

Kachemak Bay (KAC) NERR Water Quality Metadata
January – March 2025
Latest Update: 04/18/2025

Note: This is a provisional metadata document; it has not been authenticated as of its download date. Contents of this document are subject to change throughout the QAQC process and it should not be considered a final record of data documentation until that process is complete. Contact the CDMO (cdmosupport@baruch.sc.edu) or reserve with any additional questions.

I. Data Set and Research Descriptors

1) Principal investigator(s) and contact persons –

Contact Persons:

Lauren Sutton, Research Coordinator, lsutton7@alaska.edu

Chris Guo, SWMP Coordinator, chguo@alaska.edu

Address:

Kachemak Bay Research Reserve

2181 Kachemak Dr.

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2) Entry verification –

Deployment data are uploaded from the YSI data logger to a personal computer with Windows 7 or newer operating system. Files are exported from EcoWatch in a comma-delimited format (.CDF) , EcoWatch Lite in a comma separated file (CSV) or KOR Software in a comma separated file (CSV) and uploaded to the CDMO where they undergo automated primary QAQC; automated Depth/Level corrections for changes in barometric pressure (cDepth or cLevel parameters); and become part of the CDMO's online provisional database. All pre- and post-deployment data are removed from the file prior to upload. During primary QAQC, data are flagged if they are missing or out of sensor range. The edited file is then returned to the reserve for secondary QAQC 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 summary statistics, and graphs the data for review. It allows the user to apply QAQC flags and codes to the data, remove any overlapping deployment data, append files, and export the resulting data file for upload to the CDMO. Upload after secondary QAQC results in ingestion into the database as provisional plus data, recalculation of cDepth or cLevel parameters, and finally tertiary QAQC by the CDMO 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. Lauren Sutton and Chris Guo were responsible for data management.

3) Research objectives –

In Kachemak Bay, there are two permanent water quality monitoring stations (Homer and Seldovia), each having two data sondes. 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, one data logger is suspended 1-meter below the surface ("Surface"), and one data logger is suspended 1-meter from the bottom ("Deep"). At both locations the surface sondes are horizontally within 100 meters of the deep sondes. The circulation in Kachemak Bay is driven primarily by an 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 north shore, flowing past the Homer instruments. Additionally, trapped coastal flows separate the bay into two distinct ecosystems (inner vs outer bay), 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, freshwater runoff from the surrounding ice fields and watersheds dilute the salinity and increase the sediment load in the path of the Homer instruments. The in-flowing water, in the path of the Seldovia instruments, initially supports a marine system, while the northern 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 are meant to supplement studies on primary productivity, larval distribution, settlement, recruitment, growth rates, community dynamics, and biodiversity in the bay.

4) Research methods –

Both telemetered instruments (“Deep”) are stationary and 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 of the ocean floor (actual depth changes with respect to the tides). The surface sondes are attached to a buoy and a sonde guard that slides vertically on a cable to ensure that the sonde remains 1-meter below the surface as the tide is changing. Calibration and deployment were performed monthly using methods outlined in the YSI Operations Manual. The following sensors are calibrated using standards purchased from YSI: pH (7 and 10), conductivity (50 mS/cm), and turbidity (124 FNU). Depth is calibrated at zero compensating for barometric pressure. The Chlorophyll probe is calibrated in DI water (0 RFU) and Rhodamine solution compensating for temperature (16.4 RFU at 22 °C). 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. Data are collected at fifteen-minute sampling intervals on the hour in Alaska Standard Time.

A YSI WaterLog Storm 3 transmitter was installed at the Homer Deep station on 12/10/2020 and transmits data to the NOAA GOES satellite, NESDIS ID # 3B00077A WQ. A YSI WaterLog Storm 3 transmitter was installed at the Seldovia Deep station on 06/16/2024 and transmits data to the NOAA GOES satellite, NESDIS ID # 3B040240 WQ. 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 www.nerdsdata.org.

