



Supplement of

A high-resolution synthesis dataset for multistressor analyses along the US West Coast

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S1: Formatting Example

Here, we provide data formatting and quality flagging examples to illustrate our “human in the loop” QA/QC practices.

We are using a subset of dataset 40 (Kroeker et al., 2023) for both the formatting and flagging example). The full dataset 40 includes temperature, dissolved oxygen, and pH time series from SeapHOx instruments placed at six different sites along the coast. For simplicity, we show only 1/6 sites here.

All datasets pulled into the MOCHA synthesis were converted to a common format and units. While this process was unique for every dataset, the principles were the following: * 1) manipulate the minimal amount necessary. * 2) retain all directly measured parameters. * 3) discard calculated parameters.

```
dat <- read_csv("40_subset_BC.csv")
```

S1.1: Location, date, time, and project information

All observations need to be accompanied by location, date, time, depth, and project information. Here, we assign a dataset ID number to link it to our metadata spreadsheet; add habitat, sampling scheme, and measurement type (gleaned from individual project metadata), and format temporal and spatial columns.

```
## Make our target dataframe with correct formatting
target_cols <- c("dataset_id", "latitude", "longitude", "depth_m", "time_utc", "t_C",
  "t_flag", "sal_pss", "sal_flag", "pH_total", "pH_flag", "pH_type",
  "pCO2_uatm", "pCO2_flag", "pCO2_type", "fCO2_uatm", "fCO2_flag",
  "fCO2_type", "tCO2_umolkg", "tCO2_flag", "tCO2_type", "ta_umolkg",
  "ta_flag", "ta_type", "do_umolkg", "do_sat", "do_flag", "do_type",
  "chl_ugL", "chl_flag", "chl_type", "si_umolkg", "nh4_umolkg",
  "no3_umolkg", "no2_umolkg", "po3_umolkg", "nutr_flag", "nutr_type",
  "habitat", "sample_scheme")
df40 <- data.frame(matrix(nrow = nrow(dat), ncol = 40))
names(df40) <- target_cols

## Input dataset_id, habitat, and sample scheme
## Copy over coordinates, depth, and datetime if possible.
## Input instrument types
df40 <- df40 %>%
  mutate(dataset_id = 40, sample_scheme = "intertidal/subtidal sensor deployment",
    habitat = "oceanic") %>%
  mutate(latitude = dat$latitude, longitude = dat$longitude,
    depth_m = dat$depth) %>%
  mutate(pH_type = "autonomous sensor", do_type = "autonomous sensor")

# In this case, the date and time need some formatting before being copied over
#Format the date and time
dat <- dat %>%
  mutate(day = str_sub(date, start = 1L, end = 2L)) %>%
  mutate(month = str_sub(date, start = 3L, end = 4L)) %>%
  mutate(year = str_sub(date, start = 5L, end = 8L)) %>%
  mutate(date2 = lubridate::make_date(month = month, day = day,
    year = year)) %>%
  mutate(time_utc = lubridate::ymd_hms(paste(date2, time, sep = " ")))
```

```

# Copy the datetime over
df40$time_utc <- dat$time_utc

# Get the temperature when its missing
dat <- dat %>%
  mutate(qc_temp = ifelse(is.na(temp) & !is.na(do_temp), 2, qc_temp)) %>%
  mutate(temp = ifelse(is.na(temp), do_temp, temp))

```

Measured parameter data should be accompanied by QA/QC information when possible. Whatever the original publisher's QA/QC system, we mapped all data highlighted by the original investigators as “bad” or “unreliable” to our flag of 3. All other data, regardless of author notes, was mapped to our flag of 2 (unevaluated) until the secondary QC stage demonstrated in part 2 of this supplement. In this example dataset, the columns “qc_temp”, “do_qc”, and “qc_pH” are the quality control notes from primary QC. A “4” flag denotes unreliable observations.

```

# Grab temperature, do (umol/kg), and pH observations and quality flags
# Map "bad" flags to 3, all others to 2
df40 <- df40 %>%
  mutate(t_C = dat$temp, pH_total = dat$pH, do_umolkg = dat$do_umolkg) %>%
  mutate(t_flag = dat$qc_temp, pH_flag = dat$qc_pH, do_flag = dat$do_qc) %>%
  mutate(across(c(t_flag, pH_flag, do_flag), ~ ifelse(. == 4, 3, 2)))

```

When necessary, measured parameters were converted to our chosen units or adjusted for *in-situ* conditions. In this example dataset, the temperature is already in degrees Celcius and the pH is already *in-situ* and on the total scale, but the dissolved oxygen needs to be converted to saturation.

```

oxy_saturation <- function(temperature_celsius, do_umolkg, salinity){

  A0 = 5.80818
  A1 = 3.20684
  A2 = 4.11890
  A3 = 4.93845
  A4 = 1.01567
  A5 = 1.41575
  B0 = -7.01211e-3
  B1 = -7.25958e-3
  B2 = -7.93334e-3
  B3 = -5.54491e-3
  C0 = -1.32412e-7

  Temp = log((298.15-temperature_celsius)/(273.15+temperature_celsius))

  #Get the saturation percent
  100 * do_umolkg/exp((A0 + A1*Temp + A2*Temp^2 + A3*Temp^3 + A4*Temp^4 +
    A5*Temp^5) + salinity*(B0 + B1*Temp + B2*Temp^2 +
    B3*Temp^3) + C0*salinity^2)
}

# Convert the DO to %sat using a salinity of 33.5, as recommended by the Kroeker lab
df40 <- df40 %>%
  mutate(do_sat = oxy_saturation(t_C, do_umolkg, 33.5))

```

The dataset is now formatted and ready for our secondary QC practices.

S2: QA/QC Example: Dataset 40 Subset

For all dataset in this compilation, our flagging principles were the following: * All data identified as unreliable by the original publishers/investigators is assigned an “unreliable” (3) flag. + Retain these flags even if the data looks reasonable during this secondary QC. * All other data is examined through as many lenses as possible and considered in its geographic and temporal context. * Err toward inclusion. If data are reasonable and plausible, do not assign an “unreliable” flag. * For all data that have been examined, upgrade quality flags from 2s (unexamined) to 1s (plausible and reliable) after identifying all unreliable data.

S2.1: Dataset 40 Considerations

This example will walk through our typical project QA/QC procedures for time series data using a subset of dataset 40 from the Big Creek site and formatted in the example above. These data were generated by a submerged SeapHOx measuring *in-situ* temperature, dissolved oxygen, and pH and are published in full in Kroeker et al. (2023).

For autonomous sensor datasets, QA/QC starts with time series graphs, then moves into property-property plots as appropriate. Here, we show the original time series plots with the original investigator’s initial quality flags. Next, we will identify any additional data that should be assigned an “unreliable” (3) quality flag.

For each of the time series below, we first show all of the data with “unreliable” observations identified by primary QC colored in yellow. Next, we filter out this unreliable data to focus on the data that needs secondary QC. These plots are colored by a second parameter to provide additional context. Additional data identified as “unreliable” during the secondary QC using the time series is circled in red.

S2.2: Individual Time Series QA/QC

S2.2.1: Temperature Time Series

The temperature time series looks plausible. Additional unreliable temperatures may become apparent in property-property plots (next section).

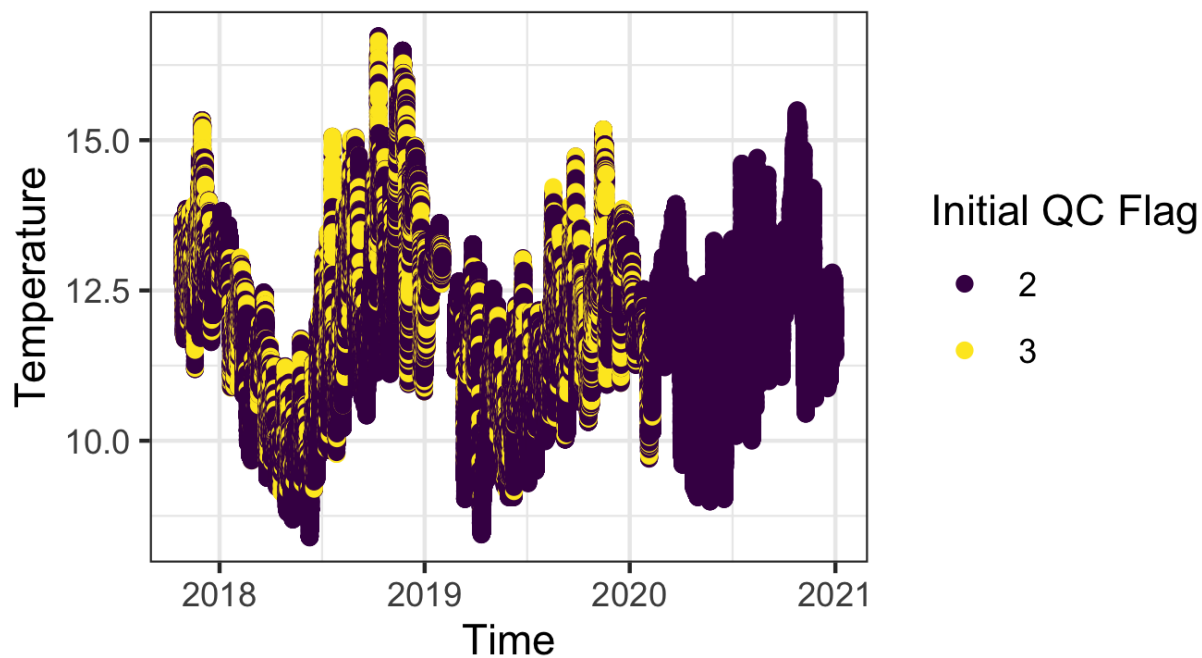
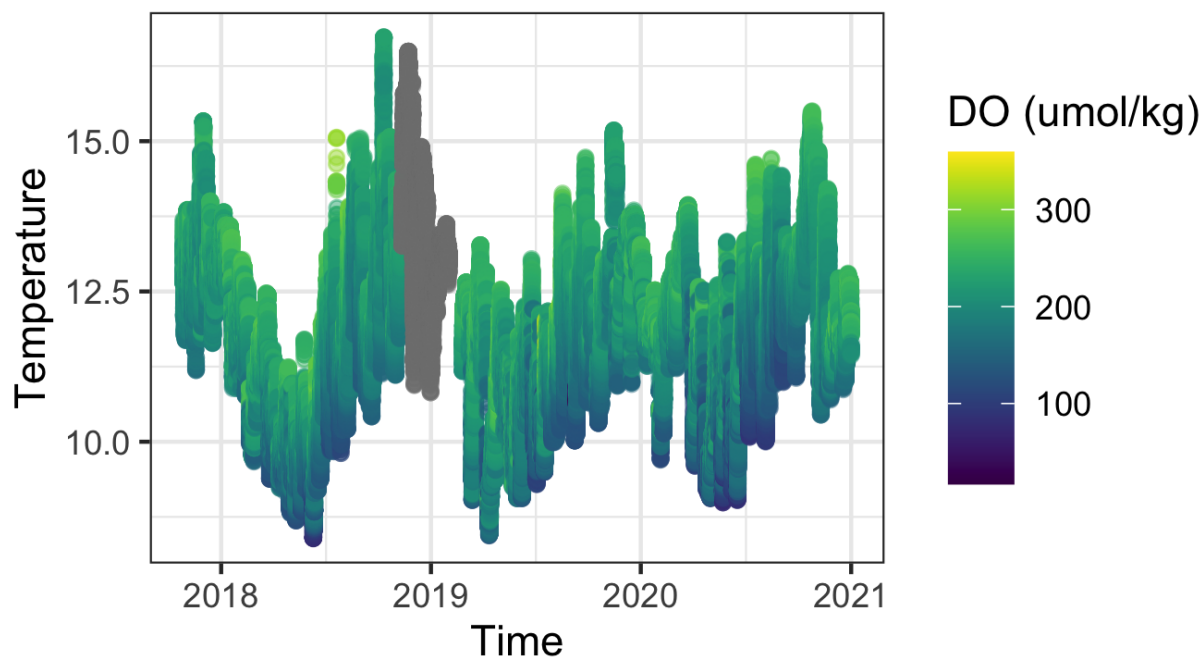


Figure S1: Temperature time series with original investigator flags.



