

Kachemak Bay Research Reserve (KAC) NERR Water Quality Metadata
January - December 2007
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I. Data Set and Research Descriptors

1) Principal Investigators & Contact Persons

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2) Entry Verification

Deployment data are uploaded from the YSI data logger to a Personal Computer (IBM compatible). Files are exported from EcoWatch in a comma-delimited format (.CDF) and uploaded to the CDMO where they undergo automated primary QAQC and become part of the CDMO's online provisional database. Excessive pre- and post-deployment data are removed from the file prior to upload with up to 2 hours of pre- and post-deployment data retained to assist in data management. During primary QAQC, data are flagged if they are missing or out of sensor range. The edited file is then returned to the Reserve where it is opened in Microsoft Excel and processed using the CDMO's NERRQAQC Excel macro. The macro inserts station codes, creates metadata worksheets for flagged data, and graphs the data for review. It allows the user to apply QAQC flags and codes to the data, remove remaining pre- and post-deployment data, append files, and export the resulting data file to the CDMO for tertiary QAQC and assimilation into the CDMO's authoritative online database. Where deployment overlap occurs between files, the data produced by the newly calibrated sonde is generally accepted as being the most accurate. For more information on QAQC flags and codes, see Sections 11 and 12.

Judy Hamilton was responsible for these tasks.

3) Research Objectives

The YSI electronic data loggers are programmed to measure the water temperature, specific conductivity, dissolved oxygen, depth, pH, and turbidity conditions at 15-minute intervals. There are four permanent data logger sites at two locations in Kachemak Bay. One site is located on the northeast side of the Bay at the end of the Homer Spit, and the other on the southwest side of the Bay in Seldovia. At each site a data logger is suspended 1-meter below the surface ("Surface"), and one data logger 1-meter from the bottom ("Deep"). The deep site is in the

same location as the previous Homer Dolphin site. The Seldovia Deep site is at the previous Seldovia site. At both locations the surface sondes are horizontally within a couple meters of the deep sondes.

The circulation in Kachemak Bay is driven primarily by the 8-meter tidal flux.

Regional circulation is characterized by generally cyclonic ocean currents in the Gulf of Alaska flowing onto the shelf off Cook Inlet. Nutrient rich bottom water is upwelled and mixed with surface water. These enriched waters may enter into Kachemak Bay, the inflow tending to stay along the southern shore flowing past the Seldovia instruments, while water flowing out of the bay stays along the Inner Bay and north shore, flowing past the Homer instruments. These trapped coastal flows separate the bay into two distinct ecosystems, and the instruments are positioned to reflect this distinction. Within each system there is vertical stratification of the water. The vertical placement of the sondes is designed to help elucidate the differences in circulation of the surface and deep waters.

As the inflowing water proceeds up the bay, fresh water runoff from the surrounding ice fields and watersheds dilute the salinity and increase the sediment load in the path of the Homer instruments. The inflowing water, in the path of the Seldovia instruments initially supports a marine system, while the north out flowing water of the Homer instruments, is more estuarine. The Kachemak Bay water quality instruments capture this difference with deployments along the north and south shores. These data will be used to supplement studies on primary productivity, larval distribution, settlement, recruitment, growth rates, community dynamics, and biodiversity in the bay.

4) **Research Methods**

A Sutron Sat-Link2 transmitter was installed at the Homer Dolphin Deep (NESDIS ID # 3B00077A WQ) station on 12/13/05 and at the Seldovia Deep (NESDIS ID # 3B040240 WQ) site on 07/31/2007, and these transmitters send data to the NOAA GOES satellite. The transmissions are scheduled hourly and contain four (4) data sets reflecting fifteen minute data sampling intervals. Upon receipt by the CDMO, the data undergoes the same automated primary QAQC process detailed in Section 2 above. The “real-time” telemetry data become part of the provisional dataset until undergoing secondary and tertiary QAQC and assimilation in the CDMO’s authoritative online database. Provisional and authoritative data are available at <http://cdmo.baruch.sc.edu>.

