

Grade 2 Science, Unit 4  
**The Earth's Land and Water**

**Overview**

**Unit abstract**

In this unit of study, students are able to use information and models to identify and represent the shapes and kinds of land and bodies of water in an area and where water is found on Earth. The crosscutting concept of patterns is called out as an organizing concept for these disciplinary core ideas. In the second grade performance expectations, students are expected to demonstrate grade-appropriate proficiency in developing and using models and obtaining, evaluating, and communicating information. Students are expected to use these practices to demonstrate understanding of the core ideas.

**Essential question**

- What are the different kinds of land and bodies of water?

## Written Curriculum

### Next Generation Science Standards

<b>2. Earth’s Systems: Processes that Shape the Earth</b>		
Students who demonstrate understanding can:		
<b>2-ESS2-3: Obtain information to identify where water is found on Earth and that it can be solid or liquid.</b>		
The performance expectations above were developed using the following elements from the NRC document: <i>A Framework for K-12 Science Education</i>		
<div style="background-color: #4a7ebb; color: white; padding: 2px; text-align: center; font-weight: bold;">Science and Engineering Practices</div> <p style="margin: 0;"><b>Obtaining, Evaluating, and Communicating Information</b></p> <p style="margin: 0;">Obtaining, evaluating, and communicating information in K–2 builds on prior experiences and uses observations and texts to communicate new information.</p> <ul style="list-style-type: none"> <li>▪ Obtain information using various texts, text features (e.g., headings, tables of contents, glossaries, electronic menus, icons), and other media that will be useful in answering a scientific question. (2-ESS2-3)</li> </ul>	<div style="background-color: #f4a460; padding: 2px; text-align: center; font-weight: bold;">Disciplinary Core Ideas</div> <p style="margin: 0;"><b>ESS2.C: The Roles of Water in Earth’s Surface Processes</b></p> <ul style="list-style-type: none"> <li>▪ Water is found in the ocean, rivers, lakes, and ponds. Water exists as solid ice and in liquid form. (2-ESS2-3)</li> </ul>	<div style="background-color: #4caf50; color: white; padding: 2px; text-align: center; font-weight: bold;">Crosscutting Concepts</div> <p style="margin: 0;"><b>Patterns</b></p> <ul style="list-style-type: none"> <li>▪ Patterns in the natural world can be observed. (2-ESS2-3)</li> </ul>
Connections to other DCIs in second grade: <b>2.PS1.A</b> (2-ESS2-3)		
Articulation of DCIs across grade-levels: <b>5.ESS2.C</b> (2-ESS2-3)		
Common Core State Standards Connections:		
ELA/Literacy –		
<b>W.2.6</b> With guidance and support from adults, use a variety of digital tools to produce and publish writing, including in collaboration with peers. (2-ESS2-3)		
<b>W.2.8</b> Recall information from experiences or gather information from provided sources to answer a question. (2-ESS2-3)		

<b>2. Earth's Systems: Processes that Shape the Earth</b>		
Students who demonstrate understanding can:		
<b>2-ESS2-2. Develop a model to represent the shapes and kinds of land and bodies of water in an area.</b> [Assessment Boundary: Assessment does not include quantitative scaling in models.]		
The performance expectations above were developed using the following elements from the NRC document: <i>A Framework for K-12 Science Education</i> :		
<b>Science and Engineering Practices</b>	<b>Disciplinary Core Ideas</b>	<b>Crosscutting Concepts</b>
<b>Developing and Using Models</b> Modeling in K–2 builds on prior experiences and progresses to include using and developing models (i.e., diagram, drawing, physical replica, diorama, dramatization, or storyboard) that represent concrete events or design solutions. <ul style="list-style-type: none"> <li>▪ Develop a model to represent patterns in the natural world. (2-ESS2-2)</li> </ul>	<b>ESS2.B: Plate Tectonics and Large-Scale System Interactions</b> <ul style="list-style-type: none"> <li>▪ Maps show where things are located. One can map the shapes and kinds of land and water in any area. (2-ESS2-2)</li> </ul>	<b>Patterns</b> <ul style="list-style-type: none"> <li>▪ Patterns in the natural world can be observed. (2-ESS2-2)</li> </ul>
<i>Connections to other DCIs in second grade:</i> N/A		
<i>Articulation of DCIs across grade-levels:</i> <b>4.ESS2.B</b> (2-ESS2-2); <b>5.ESS2.C</b> (2-ESS2-2)		
<i>Common Core State Standards Connections:</i>		
<i>ELA/Literacy –</i>		
<b>SL.2.5</b> Create audio recordings of stories or poems; add drawings or other visual displays to stories or recounts of experiences when appropriate to clarify ideas, thoughts, and feelings. (2-ESS2-2)		
<i>Mathematics –</i>		
<b>MP.2</b> Reason abstractly and quantitatively. (2-ESS2-2)		
<b>MP.4</b> Model with mathematics. (2-ESS2-2)		
<b>2.NBT.A.3</b> Read and write numbers to 1000 using base-ten numerals, number names, and expanded form. (2-ESS2-2)		

## Clarifying the standards

### *Prior learning*

There are no disciplinary core ideas that are considered prior learning for the concepts in this unit of study.

