

Kato, S., N. G. Loeb, D. A. Rutan, and F. G. Rose, 2015: Clouds and the Earth's Radiant System (CERES) data products for climate research. *J. Meteor. Soc. Japan*, **93**, 597-612. <https://doi.org/10.2151/jmsj.2015-048>

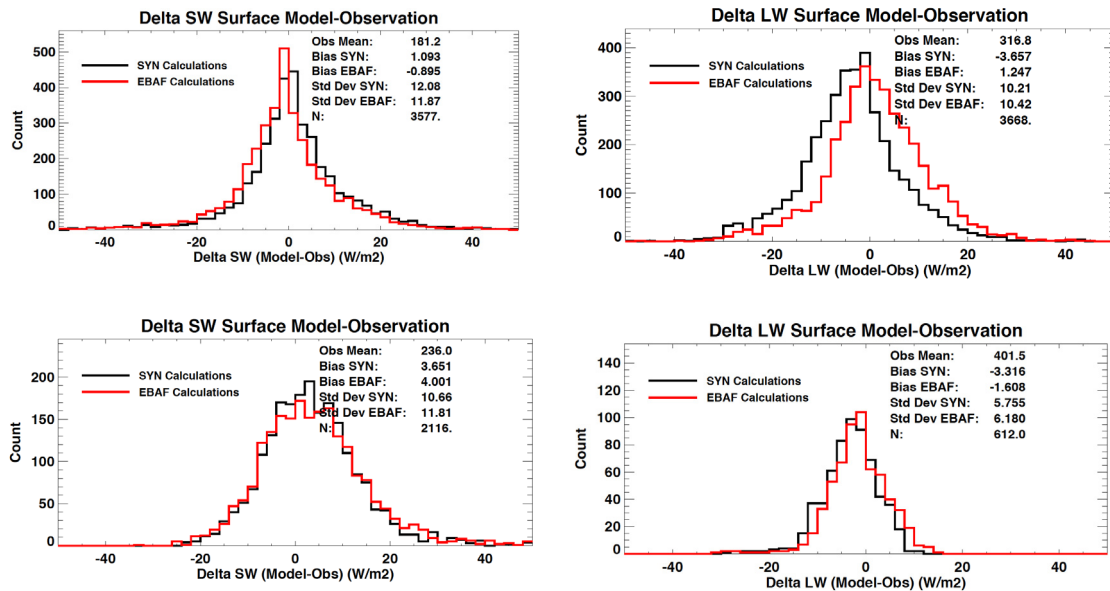


Figure 1: Occurrence of computed minus observed monthly mean (top left) downward shortwave irradiance, (top right) downward longwave irradiance over 37 land sites. Bottom two plots are the same as top plots but modeled and observed irradiance over 49 ocean buoys are used. The location of land sites and buoys is given in Rutan et al. (2014). 10 years of data from March 2000 through Feb. 2010 are used. Black and red lines are, respectively, for SYN and EBAF. EBAF irradiances use adjustment to cloud, atmospheric and surface properties based on CERES-derived TOA shortwave and longwave irradiances. No adjustments are applied to SYN irradiances.

- The paper provides brief descriptions of algorithms used to produce level-2 and -3 CERES top-of-atmosphere and surface irradiance data products, their uncertainty and validation results. Figure 1 (above) extracted from the paper shows that surface irradiances from CERES EBAF-surface and SYN1deg-month data products agree with surface irradiances observed at validation sites to within their uncertainties.
- Using a simple analytical model, the paper discusses the method to detect top-of-atmosphere shortwave and longwave irradiance trends. It also shows that the time to detect trends depends on feedback parameters.