## 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 4e-01 0e+00 2e-05 20-01 5.0e-03 2e-01 1e-01 0e+00 ∆ mmrbc -1e-01 so2 0e+00 -2e-05-1e-01 0.0e+00-2e-01 -4e-05 -2e-01 -4e-0 -3e-01 2000 2001 2000 2001 2002 2003 2004 2002 2003 2004 2002 2003 2004 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2000 2001 Year Year Year Year Year upwelling longwave flux at TOA – shp-atl-shift upwelling shortwave flux at TOA – shp–atl–shift upwelling clear-sky longwav flux at TOA - shp-atl-shift net radiative flux incident shortwave flux at TOA - shp-atl-shift at TOA - shp-atl-shift 5 0e-02 5.0e-02 1e-02 00+00 0e+00 0.0e+0.0∆ rlut + 0.0e + 00-2e-03 -2.5e-02 -2 5e-02 -4e-03-2e-02 -5.0e-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 Year upwelling clear-sky shortway clear-sky net radiative implied cloud response dry deposition rate wet deposition rate flux at TOA - shp-atl-shift flux at TOA - shp-atl-shift at TOA - shp-atl-shift of BC - shp-atl-shift of BC - shp-atl-shift rsutcs) 0e+00 5.0e-02 0e+00 2e-01 1e-01 -1e-02 2.5e-02 -1e-02 rlutcs rsu ∆ rsutcs wetbc Δ drybα -2e-02 00+00 ∆ rlutcs + 0.0e+00 -2e-02 rsut -1e-01 \_2e\_01 -2.5e-02 -3e-02 rlut + -3e-01 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 BC – shp-atl-shift dry deposition rate of SO2 – shp-atl-shift wet deposition rate of SO2 – shp-atl-shift dry deposition rate of SO4 – shp-atl-shift wet deposition rate of SO4 – shp-atl-shift 4e-01 1e-01 0.0e+00 0.0e+00 2e-01 -5.0e-03 drybc + wetbc 0e+00 0e+00 -1.0e-01 -2e-01 -1.0e-01 -1e-01 -4e-01 -1.5e-01 -2.0e-02 -2.0e-01 -6e 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 $\frac{dyso2 + wetso2}{2 + (dyso4 + wetso4)/3}$ Ice water path - shp-atl-shDimethyl sulphide (DMS) mole fraction total deposition rate cloud cover ambient aerosol optical of S - shp-atl-shift percentage - shp-atl-shift thickness at 550nm - shp-atl-2e-01 0.0e+00 0e+00 clivi (kg m<sup>-2</sup>) lom lom) smb 0e+001e-01 expression cltc ∆ od550aeı 1e-01 -5e-02-1e-01 0e+00 0e+00 -1e-01 -2e-01 -1e-01-1e-01 20002001200220032004 2002 2003 2004 2002 2003 2004 2000 2001 2002 2003 2004 2002 2003 2004 2000 2001 2000 2001 2000 2001 Year Year Year Year Year load load of so4 - shp-atl-shift of bc - shp-atl-shift -1e-012.5e-01 loadso4 (kg m<sup>-2</sup>)oadbc (kg m -3e-01-2.5e-01 -4e-01 -5e-01 -5 0e-01

2000 2001 2002 2003 2004

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