



Ancient shoreline reconstruction at a Maritime Maya Port in Yucatan, Mexico

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Throughout history, worldwide, a major part of the human experience has been to adapt to changing landscapes, and environments. These adaptations can take many forms, sometimes as innovation, manipulation of the conditions, behavioral or technological changes; and in some cases the decision to abandon the area. The northeastern Yucatan peninsula, home of the Maritime maya port site Vista-Alegre, shows signs of such human changes, though little is known about the corresponding landscape and environment. Vista Alegre is located on the meeting point of the Caribbean Sea and the Gulf of Mexico, at the north-eastern tip of the Yucatan peninsula, in the back of the Holbox lagoon. The site was inhabited from the 9th century B.C until the mid 16th century A.D., with an apparent two century abandonment phase from the mid 7th to 9th century A.D. A multidisciplinary effort (“Costa Escondida project”) has been investigating the life of past Mayan inhabitants and the broader connections of the site to the Maritime Maya trade network. One of the questions that has arisen is what were the mutual influences between the inhabitants to their surrounding environment. In order to answer that question the site’s shoreline geomorphology and climate history is being reconstructed for the past 2-3000 years. The reconstruction is based on multiproxy analysis of marine sediment cores and surface samples, combined with archaeological data. The study presented focuses on the shoreline shifts at the site, revealing the complexity, and significant affect of sea level rise on the marine environment of Vista Alegre. This study contributes to our understanding of the site’s possible functions, the environmental challenges the local inhabits contended with, and the identification of ancient harboring locations. The results show five depositional phases over the past 2-3000 years. The ancient shoreline maps show a general trend of sea level rise, though with varying rates over time that relates well to relative sea-level curves published for the region. By looking at the reconstructed ancient shoreline maps, we emphasis the need of site-specific shoreline reconstruction rather than relying solely on moving the sea level up or down relative to the modern bathymetry and topography. Continued analysis of results from the research, and future research activities, may make it possible to recognize hurricane proxies in the sediment, locate underwater manmade seafaring artifacts and facilities, determine the range of economic opportunities for past inhabitants and quantify the availability of potable water sources.