

Storm Surge

Abstract

Storm surges occur in coastal areas when strong onshore winds and low atmospheric pressure during passing storms raise water levels along the shore above predicted levels. Storm surges occur on all four Canadian coasts (Pacific, Arctic, Atlantic and Great Lakes). The most severe known surges in Canada have been 2 to 3 metres high (well over the head of the average person). Severe storm surges that occur on high tides or during high lake levels can result in flood damage, evacuation of communities and loss of life. This map shows that a qualitative estimate of storm-surge hazards for selected representative locations varies in severity and frequency in different areas of coastal Canada. The data shown are for illustrative purposes only and should not be used for local storm-surge hazard management.

Each dot symbol on the map indicates a representative storm-surge site. The site may represent a few to several hundred kilometres of shoreline. The size of the dots reflects frequency, not area covered. On this map, a low frequency means one surge every few years, a medium frequency indicates one surge every year and a high frequency represents several surges every year. Low severity corresponds to some flooding or erosion during large surges, with minor resulting damage. Medium severity indicates moderate flooding or erosion during large surges, with moderate damage. High severity means extensive flooding or severe erosion during large surges, with significant damage.

Map Sources

Frequency and Severity of Storm Surges for Selected Locations

Each dot symbol on the map indicates a representative storm-surge site. The site may represent a few to several hundred kilometres of shoreline. The size of the dots reflects frequency, not area covered. The data shown are for illustrative purposes only and should not be used for local storm-surge hazard management. Atlantic Marine Environmental Geosciences, Geological Survey of Canada, 2006.

Related Web sites (1999 – 2009)

Federal Government

Environment Canada. Public weather warning for Canada
http://www.weatheroffice.gc.ca/warnings/warnings_e.html

The online source for storm surge warnings issued by the Meteorological Service of Canada

Environment Canada. The Storm Surge and waves at Halifax with hurricane Juan, September 2003

<http://www.ec.gc.ca/ouragans-hurricanes/>

Interesting description of the storm surge at Halifax during Hurricane Juan

Natural Resources Canada. Canadian Climate Impacts and Adaptation Research Network. Reducing the Vulnerability of Coastal trails and Boardwalks to Storm Surge, Flooding , Erosion and Sea Ice.

http://www.c-ciarn.ca/pdf/czreport04_3_e.pdf

Detailed report by Canada's Climate Change Impacts and Adaptations Research Network on reducing vulnerability of tourist infrastructure to coastal hazards

Natural Resources Canada. Climate change Impacts and adaptation. Project database, coastal zones.

http://www.adaptation.nrcan.gc.ca/projdb/final_coastal_e.php

Links to a comprehensive report detailing storm surges and potential flooding in southeast New Brunswick

Public Safety Canada. Is your family prepared?

<http://www.getprepared.gc.ca/index-eng.aspx>

Public Safety Canada. Keeping Canadians Safe. Significant tsunamis and storm surges of the 19th and 20th centuries

<http://www.publicsafety.gc.ca/res/em/nh/tss/tss-sig-en.asp>

Useful site listing some known surges in Canada and providing information on preparing for surges

Provincial/Territorial Government

Government of Nova Scotia. Emergency management office. Storm surge.

<http://emo.gov.ns.ca/>

Excellent site from the Nova Scotia Emergency Management Organization providing information on preparing for and recovering from storm surges and emergencies in general

Other

Dalhousie University. Storm surges or is that an ocean in my basement?

http://myweb.dal.ca/kelley/pub/pre_oth/2002/AST/AST2002.ppt#16

Dalhousie University presentation giving worldwide examples of storm surge events and estimates of lives lost



United States Government. Department of Commerce. National Oceanic and Atmospheric Administration. Tropical Prediction Center. National Hurricane Center. Hurricane preparedness. Storm surge
http://www.nhc.noaa.gov/HAW2/english/storm_surge.shtml
Site from NOAA (National Oceanic and Atmospheric Administration) providing more information on surges during hurricanes with good animations

United States Government. Department of Homeland Security. Federal Emergency Management Agency. Before a Hurricane
http://www.fema.gov/hazard/hurricane/hu_before.shtm
General information on preparing specifically for hurricanes including useful "how to" guides

