

**Wind fields in the North Sea region - past and possible future changes**

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Wind fields in the North Sea region are investigated within the research programme KLIWAS (Impacts of climate change on waterways and navigation - Searching for options of adaptation) of the German Federal Ministry of Transport, Building and Urban Development (BMVBS). One aim of KLIWAS is the analysis of the potential consequences of climate change for navigation on coastal waterways and for the safety of the coasts. The coasts will be influenced by climate change due to rising of sea level and the possibility of changes in probability and strength of storm floods. A time series of mean geostrophic wind (1880 - 2010) across the south eastern North Sea shows a high decadal variability. The 98th percentile of its probability distribution shows a small significant trend compared to its temporal variability. However, temporal behaviour of the median shows no significant trend. Therefore the question which arises is whether evidence can be found, that wind speeds in the North Sea region will change in future, as an effect of climate change. In the context of KLIWAS wind results close to sea surface (10 m wind) of several climate projections of the runs of Regional Climate Models (RCM) of the ENSEMBLE project (Hewitt, C. D. and D. J. Griggs, 2004) are validated and evaluated. Regional differences of the wind fields are investigated by dividing the analysed North Sea area into 14 regions. Temporal and spatial behaviour of yearly probability distributions of wind speeds are calculated and investigated for hindcasts (1950 - 2000) as well as for climate runs over 150 years (1950 - 2100). The results of comparisons to ERA40-data (Simmons, A.J. and J.K. Gibson, 2000) are shown. Literature: Hewitt, C. D. and D. J. Griggs, 2004: Ensembles-based Predictions of Climate Changes and their Impacts. Eos, 85, p 566. Simmons, A.J. and J.K. Gibson, 2000: The ERA-40 project plan, ERA-40 project report series, Vol 1, 63, ECMWF, Shinfield Park, Reading, UK.