

AeroCom model median

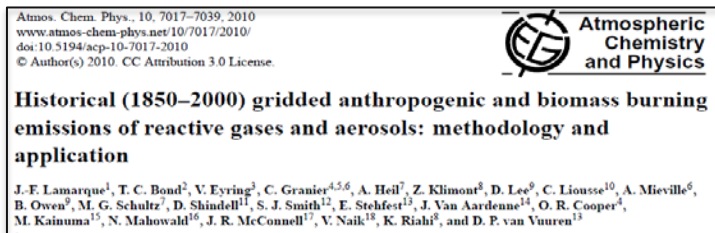
Gunnar Myhre

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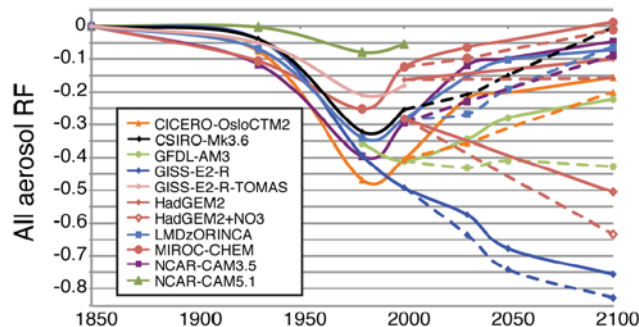
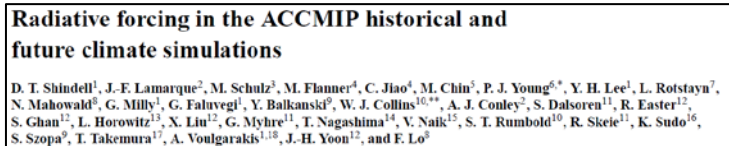
Time history of aerosols and aerosol properties

