

Review for the manuscript on “DANRA: The Kilometre-Scale Danish Regional Atmospheric Reanalysis”

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This paper presents a kilometre-scale reanalysis system developed exclusively for Danish weather- and climate-related studies and tools developments.

General comments:

The DANRA reanalysis modelling system and observations are mainly based on well-established modelling and observation infrastructures, such as Arctic, European and global Copernicus reanalysis systems. These systems are well documented. This paper describes specific modelling and observation processing that enhance the system over the Danish area of interest. The Authors demonstrate the added value of the system through verification procedures and case studies by comparing DANRA-produced datasets with the above-mentioned reanalysis datasets. In the moment where data-driven model development is in focus, I found it important that DANRA analyses are made available for this purpose.

Depending on the development and studies' needs, more information about the upper-air datasets would be valuable and would make this paper more comprehensive. Although I agree that the added values from HARMONIE-AROME-based model systems are mostly in better description of the near-surface parameters and fields.

Minor comments/suggestions:

line 4: ...climate reanalysis model or system that...

line 17: ... weather and climate evolution or change

line 20: ...public sectors.

Line 34: I would define the model discretisation better by separating the horizontal and vertical discretisation.

Line 75: describe what parameters are analysed/changed instead of “near-surface and soil properties”

line 92: I'd use another word than “extensive array” to make it more explicit

line 104: used in the ERA5 reanalysis and archived in MARS

line 116: what does it mean “CERRA (2018-2021)” I don't understand this

line 128: in observation reporting via

line 130: I'd add a connecting word, like Meaning, the final ... because the first sentence is hanging somehow...

line 133 : 1994, through ..., were ... use commas

line 137: this looks to me a continuation of the previous sentence, so shouldn't be in separate paragraph.

Line 161: “exhibits significant drops in magnitude and at hourly intervals” I'd make it clear that the drops are observed every 3 hours and the datasets are hourly.

Line 256: resolve the question mark. And instead of “wind speeds” “wind intensities”

line 269: (Fig. 8c)

line 283: resolve the question mark

line 287: please find better wording than “most crucial elements in NWP”

line 294: “had travelled” sounds a bit strange; I'd use other words.

Line 300: “the time point when”, sounds strange to me

line 358: post-processing with shorter line

line 375: delete (Danish Reanalysis) since what DANRA is well explained above.