## so2-at-height: absolute difference surface concentration of BC – SH–sea surface flux surface flux surface concentration surface concentration of SO2 - SH-sea of BC - SH-sea of SO4 - SH-sea of SO2 - SH-sea 3.6e-16 9.2e-22 2e-14 -5.0e-12 emiso2 (kg m-2 s-1) emibc (kg m-2 s-1) mmrso4 (kg kg-1) mmrbc (kg kg-1) so2 (kg kg-1) 0e+00 -1.0e-1 -4.6e-21 1.7e-16 -2e-14 -4e-14 5.0e-12 -2.0e-11 \_6e\_14 -1.0e-20 2001 2002 2003 2001 2002 2003 2001 2002 2003 2001 2002 2003 2001 2002 2003 Year Year Year Year Year upwelling longwave flux at TOA – SH–sea upwelling shortwave flux at TOA – SH-sea upwelling clear-sky longwave flux at TOA - SH-sea net radiative flux incident shortwave flux at TOA - SH-sea at TOA - SH-sea 0.03 1e-07 0.02 0.10 0.04 rlut + rsut (W m-2) rlutcs (W m-2) 5e-08 rsut (W m-2) rsdt (W m-2) 0.01 rlut (W m-2) 0.05 0.00 0.00 0e+00 0.0 0.00 -0.01 -0.04 -0.05 -0.02-0.1 2001 2002 2003 2001 2003 2001 2003 2001 2002 2003 2001 2003 Year Year Year Year Year upwelling clear-sky shortwave flux at TOA - SH-sea clear-sky net radiative flux at TOA - SH-sea dry deposition rate of BC – SH–sea wet deposition rate of BC – SH–sea total deposition rate of BC – SH–sea 3.0e-16 3.8e-16 7.2e-17 drybc + wetbc (kg m-2 s-1) rlutcs + rsutcs (W m-2) 0.075 drybc (kg m-2 s-1) wetbc (kg m-2 s-1) 0.02 rsutcs (W m-2) 0.050 9.2e-18 -1.3e-16 -1.2e-16 0.00 0.025 0.000 -0.02 -5.3e -5 6e-16 -6 1e-16 2001 2002 2003 2004 2001 2002 2003 2004 2001 2002 2003 2004 2001 2002 2003 2001 2002 2003 Year Year Year Year Year wetso4)/3 (kg m-2 s-1) dry deposition rate of SO4 – SH-sea wet deposition rate of SO4 – SH–sea total deposition rate of S – SH–sea dry deposition rate wet deposition rate of SO2 - SH-sea of SO2 - SH-sea -1e-14 dryso2 (kg m-2 s-1) wetso2 (kg m-2 s-1) dryso4 (kg m-2 s-1) wetso4 (kg m-2 s-1) 4e-14 -2e-14 2e-14 (dryso2 + wetso2)/2 + (dryso4 + 8e-14 3e-14 -3e-14 2e-14 6e-14 -4e-14 -5e-14 2003 2001 2002 2003 2004 2001 2002 2003 2001 2002 2004 2001 2002 2003 2004 2001 2002 2003 Year Year Year Year Year ambient aerosol optical total cloud cover convective cloud cover thickness at 550nm - SH-se percentage - SH-sea percentage - SH-sea 0.050 0.0020 0.0015 0.025 clt (%) % 0e+00 0.0010 0.000 0.0005 -5e-04 0.0000 -0.025 -1e-03 2001 2002 2003 2004 2001 2002 2003 2004 2001 2002 2003 2004 Year Year Year CESM1 E3SM MIROC NorESM2 OsloCTM3