

Interactive comment on “Insight into collision zone dynamics from topography: numerical modelling results and observations” by A. D. Bottrill et al.

S. Buiter (Editor)

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Dear authors,

The two reviews of your manuscript are overall positive and offer constructive suggestions for its revision. In addition to the comments of the reviewers, I have a few points which I would like you to address, but which should be relatively straightforward to include:

I suggest that you extend the description of your modelling method so that the manuscript would offer a level of detail that would allow the models to be reproduced. More specifically, could you include:

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- the flowlaws used for each materials, with references and a table of values (A , n , Q , V , grain size, wet/dry)
- the values of the thermal parameters (capacity, conductivity, expansivity)
- the densities
- the width + height and viscosity of the mantle weak zone. Is this zone coupled to the overriding plate, to the subducting plate, or free to deform?
- a description of the yield behaviour and values used
- the type of element (quadrilateral with linear velocity and constant pressure?)

The subducting Neo-tethys plate is assumed to be old with an estimated age of 200 Ma (page 893). The model ocean plate is 60 Ma and ca 67 Ma at collision. Could this age discrepancy be important?

Topography in the models is calculated from normal stress at the free-slip surface. Could you add a brief discussion of how this would compare to topography obtained from models with a true free surface?

Thank you for submitting your work to Solid Earth!
Susanne Buiter

Interactive comment on Solid Earth Discuss., 4, 889, 2012.