Reference - absolute global averages surface concentration of SO4 – global surface flux of BC surface flux of SO2 surface concentration surface concentration global global of BC - global of SO2 - global 5.50e-13 1.50e-09 1.2e-11 $\mathrm{emibc}\,(\mathrm{kg}\,\mathrm{m}^{-2}\,\mathrm{s}^{-1})$ emiso2 (kg m $^{-2}$ s $^{-1}$ mmrso4 (kg kg^{_1} mmrbc (kg kg⁻¹ so2 (kg kg⁻¹) 1.0e-10 1.00e-09 9.0e-11 8.0e-11 5.00e-10 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 Year Year Year Year Year clear-sky longwave flux at TOA – global longwave flux at TOA net radiative flux at incident shortwave flux shortwave flux at TOA global TOA –global at TOA – global global -236 341.6 -335 -260 -95 rlut + rsut $(W m^{-2})$ -238 -340 rlutcs (W m^{-2}) $rsut (W m^{-2})$ rlut $(W m^{-2})$ $rsdt (W m^{-2})$ -262 -100 -240 -345 -264 -242 -266 -105 -350 340.4 -268 -244 2002 2002 2003 2004 2000 2001 2002 2003 2004 2002 2003 2004 2000 2001 2003 2004 2001 2000 2001 2002 2003 2004 2000 2001 2000 Year clear-sky net radiative flux at TOA – global implied cloud response at TOA – global clear-sky shortwave flux at TOA - global dry deposition rate of BC – global wet deposition rate of BC – global rlutcs - rsutcs (W m⁻²) rlutcs + rsutcs (W m⁻²) wetbc $(kg m^{-2} s^{-1})$ drybc (kg m^{-2} s⁻¹ $rsutcs (W m^{-2})$ -25 -315 -35 + rsut --320 -54 芦 2002 2003 2003 2004 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2004 2000 2001 2002 2000 2001 Year Year Year Year Year dry deposition rate of SO4 – global total deposition rate of BC – global dry deposition rate of SO2 – global wet deposition rate of SO2 – global wet deposition rate of SO4 – global 5.5e-13 $drybc + wetbc (kg m^{-2} s^{-1})$ 5.0e-13 wetso2 $(kg m^{-2} s^{-1}$ dryso4 (kg m⁻² s⁻¹ dryso2 (kg m^{-2} s⁻¹ wetso4 (kg $\mathrm{m}^{-2} \mathrm{s}^{-1}$ 4.5e-13 5.0e-12 8.0e-13 3.0e-13 2000 2001 2002 2003 2004 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 Year Year total deposition rate of S – global ambient aerosol optical thickness at 550nm – global total cloud cover convective cloud cover (dryso2 + wetso2)/2 + (dryso4 + wetso4)/3percentage - global percentage - global $(kg m^{-2} s^{-1})$ od550aer % % ŧ 0.12 60 10 4e-12 20002001200220032004 2001 2002 2001 2002 2003 2000 2001 2002 2003 2004 2000 2000 Year Year Year Year CAM-ATRAS E3SM GISS modelE OsloCTM3 CESM **GEOS** MIROC-SPRINTARS UKESM1 CESM2 GFDL-ESM4 NorESM2