S2.2.2: Dissolved Oxygen Time Series

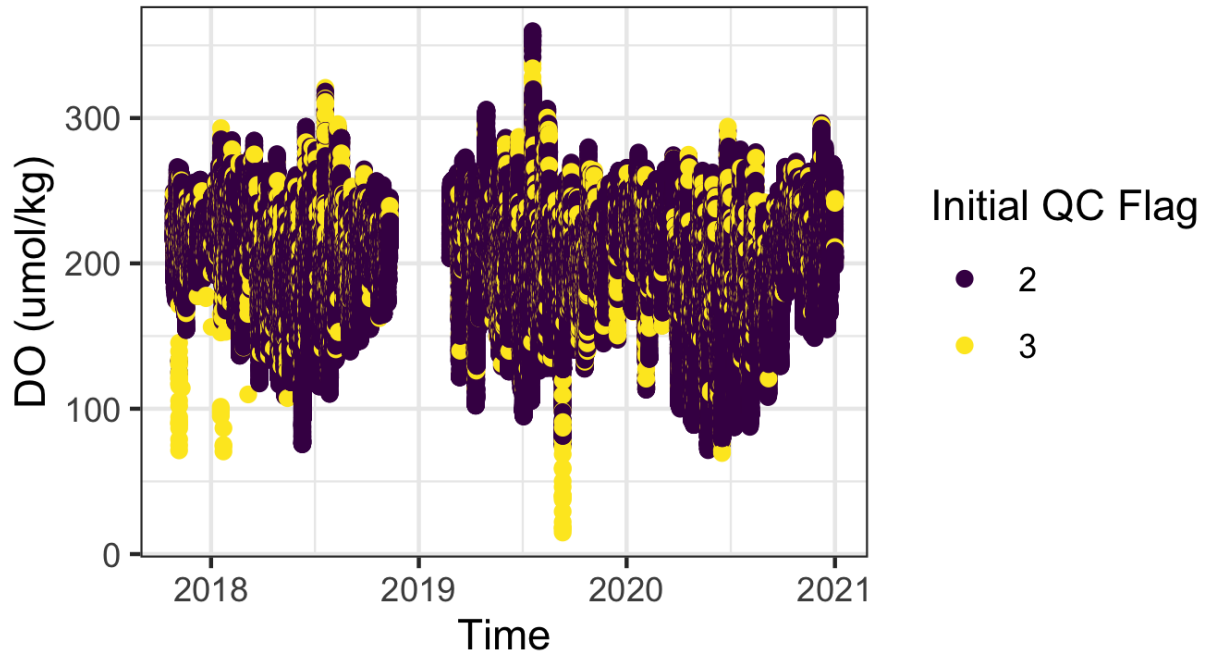


Figure S2: Dissolved oxygen time series with original quality flags.

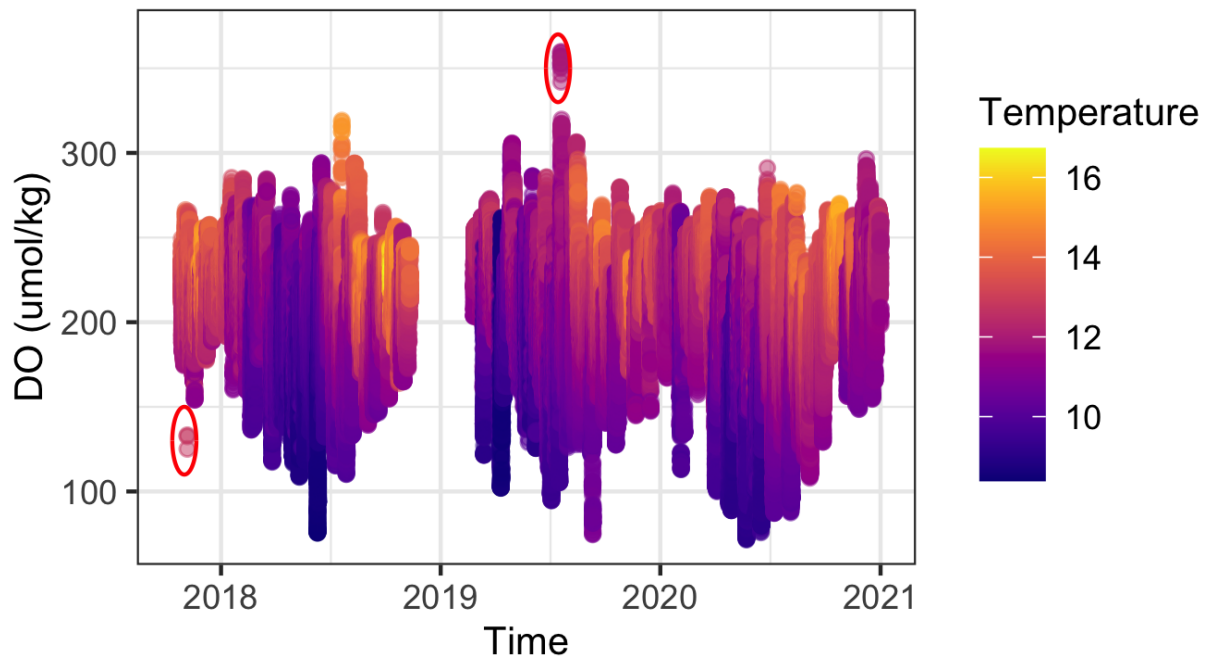


Figure S3: Dissolved oxygen time series with initial unreliable data removed.

S2.2.3: pH Time Series

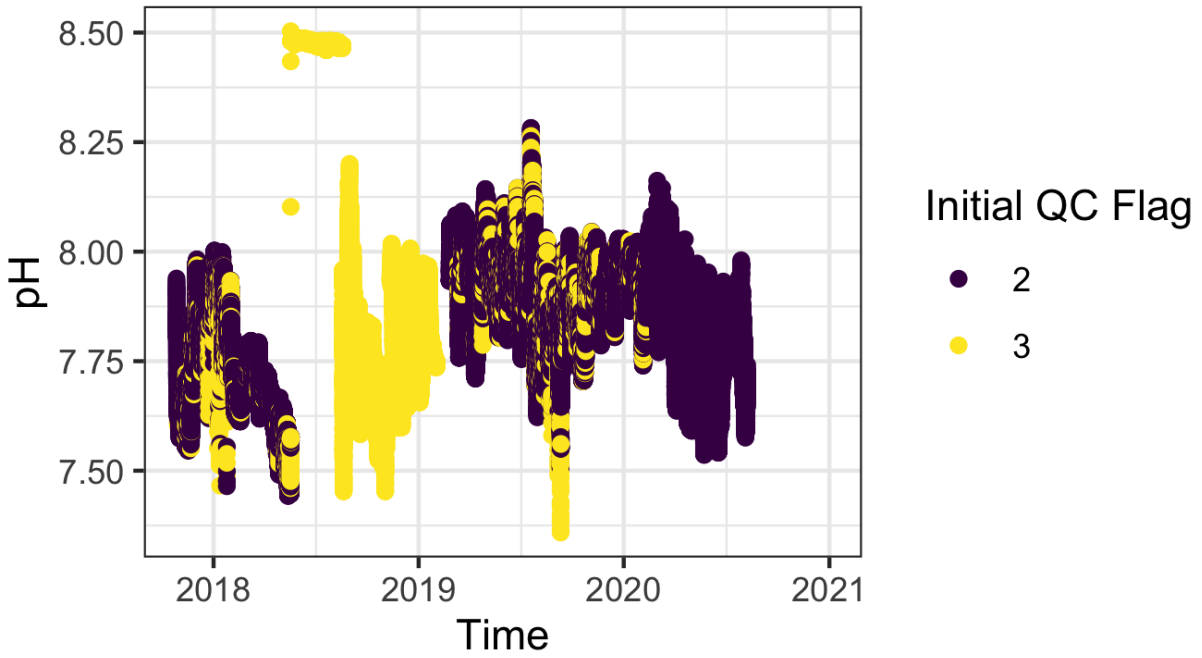


Figure S4: pH time series with original quality flags.

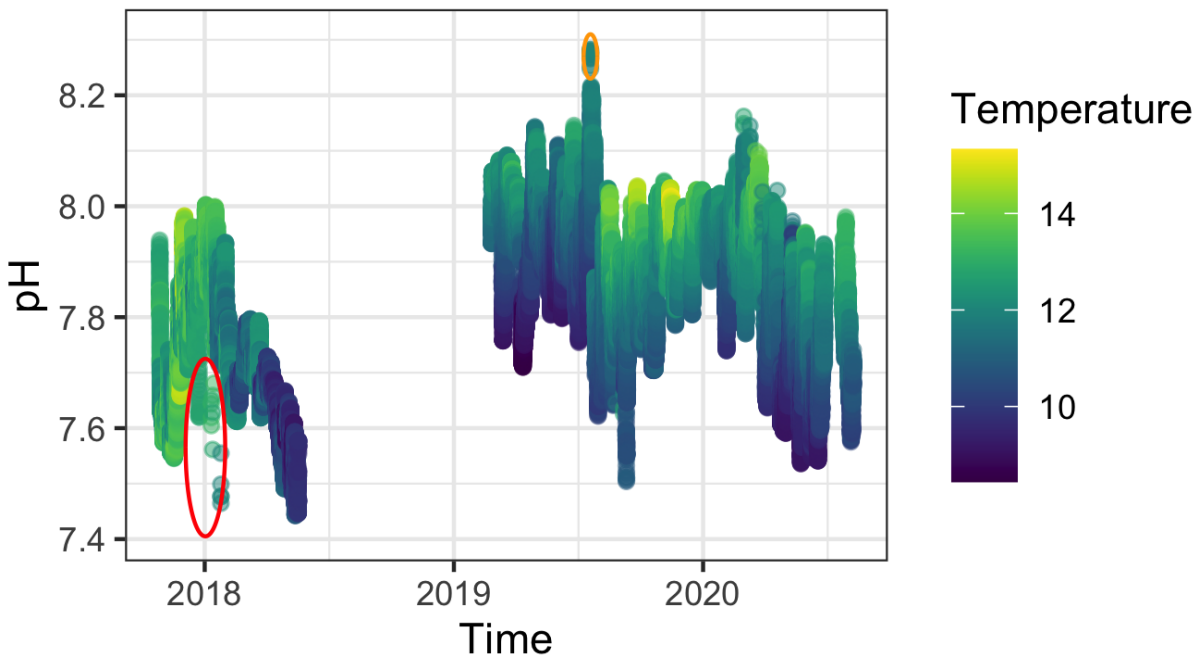


Figure S5: pH time series with originally noted unreliable data removed.

