

## 2-ESS1-1 Earth's Place in the Universe

Students who demonstrate understanding can:

- 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.]

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

<b>Science and Engineering Practices</b>	<b>Disciplinary Core Ideas</b>	<b>Crosscutting Concepts</b>
<p><b>Constructing Explanations and Designing Solutions</b></p> <p>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"> <li>Make observations from several sources to construct an evidence-based account for natural phenomena.</li> </ul>	<p><b>ESS1.C: The History of Planet Earth</b></p> <ul style="list-style-type: none"> <li>Some events happen very quickly; others occur very slowly, over a time period much longer than one can observe.</li> </ul>	<p><b>Stability and Change</b></p> <ul style="list-style-type: none"> <li>Things may change slowly or rapidly.</li> </ul>

Observable features of the student performance by the end of the grade:											
1	Articulating the explanation of phenomena										
	a Students articulate a statement that relates the given phenomenon to a scientific idea, including that Earth events can occur very quickly or very slowly.										
	b Students use evidence and reasoning to construct an evidence-based account of the phenomenon.										
2	Evidence										
	a Students describe* the evidence from observations (firsthand or from media; e.g., books, videos, pictures, historical photos), including: <table border="1" style="width: 100%; margin-left: 20px;"> <tr> <td>i.</td> <td>That some Earth events occur quickly (e.g., the occurrence of flood, severe storm, volcanic eruption, earthquake, landslides, erosion of soil).</td> </tr> <tr> <td>ii.</td> <td>That some Earth events occur slowly.</td> </tr> <tr> <td>iii.</td> <td>Some results of Earth events that occur quickly.</td> </tr> <tr> <td>iv.</td> <td>Some results of Earth events that occur very slowly (e.g., erosion of rocks, weathering of rocks).</td> </tr> <tr> <td>v.</td> <td>The relative amount of time it takes for the given Earth events to occur (e.g., slowly, quickly, hours, days, years).</td> </tr> </table>	i.	That some Earth events occur quickly (e.g., the occurrence of flood, severe storm, volcanic eruption, earthquake, landslides, erosion of soil).	ii.	That some Earth events occur slowly.	iii.	Some results of Earth events that occur quickly.	iv.	Some results of Earth events that occur very slowly (e.g., erosion of rocks, weathering of rocks).	v.	The relative amount of time it takes for the given Earth events to occur (e.g., slowly, quickly, hours, days, years).
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iv.	Some results of Earth events that occur very slowly (e.g., erosion of rocks, weathering of rocks).										
v.	The relative amount of time it takes for the given Earth events to occur (e.g., slowly, quickly, hours, days, years).										
	b Students make observations using at least three sources										
3	Reasoning										
	a Students use reasoning to logically connect the evidence to construct an evidence-based account. Students describe* their reasoning, including: <table border="1" style="width: 100%; margin-left: 20px;"> <tr> <td>i.</td> <td>In some cases, Earth events and the resulting changes can be directly observed; therefore those events must occur rapidly.</td> </tr> <tr> <td>ii.</td> <td>In other cases, the resulting changes of Earth events can be observed only after long periods of time; therefore these Earth events occur slowly, and change happens over a time period that is much longer than one can observe.</td> </tr> </table>	i.	In some cases, Earth events and the resulting changes can be directly observed; therefore those events must occur rapidly.	ii.	In other cases, the resulting changes of Earth events can be observed only after long periods of time; therefore these Earth events occur slowly, and change happens over a time period that is much longer than one can observe.						
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## 2-ESS2-1 Earth's Systems

Students who demonstrate understanding can:

- 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.]

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

### Science and Engineering Practices

#### 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.

- Compare multiple solutions to a problem.

### Disciplinary Core Ideas

#### ESS2.A: Earth Materials and Systems

- Wind and water can change the shape of the land.

#### ETS1.C: Optimizing the Design Solution

- Because there is always more than one possible solution to a problem, it is useful to compare and test designs. (*secondary*)

### Crosscutting Concepts

#### Stability and Change

- Things may change slowly or rapidly.

#### Connections to Engineering, Technology, and Applications of Science

#### Influence of Engineering, Technology, and Science on Society and the Natural World

- Developing and using technology has impacts on the natural world.

#### Connections to Nature of Science

#### Science Addresses Questions About the Natural and Material World

- Scientists study the natural and material world.

### Observable features of the student performance by the end of the grade:

1	Using scientific knowledge to generate design solutions	
	a	Students describe* the given problem, which includes the idea that wind or water can change the shape of the land by washing away soil or sand.
	b	Students describe* at least two given solutions in terms of how they slow or prevent wind or water from changing the shape of the land.
2	Describing* specific features of the design solution, including quantification where appropriate	
	a	Students describe* the specific expected or required features for the solutions that would solve the given problem, including:
		i.
ii.	Addressing problems created by both slow and rapid changes in the environment (such as many mild rainstorms or a severe storm and flood).	
3	Evaluating potential solutions	
	a	Students evaluate each given solution against the desired features to determine and describe* whether and how well the features are met by each solution.
	b	Using their evaluation, students compare the given solutions to each other.

## 2-ESS2-2 Earth's Systems

Students who demonstrate understanding can:

- 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.]*

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

### Science and Engineering Practices

#### 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.

- Develop a model to represent patterns in the natural world.

### Disciplinary Core Ideas

#### ESS2.B: Plate Tectonics and Large-Scale System Interactions

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

### Crosscutting Concepts

#### Patterns

- Patterns in the natural world can be observed.

### Observable features of the student performance by the end of the grade:

1	Components of the model
a	Students develop a model (i.e., a map) that identifies the relevant components, including components that represent both land and bodies of water in an area.
2	Relationships
a	In the model, students identify and describe* relationships between components using a representation of the specific shapes and kinds of land (e.g., playground, park, hill) and specific bodies of water (e.g., creek, ocean, lake, river) within a given area.
b	Students use the model to describe* the patterns of water and land in a given area (e.g., an area may have many small bodies of water; an area may have many different kinds of land that come in different shapes).
3	Connections
a	Students describe* that because they can map the shapes and kinds of land and water in any area, maps can be used to represent many different types of areas.

## 2-ESS2-3 Earth's Systems

Students who demonstrate understanding can:

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

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

### Science and Engineering Practices

#### 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.

- 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.

### Disciplinary Core Ideas

#### ESS2.C: The Roles of Water in Earth's Surface Processes

- Water is found in the ocean, rivers, lakes, and ponds. Water exists as solid ice and in liquid form.

### Crosscutting Concepts

#### Patterns

- Patterns in the natural world can be observed.

### Observable features of the student performance by the end of the grade:

1	Obtaining information	
	a	Students use books and other reliable media as sources for scientific information to answer scientific questions about:
		i. Where water is found on Earth, including in oceans, rivers, lakes, and ponds.
		ii. The idea that water can be found on Earth as liquid water or solid ice (e.g., a frozen pond, liquid pond, frozen lake).
		iii. Patterns of where water is found, and what form it is in.
2	Evaluating Information	
	a	Students identify which sources of information are likely to provide scientific information (e.g., versus opinion).