# Great Lakes Climate and Weather- Lesson 3: Standards and Assessment

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

### Discipline 1: Science processes
Inquiry process (IP)
- S.IP.M.1 Inquiry involves generating questions, conducting investigations and developing solutions to problems through reasoning and observation.
- S.IP.05-07.16 – Identify patterns in data.

### Discipline 4: Earth science
Earth systems (ES)
Weather and climate
- E.ES.M.7 Weather and climate – global patterns of atmospheric and oceanic movement influence weather and climate.
- E.ES.07.71 – Compare and contrast the difference and relationship between climate and weather.
- E.ES.07.73 – Explain how the temperature of oceans affects the different climates on Earth because water in the oceans holds a large amount of heat.
- E.ES.07.81 – Explain the water cycle and describe how evaporation, transpiration, condensation, cloud formation, precipitation, infiltration, surface runoff, ground water and absorption occur within the cycle.

## National Science Education Standards (NSES) - Middle School

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'.

## 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 | Describe weather conditions associated with frontal boundaries and movement of major air masses across North America. | Describe weather conditions associated with the movement of frontal boundaries across the Great Lakes region. |
| Medium | Explain how the temperature of oceans affects the different climates on Earth because water in oceans holds a large amount of heat. | Describe how hills and highlands form clouds and precipitation. |
| Medium | | Describe how differences in lake and air temperature cause lake-effect snow. |
| High | | Describe how cities and industrial areas are related to lake-effect snow. |