



## **Estaña Lakes and Estopiñán aquifer hydrogeological study advances (Huesca, España).**

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The study area is located in the Pyrenean Marginal Sierras. The Estopiñán syncline constitutes the main aquifer made of two permeable levels: Upper Cretaceous and Eocene. The endorheic Lakes of Estaña, with a karstic origin, are the second most relevant hydrological feature. The main goal is to determine hydrological and hydrogeological functioning of the system, that for, a first hydrochemical and isotopic ( $\delta^{18}\text{O}$ ,  $\delta^2\text{H}$  and  $3\text{H}$ ) description of groundwater, precipitation and lakes have been done, from 2007 obtained data. This description allowed to differentiate the main hydrochemical groups and to deduce qualitatively the dominating chemical processes. Data obtained from the complementary campaigns, done between march and september 2008, have allowed to corroborate those groups, and a general temporal hydrochemical stability has been observed. On the other hand, the interpretations of multiparametric profiles from both lakes are being done. It has allowed to confirm Big Lake monomictic character, suffering a process of stratification in the water between March and October and with a thermocline about 6 m of depth. Anyway, different methods and specific techniques for carbonated aquiferous are being applied to achieve these objectives, comprising: geologic mapping, complemented with several geophysics methods, that are making possible to have an approximate idea of the charted materials continuity, as well as a piezometric study, complemented with several boreholes drilling in lakes surrounding area. Future research strategies will be also presented. It will allow to obtain information about the existing aquifer or aquifers in the lakes surrounding area, as well as helping to resolve the geophysics set out uncertainties. Other current studies are exposed, like soil water balance or lake balances. The future research strategies will be also presented, like specific isotopic techniques application ( $\delta^{15}\text{N}$ ,  $\delta^{34}\text{S}$ ) and "drive points" installation in the riparian zone.

Keywords: carbonatic aquifer, hydrogeology, karst, Estaña Lakes, Estopiñán Syncline.