Unit One Earth's Land and Water

2nd Grade: Suggested Pacing: 5 weeks/ end of MP1

Unit Summary: In this unit of study, students 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. Students apply their understanding of the idea that wind and water can change the shape of land to compare design solutions to slow or prevent such change.

Vocabulary: boulder, canyon, downstream, erosion, flow, lake, landslide, liquid, ocean, rapidly, river, slowly, solid, weathering

Stage 1 – Desired Results (Also see Disciplinary Core Ideas below)

Performance Expectations: (PE) (Established Goals / Content Standards)

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

- **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-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.*

- **K-2-ETS1-1: Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.**

- **K-2-ETS1-2: Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.**

Enduring Understandings Students will understand that: ● Water is found in the ocean, rivers, lakes, and ponds. Water exists as solid ice and in liquid form.	**Essential Question** **How and why is Earth constantly changing?** **Questions to Guide Instruction**

• Wind and water can change the shape of the land. • The changes in the shape of land can be quick or slow and people can do build things to change how quick it happens.	• *How can we identify where water is found on Earth and if it is solid or liquid?* • *In what ways can you represent the shapes and kinds of land and bodies of water in an area?* • *What evidence can we find to prove that Earth events can occur quickly or slowly?* • *In what ways do humans slow or prevent wind or water from changing the shape of the land?*

Science & Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
Constructing Explanations and Designing Solutions • 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) **Asking Questions and Defining Problems** • Ask questions based on observations to find more information about the natural and/or designed world(s). (K-2-ETS1-1) • Define a simple problem that can be solved through the development of a new or improved object or tool. (K-2-ETS1-1) **Developing and Using Models** • Develop a simple model based on evidence to represent a proposed object or tool. (K-2-ETS1-2)	**ESS2.C: The Role 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. **(2-ESS2-3) 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. (2-ESS2-2) **ESS1.C: The History of Planet Earth** • Some events happen very quickly; others occur very slowly, over a time period much longer than one can observe. (2-ESS1-1) **ESS2.A: Earth Materials and Systems** • Wind and water can change the shape of the land. (2-ESS2-1) **ETS1.A: Defining and Delimiting Engineering Problems** • A situation that people	**Stability and Change** • Things may change slowly or rapidly. (2-ESS1-1) **Structure and Function** • The shape and stability of structures of natural and designed objects are related to their function(s). (K-2-ETS1-2) --- ***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. (2-ESS2-1) --- ***Connections to Nature of Science*** **Science Addresses Questions About the Natural and Material World** • Scientists study the natural and material world. (2-ESS2-1)

	want to change or create can be approached as a problem to be solved through engineering. (K-2-ETS1-1) ● Asking questions, making observations, and gathering information are helpful in thinking about problems. (K-2-ETS1-1) ● Before beginning to design a solution, it is important to clearly understand the problem. (K-2-ETS1-1) **ETS1.B: Developing Possible Solutions** ● Designs can be conveyed through sketches, drawings, or physical models. These representations are useful in communicating ideas for a problem's solutions to other people. (K-2-ETS1-2)	

Stage 2 – Model Assessments	
Summative Performance Task(s) ● Performance Task #1: (2-ESS2-3, 2-ESS2-2) Students will illustrate a map that represents landforms and bodies of water in an area. The illustration must include several types of landforms and water (both solid and liquid forms). ● Performance Task #2: (2-ESS1-1, 2-ESS2-1) In this task, students will work collaboratively to illustrate and explain how water causes beach erosion and present a solution to beach erosion. ● Make Your Own Erosion! ● Writing Task: Imagine you are a big rock high in	**Formative Evidence:** *How can we identify where water is found on Earth and if it is solid or liquid?* *In what ways can you represent the shapes and kinds of land and bodies of water in an area?* ***Students who understand the concepts are able to:*** ● 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.)*

the mountains that gets washed down into a river during a thunderstorm. Write a story telling what happens to you and where you end up. Mystery Science Assessments are available for both the end of each mystery and the end of each unit. Rubric Options: I Get It Rubric A primary rubric that uses a combination of words and symbols to describe different levels of performance. Primary Science Rubric This rubric is appropriate for use with younger children. It shows how a seed develops, from being planted to becoming a flowering plant. Each growth level represents a different level of performance. Science Rubric The Exemplars Science Rubric is based on the following science standards: The National Research Council and the American Association for the Advancement of Science and New Standards. It includes four criteria: use of scientific tools, science reasoning and strategies, science concepts and,use of data and communication. Science Continuum Rubric This continuum was developed by an Exemplars workshop leader and task writer, Tracy Lavallee. It provides a framework for assessing the scientific thinking of young students.	*What evidence can we find to prove that Earth events can occur quickly or slowly?* ***Students who understand the concepts are able to:*** ● Use information from several sources to provide evidence that Earth events can occur quickly or slowly. *(Assessment does not include quantitative measurements of timescales.)* Some examples of these events include: ○ Volcanic explosions ○ Earthquakes ○ Erosion of rocks. *In what ways do humans slow or prevent wind or water from changing the shape of the land?* ***Students who understand the concepts are able to:*** ● Compare multiple solutions to a problem. ● Compare multiple solutions designed to slow or prevent wind or water from changing the shape of the land. Examples of solutions could include: ● Different designs of dikes and windbreaks to hold back wind and water ● Different designs for using shrubs, grass, and trees to hold back the land.

