

Plausible 2050 offshore wind locations in the North Sea

S Waldman
Heriot-Watt University

P Munro, R Forster
University of Hull

This work © 2022-23 is licensed under CC BY 4.0. To view a copy of this license, visit <http://creativecommons.org/licenses/by/4.0/>

Enquiries: simon.waldman@hw.ac.uk

This version released December 2023.

This dataset contains a set of points representing plausible locations for offshore wind turbines to have been built in the North Sea by the years 2030, 2035, 2040, 2045 and 2050, based off the national ambitions announced up to August 2022.

The data are given both as shapefile and CSV. Both contain the same points. Coordinates are lat/lon to WGS84 (EPSG 4326).

An additional shapefile gives the zones that contain these wind farms, with predicted years of construction.

For the turbine locations or the zones, where a year is missing this indicates the wind farm already exists in 2022. Existing wind turbine coordinates are sourced from the DeepOWT dataset by Hoeser et al [1]. Others use a newly-generated, speculative grid, using predicted turbine sizes and spacings for the year of construction. Wind farms that are planned between now and 2030 but not yet built use 2030 attributes for spacing purposes, but list Year and Capacity as “NULL” in the shapefile. Following visual inspection a small number of wind farms which were under construction at the time of the DeepOWT snapshot were set to ignore this dataset and generate a new grid, as otherwise the farm would be only partly populated.

A full description of how these coordinates were arrived at is currently under development as a journal article, and once it is available this readme will be updated to link to it. If you have arrived at this snapshot after early 2024, then check the “latest version” link in Zenodo to see if this has already happened.

If using this version, please cite the data set directly using the title and authors above and DOI 10.5281/zenodo.10259046

Version History

VERSION NUMBER	DATE	CHANGES
1	Sept 2022	Initial version, without existing or planned wind farms included.
2	Dec 2023	Now includes already-built wind farms (from DeepOWT) and planned ones. Changed coordinate system to lat/lon.

Readme updated.
Included a new shapefile giving the predicted zones.
Author SW has moved institution

References

- [1] T. Hoeser, S. Feuerstein, and C. Kuenzer, 'DeepOWT: a global offshore wind turbine data set derived with deep learning from Sentinel-1 data', *Earth Syst. Sci. Data*, vol. 14, no. 9, pp. 4251–4270, Sep. 2022, doi: 10.5194/essd-14-4251-2022.