Reference – absolute land averages surface concentration of BC – land surface flux of BC - land surface flux of SO2 - land surface concentration surface concentration of SO4 - land of SO2 - land 1.8e-09 emibc (kg m^{-2} s⁻¹) əmiso2 (kg m $^{-2}$ s $^{-1}$ mmrbc (kg kg⁻¹ mmrso4 (kg kg $\cos{(\mathrm{kg}\,\mathrm{kg}^{-1})}$ 1 00e-12 9.0e-10 2000 2001 2002 2003 2004 2002 2003 2004 2002 2003 2004 2002 2003 2004 2002 2003 2004 Year Year Year longwave flux at TOA - land clear-sky longwave flux at TOA - land shortwave flux at TOA - land net radiative flux at TOA - Ian incident shortwave flux at TOA – land -340 300 -231 rlut + rsut $(W m^{-2})$ -345 200 rlut $(W m^{-2})$ $rsut (W m^{-2})$ rlutcs (W m^{-2}) $rsdt (W m^{-2})$ -233 -254 100 -350 Λ -235 -355 -360 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 Year dry deposition rate of BC – land clear-sky shortwave flux at TOA - land clear-sky net radiative flux at TOA – land implied cloud response at TOA – land wet deposition rate of BC – land rsut - rlutcs - rsutcs (W m⁻²) -320 lutcs + rsutcs (W m^{-2} drybc (kg m $^{-2}$ s $^{-1}$) wetbc $(kg m^{-2} s^{-1}$ rsutcs $(W m^{-2})$ -325 1.00e-12 -330 -30 -335 5.00e-13 rlut + 2000 2001 2002 2003 2004 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 Year Year Year Year Year dry deposition rate of SO2 – land dry deposition rate of SO4 – land total deposition rate of BC – land wet deposition rate of SO4 – land wet deposition rate of SO2 - land 1e-11 0.04 1.6e-11 $drybc + wetbc (kg m^{-2} s^{-1})$ $dryso2 (kg m^{-2} s^{-1})$ 0.03 wetso2 (kg m $^{-2}$ s $^{-1}$) wetso4 (kg m⁻² s⁻¹) dryso4 (kg m $^{-2}$ s $^{-1}$ 1.0e-12 0.02 8.0e-13 0.01 2000 2001 2002 2003 2004 2002 2003 2004 2000 2001 2002 2003 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 Year Year Year total deposition rate of S – land (dryso2 + wetso2)/2 + (dryso4 + wetso4)/30.020 0.015 $(kg m^{-2} s^{-1})$ 0.010 0.005 0.000 2000 2001 2002 2003 2004 Year

