Assessment of Dust Source Attribution to the Global Land and Ocean Regions
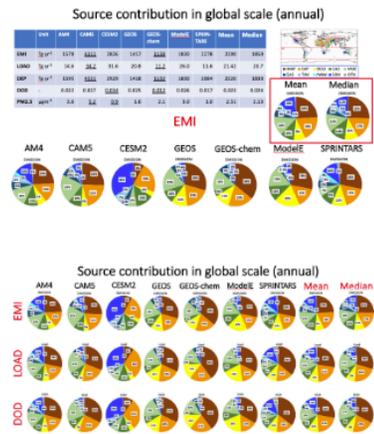
Dongchul Kim1,2, Mian Chin2, Greg Schuster3, Toshihiko Takemura4, Paolo Tuccella5, Paul Ginoux6, Xiaohong Liu7, Yang Shi7, Hitoshi Matsui8, and Kostas Tsigaridis9,10

1University of Maryland, Baltimore County, Baltimore, MD, USA, 2NASA Goddard Space Flight Center, Greenbelt, MD, United States, 3NASA Langley Research Center, Hampton, VA, United States, 4Research Institute for Applied Mechanics, Kyushu University, Fukuoka, Japan, 5University of L'Aquila, L'Aquila, Italy, 6NOAA, Geophysical Fluid Dynamics Laboratory, Princeton, New Jersey, USA,7Texas A&M University, College Station, TX, United States, 8Nagoya University, Nagoya, Japan,

UPLOAD AUTHOR PHOTOS

Objectives and method

contributions from various models

Source contribution in global scale (annual)

EMI

AM4   CAM5   CESM2   GEOS   GEOS-chem   ModelE   SPRINTARS

Source contribution in global scale (annual)

EMI

LOAD

DOD

Summary (1)

1. Significant difference in RSRC between models.
2. Consistent budget terms among emission, loading, and DOD in each model.
3. A multi-model mean provides a statistically robust estimate of global budget terms.
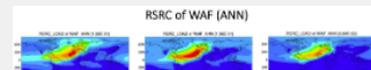
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## Horizontal distribution of source contribution

Seaonality of RSRC of WAF

RSRC of WAF (DJF)

RSRC of WAF (JJA)
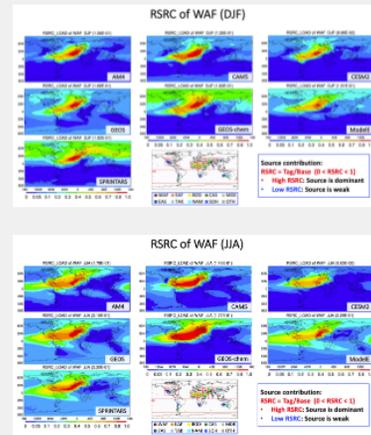
Comparisons of horizontal profile of RSRC from various source regions in models

RSRC of WAF (ANN)

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Vertical profile of source contribution

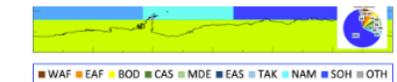### Veritcal profile of mass concentration and RSRC

Vertical Profile from GEOS (ANN): Dust (ug/m3)

Vertical Profile from GEOS (ANN): RSRC
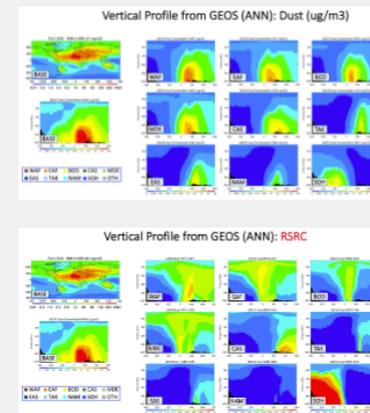
Comparisons of veritcal profile of RSRC from various source from models

RSRC of WAF

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Source contribution to various receptors

WAF   EAF   BOD   CAS   MDE   EAS   TAK   NAM   SOH   OTH

Overall Summary

1. This study is to estimate the source contribution to the Earth atmospheric dust including, EMI, LOAD, PM2.5, and DEP.
2. RSRC has seasonal variation and the differences between models are large, greater than factor of 2~3.
3. Different vertical profile structures between mass concentration and RSRC.
4. Source contribution to receptor regions is estimated and compared.
5. Multi-model mean source contribution to receptor region is estimated.
6. Also checkout our poster (A25D-07) "On Improving the Dust Lidar Ratios for Version 5 of CALIOP by Using Measurements with Source-tagged Model Results" by Kar et al.

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