


## Eighth Grade Science Curriculum Bundle # 8

<b>Title</b>	 	<b>Suggested Dates</b>
Weather		Jan 31 – Feb 18 (15 Days)

<b>Big Idea/Enduring Understanding</b>	<b>Guiding Questions</b>
<p>Recognizing patterns helps predict what will occur the next time and what can change over time.</p> <p>The atmosphere is a mixture of gases with suspended solids and liquids</p> <p>Radiant energy from the sun creates temperature differences in water, land and the atmosphere which drive local, regional and long term global patterns of atmospheric circulation like climate and short term global patterns like storms, hurricanes, tornadoes.</p>	<p>How can we observe the effect of the Sun’s energy on the Earth’s surface and atmosphere?</p> <p>Why is it important to collect and communicate weather information?</p> <p>What technology insures clean air resources for me?</p> <p>How have humans modified the weather system?</p>

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.

<b>Knowledge &amp; Skills with Student Expectations</b>	<b>Specificity &amp; Examples</b>	<b>Suggested Resources</b> (Read the note above)
<p><b>8.10 Earth and space. The student knows that climatic interactions exist among Earth, ocean, and <u>weather</u> systems. The student is expected to:</b></p> <p><b>8.10A</b> recognize that the Sun provides the energy that drives convection within the <b>atmosphere</b> and oceans, <b>producing winds</b> and ocean currents</p>	<p><b>Including:</b></p> <p>---Atmospheric Composition</p> <p>---Layers of the Atmosphere</p> <ul style="list-style-type: none"> <li>• Troposphere</li> <li>• Mesosphere</li> <li>• Stratosphere</li> <li>• Ionosphere</li> <li>• Thermosphere</li> <li>• Exosphere</li> </ul> <p>---Convection, Conduction, Radiation</p> <p>---Jet Stream</p>	<p><b>Textbook:</b> pp 508-513 ( characteristics of air), pp 514-517 (heating of the atmosphere); in 6<sup>th</sup> Grade Book</p> <p><b><u>VOCABULARY:</u></b> astmosphere, water cycle, Coriolis Effect, meteorology, meteorologist, relative humidity, climate, El Nino, La Nina, acid rain, ozone, global warming, greenhouse gases, Fahrenheit, Celsius, Jet Stream, hurricane, cyclones, typhoons, pollution, point source and non-point source pollution, cold front, warm front, occluded front, stationary front, barometric pressure, isobar, sling psychometer, anemometer, barometer, flash flooding, evaporation, condensation, saturation, tornadoes, satellite images, conduction, convection, and radiation.</p> <p><b><u>Assessments:</u></b> Layers of the Atmosphere assessment Weather and Atmosphere Quiz</p>

