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| **Columbus County Schools** *Science Curriculum Guide* | | |
| **SUBJECT:** Science | **GRADE LEVEL:** 7th | **GRADING PERIOD:** 3rd 9 weeks |
| Module(s): F – Earth’s Water and Atmosphere | Time Frame: 4 weeks | **Unit:** Earth Systems, Structures and Processes. |
| Essential Standard: **7.E.1 Understand how the cycling of matter (water and gases) in and out of the atmosphere relates to Earth’s atmosphere, weather, and climate and the effects of the atmosphere on humans.** | | | |

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| **Lesson:**  **Earth’s Atmosphere**  **(1 Week)** | **Technology and Literacy Standards and Tasks** | **Academic Vocabulary:** | **Assessment(s):** | **Additional Resources:** |
| **Clarifying Objective:**  **7.E.1.1: Compare the composition, properties and structure of Earth’s atmosphere to include: mixtures of gases and differences in temperature and pressure within layers.**  **Essential Questions:**  What is the atmosphere?  How does energy move through Earth’s systems?  What is wind? | ***Science Fusion* Online Components and Digital Lessons**  **Write to Learn *(*See Additional Resources)**  **Technology Standards:**  7.SI.1  7.RP.1  7.SE.1  **Literacy Standards:**  [CCSS.ELA-Literacy.RST.6-8.1](http://www.corestandards.org/ELA-Literacy/RST/6-8/1/) .  [CCSS.ELA-Literacy.RST.6-8.8](http://www.corestandards.org/ELA-Literacy/RST/6-8/8/) | * atmosphere * air pressure thermosphere * mesosphere * stratosphere troposphere * ozone layer * greenhouse effect * temperature * thermal energy * radiation * thermal expansion * convection * wind. | **Formative:**  Write to Learn Assignments  Bell Ringers/Exit Tickets  **Science Formative Assessment: 75 Practical Strategies (Keeley)**   * **First Word, Last Word page 88** * **Justified True/False page 126** * **Juicy Questions page 121** * **Commit and Toss page 65**   **Uncovering Student Ideas in Science Vol.3 (Keeley)**   * **Where did the water come from? Page 163** * **Rainfall page 171**   **Summative:**   * **Unit Tests** * **County Benchmarks** * **Projects** * ***Exam View* Test bank** * ***Schoolnet Test bank*** | McDougal Littell 7th Grade Science Book page 9A – 39A  Science Fusion Work Book Earth’s Water and Atmosphere page 104 - 113  Science Fusion Teacher Edition Earth’s Water and Atmosphere page 134 – 147  **Write to Learn**  [**Science 6 12.1 What is Earth's atmosphere?**](http://pearsonkt.com/cgi-bin/writeToLearn/teacher/displayText.cgi?textID=1331&classID=9733)  [**Weather and Climate: 1.3 Layers of the Atmosphere**](http://pearsonkt.com/cgi-bin/writeToLearn/teacher/displayText.cgi?textID=157&classID=9733) |

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| **Lessons:**  **Weather Patterns**  **(3 Weeks)** | **Technology and Literacy Standards and Tasks** | **Academic Vocabulary:** | **Assessment(s):** | **Additional Resources:** |
| **Clarifying Objectives:**  **7.E.1.2: Explain how the cycling of water in and out of the atmosphere and atmospheric conditions relate to the weather patterns on Earth.**  **7.E.1.5: Explain the influence of convection, global winds and jet stream on weather and climate.**  **Essential Questions:**  What is weather and how can we describe different types of weather conditions?  How do the water cycle and other global patterns affect local weather? | ***Science Fusion* Online Components and Digital Lessons**  **Write to Learn *(*See Additional Resources)**  **Technology Standards:**  7.SI.1:  7.TT.1:  7.RP.1  7.SE.1:  **Literacy Standards:**  [CCSS.ELA-Literacy.RST.6-8.5](http://www.corestandards.org/ELA-Literacy/RST/6-8/5/)  [CCSS.ELA-Literacy.RST.6-8.2](http://www.corestandards.org/ELA-Literacy/RST/6-8/2/) | * weather * humidity * relative humidity * dew point * precipitation * air pressure * wind * visibility * Coriolis Effect * jet streams * water cycle | **Formative:**  Write to Learn Assignment  Quiz  Review Games  Group Assignments  Bell Ringers/Exit Tickets  **Science Formative Assessment: 75 Practical Strategies (Keeley)**   * **First Word, Last Word page 88** * **Justified True/False page 126** * **Juicy Questions page 121** * **Commit and Toss page 65**   **Summative:**   * **Unit Tests** * **County Benchmarks** * **Projects** * ***Exam View* Test bank** * ***SchoolNet* Test bank** | McDougal Littell 7th Grade Science Book page 9A – 39A  Science Fusion Work Book Earth’s Water and Atmosphere page 14 – 25 and page 114 - 131  Science Fusion Teacher Edition Earth’s Water and Atmosphere page 26 – 39 and page 152 - 167  **Write to Learn**  [**Science 6 12.2 How do clouds and precipitation form?**](http://pearsonkt.com/cgi-bin/writeToLearn/teacher/displayText.cgi?textID=1332&classID=9733) |

