

Review of “Modelling the deep convective transport of trace gases (CO, NH₃ and SO₂) from the planetary boundary layer to the Asian summer monsoon anticyclone” by J. Ma et al.

Overall Thoughts: The authors have addressed my primary concern in the original manuscript, which was to include comparisons between the model simulation and available observations. I believe the manuscript should be accepted for publication after considering the few points below.

Recommendation: Minor revision

Remaining comments:

- The inclusion of remote sensing observations to evaluate the performance of model convection and trace gases is very beneficial. I think the authors should add some additional road-mapping comments to clarify that despite that the observed and simulated trace gas distributions not being in agreement with each other, the analysis of simulated convective transport is still useful to present. There is a short mention of this in the final concluding paragraph, but otherwise it seems to me that the new Section 3.3 does not cause any updated tone in the surrounding sections.
- In Figure 3, I believe the NH₃ and SO₂ colorbars should be the same between observations and models for a fair comparison. I recognize however that this may not look great and could obscure some important details, so if the authors insist on keeping it as-is, I suggest adding some explicit mention in the caption and/or text that the colorbars are different to make sure the reader is not fooled.
- The Smith et al. (2025b) citation should be updated since it's now been published in 2026, see <https://doi.org/10.1029/2025GL118851>
- I suggest removing “T63L90” from the first sentence of the conclusions, this is specific jargon to EMAC and isn't digestible for a broader audience without scrolling back up. If there is something important to mention about the configuration (e.g., resolution), I suggest repeating it again here.