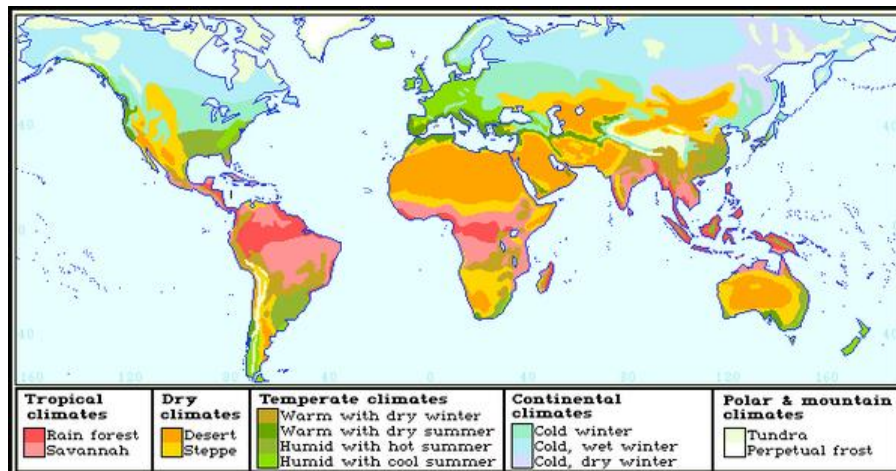




UNIT 2

WEATHER AND CLIMATE



Unit 2: Weather and Climate

6 weeks

In this unit, students focus on understanding patterns of weather across different times of the year and in different areas of the world. They will understand how scientists record these patterns and use them to make predictions about what may happen in the future. Students will represent and use data about weather conditions to describe these patterns and their expectations during a particular time of the year.

Students will use pictographs, bar graphs, and tables to represent data and information obtained about weather conditions. Some of these weather conditions could include: temperature, precipitation, wind direction, or hours of daylight. They will gather information from a variety of sources and use data to describe weather climates in various regions of the world.

Students will understand that a variety of natural hazards can occur through natural processes such as wind and rain, flooding, tornadoes, hurricanes, or snow and ice. They will apply this understanding to design solutions that will reduce the impact of weather-related hazards. As they craft these solutions, they will make claims about the merit of the solutions, using relevant evidence about how it meets the criteria and constraints of the problem.

Unit 2 Performance Expectations

- ❖ **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.] [Assessment Boundary: Assessment of graphical displays is limited to pictographs and bar graphs. Assessment does not include climate change.]
- ❖ **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.]

In Unit 2, students will understand...

- ❖ Scientists record patterns of the weather across different times and areas so they can make predictions about what kind of weather might happen next.
- ❖ Climate describes a range of an area's typical weather conditions and the extent to which these conditions vary over years.
- ❖ A variety of natural hazards result from natural processes.
- ❖ Humans cannot eliminate natural hazards but can take steps to reduce their impacts.
- ❖ Claims can be made about the merit of a solution to a problem, citing relevant evidence from a variety of sources.

Unit 2 Essential Questions:

- ❖ What is the typical weather in different parts of the world? How does this change throughout the year?
- ❖ How can the impact of weather-related hazards be reduced?



Foundational Knowledge:

Prior to 3rd grade, students should have knowledge, understanding of, and experiences with the following ideas:

- ❖ Sunlight warms Earth's surface.
- ❖ Weather is the combination of sunlight, wind, snow, or rain, and temperature in a particular region at a particular time.
- ❖ People measure these conditions to describe and record the weather and to notice patterns over time.
- ❖ Some kinds of severe weather are more likely than others in a given region.
- ❖ Weather scientists forecast severe weather so that the communities can prepare for and respond to these events.

With the implementation of new standards, students may not have had opportunities to engage in these foundational understandings and ideas before 3rd grade. You may need to provide opportunities for students to experience these ideas as you move forward.

Unit Vocabulary:

forecast
meteorologist
rain
precipitation
wind
climate
tropical climate
polar climate
tundra

weather
severe weather
natural hazard
thunderstorm
tornado
hurricane
blizzard
monsoon
flooding

air
atmosphere
thermometer
temperature
wind vane
barometer
hygrometer
anemometer
season



Additional Content Connections:

*These connections provide opportunities to score to other content standards with focused instruction.

ELA:

- ❖ Speaking and Listening
 - SL.3.1 Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher led) with diverse partners on grade 3 topics and texts, building on others' ideas and expressing their own clearly.
 - SL.3.2 Determine the main ideas and supporting details of a text read aloud or information presented in diverse media and formats, including visually, quantitatively, and orally.
- ❖ Writing
 - 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.

Math:

- ❖ Measurement and Data
 - 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.
- ❖ Standards for Mathematical Practice
 - MP.2 Reason abstractly and quantitatively
 - MP.4 Model with Mathematics
 - MP.5 Use appropriate tools strategically

Social Studies:

- ❖ Spatial Views of the World
 - G.8.3.2 Use thematic maps (e.g., climate, political, physical) and other geographic representations to describe physical and human characteristics of a variety of places in Arkansas and the interactions that shape them



Weather and Climate

Students who demonstrate understanding can:

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.] [Assessment Boundary: Assessment of graphical displays is limited to pictographs and bar graphs. Assessment does not include climate change.]

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.]

The performance expectations above were developed using the following elements from the NRC document *A Framework for K-12 Science Education*:

Science and Engineering Practices**Analyzing and Interpreting Data**

Analyzing data in 3–5 builds on K–2 experiences and progresses to introducing quantitative approaches to collecting data and conducting multiple trials of qualitative observations. When possible and feasible, digital tools should be used.

- Represent data in tables and various graphical displays (bar graphs and pictographs) to reveal patterns that indicate relationships. (3-ESS2-1)

Engaging in Argument from Evidence

Engaging in argument from evidence in 3–5 builds on K–2 experiences and progresses to critiquing the scientific explanations or solutions proposed by peers by citing relevant evidence about the natural and designed world(s).

- Make a claim about the merit of a solution to a problem by citing relevant evidence about how it meets the criteria and constraints of the problem. (3-ESS3-1)

Obtaining, Evaluating, and Communicating Information

Obtaining, evaluating, and communicating information in 3–5 builds on K–2 experiences and progresses to evaluating the merit and accuracy of ideas and methods.

- Obtain and combine information from books and other reliable media to explain phenomena. (3-ESS2-2)

Disciplinary Core 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)

Crosscutting Concepts**Patterns**

- Patterns of change can be used to make predictions. (3-ESS2-1, 3-ESS2-2)

Cause and Effect

- Cause and effect relationships are routinely identified, tested, and used to explain change. (3-ESS3-1)

Connections to Engineering, Technology, and Applications of Science**Influence of Engineering, Technology, and Science on Society and the Natural World**

- Engineers improve existing technologies or develop new ones to increase their benefits (e.g., better artificial limbs), decrease known risks (e.g., seatbelts in cars), and meet societal demands (e.g., cell phones). (3-ESS3-1)

Connections to Nature of Science**Science is a Human Endeavor**

- Science affects everyday life. (3-ESS3-1)

