

GLOBAL AEROSOL MODELLING BY COUPLING OF THE GENERAL CIRCULATION MODEL ECHAM5 AND THE AEROSOL MODEL M7

P. Stier (1), J. Feichter (1), E. Vignati (2), J. Wilson (2)

(1) Max Planck Institute for Meteorology, Bundesstr. 55, 20146 Hamburg, Germany, (2) Environment Institute, European Commission, Joint Research Centre, I-21020, Ispra, Italy (stier@dkrz.de)

Aerosols play an important part in the earth's radiation budget directly by scattering and absorption as well as indirectly by their influence on cloud properties. However, insufficient measurements and simulations do not yet allow to quantify these effects satisfactorily. To increase the understanding about the effects of aerosols we utilise the ECHAM5 General Circulation Model (GCM) coupled with the aerosol model M7. ECHAM5 is the most recent version of the climate model developed at the Max Planck Institute for Meteorology in Hamburg evolving from the GCM of the European Centre for Medium Range Weather Forecasting in Reading. The multi-modal aerosol model M7, developed at the Joint Research Centre of the European Commission in Ispra, represents the aerosol distributions of Sulphate, Black Carbon, Organic Carbon, Sea Salt and Dust by seven internally mixed log-normal modes. The coupling of ECHAM5 and M7 allows simulating size resolved global aerosol distributions with online calculation of the various source and sink processes. Further coupling of the simulated aerosol size distributions to the cloud scheme will allow scrutinising the indirect aerosol effect. Results will be presented that show that the simulated aerosol fields are generally in reasonable agreement with the limited observations available.