CMIP5

- 2010 – emissions and results from 1 aerosol model



- 2013 – ACCMIP results

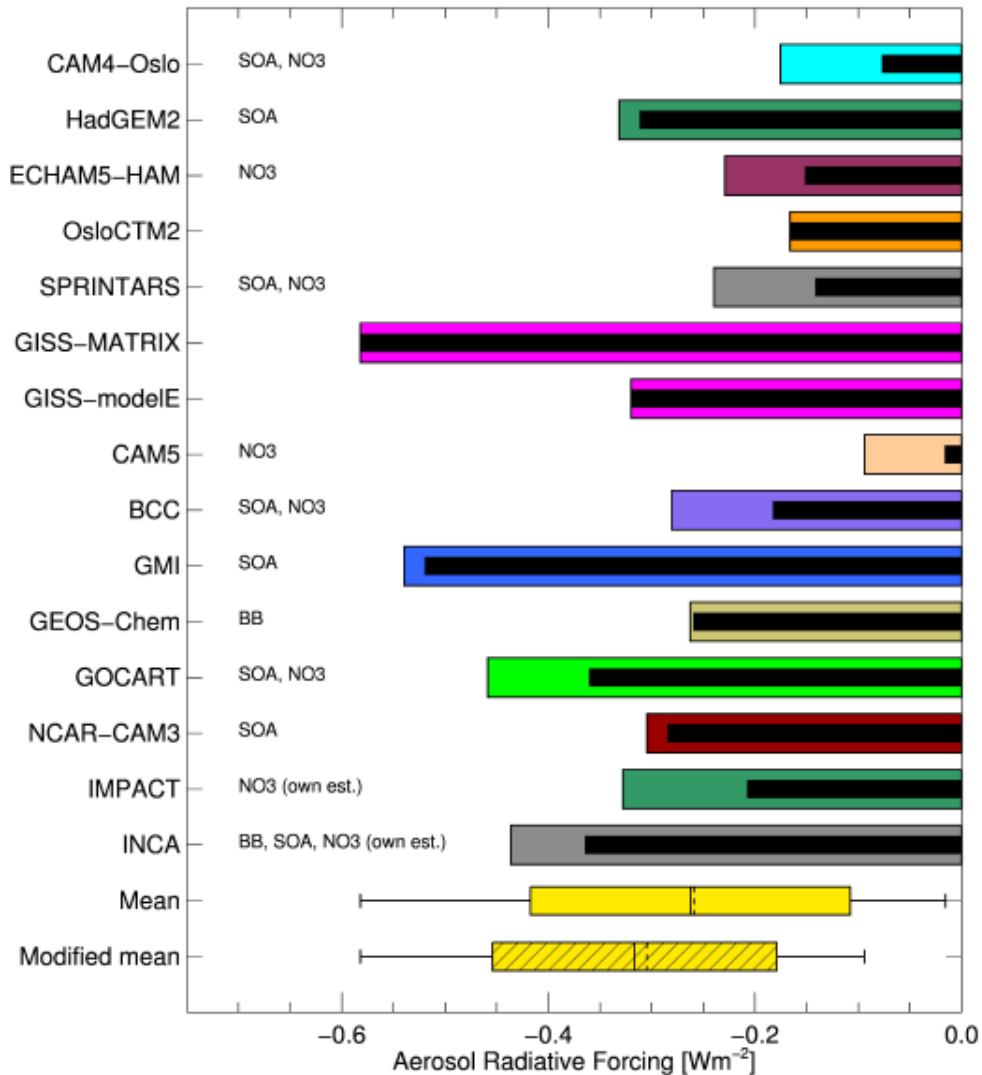


CMIP6

- Should we provide aerosol fields and aerosol optical properties from several models before the CMIP6 models complete the runs?

- AerChemMIP results will be analyzed for the CMIP6 simulations before IPCC AR6

Why provide aerosol model mean products?



