
This case study looks at long term shore retreats of the Pacific coast of Colombia which is located at the convergence of the Nazca and South American plates. This location has contributed to a history of natural disasters due to earthquakes and tsunamis. In addition to these large events, erosional forces exacerbated by El Nino year 1997-1998 and associated sea level rise have an environmental impact that has forced the study area village of El Concho to relocate inland on the delta. This study is significant in informing agencies involved in planning village relocation due to shoreline erosion and my area of interest in the coastal erosion process as influenced by El Nino events.

Habitation of the Island began in 1906 and the island had an agricultural economy based upon rice, mangoes, coconuts, and other crops which were exported. They also forested, fished, kept vacation homes of inlanders and had the occasional tourists. The coastal erosion was documented by the authors by comparing air photos and radar images from 1968 to present, and through obtaining oral history from the island residents and found significant changes to the landform had occurred. Changes to the northern end of the island predate the 1968 photos where a “sandy cuspate tidal flat” developed contributing to erosional forces “in a downcurrent direction on the island front”. The center of the island showed beach retreat and the formation of an inlet. It is in this center portion that the village was located. The southern end of the island showed a development of a “long beach ridge system” which is not expanded upon in the article. The area of focus is the center of the island where the village was located and the erosional forces that created the inlet and subsequent destruction of the village. The first signs of channelization appeared (according to oral history) was some time between 1970 and 1975 but was not measured until 1988-1989 when beach retreat was 15m. An earthquake in 1991 affected the erosion through “liquefaction, land cracking, and water-soil expulsion”. Residents noticed that “overwash” increased from a semiannual
occurrence to a monthly one after the earthquake which could indicate land subsidence although no quantified data is available. It is however documented that in the years 1993-1997 beach retreat averaged 11m per year and in 1996 during a high tide, the center of the island was incised by a channel which grew to be 50m wide and 10m deep by 1997 created more erosional force by “bi-directional tidal circulation”. The El Nino year of 1997-1998 brought a sea level rise of 30-35cm exacerbated the inlet erosion and flooding the village.

The villagers knew when the inlet was incised in 1996 that they would have to move but could not decide between a movement along the island or to relocate to the interior of the delta. When the El Nino flooded the village they decided to move to the interior. This decision however was a difficult one as the benefits of their coastal home included being able to know the weather, seeing their fishermen and passing travelers offshore, as well as providing an ocean breeze to keep mosquitoes at bay. The authors suggest a geomorphological mapping program to assist planning agencies in the future relocation of villages impacted by coastal erosion processes.

The article was mostly a historical review of a process of coastal erosion. The methods of study were limited but also interesting in the use of oral history as a tool for the researcher. The author’s most likely were now looking to seek funding for further studies in order to hopefully inform the government in dealing with these environmental impacts on villages and their economic fallout. Perhaps now that the villagers have moved off of the island there could be a reforestation project. The deforestation and cultivation of the island probably contributed to the erosion process as well but was never mentioned by the authors.