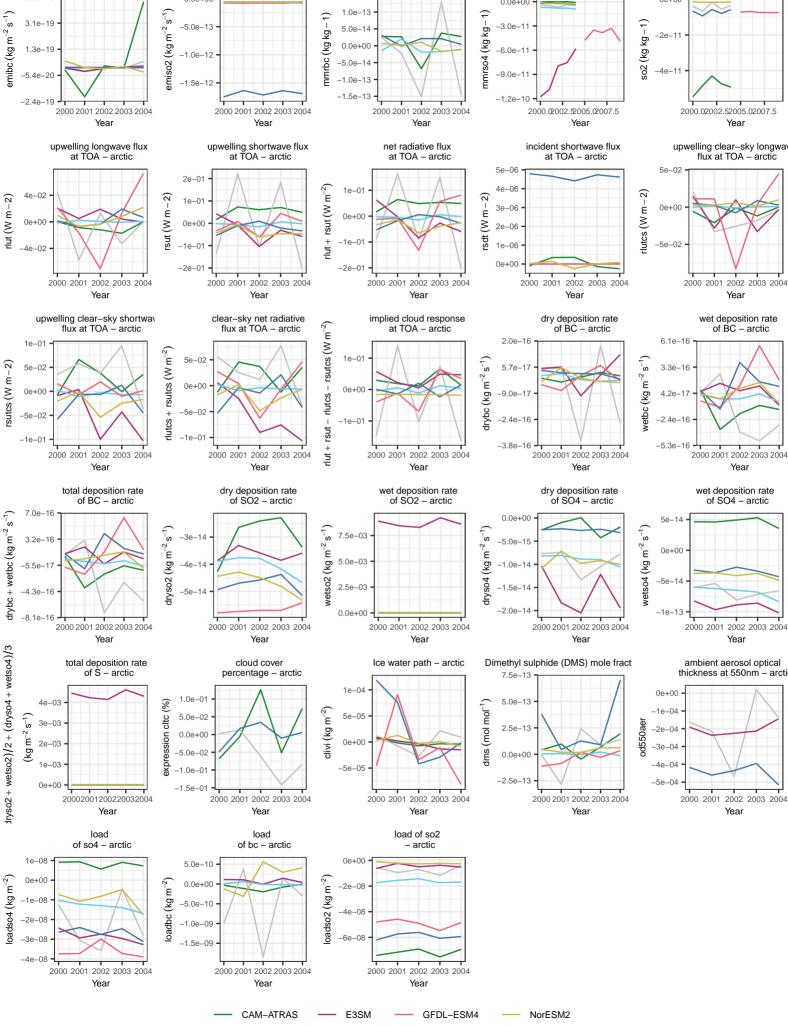
## shp-30p-red: absolute difference surface flux of SO2 – arctic surface concentration surface concentration of SO4 – arctic surface concentration of SO2 – arctic 1.0e-13 kg-1) (kg kgso2 (kg kg-1) nmrbc (kg 0.0e+00 -5.0e-2000 2001 2002 2003 2004 2000.02002.52005.02007.5 2000.02002.52005.02007.5 Year Year Year Year upwelling shortwave flux at TOA – arctic net radiative flux at TOA – arctic incident shortwave flux at TOA – arctic upwelling clear-sky longwav flux at TOA - arctic rlut + rsut $(W m^{-2})$ 1e-0 rlutes (W m rsdt (W m – 0e+00 -5e-02 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2002 2003 2004 Year Year Year Year clear-sky net radiative flux at TOA - arctic implied cloud response dry deposition rate of BC – arctic wet deposition rate of BC – arctic rlutcs – rsutcs (W $m^{-2}$ ) at TOA – arctic 2 0e-16 1e-01 vetbc (kg m<sup>-2</sup> s<sup>-</sup> 3.3e-16 drybc (kg m<sup>-2</sup> s<sup>-</sup> 0e+00 -9.0e-1 -1e-01 -2.4e-16 rsut rlut + 2000 2001 2002 2003 2004 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 Year Year Year Year dry deposition rate of SO2 – arctic wet deposition rate of SO2 – arctic dry deposition rate of SO4 – arctic wet deposition rate of SO4 – arctic 0.0e+00 wetso4 $(kg m^{-2} s^{-1})$ wetso2 (kg m $^{-2}$ s $^{-1}$ 7.5e-03 dryso4 (kg $\mathrm{m}^{-2} \mathrm{s}^{-1}$ 0e+00 5.0e-03 2.5e-03 -2.0e-14 0.0e+00 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 Year Year Year Year cloud cover Ice water path - arctic Dimethyl sulphide (DMS) mole fract ambient aerosol optical percentage - arctic thickness at 550nm - arctic 0e+00 'lom (mol mol' clivi (kg m<sup>-2</sup>) 5e-05 0e+00 0.0e+00 -5e-05 -5e-04 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 Year Year Year Year load load of so2 of bc - arctic - arctic 0e+00-4e-08



CESM1

**GEOS** 

GISS modelE

surface flux of BC – arctic

5.0e-19