shp-10p-red: absolute difference surface flux of BC - NH-land surface flux of SO2 - NH-land surface concentration surface concentration of BC - NH-land of SO4 - NH-land 1 3e-17 -6.4e-15 2.5e-13 -5.9e-17 emiso2 (kg m-2 s-1) emibc (kg m-2 s-1) -5.0e-12 mmrso4 (kg kg-1) nmrbc (kg kg-1) 0.0e+00 -1.3e-16 -1.2e-14 -1.0e-11 -2.5e-13 -2.0e-16 -1.5e-14 -5.0e-13 -1.5e-1 -2.7e-16 -1.8e-14 2000 2001 2002 2003 2000 2001 2002 2003 2000 2001 2002 2003 2000 2001 2002 2003 Year Year Year Year upwelling longwave flux at TOA – NH–land upwelling shortwave flux at TOA – NH–land surface concentration net radiative flux at TOA - NH-land of SO2 - NH-land 1.5e-11 0.05 0.03 0.06 + rsut (W m-2) 205 (kg kg-11) 5.0e-12 1.0e-1 rsut (W m-2) rlut (W m-2) 0.00 0.00 0.03 -0.05 큳 -0.03 0.00 0.0e+00 -0.10 -0.06 2000 2001 2002 2003 2000 2001 2002 2003 2000 2001 2002 2000 2001 2002 2003 Year Year Year Year upwelling clear-sky longwave flux at TOA - NH-land upwelling clear–sky shortwave flux at TOA – NH–land clear-sky net radiative flux at TOA - NH-land incident shortwave flux at TOA - NH-land 0.050 0.01 0.00 0.03 rlutcs + rsutcs (W m-2) 0.00 0.025 rsutcs (W m-2) 0.02 rlutcs (W m-2) rsdt (W m-2) -0.01 -0.01 0.000 0.01 -0.02 0.00 -0.025 -0.02-0.03-0.050 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 Year Year Year Year dry deposition rate of SO2 – NH–land dry deposition rate of BC – NH–land wet deposition rate of BC – NH–land total deposition rate of BC – NH–land 1.6e-16 1.2e-15 9.5e-16 -2.7e-15 drybc + wetbc (kg m-2 s-1) 4.6e-17 dryso2 (kg m-2 s-1) drybc (kg m-2 s-1) wetbc (kg m-2 s-1) -6.2e-17 -7.7e-16 -8.6e-16 -7.7e-15 -1.8e-15 -2 8e-16 -2.7e-15 2000 2004 2000 2001 2002 2003 2001 2002 2003 2004 2000 2001 2002 2003 2000 2001 2002 2003 Year Year Year Year wet deposition rate dry deposition rate wet deposition rate total deposition rate of SO2 - NH-land of SO4 - NH-land of SO4 - NH-land of S - NH-land 7.0e-18 -3.1e-15 + wetso4)/3 (kg 7.3e-15 wetso2 (kg m-2 s-1) dryso4 (kg m-2 s-1) wetso4 (kg m-2 s-1) -5.0e-14 (dryso2 + wetso2)/2 + (dryso4 -2.2e-18 -6.2e-15 -1.2e-14 -7.5e-14 -6.8e-2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 Year Year Year Year CESM1 GISS (all em) GISS (SO2)