so2-at-hgt: absolute difference surface flux of BC - arctic surface flux of SO2 - arctic surface concentration surface concentration of SO4 - arctic of BC - arctic 5.2e-20 1.4e-15 1.8e-20 emiso2 (kg m-2 s-1) 1.0e-15 emibc (kg m-2 s-1) mmrbc (kg kg-1) mmrso4 (kg kg-1) -1e-13 -1.5e-20 6.7e-16 -2e-13 -4.8e-20 3.0e-16 -8.1e-20 -6.7e-17 2001 2003 2001 2001 2003 2002 2001 2002 2003 2002 2003 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 0.000 rlut + rsut (W m-2) 0.4 so2 (kg kg-1) rsut (W m-2) rlut (W m-2) -0.025 -0.050 0.2 -0.075 0.0 0.0 -0.100 2001 2002 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 5.0e-08 0.5 0.03 0.4 m-20.4 2.5e-08 0.02 rsutcs (W m-2) rlutcs (W m-2) rsdt (W m-2) 0.3 rlutcs + rsutcs (W 0.3 0.01 0.0e+00 0.2 0.00 0.2 -2.5e-08 -0.01 0.1 0.1 -5.0e-08 -0.02 0.0 0.0 -7.5e-08 2004 2001 2004 2001 2002 2003 2004 2001 2002 2003 2004 2001 2002 2003 2002 2003 Year Year Year Year dry deposition rate of BC – arctic total deposition rate of BC – arctic wet deposition rate dry deposition rate of BC - arctic of SO2 - arctic 5.3e-16 3.4e-16 5.1e-16 -2e-13 drybc + wetbc (kg m-2 s-1) drybc (kg m-2 s-1) 3.8e-17 wetbc (kg m-2 s-1) 2.2e-16 dryso2 (kg m-2 s-1) -2.6e-16 1.1e-16 -9.2e-17 -5.6e-16 4.0e-16 -5e-13 -8.6e-16 -3.0e-16 -7.2e-16 2001 2003 2001 2003 2004 2001 2003 2004 2003 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 dryso4 (kg m-2 s-1) 8.0e-14 8.0e-14 wetso2 (kg m-2 s-1) wetso4 (kg m-2 s-1) 4e-13 3.5e-13 3e-13 2e-13 3.0e-13 1e-13 5.0e-13 0e+00 2001 2002 2003 2004 2001 2002 2003 2004 2001 2002 2003 2004 2001 2002 2003 2004 Year Year Year Year NorESM2 CESM1 E3SM MIROC