

Unit 2: Earth's Waters–The Impact of Hurricane Katrina

When it struck the Gulf Coast, Hurricane Katrina was a category 4 hurricane. What made Katrina a \$200 billion storm event? Earth science can help you grapple with this question. Earth scientists study weather, storms, storm surge, rivers, deltas, wetlands, and floods. Over the next three 7-day cycles, you will explore these topics. You will also become an expert in a field of Earth science related to the storm event. Your group will do a research project on an Earth science question related to Hurricane Katrina, but your group will have to come up with the question and a plan for research!

Big Ideas

1. “Earth is Whole” means that all of the planet’s physical features and living organisms are interconnected.
2. Important features of systems are that each part of a system can itself be described as a system, and that a system can be very different from its parts (the whole is more than the sum of its parts).
3. The three systems questions are: What are the parts of the system? How does the system function as a whole? How is the system itself part of larger systems?
4. The water that we drink connects us with the living beings that inhabited the planet before us, that inhabit Earth today, and that will inhabit it in the future.

Science Concepts

1. The Sun’s energy drives Earth’s weather systems, storms, and the water cycle (the flow of water through Earth’s systems).
2. Natural hazards are events that change or destroy human and wildlife habitats, damage property, and harm or kill humans, but human activities like urban growth and land-use decisions can speed up natural changes.
3. Natural hazards challenge us to estimate the rate and scale of change and to identify and enact preventive measures that can save property and lives.
4. The kind of question you ask affects the type of scientific investigation you need to do: observing and describing objects, organisms, or events; collecting specimens; doing experiments; seeking more information; discovering new objects and phenomena; and making models.
5. As a human endeavor, science relies on basic human qualities, such as reasoning, insight, energy, skill, and creativity—as well as on scientific habits of mind, such as intellectual honesty, tolerance of ambiguity, skepticism, and openness to new ideas.

Major Objectives¹

1. Define four major ways that freshwater is used as a resource. (1.1)
2. Classify major storage systems of Earth’s water. (1.1)
3. Analyze the roles of evaporation and condensation in fueling hurricanes. (1.2)
4. Identify the major processes in the water cycle and how the cycle works. (1.3)
5. Summarize how watersheds work in terms of the storage and movement of water. (2.1)
6. Describe the parts of a river, how rivers flow, and how rivers change the land. (2.1)
7. Analyze ways that people try to control flooding along rivers and assess the tradeoffs. (2.1)
8. Analyze how wetlands help control flooding (2.3)
9. Assess the impacts of rainfall, storm surge, and levee failure in the recent flooding of New Orleans.
10. Design and conduct a scientific investigation related to the causes or effects of hurricane-related flooding.

¹ Chapter and section from the *Earth’s Waters* textbook are shown in parentheses

Activities (40%)	Points	Score	Comments
B-1. Earth's water and how we use it (objectives 1-2).	25		
B-2. Exploring processes in the water cycle (objectives 3-4)	25		
B-3. Watersheds big and small (objective 5)	25		
B-4. Design lab: River systems, erosion and deposition (objective 6)	40		
B-5. Modeling and controlling flooding along rivers and deltas. (objectives 6-7)	30		
B-6. Modeling how wetlands work (objective 8)	25		
B-7. Internet-based activity	30		
Journal Entries (10%)	Points	Score	Comments
JE-3. Hurricane Katrina: Initial ideas	10		
JE-4. Thinking in terms of systems	10		
JE-5. Scientific investigations	10		
JE-6. Rivers as systems	10		
JE-7. Using earth science knowledge	10		
Assessments (30%)	Points	Score	Comments
<u>Quiz 1</u> Objectives 1-2	10		
<u>Quiz 2</u> : Objectives 3-4	10		
<u>Quiz 3</u> . Objective 5	10		
<u>Quiz 4</u> Objectives 6-7	10		
<u>Quiz 5</u> Objective 8	10		
Unit Test: Complete a 40-question test on the objectives of the unit.	100		
Projects (20%)	Points	Score	Comments
<u>Research Report</u> . Write a three-page (1200-1500 word) research paper on an Earth science process that was part of Hurricane Katrina. Include an original investigation in your report (objectives 9 and 10).	100		

Unit Grade Total score of _____ points out of 500 possible, for an average of _____ %.

Comments