Reference – absolute NH–atlantic averages surface concentration of BC – NH–atlantic surface flux of BC - NH-atla surface flux of SO2 - NH-atla surface concentration surface concentration of SO4 - NH-atlantic of SO2 - NH-atlantic 2.0e-13 emibc $(kg m^{-2} s^{-1})$ emiso2 (kg m⁻² s⁻¹ mmrbc (kg kg⁻¹ mmrso4 (kg kg $so2 (kg kg^{-1}$ 1.00e-09 5.00e 1.2e-10 2.50e-12 5.0e-14 2002 2003 2004 2000 2001 2002 2003 2004 2002 2003 2004 2002 2003 2004 2002 2003 2004 Year Year Year Year longwave flux at TOA - NH-atla clear-sky longwave flux at TOA - NH-atlantic shortwave flux at TOA - NH-atla net radiative flux at TOA - NH-at incident shortwave flux at TOA - NH-atlantic -244 -335 300 $rlut + rsut (W m^{-2})$ rlut $(W m^{-2})$ $rsut (W m^{-2})$ -248 rlutcs $(W m^{-2})$ $rsdt (W m^{-2})$ 200 -340 100 -252 -345 -276 0 -256 2002 2000 2001 2002 2003 2004 2000 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2003 2004 2001 Year Year clear-sky net radiative flux at TOA - NH-atlantic clear-sky shortwave flux at TOA - NH-atlantic implied cloud response at TOA – NH-atlantic dry deposition rate of BC - NH-atlantic wet deposition rate of BC – NH–atlantic rsut - rlutcs - rsutcs (W m⁻²) 4.0e-13 ·lutcs + rsutcs (W m⁻²) $drybc (kg m^{-2} s^{-1})$ wetbc $(kg m^{-2} s^{-1})$ $rsutcs (W m^{-2})$ -25 -315 -30-320 -44 ij 2000 2001 2002 2003 2004 2001 2002 2003 2004 2000 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 Year Year Year Year Year total deposition rate dry deposition rate wet deposition rate dry deposition rate wet deposition rate of SO4 - NH-atlantic of BC - NH-atlantic of SO2 - NH-atlantic of SO2 - NH-atlantic of SO4 - NH-atlantic $drybc + wetbc (kg m^{-2} s^{-1})$ 5.0e-13 0.03 dryso2 (kg m $^{-2}$ s $^{-1}$) wetso2 (kg $\mathrm{m}^{-2}\,\mathrm{s}^{-1}$ 2.0e-12 wetso4 (kg $\mathrm{m}^{-2}\,\mathrm{s}^{-1}$ dryso4 (kg $\mathrm{m}^{-2}\,\mathrm{s}^{-1}$ 0.02 4.0e-13 0.01 3 0e-13 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2002 2003 2004 2000 2001 2002 2003 2004 Year Year Year Year total deposition rate of S – NH–atlantic (dryso2 + wetso2)/2 + (dryso4 + wetso4)/30.015 $(kg m^{-2} s^{-1})$ 0.010 0.005 0.000 2000 2001 2002 2003 2004 Year CAM-ATRAS CESM1-1950 GISS-1950 CAM-ATRAS-1950 GEOS-1950 NorESM2 CESM1 E3SM-1950 **GISS** NorESM2-1950