Aeolian Sediment Flux Measurements at the Belgian Coast: Field Campaigns 2016

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Introduction

Since no accurate quantitative data on the amount of Aeolian sediment flux is available at the Belgian Coast, the impact of Aeolian processes in the overall sediment budget is unknown. Intensive studies on beach and dune erosion led to well-developed erosion models. In the recent years, consequently, there is a growing awareness for better prediction models for the equally important beach and dune accretion by wind. In order to derive quantitative relations between the amount of sand transported and parameters describing the hydro-meteorological state, monthly field campaigns are scheduled. Of the two-year field study planned, five field campaigns were conducted on the artificial beach of Mariakerke-Bad and the natural beach of Koksijde (West-Flanders, Belgium). These were conducted on May 13th 2016, September 29th 2016, November 21st 2016 respectively and on October 19th 2016 and November 24th 2016.

Methods

Depending of the study sites, weather conditions, wind conditions, topography and area of interest, each campaign, with a time span of one day, used a different experimental set-up. Two 3m-high meteorological stations, each with four anemometers, a wind vane and a temperature sensor, provided quantitative data of the wind flow at different locations on the beach. A CR800 Campbell Scientific datalogger recorded the data at 1Hz. The horizontal and vertical variability of the event scale Aeolian sediment transport was analyzed with a horizontal trap, 12 rotatable and 4 fixed MWAC sand traps. Two saltiphones registered the intensity and variations of grain impacts over time. Hourly measurements of the surficial moisture content were done with a ML3 Theta moisture probe. The topography measurements were typically done with laser and GPS techniques. Results of the data will be presented at the conference.

Part of the experimental set-up used on the beach of Mariakerke-Bad, November 21st 2016. As seen in the figure, it consisted of fixed MWAC sand traps, rotatable MWAC sand traps, vertical traps and a horizontal trap.

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