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Forecasting the weather
- ensemble techniques
in probabilistic weather prediction

Enhancing the numerical parameterization and simulation of offshore turbulence

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Steps are described that bring together work updating the closure constants of the Mellor-Yamada-Janjic planetary boundary layer scheme (Foreman & Emeis, 2011) and the analysis of the marine atmospheric boundary layer drag coefficient (Foreman & Emeis, 2010). Previous efforts to enhance the calculation of turbulent kinetic energy for offshore applications in numerical weather prediction models have been hampered to a certain extent by an inaccurate calculation of the friction velocity, u* where the friction velocity determines principally the magnitude of the TKE at the lower model boundary. Therefore, an inaccurate calculation of u* in the surface layer scheme will result in an imprecise calculation of TKE in the boundary layer scheme, even if steps have been taken to improve the latter. We will present improvements in the calculation of offshore u* as estimated at the FINO1 measurement platform, which, with an updated planetary boundary layer scheme, improve the calculation of wind speed, wind shear and TKE.

References:

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