Summary - percent difference surface flux of BC - NH-sea surface flux of SO2 - NH-sea 10% 0.3% 0.2% 5% 0.1% Δ emibc ∆ emiso2 0% 0% -0.1% -5% -0.2% -0.3% -10% surface concentration of BC - NH-sea surface concentration of SO4 - NH-sea 20% 5% 10% ∆ mmrbc ∆ mmrso4 0% 0% -10%-5% -20% surface concentration of SO2 - NH-sea surface concentration of DMS - NH-sea 100% 2% 50% 1% Δ dms $\Delta \, \text{so2}$ 0% 0% -50% -1% -100% -2%



Summary - percent difference column mass burden of SO4 - NH-sea column mass burden of SO2 - NH-sea 30% 20% 20% 10% ∆ loadso2 ∆ loadso4 0% 0% -10% -20% -20% -30% column mass burden of BC - NH-sea SO4 lifetime - NH-sea 400% 10% ∆ loadso4/(dryso4 + wetso4) 5% 200% Δ loadbc 0% 0% -5% -200% -10% SO2 timescale - NH-sea 2e+05% ∆ loadso2/emiso2 1e+05% 0% -1e+05% -2e+05% 10 50A ridh soa ▲ CAM5 E3SM GISS OsloCTM3

CESM1

• CESM2

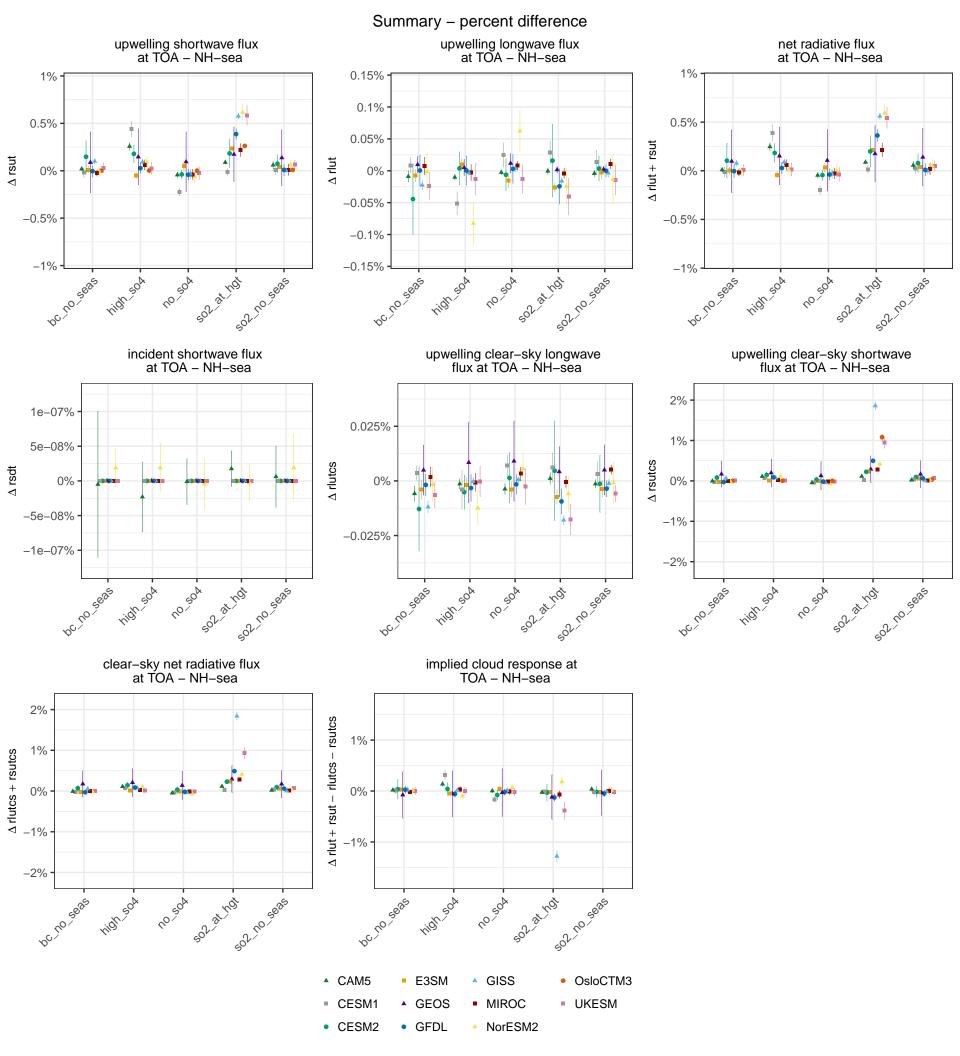
GEOS

• GFDL

MIROC

NorESM2

UKESM



Summary - percent difference ambient aerosol optical total cloud cover - NH-sea thickness at 550nm - NH-sea 0.25% 50% Δ od550aer $\Delta \, \text{clt}$ 0% 0% -0.25% -50% convective cloud cover - NH-sea surface cloud cover - NH-sea 2% 0.2% 1% Δ cltc ∆ cl 0% 0% -1% -0.2% -2% bc ho seas sol at not 1050A ice water path - NH-sea 1% 0.5% ∆ clivi 0% -0.5% -1% no sola bc no seas ▲ CAM5 E3SM GISS OsloCTM3 CESM1 GEOS MIROC UKESM

• CESM2

• GFDL

NorESM2

