



UNIT 2

EARTH'S SYSTEMS: PROCESSES THAT SHAPE THE EARTH



Unit 2: Earth's Systems: Processes that Shape the Earth

12 weeks

In this unit, students will understand that events occur on Earth that can shape its surface. These changes may occur very quickly through events like earthquakes and volcanoes. The changes may also occur slowly and over a lengthy period of time that make it difficult for one to observe. Wind and water are two sources of change on the surface of the Earth.

Students will find evidence, from a variety of sources, to prove that these changes occur on Earth, both slowly and quickly. Students will apply understanding of how wind and water can change the shape of the Earth as they work to design solutions to slow or prevent these changes from occurring. They will understand how different designs or structures like dikes and windbreaks help to hold back wind and water. They will also understand that a variety of landscaping features, like shrubs, grass, and trees, help hold the land intact.

Students will use information about landforms and maps to identify where land and water is found on Earth. They will understand that water can be found both in the liquid and solid states on Earth. They will work to develop models or representations of the shape of the land and bodies of water found in a specific area. These models can include diagrams, drawings, dioramas, story boards, or physical replications.

Unit 2 Performance Expectations

- ❖ **2-ESS1-1 Use information from several sources to provide evidence that Earth events can occur quickly or slowly.** [Clarification Statement: Examples of events and timescales could include volcanic explosions and earthquakes, which happen quickly and erosion of rocks, which occurs slowly.] [Assessment Boundary: Assessment does not include quantitative measurements of timescales.]
- ❖ **2-ESS2-1 Compare multiple solutions designed to slow or prevent wind or water from changing the shape of the land.*** [Clarification Statement: Examples of solutions could include different designs of dikes and windbreaks to hold back wind and water, and different designs for using shrubs, grass, and trees to hold back the land.]
- ❖ **2-ESS2-2 Develop a model to represent the shapes and kinds of land and bodies of water in an area.** [Assessment Boundary: Assessment does not include quantitative scaling in models.]
- ❖ **2-ESS2-3 Obtain information to identify where water is found on Earth and that it can be solid or liquid.**

Unit 2 Essential Questions:

- ❖ What are the different landforms and bodies of water on the surface of the Earth and how do they change over time?
- ❖ What evidence can we find to prove that the Earth changes quickly and slowly and how can we prevent these changes?



In Unit 2, students will understand...

- ❖ Some events happen very quickly, while other events occur very slowly over time.
- ❖ Some events occur over a time period much longer than one can observe.
- ❖ Wind and water can change the shape of the land.
- ❖ Maps show where things are located.
- ❖ Maps can show the shapes and kinds of land and water in an area.
- ❖ Water is found in the ocean, rivers, lakes, and ponds.
- ❖ Water, as part of Earth's landforms, exists as solid ice and in liquid form.
- ❖ Engineers develop solutions to prevent damage to Earth's surface.

Unit Vocabulary:

evidence	landform	earthquake
claim	weathering	volcano
engineer/engineering	erosion	glacier
wind	flood	cave
water/ice	break down	canyon
rocks	landslide	soil
mountain	river	map
ocean	pond	lake

Additional Content Connections:

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

ELA:

- ❖ Speaking and Listening
 - SL.2.1 Participate in collaborative conversations with diverse partners about grade 2 topics and texts with peers and adults in small and larger groups
 - SL.2.2 Recount or describe key ideas or details from a text read aloud or information presented orally or through other media.

Social Studies:

- ❖ Spatial Views of the World
 - G.8.2.1 Use map keys, legends, symbols, intermediate directions, scale, and compass rose to derive information from maps
 - G.8.1.2 Use geographic representations to describe the physical and human characteristics of a community
 - G.8.2.3 Construct and label maps of familiar and unfamiliar places
- ❖ Changing Spatial Patterns
 - G.11.2.2 Investigate ways natural and human-made disasters affect people locally, nationally, and globally



Earth's Systems: Processes that Shape the Earth

Students who demonstrate understanding can:

2-ESS1-1 Use information from several sources to provide evidence that Earth events can occur quickly or slowly.

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2-ESS2-1 Compare multiple solutions designed to slow or prevent wind or water from changing the shape of the land.* [Clarification Statement: Examples of solutions could include different designs of dikes and windbreaks to hold back wind and water, and different designs for using shrubs, grass, and trees to hold back the land.]

2-ESS2-2 Develop a model to represent the shapes and kinds of land and bodies of water in an area.

[Assessment Boundary: Assessment does not include quantitative scaling in models.]

2-ESS2-3 Obtain information to identify where water is found on Earth and that it can be solid or liquid.

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	Disciplinary Core Ideas	Crosscutting Concepts
<p>Developing and Using Models 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.</p> <ul style="list-style-type: none"> Develop a model to represent patterns in the natural world. (2-ESS2-2) <p>Constructing Explanations and Designing Solutions Constructing explanations and designing solutions in K–2 builds on prior experiences and progresses to the use of evidence and ideas in constructing evidence-based accounts of natural phenomena and designing solutions.</p> <ul style="list-style-type: none"> Make observations from several sources to construct an evidence-based account for natural phenomena. (2-ESS1-1) Compare multiple solutions to a problem. (2-ESS2-1) <p>Obtaining, Evaluating, and Communicating Information 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"> 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) 	<p>ESS1.C: The History of Planet Earth</p> <ul style="list-style-type: none"> Some events happen very quickly; others occur very slowly, over a time period much longer than one can observe. (2-ESS1-1) <p>ESS2.A: Earth Materials and Systems</p> <ul style="list-style-type: none"> Wind and water can change the shape of the land. (2-ESS2-1) <p>ESS2.B: Plate Tectonics and Large-Scale System Interactions</p> <ul style="list-style-type: none"> Maps show where things are located. One can map the shapes and kinds of land and water in any area. (2-ESS2-2) <p>ESS2.C: The Roles of Water in Earth's Surface Processes</p> <ul style="list-style-type: none"> Water is found in the ocean, rivers, lakes, and ponds. Water exists as solid ice and in liquid form. (2-ESS2-3) <p>ETS1.C: Optimizing the Design Solution</p> <ul style="list-style-type: none"> Because there is always more than one possible solution to a problem, it is useful to compare and test designs. (2-ESS2-1) 	<p>Patterns</p> <ul style="list-style-type: none"> Patterns in the natural world can be observed. (2-ESS2-2, 2-ESS2-3) <p>Stability and Change</p> <ul style="list-style-type: none"> Things may change slowly or rapidly. (2-ESS1-1, 2-ESS2-1) <p>-----</p> <p>Connections to Engineering, Technology, and Applications of Science</p> <p>Influence of Engineering, Technology, and Science on Society and the Natural World</p> <ul style="list-style-type: none"> Developing and using technology has impacts on the natural world. (2-ESS2-1) <p>-----</p> <p>Connections to Nature of Science</p> <p>Science Addresses Questions About the Natural and Material World</p> <ul style="list-style-type: none"> Scientists study the natural and material world. (2-ESS2-1)

