## shp-atl-shift: absolute difference surface flux surface concentration of BC – NH–indian surface flux surface concentration surface concentration of BC - NH-indian of SO2 - NH-indian of SO4 - NH-indian of SO2 - NH-indian 0.0e+00 emibc (kg $\mathrm{m}^{-2} \mathrm{s}^{-1}$ ) emiso2 (kg $\mathrm{m}^{-2}\,\mathrm{s}^{-1}$ kq-1-6.1e-22 6.0e-16 -5.0e-13 nmrso4 (kg kg so2 (kg kg – nmrbc (kg -1.0e-12 9.9e-17 -1.5e-12 -5.8e-21 -4.0e-16 -2.0e-12 -6e -8 4e-2 \_9 0e\_16 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2000 2001 2002 2003 2004 Year Year Year Year Year upwelling longwave flux at TOA – NH–indian upwelling shortwave flux at TOA – NH–indian incident shortwave flux at TOA – NH–indian upwelling clear-sky longway flux at TOA - NH-indian net radiative flux at TOA – NH-indian 5 0e=02 1e-01 $m^{-2}$ 5 rlut (Wm-2) rsut (Wm-2)(Wm-2)rsut (W r rlutcs (W m-\_1e\_01 3e-01 0e+00 0.0e + 0.05e-02 -2e-01 2e-01 rsdt -01 -2 5e-02 -1e-01 1e-01 0e+00 -4e-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 clear-sky net radiative implied cloud response dry deposition rate wet deposition rate upwelling clear-sky shortwa flux at TOA - NH-indian flux at TÓA - NH-indian rsutcs (W $m^{-2}$ ) at TOA - NH-indian of BC - NH-indian of BC - NH-indian 6.6e-15 1.0e-01 3.8e-16 lutcs + rsutcs (W $m^{-2}$ ) 1e-01 rsutcs (W m-2) 2.5e-02 3.3e-15 drybc (kg $m^{-2} s^{-1}$ vetbc (kg m<sup>-2</sup> s<sup>-</sup> 5.0e-02 0.0e+00 rlutcs -0e+00 2.5e-02 0.0e+00 rsut – -1e-01 -5.0e-02 -2.5e-02 -7.5e-02 -4 Ne-16 -6.6e-15 + <u>+</u> 10. 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–indian dry deposition rate of SO2 – NH–indian wet deposition rate of SO2 – NH-indian dry deposition rate of SO4 – NH–indian wet deposition rate of SO4 – NH–indian 6.8e-15 3.5e-16 5.7e-18 $\mathrm{drybc} + \mathrm{wetbc} \, (\mathrm{kg} \, \mathrm{m}^{-2} \, \mathrm{s}^{-1})$ 5.0e-14 wetso2 $(kg m^{-2} s^{-1})$ dryso2 (kg m $^{-2}$ s $^{-1}$ 3.5e-15 dryso4 (kg m<sup>-2</sup> s<sup>-′</sup> 0.0e+00 wetso4 (kg m<sup>-2</sup> 0e+00 1.4e-16 -2.8e-15 -3.2e-15 -6.0e-15 -8.1e-18 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 - NH-indiaDimethyl sulphide (DMS) mole fraction total deposition rate cloud cover ambient aerosol optical of S - NH-indian percentage - NH-indian thickness at 550nm - NH-indian 0e+00 expression cltc (%) clivi (kg $m^{-2}$ ) \_lom lom) smb 6e-02 $(kg m^{-2} s^{-1})$ od550aer 0e+00 3e-02 -2e-14 0e+00 -1e-03 -3e-02 20002001200220032004 2002 2003 2004 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2000 2001 Year Year Year Year Year load load of so2 - NH-indian of bc - NH-indian 3e-10 1e-07 $\log \log (\log \, m^{-2})$ loadbc (kg m<sup>-2</sup>) 5e-08 1e-10 0e+00 -1e-10 -5e-08 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 Year