

Submission: T-2020-163-92

Last Name of PRESENTING Author Rokaya
Middle Name or initials of PRESENTING Author
First Name of PRESENTING Author Prabin

Country of PRESENTING Author Canada

Institution, organization or general address University of Saskatchewan

Theme 2: Observing in Support of Adaptation and Mitigation

Author list (in order) Rokaya, Prabin; Lindenschmidt, Karl-Erich

Poster title (brief) Impact of future climate on hydrology and river ice processes in Canadian Arctic Rivers

Abstract - text box

The river systems in the high-latitude arctic regions of the Northern Hemisphere are particularly sensitive to environmental change. In these cold river systems, annual runoff in future climate is predicted to increase, owing to projected increases in precipitation and thawing of permafrost regions. Similarly, spring flows are estimated to arrive early, and ice cover durations are expected to decrease due to the projected delays in river freeze-up and early ice-cover breakup. Since the ice regime is an integral component of these northern arctic river systems, the changes in river ice processes, including the timing and severity of ice-cover formation and breakup, can result in varying degrees of consequence: from loss of life to damage to infrastructure, from disruption in river transport to hindrance in hydroelectric production, and from disturbance in ecology to water quality deterioration. However, previous studies have shown that climatic effects are spatially asymmetrical, with varying degrees of implications across the regions. Therefore, despite the general consensus on projected impacts of future climate on arctic hydrology and river ice processes, their quantitative assessments across the regions remain largely uncertain. In this study, we investigate the impacts of future climate on hydrology and river ice processes in five watersheds of different drainage areas and within diverse climate, ecological zones and latitudes in Canada.