



## **Contribution to the analysis of sedimentological and diagenetic processes associated with subaerial exposure: Example of Palaeocene Campo-Merli transect (South Pyrenees, Spain)**

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Lateral variations of sedimentological and diagenetic processes on terrestrial sediments associated with subaerial exposure are still not well known. The aim of this study is to improve this knowledge by analysing Campo - Merli sections, where a continuous terrestrial horizon (“Colmenar Tremp Horizon” or “CTH”) dated from Middle Palaeocene is preserved. These sections belong to Graus-Tremp basin (Aragon, Spain) and are located between Ésera and Isábena valleys. They are composed of carbonate and terrestrial alternating sediments dated from Late Cretaceous to Early Eocene. In a palaeogeographical point of view (Pujalte et al., 2005), Campo section is approximately 20 km closer to coast-line than Merli section. In Campo section, “Colmenar Tremp Horizon” (Eichenseer, 1988) is composed of two successive terrestrial levels. First level (3 meters thick) is formed by mudstone with ostracods, characea and *microcodiums*. Base level sediments are strongly affected by desiccation cracks and root prints. Cathodoluminescence analyses show two successive phases of no luminescent and isopachous calcite cementation. The two last meters of sediments are strongly brecciated. At the top, *microcodiums* are reworked and replaced by microdolomite. The second terrestrial level (3 meters thick) of “CTH” is composed by marbled marls, followed by rhizocretions. In Merli section, “CTH” is composed by three layers. First layer (15 cm thick) sediments are dolomitized mudstones, affected by desiccation. Second bed (2 m thick) is down-top composed by desiccated mudstones, strongly brecciated mudstones with Characea, ostracods and *microcodium*, and at the end, re-

worked sediments containing peloid, Characea, ostracods and millioids. The third and the last bed is a massive mudstone with ostracods, characea and some *microcodiums*. In each case, *microcodiums* are dissolved in micrite contact and replaced by sparitic cement. Sudden appearance of millioids in Merli section is interpreted like an effect of a local marine intrusion. Synchronously, roots print only recorded at Campo section indicate a local paleosol development. Then, a paleotopographic effect should be responsible for these differences, on influencing water flow, water chemistry and sedimentary dynamic. In conclusion, results obtained along a continuous terrestrial horizon prove that even if palaeoecological conditions are similar (development of marsch), diagenetic and sedimentological processes can locally vary, without being influenced by the distance to the coast-line.