**Review: Next-generation angular distribution models for top-of-atmosphere radiative flux calculation from the CERES instruments: validation by Su et al.**

## General Comments:

Su et al. (2015) described the methodology used to develop the next-generation CERES ADMs, which were developed using the latest cloud algorithms (Minnis et al., 2010). These newly developed ADMs are used to produce the Edition 4 Single Satellite Footprint TOA/Surface Fluxes and Clouds (SSF) product for Terra and Aqua and Edition 1 SSF product for Suomi NPP, whereas fluxes in the Edition 2 and 3 SSF products are inverted using the ADMs described in Loeb et al. (2005). This paper validates the TOA SW and LW fluxes inverted using the ADMs developed by Su et al. (2015), and provides the uncertainties and biases of instantaneous TOA fluxes. ADMs are an important means to convert the radiance to irradiance which plays an important role in Earth Radiation budget. As shown in Table 1, the biases of TOA SW flux using the new ADMs are decreased significantly from original ones those were based on old version ADMs (Loeb et al. 2005). Also the Estimated uncertainty in all-sky solar reflected single field-of-view instantaneous radiative fluxes at TOA is also decreased to 9.9 $Wm^{-2}$ from original 13 $Wm^{-2}$ (*Chambers et al.*, 2002; *Loeb et al*., 2003a, 2003b). These improvements are very important for researchers to study the global radiation budgets, and are crucial for modelers to improve their simulations. Therefore, I recommend to accept it with the following minor changes.

## Specific Comments:

1) Abstract Lines 15-18: For clear skies, the TOA instantaneous SW flux uncertainties are about 2.3% (1.9 $Wm^{-2}$), 1.6% (4.5 $Wm^{-2}$), and 2.0% (6.0$Wm^{-2}$) over ocean, land and snow/ice surface, respectively. For all skies, they are about 3.3% (9.0Wm-2), 2.7% (8.4Wm-2), and 3.7% (9.9Wm-2).
2) Abstract Lines 20-23, as well as the similar sentences in the text and summary. Following 1).
3) Table 1 shows that the biases of the global SW and LW fluxes using new ADMs are less than those from old ADMs, while Tables 2-3 show the opposite results, why?
4) The flux uncertainties in Table 5 are slightly different to the values in abstract, which one is correct?
5) Figures 6-9, is it possible to think other ways to show your results more clear than current way? The current plots are hard to read and understand. Following is an example although you do not have to use the same style.

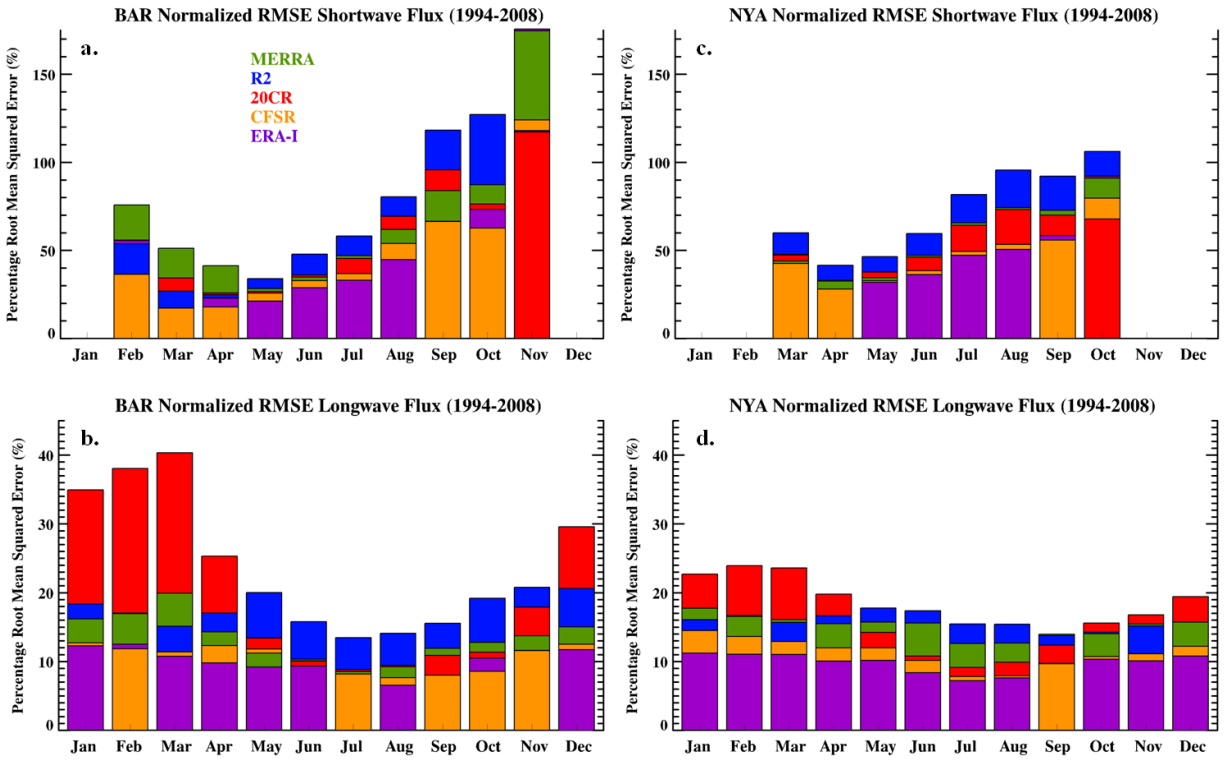


Figure 6. Monthly RMSEs in (a) SW-down and (b) LW-down fluxes over BAR. (c)-(d) are the same as (a) and (b) except over NYA site. All reanalyses start at zero on y-axis. Values are based on 6-hr means during the 15-yr period (1994-2008). RMSEs are normalized by the observed mean flux for each month and are represented as a percentage. (Zib et al. 2012, J CLim).

6) Summary part.
It is a little bit longer, and the % and Wm-2 in several consistent checks are larger than your claimed uncertainties, which may confuse readers a little bit.