Supplement of Atmos. Chem. Phys., 19, 2385–2403, 2019
https://doi.org/10.5194/acp-19-2385-2019-supplement

Atmospheric Chemistry and Physics
Open Access
EGU

Supplement of

Local and remote temperature response of regional SO_2 emissions

Anna Lewinschal et al.

Correspondence to: Anna Lewinschal (anna@misu.su.se)

Table S1. Global and local cloud properties change per emission change in the ERF simulations, i.e. local changes for 0xEU SO_2 are averaged over EU, for 5xNA SO_2 over NA etc. All values presented are 10^{-2}/TgSyr^{-1}. The variables are r_{eff}: cloud top effective radius, LWP: liquid water path, IWP: ice water path, PREC: precipitation, CLDtot: total cloud cover, CLDlow: low cloud cover.

Experiment	0xEU SO_2	7xEU SO_2	5xNA SO_2	5xEA SO_2	10xSA SO_2
Global					
$r_{eff}(\mu m)/\Delta$em	-1.065	-0.228	-0.293	-0.193	-0.141
LWP(gm^{-2})/Δem	6.657	1.414	3.534	1.976	1.805
IWP(gm^{-2})/Δem	0.245	-0.350	-0.993	-0.535	0.037
PREC(mmd^{-1})/Δem	0.011	-0.015	-0.131	0.014	0.006
CLDtot(%)/Δem	0.108	0.693	-1.518	0.303	-0.119
CLDlow(%)/Δem	0.469	-0.154	0.088	-0.156	-0.187
Local					
$r_{eff}(\mu m)/\Delta$em	-12.367	-1.870	-2.035	-1.463	-3.164
LWP(gm^{-2})/Δem	108.791	18.041	20.359	18.918	13.057
IWP(gm^{-2})/Δem	3.848	-1.60	-7.520	0.079	-0.665
PREC(mmd^{-1})/Δem	0.259	0.093	0.054	1.031	-0.322
CLDtot(%)/Δem	0.472	3.558	-4.008	0.182	-1.410
CLDlow(%)/Δem	2.253	-0.227	0.661	0.945	0.115

Table S2. Global and local cloud properties change per emission change in the coupled simulations, i.e. local changes for 0xEU SO_2 are averaged over EU, for 5xNA SO_2 over NA etc. All values presented are 10^{-2}/TgSyr^{-1}. The variables are r_{eff}: cloud top effective radius, LWP: liquid water path, IWP: ice water path, PREC: precipitation, CLDtot: total cloud cover, CLDlow: low cloud cover.

Experiment	0xEU SO_2	7xEU SO_2	5xNA SO_2	5xEA SO_2	10xSA SO_2
Global					
$r_{eff}(\mu m)/\Delta$em	-0.941	-0.387	-0.421	-0.260	-0.248
LWP(gm^{-2})/Δem	2.066	1.074	1.180	0.957	0.393
IWP(gm^{-2})/Δem	0.507	0.249	0.286	0.263	0.239
PREC(mmd^{-1})/Δem	-0.078	-0.039	-0.052	-0.041	-0.044
CLDtot(%)/Δem	-0.681	-0.236	-0.278	-0.225	-0.279
CLDlow(%)/Δem	-0.767	-0.274	-0.406	-0.261	-0.350
Local					
$r_{eff}(\mu m)/\Delta$em	-12.892	-1.880	-2.037	-1.531	-3.031
LWP(gm^{-2})/Δem	98.090	20.053	19.099	16.213	8.307
IWP(gm^{-2})/Δem	2.364	0.589	0.774	0.165	-0.841
PREC(mmd^{-1})/Δem	-0.324	-0.105	-0.318	-0.103	-0.739
CLDtot(%)/Δem	-0.472	-0.379	-0.234	0.153	-2.715
CLDlow(%)/Δem	1.446	0.523	0.392	0.709	-0.111

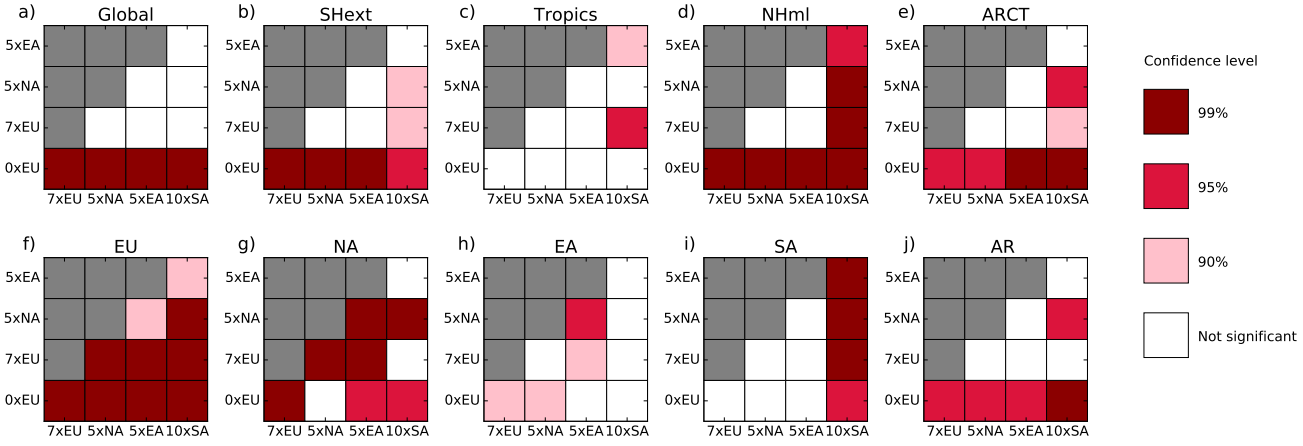

Figure S1. Significance levels for temperature differences between the different experiments, for the temperature response regions a) global mean, b) SHext, c) Tropics, d) NHml, e) ARCT, f) EU, g) NA, h) EA, i) SA and j) AR.