



## 5<sup>th</sup> Grade - Elementary Science Bundle 2

<b>Title</b>			<b>Suggested Dates</b>
Water Cycle / Weather & Climate			Sept 13 – Oct 1 (14.5 days)
<a href="#">Link to Integrated Process Skills</a> <a href="#">Link to Assessment</a> <a href="#">Link to Related Assurance Words</a> <a href="#">Link to Related Literature</a> <a href="#">Link to Universal Design</a> <a href="#">Link to Science Project / Science Fair Information</a>			

Big Idea/Enduring Understanding	Guiding Questions
The Sun’s energy fuels the water cycle process.  Through the water cycle, Earth’s oceans provide most of our usable water.  Weather conditions are specific events occurring and changing frequently.  Climate is the overall pattern of weather over time in an area.	How does the water cycle enable us to use Earth’s water?  What are the similarities and differences between climate and weather?  Why is it important to recognize the patterns in weather to understand the climate of an area?  How do the concepts and ideas in this bundle connect / relate the concepts / ideas in previous bundle(s)?

The resources included here provide teaching examples and/or meaningful learning experiences to address the District Curriculum. In order to address the TEKS to the proper depth and complexity, teachers are encouraged to use resources to the degree that they are congruent with the TEKS and research-based best practices. Teaching using only the suggested resources does not guarantee student mastery of all standards. Teachers must use professional judgment to select among these and/or other resources to teach the district curriculum.

Knowledge & Skills with Student Expectations	District Specificity/Examples	Suggested Resources (See note above)
<b>Bundle 1: Sun, Earth, and Moon concepts can be continued, as needed, through the first week of Bundle 2.</b>		
<b>5.8 Earth and Space. The student knows that there are recognizable patterns in the natural world and among the Sun, Earth, and Moon system. The student is expected to:</b>  5.8b explain how the Sun and the ocean interact in the water cycle	<b>Including an understanding of the Earth’s Oceans:</b> <ul style="list-style-type: none"> <li>• Ocean’s are the Earth’s largest bodies of water</li> <li>• 75% of Earth = the oceans (salt water)</li> </ul> <b>Including:</b> <ul style="list-style-type: none"> <li>• The Sun provides the energy that drives the water cycle</li> <li>• The Sun’s thermal energy causes evaporation</li> <li>• The sheer volume of the Earth’s oceans provides majority of necessary water for the planet</li> <li>• The Earth’s ability to have fresh water is dependent upon the interaction between the Sun and the oceans via the water cycle</li> <li>• The water cycle is the transportation method for Earth’s water</li> <li>• The water cycle separates fresh water from salt; only the water evaporates therefore creating fresh water precipitation</li> </ul>	<a href="#">TAKscopes 5.8b The Sun and the Water Cycle</a>  <a href="#">AIMS 5<sup>th</sup> Grade Earth Science Texas Core Curriculum</a> “The Mini Water Cycle”, page 167 (note: add salt to activity to model the removal of salt from ocean during water cycle)  <a href="#">FOSS Kit: Water</a> Investigation 3 Water Vapor  <a href="#">Gateway, 5<sup>th</sup> Grade:</a> 4.1 The Water Cycle: Engage Activity, page 120  <a href="#">BrainPop</a> “The Earth”, “The Sun”, “The Moon”, “Weather”, “Climate Type”  <a href="#">FOSSWEB: Water</a>

