

# data report

CalCOFI Cruise 1611  
6 - 22 November, 2016

CC Reference 17 - 04  
1 Sept., 2017

**UNIVERSITY OF CALIFORNIA, SAN DIEGO  
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**PHYSICAL, CHEMICAL AND BIOLOGICAL DATA**

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## INTRODUCTION

The data presented in this report were collected during cruise 1611\* of the California Cooperative Oceanic Fisheries Investigations (CalCOFI) program aboard the RV Sally Ride. The CalCOFI program was organized in the late 1940's to study the causes of variations in population size of fishes of importance to the State of California. It is carried out by NOAA's National Marine Fisheries Service Southwest Fisheries Science Center, the California Department of Fish and Wildlife, and the Integrative Oceanography Division (IOD) at Scripps Institution of Oceanography (SIO). IOD contributes to this program by investigations of the physical, chemical and biological structure of the California Current. Data from the cruise were collected and processed by personnel of the Integrative Oceanography Division and the Southwest Fisheries Science Center. CalCOFI data presented in this report and collected on previous cruises can be accessed at <http://www.calcofi.org>.

## STANDARD PROCEDURES

### *CTD/Rosette Cast Data*

A Sea-Bird Electronics, Inc., Conductivity-Temperature-Depth (CTD) instrument (Seabird 911+, Serial number 3161-936) with a rosette was deployed at each station on this cruise. The rosette was equipped with 24 ten-liter plastic (PVC) bottles equipped with epoxy-coated springs and Viton O-rings. Each CTD/rosette cast usually sampled 20 depths to a maximum sampling depth of 515 meters, bottom depth permitting. Occasional stations have multiple bottles tripped at the same depth to provide more water for ancillary programs. Additional bottle depths also appear in combined hydrographic and primary productivity casts. The sample spacing was designed to sample depth intervals as close as 10 meters around the sharp upper thermocline features such as the chlorophyll, oxygen, nitrite maxima and the shallow salinity minimum. Salinity, oxygen and nutrients were determined at sea for all depths sampled. Chlorophyll-*a* and phaeopigments were determined at sea on samples from the top 200 meters, bottom depth permitting.

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

Salinity samples were collected from all rosette bottles and analyzed at sea using a Guildline model 8410 Portasal salinometer. Salinity samples were drawn into 200 ml Kimax high-alumina borosilicate bottles that were rinsed three times with sample prior to filling. The results were compared with the CTD salinity to verify that the rosette bottle did not mis-trip or leak. The salinometer was standardized before and after each group of samples with standardized seawater. Periodic checks on the conductivity of the standardized seawater were made by comparison with IAPSO Standard Seawater batch P158. Salinity values were calculated using the algorithms for the Practical Salinity Scale, 1978 (UNESCO, 1981a) and are reported to three decimal places, provided that accepted standards were met.

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

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

Nutrient samples were analyzed at sea using a QuAAtro continuous flow analyzer (SEAL Analytical). Dissolved silicate, nitrate, and nitrite were analyzed using a modification of the method described by Armstrong (1967) and Gordon et al. (1992). Phosphate was measured with a modification of the Murphy and Riley (1962) protocol and ammonium is analyzed using a modified fluorometric method described by Kerouel and Aminot (1997). Samples were collected in 45ml high-density polypropylene screw top tubes which were acid washed and rinsed with sample three times prior to filling. Standardizations and cadmium-reduction coil efficiency determinations were performed at the beginning of every run. Drift and baseline corrections were performed in each run using a high standard and blank respectively inserted before and after sample sets. A sample of reference material for nutrients in seawater (RMNS), produced by KANSO technos ([www.kanso.co.jp](http://www.kanso.co.jp)) was included in every run and those data were monitored throughout the cruise and available to adjust values for nitrate, nitrite, phosphate, and silicate if appropriate. The mean values for  $\text{NO}_2 + \text{NO}_3$ ,  $\text{PO}_4$ , and dissolved reactive silicate species (SIL) for the cruise were calculated and compared to certified manufacturer values (see table below). A separate reference sample was used to monitor ammonium stability throughout the cruise. Samples not analyzed immediately after collection were refrigerated and run the following day.

<b>1611SR</b>	<b><math>\text{NO}_2 + \text{NO}_3</math> (<math>\mu\text{mol/L}</math>)</b>	<b><math>\text{PO}_4</math> (<math>\mu\text{mol/L}</math>)</b>	<b>SIL (<math>\mu\text{mol/L}</math>)</b>
Mean $\pm$ SD (n=31)	$36.79 \pm .23$	$2.57 \pm .02$	$109.19 \pm .54$
Certified Value* (Lot CB)	36.78	2.58	111.82

\*Converted from  $\mu\text{mol/kg}$  using assumed lab temperature of 20°C and salinity 34.374 provided by manufacturer

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

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

#### *Primary Productivity Sampling*

Primary productivity samples were taken each day shortly before local apparent noon (LAN). Primary production was estimated from  $^{14}\text{C}$  uptake using a simulated *in situ* technique. Light penetration was estimated from the Secchi depth (assuming that the 1% light level is three times the Secchi depth). The depths with ambient light intensities corresponding to light levels simulated by the on-deck incubators were identified and sampled on the rosette up-cast. Occasionally an extra bottle or two were tripped in addition to the usual 20 levels sampled in the combined rosette-productivity cast in order to maintain the normal sampling depth resolution. Triplicate samples (two light and one dark control) were drawn from each productivity sample depth into 250 ml polycarbonate incubation bottles. Samples were inoculated with a cruise average of 6.58  $\mu\text{Ci}$  of  $^{14}\text{C}$  as  $\text{NaHCO}_3$  (200 $\mu\text{l}$  of stock solution) prepared in a 0.3 g/liter solution of sodium carbonate (Fitzwater *et al.*, 1982). Samples were incubated from LAN to civil twilight in seawater-cooled incubators with neutral-density screens which simulate *in situ* light levels. At the end of the incubation, the samples were filtered onto Millipore HA filters and placed in scintillation vials. One half ml of 10% HCl was added to each sample. The sample was then allowed to sit, without a cap, at room temperature for 12 hours (after Lean and Burnison, 1979). Following this, 10 ml of scintillation cocktail were added to each sample and the samples were returned to SIO where the radioactivity was determined with a scintillation counter. Salinity, oxygen, nutrients, chlorophyll-*a* and phaeopigments were determined from all rosette productivity bottles.

#### *Macrozooplankton Net Tows*

Macrozooplankton was sampled with a 71 cm mouth diameter paired net (bongo net) equipped with 0.505mm plankton mesh. Bottom depth permitting, the nets were towed obliquely from 210 meters to the surface. The tow time for a standard tow was 21.5 minutes. Volumes filtered were determined from flowmeter readings and the

mouth area of the net. Only one sample of each pair was retained and preserved. The biomass, as wet displacement volume, after removal of large (>5 ml) organisms, was determined in the laboratory ashore. These procedures are summarized in greater detail in Kramer *et al.* (1972).

#### *Ancillary Programs*

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

- 1) *Underway Data:* Continuous near surface measurements of temperature, salinity and *in vivo* chlorophyll fluorescence were recorded from seawater pumped through the ship's uncontaminated seawater system. Water was drawn from a depth of approximately 5 meters. The data were logged in one-second increments using a Sea-Bird Electronics, Inc., SBE 45 MicroTSG Thermosalinographs for internal and external measurements, and a WetLabs C-star transmissometer and Wetlabs FLNTU and Eco-triplet fluorometers. The data has been processed to show 10 minute averages.
- 2) *ADCP:* Continuously sample profiles of currents using the RDI/Teledyne Acoustic Doppler Current Profiler. This will be dependent on the ability to sync the ADCP's output with the EK60 and ME70. The EK60 and ME70 will hold priority over the ADCP. The ADCP raw data are collected and archived for potential data processing ashore. The National Centers for Environmental Information (NCEI) in collaboration with the E.Firing Acoustic Doppler Current Profiler (ADCP) Laboratory at the University of Hawaii have established the Joint Archive for Shipboard ADCP (JASADCP). The JASADCP is responsible for the acquisition, review, documentation, archival, and distribution of shipboard ADCP data sets, data may be accessed through their website (<http://ilikai.soest.hawaii.edu/sadcp/index.html>). Shipboard ADCP data is acquired by University of Hawaii Data Acquisition System (UDHAS) and uses Common Ocean Data Access System (CODAS) processing to incrementally build a dataset of averaged, edited ocean velocities for each ADCP and ping type specified. Processed data and plots are served on the shipboard network, and daily status summaries are emailed and available online ([http://currents.soest.hawaii.edu/uhdas\\_fromships.html](http://currents.soest.hawaii.edu/uhdas_fromships.html)).
- 3) *Underway Sea Surface pCO<sub>2</sub> and pH measurements:* Automated shipboard analysis of the partial pressure of CO<sub>2</sub> and pH were made from the ship's underway flow-through system. pCO<sub>2</sub> measurements were taken with the Shipboard Underway pCO<sub>2</sub> Environmental Recorder (SUPER-CO<sub>2</sub>) sold by Sunburst Sensors designed with a showered equilibrator and a LI-COR 840A CO<sub>2</sub>/H<sub>2</sub>O non-dispersive infrared gas analyzer. pH measurements were taken with a Honeywell Durafet based on Ion Selective Field Effect Transistor (ISFET) technology. The Durafet pH sensor was calibrated before and after the cruise. pCO<sub>2</sub> was calibrated with standard gases traceable to NIST every 4 hours, along with an atmospheric sample. Temperature and salinity were also sampled using a SeaBird Thermosalinograph (SBE45). Measurements were recorded every 4 seconds. (T. Martz, SIO)
- 4) *California Current Ecosystem Long Term Ecological Research Program:* The CCE-LTER program augments standard CalCOFI measurements to further characterize the lower trophic levels as well as the carbon system. Measurements of particulate organic carbon and nitrogen, dissolved organic carbon and nitrogen, taxon-specific phytoplankton pigments, flow-cytometric counts of bacteria and picoautotrophs and the determination of mesozooplankton size structure using a Laser Optical Plankton Counter are sampled for all CalCOFI stations. On CalCOFI lines 90 and 80 measurements also include microscopic counts of heterotrophic and autotrophic phytoplankton for biomass and abundance and mesozooplankton community structure sampled with the Planktonic Rate Processes in Oligotrophic Ocean Systems (PRPOOS) tow net. (M. Ohman, SIO)
- 5) *Advanced Laser Fluorometer Analyzer (ALFA):* Continuous underway analysis of phytoplankton pigment groups and variable fluorescence ( $F_v/F_m$ ). ALFA, developed by A. Chekalyuk at Lamont-Doherty Earth Observatory, uses laser stimulated emission at 405 and 532 nm together with spectral deconvolution analysis to distinguish fluorescence from three types of phycoerythrin, chlorophyll-a, and chromophoric dissolved organic matter (CDOM). The ALFA is useful for differentiating the contribution of cyanobacteria and cryptophytes from other phytoplankton taxa present in natural phytoplankton assemblages, as well as for assessing phytoplankton photophysiological status. (R. Goericke, SIO)

6) *Custom Laser Analytical Spectroscopic System:* Another system developed by Alex Chekalyuk to characterize phytoplankton community structure and phytoplankton photosynthetic capacity. The instrument is using passive fluorometry to measure of chromophoric organic matter (COM), chlorophylls and phycobiliprotein pigments that are characteristic of some cyanobacteria and cryptophyte algae. It is using active fluorometry to measure variable fluorescence (Fv/Fm), a proxy for the photosynthetic capacity of the phytoplankton. The measurements have been carried out in the past on water from the ship's clean seawater system (ALF system). On this cruise those routine measurements were expanded to include bottle samples from the CalCOFI CTD casts to provide depth-resolved data for those variables. (R. Goericke, SIO)

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

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

9) *Inorganic Carbon System:* The CalCOFI group collected samples for the characterization of the inorganic carbon system at selected locations along the cruise track with 14 profile and 8 additional surface water stations. Total inorganic carbon and alkalinity will be measured which will allow the calculation of pH and pCO<sub>2</sub>. The objectives of these measurements are first the long-term characterization of the inorganic carbon system and its response to changing ocean climate and second measurements of pH in the coastal zone in order to monitor the impact of 'corrosive' waters on benthic ecosystems in the Southern California Bight. (R. Goericke, SIO)

10) *Marine Mammal Observations:* During daylight transits, visual line-transect surveys were conducted by marine mammal observers focusing on cetaceans. Acoustic line-transect surveys were performed using a towed hydrophone array which consists of multiple hydrophone elements that sample sounds up to 100 kHz allowing for localization of calling animals. Acoustic monitoring also takes place on individual stations using sonobuoys. (J. Hildebrand, SIO)

11) *Microbial Diversity and Gene Expression:* Samples suitable for purification of DNA and RNA from bacterial and microbial eukaryotic biomass are collected for molecular diversity assays targeted to various genetic marker loci (16S and 18S rRNA). DNA samples are collected at every station, in parallel with particulate organic matter (POM) samples, on Whatman GF/F filters. RNA samples are collected in parallel with primary productivity samples on 0.2 µM sterivex filters with a maximum filtration time of 30 min. Additional samples from the mixed layer, chlorophyll max, and two depths below the euphotic zone are collected along lines 80 and 90. (A. Allen, SIO and JCVI)

12) *Thorium-234 Determination:* Th-234 is a decay product of U-238 with a half-life of 28 days; yet as opposed to Uranium, Thorium is particle reactive and readily binds to the surface of particles. Therefore a Th-234 concentration profile is an indirect measure of carbon export since rather than existing at equilibrium with U-238, Th-234 is removed via sinking particles. The procedure itself consists of A) the co-precipitation of Th-234 with

Manganese from 2L of seawater, B) Collection of the precipitate onto a filter (vac-filtration), and once dried C) measurement of the radioactive decay on a low-background beta counter. (T. Kelly, FSU)

13) *Harmful Algal Bloom Sampling:* CalCOFI will collect surface and mixed layer water samples at select stations for phycotoxin (domoic acid) analysis and *Pseudo-nitzschia* cell counts. We are examining the dynamics of coastal phytoplankton blooms that lead to detrimental effects on both human and ecosystem health in response to rapid and long-term climate variability in the California Current System. A major goal of this project is the collection of toxin data outside of the very nearshore pier sampling currently funded by the NOAA Integrated Ocean Observing System via the two regional associations in California. Given that the warm anomaly broke temperature records as far back as 1900 and is now interacting with one of the top three ENSO events on record, it is important to quickly capture the influence of these climatic phenomena on harmful algal blooms (C. Anderson and R. Kudela, UCSC).

## TABULATED DATA

### *CTD/Rosette Cast Data*

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

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

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

### *Primary Productivity Data*

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

### *Macrozooplankton Data*

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

#### FOOTNOTES

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

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

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## FIGURES

### Cruise 1611

1. CalCOFI Cruise 1611 track and station positions.
2. Horizontal distribution of dynamic height anomaly (0 over 500m). In areas shallower than 500 m, the dynamic heights were extrapolated on the basis of the offshore deeper steric height as described in Reid and Mantyla (1976).
3. Horizontal distributions at 10 meters: A) chlorophyll-*a*; B) potential density; C) temperature; and D) salinity.
4. Horizontal distributions at 200 meters: A) dynamic height anomaly (200 over 500 m); B) potential density; C) temperature; and D) salinity.
5. Sections along CalCOFI line 90 (vertical exaggeration, 1000): A) potential density; B) temperature; C) salinity; D) silicate; E) nitrate; F) phosphate; G) chlorophyll-*a*; H) oxygen saturation; I) oxygen; J) nitrite; and K) phaeopigments.

