Geophysical Research Abstracts
Vol. 16, EGU2014-3852-1, 2014
EGU General Assembly 2014

Wind Turbine Wake Experiment - Wieringermeer (WINTWEX-W)

Valerie Kumer (1), Joachim Reuder (1), Benny Svardal (2), and Peter Eecen (3)

(1) Geophysical Institute, University of Bergen, Norway, (2) Christian Michelsen Research Institute, Bergen, Norway, (3) Energy Research Center of the Netherlands, Petten, Netherlands

The Wind Turbine Wake Experiment - Wieringermeer (WINTWEX-W) is a cooperative wake measurement campaign conducted by the Norwegian Centre of Offshore Wind Energy (Norcowe) and the Energy Research Centre of the Netherlands (ECN). A scanning, four static Windcubes as well as a downstream looking nacelle LiDAR are placed for half a year downstream of one of five research wind turbines in ECNs' wind turbine test farm Wieringermeer. In order to capture wake characteristics under different weather conditions a 60° sector for three different elevations and two vertical cross-sections are scanned every minute with additional wind profile information every second at 2, 5 and 12 rotor diameter distances. Another static Windcube, a forward-looking nacelle LiDAR and three Sonics are placed upstream to measure the undisturbed approaching flow field. During the campaign several scanning algorithms are tested to capture most wake features. The aim of the campaign is a qualitative and quantitative description of single wind turbine wake evolution, propagation and persistency, as well as to improve CFD wake models by delivering a detailed data set of several real atmospheric conditions.