.29	3.15	0.39	0	
2	11.81	11.81	33.675	25.596	238.1	0.005	6.35	103.6	11.6	0.95	9.8	0.29	3.15	0.39	2	220
10	11.81	11.81	33.676	25.597	238.2	0.024	6.33	103.3	11.6	0.95	9.8	0.29	2.74	0.45	10	219
20	11.51	11.51	33.696	25.669	231.7	0.047	6.04	98.0	13.1	1.02	11.0	0.30	2.66	0.66	20	218
30 ISL	10.76	10.76	33.771	25.862	213.5	0.070	4.93	78.7	19.1	1.43	16.8	0.29	1.11	0.62	30	
31	10.68	10.68	33.780	25.883	211.5	0.072	4.80	76.5	19.8	1.47	17.4	0.29	0.94	0.62	31	217
41	10.21	10.21	33.833	26.006	200.0	0.092	3.92	61.9	24.1	1.70	21.1	0.33	0.45	0.44	41	216
50	9.92	9.91	33.834	26.056	195.4	0.110	3.27	51.3	25.7	1.80	22.9	0.13	0.24	0.34	50	215
60	9.59	9.58	33.881	26.148	186.9	0.129	2.92	45.5	28.2	1.91	24.5	0.08	0.22	0.36	60	214
70	9.27	9.26	33.900	26.215	180.7	0.148	2.83	43.8	29.4	1.94	25.3	0.05	0.08	0.25	70	213
75 ISL	9.13	9.12	33.915	26.250	177.5	0.157	2.82	43.5	30.2	1.96	25.7	0.05	0.07	0.24	75	
85	8.92	8.91	33.945	26.306	172.3	0.174	2.80	43.0	31.6	2.00	26.3	0.04	0.06	0.21	85	212
100	8.82	8.81	33.968 D	26.340	169.3	0.200	2.70	41.3	32.9	2.04	26.9	0.05	0.06	0.19	101	211
118	8.66	8.65	33.983	26.377	166.2	0.230	2.74	41.8	33.8	2.04	27.1	0.05	0.07	0.15	119	210
125 ISL	8.62	8.61	33.990	26.389	165.2	0.241	2.75	41.9	34.1	2.04	27.1	0.05	0.07	0.15	126	
140	8.52	8.51	34.003	26.415	163.0	0.266	2.77	42.1	34.8	2.05	27.3	0.05	0.07	0.15	141	209
150 ISL	8.39	8.37	34.005	26.437	161.1	0.282	2.75	41.7	35.5	2.07	27.5	0.05	0.07	0.14	151	
169	8.17	8.15	34.021	26.482	157.0	0.312	2.72	41.0	37.6	2.11	28.2	0.04	0.09	0.12	170	208
200 ISL	8.29	8.27	34.134	26.554	150.9	0.360	1.76	26.7	43.0	2.43	30.8	0.03	0.13	0.15	201	
203	8.31	8.29	34.145	26.559	150.4	0.365	1.66	25.1	43.6	2.46	31.1	0.03	0.13	0.15	204	207
230	8.11	8.09	34.180	26.617	145.4	0.405	1.39	21.0	47.3	2.58	32.2	0.03			231	206
250 ISL	7.90	7.87	34.193	26.659	141.7	0.433	1.25	18.8	50.4	2.67	33.1	0.03			252	
266	7.72	7.69	34.198	26.689	139.0	0.456	1.17	17.5	52.8	2.74	33.8	0.03			268	205
300 ISL	7.39	7.36	34.201	26.739	134.7	0.502	1.05	15.6	57.2	2.83	34.9	0.02			302	
321	7.22	7.19	34.203	26.765	132.5	0.530	0.98	14.5	59.5	3.02 U	35.5	0.02			323	204
377	6.99	6.95	34.244	26.830	127.1	0.603	0.73	10.7	64.5	2.95	36.6	0.02			380	203
400 ISL	6.86	6.82	34.248	26.851	125.3	0.632	0.68	10.0	66.5	2.98	37.1	0.02			403	
438	6.62	6.58	34.251	26.886	122.4	0.679	0.61	8.9	69.9	3.04	38.0	0.02			441	202
500 ISL	6.22	6.18	34.273	26.956	116.3	0.753	0.45	6.5	76.5	3.14	39.5	0.02			504	
518	6.11	6.06	34.280	26.976	114.5	0.774	0.40	5.8	78.4	3.17	39.9	0.02			522	201

RV DAVID STARR JORDAN CALCOFI CRUISE 9904 STATION 80 60

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT TYPE
34 9.2 N	121 8.8 W	13/04/99	0703 UTC	2159 m	350 21 kn			1023.9 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	10.99	10.99	33.817	25.857	213.3	0.000	6.34	101.8	12.1	1.00	10.2	0.21	10.60	2.17	0	
2		10.99	10.99	33.817	25.857	213.4	0.004	6.34	101.8	12.1	1.00	10.2	0.21	10.60	2.17	2	220
10		10.96	10.96	33.822	25.866	212.6	0.021	6.28	100.7	12.3	0.99	10.4	0.21	10.56	1.77	10	219
20		10.66	10.66	33.853	25.943	205.5	0.042	5.81	92.6	17.9	1.26	14.2	0.20	8.32	1.06	20	218
30		10.43	10.43	33.871	25.998	200.6	0.063	5.36	85.0	22.0	1.47	17.2	0.19	5.05	0.72	30	217
41		10.29	10.29	33.879	26.028	197.9	0.084	5.00	79.1	23.7	1.59	18.9	0.19	2.95	0.66	41	216
50		10.19	10.18	33.878	26.045	196.5	0.102	4.68	73.8	24.5	1.65	19.7	0.20	2.12	0.69	50	215
62		9.67	9.66	33.895	26.146	187.2	0.125	3.35	52.3	29.0	1.93	23.7	0.23	0.60	0.64	62	214
73		9.30	9.29	33.984	26.276	175.0	0.145	2.49	38.5	32.7	2.12	26.7	0.23	0.30	0.47	73	213
75	ISL	9.24	9.23	33.995	26.294	173.3	0.149	2.38	36.8	33.4	2.15	27.2	0.20	0.25	0.44	75	
83		9.04	9.03	34.030	26.354	167.8	0.162	2.06	31.7	35.7	2.25	28.6	0.06	0.09	0.34	83	212
100	ISL	8.78	8.77	34.057	26.416	162.1	0.190	2.01	30.8	38.0	2.30	29.2	0.04	0.06	0.38	101	
101		8.77	8.76	34.058	26.419	161.9	0.192	2.01	30.8	38.1	2.30	29.2	0.04	0.06	0.38	102	211
121		8.77	8.76	34.080	26.436	160.7	0.224	1.85	28.3	39.7	2.36	29.7	0.04	0.08	0.36	122	210
125	ISL	8.74	8.73	34.083	26.443	160.1	0.231	1.83	28.0	40.1	2.37	29.8	0.04	0.07	0.35	126	
141		8.56	8.55	34.093	26.479	156.9	0.256	1.78	27.1	41.5	2.42	30.2	0.02	0.05	0.33	142	209
150	ISL	8.45	8.43	34.095	26.498	155.3	0.270	1.78	27.0	42.2	2.43	30.5	0.02	0.05	0.31	151	
168		8.27	8.25	34.106	26.534	152.1	0.298	1.78	26.9	43.6	2.45	31.0	0.01	0.05	0.27	169	208
200		8.17	8.15	34.173	26.602	146.2	0.345	1.42	21.4	46.6	2.59	32.1	0.01	0.05	0.19	201	207
225		7.76	7.74	34.164	26.656	141.4	0.381	1.48	22.1	50.2	2.62	32.9	0.02			226	206
250	ISL	7.54	7.52	34.168	26.691	138.4	0.416	1.37	20.4	52.9	2.68	33.7	0.02			252	
271		7.40	7.37	34.176	26.718	136.2	0.445	1.23	18.3	55.1	2.74	34.4	0.01			273	205
300	ISL	7.14	7.11	34.186	26.762	132.3	0.484	1.06	15.6	58.9	2.83	35.5	0.01			302	
318		6.99	6.96	34.195	26.790	129.8	0.508	0.96	14.1	61.4	2.88	36.1	0.01			320	204
378		6.69	6.66	34.247	26.873	122.8	0.583	0.63	9.2	68.9	3.03	37.8	0.00			381	203
400	ISL	6.53	6.49	34.257	26.902	120.2	0.610	0.56	8.1	71.6	3.07	38.5	0.00			403	
438		6.25	6.21	34.271	26.950	116.0	0.655	0.47	6.8	76.2	3.14	39.6	0.00			441	202
500	ISL	5.90	5.86	34.302	27.019	109.9	0.725	0.35	5.0	82.5	3.23	40.7	0.00			504	
537		5.69	5.64	34.321	27.061	106.3	0.765	0.28	4.0	86.2	3.28	41.4	0.00			541	201

RV DAVID STARR JORDAN CALCOFI CRUISE 9904 STATION 80 70

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT TYPE
33 48.9 N	121 50.5 W	13/04/99	1317 UTC	3625 m	330 22 kn			1025.6 mb	11.2 C	9.8 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	11.53	11.53	33.630	25.613	236.4	0.000	6.44	104.5	4.5	0.78	7.7	0.27	6.44	1.39	0	
2		11.53	11.53	33.630	25.613	236.5	0.005	6.44	104.5	4.5	0.78	7.7	0.27	6.44	1.39	2	220
10	ISL	11.53	11.53	33.630	25.613	236.7	0.024	6.40	103.8	4.5	0.78	7.7	0.27	6.40	1.13	10	
11		11.53	11.53	33.630	25.613	236.7	0.026	6.40	103.8	4.5	0.78	7.7	0.27	6.39	1.10	11	219
20	ISL	11.53	11.53	33.633	25.616	236.7	0.047	6.42	104.1	4.7	0.79	7.8	0.27	6.76	1.34	20	
21		11.53	11.53	33.633	25.616	236.7	0.050	6.42	104.1	4.7	0.79	7.8	0.27	6.80	1.36	21	218
30		11.37	11.37	33.698	25.696	229.3	0.071	5.94	96.0	12.4	1.09	11.2	0.32	2.15	0.99	30	217
41		11.30	11.29	33.716	25.723	227.0	0.096	5.74	92.7	14.2	1.16	12.2	0.33	1.38	0.82	41	216
50	ISL	10.67	10.66	33.761	25.871	213.1	0.116	4.53	72.2	20.0	1.51	17.5	0.37	0.54	0.61	50	
52		10.53	10.52	33.772	25.904	210.0	0.120	4.25	67.5	21.3	1.59	18.7	0.38	0.39	0.57	52	215
61		10.34	10.33	33.798	25.957	205.1	0.138	3.84	60.8	23.3	1.70	20.5	0.38	0.27	0.50	61	214
70		10.09	10.08	33.843	26.035	197.9	0.157	3.29	51.8	25.9	1.84	22.9	0.25	0.24	0.51	70	213
75	ISL	9.95	9.94	33.861	26.073	194.4	0.166	3.07	48.2	27.0	1.89	23.9	0.18	0.23	0.51	75	
86		9.66	9.65	33.888	26.142	188.0	0.187	2.75	42.9	28.8	1.97	25.3	0.05	0.19	0.52	86	212
100	ISL	9.37	9.36	33.910	26.207	182.1	0.213	2.67	41.4	30.4	2.02	26.1	0.03	0.12	0.36	101	
101		9.35	9.34	33.911	26.211	181.7	0.215	2.66	41.2	30.5	2.02	26.1	0.03	0.11	0.35	102	211
120		8.80	8.79	33.957	26.335	170.2	0.249	2.67	40.9	33.3	2.06	27.3	0.03	0.05	0.25	121	210
125	ISL	8.74	8.73	33.966	26.352	168.7	0.257	2.64	40.3	33.8	2.08	27.5	0.03	0.05	0.24	126	
139		8.59	8.58	33.987	26.392	165.2	0.280	2.55	38.8	35.4	2.14	28.1	0.03	0.05	0.23	140	209
150	ISL	8.36	8.34	34.008	26.443	160.4	0.298	2.48	37.6	37.7	2.20	28.9	0.03	0.04	0.18	151	
168		7.97	7.95	34.038	26.526	152.8	0.327	2.37	35.6	41.5	2.28	30.2	0.02	0.03	0.11	169	208
195		7.69	7.67	34.047	26.574	148.6	0.367	2.30	34.3	44.0	2.34	30.9	0.02	0.08	0.10	196	207
200	ISL	7.63	7.61	34.048	26.583	147.8	0.375	2.28	34.0	44.7	2.36	31.1	0.02			201	
227		7.27	7.25	34.051	26.637	143.0	0.414	2.13	31.5	48.7	2.45	32.4	0.03			228	206
250	ISL	6.98	6.96	34.046	26.673	139.8	0.446	2.05	30.1	51.9	2.51	33.3	0.03			252	
269		6.76	6.74	34.043	26.701	137.3	0.473	1.96	28.6	54.6	2.56	34.1	0.02			271	205
300	ISL	6.48	6.45	34.056	26.749	133.1	0.515	1.66	24.1	60.1	2.69	35.9	0.02			302	
322		6.32	6.29	34.073	26.783	130.1	0.544	1.41	20.4	63.9	2.79	37.1	0.02			324	204
377		6.07	6.04	34.133	26.863	123.1	0.613	0.94	13.5	70.8	2.99	38.9	0.01			380	203
400	ISL	5.92	5.89	34.151	26.896	120.1	0.641	0.80	11.5	74.3	3.04	39.7	0.01			403	
432		5.70	5.66	34.173	26.941	116.1	0.679	0.66	9.4	79.2	3.11	40.6	0.01			435	202
500	ISL	5.40	5.36	34.221	27.016	109.6	0.756	0.47	6.7	86.8	3.26	41.7	0.01			504	
509		5.36	5.32	34.227	27.026	108.8	0.766	0.45	6.4	87.8	3.28	41.9	0.01			513	201

RV DAVID STARR JORDAN CALCOFI CRUISE 9904 STATION 80 80

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT	TYPE
33 29.1 N	122 31.8 W	13/04/99	1909 UTC	3978 m	360 20 kn	330 04 08	1	1028.5 mb	13.5 C	11.5 C	15m	6/8	AS

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	33.490	25.364	260.2	0.000	6.22	102.4	5.6	0.65	5.0	0.19	1.50	0.31	0	
2	A	12.28	12.28	33.490 D	25.364	260.2	0.005	6.22	102.4	5.6	0.65	5.0	0.19	1.50	0.31	2	220
10	A	12.25	12.25	33.489	25.369	259.9	0.026	6.24	102.7	5.6	0.67	5.0	0.19	1.37	0.32	10	219
20	ISL	12.24	12.24	33.489	25.371	260.0	0.052	6.23	102.5	5.6	0.66	5.1	0.19	1.39	0.30	20	
22	A	12.24	12.24	33.489	25.371	260.0	0.057	6.22	102.3	5.6	0.66	5.1	0.19	1.39	0.30	22	218
30	ISL	12.22	12.22	33.494	25.379	259.5	0.078	6.20	102.0	5.7	0.67	5.2	0.20	1.20	0.31	30	
33	A	12.20	12.20	33.494	25.383	259.2	0.086	6.19	101.7	5.7	0.67	5.2	0.20	1.12	0.31	33	217
44	A	12.08	12.07	33.575	25.469	251.3	0.114	6.13	100.6	6.3	0.74	6.1	0.26	0.91	0.38	44	216
50	ISL	11.92	11.91	33.617	25.532	245.4	0.129	5.88	96.2	7.9	0.86	7.9	0.32	0.54	0.24	50	
53		11.86	11.85	33.634	25.556	243.2	0.136	5.78	94.4	8.6	0.92	8.7	0.34	0.37	0.17	53	215
61	A	11.89	11.88	33.657 D	25.569	242.2	0.155	5.88	96.1	8.7	0.93	8.6	0.27	0.28	0.15	61	214
70		11.35	11.34	33.622	25.641	235.5	0.177	5.03	81.3	12.7	1.15	12.5	0.22	0.31	0.12	70	213
75	ISL	11.01	11.00	33.625	25.705	229.5	0.189	4.56	73.1	15.3	1.29	15.0	0.16	0.28	0.13	75	
85		10.40	10.39	33.652	25.833	217.4	0.211	3.82	60.5	19.9	1.54	19.2	0.04	0.18	0.16	85	212
100		9.97	9.96	33.697	25.942	207.4	0.243	3.56	55.8	22.1	1.64	20.9	0.04	0.11	0.11	101	211
122		9.32	9.31	33.886	26.197	183.5	0.286	2.85	44.1	29.2	1.94	25.3	0.02	0.09	0.15	123	210
125	ISL	9.27	9.26	33.909	26.223	181.1	0.291	2.77	42.8	29.9	1.97	25.7	0.02	0.09	0.15	126	
140		9.03	9.01	34.002	26.335	170.8	0.318	2.46	37.8	33.2	2.10	27.1	0.02	0.06	0.17	141	209
150	ISL	8.84	8.82	34.029	26.386	166.0	0.335	2.38	36.5	35.0	2.15	27.8	0.02	0.05	0.16	151	
170		8.48	8.46	34.052	26.460	159.3	0.367	2.30	35.0	38.2	2.23	28.9	0.02	0.03	0.14	171	208
200	ISL	8.10	8.08	34.096	26.552	151.0	0.414	1.95	29.4	43.3	2.40	30.6	0.02	0.02	0.10	201	
201		8.09	8.07	34.097	26.555	150.8	0.415	1.94	29.2	43.5	2.41	30.7	0.02	0.02	0.10	202	207
232		7.93	7.91	34.141	26.613	145.7	0.461	1.58	23.7	47.4	2.54	32.2	0.03			233	206
250	ISL	7.72	7.70	34.150	26.651	142.3	0.487	1.48	22.1	50.0	2.60	33.0	0.03			252	
271		7.45	7.42	34.155	26.694	138.4	0.516	1.39	20.6	53.3	2.67	33.9	0.02			273	205
300	ISL	7.17	7.14	34.171	26.746	133.8	0.556	1.18	17.4	57.8	2.77	35.2	0.02			302	
321		6.94	6.91	34.173	26.780	130.8	0.584	1.06	15.6	61.2	2.84	36.2	0.02			323	204
379		5.90	5.87	34.088	26.849	124.3	0.658	1.11	15.9	71.0	2.92	38.9	0.02			382	203
400	ISL	5.96	5.93	34.130	26.875	122.2	0.684	0.93	13.3	72.5	2.98	39.0	0.02			403	
439		6.22	6.18	34.232	26.923	118.5	0.731	0.56	8.1	74.7	3.10	39.3	0.01			442	202
500	ISL	5.94	5.90	34.278	26.995	112.2	0.801	0.40	5.7	81.1	3.20	40.4	0.01			504	
515		5.87	5.83	34.289	27.013	110.7	0.818	0.36	5.2	82.7	3.22	40.7	0.01			519	201

A) PRIMARY PRODUCTIVITY SAMPLES WERE TAKEN FROM THESE LEVELS.

RV DAVID STARR JORDAN CALCOFI CRUISE 9904 STATION 80 90

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT	TYPE
33 9.1 N	123 13.1 W	14/04/99	0100 UTC	4226 m	360 15 kn	360 04 06	1	1027.0 mb	12.6 C	11.7 C	11m	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	12.69	12.69	33.380	25.199	275.8	0.000	6.25	103.7	4.2	0.46	1.9	0.11	0.89	0.19	0	
2		12.69	12.69	33.380	25.200	275.8	0.006	6.25	103.7	4.2	0.46	1.9	0.11	0.89	0.19	2	220
10	ISL	12.70	12.70	33.383	25.200	276.0	0.028	6.24	103.6	4.0	0.46	1.9	0.11	0.85	0.18	10	
11		12.70	12.70	33.383	25.200	276.0	0.030	6.24	103.6	4.0	0.46	1.9	0.11	0.85	0.18	11	219
20	ISL	12.65	12.65	33.380	25.208	275.5	0.055	6.23	103.3	4.0	0.45	1.9	0.11	0.89	0.22	20	
21		12.64	12.64	33.380	25.210	275.3	0.058	6.23	103.3	4.0	0.45	1.9	0.11	0.90	0.22	21	218
30	ISL	12.58	12.58	33.382	25.223	274.3	0.083	6.20	102.7	4.0	0.46	2.0	0.12	0.91	0.23	30	
31		12.57	12.57	33.382	25.225	274.2	0.085	6.20	102.6	4.0	0.46	2.0	0.12	0.91	0.23	31	217
41		12.53	12.52	33.381	25.232	273.7	0.113	6.16	101.9	4.1	0.48	2.2	0.15	0.71	0.19	41	216
50	ISL	12.37	12.36	33.428	25.300	267.5	0.137	6.01	99.1	4.9	0.59	3.6	0.32	0.38	0.16	50	
51		12.35	12.34	33.436	25.310	266.6	0.140	5.99	98.7	5.0	0.61	3.8	0.34	0.35	0.16	51	215
60		12.16	12.15	33.524	25.415	256.9	0.163	5.89	96.7	6.2	0.75	5.6	0.46	0.25	0.13	60	214
70		12.12	12.11	33.552	25.444	254.3	0.189	5.90	96.8	6.5	0.78	6.0	0.35	0.18	0.12	70	213
75	ISL	12.10	12.09	33.564	25.457	253.2	0.202	5.89	96.6	6.7	0.79	6.2	0.35	0.17	0.12	75	
85		12.05	12.04	33.580	25.479	251.3	0.227	5.87	96.2	7.0	0.81	6.5	0.35	0.15	0.11	85	212
100	ISL	11.99	11.98	33.578	25.490	250.7	0.265	5.82	95.3	7.3	0.83	6.9	0.36	0.10	0.08	101	
101		11.99	11.98	33.578	25.490	250.8	0.267	5.82	95.3	7.3	0.83	6.9	0.36	0.10	0.08	102	211
119		11.31	11.30	33.558	25.600	240.6	0.311	4.84	78.1	12.8	1.14	12.8	0.08	0.09	0.09	120	210
125	ISL	11.01	10.99	33.590	25.679	233.1	0.325	4.43	71.0	15.3	1.28	15.1	0.07	0.08	0.10	126	
141		10.20	10.18	33.707	25.912	211.2	0.361	3.48	54.8	21.9	1.62	20.6	0.03	0.05	0.11	142	209
150	ISL	9.84	9.82	33.762	26.015	201.5	0.380	3.28	51.3	24.1	1.72	22.3	0.03	0.04	0.11	151	
171		9.17	9.15	33.877	26.215	182.8	0.420	3.08	47.5	28.4	1.87	24.7	0.02	0.02	0.09	172	208
199		8.56	8.54	33.999	26.407	164.9	0.469	2.54	38.7	35.5	2.12	28.0	0.02	0.02	0.06	200	207
200	ISL	8.54	8.52	34.001	26.411	164.5	0.470	2.53	38.5	35.7	2.13	28.1	0.02			201	
232		8.00	7.98	34.045	26.528	153.8	0.521	2.16	32.5	41.9	2.32	30.6	0.02			233	206
250	ISL	7.75	7.73	34.061	26.577	149.3	0.548	2.04	30.5	44.8	2.39	31.5	0.02			251	
271		7.49	7.46	34.076	26.626	144.9	0.579	1.91	28.4	48.2	2.47	32.4	0.02			273	205
300	ISL	7.12	7.09	34.096	26.694	138.7	0.620	1.61	23.7	53.9	2.63	34.2	0.02			302	
320		6.88	6.85	34.108	26.737	134.8	0.648	1.39	20.4	57.9	2.73	35.4	0.02			322	204
379		6.40	6.37	34.139	26.826	127.0	0.725	0.98	14.2	66.9	2.90	37.8	0.02			381	203
400	ISL	6.20	6.16	34.151	26.861	123.7	0.751	0.85	12.3	70.5	2.96	38.7	0.02			403	
439		5.86	5.82	34.177	26.925	117.9	0.798	0.65	9.3	77.1	3.07	40.1	0.02			442	202
500	ISL	5.50	5.46	34.223	27.006	110.7	0.868	0.43	6.1	85.3	3.20	41.5	0.02			503	
511		5.44	5.40	34.231	27.019	109.5	0.880	0.39	5.5	86.8	3.22	41.8	0.02			515	201

RV DAVID STARR JORDAN CALCOFI CRUISE 9904 STATION 80 100

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT TYPE
32 48.8 N	123 54.4 W	14/04/99	0658 UTC	4355 m	360 21 kn			1026.8 mb	11.4 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	11.92	11.92	32.828	24.918	302.6	0.000	6.30	102.5	3.1	0.38	0.3	0.02	0.44	0.12	0	
2	11.92	11.92	32.828	24.918	302.6	0.006	6.30	102.5	3.1	0.38	0.3	0.02	0.44	0.12	2	220
10 ISL	11.93	11.93	32.828	24.916	303.0	0.030	6.31	102.7	3.0	0.37	0.2	0.02	0.42	0.11	10	
16	11.93	11.93	32.828	24.917	303.1	0.048	6.32	102.9	2.9	0.37	0.2	0.02	0.41	0.11	16	219
20 ISL	11.92	11.92	32.828	24.918	303.0	0.061	6.31	102.7	2.9	0.37	0.2	0.02	0.41	0.11	20	
30	11.91	11.91	32.831	24.923	302.8	0.091	6.29	102.3	3.0	0.38	0.3	0.02	0.42	0.11	30	218
45	11.98	11.97	32.856	24.930	302.6	0.136	6.24	101.7	3.0	0.38	0.4	0.02	0.42	0.14	45	217
50 ISL	11.86	11.85	32.869	24.962	299.6	0.151	6.20	100.8	3.1	0.41	0.9	0.04	0.41	0.14	50	
56	11.70	11.69	32.887	25.006	295.6	0.169	6.17	100.0	3.3	0.45	1.5	0.06	0.40	0.13	56	216
65	11.55	11.54	32.916	25.056	291.0	0.196	6.24	100.8	3.3	0.48	1.9	0.08	0.40	0.14	65	215
74	11.43	11.42	32.943	25.099	287.1	0.222	6.25	100.7	3.2	0.51	2.4	0.09	0.43	0.16	74	214
75 ISL	11.45	11.44	32.952	25.102	286.8	0.224	6.25	100.8	3.2	0.51	2.4	0.09	0.43	0.16	75	
85	11.70	11.69	33.079	25.156	282.0	0.253	6.20	100.6	3.3	0.52	2.7	0.10	0.39	0.14	85	213
96	11.90	11.89	33.269	25.266	271.8	0.283	5.37	87.6	6.6	0.72	6.2	0.08	0.19	0.10	96	212
100 ISL	11.76	11.75	33.309	25.324	266.4	0.294	5.17	84.1	7.9	0.81	7.7	0.07	0.14	0.08	100	
110	11.24	11.23	33.387	25.479	251.8	0.320	4.80	77.2	11.1	1.02	11.2	0.05	0.07	0.05	111	211
125	10.61	10.60	33.524	25.698	231.2	0.356	4.36	69.3	15.0	1.25	15.0	0.05	0.04	0.04	126	210
143	9.87	9.85	33.702	25.963	206.2	0.396	3.67	57.4	21.1	1.58	20.3	0.02	0.01	0.03	144	209
150 ISL	9.68	9.66	33.750	26.032	199.8	0.410	3.65	56.9	22.2	1.62	21.1	0.02	0.01	0.03	151	
169	9.29	9.27	33.847	26.172	186.8	0.447	3.61	55.8	24.6	1.68	22.3	0.01	0.02	0.03	170	208
199	8.84	8.82	33.948	26.323	172.9	0.501	2.95	45.2	31.4	1.96	26.0	0.00	0.02	0.05	200	207
200 ISL	8.82	8.80	33.950	26.328	172.5	0.502	2.98	45.6	31.4	1.95	25.9	0.00			201	
228	8.35	8.33	33.998	26.438	162.4	0.549	3.76	57.0	31.5	1.75	24.2	0.01			229	206
250 ISL	7.96	7.93	34.015	26.510	155.8	0.584	3.19	47.9	37.2	1.99	27.2	0.01			251	
270	7.60	7.57	34.021	26.567	150.5	0.615	2.44	36.3	43.5	2.28	30.7	0.00			272	205
300 ISL	7.07	7.04	34.024	26.644	143.4	0.659	2.16	31.8	49.1	2.43	32.7	0.00			302	
319	6.76	6.73	34.023	26.686	139.5	0.686	2.10	30.7	52.3	2.49	33.5	0.00			321	204
378	5.99	5.96	34.027	26.789	130.0	0.765	1.59	22.8	64.5	2.74	37.3	0.00			380	203
400 ISL	5.92	5.89	34.058	26.823	127.1	0.793	1.33	19.0	67.8	2.83	38.3	0.00			403	
438	5.87	5.83	34.118	26.877	122.4	0.841	0.91	13.0	73.1	2.98	39.6	0.00			441	202
500 ISL	5.42	5.38	34.158	26.964	114.6	0.914	0.62	8.8	82.9	3.12	41.5	0.00			503	
514	5.32	5.28	34.167	26.983	112.8	0.930	0.56	7.9	85.1	3.15	41.9	0.00			517	201

RV DAVID STARR JORDAN CALCOFI CRUISE 9904 STATION 82 47

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT TYPE
34 17.0 N	120 1.5 W	12/04/99	1848 UTC	579 m	330 10 kn	060 01 08	1	1020.2 mb	14.5 C	10.4 C	5m	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	11.37	11.37	33.726	25.717	226.6	0.000	7.61	123.1	1.1	0.30	0.1	0.06	20.21	6.10	0	
2 A,B	11.37	11.37	33.726	25.717	226.6	0.005	7.61	123.1	1.1	0.30	0.1	0.06	20.21	6.10	2	224
7 B	11.26	11.26	33.730	25.740	224.5	0.016	7.38	119.1	1.4	0.34	0.5	0.07	18.37	7.06	7	223
10 ISL	11.23	11.23	33.748	25.760	222.7	0.023	6.94	111.9	2.2	0.46	2.1	0.09	19.14	6.26	10	
11 B	11.22	11.22	33.754	25.766	222.2	0.025	6.79	109.5	2.5	0.51	2.7	0.10	19.50	5.93	11	222
20 ISL	11.18	11.18	33.780	25.794	219.7	0.045	6.35	102.3	4.0	0.66	4.7	0.14	19.50	5.78	20	
21 B	11.17	11.17	33.783	25.798	219.4	0.047	6.27	101.0	4.2	0.68	4.9	0.14	19.50	5.75	21	221
30 ISL	9.88	9.88	33.880	26.099	191.0	0.065	3.60	56.4	25.3	1.78	22.0	0.17	4.12	1.87	30	
31	9.73	9.73	33.892	26.133	187.7	0.067	3.31	51.7	27.7	1.90	23.9	0.17	2.37	1.43	31	220
41	9.52	9.52	33.935	26.201	181.4	0.086	3.03	47.1	30.1	1.99	25.1	0.19	0.73	0.85	41	219
50 ISL	9.36	9.35	33.960	26.247	177.2	0.102	2.67	41.4	31.9	2.04	26.0	0.14	0.22	0.39	50	
51	9.35	9.34	33.963	26.251	176.9	0.104	2.63	40.8	32.1	2.05	26.1	0.13	0.20	0.35	51	218
60	9.31	9.30	33.999	26.286	173.8	0.119	2.25	34.8	34.2	2.16	27.2	0.14	0.17	0.32	60	217
70	9.20	9.19	34.020	26.320	170.7	0.137	2.14	33.1	34.9	2.21	27.8	0.18	0.18	0.46	70	216
75 ISL	9.17	9.16	34.034	26.336	169.3	0.145	2.10	32.4	35.2	2.23	28.0	0.15	0.15	0.43	75	
85	9.13	9.12	34.063	26.365	166.7	0.162	2.03	31.3	36.0	2.26	28.3	0.07	0.09	0.32	85	215
99	9.01	9.00	34.090	26.406	163.1	0.185	1.90	29.2	37.3	2.32	28.9	0.05	0.09	0.31	100	214
100 ISL	9.00	8.99	34.090	26.408	163.0	0.187	1.90	29.2	37.4	2.32	28.9	0.05	0.09	0.31	101	
120	8.77	8.76	34.093	26.447	159.7	0.219	1.84	28.2	39.5	2.36	29.7	0.04	0.07	0.31	121	213
125 ISL	8.77	8.76	34.101	26.453	159.2	0.227	1.80	27.6	39.8	2.37	29.8	0.03	0.07	0.32	126	
139	8.77	8.76	34.122	26.469	157.9	0.249	1.68	25.7	40.4	2.40	30.1	0.02	0.08	0.33	140	212
150 ISL	8.74	8.72	34.135	26.484	156.7	0.266	1.61	24.6	41.1	2.42	30.3	0.02	0.08	0.32	151	
169	8.63	8.61	34.150	26.514	154.2	0.296	1.51	23.0	42.7	2.47	30.7	0.02	0.08	0.30	170	211
199	8.34	8.32	34.154	26.562	150.1	0.342	1.37	20.8	46.6	2.58	31.8	0.02	0.07	0.28	200	210
200 ISL	8.33	8.31	34.154	26.563	150.0	0.343	1.37	20.8	46.6	2.58	31.8	0.02			201	
229	8.06	8.04	34.153	26.603	146.6	0.386	1.46	22.0	47.7	2.58	32.4	0.05			230	209
250 ISL	7.95	7.92	34.157	26.623	145.1	0.417	1.38	20.7	49.2	2.61	32.8	0.04			252	
270	7.85	7.82	34.163	26.643	143.5	0.446	1.26	18.9	51.4	2.66	33.3	0.02			272	208
300 ISL	7.55	7.52	34.170	26.692	139.2	0.488	1.07	15.9	56.5	2.76	34.2	0.02			302	
319	7.35	7.32	34.175	26.725	136.3	0.514	0.95	14.1	60.0	2.83	34.8	0.02			321	207
379	6.86	6.82	34.198	26.811	128.7	0.594	0.68	10.0	69.2	3.01	36.0	0.02			382	206
400 ISL	6.71	6.67	34.206	26.838	126.4	0.620	0.59	8.6	72.4	3.07	36.1	0.02			403	
437	6.49	6.45	34.219	26.878	123.0	0.667	0.43	6.2	78.3	3.17	36.2	0.02			440	205
500 ISL	6.28	6.24	34.228	26.913	120.4	0.743	0.16	2.3	89.4	3.31	33.7	0.01			504	
511	6.26	6.21	34.229	26.916	120.2	0.756	0.12	1.7	91.2	3.33	33.1	0.01			515	204
549	6.22	6.17	34.230	26.923	120.1	0.802	0.05	0.7	95.7	3.35	30.8	0.01			553	203
559	6.22	6.17	34.232	26.924	120.1	0.814	0.06	0.9	95.4	3.38	30.8	0.01			563	202
568	6.22	6.17	34.232	26.924	120.2	0.825	0.04	0.6	95.9	3.40	30.8	0.02			572	201

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

RV DAVID STARR JORDAN CALCOFI CRUISE 9904 STATION 83 40.6

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT	TYPE
34 13.5 N	119 24.8 W	12/04/99	1426 UTC	36 m	340	08 kn	280 01 13	1	1017.3 mb	11.2 C	9.6 C		6/8	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	11.60	11.60	33.692	25.648	233.1	0.000	6.15	99.9	5.3	0.67	5.5	0.17	12.21	1.78	0	
3	11.60	11.60	33.692	25.649	233.1	0.007	6.15	99.9	5.3	0.67	5.5	0.17	12.21	1.78	3	205
5	11.59	11.59	33.689	25.648	233.3	0.012	6.14	99.8	5.3	0.68	5.5	0.17	12.21	2.11	5	204
10	11.57	11.57	33.707	25.666	231.7	0.023	6.14	99.7	5.8	0.72	5.7	0.17	13.01	1.86	10	203
20	11.18	11.18	33.753	25.773	221.7	0.046	5.59	90.1	9.5	0.95	8.8	0.18	11.63	1.80	20	202
30	10.84	10.84	33.809	25.878	212.0	0.068	4.37	69.9	17.3	1.45	14.9	0.20	5.32	1.84	30	201

