

HQR023-15

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Holocene environmental evolution based on lake deposits in Central Eurasia

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To reconstruct environmental evolution in Ili Delta and Balkhash Lake areas, we have continued geological, geomorphological and paleoenvironmental researches under the Ili project, RIHN, since 2007 (Endo et al., 2010). Following the reconstruction of lake level change in the last 2000 years using 2007 core in the western part of Balkhash Lake, we took several cores in 2009 in the easternmost part of the lake, where is the deepest part of the lake.

These 2009 cores, covering almost Holocene, have been analyzed using pollen, diatom, and ostracod, and also geochemistry and magnetic properties. Two cores, 0901 and 0902, provide us continuous environmental records, which are combined with geological and geomorphological events and evidences.

Especially, in mid Holocene, highly lowered lake level stage is recognized from 5500 to 3500 years ago, when dry vegetation like desert was dominant and coniferous forest decreased. It suggests warm and dry climate is dominated.

In the lowest reaches of Heihe, the middle Inner Mongolian, about 20 paleoshore- lines (gravel bars) were dated by AMS 14C method. However, from 6000 to 3500 years BP there are no gravel bars, suggesting very low lake level dominant. After 3500 years BP, alluvial processes were reactivated and lake level attained to the highest (Endo et al., 2006).

Nearly same situation is reported in Mongolian lake, where 5800 to 3100 years BP, warm and dry conditions were dominant using diatom and pollen analyses (Wang et al., 2011). They proposed the existence of mid Holocene drought probably in east and central Asia.

We will compare the paleoenvironmental results in Central Eurasia with those of the eastern part during the middle Holocene, and discuss the extension of warm and dry climate, and the cause of such climate change.

References

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Keywords: lake level change, Holocene, hyper arid stage, pollen analysis, ostracod analysis, diatom analysis