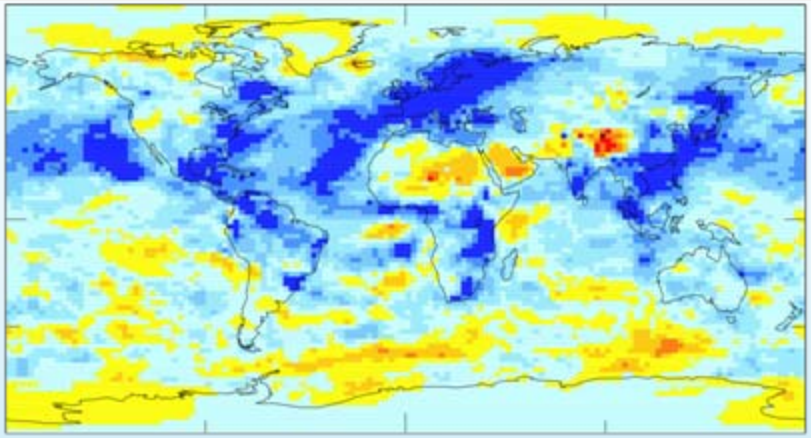
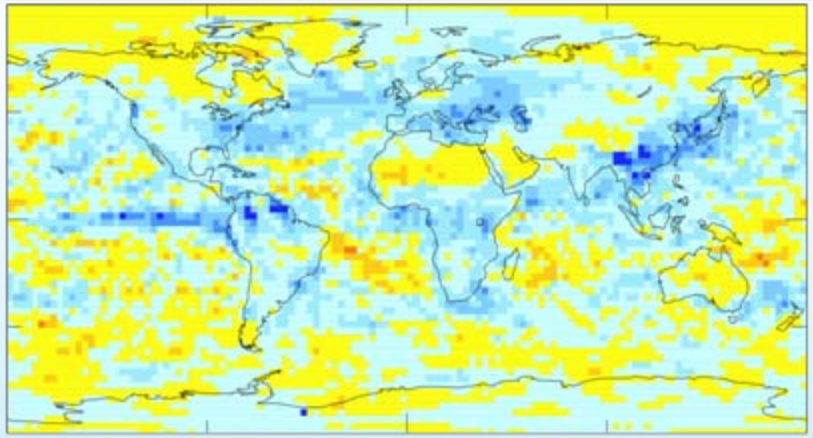
# 20th Century AR4 Aerosol Radiative Forcing ($W/m^2$)

