Geophysical Research Abstracts
Vol. 18, EGU2016-16625, 2016
EGU General Assembly 2016

Holocene environmental changes in northern Lebanon as inferred from a multiproxy study on lacustrine-palustrine sediment

Laurence Vidal (1), Hage-Hassen Jenna (2), François Demory (1), Anne-Lise Develle (3), Elise van Campo (4), and Ata Elias (2)

(1) UMR 7330, CEREGE, Aix en Provence cedex 4, France (vidal@cerege.fr), (2) AUB, American Univ. Beirut, Geology Dpt., Beirut, Lebanon, (3) EDYTEM, Univ. de Savoie, UMR 5204, bat. Pôle Montagne, 73376 Le Bourget du Lac, cedex, France, (4) ECOLAB UMR 5245, Univ. Paul Sabatier, bat 4R1, 118 route de Narbonne, 31055 Toulouse, cedex, France

The reconstruction of the Levantine post-glacial environmental evolution is essential to understand the interactions between variability of regional water cycle, dynamics of the global climate, and cultural evolution. We present a paleolacustrine record from the karstic Yammouneh basin (34.06N-34.09N; 36.0E-36.03E, 1360 m a.s.l.), located on the eastern flank of Mount Lebanon (northern Levant). Holocene sediments (retrieved from gully and a trenbch) (1.5 to 3.6 m thick) consist of pale lacustrine chalk interrupted by an ash layer and remarkable centimetric beds of ocher to dark brown silty clays used, in addition to 14C ages, as stratigraphical markers. Lacustrine biogenic remains are diversified and abundant (ostracods, gastropods, charophytes, chlorophyceae, plant debris...) all reflecting a freswater, generally shallow waterbody. We analysed the sediment mineralogy and geochemistry, TOM contents, magnetic properties, pollen and calcite oxygen isotope composition derived from ostracod shells. These sequences are compared to former data from 2 trenches and 1 core collected in different points of the basin (Daeron et al., 2007; Develle et al., 2009, 2010). A total of 42 AMS 14C dating (partly carbonized wood) provide a solid chronology from the YD to present. Results reveal the following main features : 1- intervals dominated by authigenic calcite suggest that the major water supply was the karstic springs, which still deliver Ca-rich water and low surface runoff; 2- the lake oxygen isotope composition has been impacted by the source isotope composition throughout the Holocene and by increased inland rainfall during the early Holocene; 3- a decideous oak forest, implying much more soil water availability than today, was developed around the lake from ca. 11.5 to 9.5 kyr (the very bad pollen preservation after 8.3 kyr reflects oxidation or frequent oscillations of the water level); 4- four paleosols evidenced from lithofacies and magnetic properties are identified, during the YD, and around 8 kyr, 6 kyr and 2 kyr. Our data are compared with other Holocene paleohydrological (lake and speleothem) records from the northern and southern Levant.