

Home

Online Library ACP

- ▣ Recent Final Revised Papers
- ▣ [Volumes and Issues](#)
- ▣ Special Issues
- ▣ Library Search
- ▣ Title and Author Search

Online Library ACPD

Alerts & RSS Feeds

General Information

Submission

Review

Production

Subscription

Comment on a Paper

Impact  
Factor  
4.865

ISI  
indexed



▣ [Volumes and Issues](#) ▣ [Contents of Issue 1](#)

Atmos. Chem. Phys., 6, 237-253, 2006  
www.atmos-chem-phys.net/6/237/2006/

© Author(s) 2006. This work is licensed under a Creative Commons License.

## Aerosol direct radiative effect at the top of the atmosphere over cloud free ocean derived from four years of MODIS data

L. A. Remer and Y. J. Kaufman

Laboratory for Atmospheres, NASA/Goddard Space Flight Center, Greenbelt MD, USA

**Abstract.** A four year record of MODIS spaceborne data provides a new measurement tool to assess the aerosol direct radiative effect at the top of the atmosphere. MODIS derives the aerosol optical thickness and microphysical properties from the scattered sunlight at 0.55–2.1  $\mu\text{m}$ . The monthly MODIS data used here are accumulated measurements across a wide range of view and scattering angles and represent the aerosol's spectrally resolved angular properties. We use these data consistently to compute with estimated accuracy of  $\pm 0.6 \text{ Wm}^{-2}$  the reflected sunlight by the aerosol over global oceans in cloud free conditions. The MODIS high spatial resolution (0.5 km) allows observation of the aerosol impact between clouds that can be missed by other sensors with larger footprints. We found that over the clear-sky global ocean the aerosol reflected  $5.3 \pm 0.6 \text{ Wm}^{-2}$  with an average radiative efficiency of  $-49 \pm 2 \text{ Wm}^{-2}$  per unit optical thickness. The seasonal and regional distribution of the aerosol radiative effects are discussed. The analysis adds a new measurement perspective to a climate change problem dominated so far by models.

▣ [Final Revised Paper](#) (PDF, 3492 KB) ▣ [Discussion Paper](#) (ACPD)

Citation: Remer, L. A. and Kaufman, Y. J.: Aerosol direct radiative effect at the top of the atmosphere over cloud free ocean derived from four years of MODIS data, Atmos. Chem. Phys., 6, 237-253, 2006. ▣ [Bibtex](#) ▣ [EndNote](#) ▣ [Reference Manager](#)



Search ACP

Library Search

Author Search

News

- ▣ [Sister Journals AMT & GMD](#)
- ▣ [Financial Support for Authors](#)
- ▣ [Journal Impact Factor](#)
- ▣ [Public Relations & Background Information](#)

Recent Papers

01 | ACP, 23 Dec 2008: Measurement of glyoxal using an incoherent broadband cavity enhanced absorption spectrometer

02 | ACPD, 23 Dec 2008: Single particle characterization using a light scattering module coupled to a time-of-flight aerosol mass spectrometer

03 | ACP, 23 Dec 2008: Corrigendum to "Modeling the effect of plume-rise on the transport of carbon monoxide over Africa with NCAR CAM" published in