no-so4: percent difference surface flux of BC – land surface flux of SO2 – land surface concentration of BC – land surface concentration of SO4 – land surface concentration of SO2 – land 1.5e-05% 0.5% 1e-05% -6% 0.25% 5e-06% Percent Percent Percent Percent Percent -8% 0% -5e-06% -0.25% -1e-05% 0% -0.5% 2001 2002 2003 2004 2001 2002 2003 2004 2001 2002 2003 2001 2002 2003 2001 2002 2003 Year Year Year Year Year upwelling longwave flux at TOA – land upwelling shortwave flux at TOA – land net radiative flux at TOA – land upwelling clear-sky longwav flux at TOA - land incident shortwave flux at TOA - land 0.075% 0.02% 0% 0% 6e-08% 0.01% 0.05% -0.1% -0.1% Percent Percent Percent 0% 3e-08% 0.025% -0.01% -0.2% -0.2% 0% 0% -0.02% -3e-08% 2001 2002 2003 2004 2001 2003 2001 2003 2001 2002 2003 2001 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 - land flux at TOA - land of BC - land of BC - land of BC - land 0.15% 0.5% 0.5% 0.1% 0.1% 0.4% 0.25% 0.05% 0.05% Percent 0% Percent Percent 0% -0.4% -0.25% -0.05% -0.05% -0.5% -0.8% -0.5% -0.1% -0.1% -0.752003 2001 2003 2001 2003 2001 2001 2002 2003 2001 2003 Year Year Year Year Year dry deposition rate wet deposition rate dry deposition rate wet deposition rate total deposition rate of SO2 - land of SO2 – land of SO4 - land of SO4 – land of S - land 2.7% 2% 2.69 Percent Percent Percent Percent 0% 2.5% 0% -15% 2.4% 2.3% -20% 2001 2002 2003 2004 2001 2002 2003 2004 2001 2002 2003 2004 2001 2002 2003 2004 2001 2002 2003 2004 Year Year Year Year Year ambient aerosol optical convective cloud cover total cloud cover thickness at 550nm - land percentage - land percentage - land 0.25% 0% 0.1% -20% 0% -0.25%-0.1% -0.5% -0.2% -60% -0.75% 2002 2002 2002 2003 2003 2004 2001 2003 2004 2001 2004 2001 Year Year Year

CFSM1

CESM2

F3SM

GEOS

GFDI

GISS

MIROC

NorESM2

OsloCTM3

UKESM