Atmospheric Chemistry and Physics Discussions

Atmos. Chem. Phys. Discuss., referee comment RC2
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Review of the manuscript "Potential environmental impact of bromoform from Aspargopsis farming in Australia" by Jia et al., ACPD, 2021.

Rafael Pedro Fernandez (Referee)

Referee comment on "Potential environmental impact of bromoform from *Asparagopsis* farming in Australia" by Yue Jia et al., Atmos. Chem. Phys. Discuss., https://doi.org/10.5194/acp-2021-800-RC2, 2022

The paper presents modeling experiment to evaluate how one of the proposed feeding management alternatives to reduce CH4 emissions from ruminant livestock (i.e., Aspargopsis farming) could impact on the stratospheric ozone layer due to the by-product formation of bromoform (CHBr3). This species is a very short-lived species (VSLS) with a mean lifetime of 17 days in the atmosphere, and consequently, the CHBr3 impact on stratospheric ozone depends on the superposition of source strength and location with the efficiency of convective transport. The paper propose a multiple set of realistic local and global scenarios, as well as the occurrence of some improbable extreme episodes affecting the Australian coast, to evaluate a representative range of the overall ozone depletion potential (ODP) of bromoform emissions from oceanic and terrestrial cultivation approaches, and compare them with the impact of coastal natural bromoform emissions. The work is very well-planed and provides a realistic and clear evaluation of the magnitude of one of the environmental consequences of promoting Aspargopsis production in Australia, and determine that even in the worse possible scenario, the negative impact of the additional farming-released bromoform are very small in comparison with the natural contribution from the ocean. The methodology and results are generally well presented, although some clarification is required as described below. I suggest the paper is accepted for publication after the issues/comments in the attached file have been solved.

Please also note the supplement to this comment:
https://acp.copernicus.org/preprints/acp-2021-800/acp-2021-800-RC2-supplement.pdf