Atmos. Chem. Phys., 13, 1853–1877, 2013
www.atmos-chem-phys.net/13/1853/2013/
 doi:10.5194/acp-13-1853-2013
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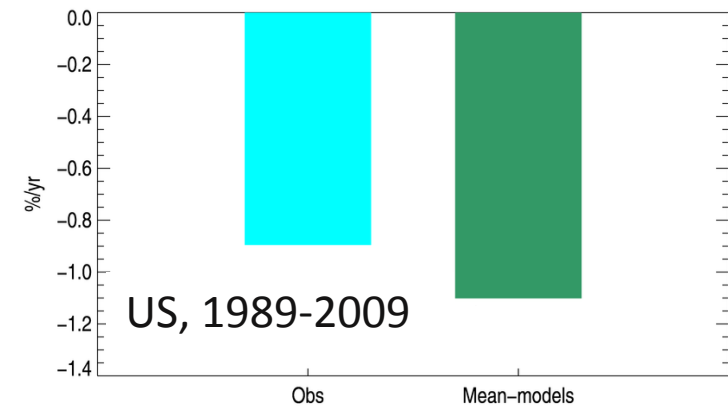
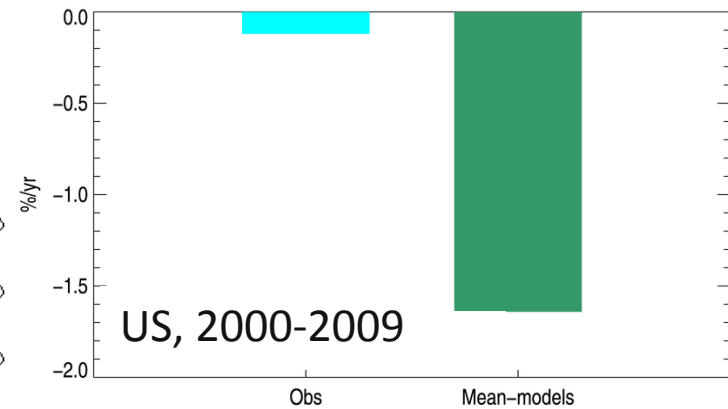
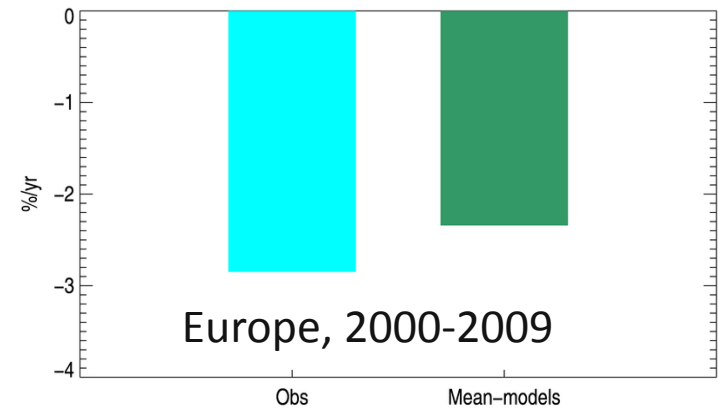
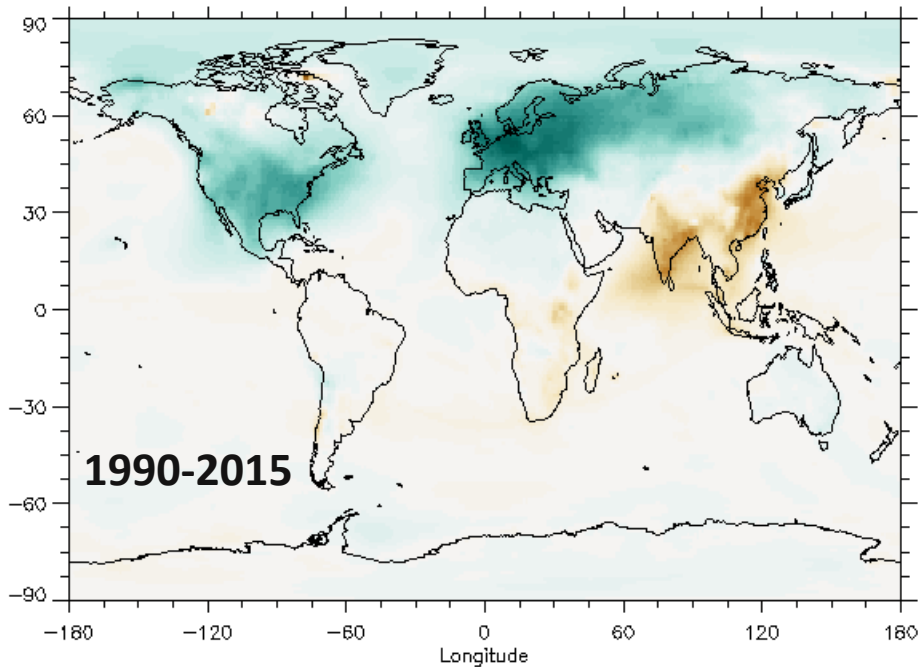
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Radiative forcing of the direct aerosol effect from AeroCom Phase II simulations

