Geophysical Research Abstracts
Vol. 14, EGU2012-4964, 2012
EGU General Assembly 2012

Site assessment for wind farms in Austria – ground-based remote-sensing and modelling

K. Baumann-Stanzer, H.V. Tran, H. Kaufmann, E. Koch, C. Lotteraner, and M. Piringer

Central Institute for Meteorology and Geodynamics, Customer Service/Environmental Meteorology, Vienna, Austria (k.baumann-stanzer@zamg.ac.at)

Site assessment concerning the wind potential, shading and icing for planned wind farms in Austria is conducted based on spatially highly resolved wind field modelling. Surface roughness, terrain and obstacles in the vicinity of the site are taken into account in the modelling approach as well as technical details of the planned wind farm.

Representative wind measurements are essential for the correctness of the predicted energy yield. Climatological wind information is retrieved from the long time-series of the Austrian meteorological observational network.

To achieve better wind conditions (high wind speed and low turbulence) higher hub heights of the new wind turbine types are planned, e.g. nowadays, the standard hub heights of about 3.0 MW turbine classes are over 135m. Because wind measurements with conventional wind masts at this altitude are difficult to perform and the application of logarithmic wind profiles of wind models close to the boundary layer are associated with uncertainty, nowadays measurements are carried out with remote sensing techniques.

Advanced ground-based remote sensing techniques as RASS (radio-acoustic sounding system) and LIDAR render wind, turbulence and temperature (RASS only) profiles including the vertical range that will be reached by the moving blades of the wind turbine. Benefits and limitations of the sounding systems are discussed.