**Hydrology and
Earth System
Sciences
Discussions**

Interactive comment on "Improving the accuracy of the AFWA-NASA (ANSA) blended snow-cover product over the Lower Great Lakes region" *by* D. K. Hall et al.

Anonymous Referee #2

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The paper addresses the important subject of SWE mapping, particularly the validation of a global snow product (ANSA), in the framework of climate-modeling. The paper introduces the ANSA SWE maps performances in the largest surface freshwater system on the planet, i.e. Great Lakes. It is well structured, scientifically sounding and clear. Anyway I have some concerns as regards some topics that are not fully explained or reported in the paper, and mainly: 1) Introduction/discussion of reference data: the co-op station data are not described in their basic features, as automatic snow depth data collection, aggregation and quality check are not trivial tasks some more information must be given; such data are used as a reference after a conversion and spatial interpolation, a detailed description of such interpolation is only referred and not reported

neither discussed, even if it is not irrelevant for the analysis. 2) referring to Foster et al. (2011) the ANSA processor used on AMSR-E data results in Snow Depth values, which are then converted into SWE, it must be explained why the SD measured by co-op stations is not directly comparable to the AMSR-E derived SD and how the conversion from SD to SWE within the ANSA processing (according to average in situ densities) can influence such comparison. 3) It has been proved that the 7-days running mean bias-correction outperforms the 5-year one; I guess there are some important differences when considering this result by an operational point of view; this aspect could be discussed more in detailed even if it has been suggested in lines 6 to 8 of page 1149. 4) Maybe it is important to exclude that the use of a conversion factor of 0.3 proved better than the 0.2 one, because of a compensation of underestimation of snow by radar sensors, which is a known issues also reported by the Authors elsewhere.

Minor comments regards the figures, for which I agree with Referee #1