

History's Turbulent Winds and Waters: Historical Hurricanes

Lesson Plan

Grades: 7-10

Subjects: Environmental science, life science, language arts/writing

Lesson Summary: Students will learn about hurricanes in history, how hurricanes develop, hurricane preparations, and will think and write about what happens during and after the storm.

Objectives:

The students will be able to:

- 1) Define hurricane, tropical storm, tropical depression.
- 2) Explain the difference between the different categories of hurricanes.
- 3) List ways that people can prepare for a storm, including their local evacuation route.
- 5) Explain why storms were and are so devastating despite storm warnings and preparations using historical records of past storms.

Materials:

Each student will need the following:

- 1) Computer with internet access
- 2) Paper
- 3) Pen or pencil
- 4) Copy of the hurricane preparation list assignment
- 5) Copy of the [hurricane tracking chart](#)
- 6) Copy of the hurricane writing assignment

Teacher Preparation:

- 1) Print out a copy of the [hurricane tracking chart](#), the hurricane preparation list assignment, and the hurricane writing assignment. Photocopy enough for everyone in your class.
- 2) Make sure the computers are ready for the students so there is no lost time.
- 3) Make sure there are enough copies of the three components of the writing lesson. You can print out and photocopy new ones or reuse the old ones.

Procedures:

- 1) The students start by reading "**History's Turbulent Winds and Waters.**"
- 2) Ask them to read the selection. (20-30 minutes)
- 3) When the students have finished reading, have the students get out the hurricane preparation sheet and ask them to complete it. (30 minutes)
- 4) Pass out the hurricane tracking chart and ask them to complete it based on the historical hurricane they choose. (20-30 minutes)
- 5) Have the students get out the writing instruction sheet and begin writing. (20-30 minutes)

Total Time estimates:

Two 50-minute class periods

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Unlike simple storms, which can be damaging enough on their own, hurricanes are storm systems. As storm systems, hurricanes are collections of storms that operate together, exponentially increasing their power and potential for damage.

In order for these storm systems to develop, certain conditions must be present. Those conditions are most often present during hurricane season, which runs June 1 – November 30 each year. Hurricane season refers to the time in which different variables change and become optimal for the development of hurricanes. All weather events occur because of a complex system of factors, which is why predicting the weather is so difficult. During hurricane season, those factors align—warm water, air movement, air pressure, and moist air. These combine and encourage storm development. As the storm system grows, it can then develop into a tropical depression

(sustained winds under 38 mph), tropical storm (sustained winds of 39 to 73 mph), and hurricane (sustained winds over 74 mph).

After becoming a hurricane, the Saffir-Simpson scale is used to place hurricanes in one of five categories, based on intensity. These categories are based on wind speed, storm surge, and the likely degree of damage. [According to the National Weather Service:](#)

Category One Hurricane: Winds 74-95 mph (64-82 kt or 119-153 km/hr). Storm surge generally 4-5 ft above normal.

Category Two Hurricane: Winds 96-110 mph (83-95 kt or 154-177 km/hr). Storm surge generally 6-8 feet above normal.

Category Three Hurricane: Winds 111-130 mph (96-113 kt or 178-209 km/hr). Storm surge generally 9-12 ft above normal.

Category Four Hurricane: Winds 131-155 mph (114-135 kt or 210-249 km/hr). Storm surge generally 13-18 ft above normal.

Category Five Hurricane: Winds greater than 155 mph (135 kt or 249 km/hr). Storm surge generally greater than 18 ft above normal.



Storm surge image from: [International Hurricane Research Center](#)

Hurricanes: More than a Number

The technical information on hurricanes only shows part of the picture. Hurricanes combine wind and water damage over a long period of time, causing damage both quickly and throughout the course of the storm. Damages even occur after the storm, with wind and water damage leading to weakened buildings and trees that collapse later on, flooding that can break dams and levees, erosion, and many other problems. Hurricanes leave lasting damage even after they pass because of contaminated water, power outages, downed trees, lack of housing, and many other problems caused by direct damage from the storm.

Staying Safe during a Hurricane

Hurricane tracking and preparedness have improved, but they cannot prevent hurricanes. They do help in notifying people of hurricanes so that people can take the appropriate steps to ensure their safety. The best protection from hurricanes is information; information on the hurricane and on being prepared. Hurricane preparedness includes following information on hurricanes to know when to use a disaster plan and having that disaster plan ready.

