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SCG73-P03 Room:Convention Hall Time:May 21 17:15-18:30

Geomorphological and sedimentological dynamic changes at the coast of Tottori Sand Dunes over a last half-century

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Since 1980's, coastal erosion and vegetation growth were key tasks at the Tottori Sand Dunes, south-west Japan. We surveyed these issues from a view point of basin-scale sediment systems. The Sendai River, which is the main river to supply sediments to the coast, has characteristics of intermittent intensive sand transport. As for offshore bars along the coast, we surveyed them by air photos from 1968 to 2008 in every 5 year intervals. The result indicates that offshore bars had declined in the period from 1968 to 1998, but have enlarged since 2003.These changes were caused by large floods at the Sendai River in 1998 and 2004. Grain size analyses of berm-crest sediments along the Tottori Sand Dunes coast were conducted repeatedly since 1955. The result is shown in the figure below. Median diameters of 2004-5 and 2009 beach sediments were coarser than 1.0 mm but ones at 2011 were decreased dramatically: finer than 0.5 mm, which is a similar value to 1955. These changes were perhaps caused by gravel harvesting activities at the Sendai River during 1960's -1970's, which conducted coastal erosion issues later and beach sediments coarsening at that time. The large flood events of 1998 and 2004, however, supplied huge amounts of fine sediment to the coast and enlarger offshore bars and then recovered the beach sediment to be finer since 2011. According to wind duct experiments, sediment transport rates by wind from beach are influenced effectively by their grain sizes. Vegetation growth issues at Tottori Sand Dunes might be related with beach coarsening and decrease in the amount of blown sand. So we are expecting that vegetation growth at Tottori Sand Dunes will attenuate naturally by the increase of blown sand from the beach in near future.

Keywords: offshore bar, beach sediment, grain size changes, the Sendai-river basin, major flood events, particle-size mixture effects on sediment transport

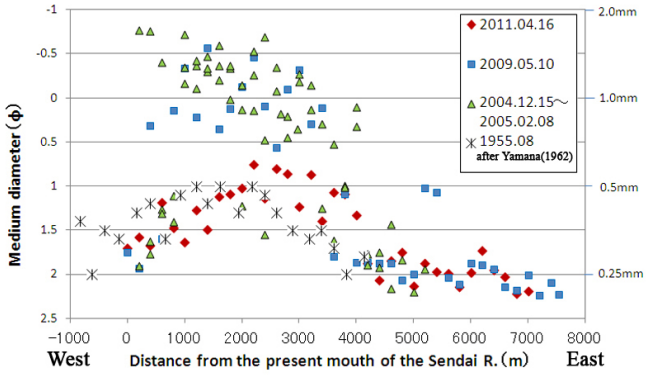

Fig. Medium diameter changes of beach sediments along the Tottori Sand Dunes over 56 years