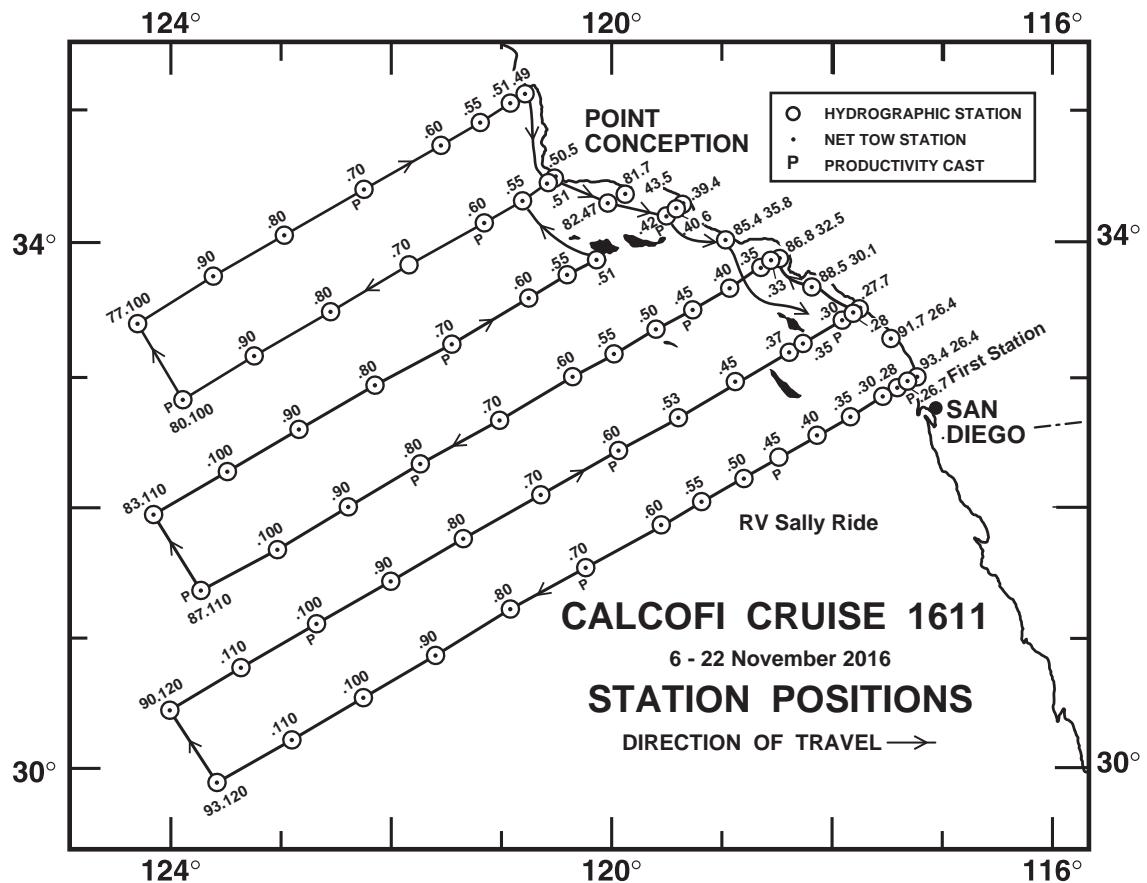


FIGURE 1

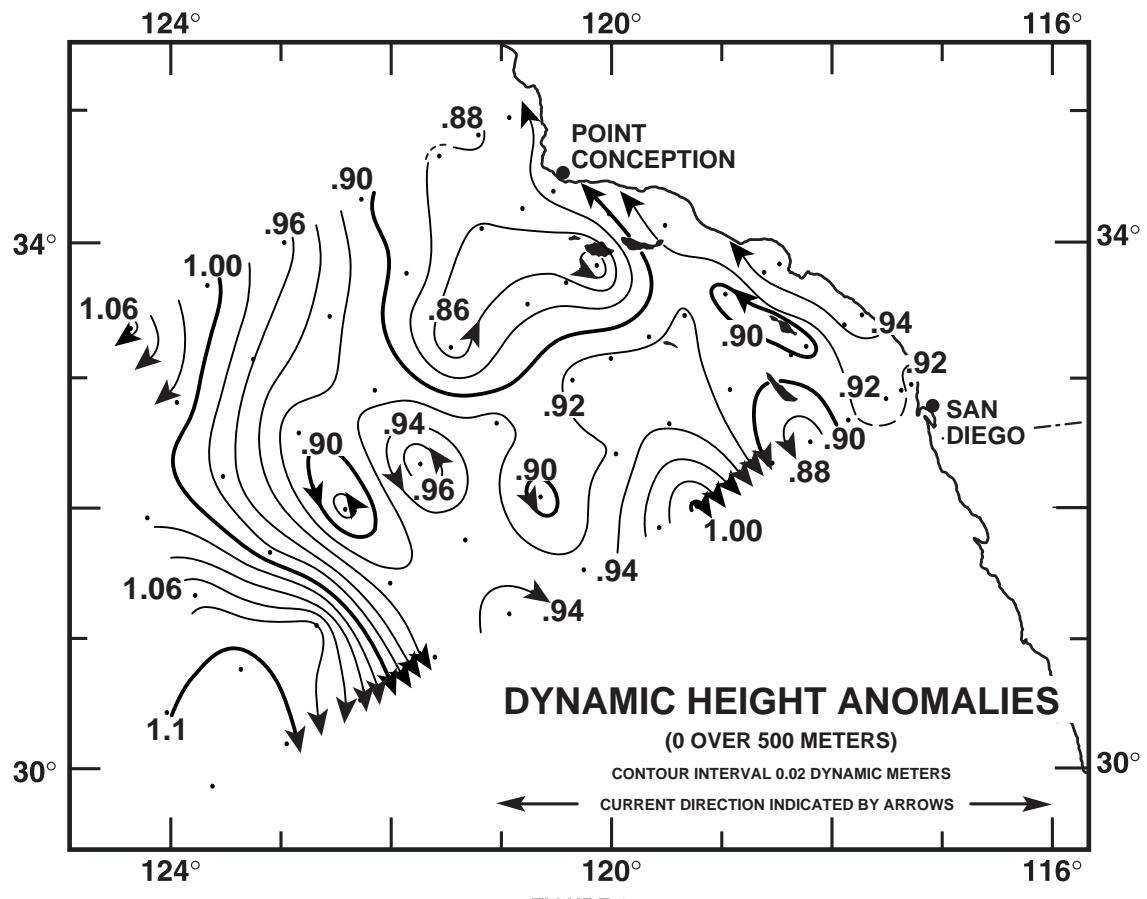


FIGURE 2

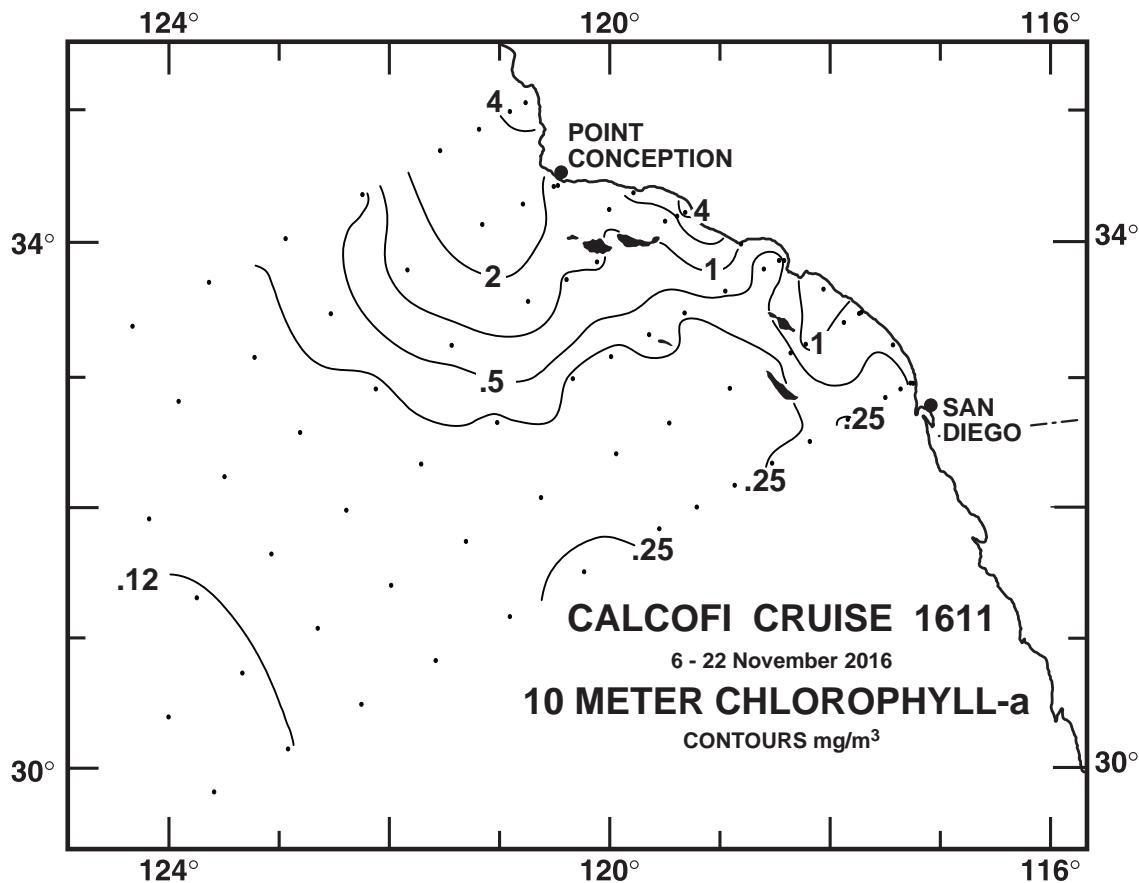


FIGURE 3A

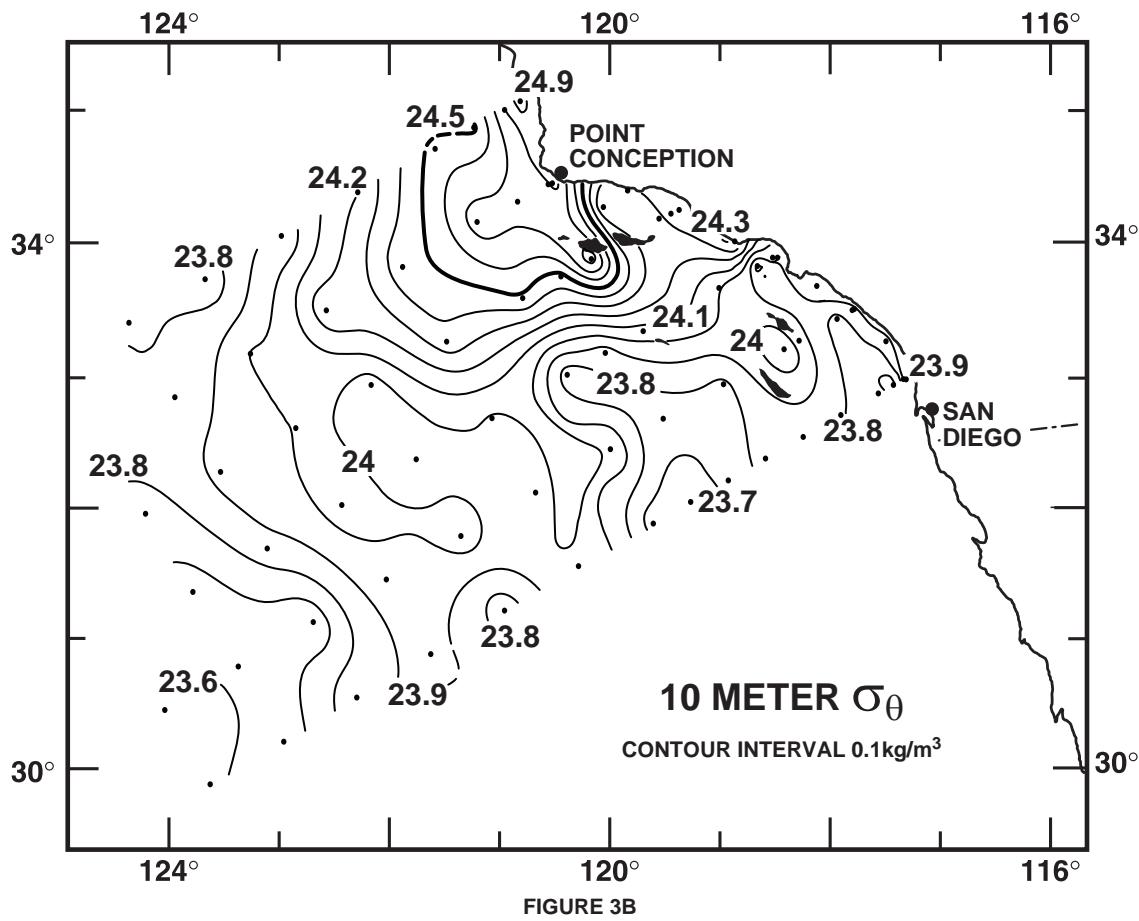


FIGURE 3B

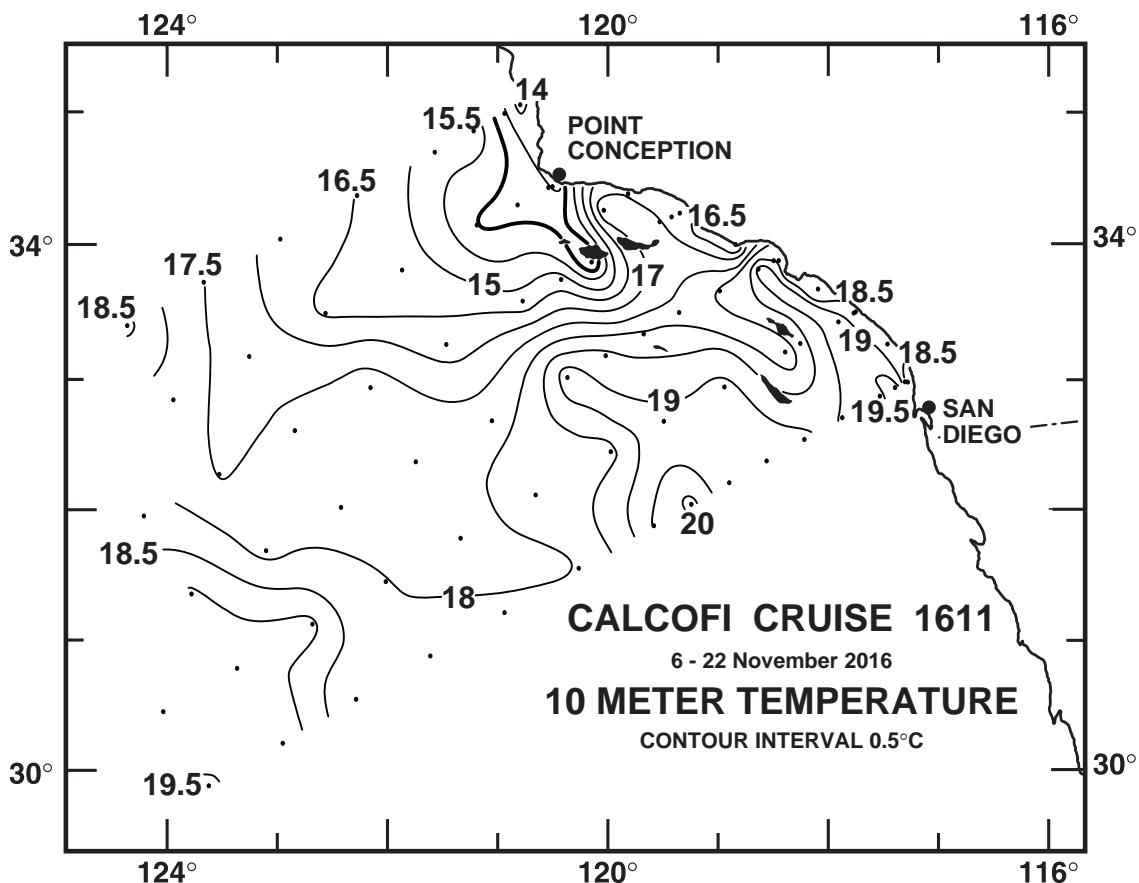


FIGURE 3C

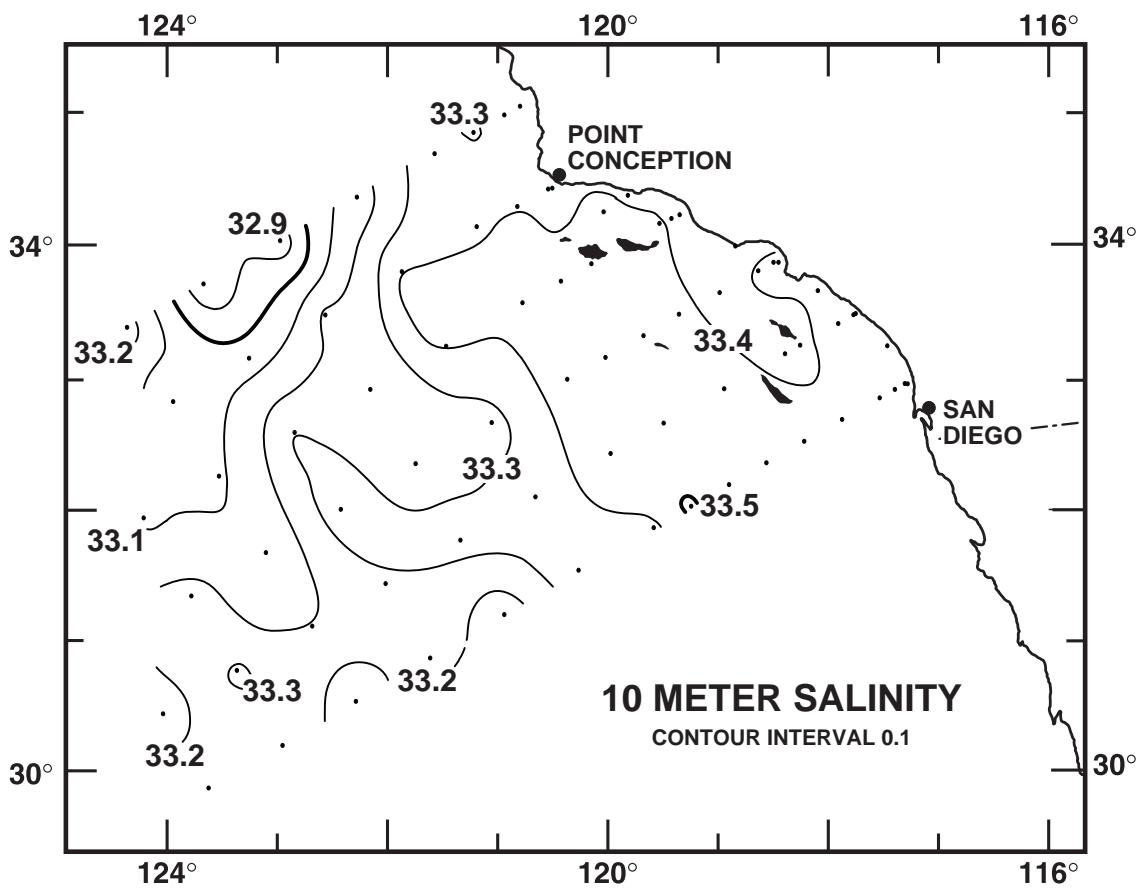


FIGURE 3D

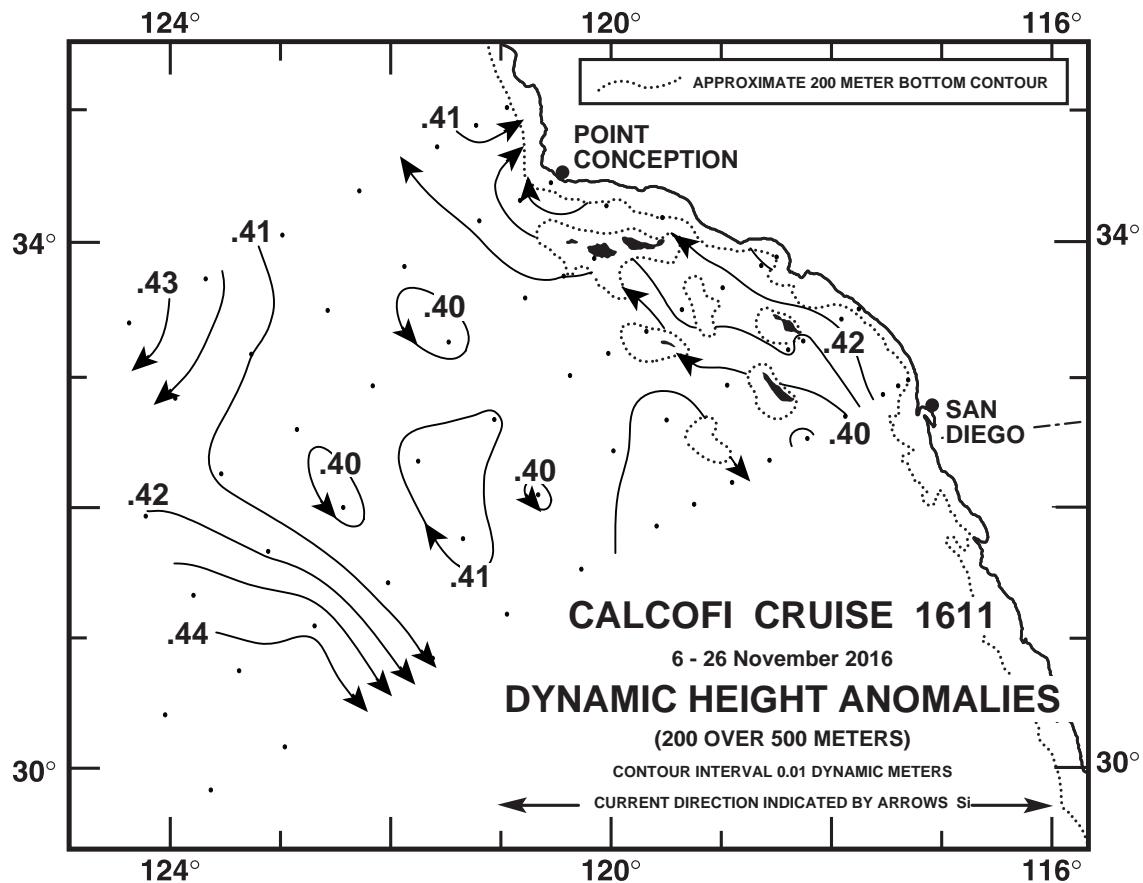


FIGURE 4A

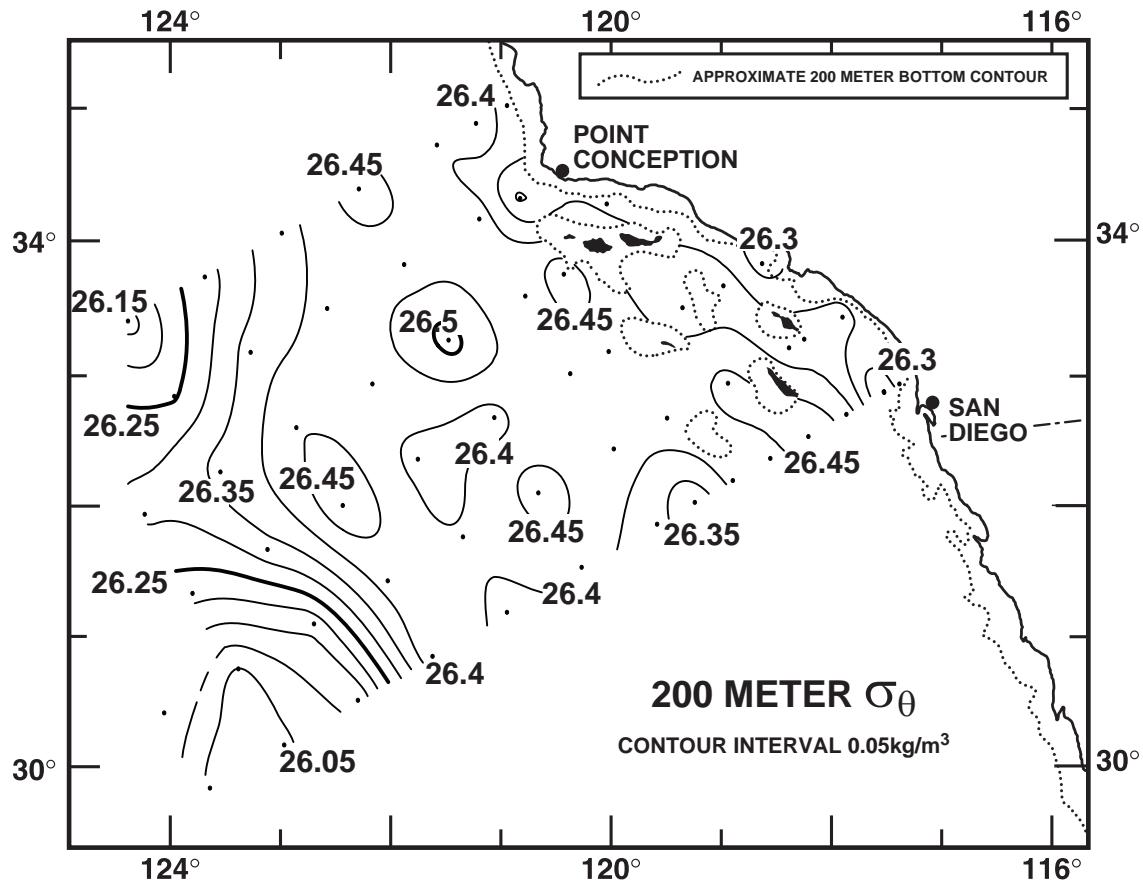


FIGURE 4B

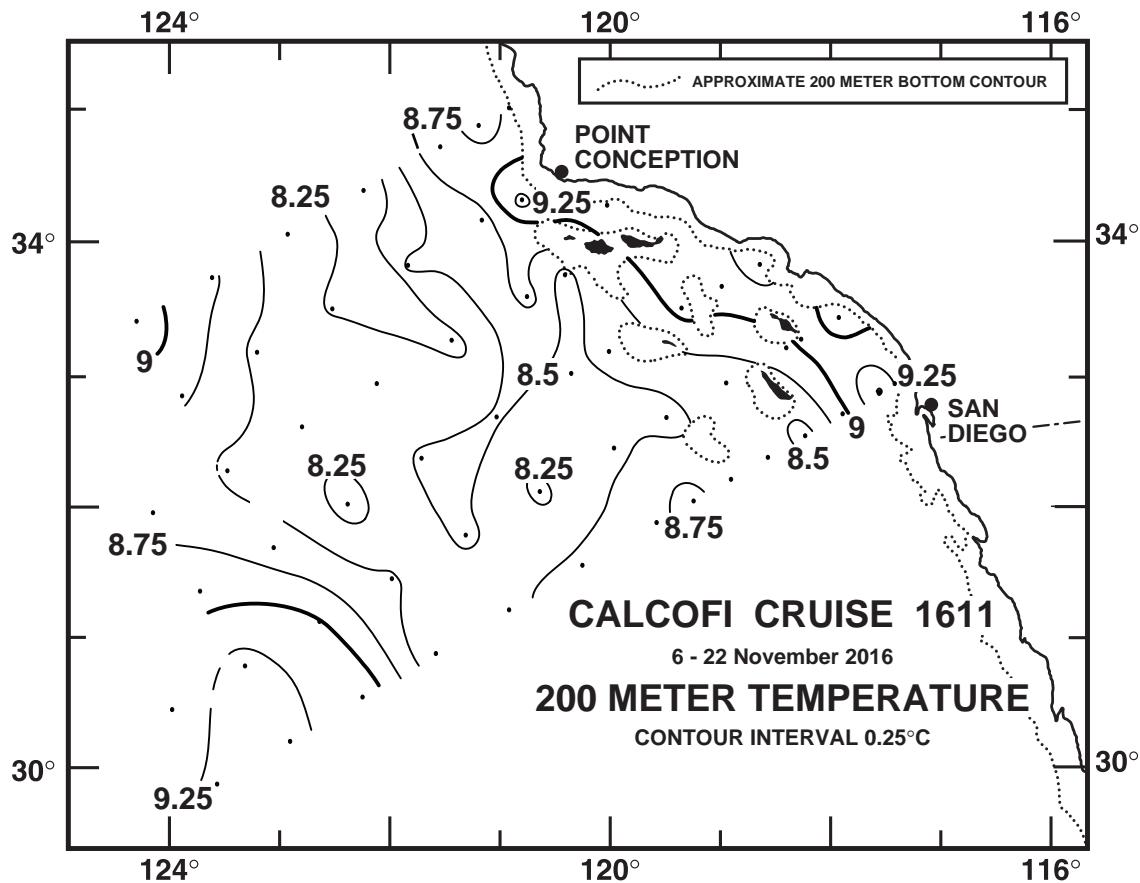


FIGURE 4C

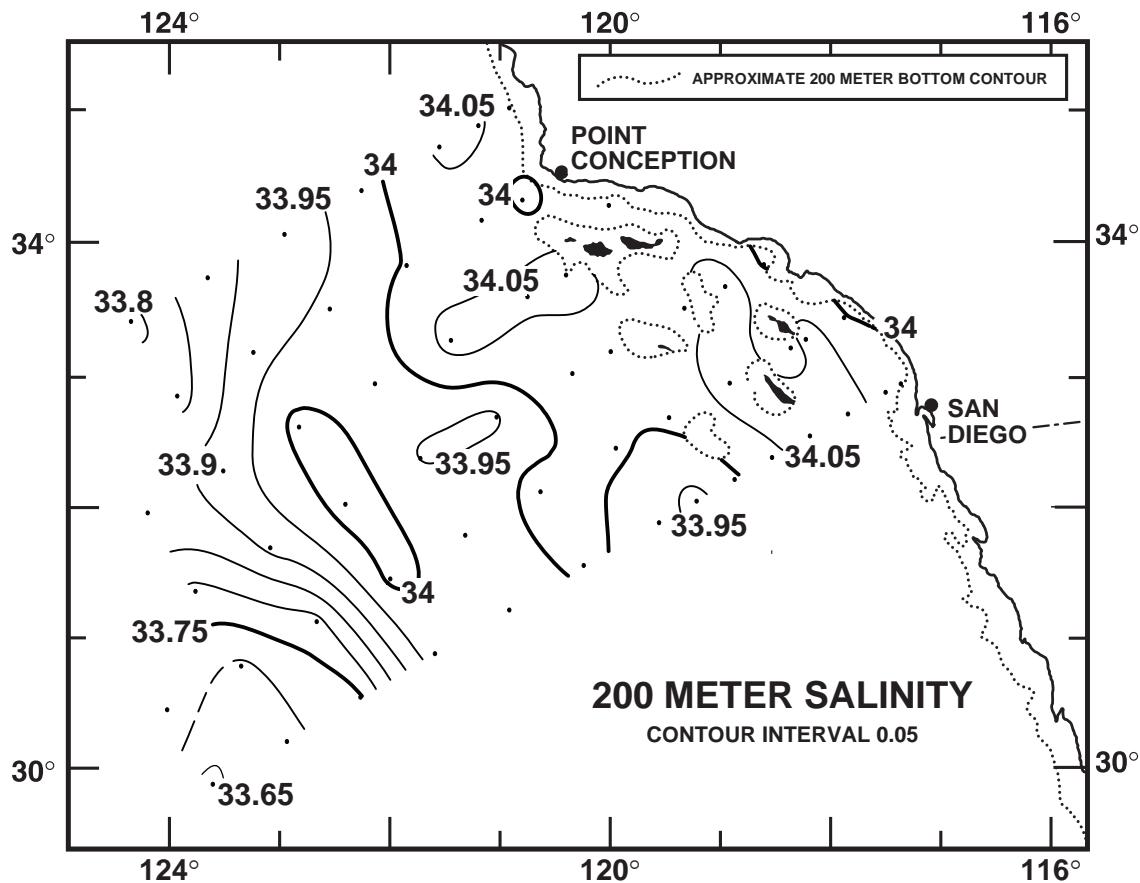
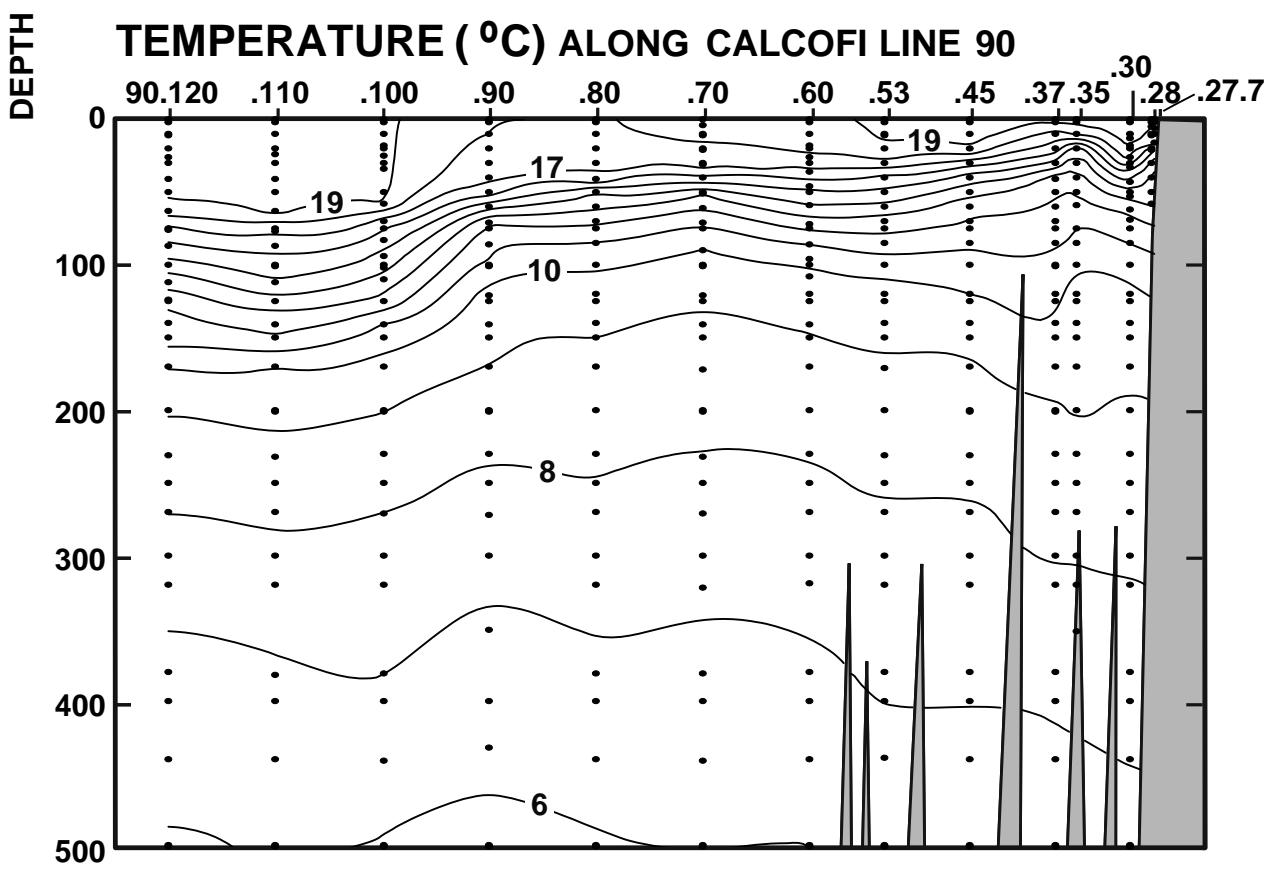
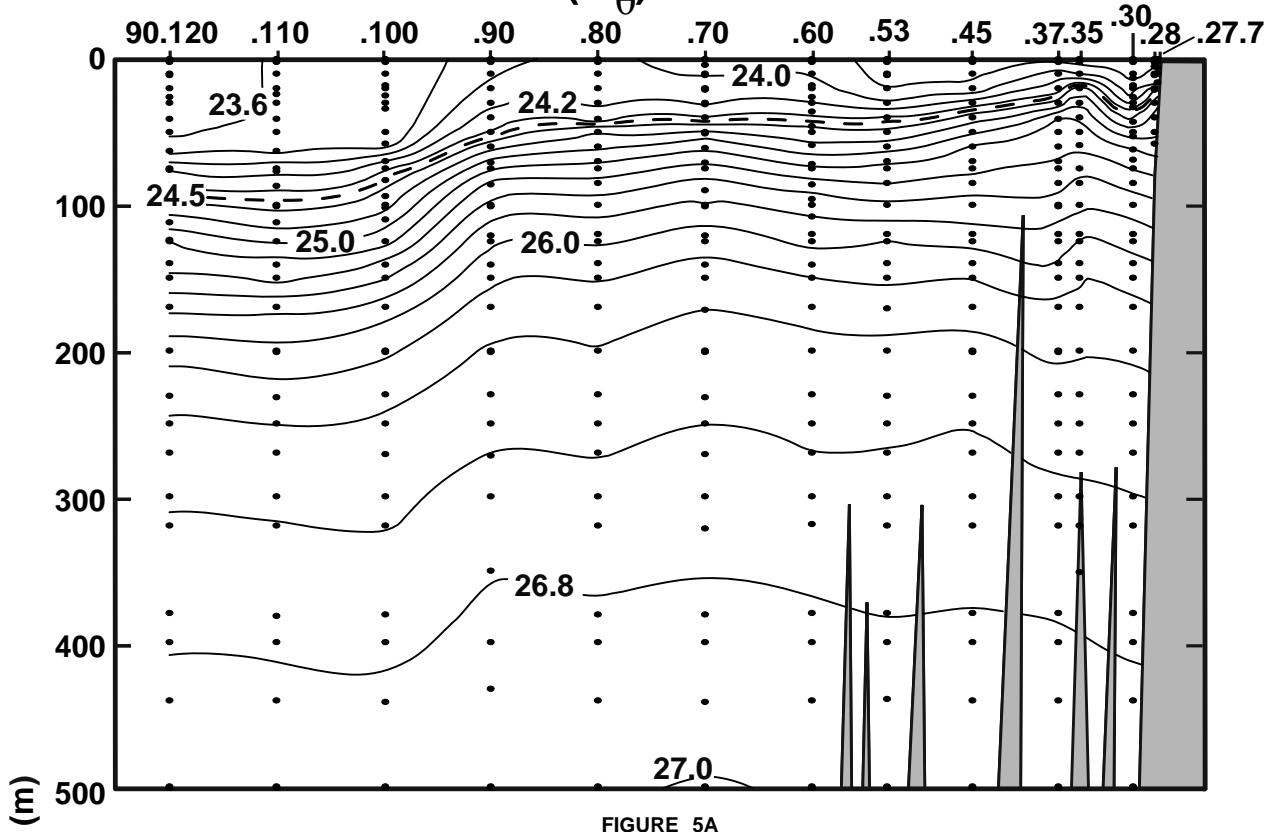


FIGURE 4D

# CALCOFI CRUISE 1611

10 - 12 November 2016

## POTENTIAL DENSITY ( $\sigma_0$ ) ALONG CALCOFI LINE 90



# CALCOFI CRUISE 1611

10 - 12 November 2016

## SALINITY ALONG CALCOFI LINE 90

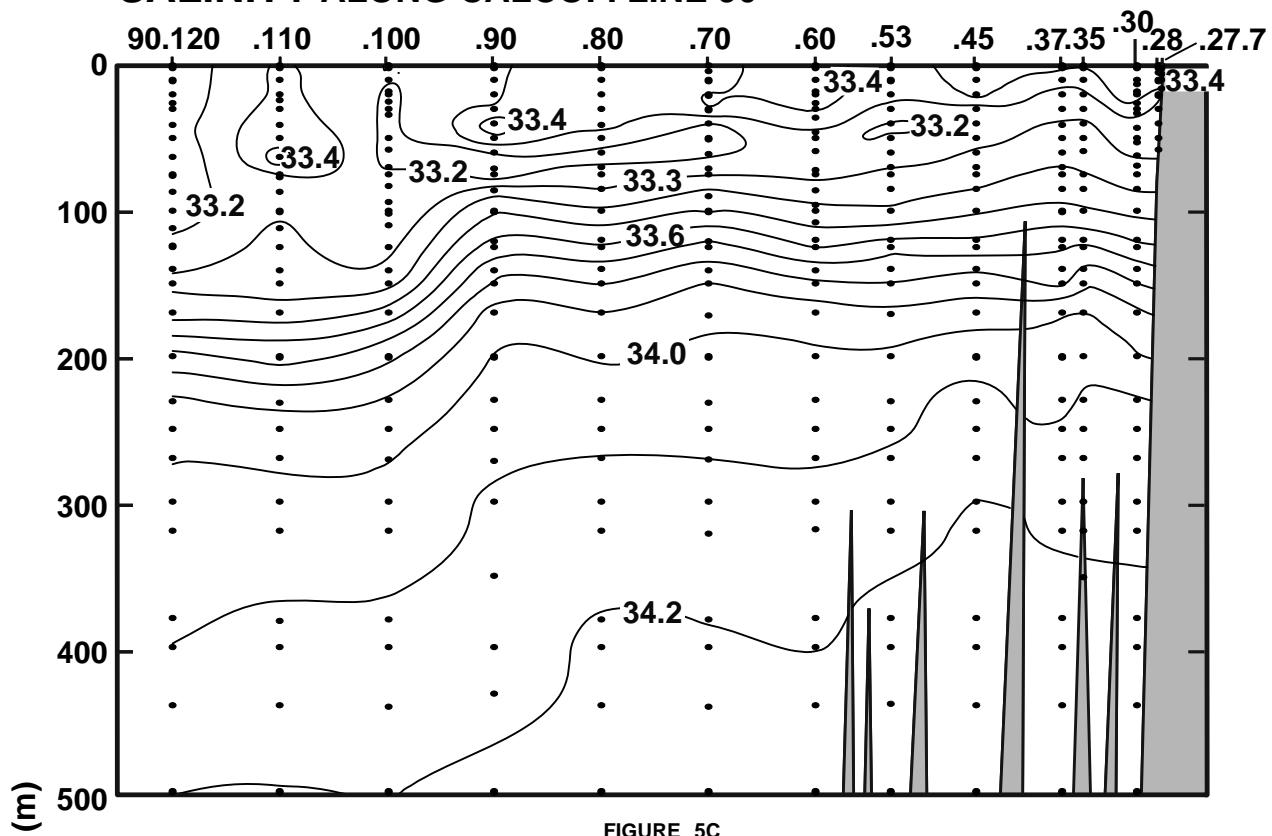


FIGURE 5C

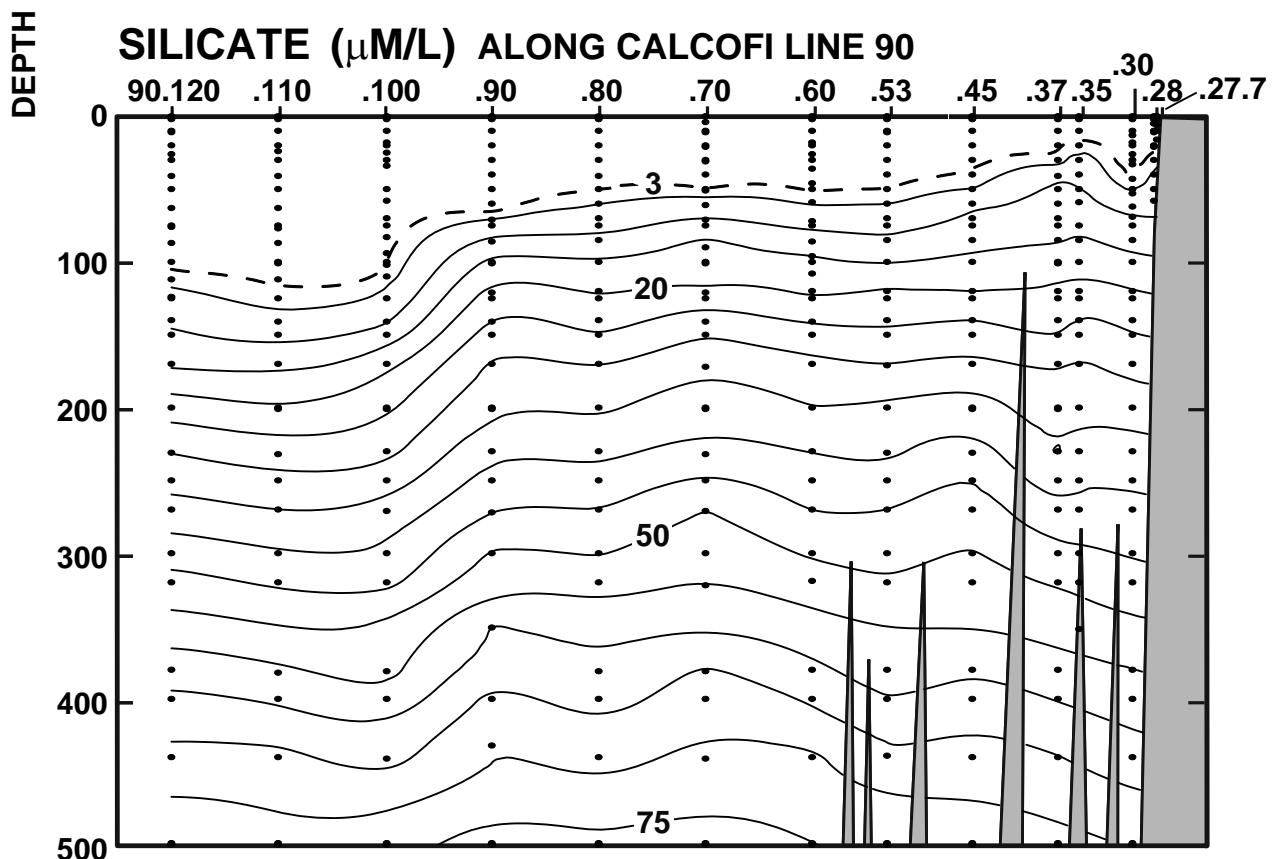
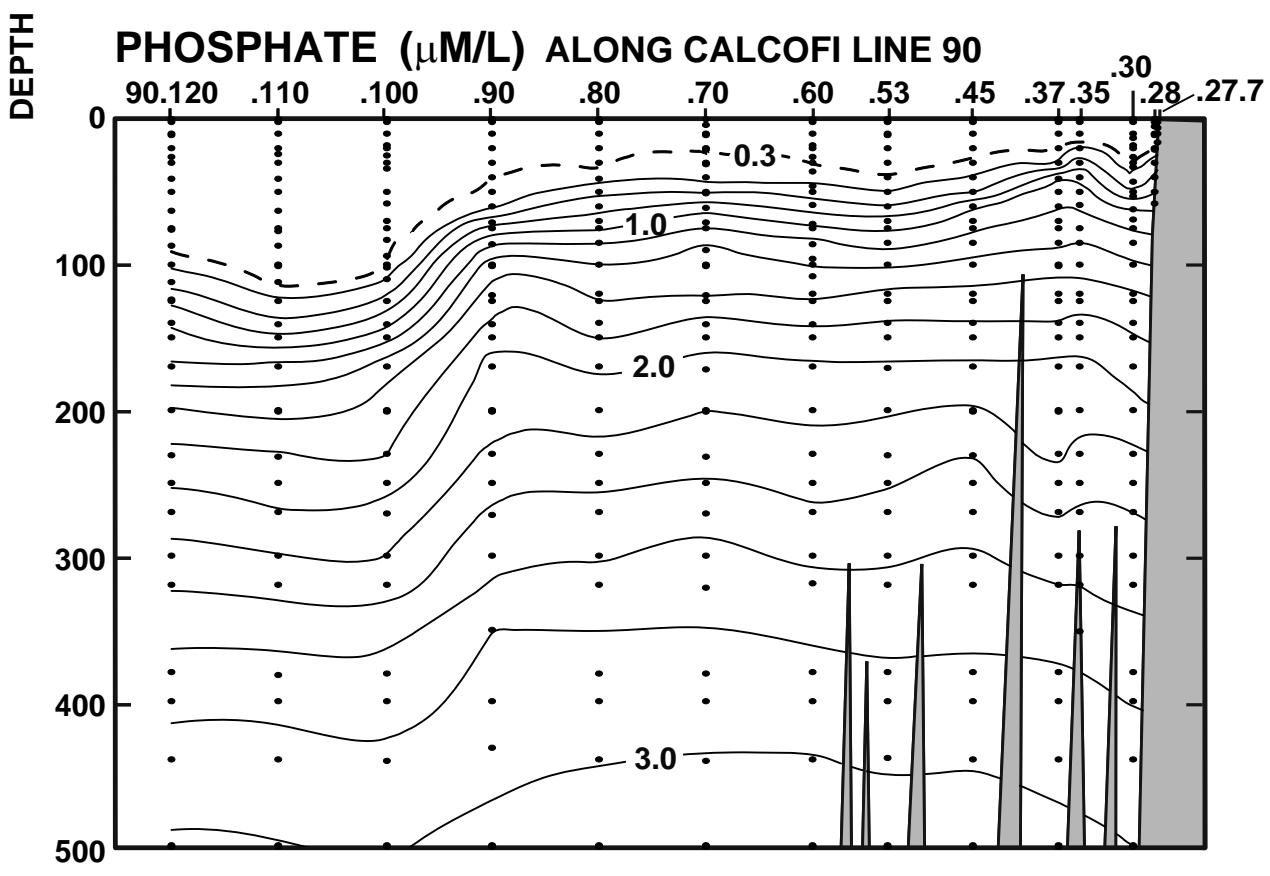
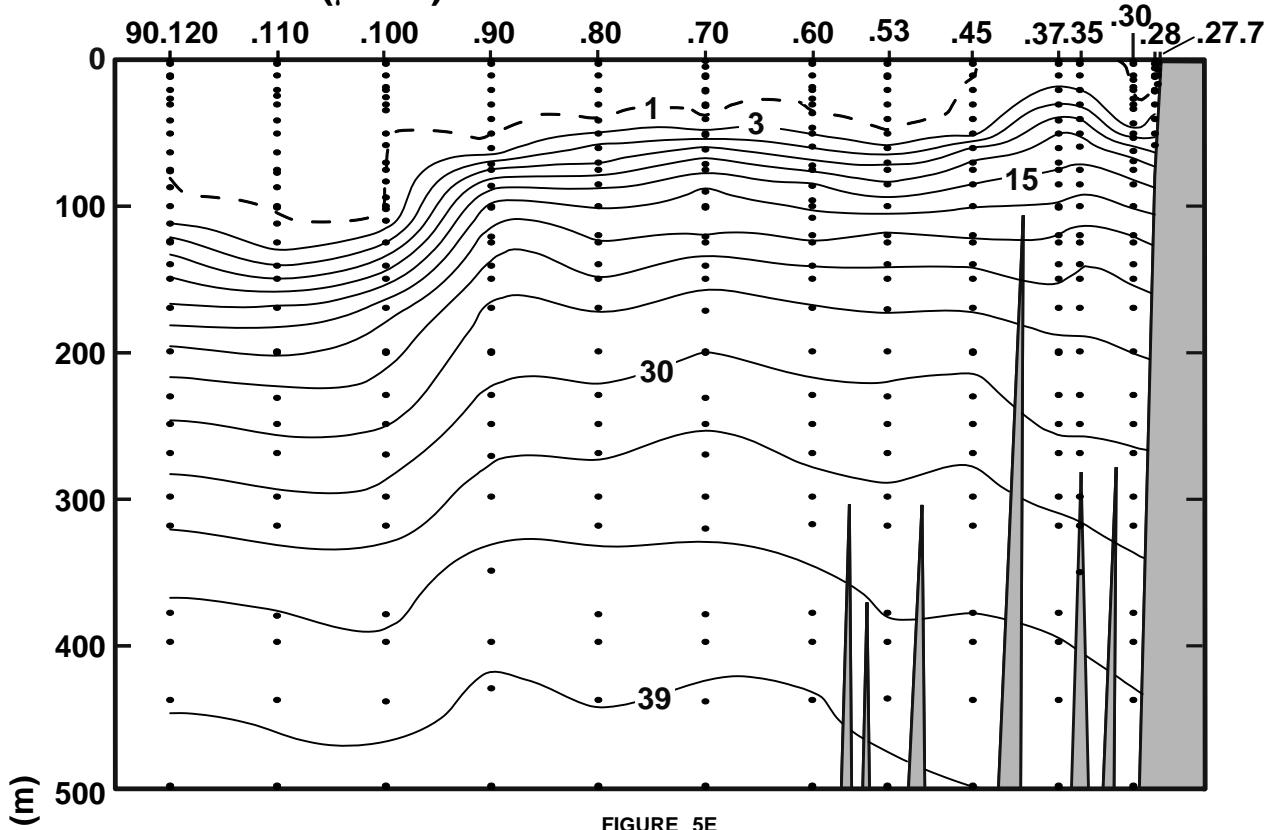