As necessary, we examined subsets of time series to get a closer look at the data. Here, we're showing the previous time series from 2019 onward. This highlights a few scattered pH observations in 2020 that seem to have unusual temperatures relative to surrounding data and might be unreliable, though they do not have extreme pH values. These points will be better investigated in property-property plots.

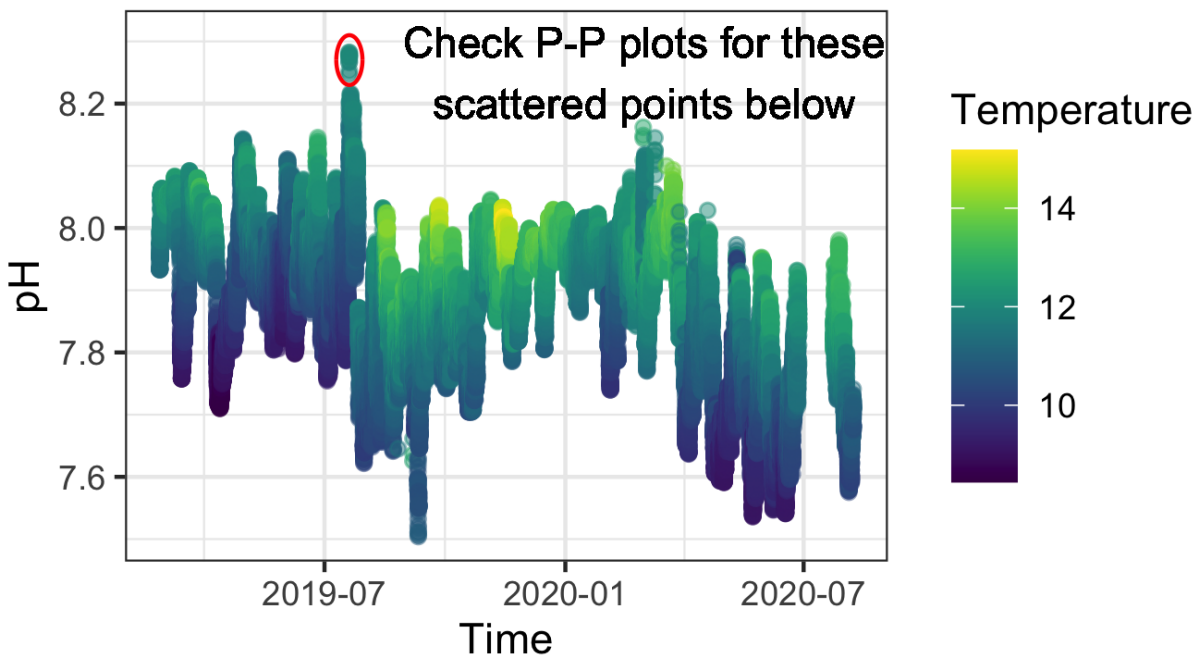


Figure S6: pH time series subset.

S2.2.4: Apply the additional time series flags

Flag the additional unreliable data identified in the time series plots. Retain the 3 flags for all previously identified unreliable data. Eliminate flags for rows with no data.

Note that this flagging code is based on the specific plots and data shown. Each dataset was examined individually, generic flags based on time or parameter values do not apply across datasets (e.g., the code identifying the 2017 unreliable dissolved oxygen observations is not meant to imply that *all* dissolved oxygen observations before 2018 and below 150 $\mu\text{mol/kg}$ are considered unreliable).

```
df40 <- df40 %>%
  mutate(t_flag = case_when(t_flag == 3 ~ 3,
    !is.na(t_C) ~ 2,
    TRUE ~ NA_real_)) %>%
  mutate(do_flag = case_when(do_flag == 3 ~ 3,
    time_utc < "2018-01-01" & do_umolkg < 150 ~ 3,
    do_umolkg > 330 ~ 3,
    !is.na(do_umolkg) ~ 2,
    TRUE ~ NA_real_)) %>%
  mutate(pH_flag = case_when(pH_flag == 3 ~ 3,
    time_utc > "2017-12-20" & time_utc < "2017-12-25"
    & pH_total < 7.79 ~ 3,
    time_utc > "2018-01-01" & time_utc < "2018-01-15"
    & pH_total < 7.81 ~ 3,
```



```

time_utc > "2018-01-15" & time_utc < "2018-02-15"
& pH_total < 7.6 ~ 3,
pH_total > 8.24 ~ 3,
!is.na(pH_total) ~ 2,
TRUE ~ NA_real_)

```

S2.3: Property-Property QA/QC for Autonomous Sensor Data

With all multiparameter data sets, we used property-property plots to ensure that data relationships were consistent with biological activity, conservative mixing, and other oceanographic considerations. Here, we will focus on dissolved oxygen and pH data that have not been identified as unreliable either in the original author’s quality control or in our time series-based secondary quality control discussed above. All pH and DO data that has already been flagged with a 3 QC value has been excluded. “Unreliable” temperature data is retained in these plots to examine how these temperatures might have affected the pH and DO measurements.

S2.3.1: Property-Property Plots for Dataset 40 Subset

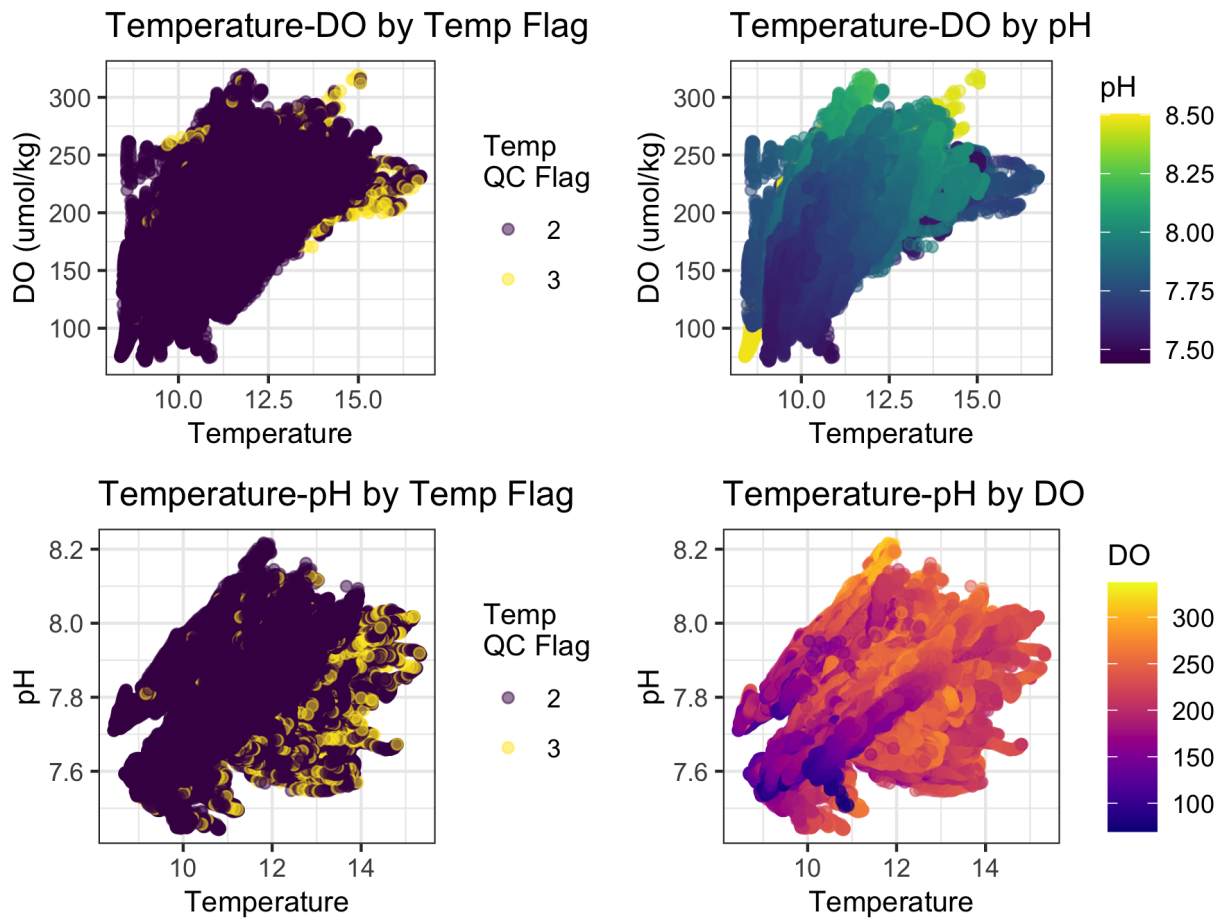


Figure S7: Property-property plots of temperature, dissolved oxygen, and pH for QA/QC.

