bc-no-season: absolute difference surface flux of BC – NH–indian surface flux surface concentration surface concentration of SO2 - NH-indian of BC - NH-indian of SO4 - NH-indian of SO2 - NH-indian 2.5e-16 5.3e-15 0e+00 emiso2 $(kg m^{-2} s^{-1})$ Δ emibc (kg m⁻² s⁻¹) ∆ mmrso4 (kg kg − 1) $\Delta \cos (kg kg - 1)$ ka ka--2.2e-2.5e-15 ∆ mmrbc (-1.6e-16 1.1e-15 _6e_10 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 – NH-indian upwelling shortwave flux at TOA – NH–indian upwelling clear-sky longwav flux at TOA - NH-indian net radiative flux incident shortwave flux at TOA - NH-indian at TOA - NH-indian 3e-01 1e-06 Δ rlut + rsut (W m⁻²) 1e+00 Δ rlutcs (W m-2) Δ rlut (W m – 2) ∆ rsut (W m – rsdt (W m-5e-01 0e+00 -5e-01 -1e+00 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 Year Year Year Year Year upwelling clear-sky shortway flux at TOA - NH-indian clear-sky net radiative flux at TOA - NH-indian dry deposition rate of BC – NH–indian wet deposition rate of BC – NH–indian $\rm rsutcs \ (W\ m^{-2})$ implied cloud response at TOA - NH-indian rlutcs + rsutcs (W m $^{-2}$) 0e+00 0e+00 0e+00 Δ rsutcs (W m – 2) $\mathrm{drybc}\,(\mathrm{kg}\,\mathrm{m}^{-2}\,\mathrm{s}^{-1}$ wetbc (kg m⁻² s⁻¹ 2e-01 -2e-01 0e+00 rlutcs -0e+00 -2e-14 -5e-01 -6e-01 -2e-0 rsut -8e-01 rlut + 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 dry deposition rate of SO4 – NH–indian wet deposition rate of SO4 – NH–indian total deposition rate of BC – NH–indian dry deposition rate of SO2 – NH-indian wet deposition rate of SO2 – NH-indian wetbc $(kg m^{-2} s^{-1}$ 0.0e+00 wetso4 (kg m⁻² s⁻ ∆ dryso2 (kg m⁻² s⁻́ wetso2 (kg m $^{-2}$ s $^{-}$ dryso4 (kg m⁻² s⁻ 2e-14 -5.0e-14 0e+00 -1.0e-13 00+00 ∆ drybc + 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2002 2003 2004 2000 2001 2002 2003 2004 Year Year Year Year Year dryso2 + wetso2)/2 + (dryso4 + wetso4)/3total deposition rate ambient aerosol optical total cloud cover - NH-india convective cloud cover - NH-ir surface cloud cover - NH-in of S - NH-indian thickness at 550nm - NH-inc 5 0e-02 5e-01 ∆ cltc (percent) ∆ clt (percent) ∆ cl (percent) $(kg m^{-2} s^{-1})$ 0e+00 0.0e+00 -1.0e-0 1e-13 -1e+00 2000 2001 2002 2003 2004 20002001200220032004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 Year Year Year Year Year ice water path - NH-indian surface concentration column mass burden column mass burden column mass burden of DMS - NH-indian of BC - NH-indian of SO2 - NH-indian of SO4 - NH-indian 2e-03 Δ clivi (kg m $^{-2}$) $loadbc (kg m^{-2})$ Δ loadso2 (kg m $^{-2}$ Δ loadso4 (kg m⁻² ∆ dms (kg kg –1) 5.0e-07 1e-03 0e+00 2e-08 2.5e-07 0e+00 0e+00 0e+00 -4e-09 0.0e+00 -1e-03 -6e-09 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 CAM5 E3SM **GISS** OsloCTM3

CESM1

CESM2

GEOS

GFDL

MIROC

NorESM2

UKESM