

# data report

**CalCOFI Cruise 0411**  
**2 – 19 November 2004**

**CC Reference 07-02**  
**2 March 2007**



**UNIVERSITY OF CALIFORNIA, SAN DIEGO**  
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**LA JOLLA, CALIFORNIA 92093-0227**

**PHYSICAL, CHEMICAL AND BIOLOGICAL DATA**

**CalCOFI Cruise 0411**  
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## INTRODUCTION

The data presented in this report were collected during the 0411\* cruise of the California Cooperative Oceanic Fisheries Investigations (CalCOFI) program aboard the RV *Roger Revelle* of Scripps Institution of Oceanography, University of California, San Diego. The CalCOFI program was organized in the late 1940's to study the causes of variations in population size of fishes of importance to the State of California. It is carried out by NOAA's National Marine Fisheries Service Southwest Fisheries Science Center, the California Department of Fish and Game, and the Integrative Oceanography Division (IOD) at Scripps Institution of Oceanography (SIO). IOD contributes to this program by investigations of the physical, chemical and biological structure of the California Current. Data from the cruises were collected and processed by personnel of the Integrative Oceanography Division and the Southwest Fisheries Science Center. Other SIO staff members and volunteers also assisted in the collection of data and chemical analyses at sea. CalCOFI data presented in this report and collected on previous cruises can be accessed at <http://www.calcofi.org>.

## STANDARD PROCEDURES

### *CTD/Rosette Cast Data*

A Sea-Bird Electronics, Inc., Conductivity-Temperature-Depth (CTD) instrument (Seabird 911, Serial number 1049) with a rosette was deployed at each station on these cruises. The rosette was equipped with 24 ten-liter plastic (PVC) bottles equipped with epoxy-coated springs and Viton O-rings. Each CTD/rosette cast usually sampled 20 depths to a maximum sampling depth of 525 meters, bottom depth permitting. Occasional stations have multiple bottles tripped at the same depth to provide more water for ancillary programs. The sample spacing was designed to sample depth intervals as close as 10 meters around the sharp upper thermocline features such as the chlorophyll, oxygen, nitrite maxima and the shallow salinity minimum. Salinity, oxygen and nutrients were determined at sea for all depths sampled. Chlorophyll-*a* and phaeopigments were determined at sea on samples from the top 200 meters, bottom depth permitting.

Pressures and temperatures assigned to the water sample data were derived from the CTD signals recorded just prior to the bottle trip. Pressures have been converted to depths by the Saunders (1981) pressure-to-depth conversion technique. CTD temperatures reported with the bottle data have been rounded to the nearest hundredth of a degree Celsius.

Salinity samples were collected from all rosette bottles and analyzed at sea using a Guildline model 8410 Portasal salinometer. Salinity samples were drawn into 200 ml Kimax high-alumina borosilicate bottles that were rinsed three times with sample prior to filling. The results were compared with the CTD salinity to verify that the rosette bottle did not mis-trip or leak. The salinometer was standardized before and after each group of samples with standardized seawater. Periodic checks on the conductivity of the standardized seawater were made by comparison with IAPSO Standard Seawater batch P144. Salinity values were calculated using the algorithms for the Practical Salinity Scale, 1978 (UNESCO, 1981a) and are reported to three decimal places, provided that accepted standards were met.

Dissolved oxygen analyses were performed with an Ocean Data Facility of Scripps Institution of Oceanography designed automated oxygen titrator using photometric end-point detection based on the absorption of 365nm wavelength ultra-violet light. A computer using PC software controlled the titration of the samples and the data logging. The method used a modified-Winkler titration following the technique of Carpenter (1965) with modifications by Culberson (1991), but with higher concentrations of thiosulfate solution (50 g/l). Standard KIO<sub>3</sub> solutions prepared ashore were run at the beginning of each run. Reagent and sea water blanks were determined to account for presence of oxidizing or reducing materials.

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

three times prior to filling. Standardizations were done at the beginning and end of each group of samples with a set of mid-concentration range standards prepared fresh for each run. Samples not analyzed immediately after collection were refrigerated and run the following day. Sets of six different concentration standards were analyzed periodically to determine the deviation from linearity as a function of concentration, for the silicate, nitrate and phosphate analyses. Final sample concentrations were corrected for deviations from linearity using a second order polynomial.

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

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

#### *Primary Productivity Sampling*

Primary productivity samples were taken each day shortly before local apparent noon (LAN). Primary production was estimated from  $^{14}\text{C}$  uptake using a simulated *in situ* technique. Light penetration was estimated from the Secchi depth (assuming that the 1% light level is three times the Secchi depth). The depths with ambient light intensities corresponding to light levels simulated by the on-deck incubators were identified and sampled on the rosette up-cast. Occasionally an extra bottle or two were tripped in addition to the usual 20 levels sampled in the combined rosette-productivity cast in order to maintain the normal sampling depth resolution. Triplicate samples (two light and one dark control) were drawn from each productivity sample depth into 250 ml polycarbonate incubation bottles. Samples were inoculated with 32.3 - 41.6  $\mu\text{Ci}$  of  $^{14}\text{C}$  as  $\text{NaHCO}_3$  (200  $\mu\text{l}$  of 50  $\mu\text{Ci/ml}$  stock) prepared in a 0.3 g/liter solution of sodium carbonate (Fitzwater *et al.*, 1982). Acid contamination of Teflon stock bottles required individual station calculations for specific activity for each productivity experiment. Samples were incubated from LAN to civil twilight in seawater-cooled incubators with neutral-density screens which simulate *in situ* light levels. At the end of the incubation, the samples were filtered onto Millipore HA filters and placed in scintillation vials. One half ml of 10% HCl was added to each sample. The sample was then allowed to sit, without a cap, at room temperature for 12 hours (after Lean and Burnison, 1979). Following this, 10 ml of scintillation cocktail were added to each sample and the samples were returned to SIO where the radioactivity was determined with a scintillation counter. Salinity, oxygen, nutrients, chlorophyll-*a* and phaeopigments were determined from all rosette productivity bottles.

#### *Macrozooplankton Net Tows*

Macrozooplankton was sampled with a 71 cm mouth diameter paired net (bongo net) equipped with 0.505mm plankton mesh. Bottom depth permitting, the nets were towed obliquely from 210 meters to the surface. The tow time for a standard tow was 21.5 minutes. Volumes filtered were determined from flowmeter readings and the mouth area of the net. Only one sample of each pair was retained and preserved. The biomass, as wet displacement volume, after removal of large (>5 ml) organisms, was determined in the laboratory ashore. These procedures are summarized in greater detail in Kramer *et al.* (1972). An Optical Plankton Counter (OPC, Dave Checkley, SIO) was routinely used in one side of the paired bongo net frame. The purpose of the OPC is to obtain information on the vertical distributions of size categories of zooplankton, using data from the counter, without affecting the ongoing time series of data obtained from the catches of the integrative bongo net.

#### *Avifauna Observations (Point Reys Bird Observatory)*

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

## *Ancillary Programs*

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

- 1) *Underway Data.* Continuous near surface measurements of temperature, salinity and *in vivo* chlorophyll fluorescence were recorded from seawater pumped through the ship's uncontaminated seawater system. Water was drawn from a depth of approximately 3 meters. The data were logged in one-minute averages using a Sea-Bird Electronics, Inc., SBE 45 MicroTSG Thermosalinograph and a Wetlabs Wetstar fluorometer.
- 2) *ADCP.* Continuous profiles of ocean currents and acoustic backscatter between 20 and 500 meters deep were measured along the shiptrack from a hull-mounted 150 kHz Acoustic Doppler Current Profiler (ADCP). The ADCP data were averaged over 3-minute intervals. Sixty 8-meter depth bins were recorded. (T. Chereskin, SIO)
- 3) *California Current Ecosystem Long Term Ecological Research Program:* The CCE-LTER program augments standard CalCOFI measurements to further characterize the lower trophic levels as well as the carbon system. These additional samples, taken at all CalCOFI stations, are for measurements of particulate organic carbon and nitrogen, dissolved organic carbon and nitrogen, taxon-specific phytoplankton pigments, flow-cytometric counts of bacteria and picoautotrophs, microscopic counts of nano- microplankton, determination of mesozooplankton size structure using a Laser Optical Plankton Counter, and mesozooplankton community structure.
- 4) *SCCOOS Nearshore and Bio-optical Observations:* The objective of these observations is to extend CalCOFI time series to the nearshore and make bio-optical observations for the development of empirical proxies for particle size load and structure and phytoplankton biomass and rates of primary production. The nearshore observations consist of 9 stations at the ends and interspersed with current CalCOFI lines on the 20 m isobath with a standard set of CalCOFI observations. Bio-optical measurements at all CalCOFI and SCCOOS stations consist of irradiance at 9 wavelengths, light transmission at three wavelengths, fluorescence of Chl a, CDOM and phycoerythrin and light scattering at three wavelengths.
- 5) *Trace metals.* Seawater samples from the surface and at depth were obtained for iron analysis (dissolved and total iron) at 33 stations using a trace metal-clean pole sampler and trace metal-clean GO-flo bottles. Iron addition incubations were also performed at 15 stations to assay for iron limitation in the phytoplankton community. (K. Barbeau, SIO).
- 6) *Bio-optics.* Spectral radiometry of the top 100 meters of the water column were measured daily with a multi-spectral free fall radiometer (PRR-800, Biospherical). Water samples obtained from the CTD/rosette cast were analyzed for determination of absorption by particulate, detrital materials, and algal HPLC pigments. (G. Mitchell, SIO)
- 7) *Organic carbon.* At each station several samples were drawn from the CTD for total organic carbon concentration profiles. Casts of 24 ten liter bottles to 1000 meters were filtered for stable isotope measurements of organic carbon. Several solid phase extracts from filtered seawater were taken for chemical and isotope analyses of dissolved organic carbon (L. Aluwihare, SIO)
- 8) *Marine mammal observations.* During daylight transits, visual line-transect surveys were conducted by marine mammal observers focusing on cetaceans. Surveys were conducted using handheld 10x binoculars, while mounted 125x "Big Eyes" binoculars are used to confirm species identity of groups. Acoustic line-transect surveys were performed using a towed hydrophone array which consists of multiple hydrophone elements that sample sounds up to 100 kHz allowing for localization of calling animals. Acoustic monitoring also takes place on individual stations using sonobuoys.

## TABULATED DATA

### *CTD/Rosette Cast Data*

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

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

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

### *Primary Productivity Data*

In addition to the normal hydrographic data that are reported in the rosette cast data section, the tabulated data include: the *in situ* light levels at which the samples were collected, the uptake from each of the replicate light bottles, uptake 1 and uptake 2 (which have been corrected for dark uptake by subtracting the dark value), the mean of the two uptake values and the dark uptake. The uptake values are totals for the incubation period. Also shown are the times of LAN, civil twilight, and the value of the mean uptake integrated from the surface to the deepest sample, assuming the shallowest value continues to the surface and that negative values (when dark uptake exceeds light uptake) are zero. The uptake data are reported to two significant digits (values <1.00) or one decimal (values >1.00). 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<sup>3</sup>/1000m<sup>3</sup> strained) and as the total volume minus the volume of larger organisms under the heading "Small." Tow times are given in local PST (+8) time.

## FOOTNOTES

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

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

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## FIGURES

### Cruise 0411

1. CalCOFI Cruise 0411 track and station positions.
2. Horizontal distribution of dynamic height anomaly (0 over 500m). In areas shallower than 500 m, the dynamic heights were extrapolated on the basis of the offshore deeper steric height as described in Reid and Mantyla (1976).
3. Horizontal distributions at 10 meters: A) chlorophyll-*a*; B) potential density; C) temperature; and D) salinity.
4. Horizontal distributions at 200 meters: A) dynamic height anomaly (200 over 500 m); B) potential density; C) temperature; and D) salinity.
5. Sections along CalCOFI line 90 (vertical exaggeration, 1000): A) potential density; B) temperature; C) salinity; D) silicate; E) nitrate; F) phosphate; G) chlorophyll-*a*; H) oxygen saturation; I) oxygen; J) nitrite; and K) phaeopigments.

