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Winter Hydrodynamics of the Upper Peace-Athabasca Delta

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POSTER ABSTRACT

A detailed hydrodynamic model of the upper Peace-Athabasca Delta was recently completed using newly surveyed bathymetry and hydrometric measurements at key channel junctions that were provided by the Cumulative Environmental Management Association (CEMA). Although much of the channel network remains largely un-surveyed, the new data has proven to be invaluable to the present model which is now able to simulate flow distributions in the upper delta within 3% of those measured during the survey program. One of the unique features of this model is its ability to cope with the occurrence of complete flow cut-off to individual channels in the network due to freeze-through or extremely low river stage without relying on unrealistic modifications to the geometric cross-section profiles. This poster demonstrates some of the insights this model can offer into the complex winter hydrodynamics of the upper Peace-Athabasca Delta, such as the effects of varying discharge, Lake Athabasca levels, and ice thickness on the freezing of channels and flow distribution through the network.