

UNIT

Unit Name: Weather & Climate

Subject: Earth and Space Science

Time Frame: Trimester 1

Grade: 3rd

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UNIT SUMMARY- The students will be able to understand the typical weather conditions expected in a particular season and in various regions of the world. These conditions can be recorded and predicted and may help prevent the impact of hazardous weather.

UNIT RESOURCES

- Tornadoes! /by Gail Gibbons
- Flash, Changing seasons / Bobbie Kalman & Kelley MacAulay
- Crash, Rumble, and Roll /by Franklyn Mansfield Branley
- What is climate? / by Ellen Lawrence
- Monsoon afternoon / written by Kashmira Sheth ; illustrated by Yoshiko Jaeggi
- Weather / Seymour Simon
- On the same day in March : a tour of the world's weather / Marilyn Singer ; illustrated by Frane Lessacoffrey
- Fearsome forces of nature / Anita Ganeri.
- Wild weather / Anita Ganeri
- Climates of the world : identifying and comparing mean, median, and mode / Barbara Linde

Internet Resource Links:

http://education.nationalgeographic.com/education/activity/extreme-weather-on-earth/?ar_a=1

www.theweatherchannelkids.com

http://www.nssl.noaa.gov/edu/bm/bm_main.html

<http://www.nws.noaa.gov/om/reachout/kidspage.html>

<http://www.sercc.com/education>

STAGE ONE

GOALS AND STANDARDS

- 3-ESS2-1: Represents data and tables in graphical displays to describe typical weather conditions during a particular season.
- 3-ESS2-2: Obtain and combine information to describe climate in different regions of the world.
- 3-ESS3-1: **Make a claim about the merit of a design solution that reduces the impact of a weather-related hazard.**

ENDURING UNDERSTANDINGS

- **Weather changes depending on the season.**
- **Weather is different in different regions of the world.**
- **Scientists can record weather across different times and areas so that they can make prediction about what kind of weather might happen next.**
- **Earth's processes combine to make weather.**
- **Weather can be hazardous.**
- **Humans cannot eliminate natural hazards, but can take steps to reduce their impacts.**

ESSENTIAL QUESTION “How does weather impact your everyday life?”

KNOWLEDGE AND SKILLS

Vocabulary:

Climate-The general weather conditions of a location.

Region- A large part of the Earth’s surface.

Season- A period of the year that is distinguished by special climate conditions and the hours of daylight.

Temperature- The measurement of how hot or cold something is.

Precipitation- Water that falls from clouds in the form of rain, snow, sleet, or hail.

Lightning- A flash of light formed when electricity passes from one cloud to another or between a cloud and the ground.

Wind- Moving air

Front- The line where two air masses meet.

Atmosphere- The mass of air around the earth.

Hurricane- A strong, spinning rainstorm with high winds that starts over the Atlantic or Eastern Pacific ocean.

Typhoon- A strong, spinning rainstorm with high winds that starts in the Western Pacific Ocean.

Blizzard- A severe snowstorm with cold temperatures, high winds, and heavy snow.

Thunderstorm- A storm with thunder, lightning, heavy precipitation, and sometimes hail.

Tornado- A fast-spinning, funnel-shaped column of air that touches the earth’s surface.

Derecho-A widespread, long-lived, straight-line windstorm.

Flood- An overflow of water that covers land.

Barrier- A physical structure which blocks something.

The Students will know:

- **What is typical weather in different times of the year.**
- **Climates are different depending on the region of the world.**
- **A variety of hazards result from weather processes and humans cannot eliminate the hazards, but can reduce their impact.**

STAGE TWO

PERFORMANCE TASK

***Create a structure/barrier as a solution to the hazard of high winds.**

- **Materials:**
 - **Cardboard base (11" x 14") one per group**
 - **Straws (for creating wind)**
 - **Assorted construction materials (paper, toothpicks, clay, toilet paper rolls, popsicle sticks, etc.)**
- **Directions:**
 - **Students will work in small groups and design a barrier/structure that will withstand high winds (as demonstrated by blowing on the barrier/structure with the straw). The barrier/structure should not collapse or blow away.**

STAGE THREE

LEARNING PLAN

Activities, experiences, and lessons:

September/October –Weather charting and weather differences

- **Choose a City, State, or Country. Make copies of the weather page from a newspaper or online weather source. Have students track the temperature and precipitation for his/her location for a week. Present data in a chart and/or oral presentation.**
- **Keep a weather journal; find someone in another location (or use on-line source) to compare your local weather to the weather in another location.**
- **Invite a meteorologist to come speak to the students about his/her career and to explain how understanding weather helps students in their daily life.**

October/November – Weather Hazards

- **SPARK ACTIVITY: The spark is designed to get students thinking about the unit's topics and to generate curiosity and discussion.**
 - **Materials:**
 - **Comb**
 - **Wool cloth**
 - **Metal object**
 - **Paper lunch bags**
 - **Activity: Ask students to tell stories about storms they have experienced. Have students use their senses to describe details. Ask students to draw the shape of lightning in the air with their finger. Then, on the count of three, allow volunteers to mimic the sound of thunder. Tell students that you are going to create lightning and thunder in the classroom!**
 - **Questions:**
 - *What is lightning?*
 - *What is thunder?*
 - *Which do you notice first in a storm- thunder or lightning? Why do you think this is?*
 - *Have you ever seen lightning without hearing thunder? Why do you think this is?*
 - *Have you ever heard thunder without seeing lightning? Why do you think this is?*

- *Is there a certain time of year when you see lightning and hear thunder more than other times of the year? When? Why do you think this is?*

Demonstrate lighting on a small scale by rubbing the comb several times over the wool. Immediately hold the comb up to a metal object and let the students observe the electric discharge. Explain that this spark is similar to the flash seen when electricity passes between the ground and a cloud or from one cloud to another. Let volunteers try reproducing the effect.

Now demonstrate thunder by inflating a paper lunch bag, twisting it shut, and then popping it between your hands. Like thunder, this sudden movement of air creates strong vibrations and thus makes a loud sound. Provide volunteers with more bags to make their own thunder.

Ask students to discuss in small groups how each demonstration is similar to and different from real lightning and thunder. Challenge students to research more about the science behind these and other weather-related phenomenon. Use this activity to begin a study of weather hazards.

- **Ask students to write about or discuss how the derecho or Superstorm Sandy affected their life.**
- **Study/Discuss ways people could stay safe during a severe weather emergency.**