Supplement of

Diurnal variations, photochemical production and loss processes for hydrogen peroxide in the boundary layer over Europe

Horst Fischer[1], Raoul Axinte[1], Heiko Bozem[1*], John N. Crowley[1], Cheryl Ernest[1**], Stefan Gilge[2], Sascha Hafermann[1], Hartwig Harder[1], Korbinian Hens[1], Rainer Königstedt[1], Dagmar Kubistin[1], Chinmay Mallik[1], Monica Martinez[1], Anna Novelli[1#], Uwe Parchatka[1], Christian Plass-Dülmer[2], Andrea Pozzer[1], Eric Regelin[1], Andreas Reiffs[1], Torsten. Schmidt[1], Jan Schuladen[1], and Jos Lelieveld[1]

[1]Max Planck Institute for Chemistry, POB 3060, 55020 Mainz, Germany
[2]German Weather Service, Hohenpeißenberg, Germany
*now at Johannes-Gutenberg University, Mainz, Germany
**now at Dept. of Neurology, Johannes-Gutenberg University, Mainz, Germany
[#]now at Forschungszentrum Jülich, Germany

Correspondence to: Horst Fischer (horst.fischer@mpic.de)

Table S1: Data coverage in %.

	DOMINO	**HUMPPA**	**PARADE**	**HOPE**	**CYPHEX**
H_2O_2	90.06	93.66	86.13	25.79	82.47
NOx	90.06	95.1	92.3	100	90.71
O_3	90.06	95.1	84.6	100	90.71
OH	80.88	70.02	38.33	98.89	70.48
HO_2	81.44	14.7	22.77	29.84	41.16
JNO_2	95.36	95.17	100	100	73.25

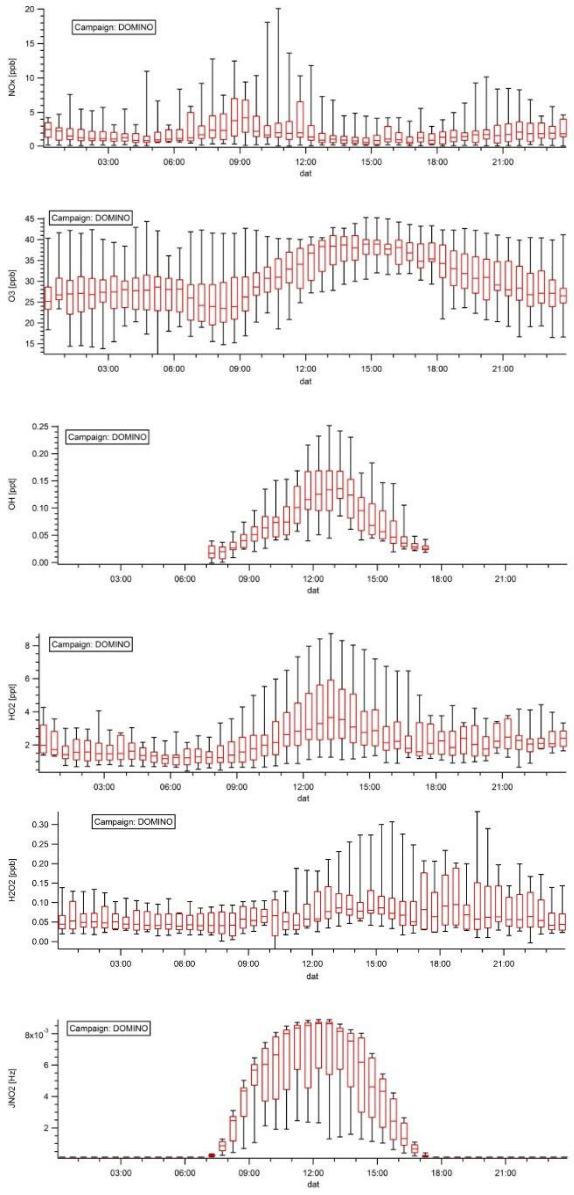

Figure S1: Diurnal variations (median, box: 25 and 75% quartiles, whiskers: min and max) for 30 min bins obtained for the DOMINO campaign: NOx, O_3, OH, HO_2, H_2O_2 and JNO_2 (from top). Note that local noon is 11:30 UTC.

