shp-30p-red: absolute difference surface flux 3C – NH–atlantic surface flux of SO2 – NH–atlantic surface concentration surface concentration of SO4 – NH–atlantic surface concentration of SO2 – NH–atlantic 1.7e-20 -7.5e-12 (kg kg - 1)nmrbc (kg kg-1) emiso2 (kg m⁻² s⁻ 8.3e-2 (kg kg – 1) -1.0e-1 0e+00 2.2e-24 mmrso4 -8.3e-21 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 incident shortwave flux at TOA – NH–atlantic upwelling clear–sky longwa flux at TOA – NH–atlanti net radiative flux at TOA - NH-atlantic 1e-01 0e+00 $rlut + rsut (W m^{-2})$ 7.5e-06 rlutcs (Wm-2)2.5e-02 sut (W m - 2)5e-02 sdt (Wm-2)-1e-01 0e+00 0.0e+00-2e-01 _5e_02 -1e-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 shortway flux at TOA - NH-atlantic clear-sky net radiative flux at TOA - NH-atlantic implied cloud response dry deposition rate of BC – NH-atlantic wet deposition rate of BC – NH-atlantic at TOA – NH–atlantic 3 0e-16 8.5e-16 2.5e-02 rsutcs (W 0e+00 m^{-2} 0e+00 wetbc (kg $\,\mathrm{m}^{-2}\,\mathrm{s}^{-1}$ 1.8e-16 3.1e-16 drybc (kg m⁻² s⁻ rsutcs (W 0.0e+00 -2e-02 -1e-01 rlutcs --2.5e-02 -4e-02 -5 0e-02 -2e-01 rsut – -6e-02 2000 2001 2002 2003 2004 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 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 8 7e-16 wetso2 (kg m⁻² s⁻¹. dryso2 (kg $\mathrm{m}^{-2}\,\mathrm{s}^{-1}$ wetso4 (kg m^{-2} s⁻¹ dryso4 (kg m⁻² s¯ 3.1e-16 -2.5e-16 1e-02 -8.2e-16 0e+002000 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-atl percentage – NH-atlantic 6e-04 -8.0e-04 cltc (%) clivi (kg m⁻²) _lom lom) smb $(kg m^{-2} s^{-1})$ -1.2e-03 2e-04 expression 0e+00 -1.6e-03 -1e-02 5.0e-03 -2.0e-03 0.0e + 0020002001200220032004 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 SO2 lifetime – – NH–atlantic SO4 lifetime load load load of so2 - NH-atlantic of so4 - NH-atlantic of bc - NH-atlantic - NH-atlantic wetso4) (days loadso2/emiso2 (days) 0.0e + 00-2e-08 oadso2 (kg m⁻²) oadbc (kg m⁻² oadso4/(dryso4+ -1e-07 -1.0e-09 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2001 2002 2004 2000 2001 2002 2003 Year Year Year Year Year NorESM2

CAM-ATRAS

CESM1

F3SM

GEOS

GFDI -FSM4

GISS modelE

emibc $(kg m^{-2} s^{-1})$

rlut (Wm-2)

rsutcs (W m-2)

drybc + wetbc (kg m⁻² s⁻¹)

dyso2 + wetso2)/2 + (dyso4 + wetso4)/3

oadso4 $(kg m^{-2})$