Reference – absolute SH–sea averages surface flux of SO2 - SH-se surface flux of BC - SH-sea surface concentration surface concentration surface concentration of BC - SH-sea of SO4 - SH-sea of SO2 - SH-sea 4.5e-10 $\mathrm{emibc}\,(\mathrm{kg}\,\mathrm{m}^{-2}\,\mathrm{s}^{-1})$ emiso2 (kg m⁻² s⁻ mmrbc (kg kg^{_1} mmrso4 (kg kg ${ m so2}$ (kg kg $^{-1}$ 1e-14 2.0e-10 2002 2003 2004 2002 2003 2004 2002 2003 2004 2002 2003 2004 2002 2003 2004 Year Year Year Year Year clear-sky longwave flux at TOA - SH-sea longwave flux at TOA - SH-se shortwave flux at TOA - SH-se net radiative flux at TOA - SHincident shortwave flux at TOA – SH-sea -335 300 -262.5 rlut + rsut (W m^{-2} -242 rlut $(W m^{-2})$ rsut (W m⁻²) rlutcs $(W m^{-2})$ -98 200 $rsdt (W m^{-2})$ -265.0 -244 100 -100 -345 -267.5 -246 -102 -270.0 -350 -1002003 2004 2000 2001 2000 2001 2002 2003 2004 2001 2002 2002 2003 2004 2000 2001 2002 2003 2004 2002 2003 2004 2000 2001 Year Year dry deposition rate of BC – SH–sea clear-sky shortwave flux at TOA - SH-sea clear-sky net radiative flux at TOA - SH-sea implied cloud response at TOA – SH-sea wet deposition rate of BC – SH–sea rlutcs - rsutcs (W m⁻²) -39 lutcs + rsutcs (W m $^{-2}$) wetbc $(kg m^{-2} s^{-1})$ rsutcs (W m⁻²) drybc (kg m⁻² s⁻ -305 -310 rsut – ij 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2001 2002 2003 2004 2000 2002 2003 2004 2000 2001 2002 2003 2004 Year Year Year Year Year total deposition rate of BC – SH–sea dry deposition rate of SO4 – SH–sea dry deposition rate wet deposition rate wet deposition rate of SO2 - SH-sea of SO2 - SH-sea of SO4 - SH-sea $drybc + wetbc (kg m^{-2} s^{-1})$ wetso2 $(kg m^{-2} s^{-1})$ $dryso4 (kg m^{-2} s^{-1})$ wetso4 $(kg m^{-2} s^{-1}$ dryso2 (kg $\mathrm{m}^{-2}\,\mathrm{s}^{-1}$ 0.010 1.0e-13 0.005 6.0e-14 4.0e-14 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 Year Year Year Year total deposition rate of S – SH–sea (dryso2 + wetso2)/2 + (dryso4 + wetso4)/30.008 0.006 $(kg m^{-2} s^{-1})$ 0.004 0.002 0.000 2000 2001 2002 2003 2004 Year

