so2-at-height: percent difference surface flux of BC – sea surface flux of SO2 – sea surface concentration of BC – sea surface concentration of SO4 – sea surface concentration of SO2 – sea 6e-06% 0.25% 6% 15% 3e-06% 0% 0% Percent 4% Percent Percent 0% -0.25% 2% 5% -06% -0.5% -20% 0% 2003 2001 2002 2003 2001 2002 2003 2004 2001 2002 2003 2001 2002 2004 2001 2002 2003 Year Year Year Year Year upwelling longwave flux at TOA – sea upwelling shortwave flux at TOA – sea upwelling clear–sky longwav flux at TOA – sea net radiative flux incident shortwave flux at TOA - sea at TOA - sea 0.02% 0.4% 0.4% 0.3% 0% 0.3% 1e-08% Percent Percent Percent 0.2% 0% -0.01% 0.1% -0.04% -08% 0% -0.02% 2001 2002 2003 2004 2001 2003 2004 2001 2002 2003 2004 2001 2002 2003 2004 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 - sea flux at TOA - sea of BC - sea of BC - sea of BC - sea 0.6% 0.2% 0.4% 0.75% 0.75% 0.5% 0% Percent Percent 0.2% 0.5% 0% 0% 0.25% -0.4% -0.2% -0.6% 0% 0% 2003 2003 2001 2001 2001 2003 2001 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 - sea of SO2 - sea of SO4 - sea of SO4 - sea of S - sea 12.5% 20% 5% 10% Percent Percent Percent Percent Percent 10% 7.5% 0% 10% 5% 5% 5% -5% 2.5% 2001 2002 2003 2004 2001 2002 2003 2001 2002 2003 2004 2001 2002 2003 2004 2001 2002 2003 2004 Year Year Year convective cloud cover ambient aerosol optical total cloud cover thickness at 550nm - sea percentage - sea percentage - sea 0% 6e+35% 0.1% -20% 4e+35% Percent 0.05% 2e+35% 0% -60% -0.05% 0% -80% 2002 2002 2002 2003 2003 2004 2001 2003 2004 2001 2004 2001 Year Year Year

GFOS

GISS

CESM1

MIROC

NorESM2

OsloCTM3

UKESM