

Flooding history in Lake Nakaumi of western Japan inferred from sediment records during the last 700 years

*Yuki Ota^{1,2,3}, Hodaka Kawahata^{1,2,3}, Takaharu Sato⁴, Koji Seto⁵

1. Department of Earth and Planetary Science, The University of Tokyo, 2. Atmosphere Ocean Research Institute, the University of Tokyo, 3. Institute of Geology and Geoinformation, National Institute of Advanced Industrial Science and Technology, 4. Graduate School of Integrated Arts and Sciences, Hiroshima University, 5. Research Center for Coastal Lagoon Environments, Shimane University

Management of flood risk to local communities located near river mouths can benefit from a knowledge-based approach to flooding history. On some rivers in western Japan, flood events since the 16th century have been well documented in the literature. However, the data of those events are insufficient for an objective evaluation of flooding such as its intensity. Therefore, we analyzed a ¹⁴C-dated sediment core recovered from near the linashi River mouth in Lake Nakaumi, western Japan, and reconstructed extreme flooding records in the past 700 years from rock magnetism, grain-size distribution and sediment geochemistry. The sediment core contained three black layers, characterized by high magnetic susceptibility (MS), a low anhysteretic remanent magnetization to saturation isothermal remanent magnetization, a high total organic carbon (TOC) to total nitrogen ratio, and coarse mean grain size, that we identified as possible flooding event deposits. In addition, the chemical index of alteration was low and the TOC to total sulfur ratio was high in these layers, indicating intensified erosion sediments associated with more freshwater inflow due to the flood events. We tentatively correlated the three event deposits with historically documented flooding events along the linashi River in AD 1596, 1666, and 1826. The magnitudes of the variations in sedimentary properties relating to rock magnetism and geochemistry suggest that the smallest was the AD 1666 event.

Keywords: Lake Nakaumi, Floods, Sediments