5) Site location and character –

Site name	Homer Surface	Homer Deep
Latitude and longitude	59° 36' 7.38 N, 151° 24' 33.90 W	59° 36' 7.24 N, 151° 24' 31.61 W
Tidal range (<i>meters</i>)	8.9	
Salinity range (<i>psu</i>)	10.2 – 32.2	24.9 – 32.7
Type and amount of freshwater input	Precipitation, glacial/snow melt, sea ice at times; Amount of freshwater input differs between surface and deep stations due to stratification	
Water depth (<i>meters, MLW</i>)	0.505 surveyed	

Sonde distance from bottom (<i>meters</i>)	1 (from sea surface)	1
Bottom habitat or type	Primarily sand	
Pollutants in area	None known	
Description of watershed	These stations are positioned at the middle of Kachemak Bay, downstream of inner bay circulation comprised of mixed freshwater sources as well as some oceanic input	

Site name	Seldovia Surface	Seldovia Deep
Latitude and longitude	59° 26' 27.56 N, 151° 43' 15.46 W	59° 26' 27.56 N, 151° 43' 15.46 W
Tidal range (<i>meters</i>)	9.1	
Salinity range (<i>psu</i>)	19.3 – 32.7	24.5 – 36.0
Type and amount of freshwater input	Precipitation, snow melt, submerged groundwater discharge, sea ice at times; Amount of freshwater input differs between surface and deep stations due to stratification	
Water depth (<i>meters</i> , <i>MLW</i>)	0.517 surveyed	
Sonde distance from bottom (<i>meters</i>)	1 (from sea surface)	1
Bottom habitat or type	Primarily sand	
Pollutants in area	None known	
Description of watershed	These stations are positioned near the mouth of Kachemak Bay on the southern coast, downstream of outer bay circulation comprised of oceanic input (Alaska Coastal Current) as well as some freshwater sources	

SWMP station timeline

Station Code	SWMP Status	Station Name	Location	Active Dates	Reason Decommissioned	Notes
kach3wq	p	Homer Surface 3	59° 36' 7.38 N, 151° 24' 33.90 W	05/31/2012 12:15 – current	NA	NA
kachdwq	P	Homer Dolphin Deep	59° 36' 7.24 N, 151° 24' 31.61 W	01/01/2003 00:00 – current	NA	NA
kacsdwq	P	Seldovia Deep	59° 26' 27.56 N, 151° 43' 15.46 W	01/01/2004 00:00 – current	NA	NA
kacsswq	P	Seldovia Surface	59° 26' 27.56 N, 151° 43' 15.46 W	01/01/2004 00:00 – current	NA	NA

kacbcwq	P	Bear Cove	59° 42' 20.41 N, 151° 3' 33.84 W	06/18/2002 11:30 - 09/24/2003 17:30	Change in research questions and difficult access.	Site was seasonal, because access was too difficult in winter.
kacdlwq	P	Homer Dolphin	59° 36' 7.24 N, 151° 24' 31.61 W	10/24/2002 10:00 - 12/31/2002 23:30	Just renamed to kachdwq.	Exact same site as kachdwq. Naming convention changed when installing paired surface- deep sondes.
kachowq	P	Homer	59° 36' 8.34 N, 151° 24' 36.00 W	07/12/2001 07:45 - 11/20/2002 12:30	On city dock. City built a newer dock surrounding old one.	1 meter off bottom, 62 meters from current kachdwq site. Data overlaps kacdlwq site in late 2002. Old mount destroyed by storm November 2002.
kachswq	P	Homer Dolphin Surface	59° 36' 7.24 N, 151° 24' 31.61 W	02/13/2004 09:30 - 11/28/2011 16:00	Sonde was getting destroyed by banging against pilings. Moved 35 meters.	Essential equivalent to kach3wq. Site was relocated to a safer location for the sonde in rough seas.
kacpgwq	P	Port Graham	59° 22' 13.91 N, 151° 53' 46.03 W	06/21/2002 10:00 - 09/24/2003 15:30	Change in research questions and difficult access.	Site was seasonal, because access was too difficult in winter.
kacsewq	P	Seldovia	59° 26' 27.56 N, 151° 43' 15.46 W	08/17/2001 15:15 - 12/31/2003 23:30	Just renamed to kacsdwq.	Exact same site as kacsdwq. Naming convention changed when installing paired surface- deep sondes.

