Understanding Systems with Computational Models: Using, Assessing, and Modifying a Computational Model

A system is a group of things which affect each other, such as plants and animals in a food web or parts of a machine. Models and simulations represent relationships and processes of systems with interrelated parts. Models can be computational or non-computational.

Computational models represent mathematical relationships between parts of a system, and are created using a computer. In this activity, you will use a computational model to collect data about a scientific phenomenon and then assess how accurate the computational model predicts phenomena in the real world.

1 Part 1: Exploring a Computational Model

Explore the computational model. Consider:

- What real-world phenomenon is this model based on?
- What settings can you change?
- What happens if you set them to one extreme or the other?

2 Part 2: Developing a Question/Connecting to the Real World

- How does this phenomenon relate to your life and/or community?
- What do you wonder about this phenomenon?
- How can this model help you to better understand this phenomenon?

3 Part 3: Using a Computational Model to Answer a Driving Question

Link to computational model:		
Question:		
Scenario 1	**Scenario 2**	**Scenario 3**
Settings:	**Settings:**	**Settings:**
Results:	**Results:**	**Results:**
Compare/contrast your results. What did you learn about your question?		
What questions do you have about your results?		

4 Part 4: Assessing Your Computational Model

1. How is this real-world phenomenon different from the model? Identify at least two factors that are not represented in the model.

2. Did the creator make any assumptions about the system when they created the model? If so, how are those assumptions affecting the model?

5 Part 5 (Optional): Modify the Computational Model

What changes can you make to this model to make it more similar to the real world or better inform your question?

Are you able to see the code used to create this model? If so, look inside! Modify the code to reflect the change you identified.