bc-no-season: absolute difference surface flux of BC – SH–land surface flux of SO2 – SH–land surface concentration of BC – SH–land surface concentration of SO4 – SH–land surface concentration of SO2 – SH–land 2.5e-11 0e+00 $\mathrm{emibc}\,(\mathrm{kg}\,\mathrm{m}^{-2}\,\mathrm{s}^{-1})$ emiso2 (kg $\mathrm{m}^{-2}\,\mathrm{s}^{-1}$) mmrbc (kg kg⁻¹) mmrso4 (kg kg⁻ so2 (kg kg⁻1 -2.6e-15 0e+00 5.0e-12 -6.0e-15 -6e-10 0.0e + 0.00.0e+00 -9.4e-15 2001 2002 2003 2001 2002 2003 2001 2002 2003 2001 2002 2003 2001 2002 2003 Year Year Year Year Year longwave flux at TOA – SH–land net radiative flux at TOA – SH–land incident shortwave flux at TOA – SH–land clear-sky longwave flux at TOA - SH-land shortwave flux at TOA – SH–land 0.1 0.05 rlut + rsut $(W m^{-2})$ 0.0 rlutcs $(W m^{-2})$ rlut $(W m^{-2})$ $rsut (W m^{-2})$ $rsdt (W m^{-2})$ 0.00 -0.1 -0.1 -0.1 -0.2 -0.2 -2e-07 -0.2 -0.3 -0.3 -0.10 2001 2003 2001 2003 2001 2003 2001 2002 2003 2001 2003 Year Year Year Year Year clear-sky shortwave flux at TOA - SH-land dry deposition rate of BC – SH–land wet deposition rate of BC – SH–land clear-sky net radiative implied cloud response flux at TOA - SH-land at TOA - SH-land 0.05 rlut + rsut – rlutcs – rsutcs (W m $^{-2}$) 0.00 rlutcs + rsutcs (W m^{-2}) 0.0 drybc (kg $m^{-2} s^{-1}$) wetbc $(kg m^{-2} s^{-1})$ $\rm rsutcs \, (W \, m^{-2})$ 0.05 -0.05 1.0e-13 -0.10 0.00 -0.15 -0.05 5.0e-14 -0.20-0.10 0.0e+00 2003 2003 2001 2003 2001 2002 2003 2001 2003 2001 2002 2001 2002 Year Year Year Year Year total deposition rate of BC – SH–land dry deposition rate of SO2 – SH–land dry deposition rate of SO4 – SH–land wet deposition rate of SO4 – SH-land wet deposition rate of SO2 - SH-land 4.8e-15 $drybc + wetbc \left(kg \ m^{-2} \ s^{-1} \right)$ wetso2 $(kg m^{-2} s^{-1})$ wetso4 $(kg m^{-2} s^{-1})$ $dryso2 (kg m^{-2} s^{-1})$ $dryso4 (kg m^{-2} s^{-1})$ 5e-14 1.0e-13 0e+00 5.0e-14 0e+00 0e+00 0.0e+00 2001 2002 2003 2004 2001 2002 2003 2001 2002 2003 2001 2002 2003 2001 2002 2003 Year total deposition rate of S – SH–land ambient aerosol optical convective cloud cover total cloud cover (dryso2 + wetso2)/2 + (dryso4 + wetso4)/3percentage - SH-land 0.00 0.1 $(kg m^{-2} s^{-1})$ 2e-14 -0.1 -0.02od550aer cltc (%) -0.1 -0.2 -0.04 -0.2 -0.3 -0.062001 2002 2003 2004 2002 2003 2002 2003 2004 2002 2003 2004 2001 2001 2004 2001 Year Year Year

Year

CFSM1

CESM2

F3SM

GEOS

GFDI

GISS

MIROC

NorESM2

OsloCTM3

UKESM