Mini-Map for SCI.EE.8.ESS.Weath-2

Subject: Science
Earth and Space Science (ESS)
Grade band: 6–8

Grade-Level Expectation

DLM Essential Element	DLM Disciplinary Core Idea Family[1]	Framework Disciplinary Core Ideas
SCI.EE.8.ESS.Weath-2 Use information to describe the relationships between regional climates, location on Earth, geographic features, and weather.	Earth and Space Science – Weather and Climate	ESS2.D: Weather and Climate ESS3.D: Global Climate Change

[1] DLM Science Essential Elements organize Disciplinary Core Ideas (defined in the *Framework for K-12* Science *Education*) into DCI families. By combining similar concepts within a domain, science content from the general education standards is reduced in depth, breadth, and complexity to provide access for students that qualify for the DLM alternate assessment.

Linkage Level Descriptions

Initial Precursor	Distal Precursor	Proximal Precursor	Target[2]
Match a visual, tactile, or symbolic representation with the real object.	Use information to describe that daily weather conditions, which are composed of different kinds of atmospheric conditions for a specific time and place, differ by location.	Use weather and climate information to determine that climate (i.e., the pattern of weather conditions in an area over many years) differs across regions of Earth.	Use information to describe how a region's location on Earth and its geographic features affect its climate.

[2] The target linkage level description is a measurement target that describes the expectations (content and performance) of the Essential Element for assessment purposes.

Essential Element Three Dimensions

Each Essential Element is defined in the three dimensions described in the *Framework for K-12 Science Education*: disciplinary core ideas (DCIs), science and engineering practices (SEPs), and crosscutting concepts (CCCs). The table below lists the details of each dimension from the individual DLM Essential Element descriptions, with color-coding of dimensions corresponding to the Next Generation Science Standards (NGSS). The first row (in blue) lists the SEP(s) used to construct the Essential Element and describes ways each SEP could be incorporated. The second row (in orange) describes the science concepts within the DCI family related to this Essential Element. The third row (in green) lists the CCC(s) associated with the Essential Element and explains how each might be incorporated in the grade band (quoted from NSTA, 2013, matrix of CCCs). Note that the SEP is presented first here (rather than second, as it is in the full list of Essential Elements) to reflect the emphasis on practices in instruction and across the linkage levels. The final row (in white) includes examples of how the three dimensions could work together to support instruction for the Essential Element. These examples provide ideas for integrating the dimensions and are not exhaustive, nor are they intended to limit instruction.

Science and Engineering Practices	**Analyzing and Interpreting Data:** Analyzing data in grades 6–8 builds on K–5 experiences and progresses to representing and evaluating data to support explanations about relationships and solutions to problems in the natural world. • Gather and represent data to determine and describe patterns. • Evaluate data to construct and support explanations. • Analyze data to evaluate solutions to problems. **Constructing Explanations and Designing Solutions:** Constructing explanations and designing solutions in grades 6–8 builds on K–5 experiences and progresses to constructing explanations about processes or relationships in the natural or designed world. • Use information, data, or models to construct descriptions and explanations of processes and relationships in the natural world. **Obtaining, Evaluating, and Communicating Information:** Obtaining, evaluating, and communicating information in grades 6–8 builds on K–5 experiences and progresses to combining information to describe and support scientific claims and ideas • Decide which observations, images, texts, data, and other media are useful for defining problems and determining how the natural world works. • Combine information (e.g., observations, texts, tables, images, graphs, maps) to answer scientific questions and evaluate scientific ideas.

Disciplinary Core Ideas	**Weather and Climate** • Weather and climate are influenced by interactions involving sunlight, ice, bodies of water, and landforms. These interactions vary with latitude, altitude, and local and regional geography. • Weather is a specific event, such as a rainstorm or hot day that happens over a few hours, days, or weeks. Weather can change from hour to hour or even year to year. • Climate is the long-term pattern of weather in a particular area. The region's average weather patterns, usually tracked for at least 30 years, are considered its climate. • Different parts of the world have different climates. o Tropical wet climates occur in parts of the world near the equator that are hot and rainy nearly every day. o Polar climates occur in parts of the world near the poles that are cold and snow-covered most of the year. o Between the icy poles and the steamy tropics are many other climates that contribute to Earth's biodiversity. • The climate of an area in which air masses originate eventually affects the weather in other areas. • It has been observed that Earth's global climate is getting warmer.

Crosscutting Concepts	**Patterns**: Observed patterns in nature guide organization and classification and prompt questions about relationships and causes underlying them. • Macroscopic patterns are related to the nature of microscopic and atomic-level structure. • Patterns in rates of change and other numerical relationships can provide information about natural and human designed systems. • Patterns can be used to identify cause and effect relationships. • Graphs, charts, and images can be used to identify patterns in data. **Cause and Effect: Mechanism and Explanation**: Events have causes, sometimes simple, sometimes multifaceted. Deciphering causal relationships, and the mechanisms by which they are mediated, is a major activity of science and engineering. • Relationships can be classified as causal or correlational, and correlation does not necessarily imply causation. • Cause and effect relationships may be used to predict phenomena in natural or designed systems. • Phenomena may have more than one cause, and some cause and effect relationships in systems can only be described using probability. **Scale, Proportion, and Quantity**: In considering phenomena, it is critical to recognize what is relevant at different size, time, and energy scales, and to recognize proportional relationships between different quantities as scales change. • Time, space, and energy phenomena can be observed at various scales using models to study systems that are too large or too small. • The observed function of natural and designed systems may change with scale. • Proportional relationships (e.g., speed as the ratio of distance traveled to time taken) among different types of quantities provide information about the magnitude of properties and processes. • Scientific relationships can be represented through the use of algebraic expressions and equations. • Phenomena that can be observed at one scale may not be observable at another scale.
How three dimensions support instruction for this Essential Element	Using data and information, students can identify patterns in weather and climate across different regions of Earth. These patterns can also help students explain cause-and-effect relationships, such as how bodies of water or elevation impact climate in the surrounding area. Students can also learn concepts related to scale, proportion, and quantity through comparison of weather data from one region's climate patterns to other regions in vastly different locations on Earth.

Instructional Resources

Resources
Learning modules and additional science instructional resources can be found at https://www.dlmpd.com/science/
A glossary defining key science terms found in the Essential Elements can be found at DLM Glossary for Science Learning Maps.

Link to Text-Only Map

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