Both telemetered instruments are normally housed in ABS pipe mounted vertically on the ferry docks of Homer and Seldovia. The pipes are positioned to ensure that the sensors are approximately 1 meter above the bottom. However, because of ongoing issues with the Seldovia deployment apparatus, the Deep site was relocated to one meter above the bottom on the Surface site’s deployment cable for the entire year.

Calibration and deployment were performed monthly using methods outlined in the YSI Operating and Service Manual. After cleaning the data loggers, the dissolved oxygen (DO) membrane is replaced and allowed to season in water-saturated air for at least 12 hours before the DO sensor is calibrated. The pH, conductivity, depth, and turbidity sensors are calibrated using the following standards purchased from YSI (except depth): pH 7 and 10, conductivity standards of 50 mS/cm, respectively, and depth of 0. Turbidity standard of 123 NTU is purchased from YSI.

The Chlorophyll probe is calibrated at zero in DI water. QA/QC of this parameter is conducted by comparing sonde data to our monthly grab samples that are analyzed on a Turner 10-AU Spectrophotometer (see Nutrient data/metadata for 2011). Sonde data are accepted or rejected based

on this comparison. The estimates of chlorophyll concentration produced by the YSI chlorophyll probe are meant to complement the more accurate results obtained by the monthly grab samples.

5) Site Location and Character

Kachemak Bay is located approximately 200 kilometers south of Anchorage, on the western shore of the Kenai Peninsula. Kachemak Bay, at 59.6° N and 151.5° W, is a temperate regional fjord with hydrographic conditions unique among the NERR system estuaries. The tidal range of 8 meters is among the largest in the world, and salinity ranges from near zero at stream mouths to 33.0 PSU at the entrance to the inner Bay. The bay is 35 kilometers wide at its mouth and approximately 57 kilometers long. The head of Kachemak Bay is located to the northeast at the Fox River Flats, and the mouth lies to the southwest, along a line between Anchor Point and Point Pogibshi. The 6 kilometer long Homer Spit that extends into the Bay from the northern shoreline splits Kachemak Bay into inner and outer bays. The Kachemak Bay NERR comprises the entire inner Bay and the outer Bay. Water flows between the inner and outer Bays through a narrow opening formed between the Spit and the southern shoreline. The Bay has an average depth of 45 meters, and a maximum of 200 meters. Fresh water introduced primarily by the Fox, Bradley, and Martin Rivers and Sheep Creek at the head of the Bay, flows along the northwest shore of the inner Bay.

The Homer YSI data logger site is located on the north side of Kachemak Bay at 59.6028°N and 151.4081°W. The “deep” sonde is deployed at a depth 1 meter from the bottom, in water fluctuating between 8.0 and 17.0 meters. The “surface” data sonde is deployed at a nominal depth of 1 meter. The bottom habitat is predominantly sand. Pollutants in the area are from the excessive boat traffic at the entrance of the Homer harbor, and a nearby fish waste outfall line. Throughout the year, salinity has ranged from 20.5 to 31.7 ppt, as the instrument's location in the stratified water column is dependent on tide height, with a tidal range of 8.1 meters. It is predominately an estuarine environment during summer months when glacial runoff is highest, and during the winter months it reverts to a more marine-like system with glacial runoff at a minimum.

The Seldovia YSI data logger site is located on the south side of Kachemak Bay at 59.4413°N, 151.7186°W, approximately 24 kilometers west of the Homer site. As with the Homer site, the data loggers are situated on the ferry terminal dock, with one instrument 1 meter below the surface, and one 1 meter above the bottom, in water fluctuating between 5.0 and 13.3 meters. The access to Seldovia is limited to boat or air, as the site is located off the highway system. The bottom habitat is predominantly rocky substrate. Pollutants in the area are minimal. Throughout the year, salinity has ranged from 25.0 to 32.9 ppt at this site with a tidal range of 8.0 meters.

