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Physical, Nutrient, and Biological Measurements of
Coastal Waters off Central California in October 2005

by

Thomas A. Rago, Reiko Michisaki, Baldo Marinovic, and Katherine Whitaker

May 2006

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Prepared for: Marine Sciences Institute,
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13. ABSTRACT (maximum 200 words) The results of analyses of hydrographic, nutrient, and biological data collected in coastal ocean waters off Central California in October 2005 aboard the <i>R/V Point Sur</i> are presented in both tabular and graphical form. The cruise proceeded from Moss Landing, California, to Point Reyes, California, following CalCOFI line 67 to station 90, thence to CalCOFI line 60/station 90, and finally along CalCOFI line 60. Marine mammal observations taken during the cruise are also included.				
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Introduction

Following in a long tradition of hydrographic studies of the California Current system--see, for example, Steger et al. (2000) and Collins et al. (2003)-- the data in this report were collected during the 25-30 October 2005 cruise of the Pacific Coast Ocean Observing System (PaCOOS) program aboard the *R/V Point Sur* of the Moss Landing (California) Marine Laboratories. The PaCOOS program was organized in 2003/2004 as the NOAA west coast contribution to the national Integrated Ocean Observing System (IOOS), and is charged with "providing the ocean information needed for the sustained use of fishery resources and protection of marine species and their ecosystem under a changing climate."¹ PaCOOS cruises generally subsample the standard California Cooperative Oceanic Fisheries Investigations (CalCOFI) grid of hydrographic stations (figure 1). With a slight exception, this cruise did exactly that, sampling along CalCOFI line 67 out of Moss Landing to station 90 (CTD cast 18/19), northwest to CalCOFI line 60/station 90 (CTD cast 23), then shoreward to Point Reyes, California, along CalCOFI line 60 (figure 2). The exception was that, to increase the resolution of the hydrographic data, eight CTD casts were inserted between the standard CalCOFI sites along line 67. Primary productivity and zooplankton analyses were not performed at these added sites. Participants on the cruise came from the Naval Postgraduate School (Physical Oceanography and Marine Mammal Observations), the Monterey Bay Aquarium Research Institute (Nutrient Analysis and Primary Productivity), and the University of California at Santa Cruz (Zooplankton Analysis).

Standard Procedures

CTD/Rosette Data:

At each site a Seabird Electronics, Inc., Conductivity-Temperature-Depth (CTD) instrument fitted with a 12-place rosette was deployed. The rosette was equipped with 12 10-liter PVC Niskin bottles for collection of water samples. The CTD was generally lowered to 1000 meters or the bottom (whichever came first), except that casts were extended to the full ocean depth at CTD stations 18 (4325 dbar) and 23 (4343 dbar). Where primary productivity sampling was performed, water samples were taken at depths designed to maximize resolution of the variables sampled throughout the thermocline. Where only nutrient sampling was performed², water samples were more or less evenly spaced throughout the water column. A water sample was always obtained at the bottom of each CTD cast for later conductivity/salinity calibration of the CTD conductivity sensors.

Besides temperature (dual sensors), conductivity (dual sensors), and pressure, the CTD also measured fluorescence, transmissivity, dissolved oxygen content, and photosynthetically available radiation (PAR) in the water column. Except for PAR and the secondary of the dual sensors, all these parameters are reported here.

¹ <http://www.pacoos.org/Pages/history.htm>

² CTD stations 3, 5, 7, 9, 11, 13, 15, and 17

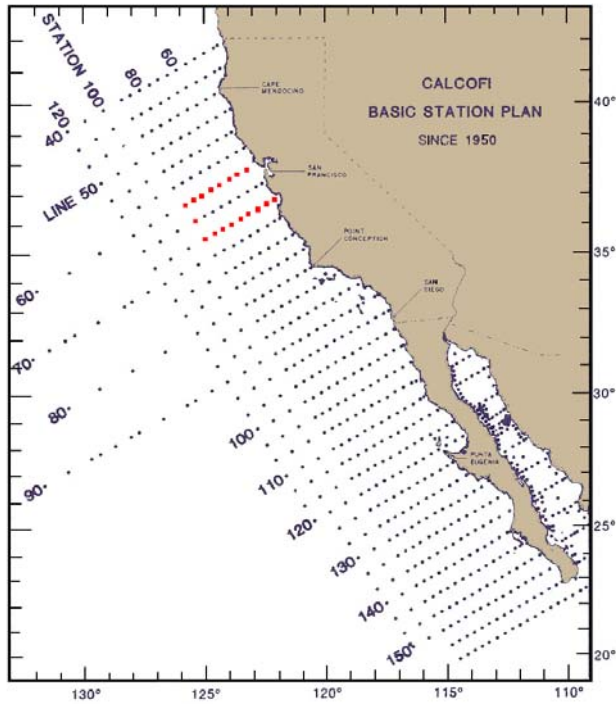


Figure 1: Full CalCOFI hydrographic station grid. Stations occupied during the PaCOOS cruise of October 2005 are highlighted in red.

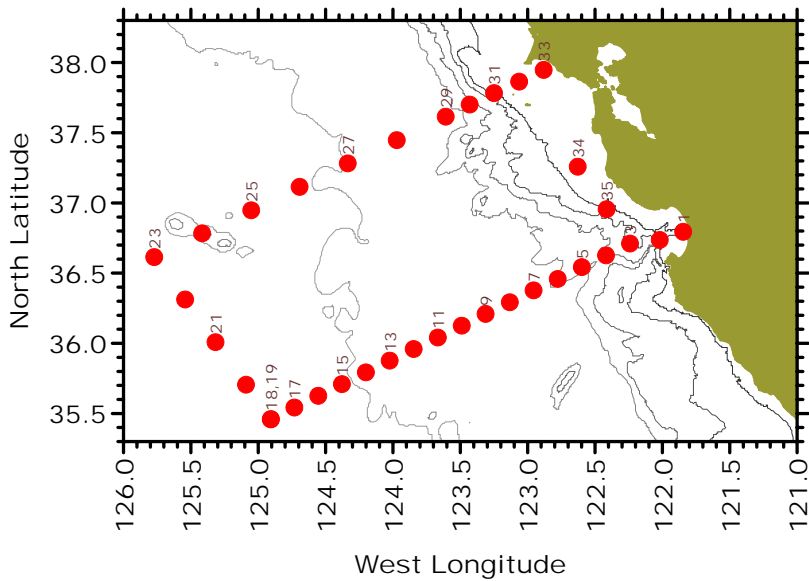


Figure 2: Hydrographic stations occupied during the PaCOOS cruise of October 2005. 200, 1000, 2000, 3000, and 4000 m isobaths are shown.

A minimum of two salinity samples (including the bottom-of-cast sample) were collected from each CTD cast. These samples were returned to the Naval Postgraduate School (NPGS), where they were analyzed using a Guildline model 8400B Autosol salinometer. A regression between the salinometer results and the conductivities measured by the CTD at the times the Niskin bottles were tripped was made, from which a correction to the CTD salinities was determined and then applied. The salinometer was standardized using IAPSO Standard Seawater (batches P143 and P145) before and after each set of water samples was analyzed. Salinity values were calculated using the algorithms for the Practical Salinity Scale, 1978 (UNESCO, 1981).

Dissolved oxygen (Winkler) samples were collected at CTD stations 18 and 27. These were returned to the Monterey Bay Aquarium Research Institute (MBARI) for analysis. The CTD for this cruise was outfitted with a Sea-Bird Electronics, Inc., SBE 43 oxygen sensor. This sensor is a polarographic membrane that outputs a voltage proportional to the temperature-compensated current flow occurring when oxygen is reacted inside the membrane. Dissolved oxygen concentration is then calculated from a modified version of the algorithm by Owens and Millard (1985). The results of the MBARI analysis of the Winkler oxygen samples were compared to the corresponding oxygen values recorded by the CTD. Using the method described in SBE Application Note #64-2³, we calculated new SBE 43 sensor coefficients. Corrected CTD oxygen values were then recalculated with the modified version of the Owens and Millard (1985) algorithm using the new sensor coefficients.

Nutrient samples were collected in 45-ml polypropylene screw-capped containers which were rinsed three times prior to filling. Samples were frozen and returned to MBARI for later analysis on an AlpChem autoanalyzer, as in Sakamoto et al. (1990).

Chlorophyll-*a* and phaeopigments were collected in 280-ml polyethylene bottles and filtered onto 25-mm Whatmann GF/F filters. Chlorophyll-*a* was assayed with the standard fluorometric procedure of Holm-Hansen et al. (1965), modified such that phaeopigments are extracted in acetone in a freezer over at least 24 hours (Venrick and Hayward, 1984; Chavez et al., 1991). Analysis was performed as possible during the cruise or at MBARI immediately following the cruise.

Primary productivity was estimated for the 100, 50, 15, 5, 1, and 0.1% light penetration depths as determined by secchi, and followed the general method of Parsons et al. (1984). Water samples from the appropriate depths were collected in 280-ml polycarbonate bottles, spiked with ¹⁴C, and incubated on deck for 24 hours under running seawater in plexiglass tubes wrapped with nickel-cadmium screens of differing pore size. (See Pennington and Chavez, 2000, for methodology details.)

Zooplankton Net Tows:

Nineteen stations⁴ were sampled for zooplankton during the cruise. All sampling was conducted with 0.7-m diameter paired bongo nets fitted with 505-mm mesh, which were towed obliquely to a depth of 210 m (or within 10 m of the bottom, whichever came

³ http://www.seabird.com/pdf_documents/ApplicationNotes/Appnote64-2Aug05.pdf

⁴ CTD stations 1, 2, 4, 6, 8, 10, 12, 14, 16, 18, and 23-31

first). Samples were preserved at sea according to standard protocols (Kramer et al., 1972). Upon return to the University of California at Santa Cruz (UCSC), all samples were initially measured for total biovolume and subsequently processed for krill species composition and abundance.

Marine Mammal Observations:

Observations of marine mammals were made by a single observer during daylight hours (approximately 1600 to 0100 Coordinated Universal Time [UTC]) throughout the cruise. Observations were made from the forward Bridge deck, where eye height was approximately 9.7 meters above the sea surface, using handheld Fujinon 7 x 50 binoculars with compass for bearing and reticle for distance. Observations were recorded on a laptop computer using the marine mammal and bird mapping program *Seebird*. This program interfaces with handheld global positioning system (GPS) devices, and allows the generation of observation logs containing the observations of the mammals themselves with matching ship's velocities and positions, observational conditions, etc. Generally, intensive "on effort" observations were made during the first half of each half-hour period, with the second half of the half-hour period devoted to less intensive "off effort" observations. Depending on the situation, the observer would take short breaks from the observations approximately every two hours.

Ancillary Observations:

During this cruise, several ancillary systems collected data that are also presented in this technical report.

- 1) *Underway Data:* Near surface measurements of temperature, salinity, and chlorophyll fluorescence were recorded from water pumped through the ship's uncontaminated seawater system. These data, along with meteorological data (air temperature, barometric pressure, etc.) collected from various sensors mounted primarily on the ship's mast, were recorded at approximately 30-second intervals throughout the cruise. Table 1 lists these data at the start of each hydrographic station.
- 2) *ADCP:* Continuous profiles of ocean currents and acoustic backscatter between 10 and 730 meters were measured along the ship's track using hull-mounted Acoustic Doppler Current Profilers (75-kHz Ocean Surveyor, 300-kHz Broad Band). The data were averaged over 5-minute intervals. Because of navigation difficulties, no data are available for the first day of the cruise (figure 7).
- 3) *Rafos:* Two subsurface drifting buoys (Rafos floats) were deployed on 825-day missions near CTD stations 4 and 5.

Tabulated Data

The following tables of data follow:

1) Table 1: *Meteorological and Sea Surface Data*

This lists the meteorological and surface oceanographic conditions at the start of each hydrographic station.

2) Table 2: *Hydrographic Data*

This is a chronological listing of the hydrographic data collected at each CTD station during the cruise. Data are given for standard pressures, except that the last line of data for each site is the deepest pressure for that CTD cast. The surface pressure, listed as 0 dbar, is actually 2 dbar. Salinities have been adjusted according to the conductivity/salinity calibration correction determined from the collected salinity water samples. The time listed for each station is the beginning (UTC) of the CTD cast. Units of geopotential anomaly ($\Delta\Phi$), potential density (σ_θ), and potential spiciness (π_θ) are m^2s^{-2} , kg m^{-3} , and kg m^{-3} , respectively.

3) Table 3: *Nutrient and Primary Productivity Data*

This is a chronological listing of the results of the nutrient and primary productivity analyses of the water samples collected from the 12 Niskin bottles tripped at each hydrographic station. The time given is the start (UTC) for each hydrographic station. Except where primary productivity analyses were not performed (see Introduction), the data for each hydrographic station are separated into two sections (“Physical and Chemical” and “Biological”).

The physical oceanographic properties listed in the first seven columns of the “Physical and Chemical” section of each station’s data are the uncorrected values measured by the CTD at the times each Niskin bottle was tripped. Because they are uncorrected, these values may differ slightly from those listed in Table 1. The last four columns of this section of each station’s data give the nitrate (NO_3), nitrite (NO_2), phosphate (PO_4), and dissolved silicate (SiO_4) concentrations (determined as described previously).

The “Biological” section of each station’s data gives the results of the primary productivity analyses. As stated above, primary productivity sampling was not undertaken at every hydrographic station.

4) Table 4: *Zooplankton Data*

Nineteen hydrographic stations—10 on CalCOFI line 67, 9 on CalCOFI line 60—were sampled for zooplankton. This table lists the total biovolume and krill abundance measured. The data are listed by CalCOFI line, onshore to offshore and south to north.

5) Table 5: Marine Mammal Data

This table lists the results of the marine mammal observations made during the cruise. The data are listed by species code, then chronologically within each species code.

Figures of Results

Graphical representations of the data collected during this cruise follow the tabulated data. Figure 3 is a series of four diagrams contouring (a) the temperature ($^{\circ}\text{C}$), (b) the salinity, (c) the density anomaly (kg m^{-3}), and (d) the oxygen ($\mu\text{m kg}^{-1}$) fields along the line of hydrographic stations from Moss Landing to Point Reyes. The two dashed blue lines in each diagram indicate the locations of the corner hydrographic stations (CTDs 18/19 and 23).

Figure 4 contours the fluorescence in the upper 100 meters of the water column along the line of hydrographic stations from Moss Landing to Point Reyes. Again, the dashed blue lines indicate the locations of the corner hydrographic stations.

Figures 5 and 6 chart the locations of marine mammal sightings: figure 5 shows all sightings, while figure 6 shows only the smaller marine mammal (that is, no large whales) sightings.

Finally, figure 7 shows the ADCP velocities measured along the ship's track, except that there are no data for the first day of the cruise, during which time there was difficulty with the navigation input to the ADCP.

Cruise Participants

Personnel	Duties	Institutional Affiliation
Curtis Collins (Chief Sci.) Tarry Rago Katherine Whitaker	Physical Oceanography Physical Oceanography Marine Mammal Obs.	Naval Postgraduate School
Tim Pennington Marguerite Blum Erich Reinecker Jen King Mark Harlan Sarah Ashby	Nutrients, Primary Prod. Nutrients, Primary Prod. Nutrients Nutrients Nutrients Nutrients	Monterey Bay Aquarium Research Institute
Asila Ghoul Ann Vassilieva	Phytoplankton Net Tows Phytoplankton Net Tows	Univ. of CA at Santa Cruz
Ben Jokinen	Ship's Technician	Moss Landing Marine Labs

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Tables

Table 1: *Meteorological and sea surface data collected during the PaCOOS cruise of October 2005.* Listed here are the meteorological and surface oceanographic conditions as measured by the underway data acquisition system of the *R/V Point Sur* at the beginning of each hydrographic station. Continuous measurements of the water being pumped through the ship's uncontaminated seawater system ("sea chest") from approximately 3 meters below the surface supplied the oceanographic data, while instrumentation atop the ship's mast (except for the barometer, which was mounted on the Bridge) supplied the meteorological data. For obvious reasons, shortwave radiation disappeared with darkness at night.

Station	Yearday, 2005 (UTC)	Air Temperature (°C)	Humidity (percent)	Barometric Pressure (mb)	Shortwave Radiation (watts/m ²)	Wind Speed (m/s)	Wind Direction (°T)	Sea Surface Temperature (°C)	Sea Surface Salinity
1	298.7049	12.5	96.0	1022.7	216.6	0.5	288.7	13.00	33.36
2	298.7884	13.6	89.5	1022.8	616.1	1.1	247.9	13.37	33.33
3	298.9042	14.0	78.7	1022.3	62.7	2.4	16.4	14.73	33.25
4	298.9909	14.1	83.8	1022.4	90.0	2.6	16.2	13.75	33.39
5	299.1032	13.8	84.6	1022.1	0.0	2.5	78.5	13.48	33.38
6	299.1890	14.3	89.1	1022.8	0.0	1.6	52.2	14.45	33.27
7	299.2928	14.8	90.2	1022.6	0.0	4.1	61.0	14.89	33.22
8	299.3746	15.8	90.9	1021.4	0.0	5.1	66.8	16.04	33.22
9	299.4723	16.3	89.1	1020.8	0.3	5.0	60.7	16.24	33.22
10	299.5613	16.7	88.3	1020.0	0.4	5.8	49.2	16.36	33.19
11	299.6903	14.7	89.8	1020.9	246.6	5.2	278.8	16.18	33.21
12	299.7765	14.9	83.9	1020.9	515.8	3.9	305.2	16.45	33.22
13	299.8836	14.6	78.9	1019.3	149.8	5.1	282.5	16.68	33.21
14	299.9610	14.9	76.3	1019.1	19.8	4.2	289.1	16.86	33.24
15	300.0659	15.1	75.2	1018.7	0.1	3.8	297.2	17.04	33.34
16	300.1490	15.5	70.6	1019.3	0.0	4.2	303.8	16.96	33.32
17	300.2537	15.6	71.7	1019.1	0.0	2.6	311.0	16.83	33.24
18	300.3597	15.5	71.3	1018.6	0.0	2.7	4.0	16.61	33.07
19	300.6328	15.7	77.3	1017.6	0.9	5.2	60.6	16.49	33.16
20	300.7341	16.2	79.6	1017.1	14.3	7.3	75.1	16.75	33.24
21	300.8695	16.3	83.9	1014.9	265.3	8.8	81.7	16.71	33.23
22	301.0040	16.0	89.5	1013.3	17.9	9.0	96.1	16.63	33.22
23	301.1571	16.5	90.6	1012.8	0.0	9.4	86.8	16.20	33.20
24	301.3784	14.5	94.6	1014.0	0.5	5.7	287.0	16.24	33.22
25	301.5757	13.8	94.4	1015.9	0.0	3.5	278.6	15.23	33.10
26	301.7256	14.0	93.9	1017.4	64.9	2.6	247.8	15.29	33.24
27	301.8887	14.2	90.2	1017.7	118.0	2.3	247.7	15.08	33.17
28	302.0481	14.1	89.9	1017.9	12.1	3.2	301.1	14.72	33.20

Station	Yearday, 2005 (UTC)	Air Temperature (°C)	Humidity (percent)	Barometric Pressure (mb)	Shortwave Radiation (watts/m ²)	Wind Speed (m/s)	Wind Direction (°T)	Sea Surface Temperature (°C)	Sea Surface Salinity
29	302.2126	14.1	93.1	1019.7	0.0	5.8	317.2	14.62	33.20
30	302.3253	12.7	96.2	1020.2	0.0	5.9	288.4	14.34	33.22
31	302.4389	11.8	97.1	1021.2	0.0	4.0	304.0	14.53	33.23
32	302.5246	10.9	97.4	1021.7	0.0	4.3	297.7	13.10	33.25
33	302.5920	10.6	97.6	1022.3	0.5	3.8	318.2	12.87	33.19
34	302.9643	13.4	85.9	1023.5	1.0	6.8	298.0	13.21	33.38
35	303.0749	13.3	86.2	1023.0	0.0	8.4	291.8	13.36	33.34

Table 2: List at standard pressures of hydrographic data collected during the PaCOOS cruise of October 2005. Stations are in chronological (and numerical) order. For each cast, the surface pressure (listed as 0 dbar) is actually 2 dbar, while the last pressure is the deepest pressure of the cast. Salinities have been adjusted according to the calibration correction determined from the collected salinity water samples. The time listed for each station is the beginning (*<mm/dd/yyyy, hhmm>* UTC) of the CTD cast. Units of geopotential anomaly ($\Delta\Phi$), potential density (σ_θ), and potential spiciness (π_θ) are m^2s^{-2} , kg m^{-3} , and kg m^{-3} , respectively.

