

# A Storm is Brewing

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**Grade Level** 4-5  
**Duration** 2 class periods

## National Standards

### GEOGRAPHY

#### Element 3: Physical Systems

7. The physical processes that shape the patterns of Earth's surface

#### Element 5: Environment and Society

15. How physical systems affect human systems

#### Element 6: The Uses of Geography

17. How to apply geography to interpret the past

18. How to apply geography to interpret the present and plan for the future

### NEXT GENERATION OF SCIENCE STANDARDS

#### Earth's Systems: Processes that Shape the Earth

4-ESS3-2. Generate and compare multiple solutions to reduce the impacts of natural Earth processes on humans.

## AZ Standards

### ELA

#### Reading

##### Key Ideas and Details

4.RI.1 Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text.

5.RI.1 Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text.

4.RI.2 Determine the main idea of a text and explain how it is supported by key details; summarize the text.

5.RI.2 Determine two or more main ideas of a text and explain how they are supported by key details; summarize the text.

4.RI.3 Explain events, procedures, ideas, or concepts in a historical, scientific, or technical text, including what happened and why, based on specific information in the text.

5.RI.3 Explain the relationships or interactions between two or more individuals, events, ideas, or concepts in a historical, scientific, or technical text, based on specific information in the text.

##### Integration of Knowledge and Ideas

4.RI.7 Interpret information presented visually, orally, or quantitatively (e.g., in charts, graphs, diagrams, time lines, animations, or interactive elements on Web pages) and explain how the information contributes to an understanding of the text in which it appears.

5.RI.7 Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently.

##### Writing

##### Production and Distribution of Writing

4.W.4 and 5.W.4 Produce clear and coherent writing in which the development and organization are appropriate to task, purpose, and audience.

##### Speaking and Listening Standards

##### Presentation of Knowledge and Ideas

4.SL.4 Report on a topic or text, tell a story, or recount an experience in an organized manner,

## Arizona Social Science Standards

### GEOGRAPHY

**The use of geographic representations and tools help individuals understand their world.**

4.G1.1 Use and construct maps and graphs to represent changes in the Americas over time.

5.G1.1 Use and construct maps and graphs to represent changes in the United States.

**Human-environment interactions are essential aspects of human life in all societies.**

4.G2.1 Compare the diverse ways people or groups of people have impacted, modified, or adapted to the environment of the Americas.

5.G2.1 Describe how natural and human-caused changes to habitats or climate can impact our world.



using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace.  
 5.SL.4 Report on a topic or text or present an opinion, sequencing ideas logically and using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace.

**SCIENCE**

**Earth and Space Standards**

4.E1U2.10 Define problem(s) and design solution(s) to minimize the effects of natural hazards.

**Life Science Standards**

5.L4U3.11 Obtain, evaluate, and communicate evidence about how natural and human-caused changes to habitats or climate can impact populations.

<b>SIOP Elements</b>		
<p><b>Preparation</b>                      Adapting content                      Linking to background  <b>Linking to past learning</b>                      Strategies used</p>	<p><b>Scaffolding</b>  <b>Modeling</b>                      Guided practice                      Independent practice  <b>Comprehensible input</b></p>	<p><b>Grouping Option</b>                      Whole class                      Small groups                      Partners                      Independent</p>
<p><b>Integrating Processes</b>                      Reading                      Writing                      Speaking                      Listening</p>	<p><b>Application</b>                      Hands on                      Meaningful                      Linked to objectives  <b>Promotes engagement</b></p>	<p><b>Assessment</b>                      Individual                      Group  <b>Written</b>                      Oral</p>

<b>Arizona English Language Proficiency Standards</b>
<p><b>Grade 4 and 5</b>  <b>Basic</b>  <b>Listening and Reading</b>                      Standard 1 By the end of each language proficiency level, an English learner can construct meaning from oral presentations and literary and informational text through grade appropriate listening, reading, and viewing.                      B-1: determine the central idea (in informational text) and theme (in literary text) and explain how they are supported by key details.                      B-2: recount a text including specific details and information.                      B-4 utilize visual information to understand the text  <b>Speaking and Writing</b>                      Standard 3 By the end of each language proficiency level, an English learner can speak and write about grade appropriate complex literary and informational texts and topics.                      B-1: deliver short oral presentations that include some details to develop a topic.                      B-3 compose informational text that includes details to develop a topic while using appropriate conventions.</p>



## A Storm is Brewing

B-5: use examples of precise language and domain-specific vocabulary within informative texts.

### Listening, Speaking, Reading, and Writing

Standard 6 By the end of each language proficiency level, an English learner can participate in grade-appropriate oral and written exchanges of information, ideas, and analyses, responding to peer, audience, or reader comments and questions.

B-1: participate in discussions about familiar topics and texts.

