ESM 232 – Spring 2021

Overview

Computer-based modeling and simulation are widely used tools in both practical environmental problem solving and in environmental research. Models give us a way to look at the world through a mixture of data and theory. A good model can help us to understand how the world works and how decisions that we make might change the world in ways that are important to us. There are many different types of models, from simple to complex, and models are often tailored to answer a specific questions. This course will give you skills that help you to choose which model, or modeling technique, is right for you - given the task at hand. The course will cover designing a new model and evaluating existing models. We will emphasize best practices, such as sensitivity and uncertainty analysis, that help to design and use models to reliably support environmental problem solving. This is a skills based course and we will use R (a data analysis and programming environment) as our basic platform. Class will include a mix of lectures and hands-on examples, using students' own computers.

Many lectures will include Rmarkdown code; I will provide this code, R functions and data, as well as any lecture slides on Gauchospace. I will also provide these in an Github respository (you will not need to access this but for those of you who are familiar with Github it will give you an easy way to obtain course materials)

I will assume that everyone has some basic R skills (from ESM 203 and other courses), including how to use ggplot, and Rmarkdown.

There are 10 assignments. Most assignments will be done in groups (but 1-2 will be individual). Assignments will vary in length but most will be short coding assignments with a 1- paragraph write up. All assignments will be submitted on Gauchospace.

Instructors

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TA

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Class meetings

- MW 8:00-9:15
- Zoom