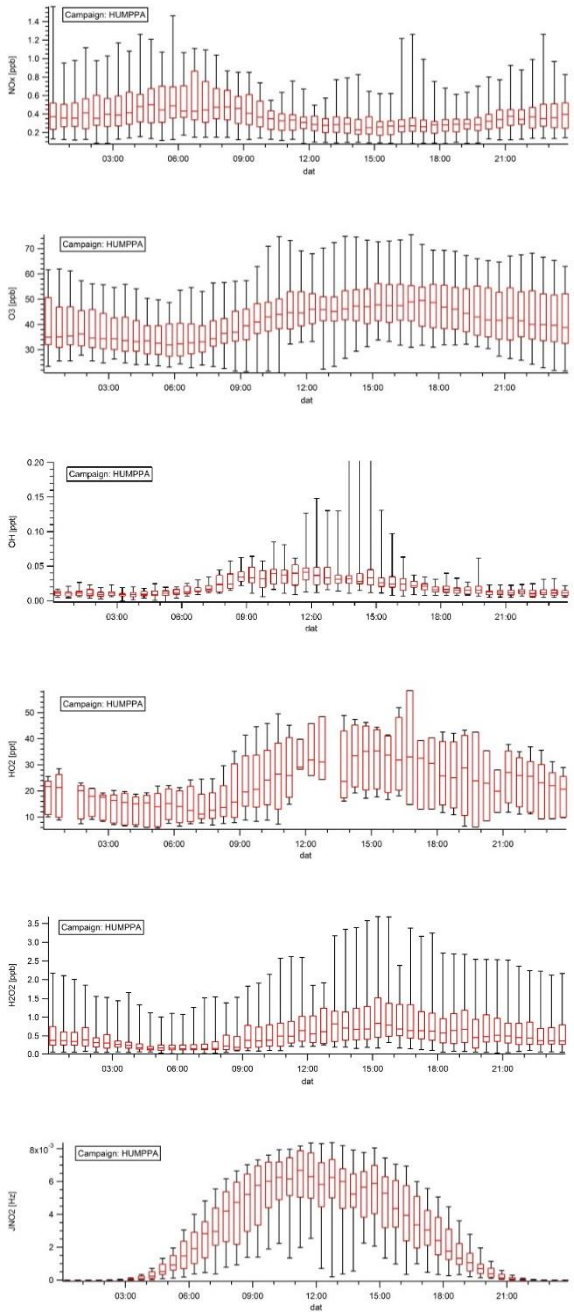

Figure S2: Diurnal variations (median, box: 25 and 75% quartiles, whiskers: min and max) for 30 min bins obtained for the HUMPPA campaign: NOx, O_3, OH, HO_2, H_2O_2 and JNO_2 (from top). Note that OH is plotted on a log scale. Local noon is 13:30 UTC.

