

# Devastating Weather

## Unit of Practice

### Abstract

Weather is a daily topic of interest for most students. Can we go on the picnic? Will the snowstorm close school? Do I need my winter coat or can I wear shorts? But when the weather turns “bad,” what are the consequences? What makes weather devastating? How is *devastating* defined?

### Invitation

How can we help students to understand the social, environmental, and economic impact of weather? How is weather a part of the systems of the Earth? What makes a weather event devastating? (*Big Ideas*)

Why does everyone talk about the weather and no one does anything? Could something be done? Can the weather be controlled? Is weather free or does it have a cost connected to it? (*Entry Questions*)

### Tasks

In this unit, students work in groups to brainstorm weather phenomena, define *devastating*, predict which phenomena is the most devastating based on their own definition, create questions that can address the issues, and then process their research. They create a multimedia presentation detailing their findings and conclusions as the culminating project.

### Tools

Computer(s), the Internet, atlases, resource books, a digital camera, a scanner, word-processing software, presentation software, textbooks, chart paper, and markers.

### Interactions

The teacher introduces the topic of weather and divides students into groups of two or three. Students individually research different weather events, then compare their information and come to a group consensus on which is the most devastating. The teacher continually monitors and guides student work.

## **Standards**

### **Investigation and Experimentation**

Scientific progress is made by asking meaningful questions and conducting careful investigations. As a basis for understanding this concept, students should develop their own questions and perform investigations.

#### **Science: Grades 6–12**

*Theme: 1.2 Questioning:* The development of an inquisitive mind and the effective use of questioning techniques furthers the acquisition of information.

- Initial information and prior knowledge are used to ask questions.
- Questions may be structured so that they can be investigated scientifically.
- Data should be examined to find patterns and relationships.
- Tables and graphs may be used to interpret the meaning and significance of data.
- Information should be related to prior knowledge.

*Communicating:* An essential aspect of science is the act of accurately and effectively conveying oral, written, graphic, or electronic information from the preparer to the user.

The sharing and disseminating of results should be done in a clear and concise manner.

### **Computer Technology Standards**

The student will use a variety of technologies to improve classroom learning, increase productivity, and support creativity.

The student will use technology as a tool to conduct and evaluate research and to communicate effectively information and ideas.

The student will use technology resources to develop problem-solving strategies, improve decision-making, and support real-world applications.

*Content Standard:* The student will use, read, and view media/technology and analyze content and concepts accurately. Students will exhibit a knowledge of history, identifying and describing major events, people, and trends.

### **Speaking and Listening: Grades 6–12**

*Content Standard:* The student will express ideas clearly and effectively in a variety of oral contexts and apply active listening skills in the analysis and evaluation of spoken ideas.

*Social Studies:* Students will exhibit a knowledge of history, identifying and describing major events, people, and trends.

*Language Arts - Reading/variety of texts:* The student reads widely for different purposes in varied sources. Students deliver well-organized formal presentations.

## **Situations**

Students work in the classroom, media center, or at home to do their research. The unit will take approximately two weeks. Suggested timelines are 50 minutes per day; 3 periods for research, 4 periods for construction, and 3 periods for project presentations and discussions.

## **Assessment**

- The teacher asks questions and informally monitors group progress throughout the unit.
- The teacher and students together can create a rubric for the oral presentations.
- An individual and group assessment will be included.
- A rubric assessing the entire unit could also be developed. Categories for the rubric might include, but are not limited to: Content, Style, Media, Collaboration, and Time Management.

## **The project**

During this project, students will encounter scientific, economic, ethical, social, and environmental systems that will require them to make difficult choices and decisions. Is a drought or flood more devastating? Is *devastating* defined by the cost in terms of money, lives, property, or the environment? Are we concerned with the long-term or short-term effects? There are no “right” answers.

### **Phase 1: Plan in small groups**

- Brainstorm a list of weather events.
- Share the list with the other groups. Groups can borrow from one another’s lists.
- Define *devastating*.
- Have group members select two or three devastating weather events from their list (preferably one weather event per person).
- Predict which is the MOST devastating.
- Write three questions that need to be answered to determine which is truly the most devastating weather phenomena.