**Technology Standards Used in this Unit:**

7.SI.1: Research topics, use graphic organizers, and evaluate the validity of resources both online and in text.

7.RP.1: Group work and individual research activities using online resources.

7.SE.1: Learn safe practices when using online resources and the proper way to summarize retrieved information.

7.TT.1: Use technology tools to organize information and explore new ways to communicate with peers and teachers.

**Literacy Standards Used in this Unit:**

[CCSS.ELA-Literacy.RST.6-8.1](http://www.corestandards.org/ELA-Literacy/RST/6-8/1/) Cite specific textual evidence to support analysis of science and technical texts.

[CCSS.ELA-Literacy.RST.6-8.2](http://www.corestandards.org/ELA-Literacy/RST/6-8/2/) Determine the central ideas or conclusions of a text; provide an accurate summary of the text distinct from prior knowledge or opinions.

[CCSS.ELA-Literacy.RST.6-8.5](http://www.corestandards.org/ELA-Literacy/RST/6-8/5/) Analyze the structure an author uses to organize a text, including how the major sections contribute to the whole and to an understanding of the topic.

[CCSS.ELA-Literacy.RST.6-8.8](http://www.corestandards.org/ELA-Literacy/RST/6-8/8/) Distinguish among facts, reasoned judgment based on research findings, and speculation in a text.

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| **Day 1**  **Lesson: Earth’s Atmosphere** | **Day 2**  **Lesson: Earth’s Atmosphere** | **Day 3**  **Lesson: Earth’s Atmosphere** | **Day 4**  **Lesson: Earth’s Atmosphere** | **Day 5**  **Lesson: Earth’s Atmosphere** |
| **Clarifying Objective: 7.E.1.1 Compare the composition, properties and structure of Earth’s atmosphere to include: mixtures of gases and differences in temperature and pressure within layers.**  **Academic Vocabulary:**  atmosphere, air pressure, thermosphere, mesosphere, stratosphere, troposphere, ozone layer, greenhouse effect, temperature, thermal energy, radiation, thermal expansion, convection, wind. | **Clarifying Objective: 7.E.1.1 Compare the composition, properties and structure of Earth’s atmosphere to include: mixtures of gases and differences in temperature and pressure within layers.**  **Academic Vocabulary:**  atmosphere, air pressure, thermosphere, mesosphere, stratosphere, troposphere, ozone layer, greenhouse effect, temperature, thermal energy, radiation, thermal expansion, convection, wind. | **Clarifying Objective: 7.E.1.1 Compare the composition, properties and structure of Earth’s atmosphere to include: mixtures of gases and differences in temperature and pressure within layers.**  **Academic Vocabulary:**  atmosphere, air pressure, thermosphere, mesosphere, stratosphere, troposphere, ozone layer, greenhouse effect, temperature, thermal energy, radiation, thermal expansion, convection, wind. | **Clarifying Objective: 7.E.1.1 Compare the composition, properties and structure of Earth’s atmosphere to include: mixtures of gases and differences in temperature and pressure within layers.**  **Academic Vocabulary:**  atmosphere, air pressure, thermosphere, mesosphere, stratosphere, troposphere, ozone layer, greenhouse effect, temperature, thermal energy, radiation, thermal expansion, convection, wind. | **Clarifying Objective:**  **7.E.1.1 Compare the composition, properties and structure of Earth’s atmosphere to include: mixtures of gases and differences in temperature and pressure within layers.**  **Academic Vocabulary:**  atmosphere, air pressure, thermosphere, mesosphere, stratosphere, troposphere, ozone layer, greenhouse effect, temperature, thermal energy, radiation, thermal expansion, convection, wind. |
| **Bell Ringer:**  **Engage Your Brain p. 104 #1 and #2**  **Instructional Tasks:** “The Atmosphere” Digital Lesson with fill in notes.  **Summarizer:**  **What are three things you learned today?** | **Bell Ringer:**  **#9 Student Workbook p. 109**  **Instructional Tasks:  Lesson Review “Lesson 1: The Atmosphere” p. 113 in Student Workbook**  **Summarizer:**  **How does the atmosphere protect life on Earth?** | **Bell Ringer:**  **Interpreting Visuals TE p. 144**  **Instructional Tasks:** Daily Demo “Transfer Energy” TE p. 151  Quick Lab “Modelling Convection” TE p. 151  Have students respond in writing to these labs. There are resources in the ***Science Fusion*** Teacher Resources that are tied to these activities.  **Summarizer:**  **Pyramid FoldNote p. 154** | **Bell Ringer: Analyzing TE 144**  **Instructional Tasks:  “Energy Transfer” Digital Lesson** with fill in notes  **Summarizer:**  **Energy Transfer Game TE p.154** | **Bell Ringer: Probing Question Synthesizing TE p. 145**  **Instructional Tasks:  Atmospheric Review TE p.140**  **Summarizer: Discuss responses to questions on charts.** |
| **Assessment:** Participation, Discussion | **Assessment:** Observation, Participation | **Assessment:**  Observation, Participation | **Assessment:** Participation, Discussion | **Assessment:** Participation, Discussion, Observation |