## 5<sup>th</sup> Grade - Elementary Science Bundle 2

		<p><a href="#">Module Summary: Teacher Resources</a>          Investigation3: Water Vapor; Student pages:          Evaporation Location Charts, page 10          Evaporation Place Mat, page 12          Surface Area Chart, page 13          Condensation Observations, page 14</p> <p><a href="#">FOSSWEB: Water Planet</a>          Activity: Water Cycle  <a href="#">Module Summary: See Investigation 2</a>  <a href="#">Student Pages: Evaporation Location Chart (page 5), Surface Area Chart (page 6)</a> (*charts are easier to use free standing from this module summary)</p> <p><a href="#">Water Cycle animation - review</a></p> <p>Readers Theater (Campus share &gt; Sci Curr Info &gt; 5<sup>th</sup> Grade &gt; Bundle 2)</p> <p><a href="#">Reading A-Z</a>          What Do You Think About Climate Change? (level Y, grade 5)          Violent Weather (Level Z, Grade 5)</p>
<p><b>5.8 Earth and Space. The student knows that there are recognizable patterns in the natural world and among the Sun, Earth, and Moon system. The student is expected to:</b></p> <p>5.8a differentiate between weather and climate</p>	<p><b>Including:</b>  <u><b>Weather</b></u></p> <ul style="list-style-type: none"> <li>• Day to day and seasonal</li> <li>• Measure with instruments</li> <li>• Report daily / weekly using weather maps and symbols</li> <li>• Plan daily / weekly activities and clothing according to weather</li> <li>• Impacted by daily conditional changes, water cycle</li> </ul> <p><u><b>Climate</b></u></p> <ul style="list-style-type: none"> <li>• Pattern of weather over time</li> <li>• “Big picture”; use gathered data to determine climate</li> <li>• Reported / found in historical records, graphs, almanacs, climate maps</li> <li>• Long term or future planning such as moving to a new state</li> <li>• More constant; based on repeated weather patterns in a given area over a long period of time</li> <li>• Impacted by multiple environmental factors</li> </ul>	<p><a href="#">TAKScopes 5.8a Weather and Climate</a></p> <p><a href="#">AIMS 4<sup>th</sup> Grade Earth Science Texas Core Curriculum</a>          “Weather Changes”, page 170          “Temperature Tally”, page 171          “Nationwide Highs”, page 179</p> <p><a href="#">EPA Climate and Weather</a></p> <p><a href="#">Geography World Weather and Climate</a></p> <p><a href="#">Environmental Protection Agency (EPA) Weather and Climate Scientist</a></p> <p><a href="#">Weather Instruments animation - review</a></p>

## 5<sup>th</sup> Grade - Elementary Science Bundle 2

Scientific Investigation and Reasoning		The Process TEKS are integrated with and taught THROUGH the content TEKS.	<a href="#">Back to Top</a>
<p><b>5.1 Scientific investigations and reasoning. The student conducts classroom and outdoor investigations following home and school safety procedures and environmentally appropriate and ethical practices. The student is expected to:</b></p> <p>5.1a demonstrate safe practices and the use of safety equipment as described in the Texas Safety Standards during classroom and outdoor investigations</p> <p>5.1b make informed choices in the conservation, disposal, and recycling of materials</p>	<p><i>Adhere to weather warnings</i> <i>No looking directly at the Sun</i></p> <p>Including:</p> <ul style="list-style-type: none"> <li>• No tasting unless instructed</li> <li>• Safe smelling – wafting</li> <li>• Eye and skin protection, as needed</li> <li>• Wait for teacher directions</li> <li>• Wash hands after science investigations</li> <li>• Directly pointing out / planning for safety risks</li> <li>• Proper use of all applicable safety equipment</li> <li>• Encourage students to identify safety precautions on their own throughout the year</li> </ul>	<p><a href="#">PISD Science Safety Page</a></p> <p><a href="#">Texas Science Safety Standards</a></p> <p><a href="#">DuPont Science Safety Zone</a></p>	
<p><b>5.2 Scientific investigations and reasoning. The student uses scientific methods during laboratory and outdoor investigations. The student is expected to:</b></p> <p>5.2a describe, plan, and implement simple experimental investigations testing one variable</p> <p>5.2b ask well-defined questions, formulate testable hypothesis, and select and use appropriate equipment and technology</p> <p>5.2c collect information by detailed observation and accurate measuring</p> <p>5.2d analyze and interpret information to construct reasonable explanations from direct (observable) and indirect (inferred) evidence</p> <p>5.2e demonstrate that repeated investigations may increase the reliability of results</p> <p>5.2f communicate valid conclusions in both written and verbal forms</p> <p>5.2g construct appropriate simple graphs, tables, maps, and charts using technology,</p>	<p><i>Investigations as they relate to the Sun/Ocean interaction / Water Cycle</i></p> <p>Experimental Investigations including:</p> <ul style="list-style-type: none"> <li>• Whole group participation</li> <li>• Small group participation</li> <li>• Partner participation</li> <li>• Individual participation</li> </ul> <p>Experimental Investigations including:</p> <ul style="list-style-type: none"> <li>• Pre-determined inquiry (i.e. AIMS activities)</li> <li>• Guided inquiry</li> <li>• Full inquiry</li> </ul> <p>Experimental Investigation (Scientific Method) steps including:</p> <ul style="list-style-type: none"> <li>• Problem / Question</li> <li>• Hypothesis</li> <li>• Materials</li> <li>• Procedure</li> <li>• Data / Results</li> <li>• Conclusions</li> </ul> <p><b>NOTE:</b> Not all investigations / activities are experimental investigations</p>	<p><a href="#">What are descriptive, comparative, and experimental investigations?</a> 5<sup>th</sup> graders experience all three types.</p>	

