

SAR monitoring: climate and anthropogenic effect on coastal environment

Introduction

How exactly do more intense storms, precipitation, or human activities affect beaches? The processes by which meteorological phenomena and human activity lead to significant coastal erosion and coastal damage are not yet fully understood. Currently, there is a lack of knowledge on causal empirical relationships between these phenomena, due to a lack of observations and models.

SAR satellite sensors allow a continuous, world-wide and all-weather monitoring of coastal areas; thus, they represent an ideal way to cover this gap. Many studies demonstrate SAR ability to estimate soil characteristics (eg. surface roughness, soil moisture), wind fields and morphological variability on bare soil or agricultural fields. Their potential to get this information on sandy area is currently investigated.

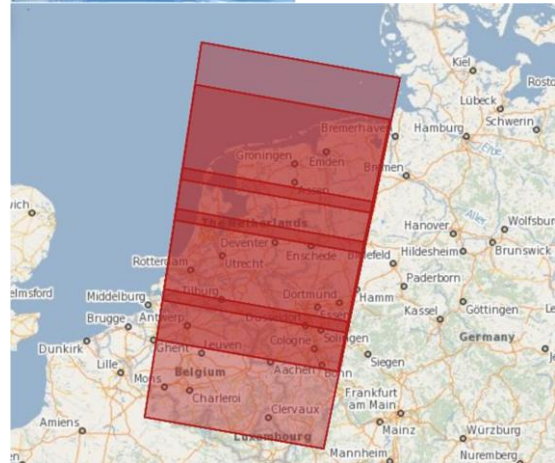
Research Goals

The aim of this research project is to perform an analysis of various coastal areas world-wide located at a high spatiotemporal resolution by exploiting SAR data. Using Sentinel-1 C-band data on these beaches, together with ancillary data as weather dataset, you will be able to:

- Evaluate correlation factors to identify which phenomena significantly affect the beach environment;
- Generate time series to distinguish cyclical and secular effects.



The Sand Motor (NL), a high-variability coastal environment.



Sentinel-1 and its descending orbit-track over the dutch coast

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