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Coastal erosion in the Yasawa Islands, Fiji: Human error - Not sea level rise

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We studied several sites of coastal erosion in the Yasawa Islands of Fiji. Before arriving in Fiji, we examined satellite images on Google Earth and identified specific sites for investigation. From the day of our arrival on Navotua Island the local residents were curious about our activity and wanted to know if they were in danger of a rising sea. We were told of three isolated instances of severe erosion that was being blamed on SLR. We were subsequently able to investigate NanuyaLailai and Long Sandy Beach, both on Matakawalevu Island, and Yagetta Village on Yagetta Island. The reasons for the erosion at NanuyaLailai and Long Sandy Beach were obviously due to sea walls and jetties. At NanuyaLailai there is no beach at high tide and the new sea wall was still under construction. Long Sandy Beach is located across a short, narrow channel from Goat Island. Long Sandy Beach has both a sea wall in front of the main lodge and two rock groins projecting into the channel. The groin to the west caused a gyre of the current to form that cut into the beach, washing away much of the sand. The second groin, to the east, blocks sediments from depositing on the beach. As at NanuyaLailai, there is little to no dry beach at high tide. Yagetta Village presented a totally different problem as there are neither groins or sea walls on the beach. Yagetta Village is in a small cove and from the satellite images we could see a large, unconsolidated mass of sediments to the NE of the village. There was no obvious cause of their beach erosion, which occurred very quickly and several years prior to Cyclone Winston in 2016. During interviewing the village chief, he happened to mention that they used to have thousands of sea cucumbers (*Holothuriascabra*, sand-fish) carpeting the shallow offshore waters. Their beach began to vanish after they began wholesale harvesting of these animals to sell to Japan and China. We concluded that the sand-fish, which secrete a sticky substance from their skin that causes sediments to adhere to them and which burrow into the sand at night, were stabilizing the offshore sediments and preventing beach erosion. In their absence, there is no longer anything preventing the sediments from being entrained and moved away from the village beach. We concluded that the erosion we investigated had nothing to do with SLR but everything to do with human error in either trying to barricade the beach with rock structures or through ignorance of the importance of *H. scabra* to sediment stability.

Biography

Pamela Matlack Klein received her MS degree from Oceanographic Center of Nova Southeastern University, Dania, Florida, in 1983. She subsequently assisted in the founding of the Coastal Education and Research Foundation and the *Journal of Coastal Research*. Currently she writes a weekly newspaper column and is part of the Portuguese Sea Level Project and the Fiji New Sea Level Project.

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