## 5<sup>th</sup> Grade - Elementary Science Bundle 2

<p>including computers, to organize, examine, and evaluate information</p>		
<p><b>5.3 Scientific investigation and reasoning. The student uses critical thinking and scientific problem solving to make informed decisions. The student is expected to:</b></p> <p>5.3a in all fields of science, analyze, evaluate, and critique scientific explanations by using empirical evidence, logical reasoning, and experimental and observational testing, including examining all sides of scientific evidence of those scientific explanations so as to encourage critical thinking by the student</p>	<p><b>Possible Current Event Discussion Topics:</b>  <b>Global Warming / Climate Change / Greenhouse Effect</b></p> <p>Including:</p> <ul style="list-style-type: none"> <li>• Discussing, analyzing, considering evidence and multiple points of view</li> </ul>	<p><a href="#">Using Socratic Seminars for higher-order thinking and discussion</a></p> <p><a href="#">Multisensory Strategies for Science Vocabulary by Sandra Husty and Julie Jackson</a> includes Bag &amp; Tag</p>
<p><b>5.3 Scientific investigation and reasoning. The student uses critical thinking and scientific problem solving to make informed decisions. The student is expected to:</b></p> <p>5.3c draw or develop a model that represents how something works or looks that cannot be seen such as how a soda dispensing machine works</p>	<p>Including:</p> <ul style="list-style-type: none"> <li>• Student generated models</li> <li>• Minimum three models / representations per concept</li> <li>• Asking / considering the following questions: <ul style="list-style-type: none"> <li>○ What is the model for?</li> <li>○ What do the parts of the model represent?</li> <li>○ How is the model the same as the real thing?</li> <li>○ How is the model different from the real thing?</li> </ul> </li> <li>• How well does the model represent the real thing; what can't it show?</li> </ul>	
<p><b>5.4 Scientific investigation and reasoning. The student knows how to use a variety of tools and methods to conduct science inquiry. The student is expected to:</b></p> <p>5.4a collect, record, and analyze information using tools including calculators, microscopes, cameras, computers, hand lenses, metric rulers, Celsius thermometers, prisms, mirrors, pan balances, triple beam balances, spring scales, graduated cylinders, beakers, hot plates, meter sticks, magnets, collecting nets, and notebooks; timing devices including clocks and stopwatches, and materials to support the observation of habitats of organisms such as terrariums and aquariums</p>	<p><b>Including:</b></p> <ul style="list-style-type: none"> <li>• Notebooks</li> <li>• Computers</li> <li>• Calculators</li> <li>• Hand lens</li> <li>• Goggles</li> </ul> <p>Including:</p> <ul style="list-style-type: none"> <li>• Metric units of measure</li> </ul> <p><b>NOTE:</b>  Scaffolding for introducing new tools:</p> <ol style="list-style-type: none"> <li>1. Tools are modeled</li> <li>2. Students are exposed and gain experience through group interaction</li> <li>3. Individuals develop skills through multiple opportunities for practice throughout year</li> </ol>	<p><a href="#">Tools of the Science Classroom animation</a></p> <p><a href="#">How to Use a Metric Ruler animation</a></p>