FIGURE 5D

# CALCOFI CRUISE 1611

10 - 12 November 2016

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



# CALCOFI CRUISE 1611

10 - 12 November 2016

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

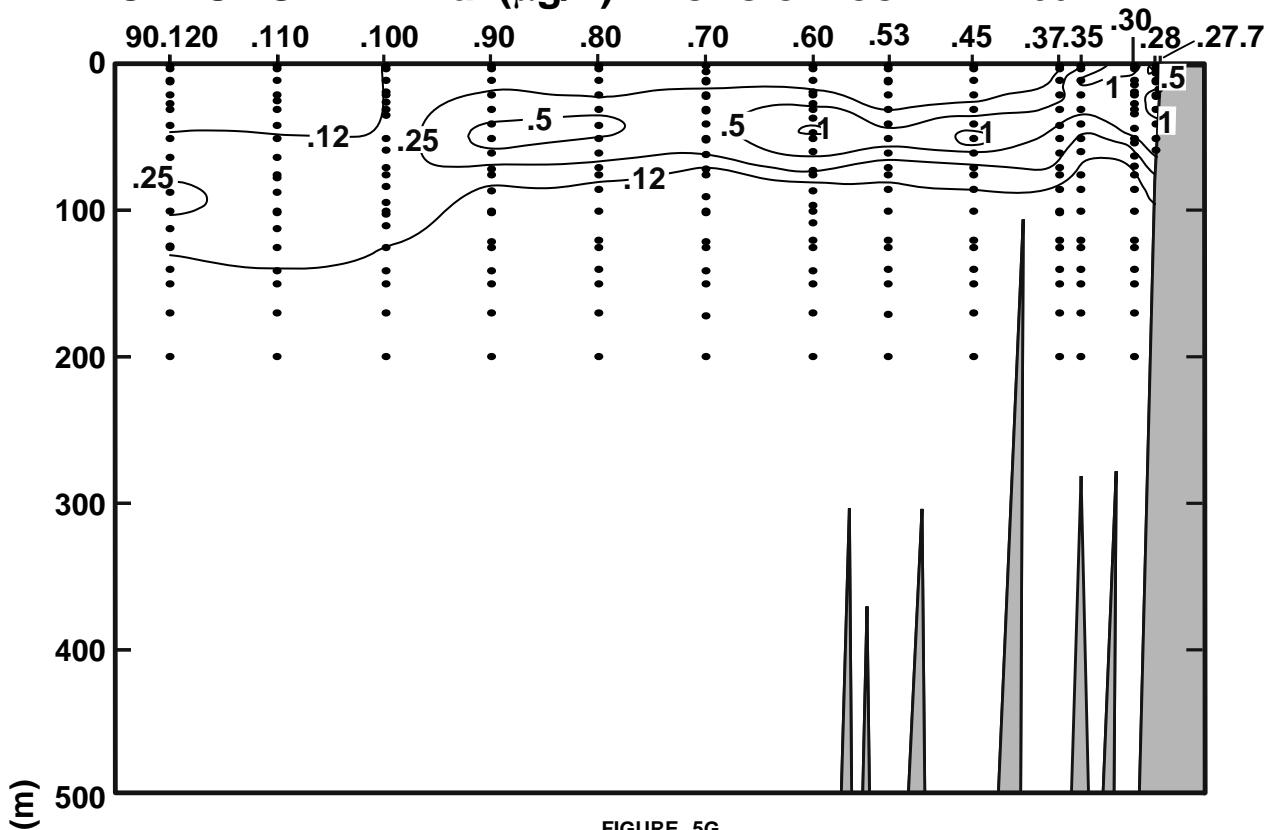


FIGURE 5G

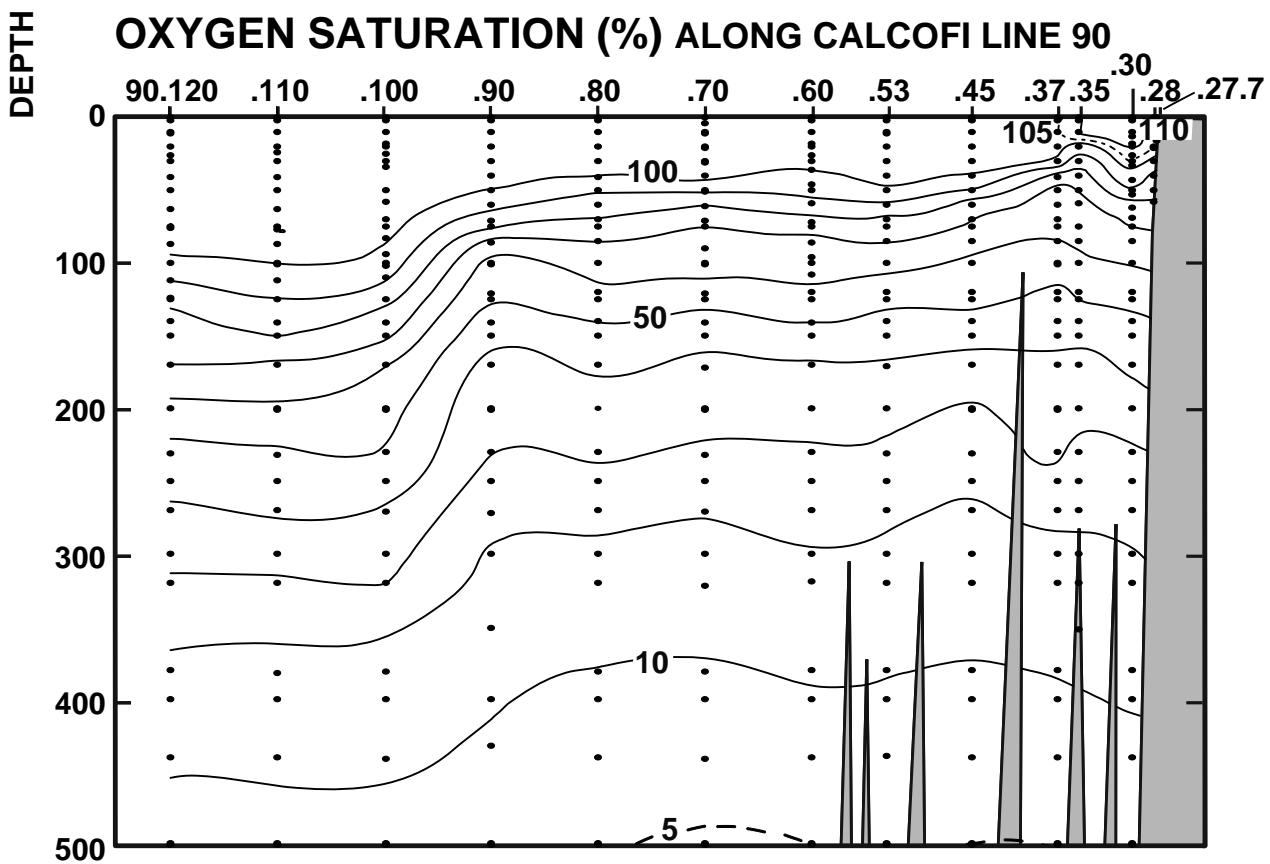
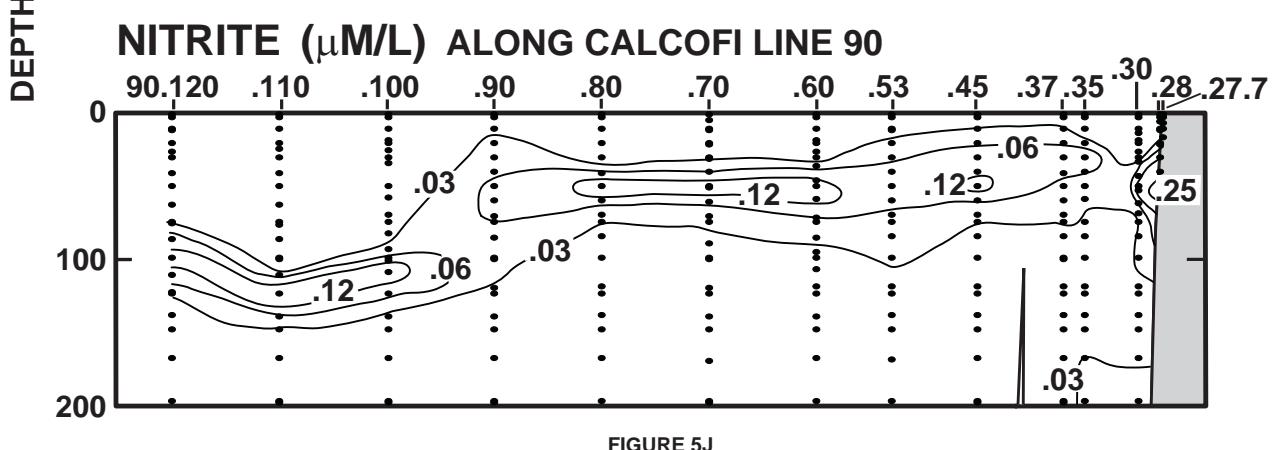
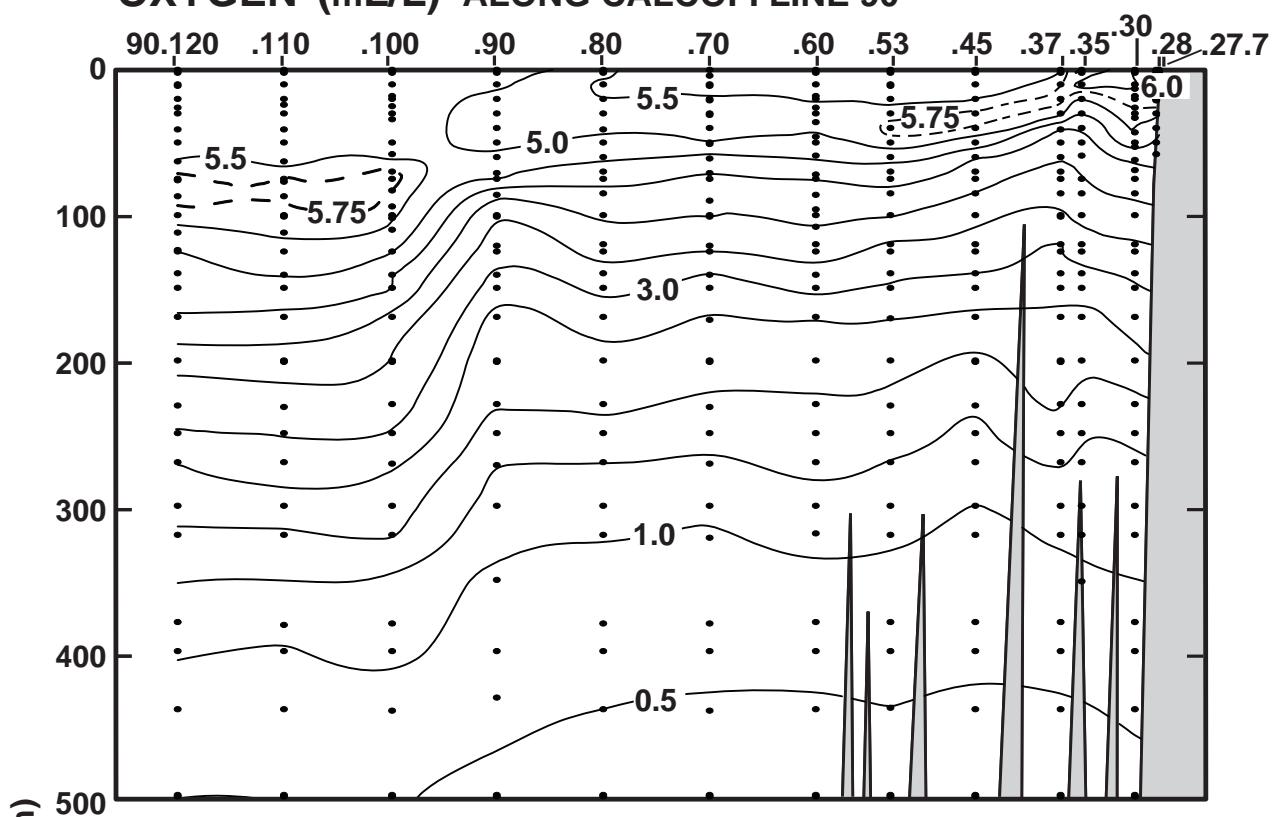


FIGURE 5H

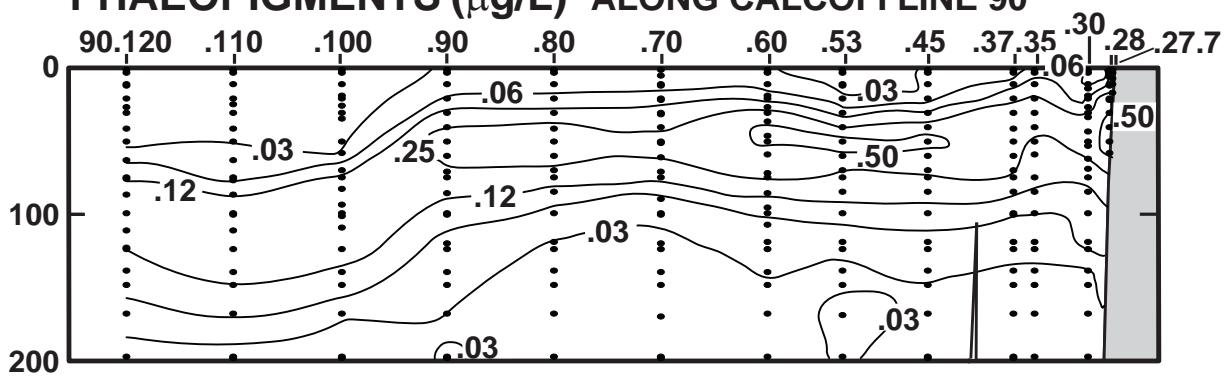
# CALCOFI CRUISE 1611

10 - 12 November 2016

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



## PHAEOPIGMENTS (μg/L) ALONG CALCOFI LINE 90



## PERSONNEL

### CalCOFI Cruise 1611

#### SHIP'S CAPTAIN

Thomas DesJardins, R/V Sally Ride

#### PERSONNEL PARTICIPATING IN THE COLLECTION OF DATA

Wilkinson, James (Chief Scientist)	Information Systems Analyst, SIO
Benner, Joel	Volunteer
Casares, Hanna	Volunteer
Checkley, David	Researcher, SIO
Dahl, Cassandra	Volunteer
Debich, Amanda	Marine Mammal Observer, MPL
Dovel, Shonna	Staff Research Associate, SIO
Gardner, Emily	Fishery Biologist, NMFS
Goericke, Ralf	Researcher, SIO
Kelly, Thomas	Grad Student, FSU
Manion, Sue	Fishery Biologist, NMFS
Miller, Melissa	Staff Research Associate, SIO
Overcash, Bryan	Fishery Biologist, NMFS
Reshef, Eadoh	Acoustic Technician, SIO
Roadman, Megan	Staff Research Associate, SIO
Rodgers-Wolgast, Jennifer	Staff Research Associate, SIO
Schuller, Daniel	Staff Research Associate, SIO
Vasquez del Mercado, Lanora	Fishery Biologist, NMFS
Whitaker, Katherine	Marine Mammal Observer, MPL
Wolgast, David	Staff Research Associate, SIO







RV SALLY RIDE

## CALCOFI CRUISE 1611

STATION 76.7 100.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD			
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXYGEN	OXY	SI03*	P04*	N03*	N02*	NH4*	CHL-A	PHAEAO	PRES SAMP	
m	DEG C	DEG C	THETA		ml/L	#mol/Kg	PCT	#M	#M	#M	#M	#M	#M	#M	#g/L	#g/L	db	
0	18.65	18.65	33.252	23.775	411.5	0.000	5.38	235.1	100.6	1.8	0.18	0.0	0.02	0.00	0.13	0.02	0	
2	18.65	18.65	33.252	23.776	411.5	0.008	5.38	235.1	100.6	1.8	0.18	0.0	0.00	0.00	0.13	0.02	2 20	
10	18.63	18.63	33.253	23.780	411.4	0.041	5.40	235.7	100.8	1.5	0.18	0.0	0.00	0.00	0.13	0.03	10 19	
20	ISL	18.62	33.252	23.783	411.5	0.079	5.37	0234.2	0100.2	1.4	0.18	0.0	0.01	0.00	0.13	0.03	20	
25	18.60	18.59	33.254	23.791	410.9	0.103	5.39	235.5	100.6	1.3	0.18	0.0	0.00	0.00	0.13	0.03	25 18	
30	ISL	18.60	33.254	23.791	411.1	0.120	5.38	0234.6	0100.3	1.3	0.18	0.0	0.01	0.00	0.14	0.03	30	
40	18.60	18.59	33.259	23.795	411.1	0.164	5.42	236.9	101.2	1.2	0.17	0.0	0.00	0.00	0.16	0.02	40 17	
50	18.35	18.34	33.275	23.871	404.3	0.205	5.50	240.1	102.1	1.2	0.18	0.0	0.00	0.00	0.15	0.04	50 16	
61	17.77	17.76	33.528	24.207	372.6	0.248	5.71	249.5	105.1	1.5	0.15	0.0	0.00	0.00	0.29	0.11	61 15	
75	16.39	16.38	33.507	24.517	343.4	0.298	5.80	253.4	103.9	1.8	0.16	0.0	0.00	0.00	0.26	0.31	76 14	
87	15.05	15.04	33.502	24.813	315.5	0.338	5.77	251.9	100.6	2.2	0.18	0.0	0.04	0.00	0.31	0.22	88 13	
100	14.81	14.80	33.507	24.868	310.7	0.378	5.65	246.6	98.0	2.5	0.25	0.1	0.12	0.00	0.23	0.19	101 12	
112	13.70	13.68	33.470	25.074	291.2	0.414	5.49	239.9	93.1	3.0	0.31	1.1	0.15	0.00	0.17	0.16	113 11	
125	12.85	12.83	33.458	25.236	275.9	0.451	5.38	235.1	89.7	4.2	0.42	3.5	0.04	0.00	0.11	0.11	126 10	
141	12.22	12.20	33.473	25.369	263.6	0.494	5.25	229.3	86.4	5.2	0.51	5.0	0.03	0.00	0.09	0.08	142 09	
150	ISL	11.41	33.485	25.529	248.4	0.517	5.11	0222.5	082.6	8.3	0.73	8.5	0.03	0.00	0.07	0.06	151	
171	9.75	9.73	33.557	25.874	215.5	0.566	4.41	192.6	68.8	15.7	1.25	16.6	0.00	0.00	0.01	0.02	172 08	
200	9.21	9.18	33.780	26.138	191.0	0.625	3.97	173.3	61.2	21.4	1.48	20.5	0.00	0.00	0.00	0.01	202 07	
230	8.55	8.52	33.915	26.347	171.5	0.679	3.09	134.8	47.0	29.7	1.84	25.8	0.00	0.00			232 06	
250	ISL	8.28	8.25	33.973	26.434	163.6	0.713	2.83	0123.1	042.8	32.6	1.93	27.0	0.01	0.00			252
270	8.11	8.09	33.990	26.472	160.2	0.746	2.64	115.4	39.8	35.5	2.02	28.3	0.00	0.00			272 05	
300	ISL	7.73	7.70	34.025	26.556	152.6	0.793	2.21	096.2	033.0	41.5	2.21	30.8	0.01	0.00			302
320	7.44	7.41	34.043	26.612	147.4	0.823	1.87	81.7	27.8	45.6	2.34	32.5	0.00	0.00			323 04	
380	6.82	6.78	34.066	26.717	138.0	0.908	1.38	60.3	20.2	55.0	2.57	35.6	0.00	0.00			383 03	
400	ISL	6.65	6.61	34.084	26.755	134.6	0.937	1.20	02.3	017.5	58.3	2.66	36.6	0.01	0.00			403
440	6.34	6.30	34.129	26.831	127.8	0.988	0.80	34.9	11.6	64.9	2.83	38.6	0.00	0.00			444 02	
500	ISL	6.16	6.11	34.207	26.918	120.3	1.065	0.51	02.0	0 D 7.3	72.2	2.99	40.0	0.01	0.00			504
516	6.00	5.95	34.208	26.938	118.4	1.082	0.45	19.6	6.5	74.2	3.03	40.4	0.00	0.00			520 01	

D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED 02;

RV SALLY RIDE

## CALCOFI CRUISE 1611

STATION 80.0 50.5

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD		
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXYGEN	OXY	SI03*	P04*	N03*	N02*	NH4*	CHL-A	PHAEAO	PRES SAMP
m	DEG C	DEG C	THETA		ml/L	#mol/Kg	PCT	#M	#M	#M	#M	#M	#M	#M	#g/L	#g/L	db
0	14.94	14.94	33.374	24.732	320.3	0.000	5.39	235.3	93.6	4.7	0.58	3.1	0.14	0.10	1.44	0.31	0
2	14.94	14.94	33.374	24.732	320.3	0.006	5.39	235.3	93.6	4.7	0.58	3.1	0.14	0.10	1.44	0.31	2 05
5	14.68	14.68	33.373	24.787	315.2	0.016	5.40	235.6	93.3	5.4	0.64	3.9	0.16	0.20	1.38	0.35	5 04
10	14.33	14.33	33.375	24.863	308.1	0.032	5.41	236.2	92.9	6.7	0.76	5.3	0.19	0.30	1.09	0.48	10 02
10	14.33	14.33	33.375	24.863	308.1	0.032											10 03
16	14.29	14.29	33.375	24.873	307.4	0.050	5.37	234.7	92.2	7.1	0.81	5.8	0.19	0.30	1.26	0.29	16 01

D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED 02;

RV SALLY RIDE

## CALCOFI CRUISE 1611

STATION 80.0 51.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD		
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXYGEN	OXY	SI03*	P04*	N03*	N02*	NH4*	CHL-A	PHAEAO	PRES SAMP
m	DEG C	DEG C	THETA		ml/L	#mol/Kg	PCT	#M	#M	#M	#M	#M	#M	#M	#g/L	#g/L	db
0	15.12	15.12	33.369	24.689	324.4	0.000	5.41	236.1	94.3	4.2	0.54	2.6	0.16	0.03	1.79	0.07	0
2	15.12	15.12	33.369	24.689	324.5	0.007	5.41	236.1	94.3	4.2	0.54	2.6	0.16	0.00	1.79	0.07	2 09
5	15.13	15.13	33.374	24.692	324.3	0.016	5.44	237.7	95.0	4.0	0.52	2.5	0.15	0.00	1.80A	0.10A	5 08
10	14.75	14.75	33.360	24.762	317.7	0.032	5.24	228.8	90.7	5.2	0.63	3.6	0.19	0.06	1.47	0.07	10 06
10	14.75	14.75	33.360	24.762	317.7	0.032											10 07
20	13.04	13.04	33.347	25.107	285.2	0.062	4.49	0195.7	0 75.1	8.0	0.87	7.5	0.16	0.06	0.76	0.19	20 05
30	12.82	12.82	33.340	25.144	281.9	0.091	4.37	190.9	72.7	9.8	1.04	10.2	0.11	0.00	0.45	0.23	30 04
40	12.12	12.12	33.353	25.289	268.4	0.118	4.10	179.1	67.2	11.6	1.20	12.7	0.05	0.00	0.27	0.19	40 03
50	12.03	12.02	33.356	25.310	266.6	0.145	4.10	179.1	67.1	11.5	1.20	13.2	0.05	0.00	0.25	0.17	50 02
61	11.85	11.84	33.387	25.367	261.5	0.174	3.98	174.0	64.9	12.8	1.29	14.3	0.07	0.00	0.20	0.18	62 01

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

D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED 02;







RV SALLY RIDE

CALCOFI CRUISE 1611

STATION 81.7 43.5

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD		
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXYGEN	OXY	SI03*	P04*	N03*	N02*	NH4*	CHL-A	PHAEAO	PRES SAMP
m	DEG C	DEG C	THETA			ml/L	mol/Kg	PCT	MM	MM	MM	MM	MM	ug/L	ug/L	db	
0	17.04	17.04	33.396	24.275	363.8	0.000	5.81	254.0	105.4	2.3	0.27	0.2	0.03	0.06	1.23	0.24	0
2	17.04	17.04	33.396	24.275	363.9	0.007	5.81	254.0	105.4	2.3	0.27	0.2	0.03	0.06	1.23	0.24	2 04
5	17.02	17.02	33.395	24.279	363.6	0.018	5.78	252.3	104.6	2.2	0.28	0.1	0.03	0.00	1.30	0.22	5 03
10	16.94	16.94	33.389	24.294	362.4	0.036	5.83	254.5	105.4	2.6	0.31	0.1	0.05	0.00	2.40	0.42	10 02
16	16.89	16.89	33.391	24.307	361.3	0.058	5.83	254.5	105.3	2.8	0.34	0.1	0.06	0.10	2.52	0.52	16 01

D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED 02;

RV SALLY RIDE

CALCOFI CRUISE 1611

STATION 81.8 46.9

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD			
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXYGEN	OXY	SI03*	P04*	N03*	N02*	NH4*	CHL-A	PHAEAO	PRES SAMP	
m	DEG C	DEG C	THETA			ml/L	mol/Kg	PCT	MM	MM	MM	MM	MM	ug/L	ug/L	db		
0	17.52	17.52	33.425	24.184	372.5	0.000	5.64	246.1	103.1	1.8	0.27	0.1	0.02	0.01	1.24	0.05	0	
2	17.52	17.51	33.425	24.184	372.6	0.008	5.64	246.1	103.1	1.8	0.27	0.1	0.00	0.00	1.24	0.05	2 24	
10	17.48	17.48	33.421	24.190	372.3	0.037	5.63	246.1	103.0	1.8	0.27	0.0	0.00	0.00	1.12	0.08	10 23	
20	16.27	16.27	33.363	24.430	349.8	0.073	5.44	237.5	97.1	3.2	0.43	1.7	0.13	0.00	0.97	0.31	20 22	
30	13.36	13.36	33.282	24.992	296.4	0.106	4.71	205.9	79.3	7.2	0.83	7.9	0.36	0.00	0.53	0.33	30 21	
40	12.59	12.59	33.306	25.163	280.4	0.135	4.33	189.1	71.7	9.4	1.04	11.8	0.05	0.00	0.28	0.22	40 20	
50	11.91	11.90	33.362	25.337	264.0	0.162	4.06	177.3	66.3	11.9	1.21	14.3	0.00	0.00	0.14	0.15	50 19	
60	11.19	11.18	33.435	25.526	246.2	0.187	3.73	162.8	59.9	15.2	1.43	16.7	0.04	0.00	0.08	0.15	60 18	
70	10.92	10.91	33.479	25.609	238.7	0.211	3.68	160.7	58.9	15.8	1.44	17.5	0.00	0.00	0.07	0.09	71 17	
75 ISL	10.84 D	10.83 D	33.482 D	25.625	237.2	0.225	3.67	D159.9 D	58.6	16.2	1.47	17.9	0.01	0.00	0.06	0.09	76	
85	10.70	10.69	33.501	25.666	233.5	0.247	3.53	154.4	56.2	17.2	1.52	18.6	0.00	0.00	0.05	0.09	86 16	
100	10.46	10.45	33.555	25.749	226.0	0.281	3.43	149.8	54.3	18.2	1.57	19.5	0.00	0.00	0.04	0.06	101 15	
120	10.15	10.13	33.667	25.891	212.9	0.325	3.00	131.1	47.3	21.4	1.75	21.8	0.00	0.00	0.03	0.05	121 14	
125 ISL	10.13 D	10.12 D	33.695 D	25.916	210.6	0.338	2.96	D128.8 D	46.6	22.2	1.79	22.3	0.00	0.00	0.02	0.05	126	
140	9.95	9.93	33.805	26.033	199.9	0.367	2.64	115.2	41.4	24.8	1.89	24.0	0.00	0.00	0.01	0.05	141 13	
150 ISL	9.78 D	9.76 D	33.849 D	26.096	194.0	0.389	2.60	D113.3 D	40.7	25.9	1.94	24.5	0.00	0.00	0.01	0.05	151	
170	9.56	9.55	33.921	26.189	185.6	0.424	2.30	100.5	35.8	28.2	2.03	25.6	0.00	0.00	0.05	0.05	171 12	
200	9.19	9.17	34.035	26.339	171.9	0.478	1.93	84.4	29.8	33.2	2.19	27.7	0.00	0.00	0.00	0.06	202 11	
230	8.92	8.89	34.107	26.440	162.9	0.528	1.50	65.4	23.0	38.7	2.36	29.4	0.00	0.00	0.00	0.06	232 10	
250 ISL	8.75 D	8.72 D	34.139 D	26.492	158.3	0.564	1.19	D51.7 D	18.2	42.4	2.47	30.5	0.01	0.00	0.00	0.06	252	
270	8.42	8.39	34.159	26.558	152.3	0.591	1.00	43.6	15.2	46.0	2.57	31.7	0.00	0.00	0.00	0.06	272 09	
300 ISL	8.08 D	8.05 D	34.178 D	26.625	146.3	0.640	0.85	D36.9 D	12.8	51.5	2.68	32.6	0.01	0.00	0.00	0.06	302	
320	7.94	7.90	34.190	26.657	143.6	0.665	0.70	30.3	10.4	55.2	2.75	33.2	0.00	0.00	0.00	0.06	323 08	
380	7.26	7.22	34.220	26.779	132.6	0.748	0.36	15.8	5.4	67.7	2.98	33.8	0.00	0.00	0.00	0.06	383 07	
400 ISL	7.11 D	7.07 D	34.232 D	26.809	130.0	0.779	0.30	D13.1 D	4.5	71.9	3.05	33.4	0.01	0.00	0.00	0.06	403	
440	6.76	6.72	34.244	26.867	124.9	0.825	0.13	5.5	1.8	80.2	3.18	32.6	0.00	0.00	0.00	0.06	444 06	
480	6.61	6.57	34.248	26.891	123.1	0.875	0.01	0.5	0.2	91.7	3.40	29.1	0.00	0.00	0.00	0.06	484 05	
500 ISL	6.58 D	6.53 D	34.251 D	26.898	122.7	0.906	0.01	0.3	0.1	94.7	3.49	27.3	0.01	0.00	0.00	0.06	504	
515	6.55	6.50	34.260	26.910	121.8	0.918	0.00	0.1	0.0	97.0	3.55	26.0	0.00	0.07	0.00	0.06	519 04	
539	6.53	6.48	34.251	26.905	122.6	0.947	0.01	0.6	0.2	102.1	3.77	20.6	1.07	0.00	0.00	0.00	0.06	544 03
560	6.53	6.48	34.249	26.905	123.0	0.973	0.01	0.6	0.2	103.0	3.81	19.8	1.19	0.00	0.00	0.00	0.06	565 02
565	6.53	6.48	34.254	26.908	122.8	0.979	0.01	0.4	0.2	103.3	3.83	19.9	1.20	0.00	0.00	0.00	0.06	570 01

D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED 02;

RV SALLY RIDE

CALCOFI CRUISE 1611

STATION 83.3 39.4

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD		
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXYGEN	OXY	SI03*	P04*	N03*	N02*	NH4*	CHL-A	PHAEAO	PRES SAMP
m	DEG C	DEG C	THETA			ml/L	mol/Kg	PCT	MM	MM	MM	MM	MM	ug/L	ug/L	db	
0	16.91	16.91	33.395	24.304	361.1	0.000	5.85	255.7	105.9	3.5	0.45	0.1	0.07	0.00	4.67	0.71	0
2	16.91	16.91	33.395	24.304	361.1	0.007	5.85	255.7	105.9	3.5	0.45	0.1	0.07	0.00	4.67	0.71	2 05
5	16.77	16.77	33.385	24.329	358.9	0.018	5.83	254.6	105.1	3.4	0.45	0.0	0.08	0.00	4.71	0.69	5 04
10	16.68	16.68	33.384	24.352	356.9	0.036	5.84	254.9	105.0	3.4	0.46	0.0	0.08	0.00	4.80	0.66	10 02
10	16.68	16.68	33.380	24.348	357.2	0.036	5.64	246.5	101.7	2.7	0.35	0.3	0.08	0.09	1.87	0.36	10 03
17	16.20	16.20	33.360	24.444	348.4	0.061	5.65	246.7	100.7	3.5	0.46	0.3	0.13	0.18	2.26	0.59	17 01

D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED 02;











RV SALLY RIDE

## CALCOFI CRUISE 1611

STATION 86.7 45.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD			
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SV	DYN HT	OXYGEN	OXYGEN	OXY	SI03*	P04*	N03*	N02*	NH4*	CHL-A	PHAEAO	PRES	SAMP	
m	DEG C	DEG C	THETA				ml/L	mol/Kg	PCT	#M	#M	#M	#M	#M	μg/L	μg/L	db		
0	18.00	18.00	33.432	24.073	383.1	0.000	5.54	242.0	102.4	1.4	0.26	0.1	0.02	0.02	0.36	0.05	0		
2 A	18.00	18.00	33.432	24.073	383.1	0.008	5.54	242.0	102.4	1.4	0.26	0.1	0.00	0.00	0.36	0.05	2	24	
10 ISL	17.67	17.67	33.422	D 24.145	376.6	0.035	5.57	242.8	102.2	1.4	0.26	0.0	0.01	0.00	0.25	0.06	10		
12	17.65	17.65	33.421	24.149	376.3	0.046	5.58	243.4	102.3	1.4	0.26	0.0	0.00	0.00	0.22	0.06	12	21	
12	17.65	17.65	33.422	24.150	376.2	0.047											12	23	
12	17.65	17.65	33.424	24.152	376.0	0.046											12	22	
20 ISL	17.51	D 17.51	33.418	D 24.181	373.5	0.072	5.58	243.2	102.0	1.6	0.28	0.1	0.02	0.00	0.30	0.12	20		
22 A	17.45	17.45	33.414	24.193	372.4	0.083	5.58	243.5	101.9	1.6	0.28	0.1	0.00	0.24	0.32	0.14	22	20	
30 A	17.24	17.23	33.397	24.232	369.1	0.113	5.52	241.1	100.5	2.2	0.35	0.8	0.08	0.12	0.55	0.21	30	19	
40	15.49	15.48	33.368	24.611	332.3	0.148	5.25	229.4	92.3	3.5	0.51	3.1	0.24	0.10	0.70	0.27	40	17	
40	15.49	15.48	33.373	24.615	332.8	0.147											40	18	
49	14.08	14.07	33.292	24.855	310.1	0.177	5.06	221.0	86.4	4.9	0.70	5.9	0.25	0.00	0.54	0.31	49	16	
50 ISL	13.82	D 13.81	33.283	D 24.901	305.8	0.178	5.10	d222.1	D 86.6	5.2	0.73	6.3	0.23	0.00	0.52	0.32	50		
57 A	12.98	12.98	33.281	25.068	290.0	0.201	4.75	207.4	79.3	7.3	0.90	9.2	0.12	0.00	0.38	0.36	57	15	
73	11.39	11.38	33.382	25.449	253.9	0.244	4.12	179.9	66.5	13.2	1.29	15.7	0.04	0.00	0.14	0.19	74	14	
75 ISL	11.35	D 11.34	33.386	D 25.460	252.9	0.247	4.10	d178.3	D 66.0	13.7	1.32	16.1	0.03	0.00	0.13	0.18	76		
88	10.55	10.54	33.497	25.688	231.5	0.281	3.69	160.9	58.5	17.2	1.50	18.8	0.03	0.00	0.07	0.12	89	13	
100 ISL	10.31	D 10.30	33.595	D 25.807	220.5	0.306	3.38	d147.2	D 53.4	19.9	1.63	20.7	0.03	0.00	0.04	0.10	101		
106 A	10.00		9.98	33.628	25.886	213.1	0.321	3.23	141.0	50.7	21.3	1.70	21.7	0.00	0.00	0.03	0.08	107	12
116 A	9.69		9.68	33.677	25.975	204.7	0.342	3.26	142.5	50.9	22.0	1.71	22.4	0.00	0.00	0.01	0.04	117	11
125 ISL	9.48	D 9.47	33.732	D 26.053	197.5	0.358	3.21	d139.8	D 49.8	23.3	1.75	23.0	0.02	0.00	0.01	0.04	126		
128	9.42	9.40	33.735	26.066	196.3	0.366	3.20	139.7	49.6	23.7	1.76	23.2	0.00	0.00	0.01	0.04	129	10	
141	9.38	9.36	33.808	26.130	190.5	0.391	2.85	124.6	44.2	25.7	1.87	24.6	0.00	0.00	0.00	0.05	142	9	
150 ISL	9.35	D 9.33	33.837	D 26.157	188.1	0.407	2.80	d121.7	D 43.3	26.5	1.90	25.0	0.02	0.00	0.00	0.04	151		
171	9.30		9.28	33.901	26.216	183.0	0.447	2.59	112.9	40.0	28.4	1.98	26.0	0.00	0.00	0.01	0.04	172	8
200	9.10		9.08	34.038	26.356	170.3	0.498	2.05	89.6	31.6	32.9	2.17	27.9	0.00	0.00	0.01	0.04	202	7
231	8.78		8.75	34.116	26.469	160.1	0.549	1.68	73.4	25.8	37.7	2.32	29.8	0.00	0.00		233	6	
250 ISL	8.59	D 8.56	34.157	D 26.532	154.5	0.579	1.50	d65.0	D 22.8	40.0	24.0	30.6	0.02	0.00			252		
270	8.48	8.45	34.180	26.567	151.5	0.610	1.32	57.4	20.0	42.4	2.48	31.4	0.00	0.00			272	5	
300 ISL	8.24	D 8.21	34.208	D 26.625	146.5	0.655	1.10	d48.0	D 16.7	45.1	2.56	32.3	0.02	0.00			302		
320	8.13	8.10	34.213	26.646	144.8	0.684	1.02	44.6	15.4	47.0	2.62	32.9	0.00	0.00			323	4	
381	7.58	7.55	34.237	26.747	136.0	0.770	0.76	33.1	11.3	53.8	2.77	34.8	0.00	0.00			384	3	
400 ISL	7.38	D 7.34	34.246	D 26.783	132.8	0.796	0.69	d29.8	D 10.2	56.4	2.81	35.4	0.02	0.00			403		
441	7.03		6.98	34.257	26.842	127.5	0.848	0.56	24.3	8.2	62.2	2.91	36.9	0.00	0.00			445	2
500 ISL	6.61	D 6.57	34.286	D 26.922	120.6	0.924	0.40	d17.3	D 5.8	69.6	3.03	38.1	0.01	0.00			504		
517	6.51	6.46	34.295	26.943	118.7	0.942	0.36	15.7	5.2	71.7	3.06	38.4	0.00	0.00			521	1	

A) PRIMARY PRODUCTIVITY SAMPLES WERE TAKEN FROM THESE LEVELS.

