

Atmos. Meas. Tech. Discuss., referee comment RC2
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Comment on amt-2022-6

Anonymous Referee #2

Referee comment on "Air pollution monitoring: development of ammonia (NH₃) dynamic reference gas mixtures at nanomoles per mole levels to improve the lack of traceability of measurements" by Tatiana Macé et al., Atmos. Meas. Tech. Discuss.,
<https://doi.org/10.5194/amt-2022-6-RC2>, 2022

General comments:

This manuscript developed ammonia dynamic reference gas mixtures at nmol/mol levels in the lab. I agree with the authors that such a reference gas could improve the QA/QC in ammonia measurements, which is highly needed in field investigations. The data and techniques used in this study are well described, referenced and easy to follow. The conclusions are consistent with the stated objectives. This study represents an original and interesting contribution to the determination of ammonia behavior in the air. My recommendation is to go through some minor revisions before accepting for publication.

Major concerns:

This study did not indicate the reasons to select the measurement range of 1-400 nmol/mol in this study (e.g., Line 454). The readers may wonder if it is representative of ambient ammonia concentrations worldwide, and thus the reference gas mixtures can be widely used.

Line 83: Could you please change the unit of nmol/mol in the whole text to ppb or ug/m³, which are more common in literature reporting ammonia concentrations?

Why Picarro G2103 analyzer was selected as a reference in this study (e.g., Line 360)?

It will be more interesting to give an example by applying this dynamic reference gas in the real course of ammonia measurements (e.g., show the time series in the field measurements by overlapping the calibration process on the ambient ammonia concentrations, based on figure 6).

Technical corrections:

Lines 26-29: Some words or logic here looks not scientific sound, e.g., "raised great interest", "requests shows the interest" and "to guarantee".

Line 45: Some recent nitrogen isotopic study also suggested nonagricultural emissions of ammonia in urban regions, e.g., <https://pubs.acs.org/doi/10.1021/acs.est.1c05884>. Such findings signify the requirements in observing ammonia to reduce air pollution.

Line 127: Be consistent in the text and change sulfur dioxide, nitrogen dioxide to SO₂, NO_x.

Lines 508-509: The last sentence in the conclusion is not scientific sound.

