**Muskegon Lake Citizen Scientist Data Dashboard Project:**

For this project, I am the only team member in this class. The inspiration for this project is an extension of what I am working on for my graduate assistantship. This semester our task is to create a dashboard to show off the data collected by the Muskegon Lake buoy. Currently, they do have a way to graph data that they collect from the buoy, and they call it their Data Grapher. This setup allows the user to manually select the different parameters they want to observe in the graph and in what graphing style they would want. While this is a very effective system, I feel it would be harder for someone from the public to understand and use the Data Grapher effectively. The Data Grapher also has a path to another page called Current Conditions that shows off the current air and water conditions that the buoy is measuring. This seems like a good place to put a citizen scientist dashboard.

Dr. Biddanda and his lab have been working with the buoy data for quite some time**1**. Last semester I was able to sit in and help when I could with other tasks presented by them that involved working towards predictions of weather events and algal blooms. The data they provided us at the time was curated data but went as far back as 2011 buoy data. As a part of their grants and their selling point is that their data is public and open source so that other people around the world could have access to this data. During a meeting with the AWRI group, they had mentioned how during the offseason they receive emails about the buoy from boaters/fishers. So, with that information, the focus for the dashboard will be the public and potentially small features that fisherman/boaters might get more use out of. More specifically something that will help inform them about the water quality and that might allow them to find out if the lake has good fishing qualities for the day.

The data for this project is from a buoy on Muskegon lake that is in the lake from April-October and will upload new water data every hour and weather data every 15 minutes. Their data is from a buoy that is placed in Muskegon lake from about April – October. It is uploaded from the buoy to a server that populates a file linked to their API. On the API webpage, they include a table that shows all the different URL parameters and what they do. A user could either use this page to build their URL or they can go to the Data Grapher and build the URL that way. All of this is publicly available as mentioned earlier having their data public is not only a requirement but something that they want to do and want to encourage others to access their data.

While looking for resources to help with this project I kept finding various pages and links back to the National Oceanic and Atmospheric Administration (NOAA) where they have national buoys observation and plenty of other pages to show off their data that is all publicly available. I decided to take a more in-depth look at the NOAA buoy website to find examples and concepts that I would like to highlight that they either have or do not have on their dashboard**2**. Another resource I found was from the U.S. Climate Resilience Toolkit which is an extension of the NOAA**3**. This site showcases off different infographics for weather forecasting, historical observations, climate change specific, socioeconomic and equity resources, region-specific tools, and case studies. In the end, those two sites will be great resources for reference when designing the layout of the project.

**References:**

1. Steinman, A.D., M. Ogdahl, R. Rediske, C.R. Ruetz III, B.A. Biddanda, and L. Nemeth. 2008. Current status and trends in Muskegon Lake, Michigan. Journal of Great Lakes Research 34: 169-188.

2. US Department of Commerce, N. O. and A. A. (n.d.). National Data Buoy Center. <https://www.ndbc.noaa.gov/>

3. Water Resources Dashboard | U.S. Climate Resilience Toolkit. (n.d.). <https://toolkit.climate.gov/topics/water/water-resources-dashboard>