

## Elementary GLOBE and Ohio Science Standards

Grade Level	Standard	GLOBE Protocol/ Activity	NASA Resource
<b>Kindergarten</b> ESS	Observing, exploring, describing and comparing weather changes, patterns in the sky and seasonal changes	<p><b>Protocols:</b> Air temperature, Clouds, Precipitation, Surface Temperature</p> <p><b>Source:</b> <i>Do You Know Clouds Have Names</i></p> <p><b>Activities:</b></p> <ol style="list-style-type: none"> <li>1. Cloudscape</li> <li>2. To Spread or Not to Spread</li> </ol>	<p>NASA Wavelength Digital Library: <a href="http://nasawavelength.org">http://nasawavelength.org</a></p> <p>Visible Earth: <a href="http://visibleearth.nasa.gov">http://visibleearth.nasa.gov</a></p> <p>Eyes on the Earth-3D <a href="http://eyes.jpl.nasa.gov">http://eyes.jpl.nasa.gov</a></p> <p>Satellites that observe clouds or atmosphere</p> <p><b>Aura:</b> Atmosphere composition <a href="http://aura.gsfc.nasa.gov">http://aura.gsfc.nasa.gov</a></p> <p><b>Cloudsat:</b> Structure, composition and effects of clouds on a global basis <a href="http://Cloudsat.atmos.colostate.edu">http://Cloudsat.atmos.colostate.edu</a></p> <p><b>Goes:</b> weather <a href="http://goes.gsfc.nasa.gov">http://goes.gsfc.nasa.gov</a></p> <p><b>GPM:</b> precipitation <a href="https://pmm.nasa.gov/gpm">https://pmm.nasa.gov/gpm</a></p> <p><b>Terra:</b> Global Measurement of atmosphere <a href="http://terra.nasa.gov">http://terra.nasa.gov</a></p>
<b>Kindergarten</b> LS	Observing, exploring, describing and comparing living things in Ohio	<p><b>Protocols:</b> Air Temperature, Surface Temperature</p> <p><b>Source:</b> <i>Mystery of the Missing Humming Birds</i></p> <p><b>Activities:</b></p> <ol style="list-style-type: none"> <li>1. All Year Long</li> <li>2. Honing in on Hummingbirds</li> </ol>	<p>NASA Wavelength Digital Library: <a href="http://nasawavelength.org">http://nasawavelength.org</a></p> <p><i>Educators Guide to NASA Data and Images</i></p> <p><b>SATELLITE:</b></p> <p><b>LANDSAT:</b> <a href="http://landsat.gsfc.nasa.gov">http://landsat.gsfc.nasa.gov</a></p> <p><b>Terra:</b> <a href="http://terra.nasa.gov">http://terra.nasa.gov</a></p>

