**HABs Excel Workbook and UCSC Excel Sheet Overview**

**Excel Workbook:**

This excel workbook has around 30 individual sheets and can be quite daunting without understanding what each cell stands for so I’ll refer to the sheet labeled as “Week 1 HABs Sheet” which should help to explain what each value means.

**Column Names and Descriptions**:

* **Station\_id**: 2 letter code for the location for our database
* **Station\_name**: The location data was pulled from
* **Latitude and longitude**: GPS Coordinates
* **Collection\_date**: Date
* **Collection\_time**: Time (Military time)
* **Air\_temperaturec**: temperature in Celsius
* **Air\_temperaturef**: temperature in Fahrenheit
* **Aqi**: Air Quality Index (Pollutants in PM10 and PM2.5)
* **Concentration**: visual observation scale from 0-5 in how pronounced the bloom is in location (0 being non-existent, 5 being fully covered)
* **Ec**: Electroconductivity (measure of dissolved solids) Unit is microsiemens (μS) and the column right next to it refers to it as such.
* **Humidity**: Measure of humidity (fractional for percentages)
* **Salinity**: Measure of dissolved salts (unit is parts per thousand (PPT), notated in column to the right)
* **Sky**: Cloud conditions scaled from 0-3 (0 being clear skies, 3 being overcast)
* **Test\_result**: Abraxis Test Strip for Microcystis Toxins with a test limit 10 parts per billion (ppb). If test result surpassed 10 the column to the right shows a greater than symbol (>) to notify this, also the reference for units
* **Uvi**: Ultraviolet Index for how intense sun activity is in the area
* **Visual\_water\_quality\_observations**: ignore this, it was there for the database
* **Water\_tempc**: water temperature in Celsius
* **Water\_tempf**: water temperature in Fahrenheit
* **Wind**: Wind Speed, with direction and unit of mph in the column to the right.

**General Information:**

With that out of the way, some of the more important things to take note of are the first seven sheets which show location specific data from Mcleod Lake, Morelli Park, Mormon Slough, San Joaquin River (from Stockton Rod and Gun Club), Smith Canal (form American Legion Park), Windmill Cove (off a levee on the way to Windmill Cove), and Buckley Cove. It’s easier to see the trend over time in those specific sheets because it’s been ordered by collection dates. Water temperatures and test results are the most telling for HABs, but salinity and electroconductivity increase throughout is interesting to note.

Also on the site-specific sheets, some general averages, medians, max and min values, and standard deviations were calculated for each column.

As for the sheets that aren’t full or the sheets that specify “skipped”, there were weeks where we couldn’t get out into the field because of illness, heat waves, or one time when our office got broken into. That should explain why those gaps are there.

**UCSC:**

The Abraxis Test Strips we used for recreational water were great for diagnosing toxin problems in the Stockton Delta but were also limiting with only being able to detect up to 10 ppb. To help with understanding the true nature of the toxins and specific species of toxins, we grabbed samples from the sites we tested and sent them to a lab at UCSC to get the Liquid Chromatography – Mass Spectrometry (LC-MS) for those specifics.

The second Excel Sheet from UCSC shows the specific types of HABs were in the water samples, which show the various types of Microcystin (RR, YR, LR, LA, LF, dmLR, LY, WR), Nodularins, Anatoxins, and Cylindrospermopsins.

* **Bdl**: below detected level
* Microcystin RR, LR, dmLR, and WR were the only types of HABs ever found in the water.
  + Can cross reference the dates with our test results in the excel workbook