



Flash Floods Teaching Box

Topic: Flash Flooding

Level: Secondary Grades

How to use this resource:

Each tab correlates with a part of the scope and sequence for this topic and includes links to hands-on activities, background content, and multimedia resources. Select the resources within each tab that are best suited for your students to meet the learning goals. (There are often more resources linked within each section than you will need.)

Additional detail about standards, including Common Core and Geography Standards are listed under each tab.

Teaching Boxes are themed collections of classroom-ready educational resources to build student understanding of science, technology, engineering, and math (STEM). Resources highlighted within teaching boxes are from various science education programs and all have been vetted by the Spark education team.

This page provides an overview of the Teaching Box contents and associated standards.

Explore this Teaching Box and its educational resources at:

scied.ucar.edu/floods-teaching-box

Rainfall and Flash Flooding

- Goal: Students learn that storms with unusual amounts of rainfall can cause a flash flood.
- Activity: Students learn how rainfall is measured and how it can lead to flooding.
- Performance Expectation: Students learn that storms with unusual amounts of rainfall can cause a flash flood by studying how rainfall is measured, analyzing and interpreting rainfall data, and using mathematics.
- Standards:
 - Science and Engineering Practices: Analyzing and Interpreting Data
 - Science and Engineering Practices: Using Mathematics and Computational Thinking
 - MS-ESS2.C: The Role of Water in Earth's Surface Processes
 - MS-ESS2.D: Weather and Climate
 - Crosscutting Concepts: Scale Proportion and Quantity
 - Crosscutting Concepts: Cause and Effect

Geology and Flash Floods

- Goal: Students learn that water flows downhill on land and that the shape of the land and the ability of water to soak into the ground influences whether a rainstorm causes a flash flood.
- Activity: Students build models to learn how topography and the permeability of the land affect flash flooding and apply their understandings to consider the effects of floods in urban environments.
- Performance Expectation: Students develop and test a physical model of a mountainous area to describe the how surface water moves through the area due to the force of gravity and how the permeability of the land impacts flooding. (Based on part of MS-ESS2-4)
- Standards:
 - Science and Engineering Practices: Developing and Using Models
 - Science and Engineering Practices: Planning and Carrying Out Investigations
 - MS-ESS2.C: The Role of Water in Earth's Surface Processes
 - MS-ESS2.A: Earth Materials and Systems
 - Crosscutting Concepts: Cause and Effect
 - Crosscutting Concepts: Stability and Change
 - National Geography Standards: 15 - How Physical Systems Affect Human Systems (15.3 - People adapt to the conditions of the physical environment)

Determining Flood Risk

- Goal: Students learn how flash flood risk and probability is assessed.
- Activity: Students learn about the 2013 Colorado floods and the probability of a 100-year flood event, and then interpret data on a floodplain map
- Performance Expectation: Analyze and interpret data on natural hazards to forecast future catastrophic events to understand the likelihood of future events (based on PE MS-ESS3-2)
- Standards:
 - MS-ESS2.C: The Role of Water in Earth's Surface Processes
 - MS-ESS3.B: Natural Hazards
 - Science and Engineering Practices: Analyzing and Interpreting Data
 - Science and Engineering Practices: Constructing Explanations and Designing Solutions
 - Crosscutting Concepts: Cause and Effect