NH-pacific: absolute difference surface flux of SO2 – bc–no–season surface concentration of BC – bc–no–season surface concentration of SO4 – bc–no–season surface flux of BC – bc–no–season surface concentration of SO2 – bc–no–season 1.2e+00 0.0e+00 4e-01 3e+00 -2e+00 emibc (kg m-2 s-1) emibc (kg m-2 s-1) 9.0e-01 -2.5e+01 nmrbc (kg kg-1) 2e-01 so2 (kg kg-1) 2e+00 4e+00mmrso4 (kg 6.0e-01 -5.0e+01 0e+00 -6e+00 3.0e-01 _7 5e+01 -2e-01 0e+00 2003 2002 2003 2003 2002 2003 2001 2002 2003 2001 2002 2001 2001 2002 2001 Year Year Year Year Year upwelling longwave flux at TOA – bc–no–season upwelling shortwave flux at TOA – bc–no–season incident shortwave flux at TOA – bc-no-season upwelling clear–sky longwar flux at TOA – bc–no–seaso net radiative flux at TOA - bc-no-season 4e-01 3e-01 rlut + rsut (W m-2) 0e+00 2e-01 lutcs (W m-2) 0.0e+00 rlut (W m-2) rsut (W m-2) rsdt (W m-2) 2e-01 1e-01 -5e-02 0e+00 0e+00 -1e-01 -1e-01 -5.0e-02 2003 2003 2003 2001 2002 2004 2001 2002 2003 2001 2002 2003 2004 2001 2002 2001 2002 Year Year Year dry deposition rate of BC – bc–no–season upwelling clear-sky shortwa clear-sky net radiative wet deposition rate total deposition rate flux at TOA - bc-no-seaso flux at TOA - bc-no-seaso of BC - bc-no-season of BC - bc-no-season 2.0e-01 0.0e+00 wetbc (kg m-2 s-1 1.5e-01 ·lutcs + rsutcs (W m-2) wetbc (kg m-2 s-1) drybc (kg m-2 s-1 -2.5e+00 rsutcs (W m-2) 0e+00 1.0e-01 5.0e-02 -1 0e+01 -5.0e+00 5.0e-02 0.0e+0.00.0e+00 -7.5e+00 -5.0e-02 -5 0e-02 2001 2002 2003 2004 2001 2002 2003 2001 2002 2003 2001 2002 2003 2002 2003 Year Year Year Year Year + (dryso4 + wetso4)/3 (kg m-2 s-1) dry deposition rate of SO2 – bc–no–season dry deposition rate of SO4 – bc–no–season wet deposition rate wet deposition rate total deposition rate of SO2 - bc-no-season of SO4 - bc-no-season of S - bc-no-season 0.0e+00 2e-01 3e+00 dryso2 (kg m-2 s-1) wetso2 (kg m-2 s-1) dryso4 (kg m-2 s-1) 4e-01 0e+00 2e+00 0e+00 2e-01 1e+00 -5e-01 -1.5e+00 -2e-01 -2e-01 0e+00 -2.0e+00 -4e-0 -1e+002003 2001 2003 2001 2003 2002 2003 2003 Year Year (dryso2 Year convective cloud cover percentage – bc-no-season ambient aerosol optical total cloud cover 0e+00 2e-01 2e-01 -2e+01 1e-01 1e-01 clt (%) cltc (%) -4e+01 0e+00 -1e-01 -6e+01 -1e-01 -2e-01 2002 2003 2002 2003 2002 2003 Year Year Year

CESM1

E3SM

GISS

MIROC

NorESM2

GFDI

OsloCTM3

UKESM

GEOS