

Upper Paleogene shallow-water events in the Sandino Forearc Basin, Nicaragua-Costa Rica – response to tectonic uplift

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The Upper Cretaceous–Neogene Sandino Forearc Basin is exposed in the southeastern Nicaraguan Isthmus and in the northwestern corner of Costa Rica. It consists of an elongated, slightly folded belt (160 km long/30 km wide). During Campanian to Oligocene, the predominantly deep-water pelagic, hemipelagic and turbiditic sequences were successively replaced by shelf siliciclastics and carbonates at different steps of the basin evolution. We have made an inventory of Tertiary shallow-water limestones in several areas of Nicaragua and northern Costa Rica. They always appear as isolated rock bodies, generally having an unconformable stratigraphic contact with the underlying detrital sequences. The presence of these short-lived carbonate shoals can be attributed to local or regional tectonic uplift in the forearc area. The best-preserved exposure of such a carbonate buildup is located on the small Isla Juanilla (0.15 km², Junquillal Bay, NW Costa Rica). The whole island is made of reef carbonates, displaying corals in growth position, associated with coralline red algae (Juanilla Formation). Beds rich in Larger Benthic Foraminifera such as *Lepidocyclina undosa* –*favosa* group permit to date this reef as late Oligocene. A first uplift event affected the Nicaraguan Isthmus, that rose from deep-water to shelfal settings in the latest Eocene-earliest Oligocene. The upper Oligocene Juanilla Formation formed on an anticline that developed during the early Oligocene, contemporaneously with other folds observed in the offshore Sandino Forearc Basin. During the early Oligocene, a period of global sea-level fall, the folded tectonic high underwent deep erosion. During the late Oligocene, a time of overall stable eustatic sea level, tectonic uplift gave way to moderate subsidence, creating accommodation space for reef growth. A 4th or 5th order (Milankovic-type) glacio-eustatic sea level rise, could also have triggered reef growth, but its preservation implies at least moderate subsidence.