Using Python for Satellite Visualization

NOAA-NASA Satellite Meteorology
Summer School

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UCAR | COMMUNITY PROGRAMS

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Python at Unidata

MetPy - https://unidata.github.io/MetPy/latest/index.html

- Collection of tools in Python for reading, visualizing, and performing calculations with weather data
- Replaces GEMPAK - full functionality is still in development
- Built around the SciPy ecosystem, so it supports N-D arrays and tabular formats

Siphon - https://unidata.github.io/siphon/latest/

- Collection of Python utilities for downloading data from remote data services (THREDDS, unique meteorological datasets)
- Allows subsetting of data remotely to allow easier access
- Allows you to access GOES 16/17 data through THREDDS servers

Python Gallery

- Examples of MetPy and Siphon usage for a multitude of atmospheric science datasets and use cases
- If you have examples that would be useful to the community, send us a pull request!
- https://unidata.github.io/python-gallery/examples/index.html

SatPy

- Not a Unidata package, but worth checking out!
- Can read in and plot geostationary and polar-orbiting satellite data
- https://satpy.readthedocs.io/en/latest/

Python-based Satellite Data Visualization

- Interactive GOES Plot
- Accessing GOES data via S3
- Tutorial

Tutorial

- Need conda installed: conda.io/miniconda.html
- Clone/download the Unidata Python Workshop repo:
  - https://github.com/Unidata/python-workshop.git

- Navigate inside the root directory of the repo and create your conda environment: "**conda env create**" and then "**conda activate unidata**"

- Navigate in your terminal to notebooks/Satellite_Data and launch Jupyter notebooks by typing "**jupyter notebook**"

Python-based Satellite Data Visualization

GLM

- Data is available on THREDDS
- Example notebook will be coming up on the Python gallery soon

Have any questions? Find us on:

- StackOverflow
- Gitter
- Github
- support-python@unidata.ucar.edu

For more tutorial information, see https://unidata.github.io/python-workshop/