Batch DEM Conversion and Re-Projection

Automation using Python

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Adapted From

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Purpose

- Download large quantities of DEM files on the web.
  - Example: DEM data for all cities in a county.
- Perform other GIS tasks associated with many DEM files that will otherwise take large amounts of time if processed manually.
  - Extract data from ZIP files which were downloaded.
  - Geoprocessing tasks
    - Re-projection
    - DEM to other raster type
    - Create a raster mosaic
    - Incorporate into a current working map
- Uses *Beautiful Soup* (**`bs4`**) Python library for *web scraping*.

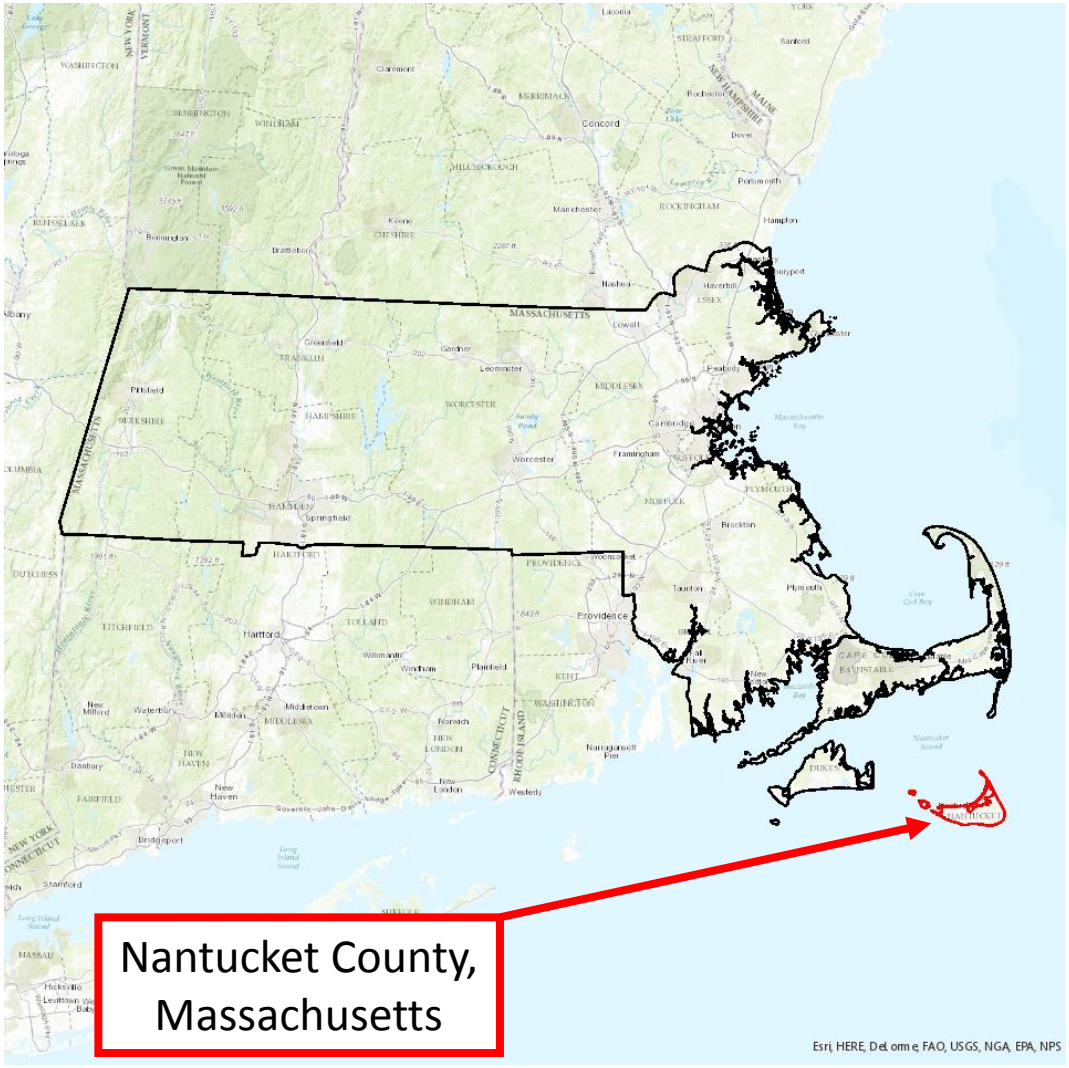
batchDEM.py

What does this script do?

1) Asks the user what website to parse and where to store the data (i.e., on your local drive).
2) Downloads all files associated with that particular webpage that are contained within ZIP files.
3) Extracts the files on your local drive and deletes the ZIP files.
4) User can choose to…
   i. …re-project all DEM files downloaded with respect to a feature class in your map of working directory.
   ii. …change the file type of the DEMs (i.e., from .dem to Esri grid files).
   iii. …create a raster mosaic of any or all of the DEM files.
   iv. …incorporate the new raster mosaic into the current map.

Demonstration

Demonstration



Demonstration

- Python Script

batchDEM.py

- Data

http://www.webgis.com/terr_pages/MA/dem75/nantucket.html

Summer Internship

My Internship

- The Travelers Indemnity Co., Hartford, CT
- **Advanced Analytics**, Personal Insurance, Research & Development (PI R&D)
  - Auto, property, monitoring & data, innovation
- Work mostly on modeling
  - Additive models, trees, boosting & bagging, text mining, GLMs, deep learning, AI
  - SAS, R, Python
- Also utilize geospatial analysis

TRAVELERS

Geospatial-Related Projects

- Several small projects with short turn-around time
- Explored *telematics data* collected from opted-in policy driver either with a dashboard attachment or through a smart phone app
  - Finding driving patterns of start/end trip locations
- **Main Project**
  - Determine a way to segment 5-digit ZIP Codes based on where people drive
  - When someone calls Travelers for an auto insurance quote, we ask where they park their car (i.e., where they live)
    - Use the ZIP Code of this location to assess driver risk
  - If we know of a common end trip location we can find driving routes from starting locations (network analysis)
    - Assess driving risk by routes they drive
  - Segment ZIP Codes with Thiessen polygons from starting locations.
  - All of this was done using ***Python***
    - Python 2.7 & ArcMap 10.4