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Surface PM_{2.5}

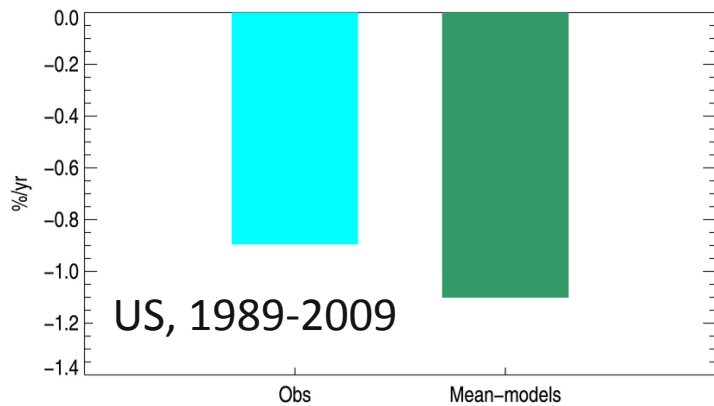
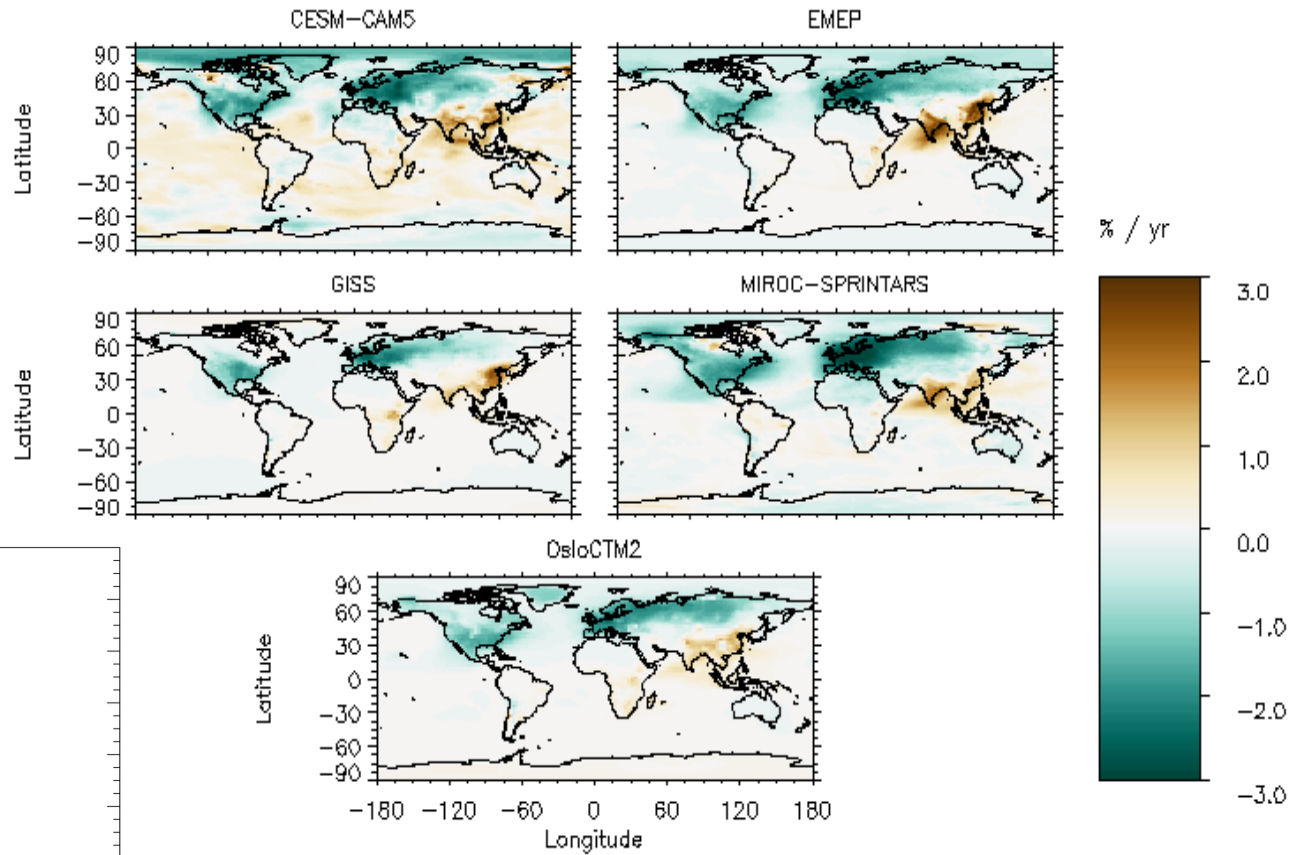
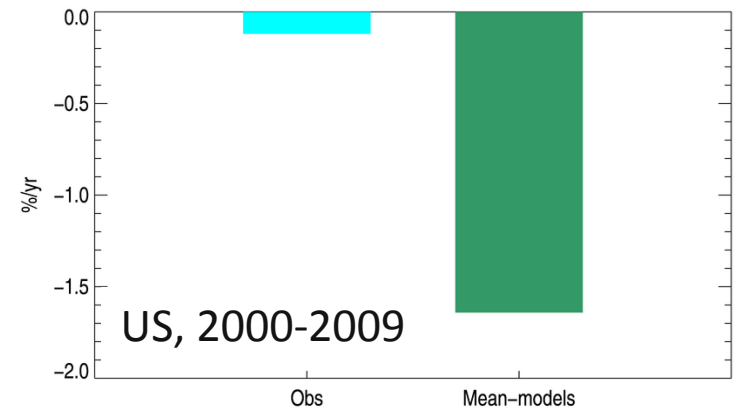
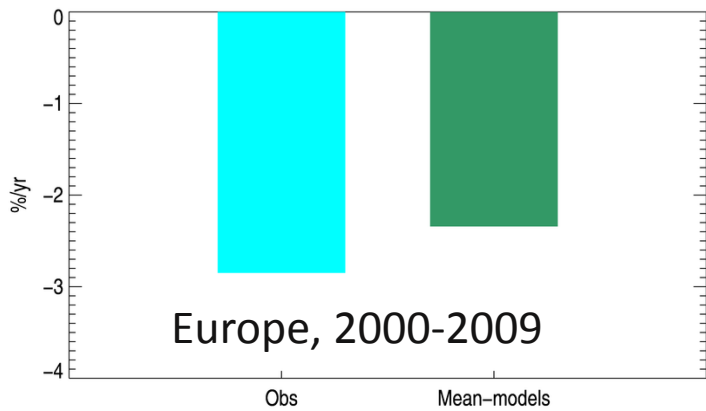


