

## The sensitivity of global aerosol simulations to two AeroCom phase II emission inventories

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Previously, the effects of unified aerosol sources on global aerosol simulation in twelve different AeroCom models (i.e. AeroCom ExpB) was examined by Textor et al. (2007). In this study, the sensitivity of a model to different anthropogenic and biomass burning emissions (the AeroCom phase II inventories A2-ACCMIP and A2-MAP) are examined by one model, NASA GEOS5-GOCART. The resulting global and regional aerosol loading, aerosol optical depth (AOD) and radiative forcing will be compared among experiments with different emission inventories, and modeled AOD is evaluated by satellite data from MODIS and MISR, and in-situ measurement from AERONET. The preliminary results show that in the anthropogenic emission dominated region, and in even in East Asia, where the largest disagreement exists between these two emission inventories, there is little effect on the AOD due to differences from the two anthropogenic emission inventories. However, for the biomass burning dominated region, such as Southern Africa and South America, model runs based on A2-MAP show better agreement with satellite observations in the dry season over the southern hemisphere, i.e. June to September. It is suggested that the emission factor for SO<sub>2</sub>, BC and OC applied to GFEDv2 dry mass burned in A2-ACCMIP is too low for these regions. So far this study was performed with only one model. We suggest a new set of AeroCom Phase II multi-model experiments to assess the extent to which emissions, particularly the AeroCom II emission inventories, influence the simulation of AOD and radiative forcing.

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