EMS Annual Meeting Abstracts
Vol. 11, EMS2014-233, 2014
14th EMS / 10th ECAC

Comparison of inflow wind variables and error detection using LiDAR technology

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Remote sensing of the atmospheric variables with the use of LiDAR is a relatively new technology field for wind resource assessment in wind energy. The validation of LiDAR measurements and comparisons with other sensing elements is of high importance for further applications of the data. A measurement campaign with two Leosphere vertical scanning WindCube LiDARs and met mast measurements is used for comparing inflow wind variables from LiDAR, sonic and cup anemometers. The comparison revealed some sources of error, for which some probable causes and solutions are presented here. The aim of the setup is to detect the errors in the mat mast installations, improve the uncertainty analysis and allows accurate estimation of inflow properties for wind energy purposes.