An Introduction to Dynamic Simulation Modeling

Goals of the workshop

- Discuss the different types of static and dynamic models.
- Explore how to use ModelBuilder to add the time component to models through iteration control.
- Focus on how to create dynamic simulation models and discuss the associated issues.
- Examine how to perform error and sensitivity analysis through simulations.
- Present how to capture random events in stochastic models.
- Through demonstrations, show how to build dynamic simulation models.

Major topics covered

- Understanding different model types: Descriptive and process as well as deterministic and stochastic models will be discussed.
- Creating dynamic simulation models: Examine how to create dynamic simulation models with ModelBuilder.
- Developing stochastic simulation models: Explore how random numbers can be used to capture random events and control processing and decision making within a dynamic simulation model.
- Creating random numbers: Examine how to create random numbers and random values for each cell value in rasters, and how to use distributions when calculating the random numbers.
- Producing random points: Describe how to place random points on a surface and how these points can be used in dynamic simulation models.
- Understanding lists and series: How to use lists and series to control iteration processing in ModelBuilder will be presented.
- Performing error analysis: Demonstrate how to perform error analysis through simulation modeling.
- Performing sensitivity analysis: Examine how to perform sensitivity analysis through simulation modeling.
- Demonstrating the principles through models: Several demonstrations of actual models will highlight how to build dynamic process models, process models with stochastic events, and perform error and sensitivity analysis through simulation models.