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Comment

Interactive comment on “Determination of circumsolar radiation from Meteosat Second Generation” by B. Reinhardt et al.

Anonymous Referee #2

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The present manuscript deals with the determination of circumsolar radiation using data from SEVIRI onboard Meteosat Second Generation satellites. Accurate data on circumsolar radiation is becoming more and more important for prediction of solar gain by concentrating solar technologies. Ground measurements of circumsolar radiation are however scarce. The present paper therefore first focuses on the retrieval uncertainties regarding the determination of thin cirrus cloud properties. Then the uncertainties of determination of circumsolar ratio (CSR) in connection with the various ice particle shapes assumptions are discussed. In the end a “validation” of the CSR calculations by comparing them with ground based measurements is performed. Altogether the modelling approach is state of the art, a new method concerning the determination of CSR using satellite data is presented, the discussion concerning the uncertain-

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ties arising from different ice particle shape assumptions is interesting. Altogether the present paper may be an important contribution for the scientific community. In my opinion the validation part is however weak: 1) In the validation section is not shown that an improvement has been obtained by using the Baum v3.5. 2) Only the diurnal variations of CSR during three chosen days showing satellite retrieved CSR and SAM retrieved CSR are shown. The agreement is not that impressive. The reader may ask himself whether the good agreement was obtained by chance or whether it may also be seen on other days. The comparison on the second day (6. June 2011) which is shown is not satisfying at all. 3) A mean absolute deviation of 0.07 was obtained. Considering the absolute values of the CSR between 0.01 and 0.45, I am personally not convinced that this shows a “good agreement”. 4) Are the assumptions regarding the cloud optical characteristics also valid for Winter time?

I would personally expect more data included in this validation. Some figures dealing with the validation e.g. one x-y graph (SAM retrieved CSR vs satellite retrieved CSR) should be added. I also think that some figures showing the differences between Baum 3.5 and Baum 2.0 (eg. Fig. 6 or 7, or fig. 10) could be removed instead. The Baum v2.0 results should be included in the validation. The mean relative deviation should also be considered

I agree that fig. 12 showing the frequency distribution of CSR may be of importance for the solar energy community. I do however not think that this is sufficient for a model validation. Do we really need such a sophisticated model only to show a frequency distribution?

Minor comments:

p.5846: this simplifications => these simplifications Some sentences such as “Please not that our definition of. . . “ are very close to spoken language. The paper is often written in first person plural. Third person single would be more appropriate. Editorial language check is required. In the figure captions the acronyms should be written out

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so that the figures are self explaining.

Interactive comment on Atmos. Meas. Tech. Discuss., 6, 5835, 2013.

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