6) Data Collection Period

Monitoring at Homer Deep, Seldovia Deep, and Seldovia surface was continuous throughout 2007 (though data gaps exist due to issues occurring during the 05/07 deployments). The Homer Surface site was sampled continuously from 04/10/07 – 11/23/07, and is removed during the winter because of icing conditions that are prevalent at this site. Deployment and retrieval dates and times for 2007 are listed below:

Station	Start Date / Time	End Date/ Time	Sonde ID	Comments
Homer Surface	01/01/07, 00:00	04/10/07, 10:00		No sonde deployed due to ice
Homer Surface	04/10/07, 10:15	05/08/07, 14:45	Amundsen-EDS	
Homer Surface	05/08/07, 15:15	06/20/07, 06:30	Cortez-EDS	Stopped working; cause unknown
Homer Surface	06/20/07, 09:30	07/23/07, 11:15	Zeus	
Homer Surface	07/23/07, 11:45	09/05/07, 13:15	Calypso	
Homer Surface	09/05/07, 14:00	10/04/07, 10:00	Zeus	
Homer Surface	10/04/07, 10:45	11/08/07, 11:15	Cortez-EDS	
Homer Surface	11/08/07, 11:45	11/23/07, 13:15	Calypso	
Homer Surface	11/23/07, 13:30	12/31/07, 23:45		No sonde deployed due to ice
Homer Deep	01/01/07, 00:00	01/17/07, 08:00	Vitus-EDS	
Homer Deep	01/17/07, 08:30	02/08/07, 12:15	Nautilus -EDS	
Homer Deep	02/08/07, 16:15	03/08/07, 14:45	Vitus -EDS	
Homer Deep	03/08/07, 15:30	04/10/07, 08:15	Nautilus -EDS	
Homer Deep	04/10/07, 10:45	05/08/07, 08:30	Vitus-EDS	
Homer Deep	05/08/07, 8:45	06/01/07, 14:00	Nautilus-EDS	No data; bad connection inside battery compartment
Homer Deep	06/01/07, 14:15	07/20/07, 08:15	Vitus-EDS	
Homer Deep	07/20/07, 10:15	09/05/07, 12:45	Neptune-EDS	
Homer Deep	09/05/07, 14:00	10/04/07, 09:45	Nansen-EDS	
Homer Deep	10/04/07, 11:00	11/08/07, 10:45	Vitus-EDS	
Homer Deep	11/08/07, 12:00	12/06/07, 11:15	Neptune-EDS	
Homer Deep	12/06/07, 11:45	12/31/07, 23:45	Kozloff-EDS	
Seldovia Surface	01/01/07, 11:00	01/16/07, 10:45	Nansen-EDS	
Seldovia Surface	01/16/07, 11:00	02/14/07, 12:30	Calypso	
Seldovia Surface	02/14/07, 13:00	02/23/07, 21:30	Amundsen-EDS	Sonde operated intermittently until 2/23 then stopped.
Seldovia Surface	03/18/07, 14:15	04/11/07, 12:30	Calypso	
Seldovia Surface	04/11/07, 14:00	05/09/07, 08:45	Nansen-EDS	
Seldovia Surface	05/09/07, 09:00	06/18/07, 16:30	Calypso	Sonde did not log; no data
Seldovia Surface	06/18/07, 16:45	07/24/07, 10:45	Kozloff-EDS	
Seldovia Surface	07/24/07, 11:15	09/07/07, 10:00	Cortez-EDS	
Seldovia Surface	09/07/07, 10:45	10/05/07, 10:00	Calypso	
Seldovia Surface	10/05/07, 10:15	11/09/07, 14:00	Kozloff-EDS	
Seldovia Surface	11/09/07, 14:15	12/07/07, 12:00	Cortez-EDS	
Seldovia Surface	12/07/07, 12:30	12/31/07, 23:45	Zeus	

