arctic: percent difference surface flux surface flux surface concentration surface concentration surface concentration of BC - bc-no-season of SO2 - bc-no-season of SO4 - bc-no-season of SO2 - bc-no-season 0.0e + 0020+01 -2.5e+015.0e-0 4e+00 1e+01 -5.0e+01 2e-02 0.0e+00 00+00 1e-02 -5.0e-01 -1e+0 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 upwelling longwave flux at TOA – bc–no–season upwelling shortwave flux at TOA – bc–no–season upwelling clear-sky longway flux at TOA - bc-no-seaso net radiative flux incident shortwave flux at TOA - bc-no-season at TOA - bc-no-season 5e-01 7.5e-02 8e-02 rsut 5.0e-02 0e+00 0e+00 ∆ rlut + 0e+00 _5e_01 -5e-01 0e+00 -1e+00 -1e+00 2000 2001 2002 2003 2004 2002 2003 2004 2002 2003 2004 2002 2003 2004 2002 2003 2004 2000 2001 2000 2001 2000 Year Year Year Year Year clear-sky net radiative flux at TOA - bc-no-seaso upwelling clear-sky shortwa implied cloud response dry deposition rate wet deposition rate flux at TOA - bc-no-seaso at TOA - bc-no-season of BC - bc-no-season of BC - bc-no-season rsutcs) 4e-01 rlutcs -1e+01 -5.0e-0° -1.0e+01rsut – -1.0e+00 -1.0e+000e+00 -1.5e+01 -1.5e+00-2.0e+01 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 SO2 – bc–no–season wet deposition rate of SO2 – bc–no–season dry deposition rate of SO4 – bc–no–season wet deposition rate of SO4 – bc–no–season total deposition rate of BC - bc-no-season 6e-01 1e+01 4e+00 3e-01 4e+00 5e+00 ∆ dryso∠ 0e+00 -2e+00 0e+00 0e+00 -50+00 -1e+01 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 $\frac{1}{3} dryso2 + wetso2)/2 + \frac{1}{3} dryso4 + wetso4)/3$ total deposition rate ambient aerosol optical total cloud cover - bc-no-sea convective cloud cover - bc-no-s surface cloud cover - bc-no-se of S - bc-no-season thickness at 550nm - bc-no-se 3e-01 8e+00 0e+00 ا کا کا -2e+01 4e+00 0e+00 -2.5e-01 0e+00 -3e-01 -4e+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 ice water path - bc-no-sease surface concentration column mass burden column mass burden column mass burden of DMS - bc-no-season of SO2 - bc-no-season of SO4 - bc-no-season 3e-01 1e+00 ∆ dms 1e+01 0e+00 5.0e+00 -1e+01 -3e-01 0e+00 -1e+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 Year Year Year

CAM5

CESM1

CESM2

E3SM

GEOS

GFDL

MIROC

NorESM2

OsloCTM3

UKESM