+ 0.3W/m^2 radiative forcing by black carbon

AERONET knows about BC

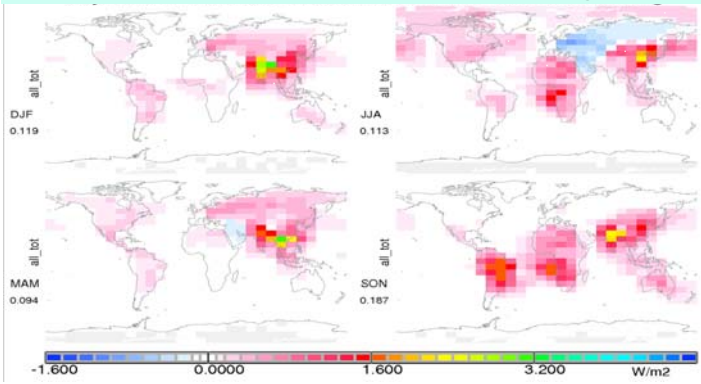
- AERONET sky radiances data provide in addition to AOD also data on aerosol absorption and size at about 400 sites.
- the absorption of sub-micron sizes is determined and attributed to BC.
- associated BC-AODs are then applied to correct BC-AODs and the radiative forcing of the AeroCom median model

CONCEPT

combine local higher quality data of AERONET with spatial distribution from global modeling
→ learn about deficiencies in modeling
→ a better global estimate for BC radiative forcing

AeroCom median forcing adjustments

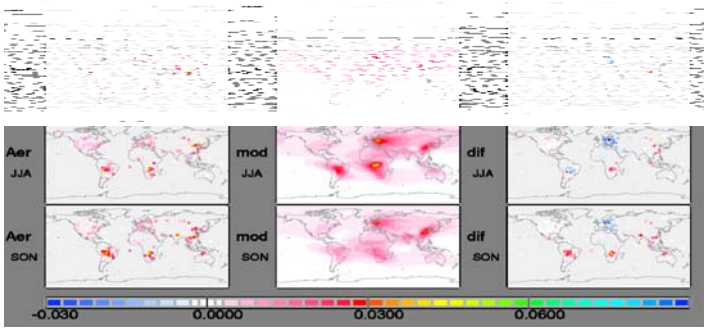
seasonal, total BC, ToA, all-sky



← BC forcing weaker BC forcing stronger →

comparing BC-AOD

AERONET / AeroCom median model / difference

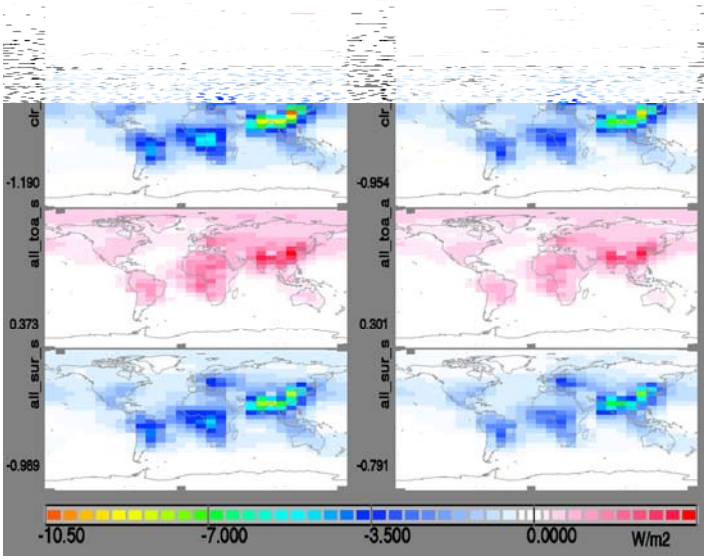


'best guess' BC radiative forcing

global annual averages

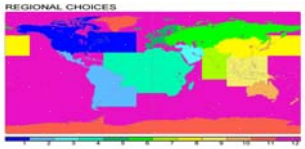
in W/m2	ToA (old)	surf	atm
total all-sky	+0.37 (+.24)	-1.0	+1.4
total clr-sky	+0.29 (+.19)	-1.2	+1.5
anthr. all-sky	+0.30 (+.19)	-0.8	+1.1
anthr. clr-sky	+0.23 (+.16)	-1.0	+1.2

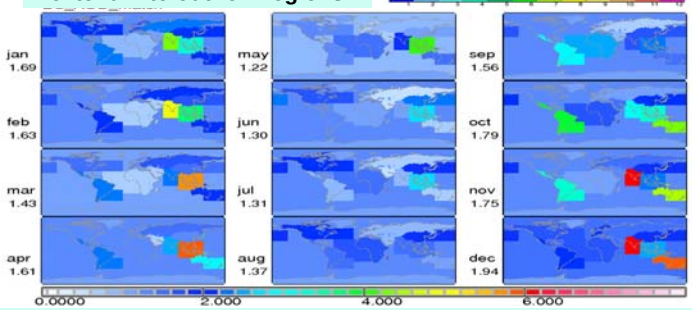
total BC anthropogenic BC



regional adjustments for modeling

regional corrections = AERONET / AeroCom inter-quartile ratios
extend into outflow regions





strong adjustment-factors for s.Asia dry season

S.Kinne, M.Schulz, S.Ghan
T.Bond and D.Fahey