Name _____ Date _____

Hurricane!

The Intergovernmental Panel on Climate Change (IPCC) is an intergovernmental body meant to review and assess technical information relating to climate change. As of 2013, 195 countries are members of the IPCC, with thousands of scientists from around the world volunteering their expertise to contribute to the IPCC's work. In 2007, they drafted a summary report which indicated that large, flooding storms are predicted to increase in intensity in northeastern North America. These types of storms could be hurricanes, nor'easters, blizzards and large storms in general. How do you think these regional storm events might change our local stream ecosystems? In this activity, you will learn how the flow of water in a stream changes during a flood and why the timing of a flood can make a big difference in its overall impact.

Part 1: Reading

Read the Poughkeepsie Journal article from April 22, 2007, and answer the following questions:

1. According to the USGS, how important was the April 2007 flood?
2. What natural factors contribute to the severity of a flood?
3. What human factors contribute to the severity of a flood?
4. How can actions taken in your community impact flooding in other communities?
5. What actions can be taken to reduce the impacts of future flooding?

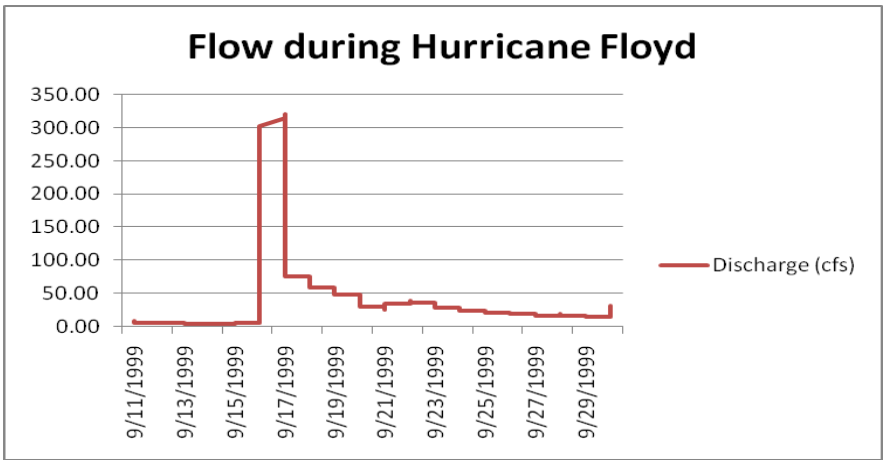
Part 2: Analyze the data

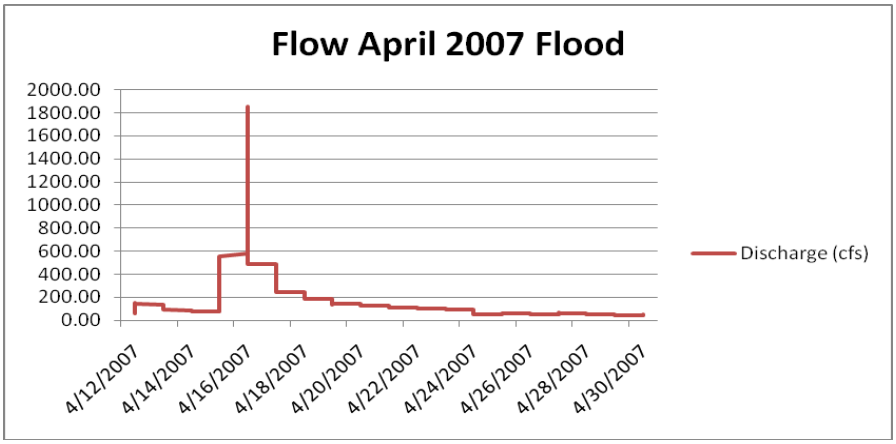
1. How much rain caused each of the floods?
   Which event had more rain?
   Based only on this information, which storm do you think would cause more flooding?