D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED 02;

RV SALLY RIDE

## CALCOFI CRUISE 1611

STATION 86.7 50.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD		
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SV	DYN HT	OXYGEN	OXYGEN	OXY	SI03*	P04*	N03*	N02*	NH4*	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C	THETA				ml/L	mol/Kg	PCT	#M	#M	#M	#M	#M	μg/L	μg/L	db	
0	18.30	18.30	33.443	24.007	389.4	0.000	5.52	241.1	102.6	1.3	0.26	0.0	0.02	0.03	0.33	0.08	0	
2	18.30	18.30	33.443	24.007	389.5	0.008	5.52	241.1	102.6	1.3	0.26	0.0	0.00	0.33	0.08	2	10	
5	18.28	18.28	33.448	24.016	388.7	0.020	5.54	241.8	102.8	1.4	0.27	0.0	0.00	0.00	0.33	0.09	5	9
10 ISL	18.10	D 18.10	33.443	D 24.057	385.0	0.035	5.55	d242.0	D 102.7	1.4	0.27	0.0	0.02	0.00	0.36	0.08	10	
11	18.10	18.09	33.445	24.060	384.7	0.043	5.53	241.5	102.4	1.4	0.27	0.0	0.00	0.00	0.36	0.08	11	7
11	18.10	18.09	33.444	24.060	384.8	0.042											11	8
20 ISL	18.06	D 18.06	33.441	D 24.067	384.5	0.074	5.56	d242.5	D 102.8	1.4	0.26	0.0	0.02	0.00	0.43	0.13	20	
21	17.82	17.81	33.444	24.128	378.7	0.081	5.54	241.7	101.9	1.4	0.26	0.0	0.00	0.00	0.44	0.13	21	6
30	16.59	16.58	33.365	24.360	356.8	0.114	5.53	241.3	99.3	2.1	0.36	0.8	0.08	0.77	0.36	30	5	
40	15.47	15.47	33.285	24.550	339.0	0.157	5.49	239.8	96.4	2.6	0.43	1.7	0.16	0.00	0.90	0.63	41	16
50	14.29	14.28	33.194	24.736	321.5	0.187	5.34	233.4	91.6	3.5	0.54	3.7	0.23	0.00	0.66	0.39	50	15
60	13.00	12.99	33.127	24.946	301.7	0.218	5.21	227.6	86.9	4.7	0.67	6.2	0.09	0.00	0.41	0.30	60	14
71	12.14	12.13	33.223	25.188	278.9	0.250	4.81	210.2	78.9	7.8	0.90	9.8	0.05	0.20	0.25	0.23	72	13
75 ISL	12.00	D 11.99	33.240	D 25.226	275.3	0.263	4.81	d209.5	D 78.6	8.2	0.93	10.3	0.04	0.00	0.23	0.23	76	
85	11.68	11.67	33.261	25.302	268.3	0.288	4.65	203.1	75.5	9.3	1.01	11.4	0.04	0.00	0.17	0.24	86	12
100 ISL	10.80	D 10.79	33.437	D 25.598	240.4	0.328	3.87	d168.5	D 61.7	14.8	1.39	17.4	0.03	0.00	0.08	0.13	101	
101	10.84	10.83	33.436	25.591	241.1	0.329	3.87	168.8	61.7	15.2	1.42	17.8	0.03	0.00				

RV SALLY RIDE

CALCOFI CRUISE 1611

STATION 86.7 60.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD	
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SV	DYN HT	OXYGEN	OXYGEN	OXY	SI03*	P04*	N03*	N02*	NH4*	CHL-A	PHAEAO	PRES SAMP
m	DEG C	DEG C	THETA			ml/L	mol/Kg	PCT	#M	#M	#M	#M	#M	#g/L	#g/L	db	
0	19.39	19.39	33.438	23.729	415.9	0.000	5.34	232.9	101.2	1.6	0.24	0.0	0.01	0.00	0.16	0.03	0
2	19.39	19.39	33.438	23.729	416.0	0.008	5.34	232.9	101.2	1.6	0.24	0.0	0.00	0.00	0.16	0.03	2 21
10	19.39	19.39	33.438	23.730	416.3	0.042	5.33	232.9	101.2	1.6	0.26	0.1	0.00	0.14	0.17	0.02	10 19
10	19.39	19.39	33.439	23.731	416.2	0.043											10 20
20	18.93	18.92	33.383	23.807	409.3	0.083	5.49	239.7	103.2	1.5	0.27	0.1	0.00	0.10	0.18	0.04	20 18
30	16.66	16.66	33.271	24.270	365.4	0.122	5.77	252.1	103.8	1.4	0.28	0.0	0.00	0.00	0.38	0.13	30 17
40	15.60	15.59	33.182	24.443	349.2	0.157	5.79	252.9	101.9	1.7	0.32	0.2	0.00	0.00	0.72	0.40	40 16
50	14.41	14.40	33.058	24.606	333.9	0.191	5.81	253.6	99.6	2.0	0.37	1.1	0.13	0.09	0.51	0.41	50 15
61	13.67	13.66	33.091	24.784	317.2	0.227	5.55	242.5	93.9	2.9	0.48	2.6	0.26	0.00	0.58	0.25	61 14
70	12.50	12.49	33.217	25.114	285.9	0.254	5.01	218.8	82.7	6.2	0.74	7.4	0.04	0.00	0.25	0.30	71 13
75 ISL	12.28	D 12.27	33.231	D 25.167	280.9	0.270	4.94	D 215.0	D 81.1	6.7	0.78	8.1	0.03	0.00	0.24	0.27	76
86	11.77	11.76	33.239	25.270	271.4	0.299	4.83	211.0	78.6	7.8	0.88	9.7	0.03	0.00	0.20	0.21	87 12
100 ISL	11.22	D 11.20	33.293	D 25.413	258.1	0.338	4.48	D 195.0	D 72.0	10.7	1.09	13.0	0.03	0.00	0.13	0.14	101
101	10.87	10.85	33.349	D 25.518	248.0	0.341	4.33	D 188.6	D 69.1	10.9	1.10	13.3	0.03	0.00	0.13	0.13	102 11
120	10.16	10.15	33.525	25.778	223.6	0.383	3.56	155.5	56.0	18.2	1.55	20.3	0.00	0.00	0.05	0.07	121 10
125 ISL	9.98	D 9.97	33.591	D 25.860	215.9	0.397	3.40	D 148.0	D 53.3	19.8	1.62	21.2	0.01	0.00	0.04	0.06	126
140	9.24	9.22	33.742	26.100	193.2	0.425	3.09	134.9	47.7	24.6	1.81	24.2	0.00	0.00	0.00	0.04	141 09
150 ISL	8.98	D 8.96	33.816	D 26.200	183.9	0.447	3.11	D 135.3	D 47.7	26.5	1.86	25.1	0.01	0.00	0.00	0.03	151
170	8.75	8.73	33.923	26.320	172.9	0.480	2.68	116.9	40.9	30.4	1.97	26.9	0.00	0.00	0.00	0.03	171 08
200	8.45	8.43	34.023	26.446	161.5	0.530	2.09	91.0	31.7	36.2	2.18	29.5	0.00	0.00	0.00	0.02	202 07
230	8.17	8.15	34.087	26.538	153.2	0.577	1.66	72.3	25.0	41.0	2.36	31.4	0.00	0.00			232 06
250 ISL	7.94	D 7.91	34.123	D 26.602	147.4	0.611	1.42	D 61.9	D 21.4	45.0	2.46	32.7	0.01	0.00			252
270	7.59	7.56	34.131	26.660	142.1	0.637	1.26	55.0	18.8	49.1	2.55	33.9	0.00	0.00			272 05
300 ISL	7.24	D 7.21	34.162	D 26.733	135.5	0.682	1.03	D 44.9	D 15.3	53.3	2.66	35.1	0.01	0.00			302
321	7.07	7.04	34.171	26.765	132.8	0.706	0.91	39.6	13.4	56.3	2.74	35.9	0.00	0.00			324 04
380	6.75	6.71	34.224	26.851	125.3	0.783	0.59	25.9	8.7	63.4	2.91	37.5	0.00	0.00			383 03
400 ISL	6.69	D 6.65	34.241	D 26.873	123.5	0.812	0.54	D 23.7	D 7.9	65.6	2.94	37.9	0.01	0.00			403
440	6.42	6.38	34.276	26.937	117.9	0.856	0.40	17.3	5.8	70.0	3.01	38.7	0.00	0.00			444 02
500 ISL	6.21	D 6.16	34.301	D 26.986	114.0	0.931	0.33	D 14.4	D 4.8	74.3	3.08	39.4	0.01	0.00			504
518	6.15	6.10	34.305	26.996	113.2	0.946	0.31	13.4	4.4	75.6	3.10	39.6	0.00	0.00			522 01

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

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD	
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SV	DYN HT	OXYGEN	OXYGEN	OXY	SI03*	P04*	N03*	N02*	NH4*	CHL-A	PHAEAO	PRES SAMP
m	DEG C	DEG C	THETA			ml/L	mol/Kg	PCT	#M	#M	#M	#M	#M	#g/L	#g/L	db	
0	17.79	17.79	33.255	23.989	391.1	0.000	5.51	240.5	101.2	0.6	0.24	0.0	0.02	0.00	0.19	0.05	0
4	17.79	17.79	33.255	23.989	391.3	0.016	5.51	240.5	101.2	0.6	0.24	0.0	0.00	0.00	0.19	0.05	4 24
10	17.79	17.79	33.252	23.987	391.7	0.039	5.51	240.4	101.2	0.8	0.26	0.0	0.00	0.00	0.20	0.05	10 20
10	17.79	17.79	33.251	23.987	391.7	0.040											10 23
10	17.79	17.79	33.252	23.987	391.7	0.041											10 22
10	17.79	17.79	33.255	23.989	391.5	0.040											10 21
20	17.79	17.79	33.252	23.987	392.1	0.078	5.51	240.7	101.3	0.7	0.25	0.0	0.00	0.00	0.20	0.05	20 19
30 ISL	17.78	D 17.78	33.252	D 23.990	392.2	0.118	5.52	D 240.6	D 101.4	0.6	0.27	0.0	0.02	0.00	0.20	0.06	30
31	17.78	17.77	33.255	23.993	391.9	0.121	5.52	241.0	101.4	0.6	0.27	0.0	0.00	0.00	0.20	0.06	31 18
40	17.22	17.21	33.302	24.165	375.8	0.156	5.69	248.4	103.4	0.6	0.27	0.0	0.00	0.00	0.34	0.17	40 17
46	16.70	16.69	33.315	24.296	363.5	0.178	5.71	249.2	102.7	0.7	0.29	0.0	0.00	0.00	0.40	0.26	46 16
50 ISL	15.68	D 15.67	33.297	D 24.515	342.7	0.194	5.52	D 240.8	D 97.4	0.8	0.31	0.0	0.05	0.00	0.60	0.40	50
51	15.75	15.74	33.356	24.544	340.0	0.196	5.40	235.0	95.3	0.9	0.32	0.0	0.06	0.00	0.65	0.44	51 15
61	12.53	12.52	33.084	25.004	296.1	0.227	5.26	229.8	86.9	3.5	0.65	5.8	0.06	0.00	0.26	0.29	61 14
71	12.07	12.06	33.161	25.152	282.2	0.256	4.85	211.6	79.3	6.7	0.89	9.7	0.03	0.00	0.11	0.16	72 13
75 ISL	11.66	D 11.65	33.223	D 25.276	270.5	0.270	4.77	D 207.9	D 77.4	7.9	0.96	10.7	0.03	0.00	0.10	0.14	76
86	11.07	11.06	33.264	D 25.415	257.5	0.299	4.51	D 196.6	D 72.3								87 12
100 ISL	10.21	D 10.19	33.398	D 25.671	233.4	0.333	4.09	D 178.0	D 64.3	15.1	1.36	17.3	0.02	0.00	0.03	0.06	101
101	10.22	10.21	33.393	25.665	233.9	0.333	4.10	179.0	64.5	15.4	1.38	17.5	0.00	0.00	0.03	0.05	102 11
120	9.68	9.66	33.558	25.885	213.3	0.376	3.60	157.1	56.0	19.9	1.60	21.2	0.00	0.00	0.01	0.04	121 10
125 ISL	9.59	D 9.57	33.590	D 25.924	209.7	0.389	3.56	D 155.0	D 55.3	20.3	1.60	21.3	0.02	0.00	0.01	0.03	126
141	9.18	9.17	33.667	26.051	197.9	0.419	3.65	159.2	56.2	21.6	1.61	21.8	0.00	0.00	0.01	0.02	142 09
150 ISL	9.15	D 9.13	33.770	D 26.137	190.0	0.439	3.45	D 150.2	D 53.2	23.4	1.69	22.9	0.02	0.00	0.01	0.02	151
170	8.93	8.91	33.862	26.244	180.1	0.474	2.95	128.7	45.2	27.6	1.87	25.4	0.00	0.00	0.00	0.02	171 08
200	8.50	8.48	33.945	26.377	168.0	0.526	2.81	122.6	42.7	31.4	1.95	26.8	0.00	0.00	0.00	0.02	202 07
230	8.09	8.07	33.998	26.481	15												





RV SALLY RIDE

CALCOFI CRUISE 1611

STATION 88.5 30.1

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD		
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXYGEN	OXY	SI03*	P04*	N03*	N02*	NH4*	CHL-A	PHAEAO	PRES SAMP
m	DEG C	DEG C	THETA			ml/L	#mol/Kg	PCT	#M	#M	#M	#M	#M	#M	#g/L	#g/L	db
0	18.09	18.09	33.370	24.004	389.7	0.000	5.99	261.8	110.9	1.8	0.19	0.0	0.03	0.00	1.03	0.24	0
2	18.09	18.09	33.370	24.004	389.7	0.008	5.99	261.8	110.9	1.8	0.19	0.0	0.03	0.00	1.03	0.24	2 04
6	18.06	18.06	33.359	24.002	390.1	0.023	6.07	265.1	112.2	2.2	0.23	0.0	0.03	0.00	1.55	0.37	6 03
10	18.06	18.06	33.363	24.007	389.8	0.039	6.09	265.8	112.5	2.3	0.25	0.0	0.03	0.00	1.79	0.44	10 02
15	18.01	18.01	33.350	24.008	389.9	0.059	6.14	267.9	113.4	3.0	0.30	0.0	0.05	0.00	2.24	0.49	15 01

D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED 02;

RV SALLY RIDE

CALCOFI CRUISE 1611

STATION 90.0 27.7

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD		
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXYGEN	OXY	SI03*	P04*	N03*	N02*	NH4*	CHL-A	PHAEAO	PRES SAMP
m	DEG C	DEG C	THETA			ml/L	#mol/Kg	PCT	#M	#M	#M	#M	#M	#M	#g/L	#g/L	db
0	18.98	18.98	33.404	23.807	408.5	0.000	5.75	251.1	108.2	1.2	0.17	0.0	0.03	0.01	0.67	0.13	0
2	18.98	18.98	33.404	23.807	408.5	0.008	5.75	251.1	108.2	1.2	0.17	0.0	0.03	0.00	0.67	0.13	2 04
6	18.84	18.84	33.401	23.841	405.5	0.025	5.81	253.7	109.0	1.3	0.17	0.0	0.03	0.00	0.84	0.17	6 03
10	18.54	18.54	33.407	23.922	397.9	0.041	5.81	253.6	108.4	1.3	0.17	0.0	0.03	0.08	0.84	0.18	10 02
16	18.63	18.62	33.406	23.900	400.2	0.065	5.82	254.3	108.8	1.4	0.18	0.0	0.03	0.00	1.04	0.23	16 01

D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED 02;

RV SALLY RIDE

CALCOFI CRUISE 1611

STATION 90.0 28.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD		
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXYGEN	OXY	SI03*	P04*	N03*	N02*	NH4*	CHL-A	PHAEAO	PRES SAMP
m	DEG C	DEG C	THETA			ml/L	#mol/Kg	PCT	#M	#M	#M	#M	#M	#M	#g/L	#g/L	db
0	19.17	19.17	33.381	23.743	414.5	0.000	5.55	242.3	104.7	1.4	0.20	0.0	0.02	0.03	0.29	0.05	0
2	19.17	19.17	33.381	23.743	414.6	0.008	5.55	242.3	104.7	1.4	0.20	0.0	0.00	0.00	0.29	0.05	2 08
5	19.10	19.10	33.386	23.764	412.7	0.021	5.57	243.0	104.9	1.4	0.20	0.0	0.00	0.00	0.32	0.06	5 07
10	18.53	18.52	33.391	D 23.913	398.8	0.037	5.72	249.4	106.7	1.2	0.18	0.0	0.02	0.00	0.56	0.12	10
11	18.69	18.69	33.394	23.874	402.5	0.045	5.75	251.1	107.6	1.1	0.17	0.0	0.00	0.00	0.61	0.13	11 06
20	16.82	D 16.81	33.292	D 24.249	367.0	0.076	5.92	258.0	106.7	2.4	0.30	0.1	0.04	0.00	1.37	0.46	20
21	15.85	15.84	33.304	24.480	345.0	0.083	5.94	259.2	105.0	2.5	0.31	0.1	0.04	0.64	1.45	0.50	21 05
30	14.45	14.45	33.243	24.738	320.7	0.113	5.58	243.8	96.0	4.3	0.53	0.9	0.12	0.81	1.33	0.54	30 04
40	13.65	13.65	33.266	24.922	303.4	0.144	5.07	221.3	85.8	5.8	0.68	4.5	0.26	0.00	0.80	0.53	40 03
50	13.41	13.40	33.274	24.979	298.3	0.175	4.88	213.0	82.1	7.0	0.81	5.7	0.32	0.09	0.75	0.52	50 02
58	13.23	13.23	33.281	25.019	294.7	0.198	4.74	207.0	79.5	7.9	0.92	6.8	0.34	0.60	0.68	0.58	58 01

D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED 02;

RV SALLY RIDE

CALCOFI CRUISE 1611

STATION 90.0 30.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD		
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXYGEN	OXY	SI03*	P04*	N03*	N02*	NH4*	CHL-A	PHAEAO	PRES SAMP
m	DEG C	DEG C	THETA			ml/L	#mol/Kg	PCT	#M	#M	#M	#M	#M	#M	#g/L	#g/L	db
0	19.59	19.59	33.492	23.719	416.9	0.000	6.02	262.8	114.6	1.7	0.21	0.0	0.02	0.00	1.27	0.06	0
2 A	19.59	19.59	33.492	23.719	416.9	0.008	6.02	262.8	114.6	1.7	0.21	0.0	0.00	0.00	1.27	0.06	2 24
10 ISL	19.42	D 19.41	33.482	D 23.758	413.6	0.042	6.03	263.2	114.5	1.6	0.21	0.0	0.01	0.00	0.83	0.06	10
13 A	19.36	19.36	33.475	23.767	412.9	0.054	6.04	263.7	114.5	1.6	0.21	0.0	0.00	0.00	0.67	0.06	13 21
14	19.23	19.22	33.475	23.801	409.6	0.056											14 22
14	19.23	19.22	33.478	23.803	409.4	0.056											14 22
18 A	19.03	19.02	33.462	23.841	405.9	0.074	5.82	254.0	109.6	1.6	0.22	0.0	0.00	0.00	0.60	0.09	18 20
20 ISL	18.84	D 18.84	33.459	D 23.886	401.7	0.083	5.82	253.6	109.2	1.7	0.23	0.0	0.00	0.00	0.60	0.11	20
26	18.32	18.32	33.417	23.984	392.6	0.106	5.80	253.5	107.9	1.9	0.24	0.0	0.00	0.00	0.60	0.15	26 19
30 ISL	17.37	D 17.37	33.388	D 24.193	372.7	0.122	5.77	251.4	105.1	1.9	0.28	0.0	0.00	0.00	0.63	0.25	30
33 A	16.59	16.58	33.302	24.311	361.6	0.133	5.74	250.5	103.0	1.9	0.31	0.0	0.00	0.00	0.65	0.32	33 17
33	16.59	16.58	33.314	24.320	360.7	0.134											33 18
43	14.91	14.90	33.213	24.617	332.6	0.167	5.52	241.0	95.8	2.9	0.42	0.6	0.06	0.00	0.74	0.48	43 16
50 ISL	13.64	D 13.64	33.208	D 24.879	307.8	0.191	5.35	233.0	D 90.4	4.7	0.64	4.5	0.15	0.00	0.44	0.41	50
53	13.25	13.25	33.223	24.969	299.3	0.199	5.03	219.7	84.4	5.5	0.73	6.2	0.19	0.00	0.31	0.38	53 15
62 A	12.24	12.23	33.290	25.219	275.7	0.225	4.56	198.9	74.8	8.8	1.00	10.8	0.03	0.00	0.17	0.23	63 14
69 A	11.84	11.84	33.314	25.313	266.8	0.244	4.38	191.0	71.3	10.2	1.11	12.6	0.00	0.00	0.12	0.15	70 13
75 ISL	11.61	D 11.60	33.349	D 23.383	260.3	0.261	4.35	189.6	D 70.6	11.4	1.18	13.7	0.02	0.00	0.10	0.14	76
85	11.04	11.03	33.389	25.158	247.7	0.285	4.07	177.9	65.3	13.4	1.29	15.5	0.00	0.00	0.07	0.12	86 12
100	10.38	10.36	33.471	25.699	230.7	0.321	3.84	167.9	60.7	16.1	1.42						

RV SALLY RIDE

CALCOFI CRUISE 1611

STATION 90.0 35.0

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	WIND SPEED		WEA	BAROMETER			DRY 1016.4 mb	WET 19.8 C	SECCHI	CLD AMT	TYPE	ORD 028		
							020	02 kn		OXYGEN ml/L	OXYGEN #mol/Kg	OXY PCT	SIO3*	P04*	N03*	N02*	NH4*	CHL-A #g/L	PHAE0 #g/L	
0	19.20	19.20	33.395	23.745	414.3	0.000	5.78	252.3	109.1	0.8	0.10	0.0	0.02	0.00	0.48	0.08	0	0		
2	19.20	19.20	33.395	23.746	414.4	0.008	5.78	252.3	109.1	0.8	0.10	0.0	0.00	0.48	0.08	2	19			
10	18.29	18.28	33.362	23.950	395.2	0.041	6.25	273.1	116.1	1.2	0.16	0.0	0.00	1.16	0.18	10	17			
10	18.29	18.28	33.362	23.950	395.2	0.041										10	18			
20	14.43	14.42	33.265	24.759	318.3	0.076	5.41	236.3	93.0	4.2	0.43	0.0	0.03	0.00	0.72	0.28	20	16		
30	13.15	13.14	33.283	25.036	292.2	0.107	4.78	208.5	80.0	6.7	0.79	5.7	0.11	0.00	0.59	0.32	30	15		
40	12.60	12.60	33.314	25.168	279.9	0.136	4.57	199.4	75.6	8.2	0.94	9.2	0.06	0.00	0.29	0.32	40	14		
50	12.00	12.00	33.343	25.305	267.2	0.163	4.27	186.3	69.8	10.4	1.10	11.9	0.04	0.00	0.21	0.19	50	13		
59	11.80	11.80	33.364	25.359	262.2	0.187	4.12	179.8	67.0	11.5	1.18	13.3	0.04	0.00	0.14	0.18	59	12		
75	10.96	10.95	33.407	25.547	244.7	0.227	3.98	173.8	63.6	13.8	1.31	15.7	0.03	0.00	0.08	0.15	76	11		
85	10.51	10.50	33.447	25.657	234.4	0.251	3.89	170.0	61.7	15.5	1.41	17.4	0.03	0.00	0.06	0.10	86	10		
100	10.09	10.08	33.513	25.780	223.0	0.286	3.73	162.6	58.5	17.7	1.52	19.1	0.03	0.00	0.04	0.06	101	9		
120	9.59	9.57	33.660	25.979	204.4	0.328	3.31	144.6	51.5	22.0	1.70	22.1	0.03	0.00	0.02	0.04	121	8		
125 ISL	9.60	D	9.59	33.726	D	26.028	199.8	0.340	3.25	D141.6	D	50.6	22.8	1.74	22.6	0.03	0.00	0.02	0.04	126
140	9.38	9.36	33.824	26.142	189.4	0.368	2.89	126.1	44.7	25.4	1.85	23.9	0.03	0.00	0.02	0.03	141	7		
150 ISL	9.38	D	9.37	33.900	D	26.201	184.0	0.388	2.68	D116.6	D	41.5	27.1	1.92	24.7	0.03	0.00	0.01	0.03	151
170	9.30	9.28	34.008	26.299	175.1	0.423	2.30	100.5	35.6	30.5	2.06	26.2	0.03	0.00	0.01	0.03	171	6		
200	9.09	9.07	34.084	26.393	166.8	0.474	1.97	85.9	30.3	34.2	2.20	27.7	0.04	0.00	0.02	0.03	202	5		
230	8.88	8.86	34.157	26.485	158.6	0.523	1.58	69.1	24.3	37.8	2.33	29.1	0.04	0.00			232	4		
250 ISL	8.67	D	8.64	34.172	D	26.530	154.7	0.557	1.48	D64.4	D	22.6	39.7	2.38	29.8	0.03	0.00			252
270	8.52	8.49	34.170	26.552	152.9	0.585	1.39	60.6	21.1	41.5	2.43	30.5	0.03	0.11			272	3		
300 ISL	8.05	D	8.01	34.178	D	26.631	145.8	0.633	1.23	D53.6	D	18.6	46.0	2.53	32.1	0.03	0.00			302
320	7.87	7.84	34.188	26.665	142.8	0.658	1.07	46.8	16.1	49.0	2.60	33.1	0.03	0.00			323	2		
352	7.67	7.64	34.210	26.712	138.8	0.704	0.91	39.7	13.6	52.6	2.71	34.2	0.00	0.00			355	01		

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

RV SALLY RIDE

CALCOFI CRUISE 1611

STATION 90.0 37.0

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	WIND SPEED		WEA	BAROMETER			DRY 1016.0 mb	WET 19.8 C	SECCHI	CLD AMT	TYPE	ORD 027		
							130	04 kn		OXYGEN ml/L	OXYGEN #mol/Kg	OXY PCT	SIO3*	P04*	N03*	N02*	NH4*	CHL-A #g/L	PHAE0 #g/L	
0	19.30	19.30	33.426	23.744	414.5	0.000	5.47	238.9	103.6	1.6	0.20	0.0	0.02	0.00	0.23	0.04	0	0		
2	19.30	19.30	33.426	23.744	414.6	0.008	5.47	238.9	103.6	1.6	0.20	0.0	0.00	0.23	0.04	2	22			
9	17.93	17.50	33.351	24.131	377.9	0.038										9	21			
10	17.51	17.50	33.347	24.128	378.2	0.040	5.68	248.2	103.9	2.0	0.24	0.0	0.00	0.00	0.31	0.07	10	20		
20	16.63	16.62	33.260	24.269	365.1	0.077	5.83	254.8	104.8	2.6	0.30	0.0	0.00	0.00	0.40	0.18	20	19		
30	14.88	14.87	33.221	24.630	331.0	0.112	5.79	252.8	100.4	3.3	0.37	0.0	0.00	0.00	0.59	0.38	30	17		
30	14.88	14.87	33.226	24.634	330.7	0.113										30	18			
41	12.45	12.44	33.328	25.209	276.0	0.145	4.48	195.6	73.9	9.2	0.98	9.8	0.07	0.00	0.52	0.45	41	16		
50	12.12	12.12	33.358	25.294	268.2	0.170	4.19	183.0	68.7	10.8	1.11	12.1	0.05	0.00	0.39	0.44	50	15		
60	11.91	11.90	33.381	25.352	262.9	0.197	4.02	175.5	65.6	11.9	1.19	13.4	0.04	0.00	0.28	0.41	60	14		
70	11.70	11.70	33.401	25.406	258.0	0.223	3.92	171.2	63.7	12.7	1.25	14.5	0.03	0.00	0.22	0.28	71	13		
75 ISL	11.53	D	11.52	33.415	D	25.449	254.0	0.233	3.87	D168.4	D	62.6	13.3	1.29	15.0	0.03	0.00	0.18	0.23	76
85	11.32	11.31	33.447	25.513	248.2	0.260	3.70	161.6	59.7	14.6	1.36	16.2	0.03	0.00	0.10	0.14	86	12		
100 ISL	10.89	D	10.88	33.536	D	25.660	234.5	0.295	3.39	D147.4	D	54.1	17.2	1.51	18.3	0.02	0.00	0.04	0.07	101
101	10.84	10.82	33.540	25.672	233.4	0.299	3.36	146.7	53.6	17.4	1.52	18.5	0.00	0.00	0.04	0.06	102	11		
120	10.40	10.39	33.671	25.851	216.8	0.342	2.98	130.0	47.1	20.9	1.71	21.1	0.00	0.00	0.01	0.04	121	10		
125 ISL	10.39	D	10.37	33.684	D	25.864	215.7	0.351	2.98	D129.7	D	47.1	21.4	1.73	21.4	0.02	0.00	0.01	0.04	126
140	9.92	9.91	33.758	26.000	203.0	0.384	2.78	121.3	43.5	23.0	1.80	22.4	0.00	0.00	0.01	0.03	141	9		
150 ISL	9.75	D	9.73	33.769	D	26.038	199.5	0.403	2.94	D128.1	D	45.9	25.1	1.88	23.5	0.02	0.00	0.01	0.03	151
170	9.58	9.56	33.986	26.237	181.1	0.441	2.30	100.2	35.7	29.3	2.04	25.7	0.00	0.00	0.00	0.02	171	8		
200 ISL	8.88	D	8.86	34.007	D	26.366	169.2	0.494	2.33	D101.3	D	35.7	32.2	2.08	27.2	0.02	0.00	0.00	0.02	202
201	8.90	8.88	34.009	26.365	169.4	0.496	2.29	99.8	35.1	32.3	2.08	27.2	0.00	0.00	0.00	0.02	203	7		
230	8.67	8.64	34.023	26.414	165.3	0.544	2.22	97.1	33.9	34.4	2.11	28.2	0.00	0.00			232	6		
250 ISL	8.65	D	8.62	34.098	D	26.476	159.8	0.577	1.89	D82.3	D	28.9	37.7	2.24	29.4	0.02	0.00			252
270	8.37	8.34	34.136	26.548	153.2	0.608	1.58	68.9	24.0	41.0	2.37	30.6	0.00	0.00			272	5		
300 ISL	8.09	D	8.06	34.194	D	26.637	145.2	0.654	1.16	D50.5	D	17.5	46.1	2.51	32.3	0.02	0.00			302
320	7.80	7.76	34.187	26.675	141.8	0.682	1.07	46.6	16.0	49.5	2.60	33.5	0.00	0.00			323	4		
380	7.30	7.26	34.241	26.790	131.6	0.764	0.6													

RV SALLY RIDE

## CALCOFI CRUISE 1611

STATION 90.0 45.0

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	WIND SPEED m/L	WAVES	WEA	BAROMETER mb	DRY 1016.9	WET 19.5	SECCHI C	CLD	AMT	TYPE	ORD	
																	026	
0	19.72	19.72	33.454	23.657	422.8	0.000	5.37	234.6	102.5	1.6	0.23	0.0	0.02	0.00	0.22	0.04	0	
2	19.72	19.72	33.454	23.657	422.9	0.009	5.37	234.6	102.5	1.6	0.23	0.0	0.00	0.00	0.22	0.04	2	
10	19.23	19.23	33.442	23.775	411.9	0.042	5.45	238.2	103.1	1.7	0.24	0.0	0.03	0.00	0.18	0.04	10	
10	19.23	19.23	33.443	23.776	411.9	0.042											20	
20	18.97	18.96	33.443	23.843	405.8	0.083	5.47	238.8	102.9	1.6	0.25	0.0	0.00	0.00	0.17	0.04	20	
30	16.45	16.45	33.247	24.299	362.6	0.121	5.85	255.3	104.6	2.5	0.33	0.0	0.00	0.00	0.34	0.12	30	
40	14.47	14.46	33.208	24.707	324.0	0.156	5.78	252.2	99.3	3.4	0.41	0.0	0.00	0.00	0.69	0.32	40	
50	13.46	13.46	33.256	24.953	300.8	0.187	5.34	233.4	90.1	4.8	0.56	1.4	0.14	0.00	1.38	0.62	50	
60	12.28	12.27	33.317	25.233	274.3	0.216	4.49	196.3	73.9	9.1	0.99	10.0	0.05	0.00	0.39	0.36	60	
70	11.96	11.95	33.351	25.320	266.2	0.243	4.27	186.6	69.8	10.8	1.11	12.3	0.04	0.00	0.24	0.27	71	
75	11.92 D	11.91	33.359	25.334	265.0	0.257	4.25	0184.9	69.3	11.6	1.17	13.2	0.03	0.00	0.20	0.24	76	
85	11.19	11.18	33.400	25.499	249.4	0.282	3.98	173.6	63.9	13.2	1.28	15.0	0.03	0.00	0.12	0.17	86	
100	10.57	10.56	33.486	25.677	232.8	0.318	3.66	159.7	58.0	16.4	1.46	17.9	0.00	0.00	0.06	0.08	101	
120	10.02	10.00	33.608	25.867	215.1	0.363	3.32	145.1	52.2	19.9	1.64	20.6	0.00	0.00	0.02	0.05	121	
125	9.74 D	9.73	33.647	25.944	207.9	0.375	3.44	0149.8	53.7	21.2	1.68	21.4	0.02	0.00	0.02	0.05	126	
140	9.34	9.32	33.783	26.117	191.7	0.403	2.99	130.3	46.2	25.1	1.81	23.8	0.00	0.00	0.01	0.03	141	
150	9.22 D	9.20	33.859	26.195	184.5	0.424	2.76	0119.9	42.5	27.1	1.88	24.8	0.02	0.00	0.01	0.03	151	
170	8.90	8.88	33.946	26.316	173.4	0.458	2.42	105.5	37.1	31.0	2.03	26.8	0.00	0.00	0.00	0.03	171	
200	8.57 D	8.55	34.078	26.471	159.2	0.510	1.89	082.0	28.7	37.3	2.22	29.4	0.01	0.00	0.00	0.02	202	
201	8.55	8.53	34.072	26.468	159.5	0.509	1.90	82.8	28.9	37.5	2.23	29.5	0.00	0.00	0.00	0.02	203	
231	8.32	8.29	34.149	26.566	150.7	0.556	1.49	65.2	22.6	42.2	2.40	30.8	0.00	0.00		233	06	
250	8.21 D	8.18	34.161	26.591	148.6	0.587	1.41	061.3	21.3	44.9	2.47	31.9	0.02	0.00		252		
270	7.84	7.82	34.159	26.645	143.7	0.614	1.23	53.6	18.4	47.7	2.54	32.9	0.00	0.00		272	05	
300	7.77 D	7.74	34.202	26.690	140.0	0.659	0.99	043.0	14.8	50.3	2.62	33.6	0.01	0.00		302		
320	7.63	7.59	34.210	26.718	137.6	0.684	0.91	39.6	13.5	52.0	2.67	34.1	0.00	0.00		323	04	
380	7.15	7.12	34.238	26.807	129.9	0.765	0.64	27.7	9.4	59.3	2.84	36.0	0.00	0.00		383	03	
400	7.03 D	7.00	34.251	26.835	127.5	0.794	0.59	059.0	25.5	8.6	62.0	2.89	36.6	0.01	0.00		403	
440	6.69	6.65	34.274	26.900	121.7	0.840	0.42	18.4	6.2	67.5	2.99	37.8	0.00	0.00		444	02	
500	6.32 D	6.28	34.295	26.966	116.0	0.916	0.34	014.9	5.0	73.3	3.07	39.0	0.01	0.00		504		
517	6.23	6.18	34.304	26.985	114.3	0.931	0.31	13.3	4.4	74.9	3.09	39.3	0.00	0.00		521	01	

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

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	WIND SPEED m/L	WAVES	WEA	BAROMETER mb	DRY 1015.5	WET 21.3	SECCHI C	CLD	AMT	TYPE	ORD
																	025
0	19.18	19.18	33.343	23.711	417.6	0.000	5.36	234.0	101.2	1.4	0.23	0.0	0.02	0.01	0.13	0.03	0
2	19.18	19.18	33.343	23.711	417.7	0.008	5.36	234.0	101.2	1.4	0.23	0.0	0.00	0.00	0.13	0.03	2
10	19.11 D	19.11	33.340	23.728	416.4	0.042	5.35	233.5	100.9	1.4	0.23	0.0	0.02	0.00	0.14	0.02	10
11	19.09	19.09	33.343	23.736	415.7	0.046	5.35	233.7	100.8	1.3	0.23	0.0	0.00	0.11	0.14	0.02	11
11	19.09	19.09	33.341	23.734	415.9	0.046											21
20	18.79	18.78	33.326	23.799	410.0	0.083	5.42	236.5	101.5	1.3	0.26	0.0	0.00	0.00	0.15	0.04	20
30	17.73	17.73	33.271	24.017	389.6	0.123	5.60	244.6	102.8	1.5	0.26	0.0	0.00	0.00	0.23	0.08	30
40	15.60	15.59	33.188	24.447	348.8	0.160	5.85	255.6	103.0	2.2	0.31	0.0	0.00	0.00	0.40	0.23	40
50	14.83	14.82	33.207	24.631	331.5	0.194	5.70	248.9	98.7	3.0	0.39	0.3	0.08	0.06	0.71	0.59	50
50	14.83	14.82	33.208	24.632	331.4	0.195											16
60	13.72	13.71	33.252	24.898	306.3	0.226	5.21	227.3	88.2	4.8	0.61	3.6	0.08	0.21	0.30	0.44	60
70	12.48	12.47	33.296	25.179	279.7	0.255	4.69	204.9	77.5	7.9	0.90	8.9	0.04	0.00	0.16	0.25	71
75	12.22 D	12.21	33.324	25.250	273.1	0.271	4.71	0205.3	77.4	8.8	0.97	10.1	0.04	0.00	0.14	0.22	76
85	11.64	11.63	33.361	25.388	260.1	0.296	4.34	189.4	70.4	10.7	1.12	12.3	0.04	0.06	0.10	0.16	86
100	10.47	10.46	33.412	25.637	236.6	0.333	4.04	176.5	64.0	14.8	1.37	16.7	0.03	0.00	0.06	0.08	101
120	9.62	9.61	33.600	25.926	209.4	0.378	3.44	150.0	53.4	20.5	1.66	21.5	0.03	0.17	0.02	0.04	121
125	9.52 D	9.51	33.685	26.009	201.6	0.390	3.36	0146.2	52.2	21.4	1.70	22.1	0.03	0.00	0.01	0.04	126
140	9.31	9.30	33.733	26.081	195.1	0.418	3.06	133.6	47.3	24.1	1.81	23.8	0.00	0.00	0.00	0.03	141
150	9.18 D	9.16	33.805	26.160	187.8	0.439	2.97	0129.1	45.7	26.1	1.88	24.8	0.02	0.00	0.00	0.03	151
171	8.86	8.84	33.923	26.303	174.6	0.475	2.51	109.6	38.5	30.2	2.03	26.8	0.00	0.20	0.00	0.04	172
200	8.42	8.40	34.011	26.440	162.0	0.524	2.21	96.5	33.6	35.9	2.18	29.0	0.00	0.11	0.01	0.03	202
231	8.20	8.18	34.056	26.509	156.0	0.574	1.91	83.4	28.9	39.3	2.29	30.3	0.00	0.00		233	06
250	8.17 D	8.14	34.071	26.527	154.7	0.606	1.85	080.5	27.9	42.1	2.38	31.3	0.02	0.00		252	
270	7.86	7.83	34.120	26.612	146.8	0.633	1.47	64.0	22.0	45.0	2.47	32.3	0.00	0.47		272	05
300	7.71 D	7.68	34.159	26.665	142.3	0.											

