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**Physical characterization of air inclusions in river ice
for the purpose of a backscatter model.**

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Abstract:

The physical characteristics of air inclusions embedded in the ice cover of the Saint François River (Quebec, Canada) and of the Athabasca River (Alberta, Canada) are presented in this poster. Such inclusions are important to the analysis and interpretation of Synthetic Aperture Radar satellite images used to characterize river ice. Three ice types were present on both rivers (Columnar ice, snow ice and frazil ice). The study of ice cores samples extracted from these two rivers shows that the concentration of air inclusions in the ice cover is highly dependent on both the ice type as well as the rate of freezing. When this rate is slow, the ice cover will have few air inclusions. However, with a rapid freezing rate, which is sustained in duration, the amount of inclusions and their cross sectional diameter increase. Shape, size and distribution of air inclusions were found to be different for each ice type. In most cases, air inclusions were either tubular or spherical and were either sparsely or closely spaced. These measurements will be used as input data for a microwave backscattering model to understand the interaction of radar signal with the different ice types formed on the river.