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Aerosol emission data sets and their dimming / brightening

Doris Folini (1), Martin Wild (1), Maria Grazia Frontoso (1), and Toru Nozawa (2)

(1) ETH Zurich, Institute for Atmospheric and Climate Science, Zurich, Switzerland (doris.folini@env.ethz.ch), (2) National Institute for Environmental Studies, Tsukuba, Ibaraki 305-8506, Japan

A number of different aerosol emission inventories are used in the context of global climate modeling, all of them afflicted with uncertainties, even when it comes to recent decades. Our goal is to quantify differences in modeled climate arising from the use of different aerosol emission data sets. We perform ensembles of transient simulations (1950 - 2000) with one global climate model, ECHAM6-HAM2, with different aerosol emission data sets (IPCC CMPI5; NIES, National Institute of Environmental Studies, Japan; AEROCOM). The model results are analyzed with particular focus on changes in surface solar radiation (dimming and brightening), but also with regard to surface air temperature and precipitation.