

## Wetter condition during the Heinrich Event 1? deduced from detrital flux and provenance records from Lake Suigetsu

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Stalagmites in Chinese caves, loess/paleosol sequence of the Chinese Loess Plateau, and lacustrine sediments in Asian countries are favorable to monitor the past changes in East Asian summer monsoon (EASM). However, not much is known about EASM spatial changes during the last deglaciation mostly due to the large uncertainty in the chronologies of the lacustrine and loess/paleosol sediments.

Lake Suigetsu in Central Japan is known for the varved sediments which cover at least last 70 kyr. Recently, accurate age model is established for SG06 core based on varve counting and more than 800 radiocarbon dates (e.g., Ramsey et al., 2012; Staff et al., 2013). Here we examine the precipitation changes in Central Japan during the last deglaciation from the flux and provenance changes of the detrital materials found in the SG06 core sediment.

We analysed flux of detrital materials for the last glacial part of the SG06 core (1402-1810 cm interval of the SG06 composite depth) with 1 cm resolution (corresponding to 7-13 yrs) and estimated provenance of the detrital materials using chemical and mineral compositions, grain sizes, and electron spin resonance intensity and crystallinity of the quartz. The reconstructed flux of detrital materials are characterized by the millennial-scale increases exceeding 12 mg/cm<sup>2</sup>/yr at 16,600-14,800 and 13,700-12,800 SG06<sub>2012</sub> yr BP and short-lived (decadal to centennial) episodes of higher flux repeated more than thirty times throughout the deglaciation interval.

The grain size, color, chemical composition, and crystallinity of quartz records suggest that the increase of the detrital materials during 16,600-14,800 SG06<sub>2012</sub> yr BP was mainly due to increase of suspended particles supplied from Hasu river through Lake Mikata, that is located immediately upstream of Lake Suigetsu and trapping most of coarse detrital grains. In contrast, the increase of detrital materials during 13,700-12,800 SG06<sub>2012</sub> yr BP likely reflects local slope erosion around the lake and partly the long-distance aeolian transport from the Asian deserts. Our result suggests the wetter condition in Central Japan during the Heinrich Event 1 in contrast to the dry condition in Yangtze River Basin, China, according to the  $\delta^{18}O$  stalagmite record (Wang et al., 2001).

Keywords: Lake Suigetsu, Heinrich Event, East Asian Summer Monsoon, detrital material, quartz