



Holocene climate oscillations and climate events imprinted into varved lacustrine sediments of Western Europe

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Composite varve dated sediment profiles from Lake Holzmaar and Lake Meerfelder Maar situated in the German Eifel region have been used to investigate Holocene climate variability within a paired lake study. Stable carbon and nitrogen isotopes of bulk organic matter were determined continuously resulting in isotope records with a mean time resolution of 20-50 years. Differences in the isotopic response between these small maar lakes help to explore the sensitivity of different lake systems to similar environmental and climatic changes. The isotope records give evidence of major Holocene climate events in Europe around 9,600, 7,300, 5,500 and 2,700 years BP (Lücke et al., 2003, Baier et al., 2004). Comparisons with marine records from the north-east Atlantic indicate a clear temporal synchronicity between terrestrial and marine signals. In addition, higher frequency oscillations in the order of several hundred years are revealed by the stable nitrogen isotope records from Lake Holzmaar and Lake Meerfelder Maar. The forcing factors for this behaviour can probably be found in atmospheric circulation changes or variations in solar activity.

Lücke, A., Schleser, G.H., Zolitschka, B. & Negendank, J.F.W. (2003) A continuous Lateglacial and Holocene organic carbon isotope record of lacustrine palaeoproductivity and climatic change derived from varved lake sediments of Lake Holzmaar, Germany. *Quaternary Science Reviews* 22, 569-580.

Baier, J., Lücke, A., Negendank, J.F.W., Schleser, G.H. & Zolitschka, B. (2004) Diatom and geochemical evidence of mid- to late Holocene climatic changes at Lake Holzmaar, West-Eifel (Germany). *Quaternary International* 113, 81-96.