Cretaceous and Cenozoic calcareous nannofossil biostratigraphy of the northwestern inland basins of Colombia

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Calcareous nannofossils, one of the most valuable micropaleontological groups for dating and correlating Mesozoic and Cenozoic oceanic deposits, have been little documented in onshore deposits of South America. We present here a summary of ten years of micropaleontological research on calcareous nannofossils in the northwestern inland basins of Colombia that establishes a biostratigraphic framework for Colombian onshore deposits. Our study is based on the analysis of 2444 samples from 88 onshore deposits across the Caribbean, Pacific, and inter-Andean valley basins. The analysis reveals that calcareous nannofossils were identified in 57% of the analyzed samples, exhibiting moderate to poor preservation and common to rare abundance. We identified fourteen micropaleontological assemblages, which include nannofossil markers used in the standard biozonations for tropical and subtropical regions. This enables us to place Colombian deposits within these well-dated biozonations, resulting in a chronostratigraphic framework spanning from the Aptian (Early Cretaceous) to the Calabrian–Chibanian (Pleistocene). These results are compared to previous ages reported in the literature, demonstrating a good correspondence with foraminifera, palynomorphs, and ammonites. This comparative analysis serves to corroborate the reliability of our independent framework for dating and correlating Colombian deposits. Future work should focus on Pacific inland basins and Mesozoic onshore deposits to add additional refinement to this chronostratigraphic framework, which is expected to contribute to the understanding of the geologic evolution of oceanic seaways operating in the Mesozoic and Cenozoic between the eastern Pacific Ocean and the proto-Caribbean Sea.