

Restoration of the coastal geo-environment along Tottori Sand Dunes

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Along the coast of Tottori Sand Dunes, south-west Japan, dimensions of offshore bars were illustrated from air photos taken in 1968-2008 at 5 year intervals and grain size distributions at berm crests on the beach have been investigated over a half century since 1955. The results show that beach environments have been restoring naturally after damages induced by human activities, such as sand and gravel harvesting in the Sendai River during 1960-1975, which had caused diminishing of offshore bars, coastal erosions and beach sediment coarsening (>1.0 mm) at 1980's and finally vegetation covering of the Tottori Sand Dunes. After stopping sand and gravel harvesting, large floods occurred in 1998 and 2004. These floods transported lots of sediment from upper parts of the drainage area to the main Sendai River. Around 2000, offshore bars along the coast became larger and grain sizes on the beach changes finer (<0.4 mm) after 2011. These grain size values are similar to those in 1955. We are expecting that weeds on the Tottori Sand Dunes will relief naturally by activating blown sand. These phenomena are a good story to get visitors notice well-coordinated natural systems as a geo-park site in the San'in-kaigan Global Geo Park.

Keywords: Tottori sand Dunes, weeding of sand dunes, offshore bar, grain size distribution of beach deposit, sand and gravel harvesting, changes over a last half century