## 5<sup>th</sup> Grade - Elementary Science Bundle 2

5.4b use safety equipment including safety goggles and gloves		
<b>Related Assurance Words</b>		<a href="#">Back to Top</a>
climate, differentiate, experiment, hypothesis, interact (interaction), interpret, relationship, reliability, significance, weather		
<b>Related Literature</b>		<a href="#">Back to Top</a>
<p><u>The Water Cycle</u> by Bobbie Kalman</p> <p><u>Water Cycle</u> by Rebecca Olien</p> <p><u>The Water Cycle</u> by Rebecca Harman</p> <p><u>Water and the Weather</u> by Rebecca Olien</p> <p><u>Water in the Atmosphere</u> by Isaac Nadeau</p> <p><u>Weather</u> by Seymour Simon</p> <p><u>Weather Patterns</u> by Monica Hughes</p> <p><u>It Never Rains in Antarctica: and other freaky facts about climate, land, and nature</u> by Barbara Seuling</p> <p><u>Climates</u> by Theresa Jarosz Alberti</p> <p><u>Community Space: How Land and Weather Shape Communities</u> by Angela Catalona</p> <p><u>Global Warming the Threat to Earth's Changing Climate</u> by Laurence Pringle</p> <p><u>Global Warming</u> by Chris Oxlade</p>	<p><u>El ciclo del agua</u> by Bobbie Kalman</p> <p><u>El ciclo del agua</u> by Helen Frost</p> <p><u>Como cambia el agua</u> by Jim Mezzanotte</p> <p><u>Seasons and Weather = Los estaciones y el tiempo</u> by Mary Berendes</p>	
<b>Assessment Support</b>	<a href="#">Region XIII Science TAKS Resources</a>	<a href="http://www.tmsds.org">www.tmsds.org</a>
<b>Assessment Probes</b>		<a href="#">Back to Top</a>
<p><u>Uncovering Student Ideas in Science, Volume 1</u> “Wet Jeans”, page 155</p> <p><u>Uncovering Student Ideas in Science, Volume 2</u> “Turning the Dial”, page 47</p> <p><u>Uncovering Student Ideas in Science, Volume 3</u> “What are Clouds Made Of”, page 155 “Where Did the Water Come From?”, page 163 “Rainfall”, page 171</p>	<b>Performance Assessment</b>	
	Create representation displaying comprehension of the interaction between the Sun, Ocean, and the Water Cycle, i.e. drawing, model, PhotoStory.	
<b>Scenario / Open Ended</b>	<b>Multiple Choice</b>	
<p>Where does the heat energy come from that fuel the water cycle?</p> <p>What are two similarities between weather and climate?</p>	<u>Gateway, 5<sup>th</sup> Grade:</u> 4.1 student page 146	

## 5<sup>th</sup> Grade - Elementary Science Bundle 2

<b>5<sup>th</sup> Grade Science Project / Fair Information</b>	<i>*See Campus Science Fair Contact for complete information*</i>	<a href="#">Back to Top</a>
<p style="color: red; margin: 0;"><b>Introduce the Science Project during this Bundle (suggest toward the end of the Bundle) Science Projects are part of the TEKS; components are instructional and taught through content in the classroom. (Can begin Bundle 3 Instructional Points)</b></p>	<p>*Each campus has its own timeline based upon when the campus science fair event is scheduled to occur.</p> <p>Individual or team <b>EXPERIMENT</b> required for all 5<sup>th</sup> graders</p>	
	<p><u>Experiment Components:</u> Title, Question (testable), Definitions, Hypothesis, Background Information, Materials, Procedure, Results, Conclusion</p>	<p><a href="#">Experimental Investigation Rubric</a></p>
<p>Participation in campus Science Fair required for all 5<sup>th</sup> graders; Students <u>wishing</u> to be considered for the Austin Energy Regional Science Festival complete and submit an “AERSF Intent Form” prior to the campus science fair event.</p>	<p><a href="#">Austin Energy Science Festival Website</a></p>	

<b>Differentiation / Universal Design Consideration Points</b>	<p><b><a href="#">Universal Design: Link to Barriers and Solutions Tool</a></b></p>	<p><b><a href="#">What is This?</a></b></p>	<p><b><a href="#">Back to Top</a></b></p>	
<b>Current Methods and Materials</b>	<b>Possible Challenges</b>	<b>Possible Solutions</b>		
<p>Accessing text / academic language, such as: water cycle weather climate</p>	<ul style="list-style-type: none"> <li>difficulty in accessing concept</li> <li>decoding and reading comprehension</li> <li>vision</li> <li>interest/engagement</li> </ul>	<p>Pair or partner read</p> <p>Search district resources for digital books with e-readers/audio</p> <p>SOLO Read Out Loud program or other text to speech/reader (see Campus AT Team Lead)</p> <p><u>For Water Cycle:</u> Pearson Website – Science Leveled Readers: <a href="#">Earth’s Water</a> – ISBN 0-328-13821-5</p> <p><u>For Climate:</u> Pearson Website – Science Leveled Readers: <a href="#">Water Cycle and Weather</a> – ISBN 0-328-13874-6 – Start on page 20</p> <p>Note: Some Pearson Online Level Readers have a speaker button that will read the text aloud.</p> <p>For reading comprehension support using web text or other digital text, use SOLO Read Out Loud &gt; Outline &gt; Add Outline &gt; Non-Fiction Compare and Contrast outline...</p> <p>Simplify text via Autosummarize or Wikipedia Simple English</p> <p>Highlight key concepts</p>		

