



Extreme Weather: Hurricanes

Submitted by: Christi Ridley, 9-12 Grade
Seymour High School, Seymour, TN

Target Grade: Ecology/Environmental Science

Time Required: 90 minutes

Ecology/AP Environmental Science Standards:

- 3255.5.1 Explain how temperature, precipitation, latitude, and altitude influence biomes
- 3260.7.3 Explain how human activity is related to ozone depletion and climate change.
- 3260.7.10 Predict the consequences of a warmer earth

Lesson Objectives:

The learner will:

- Explain the relationship of hurricanes and warmer ocean temperatures
- Describe the effect of the Coriolis Effect on major weather patterns
- Evaluate the impact humans may have on hurricane formation

Central Focus:

Via a multi-strategy instructional approach, students investigate the formation of hurricanes, the Coriolis Effect, and the relationship between extreme weather and our society.

Materials

- Google slides presentation
- Internet access
- Inflatable globe
- Lazy Susan
- Water soluble marker
- [Podcast about Hurricane Sandy Recovery](#)
- Paper/pen



Instruction:

Introduction (10 minutes)

- Hook and pre-assessment: Ask students for examples of extreme weather that they have heard about in the news. List examples on board and discuss possible explanations for extreme weather.
- Refer to objectives: 1) Explain the relationship of hurricanes and warmer ocean temperatures 2) Describe the effect of the Coriolis Effect on major weather patterns 3) Evaluate the impact humans may have on hurricane formation

Direct instruction (25 minutes)

Present and discuss [Google Slides presentation](#) with embedded videos

Coriolis Effect Activity (20 minutes)

One student spins the inflatable globe on lazy Susan in an easterly direction, while the other student holds marker at equator and attempts to draw a straight line. Students will observe that the marker line deflects to the right in the northern hemisphere and to the left in the southern hemisphere.

Questioning: Why are we holding the marker at the equator? What does the marker line represent? Why does the line deflect to the right in the northern hemisphere and to the left in the southern hemisphere? What is the significance of the Coriolis Effect? What other ways can you think of to model the Coriolis Effect?

NPR Activity (15 minutes)

As a class, students listen to a NPR podcast about hurricane Sandy recovery.

Teacher initiates class discussion about how the state of New Jersey is attempting to prevent future hurricane damage by allowing damaged properties to revert back into wetlands, which will act as a storm surge buffer in future storms



Closure Essay Activity (20 minutes)

To review, students will write a short essay about hurricane formation and how humans may exacerbate frequency of storms by releasing greenhouse gases (from burning fossil fuels) such as carbon dioxide. Student will close essay with strategies for reducing greenhouse emissions and how to create storm surge buffers by restoring natural habitats such as wetlands and mangroves.

Differentiation

Students may be given copy of Google Slides presentation to aid students with language challenges

Students may complete Coriolis Activity in groups of 3-4 if physical assistance is needed

Students may draw a picture of hurricane formation as an alternative to explaining hurricane formation in words (if student is a more visual learner)

Students may have access to the NPR podcast the day before if students have auditory processing challenges

Assessment

1. Formative assessment of initial questioning to determine the level of guidance students will need throughout the lesson.
2. Formative assessment of student responses to questioning. Students from various achievement levels will be chosen to answer the questions for teacher to determine student mastery of content.
3. Summative assessment of student essay to determine mastery of critical thinking skills of applying what they have learned and evaluating the relationship between society and extreme weather.