



Reef community diversification during the closure of the Panamanian Isthmus (Early Pliocene, Costa Rica)

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The Miocene to Lower Pleistocene Limon Group of Costa Rica is one of the best-preserved mixed carbonate-siliciclastic successions in the Central American region. It provides unique data to understand the physical and biotic changes in shallow-marine environments along the Caribbean coast associated with the emergence of the Central American Isthmus. Our study focuses on two Lower Late Pliocene reef units, the Las Islas roadcut and the newly discovered Contact Cut, which are located at the contact between the siliciclastic sediments of the Rio Banano Formation and the mixed reefal and coral bearing deposits and siliciclastic sediments of the Quebrada Chocolate Formation. The siliciclastic sediments were deposited in a thick, deltaic setting sourced by erosion of the Cordillera de Talamanca. The deposits preserve a sequence of progressively shallowing, near-shore sediments that were exposed by uplift during the early to middle Pleistocene.

Both time-equivalent reefs document a distinct facies diversification during the final stages of the closing of the Central American Isthmus. In the Las Islas outcrop red algae and large benthic foraminifers dominate while at Contact Cut coral patches and molluscs prevail. In the Las Islas outcrop a high diversity of massive corals only is present on the slope and reef crest while at Contact Cut a high diversity of corals exists throughout the whole reef, including a beginning back reef facies dominated by coral patches. Both reefs developed in an environment stressed by siliciclastics, which ultimately caused a decrease in coral diversity and abundance followed by a complete demise of the reefs. It will be discussed to what extent the facies differences and the ultimate reef demise were caused by variations in sea-level, nutrients input,

currents and wave action or if they resulted from environmental stress in response to the increased input of siliciclastics due to a possible uplift of the entire area.