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% ∆ emiso2 ∆ mmrbc ∆ mmrso4 ∆ emibc 2e-05% 5% -0.1% -60% -2e-05% -0.2%-6% 2001 2002 2003 2001 2002 2003 2004 2001 2002 2003 2001 2003 2004 2001 2002 2003 Year Year Year Year Year net radiative flux at TOA – SH-land incident shortwave flux at TOA – SH–land clear-sky longwave flux at TOA - SH-land longwave flux at TOA shortwave flux at TOA -SH-land SH-land 0.05% 0.1% 0% ∆ (rlut + rsut) -2e-08% 0.05% ∆ rlut 0.05% 0% -4e-08% 0% -0.01% _6e_08% 0% -0.05% -0.05% 2003 2001 2003 2001 2003 2001 2002 2003 2001 2003 Year Year Year Year Year dry deposition rate of BC – SH–land wet deposition rate of BC – SH–land clear-sky shortwaveflux clear-sky net radiative implied cloud response at TOA - SH-land flux at TOA - SH-land at TOA - SH-land (rlut + rsut - rlutcs - rsutcs) 0.2% 0.2% 0% Δ (rlutcs + rsutcs) 0.1% 0.25% o.1% ∨ vs.ntcs △ wetbc 0% 0% -0.1% -0.1% -0.2%-0.25%0% 0% -0.3%2001 2003 2001 2003 2001 2003 2001 2003 2001 2003 Year Year Year Year Year total deposition rate of BC – SH–land wet deposition rate of SO4 – SH–land dry deposition rate wet deposition rate dry deposition rate of SO2 - SH-land of SO2 - SH-land of SO4 - SH-land 15% 20% 0.6% -20% 15% ∆ (drybc + wetbc) 0.3% -30% 15% 10% ∆ wetso2 10% ∆ dryso2 ∆ dryso4 ∆ wetso4 0% -40% 10% 5% 5% -0.3% -50% 5% 0% 0% -0.6%2001 2002 2003 2001 2002 2003 2001 2002 2003 2004 2001 2002 2003 2004 2001 2002 2003 2004 Year Year total deposition rate of S – SH–land ambient aerosol optical convective cloud cover percentage – SH-land $\Delta \left(\text{dryso2} + \text{wetso2} \right) / 2 + \left(\text{dryso4} + \text{wetso4} \right) / 3$ total cloud cover thickness at 550nm - SH-lan percentage - SH-land 0% 1.5e+36% -4% 0.1% -20% ∆ od550aer 1e+36% -8% ∆ clt -40% -0.1% -12% 5e+35% -0.2% -60% -0.3% 0% 2002 2003 2002 2003 2001 2004 2001 2002 2003 2004 2001 2004 2001 2002 2003 2004 Year Year Year Year

OsloCTM3

UKESM

CFSM1

E3SM

GFOS

GISS

MIROC

NorESM2