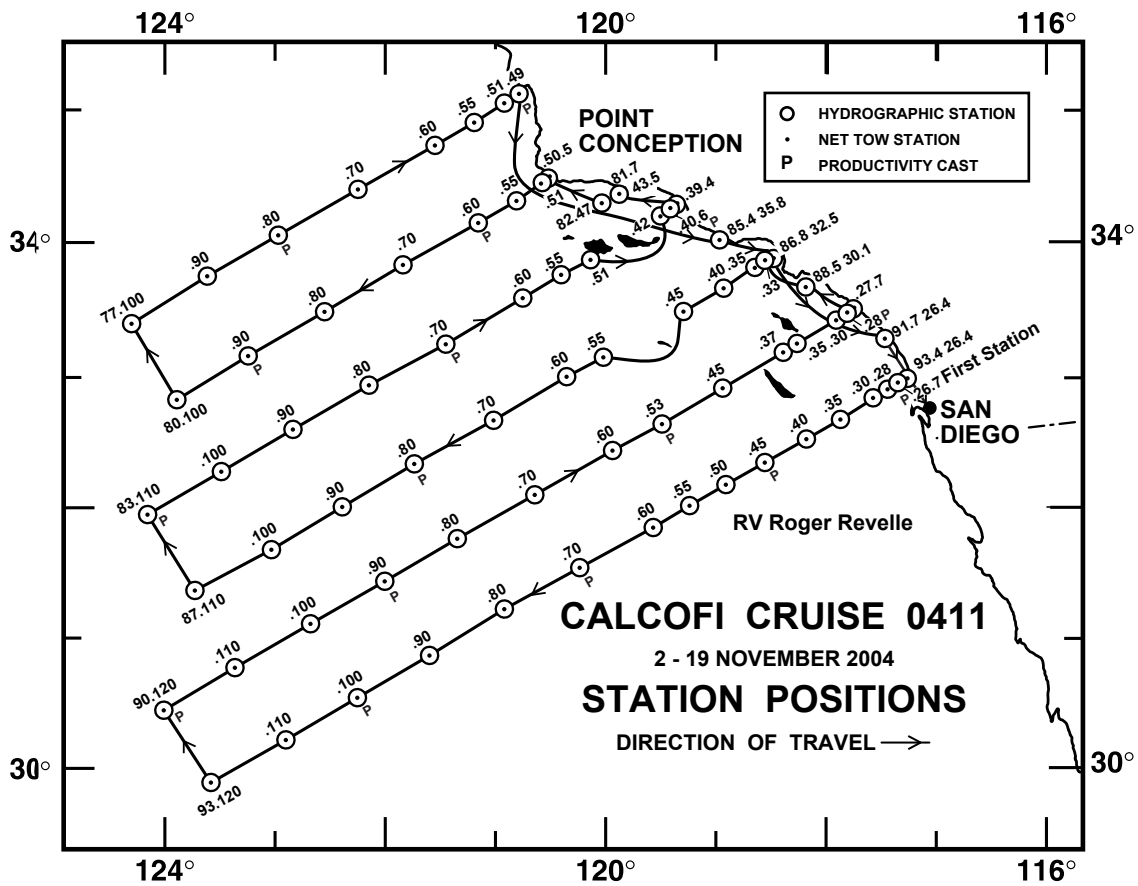


FIGURE 1

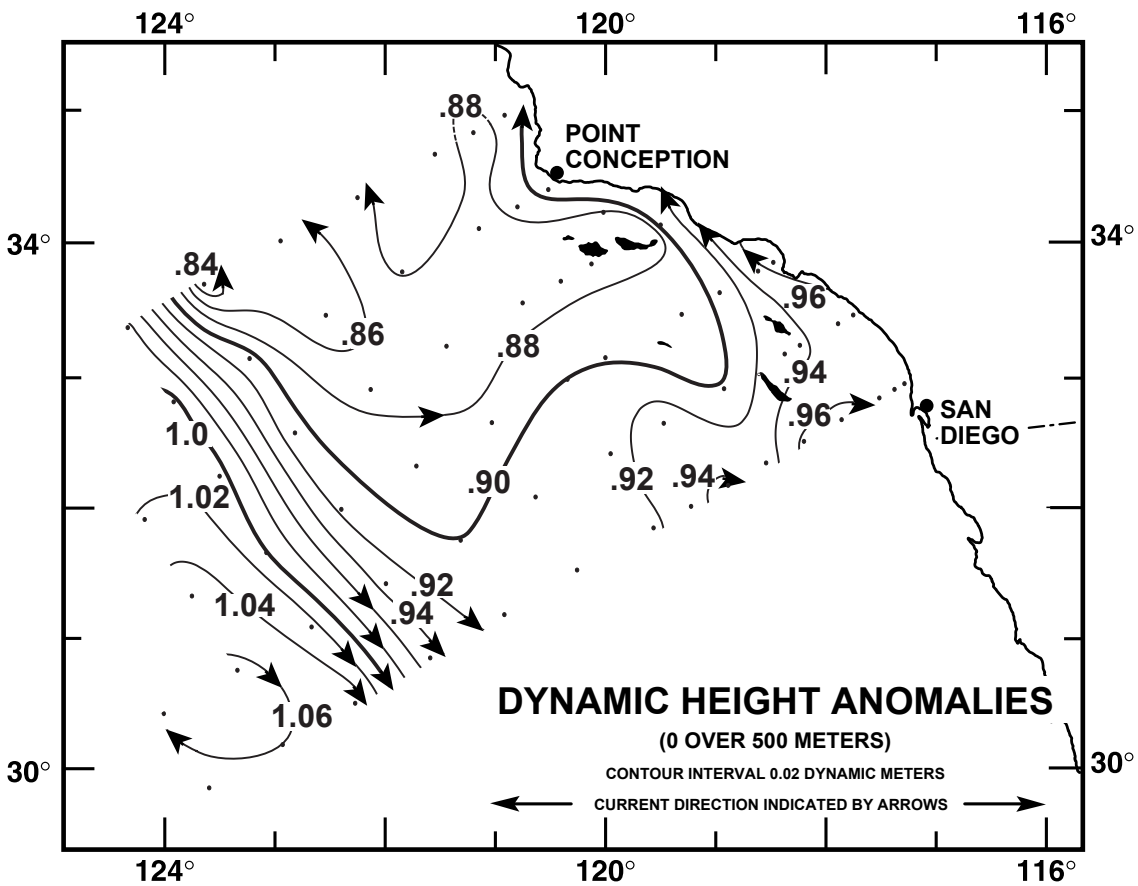


FIGURE 2



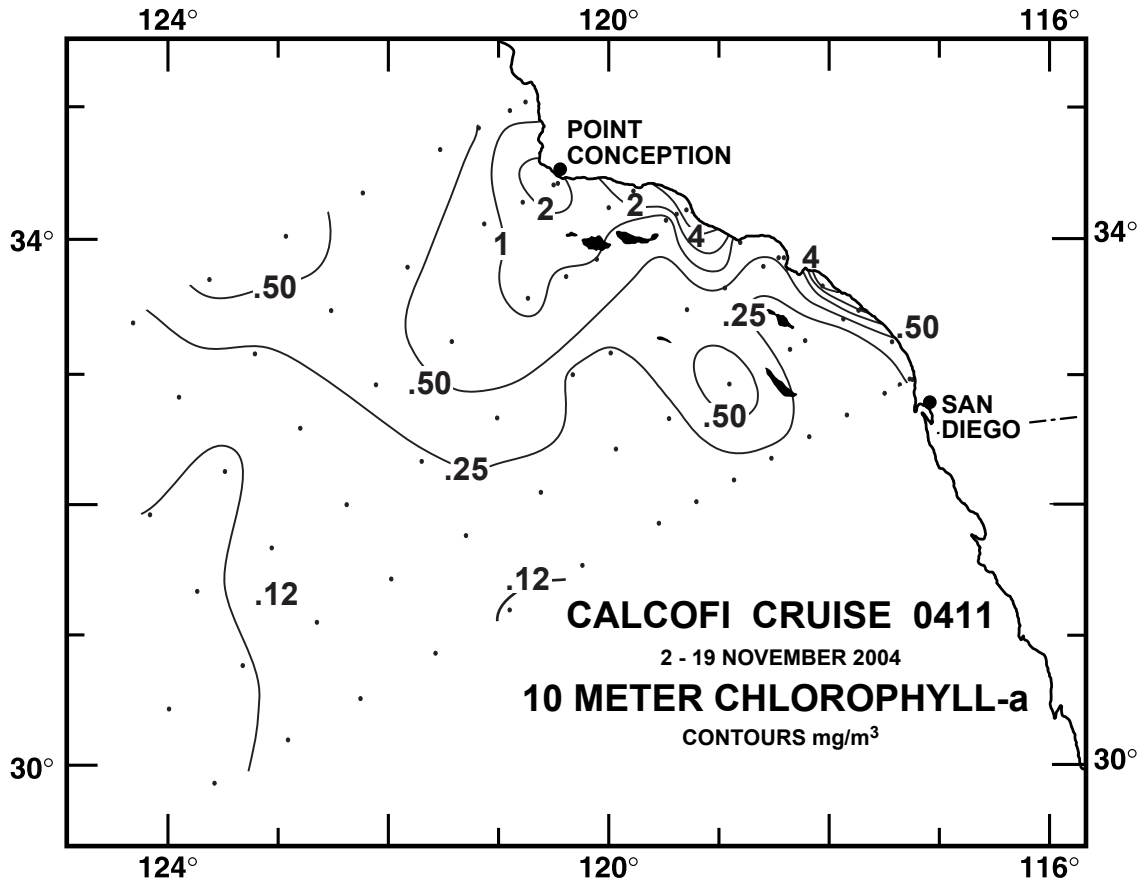


FIGURE 3A

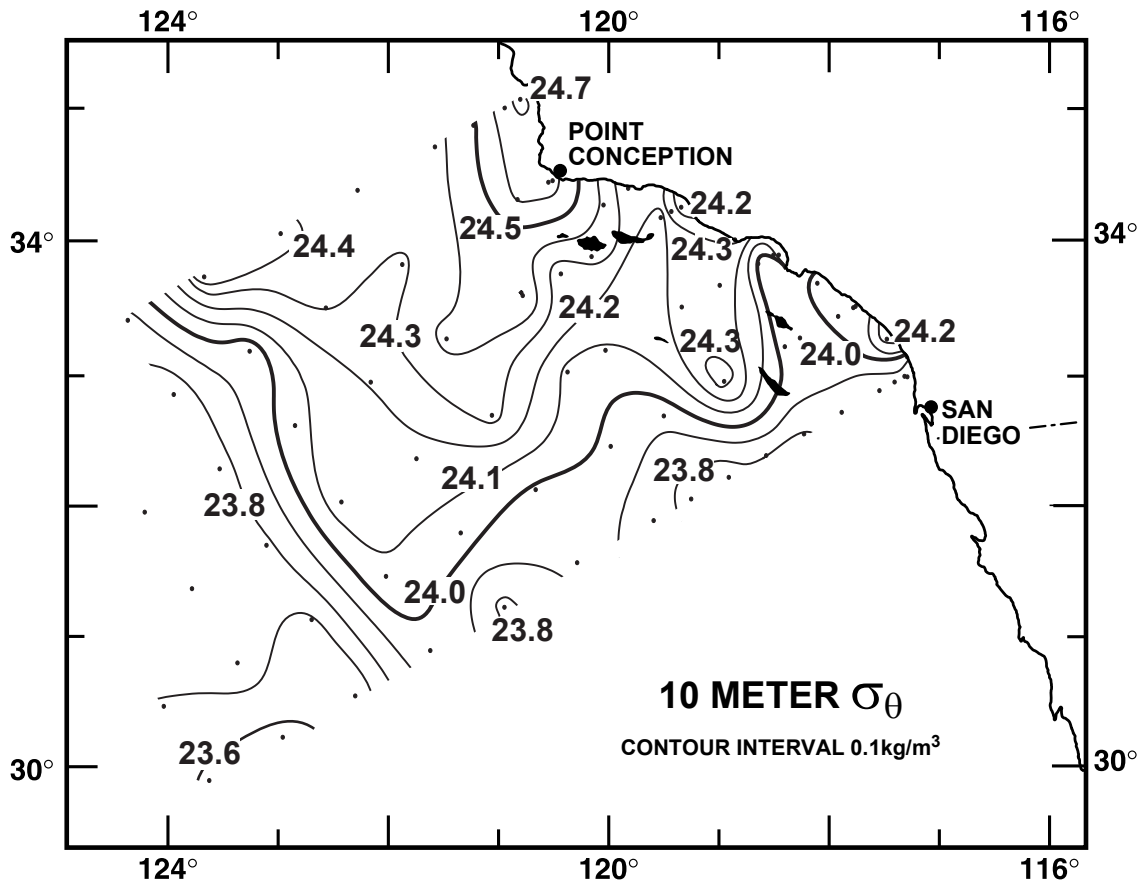


FIGURE 3B

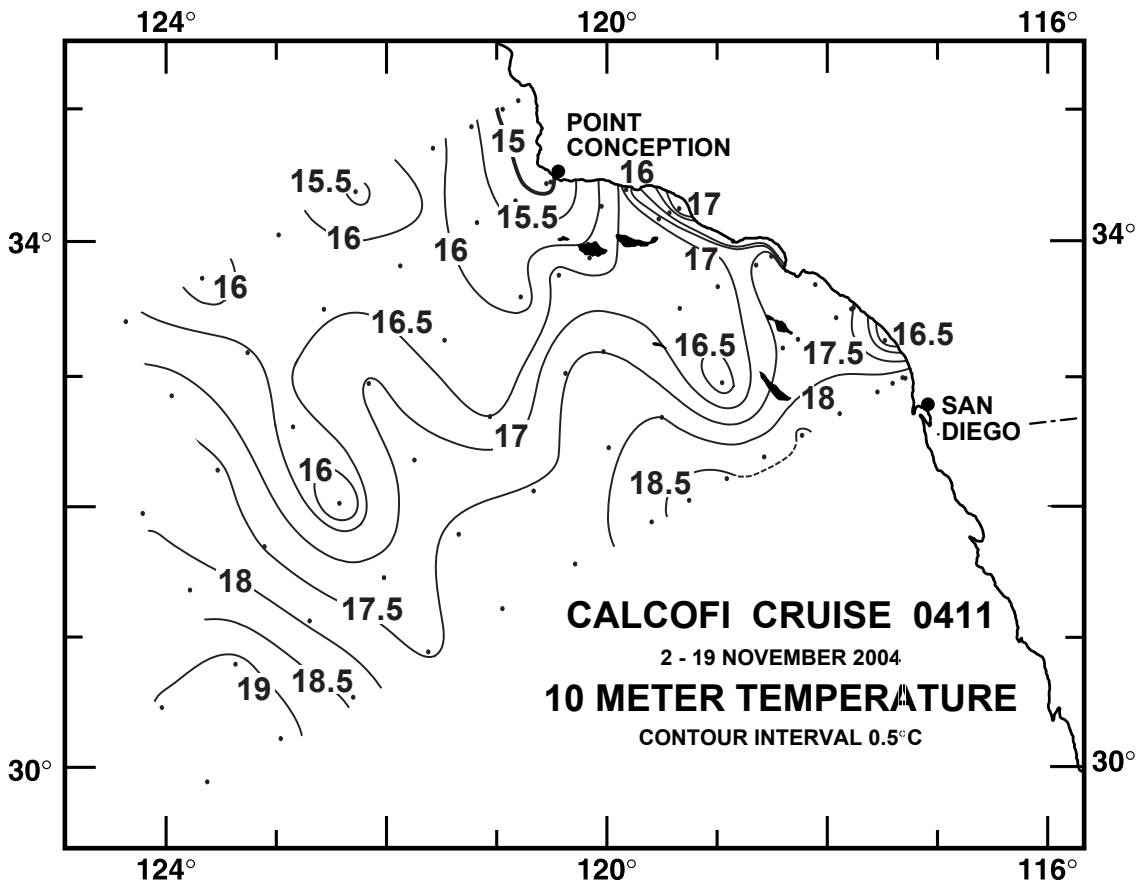


FIGURE 3C

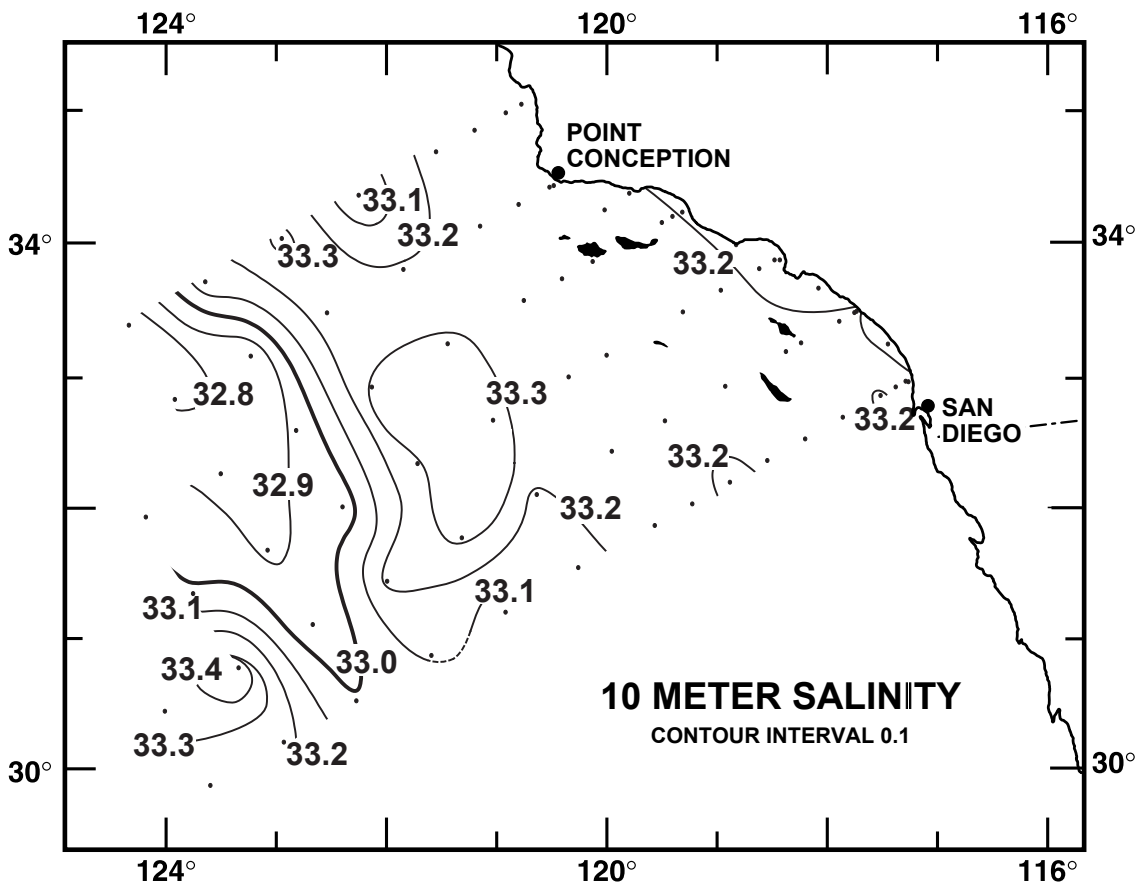


FIGURE 3D

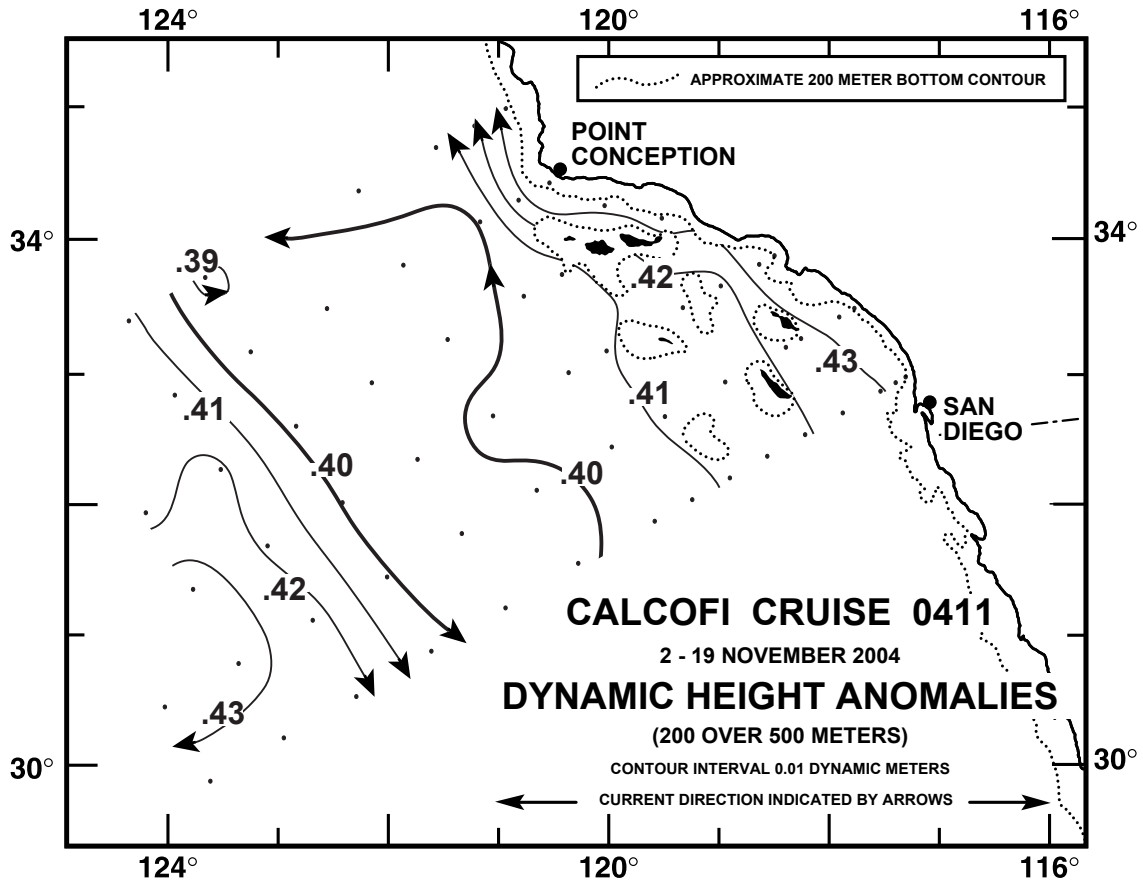


FIGURE 4A

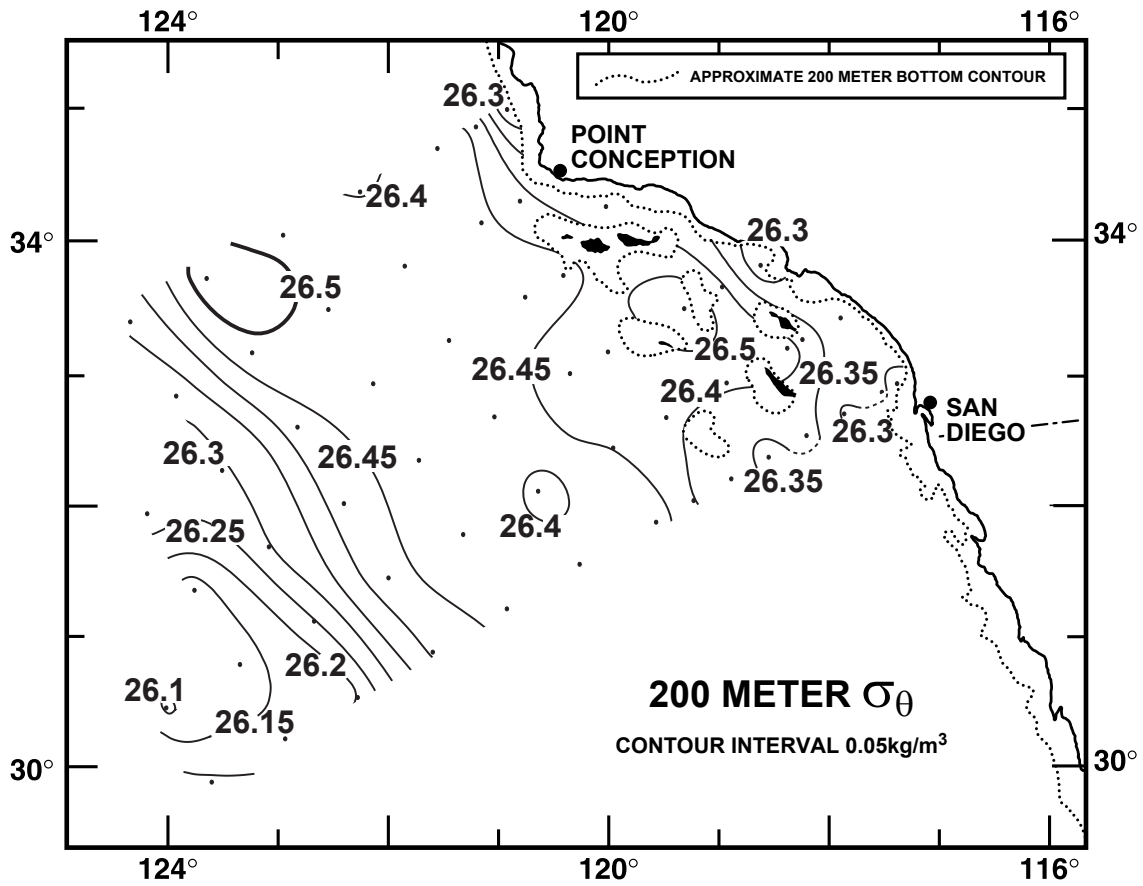


FIGURE 4B

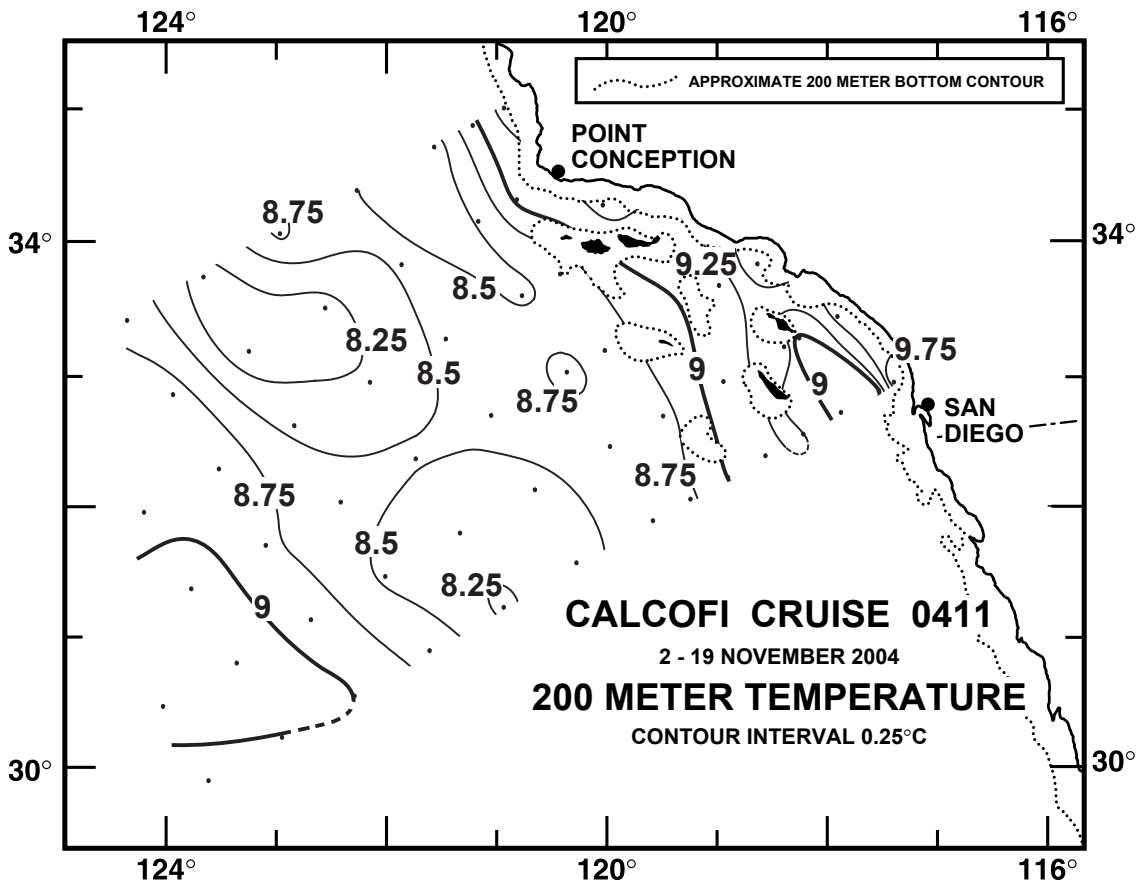


FIGURE 4C

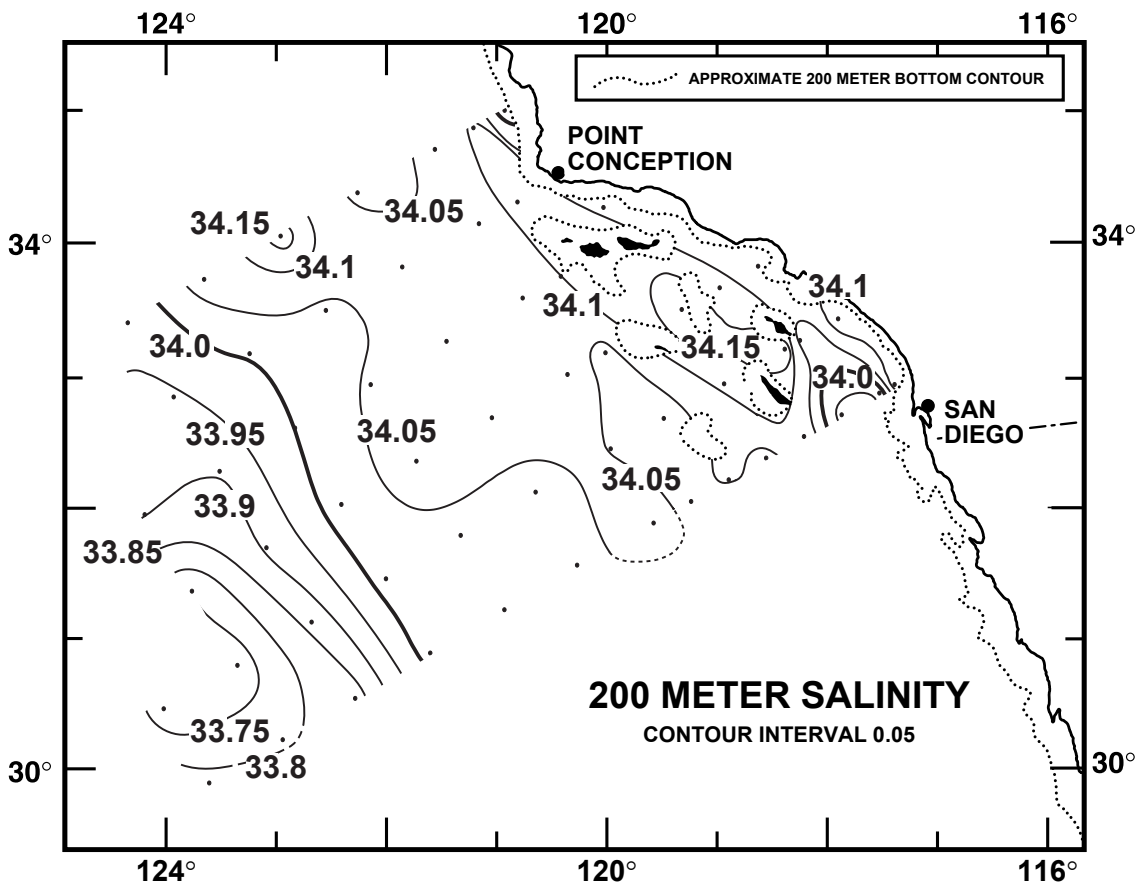


FIGURE 4D

# CALCOFI CRUISE 0411

6 - 9 NOVEMBER 2004

## POTENTIAL DENSITY ( $\sigma_\theta$ ) ALONG CALCOFI LINE 90

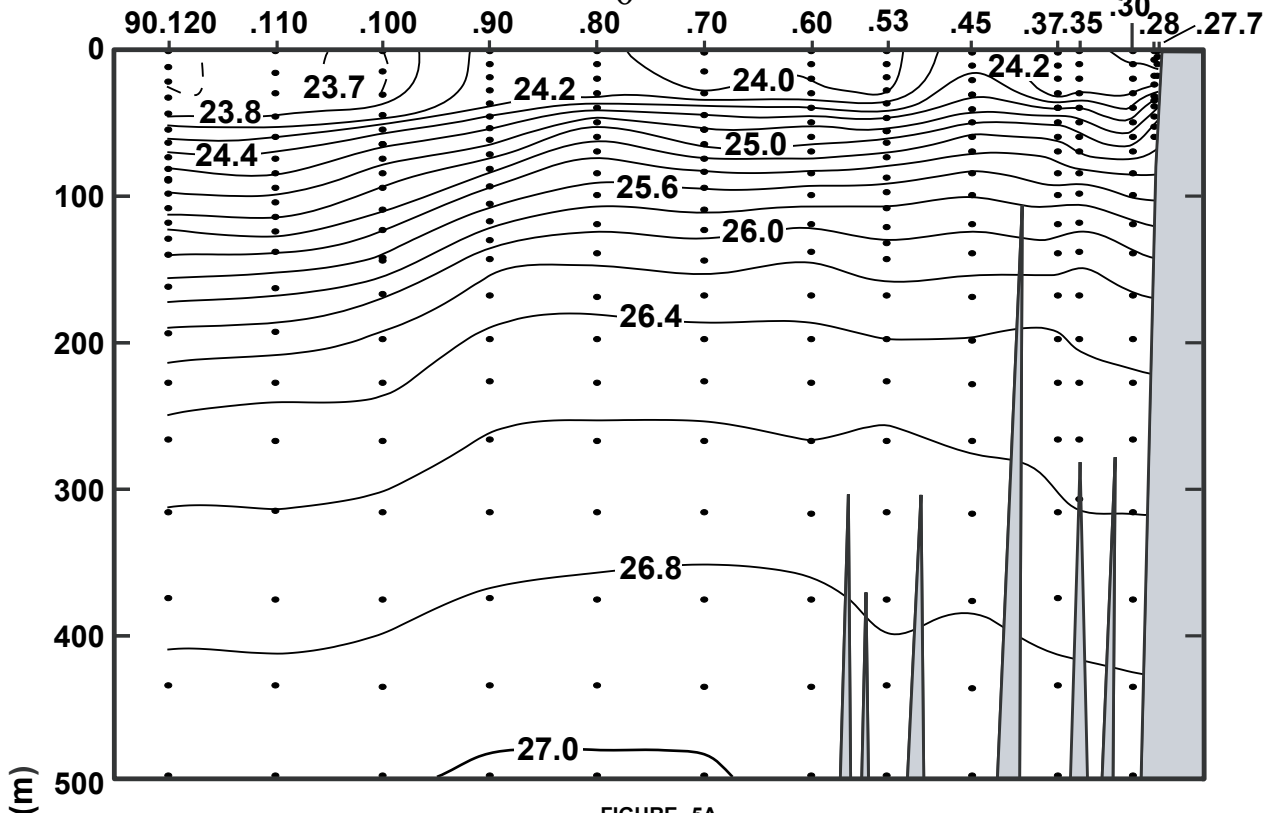


FIGURE 5A

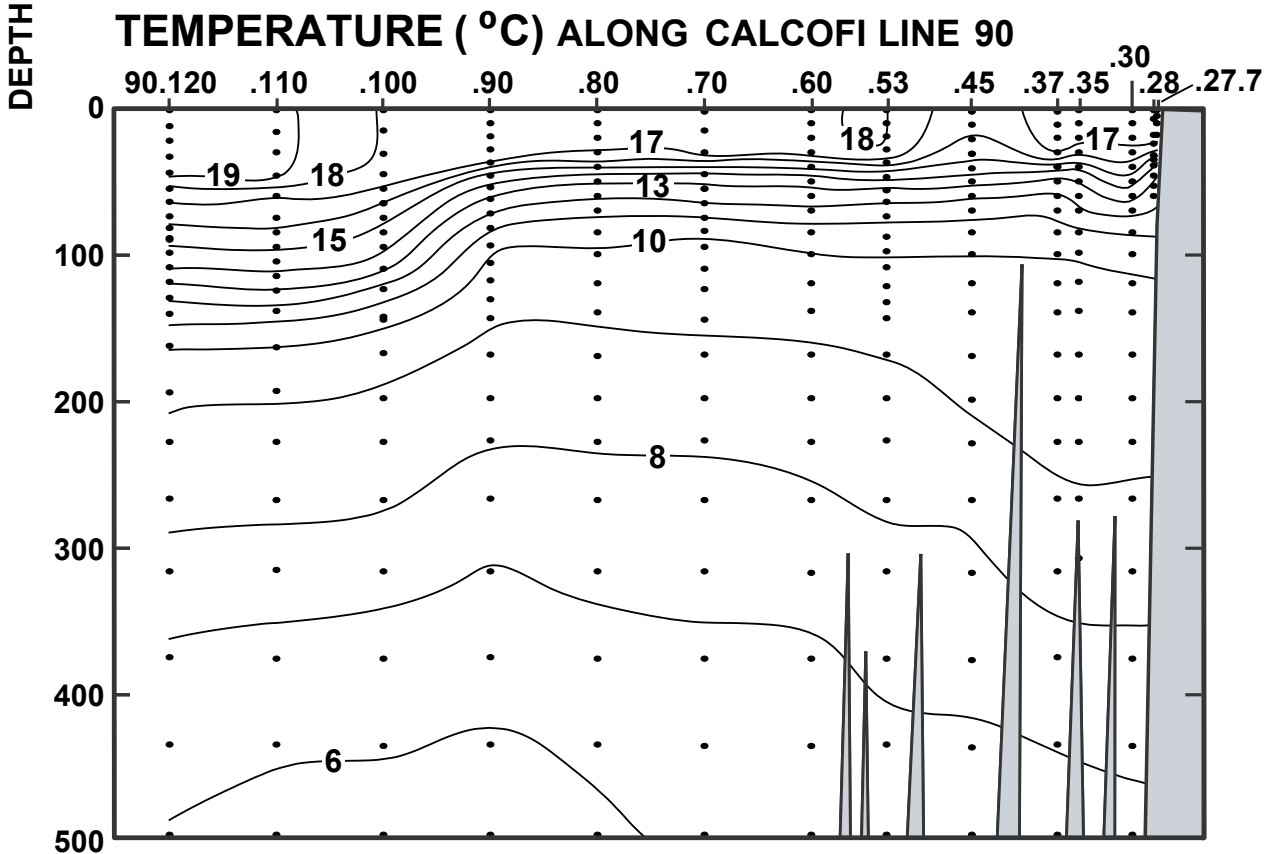


FIGURE 5B

# CALCOFI CRUISE 0411

6 - 9 NOVEMBER 2004

## SALINITY ALONG CALCOFI LINE 90

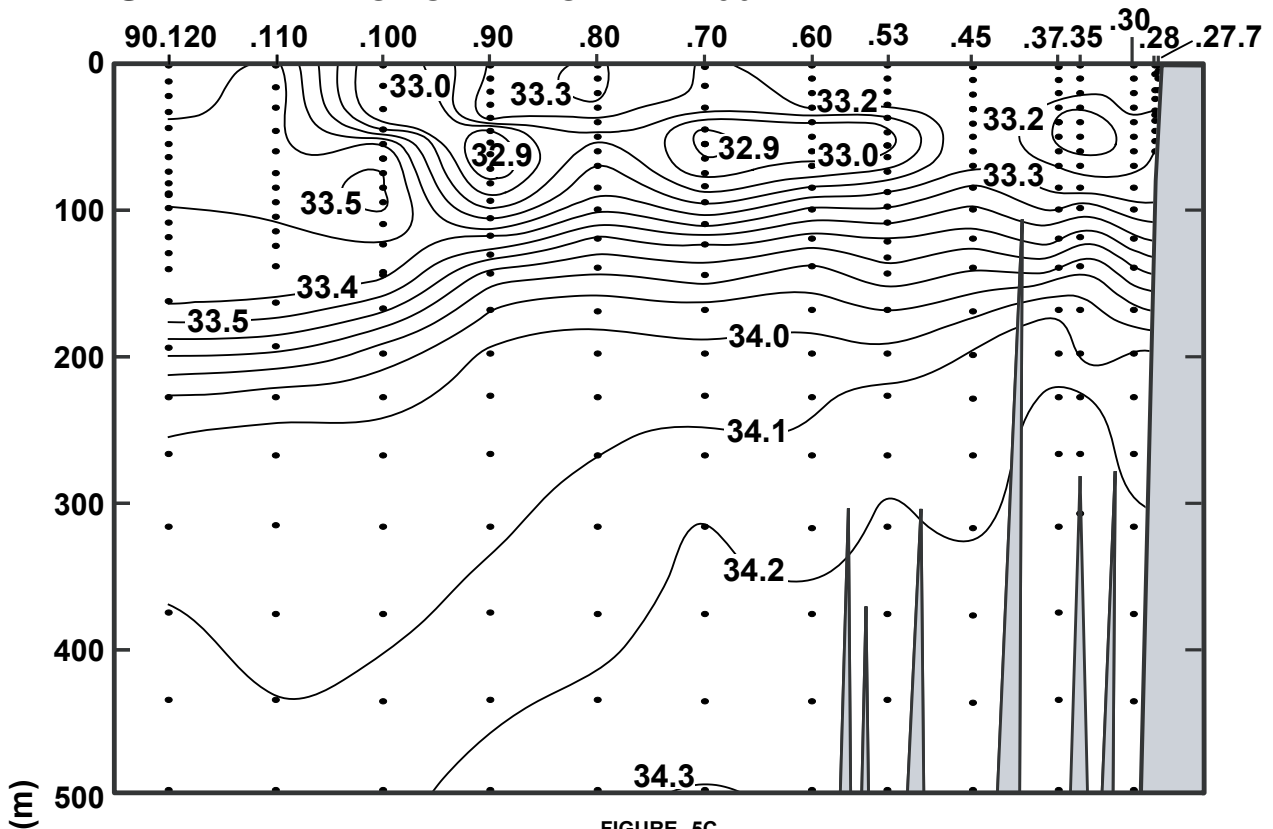


FIGURE 5C

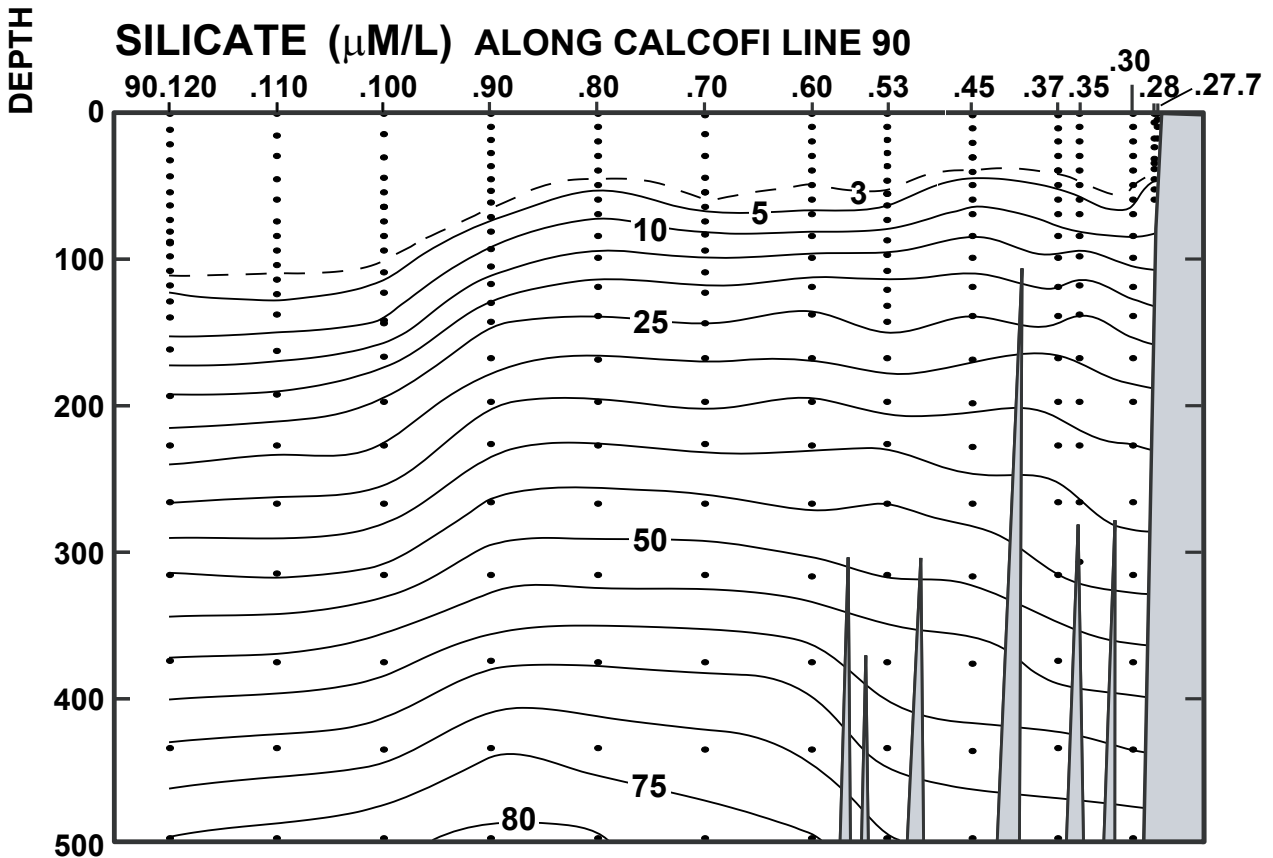


FIGURE 5D

# CALCOFI CRUISE 0411

6 - 9 NOVEMBER 2004

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

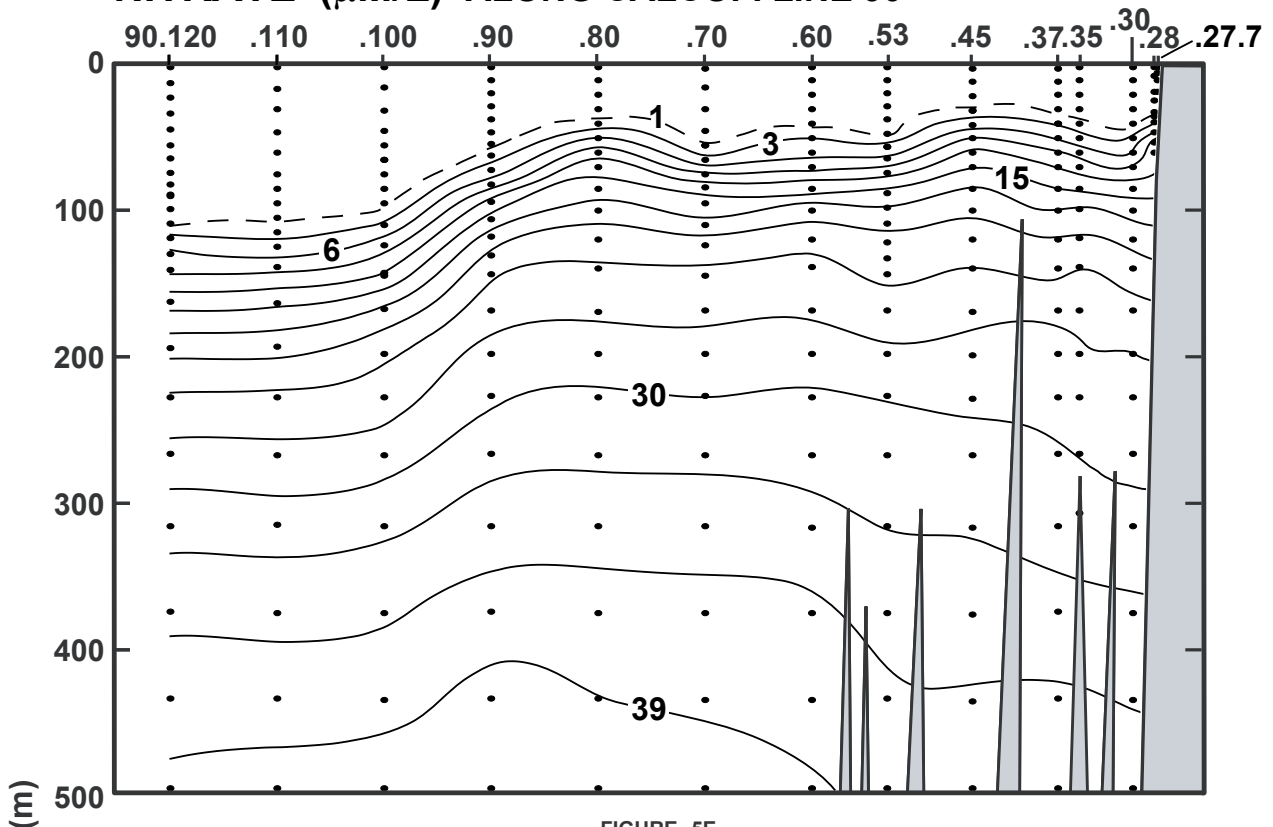


FIGURE 5E

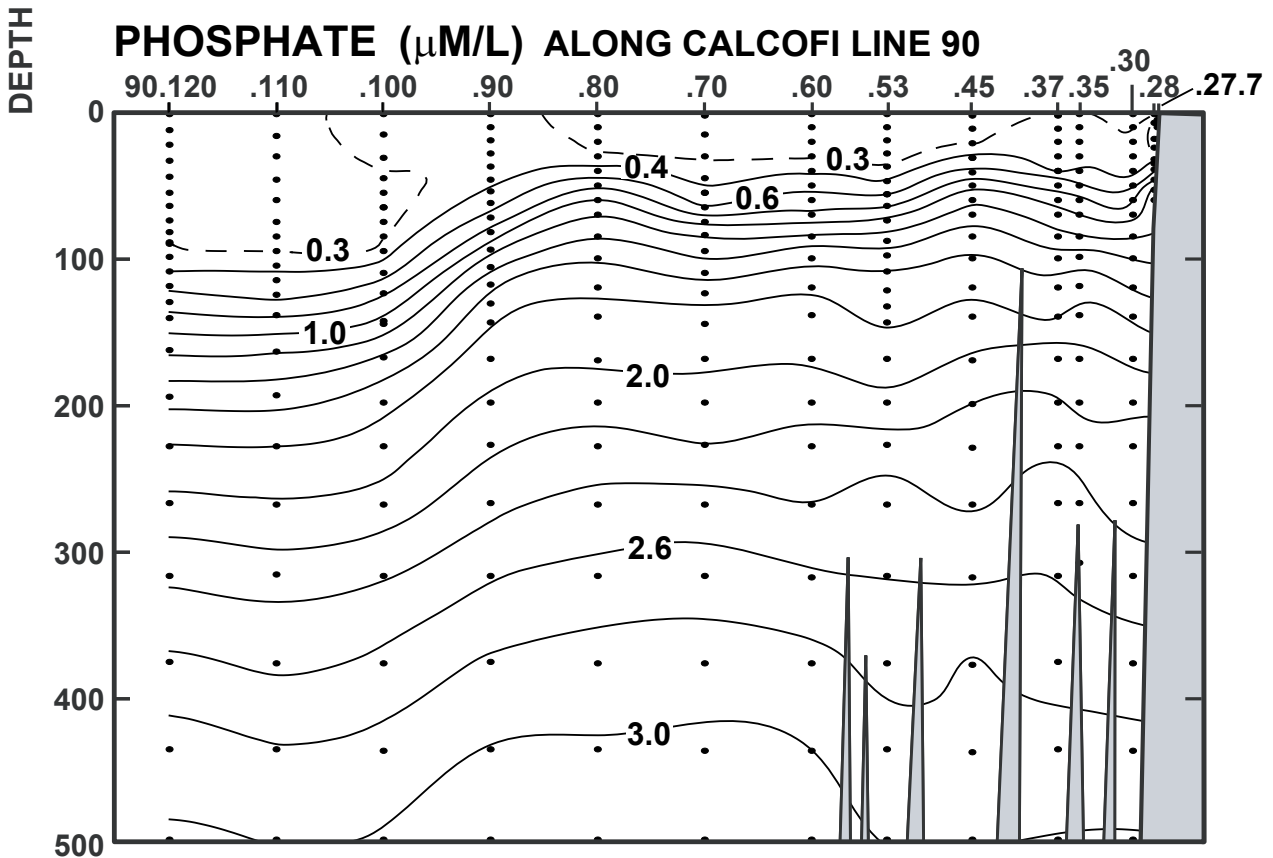


FIGURE 5F

# CALCOFI CRUISE 0411

6 - 9 NOVEMBER 2004

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

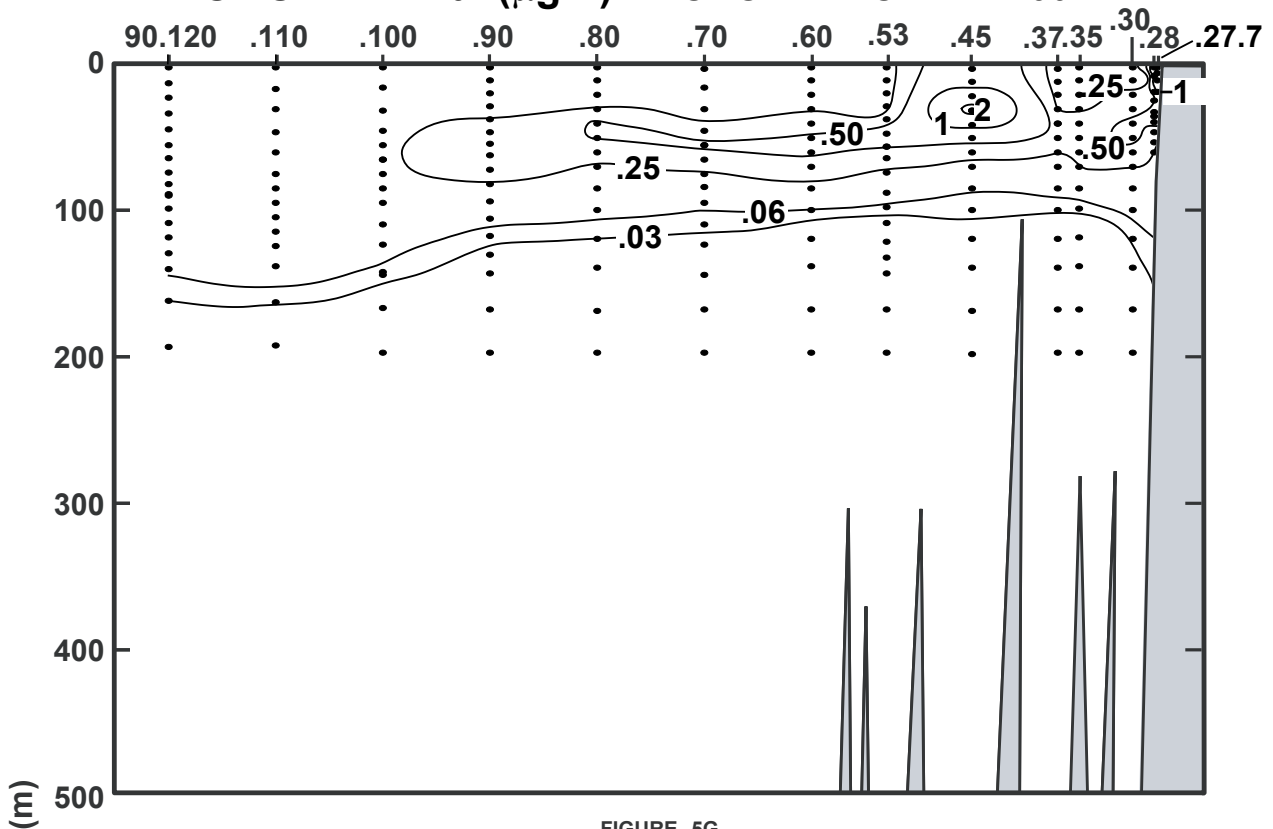


FIGURE 5G

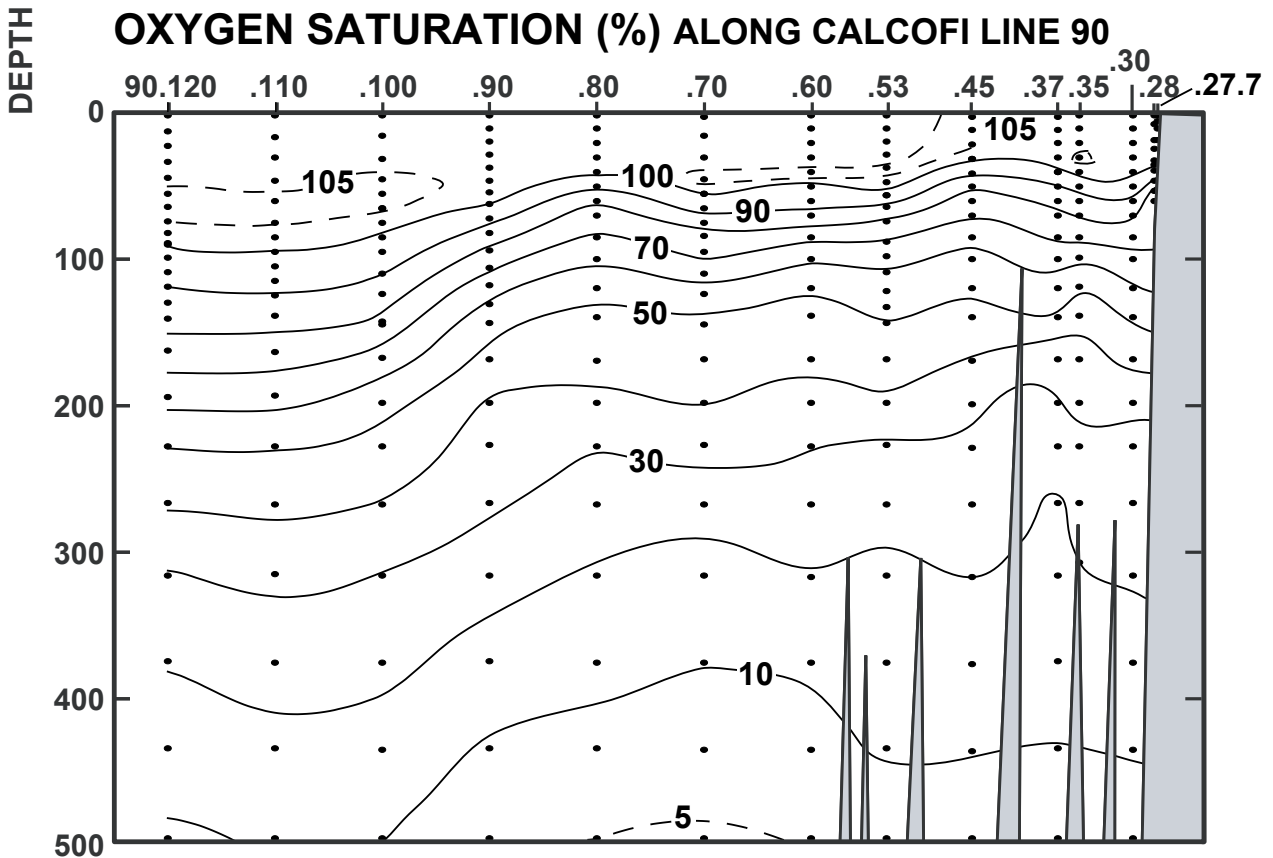


FIGURE 5H



# CALCOFI CRUISE 0411

6 - 9 NOVEMBER 2004

## OXYGEN (mL/L) ALONG CALCOFI LINE 90

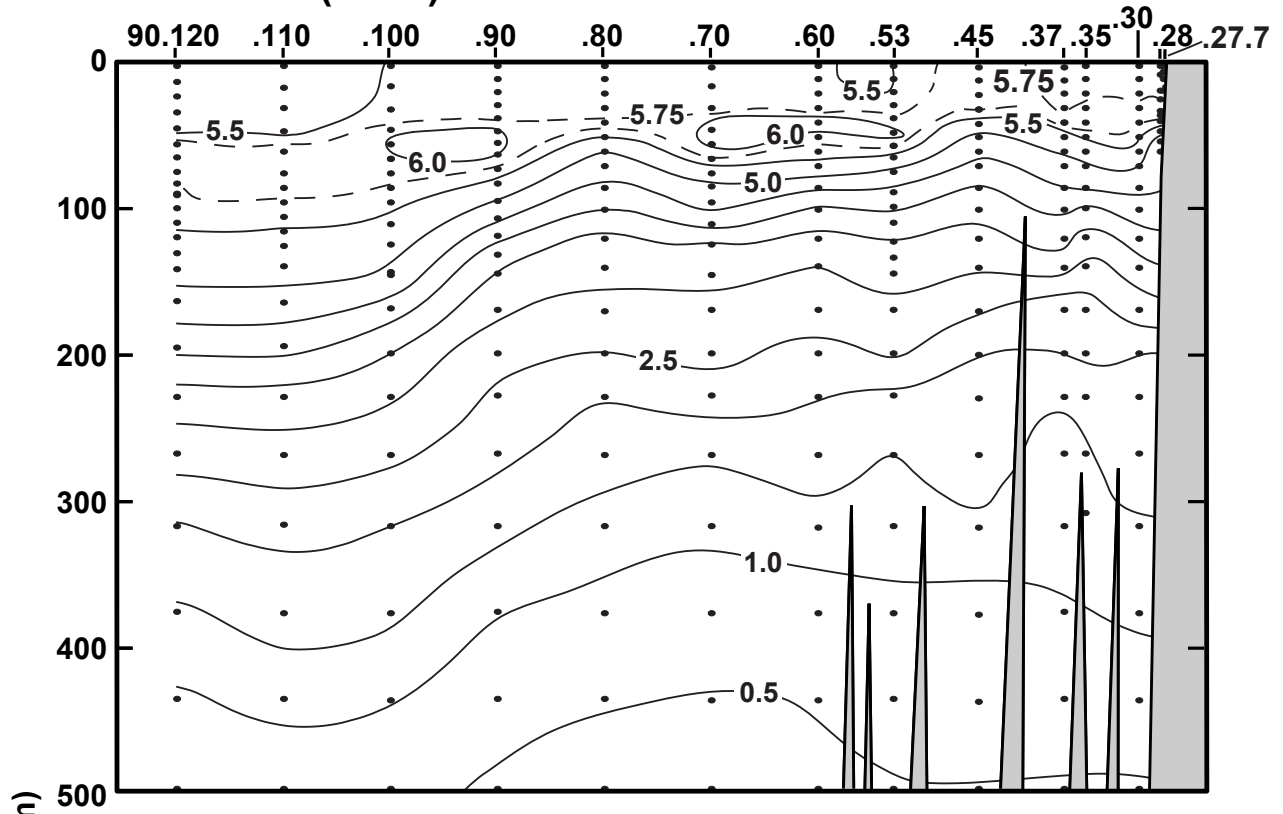


FIGURE 5I

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

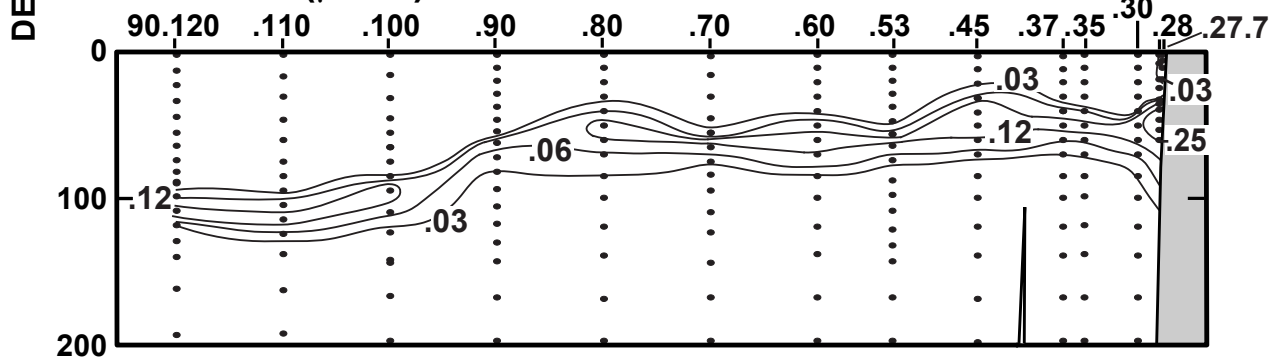


FIGURE 5J

## PHAEOPIGMENTS ( $\mu\text{g/L}$ ) ALONG CALCOFI LINE 90

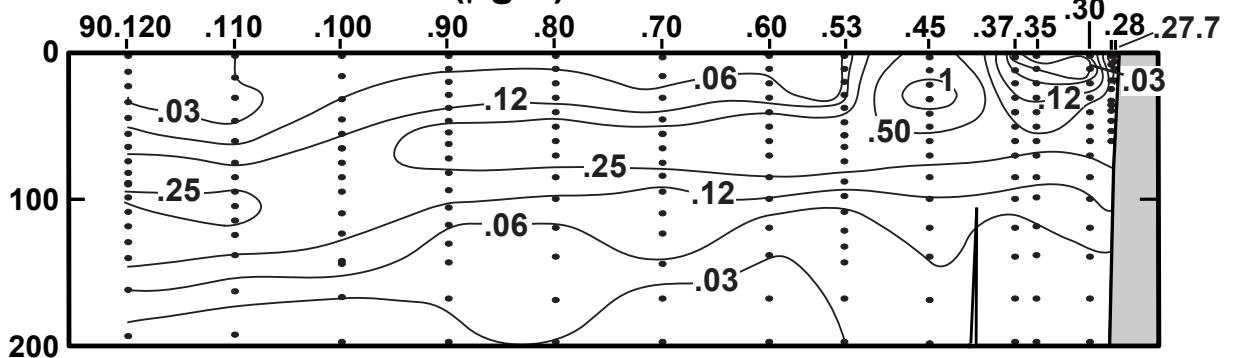


FIGURE 5K

PERSONNEL

CalCOFI Cruise 0411

SHIP'S CAPTAIN

Thomas J. Desjardins, RV *Roger Revelle*

PERSONNEL PARTICIPATING IN THE COLLECTION OF DATA

		Participating (Legs)
Goericke, Ralf (Chief Scientist)	Research Oceanographer, SIO	1,2,3
Abramenkoff, Dimitry N.	Fishery Biologist, NMFS	1,2,3
Abramenkoff, Mary	Volunteer	1,2,3
Aluwihare, Lahini L.	Assistant Professor, SIO	2,3
Becker, Susan M.	Staff Research Associate, SIO	1,2,3
Bowlin, Noelle M.	Fishery Biologist, NMFS	1,2,3
Call, Bill	Videographer, SIO	2,3
Colt, Cambria	Resident Technician, SIO	1,2,3
Dall'Osto, Manuel	Graduate Student, UCSD	1,2,3
De Jesus, Roman P.	Graduate Student, SIO	1,2,3
Dotson, Ronald C.	Staff Research Associate, SIO	1,2,3
Douglas, Annie	Marine Mammal Observer, Cascadia Research	1,2,3
Ekern, Lindsey J.	Volunteer	1,2,3
Furntani, Hiroshi	Post Graduate Researcher, SIO	1,2,3
Genger, Hal M.	Professor, Humboldt State University	1,2,3
Hays, Amy E.	Fishery Biologist, NMFS	1,2,3
Henderson, E. Elizabeth	Staff Research Associate, SIO	1,2,3
Hopkinson, Brian M.	Graduate Student, SIO	1,2,3
Kacena, Teresa A.	Staff Research Associate, SIO	1,2,3
Keiper, Carol A.	Seabird Biologist, Pt. Reyes Bird Observatory	1,2,3
McOwiti, Thomas	LTER Program Observer, LTER Program Office	1
Meador, Travis	Graduate Student, SIO	1,2,3
Miller, Autumn	Marine Mammal Observer, Cascadia Research	1,2,3
Monroe, Robert	Writer, SIO	2,3
Ohman, Mark D.	Professor, SIO	1
Powell, Jesse R.	Staff Research Associate, SIO	1,2,3
Quiel, Barry S.	Computer Technician, SIO	1,2,3
Ramirez, Fernando	Staff Research Associate, SIO	1,2,3
Reynolds, Susan Marie	Resident Technician, SIO	1,2,3
Seegers, Brian J.	Staff Research Associate, SIO	1,2,3
Sheldon, Jennifer L.	Staff Research Associate, SIO	1,2,3
Smith, Michael Harrison	Marine Mammal Observer, Cascadia Research	1,2,3
Soldevilla, Melissa S.	Graduate Student, SIO	1,2,3
Taylor, Andrew	Laboratory Assistant	1,2,3
Wilkinson, James R.	Programmer Analyst, SIO	1,2,3
Wolgast, David M.	Staff Research Associate, SIO	1,2,3
Yin, Suzanne	Marine Mammal Observer, Cascadia Research	1,2,3

Leg 1: San Diego to Dana Point, California, 2 – 9 Nov., 2004

Leg 2: Dana Point to Ventura, California, 9 – 14 Nov., 2004

Leg 3: Ventura to San Diego, California, 14 – 17 Nov., 2004

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE			
35 5.3 N	120 46.6 W	18/11/04	1910 UTC	64 m	290 06 kn	320 01 05	1	1022.3 mb	16.2 c	14.9 c	13m	2/8	CS			
DEPTH	TEMP	POT TEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXY	SI03	P04	N03	N02	CHL-A	PHAE0	PRES	SAMP
m	DEG C	DEG C		THETA			ml/l	PCT	um/l	um/l	um/l	um/l	ug/l	ug/l	db	
0 ISL	14.82	14.82	33.276	24.683	325.0	0.000	5.81	100.7	4.6	0.40	3.1	0.17	0.25	0.02		0
1 A	14.82	14.82	33.276	24.683	325.0	0.003	5.81	100.7	4.6	0.40	3.1	0.17	0.25	0.02		1 210
5	14.60	14.60	33.274	24.728	320.8	0.016	5.85	100.9	4.6	0.40	3.2	0.17	0.40	0.04		5 208
8 A	14.55	14.55	33.274	24.739	319.9	0.026	5.87	101.2	4.6	0.41	3.2	0.17	0.41	0.06		8 207
10 ISL	14.54	14.54	33.274	24.741	319.7	0.032	5.86	101.0	4.6	0.41	3.2	0.17	0.37	0.05		10
19 A	14.51	14.51	33.274	24.748	319.3	0.061	5.74	98.9	4.6	0.42	3.3	0.18	0.11	0.00		19 206
20 ISL	14.50	14.50	33.275	24.751	319.1	0.064	5.72	98.5	4.6	0.43	3.3	0.18	0.10	0.00		20
26 A	14.41	14.41	33.279	24.773	317.1	0.083	5.57	95.7	5.1	0.46	3.9	0.19	0.06	0.01		26 205
30 ISL	14.09	14.09	33.291	24.849	310.0	0.096	5.34	91.2	6.4	0.57	5.3	0.22	0.06	0.01		30
35 A	13.66	13.66	33.310	24.953	300.2	0.111	5.04	85.3	8.1	0.71	7.1	0.26	0.05	0.00		35 204
42	13.38	13.37	33.326	25.022	293.8	0.132	4.86	81.8	9.1	0.78	8.0	0.28	0.04	0.00		42 203
50 A	12.50	12.49	33.353	25.217	275.5	0.155	4.31	71.2	11.4	1.09	11.8	0.28	0.00	0.00		50 202
60	12.06	12.05	33.388	25.328	265.1	0.182	4.04	66.2	13.6	1.27	14.3	0.20	0.00	0.00		60 201

A) PRIMARY PRODUCTIVITY SAMPLES WERE TAKEN FROM THESE LEVELS.

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE			
35 1.3 N	120 55.1 W	18/11/04	1543 UTC	230 m	330 17 kn	330 04 08	1	1022.7 mb	14.8 c	14.1 c	10m	3/8	CS			
DEPTH	TEMP	POT TEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXY	SI03	P04	N03	N02	CHL-A	PHAE0	PRES	SAMP
m	DEG C	DEG C		THETA			ml/l	PCT	um/l	um/l	um/l	um/l	ug/l	ug/l	db	
0 ISL	14.99	14.99	33.260	24.634	329.7	0.000	5.99	104.2	3.9	0.27	1.4	0.12	2.27	0.56		0
1	14.99	14.99	33.260	24.634	329.7	0.003	5.99	104.2	3.9	0.27	1.4	0.12	2.27	0.56		1 215
10	14.87	14.87	33.260	24.660	327.5	0.033	5.81	100.8	4.4	0.32	1.9	0.14	0.87	0.33		10 214
20	14.00	14.00	33.259	24.843	310.3	0.065	5.19	88.4	5.3	0.62	5.2	0.26	0.31	0.25		20 213
30	12.62	12.62	33.265	25.125	283.7	0.094	4.68	77.5	7.9	1.00	11.0	0.20	0.23	0.29		30 212
40	11.51	11.51	33.319	25.376	260.0	0.122	4.31	69.7	11.2	1.23	14.8	0.07	0.17	0.20		40 211
50	11.29	11.28	33.337	25.430	255.0	0.147	4.21	67.8	12.1	1.29	15.7	0.06	0.16	0.20		50 210
60	10.71	10.70	33.388	25.573	241.6	0.172	3.99	63.5	14.3	1.40	17.6	0.03	0.11	0.19		60 209
70	10.46	10.45	33.425	25.646	234.9	0.196	3.88	61.4	15.5	1.46	18.5	0.03	0.09	0.15		70 208
75 ISL	10.36	10.35	33.440	25.675	232.3	0.208	3.83	60.5	16.0	1.48	18.8	0.03	0.08	0.15		75
85	10.19	10.18	33.477	25.733	227.0	0.231	3.73	58.7	17.0	1.51	19.5	0.02	0.06	0.14		85 207
100	9.93	9.92	33.570	25.849	216.2	0.264	3.51	55.0	19.3	1.60	20.8	0.02	0.04	0.12		101 206
119	9.73	9.72	33.777	26.045	198.0	0.303	2.94	45.9	24.2	1.79	23.4	0.02	0.01	0.08		120 205
125 ISL	9.68	9.67	33.814	26.082	194.6	0.315	2.84	44.3	25.1	1.83	23.9	0.02	0.01	0.08		126
139	9.59	9.57	33.867	26.139	189.5	0.342	2.70	42.0	26.6	1.88	24.6	0.03	0.01	0.07		140 204
150 ISL	9.57	9.55	33.880	26.152	188.4	0.363	2.66	41.4	27.0	1.89	24.8	0.03	0.01	0.07		151
169	9.55	9.53	33.889	26.163	187.8	0.398	2.62	40.7	27.4	1.90	25.0	0.03	0.00	0.08		170 203
199	9.36	9.34	33.964	26.253	179.8	0.454	2.36	36.6	30.5	1.99	26.2	0.06	0.01	0.08		200 202
200 ISL	9.35	9.33	33.966	26.256	179.5	0.455	2.35	36.4	30.6	2.00	26.3	0.06				201
229	9.13	9.10	34.019	26.334	172.7	0.506	2.03	31.3	34.4	2.16	27.7	0.13				230 201

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE			
34 53.3 N	121 12.0 W	18/11/04	1049 UTC	550 m	330 13 kn			1021.7 mb	14.4 c	13.8 c						
DEPTH	TEMP	POT TEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXY	SI03	P04	N03	N02	CHL-A	PHAE0	PRES	SAMP
m	DEG C	DEG C		THETA			ml/l	PCT	um/l	um/l	um/l	um/l	ug/l	ug/l	db	
0 ISL	15.67	15.67	33.269	24.491	343.2	0.000	5.81	102.4	0.4	0.25	0.1	0.00	0.50	0.25		0
1	15.67	15.67	33.269	24.491	343.2	0.003	5.81	102.4	0.4	0.25	0.1	0.00	0.50	0.25		1 220
10 ISL	15.68	15.68	33.267	24.488	343.9	0.034	5.81	102.4	0.4	0.25	0.1	0.00	0.47	0.26		10
11	15.68	15.68	33.267	24.488	343.9	0.038	5.81	102.4	0.4	0.25	0.1	0.00	0.47	0.26		11 219
20 ISL	15.49	15.49	33.254	24.520	341.1	0.069	5.81	102.0	0.4	0.27	0.1	0.01	0.82	0.53		20
21	15.47	15.47	33.252	24.523	340.8	0.072	5.81	102.0	0.4	0.27	0.1	0.01	0.85	0.56		21 218
30 ISL	13.70	13.70	33.076	24.764	318.1	0.102	5.56	94.1	2.8	0.52	3.2	0.26	0.59	0.47		30
31	13.47	13.47	33.061	24.799	314.8	0.105	5.52	92.9	3.2	0.56	3.7	0.28	0.54	0.46		31 217
40	12.19	12.18	33.139	25.110	285.3	0.132	4.90	80.3	7.1	0.95	10.2	0.11	0.19	0.26		40 216
50	11.38	11.37	33.290	25.377	260.1	0.159	4.33	69.8	11.4	1.26	15.4	0.03	0.08	0.23		50 215
61	10.73	10.72	33.345	25.536	245.1	0.187	4.11	65.4	13.9	1.40	17.5	0.03	0.06	0.20		61 214
75 ISL	9.79	9.78	33.450	25.779	222.3	0.219	3.82	59.6	18.2	1.59	20.9	0.01	0.03	0.12		75
86	9.54	9.53	33.553	25.900	210.9	0.243	3.50	54.3	21.0	1.71	22.7	0.01	0.02	0.08		86 212
100	9.31	9.30	33.741	26.085	193.7	0.272	2.96	45.8	25.4	1.87	25.3	0.01	0.01	0.06		101 211
120	9.18	9.17	33.855	26.195	183.6	0.309	2.77	42.7	27.5	1.90	25.9	0.01	0.00	0.05		121 210
125 ISL	9.16	9.15	33.868	26.209	182.4	0.319	2.75	42.4	27.7	1.91	26.0	0.01	0.00	0.05		126
140	9.10	9.08	33.897	26.241	179.6	0.346	2.68	41.3	28.5	1.93	26.3	0.01	0.00	0.05		141 209
150 ISL	9.00	8.98	33.924	26.278	176.3	0.363	2.60	40.0	29.6	1.96	26.9	0.01	0.00	0.05		151
170	8.84	8.82	33.990	26.356	169.3	0.398	2.36	36.2	32.4	2.06	28.1	0.01	0.00	0.05		171 208
199	8.95	8.93	34.120	26.441	161.9	0.446	1.78	27.4	36.6	2.25	29.1	0.01	0.00	0.06		200 207
200 ISL	8.93	8.91	34.119	26.443	161.7	0.448	1.79	27.5	36.7	2.25	29.1	0.01				201
229	8.39	8.37	34.080	26.497	156.9	0.494	2.07	31.4	38.6	2.19	29.8	0.01				230 206
250 ISL	8.35	8.32	34.144	26.553	151.9	0.526	1.74	26.4	41.6	2.31	30.7	0.01				252
269	8.31	8.28	34.199	26.603	147.6	0.555	1.36	20.6	44.5	2.45	31.6	0.01				271 205
300 ISL	8.18	8.15	34.222	26.64												

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE
34 43.3 N	121 32.9 W	18/11/04	0541	UTC	911 m	310	13 kn			1022.9 mb	13.5 c	14.1 c				
DEPTH	TEMP	POT TEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXY	SI03	P04	N03	N02	CHL-A	PHAE0	PRES	SAMP
m	DEG C	DEG C		THETA			mL/L	PCT	uM/L	uM/L	uM/L	uM/L	ug/L	ug/L	db	
0 ISL	16.16	16.16	33.253	24.369	354.9	0.000	5.74	102.2	1.0	0.26	0.1	0.00	0.34	0.15	0	
1	16.16	16.16	33.253	24.369	354.9	0.004	5.74	102.2	1.0	0.26	0.1	0.00	0.34	0.15	1	221
10	16.16	16.16	33.253	24.369	355.2	0.036	5.72	101.8	1.0	0.26	0.1	0.00	0.34	0.15	10	220
20	16.16	16.16	33.252	24.369	355.5	0.071	5.72	101.8	1.0	0.26	0.1	0.00	0.32	0.17	20	219
30	16.16	16.16	33.253	24.370	355.7	0.107	5.71	101.6	0.9	0.25	0.1	0.00	0.37	0.18	30	218
40	16.06	16.05	33.246	24.387	354.4	0.142	5.69	101.1	1.0	0.27	0.2	0.01	0.48	0.25	40	217
45	15.80	15.79	33.216	24.423	351.1	0.160	5.71	100.9	1.1	0.29	0.3	0.03	0.52	0.28	45	216
50	14.87	14.86	33.109	24.545	339.6	0.177	5.71	99.0	1.8	0.37	1.0	0.10	0.57	0.35	50	215
60	11.98	11.97	32.896	24.961	299.9	0.209	5.52	90.0	4.7	0.70	5.8	0.11	0.36	0.38	60	214
70	10.79	10.78	33.014	25.268	270.8	0.238	4.99	79.3	8.4	1.04	11.7	0.02	0.16	0.25	70	213
75 ISL	10.49	10.48	33.095	25.383	259.9	0.251	4.77	75.4	10.2	1.17	13.8	0.02	0.11	0.20	75	
85	10.14	10.13	33.272	25.581	241.3	0.276	4.34	68.1	13.9	1.38	17.4	0.01	0.07	0.11	85	212
100	9.54	9.53	33.544	25.894	211.9	0.310	3.56	55.2	20.7	1.67	22.5	0.01	0.02	0.05	100	211
120	9.22	9.21	33.787	26.136	189.3	0.350	2.87	44.3	26.2	1.88	25.5	0.01	0.00	0.04	121	210
125 ISL	9.16	9.15	33.821	26.172	185.9	0.359	2.78	42.8	27.1	1.91	26.0	0.01	0.00	0.04	126	
139	9.04	9.03	33.886	26.242	179.5	0.385	2.61	40.1	29.0	1.98	27.0	0.00	0.00	0.04	140	209
150 ISL	8.98	8.96	33.930	26.286	175.5	0.404	2.49	38.2	30.3	2.02	27.6	0.00	0.00	0.04	151	
170	8.84	8.82	33.994	26.359	169.0	0.439	2.30	35.2	32.7	2.08	28.5	0.00	0.00	0.03	171	208
199	8.38	8.36	34.060	26.482	157.7	0.486	2.06	31.2	37.4	2.20	30.1	0.01	0.00	0.03	200	207
200 ISL	8.36	8.34	34.061	26.486	157.4	0.488	2.05	31.1	37.6	2.20	30.2	0.01			201	
229	7.94	7.92	34.088	26.570	149.7	0.532	1.78	26.7	43.2	2.34	32.1	0.00			230	206
250 ISL	7.86	7.83	34.121	26.608	146.5	0.563	1.59	23.8	45.3	2.41	32.6	0.00			251	
268	7.83	7.80	34.148	26.634	144.3	0.590	1.44	21.6	46.7	2.46	32.9	0.01			270	205
300 ISL	7.54	7.51	34.168	26.692	139.2	0.635	1.24	18.5	50.9	2.55	34.1	0.00			302	
318	7.37	7.34	34.175	26.722	136.6	0.660	1.15	17.1	53.2	2.60	34.7	0.00			320	204
378	7.18	7.14	34.206	26.774	132.5	0.741	0.90	13.3	57.4	2.72	35.7	0.00			380	203
400 ISL	7.00	6.96	34.222	26.811	129.2	0.769	0.76	11.2	60.8	2.79	36.5	0.00			403	
437	6.67	6.63	34.249	26.878	123.2	0.816	0.54	7.9	66.8	2.91	37.9	0.00			440	202
500 ISL	6.29	6.24	34.265	26.941	117.8	0.892	0.41	5.9	73.5	3.00	39.2	0.00			503	
514	6.21	6.16	34.269	26.954	116.6	0.908	0.38	5.5	75.0	3.02	39.5	0.00			518	201

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE
34 23.3 N	122 14.8 W	17/11/04	2336	UTC	3927 m	350	09 kn	350 03 05	1	1021.5 mb	15.1 c	13.8 c	13m		3/8	CU
DEPTH	TEMP	POT TEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXY	SI03	P04	N03	N02	CHL-A	PHAE0	PRES	SAMP
m	DEG C	DEG C		THETA			mL/L	PCT	uM/L	uM/L	uM/L	uM/L	ug/L	ug/L	db	
0 ISL	15.37	15.37	33.001	24.351	356.5	0.000	5.95	104.1	2.1	0.31	0.1	0.00	0.39	0.13	0	
1	15.37	15.37	33.001	24.351	356.6	0.004	5.95	104.1	2.1	0.31	0.1	0.00	0.39	0.13	1	220
10	15.28	15.28	32.999	24.370	355.1	0.036	5.94	103.7	2.0	0.31	0.1	0.00	0.41	0.15	10	219
20	14.92	14.92	33.029	24.471	345.7	0.071	6.01	104.2	2.4	0.34	0.4	0.02	0.87	0.34	20	218
30	14.12	14.12	33.151	24.735	320.8	0.104	5.84	99.7	3.6	0.49	2.6	0.16	0.88	0.53	30	217
40	12.77	12.76	32.971	24.868	308.4	0.135	5.70	94.5	4.3	0.63	4.3	0.22	0.67	0.38	40	216
50	11.54	11.53	32.965	25.096	286.9	0.165	5.31	85.8	6.4	0.88	8.6	0.10	0.37	0.25	50	215
60	10.54	10.53	33.117	25.392	258.8	0.192	4.78	75.6	10.6	1.20	14.1	0.02	0.15	0.17	60	214
70	10.38	10.37	33.168	25.459	252.6	0.218	4.64	73.2	11.9	1.27	15.4	0.02	0.13	0.15	70	213
75 ISL	10.16	10.15	33.215	25.533	245.7	0.230	4.51	70.8	13.3	1.34	16.7	0.02	0.11	0.13	75	
85	9.71	9.70	33.330	25.698	230.1	0.254	4.18	65.0	16.5	1.51	19.4	0.01	0.07	0.08	85	212
100	9.47	9.46	33.510	25.878	213.3	0.288	3.66	56.7	20.5	1.68	22.1	0.01	0.03	0.06	100	211
120	9.07	9.06	33.784	26.157	187.2	0.328	2.85	43.8	27.4	1.94	26.2	0.01	0.01	0.04	121	210
125 ISL	8.95	8.94	33.811	26.197	183.4	0.337	2.82	43.3	28.6	1.95	26.7	0.01	0.01	0.04	126	
139	8.68	8.67	33.854	26.273	176.4	0.362	2.74	41.8	30.9	1.98	27.4	0.01	0.00	0.04	140	209
150 ISL	8.71	8.69	33.906	26.310	173.2	0.381	2.57	39.2	31.8	2.03	27.9	0.01	0.00	0.04	151	
169	8.84	8.82	33.988	26.354	169.4	0.414	2.28	34.9	32.8	2.10	28.5	0.00	0.00	0.04	170	208
199	8.51	8.49	34.038	26.445	161.3	0.463	2.25	34.2	36.0	2.11	29.3	0.01	0.00	0.04	200	207
200 ISL	8.50	8.48	34.040	26.448	161.0	0.465	2.23	33.9	36.2	2.12	29.4	0.01			201	
229	8.16	8.14	34.105	26.551	151.7	0.510	1.65	24.9	42.1	2.34	31.9	0.00			230	206
250 ISL	7.98	7.95	34.123	26.592	148.1	0.542	1.50	22.5	44.7	2.42	32.7	0.00			251	
269	7.81	7.78	34.128	26.621	145.5	0.570	1.44	21.6	46.8	2.46	33.2	0.00			271	205
300 ISL	7.42	7.39	34.139	26.686	139.7	0.614	1.26	18.7	51.7	2.57	34.5	0.00			302	
318	7.20	7.17	34.145	26.722	136.4	0.639	1.15	17.0	54.6	2.63	35.2	0.00			320	204
378	6.75	6.72	34.168	26.802	129.5	0.719	0.87	12.7	61.8	2.78	37.0	0.00			380	203
400 ISL	6.57	6.53	34.178	26.834	126.6	0.747	0.77	11.2	64.9	2.83	37.7	0.00			403	
438	6.27	6.23	34.195	26.887	121.9	0.794	0.62	9.0	70.3	2.90	38.9	0.00			441	202
500 ISL	5.83	5.79	34.214	26.958	115.6	0.868	0.45	6.4	78.2	3.01	40.3	0.00			503	
513	5.74	5.70	34.219	26.974	114.2	0.882	0.42	6.0	79.9	3.03	40.6	0.00			517	201

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE
34 3.3 N	122 56.5 W	17/11/04	1711	UTC	4131 m	270	07 kn	330 03 07	1	1023.3 mb	16.8 c	15.0 c	14m		4/8	CC
DEPTH	TEMP	POT TEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXY	SI03	P04	N03	N02	CHL-A	PHAE0	PRES	SAMP
m	DEG C	DEG C		THETA			mL/L	PCT	uM/L	uM/L	uM/L	uM/L	ug/L	ug/L	db	
0 ISL	16.11	16.11	33.334	24.442	347.9	0.000	5.74	102.1	1.6	0.26	0.1	0.00	0.67	0.21		0
1	16.10	16.10	33.334	24.445	347.7	0.003										1 224
1 A	16.11	16.11	33.334	24.442	347.9	0.003	5.74	102.1	1.6	0.26	0.1	0.00	0.67	0.21		1 223
8 A	16.07	16.07	33.334	24.452	347.2	0.028	5.74	102.0	1.6	0.25	0.1	0.00	0.74	0.18		8 222
10 ISL	16.07	16.07	33.334	24.452	347.3	0.035	5.74	102.0	1.6	0.25	0.1	0.00	0.68	0.20		10
14	16.06	16.06	33.334	24.454	347.2	0.049	5.75	102.2	1.6	0.25	0.1	0.00	0.63	0.27		14 221
20 ISL	15.69	15.69	33.308	24.517	341.3	0.069	5.70	100.6	2.0	0.29	0.5	0.03	1.12	0.43		20
21 A	15.61	15.61	33.304	24.532	340.0	0.073	5.69	100.2	2.1	0.30	0.6	0.04	1.21	0.45		21 219
21	15.65	15.65	33.310	24.528	340.4	0.073										21 220
28 A	15.21	15.21	33.299	24.617	332.1	0.096	5.71	99.8	2.8	0.34	0.9	0.08	1.26	0.45		28 218
30 ISL	15.01	15.01	33.307	24.667	327.4	0.103	5.57	96.9	3.4	0.41	2.0	0.13	1.12	0.42		30
37 A	14.07	14.06	33.335	24.888	306.5	0.125	4.95	84.5	6.1	0.75	7.2	0.25	0.57	0.31		37 217
46	12.40	12.39	33.344	25.229	274.2	0.151	4.30	70.9	10.3	1.17	14.0	0.03	0.31	0.24		46 216
50 ISL	11.71	11.70	33.345	25.360	261.8	0.162	4.17	67.8	11.8	1.29	15.9	0.02	0.25	0.21		50
54 A	11.10	11.09	33.355	25.478	250.5	0.172	4.08	65.4	13.2	1.38	17.4	0.02	0.20	0.18		54 215
62	10.26	10.25	33.431	25.685	231.0	0.191	3.81	60.0	16.5	1.54	19.9	0.01	0.10	0.11		62 214
70	9.70	9.69	33.475	25.813	218.9	0.209	3.71	57.8	19.4	1.63	21.5	0.01	0.03	0.08		70 213
75 ISL	9.73	9.72	33.572	25.884	212.3	0.220	3.45	53.8	21.0	1.70	22.5	0.01	0.03	0.07		75
85	9.80	9.79	33.732	25.997	201.8	0.241	2.88	45.0	23.7	1.83	24.0	0.01	0.02	0.06		85 212
100	9.65	9.64	33.826	26.096	192.7	0.270	2.66	41.5	25.9	1.90	24.9	0.01	0.01	0.06		101 211
120	9.42	9.41	33.946	26.228	180.6	0.308	2.35	36.5	29.2	2.01	26.5	0.01	0.01	0.06		121 210
125 ISL	9.39	9.38	33.963	26.246	178.9	0.317	2.31	35.8	29.7	2.02	26.7	0.01	0.01	0.06		126
140	9.29	9.27	34.002	26.293	174.8	0.343	2.22	34.4	31.0	2.06	27.3	0.01	0.00	0.05		141 209
150 ISL	9.19	9.17	34.035	26.335	171.0	0.361	2.13	32.9	32.3	2.10	27.8	0.01	0.00	0.05		151
169	9.00	8.98	34.096	26.413	163.9	0.392	1.93	29.7	35.0	2.17	28.9	0.01	0.00	0.04		170 208
199	8.82	8.80	34.163	26.495	156.7	0.440	1.63	25.0	38.7	2.27	30.1	0.00	0.00	0.03		200 207
200 ISL	8.81	8.79	34.164	26.497	156.5	0.442	1.62	24.8	38.8	2.27	30.1	0.00				201
229	8.53	8.51	34.193	26.564	150.6	0.487	1.42	21.6	42.2	2.39	31.1	0.00				230 206
250 ISL	8.37	8.34	34.207	26.600	147.6	0.518	1.30	19.7	44.3	2.45	31.6	0.00				252
269	8.21	8.18	34.215	26.630	144.9	0.546	1.20	18.1	46.3	2.49	32.1	0.00				271 205
300 ISL	7.84	7.81	34.222	26.691	139.5	0.590	1.06	15.9	50.7	2.59	33.5	0.00				302
318	7.62	7.59	34.225	26.726	136.4	0.615	0.98	14.6	53.4	2.64	34.4	0.00				320 204
378	7.04	7.00	34.233	26.814	128.6	0.694	0.72	10.6	61.1	2.78	36.5	0.00				380 203
400 ISL	6.89	6.85	34.245	26.844	126.0	0.722	0.63	9.2	63.6	2.83	37.1	0.00				403
438	6.65	6.61	34.263	26.891	121.9	0.769	0.49	7.1	67.9	2.91	38.1	0.00				441 202
500 ISL	6.10	6.06	34.262	26.963	115.5	0.843	0.39	5.6	76.4	3.01	39.9	0.00				503
512	5.99	5.95	34.262	26.977	114.2	0.857	0.37	5.3	78.0	3.03	40.3	0.00				516 201

A) PRIMARY PRODUCTIVITY SAMPLES WERE TAKEN FROM THESE LEVELS.

