## NH-land: absolute difference surface flux of BC – shp–80p–red surface flux surface concentration surface concentration surface concentration of SO2 - shp-80p-red of BC - shp-80p-red of SO4 - shp-80p-red of SO2 - shp-80p-red -1.1e+00 1e-05 2e-01 -1.2e+00 -4.5e-01 1e-01 5e-06 4e-01 ∆ emibc ∆ emiso2 -1.3e+00 $\Delta so2$ 0e+00 0e+00 -5.0e-01 -6e-01 -1.5e+0.0-5e-06 -8e-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 – shp–80p–red upwelling shortwave flux at TOA – shp–80p–red upwelling clear-sky longwav flux at TOA - shp-80p-red net radiative flux incident shortwave flux at TOA – shp–80p–red at TOA - shp-80p-red 5 0e-02 2e-02 0.0e+00 56-03 0e+00 rsut -4.0e-02 0e+00 0.0e + 0.0e +∆ rlut -5e-02 -5e-03 -2 5e-02 -1e-0 -1.2e-0 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-80p-red flux at TOA - shp-80p-red at TOA - shp-80p-red of BC - shp-80p-red of BC - shp-80p-red 2e-01 -4e-02 1e-01 -5e-02 rlutcs rsu -6e-02 ∆ rsutcs ∆ wetbc Δ drybα 1e-01 rlutcs+ 0e+00-7e-020e+00 (rlut + -2e-01 -8e-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–80p–red dry deposition rate of SO2 – shp–80p–red wet deposition rate of SO2 – shp–80p–red dry deposition rate of SO4 – shp–80p–red wet deposition rate of SO4 – shp–80p–red -1.1e+00 -6e-01 1e-01 -1.2e+00 -1.2e+00 drybc + wetbc -6.8e-01 ∆ dryso2 -1.3e+00 0e+00 -1.3e+00-8e-01 -1.4e+00 -7.2e-01 -1e-01 -1.5e+00 -1e+00 -7.6e-01 -1.6e+00 -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 dryso2 + wetso2)/2 + (dryso4 + wetso4)/3Ice water path - shp-80p-Dimethyl sulphide (DMS) mole fraction total deposition rate cloud cover ambient aerosol optical of S - shp-80p-red percentage - shp-80p-red thickness at 550nm - shp-80p-red 5e-01 -1.5e+00 % -2e-01 clivi (kg m<sup>-2</sup>) \_lom lom) smb 0e+00 expression cltc 0e+00 ∆ od550ae -1.6e+00 -4e\_01 -5e-0-5e-0 -6e-01 -1.7e+00-1e+0020002001200220032004 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 Year Year Year Year Year load load of so4 - shp-80p-red of bc - shp-80p-red 1e-01 $loadso4 (kg m^{-2})$ loadbc (kg m<sup>-2</sup>) 0e+00 -1.6e+00 -1e-01 -2e-01 -1.8e+00 -3e-01 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 Year Year