bc-no-season: percent difference surface concentration of BC – bc–no–season surface flux of BC – bc–no–season surface flux of SO2 – bc–no–season surface concentration of SO4 – bc–no–season surface concentration of SO2 – bc–no–season 3% 0% 0.4% -25% 0.2% Percent Percent _5% Percent Percent -50% 0% 2% 1% _75% -0.2% 2001 2002 2003 2001 2002 2003 2001 2002 2003 2001 2002 2003 2001 2002 2003 Year Year Year Year Year upwelling longwave flux at TOA – bc–no–season upwelling shortwave flux at TOA – bc–no–season upwelling clear-sky longwav flux at TOA - bc-no-seaso net radiative flux incident shortwave flux at TOA - bc-no-season at TOA - bc-no-season 0.3% 1e-07% 0.2% 0.01% 0.2% 7 56-08% 0.05% Percent Percent Percent 0.1% Percent 0% Percent 0.1% 0% -0.01% 2.5e-08% -0.05% 0% -0.02% 2002 2003 2003 2004 2001 2002 2003 2004 2001 2002 2003 2004 2001 2002 2003 2004 2001 2001 2002 Year Year Year upwelling clear-sky shortway clear-sky net radiative dry deposition rate wet deposition rate total deposition rate flux at TOA - bc-no-seaso flux at TOA - bc-no-season of BC - bc-no-season of BC - bc-no-season of BC - bc-no-season 0.15% 10% 0.15% 5% 0.1% 0.1% -5% Percent Percent Percent 0.05% 0.05% -5% -10% -20% 0% -0.05% -0.05% 2001 2002 2003 2001 2002 2003 2001 2002 2003 2004 2001 2002 2003 2001 2002 2003 Year Year Year Year Year dry deposition rate wet deposition rate dry deposition rate wet deposition rate total deposition rate of SO2 - bc-no-season of SO2 - bc-no-season of SO4 - bc-no-season of SO4 - bc-no-season of S - bc-no-season 0.1% 4% 0.4% 0% 3% Percent Percent Percent Percent 0% 0% -0.2% -0.4% -0.4% 0% -0.3% -0.8% 2001 2003 2001 2002 2003 2001 2002 2003 2004 2001 2002 2003 2004 2001 2003 Year Year Year Year ambient aerosol optical total cloud cover convective cloud cover thickness at 550nm - bc-no-sea percentage - bc-no-seasor percentage - bc-no-season 0% 0.2% 0.5% -20% Percent 0% -40% 0.25% -60% 0% -80% -0.4% 2002 2003 2003 2001 Year Year Year UKESM CFSM1 GISS MIROC **GFDI**

E3SM

CESM2

NorESM2

OsloCTM3

GEOS