bc-no-season: percent difference surface flux surface flux surface concentration surface concentration surface concentration of BC - sea of SO2 - sea of BC - sea of SO4 - sea of SO2 - sea 2e-01 0.00+00 1 00+00 3e+00 1e-01 -2.5e+01 ∆ mmrso4 2e+00 0e+00 -5.0e+01 5.0e-01 -5.0e+001e+00 -1e-0 -7.5e+00-2e-01 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2000 2001 2002 2003 2004 Year Year upwelling longwave flux at TOA – sea upwelling shortwave flux at TOA – sea upwelling clear-sky longwav flux at TOA - sea net radiative flux incident shortwave flux at TOA – sea at TOA - sea 3e-02 4e-01 2e-02 5e-08 36_01 1e-02 rsut 1e-02 ∆ rlutcs 2e-01 ∆ rlut + 0e+00 0e+00 00+00 1e_01 1e-01 -1e-02 -1e-02 0e+00 -2e-02 -5e-08 -1e-0 2002 2003 2004 2002 2003 2004 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 Year Year Year Year Year upwelling clear-sky shortwave flux at TOA - sea clear-sky net radiative implied cloud response dry deposition rate wet deposition rate flux at TOA - sea at TOA - sea of BC - sea of BC - sea rsutcs) 0.0e+00 36_01 0e+00 1e-01 rsutcs rlutcs -2e-01 -3e+00 2e-01 5e-02 ∆ wetbc ∆ rlutcs + -5.0e+00 -6e+00 1e-0 1e-01 -5e-02 -7.5e+00 0e+00 0e+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 dry deposition rate of SO4 – sea wet deposition rate of SO4 – sea dry deposition rate wet deposition rate total deposition rate of BC - sea of SO2 - sea of SO2 - sea 0.0e + 0.02.5e+00 4e-01 3e+00 -5.0e+00 2e-01 wetso2 1.5e+00 0e+00 1.0e+00 1e+00 5.0e-01 -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 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 - sea convective cloud cover - sea surface cloud cover - sea of S - sea thickness at 550nm - sea 2e-01 1e+00 6e+00 0e+00 1e-01 5e-01 -2e+01 0.0e+0.04e+00 0e+00 0e+00 -4e+012e+00 -1 0e-01 -6e+01 -01 0e+00 -1e+00 -1.5e-01 20002001200220032004 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 ice water path - sea surface concentration column mass burden column mass burden column mass burden of BC - sea of SO2 - sea of DMS - sea of SO4 - sea 3e-01 5.0e+00 4e-01 4e+00 1.5e+0.10.0e+00 2e-01 2e-01 3e+00 1.0e+01 1e-01 2e+00 0e+00 -1.0e+0.10e+00 5.0e+00 1e+00 -1.5e+01 -2e-01 -1e-01 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2000 2001 2002 2003 2004 Year Year Year Year Year

