

Pliocene paleodrainage in northwestern South America constrained by multi-method sedimentary provenance in the Alta Guajira Peninsula, Colombia

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The identification of the catfish fossil genera *Brachyplatystoma* and *Zungaroin* in 3.5-2.8 Ma (Pliocene) fluvio-deltaic strata in the Alta Guajira Peninsula (AGP), the northernmost tip of South America, suggests the presence of a large fluvial system in what today is an arid region. The fauna are related to the Orinoco-Amazon system and thus poses the question whether a Pliocene proto-Orinoco drainage into the AGP existed. However, surrounding mountain ranges like the Eastern Colombian Cordillera, the Perija Range and the Merida Andes were already uplifted by at least the late Miocene to Pliocene, which would have impeded the outflow of the proto-Orinoco river into the AGP. We address the reconstruction of paleodrainage distributions in the AGP by conducting detailed sedimentary provenance analyses of the Ware Formation using sandstone and conglomerate petrography, heavy mineral analysis, detrital zircon U/Pb geochronology, and detrital apatite and zircon fission-track analysis. Our initial results suggest rapid sediment transport from a nearby source, allowing for the preservation of angular feldspar and volcanic lithic fragments. In addition, multidimensional analysis (MDS) of available Neogene detrital zircon U-Pb ages in NW South America reveal a dissimilar distribution for (1) the Llanos-Orinoco basins, and (2) the Guajira-Middle Magdalena basins. Initial results from the Pliocene Ware Formation suggest that the drainage system was unlikely connected with the Orinoco. Altogether, the results suggest a local provenance that would require endemic development of the catfish fauna found.