

Dune Monitoring During Storm Surge Events

Nils Koldrack, Ralf Bill, Constantin Schweiger, Christian Kaehler, Konrad Miegel (Germany) and Matthias Jonas

Key words: Coastal Zone Management; Deformation measurement; Engineering survey; Geoinformation/GI; GNSS/GPS; Hydrography; Laser scanning; Photogrammetry; Remote sensing

SUMMARY

The research project PADO (Processes and Effects of Dune Breakthroughs on the German Baltic Sea Coast) has the goal to generate essential knowledge on dune dynamics and the behaviour of dunes in breakthrough situations. The aim is to improve the design concept for dunes and combined coastal protection systems.

For this purpose, a large-scale dune structure was built on the beach of Rostock Warnemünde planned for an annual storm surge event. The dune structure was loaded to fail by a storm surge and monitored by extensive instrumentation.

Using a 3D measuring concept, the dune surface could be continuously measured and the processes recorded that had taken place, such as the formation of breaches. The data obtained serve, among other things, as a basis for the calibration of numerical models and for further investigations of the long-term consequences of a dune breakthrough on the hinterland, in particular on the associated salinisation and the subsequent salinisation process. In addition, socio-economic evaluations are carried out on the basis of the flooded areas, in which technical, hydrological and economic assessments of the coastal regions protected by dunes are carried out.

Dune Monitoring During Storm Surge Events (10259)

Nils Koldrack, Ralf Bill, Constantin Schweiger, Christian Kaehler, Konrad Miegel (Germany) and Matthias Jonas

FIG Working Week 2020

Smart surveyors for land and water management

Amsterdam, the Netherlands, 10–14 May 2020