Station	Start Date / Time	End Date/ Time	Sonde ID	Comments
Seldovia Deep	01/01/07, 00:00	01/16/07, 10:30	Amundsen-EDS	
Seldovia Deep	01/16/07, 11:00	02/14/07, 12:30	Cortez-EDS	
Seldovia Deep	02/14/07, 13:00	03/18/07, 13:30	Nansen-EDS	
Seldovia Deep	03/18/07, 14:15	04/11/07, 12:45	Cortez-EDS	
Seldovia Deep	04/11/07, 14:00	05/09/07, 08:45	Kozloff-EDS	
Seldovia Deep	05/09/07, 09:00	06/18/07, 16:30	Neptune-EDS	Sonde did not log; No data
Seldovia Deep	06/18/07, 16:45	07/24/07, 10:45	Nansen-EDS	
Seldovia Deep	07/24/07, 11:15	09/07/07, 10:15	Vitus-EDS	
Seldovia Deep	09/07/07, 10:30	10/05/07, 10:00	Neptune-EDS	
Seldovia Deep	10/05/07, 10:15	11/09/07, 14:00	Nansen-EDS	
Seldovia Deep	11/09/07, 14:15	12/07/07, 12:00	Vitus-EDS	
Seldovia Deep	12/07/07, 12:30	12/31/07, 23:45	Nansen-EDS	

7) **Distribution**

According to the Ocean and Coastal Resource Management Data Dissemination Policy for the NERRS System-wide Monitoring Program, NOAA/ERD retains the rights to analyze, synthesize and publish summaries of the NERRS System-wide Monitoring Program data. The PI retains the right to be fully credited for having collected and processed the data. Following academic courtesy standards, the PI and NERR site where data were collected will be contacted and fully acknowledged in any subsequent publications in which any part of the data are used. Manuscripts resulting from this NOAA/OCRM supported research that are produced for publication in open literature, including refereed scientific journals, will acknowledge that the research was conducted under an award from the Estuarine Reserves Division, Office of Oceanic and Atmospheric Administration. The data set enclosed within this package/transmission is only as good as the quality assurance and quality control procedures outlined by the enclosed metadata reporting statement. The user bears all responsibility for its subsequent use/misuse in any further analyses or comparisons. The Federal government does not assume liability to the Recipient or third persons, nor will the Federal government reimburse or indemnify the Recipient for its liability due to any losses resulting in any way from the use of this data.

NERR water quality data and metadata can be obtained from the Research Coordinator at the individual NERR site, from the Data Manager at the Centralized Data Management Office (please see personnel directory under the general information link on the CDMO home page), and online at the CDMO home page <http://cdmo.baruch.sc.edu>. Data are available in text tab-delimited format.

8) **Associated Researchers and Projects**

The USGS, in conjunction with KBBR and the City of Homer, is conducting a sediment transport monitoring program at Munson Point in Homer. This study uses an ARGUS camera array that collects hourly images of the beach area each day. To better understand the forces associated with the sediment transport, a wave gauge is moored in 3 m MLLW of water. More information about this project can be found at <http://zuma.nwra.com/homer/>.

The data are being combined with hydrographic survey data to examine water exchange between Kachemak Bay and Lower Cook Inlet. The sonde data provides the temporal context while the survey data provides the spatial information.

In addition, these data complement the other concurrent SWMP modules, meteorological and nutrient data collection.

II. Physical Structure Descriptors

9) **Sensor Specifications**—Kachemak Bay NERR deployed six 6600EDS and 4 6600sondes in 2007. Sondes deployed at Homer Dolphin Deep and Seldovia Deep were always 6600EDS sondes and included chlorophyll-a probes.

