

Authors' Response to the Editor of

Volcanic Aerosol Modification of the Stratospheric Circulation in E3SMv2 Part II: Brewer–Dobson Circulation

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EC: *Editor Comment*, AR: Author Response, □ Manuscript Text

1. Author Comments

We thank the editor for their minor revision suggestion, and for pointing us to more insightful works in the literature. We especially thank them for the nomination of our paper for a highlight article. We have responded to the editor's comments below, in order of the simplest to most involved responses. Each comment appears as a editor comment (EC) followed by an author response (AR). Closed boxes show text from the manuscript. Red text with strikethrough represents deleted text, and blue text with wavy underlining represents new text.

2. Comment 1

EC: *"This circulation describes the transport of mass in the meridional plane, as the superposition of an advective component which approximates the Lagrangian mass flow, and an eddy-driven component, which approximates the effects of Stokes drift, wave transience and dissipation."*

I think that the statement is even more confusing this way and suggest rephrasing similarly to:

"This circulation approximates the mean Lagrangian transport of mass in the meridional plane as a superposition of the Eulerian mean circulation and an eddy-driven component accounting for the Stokes drift induced by the wave field."

As for the wave transience and dissipation - I suggest not to mention them here, because it is these two factors that make the relationship between the Lagrangian mean and residual mean circulation complicated.

AR: The text has been edited as:

This circulation ~~describes the net~~ approximates the mean Lagrangian transport of mass in the meridional plane ~~, as the superposition of an advective component which approximates the Lagrangian mass flow, as a superposition of the Eulerian mean circulation~~ and an eddy-driven component ~~which approximates the effects of Stokes drift, wave transience and dissipation~~ accounting for the Stokes drift induced by the wave field...

3. Comment 2

EC: *Some sections are unnamed and misplaced. Please pay attention to the manuscript composition:*
<https://www.atmospheric-chemistry-and-physics.net/submission.html#manuscriptcomposition>

AR: We searched through the manuscript, and could find no section titling errors in the main body of the paper. We did, however, find that the section titles for Code and Data Availability, Author Contributions, Competing Interests, and the Acknowledgments were not rendering properly. We repaired that by changing our TeX Live version from 2025 to 2023. Thus, our draft PDF is updated, but there were no changes to our main TeX file.