Reference – absolute NH–pacific averages surface concentration of SO4 – NH–pacific surface flux of BC - NH-pac surface flux of SO2 - NH-pac surface concentration surface concentration of BC – NH–pacific of SO2 - NH-pacific 1.50e-10 $\mathrm{emibc}\,(\mathrm{kg}\,\mathrm{m}^{-2}\,\mathrm{s}^{-1})$ emiso2 (kg $\mathrm{m}^{-2}\,\mathrm{s}^{-1}$ mmrso4 (kg kg⁻ mmrbc (kg kg^{_1} so2 (kg kg⁻¹ 2002 2003 2004 2002 2003 2004 2002 2003 2004 2002 2003 2004 Year Year Year Year clear-sky longwave flux at TOA - NH-pacific longwave flux at TOA - NH-pag shortwave flux at TOA - NH-page net radiative flux at TOA - NH-pa incident shortwave flux at TOA - NH-pacific 300 rlut + rsut $(W m^{-2})$ rlut $(W m^{-2})$ rsut (W m⁻²) rlutcs (W m^{-2}) $rsdt (W m^{-2})$ 200 100 -276 -250 -105 0 _280 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 Year clear–sky shortwave flux at TOA – NH–pacific clear-sky net radiative flux at TOA - NH-pacific implied cloud response at TOA – NH–pacific dry deposition rate of BC – NH–pacific wet deposition rate of BC – NH–pacific rsut - rlutcs - rsutcs (W m⁻²) -305 ·lutcs + rsutcs (W m⁻²) wetbc $(kg m^{-2} s^{-1})$ drybc $(kg m^{-2} s^{-1})$ $\rm rsutcs \ (W \ m^{-2})$ -310-315 -320 ij 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2001 2002 2003 2004 2000 2002 2003 2004 2000 2001 2002 2003 2004 Year Year Year Year Year dry deposition rate of SO4 – NH–pacific total deposition rate of BC – NH–pacific wet deposition rate of SO4 – NH–pacific dry deposition rate wet deposition rate of SO2 - NH-pacific of SO2 - NH-pacific $drybc + wetbc (kg m^{-2} s^{-1})$ 0.03 wetso2 (kg $\mathrm{m}^{-2}\,\mathrm{s}^{-1}$ dryso2 (kg $\mathrm{m}^{-2}\,\mathrm{s}^{-1}$ dryso4 (kg $\mathrm{m}^{-2} \mathrm{s}^{-1}$ wetso4 (kg $\mathrm{m}^{-2} \mathrm{s}^{-1}$ 0.01 5.0e-13 2000 2001 2002 2003 2004 2001 2002 2003 2004 2000 2001 2002 2003 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 Year Year Year Year total deposition rate of S – NH–pacific (dryso2 + wetso2)/2 + (dryso4 + wetso4)/30.015 $(kg m^{-2} s^{-1})$ 0.010 0.005 0.000 2000 2001 2002 2003 2004 Year CAM-ATRAS CESM1-1950 **GEOS** GISS-1950 CAM-ATRAS-1950 GEOS-1950 NorESM2 CESM1 E3SM-1950 **GISS** NorESM2-1950