### *Progression of current learning*

#### **Driving question 1**

How can we identify where water is found on Earth and if it is solid or liquid?

##### Concepts

- Patterns in the natural world can be observed.
- Water is found in the ocean, rivers, lakes, and ponds. Water exists as solid ice and in liquid form.

##### Practices

- Observe patterns in the natural world.
- Obtain information using various texts, text features (e.g., headings, tables of contents, glossaries, electronic menus, icons) and other media that will be useful in answering a scientific question.
- Obtain information to identify where water is found on Earth and to communicate that it can be a solid or liquid.

#### **Driving question 2**

In what ways can you represent the shapes and kinds of land and bodies of water in an area?

##### Concepts

- Patterns in the natural world can be observed.
- Maps show where things are located. One can map the shapes and kinds of land and water in any area.

##### Practices

- Observe patterns in the natural world.
- Develop a model to represent patterns in the natural world.
- Develop a model to represent the shapes and kinds of land and bodies of water in an area. (Assessment does not include quantitative scaling in models.)

### Integration of content, practices, and crosscutting concepts

In this unit of study, students look for patterns as they identify where water is found on Earth and explore the shapes and kinds of land and bodies of water found in an area. Students also develop models to identify and represent the shapes and kinds of land and bodies of water in an area.

To begin this unit's progression of learning, students identify where water is found on Earth and whether it is solid or liquid. Using texts, maps, globes, and other resources (including appropriate online resources), students will observe that water is found in liquid form in oceans, rivers, lakes, and ponds. They also discover that water exists as a solid in the Earth's snowcaps and glaciers.

After students identify where water is found on the Earth, they take a closer look at bodies of water and landforms that can be found in the natural world. Using firsthand observations and media resources, students should look for patterns among the types of landforms and bodies of water. For example, students should notice that mountains are much taller and more rugged than hills, lakes are an enclosed body of water surrounded by land, and streams flow across land and generally end at a larger body of water, such as a lake or the ocean.

Students should also have opportunities to use maps to determine where landforms and bodies of water are located. As students become more familiar with the types and shapes of landforms and bodies of water, they develop models to represent the landforms and bodies of water found in an area. For example, students can draw/create a map of the area of the state in which they live, showing various landforms (e.g., hills, coastlines, and islands) and bodies of water (e.g., rivers, lakes, ponds, and the ocean). Teachers should keep in mind that assessment does not include quantitative scaling of models (an accurate proportional relationship with the real world).

### Integration of DCI from other units within this grade level

Other connections to disciplinary core ideas within this grade level are found in Unit 2, Properties of Matter.

- Different kinds of matter exist and many of them can be either solid or liquid, depending on temperature. Matter can be described and classified by its observable properties.
- Different properties are suited to different purposes.
- A great variety of objects can be build up from a small set of pieces.

### Integration of English language arts and mathematics

#### *English language arts*

The Common Core State Standards for English language arts can be incorporated in this unit in a number of ways. Students can gather information about the types of landforms and bodies of water from experiences or from text and digital resources. They can use this information to answer questions such as, "Where can water be found as solid ice or snow year round?" Students should also have the opportunity to use their research to publish a writing piece, with guidance and support from adults or collaboratively with peers, based on their findings about various landforms and bodies of water. Diagrams, drawings, photographs, audio or video recordings, poems, dioramas, models, or other visual displays can accompany students' writing to help recount experiences or clarify thoughts and ideas.

#### *Mathematics*

The Common Core State Standards for Mathematics can also be incorporated into this unit. As students collect data about the size of landforms and bodies of water, these numbers can be used to answer questions, make comparisons, or solve problems. For example,

- If students know that a mountain is 996 feet in height, a lake is 550 feet deep, a river is 687 miles long, and a forest began growing about 200 years ago, have students show each number in three ways using base-ten blocks, number words, and expanded form.
- A stream was 17 inches deep before a rainstorm and 33 inches deep after a rainstorm. How much deeper did it get during the rainstorm?

As students engage in these types of mathematical connections, they are also modeling with mathematics and reasoning abstractly and quantitatively. When modeling with mathematics, students diagram situations mathematically (using equations, for example) and/or solve addition or subtraction word problems. When students reason abstractly and quantitatively, they manipulate symbols (numbers and other math symbols) abstractly and attend to the meaning of those symbols while doing so.

### ***Future learning***

The following disciplinary core ideas are future learning for the concepts in this unit of study.

In grade 4, students will know that:

- The locations of mountain ranges, deep ocean trenches, ocean floor structures, earthquakes, and volcanoes occur in patterns. Most earthquakes and volcanoes occur in bands that are often along the boundaries between continents and oceans. Major mountain chains form inside continents or near their edges. Maps can help locate the different land and water features of Earth.

In grade 5, students will know that:

- Nearly all of Earth's available water is in the ocean. Most fresh water is in glaciers or underground; only a tiny fraction is in streams, lakes, wetlands, and the atmosphere.

## **Number of Instructional Days**

*Recommended number of instructional days: 20 (1 day = approximately 45-60 minutes)*

**Note**—The recommended number of days is an estimate based on the information available at this time. Teachers are strongly encouraged to review the entire unit of study carefully and collaboratively to determine whether adjustments to this estimate need to be made.