**Final Project**

**ESM 263**

The project is meant to be a chance for you to cement some of the concepts and tools we've learned in class, and hopefully explore some of the many tools we didn't cover. Projects should be the bulk of your effort for the rest of ESM 263. Projects may be done individually or in pairs. Please no teams of three, it is just too hard to grade equitably. If you are struggling to find a partner, please let us know.

**In the project, we primarily care about your ability to 1) find and use appropriate data and 2) use a logical and diverse suite of geospatial methods to address an environmental problem (of interest to you).**

Suggested Timeline (4 unit class ~=10h/wk)

**Lab week 8 (~2h):** Decide on topic. Sketch conceptual model. Sleuth major data sources. Start cleaning data (being sure to have a copy of the raw, unmodified data somewhere safe).

**Week 8 (~7h):** Download all required data. Make a copy of all of the raw data and save it somewhere safe (e.g. create "RawData" folder on **H**) and never modify it. Finish conceptual model of analysis. Make arcpro file, bring in data, get it organized & cleaned (reproject, dissolve, clip, select by attribute, filter, resample, reclassify etc etc).

\*As annoying as it is, working in arc on the C and copying to the H is recommended. Be careful not to overwrite your work! Use appropriate file naming conventions and be careful where you are saving.

**Lecture week 9:** Jamie introduces arcGIS online!

**Lab week 9 (2h):** Finish analysis. Make sure order of operations is logical & output makes sense. Add any finishing touches to project to illustrate mastery of different tools, data types etc. (see below).

**Week 9 (~7h):** Pretty up figures. Pretty up conceptual model. Make slides using slide template on canvas. Make notes, particularly for methods and results (see below).

**Lecture week 10**: No lecture. Finish project & presentation slides.

**Lab week 10:** Final presentations. Presentations should not exceed 7 minutes.

The projects are worth 40 points, which will be allocated as follows.

**Difficulty (12 points):** Assessment of the diversity of datasets and tools used. A project as complex as lab 6/7 (raster, vector, zonal statistics) would be 12 points. A project as straightforward as lab 3 (vector only) would be more like 8-9 points. See below.

**Execution (12 points):** Extent to which the analysis was successfully implemented. Completed, logical and correct spatial analysis– projection, order of operations, data, etc– to match the objectives would be full credit. See below.

**Presentation (10 points):** Slide quality (1pts), talk quality (1 pts), background (1 pt), objectives (1 pt), methods (3pts) and results (3pts). Time deduction (0.5 pt deduction/30 seconds over 7m).

**Slide Notes (6 points):** Notes should detail the information you can't include in the slide itself. They should support and explain the information on the slide, and will likely be more informative and detailed than what you have time to say (i.e., they should include more nitty-gritty details than your "script"). We are less concerned about background and conclusion material in 263 (1 pt each). We are more concerned about methods (2pts) and results (2pts). Print the slides as a pdf in notes layout (file/print/layout→notes (mac), or [file/print/Settings/select Notes Pages under Print Layout (PC)](https://support.microsoft.com/en-us/office/print-slides-with-or-without-speaker-notes-02952fc2-2921-4305-b8b2-e98644a93e06) and turn that in on Canvas.

Difficulty & Execution Rubric

| **Category** | **Specific** | **<9 pts** | **9-11** | **11-12pts** |
| --- | --- | --- | --- | --- |
| Difficulty | Uses multiple data sets of different data types | Uses limited data sources of similar extent and data type |  | Combines raster, vector, tabular data. Searches and obtains data from reliable sources that best match needs of the project. |
| Difficulty | Complexity of analysis | Primarily relies on one type of data & analysis. Limited number of tools. |  | Harmonizes resolution & projections, converts between rasters/vectors. Involves a series of tools to complete analysis. |
| Execution | Logical approach | Tools haphazardly run. Conceptual model missing or flawed. |  | Clear conceptual model. Careful ordering of spatial operations to address objective(s). |
| Execution | Successful execution | Limited or incomplete results. Limited documentation of troubleshooting effort. |  | Results address 1-2 interesting spatial objectives successfully. Visually appealing figure(s) that clearly show the results. |

We suggest you work on a small area so you can focus on an in-depth analysis rather than waiting for tools to run. We also suggest that your results include both a map and some other chart, table, etc that answers a question (ie more than just the visual of the map).