shp-atl-shift: absolute difference surface concentration of BC – sea surface flux surface flux surface concentration surface concentration of SO4 – sea of BC - sea of SO2 - sea of SO2 - sea $\mathrm{emibc}\,(\mathrm{kg}\,\mathrm{m}^{-2}\,\mathrm{s}^{-1})$ nmrso4 (kg kg – 1) nmrbc (kg kg-1) əmiso2 (kg m $^{-2}$ s $^{-1}$ -1.2e-22 so2 (kg kg – 1) 0e+00 -3.0e-21 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2002 2003 2004 2002 2003 2004 2002 2003 2004 2000 2001 2000 2001 2000 2001 Year Year Year Year Year upwelling longwave flux at TOA – sea upwelling shortwave flux at TOA – sea net radiative flux at TOA – sea upwelling clear-sky longway flux at TOA - sea incident shortwave flux at TOA – sea 5.0e-02 0e+00 2e-02 -lut + rsut $(W m^{-2})$ rlutcs (W m-2) rlut (Wm-2)rsut (Wm-2)rsdt (Wm-2)1.0e-02 1e-02 0.0e + 0.05.0e-03 0e+00 -2.5e-02 0.0e+00 -1e-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 shortwav clear-sky net radiative implied cloud response dry deposition rate wet deposition rate flux at TOA - sea flux at TOA - sea at TOA - sea of BC - sea of BC - sea rsutcs (W m⁻²) 2.2e-16 lutcs + rsutcs (W m^{-2}) 0e+00 1e-02 rsutcs (W m-2) 1.8e-17 wetbc (kg ${\sf m}^{-2}\,{\sf s}^{-1}$ drybc (kg $m^{-2} s^{-1}$ -1e-02 5e-03 -2e-02 rlutes -4e-03 0e+00 -6e-03 -5e-03 rsut -5e-02 -5.8e-1 Ė 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 dry deposition rate of SO2 – sea dry deposition rate of SO4 – sea wet deposition rate of SO4 – sea total deposition rate of BC – sea wet deposition rate of SO2 – sea 2.7e-16 -2.4e-14 -6.7e-18 -1.8e-16 -1.8e-14 $drybc + wetbc \left(kg \ m^{-2} \ s^{-1} \right)$ dryso2 (kg $\mathrm{m}^{-2}\,\mathrm{s}^{-1}$ wetso2 (kg m^{-2} s⁻¹ dryso4 (kg m^{-2} s⁻ wetso4 $(kg m^{-2})$ -7.2e-17 -2.6e-14 -3.8e-15 -2.5e-14 -2.8e-14 -8.7e-18 -3.2e-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 dryso2 + wetso2)/2 + (dryso4 + wetso4)/3Ice water path - sea Dimethyl sulphide (DMS) mole fract total deposition rate cloud cover ambient aerosol optical of S - sea thickness at 550nm - sea 2e-02 expression cltc (%) clivi (kg m⁻²) 0e+00_lom lom) smp 0e+00 $(kg m^{-2} s^{-1})$ od550aer 0e+00 -2e-04 -1e-02 20002001200220032004 2002 2003 2004 2000 2001 2002 2003 2004 2002 2003 2004 2000 2001 2000 2001 Year Year Year Year Year load load of so2 - sea of bc - sea 2e-11 0.0e+00 $loadso4 (kg m^{-2})$ 1e-11 loadbc (kg m $^{-2}$) -2.5e-090e+00 -1e-11 -7.5e-09 -1.0e-08 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 Year Year