Station: 1 Date: 10/25/2005, 1650 **Lat.:** 36° 47.69 N **Long.:** 121° 50.77 W

P(dbar)	T(°C)	S	O ₂ ($\mu\text{m}/\text{kg}$)	Xmiss(%)	$\Delta\Phi$	σ_θ	π_θ
0	12.764	33.364	319.5	68.1	0.056	25.172	0.359
10	12.668	33.393	289.3	82.7	0.277	25.213	0.363
20	12.065	33.447	245.5	91.1	0.544	25.371	0.287
30	11.376	33.461	213.1	92.5	0.795	25.510	0.167
50	10.500	33.641	163.8	89.7	1.259	25.806	0.150
75	10.211	33.705	138.9	83.8	1.790	25.907	0.150
100	10.080	33.729	130.7	83.0	2.309	25.948	0.145
125	9.791	33.770	120.1	88.9	2.817	26.029	0.129
150	9.505	33.832	110.2	88.0	3.307	26.125	0.129
200	8.156	34.050	72.5	83.7	4.181	26.507	0.088
250	7.662	34.113	59.5	80.2	4.926	26.630	0.064
278	7.537	34.126	56.9	83.6	5.327	26.659	0.056

Station: 2 Date: 10/25/2005, 1846 **Lat.:** 36° 44.19 N **Long.:** 122° 01.22 W

P(dbar)	T(°C)	S	O ₂ ($\mu\text{m}/\text{kg}$)	Xmiss(%)	$\Delta\Phi$	σ_θ	π_θ
0	12.766	33.351	284.7	85.0	0.056	25.162	0.349
10	12.427	33.377	269.6	90.5	0.276	25.247	0.302
20	12.070	33.406	247.8	91.7	0.545	25.338	0.255
30	11.534	33.407	218.8	92.7	0.805	25.439	0.153
50	10.575	33.484	177.6	92.9	1.286	25.671	0.039
75	10.299	33.633	151.4	92.7	1.840	25.835	0.108
100	10.097	33.803	120.6	92.5	2.362	26.003	0.207
125	10.056	33.853	112.0	92.6	2.860	26.049	0.239
150	9.983	33.882	108.1	92.6	3.350	26.085	0.249
200	9.656	33.947	103.5	93.0	4.300	26.191	0.244
250	9.104	33.982	101.1	93.7	5.207	26.309	0.181
300	8.405	34.108	71.4	92.6	6.040	26.517	0.170
400	7.158	34.156	49.8	92.4	7.503	26.737	0.024
500	6.021	34.221	24.0	93.8	8.766	26.940	-0.076
600	5.463	34.294	17.6	91.9	9.871	27.067	-0.087
700	5.056	34.343	16.0	90.1	10.881	27.155	-0.097
800	4.820	34.370	14.9	90.0	11.843	27.204	-0.103
900	4.379	34.414	17.7	88.0	12.750	27.288	-0.117
1000	3.898	34.459	23.1	84.0	13.571	27.374	-0.132
1011	3.870	34.461	23.6	82.9	13.657	27.379	-0.133

Station: 3 Date: 10/25/2005, 2132 Lat.: 36° 42.65 N Long.: 122° 14.47 W

P(dbar)	T(°C)	S	O ₂ (μm/kg)	Xmiss(%)	ΔΦ	σ _θ	π _θ
0	13.872	33.263	376.8	83.8	0.061	24.871	0.508
10	13.331	33.291	289.5	88.5	0.302	25.004	0.417
20	12.671	33.302	266.1	90.2	0.590	25.142	0.291
30	12.070	33.367	239.6	92.0	0.864	25.308	0.224
50	10.427	33.478	191.9	92.6	1.348	25.692	0.008
75	9.364	33.604	156.6	93.8	1.890	25.968	-0.073
100	9.505	33.883	115.9	93.6	2.371	26.164	0.170
125	9.337	34.025	94.6	93.3	2.822	26.303	0.255
150	9.157	34.059	88.6	93.3	3.249	26.359	0.252
200	8.873	34.084	84.7	93.7	4.082	26.425	0.226
250	8.569	34.111	78.2	93.9	4.887	26.493	0.198
300	7.660	34.080	81.0	94.1	5.642	26.605	0.037
400	6.521	34.113	50.5	94.1	7.039	26.789	-0.096
500	5.825	34.205	22.4	94.1	8.263	26.951	-0.113
600	5.394	34.291	12.1	93.9	9.363	27.073	-0.097
700	5.025	34.348	8.5	93.8	10.370	27.162	-0.096
800	4.486	34.403	9.5	94.0	11.290	27.266	-0.113
900	4.122	34.438	13.1	93.9	12.141	27.334	-0.125
1000	3.945	34.457	16.1	93.3	12.952	27.368	-0.128
1012	3.926	34.459	16.7	93.3	13.047	27.371	-0.128

Station: 4 Date: 10/25/2005, 2337 Lat.: 36° 37.60 N Long.: 122° 25.13 W

P(dbar)	T(°C)	S	O ₂ (μm/kg)	Xmiss(%)	ΔΦ	σ _θ	π _θ
0	12.427	33.433	288.2	89.1	0.053	25.291	0.347
10	12.104	33.464	272.2	87.0	0.263	25.377	0.308
20	11.506	33.528	243.0	90.3	0.510	25.538	0.245
30	11.470	33.553	242.2	90.4	0.753	25.564	0.257
50	11.373	33.565	235.0	90.8	1.234	25.592	0.248
75	10.417	33.572	169.9	92.5	1.816	25.768	0.080
100	9.817	33.628	150.3	93.1	2.359	25.913	0.020
125	9.358	33.775	132.0	93.5	2.859	26.104	0.060
150	9.206	33.868	119.1	93.6	3.329	26.202	0.109
200	8.969	34.054	85.4	93.8	4.201	26.386	0.217
250	8.781	34.115	74.9	93.9	5.020	26.463	0.234
300	8.291	34.124	74.1	94.0	5.806	26.547	0.165
400	7.035	34.133	54.1	93.9	7.264	26.736	-0.011
500	5.999	34.207	25.4	93.9	8.534	26.932	-0.089
600	5.150	34.316	9.8	93.8	9.614	27.121	-0.106
700	4.657	34.337	7.1	94.1	10.591	27.194	-0.146
800	4.482	34.394	8.5	94.1	11.501	27.260	-0.121
900	4.266	34.423	11.3	93.9	12.366	27.307	-0.121
1000	3.939	34.457	15.9	93.8	13.185	27.368	-0.129
1013	3.915	34.459	16.3	93.8	13.288	27.372	-0.130

Station: 5 Date: 10/26/2005, 0219 Lat.: 36° 32.59 N Long.: 122° 35.94 W

P(dbar)	T(°C)	S	O ₂ (μm/kg)	Xmiss(%)	ΔΦ	σ _θ	π _θ
0	13.088	33.397	384.4	68.8	0.056	25.133	0.451
10	12.878	33.401	343.9	72.6	0.280	25.178	0.411
20	12.418	33.416	287.7	89.4	0.552	25.280	0.332
30	12.026	33.449	266.6	91.0	0.815	25.381	0.281
50	11.543	33.493	238.4	92.0	1.326	25.505	0.223
75	10.264	33.617	161.5	92.9	1.904	25.829	0.089
100	9.901	33.732	138.9	93.1	2.428	25.980	0.117
125	9.680	33.886	111.8	93.1	2.918	26.138	0.202
150	9.487	33.942	100.6	93.4	3.382	26.214	0.213
200	9.283	34.080	75.6	93.8	4.255	26.356	0.288
250	8.728	34.095	77.2	93.9	5.083	26.456	0.210
300	8.126	34.145	67.5	94.0	5.857	26.588	0.157
400	6.994	34.156	48.6	94.1	7.278	26.760	0.001
500	5.905	34.218	22.1	94.1	8.516	26.952	-0.092
600	5.396	34.284	11.4	94.0	9.627	27.067	-0.103
700	4.791	34.334	7.6	94.0	10.637	27.177	-0.134
800	4.467	34.403	9.5	93.8	11.551	27.268	-0.115
900	4.183	34.430	12.0	93.9	12.409	27.321	-0.125
1000	3.899	34.447	14.1	93.9	13.225	27.364	-0.141
1012	3.846	34.451	14.7	93.9	13.320	27.373	-0.143

Station: 6 Date: 10/26/2005, 0423 Lat.: 36° 27.49 N Long.: 122° 46.63 W

P(dbar)	T(°C)	S	O ₂ (μm/kg)	Xmiss(%)	ΔΦ	σ _θ	π _θ
0	14.188	33.282	275.4	88.2	0.062	24.821	0.591
10	13.671	33.292	256.1	89.6	0.306	24.935	0.488
20	12.083	33.320	217.1	92.5	0.590	25.270	0.190
30	11.385	33.373	198.9	93.1	0.849	25.440	0.099
50	10.416	33.561	158.9	93.3	1.328	25.759	0.072
75	9.877	33.716	133.4	93.5	1.858	25.972	0.101
100	9.751	33.842	112.8	93.2	2.354	26.091	0.179
125	9.682	33.940	92.2	93.5	2.825	26.180	0.245
150	9.646	34.043	74.9	93.6	3.278	26.267	0.320
200	8.951	34.064	85.0	93.7	4.131	26.397	0.222
250	8.987	34.189	58.0	94.0	4.940	26.490	0.325
300	8.479	34.182	57.5	94.1	5.715	26.564	0.240
400	7.414	34.221	37.8	94.1	7.129	26.753	0.111
500	6.504	34.230	26.1	94.2	8.415	26.885	-0.007
600	5.605	34.257	14.8	94.2	9.578	27.020	-0.100
700	4.998	34.344	7.6	94.2	10.613	27.162	-0.103
800	4.636	34.399	8.7	94.1	11.545	27.247	-0.101
900	4.152	34.426	11.2	94.1	12.409	27.321	-0.131
1000	3.873	34.449	14.2	94.1	13.220	27.369	-0.141
1012	3.831	34.452	14.6	94.1	13.314	27.375	-0.143

Station: 7 Date: 10/26/2005, 0652 Lat.: 36° 22.68 N Long.: 122° 57.42 W

P(dbar)	T(°C)	S	O ₂ (μm/kg)	Xmiss(%)	ΔΦ	σ _θ	π _θ
0	14.672	33.231	295.0	88.1	0.065	24.679	0.656
10	13.545	33.257	294.2	86.4	0.316	24.934	0.434
20	12.525	33.290	259.6	86.4	0.607	25.162	0.252
30	12.004	33.460	257.3	91.3	0.872	25.393	0.285
50	10.721	33.538	184.4	92.8	1.358	25.688	0.108
75	9.959	33.707	138.2	92.9	1.892	25.951	0.108
100	9.745	33.810	117.6	92.1	2.389	26.067	0.153
125	9.561	33.877	108.9	92.7	2.868	26.150	0.174
150	9.315	33.941	101.2	93.1	3.328	26.241	0.184
200	8.880	34.051	90.8	93.8	4.189	26.397	0.200
250	8.481	34.107	79.0	93.9	4.992	26.504	0.181
300	8.174	34.158	64.3	94.0	5.755	26.592	0.175
400	6.832	34.139	49.5	94.1	7.169	26.768	-0.034
500	6.024	34.169	30.5	94.1	8.439	26.898	-0.117
600	5.678	34.248	16.4	94.2	9.604	27.005	-0.098
700	5.145	34.315	8.6	94.2	10.670	27.122	-0.109
800	4.745	34.378	7.7	94.2	11.642	27.218	-0.105
900	4.416	34.420	10.2	94.1	12.535	27.288	-0.108
1000	3.987	34.452	14.7	94.2	13.370	27.360	-0.128
1011	3.942	34.456	15.0	94.2	13.458	27.367	-0.130

Station: 8 Date: 10/26/2005, 0851 Lat.: 36° 17.55 N Long.: 123° 07.97 W

P(dbar)	T(°C)	S	O ₂ (μm/kg)	Xmiss(%)	ΔΦ	σ _θ	π _θ
0	15.927	33.231	254.2	90.8	0.070	24.404	0.939
10	15.666	33.235	259.4	90.1	0.350	24.465	0.881
20	13.579	33.331	293.4	82.5	0.674	24.984	0.499
30	12.517	33.415	268.9	90.9	0.956	25.260	0.350
50	11.011	33.520	200.2	92.7	1.460	25.622	0.146
75	10.128	33.647	141.5	93.1	2.017	25.875	0.089
100	9.788	33.734	125.3	93.4	2.532	26.001	0.100
125	9.303	33.948	98.5	93.6	3.003	26.248	0.188
150	9.082	34.039	86.7	93.8	3.439	26.355	0.224
200	8.590	34.098	80.7	93.9	4.254	26.479	0.192
250	8.211	34.137	71.8	94.0	5.026	26.568	0.164
300	7.469	34.120	65.1	94.1	5.758	26.664	0.041
400	6.500	34.139	43.3	94.1	7.105	26.812	-0.078
500	5.848	34.196	24.0	94.1	8.324	26.942	-0.117
600	5.363	34.287	11.4	94.1	9.431	27.074	-0.104
700	4.988	34.355	7.8	94.1	10.442	27.172	-0.095
800	4.619	34.401	8.9	94.1	11.374	27.250	-0.101
900	4.217	34.426	11.0	94.1	12.245	27.314	-0.124
1000	3.934	34.455	15.1	94.2	13.062	27.367	-0.131
1011	3.919	34.457	15.5	94.2	13.149	27.370	-0.131

Station: 9 Date: 10/26/2005, 1111 Lat.: 36° 12.60 N Long.: 123° 18.78 W

P(dbar)	T(°C)	S	O ₂ (μm/kg)	Xmiss(%)	ΔΦ	σ _θ	π _θ
2	16.085	33.224	253.6	90.8	0.071	24.362	0.970
10	15.915	33.221	256.2	91.5	0.355	24.399	0.928
20	15.849	33.221	251.6	91.6	0.707	24.414	0.912
30	15.525	33.211	254.5	91.7	1.054	24.479	0.829
50	11.143	33.075	224.8	93.0	1.672	25.252	-0.185
75	9.633	33.402	189.0	93.9	2.287	25.767	-0.190
100	9.108	33.610	159.3	93.9	2.813	26.015	-0.111
125	8.959	33.827	123.9	93.9	3.288	26.208	0.037
150	8.625	33.987	103.8	94.0	3.719	26.386	0.111
200	8.221	34.089	86.0	94.1	4.515	26.528	0.128
250	7.874	34.137	69.2	94.1	5.259	26.618	0.114
300	7.192	34.131	58.4	94.1	5.966	26.711	0.010
400	6.438	34.188	34.0	94.1	7.268	26.860	-0.047
500	5.631	34.243	17.7	93.9	8.443	27.005	-0.106
600	5.181	34.289	9.9	94.2	9.509	27.096	-0.124
700	4.778	34.332	7.1	94.2	10.506	27.177	-0.137
800	4.557	34.404	8.8	94.2	11.427	27.260	-0.105
900	4.233	34.441	12.8	94.2	12.284	27.324	-0.111
1000	3.891	34.464	16.4	94.2	13.093	27.379	-0.128
1013	3.849	34.468	17.3	94.2	13.194	27.386	-0.129

Station: 10 Date: 10/26/2005, 1318 Lat.: 36° 07.55 N Long.: 123° 29.36 W

P(dbar)	T(°C)	S	O ₂ (μm/kg)	Xmiss(%)	ΔΦ	σ _θ	π _θ
0	16.178	33.197	251.7	90.8	0.072	24.321	0.971
10	16.167	33.196	254.7	91.0	0.360	24.323	0.967
20	16.035	33.195	250.7	90.5	0.718	24.353	0.935
30	15.988	33.199	252.7	90.8	1.074	24.366	0.927
50	15.321	33.185	241.9	92.2	1.781	24.505	0.762
75	10.978	33.310	204.5	93.3	2.503	25.465	-0.028
100	9.617	33.414	180.4	93.9	3.089	25.779	-0.183
125	9.058	33.654	154.5	94.0	3.614	26.057	-0.084
150	8.745	33.876	124.6	93.9	4.075	26.281	0.041
200	8.077	33.997	116.2	94.0	4.910	26.478	0.034
250	7.335	34.014	108.9	94.1	5.669	26.599	-0.061
300	7.056	34.104	64.2	94.1	6.381	26.709	-0.030
400	6.221	34.149	36.4	94.1	7.683	26.856	-0.106
500	5.446	34.191	21.4	94.2	8.863	26.986	-0.170
600	5.147	34.274	10.6	94.2	9.939	27.088	-0.140
700	4.915	34.361	7.6	94.2	10.931	27.185	-0.098
800	4.410	34.390	8.1	94.2	11.849	27.264	-0.131
900	4.059	34.427	11.5	94.2	12.697	27.331	-0.140
1000	3.888	34.468	17.3	94.2	13.495	27.382	-0.126
1010	3.857	34.470	17.9	94.2	13.573	27.387	-0.127

Station: 11 Date: 10/26/2005, 1625 Lat.: 36° 02.56 N Long.: 123° 40.06 W

P(dbar)	T(°C)	S	O ₂ (μm/kg)	Xmiss(%)	ΔΦ	σ _θ	π _θ
0	15.985	33.220	259.8	90.3	0.071	24.382	0.944
10	15.957	33.223	256.2	90.2	0.354	24.391	0.940
20	15.745	33.225	255.4	90.5	0.704	24.440	0.891
30	15.607	33.209	254.4	91.5	1.052	24.459	0.847
50	13.123	33.026	249.5	92.4	1.723	24.841	0.162
75	10.616	33.232	208.1	93.6	2.414	25.468	-0.156
100	9.502	33.448	187.7	94.0	2.993	25.825	-0.175
125	8.853	33.701	166.3	94.0	3.500	26.126	-0.080
150	8.671	33.873	140.2	94.0	3.955	26.289	0.027
200	8.206	34.025	101.3	94.0	4.787	26.480	0.075
250	7.322	34.030	94.4	94.1	5.544	26.613	-0.050
300	6.746	34.057	73.1	94.1	6.248	26.714	-0.109
400	6.122	34.162	32.4	94.1	7.535	26.879	-0.108
500	5.422	34.207	18.2	94.2	8.702	27.002	-0.160
600	5.000	34.291	8.7	94.2	9.758	27.118	-0.144
700	4.714	34.343	6.8	94.2	10.730	27.193	-0.135
800	4.349	34.401	9.1	94.2	11.630	27.279	-0.130
900	4.099	34.445	14.7	94.2	12.468	27.341	-0.122
1000	3.796	34.467	20.1	94.3	13.260	27.391	-0.135
1011	3.772	34.470	20.9	94.3	13.344	27.395	-0.136

Station: 12 Date: 10/26/2005, 1829 Lat.: 35° 57.58 N Long.: 123° 50.82 W

P(dbar)	T(°C)	S	O ₂ (μm/kg)	Xmiss(%)	ΔΦ	σ _θ	π _θ
0	16.246	33.233	256.1	90.6	0.072	24.333	1.015
10	16.217	33.234	254.4	90.4	0.358	24.341	1.008
20	16.133	33.249	252.1	91.6	0.715	24.372	1.000
30	15.861	33.230	253.3	91.9	1.067	24.419	0.922
50	12.025	33.054	234.5	92.8	1.712	25.075	-0.034
75	10.456	33.390	186.6	93.6	2.360	25.618	-0.058
100	9.150	33.566	179.4	94.0	2.906	25.973	-0.139
125	8.925	33.801	131.2	94.0	3.386	26.193	0.011
150	8.607	33.910	117.0	94.0	3.829	26.329	0.047
200	8.116	34.041	94.3	94.0	4.636	26.506	0.074
250	7.301	34.030	93.5	94.1	5.390	26.616	-0.054
300	6.571	34.026	82.8	94.1	6.090	26.712	-0.157
400	5.954	34.129	36.7	94.1	7.377	26.875	-0.155
500	5.614	34.228	17.3	94.1	8.539	26.995	-0.120
600	4.875	34.261	9.9	94.2	9.603	27.109	-0.181
700	4.675	34.365	6.9	94.1	10.570	27.215	-0.122
800	4.271	34.400	9.0	94.2	11.458	27.287	-0.138
900	4.017	34.442	13.3	94.2	12.289	27.347	-0.133
1000	3.788	34.466	18.4	94.2	13.076	27.391	-0.137
1011	3.762	34.469	18.9	94.2	13.160	27.395	-0.137

Station: 13 Date: 10/26/2005, 2104 Lat.: 35° 52.61 N Long.: 124° 01.49 W

P(dbar)	T(°C)	S	O ₂ (μm/kg)	Xmiss(%)	ΔΦ	σ _θ	π _θ
2	16.486	33.214	254.7	89.5	0.073	24.263	1.056
10	16.367	33.213	252.9	90.2	0.364	24.290	1.028
20	15.943	33.214	257.0	90.4	0.722	24.388	0.928
30	15.865	33.208	257.0	90.7	1.075	24.401	0.906
50	11.521	33.162	221.4	93.1	1.711	25.252	-0.044
75	10.102	33.500	168.2	93.8	2.323	25.765	-0.032
100	8.970	33.708	147.0	94.0	2.835	26.113	-0.055
125	8.863	33.861	118.1	94.0	3.293	26.250	0.049
150	8.575	33.945	110.7	94.0	3.724	26.361	0.069
200	8.090	34.030	96.0	94.0	4.531	26.502	0.062
250	7.259	34.035	92.2	94.1	5.281	26.626	-0.055
300	6.828	34.090	61.0	94.2	5.979	26.729	-0.071
400	5.979	34.130	36.6	94.1	7.267	26.872	-0.151
500	5.319	34.187	20.4	94.2	8.429	26.998	-0.188
600	4.943	34.260	10.1	94.2	9.493	27.101	-0.174
700	4.553	34.335	6.5	94.2	10.466	27.204	-0.159
800	4.327	34.391	8.0	94.2	11.364	27.274	-0.139
900	4.033	34.433	12.1	94.2	12.199	27.339	-0.138
1000	3.788	34.465	16.8	94.2	12.988	27.390	-0.137
1012	3.763	34.469	17.4	94.2	13.080	27.396	-0.137

Station: 14 Date: 10/26/2005, 2255 Lat.: 35° 47.59 N Long.: 124° 12.09 W

P(dbar)	T(°C)	S	O ₂ (μm/kg)	Xmiss(%)	ΔΦ	σ _θ	π _θ
0	16.662	33.252	249.2	90.9	0.073	24.252	1.128
10	16.599	33.253	253.5	90.8	0.366	24.267	1.113
20	16.610	33.304	252.9	90.1	0.728	24.304	1.156
30	16.539	33.333	247.3	90.6	1.089	24.343	1.161
50	11.198	33.129	218.3	92.9	1.721	25.284	-0.132
75	9.928	33.475	168.1	93.7	2.323	25.775	-0.082
100	9.125	33.715	140.7	94.0	2.835	26.094	-0.025
125	8.939	33.903	110.4	94.1	3.297	26.271	0.094
150	8.489	33.943	115.1	94.0	3.725	26.372	0.054
200	7.970	34.035	97.7	94.0	4.522	26.523	0.048
250	7.335	34.033	92.6	94.1	5.270	26.614	-0.046
300	6.965	34.085	62.6	94.2	5.978	26.707	-0.057
400	6.080	34.135	37.0	94.2	7.282	26.864	-0.135
500	5.610	34.216	18.6	94.1	8.457	26.987	-0.130
600	4.920	34.263	9.7	94.1	9.524	27.106	-0.174
700	4.638	34.344	6.9	94.2	10.499	27.202	-0.142
800	4.329	34.395	8.4	94.2	11.400	27.277	-0.136
900	4.052	34.445	13.4	94.2	12.237	27.347	-0.126
1000	3.854	34.479	19.1	94.2	13.023	27.394	-0.120
1013	3.820	34.482	19.8	94.2	13.123	27.400	-0.121

Station: 15 Date: 10/27/2005, 0126 Lat.: 35° 42.58 N Long.: 124° 22.75 W

P(dbar)	T(°C)	S	O ₂ (μm/kg)	Xmiss(%)	ΔΦ	σ _θ	π _θ
0	16.859	33.347	249.5	89.9	0.073	24.279	1.250
10	16.856	33.347	251.1	89.8	0.364	24.280	1.249
20	16.729	33.354	252.1	89.5	0.725	24.315	1.223
30	16.624	33.372	249.7	89.3	1.085	24.354	1.212
50	14.155	33.308	227.3	92.2	1.785	24.849	0.603
75	10.002	33.546	159.2	93.7	2.394	25.818	-0.012
100	9.160	33.701	139.3	94.0	2.904	26.077	-0.031
125	8.776	33.859	120.7	94.0	3.370	26.262	0.033
150	8.536	33.960	110.0	94.0	3.799	26.378	0.075
200	8.089	34.061	88.5	94.1	4.596	26.526	0.086
250	7.375	34.074	75.5	94.2	5.333	26.641	-0.008
300	6.704	34.058	68.2	94.2	6.032	26.721	-0.113
400	5.918	34.111	42.8	94.1	7.321	26.865	-0.174
500	5.305	34.168	23.2	94.2	8.490	26.985	-0.204
600	5.045	34.273	9.9	94.1	9.561	27.100	-0.152
700	4.761	34.337	7.0	94.2	10.548	27.183	-0.134
800	4.527	34.389	8.1	94.2	11.469	27.251	-0.120
900	4.271	34.435	11.7	94.2	12.336	27.316	-0.112
1000	3.966	34.477	18.3	94.2	13.147	27.381	-0.111
1011	3.918	34.481	19.2	94.2	13.232	27.389	-0.112

Station: 16 Date: 10/27/2005, 0326 Lat.: 35° 37.59 N Long.: 124° 33.27 W

P(dbar)	T(°C)	S	O ₂ (μm/kg)	Xmiss(%)	ΔΦ	σ _θ	π _θ
0	16.779	33.325	249.7	88.9	0.073	24.281	1.213
10	16.776	33.325	252.1	89.0	0.363	24.282	1.213
20	16.603	33.296	252.4	89.3	0.726	24.300	1.148
30	16.449	33.287	250.4	89.5	1.088	24.329	1.104
50	15.732	33.272	216.4	91.5	1.803	24.480	0.924
75	10.041	33.463	171.4	93.4	2.436	25.746	-0.072
100	9.196	33.667	143.5	93.9	2.960	26.045	-0.051
125	8.786	33.829	133.0	94.0	3.427	26.237	0.011
150	8.486	33.920	129.6	94.1	3.862	26.355	0.036
200	8.151	34.056	86.0	94.1	4.667	26.513	0.092
250	7.676	34.087	72.3	94.1	5.419	26.608	0.045
300	7.198	34.113	58.2	94.2	6.131	26.697	-0.002
400	6.032	34.102	44.5	94.2	7.447	26.843	-0.167
500	5.562	34.207	21.0	94.1	8.637	26.985	-0.143
600	5.177	34.278	9.9	94.1	9.713	27.088	-0.134
700	4.710	34.333	6.9	94.1	10.702	27.185	-0.143
800	4.436	34.392	8.0	94.2	11.618	27.263	-0.128
900	4.102	34.434	12.0	94.2	12.466	27.332	-0.130
1000	3.792	34.468	17.3	94.2	13.260	27.391	-0.135
1012	3.755	34.472	18.6	94.2	13.352	27.398	-0.136

