

Nat. Hazards Earth Syst. Sci. Discuss., author comment AC2
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Reply on RC3

Stuart R. Mead et al.

Author comment on "Quantifying location error to define uncertainty in volcanic mass flow hazard simulations" by Stuart R. Mead et al., Nat. Hazards Earth Syst. Sci. Discuss., <https://doi.org/10.5194/nhess-2021-49-AC2>, 2021

Thank you for your review of our manuscript and identification of some issues, we have addressed your comments as follows:

1. L038-041: The implication is that scaled, experimental models are (over)simplified and hence unsuitable as benchmarks, as opposed to real-world flows. I think the truth is somewhere inbetween: real-world flows (or more realistically their deposits) are often subject to erosion, slumping or alteration before being surveyed.

This may have been an (unintentional) implication of the text as written. We have modified the wording on these lines to reduce this inference by readers ("Experimental facilities and studies ... can provide detailed observations of mass flow processes to validate, develop and benchmark numerical models") and clarified 'real world' mass flows are useful for assessing model accuracy at a subsystem level (e.g. as suggested by Esposti Ongaro et al., 2020), rather than in place of experimental facilities.

2. Furthermore, given uncertainty over the initial state of the topography (cf. 10 m initial DEM), the uncertainty of deposit depth estimation may be as large or larger than the location errors cited in this study.

We have made some changes to text in places in response to other reviewers (see RC2) to clarify we are not comparing deposit depths in this assessment.

References

Esposti Ongaro, T., Cerminara, M., Charbonnier, S. J., Lube, G., & Valentine, G. A. (2020). A framework for validation and benchmarking of pyroclastic current models. *Bulletin of Volcanology*, 82, 1-17.