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## Late Glacial and Holocene changes in vegetation cover and climate in southern Siberia derived from a 15 kyr long pollen record from Lake Kotokel

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**Abstract.** In this study a radiocarbon-dated pollen record from Lake Kotokel (52°47′ N, 108°07′ E, 458 m a.s.l.) located in southern Siberia east of Lake Baikal was used to derive quantitative characteristics of regional vegetation and climate from about 15 kyr BP (1 kyr=1000 cal. yr) until today. Quantitative reconstruction of the late glacial vegetation and climate dynamics suggests that open steppe and tundra communities predominated in the study area prior to ca. 13.5 kyr BP and again during the Younger Dryas interval, between 12.8 and 11.6 kyr BP. The pollen-based climate reconstruction suggests lower-than-present mean January (~−38°C) and July (~−12°C) temperatures and annual precipitation (~270–300 mm) values during these time intervals. Boreal woodland replaced the primarily open landscape around Kotokel three times at about 14.8–14.7 kyr BP, during the Allerød Interstadial between 13.3–12.8 kyr BP and with the onset of the Holocene interglacial between 11.5 and 10.5 kyr BP, presumably in response to a noticeable increase in precipitation, and in July and January temperatures. The maximal spread of the boreal forest (taiga) communities in the region is associated with a warmer and wetter-than-present climate ( $T_w \sim 17\text{--}18^\circ\text{C}$ ,  $T_c \sim -19^\circ\text{C}$ ,  $P_{\text{ann}} \sim 500\text{--}550\text{ mm}$ ) that occurred ca. 10.8–7.3 kyr BP. During this time interval woody vegetation covered more than 50% of the area within a 21×21 km window around the lake. The pollen-based best modern analogue reconstruction suggests a decrease in woody cover percentages and in all climatic variables about 7–6.5 kyr BP. Our results demonstrate a gradual decrease in precipitation and mean January temperature towards their present-day values in the region around Lake Kotokel since that time.

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