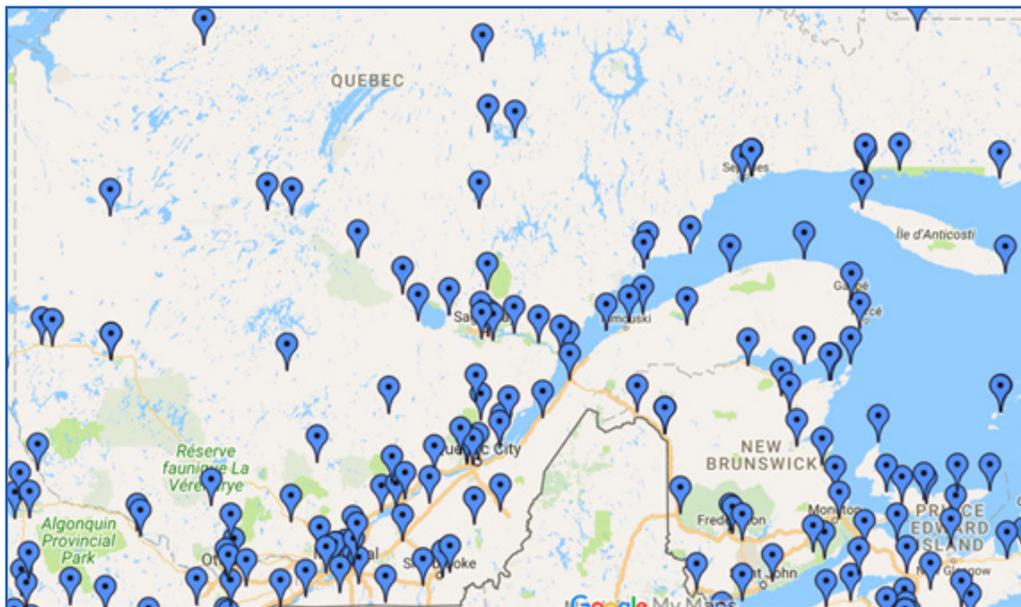


## New, easy-to-use hydro-meteorological system helps flood forecasting in data-scarce areas

*New tool helps town planners quantify and reduce predictive uncertainty of floods, in areas where meteorological gauging is low*



Map of Quebec and neighbouring provinces showing flow gauges' locations.

A new streamflow forecasting system specially designed to improve forecasting in data poor watershed is being developed by the FloodNet Research Team. It will help planners and flood forecasters in locations that have a low density of meteorological stations to improve flood prediction and planning. When completed, the tool will offer a simple interface that an untrained forecaster or support staff can use to collect and interpret data to share with local planners.

Streamflow forecasting systems are an important tool to help municipalities predict and manage flood risks. Typically, these systems are designed to process data from high-quality meteorological forecasts and collected stream flow data from a dense network of gauges that is operated by highly-trained experts. In situations where only, lower data quality is available these experts can use their experience to make credible decisions.

But in many flood-vulnerable areas of Québec, where this tool is being designed and tested, the density of the ground-based meteorological network is low. This means that municipalities only have access to lower-quality data, which is a risk to the

local population. Many smaller municipalities do not have the means to employ experts and have to manage flood forecasting and face floods without optimal stream flow forecasting systems, and the ability to rapidly interpret data. This tool now under development by the FloodNet Research Team aims to improve the capacity of data-scarce towns to better anticipate floods and strengthen their emergency response – an urgent need for many data-poor communities near rivers across Canada.

This streamflow forecasting system is fully automatic. It is specifically designed for use by officials that are not specialized in flood forecasting. When completed, it will be available to support data-scarce towns across the country to

help them better anticipate floods and strengthen their emergency response. In Quebec, an estimated 100000 residents can benefit from the system. Across the country, potentially a million people living in data-poor river areas can be better protected.

The system merges ensemble meteorological forecasts, probabilistic data assimilation, multiple hydrological models, and post-processing to present accurate predictions. The approach accounts for uncertainties at several levels and scales – including meteorological, initial conditions, hydrological models, and low data quality, respectively. To date, it has been tested in 38 catchments (18 with low data quality) and has demonstrated that it maintains the same level of accuracy in data poor areas as well as in data scarce areas.

The system is currently at prototype stage. The FloodNet Team is assessing how to create a simple graphic interface suitable for use by non-experts. This will allow the user to automatically retrieve data, run stream flow forecasting and output useful charts and displays to illustrate potential risks in their municipality.