Dear Authors,

I have only one question: On page 8354 it was written that "satellite retrieval algorithms [...], such as single scattering albedo or other aspects utilized by the aerosol models, may not work well over the strong dust and biomass burning regions and/or during their active seasons." Which single scattering albedo was assumed in the visible spectral range around 550 nm?

Sebastian Otto

Single scattering albedo utilized by the aerosol models is necessary in MODIS retrieval algorithm. To our knowledge, MODIS aerosol retrievals are based on look-up table (LUT) approach, i.e. radiative transfer calculations are pre-computed for a set of aerosol and surface parameters. The goal of algorithm is to use the lookup table to determine the conditions that best mimic the MODIS-observed spectral reflectance and retrieve the associated aerosol properties. The MODIS aerosol retrievals have two independent algorithms, one for deriving aerosols over land and the second for aerosols over ocean. Three wavelengths are used in the algorithm over land (0.47, 0.66, and 2.13 um), and six wavelengths used in the algorithm over ocean (0.55, 0.66, 0.86, 1.24, 1.6, and 2.13). There are a bunch of publications to describe the MODIS algorithm available, e.g. Remer et al. (2005), Kaufman et al. (1997), etc.. Further details about MODIS aerosol retrieval algorithms can be found in these publications.

Xiaoyan Ma

References

Remer, L. A., et al.: The MODIS algorithm, products and validation. J. Atmos. Sci., 62, 947–973, 2005.

Kaufman, Y. J., D. Tanre´, L. A. Remer, E. F. Vermote, A. Chu, and B. N. Holben: Operational remote sensing of tropospheric aerosol over the land from EOS-MODIS, J. Geophys. Res., 102, 17,051-17,061, 1997.