



Storm Surges and Seiches - Lesson 2 Activity: Impacts

Part 2 - Storm Narrative

Lake Erie is the southernmost, shallowest and smallest of the Great Lakes by volume. Lake Erie, due to its orientation, is prone to storm surges.

Buffalo, New York is at the eastern end of Lake Erie. The water is deep at Buffalo and the shoreline is steep. This limits problems caused by storm surges at the eastern end of the lake. However, boats and the docks are damaged as boats move around and bang against docks as the water level rapidly rises and falls.

Toledo, Ohio is at the western end of Lake Erie. The water is shallow and the land surrounding the western end of the lake is flat and lies at about the same elevation as the lake surface. When the water in Lake Erie is moved toward Buffalo in a large surge, a big part of Maumee Bay near Toledo can actually dry up. When this happens, boats that are tied to docks will be sitting on the lake bottom. When the water comes rushing back into the bay the boats can be shoved under the docks and then lifted up, damaging or destroying boats and docks. In addition when a surge is pushed toward Toledo, the western end of the lake cannot hold all of the water that rushes into it. The water will spill out of the lake, flooding the land. Floods caused by surges have caused a lot of damage around Toledo.

Storm: Lake Erie - October 25-27, 2001

In October 2001, a storm moving across Lake Erie caused the water level to drop 6 feet below normal when the surge was at Buffalo. Water rose 4 feet in Buffalo.

On October 25-27, 2001 a storm with winds greater than 50 knots (58 mph/93 kph) formed in the western Great Lakes region. The winds created 15-20 foot (4-6 meters) waves which moved eastward throughout central and eastern Lake Superior, eastern Lake Michigan, eastern Lake Huron and central Lake Erie, peaking late on October 26. Wind and waves caused a storm surge on each lake. Storm surges were followed by seiches of lesser magnitude (less than 1 foot) as winds slowed without shifting direction.

Storm-force winds `roared up the axis of Lake Erie from Toledo toward Buffalo. The strong winds caused a storm surge on Lake Erie exceeded six feet (1.8 meters). The difference in water level between Toledo and Buffalo was nearly 10 feet on the morning of October 26, 2001. (The record storm surge on Lake Erie is 16 feet.)