Mediterranean climate variability during the last interglacial

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Fucino Basin, an intermountain basin located in the Central Apennines (42.00°N,13.56°E, 670-700 m a.s.l.), is a key site for reconstructing past climate oscillations in the W-Mediterranean region. It displays a ~1 km thick, continuous lacustrine sedimentary succession spanning over the last 1.5 Ma [1]. Here we present a multi-proxy record obtained from the upper part of the sedimentary succession, corresponding to the last 190 ka. Several tephra layers [2] allow the establishment of a robust, independent chronology for the observed lithological and biogeochemical changes. We reconstruct time series for processes of catchment erosion (Ca/Ti ratio), lake primary productivity (TIC, TOC/TN), and lake water balance ($\delta^{18}O_{cal.}$) and focus particularly on the environmental and climatic variability during the Last Interglacial and the subsequent glacial inception (130-70 ka period). Different proxies show a strong coherence and depict a first interval of warm and humid climate with reduced variability between ca. 129 and 116 ka, followed by progressive cooling associated with increasing instability on millennial-centennial scale. Our record shows striking resemblance with speleothem and pollen data from the Mediterranean region and with Mediterranean and North Atlantic sea surface temperature records, indicating a strong sensitivity of the local environmental variability to regional and extra-regional climate patterns.

[1] Giaccio, B. *et al.* (2015) *Sci. Drill.* 20, 13–19. [2] Giaccio, B. *et al.* (2017) *Quat. Sci. Rev.* 158, 211-234.