

Review of “Rapid saturation of cloud water adjustments to shipping emissions” by Manshausen et al. (egusphere-2023-813)

The authors have addressed my comments carefully, and I fully support the manuscript’s publication in Atmospheric Chemistry and Physics. Below, I state a few suggestions that the authors may want to consider.

Suggestions (all line numbers refer to the tracked changes document)

A recent paper by Diamond (2023) also addresses the impact of shipping fuel regulations on clouds. I suggest referencing this publication.

Ll. 7 – 9: Instead of writing about “increases”, I suggest writing about “anomalies”. I associate a “constant increase” with a constant $dLWP/dNd$ or $dLWP/dNa$, which are not independent of emissions, as they would result in an increase of LWP proportional to Nd or Na.

L. 21: Replace “they” with “these”, or remove “studies”.

L. 43: Define “IR” or replace with “infrared”.

L. 54: Change to “The mixing of the track with the surrounding air, [...]”.

Ll. 118 – 119, Fig. 6a: Any ideas why the Nd anomaly increases with free-tropospheric dryness? Could this be due to an enhanced suppression of precipitation by the evaporation of LWP via the entrainment of drier air?

L. 123: “controlling”, not “controllong”.

References

Diamond, M. S. (2023). Detection of large-scale cloud microphysical changes within a major shipping corridor after implementation of the International Maritime Organization 2020 fuel sulfur regulations. *Atmospheric Chemistry and Physics*, 23(14), 8259-8269.