Lakes comprise a large portion of the surface cover in the Northern Hemisphere, forming an important part of the cryosphere. Recent studies have demonstrated that ice break-up dates, in particular, have been occurring earlier in many parts of the North over the last 50 years in response to warmer climate during the winter and spring. The timing of lake ice phenological events (e.g. break-up/freeze-up) are useful indicators of climate variability and change, and changes to the present-day ice cover regimes could result in ecosystem changes, and alterations to the energy and water balances. This talk will highlight a) the ways in which lake ice conditions can be monitored, focussing on the past decade, b) the last 30 years of lake ice trends identified through modelling and c) future projections for lake ice across North America.