



A high-resolution flood chronology recovered from varved sediments of Lake Mondsee of the last 7000 years and the triggering mechanisms beyond (Upper Austria)

Tina Swierczynski (1), Lucas Kämpf (1), Philip Müller (2), Stefan Lauterbach (1), Achim Brauer (1), and Bruno Merz (2)

(1) German Research Centre for Geosciences, 5.2 Climate Dynamics and Landscape Evolution, Potsdam, Germany (swier@gfz-potsdam.de), (2) German Research Centre for Geosciences, 5.4 Hydrology, Potsdam, Germany

Annually laminated (varved) lake sediments provide high-resolution records of paleo-environmental conditions, such as extreme discharge events. A combination of sedimentological and geochemical methods allow to identify local debris flow events and catchment-scale flood events as recorded in varved sediments of Lake Mondsee. In total, 18 multi-decadal scale summer flood episodes are identified at Lake Mondsee for the last 7000 years. An increased flood activity occurred during the last 1500 years. In West-Central Europe, the onset of higher hydrological activity occurred much earlier at around 2800 years BP. These regional disparities of flood activity might be due to a change in atmospheric circulation patterns affecting different regions of Europe or to the sensitivity of the individual flood archives recording floods. A multi-core analysis approach reveals distinguished distribution patterns of detrital layers pointing out that the seasonality and sources of detrital input besides flood amplitude are important parameters beyond the flood layer deposition in Lake Mondsee. This emphasizes that a better knowledge about the processes leading to the formation of flood layers (e.g. flood thresholds) fosters an improved interpretation of long flood chronologies from lake sediments.