shp-ind-shift: absolute difference surface flux surface concentration of BC – sea surface flux surface concentration surface concentration of BC - sea of SO2 - sea of SO4 - sea of SO2 - sea -5.0e-01 1e-01 0.0e+00 -2e-01 $\Delta so2$ -7.5e-01 0e+00 -3e-01 -1.0e+00 -01 -2e-01 -1.2e+00 -4e-01 -1.5e-05 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 Year Year Year Year Year upwelling longwave flux at TOA – sea upwelling shortwave flux at TOA – sea incident shortwave flux at TOA – sea upwelling clear-sky longwave flux at TOA - sea net radiative flux at TOA – sea 5.0e-02 0e+00 0e+00 + rsut 0.0e + 0.0e +∆ rlut 2e-03 -2e-02 0e+00 -2 5e-02 -4e-02 -4e-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 upwelling clear-sky shortway 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 1e-02 5e-02 2e-02 rsutcs 0e+00 rlutcs-0e+00 ∆ rsutcs ∆ wetbc ∆ drybc 0e+00 -1e-02 -1e-02 -1e-01 _5e_02 -2e-02 (rlut + -2e-022000 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 wet deposition rate of SO2 – sea dry deposition rate of SO4 – sea wet deposition rate of SO4 – sea total deposition rate of BC – sea dry deposition rate of SO2 – sea -5.2e-01 0e+00 -5.4e-01 drybc + wetbc 4e-01 0e+00 ∆ wetso4 -5.8e-01 -2e-01 -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 $\frac{dryso2 + wetso2}{2 + (dryso4 + wetso4)/3}$ total deposition rate Dimethyl sulphide (DMS) mole fract cloud cover Ice water path - sea ambient aerosol optical of S - sea thickness at 550nm - sea 1e-01 3e-01 _lom lom) smb clivi (kg m⁻²) 5e-02 expression cltc -4.8e-01 0e+00 ∆ od550ae 0e+00-5.2e-01 0e+00 -5e-02 -5.6e-01 20002001200220032004 2000 2001 2002 2003 2004 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 Year Year Year Year Year load load of so4 - sea of bc - sea 3e-01 1e-01 $\log \log (\log \, m^{-2})$ loadbc (kg m -1e-01 1e-01 -2e-01 -3e-01 0e+00 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 Year