

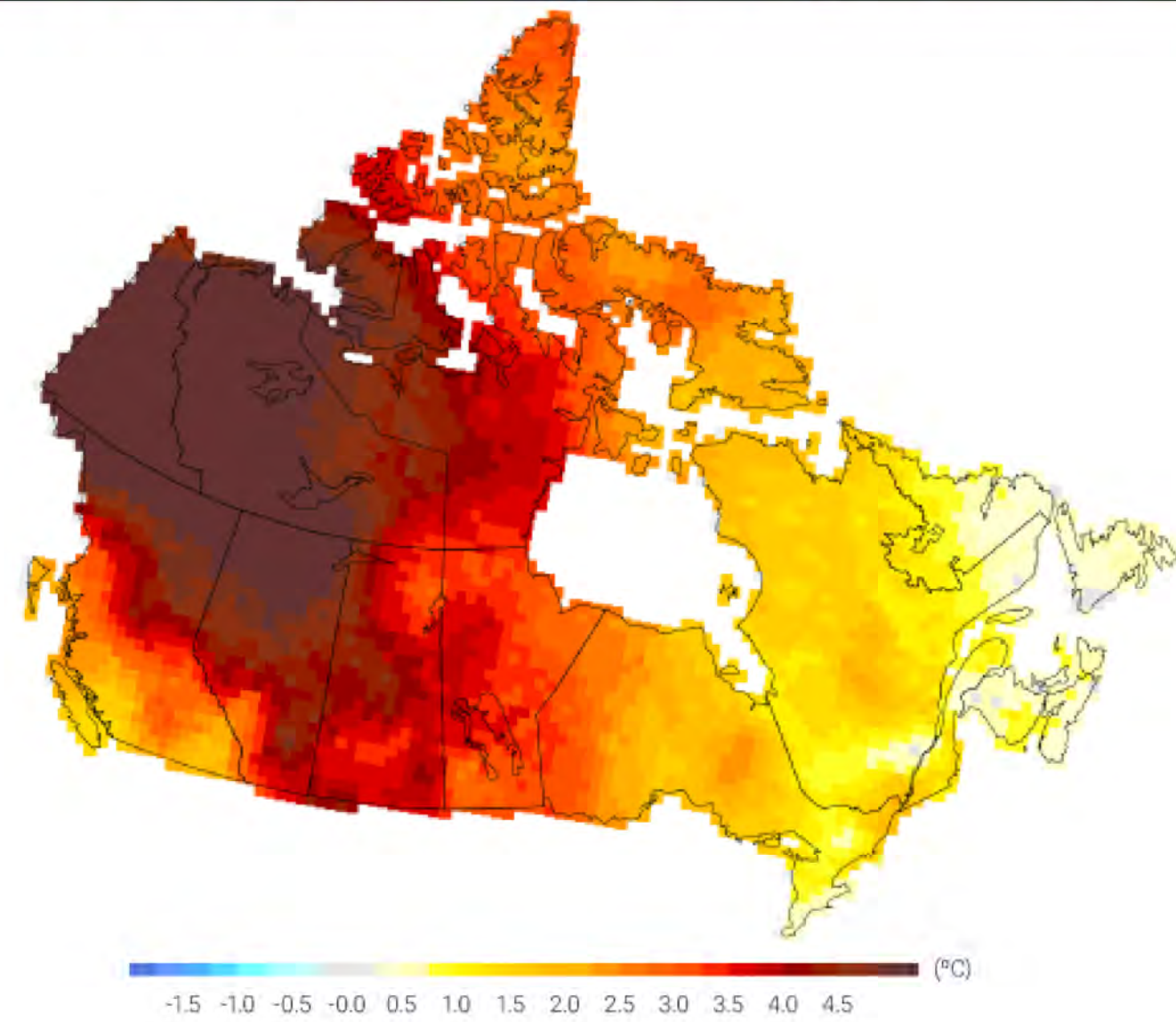
# CLIMATE CHANGE IMPACTS

## 2020 PROVINCIAL POLICY STATEMENT

### 3.1 Natural Hazards:

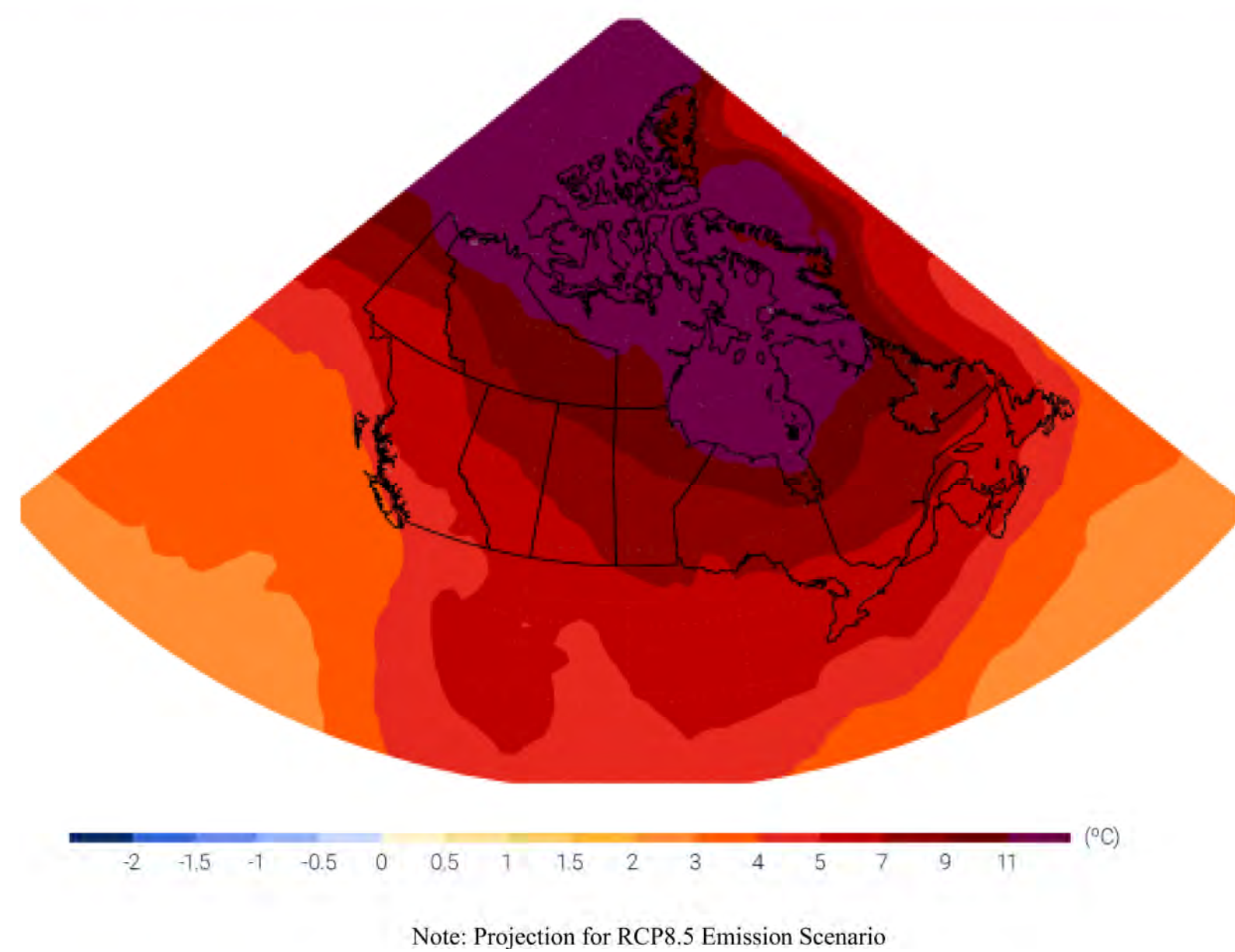
3.1.3 Planning authorities shall prepare for the impacts of a changing climate that may increase the risk associated with natural hazards.