RV DAVID STARR JORDAN CALCOFI CRUISE 9904 STATION 83 42

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT	TYPE
34 10.7 N	119 30.5 W	12/04/99	1231 UTC	140 m	010	08 kn			1016.5 mb	11.1 C	9.6 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	11.55	11.55	33.708	25.670	231.0	0.000	6.22	101.0	7.5	0.78	6.9	0.22	8.72	1.66	0	
2	11.55	11.55	33.708	25.670	231.1	0.005	6.22	101.0	7.5	0.78	6.9	0.22	8.72	1.66	2	212
10	11.49	11.49	33.721	25.692	229.2	0.023	6.13	99.4	8.6	0.82	7.8	0.23	7.78	1.88	10	211
20	11.45	11.45	33.729	25.705	228.2	0.046	6.04	97.9	9.2	0.86	8.2	0.23	8.10	1.67	20	210
30	11.43	11.43	33.739	25.717	227.3	0.069	5.99	97.0	9.5	0.88	8.5	0.23	8.18	1.70	30	209
40	11.37	11.37	33.761	25.745	224.9	0.091	5.86	94.8	10.5	0.95	9.1	0.24	7.38	1.61	40	208
50	11.08	11.07	33.789	25.820	218.0	0.113	5.07	81.5	13.9	1.19	12.4	0.22	5.68	1.42	50	207
60	10.26	10.25	33.866	26.024	198.8	0.134	3.33	52.6	23.8	1.75	20.5	0.18	1.68	0.86	60	206
70	9.41	9.40	33.973	26.250	177.4	0.153	2.26	35.1	33.3	2.15	27.0	0.13	0.40	0.61	70	205
75 ISL	9.34	9.33	33.987	26.272	175.4	0.162	2.18	33.8	34.3	2.18	27.3	0.18	0.34	0.63	75	
84	9.22	9.21	34.011	26.310	171.9	0.178	2.03	31.4	36.1	2.24	27.8	0.26	0.23	0.69	84	204
99	9.20	9.19	34.076	26.365	167.1	0.203	1.98	30.6	35.1	2.26	28.1	0.04	0.16	0.42	100	203
100 ISL	9.19	9.18	34.076	26.366	167.0	0.205	1.98	30.6	35.2	2.26	28.1	0.04	0.16	0.42	101	
115	9.05	9.04	34.081	26.393	164.7	0.230	1.86	28.6	37.2	2.33	28.9	0.11	0.20	0.42	116	202
125 ISL	8.91	8.90	34.126	26.450	159.4	0.246	1.69	26.0	39.1	2.42	29.6	0.07	0.17	0.38	126	
131	8.82	8.81	34.153	26.486	156.2	0.255	1.58	24.2	40.3	2.48	30.1	0.05	0.15	0.35	132	201

RV DAVID STARR JORDAN CALCOFI CRUISE 9904 STATION 83 51

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT	TYPE
33 52.7 N	120 8.1 W	12/04/99	0637 UTC	98 m	050	01 kn			1015.9 mb	10.5 C	8.2 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	11.40	11.40	33.722	25.708	227.4	0.000	6.12	99.0	11.2	0.88	8.8	0.22	8.27	1.33	0	
2	11.40	11.40	33.722	25.709	227.4	0.005	6.12	99.0	11.2	0.88	8.8	0.22	8.27	1.33	2	211
5	11.36	11.36	33.726	25.719	226.5	0.011	6.07	98.2	11.4	0.89	9.0	0.22	8.27	1.05	5	210
9	11.23	11.23	33.763	25.772	221.6	0.020	5.63	90.8	13.5	1.03	10.8	0.21	6.57	1.31	9	209
10 ISL	11.21	11.21	33.763	25.775	221.3	0.023	5.61	90.4	13.6	1.04	10.9	0.21	6.53	1.30	10	
20	11.12	11.12	33.783	25.807	218.5	0.045	5.45	87.7	14.7	1.12	11.9	0.21	6.17	1.21	20	208
30	11.01	11.01	33.794	25.836	216.0	0.066	5.24	84.1	16.0	1.18	13.0	0.21	5.72	1.16	30	207
40	10.91	10.91	33.801	25.859	214.0	0.088	5.12	82.0	16.6	1.23	13.6	0.21	5.46	1.04	40	206
50	10.67	10.66	33.823	25.919	208.5	0.109	4.71	75.1	19.3	1.37	15.6	0.19	4.21	1.01	50	205
60	10.55	10.54	33.837	25.951	205.7	0.130	4.46	70.9	20.7	1.46	16.6	0.18	3.31	0.94	60	204
70	10.30	10.29	33.853	26.007	200.6	0.150	4.21	66.6	22.1	1.53	17.9	0.17	2.78	0.86	70	203
75 ISL	10.14	10.13	33.880	26.056	196.1	0.160	3.89	61.3	24.1	1.63	19.4	0.15	2.52	0.88	75	
80	9.93	9.92	33.916	26.119	190.1	0.169	3.48	54.6	26.8	1.77	21.3	0.13	2.16	0.89	80	202
89	9.40	9.39	33.993	26.267	176.2	0.186	2.58	40.0	32.6	2.06	25.4	0.10	0.97	0.72	89	201

RV DAVID STARR JORDAN CALCOFI CRUISE 9904 STATION 83 55

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT	TYPE
33 44.5 N	120 24.7 W	12/04/99	0244 UTC	951 m	250	04 kn	230 03 06	1	1013.0 mb	12.3 C	8.4 C		2/8	AS

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	12.05	12.05	33.605	25.497	247.5	0.000	6.12	100.4	9.8	0.88	8.4	0.26	1.49	0.14	0	
2	12.05	12.05	33.605	25.497	247.6	0.005	6.12	100.4	9.8	0.88	8.4	0.26	1.49	0.14	2	220
10 ISL	11.75	11.75	33.630	25.573	240.5	0.024	5.99	97.6	11.5	0.97	9.9	0.29	1.46	0.34	10	
11	11.70	11.70	33.635	25.586	239.3	0.027	5.97	97.2	11.8	0.98	10.1	0.29	1.46	0.37	11	219
20 ISL	11.59	11.59	33.666	25.631	235.3	0.048	5.87	95.3	13.0	1.03	11.0	0.29	1.85	0.45	20	
21	11.58	11.58	33.670	25.635	234.8	0.051	5.86	95.2	13.1	1.04	11.1	0.29	1.92	0.46	21	218
30 ISL	11.26	11.26	33.716	25.730	226.1	0.071	5.72	92.3	15.6	1.14	12.6	0.27	2.97	0.65	30	
31	11.23	11.23	33.721	25.739	225.2	0.074	5.70	91.9	15.9	1.15	12.8	0.27	3.08	0.67	31	217
41	11.12	11.11	33.752	25.784	221.2	0.096	5.57	89.6	16.5	1.18	13.3	0.25	3.25	0.70	41	216
50 ISL	11.07	11.06	33.785	25.818	218.1	0.116	5.28	84.9	16.9	1.23	13.8	0.23	2.50	0.62	50	
51	11.06	11.05	33.788	25.823	217.8	0.118	5.24	84.2	17.0	1.24	13.9	0.23	2.40	0.61	51	215
62	10.84	10.83	33.818	25.885	212.0	0.141	4.87	77.9	18.8	1.36	15.2	0.22	1.74	0.61	62	214
71	10.31	10.30	33.878	26.025	198.9	0.160	3.98	63.0	25.0	1.68	19.7	0.23	0.89	0.49	71	213
75 ISL	10.09	10.08	33.903	26.082	193.6	0.168	3.58	56.4	27.0	1.79	21.4	0.21	0.76	0.47	75	
85	9.56	9.55	33.949	26.207	181.9	0.187	2.88	44.8	30.2	1.95	24.4	0.15	0.61	0.42	85	212
100	8.87	8.86	33.948	26.317	171.6	0.213	3.21	49.2	30.5	1.88	25.0	0.03	0.04	0.23	101	211
120	8.78	8.77	33.980	26.356	168.2	0.247	2.85	43.6	33.1	2.02	26.5	0.03	0.04	0.21	121	210
125 ISL	8.76	8.75	34.015	26.387	165.4	0.255	2.56	39.2	35.1	2.12	27.4	0.05	0.04	0.21	126	
139	8.70	8.69	34.118	26.477	157.1	0.278	1.74	26.6	41.1	2.40	30.0	0.09	0.04	0.22	140	209
150 ISL	8.61	8.59	34.147	26.514	153.8	0.295	1.66	25.3	43.1	2.44	30.5	0.08	0.03	0.20	151	
172	8.38	8.36	34.161	26.561	149.8	0.329	1.51	22.9	45.1	2.53	31.4	0.06	0.02	0.16	173	208
200 ISL	8.06	8.04	34.191	26.633	143.3	0.370	1.33	20.0	48.9	2.63	32.6	0.02	0.02	0.16	201	
201	8.05	8.03	34.192	26.635	143.1	0.371	1.32	19.9	49.0	2.63	32.6	0.02	0.02	0.16	202	207
230	7.94	7.92	34.207	26.664	140.9	0.412	1.19	17.9	51.3	2.70	33.3	0.03			231	206
250 ISL	7.84	7.81	34.214	26.684	139.3	0.440	1.13	16.9	52.6	2.73	33.7	0.03			252	
268	7.76	7.73	34.219	26.700	138.1	0.465	1.08	16.2	53.6	2.75	34.0	0.02			270	205
300 ISL	7.68	7.65	34.227	26.718	136.8	0.509	1.01	15.1	55.0	2.79	34.4	0.01			302	
317	7.62	7.59	34.231	26.730	135.9	0.532	0.97	14.5	55.9	2.81	34.6	0.01			319	204
379	7.11	7.07	34.243	26.813	128.8	0.614	0.76	11.2	63.5	2.94	36.4	0.02			382	203
400 ISL	6.97	6.93	34.248	26.836	126.9	0.641	0.71	10.4	65.6	2.98	37.0	0.02			403	
439	6.71	6.67	34.259 D	26.880	123.0	0.690	0.61	8.9	69.8	3.04	38.0	0.01			442	202
500 ISL	6.19	6.15	34.290	26.973	114.6	0.762			78.5	3.17	39.8	0.00			504	
515	6.06	6.01	34.298	26.996	112.5	0.779			80.7	3.20	40.2	0.00			519	201

RV DAVID STARR JORDAN CALCOFI CRUISE 9904 STATION 83 60

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT	TYPE
33 34.8 N	120 45.3 W	11/04/99	2242 UTC	1362 m	280 18 kn	270 04 07	1	1013.4 mb	14.0 C	9.5 C	15m	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	12.07	12.07	33.590	25.481	249.0	0.000	6.24	102.4	8.9	0.80	7.6	0.24	3.66	0.58	0	
2	12.07	12.07	33.590 D	25.481	249.0	0.005	6.24	102.4	8.9	0.80	7.6	0.24	3.66 A	0.58 A	2	220
10 ISL	11.81	11.81	33.618	25.552	242.5	0.025	6.39	104.3	9.3	0.83	8.0	0.26	4.21	0.66	10	
11	11.76	11.76	33.624	25.566	241.2	0.027	6.40	104.3	9.4	0.83	8.1	0.26	4.30	0.67	11	219
20	11.52	11.52	33.671	25.647	233.7	0.048	6.08	98.6	11.7	0.97	10.5	0.28	4.51	0.74	20	218
30 ISL	11.25	11.25	33.710	25.727	226.3	0.071	5.62	90.6	14.5	1.17	13.2	0.32	1.80	0.92	30	
31	11.23	11.23	33.713	25.733	225.8	0.074	5.58	90.0	14.8	1.19	13.4	0.32	1.51	0.93	31	217
41	11.06	11.05	33.731	25.778	221.8	0.096	5.25	84.3	16.8	1.29	14.8	0.31	1.09	0.58	41	216
50 ISL	10.94	10.93	33.752	25.816	218.4	0.116	5.07	81.2	18.3	1.37	15.9	0.32	0.70	0.44	50	
51	10.93	10.92	33.754	25.819	218.1	0.118	5.06	81.1	18.4	1.38	16.0	0.32	0.66	0.44	51	215
60	10.86	10.85	33.764	25.840	216.3	0.138	4.98	79.7	19.3	1.43	16.5	0.34	0.46	0.54	60	214
71	10.84	10.83	33.770	25.848	215.8	0.161	4.98	79.6	19.6	1.43	16.7	0.34	0.53	0.55	71	213
75 ISL	10.79	10.78	33.774	25.860	214.7	0.170	4.89	78.1	20.0	1.46	17.1	0.33	0.52	0.52	75	
85	10.57	10.56	33.786 D	25.908	210.4	0.191	4.46	70.9	21.4	1.56	18.8	0.26	0.50	0.43	85	212
100 ISL	10.01	10.00	33.814	26.026	199.4	0.222	3.28	51.5	24.9	1.76	22.5	0.05	0.20	0.32	101	
101	9.97	9.96	33.817 D	26.036	198.5	0.224	3.20	50.2	25.1	1.77	22.7	0.04	0.18	0.31	102	211
120	9.46	9.45	33.891	26.178	185.3	0.260	2.80	43.5	28.8	1.92	25.0	0.03	0.07	0.29	121	210
125 ISL	9.38	9.37	33.905	26.202	183.1	0.270	2.74	42.5	29.6	1.95	25.4	0.03	0.06	0.26	126	
140	9.17	9.15	33.942	26.265	177.4	0.297	2.60	40.1	31.6	2.02	26.4	0.03	0.04 A	0.17 A	141	209
150 ISL	9.02	9.00	33.967	26.309	173.4	0.314	2.51	38.6	33.0	2.06	27.0	0.03	0.04	0.16	151	
169	8.75	8.73	34.011	26.386	166.4	0.346	2.34	35.8	35.7	2.15	28.1	0.02	0.03	0.13	170	208
199	8.35	8.33	34.071	26.495	156.5	0.395	2.06	31.2	40.4	2.31	29.8	0.02	0.03	0.12	200	207
200 ISL	8.34	8.32	34.073	26.498	156.2	0.396	2.05	31.1	40.6	2.32	29.9	0.02			201	
228	8.01	7.99	34.125	26.589	148.0	0.439	1.69	25.4	45.7	2.47	31.7	0.03			229	206
250 ISL	7.72	7.70	34.131	26.636	143.7	0.471	1.58	23.6	48.8	2.54	32.7	0.03			252	
278	7.41	7.38	34.130	26.680	139.9	0.511	1.50	22.3	52.2	2.61	33.6	0.03			280	205
300 ISL	7.29	7.26	34.148	26.712	137.2	0.541	1.34	19.8	54.7	2.68	34.4	0.02			302	
318	7.20	7.17	34.167	26.739	134.8	0.566	1.19	17.6	57.0	2.74	35.0	0.02			320	204
377	6.65	6.62	34.231	26.865	123.4	0.642	0.69	10.1	67.8	2.99	37.6	0.02			380	203
400 ISL	6.46	6.42	34.237	26.895	120.8	0.670	0.61	8.9	70.8	3.04	38.3	0.02			403	
435	6.20	6.16	34.239	26.931	117.6	0.712	0.55	7.9	74.9	3.08	39.3	0.02			438	202
500 ISL	5.75	5.71	34.247	26.994	112.1	0.786	0.43	6.1	82.3	3.17	40.8	0.01			504	
516	5.64	5.60	34.250	27.010	110.7	0.804	0.40	5.7	84.1	3.19	41.2	0.01			520	201

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

RV DAVID STARR JORDAN CALCOFI CRUISE 9904 STATION 83 70

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT	TYPE
33 13.7 N	121 25.8 W	11/04/99	1802 UTC	3797 m	300 25 kn	270 05 06	6	1012.3 mb	10.2 C	9.8 C	14m	8/8	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	12.54	12.54	33.154	25.053	289.7	0.000	6.16	101.8	3.4	0.40	1.1	0.06	0.74	0.16	0	
2 A	12.54	12.54	33.154	25.053	289.7	0.006	6.16	101.8	3.4	0.40	1.1	0.06	0.74	0.16	2	222
10 A	12.54	12.54	33.153	25.053	290.0	0.029	6.17	101.9	3.4	0.40	1.1	0.06	0.61	0.14	10	221
20 ISL	12.51	12.51	33.168	25.071	288.6	0.058	6.13	101.2	3.6	0.42	1.4	0.08	0.63	0.16	20	
21 A	12.51	12.51	33.169	25.071	288.5	0.061	6.13	101.2	3.6	0.42	1.4	0.08	0.63	0.16	21	220
30 ISL	12.26	12.26	33.313	25.231	273.5	0.086	5.96	98.0	5.3	0.60	4.0	0.18	0.57	0.17	30	
31 A	12.23	12.23	33.331	25.251	271.7	0.089	5.94	97.6	5.5	0.62	4.3	0.19	0.56	0.17	31	219
41 A	12.12	12.11	33.441	25.357	261.8	0.115	5.92	97.1	6.4	0.70	5.6	0.21	0.59	0.21	41	218
48	12.12	12.11	33.480	25.388	259.1	0.134	5.97	98.0	6.7	0.73	5.9	0.21	0.70	0.25	48	217
50 ISL	12.10	12.09	33.494	25.402	257.7	0.139	5.98	98.1	6.7	0.74	6.1	0.22	0.84	0.25	50	
57 A	12.03	12.02	33.538	25.450	253.4	0.157	6.00	98.3	6.8	0.77	6.6	0.24	1.37	0.28	57	216
65	12.02	12.01	33.566	25.474	251.4	0.177	6.05	99.1	6.7	0.78	6.8	0.26	1.57	0.41	65	215
74	12.02	12.01	33.576	25.482	250.8	0.200	6.05	99.1	6.7	0.78	6.8	0.26	1.81	0.40	74	214
75 ISL	12.02	12.01	33.577	25.483	250.8	0.202	6.05	99.1	6.7	0.78	6.8	0.26	1.79	0.40	75	
85	11.97	11.96	33.588	25.501	249.3	0.227	5.94	97.2	7.6	0.83	7.4	0.27	1.25	0.41	85	213
95	11.86	11.85	33.604	25.534	246.4	0.252	5.73	93.6	9.0	0.91	8.6	0.28	0.44	0.19	95	212
100 ISL	11.79	11.78	33.600	25.544	245.5	0.264	5.69	92.8	9.3	0.94	8.9	0.28	0.40	0.18	101	
109	11.67	11.66	33.617	25.580	242.3	0.286	5.51	89.6	10.4	1.02	10.0	0.28	0.32	0.17	110	211
125	10.51	10.50	33.613	25.785	223.0	0.323	4.33	68.7	16.9	1.36	16.3	0.13	0.14	0.12	126	210
144	9.22	9.20	33.845	26.182	185.4	0.362	2.92	45.1	28.7	1.91	25.0	0.02	0.04	0.09	145	209
150 ISL	9.07	9.05	33.892	26.242	179.7	0.373	3.03	46.6	28.6	1.89	24.5	0.02	0.04	0.08	151	
169	8.84	8.82	33.983	26.350	169.8	0.406	3.74	57.3	28.3	1.68	23.1	0.02	0.02	0.05	170	208
200	8.19	8.17	34.009	26.471	158.7	0.457	3.09	46.6	35.2	1.96	26.7	0.01	0.01	0.04	201	207
231	7.88	7.86	34.035	26.537	152.8	0.505	2.60	39.0	40.7	2.18	29.3	0.02			232	206
250 ISL	7.70	7.68	34.050	26.576	149.4	0.534	2.40	35.8	43.5	2.29	30.3	0.02			251	
267	7.53	7.50	34.061	26.609	146.5	0.559	2.24	33.3	45.9	2.37	31.0	0.02			269	205
300 ISL	7.13	7.10	34.078	26.679	140.2	0.607	1.89	27.9	51.4	2.52	33.0	0.02			302	
318	6.90	6.87	34.083	26.714	136.9	0.632	1.71	25.1	54.7	2.60	34.2	0.02			320	204
378	6.09	6.06	34.080	26.819	127.3	0.711	1.26	18.1	67.1	2.84	37.8	0.01			380	203
400 ISL	5.95	5.92	34.101	26.853	124.2	0.739	1.07	15.3	71.0	2.92	38.7	0.01			403	
439	5.77	5.73	34.147	26.912	119.0	0.786	0.77	11.0	77.5	3.05	40.1	0.01			442	202
500 ISL	5.34	5.30	34.196	27.003	110.7	0.856	0.49	6.9	87.0	3.19	41.7	0.01			503	
514	5.24	5.20	34.208	27.025	108.8	0.871	0.42	5.9	89.2	3.22	42.1	0.01			518	201

A) PRIMARY PRODUCTIVITY SAMPLES WERE TAKEN FROM THESE LEVELS.

RV DAVID STARR JORDAN CALCOFI CRUISE 9904 STATION 83 80

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT TYPE
32 55.1 N	122 8.0 W	11/04/99	1043 UTC	4186 m	230 20 kn			1013.2 mb	13.0 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	12.43	12.43	33.053	24.996	295.1	0.000	6.25	103.0	2.9	0.37	0.5	0.03	0.51	0.13	0	
2		12.43	12.43	33.053	24.996	295.2	0.006	6.25	103.0	2.9	0.37	0.5	0.03	0.51	0.13	2	220
10	ISL	12.43	12.43	33.054	24.997	295.3	0.030	6.24	102.8	2.8	0.36	0.5	0.03	0.50	0.09	10	
11		12.43	12.43	33.054	24.997	295.3	0.032	6.24	102.8	2.8	0.36	0.5	0.03	0.50	0.08	11	219
20		12.43	12.43	33.114	25.044	291.1	0.059	6.27	103.3	2.9	0.39	0.7	0.04	0.56	0.12	20	218
30		12.47	12.47	33.134	25.052	290.6	0.088	6.26	103.3	2.9	0.39	0.8	0.05	0.58	0.12	30	217
41		12.26	12.25	33.373	25.278	269.4	0.119	5.87	96.5	5.5	0.64	4.5	0.21	0.59	0.20	41	216
50		11.99	11.98	33.394	25.346	263.1	0.143	5.67	92.7	7.0	0.76	6.2	0.27	0.38	0.17	50	215
59		11.27	11.26	33.383	25.470	251.5	0.166	5.13	82.6	11.2	1.02	10.8	0.10	0.22	0.11	59	214
71		10.80	10.79	33.440	25.598	239.5	0.195	4.57	72.9	14.5	1.22	14.2	0.03	0.12	0.09	71	213
75	ISL	10.58	10.57	33.469	25.659	233.8	0.205	4.39	69.7	15.8	1.30	15.5	0.03	0.10	0.09	75	
85		10.02	10.01	33.556	25.823	218.3	0.227	4.01	62.9	18.9	1.47	18.4	0.02	0.06	0.10	85	212
100	ISL	9.50	9.49	33.699	26.021	199.8	0.259	3.85	59.8	21.8	1.57	20.4	0.02	0.05	0.06	101	
101		9.48	9.47	33.708	26.031	198.8	0.261	3.84	59.6	22.0	1.58	20.5	0.02	0.05	0.06	102	211
120		9.15	9.14	33.836	26.185	184.5	0.297	3.33	51.3	27.0	1.80	23.7	0.02	0.03	0.05	121	210
125	ISL	9.10	9.09	33.863	26.214	181.8	0.306	3.15	48.5	28.4	1.87	24.6	0.02	0.03	0.05	126	
140		8.95	8.93	33.925	26.287	175.2	0.333	2.74	42.1	31.8	2.03	26.6	0.01	0.05	0.05	141	209
150	ISL	8.72	8.70	33.944	26.338	170.5	0.350	2.88	44.0	32.6	2.01	26.5	0.01	0.05	0.05	151	
168		8.28	8.26	33.964	26.421	162.8	0.380	3.24	49.0	33.7	1.93	26.3	0.01	0.03	0.04	169	208
199		7.85	7.83	34.008	26.520	153.9	0.429	2.84	42.5	39.3	2.12	28.7	0.01	0.01	0.05	200	207
200	ISL	7.84	7.82	34.008	26.521	153.7	0.431	2.83	42.4	39.5	2.13	28.8	0.01			201	
230		7.41	7.39	34.014	26.588	147.7	0.476	2.57	38.1	44.4	2.28	30.6	0.01			231	206
250	ISL	7.20	7.18	34.029	26.630	144.0	0.505	2.32	34.2	47.7	2.38	31.8	0.01			251	
271		6.99	6.96	34.044	26.671	140.4	0.535	2.08	30.5	51.2	2.47	33.0	0.01			273	205
300	ISL	6.60	6.57	34.041	26.721	135.8	0.575	1.94	28.2	56.2	2.57	34.6	0.01			302	
318		6.36	6.33	34.039	26.751	133.0	0.600	1.86	26.9	59.4	2.63	35.5	0.01			320	204
376		5.88	5.85	34.079	26.844	124.7	0.674	1.21	17.3	70.0	2.88	38.5	0.01			378	203
400	ISL	5.74	5.71	34.103	26.881	121.4	0.704	1.03	14.7	73.7	2.96	39.5	0.01			403	
439		5.55	5.51	34.142	26.935	116.7	0.750	0.81	11.5	79.3	3.07	40.7	0.01			442	202
500	ISL	5.25	5.21	34.181	27.002	110.8	0.820	0.59	8.3	87.1	3.20	42.0	0.01			503	
506		5.22	5.18	34.185	27.009	110.2	0.826	0.57	8.0	87.9	3.21	42.1	0.01			510	201

RV DAVID STARR JORDAN CALCOFI CRUISE 9904 STATION 83 90

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT TYPE
32 34.6 N	122 48.7 W	11/04/99	0503 UTC	4246 m	260 14 kn			1019.3 mb	12.8 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	12.39	12.39	33.432	25.298	266.4	0.000	6.23	102.8	5.2	0.56	3.3	0.17	0.95	0.19	0	
2		12.39	12.39	33.432	25.298	266.5	0.005	6.23	102.8	5.2	0.56	3.3	0.17	0.95	0.19	2	220
10	ISL	12.39	12.39	33.432	25.298	266.7	0.027	6.22	102.6	5.1	0.56	3.3	0.18	0.84	0.18	10	
11		12.39	12.39	33.432	25.298	266.7	0.029	6.22	102.6	5.1	0.56	3.3	0.18	0.83	0.18	11	219
20		12.36	12.36	33.430	25.302	266.5	0.053	6.20	102.2	5.0	0.55	3.3	0.18	0.93	0.22	20	218
30		12.34	12.34	33.449	25.321	265.0	0.080	6.17	101.7	5.1	0.58	3.6	0.19	0.89	0.22	30	217
40		12.27	12.26	33.466	25.348	262.7	0.106	6.10	100.4	5.6	0.65	4.5	0.21	0.73	0.30	40	216
50		12.19	12.18	33.488	25.381	259.8	0.132	6.02	98.9	5.9	0.70	5.1	0.24	0.62	0.27	50	215
60		12.07	12.06	33.523	25.431	255.3	0.158	5.81	95.3	6.9	0.79	6.6	0.41	0.56	0.30	60	214
70		12.04	12.03	33.548	25.456	253.2	0.184	5.86	96.0	7.0	0.80	6.5	0.32	0.42	0.21	70	213
75	ISL	11.99	11.98	33.550	25.467	252.2	0.196	5.77	94.4	7.5	0.83	7.1	0.33	0.35	0.18	75	
85		11.89	11.88	33.554	25.489	250.4	0.221	5.59	91.3	8.5	0.88	8.4	0.34	0.24	0.13	85	212
100		11.89	11.88	33.596	25.522	247.6	0.259	5.66	92.5	8.5	0.91	8.4	0.26	0.24	0.12	101	211
120		9.98	9.97	33.646	25.901	211.7	0.305	3.86	60.5	19.9	1.51	19.2	0.03	0.05	0.07	121	210
125	ISL	9.69	9.68	33.689	25.983	204.0	0.315	3.83	59.7	21.4	1.56	20.3	0.03	0.04	0.06	126	
139		9.15	9.13	33.818	26.171	186.2	0.342	3.75	57.8	24.8	1.66	22.1	0.02	0.02	0.05	140	209
150	ISL	8.96	8.94	33.884	26.253	178.6	0.362	3.34	51.3	28.3	1.83	24.3	0.02	0.02	0.05	151	
169		8.78	8.76	33.961	26.342	170.5	0.396	2.57	39.3	34.0	2.11	27.8	0.01	0.02	0.06	170	208
199		8.28	8.26	34.036	26.478	158.0	0.445	2.21	33.4	39.9	2.29	30.1	0.00	0.01	0.05	200	207
200	ISL	8.27	8.25	34.037	26.480	157.8	0.446	2.21	33.4	40.0	2.29	30.1	0.00			201	
229		7.91	7.89	34.047	26.542	152.3	0.491	2.18	32.7	42.9	2.35	31.0	0.00			230	206
250	ISL	7.63	7.61	34.058	26.592	147.9	0.523	2.04	30.4	46.2	2.43	32.0	0.00			251	
269		7.39	7.36	34.069	26.635	144.0	0.551	1.87	27.7	49.5	2.51	33.1	0.00			271	205
300	ISL	7.10	7.07	34.091	26.693	138.8	0.594	1.58	23.3	54.4	2.64	34.7	0.00			302	
318		6.95	6.92	34.102	26.723	136.2	0.619	1.42	20.8	57.1	2.71	35.6	0.00			320	204
377		6.43	6.40	34.115	26.803	129.1	0.697	1.13	16.4	65.2	2.87	37.7	0.00			379	203
400	ISL	6.28	6.24	34.131	26.835	126.3	0.727	0.99	14.3	68.5	2.94	38.4	0.00			403	
438		6.00	5.96	34.157 D	26.891	121.2	0.774	0.76	10.9	74.5	3.05	39.7	0.00			441	202
500	ISL	5.29	5.25	34.167	26.986	112.3	0.846	0.56	7.9	86.8	3.17	42.2	0.00			503	
514		5.13	5.09	34.170	27.007	110.3	0.862	0.52	7.3	89.6	3.20	42.8	0.00			518	201

RV DAVID STARR JORDAN CALCOFI CRUISE 9904 STATION 83 100

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT	TYPE
32 14.9 N	123 29.6 W	10/04/99	2319 UTC	4154 m	320 12 kn	330 07 07	2	1021.9 mb	12.9 C	10.0 C	20m	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	12.75	12.75	32.969	24.869	307.2	0.000	6.18	102.4	2.6	0.32	0.1	0.00	0.37	0.08	0	
2		12.75	12.75	32.969	24.869	307.3	0.006	6.18	102.4	2.6	0.32	0.1	0.00	0.37	0.08	2	220
10	ISL	12.70	12.70	32.969	24.879	306.5	0.031	6.19	102.5	2.6	0.32	0.1	0.00	0.36	0.08	10	
16		12.65	12.65	32.968	24.888	305.8	0.049	6.20	102.6	2.6	0.32	0.1	0.00	0.35	0.09	16	219
20	ISL	12.63	12.63	32.967	24.892	305.6	0.061	6.20	102.5	2.6	0.32	0.1	0.00	0.36	0.09	20	
30		12.61	12.61	32.965	24.894	305.6	0.092	6.19	102.3	2.6	0.32	0.1	0.00	0.39	0.10	30	218
45		12.58	12.57	32.962	24.898	305.6	0.138	6.19	102.2	2.5	0.33	0.1	0.00	0.44	0.11	45	217
50	ISL	12.56	12.55	32.959	24.900	305.6	0.153	6.18	102.0	2.5	0.33	0.1	0.00	0.44	0.13	50	
54		12.55	12.54	32.957 D	24.900	305.7	0.165	6.18	102.0	2.5	0.33	0.1	0.00	0.44	0.14	54	216
64		12.15	12.14	32.894	24.928	303.2	0.196	6.20	101.4	2.5	0.37	0.4	0.03	0.47	0.17	64	215
74		11.99	11.98	32.870	24.939	302.3	0.226	6.21	101.2	2.5	0.39	0.5	0.04	0.36	0.16	74	214
75	ISL	11.99	11.98	32.871	24.940	302.3	0.229	6.20	101.1	2.5	0.39	0.5	0.04	0.35	0.16	75	
84		12.00	11.99	32.900	24.961	300.5	0.256	6.15	100.3	2.7	0.41	0.9	0.07	0.25	0.12	84	213
95		12.43	12.42	33.122	25.052	292.2	0.289	5.85	96.4	3.6	0.48	2.2	0.12	0.19	0.11	95	212
100	ISL	12.40	12.39	33.169	25.094	288.3	0.303	5.72	94.2	4.0	0.51	2.8	0.14	0.17	0.11	100	
109		12.36	12.35	33.267	25.178	280.6	0.329	5.50	90.6	5.2	0.60	4.3	0.16	0.15	0.12	109	211
125		11.15	11.13	33.241	25.382	261.3	0.372	5.23	83.9	9.8	0.94	9.5	0.07	0.08	0.07	126	210
143		10.45	10.43	33.567	25.760	225.7	0.416	4.14	65.5	16.4	1.35	16.4	0.01	0.03	0.04	144	209
150	ISL	10.22	10.20	33.644	25.859	216.4	0.431	4.04	63.7	18.1	1.43	17.9	0.01	0.02	0.03	151	
169		9.64	9.62	33.779	26.062	197.4	0.471	3.78	58.9	21.7	1.57	20.4	0.01	0.01	0.02	170	208
199		8.83	8.81	33.907	26.293	175.8	0.527	3.70	56.6	27.4	1.73	23.1	0.00	0.01	0.03	200	207
200	ISL	8.81	8.79	33.910	26.298	175.3	0.529	3.70	56.6	27.5	1.73	23.2	0.00			201	
230		8.36	8.34	33.969	26.414	164.7	0.580	3.55	53.8	31.8	1.83	24.9	0.00			231	206
250	ISL	8.02	7.99	33.981	26.475	159.2	0.612	3.38	50.8	35.2	1.92	26.4	0.00			251	
269		7.72	7.69	33.989	26.525	154.6	0.642	3.13	46.7	38.8	2.04	28.0	0.00			271	205
300	ISL	7.46	7.43	34.034	26.598	148.0	0.689	2.42	35.9	45.0	2.31	30.9	0.00			302	
319		7.33	7.30	34.062	26.639	144.4	0.716	1.97	29.2	49.0	2.48	32.6	0.00			321	204
378		6.58	6.55	34.096	26.768	132.5	0.798	1.37	19.9	61.2	2.76	36.3	0.00			380	203
400	ISL	6.42	6.38	34.116	26.805	129.2	0.827	1.16	16.8	64.9	2.85	37.3	0.00			402	
438		6.20	6.16	34.151	26.861	124.2	0.875	0.84	12.1	70.8	2.98	38.8	0.00			441	202
500	ISL	5.80	5.76	34.196	26.948	116.5	0.950	0.56	8.0	79.6	3.15	40.5	0.00			503	
514		5.71	5.67	34.206	26.967	114.8	0.966	0.50	7.1	81.6	3.19	40.9	0.00			517	201

RV DAVID STARR JORDAN CALCOFI CRUISE 9904 STATION 83 110

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT	TYPE
31 54.9 N	124 10.7 W	10/04/99	1805 UTC	4201 m	010 16 kn	310 05 09	2	1025.5 mb	12.5 C	9.1 C	24m	8/8	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	14.42	14.42	33.467	24.915	302.8	0.000	5.88	101.2	2.8	0.25	0.0	0.00	0.23	0.05	0	
2	A	14.42	14.42	33.467	24.915	302.9	0.006	5.88	101.2	2.8	0.25	0.0	0.00	0.23	0.05	2	221
10	ISL	14.42	14.42	33.466	24.915	303.2	0.030	5.88	101.2	2.8	0.25	0.0	0.00	0.22	0.06	10	
17	A	14.42	14.42	33.465	24.914	303.4	0.052	5.88	101.2	2.7	0.25	0.0	0.00	0.22	0.06	17	220
20	ISL	14.42	14.42	33.464	24.914	303.6	0.061	5.87	101.0	2.7	0.25	0.0	0.00	0.22	0.06	20	
26		14.41	14.41	33.462	24.914	303.7	0.079	5.86	100.8	2.6	0.24	0.0	0.00	0.23	0.05	26	219
30	ISL	14.41	14.41	33.462	24.914	303.8	0.091	5.86	100.8	2.6	0.24	0.0	0.00	0.23	0.05	30	
37	A	14.42	14.41	33.464	24.914	304.0	0.112	5.87	101.0	2.6	0.25	0.0	0.00	0.23	0.05	37	218
50	ISL	14.42	14.41	33.466	24.916	304.3	0.152	5.87	101.0	2.6	0.25	0.0	0.00	0.23	0.05	50	
53	A	14.42	14.41	33.466	24.916	304.3	0.161	5.87	101.0	2.6	0.25	0.0	0.00	0.23	0.05	53	217
68	A	14.43	14.42	33.464	24.913	305.1	0.207	5.88	101.2	2.6	0.25	0.0	0.00	0.21	0.06	68	216
75	ISL	14.44	14.43	33.473	24.918	304.8	0.228	5.87	101.1	2.6	0.24	0.0	0.00	0.23	0.05	75	
78		14.45	14.44	33.477	24.919	304.8	0.237	5.86	100.9	2.6	0.24	0.0	0.00	0.24	0.05	78	215
88		14.47	14.46	33.481	24.918	305.2	0.268	5.87	101.1	2.4	0.25	0.0	0.00	0.25	0.05	88	214
100	A	14.52	14.51	33.493	24.917	305.6	0.304	5.85	100.9	2.4	0.25	0.0	0.00	0.26	0.06	100	213
105		14.80	14.78	33.731	25.041	294.1	0.319	5.51	95.7	3.2	0.31	1.0	0.08	0.29	0.18	105	212
115		13.45	13.43	33.561	25.192	279.7	0.348	5.34	90.1	4.6	0.49	3.2	0.05	0.23	0.19	116	211
125		12.56	12.54	33.602	25.400	260.0	0.375	5.04	83.5	6.9	0.67	6.3	0.00	0.11	0.09	126	210
140		11.43	11.41	33.652	25.652	236.2	0.412	4.59	74.3	11.2	0.99	11.4	0.00	0.05	0.04	141	209
150	ISL	10.85	10.83	33.668	25.769	225.2	0.435	4.32	69.0	14.1	1.18	14.3	0.00	0.04	0.04	151	
162		10.30	10.28	33.690	25.882	214.5	0.462	4.04	63.8	17.3	1.37	17.3	0.01	0.03	0.03	163	208
194		9.47	9.45	33.847	26.144	190.1	0.526	3.57	55.4	24.0	1.67	21.8	0.00	0.01	0.01	195	207
200	ISL	9.36	9.34	33.875	26.183	186.4	0.538	3.60	55.7	24.6	1.68	22.0	0.00			201	
229		8.90	8.88	33.980	26.339	172.0	0.590	3.73	57.2	27.4	1.69	22.6	0.00			230	206
250	ISL	8.55	8.52	34.003	26.412	165.4	0.625	3.33	50.7	31.8	1.87	25.0	0.00			251	
270		8.24	8.21	34.008	26.463	160.7	0.658	2.87	43.4	36.3	2.06	27.5	0.00			271	205
300	ISL	7.84	7.81	34.025	26.536	154.1	0.705	2.62	39.2	40.5	2.19	29.3	0.00			302	
317		7.63	7.60	34.034	26.574	150.7	0.731	2.52	37.6	42.8	2.25	30.1	0.00			319	204
381		6.75	6.71	34.063	26.719	137.3	0.823	1.79	26.1	55.7	2.60	34.4	0.00			383	203
400	ISL	6.57	6.53	34.073	26.751	134.4	0.849	1.60	23.3	59.1	2.69	35.5	0.00			402	
440		6.24	6.20	34.094	26.811	129.0	0.901	1.24	17.9	66.0	2.85	37.5	0.00			443	202
500	ISL	5.73	5.69	34.124	26.899	121.0	0.976	0.88	12.5	76.1	3.02	39.8	0.00			503	
514		5.61	5.57	34.132	26.921	119.0	0.993	0.79	11.2	78.4	3.06	40.3	0.00			517	201

A) PRIMARY PRODUCTIVITY SAMPLES WERE TAKEN FROM THESE LEVELS.

