



## **Validation of a Wind Farm Parameterisation in COSMO-CLM using large eddy simulations**

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Offshore wind deployment is foreseen to expand dramatically in the coming years.

The strong expansion of offshore wind parks is likely to affect the regional climatology of the coastal areas surrounding the Atlantic, North Sea and Baltic Sea. The main aim of this project is to assess the climate effect of a change in sea use, due to large-scale offshore wind deployment. Wind turbines are shown to have an effect on wind speed and moisture when parameterized in COSMO-CLM. However the magnitude of these is still unclear on the kilometer scale, and direct comparison with offshore wind farm data remains difficult. Large eddy simulations offer insights into processes otherwise parameterised in regional climate models, and are used to validate the wind farm representation. This is done by implementing the wind farm parameterisation in an idealised version of COSMO-CLM and comparing its output with large eddy simulations. Changes in wind speed and shear stresses in and outside of the wind farm are assessed and the effect of wind farms on the geostrophic wind above the boundary layer will be investigated under different wind farm deployments.