



MIS5 hydrological variability from continental carbonates from the Sulmona Basin (central Italy)

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There are few highly resolved, chronologically well-anchored continental records documenting the MIS5 climatic instability over Mediterranean area, particularly for montane sites. Understanding rapid climate changes in high-altitude areas is of particular relevance because water availability in the Mediterranean basin is generally scarce and unevenly distributed, and mostly dependent on runoff from mountain areas. Here we present a multiproxy record ($\delta^{18}\text{O}$, $\delta^{13}\text{C}$ and CaCO_3 content) from a lacustrine succession in the Sulmona basin (Abruzzo, central Italy) which spans the period ca. 90 to 120 ka. The succession is chronologically anchored by means on tephrochronology ($^{40}\text{Ar}/^{39}\text{Ar}$ dating) and tephra correlations. The observed millennial variability is interpreted in terms of hydrological changes (i.e. amount and seasonality of the precipitation) and it is consistent with coeval well dated speleothem isotope record from central Italy, testifying the regional significance of $\delta^{18}\text{O}$ variations and the accuracy of the proposed age model. The observed features correlate well also with Greenland stadials/interstadials from GI25 to GI22 and with North Atlantic cold events from C25 to C22, which are expressed as period of reduced precipitation. The correlations with high latitudes records indicate a strong Mediterranean-North Atlantic climate teleconnection during this period. The record also show different amplitude and expression of the wetter period interspersed among the Greenland stadials/North Atlantic C events. Correlations with pollen records allow to disentangle the seasonality pattern of the precipitation and potentially to unravel the modulation of the hydrological signal exerted by low-latitudes teleconnections on Mediterranean climate, especially during periods of enhanced monsoon activity.