General comments

This paper is reporting a comparison of the measurement techniques, flux gradient and eddy covariance, in measuring NH_3 deposition fluxes. The benefits of this study would be great for the gas measurement community, especially for the peoples who are interested in NH_3 emissions and deposition because the nature of NH_3 "sticky" character and having practical friendly large-scale field equipment make the filed measurements difficult. However, there are some drawbacks in the current stage of the manuscript, I recommend authors to address the issues before considering to be published in this journal.

In the abstract, I would expect to see some clear messages including the measured NH_3 deposition fluxes measured by both techniques and the difference in the NH_3 deposition fluxes between these two techniques, especially during the periods when winds came from no-objects direction (green sector). Secondly, in the methods and materials section, there is lack of information on the soil physical and chemical properties along the footprint or the transects from 100-200 m away to the tower, particularly within the green wind sector. The soil properties, including N and C contents, moisture contents, pH, soil texture, and grass types, crop age etc, could help us better understand the upwind footprint areas and how they could contribute to the measurements in this study. Thirdly, in the results and discussion sections, authors spent a length to discuss the footprint. My main concern is that the two techniques have different footprints due to the height of the sensors, and different footprint area could contribute to the different NH_3 emissions and deposition (due to the land use and farm management practices). EC is often used at a larger area and but can't be deployed at many filed studies due to the limited size of the paddocks, which requires a difficult "footprint" analysis. I suspect there is lack of an accurate footprint modelling to correct EC measurements in this study. see some studies from Coates et al., 2018, 2021.
Coates, T. W., Benvenutti, M. A., Flesch, T. K., Charmley, E., McGinn, S. M., and Chen, D.: Applicability of Eddy Covariance to Estimate Methane Emissions from Grazing Cattle, J Environ Qual., 47, 54-61, 10.2134/jeq2017.02.0084, 2018.

Reviewer suggests that there is a need of adding a footprint analysis of AGM measurements as well. In addition to the factor of u*, we may also want to look at the correlation between AGM footprint and stability length L, which also can tell us the footprint variations during night-time stable and day-time unstable conditions. Further information on different paddocks soil properties and the history of farm management in the last couple of weeks (grazing, fertiliser application, irrigation, ploughing etc) are needed. Majority of N losses as NH_3 occurred at the first 2-3 weeks following N fertiliser application to the soils.

Specific comments

1, be aware of self-citation. There are too many times using two references Wang et al., 2021, 2022. I'm sure there are many other studies in this area.

2, the manuscript is long. Please remove some repeated parts and shorten unnecessary contents, for example, line 134 to 137.

3, add a detail map of experimental site including the surrounding terrains (200 m radius) and indicates equipment locations, heights, and the dimension of each paddock.

Line 37. What does “right circumstance” mean here.

Figure 2. perhaps need number each instrument.

Line 212. please explain why the path-length was set at 22.1 m (between miniDOAS and retro-reflector). Was it recommended by the manufactory? Is there any specific reason that the distance between two miniDOSA paths (upper and lower path) was 1.53 m? would the measurements be better if the distance between the two paths is larger, such as 2.5 m?

Line 290 please provide the details of the functions for stable and unstable conditions.

Line 307. It seems to me that the signal to noise ratio corresponds to the detection limit of NH_3 flux. What caused the signal to noise ratio higher in the study by Wang et al., 2022?

Line 311. was there any drifting of the release rate during the measurement period? if yes, what was it?

Line 321-322. It is a concern that weather the HT8700 sensor can be used in a wet season as more NH_3 deposition will be expected in wet season than dry season.

Line 372. Provide the value for A, B, and C parameters. Are these values the same as that reported in Wang et al., 2021? Would these values be consistent or variable at different environmental conditions?

Line 379. More details about the stationarity and integral turbulence tests used in this study are needed.

Figure 8. Many studies have shown that NH3 emissions positively correlated with ambient temperature, higher emissions in the middle of the day (higher ambient temperature) than that at night-time, however from the figure 8, both miniDOAS bottom and miniDOAStop show the opposite pattern, higher concentrations at low ambient temperature and lower ones at higher temperature. Why? Perhaps add one or two sentences to mention that at night-time with low wind conditions, the concentrations can be build up and higher concentrations at night-time than day-time were observed. Suggest adding wind speed (or u*) in the figure.

Line 524. I don't agree, as the better agreement was between 21-24 Sep, while much higher AGM before 18 Sep. Again, suggest comparing the concurrent fluxes from both techniques. Furthermore, should consider using the footprint model to correct the EC fluxes.

Line 531. Is it necessary to calculate the cumulative flux on this particulate day when the winds were from the SE, large disturbance from the objects?

Figure 11. 1) why is this typical NH3 diurnal pattern different from the NH3 concentration plotted in Figure 8?
2) From Figure 9, the top panel shows most of time EC measurements were higher than AGM, but in lower panel it shows some time AGM higher than EC, other time EC higher than AGM, and some time they agreed well. However, in Figure 11, obviously AGM (in blue) is higher than EC (in red). Why?
It is import for science aspect, it is worth to split the results, to identify in which conditions EC higher than the red and when AGM higher than EC.
3) please indicate if the same numbers listed on the top present for both technique measurements? If not, please add different numbers.
4) there is lack of explanation on the diurnal pattern. There is a "jump" in the deposition flux in the morning at 5 am, was it really happening or just due to the noise? There are not many available data at night for deposition flux datasets (both only 2 at 5 am and 22 pm).

Line 595. I would like to see how the footprint are associated with the surface roughness z0 and stability length L (stable and unstable conditions).

Line 660 please indicate it in the Figure 1.

Line 802. Please provide a footprint analysis for AGM, the EC measurement should be corrected with a footprint modelling.

Technical comments
Line 410. Remove "respectively"
Line 413. Add a comma, to be 5%, 5%, and 1%, respectively.