### **Phase 2: Gather**

- Each group member researches to find the answers to the questions.
- Collect pictures and information in a database addressing the questions.

### **Phase 3: Build**

- Construct an oral presentation that explains the group findings to the class.
- The presentation should include one of the following:
  - slideshow of the database
  - a spreadsheet with graphs
  - a word-processing document
  - a HyperStudio or mPOWER stack
  - a PowerPoint presentation
  - a slideshow done in draw or presentation mode

Possible guidelines for the presentation might include:

- Title slide
- Hypothesis or prediction slide
- Two slides with pictures and text about each weather phenomena
- Conclusion slide: Which is the most devastating? Why?
- About the Authors slide
- Bibliography slide

### **Phase 4: Present findings to the class**

- Each person in the group should speak, presenting more detailed information that they found that focuses on the group prediction. Did their research prove or disprove their prediction? What unexpected information did they find? If they had more time, how would they investigate further?
- The class should be able to ask questions of the group.

### **Phase 5: Assess**

- Use rubrics to assess the process and products of the activities.

## **Internet Resources**

### **Hurricanes**

#### **World Book Encyclopedia: Hurricanes and Typhoons**

[http://www.worldbook.com/fun/bth/hurricane/html/hurricanes\\_.htm](http://www.worldbook.com/fun/bth/hurricane/html/hurricanes_.htm)

#### **A Comparison of Droughts, Floods, and Hurricanes in the U.S.**

<http://enso.unl.edu/ndmc/enigma/compare.htm>

#### **Hurricane Definition**

<http://www.nws.noaa.gov/er/box/hurdef.html>

**National Hurricane Center**

<http://www.nhc.noaa.gov/>  
<http://www.nhc.noaa.gov/pastdead.html>  
<http://ns.ec.gc.ca/weather/hurricane/hurricanes4.html>  
<http://hurricanes.noaa.gov/prepare/structure.htm>  
<http://www.cotf.edu/ete/modules/sevweath/swhoware.html>  
<http://www.cotf.edu/ete/modules/sevweath/swwhatore.html>  
<http://kids.mtpe.hq.nasa.gov/archive/hurricane/>  
<http://www.hurricanehunters.com/>  
<http://stemnet.nf.ca/CITE/hurricanes.htm>

**Weather****University of Michigan Weather Sites Page**

This page provides access to over 380 North American weather sites.  
<http://cirrus.sprl.umich.edu/wxnet/servers.html>

**Weather Impacts in Canada With Graphs of Costs**

<http://www.esig.ucar.edu/socasp/weather1/street.html>

**USA Today Weather Links**

<http://www.usatoday.com/weather/>

**Live Weather Images**

<http://weatherimages.org>

**Glossary of Weather Terms**

<http://www.nws.noaa.gov/er/box/glossary.htm>

**Disasters****Natural Disasters: Forecasting Economic and Life Losses**

[http://marine.usgs.gov/fact-sheets/nat\\_disasters/](http://marine.usgs.gov/fact-sheets/nat_disasters/)

