NH-sea: absolute difference surface flux surface concentration surface concentration surface concentration of SO2 - shp-ind-shift-19 of SO4 - shp-ind-shift-195 of BC - shp-ind-shift-195 of SO2 - shp-ind-shift-198 nmrbc (kg kg-1) -3.2e-14 so2 (kg kg – 1) nmrso4 (kg kg 0e+00 -3.7e-14 _3 9e_14 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 Year Year Year Year upwelling shortwave flux at TOA – shp-ind-shift-195 upwelling clear-sky longway flux at TOA - shp-ind-shift-1 incident shortwave flux at TOA – shp-ind-shift-19 net radiative flux at TOA - shp-ind-shift-19 1e-01 5.0e-02 $' \, m^{-2}$ rlutes (W m-2) rsdt (Wm-2)rsut (W 0e+00 0.0e+00 0.0e + 0.0-1e-02 -2 5e-02 -2 5e-02 -2e-02 -5.0e-02 -5.0e-02 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 Year Year Year Year implied cloud response dry deposition rate wet deposition rate clear-sky net radiative $\rm rsutcs \ (W \ m^{-2})$ at TOA - shp-ind-shift-19 of BC - shp-ind-shift-19 of BC - shp-ind-shift-19 7.2e-17 5.0e-02 3.3e-17 1.6e-16 vetbc (kg m⁻² s⁻ drybc (kg m⁻² s⁻ 2.5e-02 rlutes 0.0e+00 rsnt -2.5e-02 _8 6e_1 -6.7e-16 rit + 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 Year Year Year Year dry deposition rate of SO4 – shp–ind–shift–19 wet deposition rate of SO4 – shp–ind–shift–19 dry deposition rate of SO2 – shp–ind–shift–19 wet deposition rate of SO2 – shp-ind-shift-19 -6.8e wetso2 (kg m^{-2} s⁻¹ dryso4 (kg m⁻² s^{-′} wetso4 (kg m⁻² -9.3e-18 -8.6e-15 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 Year Year Year Ice water path - shp-ind-sDiffnethyl sulphide (DMS) mole fraction - sł cloud cover ambient aerosol optical thickness at 550nm - shp-ind-shift-1 2e-04 2.5e-14 clivi (kg m⁻²) _lom lom) smb 0.0e+00 0e+00 od550aer -2e-04 -5.0e-14 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001

surface flux

2000 2001 2002 2003 2004

Year

upwelling longwave flux at TOA – shp-ind-shift-195

emiso2 (kg m⁻² s⁻

of BC - shp-ind-shift-19!

 $\mathrm{emibc}\,(\mathrm{kg}\,\mathrm{m}^{-2}\,\mathrm{s}^{-1})$

3.4e-2

1.8e-21

1.0e-22

-1 6e-2°