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<b>Kindergarten</b> PS	Observing, exploring, describing and comparing Earth materials	<p><b>Protocols:</b> Soil temperature Surface Temperature Air Temperature</p> <p><b>Source:</b> <i>The Scoop on Soils</i></p> <p><b>Activities:</b> 1. We All Need Soil 2. Getting to Know Soil 3. Soil Treasure Hunt</p>	<p>NASA Wavelength Digital Library: <a href="http://nasawavelength.org">http://nasawavelength.org</a></p> <p><b>Activities:</b> 1. Soil and My Backyard 2. Earth Systems in a Bottle</p> <p><b>SATELLITE:</b> <b>SMAP</b> <a href="https://smap.jpl.nasa.gov">https://smap.jpl.nasa.gov</a></p>
<b>Grade 1 ESS</b>	The Sun is Earth's source of Energy. The changes in energy that occur to land, air and water	<p><b>Protocols:</b> Soil temperature Surface Temperature Air Temperature Eclipse</p> <p><b>Source:</b> <i>Mystery of the Missing Humming Birds</i></p> <p><b>Activity:</b> All Year Long</p>	<p>NASA Wavelength Digital Library: <a href="http://nasawavelength.org">http://nasawavelength.org</a></p> <p><b>Activities:</b> 1. Our Very Own Star: The Sun 2. The Source of Energy Lab 3. Eclipse Safety Bulletin 4. Sun as a Star Guide <a href="https://www.nasa.gov/pdf/145908main_Sun.As.A.Star.Guide.pdf">https://www.nasa.gov/pdf/145908main_Sun.As.A.Star.Guide.pdf</a></p> <p><b>SATELLITE:</b> <b>ISIS</b> <a href="https://www.nasa.gov/mission_pages/iris/index.html">https://www.nasa.gov/mission_pages/iris/index.html</a></p>
<b>Grade 1 PS</b>	Living things have basic needs which are met by obtaining materials from the physical environment. Living things will only live in environments that meet their needs.	<p><b>Protocols:</b> Soil temperature Surface Temperature Air Temperature</p> <p><b>Source:</b> <i>All About Earth</i></p> <p><b>Activities:</b> 1. Earth Systems in a Bottle 2. We're all Connected 3. Earth System Play</p>	<p>NASA Wavelength Digital Library: <a href="http://nasawavelength.org">http://nasawavelength.org</a></p> <p>1. Harnessing the Sun's Energy 2. The Day Joshua Jumped Too Much <a href="https://sdo.gsfc.nasa.gov/assets/docs/ThinkScientifically_1.pdf">https://sdo.gsfc.nasa.gov/assets/docs/ThinkScientifically_1.pdf</a> Resources for The Day... Too Much <a href="https://sdo.gsfc.nasa.gov/assets/docs/Book1_resources.pdf">https://sdo.gsfc.nasa.gov/assets/docs/Book1_resources.pdf</a></p> <p><b>SATELLITE:</b> <b>LANDSAT</b> <a href="http://landsat.gsfc.nasa.gov">http://landsat.gsfc.nasa.gov</a> <b>Terra</b> <a href="http://terra.nasa.gov">http://terra.nasa.gov</a></p>

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Grade 2 ESS	Focuses on air and water as it relates to weather and weather changes	<p><b>Protocols:</b> Air Temperature Precipitation</p> <p><b>Source:</b> <i>Do You Know Clouds have Names?</i></p> <p><b>Activities:</b> 1. Cloud Fun 2. Cloudscape 3. To Spread or Not to Spread</p>	<p>1. Rain Gauge Activity <a href="https://pmm.nasa.gov/education/lesson-plans/rain-gauge-activity">https://pmm.nasa.gov/education/lesson-plans/rain-gauge-activity</a></p> <p>2. Precipitation Tower <a href="https://pmm.nasa.gov/education/lesson-plans/precipitation-towers">https://pmm.nasa.gov/education/lesson-plans/precipitation-towers</a></p> <p>3. Water in the Geosphere <a href="https://pmm.nasa.gov/education/lesson-plans/water-earths-geosphere">https://pmm.nasa.gov/education/lesson-plans/water-earths-geosphere</a></p> <p>4. The Water Cycle animation <a href="https://pmm.nasa.gov/education/videos/water-cycle-animation">https://pmm.nasa.gov/education/videos/water-cycle-animation</a></p> <p><b>SATELLITE: GPM</b> <a href="https://www.nasa.gov/mission_pages/GPM/main/index.html">https://www.nasa.gov/mission_pages/GPM/main/index.html</a></p>
Grade 2 PS	Focuses on how ecosystems work by observations of simple interactions between the biotic/living and abiotic/nonliving parts of an ecosystems. Living things impact the environment in which they interact just as the environment impacts living things in that environment.	<p><b>Protocols:</b> Air Temperature Surface Temperature Soil Temperature Precipitation</p> <p><b>Source:</b> <i>All About Earth, The World on Stage</i></p> <p><b>Activities:</b> 1. Earth System in a Bottle 2. We Are All Connected 3. Earth System Play</p> <p><b>Source:</b> <i>Discoveries at Willow Creek</i></p> <p><b>Activity:</b> Water Wonders (Water Creatures)</p>	<p>NASA Wavelength Digital Library:</p> <p>1. Introducing Habitats and Biodiversity <a href="https://science.hq.nasa.gov/kids/imagers/teachersite/BD1.htm">https://science.hq.nasa.gov/kids/imagers/teachersite/BD1.htm</a></p> <p>2. The Air We Breathe <a href="https://www.nasa.gov/pdf/62452main_The_Air_We_Breathe.pdf">https://www.nasa.gov/pdf/62452main_The_Air_We_Breathe.pdf</a></p> <p>3. Nature Mapping <a href="https://science.hq.nasa.gov/kids/imagers/teachersite/BD2.htm">https://science.hq.nasa.gov/kids/imagers/teachersite/BD2.htm</a></p> <p>4. Water Wonders <a href="https://www.globe.gov/documents/348830/350731/ElementaryGLOBE_WaterActivity3_en.pdf">https://www.globe.gov/documents/348830/350731/ElementaryGLOBE_WaterActivity3_en.pdf</a></p>

