Comment on acp-2021-725

Anonymous Referee #2

Referee comment on "Development and application of a street-level meteorology and pollutant tracking system (S-TRACK)" by Huan Zhang et al., Atmos. Chem. Phys. Discuss., https://doi.org/10.5194/acp-2021-725-RC2, 2021

The authors presented an interesting work that integrates the Weather Forecasting Model (WRF), Computational Fluid Dynamics (CFD) and Flexible Particle (FLEXPART) to study local circulations at a neighbourhood scale and the potential contribution of one street as a source of air pollution. The authors analyzed local wind circulation under different regional wind regimes. The methods used by the authors are robust and the meteorology simulated shows good agreement as shown in figure 4. However, conclusions, as stated in lines 338-339, authors say: "In general, the S-TRACK system is effective in simulating meteorological and air pollution problems" has no strong basis. This is because the is no real emissions and only one street was evaluated. Specifically:

1) in the abstract, the authors state: "The results of the study are helpful to understand the characteristics of wind environment and effect of traffic emissions in the area...", however, there are no traffic emissions in the study.

2) The authors presented the potential impacts of only one street. however, we do not know anything about that street, type of traffic, the diurnal cycle of traffic by type of vehicle and as shown in Figures 3a, there are many streets surrounding the area. For instance, Figure 7b shows that the street might be important for site S2, but this site is closer to a perpendicular street (east), as shown in figure 3a. In a summary, despite that the results are interesting, more work is needed to provide the basis for the conclusions.

3) Figure 1 shows that the results are interpolated but the authors do not show the methods and reasons for this interpolation.

minor issues:

The authors simulated between December 30 2018 and January 31, 2021. Why this period?

Line 69: add space before Fast and remove space in "(2006"

Lines 84-88. Only one phrase for a 5 lines paragraph. Each paragraph must be formed by at least three phrases, introduction, body and conclusion.

Line 124: Why do you need drone aerial photography? I think it is very good, but I'm surprised that you are not trying other sources.

Lines 162-164: "This... FLEXPART", this phrase is redundant.

Lines 172: What was the number of particles released?

Lines 197-198: Simulating well the PBL is important to the dispersion of pollutants. How are the results? The authors can include more results in the supplementary material.

Lines 219: This line seems incomplete.

Section 3.2.1. There are many parts where English needs to be improved with a more technical language. For instance line 232 authors say: "The wind is larger", maybe more intense is more appropriate. Lines 234-237 needs edit/improvement.

Line 240: change climb or fall subsidence or other.

Line 244: Change pile up for other.

Line 261: Line seems repeated.

Figure 5 showing streamlines and divergence. Consider merging streamlines with shaded values for divergence. In that way, it would be easier to see diffluence.