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Towards a quantitative paleogeography calculator

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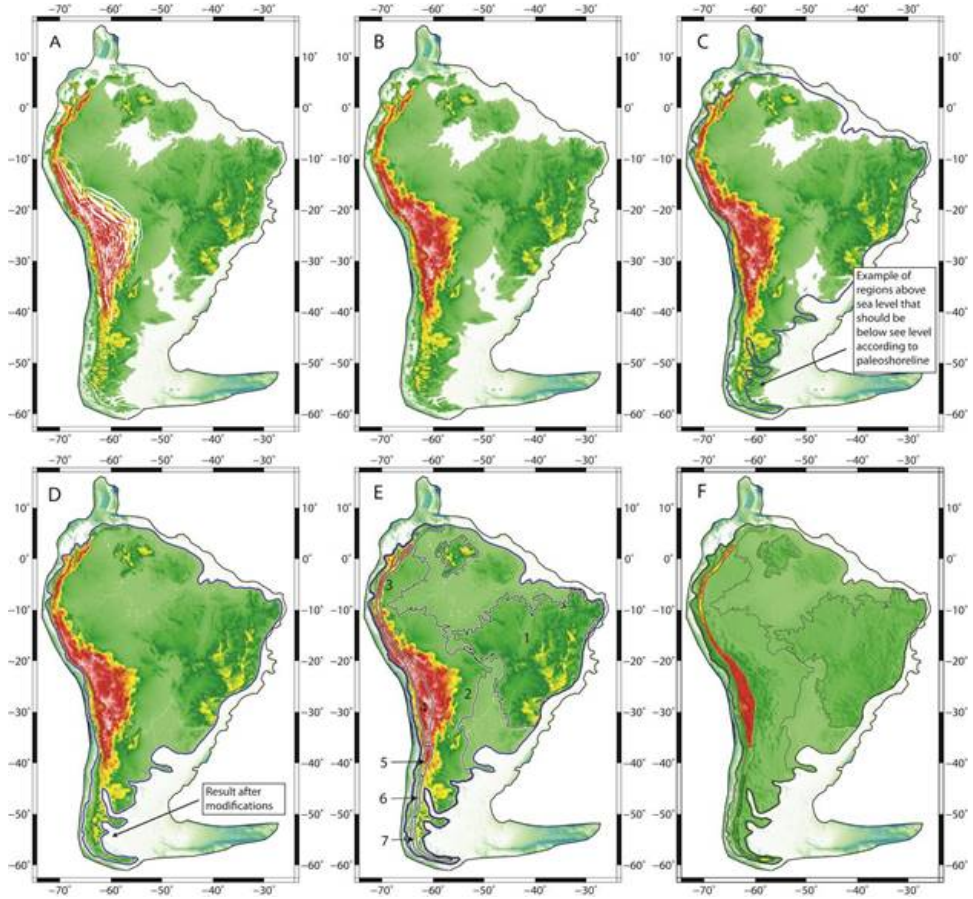
From plate tectonic to paleogeographic reconstructions

Reconstructions of past positions of continents and oceans have been available for decades. First attempts towards a global, quantitative approach or paleogeographic reconstructions, however, were made only in recent years.

The paleogeography calculator is a quantitative methodology to calculate paleo digital elevation models based on plate tectonic kinematic input parameters.

Current paleogeographic reconstructions

The currently available paleogeographic models are largely based on present day topography and require extensive manual adjustment for local modification that is subjective and precludes reproducibility. In this project, we attempt to overcome this subjectivity.

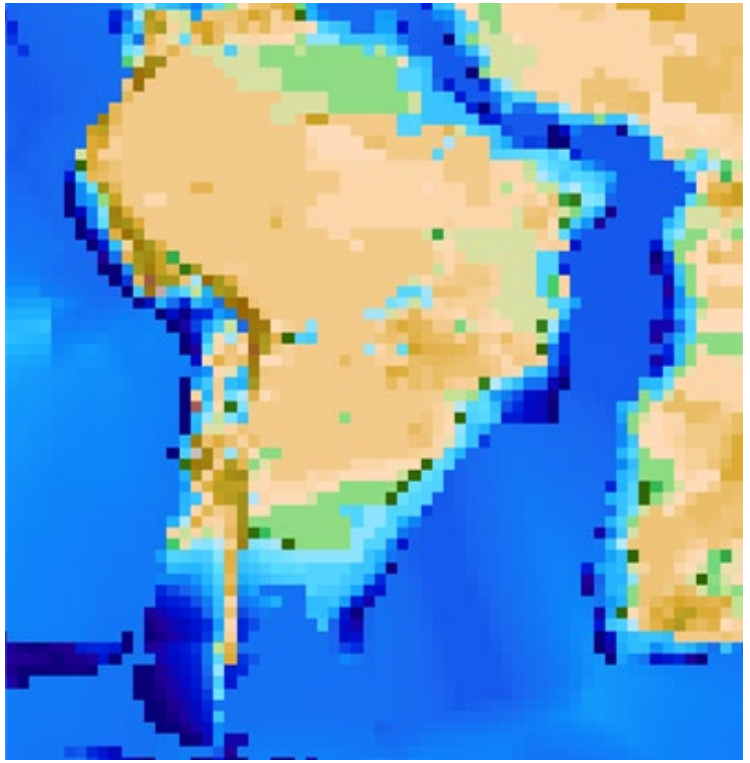


Example of manual production of paleogeographic map from tectonic reconstruction of current DEM, through several steps of manual modification (Poblete et al., in preparation).

Link to interactive maps with reconstructions at 20, 40, 60 Ma

The paleogeography calculator is...

- Flexible, it is easy to create one for new insights
- Objective and reproducible
- Independent of other data to prevent circle reasoning
- Able to produce paleoDEMs at any time slice



First result of calculated reconstruction of South America at 100 Ma.

Questionnaire

We want to know what you use paleoDEMs for and what you would like to see improved.
Would you help us and answer these two questions?

Link to questionnaire

or paste https://survey.uu.nl/jfe/form/SV_dgI0Kc4Nubp3W7P in your browser

See you at our EGU online session SSS8.10, which is scheduled for a live chat on Friday, 08 May 2020, 08:30-10:15.

References

Poblete, F., Dupont-Nivet, G., Licht, A., van Hinsbergen, D.J.J., Roperch, P., Mihalynuk, M.G., Johnston, S.T., Guillocheau, F., Baby, G., Fluteau, F., Robin, C., Baatsen, M., Global paleogeographic maps through the Greenhouse-Icehouse transition at 60, 40 and 20 Ma, in preparation