

## Wind duct experiments on mega-ripple formation processes

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Mega ripples, which have usually ca.1m wave length, have been observed at one site in Tottori Coastal Sand Dunes since 2013. The place was surroundings of the maximum exposure area of volcanic ash and pumice layers in Tottori Sand Dunes. In rainy time, surface water streams generate on these volcanic layers to form rill erosion and transport coarse particles of aggregated ash to surrounding fine sand surface. Quantity of these transported coarse particles exceeded a threshold according to enlargement of the ash and pumice exposure at 2013, which produced mega ripples. That suggested us formation processes of mega ripples.

We made a rectangular wind duct experimental apparatus (7.3 m long, 9 cm wide and 60 cm deep) and prepared polypropylene particles (4 mm in diameter, 0.9 in density) for coarse particles in the field. First, fine sand was laid in 23cm thickness on duct floor, second scattering polypropylene particles on the sand surface at some quantity and then run experiment at 16-17 m/sec wind velocity for 30-40 min.

We succeeded to form several mega ripples ca. 1m wave length, 7 cm height, concave upward shape with coarse particles concentrated at ridges and nearby stoss side slopes, which imitate perfectly mega ripples in the field. Mega ripples move downward slowly at 4 cm/min. Significant information from duct experiment is that mega ripples are formed at degrading stages. This knowledge suggests that mega ripples are observed in restricted area in the field, which make a sharpe contrast to wind ripples observed uninterrupted.