



Possible Changes of Storm Surge Risk in the German Bight under Future Climate Conditions using High Resolution Model Simulations

D.J. Befort (1), G.C. Leckebusch (1,2), U. Ulbrich (1), A. Ganske (3), H. Heinrich (3), and G. Rosenhagen (4)

(1) Freie Universität Berlin, Institute of Meteorology, Berlin, Germany (daniel.befort@met.fu-berlin.de), (2) School of Geography, Earth and Environmental Sciences, University of Birmingham, UK, (3) Bundesamt für Seeschifffahrt und Hydrographie, Hamburg, Germany, (4) Deutscher Wetterdienst, Hamburg, Germany

The coastlines of the countries located around the German Bight are heavily affected by the occurrence of storm surges. Thus, possible future changes of storm surge risk are of high interest, especially for coastal defense issues.

The goal of this study is to investigate possible impacts on storm surge potential caused by changing meteorological conditions under enhanced greenhouse gas concentrations. In a first step, extreme wind storms during the past 40 years are identified in reanalysis data and assigned to known historic storm surges. Important meteorological properties, related to a high storm surge potential, will be elaborated. In a second step, storms in GCM climate simulations with high storm surge potential are identified. Using the ECHAM5/MPI-OM 20th century run as well as the future scenario simulation under SRES A1B conditions will allow to estimate the future storm surge potential in the German Bight. In a third step, meteorological high relevant situations will be downscaled using the regional climate model COSMO-CLM, which gives a more detailed overview of the temporal and spatial development of these events.