



## **Response of varved German maar lakes to climate changes at around 2750 BP**

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Varve micro-facies and seasonal layer thickness variations in sediments from Lake Meerfelder Maar (Eifel, Germany) are regarded as seasonal climate proxies. Within the studied 1200-year time window (3300 – 2100 varve years BP) a 200-year period of distinctly increased varve thickness occurs between ca 2750 and 2550 varve years BP. In addition, the seasonal structure and composition of varves also changed during this period. Micro facies analysis reveals that both massive diatom blooms mainly in spring and increased flux of detrital minerogenic matter during spring and autumn circulation caused higher varve thickness. The internal structure of the period of changed varve deposition exhibits further details like a strongly increased interannual variability suggesting a higher frequency of extreme weather conditions in the transition seasons. The observed period of varve changes correlates with a peak in atmospheric  $^{14}\text{C}$  concentrations as reconstructed from tree rings. This increase in  $^{14}\text{C}$  concentration is considered as one of the most pronounced solar minima of a 'medium-period' cycle in the Holocene. The coincidence with the change in varve deposition suggests solar variability as trigger of regional climate change. Comparison of the Meerfelder Maar data with the nearby varve record from Lake Holzmaar confirms this interpretation and further provides indications for regional settlement changes in the Eifel region.