so2-no-season: percent difference surface concentration of BC – SH–sea surface flux of BC – SH–sea surface flux of SO2 – SH–sea surface concentration of SO4 – SH–sea surface concentration of SO2 – SH–sea 0.5% 0.003% 0.25% 0.002% -0.5% ∆ emiso2 0.25% ∆ mmrso4 ∆ mmrbc 0% 0% 0.001% -0.25%-0.25% 0% 2001 2002 2003 2004 2001 2002 2003 2004 2001 2002 2003 2001 2002 2003 2001 2002 2003 Year Year Year Year Year incident shortwave flux at TOA – SH–sea clear-sky longwave flux at TOA - SH-sea longwave flux at TOA shortwave flux at TOA net radiative flux SH-sea SH-sea at TOA - SH-sea 0.05% 5e-08% 0.1% 4e-08% 0.025% ∆ (rlut + rsut) 0.05% 3e-08% 0% ∆ rsut 2e-08% -0.025% -0.01% 0% 1e-08% 0% -0.05% -0.02° -0.05% -1e-08% 2002 2003 2001 2002 2003 2001 2003 2001 2002 2003 2002 2003 Year Year Year Year Year clear-sky shortwaveflux clear-sky net radiative implied cloud response dry deposition rate wet deposition rate of BC - SH-sea at TOA - SH-sea flux at TOA - SH-sea at TOA - SH-sea of BC - SH-sea 0.08% rsutcs 0.05% 0.05% 0.5% ∆ (rlutcs + rsutcs) rlut + rsut - rlutcs -0.04% △ wetbc △ drybc 0.025% 0% 0.025% 0.25% 0% 0% -0.4% 0% -0.04% -0.89 -0.252003 2001 2002 2003 2001 2003 2001 2003 2001 2003 2001 Year Year Year Year Year total deposition rate of BC – SH–sea wet deposition rate of SO2 – SH-sea dry deposition rate of SO4 – SH–sea wet deposition rate of SO4 – SH–sea dry deposition rate of SO2 - SH-sea 0% 1% -0.25% ∆ dryso2 ∆ wetso4 0% ∆ dryso4 0.5% -0.5% -0.3% -0.5% -0.5% 0% -0.75% -0.6% -0.5% -1.5% -0.9% 2001 2002 2003 2004 2001 2002 2003 2004 2001 2002 2003 2001 2002 2003 2004 2001 2002 2003 2004 Year Year total deposition rate ambient aerosol optical convective cloud cover total cloud cover – SH-sea percentage - SH-sea percentage - SH-sea 0% 0% 0.1 -20% -0.5% 0.05% ∆ od550aeı ∆ cltc -40% -1% -60% -0.05% -1.5%

∆ rlut

∆ rsutcs

∆ (drybc + wetbc)

 $\Delta \left(\text{dryso2} + \text{wetso2} \right) / 2 + \left(\text{dryso4} + \text{wetso4} \right) / 3$

2002

2003

Year

2004

2001