Stage 3 – Learning Plan Resources and Activities
Suggested Resources for Planning:

Mystery Science: Work of Water: Erosion and Earth's Surface

Mystery Lessons 1-4

"Optional Extras" are extensions to each Mystery. We recommend you use them during your unit or to extend the length of each unit. They include an informational text reading that builds on the Mystery's topic, assessments, and suggestions for supplemental activities.

Mystery 1: If you floated down a river, where would you end up?

Standard:2-ESS2-2, 2-ESS2-3

Target:

- I can develop a model to represent the shapes and kinds of land and bodies of water.
- I can obtain information to identify where water is found on Earth and that it can be solid or liquid.

Videos:

Landforms, Hey!

Exploring Landforms and Bodies of Water for Kids

2-ESS1-1, 2-ESS2-1 Why Do Rivers Curve?

The Wonder of Science- A Changing Earth

ReadWorks.org

Weathering and Erosion

When Water Moves Sediments Water on Earth

Reading AZ

Epic Books:

- **https://www.getepic.com/app/** ***(Free book website/resource)***

Mystery 2: Why is there sand at the beach?

Standard:2-ESS2-1, 2-ESS2-2

Target:

- I can compare multiple solutions designed to slow or prevent wind or water
- I can develop a model to represent the shapes and kinds of land and bodies of water.

2-ESS1-1, 2-ESS2-2 Augmented Reality Sandbox

The Wonder of Science- A Changing Earth

ReadWorks.org

Weathering and Erosion

When Water Moves Sediments Water on Earth

Reading AZ

Videos:
Bill Nye-Erosion
Magic School Bus Rocks and Rolls

Mystery 3: What's strong enough to make a canyon?

Standard:2-ESS1-1, 2-ESS2-1, and 2-ESS2-2
Target:

- I can use information from several sources to provide evidence that Earth events can occur quickly or slowly. - I can compare multiple solutions designed to slow or prevent wind or water
- I can develop a model to represent the shapes and kinds of land and bodies of water.

2-ESS1-1, 2-ESS2-1 How was the Grand Canyon Formed?
2-ESS2-3 Glacier National Park is Melting Away

The Wonder of Science- A Changing Earth

Landform Reading Passages

ReadWorks.org
Weathering and Erosion
A Grand Old Canyon

Reading AZ

Videos:
How Glaciers Change the World!
The Grand Canyon!
Bill Nye-Erosion
Magic School Bus Rocks and Rolls
The Magic School Bus Rides Again- The Tales Glaciers Tell

Brain Pop Jr.
https://jr.brainpop.com/science/land/slowlandchanges/
https://jr.brainpop.com/science/land/landforms/
https://jr.brainpop.com/science/land/fastlandchanges/
https://jr.brainpop.com/science/land/continentsandoceans/

Mystery 4: How can you stop a landslide?

Standard: 2-ESS2-1, K-2-ETS1-1, K-2-ETS1-2, K-2-ETS1-3
Target:

- I can compare multiple solutions designed to slow or prevent wind or water

- I can ask questions, make observations, and gather information about a situation people want to change, develop possible solutions through the development of a new or improved object or tool, and choose the best design solution.
- I can develop a simple sketch, drawing, or model to illustrate how an object can solve a given problem.
- I can analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of each.

2-ESS1-1, 2-ESS2-1 Epic Mudslide Caught on Camera

Brain Pop Jr.
https://jr.brainpop.com/science/land/slowlandchanges/

The Wonder of Science- A Changing Earth

ReadWorks.org
Weathering and Erosion
A Dangerous Landslide

Reading AZ

Books:

Earth's Landforms and Bodies of Water by Natalie Hyde
Cracking Up - A Story About Erosion by Jacqui Bailey
Earth's Landforms and Bodies of Water by Natalie Hyde

Websites:

Reading AZ:
The Force of Water-Informational (nonfiction), 543 words, Level N (Grade 2)
Land and Water-Informational (nonfiction), 277 words, Level I Benchmark (Grade 1)
The Grand Canyon-Informational (nonfiction), 213 words, Level H (Grade 1) Multilevel Book also available in levels K and N
A Landforms Adventure-Personal Narrative (nonfiction), 661 words, Level N (Grade 2) Multilevel Book also available in levels Q and T
Rocks-Factual Description (nonfiction), 57 words, Level C (Grade K)
Sinkhole Science-Informational (nonfiction), 1,033 words, Level Q (Grade 3)

Epic Books:

- **https://www.getepic.com/app/** ***(Free book website/resource)***