YSI 6600/YSI 6600EDS data sonde:

Parameter: Temperature
Units: Celsius (C)
Sensor Type: Thermistor
Model #: 6560
Range: -5 to 45 °C
Accuracy: +/-0.15 °C
Resolution: 0.01 °C

Parameter: Conductivity
Units: milli-Siemens per cm (mS/cm)
Sensor Type: 4-electrode cell with autoranging
Model #: 6560
Range: 0 to 100 mS/cm
Accuracy: +/-0.5% of reading + 0.001 mS/cm
Resolution: 0.001 mS/cm to 0.1 mS/cm (range dependent)

Parameter: Salinity
Units: parts per thousand (ppt)
Sensor Type: Calculated from conductivity and temperature
Range: 0 to 70 ppt
Accuracy: +/- 1.0% of reading or 0.1 ppt, whichever is greater
Resolution: 0.01 ppt

Parameter: Dissolved Oxygen % saturation
Units: percent air saturation (%)
Sensor Type: Rapid Pulse – Clark type, polarographic
Model #: 6562
Range: 0 to 500 % air saturation
Accuracy: 0-200 % air saturation, +/- 2 % of the reading or 2 % air saturation, whichever is greater;
200-500 % air saturation, +/- 6 % of the reading
Resolution: 0.1 % air saturation

Parameter: Dissolved Oxygen mg/L (Calculated from % air saturation, temperature and salinity)
Units: milligrams per Liter (mg/L)

Sensor Type: Rapid Pulse – Clark type, polarographic

Model #: 6562

Range: 0 to 50 mg/L

Accuracy: 0 to 20 mg/L, +/- 2 % of the reading or 0.2 mg/L, whichever is greater; 20 to 50 mg/L, +/- 6 % of the reading

Resolution: 0.01 mg/L

Parameter: Vented Level – Deep (Depth)

Units: feet or meters (ft or m)

Sensor Type: Stainless steel strain gauge

Range: 0 to 656 ft (200 m)

Accuracy: +/- 1 ft (0.3 m)

Resolution: 0.001 ft (0.001 m)

Parameter: pH

Units: units

Sensor Type: Glass combination electrode

Model #: 6561 and 6561FG

Range: 0 to 14 units

Accuracy: +/- 0.2 units

Resolution: 0.01 units

Parameter: Turbidity

Units: nephelometric turbidity units (NTU)

Sensor Type: Optical, 90 ° scatter, with mechanical cleaning

Model #: 6136

Range: 0 to 1000 NTU

Accuracy: +/- 5 % reading or 2 NTU (whichever is greater)

Resolution: 0.1 NTU

Parameter: Chlorophyll Fluorescence

Units: micrograms/Liter

Sensor Type: Optical probe w/ mechanical cleaning

Model#: 6025

Range: 0 to 400 ug/Liter

Accuracy: Dependent on methodology

Resolution: 0.1 ug/L chl a, 0.1% FS

The reliability of the dissolved oxygen (DO) data after 96 hours post-deployment for non-EDS (Extended Deployment System) data sondes may be problematic due to fouling which forms on the DO probe membrane during some deployments (Wenner et al. 2005). Many reserves have upgraded to YSI 6600 EDS data sondes, which increase DO accuracy and longevity by reducing the environmental effects of fouling. The user is therefore advised to consult the metadata and to exercise caution when utilizing the DO data beyond the initial 96-hour time period. However, this potential drift is not always problematic for some uses of the data (i.e., periodicity analysis). It should be noted that the amount of fouling is site specific and that not all data are affected. The Research Coordinator at the specific NERR site should be contacted concerning the reliability of the DO data because of the site and seasonal variation in the fouling of the DO sensor. A mixture of EDS and non-EDS sondes are used at KBNERR, deployments using EDS sondes are detailed in the Data Collection Period section.

