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**Title:** *Thermokarst lake change: from spatiotemporal landscape dynamics to hydrological reflections of permafrost change*

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Recent warming in the Arctic has triggered changes in the cryosphere, including warming and degradation of permafrost. These changes have direct influence on the terrestrial hydrology of the Arctic and, more specifically, on the presence and distribution of thermokarst lakes in arctic regions as such lakes are by definition tightly coupled to the existence and condition of subsurface permafrost. In this study, remotely sensed imagery was used to assess changes in both the size and size distribution of thermokarst lakes for three time periods within the Nadym (48,000 km<sup>2</sup>) and Pur (95,100 km<sup>2</sup>) river basins in Western Siberia, aiming to understand landscape dynamics in a thermokarst lake-rich region. Results show variability in the size and distribution of thermokarst lakes within the two river basins. Over the three periods from 1973 through 1987-1988 to 2007-2009, there is clear predominance for size decrease in the smaller (