

Earth Space Science

<p>ESS1 - The Earth and Earth materials, as we know them today, have developed over long periods of time, through constant change processes.</p>		
	<p>K-2</p>	<p>3-4</p>
<p>1. ATMOSPHERE, CLIMATE, & WEATHER</p>	<p>S(ESS1)-2-1.1 Recognize that weather conditions change frequently, and that weather patterns change over the seasons.</p> <p>S(ESS1)-2-1.2 Describe and compare weather using observations and measurements of local weather conditions.</p>	<p>S(ESS1)-4-1.1 Explain how water exists in the atmosphere in different forms and describe how it changes from one form to another through various processes, such as freezing, condensation, precipitation and evaporation.</p> <p>S(ESS1)-4-1.2 Explain that air surrounds the Earth, it takes up space, and it moves around as wind.</p> <div style="border: 2px solid black; padding: 5px; margin-top: 10px;"> <p>S(ESS1)-4-1.3 Based on data collected from daily weather observations, describe weather changes or weather patterns. [ESS1 (K-4) POC -5]</p> </div> <div style="border: 2px solid black; padding: 5px; margin-top: 10px;"> <p>S(ESS1)-4-1.4 Explain how the use of scientific tools helps to extend senses and gather data about weather.</p> </div>

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		<p>(i.e., weather/wind vane: direction; wind sock: wind intensity; anemometer: speed; thermometer: temperature; meter sticks/rulers: snow depth; rain gauges: rain amount in inches) [ESS1 (K-4) NOS -3]</p>
<p>2. COMPOSITION & FEATURES</p>	<p>S(ESS1)-2-2.1 Recognize that solid rocks, soils, and water in its liquid and solid states can be found on the Earth’s surface.</p> <p>S(ESS1)-2-2.2 Use observable properties, such as color and texture, to classify and organize rocks and minerals.</p> <p>S(ESS1)-2-2.3 Recognize that Earth materials have a variety of properties, including size, shape, color and texture.</p>	<p>S(ESS1)-4-2.1 Describe Earth materials such as gases found in the atmosphere, rocks, soils, and water in its liquid and solid states.</p> <p>S(ESS1)-4-2.2 Describe rock as being composed of different combinations of minerals.</p> <div style="border: 2px solid black; padding: 5px;"> <p>S(ESS1)-4-2.3 Given information about Earth materials, explain how their characteristics lend themselves to specific uses. [ESS1 (K-4) FAF -6]</p> </div> <div style="border: 2px solid black; padding: 5px; margin-top: 10px;"> <p>S(ESS1)-4-2.4 Given certain Earth materials (soils, rocks, or minerals) use physical properties to sort, classify, and/or describe them. [ESS1 (K-4) INQ -1]</p> </div>

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3. FOSSILS	<i>None at this grade span.</i>	S(ESS1)-4-3.1 Recognize and explain that fossils offer evidence of plants, animals and the nature of environments that existed long ago.
4. OBSERVATION OF THE EARTH FROM SPACE	<i>None at this grade span.</i>	S(ESS1)-4-4.1 Recognize features of the Earth as viewed by astronauts in orbit and as transmitted by scientific instruments on satellites and spacecraft.
5. PROCESSES & RATES OF CHANGE	S(ESS1)-2-5.1 Recognize that some changes are too slow or too fast to be easily observed.	S(ESS1)-4-5.1 Identify and describe processes that affect the features of the Earth's surface, including weathering, erosion, deposition of sediment. S(ESS1)-4-5.2 Explain how wind, water, or ice shape and reshape the Earth's surface. [ESS1 (K-4) INQ+SAE -4]
6. ROCK CYCLE	S(ESS1)-2-6.1 Explain that large rocks can be broken down into smaller rocks. S(ESS1)-2-6.2 Describe rocks and soils in terms of their physical properties.	S(ESS1)-4-6.1 Explain that smaller rocks come from the breaking and weathering of larger rocks and bedrock. S(ESS1)-4-6.2 Distinguish between the three categories of rocks, metamorphic, igneous and sedimentary, and

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		<p>describe the processes that create them.</p> <p>S(ESS1)-4-6.3 Identify minerals by their physical properties, such as color, texture and cleavage, and describe simple tests used in the identification process.</p> <div style="border: 2px solid black; padding: 5px;"> <p>S(ESS1)-4-6.4 Use results from an experiment to draw conclusions about how water interacts with earth materials (e.g., percolation, erosion, frost heaves). [ESS1 (K-4) INQ -2]</p> </div>
<p>7. WATER</p>	<p>S(ESS1)-2-7.1 Recognize that water can be a liquid or a solid, and explain that it can be made to change from one state to the other, but the amount (mass) of water always remains the same in either state.</p>	<p>S(ESS1)-4-7.1 Recognize and describe the Earth's surface as mostly covered by water.</p> <p>S(ESS1)-4-7.2 Explain that most of Earth's water is salt water, which is found in the oceans, and that fresh water is found in rivers, lakes, underground sources, and glaciers.</p>

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ESS2 - The Earth is part of a solar system, made up of distinct parts, which have temporal and spatial interrelationships.

