Lesson Implementation & Reflection

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For this lesson, I chose the Graphing Sea-Level Trends. Found here: https://www.jpl.nasa.gov/edu/teach/activity/graphing-sea-level-trends/

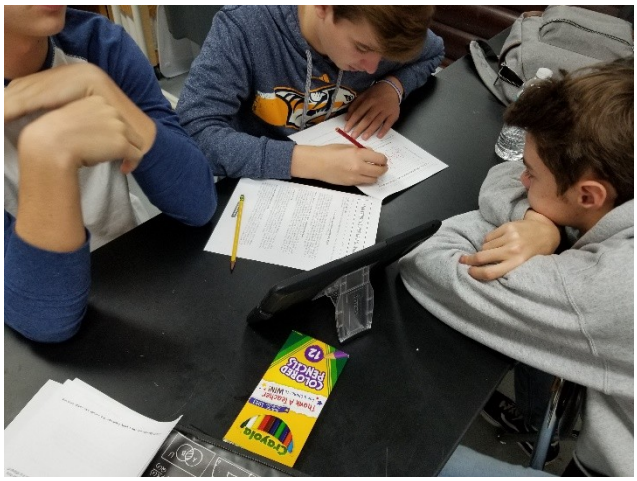
Summary: This classroom activity allows students to view 130 year data about sea-level rise and create their own models (graphs) to give them a stronger understanding of sea-level rise. Students collect the data, plot the data, and then compare short term trends with long term trends to come a conclusion as to if sea-level rise is occurring or not. The activity on the JPL site provides all the resources you will need in order to complete the activity in class.

Reflection: I used this lesson in my 9th grade Honors Biology class as part of mini unit on Habitat Loss, which fall into an large unit on Climate Change in my Biosphere and Ecology portion of the year. Before this lesson, we cover ecosystems and biomes. Students have just learned about the terrestrial and aquatic biomes of the world. It is helpful if students are familiar with photosynthesis and how it is involved with aquatic biomes. They will need to be familiar with the Aphotic zone and how turbidity due to sediment impacts aquatic biomes. We completed an adapted lesson called Upstream/Downstream from NSTA in which students are part of a fictious town 50 miles upriver from the Gulf of Mexico. Students learn about habitat loss due to sediment flowing downstream from their city, and this leads us into other ways aquatic ecosystems can be damaged, including sea-level rise. Since the upstream/downstream activity focuses on seagrass beds along the Gulf coast, sea-level rise ties in easily to discussion.

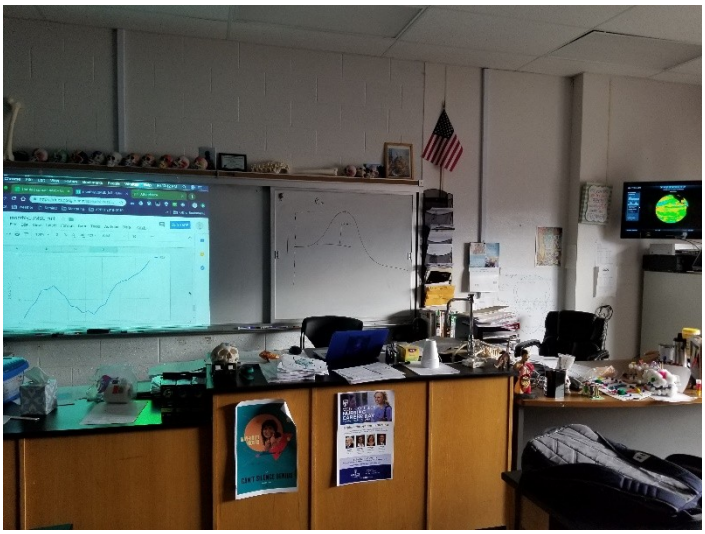
As suggested in the activity, I split the students into lab groups and gave each group a 21 year span of the 130 years of data. Each group would plot their data in google sheets and then create a graph to represent their data in a visual format. I created a graph that represents the total 130 year period but did not show it to them until after they had all completed their 21 year short-term graphs. Following their graphs each group would compare their final results with other groups. All groups were looking at series of short-term trends and were able to come to conclusions as to if sea-level rise was occurring or not. One idea I had, but did not turn out well at all was to have each group print their graph, the plan was to line all the graphs up in

