

# 4

## Universe, Earth, Environment (Earth Science)

### Essential Question: How do the earth, sun and moon function as a system?

Enduring Knowledge	Science Concepts	GE	Evidence of Understanding
<p><b><u>Solar System:</u> The universe, earth and all earth systems have undergone change in the past, continue to change in the present and predicted to continue changing in the future.</b></p>	<p>a. The earth is one of several planets that orbit the sun, and the moon orbits the earth. b. Like all planets and stars, the earth is approximately spherical in shape. The rotation of the earth on its axis every 24 hours produces the night and day cycle.</p>	44	<p>Creating a model of the planets and their correct order from the sun Drawing or building and then explaining a model of the earth rotating on its axis in relation to the sun and moon (i.e., day and night)</p>
<p><b><u>Scale, Distances, Star Formation, Theories, Instrumentation:</u> The universe, earth and all earth systems have undergone change in the past, continue to change in the present and predicted to continue changing in the future.</b></p>	<p>a. Stars are like the sun, but so far away that they look like points of light. Some are smaller; some are larger than the sun. b. The patterns of the stars stay the same, although they appear to move across the sky.</p>	45	<p>Identifying similar star patterns/or groups from night photographs of the same location at different times of the years Comparing (similarities) between the sun and stars</p>
<p><b><u>Atmosphere, Water Cycle, Weather, Seasons:</u> The universe, earth and all earth systems have undergone change in the past, continue to change in the present and predicted to continue changing in the future.</b></p>	<p>a. Weather changes from day to day and over the seasons. Weather can be described by measurable quantities (such as temperature, wind direction and speed, precipitation and air pressure). b. Air is a substance that surrounds us, takes up space and whose movement we feel as wind. c. Liquid water is changed by heat from the sun to gas (vapor) and returns to a liquid or solid state when cooled to the freezing point. d. Clouds and fog are made of small drops of water.</p>	48	<p>Observing, recording and analyzing local weather data and making predictions based on that data Describing water as it changes into vapor in the air and reappears as a liquid when it is cooled Explaining how this cycle of water relates to weather and the formation of clouds</p>

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### (Earth Science)

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### What is the water cycle and how does it influence our weather?

Focusing Questions	Potential Inquiries/Activities	Resources/Notes
<p><b>What is the relationship between the earth, the sun, and the moon?</b></p> <ul style="list-style-type: none"><li>- Earth is the third planet from the sun.</li><li>- Earth orbits the sun, which is a star.</li><li>- The moon orbits the earth.</li><li>- The earth, sun and moon are interrelated parts of a system, each part influencing the others.</li></ul> <p><b>How is the earth shaped?</b></p> <ul style="list-style-type: none"><li>- The earth is spherical in shape.</li><li>- Planets and stars are spheres (spherical in shape).</li></ul> <p><b>How do day and night occur?</b></p> <ul style="list-style-type: none"><li>- Day and night happen due to the rotation of the earth on its axis, once every 24 hours.</li><li>- The side of the earth facing the sun has day.</li><li>- The side of the earth not facing the sun has night.</li></ul>	<p>Create a planetary model demonstrating the distances to scale.</p> <p>Create a planetary model demonstrating diameters to scale.</p>	
<p><b>How is the sun alike/different from other stars?</b></p> <ul style="list-style-type: none"><li>- The sun is a star.</li><li>- Stars can be both smaller and larger than the sun.</li><li>- Star patterns in the sky do not change, they remain in the same pattern.</li></ul>	<p>Observe and compare the star patterns.</p> <p>Compare the sun to other stars.</p>	<ul style="list-style-type: none"><li>- Nightly star journal</li><li>- Internet NASA links</li></ul>
<p><b>How can weather be measured?</b></p> <ul style="list-style-type: none"><li>- Weather changes occur both daily and seasonally.</li><li>- Weather can be measured.</li><li>- Weather consists of temperature, wind direction and speed, precipitation, and air pressure.</li></ul> <p><b>What are the properties of air?</b></p> <ul style="list-style-type: none"><li>- Air is everywhere.</li><li>- Air takes up space.</li><li>- When air moves we feel it as wind.</li></ul> <p><b>How does water change when it is heated, or cooled?</b></p> <ul style="list-style-type: none"><li>- Liquid water changes to a gas (water vapor) when sufficiently heated.</li><li>- Liquid water changes to a solid (ice) when sufficiently cooled.</li><li>- Water boils at 100°C (or 212°F).</li></ul>	<p>Observe and record weather changes daily and/or seasonally.</p> <p>Describe how the cycle of water relates to weather changes.</p> <p>Boil water. Observe water vapor as it disperses and is no longer visible.</p>	<ul style="list-style-type: none"><li>- D.A.S.H. program (Developmental Approaches to Science and Health)</li><li>- Weather journal</li><li>- Local weather station <a href="http://www.wunderground.com">www.wunderground.com</a></li><li>- Thermometer</li><li>- Barometric pressure gauge</li><li>- Beaufort Scale</li></ul>



-Water freezes at 0°C (or 32°F).

**What are clouds? What is fog?**

- Clouds and fog consist of small drops of water vapor, which are so concentrated they are visible to the eye.