



# Grade 2 Science - Unit 1 - Earth's Systems: Processes that Shape the Earth

## Unit Focus

In this unit, students will explore how natural forces like wind and water shape the Earth's surface through processes like erosion and weathering. They will distinguish between Earth events that occur quickly, such as earthquakes and volcanic eruptions, and those that happen slowly, like the formation of the Grand Canyon. Through hands-on experiments, model-building, and problem-solving activities—including selected lessons from Mystery Science—students will investigate how land and water are interconnected and examine ways to slow or prevent changes to the land caused by erosion.

## Stage 1: Desired Results - Key Understandings

Standard(s)	Transfer	
<p><b>Next Generation Science Standards</b> Cross Cutting Concepts: 2</p> <ul style="list-style-type: none"> <li>Patterns in the natural world can be observed. (2-ESS2-2),(2-ESS2-3) (2.ES.CC.1.1)</li> <li>Things may change slowly or rapidly. (2- ESS1-1),(2-ESS2-1) (2.ES.CC.2.1)</li> <li>Developing and using technology has impacts on the natural world. (2-ESS2-1) (2.ES.CC.3.1)</li> <li>Scientists study the natural and material world. (2-ESS2-1) (2.ES.CC.4.1)</li> </ul> <p>Disciplinary Core Ideas: 2</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. (2-ESS1-1) (2.ESS1.C.1)</li> <li>Wind and water can change the shape of the land. (2- ESS2-1) (2.ESS2.A.1)</li> <li>Maps show where things are located. One can map the shapes and kinds of land and water in any area. (2-ESS2- 2) (2.ESS2.B.1)</li> <li>Because there is always more than one possible solution to a problem, it is useful to compare and test designs. (secondary to 2-ESS2-1) (2.ETS1.C.1)</li> </ul> <p>Performance Expectations: 2</p> <ul style="list-style-type: none"> <li>Use information from several sources to provide evidence that Earth events can occur quickly or slowly. (2-ESS1-1)</li> <li>Compare multiple solutions designed to slow or prevent wind or water from changing the shape of the land. (2-ESS2-1)</li> <li>Develop a model to represent the shapes and kinds of land and bodies of water in an area. (2-ESS2-2)</li> </ul>	<p><i>Students will be able to independently use their learning to...</i> <b>T1</b> Create models to explore complex systems, show mastery of key science concepts, and/or develop solutions through creation of a product open to testing and redesign.</p>	
	<b>Meaning</b>	
	<b>Understanding(s)</b>	<b>Essential Question(s)</b>
	<p><i>Students will understand that...</i> <b>U1</b> Earth's surface is constantly changing due to natural forces like wind, water, and geological activity. <b>U2</b> Some Earth events occur quickly, while others happen over long periods. <b>U3</b> Humans can design and use different solutions, such as dikes, windbreaks, and plants, to slow or prevent erosion and other land changes. <b>U4</b> Land and water are interconnected, and models can help us understand the different landforms and bodies of water on Earth.</p>	<p><i>Students will keep considering...</i> <b>Q1</b> How do natural forces like wind and water change the shape of the land? <b>Q2</b> What is the difference between Earth events that happen quickly and those that happen slowly? <b>Q3</b> How can people design solutions to slow or prevent changes to the land caused by wind and water? <b>Q4</b> How are land and water connected in shaping Earth's surface?</p>
	<b>Acquisition of Knowledge and Skill</b>	
<b>Knowledge</b>	<b>Skill(s)</b>	
<p><i>Students will know...</i> <b>K1</b> Examples of Earth events that happen quickly (e.g., earthquakes, volcanic eruptions) and those that happen slowly (e.g., erosion, weathering).</p>	<p><i>Students will be skilled at...</i> <b>S1</b> Identify and describe events that change Earth quickly and those that change it slowly.</p>	

## Stage 1: Desired Results - Key Understandings

Science and Engineering Practices: 2

- Develop a model to represent patterns in the natural world. (2-ESS2-2) (2.ES.SEP.1.1)
- Make observations from several sources to construct an evidence-based account for natural phenomena. (2-ESS1-1) (2.ES.SEP.2.1)
- Compare multiple solutions to a problem. (2-ESS2-1) (2.ES.SEP.2.2)

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- Idea Generation: Studying a problem, need or model (mentor text, political piece, documents, art work, etc.) to consider limitations and imagine new solutions/ transformations. (POG.2.1)

**K2** How wind and water shape landforms over time.

**K3** Different landforms (mountains, valleys, plains) and bodies of water (oceans, lakes, rivers).

**K4** Ways humans can prevent or slow erosion, such as using plants, windbreaks, and engineered structures.

**K5** How to use models to represent land and water features.

**K6** Vocabulary: Water Cycle, Evaporation, Condensation, Precipitation, Landforms, Valley, Plain, Canyon, Deposition, Ocean, River, Globe, Map, Erosion, Weathering, Flow, Fast Changes, Slow Changes, Design Solution.

**S2** Use evidence from multiple sources to explain how Earth’s surface changes over time.

**S3** Compare different solutions designed to slow or prevent erosion and evaluate their effectiveness.

**S4** Develop and use models to represent landforms and bodies of water in an area.

**S5** Explain how land and water interact to shape Earth’s surface.