

## ***Interactive comment on “The Making of the New European Wind Atlas – Part 2: Production and Evaluation” by Martin Dörenkämper et al.***

### **Anonymous Referee #2**

Received and published: 27 May 2020

This paper is of great interest to the community as it describes the details of how the New European Wind Atlas was composed, including the specifics of the modeling, and verifies the model results with data. The methods described are reasonable and state-of-the-science. Although WASP is not perfect, its imperfections are well documented and fairly analyzed and discussed here.

Technical comments: - Detailed discussion of surface roughness and the difficulties is interesting. Thanks for including. - p. 14 , line 6 mentions that results were checked for obvious errors "like icing". On p. 4 line 5, you mention that additional code added to WRF estimates ice accumulation. This appears to be inconsistent. - p. 18 - Assume neutral atmospheric stability. This could be a large, inappropriate assumption. On line 15, authors mention that this assumption may cause small discrepancies. I would

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be much more concerned since stable conditions, which in some locales occur nearly nightly, can cause low level jets, which can result in shear across the turbine blade as well as large errors in the wind speed. I guess it all depends on how well WRF models those. This could be discussed a bit more. - Very nice discussion of bias and consideration of RIX implications - The authors assume the NREL 5MW turbine for power estimates. Was there any opportunity to compare to actual power for a few existing farms? That would certainly provide a bit more confidence in power estimates. - p. 23, line 13 - interesting that WASP reduces the accuracy of WRF in high RIX terrain. Have you considered replacing the WASP results with WRF in those locales? Would be interesting to discuss. - p. 24, lines 3-11 - very nice analysis. p. 26, second paragraph - nice discussion of limitations. This is very helpful. - p. 27 - nice list of bullets. The final one discussed which models are more accurate in different orography. I'm confused then which model is shown on the website for wind direction. Is it always WASP? Or is it the most accurate model (WRF for complex, ERA5 for simple)? Which should be shown? Similar questions for bullet 3 for wind speed.

Minor comments: p. 6, lines 10-11 - "however" used twice in one sentence p. 8, line 8 - data WERE is appropriate. Please use "data" as plural throughout. There is mixed use in this manuscript - please change to be consistent. p. 9, line 14 - not a sentence p. 13 - line 18 - would likely have complex structures "in the flow" due to ... Please specify to help readers p. 14, lines 11 and 12 - data "were" - correct 3 times please. Several others later so won't point out each one. p. 21, line 18 - results, which "show" ... (agreement) p. 22, line 7 - Do you mean "convolved" rather than "convoluted"? p. 25, lines 23-24 - "A big improvement ....." not a sentence. p. 30, MD and BTO - likely "automating". automatising is not common English usage.

Please also note the supplement to this comment:

<https://www.geosci-model-dev-discuss.net/gmd-2020-23/gmd-2020-23-RC2-supplement.pdf>

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Interactive comment on Geosci. Model Dev. Discuss., <https://doi.org/10.5194/gmd-2020-23>, 2020.

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