



The Baltic and North Seas Climatology - a new reference data set for climate simulations over sea

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The Baltic and North Seas Climatology (BNSC) is a new climatology calculated solely from marine in situ observations. It was created in cooperation between the University of Hamburg (UHH), the Federal Maritime and Hydrographic Agency (BSH) and the Deutscher Wetterdienst (DWD). It was funded by the German Federal Ministry of Transport and Digital Infrastructure (BMVI) within the “Network of Experts” and publically released through the Integrated Data Center (ICDC, www.icdc.cen.uni-hamburg.de) in 2018.

The climatology consists of an atmospheric and a hydrographic part in the region of the Baltic Sea, the North Sea and adjacent regions of the North Atlantic. As it includes homogenous fields both for the atmosphere and the ocean on a corresponding grid, it is especially a valuable tool to validate regionally coupled climate simulations over sea. The atmospheric part consists of time series of monthly mean gridded fields for 2m air temperature, 2m dew point and sea level pressure from 1950 to 2015 on a $1^\circ \times 1^\circ$ grid. The hydrographic part includes the variables water temperature and salinity from 1873 to 2015 with a grid of 105 depth levels and a 0.25° horizontal resolution. Additionally, monthly climatological and, for the hydrographic part, decadal optimum interpolated fields are available.

The results presented here focus on the sea level pressure of the atmospheric part. The BNSC is compared to different data products including coastal station data. Furthermore the BNSC is used to validate reanalyses (ERA40, ERA-Interim, COSMO-REA6) and two regionally coupled climate models (REMO-MPIOM, RCA4-NEMO). The results show that there is a good agreement with existing observational data products and therefore confirm the applicability of the BNSC as a new reference data set, which is based on direct measurements alone.