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1. EARTH, SUN AND MOON	<p>S(ESS2)-2-1.1 Recognize the basic patterns of the Sun, including its appearance during the daytime, and how its position in the sky changes through the seasons.</p> <p>S(ESS2)-2-1.2 Recognize the basic patterns of the Moon, including its appearance sometimes at night and sometimes during the day, and how it appears to change shape through the month.</p>	<p>S(ESS2)-4-1.1 Explain that night and day are caused by the Earth's rotation on its axis and that the Earth rotates approximately once, every 24 hours.</p> <p>S(ESS2)-4-1.2 Describe the Sun as a star.</p>
2. ENERGY	<p>S(ESS2)-2-2.1 Recognize that the light and heat the Sun provides to the Earth is necessary for life.</p>	<p>S(ESS2)-4-2.1 Recognize the Sun provides the light and heat necessary to maintain the temperature of the Earth.</p>
3. SOLAR SYSTEM	<p><i>None at this grade span.</i></p>	<p>S(ESS2)-4-3.1 Recognize the Moon orbits the Earth.</p> <p>S(ESS2)-4-3.2 Recognize the Earth is one of a number of planets that orbit the Sun.</p>

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<p>4. VIEW FROM EARTH</p>	<p>S(ESS2)-2-4.1 Recognize the Sun, Moon and stars all appear to move slowly across the sky.</p> <p>S(ESS2)-2-4.2 Recognize that as the position of the Sun changes in relation to the Earth it creates shadows of varying length and direction.</p> <p>S(ESS2)-2-4.3 Explain that people should not look directly at the Sun because it is dangerous and may cause injury to the eyes.</p>	<p>S(ESS2)-4-4.1 Recognize that although star patterns seen in the sky appear to move slowly each night from east to west they actually remain the same, and explain why different stars can be seen during different seasons.</p> <p>S(ESS2)-4-4.2 Explain why the planets look like stars, and why, over a period of time, they appear to wander among the constellations.</p>

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ESS3 - The origin and evolution of galaxies and the universe demonstrate fundamental principles of physical science across vast distances and time.		
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1. SIZE AND SCALE	<i>None at this grade span.</i>	<p>S(ESS3)-4-1.1 Recognize that astronomical objects in space are massive in size and are separated from one another by vast distances.</p> <p>S(ESS3)-4-1.2 Explain that telescopes magnify the size of distant objects and significantly increase the number of these objects that can be viewed from Earth.</p>
2. STARS AND GALAXIES	S(ESS3)-2-2.1 Recognize there are too many stars to count, and that they are unequal in their brightness.	<p>S(ESS3)-4-2.1 Recognize and describe the stars, like the Sun, as spherical in nature.</p> <p>S(ESS3)-4-2.2 Recognize that stars come in different colors, and that the Sun is a yellow star.</p>
3. UNIVERSE	<i>None at this grade span.</i>	<i>None at this grade span.</i>

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ESS4 - The growth of scientific knowledge in Earth Space Science has been advanced through the development of technology and is used (alone or in combination with other sciences) to identify, understand and solve local and global issues.		
	K-2	3-4
1. DESIGN TECHNOLOGY	<i>None at this grade span</i>	S(ESS4)-4-1.1 Recognize that man uses various mechanical devices to record changes in the weather and the Earth.
2. TOOLS	S(ESS4)-2-2.1 Recognize, and with assistance, safely demonstrate the use of tools to gather data and extend the senses, such as thermometers, hand lens and balances.	S(ESS4)-4-2.1 Demonstrate the use of simple instruments including, thermometers, windsocks, meter sticks, rain gauges to collect weather data.
3. SOCIAL ISSUES (LOCAL AND GLOBAL) USES OF EARTH MATERIALS	S(ESS4)-2-3.1 Differentiate between natural and man-made materials.	S(ESS4)-4-3.1 Distinguish between and provide examples of materials that can be recycled/reused and those that cannot. S(ESS4)-4-3.2 Provide examples of technology that have changed the environment and explain whether the effect had a positive or negative impact. S(ESS4)-4-3.3 Explain how to dispose of waste so that it does not harm the environment.

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ESS4 - The growth of scientific knowledge in Earth Space Science has been advanced through the development of technology and is used (alone or in combination with other sciences) to identify, understand and solve local and global issues.		
4. ENVIRONMENTAL CHANGE	<p>S(ESS4)-2-4.1 Identify environments that are natural, such as a forest, meadow, or mountains and those that have been built or modified by people, including cities, roads, farms, and houses.</p> <p>S(ESS4)-2-4.2 Describe actions that can help the environment, such as recycling and proper disposal of waste materials.</p>	S(ESS4)-4-4.1 Recognize there are pros and cons to using different types of energy, such as solar energy and fossil fuels, and compare the differences.
5. CAREER TECHNICAL EDUCATION CONNECTIONS	S(ESS4)-2-5.1 Recognize that some jobs/careers require knowledge and use of Earth science content and/or skills.	S(ESS4)-4-5.1 Identify some jobs/careers that require knowledge and use of Earth science content and/or skills.

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