bc-no-season: percent difference surface flux of SO2 – NH–land surface concentration of BC – NH–land surface concentration of SO4 – NH–land surface flux of BC – NH–land surface concentration of SO2 – NH–land 0.2% 0.008% 0.2% 0.2% 0% 0.006% Percent 0.1% Percent Percent 0.004% 0% 0% 0.002% -0.4% -0.2% 0% 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 – NH–land upwelling shortwave flux at TOA – NH–land net radiative flux at TOA – NH–land incident shortwave flux at TOA – NH–land upwelling clear-sky longwav flux at TOA - NH-land 0.1% 1e-07% 0.01% 0.05% 0% 0.05% 0.05% 5e_08% Percent Percent Percent Percent -0.01% 0% 0% 0% -0.02% -0.05% -0.05% -0.03% -5e-08% 2002 2003 2001 2002 2003 2001 2002 2003 2001 2002 2003 2004 2002 2003 Year Year Year Year Year dry deposition rate of BC – NH–land wet deposition rate of BC – NH–land upwelling clear-sky shortway clear-sky net radiative total deposition rate flux at TOA - NH-land flux at TOA - NH-land of BC - NH-land 6% 0.1% 0.05% 0% 0.05% 4% 4% Percent Percent 0% 3% 0% 2% -0.05% -0.05% 0% -0.1%-0.1% 2001 2003 2001 2003 2001 2002 2003 2001 2003 2001 2002 2003 Year Year Year Year Year dry deposition rate of SO4 – NH–land total deposition rate of S – NH–land wet deposition rate of SO4 – NH–land dry deposition rate wet deposition rate of SO2 - NH-land of SO2 - NH-land 0.8% 0.1 0.6% 0.2% Percent Percent Percent Percent Percent 0.4% 0% 0% 0.1% -0.1% 0.2% -0.25% 0% -0.1%-0.5% 2001 2002 2003 2004 2001 2002 2003 2004 2001 2002 2003 2004 2001 2002 2003 2004 2001 2002 2003 2004 Year Year ambient aerosol optical convective cloud cover total cloud cover percentage - NH-land percentage - NH-land 400% 0.1 300% Percent 0% Percent 200% -0.1% 0% 100% -0.2% -0.1% -0.3% 0% 2002 2002 2003 2004 2002 2003 2001 2003 2004 2001 2001 2004 Year Year Year OsloCTM3 CESM1 **GFDI** MIROC

E3SM

GISS

NorESM2