**Characterizing the impact of dams on the thermal regime of the Fourchue River (Quebec) \***A. Maheu1, A. St-Hilaire1, L. Beaupré1, A. Daigle1 and D. Caissie2

1Centre Eau-Terre-Environnement, Institut national de la recherche scientifique; 2Fisheries and Oceans Canada ([audrey.maheu@ete.inrs.ca](mailto:audrey.maheu@ete.inrs.ca); presentation)

Although dams have been shown to modify water temperatures, few studies have detailed which specific aspect of the thermal regime is altered. The objective of this study was to characterize the impact of a dam on five components of the thermal regime of the Fourchue River (Quebec): magnitude, duration, frequency, timing and variability. Water temperature was monitored upstream and downstream of the Morin dam during the summer 2011 and winter 2011-2012. Temperature duration curves and thermal indices were used to describe the thermal regime of the natural and regulated reaches of the river. A principal component analysis was also performed to determine which components of the thermal regime were most modified by the dam. In the summer, the dam modified the magnitude and variability of water temperatures: it had a warming effect on cool temperatures and a cooling effect on warm temperature extremes. Modification of the summer thermal regime by the dam can be described by two thermal indices: the mean July water temperature and the variance in maximum daily temperature. In the winter, the dam suppressed freezing conditions for 2 km downstream of the dam and reduced the duration of freezing conditions by 30 % at 5 km from the dam. Four indices were selected to characterize the modification of the winter thermal regime by the dam. This study highlighted the importance of 1) a comprehensive characterization of all components of the thermal regime and 2) a year-around perspective to understand the impacts of dams on the thermal regime of rivers.