so2-at-height: 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 9e+00 10+01 3e-05 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 – NH-atlantic upwelling shortwave flux at TOA – NH–atlantic incident shortwave flux at TOA – NH–atlantic upwelling clear-sky longwav flux at TOA - NH-atlantic net radiative flux at TOA - NH-atlantic 1e-01 5e-02 rsut 0e+00 ∆ rlutcs 5 0e-01 ∆ rsdt ∆ rlut + 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 2001 Year Year Year Year Year upwelling clear–sky shortway flux at TOA – NH–atlantic clear-sky net radiative implied cloud response dry deposition rate wet deposition rate flux at TOA - NH-atlantic at TOA - NH-atlantic of BC - NH-atlantic of BC - NH-atlantic rsutcs) 2.0e+00 0.0e+001.5e+00 1.5e+00 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 total deposition rate of BC – NH–atlantic dry deposition rate wet deposition rate of SO2 – NH–atlantic dry deposition rate of SO4 – NH–atlantic wet deposition rate of SO4 – NH–atlantic of SO2 - NH-atlantic 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 5.0e+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 - NH-atlar convective cloud cover - NH-atla surface cloud cover - NH-atla of S - NH-atlantic thickness at 550nm - NH-atla 5.0e-01 0.0e+00 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 2003 2004 2000 2001 2002 2003 2004 2000 2001 Year Year Year Year Year ice water path - NH-atlantic column mass burden column mass burden column mass burden surface concentration of SO4 - NH-atlantic of DMS - NH-atlantic of BC - NH-atlantic of SO2 - NH-atlantic 1e+00 5e-01 5e-01 2e+0 2e+01 ∆ clivi ∆ loadbc 0e+000e+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