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Field measurements of methylglyoxal using proton transfer reaction time-of-flight mass spectrometry and comparison to the DNPH–HPLC–UV method

Vincent Michoud et al.

Correspondence to: Vincent Michoud (vincent.michoud@lisa.u-pec.fr)

Supplementary material 1: Example of peak fitting for MEK+butanal and methylglyoxal during the ChArMEx SOP2 field campaign

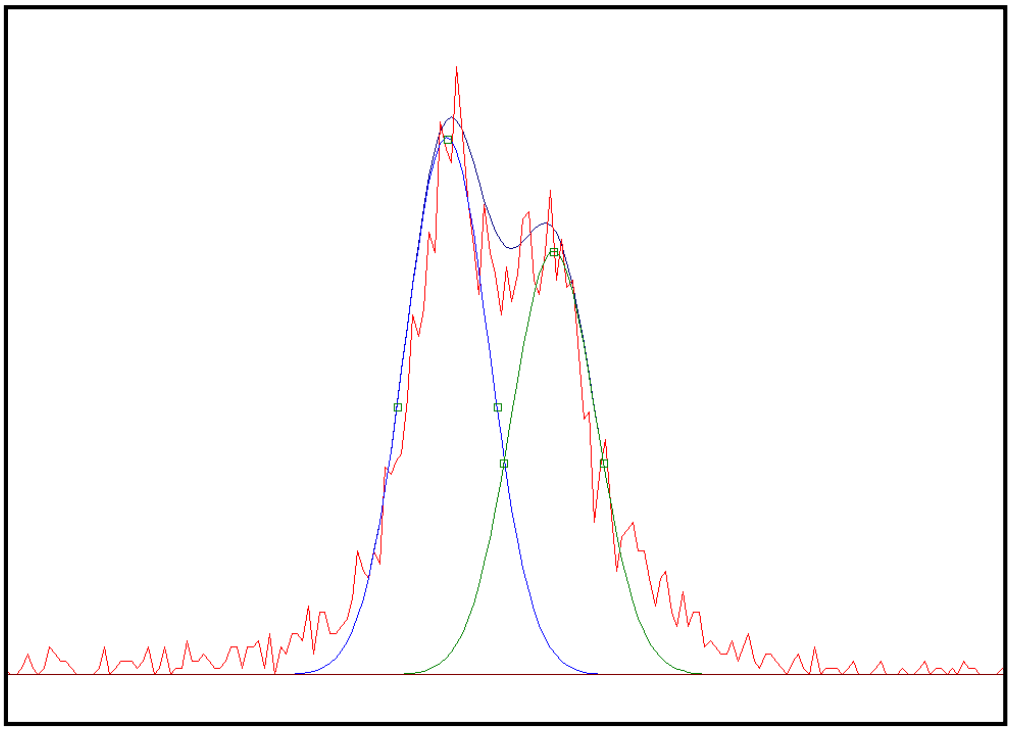

Figure S1: Example of signal recorded at m/z 73 (red line) and of Gaussian peak fitting analysis for MEK+butanal (green line) at m/z 73.065 and methylglyoxal (blue line) at m/z 73.029.

Supplementary material 2: Scatter plot of the PTR-ToFMS sensitivity for MGLY and the m/z 37-to-m/z 19 ratio