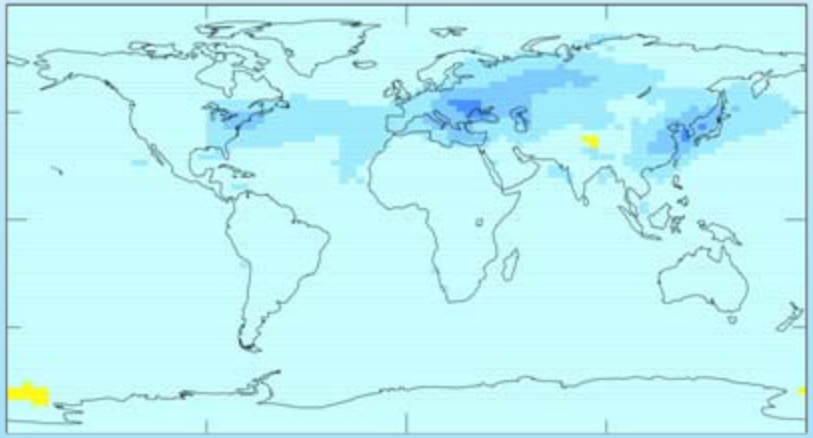
**GFDL**



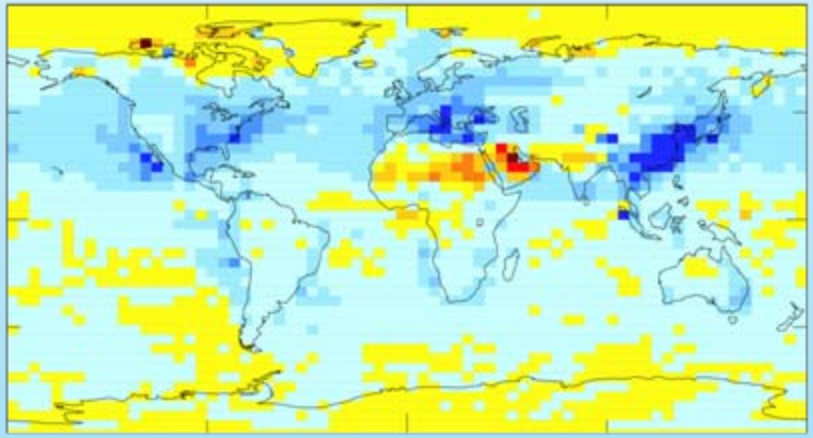
**SPRINTARS**

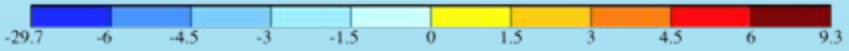


**IPSL**



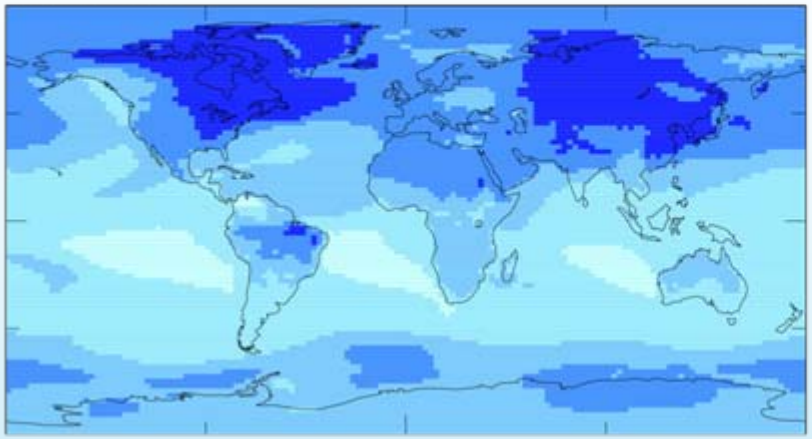
**GISS**



# *Surface Temperature Response