

## Onset of current climatic regime and long-term solar insolation: implications of long Baikal sediment records

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Long high-resolution records obtained from Lake Baikal sediments (BDP98) suggest that the climate of the Asian continental interior cooled gradually, with some fluctuations. Physical properties of the sediments and biogenic SiO<sub>2</sub> content suggest that major climato-limnological shifts occurred at about 8.5-8.8 Ma, 5.0-6.0 Ma, 3.8-4.0 Ma, 2.6-2.8 Ma, 1.7-1.9 Ma, and 0.8-1.1 Ma, in addition to minor shifts. The amplitude of fluctuations began to increase at about 4.0 Ma; most periods (1000 kyr, 400 kyr, 100 kyr and 40 kyr) have fluctuated more clearly since the time. The major climato-limnological fluctuations have long periods of about 2000 kyr, 1000 kyr and 600 kyr, in addition to the 400 kyr, 100 kyr and 40 kyr, which may also correspond to Milankovitch parameters of eccentricity, suggesting that changes in solar insolation were printed in long-term environmental variations of the eastern Eurasian Continent.

Low summer insolation would increase Northern Hemisphere ice sheets only when climatic conditions allow winter snow to persist all the year. Lake Baikal records reveal that this kind of climatic threshold may have been reached around 4.0 Ma. Insolation minima at about 3.9, 3.8 and 3.7 Ma, which are obliquity related insolation minima, may have triggered the Milankovitch type climatic oscillations in the current climatic regime (beginning of the major Northern Hemisphere ice sheets). Intensification of the climatic oscillations at about 2.8 Ma is probably connected to another decrease in the insolation (another obliquity related insolation minima). It seems to have triggered larger oscillations in the current climatic regime of late Pliocene and Pleistocene.