



## **Offshore wind resource assessment in the German part of the North Sea: Comparative study between MM5 and WASP.**

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Suitable sites for wind farm on land are scarce in some regions in Europe, while potential areas for offshore sites are huge. Accurate knowledge of the offshore wind resource is, therefore, of crucial importance for the planning of wind farms. Contrary to sites on land, offshore measurements are scarce and, accurate assessment of the wind resource in coastal zones is difficult since it depends on the parameterization of both roughness and stability changes. Therefore, the growing interest in harnessing offshore wind energy requires reliable tools for the wind resource estimation at these sites.

Most commonly used tool for wind resource predictions on land as well as offshore is the WASP program. Despite its strong simplifications for offshore sites (constant sea surface roughness, a simple wind profile and a stability independent internal boundary layer model), it showed only small deviations in practical applications in comparison with wind measurements over the Baltic Sea.

An alternative approach for wind resource assessment is the use of mesoscale meteorological models. Mesoscale models used for numerical weather prediction are limited area models with sufficiently high horizontal and vertical resolution to resolve regional

features such as the coastline, orography or convection.

The aim of this study is to compare the wind resource over the German Bight in the North Sea calculating by different models: Mesoscale Meteorological Model (MM5) with input from the NCEP analysis without using direct measured data, and WAsP method using measured data both from offshore, coastal and land measurements. The results are compared both with each other and with measured data from the FINO 1 offshore platform, lightship, coastal and land sites. A geographical information system is used for a spatial intercomparison of the model results.