order to see

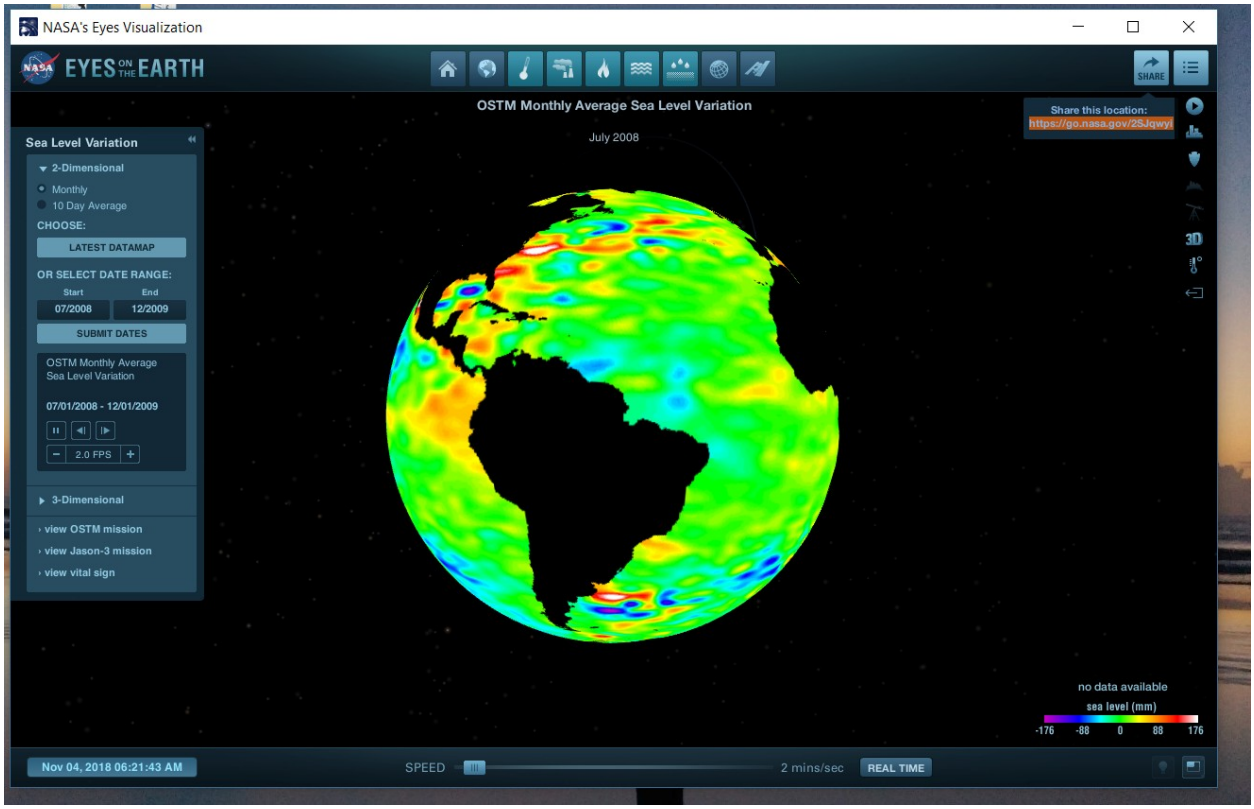
not give
and some
enlarged



the “big” picture.
Unfortunately, I did
enough instruction
graphs were
prior to printing



so the graphs did not line up at all. It would have been great to be able to line them all up and show the long term trend. I just showed them the one I made. Now comes the really cool part. We took a few dates between 2008 and 2009 and plotted those into the NASA EYES site to see what the earth looked like with sea-level rise at those dates. I projected both the graph and the NASA EYES on two different screens in the room and that just opened more discussion on sea-level rise and how it can impact us, especially coastal communities. Next year, or next week, I hope to collect some ice-cap melting data, or global temp data



and have the students create a double y-axis graph to see if we can give evidence to what may be causing the sea-level rise.

Problem: We are a 1:1 iPad school, google sheets and excel are weird on iPads. You can not right click, and importing CSV files is not easy either. What we did to bypass this problem, was I imported the data into a google sheet on my laptop and shared it with the students. They in turn, would make a copy so they could use it off line and manipulate it without messing it up for everyone.

This was a great activity that opens up for more ideas and possibilities.