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Atmospheric Measurement Techniques Discussions

Interactive comment on "A sun-tracking method to improve the pointing accuracy of weather radar" *by* X. Muth et al.

Anonymous Referee #2

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This paper presents a relevant extension of the available methods for monitoring and tracking of the sun in order to improve the alignment of the radar antenna. The extension presented here is especially relevant for mobile radars that can be located at non-standard orientations. The paper is worthy of publication in Atmospheric Measurement Techniques Discussions after a few improvements have been made.

- The introduction of Position 1 and Position 2 in Section 2.1 is rather hidden. A more prominent explanation of these two positions that are very relevant for this work is needed.

- The fundamental assumption of the analysis method is that Positions 1 and 2 are exactly opposite. In previous studies on antenna alignment I have seen that the elevation

and azimuth scales can have a non-linearity of tenths of degrees. How would is impact your method?

- In Section 2.3 did you consider measuring the actual surface refractivity via pressure, temperature, and humidity and input that in your refraction correction?

- In Section 3.1 you mention 'alternatively in both positions' of the antenna (see Fig. 3)' but this figure does not help me understand the nature of both positions.

- In Section 3.2 the model for fitting the sun tracking results is described. If I understand it correctly it consists of a two step approach: first data from a number of sun tracking experiments are analyzed using the model contained in Equations 1-6 for each experiment individually. Subsequently the extracted biases (x0,y0) for each experiment at different elevations/azimuths are interpreted using the additional model in Equations 7 and 8. If this is indeed the case I suggest that the authors rewrite this Section to make it much more clear. In addition the description of Equations 7 and 8 and the symbols therein should be improved as none of the symbols in these equations are introduced properly (and Figure 1 with some of these symbols is also not very clear).

- Sections 3.3 starts with details about the equations for getting the sun position up to 0.003 deg, that seems much more accurate than required for this application. What kind of requirement does this put on your timing? I think an accuracy of a few hundredths of a degree is sufficient.

- Section 3.4, how accurate synchronization in time is needed?

- Figure 8 could be improved. The data are fine but the display is confusing.

- What is the added value of Figure 9 after the discussion of Figure 8?

- Conclusions (last lines): the application of the method maybe difficult for operational weather radar as it is difficult to take them of the network for a whole day. Probably the method will be more used for (mobile) research radars.