### 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

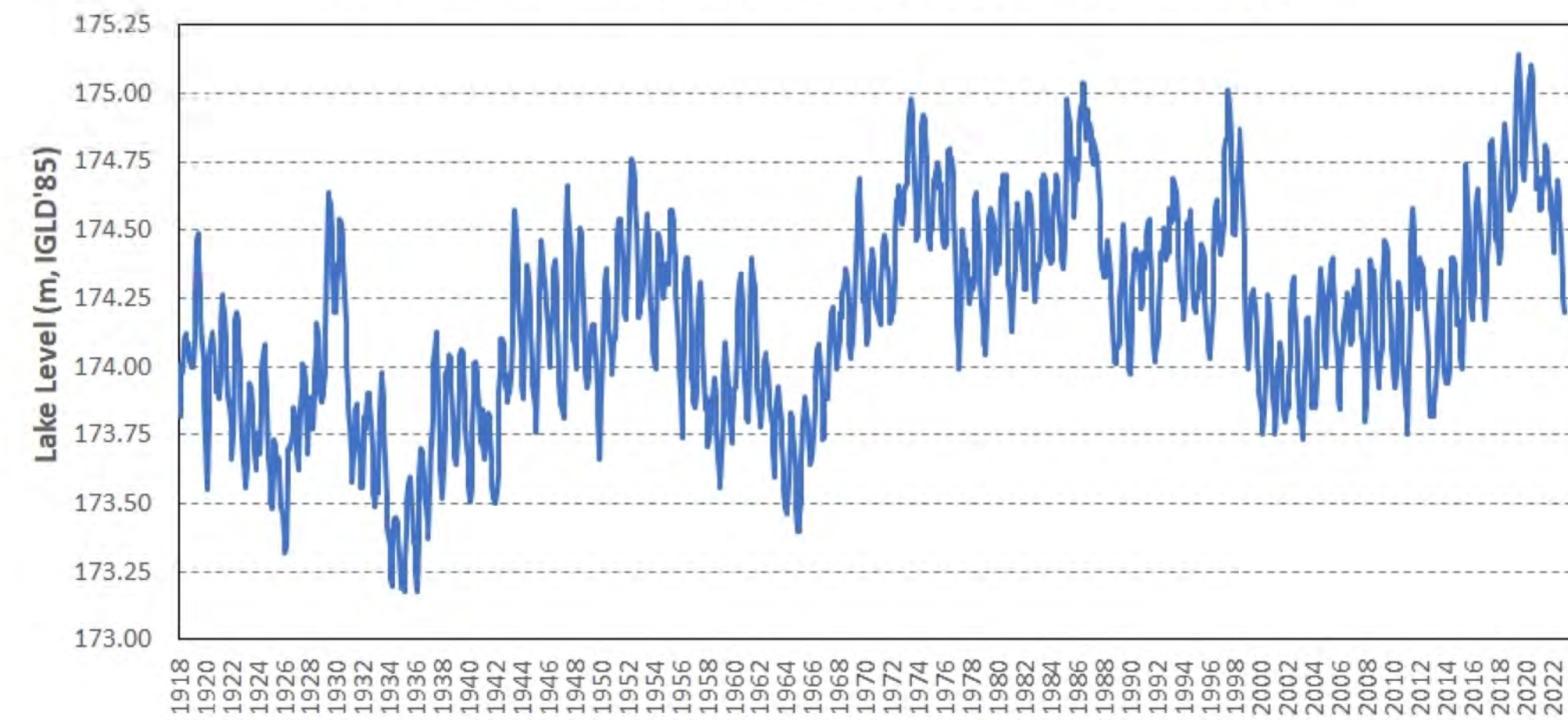


Note: Projection for RCP8.5 Emission Scenario

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'.

