



# What Improvements are found in GISS Post-CMIP5 Compared to CERES-MODIS Cloud and Radiation Results

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## Key Accomplishment

1) Changes to the planetary boundary layer (PBL) scheme in the **GISS post-CMIP5** GCM have resulted in increased marine boundary layer cloud fractions (CF, ~20%) and total CFs over the Southern Mid-latitudes compared to **GISS CMIP5** simulations. **GISS Post-CMIP5 CFs** are closer to CERES-MODIS CFs, and are in better agreement than most other GCMs simulations.

2) Owing to the increased total CF over the Southern Mid-latitudes, the **GISS post-CMIP5** simulated TOA reflected Shortwave flux has also increased by ~15  $Wm^{-2}$  compared to **GISS CMIP5** simulations, bringing it closer to CERES results.

## Publications

- Stanfield, R., X. Dong, B. Xi, A. Kennedy, A. Gel Genio, P. Minnis, and J. Jiang, 2014: Assessment of NASA GISS CMIP5 and post-CMIP5 Simulated Clouds and TOA Radiation Budgets Using Satellite Observations: Part I: Cloud fraction and properties. *J. Clim.*, 27, 4189-4208. doi:10.1175/JCLI-D-13-00588.1
- Stanfield, R., X. Dong, B. Xi, A. Gel Genio, P. Minnis, D. Doelling, and N. Loeb, 2014: Assessment of NASA GISS CMIP5 and post-CMIP5 Simulated Clouds and TOA Radiation Budgets Using Satellite Observations. Part II: TOA Radiation Budgets and Cloud Radiative Forcings. *J. Clim.* (In press).
- Dolinar, E., X. Dong, B. Xi, J. Jiang and H. Su, 2014: Evaluation of CMIP5 simulated Clouds and TOA Radiation Budgets using NASA satellite observations. *Climate Dynamics*. DOI: 10.1007/s00382-014-2158-9

