## SH-land: absolute difference surface flux of SO2 – shp–ind–shift surface flux surface concentration surface concentration surface concentration of BC - shp-ind-shift of BC - shp-ind-shift of SO4 - shp-ind-shift of SO2 - shp-ind-shift 1.5e-01 7.5e-03 3e-01 1.0e-01 3e-01 2e-01 o 2e−05 $\Delta so2$ 2.56-03 2e-01 0.0e+00 1e-01 0.0e+00 1e-01 -5.0e-02 0e+00 -2 5e-03 -1.0e-01 0e+00 -5.0e-03 2002 2000 2001 2002 2003 2004 2000 2001 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 – shp-ind-shift upwelling shortwave flux at TOA – shp-ind-shift upwelling clear–sky longwav flux at TOA – shp–ind–shif incident shortwave flux at TOA – shp-ind-shift net radiative flux at TOA - shp-ind-shift 5.0e-02 0.0e+00 5e-02 rlut + rsut ∆ rsut 0.0e + 00-5.0e-02 -1e-02 -2 5e-02 -7.5e-02 -5e-02 -2e-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-ind-shift flux at TOA - shp-ind-shift at TOA - shp-ind-shift of BC - shp-ind-shift of BC - shp-ind-shift rsutcs) 2e-02 rsutcs rlutcs -1e-02 0e+00 1e-01 ∆ rsutcs ∆ wetbc ∆ drybc 0e+00 -1e-020e+00 rsut 0e+00 (rlut + -1e-01 -4e-02 -2e-02 -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 total deposition rate of BC – shp-ind-shift dry deposition rate of SO2 – shp–ind–shift wet deposition rate of SO2 – shp–ind–shift dry deposition rate of SO4 – shp–ind–shift wet deposition rate of SO4 – shp-ind-shift 5e-02 3e-01 2e-01 6e-01 drybc + wetbc 0e+002e-01 1e-0 0e+00 ∆ dryso2 4e-01 1e-01 2e-01 -1e-01 -6e-01 0e+00 -1e-01 -1e-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 dryso2 + wetso2)/2 + (dryso4 + wetso4)/3Ice water path - shp-ind-spimethyl sulphide (DMS) mole fraction total deposition rate cloud cover ambient aerosol optical thickness at 550nm - shp-ind-shift percentage - shp-ind-shift 2e-01 4e-01 1e-01 expression cltc (% 3e-01 4e-01 clivi (kg m<sup>-2</sup>) 0e+00 \_lom lom) smb 2e-01 0e+00 ∆ od550aeı 0e+00 1e-01 -1e-01 0e+00 -2e-01 4e-01 -3e-01 -1e+00 20002001200220032004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 Year Year Year Year Year load load of so4 - shp-ind-shift of bc - shp-ind-shift 4e-01 1e-01 loadso4 (kg m<sup>-2</sup>) oadbc (kg m $^{-2}$ ) 0e+00 2e-01 -1e-011e-01 0e+00 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 Year Year