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Solid Earth
Discussions

Interactive comment on "Towards the application of Stokes flow equations to structural restoration simulations" *by* Melchior Schuh-Senlis et al.

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The article presents in a clear concise manner a new way of doing structural restoration using Stokes flow equations. The manuscript is well written and reads smoothly. The use of Stokes flow is clearly justified by the authors in the light of the geomechanical restoration problems (e.g., the non-physical constraint of flattening) but also when considering the difficulty of restoring structures with salt intrusions.

I like publications that are based on simple ideas (here, the *reverse time scheme* used by the authors): ***Everything should be made as simple as possible, but not simpler***. I think that the authors are paving the way for new ideas and developments in the domain of structural restoration, and we clearly see the potential for restoring more

and more complex models, not only in 2D but also in 3D.

Some questions, suggestions:

- Even if faults are not yet included in the modeling, I do not see potential problems as the authors already deal with salt intrusion (interface between the rocks and the salt body). A specific viscosity for the faults can be used for the modeling, which was stated by the authors. So my first question is why the authors did not present a (synthetic) model with at least one faults, as all the ingredients are already here (coding)?
- My second question (and suggestion) is related to rock properties, especially the poisson's ratio and the Young modulus. Is there a way to incorporate those properties in the process of restoration using Stoke flow equations? I think that this problem should be a little bit discuss by the authors as they can have an impact on the restoration process.
- Another suggestion is to provide information about the computation time of the models (or at least for some of them).

Overall, I would say it is an excellent manuscript.

Frantz

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