Station: 17 Date: 10/27/2005, 0557 Lat.: 35° 32.57 N Long.: 124° 43.92 W

P(dbar)	T(°C)	S	O ₂ (μm/kg)	Xmiss(%)	ΔΦ	σ _θ	π _θ
0	16.639	33.252	248.8	90.8	0.073	24.257	1.123
10	16.638	33.252	253.3	90.8	0.366	24.258	1.122
20	16.275	33.248	256.4	91.1	0.728	24.339	1.033
30	15.592	33.231	255.6	90.4	1.078	24.480	0.861
50	11.427	33.235	214.0	92.8	1.704	25.326	-0.004
75	9.637	33.590	154.6	93.8	2.287	25.913	-0.039
100	9.180	33.757	126.4	94.0	2.785	26.118	0.018
125	8.704	33.853	138.2	94.1	3.242	26.269	0.017
150	8.481	33.919	130.1	94.0	3.673	26.355	0.034
200	8.189	34.079	79.4	94.1	4.473	26.525	0.116
250	7.582	34.092	68.3	94.2	5.217	26.625	0.036
300	7.026	34.109	55.7	94.2	5.920	26.717	-0.029
400	6.091	34.152	34.4	94.1	7.215	26.876	-0.120
500	5.421	34.212	18.0	94.1	8.376	27.006	-0.156
600	4.987	34.284	9.1	94.1	9.433	27.114	-0.150
700	4.685	34.360	6.8	94.1	10.402	27.210	-0.125
800	4.356	34.407	8.9	94.1	11.294	27.283	-0.124
900	4.051	34.438	12.5	94.1	12.128	27.341	-0.132
1000	3.746	34.468	17.4	94.2	12.914	27.396	-0.140
1011	3.709	34.469	18.0	94.2	12.997	27.401	-0.142

Station: 18 Date: 10/27/2005, 0758 Lat.: 35° 27.59 N Long.: 124° 54.35 W

P(dbar)	T(°C)	S	O ₂ (μm/kg)	Xmiss(%)	ΔΦ	σ _θ	π _θ
0	16.442	33.079	260.8	89.7	0.075	24.170	0.940
10	16.444	33.078	259.8	89.7	0.374	24.169	0.939
20	16.226	33.106	262.7	89.8	0.745	24.241	0.910
30	15.801	33.173	259.8	90.4	1.103	24.388	0.863
50	12.684	32.960	253.8	92.6	1.774	24.876	0.021
75	10.826	33.125	216.9	93.6	2.478	25.348	-0.203
100	9.534	33.559	158.9	93.8	3.061	25.906	-0.082
125	8.896	33.796	136.8	93.9	3.552	26.194	0.002
150	8.705	33.883	122.6	93.9	3.999	26.293	0.041
200	8.168	34.045	87.9	93.9	4.818	26.502	0.086
250	7.380	34.064	79.2	94.1	5.566	26.632	-0.015
300	6.631	34.066	64.9	94.1	6.259	26.736	-0.117
400	5.776	34.111	39.8	94.1	7.528	26.883	-0.192
500	5.228	34.180	21.2	94.1	8.682	27.004	-0.204
600	4.766	34.257	11.3	94.1	9.735	27.118	-0.196
700	4.402	34.324	7.2	94.2	10.696	27.212	-0.184
800	4.238	34.384	7.5	94.2	11.587	27.278	-0.154
900	3.961	34.430	11.4	94.2	12.421	27.344	-0.147
1000	3.702	34.463	16.5	94.2	13.203	27.397	-0.147
1100	3.469	34.492	20.7	94.2	13.942	27.443	-0.148
1200	3.240	34.514	25.6	94.2	14.643	27.483	-0.152
1300	3.054	34.527	29.6	94.2	15.314	27.511	-0.160
1400	2.903	34.546	35.4	94.2	15.960	27.540	-0.159
1500	2.704	34.560	38.6	94.2	16.579	27.570	-0.165
1750	2.264	34.587	50.9	94.2	18.016	27.630	-0.181
2000	2.007	34.612	66.4	94.3	19.332	27.671	-0.183
2500	1.747	34.646	89.1	94.3	21.757	27.721	-0.179
3000	1.616	34.664	108.7	94.3	24.058	27.748	-0.177
3500	1.524	34.678	125.8	94.3	26.318	27.769	-0.175
4000	1.491	34.687	141.9	94.3	28.550	27.782	-0.174
4325	1.510	34.686	144.9	94.3	30.035	27.783	-0.176

Station: 19 Date: 10/27/2005, 1508 Lat.: 35° 27.51 N Long.: 124° 54.41 W

P(dbar)	T(°C)	S	O ₂ (μm/kg)	Xmiss(%)	ΔΦ	σ _θ	π _θ
0	16.297	33.166	254.0	90.2	0.073	24.270	0.974
10	16.303	33.166	255.6	90.3	0.365	24.269	0.975
20	16.027	33.145	259.5	90.3	0.727	24.316	0.894
30	15.569	33.147	260.1	90.4	1.081	24.420	0.789
50	12.654	32.986	250.8	92.6	1.742	24.902	0.036
75	10.433	33.213	205.2	93.6	2.431	25.485	-0.203
100	9.682	33.461	171.5	93.7	3.020	25.805	-0.135
125	9.103	33.696	149.5	93.8	3.531	26.083	-0.044
150	8.825	33.829	131.5	93.9	4.001	26.231	0.016
200	8.389	34.021	88.6	93.9	4.846	26.450	0.100
203	8.278	34.020	93.3	93.9	4.894	26.466	0.082

Station: 20 Date: 10/27/2005, 1728 Lat.: 35° 42.34 N Long.: 125° 05.41 W

P(dbar)	T(°C)	S	O ₂ (μm/kg)	Xmiss(%)	ΔΦ	σ _θ	π _θ
0	16.555	33.243	254.3	90.0	0.073	24.269	1.095
10	16.554	33.243	253.7	90.0	0.365	24.270	1.095
20	16.479	33.234	255.4	90.0	0.729	24.281	1.070
30	16.224	33.231	253.4	90.0	1.091	24.337	1.007
50	11.444	33.226	215.8	92.3	1.738	25.315	-0.008
75	9.627	33.438	175.4	93.5	2.339	25.795	-0.163
100	9.101	33.697	143.0	93.8	2.851	26.083	-0.043
125	8.803	33.828	130.8	93.9	3.318	26.234	0.013
150	8.632	33.921	115.3	93.9	3.756	26.333	0.059
200	8.149	34.042	96.6	94.0	4.568	26.502	0.080
250	7.789	34.092	74.2	94.1	5.324	26.595	0.066
300	6.851	34.061	72.5	94.1	6.035	26.703	-0.091
400	6.113	34.126	42.2	94.0	7.343	26.852	-0.138
500	5.642	34.251	14.4	94.1	8.517	27.010	-0.099
600	5.011	34.295	8.1	94.1	9.569	27.121	-0.139
700	4.562	34.351	6.7	94.1	10.530	27.216	-0.145
800	4.291	34.405	8.6	94.1	11.415	27.288	-0.133
900	3.994	34.443	12.8	94.1	12.242	27.350	-0.134
1000	3.705	34.470	15.6	94.1	13.020	27.402	-0.142
1025	3.653	34.475	15.5	94.1	13.208	27.411	-0.143

Station: 21 Date: 10/27/2005, 2043 Lat.: 36° 00.52 N Long.: 125° 19.05 W

P(dbar)	T(°C)	S	O ₂ (μm/kg)	Xmiss(%)	ΔΦ	σ _θ	π _θ
0	16.515	33.240	254.1	89.7	0.073	24.277	1.084
10	16.436	33.238	253.6	89.7	0.363	24.294	1.063
20	16.375	33.236	254.7	89.7	0.725	24.307	1.047
30	15.811	33.207	251.1	89.6	1.082	24.412	0.892
50	12.854	33.180	234.8	92.2	1.749	25.013	0.230
75	10.322	33.396	185.5	93.4	2.401	25.646	-0.077
100	9.495	33.678	144.5	93.8	2.949	26.005	0.006
125	9.069	33.816	130.8	94.0	3.430	26.182	0.045
150	8.851	33.970	106.5	93.9	3.871	26.338	0.132
200	8.249	34.060	78.7	94.0	4.679	26.502	0.110
250	7.641	34.094	68.0	94.1	5.428	26.618	0.046
300	7.118	34.104	58.7	94.2	6.138	26.700	-0.021
400	6.271	34.173	30.1	94.1	7.437	26.869	-0.080
500	5.365	34.192	20.3	94.1	8.600	26.997	-0.178
600	5.075	34.279	9.2	94.1	9.668	27.100	-0.144
700	4.648	34.323	6.6	94.1	10.651	27.184	-0.158
800	4.306	34.379	7.2	94.1	11.561	27.266	-0.151
900	4.010	34.416	8.3	94.1	12.409	27.328	-0.153
1000	3.752	34.448	12.0	94.1	13.208	27.380	-0.154
1013	3.699	34.451	12.6	94.1	13.308	27.387	-0.157

Station: 22 Date: 10/27/2005, 2356 Lat.: 36° 18.77 N Long.: 125° 32.54 W

P(dbar)	T(°C)	S	O ₂ (μ m/kg)	Xmiss(%)	$\Delta\Phi$	σ_{θ}	π_{θ}
0	16.430	33.228	258.3	90.3	0.073	24.287	1.055
10	16.432	33.228	255.6	90.3	0.363	24.287	1.054
20	16.423	33.228	254.7	90.3	0.726	24.289	1.052
30	15.960	33.219	255.9	89.9	1.086	24.388	0.936
50	14.668	33.278	256.4	92.3	1.773	24.717	0.690
75	10.639	33.277	202.3	93.4	2.470	25.499	-0.115
100	9.798	33.522	163.0	93.8	3.051	25.833	-0.067
125	9.289	33.792	133.0	93.9	3.554	26.128	0.062
150	8.852	33.875	117.0	93.9	4.013	26.263	0.057
200	8.424	34.041	83.6	94.0	4.847	26.460	0.122
250	7.831	34.072	75.6	94.1	5.619	26.574	0.056
300	7.266	34.098	63.8	94.2	6.343	26.676	-0.005
400	6.136	34.096	49.1	94.1	7.676	26.826	-0.158
500	5.649	34.208	20.6	94.1	8.880	26.976	-0.132
600	4.719	34.210	13.8	94.1	9.965	27.086	-0.239
700	4.491	34.295	7.3	94.1	10.955	27.179	-0.197
800	4.320	34.368	6.0	94.1	11.875	27.257	-0.158
900	4.057	34.417	8.2	94.1	12.732	27.323	-0.148
1000	3.777	34.452	12.1	94.1	13.535	27.380	-0.149
1011	3.751	34.454	12.1	94.1	13.620	27.385	-0.150

Station: 23 Date: 10/28/2005, 0308 Lat.: 36° 36.86 N Long.: 125° 46.27 W

P(dbar)	T(°C)	S	O ₂ (μm/kg)	Xmiss(%)	ΔΦ	σ _θ	π _θ
0	16.037	33.242	257.1	88.7	0.071	24.387	0.973
10	16.038	33.240	261.0	88.9	0.353	24.386	0.971
20	16.035	33.242	261.2	89.0	0.707	24.388	0.972
30	15.619	33.196	262.1	89.4	1.059	24.447	0.839
50	13.031	32.987	255.6	91.9	1.728	24.829	0.112
75	10.663	33.115	221.5	93.4	2.436	25.369	-0.241
100	9.640	33.404	181.9	93.7	3.037	25.767	-0.188
125	9.078	33.651	153.6	93.9	3.558	26.052	-0.083
150	8.948	33.853	114.7	93.9	4.027	26.231	0.056
200	8.185	33.974	105.6	93.9	4.880	26.444	0.032
250	7.632	34.047	88.8	94.0	5.654	26.582	0.007
300	7.043	34.076	67.9	94.1	6.375	26.689	-0.054
400	5.971	34.116	41.7	94.0	7.688	26.862	-0.164
500	5.399	34.185	22.3	94.1	8.866	26.988	-0.179
600	4.948	34.248	11.4	94.1	9.944	27.090	-0.183
700	4.603	34.319	6.1	94.1	10.927	27.186	-0.166
800	4.247	34.384	6.2	94.1	11.834	27.276	-0.154
900	4.033	34.432	10.1	94.1	12.671	27.338	-0.138
1000	3.683	34.455	12.6	94.1	13.458	27.392	-0.156
1100	3.459	34.492	18.7	94.1	14.200	27.444	-0.149
1200	3.249	34.516	24.7	94.1	14.900	27.483	-0.150
1300	3.009	34.526	28.9	94.1	15.570	27.515	-0.164
1400	2.805	34.540	32.7	94.2	16.209	27.544	-0.171
1500	2.657	34.554	37.0	94.2	16.824	27.569	-0.174
1750	2.255	34.586	51.5	94.2	18.258	27.629	-0.183
2000	1.998	34.610	63.8	94.2	19.573	27.670	-0.185
2500	1.736	34.645	88.0	94.2	22.005	27.721	-0.180
3000	1.603	34.666	108.4	94.3	24.302	27.750	-0.176
3500	1.514	34.678	126.5	94.3	26.547	27.770	-0.176
4000	1.488	34.687	139.3	94.3	28.773	27.782	-0.174
4343	1.512	34.688	145.4	94.3	30.330	27.785	-0.174

Station: 24 Date: 10/28/2005, 0856 Lat.: 36° 47.04 N Long.: 125° 25.00 W

P(dbar)	T(°C)	S	O ₂ (μm/kg)	Xmiss(%)	ΔΦ	σ _θ	π _θ
0	16.030	33.231	256.5	89.7	0.071	24.381	0.963
10	16.034	33.231	258.2	89.8	0.354	24.380	0.963
20	16.039	33.234	257.0	91.0	0.708	24.381	0.967
30	15.773	33.269	258.4	90.4	1.060	24.468	0.932
50	14.421	33.219	251.0	92.2	1.732	24.725	0.590
75	10.436	33.223	206.0	93.5	2.443	25.492	-0.195
100	9.292	33.632	152.4	93.8	3.001	26.002	-0.064
125	9.089	33.775	128.3	93.8	3.489	26.147	0.016
150	8.861	33.950	98.3	93.9	3.939	26.321	0.119
200	8.172	34.004	104.0	93.9	4.764	26.469	0.054
250	7.528	34.054	84.4	94.0	5.528	26.603	-0.002
300	7.085	34.079	68.3	94.0	6.245	26.686	-0.045
400	6.159	34.110	46.5	94.0	7.569	26.834	-0.145
500	5.370	34.154	26.7	94.0	8.762	26.966	-0.207
600	4.936	34.241	11.0	94.1	9.846	27.086	-0.190
700	4.566	34.313	6.9	94.1	10.839	27.185	-0.175
800	4.260	34.375	6.4	94.1	11.747	27.268	-0.159
900	4.008	34.413	8.6	94.1	12.596	27.325	-0.156
1000	3.810	34.447	11.9	94.1	13.401	27.373	-0.150
1010	3.785	34.450	12.1	94.1	13.480	27.378	-0.150

Station: 25 Date: 10/28/2005, 1340 Lat.: 36° 56.89 N Long.: 125° 03.10 W

P(dbar)	T(°C)	S	O ₂ (μm/kg)	Xmiss(%)	ΔΦ	σ _θ	π _θ
0	15.018	33.112	262.8	91.2	0.068	24.513	0.638
10	14.990	33.129	264.8	91.6	0.341	24.532	0.645
20	14.815	33.162	265.4	91.7	0.678	24.596	0.632
30	14.125	33.264	267.2	91.7	1.000	24.820	0.562
50	13.590	33.269	258.0	91.9	1.612	24.935	0.452
75	10.350	33.341	189.0	93.0	2.291	25.599	-0.116
100	9.167	33.547	165.0	93.4	2.843	25.956	-0.151
125	9.091	33.775	128.1	93.5	3.332	26.147	0.017
150	8.890	33.942	99.0	93.6	3.781	26.309	0.117
200	8.284	34.053	82.8	93.7	4.604	26.491	0.109
250	7.650	34.084	74.7	93.8	5.359	26.609	0.039
300	7.079	34.099	63.9	93.9	6.068	26.702	-0.030
400	6.255	34.144	38.6	93.8	7.386	26.848	-0.106
500	5.543	34.218	18.1	93.8	8.566	26.996	-0.137
600	5.209	34.281	9.7	93.8	9.644	27.086	-0.128
700	4.723	34.337	6.8	93.8	10.639	27.187	-0.139
800	4.416	34.388	7.8	93.8	11.552	27.262	-0.133
900	4.115	34.426	10.0	93.8	12.408	27.325	-0.135
1000	3.892	34.458	13.8	93.8	13.212	27.373	-0.133
1012	3.868	34.461	14.0	93.8	13.306	27.379	-0.133

Station: 26 Date: 10/28/2005, 1716 Lat.: 37° 06.89 N Long.: 124° 41.57 W

P(dbar)	T(°C)	S	O ₂ (μm/kg)	Xmiss(%)	ΔΦ	σ _θ	π _θ
0	15.072	33.246	274.6	87.9	0.066	24.605	0.756
10	15.061	33.266	273.9	87.9	0.332	24.623	0.770
20	14.668	33.260	273.4	89.8	0.660	24.703	0.677
30	13.901	33.257	268.6	90.5	0.979	24.862	0.508
50	11.992	33.443	239.9	92.6	1.546	25.383	0.269
75	10.189	33.596	152.8	93.2	2.152	25.825	0.060
100	9.582	33.841	107.4	93.4	2.651	26.118	0.150
125	9.510	33.976	84.9	93.4	3.117	26.236	0.244
150	9.279	34.052	75.1	93.5	3.553	26.333	0.266
200	8.847	34.158	59.0	93.7	4.374	26.486	0.279
250	8.177	34.151	61.7	93.8	5.138	26.585	0.170
300	7.190	34.080	65.8	93.8	5.865	26.672	-0.030
400	6.325	34.144	39.4	93.8	7.201	26.839	-0.097
500	5.698	34.190	24.0	93.9	8.407	26.955	-0.140
600	5.317	34.283	10.2	93.8	9.514	27.075	-0.113
700	4.810	34.306	7.3	93.9	10.535	27.153	-0.153
800	4.471	34.354	6.5	93.9	11.482	27.229	-0.154
900	4.243	34.410	7.6	93.9	12.369	27.299	-0.134
1000	4.003	34.443	10.6	93.9	13.203	27.350	-0.134
1011	3.967	34.446	11.6	93.9	13.292	27.356	-0.135

Station: 27 Date: 10/28/2005, 2111 Lat.: 37° 16.92 N Long.: 124° 20.16 W

P(dbar)	T(°C)	S	O ₂ (μm/kg)	Xmiss(%)	ΔΦ	σ _θ	π _θ
0	14.872	33.178	265.4	89.9	0.067	24.595	0.658
10	14.745	33.206	264.4	89.5	0.332	24.644	0.652
20	13.961	33.254	269.0	90.2	0.654	24.846	0.519
30	13.139	33.308	263.5	90.1	0.953	25.055	0.390
50	12.742	33.341	253.6	91.9	1.524	25.160	0.335
75	10.058	33.875	96.4	93.2	2.102	26.065	0.258
100	9.714	33.991	75.5	93.5	2.567	26.214	0.291
125	9.608	34.026	69.3	93.5	3.015	26.259	0.300
150	9.487	34.069	63.2	93.5	3.453	26.313	0.314
200	9.181	34.142	54.4	93.6	4.295	26.421	0.321
250	8.824	34.178	54.6	93.7	5.095	26.506	0.291
300	8.444	34.194	52.7	93.9	5.862	26.579	0.244
400	7.232	34.186	43.2	93.9	7.292	26.750	0.058
500	6.363	34.213	28.4	94.0	8.583	26.890	-0.038
600	5.617	34.247	16.0	93.9	9.757	27.012	-0.106
700	4.937	34.305	6.9	93.9	10.805	27.138	-0.140
800	4.511	34.363	5.8	93.9	11.757	27.232	-0.142
900	4.274	34.409	7.1	93.9	12.643	27.295	-0.132
1000	4.052	34.445	11.9	93.9	13.481	27.347	-0.127
1012	3.988	34.446	11.6	93.9	13.578	27.354	-0.133

Station: 28 Date: 10/29/2005, 0100 Lat.: 37° 26.84 N Long.: 123° 58.33 W

P(dbar)	T(°C)	S	O ₂ (μm/kg)	Xmiss(%)	ΔΦ	σ _θ	π _θ
0	14.490	33.204	286.0	86.0	0.065	24.697	0.594
10	14.420	33.218	290.8	86.2	0.323	24.723	0.590
20	14.245	33.255	277.1	89.3	0.642	24.788	0.581
30	13.186	33.297	254.8	91.9	0.943	25.037	0.391
50	12.011	33.419	239.2	92.5	1.498	25.360	0.253
75	10.720	33.419	194.9	93.0	2.134	25.596	0.012
100	9.324	33.624	148.4	93.4	2.684	25.991	-0.065
125	9.091	33.788	128.5	93.5	3.167	26.156	0.027
150	8.830	33.926	112.1	93.6	3.613	26.307	0.095
200	8.447	34.049	95.7	93.7	4.439	26.463	0.131
250	7.907	34.086	81.5	93.9	5.212	26.574	0.079
300	7.514	34.136	62.3	93.9	5.942	26.670	0.060
400	6.598	34.180	34.7	93.9	7.279	26.832	-0.032
500	5.508	34.188	22.2	93.9	8.469	26.977	-0.165
600	4.978	34.263	9.6	93.9	9.555	27.099	-0.168
700	4.794	34.355	6.5	93.6	10.540	27.194	-0.117
800	4.406	34.388	6.3	93.9	11.455	27.263	-0.134
900	4.076	34.407	7.2	93.9	12.316	27.314	-0.153
1000	3.828	34.454	13.2	94.0	13.125	27.377	-0.142
1012	3.822	34.460	14.2	94.0	13.218	27.382	-0.138

Station: 29 Date: 10/29/2005, 0457 Lat.: 37° 36.91 N Long.: 123° 36.55 W

P(dbar)	T(°C)	S	O ₂ (μm/kg)	Xmiss(%)	ΔΦ	σ _θ	π _θ
0	14.401	33.205	270.4	89.2	0.064	24.716	0.576
10	14.302	33.278	268.0	90.0	0.320	24.794	0.612
20	13.273	33.314	251.5	91.6	0.621	25.033	0.422
30	11.697	33.316	209.5	92.6	0.896	25.338	0.112
50	10.358	33.469	181.1	93.3	1.383	25.697	-0.012
75	9.689	33.587	157.5	93.5	1.931	25.902	-0.033
100	9.239	33.768	135.8	93.5	2.427	26.117	0.036
125	8.784	33.903	115.8	93.7	2.882	26.295	0.069
150	8.616	33.999	95.9	93.8	3.306	26.397	0.119
200	8.319	34.111	74.2	93.8	4.095	26.531	0.161
250	7.703	34.110	69.1	93.9	4.840	26.622	0.067
300	7.187	34.138	54.7	94.0	5.541	26.718	0.015
400	6.500	34.172	35.7	93.9	6.857	26.838	-0.052
500	5.778	34.203	22.6	94.0	8.061	26.956	-0.120
600	5.308	34.261	13.2	93.7	9.173	27.059	-0.132
700	5.028	34.337	8.1	93.7	10.195	27.153	-0.105
800	4.532	34.377	7.5	93.8	11.134	27.241	-0.128
900	4.205	34.415	8.6	93.6	12.013	27.307	-0.134
1000	3.892	34.446	11.6	93.6	12.831	27.364	-0.142
1013	3.853	34.450	12.0	93.6	12.934	27.371	-0.143

