

Study Site Environmental Parameters

2023-08-28

Temp and Salinity Data from UCSD Shore Stations 1924-2023

```
newport.temp <- read_csv(here("Data", "Site_Data", "NewportBeach_TEMP_1924-2023.csv"), skip=44)

## New names:
## * ' ' -> '...8'
## * ' ' -> '...9'
## * ' ' -> '...10'
## * ' ' -> '...11'

## Warning: One or more parsing issues, call 'problems()' on your data frame for details,
## e.g.:
##   dat <- vroom(...)
##   problems(dat)

## Rows: 35945 Columns: 11
## -- Column specification -----
## Delimiter: ","
## dbl (7): YEAR, MONTH, DAY, TIME_PST, TIME_FLAG, SURF_TEMP_C, TEMP_FLAG
## lgl (4): ...8, ...9, ...10, ...11
##
## i Use 'spec()' to retrieve the full column specification for this data.
## i Specify the column types or set 'show_col_types = FALSE' to quiet this message.

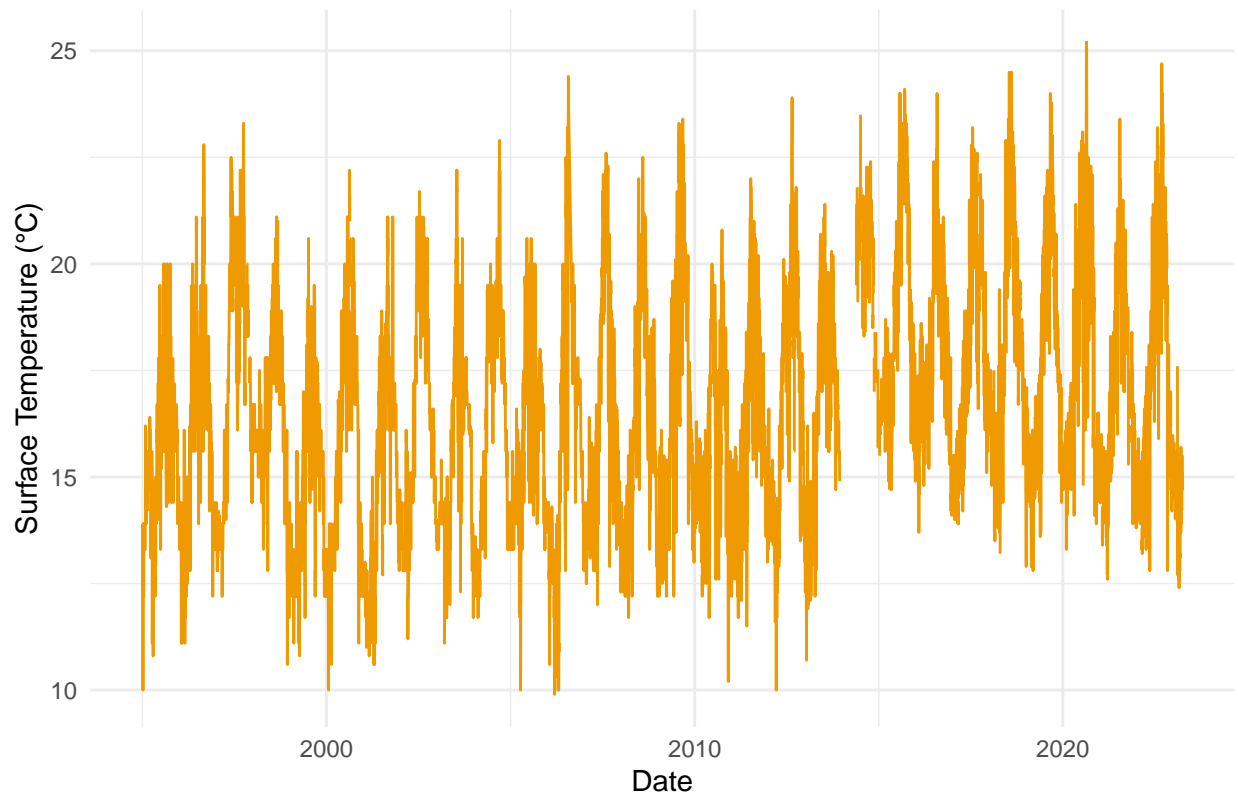
# Filter data where TEMP_FLAG is either NaN or 1
filtered_data <- newport.temp %>%
  filter(TEMP_FLAG == 0)

# Convert YEAR and MONTH to a date format
filtered_data <- filtered_data %>%
  mutate(
    DATE = ymd(paste(YEAR, MONTH, DAY))
  ) %>%
  select(DATE, SURF_TEMP_C, TEMP_FLAG)

# Create a time series plot using ggplot
ggplot(data = filtered_data) +
  geom_line(aes(x = DATE, y = SURF_TEMP_C), color = "orange2") +
  labs(x = "Date", y = "Surface Temperature (°C)", title = "Time Series of Surface Temperature") +
  theme_minimal()

## Warning: Removed 2 rows containing missing values ('geom_line()').
```

