shp-atl-shift-1950: absolute difference surface concentration of BC – global surface concentration of SO4 – global surface flux surface flux surface concentration of SO2 - global of BC - global of SO2 - global $\mathrm{emibc}\,(\mathrm{kg}\,\mathrm{m}^{-2}\,\mathrm{s}^{-1})$ mmrso4 (kg kg – 1) əmiso2 (kg m $^{-2}$ s $^{-1}$ nmrbc (kg kg-1) 2.1e-20 so2 (kg kg – 1) 5 Oe-13 0.0e+00 9.0e-22 4.9e-17 2.5e-13 -1.9e-20 0.0e+00 _5 0e_14 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 – global upwelling shortwave flux at TOA – global net radiative flux at TOA – global upwelling clear-sky longway flux at TOA - global incident shortwave flux at TOA – global 5.0e-02 $' \, m^{-2}$ 1e-02 rlutes (W m-2) rlut (Wm-2)rsut (Wm-2)rsdt (Wm-2)rsut (W r 0e+00 0e+00 0e+00 0e+00 0.0e + 0.0-1e-02 rlut + -1e-02 -2e-02 -2.5e-02 -4e-03 -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 shortwa implied cloud response dry deposition rate wet deposition rate clear-sky net radiative flux at TOA - global flux at TOA - global at TOA - global of BC – global of BC - global rsutcs $(W m^{-2})$ 8.2e-17 2e-02 ·lutcs + rsutcs (W m⁻²) rsutcs (Wm-2) 5.0e-17 wetbc (kg m⁻² s⁻ drybc (kg m⁻² s⁻ 0e+00 0.0e+00 rlutcs -1e-02rsut – _8 0e_ rit + 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 dry deposition rate of SO2 – global total deposition rate of BC – global wet deposition rate of SO2 – global dry deposition rate of SO4 – global wet deposition rate of SO4 – global 1.8e-17 7.9e-16 2.0e-18 1.6e-15 5.3e-15 $\mathrm{drybc} + \mathrm{wetbc} \, (\mathrm{kg} \, \mathrm{m}^{-2} \, \mathrm{s}^{-1})$ wetso2 $(kg m^{-2} s^{-1})$ wetso4 $(kg m^{-2} s^{-1})$ dryso2 (kg $\mathrm{m}^{-2}\,\mathrm{s}^{-1}$ dryso4 (kg m $^{-2}$ s $^{-1}$ -3.5e-18 -3.5e-17 -2.5e-19 -8.6e-16 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)/3Dimethyl sulphide (DMS) mole fracti total deposition rate cloud cover Ice water path - global ambient aerosol optical thickness at 550nm - global 1e-02 8 0.0e+00 clivi (kg m^{-2}) 0e+00 _lom lom) smb $(kg m^{-2} s^{-1})$ expression cltc od550aeı -2 5e-14 -1e-02 20002001200220032004 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 Year Year Year Year Year load load of so2 - global of bc - global loadso4 (kg m⁻²) loadbc (kg m⁻²) 5.0e-09 2.5e-09 0e+00 0.0e+00 -3e-12 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004