Geophysical Research Abstracts
Vol. 21, EGU2019-4821, 2019
EGU General Assembly 2019

Combining in-situ wind measurements from cruise ships with global numerical weather predictions using model output statistics

Olle Räty and Marko Laine
Finnish Meteorological Institute, Meteorological Research, Helsinki, Finland (olle.raty@fmi.fi)

Algorithms designed for improving sailing efficiency and ship route optimization (e.g. weather routing) typically require numerical weather prediction (NWP) data such as wind speed and direction as their input. However, the coarse temporal and spatial resolution of global forecasts and systematic errors in their output limit the value of NWP data in such applications, especially when predictions at longer forecast lead times are required. A potential, yet relatively unexplored, approach to alleviate this issue is to combine in-situ observations from ships with NWP data using model output statistics (MOS).

With the aim to better facilitate the use of NWP data in ship routing and optimization algorithms, we test the use of wind measurements obtained from a set of large cruise ships in a simple deterministic MOS-system based on multiple linear regression. This system is used to post-process 10-metre wind speed forecasts obtained from Global Forecast System along the ship routes in different maritime regions. We illustrate the improvements in wind speed values obtained with the developed system, discuss probabilistic extensions to it as well as issues related to the use of ship measurement in MOS such as their non-local nature.