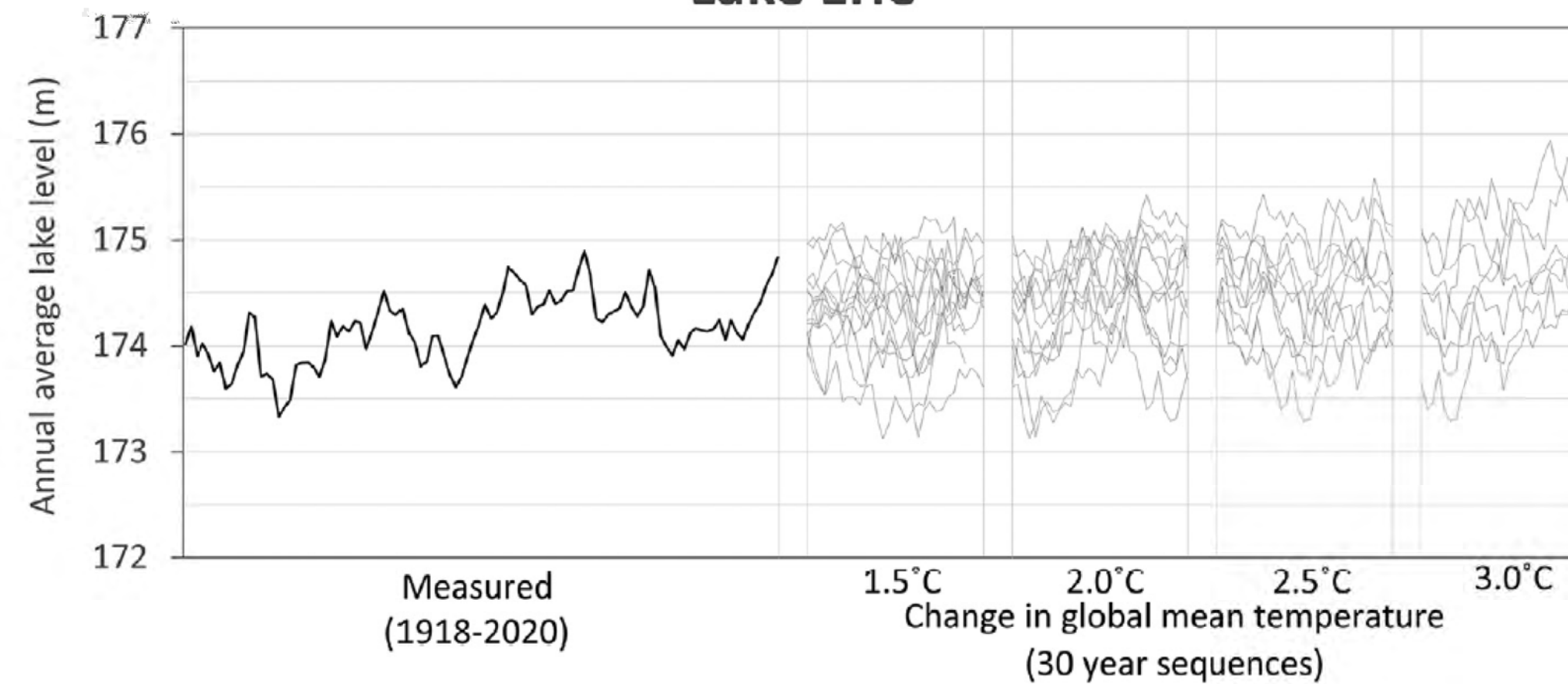
## Historical Measured Lake Levels

Lake Erie Monthly Mean Lake Levels - 1918 to 2022



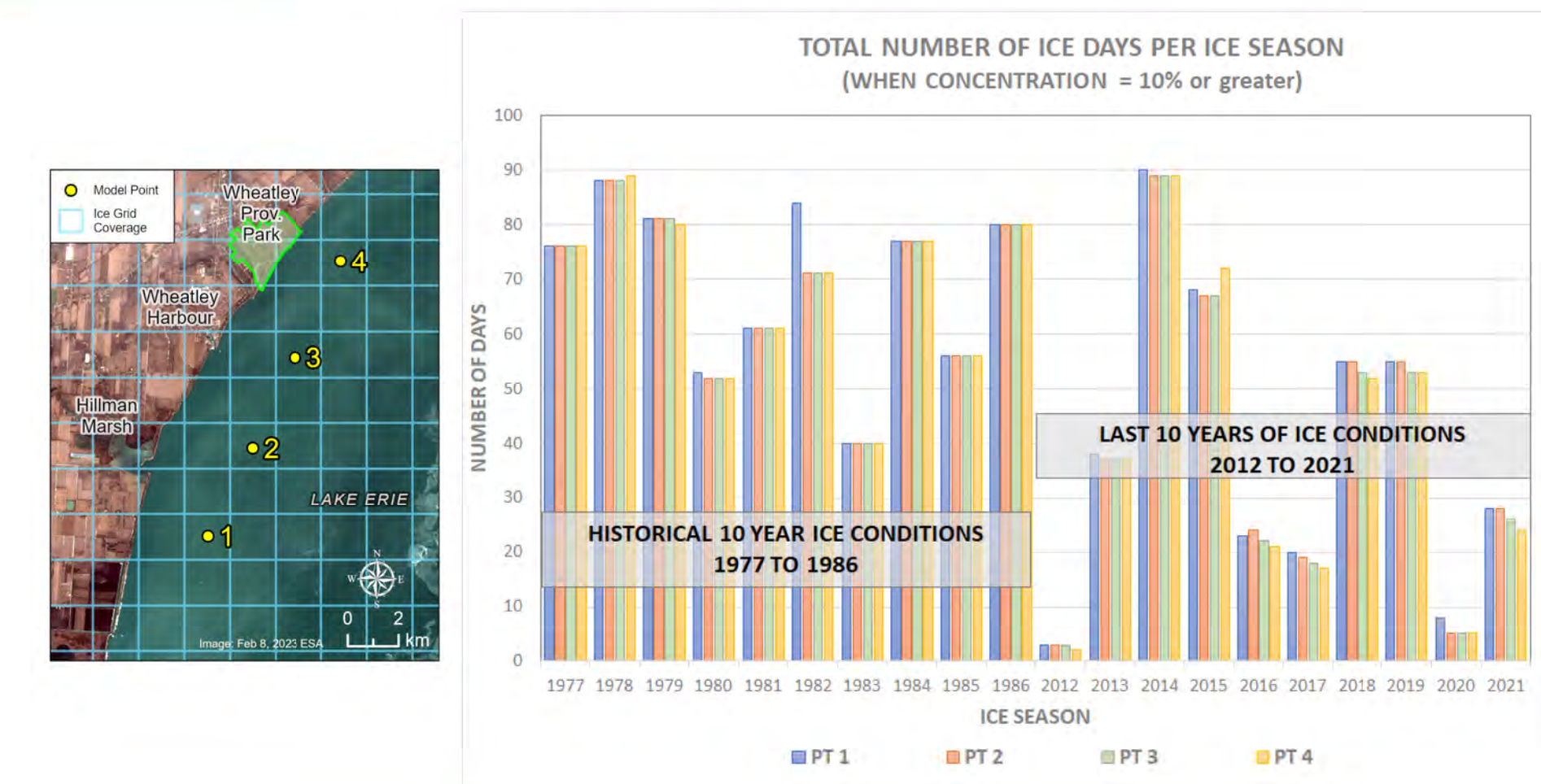
## Future Climate Change Lake Level Projections

