



EMS Annual Meeting Abstracts

Vol. 20, EMS2023-270, 2023, updated on 20 May 2024

<https://doi.org/10.5194/ems2023-270>

EMS Annual Meeting 2023

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## Recent developments in the provision of wind information for site tenders for German offshore wind farms according to WindSeeG

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The construction of offshore wind farms in Germany's Exclusive Economic Zone (EEZ) is an important component for the successful implementation of the energy transition. In 2021 the Federal Network Agency started to launch yearly tenders for sites in the North Sea and Baltic Sea which are conducted in cooperation with the Federal Maritime and Hydrographic Agency (BSH) according to the Offshore Wind Energy Act (WindSeeG). The German Meteorological Service (DWD) supports the BSH in compiling the required wind information. This information is made publicly available by the BSH to bidders via the PINTA portal (<https://pinta.bsh.de>) as part of the tendering procedure.

Detailed information on the wind conditions on the sites is crucial for the bidders' bid calculations. This information is compiled in collaboration by the BSH and the DWD with the participation of external contractors. In detail, corresponding investigations are in-situ measurements on the research platforms in the North Sea and Baltic Sea (FINO1, FINO2 and FINO3, <https://www.fino-offshore.de/de/index.html>) and one-year LiDAR measurements, which are carried out by external contractors on behalf of the BSH at the sites to be tendered. Furthermore, data and evaluation results of the COSMO-REA6 and ERA5 reanalyses are provided by DWD. These data sets are the basis for the preparation of comprehensive reports on the wind conditions on the sites. The first two tendering processes have successfully completed for three sites in the southeastern North Sea (N-3.7, N-3.8, N-7.2) and for one site in the Baltic Sea (O-1.3) in September 2021 and September 2022, respectively. In 2023, a call for tender for sites N-3.5, N-3.6, N-6.6 and N-6.7, located in the North Sea, has been published.

The reanalysis and measurement data provided allow a detailed investigation of the seasonal variability as well as an in-depth assessment of the current and the historical wind field on each site. The focus of the measurements is on the heights relevant for future wind turbine types. The evaluation of the reanalyses is carried out for the grid points closest to the sites as well as the surrounding grid points and is validated using the existing measurement data. Previous evaluations show a very good correlation, which gives the reanalyses a high significance to

determine the wind conditions on the sites. In addition, information on long-term variability is required. Long-term time series of geostrophic wind derived from air pressure data from coastal stations enable an assessment of multi-decadal variations.

Looking ahead, future sites such as N-9 to N-13 and westward of shipping route SN10 in the North Sea are located far offshore increasingly remote from land. This will raise new challenges for the preliminary investigations in all disciplines such as marine environment, geology, subsoil and oceanography, as they are.