Disaster plans include a family plan on what to do in the event of a disaster, a disaster supply kit (with water, food, eating utensils, medicines, basic first aid materials, clothing, special items for babies and the elderly, bathroom supplies, flashlights and batteries, a battery or crank powered radio, access to a telephone, money, keys, important documents like birth certificates, pet care items, games and other recreational items for helping weather the storm), an evacuation plan, a plan for securing your home whether or not you evacuate, and a pet plan so that your pet is also safe.



Hurricane damage caused in Puerto Rico by the San Ciriaco Hurricane of 1899, from the [Library of Congress](#).

After the Storm

After the storm passes, the emphasis shifts from preparation to recovery and rebuilding. Part of recovery includes triage, which is the system of prioritizing problems to ensure that the problems with the greatest need are treated first. For instance, hospital emergency rooms use triage to see the severity of people coming in to the emergency room. By triaging the patients, the hospital ensures that those with the greatest need are taken care of first.

Triage after a hurricane ranks problems by severity so that the most critical needs—helping those with medical needs, finding uncontaminated water, stabilizing buildings, and so on—are taken care of before other less critical needs. As the recovery process progresses, some needs that were not critical can become critical, so the triage process must continue to re-evaluate the conditions.

Hurricanes in History

Before hurricane tracking, hurricane warning systems, and planned evacuation routes, hurricanes were even more dangerous. Hurricanes were especially dangerous because they have a storm “eye” which is an area of relative calm in the middle. The winds and storm intensify as the hurricane passes. However, in the middle of the storm, the eye passes. Mistakenly thinking that the eye was the end of the storm, some have left secure areas or begun the recovery process too soon, leading to more destruction.

In [Robinson Crusoe by Daniel Defoe](#), Robinson Crusoe is on a ship and everyone on the ship—except for him—is killed by a storm. *Robinson Crusoe* is set in the 1600's, and was written in the 1700's. In those times, hurricane and storm tracking was virtually nonexistent. For many years after *Robinson Crusoe*, storms continued to wreak massive devastation and they continue to do so even today. However, now better tracking, planning, preparation, building codes, and awareness help make people safer in the face of hurricanes.

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Hurricane Preparation List Assignment

Hurricanes are extremely powerful and dangerous storms, often requiring people to evacuate for their own safety. Even smaller storms can be dangerous if you're not prepared. A disaster plan, which includes an evacuation plan, is an important step toward safety.

- 1). For this assignment, list what you think you would need in your disaster supply kit. The supply kit needs to include all of your essentials, so what should you include? ([The University of Florida's IFAS website has more details to help.](#))
- 2). In the event of a major storm, many people will need to evacuate. What is your evacuation plan? What is your evacuation route?

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Hurricane Tracking Sheet

Using the hurricane tracking chart, chart one of the historical hurricanes listed below. List as much information as possible—where the hurricanes hit, and on what day and time. If this information is not available, complete as much information as you can.

- [Hurricane Fifi-Orlene](#) (1974)
- [Hurricane Flora](#) (1963)
- [Dominican Republic Hurricane, also known as Hurricane San Zenon](#) (1930)
- [Great Hurricane of 1780](#)

More information on each of these hurricanes can be found on the National Hurricane Center website (<http://www.nhc.noaa.gov/HAW2/english/history.shtml>) or on Wikipedia.

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Writing Assignment

Using Robinson Crusoe's account after being shipwrecked from a hurricane in the novel ([Page 67](#) begins the day after the storm), newspapers, and any other materials, write a fictional journal of the hurricane you chose to track from the perspective of a person living in one of the areas hit by the storm.

The diary should have at least five entries. No more than two of those entries can be from before or during the storm. Because these are historical hurricanes when tracking and prevention was less possible, the bulk of the journal entries should be after the storm. The entries should be written from a particular character's perspective as though the character actually experienced the storm.

Before writing the entries, consider the following questions:

- Where is your character? What country? What area? All of these storms were devastating, with more damage to those closer to water. Who is your character (age, gender, family, nationality, primary language)?
- Why is your character writing this journal: family record, business record (of shipping, farming, local store, working conditions), travel journal, personal reasons (what are they)?
- What storm did you choose? What sources will you use in your research?

For each of the five entries, consider these questions:

- Why is your character writing this particular entry? People write about what's important, so write about what's important to your character—safety of family, access to food, security of property, shock at the storm damage.
- On what day is this entry written? Remember, only two can be before or during the storm; the others should be about the time period soon after the storm.

After you complete all of your entries, you can draw illustrations to help explain the events in your journal. Once everyone is finished, you may be asked to read part of your journal to the class and to discuss the hurricane you chose.