Lake Erie

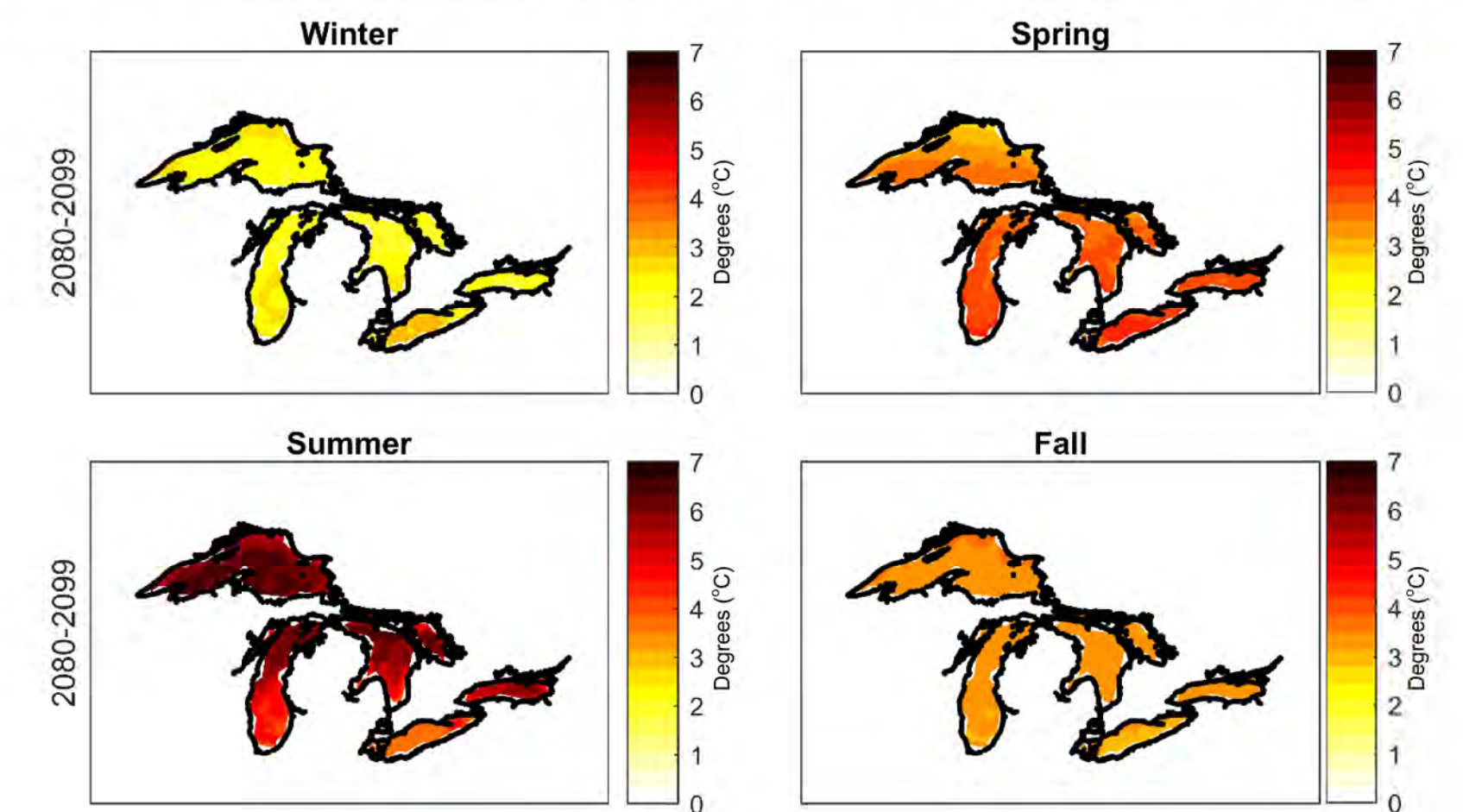


Source: Seglenieks and Temgoua (2022). Future water levels of the Great Lakes under 1.5 C and 3 C warmer climates. Journal of Great Lakes Research

## Example of Ice Loss with a Warming Winter



## Late Century Warming Projections for Lake Temperature



Note: Projection for RCP8.5 Emission Scenario

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.

## Winter Wave Energy Increase for Ice-free Conditions

