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The period from the Last Interglacial to the Last Glacial Maximum (MIS 5 – 2) in different archives of southern Italy

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Sediment cores from S Italy provide excellent archives of Late Pleistocene climate and vegetation changes, particularly from the Lago Grande di Monticchio (Allen et al., 2000; Brauer et al., 2007), the crater lakes of the central West coast of Italy, Valle di Castiglione, Lagaccione, Lago di Vico, Stracciacappa (Follieri et al., 1998) and the marine core GNS84-C106 in the Gulf of Salerno (Di Donato et al., 2008). These records show that woody Mediterranean vegetation covered the region during most of the Last Interglacial (from 129-127 ka BP until 115-116 ka BP). In the last phase of the interglacial (from 115-116 ka BP until about 110 ka BP), the forest composition changed, showing an increase in Abies and Alnus and a decrease in Mediterranean taxa.
The interglacial was terminated by the Melisey I Stadial, during which grasses and Betula predominated. Forests spread again during St. Germain I, but they consisted mainly of Fagus, Abies and various deciduous trees. A steppe phase (Melisey II) followed, in which Chenopodiaceae prevailed, before St. Germain II set in, with forests dominated by Abies, Ulmus and Carpinus. From the end of St. Germain II until the Lateglacial, steppe, composed of Artemisia, Gramineae and Chenopodiaceae, predominated, with week expansions of trees (mainly Pinus and Juniperus) during several periods.
What information can be obtained from terrestrial geo-archives for the same region and time? Sea level highstands, corresponding to interglacial and interstadial periods, created marine terraces along the coasts of S Italy. We are currently carrying out a geomorphological, sedimentological and pedological study on a flight of 11 uplifted marine terraces in the central Gulf of Taranto, the lowermost of them falling into the time span of interest. The terraces generally comprise a gravel body, deposited in a littoral environment, covered by a layer of fine sediments of varying thickness. The latter were deposited when the terrace was still close to the sea level, in lagoonal to alluvial environments. There are only few age estimates available. Several shells from the lower terraces are currently being dated. A Calcic Luvisol developed on the terrace T1 (terminology according to Brückner, 1980), which is attributed to MIS 5.1. The next higher terraces T2 and T3 are characterised by progressive soil evolution, in particular increasing rubification and clay translocation. In some locations, loess accumulated on the terraces, as observed in the profile Petrulla on T1. According to OSL datings by Zander et al. (2006), the loess at this site accumulated between 24.9 ka BP and <16 ka BP, i.e. during the LGM. A yellowish-brown Calcic Luvisol developed in the loess. Thus, the soils reflect rather the interglacial soil formation in a Mediterranean environment than the glacial soil formation in a steppe environment.

References

Allen, J.R.M., Watts, W.A., Huntley, B. (2000): Weichelian palynostratigraphy, palaeovegetation and palaeoenvironment; the record from Lago Grande di Monticchio, southern Italy. Quaternary International, 73/74: 91-110.
Brückner, H., 1980. Marine Terrassen in Süditalien. Eine quartärmorphologische Studie über das Küstentiefland von Metapont. Düsseldorfer Geographische Schriften, 14, 235 p.
Di Donato, V., Esposito, P., Russo-Ermolli, E., Scarano, A., Cheddadi, R. (2008): Coupled atmospheric and marine palaeoclimatic reconstruction for the last 35 ka in the Sele Plain – Gulf of Salerno area (southern Italy). Quaternary International, 190: 146-157.

Follieri, M., Giardini, M., Magri, D., Sadori, L. (1998): Palynostratigraphy of the last glacial period in the volcanic region of central Italy. Quaternary International, 47/48: 3-20.
Zander, A., Fülling, A., Brückner, H. & Mastronuzzi, G. (2006): OSL dating of Upper Pleistocene littoral sediments: a contribution to the chronostratigraphy of raised marine terraces bordering the Gulf of Taranto, South Italy. Geografia Fisica e Dinamica Quaternaria, 29 (1): 33-50.