

Provenance of the Caballos Formation in the Upper Magdalena Valley and Putumayo basin, Colombia: climatic and tectonic implications

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In the Upper Magdalena Valley, the Putumayo basin and the eastern Ecuadorian basin, sedimentary accumulation began in the Berramian and extends to the Albian-Aptian, and is documented in the Caballos Formation, which would have been discontinuously deposited on vulcano-sedimentary and plutonic Jurassic rocks, reached thicknesses between 100 and 200 meters.

These siliciclastic sequences are characterized towards the northern part (Upper Magdalena Valley) by including in the base lithoarenites to sublithoarenites, which are to the top to gray quartz sandstones, with fine to medium grain sizes (Guerrero et al., 2000), with subangular and sub-rounded forms associated with sedimentary environments ranging from transitional to shallow marine platform (Vergara et al., 1995). Towards the south, the sequences correspond to white quartz arenites with a clay matrix interspersed with fine layers of carbonaceous mudstone, with medium to coarse grain sizes, subangular to angular shapes, with presence of glauconite and pyrite associated with a beach environment. Additionally, in both basins, quartz is monocrystalline with straight and wave extinction.

It is suggested that the compositional maturity registered in these rocks, would be related to more humid climatic conditions that characterized the North of South America during the Albian-Aptian (Mejía-Velásquez et al., 2012), as well as the development of a moderate relief during the extensional history, which together would facilitate the development of an extensive weathering in the source area.

Guerrero J., Sarmiento G., Navarrete R., 2000. The Stratigraphy the W Side the Cretaceous Colombian Basin in the Upper Magdalena Valley. Reevaluation of Selected Areas and Type Localities Including Aipe, Guaduas, Ortega, and Piedras. *Geología Colombiana* 25, Pgs. 45-110, 12 Pl., 5 Figs., 6 Tabl., 1 Microp. App.: 6 Pl.

Mejía-Velásquez, P. J., Dilcher, D. L., Jaramillo, C. A., Fortini, L. B., & Manchester, S. R. (2012). Palynological composition of a Lower Cretaceous South American tropical sequence: climatic implications and diversity comparisons with other latitudes. *American journal of botany*, 99(11), 1819-1827.

Vergara, L., Guerrero, J., Patarroyo, P. & Sarmiento, G. 1995. Comentarios acerca de la Nomenclatura Estratigráfica del Cretácico Inferior del Valle Superior del Magdalena.-*Geología Colombiana*, 19, pgs. 21-32, 1 Fig., 2 Tablas, Santa fe de Bogotá.