B-2: participate in written exchanges about familiar topics and texts.

B-4: ask questions to gain information or clarify understanding.

B-5: contribute information and evidence to collaborative oral and written discussions.

Standard 7 By the end of each language proficiency level, an English learner can conduct research and evaluate and communicate findings to answer questions or solve problems.

B-1: gather information from multiple provided resources to answer questions.

B-2: sort evidence into categories.

## Overview

Weather and climate impact people as well as the environment. Therefore, throughout the ages, people have adapted to weather/climate conditions (drought, flash floods, dust storms, etc.) to save human lives as well as preserve their physical surroundings.

## Purpose

In this lesson students will learn more about 6 forces of nature including what causes these natural disasters and where these disasters have occurred. This lesson contains strategies for diverse learners (ELLs).

## Key Vocabulary

**dust storm:** a strong wind that carries fine particles of dust for long distances

**tornado:** a rapidly spinning tube of air that touches both the ground and a cloud above

**wildfire:** an uncontrolled fire often occurring in wilderness areas but can also destroy homes and farmland

**drought:** too little rainfall over a long period of time

**flash flood:** a large flow of water within several hours of a rainstorm

**extreme heat:** very hot temperatures

## Materials

- Access to computer lab with internet
- Computer and projection device
- Whiteboard and markers or document camera

- KWL Chart Notes
- Vocabulary Cards
- Vocabulary Test
- Country Research Sheet
- Weather Occurrences graphic organizer

## Objectives

The student will be able to:

1. Read text and summarize key aspects about natural disasters and emergency preparedness.
2. Work cooperatively to create a written and oral project.
3. Gain information from the Internet and cite his/her sources.

## Procedures

*Prerequisite Knowledge:* Students know the terms *weather* and *climate*.

### SESSION ONE

#### Engage:

- a. Draw a KWL chart and title it: "Weather Occurrences (Natural Disasters). Distribute the KWL Chart Notes to students.
- b. Ask students what they already know about natural disasters. (**Preparation: Linking to past knowledge**) As you are writing the class comments on the chart, have students write the comments on their KWL Chart Notes. (**Scaffolding: Modeling**) At the bottom, have them write one question they would like to have answered to at the end of the lesson. (**Application: Promotes engagement**)
- c. Show the following 2-3 minute video –



## A Storm is Brewing

<http://vimeo.com/87524360> This is a montage of weather related phenomenon showing students participating in the activities at the AZ Science Center. **(Application: Promotes engagement)**

- d. After watching the video ask the students what weather related events they saw the students experiencing in the video. If any of these events were not already on the KWL chart, they should be added. **(Integrating Processes: Listening, Writing)**
- e. Distribute the Country Research Sheet and explain to the students that they are going to assume the role of a scientist or geographer that specializes in natural disasters. Their job is to research a recent natural disaster somewhere in the world. After learning about that country's disaster, they will then prepare a communication in the form of a short TV announcement so that the people of the area know what to do if this force of nature comes to their area.

### Explore:

- a. Divide students into groups of two or three. Assign each group one of the natural disasters in the Key Vocabulary list. Hand them a Vocabulary Card so they can visualize the force of nature and know its definition. **(Scaffolding: Comprehensible Input)**
- b. Project and distribute the Scoring Guide. Explain how the 2-3 minute TV announcement will be graded. **(Scaffolding: Comprehensible Input)**

### Explain:

- a. Provide computer lab time for groups to complete the Country Research Sheet and prepare their TV announcement. **(Integrated Processes: Reading, Writing)**

## SESSION TWO

- b. Continue research and documentation of information in the computer lab.
- c. Stress that rehearsing their announcement is part of the assignment and allow more time for this. **(Integrated Processes: Speaking)**

### Elaborate:

- a. Team give their announcements. **(Integrated Processes: Speaking)**
- f. Return to the KWL chart from Session One. Add in information that was given in the announcements. Students should be adding in information on their copy of the KWL chart. **(Scaffolding: Modeling) (Integrating Processes: Listening, Writing)**

### Evaluate:

- b. Have students take their KWL chart and now complete the graphic organizer called Weather Occurrences. They should have at least 8 statements about each type of natural disaster and in the center bubble, they should draw an illustration of the weather occurrence. **(Assessment: Individual, Written)**

## Assessment

### Geography, ELA and Science

The KWL Chart Notes can be graded. Students will complete 10 of the 12 boxes to be considered mastery.

The Country Research Sheet and presentation can be graded. Students will score 50 points or higher on the Country Research Scoring Guide to be considered mastery.

Vocabulary acquisition can be graded. Students will score 80% or higher on the Vocabulary Test to be considered mastery.

The Weather Occurrences graphic organizer can be graded. Mastery will be considered 7-8 correct statements for each of the six disasters listed.