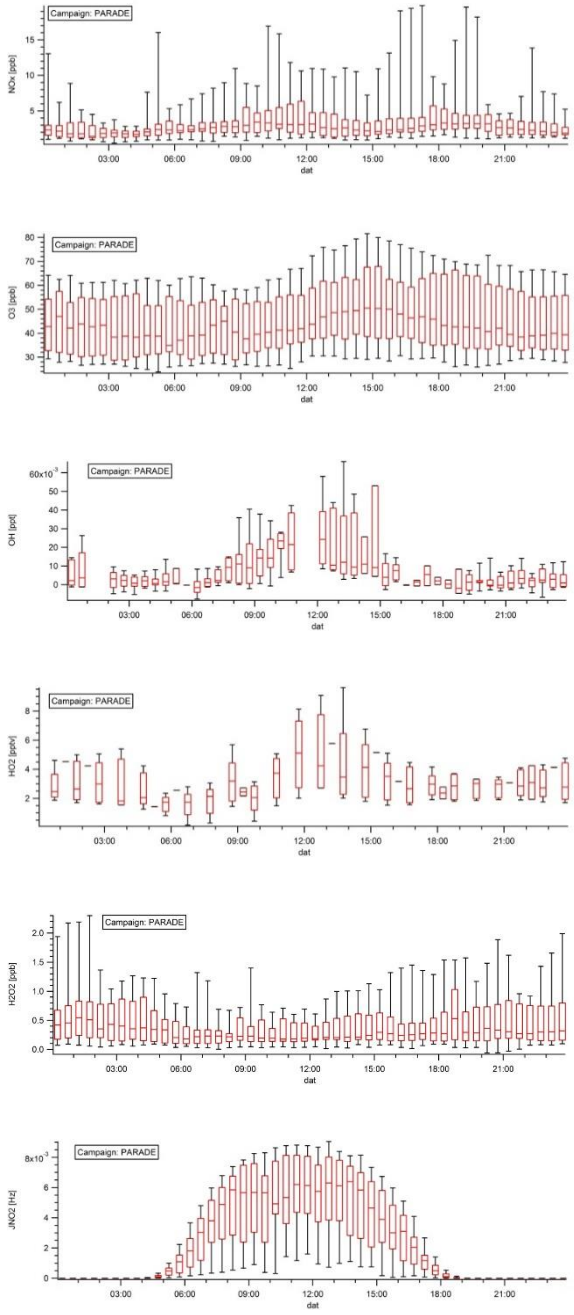

Figure S3: Diurnal variations (median, box: 25 and 75% quartiles, whiskers: min and max) for 30 min bins obtained for the PARADE campaign: NOx, O_3, OH, HO_2, H_2O_2 and JNO_2 (from top). Local noon is 12:30 UTC.

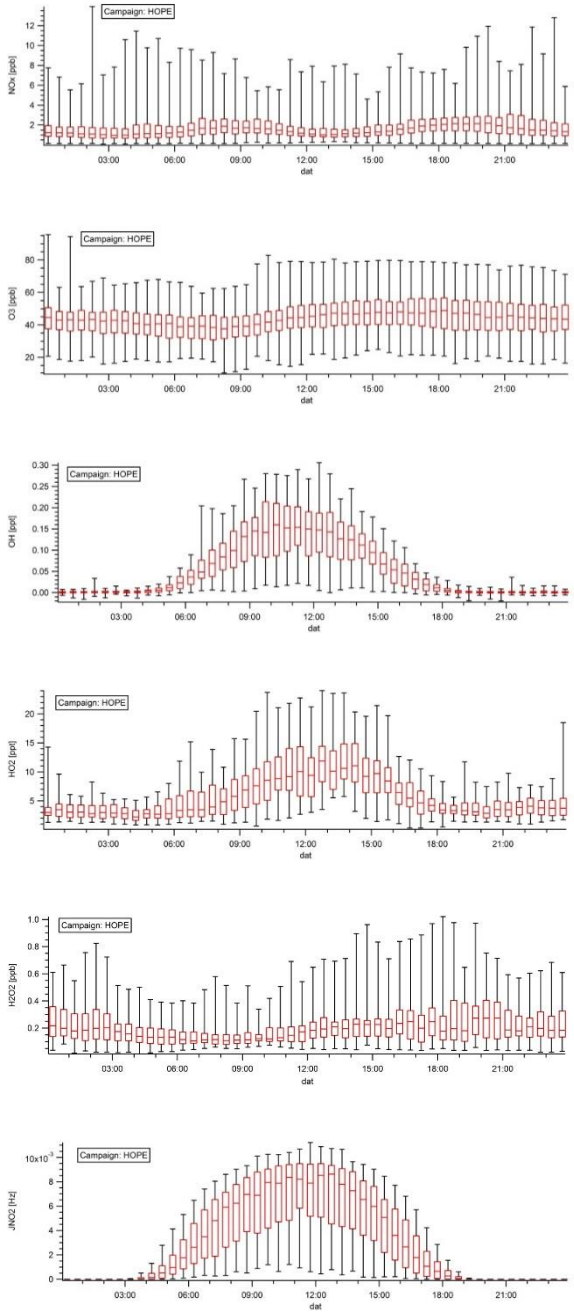

Figure S4: Diurnal variations (median, box: 25 and 75% quartiles, whiskers: min and max) for 30 min bins obtained for the HOPE campaign: NOx, O_3, OH, HO_2, H_2O_2 and JNO_2 (from top). Local noon is 12:45 UTC.

