## so2-no-season: absolute difference surface flux of BC – NH–atlantic surface flux of SO2 – NH–atlantic surface concentration of BC – NH–atlantic surface concentration of SO4 – NH–atlantic surface concentration of SO2 – NH–atlantic $\mathrm{emibc}\,(\mathrm{kg}\,\mathrm{m}^{-2}\,\mathrm{s}^{-1})$ emiso2 $(kg m^{-2} s^{-1})$ 0e+00 mmrbc (kg kg<sup>-1</sup>) mmrso4 (kg kg<sup>-</sup> so2 (kg kg<sup>-1</sup>) 0e+00 0e+00 -6e-12 -2.9e-18 2001 2002 2003 2001 2002 2003 2001 2003 2001 2002 2003 2001 2002 2003 Year Year Year Year Year longwave flux at TOA -NH-atlantic net radiative flux at TOA – NH–atlantic incident shortwave flux at TOA – NH–atlantic clear-sky longwave flux at TOA - NH-atlantic shortwave flux at TOA – NH–atlantic 0.2 6e-07 0.06 0.1 0.05 0.1 $rlut + rsut (W m^{-2})$ 0.03 rlutcs (W $m^{-2}$ ) rlut $(W m^{-2})$ $rsut(Wm^{-2})$ sdt (W m<sup>-2</sup>) 0.00 0.0 0.0 0.00 -0.05 2e-07 -0.1 -0.1 -0.03 -0.10 -0.2 -0.152001 2002 2003 2001 2002 2003 2001 2003 2001 2002 2003 2001 2003 Year Year Year Year Year clear-sky shortwave clear-sky net radiative implied cloud response dry deposition rate wet deposition rate flux at TOA - NH-atlantic flux at TOA - NH-atlantic at TOA - NH-atlantic of BC - NH-atlantic of BC - NH-atlantic 4.0e-16 1.2e-15 rlut + rsut - rlutcs - rsutcs (W m<sup>-2</sup> 0.05 0.025 rlutcs + rsutcs (W m<sup>-2</sup>) 0.000 2.5e-16 3.7e-16 $drybc (kg m^{-2} s^{-1})$ wetbc (kg m $^{-2}$ s $^{-1}$ ) rsutcs $(W m^{-2})$ 0.000 0.00 -0.025 9.5e-17 -0.025 -0.05 -0.050-0.050 -0.10-0.15-2 1e-16 -2 0e-15 2001 2002 2003 2001 2002 2003 2001 2003 2001 2003 2001 2003 Year Year Year Year Year total deposition rate of BC – NH–atlantic dry deposition rate wet deposition rate dry deposition rate wet deposition rate of SO2 - NH-atlantic of SO2 - NH-atlantic of SO4 - NH-atlantic of SO4 - NH-atlantic 1.5e-15 3e-14 0e+00 $drybc + wetbc (kg m^{-2} s^{-1})$ 4.0e-14 5.9e-16 $dryso2 (kg m^{-2} s^{-1})$ wetso2 $(kg m^{-2} s^{-1})$ $dryso4 (kg m^{-2} s^{-1})$ 2e-14 wetso4 (kg m<sup>-2</sup> s<sup>-1</sup>) 0.0e+00-2e-14 -3.1e-16 1e-14 -1 2e-15 -4e-14 2001 2002 2003 2004 2001 2002 2003 2004 2001 2002 2003 2004 2001 2002 2003 2004 2001 2002 2003 Year Year Year total deposition rate ambient aerosol optical total cloud cover convective cloud cover (dryso2 + wetso2)/2 + (dryso4 + wetso4)/3thickness at 550nm - NH-atlar percentage - NH-atlantic percentage - NH-atlantic 0.01 0.00 0.1 $(kg m^{-2} s^{-1})$ -0.050.0 od550ae cltc (%) clt (%) -0.1 -0.01 -0.102001 2002 2003 2004 2003 2004 2002 2003 2002 2001 2002 2001 2004 2001 2003 2004 Year Year Year Year

CFSM1

CESM2

F3SM

**GEOS** 

**GFDI** 

**GISS** 

MIROC

NorESM2

OsloCTM3

**UKESM**