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**Title:** *Effects of a Changing Cryosphere on Northern Lentic Ecosystems*

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There is growing evidence that the Arctic is being significantly altered and highly susceptible to the effects of a rapidly changing and increasingly variable climate. Freshwater systems and related hydro-ecological processes are particularly sensitive to changes in climate and related impacts on cryospheric components. This paper reports on how changes in permafrost and freshwater-ice regimes have, and are projected to affect lentic ecosystems. Specifically discussed are: a) the role of permafrost degradation (i.e., increased depth of seasonal active layer and/or shoreline thermokarst slumping) on geochemical loadings (e.g., carbon, nitrogen, phosphorus cycling) and resultant primary and secondary production; and, b) changes in the timing, duration and composition of lake-ice on under-ice oxygen and light regimes, which also affect habitat quality. Results focusing on studies from northwestern Canada are provided as examples of such effects. New, integrated monitoring and assessment approaches are also presented. In particular, experiences with the testing of a recently deployed satellite-controlled multi-sensor buoy platform are discussed.