RV SALLY RIDE

CALCOFI CRUISE 1611

STATION 90.0 60.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD							
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXYGEN	OXY	SI03*	P04*	N03*	N02*	NH4*	CHL-A	PHAEAO	PRES SAMP						
m	DEG C	DEG C	THETA			ml/L	μmol/Kg	PCT	MM	MM	MM	MM	MM	ug/L	ug/L	db							
32	25.1 N	119 57.6 W	11/11/2016	1844	UTC	869 m	040	08 kn	280	04	10	1	1018.5	mb	20.0	C	19.0	C	28 m	1/8	CI	024	
0	18.49	18.49	33.432	23.953	394.5	0.000	5.44	237.5	101.4	1.4	0.27	0.1	0.03	0.01	0.18	0.04	0						
2	A	18.49	18.49	33.432	23.953	394.6	0.008	5.44	237.5	101.4	1.4	0.27	0.1	0.03	0.00	0.18	0.04	2	23				
10	18.33	18.33	33.470	24.022	388.3	0.039	5.45	238.0	101.3	1.3	0.28	0.1	0.00	0.09	0.21	0.05	10	21					
11	18.32	18.31	33.466	24.022	388.3	0.042												11	22				
18	A	18.26	18.26	33.461	24.032	387.7	0.070	5.45	237.9	101.1	1.3	0.28	0.0	0.00	0.00	0.26	0.07	18	20				
20	ISL	18.26	D	18.25	33.461	D	24.034	387.6	0.075	5.48	D239.0	D101.7	1.3	0.28	0.0	0.01	0.00	0.29	0.09	20			
26	A	17.80	17.79	33.433	24.124	379.2	0.101	5.53	241.3	101.7	1.2	0.28	0.0	0.00	0.00	0.38	0.17	26	19				
30	ISL	17.35	D	17.34	33.404	D	24.210	371.1	0.113	5.64	D245.7	D102.8	1.4	0.30	0.0	0.02	0.00	0.60	0.31	30			
36	16.83	16.82	33.385	24.319	360.9	0.138	5.55	242.1	100.1	1.6	0.32	0.1	0.03	0.00	0.93	0.51	36	18					
46	A	15.27	15.26	33.281	24.592	335.1	0.173	5.46	238.4	95.5	2.1	0.43	1.7	0.13	0.18	1.05	0.54	46	16				
46		15.27	15.26	33.285	24.596	334.8	0.174											46	17				
50	ISL	14.75	D	14.74	33.253	D	24.684	326.5	0.184	5.44	D236.9	D 94.0	2.8	0.51	2.9	0.14	0.00	0.91	0.52	50			
59		14.02	14.01	33.237	24.824	313.4	0.215	5.10	222.5	86.9	4.5	0.69	5.6	0.16	0.00	0.60	0.47	59	15				
72		12.39	12.38	33.262	25.170	280.6	0.253	4.62	201.8	76.1	7.8	0.97	10.4	0.05	0.00	0.20	0.31	73	14				
75	ISL	12.15	D	12.14	33.271	D	25.222	275.7	0.260	4.55	D198.0	D 74.5	8.9	1.04	11.6	0.05	0.00	0.18	0.27	76			
86	A	11.01	11.00	33.354	25.496	249.8	0.290	4.12	179.7	65.9	12.9	1.29	15.7	0.00	0.00	0.07	0.12	87	13				
96	A	10.20	10.19	33.406	25.678	232.6	0.315	4.15	181.3	65.3	15.1	1.36	17.0	0.03	0.07	0.04	0.08	97	12				
100	ISL	10.14	D	10.13	33.421	D	25.699	230.6	0.322	4.16	D181.1	D 65.4	15.7	1.39	17.6	0.02	0.07	0.04	0.07	101			
108		9.77	9.76	33.477	25.806	220.6	0.342	3.98	173.7	62.0	17.0	1.45	18.7	0.00	0.08	0.03	0.05	109	11				
120		9.59	9.58	33.563	25.903	211.6	0.368	3.77	164.4	58.5	19.3	1.56	20.3	0.00	0.00	0.02	0.03	121	10				
125	ISL	9.52	D	9.51	33.593	D	25.937	208.5	0.377	3.77	D163.9	D 58.4	20.6	1.61	21.2	0.02	0.00	0.01	0.03	126			
141		9.08	9.06	33.751	26.133	190.1	0.410	3.23	140.9	49.6	24.7	1.79	24.0	0.00	0.00	0.01	0.03	142	09				
150	ISL	8.97	D	8.96	33.814	D	26.199	184.0	0.426	3.16	D137.6	D 48.5	26.7	1.86	25.0	0.01	0.00	0.00	0.03	151			
170		8.75	8.73	33.952	26.343	170.7	0.462	2.53	110.5	38.7	31.3	2.03	27.2	0.00	0.00	0.00	0.02	171	08				
200		8.44	8.42	34.010	26.437	162.3	0.512	2.24	97.6	33.9	35.1	2.15	28.9	0.00	0.00	0.00	0.02	202	07				
230		8.06	8.03	34.057	26.532	153.7	0.560	1.93	84.1	29.0	39.9	2.28	30.6	0.00	0.00			232	06				
250	ISL	7.85	D	7.83	34.064	D	26.568	150.6	0.591	1.86	D 80.7	D 27.8	42.4	2.35	31.5	0.02	0.00			252			
270		7.72	7.69	34.081	26.601	147.8	0.620	1.70	74.2	25.4	44.9	2.42	32.4	0.00	0.00			272	05				
300	ISL	7.53	D	7.50	34.129	D	26.667	142.0	0.665	1.29	D 56.3	D 19.3	49.4	2.56	34.0	0.02	0.00			302			
319		7.32	7.29	34.143	26.708	138.3	0.690	1.17	51.1	17.3	52.3	2.65	35.0	0.00	0.00			322	04				
380		6.74	6.71	34.181	26.818	128.4	0.771	0.73	32.0	10.7	61.1	2.85	37.3	0.00	0.00			383	03				
400	ISL	6.62	D	6.58	34.195	D	26.846	126.0	0.799	0.65	D 28.3	D 9.5	64.3	2.90	38.0	0.01	0.00			403			
440		6.24	6.20	34.235	26.928	118.5	0.846	0.44	19.2	6.4	70.8	3.01	39.2	0.00	0.00			444	02				
500	ISL	5.99	D	5.95	34.265	D	26.984	113.9	0.919	0.35	D 15.2	D 5.0	75.2	3.09	40.1	0.02	0.00			504			
516		5.98	5.93	34.267	26.988	113.7	0.934	0.34	14.9	4.9	76.3	3.11	40.3	0.00	0.00			520	01				

A) PRIMARY PRODUCTIVITY SAMPLES WERE TAKEN FROM THESE LEVELS.

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

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD				
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXYGEN	OXY	SI03*	P04*	N03*	N02*	NH4*	CHL-A	PHAEAO	PRES SAMP			
m	DEG C	DEG C	THETA			ml/L	μmol/Kg	PCT	MM	MM	MM	MM	MM	ug/L	ug/L	db				
32	5.1 N	120 38.3 W	11/11/2016	1206	UTC	3805 m	010	04 kn									023			
0	18.38	18.38	33.365	23.929	396.9	0.000	5.45	237.8	101.3	1.2	0.28	0.0	0.02	0.00	0.19	0.04	0			
4	A	18.38	18.38	33.365	23.929	397.0	0.016	5.45	237.8	101.3	1.2	0.28	0.0	0.00	0.19	0.04	4	22		
10	ISL	18.36	D	18.35	33.368	D	23.937	396.4	0.040	5.42	236.4	100.8	1.2	0.28	0.0	0.02	0.00	0.19	0.04	10
11		18.26	18.26	33.368	23.961	394.2	0.044	5.42	236.5	100.5	1.1	0.28	0.0	0.00	0.19	0.04	11	20		
11	A	18.26	18.26	33.371	23.963	394.0	0.044										11	21		
20	ISL	17.71	D	17.70	33.401	D	24.121	379.3	0.079	5.51	240.2	101.1	1.3	0.31	0.0	0.02	0.00	0.29	0.09	20
21		17.72	17.71	33.409	24.125	378.9	0.082	5.52	240.9	101.3	1.3	0.31	0.0	0.00	0.30	0.10	21	19		
30	ISL	17.61	D	17.61	33.403	D	24.146	377.2	0.117	5.53	D241.3	D 101.4	1.1	0.30	0.0	0.02	0.00	0.42	0.17	30
31		17.42	17.42	33.401	24.190	373.1	0.120	5.52	241.0	100.8	1.1	0.30	0.0	0.00	0.44	0.18	31	18		
40		15.82	15.81	33.180	24.392	354.0	0.154	5.78	252.6	102.2	1.3	0.33	0.0	0.04	0.00	0.37	0.20	40	16	
50	ISL	13.57	D	13.56	33.086	D	24.800	315.3	0.188	5.52	D240.5	D 93.1	3.1	0.58	4.0	0.22	0.00	0.42	0.36	50
51		13.03	13.02	33.093	24.914	304.5	0.189	5.42	236.7	90.4	3.2	0.60	4.4	0.23	0.00	0.42	0.37	51	15	
61		12.14	12.13	33.191	25.161	281.1	0.219	4.81	210.2	78.9	7.2	0.93	10.2	0.04	0.00	0.21	0.25	61	14	

RV SALLY RIDE

## CALCOFI CRUISE 1611

STATION 90.0 80.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD		
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXYGEN	OXY	SI03*	P04*	N03*	N02*	NH4*	CHL-A	PHAE0	PRES	SAMP
m	deg c	deg c		theta		ml/L	μmol/Kg	PCT	#M	#M	#M	#M	#M	mg/L	μg/L		db	
31	45.1 N	121 18.9 W	11/11/2016	0547	UTC	3717 m	350	10 kn		1016.2 mb	17.1 C	16.1 C					022	
0	17.84	17.84	33.376	24.069	383.5	0.000	5.51	240.8	101.5	0.9	0.29	0.0	0.00	0.00	0.19	0.05	0	
2	17.84	17.84	33.376	24.069	383.5	0.008	5.51	240.8	101.5	0.9	0.29	0.0	0.00	0.00	0.19	0.05	2 20	
10	17.84	17.84	33.375	24.069	383.9	0.038	5.49	239.9	101.1	0.9	0.29	0.0	0.00	0.00	0.18	0.05	10 19	
20	17.82	17.81	33.375	24.075	383.7	0.077	5.49	239.6	101.0	0.8	0.28	0.0	0.00	0.00	0.22	0.06	20 18	
30	17.26	17.26	33.342	24.184	373.6	0.115	5.57	243.2	101.3	0.9	0.29	0.0	0.00	0.00	0.38	0.14	30 17	
41	16.93	16.92	33.348	24.268	366.0	0.155	5.58	243.8	100.9	1.2	0.33	0.1	0.03	0.00	0.69	0.31	41 16	
50	13.98	13.97	33.232	24.829	312.6	0.186	5.34	233.3	91.0	3.0	0.54	3.3	0.22	0.09	0.47	0.38	50 15	
60	13.31	13.30	33.196	24.939	302.4	0.217	5.03	219.5	84.4	5.1	0.76	7.1	0.07	0.00	0.28	0.29	60 14	
70	12.08	12.07	33.205	25.185	279.1	0.246	4.90	214.1	80.2	6.4	0.85	8.5	0.04	0.00	0.22	0.23	71 13	
75 ISL	11.90 D	11.89	33.273	D 25.271	271.1	0.261	4.61	D 200.7	D 75.2	8.2	0.97	10.5	0.03	0.00	0.17	0.18	76	
85	10.95	10.94	33.294	25.460	253.1	0.286	4.40	192.2	70.3	11.6	1.20	14.4	0.00	0.00	0.07	0.08	86 12	
100	10.18	10.17	33.417	25.689	231.6	0.322	4.08	178.0	64.1	15.5	1.40	17.7	0.00	0.00	0.04	0.05	101 11	
120	9.60	9.59	33.570	25.906	211.3	0.367	3.78	165.1	58.8	19.7	1.57	20.6	0.00	0.00	0.01	0.03	121 10	
125 ISL	9.42 D	9.41	33.612	D 25.969	205.4	0.379	3.76	D 163.7	D 58.2	20.5	1.60	21.1	0.01	0.00	0.01	0.03	126	
140	9.14	9.12	33.697	26.113	192.0	0.407	3.44	150.3	53.0	23.1	1.70	22.8	0.00	0.00	0.01	0.02	141 09	
150 ISL	9.01 D	9.00	33.794	D 26.177	186.1	0.429	3.14	D 136.8	D 48.3	25.4	1.79	24.1	0.01	0.00	0.00	0.03	151	
170	8.70	8.69	33.899	26.308	174.0	0.462	2.79	121.8	42.6	29.8	1.96	26.7	0.00	0.00	0.03	0.03	171 08	
200	8.52	8.50	33.983	26.403	165.6	0.513	2.39	104.2	36.3	34.2	2.11	28.6	0.00	0.00	0.00	0.02	202 07	
230	8.12	8.10	34.033	26.504	156.4	0.561	2.08	90.7	31.3	38.8	2.24	30.3	0.00	0.00			232 06	
250 ISL	7.98 D	7.96	34.060	D 26.546	152.8	0.596	1.89	D 82.1	D 28.3	41.9	2.36	31.5	0.01	0.00			252	
270	7.95	7.93	34.104	26.586	149.4	0.622	1.50	65.3	22.5	45.1	2.47	32.7	0.00	0.00			272 05	
300 ISL	7.33 D	7.30	34.112	D 26.682	140.4	0.670	1.29	D 56.0	D 19.1	49.7	2.58	34.2	0.01	0.00			302	
320	7.47	7.44	34.151	26.693	139.8	0.693	1.05	45.8	15.6	52.9	2.66	35.1	0.00	0.00			323 04	
381	6.95	6.91	34.206	26.810	129.4	0.775	0.67	29.4	9.9	60.8	2.87	37.2	0.00	0.00			384 03	
400 ISL	6.82 D	6.78	34.220	D 26.839	126.9	0.805	0.61	D 26.7	D 9.0	63.1	2.91	37.7	0.01	0.00			403	
440	6.49	6.45	34.223	26.886	122.8	0.850	0.50	21.9	7.3	68.0	2.99	38.8	0.00	0.00			444 02	
500 ISL	5.94 D	5.90	34.261	D 26.987	113.5	0.927	0.37	D 16.1	D 5.3	75.8	3.12	40.3	0.02	0.00			504	
516	5.91	5.86	34.264	26.994	113.1	0.939	0.34	14.8	4.8	77.9	3.16	40.7	0.00	0.08			520 01	

D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED 02;

RV SALLY RIDE

## CALCOFI CRUISE 1611

STATION 90.0 90.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD		
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXYGEN	OXY	SI03*	P04*	N03*	N02*	NH4*	CHL-A	PHAE0	PRES	SAMP
m	deg c	deg c		theta		ml/L	μmol/Kg	PCT	#M	#M	#M	#M	#M	mg/L	μg/L		db	
31	25.1 N	121 59.4 W	10/11/2016	2244	UTC	3917 m	350	02 09	1	1014.2 mb	19.0 C	17.0 C	18 m	7/8	CU	021		
0	18.04	18.04	33.282	23.949	394.9	0.000	5.47	238.9	101.0	1.0	0.26	0.0	0.02	0.09	0.19	0.04	0	
2	18.04	18.04	33.282	23.949	395.0	0.008	5.47	238.9	101.0	1.0	0.26	0.0	0.00	0.09	0.19	0.04	2 24	
10	18.01	18.00	33.288	23.962	394.1	0.040	5.48	239.2	101.1	1.0	0.26	0.0	0.00	0.20	0.04	10 22		
10	18.01	18.00	33.296	23.968	393.5	0.041											10 23	
20	17.63	17.63	33.292	24.056	385.5	0.079	5.53	241.4	101.3	1.0	0.27	0.0	0.00	0.00	0.27	0.06	20 21	
30	17.31	17.31	33.295	24.135	378.3	0.117	5.64	246.1	102.7	1.0	0.26	0.0	0.00	0.00	0.35	0.14	30 20	
40	17.15	17.14	33.474	24.313	361.7	0.154	5.59	244.0	101.5	1.1	0.30	0.0	0.00	0.00	0.52	0.24	40 19	
50	16.54	16.53	33.385	24.386	355.0	0.190	5.61	244.9	100.7	1.1	0.33	0.2	0.07	0.10	0.68	0.35	50 17	
50	16.54	16.53	33.401	24.399	353.9	0.190											50 18	
60	14.40	14.39	33.202	24.719	323.5	0.223	5.41	236.4	93.0	1.1	0.33	0.2	0.07	0.20	0.42	0.27	60 16	
71	12.17	12.16	35.090	25.077	289.4	0.257	5.13	224.2	84.1	5.1	0.74	7.4	0.07	0.00	0.19	0.24	72 15	
75 ISL	11.92 D	11.91	33.130	D 25.156	282.0	0.270	5.08	D 221.4	D 82.9	6.7	0.86	9.2	0.06	0.00	0.17	0.21	76	
86	11.22	11.21	33.364	D 25.468	252.5	0.300	4.09	D 178.1	D 65.8	11.2	1.19	14.3	0.04	0.00	0.10	0.13	87 14	
100 ISL	10.88 D	10.87	33.497	D 25.631	237.2	0.335	3.57	D 155.6	D 57.1	16.0	1.50	18.8	0.04	0.00	0.05	0.09	101	
101	10.57	10.56	33.496	25.685	232.1	0.335	3.52	153.8	55.9	16.3	1.52	19.1	0.04	0.00	0.04	0.09	102 13	
121	9.65	9.64	33.619	25.937	208.4	0.379	3.27	142.9	50.9	21.2	1.72	22.5	0.03	0.00	0.01	0.04	122 12	
125 ISL	9.60 D	9.59	33.640	D 25.962	206.1	0.390	3.24	D 141.2	D 50.4	22.0	1.74	22.9	0.03	0.00	0.01	0.04	126	
141	9.31	9.29	33.775	26.114	192.0	0.419	2.89	126.0	44.6	25.1	1.84	24.6	0.00	0.00	0.00	0.04	142 11	
150 ISL	9.23 D	9.21	33.810	D 26.156	188.2	0.439	2.85	D 123.9	D 43.9	26.8	1.91	25.5	0.02	0.00	0.00	0.04	151	
170	8.98	8.97	33.946	26.301	174.8	0.472	2.28	99.3	35.0	30.5	2.06	27.6	0.00	0.18	0.00	0.03	171 10	
200 ISL	8.53 D	8.51	34.010	D 26.424	163.6	0.527	2.20	D 95.6	D 33.4	34.0	2.13	28.8	0.02	0.14	0.00	0.03	202 09	
201	8.47	8.44	34.008	26.431	162.9	0.524	2.16	94.4	32.9	34.1	2.13	28.8	0.00	0.14	0.00	0.03	203 09	
230	8.12	8.09	34.041	26.511	155.7	0.571	2.00	87.1	30.1	38.8	2.25	30.6	0.00	0.00			232 08	
250 ISL	7.81 D	7.79	34.051	D 26.564	151.0	0.606	1.93	D 83.8	D 28.8	41.7	2.34	31.6	0.02	0.00			252	
272	7																	

RV SALLY RIDE

CALCOFI CRUISE 1611

STATION 90.0 100.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD			
31 5.5 N	122 39.1 W	10/11/2016	1704	UTC	4082 m	O10 14 kn	300 08 12	1	1018.3 mb	18.2 C	16.8 C	27 m	6/8	ST	020			
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXYGEN	OXY	SIO3*	P04*	N03*	N02*	NH4*	chl-a	phaeo	pres samp	
m	deg c	deg c	theta			ml/L	mol/Kg	pct		#M	#M	#M	#M	#M	mg/L	ng/L	db	
0	19.13	19.13	33.196	23.610	427.2	0.000	5.37	234.7	101.3	1.7	0.23	0.1	0.02	0.12	0.12	0.02	0	
2	A	19.13	19.13	33.196	23.611	427.3	0.009	5.37	234.7	101.3	1.7	0.23	0.1	0.00	0.12	0.12	0.02	2 24
10	19.13	19.13	33.201	23.615	427.2	0.043	5.36	d233.9	d101.0	1.7	0.22	0.1	0.00	0.00	0.12	0.02	10 22	
11	19.14	19.14	33.194	23.608	427.9	0.046											11 23	
18	A	19.13	19.13	33.195	23.611	427.9	0.077	5.33	232.9	100.5	1.8	0.22	0.1	0.00	0.00	0.12	0.02	18 21
20	ISL	19.13	D 19.13	33.194	D 23.610	428.1	0.082	5.36	d234.0	d101.1	1.7	0.22	0.1	0.02	0.00	0.12	0.02	20
25	A	19.14	19.13	33.196	23.612	428.1	0.107	5.38	234.7	101.3	1.6	0.23	0.1	0.00	0.00	0.13	0.02	25 20
30	ISL	19.13	D 19.13	33.193	D 23.611	428.4	0.125	5.36	d233.7	d101.0	1.6	0.22	0.0	0.02	0.00	0.12	0.02	30
34	A	19.13	19.13	33.194	23.612	428.5	0.145	5.33	232.6	100.4	1.6	0.22	0.0	0.00	0.00	0.12	0.02	34 19
44	19.13	19.12	33.193	D 23.612	428.8	0.185	5.36	d233.8	d101.0									44 18
50	ISL	19.13	D 19.13	33.193	D 23.612	429.1	0.212	5.36	d233.9	d101.0	1.6	0.22	0.1	0.02	0.00	0.14	0.03	50
58	18.96	18.95	33.193	23.656	425.2	0.248	5.34	230.0	100.2	1.6	0.22	0.1	0.00	0.00	0.14	0.03	58 17	
70	16.58	16.57	33.165	24.210	372.6	0.296	5.84	254.9	104.7	1.9	0.22	0.0	0.00	0.00	0.23	0.09	71 16	
75	ISL	16.00	D 15.99	33.243	D 24.402	354.4	0.312	5.84	d254.7	d103.7	2.0	0.23	0.0	0.02	0.00	0.23	0.13	76
83	A	15.63	15.62	33.260	24.499	345.3	0.342	5.76	251.4	101.4	2.2	0.24	0.0	0.00	0.00	0.23	0.20	84 15
94	A	14.61	14.60	33.217	24.688	327.5	0.379	5.65	246.7	97.4	2.6	0.28	0.1	0.03	0.00	0.23	0.20	95 13
100	ISL	14.39	D 14.37	33.218	D 24.736	323.1	0.397	5.59	d243.5	d95.9	2.9	0.31	0.2	0.07	0.00	0.22	0.21	101
102	14.30	14.29	33.215	24.752	321.6	0.405	5.55	242.3	95.1	3.0	0.32	0.2	0.09	0.00	0.21	0.21	103 12	
110	13.54	13.53	33.219	24.912	306.5	0.430	5.42	236.8	91.5	3.7	0.40	1.1	0.19	0.00	0.19	0.18	111 11	
125	12.72	12.70	33.277	25.121	286.8	0.475	5.04	220.1	83.6	6.1	0.67	5.9	0.04	0.00	0.12	0.17	126 10	
141	10.94	10.93	33.307	25.474	253.3	0.518	4.50	d195.9	d71.9	9.6	0.96	11.0	0.03	0.00	0.10	0.10	142 09	
150	ISL	10.59	D 10.57	33.365	D 25.581	243.1	0.540	4.54	d197.6	d72.0	12.4	1.13	13.6	0.02	0.00	0.07	0.08	151
170	9.58	9.56	33.537	25.886	214.3	0.586	3.90	170.3	60.6	18.6	1.51	19.6	0.00	0.00	0.02	0.03	171 08	
200	ISL	9.02	D 9.00	33.782	D 26.168	188.0	0.646	3.48	d151.3	d53.4	24.1	1.67	22.9	0.02	0.00	0.00	0.02	202
201	9.03	9.01	33.778	26.164	188.5	0.648	3.49	152.4	53.6	24.3	1.68	23.0	0.00	0.00	0.00	0.02	203 07	
230	8.49	8.47	33.908	26.350	171.2	0.701	3.27	142.8	49.7	28.7	1.79	24.9	0.00	0.00			232 06	
250	ISL	8.29	D 8.26	33.966	D 26.427	164.2	0.734	2.98	d129.6	d45.0	32.7	1.93	26.8	0.02	0.00			252
271	7.99	7.96	33.996	26.494	158.0	0.768	2.59	112.8	38.8	37.0	2.07	28.8	0.00	0.00			273 05	
300	ISL	7.67	D 7.64	34.019	D 26.560	152.1	0.814	2.21	d96.3	d33.0	41.0	2.20	30.5	0.02	0.00			302
320	7.56	7.53	34.031	26.585	150.0	0.844	2.05	89.2	30.4	43.7	2.29	31.7	0.00	0.00			323 04	
381	7.01	6.97	34.109	26.726	137.4	0.931	1.20	52.3	17.6	53.8	2.64	35.5	0.00	0.00			384 03	
400	ISL	6.88	D 6.85	34.119	D 26.751	135.2	0.958	1.13	d49.2	d16.6	56.9	2.70	36.3	0.02	0.00			403
441	6.46	6.42	34.146	26.830	128.0	1.011	0.81	35.3	11.7	63.5	2.83	37.9	0.00	0.00			445 02	
500	ISL	5.97	D 5.93	34.198	D 26.934	118.6	1.086	0.53	d23.1	d7.6	72.4	2.98	39.7	0.02	0.00			504
516	5.84	5.80	34.200	26.952	116.9	1.103	0.52	22.5	7.4	74.9	3.02	40.2	0.00	0.00			520 01	

A) PRIMARY PRODUCTIVITY SAMPLES WERE TAKEN FROM THESE LEVELS.