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	<p><u>Teacher Notes:</u> Water evaporates from the surface of the earth, rises and cools, condenses into rain or snow, and falls again to the surface. The water falling on land collects in rivers and lakes, soil, and porous layers of rock, and much of it flows back into the oceans. The cycling of water in and out of the atmosphere is a significant aspect of the weather patterns on Earth. (Source: Benchmarks)</p> <p>Describe solar energy as a driving force between weather and ocean systems</p>	<p>Weather and Atmosphere Test Pop quiz Atmosphere Layers</p> <p><b>Activities:</b> Characteristics of the Atmosphere Power point <b>CORE</b> <u>Aims Earth Book:</u> The Great Moderator pp 347-353 Graphing the Atmosphere Jet Stream Power point Energy Transfer in Atmosphere Graphic Organizer Observing Convection Where Does Water Come From Heating the Earth</p> <p><b>PreAP:</b> LTF # 25 Evaporation and Condensation Earth/Life p. 540</p>
<p><b>8.10 Earth and space. The student knows that climatic interactions exist among Earth, ocean, and weather systems. The student is expected to:</b></p> <p><b>8.10B</b> identify how global patterns of atmospheric movement influence local weather using weather maps that show high and low pressures and fronts</p>	<p><u>Including:</u></p> <p>--- Components of the Atmosphere</p> <p>--- Layers of the Atmosphere</p> <p>--- Atmospheric Movement</p> <ul style="list-style-type: none"> <li>• Fronts: warm, cold, stationary and occluded</li> <li>• Wind</li> <li>• Jet Stream</li> </ul> <p>---Systems</p> <ul style="list-style-type: none"> <li>• High Pressure</li> <li>• Low Pressure</li> </ul> <p>--- Weather Maps</p> <p><u>Teacher Notes:</u> The earth has a variety of climates, defined by average temperature, precipitation, humidity, air pressure, and wind, over time in a particular place. (Source: Benchmarks)</p> <p>Clouds, formed by the condensation of water vapor, affect weather and climate. (Source: NSES)</p> <p>Global patterns of atmospheric movement influence local weather. Oceans have a major effect on climate, because water in the oceans holds a large amount of heat. (Source: NSES)</p>	<p><b>Textbook: pp 580-581 (weather maps) and pp 518-525 (pressure/wind) in 6<sup>th</sup> Grade Book</b></p> <p><b>Activities:</b> <u>Aims Earth Book:</u> Out Front pp. 302-315 <b>CORE</b> Weather Fronts Power point <b>CORE</b> <u>Aims Earth Book:</u> Layers of the Earth pp 260-269 Atmosphere Layers Power point The Earth's Atmosphere Power point Modeling Air Masses and Fronts Stormy Skies Air Under Pressure Fronts Atmosphere Layers Foldable + Key #48 Student Worksheet: Watching the Weather (One Stop Planner) Brainpop: Earth's Atmosphere Brainpop: Weather</p> <p><b>PreAP:</b> Weather Basics (Teacher Resource) Air Under Pressure Differences Between Climate and Weather Blocking The Sun Winds of the World (Supplemental Reading)</p>

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		<p><b>Technology:</b> Vernier CLB Labs          #01 Hot Hands (Pre lab)          #04 Relative Humidity          #19 Fun with Pressure</p> <p>Adopt-A-City Webquest</p>
<p><b>8.10 Earth and space. The student knows that climatic interactions exist among Earth, ocean, and weather systems. The student is expected to:</b></p> <p><b>8.10C</b> identify the role of the oceans in the formation of weather systems such as hurricanes</p>	<p><b>Including:</b></p> <ul style="list-style-type: none"> <li>---The Coriolis Effect on Air Currents</li> <li>--- Air Mass and Fronts</li> <li>---Cloud Formation</li> <li>---Relative humidity</li> <li>---Air mass densities</li> </ul> <p><b>Teacher Notes:</b> Describe solar energy as the driving force behind weather and ocean systems.</p> <p><b>Examples:</b></p> <ul style="list-style-type: none"> <li>---Severe weather (hurricanes, tornadoes/water spouts)</li> <li>---Flash flooding</li> </ul> <p>Water, which covers the majority of the earth’s surface, circulates through the crust, oceans, and atmosphere in what is known as the “water cycle.” Water evaporates from the earth’s surface, rises and cools as it moves to higher elevations, condenses as rain or snow, and falls to the surface where it collects in lakes and oceans.</p>	<p><b>Textbook:</b> pp 576-578</p> <p><b>Activities:</b>          Holt Science: Understanding Weather (One Stop Planner) <b>CORE</b> or  <u>Aims Earth Book:</u> Hurricane pp 354-371 <b>CORE</b>          Hurricane’s Life Worksheet          Hurricanes (Teacher Resource)          Hurricane Data 1900-2004          #21: Reinforcement Worksheet: Precipitation Situations (One Stop Planner)</p> <p><b>Technology:</b>          Hurricane Activity (folder)          Tornado Activity (folder)  <a href="http://www.middleschoolscience.com/hurricane.htm">Hurricane Activity</a> hyperlink  <a href="http://www.middleschoolscience.com/hurricane.htm">http://www.middleschoolscience.com/hurricane.htm</a></p>
<p><b>8.11 Organisms and environments. The student knows that interdependence occurs among living systems and the environment and that human activities can affect these systems. The student is expected to:</b></p> <p><b>8.11C</b> explore how short- and long-term environmental changes affect organisms and traits in subsequent populations</p>	<p><b>Environmental problems such as:</b></p> <ul style="list-style-type: none"> <li>---Acid rain (reintroduce the pH scale)</li> <li>---Ozone layer depletion</li> <li>---Greenhouse Gases</li> <li>---Global Warming</li> </ul> <p><b>Environmental solutions:</b></p> <ul style="list-style-type: none"> <li>---Laws</li> <li>---Reduce/reuse/recycle</li> <li>---Reclamation projects</li> <li>---Water treatment &amp; disease reduction</li> </ul> <p><b>Teacher Notes:</b> The wasteful or unnecessary use of natural resources can limit their availability for other purposes. Restoring depleted soil, forests, or fishing grounds can be difficult or costly. (Source: Benchmarks)</p>	<p><b>Textbook:</b> pp 259-263, 264-267</p> <p><b>Activities:</b>          Global Warming Activity          The Greenhouse Effect Power point          Green House Effect Lab          Greenhouse Activity (folder)          Pollution Resources (folder)          Ozone Pollution (Smog Alert) as Teacher Demo          Smog Alert</p> <p><b>PreAP:</b>          Global Warming Flap (duplicated in Bundle #12)          LTF # 30: Are You Meeting the Kyoto Protocol?          Life/Earth p. 595</p>

