

NSERC / Manitoba Hydro Industrial Research Chair in River Ice Engineering

Manitoba Hydro's (MH) entire hydraulic system is affected by river ice processes for a significant portion of each year. These processes negatively impact the efficiency of the MH system and reduce potential revenues at a time that coincides with the peak annual energy demand of the Province. The overarching objective of this IRC program is to significantly improve our understanding of river ice processes, and to incorporate this new knowledge into a comprehensive river ice simulation program. This will allow MH to assess and mitigate the negative effects of river ice on their system.

This research program involves six separate projects that include field work, laboratory experiments and numerical modelling of river ice processes. A team of researchers and collaborators from the University of Manitoba, Manitoba Hydro, Clarkson University and local consulting firms have been working on this program since 2014. Projects include studying and modelling the ice consolidation processes on the Lower Nelson and Dauphin Rivers, evaluating the effects of hanging ice dams and ice jams on sediment transport and channel conveyance, measuring the turbulent flow characteristics of partial ice covers, and investigating freeze-up processes on the Red and Assiniboine Rivers as well as upstream of the Jenpeg Generating Station. The program will train 12 graduate students, 10 undergraduate students and at least two post-doctoral fellows.