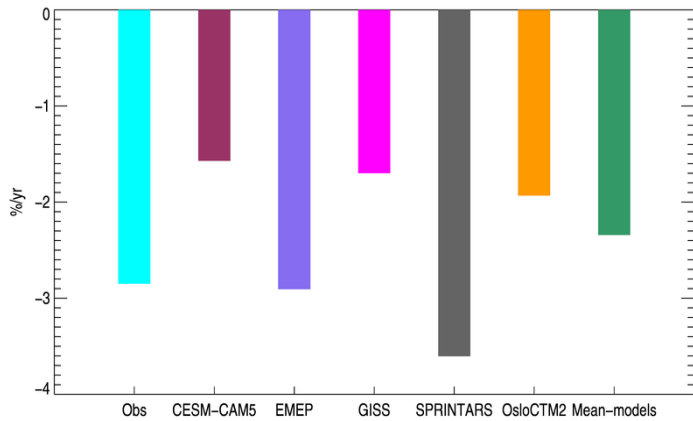
Models:

Mean of 5 global aerosol models: CESM-CAM5, EMEP, GISS, OsloCTM2, SPRINTARS

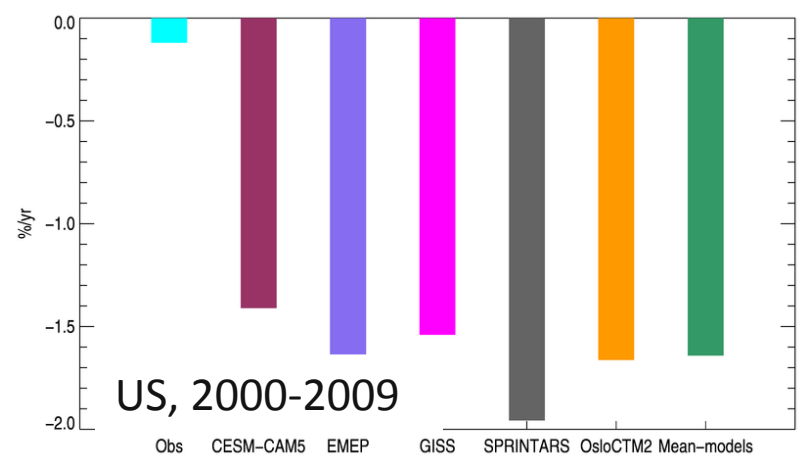
Observations:

