

## Logistics for Student Modeling Day

The modeling projects involve teams of students choosing one of five or six modeling projects that involve developing a python code and running simulations that provide insights to a science problem. Each project contains a set of background materials, a starting code, and some objectives with what additions to make to the model to meet the overall objectives. Below is a summary of the logistics for the event along with alternative ideas for the future offering.

### Logistics

1. Participating students should have some programming experience. They can come from a mix of academic backgrounds. Ideally, they are a mix of computer science and science and engineering students so that they can combine their existing expertise to address the modeling problems.
2. The modeling day is preceded by a half-day workshop on Python programming to make sure that all students have an adequate background to undertake the programming part of the exercise. In the tutorial, students download and use Anaconda Python package which includes all of the required libraries as well as a GUI interface for python.
3. The students then spend a full day on the modeling projects. At the beginning their project choices are introduced and they are asked to read the background materials and choose one of the projects for their team. Several teams can choose the same project. Students work on the project throughout the day with coffee and lunch breaks. At the end of the day, each team is required to make a presentation of their experience and findings.
4. The modeling day has been run once as a competition and once as just a learning experience. Our recommendation is to run it as a learning experience. When it was run as a competition, organizers were not able to answer very specific programming or modeling questions. In that case, some of the groups got stuck and were not able to finish the project. When it was run as a learning experience, we were able to advise the groups on how to get around any problems and all teams were able to get to an excellent finish.

### Future Offering

1. Instructors for modeling day will need expertise in python and will need to work through the projects so that they are able to advise students throughout the day.
2. Instructors need to work with whoever is giving the python tutorial to ensure that all of the necessary syntax and programming techniques are introduced in the tutorial.
3. The number and types of projects that are used could be varied. We can reuse the projects from the previous years and/or add to the available projects. Creating a project involves a substantial amount of work to present

the project, provide background reading materials, and a relevant starting code.

4. If this is going to run at multiple sites, we may need to plan for a half-day instructor orientation that could be done via a webcast or in person at a central site. There are some funds in the education budget that could partially support a live event including some travel subsidies to a central site.