



Great Lakes Climate and Weather- Lesson 2: Standards and Assessment

State of Michigan - Grade Level Content Expectations (5th-7th grade)

Discipline 1: Science processes

Inquiry process (IP)

- S.IP.05-07.11 – Generate scientific questions based on research
- S.IP.05-07.15 – Construct charts and graphs from data and observations

Inquiry, analysis and communication (IA)

- S.IA.05-07.11 – Analyze information from data tables and graphs to answer scientific questions
- S.IA.05-07.12 – Evaluate data through collaborative scientific discourse
- S.IA.05-07.13 – Communicate and defend findings of investigations using evidence

Discipline 2: Physical science

Energy (EN)

- P.EN.M.4 Energy transfer
- P.EN.06.41 Explain how different forms of energy can be transferred from one place to another by radiation or convection

Discipline 4: Earth science

Earth systems (ES)

- E.ES.M.7 Weather and climate
- E.ES.07.73 Explain how the temperature of the oceans affects the different climates on Earth because water in the ocean holds a large amount of heat

National Science Education Standards (NSES) - Middle School

Science as inquiry (A):

- Think critically and logically to make the relationships between evidence and explanations
- Recognize and analyze alternative explanations and predictions

Physical science (B):

- Heat moves in predictable ways, flowing from warmer objects to cooler ones, until both reach the same temperature

Educators are encouraged to use this free material. Please include source information:

Great Lakes Lessons, Teaching with Great Lakes Data, Michigan Sea Grant, www.greatlakeslessons.com

Great Lakes Literacy Principles – K-12

3d – The Great Lakes have a significant influence on regional climate by absorbing, storing and moving heat and water. Lake-effect precipitation can occur downwind when major weather systems move over the lakes.

Standards Sources

- State of Michigan: Michigan department of education - Grade level content expectations (GLCEs)
- NSES: National science education standards
- Great Lakes Literacy Principles, COSEE Great Lakes, 2010. Great Lakes Literacy: Essential principles and fundamental concepts for Great Lakes learning [brochure]. Columbus, OH: Ohio Sea Grant OHSU-B-090. Available from www.coseegreatlakes.net.

Assessment

This assessment chart was designed for teachers to create their own assessment. In creating assessments, the value should depend on the learning level of the task. Levels are coded as Low (knowledge, comprehension), Medium (application, analysis), High (synthesis, evaluation).

Learning Level	Learning Objective	Student Performance
Low	Explain how the temperature of oceans affects the different climates on Earth because water in oceans holds a large amount of heat.	Describe the Great Lakes as a heat source and a heat sink.
Medium	Generate scientific questions based on research.	Develop a hypothesis about the relationship between the Great Lakes and fruit growing in the region.
Medium	Construct graphs from data.	Graph coastal and inland temperatures.
High	Communicate and defend findings of investigations using evidence.	Describe conclusions using graphs and data tables as evidence.