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE
33 43.3 N	123 38.0 W	17/11/04	1001	UTC	4161 m	010	06 kn			1021.6 mb	15.8 c	13.9 c				
DEPTH	TEMP	POT TEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXY	SI03	P04	N03	N02	CHL-A	PHAE0	PRES	SAMP
m	DEG C	DEG C		THETA			mL/L	PCT	uM/L	uM/L	uM/L	uM/L	ug/L	ug/L	db	
0 ISL	15.71	15.71	33.088	24.343	357.3	0.000	5.82	102.6	1.7	0.29	0.1	0.00	0.43	0.17		0
1	15.71	15.71	33.088	24.343	357.3	0.004	5.82	102.6	1.7	0.29	0.1	0.00	0.43	0.17		1 220
10 ISL	15.61	15.61	33.173	24.431	349.3	0.035	5.86	103.1	1.9	0.29	0.1	0.00	0.62	0.28		10
12	15.59	15.59	33.203	24.459	346.7	0.042	5.86	103.1	2.0	0.29	0.1	0.00	0.69	0.32		12 219
20 ISL	15.68	15.68	33.317	24.527	340.5	0.070	5.75	101.4	2.1	0.31	0.4	0.03	1.02	0.49		20
21	15.69	15.69	33.328	24.533	339.9	0.073	5.73	101.1	2.1	0.31	0.4	0.04	1.05	0.50		21 218
30	15.51	15.51	33.324	24.570	336.6	0.104	5.63	99.0	2.4	0.35	0.8	0.09	1.00	0.37		30 217
40	13.52	13.51	33.316	24.986	297.2	0.135	4.80	81.0	6.6	0.86	9.0	0.08	0.32	0.25		40 216
50	11.43	11.42	33.324	25.395	258.4	0.163	4.22	68.2	11.6	1.30	15.9	0.02	0.15	0.18		50 215
60	10.45	10.44	33.386	25.617	237.4	0.188	3.95	62.5	15.6	1.50	19.2	0.01	0.08	0.12		60 214
70	9.55	9.54	33.484	25.844	215.9	0.211	3.66	56.8	19.9	1.66	21.9	0.01	0.03	0.06		70 213
75 ISL	9.45	9.44	33.576	25.933	207.6	0.221	3.47	53.8	21.7	1.73	23.0	0.01	0.02	0.06		75
85	9.26	9.25	33.698	26.059	195.8	0.241	3.11	48.0	24.6	1.83	24.8	0.01	0.01	0.05		85 212
100	9.24	9.23	33.790	26.135	189.0	0.270	2.75	42.5	26.5	1.88	25.8	0.01	0.01	0.06		100 211
120	8.86	8.85	33.848	26.240	179.2	0.307	2.76	42.3	29.3	1.94	27.0	0.01	0.00	0.04		121 210
125 ISL	8.85	8.84	33.878	26.266	176.9	0.316	2.68	41.0	29.9	1.97	27.3	0.01	0.00	0.04		126
140	8.82	8.81	33.963	26.337	170.4	0.342	2.40	36.7	31.9	2.05	28.1	0.01	0.00	0.04		141 209
150 ISL	8.78	8.76	34.006	26.377	166.8	0.359	2.22	34.0	33.3	2.10	28.7	0.01	0.00	0.04		151
169	8.62	8.60	34.061	26.446	160.7	0.390	1.98	30.2	36.1	2.18	29.7	0.00	0.00	0.04		170 208
199	8.12	8.10	34.082	26.538	152.3	0.437	2.02	30.5	40.0	2.22	30.5	0.00	0.00	0.03		200 207
200 ISL	8.12	8.10	34.084	26.540	152.1	0.438	2.00	30.2	40.2	2.23	30.6	0.00				201
250 ISL	7.83	7.81	34.156	26.640	143.4	0.512	1.35	20.2	47.7	2.49	33.3	0.00				252
269	7.60	7.57	34.153	26.671	140.7	0.539	1.29	19.2	50.2	2.53	33.9	0.00				271 205
300 ISL	7.24	7.21	34.164	26.731	135.3	0.582	1.09	16.1	54.7	2.64	35.2	0.00				302
319	7.01	6.98	34.170	26.768	132.0	0.607	0.98	14.4	57.6	2.70	36.0	0.00				321 204

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE		
33 23.3 N	124 19.4 W	17/11/04	0354 UTC		110 07 kn			1020.8 mb	16.4 c	14.8 c						
DEPTH	TEMP	POT TEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXY	SI03	P04	N03	N02	CHL-A	PHAE0	PRES	SAMP
m	DEG C	DEG C		THETA			mL/L	PCT	uM/L	uM/L	uM/L	uM/L	ug/l	ug/l	db	
0 ISL	16.55	16.55	32.707	23.860	403.4	0.000	5.68	101.6	1.2	0.31	0.1	0.00	0.14	0.07	0	
1	16.55	16.55	32.707	23.860	403.4	0.004	5.68	101.6	1.2	0.31	0.1	0.00	0.14	0.07	1	221
10	16.55	16.55	32.707	23.861	403.6	0.040	5.67	101.4	1.2	0.31	0.1	0.00	0.15	0.06	10	220
20	16.45	16.45	32.703	23.881	402.0	0.081	5.69	101.5	1.2	0.32	0.1	0.00	0.16	0.06	20	219
30	16.34	16.34	32.736	23.932	397.5	0.121	5.70	101.5	1.3	0.32	0.1	0.00	0.20	0.08	30	218
40	16.26	16.25	32.882	24.062	385.3	0.160	5.72	101.8	1.3	0.32	0.1	0.00	0.31	0.09	40	217
50	16.02	16.01	32.938	24.160	376.3	0.198	5.74	101.7	1.4	0.33	0.1	0.00	0.35	0.19	50	216
60	14.81	14.80	32.822	24.337	359.7	0.235	5.94	102.6	1.7	0.39	0.3	0.04	0.45	0.31	60	215
70	12.90	12.89	32.795	24.677	327.3	0.269	5.83	96.8	2.4	0.52	1.0	0.19	0.33	0.36	70	214
75 ISL	12.51	12.50	32.795	24.783	317.4	0.285	5.80	95.5	2.6	0.54	1.5	0.16	0.27	0.33	75	
85	12.13	12.12	32.889	24.928	303.7	0.316	5.73	93.7	3.3	0.59	3.1	0.05	0.16	0.24	85	213
100	11.18	11.17	32.899	25.110	286.6	0.360	5.43	87.0	5.7	0.82	7.3	0.01	0.09	0.14	100	212
119	9.80	9.79	33.055	25.469	252.6	0.412	4.88	75.9	12.0	1.24	14.5	0.01	0.04	0.06	120	211
125 ISL	9.47	9.46	33.135	25.586	241.6	0.426	4.77	73.7	13.8	1.32	16.0	0.01	0.03	0.05	126	
139	8.90	8.89	33.341	25.838	217.8	0.459	4.46	68.1	18.1	1.48	19.0	0.00	0.01	0.03	140	210
150 ISL	8.86	8.84	33.514	25.979	204.5	0.482	3.90	59.6	22.4	1.68	22.1	0.00	0.01	0.03	151	
169	8.79	8.77	33.731	26.161	187.7	0.519	2.99	45.7	28.7	1.96	26.3	0.00	0.00	0.03	170	209
199	8.66	8.64	33.952	26.354	169.9	0.573	2.91	44.4	30.6	1.92	26.4	0.00	0.00	0.02	200	208
200 ISL	8.65	8.63	33.956	26.359	169.5	0.574	2.92	44.5	30.7	1.92	26.4	0.00			201	
229	8.17	8.15	34.009	26.474	158.9	0.622	3.09	46.6	34.4	1.88	26.8	0.00			230	207
238	8.02	8.00	34.012	26.499	156.7	0.636	3.03	45.6	35.9	1.90	27.3	0.00			239	206
250 ISL	7.75	7.73	34.009	26.536	153.2	0.655	2.94	43.9	38.8	1.96	28.3	0.00			251	
268	7.37	7.34	34.003	26.586	148.6	0.682	2.78	41.2	43.3	2.08	29.9	0.00			269	205
300 ISL	7.12	7.09	34.012	26.628	144.9	0.729	2.40	35.3	47.4	2.22	31.8	0.00			302	
318	7.03	7.00	34.019	26.646	143.5	0.755	2.17	31.9	49.4	2.30	32.8	0.00			320	204
378	6.04	6.01	34.035	26.789	130.0	0.837	1.54	22.1	63.1	2.63	37.0	0.00			380	203
400 ISL	5.81	5.78	34.046	26.827	126.6	0.865	1.37	19.6	67.4	2.71	38.0	0.00			402	
437	5.53	5.49	34.069	26.879	121.8	0.911	1.12	15.9	73.8	2.82	39.3	0.00			440	202
500 ISL	5.24	5.20	34.128	26.961	114.6	0.986	0.74	10.4	82.9	2.97	41.0	0.00			503	
514	5.17	5.13	34.141	26.979	112.9	1.002	0.65	9.1	84.9	3.00	41.4	0.00			517	201

## RV ROGER REVELLE

## CALCOFI CRUISE 0411

## STATION 80.0 50.5

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE		
34 27.7 N	120 29.1 W	15/11/04	1030 UTC	23 m	270 01 kn			1015.5 mb	17.0 c	12.9 c						
DEPTH	TEMP	POT TEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXY	SI03	P04	N03	N02	CHL-A	PHAE0	PRES	SAMP
m	DEG C	DEG C		THETA			mL/L	PCT	uM/L	uM/L	uM/L	uM/L	ug/l	ug/l	db	
0 ISL	15.26	15.26	33.244	24.563	336.4	0.000	5.68	99.3	2.0	0.36	1.4	0.10	2.00	0.66	0	
1	15.26	15.26	33.244	24.563	336.5	0.003	5.68	99.3	2.0	0.36	1.4	0.10	2.00	0.66	1	204
5	15.13	15.13	33.246	24.593	333.7	0.017	5.63	98.2	2.6	0.41	1.9	0.13	2.03	0.84	5	203
10	14.93	14.93	33.245	24.635	329.8	0.033	5.60	97.3	3.2	0.49	2.6	0.17	1.90	0.78	10	202
16	14.88	14.88	33.247	24.648	328.8	0.053	5.55	96.3	3.7	0.53	2.9	0.19	1.95	0.85	16	201

## RV ROGER REVELLE

## CALCOFI CRUISE 0411

## STATION 80 51

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE		
34 27.0 N	120 31.4 W	15/11/04	1137 UTC	75 m	360 08 kn			1015.3 mb	16.4 c	13.9 c						
DEPTH	TEMP	POT TEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXY	SI03	P04	N03	N02	CHL-A	PHAE0	PRES	SAMP
m	DEG C	DEG C		THETA			mL/L	PCT	uM/L	uM/L	uM/L	uM/L	ug/l	ug/l	db	
0 ISL	14.84	14.84	33.243	24.653	327.8	0.000	5.66	98.1	2.7	0.43	2.4	0.18	2.68	0.83	0	
1	14.84	14.84	33.243	24.653	327.8	0.003	5.66	98.1	2.7	0.43	2.4	0.18	2.68	0.83	1	209
5	14.83	14.83	33.241	24.654	327.9	0.016	5.66	98.1	2.7	0.44	2.5	0.18	2.67	0.76	5	208
10	14.80	14.80	33.243	24.662	327.3	0.033	5.57	96.5	3.0	0.47	2.9	0.21	3.58	0.89	10	207
20	14.59	14.59	33.245	24.709	323.1	0.065	5.44	93.8	3.3	0.53	3.6	0.25	3.27	0.93	20	206
30	14.07	14.07	33.239	24.813	313.4	0.097	5.21	88.9	4.3	0.66	5.3	0.29	1.24	0.77	30	205
40	13.51	13.50	33.238	24.928	302.7	0.128	5.00	84.3	6.0	0.78	7.0	0.27	1.62	0.52	40	204
50	13.26	13.25	33.243	24.982	297.8	0.158	4.84	81.2	7.0	0.86	8.4	0.26	0.43	0.49	50	203
60	12.92	12.91	33.259	25.062	290.4	0.187	4.66	77.7	8.3	0.95	9.6	0.23	0.64	0.31	60	202
70	12.66	12.65	33.271	25.123	284.9	0.216	4.56	75.6	9.3	1.01	10.4	0.22	0.39	0.65	70	201

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE
34 19.0 N	120 48.1 W	15/11/04	1449	UTC	824 m	350	10 kn	310 04 10	1	1015.7 mb	15.5 c	15.0 c	14m		5/8	CS
DEPTH	TEMP	POT TEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXY	SI03	P04	N03	N02	CHL-A	PHAE0	PRES	SAMP
m	DEG C	DEG C		THETA			mL/L	PCT	uM/L	uM/L	uM/L	uM/L	ug/l	ug/l	db	
0	ISL	15.16	15.16	33.267	24.602	332.7	0.000	5.85	102.1	0.6	0.33	1.1	0.06	1.46	0.88	0
1		15.16	15.16	33.267	24.602	332.7	0.003	5.85	102.1	0.6	0.33	1.1	0.06	1.46	0.88	1 220
10		15.14	15.14	33.273	24.611	332.1	0.033	5.84	101.9	0.7	0.34	1.2	0.06	1.51	1.06	10 219
20		15.10	15.10	33.285	24.630	330.6	0.066	5.82	101.4	0.8	0.35	1.4	0.07	1.82	1.11	20 218
30		14.93	14.93	33.260	24.648	329.2	0.099	5.70	99.0	1.4	0.41	2.2	0.10	1.93	1.28	30 217
40		14.65	14.64	33.251	24.701	324.4	0.132	5.59	96.5	2.1	0.47	3.0	0.11	1.48	0.86	40 216
50		12.07	12.06	33.236	25.208	276.2	0.162	4.72	77.2	7.9	0.99	11.3	0.12	0.38	0.32	50 215
60		10.69	10.68	33.420	25.602	238.9	0.188	3.82	60.8	15.5	1.43	17.8	0.04	0.09	0.21	60 214
70		10.34	10.33	33.489	25.716	228.2	0.211	3.68	58.1	17.6	1.52	19.4	0.04	0.07	0.19	70 213
75	ISL	10.20	10.19	33.525	25.768	223.4	0.222	3.59	56.5	18.6	1.56	20.1	0.03	0.06	0.18	75
85		9.97	9.96	33.601	25.867	214.2	0.244	3.40	53.5	20.4	1.65	21.3	0.01	0.05	0.15	85 212
99		9.77	9.76	33.715	25.989	202.8	0.274	3.13	48.9	22.8	1.77	22.7	0.01	0.03	0.11	99 211
100	ISL	9.76	9.75	33.719	25.994	202.4	0.276	3.12	48.7	22.9	1.77	22.8	0.01	0.03	0.11	100
119		9.64	9.63	33.777	26.060	196.6	0.313	2.97	46.3	24.5	1.84	23.6	0.01	0.02	0.20	120 210
125	ISL	9.62	9.61	33.809	26.088	194.0	0.325	2.88	44.8	25.2	1.87	24.0	0.01	0.02	0.19	126
139		9.58	9.56	33.894	26.161	187.3	0.352	2.63	40.9	27.2	1.96	24.9	0.01	0.01	0.13	140 209
150	ISL	9.56	9.54	33.963	26.219	182.1	0.372	2.38	37.0	29.0	2.02	25.8	0.01	0.01	0.11	151
169		9.47	9.45	34.063	26.312	173.6	0.406	2.01	31.2	32.1	2.11	27.2	0.01	0.01	0.09	170 208
199		9.07	9.05	34.112	26.415	164.3	0.457	1.94	29.9	35.2	2.18	28.2	0.01	0.01	0.06	200 207
200	ISL	9.07	9.05	34.114	26.417	164.2	0.458	1.94	29.9	35.3	2.18	28.2	0.01			201
229		8.96	8.94	34.158	26.469	159.8	0.505	1.78	27.4	37.1	2.24	28.9	0.01			230 206
250	ISL	8.79	8.76	34.192	26.523	155.0	0.538	1.58	24.2	39.7	2.33	29.8	0.01			251
268		8.63	8.60	34.215	26.566	151.2	0.566	1.41	21.5	41.9	2.40	30.6	0.01			270 205
300	ISL	8.50	8.47	34.224	26.594	149.1	0.614	1.31	19.9	43.7	2.44	31.2	0.01			302
319		8.40	8.37	34.222	26.608	148.1	0.642	1.27	19.3	44.8	2.46	31.6	0.01			321 204
378		7.57	7.53	34.224	26.733	136.7	0.726	0.96	14.3	54.3	2.65	34.2	0.00			380 203
400	ISL	7.37	7.33	34.226	26.763	134.1	0.756	0.85	12.6	57.5	2.72	34.8	0.00			403
438		7.08	7.04	34.233	26.810	130.1	0.806	0.68	10.0	62.7	2.82	35.7	0.00			441 202
500	ISL	6.64	6.59	34.265	26.895	122.5	0.885	0.48	7.0	69.9	2.94	37.6	0.00			503
513		6.55	6.50	34.272	26.913	120.9	0.900	0.44	6.4	71.4	2.97	38.0	0.00			517 201

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE
34 9.0 N	121 9.0 W	15/11/04	1901	UTC	2199 m	340	09 kn	330 04 12	1	1017.5 mb	17.7 c	16.2 c	13m		5/8	CS
DEPTH	TEMP	POT TEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXY	SI03	P04	N03	N02	CHL-A	PHAE0	PRES	SAMP
m	DEG C	DEG C		THETA			mL/L	PCT	uM/L	uM/L	uM/L	uM/L	ug/l	ug/l	db	
0	ISL	16.02	16.02	33.277	24.419	350.1	0.000	5.75	102.1	0.5	0.28	0.1	0.01	0.71	0.25	0
1	A	16.02	16.02	33.277	24.419	350.1	0.004	5.75	102.1	0.5	0.28	0.1	0.01	0.71	0.25	1 222
1		16.01	16.01	33.274	24.419	350.1	0.004									1 223
8	A	15.93	15.93	33.275	24.438	348.6	0.028	5.77	102.3	0.4	0.28	0.1	0.00	0.73	0.36	8 221
10	ISL	15.91	15.91	33.275	24.443	348.2	0.035	5.77	102.2	0.4	0.28	0.1	0.00	0.79	0.37	10
19	A	15.81	15.81	33.280	24.469	345.9	0.066	5.79	102.4	0.2	0.27	0.1	0.00	1.22	0.45	19 220
20	ISL	15.79	15.79	33.282	24.475	345.4	0.070	5.79	102.3	0.2	0.27	0.1	0.00	1.30	0.48	20
26	A	15.70	15.70	33.293	24.504	342.8	0.090	5.81	102.5	0.0	0.27	0.1	0.00	1.68	0.67	26 219
30	ISL	15.66	15.66	33.288	24.509	342.4	0.104	5.80	102.2	0.0	0.28	0.1	0.00	1.66	0.81	30
35	A	15.62	15.61	33.282	24.514	342.2	0.121	5.77	101.6	0.1	0.29	0.1	0.01	1.64	0.90	35 217
35		15.63	15.62	33.283	24.512	342.3	0.121									35 218
42		15.01	15.00	33.238	24.614	332.8	0.145	5.68	98.8	0.9	0.38	1.2	0.06	1.40	0.65	42 216
50	A	11.41	11.40	32.960	25.115	285.0	0.169	5.24	84.4	6.4	0.90	9.1	0.03	0.22	0.37	50 215
60		11.02	11.01	33.088	25.285	269.0	0.197	4.83	77.2	9.1	1.11	12.8	0.02	0.15	0.27	60 214
70		10.91	10.90	33.239	25.422	256.2	0.223	4.45	71.0	11.3	1.27	15.7	0.02	0.11	0.18	70 213
75	ISL	10.65	10.64	33.306	25.520	247.0	0.236	4.24	67.3	13.0	1.36	17.2	0.02	0.08	0.14	75
85		10.06	10.05	33.428	25.717	228.5	0.260	3.85	60.4	16.5	1.53	19.9	0.01	0.04	0.08	85 212
100		9.65	9.64	33.571	25.897	211.6	0.293	3.46	53.8	20.8	1.70	22.5	0.01	0.02	0.07	100 211
119		9.32	9.31	33.729	26.074	195.1	0.331	3.04	47.0	24.8	1.83	24.7	0.00	0.01	0.06	120 210
125	ISL	9.25	9.24	33.774	26.121	190.8	0.343	2.92	45.1	26.0	1.87	25.3	0.00	0.01	0.06	126
139		9.11	9.09	33.862	26.212	182.3	0.369	2.68	41.3	28.3	1.96	26.5	0.00	0.00	0.05	140 209
150	ISL	9.05	9.03	33.903	26.254	178.6	0.389	2.57	39.5	29.4	1.99	27.1	0.00	0.00	0.05	151
169		8.94	8.92	33.954	26.312	173.5	0.422	2.42	37.1	31.2	2.03	27.8	0.00	0.00	0.06	170 208
199		8.53	8.51	34.050	26.451	160.7	0.472	2.14	32.6	36.5	2.16	29.5	0.00	0.00	0.05	200 207
200	ISL	8.51	8.49	34.052	26.456	160.3	0.474	2.13	32.4	36.7	2.16	29.6	0.00			201
229		8.02	8.00	34.080	26.552	151.5	0.519	1.95	29.3	41.8	2.28	31.3	0.00			230 206
250	ISL	7.71	7.69	34.087	26.603	146.8	0.551	1.83	27.3	44.7	2.34	32.3	0.00			251
269		7.46	7.43	34.089	26.641	143.5	0.578	1.72	25.5	47.3	2.39	33.1	0.00			271 205
300	ISL	7.05	7.02	34.093	26.702	138.0	0.622	1.49	21.9	52.8	2.51	34.8	0.00			302
318		6.84	6.81	34.097	26.734	135.1	0.646	1.35	19.8	56.0	2.59	35.8	0.00			320 204
377		6.47	6.44	34.140	26.817	127.8	0.724	0.95	13.8	63.8	2.81	37.6	0.00			379 203
400	ISL	6.32	6.28	34.161	26.854	124.6	0.753	0.81	11.7	67.1	2.88	38.3	0.00			403
500	ISL	5.93	5.89	34.217	26.948	116.6	0.873	0.49	7.0	76.4	3.02	40.1	0.00			503
514		5.89	5.85	34.222	26.957	115.9	0.889	0.46	6.6	77.4	3.03	40.3	0.00			518 201

A) PRIMARY PRODUCTIVITY SAMPLES WERE TAKEN FROM THESE LEVELS.

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE
33 49.0 N	121 50.6 W	16/11/04	0100	UTC	3646 m	340	05 kn	360 02 04	1	1015.7 mb	16.7 c	15.0 c		4/8		CI
DEPTH	TEMP	POT TEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXY	SI03	P04	N03	N02	CHL-A	PHAE0	PRES	SAMP
m	DEG C	DEG C		THETA			ml/L	PCT	um/L	um/L	um/L	um/L	ug/L	ug/L	db	
0 ISL	16.55	16.55	33.220	24.254	365.8	0.000	5.68	101.9	1.4	0.30	0.1	0.00	0.31	0.14	0	
2	16.55	16.55	33.220	24.254	365.9	0.007	5.68	101.9	1.4	0.30	0.1	0.00	0.31	0.14	2	222
10	16.42	16.42	33.215	24.281	363.6	0.036	5.70	102.0	1.5	0.29	0.1	0.00	0.35	0.13	10	220
10	16.42	16.42	33.214	24.280	363.7	0.036									10	221
20	16.38	16.38	33.212	24.288	363.2	0.073	5.68	101.5	1.5	0.29	0.1	0.00	0.39	0.16	20	219
30	16.35	16.35	33.208	24.292	363.2	0.109	5.67	101.3	1.5	0.29	0.1	0.00	0.42	0.18	30	218
40	16.16	16.15	33.199	24.329	360.0	0.145									40	217
40	16.17	16.16	33.195	24.323	360.5	0.145	5.66	100.7	1.5	0.31	0.1	0.02	0.58	0.21	40	216
50	12.20	12.19	33.001	25.001	295.9	0.178	5.26	86.2	6.1	0.87	7.9	0.03	0.28	0.19	50	215
60	10.63	10.62	32.976	25.266	270.8	0.206	5.10	80.8	8.7	1.08	11.3	0.02	0.17	0.17	60	214
70	10.15	10.14	33.096	25.442	254.2	0.233	4.80	75.3	11.4	1.26	14.3	0.02	0.12	0.11	70	213
75 ISL	9.99	9.98	33.158	25.517	247.2	0.245	4.62	72.2	12.8	1.35	15.8	0.02	0.09	0.10	75	
84	9.79	9.78	33.269	25.637	235.9	0.267	4.30	67.0	15.3	1.49	18.1	0.01	0.05	0.08	84	212
99	9.54	9.53	33.443	25.815	219.3	0.301	3.89	60.3	18.6	1.65	20.7	0.01	0.03	0.05	99	211
100 ISL	9.54	9.53	33.456	25.825	218.4	0.303	3.85	59.7	18.9	1.66	20.9	0.01	0.03	0.05	100	
119	9.45	9.44	33.683	26.017	200.5	0.343	3.10	48.1	23.7	1.89	24.3	0.01	0.01	0.05	120	210
125 ISL	9.34	9.33	33.728	26.070	195.6	0.355	3.02	46.7	24.5	1.91	24.7	0.01	0.01	0.05	126	
139	9.07	9.05	33.812	26.180	185.4	0.382	2.93	45.1	26.3	1.94	25.3	0.01	0.00	0.04	140	209
150 ISL	8.92	8.90	33.887	26.262	177.8	0.402	2.77	42.5	28.5	2.00	26.2	0.01	0.00	0.04	151	
169	8.73	8.71	33.998	26.379	167.0	0.434	2.45	37.4	32.6	2.11	28.0	0.00	0.00	0.03	170	208
199	8.53	8.51	34.073	26.469	159.0	0.483	1.99	30.3	37.5	2.27	30.2	0.00	0.00	0.03	200	207
200 ISL	8.52	8.50	34.075	26.472	158.7	0.485	1.98	30.1	37.6	2.27	30.2	0.00			201	
228	8.26	8.24	34.128	26.554	151.4	0.528	1.68	25.4	41.1	2.38	31.2	0.00			229	206
250 ISL	8.05	8.02	34.154	26.606	146.8	0.561	1.51	22.7	44.2	2.46	32.0	0.00			251	
268	7.87	7.84	34.168	26.644	143.4	0.587	1.39	20.8	46.8	2.52	32.6	0.00			270	205
300 ISL	7.56	7.53	34.182	26.700	138.5	0.632	1.16	17.3	51.4	2.64	34.0	0.00			302	
318	7.39	7.36	34.189	26.730	135.8	0.657	1.04	15.4	53.9	2.71	34.7	0.00			320	204
378	6.97	6.93	34.234	26.825	127.5	0.736	0.68	10.0	61.9	2.86	36.5	0.00			380	203
400 ISL	6.71	6.67	34.231	26.858	124.5	0.764	0.62	9.1	65.5	2.90	37.3	0.00			403	
437	6.27	6.23	34.224	26.910	119.7	0.809	0.55	7.9	71.4	2.97	38.7	0.00			440	202
500 ISL	5.84	5.80	34.249	26.985	113.1	0.882	0.39	5.6	79.2	3.05	40.3	0.00			503	
513	5.75	5.71	34.254	27.000	111.7	0.897	0.36	5.1	80.8	3.07	40.6	0.00			517	201

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE
33 29.0 N	122 32.0 W	16/11/04	0654	UTC	3995 m	310	05 kn			1017.6 mb	16.1 c	15.0 c				
DEPTH	TEMP	POT TEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXY	SI03	P04	N03	N02	CHL-A	PHAE0	PRES	SAMP
m	DEG C	DEG C		THETA			ml/L	PCT	um/L	um/L	um/L	um/L	ug/L	ug/L	db	
0 ISL	16.43	16.43	33.247	24.302	361.2	0.000	5.67	101.5	1.3	0.28	0.1	0.01	0.35	0.16	0	
1	16.43	16.43	33.247	24.302	361.2	0.004	5.67	101.5	1.3	0.28	0.1	0.01	0.35	0.16	1	220
10	16.43	16.43	33.247	24.303	361.5	0.036	5.67	101.5	1.2	0.27	0.1	0.01	0.35	0.14	10	219
20	16.42	16.42	33.246	24.305	361.6	0.072	5.66	101.3	1.2	0.26	0.1	0.01	0.35	0.16	20	218
30	16.36	16.36	33.243	24.317	360.8	0.108	5.65	101.0	1.3	0.27	0.2	0.01	0.41	0.19	30	217
40	13.38	13.37	33.250	24.963	299.4	0.141	4.93	82.9	5.7	0.84	8.8	0.14	0.43	0.30	40	216
50	11.96	11.95	33.288	25.269	270.4	0.170	4.50	73.5	9.4	1.17	14.2	0.04	0.23	0.20	50	215
60	10.65	10.64	33.347	25.552	243.6	0.196	4.07	64.6	13.9	1.42	18.2	0.02	0.13	0.16	60	214
70	10.05	10.04	33.454	25.738	226.1	0.219	3.67	57.6	17.6	1.58	20.8	0.02	0.05	0.08	70	213
75 ISL	9.77	9.76	33.500	25.821	218.3	0.230	3.58	55.8	19.3	1.63	21.7	0.02	0.03	0.07	75	
84	9.39	9.38	33.584	25.949	206.3	0.249	3.45	53.4	21.9	1.69	23.0	0.02	0.01	0.05	84	212
99	9.40	9.39	33.760	26.085	193.6	0.279	2.90	44.9	25.2	1.83	25.2	0.01	0.01	0.05	99	211
100 ISL	9.39	9.38	33.767	26.092	193.0	0.281	2.90	44.9	25.3	1.83	25.2	0.01	0.01	0.05	100	
119	9.10	9.09	33.850	26.204	182.7	0.317	2.84	43.7	27.5	1.85	25.7	0.01	0.00	0.04	120	210
125 ISL	9.05	9.04	33.880	26.236	179.8	0.328	2.85	43.8	28.1	1.85	25.8	0.01	0.00	0.04	126	
139	8.91	8.90	33.943	26.307	173.3	0.353	2.87	44.0	29.4	1.84	25.9	0.01	0.00	0.04	140	209
150 ISL	8.70	8.68	33.967	26.359	168.5	0.371	3.11	47.5	30.1	1.78	25.5	0.01	0.00	0.03	151	
169	8.34	8.32	33.990	26.433	161.8	0.403	3.42	51.8	31.6	1.72	25.2	0.01	0.00	0.02	170	208
199	8.11	8.09	34.025	26.495	156.4	0.450	2.67	40.2	37.1	1.96	28.0	0.00	0.00	0.02	200	207
200 ISL	8.10	8.08	34.026	26.497	156.2	0.452	2.64	39.8	37.3	1.97	28.1	0.00			201	
228	7.83	7.81	34.070	26.572	149.5	0.495	1.96	29.4	43.1	2.22	31.8	0.00			229	206
250 ISL	7.66	7.64	34.106	26.625	144.7	0.527	1.62	24.2	46.8	2.36	33.2	0.00			251	
268	7.51	7.48	34.131	26.667	141.0	0.553	1.42	21.1	49.6	2.45	33.8	0.00			270	205
300 ISL	7.17	7.14	34.150	26.730	135.4	0.597	1.16	17.1	54.1	2.59	35.1	0.00			302	
318	6.95	6.92	34.152	26.762	132.5	0.621	1.07	15.7	56.7	2.66	35.8	0.00			320	204
378	6.15	6.12	34.132	26.852	124.2	0.698	0.89	12.8	68.0	2.80	38.6	0.00			380	203
400 ISL	6.21	6.17	34.176	26.880	122.0	0.725	0.72	10.4	69.9	2.86	38.6	0.00			403	
437	6.38	6.34	34.258	26.923	118.6	0.770	0.44	6.4	72.5	2.96	38.7	0.00			440	202
500 ISL	5.87	5.83	34.291	27.014	110.4	0.842	0.31	4.4	81.5	3.08	40.3	0.00			503	
513	5.76	5.72	34.298	27.034	108.6	0.856	0.28	4.0	83.3	3.10	40.6	0.00			517	201



LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE
33 9.0 N	123 13.3 W	16/11/04	1701	UTC	4238 m	040	04 kn	340 03 10	1	1019.6 mb	16.5 c	15.1 c	30m		3/8	CS
DEPTH	TEMP	POT TEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	PHYC	SI03	P04	N03	N02	CHL-A	PHAE0	PRES	SAMP
m	DEG C	DEG C		THETA			ML/L	PCT	UM/L	UM/L	UM/L	UM/L	UG/L	UG/L	DB	
0 ISL	16.58	16.58	32.797	23.923	397.4	0.000	5.66	101.3	1.3	0.32	0.1	0.00	0.15	0.06		0
2 A	16.58	16.58	32.797	23.923	397.5	0.008	5.66	101.3	1.3	0.32	0.1	0.00	0.15	0.06		2 224
10	16.57	16.57	32.797	23.925	397.5	0.040	5.66	101.3	1.2	0.32	0.1	0.00	0.17	0.07		10 223
19 A	16.57	16.57	32.821	23.944	396.0	0.075	5.66	101.3	1.2	0.32	0.1	0.00	0.17	0.06		19 222
20 ISL	16.57	16.57	32.821	23.944	396.0	0.079	5.66	101.3	1.2	0.32	0.1	0.00	0.17	0.06		20
27	16.53	16.53	32.820	23.953	395.4	0.107	5.67	101.4	1.2	0.32	0.1	0.00	0.19	0.09		27 221
30 ISL	16.43	16.43	32.855	24.003	390.8	0.119	5.70	101.8	1.3	0.32	0.1	0.00	0.22	0.14		30
36	15.91	15.90	32.895	24.151	376.7	0.142	5.82	102.9	1.4	0.33	0.1	0.00	0.35	0.24		36 220
40	15.24	15.23	32.848	24.263	366.1	0.157	5.95	103.7	1.5	0.35	0.1	0.01	0.51	0.40		40 219
44 A	13.35	13.34	32.733	24.570	336.9	0.171	6.20	103.9	2.1	0.43	0.6	0.07	0.52	0.42		44 218
50 ISL	12.80	12.79	32.753	24.694	325.2	0.191	6.07	100.6	2.6	0.50	1.2	0.17	0.44	0.42		50
52	12.62	12.61	32.760	24.734	321.4	0.197	6.02	99.4	2.7	0.52	1.5	0.20	0.40	0.42		52 217
60 A	13.02	13.01	32.951	24.804	315.0	0.223			4.0	0.62	3.7	0.32	0.31	0.28		60 216
70	11.98	11.97	33.071	25.097	287.3	0.253	5.25	85.7	7.2	0.89	9.2	0.02	0.19	0.16		70 215
75 ISL	11.66	11.65	33.154	25.221	275.6	0.267	4.95	80.3	9.4	1.06	11.9	0.02	0.15	0.16		75
80 A	11.32	11.31	33.221	25.335	264.8	0.280	4.70	75.7	11.5	1.20	14.1	0.02	0.11	0.16		80 214
92	9.86	9.85	33.212	25.581	241.4	0.311	4.62	72.1	13.3	1.30	16.0	0.01	0.05	0.08		92 213
100 ISL	9.36	9.35	33.240	25.685	231.6	0.330	4.59	70.8	14.9	1.36	17.0	0.01	0.03	0.05		100
104	9.19	9.18	33.266	25.733	227.1	0.339	4.58	70.4	15.9	1.39	17.6	0.01	0.02	0.04		104 212
115 A	8.80	8.79	33.404	25.902	211.2	0.363	4.26	65.0	20.1	1.55	20.5	0.01	0.01	0.02		116 211
125 ISL	8.78	8.77	33.483	25.967	205.2	0.384	3.98	60.7	22.4	1.66	22.2	0.00	0.00	0.03		126
128	8.78	8.77	33.499	25.980	204.1	0.390	3.87	59.0	23.0	1.69	22.7	0.00	0.00	0.03		129 210
140	9.15	9.13	33.695	26.075	195.4	0.414	3.10	47.7	25.4	1.89	25.2	0.00	0.01	0.03		141 209
150 ISL	9.00	8.98	33.781	26.167	186.9	0.433	2.77	42.5	27.6	1.98	26.5	0.00	0.01	0.03		151
169	8.71	8.69	33.931	26.330	171.7	0.467	2.52	38.5	32.1	2.06	28.0	0.00	0.00	0.04		170 208
199	8.03	8.01	34.002	26.489	156.9	0.516	2.35	35.3	38.9	2.15	30.2	0.00	0.00	0.02		200 207
200 ISL	8.02	8.00	34.003	26.491	156.7	0.518	2.34	35.2	39.1	2.15	30.3	0.00				201
229	7.66	7.64	34.021	26.558	150.7	0.562	2.19	32.7	43.3	2.25	31.6	0.00				230 206
250 ISL	7.24	7.22	34.013	26.612	145.8	0.594	2.22	32.8	47.2	2.28	32.3	0.01				251
269	6.88	6.86	34.010	26.659	141.4	0.621	2.24	32.8	50.7	2.31	32.9	0.01				271 205
300 ISL	6.77	6.74	34.069	26.721	136.0	0.664	1.72	25.1	55.1	2.51	34.8	0.00				302
319	6.71	6.68	34.099	26.752	133.2	0.689	1.34	19.6	57.6	2.64	36.0	0.00				321 204
378	6.28	6.25	34.139	26.841	125.4	0.766	0.92	13.3	66.3	2.81	38.0	0.00				380 203
400 ISL	6.07	6.04	34.149	26.876	122.2	0.793	0.81	11.6	70.0	2.87	38.8	0.00				403
438	5.72	5.68	34.168	26.935	116.8	0.838	0.64	9.1	76.3	2.97	40.0	0.00				441 202
500 ISL	5.41	5.37	34.214	27.009	110.3	0.909	0.43	6.1	84.4	3.09	41.3	0.00				503
513	5.34	5.30	34.224	27.026	108.8	0.923	0.38	5.4	86.1	3.11	41.6	0.00				516 201

A) PRIMARY PRODUCTIVITY SAMPLES WERE TAKEN FROM THESE LEVELS.

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE
32 49.0 N	123 54.5 W	16/11/04	2155	UTC	4376 m	110	03 kn	260 03 05	1	1018.6 mb	17.4 c	15.5 c	33m		4/8	AC
DEPTH	TEMP	POT TEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	PHYC	SI03	P04	N03	N02	CHL-A	PHAE0	PRES	SAMP
m	DEG C	DEG C		THETA			ML/L	PCT	UM/L	UM/L	UM/L	UM/L	UG/L	UG/L	DB	
0 ISL	17.44	17.44	32.783	23.711	417.7	0.000	5.59	101.7	1.3	0.31	0.1	0.00	0.12	0.04		0
2	17.44	17.44	32.783	23.711	417.7	0.008	5.59	101.7	1.3	0.31	0.1	0.00	0.12	0.04		2 220
10 ISL	17.35	17.35	32.779	23.729	416.2	0.042	5.58	101.4	1.3	0.31	0.1	0.00	0.13	0.05		10
15	17.27	17.27	32.775	23.745	414.8	0.062	5.58	101.2	1.3	0.31	0.1	0.00	0.13	0.05		15 219
20 ISL	17.22	17.22	32.769	23.753	414.3	0.083	5.59	101.3	1.3	0.31	0.1	0.00	0.14	0.05		20
30	17.12	17.12	32.757	23.767	413.2	0.125	5.60	101.3	1.3	0.30	0.1	0.00	0.17	0.04		30 218
45	16.10	16.09	32.742	23.991	392.3	0.185	5.81	103.0	1.4	0.32	0.1	0.00	0.25	0.21		45 217
50 ISL	15.96	15.95	32.812	24.077	384.3	0.204	5.85	103.4	1.4	0.32	0.1	0.00	0.31	0.24		50
55	15.67	15.66	32.866	24.183	374.3	0.223	5.90	103.7	1.5	0.33	0.1	0.00	0.37	0.25		55 216
65	13.81	13.80	32.783	24.516	342.7	0.259	6.12	103.6	1.9	0.39	0.2	0.05	0.39	0.25		65 215
75	12.96	12.95	32.791	24.693	326.0	0.293	6.02	100.1	2.2	0.45	0.9	0.14	0.29	0.34		75 214
84	12.05	12.04	32.766	24.848	311.3	0.321	5.81	94.8	3.2	0.58	3.0	0.04	0.19	0.19		84 213
94	11.50	11.49	32.770	24.952	301.5	0.352	5.74	92.5	3.9	0.65	4.4	0.01	0.13	0.18		94 212
100 ISL	11.47	11.46	32.873	25.038	293.5	0.370	5.60	90.3	4.4	0.69	5.4	0.01	0.11	0.15		100
109	11.36	11.35	33.038	25.186	279.6	0.396	5.35	86.1	5.8	0.78	7.5	0.01	0.08	0.10		109 211
124	9.98	9.97	33.088	25.465	253.1	0.436	4.99	78.0	10.8	1.11	13.2	0.01	0.04	0.05		125 210
125 ISL	9.93	9.92	33.101	25.484	251.4	0.438	4.95	77.3	11.2	1.13	13.6	0.01	0.04	0.05		126
144	9.35	9.33	33.406	25.817	219.9	0.483	4.15	64.1	18.6	1.52	19.8	0.00	0.01	0.02		145 209
150 ISL	9.25	9.23	33.498	25.905	211.7	0.496	3.97	61.2	20.2	1.58	20.9	0.00	0.01	0.02		151
169	9.06	9.04	33.744	26.128	190.9	0.534	3.48	53.5	24.4	1.71	23.4	0.00	0.00	0.02		170 208
199	8.90	8.88	33.939	26.307	174.5	0.589	2.68	41.1	30.4	1.96	26.8	0.00	0.00	0.02		200 207
200 ISL	8.89	8.87	33.944	26.312	174.0	0.591	2.66	40.8	30.6	1.97	26.9	0.00				201
250 ISL	8.25	8.22	34.071	26.511	155.8	0.673	2.00	30.2	39.4	2.23	30.7	0.00				251
268	8.02	7.99	34.076	26.550	152.4	0.700	1.96	29.5	41.7	2.27	31.3	0.00				269 205
300 ISL	7.66	7.63	34.108	26.628	145.4											

RV ROGER REVELLE

CALCOFI CRUISE 0411

STATION 81.7 43.5

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE
34 24.2 N	119 48.1 W	15/11/04	0103	UTC	21 m	070	04 kn	180 01 03	0	1014.6 mb	18.5 c	14.4 c				
DEPTH	TEMP	POT TEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXY	SI03	P04	N03	N02	CHL-A	PHAE0	PRES	SAMP
m	DEG C	DEG C		THETA			mL/L	PCT	uM/L	uM/L	uM/L	uM/L	ug/l	ug/l	db	
0 ISL	16.65	16.65	33.206	24.220	369.0	0.000	5.84	104.9	2.1	0.28	0.2	0.05	3.24	0.73	0	
1	16.65	16.65	33.206	24.220	369.1	0.004	5.84	104.9	2.1	0.28	0.2	0.05	3.24	0.73	1	204
5	16.64	16.64	33.206	24.223	369.0	0.018	5.84	104.9	2.1	0.28	0.2	0.06	3.27	0.70	5	203
10	16.59	16.59	33.206	24.234	368.0	0.037	5.78	103.7	2.2	0.29	0.2	0.06	3.37	0.68	10	202
16	15.91	15.91	33.217	24.398	352.6	0.058	5.42	96.0	2.8	0.50	1.1	0.13	1.31	0.83	16	201

RV ROGER REVELLE

CALCOFI CRUISE 0411

STATION 82 47

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE
34 16.5 N	120 1.5 W	15/11/04	0446	UTC	577 m	180	02 kn			1015.5 mb	17.0 c	16.0 c				
DEPTH	TEMP	POT TEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXY	SI03	P04	N03	N02	CHL-A	PHAE0	PRES	SAMP
m	DEG C	DEG C		THETA			mL/L	PCT	uM/L	uM/L	uM/L	uM/L	ug/l	ug/l	db	
0 ISL	16.04	16.04	33.241	24.387	353.2	0.000	6.14	109.0	0.1	0.21	0.1	0.00	1.01	0.42	0	
1 A	16.04	16.04	33.241	24.387	353.2	0.004	6.14	109.0	0.1	0.21	0.1	0.00	1.01	0.42	1	224
10	16.04	16.04	33.239	24.385	353.6	0.035	6.13	108.8	0.1	0.21	0.1	0.00	1.07	0.33	10	223
20	13.68	13.68	33.212	24.873	307.5	0.068	5.16	87.3	5.0	0.74	6.4	0.36	1.03	0.50	20	222
30	12.32	12.32	33.215	25.144	281.9	0.098	4.66	76.7	7.8	1.02	11.1	0.03	0.23	0.23	30	221
40	11.37	11.37	33.322	25.404	257.3	0.125	4.15	66.9	12.3	1.27	15.0	0.02	0.12	0.22	40	220
50	10.76	10.75	33.448	25.611	237.8	0.150	3.73	59.4	16.4	1.47	18.1	0.01	0.08	0.15	50	219
59	10.20	10.19	33.600	25.827	217.5	0.170	3.30	52.0	20.5	1.65	20.8	0.01	0.04	0.12	59	218
70	10.13	10.12	33.658	25.884	212.3	0.194	3.14	49.4	21.7	1.72	21.6	0.01	0.03	0.11	70	217
75 ISL	10.12	10.11	33.671	25.896	211.2	0.204	3.10	48.8	22.0	1.73	21.8	0.01	0.03	0.10	75	
85	10.12	10.11	33.690	25.911	210.0	0.225	3.03	47.7	22.4	1.74	22.0	0.01	0.02	0.09	85	216
99	10.05	10.04	33.727	25.952	206.4	0.254	2.94	46.2	23.2	1.78	22.4	0.01	0.02	0.08	100	215
100 ISL	10.05	10.04	33.734	25.957	206.0	0.257	2.92	45.9	23.3	1.79	22.5	0.01	0.02	0.08	101	
119	9.96	9.95	33.873	26.081	194.6	0.295	2.56	40.2	25.9	1.89	24.0	0.01	0.01	0.07	120	214
125 ISL	9.88	9.87	33.900	26.116	191.4	0.306	2.51	39.3	26.6	1.91	24.4	0.01	0.01	0.07	126	
139	9.69	9.67	33.948	26.185	185.1	0.333	2.44	38.1	28.1	1.96	25.1	0.01	0.01	0.06	140	213
150 ISL	9.62	9.60	33.987	26.228	181.3	0.353	2.33	36.3	29.2	2.00	25.7	0.01	0.01	0.06	151	
170	9.54	9.52	34.048	26.289	175.9	0.388	2.11	32.8	31.2	2.08	26.6	0.01	0.00	0.06	171	212
199	9.35	9.33	34.103	26.363	169.4	0.438	1.90	29.5	34.1	2.16	27.5	0.01	0.00	0.06	200	211
200 ISL	9.35	9.33	34.105	26.365	169.2	0.440	1.89	29.3	34.2	2.16	27.5	0.01			201	
228	9.20	9.17	34.153	26.427	163.9	0.487	1.52	23.5	37.4	2.28	29.0	0.01			229	210
250 ISL	8.94	8.91	34.172	26.484	158.8	0.522	1.25	19.2	41.0	2.41	30.3	0.00			252	
268	8.71	8.68	34.182	26.528	154.9	0.551	1.07	16.4	44.0	2.51	31.3	0.00			270	209
300 ISL	8.46	8.43	34.195	26.577	150.7	0.599	0.90	13.7	47.6	2.63	32.3	0.00			302	
318	8.34	8.31	34.199	26.599	148.9	0.626	0.84	12.7	49.5	2.68	32.7	0.00			320	208
377	7.81	7.77	34.213	26.690	141.0	0.712	0.62	9.3	57.6	2.85	33.5	0.00			379	207
400 ISL	7.55	7.51	34.219	26.732	137.2	0.744	0.47	7.0	62.4	2.97	33.3	0.00			403	
437	7.12	7.08	34.231	26.802	130.7	0.793	0.21	3.1	73.7	3.25	33.0	0.00			440	206
477	6.67	6.63	34.244	26.874	124.1	0.844	0.00	0.0	93.3	3.71	26.4	0.42			480	205
500 ISL	6.57	6.52	34.248	26.891	122.8	0.873	0.01	0.1	100.4	3.91	21.7	0.71			503	
512	6.55	6.50	34.249	26.894	122.6	0.888	0.02	0.3	103.0	3.99	19.3	0.87			516	204
531	6.54	6.49	34.251	26.898	122.6	0.911	0.01	0.1	105.7	4.08	16.4	1.13			535	203
561	6.49	6.44	34.251	26.904	122.3	0.948	0.00	0.0	123.2	4.81	0.5	0.84			565	202
566	6.49	6.44	34.255	26.908	122.1	0.954	0.00	0.0	123.5	4.83	0.3	0.69			570	201

A) SANTA BARBARA BASIN STATION.

RV ROGER REVELLE

CALCOFI CRUISE 0411

STATION 83.3 39.4

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE
34 15.5 N	119 19.4 W	14/11/04	2054	UTC	22 m	310	13 kn	300 01 04	0	1015.1 mb	20.0 c	14.6 c	02m			
DEPTH	TEMP	POT TEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXY	SI03	P04	N03	N02	CHL-A	PHAE0	PRES	SAMP
m	DEG C	DEG C		THETA			mL/L	PCT	uM/L	uM/L	uM/L	uM/L	ug/l	ug/l	db	
0 ISL	17.22	17.22	33.205	24.086	381.8	0.000	6.00	109.0	3.5	0.36	0.1	0.01	11.91	0.84	0	
1	17.22	17.22	33.205	24.086	381.9	0.004	6.00	109.0	3.5	0.36	0.1	0.01	11.91	0.84	1	204
5	17.12	17.12	33.201	24.107	380.0	0.019	5.81	105.4	3.4	0.35	0.1	0.02	9.95	0.46	5	203
10 ISL	17.07	17.07	33.203	24.120	378.9	0.038	5.79	104.9	3.5	0.36	0.1	0.03	9.26	0.73	10	
11	17.06	17.06	33.204	24.123	378.6	0.042	5.79	104.9	3.5	0.37	0.1	0.03	9.12	0.80	11	202
16	16.85	16.85	33.201	24.171	374.3	0.061	5.35	96.5	3.6	0.40	0.2	0.08	1.83	0.47	16	201

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE			
34 13.5 N	119 24.7 W	14/11/04	1833 UTC	36 m	110 02 kn	340 01 06	1	1016.6 mb	18.1 c	14.4 c	14m	1/8	CI			
DEPTH	TEMP	POT TEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXY	SI03	P04	N03	N02	CHL-A	PHAE0	PRES	SAMP
m	DEG C	DEG C		THETA			ml/L	PCT	uM/L	uM/L	uM/L	uM/L	ug/L	ug/L	db	
0 ISL	16.50	16.50	33.192	24.244	366.8	0.000	5.76	103.2	1.4	0.28	0.3	0.03	1.35	0.40	0	
1 A	16.50	16.50	33.192	24.244	366.8	0.004	5.76	103.2	1.4	0.28	0.3	0.03	1.35	0.40	1	206
1	16.57	16.57	33.193	24.229	368.2	0.004									1	207
8 A	15.75	15.75	33.189	24.412	351.0	0.029	5.60	98.8	2.4	0.45	1.7	0.27	1.89	0.38	8	205
10 ISL	15.54	15.54	33.187	24.457	346.8	0.036	5.56	97.7	2.6	0.48	2.0	0.36	1.86	0.40	10	
14	15.21	15.21	33.183	24.527	340.2	0.050	5.49	95.8	2.9	0.51	2.6	0.50	1.69	0.45	14	204
20 ISL	15.07	15.07	33.182	24.557	337.6	0.070	5.45	94.9	3.1	0.53	2.9	0.54	1.36	0.48	20	
21	15.08	15.08	33.181	24.554	337.9	0.073									21	203
21 A	15.06	15.06	33.182	24.559	337.4	0.073	5.45	94.9	3.1	0.53	2.9	0.55	1.31	0.49	21	202
29 A	14.86	14.86	33.183	24.603	333.4	0.100	5.36	92.9	3.5	0.59	3.5	0.60	1.33	0.16	29	201

A) PRIMARY PRODUCTIVITY SAMPLES WERE TAKEN FROM THESE LEVELS.

