

Spatial Programming Term Project, Part 3: Seth Opatz

Project Topic:

I used a Python script to automate watershed delineation, mapping watershed boundaries using stream networks. Manually performing this task is time-consuming and prone to human error, so it is a prime candidate to use Python automation for. The program takes any DEM raster and automatically delineates watersheds in raster and polygon format, depending on what the user wants.

Pseudocode:

Ask user for path to DEM file

If path exists and is raster:

 break

else:

 give error message to user and have them put in different file path

Ask user for path to output directory

If path exists, is a directory, and is write-able:

 break

else:

 give error message to user and have them put in different directory path

Ask user what outputs they want (polygons, raster, or both)

Ask user for flow accumulation threshold so they can choose the size of the watersheds that are created

Fill DEM

Calculate flow direction raster from filled DEM

Calculate flow accumulation raster using flow direction raster

Extract streams from flow accumulation grid using the Con (conditional if/else) tool

Reclassify stream raster so that pixels with no stream contain NODATA

Use stream link tool with the reclassified streams and flow direction raster as inputs

Use watershed tool with the stream link and flow direction raster as inputs

Output the raster to the output directory if the user chose to do so

Convert the watershed raster to polygons usable for GIS purposes and output it if the user chose to do so

FlowChart:

