## shp-atl-shift: absolute difference surface flux surface concentration of BC – NH–sea surface flux surface concentration surface concentration of BC - NH-sea of SO2 - NH-sea of SO4 - NH-sea of SO2 - NH-sea 6e-06 -1.0e+00 1e-01 4e-06 -1.5e+00 $\Delta so2$ 0e+00 2e-06 -5e-02 0e+00 -2.5e+00 -1e-01 -6e-01 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 Year Year Year Year Year upwelling longwave flux at TOA – NH–sea upwelling shortwave flux at TOA – NH–sea net radiative flux at TOA – NH-sea incident shortwave flux at TOA – NH–sea upwelling clear-sky longwave flux at TOA - NH-sea 5.0e-02 \_2 5e\_02 1e-02 2e-02 rsut ∆ rlut -8.0e-02 -7.5e-02 0.0e + 0.0e +△ rlut 1e-02 -2 5e-02 0e+00 0e+00 -1.2e-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 dry deposition rate of BC – NH–sea wet deposition rate of BC – NH–sea upwelling clear-sky shortway clear-sky net radiative implied cloud response flux at TOA - NH-sea flux at TOA - NH-sea at TOA - NH-sea rsutcs 2e-02 1e-02 1e-01 0e+00 rlutcs -0e+00 rsu ∆ drybc 0e+00 0e+00 -1e-02\_1e\_02 rsut rlut + -2e-02 -1e-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 – NH–sea dry deposition rate of SO2 – NH–sea wet deposition rate of SO2 – NH–sea dry deposition rate of SO4 – NH–sea wet deposition rate of SO4 – NH–sea 2e-01 -8.0e-01 -8.8e-01 -4e-011e-01 -8.5e-01 drybc + wetbc -9.2e-0 0e+00 ∆ dryso2 -5e-01 -9.0e-01 -1e-01 -9.6e-01 -6e-01 \_9 5e\_01 -2e-01 -7.5e-01 -7e-01 -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 dryso2 + wetso2)/2 + (dryso4 + wetso4)/3total deposition rate Ice water path - NH-sea Dimethyl sulphide (DMS) mole fraction cloud cover ambient aerosol optical of S - NH-sea thickness at 550nm - NH-sea 4e-01 2e-01 -1.0e+00 8 2e-01 clivi (kg $m^{-2}$ ) \_lom lom) smb 0e+00 4e-02 expression cltc -1.1e+00∆ od550ae 0e+00 -2e-0 -1.1e+00 -2e-01 -1.2e+00 0e+00 -6e-01 20002001200220032004 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 Year Year Year Year Year load load of so4 - NH-sea of bc - NH-sea 2e-01 loadso4 (kg m<sup>-2</sup>) loadbc (kg m<sup>-2</sup>) 1e-01 0e+00 -1e-01 -2e-01 -2e-01 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 Year