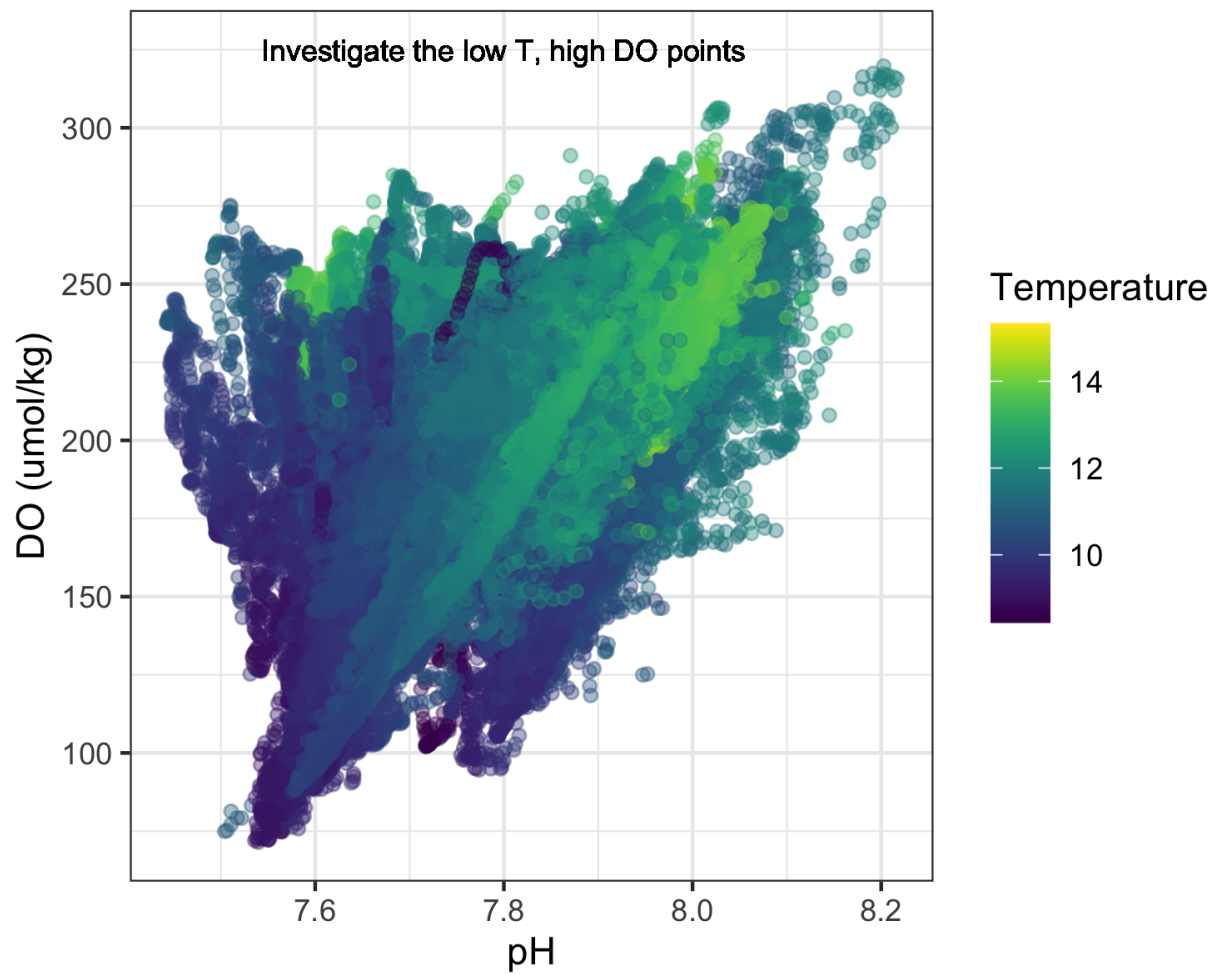


Figure S8: pH versus dissolved oxygen property-property plot.

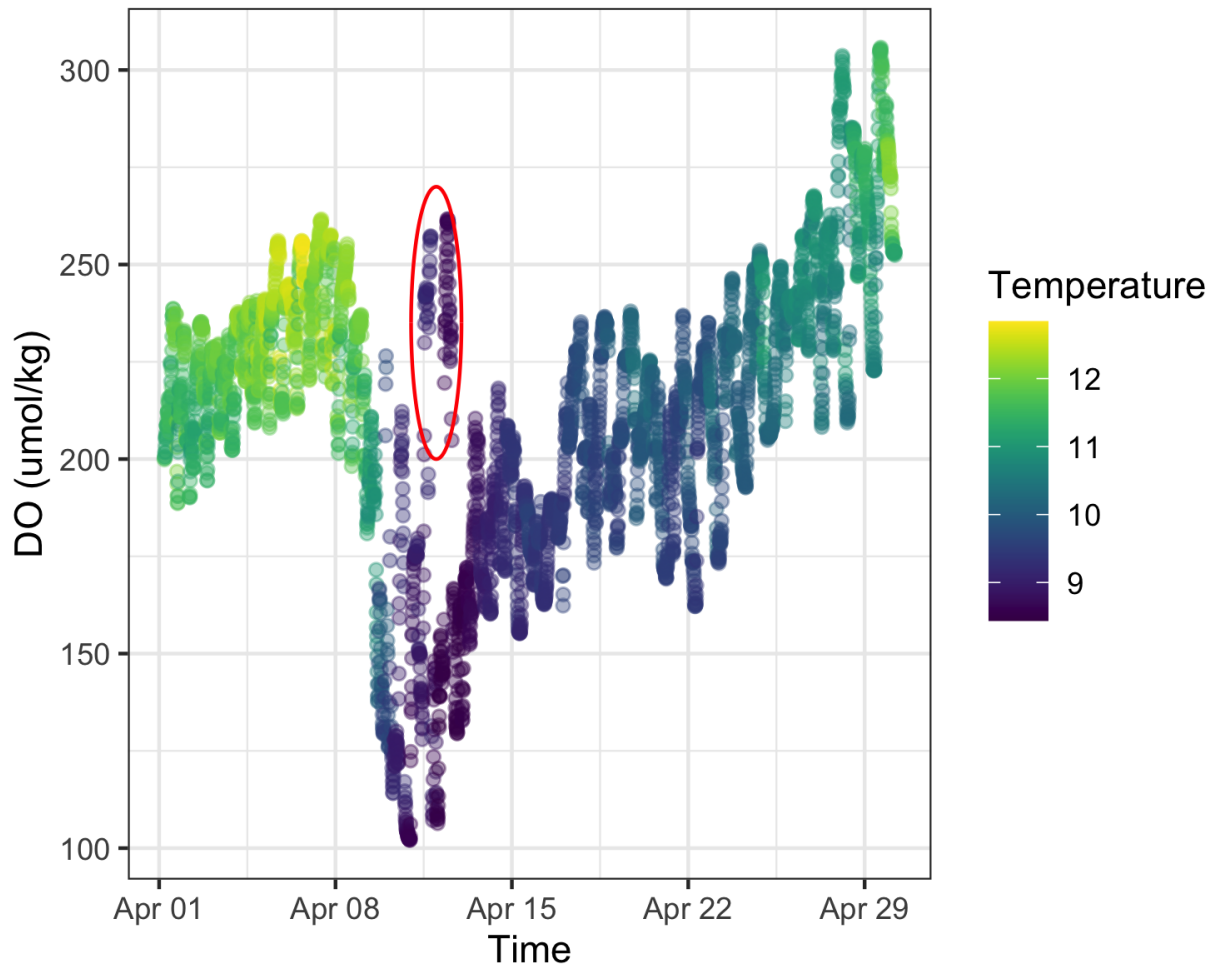


Figure S9: Time series of the low dissolved oxygen, mid-pH event identified in Fig. S9.

The property-property plots look plausible in general and don't suggest many additional flags. We will flag the high dissolved oxygen readings associated with the very low temperature event in April of 2019 since these readings are far above what any similar temperature dissolved oxygen values are *and* the sensor data has a large discontinuity between the bulk of the dissolved oxygen readings and the anomalous, higher dissolved oxygen readings.

After marking these high dissolved oxygen readings, we will update all data that hasn't been flagged with a "unreliable" marker (3) to a "reliable or plausible" (1) QC status.

```
## Apply 3 flags to the high DOs in mid April 2019
## Update all flags that aren't 3s to be 1s
df40 <- df40 %>%
  mutate(do_flag = case_when(do_flag == 3 ~ 3,
                             do_umolkg > 225 & t_C < 9 & time_utc > "2019-04-08"
                               & time_utc < "2019-04-15" ~ 3,
                             do_umolkg > 200 & t_C < 9 & time_utc > "2019-04-12"
                               & time_utc < "2019-04-13" ~ 3,
                             !is.na(do_umolkg) ~ 1,
                             TRUE ~ NA_real_)) %>%
  mutate(pH_flag = case_when(pH_flag == 3 ~ 3,
```

```
      !is.na(pH_total) ~ 1,  
      TRUE ~ NA_real_)) %>%  
mutate(t_C = case_when(t_flag == 3 ~ 3,  
      !is.na(t_C) ~ 1,  
      TRUE ~ NA_real_))
```

S3: References

Kroeker, K. J., Donham, E. M., Vylet, K., Warren, J. K., Cheres, J., Fiechter, J., Freiwald, J., and Takeshita, Y.: Exposure to extremes in multiple global change drivers: Characterizing pH, dissolved oxygen, and temperature variability in a dynamic, upwelling dominated ecosystem, *Limnol. Oceanogr.*, 1–13, <https://doi.org/10.1002/lno.12371>, 2023.