to 20th Century AR4 Aerosol Radiative Forcing (C)*

**GFDL**



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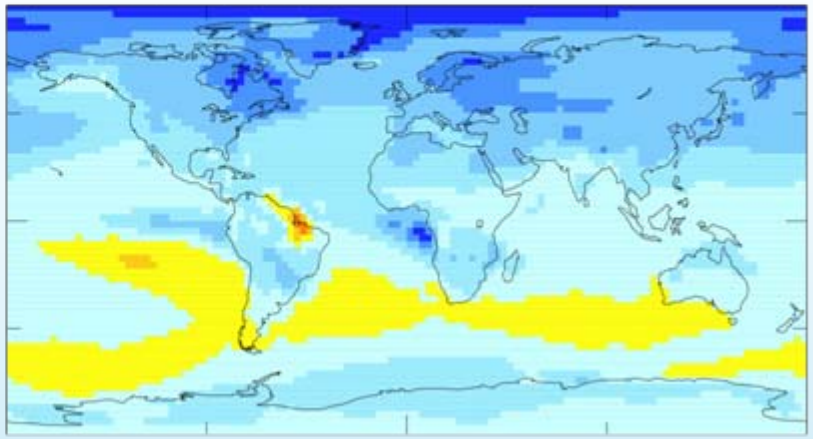
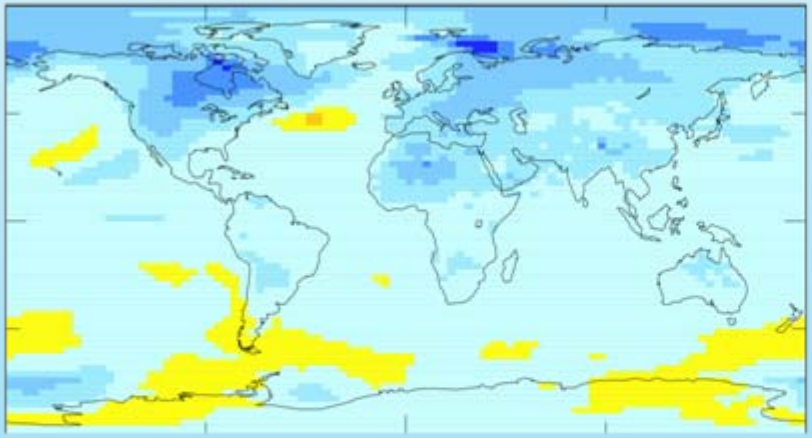
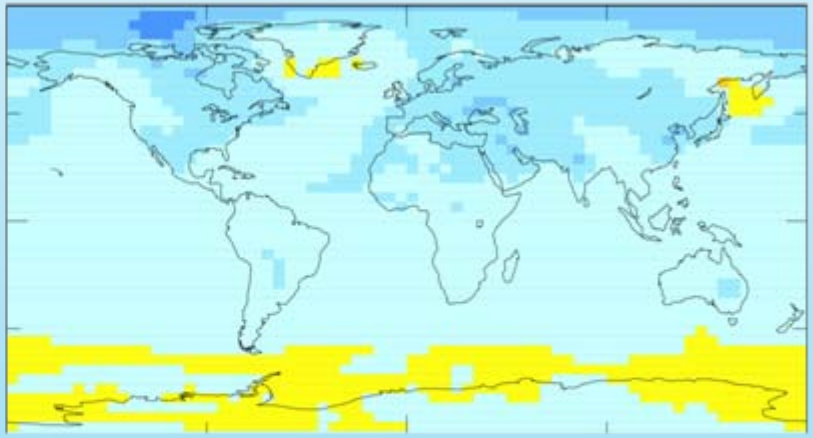