Station: 30 Date: 10/29/2005, 0738 Lat.: 37° 42.07 N Long.: 123° 25.89 W

P(dbar)	T(°C)	S	O ₂ (μm/kg)	Xmiss(%)	ΔΦ	σ _θ	π _θ
0	14.122	33.227	276.4	87.7	0.063	24.792	0.533
10	14.127	33.243	278.0	88.2	0.314	24.804	0.546
20	13.264	33.279	255.3	91.3	0.622	25.008	0.393
30	12.682	33.355	246.7	92.4	0.909	25.182	0.335
50	11.299	33.405	210.5	93.0	1.427	25.481	0.107
75	9.840	33.585	154.3	93.4	1.997	25.875	-0.009
100	9.300	33.770	132.7	93.6	2.499	26.109	0.048
125	9.146	33.954	108.2	93.6	2.953	26.278	0.168
150	8.831	33.988	107.9	93.6	3.383	26.355	0.143
200	8.487	34.078	87.3	93.8	4.194	26.479	0.160
250	8.010	34.075	83.5	93.9	4.967	26.550	0.085
300	7.415	34.102	67.7	94.0	5.707	26.658	0.019
400	6.649	34.158	40.4	93.9	7.058	26.808	-0.043
500	5.852	34.230	19.8	94.0	8.276	26.968	-0.090
600	5.353	34.278	11.3	93.9	9.385	27.067	-0.113
700	4.938	34.332	7.4	93.8	10.400	27.159	-0.119
800	4.494	34.375	6.4	93.8	11.341	27.243	-0.135
900	4.162	34.416	8.4	93.9	12.213	27.312	-0.138
1000	3.828	34.450	12.2	93.7	13.022	27.374	-0.146
1012	3.786	34.455	12.3	93.7	13.116	27.382	-0.146

Station: 31 Date: 10/29/2005, 1030 Lat.: 37° 46.97 N Long.: 123° 15.04 W

P(dbar)	T(°C)	S	O ₂ (μm/kg)	Xmiss(%)	ΔΦ	σ _θ	π _θ
0	14.326	33.242	265.4	89.5	0.064	24.761	0.589
10	14.128	33.263	260.9	89.7	0.316	24.819	0.563
20	12.480	33.378	249.8	90.8	0.610	25.238	0.313
30	11.873	33.449	237.6	91.8	0.872	25.410	0.251
50	10.505	33.506	179.9	93.2	1.363	25.700	0.044
75	9.715	33.730	131.8	91.4	1.894	26.009	0.085
100	9.642	33.748	123.3	89.4	2.391	26.036	0.086
125	9.623	33.760	121.7	89.0	2.886	26.049	0.092
126	9.622	33.761	121.5	89.1	2.906	26.050	0.093

Station: 32 Date: 10/29/2005, 1233 Lat.: 37° 51.87 N Long.: 123° 03.81 W

P(dbar)	T(°C)	S	O ₂ (μm/kg)	Xmiss(%)	ΔΦ	σ _θ	π _θ
0	12.854	33.252	288.7	80.8	0.058	25.067	0.288
10	12.214	33.437	271.1	88.7	0.278	25.335	0.308
20	11.155	33.484	221.1	92.5	0.528	25.568	0.144
30	10.985	33.557	209.3	92.8	0.765	25.656	0.171
50	10.143	33.648	149.5	92.4	1.209	25.873	0.093
75	9.853	33.715	116.9	85.4	1.728	25.975	0.096
86	9.821	33.730	101.5	76.0	1.951	25.992	0.103

Station: 33 Date: 10/29/2005, 1411 Lat.: 37° 56.86 N Long.: 122° 52.94 W

P(dbar)	T(°C)	S	O ₂ (μm/kg)	Xmiss(%)	ΔΦ	σ _θ	π _θ
0	12.639	33.195	287.1	82.1	0.058	25.065	0.200
10	12.517	33.353	285.9	85.8	0.284	25.212	0.301
20	12.445	33.440	289.6	88.1	0.557	25.293	0.356
30	11.094	33.590	211.6	92.6	0.807	25.661	0.217
46	10.101	33.641	115.7	63.8	1.153	25.874	0.080

Station: 34 Date: 10/29/2005, 2307 Lat.: 37° 15.50 N Long.: 122° 37.73 W

P(dbar)	T(°C)	S	O ₂ (μm/kg)	Xmiss(%)	ΔΦ	σ _θ	π _θ
0	12.954	33.387	306.8	77.3	0.056	25.153	0.416
10	12.632	33.388	265.0	86.6	0.278	25.217	0.352
20	12.504	33.399	253.1	88.8	0.550	25.250	0.335
30	11.764	33.468	215.9	91.2	0.818	25.444	0.245
50	10.971	33.551	162.5	91.7	1.292	25.653	0.163
75	9.838	33.744	101.4	86.9	1.820	26.000	0.116
92	9.802	33.755	94.0	75.9	2.161	26.015	0.119

Station: 35 Date: 10/30/2005, 0145 Lat.: 36° 57.32 N Long.: 122° 24.91 W

P(dbar)	T(°C)	S	O ₂ (μm/kg)	Xmiss(%)	ΔΦ	σ _θ	π _θ
0	13.135	33.350	313.2	82.3	0.057	25.088	0.424
10	12.877	33.360	272.1	82.6	0.285	25.147	0.379
20	11.467	33.469	228.6	92.6	0.542	25.499	0.190
30	10.716	33.504	189.7	92.9	0.780	25.661	0.080
50	9.934	33.679	139.2	92.8	1.218	25.933	0.082
75	9.874	33.766	121.4	89.7	1.724	26.011	0.140
100	9.851	33.793	116.4	90.2	2.222	26.037	0.158
125	9.787	33.847	109.5	90.9	2.713	26.090	0.189
150	9.609	33.880	106.9	92.6	3.194	26.145	0.184
200	9.087	33.964	96.4	92.2	4.109	26.296	0.165
250	8.633	34.056	83.1	92.2	4.950	26.440	0.164
273	8.378	34.084	77.5	92.1	5.319	26.502	0.147

Table 3: Results of nutrient and primary productivity analyses of water samples collected at hydrographic stations during the PaCOOS cruise of October 2005. Stations are in chronological (and numerical) order. The time listed (<Mon. dd, yyyy hh:mm>) for each station is the beginning of the CTD cast. 12 Niskin bottles were tripped at each station, although some bottles sampled duplicate pressures. Except where primary productivity analyses were not performed (see Introduction), the data for each station are separated into two sections (“Physical and Chemical” and “Biological”).

The physical oceanographic properties listed in the first seven columns of the “Physical and Chemical” section of each station’s data are the uncorrected values measured by the CTD at the times each Niskin bottle was tripped. Because they are uncorrected, these values may differ slightly from those listed in Table 2. The last four columns of this section give the nitrate (NO₃), nitrite (NO₂), phosphate (PO₄), and dissolved silicate (SiO₄) concentrations.

The “Biological” section of each station’s data gives the results of the primary productivity analyses. As stated above, primary productivity sampling was not undertaken at every hydrographic station.

Date: Oct 25, 2005 16:49 Cruise: S405 Latitude: 36.795 Year: 2005
 Project: CALCOFI Station: C1 Longitude: -121.846 Work week: 44
 Platform: RVPOINT SUR Cast: 1 Secchi Depth: --- Day of Year: 298

* Note: Latitude and Longitude are reported in decimal degrees. '---' signifies no data.

Physical and Chemical

DEP (m)	PRESS (db)	BTL #	TEMP (°C)	SAL	SIGMA T	TRANSMISS (%)	NO3 (µM)	NO2 (µM)	PO4 (µM)	SIO4 (µM)
0	2.1	12	12.789	33.341	25.149	72	2.713	0.199	0.844	9.782
5	5.0	11	12.733	33.358	25.174	87	5.137	0.231	0.825	10.476
10	10.3	10	12.311	33.394	25.283	91	8.049	0.253	0.874	11.562
20	20.1	9	11.824	33.438	25.409	92	11.772	0.293	1.088	13.675
30	30.9	8	10.932	33.439	25.573	93	18.425	0.360	1.621	18.737
40	40.4	7	10.468	33.620	25.796	87	21.085	0.436	2.082	23.180
60	60.4	6	10.260	33.668	25.869	84	22.534	0.441	2.421	24.695
80	80.6	5	10.109	33.695	25.916	83	23.874	0.280	2.025	26.994
100	101.1	4	9.842	33.725	25.985	89	24.560	0.178	2.146	27.232
150	150.4	3	9.503	33.803	26.103	88	27.141	0.213	2.495	34.707
200	201.5	2	8.108	34.029	26.498	84	32.115	0.138	2.607	51.707
275	277.2	1	7.557	34.099	26.635	83	33.865	0.109	2.711	58.725

Biological

DEP (m)	BTL #	CHL (mg m-3 d-1)	PHAEO (mg m-3 d-1)	DEP (m)	% S. I.	CARBON (mg m-3 d-1)	PROD INDEX carbon/chl (mg m-3 d-1)	LIGHT DEPTH (m)
0	12	8.648	0.925	0	100	142.506	16.478	0
5	11	1.372	0.464	0	50	254.831	29.467	3
10	10	0.761	0.396	5	30	35.119	25.590	5
20	9	0.451	0.445	5	15	26.865	19.575	9
30	8	0.263	0.555	10	5	7.083	9.302	18
40	7	0.254	0.808	10	1	1.813	2.381	32
60	6	0.216	0.741	20	0.1	0.078	0.172	51
80	5	0.165	0.562					
100	4	0.106	0.392					
150	3	0.082	0.267					
200	2	0.050	0.300					
275	1	0.041	0.320					

Integrated Value

Integrated values are 1.0% of Surface Intensity (S.I.)

Chlorophyll a:	59.96	mg m-2 day -1	Carbon Fixation:	1185.9	mg m-2 day-1
Phaeophytin:	15.39	mg m-2 day -1	Productivity Index:	19.78	mg C mg Chl day-1
Mixed Layer	21	meters	PBOpt:	29.47	mg C mg Chl day-1

Date: Oct 25, 2005 18:45 Cruise: S405 Latitude: 36.736 Year: 2005
 Project: CALCOFI Station: H3 Longitude: -122.020 Work week: 44
 Platform: RV POINT SUR Cast: 2 Secchi Depth: --- Day of Year: 298

* Note: Latitude and Longitude are reported in decimal degrees. '---' signifies no data.

Physical and Chemical

DEP (m)	PRESS (db)	BTL #	TEMP (°C)	SAL	SIGMA T	TRANSMISS (%)	NO3 (µM)	NO2 (µM)	PO4 (µM)	SIO4 (µM)
0	1.6	12	13.020	33.358	25.117	78	2.475	0.275	0.712	9.237
5	4.9	11	12.709	33.378	25.194	87	3.200	0.218	0.679	9.208
10	9.9	10	12.560	33.378	25.223	91	4.650	0.256	0.695	9.224
20	20.8	9	12.299	33.365	25.263	92	7.828	0.282	0.941	10.519
30	29.7	8	11.913	33.384	25.351	93	10.811	0.325	1.162	12.700
40	40.4	7	10.822	33.385	25.550	93	19.114	0.306	1.578	16.920
60	60.1	6	10.324	33.511	25.736	93	21.563	0.256	2.085	20.349
80	80.3	5	10.006	33.642	25.893	93	22.106	0.133	1.897	22.597
100	100.9	4	10.029	33.797	26.010	93	24.346	0.092	2.067	26.497
150	151.7	3	9.926	33.879	26.092	93	25.895	0.157	2.286	28.835
200	201.2	2	9.523	33.937	26.205	93	27.111	0.078	2.265	30.668
1000	1010.3	1	3.865	34.436	27.359	84	44.154	0.144	3.486	125.71

Biological

DEP (m)	BTL #	CHL (mg m-3 d-1)	PHAEO (mg m-3 d-1)	DEP (m)	% S. I.	CARBON (mg m-3 d-1)	PROD INDEX carbon/chl (mg m-3 d-1)	LIGHT DEPTH (m)
0	12	11.280	0.904	0	100	314.056	27.842	0
5	11	4.277	0.553	5	50	145.884	34.109	2
10	10	0.724	0.321	10	30	26.201	36.199	4
20	9	0.339	0.286	10	15	18.461	25.506	7
30	8	0.360	0.377	20	5	4.526	13.338	15
40	7	0.288	0.377	30	1	1.177	3.269	30
60	6	0.154	0.321	40	0.1	0.133	0.461	53
80	5	0.083	0.251					
100	4	0.061	0.218					
150	3	0.025	0.148					
200	2	0.012	0.123					
1000	1	0.024	0.290					

Integrated Value

Integrated values are 1.0% of Surface Intensity (S.I.)

Chlorophyll <i>a</i> :	33.62	mg m-2 day -1	Carbon Fixation:	871.28	mg m-2 day-1
Phaeophytin:	10.74	mg m-2 day -1	Productivity Index:	25.91	mg C mg Chl day-1
Mixed Layer	840	meters	PBOpt:	36.2	mg C mg Chl day-1

Date: Oct 25, 2005 21:32 Cruise: S405 Latitude: 36.711 Year: 2005
 Project: CALCOFI Station: NPS1 Longitude: -122.241 Work week: 44
 Platform: RVPOINT SUR Cast: 3 Secchi Depth: --- Day of Year: 298

* Note: Latitude and Longitude are reported in decimal degrees. '---' signifies no data.

Physical and Chemical

DEP (m)	PRESS (db)	BTL #	TEMP (°C)	SAL	SIGMA T	TRANSMISS (%)	NO3 (µM)	NO2 (µM)	PO4 (µM)	SIO4 (µM)
0	1.0	12	14.030	33.221	24.806	56	2.013	0.198	1.328	6.326
50	49.8	11	10.792	33.472	25.623	93	17.291	0.270	1.427	16.298
100	100.4	10	9.507	33.860	26.146	94	25.934	0.100	2.001	28.488
200	201.3	9	8.879	34.057	26.402	94	29.681	0.070	2.136	37.417
300	302.9	8	7.656	34.068	26.597	94	33.367	0.063	2.334	47.984
400	404.6	7	6.579	34.082	26.757	94	33.291	0.061	2.548	57.192
500	504.3	6	5.748	34.178	26.940	94	40.552	0.073	3.111	78.810
600	605.7	5	5.311	34.279	27.073	94	41.916	0.050	3.158	92.615
700	705.5	4	4.942	34.334	27.160	94	43.305	0.079	3.225	101.22
800	806.3	3	4.472	34.378	27.248	94	43.466	0.054	3.277	110.10
900	908.1	2	4.125	34.411	27.312	94	44.020	0.058	3.344	117.65
1000	1010.6	1	3.927	34.433	27.351	93	39.867	0.065	3.070	112.45

Date: Oct 25, 2005 23:37 Cruise: S405 Latitude: 36.627 Year: 2005
 Project: CALCOFI Station: 67-55 Longitude: -122.419 Work week: 44
 Platform: RVPOINT SUR Cast: 4 Secchi Depth: --- Day of Year: 298

* Note: Latitude and Longitude are reported in decimal degrees. '---' signifies no data.

Physical and Chemical

DEP (m)	PRESS (db)	BTL #	TEMP (°C)	SAL	SIGMA T	TRANSMISS (%)	NO3 (µM)	NO2 (µM)	PO4 (µM)	SIO4 (µM)
0	2.1	12	12.382	33.397	25.271	88	5.354	0.206	0.664	10.875
5	5.0	11	12.101	33.424	25.346	88	6.827	0.244	1.007	11.571
10	10.3	10	11.784	33.502	25.467	89	10.028	0.270	1.062	15.147
20	20.0	9	11.503	33.514	25.528	90	10.011	0.246	1.028	13.261
30	30.1	8	11.484	33.539	25.551	90	10.949	0.264	1.009	15.229
40	39.9	7	11.387	33.541	25.571	91	14.008	0.272	1.203	16.204
60	61.9	6	10.765	33.557	25.695	92	18.538	0.265	1.489	18.678
80	82.1	5	10.255	33.570	25.794	93	21.921	0.170	1.884	20.798
100	100.9	4	9.836	33.610	25.896	93	23.101	0.082	1.870	22.382
150	151.2	3	9.206	33.830	26.172	94	26.584	0.074	2.067	28.853
200	201.2	2	8.990	34.000	26.340	94	29.599	0.058	2.359	34.357
1000	1011.0	1	3.921	34.432	27.350	94	43.857	0.012	3.530	119.32

Biological

DEP (m)	BTL #	CHL (mg m-3 d-1)	PHAEO (mg m-3 d-1)	DEP (m)	% S. I.	CARBON (mg m-3 d-1)	PROD INDEX carbon/chl (mg m-3 d-1)	LIGHT DEPTH (m)
0	12	3.807	0.536	0	100	119.979	31.515	0
5	11	3.168	0.705	5	50	102.287	32.290	3
10	10	1.927	0.658	5	30	127.677	40.305	5
20	9	1.692	0.788	10	15	34.806	18.062	9
30	8	1.824	0.944	20	5	19.941	11.785	15
40	7	0.912	0.724	20	1	3.526	2.084	24
60	6	0.592	0.792	40	0.1	0.424	0.465	37
80	5	0.199	0.574					
100	4	0.083	0.403					
150	3	0.022	0.194					
200	2	0.036	0.159					
1000	1	0.012	0.050					

Integrated Value

Integrated values are 1.0% of Surface Intensity (S.I.)

Chlorophyll <i>a</i> :	53.06	mg m-2 day -1	Carbon Fixation:	1214.8	mg m-2 day-1
Phaeophytin:	17.29	mg m-2 day -1	Productivity Index:	22.90	mg C mg Chl day-1
Mixed Layer	423	meters	PBOpt:	40.3	mg C mg Chl day-1

Date: Oct 26, 2005 02:18 Cruise: S405 Latitude: 36.543 Year: 2005
 Project: CALCOFI Station: NPS#2 Longitude: -122.599 Work week: 44
 Platform: RVPOINT SUR Cast: 5 Secchi Depth: --- Day of Year: 299

* Note: Latitude and Longitude are reported in decimal degrees. '---' signifies no data.

Physical and Chemical

DEP (m)	PRESS (db)	BTL #	TEMP (°C)	SAL	SIGMA T	TRANSMISS (%)	NO3 (µM)	NO2 (µM)	PO4 (µM)	SIO4 (µM)
0	2.1	12	13.348	33.360	25.053	71	2.347	0.135	0.784	8.897
50	51.1	11	11.163	33.523	25.597	92	24.025	0.065	1.785	23.787
100	100.9	10	9.801	33.684	25.960	93	23.815	0.076	1.925	23.831
200	202.0	9	9.169	33.997	26.309	94	27.201	0.047	2.068	31.561
300	302.9	8	7.953	34.087	26.568	94	32.750	0.045	2.500	45.298
400	403.5	7	6.725	34.110	26.760	94	37.356	0.015	2.909	61.499
500	503.6	6	5.910	34.195	26.933	94	39.911	0.049	3.228	75.120
600	604.5	5	5.368	34.261	27.052	94	42.232	0.033	3.390	87.918
700	705.5	4	4.809	34.309	27.156	94	43.592	0.017	3.464	99.184
800	807.9	3	4.467	34.376	27.247	94	43.998	0.010	3.499	107.89
900	909.2	2	4.152	34.405	27.304	94	43.220	0.021	3.460	112.65
1000	1010.3	1	3.854	34.425	27.351	94	44.297	0.021	3.518	120.93

Date: Oct 26, 2005 04:23 Cruise: S405 Latitude: 36.458 Year: 2005
 Project: CALCOFI Station: 67-60 Longitude: -122.777 Work week: 44
 Platform: RVPOINT SUR Cast: 6 Secchi Depth: --- Day of Year: 299

* Note: Latitude and Longitude are reported in decimal degrees. '---' signifies no data.

Physical and Chemical

DEP (m)	PRESS (db)	BTL #	TEMP (°C)	SAL	SIGMA T	TRANSMISS (%)	NO3 (µM)	NO2 (µM)	PO4 (µM)	SIO4 (µM)
0	1.8	12	14.162	33.248	24.800	85	2.961	0.245	0.529	4.627
5	4.7	11	13.873	33.249	24.861	85	4.598	0.287	0.768	5.495
10	10.5	10	13.295	33.268	24.993	91	6.352	0.341	0.695	6.980
20	20.1	9	12.124	33.341	25.278	92	12.053	0.352	1.008	12.202
30	30.4	8	11.199	33.379	25.478	93	---	---	---	---
40	40.5	7	10.491	33.462	25.668	93	20.384	0.078	1.618	18.117
60	60.6	6	10.157	33.607	25.839	93	22.494	0.033	1.734	21.598
80	80.4	5	9.903	33.684	25.943	94	24.055	0.027	1.848	24.296
100	102.0	4	9.753	33.783	26.045	93	25.514	0.046	2.087	26.962
150	151.2	3	9.647	33.991	26.226	94	28.695	0.059	2.500	32.536
200	202.0	2	9.003	34.037	26.367	94	29.389	0.064	2.491	35.525
1000	1010.8	1	3.837	34.426	27.354	94	43.504	0.037	3.400	119.04

Biological

DEP (m)	BTL #	CHL (mg m-3 d-1)	PHAEO (mg m-3 d-1)	DEP (m)	% S. I.	CARBON (mg m-3 d-1)	PROD INDEX carbon/chl (mg m-3 d-1)	LIGHT DEPTH (m)
0	12	5.678	0.989	0	100	272.575	48.009	0
5	11	2.811	0.688	5	50	160.660	57.162	3
10	10	0.902	0.394	5	30	127.150	45.239	5
20	9	0.479	0.417	10	15	40.632	45.026	9
40	7	0.191	0.260	20	5	5.936	12.382	17
60	6	0.121	0.203	20	1	1.739	3.628	32
80	5	0.060	0.175	40	0.1	0.038	0.197	59
100	4	0.034	0.146					
150	3	0.025	0.107					
200	2	0.020	0.074					
1000	1	0.006	0.025					

Integrated Value

Integrated values are 1.0% of Surface Intensity (S.I.)

Chlorophyll <i>a</i> :	38.29	mg m-2 day -1	Carbon Fixation:	1501.9	mg m-2 day-1
Phaeophytin:	15.62	mg m-2 day -1	Productivity Index:	39.22	mg C mg Chl day-1
Mixed Layer	4	meters	PBOpt:	57.16	mg C mg Chl day-1

Date: Oct 26, 2005 06:52 Cruise: S405 Latitude: 36.378 Year: 2005
 Project: CALCOFI Station: NPS-3 Longitude: -122.957 Work week: 44
 Platform: RVPOINT SUR Cast: 7 Secchi Depth: --- Day of Year: 299

* Note: Latitude and Longitude are reported in decimal degrees. '---' signifies no data.

