

Interactive comment on “Contrail cirrus radiative forcing for future air traffic” by Lisa Bock and Ulrike Burkhardt

Anonymous Referee #1

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General Comments

The article estimates the increase in contrail cirrus radiative forcing (RF) between 2006 and 2050, separating the contributions from the increase in air traffic and cruise altitude, reduction in soot emissions, and background meteorology differences linked to future climate change. The results report an RF increase by a factor of 3 with a relatively modest reduction (15%) from a 50% soot number emissions decrease, concluding that the increase in RF linked to traffic growth (factor of 4) cannot be counterbalanced by improvements in propulsion efficiency and soot emissions.

The manuscript addresses a relevant topic, providing guidance for attribution and mitigation options for the contribution of the aviation sector to climate change. The methodology is sound and based on a tested model and all the sections of the manuscript are

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clearly presented in a logical way. The manuscript definitely fulfil ACP's standards, and is unreservedly recommended for publication. Only very minor suggestions are made that I hope will improve the clarity and interpretation of the results.

Specific suggestions:

Pg 4 In 22: It would probably be useful to expand on the magnitude of the future flight altitude shift and add a reference. This will enable the reader to get a sense of the sensitivity of your model to such changes.

Pg 6 In 19: add a comma after the word “large”.

Pg 6 In 19: It would probably be useful to expand, in the sentence starting in In 19, if the reduction in ice crystal numbers in the tropics is accounted for in the parameterisation.

Pg 9 In 8: remove “of the”

Pg 9 In 16: add the period in “et al”

Interactive comment on Atmos. Chem. Phys. Discuss., <https://doi.org/10.5194/acp-2018-1294>, 2019.

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