high-so4: absolute difference surface flux of BC - arctic surface flux of SO2 - arctic surface concentration surface concentration of BC - arctic of SO4 - arctic 7.4e-20 -1.1e-13 4.0e-1 4e-13 4.5e-20 emiso2 (kg m-2 s-1) emibc (kg m-2 s-1) mmrso4 (kg kg-1) mmrbc (kg kg-1) -1.2e-13 1.5e-20 3.0e-1 1e-13 -1.4e-20 2.5e-11 0e+00 -4.3e-20 2001 2003 2003 2001 2003 2002 2003 2001 2002 2001 2002 Year Year Year Year upwelling longwave flux at TOA – arctic upwelling shortwave flux at TOA – arctic surface concentration net radiative flux at TOA - arctic of SO2 - arctic 0.6 0.05 0.4 0.00 rlut + rsut (W m-2) 0.50 rsut (W m-2) so2 (kg kg-1) rlut (W m-2) -4e-1 -0.05 0.2 -0.10 0.0 0.00 -0.15-8e-11 2001 2003 2001 2002 2001 2002 2003 2001 2002 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 0.08 0.15 4e-08 0.10 rlutes + rsutes (W m-2) 0.10 rsutcs (W m-2) rlutcs (W m-2) 0.04 rsdt (W m-2) 0.05 3e-08 0.05 0.00 2e-08 0.00 0.00 -0.05 1e-08 -0.050e+00 -0.10-0.10 2003 2004 2003 2004 2004 2001 2002 2004 2001 2002 2003 2001 2002 2001 2002 2003 Year Year Year Year dry deposition rate of BC – arctic wet deposition rate of BC – arctic total deposition rate dry deposition rate of BC - arctic of SO2 - arctic 1.1e-15 2.0e-15 1.0e-15 drybc + wetbc (kg m-2 s-1) drybc (kg m-2 s-1) 8.2e-16 wetbc (kg m-2 s-1) dryso2 (kg m-2 s-1) -6e-14 2.2e-16 5.3e-16 8.4e-16 -8e-14 2.5e-16 -7.0e-17 -3.5e-16 2003 2001 2003 2001 2003 2004 2003 2001 2002 2002 2002 2001 2002 Year Year Year Year (dryso2 + wetso2)/2 + (dryso4 + wetso4)/3 (kg m-2 s-1) wet deposition rate dry deposition rate wet deposition rate total deposition rate of SO2 - arctic of SO4 - arctic of SO4 - arctic of S - arctic 0.0e+00 wetso2 (kg m-2 s-1) dryso4 (kg m-2 s-1) wetso4 (kg m-2 s-1) 8e-14 0e+00 -4.0e-14 6e-14 7e-14 -2e-14 5e-14 -8.0e-14 6e-14 -1.2e-13 2004 2001 2002 2003 2004 2001 2002 2003 2004 2001 2002 2003 2004 2001 2002 2003 Year Year Year Year CESM1 E3SM GISS MIROC NorESM2