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE			
34 10.7 N	119 30.5 W	14/11/04	1540 UTC	136 m	160 05 kn	200 03 06	0	1016.6 mb	17.2 c	15.0 c	20m					
DEPTH	TEMP	POT TEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXY	SI03	P04	N03	N02	CHL-A	PHAE0	PRES	SAMP
m	DEG C	DEG C		THETA			ml/L	PCT	uM/L	uM/L	uM/L	uM/L	ug/L	ug/L	db	
0 ISL	17.01	17.01	33.224	24.150	375.7	0.000	5.70	103.2	0.9	0.27	0.1	0.00	0.38	0.16	0	
1	17.01	17.01	33.224	24.150	375.8	0.004	5.70	103.2	0.9	0.27	0.1	0.00	0.38	0.16	1	212
10	17.00	17.00	33.224	24.153	375.8	0.038	5.71	103.3	0.9	0.27	0.1	0.00	0.39	0.15	10	211
20	16.96	16.96	33.222	24.161	375.4	0.075	5.71	103.2	1.0	0.27	0.0	0.00	0.36	0.18	20	210
30	14.20	14.20	33.154	24.721	322.2	0.110	5.55	94.9	3.1	0.58	3.7	0.36	0.65	0.23	30	209
40	12.68	12.67	33.173	25.042	291.8	0.141	4.98	82.5	5.6	0.90	9.1	0.10	0.35	0.32	40	208
50	12.08	12.07	33.213	25.188	278.1	0.169	4.71	77.1	7.8	1.04	11.2	0.07	0.21	0.27	50	207
60	11.33	11.32	33.273	25.373	260.7	0.196	4.39	70.7	10.5	1.21	14.0	0.03	0.13	0.21	60	206
70	10.66	10.65	33.370	25.568	242.3	0.221	4.02	63.9	13.8	1.38	16.8	0.01	0.07	0.17	70	205
75 ISL	10.48	10.47	33.431	25.647	234.9	0.233	3.82	60.5	15.5	1.46	18.0	0.01	0.05	0.14	75	
85	10.29	10.28	33.538	25.763	224.1	0.256	3.47	54.7	18.3	1.60	19.9	0.02	0.03	0.09	85	204
100	10.24	10.23	33.595	25.817	219.3	0.289	3.30	52.0	19.6	1.66	20.6	0.02	0.02	0.09	100	203
114	10.05	10.04	33.811	26.018	200.5	0.319	2.71	42.6	24.1	1.87	23.2	0.01	0.01	0.08	115	202
125 ISL	9.99	9.98	33.886	26.087	194.2	0.341	2.52	39.6	25.8	1.95	24.0	0.01	0.01	0.07	126	
130	9.96	9.95	33.920	26.118	191.3	0.350	2.44	38.3	26.6	1.98	24.3	0.01	0.01	0.07	131	201

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE			
33 52.7 N	120 8.0 W	14/11/04	1022 UTC	96 m	360 09 kn			1015.2 mb	19.8 c	13.7 c						
DEPTH	TEMP	POT TEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXY	SI03	P04	N03	N02	CHL-A	PHAE0	PRES	SAMP
m	DEG C	DEG C		THETA			ml/L	PCT	uM/L	uM/L	uM/L	uM/L	ug/L	ug/L	db	
0 ISL	16.25	16.25	33.197	24.305	361.0	0.000	5.76	102.7	1.3	0.30	0.3	0.02	0.73	0.35	0	
1	16.25	16.25	33.197	24.305	361.0	0.004	5.76	102.7	1.3	0.30	0.3	0.02	0.73	0.35	1	210
10	16.16	16.16	33.202	24.330	358.9	0.036	5.75	102.3	1.5	0.34	0.6	0.03	0.99	0.32	10	209
20	15.12	15.12	33.212	24.569	336.4	0.071	5.62	98.0	2.7	0.48	2.6	0.10	1.28	0.52	20	208
30	14.81	14.81	33.208	24.633	330.6	0.104	5.61	97.2	3.0	0.51	3.0	0.12	1.35	0.54	30	207
40	14.84	14.83	33.214	24.632	331.0	0.137	5.56	96.4	3.1	0.54	3.1	0.11	1.20	0.49	40	206
50	13.22	13.21	33.272	25.013	294.9	0.168	4.94	82.8	7.3	0.84	8.2	0.10	0.68	0.39	50	205
60	11.73	11.72	33.303	25.324	265.5	0.197	4.42	71.8	10.8	1.15	13.1	0.06	0.25	0.29	60	204
70	11.36	11.35	33.332	25.414	257.1	0.223	4.24	68.4	11.8	1.25	14.5	0.05	0.22	0.21	70	203
75 ISL	11.13	11.12	33.376	25.490	249.9	0.235	4.07	65.3	13.2	1.32	15.7	0.04	0.17	0.19	75	
80	10.88	10.87	33.433	25.579	241.6	0.248	3.86	61.6	15.0	1.41	17.0	0.04	0.11	0.17	80	202
91	10.37	10.36	33.587	25.788	221.9	0.273	3.35	53.0	19.3	1.63	20.1	0.03	0.05	0.12	91	201

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE
33 44.7 N	120 24.6 W	14/11/04	0610	UTC	978 m	360	14 kn			1015.0 mb	16.5 c	14.9 c				
DEPTH	TEMP	POT TEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXY	SI03	P04	N03	N02	CHL-A	PHAE0	PRES	SAMP
m	DEG C	DEG C		THETA			ml/L	PCT	uM/L	uM/L	uM/L	uM/L	ug/L	ug/L	db	
0 ISL	16.71	16.71	33.234	24.228	368.3	0.000	5.70	102.6	0.8	0.25	0.1	0.01	0.75	0.31	0	
2	16.71	16.71	33.234	24.228	368.4	0.007	5.70	102.6	0.8	0.25	0.1	0.01	0.75	0.31	2	224
10 ISL	16.71	16.71	33.236	24.230	368.5	0.037	5.70	102.6	0.8	0.25	0.0	0.01	0.78	0.31	10	
11	16.71	16.71	33.236	24.230	368.5	0.041	5.70	102.6	0.8	0.25	0.0	0.01	0.79	0.31	11	222
11	16.71	16.71				0.041									11	223
20 ISL	16.67	16.67	33.241	24.243	367.5	0.074	5.70	102.5	0.7	0.25	0.1	0.01	0.83	0.34	20	
21	16.67	16.67	33.241	24.243	367.5	0.077	5.70	102.5	0.7	0.25	0.1	0.01	0.84	0.35	21	221
30	16.07	16.07	33.268	24.402	352.7	0.110	5.71	101.5	0.6	0.29	0.4	0.02	1.30	0.42	30	220
35	15.85	15.84	33.266	24.450	348.3	0.127									35	218
35	15.84	15.83	33.268	24.454	347.9	0.127	5.69	100.6	0.7	0.32	0.7	0.03	1.26	0.46	35	217
36	15.86	15.85	33.267	24.448	348.4	0.131									36	219
40	15.31	15.30	33.263	24.568	337.2	0.144	5.56	97.3	1.7	0.43	2.2	0.10	0.98	0.50	40	216
50	12.72	12.71	33.182	25.042	292.1	0.176	5.01	83.1	6.5	0.90	9.3	0.14	0.44	0.33	50	215
60	11.11	11.10	33.269	25.410	257.2	0.203	4.42	70.9	11.5	1.25	15.3	0.02	0.14	0.22	60	214
70	10.28	10.27	33.432	25.682	231.4	0.228	3.90	61.5	16.1	1.48	19.0	0.02	0.06	0.12	70	213
75 ISL	10.04	10.03	33.487	25.766	223.6	0.239	3.75	58.8	17.6	1.55	20.1	0.02	0.04	0.11	75	
85	9.77	9.76	33.559	25.867	214.1	0.261	3.58	55.8	19.5	1.62	21.4	0.01	0.02	0.08	85	212
100	9.61	9.60	33.612	25.935	207.9	0.293	3.47	54.0	20.9	1.66	21.9	0.01	0.01	0.07	100	211
120	9.39	9.38	33.712	26.050	197.4	0.333	3.21	49.7	23.3	1.75	23.5	0.01	0.01	0.05	120	210
125 ISL	9.31	9.30	33.752	26.094	193.3	0.343	3.12	48.2	24.3	1.78	24.0	0.01	0.01	0.05	126	
140	9.10	9.08	33.870	26.220	181.6	0.371	2.87	44.2	27.3	1.87	25.5	0.01	0.00	0.04	141	209
150 ISL	9.04	9.02	33.915	26.265	177.5	0.389	2.76	42.5	28.5	1.91	26.1	0.01	0.00	0.04	151	
169	8.93	8.91	33.974	26.329	171.8	0.422	2.56	39.3	30.7	1.98	27.1	0.01	0.00	0.04	170	208
199	8.52	8.50	34.073	26.471	158.8	0.472	2.16	32.9	36.6	2.14	29.3	0.00	0.00	0.03	200	207
200 ISL	8.51	8.49	34.075	26.474	158.5	0.473	2.15	32.7	36.7	2.14	29.3	0.00			201	
229	8.25	8.23	34.104	26.537	153.1	0.519	1.98	29.9	39.9	2.24	30.4	0.00			230	206
250 ISL	8.03	8.00	34.111	26.575	149.7	0.550	1.86	28.0	42.5	2.30	31.3	0.00			251	
269	7.83	7.80	34.118	26.610	146.6	0.579	1.74	26.1	45.0	2.36	32.1	0.00			271	205
300 ISL	7.56	7.53	34.155	26.679	140.5	0.623	1.42	21.1	49.8	2.50	33.4	0.00			302	
318	7.42	7.39	34.179	26.718	137.0	0.648	1.22	18.1	52.7	2.59	34.2	0.00			320	204
377	6.92	6.88	34.230	26.828	127.1	0.726	0.74	10.9	62.0	2.82	36.6	0.00			379	203
400 ISL	6.84	6.80	34.237	26.845	125.9	0.755	0.67	9.8	63.5	2.85	37.0	0.00			403	
437	6.74	6.70	34.244	26.864	124.5	0.801	0.62	9.1	65.4	2.88	37.5	0.00			440	202
500 ISL	6.42	6.37	34.282	26.937	118.3	0.878	0.45	6.5	72.3	3.01	38.7	0.00			503	
513	6.35	6.30	34.290	26.953	116.9	0.893	0.41	5.9	73.7	3.04	39.0	0.00			517	201

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE
33 34.7 N	120 45.3 W	14/11/04	0055	UTC	1378 m	010	15 kn	330 05 06	0	1013.1 mb	16.3 c	14.6 c				
DEPTH	TEMP	POT TEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXY	SI03	P04	N03	N02	CHL-A	PHAE0	PRES	SAMP
m	DEG C	DEG C		THETA			ml/L	PCT	uM/L	uM/L	uM/L	uM/L	ug/L	ug/L	db	
0 ISL	15.67	15.67	33.287	24.505	341.9	0.000	5.81	102.4	0.0	0.31	0.3	0.02	1.32	0.75	0	
1	15.67	15.67	33.287	24.505	341.9	0.003	5.81	102.4	0.0	0.31	0.3	0.02	1.32	0.75	1	220
10	15.66	15.66	33.286	24.507	342.0	0.034	5.80	102.2	0.0	0.31	0.2	0.02	1.25	0.83	10	219
20	15.65	15.65	33.283	24.507	342.3	0.068	5.78	101.9	0.0	0.31	0.3	0.03	1.23	0.77	20	218
30	14.84	14.84	33.215	24.632	330.7	0.102	5.58	96.7	1.5	0.46	2.3	0.11	0.80	0.49	30	217
40	12.41	12.40	33.071	25.015	294.4	0.133	5.20	85.6	5.2	0.85	8.4	0.09	0.32	0.32	40	216
50	11.53	11.52	33.123	25.220	275.0	0.162	4.87	78.7	7.7	1.07	11.9	0.04	0.19	0.25	50	215
60	11.17	11.16	33.184	25.333	264.5	0.189	4.64	74.5	9.6	1.19	14.0	0.03	0.14	0.21	60	214
70	10.57	10.56	33.333	25.555	243.6	0.214	4.16	66.0	13.6	1.42	17.7	0.02	0.07	0.14	70	213
75 ISL	10.38	10.37	33.380	25.625	237.0	0.226	4.01	63.3	14.9	1.49	18.8	0.02	0.05	0.12	75	
85	10.10	10.09	33.454	25.730	227.2	0.249	3.78	59.4	17.0	1.58	20.3	0.01	0.04	0.09	85	212
100	9.67	9.66	33.581	25.901	211.2	0.282	3.43	53.4	20.7	1.71	22.4	0.01	0.02	0.09	100	211
120	9.35	9.34	33.751	26.087	193.9	0.323	2.95	45.6	25.2	1.86	25.1	0.01	0.01	0.08	121	210
125 ISL	9.31	9.30	33.775	26.112	191.6	0.332	2.90	44.8	25.7	1.88	25.3	0.01	0.01	0.08	126	
139	9.23	9.21	33.829	26.167	186.7	0.359	2.80	43.2	26.8	1.91	25.7	0.01	0.01	0.08	140	209
150 ISL	9.14	9.12	33.882	26.223	181.5	0.379	2.70	41.6	28.1	1.95	26.2	0.01	0.01	0.07	151	
169	8.93	8.91	33.967	26.323	172.4	0.413	2.51	38.5	30.8	2.02	27.3	0.01	0.01	0.06	170	208
199	8.47	8.45	34.053	26.463	159.6	0.463	2.22	33.7	36.2	2.13	29.5	0.01	0.00	0.04	200	207
200 ISL	8.46	8.44	34.054	26.465	159.4	0.464	2.22	33.7	36.3	2.13	29.5	0.01			201	
229	8.24	8.22	34.062	26.505	156.0	0.510	2.18	33.0	38.4	2.17	30.0	0.00			230	206
250 ISL	8.02	7.99	34.090	26.560	151.1	0.542	1.90	28.6	41.7	2.28	31.3	0.00			251	
268	7.81	7.78	34.115	26.611	146.5	0.569	1.64	24.6	45.0	2.39	32.5	0.00			270	205
300 ISL	7.39	7.36	34.119	26.675	140.7	0.615	1.48	21.9	49.9	2.49	33.8	0.00			302	
318	7.18	7.15	34.121	26.706	137.9	0.640	1.42	21.0	52.5	2.54	34.4	0.00			320	204
378	6.98	6.94	34.206	26.801	129.8	0.720	0.83	12.2	60.6	2.76	36.5	0.00			380	203
400 ISL	6.87	6.83	34.232	26.837	126.6	0.748	0.68	10.0	63.4	2.83	37.1	0.00			403	
437	6.65	6.61	34.269	26.896	121.5	0.794	0.48	7.0	68.1	2.93	38.0	0.00			440	202
500 ISL	6.18	6.14	34.311	26.991	112.9	0.868	0.30	4.3	76.8	3.06	39.7	0.00				

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE		
33 14.7 N	121 26.6 W	13/11/04	1757 UTC	3793 m	190	22 kn	320 08 10	1	1014.9 mb	16.9 c	15.1 c	12m	4/8	SC		
DEPTH	TEMP	POT TEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXY	SI03	P04	N03	N02	CHL-A	PHAE0	PRES	SAMP
m	DEG C	DEG C		THETA			mL/L	PCT	uM/L	uM/L	uM/L	uM/L	ug/L	ug/L	db	
0 ISL	16.10	16.10	33.312	24.428	349.3	0.000	5.75	102.3	0.0	0.28	0.1	0.00	0.84	0.39	0	
2 A	16.10	16.10	33.312	24.428	349.3	0.007	5.75	102.3	0.0	0.28	0.1	0.00	0.84	0.39	2	223
2	16.10	16.10	33.312	24.428	349.3	0.007									2	224
8 A	16.09	16.09	33.313	24.431	349.2	0.028	5.73	101.9	0.0	0.27	0.1	0.00	0.82	0.31	8	222
10 ISL	16.09	16.09	33.313	24.431	349.3	0.035	5.73	101.9	0.0	0.27	0.1	0.00	0.82	0.32	10	
18 A	16.09	16.09	33.311	24.430	349.7	0.063	5.76	102.4	0.0	0.27	0.1	0.00	0.81	0.35	18	221
20 ISL	16.09	16.09	33.311	24.430	349.7	0.070	5.77	102.6	0.0	0.27	0.1	0.00	0.84	0.32	20	
24 A	16.09	16.09	33.311	24.430	349.8	0.084	5.78	102.8	0.0	0.26	0.1	0.00	0.89	0.28	24	220
30 ISL	16.09	16.09	33.312	24.431	349.9	0.105	5.76	102.4	0.0	0.26	0.1	0.00	0.77	0.36	30	
32 A	16.09	16.08	33.312	24.431	350.0	0.112	5.75	102.2	0.0	0.26	0.1	0.00	0.75	0.40	32	219
39	15.99	15.98	33.308	24.451	348.3	0.136	5.70	101.1	0.0	0.29	0.3	0.02	1.04	0.43	39	217
39	16.08	16.07	33.310	24.432	350.1	0.136									39	218
46 A	13.92	13.91	33.109	24.745	320.4	0.160	5.44	92.5	3.0	0.61	4.1	0.21	0.80	0.63	46	216
50 ISL	12.82	12.81	33.049	24.919	303.8	0.172	5.31	88.2	4.5	0.76	6.6	0.14	0.46	0.50	50	
53	12.17	12.16	33.046	25.042	292.1	0.181	5.18	84.9	5.7	0.86	8.6	0.06	0.22	0.36	53	215
60	11.74	11.73	33.226	25.262	271.3	0.201	4.65	75.6	9.1	1.11	13.1	0.02	0.15	0.22	60	214
70	10.78	10.77	33.332	25.518	247.1	0.227	4.19	66.7	13.1	1.36	17.1	0.02	0.08	0.16	70	213
75 ISL	10.48	10.47	33.397	25.621	237.4	0.239	3.97	62.8	15.1	1.45	18.6	0.02	0.05	0.14	75	
85	10.08	10.07	33.518	25.783	222.1	0.262	3.60	56.5	18.4	1.59	20.8	0.01	0.02	0.10	85	212
100	9.78	9.77	33.631	25.922	209.2	0.294	3.32	51.8	21.0	1.70	22.4	0.01	0.02	0.08	100	211
119	9.27	9.26	33.752	26.100	192.6	0.332	3.15	48.7	24.3	1.77	24.0	0.01	0.00	0.05	120	210
125 ISL	9.20	9.19	33.792	26.143	188.7	0.344	3.04	46.9	25.3	1.80	24.6	0.01	0.00	0.05	126	
139	9.10	9.08	33.882	26.229	180.7	0.370	2.77	42.7	27.7	1.88	25.9	0.00	0.01	0.04	140	209
150 ISL	8.97	8.95	33.942	26.297	174.5	0.389	2.61	40.1	29.7	1.94	26.8	0.00	0.01	0.04	151	
169	8.76	8.74	34.021	26.392	165.8	0.422	2.40	36.7	32.8	2.04	28.0	0.00	0.00	0.04	170	208
199	8.56	8.54	34.069	26.461	159.7	0.470	2.18	33.2	36.0	2.14	29.3	0.00	0.00	0.03	200	207
200 ISL	8.55	8.53	34.071	26.465	159.4	0.472	2.17	33.0	36.2	2.15	29.4	0.00			201	
229	8.13	8.11	34.128	26.573	149.5	0.517	1.74	26.2	41.8	2.32	31.2	0.00			230	206
250 ISL	8.02	7.99	34.182	26.632	144.2	0.548	1.40	21.1	45.8	2.46	32.2	0.00			251	
269	7.95	7.92	34.224	26.676	140.4	0.575	1.14	17.1	49.2	2.57	33.0	0.00			271	205
300 ISL	7.68	7.65	34.241	26.729	135.8	0.618	0.95	14.2	53.1	2.67	34.0	0.00			302	
319	7.48	7.45	34.240	26.757	133.3	0.643	0.89	13.2	55.3	2.71	34.6	0.00			321	204
378	6.86	6.82	34.260	26.860	124.1	0.719	0.60	8.8	64.6	2.89	37.1	0.00			380	203
400 ISL	6.70	6.66	34.273	26.892	121.3	0.746	0.51	7.4	67.5	2.94	37.7	0.00			403	
438	6.48	6.44	34.298	26.941	117.0	0.791	0.38	5.5	72.0	3.01	38.5	0.00			441	202
500 ISL	6.14	6.10	34.334	27.014	110.7	0.862	0.25	3.6	79.3	3.10	39.7	0.00			503	
512	6.07	6.02	34.341	27.029	109.4	0.875	0.22	3.2	80.7	3.12	39.9	0.00			516	201

A) PRIMARY PRODUCTIVITY SAMPLES WERE TAKEN FROM THESE LEVELS.

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE		
32 54.7 N	122 7.7 W	13/11/04	1148 UTC	4174 m	340	18 kn			1015.7 mb	16.0 c	14.0 c					
DEPTH	TEMP	POT TEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXY	SI03	P04	N03	N02	CHL-A	PHAE0	PRES	SAMP
m	DEG C	DEG C		THETA			mL/L	PCT	uM/L	uM/L	uM/L	uM/L	ug/L	ug/L	db	
0 ISL	17.07	17.07	33.308	24.200	370.9	0.000	5.59	101.3	0.7	0.27	0.1	0.00	0.26	0.08	0	
2	17.07	17.07	33.308	24.201	371.0	0.007	5.59	101.3	0.7	0.27	0.1	0.00	0.26	0.08	2	220
10 ISL	17.06	17.06	33.306	24.202	371.1	0.037	5.58	101.1	0.6	0.27	0.1	0.00	0.27	0.08	10	
11	17.06	17.06	33.306	24.202	371.2	0.041	5.58	101.1	0.6	0.27	0.1	0.00	0.27	0.08	11	219
20 ISL	17.07	17.07	33.307	24.200	371.6	0.074	5.58	101.1	0.6	0.27	0.1	0.00	0.28	0.08	20	
21	17.07	17.07	33.307	24.201	371.6	0.078	5.58	101.1	0.6	0.27	0.1	0.00	0.28	0.08	21	218
30	17.05	17.05	33.304	24.203	371.7	0.111	5.59	101.3	0.7	0.27	0.2	0.00	0.29	0.09	30	217
41	13.68	13.67	33.012	24.719	322.7	0.150	5.86	99.1	2.3	0.52	2.4	0.10	0.56	0.35	41	216
50	11.32	11.31	32.872	25.063	289.9	0.177	5.45	87.6	5.2	0.81	7.1	0.04	0.33	0.19	50	215
61	10.66	10.65	33.011	25.288	268.7	0.208	5.14	81.5	7.9	1.01	10.7	0.03	0.12	0.14	61	214
70	9.94	9.93	33.094	25.476	251.0	0.231	4.87	76.0	11.4	1.22	14.4	0.01	0.11	0.08	70	213
75 ISL	9.68	9.67	33.129	25.546	244.4	0.244	4.79	74.4	12.8	1.29	15.6	0.01	0.09	0.06	75	
85	9.38	9.37	33.220	25.666	233.1	0.268	4.57	70.5	15.4	1.41	17.6	0.01	0.05	0.05	85	212
100	9.34	9.33	33.495	25.888	212.4	0.301	3.80	58.7	20.3	1.65	21.7	0.01	0.02	0.04	100	211
120	9.22	9.21	33.717	26.081	194.4	0.342	3.24	50.0	24.2	1.81	24.1	0.01	0.01	0.03	121	210
125 ISL	9.17	9.16	33.761	26.123	190.5	0.351	3.13	48.2	25.2	1.84	24.6	0.01	0.01	0.03	126	
140	8.99	8.97	33.868	26.236	180.1	0.379	2.88	44.2	27.9	1.92	26.0	0.01	0.01	0.03	141	209
150 ISL	8.85	8.83	33.917	26.297	174.5	0.397	2.85	43.6	29.2	1.94	26.4	0.01	0.01	0.03	151	
170	8.57	8.55	33.985	26.394	165.6	0.431	2.79	42.5	31.9	1.97	27.2	0.01	0.00	0.02	171	208
199	8.29	8.27	34.057	26.493	156.6	0.477	2.23	33.8	37.6	2.17	29.9	0.01	0.00	0.04	200	207
200 ISL	8.28	8.26	34.058	26.495	156.4	0.479	2.22	33.6	37.7	2.17	29.9	0.01			201	
229	7.93	7.91	34.066	26.554	151.2	0.524	2.12	31.8	41.3	2.25	30.9	0.00			230	206
250 ISL	7.61	7.59	34.069	26.603	146.8	0.555	1.97	29.4	45.2	2.34	32.2	0.00			251	
300 ISL	7.25	7.22	34.146	26.716	136.8	0.626	1.35	20.0	52.8	2.60	34.4	0.00			302	
319	7.23	7.20	34.189	26.752	133.6	0.651	1.09	16.1	55.0	2.69	34.8	0.00			321	204
378	6.79	6.75	34.232													

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE
32 34.7 N	122 48.7 W	13/11/04	0521	UTC	4263 m	350	15 kn			1016.9 mb	15.5 c	13.1 c				
DEPTH	TEMP	POT TEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXY	SI03	P04	N03	N02	CHL-A	PHAE0	PRES	SAMP
m	DEG C	DEG C		THETA			ml/L	PCT	uM/L	uM/L	uM/L	uM/L	ug/L	ug/L	db	
0 ISL	16.30	16.30	32.917	24.079	382.5	0.000	5.72	101.9	1.5	0.32	0.1	0.00	0.17	0.07		0
1	16.30	16.30	32.917	24.079	382.6	0.004	5.72	101.9	1.5	0.32	0.1	0.00	0.17	0.07		1 220
10	16.31	16.31	32.918	24.078	383.0	0.038	5.72	101.9	1.5	0.32	0.1	0.00	0.16	0.07		10 219
20	16.12	16.12	32.953	24.148	376.6	0.076	5.76	102.3	1.7	0.32	0.1	0.00	0.25	0.13		20 218
30	15.18	15.18	32.932	24.341	358.5	0.113	5.97	104.0	2.0	0.36	0.1	0.01	0.57	0.33		30 217
40	13.09	13.08	32.751	24.635	330.6	0.147	6.33	105.5	2.2	0.41	0.2	0.03	0.41	0.36		40 216
50	12.47	12.46	32.769	24.770	318.0	0.180	6.16	101.4	2.6	0.46	0.9	0.11	0.36	0.37		50 215
60	11.71	11.70	32.829	24.959	300.1	0.211	5.73	92.8	3.8	0.62	3.9	0.06	0.21	0.30		60 214
70	11.16	11.15	32.880	25.099	287.0	0.240	5.46	87.4	5.4	0.78	7.0	0.02	0.14	0.22		70 213
75 ISL	10.90	10.89	32.935	25.188	278.6	0.254	5.38	85.7	6.2	0.83	8.0	0.02	0.11	0.18		75
85	10.37	10.36	33.057	25.375	261.0	0.281	5.20	81.9	8.4	0.95	10.4	0.01	0.07	0.11		85 212
100	9.49	9.48	33.190	25.625	237.3	0.319	4.64	71.8	14.8	1.35	16.9	0.01	0.02	0.05		100 211
120	8.75	8.74	33.453	25.948	206.9	0.363	4.13	62.9	21.5	1.59	21.4	0.01	0.00	0.03		121 210
125 ISL	8.76	8.75	33.529	26.006	201.5	0.373	3.94	60.1	22.9	1.66	22.4	0.01	0.00	0.03		126
139	8.78	8.77	33.703	26.140	189.1	0.401	3.44	52.5	26.3	1.81	24.6	0.01	0.00	0.03		140 209
150 ISL	8.76	8.74	33.809	26.226	181.1	0.421	3.34	51.0	27.9	1.82	24.9	0.01	0.00	0.03		151
169	8.68	8.66	33.934	26.337	171.0	0.454	3.17	48.4	29.5	1.83	25.3	0.00	0.00	0.02		170 208
199	8.45	8.43	33.998	26.423	163.4	0.505	3.47	52.7	31.2	1.75	24.8	0.01	0.00	0.07		200 207
200 ISL	8.43	8.41	34.000	26.427	162.9	0.506	3.43	52.1	31.5	1.76	25.0	0.01				201
229	7.92	7.90	34.061	26.552	151.4	0.552	2.13	32.0	41.7	2.23	30.9	0.00				230 206
250 ISL	7.65	7.63	34.073	26.601	147.0	0.583	1.95	29.1	45.5	2.34	32.5	0.00				251
269	7.46	7.43	34.078	26.632	144.3	0.611	1.78	26.4	47.8	2.38	33.1	0.00				271 205
300 ISL	7.29	7.26	34.122	26.691	139.1	0.655	1.41	20.9	51.8	2.54	34.3	0.00				302
319	7.18	7.15	34.145	26.725	136.2	0.681	1.21	17.9	54.3	2.63	35.0	0.00				321 204
377	6.30	6.27	34.115	26.819	127.4	0.757	1.03	14.9	64.7	2.77	37.7	0.00				379 203
400 ISL	6.11	6.07	34.128	26.854	124.3	0.786	0.88	12.7	68.5	2.84	38.5	0.00				403
437	5.89	5.85	34.162	26.909	119.4	0.831	0.64	9.2	74.2	2.95	39.7	0.00				440 202
500 ISL	5.56	5.52	34.216	26.993	112.0	0.904	0.44	6.3	82.4	3.08	41.1	0.00				503
513	5.49	5.45	34.227	27.010	110.4	0.919	0.40	5.7	84.1	3.11	41.4	0.00				516 201

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE
32 14.7 N	123 29.6 W	12/11/04	2306	UTC	4163 m	360	17 kn	300 04 05	1	1017.1 mb	17.8 c	14.9 c	26m		4/8	SC
DEPTH	TEMP	POT TEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXY	SI03	P04	N03	N02	CHL-A	PHAE0	PRES	SAMP
m	DEG C	DEG C		THETA			ml/L	PCT	uM/L	uM/L	uM/L	uM/L	ug/L	ug/L	db	
0 ISL	17.64	17.64	32.901	23.753	413.6	0.000	5.54	101.3	1.4	0.30	0.1	0.00	0.10	0.05		0
1	17.64	17.64	32.901	23.753	413.6	0.004	5.54	101.3	1.4	0.30	0.1	0.00	0.10	0.05		1 220
10 ISL	17.63	17.63	32.900	23.755	413.7	0.041	5.55	101.5	1.4	0.30	0.1	0.00	0.10	0.04		10
15	17.62	17.62	32.899	23.757	413.7	0.062	5.55	101.4	1.4	0.30	0.1	0.00	0.11	0.04		15 219
20 ISL	17.48	17.48	32.878	23.775	412.2	0.083	5.56	101.3	1.4	0.30	0.1	0.00	0.11	0.04		20
30	17.13	17.13	32.835	23.825	407.7	0.124	5.60	101.3	1.4	0.31	0.1	0.00	0.14	0.05		30 218
45	16.77	16.76	32.832	23.907	400.4	0.184	5.65	101.5	1.4	0.30	0.1	0.00	0.25	0.12		45 217
50 ISL	16.58	16.57	32.850	23.965	395.0	0.204	5.68	101.7	1.5	0.30	0.1	0.00	0.27	0.12		50
55	16.38	16.37	32.868	24.025	389.4	0.224	5.72	102.0	1.5	0.30	0.1	0.00	0.28	0.12		55 216
65	14.30	14.29	32.958	24.550	339.5	0.260	6.14	105.1	2.0	0.33	0.1	0.00	0.29	0.32		65 215
75	13.45	13.44	32.936	24.707	324.7	0.293	6.05	101.7	2.3	0.38	0.5	0.07	0.27	0.33		75 214
84	12.97	12.96	33.070	24.907	305.9	0.322	5.72	95.3	3.2	0.48	2.3	0.13	0.23	0.28		84 213
94	12.48	12.47	33.207	25.108	286.9	0.351	5.47	90.3	4.5	0.59	4.9	0.02	0.11	0.17		94 212
100 ISL	12.45	12.44	33.286	25.176	280.6	0.368	5.41	89.3	4.7	0.59	5.2	0.02	0.10	0.15		100
109	12.35	12.34	33.373	25.262	272.6	0.393	5.34	88.0	5.2	0.60	5.6	0.01	0.09	0.13		109 211
124	11.08	11.06	33.382	25.505	249.7	0.433	5.11	81.9	8.3	0.84	9.7	0.01	0.05	0.07		125 210
125 ISL	11.00	10.98	33.383	25.520	248.2	0.435	5.09	81.5	8.6	0.86	10.0	0.01	0.05	0.07		126
144	9.81	9.79	33.438	25.767	224.8	0.480	4.62	72.1	14.4	1.23	15.8	0.01	0.02	0.04		145 209
150 ISL	9.65	9.63	33.488	25.833	218.7	0.493	4.52	70.3	15.7	1.29	16.9	0.01	0.01	0.03		151
169	9.40	9.38	33.669	26.015	201.7	0.533	4.18	64.7	19.6	1.44	19.4	0.00	0.00	0.02		170 208
199	9.01	8.99	33.896	26.256	179.4	0.590	3.31	50.9	26.9	1.73	23.8	0.00	0.00	0.02		200 207
200 ISL	9.00	8.98	33.900	26.260	179.0	0.592	3.31	50.9	27.0	1.73	23.8	0.00				201
229	8.63	8.61	33.982	26.383	167.8	0.642	3.29	50.1	30.3	1.76	25.0	0.00				230 206
250 ISL	8.27	8.24	34.015	26.464	160.3	0.677	2.92	44.2	35.2	1.92	27.3	0.00				251
269	7.93	7.90	34.034	26.530	154.3	0.707	2.51	37.7	40.0	2.09	29.7	0.00				270 205
300 ISL	7.50	7.47	34.054	26.608	147.1	0.754	2.08	30.9	45.9	2.28	32.2	0.00				302
318	7.29	7.26	34.064	26.646	143.7	0.780	1.87	27.7	49.0	2.37	33.3	0.00				320 204
378	6.76	6.73	34.125	26.767	132.8	0.863	1.15	16.8	59.4	2.67	36.5	0.00				380 203
400 ISL	6.51	6.47	34.132	26.806	129.2	0.891	1.01	14.7	63.2	2.74	37.4	0.00				402
437	6.11	6.07	34.140	26.864	123.9	0.938	0.85	12.2	69.5	2.84	38.8	0.00				440 202
500 ISL	5.67	5.63	34.171	26.944	116.7	1.014	0.61	8.7	78.7	2.98	40.5	0.00				503
512	5.59	5.55	34.177	26.958	115.4	1.028	0.56	8.0	80.5	3.01	40.8	0.00				515 201

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE		
31 54.7 N	124 10.2 W	12/11/04	1747 UTC	4210 m	360	12 kn	010 03 07	1	1019.4 mb	19.2 c	16.3 c	36m	4/8	CU		
DEPTH	TEMP	POT TEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXY	SI03	P04	N03	N02	CHL-A	PHAE0	PRES	SAMP
m	DEG C	DEG C		THETA			mL/L	PCT	uM/L	uM/L	uM/L	uM/L	ug/L	ug/L	db	
0 ISL	18.00	18.00	32.937	23.694	419.3	0.000	5.50	101.3	1.4	0.30	0.1	0.00	0.13	0.05		0
2 A	18.00	18.00	32.937	23.694	419.3	0.008	5.50	101.3	1.4	0.30	0.1	0.00	0.13	0.05		2 223
2	18.00	18.00	32.939	23.695	419.2	0.008										2 224
10 ISL	17.99	17.99	32.936	23.696	419.4	0.042	5.50	101.3	1.4	0.30	0.1	0.00	0.12	0.05		10
13	17.99	17.99	32.936	23.696	419.5	0.055	5.50	101.3	1.4	0.30	0.1	0.00	0.12	0.05		13 222
20 ISL	17.98	17.98	32.937	23.699	419.4	0.084	5.50	101.2	1.4	0.29	0.1	0.00	0.13	0.05		20
22 A	17.98	17.98	32.937	23.700	419.5	0.092	5.50	101.2	1.4	0.29	0.1	0.00	0.13	0.05		22 221
30 ISL	17.95	17.94	32.930	23.702	419.5	0.126	5.49	101.0	1.3	0.29	0.1	0.00	0.14	0.06		30
32	17.94	17.93	32.928	23.703	419.5	0.134	5.49	101.0	1.3	0.29	0.1	0.00	0.14	0.06		32 220
42	17.88	17.87	32.918	23.710	419.1	0.176	5.53	101.6	1.4	0.29	0.1	0.00	0.20	0.05		42 219
50 ISL	17.86	17.85	32.917	23.714	419.0	0.210	5.51	101.2	1.4	0.29	0.1	0.00	0.20	0.07		50
53 A	17.85	17.84	32.917	23.717	418.9	0.222	5.50	101.0	1.4	0.29	0.1	0.00	0.20	0.09		53 218
62	14.85	14.84	32.840	24.342	359.2	0.257	6.27	108.4	1.6	0.32	0.1	0.00	0.27	0.20		62 217
72 A	13.83	13.82	32.880	24.587	336.1	0.292	6.08	103.0	2.1	0.37	0.1	0.00	0.25	0.31		72 216
75 ISL	13.66	13.65	32.908	24.643	330.8	0.302	6.02	101.6	2.2	0.38	0.2	0.01	0.26	0.32		75
80	13.40	13.39	32.934	24.716	324.0	0.318	5.94	99.8	2.4	0.41	0.4	0.03	0.28	0.34		80 215
84	13.13	13.12	32.905	24.747	321.0	0.331	5.89	98.4	2.5	0.44	0.6	0.05	0.28	0.32		84 214
95 A	12.72	12.71	32.910	24.832	313.2	0.366	5.71	94.5	3.0	0.54	2.3	0.18	0.25	0.31		95 213
100 ISL	12.41	12.40	32.942	24.917	305.2	0.382	5.56	91.5	3.8	0.62	4.0	0.14	0.21	0.28		100
110	11.68	11.67	33.028	25.120	286.0	0.411	5.23	84.8	5.9	0.82	8.0	0.02	0.13	0.22		110 212
124	10.58	10.57	33.135	25.400	259.5	0.449	4.88	77.3	9.8	1.07	12.6	0.01	0.07	0.14		124 211
125 ISL	10.51	10.50	33.149	25.423	257.3	0.452	4.86	76.8	10.1	1.08	12.9	0.01	0.07	0.13		125
137 A	9.87	9.85	33.325	25.669	234.0	0.481	4.57	71.3	13.6	1.25	15.8	0.01	0.03	0.06		137 210
150 ISL	9.50	9.48	33.464	25.838	218.1	0.511	4.01	62.1	18.2	1.51	19.9	0.00	0.01	0.03		151
153	9.45	9.43	33.491	25.868	215.4	0.517	3.89	60.2	19.2	1.56	20.7	0.00	0.01	0.03		154 209
169	9.28	9.26	33.637	26.010	202.2	0.551	3.72	57.4	21.8	1.62	22.0	0.00	0.00	0.03		170 208
199	8.90	8.88	33.904	26.279	177.1	0.608	2.67	40.9	30.2	1.97	26.9	0.01	0.00	0.02		200 207
200 ISL	8.89	8.87	33.910	26.286	176.5	0.609	2.65	40.6	30.4	1.98	27.0	0.01				201
229	8.47	8.45	34.026	26.442	162.1	0.659	2.41	36.6	35.3	2.08	28.7	0.00				230 206
250 ISL	8.12	8.09	34.055	26.518	155.1	0.692	2.28	34.4	39.3	2.14	30.1	0.00				251
268	7.82	7.79	34.061	26.567	150.6	0.719	2.17	32.5	42.6	2.20	31.2	0.00				269 205
300 ISL	7.38	7.35	34.068	26.636	144.4	0.767	1.95	28.9	47.1	2.32	32.7	0.00				302
318	7.15	7.12	34.068	26.668	141.5	0.792	1.82	26.8	49.6	2.40	33.5	0.00				320 204
378	6.44	6.41	34.086	26.778	131.4	0.874	1.30	18.8	60.9	2.66	36.9	0.00				380 203
400 ISL	6.18	6.14	34.084	26.811	128.4	0.903	1.20	17.3	64.8	2.72	37.8	0.00				402
437	5.81	5.77	34.090	26.862	123.7	0.949	1.06	15.1	70.9	2.81	39.0	0.00				440 202
500 ISL	5.54	5.50	34.167	26.956	115.4	1.025	0.64	9.1	80.2	2.97	40.7	0.00				503
513	5.49	5.45	34.183	26.975	113.7	1.040	0.55	7.8	82.1	3.00	41.1	0.00				516 201

A) PRIMARY PRODUCTIVITY SAMPLES WERE TAKEN FROM THESE LEVELS.

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE		
34 0.4 N	118 50.2 W	19/11/04	0717 UTC	39 m	110	03 kn			1016.8 mb	15.6 c	13.9 c					
DEPTH	TEMP	POT TEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXY	SI03	P04	N03	N02	CHL-A	PHAE0	PRES	SAMP
m	DEG C	DEG C		THETA			mL/L	PCT	uM/L	uM/L	uM/L	uM/L	ug/L	ug/L	db	
0 ISL	16.47	16.47	33.207	24.263	365.0	0.000			2.1	0.26	0.3	0.05	0.25	0.07		0
1	16.47	16.47	33.207	24.263	365.0	0.004			2.1	0.26	0.3	0.05	0.25	0.07		1 206
6	16.04	16.04	33.187	24.345	357.3	0.022			2.4	0.31	0.9	0.24	0.42	0.06		6 205
10 ISL	15.72	15.72	33.188	24.418	350.5	0.036			2.6	0.33	1.1	0.27	0.38	0.08		10
11	15.64	15.64	33.189	24.437	348.7	0.039			2.7	0.34	1.1	0.28	0.36	0.09		11 204
20 ISL	14.85	14.85	33.167	24.593	334.1	0.070			4.0	0.53	3.0	0.74	0.39	0.12		20
21	14.77	14.77	33.164	24.608	332.7	0.073			4.2	0.55	3.3	0.80	0.39	0.12		21 203
30	14.21	14.21	33.162	24.725	321.8	0.103			5.3	0.71	5.0	0.99	0.23	0.11		30 202
39	13.76	13.75	33.170	24.824	312.6	0.131			5.9	0.79	6.5	0.78	0.23	0.11		39 201

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE		
33 53.4 N	118 26.5 W	19/11/04	0957 UTC	21 m	050	03 kn			1015.8 mb	15.0 c	14.5 c					
DEPTH	TEMP	POT TEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXY	SI03	P04	N03	N02	CHL-A	PHAE0	PRES	SAMP
m	DEG C	DEG C		THETA			mL/L	PCT	uM/L	uM/L	uM/L	uM/L	ug/L	ug/L	db	
0 ISL	17.03	17.03	33.177	24.109	379.6	0.000			2.4	0.18	0.3	0.02	0.34	0.07		0
1	17.03	17.03	33.177	24.109	379.6	0.004			2.4	0.18	0.3	0.02	0.34	0.07		1 204
5	16.77	16.77	33.174	24.168	374.2	0.019			2.6	0.22	0.4	0.05	0.39	0.04		5 203
10 ISL	15.68	15.68	33.142	24.392	353.0	0.037			4.0	0.41	1.9	0.51	0.24	0.02		10
11	15.46	15.46	33.136	24.436	348.8	0.041			4.3	0.45	2.3	0.63	0.21	0.02		11 202
17	15.18	15.18	33.122	24.487	344.2	0.061			4.5	0.60	3.8	1.25	0.29	0.02		17 201

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE
33 53.4 N	118 29.4 W	10/11/04	0231	UTC	58 m	290	11 kn			1018.9 mb	17.4 c	13.5 c				
DEPTH	TEMP	POT TEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXY	SI03	P04	N03	N02	CHL-A	PHAE0	PRES	SAMP
m	DEG C	DEG C		THETA			ml/L	PCT	um/L	um/L	um/L	um/L	ug/L	ug/L	db	ug/L
0 ISL	17.76	17.76	33.169	23.929	396.8	0.000	5.74	105.4	1.0	0.26	0.1	0.00	0.51	0.18	0	
1	17.76	17.76	33.169	23.930	396.8	0.004	5.74	105.4	1.0	0.26	0.1	0.00	0.51	0.18	1	208
5	17.75	17.75	33.164	23.928	397.1	0.020	5.75	105.5	1.0	0.25	0.1	0.00	0.49	0.17	5	207
10	17.68	17.68	33.165	23.946	395.5	0.040	5.73	105.0	1.0	0.25	0.1	0.00	0.50	0.16	10	206
20	17.19	17.19	33.151	24.053	385.7	0.079	5.59	101.5	1.8	0.37	0.7	0.31	0.98	0.34	20	205
25	15.91	15.91	33.140	24.339	358.5	0.097	5.43	96.1	2.6	0.49	1.6	0.66	1.32	0.54	25	204
30	15.55	15.55	33.136	24.417	351.3	0.115	5.48	96.3	2.9	0.55	2.1	0.90	0.65	0.39	30	203
40	13.98	13.97	33.093	24.720	322.6	0.149	5.43	92.4	4.2	0.71	4.5	0.94	0.32	0.32	40	202
50	13.03	13.02	33.143	24.951	300.8	0.180	4.84	80.8	6.8	0.96	9.5	1.07	0.13	0.25	50	201

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE
33 49.4 N	118 37.7 W	10/11/04	0541	UTC	651 m	300	12 kn			1019.4 mb	16.8 c	14.0 c				
DEPTH	TEMP	POT TEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXY	SI03	P04	N03	N02	CHL-A	PHAE0	PRES	SAMP
m	DEG C	DEG C		THETA			ml/L	PCT	um/L	um/L	um/L	um/L	ug/L	ug/L	db	ug/L
0 ISL	17.59	17.59	33.145	23.952	394.6	0.000	5.75	105.2	1.4	0.28	0.1	0.00	0.37	0.22	0	
1	17.59	17.59	33.145	23.952	394.6	0.004	5.75	105.2	1.4	0.28	0.1	0.00	0.37	0.22	1	220
10	17.59	17.59	33.141	23.949	395.2	0.039	5.74	105.0	1.3	0.28	0.1	0.00	0.37	0.19	10	219
20	16.85	16.85	33.219	24.184	373.1	0.078	5.81	104.8	1.0	0.32	0.1	0.00	0.49	0.29	20	218
30	14.33	14.33	33.156	24.695	324.7	0.113	5.97	102.4	2.1	0.47	1.2	0.09	1.19	0.59	30	217
40	13.12	13.11	33.164	24.949	300.7	0.144	5.16	86.3	4.7	0.83	7.0	0.81	0.35	0.30	40	216
50	12.18	12.17	33.207	25.165	280.4	0.173	4.79	78.6	7.1	1.04	10.8	0.04	0.26	0.26	50	215
60	11.34	11.33	33.286	25.382	259.9	0.200	4.31	69.5	10.8	1.26	14.2	0.02	0.12	0.20	60	214
70	11.10	11.09	33.330	25.459	252.7	0.226	4.13	66.2	12.3	1.34	15.5	0.02	0.08	0.15	70	213
75 ISL	10.99	10.98	33.344	25.490	249.9	0.238	4.07	65.1	12.8	1.37	16.0	0.02	0.07	0.13	75	
85	10.76	10.75	33.381	25.560	243.5	0.263	3.95	62.9	13.9	1.43	16.9	0.01	0.06	0.11	85	212
99	10.41	10.40	33.488	25.704	230.0	0.296	3.64	57.6	16.7	1.57	18.9	0.01	0.04	0.08	99	211
100 ISL	10.40	10.39	33.493	25.710	229.5	0.298	3.62	57.2	16.8	1.58	19.0	0.01	0.04	0.08	100	
119	10.30	10.29	33.562	25.781	223.1	0.341	3.38	53.3	18.6	1.66	20.1	0.01	0.02	0.08	120	210
125 ISL	10.26	10.25	33.590	25.810	220.5	0.355	3.29	51.9	19.3	1.69	20.5	0.01	0.02	0.08	126	
139	10.17	10.15	33.665	25.884	213.8	0.385	3.08	48.5	20.9	1.77	21.5	0.01	0.02	0.07	140	209
150 ISL	10.10	10.08	33.733	25.949	207.8	0.408	2.94	46.2	22.3	1.82	22.3	0.01	0.02	0.06	151	
169	9.97	9.95	33.858	26.069	196.8	0.447	2.69	42.2	24.8	1.92	23.6	0.01	0.01	0.05	170	208
199	9.76	9.74	34.049	26.254	179.9	0.503	2.21	34.6	29.1	2.09	25.6	0.01	0.00	0.05	200	207
200 ISL	9.75	9.73	34.055	26.260	179.3	0.505	2.19	34.2	29.3	2.10	25.7	0.01			201	
228	9.57	9.54	34.182	26.390	167.6	0.554	1.74	27.1	33.4	2.26	27.5	0.00			229	206
250 ISL	9.33	9.30	34.216	26.456	161.7	0.590	1.59	24.7	36.0	2.34	28.5	0.00			251	
268	9.11	9.08	34.222	26.496	158.1	0.619	1.52	23.5	37.9	2.39	29.2	0.00			270	205
300 ISL	8.74	8.71	34.232	26.563	152.2	0.668	1.37	21.0	41.6	2.49	30.4	0.00			302	
318	8.54	8.51	34.234	26.596	149.3	0.695	1.28	19.5	43.7	2.54	31.0	0.00			320	204
377	7.91	7.87	34.258	26.710	139.1	0.781	0.93	14.0	51.1	2.72	33.4	0.00			379	203
400 ISL	7.68	7.64	34.262	26.747	135.9	0.812	0.83	12.4	53.8	2.78	34.1	0.00			403	
437	7.34	7.30	34.269	26.802	131.0	0.862	0.70	10.4	58.3	2.87	35.2	0.00			440	202
500 ISL	6.86	6.81	34.291	26.886	123.6	0.942	0.47	6.9	66.7	3.00	37.1	0.00			503	
513	6.76	6.71	34.296	26.904	122.0	0.958	0.42	6.1	68.4	3.03	37.5	0.00			516	201

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE
33 39.4 N	118 58.5 W	10/11/04	1017	UTC	750 m	300	03 kn			1017.8 mb	17.3 c	14.6 c				
DEPTH	TEMP	POT TEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXY	SI03	P04	N03	N02	CHL-A	PHAE0	PRES	SAMP
m	DEG C	DEG C		THETA			ml/L	PCT	um/L	um/L	um/L	um/L	ug/L	ug/L	db	ug/L
0 ISL	16.84	16.84	33.286	24.238	367.4	0.000	5.69	102.7	0.4	0.28	0.1	0.00	0.28	0.13	0	
1	16.84	16.84	33.286	24.238	367.4	0.004	5.69	102.7	0.4	0.28	0.1	0.00	0.28	0.13	1	220
10	16.69	16.69	33.291	24.277	364.0	0.037	5.70	102.6	0.2	0.28	0.1	0.00	0.40	0.19	10	219
20	16.57	16.57	33.293	24.306	361.5	0.073	5.72	102.7	0.1	0.30	0.1	0.01	0.55	0.32	20	218
30	16.29	16.29	33.270	24.353	357.3	0.109	5.68	101.4	0.5	0.34	0.6	0.04	0.65	0.50	30	217
40	15.02	15.01	33.202	24.584	335.6	0.143	5.60	97.4	2.0	0.51	2.6	0.14	0.68	0.50	40	216
50	12.53	12.52	33.132	25.040	292.3	0.175	5.14	84.9	5.8	0.91	9.2	0.14	0.41	0.40	50	215
60	11.85	11.84	33.211	25.230	274.4	0.203	4.75	77.4	8.2	1.10	12.4	0.03	0.23	0.28	60	214
70	11.30	11.29	33.273	25.379	260.4	0.230	4.54	73.1	10.4	1.22	14.5	0.02	0.14	0.22	70	213
75 ISL	11.04	11.03	33.304	25.450	253.7	0.243	4.37	70.0	11.6	1.28	15.5	0.02	0.11	0.20	75	
85	10.59	10.58	33.374	25.584	241.2	0.268	4.02	63.8	14.1	1.41	17.4	0.02	0.07	0.15	85	212
100	10.13	10.12	33.519	25.776	223.1	0.302	3.62	56.9	17.7	1.56	19.8	0.01	0.03	0.08	100	211
120	9.83	9.82	33.796	26.043	198.2	0.344	2.98	46.6	23.2	1.79	23.0	0.01	0.01	0.06	121	210
125 ISL	9.80	9.79	33.845	26.086	194.2	0.354	2.86	44.7	24.2	1.82	23.5	0.01	0.01	0.06	126	
139	9.75	9.73	33.953	26.179	185.7	0.381	2.59	40.5	26.6	1.88	24.6	0.01	0.00	0.05	140	209
150 ISL	9.68	9.66	34.011	26.236	180.5	0.401	2.42	37.8	28.1	1.96	25.4	0.01	0.00	0.05	151	
169	9.51	9.49	34.071	26.312	173.7	0.435	2.23	34.7	30.3	2.07	26.5	0.01	0.00	0.05	170	208
199	9.06	9.04	34.099	26.407	165.1	0.485	2.23	34.4	33.2	2.10	27.8	0.01	0.00	0.04	200	207
200 ISL	9.06	9.04	34.101	26.408	165.0											



LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	
33 29.4 N	119 19.1 W	10/11/04	1403	UTC	1636 m	300	14 kn	290 02 08	1	1018.3 mb	15.6 c	13.3 c	23m	2/8	AC	
DEPTH	TEMP	POT TEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXY	SI03	P04	N03	N02	CHL-A	PHAE0	PRES	SAMP
m	DEG C	DEG C		THETA			ML/L	PCT	UM/L	UM/L	UM/L	UM/L	UG/L	UG/L	DB	
0 ISL	16.88	16.88	33.263	24.211	370.0	0.000	5.66	102.2	0.6	0.28	0.1	0.00	0.37	0.10	0	
1	16.88	16.88	33.263	24.211	370.0	0.004	5.66	102.2	0.6	0.28	0.1	0.00	0.37	0.10	1	220
10 ISL	16.88	16.88	33.263	24.211	370.3	0.037	5.66	102.2	0.6	0.28	0.1	0.00	0.35	0.10	10	
11	16.88	16.88	33.263	24.211	370.3	0.041	5.66	102.2	0.6	0.28	0.1	0.00	0.35	0.10	11	219
20 ISL	16.84	16.84	33.258	24.217	370.0	0.074	5.69	102.6	0.6	0.28	0.1	0.00	0.40	0.14	20	
21	16.84	16.84	33.257	24.216	370.1	0.078	5.69	102.6	0.6	0.28	0.1	0.00	0.41	0.14	21	218
30 ISL	14.60	14.60	33.076	24.576	336.0	0.110	5.83	100.5	1.7	0.43	1.4	0.06	0.97	0.67	30	
32	14.04	14.04	33.050	24.674	326.7	0.116	5.86	99.8	2.1	0.49	2.1	0.08	1.06	0.76	32	217
41	12.96	12.95	33.136	24.959	299.8	0.144	5.19	86.5	5.3	0.84	8.0	0.22	0.53	0.40	41	216
50	12.25	12.24	33.171	25.123	284.3	0.171	4.94	81.1	6.9	0.97	10.5	0.08	0.37	0.31	50	215
60	11.26	11.25	33.262	25.378	260.3	0.198	4.47	71.9	10.6	1.23	14.8	0.03	0.12	0.22	60	214
70	10.96	10.95	33.363	25.510	247.9	0.223	4.11	65.7	13.6	1.37	17.2	0.02	0.08	0.16	70	213
75 ISL	10.70	10.69	33.400	25.585	240.9	0.235	3.98	63.3	14.9	1.43	18.2	0.02	0.07	0.15	75	
85	10.18	10.17	33.468	25.727	227.4	0.259	3.77	59.3	17.2	1.53	19.9	0.01	0.05	0.13	85	212
100	9.73	9.72	33.586	25.895	211.8	0.292	3.50	54.6	20.2	1.64	21.6	0.01	0.02	0.08	100	211
120	9.41	9.40	33.745	26.072	195.3	0.333	3.16	49.0	23.8	1.75	23.5	0.01	0.01	0.05	121	210
125 ISL	9.33	9.32	33.799	26.127	190.2	0.342	3.05	47.2	25.1	1.79	24.1	0.01	0.01	0.05	126	
140	9.12	9.10	33.956	26.284	175.5	0.370	2.71	41.8	29.3	1.91	26.0	0.01	0.00	0.04	141	209
150 ISL	9.09	9.07	34.035	26.351	169.4	0.387	2.45	37.8	31.7	2.01	26.9	0.01	0.00	0.04	151	
169	9.04	9.02	34.129	26.433	162.0	0.418	1.98	30.5	35.5	2.18	28.2	0.01	0.00	0.04	170	208
199	9.00	8.98	34.208	26.502	156.1	0.466	1.56	24.0	38.5	2.32	29.5	0.01	0.00	0.04	200	207
200 ISL	9.00	8.98	34.210	26.503	156.0	0.468	1.55	23.9	38.6	2.32	29.5	0.01			201	
229	8.91	8.89	34.255	26.553	151.8	0.512	1.28	19.7	41.1	2.42	30.4	0.01			230	206
250 ISL	8.83	8.80	34.274	26.581	149.6	0.544	1.17	17.9	42.5	2.47	30.7	0.01			251	
268	8.74	8.71	34.282	26.602	147.9	0.571	1.11	17.0	43.6	2.50	31.0	0.01			270	205
300 ISL	8.45	8.42	34.271	26.638	144.9	0.618	1.06	16.1	46.2	2.54	31.8	0.00			302	
319	8.26	8.23	34.261	26.660	143.1	0.645	1.04	15.7	47.8	2.57	32.4	0.00			321	204
378	7.81	7.77	34.258	26.725	137.7	0.728	0.88	13.2	52.7	2.68	34.0	0.00			380	203
400 ISL	7.57	7.53	34.265	26.765	134.0	0.758	0.78	11.6	56.1	2.74	34.9	0.00			403	
438	7.15	7.11	34.281	26.838	127.5	0.807	0.59	8.7	62.4	2.86	36.4	0.00			441	202
500 ISL	6.66	6.61	34.305	26.924	119.8	0.884	0.40	5.8	70.9	3.01	38.1	0.00			503	
513	6.56	6.51	34.311	26.942	118.2	0.899	0.36	5.2	72.7	3.04	38.4	0.00			517	201

