



## **Varve chronology of the last 3000 years of the sediment record from Lake Mondsee (Upper Austria)**

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Reconstructing earth system response to climate and environmental change largely relies on robust chronologies. Thus for the DecLakes project a multiple dating concept including varve chronology and radiocarbon dating is applied. Within this frame first varve chronological results for the upper 6 m of the sediments from Lake Mondsee are presented.

Fine laminations are preserved almost continuously in the upper part of the sediment record. Microfacies analyses revealed that the light/dark couplets represent true calcite varves. The light layers consist of endogenic calcite precipitating in the spring/summer season when water temperature was high and the lake was biological productive. The darker autumn/winter sub-layers predominantly reflect detrital sediment fluxes of organic and minerogenic matter but also include abundant diatom frustules. Occasionally intercalated within in the regular varve succession are detrital layers with a thickness ranging from 0.1 to 32 mm. These layers reflect surface runoff events probably caused by extreme precipitation or flooding.

The chronology was established by repeated counting of varves in thin sections under a petrographic microscope. These results are compared with counts on scans from thin sections and high-resolution digital photos as well as digital image processing of the latter.

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