NH-atlantic: percent difference surface flux surface flux surface concentration surface concentration of BC - so2-at-height of SO2 - so2-at-height of BC - so2-at-height of SO4 - so2-at-height of SO2 - so2-at-height 9e+00 10+01 3e-05 2.0e+01 6e+00 2e-05 0e+00 emiso2 Δ emibc 1e - 053e+00 -1e+01 5 0e+00 _1e_05 2000 2001 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 upwelling longwave flux at TOA – so2–at–height upwelling clear-sky longwav flux at TOA - so2-at-heigh net radiative flux upwelling shortwave flux incident shortwave flux at TOA - so2-at-height at TOA - so2-at-height at TOA - so2-at-height 1e-01 5e-02 rsut 0e+00 5 0e-01 ∆ rsdt rlut + 1 0e+00 2 50 -1e-07 0.0e + 000.0e+00 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2002 2003 2004 2000 2001 2002 2003 2004 2000 Year Year Year Year Year upwelling clear-sky shortway flux at TOA - so2-at-heigh clear-sky net radiative implied cloud response dry deposition rate wet deposition rate flux at TOA - so2-at-heigh at TOA - so2-at-height of BC - so2-at-height of BC - so2-at-height rsutcs) 2.0e+00 0.0e + 001.5e+00 1.5e+00 -5 0e-01 rlutcs + 1.0e+00 rsut -5e-01 5.0e-01 5.0e-01 -1.0e+00-5.0e-01 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 Year dry deposition rate of SO2 – so2–at–height wet deposition rate of SO2 – so2–at–height dry deposition rate of SO4 – so2–at–height wet deposition rate of SO4 – so2–at–height total deposition rate of BC - so2-at-height 2.5e+01 1e+00 5e+00 2.0e+0° 2.0e+01 5e-01 0e+00 1.0e+01 -5e+00 10401 -5e-01 -1e+00 -1e+01 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 Year Year Year Year $\frac{1}{3} dryso2 + wetso2)/2 + \frac{1}{3} dryso4 + wetso4)/3$ Year total deposition rate ambient aerosol optical total cloud cover - so2-at-he convective cloud cover - so2-at-l surface cloud cover - so2-at-l of S - so2-at-height thickness at 550nm - so2-at-h 5.0e-01 0e+00 0.0e+00 6e+01 -2e+01 0.0e+00 4e+35 <u>0</u> 4e+01 -4e+01 2e+35 -2.5e-01 2e+01 -1.5e+00 -8e+01 0e+00 20002001200220032004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2002 2000 2001 2002 2003 2004 2000 2001 2003 2004 Year Year Year Year Year ice water path - so2-at-heig surface concentration column mass burden column mass burden column mass burden of DMS - so2-at-height of BC - so2-at-height of SO2 - so2-at-height of SO4 - so2-at-height 1e+00 5e-01 5e-01 2e+0 2e+01 ∆ loadbo 0e+000e+00 0e+00 _5e_01 1e+01-5e-01 -5e-01 -1e+00 0e+00 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2002 2003 2004 2000 2001 2002 2003 2004 Year Year Year Year Year CAM5 E3SM **GISS** OsloCTM3 CESM1 **GEOS** MIROC **UKESM**

CESM2

GFDL

NorESM2