

Space for Shore German Success Story

SYLT ODDE 2001 – 2020



Source: Ralf Roletschek - Fotoflug über das nordfriesische Wattenmeer, Blick aus S, 1 km Höhe auf die Hörnummer Odde, Supported by Wikimedia Österreich

THE SPACE BASED SOLUTION

Coastline Detection from Space – Differentiation between water and land areas is possible with satellite data. Though the water line also changes depending on wind and tides, a trend over several years is detectable. The accuracy of the water line derived from satellite data is depending on the spatial resolution of the sensors. With Sentinel-2 and its 10m pixel size in

the relevant bands, we have a very good basis for detecting changes that affect several tens of meter. In order to go back in time, we also looked into older Landsat images, with a resolution of 30m. By overlaying the extracted land-water line, we can show the changes over the years.

The Challenge

The Island of Sylt is exposed to the North Sea and each storm can cause dramatic damage to the coastline. The coast of Sylt is protected by several measures such as sand nourishment and coastal protection constructions. The most southern part of the Island of Sylt is famous for its large sandy beach that has undergone major changes during the last years. Parts are left out from protection measures since **2015**.

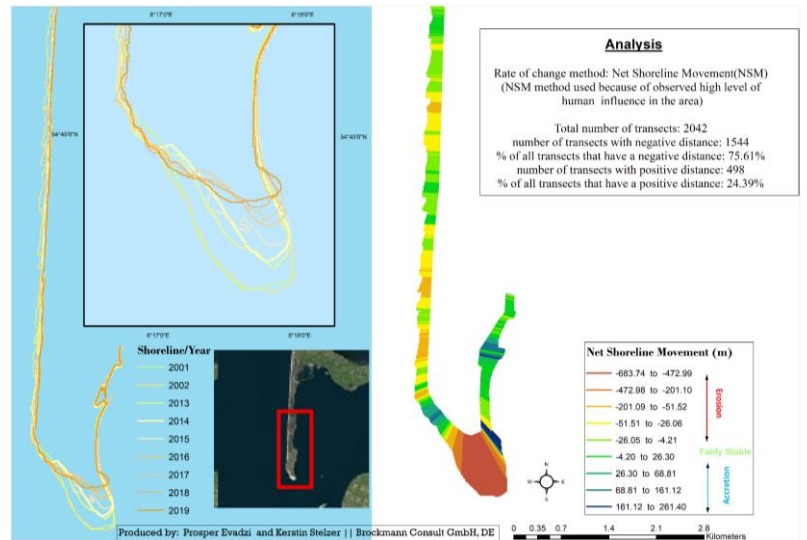
The Outcomes

The information derived from satellite data show the change of Sylt Odde over the past 20 years. Those changes are also reported by field surveys and detected by airborne and laser scan images.

RESULTS

The example of Island of Sylt (southern part) demonstrates how the coastline has changed over the last 20 years. Each line shows the waterline in a dedicated year (light green in 2001 to orange in 2019). The map on the right shows the loss and gains of land. The brown areas show the loss of the South part of Sylt (Ode) but also a small gain to the east (blue stripe)

Validation is done with airborne images and by comparing the water line with a laser scan data.



GERMAN SUCCESS STORY

19

Years Retrospective

03

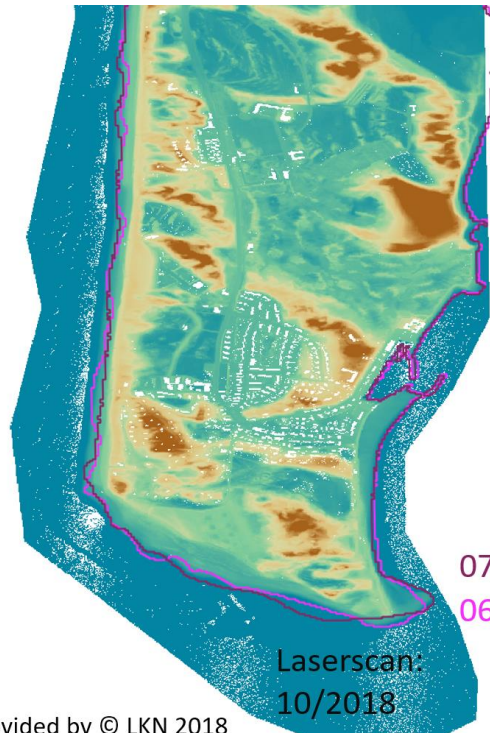
Indicators produced

03

Areas of Interest

150

Km of test sites



Data sources:
 Laserscan data provided by © LKN 2018
 Coastline extraction from Sentinel-2 © ESA 2018, 2019