

Investigation of the impact of winter storms on sediment dynamics in the East-Frisian Wadden Sea (southern North Sea) using the numerical model GETM

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There is strong evidence from sedimentology that the long-term sediment budget in the East-Frisian Wadden Sea (southern North Sea) is dominated by strong wind events (extreme events).

Observed distribution of sediments behind the barrier islands on the indicates a deficit of small size sediments which might become even larger under accelerating sea-level-rise scenarios.

The sediment budget under the influence of such events is investigated with a coupled hydrodynamic/sediment model (GETM, see Burchard and Bolding 2002). In detail, we investigate the influence of storm induced sea level rise and stronger waves on the sediment distribution. The numerical experiments are performed for different sediment classes with diameters between $40\mu\text{m}$ and $200\mu\text{m}$.

A permanent pile station in the tidal inlet of Otzumer Balje has allowed us for the first time to measure conditions during extreme wind and storm surge situations (e.g. stormflood of Nov 2006 and Hurricane Kyrill of Jan 2007). These data are used to validate our model results.