RV DAVID STARR JORDAN CALCOFI CRUISE 9904 STATION 87 33

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT	TYPE
33 53.4 N	118 29.5 W	08/04/99	0300 UTC	56 m	280	11 kn	230 1 5	1	1022.4 mb	13.0 C	9.8 C	5m	1/8	AS

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	13.18	13.18	33.602	25.275	268.6	0.000	7.01	117.7	2.2	0.21	0.4	0.04	9.08	1.13	0	
2		13.18	13.18	33.602	25.275	268.7	0.005	7.01	117.7	2.2	0.21	0.4	0.04	9.08	1.13	2	207
5		13.18	13.18	33.602	25.275	268.8	0.013	7.01	117.7	2.1	0.21	0.3	0.04	9.48	0.79	5	206
10	ISL	13.12	13.12	33.607	25.291	267.4	0.027	7.00	117.4	2.2	0.23	0.6	0.05	9.52	1.03	10	
11		13.11	13.11	33.608	25.294	267.1	0.030	7.00	117.4	2.2	0.23	0.6	0.05	9.53	1.13	11	205
20	ISL	12.37	12.37	33.642	25.465	251.0	0.053	5.90	97.4	6.2	0.59	6.0	0.20	15.45	1.36	20	
21		12.27	12.27	33.647	25.488	248.9	0.055	5.75	94.8	6.9	0.64	6.8	0.22	15.92	1.39	21	204
30		11.76	11.76	33.676	25.607	237.8	0.077	4.81	78.4	13.2	1.12	12.1	0.38	8.59	1.01	30	203
41		10.81	10.81	33.755	25.841	215.7	0.102	3.33	53.2	20.6	1.64	19.6	0.35	2.86	0.72	41	202
50		10.54	10.53	33.789	25.915	208.9	0.121	3.02	48.0	23.1	1.78	21.2	0.28	1.84	1.36	50	201

RV DAVID STARR JORDAN CALCOFI CRUISE 9904 STATION 87 35

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT	TYPE
33 49.5 N	118 37.6 W	08/04/99	0421 UTC	634 m	290	10 kn			1024.1 mb	13.5 C	11.0 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	13.56	13.56	33.571	25.174	278.2	0.000	6.78	114.7	0.7	0.17	0.0	0.00	1.67	0.23	0	
2		13.56	13.56	33.571	25.174	278.3	0.006	6.78	114.7	0.7	0.17	0.0	0.00	1.67	0.23	2	220
10	ISL	13.33	13.33	33.592	25.237	272.5	0.028	6.91	116.4	0.8	0.18	0.1	0.00	2.44	0.46	10	
11		13.28	13.28	33.596	25.250	271.3	0.030	6.93	116.6	0.8	0.18	0.1	0.00	2.54	0.49	11	219
20		12.55	12.55	33.614	25.409	256.4	0.054	5.41	89.7	6.3	0.67	5.9	0.13	9.30	1.96	20	218
30		12.03	12.03	33.647	25.534	244.7	0.079	4.64	76.1	11.6	1.05	10.7	0.21	3.53	1.39	30	217
40		11.59	11.58	33.686	25.647	234.3	0.103	4.57	74.2	14.1	1.18	13.0	0.28	4.83	0.94	40	216
50		10.95	10.94	33.714	25.785	221.3	0.126	3.69	59.1	17.8	1.44	17.5	0.15	2.28	0.74	50	215
60		10.21	10.20	33.792	25.975	203.4	0.147	3.31	52.2	22.2	1.66	20.7	0.04	0.46	0.35	60	214
71		9.78	9.77	33.874	26.111	190.7	0.169	3.00	46.9	25.6	1.82	23.1	0.02	0.16	0.26	71	213
75	ISL	9.72	9.71	33.892	26.135	188.4	0.176	2.92	45.6	26.3	1.86	23.6	0.02	0.17	0.27	75	
85		9.64	9.63	33.928	26.177	184.7	0.195	2.73	42.6	27.6	1.93	24.6	0.02	0.19	0.30	85	212
99		9.53	9.52	33.982	26.238	179.2	0.220	2.46	38.3	29.5	2.04	25.6	0.03	0.13	0.25	100	211
100	ISL	9.52	9.51	33.986	26.242	178.8	0.222	2.44	38.0	29.7	2.05	25.7	0.03	0.13	0.25	101	
120		9.33	9.32	34.056	26.328	171.0	0.257	2.08	32.2	33.4	2.21	27.6	0.01	0.17	0.23	121	210
125	ISL	9.26	9.25	34.070	26.351	169.0	0.266	2.01	31.1	34.2	2.24	28.0	0.01	0.16	0.21	126	
140		9.03	9.01	34.105	26.415	163.1	0.291	1.86	28.6	36.3	2.31	28.9	0.01	0.11	0.17	141	209
150	ISL	8.93	8.91	34.120	26.443	160.7	0.307	1.79	27.5	37.4	2.34	29.3	0.01	0.09	0.17	151	
170		8.76	8.74	34.143	26.488	156.7	0.339	1.69	25.9	39.4	2.40	30.0	0.01	0.07	0.17	171	208
200		8.44	8.42	34.181	26.568	149.6	0.385	1.48	22.5	43.6	2.51	31.3	0.00	0.06	0.13	201	207
229		8.19	8.17	34.203	26.623	144.8	0.427	1.31	19.8	46.9	2.60	32.2	0.00			230	206
250	ISL	8.06	8.03	34.212	26.650	142.6	0.457	1.23	18.5	48.6	2.64	32.7	0.00			252	
269		7.95	7.92	34.218	26.671	140.9	0.484	1.16	17.4	50.1	2.68	33.1	0.00			271	205
300	ISL	7.69	7.66	34.233	26.722	136.5	0.527	0.99	14.8	53.8	2.77	34.1	0.00			302	
318		7.54	7.51	34.242	26.750	134.0	0.552	0.90	13.4	55.9	2.82	34.7	0.00			320	204
379		7.22	7.18	34.255	26.807	129.5	0.632	0.73	10.8	60.3	2.91	36.0	0.00			382	203
400	ISL	7.03	6.99	34.264	26.840	126.5	0.659	0.64	9.4	63.2	2.97	36.8	0.00			403	
438		6.67	6.63	34.283	26.904	120.7	0.706	0.48	7.0	68.8	3.07	38.2	0.00			441	202
500	ISL	6.36	6.31	34.312	26.969	115.2	0.779	0.35	5.1	74.4	3.16	39.4	0.00			504	
515		6.28	6.23	34.319	26.985	113.9	0.796	0.32	4.6	75.8	3.18	39.7	0.00			519	201

RV DAVID STARR JORDAN CALCOFI CRUISE 9904 STATION 87 40

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT	TYPE
33 39.6 N	118 58.4 W	08/04/99	0826 UTC	789 m	300	12 kn			1025.8 mb	12.1 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	12.82	12.82	33.640	25.375	259.0	0.000	5.89	98.2	7.4	0.66	5.5	0.22	1.78	0.34	0	
2		12.82	12.82	33.640	25.376	259.1	0.005	5.89	98.2	7.4	0.66	5.5	0.22	1.78	0.34	2	220
10		11.99	11.99	33.705	25.586	239.3	0.025	6.03	98.8	9.1	0.79	7.4	0.19	3.07	0.55	10	219
20	ISL	11.68	11.68	33.725	25.660	232.5	0.049	5.63	91.7	11.5	0.95	9.7	0.18	2.55	0.57	20	
21		11.67	11.67	33.725	25.662	232.4	0.051	5.56	90.5	11.8	0.97	10.0	0.18	2.50	0.57	21	218
30		11.21	11.21	33.745	25.762	223.1	0.072	4.61	74.3	15.3	1.23	13.9	0.17	1.88	0.65	30	217
41		10.99	10.99	33.755	25.809	218.8	0.096	4.28	68.7	17.2	1.35	15.8	0.15	1.78	0.71	41	216
50	ISL	10.33	10.32	33.809	25.967	203.9	0.115	3.32	52.5	22.3	1.67	20.8	0.08	0.69	0.52	50	
51		10.26	10.25	33.816	25.985	202.3	0.117	3.22	50.9	22.9	1.70	21.3	0.07	0.57	0.50	51	215
60		10.09	10.08	33.838	26.031	198.1	0.135	3.08	48.5	24.1	1.76	22.0	0.06	0.31	0.40	60	214
70		9.68	9.67	33.917	26.161	185.9	0.154	2.75	42.9	27.6	1.93	24.2	0.02	0.06	0.37	70	213
75	ISL	9.56	9.55	33.942	26.201	182.2	0.163	2.67	41.6	28.7	1.97	24.9	0.02	0.05	0.33	75	
85		9.43	9.42	33.979	26.251	177.6	0.181	2.54	39.4	30.3	2.03	25.8	0.03	0.03	0.24	85	212
100		9.32	9.31	34.041	26.318	171.6	0.207	2.22	34.4	32.8	2.16	27.2	0.02	0.03	0.22	101	211
120		9.10	9.09	34.087	26.390	165.1	0.241	2.03	31.3	35.3	2.26	28.4	0.02	0.04	0.21	121	210
125	ISL	9.06	9.05	34.100	26.406	163.7	0.249	1.96	30.2	36.0	2.29	28.7	0.02	0.04	0.20	126	
140		8.96	8.94	34.129	26.445	160.3	0.274	1.79	27.5	38.0	2.36	29.4	0.02	0.03	0.19	141	209
150	ISL	8.85	8.83	34.129	26.463	158.8	0.290	1.81	27.8	38.6	2.36	29.6	0.02	0.03	0.19	151	
169		8.63	8.61	34.124	26.493	156.2	0.320	1.84	28.1	39.7	2.37	29.9	0.02	0.02	0.19	170	208
199		8.32	8.30	34.161	26.570	149.3	0.365	1.62	24.6	43.5	2.49	31.2	0.02	0.02	0.11	200	207
200	ISL	8.30	8.28	34.161	26.573	149.1	0.367	1.62	24.5	43.6	2.49	31.2	0.02			201	
229		7.86	7.84	34.148	26.629	144.1	0.409	1.59	23.8	47.4	2.55	32.3	0.01			230	206
250	ISL	7.68	7.66	34.166	26.670	140.5	0.439	1.43	21.4	50.2	2.62	33.2	0.01			252	
271		7.56	7.53	34.192	26.708	137.3	0.468	1.22	18.2	53.1	2.71	34.1	0.02			273	205
300	ISL	7.37	7.34	34.223	26.759	132.7	0.508	0.96	14.2	57.3	2.82	35.1	0.01			302	
317		7.26	7.23	34.239	26.788	130.3	0.530	0.83	12.3	59.7	2.88	35.6	0.01			319	204
380		6.73	6.69	34.265	26.881	122.0	0.609	0.58	8.5	68.3	3.04	37.8	0.01			383	203
400	ISL	6.58	6.54	34.275	26.910	119.5	0.634	0.51	7.4	70.8	3.09	38.4	0.01			403	
438		6.33	6.29	34.295	26.958	115.3	0.678	0.41	5.9	75.4	3.16	39.3	0.01			441	202
500	ISL	5.96	5.92	34.323	27.028	109.1	0.748	0.33	4.7	83.3	3.24	39.9	0.01			504	
511		5.89	5.85	34.328	27.041	108.0	0.760	0.31	4.4	84.7	3.25	40.0	0.01			515	201

RV DAVID STARR JORDAN CALCOFI CRUISE 9904 STATION 87 45

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT	TYPE
33 29.7 N	119 18.9 W	08/04/99	1212	UTC	1652 m	350	12 kn			1026.8 mb	12.2 c	10.6 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	12.58	12.58	33.645	25.426	254.2	0.000	5.93	98.4	8.0	0.70	6.0	0.24	1.75	0.41	0	
3		12.58	12.58	33.645	25.426	254.3	0.008	5.93	98.4	8.0	0.70	6.0	0.24	1.75	0.41	3	220
10	ISL	12.58	12.58	33.644	25.426	254.5	0.025	5.89	97.7	8.0	0.70	5.9	0.24	1.77	0.41	10	
16		12.58	12.58	33.643	25.425	254.7	0.041	5.85	97.0	8.0	0.70	5.9	0.24	1.78	0.41	16	219
20	ISL	12.57	12.57	33.648	25.431	254.3	0.051	5.84	96.8	8.0	0.70	6.0	0.23	1.90	0.43	20	
30	ISL	12.55	12.55	33.659	25.444	253.3	0.076	5.83	96.6	8.0	0.70	6.1	0.21	2.19	0.51	30	
31		12.55	12.55	33.66	25.445	253.3	0.079	5.83	96.6	8.0	0.70	6.1	0.21	2.22	0.52	31	218
45		12.44	12.43	33.652	25.460	252.2	0.114	5.97	98.7	7.0	0.68	5.8	0.23	4.34	0.75	45	217
50	ISL	12.37	12.36	33.656	25.477	250.7	0.127	5.75	94.9	8.0	0.74	6.6	0.26	3.46	0.68	50	
56		12.28	12.27	33.66	25.497	248.9	0.142	5.49	90.5	9.3	0.81	7.5	0.29	1.96	0.60	56	216
65		10.16	10.15	33.810	25.997	201.4	0.162	3.19	50.3	23.7	1.71	21.5	0.05	0.18	0.20	65	215
75	ISL	9.82	9.81	33.845	26.082	193.5	0.182	3.09	48.3	25.3	1.80	22.9	0.05	0.13	0.19	75	
76		9.79	9.78	33.848	26.089	192.8	0.184	3.08	48.2	25.5	1.81	23.0	0.05	0.12	0.19	76	214
84		9.67	9.66	33.922	26.167	185.6	0.199	2.72	42.4	28.2	1.95	24.7	0.06	0.10	0.16	84	213
95		9.64	9.63	33.937	26.184	184.2	0.219	2.61	40.7	28.9	1.98	25.1	0.05	0.11	0.19	96	212
100	ISL	9.57	9.56	33.949	26.205	182.3	0.228	2.55	39.7	29.6	2.01	25.5	0.05	0.09	0.18	101	
109		9.41	9.40	33.975	26.252	178.1	0.245	2.43	37.7	31.0	2.06	26.2	0.05	0.05	0.15	110	211
125		9.19	9.18	34.03	26.331	170.9	0.272	2.24	34.6	33.8	2.17	27.4	0.05	0.06	0.13	126	210
144		8.99	8.97	34.073	26.397	164.9	0.304	2.06	31.7	36.5	2.26	28.5	0.04	0.03	0.11	145	209
150	ISL	8.89	8.87	34.080	26.418	163.0	0.314	2.05	31.5	37.2	2.28	28.7	0.03	0.03	0.10	151	
169		8.56	8.54	34.102	26.487	156.7	0.345	2.02	30.8	39.3	2.33	29.5	0.02	0.03	0.08	170	208
198		8.32	8.30	34.16	26.569	149.4	0.389	1.64	24.9	43.9	2.49	31.3	0.02	0.03	0.09	199	207
200	ISL	8.30	8.28	34.163	26.575	148.9	0.392	1.62	24.5	44.2	2.50	31.4	0.02			201	
228		8.01	7.99	34.19	26.640	143.1	0.433	1.34	20.2	48.9	2.63	32.8	0.02			229	206
250	ISL	7.79	7.77	34.207	26.686	139.1	0.464	1.18	17.7	52.1	2.72	33.8	0.02			252	
268		7.61	7.58	34.218	26.721	136.0	0.489	1.08	16.1	54.7	2.78	34.5	0.02			270	205
300	ISL	7.23	7.20	34.229	26.784	130.3	0.531	0.91	13.5	60.2	2.88	35.9	0.02			302	
317		7.04	7.01	34.234	26.814	127.6	0.553	0.84	12.4	63.0	2.93	36.5	0.02			319	204
378		6.69	6.66	34.257	26.880	122.0	0.629	0.63	9.2	69.3	3.05	37.9	0.01			381	203
400	ISL	6.53	6.49	34.270	26.912	119.2	0.656	0.55	8.0	72.4	3.10	38.4	0.01			403	
438		6.25	6.21	34.295	26.969	114.2	0.700	0.43	6.2	77.9	3.18	39.1	0.01			441	202
500	ISL	5.90	5.86	34.330	27.042	107.8	0.769	0.30	4.3	85.8	3.27	39.9	0.01			504	
509		5.85	5.81	34.335	27.052	106.9	0.779	0.28	4.0	87.0	3.28	40.0	0.01			513	201

RV DAVID STARR JORDAN CALCOFI CRUISE 9904 STATION 87 50

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT	TYPE
33 19.5 N	119 39.8 W	08/04/99	1825	UTC	75 m	120	02 kn	280 01 05	5	1026.9 mb	12.1 c	9.9 c	8m	8/8	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	12.23	12.23	33.691	25.529	244.4	0.000	5.92	97.5	10.3	0.77	7.3	0.12	3.70	0.52	0	
1	A	12.23	12.23	33.691	25.529	244.4	0.002	5.92	97.5	10.3	0.77	7.3	0.12	3.70	0.52	1	210
6	A	12.23	12.23	33.694	25.532	244.3	0.015	6.04	99.5	10.3	0.78	7.3	0.13	3.94	0.39	6	209
10	ISL	12.21	12.21	33.693	25.535	244.1	0.024	5.96	98.1	10.3	0.78	7.4	0.13	3.98	0.47	10	
13	A	12.19	12.19	33.691	25.537	244.0	0.032	5.87	96.6	10.3	0.78	7.5	0.12	4.01	0.55	13	208
18	A	12.18	12.18	33.692	25.540	243.9	0.044	5.86	96.4	10.3	0.79	7.5	0.12	3.70	0.54	18	207
20	ISL	12.17	12.17	33.693	25.543	243.6	0.049	5.85	96.2	10.3	0.79	7.6	0.12	3.75	0.53	20	
24	A	12.14	12.14	33.695	25.550	243.1	0.059	5.83	95.8	10.4	0.81	7.9	0.13	3.96	0.51	24	206
30	ISL	12.08	12.08	33.702	25.567	241.6	0.073	5.73	94.1	10.8	0.85	8.4	0.14	4.12	0.66	30	
33	A	12.01	12.01	33.707	25.584	240.0	0.080	5.68	93.1	11.3	0.89	8.9	0.14	4.20	0.73	33	205
43		11.43	11.42	33.740	25.718	227.5	0.104	4.86	78.7	15.1	1.16	12.7	0.16	1.68	0.47	43	204
50		10.67	10.66	33.804	25.904	210.0	0.119	4.07	64.9	20.2	1.45	17.2	0.17	0.66	0.35	50	203
61		10.28	10.27	33.856	26.013	199.9	0.142	3.61	57.1	24.4	1.68	20.4	0.18	0.38	0.26	61	202
71		9.99	9.98	33.883	26.083	193.4	0.161	3.21	50.4	26.7	1.83	22.4	0.15	0.22	0.24	71	201

A) PRIMARY PRODUCTIVITY SAMPLES WERE TAKEN FROM THESE LEVELS.

RV DAVID STARR JORDAN CALCOFI CRUISE 9904 STATION 87 55

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT	TYPE
33 9.5 N	120 0.6 W	08/04/99	2102	UTC	1191 m	230	11 kn	290 2 11	1	1025.8 mb	14.6 c	10.9 c	11m	3/8	AC

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	12.10	12.10	33.612	25.493	247.9	0.000	6.11	100.3	10.1	0.86	8.4	0.20	2.74	0.50	0	
2		12.10	12.10	33.612	25.493	247.9	0.005	6.11	100.3	10.1	0.86	8.4	0.20	2.74	0.50	2	220
10	ISL	11.81	11.81	33.630	25.562	241.6	0.025	5.99	97.7	10.5	0.90	8.9	0.20	3.46	0.72	10	
11		11.76	11.76	33.632	25.572	240.6	0.027	5.96	97.1	10.6	0.90	9.0	0.20	3.51	0.74	11	219
20	ISL	11.48	11.48	33.599	25.599	238.3	0.049	5.47	88.6	12.7	1.06	11.3	0.21	1.58	0.48	20	
21		11.45	11.45	33.598	25.604	237.9	0.051	5.42	87.7	13.0	1.08	11.6	0.21	1.33	0.45	21	218
30	ISL	11.25	11.25	33.700	25.719	227.1	0.072	5.36	86.4	16.2	1.23	13.9	0.27	1.09	0.51	30	
31		11.23	11.23	33.714	25.734	225.7	0.074	5.35	86.3	16.5	1.24	14.1	0.28	1.06	0.52	31	217
41		11.10	11.09	33.774	25.804	219.3	0.096	5.27	84.8	18.4	1.32	15.1	0.28	0.95	0.55	41	216
50	ISL	11.07	11.06	33.788	25.821	217.9	0.116	5.21	83.7	18.5	1.33	15.1	0.26	0.93	0.50	50	
51		11.07	11.06	33.788	25.821	217.9	0.118	5.20	83.6	18.5	1.33	15.1	0.26	0.93	0.49	51	215
61		10.98	10.97	33.782	25.832	217.1	0.140	5.09	81.7	19.2	1.36	15.8	0.28	0.69	0.44	61	214
70		10.90	10.89	33.773	25.840	216.5	0.159	4.92	78.8	19.1	1.39	16.1	0.25	0.63	0.41	70	213
75	ISL	10.68	10.67	33.757	25.866	214.1	0.170	4.60	73.3	19.6	1.45	17.2	0.21	0.51	0.35	75	
86		10.03	10.02	33.752	25.974	204.0	0.193	3.78	59.4	21.9	1.63	20.4	0.12	0.22	0.19	86	212
100		9.18	9.17	33.878	26.213	181.5	0.220	3.09	47.7	27.7	1.87	24.4	0.03	0.02	0.09	101	211
120		8.94	8.93	33.933	26.294	174.1	0.256	2.95	45.3	30.6	1.93	25.9	0.03	0.03	0.09	121	210
125	ISL	8.86	8.85	33.945	26.317	172.1	0.264	2.92	44.7	31.3	1.95	26.2	0.03	0.03	0.09	126	
139		8.65	8.64	33.974	26.372	167.1	0.288	2.85	43.5	32.9	2.02	26.8	0.02	0.02	0.10	140	209
150	ISL	8.54	8.52	33.988	26.400	164.6	0.306	2.85	43.4	33.7	2.04	27.1	0.02	0.01	0.08	151	
170		8.34	8.32	34.005	26.444	160.7	0.339	2.84	43.0	35.3	2.06	27.6	0.02	0.01	0.05	171	208
200		7.79	7.77	34.029	26.545	151.5	0.386	2.67	39.9	40.8	2.19	29.4	0.03	0.03	0.07	201	207
230		7.49	7.47	34.078	26.627	144.1	0.430	2.05	30.5	47.0	2.43	32.0	0.02			231	206
250	ISL	7.60	7.58	34.147	26.666	140.8	0.459	1.55	23.1	50.3	2.60	33.2	0.02			252	
268		7.70	7.67	34.204	26.697	138.3	0.484	1.16	17.3	53.0	2.73	34.0	0.03			270	205
300	ISL	7.31	7.28	34.198	26.748	133.8	0.527	1.10	16.3	57.4	2.82	35.3	0.03			302	
319		7.03	7.00	34.181	26.774	131.4	0.552	1.07	15.7	59.8	2.85	35.9	0.02			321	204
381		6.88	6.84	34.247	26.847	125.4	0.632	0.70	10.3	66.1	2.99	37.3	0.01			384	203
400	ISL	6.72	6.68	34.258	26.878	122.7	0.656	0.62	9.1	68.9	3.03	37.9	0.01			403	
436		6.38	6.34	34.274	26.935	117.4	0.699	0.49	7.1	74.3	3.11	39.1	0.01			439	202
500	ISL	6.00	5.96	34.304	27.008	111.1	0.772	0.36	5.2	80.9	3.21	40.4	0.01			504	
513		5.92	5.88	34.310	27.023	109.8	0.786	0.33	4.7	82.3	3.23	40.7	0.01			517	201

RV DAVID STARR JORDAN CALCOFI CRUISE 9904 STATION 87 60

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT	TYPE
32 59.4 N	120 20.9 W	09/04/99	0103 UTC	718 m	320 20 kn	310 02 04	2	1024.5 mb	11.9 C	9.8 C		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	12.67	12.67	33.399	25.218	274.0	0.000	6.16	102.2	5.3	0.59	3.7	0.12	0.51	0.13	0	
2		12.67	12.67	33.399	25.218	274.1	0.005	6.16	102.2	5.3	0.59	3.7	0.12	0.51	0.13	2	220
10	ISL	12.66	12.66	33.400	25.221	274.0	0.027	6.16	102.2	5.3	0.59	3.8	0.13	0.53	0.15	10	
11		12.66	12.66	33.400	25.221	274.0	0.030	6.16	102.2	5.3	0.59	3.8	0.13	0.54	0.15	11	219
20		12.61	12.61	33.411	25.240	272.5	0.055	6.16	102.1	5.3	0.59	3.9	0.13	0.61	0.16	20	218
30	ISL	12.35	12.35	33.476	25.340	263.2	0.082	6.13	101.1	5.9	0.65	4.8	0.16	0.74	0.25	30	
31		12.32	12.32	33.484	25.352	262.0	0.084	6.13	101.0	6.0	0.66	4.9	0.16	0.75	0.26	31	217
40		12.23	12.22	33.537	25.411	256.7	0.107	6.03	99.2	6.6	0.73	5.7	0.19	0.55	0.23	40	216
49		12.06	12.05	33.589	25.484	250.0	0.130	5.84	95.8	7.9	0.83	7.3	0.21	0.42	0.18	49	215
50	ISL	12.05	12.04	33.591	25.487	249.7	0.133	5.83	95.6	8.0	0.84	7.4	0.21	0.41	0.18	50	
60		11.87	11.86	33.596	25.525	246.3	0.158	5.65	92.3	9.1	0.93	8.6	0.23	0.34	0.19	60	214
70		11.47	11.46	33.594	25.598	239.6	0.182	5.11	82.7	11.6	1.07	11.5	0.17	0.24	0.15	70	213
75	ISL	11.35	11.34	33.606	25.629	236.8	0.194	4.86	78.5	12.6	1.14	12.8	0.13	0.19	0.15	75	
85		11.09	11.08	33.647	25.708	229.4	0.217	4.38	70.4	15.0	1.29	15.3	0.06	0.12	0.15	85	212
100		10.32	10.31	33.745	25.920	209.5	0.250	3.75	59.3	20.8	1.57	19.8	0.06	0.12	0.12	101	211
120		9.81	9.80	33.852	26.090	193.7	0.290	3.58	56.0	25.2	1.73	22.1	0.15	0.21	0.23	121	210
125	ISL	9.70	9.69	33.862	26.116	191.3	0.300	3.53	55.1	25.6	1.75	22.5	0.14	0.19	0.22	126	
139		9.39	9.37	33.880	26.181	185.4	0.326	3.36	52.1	26.6	1.79	23.4	0.09	0.11	0.18	140	209
150	ISL	9.10	9.08	33.914	26.255	178.5	0.346	3.17	48.8	28.7	1.87	24.7	0.06	0.07	0.14	151	
169		8.64	8.62	33.975	26.375	167.4	0.379	2.86	43.6	32.7	2.02	26.8	0.03	0.02	0.09	170	208
199		8.28	8.26	34.016	26.463	159.5	0.428	2.69	40.7	36.5	2.13	28.3	0.03	0.01	0.08	200	207
200	ISL	8.27	8.25	34.018	26.466	159.2	0.430	2.68	40.5	36.7	2.14	28.4	0.03			201	
228		7.88	7.86	34.068	26.563	150.3	0.473	2.23	33.4	42.5	2.32	30.5	0.02			229	206
250	ISL	7.62	7.60	34.097	26.624	144.8	0.506	1.91	28.5	46.9	2.46	32.1	0.02			251	
269		7.42	7.39	34.118	26.669	140.7	0.533	1.65	24.5	50.5	2.58	33.4	0.02			271	205
300	ISL	7.18	7.15	34.156	26.733	135.1	0.576	1.29	19.0	55.8	2.74	35.0	0.02			302	
318		7.07	7.04	34.176	26.764	132.3	0.600	1.11	16.3	58.6	2.81	35.8	0.02			320	204
380		6.68	6.65	34.229	26.860	124.0	0.679	0.72	10.5	66.7	2.99	37.8	0.01			382	203
400	ISL	6.57	6.53	34.245	26.887	121.6	0.704	0.62	9.0	69.1	3.04	38.3	0.01			403	
439		6.37	6.33	34.271	26.934	117.6	0.750	0.48	7.0	73.4	3.12	39.2	0.01			442	202
500	ISL	6.11	6.07	34.292	26.985	113.4	0.821	0.39	5.6	78.2	3.18	40.0	0.01			503	
511		6.06	6.01	34.296	26.995	112.6	0.833	0.37	5.3	79.1	3.19	40.2	0.01			515	201

RV DAVID STARR JORDAN CALCOFI CRUISE 9904 STATION 87 70

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT	TYPE
32 39.7 N	121 2.1 W	09/04/99	0705 UTC	3779 m	320 30 kn			1026.3 mb	11.1 C	7.9 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	12.41	12.41	33.457	25.313	265.0	0.000	6.10	100.7	7.0	0.66	4.9	0.19	0.72	0.19	0	
2		12.41	12.41	33.457	25.313	265.0	0.005	6.10	100.7	7.0	0.66	4.9	0.19	0.72	0.19	2	220
10		12.41	12.41	33.457	25.314	265.2	0.027	6.08	100.4	7.0	0.66	4.9	0.19	0.71	0.19	10	219
20		12.41	12.41	33.455	25.312	265.6	0.053	6.07	100.2	6.9	0.66	4.9	0.19	0.62	0.17	20	218
30		12.41	12.41	33.459	25.316	265.5	0.080	6.07	100.2	7.0	0.66	4.9	0.19	0.67	0.22	30	217
40		12.41	12.40	33.466	25.321	265.2	0.106	6.08	100.4	7.0	0.67	5.0	0.20	0.76	0.25	40	216
50		12.33	12.32	33.501	25.364	261.4	0.132	6.01	99.1	7.3	0.70	5.5	0.23	0.98	0.28	50	215
60		12.26	12.25	33.528	25.399	258.4	0.158	5.92	97.4	7.7	0.75	6.1	0.27	0.61	0.25	60	214
70		12.25	12.24	33.553	25.420	256.6	0.184	5.86	96.5	8.2	0.77	6.5	0.26	0.33	0.16	70	213
75	ISL	12.22	12.21	33.551	25.424	256.3	0.197	5.83	95.9	8.4	0.78	6.6	0.26	0.33	0.16	75	
85		12.16	12.15	33.552	25.437	255.4	0.223	5.72	94.0	8.9	0.81	7.2	0.24	0.33	0.15	85	212
99		11.62	11.61	33.496	25.495	250.1	0.258	5.32	86.4	10.6	0.95	9.6	0.17	0.23	0.16	99	211
100	ISL	11.56	11.55	33.501	25.510	248.7	0.260	5.24	85.0	11.0	0.98	10.0	0.16	0.22	0.16	101	
120		10.40	10.39	33.674	25.851	216.5	0.307	3.73	59.0	19.5	1.51	19.0	0.02	0.07	0.09	121	210
125	ISL	10.14	10.13	33.715	25.928	209.3	0.318	3.60	56.7	21.0	1.58	20.1	0.02	0.05	0.08	126	
139		9.51	9.49	33.822	26.116	191.5	0.346	3.44	53.4	24.6	1.71	22.3	0.01	0.03	0.05	140	209
150	ISL	9.20	9.18	33.887	26.218	182.1	0.366	3.22	49.7	27.5	1.82	24.0	0.01	0.03	0.05	151	
169		8.84	8.82	33.968	26.338	170.9	0.400	2.83	43.3	32.1	2.00	26.4	0.01	0.02	0.06	170	208
199		8.35	8.33	34.039	26.470	158.8	0.449	2.42	36.7	37.9	2.21	28.9	0.01	0.01	0.05	200	207
200	ISL	8.34	8.32	34.040	26.472	158.6	0.451	2.41	36.5	38.0	2.21	29.0	0.01			201	
228		8.03	8.01	34.069	26.542	152.4	0.494	2.16	32.5	41.9	2.33	30.5	0.01			229	206
250	ISL	7.74	7.72	34.093	26.604	146.8	0.527	1.91	28.6	45.9	2.45	31.8	0.01			251	
270		7.49	7.46	34.118	26.659	141.7	0.556	1.66	24.7	49.9	2.56	33.0	0.01			272	205
300	ISL	7.28	7.25	34.176	26.735	135.0	0.598	1.21	17.9	55.8	2.75	34.8	0.01			302	
319		7.17	7.14	34.207	26.775	131.4	0.623	0.97	14.3	59.1	2.85	35.8	0.01			321	204
380		6.74	6.70	34.197	26.827	127.2	0.702	0.87	12.7	64.5	2.92	37.2	0.01			382	203
400	ISL	6.60	6.56	34.210	26.856	124.6	0.727	0.77	11.2	67.1	2.97	37.9	0.01			403	
438		6.36	6.32	34.243	26.914	119.5	0.773	0.56	8.1	72.2	3.08	39.2	0.00			441	202
500	ISL	6.13	6.09	34.290	26.981	113.8	0.846	0.38	5.5	78.0	3.17	40.1	0.00			503	
515		6.08	6.03	34.302	26.997	112.5	0.863	0.34	4.9	79.4	3.19	40.3	0.00			519	201

