## NH-atlantic: absolute difference surface flux of SO2 – bc–no–season surface concentration of BC – bc–no–season surface flux of BC – bc–no–season surface concentration of SO4 – bc–no–season surface concentration of SO2 – bc–no–season 3.8e-16 0.0e+00 1.2e-13 emibc (kg m-2 s-1) 2.0e-16 emibc (kg m-2 s-1) mmrbc (kg kg-1) -5.0e-11 (kg kg-1) 8.0e-14 mmrso4 (kg 2.9e-17 -1.0e-10 302 -1.5e-10 0e+00 -3.2e-16 2001 2002 2003 2001 2002 2003 2001 2002 2003 2001 2003 2002 2003 Year Year Year Year Year upwelling longwave flux at TOA – bc-no-season upwelling shortwave flux at TOA – bc–no–season incident shortwave flux at TOA – bc–no–season upwelling clear-sky longwar flux at TOA - bc-no-seaso net radiative flux at TOA - bc-no-season 1e-01 2e-01 5.0e-02 3e-07 rlut + rsut (W m-2) 1e-01 ·lutcs (W m-2) rlut (W m-2) sut (W m-2) rsdt (W m-2) 2.5e-02 0e+00 0e+00 0.0e+00 1e-07 -1e-0 -1e-01 -2 5e-02 -2e-01 2003 2003 2003 2001 2002 2003 2004 2001 2003 2001 2001 2002 2001 2002 Year Year Year Year dry deposition rate of BC – bc–no–season upwelling clear-sky shortwa clear-sky net radiative implied cloud response wet deposition rate flux at TOA - bc-no-seaso flux at TOA - bc-no-seasc at TOA - bc-no-season of BC - bc-no-season 0e+00 1e-01 lut+rsut-rlutcs-rsutcs(W~m^ 0.0e+00 2.5e-02 wetbc (kg m-2 s-1) drybc (kg m-2 s-1 rsutcs (W m-2) ·lutcs + rsutcs (W 0e+00 0.0e+00 -1e-01 -5.0e-02 -5.0e-02 -7 5e-02 2001 2003 2004 2001 2002 2003 2004 2001 2003 2004 2001 2002 2003 2002 2003 Year Year Year Year Year dry deposition rate of SO4 – bc–no–season total deposition rate dry deposition rate wet deposition rate wet deposition rate of BC - bc-no-season of SO2 - bc-no-season of SO2 - bc-no-season of SO4 - bc-no-season drybc + wetbc (kg m-2 s-1) 2.0e-13 dryso2 (kg m-2 s-1) wetso2 (kg m-2 s-1) wetso4 (kg m-2 s-1 3.0e-15 dryso4 (kg m-2 1.0e-13 5.0e-14 2002 2003 2001 2003 2001 2003 2001 2003 2002 2003 Year Year Year Year (dryso2 + wetso2)/2 + (dryso4 + wetso4)/3 (kg m-2 s-1) total deposition rate ambient aerosol optical total cloud cover convective cloud cover percentage - bc-no-seaso percentage - bc-no-season 0e+00 2e-01 1e-01 5.0e-14 od550aeı cltc (%) -1e-01 -1e-01 -2e-01 0.0e+00 2002 2003 2002 Year Year Year Year **UKESM**

CFSM<sup>2</sup>

E3SM

GISS

CESM2

MIROC

NorESM2

**GFDI** 

OsloCTM3

**GEOS**