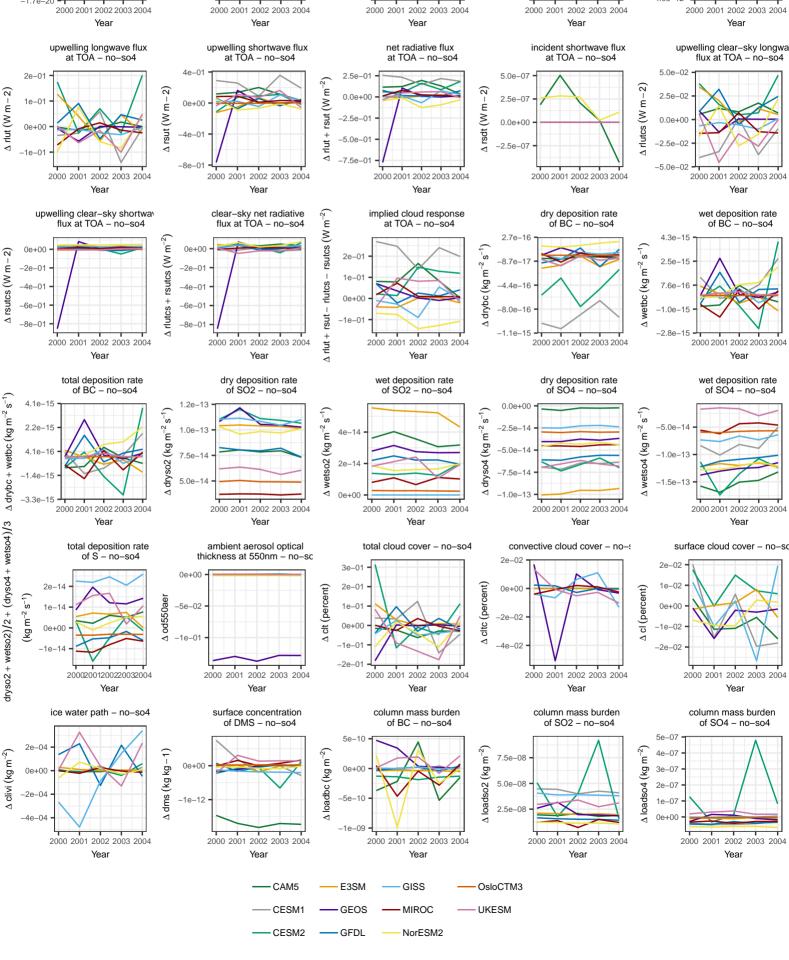
NH-atlantic: absolute difference surface flux surface concentration surface concentration surface concentration of SO2 - no-so4 of BC - no-so4 of SO4 - no-so4 of SO2 - no-so4 2 0e-13 (kg kg - 1)(kg kg - 1)△ mmrbc (kg kg ∆ mmrso4 ∆ so2 (4.0e-12 2000 2001 2002 2003 2004 2000 2001 2000 2001 2002 2003 2004 2002 2003 2004 2000 2001 2002 2003 2004 upwelling shortwave flux at TOA – no-so4 upwelling clear-sky longwa flux at TOA - no-so4 net radiative flux incident shortwave flux at TOA - no-so4 at TOA - no-so4 Δ rlut + rsut (W m⁻²) Δ rlutcs (W m-2) 0.0e+00 2.5e-02 E rsdt (W -2.5e-01 0.0e+00 0.0e + 0.0e +-5.0e-01 -2.5e-07 -5.0e-02 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 Year Year Year Year clear-sky net radiative flux at TOA - no-so4 dry deposition rate of BC – no–so4 wet deposition rate of BC – no-so4 $\rm rsutcs \ (W\ m^{-2})$ implied cloud response at TOA - no-so4 2.7e-16 4.3e-15 wetbc (kg m⁻² s⁻¹ drybc (kg m⁻² s^{-'} 2e-01 1e-01 rlutcs -0e+00 -8.0e-16 rsut-1e-01 rlut + 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 dry deposition rate of SO4 – no–so4 dry deposition rate of SO2 – no-so4 wet deposition rate of SO4 – no-so4 wet deposition rate of SO2 - no-so4 0.0e + 00 Δ wetso2 (kg m⁻² s⁻ wetso4 (kg m⁻² s⁻ ∆ dryso4 (kg m⁻ 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 Yea Year Year ambient aerosol optical total cloud cover - no-so4 convective cloud cover - no-s surface cloud cover - no-so 3e-01 ∆ cltc (percent) ∆ clt (percent) ∆ cl (percent) -1e-02 -1e-01 -4e-02-2e-01 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 Year Year Year Year



surface flux

2.6e-20

4.3e-2

-6.3e-21

 Δ emibc (kg m⁻² s⁻¹)

 Δ rlut (W m – 2)

 Δ rsutcs (W m – 2)

dryso2 + wetso2)/2 + (dryso4 + wetso4)/3

of BC - no-so4

 Δ emiso2 (kg m $^{-2}$ s $^{-1}$