RV DAVID STARR JORDAN CALCOFI CRUISE 9904 STATION 87 80

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT TYPE
32 19.6 N	121 42.4 W	09/04/99	1259 UTC	4020 m	360 35 kn			1027.5 mb	11.3 C	8.1 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	14.31	14.31	33.404	24.890	305.3	0.000	5.94	102.0	3.7		0.1	0.00	0.31	0.07	0	
3	14.31	14.31	33.404	24.890	305.3	0.009	5.94	102.0	3.7		0.1	0.00	0.31	0.07	3	220
10 ISL	14.31	14.31	33.405	24.891	305.4	0.031	5.94	102.0	3.5		0.1	0.00	0.31	0.08	10	
16	14.31	14.31	33.405	24.891	305.6	0.049	5.94	102.0	3.2	0.31	0.1	0.00	0.30	0.08	16	219
20 ISL	14.31	14.31	33.405	24.891	305.7	0.061	5.93	101.8	3.2	0.30	0.1	0.00	0.30	0.08	20	
30 ISL	14.31	14.31	33.404	24.891	306.1	0.092	5.91	101.4	3.1	0.29	0.1	0.00	0.30	0.07	30	
31	14.31	14.31	33.404	24.891	306.1	0.095	5.91	101.4	3.1	0.29	0.1	0.00	0.30	0.07	31	218
46	14.32	14.31	33.404	24.889	306.7	0.141	5.93	101.8	3.1	0.30	0.1	0.00	0.30	0.07	46	217
50 ISL	14.32	14.31	33.407	24.892	306.6	0.153	5.93	101.8	3.1	0.30	0.1	0.00	0.30	0.08	50	
55	14.32	14.31	33.411	24.895	306.4	0.168	5.92	101.6	3.0	0.29	0.1	0.00	0.30	0.08	55	216
65	14.30	14.29	33.400	24.891	307.1	0.199	5.90	101.2	3.0	0.30	0.1	0.00	0.31	0.07	65	215
74	13.13	13.12	33.148 D	24.935	302.9	0.226	6.01	100.5	3.0	0.35	0.3	0.02	0.41	0.15	74	214
75 ISL	13.07	13.06	33.134	24.936	302.8	0.229	6.02	100.5	3.0	0.35	0.3	0.02	0.41	0.15	75	
86	12.44	12.43	32.978	24.938	302.8	0.263	6.18	101.8	2.9	0.39	0.4	0.03	0.40	0.18	86	213
92	13.02	13.01	33.197	24.995	297.7	0.281	5.93	99.0	3.8	0.47	1.7	0.08	0.42	0.21	92	212
100 ISL	12.79	12.78	33.322	25.138	284.3	0.304	5.54	92.1	5.4	0.59	3.9	0.05	0.33	0.18	100	
109	12.54	12.53	33.494	25.320	267.2	0.329	5.11	84.6	7.4	0.75	6.7	0.02	0.19	0.12	109	211
119	12.09	12.07	33.589	25.480	252.2	0.355	4.72	77.4	9.7	0.93	9.7	0.01	0.11	0.08	120	210
125 ISL	11.69	11.67	33.621	25.580	242.8	0.370	4.49	73.0	11.8	1.07	11.9	0.01	0.08	0.06	126	
146	10.29	10.27	33.711	25.900	212.5	0.417	3.83	60.5	19.6	1.52	18.8	0.01	0.02	0.03	147	209
150 ISL	10.09	10.07	33.735	25.952	207.5	0.426	3.76	59.1	20.7	1.57	19.6	0.01	0.02	0.03	151	
172	9.27	9.25	33.862	26.187	185.4	0.469	3.54	54.7	25.5	1.73	22.6	0.00	0.01	0.02	173	208
195	8.97	8.95	33.964	26.315	173.7	0.510	3.54	54.4	28.5	1.84	23.8	0.01	0.01	0.02	196	207
200 ISL	8.86	8.84	33.976	26.342	171.2	0.519	3.49	53.5	29.5	1.86	24.2	0.01			201	
226	8.23	8.21	34.011	26.467	159.6	0.562	3.17	47.9	35.0	1.98	26.6	0.00			227	206
250 ISL	7.77	7.75	34.014	26.537	153.1	0.600	2.97	44.4	39.4	2.11	28.2	0.00			251	
272	7.42	7.39	34.009	26.583	148.9	0.633	2.77	41.1	43.4	2.24	29.6	0.01			274	205
300 ISL	7.04	7.01	34.023	26.648	143.0	0.674	2.38	35.0	49.0	2.40	31.7	0.01			302	
320	6.81	6.78	34.038	26.691	139.1	0.702	2.08	30.4	53.1	2.52	33.2	0.01			322	204
379	6.33	6.30	34.098	26.802	129.1	0.781	1.29	18.7	64.8	2.91	37.3	0.00			381	203
400 ISL	6.18	6.14	34.109	26.830	126.6	0.808	1.12	16.1	67.9	2.95	38.1	0.00			403	
434	5.96	5.92	34.127	26.873	122.9	0.850	0.92	13.2	72.5	3.00	39.1	0.00			437	202
500 ISL	5.59	5.55	34.194	26.972	114.0	0.928	0.56	8.0	82.4	3.24	41.0	0.00			503	
507	5.55	5.51	34.201	26.982	113.1	0.936	0.52	7.4	83.4	3.27	41.2	0.00			510	201

RV DAVID STARR JORDAN CALCOFI CRUISE 9904 STATION 87 90

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT TYPE
31 59.7 N	122 23.2 W	09/04/99	1913 UTC	4075 m	360 22 kn	340 10 09	1	1031.3 mb	12.8 C	9.0 C	25m	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	13.04	13.04	33.049	24.875	306.7	0.000	6.10	101.8	2.7	0.34	0.0	0.01	0.31	0.10	0	
2 A	13.04	13.04	33.049	24.875	306.8	0.006	6.10	101.8	2.7	0.34	0.0	0.01	0.31	0.10	2	221
10 ISL	13.03	13.03	33.049	24.877	306.8	0.031	6.11	101.9	2.6	0.33	0.0	0.01	0.31	0.09	10	
18 A	13.02	13.02	33.049	24.879	306.8	0.055	6.11	101.9	2.6	0.32	0.0	0.00	0.31	0.09	18	220
20 ISL	13.02	13.02	33.048	24.878	306.9	0.061	6.10	101.7	2.6	0.32	0.0	0.00	0.32	0.09	20	
27	13.01	13.01	33.045	24.878	307.1	0.083	6.08	101.4	2.7	0.32	0.0	0.00	0.33	0.10	27	219
30 ISL	13.02	13.02	33.047	24.878	307.2	0.092	6.08	101.4	2.7	0.33	0.0	0.00	0.32	0.10	30	
36 A	13.03	13.03	33.051	24.879	307.3	0.110	6.09	101.6	2.6	0.35	0.0	0.00	0.31	0.09	36	218
50 ISL	13.02	13.01	33.047	24.878	307.7	0.154	6.09	101.6	2.5	0.33	0.0	0.00	0.17	0.06	50	
54 A	13.01	13.00	33.045	24.879	307.7	0.166	6.09	101.5	2.5	0.33	0.0	0.00	0.14	0.05	54	217
73 A	13.01	13.00	33.046	24.880	308.1	0.224	6.09	101.5	2.6	0.32	0.0	0.00	0.33	0.10	73	216
75 ISL	13.01	13.00	33.046	24.880	308.2	0.231	6.09	101.5	2.6	0.32	0.0	0.00	0.33	0.10	75	
82	13.01	13.00	33.047	24.881	308.3	0.252	6.08	101.4	2.6	0.32	0.0	0.00	0.35	0.10	82	215
91	13.03	13.02	33.058	24.886	308.1	0.280	6.05	100.9	2.6	0.33	0.1	0.01	0.30	0.10	91	214
100 ISL	12.71	12.70	33.125	25.001	297.3	0.307	5.82	96.5	3.2	0.40	1.2	0.05	0.26	0.12	100	
102 A	12.60	12.59	33.148	25.040	293.6	0.313	5.74	94.9	3.5	0.42	1.4	0.06	0.25	0.13	102	213
108	12.19	12.18	33.231	25.183	280.1	0.330	5.43	89.1	5.0	0.59	3.8	0.06	0.25	0.16	108	212
117	11.75	11.74	33.285	25.307	268.4	0.355	5.22	84.9	6.8	0.73	6.1	0.03			118	211
125	10.99	10.97	33.410	25.542	246.1	0.375	4.94	79.1	11.8	1.09	11.5	0.02	0.08	0.07	126	210
137	10.39	10.37	33.465	25.690	232.2	0.404	4.33	68.4	16.5	1.36	16.0	0.02	0.04	0.05	138	209
150 ISL	10.04	10.02	33.597	25.853	216.9	0.433	3.63	57.0	21.4	1.64	20.1	0.02	0.03	0.05	151	
167	9.73	9.71	33.770	26.040	199.5	0.469	3.03	47.3	26.0	1.87	23.6	0.01	0.01	0.05	168	208
195	9.00	8.98	33.855	26.225	182.2	0.522	3.59	55.1	26.5	1.75	23.1	0.01	0.01	0.04	196	207
200 ISL	8.92	8.90	33.874	26.253	179.7	0.531	3.55	54.4	27.2	1.77	23.5	0.01			201	
228	8.60	8.58	33.971	26.379	168.1	0.580	3.19	48.6	32.1	1.95	25.8	0.01			229	206
250 ISL	8.32	8.29	34.002	26.446	162.0	0.616	3.26	49.3	34.2	1.96	26.1	0.01			251	
268	8.08	8.05	34.012	26.490	158.0	0.645	3.32	50.0	35.8	1.96	26.2	0.01			269	205
300 ISL	7.65	7.62	34.019	26.559	151.8	0.695	2.94	43.8	40.7	2.13	28.6	0.00			302	
319	7.37	7.34	34.018	26.598	148.2	0.723	2.65	39.3	44.3	2.26	30.3	0.00			321	204
374	6.44	6.41	34.015	26.722	136.6	0.801	2.11	30.6	56.3	2.55	34.3	0.00			376	203
400 ISL	6.16	6.12	34.036	26.775	131.8	0.836	1.75	25.2	62.1	2.71	36.2	0.00			402	
436	5.86	5.82	34.071	26.841	125.8	0.883	1.28	18.3	69.9	2.92	38.5	0.00			439	202
500 ISL	5.37	5.33	34.116	26.936	117.1	0.960	0.84	11.9	81.2	3.09	40.9	0.00			503	
511	5.29	5.25	34.124	26.952	115.6	0.973	0.76	10.7	83.2	3.12	41.3	0.00			514	201

A) PRIMARY PRODUCTIVITY SAMPLES WERE TAKEN FROM THESE LEVELS.

RV DAVID STARR JORDAN CALCOFI CRUISE 9904 STATION 87 100

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT	TYPE
31 39.5 N	123 3.9 W	10/04/99	0132 UTC	4099 m	030 23 kn	360 09 08	1	1029.0 mb	12.2 C	8.9 C		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	14.53	14.53	33.423	24.858	308.3	0.000	5.89	101.6	2.9	0.27	0.0	0.00	0.18	0.04	0	
2	14.53	14.53	33.423	24.858	308.3	0.006	5.89	101.6	2.9	0.27	0.0	0.00	0.18	0.04	2	220
10 ISL	14.53	14.53	33.423	24.858	308.5	0.031	5.89	101.6	2.9	0.27	0.0	0.00	0.19	0.04	10	
16	14.54	14.54	33.423	24.856	308.9	0.049	5.89	101.6	2.9	0.27	0.0	0.00	0.19	0.04	16	219
20 ISL	14.54	14.54	33.424	24.857	308.9	0.062	5.89	101.6	2.9	0.27	0.0	0.00	0.19	0.04	20	
30 ISL	14.55	14.55	33.427	24.858	309.2	0.093	5.88	101.4	2.8	0.27	0.0	0.00	0.19	0.04	30	
31	14.55	14.55	33.428	24.859	309.2	0.096	5.88	101.4	2.8	0.27	0.0	0.00	0.19	0.04	31	218
45	14.57	14.56	33.436	24.861	309.3	0.139	5.88	101.5	2.8	0.27	0.0	0.00	0.17	0.05	45	217
50 ISL	14.58	14.57	33.443	24.864	309.2	0.154	5.88	101.5	2.8	0.27	0.0	0.00	0.17	0.05	50	
61	14.61	14.60	33.459	24.871	308.9	0.188	5.87	101.4	2.8	0.27	0.0	0.00	0.17	0.05	61	216
75 ISL	14.62	14.61	33.464	24.873	309.1	0.232	5.85	101.1	2.8	0.27	0.0	0.00	0.22	0.07	75	
76	14.62	14.61	33.464	24.873	309.1	0.235	5.85	101.1	2.8	0.27	0.0	0.00	0.22	0.07	76	215
86	14.62	14.61	33.466	24.875	309.3	0.266	5.85	101.1	2.7	0.27	0.1	0.00	0.23	0.05	86	214
95	14.46	14.45	33.465	24.908	306.3	0.293	5.80	99.9	2.9	0.31	0.3	0.01	0.28	0.09	95	213
100 ISL	13.70	13.69	33.457	25.060	291.9	0.308	5.56	94.3	4.3	0.46	2.5	0.03	0.30	0.18	100	
104	13.06	13.05	33.462	25.193	279.2	0.320	5.34	89.3	5.6	0.59	4.4	0.04	0.31	0.25	104	212
116	12.77	12.75	33.553	25.321	267.3	0.353	5.09	84.7	6.8	0.68	6.1	0.03	0.18	0.24	117	211
125	12.32	12.30	33.578	25.428	257.3	0.376	4.84	79.8	8.5	0.82	8.3	0.02	0.16	0.12	126	210
138	11.48	11.46	33.661	25.650	236.4	0.408	4.48	72.6	11.9	1.04	12.1	0.01	0.07	0.06	139	209
150 ISL	10.86	10.84	33.724	25.811	221.2	0.436	4.26	68.1	14.8	1.21	14.8	0.01	0.05	0.05	151	
164	10.27	10.25	33.785	25.961	207.1	0.466	4.07	64.3	18.0	1.37	17.4	0.01	0.02	0.03	165	208
196	9.19	9.17	33.904	26.233	181.5	0.528	3.71	57.2	25.0	1.66	22.0	0.01	0.01	0.02	197	207
200 ISL	9.11	9.09	33.917	26.256	179.4	0.535	3.65	56.2	25.9	1.69	22.5	0.01			201	
231	8.59	8.57	33.994	26.399	166.3	0.589	3.16	48.1	32.5	1.94	25.8	0.01			232	206
250 ISL	8.23	8.20	34.017	26.472	159.6	0.620	2.93	44.3	36.5	2.06	27.5	0.01			251	
269	7.86	7.83	34.026	26.534	153.8	0.649	2.75	41.2	40.3	2.16	29.0	0.01			270	205
300 ISL	7.28	7.25	34.015	26.608	146.9	0.696	2.66	39.3	45.2	2.26	30.5	0.00			302	
317	7.02	6.99	34.012	26.642	143.8	0.721	2.58	37.9	47.8	2.32	31.3	0.00			319	204
374	6.77	6.74	34.104	26.749	134.4	0.800	1.48	21.6	58.4	2.71	35.4	0.00			376	203
400 ISL	6.73	6.69	34.156	26.796	130.4	0.835	1.11	16.2	62.3	2.85	36.6	0.00			402	
440	6.66	6.62	34.231	26.865	124.4	0.885	0.69	10.1	67.5	3.01	37.9	0.01			443	202
500 ISL	6.39	6.34	34.295	26.951	116.9	0.958	0.40	5.8	74.3	3.15	39.3	0.01			503	
512	6.34	6.29	34.308	26.968	115.4	0.972	0.34	4.9	75.6	3.18	39.6	0.01			515	201

RV DAVID STARR JORDAN CALCOFI CRUISE 9904 STATION 87 110

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT	TYPE
31 19.4 N	123 44.4 W	10/04/99	0740 UTC	3894 m	030 23 kn			1028.5 mb	11.5 C	8.0 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	14.27	14.27	33.374	24.875	306.7	0.000	5.94	101.9	3.3	0.28	0.1	0.00	0.27	0.07	0	
2	14.27	14.27	33.374	24.875	306.7	0.006	5.94	101.9	3.3	0.28	0.1	0.00	0.27	0.07	2	220
10 ISL	14.26	14.26	33.371	24.875	306.9	0.031	5.95	102.0	3.2	0.28	0.1	0.00	0.26	0.08	10	
16	14.26	14.26	33.370	24.875	307.2	0.049	5.95	102.0	3.1	0.28	0.1	0.00	0.26	0.08	16	219
20 ISL	14.27	14.27	33.371	24.873	307.4	0.061	5.94	101.9	3.1	0.28	0.1	0.00	0.26	0.07	20	
30	14.28	14.28	33.375	24.875	307.6	0.092	5.92	101.5	3.1	0.28	0.1	0.00	0.26	0.06	30	218
46	14.27	14.26	33.371	24.874	308.1	0.141	5.93	101.7	3.0	0.27	0.1	0.00	0.27	0.07	46	217
50 ISL	14.27	14.26	33.371	24.874	308.2	0.154	5.93	101.7	3.0	0.27	0.1	0.00	0.26	0.07	50	
59	14.27	14.26	33.371	24.875	308.4	0.181	5.92	101.5	3.0	0.27	0.1	0.00	0.25	0.07	59	216
74	14.27	14.26	33.371	24.875	308.8	0.228	5.91	101.3	3.0	0.28	0.0	0.00	0.26	0.06	74	215
75 ISL	14.27	14.26	33.372	24.876	308.8	0.231	5.91	101.3	3.0	0.28	0.0	0.00	0.26	0.06	75	
86	14.26	14.25	33.379	24.884	308.4	0.265	5.93	101.7	3.0	0.29	0.2	0.01	0.29	0.08	86	214
95	13.95	13.94	33.504	25.045	293.2	0.292	5.61	95.6	4.0	0.40	1.8	0.08	0.38	0.29	95	213
100 ISL	13.84	13.83	33.525	25.084	289.6	0.306	5.53	94.1	4.3	0.44	2.3	0.08	0.36	0.29	100	
106	13.71	13.70	33.547	25.128	285.6	0.324	5.45	92.5	4.7	0.47	2.9	0.07	0.33	0.28	106	212
114	13.44	13.42	33.640	25.255	273.7	0.346	5.27	89.0	5.4	0.52	4.0	0.04	0.22	0.19	115	211
125 ISL	13.11	13.09	33.659	25.336	266.2	0.376	5.17	86.7	6.2	0.58	4.9	0.03	0.15	0.20	126	
126	13.06	13.04	33.656	25.344	265.5	0.378	5.16	86.4	6.3	0.59	5.1	0.03	0.15	0.20	127	210
139	11.77	11.75	33.597	25.546	246.3	0.412	4.58	74.6	11.1	0.99	11.3	0.01	0.09	0.07	140	209
150 ISL	11.06	11.04	33.648	25.716	230.3	0.438	4.31	69.2	14.0	1.17	14.4	0.01	0.05	0.05	151	
162	10.49	10.47	33.742	25.890	213.9	0.465	4.13	65.5	16.7	1.30	16.6	0.01	0.02	0.02	163	208
194	9.14	9.12	33.941	26.270	178.0	0.527	3.78	58.3	25.8	1.64	22.2	0.01	0.01	0.02	195	207
200 ISL	9.00	8.98	33.958	26.306	174.7	0.538	3.71	57.0	27.0	1.68	22.9	0.01			201	
228	8.56	8.54	33.995	26.404	165.7	0.585	3.36	51.1	31.8	1.86	25.4	0.00			229	206
250 ISL	8.23	8.20	34.014	26.469	159.8	0.621	3.11	47.0	35.6	2.00	27.0	0.00			251	
268	7.97	7.94	34.023	26.515	155.6	0.650	2.92	43.9	38.7	2.10	28.2	0.00			269	205
300 ISL	7.52	7.49	34.033	26.589	148.9	0.698	2.58	38.4	44.1	2.26	30.3	0.00			302	
318	7.30	7.27	34.043	26.628	145.4	0.725	2.36	34.9	47.3	2.36	31.5	0.00			320	204
378	6.99	6.95	34.158	26.762	133.5	0.809	1.23	18.1	59.3	2.78	35.7	0.00			380	203
400 ISL	6.83	6.79	34.177	26.799	130.2	0.838	1.03	15.1	62.6	2.87	36.7	0.00			402	
438	6.51	6.47	34.192	26.854	125.3	0.886	0.82	11.9	68.0	2.98	38.0	0.00			441	202
500 ISL	5.90	5.86	34.195	26.935	117.9	0.961	0.59	8.5	77.9	3.11	40.2	0.00			503	
516	5.74	5.70	34.197	26.956	115.9	0.980	0.53	7.6	80.5	3.14	40.8	0.00			519	201

RV DAVID STARR JORDAN CALCOFI CRUISE 9904 STATION 90 28

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT	TYPE
33 28.6 N	117 45.9 W	07/04/99	1837 UTC	75 m	270 08 kn	230 1 4	1	1020.1 mb	10.2 C	9.5 C	8m	3/8	CB

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	13.02	13.02	33.598	25.303	265.9	0.000	6.37	106.6	1.0	0.26	0.9	0.05	5.10	1.39	0	
1	A	13.02	13.02	33.598	25.304	265.9	0.003	6.37	106.6	1.0	0.26	0.9	0.05	5.10	1.39	1	210
6	A	12.99	12.99	33.608	25.317	264.7	0.016	6.36	106.4	1.0	0.27	0.9	0.05	5.37	1.13	6	209
10	ISL	12.96	12.96	33.602	25.319	264.7	0.027	6.36	106.3	1.0	0.26	0.9	0.05	5.37	1.57	10	
13	A	12.94	12.94	33.599	25.320	264.6	0.034	6.36	106.3	1.0	0.26	0.9	0.05	5.37	1.90	13	208
18	A	12.94	12.94	33.598	25.320	264.8	0.048	6.31	105.4	1.0	0.28	0.9	0.05	4.96	1.59	18	207
20	ISL	12.94	12.94	33.600	25.321	264.7	0.053	6.31	105.4	1.0	0.28	0.9	0.05	4.99	1.37	20	
24	A	12.93	12.93	33.605	25.327	264.3	0.064	6.29	105.1	1.1	0.30	1.0	0.05	5.23	0.98	24	206
30	ISL	12.75	12.75	33.605	25.363	261.1	0.079	6.12	101.8	1.7	0.37	1.8	0.09	5.98	1.08	30	
34	A	12.57	12.57	33.605	25.398	257.8	0.090	6.00	99.5	2.1	0.41	2.4	0.11	6.17	1.15	34	205
43		12.14	12.13	33.622	25.494	248.9	0.113	4.97	81.7	7.7	0.89	8.0	0.32	3.87	1.35	43	204
50	ISL	11.53	11.52	33.640	25.622	236.8	0.130	4.26	69.1	11.9	1.19	12.3	0.37	1.89	0.90	50	
51		11.44	11.43	33.644	25.642	235.0	0.132	4.16	67.3	12.6	1.23	12.9	0.38	1.65	0.87	51	203
59		10.90	10.89	33.693	25.777	222.2	0.150	3.41	54.6	19.0	1.62	18.3	0.26	0.98	2.04	59	202
70		10.53	10.52	33.754	25.890	211.7	0.174	2.86	45.4	22.7	1.85	21.0	0.31	0.61	1.23	70	201

A) PRIMARY PRODUCTIVITY SAMPLES WERE TAKEN FROM THESE LEVELS.

RV DAVID STARR JORDAN CALCOFI CRUISE 9904 STATION 90 30

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT	TYPE
33 25.7 N	117 54.2 W	07/04/99	1520 UTC	620 m	270 13 kn	270 03 07	6	1017.9 mb	11.7 C	9.8 C	14m	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	13.14	13.14	33.561	25.251	270.9	0.000	6.06	101.7	4.9	0.48	2.3	0.11	0.97	0.31	0	
2		13.14	13.14	33.561	25.251	270.9	0.005	6.06	101.7	4.9	0.48	2.3	0.11	0.97	0.31	2	220
10	ISL	13.14	13.14	33.562	25.252	271.1	0.027	6.06	101.6	5.0	0.48	2.3	0.11	1.04	0.31	10	
11		13.14	13.14	33.562	25.252	271.1	0.030	6.06	101.6	5.0	0.48	2.3	0.11	1.05	0.31	11	219
20		13.14	13.14	33.568	25.257	270.9	0.054	5.99	100.5	5.3	0.50	2.6	0.13	0.96	0.30	20	218
30	ISL	12.52	12.52	33.584	25.391	258.3	0.081	5.53	91.6	7.7	0.71	6.0	0.32	0.88	0.35	30	
31		12.45	12.45	33.586	25.406	256.9	0.083	5.48	90.6	8.0	0.74	6.4	0.34	0.88	0.36	31	217
40		12.05	12.04	33.606	25.499	248.4	0.106	5.12	84.0	10.0	0.93	9.2	0.35	0.93	0.46	40	216
50		11.34	11.33	33.646	25.661	233.1	0.130	4.43	71.6	14.0	1.19	13.9	0.05	0.23	0.20	50	215
60		10.79	10.78	33.693	25.797	220.4	0.153	3.94	62.9	17.5	1.40	17.1	0.03	0.16	0.16	60	214
70		10.57	10.56	33.729	25.864	214.3	0.174	3.72	59.1	19.4	1.49	18.6	0.02	0.09	0.12	70	213
75	ISL	10.37	10.36	33.758	25.921	208.9	0.185	3.55	56.2	21.0	1.57	19.8	0.02	0.07	0.12	75	
85		9.97	9.96	33.823	26.040	197.8	0.205	3.20	50.2	24.2	1.74	22.2	0.02	0.04	0.13	85	212
100		9.67	9.66	33.899	26.150	187.6	0.234	2.90	45.2	26.8	1.87	23.9	0.02	0.03	0.08	101	211
121		9.49	9.48	33.972	26.237	179.8	0.273	2.60	40.4	29.7	2.01	25.6	0.01	0.01	0.05	122	210
125	ISL	9.46	9.45	33.992	26.257	177.9	0.280	2.51	39.0	30.4	2.04	26.0	0.01	0.01	0.05	126	
140		9.31	9.29	34.063	26.338	170.6	0.306	2.19	33.9	33.2	2.17	27.4	0.01	0.01	0.07	141	209
150	ISL	9.14	9.12	34.086	26.383	166.4	0.323	2.10	32.4	34.7	2.23	28.1	0.01	0.01	0.07	151	
170		8.82	8.80	34.109	26.452	160.2	0.356	2.02	31.0	37.3	2.31	29.1	0.01	0.01	0.06	171	208
200		8.62	8.60	34.142	26.510	155.2	0.403	1.81	27.6	40.2	2.39	30.1	0.01	0.01	0.06	201	207
228		8.44	8.42	34.178	26.566	150.4	0.446	1.55	23.6	43.5	2.50	31.3	0.01			229	206
250	ISL	8.26	8.23	34.202	26.612	146.3	0.478	1.38	20.9	46.4	2.59	32.1	0.01			252	
273		8.07	8.04	34.221	26.656	142.5	0.512	1.24	18.7	49.2	2.67	32.9	0.01			275	205
300	ISL	7.87	7.84	34.230	26.693	139.3	0.550	1.12	16.8	51.7	2.72	33.7	0.01			302	
318		7.74	7.71	34.233	26.715	137.5	0.575	1.05	15.7	53.3	2.75	34.2	0.01			320	204
387		7.20	7.16	34.264	26.817	128.7	0.666	0.70	10.3	62.1	2.95	36.6	0.01			390	203
400	ISL	7.05	7.01	34.269	26.842	126.4	0.683	0.64	9.4	64.3	2.99	37.2	0.01			403	
433		6.69	6.65	34.284	26.902	120.8	0.724	0.51	7.4	69.6	3.09	38.5	0.01			436	202
500	ISL	6.32	6.27	34.311	26.973	114.8	0.803	0.36	5.2	75.9	3.17	39.8	0.01			504	
512		6.25	6.20	34.316	26.986	113.6	0.816	0.33	4.8	77.0	3.18	40.0	0.01			516	201

RV DAVID STARR JORDAN CALCOFI CRUISE 9904 STATION 90 35

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT	TYPE
33 15.5 N	118 14.8 W	07/04/99	1123 UTC	241 m	270 15 kn			1015.8 mb	12.7 C	9.8 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	13.26	13.26	33.589	25.249	271.1	0.000	6.26	105.3	2.6	0.31	1.0	0.05	4.31	0.69	0	
2		13.26	13.26	33.589	25.249	271.2	0.005	6.26	105.3	2.6	0.31	1.0	0.05	4.31	0.69	2	216
10	ISL	13.25	13.25	33.585	25.248	271.5	0.027	6.27	105.4	2.6	0.32	1.0	0.05	4.44	0.70	10	
13		13.25	13.25	33.583	25.246	271.7	0.035	6.27	105.4	2.6	0.32	1.0	0.05	4.51	0.70	13	215
20	ISL	13.25	13.25	33.583	25.247	271.9	0.054	6.19	104.1	2.9	0.34	1.2	0.06	4.60	0.80	20	
30		13.24	13.24	33.584	25.250	271.8	0.081	6.08	102.2	3.4	0.38	1.6	0.08	4.72	0.91	30	214
45		12.83	12.82	33.594	25.339	263.7	0.122	5.46	91.0	7.2	0.66	5.1	0.25	1.84	0.67	45	213
50	ISL	12.44	12.43	33.612	25.429	255.3	0.135	5.09	84.2	9.4	0.84	7.8	0.26	1.28	0.57	50	
55		11.98	11.97	33.636	25.535	245.2	0.147	4.65	76.1	11.9	1.04	11.0	0.28	0.86	0.46	55	212
66		10.99	10.98	33.705	25.771	223.0	0.173	3.41	54.7	18.3	1.55	18.8	0.03	0.29	0.24	66	211
75	ISL	10.50	10.49	33.767	25.906	210.4	0.192	3.28	52.1	20.9	1.65	20.4	0.03	0.10	0.17	75	
76		10.46	10.45	33.773	25.917	209.3	0.194	3.27	51.9	21.1	1.65	20.4	0.03	0.09	0.17	76	210
85		10.25	10.24	33.805	25.978	203.6	0.213	3.17	50.1	22.5	1.71	21.4	0.02	0.04	0.13	85	209
95		10.03	10.02	33.841	26.044	197.6	0.233	3.06	48.1	24.0	1.78	22.4	0.02	0.05	0.14	95	208
100	ISL	9.87	9.86	33.865	26.090	193.3	0.243	3.00	47.0	25.1	1.82	23.1	0.02	0.04	0.13	101	
111		9.49	9.48	33.924	26.199	183.1	0.264	2.86	44.4	27.8	1.92	24.6	0.02	0.02	0.11	112	207
125		9.11	9.10	33.994	26.315	172.3	0.288	2.63	40.5	31.4	2.05	26.4	0.01	0.03	0.07	126	206
146		8.88	8.86	34.042	26.390	165.6	0.324	2.38	36.5	34.3	2.16	27.8	0.01	0.03	0.07	147	205
150	ISL	8.86	8.84	34.043	26.394	165.3	0.331	2.38	36.5	34.4	2.17	27.9	0.01	0.03	0.07	151	
171		8.73	8.71	34.051	26.421	163.1	0.365	2.34	35.8	35.6	2.21	28.3	0.02	0.03	0.06	172	204
198		8.17	8.15	34.121	26.561	150.1	0.407	1.88	28.4	42.9	2.42	30.9	0.02	0.02	0.05	199	203
200	ISL	8.16	8.14	34.122	26.564	149.9	0.410	1.86	28.1	43.1	2.43	31.0	0.02			201	
227		8.05	8.03	34.139	26.594	147.5	0.451	1.67	25.1	45.3	2.51	31.9	0.03			228	202
237		7.96	7.94	34.159	26.623	144.9	0.465	1.61	24.2	46.8	2.54	32.2	0.03			238	201

RV DAVID STARR JORDAN CALCOFI CRUISE 9904 STATION 90 37

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT TYPE
33 11.0 N	118 23.1 W	07/04/99	0853 UTC	1178 m	330 09 kn			1016.1 mb	13.5 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	13.57	13.57	33.561	25.164	279.1	0.000	6.10	103.2	2.4	0.36	0.8	0.05	1.84	0.57	0	
1	13.57	13.57	33.561	25.164	279.2	0.003	6.10	103.2	2.4	0.36	0.8	0.05	1.84	0.57	1	220
10 ISL	13.57	13.57	33.560	25.164	279.5	0.028	6.08	102.9	2.4	0.35	0.7	0.05	1.88	0.56	10	
11	13.57	13.57	33.560	25.164	279.5	0.031	6.07	102.7	2.4	0.35	0.7	0.05	1.88	0.56	11	219
20	13.20	13.20	33.581	25.255	271.1	0.055	6.01	100.9	2.5	0.43	1.6	0.08	4.47	1.52	20	218
30	13.05	13.05	33.589	25.291	267.9	0.082	5.91	99.0	3.7	0.49	2.0	0.10	4.96	2.14	30	217
40	12.89	12.88	33.596	25.329	264.6	0.109	5.63	94.0	5.3	0.60	3.5	0.16	4.11	1.67	40	216
50	12.59	12.58	33.607	25.396	258.4	0.135	5.37	89.1	7.2	0.73	5.6	0.21	3.31	1.52	50	215
60	11.73	11.72	33.641	25.586	240.5	0.160	4.37	71.2	12.9	1.13	12.1	0.20	1.24	0.97	60	214
70	10.56	10.55	33.737	25.872	213.5	0.183	3.36	53.4	19.8	1.57	19.3	0.03	0.16	0.27	70	213
75 ISL	10.51	10.50	33.748	25.889	212.0	0.193	3.32	52.7	20.3	1.60	19.8	0.03	0.14	0.26	75	
85	10.40	10.39	33.770	25.925	208.7	0.215	3.24	51.3	21.3	1.66	20.7	0.02	0.09	0.23	85	212
100	10.00	9.99	33.832	26.042	197.9	0.245	3.06	48.1	24.0	1.78	22.5	0.02	0.04	0.16	101	211
119	9.57	9.56	33.900	26.167	186.3	0.282	2.90	45.1	27.0	1.90	24.1	0.01	0.02	0.10	120	210
125 ISL	9.45	9.44	33.917	26.200	183.3	0.293	2.87	44.6	27.9	1.93	24.6	0.01	0.02	0.10	126	
139	9.19	9.17	33.955	26.272	176.7	0.318	2.79	43.1	29.9	1.99	25.7	0.01	0.01	0.10	140	209
150 ISL	9.04	9.02	33.990	26.324	172.0	0.337	2.65	40.8	31.7	2.06	26.7	0.01	0.01	0.09	151	
169	8.79	8.77	34.046	26.407	164.4	0.369	2.36	36.1	35.2	2.19	28.3	0.01	0.02	0.07	170	208
199	8.25	8.23	34.101	26.534	152.8	0.417	1.98	29.9	41.0	2.36	30.5	0.01	0.02	0.07	200	207
200 ISL	8.24	8.22	34.103	26.537	152.5	0.418	1.97	29.8	41.1	2.36	30.6	0.01			201	
229	8.04	8.02	34.142	26.598	147.2	0.461	1.68	25.3	45.2	2.49	32.0	0.01			230	206
250 ISL	7.78	7.76	34.155	26.646	142.8	0.492	1.50	22.5	48.9	2.58	33.2	0.01			252	
270	7.53	7.50	34.166	26.691	138.7	0.520	1.34	19.9	52.3	2.67	34.2	0.01			272	205
300 ISL	7.35	7.32	34.197	26.742	134.4	0.561	1.09	16.2	55.9	2.78	35.2	0.01			302	
319	7.27	7.24	34.216	26.768	132.1	0.586	0.95	14.1	58.0	2.84	35.8	0.01			321	204
379	6.84	6.80	34.245	26.851	125.0	0.663	0.66	9.7	65.5	2.99	37.7	0.01			381	203
400 ISL	6.69	6.65	34.258	26.881	122.3	0.689	0.58	8.5	68.2	3.04	38.4	0.01			403	
437	6.43	6.39	34.279	26.933	117.8	0.734	0.45	6.5	72.8	3.12	39.5	0.00			440	202
500 ISL	6.08	6.04	34.303	26.998	112.2	0.806	0.33	4.7	79.0	3.20	40.8	0.00			503	
514	6.00	5.95	34.309	27.013	110.9	0.822	0.30	4.3	80.4	3.22	41.1	0.00			518	201