S4: Dataset Metadata Table

Dataset ID	Dataset Name	Primary location	Latitude range	Longitude range	Depths	Habitat	Date Range	No. Obs.	Sampling scheme	Parameters	Sensors	Comments	Dataset citation
1	SBC LTER: Reference: Sea-surface water temperature, Santa Barbara Harbor, Santa Barbara, CA, USA	Santa Barbara, CA	34.40487	-119.6922	0 m	Oceanic	01/1955 - 12/2018	23373	Intertidal/Subtidal discrete collection	T			Carter, M. L., Flick, R. E., Terrill, E., Beckhaus, E. C., Martin, K., Fey, C. L., Walker, P. W., Largier, J. L., and McGowan, J. A.: Shore Stations Program Data Archive: Current and historical coastal ocean temperature and salinity measurements from California stations, UC San Diego Library Digital Collections [data set], https://doi.org/10.6075/J06TOK0M , 2021.
2	National Data Buoy Center Station BDXC1 Bodega Head, CA	Bodega Head, CA	38.317	-123.071	0 m	Oceanic	11/2015 - 12/2018	84932	Mooring	T, S, Chl	YSI (6-Series)		National Data Buoy Center: Station BDXC1 - Bodega, CA, National Oceanic and Atmospheric Administration [data set], https://www.ndbc.noaa.gov/historical_data.shtml#ocean , 2023.
3	SBC LTER: Ocean: Time-series: Mid-water SeaFET and CO2 system chemistry at Alegria (ALE)	Santa Barbara, CA	34.4617	-120.29	3 m	Oceanic	06/2011 - 01/2014	67048	Mooring	T, S, pH, TA	Sea-Bird SeaFET; Conductivity and Temperature sensor (SBE 37-SM MicroCAT)		Santa Barbara Coastal LTER, Hofmann, G.E. and Washburn, L.: SBC LTER: Ocean: Time-series: Mid-water SeaFET pH and CO2 system chemistry at Alegria(ALE), ongoing since 2011-06-21, Environmental Data Initiative [data set], https://doi.org/10.6073/pasta/1bd1491475ff6afee4be10d054d1ef0b , 2018
5	Chemical and hydrographic profile measurements during the 2016 West Coast Ocean Acidification Cruise (WCOA2016, May 5 to June 7, 2016)	West Coast of the U.S.	32.77 to 48.49	-126.6 to -117.8	2 m to 2503 m	Oceanic	05/2016 - 06/2016	1371	Cruise	T, S, pH, DIC, TA, DO, Chl, Nutrients	CTD (SBE9+)	Cruise stations have been cropped to U.S. waters.	Alin, S. R., Feely, R. A., Hales, B., Byrne, R. H., Cochlan, W., Liu, X., and Greeley, D.: Dissolved inorganic carbon, total alkalinity, pH on total scale, and other variables collected from profile and discrete sample observations using CTD, Niskin bottle, and other instruments from NOAA Ship Ronald H. Brown in the U.S. West Coast California Current System from 2016-05-08 to 2016-06-06 (NCEI Accession 0169412), NOAA National Centers for Environmental Information [data set], https://doi.org/10.7289/v5v40shg , 2017.
6	National Data Buoy Center Station 46025 Santa Monica Basin, CA	Channel Islands, CA	33.763	-119.053	1 m	Oceanic	12/2007 - 06/2009	12407	Mooring	T, S	YSI; Conductivity and Temperature sensors (SBE 16 SeaCAT, and SBE 37-SM MicroCAT)		National Data Buoy Center: Station 46205 - West Dixon Entrance, CA, National Oceanic and Atmospheric Administration [data set], https://www.ndbc.noaa.gov/historical_data.shtml#ocean , 2023.
7	National Data Buoy Center Station 46217 Anacapa Passage, CA	Channel Islands, CA	34.167	-119.435	0.46 m	Oceanic	09/2004 - 05/2019	214197	Mooring	T	YSI		National Data Buoy Center: Station 46217 - Anacapa Passage, CA (111), National Oceanic and Atmospheric Administration [data set], https://www.ndbc.noaa.gov/historical_data.shtml#ocean , 2023.
8	National Data Buoy Center Station 46053 Channel Islands, CA	Channel Islands, CA	34.252	-119.853	1 m	Oceanic	03/2007 - 09/2008	13302	Mooring	T, S	YSI		National Data Buoy Center: Station 46053 (LLNR 196) - EAST SANTA BARBARA - 12NM Southwest of Santa Barbara, CA, National Oceanic and Atmospheric Administration [data set], https://www.ndbc.noaa.gov/historical_data.shtml#ocean , 2023.
9	National Data Buoy Center Station TDPC1 Trinidad, CA	Eureka, CA	41.055	-124.147	3 m	Oceanic	07/2007 - 09/2011	13564	Mooring	T, S, DO, Chl	YSI	This dataset overlaps with dataset 45 (CenCOOS Humboldt/Trinidad Staion) and is taken from the same shore station over a slightly different timeline. Overlapping observations have been cropped out of this dataset to avoid duplicates.	National Data Buoy Center: Station TDPC1 - Trinidad Pier Trinidad, CA, National Oceanic and Atmospheric Administration [data set], https://www.ndbc.noaa.gov/historical_data.shtml#ocean , 2023.
10	National Data Buoy Center Station FPXC1 Fort Point, CA	Fort Point, San Francisco Bay, CA	37.807	-122.466	0 m	Estuarine	11/2015 - 12/2018	83030	Mooring	T, S, Chl	YSI		National Data Buoy Center: Station FPXC1 - Fort Point, CA, National Oceanic and Atmospheric Administration [data set], https://www.ndbc.noaa.gov/station_page.php?station=bdxc1 , 2023.
11	National Data Buoy Center Station 46221 Santa Monica Bay, CA	Santa Monica Bay, CA	33.855	-118.634	0.46 m	Oceanic	09/2004 - 12/2020	246676	Mooring	T	YSI		National Data Buoy Center: Station 46221 - Santa Monica Bay, CA (028), National Oceanic and Atmospheric Administration [data set], https://www.ndbc.noaa.gov/historical_data.shtml#ocean , 2023.
12	National Data Buoy Center Station 46235 Imperial Beach, CA	Imperial Beach, CA	32.57	-117.169	0.46 m	Oceanic	05/2015 - 12/2018	45470	Mooring	T	YSI		National Data Buoy Center: Station 46235 - Imperial Beach Nearshore, CA (155), National Oceanic and Atmospheric Administration [data set], https://www.ndbc.noaa.gov/historical_data.shtml#ocean , 2023.
14	National Data Buoy Center Station 46251 Santa Cruz Basin, CA	Santa Cruz Basin, CA	33.761	-119.559	0.46 m	Oceanic	10/2013 - 12/2018	69772	Mooring	T	YSI		National Data Buoy Center: Station 46251 - Santa Cruz Basin, CA (203), National Oceanic and Atmospheric Administration [data set], https://www.ndbc.noaa.gov/historical_data.shtml#ocean , 2023.
15	National Data Buoy Center Station ICAC1 Santa Monica Pier, CA	Santa Monica, CA	34.008	-118.5	10.3 m	Oceanic	01/2010 - 12/2020	941237	Mooring	T	YSI		National Data Buoy Center: Station ICAC1 - 9410840 - Santa Monica Pier, National Oceanic and Atmospheric Administration [data set], https://www.ndbc.noaa.gov/historical_data.shtml#ocean , 2023.

16	National Data Buoy Center Station PRYC1 Point Reyes, CA	Point Reyes, CA	37.996	-122.977	1.5 m	Oceanic	04/2005 - 12/2018	984134	Mooring	T	YSI		National Data Buoy Center: Station PRYC1 - 9415020 - Point Reyes, CA, National Oceanic and Atmospheric Administration [data set], https://www.ndbc.noaa.gov/historical_data.shtml#ocean , 2023.
17	National Data Buoy Center Station HBXC1 Humboldt Bay Pier, CA	Humboldt Bay, CA	40.777	-124.197	0 m	Estuarine	11/2015 - 12/2018	20766	Intertidal/ Subtidal sensor deployment	T, S, DO, Chl	YSI (6-Series)		National Data Buoy Center: Station HBXC1 - Humboldt, CA, National Oceanic and Atmospheric Administration [data set], https://www.ndbc.noaa.gov/historical_data.shtml#ocean , 2023.
18	National Data Buoy Center Station MBXC1 Morro Bay BM1 T Pier, CA	Morro Bay, CA	35.37	-120.858	0 m	Estuarine	11/2015 - 01/2019	44201	Mooring	T, S, DO, Chl	YSI	This dataset overlaps with dataset 53 (Morro Bay BM1-T Pier) and is taken from the same shore station, though the two datasets have different time ranges. Data from the published NDBC record that overlaps with dataset 53 has been cropped out to avoid duplicates.	National Data Buoy Center: Station MBXC1 - Morro Bay - BM1 T-Pier, CA, National Oceanic and Atmospheric Administration [data set], https://www.ndbc.noaa.gov/historical_data.shtml#ocean , 2023.
19	National Data Buoy Center Station MLSC1 Moss Landing, CA	Moss Landing, CA	36.802	-121.791	0 m	Oceanic	08/2009 - 12/2018	162270	Mooring	T, S, DO	pH Electrode (Honeywell DuraFET III); Oxygen Probe (Oxyguard 840)		National Data Buoy Center: Station MLSC1 - Moss Landing, South Harbor, CA, National Oceanic and Atmospheric Administration [data set], https://www.ndbc.noaa.gov/historical_data.shtml#ocean , 2023.
20	National Data Buoy Center Station MTYC1 Monterey Bay, CA	Monterey, CA	36.605	-121.889	2.1 m	Oceanic	11/2015 - 12/2018	31449	Mooring	T, S, DO, Chl	YSI		National Data Buoy Center: Station MTYC1 - 9413450 - Monterey, CA, National Oceanic and Atmospheric Administration [data set], https://www.ndbc.noaa.gov/historical_data.shtml#ocean , 2023.
21	Chemical and hydrographic profile measurements during the 2013 West Coast Ocean Acidification Cruise (WCOA2013, August 3-29, 2013)	West Coast of the U.S.	36.52 to 48.44	-126.6 to - 121.8	2 m to 2530 m	Oceanic	08/2013 - 08/2013	875	Cruise	T, S, pH, DIC, TA, DO, Chl, Nutrients	CTD (Sea-Bird SBE 3+); Dissolved Oxygen sensor (Sea-Bird SBE 43)	Cruise stations have been cropped to U.S. waters.	Feely, R. A., Alin, S. R., Hales, B., Johnson, G. C., Byrne, R. H., Peterson, W. T., Liu, X., and Greeley, D.: Dissolved inorganic carbon, total alkalinity, pH on total scale and other variables collected from profile and discrete sample observations on NOAA Ship Fairweather (EXPOCODE 317W20130803) and R/V Point Sur (EXPOCODE 32P020130821) in the U.S. West Coast California Current System during the 2013 West Coast Ocean Acidification Cruise (WCOA2013) from 2013-08-03 to 2013-08-29 (NCEI Accession 0132082), NOAA National Centers for Environmental Information [data set], https://doi.org/10.7289/v5c53hxp , 2015.
22	Chemical and hydrographic measurements during the 2012 West Coast Ocean Acidification Cruise (WCOA2012, September 4-17, 2012)	West Coast of the U.S.	37.67 to 48.38	-126.1 to - 122.9	1.7 m to 2963 m	Oceanic	09/2012 - 09/2012	1056	Cruise	T, S, DIC, TA, DO, Chl, Nutrients	CTD (Sea-Bird SBE 9+); Dissolved oxygen sensor (Sea-Bird SBE 43)	Cruise stations have been cropped to U.S. waters.	Feely, R. A., Alin, S. R., Hales, B., Johnson, G. C., Juranek, L. W., Peterson, W. T., and Greeley, D.: Dissolved inorganic carbon, alkalinity, temperature, salinity and other variables collected from discrete sample and profile observations using Alkalinity titrator, CTD and other instruments from NOAA Ship Bell M. Shimada in the Columbia River estuary - Washington/Oregon, Gulf of the Farallones National Marine Sanctuary and others from 2012-09-04 to 2012-09-17 (NCEI Accession 0157445), NOAA National Centers for Environmental Information [data set], https://doi.org/10.25921/e7m6-gh32 , 2016.
23	Chemical and hydrographic profile measurements during the 2011 West Coast Ocean Acidification Cruise (WCOA2011, August 12-30, 2011)	West Coast of the U.S.	33.35 to 48.38	-127.5 to - 117.8	1.4 m to 2800 m	Oceanic	08/2011 - 08/2011	1451	Cruise	T, S, pH, DIC, TA, DO, Chl, Nutrients	CTD (Sea-Bird SBE 9+); Dissolved oxygen sensor (Sea-Bird SBE 43)	Cruise stations have been cropped to U.S. waters.	Feely, R. A., Alin, S. R., Hales, B., Johnson, G. C., Juranek, L. W., Byrne, R. H., Peterson, W. T., Goni, M., Liu, X., Greeley, D.: Dissolved inorganic carbon, total alkalinity, pH, temperature, salinity and other variables collected from profile and discrete sample observations using CTD, Niskin bottle, and other instruments from R/V Wecoma in the U.S. West Coast California Current System during the 2011 West Coast Ocean Acidification Cruise (WCOA2011) from 2011-08-12 to 2011-08-30 (NCEI Accession 0123467), NOAA National Centers for Environmental Information [data set], https://doi.org/10.7289/v5jq0xz1 , 2015.
24	Dissolved inorganic carbon, alkalinity, temperature, salinity and other variables collected from discrete sample and profile observations using Alkalinity titrator, CTD and other instruments from WECOMA in the U.S. West Coast California Current System from 2007-05-11 to 2007-06-14 (NCEI Accession 0083685)	West Coast of the U.S.	32.6 to 48.28	-129.4 to - 118.5	3.2 m to 4199 m	Oceanic	05/2007 - 06/2007	1512	Cruise	T, S, DIC, TA, DO, Nutrients	CTD (Sea-Bird SBE 9+); Dissolved oxygen sensor (Sea-Bird SBE 43)	Cruise stations have been cropped to U.S. waters.	Feely, R. A. and Sabine, C. L.: Dissolved inorganic carbon, alkalinity, temperature, salinity and other variables collected from discrete sample and profile observations using Alkalinity titrator, CTD and other instruments from WECOMA in the U.S. West Coast California Current System from 2007-05-11 to 2007-06-14 (NCEI Accession 0083685), NOAA National Centers for Environmental Information [data set], https://doi.org/10.3334/cdiac/otg.clivar_nacp_west_coast_cruise_2007_2013 .

