shp-60p-red-1950: absolute difference surface flux of SO2 – NH–atlantic surface flux BC – NH–atlantic surface concentration surface concentration of SO4 – NH–atlantic surface concentration of SO2 – NH-atlantic 4 86-21 -7.0e-12 mmrso4 (kg kg – 1) $\mathrm{emibc}\,(\mathrm{kg}\,\mathrm{m}^{-2}\,\mathrm{s}^{-1})$ əmiso2 (kg m $^{-2}$ s $^{-1}$ nmrbc (kg kg-1) _1 4e_2 (kg kg - 1)1e-12 -7.6e-2 302 -1 4e-20 0e+00 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 Year Year Year upwelling longwave flux at TOA – NH–atlantic upwelling shortwave flux at TOA – NH–atlantic net radiative flux at TOA – NH-atlantic incident shortwave flux at TOA – NH–atlantic upwelling clear-sky longway flux at TOA - NH-atlantic 0e+00 $rsut (W m^{-2})$ rlutcs (W m-2) 5.0e-07 sut (W m-2)sdt (Wm-2)8.0e-01 2.5e-07 4 0e-01 _8e_01 rt H 0.0e+00 0.0e+00 -2.5e-07 -3e-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 Year Year upwelling clear–sky shortwav flux at TOA – NH–atlantic clear-sky net radiative implied cloud response dry deposition rate of BC – NH-atlantic wet deposition rate of BC – NH-atlantic flux at TOA – NH–atlantic rsutcs $(W m^{-2})$ at TOA – NH–atlantic 2 2e-16 1 2e-15 rlutcs + rsutcs (W m⁻²) vetbc (kg m⁻² s^{-′} drybc (kg m⁻² s⁻ 8.0e-01 0e+00 1e-01 rlutcs 0e+00 rsut-0.0e + 00rlut + 2000 2001 2002 2003 2004 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 Year Year 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 wetso4 (kg $\mathrm{m}^{-2}\,\mathrm{s}^{-1}$ $^{-2}$ s⁻¹ dryso4 (kg $\mathrm{m}^{-2}\,\mathrm{s}^{-1}$ dryso2 (kg m $^{-2}$ s $^{-1}$ -9.5e-16 -3.2e-15 5.0e-13 1e-13 -5.5e-15 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 Year Year Year total deposition rate of S - NH-atlantic cloud cover Ice water path - NH-atlan@imethyl sulphide (DMS) mole fraction ambient aerosol optical thickness at 550nm – NH–atla percentage - NH-atlantic 36-02 _lom lom) smp clivi (kg m⁻²) $(kg m^{-2} s^{-1})$ 양 2e-02 2e-03 expression 1e-02 20002001200220032004 2000 2001 2002 2003 2004 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 Year Year Year Year Year load load load of so2 - NH-atlantic of so4 - NH-atlantic of bc - NH-atlantic oadso4 $(kg m^{-2})$ -5e-08 loadso2 (kg m⁻²) oadbc (kg m⁻²) 0e+00 -1e-07 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 Year Year Year

CAM-ATRAS

CESM1

F3SM

GEOS

GISS modelE

NorESM2

rlut (Wm-2)

rsutcs (W m-2)

drybc + wetbc (kg m⁻² s⁻¹)

dyso2 + wetso2)/2 + (dryso4 + wetso4)/3