Europe: EMEP (Tørseth et al., 2012), 13 stations
US: IMPROVE (Hand et al., 2011), 58 stations (25 for 1989-2009)

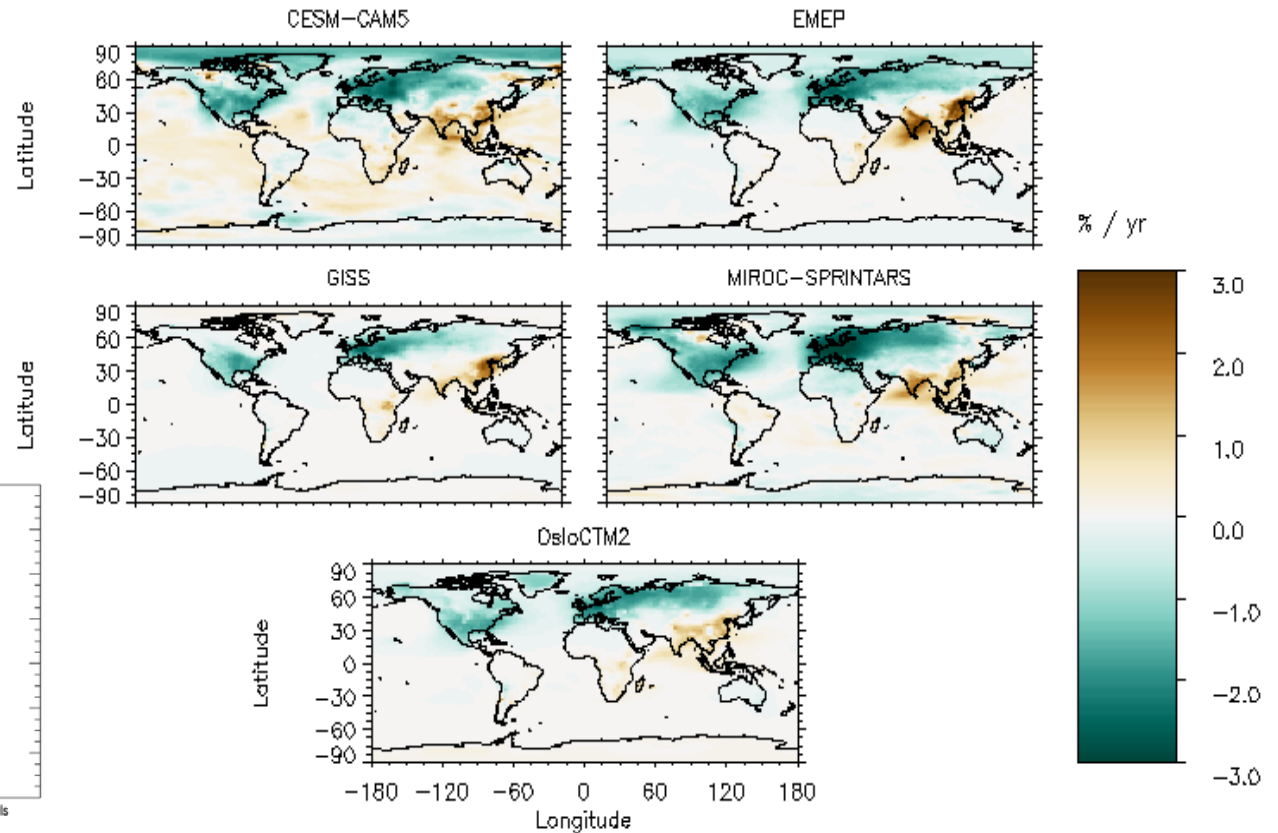