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	
33 9.4 N	120 0.4 W	10/11/04	2130	UTC	1196 m	220	05 kn	290 01 04	1	1018.3 mb	17.5 c	15.7 c	32m	2/8	CS	
DEPTH	TEMP	POT TEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXY	SI03	P04	N03	N02	CHL-A	PHAE0	PRES	SAMP
m	DEG C	DEG C		THETA			ML/L	PCT	UM/L	UM/L	UM/L	UM/L	UG/L	UG/L	DB	
0 ISL	17.65	17.65	33.301	24.057	384.6	0.000	5.55	101.7	0.8	0.27	0.1	0.00	0.22	0.09	0	
1	17.65	17.65	33.301	24.057	384.6	0.004	5.55	101.7	0.8	0.27	0.1	0.00	0.22	0.09	1	221
10	17.55	17.55	33.298	24.079	382.8	0.038	5.55	101.5	0.8	0.27	0.1	0.00	0.21	0.05	10	220
20	17.01	17.01	33.218	24.146	376.8	0.076	5.73	103.7	1.0	0.30	0.3	0.01	0.35	0.06	20	219
30	15.02	15.02	33.062	24.476	345.6	0.112									30	218
30	15.02	15.02	33.073	24.484	344.8	0.112	6.05	105.1	1.7	0.38	0.6	0.02	0.38	0.12	30	217
40	13.50	13.49	32.959	24.714	323.1	0.146	6.04	101.7	2.7	0.50	2.0	0.06	0.33	0.16	40	216
50	12.76	12.75	32.978	24.876	307.9	0.177	5.66	93.8	3.9	0.68	5.0	0.14	0.34	0.23	50	215
60	11.81	11.80	33.059	25.119	284.9	0.207	5.13	83.4	6.4	0.93	9.5	0.10	0.25	0.24	60	214
70	11.03	11.02	33.172	25.349	263.2	0.234	4.67	74.7	9.7	1.18	13.8	0.04	0.15	0.25	70	213
75 ISL	10.71	10.70	33.234	25.454	253.3	0.247	4.46	70.9	11.6	1.28	15.6	0.03	0.12	0.21	75	
84	10.26	10.25	33.346	25.619	237.8	0.269	4.11	64.7	14.8	1.44	18.3	0.02	0.09	0.12	84	212
99	9.80	9.79	33.524	25.835	217.4	0.304	3.64	56.8	19.0	1.62	21.1	0.01	0.03	0.08	99	211
100 ISL	9.78	9.77	33.533	25.846	216.5	0.306	3.62	56.5	19.2	1.63	21.2	0.01	0.03	0.08	100	
119	9.41	9.40	33.679	26.021	200.2	0.345	3.35	51.9	22.5	1.72	23.1	0.01	0.01	0.04	120	210
125 ISL	9.30	9.29	33.741	26.087	194.0	0.357	3.22	49.8	24.0	1.77	23.8	0.01	0.01	0.04	126	
139	9.07	9.05	33.874	26.228	180.8	0.383	2.92	44.9	27.5	1.88	25.4	0.01	0.00	0.04	140	209
150 ISL	8.96	8.94	33.928	26.288	175.3	0.403	2.79	42.8	29.2	1.93	26.1	0.01	0.00	0.04	151	
169	8.82	8.80	33.979	26.350	169.8	0.436	2.64	40.4	31.4	1.99	27.0	0.01	0.00	0.03	170	208
199	8.63	8.61	34.038	26.426	163.1	0.486	2.41	36.8	34.6	2.07	28.3	0.01	0.00	0.03	200	207
200 ISL	8.62	8.60	34.040	26.430	162.8	0.487	2.40	36.6	34.7	2.07	28.3	0.01			201	
228	8.35	8.33	34.083	26.505	156.1	0.532	2.13	32.3	38.5	2.19	29.6	0.00			229	206
250 ISL	8.14	8.11	34.105	26.554	151.7	0.566	1.93	29.1	41.4	2.28	30.8	0.00			251	
268	7.96	7.93	34.118	26.591	148.4	0.593	1.78	26.7	43.9	2.35	31.7	0.00			270	205
300 ISL	7.59	7.56	34.136	26.660	142.3	0.639	1.54	22.9	48.7	2.47	33.2	0.00			302	
318	7.39	7.36	34.145	26.695	139.1	0.665	1.41	20.9	51.4	2.54	33.9	0.00			320	204
378	6.97	6.93	34.183	26.784	131.3	0.746	1.00	14.7	59.0	2.73	36.0	0.00			380	203
437	6.60	6.56	34.222	26.866	124.3	0.821	0.67	9.8	66.7	2.89	37.8	0.00			440	202
500 ISL	6.37	6.32	34.280	26.942	117.8	0.897			73.3	3.01	38.6	0.00			503	
513	6.32	6.27	34.292	26.958	116.4	0.913			74.7	3.03	38.8	0.00			517	201

A) FIRST FLUOROMETER READING NOT RECORDED, CHLOROPHYLL AND PHAEOPIGMENT CALCULATED WITH ASSUM

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE
32 59.4 N	120 21.0 W	11/11/04	0159	UTC	720 m	310	12 kn			1018.6 mb	17.2 C	15.4 C				
DEPTH	TEMP	POT TEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	PHYC	SI03	P04	N03	N02	CHL-A	PHAE0	PRES	SAMP
m	DEG C	DEG C		THETA			ml/l	PCT	uM/l	uM/l	uM/l	uM/l	ug/l	ug/l	db	
0 ISL	17.50	17.50	33.262	24.063	384.0	0.000	5.56	101.6	0.9	0.27	0.1	0.00	0.16	0.06		0
1	17.50	17.50	33.262	24.063	384.1	0.004	5.56	101.6	0.9	0.27	0.1	0.00	0.16	0.06		1 220
10	17.50	17.50	33.267	24.067	384.0	0.038	5.56	101.6	0.9	0.27	0.1	0.00	0.18	0.05		10 219
20	17.34	17.34	33.277	24.114	379.9	0.077	5.57	101.5	0.8	0.27	0.1	0.00	0.19	0.07		20 218
30	17.03	17.03	33.311	24.213	370.7	0.114	5.67	102.7	0.4	0.26	0.1	0.00	0.32	0.11		30 217
40	16.80	16.79	33.330	24.282	364.5	0.151	5.66	102.1	0.5	0.27	0.1	0.00	0.45	0.19		40 216
50	15.41	15.40	33.189	24.489	345.0	0.186	5.76	101.0	1.5	0.40	1.3	0.06	0.72	0.25		50 215
60	12.67	12.66	33.116	25.000	296.3	0.218	5.33	88.3	5.1	0.80	7.6	0.16	0.48	0.19		60 214
69	11.34	11.33	33.123	25.255	272.1	0.244	4.87	78.4	8.3	1.05	12.0	0.05	0.23	0.25		69 213
75 ISL	10.83	10.82	33.215	25.418	256.7	0.260	4.50	71.7	11.3	1.23	15.0	0.04	0.14	0.22		75
85	10.33	10.32	33.400	25.649	234.9	0.284	3.94	62.2	16.2	1.49	19.2	0.01	0.06	0.14		85 212
100	9.91	9.90	33.563	25.847	216.3	0.318	3.47	54.3	20.2	1.65	21.9	0.01	0.03	0.09		100 211
119	9.38	9.37	33.797	26.118	191.0	0.357	2.92	45.2	25.7	1.82	24.5	0.01	0.01	0.06		120 210
125 ISL	9.30	9.29	33.843	26.167	186.4	0.368	2.80	43.3	27.0	1.87	25.1	0.01	0.01	0.06		126
139	9.19	9.17	33.925	26.249	178.9	0.394	2.58	39.8	29.5	1.96	26.1	0.00	0.01	0.06		140 209
150 ISL	9.11	9.09	33.991	26.313	173.0	0.413	2.39	36.8	31.4	2.03	26.9	0.00	0.01	0.05		151
169	9.00	8.98	34.074	26.396	165.5	0.445	2.14	32.9	33.9	2.11	28.0	0.00	0.00	0.04		170 208
199	8.88	8.86	34.084	26.423	163.5	0.495	2.04	31.3	35.3	2.15	28.6	0.00	0.00	0.04		200 207
200 ISL	8.87	8.85	34.085	26.426	163.3	0.496	2.04	31.3	35.4	2.15	28.6	0.00				201
229	8.59	8.57	34.118	26.496	157.1	0.543	1.84	28.0	38.7	2.24	29.9	0.00				230 206
250 ISL	8.43	8.40	34.169	26.561	151.3	0.575	1.56	23.7	42.2	2.35	30.8	0.00				251
268	8.29	8.26	34.210	26.614	146.5	0.602	1.33	20.1	45.3	2.45	31.6	0.00				270 205
300 ISL	7.97	7.94	34.224	26.674	141.3	0.648	1.16	17.4	49.0	2.53	32.8	0.00				302
318	7.78	7.75	34.223	26.701	138.9	0.673	1.10	16.5	51.0	2.56	33.4	0.00				320 204
378	7.13	7.09	34.251	26.816	128.5	0.753	0.72	10.6	60.8	2.75	36.1	0.00				380 203
400 ISL	6.90	6.86	34.246	26.844	126.0	0.781	0.66	9.7	63.7	2.80	36.9	0.00				403
437	6.55	6.51	34.241	26.887	122.2	0.827	0.58	8.4	68.3	2.87	38.0	0.00				440 202
500 ISL	6.12	6.08	34.296	26.987	113.2	0.902	0.34	4.9	77.6	3.02	39.6	0.00				503
512	6.04	5.99	34.307	27.006	111.5	0.915	0.30	4.3	79.4	3.05	39.9	0.00				515 201

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE
32 39.4 N	121 2.0 W	11/11/04	0814	UTC	3789 m	290	08 kn			1020.3 mb	16.7 C	14.9 C				
DEPTH	TEMP	POT TEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	PHYC	SI03	P04	N03	N02	CHL-A	PHAE0	PRES	SAMP
m	DEG C	DEG C		THETA			ml/l	PCT	uM/l	uM/l	uM/l	uM/l	ug/l	ug/l	db	
0 ISL	16.52	16.52	33.302	24.324	359.2	0.000	5.70	102.2	0.0	0.26	0.1	0.00	0.31	0.17		0
1	16.52	16.52	33.302	24.324	359.2	0.004	5.70	102.2	0.0	0.26	0.1	0.00	0.31	0.17		1 220
10	16.46	16.46	33.305	24.340	357.9	0.036	5.72	102.5	0.0	0.26	0.1	0.00	0.33	0.19		10 219
20	16.39	16.39	33.311	24.362	356.2	0.072	5.72	102.3	0.0	0.26	0.1	0.00	0.34	0.24		20 218
30	16.36	16.36	33.317	24.373	355.4	0.107	5.70	101.9	0.0	0.27	0.1	0.00	0.45	0.25		30 217
40	15.89	15.88	33.313	24.477	345.8	0.142	5.49	97.2	0.9	0.38	1.3	0.07	0.60	0.47		40 216
50	13.51	13.50	33.226	24.919	303.9	0.175	4.98	84.0	5.6	0.86	8.6	0.20	0.44	0.49		50 215
60	11.64	11.63	33.205	25.264	271.1	0.203	4.67	75.7	9.0	1.15	13.4	0.03	0.18	0.27		60 214
70	11.06	11.05	33.281	25.428	255.6	0.230	4.38	70.2	11.6	1.31	15.9	0.02	0.11	0.19		70 213
75 ISL	10.75	10.74	33.314	25.509	248.1	0.242	4.26	67.8	12.8	1.37	17.0	0.02	0.09	0.16		75
85	10.19	10.18	33.390	25.665	233.4	0.266	4.00	62.9	15.4	1.48	19.1	0.01	0.06	0.12		85 212
99	9.73	9.72	33.551	25.868	214.3	0.298	3.50	54.5	20.0	1.68	22.2	0.01	0.02	0.07		99 211
100 ISL	9.70	9.69	33.564	25.883	212.9	0.300	3.46	53.9	20.3	1.69	22.4	0.01	0.02	0.07		100
119	9.37	9.36	33.782	26.108	191.9	0.338	2.82	43.7	25.7	1.88	25.3	0.00	0.01	0.07		120 210
125 ISL	9.32	9.31	33.828	26.152	187.9	0.350	2.75	42.5	26.6	1.90	25.4	0.00	0.01	0.07		126
139	9.25	9.23	33.908	26.226	181.1	0.376	2.68	41.4	28.0	1.93	25.7	0.00	0.01	0.06		140 209
150 ISL	9.18	9.16	33.951	26.271	177.0	0.395	2.61	40.3	29.1	1.95	26.1	0.00	0.01	0.05		151
169	9.02	9.00	34.007	26.341	170.8	0.428	2.46	37.8	31.3	2.01	27.0	0.00	0.00	0.04		170 208
199	8.57	8.55	34.100	26.484	157.6	0.478	2.00	30.5	37.2	2.20	29.5	0.00	0.00	0.03		200 207
200 ISL	8.55	8.53	34.100	26.487	157.3	0.479	2.00	30.5	37.3	2.20	29.6	0.00				201
229	8.04	8.02	34.076	26.546	152.1	0.524	2.03	30.6	41.0	2.24	31.0	0.00				230 206
250 ISL	7.91	7.88	34.101	26.585	148.6	0.556	1.85	27.8	43.4	2.34	31.7	0.00				251
268	7.85	7.82	34.131	26.618	145.9	0.582	1.65	24.7	45.4	2.43	32.2	0.00				270 205
300 ISL	7.63	7.60	34.163	26.675	140.9	0.628	1.37	20.4	49.5	2.54	33.3	0.00				302
318	7.49	7.46	34.176	26.706	138.2	0.653	1.23	18.3	51.9	2.59	33.9	0.00				320 204
377	6.97	6.93	34.194	26.793	130.5	0.732	0.93	13.7	59.3	2.74	36.1	0.00				379 203
400 ISL	6.81	6.77	34.208	26.826	127.6	0.762	0.79	11.6	62.3	2.80	36.9	0.00				403
437	6.58	6.54	34.235	26.878	123.0	0.808	0.59	8.6	67.0	2.90	38.0	0.00				440 202
500 ISL	6.26	6.22	34.286	26.961	115.8	0.884	0.37	5.3	74.5	3.02	39.2	0.00				503
513	6.19	6.14	34.297	26.979	114.2	0.899	0.33	4.8	76.1	3.05	39.5	0.00				517 201

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE		
32 19.4 N	121 42.9 W	11/11/04	1720 UTC	4080 m	310	10 kn	280 04 09	2	1022.1 mb	18.0 c	15.3 c	24m	8/8	CC		
DEPTH	TEMP	POT TEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXY	SI03	P04	N03	N02	CHL-A	PHAE0	PRES	SAMP
m	DEG C	DEG C		THETA			mL/L	PCT	uM/L	uM/L	uM/L	uM/L	ug/L	ug/L	db	
0 ISL	17.17	17.17	33.290	24.163	374.5	0.000	5.58	101.3	0.7	0.27	0.1	0.00	0.21	0.09		0
1 A	17.17	17.17	33.290	24.163	374.5	0.004	5.58	101.3	0.7	0.27	0.1	0.00	0.21	0.09		1 223
1	17.17	17.17	33.291	24.164	374.5	0.004										1 224
9	17.16	17.16	33.291	24.167	374.5	0.034	5.58	101.3	0.7	0.28	0.1	0.00	0.22	0.09		9 222
10 ISL	17.15	17.15	33.292	24.170	374.2	0.037	5.58	101.3	0.7	0.28	0.1	0.00	0.22	0.09		10
14 A	17.13	17.13	33.296	24.178	373.6	0.052	5.57	101.1	0.6	0.27	0.1	0.00	0.23	0.10		14 221
20 ISL	17.09	17.09	33.287	24.180	373.5	0.075	5.58	101.2	0.6	0.27	0.1	0.00	0.26	0.13		20
24	17.05	17.05	33.280	24.185	373.2	0.090	5.59	101.3	0.6	0.27	0.1	0.00	0.29	0.15		24 220
30 ISL	16.96	16.96	33.284	24.209	371.1	0.112	5.60	101.3	0.7	0.28	0.1	0.00	0.32	0.18		30
35 A	16.88	16.87	33.287	24.230	369.3	0.131	5.62	101.5	0.7	0.29	0.1	0.00	0.35	0.20		35 219
42	15.74	15.73	33.224	24.443	349.2	0.156	5.65	99.7	1.1	0.36	0.9	0.03	0.43	0.23		42 218
47	14.67	14.66	33.173	24.637	330.7	0.173										47 217
48 A	14.35	14.34	33.179	24.709	323.8	0.176	5.35	91.8	4.0	0.70	6.3	0.15	0.44	0.28		48 216
50 ISL	13.78	13.77	33.163	24.815	313.8	0.182	5.26	89.2	4.7	0.78	7.5	0.15	0.41	0.31		50
56	12.28	12.27	33.151	25.102	286.5	0.200	5.02	82.5	6.3	0.95	10.4	0.14	0.30	0.35		56 215
64 A	11.67	11.66	33.215	25.266	271.0	0.223	4.69	76.1	8.7	1.12	13.3	0.06	0.22	0.25		64 214
75 ISL	10.91	10.90	33.314	25.481	250.8	0.251	4.23	67.6	12.1	1.32	16.7	0.03	0.14	0.20		75
77	10.79	10.78	33.332	25.516	247.4	0.256	4.16	66.3	12.7	1.35	17.2	0.03	0.13	0.20		77 213
92 A	10.14	10.13	33.432	25.706	229.6	0.292	3.84	60.3	16.4	1.52	19.7	0.02	0.06	0.11		92 212
100 ISL	9.93	9.92	33.494	25.790	221.8	0.310	3.67	57.4	18.0	1.59	20.8	0.01	0.05	0.10		100
106	9.80	9.79	33.540	25.848	216.4	0.323	3.56	55.6	19.1	1.63	21.5	0.01	0.04	0.10		106 211
120	9.48	9.47	33.636	25.976	204.5	0.353	3.42	53.0	21.5	1.67	22.6	0.01	0.02	0.06		121 210
125 ISL	9.38	9.37	33.683	26.029	199.5	0.363	3.33	51.5	22.6	1.71	23.2	0.01	0.02	0.06		126
139	9.13	9.11	33.815	26.172	186.1	0.390	3.05	47.0	25.9	1.82	24.9	0.01	0.01	0.08		140 209
150 ISL	9.03	9.01	33.886	26.244	179.5	0.410	2.86	44.0	27.8	1.88	25.8	0.01	0.01	0.07		151
169	8.89	8.87	33.976	26.337	171.1	0.443	2.57	39.4	30.9	1.98	27.2	0.01	0.00	0.04		170 208
199	8.53	8.51	34.077	26.472	158.7	0.493	2.17	33.0	36.5	2.13	29.3	0.00	0.00	0.03		200 207
200 ISL	8.52	8.50	34.079	26.475	158.4	0.494	2.16	32.9	36.6	2.13	29.3	0.00				201
228	8.30	8.28	34.120	26.542	152.6	0.538	1.89	28.6	40.5	2.27	30.6	0.00				229 206
250 ISL	8.02	7.99	34.140	26.599	147.4	0.571	1.68	25.3	44.1	2.37	31.7	0.00				251
268	7.77	7.74	34.150	26.644	143.3	0.597	1.53	22.9	47.2	2.45	32.7	0.00				270 205
300 ISL	7.35	7.32	34.154	26.708	137.6	0.642	1.32	19.6	52.3	2.55	34.2	0.00				302
318	7.14	7.11	34.158	26.741	134.6	0.666	1.21	17.8	55.1	2.61	35.0	0.00				320 204
377	6.80	6.76	34.225	26.841	125.9	0.743	0.73	10.7	63.5	2.84	37.0	0.00				379 203
400 ISL	6.67	6.63	34.242	26.872	123.2	0.772	0.62	9.0	66.1	2.89	37.6	0.00				403
438	6.45	6.41	34.265	26.919	119.1	0.818	0.50	7.3	70.1	2.96	38.5	0.00				441 202
500 ISL	6.13	6.09	34.305	26.993	112.7	0.890	0.33	4.8	76.9	3.07	39.8	0.00				503
511	6.07	6.02	34.312	27.006	111.5	0.902	0.30	4.3	78.1	3.09	40.0	0.00				514 201

A) PRIMARY PRODUCTIVITY SAMPLES WERE TAKEN FROM THESE LEVELS.

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE		
31 59.4 N	122 23.6 W	11/11/04	2218 UTC	4087 m	300	05 kn	310 02 08	1	1019.7 mb	17.4 c	15.2 c	25m	3/8	CC		
DEPTH	TEMP	POT TEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXY	SI03	P04	N03	N02	CHL-A	PHAE0	PRES	SAMP
m	DEG C	DEG C		THETA			mL/L	PCT	uM/L	uM/L	uM/L	uM/L	ug/L	ug/L	db	
0 ISL	16.57	16.57	32.917	24.017	388.4	0.000	5.78	103.5	1.6	0.31	0.1	0.00	0.22	0.08		0
1	16.57	16.57	32.917	24.017	388.5	0.004	5.78	103.5	1.6	0.31	0.1	0.00	0.22	0.08		1 220
10	15.95	15.95	32.931	24.169	374.2	0.038	5.79	102.4	1.6	0.31	0.1	0.00	0.22	0.08		10 219
20	15.74	15.74	33.029	24.292	362.8	0.075	5.82	102.6	1.9	0.30	0.1	0.00	0.41	0.14		20 218
30	15.54	15.54	33.065	24.364	356.3	0.111	5.86	102.9	2.0	0.30	0.1	0.01	0.67	0.25		30 217
40	15.65	15.64	33.173	24.423	350.9	0.146	5.74	101.1	2.0	0.32	0.2	0.02	0.63	0.30		40 216
50	14.72	14.71	33.103	24.572	337.0	0.181	5.74	99.2	2.4	0.41	0.9	0.13	0.35	0.24		50 215
60	12.35	12.34	32.915	24.906	305.2	0.213	5.81	95.5	3.2	0.53	2.4	0.13	0.25	0.24		60 214
70	11.64	11.63	32.873	25.006	295.8	0.243	5.72	92.5	3.8	0.60	3.7	0.09	0.21	0.23		70 213
75 ISL	11.25	11.24	32.902	25.100	287.0	0.258	5.59	89.7	5.0	0.70	5.6	0.06	0.17	0.20		75
85	10.57	10.56	33.025	25.315	266.6	0.285	5.17	81.8	8.3	0.96	10.6	0.02	0.09	0.14		85 212
100	10.18	10.17	33.287	25.587	241.1	0.323	4.22	66.3	14.7	1.42	17.9	0.01	0.04	0.09		100 211
120	8.89	8.88	33.452	25.926	209.1	0.368	3.93	60.1	21.7	1.67	22.2	0.01	0.01	0.03		121 210
125 ISL	8.89	8.88	33.522	25.981	204.0	0.379	3.79	58.0	23.1	1.72	23.0	0.01	0.01	0.03		126
139	8.88	8.87	33.675	26.102	192.7	0.406	3.33	51.0	26.5	1.85	24.8	0.01	0.00	0.03		140 209
150 ISL	8.94	8.92	33.797	26.188	184.8	0.427	2.91	44.6	28.7	1.95	26.2	0.01	0.00	0.03		151
169	8.99	8.97	33.960	26.308	173.8	0.461	2.33	35.8	31.6	2.09	28.0	0.00	0.00	0.04		170 208
199	8.65	8.63	34.030	26.417	164.0	0.512	2.33	35.5	34.3	2.10	28.6	0.01	0.00	0.04		200 207
200 ISL	8.63	8.61	34.029	26.419	163.8	0.514	2.36	36.0	34.4	2.09	28.5	0.01				201
229	7.94	7.92	34.004	26.504	155.9	0.560	3.08	46.2	36.8	1.92	27.4	0.00				230 206
250 ISL	7.69	7.67	34.029	26.560	150.9	0.592	2.63	39.3	41.2	2.10	29.7	0.00				251
268	7.55	7.52	34.060	26.605	146.9	0.619	2.03	30.2	45.6	2.32	32.2	0.00				270 205
300 ISL	7.23	7.20	34.096	26.679	140.2	0.665	1.53	22.6	51.7	2.52	34.4	0.00				302
318	7.03	7.00	34.110	26.718	136.7	0.690	1.35	19.9	55.0	2.60	35.3	0.00				320 204
377	6.22	6														

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE
31 39.4 N	123 4.2 W	12/11/04	0400	UTC	4131 m	360	06 kn			1019.8 mb	14.5 c	15.5 c				
DEPTH	TEMP	POT TEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXY	SI03	P04	N03	N02	CHL-A	PHAE0	PRES	SAMP
m	DEG C	DEG C		THETA			mL/L	PCT	uM/L	uM/L	uM/L	uM/L	ug/L	ug/L	db	
0 ISL	17.76	17.76	32.917	23.737	415.2	0.000	5.55	101.7	1.2	0.30	0.1	0.00	0.12	0.05	0	
1	17.76	17.76	32.917	23.737	415.2	0.004	5.55	101.7	1.2	0.30	0.1	0.00	0.12	0.05	1	221
10 ISL	17.47	17.47	32.881	23.779	411.5	0.041	5.56	101.3	1.2	0.31	0.1	0.00	0.13	0.06	10	
11	17.42	17.42	32.876	23.787	410.7	0.045	5.56	101.2	1.2	0.31	0.1	0.00	0.13	0.06	11	220
20	16.99	16.99	32.856	23.873	402.8	0.082	5.61	101.3	1.2	0.31	0.1	0.00	0.14	0.06	20	219
30	16.59	16.59	32.873	23.980	392.9	0.122	5.67	101.5	1.3	0.31	0.1	0.00	0.24	0.11	30	218
40	16.33	16.32	32.921	24.076	384.0	0.161	5.71	101.8	1.4	0.31	0.1	0.00	0.31	0.19	40	217
50	15.75	15.74	32.922	24.208	371.7	0.198	5.87	103.4	1.5	0.31	0.1	0.00	0.33	0.25	50	216
55	14.62	14.61	32.893	24.432	350.5	0.217	6.20	106.8	1.6	0.32	0.1	0.00	0.29	0.29	55	215
60	14.00	13.99	32.880	24.552	339.1	0.234	6.13	104.2	1.7	0.35	0.1	0.00	0.23	0.25	60	214
70	13.52	13.51	32.946	24.701	325.1	0.267	5.97	100.5	2.1	0.39	0.3	0.03	0.25	0.24	70	213
75 ISL	13.41	13.40	32.986	24.754	320.2	0.283	5.87	98.6	2.3	0.43	0.8	0.08	0.24	0.23	75	
85	13.16	13.15	33.062	24.863	310.1	0.315	5.66	94.7	2.9	0.52	2.5	0.15	0.19	0.21	85	212
99	12.21	12.20	33.148	25.114	286.4	0.356	5.34	87.6	5.0	0.70	6.3	0.02	0.11	0.17	99	211
100 ISL	12.15	12.14	33.152	25.129	285.0	0.359	5.32	87.2	5.2	0.72	6.6	0.02	0.11	0.17	100	
120	11.13	11.12	33.266	25.405	259.0	0.414	4.98	79.9	8.6	0.97	11.0	0.01	0.06	0.10	120	210
125 ISL	10.93	10.91	33.324	25.486	251.4	0.426	4.99	79.7	9.0	0.97	11.2	0.01	0.05	0.08	125	
139	10.41	10.39	33.490	25.706	230.7	0.460	5.02	79.4	10.2	0.97	11.6	0.00	0.03	0.05	140	209
150 ISL	9.93	9.91	33.567	25.848	217.3	0.485	4.89	76.5	12.8	1.09	13.7	0.00	0.02	0.04	151	
169	9.20	9.18	33.677	26.054	198.0	0.524	4.44	68.4	18.6	1.37	18.4	0.00	0.00	0.03	170	208
199	8.77	8.75	33.905	26.300	175.0	0.580	3.22	49.2	28.1	1.81	25.1	0.00	0.00	0.02	200	207
200 ISL	8.76	8.74	33.909	26.305	174.6	0.582	3.21	49.1	28.3	1.82	25.2	0.00			201	
229	8.42	8.40	33.988	26.420	164.2	0.631	2.99	45.4	32.3	1.91	26.7	0.00			230	206
250 ISL	8.14	8.11	34.018	26.486	158.2	0.665	2.76	41.6	36.3	2.02	28.3	0.00			251	
269	7.88	7.85	34.036	26.539	153.4	0.695	2.52	37.8	40.1	2.14	29.8	0.00			270	205
300 ISL	7.54	7.51	34.067	26.613	146.7	0.741	2.07	30.8	45.2	2.32	31.9	0.00			302	
318	7.35	7.32	34.080	26.650	143.3	0.767	1.83	27.1	48.2	2.42	33.0	0.00			320	204
378	6.53	6.50	34.097	26.775	131.8	0.850	1.36	19.8	60.1	2.66	36.4	0.00			380	203
400 ISL	6.32	6.28	34.110	26.813	128.4	0.878	1.20	17.4	63.9	2.73	37.3	0.00			402	
438	6.02	5.98	34.137	26.873	122.9	0.926	0.94	13.5	70.1	2.85	38.7	0.00			441	202
500 ISL	5.63	5.59	34.195	26.968	114.4	1.000	0.59	8.4	80.0	3.00	40.5	0.00			503	
513	5.55	5.51	34.207	26.987	112.7	1.014	0.52	7.4	82.1	3.03	40.9	0.00			516	201

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE
31 19.4 N	123 44.6 W	12/11/04	0945	UTC	4029 m	070	06 kn			1017.8 mb	17.2 c	16.5 c				
DEPTH	TEMP	POT TEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXY	SI03	P04	N03	N02	CHL-A	PHAE0	PRES	SAMP
m	DEG C	DEG C		THETA			mL/L	PCT	uM/L	uM/L	uM/L	uM/L	ug/L	ug/L	db	
0 ISL	18.15	18.15	33.009	23.712	417.5	0.000	5.48	101.3	1.3	0.30	0.1	0.00	0.12	0.04	0	
1	18.15	18.15	33.009	23.712	417.5	0.004	5.48	101.3	1.3	0.30	0.1	0.00	0.12	0.04	1	221
10 ISL	18.14	18.14	33.011	23.717	417.4	0.042	5.48	101.2	1.3	0.30	0.1	0.00	0.11	0.05	10	
15	18.13	18.13	33.013	23.721	417.2	0.063	5.48	101.2	1.3	0.30	0.1	0.00	0.11	0.05	15	220
20 ISL	18.13	18.13	33.016	23.723	417.1	0.083	5.48	101.2	1.3	0.29	0.1	0.00	0.11	0.05	20	
30	18.14	18.13	33.022	23.726	417.2	0.125	5.47	101.0	1.3	0.28	0.1	0.00	0.12	0.06	30	219
45	18.49	18.48	33.249	23.814	409.4	0.187	5.48	102.0	1.3	0.26	0.1	0.00	0.19	0.08	45	218
50 ISL	18.08	18.07	33.320	23.969	394.7	0.207	5.64	104.2	1.4	0.25	0.1	0.00	0.18	0.08	50	
59	17.14	17.13	33.439	24.287	364.7	0.241	5.91	107.3	1.5	0.23	0.1	0.00	0.16	0.09	59	217
75	15.97	15.96	33.578	24.664	329.1	0.297	5.87	104.3	1.9	0.21	0.1	0.00	0.18	0.16	75	216
85	15.46	15.45	33.561	24.766	319.7	0.329	5.84	102.7	2.0	0.22	0.1	0.00	0.18	0.17	85	214
85	15.48	15.47	33.566	24.765	319.8	0.329	5.84	102.7	2.0	0.22	0.1	0.00	0.19	0.16	85	215
94	14.76	14.75	33.512	24.880	309.0	0.358	5.75	99.7	2.2	0.26	0.4	0.04	0.17	0.18	94	213
100 ISL	14.07	14.06	33.434	24.966	300.9	0.376	5.63	96.2	2.7	0.34	1.3	0.09	0.15	0.21	100	
105	13.53	13.52	33.380	25.035	294.3	0.391	5.52	93.2	3.2	0.41	2.2	0.11	0.14	0.22	105	212
114	13.01	12.99	33.388	25.146	284.0	0.417	5.41	90.4	3.9	0.50	3.7	0.02	0.12	0.18	114	211
124	12.31	12.29	33.391	25.284	270.9	0.445	5.27	86.8	5.2	0.61	5.9	0.01	0.09	0.15	124	210
125 ISL	12.26	12.24	33.393	25.296	269.8	0.447	5.26	86.5	5.3	0.62	6.1	0.01	0.09	0.15	125	
139	11.59	11.57	33.431	25.451	255.3	0.484	5.18	84.0	6.7	0.72	7.9	0.01	0.06	0.10	140	209
150 ISL	11.00	10.98	33.462	25.582	242.9	0.512	5.13	82.1	8.3	0.81	9.5	0.01	0.04	0.07	151	
164	10.30	10.28	33.517	25.747	227.4	0.544	5.05	79.7	10.8	0.94	11.8	0.00	0.03	0.04	165	208
194	9.28	9.26	33.714	26.070	197.0	0.608	4.67	72.1	17.6	1.23	17.1	0.00	0.00	0.01	195	207
200 ISL	9.17	9.15	33.751	26.117	192.6	0.620	4.58	70.6	18.9	1.28	17.9	0.00			201	
229	8.77	8.75	33.901	26.298	175.9	0.673	4.04	61.7	25.0	1.50	21.5	0.00			230	206
250 ISL	8.48	8.45	33.968	26.395	166.9	0.709	3.50	53.2	29.9	1.70	24.5	0.00			251	
268	8.23	8.20	34.005	26.463	160.8	0.739	3.05	46.1	34.1	1.87	26.9	0.00			269	205
300 ISL	7.82	7.79	34.030	26.543	153.5	0.789	2.55	38.2	40.2	2.07	29.8	0.00			302	
318	7.59	7.56	34.031	26.577	150.4	0.816	2.35	35.0	43.4	2.16	31.0	0.00			320	204
378	6.66	6.63	34.033	26.708	138.3	0.903	1.84	26.8	55.1	2.45	34.8	0.00			380	203
400 ISL	6.33	6.29	34.038	26.755	133.8	0.933	1.63	23.6	59.9	2.55	36.2	0.00			402	
438	5.85	5.81	34.060	26.833	126.5	0.982	1.26	18.0	67.9	2.71	38.3	0.00			441	202
500 ISL	5.61	5.57	34.147	26.932	117.7	1.058	0.72	10.2	77.4	2.93	40.4	0.00			503	
513	5.56	5.52	34.165	26.953	115.9	1.073	0.61	8.7	79.4	2.98	40.8	0.00			516	201

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE
33 40.4 N	118 5.6 W	09/11/04	2306	UTC	22 m	250	07 kn	250 02 05	1	1018.8 mb	17.6 c	14.4 c	05m		3/8	AS
DEPTH	TEMP	POT TEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXY	SI03	P04	N03	N02	CHL-A	PHAE0	PRES	SAMP
m	DEG C	DEG C		THETA			mL/L	P								

## RV ROGER REVELLE

## CALCOFI CRUISE 0411

STATION 90.0 27.7

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE
33 29.7 N	117 44.9 W	09/11/04	2025	UTC	25 m	250	04 kn	290 01 05	1	1019.5 mb	17.9 c	14.9 c	05m	5/8		AS
DEPTH	TEMP	POT TEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXY	SI03	P04	N03	N02	CHL-A	PHAE0	PRES	SAMP
m	DEG C	DEG C		THETA			mL/L	PCT	uM/L	uM/L	uM/L	uM/L	ug/L	ug/L	db	
0 ISL	17.66	17.66	33.091	23.894	400.2	0.000	5.59	102.4	2.0	0.35	0.2	0.04	2.49	0.86		0
1	17.66	17.66	33.091	23.894	400.2	0.004	5.59	102.4	2.0	0.35	0.2	0.04	2.49	0.86		1 204
5	17.65	17.65	33.089	23.895	400.2	0.020	5.60	102.5	2.0	0.35	0.2	0.04	2.37	0.92		5 203
10	17.46	17.46	33.104	23.952	395.0	0.040	5.52	100.7	2.0	0.36	0.2	0.05	2.40	0.60		10 202
18	17.17	17.17	33.145	24.053	385.6	0.071	5.40	98.0	1.9	0.42	0.4	0.09	1.15	0.75		18 201

## RV ROGER REVELLE

## CALCOFI CRUISE 0411

STATION 90 28

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE
33 29.1 N	117 46.1 W	09/11/04	1801	UTC	66 m	190	05 kn	130 01 05	1	1020.4 mb	17.1 c	15.1 c	12m	7/8		SC
DEPTH	TEMP	POT TEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXY	SI03	P04	N03	N02	CHL-A	PHAE0	PRES	SAMP
m	DEG C	DEG C		THETA			mL/L	PCT	uM/L	uM/L	uM/L	uM/L	ug/L	ug/L	db	
0 ISL	17.78	17.78	33.100	23.872	402.3	0.000	5.70	104.6	1.3	0.31	0.1	0.00	0.83	0.45		0
1 A	17.78	17.78	33.100	23.872	402.3	0.004	5.70	104.6	1.3	0.31	0.1	0.00	0.83	0.45		1 211
1	17.78	17.78	33.099	23.871	402.4	0.004										1 212
7 A	17.68	17.68	33.211	23.981	392.1	0.028	5.65	103.6	0.8	0.28	0.1	0.00	0.47	0.25		7 210
10 ISL	17.65	17.65	33.227	24.001	390.3	0.040	5.65	103.5	0.7	0.28	0.1	0.00	0.42	0.23		10
18 A	17.56	17.56	33.265	24.052	385.7	0.071	5.64	103.2	0.6	0.27	0.1	0.00	0.30	0.17		18 209
20 ISL	17.47	17.47	33.268	24.076	383.5	0.078	5.67	103.6	0.6	0.27	0.1	0.00	0.33	0.21		20
24 A	17.12	17.12	33.262	24.154	376.1	0.094	5.74	104.1	0.7	0.29	0.1	0.00	0.43	0.29		24 208
30 ISL	15.87	15.87	33.226	24.415	351.5	0.115	5.93	104.9	1.1	0.33	0.2	0.01	0.55	0.33		30
32 A	15.29	15.29	33.197	24.521	341.4	0.122	5.96	104.2	1.3	0.35	0.2	0.01	0.60	0.34		32 207
34	14.36	14.36	33.124	24.664	327.7	0.129										34 206
35	14.28	14.27	33.117	24.676	326.7	0.132	5.89	100.9	2.1	0.49	1.6	0.14	0.70	0.54		35 205
39	13.93	13.92	33.120	24.751	319.6	0.145	5.71	97.1	2.6	0.58	2.7	0.30	0.53	0.46		39 204
46 A	13.18	13.17	33.146	24.923	303.3	0.167	5.27	88.2	4.4	0.80	6.2	0.55	0.40	0.44		46 203
50 ISL	12.89	12.88	33.171	25.000	296.1	0.179	4.83	80.4	6.8	0.99	9.0	0.43	0.31	0.43		50
53	12.70	12.69	33.189	25.051	291.3	0.188	4.53	75.1	8.5	1.11	10.8	0.31	0.25	0.42		53 202
60	12.22	12.21	33.213	25.162	280.9	0.208	4.40	72.2	9.4	1.17	11.6	0.27	0.24	0.40		60 201

A) PRIMARY PRODUCTIVITY SAMPLES WERE TAKEN FROM THESE LEVELS.

## RV ROGER REVELLE

## CALCOFI CRUISE 0411

STATION 90 30

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE
33 25.1 N	117 54.3 W	09/11/04	1440	UTC	618 m	300	07 kn	270 01 09	1	1019.0 mb	16.1 c	14.0 c	25m	7/8		SC
DEPTH	TEMP	POT TEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXY	SI03	P04	N03	N02	CHL-A	PHAE0	PRES	SAMP
m	DEG C	DEG C		THETA			mL/L	PCT	uM/L	uM/L	uM/L	uM/L	ug/L	ug/L	db	
0 ISL	17.70	17.70	33.213	23.978	392.2	0.000	5.57	102.2	0.8	0.29	0.1	0.00	0.21	0.05		0
1	17.70	17.70	33.213	23.978	392.2	0.004	5.57	102.2	0.8	0.29	0.1	0.00	0.21	0.05		1 220
10	17.65	17.65	33.217	23.993	391.0	0.039	5.58	102.2	0.8	0.29	0.1	0.00	0.22	0.04		10 219
20	17.01	17.01	33.240	24.163	375.2	0.077	5.72	103.5	0.6	0.30	0.1	0.00	0.45	0.10		20 218
30	16.96	16.96	33.245	24.179	374.0	0.115	5.72	103.4	0.6	0.30	0.1	0.00	0.41	0.21		30 217
40	15.89	15.88	33.186	24.380	355.1	0.151	5.76	101.9	0.6	0.30	0.1	0.00	0.57	0.30		40 216
50	14.50	14.49	33.135	24.644	330.2	0.186	5.64	97.0	2.4	0.54	2.9	0.15	0.63	0.30		50 215
60	13.44	13.43	33.115	24.847	310.9	0.218	5.41	91.0	3.7	0.72	5.6	0.20	0.40	0.29		60 214
70	12.38	12.37	33.159	25.090	288.0	0.248	5.03	82.8	5.9	0.93	9.2	0.05	0.25	0.27		70 213
75 ISL	11.88	11.87	33.181	25.201	277.5	0.262	4.88	79.5	7.2	1.02	10.8	0.04	0.22	0.24		75
85	11.07	11.06	33.233	25.390	259.7	0.289	4.63	74.2	9.8	1.19	13.6	0.03	0.19	0.16		85 212
100	10.51	10.50	33.334	25.567	243.1	0.326	4.29	67.9	13.3	1.37	16.6	0.02	0.07	0.11		100 211
120	9.79	9.78	33.514	25.829	218.4	0.373	3.83	59.8	18.0	1.57	19.8	0.01	0.03	0.08		121 210
125 ISL	9.71	9.70	33.562	25.880	213.7	0.383	3.70	57.6	19.1	1.62	20.5	0.01	0.02	0.07		126
140	9.57	9.55	33.701	26.012	201.5	0.414	3.33	51.8	22.2	1.75	22.3	0.01	0.01	0.04		141 209
150 ISL	9.46	9.44	33.780	26.092	194.1	0.434	3.14	48.7	24.0	1.82	23.3	0.01	0.00	0.04		151
169	9.35	9.33	33.919	26.219	182.4	0.470	2.78	43.1	27.2	1.94	24.9	0.00	0.00	0.05		170 208
199	9.60	9.58	34.135	26.348	171.0	0.523	1.97	30.7	31.9	2.18	27.1	0.00	0.00	0.04		200 207
200 ISL	9.60	9.58	34.139	26.351	170.7	0.525	1.95	30.4	32.0	2.19	27.1	0.00				201
250 ISL	9.04	9.01	34.178	26.473	159.9	0.607	1.76	27.1	36.9	2.31	28.8	0.00				251
268	8.75	8.72	34.163	26.507	156.9	0.636	1.81	27.7	38.3	2.32	29.4	0.00				270 205
300 ISL	8.54	8.51	34.196	26.566	151.8	0.685	1.58	24.1	41.3	2.42	30.3	0.00				302
318	8.44	8.41	34.219	26.599	148.9	0.712	1.41	21.4	43.3	2.49	30.9	0.00				320 204
378	7.66	7.62	34.221	26.718	138.2	0.798	1.09	16.3	51.9	2.68	33.7	0.00				380 203
400 ISL	7.46	7.42	34.233	26.756	134.8	0.828	0.95	14.1	54.9	2.75	34.5	0.00				403
438	7.18	7.14	34.257	26.815	129.7	0.879	0.71	10.5	59.9	2.86	35.8	0.00				441 202
500 ISL	6.73	6.68	34.289	26.902	122.0	0.957	0.46	6.7	68.0	3.02	37.3	0.00				503
513	6.64	6.59	34.296	26.920	120.4	0.972	0.41	6.0	69.7	3.05	37.6	0.00				516 201

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE
33 15.1 N	118 15.0 W	09/11/04	1101	UTC	325 m	290	09 kn			1018.4 mb	15.9 c	13.3 c				
DEPTH	TEMP	POT TEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXY	SI03	P04	N03	N02	CHL-A	PHAE0	PRES	SAMP
m	DEG C	DEG C		THETA			mL/L	PCT	uM/L	uM/L	uM/L	uM/L	ug/L	ug/L	db	
0 ISL	17.59	17.59	33.245	24.029	387.3	0.000	5.58	102.1	0.7	0.30	0.1	0.00	0.19	0.07		0
1	17.59	17.59	33.245	24.029	387.4	0.004	5.58	102.1	0.7	0.30	0.1	0.00	0.19	0.07		1 217
10	17.59	17.59	33.247	24.031	387.5	0.039	5.58	102.1	0.7	0.30	0.1	0.00	0.19	0.06		10 216
20	17.42	17.42	33.218	24.049	386.0	0.077	5.64	102.9	0.8	0.30	0.1	0.00	0.18	0.08		20 215
30	16.10	16.10	33.051	24.228	369.3	0.115	5.99	106.4	1.1	0.34	0.1	0.00	0.21	0.10		30 214
40	14.14	14.13	33.015	24.626	331.5	0.150	5.92	101.0	2.2	0.49	1.7	0.06	0.43	0.21		40 213
50	13.06	13.05	33.034	24.860	309.4	0.182	5.56	92.8	3.3	0.64	4.0	0.14	0.31	0.24		50 212
60	12.30	12.29	33.101	25.060	290.6	0.212	5.15	84.6	5.6	0.88	8.3	0.06	0.26	0.28		60 211
70	11.95	11.94	33.160	25.172	280.2	0.241	4.95	80.8	6.7	0.96	9.8	0.04	0.26	0.21		70 210
75 ISL	11.58	11.57	33.184	25.259	271.9	0.255	4.84	78.4	7.9	1.04	11.3	0.03	0.21	0.19		75
85	10.78	10.77	33.257	25.459	253.0	0.281	4.55	72.4	11.1	1.25	14.7	0.02	0.10	0.15		85 209
99	10.03	10.02	33.459	25.746	225.9	0.314	3.89	61.0	16.9	1.54	19.1	0.01	0.03	0.06		99 208
100 ISL	10.03	10.02	33.474	25.758	224.9	0.317	3.85	60.4	17.2	1.55	19.3	0.01	0.03	0.06		100
119	9.95	9.94	33.689	25.939	208.0	0.358	3.20	50.2	21.3	1.75	21.7	0.01	0.01	0.07		120 207
125 ISL	9.85	9.84	33.754	26.007	201.7	0.370	3.07	48.0	22.7	1.80	22.5	0.01	0.01	0.06		126
139	9.63	9.61	33.887	26.148	188.6	0.397	2.82	43.9	25.6	1.90	24.1	0.01	0.00	0.04		140 206
150 ISL	9.63	9.61	33.964	26.208	183.1	0.418	2.57	40.1	27.3	1.99	24.9	0.01	0.00	0.04		151
169	9.64	9.62	34.046	26.271	177.6	0.452	2.27	35.4	29.4	2.09	25.9	0.00	0.00	0.04		170 205
199	8.81	8.79	33.996	26.366	168.9	0.504	2.60	39.8	31.7	2.04	27.1	0.00	0.00	0.05		200 204
200 ISL	8.82	8.80	34.002	26.369	168.6	0.506	2.58	39.5	31.8	2.05	27.1	0.00				201
229	9.31	9.28	34.181	26.431	163.5	0.554	1.71	26.5	35.6	2.31	28.4	0.02				230 203
250 ISL	9.15	9.12	34.217	26.486	158.8	0.588	1.59	24.6	38.0	2.40	29.2	0.02				251
268	8.91	8.88	34.218	26.525	155.3	0.616	1.48	22.7	39.7	2.43	29.8	0.01				270 202
300 ISL	8.80	8.77	34.227	26.550	153.5	0.665	1.39	21.3	41.1	2.47	30.3	0.01				302
309	8.77	8.74	34.229	26.556	153.1	0.679	1.37	21.0	41.5	2.48	30.4	0.01				311 201

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE
33 11.1 N	118 23.2 W	09/11/04	0741	UTC	1166 m	290	11 kn			1018.8 mb	16.1 c	14.0 c				
DEPTH	TEMP	POT TEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXY	SI03	P04	N03	N02	CHL-A	PHAE0	PRES	SAMP
m	DEG C	DEG C		THETA			mL/L	PCT	uM/L	uM/L	uM/L	uM/L	ug/L	ug/L	db	
0 ISL	17.58	17.58	33.212	24.006	389.5	0.000	5.57	101.9	0.7	0.31	0.1	0.00	0.16	0.05		0
2	17.58	17.58	33.212	24.006	389.6	0.008	5.57	101.9	0.7	0.31	0.1	0.00	0.16	0.05		2 221
10 ISL	17.59	17.59	33.217	24.007	389.7	0.039	5.58	102.1	0.7	0.30	0.1	0.00	0.18	0.03		10
11	17.59	17.59	33.218	24.008	389.6	0.043	5.58	102.1	0.7	0.30	0.1	0.00	0.18	0.03		11 220
20	17.42	17.42	33.216	24.048	386.2	0.078	5.64	102.9	0.7	0.30	0.1	0.00	0.20	0.09		20 219
30	17.26	17.26	33.195	24.070	384.4	0.116	5.69	103.4	0.8	0.31	0.1	0.00	0.24	0.10		30 218
40	16.49	16.48	33.159	24.223	370.1	0.154	5.80	103.8	1.0	0.34	0.2	0.01	0.33	0.14		40 216
40	16.64	16.63	33.152	24.183	373.9	0.154	5.80	104.2	1.1	0.34	0.3	0.01	0.33	0.15		40 217
50	12.56	12.55	33.047	24.968	299.1	0.188	5.40	89.2	4.5	0.76	6.0	0.12	0.44	0.24		50 215
60	11.92	11.91	33.125	25.150	282.0	0.217	5.06	82.5	6.4	0.93	9.2	0.06	0.25	0.34		60 214
70	11.22	11.21	33.198	25.335	264.5	0.244	4.84	77.8	8.6	1.07	11.9	0.02	0.17	0.25		70 213
75 ISL	11.04	11.03	33.222	25.386	259.8	0.257	4.74	75.9	9.4	1.13	12.9	0.02	0.14	0.22		75
85	10.77	10.76	33.266	25.468	252.2	0.283	4.53	72.1	11.2	1.26	14.8	0.01	0.09	0.17		85 212
100	10.12	10.11	33.377	25.667	233.5	0.319	4.17	65.5	15.0	1.45	17.9	0.01	0.04	0.09		100 211
120	9.53	9.52	33.561	25.909	210.8	0.364	3.70	57.4	19.8	1.65	21.1	0.01	0.01	0.04		121 210
125 ISL	9.53	9.52	33.614	25.950	207.0	0.374	3.59	55.7	20.6	1.68	21.6	0.01	0.01	0.04		126
140	9.55	9.53	33.757	26.059	197.0	0.404	3.21	49.9	23.2	1.78	22.9	0.00	0.00	0.06		141 209
150 ISL	9.58	9.56	33.884	26.154	188.3	0.424	2.83	44.0	25.8	1.90	24.2	0.00	0.00	0.06		151
169	9.60	9.58	34.097	26.317	173.2	0.458	2.14	33.4	30.7	2.12	26.5	0.00	0.00	0.04		170 208
199	9.43	9.41	34.203	26.429	163.2	0.508	1.65	25.6	34.9	2.30	28.3	0.00	0.00	0.04		200 207
200 ISL	9.42	9.40	34.204	26.431	163.0	0.510	1.64	25.5	35.0	2.30	28.3	0.00				201
229	9.21	9.18	34.226	26.483	158.6	0.557	1.53	23.7	37.3	2.37	29.1	0.00				230 206
250 ISL	9.03	9.00	34.251	26.531	154.4	0.590	1.35	20.8	39.8	2.45	29.9	0.00				251
268	8.87	8.84	34.270	26.572	150.8	0.617	1.19	18.3	41.9	2.52	30.6	0.00				270 205
300 ISL	8.66	8.63	34.281	26.614	147.4	0.665	1.09	16.7	44.0	2.58	31.2	0.00				302
318	8.53	8.50	34.280	26.634	145.8	0.691	1.06	16.1	45.1	2.60	31.6	0.00				320 204
377	7.79	7.75	34.249	26.721	138.0	0.775	0.95	14.2	52.3	2.71	33.9	0.00				379 203
400 ISL	7.48	7.44	34.250	26.766	133.9	0.806	0.84	12.5	56.0	2.78	35.0	0.00				403
437	7.04	7.00	34.260	26.836	127.5	0.854	0.66	9.7	61.8	2.89	36.5	0.00				440 202
500 ISL	6.72	6.67	34.288	26.902	121.9	0.933	0.47	6.9	67.7	3.01	37.7	0.00				503
513	6.66	6.61	34.294	26.915	120.8	0.949	0.43	6.3	68.9	3.03	38.0	0.00				516 201

