so2-at-height: percent difference surface flux of SO2 – global surface concentration of BC – global surface flux of BC – global surface concentration of SO4 – global surface concentration of SO2 – global 1.5e-05% 25% 20% 3% 1e-05% _20% -0.5% Percent 15% Percent 5e-06% Per -40% 0% -1.5% 0% -60% 2001 2002 2003 2001 2002 2003 2004 2001 2002 2003 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 longwav flux at TOA – global net radiative flux incident shortwave flux at TOA - global at TOA - global 0.02% 0.4% 2e-08% 0% 0.3% 0% 1e-08% Percent Percent 0.2% -0.02% 0.1 0.1% -1e-08% -0.02% -0.04% 0% 0% -2e-08% 2001 2002 2003 2001 2002 2003 2001 2002 2003 2004 2001 2002 2003 2001 2002 2003 Year Year Year Year Year upwelling clear-sky shortwave 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 0.5% 0.5% 0.4% 0.9% 0.25% 0.25% Percent Percent Percent Percent 0.2% 0.6% 0.6% 0% 0% 0.3% 0.3% 0% -0.25%0% -0.25% 2003 2003 2003 2001 2001 2001 2003 2001 2003 2001 2002 Year Year Year Year Year dry deposition rate of SO4 – global wet deposition rate of SO4 – global dry deposition rate wet deposition rate total deposition rate of SO2 – global of SO2 – global of S – global -10% 20% 20% 20% Percent Percent Percent Percent Percent -30% 0% 5% 0% 2001 2002 2003 2004 2001 2002 2003 2004 2001 2002 2003 2004 2001 2002 2003 2004 2001 2002 2003 2004 Year Year Year Year ambient aerosol optical total cloud cover convective cloud cover thickness at 550nm - global percentage - global percentage - global 8e+35% 0.1% 6e+35% 0.05% Percent -20% 4e+35% -40% -0.05% 2e+35% -60% -0.1% 0% 2002 2002 2002 2003 2001 2003 2004 2001 2003 2004 2001 Year Year

MIROC

NorESM2

GFOS

GISS

CFSM1

E3SM

OsloCTM3

UKESM