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Paleoenvironmental reconstruction of Basa de la Mora glacial lake (Central Pyrenees) during the Holocene: preliminary results from palynological analyses

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La Basa de la Mora (42º 33'N, 0º 20'E, 1914 m a.s.l.) is a glacial lake located at the central zone of the southern Pyrenees (Spain). It is a shallow lake with only 2.5 m water depth and 6.3 ha floodplain. Its position halfway between the Mediterranean Sea and the Atlantic Ocean lends to both mediterranean and oceanic climatic influences. Currently the zone has peri-mediterranean climate and is the limit of the atlantic fronts influence. Thus, the paleoenvironmental reconstruction of Basa de la Mora record (BSM) could facilitate the understanding of the complex climate patterns and forcings that interplay in this transition area, particularly at the Early Holocene, when different and apparent opposite climatic patrons has been recorded in NE Spain. To achieve this goal, we are mainly reconstructing the Holocene palaeoenvironmental conditions, including vegetation dynamics, of different lacustrine records of the region across a complete E-W / N-S transect in the Pyrenees, including the BSM sequence.

Four cores were taken from the sediments of the Basa de la Mora lake and peatbog using a Uwitec piston coring equipment with platform. Pollen analyses and chronological control is being carried out on the longest core (12m length) extracted from the deepest part of the lake. Preliminary chronology is based on six AMS 14C dates, four of them obtained from terrestrial plant macrofossil remains and the other two from charcoal. According to the age model obtained, the studied sequence spans the last ca 10000 years.

The base of the sequence (between ca 10-9 ka cal BP) reveals relatively arid climate conditions, characterized with the predominance of Juniperus versus Betula, in comparison with those observed in other palynological sequences previously studied. Xeric conditions are confirmed by the presence of Helianthemum, with a single appearance on the whole sequence, what contrasts with the well established assumption that the Early Holocene is the most humid period during the Holocene in northeastern Iberian Peninsula. Nevertheless, the delay on the adoption of moist conditions observed in Basa de la Mora fits in with the paleohydrological reconstruction carried out in the nearby Lake Estanya sequence.

After 9 ka cal BP, vegetation dynamics observed at Basa de la Mora generally matches the well known vegetation history of the southern Pyrenees. Plant assemblages registered at ca 8000 cal yr BP could be mirroring the vegetation retrieval after the 8.2 cooling event. The first appearance of Tilia in the sequence ca 7200 years ago correlates well with Climatic Optimum, corresponding with the mayor expansion of deciduous forest. From the Mid to the Late Holocene period (6-3 ka cal BP) the presence of Abies and Fagus at ca 5800 and 4000 cal yr BP respectively are synchronous with the general expansion of these key taxa in the Pyrenees. Finally, during the most recent period the forest declined which might have resulted from the combined effect of climatic changes, as the Little Ice Age, and anthropogenic activities.