Time Series of Surface Temperature



```
newport.salt <- read_csv(here("Data", "Site_Data", "NewportBeach_SALT_1924-2023.csv"), skip=44)
```

```
## New names:
## * ' ' -> '...8'
## * ' ' -> '...9'
## * ' ' -> '...10'
## * ' ' -> '...11'
```

```
## Warning: One or more parsing issues, call 'problems()' on your data frame for details,
## e.g.:
##   dat <- vroom(...)
##   problems(dat)
```

```
## Rows: 35945 Columns: 11
## -- Column specification -----
## Delimiter: ","
## dbl (7): YEAR, MONTH, DAY, TIME, TIME_FLAG, SALINITY_PSU, SALT_FLAG
## lgl (4): ...8, ...9, ...10, ...11
##
## i Use 'spec()' to retrieve the full column specification for this data.
## i Specify the column types or set 'show_col_types = FALSE' to quiet this message.
```

```
# Filter data where TEMP_FLAG is either NaN or 1
filtered_data <- newport.salt %>%
```

```

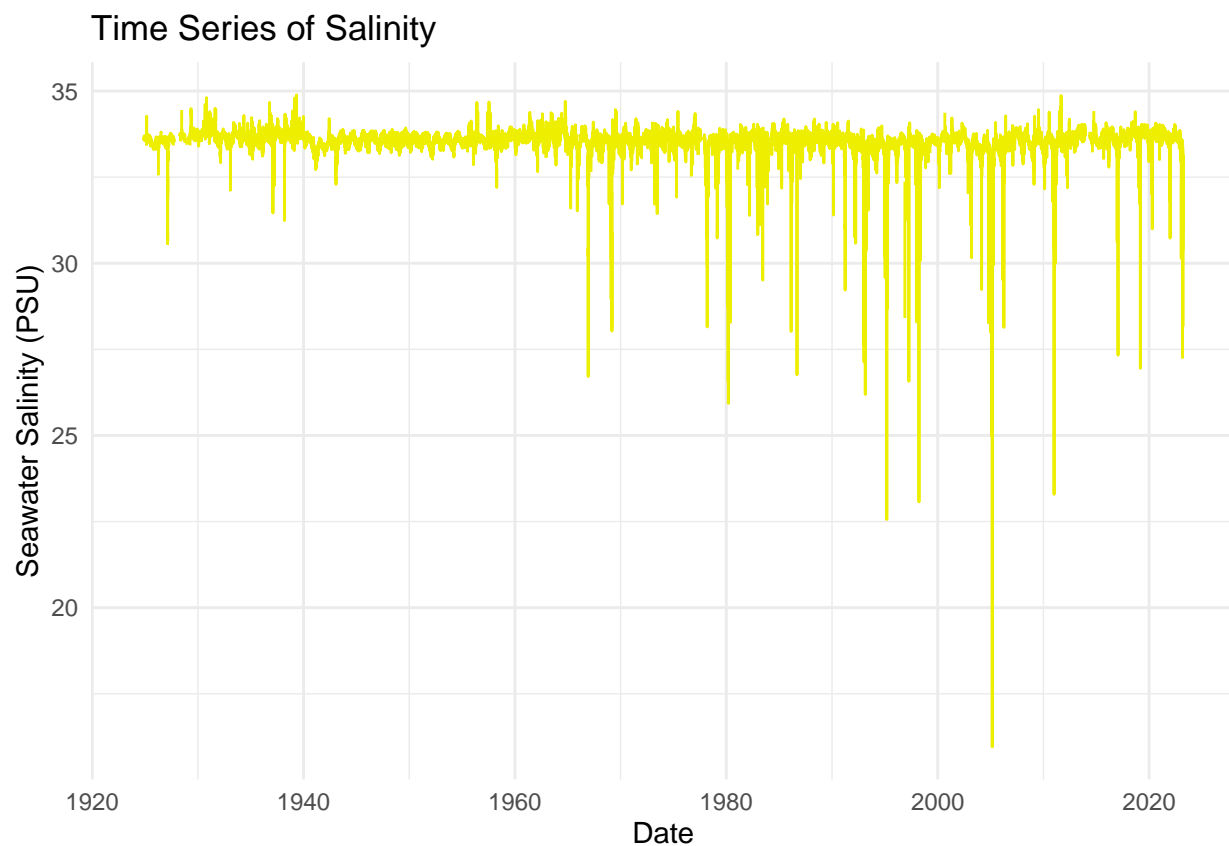
filter(SALT_FLAG == 0)

# Convert YEAR and MONTH to a date format
filtered_data <- filtered_data %>%
  mutate(
    DATE = ymd(paste(YEAR, MONTH, DAY))
  ) %>%
  select(DATE, SALINITY_PSU, SALT_FLAG)

ggplot(data = filtered_data) +
  geom_line(aes(x = DATE, y = SALINITY_PSU), color = "yellow2") +
  labs(x = "Date", y = "Seawater Salinity (PSU)", title = "Time Series of Salinity") +
  theme_minimal()

