Flint Community Schools
Science Curriculum Pacing

Earth Content **Seventh Grade**

UNIT 2: FLUID EARTH SYSTEMS AND HUMAN ACTIVITIES **STANDARD: Earth Systems**		**Pacing: November thru January,** **Total of 12 weeks**
Big Ideas: • **The sun is the major source of energy for phenomenon on Earth** • **The sun's warming relates to weather, climate and the water Cycle**	**Essential Question(s):** • **What causes wind, rain, storms, and weather to move around the Earth?** • **Why do some locations on Earth have higher average temperatures?** • **What happens to air or water when it gets warmer?** • **How does water keep moving above ground, on the ground, and under the ground?** • **When it rains or snow melts, how does the water know which way to go?**	
Concepts/Content Expectations	**Knowledge/Skills** *Inquiry GLCE's are in italics under **"Skills"**	**Vocabulary** ***Assessable** **Instructionally useful**
Solar Energy **E.ES.07.11** Demonstrate, using a model or drawing, the relationship between the warming by the sun of the Earth and the water cycle as it applies to the atmosphere (evaporation, water vapor, warm air rising, cooling, condensation, clouds).	**Knowledge (Students will understand that…..)** • **Energy from the sun** makes the Earth's water cycle and weather to work like they do • **Sunlight strikes the earth** and directs our weather and climate • **Convection currents move** the atmosphere, the ocean, and even the inner molten earth • The water cycle is like a **gigantic ferris wheel**, moving water up and down over all the earth **Skills (Students will be able to…)** • Draw a diagram showing that there is **continuous movement of water** on Earth (water cycle) • Design an investigation to prove that **light energy is transformed into thermal energy** when it hits earth (dirt, rocks, sand)	*water cycle *atmosphere *evaporation *water vapor *condensation *clouds *convection *wind *transpiration *cloud formation *precipitation *infiltration *surface runoff *groundwater

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E.ES.07.12 Describe the relationship between the warming of the atmosphere of the Earth by the sun and convection within the atmosphere and oceans. **E.ES.07.13** Describe how the warming of the Earth by the sun produces winds and ocean currents. **Water Cycle** **E.ES.07.81** Explain the water cycle and describe how evaporation, transpiration, condensation, cloud formation, precipitation, infiltration, surface runoff and ground water occur within the cycle. **E.ES.07.82** Analyze the flow of water between the components of a watershed, including surface features (lakes, streams, rivers, wetlands) and groundwater.	• Design investigations to show that warmer air (atmosphere) or water (ocean) **will rise above cooler** air or water (convection currents) • Design an investigation to show that **heat causes water to evaporate** and that coolness causes water vapor to condense • Draw a diagram comparing one cubic meter of warm air molecules to one cubic meter of cool air molecules. Use arrows to show **which air would rise above the other** and write a short explanation including the words density, gravity, low air pressure and high air pressure • Draw an illustration to show that the movement of cold and warm air in the atmosphere is similar to **the movement of warm and cold water in the ocean** • Research the **Flint River Watershed** • Find and map out a **small watershed on your school property**. Show the ridge or rise and draw arrows showing direction of water flow • Find out **where rainwater goes when it runs off your school grounds**. If it goes into storm drains, where do the storm drains take it? Name of creek? • Create a model or poster of a **watershed analyzing the flow of water** including a rise or ridge, runoff, infiltration, and groundwater	*absorption *watershed *elevations *air pressure *barometric pressure *acid rain *fog *dew hold water solar energy

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Assessment Examples Note-taking and Summarization Strategies/Graphic Organizers can be used.	Formative: • *Demonstrations and explorations* • *Experiment design and conclusion* • *Classroom discussion* • *Student journal entries* • *Quick Writes*	Summative: • *End of unit test* • *Poster, brochure, or Power Point presentation on the water cycle and how the sun's warming of the Earth causes ocean and air currents* • *Written report on the effect of human activities and action steps that can be taken* • *Models of water cycle, solar still, design for cleaning a sample of polluted water*
Resources	Earth Science Chapter 10 (Prentice Hall) Science Plus Green Level Chapter 23 Lessons 3&4 - Convection & Radiation	Science Plus Green Level S153, S168-170 VersaTiles - Earth Science Levels 5-8