Geophysical Research Abstracts,
Vol. 11, EGU2009-9632, 2009
EGU General Assembly 2009

Evaluation of spatial and temporal trends in absorbing aerosol presence using OMI OMAERO Aerosol Index data

D. C. Stein-Zweers, B. Veihelmann, J. P. Veefkind, P. Stammes, and P. Levelt
KNMI– Royal Netherlands Meteorological Institute, De Bilt, The Netherlands (stein@knmi.nl / +31302210407)

The Aerosol Index (AI) as derived from OMI OMAERO data provides daily, global information about the presence of aerosols in the atmosphere. Positive values of the aerosol index indicate the presence of absorbing aerosols including desert dust, smoke particles from biomass burning and volcanic ash. Due to the daily, global coverage of AI data these data are particularly useful for tracking the transport of aerosol plumes. Monthly means of AI are often used to describe the global distribution of absorbing aerosols. However, aerosol is often episodic in nature and is not well captured by monthly mean fields. In order to more fully describe the monthly and annual variability of aerosol presence, we evaluate the distribution of AI values along with mean and standard deviation for individual grid boxes based on a coarse 5 by 5 degree grid. Histograms of AI values for each monthly or annual grid box describe what is driving the mean AI values and variance. This is a computationally affordable method for storing additional, descriptive statistical information for monthly and annual grid boxes which cover the globe and span multiple years. Aerosol present above mid-level to high clouds can be under estimated by current AI calculation methods. As such, we also investigate the coincidence of mid- to high level clouds with overlying aerosol using MODIS cloud information. The description of long-term spatial and temporal trends in aerosol presence is useful for the interpretation of regional radiation balance as well as for understanding variability of regional source strengths and emission processes.