shp-30p-red: absolute difference surface flux of SO2 – NH–atlantic surface concentration of SO4 – NH–atlantic surface concentration surface concentration of SO2 – NH–atlantic -7.5e-12 (kg kg - 1)nmrbc (kg kg-1) əmiso2 (kg $\mathrm{m}^{-2} \mathrm{s}^{-1}$ (kg kg – 1) -1.0e-1 0e+00 mmrso4 2000 2001 2002 2003 2004 2002 2003 2004 2000.02002.52005.02007.5 2000.02002.52005.02007.5 2000 2001 Year Year Year Year upwelling shortwave flux at TOA – NH-atlantic net radiative flux at TOA – NH–atlantic incident shortwave flux at TOA – NH–atlantic upwelling clear–sky longwa flux at TOA – NH–atlanti 0e+00 $rlut + rsut (W m^{-2})$ 7.5e-06 rlutcs (Wm-2)2.5e-02 rsut (Wm-2)sdt (Wm-2)-1e-01 0.0e+00-2e-01 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 Year Year Year Year implied cloud response at TOA – NH–atlantic clear-sky net radiative flux at TOA - NH-atlantic dry deposition rate of BC – NH-atlantic wet deposition rate of BC – NH-atlantic m^{-2} 3 0e-16 8.5e-16 rsutcs (W 2.5e-02 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 -1e-01 rlutcs --2.5e-02 -5 0e-02 -2e-01 rsut – 2000 2001 2002 2003 2004 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 Year Year Year Year 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 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¯ 1e-02 0e+002000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 Year Year Year Year cloud cover percentage – NH-atlantic Ice water path - NH-atlan@imethyl sulphide (DMS) mole fraction ambient aerosol optical thickness at 550nm – NH-atl 6e-04 -8.0e-04 cltc (%) clivi (kg m⁻²) _lom lom) smp 2e-13 -1.2e-03 2e-04 expression 0e+00 -1.6e-03 -1e-02 -2.0e-03 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2000 2001 2002 2003 2004 Year Year Year Year load load of so2 - NH-atlantic of bc - NH-atlantic 0.0e + 00-2e-08 oadso2 (kg m⁻²) oadbc (kg m⁻² -1.0e-09

surface flux of BC – NH–atlantic

2000 2001 2002 2003 2004

Year

upwelling longwave flux at TOA – NH–atlantic

2000 2001 2002 2003 2004

Year

upwelling clear-sky shortway flux at TOA - NH-atlantic

2000 2001 2002 2003 2004

Year

total deposition rate of BC - NH-atlantic

2000 2001 2002 2003 2004

Year

total deposition rate of S – NH–atlantic

20002001200220032004

Year

load

of so4 - NH-atlantic

2000 2001 2002 2003 2004

Year

2000 2001 2002 2003 2004

Year

CESM1

CAM-ATRAS

2000 2001 2002 2003 2004

Year

GFDI -FSM4

GISS-E2.1

F3SM

GEOS

NorESM2

1.7e-20

8.3e-21

2.2e-24

-8.3e-21

1e-01

5e-02

0e+00

-5e-02 -1e-01

0e+00

-2e-02

-4e-02

-6e-02

8 7e-16

3.1e-16

-8.2e-16

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

rlut (Wm-2)

rsutcs (W m-2)

 $drybc + wetbc (kg m^{-2} s^{-1})$

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

oadso4 (kg m⁻²)

-1e-07

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

5.0e-03

0.0e + 00