## bc-no-season: percent difference surface flux of SO2 – NH–atlantic surface concentration of BC – NH–atlantic surface concentration of SO4 – NH–atlantic surface flux of BC – NH–atlantic surface concentration of SO2 – NH–atlantic 0% 0.4% \_25% 0.2% 2% ∆ emibc ∆ emiso2 mmrs04 ∆ mmrbc \_5% 0% 2% -10% -75% -0.2% 0% 0% -100% 2001 2002 2003 2001 2002 2003 2001 2002 2003 2001 2002 2003 2001 2002 2003 Year Year Year Year Year shortwave flux at TOA – NH–atlantic clear-sky longwave flux at TOA - NH-atlantic longwave flux at TOA net radiative flux incident shortwave flux NH-atlantic at TOA - NH-atlantic at TOA - NH-atlantic 1e-07% 0.1% 0.2% 0.01% 0.2% 7 56-08% 0.05% ∆ (rlut + rsut) 0.1% 0% 0.1% ∆ rlut 5e-08% 0% -0.01% 2.5e-08% 0% -0.05% 0% -0.02% -0.19-0.1% -0.29 2003 2001 2002 2003 2001 2003 2001 2002 2003 2004 2002 2003 2001 Year Year Year Year Year clear-sky shortwaveflux clear-sky net radiative implied cloud response dry deposition rate wet deposition rate at TOA - NH-atlantic flux at TOA - NH-atlantic at TOA - NH-atlantic of BC - NH-atlantic of BC - NH-atlantic 0.2% 0% 0.15% rlut + rsut - rlutcs - rsutcs 0.15% ∆ (rlutcs + rsutcs) 0.1% 0.1% -5% ∆ rsutcs △ wetbc △ drybc 0% 0.05% 0.05% -0.1% -10% -10% 0% -0.2% -0.05% 2003 2001 2003 2001 2003 2001 2003 2001 2002 2003 2001 Year Year Year Year Year total deposition rate of BC – NH–atlantic dry deposition rate of SO4 – NH–atlantic wet deposition rate of SO4 – NH–atlantic dry deposition rate wet deposition rate of SO2 - NH-atlantic of SO2 - NH-atlantic 3% 0.4% ∆ (drybc + wetbc) 0% 3% -10% ∆ wetso2 ∆ dryso4 ∆ wetso4 2% 0% -0.2% 0% -0.3% 2001 2002 2003 2004 2001 2002 2003 2004 2001 2002 2003 2004 2001 2002 2003 2004 2001 2002 2003 2004 Year total deposition rate $\Delta (dryso2 + wetso2)/2 + (dryso4 + wetso4)/3$ ambient aerosol optical total cloud cover convective cloud cover percentage - NH-atlantic 0% 0.2% 0.5% -20% ∆ od550aer ∆ cltc -40% 0.25% -0.2% -60% 0% -80% -0.4% 2002 2002 2001 2002 2003 2004 2002 2003 2004 2001 2003 2004 2003 2004 2001 2001 Year Year Year Year OsloCTM3 CFSM1 F3SM **GFDI** MIROC

CESM2

**GEOS** 

**GISS** 

NorESM2

**UKESM**