## 5<sup>th</sup> Grade - Elementary Science Bundle 2

<p>Visuals/ manipulate educational materials</p> <p>[To explain the interaction of Water Cycle]</p> <p>[To differentiate between weather and climate]</p>	<ul style="list-style-type: none"> <li>• engagement</li> <li>• abstract concepts</li> <li>• physical manipulation/FM skills</li> <li>• distractibility</li> </ul>	<p><a href="http://www.sweetwater.org/education/watercycle.swf">http://www.sweetwater.org/education/watercycle.swf</a> Learn about the water cycle with animation (this one also has an animated quiz with tap answer system)</p> <p><a href="http://earthguide.ucsd.edu/earthguide/diagrams/watercycle/">http://earthguide.ucsd.edu/earthguide/diagrams/watercycle/</a> Higher level water cycle diagram that uses animation to show the process, also has a quiz</p> <p>The Water Cycle <a href="http://www.harcourtschool.com/menus/science/up_close5.html">http://www.harcourtschool.com/menus/science/up_close5.html</a> (this link explains water cycle in text, sound, animation, captioning, – click arrows and shows sub animation and text that is fairly high level)</p> <p><a href="http://www.epa.gov/climatechange/kids/water_cycle_version2.html">http://www.epa.gov/climatechange/kids/water_cycle_version2.html</a> Has water cycle movie covering: water cycle, water storage, water movement, extreme cycle, wet cycle, dry cycle</p> <p><a href="http://members.enchantedlearning.com/cgi-bin/uncgi/grade">http://members.enchantedlearning.com/cgi-bin/uncgi/grade</a> (enchanted diagram - non animated)</p> <p><a href="http://members.enchantedlearning.com/classroom/quiz/watercycle.shtml">http://members.enchantedlearning.com/classroom/quiz/watercycle.shtml</a> (quiz with starts with letter answer hint)</p> <p><a href="http://www.fi.edu/fellows/fellow8/dec98/watercycle/jigsaw.htm">http://www.fi.edu/fellows/fellow8/dec98/watercycle/jigsaw.htm</a> Click and Drag Water Cycle Interactive Jigsaw Puzzle</p> <p><a href="http://kids.earth.nasa.gov/droplet.html">http://kids.earth.nasa.gov/droplet.html</a> (game)</p> <p>Predicted Global Temperature Changes animation: <a href="http://www.rmets.org/video/climate/globe.php">http://www.rmets.org/video/climate/globe.php</a></p> <p><u>Graphic organizers:</u> Things We Observe: <a href="http://www.teachervision.fen.com/tv/printables/scottforesman/Sci_1_TOP_D1_1.pdf">http://www.teachervision.fen.com/tv/printables/scottforesman/Sci_1_TOP_D1_1.pdf</a> 4 Square Vocab Template <a href="http://science-class.net/Graphic_Organizers/GO_4squarevocab_nos.pdf">http://science-class.net/Graphic_Organizers/GO_4squarevocab_nos.pdf</a> Moon Phases <a href="http://science-class.net/Graphic_Organizers/GO_moon_phases.pdf">http://science-class.net/Graphic_Organizers/GO_moon_phases.pdf</a> T-chart <a href="http://www.eduplace.com/graphicorganizer/pdf/tchart_eng.pdf">http://www.eduplace.com/graphicorganizer/pdf/tchart_eng.pdf</a> Step by Step Chart <a href="http://www.eduplace.com/graphicorganizer/pdf/stepchart_eng.pdf">http://www.eduplace.com/graphicorganizer/pdf/stepchart_eng.pdf</a> Venn Diagram <a href="http://www.eduplace.com/graphicorganizer/pdf/venn.pdf">http://www.eduplace.com/graphicorganizer/pdf/venn.pdf</a></p>
<p>Open-Ended Response</p>		<p>For open ended response to assessments on SE’s consider alternative response methods including: Solo/Writing Out loud, manipulatives, pictorial representations, models, selection of a given set of pictures, digital recorded voice response, graphic displays</p>