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Geoscientific Instrumentation Methods and Data Systems Discussions

Interactive comment on "Weather model verification using Sodankylä mast measurements" *by* M. Kangas et al.

Anonymous Referee #1

Received and published: 16 January 2016

This is an interesting paper on using meteorological mast measurements to evaluate numerical weather forecasts. I have only minor suggestions for improvements.

Data from the synoptic and upper air stations at Sodankyla are available for assimilation in NWP. Although it would be beyond the scope of this paper to investigate the impact of initialization on the verification, it would useful to have some information or what data are assimilated in HIRLAM and HARMONIE.

A certain amount of repetition could be removed from the text. There is redundant information in:

Page 579, lines 11-13 and page 581, lines 14-16

581, 12-13 and 25-26

584, 16-17 and 24-27

The text information in Figure 1 would be better presented in a table. The CNR4 at 48 m mentioned in the text is not shown in the figure and, indeed, is not used for the verification of radiation fluxes.

Are the instruments on the radiation tower heated or ventilated? Is any quality control applied to identify periods when they may have been covered with snow?

The web page sample in Figure 3 will be of limited interest to most readers if the verification is not publically accessible.

The stated agreement between simulations and observations of upwelling long-wave radiation could be shown. As the observations will include contributions from both the snow surface and trees, are they strictly comparable? It is also stated that comparison of the lowest model level temperature with mast measurements could shed light on the temperature bias problem; these measurements are available, so why not make the comparison?

It would help to state in the abstract, as later in the text, that the seven measurement masts are distributed across Europe.

The English writing is always clear enough to understand the authors' intentions but will benefit from some editing. Some minor corrections are given below.

578, 9

"Starting in 2000 with the NWP model HIRLAM"

578, 14

"produced somewhat different downwelling long-wave radiation fluxes during cloudy days"

578, 23

“ideal locations”

582, 27

“in more detail by Thum et al.”

588, 8

“Typically, the forecast”

588, 14

“will focus on the LWD comparison”

589, 25

“shed light on the problem”

590, 6

“the operational runs”

Figure 2 caption

“from HIRLAM forecasts”

The date would be better printed in the caption than on the figure.

Interactive comment on Geosci. Instrum. Method. Data Syst. Discuss., 5, 577, 2015.