

MORPHOLOGY, SEDIMENTS, AND DEPOSITIONAL ENVIRONMENTS OF A SMALL CARBONATE PLATFORM: SERRANILLA BANK, NICARAGUAN RISE, SOUTHWEST CARIBBEAN SEA¹

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ABSTRACT: Serranilla Bank (16°N, 80°W) is located on the Nicaraguan Rise, a major structural-topographic high on the Caribbean Plate. This bank is one of several small, detached platforms upon which carbonate accretion is failing to keep pace with Holocene sea-level rise. High-resolution seismic profiling, sediment sampling, SCUBA-diver observations, and dredge hauls show that this relatively deep (10 to 40 m) bank is bounded by steep escarpments, lacks coral-reefs, and has few islands and minimal Holocene sediment cover. Hardgrounds populated by brown algae and sponges predominate in the southeastern sector; sediments are thin and coarse-grained. On the remainder of the bank, *Halimeda*/molluscan-dominated sediments are more common and finer-grained. Sediment cover on about 80% of the banktop is too thin to resolve seismically (< 2 m), though some topographic lows have slightly thicker accumulations that occur as large (3–8 m high) bedforms indicating northwestward transport. The largest field of bedforms is located near the northwestern margin of the platform. Platform-margin sediment deposits are limited in thickness and areal extent. Muds are scarce and are winnowed off-shelf by strong currents. Factors limiting Holocene sediment accretion on Serranilla Bank include the platform's small size, strong currents that promote off-bank sediment transport, rapid flooding during Holocene sea-level rise, lack of active frame-building benthic communities, and ubiquitous bioerosion.