Global assessment of longwave radiative fluxes estimated by NASA/GEWEX Surface Radiation Budget (SRB) and CALIPSO-CloudSat-CERES-MODIS (C3M)

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Abstract
This study shows a global assessment of the longwave radiative fluxes by the NASA/GEWEX Surface Radiation Budget (Release 3.1) (SRB), and the CALIPSO-CloudSat-CERES-MODIS, hereafter C3M, Release B1. The origin of the differences are also analyzed and discussed. The period of time used in this study corresponds to the entire overlapping year of 2007.

Introduction
Longwave radiative fluxes (LRFs) effect and therefore with the climate change. Significant progress has been made in this field since the ground-based and satellite measurements. A better estimation of these fluxes would provide an understanding of the origin of their variability and trends. And therefore the implications in the current climate change. The results of this study quantity the agreement and the origin of the differences for the LRFs at the TOA (OLR) and surface (DLF).

Dataset and methodology

Global and zonal monthly average OLR at the TOA-difference for the clear SRB-GUW (blended between GEOSS and ISCCP retrievals) for January 2007. Units are in Wm^-2.

Results

Conclusions

References

Acknowledgments

The authors gratefully acknowledge support for the Surface Radiation Budget Project funded under the NASA Science Mission Directorate Radiation Science Program. They also acknowledge the Atmospheric Sciences Data Center of Langley Research Center for access to the NASA/GEWEX SRB and C3M data set. The first author has a fellowship under the NPP (NASA Postdoctoral Program) administered by Oak Ridge Associated Universities.

Due to the different spatial and temporal resolutions of SRB and C3M, we combined all the clouds in the footprint from the arrow CIM footprint (20 km CERES footprint) with the MODIS pixels with CloudSat and CALIPSO footprints with each SRB (T1X) set of cloud properties from ISCCP and based on a first global grid of 2° latitude x 5° longitude. The results of this study show that the agreement between both projects for mean monthly differences. The origin of the clear-sky flux differences between both datasets is mainly due to the skin temperature differences between SRB and C3M for outgoing longwave fluxes (OLFR) and the cloud radiative properties observed using surface fluxes (DLF). For净中, see the summary of the results from the GEMSS/TOA (bottom center) and CERES footprint ~20 km.

The origin of the differences between SRB and C3M is reflected in the skin temperature differences between SRB-CIML and C3M (top right), units for fluxes are in Wm^-2 and temperature in K.

The origin of the differences for the LRFs at the TOA (OLR) and surface (DLF).

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