25	California Cooperative Oceanic Fisheries Investigations (CalCOFI) Bottle Database: Oceanographic data collected from chemical analyses of seawater samples (1949 - present)	California	32.5 to 47.92	-150 to -117.2	0 m to 5165 m	Oceanic	02/1949 - 02/2019	264594 Cruise	T, S, DIC, TA, DO, Chl, Nutrients	CTD (Sea-Bird SBE 911plus)	Cruise stations have been cropped to U.S. waters.	NOAA Southwest Fisheries Science Center, National Marine Fisheries Service, Scripps Institution of Oceanography, UC San Diego, and California Department of Fish & Wildlife (Marine Region): Bottle Database - California Cooperative Oceanic Fisheries Investigations (CalCOFI) [data set], https://calcofi.org/data/oceanographic-data/bottle-database/ .
26	Applied California Current Ecosystem Studies Partnership Discrete Carbonate Chemistry Observations (2013-2019)	Central California	36.70 to 38.37	-123.6 to -122.0	2 m to 200 m	Oceanic	05/2013 - 09/2019	170 Cruise	T, S, pH, TA, DO	CTD	Dataset partially published in Davis et al., 2018. This compilation includes previously unpublished observations from 2016 onward.	
27	UC Davis Coastal Ocean Acidification Dataset	West Coast	32.67 to 48.14	-124.5 to -117.2	0 m	Oceanic	09/2010 - 05/2015	452 Intertidal/Subtidal discrete collection	T, S, pH, DIC, TA, DO	YSI; bottle samples	Dataset partially previously published in Feely et al., 2016. This compilation includes additional previously unpublished shore stations (Hill et al. unpublished). emperature, salinity, and dissolved oxygen taken in-situ with a YSI. All carbonate-system measurements made on preserved samples according to best practices.	
28	Bodega Marine Laboratory Weekly Horseshoe Cove Shore Samples	Bodega Marine Laboratory, CA	38.31627	-123.072	0 m	Oceanic	09/2010 - 12/2020	329 Intertidal/Subtidal discrete collection	T, S, pH, DIC, TA, DO	YSI	Previously unpublished data (Hill et al. unpublished) from weekly discrete shore samples taken from Horseshoe Cove, Bodega Marine Reserve. Temperature, salinity, and dissolved oxygen taken in-situ with a YSI. All carbonate-system measurements made on preserved samples according to best practices.	
30	SBC LTER: Ocean: Time-series: Mid-water SeaFET pH and CO2 system chemistry with surface and bottom Dissolved Oxygen at Arroyo Quemado Reef (ARQ), 2012-2017	Arroyo Quemado	34.46495	-120.1197	4 m	Oceanic	07/2012 - 03/2017	121265 Mooring	T, S, pH, TA, DO	Sea-Bird SeaFET	Santa Barbara Coastal LTER, Hofmann, G. and Washburn, L.: SBC LTER: Ocean: Time-series: Mid-water SeaFET pH and CO2 system chemistry with surface and bottom Dissolved Oxygen at Arroyo Quemado Reef (ARQ), 2012-2017 ver 5, Environmental Data Initiative [data set], https://doi.org/10.6073/pasta/6a81dcaaa9931c31dfa59132c7c5f829 , 2020.	
31	SBC LTER: Ocean: Time-series: Mid-water SeaFET pH and CO2 system chemistry with surface and bottom Dissolved Oxygen at Mohawk Reef (MKO), 2012 - 2017	Mohawk Reef	34.39323	-119.7301	4 m	Oceanic	01/2012 - 12/2017	156200 Mooring	T, S, pH, TA, DO	Sea-Bird SeaFET	Santa Barbara Coastal LTER, Hofmann, G., and Washburn, L.: SBC LTER: Ocean: Time-series: Mid-water SeaFET pH and CO2 system chemistry with surface and bottom Dissolved Oxygen at Mohawk Reef (MKO), 2012 - 2017 ver 5, Environmental Data Initiative [data set], https://doi.org/10.6073/pasta/23b8070eb65bae7aedc82fae8ee38b9f , 2020.	
32	SBC LTER: Ocean: Time-series: Mid-water SeaFET pH and CO2 system chemistry with surface and bottom Dissolved Oxygen at Santa Barbara Harbor/Stearns Wharf (SBH), 2012-2017	Santa Barbara Harbor/Stearns Wharf	34.40934	-119.6849	4 m	Oceanic	09/2012 - 09/2016	105155 Mooring	T, S, pH, TA, DO	Sea-Bird SeaFET	Santa Barbara Coastal LTER, Hofmann, G., and Washburn, L.: SBC LTER: Ocean: Time-series: Mid-water SeaFET pH and CO2 system chemistry with surface and bottom Dissolved Oxygen at Santa Barbara Harbor/Stearns Wharf (SBH), 2012-2017 ver 4, Environmental Data Initiative [data set], https://doi.org/10.6073/pasta/6322ad40dfbc0bbc037994490218e28e , 2020.	
33	Ocean Margin Ecosystems Group for Acidification Studies (OMEGAS) Project: Acclimation and adaptation to ocean acidification of key ecosystem components in the California Current System	West Coast	34.72 to 44.84	-124.6 to -120.6	1 m	Oceanic	04/2011 - 06/2014	381607 Intertidal/Subtidal sensor deployment	T, pH	Multiparameter sensor (Sea-Bird SeapHOx); Sea-Bird SeaFET; pH sensor (Honeywell DuraFET)	Menge, B. A., Chavez, F., Chan, F., Russell, A. D., Blanchette, C. A., Sanford, E., Friederich, G., McManus, M. A., Raimondi, P. T., Barth, J., Hill, T. M., Nielsen, K. J., Hacker, S. D., Washburn, L., and Gaylord, B.: Moorings temperature and pH from multiple sites in the California Current System starting 2008 (OMEGAS-MaS project, ACIDIC project), May 2015 ver 28, Biological and Chemical Oceanography Data Management Office (BCO-DMO) [data set], http://lod.bco-dmo.org/id/dataset/3650 , 2015.	
34	EAGER Project: Initiation of a pH/pCO2-sensing mooring platform on the Oregon coast	Oregon	44.25	-124.2	70 m	Oceanic	06/2009 - 10/2010	8976 Mooring	T, pCO2	Sunburst SAMI-CO2	Chan, F. and Menge, B. A.: SH70 SAMI pCO2 from SH70 mooring 2009-MI_LOCO-Lander, 2010-MI_LOCO-Lander in the SH70 mid-shelf time series station (Strawberry Hill): 44.25N, 124.50W from 2009-2010 (EAGER project), December 2012 ver 04, Biological and Chemical Oceanography Data Management Office (BCO-DMO) [data set], http://lod.bco-dmo.org/id/dataset/3812 , 2012.	

