## bc-no-season: 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 of BC - bc-no-seasor 0.0e+00 4e+00 -2e+00 emibc (kg m-2 s-1) 3e+00 -2.5e+01 mmrbc (kg kg-1) so2 (kg kg-1) (kg 1.0e+00 -4e+00 0e+00 -5.0e+01 1e+00 5.0e-01 -6e+00 \_7 5e+01 0e+00 -8e+00 2001 2002 2003 2001 2002 2003 2001 2002 2003 2001 2002 2003 2001 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 longwav flux at TOA - bc-no-seaso net radiative flux at TOA - bc-no-season 5.0e-02 2e-01 6e-08 2.5e-02 rlut + rsut (W m-2) 1e-01 rlutcs (W m-2) 1e-01 sut (W m-2) rsdt (W m-2) 0.0e+00 4e-08 -1e-02 0e+00 0e+00 -2.5e-02 -2e-02 -1e-01 -5.0e-02-1e-01 0e+00 2003 2003 2004 2003 2001 2002 2001 2002 2003 2001 2002 2001 2002 2001 2002 2003 Year Year Year Year upwelling clear-sky shortwa clear-sky net radiative dry deposition rate wet deposition rate total deposition rate flux at TOA - bc-no-seaso flux at TOA - bc-no-seaso of BC - bc-no-season of BC - bc-no-season of BC - bc-no-season 5e+00 1.5e-01 0.0e+00 wetbc (kg m-2 s-1) 1.5e-01 ·lutcs + rsutcs (W m-2) drybc (kg m-2 s-1) wetbc (kg m-2 s-1) 1.0e-01 -5.0e+00 0e+00 1.0e-01 -4e+00 5.0e-02 5.0e-02 -1.0e+01 -5e+00 0.0e+00 0.0e+00 1 50+01 -8e+00 -5.0e-02 -5.0e-02 2001 2002 2003 2004 2001 2002 2003 2001 2002 2003 2001 2002 2003 2001 2002 2003 Year Year Year Year Year (dryso2 + wetso2)/2 + (dryso4 + wetso4)/3 (kg m-2 s-1)dry deposition rate of SO2 – bc–no–season dry deposition rate of SO4 – bc–no–season wet deposition rate wet deposition rate total deposition rate of SO2 - bc-no-season of SO4 - bc-no-season of S - bc-no-season 4e-01 4e+00 1e-01 wetso2 (kg m-2 s-1) dryso4 (kg m-2 s-1) wetso4 (kg m-2 s-1) 0e+00 -1e+00 0e+00 2e+00 -2e-01 0.0e+001e+00 -4e-01 0e+00 -2 5e-01 2001 2003 2001 2002 2003 2001 2003 2001 2002 2003 2001 2002 2003 Year Year Year Year Year ambient aerosol optical total cloud cover convective cloud cover percentage - bc-no-seaso percentage - bc-no-season 0e+00 2e-01 1e-01 cltc (%) 1e-01 clt (%) 0e+00 0e+00 -1e-01 -1e-01

2002

MIROC

NorESM2

Year

2003

**GFDI** 

OsloCTM3

**UKESM** 

**GEOS** 

3e-01

2e-01

1e-01

-1e-01

-2e-01

-3e-0

emibc (kg m-2 s-1)

rlut (W m-2)

rsutcs (W m-2)

dryso2 (kg m-2 s-1)

-1e-01

-2e-01

-2e+01

-6e+01

-8e+01

2002

Year

2003

2003

GISS

CESM2

Year

CESM<sub>1</sub>

E3SM