



SAR-WAKE results: On Wake Effects at Large Offshore Wind Farms mapped by Satellite and airborne Images

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In the SAR-WAKE project an investigation on the wake effects downstream large offshore wind farms in the Danish seas are conducted. A series of satellite images from ERS-2 and Envisat are used. From both platforms, Synthetic Aperture Radar (SAR) observations are available. The data are calibrated and wind speed maps are retrieved using the CMOD4 geophysical model function. Wind directions typically are found from streak analysis. Otherwise meteorological observations on wind direction from offshore meteorological masts are used as input to CMOD4. The data reveal velocity deficit downwind of the wind farms. This is as expected from wake models. A new finding is the spatial dimension of the wake under various conditions. Airborne SAR data recorded with the E-SAR from one day in October 2003 is also analysed in regard to the wake near the Horns Rev wind farm in the North Sea. The SAR-WAKE project was funded by the Danish Research Agency (Sagsnr. 26-02-0312) and the satellite images were provided by the ESA project EO-1356.