



## **Capturing spatio-temporal variability in wind driven sediment transport on the beach**

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Aeolian sediment transport from the beach to the dunes is the driving process of coastal dune evolution. Simulation of this process enables scenario analysis in order to evaluate the impact of e.g. climatic change on dune evolution. However, important factors in the process of sediment transport over the beach are characterized by a large spatial and temporal variability. These factors comprise soil moisture, wind energy and aeolian streamers. The non-linearity of the process makes modeling of aeolian sediment transport and dune evolution even more complex. Modeling attempts are hampered by lack of data as datasets often have a small temporal and spatial resolution.

This study developed a strategy to measure aeolian sediment budgets, directions and patterns for modeling purposes. Sediment fluxes were measured by introducing three new designs of the Modified Wilson and Cook sediment catchers. Thirty-seven catchers were installed over an area of 1.5 ha at the north-western beach of the Dutch island Ameland. A weather station was installed to collect meteorological data. As soil moisture is a main constraint in sediment transport, soil moisture as well as landscape evolution were monitored every five minutes by a camera placed on top of the dune. To study the change in wind energy with variable geomorphology, two sonic anemometers were placed on different locations along a transect. Groundwater levels were checked everyday along a transect of piezometers from beach to dune. The preliminary results of this field campaign will be presented. This paper discusses the measurement setup, reliability of the measured data and suitability of this data for model input, calibration and validation.