bc-no-season: percent difference surface flux surface flux surface concentration surface concentration surface concentration of BC - NH-sea of SO2 - NH-sea of BC - NH-sea of SO4 - NH-sea of SO2 - NH-sea 3e-01 0.0e+00 2e-01 1 50+00 -2e+00 -2.5e+01 3e+00 1e-01 mmrso4 -4e+002e+00 0e+00 -5.0e+01 -1e-011e+00 5.0e-01 -6e+00 -2e-01_3e_01 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2000 2001 2002 2003 2004 Year Year upwelling longwave flux at TOA – NH–sea upwelling shortwave flux at TOA – NH–sea upwelling clear-sky longwav flux at TOA - NH-sea net radiative flux incident shortwave flux at TOA – NH-sea at TOA - NH-sea 5e-02 1.5e-07 rsut 0e+00 5.0e-08 2.5e-0° ∆ rlut + 2.5e 0.0e+00 _50_02 0.0e + 00-1e-01 -1.0e-07 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2002 2003 2004 2000 2001 2000 Year Year Year Year upwelling clear–sky shortwave flux at TOA – NH–sea dry deposition rate of BC – NH–sea wet deposition rate of BC – NH–sea clear-sky net radiative implied cloud response flux at TOA - NH-sea at TOA - NH-sea rsutcs) 8e-01 2e-01 6e-01 6e-01 rlutcs -1e-01 4e-01 00+00 rlutcs -5 0e+00 rsut – 2e-01 2e-01 -7.5e+00 0e+00 0e+00 r Tinti 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2002 2003 2004 2000 2001 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 dry deposition rate of SO4 – NH–sea total deposition rate of BC – NH–sea dry deposition rate of SO2 – NH–sea wet deposition rate of SO2 – NH–sea wet deposition rate of SO4 – NH–sea 6e-01 1e-01 4e+00 3e+00 -5.0e+00 3e+002e+00 2e-01 2e+00 _1 0e+01 1e+00 0e+00 10+00 -2e-01 _1 5e+01 -2e-01 0e+00 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 Year Year Year Year $\frac{1}{3} dryso2 + wetso2)/2 + \frac{1}{3} dryso4 + wetso4)/3$ Year total deposition rate ambient aerosol optical total cloud cover - NH-sea convective cloud cover - NH-s surface cloud cover - NH-se of S - NH-sea thickness at 550nm - NH-se 2e+00 8e+00 2e-01 1e+00 1e-01 6e+00 -2e+01 1e-01 ∆ct 4e+00 0e+00 0e+00 2e+00 _6e+01 0e+00 _8e+01 20002001200220032004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 Year Year Year Year Year ice water path - NH-sea column mass burden column mass burden column mass burden surface concentration of BC - NH-sea of DMS - NH-sea of SO2 - NH-sea of SO4 - NH-sea 1e+00 3e-01 1.5e+01 2e-01 5e-01 ∆ clivi 1.0e+01 1e-01 -5e+00 2e+00 0e+00 0e+00 5.0e+00 -1e+01 -1e-01 0.0e+00 -5e-01 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2000 2001 2002 2003 2004 Year Year Year Year Year CAM5 E3SM **GISS** OsloCTM3

CESM1

CESM2

GEOS

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