

ESS 211: Guidelines for mid-term report on projects

The goal of the individual projects is to give you some hands-on experience in modeling a problem of interest to you. In class we have outlined 8 steps to modeling:

1. Goal Definition
2. Conceptualization
3. Model Type/Scale Decisions
4. Coding
5. Calibration / Selection
6. Sensitivity Analysis
7. "Validation" / Evaluation
8. Application

This structure gives you some guidance on how to proceed on your project. The interim report is meant to cover the first three steps in this process. The final project will focus on steps 4 and 6. As discussed in class, I do not expect much or even any effort on steps 5 or 7-8, since these typically require more data than you have time to assemble. Of course, if you have the data and are inclined to try, that is great, and you can focus more effort on those than on step 6.

For the interim model report, please follow this outline:

- **My question is:** (1 pt.) 1-3 sentences on what the goal of the exercise is. This is best stated as a question you have, or a specific hypothesis you want to explore. For example, rather than a goal being "to understand the flow of water through a soil profile" you could ask "what factors are most important in determining the rate of water flow through a soil profile?"
- **Background:** (.5 pt.) 1-2 paragraphs on why this is of interest
- **Conceptual Model:** (2 pt.) Graphical depiction of factors in model and links between them, with a 1 paragraph description of the factors (variables and parameters) and, if you have them yet, any equations that define the links. Also, specify whether your model will be deterministic or stochastic, and what spatial and temporal scales your model will be for.
- **Factors not considered:** (1 pt.) 1 paragraph on the things you think might be important but you plan to exclude from your initial model. This will help you define the bounds of your model.
- **Relevant factor ranges:** (.5 pt.) 1 paragraph on how you plan to define the range / distribution of each variable and parameter in your model. You will need to define these in order to conduct sensitivity analysis. For example, you might have some data that describes historical variation, values from the literature, or some sort of educated guess.