bc-no-season: percent difference surface flux of SO2 – global surface flux of BC – global surface concentration surface concentration of SO4 – global surface concentration of SO2 – global of BC – global 0.4% 0.1% 0.02% -0.1% Percent Percent Percent Percent 0.2% Per -0.2% 0% 0.01% 0% -0.3% -0.2% _0.1% 0% -0.4%2001 2002 2003 2001 2002 2003 2004 2001 2002 2003 2004 2001 2002 2003 2004 2001 2002 2003 Year Year Year Year Year upwelling longwave flux at TOA – global upwelling shortwave flux at TOA – global upwelling clear-sky longway flux at TOA - global net radiative flux incident shortwave flux at TOA - global at TOA - global 0.015% 0.1% 0.03% 0.01% 0.08% 0.02% 1.5e-08% 0.005% 0.05% 0.04% Percent Percent 0.01% 0% 0% _0.005% 0% 5e-09% -0.04% -0.01% -0.01% 0% -0.015% 2001 2002 2003 2001 2002 2003 2001 2002 2003 2004 2001 2002 2003 2004 2002 2003 Year Year Year Year Year upwelling clear-sky shortway clear-sky net radiative dry deposition rate wet deposition rate total deposition rate flux at TOA - global flux at TOA - global of BC - global of BC - global of BC - global 0.12% 0.08% 0.75% 0.05% Percent Percent 0.04% Percent Percent 0.5% 0% 0% -1.5% -2.5% -0.05% -0.04% 0% 2003 2003 2001 2003 2001 2002 2003 2001 2001 2002 2001 2002 2003 Year Year Year Year Year total deposition rate of S – global dry deposition rate wet deposition rate dry deposition rate wet deposition rate of SO2 – global of SO2 – global of SO4 – global of SO4 – global 0.5% 0% 0.4% -0.1 0.3% 0.3% 0.5% Percent Percent Percent -0.2% -0.1% 0.2% 0.2% Pe -0.3% 0.25% 0.1% 0.1% 0% 0% -0.3%-0.1 2001 2002 2003 2004 2001 2002 2003 2004 2001 2002 2003 2004 2001 2002 2003 2004 2001 2002 2003 2004 Year ambient aerosol optical total cloud cover convective cloud cover thickness at 550nm - global percentage - global percentage - global 300% 0.05% 0.1 0% 200% Percent Percent -0.05% 100% 0% -0.1% 0% -0.15% 2002 2002 2002 2003 2004 2001 2003 2004 2003 2004 2001 2001 Year Year Year OsloCTM3 CESM1 **GFDI** MIROC

E3SM

GISS

NorESM2