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Abstract Submission

Title: Results of Pencil Beam and Surveillance Radar compared to German and Danish Weather Radar at the Baltic Sea Coast.

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Temporal and spatial patterns of bird migration are still poorly understood. In particular for offshore and onshore wind energy planning, the demand exists to quantify nocturnal bird migration and to forecast migration periods and peaks. Results may help to mitigate effects or implement preventive measures, e.g. to stop wind turbines.

Several different radar systems can be used to measure bird migration. However, little information is available on the comparability of the data generated with these different systems.

We used marine surveillance and pencil beam radars to measure bird flux during the migration periods of 2009 and 2010 at the Fehmarnbelt in the Baltic Sea. In addition, we acquired data from three weather radar stations within approx. 120 km of the study sites (Stevns, DK, Hamburg and Rostock, Germany). The main goal of this study was to compare bird migration intensities as recorded by the local radars (surveillance, pencil beam) with the regional weather radar stations.

The data available from the Danish weather radar station Stevns contained practically no bird signals. This was likely due to efficient filtering of non-meteorological signals during earlier data processing.

Phenologies between the local radars and the German weather radar stations showed high similarities; this applied above all for synchronous peaks of bird migration at the radar stations compared and main flight altitudes.

The cross-validation yielded positive results. Consequently, the system of weather radars (OPERA) within the main bird migration corridors offers to estimate local and regional real-time bird migration intensities. This could be used to forecast bird migration at further sites (e.g. offshore windfarms) and could serve as an early warning system. Further, bird migration intensities measured with a net of weather radars could be used to both model and validate bird migration events in the North European region.