## so2-no-season: absolute difference surface flux of BC – NH–indian surface flux of SO2 – NH-indian surface concentration of BC – NH–indian surface concentration of SO4 – NH–indian surface concentration of SO2 – NH–indian 2e-12 0e+00 2e-14 $\mathrm{emibc}\,(\mathrm{kg}\,\mathrm{m}^{-2}\,\mathrm{s}^{-1})$ $\rm emiso2~(kg~m^{-2}~s^{-1})$ mmrbc (kg kg<sup>-1</sup>) mmrso4 (kg kg $^{ extstyle -1}$ $so2 (kg kg^{-1}$ 1e-14 -1.6e-18 0e+00 0e+00 -1e-14 -1e-10 -3.3e-18 2001 2002 2003 2001 2002 2003 2001 2002 2003 2001 2002 2003 2001 2002 2003 Year Year Year Year Year longwave flux at TOA – NH–indian net radiative flux at TOA – NH-indian incident shortwave flux at TOA – NH–indian clear-sky longwave flux at TOA - NH-indian shortwave flux at TOA -NH-indian 0.50 0.5 0.4 6e-07 0.2 0.25 rlut + rsut $(W m^{-2})$ 3e-07 rlutcs (W m<sup>-2</sup>) $rlut \left( W \; m^{-2} \right)$ $rsut (W m^{-2})$ $rsdt (W m^{-2})$ 0.0 0.0 0.00 0e+00 -0. -0.2 -0.5 -0.25 -0.4 -0.2 2001 2002 2003 2001 2002 2003 2001 2003 2001 2003 2001 2003 Year Year Year Year Year clear-sky shortwave flux at TOA - NH-indian clear-sky net radiative flux at TOA - NH-indian implied cloud response dry deposition rate wet deposition rate of BC - NH-indian at TOA - NH-indian of BC - NH-indian 3.4e-15 0.05 rlut + rsut - rlutcs - rsutcs (W m-2) rlutcs + rsutcs (W m<sup>-2</sup>) 0.0 $drybc (kg m^{-2} s^{-1})$ 1.9e-15 wetbc (kg $m^{-2} s^{-1}$ ) rsutcs $(W m^{-2})$ 0.2 1e-14 0.00 3.9e-16 0e+00 0.0 -0.05 -0.2 -0.3 -0.10 -2 6e-15 2002 2001 2003 2001 2003 2001 2003 2001 2002 2003 2001 2002 2003 Year Year Year Year Year total deposition rate of BC – NH–indian dry deposition rate wet deposition rate dry deposition rate wet deposition rate of SO2 - NH-indian of SO2 - NH-indian of SO4 - NH-indian of SO4 - NH-indian 4e-14 5.0e-14 $drybc + wetbc (kg m^{-2} s^{-1})$ 2e-14 $\rm dryso2 \ (kg \ m^{-2} \ s^{-1})$ wetso2 $(kg m^{-2} s^{-1})$ $dryso4 (kg m^{-2} s^{-1})$ 0.0e+0.0wetso4 $(kg m^{-2} s^{-1})$ 0e+00 1e-14 0e+00 0e+00 -5.0e-14 -2e-14 0e+00 -1.0e-13 -1.5e-13 -6e-13 2001 2002 2003 2004 2001 2002 2003 2004 2001 2002 2003 2004 2001 2002 2003 2004 2001 2002 2003 2004 Year Year total deposition rate of S – NH–indian ambient aerosol optical convective cloud cover total cloud cover (dryso2 + wetso2)/2 + (dryso4 + wetso4)/3thickness at 550nm - NH-india percentage - NH-indian 0.00 0.050 -0.05 $(kg m^{-2} s^{-1})$ 0.0 clt (%) 0.025 cltc -0.10 0.000 -0.5 0.0e+00 -0.025 2001 2002 2003 2004 2002 2003 2002 2003 2002 2003 2001 2004 2001 2004 2001 2004 Year Year Year Year CFSM1 F3SM **GFDI** MIROC OsloCTM3

CESM2

**GEOS** 

**GISS** 

NorESM2

**UKESM**