shp-atl-shift: absolute difference surface flux of BC – NH–pacific surface flux of SO2 – NH–pacific surface concentration of BC – NH–pacific surface concentration of SO4 – NH-pacific surface concentration of SO2 – NH–pacific (kg kg-1)nmrbc (kg kg-1) əmiso2 (kg m^{–2} s^{–'} (kg kg - 1)-1.0e-11-1.2e-11 mmrso4 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 Year Year Year upwelling longwave flux at TOA – NH–pacific upwelling shortwave flux at TOA – NH–pacific net radiative flux at TOA – NH-pacific incident shortwave flux at TOA – NH-pacific upwelling clear-sky longway flux at TOA - NH-pacific 0.0e + 00 $rsut (W m^{-2})$ 2e-07 (Wm-2)sdt (Wm-2)1.0e-01 rlutcs (W m-4e-01 -1.0e+000e+00 5.0e-02 rlut + -8e-01 -2e-07 0.0e+00 -2 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 Year Year Year Year upwelling clear-sky shortway flux at TOA - NH-pacific wet deposition rate of BC – NH–pacific clear-sky net radiative flux at TOA - NH-pacific implied cloud response dry deposition rate of BC - NH-pacific $' m^{-2}$) at TOA – NH-pacific 9 7e-15 rsutcs (W rsutcs (W m^{-2}) 0e+00 0e+00 wetbc (kg m⁻² s⁻¹) 1.2e-14 drybc (kg m⁻² s⁻ -1e-01 -2e-01 4.5e-15 rlutcs. -4e-01 -2e-01 1 9e-15 rsut--3e-012000 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 Year Year Year Year total deposition rate of BC – NH-pacific dry deposition rate of SO2 – NH–pacific wet deposition rate of SO2 – NH–pacific dry deposition rate of SO4 – NH–pacific wet deposition rate of SO4 – NH-pacific vetso2 (kg m⁻² s⁻¹ dryso4 (kg $m^{-2} s^{-1}$ wetso4 $(kg m^{-2} s^{-1}$ $dryso2 (kg m^{-2} s^{-1}$ -1.0e-12 2e-02 1e-02 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 total deposition rate of S - NH-pacific cloud cover Ice water path - NH-pacifi Dimethyl sulphide (DMS) mole fraction ambient aerosol optical thickness at 550nm – NH-pa percentage – NH-pacific 4e-02 % _lom lom) smp clivi (kg m⁻²) cltc 2e-02 -5.0e-03 expression -7.5e-03 0e+00 -1e-0320002001200220032004 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 load load load of so2 of so4 - NH-pacific of bc - NH-pacific NH-pacific oadso2 (kg m⁻²) oadbc (kg m⁻²) 0e+00 -2e-10 -3e-08 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004

Year

GFDI -FSM4

GISS modelE

F3SM

GEOS

NorESM2

5.7e-21

_5 4e_21

-2 8e-20

7.5e-01

5.0e-01

2.5e-01

-1e-01

-2e-01

-3e-01

-4e-0

2.5e-14 2.0e-14

1.0e-14 5.0e-15

rsutcs (W m-

 $drybc + wetbc (kg m^{-2} s^{-1})$

dyso2 + wetso2)/2 + (dyso4 + wetso4)/3

loadso4 (kg m⁻²)

-6e-08

-8e-08

-1e-07

Year

Year

CESM1

CAM-ATRAS

 $(kg m^{-2} s^{-1})$

5.0e-03 0.0e + 0.0

emibc $(kg m^{-2} s^{-1})$