## NH-pacific: absolute difference surface flux surface flux surface concentration surface concentration surface concentration of BC - shp-atl-shift-195 of SO2 - shp-atl-shift-19 of BC - shp-atl-shift-1950 of SO4 - shp-atl-shift-19 of SO2 - shp-atl-shift-195 $\mathrm{emibc}\,(\mathrm{kg}\,\mathrm{m}^{-2}\,\mathrm{s}^{-1})$ nmrbc (kg kg – 1) emiso2 (kg m<sup>-2</sup> s<sup>-</sup> so2 (kg kg – 1) nmrso4 (kg kg 00+00 -3.0e-21 2000 2001 2002 2003 2004 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 – shp-atl-shift-195 upwelling shortwave flux at TOA – shp-atl-shift-195 upwelling clear-sky longwa flux at TOA - shp-atl-shiftincident shortwave flux at TOA – shp-atl-shift-19 net radiative flux at TOA - shp-atl-shift-19 2e-01 0e+00 2.5e-02 $rsut(W m^{-2})$ -3.0e-02 5 rlut (Wm-2)rsut (Wm-2)rsdt (Wm-2)1e-01 rlutcs (W m -0.0e+0.00.0e + 0.00e+00 -2e-01 -9.0e-02 -2 5e-02 -2.5e-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 flux at TOA - shp-atl-shift-1 implied cloud response dry deposition rate wet deposition rate clear-sky net radiative flux at TOA - shp-atl-shift-1 at TOA - shp-atl-shift-19 of BC - shp-atl-shift-195 of BC - shp-atl-shift-198 rsutcs (W $m^{-2}$ ) -1.0e-02 lutcs + rsutcs (W m $^{-2}$ ) 2e-02 0.0e + 0.0e +rsutcs (W m-2) 3.7e-1 vetbc (kg $\mathrm{m}^{-2}\,\mathrm{s}^{-1}$ drybc (kg $m^{-2} s^{-1}$ 0e+00-1.5e-02 -5 0e-02 rlutes -2e-02 -2.0e-02 -4e-02rsut – -6e-02 rt H 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 – shp-atl-shift-195 total deposition rate of BC – shp-atl-shift-195 dry deposition rate of SO2 – shp–atl–shift–19 wet deposition rate of SO2 – shp-atl-shift-19 wet deposition rate of SO4 – shp-atl-shift-19 1.5e -1.9e-13 -3.0e $\mathrm{drybc} + \mathrm{wetbc} \, (\mathrm{kg} \, \mathrm{m}^{-2} \, \mathrm{s}^{-1})$ wetso2 (kg m $^{-2}$ s $^{-1}$ wetso4 (kg m<sup>-2</sup> s<sup>-</sup> dryso2 (kg m<sup>-2</sup> s<sup>-'</sup> dryso4 (kg m<sup>-2</sup> s<sup>-′</sup> -7.8e-19 -3.2e--1.4e-13 -1.9e-13 -3.4e-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 - shp-atl-sDiffnethyl sulphide (DMS) mole fraction - sh total deposition rate cloud cover ambient aerosol optical thickness at 550nm - shp-atl-shift-1 of S - shp-atl-shift-19 percentage - shp-atl-shift-19 1e-02 0e+00 expression cltc (%) clivi (kg ${\sf m}^{-2}$ ) \_lom lom) smb $(kg m^{-2} s^{-1})$ 0e+00 -2e-04 od550aer -1e-02 -4e-04 -8e-14 20002001200220032004 2002 2003 2004 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2000 2001 Year Year Year Year Year load load of so4 - shp-atl-shift-195 of bc - shp-atl-shift-1950 1e-11 loadso4 (kg m<sup>-2</sup>) loadbc (kg m $^{-2}$ ) -2e-08 5e-12 -3e-08 0e+00 -5e-12 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 Year