

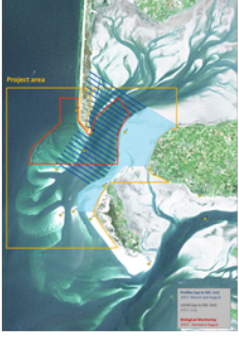
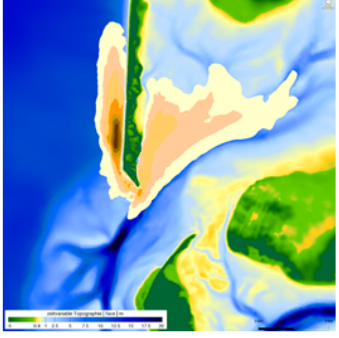

## BALancing SEDiment deficits in the WADden Sea (BASEWAD)

LKN-SH (Agency for Coastal Defense, National Park and Marine Conservation Schleswig-Holstein)

### Aim

Schleswig-Holsteins BASEWAD project is part of the European Interreg project Building with Nature. It is based on the Schleswig-Holstein Wadden Sea strategy 2100 and deals with adaptation measures for the Wadden Sea to SLR, sand mining for dike strengthening and the impact of nourishments to the Wadden Sea. The aim is to learn about sediment transport and morphological processes and adjust them to a hydrodynamic and habitat model. This can help to develop scenarios of SLR and measures to let the Wadden Sea rise along with it.

### Framework and results

<p><b>Responsibility</b> LKN-SH (Agency for Coastal Defense, National Park and Marine Conservation Schleswig-Holstein)</p> <p><b>Purpose</b></p> <ul style="list-style-type: none"> <li>• Shoreface nourishment of 400.000 m<sup>3</sup>/a in 2017 and 2019 for the island of Sylt</li> <li>• Surveying of sediment shift to locate deposition spots</li> <li>• Possible reduction of transport routes</li> </ul> <p><b>Preliminary results</b></p>  <ul style="list-style-type: none"> <li>• Measurements of transects (single beam) and tidal flats (lidar) before and after the nourishment</li> <li>• Biological monitoring takes place close to the area of the nourishments</li> </ul>	<p><b>Contracting party</b> BAW (Federal Waterways Engineering and Research Institute)</p> <p><b>Purpose</b></p> <ul style="list-style-type: none"> <li>• 3D-Hydrodynamical modelling using UnTRIM</li> <li>• Coupled with the morphodynamic model SediMorph and spectral wave model K-MODEL</li> </ul> <p><b>Preliminary results</b></p>  <ul style="list-style-type: none"> <li>• Modelling of a good tracable sediment fraction on the sea floor after nourishment at Hörnum/Sylt (2017)</li> <li>• Major share remains at deposition spot</li> <li>• Transport into the Wadden Sea</li> </ul>	<p><b>Contracting party</b> Kiel University (Research and Technology Centre, West Coast)</p> <p><b>Purpose</b></p> <ul style="list-style-type: none"> <li>• Acoustic mapping of the sea floor to monitor habitats depending on sediments</li> <li>• Benthos sampling</li> <li>• Statistical habitat modelling</li> </ul> <p><b>Preliminary results</b></p>  <ul style="list-style-type: none"> <li>• The higher the backscatter the coarser the sediments are</li> <li>• Light areas show coarse sediments</li> <li>• Dark areas display fine sediments</li> <li>• Influencing factors: angle of incidence, water content and bulk density</li> </ul>
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### Conclusion and outlook

The preliminary results indicate that the basic processes can already be hindcasted and the modelling confirms the surveyed shift of nourished sediments. If further proofs provide reliable statements the goal to reduce transport routes of 30.000 km by taking sand for beach nourishment and dike strengthening from closer locations to the island of Föhr will be reached. In addition, the Wadden Sea adapts against SLR.

The next steps include the planning of shoreface nourishments in 2019, the fine-tuning of the morphodynamic model and the continuation of the biological sampling and habitat modelling.

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