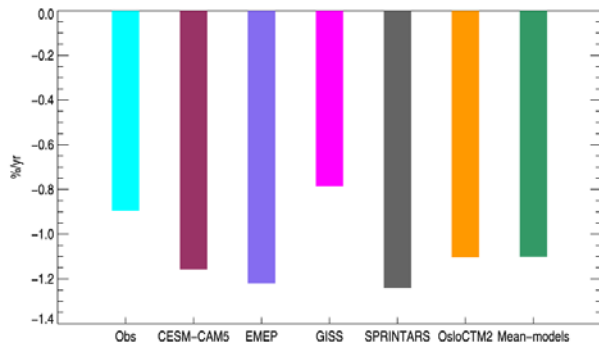
Europe, 2000-2009



US, 2000-2009



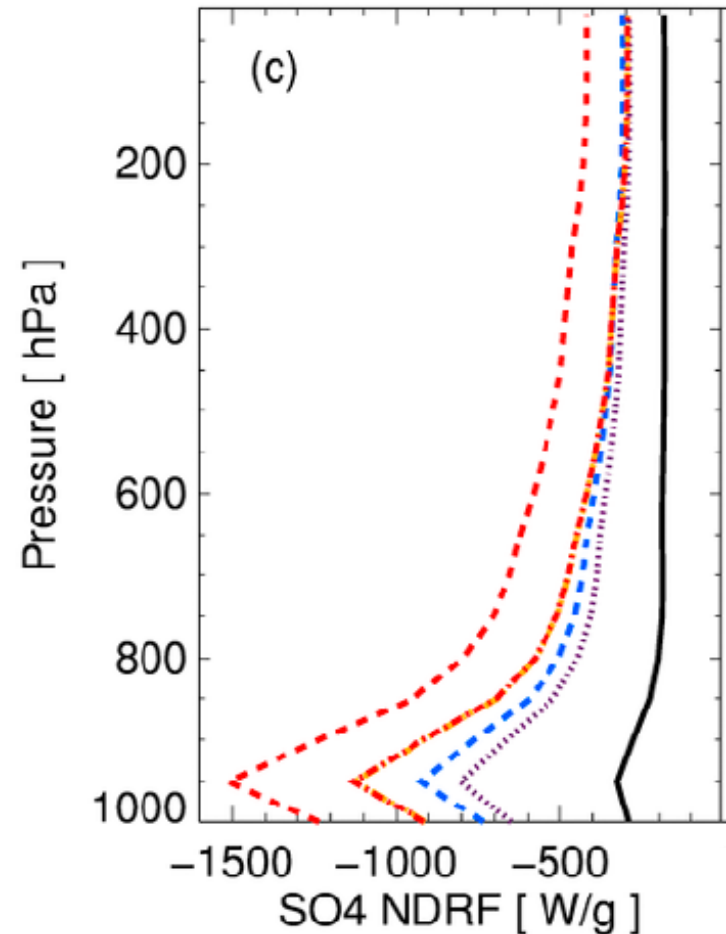
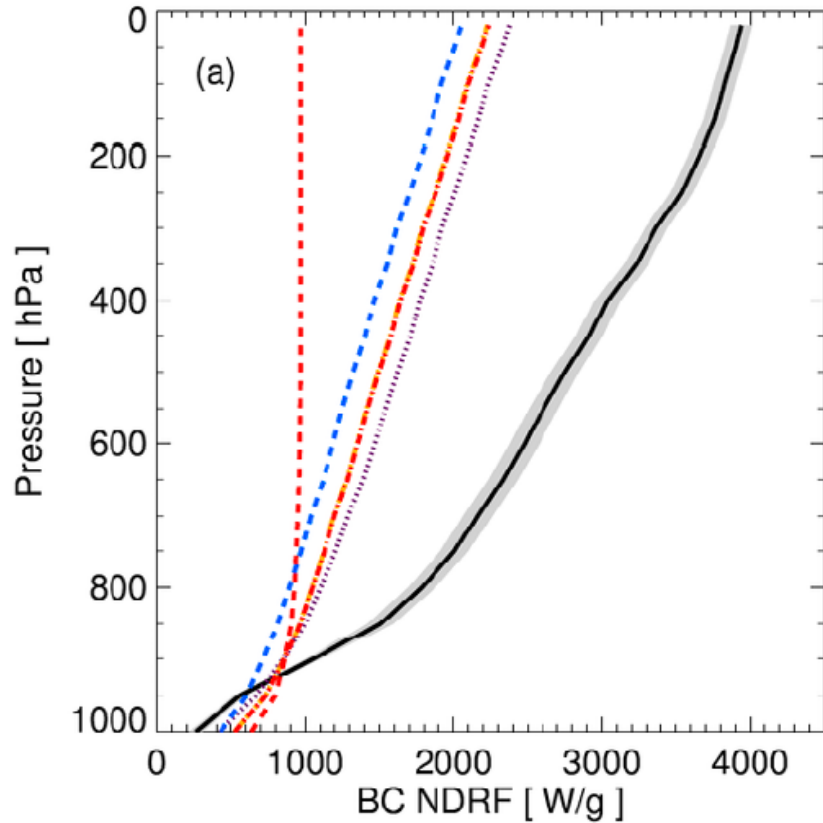
US, 1989-2009



