

Preliminary geochemical features of non-marine biogenic carbonates from the Maastrichtian of the southern Pyrenees

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The south-central Pyrenees are well known for their Maastrichtian-Danian non-marine record. Thick non-marine successions change laterally to marine sequences to the west. The studied sections belong to the Tremp Fm., within which four lithologic units of variable thickness can be recognized. They are, from base to top: (1) a marine to continental transitional Grey unit mainly consisting of marls with abundant invertebrates, lignites, limestones, and sandstone layers; (2) a fluvial Lower Red unit that includes red mudstones, sandstones, and paleosols; (3) the lacustrine Vallcebre Limestones and laterally equivalent strata that contain charophytes and *Microcodium*; and (4) a fluvial Upper Red unit that is composed of red mudstones, sandstones, and conglomerates. The two basal units are Maastrichtian in age. The K/Pg boundary is found at the base of the unit 3 on the basis of correlation with marine strata, charophyte distribution and paleomagnetic studies.

For our preliminary carbon and oxygen stable isotopic study we have considered the south-eastern Pyrenean area (Vallcebre Syncline, 500 metres of section thickness), and the south-central Pyrenean area (Tremp Basin: Coll de Nargó section and Isona localities, 450 metres and 90 metres of section thickness, respectively). We have sampled all the available biogenic and pedogenic carbonates which may have a potential primary signature: invertebrate shells from the Grey unit (brackish and freshwater molluscs, and terrestrial gastropods) and dinosaur eggshells, pedogenic nodules and *Microcodium* from the Lower Red unit.

In $\delta^{13}\text{C}/\delta^{18}\text{O}$ plots the values of pedogenic nodules display a large single grouping ($\delta^{13}\text{C}$ from -5 per mil to -10 per mil; $\delta^{18}\text{O}$ from -3 per mil to -5 per mil) whereas the dinosaur eggshells are found in two main groups: one, well defined, with $\delta^{13}\text{C}$ from -11 per mil to -14 per mil and $\delta^{18}\text{O}$ from -3 per mil to 1 per mil and the other, which is partially coincident with the pedogenic nodule grouping. Between the two eggshell groups intermediate values are found. The features of one of these two domains which record a partial effect of diagenesis or a differentiated primary signal are discussed. For the invertebrate shells, a relationship between the autoecological inferences and the isotopic features of the carbonate has been deduced.

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