

Timing and progression of Mediterranean climate during MIS5 as deduced by Speleothem records from corchia cave (Central Italy)

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Prominent, sub-Milankovitch climatic instability dominates the palaeoclimate record for the last glacial period, particularly in archives sourced from the North Atlantic region. A growing number of studies have suggested this climatic instability affected the Mediterranean basin. We present a continuous, highly resolved (decadal to centennial scale) isotopic record obtained from Corchia Cave. The isotope time series has been assembled by stacking four separate stalagmites records spanning the period between 140 and 90 ka. The lowest $\delta^{18}\text{O}$ values, representing the wettest and probably the warmest interval, started at 130 ka and ending abruptly at 126 ka. A long-term trend of increasing $\delta^{18}\text{O}$ values is present between ca. 126 and 114 ka, which is punctuated by century-scale abrupt events of increasing $\delta^{18}\text{O}$ and $\delta^{13}\text{C}$ values at ca. 126, 123, 121, 119, 116 and 114 ka. Some of these events appear to correlate with cooling events C25-C27 in North Atlantic. Two prominent cooling/drying events are clearly recognizable centred at ca. 109 and 104 ka (corresponding to C24 and C23 cold events in the North Atlantic), which are in excellent agreement with two dry/cold events at Monticchio pollen record in Southern Italy. The record terminated with a cold/dry phase at ca. 88 ka corresponding to C21 cooling in North Atlantic.

Magma storage and ascent conditions beneath Pico And Faial Islands (Azores Islands). A study on fluid inclusions

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In the islands of Faial and Pico (the Azores), fluid inclusions are hosted in megacrysts of olivine (Mg#80-88) and clinopyroxene (Mg#79-90) in highly porphyritic lavas and in mineral assemblages of ultramafic xenoliths. Only few inclusions are contained in olivine phenocrysts (Mg#<80) and plagioclases in poorly porphyritic lavas. Trails of late-stage inclusions are predominant over isolated early stage inclusions. The former experienced re-equilibration and consist of pure CO_2 ($T_m = -56.5 \div -57.2$). The latter have the same composition but may contain dypingite or Mg-calcite, which indicates that in earlier times water was present along with CO_2 .

Barometric data indicate that inclusions in xenoliths re-equilibrated at 570-586 MPa (19.7-21.2 km), in poorly porphyritic lavas from fissure zones and at the central volcano of Faial, at 465-508 MPa (16.4-18.1 km), and at Pico Volcano at 342-437 MPa (12.5-16.5 km). Shallow conditions of trapping/re-equilibration were recorded at 156 MPa for the volcano of Faial (5.6 km) and at 194 MPa for the volcano of Pico (7.1 km) in phenocrysts of the mugearites. These pressures correspond to the magma ponding and to its crystallization and can be useful for tracing the progressive thickening of a dense transition zone, below the geophysical Moho. The ability to rapidly withdrawal of the stored magmas from these volcanic systems strictly depends on the different tectonic styles, acting in the transition zone. Tectonics also plays a major role in the evolution of magmas, favouring the formation of small-lived intracrustal reservoirs, not necessarily coaxial with main conduit system.