

***Interactive comment on* “Brief Communication: A nonlinear self-similar solution to barotropic flow over varying topography” by Ruy Ibanez et al.**

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There are a few items in the response to the referees that were not addressed fully:

Ref 1:

(1) define the kinetic energy and comment on the sign (Eq 1) (2) define the Jacobian operator (Eq 2) and reply to the ref concerning his/her question regarding the outcome, the RHS.

Ref 2:

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(1) Although p (and e) will not play a role in the vorticity equation, it would be useful to be explicit in what these are. (2) There are some "cultural" issues with regard to the symbols and the names used for the various terms. For example, while there is no universally accepted nomenclature-to-equation pairing regarding the shallow water wave equation, the form used in the mss is different from the one that is familiar to a rather large community of nonlinear (as well as dispersive) wave researchers. I would suggest omission of (SWE) nomenclature. Along those lines, the use of η for the similarity variable will clash with what the SWE community often uses for the displacement of the sea surface, away from the quiescent level. The use of the symbol is still ok, since there is a published history for this term in prior work, but perhaps the way to clarify this is to be more explicit about what h is.

A suggestion:

The referees speculate that the solution may be special, i.e. the result of specialized balances (and/or unstable). This in itself is not a reason to not publish the result, but one thing that might be useful is to present the full scaling that leads to (Eq 1). This would be very useful in assuring the readers how the Taylor series works out and what terms are included/omitted. Alternatively, the authors can present a better review/explanation of the starting equation in the Zabala Sanson and van Heijst paper. The former alternative is more work but will be appreciated by the reader (and the authors). The latter would be expedient but still very useful.

Interactive comment on Nonlin. Processes Geophys. Discuss., <https://doi.org/10.5194/npg-2017-66>, 2017.

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