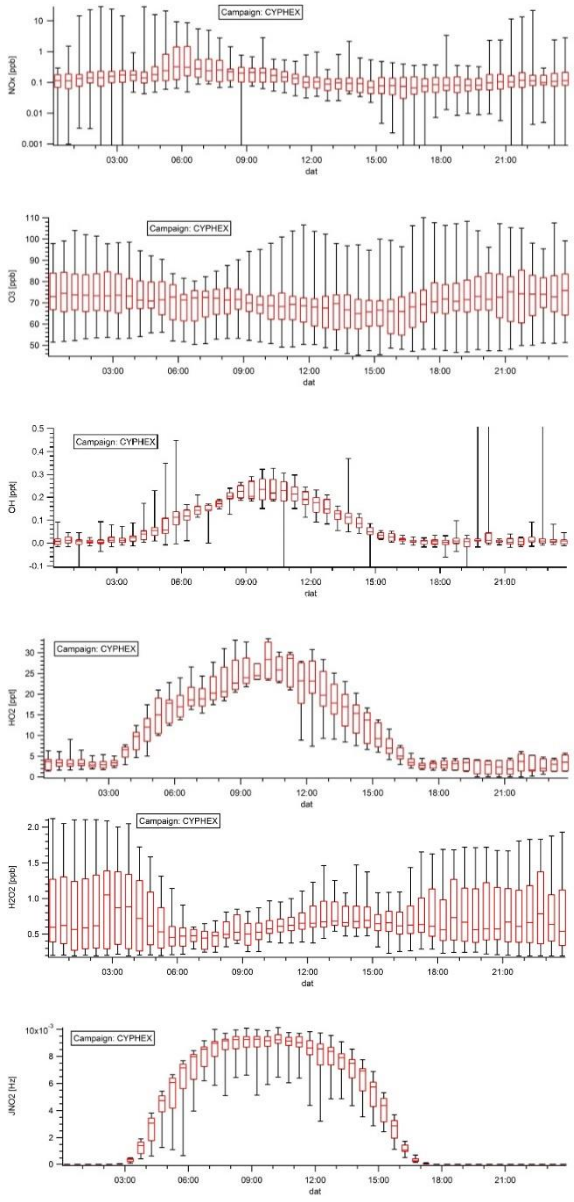

Figure S5: Diurnal variations (median, box: 25 and 75% quartiles, whiskers: min and max) for 30 min bins obtained for the CYPHEX campaign: NOx, O_3, OH, HO_2, H_2O_2 and JNO_2 (from top). Note that NOx and OH are plotted on a log scale. Local noon is 10:00 UTC.

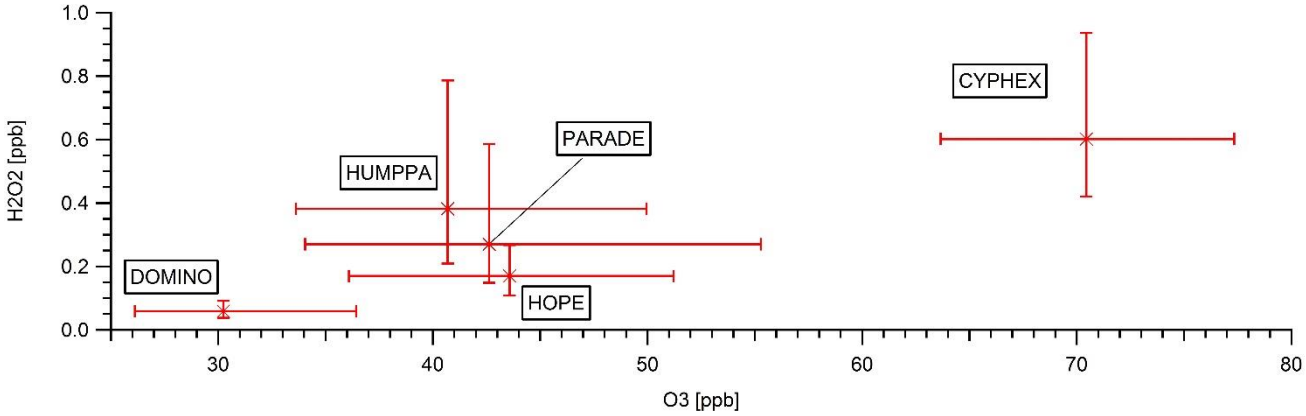

Figure S6: Parameter space (H_2O_2 vs. O_3) for the five campaigns. Note that all data (day and night) have been used for the calculation of the median values and the 25 – 75 % quartiles.