Physical and Chemical

DEP (m)	PRESS (db)	BTL #	TEMP (°C)	SAL	SIGMA T	TRANSMISS (%)	NO3 (µM)	NO2 (µM)	PO4 (µM)	SIO4 (µM)
0	2.4	12	14.602	33.196	24.667	88	4.335	0.145	0.543	8.995
50	51.9	11	10.641	33.489	25.664	93	20.434	0.148	1.554	19.605
100	100.3	10	9.634	33.785	26.066	93	25.626	0.046	1.836	27.283
200	201.4	9	8.937	34.057	26.393	94	29.609	0.022	2.161	36.132
300	301.7	8	8.206	34.158	26.587	94	32.837	0.026	2.459	45.912
400	402.4	7	6.893	34.113	26.739	94	36.615	0.024	2.631	58.556
500	504.4	6	5.987	34.141	26.881	94	39.586	0.011	2.859	72.370
600	605.6	5	5.634	34.226	26.993	94	38.253	0.018	2.849	78.027
700	707.3	4	5.129	34.297	27.110	94	40.728	0.066	2.863	85.611
800	807.7	3	4.732	34.358	27.204	94	43.936	0.008	3.291	104.05
900	908.5	2	4.357	34.399	27.278	94	44.025	0.004	3.257	110.34
1000	1010.2	1	3.945	34.429	27.346	94	44.419	0.014	3.225	114.78

Date: Oct 26, 2005 08:51 Cruise: S405 Latitude: 36.292 Year: 2005
 Project: CALCOFI Station: 67-65 Longitude: -123.133 Work week: 44
 Platform: RVPOINT SUR Cast: 8 Secchi Depth: --- Day of Year: 299

* Note: Latitude and Longitude are reported in decimal degrees. '---' signifies no data.

Physical and Chemical

DEP (m)	PRESS (db)	BTL #	TEMP (°C)	SAL	SIGMA T	TRANSMISS (%)	NO3 (µM)	NO2 (µM)	PO4 (µM)	SIO4 (µM)
0	1.8	12	15.717	33.203	24.429	90	0.633	0.056	0.183	2.270
5	5.0	11	15.723	33.202	24.427	90	0.359	0.053	0.177	2.483
10	9.9	10	15.433	33.215	24.502	88	0.423	0.077	0.386	5.528
20	19.9	9	13.544	33.308	24.974	89	3.574	0.169	0.468	8.929
30	31.0	8	12.076	33.410	25.341	92	8.932	0.243	0.816	11.768
40	40.3	7	11.462	33.449	25.486	93	14.189	0.219	1.211	14.466
60	60.9	6	10.379	33.533	25.743	93	21.755	0.044	1.564	20.130
80	79.6	5	9.894	33.666	25.930	93	24.803	0.081	1.694	24.346
100	101.1	4	9.470	33.808	26.111	94	27.054	0.062	2.026	29.109
150	150.0	3	9.028	34.014	26.344	94	26.597	0.021	1.994	31.967
200	200.4	2	8.508	34.073	26.472	94	30.393	0.025	2.194	39.088
1000	1009.8	1	3.920	34.431	27.349	94	---	---	---	---

Biological

DEP (m)	BTL #	CHL (mg m-3 d-1)	PHAEO (mg m-3 d-1)	DEP (m)	% S. I.	CARBON (mg m-3 d-1)	PROD INDEX carbon/chl (mg m-3 d-1)	LIGHT DEPTH (m)
0	12	1.156	0.297	0	100	45.696	39.523	0
5	11	1.222	0.327	5	50	71.565	58.564	5
10	10	6.683	1.053	5	30	64.560	52.832	8
20	9	1.260	0.577	10	15	170.482	25.508	12
30	8	0.712	0.144	20	5	11.730	9.313	16
40	7	0.367	0.591	20	1	3.061	2.430	23
60	6	0.119	0.481	40	0.1	0.263	0.717	37
80	5	0.062	0.313					
100	4	0.027	0.239					
150	3	0.014	0.110					
200	2	0.010	0.099					
1000	1	0.003	0.024					

Integrated Value

Integrated values are 1.0% of Surface Intensity (S.I.)

Chlorophyll <i>a</i> :	79.25	mg m-2 day -1	Carbon Fixation:	1407.6	mg m-2 day-1
Phaeophytin:	15.34	mg m-2 day -1	Productivity Index:	17.76	mg C mg Chl day-1
Mixed Layer	13	meters	PBOpt:	58.56	mg C mg Chl day-1

Date: Oct 26, 2005 11:10 Cruise: S405 Latitude: 36.210 Year: 2005
 Project: CALCOFI Station: NPS4 Longitude: -123.313 Work week: 44
 Platform: RVPOINT SUR Cast: 9 Secchi Depth: --- Day of Year: 299

* Note: Latitude and Longitude are reported in decimal degrees. '---' signifies no data.

Physical and Chemical

DEP (m)	PRESS (db)	BTL #	TEMP (°C)	SAL	SIGMA T	TRANSMISS (%)	NO3 (µM)	NO2 (µM)	PO4 (µM)	SIO4 (µM)
0	1.5	12	16.008	33.193	24.356	90	0.146	0.104	0.464	2.290
50	50.1	11	11.187	33.049	25.224	93	12.709	0.078	1.066	10.816
100	100.9	10	9.097	33.592	26.002	94	24.161	0.081	1.820	24.089
200	203.4	9	8.258	34.052	26.494	94	31.361	0.178	2.492	40.844
300	302.9	8	7.271	34.109	26.683	94	35.443	0.034	2.720	54.674
400	403.5	7	6.421	34.164	26.843	94	38.462	0.041	3.231	68.076
500	503.8	6	5.637	34.218	26.985	94	40.939	0.035	3.184	83.059
600	605.1	5	5.149	34.266	27.082	94	42.709	0.008	3.244	92.266
700	705.9	4	4.769	34.313	27.163	94	43.579	0.027	3.447	101.82
800	805.4	3	4.533	34.383	27.246	94	43.712	0.024	3.439	108.23
900	907.9	2	4.203	34.416	27.308	94	43.701	0.042	3.416	112.49
1000	1009.7	1	3.858	34.441	27.364	94	44.601	0.040	3.429	120.70

Date: Oct 26, 2005 13:18 Cruise: S405 Latitude: 36.126 Year: 2005
 Project: CALCOFI Station: 67-70 Longitude: -123.489 Work week: 44
 Platform: RVPOINT SUR Cast: 10 Secchi Depth: --- Day of Year: 299

* Note: Latitude and Longitude are reported in decimal degrees. '---' signifies no data.

Physical and Chemical

DEP (m)	PRESS (db)	BTL #	TEMP (°C)	SAL	SIGMA T	TRANSMISS (%)	NO3 (µM)	NO2 (µM)	PO4 (µM)	SIO4 (µM)
0	1.8	12	16.173	33.169	24.300	91	0.095	0.049	0.153	1.942
5	4.6	11	16.171	33.168	24.301	91	0.161	0.064	0.288	1.958
10	10.2	10	16.165	33.168	24.302	91	0.159	0.079	0.435	2.078
20	19.8	9	16.029	33.167	24.332	91	0.080	0.040	0.280	1.838
30	30.5	8	15.984	33.174	24.348	91	0.040	0.037	0.207	1.789
40	40.3	7	15.877	33.175	24.373	92	0.285	0.061	0.249	1.922
60	59.7	6	12.556	33.092	25.003	93	9.777	0.410	0.962	7.484
80	80.9	5	10.653	33.313	25.525	93	18.971	0.076	1.523	15.230
100	99.6	4	9.633	33.375	25.746	94	21.010	0.041	1.462	18.749
150	151.4	3	8.766	33.831	26.242	94	28.274	0.051	1.975	30.584
200	202.7	2	8.025	33.963	26.459	94	30.072	0.045	1.977	37.234
1000	1009.0	1	3.857	34.444	27.366	94	45.229	0.025	3.265	121.28

Biological

DEP (m)	BTL #	CHL (mg m-3 d-1)	PHAEO (mg m-3 d-1)	DEP (m)	% S. I.	CARBON (mg m-3 d-1)	PROD INDEX carbon/chl (mg m-3 d-1)	LIGHT DEPTH (m)
0	12	0.474	0.071	0	100	10.705	22.595	0
5	11	0.531	0.082	5	50	13.916	26.203	7
10	10	0.385	0.075	5	30	13.234	24.918	13
20	9	0.457	0.121	10	15	13.577	35.228	20
30	8	0.447	0.141	20	5	8.358	18.296	32
40	7	0.434	0.164	20	1	1.933	4.231	49
60	6	0.327	0.190	40	0.1	0.179	0.412	75
80	5	0.150	0.123					
100	4	0.067	0.057					
150	3	0.009	0.027					
200	2	0.006	0.021					
1000	1	0.003	0.013					

Integrated Value

Integrated values are 1.0% of Surface Intensity (S.I.)

Chlorophyll <i>a</i> :	22.60	mg m-2 day -1	Carbon Fixation:	478.81	mg m-2 day-1
Phaeophytin:	4.77	mg m-2 day -1	Productivity Index:	21.19	mg C mg Chl day-1
Mixed Layer	395	meters	PBOpt:	35.23	mg C mg Chl day-1

Date: Oct 26, 2005 16:25 Cruise: S405 Latitude: 36.042 Year: 2005
 Project: CALCOFI Station: NPS5 Longitude: -123.668 Work week: 44
 Platform: RVPOINT SUR Cast: 11 Secchi Depth: --- Day of Year: 299

* Note: Latitude and Longitude are reported in decimal degrees. '---' signifies no data.

Physical and Chemical

DEP (m)	PRESS (db)	BTL #	TEMP (°C)	SAL	SIGMA T	TRANSMISS (%)	NO3 (µM)	NO2 (µM)	PO4 (µM)	SIO4 (µM)
0	2.1	12	16.039	33.215	24.366	91	0.109	0.055	0.155	1.758
50	49.6	11	12.404	33.012	24.971	93	10.384	0.435	0.888	7.680
100	101.2	10	9.325	33.529	25.916	94	22.093	0.030	1.566	20.731
200	201.1	9	8.204	34.025	26.480	94	31.384	0.044	2.220	39.026
300	302.3	8	6.984	34.111	26.725	94	36.350	0.032	2.567	55.368
400	403.0	7	6.079	34.166	26.888	94	40.029	0.045	2.962	70.860
500	505.0	6	5.300	34.202	27.013	94	43.033	0.056	3.125	86.138
600	605.9	5	4.994	34.298	27.125	94	43.860	0.039	3.316	93.879
700	706.0	4	4.700	34.348	27.198	94	44.218	0.045	3.360	101.74
800	807.9	3	4.345	34.405	27.283	94	44.869	0.041	3.367	110.52
900	908.2	2	4.090	34.446	27.343	94	45.064	0.025	3.341	114.59
1000	1009.4	1	3.774	34.469	27.394	94	45.377	0.026	3.368	122.68

Date: Oct 26, 2005 18:28 Cruise: S405 Latitude: 35.959 Year: 2005
 Project: CALCOFI Station: 67-75 Longitude: -123.847 Work week: 44
 Platform: RVPOINT SUR Cast: 12 Secchi Depth: --- Day of Year: 299

* Note: Latitude and Longitude are reported in decimal degrees. '---' signifies no data.

Physical and Chemical

DEP (m)	PRESS (db)	BTL #	TEMP (°C)	SAL	SIGMA T	TRANSMISS (%)	NO3 (µM)	NO2 (µM)	PO4 (µM)	SIO4 (µM)
0	2.2	12	16.276	33.213	24.311	90	0.154	0.076	0.162	1.990
5	5.7	11	16.278	33.213	24.310	90	0.016	0.015	0.221	1.793
10	9.4	10	16.232	33.215	24.323	90	0.079	0.046	0.257	1.781
20	20.2	9	15.922	33.228	24.403	90	0.066	0.036	0.162	1.687
30	31.0	8	15.790	33.222	24.429	91	0.371	0.065	0.242	1.842
40	39.4	7	15.510	33.190	24.467	92	5.173	0.250	0.513	4.440
60	60.7	6	11.385	33.201	25.307	93	15.530	0.140	1.046	11.654
80	80.4	5	10.346	33.436	25.674	94	22.106	0.048	1.488	18.749
100	101.7	4	9.198	33.557	25.959	94	22.643	0.090	1.528	21.844
150	150.1	3	8.642	33.893	26.310	94	28.999	0.033	1.929	32.420
200	201.4	2	8.103	34.041	26.508	94	31.787	0.045	2.232	39.942
1000	1011.0	1	3.762	34.468	27.395	94	45.104	0.027	3.335	122.23

Biological

DEP (m)	BTL #	CHL (mg m-3 d-1)	PHAEO (mg m-3 d-1)	DEP (m)	% S. I.	CARBON (mg m-3 d-1)	PROD INDEX carbon/chl (mg m-3 d-1)	LIGHT DEPTH (m)
0	12	0.434	0.095	0	100	16.589	38.199	0
5	11	0.451	0.097	5	50	19.012	42.136	7
10	10	0.485	0.102	10	30	18.769	38.696	13
20	9	0.469	0.097	20	15	19.460	41.487	20
30	8	0.431	0.163	30	5	7.422	17.240	31
40	7	0.369	0.202	40	1	1.376	3.725	49
60	6	0.199	0.157	60	0.1	0.000	0.000	80
80	5	0.081	0.074					
100	4	0.023	0.028					
150	3	0.004	0.023					
200	2	0.005	0.014					
1000	1	0.002	0.004					

Integrated Value

Integrated values are 1.0% of Surface Intensity (S.I.)

Chlorophyll <i>a</i> :	21.45	mg m-2 day -1	Carbon Fixation:	559.65	mg m-2 day-1
Phaeophytin:	6.67	mg m-2 day -1	Productivity Index:	26.09	mg C mg Chl day-1
Mixed Layer	444	meters	PBOpt:	42.14	mg C mg Chl day-1

Date: Oct 26, 2005 21:04 Cruise: S405 Latitude: 35.877 Year: 2005
 Project: CALCOFI Station: NPS6 Longitude: -124.025 Work week: 44
 Platform: RVPOINT SUR Cast: 13 Secchi Depth: --- Day of Year: 299

* Note: Latitude and Longitude are reported in decimal degrees. '---' signifies no data.

Physical and Chemical

DEP (m)	PRESS (db)	BTL #	TEMP (°C)	SAL	SIGMA T	TRANSMISS (%)	NO3 (µM)	NO2 (µM)	PO4 (µM)	SIO4 (µM)
0	1.2	12	16.472	33.214	24.267	90	0.259	0.079	0.221	2.212
50	50.5	11	10.962	33.236	25.410	93	17.241	0.044	1.360	13.363
100	102.7	10	9.055	33.651	26.055	94	25.133	0.034	1.644	25.181
200	199.8	9	8.080	34.038	26.509	94	31.792	0.051	1.974	40.472
300	301.3	8	6.818	34.085	26.727	94	36.803	0.039	2.516	57.432
400	403.3	7	5.908	34.129	26.880	94	39.504	0.029	2.977	71.808
500	503.2	6	5.271	34.200	27.014	94	42.553	0.036	3.132	86.274
600	605.9	5	4.863	34.272	27.119	94	44.104	0.048	3.317	97.827
700	705.8	4	4.546	34.343	27.212	94	44.758	0.017	3.333	105.80
800	808.1	3	4.280	34.404	27.289	94	44.762	0.024	3.389	113.00
900	909.1	2	4.016	34.439	27.345	94	45.289	0.033	3.417	118.19
1000	1009.9	1	3.771	34.468	27.394	94	45.224	0.068	3.362	123.52

Date: Oct 26, 2005 22:55 Cruise: S405 Latitude: 35.793 Year: 2005
 Project: CALCOFI Station: 67-80 Longitude: -124.201 Work week: 44
 Platform: RVPOINT SUR Cast: 14 Secchi Depth: --- Day of Year: 299

* Note: Latitude and Longitude are reported in decimal degrees. '---' signifies no data.

Physical and Chemical

DEP (m)	PRESS (db)	BTL #	TEMP (°C)	SAL	SIGMA T	TRANSMISS (%)	NO3 (µM)	NO2 (µM)	PO4 (µM)	SIO4 (µM)
0	2.2	12	16.648	33.250	24.254	90	0.383	0.140	0.366	2.123
5	4.9	11	16.644	33.250	24.254	91	---	0.057	0.315	1.799
10	9.4	10	16.590	33.253	24.270	90	---	0.040	0.330	1.668
20	20.5	9	16.581	33.291	24.301	90	---	0.022	0.232	1.544
30	30.9	8	16.581	33.330	24.332	91	0.265	0.054	0.291	1.701
40	40.0	7	15.506	33.227	24.496	92	7.795	0.212	0.721	6.636
60	60.3	6	10.545	33.281	25.518	93	18.856	0.087	1.203	15.408
80	81.2	5	9.657	33.561	25.887	94	24.472	0.038	1.710	22.481
100	101.4	4	9.116	33.704	26.087	94	26.255	0.028	1.888	26.705
150	149.5	3	8.514	33.918	26.349	94	29.297	0.062	2.138	33.491
200	201.9	2	8.056	34.030	26.507	94	31.488	0.061	2.301	39.875
1000	1009.9	1	3.828	34.480	27.398	94	43.917	0.043	3.261	120.34

Biological

DEP (m)	BTL #	CHL (mg m-3 d-1)	PHAEO (mg m-3 d-1)	DEP (m)	% S. I.	CARBON (mg m-3 d-1)	PROD INDEX carbon/chl (mg m-3 d-1)	LIGHT DEPTH (m)
0	12	0.331	0.041	0	100	17.462	52.774	0
5	11	0.306	0.063	5	50	19.958	65.130	9
10	10	0.353	0.076	10	30	12.758	36.193	15
20	9	0.412	0.095	20	15	11.377	27.633	22
30	8	0.473	0.142	30	5	9.992	21.134	34
40	7	0.314	0.184	40	1	1.748	5.567	53
60	6	0.159	0.133	60	0.1	0.016	0.102	93
80	5	0.052	0.048					
100	4	0.016	0.028					
150	3	0.004	0.021					
200	2	0.004	0.016					
1000	1	0.002	0.010					

Integrated Value

Integrated values are 1.0% of Surface Intensity (S.I.)

Chlorophyll <i>a</i> :	20.23	mg m-2 day -1	Carbon Fixation:	587.36	mg m-2 day-1
Phaeophytin:	5.97	mg m-2 day -1	Productivity Index:	29.03	mg C mg Chl day-1
Mixed Layer	34	meters	PBOpt:	65.13	mg C mg Chl day-1

Date: Oct 27, 2005 01:25 Cruise: S405 Latitude: 35.709 Year: 2005
 Project: CALCOFI Station: NPS7 Longitude: -124.379 Work week: 44
 Platform: RVPOINT SUR Cast: 15 Secchi Depth: --- Day of Year: 300

* Note: Latitude and Longitude are reported in decimal degrees. '---' signifies no data.

Physical and Chemical

DEP (m)	PRESS (db)	BTL #	TEMP (°C)	SAL	SIGMA T	TRANSMISS (%)	NO3 (µM)	NO2 (µM)	PO4 (µM)	SIO4 (µM)
0	2.0	12	16.840	33.347	24.283	88	0.254	0.100	0.469	1.456
50	49.9	11	16.520	33.384	24.388	92	0.922	0.064	0.473	1.928
100	101.1	10	9.209	33.667	26.043	94	24.903	0.073	1.884	24.316
200	202.4	9	8.074	34.039	26.511	94	30.734	0.067	2.159	38.904
300	302.7	8	6.639	34.072	26.740	94	36.795	0.062	2.780	57.393
400	403.9	7	5.889	34.112	26.869	94	40.080	0.029	2.852	71.012
500	504.8	6	5.262	34.182	27.001	94	42.183	0.034	3.123	84.538
600	605.0	5	5.049	34.281	27.105	94	44.611	0.218	---	94.591
700	704.9	4	4.750	34.336	27.183	94	43.857	0.029	---	101.44
800	807.0	3	4.534	34.397	27.257	94	44.623	0.029	3.345	106.74
900	909.0	2	4.245	34.436	27.319	94	44.598	0.034	3.316	120.87
1000	1009.6	1	3.919	34.480	27.389	94	44.566	0.067	---	114.00

Date: Oct 27, 2005 03:26 Cruise: S405 Latitude: 35.626 Year: 2005
 Project: CALCOFI Station: 67-85 Longitude: -124.554 Work week: 44
 Platform: RVPOINT SUR Cast: 16 Secchi Depth: --- Day of Year: 300

* Note: Latitude and Longitude are reported in decimal degrees. '---' signifies no data.

Physical and Chemical

DEP (m)	PRESS (db)	BTL #	TEMP (°C)	SAL	SIGMA T	TRANSMISS (%)	NO3 (µM)	NO2 (µM)	PO4 (µM)	SIO4 (µM)
0	1.6	12	16.759	33.322	24.283	89	0.007	0.017	0.128	1.554
5	5.0	11	16.753	33.322	24.285	89	0.063	0.081	0.535	1.544
10	9.5	10	16.749	33.321	24.285	89	0.057	0.043	0.586	1.482
20	20.7	9	16.592	33.294	24.301	89	0.028	0.039	0.464	1.443
30	30.4	8	16.442	33.286	24.330	89	0.218	0.054	0.371	1.565
40	40.5	7	16.397	33.257	24.318	92	5.156	0.139	0.590	4.455
60	60.6	6	10.818	33.401	25.564	93	20.609	0.047	1.409	16.301
80	80.5	5	9.573	33.529	25.875	94	24.799	0.024	1.868	23.671
100	100.9	4	9.130	33.691	26.075	94	26.337	0.051	1.998	26.969
150	151.6	3	8.469	33.922	26.359	94	28.349	0.026	2.186	32.503
200	200.6	2	8.149	34.058	26.515	94	32.722	0.007	2.227	41.349
1000	1008.7	1	3.760	34.471	27.397	94	45.669	0.077	3.459	122.74

Biological

DEP (m)	BTL #	CHL (mg m-3 d-1)	PHAEO (mg m-3 d-1)	DEP (m)	% S. I.	CARBON (mg m-3 d-1)	PROD INDEX carbon/chl (mg m-3 d-1)	LIGHT DEPTH (m)
0	12	0.431	0.102	0	100	10.229	23.760	0
5	11	0.421	0.120	5	50	16.041	38.091	7
10	10	0.417	0.127	10	30	20.075	48.100	13
20	9	0.540	0.188	20	15	16.298	30.205	20
30	8	0.592	0.287	30	5	10.115	17.080	30
40	7	0.435	0.241	40	1	1.947	4.473	45
60	6	0.237	0.192	60	0.1	0.000	0.000	73
80	5	0.046	0.048					
100	4	0.014	0.036					
150	3	0.002	0.018					
200	2	0.001	0.015					
1000	1	0.001	0.010					

Integrated Value

Integrated values are 1.0% of Surface Intensity (S.I.)

Chlorophyll <i>a</i> :	22.35	mg m-2 day -1	Carbon Fixation:	545.64	mg m-2 day-1
Phaeophytin:	9.05	mg m-2 day -1	Productivity Index:	24.41	mg C mg Chl day-1
Mixed Layer	39	meters	PBOpt:	48.1	mg C mg Chl day-1

Date: Oct 27, 2005 05:56 Cruise: S405 Latitude: 35.543 Year: 2005
 Project: CALCOFI Station: NPS-8 Longitude: -124.732 Work week: 44
 Platform: RVPOINT SUR Cast: 17 Secchi Depth: --- Day of Year: 300

* Note: Latitude and Longitude are reported in decimal degrees. '---' signifies no data.

