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Corrigendum to “Seasonal variability and source apportionment of volatile organic compounds (VOCs) in the Paris megacity (France)” published in Atmos. Chem. Phys., 16, 11961–11989, 2016

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After publication, we discovered two errors in the paper. Despite these, it should be noted that the interpretation of the results remains unchanged. The first error concerns the caption of Table 1. It should be “A conversion factor is provided here to convert VOC mixing ratios (ppb) into $\mu g\,m^{-3}$” instead of “A conversion factor is provided here to convert VOC concentrations ($\mu g\,m^{-3}$) into (ppb) mixing ratios”.

The second error was discovered in Fig. 12 (see Sect. 3.5). Absolute and relative contributions of the reactivity of each PMF factor were recalculated. The corrected figure is added on the next page.

The reactivity of each modeled factor has been investigated by considering the factor concentration of each species (previously converted in molecule cm^{-3}) with their OH rate constant (kOH) (Atkinson and Arey, 2003) and is reported in relative (and absolute) contributions in Fig. 12. Among all the emission sources identified by PMF, solvent use appears to be the main reactive source (23 % ($0.48\,s^{-1}$)), mainly due to acetaldehyde and aromatics contributions. Acetaldehyde explains about 50 % of this source reactivity due to (1) the important weight of this compound into Factor 5 (15 %) and (2) its high OH rate constant ($1.5 \times 10^{-11}\,cm^3\,molecule^{-1}\,s^{-1}$). Aromatics contribute a quarter of the factor reactivity.

The biogenic factor is also a reactive source (20 % ($0.43\,s^{-1}$)) due to the presence of isoprene (a very reactive species) and acetaldehyde – accounting for a third of the factor reactivity. Some OVOC (including the secondary products of isoprene photo-oxidation) can also significantly contribute to this reactivity. Relative contributions of the “motor vehicle exhaust” and “wood burning” sources were estimated at 18 % ($0.37\,s^{-1}$) and 17 % ($0.36\,s^{-1}$), respectively. Alkenes (especially ethylene and propene) contribute 50 % of the sources’ reactivity, whereas aromatic compounds explain between 20 and 30 % of the PMF factors’ reactivity. The lowest contributions of reactivity are represented by the mixed-source “natural gas and background” and the “evaporative sources” factor (14 % ($0.29\,s^{-1}$) and 8 % ($0.16\,s^{-1}$), respectively), which contain more stable gases (ethane, propane, butanes).

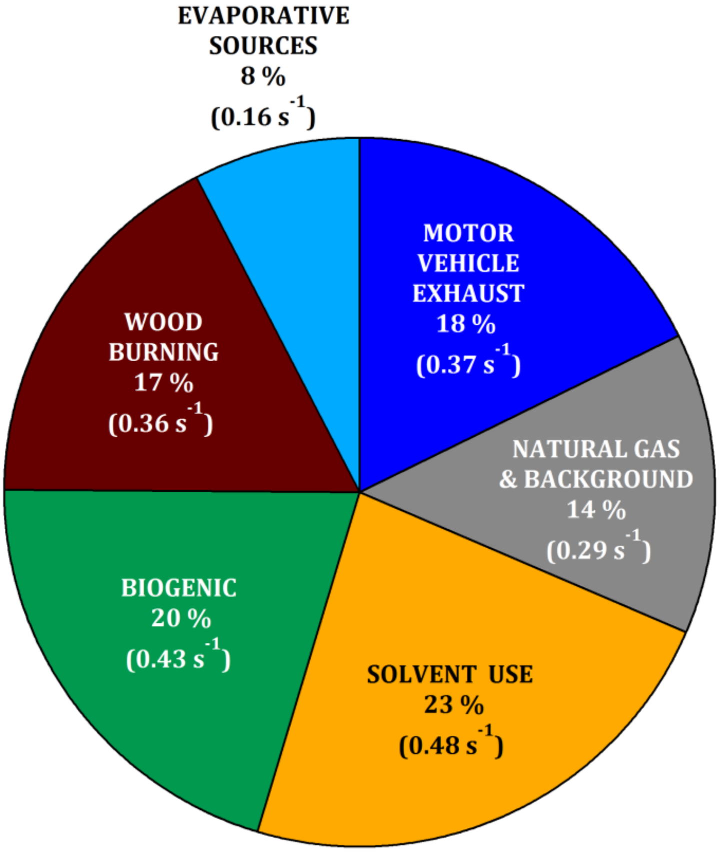

Figure 12. Relative (percent) and absolute (s^{-1}) contributions of the reactivity of each PMF factor.

References

Atkinson, R. and Arey, J.: Atmospheric Degradation of Volatile Organic Compounds, Chem. Rev., 103, 4605–4638, doi:10.1021/cr0206420, 2003.