



## Use of a marine radar for real-time monitoring of river ice jams

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### **Abstract:**

Ordinary marine radars provide an interesting option for monitoring ice runs and river breakup. Although designed to be used by the pilot aboard commercial vessels for detecting channel markers and avoiding collisions with other vessels; they can also be used to track ice. They therefore provide an interesting option for ice researchers and managers of hydro-electric installations and commercial navigation channels. The advantage of using radars are: (a) they can “see” very far: ranges can easily exceed 60 km but because of resolution issues, are normally operated within a 10 km radius; (b) they can scan 360° and therefore provide vast spatial images; (c) they output undistorted spatial data on their CRT video screens; and (d) they can “see” at night. More expensive radars can also record their data, provide directly velocity information and superimpose them all on navigation charts in order to provide real-time geo-referenced information.

Data from two sites are presented in this poster. The first data presents the formation and breakup of a “breakup-jam” ice jam on the Athabasca River just upstream of Fort McMurray obtained in the context of a research project. The radar images were superimposition on a Google Earth™ map. The river was therefore delineated and the images were processed in MATLAB™. Ice front and river ice velocities were thereby determined. The second data is graciously provided by the Canadian Coast Guard. It presents a video of ice forming a “freeze-up” jam and then later releasing. This event was located in the navigation channel of the St. Lawrence River near Louiseville.