6) Data collection period –

Homer Surface (H3)

[illegible]

Homer Deep (HD)

[illegible]

Seldovia Surface (SS)

[illegible]

Seldovia Deep (SD)

[illegible]

7) Distribution –

NOAA retains the right to analyze, synthesize and publish summaries of the NERRS System-wide Monitoring Program data. The NERRS retains the right to be fully credited for having collected and processed the data. Following academic courtesy standards, the NERR site where the data were collected should be contacted and fully acknowledged in any subsequent publications in which any part of the data are used. 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.

Requested citation format:

NOAA National Estuarine Research Reserve System (NERRS). System-wide Monitoring Program. Data accessed from the NOAA NERRS Centralized Data Management Office website: <http://www.nerrsdata.org/>; accessed 12 October 2024.

NERR water quality data and metadata can be obtained from the Research Coordinator at the individual NERR site (please see Principal Investigators and Contact Persons), 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 www.nerrsdata.org. Data are available in comma delimited format.

8) Associated researchers and projects –

As part of the SWMP long-term monitoring program, KAC NERR also collects 15-minute meteorological data and monthly grab and diel samples for nutrient/pigment data which may be correlated with this water quality dataset. These data are available at www.nerrsdata.org.

II. Physical Structure Descriptors

9) Sensor specifications –

[Instructions/Remove: Include the parameter description, units, sensor type, model #, range of measurement, accuracy and resolution for each sensor for all measuring devices (6600, 6600 EDS, 6600 EDS V2, 6600 V2, or EXO). ***Specify if all of your sondes are the same model and have the same configuration. If not, detail how many of each model you have, what different sensor configurations you use, and where the different models/configurations are deployed.*** See the following example, ***update for your sondes/sensors*** (do not include sondes/sensors that were not in use), and include the disclaimers below.]

Example: DEL NERR deployed mainly EXO data sondes and one 6600 EDS data sonde in 2020. 6600 EDS deployments occurred at DS only and utilized ROX DO sensors, these deployments are marked with an asterisk in the data collection period section.

YSI 6600EDS data sonde:

Parameter: Temperature

Units: Celsius (C)

Sensor Type: Thermistor

Model#: 6560

Range: -5 to 50 C

Accuracy: +/- 0.15

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 dependant)

Parameter: Salinity
Units: parts per thousand (ppt)
Sensor Type: Calculated from conductivity and temperature
Range: 0 to 70 ppt
Accuracy: +/- 1.0% of reading pr 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 to 500% air saturation: +/- 6% of the reading
Resolution: 0.1% air saturation

or

Sensor Type: Optical probe w/ mechanical cleaning
Model#: 6150 ROX
Range: 0 to 500% air saturation
Accuracy: 0-200% air saturation: +/- 1% of the reading or 1% air saturation, whichever is greater 200-500% air saturation: +/- 15% or reading
Resolution: 0.1% air saturation

Parameter: Dissolved Oxygen mg/L (Calculated from % air saturation, temperature, and salinity)
Units: milligrams/Liter (mg/L)
Sensor Type: Rapid Pulse - Clark type, polarographic
Model#: 6562
Range: 0 to 50 mg/L
Accuracy: 0-20 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

or

Units: milligrams/Liter (mg/L)
Sensor Type: Optical probe w/ mechanical cleaning
Model#: 6150 ROX
Range: 0 to 50 mg/L
Accuracy: 0-20 mg/L: +/- 0.1 mg/l or 1% of the reading, whichever is greater
20 to 50 mg/L: +/- 15% of the reading
Resolution: 0.01 mg/L

Parameter: Non-vented Level - Shallow (Depth)