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| **Day 6**  **Lesson: Weather** | **Day 7**  **Lesson: Weather** | **Day 8**  **Lesson: Weather** | **Day 9**  **Lesson: Weather** | **Day 10**  **Lesson: Weather** |
| **Clarifying Objective: 7.E.1.5: Explain the influence of convection, global winds and jet stream on weather and climate.**  **Academic Vocabulary:**  wind, Coriolis effect, global wind, local wind, jet stream | **Clarifying Objective: 7.E.1.5: Explain the influence of convection, global winds and jet stream on weather and climate.**  **Academic Vocabulary:**  wind, Coriolis effect, global wind, local wind, jet stream | **Clarifying Objective: 7.E.1.5: Explain the influence of convection, global winds and jet stream on weather and climate.**  **Academic Vocabulary:**  wind, Coriolis effect, global wind, local wind, jet stream | **Clarifying Objective: 7.E.1.5: Explain the influence of convection, global winds and jet stream on weather and climate.**  **Academic Vocabulary:**  wind, Coriolis effect, global wind, local wind, jet stream | **Clarifying Objective: 7.E.1.5: Explain the influence of convection, global winds and jet stream on weather and climate.**  **Academic Vocabulary:**  wind, Coriolis effect, global wind, local wind, jet stream |
| **Bell Ringer:**  **Inferring TE p. 178**  **Instructional Tasks:** “Wind in the Atmosphere” Digital Lesson with Fill in Notes  **Summarizer:**  **What are three things you learned today?** | **Bell Ringer: How do you think the movement of air would be different if Earth did not rotate?**  **Instructional Tasks:** Vocabulary Activity  Ex. Frayer Model, Magnet Words, Word Triangle  **Summarizer: What type of weather might a sea breeze carry on to land? Why?** | **Bell Ringer: Formative Assessment TE p. 179**  **Instructional Tasks:** Illustrated Sea Breezes TE p. 173 (you may also have groups illustrate land breezes, mountain breezes and/or valley breezes)  **Summarizer:**  Visual Summary Student Workbook p. 142 | **Bell Ringer: Visualize It! p. 140-141 #17 and #18**  **Instructional Tasks:** Unit 3 Review Student Workbook  **Summarizer:**  **Explain how the uneven warming of Earth causes air to move.** | **Bell Ringer:**  **N/A**  **Instructional Tasks:  Write to Learn: Science 6 12.1 What is Earth’s Atmosphere?**  **Or**  **Weather and Climate: 1.3 Layers of the Atmosphere**  **Summarizer: Completed Write to Learn** |
| **Assessment:** Participation, Discussion | **Assessment:** Observation, participation | **Assessment:**  Observation, Completed poster | **Assessment:** Graded Assignment | **Assessment:** Completed WTL Activity, Observation |

