



Influence of Tide, Waves and Wind on Intertidal Morphology

MSc Thesis Proposal

Introduction

Much is known about how sandy coasts erode during storm surges. However, coasts also accumulate sand and reinforce themselves in between storms. It is expected that reinforcement of the coast occurs during events with a particular combination of tide, waves, wind and meteorological conditions. These conditions all influence the intertidal morphology. The objective of this research is to use numerical modeling of the interaction between tide, waves, wind, meteorology and intertidal morphology to determine the events that cause significant accretion of the coast. The study should also indicate what the source of the sediment is.

Approach

Measurement data has been collected at the Dutch coast on intertidal conditions and morphology (e.g. tide, waves, wind, meteorology, morphology, grain sizes and moisture content). We used different camera techniques to obtain high-resolution data over a long time span. We will use process-based numerical transport models to simulate the transport that might have taken place during these conditions. We will use moisture content and grain size sorting as validation for transport pathways and to discriminate between source, static and sink areas.

The study includes the following aspects:

- Data analysis
- Aeolian model set-up and calibration
- Hydrodynamic model set-up calibration
- Simulations with a combined model approach
- Determination of significant events and source areas

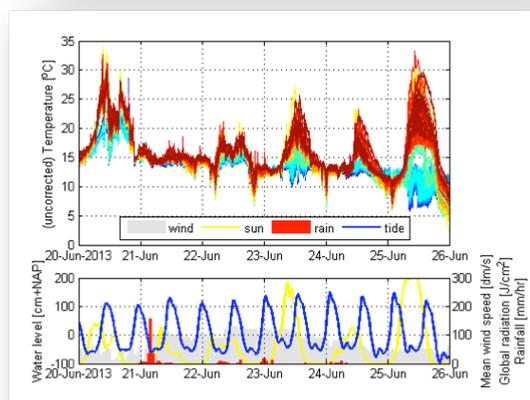
If necessary, more data can be collected using cameras at any moment at the research site near the Sand Motor.

Skills

You will obtain engineering and research skills in schematizing measurement data into a numerical model. Experience with Matlab (or other programming skills) is an advantage, but the willingness to learn these skills should be sufficient.

Project and location

This research is part of the NEMO (Nearshore Monitoring and Modeling) project (<http://nemo.cityg.tudelft.nl>) and can be performed at **Deltares** upon request.



More information

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