Socio-ecological impact of last volcanic eruptions in the Iberian Peninsula in the Late Glacial- Early Holocene transition: multi-proxy analysis results from Pla de les Preses palaeolake (Vall d'en Bas, La Garrotxa, NE Iberia)

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Abstract

Successive lava flows in the La Garrotxa volcanic region dammed the Fluvià river and lead to the formation of a lacustrine basin in the deepest part of the Vall d'en Bas valley (La Garrotxa, NE Iberia). The last flows were likely associated with the most recent eruptions from the Croscat (15,710-13,160 cal BP; Puiguriguer et al., 2012) and the Puig Jordà volcanos (17,000 BP; Bolós et al., 2014).
In this work we present the results of multi-proxy analyses (sedimentology, XRF geochemistry, pollen, sedimentary charcoal, and plant macrofossils) on a 15 m long sediment core (PdP; Pla de les Preses) from the Vall d'en Bas lacustrine basin that spans across the Late Pleistocene-Holocene transition. The analyses enabled both the identification and age assessment of volcanic eruptions in the La Garrotxa volcanic region, and the reconstruction of palaeo-environmental changes that are important to evaluate environmental constraints for the development of the last Mesolithic hunter-gatherer communities in NE Iberia.

We found that the most recent eruptions occurred around the Late Glacial-Holocene transition, i.e. some millennia later than previously thought. In addition, the record shows the local-scale environmental impacts of rapid climate change episodes and of volcanic eruptions, both in terms of changes in sediment composition and the occurrence of fire episodes affecting vegetation. The PdP core thus represents a key record to understand palaeo-environmental dynamics and ecological changes when the last volcanic eruptions occurred in the area of La Garrotxa.

References

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