

Interactive comment on “Comparing Abnormalities in Onshore and Offshore Vertical Wind Profiles” by Mathias Møller et al.

Anonymous Referee #2

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The paper presents a useful and thorough analysis of the shape of wind speed profiles at onshore, coastal offshore and offshore sites. This is quite timely as people question the applicability of MOST even in flat locations such as offshore. The quality of results presented is clear and analyses anomalies in wind profiles as a function of several relevant parameters.

My main concern is the significance of the maxima in the profiles studied. As pointed out by the authors, under unstable conditions, the wind shear is much reduced and thus fairly small wind speed changes can create maxima. The same is true when comparing offshore with onshore, especially forested sites. The higher roughness length will give higher shear and thus reduce the influence of wind speed fluctuations in terms of giving rise to maxima. So the results presented seem more about the variation in maxima as

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a function of average wind shear. The approach could be improved if a maximum is only recorded as such if a threshold is reached. This could be in terms of a fixed wind speed value or some sort of 95% exceedance, for example. The authors need to show that the 'kinks' in the profile are more than just an artefact resulting from differences in turbulent fluctuations at different heights which are more significant under lower shear conditions. If a thresholding approach were done, this would make the analysis much stronger and highlight specific phenomena, e.g. low level jets, which are likely to cause a deviation from MOST.

Specific comments: Figure 2 does not seem to be referenced or described in the text.

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