



Scope and Sequence Third Grade



Table of Contents

1. About the Scope and Sequence	2
2. Year at a Glance	3
3. How to Use the Anchor and Investigative Phenomena	4
4. Unit 1: Weather and Climate	5-9
○ Overview	
○ Sample Resources and Activities	
○ Teacher Notes: <i>Background, Common Misconceptions, Unit Unpacked</i>	
5. Article “Weather and Climate”	10-11

About the Scope and Sequence

The [Louisiana Student Standards for Science](#) represent the knowledge and skills needed for students to successfully transition to postsecondary education and the workplace. The standards call for students to:

- Apply content knowledge
- Investigate, evaluate, and reason scientifically
- Connect ideas across disciplines

This scope and sequence document is designed to assist Caddo educators with the implementation of the Louisiana Student Standards for Science. Based on the instructional shifts, this organization of the standards uses phenomenon to drive 3-dimensional science instruction. *Phenomena* are observable events that occur in the universe and can be explained by science. They establish the purpose for learning and help students to connect their learning to real-world events.

Purpose of the Scope and Sequence

This scope and sequence document was developed to assist teachers with the implementation of the [Louisiana Student Standards for Science](#). This tool is not full curriculum and will need to be further built out by science educators. It has been designed to help in the initial transition to the new standards. This document is considered a “living” document and will be updated throughout the school year. Please note:

- The standards are bundled into units.
- The units are built around an *anchor phenomenon*.
- The units also contain at least one *investigative phenomenon* which can be used for a lesson or multiple lessons.
- Sample resources and activities are provided. These sample resources and activities are not meant to be the sole resource for classroom instruction.
- This scope and sequence is a guide; it **is not** a curriculum.

Year at a Glance

Grade 3: Science Scope and Science

Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6
Weather and Climate	Electric and Magnetic Forces	Force and Motion	Organisms and Their Environments	Life Cycles and Traits	Survival
August-September					
<u>ESS2-1</u> <u>ESS2-2</u> <u>ESS3-1</u>	<u>PS2-3</u> <u>PS2-4</u>	<u>PS2-1</u> <u>PS2-2</u>	<u>3-LS4-1</u> <u>3-LS4-3*</u> <u>3-LS4-4</u>	<u>3-LS1-1</u> <u>3-LS3-1</u> <u>3-LS3-2</u>	<u>3-LS2-1</u> <u>3-LS4-2</u> <u>3-LS4-3*</u>

*Standard will be addressed in multiple units.

All About Anchor and Investigative Phenomena

Natural phenomena are observable events that occur in the universe. Phenomena can be explained or predicted by using our science knowledge. The goal of building knowledge in science is to develop general ideas based on evidence, and those ideas can explain and predict phenomena. Therefore, the focus is not just on the phenomenon itself; it is the phenomenon plus the student-generated questions about the phenomenon that guides the learning and teaching. Engineering involves using explanations of phenomena to design solutions to real-world problems.

Not all phenomena need to be used for the same amount of instructional time. Teachers use an ***anchor phenomenon*** as the overall focus for a unit. An anchoring phenomenon is complex and requires an entire unit for students to be able to explain the science behind it. ***Investigative phenomena*** are used as the focus of an instructional sequence or lesson. By centering science education on phenomena that students are motivated to explain, the focus of learning shifts from learning about a topic to figuring out why or how something happens.

How to Use Anchor and Investigative Phenomena

1. Explore the anchor phenomenon
2. Attempt to make sense of the phenomenon
3. Identify related phenomena
4. Develop questions and next steps
5. Explore investigative phenomena to help make sense of the anchor phenomenon
6. Communicate scientific reasoning around the anchor phenomenon

Sources:

[‘Using Phenomena’ by Achieve](#)

Adapted from [How do we bring 3-dimensional learning into our classroom?](#)

Grade 3: Science Scope and Science

Unit 1: Weather and Climate


Overview

Time Frame: Approximately 20 Days

Unit Storyline:

In this unit of study, students organize and use data to describe typical weather conditions expected during a particular season. Students should see patterns of weather conditions present during different seasons and represent those patterns on tables and graphs. Students obtain information via multiple reliable sources to describe climates in different regions around the world. By applying their understanding of weather-related hazards, students are able to make a claim about the merit of a design solution that reduces the impacts of such hazards. The crosscutting concepts of *patterns and cause and effect* are called out as organizing concepts for these disciplinary core ideas. Students demonstrate grade-appropriate proficiency in *analyzing and interpreting data, engaging in argument from evidence, and obtaining, evaluating, and communicating information*. Students are also expected to use these practices to demonstrate understanding of the core ideas.

