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Tephra anchored floating varve chronology covering ca. 19.0-11.0 ka BP in new core from Lake Lago Grande di Monticchio: preliminary results

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The high-resolution Monticchio (MON) sediment record has been demonstrated to be a key archive for reconstructing climate and environmental changes in the central Mediterranean for the last glacial-interglacial cycle. New sediment cores have been retrieved in April 2016 to investigate particularly the transition from the Last Glacial Maximum into the Holocene with a new high-resolution methodological approach. A floating varve chronology spanning ca. 8,000 years has been established by varve counting on thin sections using a petrographic microscope and layer thickness based sedimentation rate estimates for non- or poorly varved intervals. Varve counting is based on detailed seasonal deposition models of five different varve types. The resulting floating chronology consist of 66.6% individually counted varves and 33.4% interpolated years. The uncertainty estimate of the floating chronology has been determined by double counting and amounts to ±5.8%.

The floating chronology is anchored to an absolute chronology using the Agnano Pomici Principali tephra, dated at 11,999±52 cal yrs BP from paleosols overlying proximal tephra (Bronk Ramsey et al. 2015), is a suitable anchoring point to cross correlation. The resulting varve-based chronology has been compared with several other marker tephras dated elsewhere including the Soccavo 4 tephra (11,700±150 cal yrs BP), the Neapolitan Yellow Tuff (NYT; 14,194±172 cal yrs BP) and the Greenish tephra (19226±104 cal yrs BP). Further comparison with published (Hajdas et al. 1997) and new radiocarbon dates from different terrestrial macro remains are discussed in this paper. This study presents an independent chronology for the last glacial/interglacial transition for a comparison of MON data with high-resolution lake records western and central Europe.

References

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