



Climate change impact on coastal damage due to storm surge and sea level rise.

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The main goal of this work is to investigate the risks and economical losses in the coastal zones caused by the storm surge flooding on regional level. Particular attention is set to potential changes in loss amount associated with future climate change. Concentrating on extra-tropical storms we investigate how storminess is influenced by potential future climate scenarios and what implications this could have for associated damages and corresponding insurance losses.

The methodology for the translation of the storm surge heights inland, subsequent flooding and damage estimations is tested on the German coastal areas of the North Sea. The analysis consists of several parts. (1) The key information containing storm surge time series and statistics is provided by the CoastDat database for the past decades hindcast and for the future climate change we use A2 and B2 IPCC SRES scenarios. Significant enhancement of storm surges expected under the climate change scenarios can potentially increase the future coastal damages, especially in combination with rising mean sea level. (2) The inundation estimates are based on the land elevation maps in GIS and incorporate information about the coastal protection. (3) The loss model is adapted to the mid-latitude storm surge problem and run for the German coast.