NH-atlantic: absolute difference surface flux of SO2 – bc–no–season surface concentration of SO4 – bc–no–season surface flux of BC – bc–no–season surface concentration surface concentration of SO2 – bc–no–season 3e+00 0.0e+00 5e+00 4e-01 0e+00 emibc (kg m-2 s-1) emibc (kg m-2 s-1) -2.5e+01 nmrbc (kg kg-1) 2e-01 2e+00 so2 (kg kg-1) -50+00 (ka -5.0e+01 0e+00 2e+00 mmrso4 1e+00 1e+00 _7 5e+01 -2e-01 0e+00 2003 2001 2002 2003 2001 2002 2003 2002 2003 2001 2002 2003 2002 2001 2001 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 longwav flux at TOA - bc-no-seaso net radiative flux at TOA - bc-no-season 3e-01 1.0e-07 1e-01 2e-01 1e-02 2e-01 rlut + rsut (W m-2) 5e-02 rlutcs (W m-2) rlut (W m-2) rsut (W m-2) 1e-01 1e-01 rsdt (W r 0e+00 0e+00 2.5e-08 -5e-02 -2e-02 -1e-01 2003 2001 2002 2003 2001 2002 2003 2001 2002 2003 2004 2001 2002 2001 2002 2003 Year Year Year upwelling clear-sky shortwa clear-sky net radiative implied cloud response dry deposition rate wet deposition rate flux at TOA - bc-no-seaso flux at TOA - bc-no-seaso at TOA - bc-no-season of BC - bc-no-season of BC - bc-no-season 2e-01 0e+00 1.5e-01 1.5e-01 lut+rsut-rlutcs-rsutcs(W~m/ ·lutcs + rsutcs (W m-2) wetbc (kg m-2 s-1) drybc (kg m-2 s-1 rsutcs (W m-2) 1.0e-01 1.0e-01 -5e+00 -5e+00 0e+00 5 0e-02 5.0e-02 -1e-01 1e+01 0.0e+00 0.0e+00 -5 0e-02 -5 0e-02 2001 2002 2003 2001 2003 2004 2001 2003 2001 2002 2003 2001 2002 2003 Year Year Year Year Year dry deposition rate of SO2 – bc–no–season dry deposition rate of SO4 – bc–no–season total deposition rate wet deposition rate wet deposition rate of BC - bc-no-season of SO2 - bc-no-season of SO4 - bc-no-season 0e+00 drybc + wetbc (kg m-2 s-1) 1e-01 4e+00 3e+00 4e-01 (kg m-2 s-1) vetso4 (kg m-2 s-1) wetso2 (kg m-2 s-1) 0e+00 3e+00 -1e+01 2e+00 0e+00 ķ 1e+00 -2e+01 1e+00 0e+00 0e+00 -8e-01 2003 2001 2003 2003 2001 2003 2003 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 of S - bc-no-season percentage – bc-no-seaso percentage - bc-no-season 0e+00 2e+00 2e-01 5.0e-01 -2e+010e+00 1e+00 -4e+01 2.5e-01 픙 -6e+01 0.0e+00 0e+00 -8e+01 2002 2003 2002 Year Year Year Year **UKESM** CESM1 GISS MIROC **GFDL** E3SM CESM2 NorESM2 OsloCTM3 **GEOS**