Proposal (10 pts), due Wednesday, 11/2 at 10 pm

→ Group Members:
- Ally Dietzler, Cameron LaPlante, Quinten Wood, Shaine Metz

→ The goal of your analysis:
- Your motivating research questions:
    - How do other natural weather and geological functions affect the tide?
    - Further, how can these models be predicted?

- What are you looking to learn from this Project?
    - What relationship can we find between tidal data and other natural phenomena?
    - Tidal analysis of Bellingham, cross-referencing other weather and natural occurrence data.
    - Machine learning component:
    Finding trends in the data and predicting or filling in missing data.
    - How to form and fine-tune predictive models

- Describe the data you are working with.
    - The datasets we have available are all taken from the National Climatic Data Center (NCDC)
    - The document we are using is tidal data from NOAA and other metering stations worldwide.
    - Some prospective documents to cross reference might be as follows:
        - climatological data – May determine humidity and other elements which may contribute to the tide.
        - tectonic data – Techtonics data may help frame models for tidal anomalies.
        - weather data – Extremes may coincide with weather extremes

    - Further, (more obscure) tests may include:
        - Recorded coastal accidents (boat accidents, drownings, etc.) - How does tide affect sea activity
        - Sea life and biodiversity analysis. - How do tides affect sea life?
    - Link: [https://tidesandcurrents.noaa.gov/web_services_info.html]
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- At a high level, describe how you plan to use your data to answer your question. Be sure to talk specifically about exploratory components and machine learning components.
    - Using the weather, tectonic, and climatological data we will answer our question by comparing and contrasting the data.

- ○ Specifically we want to know if natural weather or geological events affect tides. Also using the data we may go into how tide affects sea activity like boat accidents and drownings. Or we may explore how tides affect sea life.
  - ○

→ Milestone 1 deliverable: describe what you plan to have done at the first milestone deadline. This should tell me how the Milestone 1 guideline listed in the Overview section above applies to your project.

- By the first milestone deadline, we intend to have acquired, curated, and related our tide and weather phenomena data in a cohesive and intelligible data frame. In doing so, we will have a clear picture of all of the available data and a clear path forward, ensuring that our question is answerable. Additionally, we will begin producing preliminary graphs and data points to see a general comparison between our tide and weather data. This will serve as something of a sanity check to ensure that the direction we're heading makes sense.

→ Milestone 2 deliverable: describe what you plan to have done at the second milestone deadline. This should tell me how the Milestone 2 guideline listed in the Overview section above applies to your project.

- By the second milestone deadline, we will have dived deeper into our data and analyzed correlations between tide and weather phenomena. Additionally, we will have addressed the machine learning side of our project by attempting to fill in manufactured gaps in data and explored how closely the data trends can be followed to produce predictions about the missing data.

→ Roadmap: do your best to break the project into subtasks that will take one group member no more than a week to accomplish. For each task, give a tentative allocation of which group member(s) will accomplish it and when it will be done.

- Curate necessary data from multiple sources into a workable and concise data frame. - (Cameron) by 11/7
- Brainstorm the correlation between tide and weather phenomena data to ask interesting questions. - (Shaine, Quinten) - 11/11
- Produce preliminary graphs to determine if questions have attainable answers. - (Shaine, Ally) - 11/11
- Identify naturally occurring gaps in data and create known manufactured ones to allow for machine learning testing. (Cameron, Shaine, Quinten) - 11/14
- Perform regression machine learning to observe the accuracy of the model prediction. (Cameron, Shaine, Quinten) - 11/17
- Based on the findings, create graphs, data tables, and interpret findings for the final write-up. (Ally, Shaine) - 11/17