Geophysical Research Abstracts, Vol. 8, 00775, 2006
SRef-ID: 1607-7962/gra/EGU06-A-00775

Studies of the Aerosol Indirect Effect comparing CAM-Oslo and MODIS Data on Regional and Global Scales.

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The indirect effect of aerosols on liquid clouds is investigated by comparing aerosol and cloud characteristics from the Global Climate Model CAM-Oslo to those observed by the MODIS instrument onboard the TERRA and AQUA satellites (http://modis.gsfc.nasa.gov). The comparison is carried out for 15 selected regions ranging from remote and clean to densely populated and polluted. For each region, the slope and correlation coefficient for the following parameters are calculated: Aerosol Optical Depth vs. Liquid Cloud Optical Thickness, Aerosol Optical Depth vs. Liquid Cloud Effective Radius and Aerosol Optical Depth vs. Cloud Liquid Water Path. Modeled and observed correlation coefficients and slopes are hereafter compared for a 5-year period starting January 2000. Additionally, global maps for a number of aerosol and cloud parameters crucial for the understanding of the aerosol indirect effect are compared for the same period of time. Significant differences are found between the model and the observations on both the regional and global scale However, both the model and the observations show an overall positive correlation between aerosol optical depth and cloud optical depth for all regions, supporting the current understanding of aerosol-cloud interactions.