shp-ind-shift-1950: absolute difference surface flux of SO2 – NH–atlantic surface flux BC – NH–atlantic surface concentration surface concentration of SO2 – NH-atlantic surface concentration of SO4 – NH–atlantic nmrbc (kg kg-1) emiso2 (kg m $^{-2}$ s $^{-1}$ so2 (kg kg – 1) -2.0e-13 (kg kg mmrso4 200@0012002200320042005 2002 2003 2004 2000 2001 2002 2003 2004 200020012002200320042005 2000 2001 2002 2003 2004 2000 2001 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 upwelling clear-sky longway flux at TOA - NH-atlantic incident shortwave flux at TOA – NH–atlantic 1e-06 $rsut (W m^{-2})$ rsut (W m-2) sdt (Wm-2)rlutcs (W m-5e-07 0e+00 0e+000e+00 -1e-01 -2e-02 -5e-02200020012002200320042005 200020012002200320042005 200020012002200320042005 200020012002200320042005 200020012002200320042005 Year Year Year Year Year upwelling clear-sky shortway flux at TOA - NH-atlantic implied cloud response at TOA – NH–atlantic clear-sky net radiative dry deposition rate of BC – NH-atlantic wet deposition rate $' m^{-2}$) flux at TOA – NH–atlantic of BC – NH–atlantic 3 2e-16 2 0e-15 rsutcs (W 1e-01 rlutcs + rsutcs (W m^{-2}) 2.0e-16 vetbc (kg m⁻² s^{-'} drybc (kg m⁻² s⁻ 2e-02 rlutcs -0e+00 rsutrlut + 200020012002200320042005 200020012002200320042005 200020012002200320042005 200020012002200320042005 200020012002200320042005 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 -6 9e-15 $vetso2 (kg m^{-2} s^{-1}$ dryso4 (kg $\mathrm{m}^{-2}\,\mathrm{s}^{-1}$ dryso2 (kg m⁻² s^{-′} wetso4 (kg m⁻² 200@0012002200320042005 200@0012002200320042005 200020012002200320042005 200020012002200320042005 200020012002200320042005 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 percentage - NH-atlantic thickness at 550nm – NH–atla 4e-14 dms (mol mol⁻ 2e-02 clivi (kg m⁻²) expression cltc 0e+00 0e+00 0e+00 2002002100220020024005 2002 2003 2004 200020012002200320042005 2000 2001 2000 2001 2002 2003 2004 200020012002200320042005 Year Year Year Year Year load of so2 – NH–atlantic load load - NH-atlantic of bc - NH-atlantic 1e-09 oadso2 (kg m⁻²) oadbc (kg m⁻²) 5e-10 0e+00-1.5e-08 -5e-10

2000 2001 2002 2003 2004

Year

GFDI -FSM4

GISS-E2.1

NorESM2

F3SM

GEOS

9.0e-21

3.6e-21

-1.9e-2

-7.3e-21

1e-01

0e+00

-1e-01

-2e-01

2e-02

0e+00

2 2e-15

1.2e-15

-8.1e-16

rlut (Wm-2)

rsutcs (W m-2)

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

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

loadso4 (kg m⁻²)

-2e-08

-3e-08

200020012002200320042005

Year

200020012002200320042005

Year

CESM1

CAM-ATRAS

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

-1.5e-04 -2.0e-04

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