

The manuscript addresses an important topic in structural geology and geomechanics by exploring the influence of boundary conditions on the restoration process. The use of a reverse time Stokes-based method with negative time step advection is innovative and potentially offers a more realistic approach to modeling geological deformations. The comparison with a laboratory analogue experiment adds credibility to the study.

#### **Minor Comments:**

Page 1: Line 49,60 ,developped'; Line 63 , 'a priori'

Page 2 : Line 60 and 61, 96: number font

Page 4: Line4, number font

Page 3: 'where  $\nabla$  is the del operator,  $\sigma$  is the stress tensor,  $f$  is the 5 specific body force (usually the volumetric weight  $\rho g$ ),' needs directly follow equation (1).

Page 3: Line 40 'difference'

Page 2 and others pages : 'Schuh-Senlis et al.: Application of the creeping flow restoration'

#### **Major comments:**

Strengthen your innovations and differences with previous work.

**Methodological Clarity:** While the paper introduces the use of a reverse time Stokes-based method, providing more details or references about this method could help readers unfamiliar with it to better understand its implementation and advantages.

**Quantitative Comparison:** Including quantitative metrics or benchmarks to evaluate the performance of different boundary conditions could strengthen the conclusions and provide clearer insights into their relative effectiveness.

**Case Studies:** Incorporating additional case studies or examples, beyond the laboratory analogue experiment, could further demonstrate the applicability and robustness of the proposed approach.

**Discussion on Limitations:** A discussion section dedicated to the limitations of the proposed method and potential challenges in real-world applications would provide a balanced view and guide future research directions.

Proofread the manuscript for any grammatical or typographical errors.

#### **Overall comments:**

The manuscript presents a valuable contribution to the field by exploring the influence of boundary conditions on structural restoration. With some improvements in methodological clarity, quantitative analysis, and additional case studies, the paper has the potential to be a significant and impactful publication. I recommend considering the suggestions provided to enhance the quality and depth of the study.