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A new sediment core from Lake Lago Grande di Monticchio extending back to ca. 29,000 BP: 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 (e.g., Allen et al., 1999; Brauer et al., 2007; Martin Puertas et al., 2014). 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. Accordingly, 5 new parallel sediment cores were obtained forming a 12.5 m composite profile covering the last ca. 29,000 yrs. The preliminary age-depth model of the new sediment profile is based on tephrochronology and implements 7 published dates of well-known Italian tephras. These include ages of the Mercato (TM-6b; 8,530±100 cal yrs BP), Verdoline (TM-12; 19,226±104 cal yrs BP) and Pomici di Base (TM-13; 22,081±173 cal yrs BP) eruptions of Vesuvius, as well as the Soccavo (11,700±150 cal yrs BP), Pomici Principali (TM-7b; 12,037±122 cal yrs BP), Neapolitan Yellow Tuff (TM-8; 14,194±172 cal yrs BP) and Y-3 eruptions (TM-15; 29,059±178 cal yrs BP) of the Phlegraean Fields. Additional radiocarbon dating and varve counting on the new cores is currently in progress for establishing a more detailed chronology. Here we present first high-resolution μ-XRF element scanner data combined with new micro-facies data covering the interval between the Pomici di Base (22081±173 cal yrs BP) and Mercato (8530±100 cal yrs BP) tephra layers. Tephra layers and reworked volcanic ash are well reflected by peaks in potassium. Detrital sediments indicated by Titanium (Ti) gradually decrease from the Last Glacial Maximum until the lateglacial interstadial with relatively low values and only minor fluctuations. The Younger Dryas is reflected by recurrence of detrital sediments without reaching pleniglacial values. Si/Ti ratios indicate relative variations of diatom productivity in the lake and show only a weak increase during the late glacial interstadial and subsequent decline during the Younger Dryas before the main increase in the early Holocene. Further work including biomarker stable isotopes will particularly focus on the Younger Dryas climate change and the comparison of MON data with high-resolution lake records in western and central Europe.

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