NH-pacific: percent difference surface flux surface flux surface concentration surface concentration of BC - so2-at-height of SO2 - so2-at-height of BC - so2-at-height of SO4 - so2-at-height of SO2 - so2-at-height 1e+01 7.5e+00 1.50+01 1.0e-05 mmrs₀ 5.0e+005e-01 $\Delta so2$ 0e+00 1.0e+01 5.0e-06 2.5e+00 0e+00 -1e+01 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 Year upwelling longwave flux at TOA – so2–at–height upwelling clear–sky longwa flux at TOA – so2–at–heig upwelling shortwave flux net radiative flux incident shortwave flux at TOA – so2–at–height at TOA - so2-at-height at TOA - so2-at-height 1e-01 6e-01 5e-02 rsut 5e-08 4e-01 0e+00 ∆ rlut + 0.0e+00 2e-0 0e+00 -2.5e-02 0e+00 -1e-01-5.0e-02 2000 2001 2002 2003 2004 2002 2003 2004 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 Year Year Year Year Year upwelling clear-sky shortway flux at TOA - so2-at-heigh clear-sky net radiative implied cloud response dry deposition rate wet deposition rate flux at TOA - so2-at-heigh at TOA - so2-at-height of BC - so2-at-height of BC - so2-at-height rsutcs) 0.0e + 001.5e+00 1.5e+00 _5 0e_01 0e+00rsut 5.0e-01 5 0e-01 -4e-01 0.0e+00 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2002 2003 2004 2000 2001 Year dry deposition rate of SO2 – so2–at–height wet deposition rate of SO2 – so2–at–height dry deposition rate of SO4 – so2–at–height wet deposition rate of SO4 – so2–at–height total deposition rate of BC - so2-at-height 2e+00 1.5e+01 ∆ drybc + wetbc 2.0e+01 1e+00 ∆ wetso4 5.0e+00 0e+00 1.0e+01 0.0e + 0.0e +5.0e+00 5.0e+00 -5 0e+00 0.0e + 002000 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 $\frac{1}{3} dryso2 + wetso2)/2 + \frac{1}{3} dryso4 + wetso4)/3$ total deposition rate ambient aerosol optical total cloud cover - so2-at-hei convective cloud cover - so2-at-l surface cloud cover - so2-atof S - so2-at-height thickness at 550nm - so2-at-l 8e+01 ∆ ct -1.0e+00 4e+01 -1.5e+00 2e+35 -5.0e+01 2e+01 -2e-01 0e+00 -2 5e+00 20002001200220032004 2000 2001 2002 2003 2004 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 Year Year Year Year Year ice water path - so2-at-heig surface concentration column mass burden column mass burden column mass burden of DMS - so2-at-height of BC - so2-at-height of SO2 - so2-at-height of SO4 - so2-at-height 2e+00 3e+01 5.0e-01 2e+01 1e+00 5e-01 0e+00 1e+01 0.0e+00-5e-01 -1e+00 0e+00-1e+00 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2001 2002 2003 2004 2000 2001 2002 2003 2004 Year Year Year Year Year

CAM5

CESM1

CESM2

E3SM

GEOS

GFDL

GISS

MIROC

NorESM2

OsloCTM3

UKESM