

## ***Interactive comment on “Kinematics of the South Atlantic rift” by C. Heine et al.***

**C. Heine et al.**

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We would like to thank the topical editor Douwe v. Hinsbergen for his comments and suggestions to improve the manuscript.

### **Technical parts**

Both reviewers and the editor commented on typos in the script, especially regarding capitalised words starting with “M”. These were introduced during the technical editing part, were fixed in one earlier version and re-introduced on the publisher’s side for the final discussion paper (“Ma\*” was replaced by the LaTeX command “\, Ma” globally).

All other typos in the manuscript were corrected and references were ordered.

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## Response to comments by the editor

1. *“Reviewer 1 for instance, noticed that you use 10 margin sections across 14000 km of margin, and wonders whether such small sample set is sufficient for the detailed conclusions you draw.”*

Please also see the reply to Reviewer 1. There is very limited data available publicly, outside of industry to better constrain the margin restoration. We have used nearly all currently available crustal scale geosections we could retrieve - previously published plate reconstructions for the South Atlantic have not used no margin restoration at all, so we consider this a major improvement. In addition, even in industry the crustal architecture of the conjugate South Atlantic margins is far from being resolved and agreed upon, so it is questionable whether many crustal scale cross sections would give a better “sample size” than a few relatively well constrained ones. It would certainly be beneficial to have access to a dataset such as that used by Dunbar and Sawyer (1987) for the Eastern US Margin. Unfortunately such data does not exist for the conjugate South Atlantic margins outside of industry.

2. *“ After data presentation, you give a discussion of progressive time steps of your reconstruction, starting old and going younger. Although this brings the interpreted opening history of the South Atlantic across clearly, it is insufficiently possible for the reader what interpretation steps you took to arrive at this history. Presumably, you built the reconstruction that the other way around, starting today and step-by-step and region- by-region working your way backward.”*

We have re-written parts of the methodology and are now providing a tabulated overview of the different amounts of deformation with the revised version of the paper. We think that we have laid out the individual components of the model and how they integrate in great detail in section 3.

3. *“it may increase the clarity if you show per major block or passive margin the current and restored configuration (if necessary in time-steps per region) before you go into a whole-ocean reconstruction.”*

We are now providing the data files with our publications so the interested reader can query the decisions made (and elaborated on in the text) along with a set of updated graphs and tables to illustrate the configurations.

4. *“Please place references in geochronological order;”*

The Solid Earth Guidelines ([http://www.solid-earth.net/submission/manuscript\\_preparation.html](http://www.solid-earth.net/submission/manuscript_preparation.html)) say: “In terms of short citations in the text, the ordering can be by relevance, as well as chronologically or alphabetically, depending on author’s preference”. We apologise, but sorting the references *geochronologically* turned out to be a bit of a problem instead we have sorted the references chronologically, from newest to oldest in accordance with the Solid Earth guidelines.

## References

Dunbar, J. A. and Sawyer, D. S.: Implications of continental crust extension for plate reconstruction: An example for the Gulf of Mexico, *Tectonics*, 6, 739–755, 1987.

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Interactive comment on Solid Earth Discuss., 5, 41, 2013.

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