The NERRS System-Wide Monitoring Program utilizes YSI data sondes that can be equipped with either depth or water level sensors. Both sensors measure water depth, but by convention, level sensors refer to atmospherically vented measurements and depth refers to non-vented measurements. Standard calibration protocols for the non-vented sensor use the atmosphere pressure at the time of calibration. Therefore, changes in atmospheric pressure between calibrations appear as changes in water depth. The error is equal to approximately 1.03 cm for every 1 millibar change in atmospheric pressure. This error is eliminated for level sensors because they are vented to the atmosphere throughout the deployment time interval.

Beginning in 2006, NERR SWMP standard calibration protocol calls for all non-vented depth sensors to read 0 meters at a (local) barometric pressure of 1013.25 mb (760 mm/hg). To achieve this, each site calibrates their depth sensor with a depth offset number, which is calculated using the actual atmospheric pressure at the time of calibration and the equation provided in the SWMP calibration sheet or Digital Calibration Log. This offset procedure standardizes each depth calibration for the entire NERR System. If accurate atmospheric pressure data are available, non-vented sensor depth measurements at any NERR site can be corrected. The Research Coordinator at the specific NERR site should be contacted in order to obtain information regarding atmospheric pressure data availability.

10) **Coded variable indicator and variable code definitions**

File name definitions: Reserve/deployment site/file definition/year
(ex: kacsswq2007 = Seldovia surface water quality data from 2007).

Sampling station:	Sampling site code:	Station code:
Homer Dolphin Surface	HS	kachswq
Homer Deep	HD	kachdwq
Seldovia Surface	SS	kacsswq
Seldovia Deep	SD	kacsdwq

11) **QAQC flag definitions** – This section details the automated and secondary QAQC flag definitions.

QAQC flags provide documentation of the data and are applied to individual data points by insertion into the parameter's associated flag column (header preceded by an F_). During primary automated QAQC (performed by the CDMO), -5, -4, and -2 flags are applied automatically to indicate data that is missing and above or below sensor range. All remaining data are then flagged 0, passing initial QAQC checks. During secondary and tertiary QAQC 1, -3, and 5 flags may be used to note data as suspect, rejected due to QAQC, or corrected.

-5	Outside High Sensor Range
-4	Outside Low Sensor Range
-3	Data Rejected due to QAQC
-2	Missing Data
-1	Optional SWMP Supported Parameter
0	Data Passed Initial QAQC Checks
1	Suspect Data
2	<i>Open - reserved for later flag</i>
3	<i>Open - reserved for later flag</i>
4	Historical Data: Pre-Auto QAQC

12) QAQC code definitions – This section details the secondary QAQC Code definitions used in combination with the flags above.

General Errors

GIC	No Instrument Deployed Due to Ice
GIM	Instrument Malfunction
GIT	Instrument Recording Error; Recovered Telemetry Data
GMC	No Instrument Deployed Due to Maintenance/Calibration
GNF	Deployment Tube Clogged / No Flow
GOW	Out of Water Event
GPF	Power Failure / Low Battery
GQR	Data Rejected Due to QA/QC Checks
GSM	See Metadata

Sensor Errors

SBO	Blocked Optic
SCF	Conductivity Sensor Failure
SDF	Depth Port Frozen
SDO	DO Suspect
SDP	DO Membrane Puncture
SIC	Incorrect Calibration / Contaminated Standard
SNV	Negative Value
SOW	Sensor Out of Water
SPC	Post Calibration Out of Range
SSD	Sensor Drift
SSM	Sensor Malfunction
SSR	Sensor Removed / Not Deployed
STF	Catastrophic Temperature Sensor Failure
STS	Turbidity Spike
SWM	Wiper Malfunction / Loss

Comments

CAB	Algal Bloom
CAF	Acceptable Calibration/Accuracy Error of Sensor
CAP	Depth Sensor in Water, Affected by Atmospheric Pressure
CBF	Biofouling
CCU	Cause Unknown
CDA	DO Hypoxia (<3 mg/L)
CDB	Disturbed Bottom
CDF	Data Appear to Fit Conditions
CFK	Fish Kill
CIP	Surface Ice Present at Sample Station
CLT	Low Tide
CMC	In Field Maintenance/Cleaning
CMD	Mud in Probe Guard
CND	New Deployment Begins
CRE	Significant Rain Event
CSM	See Metadata
CTS	Turbidity Spike
CVT	Possible Vandalism/Tampering
CWD	Data Collected at Wrong Depth

