

A record of summer precipitation change for the past 30 ka based on diatom valve flux from Lake Biwa in Japan

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Records of Asian summer monsoon changes i.e. humidity/aridity changes has been revealed widely from China and Tibetan Plateau. Recent study of reconstructions of regional humidity/aridity patterns shows the different fluctuation patterns within the western and eastern area of the region during the last 30 ka. In Japanese Islands there is less record of summer precipitation, therefore, relationship between the humidity/aridity changes in China and summer precipitation changes in Japanese Islands is still unclear. Here, we examine diatom valves flux in lacustrine sediment of Lake Biwa using the 140-m core, and to test it possibility as a proxy for summer precipitation. Furthermore, we discuss the relationship between the regional humidity/aridity changes in China and summer precipitation in Japan.

Based on the diatom valve flux as a proxy of summer precipitation level, precipitation levels in Lake Biwa watershed region are high during 31-29 ka, 7-0 ka cal BP, and low during 29-7 ka cal BP in that there are periods of minor increased levels at 27, 26, 21.5, 14.5 ka cal BP and periods of decreased levels at 29, 26.5, 22-23, 16.5, 12-11, 9.5, 8 ka cal BP.

Though the pattern of summer precipitation changes in Lake Biwa watershed region shows similar pattern to humidity/aridity changes in China, there are several different patterns between the records. The climate condition in China is wet during 8-10 ka cal BP, by contrast, that in Lake Biwa region is dry at the same period. After 7 ka cal BP, the humidity record in China shows decreased trend, by contrast, that in Lake Biwa region, increased trend. These different patterns of humidity/aridity changes indicate a reflection of a different climate control and behavior for moisture condition between the regions.