

Pre-Campanian Terranes in Nicoya area (Costa Rica, Middle America)

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Field mapping, isotopic and palaeontologic dating in Nicoya reveals coeval pre-Campanian, middle to late Cretaceous magmatic sedimentary sequences of different geodynamic paleoenvironments.

- 1- The Nicoya Complex is a pile of plateau basalts and intrusives of Berriasian to Campanian igneous ages, including Middle Jurassic to Santonian radiolarites.
- 2- The Matambu Terrane comprises a basaltic basement of unknown origin and age, overlain by late Albian bituminous, siliceous shales (Loma Chumico Formation). This formation is thermally affected by younger basaltic flows and intrusives of the Nicoya (plateau) Complex. The Loma

Chumico Formation is overlain by pelagic, hemipelagic/turbiditic siliceous and calcareous shales and mudstones of the Sabana Grande Formation (estimated as Cenomanian to Coniacian in age). Upsection, the Nambi Formation is characterized by volcanoclastic turbidities derived from the Nicoya Complex. ⁸⁷Sr/⁸⁶Sr isotopic analysis of Inoceramus gave a value of 0.70738, interpreted as a Coniacian age. The top of Nambi is marked by the presence of reworked Campanian shallow water bioclasts, announcing the transition to the overlap sediments.

- 3- The Manzanillo Terrane is floored by a basaltic basement intruded by the Tortugual Komatiitic suite of

Turonian (89 ma) age. Upsection, a thick hemipelagic-turbiditic sequence containing arc-derived volcanoclastic deposits is defined as Berrugate Formation, dated by radiolarian biochronology as Coniacian/Campanian.

The Manzanillo Terrane documents pre-Campanian evolved arc volcanism that resulted from active subduction of ocean floor once located between the exotic Nicoya Complex (1) /Matambu Terrane (2), and the Manzanillo Terrane (3). The Manzanillo Terrane could represent a fore-arc area at the foot of the western edge of the future Caribbean Plate. Subduction stopped when (1) and (2) reached the trench and collided with the Caribbean Plate during the Campanian.