shp-atl-shift: absolute difference surface flux of SO2 – arctic surface concentration of SO4 – arctic surface concentration surface concentration of SO2 – arctic mmrbc (kg kg – 1) so2 (kg kg-1) nmrso4 (kg kg-0e+00 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2000 2001 Year Year Year Year upwelling shortwave flux at TOA – arctic net radiative flux at TOA – arctic incident shortwave flux at TOA – arctic upwelling clear-sky longway flux at TOA - arctic 2e-01 rlut + rsut $(W m^{-2})$ rlutcs (W m-2) 00+00 rsdt (Wm-2)0e+00 -2e-01 -1e-01 -4e-01 2000 2001 2002 2003 2004 2002 2003 2004 Year Year Year Year implied cloud response at TOA – arctic clear-sky net radiative flux at TOA - arctic dry deposition rate of BC – arctic wet deposition rate of BC – arctic $rlutcs-rsutcs \left(W\ m^{-2}\right)$ 8 4e-15 vetbc $(kg m^{-2} s^{-1})$ drybc (kg m^{-2} s⁻¹ 5.0e-16 1e-01 2.5e-16 3.8e-15 0e+00 rlut + rsut -2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 Year Year Year Year dry deposition rate of SO2 – arctic wet deposition rate of SO2 – arctic dry deposition rate of SO4 – arctic wet deposition rate of SO4 – arctic $dryso4 (kg m^{-2} s^{-1})$ wetso2 (kg $\mathrm{m}^{-2}\,\mathrm{s}^{-1}$ wetso4 (kg $\mathrm{m}^{-2} \mathrm{s}^{-1}$ 4e-03 0e+00 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 Year Year Year Year cloud cover Ice water path - arctic Dimethyl sulphide (DMS) mole fractic ambient aerosol optical thickness at 550nm – arctic percentage - arctic _lom lom) smb clivi $(kg m^{-2})$ 5e-05 0e+00 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 Year Year Year Year load load of so2 of bc - arctic arctic 0.0e+0.0

