NH-pacific: absolute difference surface flux of SO2 – shp–20p–red surface flux of BC – shp–20p–red surface concentration of BC – shp–20p–red surface concentration surface concentration of SO4 - shp-20p-red of SO2 - shp-20p-red -2.5e-12 emibc (kg $\mathrm{m}^{-2} \mathrm{s}^{-1}$) əmiso2 (kg m $^{-2}$ s $^$ mmrbc (kg kg-1) -9.0e-22 so2 (kg kg – 1) nmrso4 (kg kg 0e+00 -1.5e-20 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 longwave flux at TOA – shp–20p–red upwelling shortwave flux at TOA – shp–20p–red incident shortwave flux at TOA – shp–20p–red upwelling clear-sky longway flux at TOA - shp-20p-red net radiative flux at TOA - shp-20p-red 5 0e=02 1e-01 4e-02 1e-01 $rsut(W m^{-2})$ 1.0e-0 5e-02 rlut (Wm-2)rsut (Wm-2)(Wm-2)3e-02 rlutcs (W m -0e+00 2e-02 5.0e-02 0.0e + 0.00e+00 1e-02 rsdt -1e-01 0.0e+00 -2 5e-02 0e+00 _2e_01 -5.0e-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 upwelling clear-sky shortwa clear-sky net radiative implied cloud response dry deposition rate wet deposition rate flux at TOA - shp-20p-re flux at TOÁ - shp-20p-red rsutcs (W m^{-2}) at TOA - shp-20p-red of BC - shp-20p-red of BC - shp-20p-red 1.8e-16 0.0e+00 ·lutcs + rsutcs (W m⁻²) 1e-01 rsutcs (Wm-2)2e-02 8.3e-17 3.2e-16 drybc (kg $m^{-2} s^{-1}$ vetbc (kg m⁻² s⁻ rlutcs – 0e+00 -1.0e-02 -1.5e-02rsut – -2e-02 -2.0e-02 rt H _2 2e_16 -6.6e-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 Year Year Year dry deposition rate of SO2 – shp–20p–red dry deposition rate of SO4 – shp–20p–red wet deposition rate of SO4 – shp–20p–red total deposition rate of BC – shp–20p–red wet deposition rate of SO2 – shp–20p–red 7.3e-16 -1.2e-13 $\mathrm{drybc} + \mathrm{wetbc} \, (\mathrm{kg} \, \mathrm{m}^{-2} \, \mathrm{s}^{-1})$ -1 0e-14 wetso2 (kg $\mathrm{m}^{-2} \mathrm{s}^{-1}$ dryso2 (kg m $^{-2}$ s $^{-1}$ 3.3e-16 dryso4 (kg m⁻² s⁻ wetso4 $(kg m^{-2})$ -7.1e-17 -2.0e-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 - shp-20p-Drimethyl sulphide (DMS) mole fraction total deposition rate cloud cover ambient aerosol optical of S - shp-20p-red percentage - shp-20p-red thickness at 550nm - shp-20p-red 3e-02 1e-03 expression cltc (%) 2e-02 _lom lom) smb clivi (kg m⁻²) $(kg m^{-2} s^{-1})$ 5e-04 od550aer 1e-02 0e+00 0e+00 -5e-04 0e+00 -1e-02 20002001200220032004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 Year Year Year Year Year load load of so4 - shp-20p-red of bc - shp-20p-red oadso4 $(kg m^{-2})$ oadbc (kg m⁻²) -2e-08 1e-11 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 Year