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Grade 3 ESS	Focuses on the nonliving resources of air, water, soil, rock and the energy resources.	<p><b>Protocols:</b>  Air Temperature  Surface Temperature  Soil Temperature  Soil Moisture  Precipitation</p> <p><b>Source:</b> <i>Discoveries at Willow Creek</i></p> <p><b>Activities:</b>  1. Water Wonders (Water Quality)  2. Magnify That</p> <p><b>Source:</b>  <i>What's Up In the Atmosphere?</i></p> <p><b>Activities:</b>  1. Why (Not) So Blue?  2. Up in the Air</p>	<p>NASA Wavelength Digital Library:  <a href="http://nasawavelength.org">http://nasawavelength.org</a>  The Story of Fossil Fuels, Part 1  <a href="http://climatekids.nasa.gov/fossil-fuels-coal/">http://climatekids.nasa.gov/fossil-fuels-coal/</a>  The Story of Fossil Fuels, Part 2  <a href="http://climatekids.nasa.gov/fossil-fuels-oil/">http://climatekids.nasa.gov/fossil-fuels-oil/</a>  The Story of Fossil Fuels, Part 3  <a href="http://climatekids.nasa.gov/fossil-fuels-gas/">http://climatekids.nasa.gov/fossil-fuels-gas/</a>  The Story of Fossil Fuels, Part 4  <a href="http://climatekids.nasa.gov/fossil-fuels-next/">http://climatekids.nasa.gov/fossil-fuels-next/</a></p> <p>Rainsticks and Folklore  <a href="http://climatekids.nasa.gov/rainstick/">http://climatekids.nasa.gov/rainstick/</a>  10 Interesting Things About Air  <a href="http://climatekids.nasa.gov/10-things-air/">http://climatekids.nasa.gov/10-things-air/</a>  Why is the Ocean Important  <a href="http://climatekids.nasa.gov/ocean/">http://climatekids.nasa.gov/ocean/</a></p> <p><b>Satellites:</b> Based on the Questions to be Answered  Do Clouds Warm or Cool the Earth?  <b>AQUA, CALIPSO, CLOUDSAT, TERRA</b>  Do Particles in the Air Warm or Cool the Earth?  <b>AURA, TERRA</b>  What is the Precipitation Amount Around the Earth?</p>
Grade 3 PS	Matter has specific properties and different properties are found in all substances on Earth	<p><b>Protocols:</b>  Air Temperature  Surface Temperature  Soil Temperature  Soil Moisture  Water Temperature  Water pH</p> <p><b>Source:</b> <i>Discoveries at Willow Creek</i></p> <p><b>Activity</b>  Magnify That</p>	<p>NASA Wavelength Digital Library:  <a href="http://nasawavelength.org">http://nasawavelength.org</a>  Uncovering Martian Water (Properties of Water)  <a href="http://phoenix.lpl.arizona.edu/pdf/lesson_12.pdf">http://phoenix.lpl.arizona.edu/pdf/lesson_12.pdf</a>  Ice is a Mineral  <a href="http://www.messenger-education.org/library/pdf/ice_mineral.pdf">http://www.messenger-education.org/library/pdf/ice_mineral.pdf</a>  Water in Earth's Hydrosphere  <a href="https://pmm.pps.eosdis.nasa.gov/education/lesson-plans/water-earths-hydrosphere">https://pmm.pps.eosdis.nasa.gov/education/lesson-plans/water-earths-hydrosphere</a></p>

		<p><b>Source:</b> <i>What's Up In the Atmosphere?</i></p> <p><b>Activity:</b> 1.Sky Observers</p> <p><b>Source:</b> <i>The Scoop on Soil</i></p> <p><b>Activities:</b> 1. We All Need Soil 2. Getting to Know Soil</p>	
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