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Interactive comment on "WRF4PALM v1.0: A Mesoscale Dynamical Driver for the Microscale PALM Model System 6.0" *by* Dongqi Lin et al.

Anonymous Referee #1

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This manuscript is well-written and demonstrates the application of a dynamical driver for WRF output data to the PALM LES model. I recommend that the manuscript be Accepted after the authors address the following minor revisions:

Line 46: "other mesoscale models" are mentioned without a clear antecedent for "mesoscale models". I would recommend that the authors delete "other". If the authors choose to retain the word, it should be made clear whether PALM is a being referred to as a mesoscale model (which I would say is somewhat inaccurate and misleading), or the authors should indicate here or elsewhere what mesoscale model was previously discussed or referenced.

Lines 47-49: The sentence about "offline nesting" is difficult to follow. In most WRF model studies, this is often referred to as "one-way nesting", which I find to be some-

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what clearer and more standard terminology. In any case, "...is realised as that mesoscale data are passed. . ." is an awkward construction that should be revised for clarity. If the authors choose to modify "offline-nesting", additional instances should also be addressed later in the manuscript.

Line 70-72: "meteorological forcing" is not completely consistent with "dynamical fields" (e.g. initial atmospheric profiles from the WRF are not dynamical, they are static inputs), and I think it should be aligned. I would recommend making "dynamical fields" more general and referring instead to "meteorological and sub-surface fields", "meteorological and soil outputs", or "meteorological and soil data" extracted from the WRF. If the authors choose to modify this terminology, other instances of "dynamical fields" should be addressed later in the manuscript as well.

Lines 155-156: This is related to the comment in Line 70 above, but referring to all possible WRF output as "mesoscale dynamics" feels too narrow to me. The point of this sentence is to indicate that only meteorological features that are resolved by the WRF can be passed to PALM, and parameterized processes are thus excluded from WRF4PALM. I would recommend that this sentence be revised to more effectively express this concept.

Line 160: There are minor grammatical errors in this section that should be addressed before final publication. They do not impede understanding, but they are mildly distracting.

Line 191: "resolutions" should be "grid spacings"

Line 204: "resolution" is unnecessary, or could be "spacing"

Line 206: It is not clear to me how the STG "reads synoptic conditions from the dynamic driver" when the dynamic driver is ingesting 1 km grid spacing WRF output data. Unless the WRF data is aggregated in time and space to yield "synoptic" conditions, I do not think this is accurate. The authors should clarify this point.

Line 237: It should be indicated/considered here and elsewhere that hourly average PALM and AWS data are being compared with instantaneous output from the WRF. I agree with the authors that variations in error/skill are likely attributable to cloud effects, but the potential for differences between hourly averages and instantaneous data to affect the statistical results should also be noted.

Fig. 2, caption: “resolution” should be “grid spacing”

Figs. 4 and 10: In these and other figures with an AWS label, it should be indicated in the captions that AWS refers to the observational data. Also, the temporal spacing for the wind direction data is different than the wind and temperature data. This difference should be noted in the caption, and in the discussions around Line 220 and (perhaps) around Line 297.

Fig. 14: The figure caption should read “As in Figure 8...”

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