

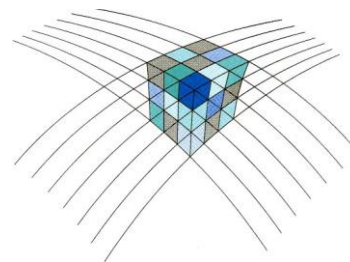
# Abstract submission for the NCG Symposium 2020

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# NCG



Netherlands Center for Geodesy and Geo-informatics

Presentation title:

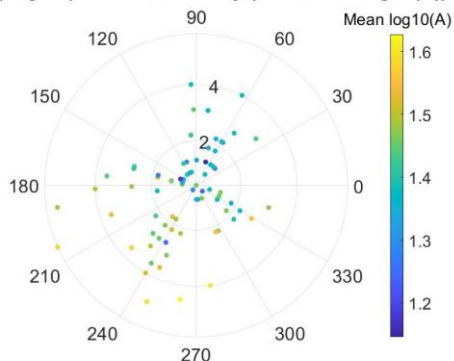
**Environmental strain on beach environments retrieved and monitored by space-borne synthetic aperture radar**

Demo: no

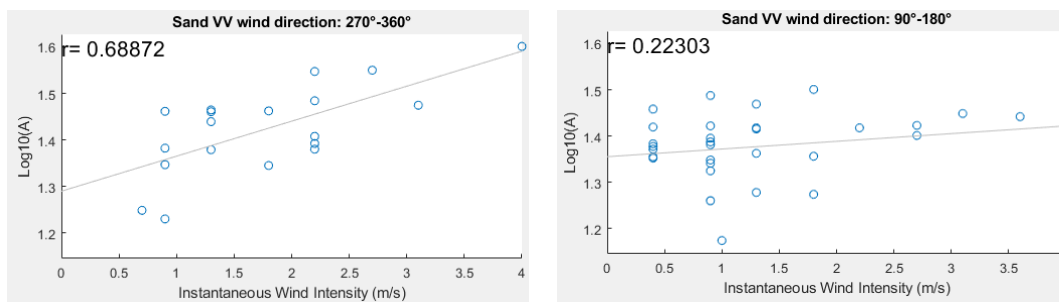
Abstract:

How exactly do more intense storms, precipitation and tidal condition affect beaches? The aim of this presentation is to show the results of a study performed on the beach of Noordwijk, located on the central Dutch coastline. The study, carried out by using *Sentinel-1* images, intends to gain insight into the potential of SAR for the retrieval and monitoring of soil properties over a sandy area, to establish a causal empirical relationship between the SAR amplitude and wind, precipitation, tidal condition. The innovative aspect is the focus on a beach environment, for understanding to what extent can SAR data detect its characteristics in terms of environmental conditions.

**Wind direction (degree) vs wind intensity (with mean log<sub>10</sub>(A)): Sand VV**



**Figure 1:** Scatter plot of the wind direction (degree, 0°=Nord; 90°=East) versus wind speed (m/s) at the time of the satellite acquisitions. SAR amplitude (VV polarization) retrieved on the study area (beach of Noordwijk) is represented in the colorbar. Low and high amplitude values are respectively associated to specific wind directions.



**Figure 2:** The analysis of the relation between wind intensity and SAR amplitude evaluated for wind direction (270°- 360°) shows an high correlation factor (left,  $r = 0.69$ ); for wind direction (90°- 180°), the correlation factor results lower (right,  $r = 0.22$ ).