

Unit 1 - Weathering & Erosion

Content Area: **Science**
Course(s): **Science 4**
Time Period: **September**
Length: **Marking Period 1**
Status: **Published**

Unit Summary

In this unit of study, students develop understandings of the effects of weathering and the rate of erosion by water, ice, wind, or vegetation. The crosscutting concepts of patterns and cause and effect are called out as organizing concepts. Students demonstrate grade-appropriate proficiency in planning and carrying out investigations and constructing explanations. Students are also expected to use these practices to demonstrate understanding of the core ideas.

Standards

MA.4.MD.A.1	Know relative sizes of measurement units within one system of units including km, m, cm, mm; kg, g; lb, oz.; l, ml; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two column table.
MA.4.MD.A.2	Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.
LA.W.4.7	Conduct short research projects that build knowledge through investigation of different aspects of a topic.
LA.W.4.8	Recall relevant information from experiences or gather relevant information from print and digital sources; take notes and categorize information, and provide a list of sources.
LA.W.4.9	Draw evidence from literary or informational texts to support analysis, reflection, and research.
SCI.4.4-ESS2-1	Make observations and/or measurements to provide evidence of the effects of weathering or the rate of erosion by water, ice, wind, or vegetation.
SCI.4.4-ESS1-1	Identify evidence from patterns in rock formations and fossils in rock layers to support an explanation for changes in a landscape over time.
TECH.8.1.5	Educational Technology: All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.
TECH.8.1.5.A.1	Select and use the appropriate digital tools and resources to accomplish a variety of tasks including solving problems.
TECH.8.1.5.A.CS2	Select and use applications effectively and productively.

Student Learning Objectives

SLO 1: Make observations and/or measurements to provide evidence of the effects of weathering or the rate of erosion by water, ice, wind, or vegetation. (4-ESS2-1)

SLO 2: Identify evidence from patterns in rock formations and fossils in rock layers to support an explanation for changes in a landscape over time. (4-ESS1-1)

Essential Questions

What do the shapes of landforms and rock formations tell us about the past?

Part A: How can evidence of the effects of weathering or the rate of erosion by water, ice, wind, or vegetation be observed or measured?

Part B: What can rock formations tell us about the past?

Enduring Understandings

Students will understand that:

- Rainfall helps to shape the land and affects the types of living things found in a region. Water, ice, wind, living organisms, and gravity break rocks, soils, and sediments into smaller particles and move them around. (4-ESS2-1)
- Living things affect the physical characteristics of their regions. (4-ESS2-1)
- Local, regional, and global patterns of rock formations reveal changes over time due to earth forces, such as earthquakes. The presence and location of certain fossil types indicate the order in which rock layers were formed. (4-ESS1-1)

Application

Students will be able to independently use their understanding to:

- Identify, test, and use cause-and-effect relationships in order to explain change.
- Make observations and/or measurements to produce data to serve as the basis for evidence for an explanation of a phenomenon.
- Make observations and/or measurements to produce evidence of the effects of weathering or the rate of erosion by water, ice, wind, or vegetation. Examples of variables to test could include:
 - Angle of slope in the downhill movement of water
 - Amount of vegetation
 - Speed of the wind
 - Relative rate of deposition
 - Cycles of freezing and thawing of water
 - Cycles of heating and cooling
 - Volume of water flow
- Support explanations using patterns as evidence.
- Identify the evidence that supports particular points in an explanation.
- Identify evidence from patterns in rock formations and fossils in rock layers to support an explanation for changes in a landscape over time. Examples of evidence from patterns could include:
 - Rock layers with marine shell fossils above rock layers with plant fossils and no shells, indicating a change from land to water over time.
 - A canyon with different rock layers in the walls and a river in the bottom, indicating that over time a river cut through the rock.

Skills

Students will be skilled at: