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Trend of significant wave height in the North Sea

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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. One aspect of this project is to create a comprehensive database from observations for the evaluation of climate change model results. This Meteorological and Oceanographic reference database will be available for subsequent projects as a standard of comparison for projected changes in coastal and open sea areas.

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. In the following we use a grid resolution of 2.5 degree to assure reliable statistics.

Here we show, that in the North Sea and especially in the German Bight the results for the significant wave height (SWH) appear mostly heterogeneous. While many areas show slightly negative or slightly positive trends, there are some regions in the north of the North Sea with especially strong (up to 2 cm/year) increasing of the SWH. In most of the regions a decrease of SHW is evident in the winter months of the mid-90ies, which corresponds fairly well with the North Atlantic Oscillation index. Nevertheless, there is no decreasing of SWH observed in recent years.