13) Post deployment information – This section documents post calibration information for instruments deployed at each site. *At a minimum, include: Date, SpCond, DO%, pH (7), and Turb (0 NTU).* Depth and additional pH and Turb post cal information are also beneficial.

(** = *not recorded*)

13) Post deployment information

Homer Surface (HS):

Site	Calibration Date	Sonde	SpCond (50 mS/cm)	DO (%)	DO probe	pH (7.02)	pH (10.06)	Turb (0 NTU)	Turb (123 NTU)	Depth (m)	Chl (0)	Comments
HS	01/01/2007											No sonde deployed due to ice
HS	02/01/2007											No sonde deployed due to ice
HS	03/01/2007											No sonde deployed due to ice
HS	04/10/2007	Amundsen	50.46	-99.9		11.14	14.08			-0.016		Turbidity probe was loose in the guard, pH and DO probe failure around the same time
HS	05/08/2007	Cortez	49.52	99.2	45.1	7.00	10.00	1.7		-0.079		
HS	06/20/2007	Zeus	44.28	08.5		6.95	9.35	1.5		-0.096		DO membrane fouled with both algae and barnacles
HS	07/20/2007	Calypso	48.59	66.7		7.05	10.08	22.0		-0.067		Turbidity probe lost its wiper
HS	09/04/2007	Zeus	49.40	95.1		6.97	10.07	3.2		-0.169		
HS	10/04/2007	Cortez	49.46	96.6		7.20	10.23	4.2		-0.272		
HS	11/07/2007	Calypso	50.02	68.7		7.09	10.06	0.2		-0.225		DO values high and erratic at beginning of deployment, then moderate and appear normal.
HS	12/01/2007											No sonde deployed due to ice

Homer Deep (HD):

Site	Calibration Date	Sonde	SpCond (50 mS/cm)	DO (%)	pH (7.02)	pH (10.06)	Turb (0 NTU)	Turb (123 NTU)	Depth (m)	Chl (0)	Comments
HD	1/17/2007	Nautilus	49.74	103.1	7.09	10.16	0.2		-0.006	0.1	
HD	2/8/2007	Vitus	50.97	95.9	7.10	10.16	0.9		-0.351	0.8	
HD	3/8/2007	Nautilus	50.50	99.3	6.96	9.99	0.2		-0.09	-0.2	
HD	4/8/2007	Vitus	50.22	98.8	7.04	10.08	1.8		-0.116	2.7	
HD	5/8/2007	Nautilus									No data; Suspect bad connection inside battery compartment.
HD	6/1/2007	Vitus	49.81	100.9	7.04	10.06	0.1		-0.141	0.5	
HD	6/26/2007	Neptune	50.43	100	6.94	9.97	-0.3		-0.07	0.5	
HD	8/28/2007	Nansen	49.68	98.2	6.88	9.94	0.4		-0.162	-0.1	
HD	10/4/2007	Vitus	50.93	102.8	7.00	10.03	4.8		-0.269	1.8	
HD	11/7/2007	Neptune	50.09	101.8	6.93	9.96	0.1	123	-0.049	0.5	
HD	12/5/2007	Kozloff	50.40	40.5	7.24	10.15	-2.6		-0.354		DO and chlorophyll probe malfunction; water in battery compartment

Seldovia Surface (SS):