Standard observational data to compare with models

- Surface $PM_{2.5}$
 - Surface concentration of key aerosol types such as sulphate, BC and OC
 - Surface extinction and absorption?
 - AOD
 - AAOD?
-
- Climatology and trends

Aerosol fields can be converted to radiative forcing



GEOPHYSICAL RESEARCH LETTERS, VOL. 38, L24802, doi:10.1029/2011GL049697, 2011
Vertical dependence of black carbon, sulphate and biomass burning aerosol radiative forcing

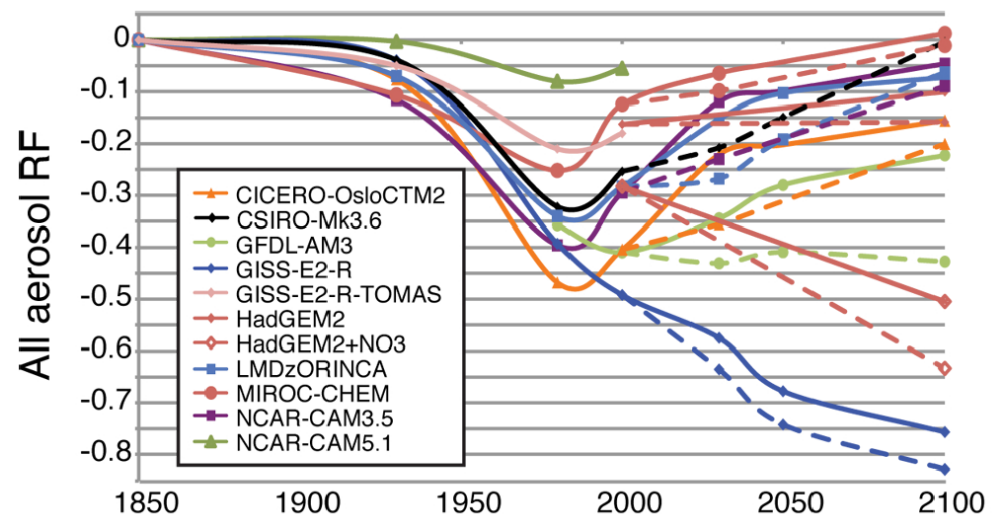
Bjørn H. Samset¹ and Gunnar Myhre¹

Plans

- Perform aerosol simulations 1850-2015 for a range of typical AeroCom models
- Serve as a benchmark for CMIP6 models, but not an official CMIP6 product
- Models fields will be regridded to common 1x1 degree format and together with model-mean made easily available for download
- Provide aerosol fields and aerosol optical properties for main anthropogenic aerosol types
- Perform simplified radiative forcing calculations
- Can be used in the analysis of AerChemMIP simulations and to observational data

Timeline

- Need commitment from modelling groups end of 2015
- Most of simulations by 2016
- Paper ready by summer 2017



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