

## What to expect in [METR 430 Meteorological Computing?](#)

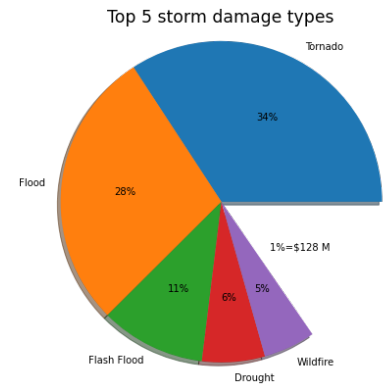
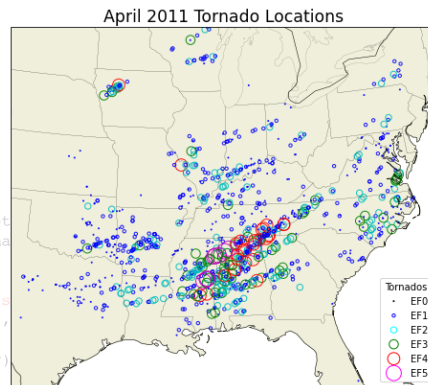
Hone your python skills to:

- deal with various data formats available on the internet;
  - make weather maps the way you want it to display;
  - visualize and analyze data, ease of handling numerous large data files in one code;
  - animation of storm systems, etc.;
- and unlimited options based on the questions you ask about the data!

You might have used Excel, IDV, ArcGIS or other software applications to deal with meteorological data, but by programming you have unlimited freedom to process data the way you want.

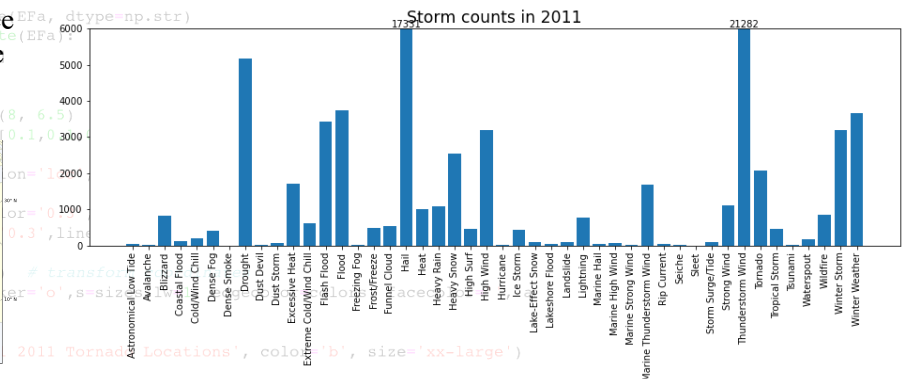
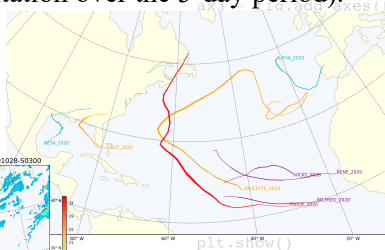
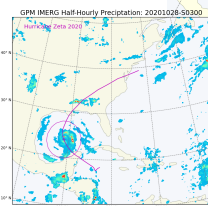
### Example 1 – storm dataset:

(right) Just for 2011, the file contains about 83 MB data ( $\sim 80,000 \times 25$ ) =  $\sim 2,000,000$  cells if opened in Excel. With a python program of  $\sim 36$  lines of code, you can easily generate the following tornado location map. With an additional  $\sim 20$  lines, a pie-chart of top 5 damaging storm types, or another 20 lines for a simple count of different storms, can be plotted.



### Example 2 – Hurricane datasets:

(below) Best track of a few Atlantic hurricanes that have time overlap. Scan the QR code to see an animation of Hurricane Zeta 2020's satellite observed precipitation (GPM data: 264 half-hourly precipitation over the 5-day period).



### Example 3 – NAM model output:

(bottom) You can make single time/level or composite weather maps, or diagnostic maps for storm analysis, or even make with your own favorite color schemes.