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| **Day 11**  **Lesson: Weather** | **Day 12**  **Lesson: Weather** | **Day 13**  **Lesson: Weather** | **Day 14**  **Lesson: Weather** | **Day 15**  **Lesson: Weather** |
| **Clarifying Objective: 7.E.1.2 Explain how the cycling of water in and out of the atmosphere**  **and atmospheric conditions relate to the weather patterns on**  **Earth.**  **7.E.1.3 Explain the relationship between the movement of air masses,**  **high and low pressure systems, and frontal boundaries to**  **storms (including thunderstorms, hurricanes, and tornadoes) and other weather conditions that may result.**  **Academic Vocabulary:**  weather, humidity, relative humidity, dew point, precipitation, air pressure, wind, visibility, cloud, cirrus cloud, stratus cloud, cumulus cloud, fog, particulates, air mass, jet stream, front, thunderstorm, hurricane, tornado, storm surge | **Clarifying Objective:** **7.E.1.2 Explain how the cycling of water in and out of the atmosphere**  **and atmospheric conditions relate to the weather patterns on**  **Earth.**  **7.E.1.3 Explain the relationship between the movement of air masses,**  **high and low pressure systems, and frontal boundaries to**  **storms (including thunderstorms, hurricanes, and tornadoes) and other weather conditions that may result.**  **Academic Vocabulary:**  weather, humidity, relative humidity, dew point, precipitation, air pressure, wind, visibility, cloud, cirrus cloud, stratus cloud, cumulus cloud, fog, particulates, air mass, jet stream, front, thunderstorm, hurricane, tornado, storm surge | **Clarifying Objective:**  **7.E.1.2 Explain how the cycling of water in and out of the atmosphere**  **and atmospheric conditions relate to the weather patterns on**  **Earth.**  **7.E.1.3 Explain the relationship between the movement of air masses,**  **high and low pressure systems, and frontal boundaries to**  **storms (including thunderstorms, hurricanes, and tornadoes) and other weather conditions that may result.**  **Academic Vocabulary:**  weather, humidity, relative humidity, dew point, precipitation, air pressure, wind, visibility, cloud, cirrus cloud, stratus cloud, cumulus cloud, fog, particulates, air mass, jet stream, front, thunderstorm, hurricane, tornado, storm surge | **Clarifying Objective:**  **7.E.1.2 Explain how the cycling of water in and out of the atmosphere**  **and atmospheric conditions relate to the weather patterns on**  **Earth.**  **7.E.1.3 Explain the relationship between the movement of air masses,**  **high and low pressure systems, and frontal boundaries to**  **storms (including thunderstorms, hurricanes, and tornadoes) and other weather conditions that may result.**  **Academic Vocabulary:**  weather, humidity, relative humidity, dew point, precipitation, air pressure, wind, visibility, cloud, cirrus cloud, stratus cloud, cumulus cloud, fog, particulates, air mass, jet stream, front, thunderstorm, hurricane, tornado, storm surge | **Clarifying Objective:**  **7.E.1.2 Explain how the cycling of water in and out of the atmosphere**  **and atmospheric conditions relate to the weather patterns on**  **Earth.**  **7.E.1.3 Explain the relationship between the movement of air masses,**  **high and low pressure systems, and frontal boundaries to**  **storms (including thunderstorms, hurricanes, and tornadoes)and other weather conditions that may result.**  **Academic Vocabulary:**  weather, humidity, relative humidity, dew point, precipitation, air pressure, wind, visibility, cloud, cirrus cloud, stratus cloud, cumulus cloud, fog, particulates, air mass, jet stream, front, thunderstorm, hurricane, tornado, storm surge |
| **Bell Ringer:**  **Write a paragraph describing everything you know about the elements of weather.**  **Instructional Tasks:** “Elements of Weather” Digital Lesson with fill in notes  **Summarizer:**  **What are three things you learned today?** | **Bell Ringer: What is the difference between humidity and relative humidity?**  **Instructional Tasks:** Cloud in a bottle demonstration  “Clouds and Cloud Formation” Digital Lesson with Fill in notes  **Summarizer:**  **Complete the flow chart on p. 167 in Student Workbook** | **Bell Ringer: Visualize It! #10 Student Workbook p. 169 and #13 p. 171**  **Instructional Tasks:** Finish “Clouds and Cloud Formation” Digital Lesson  **Summarizer:**  **Name the three factors that are required for cloud formation.** | **Bell Ringer: What do you think influences weather? Answer in 2 to 3 sentences.**  **Instructional Tasks:** “What influences weather?” Digital Lesson  **Summarizer:**  **Explain the factors that influence weather.** | **Bell Ringer: Visual Summary Student Workbook p. 192**  **Instructional Tasks:** “Severe Weather and Weather Safety” Digital Lesson  **Summarizer:**  **Stormy Weather Game TE p. 256** |
| **Assessment:** Participation, Discussion | **Assessment:** Observation, participation | **Assessment:**  Observation, participation | **Assessment:** Participation, Discussion | **Assessment:** Participation, Observation |

