



Flooding events spanning the last 700 years constrained by sedimentary records in Lake Nakaumi, western Japan

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Management of flood risk can benefit from a knowledge-based approach to flooding history. However, the data on such events are often insufficient for an objective evaluation of flooding characteristics such as their intensity. Therefore, we analyzed a ¹⁴C-dated sediment core recovered from near the Iinashi River mouth in Lake Nakaumi, western Japan, and reconstructed flooding history over 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, low anhysteretic remanent magnetization to saturation isothermal remanent magnetization ratio, high total organic carbon (TOC) to total nitrogen ratio, and coarse mean grain size, which we identified as possible flooding event deposits. Moreover, the chemical index of alteration was low and the TOC to total sulfur ratio was high in these layers, indicating intensified erosion associated with more freshwater inflow due to the flood events. Although several historical documents indicates 11 times of flooding in the Iinashi river, this study showed sedimentary evidence of only three floods, which suggests that these three floods were extreme. We tentatively correlated the three event deposits with historical floods along the Iinashi River in AD 1596, 1666 and 1826. The variations in rock magnetic and geochemical properties suggest that the flooding in AD 1666 may have been the least extreme of the events detected in the core.