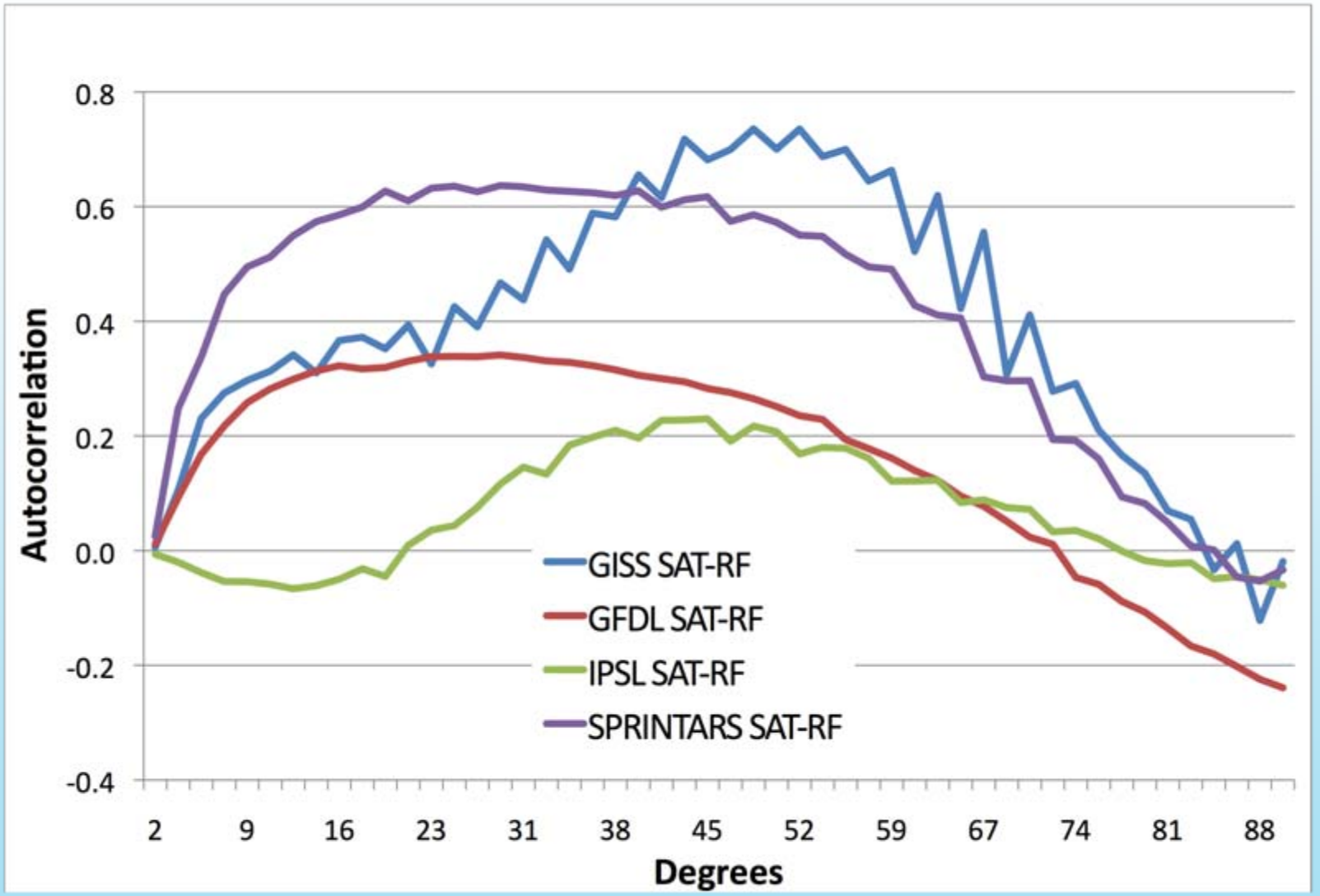
**IPSL**



**GISS**




# *Enhancement of spatial autocorrelation in dSAT over RF*




- Peaked structure comes from meridional smoothing of response

# ACCMIP: Simulations to compliment CMIP5

Historical simulations

| Emissions/Configuration | 1850 | 1890 | 1910 | 1930 | 1950 | 1970 | 1980 | 1990 | 2000 |
|---|---|---|---|---|---|---|---|---|---|
| Emissions and SSTs/GHGs for given year | C* | 1 | 1 | C | 1 | 1 | C* | 1 | C* |
| Year 2000 emissions/ 1850 SSTs & GHGs | | | | | | | | | C |

Future simulations

| Emissions/Configuration | 2010 | 2030 | 2050 | 2100 |
|---|---|---|---|---|
| RCP 2.6 | | C | 1 | C |
| RCP 4.5 | C | C | 1 | C |
| RCP 8.5 | | C | 1 | C |
| Year 2000 emissions/ RCP 8.5 SSTs & GHGs | | C | | C |

C=core, 1=tier 1, blank=not requested

Total of 14 core simulations, so ~76 model years (leaving out Tier 1 simulations).

Standardized output diagnostics coordinated with Aerocom, HTAP, CCMVal

CCC (Canada), ECHAM (Julich, Hamburg, JPL, Oberpfaffenhofen), ESRL/NOAA (US), Hadley Centre/Met Office (UK), LSCE/IPSL (France), MIROC (CCSR/NIES Japan), MRI (Japan), NASA GISS (USA), NCAR (USA), NOAA GFDL (USA), STOCHEM (UK), UKCA (NIWA New Zealand)

Winter/Spring 2010 submission of past/future output

measurement/model comparison of ozone RF estimates from TES
air quality and climate penalty
deposition of nitrogen and sulfur
comparisons with ice core observations and modern aircraft/satellite data (trop & strat)
evaluation of ozone budget and methane lifetime, comparison with ozonesondes
AeroCom-style evaluation of models vs multiple datasets (AeroNet, satellite, etc.)
evaluation of radiative forcing and of climate response