RV DAVID STARR JORDAN CALCOFI CRUISE 9904 STATION 90 45

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT TYPE
32 55.1 N	118 56.0 W	07/04/99	0359 UTC	1701 m	210 13 kn			1015.3 mb	11.8 C	9.1 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	13.14	13.14	33.645	25.316	264.7	0.000	6.21	104.2	4.9	0.51	2.8	0.12	1.40	0.30	0	
2	13.14	13.14	33.645	25.316	264.8	0.005	6.21	104.2	4.9	0.51	2.8	0.12	1.40	0.30	2	220
10 ISL	13.13	13.13	33.645	25.318	264.8	0.026	6.21	104.2	4.8	0.52	2.8	0.12	1.55	0.37	10	
11	13.13	13.13	33.645	25.318	264.8	0.029	6.21	104.2	4.8	0.52	2.8	0.12	1.58	0.38	11	219
20 ISL	12.90	12.90	33.651	25.369	260.2	0.053	6.22	103.9	4.4	0.51	2.8	0.12	1.94	1.16	20	
21	12.87	12.87	33.652	25.376	259.6	0.055	6.22	103.8	4.4	0.51	2.8	0.12	1.98	1.23	21	218
30	12.76	12.76	33.653	25.398	257.7	0.079	5.93	98.7	5.4	0.58	3.7	0.13	2.04	0.63	30	217
41	12.38	12.37	33.673	25.488	249.4	0.107	5.34	88.2	9.5	0.81	6.9	0.19	1.41	0.76	41	216
50 ISL	11.05	11.04	33.772	25.812	218.7	0.128	3.91	62.8	19.2	1.40	16.0	0.31	0.59	1.21	50	
51	10.89	10.88	33.785	25.851	215.1	0.130	3.75	60.0	20.3	1.47	17.1	0.32	0.52	1.24	51	215
61	10.16	10.15	33.850	26.028	198.4	0.150	3.06	48.2	25.2	1.76	21.8	0.25	0.60	0.44	61	214
70	9.69	9.68	33.889	26.138	188.1	0.168	2.87	44.8	27.6	1.89	23.9	0.05	0.09	0.19	70	213
75 ISL	9.58	9.57	33.901	26.166	185.6	0.177	2.83	44.1	28.3	1.91	24.4	0.05	0.08	0.18	75	
86	9.45	9.44	33.918	26.200	182.5	0.197	2.78	43.2	29.3	1.94	24.9	0.04	0.05	0.15	86	212
100	9.22	9.21	33.945	26.259	177.2	0.223	2.69	41.6	30.6	2.00	25.8	0.02	0.03	0.13	101	211
120	9.12	9.11	34.030	26.342	169.7	0.257	2.29	35.3	33.5	2.16	27.4	0.02	0.03	0.11	121	210
125 ISL	9.05	9.04	34.043	26.363	167.7	0.266	2.24	34.5	34.3	2.19	27.8	0.02	0.03	0.12	126	
140	8.81	8.80	34.073	26.425	162.1	0.290	2.10	32.2	36.8	2.26	28.9	0.02	0.03	0.15	141	209
150 ISL	8.68	8.66	34.094	26.462	158.8	0.306	1.97	30.1	38.5	2.31	29.6	0.02	0.03	0.14	151	
170	8.48	8.46	34.134	26.524	153.2	0.338	1.72	26.2	41.7	2.42	30.7	0.02	0.03	0.09	171	208
199	8.27	8.25	34.177	26.590	147.4	0.381	1.45	22.0	45.3	2.54	32.0	0.02	0.02	0.07	200	207
200 ISL	8.26	8.24	34.178	26.593	147.2	0.383	1.44	21.8	45.4	2.54	32.0	0.02			201	
229	8.04	8.02	34.196	26.640	143.1	0.425	1.28	19.3	48.6	2.63	33.0	0.01			230	206
250 ISL	7.81	7.79	34.199	26.677	140.0	0.455	1.19	17.8	51.2	2.68	33.8	0.01			252	
269	7.59	7.56	34.201	26.710	137.0	0.481	1.12	16.7	53.7	2.73	34.5	0.01			271	205
300 ISL	7.32	7.29	34.218	26.762	132.4	0.523	0.94	13.9	57.9	2.82	35.7	0.01			302	
319	7.18	7.15	34.229	26.791	129.9	0.548	0.84	12.4	60.4	2.88	36.4	0.01			321	204
377	6.83	6.79	34.246	26.853	124.7	0.621	0.66	9.7	66.2	2.99	37.5	0.01			380	203
400 ISL	6.72	6.68	34.257	26.877	122.7	0.650	0.60	8.8	68.2	3.03	38.0	0.01			403	
438	6.53	6.49	34.276	26.917	119.3	0.696	0.50	7.3	71.4	3.08	38.7	0.01			441	202
500 ISL	6.18	6.14	34.302	26.984	113.6	0.768	0.36	5.2	77.9	3.18	39.9	0.01			504	
516	6.09	6.04	34.309	27.001	112.1	0.786	0.32	4.6	79.6	3.20	40.2	0.01			520	201

RV DAVID STARR JORDAN CALCOFI CRUISE 9904 STATION 90 53

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT	TYPE
32 39.3 N	119 28.8 W	06/04/99	2301 UTC	1317 m	240 07 kn	290 06 15	1	1015.1 mb	14.1 C	10.9 C	18m	3/8	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	12.71	12.71	33.679	25.427	254.1	0.000	5.84	97.2	11.7	0.92	9.0	0.21	0.70	0.12	0	
2		12.71	12.71	33.679	25.427	254.2	0.005	5.84	97.2	11.7	0.92	9.0	0.21	0.70	0.12	2	220
10		12.13	12.13	33.677	25.538	243.9	0.025	5.83	95.8	11.4	0.91	8.9	0.21	1.03	0.22	10	219
20	ISL	12.08	12.08	33.679	25.549	243.0	0.049	5.77	94.7	11.3	0.92	9.0	0.22	1.45	0.42	20	
21		12.07	12.07	33.679	25.551	242.9	0.052	5.76	94.5	11.3	0.92	9.0	0.22	1.48	0.44	21	218
30		12.01	12.01	33.682	25.565	241.8	0.074	5.67	92.9	11.6	0.95	9.4	0.23	1.32	0.50	30	217
40		11.98	11.97	33.681 D	25.570	241.6	0.098	5.67	92.9	11.9	0.96	9.6	0.22	1.04	0.43	40	216
50		11.97	11.96	33.684	25.574	241.4	0.122	5.66	92.7	12.1	0.96	9.8	0.21	1.34	0.47	50	215
60		11.81	11.80	33.701	25.618	237.5	0.146	5.56	90.7	13.2	1.03	10.8	0.20	1.05	0.37	60	214
70		11.75	11.74	33.715	25.640	235.6	0.170	5.49	89.5	13.4	1.07	11.3	0.20	0.92	0.32	70	213
75	ISL	11.48	11.47	33.717	25.692	230.8	0.181	5.18	84.0	14.4	1.16	12.8	0.21	0.70	0.28	75	
85		10.83	10.82	33.726	25.816	219.2	0.204	4.42	70.6	17.1	1.38	16.4	0.24	0.26	0.20	85	212
100		10.17	10.16	33.767	25.963	205.5	0.236	3.66	57.7	21.0	1.60	20.2	0.06	0.07	0.20	101	211
119		9.37	9.36	33.876	26.181	185.0	0.273	3.18	49.3	26.3	1.81	23.7	0.03	0.02	0.13	120	210
125	ISL	9.21	9.20	33.902	26.227	180.7	0.284	3.10	47.9	27.6	1.86	24.4	0.03	0.02	0.13	126	
137		8.97	8.96	33.945	26.299	174.0	0.305	2.97	45.6	29.9	1.95	25.5	0.03	0.01	0.12	138	209
150	ISL	8.73	8.71	33.981	26.365	167.9	0.327	2.78	42.5	32.5	2.04	26.7	0.03	0.01	0.14	151	
168		8.47	8.45	34.018	26.435	161.6	0.357	2.53	38.4	35.7	2.14	28.1	0.02	0.01	0.15	169	208
200	ISL	8.27	8.25	34.061	26.499	156.0	0.408	2.27	34.3	38.9	2.25	29.4	0.02	0.01	0.06	201	
202		8.26	8.24	34.063	26.502	155.8	0.411	2.25	34.0	39.1	2.26	29.5	0.02	0.01	0.05	203	207
231		7.89	7.87	34.106	26.592	147.7	0.455	1.86	27.9	44.7	2.44	31.5	0.01			232	206
250	ISL	7.69	7.67	34.129	26.639	143.4	0.482	1.62	24.2	48.0	2.53	32.6	0.01			252	
267		7.53	7.50	34.148	26.677	140.0	0.506	1.42	21.1	50.8	2.61	33.4	0.01			269	205
300	ISL	7.32	7.29	34.192	26.742	134.3	0.552	1.11	16.4	55.9	2.76	34.9	0.01			302	
316		7.24	7.21	34.210	26.768	132.1	0.573	0.99	14.6	58.1	2.82	35.5	0.01			318	204
377		6.84	6.80	34.234	26.842	125.8	0.652	0.74	10.8	64.5	2.96	37.1	0.01			379	203
400	ISL	6.68	6.64	34.248	26.875	122.9	0.680	0.65	9.5	67.3	3.01	37.7	0.01			403	
435		6.45	6.41	34.269	26.922	118.7	0.723	0.53	7.7	71.5	3.08	38.6	0.01			438	202
500	ISL	6.16	6.12	34.296	26.982	113.8	0.798	0.45	6.5	77.3	3.15	39.7	0.01			503	
513		6.10	6.05	34.301	26.994	112.8	0.813	0.44	6.3	78.5	3.17	39.9	0.01			517	201

RV DAVID STARR JORDAN CALCOFI CRUISE 9904 STATION 90 60

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT	TYPE
32 25.3 N	119 57.3 W	06/04/99	1817 UTC	912 m	230 08 kn	310 01 06	1	1011.1 mb	15.1 C	11.9 C	17m	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	13.09	13.09	33.421	25.153	280.2	0.000	6.10	102.1	4.6	0.46	1.8	0.08	0.63	0.12	0	
2	A	13.09	13.09	33.421	25.153	280.3	0.006	6.10	102.1	4.6	0.46	1.8	0.08	0.63	0.12	2	220
10	ISL	13.00	13.00	33.422	25.172	278.7	0.028	6.10	101.9	4.6	0.46	1.8	0.08	0.68	0.14	10	
11	A	12.99	12.99	33.422	25.173	278.6	0.031	6.10	101.9	4.6	0.46	1.8	0.08	0.69	0.14	11	219
18		12.92	12.92	33.419	25.185	277.6	0.050	6.10	101.8	4.7	0.47	2.0	0.08	0.73	0.14	18	218
20	ISL	12.89	12.89	33.425	25.196	276.7	0.056	6.09	101.5	4.8	0.48	2.1	0.08	0.69	0.14	20	
26	A	12.79	12.79	33.456	25.240	272.7	0.072	6.05	100.7	5.2	0.52	2.7	0.10	0.58	0.14	26	217
30	ISL	12.73	12.73	33.484	25.273	269.6	0.083	6.03	100.2	5.6	0.56	3.3	0.12	0.61	0.16	30	
37	A	12.63	12.63	33.533	25.331	264.3	0.102	6.01	99.7	6.4	0.63	4.4	0.17	0.68	0.19	37	216
48	A	12.44	12.43	33.572	25.398	258.2	0.131	5.99	99.0	7.5	0.73	5.7	0.22	0.51	0.14	48	215
50	ISL	12.39	12.38	33.582	25.415	256.6	0.136	5.99	98.9	7.8	0.75	6.1	0.24	0.52	0.15	50	
58		12.24	12.23	33.617	25.472	251.4	0.156	5.97	98.3	8.8	0.83	7.4	0.30	0.60	0.23	58	214
70	A	12.23	12.22	33.638	25.490	250.0	0.186	5.90	97.1	8.9	0.85	7.7	0.30	0.68	0.29	70	213
75	ISL	12.15	12.14	33.634	25.502	248.9	0.199	5.80	95.3	9.5	0.89	8.3	0.38	0.64	0.32	75	
85		11.98	11.97	33.648	25.546	245.0	0.223	5.59	91.5	10.6	1.05	9.4	0.45	0.56	0.37	85	212
99		10.65	10.64	33.474 D	25.652	235.1	0.257	3.91	62.1	17.6	1.43	17.7	0.03	0.06	0.10	99	211
100	ISL	10.60	10.59	33.482	25.667	233.7	0.259	3.89	61.8	17.9	1.45	17.8	0.03	0.06	0.10	101	
120		10.04	10.03	33.754	25.975	204.7	0.303	3.52	55.3	21.4	1.62	20.7	0.02	0.04	0.06	121	210
125	ISL	9.90	9.89	33.786	26.024	200.2	0.313	3.51	55.0	22.1	1.64	21.1	0.02	0.03	0.06	126	
139		9.55	9.53	33.846	26.129	190.4	0.340	3.49	54.3	23.9	1.69	22.1	0.01	0.02	0.05	140	209
150	ISL	9.32	9.30	33.893	26.203	183.5	0.361	3.45	53.4	25.5	1.73	22.9	0.01	0.01	0.04	151	
167		8.98	8.96	33.954	26.305	174.0	0.391	3.30	50.7	28.5	1.83	24.3	0.01	0.01	0.03	168	208
197		8.36	8.34	34.025	26.457	160.0	0.442	2.68	40.6	36.1	2.13	28.2	0.01	0.01	0.03	198	207
200	ISL	8.30	8.28	34.026	26.467	159.1	0.446	2.69	40.7	36.4	2.13	28.2	0.01			201	
229		7.85	7.83	34.024	26.533	153.2	0.492	2.87	43.0	39.0	2.11	28.6	0.01			230	206
250	ISL	7.64	7.62	34.039	26.576	149.4	0.523	2.57	38.3	42.2	2.23	30.0	0.01			251	
270		7.48	7.45	34.068	26.621	145.3	0.553	2.12	31.5	46.2	2.40	31.8	0.01			272	205
300	ISL	7.26	7.23	34.166	26.730	135.4	0.595	1.33	19.7	54.8	2.70	34.6	0.01			302	
319		7.12	7.09	34.227	26.798	129.3	0.620	0.88	13.0	60.2	2.87	36.2	0.01			321	204
379		6.55	6.52	34.254	26.897	120.4	0.695	0.57	8.3	69.6	3.04	38.4	0.01			381	203
400	ISL	6.39	6.35	34.262	26.924	118.0	0.720	0.50	7.2	72.2	3.09	39.0	0.01			403	
437		6.16	6.12	34.277	26.966	114.4	0.763	0.42	6.1	76.3	3.16	40.0	0.01			440	202
500	ISL	5.88	5.84	34.310	27.028	109.1	0.833	0.31	4.4	82.0	3.23	41.0	0.01			503	
508		5.84	5.80	34.314	27.036	108.3	0.842	0.30	4.3	82.7	3.24	41.1	0.01			512	201

A) PRIMARY PRODUCTIVITY SAMPLES WERE TAKEN FROM THESE LEVELS.

RV DAVID STARR JORDAN CALCOFI CRUISE 9904 STATION 90 70

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT	TYPE
32 5.2 N	120 38.2 W	06/04/99	1219 UTC	3917 m	340 12 kn			1014.2 mb	13.2 C	10.6 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	12.82	12.82	33.100	24.957	298.9	0.000	6.20	103.0	2.9	0.39	0.4	0.03	0.55	0.13	0	
2		12.82	12.82	33.100	24.957	298.9	0.006	6.20	103.0	2.9	0.39	0.4	0.03	0.55	0.13	2	220
10	ISL	12.82	12.82	33.101	24.958	299.0	0.030	6.17	102.5	2.9	0.39	0.4	0.03	0.55	0.13	10	
16		12.81	12.81	33.101	24.960	299.0	0.048	6.15	102.2	2.9	0.39	0.4	0.03	0.55	0.13	16	219
20	ISL	12.81	12.81	33.100	24.960	299.1	0.060	6.15	102.2	2.9	0.39	0.4	0.03	0.54	0.13	20	
30		12.80	12.80	33.098	24.960	299.3	0.090	6.17	102.5	2.8	0.38	0.4	0.03	0.52	0.14	30	218
45		12.79	12.78	33.103	24.967	299.1	0.135	6.18	102.6	2.8	0.39	0.4	0.03	0.52	0.16	45	217
50	ISL	12.79	12.78	33.105	24.968	299.1	0.150	6.15	102.1	2.8	0.39	0.4	0.03	0.51	0.17	50	
54		12.79	12.78	33.106	24.969	299.1	0.162	6.13	101.8	2.9	0.39	0.5	0.04	0.50	0.17	54	216
64		12.81	12.80	33.141	24.993	297.2	0.191	6.11	101.5	3.1	0.42	0.8	0.06	0.40	0.15	64	215
74		12.31	12.30	33.192	25.129	284.4	0.220	5.78	95.0	4.9	0.59	3.6	0.12	0.25	0.14	74	214
75	ISL	12.26	12.25	33.204	25.148	282.6	0.223	5.74	94.3	5.1	0.61	3.9	0.12	0.24	0.14	75	
85		11.86	11.85	33.336	25.326	265.9	0.251	5.36	87.4	7.6	0.81	7.2	0.09	0.15	0.10	85	213
94		11.65	11.64	33.429	25.437	255.5	0.274	5.06	82.2	9.6	0.96	9.7	0.05	0.10	0.09	94	212
100	ISL	11.57	11.56	33.462	25.478	251.8	0.289	4.96	80.4	10.4	1.01	10.6	0.03	0.09	0.08	100	
110		11.42	11.41	33.501	25.536	246.5	0.314	4.80	77.6	11.7	1.09	11.9	0.02	0.08	0.07	111	211
125		10.87	10.85	33.590	25.704	230.7	0.350	4.26	68.1	15.3	1.31	15.7	0.01	0.05	0.06	126	210
145		10.34	10.32	33.677	25.864	215.8	0.395	3.79	59.9	19.1	1.52	19.0	0.01	0.03	0.05	146	209
150	ISL	10.14	10.12	33.713	25.927	210.0	0.405	3.70	58.2	20.3	1.57	19.9	0.01	0.02	0.05	151	
169		9.40	9.38	33.855	26.161	187.9	0.443	3.37	52.2	25.3	1.77	23.0	0.01	0.01	0.04	170	208
198		8.77	8.75	33.979	26.358	169.6	0.495	2.86	43.7	32.0	2.02	26.5	0.00	0.01	0.04	199	207
200	ISL	8.74	8.72	33.983	26.366	168.8	0.498	2.84	43.4	32.3	2.03	26.6	0.00			201	
228		8.45	8.43	34.021	26.441	162.2	0.545	2.67	40.5	35.3	2.12	27.9	0.00			229	206
250	ISL	8.26	8.23	34.047	26.491	157.8	0.580	2.47	37.4	37.9	2.22	29.0	0.00			251	
268		8.07	8.04	34.059	26.529	154.4	0.608	2.33	35.1	40.2	2.30	30.0	0.00			270	205
300	ISL	7.40	7.37	34.038	26.610	146.9	0.656	2.29	33.9	45.4	2.38	31.5	0.00			302	
321		6.97	6.94	34.029	26.662	141.9	0.687	2.26	33.2	49.3	2.44	32.5	0.00			323	204
378		6.66	6.63	34.123	26.779	131.6	0.765	1.29	18.8	60.7	2.79	36.4	0.00			380	203
400	ISL	6.40	6.36	34.122	26.812	128.5	0.793	1.15	16.7	64.8	2.88	37.6	0.00			403	
438		5.94	5.90	34.116	26.867	123.5	0.841	1.02	14.6	71.5	3.01	39.3	0.00			441	202
500	ISL	5.59	5.55	34.184	26.964	114.8	0.915	0.61	8.7	80.6	3.14	41.1	0.00			503	
512		5.52	5.48	34.198	26.984	113.0	0.928	0.53	7.5	82.4	3.17	41.5	0.00			515	201

RV DAVID STARR JORDAN CALCOFI CRUISE 9904 STATION 90 80

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT	TYPE
31 45.2 N	121 19.0 W	06/04/99	0622 UTC	3694 m	240 13 kn			1016.1 mb	13.5 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	12.81	12.81	33.087	24.949	299.6	0.000	6.10	101.3	3.1	0.39	0.5	0.03	0.23	0.06	0	
2		12.81	12.81	33.087	24.949	299.7	0.006	6.10	101.3	3.1	0.39	0.5	0.03	0.23	0.06	2	220
10		12.77	12.77	33.132	24.992	295.8	0.030	6.10	101.3	3.3	0.42	1.0	0.05	0.33	0.09	10	219
20		12.61	12.61	33.143	25.032	292.3	0.059	6.02	99.6	3.6	0.46	1.5	0.08	0.31	0.11	20	218
30	ISL	12.59	12.59	33.183	25.067	289.2	0.088	6.02	99.6	3.9	0.49	1.8	0.10	0.43	0.12	30	
31		12.59	12.59	33.190	25.073	288.7	0.091	6.02	99.6	3.9	0.49	1.8	0.10	0.44	0.12	31	217
40		12.50	12.49	33.303	25.178	278.9	0.117	5.96	98.5	4.9	0.57	3.2	0.16	0.37	0.14	40	216
50		12.41	12.40	33.299	25.192	277.8	0.145	5.91	97.5	5.1	0.59	3.5	0.18	0.31	0.14	50	215
60		12.34	12.33	33.356	25.250	272.5	0.172	5.84	96.2	6.0	0.65	4.5	0.21	0.31	0.16	60	214
70		11.64	11.63	33.320	25.354	262.8	0.199	5.48	88.9	8.1	0.85	7.8	0.12	0.17	0.11	70	213
75	ISL	11.37	11.36	33.347	25.424	256.2	0.212	5.23	84.4	9.8	0.96	9.7	0.09	0.13	0.10	75	
85		10.94	10.93	33.423	25.561	243.4	0.237	4.76	76.1	13.0	1.16	13.0	0.04	0.09	0.09	85	212
99		10.55	10.54	33.474	25.669	233.4	0.270	4.37	69.3	15.4	1.31	15.5	0.03	0.06	0.07	99	211
100	ISL	10.52	10.51	33.482	25.680	232.3	0.272	4.33	68.6	15.7	1.33	15.7	0.03	0.06	0.07	100	
120		9.95	9.94	33.655	25.913	210.6	0.317	3.59	56.3	21.2	1.64	20.6	0.02	0.02	0.06	121	210
125	ISL	9.81	9.80	33.691	25.964	205.8	0.327	3.44	53.7	22.5	1.71	21.6	0.02	0.02	0.06	126	
140		9.40	9.38	33.787	26.107	192.4	0.357	3.07	47.6	26.2	1.87	24.1	0.01	0.01	0.05	141	209
150	ISL	9.18	9.16	33.844	26.187	185.0	0.376	2.96	45.6	28.6	1.96	25.5	0.01	0.01	0.05	151	
170		8.81	8.79	33.932	26.315	173.1	0.412	2.74	41.9	32.1	2.05	27.1	0.01	0.01	0.04	171	208
200		8.34	8.32	33.989	26.432	162.4	0.462	3.40	51.5	32.5	1.89	25.7	0.00	0.00	0.02	201	207
229		8.03	8.01	34.012	26.497	156.6	0.508	2.97	44.7	36.9	2.06	28.0	0.01			230	206
250	ISL	7.80	7.78	34.024	26.541	152.8	0.541	2.74	41.0	39.9	2.16	29.3	0.01			251	
269		7.58	7.55	34.032	26.579	149.4	0.570	2.57	38.3	42.6	2.25	30.3	0.00			271	205
300	ISL	7.17	7.14	34.033	26.638	144.1	0.615	2.35	34.7	47.3	2.38	31.9	0.00			302	
317		6.97	6.94	34.037	26.669	141.3	0.639	2.21	32.4	50.1	2.45	32.8	0.00			319	204
378		6.64	6.61	34.134	26.790	130.5	0.722	1.13	16.5	62.3	2.85	37.2	0.00			380	203
400	ISL	6.30	6.26	34.129	26.831	126.7	0.750	1.00	14.5	67.0	2.92	38.5	0.00			403	
437		5.72	5.68	34.117	26.894	120.6	0.796	0.90	12.8	74.4	3.00	40.3	0.00			440	202
500	ISL	5.38	5.34	34.178	26.984	112.6	0.870	0.56	7.9	84.0	3.16	41.9	0.00			503	
514		5.31	5.27	34.192	27.004	110.8	0.885	0.48	6.8	86.1	3.19	42.3	0.00			517	201

RV DAVID STARR JORDAN CALCOFI CRUISE 9904 STATION 90 90

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT	TYPE
31 25.2 N	121 59.1 W	06/04/99	0004 UTC	3822 m	310 08 kn	340 06 09	1	1017.5 mb	14.1 C	10.9 C	28m	1/8	AC

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	13.52	13.52	33.058	24.786	315.2	0.000	6.04	101.8	2.5	0.32	0.0	0.00	0.19	0.05	0	
2		13.52	13.52	33.058	24.786	315.2	0.006	6.04	101.8	2.5	0.32	0.0	0.00	0.19	0.05	2	220
10	ISL	13.43	13.43	33.056	24.802	313.9	0.031	6.05	101.8	2.5	0.32	0.0	0.00	0.22	0.05	10	
16		13.35	13.35	33.053	24.816	312.7	0.050	6.06	101.8	2.5	0.32	0.0	0.00	0.25	0.06	16	219
20	ISL	13.34	13.34	33.052	24.818	312.7	0.063	6.05	101.6	2.5	0.32	0.0	0.00	0.24	0.06	20	
30		13.32	13.32	33.049 D	24.820	312.8	0.094	6.04	101.4	2.4	0.32	0.0	0.00	0.21	0.07	30	218
45		13.30	13.29	33.044	24.820	313.1	0.141	6.05	101.5	2.4	0.32	0.0	0.00	0.28	0.09	45	217
50	ISL	13.30	13.29	33.044	24.820	313.2	0.157	6.05	101.5	2.4	0.32	0.0	0.00	0.28	0.09	50	
61		13.30	13.29	33.044	24.821	313.5	0.191	6.04	101.3	2.4	0.32	0.0	0.00	0.29	0.09	61	216
75		13.30	13.29	33.049	24.825	313.5	0.235	6.03	101.1	2.3	0.32	0.0	0.00	0.29	0.09	75	215
85		12.80	12.79	33.020	24.901	306.4	0.266	6.02	99.9	2.7	0.37	0.5	0.07	0.34	0.15	85	214
95		12.02	12.01	32.983	25.022	295.0	0.296	5.91	96.5	4.1	0.53	2.6	0.13	0.36	0.21	95	213
100	ISL	12.20	12.19	33.106	25.084	289.3	0.311	5.77	94.6	4.5	0.56	3.3	0.08	0.32	0.21	100	
104		12.45	12.44	33.232	25.134	284.7	0.322	5.63	92.9	4.8	0.57	3.7	0.04	0.28	0.21	104	212
115		12.73	12.71	33.497	25.285	270.7	0.353	5.28	87.7	5.9	0.63	5.2	0.02	0.17	0.13	116	211
124		12.53	12.51	33.509	25.334	266.3	0.377	5.19	85.9	6.5	0.68	6.0	0.02	0.14	0.10	125	210
125	ISL	12.45	12.43	33.510	25.350	264.7	0.380	5.15	85.1	6.8	0.71	6.4	0.02	0.13	0.10	126	
140		11.14	11.12	33.553	25.627	238.4	0.417	4.43	71.2	13.0	1.15	13.3	0.02	0.04	0.04	141	209
150	ISL	10.61	10.59	33.648	25.795	222.6	0.440	4.21	66.9	15.5	1.29	15.8	0.02	0.03	0.02	151	
164		10.10	10.08	33.792	25.995	203.8	0.470	4.07	64.0	18.1	1.40	17.9	0.01	0.01	0.01	165	208
195		9.24	9.22	33.936	26.250	179.9	0.530	3.85	59.5	24.1	1.60	21.5	0.01	0.00	0.01	196	207
200	ISL	9.16	9.14	33.947	26.272	177.9	0.539	3.83	59.1	24.7	1.62	21.8	0.01			201	
229		8.76	8.74	33.980	26.361	169.9	0.589	3.70	56.6	28.0	1.72	23.2	0.01			230	206
250	ISL	8.37	8.34	33.999	26.436	163.0	0.624	3.50	53.0	31.8	1.84	24.9	0.00			251	
269		8.01	7.98	34.012	26.501	157.0	0.654	3.26	49.0	35.7	1.96	26.7	0.00			270	205
300	ISL	7.52	7.49	34.020	26.578	149.9	0.702	2.79	41.5	41.8	2.18	29.5	0.00			302	
317		7.28	7.25	34.022	26.614	146.7	0.727	2.53	37.4	45.1	2.30	30.9	0.00			319	204
377		6.48	6.45	34.034	26.732	135.8	0.812	1.90	27.6	56.8	2.59	34.9	0.00			379	203
400	ISL	6.45	6.41	34.074	26.768	132.7	0.843	1.58	22.9	60.2	2.70	36.0	0.00			402	
439		6.41	6.37	34.140	26.826	127.8	0.894	1.05	15.2	65.7	2.88	37.7	0.00			442	202
500	ISL	6.01	5.97	34.210	26.933	118.2	0.969	0.61	8.8	75.5	3.08	39.9	0.00			503	
515		5.91	5.87	34.228	26.960	115.7	0.986	0.50	7.2	77.9	3.13	40.5	0.00			518	201

RV DAVID STARR JORDAN CALCOFI CRUISE 9904 STATION 90 100

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT	TYPE
31 5.1 N	122 39.6 W	05/04/99	1811 UTC	4014 m	360 10 kn	320 09 06	2	1021.0 mb	13.1 C	9.3 C	27m	8/8	CC

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	33.323	24.844	309.6	0.000	5.93	101.6	2.6	0.29	0.0	0.00	0.23	0.07	0	
2	A	14.23	14.23	33.323	24.844	309.7	0.006	5.93	101.6	2.6	0.29	0.0	0.00	0.23	0.07	2	222
10	ISL	14.23	14.23	33.323	24.844	309.9	0.031	5.93	101.6	2.6	0.29	0.0	0.00	0.23	0.07	10	
19	A	14.22	14.22	33.323	24.847	309.9	0.059	5.92	101.4	2.6	0.29	0.0	0.00	0.23	0.07	19	221
20	ISL	14.22	14.22	33.323	24.847	309.9	0.062	5.92	101.4	2.6	0.29	0.0	0.00	0.23	0.07	20	
30		14.22	14.22	33.323	24.847	310.2	0.093	5.91	101.2	2.6	0.29	0.0	0.00	0.24	0.07	30	220
41	A	14.22	14.21	33.323	24.847	310.5	0.127	5.91	101.2					0.22	0.07	41	219
50		14.22	14.21	33.322	24.847	310.8	0.155	5.90	101.0	2.5	0.29	0.0	0.00	0.23	0.07	50	218
59	A	14.22	14.21	33.323	24.848	311.0	0.183	5.89	100.9	2.6	0.28	0.0	0.00	0.24	0.07	59	217
67		14.23	14.22	33.324	24.847	311.3	0.208	5.91	101.2	2.5	0.30	0.0	0.00	0.23	0.08	67	216
75	ISL	14.23	14.22	33.323	24.846	311.6	0.233	5.90	101.0	2.4	0.29	0.0	0.00	0.23	0.07	75	
78	A	14.23	14.22	33.323	24.846	311.6	0.242	5.90	101.0	2.4	0.29	0.0	0.00	0.23	0.07	78	215
87		14.23	14.22	33.323	24.847	311.9	0.270	5.90	101.0	2.4	0.29	0.0	0.00	0.23	0.08	87	214
99		13.96	13.95	33.374	24.943	303.1	0.307	5.73	97.6	2.9	0.37	0.9	0.08	0.31	0.25	99	213
100	ISL	13.91	13.90	33.365	24.946	302.8	0.310	5.73	97.5	3.0	0.38	1.0	0.08	0.30	0.25	100	
111	A	13.03	13.01	33.283	25.061	292.0	0.343	5.68	94.9	4.0	0.50	2.7	0.02	0.23	0.13	111	212
118		12.07	12.05	33.344	25.293	269.8	0.363	5.28	86.5	7.5	0.80	7.3	0.01	0.09	0.07	119	211
125		11.90	11.88	33.367	25.343	265.2	0.381	5.18	84.5	8.4	0.87	8.4	0.01	0.05	0.04	126	210
140		11.34	11.32	33.505	25.554	245.5	0.420	4.31	69.5	13.6	1.24	14.1	0.01	0.01	0.04	141	209
150	ISL	11.00	10.98	33.596	25.686	233.1	0.444	3.80	60.9	16.9	1.44	17.2	0.01	0.01	0.04	151	
164		10.56	10.54	33.706	25.849	217.7	0.475	3.24	51.5	20.8	1.65	20.6	0.00	0.00	0.03	165	208
194		9.75	9.73	33.825	26.080	196.2	0.537	2.85	44.5	25.9	1.87	23.8	0.00	0.00	0.02	195	207
200	ISL	9.60	9.58	33.849	26.124	192.1	0.549	2.93	45.6	26.3	1.87	23.8	0.00			201	
228		8.97	8.95	33.943	26.299	175.8	0.600	3.39	52.1	27.8	1.86	23.8	0.00			229	206
250	ISL	8.61	8.58	33.982	26.386	167.8	0.638	3.21	48.9	31.0	1.91	25.1	0.00			251	
268		8.38	8.35	34.002	26.438	163.2	0.668	3.06	46.4	34.1	1.98	26.6	0.00			269	205
300	ISL	8.04	8.01	34.043	26.521	155.7	0.719	2.54	38.2	39.5	2.19	29.1	0.00			302	
317		7.89	7.86	34.063	26.559	152.3	0.745	2.24	33.6	42.5	2.32	30.4	0.00			319	204
378		7.30	7.26	34.142 D	26.707	139.0	0.834	1.50	22.2	53.3	2.65	34.0	0.00			380	203
400	ISL	7.17	7.13	34.169	26.746	135.5	0.864	1.27	18.7	56.5	2.75	35.0	0.00			402	
436		6.98	6.94	34.207 D	26.803	130.6	0.912	0.94	13.8	61.4	2.89	36.5	0.00			439	202
500	ISL	6.51	6.46	34.246	26.897	122.1	0.993	0.62	9.0	70.4	3.06	38.6	0.00			503	
515		6.40	6.35	34.255 D	26.919	120.2	1.011	0.54	7.8	72.5	3.10	39.1	0.00			518	201

A) PRIMARY PRODUCTIVITY SAMPLES WERE TAKEN FROM THESE LEVELS.

