so2-at-height: percent difference surface flux of SO2 – SH–land surface concentration of BC – SH–land surface flux of BC – SH–land surface concentration of SO4 – SH–land surface concentration of SO2 – SH–land 6e-05% 15% 4e-05% 0.19 10% Percent Percent Percent Percent 2e-05% Percent 5% 0% -4% -0.1% -60% -2e-05% 0% -0.2% -6% 2001 2002 2003 2001 2002 2003 2004 2001 2002 2003 2001 2003 2004 2001 2002 2003 Year Year Year Year Year upwelling longwave flux at TOA – SH–land upwelling shortwave flux at TOA – SH–land net radiative flux at TOA – SH–land incident shortwave flux at TOA – SH–land upwelling clear-sky longwav flux at TOA - SH-land 0.05% 0.1% 0% -2e-08% Percent 0.05% Percent Percent 0.05% 0% -4e-08%0% -0.01% _6e_08% 0% -0.05% -0.05% 2003 2001 2003 2001 2003 2001 2002 2003 2004 2001 2002 2003 Year Year Year Year Year dry deposition rate of BC – SH–land wet deposition rate of BC – SH–land upwelling clear-sky shortwave clear-sky net radiative total deposition rate flux at TOA - SH-land flux at TOA - SH-land of BC - SH-land 0.6% 0.2% 0.2% 0.3% 0.1% 0.25% Percent 0.1% Percent 0% 0% 0% 0.1% -0.1% -0.25% -0.2% 0% 0% -0.6% -0.3%2003 2003 2001 2002 2001 2001 2002 2003 2001 2003 2001 2003 Year Year Year Year Year wet deposition rate of SO4 – SH–land total deposition rate of S – SH–land dry deposition rate of SO4 – SH–land dry deposition rate wet deposition rate of SO2 - SH-land of SO2 - SH-land 15% 20% -20% 15% -30% 15% 10% 10% Percent Percent Percent -8% -40% 10% 5% 5% -50% 0% 2001 2002 2003 2004 2001 2002 2003 2004 2001 2002 2003 2004 2001 2002 2003 2004 2001 2002 2003 2004 Year Year Year ambient aerosol optical convective cloud cover percentage – SH–land total cloud cover thickness at 550nm percentage - SH-land 0% 1.5e+36% 0.1% -20% Percent 0% 1e+36% Percent -40% -0.1% 5e+35% -0.2% -60% -0.3% 0% 2002 2002 2002 2003 2003 2004 2001 2003 2004 2001 2004 2001 Year Year Year

OsloCTM3

UKESM

CFSM1

E3SM

GFOS

GISS

MIROC

NorESM2