

LAKE CHAMPLAIN-RICHELIEU RIVER FLOOD STUDY, 2017-2021

Real-time flood forecasting

How science can help prepare for high water events in the basin

Flooding around Lake Champlain and the Richelieu River has had devastating impacts on homes, roads, buildings and farmlands. Accurate forecasts can help communities to better plan for potential threats and reduce damages before the flood waters arrive.

Producing flood forecasts

The two groups responsible for forecasting floods in the Lake Champlain-Richelieu River region are the US National Oceanic and Atmospheric Administration (NOAA) and the ministère de l'Environnement et de la Lutte contre les changements climatiques (MELCC) in Quebec. Experts in these agencies use complex computer models that combine weather forecasts and data on current conditions in the watershed, such as water levels, snowpack and soil moisture, to assess how likely flooding is within the Lake Champlain-Richelieu River system.

New models will improve future forecasting

Currently, forecasters are limited in the data they have to produce flood forecasts, and in the complexity of the forecast computer models. Many important factors such as water dynamics, waves created by wind, and future forecasts of weather and water are not directly taken into account in the forecast models. The study will address these gaps in forecasting floods, and develop new predictive flood maps.

Based on more complex Lake Champlain and Richelieu River models, these new maps will be used in combination with observations of river flow, lake level and winds to more accurately predict the extent and severity of floods.

Other benefits of new models

The binational, real time features of the new flood forecasting system will benefit communities across the basin. Models being developed will aid municipalities and emergency response teams, and will contribute to enhanced communication to the public when it matters most. The models are expected to provide more accurate flood warnings for regions expected to be most affected, and regular updates during flood events. How far into the future reliable lake and river forecasts can be made will be evaluated as well.

The study is supporting the US NOAA, Environment and Climate Change Canada (ECCC) and Quebec's MELCC in developing updated flood forecast models. Used together, these models and tools will create a clearer picture of the timing and impact of future floods.

Next steps

The new models will be calibrated and tested as they are developed during the study. The study will make recommendations to the Canadian and US governments on how to implement the most suitable forecasting models and warning tools.

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