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Last 100ka biogenic silica content variation in Lake Biwa, Japan and its factors

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Biogenic silica content (BSC) variation during the last 100ka has been clarified by using molybdenum-yellow method. Samples analyzed were taken at Off-Takashima Drilling Site of Northern Lake Biwa and the time resolution was less than 100 years.

Biogenic silica is one of the main components of diatom frustules and its content variation is regarded as to reflect primary production changes in lakes. Production rate of diatoms is influenced by temperature and precipitation during blooms. Consequently, BSC is used as one of good indicators of climate change at Lake Baikal and Lake Malawi, for example.

Result of frequency spectrum analysis shows good correlation of BSC variation to that of Milankovitch precession cycle and obliquity cycle and the result of shorter term frequency spectrum analysis showed that of ocean circulation and solar activity.

BSC of Lake Biwa also shows short term variation lasting decades to centuries. These variations can be correlated to those of Chinese Interstadials and Greenland Interstadials.

Keywords: Lake Biwa, biogenic silica, interstadials, molybdenum-yellow method