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Camera Monitoring of Coastal Dune Erosion in a Macrotidal Environment

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The recent dune erosion in the west coast of Korea is serious in terms of its speed and harmful influence on the adjacent coastal waters as well as dune forest.
The west coast of Korea is in the macro-intertidal environment and aeolian sediment transport on the intertidal flat is very active during an ebb tide, especially in winter. There is strong interaction between sand beach and dune by supplying or depositing sand.
Coastal dune, as one part of beach system, contributes for beach recovery as well as preventing beach erosion by exchanging sands between beach and dune. Due to high tidal range, the boundary of sand dunes is outside the high water line during spring tide and it makes people think coastal dune is safe from wave forces causing beach erosion. However it seems that high waves during spring high tide cause serious erosion in a relatively short period.
This paper investigates the erosion status of the dunes located in the JangHang beach in the southwest coast of Korean Peninsula, by analyzing images from camera monitoring system, and tide and wave data observed adjacent to the study site during the passage of 4 typhoons in 2012. It shows the importance of the timing of wave and tide condition in coastal dune erosion in macrotidal environment.