shp-60p-red: absolute difference surface flux of SO2 – global surface flux of BC – global surface concentration surface concentration of SO4 – global surface concentration of SO2 – global globa 1.8e-19 -6.0e-12 emibc $(kg m^{-2} s^{-1})$ mmrbc (kg kg - 1) 0.0e+00 əmiso2 (kg m⁻² s^{-'} 8.9e-20 nmrso4 (kg kgso2 (kg kg-1) -9.0e-12 _5 0e_14 0.0e+00 -2e-12 -1.0e-13 -8.9e-20 -1.5e-13 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 Year Year Year Year Year upwelling longwave flux at TOA – global upwelling shortwave flux at TOA – global net radiative flux at TOA – global incident shortwave flux at TOA – global upwelling clear-sky longwav flux at TOA - global -lut + rsut (W m rsut (Wm-2)rlut (Wm-2)rsdt (Wm-2)rlutes (W m -2e-05 2e-01 40-02 2e-01 2.5e-02 2e-02 0.0e+000e+00 0e+00-2e-01 0e+00 2000 2001 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2002 2003 2004 2000 2001 2002 2003 2004 2002 2003 2004 Year Year Year Year Year implied cloud response at TOA – global upwelling clear-sky shortwa flux at TOA - global clear-sky net radiative flux at TOA - global dry deposition rate of BC – global wet deposition rate of BC – global rlutcs – rsutcs (W m^{-2}) 8 1e-15 3 7e-16 2e-01 rsutcs (W m⁻² $\mathrm{vetbc}\,(\mathrm{kg}\,\mathrm{m}^{-2}\,\mathrm{s}^{-1})$ rsutcs (W m-2) 1.5e-0 2e-01 drybc $(kg m^{-2} s^{-1}$ 5.9e-15 2.2e-16 1e-0 1.0e-0 3.7e-15 8.4e-17 1e-01 5.0e-02 0e+00 rlutcs + 1.5e-15 0.0e+00 0e+00 rsutrlut + 2000 2001 2000 2001 2002 2003 2004 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 Year Year Year Year Year total deposition rate of BC – global wet deposition rate of SO2 – global dry deposition rate of SO4 – global wet deposition rate of SO4 – global dry deposition rate of SO2 – global 7 9e-15 $\mathrm{drybc} + \mathrm{wetbc} \, (\mathrm{kg} \; \mathrm{m}^{-2} \; \mathrm{s}^{-1})$ $^{-2}$ s⁻¹) $dryso4 (kg m^{-2} s^{-1}$ dryso2 (kg m $^{-2}$ s $^{-1}$ 5.8e-15 wetso4 (kg m⁻² -1.5e-13 3.7e-15 1.6e-15 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 Year Year Year Year Year $\frac{1}{1}$ dryso2 + wetso2)/2 + $\frac{(dryso4 + wetso4)}{3}$ cloud cover total deposition rate Ice water path - global Dimethyl sulphide (DMS) mole fractic ambient aerosol optical thickness at 550nm – globa of S – global percentage - global -1.6e-13 5.0e-03 0e+00 0e+00 1e-04 dms (mol mol⁻¹ 0.0e+00 clivi $(kg m^{-2})$ $(kg m^{-2} s^{-1})$ od550aer 0e+00 -5.0e-03 -1 9e-13 -1e-03 -1.5e-02 -2.0e-13 200@001200220032004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 Year Year Year Year Year load load of so2 - global of bc - global -2e-08 loadso4 (kg m⁻²) -4e-08 loadbc (kg m⁻²) 2.5e-10 -6e-08 0.0e+00-8e-08 -2.5e-10 -1e-07 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004

Year

Year

CAM-ATRAS

CESM1

GFOS

GFDL-ESM4

GISS modelE

NorESM2