Geophysical Research Abstracts,
Vol. 10, EGU2008-A-09566, 2008
SRef-ID: 1607-7962/gra/EGU2008-A-09566
EGU General Assembly 2008

Comparison of measured and simulated wind speed data in the North Atlantic

J. Winterfeldt (1) and R. Weisse (2)

Institute for Coastal Research, GKSS Research Center, Geesthacht, Germany
(j_winterfeldt@hotmail.com)

A systematic investigation and comparison of near-surface marine wind speed obtained from in-situ and satellite observations, atmospheric reanalyses and regional atmospheric hindcasts with reanalysis driven regional climate models (RCMs) is presented for the eastern North Atlantic and the North Sea.

Wind speed retrievals from QuikSCAT and the Hamburg Ocean Atmosphere Parameters and Fluxes from Satellite (HOAPS) data set, are found to give good representation of observed near-surface wind speed. The value of the root mean squared error (RMSE) for all co-located HOAPS and in-situ wind speed data is 2 m/s, while it is 1.8 m/s for QuikSCAT demonstrating that QuikSCAT's mission requirement of providing wind speed with an RMSE of 2 m/s is met for the eastern North Atlantic and the North Sea. QuikSCAT shows a slightly better agreement with observed instantaneous wind speed and its frequency distribution than HOAPS. In contrast, HOAPS wind speed is available for a much longer period and is therefore the more suitable product for climatic studies or investigations of trends in wind speed.

The capability of two state-of-the-art RCMs (with and without spectral nudging applied) to add value to the wind speed field of the reanalysis forcing is assessed by the comparison with QuikSCAT. To do so QuikSCAT's wind speed retrievals and the 10 m wind speed forecast from the NCEP/NCAR Reanalysis are interpolated onto the RCM grids. The added value is investigated for instantaneous wind speeds (relevant for case studies) and their frequency distribution (relevant for e.g., extreme value statistics and estimations of wind potential).