Units: feet or meters (ft or m)
Sensor Type: Stainless steel strain gauge
Range: 0 to 30 ft (9.1 m)
Accuracy: +/- 0.06 ft (0.018 m)
Resolution: 0.001 ft (0.001 m)

Parameter: pH – bulb probe or EDS flat glass probe
Units: pH units
Sensor Type: Glass combination electrode
Model#: 6561 or 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 degree scatter, with mechanical cleaning
Model#: 6136
Range: 0 to 1000 NTU
Accuracy: +/- 2% of reading or 0.3 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

YSI EXO Sonde:

Parameter: Temperature
Units: Celsius (C)
Sensor Type: CT2 probe, Thermistor
Model#: 599870
Range: -5 to 50 C
Accuracy: -5 to 35: +/- 0.01, 35 to 50: +/- 0.05
Resolution: 0.001 C

Parameter: Conductivity
Units: milli-Siemens per cm (mS/cm)
Sensor Type: CT2 probe, 4-electrode cell with autoranging
Model#: 599870
Range: 0 to 200 mS/cm
Accuracy: 0 to 100: +/- 0.5% of reading or 0.001 mS/cm; 100 to 200: +/- 1% of reading
Resolution: 0.001 mS/cm to 0.1 mS/cm (range dependant)

Parameter: Salinity
Units: practical salinity units (psu)/parts per thousand (ppt)
Sensor Type: CT2 probe, Calculated from conductivity and temperature
Range: 0 to 70 psu
Accuracy: +/- 1.0% of reading pr 0.1 ppt, whichever is greater

Resolution: 0.01 psu

OR

Parameter: Temperature

Units: Celsius (C)

Sensor Type: Wiped probe; Thermistor

Model#: 599827

Range: -5 to 50 C

Accuracy: ± 0.2 C

Resolution: 0.001 C

Parameter: Conductivity

Units: milli-Siemens per cm (mS/cm)

Sensor Type: Wiped probe; 4-electrode cell with autoranging

Model#: 599827

Range: 0 to 100 mS/cm

Accuracy: $\pm 1\%$ of the reading or 0.002 mS/cm, whichever is greater

Resolution: 0.0001 to 0.01 mS/cm (range dependent)

Parameter: Salinity

Units: practical salinity units (psu)/parts per thousand (ppt)

Model#: 599827

Sensor Type: Wiped probe; Calculated from conductivity and temperature

Range: 0 to 70 ppt

Accuracy: $\pm 2\%$ of the reading or 0.2 ppt, whichever is greater

Resolution: 0.01 psu

Parameter: Dissolved Oxygen % saturation

Sensor Type: Optical probe w/ mechanical cleaning

Model#: 599100-01

Range: 0 to 500% air saturation

Accuracy: 0-200% air saturation: $\pm 1\%$ of the reading or 1% air saturation, whichever is greater 200-500% air saturation: $\pm 5\%$ of reading

Resolution: 0.1% air saturation

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

Units: milligrams/Liter (mg/L)

Sensor Type: Optical probe w/ mechanical cleaning

Model#: 599100-01

Range: 0 to 50 mg/L

Accuracy: 0-20 mg/L: ± 0.1 mg/L or 1% of the reading, whichever is greater

20 to 50 mg/L: $\pm 5\%$ of the reading

Resolution: 0.01 mg/L

Parameter: Non-vented Level - Shallow (Depth)

Units: feet or meters (ft or m)

Sensor Type: Stainless steel strain gauge

Range: 0 to 33 ft (10 m)

Accuracy: ± 0.013 ft (0.004 m)

Resolution: 0.001 ft (0.001 m)

Parameter: pH

Units: pH units

Sensor Type: Glass combination electrode
Model#: 599701(guarded) or 599702(wiped)
Range: 0 to 14 units
Accuracy: +/- 0.1 units within +/- 10° of calibration temperature, +/- 0.2 units for entire temperature range
Resolution: 0.01 units

