shp-60p-red: absolute difference surface flux of SO2 – SH–land surface concentration surface concentration of SO4 – SH–land surface concentration of SO2 – SH–land 0e+00 0.0e+00 emiso2 $(kg m^{-2} s^{-1})$ (kg kg - 1)nmrbc (kg kg-1) -2e-12 so2 (kg kg – 1) 0e+00 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000.02002.52005.02007.5 2000.02002.52005.02007.5 Year Year Year Year upwelling shortwave flux at TOA – SH–land net radiative flux at TOA – SH–land incident shortwave flux at TOA – SH-land upwelling clear-sky longway flux at TOA - SH-land $rlut + rsut (W m^{-2})$ 7.5e-06 rlutcs (Wm-2)rsut (W m-2) sdt (W m-0e+002.5e-06 -1e-01 0.0e+00 2000 2001 2002 2003 2004 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 Year Year Year Year clear-sky net radiative flux at TOA - SH-land implied cloud response dry deposition rate of BC – SH–land wet deposition rate of BC – SH–land $rlutcs-rsutcs\left(W\;m^{-2}\right)$ at TOA – SH–land 7 0e-16 rsutcs (W m^{-2}) wetbc (kg m^{-2} s⁻¹) 2e-02 3.5e-16 drybc (kg m⁻² s⁻ 0e+00 8.4e-18 rlutcs + rsut – 1e-01 rlut + 2000 2001 2002 2003 2004 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 Year Year Year Year dry deposition rate of SO2 – SH-land wet deposition rate of SO2 – SH-land dry deposition rate of SO4 – SH-land wet deposition rate of SO4 – SH-land -3 8e-15 -3.0e-14 wetso2 $(kg m^{-2} s^{-1})$ wetso4 $(kg m^{-2} s^{-1}$ dryso2 (kg $\mathrm{m}^{-2} \mathrm{s}^{-1}$ $dryso4 (kg m^{-2} s^{-1}$ 1e-02 0e+002000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 Year Year Year Year Ice water path – SH-lanc Dimethyl sulphide (DMS) mole fraction cloud cover percentage – SH-land ambient aerosol optical thickness at 550nm - SH-la 5.0e-04 clivi (kg m⁻²) _lom lom) smb 0e+00양 od550aeı -4e-04 expression -6e-04 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2002 2003 2004 2000 2001 2000 2001 2002 2003 2004 Year Year Year Year load of so2 - SH-land load of bc - SH-land -2.5e-09 oadso2 (kg m⁻²) oadbc (kg m⁻²) -5.0e-090e+00

surface flux of BC – SH–land

2000 2001 2002 2003 2004

Year

2002 2003 2004

Year

upwelling clear-sky shortway flux at TOA - SH-land

2000 2001 2002 2003 2004

Year

total deposition rate of BC – SH–land

2000 2001 2002 2003 2004

Year

total deposition rate of S – SH–land

20002001200220032004

Year

load

of so4 - SH-land

2000 2001 2002 2003 2004

Year

upwelling longwave flux at TOA – SH–land

1.0e-18

1 2e-19

-7.9e-19

2e-01

1e-01

0e+00

2000 2001

rlut (Wm-2)

rsutcs (W m-2)

 $drybc + wetbc (kg m^{-2} s^{-1})$

dyso2 + wetso2)/2 + (dryso4 + wetso4)/3

loadso4 (kg m⁻²)

-2e-08

-4e-08

-6e-08

 $(kg m^{-2} s^{-1})$

5.0e-03

0.0e + 0.0

-6e-02

3.5e-15

1.3e-15 -9.4e-16

-3.2e-15

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

