

Decadal to centennial-scale Asian dust transport changes during the last thousand years recorded in Lake Suigetsu sediment

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Knowledge of decadal to centennial-scale variations in Asian dust transport is critical to understand the interactions between Asian dust and natural environment, and is also important to estimate past atmospheric circulation changes. Here we estimated temporal changes in the content and depositional flux of aeolian dust in sediment core SG12 from Lake Suigetsu, central Japan, during the last thousand years based on the depositional flux (please see Suzuki et al., presented in this session) and grain size of detrital materials.

First we focused on the last century and compared the estimated dust flux changes to the meteorological records. The estimated dust flux shows decadal-scale change with the decrease during 1952–1974, which could be explained by weaker westerlies in lower latitudes including central Japan, reflecting weaker Aleutian Low during the corresponding period.

Similar decadal-scale changes are observed throughout last thousand years, suggesting dominance of similar decadal-scale climate systems in the East Asia and the north Pacific. In addition, the dust record exhibits centennial-scale changes with the decreases during 11–12th, 15th and 18–19th centuries. We will further compare our result with pollen record from Lake Suigetsu and tree-ring records in Asian region, and discuss nature and mechanisms of decadal and centennial-scale climate changes in East Asia.

Keywords: Asian dust, last 1000 years, Lake Suigetsu, decadal-variation, centennial-variation