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

RV SALLY RIDE

CALCOFI CRUISE 1611

STATION 90.0 110.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD			
30 45.0 N	123 19.9 W	10/11/2016	0859	UTC	4039 m	340 18 kn	340 18 kn	1	1015.7 mb	18.8 C	17.8 C	019	6/8	ST	020			
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXYGEN	OXY	SIO3*	P04*	N03*	N02*	NH4*	chl-a	phaeo	pres samp	
m	deg c	deg c	theta			ml/L	mol/Kg	pct		#M	#M	#M	#M	#M	mg/L	ng/L	db	
0	19.48	19.48	33.313	23.612	427.1	0.000	5.30	231.2	100.5	1.7	0.22	0.0	0.02	0.00	0.10	0.02	0	
2	19.48	19.48	33.313	23.612	427.2	0.009	5.30	231.2	100.5	1.7	0.22	0.0	0.00	0.00	0.10	0.02	2 20	
10	19.48	19.48	33.312	23.612	427.5	0.043	5.29	230.9	100.4	1.7	0.21	0.0	0.00	0.00	0.10	0.02	10 19	
20	ISL	19.48	D 19.47	33.308	D 23.610	428.1	0.086	5.29	230.8	100.4	1.6	0.21	0.0	0.02	0.00	0.10	0.02	20
24	19.48	19.48	33.312	23.612	428.1	0.103	5.29	231.0	100.4	1.6	0.21	0.0	0.00	0.00	0.10	0.02	24 18	
30	ISL	19.51	D 19.50	33.325	D 23.616	428.0	0.129	5.29	230.8	100.5	1.6	0.21	0.0	0.02	0.00	0.11	0.03	30
41	19.56	19.55	33.353	23.626	427.5	0.175	5.29	230.9	100.5	1.7	0.21	0.0	0.00	0.00	0.11	0.03	41 17	
50	19.59	19.58	33.378	23.638	426.7	0.214	5.30	231.5	100.9	1.7	0.21	0.0	0.00	0.00	0.13	0.03	50 16	
63	19.37	19.36	33.429	23.733	418.1	0.269	5.35	233.5	101.4	1.7	0.21	0.0	0.03	0.00	0.16	0.05	63 15	
75	ISL	17.15	D 17.13	33.271	D 24.160	377.6	0.319	5.81	d253.2	d105.4	1.9	0.21	0.0	0.02	0.00	0.19	0.05	76
77	17.21	17.19	33.274	24.148	378.8	0.324	5.81	253.5	105.5	1.9	0.21	0.0	0.00	0.00	0.19	0.05	78 14	
87	16.33	16.32	33.279	24.355	359.3	0.361	5.76	251.6	102.9	2.0	0.21	0.0	0.00	0.00	0.23	0.11	88 13	
100	ISL	15.54	D 15.53	33.296	D 24.547	341.3	0.409	5.70	d248.4	d100.2	2.3	0.24	0.0	0.02	0.00	0.22	0.19	101
101	15.50	15.48	33.297	24.558	340.3	0.410	5.67	243.7	99.6	2.3	0.24	0.0	0.00	0.00	0.21	0.19	102 12	
112	14.85	14.83	33.310	24.711	326.0	0.446	5.58	243.7	96.8	2.7	0.27	0.0	0.03	0.00	0.22	0.23	113 11	
125	13.60	13.58	33.318	24.977	300.8	0.487	5.30	231.2	89.5	4.0	0.43	1.6	0.22	0.00				

RV SALLY RIDE

CALCOFI CRUISE 1611

STATION 90.0 120.0

DEPTH	TEMP		POTTEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXYGEN	OXY	SI03*	PO4*	N03*	N02*	NH4*	CHL-A	PHAEAO	PRES	SAMP
	m	DEG C	DEG C	THETA	ml/L	fmol/Kg	PCT	#M	#M	#M	#M	#M	#M	#M	#g/L	#g/L	db		
0	19.20	19.20	33.134	23.547	433.3	0.000	5.38	234.9	101.5	1.6	0.25	0.1	0.02	1.05	0.10	0.02	0		
2	19.20	19.20	33.134	23.547	433.3	0.009	5.38	234.9	101.5	1.6	0.25	0.1	0.00	1.05	0.10	0.02	2	22	
10 ISL	19.20	D	19.20	33.128	D	23.542	434.1	0.044	5.34	233.1	100.8	1.7	0.26	0.1	0.02	0.21	0.10	0.02	10
10	19.20	19.20	33.129	23.543	434.1	0.045												10	
11	19.20	19.20	33.130	23.544	434.0	0.048	5.34	233.1	100.7	1.7	0.26	0.1	0.00	0.11	0.11	0.02	11		
20 ISL	19.21	D	19.20	33.128	D	23.542	434.6	0.087	5.34	233.0	100.7	1.7	0.25	0.1	0.02	0.00	0.10	0.02	20
26	19.21	19.20	33.130	23.544	434.6	0.113	5.34	233.2	100.7	1.6	0.24	0.1	0.00	0.00	0.10	0.02	26		
30 ISL	19.21	D	19.20	33.130	D	23.544	434.8	0.131	5.34	233.0	100.7	1.6	0.24	0.1	0.02	0.00	0.10	0.02	30
41	19.21	19.21	33.162	23.568	433.0	0.178	5.34	233.2	100.8	1.6	0.23	0.0	0.00	0.00	0.11	0.02	41		
50	19.22	19.21	33.156	23.562	433.9	0.217	5.35	233.5	100.9	1.6	0.24	0.0	0.00	0.00	0.13	0.02	50		
63	18.46	18.44	33.120	23.727	418.5	0.272	5.52	240.9	102.6	1.5	0.24	0.0	0.00	0.00	0.19	0.05	63		
75 ISL	16.80	D	16.79	33.147	D	24.146	378.9	0.323	5.77	251.6	103.9	1.7	0.24	0.0	0.01	0.00	0.24	0.10	76
76	16.41	16.40	33.149	24.237	370.2	0.324	5.79	252.9	103.5	1.7	0.24	0.0	0.00	0.00	0.24	0.11	77		
87	15.89	15.88	33.146	24.353	359.4	0.364	5.83	254.6	103.1	1.8	0.27	0.0	0.00	0.00	0.27	0.18	88		
87	15.89	15.88	33.152	24.358	359.8	0.365											88		
100	14.57	14.55	33.134	24.633	332.9	0.409	5.66	247.0	97.4	2.4	0.37	0.6	0.16	0.00	0.27	0.25	101		
112	13.36	13.34	33.187	24.925	305.3	0.447	5.37	234.3	90.2	3.9	0.51	2.9	0.09	0.00	0.20	0.21	113		
124	12.52	12.51	33.224	25.118	287.1	0.483	5.01	218.6	82.7	6.3	0.75	6.9	0.03	0.00	0.14	0.12	125		
125 ISL	12.21	D	12.19	33.255	D	25.200	279.2	0.490	5.00	D217.8	D82.1	6.5	0.76	7.2	0.03	0.00	0.14	0.12	126
140	11.67	11.65	33.265	25.310	269.0	0.527	4.74	206.9	76.9	9.0	0.97	10.6	0.03	0.00	0.09	0.09	141		
150 ISL	11.44	D	11.43	33.380	D	25.442	256.7	0.557	4.74	D206.6	D76.7	10.8	1.06	12.2	0.02	0.00	0.07	0.08	151
170	10.05	10.03	33.454	25.744	228.0	0.602	4.46	194.9	70.0	14.2	1.23	15.5	0.00	0.00	0.03	0.04	171		
200	9.07	9.05	33.735	26.124	192.2	0.665	3.72	162.2	57.1	22.7	1.62	21.7	0.00	0.00	0.00	0.02	202		
231	8.58	8.56	33.921	26.347	171.5	0.722	3.06	133.7	46.6	29.9	1.86	25.7	0.00	0.00			233		
250 ISL	8.31	D	8.28	33.962	D	26.421	164.8	0.757	3.00	D130.4	D45.3	33.3	1.98	27.2	0.02	0.00		252	
270	8.02	8.00	33.998	26.492	158.3	0.786	2.50	109.3	37.7	36.9	2.10	28.9	0.00	0.00		272			
300 ISL	7.58	D	7.55	34.011	D	26.566	151.5	0.837	2.32	D101.0	D34.6	42.8	2.27	31.3	0.02	0.00		302	
320	7.29	7.26	34.039	26.630	145.6	0.862	1.87	81.8	27.7	46.7	2.38	32.9	0.00	0.00		323			
380	6.70	6.66	34.084	26.747	135.0	0.946	1.22	53.4	17.9	58.0	2.68	36.7	0.00	0.00		383			
400 ISL	6.52	D	6.48	34.102	D	26.786	131.6	0.978	1.05	D45.8	D15.3	60.8	2.75	37.4	0.02	0.00		403	
440	6.30	6.26	34.149	26.852	125.8	1.024	0.74	32.3	10.7	66.5	2.88	38.8	0.00	0.00		444			
500 ISL	5.91	D	5.87	34.197	D	26.940	117.8	1.104	0.51	D22.1	D7.3	74.5	3.03	40.3	0.02	0.00		504	
516	5.86	5.82	34.220	26.965	115.7	1.116	0.42	18.2	6.0	76.7	3.07	40.7	0.00	0.00		520			
																	01		

D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED 02;

RV SALLY RIDE

CALCOFI CRUISE 1611

STATION 91.7 26.4

DEPTH	TEMP		POTTEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXYGEN	OXY	SI03*	PO4*	N03*	N02*	NH4*	CHL-A	PHAEAO	PRES	SAMP
	m	DEG C	DEG C	THETA	ml/L	fmol/Kg	PCT	#M	#M	#M	#M	#M	#M	#M	#g/L	#g/L	db		
0	19.18	19.18	33.414	23.766	412.4	0.000	5.65	246.7	106.7	1.3	0.19	0.0	0.02	0.15	0.45	0.09	0		
2	19.18	19.18	33.414	23.766	412.4	0.008	5.65	246.7	106.7	1.3	0.19	0.0	0.00	0.15	0.45	0.09	2		
5	19.13	19.13	33.410	23.774	411.8	0.021	5.68	248.1	107.2						0.48	0.09	5		
10 ISL	18.73	18.73	33.402	23.871	402.7	0.041	5.72	249.8	107.1	1.5	0.22	0.0	0.00	0.07	0.64	0.15	10		
16	17.96	17.96	33.393	24.053	385.6	0.065	5.71	249.2	105.3	1.7	0.27	0.1	0.03	0.12	0.82	0.25	16		

D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED 02;

RV SALLY RIDE

CALCOFI CRUISE 1611

STATION 93.3 26.7

DEPTH	TEMP		POTTEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXYGEN	OXY	SI03*	PO4*	N03*	N02*	NH4*	CHL-A	PHAEAO	PRES	SAMP
	m	DEG C	DEG C	THETA	ml/L	fmol/Kg	PCT	#M	#M	#M	#M	#M	#M	#M	#g/L	#g/L	db		
0	19.08	19.08	33.417	23.793	409.8	0.000	5.68	247.9	107.0	2.0	0.19	0.2	0.03	0.04	0.35	0.06	0		
2 A	19.08	19.08	33.417	23.793	409.9	0.008	5.68	247.9	107.0	2.0	0.19	0.2	0.03	0.00	0.35	0.06	2		
2	19.08	19.08	33.414	23.791	410.1	0.007											2		
5	18.98	18.98	33.414	23.815	407.9	0.021	5.66	247.2	106.5	1.7	0.19	0.1	0.03	0.00	0.39	0.06	5		
10 ISL	18.86	D	18.85	33.409	D	23.844	405.3	0.037	5.73	D249.9	D107.6	1.6	0.19	0.1	0.03	0.00	0.43	0.08	
12	18.85	18.85	33.408	23.844	405.4	0.051											12		
13 A	18.57	18.57	33.408	23.916	398.6	0.053	5.73	250.0	106.9	1.5	0.19	0.1	0.03	0.06	0.45	0.09	13		
17 A	16.91	16.91	33.358	24.278	364.2	0.068	6.02	263.0	108.9	2.3	0.25	0.0	0.03	0.00	1.59	0.48	17		
20 ISL	15.31	D	15.31	33.320	D	24.611	332.5	0.075	6.18	D269.5	D108.3	2.8	0.34	0.6	0.06	0.00			

RV SALLY RIDE

CALCOFI CRUISE 1611

STATION 93.3 28.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD		
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	THETA	SV	DYN HT	OXYGEN	OXYGEN	OXY	NH4*	CHL-A	PHAEAO	PRES	SAMP			
m	DEG C	DEG C				mL/L	fmol/Kg	PCT	#M	#M	#M	#M	#g/L	#g/L	db			
0	19.78	19.78	33.448	23.638	424.5	0.000	5.44	237.4	103.9	1.1	0.20	0.0	0.02	0.07	0.22	0.03	0	
2	19.78	19.77	33.448	23.639	424.6	0.009	5.44	237.4	103.9	1.1	0.20	0.0	0.00	0.07	0.22	0.03	2 20	
10	19.74	19.73	33.439	23.642	424.6	0.043	5.46	238.6	104.3	1.3	0.20	0.1	0.00	0.00	0.23	0.05	10 19	
20	16.79	16.79	33.291	24.254	366.5	0.082	5.85	255.2	105.4	2.4	0.31	0.1	0.00	0.15	0.45	0.20	20 18	
30	13.99	13.98	33.208	24.808	314.0	0.116	5.29	231.0	90.1	4.4	0.65	4.3	0.25	0.16	0.48	0.35	30 17	
40	12.90	12.89	33.264	25.071	289.2	0.146	4.85	213.1	81.3	6.7	0.83	7.4	0.13	0.16	0.32	0.28	40 16	
50	ISL	12.21	D 12.20	33.304	D 25.235	273.8	0.172	4.61	D 201.0	D 75.8	8.8	0.97	10.3	0.07	0.00	0.18	0.21	50
51	12.03	12.02	33.305	25.271	270.4	0.177	4.58	199.8	74.9	9.0	0.98	10.6	0.06	0.00	0.17	0.20	51 15	
60	11.26	11.25	33.377	25.468	251.8	0.201	4.21	184.0	67.8	12.3	1.22	14.2	0.04	0.06	0.11	0.16	60 14	
71	11.03	11.02	33.435	25.555	243.8	0.228	3.98	173.8	63.8	13.9	1.32	15.7	0.03	0.10	0.08	0.14	72 13	
75	ISL	11.00	D 10.99	33.496	D 25.609	238.8	0.235	3.75	D 163.2	D 60.0	14.9	1.37	16.4	0.03	0.00	0.07	0.13	76
86	10.82	10.80	33.566	25.696	230.7	0.264	3.38	147.6	54.0	17.8	1.52	18.3	0.03	0.00	0.04	0.10	87 12	
100	ISL	10.44	D 10.43	33.606	D 25.792	221.9	0.293	3.34	D 145.2	D 52.8	19.1	1.59	19.7	0.02	0.00	0.03	0.07	101
101	10.28	10.27	33.605	25.820	219.2	0.298	3.30	144.0	52.1	19.2	1.59	19.8	0.00	0.00	0.03	0.07	102 11	
120	10.15	10.14	33.714	25.927	209.5	0.338	2.99	130.5	47.1	21.9	1.73	21.8	0.00	0.00	0.02	0.05	121 10	
125	ISL	10.13	D 10.11	33.725	D 25.941	208.3	0.346	3.00	D 130.6	D 47.2	22.4	1.76	22.1	0.02	0.00	0.02	0.05	126
140	9.94	9.93	33.800	26.031	200.1	0.379	2.76	120.3	43.2	24.2	1.83	23.1	0.03	0.12	0.01	0.05	141 09	
150	ISL	9.85	D 9.83	33.856	D 26.090	194.7	0.397	2.64	D 114.9	D 41.3	25.4	1.87	23.8	0.02	0.00	0.01	0.05	151
170	9.55	9.54	33.938	26.204	184.2	0.437	2.44	106.7	38.0	27.9	1.96	25.2	0.00	0.00	0.01	0.04	171 08	
200	9.24	9.22	34.034	26.331	172.7	0.491	2.17	94.6	33.5	31.4	2.08	26.9	0.00	0.00	0.00	0.04	202 07	
230	8.99	8.97	34.073	26.401	166.6	0.541	2.02	88.2	31.1	34.0	2.15	27.9	0.00	0.00			232 06	
250	ISL	8.75	D 8.72	34.092	D 26.456	161.7	0.573	2.05	D 89.0	D 31.3	36.1	2.23	28.8	0.02	0.00			252
270	8.75	8.72	34.140	26.493	158.6	0.606	1.65	72.1	25.3	38.2	2.31	29.7	0.00	0.00			272 05	
300	ISL	8.41	D 8.38	34.164	D 26.566	152.2	0.653	1.45	D 63.2	D 22.1	41.4	2.42	30.7	0.02	0.00			302
321	8.34	8.30	34.192	26.599	149.4	0.684	1.27	55.5	19.3	43.6	2.50	31.4	0.00	0.00			324 04	
381	7.50	7.46	34.198	26.728	137.7	0.770	0.96	41.9	14.3	52.6	2.66	34.5	0.00	0.00			384 03	
400	ISL	7.34	D 7.30	34.212	D 26.762	134.6	0.798	0.84	D 36.5	D 12.4	55.4	2.73	35.3	0.02	0.00			403
441	6.98	6.94	34.246	26.839	127.8	0.850	0.58	D 25.0	D 8.5	61.4	2.88	37.0	0.00	0.00			445 02	
500	ISL	6.45	D 6.41	34.286	D 26.942	118.4	0.925	0.39	D 17.1	D 5.7	71.7	3.03	38.7	0.02	0.00			504
516	6.22	6.17	34.301	26.984	114.4	0.941	0.31	13.5	4.5	74.4	3.07	39.2	0.00	0.00			520 01	

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

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD		
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	THETA	SV	DYN HT	OXYGEN	OXYGEN	OXY	NH4*	CHL-A	PHAEAO	PRES	SAMP			
m	DEG C	DEG C				mL/L	fmol/Kg	PCT	#M	#M	#M	#M	#g/L	#g/L	db			
0	19.50	19.50	33.470	23.725	416.2	0.000	5.54	241.8	105.3	1.6	0.20	0.0	0.02	0.07	0.31	0.06	0	
2	19.50	19.50	33.470	23.726	416.3	0.008	5.54	241.8	105.3	1.6	0.20	0.0	0.00	0.07	0.31	0.06	2 22	
10	ISL	19.44	D 19.44	33.460	D 23.735	415.8	0.038	5.59	D 244.0	D 106.2	1.6	0.19	0.0	0.02	0.00	0.37	0.06	10
11	19.32	19.32	33.455	23.761	413.3	0.046	5.68	248.1	107.6	1.6	0.19	0.0	0.00	0.00	0.38	0.06	11 21	
20	ISL	17.94	D 17.94	33.412	D 24.073	383.9	0.078	6.36	D 277.1	D 117.2	2.2	0.23	0.0	0.02	0.00	1.88	0.19	20
21	17.48	17.47	33.376	24.157	375.9	0.086	6.06	D 262.1	109.7	2.3	0.23	0.0	0.00	0.00	2.05	0.21	21 20	
30	ISL	14.41	D 14.41	33.276	D 24.772	317.5	0.113	5.43	D 236.6	D 93.3	4.8	0.50	0.4	0.08	0.00	1.50	0.37	30
31	14.23	14.23	33.273	24.807	314.2	0.120	5.27	230.3	90.3	5.1	0.53	0.4	0.09	0.07	1.44	0.39	31 19	
41	13.10	13.09	33.293	25.053	290.9	0.150	4.71	205.4	78.7	7.4	0.82	6.2	0.12	0.00	0.58	0.40	41 18	
50	ISL	12.20	D 12.19	33.360	D 25.280	269.5	0.173	4.35	D 189.5	D 71.5	11.0	1.09	11.5	0.06	0.00	0.19	0.23	50
51	12.11	12.11	33.366	25.302	267.5	0.178	4.20	183.3	68.8	11.4	1.12	12.1	0.06	0.00	0.15	0.21	51 16	
51	12.11	12.11	33.377	25.311	266.6	0.178											51 17	
60	11.98	11.97	33.377	25.337	264.4	0.202	4.16	181.7	68.0	11.7	1.14	12.5	0.05	0.10	0.08	0.16	60 15	
70	11.46	11.45	33.427	25.471	251.8	0.228	3.90	170.2	63.0	13.7	1.28	14.8	0.05	0.00	0.08	0.15	71 14	
75	ISL	11.32	D 11.31	33.445	D 25.512	248.0	0.238	3.88	D 169.1	D 62.6	14.4	1.32	15.4	0.04	0.00	0.07	0.14	76
86	10.97	10.96	33.492	25.610	239.8	0.267	3.65	159.4	58.5	15.8	1.41	16.7	0.00	0.27	0.05	0.12	87 13	
100	ISL	10.73	D 10.71	33.605	D 25.743	226.7	0.298	3.25	D 141.6	D 51.8	18.7	1.57	19.1	0.02	0.08	0.03	0.08	101 12
101	10.73	10.71	33.606	25.743	226.6	0.301											101 12	
101	10.69	10.67	33.609	25.753	225.7	0.302	3.22	140.7	51.3	18.9	1.58	19.2	0.00	0.07	0.03	0.08	102 11	
121	10.52	10.51	33.655	25.817	220.1	0.347	3.10	135.4	49.2	20.0	1.64	20.1	0.00	0.08	0.02	0.06	122 10	
125	ISL	10.48	D 10.47	33.659	D 25.828	219.1	0.354	3.10	D 135.0	D 49.2	20.3	1.65	20.4	0.02	0.08	0.02	0.06	126
141	10.21	10.20	33.698	25.905	212.1	0.390	3.03	132.4	47.8	21.5	1.70	21.4	0.00	0.10	0.02	0.06	142 09	
150	ISL	10.33	D 10.32	33.828	D 25.986	204.7	0.407	2.71	D 117.8	D 42.8	22.9	1.76	22.2	0.02	0.00	0.02	0.05	151
170	9.73	9.71	33.869	26.120	192.2	0.449	2.60	113.4	40.6	26.0	1.90	24.1	0.03	0.00	0.01	0.03	171 08	
200	9.55	9.53	33.999	26.253	180.3	0.505	2.23											

RV SALLY RIDE

## CALCOFI CRUISE 1611

STATION 93.3 35.0

LATITUDE 32 40.8 N	LONGITUDE 117 52.3 W	DAY/MO/YR 07/11/2016	CAST 1133	TIME UTC	BOTTOM 626 m	WIND SPEED 350 04 kn	WAVES	WEA	BAROMETER 1015.5 mb	DRY 18.0 C	WET 17.0 C	SECCHI	CLD AMT	TYPE	ORD	STATION	93.3	35.0	006	
																PRES	SAMP			
DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SV	DYN HT	OXYGEN ml/L	OXYGEN #mol/Kg	OXY PCT	SIO3*	P04*	N03*	N02*	NH4*	CHL-A #g/L	PHAE0 #g/L	PRES db			
0	19.07	19.07	33.428	23.804	408.7	0.000	5.44	237.5	102.5	1.1	0.23	0.0	0.02	0.00	0.22	0.03	0			
3	19.07	19.07	33.428	23.804	408.8	0.012	5.44	237.5	102.5	1.1	0.23	0.0	0.00	0.00	0.22	0.03	3	20		
10	19.04	19.04	33.421	23.806	408.9	0.041	5.42	236.8	102.2	1.6	0.23	0.0	0.00	0.10	0.22	0.03	10	19		
20	18.41	18.41	33.372	23.927	397.8	0.081	5.57	243.1	103.6	1.2	0.25	0.0	0.00	0.00	0.27	0.05	20	18		
30	16.70	16.69	33.326	24.304	362.2	0.119	5.74	250.7	103.3	1.4	0.29	0.0	0.00	0.00	0.55	0.24	30	17		
40	15.13	15.12	33.188	24.550	338.9	0.154	5.64	246.4	98.3	2.1	0.39	1.0	0.14	0.06	0.72	0.43	40	16		
50	13.59	13.58	33.142	24.839	311.6	0.187	5.36	234.2	90.5	3.8	0.58	4.2	0.24	0.09	0.43	0.37	50	15		
61	12.73	12.72	33.203	25.058	291.0	0.220	4.97	217.1	82.5	6.3	0.80	7.8	0.11	0.00	0.24	0.29	61	14		
71	11.92	11.91	33.316	25.301	268.1	0.248	4.41	192.7	72.0	9.7	1.07	12.4	0.06	0.00	0.19	0.18	72	13		
75	ISL 11.72	D 11.71	33.341	D 25.357	262.8	0.254	4.29	D187.0	D 69.8	10.6	1.13	13.3	0.06	0.00	0.17	0.17	76			
86	10.99	10.98	33.451	D 25.576	242.1	0.282	3.79	D165.1	D 60.7	13.1	1.29	15.9	0.05	0.00	0.11	0.13	87	12		
100	ISL 10.44	D 10.43	33.538	D 25.740	226.9	0.315	3.47	D151.0	D 54.9	17.3	1.51	19.6	0.03	0.00	0.07	0.07	101			
101	10.35	10.34	33.531	25.750	225.9	0.322	3.49	152.4	55.2	17.7	1.53	19.8	0.03	0.00	0.06	0.07	102	11		
120	9.73	9.71	33.676	25.969	205.4	0.363	3.11	135.8	48.5	22.3	1.72	22.8	0.00	0.00	0.01	0.05	121	10		
125	ISL 9.71	D 9.69	33.701	D 25.992	203.4	0.369	3.06	D133.2	D 47.7	22.9	1.74	23.1	0.02	0.00	0.01	0.05	126			
141	9.27	9.25	33.830	D 26.164	187.2	0.400	2.98	129.9	46.0	24.7	1.80	24.1	0.03	0.00	0.01	0.04	142	09		
150	ISL 9.25	D 9.23	33.840	D 26.176	186.3	0.417	2.84	D123.4	D 43.8	25.9	1.83	24.6	0.03	0.00	0.01	0.04	151			
171	9.00	8.98	33.919	26.279	176.9	0.459	2.66	D115.7	D 40.8	28.6	1.90	25.6	0.03	0.00	0.00	0.03	172	08		
200	ISL 8.93	D 8.90	34.105	D 26.436	162.6	0.505	1.89	D 82.3	D 29.0	35.0	2.19	28.2	0.02	0.00	0.01	0.03	202			
201	8.93	8.91	34.102	D 26.433	163.0	0.510	1.91	83.4	29.4	35.3	2.20	28.3	0.00	0.00	0.01	0.03	203	07		
230	8.76	8.73	34.166	26.511	156.1	0.556	1.53	66.8	23.5	38.9	2.34	29.7	0.00	0.00			232	06		
250	ISL 8.58	D 8.56	34.181	D 26.551	152.7	0.585	1.47	D 63.8	D 22.4	41.1	2.39	30.5	0.02	0.00			252			
271	8.21	8.18	34.190	26.615	146.8	0.619	1.32	57.4	19.9	43.3	2.44	31.4	0.00	0.00			273	05		
300	ISL 7.97	D 7.94	34.215	D 26.671	141.9	0.658	1.04	D 45.2	D 15.6	48.5	2.58	33.0	0.02	0.00			302			
320	7.65	7.62	34.225	26.726	136.8	0.689	0.87	38.0	13.0	52.1	2.67	34.2	0.00	0.00			323	04		
381	7.02	6.99	34.236	26.824	128.2	0.769	0.65	28.2	9.5	60.1	2.82	36.6	0.00	0.00			384	03		
400	ISL 6.96	D 6.92	34.248	D 26.842	126.7	0.792	0.58	D 25.2	D 8.5	62.5	2.86	37.1	0.02	0.00			403			
442	6.55	6.51	34.263	26.910	120.6	0.846	0.45	19.7	6.6	67.7	2.95	38.3	0.00	0.00			446	02		
500	ISL 6.29	D 6.24	34.285	D 26.962	116.3	0.914	0.37	D 16.2	D 5.4	71.6	3.01	39.0	0.02	0.00			504			
516	6.28	6.23	34.287	26.966	116.2	0.933	0.35	15.4	5.1	72.6	3.03	39.3	0.00	0.00			520	01		

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

RV SALLY RIDE

## CALCOFI CRUISE 1611

STATION 93.3 40.0

LATITUDE 32 30.7 N	LONGITUDE 118 12.8 W	DAY/MO/YR 07/11/2016	CAST 1551	TIME UTC	BOTTOM 1661 m	WIND SPEED 240 02 kn	WAVES	WEA	BAROMETER 1019.2 mb	DRY 19.5 C	WET 18.0 C	SECCHI	CLD AMT	TYPE	ORD	STATION	93.3	40.0	007		
																PRES	SAMP				
DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SV	DYN HT	OXYGEN ml/L	OXYGEN #mol/Kg	OXY PCT	SIO3*	P04*	N03*	N02*	NH4*	CHL-A #g/L	PHAE0 #g/L	PRES db				
0	19.16	19.16	33.488	23.827	406.6	0.000	5.43	237.0	102.5	2.5	0.27	0.4	0.03	0.19	0.30	0.03	0				
3	19.16	19.16	33.488	23.827	406.7	0.012	5.43	237.0	102.5	2.5	0.27	0.4	0.03	0.19	0.30	0.03	3	21			
10	ISL 19.12	D 19.11	33.497	D 23.846	405.2	0.035	5.47	D238.4	D 103.1	2.4	0.24	0.1	0.02	0.00	0.26	0.03	10				
11	19.12	19.12	33.499	23.847	405.1	0.045	5.45	237.9	102.8	2.4	0.23	0.0	0.00	0.00	0.25	0.03	11	19			
11	19.12	19.12	33.498	23.846	405.2	0.046												11	20		
20	ISL 18.43	D 18.43	33.453	D 23.984	392.3	0.075	5.76	D251.2	D 107.3	1.9	0.25	0.0	0.02	0.00	0.46	0.03	20				
21	18.49	18.49	33.452	23.969	393.9	0.085	5.85	255.5	109.1	1.9	0.25	0.0	0.00	0.00	0.48	0.03	21	18			
30	ISL 16.00	D 16.00	33.339	D 24.473	346.0	0.113	5.96	D260.0	D 105.9	3.6	0.35	0.0	0.02	0.00	1.58	0.10	30				
31	15.85	15.85	33.338	24.505	343.0	0.121	5.94	259.6	105.2	3.8	0.36	0.0	0.00	0.14	1.70	0.11	31	17			
41	13.39	13.38	33.349	25.039	292.3	0.153	5.22	228.0	87.9	6.3	0.64	1.9	0.17	0.00	1.17	0.31	41	16			
50	ISL 12.57	D 12.56	33.397	D 25.239	273.4	0.174	4.55	D198.0	D 75.2	9.6	1.00	10.2	0.30	0.00	0.44	0.26	50				
51	12.27	12.26	33.397	25.297	268.0	0.181	4.55	198.8	74.9	10.0	1.04	11.1	0.31	0.23	0.36	0.26	51	15			
61	10.49	10.49	33.487	25.690	230.7	0.206	3.73	163.0	59.1	15.6	1.42	17.8	0.14	0.00	0.20	0.21	61	14			
70	10.30	10.30	33.467	25.707	229.2	0.227	3.96	173.0	62.5	16.7	1.47	18.8	0.04	0.06	0.04	0.09	71	13			
75	ISL 10.11	D 10.10	33.507	D 25.772	223.1	0.234	3.95	D172.1	D 62.1	17.5	1.50	19.3	0.04	0.00	0.03	0.08	76				
86	9.91	9.90	33.5																		

RV SALLY RIDE

## CALCOFI CRUISE 1611

STATION 93.3 45.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD		
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SV	DYN HT	OXYGEN	OXYGEN	OXY	SI03*	P04*	N03*	N02*	NH4*	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C	THETA			ml/L	µmol/Kg	PCT	µM	µM	µM	µM	µM	µM	µg/L	µg/L	db	
32	20.8 N	118 33.3 W	07/11/2016	2046	UTC	1351 m	300	06 kn	290 03 09	1	1016.7 mb	18.2 C	16.4 C	26 m	7/8	CU	008	
0	19.40	19.40	33.509	23.782	410.9	0.000	5.39	235.2	102.2	2.2	0.25	0.2	0.02	0.20	0.25	0.02	0	
2 A	19.40	19.40	33.509	23.782	410.9	0.008	5.39	235.2	102.2	2.2	0.25	0.2	0.00	0.20	0.25	0.02	2 24	
9	19.22	19.22	33.500	23.822	407.4	0.037	5.39	235.5	102.0	2.0	0.25	0.0	0.04	0.00	0.26	0.02	9 21	
10 ISL	19.21 D	19.21	33.501	23.825	407.2	0.037	5.40	235.5	102.1	2.0	0.25	0.0	0.04	0.00	0.26	0.02	10	
10	19.21	19.21	33.500	23.825	407.2	0.039											10 23	
10	19.21	19.21	33.501	23.825	407.2	0.040											10 22	
17 A	19.17	19.16	33.513	23.845	405.5	0.069	5.42	236.8	102.4	2.1	0.25	0.0	0.05	0.10	0.28	0.03	17	
20 ISL	19.13 D	19.12	33.507	23.851	405.0	0.078	5.43	236.8	102.5	2.0	0.26	0.0	0.03	0.14	0.28	0.05	20	
24 A	18.87	18.87	33.506	23.915	399.1	0.098	5.44	237.4	102.1	2.0	0.27	0.0	0.00	0.19	0.29	0.06	24 19	
30 ISL	16.92 D	16.92	33.389	24.300	362.5	0.117	5.84	D254.7	D105.6	2.4	0.33	0.1	0.02	0.10	0.30	0.06	30	
33	16.05	16.04	33.313	24.444	348.9	0.131	5.80	253.3	103.1	2.7	0.36	0.1	0.00	0.06	0.30	0.07	33 17	
33	16.05	16.04	33.317	24.447	348.6	0.133											33 18	
43 A	13.92	13.91	33.281	24.880	307.6	0.164	5.17	225.9	88.0	5.5	0.65	4.1	0.27	0.17	0.81	0.18	43 16	
50 ISL	12.09 D	12.08	33.239	25.208	276.3	0.182	4.70	D204.9	D 77.0	7.9	0.87	8.4	0.14	0.00	0.86	0.40	50	
55	11.84	11.83	33.277	25.284	269.3	0.198	4.60	200.6	74.9	9.5	1.02	11.5	0.05	0.00	0.89	0.56	55 15	
67	11.29	11.28	33.356	25.447	254.0	0.230	4.23	184.6	68.1	12.1	1.21	14.5	0.04	0.00	0.29	0.22	68 14	
75 ISL	10.77 D	10.76	33.441	25.606	239.0	0.247	3.98	D173.3	D 63.4	15.1	1.38	16.6	0.03	0.00	0.22	0.20	76	
80 A	10.79	10.78	33.513	25.659	234.1	0.261	3.52	153.5	56.1	16.9	1.49	18.0	0.00	0.16	0.17	0.18	81 13	
89 A	10.31	10.30	33.508	25.738	226.8	0.282	3.65	159.1	57.5	17.2	1.51	19.0	0.03	0.00	0.06	0.07	90 12	
100 ISL	10.14 D	10.12	33.617	25.854	216.0	0.304	3.33	D145.0	D 52.4	19.9	1.63	20.6	0.02	0.00	0.03	0.05	101	
104	10.10	10.09	33.654	25.889	212.7	0.315	3.18	138.6	49.9	20.8	1.68	21.2	0.00	0.00	0.02	0.04	105 11	
121	9.54	9.53	33.770	26.072	195.6	0.349	3.01	131.3	46.8	23.6	1.77	23.0	0.00	0.00	0.01	0.03	122 10	
125 ISL	9.48 D	9.46	33.770	D 26.084	194.6	0.355	3.06	D133.1	D 47.4	24.3	1.80	23.4	0.02	0.00	0.01	0.03	126	
140	9.32	9.30	33.870	26.188	185.0	0.386	2.74	119.8	42.5	26.9	1.89	25.0	0.00	0.00	0.00	0.03	141 09	
150 ISL	9.14 D	9.12	33.901	D 26.241	180.1	0.402	2.67	D116.1	D 41.1	28.1	1.93	25.6	0.02	0.00	0.00	0.03	151	
170	8.95	8.93	33.958	26.317	173.3	0.439	2.47	107.9	38.0	30.6	2.00	26.8	0.00	0.08	0.00	0.02	171 08	
200	8.71	8.68	34.037	26.417	164.3	0.490	2.01	87.9	30.8	35.1	2.16	28.8	0.00	0.00	0.00	0.03	202 07	
230	8.57	8.55	34.142	26.521	155.1	0.538	1.63	70.9	24.8	39.1	2.31	29.9	0.00	0.00			232 06	
250 ISL	8.33 D	8.31	34.191	D 26.597	148.2	0.567	1.28	D 55.7	D 19.4	42.6	2.42	31.2	0.02	0.00			252	
270	8.05	8.03	34.199	26.646	143.8	0.598	1.12	48.8	16.8	46.2	2.53	32.5	0.00	0.00			272 05	
300 ISL	7.73 D	7.70	34.220	D 26.711	138.0	0.639	0.93	D 40.2	D 13.8	50.0	2.62	33.5	0.02	0.00			302	
320	7.62	7.59	34.235	D 26.738	135.7	0.666	0.80	34.8	11.9	52.4	2.68	34.2	0.00	0.00			323 04	
380	7.07	7.04	34.226	26.809	129.6	0.744	0.70	30.5	10.3	58.4	2.79	36.2	0.00	0.00			383 03	
400 ISL	6.97 D	6.94	34.244	D 26.838	127.2	0.773	0.61	D 26.4	D 8.9	61.4	2.85	36.9	0.02	0.00			403	
440	6.59	6.55	34.280	26.918	119.9	0.819	0.40	17.6	5.9	67.4	2.97	38.1	0.00	0.00			444 02	
500 ISL	6.23 D	6.18	34.297	D 26.980	114.6	0.893	0.34	D 14.9	D 5.0	73.6	3.05	39.4	0.02	0.00			504	
517	6.09	6.04	34.308	27.006	112.1	0.909	0.30	13.2	4.4	75.3	3.07	39.8	0.00	0.00			521 01	

A) PRIMARY PRODUCTIVITY SAMPLES WERE TAKEN FROM THESE LEVELS.

