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Paleoenvironmental changes during the last 460ka shown in biogenic silica profile of Lake Biwa, Japan

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We analyzed biogenic silica content (BSC) of the Takashima-oki Drilling Core over the past ca. 46,000 years with high time resolution in the range of 30-90 years. The BSC record shows strong similarities with Milankovic cycle, D-O events and Heinrich events. Moreover, time-frequency analysis of the BSC record identified major periodicities discussed on several previous studies. In addition, our study in Lake Biwa clarified strong correlation between BSC and observed mean summer temperature during the past 100 years, thus allowed us to derive empirical equation of BSC vs. mean summer temperature. We therefore reconstructed mean summer temperature variation during the past 46 kyr using obtained empirical equations.

Keywords: Lake Biwa, paleoenvironment, sediment, biogenic silica