```

Warning: Removed 13 rows containing missing values (‘geom_line()’).



pH Data from Newport Beach Pier Automated Shore Station

```

# Read the "newport.pH" dataset
newport.pH <- read_csv(here("Data", "Site_Data", "NewportBeach_PH_2018-2023.csv"))

```

```

## Rows: 467908 Columns: 8
## -- Column specification -----
## Delimiter: ","
## chr (2): time, z
## dbl (6): sea_water_ph_reported_on_total_scale_external, sea_water_ph_reporte...

```

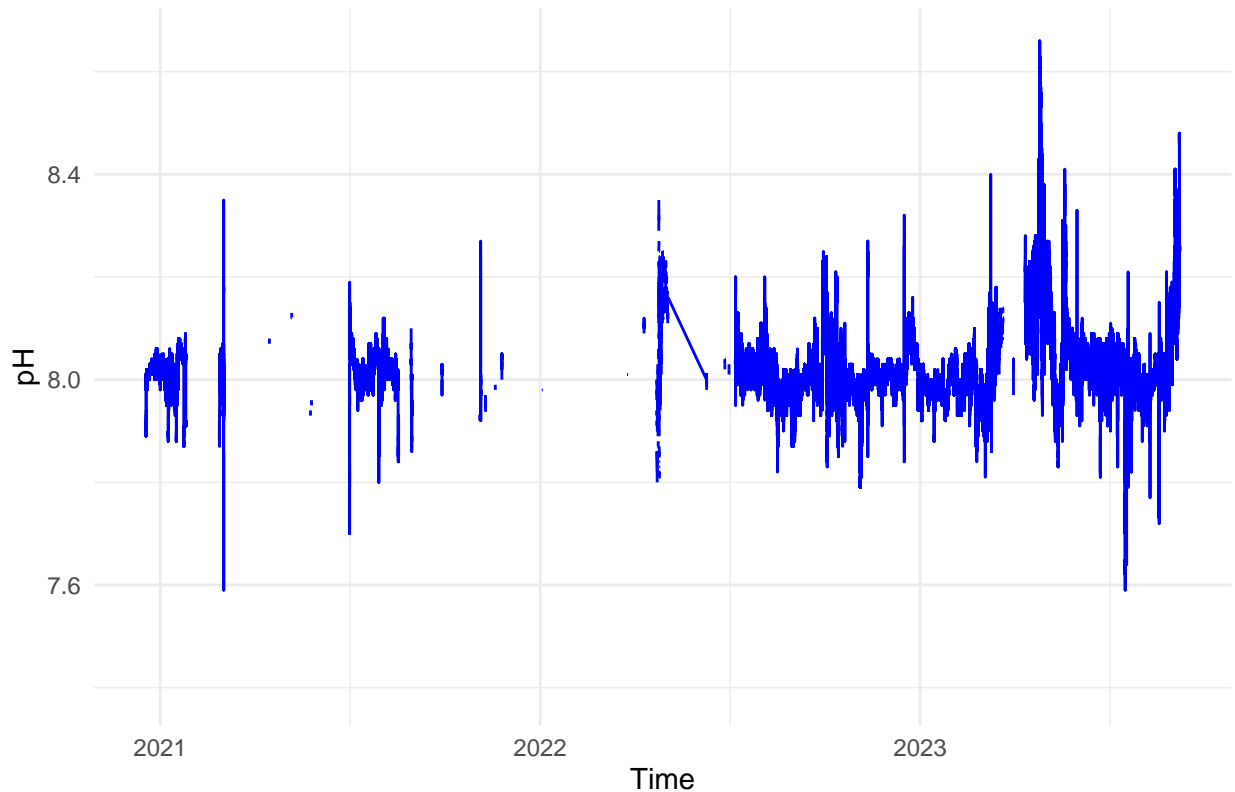
```
##
## i Use 'spec()' to retrieve the full column specification for this data.
## i Specify the column types or set 'show_col_types = FALSE' to quiet this message.

# Remove the first row of data and select for pH corrected data
newport.pH <- newport.pH[-1, ] %>%
  mutate(pH = sea_water_ph_reported_on_total_scale_salinity_corrected) %>%
  select(time, pH)

# Convert the "Time" column to POSIXct
newport.pH <- newport.pH %>%
  mutate(Time = ymd_hms(time)) %>%
  select(Time, pH)

# Create a time series plot using ggplot
ggplot(data = newport.pH) +
  geom_line(aes(x = Time, y = pH), color = "blue") +
  labs(x = "Time", y = "pH", title = "Time Series of pH") +