Physical and Chemical

DEP (m)	PRESS (db)	BTL #	TEMP (°C)	SAL	SIGMA T	TRANSMISS (%)	NO3 (µM)	NO2 (µM)	PO4 (µM)	SIO4 (µM)
0	1.9	12	16.619	33.249	24.259	91	---	---	---	---
50	50.4	11	11.002	33.250	25.413	93	20.720	0.096	1.476	16.724
100	101.1	10	9.056	33.772	26.149	94	27.479	0.023	2.018	28.097
200	200.9	9	8.069	34.081	26.545	94	33.302	0.032	2.455	42.675
300	301.5	8	6.952	34.117	26.733	94	31.898	0.024	2.407	48.278
400	403.4	7	5.934	34.143	26.888	94	40.924	0.015	3.043	73.035
500	503.3	6	5.383	34.210	27.009	94	40.516	0.011	3.042	80.678
600	604.6	5	5.001	34.296	27.123	94	43.704	0.014	3.204	93.184
700	706.3	4	4.663	34.364	27.215	94	40.047	0.000	3.127	94.195
800	807.6	3	4.328	34.409	27.288	94	44.602	0.021	3.461	108.97
900	908.4	2	4.029	34.444	27.348	94	41.287	0.021	3.160	109.04
1000	1009.7	1	3.716	34.469	27.400	94	44.425	0.063	3.353	121.43

Date: Oct 27, 2005 07:58 Cruise: S405 Latitude: 35.460 Year: 2005
 Project: CALCOFI Station: 67-90 Longitude: -124.906 Work week: 44
 Platform: RVPOINT SUR Cast: 18 Secchi Depth: --- Day of Year: 300

* Note: Latitude and Longitude are reported in decimal degrees. '---' signifies no data.

Physical and Chemical

DEP (m)	PRESS (db)	BTL #	TEMP (°C)	SAL	SIGMA T	TRANSMISS (%)	NO3 (µM)	NO2 (µM)	PO4 (µM)	SIO4 (µM)
0	1.7	12	16.291	33.069	24.197	90	0.484	0.068	0.215	1.973
400	403.3	11	5.861	34.119	26.878	94	35.062	0.008	2.524	62.386
600	605.2	10	4.748	34.268	27.129	94	37.589	0.013	2.843	82.806
800	807.3	9	4.137	34.388	27.291	94	44.935	0.014	3.292	113.38
1000	1009.4	8	3.705	34.469	27.401	94	42.639	0.048	3.166	118.28
1500	1518.4	7	2.725	34.561	27.568	94	42.500	0.017	3.162	145.48
2000	2024.3	6	2.004	34.613	27.673	94	41.257	0.022	2.990	165.55
2500	2533.0	5	1.735	34.647	27.723	94	41.799	0.067	3.194	172.17
3000	3042.6	4	1.609	34.664	27.749	94	40.469	0.021	2.986	171.78
3500	3555.4	3	1.520	34.678	27.770	94	39.317	0.014	2.828	170.86
4000	4067.2	2	1.494	34.686	27.782	94	38.677	0.034	2.808	166.25
4250	4323.9	1	1.509	34.688	27.784	94	38.307	0.005	2.671	162.70

Date: Oct 27, 2005 15:08 Cruise: S405 Latitude: 35.459 Year: 2005
 Project: CALCOFI Station: 67-90 Longitude: -124.906 Work week: 44
 Platform: RVPOINT SUR Cast: 19 Secchi Depth: --- Day of Year: 300

* Note: Latitude and Longitude are reported in decimal degrees. '---' signifies no data.

Physical and Chemical

DEP (m)	PRESS (db)	BTL #	TEMP (°C)	SAL	SIGMA T	TRANSMISS (%)	NO3 (µM)	NO2 (µM)	PO4 (µM)	SIO4 (µM)
0	1.9	12	16.288	33.158	24.266	90	0.503	0.072	0.196	2.084
5	5.0	11	16.290	33.158	24.265	91	0.526	0.080	0.431	2.153
10	9.6	10	16.284	33.157	24.266	91	0.564	0.074	0.413	1.962
20	20.3	9	15.973	33.133	24.318	90	1.320	0.099	0.476	2.197
30	30.5	8	15.327	33.125	24.456	91	1.953	0.130	0.559	2.352
40	40.5	7	14.155	33.107	24.693	92	5.556	0.326	0.769	4.834
60	60.1	6	11.287	33.036	25.196	93	12.538	0.076	1.377	10.017
80	80.2	5	10.090	33.270	25.587	94	19.437	0.102	1.684	16.821
100	101.2	4	9.614	33.528	25.869	94	24.760	0.126	2.054	22.287
150	151.1	3	8.790	33.842	26.247	94	26.342	0.072	2.053	28.779
200	201.8	2	8.290	34.021	26.464	94	31.859	0.067	2.448	38.347
200	203.0	1	8.275	34.022	26.467	94	29.509	0.088	2.419	34.999

Biological

DEP (m)	BTL #	CHL (mg m-3 d-1)	PHAEO (mg m-3 d-1)	DEP (m)	% S. I.	CARBON (mg m-3 d-1)	PROD INDEX carbon/chl (mg m-3 d-1)	LIGHT DEPTH (m)
0	12	0.388	0.121	0	100	15.888	40.925	0
5	11	0.381	0.123	5	50	18.590	48.831	8
10	10	0.386	0.135	10	30	16.709	43.251	13
20	9	0.557	0.197	20	15	16.530	29.655	20
30	8	0.528	0.262	30	5	8.407	15.914	30
40	7	0.398	0.270	40	1	1.650	4.150	46
60	6	0.166	0.162	60	0.1	0.000	0.000	75
80	5	0.103	0.137					
100	4	0.051	0.074					
150	3	0.007	0.035					
200	2	0.004	0.028					
200	1	0.002	0.031					

Integrated Value

Integrated values are 1.0% of Surface Intensity (S.I.)

Chlorophyll <i>a</i> :	21.26	mg m-2 day -1	Carbon Fixation:	549.18	mg m-2 day-1
Phaeophytin:	9.40	mg m-2 day -1	Productivity Index:	25.84	mg C mg Chl day-1
Mixed Layer	23	meters	PBOpt:	48.83	mg C mg Chl day-1

Date: Oct 27, 2005 17:28 Cruise: S405 Latitude: 35.706 Year: 2005
 Project: CALCOFI Station: 65.25-90 Longitude: -125.09 Work week: 44
 Platform: RVPOINT SUR Cast: 20 Secchi Depth: --- Day of Year: 300

* Note: Latitude and Longitude are reported in decimal degrees. '---' signifies no data.

Physical and Chemical

DEP (m)	PRESS (db)	BTL #	TEMP (°C)	SAL	SIGMA T	TRANSMISS (%)	NO3 (µM)	NO2 (µM)	PO4 (µM)	SIO4 (µM)
0	1.6	12	16.561	33.245	24.270	90	0.061	0.060	0.377	1.990
5	4.9	11	16.562	33.245	24.270	90	0.149	0.094	0.375	1.927
10	10.6	10	16.531	33.245	24.277	90	0.173	0.090	0.427	1.842
20	20.0	9	16.418	33.243	24.302	90	0.336	0.072	0.518	1.928
30	29.9	8	15.943	33.228	24.399	90	0.649	0.090	0.392	1.754
40	40.6	7	15.031	33.226	24.599	91	4.020	0.225	0.577	3.518
60	60.8	6	10.490	33.314	25.554	93	20.496	0.103	1.532	17.654
80	80.3	5	9.421	33.463	25.849	94	23.884	0.059	1.895	23.123
100	101.0	4	9.119	33.684	26.070	94	24.936	0.058	1.915	25.302
150	150.5	3	8.579	33.936	26.354	94	29.579	0.063	2.114	33.943
200	203.4	2	8.035	34.035	26.514	94	26.612	0.049	2.028	33.709
1000	1009.5	1	3.686	34.471	27.405	94	45.486	0.063	3.426	126.66

Biological

DEP (m)	BTL #	CHL (mg m-3 d-1)	PHAEO (mg m-3 d-1)	DEP (m)	% S. I.	CARBON (mg m-3 d-1)	PROD INDEX carbon/chl (mg m-3 d-1)	LIGHT DEPTH (m)
0	12	0.353	0.116	0	100	7.641	21.619	0
5	11	0.374	0.113	5	50	9.171	24.514	8
10	10	0.353	0.111	10	30	8.944	25.307	13
20	9	0.532	0.229	20	15	10.538	19.807	20
30	8	0.196	0.170	30	5	7.183	36.737	32
40	7	0.232	0.165	40	1	1.849	7.965	54
60	6	0.106	0.070	60	0.1	0.005	0.047	117
80	5	0.005	0.031					
150	3	0.001	0.019					

Integrated Value

Integrated values are 1.0% of Surface Intensity (S.I.)

Chlorophyll <i>a</i> :	16.96	mg m-2 day -1	Carbon Fixation:	388.26	mg m-2 day-1
Phaeophytin:	8.73	mg m-2 day -1	Productivity Index:	22.89	mg C mg Chl day-1
Mixed Layer	38	meters	PBOpt:	36.74	mg C mg Chl day-1

Date: Oct 27, 2005 20:43 Cruise: S405 Latitude: 36.009 Year: 2005
 Project: CALCOFI Station: 63.5-90 Longitude: -125.317 Work week: 44
 Platform: RVPOINT SUR Cast: 21 Secchi Depth: --- Day of Year: 300

* Note: Latitude and Longitude are reported in decimal degrees. '---' signifies no data.

Physical and Chemical

DEP (m)	PRESS (db)	BTL #	TEMP (°C)	SAL	SIGMA T	TRANSMISS (%)	NO3 (µM)	NO2 (µM)	PO4 (µM)	SIO4 (µM)
0	1.3	12	16.527	33.239	24.273	89	0.041	0.038	0.200	1.775
5	4.8	11	16.516	33.239	24.276	89	0.046	0.045	0.299	1.761
10	10.9	10	16.516	33.239	24.276	89	0.059	0.058	0.258	1.611
20	20.4	9	16.399	33.234	24.300	89	0.055	0.052	0.239	1.725
30	29.5	8	16.091	33.222	24.361	89	0.294	0.050	0.221	1.842
40	39.9	7	15.448	33.210	24.496	92	3.568	0.233	0.514	3.471
60	58.8	6	11.197	33.234	25.366	93	17.326	0.081	1.300	14.052
80	80.4	5	9.829	33.435	25.760	94	22.283	0.113	1.657	19.595
100	100.7	4	9.388	33.698	26.038	94	22.384	0.099	1.867	22.231
150	151.8	3	8.631	33.979	26.379	94	29.902	0.089	2.165	34.757
200	202.5	2	8.111	34.075	26.534	94	29.603	0.050	2.321	38.052
1000	1010.0	1	3.711	34.451	27.386	94	40.842	0.089	3.089	118.79

DEP (m)	% S. I.	CARBON (mg m-3 d-1)	PROD INDEX carbon/chl (mg m-3 d-1)	LIGHT DEPTH (m)
0	100	10.290	---	---
10	50	9.908	---	---
10	30	9.697	---	---
20	15	6.080	---	---
30	5	4.328	---	---
60	1	0.786	---	---
80	0.1	0.099	---	---

Integrated Value

Integrated values are 1.0% of Surface Intensity (S.I.)

Chlorophyll <i>a</i> :	---	mg m-2 day -1	Carbon Fixation:	---	mg m-2 day-1
Phaeophytin:	---	mg m-2 day -1	Productivity Index:	---	mg C mg Chl day-1
Mixed Layer	20	meters	PBOpt:	---	mg C mg Chl day-1

Date: Oct 27, 2005 23:56 Cruise: S405 Latitude: 36.313 Year: 2005
 Project: CALCOFI Station: 61.75-90 Longitude: -125.542 Work week: 44
 Platform: RVPOINT SUR Cast: 22 Secchi Depth: --- Day of Year: 300

* Note: Latitude and Longitude are reported in decimal degrees. '---' signifies no data.

Physical and Chemical

DEP (m)	PRESS (db)	BTL #	TEMP (°C)	SAL	SIGMA T	TRANSMISS (%)	NO3 (µM)	NO2 (µM)	PO4 (µM)	SIO4 (µM)
0	1.9	12	16.426	33.228	24.288	90	0.067	0.057	0.195	2.002
5	5.3	11	16.427	33.228	24.288	90	0.071	0.042	0.342	1.925
10	10.4	10	16.424	33.228	24.288	90	0.140	0.072	0.493	2.119
20	20.2	9	16.378	33.225	24.297	90	0.071	0.032	0.261	2.040
30	30.1	8	15.979	33.220	24.385	90	0.419	0.064	0.393	2.133
40	40.3	7	15.725	33.214	24.438	91	0.880	0.090	0.352	2.203
60	60.7	6	13.384	33.203	24.926	93	9.362	0.323	0.833	7.552
80	81.5	5	10.556	33.304	25.535	93	18.283	0.039	1.284	14.622
100	100.9	4	9.614	33.533	25.872	94	23.305	0.034	1.591	20.971
150	151.2	3	8.808	33.947	26.326	94	29.258	0.052	2.178	33.551
200	203.0	2	8.235	34.062	26.505	94	32.774	0.037	2.252	41.076
1000	1006.9	1	3.755	34.452	27.383	94	45.478	0.071	3.448	125.62

Biological

DEP (m)	BTL #	CHL (mg m-3 d-1)	PHAEO (mg m-3 d-1)	DEP (m)	% S. I.	CARBON (mg m-3 d-1)	PROD INDEX carbon/chl (mg m-3 d-1)	LIGHT DEPTH (m)
0	12	0.313	0.111	0	100	10.138	32.386	0
5	11	0.318	0.103	10	50	13.125	41.556	8
10	10	0.316	0.110	10	30	11.730	37.140	14
20	9	0.416	0.164	20	15	12.807	30.755	22
30	8	0.578	0.227	30	5	9.821	16.988	32
40	7	0.503	0.241	60	1	1.079	4.221	48
60	6	0.256	0.210	80	0.1	0.000	0.000	74
80	5	0.151	0.148					
100	4	0.057	0.066					
150	3	0.019	0.033					
200	2	0.021	0.017					
1000	1	0.001	0.007					

Integrated Value

Integrated values are 1.0% of Surface Intensity (S.I.)

Chlorophyll <i>a</i> :	18.90	mg m-2 day -1	Carbon Fixation:	463.95	mg m-2 day-1
Phaeophytin:	8.04	mg m-2 day -1	Productivity Index:	24.54	mg C mg Chl day-1
Mixed Layer	27	meters	PBOpt:	41.56	mg C mg Chl day-1

Date: Oct 28, 2005 03:08 Cruise: S405 Latitude: 36.614 Year: 2005
 Project: CALCOFI Station: 60-90 Longitude: -125.771 Work week: 44
 Platform: RVPOINT SUR Cast: 23 Secchi Depth: --- Day of Year: 301

* Note: Latitude and Longitude are reported in decimal degrees. '---' signifies no data.

Physical and Chemical

DEP (m)	PRESS (db)	BTL #	TEMP (°C)	SAL	SIGMA T	TRANSMISS (%)	NO3 (µM)	NO2 (µM)	PO4 (µM)	SIO4 (µM)
0	2.8	12	15.722	33.071	24.326	89	1.784	0.111	0.407	1.559
5	5.8	11	15.702	33.070	24.331	89	2.307	0.166	0.523	1.685
10	10.7	10	15.673	33.070	24.337	89	2.005	0.147	0.518	1.603
20	20.2	9	15.588	33.070	24.356	90	2.261	0.127	0.474	1.631
30	30.2	8	15.104	33.056	24.452	90	2.766	0.167	0.716	1.991
40	40.9	7	14.297	33.196	24.732	92	5.765	0.286	0.810	4.146
60	60.6	6	11.068	33.036	25.236	93	12.434	0.106	1.069	10.023
80	81.1	5	9.961	33.260	25.601	94	19.584	0.050	1.436	17.212
100	102.0	4	9.399	33.500	25.882	94	23.440	0.057	1.641	22.146
150	151.4	3	8.991	33.840	26.213	94	28.769	0.046	2.001	30.684
200	201.7	2	8.222	34.007	26.464	94	30.996	0.086	2.314	38.197
4265	4341.4	1	1.512	34.688	27.784	94	37.662	0.051	2.525	160.73

Biological

DEP (m)	BTL #	CHL (mg m-3 d-1)	PHAEO (mg m-3 d-1)	DEP (m)	% S. I.	CARBON (mg m-3 d-1)	PROD INDEX carbon/chl (mg m-3 d-1)	LIGHT DEPTH (m)
0	12	0.455	0.151	0	100	30.904	67.926	0
5	11	0.451	0.184	10	50	30.288	66.435	7
10	10	0.456	0.149	10	30	26.599	58.344	12
20	9	0.509	0.169	20	15	20.836	40.972	19
30	8	0.520	0.235	30	5	8.601	16.547	30
40	7	0.426	0.233	60	1	0.820	3.843	46
60	6	0.213	0.174	80	0.1	0.094	1.218	74
80	5	0.077	0.073					
100	4	0.042	0.046					
150	3	0.007	0.027					
200	2	0.004	0.016					
4265	1	0.000	0.000					

Integrated Value

Integrated values are 1.0% of Surface Intensity (S.I.)

Chlorophyll <i>a</i> :	20.21	mg m-2 day -1	Carbon Fixation:	756.47	mg m-2 day-1
Phaeophytin:	8.34	mg m-2 day -1	Productivity Index:	37.44	mg C mg Chl day-1
Mixed Layer	84	meters	PBOpt:	67.93	mg C mg Chl day-1

Date: Oct 28, 2005 08:55 Cruise: S405 Latitude: 36.783 Year: 2005
 Project: CALCOFI Station: 60-85 Longitude: -125.416 Work week: 44
 Platform: RVPOINT SUR Cast: 24 Secchi Depth: --- Day of Year: 301

* Note: Latitude and Longitude are reported in decimal degrees. '---' signifies no data.

Physical and Chemical

DEP (m)	PRESS (db)	BTL #	TEMP (°C)	SAL	SIGMA T	TRANSMISS (%)	NO3 (µM)	NO2 (µM)	PO4 (µM)	SIO4 (µM)
0	2.2	12	16.040	33.219	24.369	89	1.552	0.094	0.402	1.781
5	4.1	11	16.043	33.224	24.372	89	1.781	0.092	0.383	1.957
10	9.2	10	16.053	33.240	24.383	89	1.786	0.088	0.530	1.980
20	20.1	9	16.051	33.247	24.388	89	1.902	0.099	0.364	1.911
30	30.8	8	15.617	33.315	24.539	91	3.593	0.351	0.549	2.811
40	39.1	7	15.036	33.291	24.648	92	7.334	0.219	0.771	5.800
60	61.2	6	11.567	33.059	25.164	93	15.001	0.193	1.220	12.368
80	81.2	5	9.879	33.376	25.706	94	22.435	0.095	1.527	20.069
100	100.9	4	9.288	33.625	25.997	94	22.865	0.049	1.746	24.418
150	150.8	3	8.897	33.928	26.298	94	25.047	0.021	1.754	27.614
200	201.7	2	8.324	34.030	26.467	94	29.144	0.072	2.253	32.167
1000	1006.9	1	3.792	34.448	27.376	94	---	---	---	---

Biological

DEP (m)	BTL #	CHL (mg m-3 d-1)	PHAEO (mg m-3 d-1)	DEP (m)	% S. I.	CARBON (mg m-3 d-1)	PROD INDEX carbon/chl (mg m-3 d-1)	LIGHT DEPTH (m)
0	12	0.471	0.137	0	100	26.851	57.015	0
5	11	0.464	0.124	10	50	28.038	61.627	7
10	10	0.455	0.142	10	30	22.583	49.637	12
20	9	0.442	0.124	20	15	17.305	39.170	20
30	8	0.431	0.189	30	5	7.913	18.380	31
40	7	0.305	0.177	60	1	0.685	3.469	49
60	6	0.197	0.150	80	0.1	0.000	0.000	82
80	5	0.084	0.070					
100	4	0.038	0.050					
150	3	0.004	0.029					
200	2	0.004	0.019					
1000	1	0.002	0.006					

Integrated Value

Integrated values are 1.0% of Surface Intensity (S.I.)

Chlorophyll <i>a</i> :	19.66	mg m-2 day -1	Carbon Fixation:	696.47	mg m-2 day-1
Phaeophytin:	7.59	mg m-2 day -1	Productivity Index:	35.43	mg C mg Chl day-1
Mixed Layer	850	meters	PBOpt:	61.63	mg C mg Chl day-1

Date: Oct 28, 2005 13:40 Cruise: S405 Latitude: 36.948 Year: 2005
 Project: CALCOFI Station: 60-80 Longitude: -125.052 Work week: 44
 Platform: RVPOINT SUR Cast: 25 Secchi Depth: --- Day of Year: 301

* Note: Latitude and Longitude are reported in decimal degrees. '---' signifies no data.

Physical and Chemical

DEP (m)	PRESS (db)	BTL #	TEMP (°C)	SAL	SIGMA T	TRANSMISS (%)	NO3 (µM)	NO2 (µM)	PO4 (µM)	SIO4 (µM)
0	2.6	12	15.049	33.140	24.528	90	4.657	0.175	0.508	3.055
5	5.2	11	15.056	33.138	24.525	90	3.795	0.145	0.680	2.912
10	10.2	10	15.040	33.136	24.526	90	3.848	0.142	0.561	2.881
20	21.2	9	14.520	33.211	24.696	91	5.874	0.350	0.905	4.053
30	29.7	8	13.821	33.241	24.866	92	6.513	0.244	0.841	4.482
40	40.0	7	13.699	33.247	24.896	92	7.037	0.327	0.971	5.823
60	60.8	6	11.570	33.309	25.357	93	16.774	0.284	1.619	13.405
80	80.1	5	9.996	33.389	25.697	93	21.602	0.086	1.764	18.924
100	99.4	4	9.124	33.557	25.970	93	24.329	0.178	2.103	24.595
150	151.9	3	8.808	33.952	26.330	94	30.095	0.174	2.517	34.548
200	201.1	2	8.306	34.050	26.485	94	32.139	0.043	2.307	40.419
1000	1009.6	1	3.868	34.460	27.378	94	44.812	0.056	3.445	120.43

Biological

DEP (m)	BTL #	CHL (mg m-3 d-1)	PHAEO (mg m-3 d-1)	DEP (m)	% S. I.	CARBON (mg m-3 d-1)	PROD INDEX carbon/chl (mg m-3 d-1)	LIGHT DEPTH (m)
0	12	0.455	0.133	0	100	19.384	42.605	0
5	11	0.463	0.126	10	50	18.610	54.241	7
10	10	0.343	0.116	20	30	16.545	46.937	13
20	9	0.353	0.150	20	15	12.660	35.916	21
30	8	0.381	0.172	40	5	6.105	14.930	33
40	7	0.409	0.213	60	1	0.666	3.959	50
60	6	0.168	0.146	80	0.1	0.084	0.720	81
80	5	0.117	0.118					
100	4	0.039	0.065					
150	3	0.019	0.033					
200	2	0.003	0.016					
1000	1	0.002	0.007					

Integrated Value

Integrated values are 1.0% of Surface Intensity (S.I.)

Chlorophyll <i>a</i> :	17.23	mg m-2 day -1	Carbon Fixation:	523.07	mg m-2 day-1
Phaeophytin:	8.14	mg m-2 day -1	Productivity Index:	30.36	mg C mg Chl day-1
Mixed Layer	120	meters	PBOpt:	54.24	mg C mg Chl day-1

Date: Oct 28, 2005 17:16 Cruise: S405 Latitude: 37.115 Year: 2005
 Project: CALCOFI Station: 60-75 Longitude: -124.693 Work week: 44
 Platform: RVPOINT SUR Cast: 26 Secchi Depth: --- Day of Year: 301

* Note: Latitude and Longitude are reported in decimal degrees. '---' signifies no data.

