Geophysical Research Abstracts
Vol. 12, EGU2010-8647, 2010
EGU General Assembly 2010

Holocene vegetation changes through Lac Ledro sediments (Trentino, Italy).

Sebastien Joannin (1,2), Boris Vannière (2), Didier Galop (3), Michel Magny (2), Adrian Gilli (4), Emmanuel Chapron (5), Stéfanie Wirth (4), Flavio Anselmetti (6), and Marc Desmet (5)

(1) Maison des Sciences de l'Homme et de l'Environnement USR 3124 (CNRS, UFC-UTBM), Université de Franche-Comté, 16 route de Gray, 25030 Besançon, France (sebastien.joannin@mshe.univ-fcomte.fr), (2) Laboratoire Chrono-Environnement, UMR CNRS 6249, Université de Franche-Comté, 16 route de Gray, 25030 Besançon, France , (3) Maison de la Recherche de l'Université du Mirail, 5 Allées A. Machado, 31058 Toulouse Cedex 1, France, (4) Geological Institute, ETH Zürich, Universtätstrasse 16, CH-8092 Zürich, Switzerland, (5) ISTO, UMR 6113 du CNRS/Université d'Orléans, Bâtiment Géosciences, 45067 Orléans, France, (6) Oberflächengewässer Eawag Überlandstrasse 133, Postfach 611 8600 Dübendorf, Switzerland

Lake Ledro is part of the French program ANR LAMA (coordinators: M. Magny and N. Combourieu Nebout) which aims to link Holocene paleoenvironmental changes along a north-south transect in Italy. Lake Ledro (652 m a.s.l.; Trentino, north-eastern Italy) is the northward component of the transect. It is located on the southern slope of the Alps and its catchment area covers 131 km2 with mountains culminating at 1500-2000 m. A multi-proxy approach based on biotic and abiotic indicators (lake-level, palynology, geochemistry and geophysic) was developed from deep and littoral cores, including sediment sequences in Early and Middle Bronze Age lake-shore archaeological sites. We aim reconstructing paleoenvironmental changes resulting from both climate and anthropic influences trough the entire Holocene.

A deep master core was built after extracting twin cores from a non disturbed sediment zone recognised by seismic-reflexion investigations. The age-depth model is based on 13 AMS 14C ages measured on terrestrial plant macrofossils and the mean temporal resolution for analyses is ca 60 years. Palynological study shows the usual vegetation succession for the southern slope of the Alps. During the first part of the Holocene, abrupt changes are observed in pollen assemblages in relation to changes in other proxies (XRF and Magnetic Susceptibility) and correlate with cold events associated to the deglaciation in the North-Atlantic area. Cool episodes corresponding to the PreBoreal Oscillation (ca 11.3 ka cal BP) and 8.2 ka event are respectively characterized by stopping afforestation and a strong development of Abies in the local ecosystem. During the second part of the Holocene, two declines of arboreal pollen abundance are observed in relation with occurrences in both cereal and anthropic pollen indicators. These two phases are confirmed by increase in soil erosion as indicated by abiotic proxies. They give evidence of two successive steps for human settlement (Early-Middle Bronze Age and Iron Age) separated by forest development. In addition, XRF data allow two successive distinct palaeohydrological periods to be recognized into the Holocene.

Finally, comparison between littoral and deep cores reinforces our interpretation and helps to disentangle climate and anthropic influences on the Holocene environment in the Central Mediterranean region.