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE
32 55.1 N	118 56.1 W	09/11/04	0141	UTC	1690 m	290	11 kn	290 03 05	1	1017.1 mb	15.8 c	13.9 c		2/8		SC
DEPTH	TEMP	POT TEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXY	SI03	P04	N03	N02	CHL-A	PHAE0	PRES	SAMP
m	DEG C	DEG C		THETA			ml/L	PCT	um/L	um/L	um/L	um/L	ug/L	ug/L	db	
0 ISL	16.08	16.08	33.234	24.372	354.6	0.000	5.97	106.1	0.0	0.28	0.1	0.00	0.88	0.65	0	
2	16.08	16.08	33.234	24.372	354.6	0.007	5.97	106.1	0.0	0.28	0.1	0.00	0.88	0.65	2	221
10 ISL	16.07	16.07	33.235	24.376	354.5	0.035	5.98	106.2	0.0	0.27	0.1	0.00	0.84	0.70	10	
11	16.07	16.07	33.235	24.376	354.6	0.039	5.98	106.2	0.0	0.27	0.1	0.00	0.84	0.71	11	220
20 ISL	15.90	15.90	33.264	24.437	349.1	0.071	6.03	106.8	0.0	0.29	0.0	0.01	1.22	1.14	20	
21	15.87	15.87	33.268	24.447	348.1	0.074	6.04	106.9	0.0	0.29	0.0	0.01	1.30	1.20	21	219
30 ISL	15.29	15.29	33.291	24.593	334.4	0.105	5.80	101.5	0.8	0.41	1.0	0.06	2.45	1.56	30	
31	15.22	15.22	33.292	24.609	332.9	0.108	5.76	100.6	0.9	0.43	1.2	0.07	2.53	1.57	31	217
31	15.26	15.26	33.292	24.601	333.8	0.108	5.75	100.6	0.8	0.43	1.2	0.07	2.73	1.88	31	218
41	14.62	14.61	33.275	24.726	322.1	0.141	5.32	91.8	3.2	0.66	4.6	0.26	1.13	0.78	41	216
50	13.36	13.35	33.294	25.002	296.0	0.169	4.84	81.4	7.0	0.95	9.4	0.21	0.48	0.52	50	215
60	12.15	12.14	33.306	25.247	272.8	0.197	4.55	74.6	9.5	1.16	12.9	0.11	0.36	0.34	60	214
70	11.38	11.37	33.276	25.367	261.5	0.224	4.42	71.3	10.6	1.29	15.0	0.03	0.16	0.28	70	213
75 ISL	11.07	11.06	33.314	25.452	253.5	0.237	4.27	68.4	12.1	1.36	16.2	0.03	0.11	0.24	75	
85	10.55	10.54	33.421	25.627	237.0	0.261	3.94	62.5	15.4	1.50	18.3	0.02	0.07	0.16	85	212
100	10.02	10.01	33.517	25.793	221.5	0.296	3.63	56.9	18.3	1.64	20.5	0.01	0.04	0.12	100	211
120	9.62	9.61	33.656	25.968	205.2	0.338	3.30	51.3	21.9	1.76	22.6	0.01	0.02	0.08	120	210
125 ISL	9.56	9.55	33.690	26.005	201.8	0.349	3.24	50.3	22.7	1.79	23.0	0.01	0.02	0.07	126	
140	9.41	9.39	33.788	26.106	192.5	0.378	3.05	47.3	25.0	1.86	24.1	0.00	0.01	0.06	141	209
150 ISL	9.30	9.28	33.852	26.174	186.2	0.397	2.89	44.7	26.7	1.92	24.9	0.00	0.01	0.06	151	
170	9.13	9.11	33.972	26.296	175.1	0.433	2.55	39.3	29.9	2.03	26.3	0.00	0.00	0.05	171	208
200	9.17	9.15	34.120	26.406	165.3	0.484	2.02	31.2	34.1	2.20	27.8	0.00	0.00	0.04	201	207
230	8.67	8.65	34.128	26.491	157.6	0.533	1.96	29.9	37.5	2.27	29.3	0.00	0.00	0.04	231	206
250 ISL	8.34	8.31	34.127	26.541	153.0	0.564	1.93	29.3	40.0	2.32	30.2	0.00	0.00	0.04	251	
269	8.08	8.05	34.129	26.582	149.4	0.593	1.86	28.0	42.5	2.37	31.0	0.00	0.00	0.04	271	205
300 ISL	7.93	7.90	34.160	26.629	145.4	0.638	1.58	23.7	46.7	2.50	32.1	0.00	0.00	0.04	302	
319	7.87	7.84	34.183	26.656	143.2	0.666	1.38	20.7	49.4	2.58	32.8	0.00	0.00	0.04	321	204
379	7.21	7.17	34.239	26.795	130.5	0.748	0.82	12.1	58.9	2.82	35.5	0.00	0.00	0.04	381	203
400 ISL	7.05	7.01	34.244	26.822	128.3	0.775									403	
439	6.81	6.77	34.249 D	26.859	125.1	0.824									442	202
500 ISL	6.50	6.45	34.288	26.932	118.9	0.899									503	
514	6.43	6.38	34.297 D	26.948	117.5	0.915									518	201

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE
32 39.1 N	119 28.8 W	08/11/04	1835	UTC	1309 m	340	07 kn	310 02 08	1	1017.6 mb	17.1 c	14.8 c		2/8		CU
DEPTH	TEMP	POT TEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXY	SI03	P04	N03	N02	CHL-A	PHAE0	PRES	SAMP
m	DEG C	DEG C		THETA			ml/L	PCT	um/L	um/L	um/L	um/L	ug/L	ug/L	db	
0 ISL	18.06	18.06	33.255	23.922	397.4	0.000	5.49	101.4	0.9	0.27	0.1	0.00	0.17	0.06	0	
1 A	18.06	18.06	33.255	23.922	397.5	0.004	5.49	101.4	0.9	0.27	0.1	0.00	0.17	0.06	1	224
10	18.02	18.02	33.255	23.933	396.8	0.040	5.49	101.3	0.9	0.27	0.1	0.00	0.17	0.07	10	223
19 A	18.01	18.01	33.254	23.935	396.9	0.075	5.50	101.5	0.9	0.27	0.1	0.00	0.17	0.08	19	222
20 ISL	18.01	18.01	33.253	23.934	397.1	0.079	5.50	101.5	0.9	0.27	0.1	0.00	0.17	0.08	20	
28	17.99	17.99	33.248	23.935	397.2	0.111	5.53	102.0	0.9	0.28	0.1	0.00	0.20	0.08	28	221
30 ISL	17.77	17.76	33.223	23.970	394.0	0.119	5.60	102.8	1.0	0.28	0.1	0.00	0.21	0.09	30	
37	16.57	16.56	33.104	24.162	375.8	0.146	5.87	105.2	1.3	0.31	0.1	0.00	0.28	0.14	37	220
47 A	13.98	13.97	32.934	24.597	334.5	0.182	6.17	104.9	2.0	0.39	0.4	0.01	0.52	0.35	47	219
50 ISL	13.45	13.44	32.926	24.699	324.8	0.191	6.07	102.1	2.4	0.45	1.2	0.04	0.53	0.40	50	
56	12.67	12.66	32.944	24.867	308.9	0.210	5.75	95.1	3.5	0.60	3.4	0.09	0.54	0.46	56	217
56	12.66	12.65	32.936	24.863	309.3	0.210	5.84	96.6	3.3	0.57	2.8	0.08	0.60	0.42	56	218
64 A	12.10	12.09	33.007	25.025	294.0	0.235	5.39	88.1	4.9	0.78	6.5	0.10	0.38	0.44	64	216
74	11.21	11.20	33.126	25.281	269.7	0.263	4.88	78.3	7.8	1.03	11.1	0.03	0.20	0.37	74	215
75 ISL	11.14	11.13	33.139	25.304	267.6	0.265	4.84	77.6	8.2	1.05	11.5	0.03	0.19	0.35	75	
88 A	10.50	10.49	33.302	25.543	245.1	0.299	4.37	69.2	12.6	1.32	16.0	0.02	0.10	0.15	88	214
98	10.15	10.14	33.392	25.673	232.8	0.323	4.09	64.3	15.2	1.45	18.1	0.01	0.05	0.09	98	213
100 ISL	10.08	10.07	33.410	25.699	230.4	0.327	4.03	63.2	15.8	1.48	18.5	0.01	0.04	0.08	100	
109	9.78	9.77	33.492	25.814	219.7	0.348	3.79	59.1	18.2	1.59	20.3	0.01	0.02	0.05	109	212
122 A	9.56	9.55	33.621	25.951	206.9	0.375	3.47	53.9	21.0	1.69	21.8	0.01	0.01	0.05	123	211
125 ISL	9.53	9.52	33.638	25.969	205.2	0.381	3.43	53.2	21.3	1.70	22.0	0.01	0.01	0.05	126	
133	9.47	9.46	33.675	26.008	201.7	0.398	3.36	52.1	22.1	1.73	22.5	0.01	0.01	0.04	134	210
144	9.32	9.30	33.738	26.082	194.9	0.420	3.22	49.8	23.6	1.78	23.3	0.01	0.01	0.04	145	209
150 ISL	9.26	9.24	33.778	26.123	191.1	0.431	3.13	48.3	24.6	1.81	23.8	0.01	0.01	0.04	151	
169	9.07	9.05	33.897	26.247	179.7	0.466	2.86	44.0	27.9	1.90	25.4	0.00	0.00	0.03	170	208
199	8.66	8.64	34.008	26.398	165.8	0.518	2.58	39.4	32.7	2.02	27.3	0.00	0.00	0.03	200	207
200 ISL	8.65	8.63	34.013	26.404	165.2	0.520	2.56	39.1	32.9	2.03	27.4	0.00	0.00	0.03	201	
228	8.41	8.39	34.135	26.537	153.1	0.564	1.89	28.7	39.6	2.29	29.7	0.00	0.00	0.03	229	206
250 ISL	8.26	8.23	34.173	26.590	148.4	0.598	1.61	24.4	43.0	2.41	30.8	0.00	0.00	0.03	251	
269	8.14	8.11	34.185	26.617	146.1	0.626	1.47	22.2	45.1	2.47						

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	
32 25.1 N	119 57.6 W	08/11/04	1337 UTC	874 m	340	11 kn	330 02 08	1	1014.7 mb	16.8 c	14.3 c		4/8		SC	
DEPTH	TEMP	POT TEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXY	SI03	P04	N03	N02	CHL-A	PHAE0	PRES	SAMP
m	DEG C	DEG C		THETA			ml/L	PCT	uM/L	uM/L	uM/L	uM/L	ug/l	ug/l	db	
0 ISL	17.71	17.71	33.221	23.981	391.8	0.000	5.52	101.3	1.0	0.29	0.1	0.00	0.20	0.06	0	
1	17.71	17.71	33.221	23.981	391.9	0.004	5.52	101.3	1.0	0.29	0.1	0.00	0.20	0.06	1	220
10	17.75	17.75	33.239	23.986	391.7	0.039	5.52	101.3	1.0	0.28	0.1	0.00	0.19	0.06	10	219
20	17.67	17.67	33.235	24.002	390.5	0.078	5.55	101.7	1.0	0.29	0.1	0.00	0.21	0.07	20	218
30	17.62	17.61	33.239	24.018	389.4	0.117	5.57	102.0	1.0	0.29	0.1	0.00	0.22	0.08	30	217
40	15.01	15.00	32.998	24.429	350.4	0.154	6.08	105.6	1.8	0.35	0.2	0.00	0.41	0.24	40	216
50	13.24	13.23	33.002	24.800	315.2	0.188	5.84	97.8	3.2	0.60	3.5	0.10	0.54	0.39	50	215
60	12.69	12.68	33.003	24.909	305.0	0.219	5.63	93.2	3.9	0.69	5.1	0.16	0.53	0.44	60	214
70	11.76	11.75	33.004	25.086	288.3	0.248	5.38	87.3	5.5	0.84	7.8	0.12	0.40	0.44	70	213
75 ISL	11.37	11.36	33.060	25.201	277.4	0.262	5.12	82.4	7.2	0.98	10.1	0.08	0.32	0.38	75	
85	10.71	10.70	33.213	25.438	255.1	0.289	4.55	72.3	11.2	1.28	14.9	0.02	0.17	0.24	85	212
100	10.05	10.04	33.420	25.712	229.2	0.325	3.91	61.3	16.5	1.55	19.7	0.01	0.05	0.10	100	211
120	9.46	9.45	33.641	25.983	203.8	0.369	3.34	51.8	22.1	1.77	23.0	0.01	0.01	0.04	121	210
125 ISL	9.38	9.37	33.690	26.034	199.0	0.379	3.23	50.0	23.1	1.81	23.6	0.01	0.01	0.04	126	
139	9.21	9.19	33.807	26.153	188.0	0.406	3.00	46.3	25.6	1.88	24.8	0.00	0.00	0.03	140	209
150 ISL	9.08	9.06	33.871	26.224	181.4	0.426	2.90	44.6	27.3	1.92	25.5	0.00	0.00	0.03	151	
169	8.86	8.84	33.950	26.321	172.5	0.460	2.75	42.1	30.1	1.98	26.6	0.01	0.00	0.03	170	208
199	8.52	8.50	34.046	26.450	160.8	0.510	2.30	35.0	35.7	2.14	29.0	0.00	0.00	0.02	200	207
200 ISL	8.51	8.49	34.048	26.453	160.5	0.511	2.29	34.8	35.8	2.15	29.1	0.00	0.00		201	
229	8.25	8.23	34.087	26.523	154.3	0.557	2.00	30.2	39.6	2.28	30.4	0.00	0.00		230	206
250 ISL	8.05	8.02	34.101	26.564	150.7	0.589	1.89	28.5	41.8	2.34	31.1	0.00	0.00		251	
269	7.86	7.83	34.111	26.600	147.5	0.617	1.79	26.8	44.0	2.40	31.7	0.00	0.00		271	205
300 ISL	7.53	7.50	34.134	26.667	141.6	0.662	1.50	22.3	49.0	2.53	33.3	0.00	0.00		302	
319	7.33	7.30	34.150	26.708	137.9	0.689	1.30	19.3	52.4	2.62	34.3	0.00	0.00		321	204
378	6.72	6.69	34.208	26.838	126.1	0.767	0.78	11.4	62.7	2.87	37.1	0.00	0.00		380	203
400 ISL	6.58	6.54	34.221	26.867	123.6	0.794	0.66	9.6	65.7	2.93	37.8	0.00	0.00		403	
438	6.40	6.36	34.239	26.905	120.3	0.840	0.52	7.5	70.1	3.01	38.6	0.00	0.00		441	202
500 ISL	6.17	6.13	34.280	26.968	115.1	0.913	0.37	5.3	75.6	3.09	39.4	0.00	0.00		503	
513	6.12	6.07	34.289	26.982	113.9	0.928	0.34	4.9	76.7	3.11	39.6	0.00	0.00		516	201

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	
32 5.1 N	120 38.3 W	08/11/04	0740 UTC	3807 m	330	09 kn			1014.4 mb	16.1 c	14.0 c					
DEPTH	TEMP	POT TEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXY	SI03	P04	N03	N02	CHL-A	PHAE0	PRES	SAMP
m	DEG C	DEG C		THETA			ml/L	PCT	uM/L	uM/L	uM/L	uM/L	ug/l	ug/l	db	
0 ISL	17.71	17.71	33.189	23.957	394.2	0.000	5.53	101.4	0.9	0.29	0.1	0.00	0.17	0.06	0	
2	17.71	17.71	33.189	23.957	394.2	0.008	5.53	101.4	0.9	0.29	0.1	0.00	0.17	0.06	2	221
10 ISL	17.71	17.71	33.190	23.958	394.4	0.039	5.53	101.4	0.8	0.29	0.1	0.00	0.18	0.06	10	
15	17.71	17.71	33.191	23.959	394.5	0.059	5.53	101.4	0.8	0.29	0.1	0.00	0.18	0.06	15	220
20 ISL	17.69	17.69	33.191	23.964	394.2	0.079	5.53	101.4	0.8	0.29	0.1	0.00	0.18	0.06	20	
30	17.66	17.65	33.190	23.971	393.8	0.118	5.54	101.5	0.8	0.28	0.1	0.00	0.18	0.06	30	219
45	13.50	13.49	32.865	24.642	330.1	0.173	6.28	105.7	1.9	0.36	0.1	0.00	0.29	0.14	45	218
50 ISL	13.06	13.05	32.878	24.740	320.9	0.189	6.20	103.4	2.2	0.39	0.3	0.02	0.42	0.27	50	
55	12.81	12.80	32.902	24.807	314.6	0.205	6.04	100.2	2.5	0.44	0.8	0.05	0.52	0.40	55	216
55	12.85	12.84	32.903	24.800	315.2	0.205	6.07	100.8	2.4	0.43	0.6	0.04	0.56	0.37	55	217
65	12.04	12.03	32.894	24.948	301.3	0.236	5.75	93.8	3.4	0.59	3.4	0.10	0.40	0.43	65	215
75	11.01	11.00	32.997	25.216	275.9	0.264	5.19	82.9	7.1	0.97	10.0	0.03	0.22	0.32	75	214
84	10.09	10.08	33.047	25.414	257.1	0.288	4.92	77.0	10.7	1.19	13.6	0.01	0.14	0.17	84	213
95	9.64	9.63	33.187	25.598	239.8	0.316	4.62	71.7	13.7	1.35	16.4	0.01	0.08	0.09	95	212
100 ISL	9.63	9.62	33.252	25.651	234.9	0.328	4.52	70.2	14.5	1.39	17.1	0.01	0.06	0.08	100	
110	9.61	9.60	33.371	25.747	226.0	0.351	4.25	66.0	16.3	1.49	18.6	0.01	0.04	0.07	110	211
124	9.52	9.51	33.605	25.945	207.5	0.381	3.41	52.9	21.4	1.77	23.0	0.01	0.02	0.11	125	210
125 ISL	9.51	9.50	33.614	25.954	206.7	0.383	3.40	52.7	21.6	1.77	23.1	0.01	0.02	0.11	126	
145	9.17	9.15	33.747	26.113	191.9	0.423	3.20	49.3	24.5	1.84	24.2	0.01	0.01	0.05	146	209
150 ISL	9.10	9.08	33.790	26.158	187.7	0.432	3.11	47.9	25.5	1.87	24.6	0.01	0.01	0.04	151	
169	8.85	8.83	33.936	26.312	173.4	0.467	2.78	42.6	29.5	1.97	26.3	0.01	0.00	0.02	170	208
199	8.44	8.42	34.017	26.439	161.8	0.517	2.67	40.5	34.0	2.05	27.8	0.01	0.00	0.02	200	207
200 ISL	8.43	8.41	34.019	26.442	161.5	0.519	2.66	40.4	34.2	2.05	27.9	0.01	0.00		201	
228	8.10	8.08	34.054	26.520	154.6	0.563	2.28	34.4	38.7	2.20	29.9	0.00	0.00		229	206
250 ISL	7.90	7.87	34.099	26.585	148.7	0.596	1.89	28.4	42.9	2.36	31.3	0.00	0.00		251	
269	7.76	7.73	34.139	26.637	144.0	0.624	1.57	23.5	46.4	2.49	32.4	0.01	0.01		271	205
300 ISL	7.57	7.54	34.184	26.700	138.4	0.668	1.23	18.3	50.8	2.63	33.7	0.01	0.01		302	
318	7.45	7.42	34.203	26.733	135.6	0.692	1.09	16.2	53.3	2.70	34.3	0.01	0.01		320	204
378	6.78	6.74	34.229	26.846	125.3	0.771	0.70	10.2	63.9	2.91	37.1	0.01	0.01		380	203
400 ISL	6.59	6.55	34.237	26.878	122.5	0.798	0.61	8.9	66.9	2.96	37.8	0.01	0.01		403	
438	6.34	6.30	34.255	26.926	118.3	0.844	0.48	7.0	71.4	3.03	38.7	0.00	0.00		441	202
500 ISL	6.10	6.06	34.306	26.997	112.2	0.915	0.31	4.5	77.1	3.13	39.7	0.00	0.00		503	
513	6.05	6.00	34.317	27.012	110.9	0.930	0.28	4.0	78.3	3.15	39.9	0.00	0.00		516	201



LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE
31 45.1 N	121 18.9 W	08/11/04	0100	UTC	3659 m	320	15 kn	300 04 08	1	1013.4 mb	16.9 c	15.0 c		6/8		SC
DEPTH	TEMP	POT TEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXY	SI03	P04	N03	N02	CHL-A	PHAE0	PRES	SAMP
m	DEG C	DEG C		THETA			ml/L	PCT	uM/L	uM/L	uM/L	uM/L	ug/L	ug/L	db	
0 ISL	17.72	17.72	33.307	24.045	385.8	0.000			0.7	0.29	0.1	0.00	0.17	0.05		0
1	17.72	17.72	33.307	24.045	385.8	0.004	5.63 U	103.4 U	0.7	0.29	0.1	0.00	0.17	0.05		1 220
10	17.73	17.73	33.307	24.043	386.3	0.039	5.51	101.2	0.7	0.29	0.1	0.00	0.17	0.06		10 219
20	17.70	17.70	33.306	24.050	386.0	0.077	5.52	101.3	0.7	0.29	0.1	0.00	0.19	0.07		20 218
30	17.53	17.52	33.301	24.087	382.8	0.116	5.54	101.3	0.7	0.30	0.1	0.00	0.24	0.07		30 217
40	15.09	15.08	33.156	24.533	340.4	0.152	5.88	102.4	1.5	0.45	1.5	0.05	0.53	0.19		40 216
50	12.86	12.85	33.076	24.932	302.6	0.184	5.53	91.9	4.2	0.77	6.3	0.17	0.52	0.32		50 215
60	11.97	11.96	33.137	25.150	282.0	0.213	5.03	82.1	6.8	1.03	10.8	0.11	0.36	0.34		60 214
70	11.29	11.28	33.217	25.337	264.3	0.241	4.62	74.3	9.4	1.22	14.0	0.04	0.21	0.33		70 213
75 ISL	10.98	10.97	33.233	25.405	257.9	0.254	4.52	72.3	10.5	1.28	15.0	0.04	0.18	0.28		75
85	10.44	10.43	33.262	25.522	247.0	0.279	4.37	69.1	12.6	1.38	16.6	0.03	0.14	0.18		85 212
100	9.93	9.92	33.383	25.703	230.0	0.315	3.99	62.4	16.4	1.57	19.5	0.01	0.08	0.11		100 211
120	9.56	9.55	33.619	25.949	207.0	0.358	3.35	52.0	21.3	1.76	22.7	0.01	0.03	0.05		121 210
125 ISL	9.45	9.44	33.660	25.999	202.3	0.369	3.28	50.8	22.3	1.79	23.2	0.01	0.02	0.05		126
140	9.15	9.13	33.765	26.130	190.2	0.398	3.16	48.7	24.9	1.84	24.2	0.01	0.01	0.04		141 209
150 ISL	9.00	8.98	33.840	26.213	182.5	0.417	3.06	47.0	26.8	1.88	24.9	0.01	0.00	0.04		151
170	8.76	8.74	33.964	26.348	170.0	0.452	2.85	43.6	30.4	1.96	26.4	0.00	0.00	0.04		171 208
199	8.41	8.39	34.031	26.455	160.3	0.500	2.50	37.9	35.3	2.11	28.4	0.01	0.00	0.03		200 207
200 ISL	8.40	8.38	34.034	26.458	160.0	0.501	2.48	37.6	35.5	2.12	28.5	0.01				201
229	8.18	8.16	34.093	26.538	152.8	0.547	2.01	30.3	40.2	2.29	30.4	0.00				230 206
250 ISL	7.85	7.83	34.095	26.589	148.2	0.578	1.88	28.2	43.6	2.38	31.6	0.00				251
269	7.56	7.53	34.092	26.629	144.6	0.606	1.80	26.8	46.6	2.45	32.5	0.00				271 205
300 ISL	7.40	7.37	34.136	26.687	139.6	0.650	1.44	21.4	50.7	2.58	33.7	0.00				302
318	7.32	7.29	34.162	26.719	136.9	0.675	1.22	18.1	53.2	2.66	34.4	0.00				320 204
378	6.53	6.50	34.167	26.831	126.6	0.754	0.86	12.5	64.6	2.88	37.4	0.00				380 203
400 ISL	6.35	6.31	34.184	26.868	123.2	0.782	0.73	10.6	67.8	2.93	38.1	0.00				403
437	6.14	6.10	34.220	26.924	118.3	0.826	0.54	7.8	72.5	3.01	39.0	0.00				440 202
500 ISL	5.92	5.88	34.276	26.996	112.1	0.899	0.35	5.0	78.9	3.12	40.1	0.00				503
513	5.88	5.84	34.288	27.011	110.9	0.913	0.31	4.4	80.2	3.14	40.3	0.00				516 201

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	
31 25.1 N	121 59.4 W	07/11/04	1821	UTC	3870 m	330	15 kn	330 05 07	1	1015.3 mb	17.1 c	15.2 c	31m	4/8		SC	
DEPTH	TEMP	POT TEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXY	SI03	P04	N03	N02	CHL-A	PHAE0	PRES	SAMP	
m	DEG C	DEG C		THETA			ml/L	PCT	uM/L	uM/L	uM/L	uM/L	ug/L	ug/L	db		
0 ISL	17.28	17.28	33.210	24.076	382.8	0.000	5.58	101.5	0.8	0.33	0.1	0.00	0.21	0.08		0	
1 A	17.28	17.28	33.210	24.076	382.9	0.004	5.58	101.5	0.8	0.33	0.1	0.00	0.21	0.08		1 223	
1	17.28	17.28	33.212	24.077	382.7	0.004											1 224
10	17.29	17.29	33.219	24.081	382.7	0.038	5.56	101.2	0.8	0.32	0.1	0.00	0.23	0.05		10 222	
19 A	17.35	17.35	33.238	24.081	382.9	0.073	5.56	101.3	0.8	0.32	0.1	0.00	0.22	0.07		19 221	
20 ISL	17.35	17.35	33.240	24.083	382.8	0.077	5.56	101.3	0.8	0.32	0.1	0.00	0.22	0.07		20	
28	17.38	17.38	33.252	24.085	382.9	0.107	5.55	101.2	0.7	0.32	0.1	0.00	0.22	0.06		28 220	
30 ISL	17.38	17.38	33.253	24.086	382.9	0.115	5.55	101.2	0.7	0.32	0.1	0.00	0.22	0.06		30	
37	17.39	17.38	33.258	24.088	382.9	0.142	5.55	101.2	0.7	0.32	0.1	0.00	0.23	0.07		37 219	
46 A	14.50	14.49	32.887	24.452	348.3	0.175	6.10	104.8	1.5	0.38	0.1	0.00	0.47	0.22		46 218	
50 ISL	13.95	13.94	32.828	24.521	341.7	0.188	6.14	104.2	1.7	0.39	0.1	0.00	0.47	0.29		50	
54	13.62	13.61	32.804	24.570	337.1	0.202	6.18	104.2	1.8	0.41	0.1	0.01	0.48	0.35		54 217	
62 A	12.87	12.86	32.811	24.725	322.5	0.228	6.03	100.1	2.2	0.48	0.8	0.06	0.41	0.42		62 216	
72	11.86	11.85	32.844	24.943	301.9	0.260	5.68	92.3	3.6	0.67	4.1	0.05	0.34	0.29		72 215	
75 ISL	11.64	11.63	32.867	25.002	296.4	0.269	5.59	90.4	4.1	0.72	5.0	0.04	0.31	0.27		75	
82 A	11.17	11.16	32.929	25.135	283.8	0.289	5.39	86.4	5.7	0.85	7.4	0.03	0.23	0.24		82 214	
94	10.15	10.14	33.027	25.389	259.8	0.321	4.97	77.9	10.4	1.18	13.1	0.01	0.11	0.16		94 213	
100 ISL	10.01	10.00	33.109	25.476	251.6	0.337	4.77	74.6	11.8	1.28	14.8	0.01	0.09	0.13		100	
106	9.95	9.94	33.198	25.556	244.1	0.352	4.58	71.6	13.0	1.36	16.1	0.01	0.08	0.11		106 212	
118 A	9.56	9.55	33.358	25.745	226.3	0.380	4.17	64.7	16.9	1.55	19.3	0.01	0.04	0.06		119 211	
125 ISL	9.54	9.53	33.464	25.831	218.3	0.395	3.90	60.5	18.7	1.64	20.8	0.01	0.03	0.05		126	
131	9.52	9.51	33.556	25.907	211.3	0.408	3.68	57.1	20.2	1.71	21.9	0.01	0.02	0.05		132 210	
144	9.11	9.09	33.733	26.111	192.0	0.435	3.38	52.0	24.3	1.81	23.6	0.01	0.01	0.04		145 209	
150 ISL	9.01	8.99	33.786	26.169	186.6	0.446	3.32	51.0	25.4	1.83	24.1	0.01	0.01	0.04		151	
169	8.80	8.78	33.898	26.290	175.5	0.480	3.15	48.2	28.1	1.88	25.3	0.01	0.01	0.03		170 208	
199	8.44	8.42	34.019	26.441	161.6	0.531	2.50	38.0	34.5	2.10	28.6	0.00	0.00	0.03		200 207	
200 ISL	8.43	8.41	34.021	26.444	161.4	0.532	2.50	37.9	34.7	2.10	28.6	0.00				201	
228	8.04	8.02	34.042	26.519	154.6	0.577	2.46	37.0	38.7	2.17	29.5	0.00				229 206	
250 ISL	7.73	7.71	34.050	26.571	149.9	0.610	2.29	34.2	42.4	2.26	30.9	0.00				251	
268	7.48	7.45	34.055	26.611	146.3	0.637	2.11	31.3	45.5	2.35	32.1	0.00				269 205	
300 ISL	7.13	7.10	34.071	26.673	140.7	0.683	1.82	26.8	50.6	2.50	33.9	0.00				302	
318	6.95	6.92	34.082	26.707	137.7	0.708	1.65	24.2	53.5	2.59	34.8	0.00				320 204	
377	6.38	6.35	34.123	26.815	127.8	0.786	1.03	14.9	64.0	2.83	37.7	0.00				379 203	

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE
31 5.1 N	122 39.7 W	07/11/04	0532	UTC	4008 m	020	09 kn			1010.8 mb	15.3 c	13.6 c				
DEPTH	TEMP	POT TEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXY	SI03	P04	N03	N02	CHL-A	PHAE0	PRES	SAMP
m	DEG C	DEG C		THETA			ml/L	PCT	uM/L	uM/L	uM/L	uM/L	ug/L	ug/L	db	
0 ISL	17.91	17.91	32.905	23.691	419.5	0.000	5.51	101.3	1.3	0.33	0.1	0.00	0.13	0.05	0	
1	17.91	17.91	32.905	23.691	419.5	0.004	5.51	101.3	1.3	0.33	0.1	0.00	0.13	0.05	1	222
10 ISL	17.92	17.92	32.900	23.685	420.4	0.042	5.52	101.5	1.2	0.32	0.1	0.00	0.13	0.06	10	
15	17.92	17.92	32.897	23.683	420.8	0.063	5.52	101.5	1.2	0.32	0.1	0.00	0.13	0.06	15	221
20 ISL	17.91	17.91	32.900	23.688	420.5	0.084	5.52	101.5	1.2	0.32	0.1	0.00	0.13	0.06	20	
30 ISL	17.87	17.86	32.895	23.694	420.2	0.126	5.52	101.4	1.2	0.32	0.1	0.00	0.14	0.06	30	
31	17.86	17.85	32.894	23.696	420.1	0.130	5.52	101.3	1.2	0.32	0.1	0.00	0.14	0.06	31	220
45	17.69	17.68	33.068	23.871	403.9	0.188	5.84	107.0	1.3	0.29	0.1	0.00	0.19	0.09	45	219
50 ISL	17.16	17.15	33.256	24.141	378.2	0.208	5.96	108.2	1.5	0.26	0.1	0.00	0.21	0.09	50	
55	16.60	16.59	33.433	24.408	352.9	0.226	6.04	108.6	1.6	0.24	0.1	0.00	0.23	0.10	55	218
65	16.16	16.15	33.494	24.556	339.1	0.260	5.96	106.2	1.7	0.23	0.1	0.00	0.25	0.14	65	217
65	16.11	16.10	33.494	24.568	338.0	0.260	5.96	106.1	1.7	0.23	0.1	0.00	0.22	0.15	65	216
75	15.40	15.39	33.497	24.729	322.9	0.293	5.83	102.4	1.9	0.25	0.1	0.00	0.20	0.23	75	215
85	14.59	14.58	33.497	24.905	306.4	0.325	5.72	98.8	2.2	0.29	0.1	0.02	0.19	0.22	85	214
95	14.22	14.21	33.510	24.993	298.2	0.355	5.59	95.8	2.5	0.33	0.5	0.14	0.18	0.22	95	213
100 ISL	13.93	13.92	33.503	25.048	293.0	0.370	5.52	94.1	2.8	0.38	1.2	0.12	0.16	0.21	100	
110	13.15	13.13	33.465	25.178	280.9	0.399	5.39	90.3	3.9	0.52	3.5	0.07	0.11	0.20	110	212
124	11.64	11.62	33.372	25.395	260.2	0.436	5.21	84.5	6.7	0.78	7.9	0.01	0.08	0.13	124	210
125 ISL	11.56	11.54	33.369	25.408	259.0	0.439	5.20	84.2	6.9	0.79	8.1	0.01	0.08	0.13	125	
143	10.36	10.34	33.373	25.624	238.6	0.484	4.96	78.3	10.2	1.04	12.0	0.00	0.05	0.08	144	209
145	10.27	10.25	33.380	25.645	236.6	0.489	4.93	77.7	10.7	1.06	12.4	0.01	0.04	0.08	146	208
150 ISL	10.03	10.01	33.414	25.712	230.3	0.500	4.80	75.2	12.2	1.14	13.8	0.01	0.03	0.07	151	
168	9.38	9.36	33.576	25.946	208.3	0.540	4.27	66.0	17.9	1.43	18.5	0.00	0.01	0.03	169	211
199	8.90	8.88	33.856	26.242	180.7	0.600	3.50	53.6	25.6	1.73	23.3	0.00	0.00	0.02	200	207
200 ISL	8.89	8.87	33.861	26.247	180.2	0.602	3.48	53.3	25.8	1.74	23.4	0.00	0.00	0.00	201	
229	8.68	8.66	33.962	26.360	170.0	0.653	3.06	46.7	29.9	1.89	25.5	0.00	0.00	0.00	230	206
250 ISL	8.41	8.38	34.013	26.441	162.5	0.688	2.82	42.8	33.6	1.99	27.1	0.00	0.00	0.00	251	
269	8.13	8.10	34.045	26.509	156.3	0.718	2.62	39.5	37.1	2.08	28.6	0.00	0.00	0.00	270	205
300 ISL	7.69	7.66	34.067	26.591	148.8	0.765	2.21	33.0	42.9	2.27	30.9	0.00	0.00	0.00	302	
318	7.43	7.40	34.070	26.631	145.2	0.792	1.99	29.5	46.4	2.38	32.2	0.00	0.00	0.00	320	204
378	6.56	6.53	34.081	26.759	133.4	0.875	1.61	23.4	58.3	2.64	35.5	0.00	0.00	0.00	380	203
400 ISL	6.36	6.32	34.096	26.797	129.9	0.904	1.39	20.1	62.0	2.73	36.5	0.00	0.00	0.00	402	
438	6.09	6.05	34.126	26.856	124.7	0.953	1.03	14.8	67.9	2.86	37.9	0.00	0.00	0.00	441	202
500 ISL	5.65	5.61	34.167	26.943	116.8	1.027	0.72	10.2	77.8	3.01	40.0	0.00	0.00	0.00	503	
513	5.56	5.52	34.176	26.961	115.1	1.042	0.65	9.2	79.9	3.04	40.4	0.00	0.00	0.00	516	201

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE
30 45.1 N	123 19.9 W	06/11/04	2243	UTC	4007 m	360	15 kn	320 04 09	1	1009.8 mb	16.0 c	14.1 c	27m		6/8	SC
DEPTH	TEMP	POT TEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXY	SI03	P04	N03	N02	CHL-A	PHAE0	PRES	SAMP
m	DEG C	DEG C		THETA			ml/L	PCT	uM/L	uM/L	uM/L	uM/L	ug/L	ug/L	db	
0 ISL	19.20	19.20	33.405	23.753	413.6	0.000	5.36	101.3	1.5	0.28	0.1	0.00	0.09	0.03	0	
1	19.20	19.20	33.405	23.753	413.6	0.004	5.36	101.3	1.5	0.28	0.1	0.00	0.09	0.03	1	220
10 ISL	19.18	19.18	33.411	23.763	413.0	0.041	5.37	101.4	1.5	0.28	0.1	0.00	0.09	0.03	10	
16	19.17	19.17	33.416	23.770	412.6	0.066	5.37	101.4	1.5	0.28	0.1	0.00	0.10	0.03	16	219
20 ISL	19.17	19.17	33.417	23.771	412.7	0.083	5.37	101.4	1.5	0.28	0.1	0.00	0.11	0.03	20	
30	19.17	19.16	33.418	23.772	412.9	0.124	5.36	101.2	1.4	0.28	0.1	0.00	0.12	0.02	30	218
46	19.17	19.16	33.417	23.772	413.5	0.190	5.36	101.2	1.4	0.28	0.1	0.00	0.11	0.03	46	217
50 ISL	18.59	18.58	33.381	23.890	402.3	0.206	5.54	103.4	1.4	0.28	0.1	0.00	0.13	0.03	50	
60	17.01	17.00	33.323	24.228	370.3	0.245	5.96	107.9	1.6	0.27	0.1	0.00	0.17	0.05	60	216
75	16.18	16.17	33.408	24.486	346.1	0.299	5.89	105.0	1.8	0.26	0.1	0.00	0.20	0.11	75	215
85	15.98	15.97	33.452	24.566	338.9	0.333	5.84	103.7	1.9	0.25	0.1	0.00	0.21	0.16	85	214
95	15.11	15.10	33.431	24.742	322.2	0.366	5.71	99.6	2.2	0.30	0.1	0.01	0.25	0.27	95	213
100 ISL	14.77	14.76	33.417	24.805	316.3	0.382	5.65	97.9	2.4	0.33	0.3	0.05	0.24	0.26	100	
105	14.46	14.44	33.403	24.861	311.1	0.398	5.59	96.2	2.7	0.37	0.7	0.10	0.22	0.26	105	212
115	13.78	13.76	33.389	24.992	298.8	0.428	5.47	92.8	3.3	0.45	1.9	0.13	0.19	0.29	115	211
125	13.10	13.08	33.397	25.135	285.3	0.457	5.21	84.5	4.2	0.54	3.8	0.04	0.14	0.19	125	210
139	11.60	11.58	33.354	25.389	261.1	0.496	5.21	84.5	7.0	0.78	8.0	0.01	0.11	0.11	140	209
150 ISL	10.71	10.69	33.363	25.556	245.3	0.523	5.04	80.1	9.7	0.97	11.1	0.01	0.07	0.07	151	
164	9.89	9.87	33.418	25.739	228.0	0.557	4.79	74.8	13.3	1.19	14.5	0.00	0.03	0.04	165	208
194	9.13	9.11	33.664	26.055	198.3	0.621	4.17	64.2	20.5	1.50	19.8	0.00	0.01	0.02	195	207
200 ISL	9.04	9.02	33.720	26.113	192.9	0.632	4.02	61.7	22.0	1.56	20.7	0.00	0.00	0.00	201	
229	8.72	8.70	33.946	26.341	171.8	0.685	3.32	50.7	28.9	1.80	24.6	0.00	0.00	0.00	230	206
250 ISL	8.46	8.43	34.008	26.430	163.7	0.720	3.02	45.9	32.7	1.92	26.4	0.00	0.00	0.00	251	
269	8.21	8.18	34.027	26.483	158.9	0.751	2.81	42.4	35.8	2.02	27.8	0.00	0.00	0.00	270	205
300 ISL	7.81	7.78	34.054	26.563	151.5	0.799	2.41	36.1	41.3	2.20	30.2	0.00	0.00	0.00	302	
317	7.58	7.55	34.060	26.602	148.1	0.825	2.21	32.9	44.4	2.29	31.4	0.00	0.00			

RV ROGER REVELLE

CALCOFI CRUISE 0411

STATION 90 120

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE			
30 25.1 N	123 59.9 W	06/11/04	1802 UTC		300 15 kn	310 08 08	1	1012.5 mb	18.0 c	14.9 c	37m	5/8	SC			
DEPTH	TEMP	POT TEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXY	SI03	P04	N03	N02	CHL-A	PHAE0	PRES	SAMP
m	DEG C	DEG C		THETA			ml/L	PCT	um/L	um/L	um/L	um/L	ug/l	ug/l	db	
0 ISL	19.11	19.11	33.302	23.697	418.9	0.000	5.35	100.8	1.4	0.30	0.1	0.00	0.10	0.03	0	
1 A	19.11	19.11	33.302	23.697	419.0	0.004	5.35	100.8	1.4	0.30	0.1	0.00	0.10	0.03	1	224
10 ISL	19.13	19.13	33.303	23.693	419.7	0.042	5.36	101.1	1.4	0.30	0.1	0.00	0.10	0.03	10	
12	19.13	19.13	33.304	23.694	419.7	0.050	5.36	101.1	1.4	0.30	0.1	0.00	0.10	0.03	12	223
20 ISL	19.13	19.13	33.305	23.695	419.8	0.084	5.36	101.1	1.4	0.29	0.1	0.00	0.10	0.03	20	
22 A	19.13	19.13	33.305	23.695	419.9	0.092	5.36	101.1	1.4	0.29	0.1	0.00	0.10	0.03	22	222
30 ISL	19.22	19.21	33.350	23.707	419.1	0.126	5.35	101.1	1.4	0.29	0.1	0.00	0.11	0.03	30	
33	19.26	19.25	33.371	23.713	418.6	0.138	5.35	101.2	1.4	0.29	0.1	0.00	0.11	0.03	33	221
44	19.42	19.41	33.434	23.721	418.3	0.184	5.33	101.1	1.4	0.29	0.1	0.00	0.13	0.04	44	220
50 ISL	18.49	18.48	33.393	23.924	399.1	0.209	5.64	105.1	1.5	0.28	0.1	0.00	0.15	0.06	50	
55 A	17.63	17.62	33.360	24.109	381.5	0.228	5.91	108.3	1.6	0.27	0.1	0.00	0.17	0.07	55	219
64	17.07	17.06	33.357	24.240	369.2	0.262	5.98	108.4	1.6	0.26	0.1	0.00	0.18	0.08	64	218
74 A	16.26	16.25	33.431	24.485	346.2	0.298	5.89	105.1	1.8	0.26	0.1	0.00	0.21	0.16	74	217
75 ISL	16.22	16.21	33.441	24.502	344.6	0.301	5.87	104.7	1.8	0.26	0.1	0.00	0.21	0.17	75	
82	15.89	15.88	33.483	24.609	334.6	0.325	5.75	101.9	1.9	0.27	0.1	0.00	0.21	0.23	82	216
89	15.31	15.30	33.443	24.708	325.3	0.348	5.72	100.2	2.1	0.30	0.0	0.01	0.23	0.23	89	214
90	15.34	15.33	33.439	24.698	326.3	0.352	5.73	100.4	2.1	0.30	0.0	0.01	0.21	0.25	90	215
99 A	14.62	14.61	33.382	24.810	315.8	0.381	5.70	98.4	2.2	0.33	0.1	0.05	0.20	0.25	99	213
100 ISL	14.57	14.56	33.379	24.819	315.0	0.384	5.70	98.3	2.2	0.33	0.1	0.06	0.20	0.25	100	
109	14.10	14.08	33.364	24.906	306.8	0.412	5.62	96.0	2.5	0.40	0.5	0.15	0.16	0.23	109	212
119	13.12	13.10	33.379	25.117	286.8	0.441	5.38	90.1	4.1	0.55	3.8	0.03	0.13	0.20	119	211
125 ISL	12.54	12.52	33.368	25.223	276.9	0.458	5.28	87.3	5.2	0.64	5.5	0.02	0.11	0.18	125	
130	12.11	12.09	33.356	25.295	269.9	0.472	5.22	85.5	6.0	0.72	6.7	0.02	0.10	0.16	130	210
141 A	11.53	11.51	33.342	25.393	260.8	0.501	5.15	83.4	7.2	0.85	8.3	0.01	0.07	0.14	142	209
150 ISL	10.92	10.90	33.345	25.505	250.2	0.524	5.04	80.5	9.0	0.98	10.4	0.01	0.05	0.11	151	
163	10.09	10.07	33.384	25.679	233.7	0.556	4.82	75.6	12.3	1.16	13.8	0.01	0.03	0.06	164	208
195	9.16	9.14	33.653	26.042	199.6	0.625	4.13	63.6	20.3	1.52	19.9	0.01	0.00	0.02	196	207
200 ISL	9.09	9.07	33.696	26.087	195.5	0.635	4.00	61.5	21.4	1.57	20.7	0.01			201	
229	8.82	8.80	33.908	26.296	176.1	0.689	3.29	50.3	27.5	1.81	24.4	0.01			230	206
250 ISL	8.57	8.54	33.986	26.396	166.9	0.725	2.96	45.1	31.5	1.94	26.4	0.01			251	
268	8.33	8.30	34.023	26.462	160.9	0.754	2.72	41.2	34.9	2.05	27.9	0.01			269	205
300 ISL	7.87	7.84	34.064	26.563	151.7	0.804	2.22	33.3	41.6	2.26	30.7	0.01			302	
318	7.61	7.58	34.075	26.609	147.4	0.831	1.96	29.2	45.3	2.37	32.1	0.01			320	204
377	6.84	6.80	34.105	26.741	135.3	0.915	1.42	20.8	55.4	2.64	35.2	0.01			379	203
400 ISL	6.65	6.61	34.125	26.782	131.6	0.945	1.22	17.8	59.4	2.75	36.3	0.01			402	
437	6.40	6.36	34.158	26.841	126.3	0.993	0.92	13.3	65.7	2.90	37.8	0.00			440	202
500 ISL	5.94	5.90	34.201	26.934	117.9	1.070	0.60	8.6	75.3	3.04	39.6	0.00			503	
514	5.84	5.80	34.211	26.955	116.1	1.086	0.53	7.6	77.4	3.07	40.0	0.00			517	201

A) PRIMARY PRODUCTIVITY SAMPLES WERE TAKEN FROM THESE LEVELS.

RV ROGER REVELLE

CALCOFI CRUISE 0411

STATION 91.7 26.4

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE			
33 14.6 N	117 27.9 W	19/11/04	1600 UTC	22 m	100 05 kn	060 01 07	4	1015.4 mb	13.1 c	13.1 c		8/8				
DEPTH	TEMP	POT TEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXY	SI03	P04	N03	N02	CHL-A	PHAE0	PRES	SAMP
m	DEG C	DEG C		THETA			ml/L	PCT	um/L	um/L	um/L	um/L	ug/l	ug/l	db	
0 ISL	16.754	16.754	33.215	24.203	370.7	0.000			1.5	0.26	0.3	0.03	0.28	0.02	0	
1	16.754	16.754	33.215	24.203	370.7	0.004			1.5	0.26	0.3	0.03	0.28	0.02	1	204
5	16.739	16.738	33.208	24.201	371.0	0.019			1.6	0.30	0.3	0.02	0.25	0.04	5	203
10 ISL	16.321	16.319	33.191	24.285	363.2	0.037			1.9	0.31	0.4	0.05	0.29	0.05	10	
11	16.189	16.187	33.187	24.312	360.7	0.041			1.9	0.31	0.4	0.05	0.30	0.05	11	202
16	15.336	15.334	33.169	24.489	343.9	0.058			4.3	0.57	3.5	0.22	0.52	0.17	16	201

RV ROGER REVELLE

CALCOFI CRUISE 0411

STATION 93.4 26.4

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE			
32 57.2 N	117 16.8 W	02/11/04	2306 UTC	20 m	320 09 kn	300 01 04	0	1020.3 mb	19.7 c	13.8 c						
DEPTH	TEMP	POT TEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXY	SI03	P04	N03	N02	CHL-A	PHAE0	PRES	SAMP
m	DEG C	DEG C		THETA			ml/L	PCT	um/L	um/L	um/L	um/L	ug/l	ug/l	db	
0 ISL	18.42	18.42	33.143	23.748	414.0	0.000	5.60	104.1	1.3	0.30	0.1	0.00	0.35	0.14	0	
1	18.42	18.42	33.143	23.748	414.1	0.004	5.60	104.1	1.3	0.30	0.1	0.00	0.35	0.14	1	204
6	18.40	18.40	33.145	23.755	413.6	0.025	5.60	104.0	1.3	0.30	0.1	0.00	0.38	0.13	6	203
11	18.31	18.31	33.137	23.771	412.2	0.045	5.64	104.6	1.5	0.30	0.1	0.00	0.48	0.23	11	202
16	18.17	18.17	33.131	23.801	409.5	0.066	5.65	104.5	1.5	0.31	0.1	0.00	0.65	0.37	16	201

RV ROGER REVELLE

CALCOFI CRUISE 0411

STATION 93 26.7

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE			
32 57.4 N	117 18.3 W	02/11/04	1954 UTC	65 m	260 04 kn	290 01 08	0	1021.6 mb	19.0 c	15.4 c	28m					
DEPTH	TEMP	POT TEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXY	SI03	P04	N03	N02	CHL-A	PHAE0	PRES	SAMP
m	DEG C	DEG C		THETA			ml/L	PCT	um/L	um/L	um/L	um/L	ug/l	ug/l	db	
0 ISL	18.29	18.29	33.202	23.826	406.7	0.000	5.57	103.3	0.9	0.29	0.1	0.00	0.23	0.09	0	
1 A	18.29	18.29	33.202	23.826	406.7	0.004	5.57	103.3	0.9	0.29	0.1	0.00	0.23	0.09	1	209
5	18.22	18.22	33.213	23.851	404.4	0.020	5.57	103.2							5	208
5	18.22	18.22	33.204	23.844	405.1	0.020	5.58	103.4	0.9	0.29	0.1	0.00	0.24	0.09	5	207
9	18.22	18.22	33.203	23.844	405.3	0.036	5.56	103.0	0.9	0.29	0.1	0.00	0.24	0.09	9	206
10 ISL	18.21	18.21	33.203	23.846	405.0	0.041	5.56	103.0	0.9	0.29	0.1	0.00	0.24	0.09	10	
17 A	18.14	18.14	33.201	23.862	403.8	0.069	5.56	102.8	0.9	0.31	0.1	0.00	0.25	0.09	17	205
20 ISL	17.69	17.69	33.200	23.971	393.5	0.081	5.64	103.4	1.0	0.32	0.2	0.01	0.37	0.16	20	
28	16.08	16.08	33.196	24.344	358.1	0.111	5.81	103.2	1.5	0.36	0.5	0.04	0.71	0.37	28	204
30 ISL	15.71	15.71	33.186	24.420	351.0	0.118	5.76	101.6	1.7	0.39	0.8	0.10	0.72	0.38	30	
39 A	14.02	14.01	33.159	24.762	318.5	0.148	5.52	94.0	3.6	0.65	3.8	0.31	0.76	0.44		

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE
32 54.8 N	117 23.7 W	03/11/04	0109	UTC	649 m	330	09 kn	320 02 04	0	1019.7 mb	18.9 c	14.7 c				
DEPTH	TEMP	POT TEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXY	SI03	P04	N03	N02	CHL-A	PHAE0	PRES	SAMP
m	DEG C	DEG C		THETA			mL/L	PCT	uM/L	uM/L	uM/L	uM/L	ug/L	ug/L	db	
0 ISL	18.33	18.33	33.218	23.828	406.5	0.000	5.53	102.7	0.9	0.28	0.1	0.00	0.19	0.05	0	
1	18.33	18.33	33.218	23.828	406.5	0.004	5.53	102.7	0.9	0.28	0.1	0.00	0.19	0.05	1	220
10	18.34	18.34	33.218	23.826	407.0	0.041	5.55	103.0	0.8	0.28	0.1	0.00	0.19	0.06	10	219
20	18.16	18.16	33.212	23.866	403.5	0.081	5.55	102.7	0.8	0.28	0.1	0.00	0.20	0.07	20	218
30	16.99	16.99	33.217	24.151	376.7	0.120	5.96	107.8	1.0	0.30	0.1	0.00	0.43	0.23	30	217
40	14.75	14.74	33.169	24.616	332.5	0.156	6.08	105.2	1.8	0.39	0.5	0.03	0.83	0.63	40	216
50	13.59	13.58	33.182	24.869	308.7	0.188	5.47	92.4	3.6	0.70	5.4	0.32	0.58	0.39	50	215
60	12.54	12.53	33.197	25.088	287.9	0.218	4.98	82.3	6.3	0.95	9.6	0.12	0.53	0.25	60	214
69	11.53	11.52	33.227	25.302	267.7	0.243	4.69	75.9	8.9	1.12	12.4	0.04	0.16	0.20	69	213
75 ISL	11.20	11.19	33.253	25.382	260.2	0.258	4.52	72.6	10.2	1.20	13.6	0.04	0.14	0.17	75	
84	10.91	10.90	33.301	25.471	251.9	0.281	4.28	68.3	12.1	1.31	15.1	0.03	0.10	0.13	84	212
99	10.39	10.38	33.424	25.658	234.4	0.318	3.91	61.8	15.8	1.49	18.1	0.02	0.04	0.08	99	211
100 ISL	10.35	10.34	33.432	25.671	233.2	0.320	3.89	61.4	16.0	1.50	18.3	0.02	0.04	0.08	100	
119	9.86	9.85	33.596	25.882	213.5	0.363	3.50	54.7	19.4	1.66	20.7	0.01	0.01	0.05	120	210
125 ISL	9.89	9.88	33.679	25.942	207.9	0.375	3.29	51.5	21.0	1.73	21.5	0.01	0.01	0.05	126	
139	9.97	9.95	33.845	26.058	197.2	0.404	2.79	43.8	24.5	1.89	23.2	0.01	0.01	0.04	140	209
150 ISL	10.07	10.05	33.944	26.119	191.7	0.425	2.45	38.6	26.4	1.99	24.0	0.01	0.01	0.04	151	
169	10.19	10.17	34.063	26.192	185.3	0.461	2.04	32.2	28.6	2.10	25.0	0.01	0.00	0.05	170	208
199	9.98	9.96	34.134	26.283	177.2	0.515	1.95	30.7	30.3	2.16	26.3	0.01	0.00	0.05	200	207
200 ISL	9.98	9.96	34.136	26.285	177.1	0.517	1.94	30.5	30.4	2.16	26.3	0.01			201	
229	9.78	9.75	34.191	26.362	170.4	0.567	1.70	26.6	33.2	2.27	27.4	0.02			230	206
250 ISL	9.47	9.44	34.200	26.421	165.1	0.603	1.69	26.3	35.0	2.30	28.1	0.02			251	
269	9.14	9.11	34.201	26.475	160.1	0.634	1.69	26.1	36.8	2.33	28.8	0.02			271	205
300 ISL	8.69	8.66	34.215	26.557	152.7	0.682	1.53	23.4	40.6	2.42	30.1	0.01			302	
318	8.44	8.41	34.224	26.603	148.6	0.709	1.40	21.3	43.1	2.49	30.9	0.01			320	204
378	7.72	7.68	34.238	26.722	137.9	0.795	1.02	15.2	52.1	2.72	33.5	0.00			380	203
400 ISL	7.51	7.47	34.246	26.759	134.6	0.825	0.89	13.2	55.0	2.79	34.4	0.00			403	
438	7.20	7.16	34.262	26.816	129.6	0.875	0.69	10.2	59.8	2.90	35.9	0.00			441	202
500 ISL	6.79	6.74	34.287	26.892	122.9	0.954	0.49	7.2	67.1	3.01	37.4	0.00			503	
513	6.70	6.65	34.293	26.909	121.4	0.969	0.45	6.6	68.6	3.03	37.7	0.00			516	201

