

***Interactive comment on* “Changes in biomass burning, wetland extent, or agriculture drive atmospheric NH₃ trends in several African regions” by Jonathan E. Hickman et al.**

Anonymous Referee #2

Received and published: 24 December 2020

While long-term surface measurements of ammonia in Africa within the framework of the IDAF have been conducted for years, the spatial and temporal pattern of ammonia in Africa remains unclear due to the limitations of surface measurements. This manuscript investigated ammonia variations in Africa between 2008 and 2017 by using satellite IASI dataset. Compared with AIRS observations, this study shows more detailed spatial variations with reasonable explanations, e.g., biomass burning and receded wetland rather than agriculture.

Overall, this manuscript is well written and easy to follow. It will be better if additional field evidences provided, e.g., ammonia isotopic nitrogen tracing for biomass burning

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and ammonia field flux measurements on wetland. Other suggestions or comments are listed below.

Line 133, The FTIR observations are limited to few sites. Do we have additional observations to validate the IASI dataset across Africa, e.g., passive samplers available at the surfaces?

Line 178, please detail what improvements have been made.

Line 179, add reference for the previously published dataset.

Line 192, how about other years?

Line 230, Some field observations found high ammonia emission at the beginning or during rainfall, likely due to intensive activities of microorganisms. Is this possible in West Africa?

Line 321, annual average?

Line 349, Can soil/mud itself emit ammonia during the period of drying?

Line 393, According to Figure S5, the ammonia concentrations show a declining trend rather than increasing?

Line 429, Is it possible to convert the unit of nutrients to N here?

Interactive comment on Atmos. Chem. Phys. Discuss., <https://doi.org/10.5194/acp-2020-945>, 2020.

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