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Comment on egusphere-2022-33

Anonymous Referee #3

Referee comment on "The realization of autonomous, aircraft-based, real-time aerosol mass spectrometry in the upper troposphere and lower stratosphere" by Antonis Dragoneas et al., EGUsphere, https://doi.org/10.5194/egusphere-2022-33-RC3, 2022

The paper "The realization of autonomous, aircraft-based, real-time aerosol mass spectrometry in the upper troposphere and lower stratosphere" by Dragoneas et al. reports on a newly-developed aerosol mass spectrometer for high-altitude platforms. The paper is well-written and comprehensive and certainly merits publication. Some comments and suggestions are included below.

- Calculated particle transmission efficiency is shown in Figure 3, but were there any laboratory tests of transmission efficiency performed? It would be difficult to test the aircraft inlet without a wind tunnel, but what about the instrument inlet? It might have been published elsewhere, but it is important enough to merit description here as well.
- Similarly, it is stated that 60 nm is considered to be the limit of detection for ERICA-LAMS, and it would be good to see some data from the optical transmission tests that were used to arrive at this number.
- The manuscript covers a lot of ground on best practices of ERICA deployment on aircraft, but it would be useful to also describe the calibration protocols and frequency during these aircraft campaigns.
- For Figure 8, the distribution of particle sizes sampled, it would be particularly useful to know the inlet and optical system transmission curves to assess how representative of the actual aerosol population this size distribution is.
- What other instruments were co-deployed with ERICA during the two field campaigns described? It would be very useful to see an intercomparison with a co-located size distribution measurement, such as a UHSAS, to quantify any sampling biases and losses.