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Paleoclimate changes in continental Asia inferred from Baikal and Hovsgol lacustrine sediment records

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Lake Baikal and Lake Hovsgol, both of which occupy Baikal rift basin, are located in the central part of continental Asia. Lacustrine sediments of these two lakes record long-term environmental changes in the continental interior. In the present study, we analyzed abundances of chemical components of these two lake sediment cores. In the Lake Baikal sediment, the uranium concentration shows a similar fluctuation pattern with the biogenic silica concentration (as a paleotemperature proxy) on a glacial and interglacial scale (i.e., 100-kyr periodicity), whereas these two chemical components an inverse correlation on a centennial to millennial scale during the interglacial and interstadial periods. This means that sedimentation process of biogenic silica and uranium in Lake Baikal is different from each other, suggesting that the uranium concentration of sediment is paleoclimate proxy different from palotemperature proxy (i.e., paleomoisture proxy). Also, comparison of the Baikal uranium concentration with the Hovsgol detrital component indicates a positive correlation during the late Holocene each other. Based on the above assumption, climate of continental Asia become wet condition during the interglacial and interstadial periods and dry condition during the glacial periods. In addition, the climate during interglacial and interstadial periods is characterized by alternation of cold-wet and warm-dry conditions.

Keywords: Paleoclimate changes, Continental Asia, Lacustrine sediments, Lake Baikal, Lake Hovsgol