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

RV SALLY RIDE

## CALCOFI CRUISE 1611

STATION 93.3 50.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD		
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SV	DYN HT	OXYGEN	OXYGEN	OXY	SI03*	P04*	N03*	N02*	NH4*	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C	THETA			ml/L	µmol/Kg	PCT	µM	µM	µM	µM	µM	µM	µg/L	µg/L	db	
32	10.7 N	118 53.5 W	08/11/2016	0055	UTC	1457 m	300	04 kn	310 03 09	1	1016.0 mb	19.0 C	17.5 C	5/8	ST	009		
0	19.16	19.16	33.355	23.726	416.2	0.000	5.37	234.6	101.4	1.9	0.26	0.2	0.02	0.07	0.15	0.03	0	
2	19.16	19.16	33.355	23.726	416.3	0.008	5.37	234.6	101.4	1.9	0.26	0.2	0.00	0.07	0.15	0.03	2 20	
10	19.02	19.02	33.356	23.761	413.2	0.042	5.37	234.6	101.1	1.5	0.24	0.0	0.00	0.00	0.17	0.02	10 19	
20 ISL	18.84 D	18.84	33.342	D 23.797	410.2	0.079	5.44	D237.2	D 102.0	1.4	0.25	0.0	0.02	0.00	0.21	0.04	20	
25	18.68	18.67	33.333	23.832	407.1	0.103	5.43	236.9	101.4	1.3	0.26	0.0	0.00	0.07	0.23	0.05	25 18	
30 ISL	18.59 D	18.59	33.357	D 23.872	403.5	0.120	5.46	D238.1	D 101.9	1.3	0.26	0.0	0.02	0.00	0.24	0.05	30	
40	18.44	18.43	33.379	23.927	398.6	0.164	5.46	238.2	101.6	1.2	0.26	0.0	0.00	0.00	0.27	0.06	40 17	
50	15.73	15.72	33.211	24.437	350.2	0.201	5.87	256.5	103.6	2.2	0.31	0.0	0.00	0.00	0.44	0.24	50 16	
62	14.02	14.01	33.251	24.836	312.3	0.241	5.38	234.9	91.7	4.1	0.51	2.0	0.15	0.00	0.40	0.40	62 15	
75 ISL	12.72 D	12.71	33.302	D 25.137	283.9	0.277	4.87	D212.3	D 80.9	6.7	0.79	7.1	0.05	0.00	0.22	0.23	76	
76	12.59	12.58	33.292	25.155	282.2	0.282	4.81	210.1	79.6	6.9	0.81	7.5	0.05	0.00	0.21	0.22	77 14	
87	11.92	11.91	33.344	25.322	266.5	0.312	4.45	194.1	72.6	9.9	1.05	11.6	0.04	0.07	0.13	0.16	88 13	
100	10.61	10.59	33.450	25.642	236.1	0.345	3.99	174.1	63.3	14.4	1.32	16.3	0.03	0.00	0.07	0.08	101 12	
111	10.42	10.41	33.483	25.701	230.8	0.371	3.88	169.6	61.4	15.8	1.38	17.5	0.00	0.00	0.05	0.07	112 11	
125	9.76	9.74	33.610	25.912	210.9	0.402	3.48	152.0	54.3	20								

RV SALLY RIDE

CALCOFI CRUISE 1611

STATION 93.3 55.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD	
32 0.8 N	119 14.0 W	08/11/2016	0455	UTC	1578 m	340 10 kn			1016.8 mb	18.8 C	17.7 C					010	
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXYGEN	OXY								
m	DEG C	DEG C	THETA			ml/L	μmol/Kg	PCT		SI03*	P04*	N03*	N02*	NH4*	CHL-A	PHAE0	PRES SAMP
0	20.18	20.18	33.534	23.597	428.5	0.000	5.23	228.4	100.7	2.0	0.26	0.1	0.02	0.79	0.14	0.03	0
2	20.18	20.18	33.534	23.597	428.6	0.009	5.23	228.4	100.7	2.0	0.26	0.1	0.00	0.79	0.14	0.03	2 21
10	20.18	20.18	33.533	23.598	428.8	0.043	5.22	228.1	100.6	2.0	0.24	0.0	0.00	0.15	0.14	0.03	10 19
10	20.18	20.18	33.548	23.609	427.7	0.043											10 20
20	ISL	20.15 D	20.15	33.527 D	23.602	428.8	0.082	5.26	D229.5 D101.2	1.9	0.23	0.0	0.02	0.00	0.17	0.04	20
25	20.09	20.08	33.526	23.618	427.6	0.107	5.24	228.7	100.7	1.9	0.23	0.0	0.00	0.00	0.18	0.04	25 18
30	ISL	20.06 D	20.06	33.505 D	23.609	428.6	0.125	5.28	D230.4 D101.4	1.9	0.23	0.0	0.02	0.00	0.20	0.05	30
40	19.57	19.56	33.428	23.681	422.2	0.171	5.41	236.1	102.9	1.8	0.22	0.0	0.00	0.00	0.23	0.07	40 17
50	ISL	17.96 D	17.95	33.375 D	24.043	387.9	0.209	5.71	D249.2 D105.4	1.9	0.24	0.0	0.02	0.00	0.25	0.07	50
51	17.86	17.85	33.376	24.068	385.5	0.216	5.66	247.2	104.2	1.9	0.24	0.0	0.00	0.00	0.25	0.07	51 16
62	16.74	16.73	33.359	24.321	361.8	0.257	5.76	251.5	103.8	2.1	0.25	0.0	0.00	0.12	0.27	0.10	62 15
75	15.49	15.48	33.357	24.603	335.1	0.302	5.59	243.9	98.2	2.9	0.34	0.1	0.06	0.08	0.42	0.23	76 14
86	14.07	14.05	33.372	24.922	305.0	0.337	5.13	223.9	87.5	4.9	0.58	3.0	0.18	0.23	0.27	0.18	87 13
100	11.81	11.79	33.396	25.385	260.9	0.377	4.40	192.0	71.6	10.4	1.05	11.6	0.04	0.00	0.13	0.15	101 12
112	11.06	11.05	33.389	25.516	248.6	0.407	4.26	186.0	68.3	12.5	1.24	14.3	0.03	0.27	0.09	0.18	113 11
125	10.46	10.45	33.458	25.674	233.7	0.439	3.89	169.8	61.6	15.7	1.42	17.6	0.00	0.11	0.06	0.08	126 10
140	9.85	9.84	33.533	25.836	218.5	0.473	3.75	163.9	58.6	18.4	1.54	19.7	0.00	0.00	0.03	0.05	141 09
150	ISL	9.64 D	9.62	33.631 D	25.949	208.0	0.492	3.61	D157.0 D 56.1	20.3	1.61	20.7	0.02	0.00			151
170	9.22	9.20	33.804 D	26.153	188.9	0.532	2.98	D129.6 D 46.0									171 08
200	ISL	8.89 D	8.86	33.931 D	26.306	174.9	0.587	2.53	D110.2 D 38.8	29.5	1.97	25.9	0.02	0.00			202
201	8.79	8.77	33.954 D	26.339	171.8	0.588	2.55	D110.9 D 39.0									203 07
230	8.49	8.46	34.006	26.428	163.8	0.639	2.20	96.1	33.5	35.1	2.18	29.0	0.00	0.00			232 06
250	ISL	8.29 D	8.27	34.061 D	26.500	157.2	0.670	1.97	D85.9 D 29.9	39.1	2.30	30.4	0.02	0.00			252
270	7.95	7.93	34.083	26.569	151.0	0.702	1.70	74.1	25.5	43.1	2.41	31.9	0.00	0.00			272 05
300	ISL	7.77 D	7.74	34.118 D	26.625	146.1	0.746	1.48	D64.2 D 22.1	47.3	2.53	33.3	0.02	0.00			302
318	7.54	7.51	34.126	26.663	142.6	0.773	1.25	54.5	18.6	49.9	2.60	34.1	0.00	0.00			321 04
380	6.81	6.78	34.139	26.775	132.5	0.858	0.98	42.8	14.4	58.6	2.77	36.6	0.00	0.00			383 03
400	ISL	6.65 D	6.61	34.152 D	26.808	129.6	0.884	0.88	D38.2 D 12.8	61.6	2.83	37.4	0.02	0.00			403
441	6.26	6.22	34.180	26.881	122.9	0.936	0.65	28.3	9.4	67.8	2.96	38.9	0.00	0.00			445 02
500	ISL	5.99 D	5.95	34.231 D	26.957	116.4	1.007	0.46	D20.1 D 6.6	74.2	3.07	40.0	0.02	0.00			504
516	5.93	5.89	34.249	26.979	114.5	1.025	0.41	17.7	5.8	76.0	3.10	40.3	0.00	0.00			520 01

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

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD	
31 50.9 N	119 34.3 W	08/11/2016	0858	UTC	1885 m	040 08 kn			1018.6 mb	18.0 C	17.5 C					011	
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXYGEN	OXY								
m	DEG C	DEG C	THETA			ml/L	μmol/Kg	PCT		SI03*	P04*	N03*	N02*	NH4*	CHL-A	PHAE0	PRES SAMP
0	19.56	19.56	33.380	23.642	424.2	0.000	5.32	232.3	101.2	1.6	0.25	0.0	0.02	0.03	0.19	0.04	0
2	19.56	19.56	33.380	23.642	424.3	0.009	5.32	232.3	101.2	1.6	0.25	0.0	0.00	0.00	0.19	0.04	2 20
10	19.56	19.56	33.380	23.642	424.6	0.043	5.32	232.2	101.1	2.0	0.25	0.2	0.00	0.00	0.17	0.04	10 19
20	ISL	19.57 D	19.56	33.379 D	23.641	425.1	0.081	5.34	D233.1 D101.6	1.7	0.24	0.1	0.02	0.00	0.18	0.04	20
26	19.56	19.56	33.379	23.643	425.2	0.111	5.34	233.0	101.5	1.6	0.24	0.0	0.00	0.00	0.18	0.04	26 18
30	ISL	19.55 D	19.54	33.378 D	23.646	425.0	0.124	5.35	D233.5 D101.7	1.6	0.25	0.0	0.02	0.00	0.23	0.06	30
40	17.56	17.55	33.264	24.054	386.4	0.168	5.79	252.7	105.9	1.9	0.28	0.0	0.00	0.00	0.35	0.11	40 17
50	ISL	15.57 D	15.56	35.191 D	24.457	348.2	0.202	5.83	D254.0 D102.4	2.1	0.31	0.0	0.02	0.00	0.32	0.21	50
51	15.43	15.42	31.191	24.489	345.2	0.209	5.81	253.9	101.9	2.2	0.31	0.0	0.00	0.00	0.32	0.22	51 16
62	14.58	14.57	33.261	24.727	322.8	0.245	5.51	240.7	95.0	3.6	0.44	0.9	0.14	0.00	0.43	0.34	62 15
75	ISL	14.00 D	13.99	33.349 D	24.916	305.2	0.283	5.10	D222.0 D 86.9	5.0	0.58	3.1	0.15	0.00	0.26	0.25	76
76	13.81	13.80	33.347	24.955	301.4	0.289	5.11	223.2	86.8	5.1	0.59	3.3	0.15	0.00	0.25	0.25	77 14
88	12.18	12.17	33.333	25.265	272.0	0.324	4.66	203.5	76.5	8.1	0.90	9.1	0.05	0.00	0.15	0.22	89 13
99	11.59	11.58	33.387	25.417	257.7	0.353	4.36	190.2	70.6	11.1	1.11	12.5	0.04	0.00	0.11	0.15	100 12
100	ISL	11.44 D	11.43	33.388 D	25.446	255.0	0.353	4.33	D188.5 D 70.0	11.4	1.13	12.8	0.04	0.00	0.10	0.14	101
112	10.46	10.45	33.471	25.684	232.4	0.384	3.99	174.2	63.2	15.1	1.37	16.6	0.03	0.00	0.06	0.07	113 11
125	9.80	9.78	35.539	25.850	216.8	0.414	3.59	156.6	56.0	18.2	1.58	19.9	0.00	0.00	0.03	0.05	126 10
140	9.58	9.56	33.638	25.963	206.3	0.445	3.50	152.8	54.4	21.0	1.66	21.4	0.00	0.00	0.01	0.03	141 09
150	ISL	9.36 D	9.35	33.735 D	26.075	195.9	0.464	3.33	D145.0 D 51.6	23.2	1.75	22.8	0.02	0.00	0.01	0.03	151
170	9.12	9.10	33.856	26.209	183.6	0.504	2.76	120.6	42.5	27.6	1.93	25.6	0.00	0.00	0.00	0.02	171 08
199	8.70	8.68	33.965	26.361	169.6	0.555	2.43	105.9	37.0	32.4	2.08	27.9	0.00	0.00	0.00	0.02	201 07
200	ISL	8.69 D	8.67	33.971 D	26.368	168.9	0.555	2.41	D104.7 D 36.7	32.5	2.08	27.9	0.02	0.00			202
231	8.30	8.28	34.028	26.473	159.5	0.607	2.16	94.3	32.7	37.0	2.21	29.7	0.00	0.00			233 06
250	ISL	8.19 D	8.16	34.073 D	26.526	154.8	0.637										

RV SALLY RIDE

CALCOFI CRUISE 1611

STATION 93.3 70.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD		
31 31.2 N	120 14.9 W	08/11/2016	1629	UTC	3964 m	340 12 kn	280 07 12	1	1018.0 mb	18.5 C	17.0 C	19 m	6/8	ST	012		
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXYGEN	OXY	SI03*	P04*	N03*	N02*	NH4*	CHL-A	PHAEAO	PRES SAMP
m	DEG C	DEG C	THETA			ml/L †mol/Kg	PCT	†M	†M	†M	†M	†M	†M	†M	†g/L	†g/L	db
0	17.96	17.96	33.380	24.043	386.0	0.000	5.49	239.8	101.3	1.3	0.30	0.0	0.02	0.17	0.27	0.06	0
2 A	17.96	17.96	33.380	24.043	386.0	0.008	5.49	239.8	101.3	1.3	0.30	0.0	0.00	0.17	0.27	0.06	2 24
10 ISL	17.96	D 17.96	33.379	D 24.043	386.3	0.035	5.54	0241.4	D 102.1	1.3	0.27	0.0	0.02	0.00	0.27	0.06	10
12 A	17.96	17.96	33.379	24.043	386.4	0.046	5.50	240.2	101.5	1.3	0.26	0.0	0.00	0.00	0.27	0.06	12 22
12	17.96	17.96	33.380	24.044	386.3	0.047											12 23
17 A	17.96	17.96	33.380	24.044	386.5	0.066	5.50	240.2	101.5	1.2	0.26	0.0	0.00	0.00	0.28	0.06	17 21
20 ISL	17.96	D 17.95	33.380	D 24.045	386.5	0.074	5.53	0241.4	D 102.1	1.2	0.26	0.0	0.02	0.00	0.29	0.06	20
24	17.96	17.96	33.389	24.051	386.1	0.093	5.52	241.0	101.8	1.2	0.27	0.0	0.00	0.00	0.30	0.07	24 20
30 ISL	17.92	D 17.91	33.417	D 24.083	383.3	0.113	5.52	0240.6	D 101.7	1.3	0.29	0.0	0.02	0.00	0.35	0.10	30
31 A	17.72	17.72	33.415	24.129	378.9	0.120	5.51	240.5	101.2	1.3	0.29	0.0	0.00	0.00	0.36	0.10	31 19
40	16.49	16.49	33.304	24.335	359.5	0.153	5.65	246.5	101.2	1.4	0.32	0.0	0.03	0.00	0.73	0.35	40 17
40	16.49	16.49	33.304	24.335	359.5	0.154											40 18
49	15.01	15.00	33.235	24.613	333.2	0.184	5.42	236.6	94.2	2.7	0.49	2.2	0.24	0.11	0.55	0.34	49 16
50 ISL	14.77	D 14.76	33.220	D 24.654	329.3	0.185	5.46	0237.8	D 94.4	2.9	0.50	2.5	0.23	0.00	0.54	0.33	50
58 A	13.86	13.86	33.198	24.827	313.0	0.213	5.24	229.0	89.1	4.0	0.62	4.6	0.21	0.00	0.39	0.32	58 15
65 A	13.16	13.15	33.218	24.984	298.2	0.234	4.96	216.4	83.0	5.8	0.77	7.4	0.05	0.00	0.28	0.23	66 14
75	12.09	12.08	33.254	25.221	275.8	0.263	4.61	201.2	75.4	8.8	1.00	11.2	0.04	0.00	0.14	0.18	76 13
85	11.58	11.57	33.292	25.344	264.3	0.290	4.44	193.6	71.9	10.6	1.14	13.1	0.03	0.07	0.09	0.14	86 12
100	10.54	10.53	33.434	25.642	236.2	0.328	3.89	169.6	61.6	15.8	1.44	17.9	0.03	0.00	0.04	0.08	101 11
120	9.80	9.79	33.574	25.876	214.2	0.373	3.46	151.0	54.0	20.2	1.65	21.3	0.00	0.00	0.02	0.04	121 10
125 ISL	9.78	D 9.76	33.607	D 25.907	211.4	0.382	3.41	0248.2	D 53.1	21.1	1.69	21.9	0.02	0.00	0.02	0.04	126
140	9.37	9.35	33.718	26.061	197.0	0.414	3.10	135.3	48.0	23.9	1.82	23.7	0.00	0.00	0.01	0.04	141 09
150 ISL	9.28	D 9.26	33.800	D 26.140	189.7	0.432	2.91	0264.6	D 44.9	26.0	1.87	24.7	0.02	0.00	0.01	0.03	151
170	8.76	8.74	33.913	26.310	173.8	0.470	2.75	119.9	42.0	30.2	1.97	26.6	0.00	0.09	0.00	0.03	171 08
200	8.57	8.55	34.015	26.420	164.0	0.520	2.11	92.2	32.2	35.5	2.20	29.2	0.00	0.00	0.00	0.02	202 07
230	7.96	7.93	34.014	26.513	155.5	0.568	2.28	99.4	34.2	38.7	2.19	29.9	0.00	0.00			232 06
250 ISL	7.86	D 7.84	34.038	D 26.546	152.6	0.599	2.05	0289.4	D 30.8	42.2	2.31	31.2	0.02	0.00			252
270	7.56	7.53	34.071	26.616	146.2	0.629	1.70	74.3	25.3	45.7	2.43	32.5	0.00	0.00			272 05
300 ISL	7.51	D 7.48	34.130	D 26.670	141.7	0.673	1.27	0255.0	D 18.8	50.2	2.59	33.9	0.02	0.00			302
320	7.39	7.36	34.158	26.710	138.2	0.700	1.01	44.1	15.0	53.3	2.69	34.9	0.00	0.00			323 04
380	6.82	6.79	34.187	26.813	129.0	0.780	0.71	30.9	10.4	61.5	2.86	37.1	0.00	0.00			383 03
400 ISL	6.61	D 6.57	34.206	D 26.857	125.0	0.807	0.64	27.8	D 9.3	64.6	2.91	37.8	0.02	0.00			403
440	6.25	6.21	34.223	26.917	119.6	0.855	0.48	21.0	7.0	71.0	3.02	39.3	0.00	0.00			444 02
500 ISL	5.84	D 5.79	34.272	D 27.009	111.3	0.927	0.33	D 14.2	D 4.7	78.4	3.14	40.5	0.02	0.00			504
516	5.76	5.72	34.281	27.025	109.9	0.942	0.31	13.6	4.5	80.4	3.17	40.8	0.00	0.00			520 01

A) PRIMARY PRODUCTIVITY SAMPLES WERE TAKEN FROM THESE LEVELS.

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

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD		
31 10.8 N	120 55.2 W	08/11/2016	2135	UTC	3851 m	240 16 kn	340 05 10	2	1016.9 mb	18.0 C	17.0 C	19 m	8/8	ST	013		
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXYGEN	OXY	SI03*	P04*	N03*	N02*	NH4*	CHL-A	PHAEAO	PRES SAMP
m	DEG C	DEG C	THETA			ml/L †mol/Kg	PCT	†M	†M	†M	†M	†M	†M	†M	†g/L	†g/L	db
0	18.46	18.46	33.116	23.719	416.9	0.000	5.44	237.5	101.2	1.2	0.24	0.0	0.02	0.04	0.16	0.00	0
2	18.46	18.46	33.116	23.719	416.9	0.008	5.44	237.5	101.2	1.2	0.24	0.0	0.00	0.00	0.16	0.00	2 20
10	18.46	18.45	33.112	23.716	417.5	0.042	5.44	237.5	101.1	1.0	0.24	0.0	0.00	0.14	0.16	0.00	10 19
20 ISL	18.42	D 18.42	33.109	D 23.723	417.3	0.080	5.45	0237.8	D 101.3	1.0	0.28	0.0	0.02	0.51	0.18	0.00	20
21	18.34	18.34	33.117	23.749	414.8	0.088	5.45	238.2	101.2	1.0	0.28	0.0	0.00	0.55	0.18A	0.00A	21 18
30	17.38	17.38	33.180	24.031	388.2	0.124	5.70	248.8	103.8	0.7	0.25	0.0	0.00	0.00	0.25	0.06	30 17
41	15.81	15.80	33.132	24.357	357.4	0.165	5.91	258.2	104.4	1.1	0.26	0.0	0.00	0.00	0.36	0.10	41 16
50	14.80	14.79	33.051	24.516	342.5	0.196	5.82	254.4	100.8	1.6	0.31	0.1	0.06	0.07	0.37	0.19	50 15
61	13.76	13.75	33.060	24.741	321.3	0.233	5.57	243.3	94.4	2.6	0.45	2.0	0.27	0.00	0.32	0.28	61 14
71	12.98	12.97	33.144	24.964	300.3	0.264	5.28	230.7	88.1	4.1	0.58	4.5	0.05	0.00	0.28	0.19	72 13
75 ISL	12.71	D 12.70	33.125	D 25.002	296.7	0.273	5.27	0229.4	D 87.3	4.9	0.65	5.5	0.05	0.00	0.24	0.18	76
85	12.10	12.09	33.188	25.167	281.2	0.305	4.95	216.0	81.0	6.9	0.81	8.2	0.03	0.00	0.15	0.15	86 12
100	11.05	11.04	33.321	25.463	253.2	0.345	4.56	199.1	73.0	10.9	1.09	12.7	0.03	0.00	0.09	0.09	101 11
120	9.87	9.86	33.449	25.767	224.6	0.392	4.15	181.0	64.8	16.2	1.40	17.7	0.00	0.00	0.03	0.05	121 10
125 ISL	9.87	D 9.86	33.471	D 25.784	223.1	0.402	4.13	0179.8	D 64.5	17.3	1.46	18.6	0.02	0.00	0.03	0.04	126
140	9.27	9.26	33.670	D 26.038	199.1	0.434	3.61	157.4	55.7	20.8	1.63	21.3	0.00	0.00	0.01	0.03	141 09
150 ISL	9.21	D 9.20	33.703	D 26.075	195.9	0.454	3.46	0150.6	D 53.4	22.7	1.70</td						

RV SALLY RIDE

## CALCOFI CRUISE 1611

STATION 93.3 90.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD		
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SV	DYN HT	OXYGEN	OXYGEN	OXY	SI03*	P04*	N03*	N02*	NH4*	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C	THETA			ml/L	mol/Kg	PCT	#M	#M	#M	#M	#M	#M	#g/L	#g/L	db	
0	17.92	17.92	33.214	23.924	397.3	0.000	5.53	241.3	101.8	1.1	0.26	0.2	0.03	0.06	0.22	0.05	0	
2	17.92	17.92	33.214	23.924	397.4	0.008	5.53	241.3	101.8	1.1	0.26	0.2	0.03	0.06	0.22	0.05	2 20	
10	17.91	17.91	33.220	23.932	396.9	0.040	5.50	240.1	101.2	0.9	0.26	0.1	0.00	0.00	0.22	0.04	10 19	
20	ISL	17.78 D	17.77	33.267 D	24.002	390.6	0.080	5.56	D242.4 D102.1	0.9	0.29	0.1	0.01	0.00	0.30	0.08	20	
21	17.72	17.72	33.290	24.033	387.7	0.083	5.56	242.7	102.0	0.9	0.29	0.1	0.00	0.09	0.30	0.08	21 18	
30	ISL	17.31 D	17.30	33.448 D	24.254	366.9	0.118	5.66	D246.7 D103.1	0.9	0.30	0.0	0.01	0.00	0.45	0.17	30	
31	17.09	17.08	33.452	24.308	361.8	0.121	5.62	245.2	101.9	0.9	0.30	0.0	0.00	0.00	0.46	0.18	31 17	
41	15.09	15.09	33.236	24.596	334.6	0.155	5.63	246.0	98.2	1.3	0.38	0.8	0.13	0.44	0.39	0.23	41 16	
50	ISL	13.60 D	13.59	33.081 D	24.791	316.2	0.186	5.58	D243.3 D94.2	2.7	0.45	2.1	0.21	0.00	0.32	0.23	50	
51	13.57	13.56	33.080	24.796	315.7	0.188	5.57	243.1	93.9	2.9	0.46	2.3	0.22	0.00	0.31	0.23	51 15	
60	13.13	13.12	33.121	24.915	304.6	0.216	5.42	236.5	90.6	3.7	0.50	3.5	0.14	0.00	0.27	0.22	60 14	
71	12.48	12.47	33.135	25.054	291.6	0.248	5.13	224.2	84.7	5.5	0.69	6.7	0.05	0.00	0.22	0.22	72 13	
75	ISL	12.20 D	12.19	33.145 D	25.116	285.8	0.262	5.11	D222.5 D83.8	6.3	0.78	8.1	0.05	0.00	0.20	0.19	76	
85	11.53	11.52	33.179	25.267	271.6	0.288	4.72	206.3	76.4	8.3	0.99	11.6	0.03	0.00	0.12	0.13	86 12	
100	10.18	10.17	33.381	25.662	234.1	0.326	4.13	180.5	65.0	15.1	1.35	17.6	0.00	0.00	0.04	0.07	101 11	
120	9.67	9.65	33.504	25.844	217.2	0.371	3.87	169.1	60.3	18.5	1.50	20.2	0.00	0.00	0.01	0.04	121 10	
125	ISL	9.50 D	9.48	33.557 D	25.913	210.7	0.385	3.83	D166.7 D59.4	19.6	1.55	20.9	0.01	0.00	0.01	0.04	126	
141	9.34	9.33	33.690	26.081	195.1	0.414	3.29	143.6	50.9	23.1	1.72	23.3	0.00	0.00	0.04	0.04	142 09	
150	ISL	9.29 D	9.28	33.824 D	26.156	188.2	0.435	2.71	D117.9 D41.9	25.0	1.78	24.3	0.01	0.00	0.00	0.04	151	
170	8.80	8.78	33.886	26.284	176.4	0.469	2.89	126.0	44.1	29.2	1.90	26.3	0.00	0.00	0.00	0.03	171 08	
200	8.24	8.22	33.980	26.443	161.6	0.519	2.75	119.8	41.5	34.4	1.99	28.0	0.00	0.00	0.00	0.02	202 07	
230	8.09	8.07	34.036	26.511	155.8	0.567	2.16	94.2	32.5	39.8	2.20	30.5	0.00	0.00	0.00	0.02	232 06	
250	ISL	7.65 D	7.62	34.027 D	26.569	150.4	0.601	2.19	D95.4 D32.7	43.6	2.34	32.1	0.01	0.00	0.00	0.00	252	
271	7.59	7.57	34.109	26.641	143.9	0.628	1.44	62.7	21.4	47.6	2.49	33.7	0.00	0.00	0.00	0.00	273 05	
300	ISL	7.33 D	7.30	34.121 D	26.689	139.8	0.674	1.27	D55.0 D18.7	52.5	2.61	35.1	0.01	0.00	0.00	0.00	302	
320	7.13	7.10	34.148	26.738	135.3	0.696	1.01	44.2	14.9	55.8	2.69	36.1	0.00	0.00	0.00	0.00	323 04	
380	6.70	6.66	34.193	26.834	126.9	0.775	0.66	29.0	9.7	62.9	2.86	37.9	0.00	0.00	0.00	0.00	383 03	
400	ISL	6.51 D	6.48	34.182 D	26.850	125.6	0.807	0.66	D28.7 D9.6	65.9	2.90	38.7	0.01	0.00	0.00	0.00	403	
441	6.06	6.02	34.194	26.918	119.3	0.850	0.54	23.3	7.7	72.0	2.99	40.2	0.00	0.00	0.00	0.00	445 02	
500	ISL	5.79 D	5.74	34.240 D	26.990	113.1	0.927	0.38	D16.7 D5.5	78.0	3.09	41.1	0.01	0.00	0.00	0.00	504	
516	5.73	5.68	34.251	27.006	111.7	0.937	0.34	14.7	4.8	79.6	3.12	41.4	0.00	0.00	0.00	0.00	520 01	

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

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD		
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SV	DYN HT	OXYGEN	OXYGEN	OXY	SI03*	P04*	N03*	N02*	NH4*	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C	THETA			ml/L	mol/Kg	PCT	#M	#M	#M	#M	#M	#M	#g/L	#g/L	db	
0	17.92	17.92	33.140	23.869	402.6	0.000	5.49	239.6	101.0	0.8	0.23	0.0	0.02	0.01	0.17	0.04	0	
2	17.92	17.92	33.140	23.869	402.6	0.008	5.49	239.6	101.0	0.8	0.23	0.0	0.00	0.00	0.17	0.04	2 20	
10	17.84	17.83	33.159	23.904	399.5	0.040	5.49	239.9	101.0	0.8	0.23	0.0	0.00	0.00	0.17	0.04	10 19	
20	ISL	17.76 D	17.76	33.146 D	23.912	399.2	0.081	5.54	D241.6 D101.7	0.7	0.23	0.0	0.02	0.00	0.19	0.05	20	
25	17.64	17.64	33.154	23.949	395.9	0.100	5.54	241.8	101.4	0.7	0.23	0.0	0.00	0.00	0.20	0.05	25 18	
30	ISL	17.61 D	17.61	33.156 D	23.957	395.3	0.121	5.56	D242.5 D101.7	0.7	0.23	0.0	0.02	0.00	0.21	0.05	30	
41	17.58	17.57	33.150	23.963	395.2	0.163	5.55	242.1	101.4	0.7	0.24	0.0	0.00	0.00	0.23	0.07	41 17	
50	ISL	17.30 D	17.29	33.166 D	24.041	388.0	0.200	5.61	D244.6 D102.0	0.7	0.25	0.0	0.02	0.00	0.31	0.12	50	
51	17.19	17.18	33.180	24.079	384.4	0.202	5.58	243.8	101.4	0.7	0.25	0.0	0.00	0.00	0.32	0.12	51 16	
62	16.80	16.79	33.256	24.228	370.6	0.244	5.67	247.5	102.2	0.8	0.26	0.0	0.00	0.06	0.30	0.14	62 15	
75	ISL	15.95 D	15.93	33.228 D	24.404	354.2	0.293	5.71	D249.0 D101.2	1.3	0.30	0.0	0.04	0.18	0.30	0.19	76	
76	15.47	15.46	33.203	24.490	346.0	0.295	5.72	249.7	100.4	1.3	0.30	0.0	0.04	0.19	0.30	0.19	77 14	
88	14.55	14.53	33.197 D	24.686	327.5	0.338	5.63	246.0	97.0	2.5	0.33	0.3	0.10	0.00	0.28	0.22	89 13	
100	ISL	13.48 D	13.46	33.205 D	24.914	306.0	0.376	5.31	D231.5 D89.5	4.8	0.57	4.2	0.07	0.00	0.21	0.18	101	
101	13.28	13.26	33.211 D	24.958	301.8	0.379	5.21	D227.1 D87.5									102 12	
113	12.11	12.09	33.240	25.208	278.1	0.411	4.89	213.4	80.0	7.4	0.82	8.5	0.03	0.00	0.13	0.14	114 11	
125	ISL	10.74 D	10.73	33.310 D	25.511	249.2	0.446	4.33	D188.6 D68.9	13.2	1.24	15.2	0.02	0.00	0.05	0.06	126	
126	10.71	10.69	33.321	25.526	247.9	0.445	4.30	187.6	68.3	13.7	1.27	15.7	0.00	0.00	0.04	0.05	127 10	
142	10.65	10.64	33.519	25.690	232.7	0.484	4.31	188.1	68.5	14.5	1.45	18.8	0.00	0.00	0.01	0.03	143 09	
150	ISL	10.57 D	10.55	33.569 D	25.744	227.7	0.505	4.20	D183.0 D66.7	16.4	1.52	19.7	0.02	0.00	0.01	0.03	151	
171	9.94	9.92	33.598	25.874	215.7	0.549	3.48	151.7	54.4	21.3	1.69	22.2	0.00	0.00	0.01	0.03	172 08	
200	ISL	9.23 D	9.21	33.746 D	26.107	193.9	0.612	3.16	D137.6 D48.8	25.1	1.79	24.1	0.02	0.00	0.00	0.02	202	
201	9.23	9.20	33.743	26.105	194.1	0.												