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE
32 50.8 N	117 31.9 W	03/11/04	0446	UTC	851 m	350	08 kn			1020.0 mb	18.3 c	14.7 c				
DEPTH	TEMP	POT TEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXY	SI03	P04	N03	N02	CHL-A	PHAE0	PRES	SAMP
m	DEG C	DEG C		THETA			mL/L	PCT	uM/L	uM/L	uM/L	uM/L	ug/L	ug/L	db	
0 ISL	18.29	18.29	33.197	23.822	407.1	0.000	5.52	102.4	1.3	0.32	0.2	0.00	0.17	0.06	0	
1	18.29	18.29	33.197	23.822	407.1	0.004	5.52	102.4	1.3	0.32	0.2	0.00	0.17	0.06	1	221
10	18.30	18.30	33.196	23.819	407.7	0.041	5.51	102.2	1.1	0.29	0.1	0.00	0.17	0.06	10	220
20	18.23	18.23	33.194	23.835	406.5	0.081	5.54	102.6	1.1	0.29	0.1	0.00	0.19	0.06	20	219
30	17.44	17.44	33.215	24.043	387.0	0.121	5.75	104.9	1.1	0.30	0.1	0.00	0.38	0.14	30	218
40	15.58	15.57	33.184	24.447	348.7	0.158	6.08	106.9	1.7	0.37	0.3	0.01	1.08	0.71	40	217
45	14.73	14.72	33.159	24.613	332.9	0.175	5.90	102.0	2.1	0.47	1.6	0.12	0.72	0.63	45	216
50	14.27	14.26	33.159	24.711	323.8	0.191	5.80	99.3	2.5	0.53	2.5	0.20	0.75	0.56	50	215
60	13.37	13.36	33.163	24.899	306.1	0.223	5.38	90.4	4.0	0.73	5.6	0.40	0.40	0.34	60	214
70	12.12	12.11	33.199	25.170	280.3	0.252	4.86	79.6	7.1	1.01	10.6	0.06	0.23	0.29	70	213
75 ISL	11.72	11.71	33.220	25.261	271.7	0.266	4.71	76.5	8.3	1.09	11.9	0.05	0.18	0.25	75	
85	11.15	11.14	33.267	25.402	258.5	0.292	4.50	72.2	10.4	1.20	13.5	0.03	0.13	0.18	85	212
99	10.52	10.51	33.353	25.580	241.8	0.328	4.19	66.4	13.5	1.37	16.2	0.02	0.06	0.12	99	211
100 ISL	10.48	10.47	33.357	25.590	240.9	0.330	4.18	66.1	13.7	1.38	16.4	0.02	0.06	0.12	100	
119	9.91	9.90	33.450	25.759	225.1	0.374	3.98	62.2	16.9	1.52	19.0	0.01	0.02	0.06	120	210
125 ISL	9.74	9.73	33.503	25.829	218.5	0.387	3.86	60.1	18.2	1.58	20.0	0.01	0.02	0.05	126	
139	9.41	9.39	33.634	25.986	203.9	0.417	3.56	55.1	21.3	1.70	22.1	0.01	0.01	0.04	140	209
150 ISL	9.26	9.24	33.712	26.071	196.0	0.439	3.41	52.6	23.0	1.76	23.0	0.01	0.01	0.03	151	
169	9.12	9.10	33.820	26.178	186.2	0.475	3.22	49.6	25.4	1.82	24.1	0.01	0.00	0.02	170	208
199	8.95	8.93	33.941	26.301	175.1	0.530	2.93	45.0	28.9	1.93	25.7	0.01	0.00	0.03	200	207
200 ISL	8.96	8.94	33.950	26.306	174.6	0.531	2.89	44.4	29.1	1.94	25.8	0.01			201	
229	9.23	9.20	34.175	26.440	162.7	0.580	1.81	28.0	35.0	2.28	28.3	0.00			230	206
250 ISL	9.06	9.03	34.191	26.480	159.3	0.614	1.73	26.7	37.2	2.35	29.1	0.00			251	
269	8.90	8.87	34.202	26.514	156.3	0.644	1.65	25.3	38.7	2.38	29.5	0.00			271	205
300 ISL	8.64	8.61	34.251	26.594	149.3	0.691	1.28	19.5	42.8	2.53	30.8	0.00			302	
319	8.47	8.44	34.279	26.642	145.0	0.719	1.06	16.1	45.4	2.62	31.6	0.00			321	204
378	7.78	7.74	34.259	26.730	137.2	0.803	0.92	13.8	52.4	2.75	33.8	0.00			380	203
400 ISL	7.49	7.45	34.256	26.770	133.6	0.832	0.83	12.3	55.9	2.81	34.8	0.00			402	
438	7.05	7.01	34.260	26.835	127.6	0.882	0.67	9.9	61.8	2.92	36.3	0.00			441	202
500 ISL	6.74	6.69	34.287	26.899	122.2	0.959	0.48	7.0	67.6	3.03	37.3	0.00			503	
513	6.68	6.63	34.293	26.912	121.2	0.975	0.44	6.4	68.8	3.05	37.8	0.00			516	201

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE		
32 40.8 N	117 52.4 W	03/11/04	0914 UTC	623 m	330 09 kn			1018.6 mb	17.4 C	14.2 C						
DEPTH	TEMP	POT TEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXY	SI03	P04	N03	N02	CHL-A	PHAE0	PRES	SAMP
m	DEG C	DEG C		THETA			ml/L	PCT	uM/L	uM/L	uM/L	uM/L	ug/L	ug/L	db	
0 ISL	18.29	18.29	33.231	23.848	404.6	0.000	5.50	102.0	0.9	0.29	0.1	0.00	0.13	0.04	0	
1	18.29	18.29	33.231	23.848	404.6	0.004	5.50	102.0	0.9	0.29	0.1	0.00	0.13	0.04	1	220
10	18.28	18.28	33.231	23.851	404.6	0.040	5.50	102.0	0.9	0.29	0.1	0.00	0.15	0.03	10	219
20	18.23	18.23	33.233	23.865	403.6	0.081	5.51	102.1	0.9	0.29	0.1	0.00	0.15	0.05	20	218
30	16.59	16.59	33.059	24.122	379.3	0.120	5.95	106.7	1.3	0.34	0.1	0.00	0.28	0.14	30	217
40	15.13	15.12	33.058	24.449	348.5	0.156	5.99	104.3	1.6	0.40	0.3	0.01	0.45	0.29	40	216
50	13.96	13.95	33.065	24.703	324.5	0.190	5.79	98.5	2.4	0.55	1.9	0.10	0.51	0.33	50	215
60	13.24	13.23	33.120	24.891	306.7	0.222	5.43	91.0	3.7	0.71	5.0	0.16	0.36	0.34	60	214
70	12.42	12.41	33.158	25.081	288.8	0.251	5.11	84.2	5.6	0.88	8.3	0.05	0.32	0.28	70	213
75 ISL	12.15	12.14	33.180	25.150	282.4	0.266	4.95	81.1	6.6	0.96	9.6	0.04	0.27	0.26	75	
85	11.69	11.68	33.227	25.272	270.9	0.293	4.66	75.6	8.7	1.11	11.8	0.02	0.17	0.22	85	212
100	10.86	10.85	33.308	25.485	250.9	0.332	4.28	68.3	12.1	1.31	15.3	0.01	0.09	0.14	100	211
119	10.13	10.12	33.481	25.747	226.4	0.378	3.77	59.2	17.1	1.56	19.1	0.00	0.02	0.09	120	210
125 ISL	9.91	9.90	33.514	25.810	220.5	0.391	3.72	58.2	18.2	1.61	20.0	0.00	0.02	0.07	126	
139	9.48	9.46	33.578	25.931	209.1	0.421	3.65	56.6	20.4	1.68	21.6	0.00	0.01	0.03	140	209
150 ISL	9.34	9.32	33.638	26.000	202.7	0.444	3.55	54.9	21.7	1.72	22.4	0.00	0.01	0.03	151	
169	9.22	9.20	33.746	26.104	193.2	0.482	3.33	51.4	23.9	1.79	23.5	0.00	0.00	0.02	170	208
199	8.92	8.90	33.916	26.286	176.5	0.537	2.94	45.1	28.6	1.93	25.6	0.00	0.00	0.03	200	207
200 ISL	8.91	8.89	33.920	26.290	176.1	0.539	2.93	44.9	28.8	1.93	25.7	0.00	0.00	0.03	201	
229	8.63	8.61	34.011	26.406	165.6	0.588	2.59	39.5	33.3	2.06	27.8	0.00	0.00	0.03	230	206
250 ISL	8.42	8.39	34.051	26.470	159.9	0.623	2.38	36.1	36.2	2.15	29.0	0.00	0.00	0.03	251	
269	8.22	8.19	34.076	26.520	155.4	0.652	2.20	33.2	38.9	2.24	29.9	0.00	0.00	0.03	271	205
300 ISL	7.85	7.82	34.114	26.605	147.7	0.699	1.86	27.9	44.0	2.39	31.6	0.00	0.00	0.03	302	
318	7.65	7.62	34.133	26.649	143.7	0.726	1.67	24.9	47.0	2.48	32.5	0.00	0.00	0.03	320	204
377	7.20	7.16	34.180	26.750	134.7	0.808	1.16	17.1	55.6	2.71	34.8	0.00	0.00	0.03	379	203
400 ISL	7.12	7.08	34.208	26.784	131.9	0.838	0.97	14.3	58.0	2.78	35.5	0.00	0.00	0.03	402	
437	7.00	6.96	34.252	26.835	127.5	0.886	0.70	10.3	61.5	2.89	36.4	0.00	0.00	0.03	440	202
500 ISL	6.59	6.54	34.283	26.916	120.5	0.965	0.47	6.8	69.2	3.03	38.1	0.00	0.00	0.03	503	
513	6.51	6.46	34.289	26.931	119.1	0.980	0.42	6.1	70.8	3.06	38.4	0.00	0.00	0.03	516	201

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE		
32 30.8 N	118 12.8 W	03/11/04	1306 UTC	1653 m	330 05 kn			1017.2 mb	18.1 C	13.9 C						
DEPTH	TEMP	POT TEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXY	SI03	P04	N03	N02	CHL-A	PHAE0	PRES	SAMP
m	DEG C	DEG C		THETA			ml/L	PCT	uM/L	uM/L	uM/L	uM/L	ug/L	ug/L	db	
0 ISL	18.54	18.54	33.221	23.778	411.2	0.000	5.45	101.6	0.9	0.29	0.1	0.00	0.18	0.05	0	
1	18.54	18.54	33.221	23.778	411.2	0.004	5.45	101.6	0.9	0.29	0.1	0.00	0.18	0.05	1	220
10 ISL	18.53	18.53	33.220	23.780	411.3	0.041	5.46	101.7	0.8	0.29	0.2	0.00	0.18	0.04	10	
15	18.53	18.53	33.220	23.781	411.5	0.062	5.46	101.7	0.8	0.29	0.2	0.00	0.19	0.04	15	219
20 ISL	18.46	18.46	33.212	23.792	410.6	0.082	5.48	102.0	0.8	0.29	0.2	0.00	0.20	0.05	20	
30	18.33	18.32	33.195	23.812	409.1	0.123	5.59	103.7	0.8	0.29	0.1	0.00	0.21	0.07	30	218
45	14.94	14.93	33.043	24.479	345.7	0.180	6.06	105.1	1.6	0.39	0.2	0.01	0.54	0.32	45	217
50 ISL	14.55	14.54	33.026	24.549	339.2	0.197	6.02	103.6	1.7	0.41	0.6	0.02	0.64	0.38	50	
55	14.26	14.25	33.025	24.609	333.5	0.214	5.99	102.5	2.0	0.46	1.0	0.04	0.69	0.43	55	216
65	13.08	13.07	33.112	24.917	304.4	0.246	5.44	90.9	3.9	0.71	5.1	0.14	0.53	0.45	65	215
75	12.65	12.64	33.157	25.036	293.3	0.276	5.17	85.6	5.2	0.84	7.5	0.10	0.36	0.37	75	214
85	12.08	12.07	33.213	25.189	278.9	0.304	4.79	78.4	7.5	1.04	10.7	0.03	0.23	0.29	85	213
94	11.03	11.02	33.283	25.436	255.5	0.328	4.39	70.3	11.1	1.26	14.5	0.01	0.12	0.19	94	212
100 ISL	10.76	10.75	33.315	25.508	248.7	0.343	4.26	67.8	12.2	1.33	15.6	0.01	0.08	0.17	100	
109	10.60	10.59	33.361	25.572	242.8	0.365	4.14	65.7	13.4	1.38	16.4	0.01	0.06	0.15	109	211
124	10.17	10.16	33.497	25.753	225.9	0.401	3.81	59.9	16.5	1.52	18.7	0.01	0.03	0.07	125	210
125 ISL	10.15	10.14	33.511	25.767	224.6	0.403	3.78	59.4	16.8	1.53	18.9	0.01	0.03	0.07	126	
144	9.88	9.86	33.776	26.020	201.0	0.443	3.14	49.2	22.1	1.77	22.0	0.01	0.01	0.05	145	209
150 ISL	9.76	9.74	33.825	26.078	195.5	0.455	3.03	47.3	23.4	1.82	22.8	0.01	0.01	0.05	151	
169	9.42	9.40	33.935	26.220	182.3	0.491	2.79	43.3	26.7	1.93	24.9	0.00	0.00	0.04	170	208
199	9.27	9.25	34.089	26.365	169.1	0.544	2.32	35.9	31.3	2.10	26.8	0.00	0.00	0.03	200	207
200 ISL	9.25	9.23	34.089	26.369	168.9	0.545	2.32	35.9	31.4	2.10	26.9	0.00	0.00	0.03	201	
228	8.63	8.61	34.071	26.453	161.2	0.592	2.39	36.5	34.9	2.13	28.2	0.00	0.00	0.03	229	206
250 ISL	8.33	8.30	34.080	26.506	156.4	0.627	2.28	34.5	37.6	2.20	29.3	0.00	0.00	0.03	251	
268	8.16	8.13	34.093	26.542	153.2	0.654	2.14	32.3	39.7	2.27	30.1	0.00	0.00	0.03	269	205
300 ISL	7.89	7.86	34.108	26.594	148.7	0.703	1.90	28.5	43.3	2.37	31.5	0.00	0.00	0.03	302	
318	7.73	7.70	34.117	26.625	146.0	0.729	1.75	26.2	45.6	2.43	32.3	0.00	0.00	0.03	320	204
377	6.88	6.84	34.161	26.779	131.7	0.811	1.16	17.0	57.6	2.73	35.7	0.00	0.00	0.03	379	203
400 ISL	6.75	6.71	34.187	26.818	128.4	0.841	0.97	14.2	61.0	2.81	36.6	0.00	0.00	0.03	402	
438	6.64	6.60	34.231	26.867	124.2	0.889	0.71	10.4	65.5	2.92	37.6	0.00	0.00	0.03	441	202
500 ISL	6.46	6.41	34.288	26.937	118.4	0.964	0.45	6.5	71.1	3.05	38.6	0.00	0.00	0.03	503	
513	6.42	6.37	34.300	26.952	117.1	0.980	0.39	5.7	72.3	3.08	38.8	0.00	0.00	0.03	516	201

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE
32 20.8 N	118 33.3 W	03/11/04	1724	UTC	1348 m	290	12 kn	290 01 08	0	1017.6 mb	19.0 c	16.0 c	31m			
DEPTH	TEMP	POT TEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXY	SI03	P04	N03	N02	CHL-A	PHAE0	PRES	SAMP
m	DEG C	DEG C		THETA			ml/L	PCT	um/L	um/L	um/L	um/L	ug/L	ug/L	db	
0 ISL	18.53	18.53	33.218	23.778	411.2	0.000	5.46	101.7	0.8	0.31	0.1	0.00	0.16	0.05	0	
1 A	18.53	18.53	33.218	23.778	411.2	0.004	5.46	101.7	0.8	0.31	0.1	0.00	0.16	0.05	1	224
10	18.44	18.44	33.218	23.801	409.4	0.041	5.47	101.8	0.8	0.30	0.1	0.00	0.17	0.05	10	223
19 A	18.14	18.14	33.193	23.856	404.4	0.078	5.61	103.7	0.9	0.30	0.1	0.00	0.28	0.06	19	222
20 ISL	17.87	17.87	33.180	23.912	399.1	0.082	5.69	104.7	0.9	0.30	0.1	0.00	0.32	0.08	20	
28	15.48	15.48	33.115	24.416	351.3	0.112	6.21	109.0	1.3	0.36	0.1	0.00	0.78	0.37	28	221
30 ISL	15.07	15.07	33.116	24.506	342.7	0.119	6.16	107.2	1.5	0.39	0.4	0.02	0.93	0.47	30	
35	14.32	14.31	33.126	24.674	326.8	0.135	5.96	102.2	2.1	0.48	1.3	0.07	1.15	0.69	35	220
35	14.31	14.30	33.127	24.677	326.5	0.135	5.95	102.0	2.1	0.48	1.4	0.07	1.24	0.68	35	219
45 A	13.81	13.80	33.129	24.783	316.7	0.168	5.82	98.7	2.5	0.54	2.2	0.11	1.09	0.57	45	218
50 ISL	13.62	13.61	33.140	24.830	312.3	0.183	5.67	95.8	3.0	0.61	3.2	0.17	0.77	0.55	50	
54	13.43	13.42	33.153	24.879	307.8	0.196	5.52	92.9	3.6	0.68	4.3	0.21	0.52	0.53	54	217
61 A	12.90	12.89	33.181	25.006	295.8	0.217	5.25	87.4	4.8	0.81	6.6	0.20	0.37	0.40	61	216
72	11.65	11.64	33.229	25.281	269.8	0.248	4.63	75.1	8.6	1.10	11.9	0.03	0.18	0.25	72	215
75 ISL	11.30	11.29	33.247	25.359	262.4	0.256	4.55	73.2	9.6	1.16	13.0	0.03	0.14	0.21	75	
82 A	10.63	10.62	33.293	25.514	247.7	0.274	4.43	70.3	11.8	1.27	15.0	0.02	0.07	0.13	82	214
94	10.31	10.30	33.359	25.620	237.8	0.303	4.21	66.4	13.8	1.38	16.7	0.01	0.05	0.09	94	213
100 ISL	10.17	10.16	33.428	25.698	230.5	0.317	3.99	62.7	15.5	1.50	18.0	0.01	0.04	0.07	100	
107	10.10	10.09	33.526	25.787	222.3	0.333	3.65	57.3	17.7	1.64	19.5	0.01	0.02	0.05	107	212
118 A	10.32	10.31	33.694	25.880	213.7	0.357	2.96	46.8	21.0	1.78	21.5	0.01	0.01	0.05	119	211
125 ISL	10.25	10.24	33.744	25.932	209.0	0.372	2.92	46.1	22.0	1.81	22.1	0.01	0.01	0.04	126	
129	10.20	10.19	33.767	25.958	206.5	0.380	2.89	45.6	22.5	1.83	22.3	0.01	0.01	0.04	130	210
139	10.25	10.23	33.864	26.026	200.4	0.400	2.54	40.1	24.5	1.98	23.2	0.00	0.00	0.04	140	209
150 ISL	10.11	10.09	33.900	26.078	195.6	0.422	2.62	41.3	25.2	1.96	23.6	0.00	0.00	0.04	151	
169	9.71	9.69	33.917	26.158	188.3	0.458	2.77	43.2	25.8	1.92	24.1	0.00	0.00	0.03	170	208
199	9.26	9.24	34.034	26.324	173.1	0.513	2.52	39.0	29.9	2.04	26.2	0.00	0.00	0.03	200	207
200 ISL	9.24	9.22	34.035	26.328	172.7	0.514	2.52	39.0	30.0	2.04	26.3	0.00	0.00		201	
228	8.69	8.67	34.068	26.441	162.3	0.561	2.37	36.2	34.5	2.15	28.2	0.00	0.00		229	206
250 ISL	8.66	8.63	34.169	26.525	154.7	0.596	1.83	27.9	38.7	2.35	29.5	0.00	0.00		251	
269	8.64	8.61	34.242	26.586	149.4	0.625	1.34	20.5	42.1	2.52	30.5	0.00	0.00		271	205
300 ISL	8.38	8.35	34.259	26.640	144.7	0.671	1.23	18.7	44.9	2.57	31.5	0.00	0.00		302	
318	8.16	8.13	34.245	26.662	142.8	0.696	1.16	17.5	46.4	2.60	32.0	0.00	0.00		320	204
377	7.22	7.18	34.211	26.772	132.7	0.778	0.99	14.6	56.0	2.77	35.1	0.00	0.00		379	203
400 ISL	6.93	6.89	34.211	26.812	129.1	0.808	0.89	13.1	59.9	2.85	36.2	0.00	0.00		403	
437	6.57	6.53	34.220	26.868	124.0	0.855	0.73	10.6	65.6	2.96	37.8	0.00	0.00		440	202
500 ISL	6.34	6.29	34.245	26.918	119.9	0.932	0.55	8.0	71.0	3.03	38.9	0.00	0.00		503	
513	6.29	6.24	34.250	26.929	119.1	0.947	0.51	7.4	72.1	3.04	39.1	0.00	0.00		516	201

A) PRIMARY PRODUCTIVITY SAMPLES WERE TAKEN FROM THESE LEVELS.

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE
32 10.8 N	118 53.6 W	03/11/04	2255	UTC	1470 m	320	18 kn	320 06 05	1	1014.7 mb	17.3 c	14.9 c	20m			
DEPTH	TEMP	POT TEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXY	SI03	P04	N03	N02	CHL-A	PHAE0	PRES	SAMP
m	DEG C	DEG C		THETA			ml/L	PCT	um/L	um/L	um/L	um/L	ug/L	ug/L	db	
0 ISL	18.60	18.60	33.169	23.724	416.4	0.000	5.45	101.7	0.9	0.29	0.1	0.00	0.15	0.05	0	
1	18.60	18.60	33.169	23.724	416.4	0.004	5.45	101.7	0.9	0.29	0.1	0.00	0.15	0.05	1	220
10 ISL	18.61	18.61	33.174	23.725	416.6	0.042	5.45	101.7	0.9	0.29	0.1	0.00	0.15	0.05	10	
16	18.61	18.61	33.178	23.729	416.5	0.067	5.45	101.7	0.9	0.29	0.1	0.00	0.15	0.05	16	219
20 ISL	18.52	18.52	33.185	23.757	414.0	0.083	5.48	102.1	0.9	0.29	0.1	0.00	0.16	0.06	20	
30	18.28	18.27	33.202	23.829	407.4	0.124	5.63	104.4	0.9	0.29	0.1	0.00	0.20	0.07	30	218
45	13.30	13.29	32.906	24.713	323.3	0.179	6.00	100.6	2.4	0.47	1.1	0.05	0.56	0.52	45	217
50 ISL	12.79	12.78	32.910	24.817	313.5	0.195	5.86	97.2	3.0	0.56	2.3	0.11	0.50	0.51	50	
55	12.56	12.55	32.936	24.882	307.4	0.211	5.65	93.3	3.6	0.65	3.9	0.15	0.41	0.50	55	216
65	12.06	12.05	33.049	25.065	290.2	0.240	5.26	86.0	5.3	0.83	7.5	0.07	0.27	0.36	65	215
75	11.64	11.63	33.178	25.243	273.4	0.269	4.91	79.6	7.4	0.99	10.4	0.02	0.17	0.29	75	214
85	11.32	11.31	33.237	25.348	263.7	0.295	4.55	73.3	9.6	1.16	13.1	0.02	0.12	0.19	85	213
95	10.68	10.67	33.302	25.512	248.2	0.321	4.36	69.3	12.1	1.29	15.2	0.01	0.07	0.11	95	212
100 ISL	10.45	10.44	33.367	25.603	239.7	0.333	4.16	65.8	13.8	1.38	16.5	0.01	0.05	0.09	100	
111	10.10	10.09	33.508	25.773	223.7	0.359	3.75	58.9	17.2	1.55	19.1	0.01	0.02	0.06	111	211
125	9.87	9.86	33.575	25.864	215.3	0.389	3.60	56.3	19.1	1.63	20.4	0.01	0.01	0.05	126	210
145	9.57	9.55	33.760	26.058	197.2	0.431	3.25	50.5	22.8	1.76	22.7	0.01	0.00	0.04	146	209
150 ISL	9.56	9.54	33.788	26.082	195.1	0.441	3.18	49.4	23.3	1.78	23.0	0.01	0.00	0.04	151	
169	9.52	9.50	33.878	26.159	188.1	0.477	2.94	45.7	25.4	1.87	23.9	0.01	0.00	0.04	170	208
198	9.06	9.04	34.060	26.376	168.0	0.529	2.43	37.4	31.2	2.06	26.6	0.00	0.00	0.03	199	207
200 ISL	9.01	8.99	34.063	26.387	167.0	0.532	2.41	37.1	31.6	2.07	26.8	0.00	0.00		201	
228	8.38	8.36	34.065	26.486	157.9	0.577	2.20	33.4	37.0	2.20	29.6	0.00	0.00		229	206
250 ISL	8.05	8.02	34.076	26.545	152.5	0.612	2.07	31.2	40.5	2.28	30.9	0.00	0.00		251	
268	7.85	7.82	34.088	26.584	149.1	0.639	1.96	29.4	43.0	2.34	31.6	0.00	0.00		269</	

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	
32 0.8 N	119 14.0 W	04/11/04	0526 UTC	1588 m	320	20 kn			1015.4 mb	15.9 c	13.1 c					
DEPTH	TEMP	POT TEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXY	SI03	P04	N03	N02	CHL-A	PHAE0	PRES	SAMP
m	DEG C	DEG C		THETA			ml/L	PCT	uM/L	uM/L	uM/L	uM/L	ug/L	ug/L	db	
0 ISL	18.69	18.69	33.242	23.757	413.2	0.000	5.42	101.3	3.5	0.28	0.1	0.00	0.16	0.05	0	
1	18.69	18.69	33.242	23.757	413.3	0.004	5.42	101.3	3.5	0.28	0.1	0.00	0.16	0.05	1	220
10 ISL	18.69	18.69	33.241	23.757	413.6	0.041	5.42	101.3	3.5	0.28	0.1	0.00	0.15	0.05	10	
16	18.69	18.69	33.241	23.757	413.8	0.066	5.43	101.5	3.4	0.28	0.1	0.00	0.15	0.05	16	219
20 ISL	18.68	18.68	33.240	23.759	413.8	0.083	5.43	101.5	3.4	0.28	0.1	0.00	0.15	0.05	20	
30	18.64	18.63	33.238	23.768	413.3	0.124	5.44	101.6	3.3	0.27	0.1	0.00	0.16	0.06	30	218
45	13.97	13.96	32.851	24.535	340.3	0.181	6.28	106.7	4.0	0.38	0.1	0.00	0.44	0.32	45	217
50 ISL	13.62	13.61	32.906	24.649	329.5	0.197	6.19	104.4	4.3	0.44	0.9	0.04	0.57	0.44	50	
55	13.45	13.44	32.978	24.739	321.1	0.214	5.97	100.4	4.8	0.53	2.3	0.09	0.64	0.52	55	216
65	12.30	12.29	33.024	25.000	296.4	0.244	5.39	88.5	7.3	0.81	7.2	0.18	0.38	0.44	65	215
75	11.67	11.66	33.137	25.206	277.0	0.273	4.88	79.1	9.8	1.08	11.9	0.05	0.23	0.34	75	214
85	10.87	10.86	33.179	25.383	260.3	0.300	4.66	74.3	12.2	1.22	14.2	0.02	0.13	0.20	85	213
95	10.48	10.47	33.254	25.510	248.4	0.325	4.48	70.8	13.9	1.30	15.5	0.02	0.09	0.14	95	212
100 ISL	10.20	10.19	33.322	25.610	238.9	0.338	4.29	67.5	15.8	1.39	16.9	0.02	0.07	0.11	100	
110	9.72	9.71	33.461	25.799	221.0	0.361	3.91	60.9	19.4	1.56	19.8	0.01	0.03	0.06	110	211
124	9.56	9.55	33.558	25.902	211.6	0.391	3.70	57.4	20.7	1.65	21.3	0.01	0.02	0.06	125	210
125 ISL	9.54	9.53	33.570	25.914	210.4	0.393	3.67	57.0	21.0	1.66	21.5	0.01	0.02	0.06	126	
145	9.16	9.14	33.814	26.167	186.8	0.433	3.01	46.4	27.6	1.87	24.9	0.01	0.00	0.04	146	209
150 ISL	9.12	9.10	33.841	26.194	184.2	0.442	2.94	45.3	28.3	1.89	25.2	0.01	0.00	0.04	151	
170	9.01	8.99	33.904	26.262	178.3	0.478	2.79	42.9	30.1	1.95	25.9	0.00	0.00	0.03	171	208
199	8.73	8.71	34.018	26.395	166.1	0.528	2.42	37.0	34.5	2.10	27.8	0.00	0.00	0.04	200	207
200 ISL	8.71	8.69	34.020	26.400	165.6	0.530	2.41	36.8	34.7	2.10	27.9	0.00			201	
228	8.28	8.26	34.067	26.503	156.2	0.575	2.19	33.1	39.5	2.21	29.7	0.00			229	206
250 ISL	8.07	8.04	34.092	26.554	151.7	0.609	2.01	30.3	42.6	2.30	30.6	0.00			251	
268	7.92	7.89	34.108	26.589	148.6	0.636	1.88	28.2	44.9	2.37	31.3	0.00			269	205
300 ISL	7.59	7.56	34.136	26.660	142.3	0.682	1.77	26.4	49.5	2.51	32.8	0.00			302	
318	7.39	7.36	34.149	26.699	138.8	0.708	1.70	25.2	52.2	2.58	33.7	0.00			320	204
378	6.76	6.73	34.168	26.801	129.6	0.788	1.07	15.6	61.4	2.78	36.2	0.00			380	203
400 ISL	6.65	6.61	34.186	26.830	127.1	0.816	0.90	13.1	63.9	2.84	36.8	0.00			402	
437	6.51	6.47	34.224	26.879	122.9	0.863	0.68	9.9	67.8	2.94	37.7	0.01			440	202
500 ISL	6.14	6.10	34.291	26.980	113.9	0.937	0.45	6.5	76.2	3.10	39.3	0.00			503	
513	6.06	6.01	34.305	27.002	112.0	0.952	0.40	5.8	77.9	3.13	39.6	0.00			516	201

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	
31 50.8 N	119 34.3 W	04/11/04	1012 UTC	1882 m	330	17 kn			1016.1 mb	15.0 c	11.3 c					
DEPTH	TEMP	POT TEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXY	SI03	P04	N03	N02	CHL-A	PHAE0	PRES	SAMP
m	DEG C	DEG C		THETA			ml/L	PCT	uM/L	uM/L	uM/L	uM/L	ug/L	ug/L	db	
0 ISL	18.45	18.45	33.273	23.840	405.3	0.000	5.45	101.4	0.8	0.29	0.1	0.00	0.16	0.07	0	
2	18.45	18.45	33.273	23.840	405.3	0.008	5.45	101.4	0.8	0.29	0.1	0.00	0.16	0.07	2	220
10	18.46	18.46	33.275	23.840	405.7	0.041	5.45	101.5	0.8	0.30	0.1	0.00	0.19	0.04	10	219
20	18.46	18.46	33.276	23.841	405.9	0.081	5.46	101.6	0.8	0.28	0.1	0.00	0.18	0.06	20	218
30	18.47	18.46	33.277	23.840	406.4	0.122	5.44	101.3	0.8	0.28	0.1	0.00	0.21	0.04	30	217
40	16.16	16.15	33.114	24.263	366.2	0.160	6.05	107.6	1.4	0.34	0.2	0.01	0.33	0.16	40	216
50	13.67	13.66	33.037	24.740	320.9	0.195	6.01	101.6	2.8	0.56	2.7	0.08	0.54	0.28	50	215
60	12.23	12.22	33.050	25.033	293.1	0.225	5.34	87.6	5.2	0.85	7.8	0.15	0.44	0.36	60	214
70	11.48	11.47	33.098	25.210	276.4	0.254	4.98	80.4	7.4	1.05	11.3	0.03	0.27	0.30	70	213
75 ISL	11.06	11.05	33.160	25.334	264.7	0.267	4.76	76.2	9.3	1.17	13.3	0.02	0.21	0.23	75	
84	10.39	10.38	33.289	25.552	244.1	0.290	4.36	68.8	13.0	1.38	16.6	0.01	0.13	0.12	84	212
99	9.86	9.85	33.444	25.763	224.3	0.325			17.2	1.57	19.8	0.01	0.03	0.07	99	211
100 ISL	9.84	9.83	33.451	25.771	223.5	0.328	3.91	61.0	17.4	1.58	19.9	0.01	0.03	0.07	100	
120	9.53	9.52	33.592	25.933	208.5	0.371	3.49	54.2	20.7	1.74	22.2	0.01	0.01	0.04	121	210
125 ISL	9.44	9.43	33.647	25.991	203.1	0.381	3.36	52.1	21.9	1.78	22.9	0.01	0.01	0.04	126	
139	9.21	9.19	33.800	26.148	188.5	0.409	3.03	46.7	25.4	1.88	24.6	0.00	0.00	0.03	140	209
150 ISL	9.04	9.02	33.877	26.235	180.4	0.429	2.89	44.4	27.5	1.93	25.5	0.00	0.00	0.03	151	
169	8.80	8.78	33.971	26.347	170.1	0.462	2.70	41.3	30.8	2.00	26.8	0.00	0.00	0.03	170	208
199	8.63	8.61	34.096	26.472	158.8	0.512	2.16	33.0	36.3	2.20	28.9	0.00	0.00	0.02	200	207
200 ISL	8.62	8.60	34.098	26.475	158.5	0.513	2.15	32.8	36.5	2.20	29.0	0.00			201	
229	8.24	8.22	34.119	26.550	151.8	0.558	1.88	28.4	40.8	2.33	30.6	0.00			230	206
250 ISL	8.03	8.00	34.150	26.606	146.8	0.589	1.64	24.7	44.4	2.45	31.6	0.00			251	
268	7.87	7.84	34.176	26.650	142.8	0.616	1.44	21.6	47.3	2.54	32.4	0.00			270	205
300 ISL	7.65	7.62	34.194	26.697	138.9	0.661	1.26	18.8	50.5	2.62	33.4	0.00			302	
318	7.53	7.50	34.199	26.718	137.1	0.685	1.18	17.6	52.1	2.66	33.9	0.00			320	204
377	7.07	7.03	34.236	26.813	128.8	0.764	0.79	11.6	59.8	2.84	35.9	0.00			379	203
400 ISL	6.94	6.90	34.246	26.838	126.6	0.793	0.69	10.1	62.2	2.89	36.4	0.00			403	
437	6.75	6.71	34.262	26.877	123.3	0.839	0.57	8.3	65.9	2.96	37.2	0.00			440	202
500 ISL	6.39	6.34	34.297	26.953	116.7	0.915	0.38	5.5	72.9	3.07	38.8	0.00			503	
513	6.32	6.27	34.304	26.968	115.5	0.930	0.34	4.9	74.3	3.09	39.1	0.00			516	201

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE		
31 31.4 N	120 15.8 W	04/11/04	1717 UTC	3942 m	300	09 kn	300 12 11	1	1017.6 mb	17.2 c	12.9 c	32m	4/8	SC		
DEPTH	TEMP	POT TEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXY	SI03	P04	N03	N02	CHL-A	PHAE0	PRES	SAMP
m	DEG C	DEG C		THETA			ml/L	PCT	uM/L	uM/L	uM/L	uM/L	ug/L	ug/L	db	
0 ISL	17.84	17.84	33.172	23.912	398.4	0.000	5.54	101.9	1.0	0.29	0.1	0.00	0.15	0.06	0	
1	17.83	17.83	33.183	23.923	397.4	0.004										1 224
2 A	17.84	17.84	33.172	23.912	398.5	0.008	5.54	101.9	1.0	0.29	0.1	0.00	0.15	0.06	2	223
10 ISL	17.82	17.82	33.171	23.917	398.3	0.040	5.53	101.6	1.0	0.29	0.0	0.00	0.13	0.08	10	
11	17.82	17.82	33.171	23.917	398.3	0.044	5.53	101.6	1.0	0.29	0.0	0.00	0.13	0.08	11	222
19 A	17.82	17.82	33.172	23.918	398.5	0.076	5.53	101.6	0.9	0.29	0.0	0.00	0.20	0.03	19	221
20 ISL	17.82	17.82	33.172	23.918	398.6	0.080	5.53	101.6	0.9	0.29	0.0	0.00	0.20	0.03	20	
28	17.80	17.80	33.170	23.922	398.5	0.112	5.54	101.8	0.9	0.28	0.0	0.00	0.17	0.06	28	220
30 ISL	17.47	17.47	33.143	23.980	392.9	0.119	5.61	102.4	0.9	0.29	0.0	0.00	0.18	0.07	30	
37	15.80	15.79	33.017	24.270	365.5	0.146	5.91	104.3	1.2	0.32	0.0	0.00	0.21	0.14	37	219
47 A	12.81	12.80	32.833	24.754	319.5	0.180	6.16	102.1	2.1	0.41	0.3	0.02	0.43	0.28	47	218
50 ISL	12.42	12.41	32.825	24.823	312.9	0.190	6.09	100.1	2.4	0.45	0.8	0.07	0.41	0.32	50	
56	11.98	11.97	32.831	24.911	304.7	0.208	5.88	95.8	3.0	0.55	2.3	0.14	0.38	0.37	56	217
65 A	11.43	11.42	32.852	25.028	293.6	0.235	5.67	91.3	4.2	0.68	4.8	0.04	0.34	0.31	65	216
75 ISL	10.68	10.67	32.913	25.209	276.5	0.264	5.33	84.5	7.2	0.93	9.2	0.00	0.19	0.25	75	
77	10.54	10.53	32.935	25.250	272.6	0.269	5.26	83.1	7.9	0.98	10.1	0.00	0.16	0.23	77	215
86 A	10.11	10.10	33.112	25.462	252.7	0.293	4.97	77.9	10.7	1.15	13.1	0.00	0.11	0.13	86	214
98	9.45	9.44	33.199	25.638	236.0	0.322	4.58	70.8	15.0	1.41	17.3	0.00	0.05	0.07	98	213
100 ISL	9.44	9.43	33.229	25.664	233.7	0.327	4.53	70.0	15.4	1.43	17.6	0.00	0.04	0.06	100	
109	9.39	9.38	33.346	25.763	224.4	0.347	4.34	67.0	16.8	1.48	18.6	0.00	0.03	0.05	109	212
122 A	9.39	9.38	33.499	25.883	213.3	0.376	4.00	61.8	19.0	1.59	20.3	0.00	0.02	0.05	123	211
125 ISL	9.31	9.30	33.537	25.926	209.3	0.382	4.01	61.9	19.4	1.58	20.4	0.00	0.02	0.05	126	
132	9.11	9.10	33.617	26.020	200.4	0.397	4.04	62.1	20.5	1.57	20.5	0.00	0.01	0.04	133	210
144	9.09	9.07	33.698	26.087	194.3	0.420	3.68	56.6	22.7	1.69	22.2	0.00	0.01	0.03	145	209
150 ISL	9.03	9.01	33.754	26.141	189.3	0.432	3.52	54.1	24.1	1.74	23.1	0.00	0.01	0.03	151	
168	8.78	8.76	33.914	26.305	174.0	0.464	3.07	46.9	28.5	1.89	25.6	0.00	0.00	0.02	169	208
199	8.41	8.39	34.033	26.456	160.1	0.516	2.41	36.6	35.5	2.12	28.9	0.00	0.00	0.03	200	207
200 ISL	8.40	8.38	34.036	26.460	159.8	0.518	2.39	36.3	35.7	2.13	29.0	0.00	0.00		201	
227	8.20	8.18	34.092	26.535	153.2	0.560	1.96	29.6	40.2	2.31	30.7	0.00	0.00		228	206
250 ISL	8.08	8.05	34.133	26.585	148.8	0.595	1.65	24.9	43.5	2.44	31.9	0.00	0.00		251	
268	7.96	7.93	34.156	26.621	145.6	0.621	1.45	21.8	46.0	2.52	32.8	0.00	0.00		269	205
300 ISL	7.52	7.49	34.164	26.692	139.2	0.667	1.24	18.4	51.3	2.64	34.3	0.00	0.00		302	
318	7.22	7.19	34.158	26.729	135.7	0.692	1.17	17.3	54.4	2.69	35.1	0.00	0.00		320	204
378	6.29	6.26	34.117	26.822	127.1	0.771	1.05	15.2	64.9	2.84	38.0	0.00	0.00		380	203
400 ISL	6.13	6.09	34.137	26.859	123.9	0.798	0.91	13.1	68.3	2.90	38.7	0.00	0.00		402	
437	5.96	5.92	34.183	26.917	118.7	0.843	0.65	9.3	73.6	2.99	39.6	0.00	0.00		440	202
500 ISL	5.59	5.55	34.220	26.992	112.1	0.916	0.46	6.5	81.2	3.09	40.8	0.00	0.00		503	
512	5.52	5.48	34.227	27.006	110.8	0.929	0.42	6.0	82.7	3.11	41.0	0.00	0.00		515	201

A) PRIMARY PRODUCTIVITY SAMPLES WERE TAKEN FROM THESE LEVELS.

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE		
31 10.8 N	120 55.2 W	05/11/04	0506 UTC	3836 m	220	09 kn			1016.2 mb	16.4 c	13.0 c					
DEPTH	TEMP	POT TEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXY	SI03	P04	N03	N02	CHL-A	PHAE0	PRES	SAMP
m	DEG C	DEG C		THETA			ml/L	PCT	uM/L	uM/L	uM/L	uM/L	ug/L	ug/L	db	
0 ISL	17.99	17.99	32.996	23.741	414.7	0.000	5.51	101.5	1.2	0.32	0.1	0.00	0.12	0.04	0	
2	17.99	17.99	32.996	23.741	414.8	0.008	5.51	101.5	1.2	0.32	0.1	0.00	0.12	0.04	2	220
10 ISL	17.99	17.99	33.021	23.761	413.2	0.041	5.51	101.5	1.1	0.31	0.1	0.00	0.12	0.04	10	
11	17.99	17.99	33.024	23.763	413.0	0.046	5.51	101.5	1.1	0.31	0.1	0.00	0.12	0.04	11	219
20 ISL	17.95	17.95	33.160	23.877	402.4	0.082	5.52	101.7	1.0	0.29	0.1	0.00	0.14	0.07	20	
21	17.94	17.94	33.176	23.892	401.1	0.086	5.52	101.7	1.0	0.29	0.1	0.00	0.14	0.07	21	218
30 ISL	17.88	17.87	33.249	23.963	394.6	0.122	5.53	101.8	0.8	0.28	0.1	0.00	0.20	0.10	30	
31	17.87	17.86	33.257	23.971	393.8	0.126	5.53	101.8	0.8	0.28	0.1	0.00	0.21	0.10	31	217
40	14.59	14.58	32.931	24.467	346.7	0.159	6.08	104.7	1.7	0.38	0.1	0.01	0.55	0.36	40	216
50 ISL	12.52	12.51	32.779	24.768	318.1	0.193	6.05	99.7	2.6	0.50	1.2	0.11	0.59	0.49	50	
51	12.41	12.40	32.776	24.787	316.4	0.196	6.05	99.4	2.7	0.51	1.3	0.12	0.59	0.49	51	215
61	12.51	12.50	32.945	24.899	306.0	0.227	5.78	95.3	2.9	0.53	2.3	0.10	0.34	0.35	61	214
70	11.70	11.69	32.927	25.037	292.9	0.254	5.63	91.2	3.8	0.65	4.4	0.03	0.23	0.30	70	213
75 ISL	11.34	11.33	32.925	25.101	286.9	0.268	5.52	88.8	4.6	0.74	5.9	0.02	0.20	0.27	75	
86	10.64	10.63	32.986	25.273	270.7	0.299	5.22	82.7	7.5	0.97	9.9	0.01	0.14	0.18	86	212
100 ISL	9.68	9.67	33.273	25.659	234.2	0.334	4.68	72.7	13.6	1.30	15.6	0.01	0.05	0.06	100	
101	9.62	9.61	33.297	25.688	231.5	0.337	4.64	72.0	14.1	1.32	16.0	0.01	0.04	0.05	101	211
119	9.03	9.02	33.603	26.022	200.0	0.375	3.94	60.5	21.4	1.62	21.3	0.00	0.01	0.02	120	210
125 ISL	9.01	9.00	33.682	26.087	193.9	0.387	3.88	59.6	22.4	1.63	21.8	0.00	0.01	0.02	126	
140	8.97	8.95	33.815	26.198	183.7	0.416	3.77	57.9	24.1	1.66	22.3	0.00	0.00	0.02	141	209
150 ISL	8.90	8.88	33.882	26.261	177.8	0.434	3.43	52.6	26.3	1.77	23.8	0.00	0.00	0.02	151	
170	8.68	8.66	33.968	26.363	168.5	0.468	2.79	42.6	30.9	1.98	26.8	0.00	0.00	0.03	171	208
200	8.17	8.15	34.015	26.478	158.0	0.517	2.88	43.5	35.8	2.01	27.8	0.00	0.00	0.02	201	207
230	7.75	7.73	34.038	26.559	150.7	0.564	2.43									



LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE
30 50.8 N	121 35.4 W	05/11/04	1101	UTC	4098 m	240	09 kn			1014.9 mb	17.6 c	14.9 c				
DEPTH	TEMP	POT TEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXY	SI03	P04	N03	N02	CHL-A	PHAE0	PRES	SAMP
m	DEG C	DEG C		THETA			mL/L	PCT	uM/L	uM/L	uM/L	uM/L	ug/L	ug/L	db	
0 ISL	17.18	17.18	33.006	23.943	395.5	0.000	5.62	101.9	1.1	0.33	0.1	0.00	0.17	0.07	0	
1	17.18	17.18	33.006	23.943	395.5	0.004	5.62	101.9	1.1	0.33	0.1	0.00	0.17	0.07	1	220
10 ISL	17.35	17.35	33.109	23.982	392.1	0.039	5.59	101.8	1.0	0.31	0.1	0.00	0.19	0.08	10	
16	17.50	17.50	33.199	24.016	389.1	0.063	5.56	101.6	0.9	0.30	0.1	0.00	0.20	0.09	16	219
20 ISL	17.52	17.52	33.215	24.023	388.5	0.078	5.55	101.4	0.9	0.30	0.1	0.00	0.20	0.09	20	
30	17.57	17.56	33.241	24.031	388.1	0.117	5.54	101.4	0.8	0.29	0.1	0.00	0.21	0.10	30	218
45	17.52	17.51	33.234	24.039	387.9	0.175	5.54	101.3	0.9	0.30	0.1	0.00	0.29	0.12	45	217
50 ISL	15.87	15.86	33.044	24.275	365.4	0.194	5.87	103.7	1.2	0.33	0.1	0.00	0.35	0.16	50	
56	13.74	13.73	32.855	24.586	335.8	0.215	6.21	105.0	1.7	0.39	0.1	0.00	0.44	0.23	56	216
66	12.08	12.07	32.785	24.856	310.1	0.248	6.00	97.9	2.8	0.54	1.6	0.13	0.59	0.47	66	215
75	11.67	11.66	32.794	24.940	302.3	0.275	5.73	92.7	4.0	0.69	4.4	0.23	0.43	0.53	75	214
85	10.94	10.93	32.857	25.120	285.3	0.305	5.43	86.5	6.1	0.89	8.2	0.03	0.21	0.33	85	213
95	10.52	10.51	32.918	25.241	273.9	0.332	5.23	82.6	7.8	1.02	10.4	0.02	0.18	0.28	95	212
100 ISL	10.22	10.21	32.985	25.344	264.1	0.346	5.12	80.4	9.3	1.10	11.9	0.02	0.15	0.23	100	
110	9.70	9.69	33.161	25.568	243.0	0.371	4.79	74.4	12.9	1.29	15.3	0.01	0.08	0.13	110	211
125	9.57	9.56	33.459	25.823	219.1	0.406	3.91	60.7	18.3	1.60	20.2	0.01	0.03	0.05	126	210
145	9.27	9.25	33.692	26.054	197.5	0.448	3.26	50.3	24.0	1.84	24.0	0.01	0.01	0.05	146	209
150 ISL	9.22	9.20	33.749	26.106	192.6	0.457	3.09	47.7	25.3	1.89	24.8	0.01	0.01	0.05	151	
168	9.06	9.04	33.921	26.267	177.7	0.491	2.58	39.7	29.4	2.03	26.9	0.00	0.00	0.04	169	208
199	8.68	8.66	34.020	26.405	165.2	0.544	2.35	35.9	33.5	2.13	28.6	0.01	0.00	0.03	200	207
200 ISL	8.67	8.65	34.022	26.408	164.9	0.545	2.35	35.9	33.6	2.13	28.6	0.01	0.00	0.03	201	
229	8.36	8.34	34.055	26.482	158.3	0.592	2.25	34.1	36.9	2.20	29.6	0.00	0.00	0.00	230	206
250 ISL	8.13	8.10	34.095	26.548	152.3	0.625	1.80	27.1	45.0	2.42	32.3	0.00	0.00	0.00	251	
270	7.87	7.84	34.127	26.612	146.5	0.655	1.36	20.4	52.8	2.63	34.8	0.00	0.00	0.00	271	205
300 ISL	7.32	7.29	34.128	26.692	139.1	0.698	1.30	19.2	54.4	2.66	35.2	0.00	0.00	0.00	302	
318	7.00	6.97	34.123	26.732	135.3	0.722	1.26	18.5	55.3	2.68	35.5	0.00	0.00	0.00	320	204
377	6.61	6.58	34.157	26.812	128.4	0.800	0.95	13.8	62.7	2.84	37.4	0.00	0.00	0.00	379	203
400 ISL	6.39	6.35	34.172	26.853	124.7	0.829	0.82	11.9	66.5	2.91	38.2	0.00	0.00	0.00	402	
438	6.01	5.97	34.196	26.921	118.4	0.875	0.62	8.9	73.1	3.01	39.5	0.00	0.00	0.00	441	202
500 ISL	5.56	5.52	34.227	27.002	111.2	0.947	0.43	6.1	82.7	3.14	41.1	0.00	0.00	0.00	503	
512	5.47	5.43	34.233	27.017	109.7	0.960	0.39	5.5	84.6	3.16	41.4	0.00	0.00	0.00	515	201

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE
30 29.9 N	122 16.1 W	05/11/04	1733	UTC	4163 m	240	13 kn	260 06 07	1	1015.8 mb	18.1 c	15.0 c	28m		6/8	sc
DEPTH	TEMP	POT TEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXY	SI03	P04	N03	N02	CHL-A	PHAE0	PRES	SAMP
m	DEG C	DEG C		THETA			mL/L	PCT	uM/L	uM/L	uM/L	uM/L	ug/L	ug/L	db	
0 ISL	18.50	18.50	33.000	23.619	426.4	0.000	5.46	101.6	1.2	0.31	0.1	0.00	0.13	0.04	0	
1	18.50	18.50	33.000	23.619	426.4	0.004	5.46	101.6	1.2	0.31	0.1	0.00	0.13	0.04	1	224
2 A	18.50	18.50	33.000	23.619	426.4	0.009	5.46	101.6	1.2	0.31	0.1	0.00	0.13	0.04	2	223
10 ISL	18.48	18.48	32.998	23.623	426.4	0.043	5.46	101.5	1.2	0.31	0.1	0.00	0.13	0.03	10	
17 A	18.46	18.46	32.995	23.626	426.3	0.072	5.46	101.5	1.2	0.32	0.0	0.00	0.14	0.03	17	222
20 ISL	18.45	18.45	32.993	23.627	426.3	0.085	5.46	101.4	1.2	0.32	0.0	0.00	0.14	0.03	20	
30 ISL	18.42	18.41	32.983	23.627	426.7	0.128	5.47	101.6	1.3	0.32	0.0	0.00	0.14	0.04	30	
31	18.42	18.41	32.982	23.627	426.8	0.132	5.47	101.6	1.3	0.32	0.0	0.00	0.14	0.04	31	221
31	18.40	18.39	32.974	23.625	426.9	0.132	5.47	101.6	1.3	0.32	0.0	0.00	0.14	0.04	31	220
41 A	18.36	18.35	32.964	23.628	427.0	0.175	5.47	101.4	1.3	0.32	0.0	0.00	0.14	0.05	41	219
50 ISL	18.05	18.04	32.958	23.700	420.4	0.213	5.51	101.6	1.3	0.33	0.0	0.00	0.17	0.06	50	
56 A	17.83	17.82	32.955	23.751	415.7	0.238	5.54	101.7	1.3	0.33	0.0	0.00	0.19	0.07	56	218
66	16.99	16.98	33.474	24.349	359.0	0.277	6.03	109.2	1.8	0.26	0.1	0.00	0.22	0.09	66	217
75 ISL	16.40	16.39	33.506	24.511	343.8	0.308	5.99	107.3	1.8	0.27	0.1	0.00	0.21	0.11	75	
76 A	16.33	16.32	33.495	24.519	343.1	0.312	5.98	106.9	1.8	0.27	0.1	0.00	0.21	0.11	76	216
86	15.46	15.45	33.448	24.679	328.1	0.345	5.92	104.0	2.0	0.27	0.1	0.00	0.21	0.17	86	215
97	14.82	14.81	33.455	24.824	314.5	0.381	5.80	100.6	2.2	0.30	0.1	0.01	0.21	0.25	97	214
100 ISL	14.60	14.59	33.431	24.852	311.8	0.390	5.79	100.0	2.3	0.31	0.2	0.02	0.23	0.25	100	
101	14.53	14.52	33.424	24.862	310.9	0.393	5.78	99.7	2.3	0.31	0.2	0.02	0.24	0.25	101	213
108 A	14.06	14.04	33.458	24.987	299.1	0.415	5.68	97.0	2.6	0.34	0.5	0.07	0.25	0.22	108	212
116	13.16	13.14	33.373	25.105	288.0	0.438	5.45	91.3	3.8	0.53	3.2	0.10	0.14	0.22	116	211
125	11.95	11.93	33.266	25.255	273.6	0.463	5.29	86.3	5.5	0.72	6.3	0.03	0.15	0.21	125	210
140	10.75	10.73	33.306	25.504	250.0	0.503	4.98	79.2	9.2	1.02	11.2	0.01	0.08	0.13	141	209
150 ISL	10.15	10.13	33.371	25.658	235.4	0.527	4.79	75.2	11.9	1.17	13.8	0.01	0.05	0.08	151	
165	9.51	9.49	33.497	25.863	216.1	0.561	4.48	69.4	16.0	1.37	17.1	0.01	0.02	0.03	166	208
194	9.07	9.05	33.771	26.148	189.5	0.620	3.60	55.4	23.6	1.71	22.6	0.00	0.00	0.02	195	207
200 ISL	9.01	8.99	33.820	26.196	185.0	0.631	3.40	52.2	25.2	1.78	23.6	0.00	0.00	0.00	201	
230	8.67	8.65	34.000	26.391	167.1	0.684	2.62	40.0	32.4	2.05	27.4	0.00	0.00	0.00	231	206
250 ISL	8.33	8.30	34.034	26.470	159.8	0.716	2.60	39.4	35.7	2.10	28.5	0.00	0.00	0.00	251	
269	7.99	7.96	34.039	26.525	154.7	0.746	2.58	38.8	38.5	2.13	29.2	0.00	0.00	0.00	270	205
300 ISL	7.53	7.50	34.054	26.604	147.5	0.793	2.22	33.0	44.1	2.30	31.3	0.00	0.00	0.00	302	
318	7.30	7.27	34.061	26.642	144.1	0.819	1.96	29.0	47.5	2.42	32.6	0.00	0.00	0.00	320	204
379	6.70	6.67	34.102	26.757	133.7	0.904	1.32	19.3	58.1	2.71	36.2	0.00	0.00	0.00	381	203
400 ISL	6.51	6.47	34.116	26.793	130.4	0.932	1.15	16.7	61.8	2.79	37.1	0.00	0.00	0.00	402	
437	6.20	6.16	34.140	26.853	125.0	0.979	0.90	13.0	68.0	2.91	38.4	0.00	0.00	0.00	440	202
500 ISL	5.74	5.70	34.178	26.941	117.1	1.055	0.62	8.8	77.2	3.05	40.2	0.00	0.00	0.00	503	

A) PRIMARY PRODUCTIVITY SAMPLES WERE TAKEN FROM THESE LEVELS.

