

Contribution of different aerosol species to the global aerosol extinction optical thickness: estimates from model results

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Abstract

We combine global distributions of aerosol loading resulting from transport models for soil dust, sulfate, sea salt and carbonaceous aerosol. From the aerosol distributions we estimate optical thicknesses and compare them with sun photometer measurements and satellite retrievals, thereby revealing problems with both model results and comparisons with such measurements. Globally, sulfate, dust, and carbonaceous particles appear to contribute equally to the total aerosol optical thickness. Owing to the different optical properties of different aerosol types, aerosol composition should be taken into consideration for estimating the aerosol climate effect as well as for aerosol retrievals from satellite measurements.
