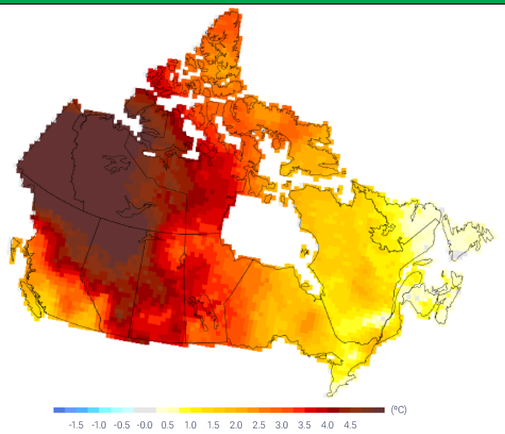
CLIMATE CHANGE IMPACTS

2020 PROVINCIAL POLICY STATEMENT

3.1 Natural Hazards:

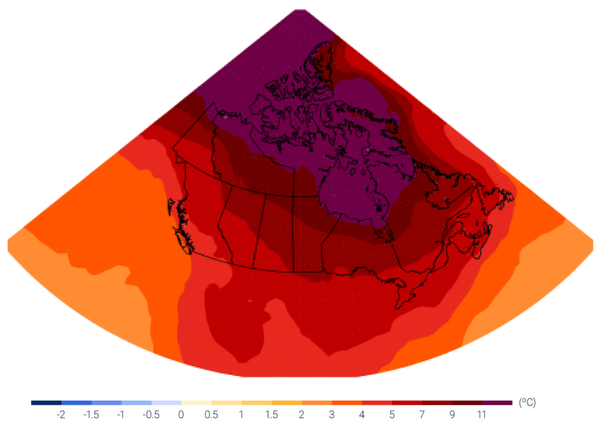
3.1.3 Planning authorities shall prepare for the impacts of a changing climate that may increase the risk associated with natural hazards.

1948 to 2012 Winter Air Temperature Increase



Source: Vincent et al, 2015. In 'Zhang, X., Flato, G., Kirchmeier-Young, M., Vincent, L., Wan, H., Wang, X., Rong, R., Fyfe, J., Li, G., Kharin, V.V. (2019): Changes in Temperature and Precipitation Across Canada; Chapter 4 in Bush, E. and Lemmen, D.S. (Eds.) Canada's Changing Climate Report. Government of Canada, Ottawa, Ontario, pp 112-193'.

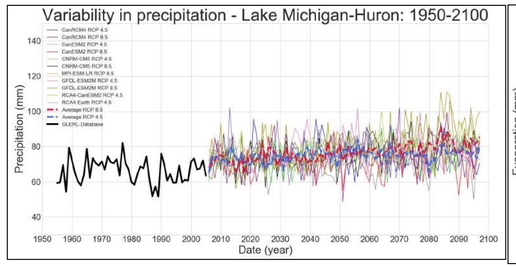
Late Century (2081-2100) Projected Winter Air Temperature Increase

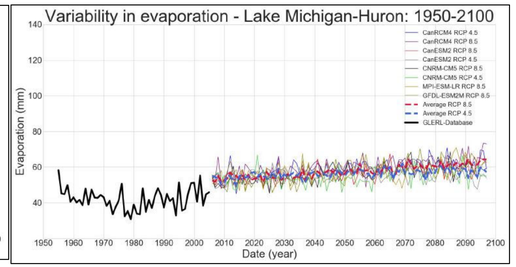


Note: Projection for RCP8.5 Emission Scenario

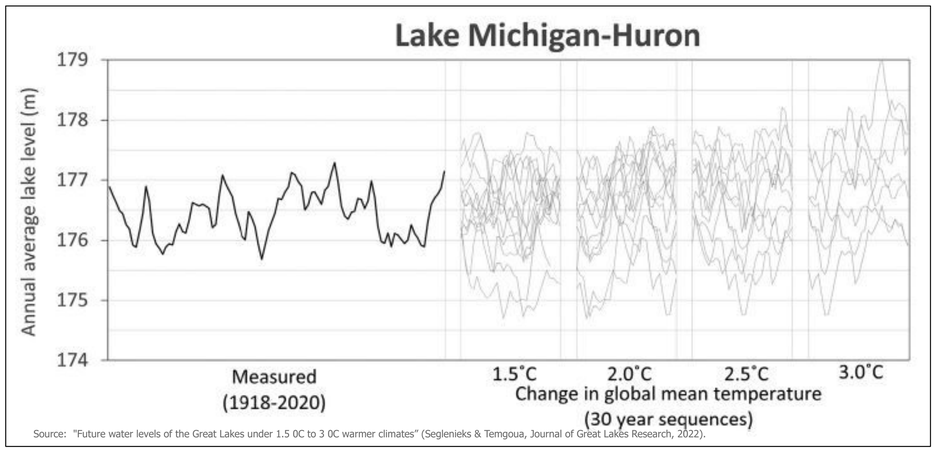
Source: Climate Research Division, Environment and Climate Change Canada. In 'Zhang, X., Flato, G., Kirchmeier-Young, M., Vincent, L., Wan, H., Wang, X., Rong, R., Fyfe, J., Li, G., Kharin, V.V. (2019): Changes in Temperature and Precipitation Across Canada; Chapter 4 in Bush, E. and Lemmen, D.S. (Eds.) Canada's Changing Climate Report. Government of Canada, Ottawa, Ontario, pp 112-193'.

