Interactive comment on "Next-generation angular distribution models for top-of-atmosphere radiative flux calculation from the CERES instruments: validation" by W. Su et al.

Anonymous Referee #2

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General comments

The paper describes the methods and results of validation of CERES derived TOA shortwave and longwave fluxes. Paper goes through estimating uncertainty in calculated fluxes due to errors in ADMs used to convert radiance to flux. Methods adopted in previous CERES validation efforts have been employed and applied to the new generation of fluxes (Edition 4 SSF) for Terra and Aqua and Edition 1 SSF product for Soumi NPP. A thorough job of accounting for all sources of error and quantifying and documenting them, to the extent possible, has been done. Validation and uncertainty characterization of the products is very important as it helps the community when drawing scientific conclusions from the product. The paper is a useful addition to the journal.

Other comments

* Errors from different sources are reported. What is the total [combined] error / uncertainty in the fluxes (monthly / instantaneous) from all these sources considered in paper.

The flux uncertainty from ADM is reported in this paper on a monthly regional scale and on an instantaneous footprint level. The first flux uncertainty can be used to represent the uncertainty for CERES monthly mean data product while the second flux uncertainty can be used to represent the uncertainty the an instantaneous footprint level.

* There are some mis-matches between numbers in the text and the tables. Kindly look closely and correct appropriately.

We went through the paper and corrected the mis-matches.

* Since narrow-band multi-spectral observations are regressed for comparison with broadband CERES fluxes; it might be useful for readers to know / re-iterate why we need broadband measurements if integrating narrow-band radiances can yield similar results? Some reference(s) of limitations and errors from this narrow-band integration for flux estimation, can be provided.

Good point! We added the following sentence in Section 3:
Although these narrowband-to-broadband conversions are useful for some applications, they cannot replace the broadband observation to accurately account for the longterm changes in both regional and global TOA radiation (Loeb et al. 2007b).