

TITLE: Fluctuations in hydrologic extremes across large lake systems

ABSTRACT: Earth's largest lake systems are susceptible to a combination of hydrologic forces, such as lake evaporation and changes in precipitation related to atmospheric stability, that are often not reconciled in conventional land surface models and data sets. Here, we explore recent changes in these forces through analysis of the hydrologic cycle across the Laurentian Great Lakes, including the extraordinary transition from a period of low water supplies in the early 2000s, to a recent period of water abundance punctuated by record-high lake water levels and extensive regional flooding. Much of the narrative surrounding the climate future for the United States and North America is based on water loss and drought; we explore the role that water abundance along the international border between the United States and Canada might play in this narrative, and the extent to which continental water supply variability can be predicted at annual and multi-decadal time scales.