

RESEARCH DOSSIER

Coastal Flooding

Coastal flooding-related research work and capacity in the MEOPAR Network

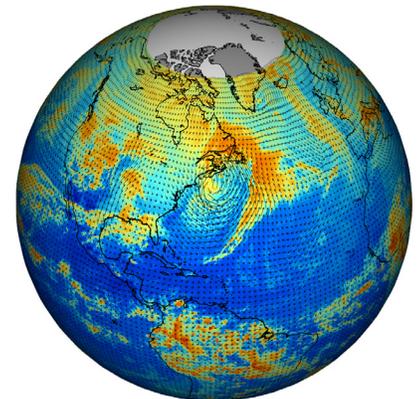
Flooding has quickly emerged as one of the costliest natural hazards in Canada. Although work is underway to better understand and prepare for overland flooding, a gap remains for flood risk in coastal communities, which have unique vulnerabilities due to the additional risks posed by marine hazards like storm surge, coastal erosion and sea-level rise.

MEOPAR is working with partners from the government, private, NGO, and community sectors to monitor and forecast the causes of coastal flooding, and to better understand and respond to the associated impacts.

Anticipating & Understanding Coastal Floods

MEOPAR supports research and development work related to observing and predicting weather and ocean phenomena that contribute to coastal flooding such as storm surges, tidal variations, extreme weather and sea-level rise.

- **Developing Tools & Technology:** Developing new, and/or modifying existing, tools and technology to accurately observe ocean conditions both at sea and in high priority coastal areas (e.g. high density regions like the Salish Sea).
- **Integrating Ocean Data:** Advancing the sharing and integration of ocean observation data between organizations; Developing best practices for managing, sharing and integrating ocean observational data
- **Improving Forecasts:** Improving the accuracy of forecasting models (both short-term and long-term) by increasing resolution, evaluating biases, and integrating new variables and data streams.



MEOPAR research has indicated that today's leading climate change models are underestimating the frequency and intensity of explosive storms in the extra-tropics, which includes Canada's Eastern and Western coasts. As a result, climate modellers can work to refine their models, and create more accurate projections of future storm activity in a warming climate.



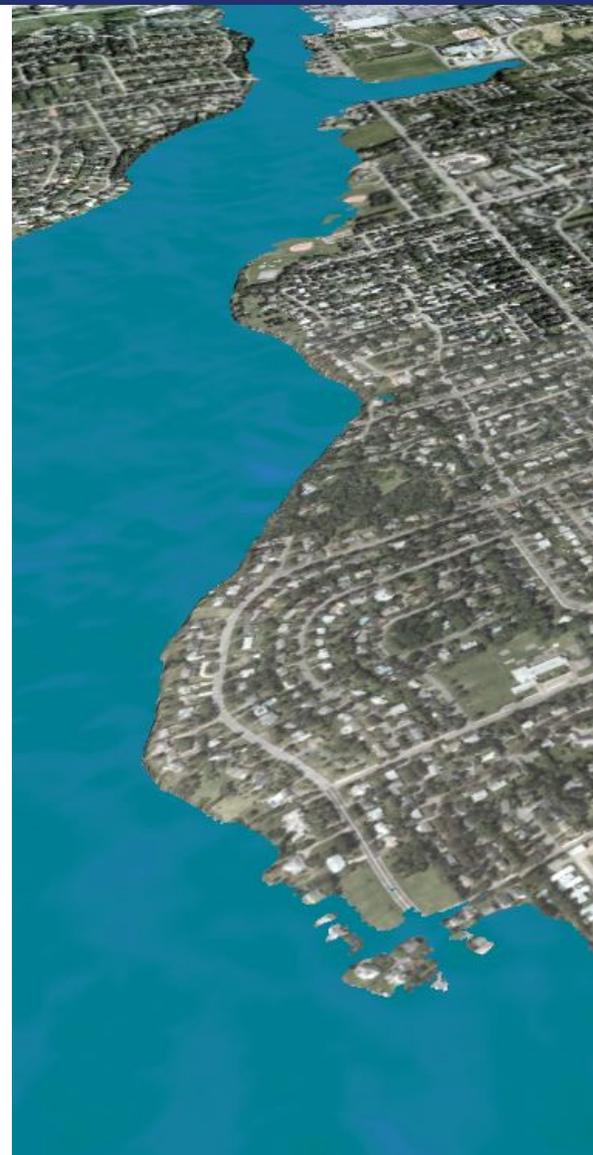
Coastal Flood Impact & Response Strategies

MEOPAR researchers are strengthening Canada's capacity to understand, forecast, and respond to the short-term and long-term impacts of coastal flooding. Activities include:

- **Identifying and Forecasting Impacts:** Developing new, and/or refining existing, tools and technology to understand and forecast the physical and socio-economic impacts of coastal flooding such as erosion and changes in the insurability of coastal communities.
- **Assessing & Mitigating Risk:** Working with stakeholders to assess and mitigate flood risk such as prevention planning, infrastructure analysis and community impact modelling.
- **Planning for Emergency Response:** Developing and/or strengthening emergency response plans including flood evacuation plans and communication strategies for use during emergency events.
- **Adapting to Climate Change:** Working with municipalities and other key stakeholders to create long-term community and/or regional strategies to improve their resilience to future climate change threats; utilizing natural and social science research to help guide policies and practices at all levels of government.

Partner Engagement

MEOPAR's research, training and knowledge mobilization activities are conceived and delivered in response to specific partner needs. We aim to supply partners with knowledge, tools, people and pathways that strengthen their resilience and opportunity in Canada's marine environment.



Dr. Adam Fenech (UPEI) has created technology that can generate an accurate digital model of a community, and allow users to simulate coastal storm surges, coastal erosion and sea-level rise in that community. The tool is used by planners to prepare for short-term emergencies and to develop long-term climate change adaptation plans.

About MEOPAR

Established in 2012 through Canada's federal Networks of Centres of Excellence Program, the Marine Environmental Observation Prediction and Response (MEOPAR) Network is a national network of academic researchers and students, government scientists, and partners in the private, NGO and community sectors working together to reduce vulnerability and strengthen opportunity in Canada's marine environment.

**Marine Environmental Observation
Prediction and Response Network**
Steele Ocean Sciences Building
Dalhousie University
1355 Oxford St.
Halifax, NS B3H 4J1
t. (902) 494 - 4384
info@meopar.ca



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Networks of Centres
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www.meopar.ca