shp-atl-shift-1950: absolute difference surface flux of SO2 – land surface concentration of BC – land surface flux surface concentration surface concentration of BC - land of SO4 - land of SO2 - land $\mathrm{emibc}\,(\mathrm{kg}\,\mathrm{m}^{-2}\,\mathrm{s}^{-1})$ 0.0e+00emiso2 (kg m $^{-2}$ s $^{-1}$ 8.9e-20 so2 (kg kg – 1) mmrso4 (kg kg <u>\$</u> -5.0e-14 nmrbc (kg 1.8e-20 3e-12 -5.4e-20 5.0e-13 2000 2001 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 Year Year Year Year Year upwelling longwave flux at TOA – land upwelling shortwave flux at TOA – land net radiative flux at TOA – land upwelling clear-sky longway flux at TOA - land incident shortwave flux at TOA – land 5.0e-02 3e-02 'lut + rsut (W m⁻² 8.0e-02 0e+00 rlut (W m-2) rsut (Wm-2)(Wm-2)0e+00 rlutcs (W m --3e-02 4.0e-02 0.0e + 0.0_1e_02 rsdt 0.0e+00 -2.5e-02 _2e_02 _1e_0 -4.0e-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 shortwav flux at TOA - land clear-sky net radiative implied cloud response dry deposition rate wet deposition rate flux at TOA - land at TOA - land of BC - land of BC - land rsutcs $(W m^{-2})$ 1.0e-16 7.2e-16 5e-02 lutcs + rsutcs (W m $^{-2}$) 1e-02 rsutcs (W m-2) wetbc (kg m⁻² s⁻ 1e-02 drybc (kg m⁻² s⁻ 0e+00 rlutcs – 0e+00 0e+00 -5e-03rsut – -1e-02 rlut + -5.2e-1 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 – land dry deposition rate of SO2 – land wet deposition rate of SO2 – land dry deposition rate of SO4 – land wet deposition rate of SO4 – land 7.6e-16 1.4e-17 4.2e-15 $\mathrm{drybc} + \mathrm{wetbc} \, (\mathrm{kg} \, \mathrm{m}^{-2} \, \mathrm{s}^{-1})$ wetso2 $(kg m^{-2} s^{-1})$ wetso4 (kg $\mathrm{m}^{-2}\,\mathrm{s}^{-1}$ dryso2 (kg $\mathrm{m}^{-2}\,\mathrm{s}^{-1}$ 4.2e-16 dryso4 (kg m⁻² s⁻ 6.7e-17 6.8e-15 6.0e-18 3.1e-15 3.0e-15 -2.2e-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 dryso2 + wetso2)/2 + (dryso4 + wetso4)/3total deposition rate Dimethyl sulphide (DMS) mole fraction cloud cover Ice water path - land ambient aerosol optical of S - land thickness at 550nm - land 5.0e-04 clivi (kg m⁻²) _lom lom) smb 1e-02 $(kg m^{-2} s^{-1})$ 당 0.0e+00 0e+00 -5.0e-04 20002001200220032004 2002 2003 2004 2000 2001 2002 2003 2004 2002 2003 2004 2000 2001 2000 2001 Year Year Year Year Year load load of so2 - land of bc - land $loadso4 (kg m^{-2})$ 1.5e-08 loadbc (kg m⁻²) 0e+00 1.0e-08 5.0e-09 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004