



## **NSF GK-12 Graduate Fellows Program**

Award # DGE-0139171

*University of North Carolina at Wilmington*

# **Hurricane Watch: How Scientist Analyze Their Effects on Coastlines**

## Activity Instructions

by

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# Hurricane Watch:



How scientists analyze the effects hurricanes have on our coastlines.

## Lesson Plan

North Carolina Standard Course of Study for 8<sup>th</sup> grade science  
**Objective 3.04:** Evaluate the forces that shape the lithosphere

**Prerequisite Knowledge:** Students can learn background information on hurricanes by completing the following **webquest** and answering its questions:

<http://www.glencoe.com/sec/science/webquest/content/hurricanes.shtml>

**Materials:** Print out copies of the **aerial photos** showing the destruction caused by hurricanes to different sites around Wilmington, North Carolina. There are 3 photos for each site. Each of the 3 photos was taken after a different hurricane. Label the back of each photo with the appropriate number found on the **photo code** sheet. You may wish to laminate the photos.

Create **scientists cards** by writing the name of a different type of scientist on one side of an index card with a brief explanation of what they do on the back. Refer to the **Scientists list** for information.

**Procedure:** Give each student a photo. They must match their photo to the other two students that have the same site. Once the photos have been matched the 3 students form a group. In their groups students will discuss the differences and similarities that they can observe among the photos of their site.

Show your students the **Scientists power point presentation**.

Pass out scientist cards to the students in a group (you may wish to combine 2 groups together). Each card should have a different scientist on it. The students must **discuss** how their individual scientist would be involved in a study that set out to determine the effects of a hurricane on the coastline of Southeastern North Carolina. You may want to provide your students with supplementary materials related to their field of study (maps, data tables, graphs etc...)

Working together the scientists must come up with a **report** to present to the mayor of Wrightsville Beach that assesses the impact these storms have had on the coastline. The report should detail the changes that have taken place with each succeeding hurricane. The students must also make suggestions for ways to lessen the hurricane's disastrous effects.

You may wish to refer to the following website for assistance:

[www.ncsu.edu/coast/shell/](http://www.ncsu.edu/coast/shell/)

**Assessment:** Students will present their reports to the class. Class can vote on which measures they believe will best protect the coastline.

## Code for Hurricane Photos

<b>Bertha</b>	July 1996	
<b>Fran</b>	September 1996	
<b>Bonnie</b>	August 1998	
#35	Bertha	Carolina Beach
#30	Fran	Carolina Beach
#25	Bonnie	Carolina Beach
#20	Bertha	Wrightsville Beach
#15	Fran	Wrightsville Beach
#10	Bonnie	Wrightsville Beach
#5	Bertha	Shell Island
#36	Fran	Shell Island
#26	Bonnie	Shell Island
#16	Bertha	Figure Eight Island
#6	Fran	Figure Eight Island
#34	Bonnie	Figure Eight Island
#24	Bertha	Topsail Island
#14	Fran	Topsail Island
#4	Bonnie	Topsail Island
#33	Bertha	Topsail Island
#23	Fran	Topsail Island
#13	Bonnie	Topsail Island
#3	Bertha	N. Topsail Island
#32	Fran	N. Topsail Island
#22	Bonnie	N. Topsail Island
#12	Bertha	N. Topsail Island
#2	Fran	N. Topsail Island
#31	Bonnie	N. Topsail Island
#21	Bertha	N. Topsail Island
#11	Fran	N. Topsail Island
#1	Bonnie	N. Topsail Island
#27	Bertha	N. Topsail Island
#17	Fran	N. Topsail Island
#7	Bonnie	N. Topsail Island

#28	Bertha	Camp Lejeune
#18	Fran	Camp Lejeune
#8	Bonnie	Camp Lejeune
#29	Bertha	Emerald Isle
#19	Fran	Emerald Isle
#9	Bonnie	Emerald Isle

### Scientist and Job Explanations

**Biologist:** I study life and living organisms, including their structure, function, growth, origin, changes over time, life processes, and distribution. This includes both plants and animals, human and non-human.

**Chemist:** I study the composition, structure, and properties of matter and substances. I am interested in the flow of minerals, elements, and nutrients through the environment. I can do water, soil, and air testing to determine the properties of these materials.

**Geologist:** I study how Earth is formed, what has happened to it since then, and what might happen to it in the future. I can study “earthly things” like rocks, rock formations, and fossils to determine the geological history of an area.

**Meteorologist:** I study weather; the local short-term changes that affect how we live every day. I use satellite and ground measurements to predict the weather and decide how climate affects the environment.

**Oceanographer:** I study oceans and how they change. I work on ships or in aircraft and get data from floating & submersible instruments, and satellites. I am interested in the chemical and biological components of the ocean system and how they interact.

**Sociologist:** I study people in large populations – how they live, grow food, and manufacture things. From what I learn about large numbers of people, I can help to predict what people do to the environment. My work helps decision makers create policies that help prevent damage to the environment. I also learn how changes in the environment affect populations.

**Technology Specialist:** I am a computer whiz. I can invent and improve computer programs to study data about Earth. I make the work of other scientists possible by keeping all the satellite information easy to access and understand. I also help create, run and maintain the high tech instruments that many scientist uses to do their jobs.

### **Suggested Questions for Photo Study**

1. What changes have occurred over time and during these hurricanes at your site?
2. What forces may have acted on this site to create these changes?
3. If there are no perceivable changes, speculate on why not.
4. How do these changes affect the populations in these areas, human and non-human?
5. How would populations along the coast have affected the damage done by these storms? Would there have been more or less damage if these populations didn't exist?
6. Does the damage done seem to be reversible or are these sites altered permanently?
7. If forces such as these continue to act upon this area, what changes might be seen in the long term?
8. After the storm is over, what effects will normal forces such as tides, winds, weather, etc... have on the site?
9. How does this affect you?