







0 4

Summary An overall assessment is challenging given that the lakes' surface water temperature responses to changes in meteorological forcing and inflows (i.e., rivers and groundwaters) are geographically different. Based on the buoy observations, the upper Great Lakes (Superior, Michigan, Huron) show consistent trends towards higher temperatures over the last 30 years and will be classified as "Increasing," with an average trend of ~0.06°C yr1. In the lower Great Lakes (Erie and Ontario), the rate of temperature increases on average was much slower at ~ 0.03°C yr⁻¹. Lake Erie's positive trend was spatially variable, ranging from ~0.02°C yr⁻¹ in the west basin to ~0.05°C yr⁻¹ in the central 0.30 0.28 1981 1979 W. Superior 0.05 ± 0.03 and eastern basins, with fewer data available. Lake Ontario, while displaying C. Superior 0.07 ± 0.04 positive trends at two eastern sites (0.05°C yr⁻¹ and 0.09°C yr⁻¹), has significantly E. Superior N. Michigan S. Michigan 0.07 ± 0.04 0.25 1980 0.41 0.39 0.41 0.06 ± 0.02 0.05 ± 0.02 1980 fewer data available, with less than 20 years. 1981 1980 N. Huron 0.06 ± 0.02 0.41 0.45 0.25 0.43 S. Huron 0.06 ± 0.02 1982 W. Erie C. Erie 0.02 ± 0.02 0.05 ± 0.02 1980 1994 E. Erie 0.04 ± 0.02 0.38 1994 W. Ontario E. Ontario E. Ontario (-0.04 ± 0.02 (-0.04 ± 0.10) 0.05 ± 0.04 0.09 ± 0.03 -0.14 0.28 0.64 2002 2002 2002 1990 Jay Austin and Reza Valipour "State of the Great Lakes 2022 Technical Report" https://binational.net/ Canada Environment and Environnement et Climate Change Canada Changement climatique Canada







































Ecological response of large lakes to climate change: outcomes from observation application of a coupled watershed-lake model	is and the
Reza Valipour <u>Reza Valipour@ec.gc.ca</u>	
contributors: Dominique Brunet, Phil Fong, Rajesh Shrestha, Jun Zhao, Craig McCrimmon	
Science and Technology, Environment and Climate Change Canada	
Canadian Meteorological and Oceanographic Society (CMOS) via Zoom, Nov 23 2022	
Environment and Environnement et Climate Change Canada Changement climatique Canada	Canada