bc-no-season: percent difference surface flux of SO2 – NH–pacific surface concentration of BC – NH–pacific surface concentration of SO4 – NH–pacific surface flux of BC – NH–pacific surface concentration of SO2 – NH–pacific 0% 0.4% 0.9% -25% 0.2% 2% ∆ emibc ∆ mmrso4 ∆ mmrbc 0.6% 0% -75% -0.2% 0% -8% -100% 2001 2002 2003 2001 2002 2003 2001 2002 2003 2004 2001 2002 2003 2001 2002 2003 Year Year Year Year Year net radiative flux at TOA – NH–pacific clear–sky longwave flux at TOA – NH–pacific shortwave flux at TOA longwave flux at TOA incident shortwave flux at TOA - NH-pacific NH-pacific NH-pacific 0.025% 0.3% 0.4% 0.2% 0% $\Delta (\mathsf{rlut} + \mathsf{rsut})$ 0.2% 2e-08% 0% 0% -2e-08% -0.1% -0.1% -0.05% 2001 2002 2003 2001 2003 2001 2003 2001 2002 2003 2004 2001 2002 2003 Year Year Year Year Year clear-sky shortwaveflux clear-sky net radiative implied cloud response dry deposition rate wet deposition rate at TOA - NH-pacific flux at TOA - NH-pacific at TOA - NH-pacific of BC - NH-pacific of BC - NH-pacific 0.2% 0% 0.15% rlut + rsut - rlutcs - rsutcs 0.15% 0.1% ∆ (rlutcs + rsutcs) 0.1% ∆ rsutcs △ wetbc △ drybc 0% 0.05% 0.05% 0% -7.5% -0.2% -0.05% -0.05% 2001 2002 2003 2004 2001 2002 2003 2001 2003 2001 2003 2001 2002 2003 Year Year Year Year Year dry deposition rate of SO4 – NH–pacific wet deposition rate of SO4 – NH–pacific total deposition rate dry deposition rate wet deposition rate of BC - NH-pacific of SO2 - NH-pacific of SO2 - NH-pacific 0.2% 2% ∆ (drybc + wetbc) -8% 0.5% 0% ∆ dryso2 ∆ wetso2 ∆ dryso4 ∆ wetso4 -12% -0.2% 0% -16% -0.5% -0.4 2001 2002 2003 2004 2001 2002 2003 2004 2001 2002 2003 2004 2001 2002 2003 2004 2001 2002 2003 2004 Year Year Year total deposition rate of S – NH–pacific $\Delta \left(\text{dryso2} + \text{wetso2} \right) / 2 + \left(\text{dryso4} + \text{wetso4} \right) / 3$ ambient aerosol optical convective cloud cover total cloud cover thickness at 550nm - NH-pac percentage - NH-pacific percentage - NH-pacific 0.2% 1.5% -20% 0.1% 0.1% 1% 0% -40% 0% 0.5% -0.1 -60% 0% -0.2% 2003 2002 2003 2002 2001 2002 2003 2004 2002 2004 2001 2004 2001 2003 2004 2001 Year Year Year Year

CFSM1

CESM2

F3SM

GEOS

GFDI

GISS

MIROC

NorESM2

OsloCTM3

UKESM