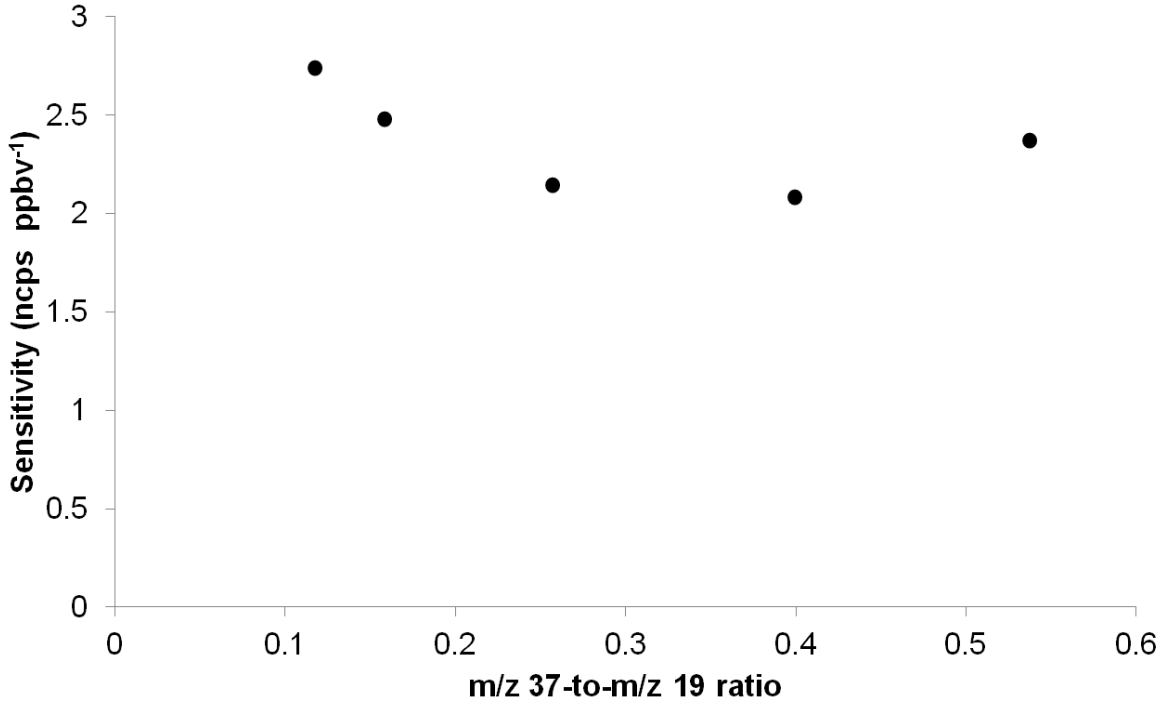

Figure S2: Scatter plot of the PTR-ToFMS sensitivity calculated at each tested MGLY concentration during calibration experiments and the m/z 37-to-m/z 19 ratio as a proxy for humidity.

Supplementary material 3: Scatter plots of the difference observed between the 2 techniques and various gaseous species