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	
30 10.8 N	122 55.4 W	05/11/04	2306 UTC	3661 m	270	10 kn	260 08 07	1	1013.5 mb	18.0 c	14.7 c	35m		5/8	SC	
DEPTH	TEMP	POT TEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXYPCT	SI03	P04	N03	N02	CHL-A	PHAE0	PRES	SAMP
m	DEG C	DEG C		THETA			mL/L		uM/L	uM/L	uM/L	uM/L	ug/L	ug/L	db	
0 ISL	19.33	19.33	33.225	23.582	429.9	0.000	5.36	101.4	1.4	0.30	0.1	0.00	0.12	0.04	0	
2	19.33	19.33	33.225	23.583	430.0	0.009	5.36	101.4	1.4	0.30	0.1	0.00	0.12	0.04	2	220
10 ISL	19.33	19.33	33.225	23.583	430.2	0.043	5.36	101.4	1.4	0.30	0.1	0.00	0.13	0.04	10	
16	19.33	19.33	33.225	23.583	430.4	0.069	5.36	101.4	1.4	0.30	0.1	0.00	0.13	0.04	16	219
20 ISL	19.33	19.33	33.225	23.583	430.5	0.086	5.36	101.4	1.4	0.30	0.1	0.00	0.13	0.04	20	
30	19.32	19.31	33.225	23.586	430.6	0.129	5.36	101.4	1.4	0.29	0.0	0.00	0.13	0.05	30	218
45	19.32	19.31	33.228	23.589	430.9	0.194	5.36	101.4	1.4	0.30	0.1	0.00	0.15	0.04	45	217
50 ISL	18.62	18.61	33.202	23.746	416.0	0.215	5.60	104.5	1.5	0.29	0.1	0.00	0.17	0.06	50	
60	16.97	16.96	33.162	24.114	381.1	0.255	6.06	109.5	1.7	0.28	0.1	0.00	0.20	0.11	60	216
74	15.52	15.51	33.157	24.441	350.3	0.306	5.99	105.2	1.7	0.31	0.1	0.00	0.21	0.18	74	215
75 ISL	15.46	15.45	33.157	24.454	349.1	0.309	5.99	105.1	1.7	0.31	0.1	0.00	0.21	0.19	75	
85	14.94	14.93	33.158	24.569	338.4	0.344	5.96	103.5	1.9	0.31	0.1	0.00	0.25	0.27	85	214
95	14.11	14.10	33.168	24.752	321.1	0.377	5.80	99.0	2.2	0.37	0.3	0.04	0.27	0.23	95	213
100 ISL	13.92	13.91	33.178	24.800	316.7	0.393	5.76	97.9	2.4	0.38	0.5	0.07	0.24	0.23	100	
105	13.74	13.73	33.185	24.842	312.7	0.408	5.71	96.7	2.6	0.40	0.6	0.10	0.20	0.23	105	212
114	13.13	13.11	33.182	24.963	301.4	0.436	5.49	91.8	3.5	0.55	3.0	0.17	0.17	0.24	114	211
124	12.17	12.15	33.160	25.132	285.3	0.465	5.21	85.4	5.4	0.78	7.0	0.02	0.14	0.20	124	210
125 ISL	12.07	12.05	33.164	25.154	283.3	0.468	5.19	84.9	5.6	0.80	7.3	0.02	0.14	0.19	125	
139	10.78	10.76	33.251	25.456	254.6	0.506	4.98	79.3	9.1	1.00	11.2	0.01	0.07	0.10	140	209
150 ISL	10.21	10.19	33.300	25.593	241.7	0.533	4.84	76.1	11.3	1.13	13.4	0.00	0.05	0.06	151	
164	9.77	9.75	33.377	25.727	229.1	0.566	4.63	72.1	14.1	1.29	15.8	0.00	0.03	0.04	165	208
194	9.08	9.06	33.733	26.117	192.5	0.629	3.76	57.8	22.6	1.64	21.7	0.00	0.00	0.02	195	207
200 ISL	9.00	8.98	33.786	26.171	187.4	0.641	3.61	55.4	24.0	1.69	22.6	0.00	0.00	0.02	201	
229	8.67	8.65	33.966	26.364	169.6	0.693	3.00	45.8	30.3	1.91	25.9	0.00	0.00	0.00	230	206
250 ISL	8.40	8.37	34.024	26.451	161.6	0.727	2.71	41.1	34.5	2.03	27.7	0.00	0.00	0.00	251	
269	8.15	8.12	34.047	26.507	156.5	0.758	2.49	37.6	38.0	2.13	29.1	0.00	0.00	0.00	270	205
300 ISL	7.71	7.68	34.071	26.591	148.8	0.805	2.12	31.7	43.5	2.30	31.2	0.00	0.00	0.00	302	
318	7.45	7.42	34.078	26.634	144.9	0.831	1.93	28.7	46.6	2.40	32.3	0.00	0.00	0.00	320	204
378	6.70	6.67	34.105	26.759	133.5	0.915	1.40	20.4	58.1	2.68	35.8	0.00	0.00	0.00	380	203
400 ISL	6.45	6.41	34.117	26.802	129.5	0.944	1.22	17.7	62.3	2.77	36.8	0.00	0.00	0.00	402	
437	6.07	6.03	34.138	26.868	123.5	0.991	0.95	13.7	69.1	2.89	38.2	0.00	0.00	0.00	440	202
500 ISL	5.64	5.60	34.177	26.952	115.9	1.066	0.68	9.7	78.4	3.03	40.1	0.00	0.00	0.00	503	
512	5.56	5.52	34.184	26.968	114.5	1.080	0.63	8.9	80.2	3.06	40.5	0.00	0.00	0.00	515	201

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	
29 50.8 N	123 35.2 W	06/11/04	0916 UTC		280	15 kn			1014.5 mb	17.2 c	13.9 c					
DEPTH	TEMP	POT TEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXYPCT	SI03	P04	N03	N02	CHL-A	PHAE0	PRES	SAMP
m	DEG C	DEG C		THETA			mL/L		uM/L	uM/L	uM/L	uM/L	ug/L	ug/L	db	
0 ISL	19.38	19.38	33.233	23.576	430.5	0.000	5.34	101.1	1.3	0.30	0.2	0.00	0.11	0.04	0	
2	19.38	19.38	33.233	23.576	430.6	0.009	5.34	101.1	1.3	0.30	0.2	0.00	0.11	0.04	2	220
10 ISL	19.38	19.38	33.234	23.577	430.8	0.043	5.34	101.1	1.2	0.30	0.1	0.00	0.11	0.04	10	
16	19.38	19.38	33.235	23.578	430.9	0.069	5.34	101.1	1.2	0.30	0.1	0.00	0.11	0.04	16	219
20 ISL	19.38	19.38	33.235	23.578	431.0	0.086	5.34	101.1	1.2	0.30	0.1	0.00	0.11	0.04	20	
30 ISL	19.38	19.37	33.234	23.578	431.4	0.129	5.33	100.9	1.2	0.30	0.1	0.00	0.11	0.04	30	
31	19.38	19.37	33.234	23.578	431.4	0.134	5.33	100.9	1.2	0.30	0.1	0.00	0.11	0.04	31	218
46	19.37	19.36	33.232	23.580	431.8	0.198	5.35	101.3	1.2	0.30	0.1	0.00	0.12	0.04	46	217
50 ISL	18.51	18.50	33.175	23.753	415.4	0.215	5.52	102.8	1.3	0.30	0.1	0.00	0.15	0.06	50	
61	15.96	15.95	33.066	24.272	366.0	0.258	5.97	105.7	1.5	0.32	0.1	0.00	0.22	0.15	61	216
75 ISL	14.99	14.98	33.086	24.502	344.4	0.308	5.95	103.3	1.7	0.33	0.1	0.00	0.20	0.28	75	
76	14.97	14.96	33.090	24.509	343.8	0.311	5.95	103.3	1.7	0.33	0.1	0.00	0.20	0.29	76	215
85	14.52	14.51	33.136	24.641	331.4	0.342	5.85	100.7	1.9	0.34	0.1	0.01	0.23	0.28	85	214
96	13.93	13.92	33.110	24.745	321.8	0.378	5.77	98.1	2.3	0.40	0.6	0.08	0.21	0.26	96	213
100 ISL	13.67	13.66	33.130	24.814	315.3	0.390	5.66	95.7	2.6	0.45	1.5	0.12	0.19	0.26	100	
105	13.28	13.27	33.158	24.914	305.8	0.406	5.50	92.3	3.2	0.54	3.0	0.14	0.16	0.25	105	212
115	12.27	12.26	33.157	25.110	287.2	0.436	5.20	85.4	5.1	0.77	6.9	0.01	0.11	0.21	115	211
125	11.33	11.31	33.179	25.302	269.0	0.463	4.89	78.7	7.9	1.00	10.8	0.01	0.08	0.14	125	210
138	10.35	10.33	33.290	25.561	244.5	0.497	4.70	74.1	11.8	1.19	14.1	0.01	0.04	0.08	139	209
150 ISL	9.77	9.75	33.379	25.728	228.7	0.525	4.51	70.3	14.8	1.33	16.5	0.01	0.02	0.05	151	
164	9.36	9.34	33.484	25.877	214.7	0.556	4.27	66.0	17.8	1.46	18.8	0.00	0.01	0.03	165	208
194	8.99	8.97	33.774	26.163	188.0	0.617	3.68	56.5	23.9	1.67	22.5	0.00	0.00	0.02	195	207
200 ISL	8.92	8.90	33.819	26.210	183.7	0.628	3.56	54.6	25.2	1.71	23.2	0.00	0.00	0.00	201	
230	8.57	8.55	33.980	26.391	167.0	0.680	3.01	45.8	31.5	1.91	26.2	0.00	0.00	0.00	231	206
250 ISL	8.30	8.27	34.022	26.465	160.2	0.713	2.75	41.6	35.0	2.02	27.7	0.00	0.00	0.00	251	
269	8.04	8.01	34.037	26.516	155.6	0.743	2.55	38.4	38.2	2.12	29.0	0.00	0.00	0.00	270	205
300 ISL	7.64	7.61	34.053	26.587	149.2	0.790	2.25	33.5	43.5	2.27	31.0	0.00	0.00	0.00	302	
318	7.42	7.39	34.058	26.623	146.0	0.817	2.08	30.9	46.5	2.35	32.1	0.00	0.00	0.00	320	204

## PRIMARY PRODUCTIVITY CASTS

RV ROGER REVELLE

CALCOFI CRUISE 0411

STATION 77 49

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	FOREL	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE							
35 5.3 N	120 46.6 W	18/11/04	1910 UTC	13 m		1148 - 1730 PST	1148 PST	1722 PST	410.2 mg C/m <sup>2</sup>							
DEPTH	TEMP	SALINITY	SIGMA	OXYGEN	OXY	SI03	P04	N03	N02	CHL-A	PHAE0	LIGHT	UPTAKE (mg C/m <sup>3</sup> )			
m	DEG C		THETA	ml/L	PCT	uM/L	uM/L	uM/L	uM/L	ug/L	ug/L	PCT	1	2	MEAN	DARK
1	14.82	33.276	24.683	5.81	100.7	4.6	0.40	3.1	0.17	0.25	0.02	89. A	14.5	11.1	12.8	0.18
5	14.60	33.274	24.728	5.85	100.9	4.6	0.40	3.2	0.17	0.40	0.04					
8	14.55	33.274	24.739	5.87	101.2	4.6	0.41	3.2	0.17	0.41	0.06	39.	18.0	39.2	28.6	0.62
19	14.51	33.274	24.748	5.74	98.9	4.6	0.42	3.3	0.18	0.11	0.00	11.	6.8	10.7	8.8	0.23
26	14.41	33.279	24.773	5.57	95.7	5.1	0.46	3.9	0.19	0.06	0.01	4.6	1.5	1.4	1.5	0.09
35	13.66	33.310	24.953	5.04	85.3	8.1	0.71	7.1	0.26	0.05	0.00	1.6	0.27	0.37	0.32	0.12
42	13.38	33.326	25.022	4.86	81.8	9.1	0.78	8.0	0.28	0.04	0.00					
50	12.50	33.353	25.217	4.31	71.2	11.4	1.09	11.8	0.28	0.00	0.00	0.27	0.02	0.02	0.02	0.04

RV ROGER REVELLE

CALCOFI CRUISE 0411

STATION 77 80

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	FOREL	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE							
34 3.3 N	122 56.5 W	17/11/04	1711 UTC	14 m		1159 - 1735 PST	1157 PST	1731 PST	152.4 mg C/m <sup>2</sup>							
DEPTH	TEMP	SALINITY	SIGMA	OXYGEN	OXY	SI03	P04	N03	N02	CHL-A	PHAE0	LIGHT	UPTAKE (mg C/m <sup>3</sup> )			
m	DEG C		THETA	ml/L	PCT	uM/L	uM/L	uM/L	uM/L	ug/L	ug/L	PCT	1	2	MEAN	DARK
1	16.11	33.334	24.442	5.74	102.1	1.6	0.26	0.1	0.00	0.67	0.21	90. A	1.3	1.8	1.5	0.08
8	16.07	33.334	24.452	5.74	102.0	1.6	0.25	0.1	0.00	0.74	0.18	42.	5.3	5.1	5.2	0.08
14	16.06	33.334	24.454	5.75	102.2	1.6	0.25	0.1	0.00	0.63	0.27					
21	15.61	33.304	24.532	5.69	100.2	2.1	0.30	0.6	0.04	1.21	0.45	10.	5.7	5.9	5.8	0.04
28	15.21	33.299	24.617	5.71	99.8	2.8	0.34	0.9	0.08	1.26	0.45	4.6	3.6	3.5	3.5	0.04
37	14.07	33.335	24.888	4.95	84.5	6.1	0.75	7.2	0.25	0.57	0.31	1.7	0.63	0.52	0.57	0.04
46	12.40	33.344	25.229	4.30	70.9	10.3	1.17	14.0	0.03	0.31	0.24					
54	11.10	33.355	25.478	4.08	65.4	13.2	1.38	17.4	0.02	0.20	0.18	0.27	0.03	0.04	0.03	0.02

RV ROGER REVELLE

CALCOFI CRUISE 0411

STATION 80 60

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	FOREL	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE							
34 9.0 N	121 9.0 W	15/11/04	1901 UTC	13 m		1150 - 1735 PST	1150 PST	1733 PST	157.0 mg C/m <sup>2</sup>							
DEPTH	TEMP	SALINITY	SIGMA	OXYGEN	OXY	SI03	P04	N03	N02	CHL-A	PHAE0	LIGHT	UPTAKE (mg C/m <sup>3</sup> )			
m	DEG C		THETA	ml/L	PCT	uM/L	uM/L	uM/L	uM/L	ug/L	ug/L	PCT	1	2	MEAN	DARK
1	16.02	33.277	24.419	5.75	102.1	0.5	0.28	0.1	0.01	0.71	0.25	89. A	6.1	6.0	6.0	0.09
8	15.93	33.275	24.438	5.77	102.3	0.4	0.28	0.1	0.00	0.73	0.36	39.	6.8	6.5	6.7	0.09
19	15.81	33.280	24.469	5.79	102.4	0.2	0.27	0.1	0.00	1.22	0.45	11.	4.5	4.9	4.7	0.07
26	15.70	33.293	24.504	5.81	102.5	0.0	0.27	0.1	0.00	1.68	0.67	4.6	2.3	2.3	2.3	0.08
35	15.62	33.282	24.514	5.77	101.6	0.1	0.29	0.1	0.01	1.64	0.90	1.6	0.73	0.75	0.74	0.06
42	15.01	33.238	24.614	5.68	98.8	0.9	0.38	1.2	0.06	1.40	0.65					
50	11.41	32.960	25.115	5.24	84.4	6.4	0.90	9.1	0.03	0.22	0.37	0.27	0.02	0.03	0.02	0.03

RV ROGER REVELLE

CALCOFI CRUISE 0411

STATION 80 90

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	FOREL	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE							
33 9.0 N	123 13.3 W	16/11/04	1701 UTC	30 m		1158 - 1740 PST	1158 PST	1742 PST	85.6 mg C/m <sup>2</sup>							
DEPTH	TEMP	SALINITY	SIGMA	OXYGEN	OXY	SI03	P04	N03	N02	CHL-A	PHAE0	LIGHT	UPTAKE (mg C/m <sup>3</sup> )			
m	DEG C		THETA	ml/L	PCT	uM/L	uM/L	uM/L	uM/L	ug/L	ug/L	PCT	1	2	MEAN	DARK
2	16.58	32.797	23.923	5.66	101.3	1.3	0.32	0.1	0.00	0.15	0.06	90. A	0.94	0.68	0.81	0.03
10	16.57	32.797	23.925	5.66	101.3	1.2	0.32	0.1	0.00	0.17	0.07					
19	16.57	32.821	23.944	5.66	101.3	1.2	0.32	0.1	0.00	0.17	0.06	38.	1.3	1.4	1.3	0.04
27	16.53	32.820	23.953	5.67	101.4	1.2	0.32	0.1	0.00	0.19	0.09					
36	15.91	32.895	24.151	5.82	102.9	1.4	0.33	0.1	0.00	0.35	0.24					
40	15.24	32.848	24.263	5.95	103.7	1.5	0.35	0.1	0.01	0.51	0.24					
44	13.35	32.733	24.570	6.20	103.9	2.1	0.43	0.6	0.07	0.52	0.42	11.	1.8	1.8	1.8	0.02
52	12.62	32.760	24.734	6.02	99.4	2.7	0.52	1.5	0.20	0.40	0.42					
60	13.02	32.951	24.804			4.0	0.62	3.7	0.32	0.31	0.28	4.6	0.64	0.58	0.61	0.02
70	11.98	33.071	25.097	5.25	85.7	7.2	0.89	9.2	0.02	0.19	0.16					
80	11.32	33.221	25.335	4.70	75.7	11.5	1.20	14.1	0.02	0.11	0.16	1.7	0.07	0.06	0.07	0.02
92	9.86	33.212	25.581	4.62	72.1	13.3	1.30	16.0	0.01	0.05	0.08					
104	9.19	33.266	25.733	4.58	70.4	15.9	1.39	17.6	0.01	0.02	0.04					
115	8.80	33.404	25.902	4.26	65.0	20.1	1.55	20.5	0.01	0.01	0.02	0.28	0.00	0.00	0.00	0.01

## PRIMARY PRODUCTIVITY CASTS

RV ROGER REVELLE

CALCOFI CRUISE 0411

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	14/11/04	1833 UTC	14 m		1133 - 1735 PST	1143 PST	1725 PST	240.1 mg C/m2

DEPTH m	TEMP DEG C	SALINITY	SIGMA THETA	OXYGEN mL/L	OXY PCT	SI03 uM/L	P04 uM/L	N03 uM/L	N02 uM/L	CHL-A ug/L	PHAE0 ug/L	LIGHT PCT	UPTAKE (mg C/m3)			
													1	2	MEAN	DARK
1	16.50	33.192	24.244	5.76	103.2	1.4	0.28	0.3	0.03	1.35	0.40	90. A	6.6	6.5	6.5	0.09
8	15.75	33.189	24.412	5.60	98.8	2.4	0.45	1.7	0.27	1.89	0.38	42.	13.6	13.7	13.6	0.10
14	15.21	33.183	24.527	5.49	95.8	2.9	0.51	2.6	0.50	1.69	0.45					
21	15.06	33.182	24.559	5.45	94.9	3.1	0.53	2.9	0.55	1.31	0.49	10.	6.7	6.6	6.6	0.08
29	14.86	33.183	24.603	5.36	92.9	3.5	0.59	3.5	0.60	1.33	0.16	4.2	2.4	0.31	1.4	0.06

RV ROGER REVELLE

CALCOFI CRUISE 0411

STATION 83 70

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	FOREL	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE
33 14.7 N	121 26.6 W	13/11/04	1757 UTC	12 m		1157 - 1730 PST	1150 PST	1727 PST	113.9 mg C/m2

DEPTH m	TEMP DEG C	SALINITY	SIGMA THETA	OXYGEN mL/L	OXY PCT	SI03 uM/L	P04 uM/L	N03 uM/L	N02 uM/L	CHL-A ug/L	PHAE0 ug/L	LIGHT PCT	UPTAKE (mg C/m3)			
													1	2	MEAN	DARK
2	16.10	33.312	24.428	5.75	102.3	0.0	0.28	0.1	0.00	0.84	0.39	77. A	3.3	3.2	3.2	0.08
8	16.09	33.313	24.431	5.73	101.9	0.0	0.27	0.1	0.00	0.82	0.31	36.	5.6	5.8	5.7	0.09
18	16.09	33.311	24.430	5.76	102.4	0.0	0.27	0.1	0.00	0.81	0.35	10.	3.8	3.8	3.8	0.07
24	16.09	33.311	24.430	5.78	102.8	0.0	0.26	0.1	0.00	0.89	0.28	4.6	1.9	2.0	2.0	0.07
32	16.09	33.312	24.431	5.75	102.2	0.0	0.26	0.1	0.00	0.75	0.40	1.7	0.64	0.71	0.67	0.07
39	15.99	33.308	24.451	5.70	101.1	0.0	0.29	0.3	0.02	1.04	0.43					
46	13.92	33.109	24.745	5.44	92.5	3.0	0.61	4.1	0.21	0.80	0.63	0.28	0.07	0.06	0.07	0.03

RV ROGER REVELLE

CALCOFI CRUISE 0411

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	12/11/04	1747 UTC	36 m		1203 - 1735 PST	1201 PST	1727 PST	84.2 mg C/m2

DEPTH m	TEMP DEG C	SALINITY	SIGMA THETA	OXYGEN mL/L	OXY PCT	SI03 uM/L	P04 uM/L	N03 uM/L	N02 uM/L	CHL-A ug/L	PHAE0 ug/L	LIGHT PCT	UPTAKE (mg C/m3)			
													1	2	MEAN	DARK
2	18.00	32.937	23.694	5.50	101.3	1.4	0.30	0.1	0.00	0.13	0.05	92. A	0.40	0.34	0.37	0.11
13	17.99	32.936	23.696	5.50	101.3	1.4	0.30	0.1	0.00	0.12	0.05					
22	17.98	32.937	23.700	5.50	101.2	1.4	0.29	0.1	0.00	0.13	0.05	39.	1.0	1.0	1.0	0.04
32	17.94	32.928	23.703	5.49	101.0	1.3	0.29	0.1	0.00	0.14	0.06					
42	17.88	32.918	23.710	5.53	101.6	1.4	0.29	0.1	0.00	0.20	0.05					
53	17.85	32.917	23.717	5.50	101.0	1.4	0.29	0.1	0.00	0.20	0.09	10.	1.1	1.1	1.1	0.02
62	14.85	32.840	24.342	6.27	108.4	1.6	0.32	0.1	0.00	0.27	0.20					
72	13.83	32.880	24.587	6.08	103.0	2.1	0.37	0.1	0.00	0.25	0.31	4.6	0.77	0.77	0.77	0.01
80	13.40	32.934	24.716	5.94	99.8	2.4	0.41	0.4	0.03	0.28	0.34					
84	13.13	32.905	24.747	5.89	98.4	2.5	0.44	0.6	0.05	0.28	0.32					
95	12.72	32.910	24.832	5.71	94.5	3.0	0.54	2.3	0.18	0.25	0.31	1.7	0.35	0.30	0.32	0.01
110	11.68	33.028	25.120	5.23	84.8	5.9	0.82	8.0	0.02	0.13	0.22					
124	10.58	33.135	25.400	4.88	77.3	9.8	1.07	12.6	0.01	0.07	0.14					
137	9.87	33.325	25.669	4.57	71.3	13.6	1.25	15.8	0.01	0.03	0.06	0.29	0.01	0.01	0.01	0.01

RV ROGER REVELLE

CALCOFI CRUISE 0411

STATION 87 80

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	FOREL	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE
32 19.4 N	121 42.9 W	11/11/04	1720 UTC	24 m		1153 - 1741 PST	1151 PST	1738 PST	95.1 mg C/m2

DEPTH m	TEMP DEG C	SALINITY	SIGMA THETA	OXYGEN mL/L	OXY PCT	SI03 uM/L	P04 uM/L	N03 uM/L	N02 uM/L	CHL-A ug/L	PHAE0 ug/L	LIGHT PCT	UPTAKE (mg C/m3)			
													1	2	MEAN	DARK
1	17.17	33.290	24.163	5.58	101.3	0.7	0.27	0.1	0.00	0.21	0.09	94. A	1.1	0.89	1.0	0.03
9	17.16	33.291	24.167	5.58	101.3	0.7	0.28	0.1	0.00	0.22	0.09					
14	17.13	33.296	24.178	5.57	101.1	0.6	0.27	0.1	0.00	0.23	0.10	41.	2.2	2.1	2.2	0.03
24	17.05	33.280	24.185	5.59	101.3	0.6	0.27	0.1	0.00	0.29	0.15					
35	16.88	33.287	24.230	5.62	101.5	0.7	0.29	0.1	0.00	0.35	0.20	11.	1.8	1.8	1.8	0.04
42	15.74	33.224	24.443	5.65	99.7	1.1	0.36	0.9	0.03	0.43	0.23					
48	14.35	33.179	24.709	5.35	91.8	4.0	0.70	6.3	0.15	0.44	0.28	4.6	0.98	0.96	0.97	0.03
56	12.28	33.151	25.102	5.02	82.5	6.3	0.95	10.4	0.14	0.30	0.35					
64	11.67	33.215	25.266	4.69	76.1	8.7	1.12	13.3	0.06	0.22	0.25	1.7	0.22	0.26	0.24	0.02
77	10.79	33.332	25.516	4.16	66.3	12.7	1.35	17.2	0.03	0.13	0.20					
92	10.14	33.432	25.706	3.84	60.3	16.4	1.52	19.7	0.02	0.06	0.11	0.28	0.02	0.02	0.02	0.01

A) INCUBATION LIGHT INTENSITIES WERE 94, 40, 10, 5.0, 2.0, 0.0 PERCENT RESPECTIVELY.

PRIMARY PRODUCTIVITY CASTS

RV ROGER REVELLE

CALCOFI CRUISE 0411

STATION 90 28

LATITUDE 33 29.1 N LONGITUDE 117 46.1 W DAY/MO/YR 9/11/04 CAST TIME 1801 UTC SECCHI 12 m FOREL FOREL INCUBATION TIME 1134 - 1730 PST LAN 1133 PST CIVIL TWILIGHT 1720 PST INTEGRATED VALUE 124.5 mg C/m2

DEPTH m	TEMP DEG C	SALINITY	SIGMA THETA	OXYGEN ml/L	OXY PCT	SI03 uM/L	P04 uM/L	N03 uM/L	N02 uM/L	CHL-A ug/L	PHAE0 ug/L	LIGHT PCT	UPTAKE (mg C/m3)			
													1	2	MEAN	DARK
1	17.78	33.100	23.872	5.70	104.6	1.3	0.31	0.1	0.00	0.83	0.45	88. A	10.2	9.8	10.0	0.12
7	17.68	33.211	23.981	5.65	103.6	0.8	0.28	0.1	0.00	0.47	0.25	41.	6.1	6.2	6.2	0.06
18	17.56	33.265	24.052	5.64	103.2	0.6	0.27	0.1	0.00	0.30	0.17	10.	2.3	2.4	2.3	0.04
24	17.12	33.262	24.154	5.74	104.1	0.7	0.29	0.1	0.00	0.43	0.29	4.6	1.1	1.1	1.1	0.03
32	15.29	33.197	24.521	5.96	104.2	1.3	0.35	0.2	0.01	0.60	0.34	1.7	0.37	0.39	0.38	0.03
35	14.28	33.117	24.676	5.89	100.9	2.1	0.49	1.6	0.14	0.70	0.54					
39	13.93	33.120	24.751	5.71	97.1	2.6	0.58	2.7	0.30	0.53	0.46					
46	13.18	33.146	24.923	5.27	88.2	4.4	0.80	6.2	0.55	0.40	0.44	0.28	0.04	0.06	0.05	0.05

RV ROGER REVELLE

CALCOFI CRUISE 0411

STATION 90 53

LATITUDE 32 39.1 N LONGITUDE 119 28.8 W DAY/MO/YR 8/11/04 CAST TIME 1835 UTC SECCHI 32 m FOREL FOREL INCUBATION TIME 1142 - 1727 PST LAN 1142 PST CIVIL TWILIGHT 1723 PST INTEGRATED VALUE 157.3 mg C/m2

DEPTH m	TEMP DEG C	SALINITY	SIGMA THETA	OXYGEN ml/L	OXY PCT	SI03 uM/L	P04 uM/L	N03 uM/L	N02 uM/L	CHL-A ug/L	PHAE0 ug/L	LIGHT PCT	UPTAKE (mg C/m3)			
													1	2	MEAN	DARK
1	18.06	33.255	23.922	5.49	101.4	0.9	0.27	0.1	0.00	0.17	0.06	95. A	1.5	1.4	1.4	0.05
10	18.02	33.255	23.933	5.49	101.3	0.9	0.27	0.1	0.00	0.17	0.07					
19	18.01	33.254	23.935	5.50	101.5	0.9	0.27	0.1	0.00	0.17	0.08	40.	1.9	1.8	1.8	0.05
28	17.99	33.248	23.935	5.53	102.0	0.9	0.28	0.1	0.00	0.20	0.08					
37	16.57	33.104	24.162	5.87	105.2	1.3	0.31	0.1	0.00	0.28	0.14					
47	13.98	32.934	24.597	6.17	104.9	2.0	0.39	0.4	0.01	0.52	0.35	10.	3.1	3.1	3.1	0.04
56	12.67	32.944	24.867	5.75	95.1	3.5	0.60	3.4	0.09	0.54	0.46					
64	12.10	33.007	25.025	5.39	88.1	4.9	0.78	6.5	0.10	0.38	0.44	4.6	1.4	1.4	1.4	0.02
74	11.21	33.126	25.281	4.88	78.3	7.8	1.03	11.1	0.03	0.20	0.37					
88	10.50	33.302	25.543	4.37	69.2	12.6	1.32	16.0	0.02	0.10	0.15	1.5	0.12	0.12	0.12	0.01
98	10.15	33.392	25.673	4.09	64.3	15.2	1.45	18.1	0.01	0.05	0.09					
109	9.78	33.492	25.814	3.79	59.1	18.2	1.59	20.3	0.01	0.02	0.05					
122	9.56	33.621	25.951	3.47	53.9	21.0	1.69	21.8	0.01	0.01	0.05	0.29	0.00	0.00	0.00	0.01

RV ROGER REVELLE

CALCOFI CRUISE 0411

STATION 90 90

LATITUDE 31 25.1 N LONGITUDE 121 59.4 W DAY/MO/YR 7/11/04 CAST TIME 1821 UTC SECCHI 31 m FOREL FOREL INCUBATION TIME 1156 - 1735 PST LAN 1152 PST CIVIL TWILIGHT 1736 PST INTEGRATED VALUE 155.6 mg C/m2

DEPTH m	TEMP DEG C	SALINITY	SIGMA THETA	OXYGEN ml/L	OXY PCT	SI03 uM/L	P04 uM/L	N03 uM/L	N02 uM/L	CHL-A ug/L	PHAE0 ug/L	LIGHT PCT	UPTAKE (mg C/m3)			
													1	2	MEAN	DARK
1	17.28	33.210	24.076	5.58	101.5	0.8	0.33	0.1	0.00	0.21	0.08	95. A	1.0	0.85	0.92	0.04
10	17.29	33.219	24.081	5.56	101.2	0.8	0.32	0.1	0.00	0.23	0.05					
19	17.35	33.238	24.081	5.56	101.3	0.8	0.32	0.1	0.00	0.22	0.07	39.	2.1	2.1	2.1	0.03
28	17.38	33.252	24.085	5.55	101.2	0.7	0.32	0.1	0.00	0.22	0.06					
37	17.39	33.258	24.088	5.55	101.2	0.7	0.32	0.1	0.00	0.23	0.07					
46	14.50	32.887	24.452	6.10	104.8	1.5	0.38	0.1	0.00	0.47	0.22	10.	2.5	2.6	2.6	0.04
54	13.62	32.804	24.570	6.18	104.2	1.8	0.41	0.1	0.01	0.48	0.35					
62	12.87	32.811	24.725	6.03	100.1	2.2	0.48	0.8	0.06	0.41	0.42	4.6	1.7	1.7	1.7	0.02
72	11.86	32.844	24.943	5.68	92.3	3.6	0.67	4.1	0.05	0.34	0.29					
82	11.17	32.929	25.135	5.39	86.4	5.7	0.85	7.4	0.03	0.23	0.24	1.7	0.44	0.45	0.44	0.02
94	10.15	33.027	25.389	4.97	77.9	10.4	1.18	13.1	0.01	0.11	0.16					
106	9.95	33.198	25.556	4.58	71.6	13.0	1.36	16.1	0.01	0.08	0.11					
118	9.56	33.358	25.745	4.17	64.7	16.9	1.55	19.3	0.01	0.04	0.06	0.29	0.02	0.01	0.02	0.01

A) INCUBATION LIGHT INTENSITIES WERE 94, 40, 10, 5.0, 2.0, 0.0 PERCENT RESPECTIVELY.

PRIMARY PRODUCTIVITY CASTS

RV ROGER REVELLE		CALCOFI CRUISE 0411										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		6/11/04		1802 UTC		37 m		1159 - 1744 PST			1159 PST	1746 PST		79.2 mg C/m <sup>2</sup>	
DEPTH m	TEMP DEG C	SALINITY	SIGMA THETA	OXYGEN mL/L	OXY PCT	SI03 uM/L	P04 uM/L	N03 uM/L	N02 uM/L	CHL-A ug/L	PHAE0 ug/L	LIGHT PCT	UPTAKE (mg C/m <sup>3</sup> )				
													1	2	MEAN	DARK	
1	19.11	33.302	23.697	5.35	100.8	1.4	0.30	0.1	0.00	0.10	0.03	96. A	0.77	0.76	0.77	0.05	
12	19.13	33.304	23.694	5.36	101.1	1.4	0.30	0.1	0.00	0.10	0.03						
22	19.13	33.305	23.695	5.36	101.1	1.4	0.29	0.1	0.00	0.10	0.03	40.	1.0	1.0	1.0	0.04	
33	19.26	33.371	23.713	5.35	101.2	1.4	0.29	0.1	0.00	0.11	0.03						
44	19.42	33.434	23.721	5.33	101.1	1.4	0.29	0.1	0.00	0.13	0.04						
55	17.63	33.360	24.109	5.91	108.3	1.6	0.27	0.1	0.00	0.17	0.07	10.	0.78	0.86	0.82	0.02	
64	17.07	33.357	24.240	5.98	108.4	1.6	0.26	0.1	0.00	0.18	0.08						
74	16.26	33.431	24.485	5.89	105.1	1.8	0.26	0.1	0.00	0.21	0.16	4.6	0.55	0.58	0.56	0.02	
82	15.89	33.483	24.609	5.75	101.9	1.9	0.27	0.1	0.00	0.21	0.23						
89	15.31	33.443	24.708	5.72	100.2	2.1	0.30	0.0	0.01	0.23	0.23						
99	14.62	33.382	24.810	5.70	98.4	2.2	0.33	0.1	0.05	0.20	0.25	1.6	0.29	0.26	0.27	0.01	
109	14.10	33.364	24.906	5.62	96.0	2.5	0.40	0.5	0.15	0.16	0.23						
119	13.12	33.379	25.117	5.38	90.1	4.1	0.55	3.8	0.03	0.13	0.20						
130	12.11	33.356	25.295	5.22	85.5	6.0	0.72	6.7	0.02	0.10	0.16						
141	11.53	33.342	25.393	5.15	83.4	7.2	0.85	8.3	0.01	0.07	0.14	0.29	0.03	0.03	0.03	0.01	

RV ROGER REVELLE		CALCOFI CRUISE 0411										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		2/11/04		1954 UTC		28 m		1227 - 1800 PST			1133 PST	1802 PST		157.0 mg C/m <sup>2</sup>	
DEPTH m	TEMP DEG C	SALINITY	SIGMA THETA	OXYGEN mL/L	OXY PCT	SI03 uM/L	P04 uM/L	N03 uM/L	N02 uM/L	CHL-A ug/L	PHAE0 ug/L	LIGHT PCT	UPTAKE (mg C/m <sup>3</sup> )				
													1	2	MEAN	DARK	
1	18.29	33.202	23.826	5.57	103.3	0.9	0.29	0.1	0.00	0.23	0.09	95. A	2.1	2.2	2.1	0.08	
5	18.22	33.204	23.844	5.58	103.4	0.9	0.29	0.1	0.00	0.24	0.09						
9	18.22	33.203	23.844	5.56	103.0	0.9	0.29	0.1	0.00	0.24	0.09						
17	18.14	33.201	23.862	5.56	102.8	0.9	0.31	0.1	0.00	0.25	0.09	39.	2.8	2.8	2.8	0.08	
28	16.08	33.196	24.344	5.81	103.2	1.5	0.36	0.5	0.04	0.71	0.37						
39	14.02	33.159	24.762	5.52	94.0	3.6	0.65	3.8	0.31	0.76	0.44	12.	4.2	4.1	4.1	0.06	
47	12.44	33.215	25.121	4.70	77.5	7.6	1.01	9.6	0.14	0.25	0.32						
57	11.98	33.260	25.244	4.25	69.4	10.5	1.20	12.9	0.31	0.12	0.23	4.4	0.31	0.32	0.32	0.09	

RV ROGER REVELLE		CALCOFI CRUISE 0411										STATION 93 45					
LATITUDE		LONGITUDE		DAY/MO/YR		CAST TIME		SECCHI	FOREL	INCUBATION TIME			LAN	CIVIL TWILIGHT		INTEGRATED VALUE	
32 20.8 N		118 33.3 W		3/11/04		1724 UTC		31 m		1134 - 1732 PST			1138 PST	1730 PST		252.0 mg C/m <sup>2</sup>	
DEPTH m	TEMP DEG C	SALINITY	SIGMA THETA	OXYGEN mL/L	OXY PCT	SI03 uM/L	P04 uM/L	N03 uM/L	N02 uM/L	CHL-A ug/L	PHAE0 ug/L	LIGHT PCT	UPTAKE (mg C/m <sup>3</sup> )				
													1	2	MEAN	DARK	
1	18.53	33.218	23.778	5.46	101.7	0.8	0.31	0.1	0.00	0.16	0.05	95. A	1.0	0.89	0.96	0.07	
10	18.44	33.218	23.801	5.47	101.8	0.8	0.30	0.1	0.00	0.17	0.05						
19	18.14	33.193	23.856	5.61	103.7	0.9	0.30	0.1	0.00	0.28	0.06	39.	3.1	2.9	3.0	0.07	
28	15.48	33.115	24.416	6.21	109.0	1.3	0.36	0.1	0.00	0.78	0.37						
35	14.31	33.127	24.677	5.95	102.0	2.1	0.48	1.4	0.07	1.24	0.68						
45	13.81	33.129	24.783	5.82	98.7	2.5	0.54	2.2	0.11	1.09	0.57	11.	6.7	6.8	6.8	0.05	
54	13.43	33.153	24.879	5.52	92.9	3.6	0.68	4.3	0.21	0.52	0.53						
61	12.90	33.181	25.006	5.25	87.4	4.8	0.81	6.6	0.20	0.37	0.40	4.9	1.6	1.6	1.6	0.03	
72	11.65	33.229	25.281	4.63	75.1	8.6	1.10	11.9	0.03	0.18	0.25						
82	10.63	33.293	25.514	4.43	70.3	11.8	1.27	15.0	0.02	0.07	0.13	1.7	0.14	0.14	0.14	0.01	
94	10.31	33.359	25.620	4.21	66.4	13.8	1.38	16.7	0.01	0.05	0.09						
107	10.10	33.526	25.787	3.65	57.3	17.7	1.64	19.5	0.01	0.02	0.05						
118	10.32	33.694	25.880	2.96	46.8	21.0	1.78	21.5	0.01	0.01	0.05	0.29	0.00	0.00	0.00	0.02	

A) INCUBATION LIGHT INTENSITIES WERE 94, 40, 10, 5.0, 2.0, 0.0 PERCENT RESPECTIVELY.

PRIMARY PRODUCTIVITY CASTS

RV ROGER REVELLE

CALCOFI CRUISE 0411

STATION 93 70

LATITUDE 31 31.4 N LONGITUDE 120 15.8 W DAY/MO/YR 4/11/04 CAST TIME 1717 UTC SECCHI 32 m FOREL INCUBATION TIME 1144 - 1740 PST LAN 1145 PST CIVIL TWILIGHT 1741 PST INTEGRATED VALUE 130.4 mg C/m2

DEPTH m	TEMP DEG C	SALINITY	SIGMA THETA	OXYGEN mL/L	OXY PCT	SI03 uM/L	P04 uM/L	N03 uM/L	N02 uM/L	CHL-A ug/L	PHAE0 ug/L	LIGHT PCT	UPTAKE (mg C/m3)			
													1	2	MEAN	DARK
2	17.84	33.172	23.912	5.54	101.9	1.0	0.29	0.1	0.00	0.15	0.06	91. A	0.53	0.61	0.57	0.03
11	17.82	33.171	23.917	5.53	101.6	1.0	0.29	0.0	0.00	0.13	0.08					
19	17.82	33.172	23.918	5.53	101.6	0.9	0.29	0.0	0.00	0.20	0.03	40.	2.0	1.9	2.0	0.03
28	17.80	33.170	23.922	5.54	101.8	0.9	0.28	0.0	0.00	0.17	0.06					
37	15.80	33.017	24.270	5.91	104.3	1.2	0.32	0.0	0.00	0.21	0.14					
47	12.81	32.833	24.754	6.16	102.1	2.1	0.41	0.3	0.02	0.43	0.28	10.	2.4	2.5	2.4	0.03
56	11.98	32.831	24.911	5.88	95.8	3.0	0.55	2.3	0.14	0.38	0.37					
65	11.43	32.852	25.028	5.67	91.3	4.2	0.68	4.8	0.04	0.34	0.31	4.4	1.0	0.99	1.0	0.02
77	10.54	32.935	25.250	5.26	83.1	7.9	0.98	10.1	0.00	0.16	0.23					
86	10.11	33.112	25.462	4.97	77.9	10.7	1.15	13.1	0.00	0.11	0.13	1.6	0.16	0.15	0.16	0.02
98	9.45	33.199	25.638	4.58	70.8	15.0	1.41	17.3	0.00	0.05	0.07					
109	9.39	33.346	25.763	4.34	67.0	16.8	1.48	18.6	0.00	0.03	0.05					
122	9.39	33.499	25.883	4.00	61.8	19.0	1.59	20.3	0.00	0.02	0.05	0.29	0.01	0.01	0.01	0.01

RV ROGER REVELLE

CALCOFI CRUISE 0411

STATION 93 100

LATITUDE 30 29.9 N LONGITUDE 122 16.1 W DAY/MO/YR 5/11/04 CAST TIME 1733 UTC SECCHI 28 m FOREL INCUBATION TIME 1155 - 1743 PST LAN 1153 PST CIVIL TWILIGHT 1746 PST INTEGRATED VALUE 80.5 mg C/m2

DEPTH m	TEMP DEG C	SALINITY	SIGMA THETA	OXYGEN mL/L	OXY PCT	SI03 uM/L	P04 uM/L	N03 uM/L	N02 uM/L	CHL-A ug/L	PHAE0 ug/L	LIGHT PCT	UPTAKE (mg C/m3)			
													1	2	MEAN	DARK
2	18.50	33.000	23.619	5.46	101.6	1.2	0.31	0.1	0.00	0.13	0.04	90. A	1.3	1.2	1.3	0.04
17	18.46	32.995	23.626	5.46	101.5	1.2	0.32	0.0	0.00	0.14	0.03	39.	1.7	1.6	1.6	0.03
31	18.42	32.982	23.627	5.47	101.6	1.3	0.32	0.0	0.00	0.14	0.04					
41	18.36	32.964	23.628	5.47	101.4	1.3	0.32	0.0	0.00	0.14	0.05	11.	1.0	1.0	1.0	0.03
56	17.83	32.955	23.751	5.54	101.7	1.3	0.33	0.0	0.00	0.19	0.07	4.6	0.67	0.63	0.65	0.03
66	16.99	33.474	24.349	6.03	109.2	1.8	0.26	0.1	0.00	0.22	0.09					
76	16.33	33.495	24.519	5.98	106.9	1.8	0.27	0.1	0.00	0.21	0.11	1.6	0.19	0.19	0.19	0.01
86	15.46	33.448	24.679	5.92	104.0	2.0	0.27	0.1	0.00	0.21	0.17					
97	14.82	33.455	24.824	5.80	100.6	2.2	0.30	0.1	0.01	0.21	0.25					
101	14.53	33.424	24.862	5.78	99.7	2.3	0.31	0.2	0.02	0.24	0.25					
108	14.06	33.458	24.987	5.68	97.0	2.6	0.34	0.5	0.07	0.25	0.22	0.27	0.06	0.07	0.07	0.01
513	5.65	34.186	26.958	0.56	8.0	79.1	3.08	40.6	0.00							

A) INCUBATION LIGHT INTENSITIES WERE 94, 40, 10, 5.0, 2.0, 0.0 PERCENT RESPECTIVELY.

## CalCOFI Cruise 0411

## MACROZOOPLANKTON BIOMASS

Net Mesh Size: 0.505mm

Line	Sta.	Latitude N	Longitude W	Date Mo/Day	Time (PST)		Water Volume Strained (m3)	Max. Tow Depth (m)	Volume per 1000 m3 Strained	
					Start	End			Total (cm3)	Small (cm3)
77.0	49.0	35 05.2	120 46.9	11/18	1157	1203	128	40.7	8	8
77.0	51.0	35 01.4	120 55.0	11/18	0845	0907	446	215	29	29
77.0	55.0	34 53.7	121 12.5	11/18	0504	0525	441	211	64	64
77.0	60.0	34 43.7	121 33.3	11/17	2344	0005	467	199.2	51	51
77.0	70.0	34 23.5	122 15.2	11/17	1657	1719	468	193.2	47	47
77.0	80.0	34 03.7	122 56.8	11/17	1053	1115	409	222.8	56	56
77.0	90.0	33 43.9	123 38.0	11/17	0308	0330	472	194.4	104	104
77.0	100.0	33 23.7	124 19.8	11/16	2120	2141	425	214.1	38	38
80.0	50.5	34 27.7	120 29.2	11/15	0257	0259	42	13.5	95	95
80.0	51.0	34 26.8	120 32.1	11/15	0441	0448	147	62.1	48	48
80.0	55.0	34 19.3	120 48.5	11/15	0821	0842	433	215.9	67	67
80.0	60.0	34 09.1	121 09.7	11/15	1254	1315	457	185.2	48	48
80.0	70.0	33 49.4	121 51.3	11/15	1842	1904	453	209.3	62	62
80.0	80.0	33 29.5	122 32.6	11/16	0035	0056	449	192.4	96	96
80.0	90.0	33 09.1	123 13.4	11/16	0608	0630	401	224.6	40	40
80.0	100.0	32 49.4	123 55.2	11/16	1547	1608	415	216.7	22	22
81.7	43.5	34 24.2	119 48.1	11/14	1736	1738	51	12.8	39	39
82.0	47.0	34 17.0	120 02.1	11/14	2223	2245	467	201.2	43	43
83.3	39.4	34 15.3	119 20.0	11/14	1333	1336	51	13.7	39	39
83.0	40.6	34 13.5	119 25.3	11/14	1124	1127	71	29.5	14	14
83.0	42.0	34 11.0	119 31.3	11/14	0840	0852	262	99.6	57	57
83.0	51.0	33 52.7	120 07.3	11/14	0315	0322	168	47	54	54
83.0	55.0	33 45.2	120 24.9	11/13	2340	0001	430	205	56	56
83.0	60.0	33 35.1	120 45.4	11/13	1841	1903	433	221.3	270	270
83.0	70.0	33 15.2	121 26.6	11/13	1156	1219	456	213.2	37	37
83.0	80.0	32 54.7	122 07.8	11/13	0456	0518	458	197.1	37	37
83.0	90.0	32 35.0	122 48.9	11/12	2252	2314	468	206.2	56	56
83.0	100.0	32 14.8	123 30.1	11/12	1626	1649	478	211.5	8	8
83.0	110.0	31 55.2	124 10.2	11/12	0751	0812	447	209.8	31	31
85.5	35.9	34 00.3	118 50.2	11/18	2349	2352	75	19.7	40	40
87.0	33.0	33 53.4	118 30.0	11/09	2006	2011	102	42.4	118	118
87.0	35.0	33 49.6	118 38.2	11/09	2325	2347	409	211.4	76	76
87.0	40.0	33 39.5	118 59.2	11/10	0337	0358	402	215.8	90	90
87.0	45.0	33 29.6	119 19.7	11/10	0708	0729	478	190	44	44
87.0	55.0	33 09.1	120 01.0	11/10	1523	1546	445	193.3	90	90
87.0	60.0	32 59.6	120 21.7	11/10	2002	2025	449	204.2	116	116
87.0	70.0	32 39.4	121 02.7	11/11	0147	0209	438	213.5	75	75
87.0	80.0	32 19.4	121 42.5	11/11	0700	0722	444	196.7	95	95
87.0	90.0	31 59.4	122 24.0	11/11	1558	1620	449	211.4	40	40
87.0	100.0	31 39.6	123 04.5	11/11	2140	2202	444	209.5	27	27
87.0	110.0	31 20.1	123 45.0	11/12	0337	0359	409	220.8	34	34
86.8	32.5	33 53.4	118 26.5	11/19	0224	0226	47	11.8	170	170
88.5	30.2	33 40.3	118 05.7	11/09	1530	1532	41	13.9	97	97
90.0	27.7	33 29.7	117 45.0	11/09	1306	1308	54	12	112	112
90.0	28.0	33 29.4	117 46.8	11/09	1053	1101	160	63.8	88	88
90.0	30.0	33 25.1	117 54.8	11/09	0752	0814	415	202	48	48
90.0	35.0	33 15.2	118 15.5	11/09	0408	0430	413	211.3	82	82
90.0	37.0	33 11.5	118 23.5	11/09	0053	0115	427	204.4	66	66
90.0	45.0	32 55.2	118 56.7	11/08	1912	1933	396	219	195	195
90.0	53.0	32 39.2	119 29.8	11/08	1252	1313	430	211.2	21	21
90.0	60.0	32 25.6	119 58.0	11/08	0644	0705	421	210	36	36
90.0	70.0	32 05.5	120 38.8	11/08	0054	0117	449	198.8	49	49
90.0	80.0	31 45.1	121 19.8	11/07	1823	1845	433	210.5	60	60
90.0	90.0	31 25.2	121 59.9	11/07	1156	1218	453	200.4	31	31
90.0	100.0	31 05.6	122 39.3	11/06	2328	2350	450	209.2	29	29
90.0	110.0	30 45.1	123 20.1	11/06	1621	1643	472	215.3	13	13
90.0	120.0	30 25.0	124 00.5	11/06	0658	0720	487	207.7	14	14
91.7	26.4	33 14.6	117 28.0	11/19	0832	0834	43	11.6	141	141
93.0	26.7	32 56.9	117 19.1	11/02	1330	1348	409	161.4	32	32
93.0	28.0	32 55.0	117 25.0	11/02	1909	1931	420	214.7	119	50
93.0	30.0	32 50.9	117 31.7	11/02	2247	2309	482	191.5	46	46
93.0	35.0	32 40.7	117 53.2	11/03	0244	0306	428	191	164	164
93.0	40.0	32 31.1	118 13.6	11/03	0626	0647	392	219.2	59	59
93.0	45.0	32 20.9	118 33.9	11/03	1148	1210	463	198.9	30	30
93.0	50.0	32 10.4	118 54.5	11/03	1650	1712	490	209.5	74	27
93.0	55.0	32 01.0	119 15.3	11/03	2319	2341	540	192.3	41	41
93.0	60.0	31 50.9	119 35.2	11/04	0343	0405	465	214	26	26
93.0	70.0	31 31.4	120 15.8	11/04	0813	0835	480	204	42	42
93.0	80.0	31 09.8	120 56.2	11/04	2232	2254	454	217	42	42
93.0	90.0	30 50.5	121 35.9	11/05	0421	0442	485	198	43	43
93.0	100.0	30 30.4	122 16.0	11/05	0836	0857	476	210	17	17
93.0	110.0	30 10.6	122 56.1	11/05	1646	1708	493	215	12	12
93.0	120.0	29 50.9	123 35.7	11/06	0228	0251	474	217	25	25
93.4	26.4	32 57.2	117 16.9	11/02	1534	1536	44	14	137	137



## FIGURES

### Avifauna Observations

#### CalCOFI Cruise 0411

- 1a. Northern Fulmar distribution.
- 1b. Red Phalarope distribution.
- 1c. Pink-footed Shearwater distribution.
- 1d. California Gull distribution.
- 1e. Black-vented Shearwater distribution.
- 1f. Western Gull distribution.

# CalCOFI Cruise 0411

