## bc-no-season: percent difference surface flux of SO2 – bc–no–season surface flux of BC – bc–no–season surface concentration surface concentration of SO4 – bc–no–season surface concentration of SO2 – bc–no–season of BC - bc-no-season 1.2% 0% 0.4% 0.9% -25% 0.2% 2% Percent Percent Percent Percent Percent 0.6% -50% 0% 0.3% \_75% -0.2% 0% 0% 2001 2002 2003 2001 2002 2003 2001 2002 2003 2004 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 longway flux at TOA - bc-no-seaso net radiative flux incident shortwave flux at TOA - bc-no-season at TOA - bc-no-season 6e-08% 0.4% 4e-08% 0% 0.2% 0% Percent Percent 0.2% Percent Percent 2e-08% 0.1% -0.05% -0.025% 0% 0% -2e-08% -0.1% -0.1% -0.2% -0.05% 2003 2003 2002 2003 2004 2001 2002 2004 2001 2002 2003 2004 2001 2002 2003 2004 2001 2002 2004 2001 Year Year Year Year upwelling clear–sky shortwav flux at TOA – bc–no–season clear-sky net radiative dry deposition rate wet deposition rate total deposition rate flux at TOA - bc-no-season of BC - bc-no-season of BC - bc-no-season of BC - bc-no-season 0.2% 0% 0.15% 0.15% -2.5% 0% 0.1% Percent 0.05% -5% 0.05% 0% 0% -15% -0.05% -0.05%2001 2002 2003 2004 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 0.6% 0% 0.2% 3% 0.4% Percent 0% Percent Percent Percent Percen 0.2% 1% -1.5% -0.5% -0.2% 0% -2% -0.4% 2001 2003 2001 2002 2003 2001 2002 2003 2001 2003 2001 2003 Year Year Year Year ambient aerosol optical total cloud cover convective cloud cover percentage - bc-no-seasor percentage - bc-no-season 0% 0.2% 0.2% -20% 0.1% 0.1% Percent Percent 0% -40% 0% -0.1% -60% -0.19-0.2% 2001 2003 2002 2003 Year Year Year **UKESM** CESM<sub>1</sub> GISS MIROC **GFDI**

E3SM

CESM2

NorESM2

OsloCTM3

**GEOS**