arctic: absolute difference surface flux surface flux surface concentration surface concentration surface concentration of BC - shp-10p-red-1950 of SO2 - shp-10p-red-195 of SO4 - shp-10p-red-195 of SO2 - shp-10p-red-195 of BC - shp-10p-red-1950 3e-05 -4e-01 0e+00 2e-0 0e+00 2e-05 _6e_01 $\Delta so2$ -2e-01 -5e-01 0e+00 -8e-01 1e-05 -1e+00 -1e+00 -2e-0 0e+00 -6e-0 2000 2001 2002 2003 2004 2002 2003 2004 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2000 2001 Year Year Year Year Year upwelling longwave flux at TOA – shp-10p-red-195 upwelling shortwave flux at TOA – shp-10p-red-195 upwelling clear-sky longwav flux at TOA - shp-10p-red-1 incident shortwave flux at TOA – shp-10p-red-19! net radiative flux at TOA - shp-10p-red-195 5.0e-02 2e-01 2e-02 1e-02 1e-01 1e-01 rsut 1e-02 5e-03 0e+00 0e+00 0.0e + 0.0e +큳 -1e-0 -1e-01 0e+00 0e+00 -2 5e-02 -2e-01 -2e-01 -5e-03 -1e-02 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 clear-sky net radiative implied cloud response dry deposition rate wet deposition rate upwelling clear-sky shortway flux at TOA - shp-10p-red-19 flux at TOA - shp-10p-red-19 at TOA - shp-10p-red-195 of BC - shp-10p-red-1950 of BC - shp-10p-red-1950 rsutcs) 6e-01 5e-02 5e-02 4e-01 rlutcs + rsutcs rlutcs -20-01 ∆ rsutcs ∆ wetbc 0e+00 -1e-01 rsut 0e+00 0e+00 -5e-02 -5e-02 _2e_01 크 -1e-01 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2002 2003 2004 2000 2001 Year Year Year Year Year total deposition rate of BC – shp–10p–red–1950 dry deposition rate of SO2 – shp–10p–red–19 wet deposition rate of SO2 – shp-10p-red-195 dry deposition rate of SO4 – shp–10p–red–195 wet deposition rate of SO4 – shp-10p-red-195 1e+00 -1e-01 5e-01 -2.0e-01 0e+00 drybc + wetbc 0e+00 ∆ wetso4 ∆ dryso4 -2 5e-01 -3e-0 -2e-01 -3.0e-01 -5e-01 -4e-01 0e+00 -3 5e-01 -5e-01 -1e+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 Year Year dryso2 + wetso2)/2 + (dryso4 + wetso4)/3total deposition rate Ice water path - shp-10p-Deichethyl sulphide (DMS) mole fraction - sh cloud cover ambient aerosol optical of S - shp-10p-red-19 percentage - shp-10p-red-1 thickness at 550nm - shp-10p-r 5.0e-01 5.0e-01 -2.0e-01 2e-01 8 1e+00 -2.5e-01 2.5e-01 clivi (kg m^{-2}) _lom lom) smb 당 ∆ od550aer 0.0e+00 0e+00 -3.0e-01 0.0e+00 -3.5e-01 -2.5e-01 0e+00 -2e-01 -4.0e-01 -5.0e-01 -2.5e-01 -4e-01 -4.5e-01 -7 5e-01 20002001200220032004 2000 2001 2002 2003 2004 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 Year Year Year Year Year load load of so4 - shp-10p-red-195 of bc - shp-10p-red-1950 5.0e-01 loadso4 (kg m⁻²) 3e-01 loadbc (kg m⁻² 2.5e-01 0e+00 0.0e+00 -3e-01 -6e-01 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004

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