

# Data and Visualization Explorations

## Physics and Mathematics of Sustainable Energy

College of the Atlantic. January 19, 2021

### Instructions

- Work with one or two other people. Please do not work in groups larger than three.
- Explore some of the websites below that let you explore data and make nice graphs.
- Make (at least) two graphs or other visualizations that are interesting to you—that tell a story or raise interesting questions.
- Export those graphs and put them in a google presentation. (If you prefer some other presentation software, that's fine. When you share with me, please do so as a pdf.)
- Upload your presentation here: [https://drive.google.com/drive/folders/1h2eovXc2q0\\_SaYVsLxz8vYX5w0Z0h7tY?usp=sharing](https://drive.google.com/drive/folders/1h2eovXc2q0_SaYVsLxz8vYX5w0Z0h7tY?usp=sharing).
- The next discussion section we'll spend a few minutes looking at everyone's graphs, and you can say a few words about why you find your graphs interesting.

Here are some websites to explore:

1. <https://www.climatewatchdata.org/ghg-emissions>. I think Climatewatch is the most complete source for GHG emissions data, both present and historical. Spend a few minutes experimenting with all the different options (the drop-down menus on the top) and be sure you know how to graph different countries and regions.
2. <https://ourworldindata.org/>. There is a lot to explore here. Try “energy” and “CO<sub>2</sub> and other GHG emissions”, both of which are under the category “energy and the environment.” Experiment and explore.
3. <http://www.carbonmap.org>. This site lets you make world maps where the areas of countries are changed so they show features other than area (e.g., present or historical emissions).
4. <https://flowcharts.llnl.gov/>. These are the energy flowcharts we looked at in the first week. You can view these for different countries and US states.
5. [https://www.gapminder.org/tools/#\\$chart-type=bubbles](https://www.gapminder.org/tools/#$chart-type=bubbles). In a sense, this graph is four-dimensional! You can plot three variables against each other: two are on the x and y axes; the third variable is the size of the circle. Then you can see how these three variables change over time.

Btw, if you're so inclined, another fun exercise might be to make a graph that is absurd—that plots two variables against each other that are clearly unrelated or a visualization which is silly or nonsensical. Feel free to share a few of these with me, too.