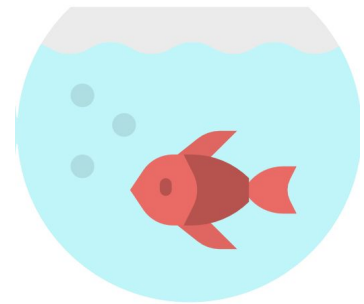




# SCIENCE CLUB!

**WELCOME BACK!**



# What did we do last week?

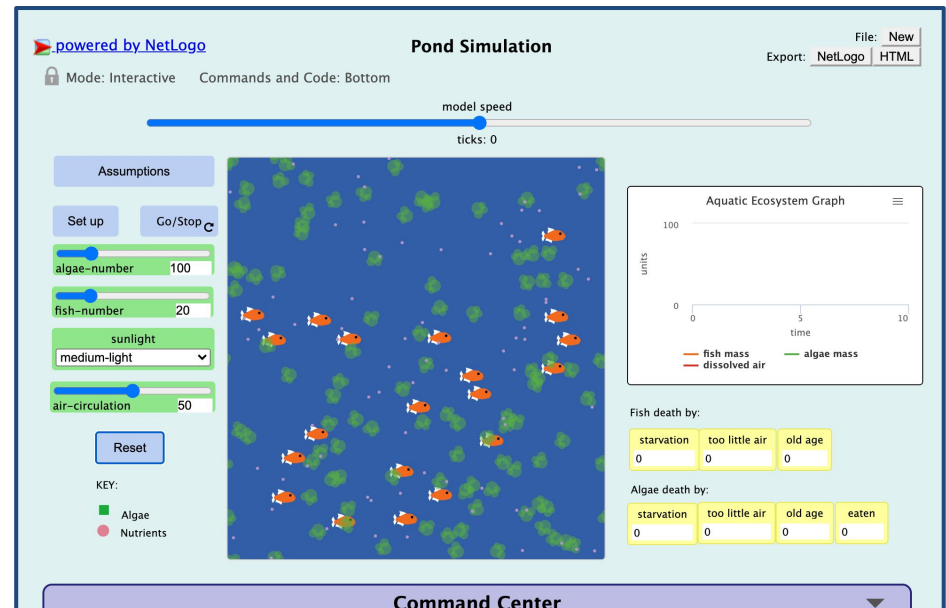
1. Developed criteria for good scientific models
  - a. Supported by evidence
  - b. Shows all steps in process
  - c. Understandable
  - d. Consistent
2. Looked at evidence in MEME!
3. Discussed what we learned from the evidence
4. Updated model/s based on the evidence





# What will we do today?

1. Review the update from Fresh ORG
2. Look at some new evidence and a simulation!
3. Revise models
4. Share out





## From the Desk of A.L. Rao

Greetings Scientists!

We received reports on a number of the ideas you proposed after looking at our initial data. Interesting stuff!

Based on your proposals, we had our team contact Dr. Euglena who conducted research in the ponds last year. She was able to provide a report about types of algae in the two ponds and about dissolved oxygen and algae. We also included some additional data about when the algal blooms started in the two ponds during that awful summer.

These reports are now in your MEME resource library.

Sincerely,  
A.L. Rao

# Evidence

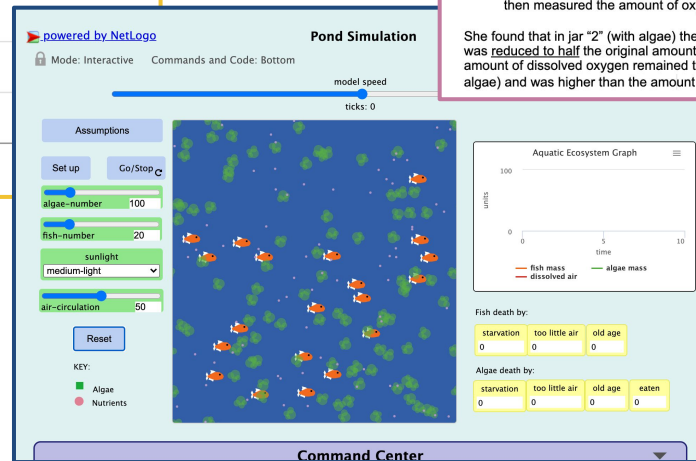
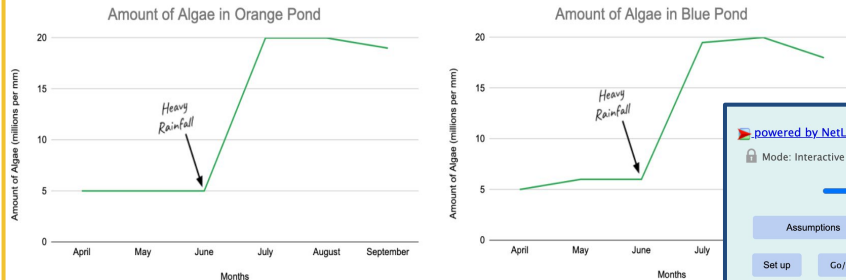
## Let's look at evidence in MEME!



