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.**		

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 . CCSS.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?** **Weather and Climate: 1.3 Layers of the Atmosphere**

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 CCSS.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?**

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 Cite specific textual evidence to support analysis of science and technical texts.

CCSS.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 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 Distinguish among facts, reasoned judgment based on research findings, and speculation in a text.

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	**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.**

		that are tied to these activities. **<u>Summarizer:</u>** **Pyramid FoldNote p. 154**		
<u>Assessment:</u> Participation, Discussion	**<u>Assessment:</u>** Observation, Participation	**<u>Assessment:</u>** Observation, Participation	**<u>Assessment:</u>** Participation, Discussion	**<u>Assessment:</u>** Participation, Discussion, Observation

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

Day 11	**Day 12**	**Day 13**	**Day 14**	**Day 15**

Lesson: Weather	Lesson: Weather	Lesson: Weather	Lesson: Weather	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**	**Bell Ringer: What is the difference between humidity and relative humidity?**	**Bell Ringer: Visualize It! #10 Student Workbook p. 169 and #13 p. 171**	**Bell Ringer: What do you think influences weather? Answer in 2 to 3 sentences.**	**Bell Ringer: Visual Summary Student Workbook p. 192**

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?**	**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**	**Instructional Tasks:** Finish "Clouds and Cloud Formation" Digital Lesson **Summarizer:** **Name the three factors that are required for cloud formation.**	**Instructional Tasks:** "What influences weather?" Digital Lesson **Summarizer:** **Explain the factors that influence weather.**	**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

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