WATER LEVELS





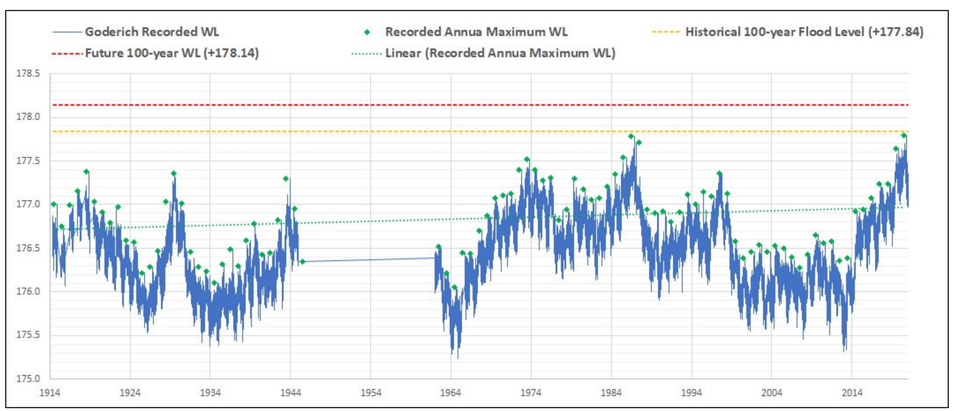
Source: "Future hydroclimate variables and lake levels for the Great Lakes using data from the coupled model intercomparison project, Phase 5" (Seglenieks & Temgoua, ECCC, 2021).



Source: "Future water levels of the Great Lakes under 1.5 0C to 3 0C warmer climates" (Seglenieks & Temgoua, Journal of Great Lakes Research, 2022).

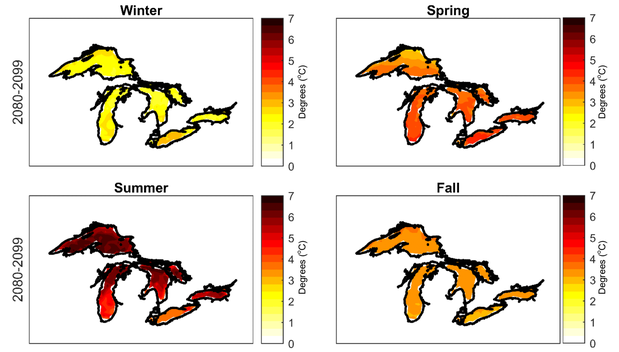
KEY FINDINGS

1) MNR 1989: 100-year flood level = +177.80 m IGLD'85
2) 2022 Update: 100-year flood level = +177.84 m IGLD'85
3) Climate Change Considered: 100-year flood level = +178.14 m



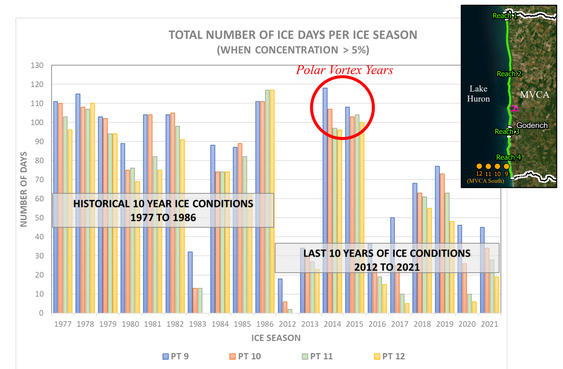
WAVE ENERGY & EROSION RATES

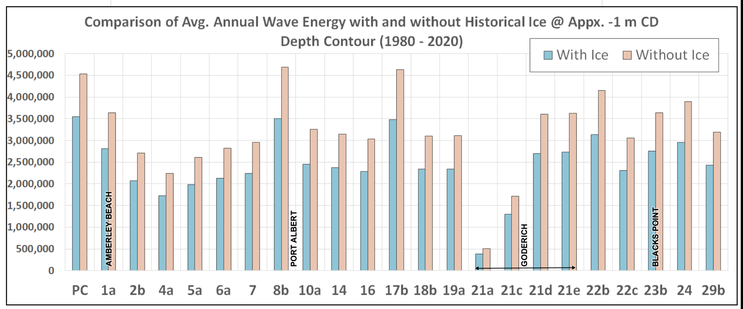
Late Century Warming Projections for Lake Temperature



Source: Seglenieks and Temgoua (2021). Future hydroclimate variables and lake levels for the Great Lakes using data from the Coupled Model Intercomparison Project Phase 5 (draft). Environment and Climate Change Canada.

Change in Ice Conditions (MVCA South)





KEY FINDINGS

1) Without historical ice cover from 1980-2020, wave energy reaching the shore would have been 32% higher
2) Winter wave energy without ice cover would have been 82% higher

MAITLAND CONSERVATION
HAZARD MAPPING STUDY

PREPARED FOR: Maitland Conservation

PREPARED BY: Zuzek inc. ONE WORLD; JL ENGINEERING; DHI The expert in WATER ENVIRONMENTS

Notes: Findings from ongoing technical analysis for study