[Limiting nutrients simulation](https://sites.google.com/site/biologydarkow/ecology/limiting-nutrients-with-data-analysis)

*Modified from Jon Darkow (2018) https://docs.google.com/document/d/1U7tOdyjsTOpnXGMfnwb\_ehBAvJ1sITouTcjrHrftQIQ/*

You are trying to determine what the limiting nutrient is in the aquatic ecosystem and justify your claim with data.

**Before you begin, identify:**

1. What are the independent variables are in the simulation?
2. What are the dependent variables are in the simulation?

# Ecosystem Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Go to your assigned ecosystem tab in the simulation. Adjust the the abiotic factors (iron, nitrogen, phosphorus, sulfur) to see which one(s) produce the most algae growth. Run the simulation as many times as it takes for you to feel confident you have identified the limiting nutrient(s).

# Simulation Data Table

The first line is an example of how to record your data.

|  |  |  |
| --- | --- | --- |
| **Nutrient Levels** |  |  |
| **Iron** | **Nitrogen** | **Phosph.** | **Sulfur** | **Algae** | **Notes** |
| *0* | *5* | *5* | *0* | *401* | *Reached max slower than P alone* |
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# Graph of Results

Insert one or more images of your graphs that show evidence of which nutrient is limiting.

# Conclusion

**What is (are) the limiting nutrient(s) in this aquatic ecosystem?**

Use the data to justify your response by referring to your data table and graph(s). Be sure to justify how you know the other nutrients are NOT limiting in the aquatic environment.