## so2-no-season: percent difference surface flux surface flux surface concentration surface concentration of BC - NH-atlantic of SO2 - NH-atlantic of BC - NH-atlantic of SO4 - NH-atlantic of SO2 - NH-atlantic 1e+00 3e+00 0e+00 -1e-03 ∆ emibc emiso2 ∆ mmrso4 00+00 $\Delta so2$ 1e+00 0.0e+00 1e+00-1e+00-3e-032000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 upwelling longwave flux at TOA – NH-atlantic upwelling shortwave flux at TOA – NH–atlantic upwelling clear-sky longwav flux at TOA - NH-atlantic net radiative flux incident shortwave flux at TOA - NH-atlantic at TOA - NH-atlantic 1e-01 1e-07 1e-02 rsut 5.0e-01 5 0e-01 0e+00 ∆ rlut + 0e+00 2.5e-01 2.5e-01 -5e-02 0.0e+00 -1e-07 0.0e + 0.0e +-2e-022002 2003 2004 2002 2003 2004 2000 2001 2002 2003 2004 2002 2003 2004 2002 2003 2004 2000 2001 2000 2001 2000 2001 Year Year Year Year Year upwelling clear–sky shortway flux at TOA – NH–atlantic clear-sky net radiative flux at TOA - NH-atlantic implied cloud response dry deposition rate wet deposition rate at TOA - NH-atlantic of BC - NH-atlantic of BC - NH-atlantic rsutcs) 2.0e+00 2 0e+00 0e+00 1.5e+00 rlutcs --4e-01 rlutcsrsut 5.0e-01 5 0e-01 -8e-01 \_2e\_01 0.0e+00 0.0e+00 -6e-01 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2002 2003 2004 2000 2001 Year Year Year total deposition rate of BC – NH–atlantic dry deposition rate of SO2 – NH–atlantic wet deposition rate of SO2 – NH–atlantic dry deposition rate of SO4 – NH–atlantic wet deposition rate of SO4 – NH–atlantic 8e-01 0e+00 1.5e+00 0.0e+00 ∆ drybc + wetbc 4e-01 1.0e+00 -1e+00∆ wetso4 0e+00 0e+00 -2e+00 0.0e+00 -5e-01 -4e-01 -3e+00-2.0e+00 -5.0e-01 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 $\frac{1}{3} dryso2 + wetso2)/2 + \frac{1}{3} dryso4 + wetso4)/3$ total deposition rate of S - NH-atlantic ambient aerosol optical total cloud cover - NH-atlar convective cloud cover - NH-atl surface cloud cover - NH-atla thickness at 550nm - NH-atla 2.5e-01 2e-01 0e+00 0e+00 -2e+01 0.0e+00-1e+00 0e+00 ∆ clt <u>\</u> \_40+01 -1e-01 -2e+00 -5e-01 -6e+01-2e-01 -3e+00-3e-01 -1e+00 2000 2001 2002 2003 2004 20002001200220032004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 Year Year Year Year Year ice water path - NH-atlantic surface concentration column mass burden column mass burden column mass burden of SO2 - NH-atlantic of DMS - NH-atlantic of BC - NH-atlantic of SO4 - NH-atlantic 1e+00 6e+00 2e-01 5e-01 4e+00 oadso2 ∆ clivi ∆ loadbc 0e+00 0e+00 2e+00 -5e-01 -5e-01 -4e-010e+00 -6e-01 2000 2001 2002 2003 2004

Year

