Reference - absolute land averages surface flux of BC - land surface flux of SO2 - land surface concentration surface concentration of BC - land of SO4 - land 2.4e-11 2.8e-09 3.00e-10 emiso2 (kg m-2 s-1) emibc (kg m-2 s-1) 1.6e-12 mmrso4 (kg kg-1) nmrbc (kg kg-1) 2.75e-10 2.2e-1 2.0e-09 2.1e-11 2.50e-10 1.5e-12 2.0e-11 1.6e-09 2.25e-10 2.00e-10 2001 2001 2002 2003 2003 2001 2002 2001 2003 Year Year Year Year upwelling longwave flux at TOA – land upwelling shortwave flux at TOA – land surface concentration net radiative flux at TOA - land of SO2 - land 360 125 4.0e-09 355 3.5e-09 rlut + rsut (W m-2) so2 (kg kg-1) rsut (W m-2) rlut (W m-2) 232 3.0e-09 115 2.5e-09 345 228 2.0e-09 110 340 2001 2003 2001 2002 2003 2001 2002 2003 2001 2002 2003 Year Year Year Year upwelling clear-sky longwave flux at TOA - land upwelling clear–sky shortwave flux at TOA – land clear-sky net radiative flux at TOA – land incident shortwave flux at TOA - land 77.5 327.25 330.0 255 rlutcs + rsutcs (W m-2) rlutcs (W m-2) 253 252 75.0 rsutcs (W m-2) 327.00 rsdt (W m-2) 327.5 72.5 326.75 325.0 322.5 326.50 70.0 25 320.0 2004 2003 2004 2003 2004 2004 2001 2002 2003 2001 2002 2001 2002 2001 2002 2003 Year Year Year Year total deposition rate of BC – land dry deposition rate of SO2 – land dry deposition rate of BC – land wet deposition rate of BC – land 1.4e-12 drybc + wetbc (kg m-2 s-1) dryso2 (kg m-2 s-1) drybc (kg m-2 s-1) wetbc (kg m-2 s-1) 1.3e-12 8e-12 4e-13 1.2e-12 1.1e-12 6e-12 5e-12 2003 2004 2001 2003 2004 2003 2004 2001 2002 2002 2001 2002 2001 2002 2003 Year Year Year Year (dryso2 + wetso2)/2 + (dryso4 + wetso4)/3 (kg m-2 s-1) wet deposition rate dry deposition rate wet deposition rate total deposition rate of SO2 - land of SO4 - land of SO4 – land of S – land 6e-12 wetso2 (kg m-2 s-1) wetso4 (kg m-2 s-1) dryso4 (kg m-2 s-1) 4e-12 2e-12 2002 2001 2003 2004 2001 2002 2003 2004 2001 2002 2003 2004 2001 2002 2003 2004 Year Year Year Year E3SM NorESM2 CESM1 GISS MIROC