Integrating Weather and Climate with GIS Technology Part 2: Analyze Data Using Python and Models

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AMS Conference on Environmental Information Processing Technologies

Time	Topic
8:00 AM	Orientation to Jupyter Notebooks for GIS
8:15 AM	Acquiring data remotely
8:30 AM	Exploratory analysis
9:00 AM	Principal Component Analysis
9:30 AM	Calculating anomalies
10:00 AM	Coffee Break
10:30 AM	Perform timeseries clustering
11:00 AM	Calculating hotspots across space and time
11:30 AM	Conduct a risk analysis
12:00 PM	Course Ends

This will be a hand-on, intensive activities-based format. Each activity will be introduced with a brief explanation of the concepts and context for the real-world scenario that will be analyzed. We intend to use Jupyter Notebooks to quickly prototype and iterate weather data analysis.

- Install additional 3rd party Python (e.g., MetPy) libraries specific to weather analysis
- Acquire data from a THREDDS server (e.g., UNIDATA) for real-time weather forecast model analysis
- Perform exploratory analysis across space and time
- Complete a Principal Components Analysis
- Calculate anomalies across a timeseries
- Perform timeseries clustering
- Calculate hotspots across space and time from observational data
- Delineate meteorologically homogeneous regions and enrich them with socioeconomic data to conduct a risk analysis