## Extensions

1. Have students write a journal entry of what they would expect to see if they were part of any of the natural disasters taught in this lesson
2. Have students draw a natural disaster that can occur in your location. Post the drawings with actual pictures of these events.
3. Have students make a booklet that includes the natural disasters learned in class. Add pictures from the Internet.
4. Have students write a journal entry explaining how they feel and to whom would they turn to for help if a major disaster destroyed their home and they lost all of their belongings.
5. Have students keep a record of the weather for a month (sun, snow, rain, cloudy). At the end of the month, have them graph the weather. Which weather feature occurred the most/least? Does your area have a rainfall deficit at this time?
6. Share Neo K12 with the students. Watch the videos of natural disasters and then you can play the on-line games.  
<http://www.neok12.com/Natural-Disasters.htm>



### Sources

Welcome to Ready Kids (FEMA)  
<https://www.ready.gov/kids>

[http://en.wikipedia.org/wiki/Category:Natural\\_disasters\\_in\\_Arizona](http://en.wikipedia.org/wiki/Category:Natural_disasters_in_Arizona)

#### Bibliography of Books on the Subject

Aardentee, E. T. (2014). *Disaster: Discover the Amazing and Devastating World of Tornadoes, Hurricanes, Earthquakes, and Floods*: Amazon Digital.

This book is listed as a 3 through 6th grade book. I found it to be just right for fourth grade. It presents a detailed look at the world's natural disasters. It includes detailed text and pictures of disasters taken by survivors.

Burnie, D. & Loughhead, T. (2013). *Disasters*. (p.112) New York: Scholastic.

This is another book that is appropriate for 4<sup>th</sup> grade. This book is part of a series called Discover More. It teaches students how unpredictable and destructive our planet can be. It explains and describes experiences of survivors. Contemporary catastrophes, such as Katrina and the Haitian earthquake are covered as well as devastating events from the past. Later chapters address the human cause of disasters such as wildfires and pandemics and the potential devastation of global warming and overpopulation. The final pages address the conceivable danger of asteroids and the death of the sun.

Hamilton, V. & Pinkney, J. (1992). *Drylongso*. San Diego: Harcourt Brace & Company.

This book is written at a third grade level. *Drylongso* talks about people against nature, specifically dust storms and droughts. The conflict between all characters and nature is evident. *Drylongso* appears during a dust storm and becomes part of a family. I found this book is very good for investing students in learning more about natural events and how human activities impact environments.

Kostigen, T. (2014). *Extreme weather: Surviving tornadoes, sandstorms, hailstorms, blizzards, hurricanes, and more!* National Geographic Children's Books.

This book could be used from third to sixth grade level. It tells the reader how to prepare and respond to emergencies. It includes the risks of building on

changing coastlines, the safety kit you should have packed at home, the telltale signs of a hurricane on the horizon, and how to power up when the grid goes down. This will be the one book to carry with you through all kinds of bad weather.

Leanne, A. (n.d.). *Extreme Weather! Learn Fun Facts About Storms and Natural Disasters: Such as Earthquakes, Floods, Tsunamis, Volcanoes & Much More in this Weather Book for Kids!* (p. 46) Amazon Digital.

This book can be used from kindergarten to seventh grade. This book has interesting overviews of 10 types of natural disasters such as drought, floods, earthquakes, tsunamis, and volcanoes. Being prepared is an important concept in this book.

Lenski, L. (1945). *Strawberry girl*. Philadelphia: J.B. Lippincott.

This book is second or third grade level reading. It talks about Birdie and her family who are trying to build a farm in Florida. But it's not easy with the heat, droughts, and cold snaps—and neighbors that don't believe in fences. There are many lessons that can stem from this book like the impact of extreme natural events (e.g., fires, volcanoes, floods, droughts) and the impact of human modifications (e.g., dams, mining, air conditioning, irrigation, agricultural) on the physical environment.

Porter, T. (1997). *Treasures in the dust*. New York: HarperCollins.

This book is listed as a fourth grade level book. This is a historical fiction story that occurs during the Great Depression in Oklahoma. It narrates the story of two 11-year-old girls, Annie and Violet, growing up between the summers of 1937 and 1938. The book is written in a diary style format where the two girls narrate their stories of surviving the Dust Bowl.

Turner, A., & Barrett, R. (1995). *Dust for dinner*. New York: HarperCollins.

This book, graded for students in grade 2-4, is excellent for vocabulary development. The story takes place in the in the Dust Bowl era of the Midwest and follows the tale of one family that had to make difficult decisions to stay together.

Villa, A. F. (2014). *Flood*. Capstone Young Readers This nonfiction book is aimed at students in first to third grade. It has beautiful painted illustrations. It talks about how a storm develops and what are the steps it follows. It then explains floods and how they occur.

