

Review of egusphere-2025-2839

We thank the authors for their elaborate, thoughtful responses to each of our many questions, and for their extensive updates to the manuscript. They have all significantly clarified our understanding. Given these clarifications, we now believe that the manuscript in its current form is suitable for publication in ACP.

We do wish to make two final notes we hope the authors consider when finalizing the text:

Mainly, having read the author's response to our concerns regarding the physical interpretation of i) how thermal merging happens and ii) what beta encapsulates, we agree with the authors that their framing is plausible. We are also satisfied with their response, which clarifies that they “don't have data showing exactly how the merging works”, and that they rather “explore the consequences” of conditions posed by the analytical and statistical merging models, and find these consequences fit observed data very well. However, we still find the paper's conclusions that lean on these points a bit strong compared to the evidence presented. Specifically, we are not convinced that the paper truly demonstrates that beta denotes the basin of attraction of a thermal through the circulation it generates. The simplicity of the proposed model could well be undercut by many mechanisms operating on real thermals (we make up these judgements from the answers to our detailed questions on the appendix).

Hence, we still wonder whether stating that “analytical calculations and statistical simulations *demonstrate* that the two exponentials result from object merging” best encapsulates the detailed and nuanced hypothesis presented. The work opens for many exciting follow-up studies of thermals that could ascertain whether this hypothesis holds, and this could be emphasised instead.

Finally, we wondered if, given the authors' new and helpful explanation of how p_1 and p_2 are hard to interpret (and one should rather use D_1/D_{tot} and D_2/D_{tot}), they would consider updating their figures 1-4 and tables 1-2 to present these numbers, rather than p_1 and p_2 . These were the figures that confused us on how to interpret p_1 and p_2 in the first place. (We realize this may be more work than what is worthwhile).