35	pCO2 pH salinity and temperature collected off the coast of Oregon USA by a SAMI-CO2 - Shelf Break and NH10	Oregon	44.641	-124.5	2 m and 120 m	Oceanic	08/2007 - 09/2011	17171	Mooring	T, S, pH, pCO2	Sunburst SAMI-pH; Sunburst SAMI-CO2; Conductivity and Temperature sensor (Sea-Bird SBE 37-SM MicroCAT)	DeGrandpre, M.: pCO2, pH, salinity and temperature data collected off the coast of Oregon, USA by a SAMI-CO2 sensor on the Shelf Break Mooring located below the National Data Buoy Center's meteorological Buoy 46050; 2007-2011 (NH10_ShelfBreak_MLR project), January 2016 ver 12, Biological and Chemical Oceanography Data Management Office (BCO-DMO) [data set], http://lod.bco-dmo.org/id/dataset/632498 , 2016.
36	SBC LTER: pH time series: Water-sample pH and CO2 system chemistry	California	34.02 to 35.52	-121.1 to 119.7	0 m to 15 m	Oceanic	06/2011 - 12/2017	588	Cruise	T, S, pH, DIC, TA	Sea-Bird SeaFET; YSI (3100 Conductivity Meter)	Santa Barbara Coastal LTER, Hofmann, G., Blanchette, C., Passow, U., Washburn, L., Lunden, J., Rivest, E., Kapsenberg, L. and Kui, L.: SBC LTER: pH time series: Water-sample pH and CO2 system chemistry, ongoing since 2011, ver 6, Environmental Data Initiative [data set], https://doi.org/10.6073/pasta/8efa600f49c3a171b13d05d70fad1d98 , 2022.
37	Bodega Marine Reserve Monthly Shore Samples	Bodega Marine Reserve, CA	38.31917	-123.0747	0 m	Oceanic	05/2011 - 03/2020	90	Intertidal/Subtidal discrete collection	T, S, pH, DIC, TA, DO	YSI	Previously unpublished data from monthly discrete shore samples taken on the Bodega Marine Reserve. Temperature, salinity, and dissolved oxygen taken in-situ with a YSI. All carbonate-system measurements made on preserved samples according to best practices. (Hill et al., unpublished).
39	California Coastal Seagrass Project	California	33.62 to 38.33	-123.0 to 118.1	0 m and 2 m	Estuarine	12/2014 - 12/2019	439769	Intertidal/Subtidal sensor deployment	T, S, pH, TA, DO	Sea-Bird SeaFET; Multiparameter sensor (Sea-Bird SeapHOx); Dissolved Oxygen and Temperature sensor (miniDOT)	Non-seagrass sites only. Ricart, A. M., Ward, M., Hill, T. M., Sanford, E., Kroeker, K. J., Takeshita, Y., Merolla, S., Shukla, P., Ninokawa, A. T., Elsmore, K., and Gaylord, B.: Coast-wide evidence of low pH amelioration by seagrass ecosystems, <i>Global Change Biology</i> 27, 2580-2591, https://doi.org/10.1111/gcb.15594 , 2021.
40	California kelp forest tidal FET sites	California	33.42 to 39.27	-123.8 to 117.8	10 m to 13 m	Oceanic	10/2017 - 12/2020	847863	Intertidal/Subtidal sensor deployment	T, pH, DO	Sea-Bird SeaFET; Dissolved Oxygen and Temperature sensor (miniDOT)	Kroeker, K. J., Donham, E. M., Vylet, K., Warren, J. K., Cheres, J., Fiechter, J., Freiwald, J., and Takeshita, Y.: Exposure to extremes in multiple global change drivers: Characterizing pH, dissolved oxygen, and temperature variability in a dynamic, upwelling dominated ecosystem, <i>Limnol. Oceanogr.</i> , 1-13, https://doi.org/10.1002/lno.12371 , 2023.
41	Dissolved inorganic carbon (DIC), total alkalinity (TA), temperature, salinity, oxygen, and nutrient data collected from discrete profile measurements during the National Oceanic and Atmospheric Administration Harmful Algal Blooms (NOAA HABs) program cruise SH1709 (EXPCODE 332220170918) in Pacific Northwest marine waters on NOAA Ship Bell M. Shimada from 2017-09-18 to 2017-09-28 (NCEI Accession number 0208230)	Washington and Oregon	44.20 to 48.48	-127.0 to 122.5	2 m to 2890 m	Oceanic	09/2017 - 09/2017	462	Cruise	T, S, DIC, TA, DO, Nutrients	CTD	Alin, S. R., Feely, R. A., Newton, J., Trainer, V. L., Adams, N. G., Greeley, D., Curry, B., Herndon, J., and Ostendorf, M. L.: Dissolved inorganic carbon (DIC), total alkalinity (TA), temperature, salinity, oxygen, and nutrient data collected from discrete profile measurements during the National Oceanic and Atmospheric Administration Harmful Algal Blooms (NOAA HABs) program cruise SH1709 (EXPCODE 332220170918) in Pacific Northwest marine waters on NOAA Ship Bell M. Shimada from 2017-09-18 to 2017-09-28 (NCEI Accession 0208230), NOAA National Centers for Environmental Information [data set], https://doi.org/10.25921/3qa5-v720 , 2019.
42	Dissolved inorganic carbon, total alkalinity, nutrients, and other variables collected from profile and discrete observations using CTD, Niskin bottle, and other instruments from R/V New Horizon and R/V Robert Gordon Sproul in the U.S. West Coast for calibration and validation of California Current Ecosystem (CCE) Moorings from 2009-12-15 to 2015-04-29 (NCEI Accession 0146024)	Southern California	32.52 to 34.33	-122.6 to 117.3	2 m to 3038 m	Oceanic	12/2009 - 04/2015	372	Cruise	T, S, DIC, TA, DO, Chl, Nutrients	CTD	Send, U., Ohman, M., Lankhorst, M., and Kim, H.-J.: Dissolved inorganic carbon, total alkalinity, nutrients, and other variables collected from profile and discrete observations using CTD, Niskin bottle, and other instruments from R/V New Horizon and R/V Robert Gordon Sproul in the U.S. West Coast for calibration and validation of California Current Ecosystem (CCE) Moorings from 2009-12-15 to 2015-04-29 (NCEI Accession 0146024), NOAA National Centers for Environmental Information [data set], https://doi.org/10.7289/v57d2s6c , 2016.
43	High-resolution ocean and atmosphere pCO2 time-series measurements from mooring CCE1_122W_33N in the North Pacific Ocean from 2008-11-11 to 2020-06-11 (NCEI Accession 0144245)	Point Conception, CA	33.456	-122.523	0 m	Oceanic	11/2008 - 11/2017	20583	Mooring	T, S, pH, pCO2, fCO2, DO	Moored Autonomous pCO2 (MAPCO2) system; Sea-Bird SeaFET; WetLabs ECO FLNTU-S Fluorometer and Turbidity sensor; Conductivity and Temperature sensor (Sea-Bird SBE 37-SM MicroCAT, Sea-Bird SBE 16 SeaCAT); Dissolved Oxygen sensor (Sea-Bird SBE 63)	Sutton, A. J., Sabine, C. L., Send, U., Ohman, M., Dietrich, C., Maenner Jones, S., Musielewicz, S., Bott, R., and Osborne, J.: High-resolution ocean and atmosphere pCO2 time-series measurements from mooring CCE1_122W_33N in the North Pacific Ocean from 2008-11-11 to 2020-06-11 (NCEI Accession 0144245), NOAA National Centers for Environmental Information [data set], https://doi.org/10.3334/cdiac/otg.tsm_cce1_122w_33n , 2016.

44	High-resolution ocean and atmosphere pCO2 time-series measurements from Mooring CCE2_121W_34N in the North Pacific Ocean from 2010-01-17 to 2021-06-16 (NCEI Accession 0084099)	Point Conception, CA	34.324	-120.831	0 m	Oceanic	01/2010 - 03/2017	19657	Mooring	T, S, pH, pCO2, fCO2, DO	Moored Autonomous pCO2 (MAPCO2) system; Sea-Bird SeaFET; Dissolved Oxygen sensor (Sea-Bird SBE 63)	Sutton, A. J., Sabine, C. L., Send, U., Ohman, M., Musielewicz, S., Maenner Jones, S., Dietrich, C., Bott, R., and Osborne, J.: High-resolution ocean and atmosphere pCO2 time-series measurements from Mooring CCE2_121W_34N in the North Pacific Ocean from 2010-01-17 to 2021-06-16 (NCEI Accession 0084099), NOAA National Centers for Environmental Information [data set], https://doi.org/10.3334/cdiac/otg.tsm_cce2_121w_34n , 2012.	
45	CeNCOOS in situ water monitoring data at Trinidad Head, California	Trinidad, CA	41.055	-124.147	0 m	Oceanic	02/2013 - 12/2020	149498	Intertidal/Subtidal sensor deployment	T, S, DO, Chl	YSI (6-Series)	This dataset overlaps with dataset 9 (NDBC station TDPC1) and is taken from the same shore station over a slightly different timeline. Overlapping observations have been retained in this dataset.	Shaughnessy, F: CeNCOOS in situ water monitoring data at Trinidad Head, California [data set], https://data.cencoos.org/#metadata/48097/station , 2023.
46	SFSU EOS YSI Raw data	Tiburon Peninsula, CA	37.891	-122.447	1 m	Estuarine	12/2020 - 12/2020	5096	Intertidal/Subtidal sensor deployment	T, S, Chl	YSI (6-Series)	Dewitt, L.: SFSU EOS YSI Raw data [data set], https://oceanview.pfeg.noaa.gov/erddap/tabledap/rtctcdRTCysirt.html , 2022.	
47	CeNCOOS in situ Water monitoring data at the Santa Cruz municipal wharf	Santa Cruz, CA	36.9603	-122.0203	1 m	Oceanic	02/2013 - 11/2020	613526	Intertidal/Subtidal sensor deployment	T, S, DO, Chl	YSI (6-Series)	Kudela, R.: CeNCOOS in situ Water monitoring data at the Santa Cruz municipal wharf [data set], https://data.cencoos.org/#metadata/48323/station , 2020.	
49	San Francisco Estuary Institute and the Aquatic Science Center Regional Monitoring Program for Water Quality in San Francisco Bay	San Francisco Bay, CA	37.43 to 38.13	-122.7 to -121.8	0 m to 88 m	Estuarine	03/1993 - 08/2019	1219	Cruise	T, S, DO, Chl	YSI	Bezalel S., Davis, J., Featherston, T., Flores, L., Grosso, C., Hale, T., Shusterman, G., Sutton, R., Weaver, M., Wong, A., and Yee, D.: Regional Monitoring Program for Water Quality in San Francisco Bay (RMP), San Francisco Estuary Institute (SFEI) [data set], https://www.sfei.org/programs/sf-bay-regional-monitoring-program , 2021.	
50	West Coast Estuary Data: Santa Monica Bay (15 m autonomous monitoring coastal acidification data and Santa Monica Bay (60 m) autonomous monitoring coastal acidification data	Santa Monica	33.7	-118.4	15 m and 60 m	Oceanic	07/2016 - 01/2019	18501	Mooring	T, S, pH, pCO2, DO	CTD (Sea-Bird SBE 5P); Multiparameter sensor (SeapHOx); Sunburst SAMI-pCO2	Rosenau, N. A., Galavotti, H., Yates, K. K., Bohlen, C., Hunt, C. W., Liebman, M., Brown, C. A., Pacella, S. R., Largier, J. L., Nielsen, K. J., Hu, X., McCutcheon, M. R., Vasslides, J. M., Poach, M., Ford, T., Johnston, K., and Steele, A.: High-resolution coastal acidification monitoring data collected in seven estuaries along the US East Coast, US West Coast and Gulf of Mexico from 2015-04-23 to 2020-07-29 (NCEI Accession 0225225), NOAA National Centers for Environmental Information [data set], https://doi.org/10.25921/xg33-1n83 , 2021.	
51	West Coast Estuary Data: San Francisco Bay (surface) autonomous monitoring coastal acidification data and San Francisco Bay (deep water mooring) autonomous monitoring coastal acidification data	SF Bay	37.8928	-122.4469	1 m and 17 m	Estuarine	02/2018 - 10/2019	38174	Mooring	T, S, pH, DO, Chl	Moored Autonomous pCO2 (MAPCO2) system; Multiparameter sensor (Sea-Bird SeapHOx); Sea-Bird SeaFET	Rosenau, N. A., Galavotti, H., Yates, K. K., Bohlen, C., Hunt, C. W., Liebman, M., Brown, C. A., Pacella, S. R., Largier, J. L., Nielsen, K. J., Hu, X., McCutcheon, M. R., Vasslides, J. M., Poach, M., Ford, T., Johnston, K., and Steele, A.: High-resolution coastal acidification monitoring data collected in seven estuaries along the US East Coast, US West Coast and Gulf of Mexico from 2015-04-23 to 2020-07-29 (NCEI Accession 0225225), NOAA National Centers for Environmental Information [data set], https://doi.org/10.25921/xg33-1n83 , 2021.	
52	Dissolved inorganic carbon, alkalinity, temperature, salinity, and nutrient data for validation measurements for moored ocean acidification time-series observations of on the Cha Ba mooring off La Push, Washington (May 2011-October 2014)	La Push, WA	47.97	-124.95	1.5 m to 101 m	Oceanic	05/2011 - 10/2014	87	Cruise	T, S, DIC, TA, Nutrients		Alin, S. R., Newton, J., Sutton, A. J., and Mickett, J.: Dissolved inorganic carbon, total alkalinity, phosphate, silicate, and other variables collected from profile and discrete sample observations using CTD, Niskin bottle and other instruments in the northwest coast of the United States near the ChĀĀ BĀf mooring off La Push, Washington from 2011-05-22 to 2014-10-24 (NCEI Accession 0145160), NOAA National Centers for Environmental Information [data set], https://doi.org/10.7289/v5b27sbj , 2016.	
53	Morro Bay BM1 T-Pier (NOAA Station MBXC1)	Morro Bay, CA	35.37085	-120.8589	1 m	Estuarine	01/2019 - 10/2020	55197	Mooring	T, S, pH, DO, Chl	Sea-Bird SeaFET; YSI	This dataset overlaps with dataset 18 (NDBC station MBXC1) and is taken from the same shore station, though the two datasets have different time ranges and this dataset features an updated instrument array. Data from the published NDBC record that overlaps with dataset 18 has been retained in this dataset.	Walter, R.: CeNCOOS in situ water quality monitoring at Morro bay [data set], https://data.cencoos.org/#metadata/20679/station , 2023.