  theme_minimal()
```

Time Series of pH



Newport Beach pH Binned Weekly Summary

```
# Read the CSV file
weekly_pH_data <- read_csv(here("Data", "Site_Data", "NewportBeach_PH_2018-2023_pH_Binned_weeks.csv"))

## Rows: 143 Columns: 5
```

```
## -- Column specification -----
## Delimiter: ","
## dbl (3): Mean, Min, Max
## dtm (2): Start date, End date
##
## i Use 'spec()' to retrieve the full column specification for this data.
## i Specify the column types or set 'show_col_types = FALSE' to quiet this message.
```

```
# Create a ggplot visualization
```

```
ggplot(weekly_pH_data, aes(x = `Start date`, y = Mean)) +
  geom_line(color = "blue", size = 1) +
  geom_errorbar(aes(ymin = Min, ymax = Max), width = 0.2, color = "red") +
  labs(x = "Week", y = "pH", title = "Weekly pH Data") +
  theme_minimal() +
  theme(axis.text.x = element_text(angle = 45, hjust = 1))
```

```
## Warning: Using 'size' aesthetic for lines was deprecated in ggplot2 3.4.0.
## i Please use 'linewidth' instead.
## This warning is displayed once every 8 hours.
## Call 'lifecycle::last_lifecycle_warnings()' to see where this warning was
## generated.
```

