



[Teaching Great Lakes Science](http://www.miseagrant.umich.edu/lessons/) <http://www.miseagrant.umich.edu/lessons/>

## Activity: Storm Behavior

**Summary:** Students use maps, charts and tables to investigate the impacts of storm surges and seiches.  
You need:

- 50 minutes
- Downloads – Part 1
  - [Data Sheet](#)
  - [Data Sheet Key](#)
  - [Figures](#)
- Downloads – Part 2
  - [Data Sheet](#)
  - [Data Sheet Key](#)
  - [Figures](#) (Use computer with internet access to view charts and maps for better clarity)
  - [Storm Narrative](#)
- Downloads – Part 3
  - [Data Sheet](#)
  - [Data Sheet Key](#)
  - [Figures](#)
- Downloads – Part 4
  - [Data Sheet](#)
  - [Data Sheet Key](#)
  - [Figures](#)

## Procedure

### Part 1

As a whole class:

- Define storm surges and seiches and discuss storm behavior in the Great Lakes region.
- Students use Figures (Part 1) to answer questions on their data sheets.

### Part 2

In small groups, read the downloaded storm narrative.

- Use Figures (Part 2) to complete data sheet. (Use links to NOAA chart and USGS maps to view in greater detail.)
- NOAA Online Chart Viewer:
  - See: Toledo Harbor/Entrance Channel to Harbor, Chart 14847
- USGS map locator:
  - See: Map Locator on the left column of the page.
  - Search: Buffalo, NY; Download Buffalo 30x60 1983.
  - Search: Toledo, Ohio; Download Toledo 30x60 1983.

- USACE storm probability tables:
  - Search: Storm probability tables and scroll down to Buffalo and Toledo.

### Part 3

In small groups, use Figures (Part 3) to complete data sheet. Alternatively, use links to USGS map and USACE table below.

- USGS map locator:
  - See: Map Locator on the left column of the page. Search: Eastlake, Ohio. Download Eastlake 7.5x7.5 1997.
- USACE historic Great Lakes levels

### Part 4


- Use Figures (Part 4) to complete data sheet. Alternatively, use links to Google Earth, Google map, USGS map locator and USACE below:
  - Google Earth. Search: Cape Vincent, NY
  - Google map. Search: Lake Ontario
- USGS map locator: Using the Map Locator on the left column of the page, search Cape Vincent, NY and download Cape Vincent, NY North 7.5x7.5 1980
  - USACE historic Great Lakes levels;
  - USACE storm probability tables;

## Activity Extension

### Climate Change

In most places, climate change is predicted to cause water levels to rise. Currently in the Great Lakes, climate change is being blamed for drops in lake levels. It is not known whether lake levels will rise or fall in relation to climate change. However, climate change is anticipated to influence runoff, precipitation and evaporation.

- Investigate current water level, wind speed and atmospheric pressure at stations in the Great Lakes region at NOAA National Ocean Service (NOS).
  - See: Great Lakes online/Water level
- Investigate extreme water levels at stations in the Great Lakes region at NOAA Center for Operational Oceanographic Products and Services (CO-OPS).
  - See: Find a NOS station by searching city/state at the top of the page.

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