Parameter: Turbidity
Units: formazin nephelometric units (FNU)
Sensor Type: Optical, 90 degree scatter
Model#: 599101-01
Range: 0 to 4000 FNU
Accuracy: 0 to 999 FNU: 0.3 FNU or +/-2% of reading (whichever is greater); 1000 to 4000 FNU +/-5% of reading
Resolution: 0 to 999 FNU: 0.01 FNU, 1000 to 4000 FNU: 0.1 FNU

Parameter: Chlorophyll
Units: micrograms/Liter
Sensor Type: Optical probe
Model#: 599102-01
Range: 0 to 400 ug/Liter
Accuracy: Dependent on methodology
Resolution: 0.01 ug/L chl a, 0.1% FS

Include the following DO (if a rapid pulse sensor was in use), Depth, Salinity and Turbidity data disclaimers:

Depth Qualifier:

The NERR System-Wide Monitoring Program utilizes YSI data sondes that can be equipped with either vented or non-vented depth/level sensors. Readings for both vented and non-vented sensors are automatically compensated for water density change due to variations in temperature and salinity; but for all non-vented depth measurements, changes in atmospheric pressure between calibrations appear as changes in water depth. The error is equal to approximately 1.02 cm for every 1 millibar change in atmospheric pressure, and is eliminated for vented 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 can be corrected.

In 2010, the CDMO began automatically correcting Depth/Level data for changes in barometric pressure as measured by the reserve's associated meteorological station during data ingestion. These corrected Depth/Level data are reported as cDepth and cLevel, and are assigned QAQC flags and codes based on QAQC protocols. Please see sections 11 and 12 for QAQC flag and code definitions.

NOTE: older Depth data cannot be corrected without verifying that the depth offset was in place and whether a vented or non-vented depth sensor was in use. No SWMP data prior to 2006 can be corrected using this method. The following equation is used for corrected Depth/Level data provided by the CDMO beginning in 2010:
$$((1013-BP)*0.0102)+\text{Depth/Level} = \text{cDepth/cLevel}.$$

Salinity units qualifier:

In 2013, EXO sondes were approved for SWMP use and began to be utilized by reserves. While the 6600 series sondes report salinity in parts per thousand (ppt) units, the EXO sondes report practical salinity units (psu). These units are essentially the same and for SWMP purposes are understood to be equivalent, however psu is considered the more appropriate designation. Moving forward the NERR System will assign psu salinity units for all data regardless of sonde type.

Turbidity qualifier:

In 2013, EXO sondes were approved for SWMP use and began to be utilized by reserves. While the 6600 series sondes report turbidity in nephelometric turbidity units (NTU), the EXO sondes use formazin nephelometric units (FNU). These units are essentially the same but indicate a difference in sensor methodology, for SWMP purposes they will be considered equivalent. Moving forward, the NERR System will use FNU/NTU as the designated units for all turbidity data regardless of sonde type. If turbidity units and sensor methodology are of concern, please see the Sensor Specifications portion of the metadata.

Chlorophyll fluorescence disclaimer:

YSI chlorophyll sensors (6025 or 599102-01) are designed to serve as a proxy for chlorophyll concentrations in the field for monitoring applications and complement traditional lab extraction methods; therefore, there are accuracy limitations associated with the data that are detailed in the YSI manual including interference from other fluorescent species, differences in calibration method, and effects of cell structure, particle size, organism type, temperature, and light on sensor measurements.

10) Coded variable definitions –

Sampling station:	Sampling site code:	Station code:
Homer Surface	H3	kach3wq
Homer Deep	HD	kachdwq
Seldovia Surface	SS	kacsswq
Seldovia Deep	SD	kacsdwq

11) 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 Depth collected from surface or near surface sonde
- 3 Calculated data: non-vented depth/level sensor correction for changes in barometric pressure
- 4 Historical Data: Pre-Auto QAQC
- 5 Corrected Data

12) QAQC code definitions –

QAQC codes are used in conjunction with QAQC flags to provide further documentation of the data and are also applied by insertion into the associated flag column. There are three (3) different code categories, general, sensor, and comment. General errors document general problems with the deployment or YSI datasonde, sensor errors are sensor specific, and comment codes are used to further document conditions or a problem with the data. Only one general or sensor error and one comment code can be applied to a particular data point, but some comment codes (marked with an * below) can be applied to the entire record in the F_Record column.

