

Dear Olivier Talagrand,

we have considered the reviewers request of a comparison with the standard GIA investigation and conducted the respective experiments. The manuscript was updated with the results from those experiments and with the editorial changes suggested by the reviewer 4 and by you with one exception:

Your comment “L. 160, formula defining w'_i . The weights w_j are to be ranked in increasing order.” → In our approach, the order of the weights does not matter and we do not rank them in increasing order (cf. Fig. 2, the normalised weight w_j is the difference between the y -values of particles j and $j-1$).

Regarding your second remark about the appendix-equations: the perturbation pressure is not known but determined in a boundary value problem. The explaining paragraph in Martinec (2000) reads:

“In summary, the initial boundary value problem for the determination of the displacement field \mathbf{u} , the perturbed gravitational potential ϕ_1 and the perturbed pressure P_1 within the viscoelastic sphere B is governed by the partial differential equations (1) and (2) constrained by eqs (3)--(5), which are valid in B at time $t \geq 0$, by the interface conditions (6) and (7), which are applied at the internal interfaces Σ , and by the boundary conditions (8)--(11), which are applied at the external surface ∂B at time $t \geq 0^+$.” A citation of this text passage was added for clarification.

The “strange” equation B6 was due to a formatting error, it should be two separate equations. It was corrected but is not marked by the latexdiff script. Please have a look.

We thank you and the reviewers for their efforts and hope that the new manuscripts meets the standards and expectations and is ready for publication in NPG.

With kind regards

The authors

Dear reviewer,

thank you for clarifying your request regarding the comparison with a standard GIA investigation. We have conducted the requested experiments and added a subsection in the discussion (Sect. 6.7).

All your editorial suggestions have been considered and the manuscript was changed accordingly.

With kind regards

The authors