Site	Calibration Date	Sonde	SpCond (50 mS/cm)	DO (%)	pH (7.02)	pH (10.06)	Turb (0 NTU)	Turb (123 NTU)	Depth (m)	Chl (0)	Comments
SS	1/16/2007	Calypso	49.91	102.1	7.04	10.09	0.5		-0.198		Turbidity wiper obscured optic.
SS	2/9/2007	Amundsen	49.31	104.0	7.14	10.10	-0.6		-0.025		Sonde operated intermittently until 2/23 then stopped.
SS	3/8/2007	Calypso	50.06	121.0	7.00	10.00	0.1		-0.073		
SS	4/11/2007	Nansen	50.28	94.8	7.05	10.07	1.6	122.3	-0.093		DO sensor drift
SS	5/9/2007	Calypso									Sonde did not log; no data
SS	5/10/2007	Kozloff		102.2	7.33	10.31	6.7		-0.051		Turbidity fouling
SS	7/20/2007	Cortez	50.90	104.6	6.73	8.28	0.2		-0.019		pH failed after 8/21; Turbidity fouling
SS	9/6/2007	Calypso	48.77	89.7	7.02	10.07	0.1		-0.338		
SS	10/4/2007	Kozloff	49.59	531.6	6.75	9.77	-6.3		-0.421		pH sensor failure; DO failed at post-calibration, but data looks fine.
SS	11/8/2007	Cortez	49.56	104.7	7.11	10.14	1.9	123	-0.056		buoy was hung-up on cable and was underwater
SS	11/23/2007	Zeus	49.80	63.7	7.05	10.04	0.3		-0.435		DO sensor drift

Seldovia Deep (SD):

Site	Calibration Date	Sonde	SpCond (50 mS/cm)	DO (%)	pH (7.02)	pH (10.06)	Turb (0 NTU)	Turb (123 NTU)	Depth (m)	Chl (0)	Comments
SD	1/16/2007	Cortez	51.21	77.6	7.12	10.18	-0.7		-0.203		DO sensor drift
SD	2/9/2007	Nansen	50.34	98.1	7.07	10.13	-0.4		-0.116		
SD	3/8/2007	Cortez	50.48	111.1	7.13	10.12	0.1		-0.073		
SD	4/11/2007	Kozloff	50.80	105.6	7.12	10.20	3.3		0.011		
SD	5/9/2007	Neptune									Sonde did not log; no data
SD	6/7/2007	Nansen	49.51	92.4	7.12	10.11	1.2		-0.05		
SD	7/20/2007	Vitus	49.03	94.5	7.08	10.12	0.2		-0.005	0.2	
SD	9/6/2007	Neptune	49.86	96.4	7.06	10.09	1.4		-0.281	1.7	
SD	10/5/2007	Nansen	49.80	68.0	7.08	10.19	-1.4		-0.412	-2.8	pH probe unstable; DO sensor drift
SD	11/8/2007	Vitus	49.17	93.6	7.12	10.10	0.6	123	-0.055	0.1	
SD	11/23/2007	Nansen	49.47	96.0	7.12	10.12	0.9		-0.413	0.2	pH became unstable mid-deployment

15) Other Remarks/Notes

Data are missing due to equipment or associated specific probes not being deployed, equipment failure, time of maintenance or calibration of equipment, or repair/replacement of a sampling station platform. Any NaNs in the dataset stand for “not a number” and are the result of low power, disconnected wires, or out of range readings. If additional information on missing data is needed, contact the Research Coordinator at the reserve submitting the data.

There were a few instances at this NERR site where turbidity recorded small negative values (-0001 and -0002). Because turbidity has a range of accuracy of ± 2 NTU, the technician did not delete or edit these values in any way.

At the 3/18 14:15 switch-out for SD there is a significant jump in dissolved oxygen. This is partly due to a Phytoplankton bloom and a couple of missing readings due to the switch-out. But all postcal data are good and the data appears to fit conditions.

The sondes at SS and HS would often get hung up on the cable and then get freed again (as tide comes in and out). Data within the top 1m are accepted (as that is the normal range of our surface sonde). Everything outside of that range was rejected.