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The climate in central Italy during the Last 15000 yrs BP: a quantitative reconstruction from Lake Accesa pollen/Lake-levels records

O. Peyron (1), **M. Magny** (1), J. L. de Beaulieu (2), R. Drescher-Schneider (3), A. Bordon (1) and E. Ortu (1)

(1) Laboratoire de Chrono-Ecologie, CNRS-UMR 6565, Université de Franche-Comté, 16 route de Gray, 25030 Besançon, France, (2) Institut Méditerranéen d'Ecologie et Paléoécologie, CNRS-UMR 6116, Europôle de l'Arbois, Aix-en-Provence, France, (3) Institut für Pflanzenwissenschaften der Karl-Franzens-Universität, Graz, Austria

The transition from the last glacial period to the present interglacial (ca. 14,000–9000 14C yr B.P.) is a period of special climatic interest characterized by rapid and marked climate oscillations in Europe and north Atlantic. Recent studies showed that these climate events (Gerzensee oscillation, Older and Younger Dryas, 8.2 ka event) can also be recorded in the Mediterranean area. Several quantitative reconstructions of these climate oscillations are now available for north and central Europe, from multi-proxies approaches. However, in Mediterranean area, high-resolution quantitative estimates of the LateGlacial and Holocene climate are still rare (except the pollen long sequence of Monticchio).

This study presents a quantitative climate reconstruction obtained from the high-resolution pollen and lake-levels records from Lake Accesa, north-central Italy (Magny et al., 2006, Drescher-Schneider et al., in press). The length of the Lake Accesa lateglacial sequence (more than 6 m) is remarkable in southern Europe. Lake Accesa documents all the Lateglacial and the Holocene, including the first abrupt warming at around 14.7 BP (Bølling) to the final step of the last deglaciation marked by the 8.2 ka cold reversal. This low-altitude site offers the opportunity to test the sensitivity of the Mediterranean area to even short term and relatively weak climatic fluctuations recognised in the North Atlantic region.

The "modern analogue technique" developed by Guiot et al (1993) has been applied

to the Lake Accesa pollen sequence to infer the quantitative estimates of past climate. An additional constraint based on the lake-level record has been used here to improve the reliability of the hydrological parameters reconstruction, considered as an essential factor in Mediterranean. The climatic parameters reconstructed are the mean temperature of the warmest and the coldest month, the annual precipitation and temperature, and the Growing-Degrees Days above 5˚C. For the first time, we also propose a reconstruction of the seasonality temperature and precipitation. Moreover, our paleoclimatic reconstruction is based on an updated modern pollen dataset containing more than 3500 pollen data.

Results shows that the major abrupt changes associated with the Oldest Dryas/Bølling, Allerød/Younger Dryas, and the Younger Dryas/Preboreal transitions were quantified as well as other minor fluctuations related to the cold events (e.g., 8.2 ka event). Warm and wet climate conditions are reconstructed during the first part of the Holocene, interrupted during the 8.2 ka event. The results have highlighted that, at Lake Accesa, the actual Mediterranean climatic regime (dry summer and mild winter) start in the early Holocene.

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