RV DAVID STARR JORDAN CALCOFI CRUISE 9904 STATION 90 110

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT TYPE
30 45.3 N	123 19.4 W	05/04/99	1007 UTC	4006 m	360 20 kn			1021.1 mb	16.1 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	14.48	14.48	33.444	24.885	305.7	0.000			3.0	0.30	0.0	0.00	0.32	0.09	0	
4	14.48	14.48	33.444	24.885	305.8	0.012	5.98 U	103.0 U	3.0	0.30	0.0	0.00	0.32	0.09	4	220
10 ISL	14.48	14.48	33.445	24.886	305.9	0.031			3.0	0.30	0.0	0.00	0.32	0.09	10	
16	14.48	14.48	33.446	24.887	306.0	0.049	5.89	101.5	3.0	0.30	0.0	0.00	0.32	0.09	16	219
20 ISL	14.48	14.48	33.445	24.886	306.2	0.061	5.90	101.7	3.0	0.30	0.0	0.00	0.33	0.09	20	
29	14.48	14.48	33.443	24.885	306.6	0.089	5.91	101.8	3.0	0.30	0.0	0.00	0.34	0.10	29	218
30 ISL	14.48	14.48	33.443	24.885	306.6	0.092	5.91	101.8	3.0	0.30	0.0	0.00	0.34	0.10	30	
45	14.49	14.48	33.443	24.883	307.2	0.138	5.90	101.7	2.9	0.30	0.0	0.00	0.31	0.09	45	217
50 ISL	14.49	14.48	33.443	24.883	307.3	0.153	5.91	101.8	2.9	0.30	0.0	0.00	0.31	0.09	50	
62	14.49	14.48	33.444	24.885	307.6	0.190	5.92	102.0	2.9	0.30	0.0	0.00	0.33	0.10	62	216
74	14.49	14.48	33.443	24.884	308.0	0.227	5.90	101.7	2.9	0.30	0.0	0.00	0.33	0.09	74	215
75 ISL	14.49	14.48	33.443	24.884	308.0	0.230	5.90	101.7	2.9	0.30	0.0	0.00	0.33	0.09	75	
88	14.49	14.48	33.443	24.885	308.4	0.270	5.94	102.3	2.8	0.30	0.0	0.00	0.33	0.09	88	214
95	14.38	14.37	33.438	24.904	306.7	0.292	5.86	100.7	3.0	0.32	0.2	0.01	0.34	0.12	95	213
100 ISL	13.53	13.52	33.437	25.079	290.0	0.307	5.50	92.9	4.6	0.53	3.1	0.03	0.39	0.26	100	
102	13.15	13.14	33.442	25.160	282.4	0.312	5.33	89.3	5.4	0.62	4.4	0.04	0.41	0.32	102	212
115	12.22	12.20	33.542	25.418	257.9	0.347	4.83	79.4	8.6	0.88	8.8	0.02	0.16	0.15	116	211
124	11.79	11.77	33.637	25.573	243.3	0.370	4.56	74.4	10.8	1.00	11.2	0.01	0.07	0.05	125	210
125 ISL	11.77	11.75	33.641	25.580	242.7	0.372	4.55	74.2	10.9	1.01	11.3	0.01	0.07	0.05	126	
142	11.39	11.37	33.664	25.668	234.6	0.413	4.43	71.6	12.3	1.10	12.7	0.01	0.05	0.04	143	209
150 ISL	11.01	10.99	33.693	25.760	226.1	0.431	4.32	69.3	13.9	1.19	14.3	0.01	0.04	0.03	151	
165	10.25	10.23	33.758	25.943	208.8	0.464	4.09	64.5	17.5	1.37	17.5	0.01	0.01	0.02	166	208
196	9.38	9.36	33.862	26.170	187.6	0.526	3.62	56.1	24.0	1.68	22.0	0.00	0.00	0.02	197	207
200 ISL	9.28	9.26	33.877	26.198	185.0	0.533	3.55	54.9	24.9	1.72	22.5	0.00			201	
225	8.73	8.71	33.959	26.349	170.9	0.577	3.19	48.7	30.5	1.92	25.5	0.01			226	206
250 ISL	8.32	8.29	33.998	26.443	162.3	0.619	3.03	45.9	34.3	2.03	27.1	0.01			251	
272	8.02	7.99	34.014	26.501	157.1	0.654	2.92	43.9	37.4	2.10	28.1	0.00			273	205
300 ISL	7.60	7.57	34.030	26.575	150.3	0.697	2.63	39.2	42.7	2.25	30.0	0.00			302	
318	7.34	7.31	34.037	26.617	146.4	0.724	2.42	35.8	46.3	2.35	31.3	0.00			320	204
373	6.60	6.57	34.048	26.728	136.3	0.802	1.85	26.9	56.7	2.62	35.0	0.00			375	203
400 ISL	6.35	6.31	34.065	26.774	132.1	0.838	1.57	22.7	61.5	2.74	36.6	0.00			402	
438	6.04	6.00	34.094	26.837	126.4	0.887	1.20	17.2	68.4	2.90	38.5	0.00			441	202
500 ISL	5.48	5.44	34.140	26.942	116.6	0.962	0.76	10.8	80.6	3.10	41.1	0.00			503	
517	5.33	5.29	34.154	26.971	113.9	0.982	0.64	9.0	84.0	3.15	41.8	0.00			520	201

RV DAVID STARR JORDAN CALCOFI CRUISE 9904 STATION 90 120

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT TYPE
30 25.2 N	123 59.4 W	05/04/99	0338 UTC	4213 m	010 20 kn			1022.8 mb	12.6 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	15.13	15.13	33.542	24.820	311.9	0.000	5.81	101.5	2.8	0.27	0.1	0.00	0.13	0.04	0	
2	15.13	15.13	33.542	24.821	311.9	0.006	5.81	101.5	2.8	0.27	0.1	0.00	0.13	0.04	2	220
10 ISL	15.13	15.13	33.542	24.821	312.1	0.031	5.81	101.5	2.7	0.26	0.0	0.00	0.14	0.03	10	
15	15.13	15.13	33.542	24.821	312.3	0.047	5.81	101.5	2.7	0.26	0.0	0.00	0.14	0.03	15	219
20 ISL	15.13	15.13	33.542	24.821	312.4	0.062	5.81	101.5	2.7	0.26	0.0	0.00	0.14	0.03	20	
30 ISL	15.13	15.13	33.542	24.822	312.7	0.094	5.80	101.3	2.7	0.26	0.0	0.00	0.13	0.04	30	
31	15.13	15.13	33.542	24.822	312.7	0.097	5.80	101.3	2.7	0.26	0.0	0.00	0.13	0.04	31	218
44	15.13	15.12	33.542 D	24.822	313.1	0.137	5.80	101.3	2.6	0.26	0.0	0.00	0.13	0.03	44	217
50 ISL	15.13	15.12	33.542	24.822	313.3	0.156	5.80	101.3	2.6	0.26	0.0	0.00	0.13	0.03	50	
61	15.13	15.12	33.543 D	24.823	313.5	0.191	5.80	101.3	2.6	0.26	0.0	0.00	0.13	0.03	61	216
75	15.13	15.12	33.543	24.824	313.9	0.235	5.79	101.1	2.5	0.26	0.0	0.00	0.15	0.04	75	215
84	15.14	15.13	33.542	24.821	314.4	0.263	5.80	101.3	2.5	0.26	0.0	0.00	0.13	0.05	84	214
96	15.13	15.12	33.553	24.832	313.7	0.301	5.79	101.1	2.5	0.26	0.0	0.00	0.18	0.06	96	213
100 ISL	15.14	15.12	33.562	24.837	313.4	0.313	5.78	101.0	2.5	0.26	0.0	0.00	0.19	0.07	100	
103	15.15	15.13	33.568	24.840	313.2	0.323	5.78	101.0	2.5	0.26	0.0	0.00	0.21	0.08	103	212
115	14.73	14.71	33.628	24.977	300.4	0.359	5.60	97.1	2.9	0.32	0.7	0.05	0.39	0.29	115	211
124	13.82	13.80	33.527	25.090	289.7	0.386	5.49	93.3	4.0	0.44	2.4	0.05	0.29	0.25	125	210
125 ISL	13.77	13.75	33.532	25.105	288.4	0.389	5.47	92.9	4.1	0.45	2.5	0.05	0.28	0.24	126	
141	13.31	13.29	33.697	25.326	267.7	0.433	5.16	86.9	5.7	0.57	4.8	0.02	0.14	0.11	142	209
150 ISL	12.75	12.73	33.709	25.447	256.3	0.457	4.97	82.7	7.1	0.69	6.8	0.01	0.10	0.07	151	
170	11.41	11.39	33.703	25.696	232.7	0.506	4.57	73.9	11.2	1.00	11.7	0.00	0.05	0.04	171	208
192	10.43	10.41	33.790	25.938	209.9	0.555	4.21	66.7	16.4	1.30	16.5	0.00	0.01	0.03	193	207
200 ISL	10.05	10.03	33.827	26.032	201.1	0.571	3.96	62.2	19.3	1.45	18.6	0.00			201	
227	8.94	8.92	33.942	26.303	175.4	0.622	3.19	49.0	29.0	1.88	24.9	0.00			228	206
250 ISL	8.40	8.37	33.992	26.426	163.9	0.661	3.20	48.5	33.2	1.94	26.6	0.00			251	
269	8.09	8.06	34.011	26.488	158.3	0.691	3.21	48.3	35.8	1.99	27.1	0.00			270	205
300 ISL	7.62	7.59	34.025	26.568	151.0	0.739	2.82	42.0	41.2	2.19	29.5	0.00			302	
318	7.39	7.36	34.028	26.603	147.8	0.766	2.52	37.3	44.5	2.32	31.0	0.00			320	204
377	6.64	6.61	34.064	26.735	135.7	0.850	1.73	25.2	57.0	2.65	35.5	0.00			379	203
400 ISL	6.40	6.36	34.087	26.785	131.1	0.881	1.43	20.7	62.1	2.78	37.1	0.00			402	
437	6.07	6.03	34.126	26.858	124.4	0.928	1.00	14.4	69.9	2.96	39.2	0.00			440	202
500 ISL	5.68	5.64	34.184	26.953	115.9	1.004	0.62	8.8	79.6	3.13	41.3	0.00			503	
509	5.62	5.58	34.192	26.967	114.6	1.014	0.56	8.0	81.0	3.15	41.6	0.00			512	201

RV DAVID STARR JORDAN CALCOFI CRUISE 9904 STATION 93 26.7

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT	TYPE
32 57.3 N	117 18.2 W	01/04/99	2033 UTC	61 m	340	11 kn	320 04 06	6	1011.4 mb	9.7 C	8.5 C	10m	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	14.06	14.06	33.564	25.066	288.5	0.000	6.13	104.8	3.7	0.33	1.5	0.12			0	
1		14.06	14.06	33.564	25.066	288.5	0.003	6.13	104.8	3.7	0.33	1.5	0.12			1	207
7		14.04	14.04	33.566	25.072	288.2	0.020	6.14	104.9	3.7	0.33	1.5	0.11	2.16	0.57	7	206
10	ISL	14.03	14.03	33.569	25.076	287.8	0.029	6.14	104.9	3.7	0.33	1.5	0.12	2.20	0.57	10	
12		14.03	14.03	33.571	25.078	287.7	0.035	6.14	104.9	3.7	0.33	1.5	0.12	2.22	0.57	12	205
20	ISL	12.61	12.61	33.609	25.393	257.9	0.056	4.97	82.5	9.2	0.86	7.9	0.56	1.39	0.64	20	
21		12.39	12.39	33.617	25.442	253.3	0.059	4.78	79.0	10.1	0.95	9.0	0.62	1.26	0.65	21	204
30	ISL	11.25	11.25	33.683	25.706	228.3	0.081	3.56	57.4	17.4	1.46	17.1	0.57	0.87	0.57	30	
31		11.15	11.15	33.691	25.730	226.0	0.083	3.45	55.5	18.2	1.51	17.9	0.57	0.84	0.56	31	203
40		10.54	10.54	33.776	25.905	209.6	0.103	3.01	47.8	22.7	1.73	21.2	0.21	0.35	0.43	40	202
49		10.20	10.19	33.836	26.010	199.8	0.121	2.87	45.3	25.1	1.84	22.7	0.21	0.15	0.32	49	201

RV DAVID STARR JORDAN CALCOFI CRUISE 9904 STATION 93 28

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT	TYPE
32 54.8 N	117 23.6 W	01/04/99	2315 UTC	648 m	260	10 kn	270 02 07	6	1010.0 mb	10.8 C	8.6 C	15m	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	14.26	14.26	33.526	24.995	295.3	0.000	6.04	103.7	4.7	0.34	0.2	0.01	0.61	0.16	0	
1		14.26	14.26	33.526	24.995	295.3	0.003	6.04	103.7	4.7	0.34	0.2	0.01	0.61	0.16	1	220
10		14.26	14.26	33.523	24.992	295.8	0.030	6.05	103.8	4.6	0.34	0.2	0.01	0.66	0.18	10	219
20		14.03	14.03	33.536	25.051	290.5	0.059	6.05	103.3					0.94	0.26	20	218
30		12.24	12.24	33.601	25.458	251.9	0.086	4.82	79.4	11.6	0.97	10.0	0.36	1.44	0.57	30	217
40		11.39	11.39	33.653	25.658	233.2	0.110	3.86	62.4	16.2	1.37	16.2	0.31	0.83	0.39	40	216
50		10.72	10.71	33.721	25.831	216.9	0.133	3.41	54.4	19.4	1.57	19.6	0.03	0.34	0.26	50	215
59		10.31	10.30	33.780	25.948	205.9	0.152	3.26	51.5	22.1	1.68	21.0	0.02	0.09	0.17	59	214
69		10.10	10.09	33.819	26.015	199.8	0.172	3.20	50.4	23.5	1.74	21.8	0.02	0.04	0.12	69	213
75	ISL	9.95	9.94	33.861	26.073	194.4	0.184	3.05	47.9	25.0	1.82	22.7	0.02	0.02	0.10	75	
85		9.73	9.72	33.931	26.164	185.9	0.203	2.76	43.1	27.7	1.95	24.4	0.01	0.01	0.08	85	212
100		9.55	9.54	33.985	26.237	179.3	0.230	2.51	39.1	30.1	2.06	25.8	0.01	0.01	0.09	101	211
119		9.48	9.47	34.058	26.306	173.2	0.264	2.16	33.6	32.7	2.19	27.2	0.01	0.01	0.07	120	210
125	ISL	9.41	9.40	34.068	26.325	171.5	0.274	2.14	33.2	33.3	2.21	27.5	0.01	0.01	0.07	126	
139		9.22	9.20	34.083	26.368	167.7	0.298	2.09	32.3	34.7	2.25	28.0	0.01	0.01	0.07	140	209
150	ISL	9.06	9.04	34.099	26.406	164.2	0.316	2.07	31.9	36.0	2.29	28.5	0.01	0.01	0.07	151	
170		8.75	8.73	34.124	26.475	158.0	0.348	2.02	30.9	38.6	2.35	29.5	0.01	0.01	0.06	171	208
199		8.27	8.25	34.131	26.554	150.8	0.393	1.89	28.6	42.3	2.42	30.7	0.01	0.01	0.06	200	207
200	ISL	8.26	8.24	34.132	26.557	150.6	0.395	1.89	28.6	42.4	2.42	30.7	0.01			201	
229		7.96	7.94	34.157	26.621	144.9	0.437	1.70	25.6	46.0	2.52	31.9	0.01			230	206
250	ISL	7.80	7.78	34.174	26.659	141.7	0.468	1.41	21.1	49.1	2.60	32.8	0.01			252	
268		7.70	7.67	34.189	26.685	139.4	0.493	1.17	17.5	51.6	2.67	33.6	0.01			270	205
300	ISL	7.63	7.60	34.221	26.721	136.6	0.537	1.01	15.1	54.3	2.77	34.4	0.01			302	
320		7.59	7.56	34.238	26.740	135.1	0.564	0.96	14.3	55.8	2.82	34.8	0.01			322	204
379		7.14	7.10	34.251	26.815	128.7	0.642	0.74	10.9	61.9	2.95	36.5	0.01			382	203
400	ISL	7.00	6.96	34.263	26.844	126.1	0.669	0.65	9.6	64.2	3.01	37.1	0.01			403	
437		6.78	6.74	34.284	26.891	122.1	0.715	0.51	7.5	68.3	3.11	38.0	0.00			440	202
500	ISL	6.45	6.40	34.301	26.948	117.3	0.790	0.39	5.7	74.0	3.16	39.3	0.01			503	
516		6.36	6.31	34.306	26.964	115.9	0.809	0.36	5.2	75.5	3.17	39.6	0.01			520	201

RV DAVID STARR JORDAN CALCOFI CRUISE 9904 STATION 93 30

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT	TYPE
32 50.7 N	117 31.8 W	02/04/99	0219 UTC	849 m	010	02 kn	300 03 07	8	1008.9 mb	8.4 C	7.0 C		7/8	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	14.16	14.16	33.506	25.000	294.8	0.000	6.07	104.0	4.3	0.34	0.3	0.01	0.46	0.10	0	
2		14.16	14.16	33.506	25.000	294.8	0.006	6.07	104.0	4.3	0.34	0.3	0.01	0.46	0.10	2	220
10	ISL	14.19	14.19	33.515	25.001	295.0	0.029	6.08	104.2	4.1	0.34	0.2	0.01	0.48	0.12	10	
11		14.19	14.19	33.517	25.003	294.8	0.032	6.08	104.2	4.1	0.34	0.2	0.01	0.48	0.12	11	219
20	ISL	14.19	14.19	33.518	25.004	295.0	0.059	6.07	104.0	4.1	0.34	0.3	0.01	0.52	0.13	20	
21		14.19	14.19	33.518	25.004	295.0	0.062	6.07	104.0	4.1	0.34	0.3	0.01	0.53	0.13	21	218
30	ISL	12.91	12.91	33.548	25.287	268.3	0.087	5.56	92.8	7.3	0.63	4.7	0.19	0.88	0.31	30	
31		12.76	12.76	33.553	25.321	265.1	0.090	5.49	91.3	7.7	0.67	5.3	0.21	0.92	0.33	31	217
41		12.31	12.30	33.577	25.427	255.2	0.116	4.90	80.8	9.7	0.91	9.0	0.18	1.18	0.50	41	216
50		11.72	11.71	33.608	25.562	242.5	0.138	4.34	70.7	12.8	1.17	13.0	0.05	0.61	0.30	50	215
60		11.28	11.27	33.663	25.686	231.0	0.162	3.84	62.0	16.0	1.36	16.2	0.03	0.50	0.29	60	214
70		10.66	10.65	33.729	25.848	215.8	0.184	3.46	55.1	19.3	1.55	19.2	0.02	0.21	0.22	70	213
75	ISL	10.41	10.40	33.767	25.921	208.9	0.195	3.32	52.6	20.7	1.63	20.3	0.02	0.18	0.18	75	
84		10.05	10.04	33.834 D	26.035	198.2	0.213									84	212
100		9.76	9.75	33.921	26.152	187.4	0.244	2.78	43.5	27.0	1.92	24.2	0.01	0.01	0.06	101	211
120		9.41	9.40	34.025	26.291	174.6	0.280	2.31	35.9	31.9	2.12	26.7	0.01	0.01	0.06	121	210
125	ISL	9.24	9.23	34.050	26.338	170.2	0.289	2.25	34.8	33.3	2.16	27.3	0.01	0.01	0.06	126	
139		8.81	8.80	34.113	26.456	159.2	0.312	2.12	32.5	36.8	2.27	28.8	0.02	0.01	0.06	140	209
150	ISL	8.80	8.78	34.130	26.471	157.9	0.329	1.89	29.0	38.6	2.36	29.6	0.02	0.01	0.07	151	
170		8.78	8.76	34.161	26.499	155.7	0.361	1.52	23.3	40.7	2.49	30.4	0.36 U	0.01	0.08	171	208
200		8.68	8.66	34.171	26.523	154.0	0.407	1.52	23.2	41.9	2.50	30.7	0.15 U	0.01	0.08	201	207
229		8.41	8.39	34.191	26.581	149.0	0.451	1.44	21.9	44.7	2.55	31.5	0.03			230	206
250	ISL	8.23	8.20	34.193	26.610	146.5	0.482	1.41	21.3	46.1	2.58	32.0	0.03			252	
269		8.06	8.03	34.195	26.637	144.2	0.510	1.39	20.9	47.7	2.61	32.5	0.02			271	205
300	ISL	7.74	7.71	34.230	26.712	137.5	0.554	1.10	16.5	53.0	2.75	34.0	0.01			302	
319		7.55	7.52	34.253	26.758	133.4	0.579	0.91	13.6	56.4	2.84	35.0	0.01			321	204
378		7.21	7.17	34.262	26.814	128.8	0.657	0.70	10.3	61.7	2.95	36.5	0.01			380	203
400	ISL	7.11	7.07	34.267	26.832	127.4	0.685	0.64	9.4	63.2	2.98	36.9	0.01			403	
437		6.94	6.90	34.277	26.863	124.8	0.731	0.56	8.2	65.9	3.03	37.5	0.01			440	202
500	ISL	6.49	6.44	34.296	26.939	118.2	0.808	0.44	6.4	73.2	3.14	39.1	0.01			503	
511		6.41	6.36	34.300	26.953	116.9	0.821	0.42	6.1	74.5	3.16	39.4	0.01			515	201

RV DAVID STARR JORDAN CALCOFI CRUISE 9904 STATION 93 35

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT TYPE
32 40.7 N	117 52.2 W	02/04/99	0642 UTC	626 m	030 04 kn			1010.2 mb	10.3 C	8.0 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	13.89	13.89	33.527	25.072	287.9	0.000	6.16	104.9	5.5	0.37	0.3	0.03	0.66	0.20	0	
2	13.89	13.89	33.527	25.072	287.9	0.006	6.16	104.9	5.5	0.37	0.3	0.03	0.66	0.20	2	220
10 ISL	13.90	13.90	33.527	25.071	288.3	0.029	6.14	104.6	5.3	0.36	0.4	0.02	0.64	0.21	10	
11	13.90	13.90	33.527	25.071	288.4	0.032	6.14	104.6	5.3	0.36	0.4	0.02	0.64	0.21	11	219
20 ISL	13.90	13.90	33.526	25.070	288.7	0.058	6.14	104.6	5.2	0.36	0.3	0.02	0.66	0.21	20	
21	13.90	13.90	33.526	25.070	288.7	0.061	6.14	104.6	5.2	0.36	0.3	0.02	0.66	0.21	21	218
30 ISL	13.89	13.89	33.528	25.074	288.6	0.087	6.14	104.6	5.2	0.37	0.4	0.02	0.63	0.21	30	
31	13.89	13.89	33.528	25.074	288.6	0.089	6.14	104.6	5.2	0.37	0.4	0.02	0.63	0.21	31	217
41	12.94	12.93	33.580	25.307	266.7	0.117	5.46	91.2	8.5	0.69	5.4	0.37	0.90	0.43	41	216
50 ISL	12.10	12.09	33.606	25.489	249.5	0.140	4.66	76.5	11.6	1.01	10.7	0.28	0.94	0.50	50	
51	12.01	12.00	33.609	25.509	247.7	0.143	4.57	74.9	12.0	1.05	11.3	0.27	0.94	0.51	51	215
61	11.31	11.30	33.659	25.677	231.8	0.167	3.93	63.4	15.6	1.33	15.6	0.06	0.44	0.33	61	214
71	10.95	10.94	33.708	25.780	222.2	0.190	3.53	56.6	18.5	1.51	18.4	0.03	0.24	0.22	71	213
75 ISL	10.80	10.79	33.726	25.821	218.4	0.198	3.46	55.3	19.4	1.56	19.0	0.03	0.19	0.19	75	
86	10.43	10.42	33.781	25.929	208.4	0.222	3.29	52.1	21.8	1.67	20.5	0.02	0.09	0.14	86	212
100 ISL	10.06	10.05	33.882	26.071	195.1	0.250	2.85	44.8	25.5	1.87	23.2	0.01	0.03	0.10	101	
101	10.04	10.03	33.889	26.080	194.3	0.252	2.82	44.3	25.8	1.88	23.4	0.01	0.03	0.10	102	211
119	9.56	9.55	33.953	26.210	182.3	0.286	2.63	40.9	29.2	2.02	25.3	0.02	0.01	0.09	120	210
125 ISL	9.52	9.51	33.971	26.231	180.4	0.297	2.56	39.8	29.9	2.05	25.7	0.02	0.01	0.09	126	
140	9.47	9.45	34.009	26.269	177.1	0.324	2.39	37.1	31.4	2.12	26.6	0.02	0.01	0.08	141	209
150 ISL	9.33	9.31	34.032	26.310	173.4	0.341	2.29	35.5	32.7	2.17	27.2	0.02	0.01	0.08	151	
169	9.01	8.99	34.067	26.389	166.2	0.373	2.16	33.2	35.2	2.25	28.2	0.02	0.00	0.07	170	208
199	8.59	8.57	34.087	26.471	158.8	0.422	2.20	33.5	37.9	2.29	29.1	0.02	0.00	0.04	200	207
200 ISL	8.57	8.55	34.088	26.475	158.5	0.424	2.20	33.5	38.0	2.29	29.1	0.02			201	
229	8.17	8.15	34.117	26.559	150.9	0.469	1.96	29.6	42.6	2.42	30.7	0.02			230	206
250 ISL	8.00	7.97	34.149	26.609	146.4	0.500	1.71	25.7	45.9	2.53	31.8	0.02			251	
269	7.87	7.84	34.179	26.652	142.6	0.527	1.46	21.9	49.0	2.63	32.8	0.02			271	205
300 ISL	7.59	7.56	34.217	26.723	136.3	0.571	1.12	16.7	54.2	2.77	34.4	0.01			302	
319	7.42	7.39	34.236	26.763	132.8	0.596	0.95	14.1	57.3	2.85	35.3	0.01			321	204
378	7.02	6.98	34.271	26.847	125.5	0.672	0.62	9.1	64.7	3.03	37.3	0.01			380	203
400 ISL	6.86	6.82	34.275	26.872	123.3	0.700	0.55	8.1	67.2	3.07	37.9	0.01			403	
438	6.60	6.56	34.282	26.913	119.8	0.746	0.46	6.7	71.4	3.13	38.9	0.01			441	202
500 ISL	6.26	6.22	34.318	26.986	113.5	0.818	0.32	4.6	77.8	3.22	40.2	0.01			503	
520	6.15	6.10	34.330	27.010	111.4	0.841	0.27	3.9	79.9	3.25	40.6	0.01			524	201

RV DAVID STARR JORDAN CALCOFI CRUISE 9904 STATION 93 40

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT TYPE
32 30.9 N	118 12.7 W	02/04/99	1050 UTC	1661 m	300 18 kn			1010.5 mb	13.1 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	13.71	13.71	33.498	25.087	286.5	0.000	6.14	104.2	5.1	0.36	0.2	0.02	0.68	0.22	0	
2	13.71	13.71	33.498	25.087	286.5	0.006	6.14	104.2	5.1	0.36	0.2	0.02	0.68	0.22	2	220
10 ISL	13.72	13.72	33.499	25.086	286.9	0.029	6.13	104.0	5.0	0.35	0.2	0.02	0.69	0.19	10	
11	13.72	13.72	33.499	25.086	286.9	0.032	6.13	104.0	5.0	0.35	0.2	0.02	0.69	0.19	11	219
20 ISL	13.71	13.71	33.498	25.088	287.0	0.057	6.13	104.0	4.9	0.37	0.3	0.02	0.72	0.17	20	
21	13.71	13.71	33.498	25.088	287.0	0.060	6.13	104.0	4.9	0.37	0.3	0.02	0.73	0.17	21	218
30	13.55	13.55	33.508	25.128	283.4	0.086	6.11	103.3	5.2	0.38	0.8	0.03	0.84	0.21	30	217
41	12.40	12.39	33.562	25.398	258.0	0.116	5.17	85.4	8.8	0.83	7.5	0.36	0.71	0.29	41	216
50 ISL	11.80	11.79	33.623	25.559	242.9	0.138	4.64	75.7	12.0	1.08	11.6	0.21	0.30	0.17	50	
51	11.74	11.73	33.630	25.576	241.3	0.141	4.58	74.6	12.4	1.11	12.0	0.18	0.26	0.16	51	215
60	11.21	11.20	33.686	25.716	228.1	0.162	3.85	62.0	16.4	1.38	16.2	0.06	0.32	0.25	60	214
70	10.99	10.98	33.719	25.782	222.1	0.184	3.55	56.9	18.2	1.49	17.9	0.03	0.22	0.20	70	213
75 ISL	10.81	10.80	33.743	25.833	217.4	0.195	3.44	55.0	19.4	1.55	18.8	0.02	0.16	0.16	75	
84	10.48	10.47	33.791	25.928	208.5	0.214	3.27	51.9	21.6	1.66	20.5	0.02	0.06	0.10	84	212
99	10.10	10.09	33.859	26.046	197.5	0.245	2.99	47.1	24.6	1.81	22.6	0.01	0.03	0.08	100	211
100 ISL	10.08	10.07	33.863	26.053	196.9	0.247	2.97	46.7	24.8	1.82	22.7	0.01	0.03	0.08	101	
120	9.76	9.75	33.932	26.161	187.0	0.285	2.72	42.5	27.7	1.96	24.5	0.01	0.01	0.06	121	210
125 ISL	9.64	9.63	33.952	26.197	183.7	0.294	2.66	41.5	28.7	2.00	25.0	0.01	0.01	0.06	126	
140	9.26	9.24	34.007	26.302	173.9	0.321	2.52	39.0	31.6	2.09	26.4	0.01	0.01	0.06	141	209
150 ISL	9.08	9.06	34.020	26.341	170.4	0.339	2.49	38.4	32.8	2.12	26.9	0.01	0.01	0.05	151	
170	8.80	8.78	34.033	26.396	165.5	0.372	2.46	37.7	34.8	2.17	27.7	0.01	0.00	0.04	171	208
199	8.46	8.44	34.086	26.490	157.0	0.419	2.23	33.9	38.6	2.29	29.1	0.01	0.00	0.04	200	207
200 ISL	8.45	8.43	34.087	26.493	156.8	0.420	2.22	33.7	38.8	2.29	29.2	0.01			201	
228	8.10	8.08	34.114	26.567	150.1	0.463	1.95	29.4	43.2	2.42	30.9	0.01			229	206
250 ISL	7.93	7.90	34.145	26.617	145.7	0.496	1.68	25.2	46.4	2.53	32.0	0.01			251	
270	7.80	7.77	34.173	26.658	142.1	0.525	1.44	21.6	49.3	2.63	33.0	0.01			272	205
300 ISL	7.53	7.50	34.202	26.720	136.5	0.567	1.15	17.1	54.1	2.75	34.4	0.01			302	
318	7.36	7.33	34.215	26.755	133.5	0.591	1.01	15.0	56.9	2.82	35.2	0.01			320	204
378	6.89	6.85	34.245	26.844	125.6	0.669	0.70	10.3	64.8	3.00	37.2	0.00			380	203
400 ISL	6.73	6.69	34.260	26.878	122.7	0.696	0.61	8.9	67.6	3.06	37.9	0.00			403	
437	6.47	6.43	34.285	26.932	117.8	0.740	0.48	7.0	72.1	3.14	39.0	0.00			440	202
500 ISL	6.11	6.07	34.320	27.007	111.3	0.813	0.34	4.9	78.6	3.22	40.3	0.00			503	
515	6.03	5.98	34.329	27.025	109.8	0.829	0.31	4.5	80.2	3.24	40.6	0.00			519	201

RV DAVID STARR JORDAN CALCOFI CRUISE 9904 STATION 93 45

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT	TYPE
32 21.1 N	118 33.0 W	02/04/99	1515 UTC	1301 m	310 22 kn	300 05 06	1	1014.0 mb	11.7 C	10.3 C		4/8	CC

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	13.04	13.04	33.531	25.248	271.2	0.000	5.88	98.4	6.7	0.57	3.4	0.10	0.98	0.28	0	
3		13.04	13.04	33.531	25.248	271.3	0.008	5.88	98.4	6.7	0.57	3.4	0.10	0.98	0.28	3	220
10		13.04	13.04	33.532	25.249	271.4	0.027	5.87	98.2	6.6	0.56	3.4	0.10	0.96	0.25	10	219
20		13.04	13.04	33.532	25.249	271.6	0.054	5.84	97.7	6.5	0.57	3.4	0.10	0.92	0.23	20	218
30		13.03	13.03	33.534	25.253	271.5	0.081	5.82	97.4	6.6	0.57	3.5	0.10	0.90	0.26	30	217
40		12.85	12.84	33.557	25.306	266.7	0.108	5.33	88.9	8.1	0.73	6.0	0.18	0.75	0.27	40	216
50		11.12	11.11	33.687	25.733	226.2	0.133	3.81	61.3	16.9	1.39	16.5	0.04	0.28	0.20	50	215
59		10.77	10.76	33.725	25.825	217.7	0.153	3.66	58.4	18.7	1.50	18.3	0.02	0.17	0.15	59	214
69		10.34	10.33	33.796	25.956	205.5	0.174	3.30	52.2	21.8	1.66	20.5	0.02	0.06	0.10	69	213
75	ISL	10.23	10.22	33.827	25.999	201.5	0.186	3.16	49.9	23.2	1.73	21.4	0.02	0.05	0.10	75	
85		10.12	10.11	33.867	26.049	196.9	0.206	2.98	46.9	24.9	1.82	22.6	0.01	0.03	0.09	85	212
100		9.84	9.83	33.913	26.132	189.3	0.235	2.73	42.7	26.8	1.92	24.0	0.01	0.03	0.08	101	211
120		9.55	9.54	33.986	26.238	179.7	0.272	2.53	39.4	30.1	2.06	25.8	0.01	0.01	0.06	121	210
125	ISL	9.53	9.52	33.995	26.248	178.8	0.281	2.48	38.6	30.4	2.07	26.0	0.01	0.01	0.06	126	
140		9.49	9.47	34.016	26.271	176.9	0.308	2.34	36.4	31.2	2.11	26.4	0.01	0.01	0.06	141	209
150	ISL	9.34	9.32	34.042	26.316	172.8	0.325	2.24	34.7	32.6	2.16	27.0	0.01	0.01	0.06	151	
170		8.99	8.97	34.094	26.414	163.9	0.359	2.06	31.7	35.8	2.27	28.4	0.01	0.01	0.05	171	208
199		8.75	8.73	34.135	26.484	157.7	0.406	1.85	28.3	39.1	2.37	29.6	0.01	0.00	0.05	200	207
200	ISL	8.74	8.72	34.136	26.486	157.5	0.407	1.84	28.1	39.2	2.37	29.6	0.01			201	
229		8.39	8.37	34.164	26.563	150.7	0.452	1.66	25.2	43.2	2.49	30.9	0.01			230	206
250	ISL	8.26	8.23	34.180	26.595	147.9	0.483	1.54	23.3	45.0	2.55	31.5	0.01			252	
270		8.16	8.13	34.192	26.620	145.9	0.513	1.44	21.7	46.6	2.59	32.1	0.01			272	205
300	ISL	7.95	7.92	34.208	26.664	142.1	0.556	1.28	19.2	49.7	2.67	33.0	0.01			302	
320		7.80	7.77	34.219	26.695	139.5	0.584	1.16	17.4	52.0	2.73	33.7	0.01			322	204
379		7.28	7.24	34.254	26.797	130.4	0.664	0.78	11.5	60.1	2.91	36.0	0.01			381	203
400	ISL	7.13	7.09	34.265	26.827	127.8	0.691	0.68	10.0	62.6	2.97	36.6	0.01			403	
438		6.85	6.81	34.284	26.881	123.1	0.738	0.54	7.9	67.3	3.06	37.7	0.01			441	202
500	ISL	6.25	6.21	34.311	26.982	113.8	0.812	0.39	5.6	76.9	3.18	39.8	0.01			503	
513		6.13	6.08	34.318	27.003	111.9	0.826	0.36	5.2	78.9	3.20	40.3	0.01			517	201