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	<p>Human activities, such as reducing the amount of forest cover, increasing the amount and variety of chemicals released into the atmosphere and intensive farming, have changed the earth's land, oceans, and atmosphere. Some of these changes have decreased the capacity of the environment to support some life forms. (Source: Benchmarks)</p> <p>Plan to review 7.8A, predict and describe how different types of catastrophic events impact ecosystems such as floods, hurricanes or tornadoes.</p>	<p>LTF# 31: Acid Rain Drops Keep Falling On My Head Life/Earth p. 600</p> <p><b>Technology: Vernier CLB Labs</b> #03 The Greenhouse Effect</p> <p>Like Moth Around a Flame (duplicated in Bundle #12)</p>
<p><b>8.9 Earth and space. The student knows that natural events can impact Earth systems. The student is expected to:</b></p> <p><b>8.9C</b> interpret topographic maps and <b>satellite views</b> to identify land and erosional features and predict how these features may be reshaped by weathering.</p>	<p>Such as: --- satellite weather, satellite imagery, and Google Earth</p>	
<p><b>8.2 The student uses scientific inquiry methods during laboratory and field investigations.</b></p> <p><b>8.2D</b> construct tables and graphs, using repeated trials and means, to organize data and identify patterns;</p>	<p>Such as: ---Air mass densities</p>	<p><u>Aims Earth Book</u>: Fronting Weather pp. 316-326</p>
<p><b>8.4 The student knows how to use a variety of tools and safety equipment to conduct science inquiry.</b></p> <p><b>8.4A</b> use appropriate tools to collect, record, and analyze information, including lab journals/notebooks, beakers, meter sticks, graduated cylinders, anemometers, psychrometers, hot plates, test tubes, spring scales, balances, microscopes, thermometers, calculators, computers, spectrosopes, timing devices, and other equipment as needed to teach the curriculum; and</p>	<p>Such as: Thermometers, sling psychrometers, barometers, and weather maps.</p>	<p><b>Activity: Holt Math Skills for Science</b> #35: Using Temperature Scales</p> <p>Relative Humidity Power point Relative Humidity Chart Relative Humidity Worksheet LTF #27 Relative Humidity Lab Earth/Life pp. 556</p>