

## SMART INFRASTRUCTURE

### Communicating Marine Risk with Focus on Coastal Flooding and Forecasting

#### What We Did

The communicating marine risk workshop included experts in marine forecasting, risk perception, emergency management, evacuation, and flooding response.

Nine of the 24 workshop participants were forecasters and model developers, individuals who work and conduct research in marine forecasting and predicting extreme weather events. They outlined the existing model for predicting extreme weather, spoke to the specific challenges that face the Halifax Peninsula and detailed the potential benefits of using a more accurate ensemble forecasting model for future predictions.

Eight of the workshop participants were ‘users’, defined as stakeholders who would need to use forecasting information and/or take action upon receiving news of an approaching extreme weather event. Users included emergency managers, representatives from the Canadian Armed Forces, Halifax Water, the Marine Pilots Association, Public Health Agency of Canada, and Halifax Public Works.

#### What We Found

Model developers emphasized the challenge of communicating information from their forecasting models to stakeholders. There were concerns that traditional ways of communicating the severity of storms (e.g. “one in 200 year flood”) do not make sense in a changing climate. Others identified the importance of visual comparisons, arguing that providing users and laypeople with visuals and photographs of exactly how severe the expected flooding will be, creates a better understanding of the risks present.

The users’ needs varied depending on the timing of the forecasting, the probability of the extreme weather, the time of day, the season, the political circumstances, and orders from elected officials. Some stakeholders felt that, while earlier or more accurate information could be helpful in beginning preparations for an extreme weather event, they still would not be able to take action without political direction or direction from commercial interests. Other stakeholders noted that too much information could potentially confuse or mislead local decision makers, leading to delayed decision making or unwillingness for parties to be held accountable for the potential damage.

The variety of factors in the risk communication process made clear the need for time sensitive information available to stakeholders at appropriate intervals and with clear direction.

#### Why Did the KTEE Research Team Host this Workshop

The purpose of the workshop was to discuss challenges in the communication of information on marine risk from the perspectives of operational agencies and potential users. Researchers sought to solicit feedback from participants on improving the communication of marine risk.

#### Research Funding

This research and workshop were made possible by financial contributions from the Marine Environmental Observation Prediction and Response Network (MEOPAR) as part of the project on “Downscaling Atmosphere-Ocean Forecasts from Global to Harbour Scales with Applications to the Maritimes”.

#### What We Recommend

The flood model and ECCC ensemble prediction system forecasts should be integrated into the traffic flow model.

The ensemble forecasts should be further validated before becoming publically available.

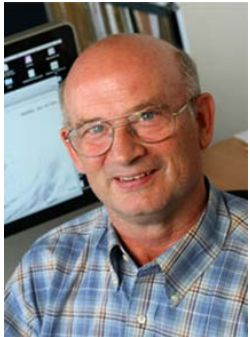
More detailed case studies should be carried out with selected users in order to drill down and determine their specific needs, involving discussions among users, researchers, and ECCC warning preparedness specialists.



**Dr. Calvin Burns** is a lecturer in the Department of Human Resource Management at the University of Strathclyde in the UK. He is an industrial-organizational psychologist who specializes in the study of risk psychology. For more information, you can contact Dr. Burns at [calvin.burns@strath.ac.uk](mailto:calvin.burns@strath.ac.uk).



**Dr. Kevin Quigley** is a professor in Dalhousie University's School of Public Administration. He is also the scholarly director of the MacEachen Institute for Public Policy and Governance, and founder of the Critical Infrastructure Protection Initiative. Dr. Quigley is a risk governance specialist. For more information, contact Dr. Quigley at [kevin.quigley@dal.ca](mailto:kevin.quigley@dal.ca).



**Dr. Hal Ritchie** is a Senior Scientist in the Meteorological Research Division of Environment and Climate Change Canada. He is also an Adjunct in the Department of Oceanography and in the Department of Physics and Atmospheric Science at Dalhousie University. His main research areas are Numerical Weather Prediction and coupled numerical modelling for environmental prediction. For more information, contact Dr. Ritchie at [hal.ritchie@canada.ca](mailto:hal.ritchie@canada.ca)



**Dr. Keith Thompson** is a professor in Dalhousie University's Faculty of Science. He holds a joint appointment in Oceanography and Statistics, and holds a Tier I Canada Research Chair in Marine Prediction and Environmental Statistics. For more information, contact Dr. Thompson at [keith.thompson@dal.ca](mailto:keith.thompson@dal.ca)

