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Climate change impact estimates for extreme marine events in the German Bight (North Sea)

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Extreme marine events and their associated risks may be strengthen by anthropogenic climate change. Beside a mean sea level rise, potential future changes in storminess and severe storm surge and wave events are important. Such potential changes have been investigated for the North Sea using four transient future climate projections for wind, storm surge and wave conditions. These projections encompass two IPCC emission scenarios (A1B and B1) and two different initial conditions. Derived future changes (2001-2100) in severe marine conditions are compared to corresponding severe reference conditions (1961-2000) for the German Bight.

The future climate projections show stronger wind-induced changes for the North Frisian than for the East Frisian coasts of the German Bight. The projections suggest generally a small increase in magnitude and frequency of severe storm surges and waves towards 2100 superimposed by strong decadal fluctuations. In this study different aspects of extreme events will be discussed such as temporal, spatial and scenario specific changes of single events as well as changes in the simultaneous occurrence of severe surges and waves. Additional effects of different rises in mean sea level will also be considered. Such informations and data can serve for further implications such as identification of exposed domains and risk assessment.