Physical and Chemical

DEP (m)	PRESS (db)	BTL #	TEMP (°C)	SAL	SIGMA T	TRANSMISS (%)	NO3 (µM)	NO2 (µM)	PO4 (µM)	SIO4 (µM)
0	1.8	12	15.103	33.250	24.600	88	1.371	0.101	0.222	3.195
5	4.2	11	15.095	33.252	24.604	88	1.397	0.100	0.258	3.174
10	9.7	10	15.059	33.266	24.623	88	1.510	0.086	0.270	3.116
20	19.8	9	14.634	33.267	24.715	90	3.608	0.158	0.399	3.902
30	30.4	8	13.809	33.275	24.895	91	6.203	0.249	0.659	5.140
40	39.7	7	13.094	33.317	25.071	92	8.466	0.353	0.865	8.862
60	60.4	6	11.425	33.471	25.510	93	21.459	0.235	1.672	19.456
80	81.2	5	9.811	33.756	26.014	93	27.031	0.034	1.941	26.907
100	99.9	4	9.566	33.856	26.132	93	28.602	0.030	2.099	30.638
150	150.8	3	9.234	34.066	26.352	94	30.713	0.028	2.290	35.990
200	202.7	2	8.729	34.165	26.510	94	32.049	0.031	2.383	41.591
1000	1010.4	1	3.968	34.445	27.356	94	45.202	0.018	3.324	119.21

Biological

DEP (m)	BTL #	CHL (mg m-3 d-1)	PHAEO (mg m-3 d-1)	DEP (m)	% S. I.	CARBON (mg m-3 d-1)	PROD INDEX carbon/chl (mg m-3 d-1)	LIGHT DEPTH (m)
0	12	0.996	0.292	0	100	39.550	39.693	0
5	11	1.015	0.316	5	50	47.666	46.952	5
10	10	0.921	0.341	10	30	39.977	43.397	9
20	9	0.714	0.312	10	15	27.144	29.466	14
30	8	0.790	0.316	20	5	9.140	12.794	23
40	7	0.479	0.243	30	1	2.445	3.097	36
60	6	0.248	0.171	40	0.1	0.253	0.528	60
80	5	0.108	0.103					
100	4	0.086	0.183					
150	3	0.019	0.080					
200	2	0.014	0.059					
1000	1	0.002	0.014					

Integrated Value

Integrated values are 1.0% of Surface Intensity (S.I.)

Chlorophyll <i>a</i> :	30.83	mg m-2 day -1	Carbon Fixation:	801.83	mg m-2 day-1
Phaeophytin:	11.63	mg m-2 day -1	Productivity Index:	26.01	mg C mg Chl day-1
Mixed Layer	366	meters	PBOpt:	46.95	mg C mg Chl day-1

Date: Oct 28, 2005 21:11 Cruise: S405 Latitude: 37.282 Year: 2005
 Project: CALCOFI Station: 60-70 Longitude: -124.336 Work week: 44
 Platform: RVPOINT SUR Cast: 27 Secchi Depth: --- Day of Year: 301

* Note: Latitude and Longitude are reported in decimal degrees. '---' signifies no data.

Physical and Chemical

DEP (m)	PRESS (db)	BTL #	TEMP (°C)	SAL	SIGMA T	TRANSMISS (%)	NO3 (µM)	NO2 (µM)	PO4 (µM)	SIO4 (µM)
0	1.7	12	14.861	33.179	24.599	90	4.962	0.137	0.459	3.878
5	5.3	11	14.800	33.189	24.619	89	4.959	0.136	0.530	3.820
10	10.1	10	14.738	33.207	24.646	89	5.075	0.151	0.542	3.760
20	19.9	9	13.812	33.278	24.896	90	6.759	0.241	0.739	5.090
30	29.9	8	13.057	33.316	25.078	90	8.732	0.331	0.892	6.414
40	41.0	7	12.735	33.328	25.151	92	14.956	0.337	1.273	12.971
60	59.9	6	10.294	33.801	25.967	93	28.072	0.098	2.196	29.099
80	81.3	5	9.788	33.966	26.182	93	28.691	0.029	2.129	30.951
100	100.3	4	9.639	34.013	26.243	94	27.163	0.025	2.119	30.194
150	150.5	3	9.431	34.087	26.336	94	30.647	0.042	2.337	35.632
200	201.2	2	9.104	34.152	26.441	94	30.334	0.037	2.421	37.318
1000	1011.1	1	3.991	34.446	27.354	94	44.855	0.030	3.310	117.94

Biological

DEP (m)	BTL #	CHL (mg m-3 d-1)	PHAEO (mg m-3 d-1)	DEP (m)	% S. I.	CARBON (mg m-3 d-1)	PROD INDEX carbon/chl (mg m-3 d-1)	LIGHT DEPTH (m)
0	12	0.553	0.163	0	100	23.553	42.613	0
5	11	0.525	0.165	10	50	27.860	51.012	7
10	10	0.546	0.201	10	30	27.577	50.494	11
20	9	0.808	0.401	20	15	26.709	33.040	17
30	8	0.799	0.445	30	5	13.561	16.972	26
40	7	0.507	0.304	60	1	0.793	4.437	38
60	6	0.179	0.141	80	0.1	0.040	0.656	63
80	5	0.061	0.089					
100	4	0.011	0.055					
150	3	0.014	0.077					
200	2	0.010	0.058					
1000	1	0.002	0.014					

Integrated Value

Integrated values are 1.0% of Surface Intensity (S.I.)

Chlorophyll <i>a</i> :	23.28	mg m-2 day -1	Carbon Fixation:	722.23	mg m-2 day-1
Phaeophytin:	11.28	mg m-2 day -1	Productivity Index:	31.02	mg C mg Chl day-1
Mixed Layer	55	meters	PBOpt:	51.01	mg C mg Chl day-1

Date: Oct 29, 2005 01:00 Cruise: S405 Latitude: 37.447 Year: 2005
 Project: CALCOFI Station: 60-65 Longitude: -123.972 Work week: 44
 Platform: RVPOINT SUR Cast: 28 Secchi Depth: --- Day of Year: 302

* Note: Latitude and Longitude are reported in decimal degrees. '---' signifies no data.

Physical and Chemical

DEP (m)	PRESS (db)	BTL #	TEMP (°C)	SAL	SIGMA T	TRANSMISS (%)	NO3 (µM)	NO2 (µM)	PO4 (µM)	SIO4 (µM)
0	2.1	12	14.519	33.211	24.696	85	1.531	0.114	0.425	3.369
5	4.6	11	14.517	33.210	24.696	85	1.905	0.143	0.451	4.050
10	10.2	10	14.437	33.230	24.728	87	2.253	0.145	0.432	3.982
20	19.5	9	14.248	33.251	24.785	90	2.927	0.189	0.537	4.116
30	29.2	8	13.292	33.289	25.010	92	8.238	0.379	0.831	5.341
40	40.2	7	12.565	33.361	25.209	92	9.752	0.414	1.032	8.269
60	61.1	6	11.690	33.433	25.432	93	13.639	0.392	1.166	12.631
80	80.2	5	9.915	33.494	25.792	93	21.419	0.059	1.736	19.342
100	100.8	4	9.114	33.700	26.084	93	25.971	0.091	1.833	26.718
150	151.8	3	8.765	33.990	26.367	94	25.540	0.052	1.967	29.824
200	201.6	2	8.272	34.054	26.494	94	30.461	0.037	2.203	38.706
1000	1010.6	1	3.823	34.460	27.382	94	39.219	0.041	3.212	109.01

Biological

DEP (m)	BTL #	CHL (mg m-3 d-1)	PHAEO (mg m-3 d-1)	DEP (m)	% S. I.	CARBON (mg m-3 d-1)	PROD INDEX carbon/chl (mg m-3 d-1)	LIGHT DEPTH (m)
0	12	3.337	0.579	0	100	136.412	40.879	0
5	11	2.717	0.538	5	50	146.504	53.929	3
10	10	1.861	0.410	10	30	79.242	42.576	6
20	9	0.761	0.309	10	15	61.283	32.927	10
30	8	0.508	0.223	20	5	14.414	18.931	17
40	7	0.437	0.237	30	1	2.361	4.652	30
60	6	0.285	0.202	40	0.1	0.517	1.183	53
80	5	0.107	0.130					
100	4	0.088	0.124					
150	3	0.029	0.059					
200	2	0.031	0.039					
1000	1	0.002	0.013					

Integrated Value

Integrated values are 1.0% of Surface Intensity (S.I.)

Chlorophyll <i>a</i> :	40.36	mg m-2 day -1	Carbon Fixation:	1298.2	mg m-2 day-1
Phaeophytin:	10.60	mg m-2 day -1	Productivity Index:	32.17	mg C mg Chl day-1
Mixed Layer	---	meters	PBOpt:	53.93	mg C mg Chl day-1

Date: Oct 29, 2005 04:57 Cruise: S405 Latitude: 37.615 Year: 2005
 Project: CALCOFI Station: 60-60 Longitude: -123.609 Work week: 44
 Platform: RVPOINT SUR Cast: 29 Secchi Depth: --- Day of Year: 302

* Note: Latitude and Longitude are reported in decimal degrees. '---' signifies no data.

Physical and Chemical

DEP (m)	PRESS (db)	BTL #	TEMP (°C)	SAL	SIGMA T	TRANSMISS (%)	NO3 (µM)	NO2 (µM)	PO4 (µM)	SIO4 (µM)
0	1.7	12	14.413	33.204	24.713	89	0.823	0.136	0.447	2.855
5	4.9	11	14.419	33.207	24.715	89	0.853	0.128	0.302	2.679
10	10.2	10	14.387	33.273	24.772	90	1.018	0.129	0.375	2.961
20	20.0	9	13.525	33.307	24.977	91	4.817	0.320	0.700	5.794
30	30.0	8	11.919	33.312	25.294	93	13.859	0.512	1.162	11.220
40	40.6	7	10.873	33.434	25.580	93	18.180	0.126	1.423	15.619
60	60.1	6	9.953	33.531	25.814	93	21.990	0.098	1.734	20.856
80	79.3	5	9.493	33.685	26.010	93	24.277	0.106	1.927	24.497
100	100.8	4	8.940	33.797	26.187	94	25.877	0.096	1.974	28.223
150	152.7	3	8.657	34.032	26.417	94	29.824	0.060	2.245	36.296
200	201.9	2	8.142	34.090	26.541	94	31.898	0.053	2.415	43.165
1000	1009.7	1	3.864	34.448	27.369	94	43.997	0.047	3.490	115.31

Biological

DEP (m)	BTL #	CHL (mg m-3 d-1)	PHAEO (mg m-3 d-1)	DEP (m)	% S. I.	CARBON (mg m-3 d-1)	PROD INDEX carbon/chl (mg m-3 d-1)	LIGHT DEPTH (m)
0	12	0.640	0.012	0	100	32.509	50.785	0
5	11	0.696	0.270	5	50	45.101	64.838	6
10	10	0.555	0.481	10	30	38.979	70.284	10
20	9	0.536	0.430	10	15	36.155	65.190	16
30	8	0.467	0.232	20	5	9.977	18.621	26
40	7	0.294	0.234	30	1	1.864	3.989	42
60	6	0.170	0.165	40	0.1	0.164	0.559	71
80	5	0.111	0.132					
100	4	0.066	0.071					
150	3	0.046	0.052					
200	2	0.027	0.032					
1000	1	0.006	0.031					

Integrated Value

Integrated values are 1.0% of Surface Intensity (S.I.)

Chlorophyll <i>a</i> :	23.14	mg m-2 day -1	Carbon Fixation:	907.79	mg m-2 day-1
Phaeophytin:	14.84	mg m-2 day -1	Productivity Index:	39.23	mg C mg Chl day-1
Mixed Layer	550	meters	PBOpt:	70.28	mg C mg Chl day-1

Date: Oct 29, 2005 07:38 Cruise: S405 Latitude: 37.701 Year: 2005
 Project: CALCOFI Station: 60-57.5 Longitude: -123.431 Work week: 44
 Platform: RVPOINT SUR Cast: 30 Secchi Depth: --- Day of Year: 302

* Note: Latitude and Longitude are reported in decimal degrees. '---' signifies no data.

Physical and Chemical

DEP (m)	PRESS (db)	BTL #	TEMP (°C)	SAL	SIGMA T	TRANSMISS (%)	NO3 (µM)	NO2 (µM)	PO4 (µM)	SIO4 (µM)
0	3.4	12	14.117	33.252	24.812	88	1.315	0.132	0.304	3.683
5	5.0	11	14.121	33.253	24.812	88	1.428	0.135	0.448	3.495
10	10.2	10	14.111	33.275	24.831	90	2.875	0.180	0.445	4.895
20	19.6	9	12.427	33.375	25.247	93	8.268	0.410	0.874	9.041
30	28.7	8	11.856	33.405	25.378	93	11.937	0.369	1.085	11.576
40	39.4	7	10.880	33.417	25.565	93	16.601	0.103	1.403	13.987
60	60.6	6	10.164	33.444	25.711	93	20.369	0.103	1.577	18.718
80	80.6	5	9.892	33.582	25.864	93	20.474	0.149	1.697	19.690
100	100.1	4	9.471	33.717	26.040	94	22.960	0.072	1.790	23.359
150	153.5	3	8.835	33.987	26.353	94	27.033	0.090	2.081	31.541
200	204.3	2	8.402	34.041	26.464	94	27.921	0.067	2.183	35.448
1000	1009.6	1	3.792	34.454	27.380	94	43.871	0.055	3.496	123.05

Biological

DEP (m)	BTL #	CHL (mg m-3 d-1)	PHAEO (mg m-3 d-1)	DEP (m)	% S. I.	CARBON (mg m-3 d-1)	PROD INDEX carbon/chl (mg m-3 d-1)	LIGHT DEPTH (m)
0	12	1.786	0.320	0	100	50.665	28.368	0
5	11	1.401	0.357	5	50	51.324	36.644	4
10	10	0.949	0.321	10	30	32.426	34.154	8
20	9	0.403	0.224	10	15	20.972	22.090	13
30	8	0.286	0.231	20	5	4.472	11.089	23
40	7	0.281	0.236	30	1	0.999	3.496	40
60	6	0.203	0.166	40	0.1	0.000	0.000	68
80	5	0.179	0.160					
100	4	0.092	0.145					
150	3	0.026	0.086					
200	2	0.030	0.077					
1000	1	0.005	0.025					

Integrated Value

Integrated values are 1.0% of Surface Intensity (S.I.)

Chlorophyll <i>a</i> :	28.70	mg m-2 day -1	Carbon Fixation:	674.84	mg m-2 day-1
Phaeophytin:	11.01	mg m-2 day -1	Productivity Index:	23.51	mg C mg Chl day-1
Mixed Layer	57	meters	PBOpt:	36.64	mg C mg Chl day-1

Date: Oct 29, 2005 10:30 Cruise: S405 Latitude: 37.783 Year: 2005
 Project: CALCOFI Station: 60-55 Longitude: -123.251 Work week: 44
 Platform: RVPOINT SUR Cast: 31 Secchi Depth: --- Day of Year: 302

* Note: Latitude and Longitude are reported in decimal degrees. '---' signifies no data.

Physical and Chemical

DEP (m)	PRESS (db)	BTL #	TEMP (°C)	SAL	SIGMA T	TRANSMISS (%)	NO3 (µM)	NO2 (µM)	PO4 (µM)	SIO4 (µM)
0	2.3	12	14.322	33.242	24.762	90	1.614	0.133	0.344	3.137
0	2.5	11	14.322	33.242	24.762	90	1.370	0.120	0.563	2.761
0	2.5	10	14.323	33.242	24.762	90	1.589	0.137	0.492	3.010
5	5.1	9	14.325	33.241	24.761	90	1.768	0.146	0.468	3.115
10	10.1	8	14.145	33.255	24.809	90	4.529	0.209	0.622	5.524
20	20.3	7	12.767	33.359	25.168	91	9.801	0.323	1.178	11.620
30	31.2	6	11.374	33.460	25.510	92	12.575	0.291	1.156	12.631
40	40.2	5	10.863	33.475	25.613	93	14.477	0.265	1.277	13.271
60	61.1	4	9.873	33.666	25.933	93	23.278	0.101	1.847	23.372
80	80.3	3	9.653	33.737	26.025	89	22.347	0.247	2.164	24.877
100	100.1	2	9.634	33.752	26.041	89	25.170	0.278	2.304	28.418
125	125.8	1	9.622	33.760	26.049	89	23.842	0.239	2.181	26.921

Biological

DEP (m)	BTL #	CHL (mg m-3 d-1)	PHAEO (mg m-3 d-1)	DEP (m)	% S. I.	CARBON (mg m-3 d-1)	PROD INDEX carbon/chl (mg m-3 d-1)	LIGHT DEPTH (m)
0	10	0.902	0.229	0	100	38.617	42.794	0
5	9	0.949	0.225	5	50	33.673	35.468	5
10	8	1.184	0.304	10	30	47.419	40.036	9
20	7	0.771	0.361	10	15	34.879	29.448	14
30	6	0.329	0.237	20	5	12.876	16.704	23
40	5	0.184	0.213	30	1	1.219	3.707	39
60	4	0.105	0.217	40	0.1	0.234	1.271	68
80	3	0.123	0.333					
100	2	0.125	0.361					
125	1	0.108	0.373					

Integrated Value

Integrated values are 1.0% of Surface Intensity (S.I.)

Chlorophyll <i>a</i> :	32.25	mg m-2 day -1	Carbon Fixation:	873.27	mg m-2 day-1
Phaeophytin:	11.43	mg m-2 day -1	Productivity Index:	27.08	mg C mg Chl day-1
Mixed Layer	---	meters	PBOpt:	42.79	mg C mg Chl day-1

Date: Oct 29, 2005 12:34 Cruise: S405 Latitude: 37.864 Year: 2005
 Project: CALCOFI Station: 60-52.5 Longitude: -123.064 Work week: 44
 Platform: RVPOINT SUR Cast: 32 Secchi Depth: --- Day of Year: 302

* Note: Latitude and Longitude are reported in decimal degrees. '---' signifies no data.

Physical and Chemical

DEP (m)	PRESS (db)	BTL #	TEMP (°C)	SAL	SIGMA T	TRANSMISS (%)	NO3 (µM)	NO2 (µM)	PO4 (µM)	SIO4 (µM)
0	2.1	12	12.846	33.272	25.085	81	---	---	---	---
0	2.0	11	12.856	33.272	25.083	82	---	---	---	---
0	1.9	10	12.856	33.272	25.083	82	---	---	---	---
0	2.4	9	12.851	33.273	25.084	81	4.117	0.243	1.192	14.917
5	5.5	8	12.638	33.349	25.185	82	4.439	0.248	1.179	16.129
10	9.4	7	12.198	33.442	25.342	90	11.692	0.294	1.149	15.501
20	20.0	6	11.178	33.483	25.563	92	15.215	0.325	1.392	15.723
30	30.3	5	10.964	33.559	25.660	93	14.967	0.312	1.509	16.847
40	40.7	4	10.464	33.596	25.777	93	21.046	0.315	1.684	21.952
60	60.2	3	10.001	33.679	25.921	92	23.418	0.109	1.957	25.632
80	80.0	2	9.821	33.727	25.990	80	25.077	0.439	2.243	36.529
85	85.1	1	9.822	33.729	25.991	76	25.222	0.438	2.281	37.994

Biological

DEP (m)	BTL #	CHL (mg m-3 d-1)	PHAEO (mg m-3 d-1)	DEP (m)	% S. I.	CARBON (mg m-3 d-1)	PROD INDEX carbon/chl (mg m-3 d-1)	LIGHT DEPTH (m)
0	9	12.690	0.799	0	100	532.947	41.997	0
5	8	7.990	0.800	5	50	364.177	45.579	2
10	7	1.025	0.333	10	30	33.797	32.986	4
20	6	0.525	0.313	10	15	23.229	22.671	6
30	5	0.387	0.281	20	5	6.219	11.856	11
40	4	0.295	0.311	30	1	1.053	2.719	24
60	3	0.228	0.326	40	0.1	0.277	0.937	47
80	2	0.320	1.786					
85	1	0.282	1.667					

Integrated Value

Integrated values are 1.0% of Surface Intensity (S.I.)

Chlorophyll <i>a</i> :	40.09	mg m-2 day -1	Carbon Fixation:	1400.3	mg m-2 day-1
Phaeophytin:	8.79	mg m-2 day -1	Productivity Index:	34.93	mg C mg Chl day-1
Mixed Layer	---	meters	PBOpt:	45.58	mg C mg Chl day-1

Date: Oct 29, 2005 14:09 Cruise: S405 Latitude: 37.948 Year: 2005
 Project: CALCOFI Station: 60-50 Longitude: -122.882 Work week: 44
 Platform: RVPOINT SUR Cast: 33 Secchi Depth: --- Day of Year: 302

* Note: Latitude and Longitude are reported in decimal degrees. '---' signifies no data.

Physical and Chemical

DEP (m)	PRESS (db)	BTL #	TEMP (°C)	SAL	SIGMA T	TRANSMISS (%)	NO3 (µM)	NO2 (µM)	PO4 (µM)	SIO4 (µM)
0	2.0	12	12.593	33.226	25.098	83	---	---	---	---
0	1.9	11	12.595	33.226	25.098	83	---	---	---	---
0	2.0	10	12.596	33.224	25.097	83	---	---	---	---
0	1.9	9	12.597	33.222	25.095	83	---	---	---	---
0	2.0	8	12.597	33.222	25.094	83	---	---	---	---
0	2.1	7	12.599	33.222	25.094	82	4.542	0.291	1.048	19.849
5	5.0	6	12.601	33.224	25.096	82	---	---	---	---
10	9.9	5	12.516	33.341	25.203	86	---	---	---	---
20	20.5	4	12.334	33.444	25.318	89	6.439	0.250	0.949	15.775
30	29.8	3	11.089	33.590	25.663	92	20.604	0.453	2.083	27.301
40	40.8	2	10.106	33.639	25.872	73	23.653	0.493	2.331	34.206
45	45.9	1	10.101	33.640	25.874	63	23.677	0.511	2.448	34.425

Biological

DEP (m)	BTL #	CHL (mg m-3 d-1)	PHAEO (mg m-3 d-1)	DEP (m)	% S. I.	CARBON (mg m-3 d-1)	PROD INDEX carbon/chl (mg m-3 d-1)	LIGHT DEPTH (m)
0	7	8.460	0.504	0	100	306.512	36.231	0
5	6	4.268	0.458	5	50	134.132	31.430	3
10	5	2.416	0.421	10	30	62.011	25.669	4
20	4	1.523	0.340	10	15	57.736	23.899	7
30	3	0.583	0.871	20	5	15.657	10.281	13
40	2	0.526	1.606	30	1	1.372	2.354	23
45	1	0.620	1.912	45	0.1	0.483	0.778	38

Integrated Value

Integrated values are 1.0% of Surface Intensity (S.I.)

Chlorophyll <i>a</i> :	50.97	mg m-2 day -1	Carbon Fixation:	1174.3	mg m-2 day-1
Phaeophytin:	11.30	mg m-2 day -1	Productivity Index:	23.04	mg C mg Chl day-1
Mixed Layer	---	meters	PBOpt:	36.23	mg C mg Chl day-1

Date: Oct 29, 2005 23:07 Cruise: S405 Latitude: 37.258 Year: 2005
 Project: CALCOFI Station: 63.5-52.5 Longitude: -122.629 Work week: 44
 Platform: RVPOINT SUR Cast: 34 Secchi Depth: --- Day of Year: 302

* Note: Latitude and Longitude are reported in decimal degrees. '---' signifies no data.

