no-so4: percent difference surface flux of BC - arctic surface flux of SO2 - arctic surface concentration surface concentration of BC - arctic of SO4 - arctic 1e-04% 5e-05% 0.5% Percent Percent 2.1% Percent 0% 0% -8% 1.8% -0.5% -5e-05% 1.5% 2001 2001 2003 2001 2003 2001 2003 2002 2003 2002 2002 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 0.04% 0.1% 0.1% 4% 0% 0% 0.02% 3.5% Percent Percent Percent -0.1% 3% 0% -0.2% -0.2% 2.5% -0.3% -0.02% -0.3% 2001 2002 2001 2002 2003 2001 2003 2001 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 2.5e-08% 0.1% 0.01% 0.1% 2e-08% 0.05% 0% 0.05% Percent 1.5e-08% Percent -0.01% 0% 1e-08% -0.02% -0.05% -0.05%5e-09% -0.03% -0.1% 0% -0.1% 2001 2003 2004 2003 2004 2001 2003 2004 2002 2004 2001 2002 2003 2001 2002 2002 Year Year Year Year dry deposition rate of SO2 – arctic dry deposition rate wet deposition rate total deposition rate of BC - arctic of BC - arctic of BC - arctic 0.25% 0% 0% 2.5% 0.2% -0.25% Percent Percent Percent -0.4% -0.5% -0.75% -0.8% 1.5% -0.2% 2001 2003 2004 2001 2003 2004 2001 2003 2004 2001 2003 2002 2002 2002 2002 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 -0.6% 2.5% -5% Percent Percent Percent 0% -0.8% -9% 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