

Referee Comments – Spatial variability of VOCs, ozone, and carbonaceous aerosols during the 2022 European summer heatwave

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General Overview:

The manuscript (egusphere-2025-6166) presents results from an Intensive Measurement Period (IMP) conducted during the European heatwave in July 2022, focusing on ozone, volatile organic compounds (VOCs), and carbonaceous aerosols at 31 sites across Europe. The topic of this study falls within the scope of the journal Atmospheric Chemistry and Physics (ACP). The authors present data from field measurements and analyze the temporal and spatial variability of the measured species. This manuscript is generally laid out well and shows its academic value. This manuscript is recommended to be published as a measurement report after addressing the concerns and comments below with minor revisions.

Major Concern:

- Section 2.2: The criteria and logics for prioritizing the sources of data do not seem to be clearly provided. Only the facts of data screening and prioritization were described. Please revise this section to ensure academic rigor.

Minor Concerns:

- Lines 290 - 291: Where are the simulated trajectories? Please provide a figure or figures of the simulated trajectories.
- Lines 466 - 468: The statement is misleading the readers to think that the ratio would be MACR/MVK, while “their ratio” is actually MVK/MACR in Fig. 5. Please revise the statement for clarification.
- Lines 472 - 473: The statement is misleading the readers to think that the slope would be (MVK+MACR)/HCHO while “the slope” is actually HCHO/(MVK+MACR) in Fig. 5. Please revise the statement for clarification.
- Lines 633 - 635: Are there studies in the literature showing that urban areas are more influenced by dust compared with regional sites? Please provide the supporting statements with citations.

Technical Comments:

- Line 106: The word “specie” seems to be a typographical error of “species”.
- Line 206: The sentence seems to mean that the species were quantified by high-performance liquid chromatography (HPLC) but contains some typographical errors.
- Line 721: Does “PMF” stand for “Positive Matrix Factorization”? Please use the full form before using the acronym by itself.