RV DAVID STARR JORDAN CALCOFI CRUISE 9904 STATION 93 50

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT	TYPE
32 11.0 N	118 53.5 W	02/04/99	1934 UTC	1460 m	310 19 kn	270 06 00	1	1014.0 mb	13.4 C	11.2 C	15m	5/8	CC

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	13.23	13.23	33.505	25.190	276.7	0.000	6.00	100.8	5.9	0.50	2.3	0.08			0	
1	A	13.23	13.23	33.505	25.190	276.8	0.003	6.00	100.8	5.9	0.50	2.3	0.08			1	222
10	ISL	13.23	13.23	33.505	25.190	277.0	0.028	6.01	101.0	5.7	0.49	2.3	0.08			10	
11	A	13.23	13.23	33.505	25.190	277.0	0.030	6.01	101.0	5.7	0.49	2.3	0.08			11	221
20	ISL	13.18	13.18	33.505	25.200	276.3	0.055	6.00	100.7	5.7	0.50	2.4	0.08			20	
22	A	13.17	13.17	33.505	25.202	276.1	0.061	6.00	100.7	5.7	0.50	2.4	0.08	0.83	0.18	22	220
30	ISL	13.12	13.12	33.511	25.217	274.9	0.083	6.07	101.7	5.7	0.51	2.6	0.09	0.91	0.21	30	
31	A	13.11	13.11	33.512	25.220	274.7	0.086	6.07	101.7	5.7	0.51	2.6	0.09	0.92	0.21	31	219
42	A	13.08	13.07	33.513	25.227	274.3	0.116	5.86	98.1	5.8	0.52	2.7	0.09	0.65	0.19	42	218
50	ISL	12.98	12.97	33.516	25.249	272.4	0.138	5.84	97.6	6.1	0.56	3.4	0.12	0.63	0.21	50	
52		12.94	12.93	33.516	25.257	271.7	0.143	5.84	97.5	6.3	0.58	3.7	0.13	0.63	0.21	52	217
61	A	12.60	12.59	33.509	25.319	266.1	0.167	5.53	91.7	7.5	0.72	5.7	0.16	0.50	0.19	61	216
69		12.52	12.51	33.544	25.361	262.2	0.189	5.59	92.5	7.6	0.73	5.8	0.24	0.44	0.18	69	215
75	ISL	11.96	11.95	33.592	25.505	248.6	0.204	5.08	83.1	10.1	0.95	9.3	0.36	0.28	0.16	75	
76		11.86	11.85	33.600	25.531	246.2	0.206	4.98	81.3	10.6	0.99	10.0	0.37	0.25	0.16	76	214
86		11.35	11.34	33.613	25.635	236.5	0.230	4.46	72.0	13.6	1.20	13.7	0.08	0.21	0.14	86	213
95		10.66	10.65	33.710	25.834	217.7	0.251	3.85	61.3	18.1	1.46	17.7	0.03	0.08	0.09	95	212
100	ISL	10.43	10.42	33.742	25.899	211.6	0.262	3.68	58.3	19.5	1.53	18.9	0.03	0.06	0.08	100	
111		10.10	10.09	33.794	25.996	202.5	0.284	3.46	54.4	21.8	1.63	20.5	0.02	0.03	0.06	112	211
125	ISL	9.75	9.74	33.878	26.120	190.9	0.312	3.08	48.1	25.4	1.83	23.0	0.02	0.02	0.05	126	
126		9.73	9.72	33.884	26.129	190.2	0.314	3.05	47.6	25.6	1.84	23.2	0.02	0.02	0.05	127	210
145		9.34	9.32	33.957 D	26.250	179.0	0.349	2.79	43.2	29.4	1.98	25.2	0.02	0.01	0.04	146	209
150	ISL	9.25	9.23	33.970	26.275	176.7	0.358	2.77	42.8	30.0	2.00	25.5	0.02	0.01	0.04	151	
170		8.89	8.87	34.007	26.361	168.8	0.392	2.72	41.7	32.4	2.06	26.5	0.01	0.01	0.04	171	208
199		8.30	8.28	34.046	26.483	157.6	0.440	2.54	38.4	37.6	2.19	28.5	0.02	0.00	0.03	200	207
200	ISL	8.30	8.28	34.050	26.486	157.3	0.441	2.51	38.0	37.8	2.20	28.6	0.02			201	
228		8.41	8.39	34.164	26.559	151.0	0.484	1.69	25.7	43.0	2.49	30.9	0.01			229	206
250	ISL	8.18	8.15	34.194	26.618	145.7	0.517	1.42	21.5	46.8	2.61	32.2	0.01			251	
268		7.93	7.90	34.203	26.663	141.7	0.543	1.30	19.5	49.7	2.67	33.0	0.01			270	205
300	ISL	7.67	7.64	34.232	26.724	136.3	0.587	1.03	15.4	54.2	2.79	34.3	0.01			302	
321		7.50	7.47	34.249	26.762	133.0	0.616	0.87	12.9	57.3	2.86	35.1	0.01			323	204
378		6.82	6.78	34.286	26.886	121.6	0.688	0.53	7.8	67.9	3.06	37.9	0.01			380	203
400	ISL	6.70	6.66	34.298	26.912	119.4	0.715	0.47	6.9	70.1	3.10	38.4	0.01			403	
434		6.56	6.52	34.313	26.943	116.9	0.755	0.41	6.0	72.6	3.14	38.9	0.01			437	202
500	ISL	6.17	6.13	34.328	27.006	111.5	0.830	0.31	4.5	78.7	3.22	40.3	0.01			503	
511		6.11	6.06	34.331	27.016	110.7	0.843	0.29	4.2	79.7	3.23	40.5	0.01			515	201

A) PRIMARY PRODUCTIVITY SAMPLES WERE TAKEN FROM THESE LEVELS.

RV DAVID STARR JORDAN CALCOFI CRUISE 9904 STATION 93 55

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT	TYPE
32 0.9 N	119 13.7 W	02/04/99	2353 UTC	1576 m	320 14 kn	330 04 08	1	1016.1 mb	13.2 C	10.9 C	19m	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	13.57	13.57	33.430	25.063	288.8	0.000	6.03	102.0	4.1	0.40	0.9	0.04	0.43	0.08	0	
2		13.57	13.57	33.430	25.063	288.8	0.006	6.03	102.0	4.1	0.40	0.9	0.04	0.43	0.08	2	220
10	ISL	13.55	13.55	33.423	25.062	289.2	0.029	6.04	102.1	4.1	0.39	0.9	0.04	0.42	0.09	10	
16		13.54	13.54	33.418	25.060	289.5	0.046	6.04	102.1	4.1	0.39	0.9	0.04	0.41	0.11	16	219
20	ISL	13.51	13.51	33.417	25.066	289.1	0.058	6.04	102.0	4.0	0.39	0.9	0.04	0.43	0.14	20	
30		13.43	13.43	33.418	25.083	287.7	0.087	6.03	101.7	3.8	0.39	0.8	0.03	0.48	0.19	30	218
45		13.42	13.41	33.426	25.092	287.3	0.130	6.00	101.1	3.9	0.40	0.9	0.04	0.45	0.14	45	217
50	ISL	13.38	13.37	33.432	25.104	286.2	0.144	5.99	100.9	4.1	0.41	1.2	0.05	0.45	0.14	50	
56		13.33	13.32	33.440	25.121	284.8	0.161	5.97	100.4	4.3	0.43	1.5	0.06	0.46	0.14	56	216
65		12.40	12.39	33.390	25.265	271.2	0.186	5.54	91.4	6.6	0.70	5.6	0.09	0.29	0.14	65	215
75	ISL	11.97	11.96	33.484	25.420	256.7	0.213	5.01	81.9	9.2	0.90	9.2	0.05	0.20	0.13	75	
76		11.94	11.93	33.497	25.436	255.3	0.215	4.96	81.1	9.5	0.92	9.5	0.04	0.19	0.13	76	214
86		11.43	11.42	33.599	25.609	238.9	0.240	4.53	73.3	12.0	1.09	12.4	0.04	0.12	0.08	86	213
94		10.89	10.88	33.663	25.756	225.0	0.259	4.20	67.2	15.1	1.27	15.4	0.02	0.06	0.06	94	212
100	ISL	10.53	10.52	33.686	25.838	217.4	0.272	4.01	63.7	17.1	1.38	17.2	0.02	0.04	0.05	100	
110		10.06	10.05	33.722	25.946	207.2	0.293	3.82	60.0	19.5	1.51	19.1	0.02	0.02	0.04	111	211
125		9.78	9.77	33.836	26.083	194.5	0.323	3.93	61.4	20.5	1.50	19.6	0.02	0.01	0.04	126	210
145		9.41	9.39	33.904 D	26.197	184.0	0.361	3.89	60.3	22.9	1.57	20.8	0.02	0.01	0.04	146	209
150	ISL	9.29	9.27	33.920	26.229	181.0	0.370	3.76	58.2	24.3	1.63	21.6	0.02	0.01	0.04	151	
169		8.84	8.82	33.971	26.341	170.7	0.404	3.16	48.4	30.0	1.90	25.1	0.01	0.01	0.04	170	208
200		8.21	8.19	34.026	26.481	157.7	0.454	2.69	40.6	36.8	2.14	28.3	0.01	0.01	0.03	201	207
229		7.84	7.82	34.050	26.555	151.1	0.499	2.42	36.2	41.6	2.27	30.0	0.01			230	206
250	ISL	7.60	7.58	34.086	26.618	145.4	0.530	2.02	30.1	46.4	2.44	31.8	0.01			251	
269		7.40	7.37	34.121	26.674	140.2	0.557	1.65	24.5	50.7	2.59	33.5	0.01			271	205
300	ISL	7.16	7.13	34.155	26.735	134.9	0.600	1.30	19.2	55.9	2.74	35.1	0.01			302	
320		7.02	6.99	34.169	26.766	132.2	0.627	1.15	16.9	58.6	2.80	35.8	0.01			322	204
379		6.60	6.57	34.183	26.834	126.3	0.703	0.88	12.8	65.6	2.94	37.8	0.01			381	203
400	ISL	6.38	6.34	34.187	26.866	123.4	0.729	0.77	11.2	69.1	3.00	38.7	0.01			403	
440		5.98	5.94	34.205	26.932	117.4	0.777	0.58	8.3	76.1	3.10	40.2	0.01			443	202
500	ISL	5.67	5.63	34.275	27.026	109.0	0.845	0.36	5.1	84.2	3.23	41.5	0.01			503	
515		5.59	5.55	34.292	27.050	106.9	0.862	0.30	4.3	86.2	3.26	41.8	0.01			519	201

RV DAVID STARR JORDAN CALCOFI CRUISE 9904 STATION 93 60

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT	TYPE
31 51.0 N	119 34.1 W	03/04/99	0420 UTC	1915 m	320 15 kn			1018.5 mb	12.9 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	13.47	13.47	33.306	24.987	296.0	0.000	6.04	101.9	3.6	0.36	0.2	0.03	0.41	0.11	0	
2		13.47	13.47	33.306	24.987	296.0	0.006	6.04	101.9	3.6	0.36	0.2	0.03	0.41	0.11	2	221
10	ISL	13.47	13.47	33.305	24.987	296.3	0.030	6.06	102.2	3.5	0.35	0.2	0.03	0.39	0.10	10	
11		13.47	13.47	33.305	24.987	296.3	0.033	6.06	102.2	3.5	0.35	0.2	0.03	0.39	0.10	11	220
20		13.47	13.47	33.308	24.990	296.3	0.059	6.05	102.0	3.6	0.35	0.2	0.03	0.38	0.12	20	219
30		13.49	13.49	33.368	25.032	292.6	0.089	6.01	101.4	3.9	0.37	0.6	0.05	0.34	0.10	30	218
41		13.42	13.41	33.412	25.081	288.2	0.121	6.01	101.3	4.4	0.40	1.0	0.06	0.41	0.11	41	217
50		13.28	13.27	33.397	25.097	286.9	0.147	5.99	100.7	4.4	0.43	1.3	0.11	0.47	0.17	50	216
61		12.64	12.63	33.371	25.204	277.0	0.178	5.69	94.3	6.0	0.62	4.2	0.18	0.60	0.29	61	215
70		12.51	12.50	33.405	25.256	272.3	0.202	5.47	90.4	6.8	0.69	5.6	0.07	0.36	0.25	70	214
75	ISL	12.36	12.35	33.412	25.290	269.1	0.216	5.39	88.8	7.4	0.75	6.5	0.04	0.28	0.20	75	
84		11.98	11.97	33.432	25.378	260.9	0.240	5.17	84.5	9.3	0.89	8.8	0.02	0.17	0.11	84	213
99		11.00	10.99	33.543	25.644	235.9	0.277	4.36	69.9	15.0	1.28	14.9	0.01	0.04	0.08	99	212
100	ISL	10.95	10.94	33.550	25.658	234.5	0.279	4.32	69.1	15.3	1.30	15.2	0.01	0.04	0.08	100	
119		10.12	10.11	33.679	25.903	211.5	0.322	3.77	59.3	20.1	1.55	19.5	0.01	0.01	0.05	120	211
125	ISL	9.89	9.88	33.724	25.977	204.6	0.334	3.62	56.7	21.7	1.62	20.7	0.01	0.01	0.04	126	
130		9.73	9.72	33.761	26.032	199.4	0.344	3.53	55.1	22.9	1.67	21.5	0.01	0.01	0.04	131	210
140		9.53	9.51	33.831	26.120	191.2	0.364	3.57	55.5	23.8	1.68	22.0	0.00	0.01	0.04	141	209
150	ISL	9.35	9.33	33.880	26.188	184.9	0.383	3.58	55.4	24.8	1.69	22.3	0.00	0.01	0.04	151	
170		9.01	8.99	33.944	26.293	175.3	0.419	3.60	55.3	27.2	1.73	23.1	0.01	0.01	0.03	171	208
200		8.51	8.49	33.995	26.411	164.5	0.470	3.37	51.2	31.8	1.87	25.3	0.00	0.00	0.02	201	207
229		7.96	7.94	34.020	26.514	155.0	0.516	2.88	43.2	38.4	2.12	28.4	0.00			230	206
250	ISL	7.66	7.64	34.034	26.569	150.1	0.548	2.61	38.9	42.0	2.24	30.0	0.01			251	
267		7.45	7.42	34.041	26.604	146.9	0.573	2.44	36.2	44.7	2.31	31.0	0.01			269	205
300	ISL	6.98	6.95	34.038	26.668	141.1	0.621	2.19	32.2	50.6	2.46	33.0	0.00			302	
317		6.78	6.75	34.039	26.696	138.6	0.644	2.06	30.1	53.4	2.53	33.9	0.00			319	204
378		6.68	6.65	34.119	26.773	132.2	0.727	1.34	19.5	60.7	2.79	36.3	0.00			380	203
400	ISL	6.48	6.44	34.138	26.815	128.4	0.756	1.11	16.1	65.1	2.88	37.5	0.00			403	
438		6.08	6.04	34.166	26.889	121.6	0.803	0.79	11.4	72.9	3.03	39.6	0.00			441	202
500	ISL	5.67	5.63	34.210	26.975	113.8	0.876	0.53	7.6	81.6	3.18	41.3	0.00			503	
511		5.60	5.56	34.218	26.990	112.5	0.889	0.48	6.8	83.1	3.21	41.6	0.00			514	201

RV DAVID STARR JORDAN CALCOFI CRUISE 9904 STATION 93 70

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT TYPE
31 31.1 N	120 14.7 W	03/04/99	1050 UTC	3930 m	320 12 kn			1019.2 mb	13.2 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	14.08	14.08	33.394	24.930	301.4	0.000	5.97	102.0	3.1	0.32	0.0	0.00	0.23	0.07	0	
2	14.08	14.08	33.394	24.930	301.5	0.006	5.97	102.0	3.1	0.32	0.0	0.00	0.23	0.07	2	220
10 ISL	14.08	14.08	33.395	24.931	301.6	0.030	5.96	101.8	3.0	0.32	0.0	0.00	0.22	0.08	10	
16	14.08	14.08	33.396	24.932	301.7	0.048	5.95	101.7	3.0	0.32	0.0	0.00	0.22	0.08	16	219
20 ISL	14.08	14.08	33.395	24.932	301.9	0.060	5.94	101.5	3.0	0.32	0.0	0.00	0.22	0.08	20	
30 ISL	14.08	14.08	33.393	24.930	302.3	0.091	5.93	101.3	3.0	0.32	0.0	0.00	0.23	0.07	30	
31	14.08	14.08	33.393	24.930	302.3	0.094	5.93	101.3	3.0	0.32	0.0	0.00	0.23	0.07	31	218
47	14.09	14.08	33.394	24.930	302.8	0.142	5.99	102.3	2.9	0.31	0.0	0.00	0.23	0.07	47	217
50 ISL	14.08	14.07	33.392	24.930	302.9	0.151	5.98	102.2	2.9	0.31	0.0	0.00	0.23	0.07	50	
56	14.05	14.04	33.387	24.933	302.8	0.169	5.94	101.4	2.9	0.32	0.0	0.00	0.24	0.07	56	216
65	13.98	13.97	33.376	24.939	302.4	0.196	5.90	100.6	2.9	0.32	0.1	0.01	0.25	0.09	65	215
75	13.10	13.09	33.273	25.038	293.2	0.226	5.88	98.4	3.8	0.45	1.7	0.14	0.34	0.17	75	214
85	12.14	12.13	33.302	25.247	273.4	0.255	5.64	92.5	6.1	0.68	5.3	0.21	0.33	0.19	85	213
96	12.04	12.03	33.371	25.319	266.8	0.284	5.58	91.3	7.1	0.76	6.4	0.15	0.25	0.16	96	212
100 ISL	12.03	12.02	33.424	25.363	262.8	0.295	5.37	87.9	7.7	0.79	7.2	0.11	0.23	0.16	100	
110	11.99	11.98	33.573	25.486	251.3	0.321	4.77	78.1	9.4	0.90	9.5	0.03	0.20	0.16	111	211
124	11.34	11.32	33.609	25.634	237.4	0.355	4.45	71.9	12.4	1.10	12.7	0.02	0.12	0.10	125	210
125 ISL	11.28	11.26	33.610	25.646	236.3	0.357	4.42	71.3	12.7	1.12	13.0	0.02	0.11	0.10	126	
144	10.23	10.21	33.647	25.860	216.2	0.400	3.93	62.0	18.6	1.47	18.2	0.01	0.02	0.04	145	209
150 ISL	10.02	10.00	33.683	25.924	210.2	0.413	3.75	58.9	20.3	1.56	19.6	0.01	0.02	0.04	151	
171	9.50	9.48	33.827	26.123	191.6	0.455	3.33	51.7	24.9	1.75	22.9	0.00	0.00	0.04	172	208
197	8.96	8.94	33.958	26.312	174.0	0.503	3.63	55.7	27.3	1.73	23.2	0.01	0.00	0.02	198	207
200 ISL	8.88	8.86	33.966	26.331	172.2	0.508	3.61	55.3	27.9	1.75	23.5	0.01			201	
229	8.20	8.18	34.014	26.473	159.0	0.556	3.17	47.9	35.1	1.98	26.7	0.00			230	206
250 ISL	7.92	7.89	34.043	26.538	153.1	0.589	2.75	41.3	39.5	2.16	28.7	0.00			251	
271	7.70	7.67	34.064	26.587	148.7	0.620	2.34	34.9	43.5	2.32	30.5	0.00			273	205
300 ISL	7.32	7.29	34.075	26.650	143.0	0.663	2.04	30.2	48.6	2.46	32.4	0.00			302	
320	7.04	7.01	34.076	26.690	139.4	0.691	1.89	27.8	52.1	2.53	33.5	0.00			322	204
376	6.22	6.19	34.070	26.794	129.7	0.766	1.47	21.2	63.8	2.78	37.1	0.00			378	203
400 ISL	6.05	6.02	34.084	26.827	126.8	0.797	1.27	18.2	67.4	2.86	38.1	0.00			402	
437	5.86	5.82	34.114	26.875	122.6	0.843	0.98	14.0	72.6	2.97	39.4	0.00			440	202
500 ISL	5.47	5.43	34.176	26.972	113.8	0.918	0.60	8.5	83.0	3.15	41.5	0.00			503	
512	5.39	5.35	34.188	26.991	112.1	0.931	0.53	7.5	85.0	3.18	41.9	0.00			515	201

RV DAVID STARR JORDAN CALCOFI CRUISE 9904 STATION 93 80

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT TYPE
31 10.4 N	120 56.2 W	03/04/99	1827 UTC	3850 m	320 18 kn	310 08 07	1	1020.2 mb	13.9 C	10.9 C	20m	7/8 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	33.171	24.923	302.1	0.000	6.08	102.0	3.2	0.36	0.2	0.02	0.31	0.07	0	
2 A	13.27	13.27	33.171	24.923	302.1	0.006	6.08	102.0	3.2	0.36	0.2	0.02	0.31	0.07	2	221
10 ISL	13.24	13.24	33.167	24.926	302.1	0.030	6.09	102.1	3.1	0.35	0.2	0.02	0.32	0.08	10	
14 A	13.23	13.23	33.165	24.927	302.1	0.042	6.09	102.1	3.0	0.35	0.2	0.02	0.32	0.09	14	220
20 ISL	13.23	13.23	33.165	24.927	302.3	0.060	6.08	101.9	3.0	0.36	0.2	0.02	0.33	0.09	20	
23	13.23	13.23	33.165	24.927	302.3	0.069	6.08	101.9	3.0	0.36	0.2	0.02	0.33	0.09	23	219
30 A	13.23	13.23	33.177	24.937	301.6	0.091	6.08	101.9	3.0	0.35	0.2	0.03	0.33	0.09	30	218
36	13.25	13.25	33.231	24.975	298.2	0.109	6.11	102.5	3.2	0.35	0.3	0.03	0.34	0.10	36	217
44 A	13.23	13.22	33.243	24.988	297.1	0.132	6.10	102.3	3.2	0.35	0.3	0.03	0.37	0.11	44	216
50 ISL	13.23	13.22	33.245	24.990	297.1	0.150	6.09	102.1	3.2	0.35	0.3	0.03	0.36	0.11	50	
51	13.23	13.22	33.246	24.991	297.1	0.153	6.09	102.1	3.2	0.35	0.3	0.03	0.36	0.11	51	215
58 A	13.33	13.32	33.299	25.012	295.2	0.174	6.03	101.4	3.2	0.36	0.5	0.05	0.22	0.08	58	214
71	12.60	12.59	33.370	25.211	276.5	0.211	5.87	97.2	5.0	0.56	3.2	0.32	0.31	0.16	71	213
75 ISL	12.27	12.26	33.390	25.290	269.1	0.222	5.68	93.4	6.5	0.68	5.2	0.28	0.27	0.15	75	
91 A	11.21	11.20	33.468	25.547	244.9	0.263	4.88	78.5	12.5	1.10	12.5	0.03	0.07	0.07	91	212
100	11.08	11.07	33.505	25.600	240.1	0.285	4.64	74.5	13.7	1.18	13.8	0.02	0.06	0.05	100	211
121	10.39	10.38	33.655	25.838	217.8	0.333	3.97	62.8	18.8	1.45	18.4	0.02	0.02	0.04	122	210
125 ISL	10.21	10.20	33.686	25.893	212.6	0.342	3.86	60.8	19.9	1.50	19.3	0.02	0.02	0.04	126	
139	9.61	9.59	33.790	26.075	195.5	0.370	3.58	55.7	23.5	1.65	21.9	0.01	0.01	0.03	140	209
150 ISL	9.37	9.35	33.850	26.161	187.5	0.391	3.65	56.5	24.3	1.65	22.1	0.01	0.01	0.03	151	
170	9.10	9.08	33.930	26.268	177.7	0.428	3.77	58.1	25.6	1.65	22.4	0.01	0.00	0.03	171	208
200	8.61	8.59	34.007	26.405	165.1	0.479	2.85	43.4	33.8	2.07	27.1	0.01	0.00	0.04	201	207
229	8.27	8.25	34.052	26.493	157.2	0.526	2.44	36.9	38.5	2.25	29.3	0.01			230	206
250 ISL	7.97	7.94	34.073	26.554	151.6	0.558	2.24	33.7	42.2	2.35	30.6	0.01			251	
269	7.72	7.69	34.090	26.604	147.1	0.587	2.08	31.1	45.5	2.44	31.7	0.01			271	205
300 ISL	7.47	7.44	34.124	26.667	141.5	0.631	1.73	25.7	50.3	2.58	33.2	0.00			302	
318	7.34	7.31	34.140	26.698	138.8	0.657	1.53	22.7	53.1	2.66	34.1	0.00			320	204
379	6.57	6.54	34.153	26.814	128.2	0.738	1.12	16.3	64.1	2.89	37.4	0.00			381	203
400 ISL	6.49	6.45	34.183	26.849	125.2	0.765	0.95	13.8	66.9	2.96	38.0	0.00			403	
439	6.40	6.36	34.242	26.908	120.1	0.813	0.65	9.4	71.6	3.08	39.0	0.00			442	202
500 ISL	5.93	5.89	34.283	27.000	111.7	0.883	0.44	6.3	80.3	3.22	40.7	0.00			503	
513	5.83	5.79	34.292	27.020	109.9	0.898	0.40	5.7	82.2	3.25	41.1	0.00			516	201

A) PRIMARY PRODUCTIVITY SAMPLES WERE TAKEN FROM THESE LEVELS.

RV DAVID STARR JORDAN CALCOFI CRUISE 9904 STATION 93 90

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT	TYPE
30 50.7 N	121 35.0 W	03/04/99	2344 UTC	4085 m	320 19 kn	320 05 06	1	1018.1 mb	12.8 C	10.7 C	23m	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	13.40	13.40	33.008	24.771	316.6	0.000	6.07	102.0	2.7	0.33	0.0	0.00	0.18	0.05	0	
2		13.40	13.40	33.008	24.771	316.6	0.006	6.07	102.0	2.7	0.33	0.0	0.00	0.18	0.05	2	220
10	ISL	13.39	13.39	33.012	24.776	316.3	0.032	6.07	102.0	2.7	0.32	0.0	0.00	0.18	0.04	10	
15		13.38	13.38	33.015	24.781	316.0	0.047	6.07	102.0	2.7	0.32	0.0	0.00	0.18	0.04	15	219
20	ISL	13.35	13.35	33.015	24.787	315.6	0.063	6.07	101.9	2.7	0.32	0.0	0.00	0.18	0.05	20	
30		13.30	13.30	33.014	24.797	315.0	0.095	6.07	101.8	2.7	0.31	0.0	0.00	0.17	0.06	30	218
45		13.27	13.26	33.012	24.801	314.9	0.142	6.07	101.7	2.6	0.31	0.0	0.00	0.20	0.06	45	217
50	ISL	13.26	13.25	33.010	24.802	315.0	0.158	6.08	101.9	2.6	0.31	0.0	0.00	0.22	0.07	50	
60		13.23	13.22	33.007	24.806	314.9	0.189	6.10	102.1	2.6	0.32	0.0	0.00	0.26	0.10	60	216
75		13.19	13.18	33.002	24.810	314.8	0.236	6.07	101.6	2.6	0.32	0.0	0.00	0.30	0.10	75	215
85		13.27	13.26	33.174	24.928	303.9	0.267	5.86	98.3	3.3	0.38	1.0	0.11	0.35	0.22	85	214
94		13.43	13.42	33.261	24.963	300.8	0.295	5.76	97.0	3.5	0.40	1.3	0.11	0.34	0.23	94	213
100	ISL	13.16	13.15	33.314	25.058	291.9	0.312	5.60	93.8	4.3	0.49	2.7	0.08	0.29	0.22	100	
106		12.81	12.80	33.362	25.165	281.9	0.330	5.43	90.3	5.3	0.58	4.3	0.05	0.23	0.20	106	212
115		12.58	12.56	33.413	25.249	274.1	0.355	5.30	87.8	6.4	0.65	5.8	0.03	0.19	0.16	116	211
125	ISL	12.10	12.08	33.452	25.372	262.6	0.381	5.06	83.0	8.4	0.80	8.2	0.02	0.10	0.09	126	
126		12.04	12.02	33.456	25.386	261.2	0.384	5.03	82.4	8.6	0.82	8.5	0.02	0.09	0.08	127	210
141		11.21	11.19	33.588	25.642	237.1	0.421	4.32	69.5	13.7	1.16	13.9	0.01	0.03	0.04	142	209
150	ISL	10.85	10.83	33.640	25.747	227.2	0.442	4.17	66.6	15.3	1.25	15.5	0.01	0.02	0.03	151	
167		10.25	10.23	33.722	25.915	211.5	0.480	3.94	62.2	18.3	1.39	18.0	0.01	0.01	0.02	168	208
194		9.22	9.20	33.894	26.221	182.7	0.533	2.84	43.8	29.1	1.92	25.6	0.00	0.00	0.02	195	207
200	ISL	9.08	9.06	33.918	26.262	178.9	0.544	2.86	44.0	29.9	1.91	25.6	0.00			201	
225		8.64	8.62	33.985	26.384	167.6	0.587	3.18	48.5	31.6	1.88	25.6	0.00			226	206
250	ISL	8.28	8.25	34.019	26.466	160.2	0.628	2.92	44.2	35.6	2.01	27.4	0.00			251	
268		8.02	7.99	34.028	26.512	156.0	0.656	2.64	39.7	39.1	2.14	29.0	0.00			269	205
300	ISL	7.36	7.33	34.027	26.607	147.2	0.705	2.50	37.0	45.3	2.26	30.9	0.00			302	
316		7.05	7.02	34.027	26.650	143.1	0.728	2.42	35.6	48.4	2.32	31.8	0.00			318	204
380		6.67	6.64	34.100	26.759	133.5	0.817	1.41	20.6	59.7	2.70	36.0	0.00			382	203
400	ISL	6.45	6.41	34.120	26.804	129.3	0.843	1.19	17.3	64.2	2.80	37.3	0.00			402	
440		5.98	5.94	34.154	26.892	121.2	0.893	0.85	12.2	73.1	2.96	39.5	0.00			443	202
500	ISL	5.42	5.38	34.175	26.977	113.3	0.963	0.59	8.4	83.8	3.09	41.4	0.00			503	
513		5.30	5.26	34.180	26.995	111.6	0.978	0.53	7.5	86.1	3.12	41.8	0.00			516	201

RV DAVID STARR JORDAN CALCOFI CRUISE 9904 STATION 93 100

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT	TYPE
30 30.9 N	122 15.2 W	04/04/99	0636 UTC	4159 m	350 33 kn			1019.0 mb	12.7 C	8.8 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	14.33	14.33	33.321	24.822	311.8	0.000	5.90	101.3	2.8	0.30	0.0	0.00	0.15	0.05	0	
2		14.33	14.33	33.321	24.822	311.8	0.006	5.90	101.3	2.8	0.30	0.0	0.00	0.15	0.05	2	220
10	ISL	14.33	14.33	33.322	24.823	311.9	0.031	5.90	101.3	2.9	0.29	0.0	0.00	0.16	0.04	10	
16		14.33	14.33	33.322	24.823	312.1	0.050	5.90	101.3	2.9	0.29	0.0	0.00	0.16	0.04	16	219
20	ISL	14.33	14.33	33.322	24.823	312.2	0.062	5.90	101.3	2.9	0.29	0.0	0.00	0.16	0.04	20	
30		14.34	14.34	33.321	24.820	312.7	0.094	5.90	101.3	2.9	0.29	0.0	0.00	0.15	0.04	30	218
45		14.34	14.33	33.321	24.821	313.1	0.141	5.92	101.6	2.8	0.29	0.0	0.00	0.15	0.05	45	217
50	ISL	14.34	14.33	33.321	24.821	313.3	0.156	5.92	101.6	2.8	0.29	0.0	0.00	0.16	0.05	50	
61		14.34	14.33	33.321	24.821	313.6	0.191	5.90	101.3	2.7	0.29	0.0	0.00	0.17	0.05	61	216
75	ISL	14.34	14.33	33.320	24.821	314.0	0.235	5.89	101.1	2.7	0.29	0.0	0.00	0.16	0.05	75	
76		14.34	14.33	33.320	24.821	314.0	0.238	5.89	101.1	2.7	0.29	0.0	0.00	0.16	0.05	76	215
86		14.33	14.32	33.320	24.823	314.1	0.269	5.90	101.2	2.7	0.29	0.0	0.00	0.18	0.07	86	214
96		14.30	14.29	33.327	24.835	313.2	0.301	5.88	100.8	2.6	0.29	0.0	0.01	0.29	0.11	96	213
100	ISL	14.21	14.20	33.332	24.858	311.2	0.313	5.86	100.3	2.7	0.31	0.2	0.06	0.38	0.18	100	
107		13.89	13.87	33.326	24.920	305.4	0.335	5.80	98.6	3.0	0.36	0.6	0.11	0.47	0.28	107	212
114		13.30	13.28	33.284	25.008	297.2	0.356	5.68	95.4	3.8	0.46	2.2	0.04	0.31	0.22	114	211
123		13.11	13.09	33.355	25.101	288.5	0.382	5.58	93.4	4.5	0.53	3.2	0.02	0.22	0.14	124	210
125	ISL	13.08	13.06	33.378	25.125	286.3	0.388	5.54	92.7	4.7	0.54	3.5	0.02	0.20	0.13	126	
140		12.81	12.79	33.538	25.302	269.8	0.430	5.19	86.4	6.4	0.66	5.7	0.01	0.11	0.10	141	209
150	ISL	12.52	12.50	33.575	25.388	261.8	0.456	5.00	82.8	7.7	0.76	7.4	0.01	0.08	0.08	151	
164		11.99	11.97	33.602	25.510	250.4	0.492	4.71	77.1	10.1	0.93	10.1	0.01	0.05	0.05	165	208
196		10.17	10.15	33.787	25.980	205.9	0.565	3.76	59.2	19.5	1.50	19.0	0.00	0.01	0.02	197	207
200	ISL	10.03	10.01	33.805	26.018	202.4	0.573	3.65	57.3	20.6	1.56	19.8	0.00			201	
228		9.34	9.31	33.904	26.210	184.5	0.627	3.03	46.9	27.4	1.88	24.3	0.00			229	206
250	ISL	8.97	8.94	33.954	26.308	175.4	0.667	2.96	45.5	30.3	1.97	25.7	0.00			251	
269		8.71	8.68	33.986	26.374	169.4	0.700	2.90	44.3	32.3	2.01	26.5	0.00			270	205
300	ISL	8.27	8.24	34.034	26.480	159.8	0.751	2.50	37.8	37.7	2.20	28.9	0.00			302	
321		7.98	7.95	34.059	26.543	154.0	0.784	2.19	32.9	41.7	2.33	30.5	0.00			323	204
380		7.22	7.18	34.090	26.677	141.7	0.871	1.72	25.4	51.8	2.57	33.7	0.00			382	203
400	ISL	6.92	6.88	34.099	26.725	137.2	0.899	1.51	22.1	56.3	2.67	35.0	0.00			402	
436		6.40	6.36	34.116	26.808	129.4	0.947	1.15	16.7	64.6	2.85	37.4	0.00			439	202
500	ISL	5.76	5.72	34.156	26.921	119.0	1.026	0.77	11.0	77.2	3.05	40.2	0.00			503	
515		5.61	5.57	34.166	26.947	116.5	1.044	0.68	9.7	80.1	3.10	40.9	0.00			518	201

