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On the application of a numerical model to simulate the onshore normalized wind profile up to 160 m

J. Nissen and S-E Gryning
Risoe-DTU National Laboratory for Sustainable Energy

This work aims to study the seasonal difference in normalized wind speed above the surface layer as it is observed at the 160m high mast at the coastal site Høvsøre at winds from the sea (westerly).

Normalized and stability averaged wind speeds above the surface layer are observed to be 20 to 50 % larger in the winter/spring seasons compared to the summer/autumn seasons at winds from west within the same atmospheric stability class.

A method combining the mesoscale model, COAMPS, and observations of the surface stability of the marine boundary layer is presented. The objective of the method is to reconstruct the seasonal signal in wind speed and identify the physical process behind. The method proved reasonably successful in capturing the relative difference in wind speed between seasons, indicating that the simulated physical processes are likely candidates to the observed seasonal signal in normalized wind speed.