Unit 2-Stormy Skies

Content Area: **Science**
Course(s): **Science 3**
Time Period: **Marking Period 2**
Length: **MP2**
Status: **Published**

Essential Questions

- What factors affect daily weather?
- What factors affect an area's climate?
- How data can be used to determine the climate of various regions?

Big Ideas

- Climate describes patterns typical weather conditions over different scales and variations.
- Historical weather patterns can be analyzed.
- A variety of hazards result from natural processes.
- Humans cannot eliminate hazards but can reduce their impacts.

CRLLKS- Career Education

9.2.5.CAP.1: Evaluate personal likes and dislikes and identify careers that might be suited to personal likes

After completing part of the Mystery Science activities for Stormy Skies, students will research more about the career of meteorology. Students will then record a Flipgrid video doing the weather forecast.

Cross-Curricular Integration

Integration Area: Language Arts

RL.3.1. Ask and answer questions, and make relevant connections to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.

RI.3.4, Determine the meaning of words and phrases as they are used in a text, distinguishing literal from nonliteral language.

RI.3.9. Compare, contrast and reflect on (e.g. practical knowledge, historical/cultural context, and background knowledge) the central message/theme, lesson, and/ or moral, settings, and plots of stories written by the same

author about the same or similar characters (e.g., in books from a series). RI.3.10 By the end of the year, read and comprehend literature, including stories, dramas, and poems at grade level text-complexity or above, with scaffolding as needed.

Activity:

Students read a nonfiction Readworks article about clouds. They also answered multiple choice and short-answer questions about the topic.

Mathematics

As part of this work, teachers should give students opportunities to work with continuous quantities and represent and interpret categorical data.

3.MD.A.2.a Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l).15 Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem.16 Science examples: (1) Estimate the mass of a large hailstone that damaged a car on a used-car lot. (2) Measure the volume of water in liters collected during a rainstorm.

3.MD.A.2.b Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l).17 Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem.18

MD.B.3. Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step “how many more” and “how many less” problems using information presented in bar graphs. Science example: Make a picture graph or bar graph to show the number of days with high temperature below freezing in December, January, February, and March. How many days were below freezing this winter?

3.MD.C.5. Recognize area as an attribute of plane figures and understand concepts of area measurement.

A square with side length 1 unit, called “a unit square,” is said to have “one square unit” of area, and can be used to measure area.
A plane figure which can be covered without gaps or overlaps by n unit squares is said to have an area of n square units.

3.MD.C.6. Measure areas by counting unit squares (square cm, square m, square in, square ft., and improvised units).

Science and Engineering Practices

Asking Questions and Defining Problems:

- Ask questions about what would happen if a variable is changed.
- Ask questions that can be investigated and predict reasonable outcomes based on patterns such as cause and effect relationships.

Using Mathematics and Computational Thinking:

- Organize simple data sets to reveal patterns that suggest relationships.

Science and Society

Lt. Col. William Rankin

Naval Pilot caught in storm cloud

CSDT Technology Integration

8.1.5.AP.4: Break down problems into smaller, manageable sub-problems to facilitate program development

Activity: Students will watch the Mystery Science lesson "How can we predict when it is going to storm?" Students will then name four different types of clouds found in the Storm Spotter's Guide and create an organizer that will classify each type of cloud. Students will then graph the data to predict which clouds most strongly predict the weather using data. Students will then analyze the cause and effect relationships between the types of clouds and the weather.

Enduring Understandings

Next Genteration Standards

Weather and Climate

3-ESS2.D Scientists record patterns of the weather across different times and areas so that they can make predictions about what kind of weather might happen next.

3-ESS2.D Climate describes a range of an area's typical weather conditions and the extent to which those conditions vary over years.

Natural Hazards

3-ESS3.B A variety of natural hazards result from natural processes. Humans cannot eliminate natural

hazards but can take steps to reduce their impacts.

Focus Areas

Knowledge

- Weather includes temperature, precipitation, and wind on a day to day basis.
- Climate is the typical weather patterns over many years.
- How to use tools such as a thermometer, rain gauge, and wind vane to collect weather data.
- Climates vary around the world due to different amounts of rain, varying temperatures, and wind patterns.
- A natural hazard is an extreme event that occurs from natural processes.
- Natural hazards cannot be prevented.
- The damage from natural hazards can be minimized.

Skills

- Predict weather conditions based on information collected.
- Analyze and interpret data to understand what is the climate in different parts of the world
- Ask questions about what caused changes in weather patterns.
- Collect data using tools such as thermometers, rain gauge, and a wind vane.
- Describe different natural hazards.
- Analyze methods for reducing damage caused by natural hazards.

Understandings

- Make a claim about the merit of a design solution that reduces the impacts of a weather-related hazard.
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Climate Change

3-ESS2-2: Obtain and combine information to describe climates in different regions of the world.

- Activty: Students will research and describe the climates of different regions around the world, and then combine their findings to create a comparative overview. Assign each student or group a different region or country from around the world. They will collect data and create visual aids such as charts, graphs, or maps to illustrate their findings. Each group presents their findings, focusing on key aspects of the climate in their assigned region. As a class, discuss similarities and differences between the climates of various regions.

3-ESS3-1: Make a claim about the merit of a design solution that reduces the impacts of a weather-related

hazard.

- Activity: Students can individually or in small groups select or be assigned a specific design solution aimed at mitigating the impacts of the chosen weather-related hazard. Example design solutions could include flood barriers, drought-resistant landscaping, hurricane-resistant building materials, heatwave resilient urban planning, etc. Conduct research on the selected design solution. Evaluate the design solution based on: Effectiveness: How well does the solution mitigate the impacts of the hazard? Sustainability: Is the solution environmentally sustainable? Feasibility: Can the solution be realistically implemented and maintained?

Resources

Primary Resources
● Mystery Science
Supplemental Resources

● BrainPopJr- Temperature, The Water Cycle
● Flocabulary-Tornadoes, Seasons
Leveled Readers:
● Weather Record Breakers
● Fertile Floods
● Follow a Raindrop
● Water
● Weather
● Changes on Earth
Scholastic Weather Watch- http://teacher.scholastic.com/activities/wwatch/severe.htm
FEMA for Kids: http://www.ready.gov/kids

Scientific Inquiry
Core
● Where do clouds form?
● How can we predict when it is going to storm?
● Why are some places always hot?
● How can you keep a house from blowing away in a windstorm?