RV SALLY RIDE

CALCOFI CRUISE 1611

STATION 93.3 110.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD			
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SV	DYN HT	OXYGEN	OXYGEN	OXY	SI03*	P04*	N03*	N02*	NH4*	CHL-A	PHAEAO	PRES SAMP	
m	DEG C	DEG C	THETA			ml/L	mol/Kg	PCT	#M	#M	#M	#M	#M	µg/L	µg/L	db		
30	10.4 N	122 55.2 W	09/11/2016	1448	UTC	3719 m	350	16 kn	300 10 15	1	1018.6 mb	19.0 C	17.0 C	6/8	SC	016		
0	19.39	19.39	33.301	23.625	425.8	0.000	5.32	232.2	100.7	1.6	0.21	0.0	0.01	0.00	0.11	0.02	0	
3	19.39	19.39	33.301	23.625	425.9	0.013	5.32	232.2	100.7	1.6	0.21	0.0	0.00	0.11	0.02	3	20	
10	ISL	19.39 D	19.39	33.300	23.625	426.2	0.043	5.33	D232.7	D101.1	1.6	0.20	0.0	0.01	0.00	0.10	0.02	10
11	19.39	19.39	33.303	23.627	426.1	0.047	5.30	231.3	100.4	1.6	0.20	0.1	0.00	0.00	0.10	0.02	11	19
20	ISL	19.39 D	19.39	33.300	23.625	426.6	0.086	5.32	D232.1	D100.8	1.6	0.21	0.0	0.01	0.00	0.11	0.02	20
26	19.39	19.39	33.302	23.627	426.7	0.111	5.31	231.9	100.7	1.6	0.21	0.0	0.00	0.00	0.11	0.02	26	18
30	ISL	19.39 D	19.39	33.300	23.626	427.0	0.129	5.33	D232.4	D100.9	1.6	0.21	0.0	0.00	0.00	0.11	0.02	30
41	19.40	19.39	33.302	23.626	427.4	0.175	5.30	231.3	100.4	1.6	0.21	0.0	0.00	0.00	0.11	0.03	41	17
50	ISL	19.42 D	19.41	33.317	23.635	427.0	0.215	5.33	D232.5	D101.0	1.6	0.20	0.0	0.01	0.00	0.13	0.02	50
51	19.42	19.41	33.329	23.642	426.3	0.218	5.31	231.7	100.6	1.6	0.20	0.0	0.00	0.00	0.13	0.02	51	16
63	19.10	19.09	33.402	23.783	413.3	0.268	5.37	234.6	101.3	1.7	0.19	0.0	0.00	0.00	0.18	0.04	63	15
75	ISL	17.27 D	17.26	33.409	D 24.236	370.4	0.317	5.76	D251.3	D104.9	1.9	0.17	0.0	0.01	0.00	0.20	0.06	76
76	17.25	17.24	33.442	24.266	367.5	0.319	5.71	249.5	104.0	2.0	0.17	0.0	0.00	0.00	0.20	0.07	77	14
87	16.98	16.96	33.437	24.329	361.9	0.359	5.66	247.2	102.5	2.0	0.18	0.0	0.00	0.00	0.21	0.13	88	13
100	16.02	16.00	33.418	24.535	342.6	0.405	5.60	244.4	99.4	2.3	0.20	0.0	0.00	0.00	0.21	0.20	101	12
112	15.41	15.39	33.430	24.681	329.0	0.445	5.49	239.8	96.4	2.6	0.25	0.1	0.06	0.00	0.21	0.14	113	11
125	14.12	14.10	33.366	24.908	307.5	0.486	5.28	230.7	90.3	3.8	0.40	1.6	0.19	0.00	0.18	0.13	126	10
142	12.22	12.20	33.323	25.252	274.8	0.536	5.00	218.2	82.1	6.3	0.68	6.1	0.04	0.00	0.11	0.17	143	09
150	ISL	12.00 D	11.98	33.338	D 25.306	269.7	0.562	4.93	D214.6	D 80.5	8.5	0.84	8.7	0.03	0.00	0.10	0.14	151
172	10.20	10.18	33.447	25.713	231.1	0.612	4.31	188.4	67.9	14.5	1.29	15.9	0.00	0.00	0.06	0.06	173	08
200	ISL	9.27 D	9.24	33.669	D 26.041	200.2	0.678	3.56	D155.0	D 55.0	22.3	1.64	21.9	0.01	0.00	0.01	0.02	202
202	9.18	9.16	33.696	26.075	197.0	0.677	3.57	155.7	55.0	22.8	1.67	22.3	0.00	0.00	0.01	0.02	204	07
232	8.59	8.57	33.877	26.310	175.0	0.733	3.09	134.9	47.0	28.8	1.86	25.6	0.00	0.00			234	06
250	ISL	8.41 D	8.39	33.951	D 26.396	167.2	0.769	2.78	D20.8	D 42.1	32.9	1.98	27.5	0.01	0.00			252
271	8.07	8.04	34.004	26.490	158.5	0.798	2.40	104.9	36.2	37.7	2.13	29.7	0.00	0.00			273	05
300	ISL	7.78 D	7.75	34.036	D 26.558	152.5	0.849	2.04	D 88.9	D 30.6	43.4	2.34	32.0	0.01	0.00			302
320	7.54	7.50	34.088	26.635	145.4	0.872	1.56	68.1	23.2	47.4	2.49	33.6	0.00	0.00			322	04
380	6.94	6.90	34.126	26.748	135.2	0.957	1.06	46.3	15.6	56.6	2.73	36.6	0.00	0.00			383	03
400	ISL	6.84 D	6.80	34.153	D 26.784	132.1	0.990	0.91	D 39.5	D 13.3	59.9	2.78	37.4	0.01	0.00			403
440	6.33	6.29	34.151	26.850	126.0	1.035	0.77	33.6	11.2	66.6	2.89	39.0	0.00	0.00			444	02
500	ISL	6.03 D	5.98	34.206	D 26.933	118.7	1.116	0.50	D 21.8	D 7.2	73.7	3.05	40.4	0.01	0.00			504
517	5.91	5.87	34.218	26.957	116.6	1.129	0.45	19.5	6.4	75.7	3.09	40.8	0.00	0.00			521	01

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

RV SALLY RIDE

CALCOFI CRUISE 1611

STATION 93.3 120.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD			
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SV	DYN HT	OXYGEN	OXYGEN	OXY	SI03*	P04*	N03*	N02*	NH4*	CHL-A	PHAEAO	PRES SAMP	
m	DEG C	DEG C	THETA			ml/L	mol/Kg	PCT	#M	#M	#M	#M	#M	µg/L	µg/L	db		
29	50.8 N	123 35.2 W	09/11/2016	2053	UTC	4143 m	360	16 kn	360 02 10	1	1016.3 mb	19.5 C	17.1 C	25 m	7/8	AC	017	
0	19.56	19.56	33.288	23.572	430.9	0.000	5.29	231.0	100.5	2.3	0.21	0.3	0.02	0.05	0.09	0.02	0	
2	19.56	19.56	33.288	23.572	430.9	0.009	5.29	231.0	100.5	2.3	0.21	0.3	0.00	0.00	0.09	0.02	2	20
10	ISL	19.56 D	19.56	33.288	D 23.573	431.2	0.044	5.29	230.9	100.6	1.6	0.21	0.0	0.01	0.00	0.08	0.03	10
11	19.56	19.56	33.288	23.572	431.3	0.047	5.29	231.1	100.6	1.5	0.21	0.0	0.00	0.08	0.08	0.03	11	19
20	ISL	19.57 D	19.57	33.291	D 23.573	431.6	0.087	5.32	D232.1	D101.1	1.5	0.21	0.0	0.01	0.00	0.09	0.02	20
26	19.57	19.57	33.292	23.575	431.7	0.112	5.32	232.2	101.1	1.4	0.21	0.0	0.00	0.00	0.09	0.02	26	18
30	ISL	19.57 D	19.56	33.290	D 23.574	431.9	0.130	5.33	D232.3	D101.2	1.4	0.20	0.0	0.01	0.00	0.10	0.02	30
40	19.57	19.56	33.304	23.584	431.4	0.173	5.30	231.5	100.8	1.4	0.19	0.0	0.00	0.00	0.11	0.02	40	17
50	ISL	19.12 D	19.11	33.463	D 23.822	409.1	0.216	5.50	D239.8	D103.7	1.5	0.18	0.0	0.01	0.00	0.15	0.04	50
51	19.02	19.01	33.456	23.841	407.3	0.219	5.45	237.8	102.6	1.6	0.18	0.0	0.00	0.00	0.15	0.04	51	16
62	17.81	17.80	33.390	24.092	383.6	0.262	5.74	250.7	105.6	1.7	0.17	0.0	0.00	0.00	0.19	0.05	62	15
75	ISL	16.88 D	16.86	33.350	D 24.276	365.2	0.313	5.77	D251.4	D104.1	1.8	0.18	0.0	0.00	0.00	0.22	0.07	76
76	16.91	16.90	33.422	24.456	349.7	0.354	5.66	246.9	101.2	2.0	0.19	0.0	0.00	0.00	0.21	0.17	88	
87	16.37	16.36	33.481	26.244	181.4	0.713	3.22	140.6	49.4	26.6	1.78	24.5	0.00	0.00			231	06
100	15.75	15.73	33.580	24.720	324.9	0.398	5.53	241.5	97.9	2.3	0.19	0.0	0.04	0.00	0.23	0.21	101	12
112	14.73	14.73	33.489	24.870	310.9	0.436	5.40	235.9	95.6	2.8	0.29	0.6	0.17	0.00	0.20	0.15	113	11
125	13.85	13.83	33.538	25.097	289.4	0.475	5.19	226.8	88.4	4.1	0.42	2.9	0.07	0.00	0.12	0.18	126	10
141	12.10	12.08	33.459	25.382	262.3	0.519	5.00	218.1	81.9	6.0	0.62	6.1	0.03	0.00	0.11	0.12	142	09
150	ISL	11.89 D	11.87	33.413	D 25.386	262.2	0.547											

PRIMARY PRODUCTIVITY CASTS

RV SALLY RIDE

CALCOFI CRUISE 1611

STATION 76.7 70.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD
34 23.4 N	122 15.0 W	20/11/2016	1700 UTC	24 m	1150 - 1800 PST	1155 PST	1725 PST	221.2 mg C/m <sup>2</sup>	071

DEPTH	TEMP	SALINITY	SIGMA	OXYGEN	OXY	SI03*	P04*	N03*	N02*	NH4*	CHL-A	PHAE0	LIGHT	UPTAKE (mg C/m <sup>3</sup> )			
m	DEG C	THETA	ml/L	PCT	μM	μM	μM	μM	μM	μM	μg/L	μg/L	PCT	1	2	MEAN	DARK
2	16.48	33.125	24.199	5.66	101.3	1.0	0.26	0.0	0.00	0.08	0.30	0.09	88. A	4.7	4.6	4.7	0.22
9	16.48	33.128	24.201	5.69	101.9	0.9	0.26	0.0	0.00	0.17	0.31	0.08					
16	16.48	33.125	24.198	5.67	101.5	0.9	0.25	0.0	0.00	0.00	0.30	0.09	36.	5.0	5.2	5.1	0.29
22	16.48	33.126	24.200	5.70	102.0	0.9	0.25	0.0	0.00	0.00	0.32	0.09	24.	1.1	2.1	1.6	4.1
31	16.30	33.140	24.252	5.69	101.5	0.9	0.25	0.0	0.00	0.00	0.36	0.10					
40	16.04	33.166	24.332	5.74	101.9	0.9	0.29	0.2	0.03	0.15	0.45	0.18	7.7	3.8	3.9	3.9	0.38
51	14.19	33.062	24.654	5.89	100.7	2.1	0.38	1.1	0.14	0.35	0.42	0.24					
65	11.61	33.079	25.173	5.13	83.1	5.3	0.81	8.1	0.03	0.00	0.22	0.21					
74	11.08	33.246	25.399	4.56D	73.1	10.4	1.16	14.2	0.00	0.00	0.07	0.09	0.88	0.40	0.38	0.39	0.30
82	10.66	33.324	25.534	4.27	67.8	13.6	1.31	16.7	0.00	0.09	0.04	0.06	0.53	0.15	0.15B	0.15	0.15

B) PRODUCTIVITY REPLICATES POOR UNCERTAIN VALUE ELIMINATED

RV SALLY RIDE

CALCOFI CRUISE 1611

STATION 80.0 60.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD
34 9.7 N	121 10.1 W	18/11/2016	1617 UTC	13 m	1150 - 1730 PST	1150 PST	1729 PST	1118.5 mg C/m <sup>2</sup>	063

DEPTH	TEMP	SALINITY	SIGMA	OXYGEN	OXY	SI03*	P04*	N03*	N02*	NH4*	CHL-A	PHAE0	LIGHT	UPTAKE (mg C/m <sup>3</sup> )			
m	DEG C	THETA	ml/L	PCT	μM	μM	μM	μM	μM	μM	μg/L	μg/L	PCT	1	2	MEAN	DARK
3	14.92	33.397	24.756	5.57	96.8	3.1	0.49	2.6	0.14	0.28	3.20	0.61	70. A	34.7	30.8	32.8	0.34
9	14.91	33.398	24.757	5.57	96.8	3.1	0.50	2.6	0.12	0.24	3.12	0.59	35.	46.9	47.4	47.1	0.33
12	14.92	33.398	24.757	5.56	96.7	3.1	0.49	2.6	0.12	0.25	3.32	0.58	24.	45.4	43.2	44.3	0.36
22	14.85	33.399	24.772	5.53	96.0	3.2	0.47	2.7	0.12	0.23	2.98	0.52	7.4	29.8	29.4	29.6	0.32
31	14.16	33.397	24.917	4.70	80.4	7.0	0.86	8.0	0.15	0.10	2.32	0.37					
40	12.12	33.412	25.335	4.05	66.4	12.1	1.25	14.5	0.10	0.00	0.57	0.28	0.89	0.63	0.59	0.61	0.11
45	11.89	33.413	25.380	4.00	65.3	12.5	1.28	15.1	0.09	0.00	0.44	0.26	0.49	0.14	0.16	0.15	0.09

RV SALLY RIDE

CALCOFI CRUISE 1611

STATION 80.0 100.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD
32 49.0 N	123 54.4 W	19/11/2016	1627 UTC	27 m	1201 - 1740 PST	1201 PST	1736 PST	183.4 mg C/m <sup>2</sup>	067

DEPTH	TEMP	SALINITY	SIGMA	OXYGEN	OXY	SI03*	P04*	N03*	N02*	NH4*	CHL-A	PHAE0	LIGHT	UPTAKE (mg C/m <sup>3</sup> )			
m	DEG C	THETA	ml/L	PCT	μM	μM	μM	μM	μM	μM	μg/L	μg/L	PCT	1	2	MEAN	DARK
3	17.70	33.011	23.823	5.51	101.0	1.5	0.23	0.0	0.04	0.00	0.16	0.04	84. A	2.6	2.8	2.7	0.10
10	17.70	33.009	23.822	5.51	101.0	1.2	0.22	0.0	0.00	0.00	0.16	0.04					
18	17.71	33.010	23.822	5.50	100.8	1.2	0.22	0.0	0.00	0.00	0.16	0.03	36.	2.8	2.8	2.8	0.09
25	17.70	33.010	23.825	5.54	101.4	1.2	0.22	0.0	0.00	0.00	0.16	0.04	24.	2.6	2.7	2.7	0.08
35	17.39	33.009	23.899	5.56	101.1	0.9	0.23	0.0	0.00	0.00	0.23	0.05					
45	17.17	33.023	23.962	5.60	101.6	0.8	0.22	0.0	0.00	0.00	0.24	0.07	7.7	2.4	2.4	2.4B	0.10
58	15.63	33.086	24.362	6.01	105.8	1.6	0.22	0.0	0.00	0.00	0.33	0.14					
71	13.90	33.098	24.743	5.91	100.3	1.7	0.27	0.1	0.09	0.00	0.36	0.31					
83	13.45	33.108	24.842	5.75	96.8	2.4	0.35	0.9	0.26	0.00	0.34	0.27	0.89	0.77	0.69	0.73	0.06
94	12.92	33.061	24.913	5.62	93.5	2.8	0.47	2.9	0.24	0.00	0.32	0.22	0.48	0.29	0.30	0.30	0.06

B) PRODUCTIVITY REPLICATES POOR UNCERTAIN VALUE ELIMINATED

RV SALLY RIDE

CALCOFI CRUISE 1611

STATION 83.3 42.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD
34 11.2 N	119 31.1 W	17/11/2016	1832 UTC	17 m	1143 - 1721 PST	1143 PST	1721 PST	804.3 mg C/m <sup>2</sup>	055

DEPTH	TEMP	SALINITY	SIGMA	OXYGEN	OXY	SI03*	P04*	N03*	N02*	NH4*	CHL-A	PHAE0	LIGHT	UPTAKE (mg C/m <sup>3</sup> )			
m	DEG C	THETA	ml/L	PCT	μM	μM	μM	μM	μM	μM	μg/L	μg/L	PCT	1	2	MEAN	DARK
2	17.09	33.415	24.277	5.61	101.9	2.8	0.32	0.9	0.07	0.08	1.18	0.30	83. A	20.3	21.3	20.8	0.30
12	17.03	33.412	24.290	5.58	101.1	2.4	0.32	0.8	0.06	0.00	1.28	0.24	34.	24.0	25.0	24.5	0.27
16	16.99	33.411	24.299	5.57	100.9	2.2	0.31	0.7	0.06	0.06	1.16	0.32	24.	22.3	23.7	23.0	0.25
23	16.97	33.410	24.304	5.57	100.8	2.2	0.32	0.7	0.06	0.08	1.17	0.29					
30	16.96	33.410	24.308	5.55	100.4	2.2	0.32	0.7	0.07	0.09	1.10	0.29	6.7	13.7	13.9	13.8	0.22
39	16.81	33.405	24.340	5.50	99.2	2.4	0.34	1.0	0.08	0.14	0.88	0.25					
47	15.35	33.378	24.650	5.30	92.8	3.9	0.49	2.8	0.16	0.12	0.56	0.23					
55	13.62	33.341	24.986	4.72	79.8	7.9	0.85	8.2	0.20	0.00	0.38	0.22	0.70	0.67	0.66	0.66	0.12
63	12.29	33.315	25.229	4.47	73.5	9.3	1.03	10.6	0.06	0.00	0.26	0.22	0.34	0.16	0.18	0.17	0.07

RV SALLY RIDE

CALCOFI CRUISE 1611

STATION 83.3 70.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD
33 14.6 N	121 26.6 W	16/11/2016	1632 UTC	18 m	1155 - 1900 PST	1151 PST	1726 PST	360.8 mg C/m <sup>2</sup>	050

DEPTH	TEMP	SALINITY	SIGMA	OXYGEN	OXY	SI03*	P04*	N03*	N02*	NH4*	CHL-A	PHAE0	LIGHT	UPTAKE (mg C/m <sup>3</sup> )			
m	DEG C	THETA	ml/L	PCT	μM	μM	μM	μM	μM	μM	μg/L	μg/L	PCT	1	2	MEAN	DARK
3	16.71	33.411	24.365	5.61	101.0	0.8	0.24	0.2	0.04	0.22	0.63	0.14	77. A	8.0	8.3	8.1	0.15
13	16.71	33.411	24.364	5.61	101.0	0.7	0.26	0.2	0.03	0.00	0.63	0.13	33.	12.0	12.0	12.0	0.15
17	16.70	33.414	24.370	5.61	101.0	0.7	0.24	0.1	0.03	0.00	0.62	0.14	23.	11.2	11.6	11.4	0.15
24	15.50	33.407	24.638	5.57	98.0	1.0	0.28	0.5	0.07	0.06	0.66	0.17					
30	14.24	33.378	24.887	4.76	81.6	5.9	0.77	7.0	0.38	0.00	0.67	0.29	7.7	5.6	5.7	5.7	0.15
38	12.10	33.322	25.270	4.36	71.5	10.0	1.10	12.7	0.06	0.00	0.25	0.25					
46	11.49	33.380	25.428	4.05	65.6	12.5	1.27	15.4	0.04	0.00	0.14	0.18					
56	10.94	33.499D	25.621	3.56D	56.9	14.7	1.40	17.2	0.04	0.00	0.10	0.13	0.84	0.25	0.26	0.26	0.07
63	10.66	33.532	25.695	3.47	55.1	17.5	1.56	19.7	0.00	0.00	0.05	0.10	0.46	0.08	0.08	0.08	0.06

A) INCUBATION LIGHT INTENSITIES WERE 61.6, 37.4, 26.1, 8.0, 0.9, 0.52 PERCENT RESPECTIVELY.

RV SALLY RIDE

CALCOFI CRUISE 1611

STATION 83.3 110.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL	TWILIGHT	INTEGRATED	VALUE	ORD
31 55.4 N	124 10.4 W	15/11/2016	1717 UTC	27 m	1200 - 1740 PST	1201 PST	1736 PST		132.0 mg C/m <sup>2</sup>	046	

DEPTH	TEMP	SALINITY	SIGMA	OXYGEN	OXY	SI03*	P04*	N03*	N02*	NH4*	CHL-A	PHAE0	LIGHT	UPTAKE (mg C/m <sup>3</sup> )			
m	DEG C	THETA	mL/L	PCT	μM	μM	μM	μM	μM	μM	μg/L	μg/L	PCT	1	2	MEAN	DARK
2	18.19	33.080	23.757	5.48	101.3	1.4	0.22	0.0	0.00	0.00	0.14	0.03	89. A	2.3	2.0	2.1	0.11
11	18.20	33.080	23.757	5.46	101.0	1.3	0.22	0.0	0.00	0.00	0.14	0.03					
17	18.19	33.080	23.758	5.48	101.3	1.3	0.22	0.0	0.00	0.00	0.14	0.03	38.	2.2	2.2	2.2	0.11
25	18.20	33.084	23.761	5.47	101.2	1.3	0.22	0.0	0.00	0.00	0.15	0.03	24.	2.0	2.0	2.0	0.09
34	18.19	33.080	23.759	5.46	100.9	1.2	0.22	0.0	0.00	0.00	0.15	0.03					
44	18.00	33.096	23.818	5.52	101.7	1.0	0.23	0.0	0.00	0.00	0.23	0.06	8.2	1.6	1.5	1.6	0.11
57	16.88	33.135	24.116	5.82	104.9	1.3	0.22	0.0	0.00	0.00	0.28	0.14					
70	15.17	33.189	24.545	5.91	103.0	1.8	0.23	0.0	0.00	0.00	0.36	0.31					
83	13.66	33.146	24.830	5.67	95.9	2.7	0.38	1.4	0.19	0.00	0.29	0.31	0.89	0.58	0.54	0.56	0.07
93	13.35	33.153	24.899	5.59	93.9	3.0	0.43	2.3	0.14	0.00	0.24	0.26	0.51	0.14	0.14	0.14	0.05

RV SALLY RIDE

CALCOFI CRUISE 1611

STATION 86.7 45.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL	TWILIGHT	INTEGRATED	VALUE	ORD
33 29.3 N	119 20.6 W	13/11/2016	1802 UTC	34 m	1138 - 1740 PST	1142 PST	1725 PST		463.9 mg C/m <sup>2</sup>	037	

DEPTH	TEMP	SALINITY	SIGMA	OXYGEN	OXY	SI03*	P04*	N03*	N02*	NH4*	CHL-A	PHAE0	LIGHT	UPTAKE (mg C/m <sup>3</sup> )			
m	DEG C	THETA	mL/L	PCT	μM	μM	μM	μM	μM	μM	μg/L	μg/L	PCT	1	2	MEAN	DARK
2	18.00	33.432	24.073	5.54	102.4	1.4	0.26	0.1	0.00	0.00	0.36	0.05	91. A	9.8	10.2	10.0	0.16
12	17.65	33.421	24.149	5.58	102.3	1.4	0.26	0.0	0.00	0.00	0.22	0.06					
22	17.45	33.414	24.193	5.58	101.9	1.6	0.28	0.1	0.00	0.24	0.32	0.14	37.	5.3	4.9	5.1	0.10
30	17.24	33.397	24.232	5.52	100.5	2.2	0.35	0.8	0.08	0.12	0.55	0.21	26.	8.4	8.2	8.3	0.11
40	15.49	33.368	24.611	5.25	92.3	3.5	0.51	3.1	0.24	0.10	0.70	0.27					
49	14.08	33.292	24.855	5.06	86.4	4.9	0.70	5.9	0.25	0.00	0.54	0.31					
57	12.98	33.281	25.068	4.75	79.3	7.3	0.90	9.2	0.12	0.00	0.38	0.36	7.6	3.4	3.2	3.3	0.08
73	11.39	33.382	25.449	4.12	66.5	13.2	1.29	15.7	0.04	0.00	0.14	0.19					
88	10.55	33.497	25.688	3.69	58.5	17.2	1.50	18.8	0.03	0.00	0.07	0.12					
106	10.00	33.628	25.886	3.23	50.7	21.3	1.70	21.7	0.00	0.00	0.03	0.08	0.83	0.10	0.09	0.10	0.04
116	9.69	33.677	25.975	3.26	50.9	22.0	1.71	22.4	0.00	0.00	0.01	0.04	0.53	0.02	0.01	0.02	0.04

RV SALLY RIDE

CALCOFI CRUISE 1611

STATION 86.7 80.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL	TWILIGHT	INTEGRATED	VALUE	ORD
32 20.4 N	121 43.2 W	14/11/2016	1758 UTC	22 m	1135 - 1745 PST	1151 PST	1736 PST		180.7 mg C/m <sup>2</sup>	042	

DEPTH	TEMP	SALINITY	SIGMA	OXYGEN	OXY	SI03*	P04*	N03*	N02*	NH4*	CHL-A	PHAE0	LIGHT	UPTAKE (mg C/m <sup>3</sup> )			
m	DEG C	THETA	mL/L	PCT	μM	μM	μM	μM	μM	μM	μg/L	μg/L	PCT	1	2	MEAN	DARK
3	17.90	33.204	23.923	5.50	101.2	1.2	0.25	0.1	0.03	0.00	0.21	0.03	81. A	3.1	3.0	3.1	0.15
11	17.90	33.207	23.924	5.52	101.6	1.1	0.26	0.1	0.03	0.00	0.19	0.04					
15	17.91	33.204	23.922	5.50	101.2	1.0	0.25	0.0	0.00	0.00	0.19	0.04	35.	3.4	3.3	3.4	0.16
20	17.90	33.203	23.924	5.51	101.5	1.0	0.25	0.0	0.00	0.00	0.19	0.05	25.	3.5	3.6	3.5	0.15
37	17.89	33.205	23.929	5.50	101.2	1.0	0.25	0.0	0.00	0.00	0.20	0.05	7.6	2.3	2.2	2.3	0.14
48	17.37	33.216	24.063	5.58	101.7	1.0	0.26	0.0	0.00	0.00	0.31	0.13					
59	15.65	33.182	24.433	5.77	101.6	1.4	0.31	0.2	0.07	0.00	0.52	0.35					
69	15.02	33.152	24.548	5.68	98.7	1.7	0.38	1.0	0.22	0.06	0.48	0.37	0.81	1.5	1.5	1.5	0.09
76	14.37	33.123	24.666	5.56	95.3	2.2	0.44	2.0	0.34	0.00	0.32	0.38	0.50	0.38	0.37	0.38	0.05

RV SALLY RIDE

CALCOFI CRUISE 1611

STATION 90.0 30.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL	TWILIGHT	INTEGRATED	VALUE	ORD
33 25.0 N	117 54.4 W	12/11/2016	1802 UTC	20 m	1140 - 1745 PST	1136 PST	1716 PST		490.4 mg C/m <sup>2</sup>	029	

DEPTH	TEMP	SALINITY	SIGMA	OXYGEN	OXY	SI03*	P04*	N03*	N02*	NH4*	CHL-A	PHAE0	LIGHT	UPTAKE (mg C/m <sup>3</sup> )			
m	DEG C	THETA	mL/L	PCT	μM	μM	μM	μM	μM	μM	μg/L	μg/L	PCT	1	2	MEAN	DARK
2	19.59	33.492	23.719	6.02	114.6	1.7	0.21	0.0	0.00	0.00	1.27	0.06	86. A	13.7	12.2	12.9	0.27
13	19.36	33.475	23.767	6.04	114.5	1.6	0.21	0.0	0.00	0.00	0.67	0.06	37.	9.6	12.6	11.1	0.24
18	19.03	33.462	23.841	5.82	109.6	1.6	0.22	0.0	0.00	0.00	0.60	0.09	25.	11.7	11.1	11.4	0.19
26	18.32	33.417	23.984	5.80	107.9	1.9	0.24	0.0	0.00	0.00	0.60	0.15					
33	16.59	33.302	24.311	5.74	103.0	1.9	0.31	0.0	0.00	0.00	0.65	0.32	7.9	8.3	8.0	8.1	0.15
43	14.91	33.213	24.617	5.52	95.8	2.9	0.42	0.6	0.06	0.00	0.74	0.48					
53	13.25	33.223	24.969	5.03	84.4	5.5	0.73	6.2	0.19	0.00	0.31	0.38					
62	12.24	33.290	25.219	4.56	74.8	8.8	1.00	10.8	0.03	0.00	0.17	0.23	0.86	0.64	0.61	0.63	0.04
69	11.84	33.314	25.313	4.38	71.3	10.2	1.11	12.6	0.00	0.00	0.12	0.15	0.50	0.19	0.18	0.19	0.03

RV SALLY RIDE

CALCOFI CRUISE 1611

STATION 90.0 60.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL	TWILIGHT	INTEGRATED	VALUE	ORD
32 25.1 N	119 57.6 W	11/11/2016	1844 UTC	28 m	1155 - 1750 PST	1144 PST	1725 PST		411.6 mg C/m <sup>2</sup>	024	

DEPTH	TEMP	SALINITY	SIGMA	OXYGEN	OXY	SI03*	P04*	N03*	N02*	NH4*	CHL-A	PHAE0	LIGHT	UPTAKE (mg C/m <sup>3</sup> )			
m	DEG C	THETA	mL/L	PCT	μM	μM	μM	μM	μM	μM	μg/L	μg/L	PCT	1	2	MEAN	DARK
2	18.49	33.432	23.953	5.44	101.4	1.4	0.27	0.1	0.03	0.00	0.18	0.04	90. A	3.6	3.6	3.6	0.16
10	18.33	33.470	24.022	5.45	101.3	1.3	0.28	0.1	0.00	0.09	0.21	0.05					
18	18.26	33.461	24.032	5.45	101.1	1.3	0.28	0.0	0.00	0.00	0.26	0.07	37.	3.9	4.1	4.0	0.21
26	17.80	33.433	24.124	5.53	101.7	1.2	0.28	0.0	0.00	0.00	0.38	0.17	24.	6.2	6.7	6.5	0.21
36	16.83	33.385	24.319	5.55	100.1	1.6	0.32	0.1	0.03	0.00	0.93	0.51					
46	15.27	33.281	24.592	5.46	95.5	2.1	0.43	1.7	0.13	0.18	1.05	0.54	8.0	7.9	7.5	7.7	0.13
59	14.02	33.237	24.824	5.10	86.9	4.5	0.69	5.6	0.16	0.00	0.60	0.47					
72	12.39	33.262	25.170	4.62	76.1	7.8	0.97	10.4	0.05	0.00	0.20	0.31					
86	11.01	33.354	25.496	4.12	65.9	12.9	1.29	15.7	0.00	0.00	0.07	0.12	0.90	0.21	0.21	0.21	0.03
96	10.20	33.406	25.678	4.15	65.3	15.1	1.36	17.0	0.03	0.07	0.04	0.08	0.52	0.10	0.09	0.09	0.02

A) INCUBATION LIGHT INTENSITIES WERE 61.6, 37.4, 26.1, 8.0, 0.9, 0.52 PERCENT RESPECTIVELY.

RV SALLY RIDE

CALCOFI CRUISE 1611

STATION 90.0 100.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL	TWILIGHT	INTEGRATED	VALUE	ORD
31 5.5 N	122 39.1 W	10/11/2016	1704 UTC	27 m	1155 - 1740 PST	1155 PST	1737	PST	107.7 mg C/m <sup>2</sup>	020	

DEPTH	TEMP	SALINITY	SIGMA	OXYGEN	OXY	SI03*	P04*	N03*	N02*	NH4*	CHL-A	PHAE0	LIGHT	UPTAKE (mg C/m <sup>3</sup> )				
m	DEG C	THETA	mL/L	PCT	μM	μM	μM	μM	μM	μM	μg/L	μg/L	PCT	1	2	MEAN	DARK	
2	19.13	33.196	23.611	5.37	101.3	1.7	0.23	0.1	0.00	0.12	0.12	0.02	89.	A	1.8	1.7	1.8	0.11
10	19.13	33.201	23.615	5.36D	101.0	1.7	0.22	0.1	0.00	0.00	0.12	0.02						
18	19.13	33.195	23.611	5.33	100.5	1.8	0.22	0.1	0.00	0.00	0.12	0.02	36.		1.9	2.0	1.9	0.11
25	19.14	33.196	23.612	5.38	101.3	1.6	0.23	0.1	0.00	0.00	0.13	0.02	24.		2.0	2.1	2.1	0.10
34	19.13	33.194	23.612	5.33	100.4	1.6	0.22	0.0	0.00	0.00	0.12	0.02	14.		1.2	1.1	1.1	0.10
58	18.96	33.193	23.656	5.34	100.2	1.6	0.22	0.1	0.00	0.00	0.14	0.03						
70	16.58	33.165	24.210	5.84	104.7	1.9	0.22	0.0	0.00	0.00	0.23	0.09						
83	15.63	33.260	24.499	5.76	101.4	2.2	0.24	0.0	0.00	0.00	0.23	0.20	0.89		0.58	0.55	0.56	0.05
94	14.61	33.217	24.688	5.65	97.4	2.6	0.28	0.1	0.03	0.00	0.23	0.20	0.48		0.22	0.21	0.21	0.04

RV SALLY RIDE

CALCOFI CRUISE 1611

STATION 93.3 26.7

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL	TWILIGHT	INTEGRATED	VALUE	ORD
32 57.4 N	117 18.3 W	06/11/2016	1954 UTC	19 m	1245 - 1745 PST	1133 PST	1719	PST	487.2 mg C/m <sup>2</sup>	001	

DEPTH	TEMP	SALINITY	SIGMA	OXYGEN	OXY	SI03*	P04*	N03*	N02*	NH4*	CHL-A	PHAE0	LIGHT	UPTAKE (mg C/m <sup>3</sup> )				
m	DEG C	THETA	mL/L	PCT	μM	μM	μM	μM	μM	μM	μg/L	μg/L	PCT	1	2	MEAN	DARK	
2	19.08	33.417	23.793	5.68	107.0	2.0	0.19	0.2	0.03	0.00	0.35	0.06	85.	A	6.7	5.3	6.0	0.19
5	18.98	33.414	23.815	5.66	106.5	1.7	0.19	0.1	0.03	0.00	0.39	0.06						
13	18.57	33.408	23.916	5.73	106.9	1.5	0.19	0.1	0.03	0.06	0.45	0.09	35.		8.9	7.7	8.3	0.28
17	16.91	33.358	24.278	6.02	108.9	2.3	0.25	0.0	0.03	0.00	1.59	0.48	25.		27.6	27.0	27.3	0.34
25	14.59	33.258	24.721	5.57	96.1	3.7	0.48	1.5	0.12	0.20	1.40	0.39						
31	13.43	33.257	24.960	5.16	86.8	5.6	0.70	4.7	0.20	0.12	0.83	0.37	8.2		7.0	6.7	6.9	0.08
40	12.71	33.302	25.138	4.58	76.0	8.6	0.93	9.0	0.10	0.00	0.53	0.37						
50	12.26	33.343	25.257	4.15	68.3	11.2	1.13	11.7	0.25	0.00	0.29	0.33						
56	12.28	33.354	25.261	4.13	68.0	11.4	1.16	12.1	0.26	0.27	0.22	0.32	1.1		0.56	0.49	0.53	0.09

RV SALLY RIDE

CALCOFI CRUISE 1611

STATION 93.3 45.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL	TWILIGHT	INTEGRATED	VALUE	ORD
32 20.8 N	118 33.3 W	07/11/2016	2046 UTC	26 m	1355 - 1810 PST	1138 PST	1726	PST	214.5 mg C/m <sup>2</sup>	008	

DEPTH	TEMP	SALINITY	SIGMA	OXYGEN	OXY	SI03*	P04*	N03*	N02*	NH4*	CHL-A	PHAE0	LIGHT	UPTAKE (mg C/m <sup>3</sup> )				
m	DEG C	THETA	mL/L	PCT	μM	μM	μM	μM	μM	μM	μg/L	μg/L	PCT	1	2	MEAN	DARK	
2	19.40	33.509	23.782	5.39	102.2	2.2	0.25	0.2	0.00	0.20	0.25	0.02	89.	A	2.6	2.3	2.5	0.12
9	19.22	33.500	23.822	5.39	102.0	2.0	0.25	0.0	0.04	0.00	0.26	0.02						
17	19.17	33.513	23.845	5.42	102.4	2.1	0.25	0.0	0.05	0.10	0.28	0.03	37.		2.4	2.4	2.4	0.16
24	18.87	33.506	23.915	5.44	102.1	2.0	0.27	0.0	0.00	0.19	0.29	0.06	24.		2.6	2.5	2.6	0.15
33	16.05	33.313	24.444	5.80	103.1	2.7	0.36	0.1	0.00	0.06	0.30	0.07						
43	13.92	33.281	24.880	5.17	88.0	5.5	0.65	4.1	0.27	0.17	0.81	0.18	7.9		4.7	4.5	4.6	0.10
55	11.84	33.277	25.284	4.60	74.9	9.5	1.02	11.5	0.05	0.00	0.89	0.56						
67	11.29	33.356	25.447	4.23	68.1	12.1	1.21	14.5	0.04	0.00	0.29	0.22						
80	10.79	33.513	25.659	3.52	56.1	16.9	1.49	18.0	0.00	0.16	0.17	0.18	0.89		0.09	0.08	0.08	0.03
89	10.31	33.508	25.738	3.65	57.5	17.2	1.51	19.0	0.03	0.00	0.06	0.07	0.52		0.04	0.05	0.05	0.02

RV SALLY RIDE

CALCOFI CRUISE 1611

STATION 93.3 70.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL	TWILIGHT	INTEGRATED	VALUE	ORD
31 31.2 N	120 14.9 W	08/11/2016	1629 UTC	19 m	1145 - 1800 PST	1145 PST	1738	PST	197.6 mg C/m <sup>2</sup>	012	

DEPTH	TEMP	SALINITY	SIGMA	OXYGEN	OXY	SI03*	P04*	N03*	N02*	NH4*	CHL-A	PHAE0	LIGHT	UPTAKE (mg C/m <sup>3</sup> )				
m	DEG C	THETA	mL/L	PCT	μM	μM	μM	μM	μM	μM	μg/L	μg/L	PCT	1	2	MEAN	DARK	
2	17.96	33.380	24.043	5.49	101.3	1.3	0.30	0.0	0.00	0.17	0.27	0.06	85.	A	5.5	5.4	5.4	0.11
12	17.96	33.379	24.043	5.50	101.5	1.3	0.26	0.0	0.00	0.00	0.27	0.06	38.		5.4	5.4	5.4	0.13
17	17.96	33.380	24.044	5.50	101.5	1.2	0.26	0.0	0.00	0.00	0.28	0.06	25.		4.8	5.1	4.9	0.15
24	17.96	33.389	24.051	5.52	101.8	1.2	0.27	0.0	0.00	0.00	0.30	0.07						
31	17.72	33.415	24.129	5.51	101.2	1.3	0.29	0.0	0.00	0.00	0.36	0.10	8.2		2.7	3.0	2.9	0.14
40	16.49	33.304	24.335	5.65	101.2	1.4	0.32	0.0	0.03	0.00	0.73	0.35						
49	15.01	33.235	24.613	5.42	94.2	2.7	0.49	2.2	0.24	0.11	0.55	0.34						
58	13.86	33.198	24.827	5.24	89.1	4.0	0.62	4.6	0.21	0.00	0.39	0.32	0.92		0.81	0.71	0.76	0.07
65	13.16	33.218	24.984	4.96	83.0	5.8	0.77	7.4	0.05	0.00	0.28	0.23	0.52		0.21	0.22	0.21	0.05

A) INCUBATION LIGHT INTENSITIES WERE 61.6, 37.4, 26.1, 8.0, 0.9, 0.52 PERCENT RESPECTIVELY.