



The Høvsøre tall wind profile experiment – a description of the vertical wind speed profile up to 600 m

A. Peña, S-E. Gryning, and R. Floors

DTU Wind Energy, Roskilde, Denmark (aldi@dtu.dk)

We present an analysis of data from a measurement campaign performed at Høvsøre, Denmark, for nearly one year of measurements. Høvsøre is a coastal site in western Denmark, where the terrain is flat; within the north-easterly sector the terrain is also homogeneous. This provides a good basis for the analysis of atmospheric boundary layer properties and the evaluation of surface and planetary boundary layer turbulence and wind speed models under a wide range of atmospheric stability conditions. The experiment is aimed to be part of the benchmarking of flow over flat terrain models, an initiative of the International Energy Agency.

The observations consist of combined meteorological mast and wind lidar measurements. The mast is heavily instrumented with, i.a. sonic and cup anemometers, temperature, humidity and rain sensors and cover the first 116.5 m from the ground. The wind lidar, installed 10 m from the mast, measures wind speed and direction from 100 m every 50 m. As its range depends on the strength of the aerosol backscatter signal, we performed the analysis up to 600 m where the availability of wind lidar measurements is high. Results from the observations of the horizontal wind speed components and wind direction from 10—600 m and turbulence fluxes from 10—100 m are illustrated in detail.