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

Corrected Depth/Level Data Codes

GCC	Calculated with data that were corrected during QA/QC
GCM	Calculated value could not be determined due to missing data
GCR	Calculated value could not be determined due to rejected data
GCS	Calculated value suspect due to questionable data
GCU	Calculated value could not be determined due to unavailable data

Sensor Errors

SBO	Blocked optic
SCF	Conductivity sensor failure
SCS	Chlorophyll spike
SDF	Depth port frozen
SDG	Suspect due to sensor diagnostics
SDO	DO suspect
SDP	DO membrane puncture
SFD	Depth from a surface or near surface sonde deployed from a floating platform, does not reflect the depth of the water column or tidal change
SIC	Incorrect calibration / contaminated standard
SNV	Negative value
SOW	Sensor out of water
SPC	Post calibration out of range
SQR	Data rejected due to QAQC checks
SSD	Sensor drift
SSM	Sensor malfunction
SSR	Sensor removed / not deployed
STF	Catastrophic temperature sensor failure
STS	Turbidity spike
SWM	Wiper malfunction / loss
SXD	Depth from a surface or near surface sonde deployed at a fixed depth, offset to substrate may be applied

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
CWE*	Significant weather event

13) Post deployment information –

Homer Surface (H3)

[illegible]

Homer Deep (HD)

[illegible]

Seldovia Surface (SS)

[illegible]

Seldovia Deep (SD)

[illegible]

14) 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.

Both Homer and Seldovia Surface stations move up and down a cable to remain at ~ 1 meter depth. Generally, a continuous trend in depth between 0 - 2 meters are expected. At times, the sonde can get hung up on the cable or may sometimes lose flotation causing it to become fixed in place. When this happens, data will resemble a tidal trend with continuously increasing and decreasing depths. Out of water events can also occur depending on the height the sonde became stuck.

Homer Surface (H3)

General

Starting 01/13/25 sonde X-Ray became stuck causing periodic collections at shallower than expected depths. From 01/16/24 22:00 to 01/28/24 20:45, X-Ray appears to become stuck at a different deeper depth causing collections at much larger depths than expected. After 01/28/25 thru to the end of deployment on 02/04/25, X-Ray appears to become stuck at a position similar to the first causing periodic collections at a shallower than expected depth. These records were flagged with CWD and depths rejected. Other parameters appeared to resemble expected conditions- so I have not flagged most of it yet. Data were rejected when obvious breaks in value trends appeared.

The Homer Surface cable were replaced prior to deployment of sonde Papa on 02/06/25. However, the cable accidentally introduced hardware that would keep the station fixed at very low tides, causing periods of shallower than normal depth collections. These issues started 02/11/25 and continued through the next couple of deployments DD/MM/YY occurring every ~ 2 weeks with the tide cycle. Additionally, sometime after 03/01/25 20:45, the buoy floating the station was lost causing collections at larger than expected depths. The buoy was replaced during station maintenance on 03/03/25 prior to deployment of sonde X-Ray. Data records during this whole period were flagged with CWD and depths rejected during these periods. Associated parameters did not appear to be affected except at depths close to 0 meters- these data were also rejected.

Homer Deep (HD)

Seldovia Surface (SS)

General

Sonde Gandalf became stuck on anchor cable from 02/04/25 14:30 to end of deployment at 02/05/25 09:30. Depths during this period were rejected and records flagged with CWD. I have not added flags to other data because generally they don't seem to differ from expected conditions.

Sonde Whiskey was deployed just prior to 02/05/25 10:00 collection; dissolved oxygen and pH sensors were still equilibrating so these data were rejected.

Seldovia Deep (SD)

Dissolved oxygen

Jan deploy (Valence) is incongruous with surrounding deployments – sensor drift? DO cap was replaced before sensor 15A100363 next March deploy (Taxi)