arctic: absolute difference surface flux of BC – shp–10p–red surface flux surface concentration surface concentration surface concentration of SO2 - shp-10p-red of BC - shp-10p-red of SO4 - shp-10p-red of SO2 - shp-10p-red 0.0e+00 0.0e+00 -5.0e-01 5e-05 _6e_01 -5.0e-01 -1.0e+00-5e<u>-</u>01 0e+00 -1.0e+0.0-1e+00 _5e_05 -2.0e+00 -1.5e+002000 2001 2002 2003 2004 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 Year Year Year Year Year upwelling longwave flux at TOA – shp–10p–red upwelling shortwave flux at TOA – shp–10p–red net radiative flux at TOA – shp–10p–red incident shortwave flux at TOA – shp–10p–red upwelling clear–sky longway flux at TOA – shp–10p–red 5 0e-02 2e-01 2e-01 1e-02 1e-01 1e-01 ∆ rlut + rsut 8.0e-03 0e+00 0e+00 0.0e + 0.0e +4.0e-03 -1e-02 -1e-01 -1e-01 -2 5e-02 0.0e+00 -2e-0 -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 Year upwelling clear-sky shortway clear-sky net radiative implied cloud response dry deposition rate wet deposition rate flux at TOA - shp-10p-red flux at TOA - shp-10p-red at TOA - shp-10p-red of BC - shp-10p-red of BC - shp-10p-red rsutcs) 1e-01 1e-01 4e_01 rsutcs 5e-02 5e-02 5e-02 rlutcs -2e-01 ∆ wetbc ∆ rsutcs drybc 0e+00 0e+00 0e+00 rsut -5e-02 -5e-02 -5e-02(rlut + -2e-01 -1e-01 -1e-02000 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 – shp–10p–red dry deposition rate of SO2 – shp–10p–red wet deposition rate of SO2 – shp-10p-red dry deposition rate of SO4 – shp–10p–red wet deposition rate of SO4 – shp–10p–red 5e-01 -6.5e-01 -3e-01 0.0e+0.0-2.5e-01 drybc + wetbc 0e+00 -4e-01 -6.6e-01 dryso2 -6.7e-01 -5e-01 -7.5e-01 -6e-01 -1.5e+0.0_6 8e_01 -1e+00 -7e-01 -2.0e+00 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-10p-Dimethyl sulphide (DMS) mole fraction total deposition rate cloud cover ambient aerosol optical of S - shp-10p-red percentage - shp-10p-rethickness at 550nm - shp-10p -6.5e-01 5.0e-01 8 2.5e-01 _lom lom) smb clivi (kg m⁻²) -7.0e-01 5e-01 양 ∆ od550ae 0e+00 0.0e+00 -7.5e-01 0e+00 -4e-01 -01 -5.0e-01 -8.0e-01 -7 5e-01 20002001200220032004 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 load load of so4 - shp-10p-red of bc - shp-10p-red 1e-01 0e+00 $\log \log (\log \, m^{-2})$ -1e-01 oadbc (kg m -5.0e-01 -2e-01 -3e-01 -7.5e-01 -4e-01 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004

Year