shp-ind-shift: absolute difference surface flux of BC - arctic surface flux of SO2 - arctic surface concentration surface concentration of SO4 - arctic of BC - arctic 3.2e-20 0.0e+00 -5.0e-13 2.1e-20 emibc (kg m-2 s-1) emiso2 (kg m-2 s-1) -5 0e-14 kg-1) mmrbc (kg kg-1) -1.0e-12 mmrso4 (kg -1.0e-13 1.0e-20 0e+00 -1.5e-12 -1.5e-13 -5.5e-22 -4e-14 -2.0e-12 -2.0e-13 -1.1e-20 2000 2001 2002 2003 2000 2001 2002 2003 2000 2001 2002 2003 2004 2000 2001 2002 2003 Year Year Year Year upwelling longwave flux at TOA – arctic upwelling shortwave flux at TOA – arctic net radiative flux at TOA - arctic surface concentration of SO2 - arctic 4e-12 0.1 0.050 0.1 rlut + rsut (W m-2) 0e+00 so2 (kg kg-1) rlut (W m-2) rsut (W m-2) 0.0 0.025 0.0 0.000 -0.1 -0.1 -8e-12 -0.025 -0.2 -0.22000 2001 2002 2003 2000 2001 2002 2000 2001 2002 2003 2000 2001 2002 2003 Year Year Year Year upwelling clear-sky longwave flux at TOA – arctic upwelling clear–sky shortwave flux at TOA – arctic clear-sky net radiative flux at TOA – arctic incident shortwave flux at TOA - arctic 0.050 0.075 0.05 rlutes + rsutes (W m-2) 0.050 0.050 0.025 rsutcs (W m-2) rlutcs (W m-2) rsdt (W m-2) 0.00 0.025 0.025 0.000 0.000 -0.050.000 -0.025 -0.025 -0.025 -0.10 -0.050 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 BC – arctic wet deposition rate total deposition rate dry deposition rate of BC - arctic of BC - arctic of SO2 - arctic 2.7e-16 4.7e-17 8.1e-17 -6.3e-15 drybc + wetbc (kg m-2 s-1) drybc (kg m-2 s-1) 1.6e-16 -9.6e-17 wetbc (kg m-2 s-1) dryso2 (kg m-2 s-1) 5.6e-17 -2.2e-16 -2.7e-16 -7.4e-15 -8.0e-15 -1.6e-16 -6.3e-16 -8.5e-2000 2004 2000 2001 2002 2003 2004 2001 2002 2003 2004 2000 2001 2002 2003 2000 2001 2002 2003 Year Year Year Year wet deposition rate dry deposition rate wet deposition rate total deposition rate of SO2 - arctic of SO4 - arctic of SO4 - arctic of S - arctic -9.6e-15 -1.9e-18 4.3e-16 S S + wetso4)/3 wetso2 (kg m-2 s-1) -2.4e-18 (kg m-2 s-1) wetso4 (kg m-2 s-1) -1.5e-14 + (dryso4 -2.9e-18 -1.3e-15 -1.9e-14 -1.2e-14 drvso4 -3.4e-18 (dryso2 + wetso2)/2 -3.9e-18 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 Year Year Year Year CESM1 GISS