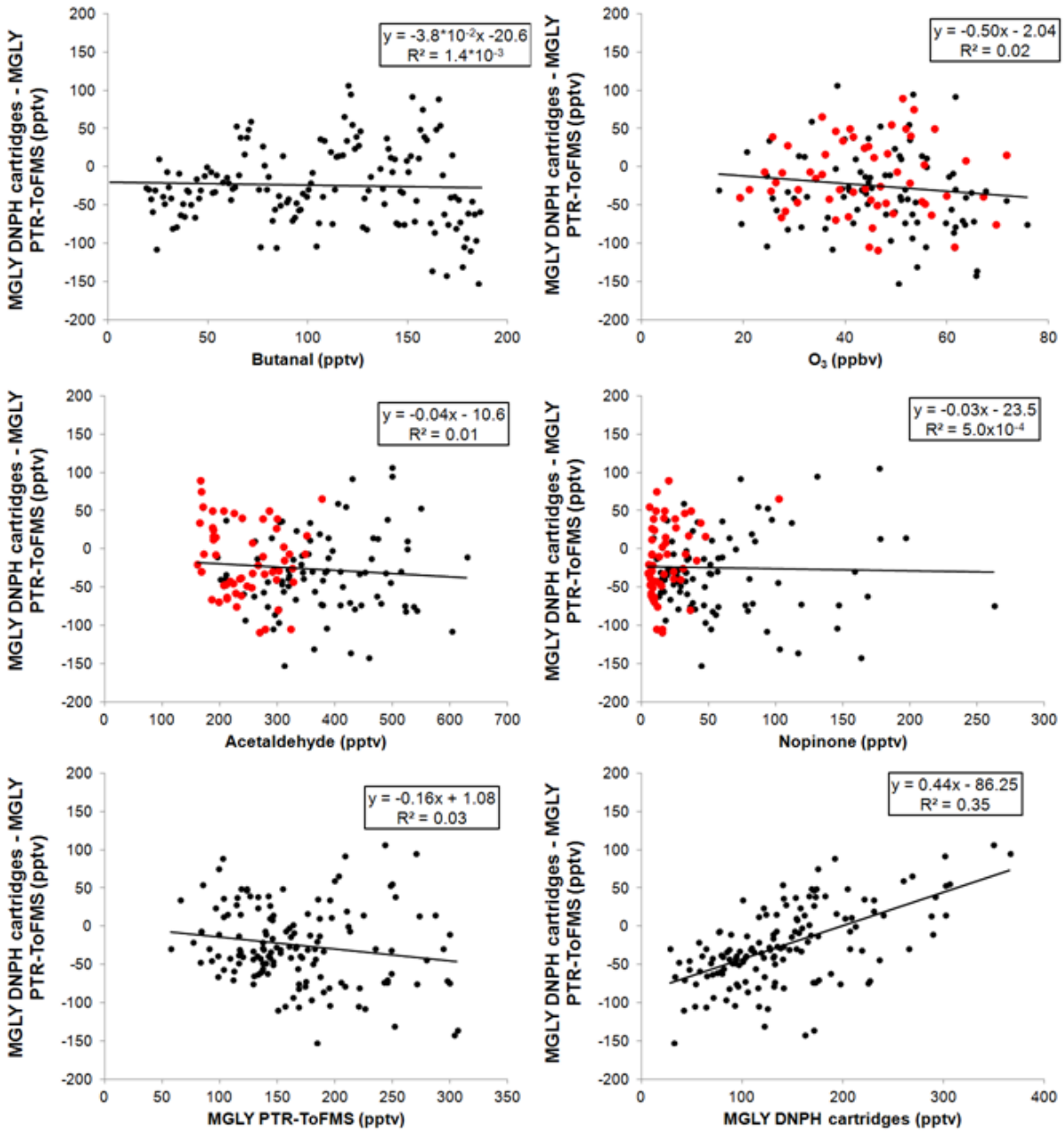

Figure S3**:** Scatter plots of the difference observed between the two techniques and various atmospheric species (red and black circles for night-time and daytime, respectively). (a) butanal measured by active sampling on DNPH cartridges, (b) O_3, (c) acetaldehyde measured by PTR-ToFMS, (d) nopinone measured by PTR-ToFMS, (e) MGLY measured by PTR-ToFMS and (f) MGLY measured by active sampling on DNPH cartridges.

Supplementary material 4: Scatter plots of the difference observed between the 2 techniques and the concentrations of various high m/z compounds

