
The lacustrine paleoclimatic record from the Sulmona Basin (central Italy): postcards from past interglacial periods

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Résumé

The study of past interglacial periods allows to disentangle the sensitivity of the Earth System to different forcing and can provide insights into climate processes and feedbacks operating under globally warm conditions, a key issue in the context of ongoing and future climate change (Tzedakis et al., 2009). The Sulmona paleolake (central Italy) existed discontinuously since the Lower-Middle Pleistocene, and has emerged in the last years as an important paleoclimatic archive for past warm intervals in the central Mediterranean (e.g. Giaccio et al., 2015; Regattieri et al., 2019 and references therein). Lacustrine sediments deposited during several Middle and Upper Pleistocene intervals, comprising the Marine Isotope Stages (MIS) 19-17, 12-late 11 and 5 were investigated at high resolution and with a multiproxy approach. The $\delta^{18}\text{O}$ of the endogenic carbonate records past hydrological changes, mostly rainfall amount variability in the high-altitude recharge area that can be tracked at regional and extra-regional scale and particularly in the North Atlantic region. Other proxies such as the $\delta^{13}\text{C}$, mineralogy, CaCO_3 content and the trace elements distribution allows to reconstruct in detail the local environmental responses. The Sulmona record is anchored to an independent chronology based on tephrostratigraphy and tephrochronology and thus it allows to shed light on mechanisms and expression of abrupt climate variability and on the sensitivity of the climate systems to different combinations of boundary conditions. Here we present some of previous and in progress results from the Sulmona Basin, particularly focussing on occurrence and dynamics of centennial to millennial scale variability during warm periods of the past.

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