NH-pacific: percent difference surface flux surface flux surface concentration surface concentration surface concentration of BC - bc-no-season of SO2 - bc-no-season of SO4 - bc-no-season of SO2 - bc-no-season 0.00+00 4e-01 3e+00 -2.5e+012e-01 Δ emibc 2e+00 \ mmrso4 -4e+00 -5.0e+01 0e+00 3.0€ -6e+00 0e+00 0.0e+00 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 upwelling shortwave flux at TOA – bc–no–season upwelling clear-sky longwaflux at TOA - bc-no-sease net radiative flux upwelling longwave flux incident shortwave flux at TOA - bc-no-season at TOA - bc-no-season at TOA - bc-no-season 1e-07 4e-01 2 56-02 20-01 ∆ rlut + r 2e-0 0e+00 00+00 -1e-01 -1e-07 2000 2001 2002 2003 2004 2002 2003 2004 2000 2002 2003 2004 2002 2003 2004 2000 2001 2002 2003 2004 Year Year Year Year Year upwelling clear–sky shortwave flux at TOA – bc–no–seasor clear-sky net radiative flux at TOA - bc-no-seaso dry deposition rate of BC – bc–no–season implied cloud response wet deposition rate at TOA - bc-no-season of BC - bc-no-season rsutcs) 5.0e-01 0.0e+00 1.0e-01 ∆ rsutcs -5.0e+00 -5.0e+00 rsut – 0.0e + 0.0-7.5e+002000 2001 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2002 2003 2004 Year dry deposition rate of SO2 – bc–no–season wet deposition rate of SO2 – bc–no–season dry deposition rate of SO4 – bc–no–season wet deposition rate of SO4 – bc–no–season total deposition rate of BC - bc-no-season 0.0e+00 1e+00 4e+00 3e+002e+005e-01 ∆ wetso2 ∆ wetso4 0e+002e+00 -1 0e+01 1e+00 0e+00 1e+00 _2e_01 -1.5e+01-5e-01 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2002 2003 2004 Year Year Year $\frac{1}{3} dryso2 + wetso2)/2 + \frac{1}{3} dryso4 + wetso4)/3$ Year total deposition rate ambient aerosol optical total cloud cover - bc-no-sea convective cloud cover - bc-no-s surface cloud cover - bc-no-s of S - bc-no-seasor thickness at 550nm - bc-no-se 5 0e-01 2e-01 1e-01 0.0e+00 1e-01 픙 0e+00 2.5e+00 -6e+01 -1e-01 -2e-01 _1 5e+00 20002001200220032004 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 ice water path - bc-no-sease surface concentration column mass burden column mass burden column mass burden of DMS - bc-no-season - bc-no-season of SO2 - bc-no-season of SO4 - bc-no-season 6e+00 5e+00 1.5e+01 5e-01 4e+00 1.0e+01 0e+00 -5e+000e+00 2e+00 -5e-01 -1e+01 0.0e+00 -2e-01 -1e+00 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2000 2001 2002 2003 2004 Year Year Year Year Year CAM5 E3SM **GISS** OsloCTM3 CESM1 GEOS MIROC **UKESM**

CESM2

GFDL

NorESM2