Standards that appear in this unit: [ESS2-1](#), [ESS2-2](#), and [ESS3-1](#)

Anchor Phenomena <i>Possible Phenomena for Unit</i>	Sample Guiding Questions for Phenomena <i>These questions can be asked as learning progresses.</i>
<p>1. Aerial Video of The Red River Flood From June 8th, 2015 (video)</p> <p>2. Flooding Near Sci-Port, 2015</p> 	<ul style="list-style-type: none">● What did you observe in the video?● What are some different reasons areas flood?● How did the flooding impact the people of the Shreveport/Bossier area?● What are the typical weather conditions in the Shreveport/Bossier area in June?● How did the flooding change the environment surrounding the river?● What are some things we can do to reduce the impact of floods?● What questions can you ask based on the video?

Investigative Phenomena <i>Possible Phenomena for Lesson(s)</i>	Sample Guiding Questions for Phenomena
Thunderstorm and Lightning from Ready.gov	<ul style="list-style-type: none"> ● What do you observe in the picture? ● What sounds would you hear if you were there? ● Could you predict what would happen in the next 30 minutes? Hour? Support your answer. ● What are some of the effects of thunderstorms and lightning? How can we reduce the negative effects of thunderstorms and lightning? ● What do you want to know more about?
Annual and Monthly Tornado Averages for Each State (maps)	<ul style="list-style-type: none"> ● What can you learn from the maps? ● Which season(s) will tornadoes most likely occur? Which states are tornadoes most likely to occur? ● Are tornadoes more likely to occur in Louisiana or Kansas? Support your answer with evidence and reasoning. ● Besides tornadoes, what are some other examples of extreme weather that can happen in Louisiana? ● What questions can you ask based on the information given?

Grade 3: Science Scope and Science

Unit 1: Weather and Climate

Sample Resources and Activities

1. **A Closer Look Textbook:** Unit 8 Lesson 1 and Lesson 2
 - Third grade students **are not** expected to master the concept of condensation or the water cycle. Third grade students do not need to master particle movement during evaporation.

2. **Sample Lesson Plans:**
 - [Climate Postcards](#)- This lesson provides an engaging way for students to investigate different climates from around the world. The teacher prints postcards from "grandma" along with graphs of climates from five different regions. Students must interpret the graphs to determine what kind of climate "grandma" is experiencing as she travels.
 - [Waterproof Roof](#)- In this engineering activity, students are challenged to design and construct a roof that will protect a cardboard house from getting wet. The criteria and constraints for the design is that students need to develop a roofing system for a house that can prevent water from entering with limited materials.
 - [Differences Between Weather and Climate](#)- Students are expected to collect and graph weather data, then analyze historical averages to develop an understanding of the difference between weather and climate.

3. **Informational Article:** '[Weather and Climate](#)' article from World Book (See your librarian to get access to your school's World Book account.)

4. **Trade Book:** [Weather by Susan Koehler](#),
 - Note: This book can be found on [EBSCO](#). Please talk to your librarian if you need assistance accessing the book.

5. **Websites:**
 - [Create a Graph](#)
 - [Weather.com](#)
 - [Ready.gov](#)
 - [Weather 101](#)
 - [SciJinks: Weather](#)
 - [Scholastic News Article: "Twister Trouble"](#)
 - [Magic School Bus Kicks Up a Storm](#)
 - If you need assistance logging into Discovery Education, ask your librarian for help.

Grade 3: Science Scope and Science

Unit 1: Weather and Climate

Teacher Notes

Background

Weather changes over a period of time. Meteorologists have used data tables to show the changes over time. There are seasonal patterns that help us predict future weather. Scientists have also collected and recorded data about climates over different regions. Through studying weather and climate conditions over a period of time we better understand causes of hazards due to weather. This data helps us design solutions and make claims to reduce the impacts of those hazards. In this unit of study, students organize and use data to describe typical weather conditions expected during a particular season. They notice patterns as they analyze and interpret weather data, and they use this data to determine cause-and-effect relationships. By applying their understanding of weather-related hazards, students make claims about the merit of a design solution that reduces the impacts of such hazards, using evidence to support their claims.

