**Introduction**

It is predicted that with global climate change, there will be an increase in temperature, precipitation and an intensification of storm systems. With weather events like hurricane Katrina, it is assumed that storm events are intensifying, and observations in weather patterns seem to support this hypothesis. Consequences of global climate change on storms are evident along coastal regions, but what are the effects on other bodies of water that lie inland?

Although storm event intensity has not been measured specifically for smaller storms affecting particular bodies of water, like Beaver Pond, the effects from local major storm events now can be used as indication storm effects. How will the direct increase in water level from precipitation change the pond? How will runoff into the system by the watershed effect the pond? The change in the water properties due to increased precipitation can be used as a model to predict the outcome of larger storms with global climate change.

**Plotting data from Beaver Pond**

The increased intensity of storm events causes an influx of runoff into systems like Beaver Pond. The data you work with will illustrate how the increased precipitation with a large storm event can alter the turbidity, percent dissolved oxygen and temperature of the water.

1. Gather data from: http://web.cortland.edu/BeaverEcology. Go to Program Overview and then to the link titled “Weather Underground”.

2. Locate a day with storm activity in which precipitation was the measured the highest in the past month. Record the twelve-hour span around the event that captures the most precipitation data available. Go further back in the data if there have been no major storm events in the past month or the data is unavailable on the Beaver Pond website (Example: November 11, 2006 had the record high of 0.63 inches from 10:56 am to 10:56 pm).

   Date of activity:
   Peak time of event:
   Time span surrounding event:

3. Locate the Live Data for Beaver Pond through the Home page by clicking the Cortland area; then the Live Data circle.

4. Open the Turbidity information for the date with the highest precipitation. You may have to enter an entire week for the search and narrow the data by an individual webpage basis. Capture and place the data, for the twelve hour span, in Excel under a column titled Turbidity. Make sure the data remains in the correct time sequence.

5. Create a graph that displays the Turbidity data against time. Decide what increment would be best for both the Turbidity and time (For example: Only place a mark on the time axis for every hour).
6. Repeat steps 2-5 but this time select a day without precipitation

7. Did turbidity increase or decrease with the storm event? Why? How does this compare to a day without rain? Is there a difference?

8. When did turbidity peak? How does that compare to the precipitation accumulation?

9. Return to the website and gather data from the same dates and times for water temperature. Produce two graphs that compare time and temperature.

10. How does the temperature correspond before the storm event? After? How does this compare to the day with out rain? What are some differences?

11. How does the temperature correspond with the turbidity of Beaver Pond? Increase or decrease with turbidity?

12. If there is a peak in the data, what else could cause an increase in temperature at that time? If there is a minimal value with the time, what would cause the temperature to decrease?

13. Return to the weather of the storm event. (Weather Underground). How does the temperature of the water compare to the temperature of the atmosphere? Does the atmosphere influence the temperature of Beaver Pond? Compare your answer to the characteristics of your day without rain.

14. Produce one final graph with the percent dissolved oxygen of Beaver Pond for the storm event.

15. What is the %D.O. before the main precipitation from the storm? After?

16. How does turbidity seem to effect %D.O.? Is there a relationship there?

17. How does temperature correspond with %D.O.? Is there a relationship between the two?

18. What other factors influence %D.O. at that time?

In order to see the relationships between factors, as a bonus activity, you may want to look at the data for periods of time when there is no storm event, or even when there is drought conditions for the Beaver Pond region.

Questions for Discussion

What are the effects of a major storm event on Beaver Pond?
How might a storm event effect the water? The structure of the pond? Biota?
What else might you look at to determine the effects of increased runoff with a storm on Beaver Pond?
Will that affect people surrounding this ecosystem?
How might the effects on Beaver Pond help to determine the effects of global climate change on larger bodies of water?