Wethersfield Public Schools
NGSS Unit Overview
Weather Around the World
Updated 2021-22

Grade: 4	**Topic:** Weather Around the World	**Time Frame/Duration:** Integrated with *Reading the Weather, Reading the World* and Social Studies Curriculum with U.S. Regions

Brief Unit Description:

This unit is taught in conjunction with the Reading the Weather, Reading the World nonfiction language arts unit, as well as the U.S. Regions social studies unit. Using a phenomenon of a tornado, students follow the inquiry process to explore different types of extreme weather and the impact it has on people, property, and surrounding areas.
During this inquiry process students notice and wonder, create a driving question board, and investigate the phenomenon through research centered around the following questions:

- *What tools do we use to measure weather?*
- *What is the benefit of understanding patterns in weather?*
- *How do we analyze and graph weather data?*
- *Can we analyze patterns in weather in various places?*
- *How are weather and climate related?*
- *How can dangerous weather affect an area?*
- *How can we reduce the impact of a weather hazard?*

Students then apply their understanding of weather-related hazards and make a claim about the merit of a design solution that reduces the impacts of such hazards.

Primary Performance Expectation(s):

- **3-ESS2-1. Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season.** [Clarification Statement: Examples of data could include average temperature, precipitation, and wind direction.]

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

- **3-ESS3-1. Make a claim about the merit of a design solution that reduces the impacts of a weather-related hazard.*** [Clarification Statement: Examples of design solutions to weather-related hazards could include barriers to prevent flooding, wind resistant roofs, and lightning rods.]

Supporting/Additional Performance Expectation:

- **3-5-ETS1-2: Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.**

Looking back:	**Looking Forward:**
Grades K-2: ● K-PS3-1. Make observations to determine the effect of sunlight on Earth's surface. ● K-PS3-2. Use tools and materials to design and build a structure that will reduce the warming effect of sunlight on an area.* ● K-ESS2-1. Use and share observations of local weather conditions to describe patterns over time. ● K-ESS3-2. Ask questions to obtain information about the purpose of weather forecasting to prepare for, and respond to, severe weather.*	Grades 6-8: ● MS-ESS2-5. Collect data to provide evidence for how the motions and complex interactions of air masses result in changes in weather conditions. ● MS-ESS2-6. Develop and use a model to describe how unequal heating and rotation of the Earth cause patterns of atmospheric and oceanic circulation that determine regional climates. ● MS-ESS3-5. Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century.

Learning Outcomes/ Hinge Ideas:

ESS2.D: Weather and Climate

- 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-ESS2-1)
- Climate describes a range of an area's typical weather conditions and the extent to which those conditions vary over years. (3-ESS2-2)

ESS3.B: Natural Hazards

- A variety of natural hazards result from natural processes. Humans cannot eliminate natural hazards but can take steps to reduce their impacts. (3-ESS3-1) *(Note: This Disciplinary Core Idea is also addressed by 4-ESSS3-2.)*

Science & Engineering Practices:	**Disciplinary Core Ideas:**	**Crosscutting Concepts:**
1. Asking questions 2. Developing and using models 3. Planning and carrying out investigations **4. Analyzing and interpreting data** 5. Using mathematics and computational thinking	**ESS2.D: Weather and Climate** ● 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-ESS2-1) ● Climate describes a range of an area's typical weather conditions and the extent to which those	**Patterns: Patterns of change can be used to make predictions.** **Cause and Effect: Cause and effect relationships are routinely identified,tested, and used to explain change.** **Stability and Change: Change is measured in terms of differences over time and may occur at different rates.Some**

6. Constructing explanations (for science) **7. Engaging in argument from evidence** **8. Obtaining, evaluating, and communicating information**	conditions vary over years. (3-ESS2-2) **ESS3.B: Natural Hazards** • A variety of natural hazards result from natural processes. Humans cannot eliminate natural hazards but can take steps to reduce their impacts. (3-ESS3-1) *(Note: This Disciplinary Core Idea is also addressed by 4-ESSS3-2.)*	**systems appear stable, but over long periods of time will eventually change.**

Common Core State Standards Connections:
ELA/Literacy:

RI.3.1 Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers. (3-ESS2-2)
RI.3.9 Compare and contrast the most important points and key details presented in two texts on the same topic. (3-ESS2-2)
W.3.1 Write opinion pieces on topics or texts, supporting a point of view with reasons. (3-ESS3-1) W.3.7 Conduct short research projects that build knowledge about a topic. (3-ESS3-1)
W.3.8 Recall information from experiences or gather information from print and digital sources; take brief notes on sources and sort evidence into provided categories. (3- ESS2-2)

Mathematics:

MP.2 Reason abstractly and quantitatively. (3-ESS2-1),(3-ESS2-2),(3-ESS3-1)
MP.4 Model with mathematics. (3-ESS2-1),(3-ESS2-2), (3-ESS3-1)
MP.5 Use appropriate tools strategically. (3-ESS2-1)
3.MD.A.2 Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l). 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. (3-ESS2-1)
3.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. (3-ESS2-1)

Suggested Resources/Lessons
UNIT LESSONS LINK

NGSS Science

Phenomenon

Mystery Science

Ways students talk about science: Talk Moves for Students

Teachers probes to facilitate student learning
Teacher probe questions

Get students thinking and talking about investigations
Claim Evidence poster

Partner Talk Checklist
Modeling Checklist:

Epic books and Pebble Go