

VALIDATION OF WIND SPEED MAPS FROM SATELLITE SAR THROUGH FOOTPRINT ANALYSIS OF IN-SITU DATA FROM AN OFFSHORE METEOROLOGICAL MAST IN DENMARK

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At the Horns Rev site in the North Sea, Denmark a 62 m tall meteorological mast is collecting meteorological data for offshore wind power prediction. These data are analysed with a footprint method of area-averaging prior to comparison to wind speed maps derived from ERS SAR satellite scenes. The SAR wind speed maps are calculated from the algorithm CMOD-IFR2. The needed input of wind direction to the algorithm is calculated either by Fast Fourier Transform that solve for the wind direction in the case of wind streaks in the SAR scene, or taken from mast observations. The sensitivity of SAR wind speeds to wind direction is assessed. The validation methodology of comparing footprint values to SAR wind speed maps is very accurate as the geolocation, the actual flux source area as well as the averaging time is as precisely determined as physically possible. This ensures a correct comparison between spatial snap-shots (SAR) and time-averages (mast). Results from the 16 cases investigated are very good. The work is funded by WEMSAR ERK6-CT-00017, the ERS SAR scenes are from ESA AO3-153 and the in-situ data are from ELSAM/ELTRA.