## shp-10p-red: absolute difference surface concentration of BC – NH–sea surface flux surface flux surface concentration surface concentration of SO2 - NH-sea of BC - NH-sea of SO4 - NH-sea of SO2 - NH-sea 5.0e-06 -1.0e+00 2.5e-06 -8.0e-01 -1.2e+00 -3e+00 0.0e+00 -1.5e+00 -1.0e+0.0-2.5e-06 -4e+00 -1.8e+00 -1 2e+00 2002 2003 2004 2000 2001 2002 2003 2004 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 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 5.0e-02 4e-02 0.0e+0.01e-02 rsut 3e-02 -5.0e-02 -5 0e-02 0.0e + 0.0e +2e-02 큳 5e-03 1e -1.0e-01 -2 5e-02 -1.5e-01 0e+00 0e+00 -2 0e-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 wet deposition rate of BC – NH–sea upwelling clear-sky shortway clear-sky net radiative implied cloud response dry deposition rate of BC - NH-sea flux at TOA - NH-sea flux at TOA - NH-sea at TOA - NH-sea 0e+00 5e-02 -1e-02 0e+00 rlutcs - $\Delta$ rsutcs -2e-02 Su △ drybc \_2e\_02 \_4e\_02 -3e-02 -5e-02 -4e-02 큳 -6e-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 -5e-01-6.0e-01 -1.3e+000e+00 -6e-01 -6e-01 drybc + wetbc \_7e\_01 -6.5e-01 -8e-01 -6.8e-01 \_9e\_01 -4e-01 -1e+00 −1e+00 -7.0e-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 $\frac{dyso2 + wetso2}{2 + (dyso4 + wetso4)/3}$ total 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 1e-01 -1.3e+00 8 -1.3e+00clivi (kg $m^{-2}$ ) \_lom lom) smb 5e-02 cltc 0e+00 -1.3e+00 ∆ od550ae expression 0.0e+00 0e+00 -2e-01 -2.5e-01 -1.3e+00 -1.3e+00 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 1e-01 -2e-010e+00 loadso4 (kg m<sup>-2</sup>)-4e-01 oadbc (kg m -1e-01 -2e-01 -6e-01 -3e-01 -8e-01 -4e-01 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 Year