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Regional variability of significant have Height in the North Sea

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Regional Variability of Significant Wave Height in the North Sea KLIWAS is a research program of the German Federal Ministry of Transport, Building and Urban Development to study the impacts of climate change on waterways and navigation and to provide options for adaptations. The project serves two purposes: One is to create a comprehensive observational database for the evaluation of climate models. This Meteorological and Oceanographic reference database will be available for all subprojects as a standard of comparison for projected changes in coastal and open sea areas. Another aspect is to provide model projections of variables like wind, significant wave height or storm surge under climate change scenarios. Here we show first results for the sea state in the North Sea for the period 1968-2009, based on observations of the German Weather Service. The data set of the German Weather Service consists of synoptic observations over the world oceans, e.g. provided by light vessels, VOS (Voluntary Observing ship) data, drifting and moored buoys and platforms. This world-wide data set is regularly updated and quality controlled. As the observations are highly irregular in space, all data was sampled within rectangular grid boxes with grid size of 2.5 degree to assure reliable statistics. In the North Sea the temporal trend of the significant wave height (SWH) appear mostly heterogeneous. While many areas show slightly negative or slightly positive trends, there are some regions in the northern part of the North Sea with especially strong (up to 2 cm/year) increase of the SWH. But additionally, in most of the regions a decrease of SHW is evident in winter months since the mid-90ies, which corresponds fairly well with the North Atlantic Oscillation index. Also, we show first results of a wave model, forced with wind results of a regional climate model under the scenario A1B for 2000 to 2100 in the North Sea. It shows an increase of significant wave height in the magnitude of 5-10 % (or approximately up to 0,5 m) for the time period from 2000 to 2100.