

26 January 2026
To
The Editor-in-Chief
Atmospheric Chemistry and Physics (ACP)

Subject: Resubmission of revised manuscript: egusphere-2025-4740, “A modified stratiform cloud microphysics parameterization: evaluation using the Community Atmosphere Model version 6 single-column model”

Dear Madam/Sir,

We are pleased to resubmit our revised manuscript entitled “*A modified stratiform cloud microphysics parameterization: evaluation using the Community Atmosphere Model version 6 single-column model*” (Manuscript ID: **egusphere-2025-4740**) for reconsideration in *Atmospheric Chemistry and Physics*. We sincerely thank you and the reviewers for the time, effort, and constructive comments provided during the review process. The reviewers’ insights have been invaluable and have significantly helped us improve the scientific clarity, technical rigor, and overall presentation of the manuscript.

In response to the reviewers’ comments, we have carried out a thorough revision of the manuscript. The major improvements and modifications include, but are not limited to, the following:

1. Clarification and expansion of the treatment of aerosols, including detailed descriptions of aerosol sources, modal structure, and their relationship to the CAM6 aerosol framework, with explicit discussion of biological, non-biological, and biomass-burning contributions.
2. Improved documentation of the stratiform and convective microphysics coupling, clearly distinguishing modifications to microphysical processes from the unchanged dynamical and closure assumptions of the convection scheme.
3. Additional discussion explaining the physical dominance of homogeneous freezing relative to secondary ice production (SIP) for the simulated MC3E case, thereby clarifying the sensitivity experiment outcomes.
4. Inclusion of quantitative metrics for evaluation of biases to complement the qualitative comparison with aircraft, satellite, and ground-based observations.
5. Improved clarity and consistency throughout the manuscript, including corrected citations, unified terminology (e.g., LS24), clearer definitions of the mixed-phase region, and resolution of typographical and figure-related issues.
6. Revised title.

A detailed, point-by-point response to all reviewer comments has been prepared and is submitted alongside the revised manuscript. We believe that the revisions have substantially strengthened the manuscript and improved its suitability for publication in *Atmospheric Chemistry and Physics*. The study provides a physically consistent and observationally evaluated advancement in the representation of stratiform cloud microphysics, with clear relevance to the ACP readership interested in cloud–aerosol interactions and climate-model development.

We confirm that this manuscript is original, has not been published previously, and is not under consideration for publication elsewhere.

The resubmission includes the following files:

- A detailed, point-by-point response to the reviewers’ comments.
- A marked-up version of the revised manuscript highlighting changes (colored in blue).
- A clean version of the revised manuscript incorporating all revisions.

We sincerely appreciate your consideration of our revised submission. We look forward to your response and would be happy to address any further comments or suggestions.

Sincerely,
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