January 5, 2021.

I wish to compliment and thank the authors for a thoughtful and succinct analysis of 'State of Science' of Atmospheric Chemistry. The manuscript was a delight to read and captures most of the important developments in the field.

However, in my judgement the manuscript misses on discussing Agricultural Air Quality and its impact on the atmospheric environment. Agricultural emissions (from both crop and animal production) play an important role in several atmospherically mediated processes of environmental and public health concerns. These atmospheric reactions/processes affect local and regional environmental quality, including odor, particulate matter (PM) exposure, eutrophication, acidification, exposure to toxics, climate, and pathogens. Agricultural emissions also contribute to the global problems caused by greenhouse (nitrous oxide and methane) gas emissions. Agriculture is the largest contributor of both ammonia and nitrous oxide burden in the atmosphere. Moreover, a number of nitrogen-, sulphur- and carbon-containing compounds, including ammonia, nitrogen oxides, hydrogen sulphide, volatile organic compounds, and hazardous air pollutants are emitted through agricultural operations. Ammonia, in particular, plays a role in a host of environmental problems (e.g., air quality, odor, climate change, soil acidification, eutrophication, biodiversity), often through interactions (i.e. atmospheric chemistry) with other compounds in the atmosphere. The manuscript misses out on the opportunity to highlight the emerging role of ammonia and other agricultural emissions in the atmosphere.

I hope the authors will find these comments useful as they revise the manuscript.

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