Initially, students learn that scientists record patterns of weather across different times and locations in order to make predictions about future weather conditions. To understand how scientists use weather data, students need time, tools, and resources (both print and digital) to collect weather data. They can use a variety of tools (e.g., thermometers, anemometers, rain gauges) to collect firsthand data and multiple resources (e.g., Weather.com, NOAA) to gather weather data that has been collected over longer periods of time. Multiple units of measurement (e.g., m, cm, °C, km/hr) should be used when recording weather conditions such as temperature, types and amounts of precipitation, and wind direction and speed. To organize the data they collect, students create graphical displays (bar graphs and pictographs) and tables. Once a sufficient amount of data is collected, students need opportunities to analyze data, looking for patterns of change that can be used to make predictions about typical weather conditions for a particular region and time of year. As they collect and analyze data over time, students learn that certain types of weather tend to occur in a given area and that combinations of weather conditions lead to certain types of weather (e.g., it is always cloudy when it rains or snows, but not all types of clouds bring precipitation).

Weather is a combination of sunlight, wind, precipitation, and temperature in a particular region at a particular time. ***Climate*** describes the range of an area's typical weather conditions and the extent to which those conditions vary over the years. After learning to analyze and use data to make weather predictions, students use long-term patterns in weather to describe climates in a variety of regions around the world. To accomplish this, students use books and other reliable media to obtain information and weather data collected over a long period of time for a variety of regions. With guidance, students analyze the available data and information in order to describe the climate (e.g., average temperatures, average precipitation, and average amount of sunlight) in each region. Science affects everyday life. Whenever people encounter problems, engineers use scientific knowledge to develop new technologies or improve existing ones to solve our day-to-day problems. After studying weather and climate, students investigate how weather-related hazards can be reduced. Students learn that there are a variety of natural hazards that result from severe weather. Severe weather, such as high winds, flooding, severe thunderstorms, tornadoes, hurricanes, ice or snowstorms, dust storms, or drought, has the potential to disrupt normal day-to-day routines and cause damage or even loss of life.

While humans cannot eliminate natural hazards, they can take steps to reduce their impact. Students can use trade books and media resources to research types of severe weather hazards and their effects on communities and find examples of how communities solve problems caused by severe weather. As a class, students determine the types of severe weather that are common to the local area and discuss the effects on the community. (Define the problem.) In pairs or small groups, students can research ways that the community reduces the effects of severe weather. (Determine ways in which the problem is solved.) Given criteria, groups can determine how well each solution reduces the effects of severe weather.

Common Student Misconceptions

- It is winter because it is cold and there is snow.
- Seasons happen at the same time everywhere on earth.
- Seasons are caused by earth's distance from the sun.
- Climate is long-term weather and can't be predicted over long periods of time.
- Students may think that clouds are a predictor of rain. In reality, there are many types of clouds, and not all types can be used to predict rain.

Unit Unpacked

- Students can collect and record data about weather in their area during different seasons.
- Students can collect and record data about weather in other areas over a time period.
- Students can analyze and interpret data to recognize patterns in weather over time.
- Students can represent data in tables and graphical displays to show patterns in weather.
- Students can obtain and evaluate information from books and media about a range of an area's typical weather conditions.
- Students can communicate information how climate conditions in areas can vary over years.
- Students can cite evidence that natural hazards result from natural processes, such as flooding, tornadoes, hurricanes, snow storms, and wind.
- Students can argue that because natural hazards result from natural processes humans cannot eliminate them.
- Students can make a claim about a merit of a design solution that would reduce the impact of natural hazards.

Weather and Climate



Supercell

Weather is the condition of the air at a certain place and time. We describe the weather in many ways. For example, we may talk about the temperature of the air, whether the sky is clear or cloudy, how hard the wind is blowing, or whether it is raining or snowing. The weather may be warm and sunny in one place but cold and snowy somewhere else.

Earth has many kinds of weather conditions. The highest temperature ever measured and written down was 134 °F (57 °C) in Death Valley, California, in 1913. The lowest temperature was -128.6 °F (-89.2 °C) in Antarctica in 1983. The driest place on Earth is Arica, Chile. It hardly ever rains there. Arica once had no rain at all for 14 years.



Weather Map of United States

Scientists who study the atmosphere and the weather are called *meteorologists*. These scientists forecast the weather—they tell what the weather will be in the near future. Some meteorologists provide weather information for businesses. The best-known meteorologists are those who give weather reports on radio and TV.



The kind of weather a place usually has is called its climate. Scientists can tell what a region's climate is by looking at the plants that grow there as well as the temperatures and the *precipitation*. Rain and snow are two kinds of precipitation. Weather can change quickly, but changes in climate take many years.

Weather information comes from many different places. Observation stations check weather conditions from the ground. They use *thermometers* to measure air temperature and *rain gauges* to measure rainfall or snowfall. Weather balloons, airplanes, and ships provide information on the atmosphere above Earth's surface. *Satellites* in space provide weather information about large areas of the world.

Source: "Weather." *World Book Kids*