

Response to Reviewer #1 and #2

We would like to thank both the reviewers for their thorough and constructive evaluation of our manuscript. We have addressed all comments and made the necessary changes in the revised manuscript. Point-by-point responses to each comment from the reviewers are included in this document.

Sincerely,

Kine Solbakken, Eirik Mikal Samuelsen and Yngve Birkelund

Author response Report #1

- **Please add a blank space before the reference to Baines and Smith 1993 on line 98.**

This has been corrected in the revised manuscript.

- **Same for the reference to Reinecke and Durran 1998 on line 175.**

This has been corrected in the revised manuscript.

- **Line 183, concerning model levels 120 and 127. Here it might be beneficial to recall that ECMWF model levels are numbered top-down.**

Thank you for this comment. The following has been added to the revised manuscript (line 178 in manuscript with tracked changes): “..., *noting that the ECMWF model levels are numbered from the model top downward.*” In addition, the abbreviation ECMWF has also been included in line 144.

- **Line 305: The symbols U and N should probably be in math font.**

This has been corrected in the revised manuscript.

Author response Report #2

- **l.237 '...propagate vertically, until they break...'**

This has been corrected in the revised manuscript.

- **l.284 '...U in Eq. 2 is approximated...'**

This has been corrected in the revised manuscript.

- **l. 287 '...choice of the model level.'**

This has been corrected in the revised manuscript.

- **l.304 '....non-dimensional mountain height...'**

This has been corrected in the revised manuscript.

- **l.313 '...whether similar relationships exist....', or '...whether a similar relationship exists...'**

This has been corrected to “..*whether a similar relationship exists..*”

- **l.334 '...curve exists ...'**

This has been corrected in the revised manuscript “..*the power curve consist of...*”

- **l.353 '.... to their maximum...'**

This has been corrected in the revised manuscript.

- **Table 2, caption One assumes that MAE, Bias and R refer to observed and modelled wind speeds, and this should probably be mentioned in the caption**

Thank you for pointing this out. The table caption in the revised manuscript has been updated to : “...*as well as the Bias, the MAE, and the correlation coefficient R between the observed and simulated wind speeds.*”

- **l.375 ‘...Bias indicates...’**

This has been corrected in the revised manuscript.

- **l.425 ‘...including qualitative differences....’**

This has been corrected in the revised manuscript.

- **l.453 ‘....Fitch-scheme exhibits....’**

This has been corrected in the revised manuscript.

- **l.459 ‘....et al (2024) suggests...’**

This has been corrected in the revised manuscript.

- **l. 474 delete ‘solid line’ (as well)**

This has been corrected in the revised manuscript.

- **Fig.10 Caption says: ‘observed vs modelled wind speeds: later (panel c), tangential windspeed is depicted. Can I trust that in panel b) it is the full wind speed (not the tangential component) which is shown? (just to compare apples to apples).**

Thank you for this comment. Panel a), b) and c) show the horizontal wind speed, while only panel d) show the tangential component. To make this clearer to the reader, we have updated the first line in the figure caption to “*a) Observed and b) simulated horizontal wind speeds at 85 m agl at the turbine locations.*” The caption for panel c) already states: “*Horizontal wind speed at 85 m agl.*”

- **l.568 ‘....there is a large blue area...’: please avoid describing the figures in this manner. Basically the figure shows that on the leeside of the mountain wind speed (tangential?) drops to near-zero values over a large area.**

Thank you for this suggestion. First, as noted above, panel c) shows the horizontal wind speed. To clarify this for the reader, we have updated the sentence in line 504 to “*Figure 13c) reveals large variations in horizontal wind speeds over the mountain areas*”

The sentence the reviewer is referring to has been updated in the revised manuscript to “*On the lee side of the mountain the horizontal wind speed drops to near-zero values over a large area.*”

- **l. 587 ‘A third explanation...’**

This has been corrected in the revised manuscript.