## bc-no-season: absolute difference surface flux of SO2 – global surface concentration of BC – global surface flux of BC – global surface concentration of SO4 – global surface concentration of SO2 – global 0.0e+00 6e+00 1.5e-01 emibc (kg m-2 s-1) 1e-01 emibc (kg m-2 s-1) mmrbc (kg kg-1) 4e+00 so2 (kg kg-1) mmrso4 (kg -5.0e+01 0e+00 2e+00 \_7 5e+01 00+00 2001 2003 2001 2002 2003 2001 2002 2003 2001 2002 2003 2001 2002 2003 Year Year Year Year Year upwelling longwave flux at TOA – global upwelling shortwave flux at TOA – global incident shortwave flux at TOA – global upwelling clear-sky longwav flux at TOA - global net radiative flux at TOA - global 1e-01 2e-02 rlut + rsut (W m-2) 2.5e-02 0e+00 0e+00 1.5e-08 ·lutcs (W m-2) rlut (W m-2) rsut (W m-2) 1e-02 ≥ 1.0e-08 -1e-01 0e+00 0.0e+00 -2e-01 -1e-02 0.0e+00 -2.5e-02 2003 2003 2003 2002 2003 2001 2002 2001 2002 2003 2004 2001 2002 2004 2001 2002 2001 Year Year Year dry deposition rate of BC – global upwelling clear-sky shortwav clear-sky net radiative implied cloud response wet deposition rate flux at TOA - global flux at TOA - global at TOA - global of BC - global 0e+00 rlut+rsut-rlutcs-rsutcs(W~m^ wetbc (kg m-2 s-1) 0e+00 0e+00 m-2 s-1) rsutcs (W m-2) -1e+00 0e+00 ·lutcs + rsutcs (W 1e-01 -1e+00 -2e-0 -2e-01 ķ -2e+00 drybc ( 0e+00 -4e-01 -4e-01 -3e+00 -3e+00 2001 2003 2004 2001 2002 2003 2001 2002 2003 2001 2002 2003 2001 2002 2003 Year Year Year Year Year dry deposition rate of SO4 – global wet deposition rate of SO4 – global total deposition rate of BC – global dry deposition rate of SO2 – global wet deposition rate of SO2 – global 1e-01 drybc + wetbc (kg m-2 s-1) 3e+002.5e-01 wetso2 (kg m-2 s-1) dryso2 (kg m-2 s-1) dryso4 (kg m–2 s–1) wetso4 (kg m-2 s-1) -2e+00 5e-02 2e+00 0.0e+000e+00 -4e+00 1e+00 2e+00 -5.0e-01 0e+00 2002 2003 2001 2002 2003 2001 2002 2003 2001 2003 2001 2003 Year Year Year (dryso2 + wetso2)/2 + (dryso4 + wetso4)/3 (kg m-2 s-1) total deposition rate of S – global ambient aerosol optical total cloud cover convective cloud cover thickness at 550nm - globa percentage - global percentage - global 3e+00 0e+00 1e-01 -2e+012e+00 clt (%) 0e+00 양 -4e+01 1e+00 -1e-01 -1e-01 -6e+01 0e+00 -2e-0 2002 2003 2002 2003 Year Year Year Year

CESM<sub>1</sub>

E3SM

GISS

CESM2

MIROC

NorESM2

**GFDL** 

OsloCTM3

**UKESM** 

**GEOS**