shp-atl-shift-1950: absolute difference surface concentration of BC – NH-atlantic surface flux surface concentration surface concentration of BC - NH-atlantic of SO2 - NH-atlantic of SO4 - NH-atlantic of SO2 - NH-atlantic 4 0e-13 $\mathrm{emibc}\,(\mathrm{kg}\,\mathrm{m}^{-2}\,\mathrm{s}^{-1})$ emiso2 (kg m $^{-2}$ s $^{-1}$ nmrbc (kg kg-1) so2 (kg kg – 1) 3.9e-13 mmrso4 (kg kg 3.8e-13 2.0e-2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 Year Year Year Year Year upwelling longwave flux at TOA – NH–atlantic upwelling shortwave flux at TOA – NH-atlantic net radiative flux at TOA – NH–atlantic upwelling clear-sky longway flux at TOA - NH-atlantic incident shortwave flux at TOA – NH-atlantic 5 0e=02 -lut + rsut $(W m^{-2})$ 0e+00 5 1e-01 rlut (Wm-2)rsut (Wm-2)rsdt (Wm-2)lutcs (W m--1e-012e-01 0.0e + 0.01e-01 -2e-01 -2 5e-02 -3e-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 clear-sky net radiative implied cloud response dry deposition rate wet deposition rate flux at TOA - NH-atlantic flux at TOA - NH-atlantic at TOA - NH-atlantic of BC - NH-atlantic of BC - NH-atlantic rsutcs (W m⁻²) lutcs + rsutcs (W m $^{-2}$) rsutcs (W m-2) 3e-02 1.0e-01 8.5e-17 6.0e-16 drybc (kg $m^{-2} s^{-1}$ wetbc (kg m⁻² s⁻ 2e-02 rlutcs 0.0e+00 rsnt -5.0e-02 0e+00 + <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 dry deposition rate of SO4 – NH–atlantic total deposition rate of BC – NH–atlantic dry deposition rate of SO2 – NH–atlantic wet deposition rate of SO2 – NH-atlantic wet deposition rate of SO4 – NH-atlantic 1.2e-15 3.5e-17 $\mathrm{drybc} + \mathrm{wetbc} \, (\mathrm{kg} \, \mathrm{m}^{-2} \, \mathrm{s}^{-1})$ wetso2 $(kg m^{-2} s^{-1})$ dryso2 (kg m $^{-2}$ s $^{-1}$ wetso4 (kg $\mathrm{m}^{-2} \mathrm{s}^{-1}$ 6.9e-16 dryso4 (kg m⁻² s^{-′} 1.9e-16 3.2e-17 -3.1e 3.1e 1.8e-13 2.6e-13 3.0e-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)/3Ice water path - NH-atlantDimethyl sulphide (DMS) mole fraction total deposition rate cloud cover ambient aerosol optical of S - NH-atlantic percentage - NH-atlantic thickness at 550nm - NH-atlantic expression cltc (%) 8.0e-14 2e-02 clivi (kg m⁻²) _lom lom) smb $(kg m^{-2} s^{-1})$ 0e+00 4.0e-14 -2e-02 0.0e+00 -4e-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 – NH-atlantic of bc - NH-atlantic $\log \log (\log \, m^{-2})$ loadbc (kg m⁻²) 6e-08 1e-11 4e-08 2e-08 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 Year