bc-no-season: absolute difference surface flux of BC – land surface flux of SO2 – land surface concentration of BC – land surface concentration of SO4 – land surface concentration of SO2 – land 2.5e-12 0e+00 1.2e-10 mmrso4 (kg kg-1) mmrbc (kg kg-1) 0.0e + 008.0e-1 so2 (kg kg-1) emiso2 (kg m-2 1e-09 4 0e-1 -2e-09 -9.9e-16 -5.0e-12 0.0e+00 2001 2002 2003 2001 2002 2003 2001 2002 2003 2001 2002 2003 2001 2002 2003 Year Year Year Year Year net radiative flux at TOA – land upwelling longwave flux at TOA – land upwelling shortwave flux at TOA – land incident shortwave flux at TOA – land upwelling clear-sky longwave flux at TOA - land 0.25 0.3 0.00 0.2 rlut + rsut (W m-2) 1.0e-07 0.2 rlutcs (W m-2) sut (W m-2) sdt (W m-2) -0.25 -0.2 0.1 -0.50 0.0e+00 -0.4 0.0 n n -5.0e-08 -0.6 2001 2002 2003 2001 2003 2001 2003 2001 2002 2003 2001 2003 Year Year Year Year Year upwelling clear–sky shortwave flux at TOA – land clear-sky net radiative dry deposition rate wet deposition rate total deposition rate flux at TOA - land of BC - land of BC - land of BC - land 4.1e-15 8e 0.0 drybc + wetbc (kg m-2 s-1) 0.0 rlutes + rsutes (W m-2) 6e-14 drybc (kg m-2 s-1) wetbc (kg m-2 s-1) 2.7e-16 -0.2 -0.8 -0.6 0e+00 -0.8 2003 2001 2003 2001 2003 2001 2003 2001 2003 Year Year Year Year Year wetso4)/3 (kg m-2 s-1) dry deposition rate of SO4 – land wet deposition rate of SO4 – land dry deposition rate wet deposition rate total deposition rate of SO2 - land of SO2 – land of S - land wetso2 (kg m-2 s-1) dryso4 (kg m-2 s-1) (kg m-2 s-1)2e-14 0e+00 1e-14 (dryso2 + wetso2)/2 + (dryso4 wetso4 0e+00 5.0e-14 0e+00 -1e-14 0.0e+00 2001 2002 2003 2004 2001 2002 2003 2001 2002 2003 2004 2001 2002 2003 2001 2002 2003 2004 Year Year ambient aerosol optical convective cloud cover total cloud cover thickness at 550nm - land percentage - land percentage - land 0.1 0.00 0.00 -0.05 0.0 -0.04 clt (%) -0.10 -0.08 -0.1 -0.15 -0.12

emibc (kg m-2 s-1)

rlut (W m-2)

rsutcs (W m-2)

dryso2 (kg m-2 s-1)

od550aer

2002

2001

2003

Year

2004

0.1