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| **Day 16**  **Lesson: Weather** | **Day 17**  **Lesson: Weather** | **Day 18**  **Lesson: Weather** | **Day 19**  **Lesson: Weather** | **Day 20**  **Lesson: Weather** |
| **7.E.1.2 Explain how the cycling of water in and out of the atmosphere**  **and atmospheric conditions relate to the weather patterns on**  **Earth.**  **7.E.1.3 Explain the relationship between the movement of air masses,**  **high and low pressure systems, and frontal boundaries to storms (including thunderstorms, hurricanes, and tornadoes) and other weather conditions that may result.**  **Academic Vocabulary:**  weather, humidity, relative humidity, dew point, precipitation, air pressure, wind, visibility, cloud, cirrus cloud, stratus cloud, cumulus cloud, fog, particulates, air mass, jet stream, front, thunderstorm, hurricane, tornado, storm surge | **Clarifying Objective:** **7.E.1.2 Explain how the cycling of water in and out of the atmosphere**  **and atmospheric conditions relate to the weather patterns on**  **Earth.**  **7.E.1.3 Explain the relationship between the movement of air masses,**  **high and low pressure systems, and frontal boundaries to storms (including thunderstorms, hurricanes, and tornadoes) and other weather conditions that may result.**  **Academic Vocabulary:**  weather, humidity, relative humidity, dew point, precipitation, air pressure, wind, visibility, cloud, cirrus cloud, stratus cloud, cumulus cloud, fog, particulates, air mass, jet stream, front, thunderstorm, hurricane, tornado, storm surge | **Clarifying Objective: 7.E.1.4: Predict weather conditions and patterns based on information obtained from:**   * **Weather data collected from direct observations and measurement (wind speed and direction, air temperature, humidity and air pressure)** * **Weather maps, satellites and radar** * **Cloud shapes and types and associated elevation**   **Academic Vocabulary:**   * **weather forecasting, meteorology, station model)** | **Clarifying Objective: 7.E.1.4: Predict weather conditions and patterns based on information obtained from:**   * **Weather data collected from direct observations and measurement (wind speed and direction, air temperature, humidity and air pressure)** * **Weather maps, satellites and radar** * **Cloud shapes and types and associated elevation**   **Academic Vocabulary:**  **weather forecasting, meteorology, station model)** | **Clarifying Objective:**  **7.E.1.6: Conclude that the good health of humans requires: monitoring the atmosphere, maintaining air quality and stewardship.**  **Academic Vocabulary:**  **ice age, greenhouse effect, global warming** |
| **Bell Ringer: Explain three types of severe weather and what you should do if severe weather threatens your area.**  **Instructional Tasks:** “When Severe Weather Strikes” Virtual Lab  **Summarizer:**  What are the four major safety threats from hurricanes? | **Bell Ringer: How can the paths of past hurricanes be used to predict the paths of new hurricanes?**  **Instructional Tasks:** “When Severe Weather Strikes” Virtual Lab (Cont.)  **Summarizer:** Explain how meteorologists predict hurricanes. What is the cone of uncertainty? | **Bell Ringer: How do you think meteorologists predict the weather?**  **Instructional Tasks:** “Weather Maps and Weather Prediction” Digital Lesson  **Summarizer:**  Responding to Weather Maps TE p. 272 | **Bell Ringer: Explain three types of information that meteorologists can get from a station model.**  **Instructional Tasks:** “Forecasting the Weather” Virtual Lab  **Summarizer:**  Explain each of the four types of fronts that meteorologists can forecast. | **Bell Ringer: Vocabulary Matching Activity**  **Instructional Tasks:**  “Forecasting the Weather” Virtual Lab (Cont.)    **Summarizer:** How did the weather maps help you predict the weather? |
| **Assessment:** Participation, Discussion, Summarizer | **Assessment:** Observation, Participation, Summarizer | **Assessment:**  Observation, Participation | **Assessment:** Participation, Discussion | **Assessment:** Participation, Observation |