54	Morro Bay BS1 Station	Morro Bay, CA	35.33382	-120.8473	1 m	Estuarine	10/2018 - 12/2020	72914	Mooring	T, S, pH, DO, Chl	Sea-Bird SeaFET; YSI	California Polytechnic State University, Center for Coastal Marine Sciences: Morro Bay - BS1 [data set], https://data.cencoos.org/#metadata/100050/station, 2023 .
55	High-resolution ocean and atmosphere pCO2 time-series measurements from mooring WA_125W_47N in the North Pacific Ocean (NCEI Accession 0115322)	Cape Elizabeth, WA	47.35	-124.73	1 m	Oceanic	06/2006 - 05/2020	32327	Mooring	T, S, pH, pCO2, fCO2, DO	Moored Autonomous pCO2 (MAPCO2) system; non-dispersive infrared (NDIR) gas analyzer; Sunburst SAMI2 pH; Conductivity and Temperature sensor (Sea-Bird SBE 37-SM MicroCAT)	Sutton, A. J., Sabine, C. L., Musielewicz, S., Maenner Jones, S., Dietrich, C., Bott, R., and Osborne, J.: High-resolution ocean and atmosphere pCO2 time-series measurements from mooring WA_125W_47N in the North Pacific Ocean (NCEI Accession 0115322), NOAA National Centers for Environmental Information [data set], https://doi.org/10.3334/cdiac/otg.tsm_wa_125w_47n, 2013 .
56	Stillwater Cove TidalFET	Carmel, CA	36.5607	-121.9459	1 m	Oceanic	02/2016 - 10/2020	103515	Intertidal/Subtidal sensor deployment	T, S, pH, DO	Multiparameter sensor (Sea-Bird SeapHOx)	Donham, E., Strobe, L., Hamilton, S., and Kroeker, K.: Coupled changes in pH, temperature and dissolved oxygen impact the physiology and ecology of herbivorous kelp forest grazers, <i>Dryad</i> [data set], https://doi.org/10.5061/dryad.8sf7m0cq7, 2022 .
57	National Data Buoy Center Station 46211 Grays Harbor, WA	Grays Harbor, WA	46.857	-124.244	0.46 m	Oceanic	01/2005 - 12/2020	234490	Mooring	T		National Data Buoy Center: Station 46211 - Grays Harbor, WA (036), National Oceanic and Atmospheric Administration [data set], https://www.ndbc.noaa.gov/historical_data.shtml#ocean, 2023 .
58	National Data Buoy Center Station NEAW1 - 9443090 Neah Bay, WA	Neah Bay, WA	48.367	-124.614	1.19 m	Estuarine	04/2005 - 12/2020	1077750	Mooring	T		National Data Buoy Center: Station NEAW1 - 9443090 - Neah Bay, WA, National Oceanic and Atmospheric Administration [data set], https://www.ndbc.noaa.gov/historical_data.shtml#ocean, 2023 .
59	National Data Buoy Center Station CECC1 â€” 9419750 Crescent City, CA	Crescent City, CA	41.746	-124.184	1.3 m	Oceanic	04/2005 - 12/2020	1212991	Intertidal/Subtidal sensor deployment	T		National Data Buoy Center: Station CECC1 - 9419750 - Crescent City, CA, National Oceanic and Atmospheric Administration [data set], https://www.ndbc.noaa.gov/historical_data.shtml#ocean, 2023 .
60	National Data Buoy Center Station 46237 San Francisco, CA	San Francisco, CA	37.788	-122.632	0.46 m	Oceanic	07/2007 - 12/2020	206800	Mooring	T		National Data Buoy Center: Station 46237 - San Francisco Bar, CA (142), National Oceanic and Atmospheric Administration [data set], https://www.ndbc.noaa.gov/historical_data.shtml#ocean, 2023 .
61	National Data Buoy Center Station 46240 Cabrillo Point, Monterey Bay, CA - 158 Monterey Bay, CA	Monterey Bay, CA	36.626	-121.907	1 m	Oceanic	12/2009 - 12/2020	152268	Mooring	T		Coastal Data Information Program (CDIP): Cabrillo Point, Monterey Bay, CA - 158 (46240) [data set], https://data.cencoos.org/#metadata/18373/station, 2023 .
62	National Data Buoy Center Station PORO3 Port Orford, OR	Port Orford, OR	42.739	-124.498	1.3 m	Oceanic	04/2005 - 12/2020	1228936	Mooring	T		National Data Buoy Center: Station PORO3 - 9431647 - Port Orford, OR, National Oceanic and Atmospheric Administration [data set], https://www.ndbc.noaa.gov/historical_data.shtml#ocean, 2023 .
63	National Data Buoy Center Station CHAO3 Charleston, OR	Charleston, OR	43.351	-124.337	2 m	Estuarine	04/2005 - 12/2020	1235698	Mooring	T		National Data Buoy Center: Station CHAO3 - 9432780 - Charleston, OR, National Oceanic and Atmospheric Administration [data set], https://www.ndbc.noaa.gov/historical_data.shtml#ocean, 2023 .
64	High-resolution ocean and atmosphere pCO2 time-series measurements from mooring CB-06_125W_43N in the North Pacific Ocean (NCEI Accession 0190840)	Coos Bay, OR	43.301	-124.535	0 m	Oceanic	06/2017 - 03/2020	4441	Mooring	T, S, pH, pCO2, fCO2, DO, Chl	Moored Autonomous pCO2 (MAPCO2) system; Sunburst SAMI2 pH; Dissolved Oxygen sensor (Xylem/Aanderaa 4175); WetLabs ECO FLNTU-S Fluorometer and Turbidity sensor	Sutton, A. J., Hales, B., Musielewicz, S., Maenner Jones, S., Bott, R., and Osborne, J.: High-resolution ocean and atmosphere pCO2 time-series measurements from mooring CB-06_125W_43N in the North Pacific Ocean (NCEI Accession 0190840), NOAA National Centers for Environmental Information [data set], https://doi.org/10.25921/rr8-se53, 2019 .
65	High-resolution ocean and atmosphere pCO2 time-series measurements from mooring NH10_124W_44N in the North Pacific Ocean (NCEI Accession 0157247)	Newport, OR	44.642	-124.3	1.7 m	Oceanic	04/2014 - 04/2017	5929	Mooring	T, S, pH, pCO2, fCO2, DO, Chl	Moored Autonomous pCO2 (MAPCO2) system; Sea-Bird SeaFET; WetLabs ECO FLNTU-S Fluorometer and Turbidity sensor	Sutton, A. J., Sabine, C. L., Hales, B., Musielewicz, S., Maenner Jones, S., Dietrich, C., Bott, R., and Osborne, J.: High-resolution ocean and atmosphere pCO2 time-series measurements from mooring NH10_124W_44N in the North Pacific Ocean (NCEI Accession 0157247), NOAA National Centers for Environmental Information [data set], https://doi.org/10.3334/cdiac/otg.tsm_nh10_124w_44n, 2016 .
66	Ocean Observatories Initiative (OOI) Washington and Oregon Inshore and Shelf Moorings	Washington and Oregon	44.38 to 47.13	-125.0 to -124.1	0 m, 7 m, and 87 m	Oceanic	09/2016 - 12/2020	10344	Mooring	T, pH, DO	Sunburst SAMI-pH, Dissolved Oxygen sensor (Xylem/Aanderaa Optode)	This data was aggregated into daily average values before incorporating into this synthesis.
67	Trinidad Head Line CTD Hydrography	Northern California	40.8641 to 41.081	-125.2 to -125.8	1 m to 545 m	Oceanic	11/2006 - 10/2020	129741	Cruise	T, S, pH, DO	CTD; Sea-Bird SBE 18 pH Sensor	

68	Cross-shelf CTD casts from shipboard survey data collected along the Newport Hydrographic Line, 1997-2021	Central Oregon	44.65 to 124.1	-128.8 to -3000m	0 m to 3000m	Oceanic	01/1998 - 12/2020	577411	Cruise	T, S, DO	CTD (Sea-Bird Scientific 19 SeaCAT, 19plus V2 SeaCAT, SBE 25 Sealogger, or SBE 25plus Sealogger profilers); Dissolved Oxygen sensor (Sea-Bird SBE 43)		Risien, C. M., Fewings, M. R., Fisher, J. L., Peterson, J. O., Morgan, C. A and Peterson, W.: Spatially gridded cross-shelf hydrographic sections and monthly climatologies from shipboard survey data collected along the Newport Hydrographic Line, 1997-2021 (1.0), Zenodo [data set], https://doi.org/10.5281/zenodo.5814071 , 2022.
69	Oceanographic Data Across Oregon's Marine Reserves	Oregon	42.66 to 45.76	-124.5 to -124.0	15 m	Oceanic	07/2010 - 09/2020	97906	Mooring	T, DO	Onset HOBO Temperature logger, CTD (Sea-Bird), Odyssey Capacitive Water Level Logger		Aylesworth, L., Fields, S. A., Fields, R. T., and Kane, C.: Oceanography Appendix Report, Oregon Department of Fish and Wildlife Marine Resources Program, Newport, OR, https://ecologyreports.oregonmarinereserves.com/Data_Files/6.%20Across%20Reserves/Oceanography/Oceanography_Appendix.html , 2022.
70	CMOP: Physical and biogeochemical observation stations in the Columbia River estuary (Saturn-02)	Columbia River Estuary, OR	46.1735	-124.1272	6 m and 35 m	Estuarine	05/2009 - 11/2019	988113	Mooring	T, S, DO	Honeywell UDA2182 Multiple Input Analyzer	More data is available from this location, but only the Saturn 02 temperature, salinity, and dissolved oxygen observations are included in this compilation.	Columbia River Intertribal Fish Commission Center for Coastal Margin Observation and Prediction.: SATURN Observation Network Endurance Stations: SATURN-02 [data set], https://cmop.critfc.org/datamart/observation-network/fixe-station/?id=saturn02&tab=inventory#anchor_38 , 2023.
71	Monthly cross-shore transects of biogeochemical properties in La Jolla, CA	Southern CA	32.87	-117.3	0 m to 40 m	Oceanic	03/2017 - 09/2018	227	Cruise	T, S, pH, DIC, TA, DO, Nutrients	Sunburst SAMI-pH, YSI, Potentiometric Titrator (TA)		Kekuewa, S. and Andersson, A.: Monthly cross-shore transects of biogeochemical properties in La Jolla, CA, Biological and Chemical Oceanography Data Management Office (BCO-DMO) [data set], doi:10.26008/1912/bco-dmo.839175.1 , 2022.