Rainfall amounts:

Hurricane Floyd	9/14/1999: 0mm	9/15/1999: 6.4mm	9/16/1999: 171.5mm	9/17/1999: 0mm
April 2007 Storm	4/14/2007: 0mm	4/15/2007: 75.7mm	4/16/2007: 55.6mm	4/17/2007: 1mm

2. Use these graphs to answer the questions that follow.

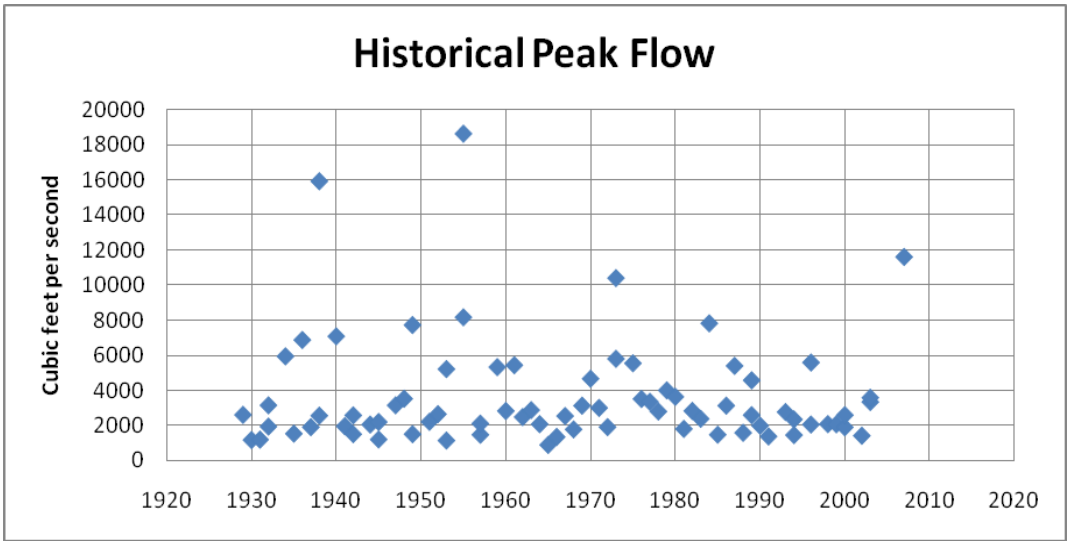




a. When and how high was peak flow for the Hurricane Floyd flood?
b. When and how high was peak flow for the April 2007 flood?
c. What was the normal rate of discharge before the two floods?
d. In what ways do the two graphs differ? Why?

3. Think about which storm caused more rain to fall and which storm had a higher stream flow rate. Why do you think this happened? Does this match with your predictions to question #1? Why or why not?

4. Use the graph below to answer the following questions:



   a. How did the 1999 and 2007 storms compare with other historical floods in the past?
   b. Which year saw the largest peak flow?
   c. Why do you think the 1999 storm didn't produce a very high peak flow?
   d. If time permits, research one of the large storm events in the past (1955, 1938) and describe the consequences of those storms. In August 1955, the region suffered from two hurricanes, and in September 1938, a category 3 hurricane made landfall on Long Island.

Part 3: Future Change

Read about predictions of storm intensity under various global warming scenarios. "Confronting Climate Change in the Northeast" by the Union of Concerned Scientists includes two relevant sections: pgs 15-31 explains the impacts on coastal systems, while pgs 62-65 explains the impacts on water in the northeast. The report can be downloaded at: http://www.northeastclimateimpacts.org/ (http://bit.ly/12xMaVa). You can also use the following NASA Earth Observatory article to learn more about hurricanes http://earthobservatory.nasa.gov/Features/Hurricanes/ (http://1.usa.gov/10VFRI2). Answer the following questions based on this reading.

1. What is a hurricane? What category of storm causes the most damage? What kind of damage does it cause?
2. How many storms, on average, occur in the Atlantic Ocean each year?
3. Have the numbers of hurricanes been increasing or decreasing over the past 30 years? What evidence did you find to support your answer?
4. Based on the climate change report, what are the potential impacts of increasing storms on coastal systems? On water resources?
5. What impact are you the most concerned about? Why?