

Interactive comment on “Forecast indices from ground-based microwave radiometer for operational meteorology” by D. Cimini et al.

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The paper presents an interesting discussion about the performance and application of FI based on MWR in an operational setting for mid-latitudes. The results would be useful for reference by operational forecasters about the value of MWR-based FIs in these climatic regions.

We thank the reviewer for the encouraging feedback.

Major comments:

One major limitation of the present paper is that the periods of FIs under study are rather limited - just limited to few months only. Is it possible to extend the period of the

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data? If not, please indicate in the paper that the present results are based on limited dataset only. It would be preferable if the data could extend over at least one year, namely, covering all seasons.

Good point. Data from two sites are presented in the paper. Data in Whistler (Canada) are only available during the presented period, as this was part of a special deployment during the Vancouver Winter Olympics in 2010. For the other site, Lindenberg (Germany), MWR and radiosonde data are collected operationally 24/7 throughout the year. However, MWR 1DVAR retrievals are only available for the presented analysis as part of a research project. Therefore it would be not possible to extend the results to a larger dataset covering all seasons. This limitation has been now clearly indicated into the revised manuscript (Section 4). In addition, in the Conclusions we have added the following remark: “It would be ideal to extend the analysis presented here to a larger data set, possibly covering all different seasons”.

A related question is what's the weather and climate conditions in which the data are obtained for the present study? It is not clear to the readers in other climatic regions about the weather conditions in which the data are obtained. The information about the weather conditions in which the data are obtained would be useful for reference of the readers about the weather conditions in which the present study would be applicable, and there may be follow-up studies in subsequent papers about the applicability of the results in other weather conditions.

Agreed. Two paragraphs introducing the climatology and typical weather conditions for both sites have been added to Section 4. These are summarized below for convenience.

The results are presented for two sites corresponding to different environmental conditions. The MOL-RAO is located at midlatitude (52.17° N, 14.12° E) and low altitude (98 m above sea level (asl)), in a flat area in Central Europe about 50 km to the South-East of Berlin, the capital of Germany. Embedded in this countryside are small

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and medium-sized lakes. The land use is dominated by forest and agricultural fields. Whistler (Canada) is located at midlatitude (50.09° N, 122.98° W) and relatively high elevation (776 m asl) in a mountainous environment along the Pacific Ranges of the Coast Mountains in western North America. The quality assessment of the forecast indices in different atmospheric conditions ideally would require data spanning over one year and covering all seasons. However, Whistler data include only the two-week period during the February 2010 Vancouver Winter Olympics. Weather conditions during this time period included multiple days of clear conditions and rain, sleet and snow days with precipitation rates up to 20 mm/hr (Cimini et al, 2011). Precipitation occurred when southwest winds advected moist maritime air from Vancouver Sound up the Whistler valley where it condensed, inflated upper air temperature and humidity, and triggered precipitation (Ware et al, 2013). Conversely, MWRP and radiosonde data in Lindenberg are collected operationally 24/7 throughout the year. However, MWRP 1DVAR retrievals are only available for the summer 2010 as part of a research project. Lindenberg has a moderate mid-latitude climate at the transition between marine and continental influences. During summer, the monthly mean temperature varies between 10 and 18 °C, while the average monthly total precipitation is about 60 mm with 8-9 average days with precipitation per month.

Minor comments:

Please clarify whether the FIs in the study are deduced from the retrieved temperature and humidity profiles from the MWR, instead of retrieved directly from the T_b values.

The FI presented here are deduced from MWR-retrieved temperature and humidity profiles, not from T_b values directly. This is now clearly stated in Section 3.2.

p.6982, line 7 - "then" should read "than"

Agreed. Thank you for spotting this typo.

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