

Environmental changes on the southern Kyushu over the last 30 ka reconstructed from the sediments of Lake Imuta-ike

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We present paleo-environmental record on the southern Kyushu area, from the geochemical evidences for sediment core of Lake Imuta-ike, Kagoshima Prefecture over the last 30,000 years.

Lake Imuta-ike, is a volcanic crater lake, located on the southern part of Kyushu Island. The lake serves a protected natural habitat of rare animals, and is a registered wetland under the Ramsar Conservation. The environment of the lake and its vicinity is of particular importance, because there have been no geological studies so far.

We collected 25-m length sediment cores from bottom of the lake in February 2011. Using the core, we had firstly undertook a series of analysis, e.g., lithological observation, non-destructive X-ray CT scanning, identification of tephra, ¹⁴C dating and sequential measurements of physical properties and magnetic susceptibility. By these analysis, we could build up the stratigraphy and the precise chronology of the core.

For reconstructing past environmental changes over the last 30,000 years, we measured total organic carbon (TOC), total nitrogen (TN), and total sulfur (TS) contents by CNS element analyzer as well as major and trace elements by ICP-AES with 2.3-cm interval bulk samples through the core.

As the results, in the last glacial after 30,000 cal yr BP, the proxy records of detritus inputs by climate changes have fluctuated with millennial scale and temporally increased at the periods of 27, 25-24, 22-21, 19-18, and 16 cal kyrs BP. These climate cool/dry events could be compared with the stadials in the North Atlantic region such as the Heinrich events. During the last glacial-interglacial transition (the LGIT, 15-9 ka), corresponding periods to the Younger Dryas (YD) stadial are identified as cold climate condition from 14.5 to 12.0 cal kyrs. In the Holocene, three large change of proxy records was occurred at 8,000, 4,000 and 2,000 cal yr BP.

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