Atmospheric Chemistry and Physics Discussions

Atmos. Chem. Phys. Discuss., referee comment RC1
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Comment on acp-2021-800

Paul J. Fraser (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-RC1, 2022

Technical comments attached: Jia et al....

This is an important paper. CHBr3 is a potent ODS and is produced in substantial quanties in the production of seaweed supplements to the diets of ruminants to suppress their CH4 production. If adopted widely, this technologhy could substantially reduce ruminant CH4 emissions which are a significant component of global CH4 emissions. The paper address the important concept for short-lived ODSs that the impact on the ozone layer is dependent on the location of the emissions. The paper demonstrated the production of the necessary supplements to feed the global ruminant levels does not significantly deplete stratospheric ozone - the technology is 'ozone safe'.

I have a technical issue with the assumed/calculated levels of CHBr3 resulting largely from coastal regions and natural seaweeds. I think the Zafra et al. data, which are a compendium of CHBr3 data from several laboratories, and are not intercalibrated (Zaffra et al. recognize this problem and have indicated it will be addressed in future studies) and potentially underestimate background levels of CHBr3 in coastal regions. This seems to be the case in Tasmania (one of the study regions) where measured bachground CHBr3 levels from the AGAGE program (not part of the Zaffra data, but arguable the best measured/calibrated CHBr3 data set available) seem to be up to a factor of 3 higher than the Zaffra et al. data. Is this important? - the authors need to address this.

The authors need to review information on CHBr3 atmospheric lifetime data and ozone impacts in the latest (2021) assessments of climate change (IPCC) and ozone depletion (UNEP)

Please also note the supplement to this comment:
https://acp.copernicus.org/preprints/acp-2021-800/acp-2021-800-RC1-supplement.pdf