



Analysis of diabatic flow modification in the internal boundary layer

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Measurements at two meteorological masts in Denmark, Horns Rev in the sea and Høvsøre near the coastline on land, are used to analyze the behaviour of the flow after a smooth-to-rough change in surface conditions. The study shows that the wind profile within the internal boundary layer is to a large extent controlled by a combination of both downstream and upstream stability and surface roughness conditions. A model based on a diffusion analogy is able to predict the internal boundary layer height well. Modeling the neutral and long-term wind profile with a 3 layer linear interpolation scheme gives good results at Høvsøre. Based on a comparison with a numerical model and the measurements the constants in the interpolation scheme are slightly adjusted, which yields an improvement for the description of the wind profile in the internal boundary layer.