## SH-sea: absolute difference surface flux of SO2 – shp–atl–shift surface flux of BC – shp–atl–shift surface concentration surface concentration surface concentration of BC - shp-atl-shift of SO4 - shp-atl-shift of SO2 - shp-atl-shift 0.0e+00 1.0e-13 nmrbc (kg kg-1) əmiso2 (kg m $^{-2}$ s $^{-1}$ 2.5e-16 so2 (kg kg – 1) 5 0e-14 nmrso4 (kg kg 0.0e+00 0e+00 -3.2e-17 -1.5e-13 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 upwelling longwave flux at TOA – shp-atl-shift upwelling shortwave flux at TOA – shp–atl–shift upwelling clear-sky longwa flux at TOA - shp-atl-shi incident shortwave flux at TOA – shp-atl-shift net radiative flux at TOA - shp-atl-shift 5 0e=02 5.0e-03 -lut + rsut $(W m^{-2})$ 2e-02 5 2.56-02 rsut (Wm-2)rsdt (Wm-2)rlutcs (W m -0.0e+00 0e+00 0.0e + 0.00.0e + 0.0-2e-02 -2.5e-02 -2 5e-02 -4e-02-5.0e-02 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 implied cloud response dry deposition rate wet deposition rate clear-sky net radiative flux at TOA - shp-atl-shif $\rm rsutcs \ (W \ m^{-2})$ at TOA - shp-atl-shift of BC - shp-atl-shift of BC - shp-atl-shift 1.5e-16 ·lutcs + rsutcs (W m<sup>-2</sup>) 0e+00 2.8e-17 drybc (kg $m^{-2} s^{-1}$ vetbc (kg m<sup>-2</sup> s<sup>-</sup> 0.0e+00 -1e-02rlutes -2e-02 -2.5e-02 rsut -3e-02 \_6 2e\_1 \_3 7e\_16 + <u>+</u> 10. 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 Year Year Year Year dry deposition rate of SO4 – shp–atl–shift wet deposition rate of SO4 – shp-atl-shift dry deposition rate of SO2 – shp-atl-shift wet deposition rate of SO2 – shp-atl-shift -9.9e-18 1.4e-18 2.8e-16 1.7e-15 wetso2 $(kg m^{-2} s^{-1})$ dryso2 (kg m $^{-2}$ s $^{-1}$ dryso4 (kg $m^{-2}$ s<sup>-</sup> wetso4 (kg $\mathrm{m}^{-2}$ -4.0e-16 -5.5e-19 -5.9e-16 -3.0e-15 -8.0e-16 -7.6e-15 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 Year Year Ice water path - shp-atl-shDimethyl sulphide (DMS) mole fraction cloud cover ambient aerosol optical percentage - shp-atl-shift thickness at 550nm - shp-atl-5.0e-14 2e-02 0.0e + 008 clivi (kg m<sup>-2</sup>) lom lom) smb expression cltc 0e+00 -5.0e-14 od550aer 1e-02 -1e-04 0e+00 -2e-04 -1e-02 -1e-04 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2002 2003 2004 2000 2001 Year Year Year Year load of bc - shp-atl-shift

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

1.9e-21

-2.6e-2

-7.0e-21

2e-02

0e+00

-2e-02

-4e-02

-6e-02

rlut (Wm-2)

Year

Year