

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.,
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Technical comments attached: Jia et al....

This is an important paper. CHBr₃ is a potent ODS and is produced in substantial quantities in the production of seaweed supplements to the diets of ruminants to suppress their CH₄ production. If adopted widely, this technology 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 Zaffra 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 background 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>