

Assignment 2 – GGS590 GeoAI – AI-Assisted Workflow CritiqueDue February 11th 2026

This assignment aims to reinforces the core ideas from this week's class, including:

- Acquiring and managing geospatial data programmatically
- Managing coordinate reference systems (CRS)
- Visualizing spatial datasets
- Applying core spatial analysis operations (e.g., buffer, union, intersection)
- Implementing iterative analytical workflows in Python
- Using dictionaries, lists, and loops to structure analytical pipelines
- Automating repeated spatial analyses across parameter ranges (e.g., multiple buffer distances)
- Storing and summarize results in Pandas DataFrames
- Evaluating and validate analytical results
- Interpreting quantitative outputs (shares, densities, counts)
- Identifying limitations and assumptions in spatial operations
- Critically assessing data quality and methodological tradeoffs
- Using generative AI to support geospatial coding
- Translating natural-language problem statements into executable Python workflows
- Debugging and refine AI-generated code
- Documenting errors and reflect on the reliability of automated code generation

Students must prompt a generative AI tool to produce a GeoAI workflow answering a spatial question of their choice, to do the following:

- Run and debug the generated code
- Identify and document errors and inefficiencies (so you can learn from common mistakes, and explain them to an instructor)
- Improve the workflow, e.g., for verbosity or speed
- Reflect on AI generated code reliability

But the topic of choice must include a sensitivity analysis, setup by using a for loop to iterate over your code automatically. Write out your results and visualize them. Explain your validation strategy.

Expected deliverables include:

- The original AI output
- The corrected code (30 points)
- An error log of issues encountered (40 points)
- A written reflective summary of your experience and validation strategy (half a page for each) (30 points)

The learning emphasis here is on critical evaluation of AI code generation tools, and your own debugging skills and code literacy.

Submission format

Please write your analysis in a Google Colab notebook and then use the print function to save it to a .pdf file for submission on Canvas. Without submitting your files like this, you will receive a 50-point penalty to your overall grade (as you need to provide both the code and the answers).

Grading rubric

Component	Points
Final corrected code	30
Error log of prompts/code that did not produce the desired response	40
Reflective summary and validation strategy	30

The Mason Honor code applies. Please also remember to follow Mason AI use policy.