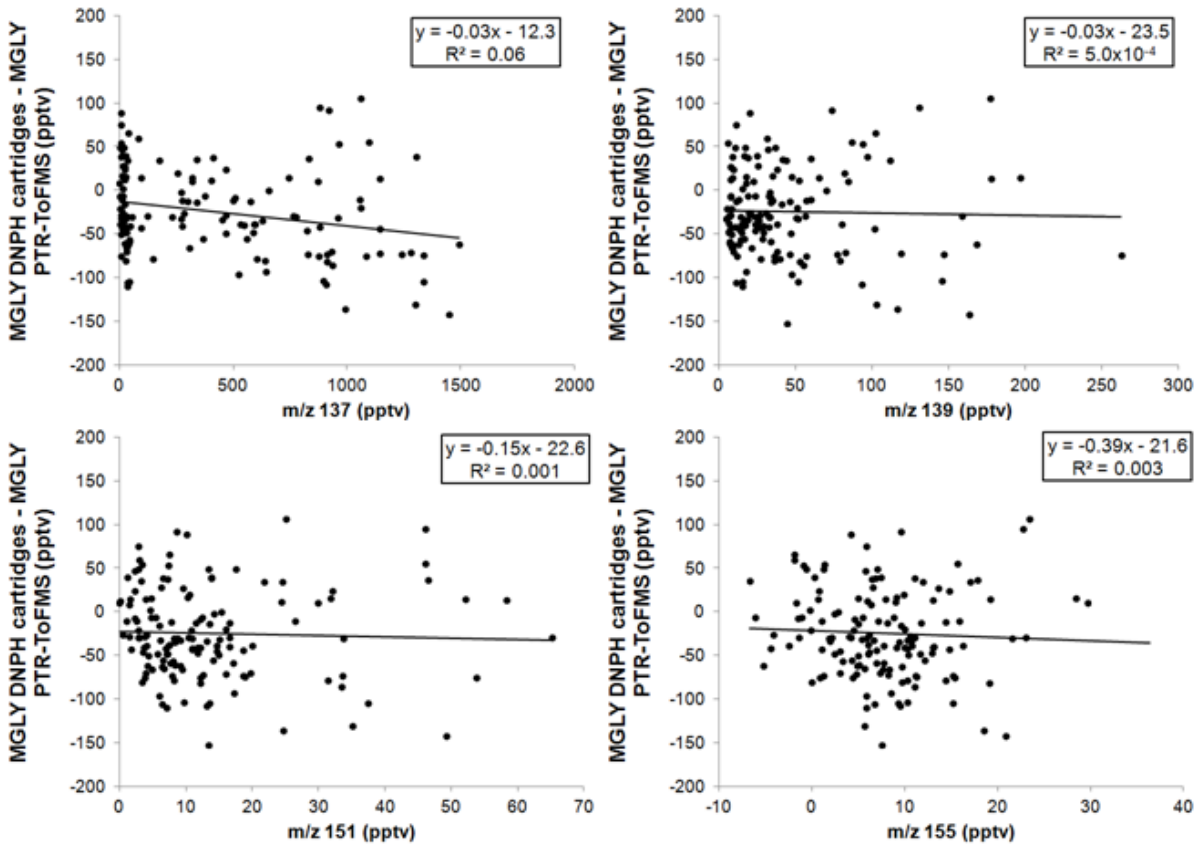

Figure S4**:** Scatter plots of the difference observed between the two techniques and (a) m/z 137 (monoterpenes), (b) m/z 139 (Nopinone), (c) m/z 151 (Pinonaldehyde), and (d) m/z 155 (unidentified oxidation product of monoterpenes).

Supplementary material 5: Scatter plot of coefficients of determination (R^2) for linear regressions between blank signals and ambient signals recorded at m/z 73 and daily averaged relative humidity values (RH)

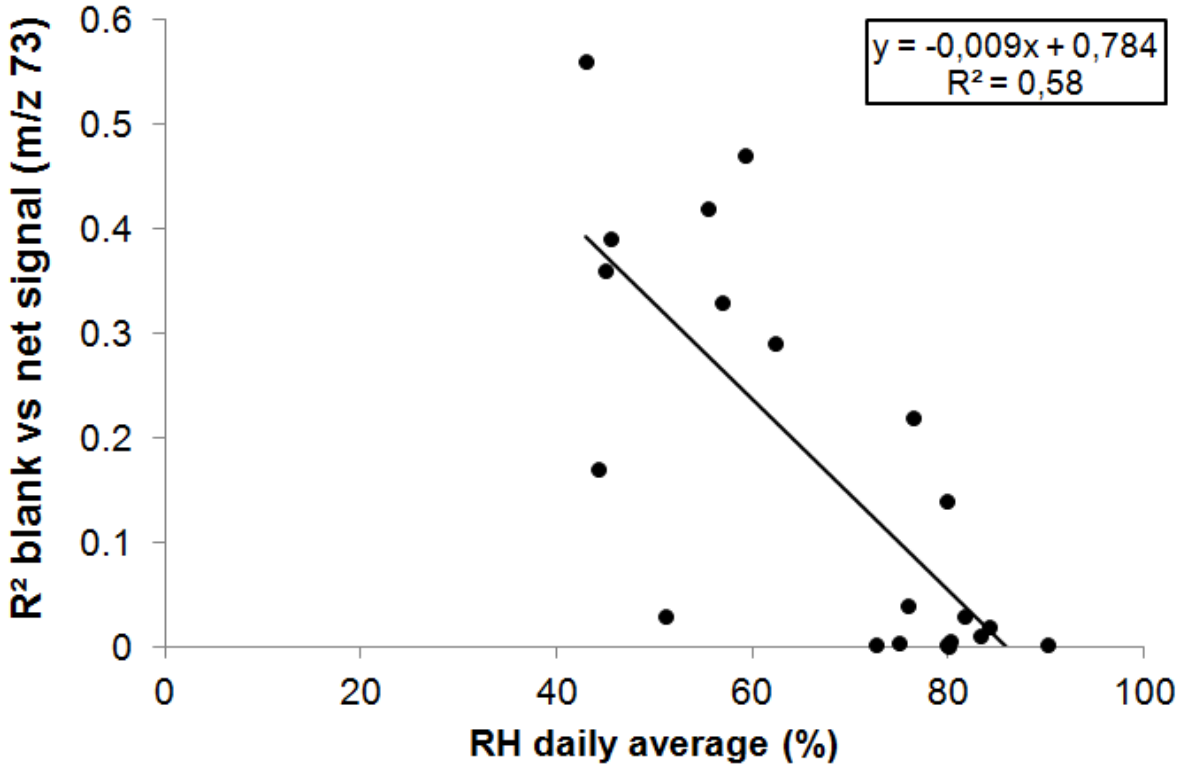

Figure S5**:** Scatter plot between coefficients of determination for the linear correlations observed between blank signals and ambient signals recorded at m/z 73 and daily averaged relative humidity values (RH).