**Search the NCDC Storm Event Database**

<http://www4.ncdc.noaa.gov/cgi-win/wwcgi.dll?wwevent~storms>

**The Disaster Center**

<http://www.disastercenter.com>

**Natural Disasters**

<http://4naturaldisasters.4anything.com/>

**Storm Prediction Center**

<http://www.spc.noaa.gov>

**Storm Prediction History**

<http://www.spc.noaa.gov/history/early.html>

**Billion Dollar U.S. Weather Disasters**

<http://www.ncdc.noaa.gov/ol/reports/billionz.html>

**Worldwide Weather and Climate Events of 1991–2001**

<http://www.ncdc.noaa.gov/ol/reports/weather-events.html>

**NOAA Reports Record Warmth for January**

<http://www.solcomhouse.com/noaarecordwarmth.htm>

**Disasters**

<http://infoplease.lycos.com/ipa/A0001437.html>

**Floods**

**Flood Deaths by State; 1988–1997**

<http://www.essc.psu.edu/hazards/rawdata/flood1.htm>

**A Comparison of Droughts, Floods, and Hurricanes in the U.S.**

<http://enso.unl.edu/ndmc/enigma/compare.htm>

**Hydrologic Information Center: Floods**

<http://www.nws.noaa.gov/oh/hic/hist.html>

[http://www.nws.noaa.gov/oh/hic/flood\\_stats/Flood\\_loss\\_time\\_series.htm](http://www.nws.noaa.gov/oh/hic/flood_stats/Flood_loss_time_series.htm)

**Flood Fact Sheet**

<http://www.fema.gov/library/floodf.htm>

**National Flood Insurance Program**

[http://www.fema.gov/nfip/c\\_10.htm](http://www.fema.gov/nfip/c_10.htm)

**Floods**

<http://www.nws.noaa.gov/om/ffbros.htm>

**Multiple Categories**

**FEMA for Kids**

<http://www.fema.gov/kids/>

**Apple Learning Interchange**

<http://www.ali.apple.com/ali/>

(Select Resources and search for topic.)

**SchoolHouse Rock Weather Video**

<http://genxtvland.simplenet.com/SchoolHouseRock/videos/weather.mov>

**Meteorology: Online Guides**

[http://ww2010.atmos.uiuc.edu/\(Gh\)/guides/mtr/home.rxml](http://ww2010.atmos.uiuc.edu/(Gh)/guides/mtr/home.rxml)

**U.S. Geological Survey: Search for Topics**

<http://www.usgs.gov/>

**The Societal Aspects of Weather Web Site**

<http://www.esig.ucar.edu/socasp/stats.html>

**Ozone**

**Stratospheric Ozone**

<http://www.ec.gc.ca/ozone/ozonelyr>

**Impacts of a Projected Depletion of the Ozone Layer**

<http://www.gcrio.org/CONSEQUENCES/summer95/impacts.html>

**Ozone Science Crossword Puzzle: Online Version**

<http://www.epa.gov/docs/ozone/puzzles/scipuzzl.html>

## **Droughts**

### **A Comparison of Droughts, Floods, and Hurricanes in the U.S.**

<http://enso.unl.edu/ndmc/enigma/compare.htm>

### **Drought - Dust Bowl**

<http://www.pbs.org/wgbh/amex/dustbowl/peopleevents/pandeAMEX06.html>

### **Droughts: What's a Drought?**

<http://library.thinkquest.org/C003603/english/droughts/whatsadrought.shtml>

### **Drought Floods & Prayer**

<http://www.ozemail.com.au/~sjhop/prayer.htm>

### **Drought: The Black Blizzard**

<http://www.discovery.com/area/history/dustbowl/dustbowl1.1.html>

## **Tornadoes**

### **The Tornado Project Online!**

<http://www.tornadoproject.com>

### **Storm Chaser Homepage**

<http://weather.admin.niu.edu/chaser/>

### **STORM PREDICTION CENTER: Tornadoes**

<http://www.spc.noaa.gov/archive/tornadoes>

### **Tornadoes**

<http://whyfiles.org/013tornado/index.html>

### **Tornado Project Online**

<http://www.tornadoproject.com/>

### **Where Twisters Strike Most...USA Today**

<http://www.usatoday.com/weather/wtornavg.htm>

### **Tornado Damage Risk Assessment: Dallas/Fort Worth**

<http://www.dfwinfo.com/weather/study.html>

<http://www.dfwinfo.com/weather/features/summary.html>

## **Blizzards**

### **Blizzards and Snow Theme Page**

<http://www.cln.org/themes/blizzards.html>

### **Movies**

<http://rsd.gsfc.nasa.gov/rsd/movies/movies.html>

<http://southflorida.digitalcity.com/DCNews/krt-balllightning.htm>