The paper reports on seasonal variations of aerosol size distributions and UFP fraction in a street canyon and how changes in particle growth are related to different types of organic aerosols and VOCs (as determined by source apportionment), other gaseous and aerosol-phase tracers and meteorological conditions. Given the interest in understanding sources of UFP, the paper fits the scope of the journal. The analysis and presentations are pretty clear though some streamlining of the discussions would make the paper more concise and easier to read. The major comment I have is about the interpretation of the aerosol composition data in relation to the periods of growth observed in the size distributions given the very different size range of the HR-AMS. More on this concern is listed below. There are also other questions/comments that need to be addressed before accepting the paper for publication.

L53: consider changing “vehicle emissions” to “combustion sources”

L62: please add a reference

L102-105: consider rephrasing this sentence. It’s long and the structure is not correct

L134: winter measurement period is rather short. How representative were meteorological conditions in the week of sampling compared to a few weeks before/after? In one of the plots, winter/spring are actually combined. That may be a better and more fair representation of the data.

L170: The indicated size range of the HR-AMS is for a standard lens. Since a PM2.5 lens was used here, the more accurate range for 50% transmission efficiency is 110-2100 nm (dva) (please see https://www.tandfonline.com/doi/suppl/10.1080/02786826.2025.2481221?scroll=top). This is a very important factor since the size range is much higher than the UFP mode that is the focus of this study. Was the pToF mode also used in the AMS acquisition? What is the mass fraction of the major AMS components as a function of size (at least during the growth periods that are highlighted in the paper)? Is it valid to extrapolate the composition in the >100 nm size range to those in the UFP range?

Figure 1: Axis label: consider changing UFP ratio to UFP fraction. Also, why is panel g more grainy- looking than panel c? There are also lines of constant concentration appearing in panel g, for example at ~20 nm or ~30 nm. Why is that so?

L220-222: incomplete sentence

L221 and 233: Please use the notation for D_p vs Dp consistently

L296: LV-OOA was mentioned before without spelling of the acronym

Figure 4: I have a few questions about the tracers shown here. Why is the traffic factor peaking so late in the night (the major peak around the 2nd shaded grey area) and not really during morning or evening rush hour? What is the axis for BLH? What are the contours in the size distribution image plot?

Figure 5: The text mentioned growth is accompanied by an increase in concentration of aged BBOA, but actually the black trace in panel b is rather flat or decreasing during these growth events. Please explain.

Figure 7: It would be useful to show the altitude of the 72-hour trajectories (maybe just the average of the clusters) in SI.

Figure 9: Is formaldehyde absolutely zero at night? It does not appear in the plot.

Figure 8-10: Some of the discussion points are very similar and parallel to each other. I suggest eliminating the repeating text and referring to similar behavior across different seasons at the same time, followed by highlights of the differences. Also, when UFP number concentration doesn't decrease, it could also indicate formation of new particles (which cannot be strictly commented on due to the lowest size range of the SMPS) or at least growth of the newly formed particles into the size range of the SMPS. I think these two possibilities should be mentioned as the reason why coagulation alone doesn't lead to drop in UFP.

L544: There could still be environments (industrial or remote) where daytime NPF driven by photochemistry drives UFP concentrations. So should this sentence be rephrased to state that at European urban environments, UFP concentration is controlled by BL dynamics and primary emissions?

L586: I think the authors should be careful for commenting on presence/absence of classical NPF since the SMPS size range is not low enough to really detect NPF.