RV DAVID STARR JORDAN CALCOFI CRUISE 9904 STATION 93 110

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT TYPE
30 10.6 N	122 54.3 W	04/04/99	1323 UTC	4195 m	360 35 kn			1019.4 mb	12.2 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	15.78	15.78	33.831	24.899	304.4	0.000	5.70	101.1	2.8	0.25	0.0	0.00	0.17	0.06	0	
4		15.78	15.78	33.831	24.899	304.5	0.012	5.70	101.1	2.8	0.25	0.0	0.00	0.17	0.06	4	220
10	ISL	15.78	15.78	33.832	24.900	304.6	0.030	5.70	101.1	2.8	0.25	0.0	0.00	0.17	0.05	10	
17		15.78	15.78	33.832	24.900	304.8	0.052	5.69	100.9	2.7	0.25	0.0	0.00	0.16	0.04	17	219
20	ISL	15.79	15.79	33.833	24.899	305.0	0.061	5.68	100.7	2.6	0.25	0.0	0.00	0.16	0.04	20	
30	ISL	15.81	15.81	33.836	24.897	305.5	0.091	5.66	100.4	2.4	0.25	0.0	0.00	0.17	0.04	30	
31		15.81	15.81	33.836	24.897	305.5	0.095	5.66	100.4	2.4	0.25	0.0	0.00	0.17	0.04	31	218
45		15.81	15.80	33.836	24.898	306.0	0.137	5.72	101.5	2.5	0.25	0.0	0.00	0.17	0.04	45	217
50	ISL	15.81	15.80	33.836	24.898	306.1	0.153	5.72	101.5	2.4	0.24	0.0	0.00	0.17	0.05	50	
60		15.82	15.81	33.837	24.897	306.5	0.183	5.71	101.3	2.3	0.23	0.0	0.00	0.16	0.06	60	216
74		15.83	15.82	33.838	24.896	307.1	0.226	5.71	101.3	2.5	0.23	0.0	0.00	0.17	0.04	74	215
75	ISL	15.83	15.82	33.838	24.896	307.1	0.229	5.71	101.3	2.5	0.23	0.0	0.00	0.17	0.04	75	
84		15.83	15.82	33.838	24.896	307.4	0.257	5.70	101.1	2.3	0.23	0.0	0.00	0.17	0.05	84	214
96		15.84	15.82	33.842	24.897	307.6	0.294	5.70	101.2	2.5	0.23	0.0	0.00	0.16	0.05	96	213
100	ISL	15.86	15.84	33.848	24.898	307.7	0.306	5.69	101.0	2.5	0.23	0.0	0.00	0.17	0.05	100	
106		15.88	15.86	33.856	24.899	307.8	0.325	5.67	100.7	2.5	0.24	0.0	0.00	0.18	0.04	106	212
112		15.97	15.95	33.898	24.912	306.8	0.343	5.65	100.6	2.6	0.24	0.1	0.01	0.20	0.06	112	211
125	ISL	16.25	16.23	34.124	25.022	296.8	0.382	5.43	97.3	2.8	0.26	0.5	0.08	0.22	0.15	126	
130		16.36	16.34	34.237	25.084	291.1	0.397	5.33	95.8	3.0	0.27	0.9	0.10	0.23	0.17	131	210
138		15.59	15.57	34.140	25.184	281.7	0.420	5.23	92.5	3.6	0.37	2.0	0.05	0.17	0.11	139	209
150	ISL	14.31	14.29	33.948	25.314	269.3	0.453	5.09	87.6	5.0	0.51	4.1	0.03	0.11	0.06	151	
157		13.59	13.57	33.847	25.386	262.5	0.472	5.00	84.8	6.0	0.60	5.4	0.02	0.08	0.05	158	208
194		11.18	11.16	33.795	25.810	222.5	0.561	4.46	71.8	13.5	1.10	13.2	0.00	0.02	0.03	195	207
200	ISL	10.88	10.86	33.809	25.874	216.4	0.574	4.41	70.6	14.8	1.17	14.3	0.00			201	
236		9.44	9.41	33.923	26.209	184.8	0.647	4.14	64.2	22.6	1.51	20.1	0.00			237	206
250	ISL	9.05	9.02	33.954	26.296	176.7	0.672	3.95	60.8	25.8	1.63	21.9	0.00			251	
278		8.43	8.40	33.994	26.424	164.7	0.720	3.52	53.4	32.0	1.85	25.0	0.00			279	205
300	ISL	8.01	7.98	34.003	26.494	158.2	0.755	3.21	48.2	36.3	2.00	27.1	0.00			302	
321		7.68	7.65	34.007	26.546	153.5	0.788	2.92	43.6	40.3	2.14	28.8	0.00			323	204
374		7.07	7.03	34.044	26.661	143.0	0.867	2.19	32.2	50.1	2.44	32.8	0.00			376	203
400	ISL	6.81	6.77	34.084	26.728	136.8	0.903	1.73	25.3	56.3	2.64	34.9	0.00			402	
436		6.48	6.44	34.139	26.816	128.8	0.951	1.16	16.8	64.8	2.89	37.4	0.00			439	202
500	ISL	5.96	5.92	34.164	26.903	121.0	1.031	0.80	11.5	74.7	3.05	39.8	0.00			503	
510		5.88	5.84	34.168	26.916	119.7	1.043	0.74	10.6	76.2	3.07	40.2	0.00			513	201

RV DAVID STARR JORDAN CALCOFI CRUISE 9904 STATION 93 120

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI/FOREL	CLD AMT TYPE
29 51.1 N	123 34.8 W	04/04/99	2010 UTC	4131 m	350 20 kn	020 10 09	1	1022.5 mb	15.0 C	10.2 C	26m	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	16.11	16.11	33.947	24.914	303.0	0.000	5.69	101.6	2.7	0.22	0.0	0.00	0.17	0.03	0	
3	A	16.11	16.11	33.947	24.914	303.1	0.009	5.69	101.6	2.7	0.22	0.0	0.00	0.17	0.03	3	222
10	ISL	16.11	16.11	33.946	24.913	303.4	0.030	5.68	101.4	2.7	0.22	0.0	0.00	0.17	0.03	10	
17	A	16.10	16.10	33.946	24.916	303.4	0.052	5.67	101.2	2.7	0.21	0.0	0.00	0.16	0.04	17	221
20	ISL	16.10	16.10	33.946	24.916	303.4	0.061	5.67	101.2	2.7	0.21	0.0	0.00	0.16	0.04	20	
30	ISL	16.10	16.10	33.947	24.917	303.7	0.091	5.66	101.1	2.7	0.21	0.0	0.00	0.16	0.05	30	
39	A	16.11	16.10	33.949	24.917	304.0	0.118	5.66	101.1	2.7	0.21	0.0	0.00	0.16	0.05	39	220
50	ISL	16.11	16.10	33.948	24.916	304.4	0.152	5.67	101.2	2.6	0.21	0.0	0.00	0.15	0.04	50	
56	A	16.11	16.10	33.947	24.916	304.6	0.170	5.67	101.2	2.5	0.21	0.0	0.00	0.15	0.04	56	219
75	A	16.11	16.10	33.949	24.918	305.1	0.228	5.65	100.9	2.5	0.21	0.0	0.00	0.14	0.04	75	218
83		16.11	16.10	33.953	24.921	305.0	0.252	5.65	100.9	2.5	0.21	0.0	0.00	0.15	0.05	83	217
95		16.12	16.10	33.951	24.918	305.7	0.289	5.67	101.3	2.5	0.21	0.0	0.00	0.16	0.05	95	216
100	ISL	16.12	16.10	33.951	24.918	305.9	0.304	5.66	101.1	2.5	0.21	0.0	0.00	0.16	0.08	100	
106	A	16.12	16.10	33.952	24.919	306.0	0.323	5.64	100.7	2.4	0.21	0.0	0.00	0.16	0.10	106	215
113		16.13	16.11	33.954	24.918	306.2	0.344	5.65	100.9	2.4	0.21	0.0	0.00	0.17	0.05	113	214
123		16.24	16.22	33.995	24.925	305.9	0.375	5.60	100.3	2.4	0.21	0.0	0.01	0.20	0.07	124	213
125	ISL	16.28	16.26	34.033	24.945	304.1	0.381	5.55	99.5	2.5	0.21	0.1	0.03	0.23	0.10	126	
133		16.46	16.44	34.209	25.039	295.5	0.405	5.36	96.5	2.8	0.24	0.6	0.10	0.31	0.21	134	212
142		15.64	15.62	34.079	25.126	287.3	0.431	5.29	93.6	3.4	0.32	1.6	0.08	0.23	0.17	143	211
150	ISL	14.76	14.74	33.929	25.204	280.0	0.454	5.24	91.0	4.1	0.38	2.4	0.04	0.17	0.14	151	
152		14.54	14.52	33.896	25.226	277.9	0.459	5.22	90.3	4.3	0.40	2.7	0.03	0.16	0.13	153	210
165		13.42	13.40	33.841	25.416	259.8	0.494	4.90	82.8	6.6	0.63	6.0	0.02	0.12	0.09	166	209
171		12.69	12.67	33.792	25.523	249.6	0.510	4.75	79.0	8.3	0.77	8.2	0.01	0.08	0.06	172	208
199		10.68	10.66	33.772	25.881	215.6	0.575	4.36	69.5	15.0	1.20	15.0	0.00	0.02	0.03	200	207
200	ISL	10.63	10.61	33.774	25.891	214.7	0.577	4.35	69.2	15.3	1.21	15.2	0.00			201	
223		9.61	9.58	33.850	26.124	192.7	0.624	4.00	62.3	21.1	1.50	19.6	0.00			224	206
250	ISL	8.87	8.84	33.928	26.304	175.8	0.673	3.62	55.5	27.3	1.74	23.3	0.00			251	
278		8.34	8.31	33.984	26.430	164.1	0.721	3.24	49.1	33.4	1.94	26.2	0.00			279	205
300	ISL	7.88	7.85	34.006	26.516	156.1	0.756	2.93	43.9	38.2	2.10	28.3	0.00			302	
315		7.59	7.56	34.016	26.566	151.4	0.779	2.72	40.5	41.5	2.21	29.6	0.00			317	204
374		6.81	6.78	34.052	26.703	138.8	0.865	1.94	28.4	53.8	2.54	34.1	0.00			376	203
400	ISL	6.60	6.56	34.075	26.749	134.7	0.900	1.64	23.9	58.4	2.66	35.6	0.00			402	
440		6.34	6.30	34.112	26.813	129.0	0.953	1.24	17.9	65.0	2.83	37.6	0.00			443	202
500	ISL	5.86	5.82	34.162	26.914	119.8	1.028	0.78	11.2	75.5	3.04	40.2	0.00			503	
508		5.80	5.76	34.169	26.927	118.6	1.037	0.72	10.3	76.9	3.07	40.5	0.00			511	201

A) PRIMARY PRODUCTIVITY SAMPLES WERE TAKEN FROM THESE LEVELS.

RV DAVID STARR JORDAN — CALCOFI CRUISE 9904 — STATION 77 51

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	FOREL	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE
35 1.3 N	120 55.2 W	15/ 4/99	1915 UTC	9 m		1203 - 1903 PST	1204 PST	1903 PST	1490.2 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
1	12.38	33.448	25.312	6.86	113.2	1.0	0.46	2.9	0.20	4.69	0.64	84. A	64.1	57.5	60.8	1.0
7	12.01	33.462	25.394	6.77	110.8	1.6	0.53	3.8	0.22	5.37	0.52	30.	74.2	70.2	72.2	1.4
14	11.69	33.473	25.462	6.68	108.6	1.6	0.55	4.5	0.21	6.35	1.75	9.2	62.5	67.3	64.9	0.72
20	11.65	33.470	25.467	6.60	107.2	1.6	0.58	4.6	0.21	6.62	2.04	3.3	37.9	36.5	37.2	0.45
26	11.56	33.475	25.488	6.50	105.4	2.6	0.62	5.3	0.22	6.75	1.35	1.2	14.8	15.6	15.2	0.26
37	11.15	33.507	25.587	6.05	97.2	8.9	0.94	9.2	0.23	5.64	1.41	0.18	0.60	0.66	0.63	0.16

RV DAVID STARR JORDAN — CALCOFI CRUISE 9904 — STATION 77 90

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	FOREL	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE
33 43.3 N	123 38.0 W	14/ 4/99	1924 UTC	21 m		1214 - 1906 PST	1215 PST	1906 PST	461.1 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
2	12.42	33.233	25.138	6.23	102.7	4.0	0.51	2.2	0.09	0.49	0.12	86. A	6.1	5.0	5.6	0.06
15	12.26	33.228	25.165	6.26	102.9	4.1	0.48	2.2	0.09	0.45	0.11	33.	9.7	10.8	10.3	0.12
31	12.06	33.281	25.244	6.24	102.1	4.3	0.55	3.1	0.13	0.60	0.17	10.	9.2	10.2	9.7	0.10
44	11.98	33.284	25.262	6.22	101.6	4.3	0.57	3.4	0.14	0.60	0.18	4.0	5.6	5.8	5.7	0.04
52	11.99	33.290	25.265	6.21	101.5	4.4	0.57	3.4	0.15	0.55	0.21					
59	11.94	33.304	25.285	6.11	99.8	4.8	0.61	3.9	0.17	0.53	0.28	1.3	2.1	2.0	2.1	0.09
68	11.64	33.396	25.413	5.63	91.4	7.9	0.83	7.4	0.27	0.27	0.14					
77	11.24	33.447	25.525	5.15	82.9	11.5	1.04	11.0	0.27	0.20	0.11					
85	10.61	33.542	25.711	4.31	68.5	17.2	1.39	16.6	0.08	0.15	0.10	0.20	0.05	0.05	0.05	0.05

RV DAVID STARR JORDAN — CALCOFI CRUISE 9904 — STATION 80 80

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	FOREL	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE
33 29.1 N	122 31.8 W	13/ 4/99	1909 UTC	15 m		1211 - 1907 PST	1211 PST	1907 PST	773.8 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	12.28	33.490 D	25.364	6.22	102.4	5.6	0.65	5.0	0.19	1.50	0.31	81. A	20.6	18.6	19.6	0.31
10	12.25	33.489	25.369	6.24	102.7	5.6	0.67	5.0	0.19	1.37	0.32	36.	30.8	27.1	29.0	0.25
22	12.24	33.489	25.371	6.22	102.3	5.6	0.66	5.1	0.19	1.39	0.30	11.	20.6	20.1	20.3	0.27
33	12.20	33.494	25.383	6.19	101.7	5.7	0.67	5.2	0.20	1.12	0.31	3.4	8.9	9.2	9.1	0.12
44	12.08	33.575	25.469	6.13	100.6	6.3	0.74	6.1	0.26	0.91	0.38	1.1	2.4	2.3	2.3	0.08
53	11.86	33.634	25.556	5.78	94.4	8.6	0.92	8.7	0.34	0.37	0.17					
61	11.89	33.657 D	25.569	5.88	96.1	8.7	0.93	8.6	0.27	0.28	0.15	0.19	0.04	0.06	0.05	0.05

RV DAVID STARR JORDAN — CALCOFI CRUISE 9904 — STATION 82 47

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	FOREL	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE
34 17.0 N	120 1.5 W	12/ 4/99	1848 UTC	5 m		1201 - 1857 PST	1201 PST	1857 PST	1938.6 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	11.37	33.726	25.717	7.61	123.1	1.1	0.30	0.1	0.06	20.21	6.10	54.A,B	85.9	77.0	81.5	0.81
7	11.26	33.730	25.740	7.38	119.1	1.4	0.34	0.5	0.07	18.37	7.06	12.	150.8	189.6	170.2	1.6
11	11.22	33.754	25.766	6.79	109.5	2.5	0.51	2.7	0.10	19.50	5.93	3.4	117.7	107.7	112.7	0.42
21	11.17	33.783	25.798	6.27	101.0	4.2	0.68	4.9	0.14	19.50	5.75	0.16	3.4	3.4	3.4	0.35

B) A VERY LOW SECCHI DUE TO VERY HIGH CHLOROPHYLL RESULTED IN THE NEAR SURFACE SAMPLE CALCULATION OF 54 PERCENT LIGHT.
DUE TO VERY CLOSE SPACING OF LIGHT LEVELS, SAMPLES NORMALLY TAKEN AT 36 AND 1.3 PERCENT WERE OMITTED.

RV DAVID STARR JORDAN — CALCOFI CRUISE 9904 — STATION 83 70

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	FOREL	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE
33 13.7 N	121 25.8 W	11/ 4/99	1802 UTC	14 m		1208 - 1856 PST	1207 PST	1856 PST	286.9 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	12.54	33.154	25.053	6.16	101.8	3.4	0.40	1.1	0.06	0.74	0.16	80. A	2.3	1.8	2.1	0.06
10	12.54	33.153	25.053	6.17	101.9	3.4	0.40	1.1	0.06	0.61	0.14	33.	10.1	9.8	9.9	0.07
21	12.51	33.169	25.071	6.13	101.2	3.6	0.42	1.4	0.08	0.63	0.16	10.	9.8	9.7	9.7	0.08
31	12.23	33.331	25.251	5.94	97.6	5.5	0.62	4.3	0.19	0.56	0.17	3.3	4.0	4.6	4.3	0.05
41	12.12	33.441	25.357	5.92	97.1	6.4	0.70	5.6	0.21	0.59	0.21	1.1	2.4	2.5	2.5	0.05
48	12.12	33.480	25.388	5.97	98.0	6.7	0.73	5.9	0.21	0.70	0.25					
57	12.03	33.538	25.450	6.00	98.3	6.8	0.77	6.6	0.24	1.37	0.28	0.19	0.33	0.40	0.36	0.06

A) INCUBATION LIGHT INTENSITIES WERE 92, 36, 10, 3.6, 1.3, 0.19 PERCENT RESPECTIVELY.

PRIMARY PRODUCTIVITY CASTS

RV DAVID STARR JORDAN — CALCOFI CRUISE 9904 — STATION 83 110

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	FOREL	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE
31 54.9 N	124 10.7 W	10/ 4/99	1805 UTC	24 m		1218 - 1906 PST	1218 PST	1906 PST	101.5 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	14.42	33.467	24.915	5.88	101.2	2.8	0.25	0.0	0.00	0.23	0.05	88. A	1.7	1.6	1.7	0.05
17	14.42	33.465	24.914	5.88	101.2	2.7	0.25	0.0	0.00	0.22	0.06	34.	2.5	2.6	2.5	0.08
26	14.41	33.462	24.914	5.86	100.8	2.6	0.24	0.0	0.00	0.23	0.05					
37	14.42	33.464	24.914	5.87	101.0	2.6	0.25	0.0	0.00	0.23	0.05	9.4	1.6	1.6	1.6	0.05
53	14.42	33.466	24.916	5.87	101.0	2.6	0.25	0.0	0.00	0.23	0.05	3.4	0.64	0.66	0.65	0.05
68	14.43	33.464	24.913	5.88	101.2	2.6	0.25	0.0	0.00	0.21	0.06	1.3	0.11	0.11	0.11	0.06
78	14.45	33.477	24.919	5.86	100.9	2.6	0.24	0.0	0.00	0.24	0.05					
88	14.47	33.481	24.918	5.87	101.1	2.4	0.25	0.0	0.00	0.25	0.05					
100	14.52	33.493	24.917	5.85	100.9	2.4	0.25	0.0	0.00	0.26	0.06	0.17	0.01	0.01	0.01	0.03

RV DAVID STARR JORDAN — CALCOFI CRUISE 9904 — STATION 87 50

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	FOREL	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE
33 19.5 N	119 39.8 W	8/ 4/99	1825 UTC	8 m		1201 - 1851 PST	1201 PST	1851 PST	1172.6 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	12.23	33.691	25.529	5.92	97.5	10.3	0.77	7.3	0.12	3.70	0.52	83. A	55.1	54.2	54.7	0.21
6	12.23	33.694	25.532	6.04	99.5	10.3	0.78	7.3	0.13	3.94	0.39	32.	76.4	93.3	84.8	0.45
13	12.19	33.691	25.537	5.87	96.6	10.3	0.78	7.5	0.12	4.01	0.55	8.3	50.2	53.8	52.0	0.50
18	12.18	33.692	25.540	5.86	96.4	10.3	0.79	7.5	0.12	3.70	0.54	3.2	19.4	18.3	18.8	0.13
24	12.14	33.695	25.550	5.83	95.8	10.4	0.81	7.9	0.13	3.96	0.51	1.00	7.7	7.0	7.3	0.16
33	12.01	33.707	25.584	5.68	93.1	11.3	0.89	8.9	0.14	4.20	0.73	0.18	0.53	0.43	0.48	0.18

RV DAVID STARR JORDAN — CALCOFI CRUISE 9904 — STATION 87 90

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	FOREL	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE
31 59.7 N	122 23.2 W	9/ 4/99	1913 UTC	25 m		1214 - 1856 PST	1212 PST	1900 PST	221.5 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	13.04	33.049	24.875	6.10	101.8	2.7	0.34	0.0	0.01	0.31	0.10	88. A	1.5	1.6	1.5	0.04
18	13.02	33.049	24.879	6.11	101.9	2.6	0.32	0.0	0.00	0.31	0.09	33.	4.8	4.5	4.6	0.07
27	13.01	33.045	24.878	6.08	101.4	2.7	0.32	0.0	0.00	0.33	0.10					
36	13.03	33.051	24.879	6.09	101.6	2.6	0.35	0.0	0.00	0.31	0.09	11.	3.3	3.7	3.5	0.08
54	13.01	33.045	24.879	6.09	101.5	2.5	0.33	0.0	0.00	0.14	0.05	3.6	2.3	2.2	2.2	0.05
73	13.01	33.046	24.880	6.09	101.5	2.6	0.32	0.0	0.00	0.33	0.10	1.1	0.97	0.95	0.96	0.11
82	13.01	33.047	24.881	6.08	101.4	2.6	0.32	0.0	0.00	0.35	0.10					
91	13.03	33.058	24.886	6.05	100.9	2.6	0.33	0.1	0.01	0.30	0.10					
102	12.60	33.148	25.040	5.74	94.9	3.5	0.42	1.4	0.06	0.25	0.13	0.19	0.14	0.07	0.11	0.03

RV DAVID STARR JORDAN — CALCOFI CRUISE 9904 — STATION 90 28

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	FOREL	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE
33 28.6 N	117 45.9 W	7/ 4/99	1837 UTC	8 m		1157 - 1846 PST	1155 PST	1846 PST	1622.8 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	13.02	33.598	25.304	6.37	106.6	1.0	0.26	0.9	0.05	5.10	1.39	83. A	85.8	84.7	85.3	0.65
6	12.99	33.608	25.317	6.36	106.4	1.0	0.27	0.9	0.05	5.37	1.13	32.	105.3	108.4	106.8	0.55
13	12.94	33.599	25.320	6.36	106.3	1.0	0.26	0.9	0.05	5.37	1.90	8.3	74.0	74.1	74.1	0.32
18	12.94	33.598	25.320	6.31	105.4	1.0	0.28	0.9	0.05	4.96	1.59	3.2	31.4	27.0	29.2	0.39
24	12.93	33.605	25.327	6.29	105.1	1.1	0.30	1.0	0.05	5.23	0.98	1.00	9.6	8.9	9.2	0.22
34	12.57	33.605	25.398	6.00	99.5	2.1	0.41	2.4	0.11	6.17	1.15	0.15	0.93	0.94	0.93	0.20

RV DAVID STARR JORDAN — CALCOFI CRUISE 9904 — STATION 90 60

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	FOREL	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE
32 25.3 N	119 57.3 W	6/ 4/99	1817 UTC	17 m		1206 - 1843 PST	1203 PST	1843 PST	293.4 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	13.09	33.421	25.153	6.10	102.1	4.6	0.46	1.8	0.08	0.63	0.12	83. A	4.3	4.1	4.2	0.05
11	12.99	33.422	25.173	6.10	101.9	4.6	0.46	1.8	0.08	0.69	0.14	37.	8.7	9.2	8.9	0.09
18	12.92	33.419	25.185	6.10	101.8	4.7	0.47	2.0	0.08	0.73	0.14					
26	12.79	33.456	25.240	6.05	100.7	5.2	0.52	2.7	0.10	0.58	0.14	9.6	6.8	7.5	7.1	0.07
37	12.63	33.533	25.331	6.01	99.7	6.4	0.63	4.4	0.17	0.68	0.19	3.5	4.0	3.7	3.8	0.03
48	12.44	33.572	25.398	5.99	99.0	7.5	0.73	5.7	0.22	0.51	0.14	1.3	1.5	1.3	1.4	0.05
58	12.24	33.617	25.472	5.97	98.3	8.8	0.83	7.4	0.30	0.60	0.23					
70	12.23	33.638	25.490	5.90	97.1	8.9	0.85	7.7	0.30	0.68	0.29	0.18	0.18	0.20	0.19	0.04

A) INCUBATION LIGHT INTENSITIES WERE 92, 36, 10, 3.6, 1.3, 0.19 PERCENT RESPECTIVELY.

PRIMARY PRODUCTIVITY CASTS

RV DAVID STARR JORDAN — CALCOFI CRUISE 9904 — STATION 90 100

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	FOREL	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE
31 5.1 N	122 39.6 W	5/ 4/99	1811 UTC	27 m		1214 - 1851 PST	1214 PST	1851 PST	143.7 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	14.23	33.323	24.844	5.93	101.6	2.6	0.29	0.0	0.00	0.23	0.07	89. A	0.44	0.40	0.42	0.02
19	14.22	33.323	24.847	5.92	101.4	2.6	0.29	0.0	0.00	0.23	0.07	34.	2.5	2.8	2.6	0.03
30	14.22	33.323	24.847	5.91	101.2	2.6	0.29	0.0	0.00	0.24	0.07					
41	14.22	33.323	24.847	5.91	101.2					0.22	0.07	9.7	2.4	2.4	2.4	0.03
50	14.22	33.322	24.847	5.90	101.0	2.5	0.29	0.0	0.00	0.23	0.07					
59	14.22	33.323	24.848	5.89	100.9	2.6	0.28	0.0	0.00	0.24	0.07	3.5	1.4	1.3	1.3	0.01
67	14.23	33.324	24.847	5.91	101.2	2.5	0.30	0.0	0.00	0.23	0.08					
78	14.23	33.323	24.846	5.90	101.0	2.4	0.29	0.0	0.00	0.23	0.07	1.2	0.58	0.58	0.58	0.02
87	14.23	33.323	24.847	5.90	101.0	2.4	0.29	0.0	0.00	0.23	0.08					
99	13.96	33.374	24.943	5.73	97.6	2.9	0.37	0.9	0.08	0.31	0.25					
111	13.03	33.283	25.061	5.68	94.9	4.0	0.50	2.7	0.02	0.23	0.13	0.18	0.09	0.09	0.09	0.01

RV DAVID STARR JORDAN — CALCOFI CRUISE 9904 — STATION 93 50

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	FOREL	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE
32 11.0 N	118 53.5 W	2/ 4/99	1934 UTC	15 m		1215 - 1841 PST	1200 PST	1843 PST	301.3 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	13.23	33.505	25.190	6.00	100.8	5.9	0.50	2.3	0.08			90. A	7.4	6.8	7.1	0.13
11	13.23	33.505	25.190	6.01	101.0	5.7	0.49	2.3	0.08			32.	10.8	11.0	10.9	0.07
22	13.17	33.505	25.202	6.00	100.7	5.7	0.50	2.4	0.08	0.83	0.18	11.	7.9	7.6	7.7	0.11
31	13.11	33.512	25.220	6.07	101.7	5.7	0.51	2.6	0.09	0.92	0.21	4.2	4.1	4.0	4.1	0.02
42	13.08	33.513	25.227	5.86	98.1	5.8	0.52	2.7	0.09	0.65	0.19	1.4	1.7	1.7	1.7	0.06
52	12.94	33.516	25.257	5.84	97.5	6.3	0.58	3.7	0.13	0.63	0.21					
61	12.60	33.509	25.319	5.53	91.7	7.5	0.72	5.7	0.16	0.50	0.19	0.19	0.08	0.09	0.08	0.04

RV DAVID STARR JORDAN — CALCOFI CRUISE 9904 — STATION 93 80

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	FOREL	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE
31 10.4 N	120 56.2 W	3/ 4/99	1827 UTC	20 m		1207 - 1849 PST	1207 PST	1851 PST	167.3 mg C/m2 B

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	13.27	33.171	24.923	6.08	102.0	3.2	0.36	0.2	0.02	0.31	0.07	86. A,B	0.02U	0.02U	0.02U	0.02
14	13.23	33.165	24.927	6.09	102.1	3.0	0.35	0.2	0.02	0.32	0.09	34.	2.6	2.4	2.5	0.10
23	13.23	33.165	24.927	6.08	101.9	3.0	0.36	0.2	0.02	0.33	0.09					
30	13.23	33.177	24.937	6.08	101.9	3.0	0.35	0.2	0.03	0.33	0.09	10.	4.8	5.2	5.0	0.08
36	13.25	33.231	24.975	6.11	102.5	3.2	0.35	0.3	0.03	0.34	0.10					
44	13.23	33.243	24.988	6.10	102.3	3.2	0.35	0.3	0.03	0.37	0.11	3.4	2.3	2.3	2.3	0.10
51	13.23	33.246	24.991	6.09	102.1	3.2	0.35	0.3	0.03	0.36	0.11					
58	13.33	33.299	25.012	6.03	101.4	3.2	0.36	0.5	0.05	0.22	0.08	1.2	0.59	0.60	0.59	0.07
71	12.60	33.370	25.211	5.87	97.2	5.0	0.56	3.2	0.32	0.31	0.16					
91	11.21	33.468	25.547	4.88	78.5	12.5	1.10	12.5	0.03	0.07	0.07	0.09	-0.01	0.01	0.00	0.07

B) INTEGRATED VALUE CACULATED USING A SURFACE VALUE DERIVED FROM THE SECOND DEPTH UPTAKE AND THE CRUISE MEAN RATIO OF THE SURFACE AND SECOND DEPTH UPTAKES.

RV DAVID STARR JORDAN — CALCOFI CRUISE 9904 — STATION 93 120

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	FOREL	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE
29 51.1 N	123 34.8 W	4/ 4/99	2010 UTC	26 m		1305 - 1902 PST	1217 PST	1902 PST	57.2 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
3	16.11	33.947	24.914	5.69	101.6	2.7	0.22	0.0	0.00	0.17	0.03	84. A	1.2	1.1	1.2	0.03
17	16.10	33.946	24.916	5.67	101.2	2.7	0.21	0.0	0.00	0.16	0.04	37.	1.4	1.4	1.4	0.04
39	16.11	33.949	24.917	5.66	101.1	2.7	0.21	0.0	0.00	0.16	0.05	10.	0.76	0.75	0.76	0.05
56	16.11	33.947	24.916	5.67	101.2	2.5	0.21	0.0	0.00	0.15	0.04	3.7	0.21	0.22	0.21	0.05
75	16.11	33.949	24.918	5.65	100.9	2.5	0.21	0.0	0.00	0.14	0.04	1.2	0.05	0.06	0.05	0.05
83	16.11	33.953	24.921	5.65	100.9	2.5	0.21	0.0	0.00	0.15	0.05					
95	16.12	33.951	24.918	5.67	101.3	2.5	0.21	0.0	0.00	0.16	0.05					
106	16.12	33.952	24.919	5.64	100.7	2.4	0.21	0.0	0.00	0.16	0.10	0.19	0.02	0.00	0.01	0.03

A) INCUBATION LIGHT INTENSITIES WERE 92, 36, 10, 3.6, 1.3, 0.19 PERCENT RESPECTIVELY.

CalCOFI Cruise 9904

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 04.9	120 46.3	04/15	1417	1423	107	53	2762	637
77	51	35 01.7	120 55.6	04/15	1202	1223	367	214	583	583
77	55	34 53.7	121 11.8	04/15	0845	0906	404	209	2460	94
77	60	34 44.4	121 31.8	04/15	0522	0544	418	208	656	53
77	70	34 23.3	122 14.6	04/14	2352	2413	419	207	473	473
77	80	34 04.2	122 56.5	04/14	1803	1825	403	213	283	283
77	90	33 43.1	123 38.2	04/14	1209	1230	300	213	237	237
77	100	33 23.3	124 18.6	04/14	0616	0637	418	210	34	34
80	51	34 27.4	120 32.1	04/12	1612	1618	128	55	296	296
80	55	34 19.9	120 47.9	04/12	1958	2020	417	213	648	648
80	60	34 09.6	121 08.3	04/13	0009	0031	412	214	192	192
80	70	33 49.0	121 50.6	04/13	0607	0629	413	214	542	542
80	80	33 29.5	122 31.8	04/13	1202	1223	415	212	147	147
80	90	33 09.7	123 12.8	04/13	1802	1824	445	209	121	121
80	100	32 48.0	123 54.7	04/14	0001	0022	434	207	903	903
82	47	34 17.3	120 01.3	04/12	1148	1209	432	211	187	187
83	40.6	34 13.5	119 25.6	04/12	0654	0657	79	24	177	177
83	42	34 10.7	119 31.3	04/12	0512	0527	300	144	193	193
83	51	33 52.9	120 09.0	04/11	2315	2324	176	85	607	607
83	55	33 43.9	120 24.5	04/11	1955	2017	480	202	194	194
83	60	33 34.2	120 46.1	04/11	1543	1604	417	209	374	374
83	70	33 14.2	121 26.3	04/11	0842	0904	459	204	122	122
83	80	32 54.9	122 08.1	04/11	0337	0359	421	216	231	231
83	90	32 34.0	122 48.8	04/10	2156	2217	427	217	143	143
83	100	32 14.9	123 30.4	04/10	1615	1637	455	208	123	123
83	110	31 54.7	124 10.7	04/10	0858	0920	432	210	32	32
87	33	33 53.3	118 29.7	04/07	1825	1830	117	41	214	214
87	35	33 49.2	118 37.3	04/07	2126	2148	422	206	107	107
87	40	33 39.8	118 58.9	04/08	0123	0144	413	215	155	155
87	45	33 30.1	119 18.9	04/08	0506	0528	408	212	270	270
87	50	33 18.9	119 39.6	04/08	0811	0817	133	53	272	272
87	55	33 09.5	120 00.5	04/08	1404	1426	421	215	199	57
87	60	32 59.4	120 21.4	04/08	1806	1828	436	214	94	94
87	90	31 59.9	122 23.0	04/09	1207	1229	433	207	39	39
87	100	31 40.0	123 03.7	04/09	1837	1859	439	215	39	39
87	110	31 19.7	123 44.5	04/10	0036	0058	436	217	41	41
90	28	33 28.7	117 46.1	04/07	1002	1009	139	59	122	122
90	30	33 26.0	117 54.1	04/07	0818	0840	420	215	448	195
90	35	33 16.1	118 14.4	04/07	0425	0444	340	193	200	200
90	37	33 10.9	118 22.4	04/07	0143	0204	417	211	216	216
90	45	32 54.9	118 55.4	04/06	2053	2115	427	212	408	408
90	53	32 38.9	119 28.7	04/06	1603	1625	442	212	138	138
90	60	32 25.5	119 57.0	04/06	1115	1136	402	214	189	189
90	70	32 05.6	120 38.4	04/06	0521	0543	420	213	119	119
90	80	31 44.5	121 18.8	04/05	2311	2333	441	213	100	100
90	90	31 25.2	121 59.2	04/05	1707	1729	436	216	32	32
90	100	31 05.5	122 40.3	04/05	0827	0849	444	214	14	14
90	110	30 46.0	123 18.8	04/05	0302	0323	456	208	26	26
90	120	30 25.9	123 59.2	04/04	2041	2103	447	217	25	25
93	26.7	32 56.7	117 18.3	04/01	1331	1338	147	62	130	130
93	28	32 54.9	117 23.2	04/01	1633	1655	450	206	56	56
93	30	32 50.3	117 32.0	04/01	1938	2000	434	212	88	88
93	35	32 40.3	117 53.0	04/01	2342	2403	419	218	98	98
93	40	32 30.5	118 12.8	04/02	0355	0417	447	212	103	103
93	45	32 20.8	118 33.6	04/02	0819	0841	443	214	56	56
93	50	32 11.0	118 54.0	04/02	1232	1254	429	218	51	51
93	55	32 00.7	119 13.6	04/02	1701	1723	441	214	57	57
93	60	31 51.2	119 34.0	04/02	2119	2141	420	215	117	117
93	70	31 31.6	120 15.3	04/03	0355	0417	431	212	79	79
93	80	31 10.7	120 55.9	04/03	0929	0951	447	206	58	58
93	90	30 49.9	121 34.8	04/03	1648	1710	435	215	30	30

FIGURES

Avifauna Observations

CalCOFI Cruise 9904

1a. Black-legged Kittiwake distribution.

1b. Brown Pelican distribution.

1c. Sooty Shearwater distribution.

1d. Surf Scoter distribution

1e. Red and Red-necked Phalarope distribution.

1f. Western Gull distribution.

CalCOFI Cruise 9904