



Intertidal Monitoring using Infrared and CCD cameras

MSc Thesis Proposal

Introduction

The water line is the divide between the hydrodynamic and Aeolian coastal regime. It is a critical and yet poorly understood phenomenon in many coastal disciplines. While the water line is in fact in the midst of the morphological active zone, in coastal morphological modeling the water line is often assumed to be a (static) model boundary. In the past, this model boundary approach is shown to be a major Achilles' heel in model development.

The coastal camera station in Kijkduin is equipped with 6 CCD cameras and is recently extended with an infrared camera. The station is now particularly suitable for monitoring intertidal dynamics. Infrared cameras measure temperature and provide a clear distinction between wet and dry parts in an image. Coastal images in general can capture complex morphological features related to the intertidal area as well.

Objective

The objective of this proposal is to study the intertidal dynamics in order to come up with a more accurate description of the dynamic boundary between the hydrodynamic and Aeolian regime (and corresponding models). Parameters of interest involve tide, waves, wind, meteorology, grain size, moisture content, etc. The dynamic boundary will be used to set up a model for sediment exchange in the intertidal area.

Approach

Long-term and high-resolution data on intertidal dynamics has been collected and is ready for analysis. Ground truth in-situ measurements are still to be collected during one or more relevant events.

The following aspects are part of the research:

- Literature research: determine the governing parameters for intertidal dynamics concerning hydrodynamic, Aeolian and meteorological processes.
- In-situ validation: collection of ground truth measurements for validation of remote sensing data during one or more events.
- Model development: a formulation on the sediment exchange in the intertidal area will be developed using the field data obtained.

Project and location

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

More information

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