

Interactive comment on “Radiative forcing from particle emissions by future supersonic aircraft” by G. Pitari et al.

Anonymous Referee #3

Received and published: 30 April 2008

Review of

Radiative forcing from particle emission by future supersonic aircraft

G. Pitari, D. Iachetti, E. Mancini, V. Montanaro, C. Marizy, O. Dessens, H. Rogers, J. Pyle, V. Grewe, A. Stenke, and O. A. Sovde

This version of the paper is considerably improved from the original version, with more description of scenarios making the paper much more solid. There are still a number of areas that require further scientific clarification, and some work on the English structure is needed. But overall the paper presents a valid contribution to the scientific assessment of aircraft emissions on the chemistry and radiative balance of the atmosphere. I expect the paper will be acceptable for publication after further revisions.

Specific Comments

Paragraph 1 of the Introduction states that the current subsonic fleet will be compared with a mixed fleet (subsonic and supersonic). The only subsonic fleet calculations presented are Scenario S4. Does S4 represent the current (2008) fleet or a projected subsonic fleet in 2025 or 2050? If it represents the current fleet, why does the paper not include a subsonic-only 2050 fleet? Section 3 mentions the years 2025 and 2050 for SCENIC scenarios, but says only 2050 scenarios will be used for this paper. Some comparison between the 2050 S4 scenario and current aircraft usage would be desirable.

Section 3, 1st paragraph: It's not clear what is meant by "An important underlying assumption ...which imply a constant number of 250 transported commercial passengers for each of them." Is 250 the number of passengers per route, per day, per plane?

Section 4: Did anthropogenic flux of sulfur change every year of the 2036-2055 simulation? What is the anthropogenic flux in 2050?

Section 4.3 and Figure 5: To what extent does the emitted soot interact with sulfate aerosol in the stratosphere? What fraction becomes covered with sulfate? What heterogeneous reactions on soot particles are included in the models? In the discussion of Figure 3, does ultrafine refer to the freshly-nucleated particles of 0.4 nm or the peak at 5 nm from direct particle emissions?

End of Section 5.1 and Figure 7, where the radiative forcing from all models are discussed, indicates that the DLR RF code has been used. How does this scheme differ from the ULAQ scheme used in all the other RF calculations shown? Figure 7 need a label on the vertical axis.

Technical Corrections

page 5093, para 2: Change "into" to "in" - "Most of the additional radiative forcing due to HSCTs results from accumulated water vapor in the stratosphere..."

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper



page 5094, 3rd line, remove comma in "models, which are included..."

Section 2 title should be "Model Descriptions", not "Models description"

Section 2.4 - There should be a reference to the "Fast-J2 method"

Section 3, 1st paragraph: Change "orientations" in "Some of these supersonic characteristics could be modified in response to pressures linked to air traffic demand, ..."

Section 3, 2nd paragraph: Change "on" to "for" in "P5 scenario... for which the range has been increased in response to traffic demand for longer distances"

Section 3, 2nd paragraph: Change "consideration" to "considerations" in "P6 scenario ...for environmental considerations."

Section 3, 2nd paragraph: Add "the" to "ie. the utilisation of a Mach 1.6 configuration ...so that the geographical emissions distributon is completely different."

Section 4, line 3: add "the" to "The SCENIC emission data were interpolated onto the ULAQ-CTM grid..."

Interactive comment on Atmos. Chem. Phys. Discuss., 8, 5091, 2008.

[Full Screen / Esc](#)[Printer-friendly Version](#)[Interactive Discussion](#)[Discussion Paper](#)