Better weather forecasting -- now

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Accurate precipitation forecasts are crucial to predicting flooding and to ensuring fresh water supply for human consumption. Being able to estimate the inflow of water into reservoirs is also essential to the efficient generation and distribution of hydroelectric power.

Thanks to research by Prof. M.K. (Peter) Yau of McGill University's Department of Atmospheric and Oceanic Sciences, and the NSERC/Hydro-Québec Industrial Research Chair in Short-term Forecasting of Precipitation, better computer models are being developed to improve short-term (24- to 48-hour) precipitation forecasting techniques.

Yau's precipitation predictions are based on developing state-of-the-art representations of cloud processes that incorporate high-resolution radar observations of weather patterns into the initial conditions for model forecasts. Yau's aim is to develop deterministic as well as probability-based systems for predicting precipitation on a regional basis, and to study how precipitation develops and is distributed in heavy precipitation systems. Or, in other words, why does it snow or rain much more heavily here rather than over there within the same storm system.

The understanding of precipitation processes and the potential improvement of quantitative precipitation forecasts address a major unsolved problem in the atmospheric sciences. New knowledge in this area will have an important impact not only on hydroelectric power generation, but also on various other aspects of the Canadian economy such as agriculture, transportation and road safety.

Dr. Rose Goldstein, McGill's Vice-Principal, Research and International Relations, stresses the importance of this research, and the benefit of the partnership between the granting agency, industry, the university and government. "The partnership between Hydro-Québec, the Natural Sciences and Engineering Research Council of Canada (NSERC), Environment Canada and researchers from McGill University, creates unique opportunities for collaborative work that promises to serve local, national and global needs for better precipitation forecasts," Goldstein said. "McGill University will enhance its already significant international leadership in precipitation research and is pleased to have this opportunity to contribute as an international centre of knowledge in this area. I thank Hydro-Québec, NSERC and Environment Canada for their support of this major initiative which will ensure a more secure and stable energy source in the future."

"Determining the quantity of runoff and forecasting precipitation, which feeds our rivers and large reservoirs, is of strategic importance to operators of hydropower generating facilities like Hydro-Québec," said Gaétan Lantagne, scientific director of Hydro-Quebec's research institute (IREQ). "That is why Hydro-Québec is proud to be associated with the creation of this Research Chair, which is not only a key contributor to the development of new numerical models for weather forecasting, but also an excellent forum for training," he added.

"NSERC makes investments in people, discovery and innovation for the benefit of all Canadians," said NSERC President Suzanne Fortier. "Dr. Yau will collaborate extensively with the scientific staff at Hydro-Québec and Environment Canada. This interaction will ensure that the Chair results are of immediate relevance to all partners, and provide students with a unique opportunity to work on applied problems in this important research area."

Provided by McGill University