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Evidence for humid glacial conditions in Central Spain from leaf waxes in the Loess Paleosol Sequence El Paraíso, Central Spain

Imke Schaefer (1,2), Marcel Bliedtner (1,2), Daniel Wolf (3), Jana Zech (1), Dominik Faust (3), Roland Zech (1,2)

(1) University of Bern, Institute of Geography, Bern, Switzerland, (2) University of Bern, Oeschger Centre for Climate Change Research, Bern, Switzerland, (3) Technical University of Dresden, Department of Geography, Dresden, Germany

For many decades, past environmental conditions in the Mediterranean Region have been controversially discussed, with pollen indicating more arid glacial conditions, whereas lake levels and fluvial records have been interpreted to indicate more humid conditions. Here we present results of the leaf wax analyses from the late Pleistocene Loess Paleosol Sequence El Paraíso, Central Spain.

Long chain n-alkanes are important constituents of the leaf wax layer of higher plants. Influences on the chain length pattern as well as on the stable carbon and deuterium isotopic composition of the leaf waxes are not yet fully understood, but most likely depend on the type of vegetation and climate. Chain length patterns in El Paraiso indicate an increase in deciduous tree-derived alkanes at ∼2 m depth which can tentatively be interpreted to reflect more humid conditions during marine isotope stage 2 (∼25ka). Compound-specific stable carbon isotopes support this and also indicate a change to more humid conditions after ∼35 ka BP. Compound specific deuterium analyses reveal particularly enriched values at greater depth, also pointing to more arid conditions and evapotranspirative enrichment early during the last glacial cycle.