



Simulating and validating coastal gradients in wind energy resources

Andrea Hahmann, Rogier Floors, Ioanna Karagali, Nikola Vasiljevic, Guillaume Lea, Elliot Simon, Michael Courtney, Merete Badger, Alfredo Peña, and Charlotte Hasager
DTU, Wind Energy, Meteorology group, Roskilde, Denmark (ahah@dtu.dk)

The experimental campaign of the RUNE (Reducing Uncertainty of Near-shore wind resource Estimates) project took place on the western coast of Denmark during the winter 2015-2016. The campaign used onshore scanning lidar technology combined with ocean and satellite information and produced a unique dataset to study the transition in boundary layer dynamics across the coastal zone.

The RUNE project aims at reducing the uncertainty of near-shore wind resource estimates produced by mesoscale modeling. With this in mind, simulations using the Weather Research and Forecasting (WRF) model were performed to identify the sensitivity in the coastal gradients of wind energy resources to various model parameters and model inputs. Among these: model horizontal grid spacing and the planetary boundary layer and surface-layer scheme. We report on the differences amongst these simulations and preliminary results on the comparison of the model simulations with the RUNE observations of lidar and satellite measurements and near coastal tall mast.