

# Earth Science UbD – 9<sup>th</sup> Grade – Weathering & Erosion: January/February

| Stage 1 - Desired Results   |   |
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| <p><b>ESTABLISHED GOALS (CCSS)</b></p> <p>RST 9.2 - Determine the central ideas or conclusions of a text; trace the text's explanation or depiction of a complex process, phenomenon, or concept; provide an accurate summary of the text.</p> <p>RST 9.3 - Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks, attending to special cases or exceptions defined in the text.</p> <p>RST 9.4 - Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to <i>grades 9-10 texts and topics</i>.</p> <p>RST 9.7 - Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically (e.g., in an equation) into words.</p> <p>RST 9.9 - Compare and contrast findings presented in a text to those from other sources (including their own</p> | <b>Transfer</b>   |
|   | <p><b><i>Students will be able to independently use their learning to...</i></b></p> <p>Recognize changes in landforms and the landscape caused by the forces of weathering and erosion.</p> <p>Identify the conditions that caused different types of weathering and erosion and their effects over time.</p> <p>Describe the different agents of weathering and erosion and where each will primarily occur.</p>  |
|   | <b>Meaning</b>  |
| <p><b>UNDERSTANDINGS</b><br/><b><i>Students will understand that...</i></b></p> <p><b>There is a difference between weathering &amp; erosion.</b></p> <p><b>Most weathering &amp; erosion involves water.</b></p> <p><b>Weathering involves both physical and chemical changes.</b></p> <p><b>Types and rates of weathering are determined by climate, rock type, and other factors.</b></p> <p><b>Soil, an important resource, is a product of weathering and erosion.</b></p> <p><b>Besides natural cycles, humans have also played a role in weathering and erosion.</b></p>   | <p><b>ESSENTIAL QUESTIONS:</b></p> <p>What is weathering?</p> <p>What is the difference between weathering and erosion?</p> <p>What are the 2 types of weathering?</p> <p>What is the most damaging weathering process?</p> <p>What compound is always associated with chemical weathering?</p> <p>What are some examples of chemical weathering?</p> <p>How does the amount of surface area exposed relate to the rate of weathering?</p> <p>Under what conditions will rock weather more quickly?</p> <p>Under what conditions will rock take longer to weather?</p> <p>Why is good soil important?</p> <p>What are the 3 main parts of soil?</p> <p>What does a mature soil profile look like?</p> <p>What is the main factor affecting soil type?</p> <p>What is a Mass Movement?</p> <p>What is the fastest type of mass movement? The slowest?</p> <p>How is earth's total water supply distributed?</p> <p>What processes make up the Water Cycle?</p> <p>Under what conditions does each section of a water budget exist?</p> <p>What are some characteristics of running water as an agent of erosion?</p> <p>What features of a stream indicate that it is young? Older?</p> <p>Why do people build homes and have farms in a flood plain?</p> <p>Under what conditions will a river lose carrying power and deposit sediment?</p> <p>What can cause a flash flood?</p> |

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| <p>experiments), noting when the findings support or contradict previous explanations or accounts.</p> <p>RI 9.4 - Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings.</p> |  | <p>How is porosity and permeability related?</p> <p>What conditions would cause the water table to be high?</p> <p>How does one draw upon groundwater as a source of fresh water?</p> <p>What affects the temperature of groundwater?</p> <p>What features are created when groundwater is heated?</p> <p>What is hard water?</p> <p>What features are created when groundwater dissolves limestone?</p> <p>What is a glacier and how does one form?</p> <p>How are the two main types of glaciers different?</p> <p>What are some possible causes for ice ages, and how have glaciers left evidence of them?</p> <p>How does wind act as an agent of both weathering and erosion?</p> <p>Describe the different types of dunes and how they form.</p> <p>What part of a coastline is eroded first?</p> <p>Describe some coastal features created by wave erosion and what factors affect the amount of coastal erosion or deposition that takes place?</p> |
| <b>Acquisition</b>   |  |   |
|  | <p><b><i>Students will know...</i></b></p> <p><b><i>Weathering agents break rock down, while agents of erosion relocate it.</i></b></p> <p><b><i>How both surface water and groundwater act as an agent of both weathering and erosion.</i></b></p> <p><b><i>How glaciers form and the land features left by its weathering and erosional effects.</i></b></p> <p><b><i>Weathering and erosion along the coast is primarily caused by waves.</i></b></p> | <p><b><i>Students will be skilled at...</i></b></p> <p><b>Identifying agents of weathering &amp; erosion, where they most often occur, the resulting landforms, and impacts on humans.</b></p> <p><b>Testing soil fertility.</b></p> <p><b>Simulating stream evolution.</b></p> <p><b>Identifying coastal features that result from wave erosion and deposition.</b></p>  |

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| Stage 2 - Evidence            |   |                |                |                |
|-------------------------------|---|----------------|----------------|----------------|
| Evaluative Criteria           | Assessment Evidence   |                |                |                |
| <b>PERFORMANCE TASKS</b>      | <b>CURRICULUM EMBEDDED PERFORMANCE ASSESSMENT (PERFORMANCE TASKS):</b><br>Create a map that illustrates the locations of the 5 largest river systems in the U.S., and the divides between them. |                |                |                |
|                               | Test a sample of soil for its level of pH, Nitrogen, Potassium, and Phosphorus, and identify plants that would respond well in that soil.   |                |                |                |
|                               | Complete a water budget for various cities in different climate zones in the U.S.   |                |                |                |
|                               | Create a map and graph that illustrate glacial rebound of the past 6000 years in the Hudson Bay area.   |                |                |                |
| CLAIMS                        | <u>CLAIM 1</u>  | <u>CLAIM 2</u> | <u>CLAIM 3</u> | <u>CLAIM 4</u> |
| DEPTH OF KNOWLEDGE LEVELS     | <u>DOK 1</u>  | <u>DOK2</u>    | <u>DOK 3</u>   | <u>DOK4</u>    |
| ACHIEVEMENT LEVEL DESCRIPTORS | <u>ALD 1</u>  | <u>ALD 2</u>   | <u>ALD 3</u>   | <u>ALD 4</u>   |

| Stage 3 – Learning Plan  |
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| Notes/discussion on agents of weathering & erosion including surface water, groundwater, glaciers, waves, wind, and gravity. |
| Soil Test Lab  |
| Water Budget activity  |
| River System map activity  |
| Stream lab   |
| Glacial Rebound activity   |
| Other review assignments   |