Reference – absolute NH-pacific averages surface concentration of BC – NH–pacific surface concentration of SO4 – NH-pacific surface concentration of SO2 – NH–pacific surface flux of BC - NH-paci surface flux of SO2 - NH-paci emiso2 (kg m-2 s-1) emibc (kg m-2 s-1) 1.5e-13 1e-09 kg-1) mmrbc (kg kg-1) so2 (kg kg-1) mmrso4 (kg 2e-10 2001 2002 2003 2001 2002 2003 2001 2003 2001 2002 2003 2001 2002 2003 Year Year Year Year Year upwelling clear-sky longwave flux at TOA - NH-pacific upwelling longwave flux at TOA – NH–pacific upwelling shortwave flux at TOA – NH–pacific incident shortwave flux at TOA – NH–pacific net radiative flux at TOA - NH-pa 280.0 373.5 355 105 rlut + rsut (W m-2) 250 rlutcs (W m-2) rsut (W m-2) 350 rsdt (W m-2) rlut (W m-2) 275.0 372.5 345 272.5 95 340 270.0 267.5 2001 2003 2001 2002 2003 2001 2003 2002 2003 2001 2003 Year Year Year Year Year upwelling clear-sky shortwave clear-sky net radiative dry deposition rate wet deposition rate total deposition rate of BC - NH-pacific of BC - NH-pacific flux at TOA - NH-pacific flux at TOA - NH-pacific of BC - NH-pacific 42 drybc + wetbc (kg m-2 s-1 rlutcs + rsutcs (W m-2) drybc (kg m-2 s-1) 41 rsutcs (W m-2) wetbc (kg m-2 40 315 39 310 38 305 2001 2003 2001 2003 2001 2002 2003 2003 2003 Year Year Year Year Year wetso4)/3 (kg m-2 s-1) dry deposition rate of SO2 – NH–pacific dry deposition rate of SO4 – NH–pacific wet deposition rate of SO4 – NH–pacific total deposition rate of S – NH–pacific wet deposition rate of SO2 - NH-pacific 1.75e-12 dryso2 (kg m-2 s-1) wetso2 (kg m-2 s-1) dryso4 (kg m-2 s-1) (kg m-2 s-1 1.50e-12 3e-12 + (dryso4 1 25e-12 (dryso2 + wetso2)/2 7.50e 2001 2002 2003 2004 2001 2002 2003 2001 2002 2003 2004 2001 2002 2003 2002 2003 Year Year Year ambient aerosol optical thickness at 550nm – NH–pacil convective cloud cover total cloud cover percentage - NH-pacific 0.16 60 0.14 od550aer cltc (%) clt (%) 0.12 20 0.08 2002 2003 2002 2003 2004 2002 2003 2004 2004 2001 2001 2001 Year Year Year OsloCTM3 CFSM1 F3SM **GFDI** MIROC CESM2 **GEOS GISS** NorESM2 **UKESM**