

# PHENOMENA, DRIVING QUESTIONS AND STORYLINE

## WEATHER AND CLIMATE

SEPUP Weather and Climate 3rd Edition—Phenomena, Driving Questions, and Storyline What causes weather and climate, and what effects do humans have on them?

| Phenomenon  | Driving Questions                                      | Guiding Questions   | Activities                                    | PE               | Storyline/Flow<br>(How an activity leads to subsequent activities)  |
|---|--|---|---|------------------|---|
| <p>The weather changes a lot during the year and from location to location.</p> | <p>What causes differences in weather and climate?</p> | <p>How can weather maps be used to forecast weather? (Activity 13; assessment activity)</p> <p>How is daily weather data different from seasonal weather data? (Activity 2)</p> <p>How have severe weather events affected your region? (Activity 3)</p> <p>Does the distribution of climates show any regional or global patterns? (Activity 4)</p> <p>What percent of Earth’s surface is covered in water? (Activity 5)</p> <p>How do different surfaces on Earth gain and lose heat? (Activity 6)</p> <p>How do ocean temperatures vary over the surface of Earth? (Activity 7)</p> <p>How does water behave when it mixes? (Activity 8)</p> <p>How do oceans affect climate? (Activity 9)</p> <p>Why do different parts of the world have different climates? (Activity 10)</p> | <p>2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 13, 14</p> | <p>MS-ESS2-6</p> | <p>Weather conditions vary from day to day, month to month, and across seasons. Sometimes weather conditions can become severe. Climates are described by the same conditions used to describe weather, and represent the average weather in a location over a long period of time. Climate patterns vary by latitude, altitude, and geographic land distribution. Oceans have an important effect on climate. They absorb energy from the sun, with the water nearest the equator warming up much more than water at higher latitudes. Variations in density due to variations in temperature and salinity drive a global pattern of interconnected ocean currents that redistribute heat. The atmosphere also has currents that move air and water from one place to another. Air and water are also driven by energy from the sun and, as with ocean currents,</p> |

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### WEATHER AND CLIMATE (continued)

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| Phenomenon   | Driving Questions                               | Guiding Questions  | Activities                             | PE        | Storyline/Flow<br>(How an activity leads to subsequent activities)   |
|--|---|--|--|-----------|--|
| The weather changes a lot during the year and from location to location. | What causes differences in weather and climate? | <p>What is the pattern of prevailing winds around Earth? (Activity 11)</p> <p>How can a weather map be used to forecast weather? (Activity 13)</p> <p>What role does the atmosphere play in weather and climate? (Activity 14) (Assessment activity)</p> | 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 13, 14 | MS-ESS2-6 | are influenced by the Coriolis effect, which is a result of the Earth's rotation. The resulting pattern of prevailing winds affects regional weather and climate. The way that Earth's atmosphere interacts with the sun's energy and the oceans thus helps determine Earth's average temperature and its different climate zones. |