### Report on Algae Growth

Algae are living things that need to breathe oxygen dissolved in the water, just like fish and other sea creatures. Nutrients help algae grow. The more nutrients there are in the water, the more algae grow and reproduce. Often, after a heavy rainfall, nutrients wash into the pond from the surrounding land.

Scientists hired by FRESH Org wanted to find out if the amount of algae in the two ponds was the same or different. They measured the amount of algae in each pond once a month from April until September. They also noted that in early June of that year, there was a very big storm that washed a lot of nutrients into both of the ponds. The graphs below show the amount of algae in both ponds from April until September.

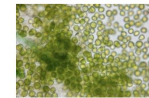
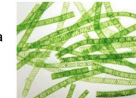


### Algae and Oxygen

Algae are very small plants that live in water. Just like other plants, algae are alive and need nutrients and oxygen to grow. Algae look green and slimy.

Dr. Euglena is an expert on algae growth in ponds. She took samples of pond water from Orange and Blue ponds. Her report concluded that both ponds had the same types of algae: Spirogyra and Chlorella algae. These are non-toxic algae (not poisonous) and both ponds have about 60% Spirogyra and 40% Chlorella

Spirogyra



Chlorella

Dr. Euglena wanted to find out how much dissolved oxygen the algae breathe in from the water:

- She took a sample of water, with both types of algae, from Orange pond and put it in the jar labeled "2".
- For comparison she took some water with no algae and put it in the jar labeled "0".
- Dr. Euglena measured the amount of oxygen in each jar. She then measured the amount of oxygen again after 5 hours.

She found that in jar "2" (with algae) the amount of dissolved oxygen was reduced to half the original amount after 5 hours. The amount of dissolved oxygen remained the same in jar "0" (with no algae) and was higher than the amount of oxygen in jar "2".



# Evidence

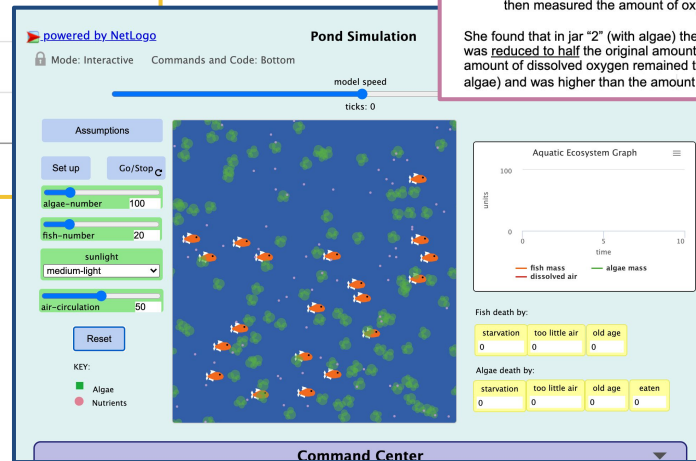
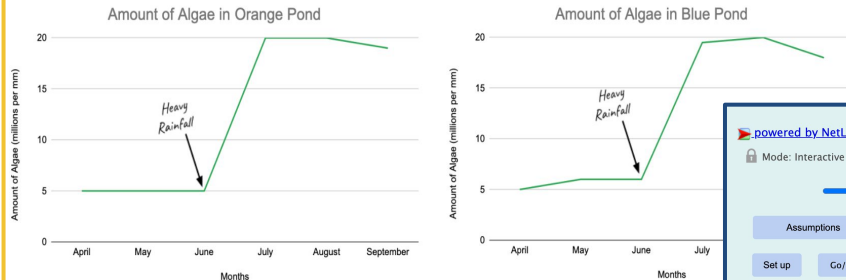
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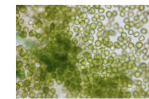
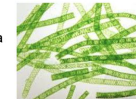


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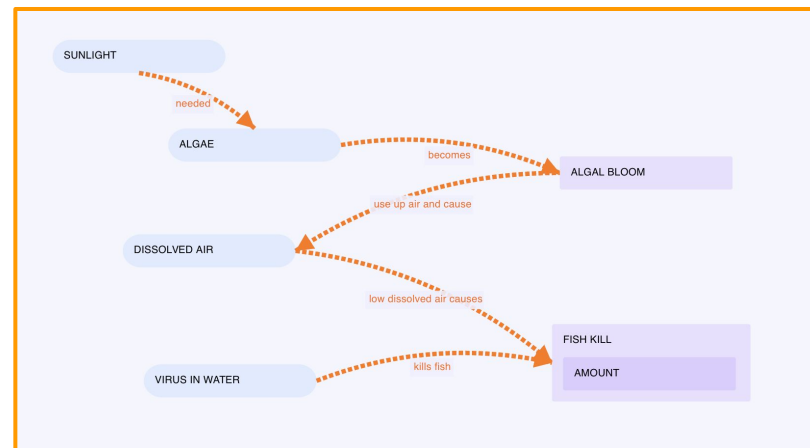
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# Share out

- What did you learn from the evidence and simulation?
- What changes did you make to your models?
- We need to update Fresh Perspectives on what we did today. What should we tell them?
- After today, what questions do we still have?





**See you next week!**



# Simulation Instructions

## Trial 1:

- algae 300
- fish 20
- air circulation 30

## Trial 2:

- algae 100
- fish 20
- air circulation 100