Atmospheric Chemistry and Physics Discussions

Atmos. Chem. Phys. Discuss., referee comment RC2
https://doi.org/10.5194/acp-2022-180-RC2, 2022

Comment on acp-2022-180

Anonymous Referee #2

Referee comment on "Retrieving CH_4-emission rates from coal mine ventilation shafts using UAV-based AirCore observations and the genetic algorithm–interior point penalty function (GA-IPPF) model" by Tianqi Shi et al., Atmos. Chem. Phys. Discuss., https://doi.org/10.5194/acp-2022-180-RC2, 2022

General Comments: The manuscript presents an interesting study of CH_4 emissions from coal mines, but it is not well written in parts and many small sections need to be corrected / clarified (see attached PDF). For example, it is not clear what is meant by effective emission height and why it is different between the 2 flights when the emission point source (the stack) remains at the same height. There is very little discussion of the wider applicability of the technique. The abstract implies that it can be used to calculate emissions from coal mines, but the results section seems to suggest that it works only for single point sources, such as a vent or shaft, and that there would be big error bars on q if the emission was not from a point source. This needs to be clarified in the discussion. There should be some recommendation as to how many flights would be required to minimise the errors on the model results.

Please also note the supplement to this comment:
https://acp.copernicus.org/preprints/acp-2022-180/acp-2022-180-RC2-supplement.pdf