Physical and Chemical

DEP (m)	PRESS (db)	BTL #	TEMP (°C)	SAL	SIGMA T	TRANSMISS (%)	NO3 (µM)	NO2 (µM)	PO4 (µM)	SIO4 (µM)
0	1.8	12	12.996	33.377	25.137	77	---	---	---	---
0	1.7	11	13.045	33.375	25.125	76	---	---	---	---
0	1.5	10	13.051	33.375	25.124	76	---	---	---	---
0	1.7	9	12.963	33.379	25.145	78	2.906	0.244	1.085	14.248
5	4.8	8	12.735	33.382	25.192	84	4.137	0.246	0.897	13.106
10	9.5	7	12.648	33.387	25.213	86	5.400	0.258	0.814	13.888
20	19.1	6	12.508	33.397	25.248	89	8.099	0.284	0.944	14.982
30	30.0	5	11.321	33.524	25.569	92	14.066	0.337	1.455	19.313
40	40.2	4	11.058	33.547	25.634	92	17.355	0.339	1.597	22.449
60	59.5	3	10.239	33.658	25.865	92	21.454	0.230	2.125	24.411
80	80.7	2	9.821	33.748	26.006	83	25.743	0.291	2.253	30.988
90	91.6	1	9.804	33.754	26.014	76	25.543	0.264	2.390	31.263

Date: Oct 30, 2005 01:44 Cruise: S405 Latitude: 36.955 Year: 2005
 Project: CALCOFI Station: 65.5-52.5 Longitude: -122.415 Work week: 45
 Platform: RVPOINT SUR Cast: 35 Secchi Depth: --- Day of Year: 303

* Note: Latitude and Longitude are reported in decimal degrees. '---' signifies no data.

Physical and Chemical

DEP (m)	PRESS (db)	BTL #	TEMP (°C)	SAL	SIGMA T	TRANSMISS (%)	NO3 (µM)	NO2 (µM)	PO4 (µM)	SIO4 (µM)
0	1.3	12	13.151	33.362	25.094	82	0.900	0.111	0.723	9.300
5	5.4	11	13.120	33.362	25.101	82	2.377	0.174	0.709	9.270
10	10.8	10	11.980	33.449	25.389	92	8.063	0.275	0.825	11.996
20	19.8	9	11.298	33.507	25.560	92	12.804	0.308	1.282	14.357
30	30.7	8	10.832	33.505	25.642	93	18.046	0.374	1.607	17.115
40	41.4	7	10.070	33.545	25.805	93	21.660	0.145	1.753	20.358
60	60.3	6	9.911	33.737	25.982	90	23.509	0.092	2.005	25.183
80	80.8	5	9.892	33.755	25.999	90	24.605	0.098	2.061	26.622
100	99.5	4	9.863	33.778	26.023	90	24.524	0.108	2.046	26.808
150	152.4	3	9.714	33.868	26.119	92	26.050	0.077	2.160	28.834
200	201.4	2	9.194	33.939	26.260	92	27.721	0.102	2.380	32.687
270	273.0	1	8.367	34.086	26.505	92	29.280	0.086	2.416	38.925

Table 4: *Zooplankton Data.* This table lists the total biovolume and krill abundance measured at the nineteen hydrographic stations—10 on CalCOFI line 67, 9 on CalCOFI line 60— where bongo net tows were completed during the PaCOOS cruise of October 2005. The data are listed by CalCOFI line, onshore to offshore and south to north.

Station (CalCOFI) Number	Latitude (°N)	Longitude (°W)	Zooplankton Biovolume (ml/1000m³)	Krill Abundance (no./1000m³)
1 (CI)	36.794	121.847	174	574
2 (MI)	36.742	122.032	71	2544
4 (67-55)	36.631	122.410	280	4247
6 (67-60)	36.449	122.777	710	551
8 (67-65)	36.290	123.133	347	4105
10 (67-70)	36.127	123.474	199	3181
12 (67-75)	35.963	123.863	125	547
14 (67-80)	35.797	124.215	116	486
16 (67-85)	35.631	124.556	773	950
18 (67-90)	35.454	124.932	171	1652
31 (60-55)	37.789	123.267	147	3653
30 (60-57.5)	37.710	123.456	495	2490
29 (60-60)	37.619	123.626	198	1151
28 (60-65)	37.443	123.991	209	1314
27 (60-70)	37.282	124.348	183	186
26 (60-75)	37.121	124.700	710	106
25 (60-80)	36.958	125.057	237	349
24 (60-85)	36.811	125.439	275	892
23 (60-90)	36.605	125.743	423	31941

Table 5: *Marine Mammal Observations.* This table lists the results of the marine mammal observations made during the PaCOOS cruise of October 2005. The data are listed by species code, then chronologically within each species code.

Species Code	Scientific (Common) Name	Size of Group	Date of Sighting (mm/dd/yyyy)	Latitude (°N)	Longitude (°W)
16	Delphinus capensis <i>(long-beaked common dolphin)</i>	150	10/26/2005	35.840	124.106
		200		35.840	124.106
		150	10/28/2005	35.840	124.106
		40		37.080	124.781
21	Grampus griseus <i>(risso's dolphin)</i>	6	10/25/2005	36.735	121.973
22	Lagenorhynchus obliquidens <i>(pacific white-sided dolphin)</i>	25	10/29/2005	37.689	123.109
		150		37.455	122.993
27	Lissodelphis borealis <i>(northern right whale dolphin)</i>	8	10/29/2005	37.689	123.109
44	Phocoenoides dalli <i>(dall's porpoise)</i>	3	10/29/2005	37.300	122.733
		3		37.265	122.647
		5		37.232	122.613
		2		37.011	122.454
74	Balaenoptera physalus <i>(fin whale)</i>	1	10/26/2005	35.872	124.035
		6	10/27/2005	35.720	124.360
		1		35.506	124.933
		1		35.740	125.107
		1		35.742	125.109
		2		36.473	125.325
		2	10/28/2005	36.568	125.031
		3	36.986	125.015	
		2	36.990	125.004	
		1	37.009	124.956	
		2	37.036	124.893	
		2	10/29/2005	37.677	123.142

Species Code	Scientific (<i>Common</i>) Name	Size of Group	Date of Sighting (mm/dd/yyyy)	Latitude (°N)	Longitude (°W)
75	Balaenoptera musculus <i>(blue whale)</i>	1	10/26/2005	36.021	123.733
		1		36.012	123.750
		1		35.840	124.106
		1		35.840	124.106
		1		35.840	124.106
		2		35.840	124.106
		2		35.840	124.106
		1		35.840	124.106
		2		35.840	124.106
		1		35.718	124.364

Species Code	Scientific (<i>Common</i>) Name	Size of Group	Date of Sighting (mm/dd/yyyy)	Latitude (°N)	Longitude (°W)	
76	Megaptera novaeangliae (<i>humpback whale</i>)	1	10/25/2005	36.757	121.866	
		2		36.727	121.971	
		1		36.731	121.949	
		2		36.710	122.045	
		3		36.718	122.003	
		4		36.679	122.043	
		1		36.686	122.094	
		2		36.714	122.164	
		1		36.740	122.206	
		1		36.691	122.419	
		1		36.630	122.397	
		1		10/26/2005	36.048	123.674
		1			36.048	123.681
		2	35.993		123.785	
		1	10/29/2005	35.991	123.788	
		4		37.703	123.097	
		2		37.666	123.125	
		4		37.670	123.131	
		1		37.345	122.836	
		1		37.273	122.666	
		1		37.260	122.634	
		1		37.259	122.630	
		1		37.187	122.582	
		2		37.165	122.567	
		2		37.106	122.524	
		4		37.098	122.518	
		4		37.097	122.517	
2	37.094	122.514				
2	37.090	122.511				
2	37.076	122.500				
3	37.071	122.496				
2	37.055	122.486				
3	37.050	122.482				
1	37.039	122.474				
2	36.989	122.438				
2	36.979	122.430				
2	36.976	122.429				
2	36.974	122.427				
1	36.963	122.419				

Species Code	Scientific (<i>Common</i>) Name	Size of Group	Date of Sighting (mm/dd/yyyy)	Latitude (°N)	Longitude (°W)
79	Unidentified large whale	1	10/26/2005	35.961	123.901
		1	10/27/2005	35.703	125.088
		1		36.002	125.311
		1		36.083	125.377
		1	10/28/2005	37.069	124.910
		1		37.076	124.793
		1		37.122	124.701
		2	10/29/2005	37.672	123.134
		1		37.349	122.845
		1		37.255	122.630
		1		37.240	122.618
		1		37.233	122.614
		1		37.206	122.596
		1		36.967	122.421

Figures

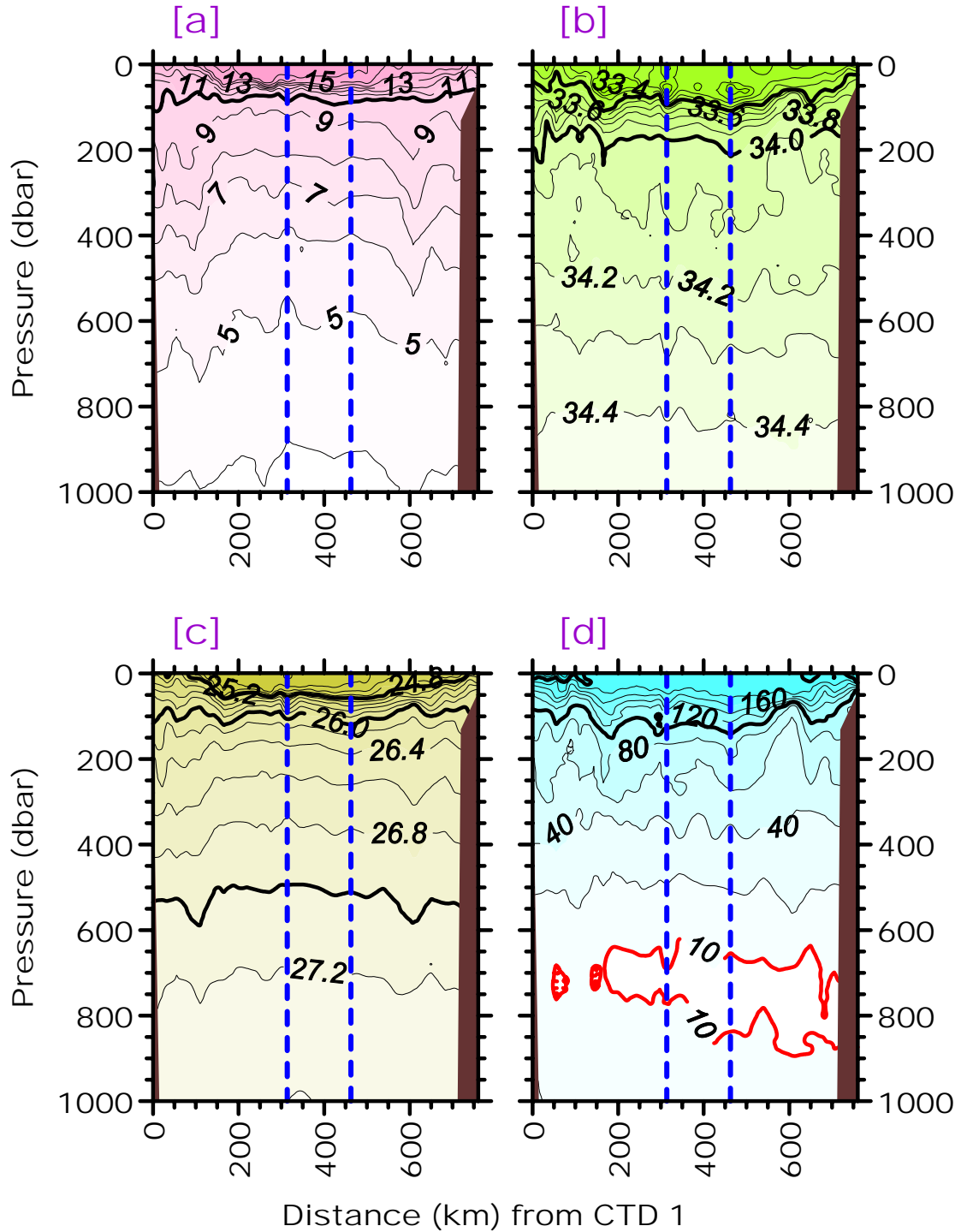


Figure 3: Contours of (a) temperature ($^{\circ}\text{C}$), (b) salinity, (c) density anomaly (kg m^{-3}), and (d) oxygen ($\mu\text{m kg}^{-1}$) fields along the line of hydrographic stations from Moss Landing (on the left) to Point Reyes. The dashed blue lines indicate the locations of the corner hydrographic stations (CTDs 18/19 and 23). Contour intervals for panels a-d are 1°C , 0.1 , 0.2 kg m^{-3} , and $20 \mu\text{m kg}^{-1}$, respectively, except that the (nearly) oxygen minimum contour of $10 \mu\text{m kg}^{-1}$ is highlighted in red in panel d.

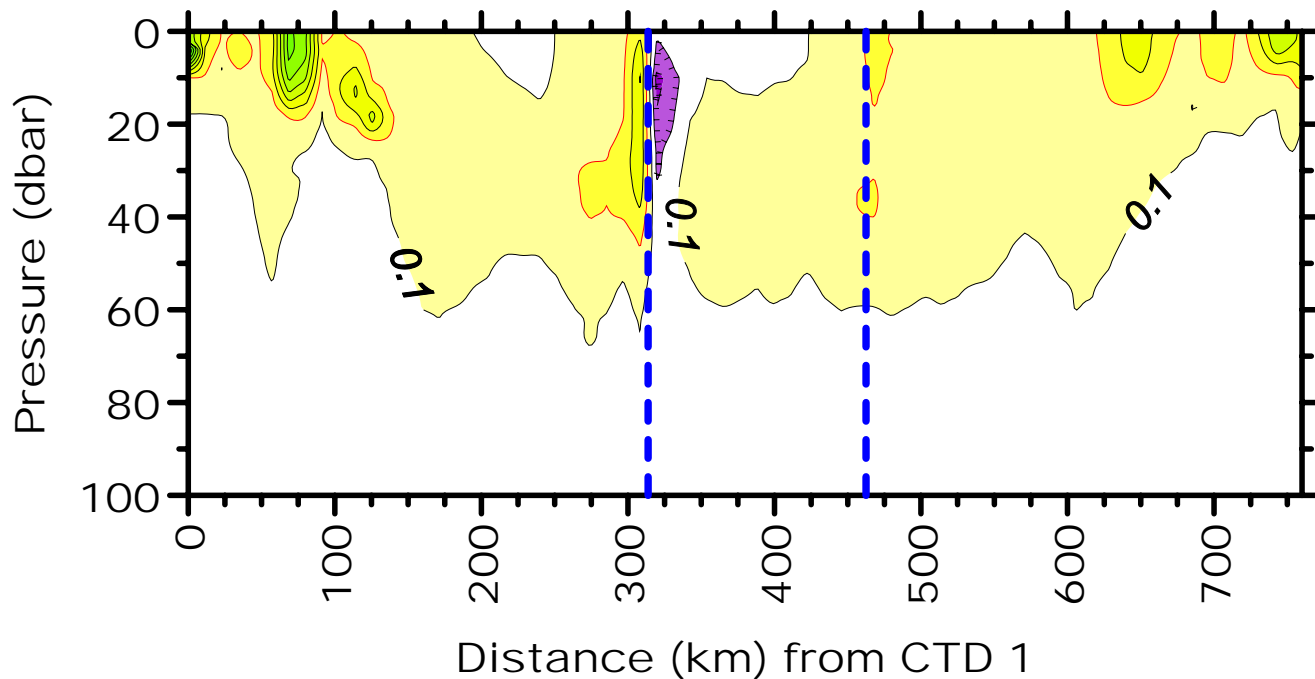


Figure 4: Contours of fluorescence (volts) in the upper 100 dbars of the water column along the line of hydrographic stations from Moss Landing (on the left) to Point Reyes. The dashed blue lines indicate the locations of the corner hydrographic stations (CTDs 18/19 and 23). The contour interval is 0.1 volt, ranging from green (highest) to purple (lowest). The 0.2-volt contour has been highlighted in red.

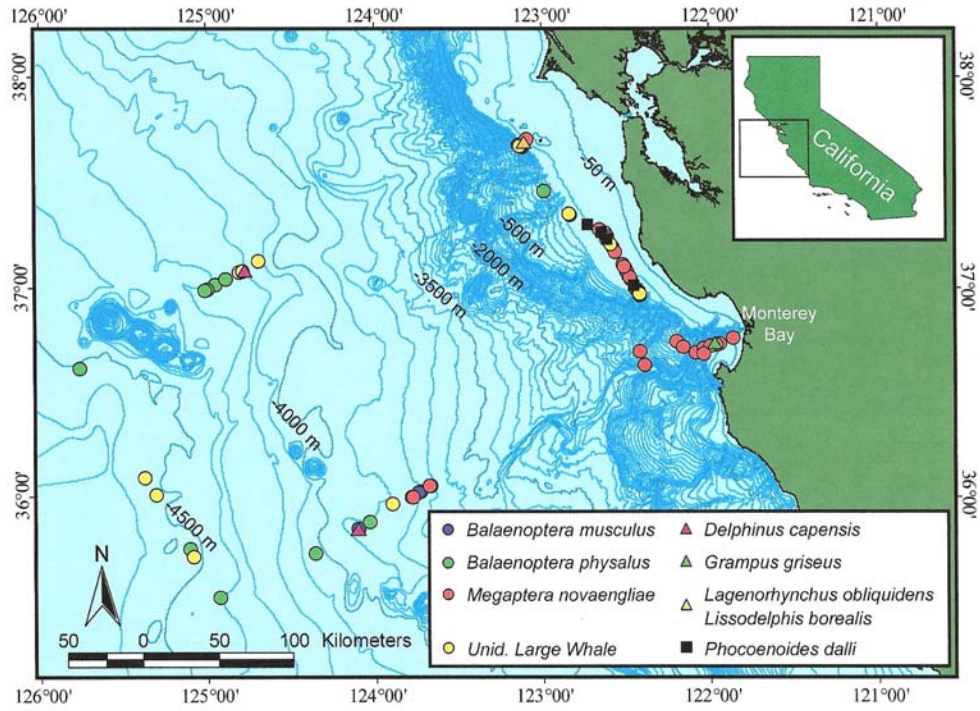


Figure 5: Locations of sightings of all marine mammals during the PaCOOS cruise of October 2005.

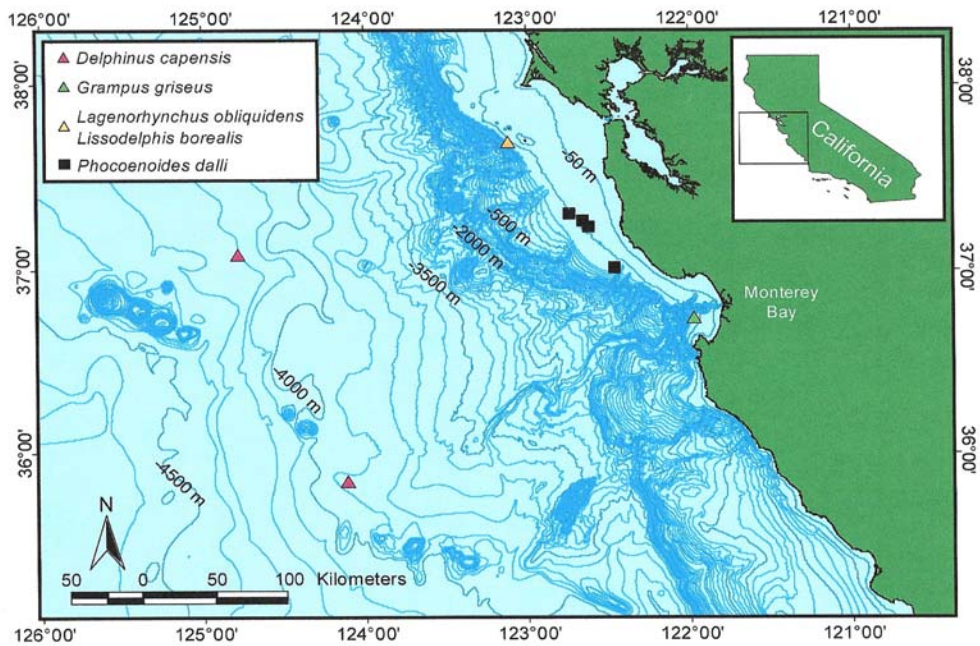


Figure 6: Locations of sightings of small marine mammals during the PaCOOS cruise of October 2005. (No large whale sightings are posted on this chart.)

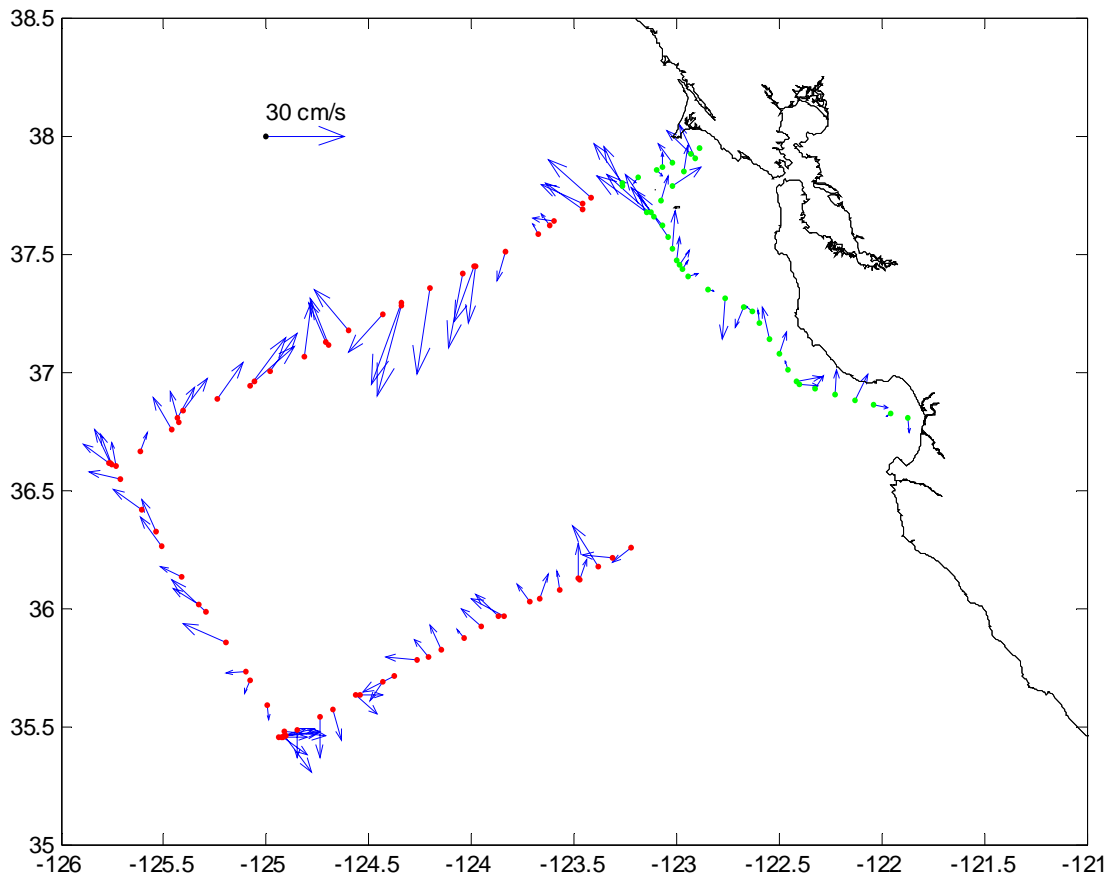


Figure 7: Ocean current velocity vectors measured by the ADCP along the track of the ship during the PaCOOS cruise of October 2005. Red dots indicate measurements by the 75 kHz Ocean Surveyor instrument, while green dots indicate measurements by the 300 kHz Broadband instrument. Each vector represents a 1-hr. average for 50-100 meters (Ocean Surveyor) or 25-50 meters (Broadband) in the water column. Because of difficulties with the input of navigation data to the Ocean Surveyor, there are no data available for the first day of the cruise.

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