SH-sea: absolute difference surface flux surface flux surface concentration surface concentration surface concentration of BC - shp-ind-shift-195 of SO2 - shp-ind-shift-195 of BC - shp-ind-shift-1950 of SO4 - shp-ind-shift-1950 of SO2 - shp-ind-shift-195 1.0e-05 2e-01 5.0e-06 5e-03 1e-01 0e+00 ∆ emiso2 0.0e+00 0e+00 -5.0e-06 0e+00−0· -1 0e-05 -2e-01 -5e-03 0e+00 -1.5e 2000 2001 2002 2003 2004 2002 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2000 2001 Year Year Year Year Year upwelling longwave flux at TOA – shp-ind-shift-19 upwelling shortwave flux at TOA – shp-ind-shift-19! upwelling clear-sky longwar flux at TOA - shp-ind-shiftincident shortwave flux at TOA – shp-ind-shift-19 net radiative flux at TOA - shp-ind-shift-19 5.0e-02 2.5e-02 5.0e-03 1.5e-02 0.0e+00 0.00+00 rsut 1.0e-02 -2.5e-02-2.5e-02 0.0e + 0.0e +5.0e-03 0.0e+00큳 0.0e + 0.0e +-2 5e-02 _7 5e_02 _2 5e_03 _7 5e_02 -5.0e-03 -1.0e-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 Year upwelling clear-sky shortway implied cloud response dry deposition rate wet deposition rate clear-sky net radiative flux at TOA - shp-ind-shift-1! flux at TOA - shp-ind-shift-1 at TOA - shp-ind-shift-195 of BC - shp-ind-shift-195 of BC - shp-ind-shift-195 rsutcs) 1.5e-02 2e-02 5.0e-01 2.5e-01 1e-02 1.0e-022.5e-01 rsutcs rlutcs Δ rsutcs -2e-02 △ drybc 0.0e+00 5.0e-03 0e+00 0.0e+00 -2.5e-01 rsut -2.5e-01 -6e-02 -5.0e-03 -5.0e-01 -5e-03 ₹ 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-1950 dry deposition rate of SO2 – shp–ind–shift–195 wet deposition rate of SO2 – shp-ind-shift-19 dry deposition rate of SO4 – shp–ind–shift–195 wet deposition rate of SO4 – shp-ind-shift-195 5e-01 5.0e-02 3e-01 5e-03 drybc + wetbc 0.0e+00 0e+00 ∆ dryso2 1.5e-01 2e-01 0e+00 -5.0e-02 1 0e-01 -5e-01 -5e-03-1.0e-01 1e-01 -1e+00 0.0e+0.0-1e-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 dryso2 + wetso2)/2 + (dryso4 + wetso4)/3Ice water path - shp-ind-sDiffnethyl sulphide (DMS) mole fraction - sł total deposition rate cloud cover ambient aerosol optical of S - shp-ind-shift-195 percentage - shp-ind-shift-19 thickness at 550nm - shp-ind-shi 8e-01 6e-01 expression cltc (%) 5e-02 0.0e + 00clivi (kg m⁻²) lom lom) smb ∆ od550ae 5e-02 1e-01 4e-01 0e+00 -2.5e-02 2e-01 -5e-02 0e+00 0e+00 0e+00-5.0e-02 -1e-01 -2e-01 20002001200220032004 2002 2003 2004 2002 2003 2004 2000 2001 2002 2003 2004 2002 2003 2004 2000 2001 2000 2001 2000 2001 Year Year Year Year Year load load of bc - shp-ind-shift-1950 of so4 - shp-ind-shift-195 4e-01 loadso4 (kg m⁻²) loadbc (kg m⁻² 4e-01 2e-01 0e+00

-2e-01

2000 2001 2002 2003 2004

2000 2001

2002 2003 2004

Year