Initial Title: The western Andes at ~20–22°S: A contribution to the quantification of crustal shortening and kinematics of deformation

Revised Title: A contribution to the quantification of crustal shortening and kinematics of deformation across the Western Andes (~20–22°S)
Author(s): Tania Habel et al.
MS No.: egusphere-2022-629
MS type: Research article

Second round of revision. Evaluation of the revised manuscript.

General comments:

Habel et al. addressed satisfactorily comments and remarks after the first round of revision. I have no more comments on the science presented in this manuscript (interpretations and discussions). The presentation of the modeling method (trishear) has been improved by adding necessary details (parameters explored, methods used to identify "preferred" models) accordingly. These information make the interpretation section more robust. Suggestions for semantic and visual improvements have been taken into account accordingly. The supplementary document follow editorial guidelines accordingly now. The English has been improved. Grammar mistakes that I was able to identify have been corrected. After this second round of revision, I recommend to accept the manuscript as it is.

Review criteria of the revised version:

1. *Does the paper address relevant scientific questions within the scope of SE?*

→ Yes. The understanding of the timing and the quantification of deformation in the Andean Western Cordillera is of a great interest for the geological community working in the Andes. Methods, results and discussion fit with the scope of Solid Earth journal.

2. *Does the paper present novel concepts, ideas, tools, or data?*

→ Yes, new ideas and data are presented in this manuscript.

3. *Are substantial conclusions reached?*

→ Yes. Results have been satisfactorily analyzed, discussed, and conceptualized. The conclusions are of importance for a better understanding of the building of the Central Andes.

4. *Are the scientific methods and assumptions valid and clearly outlined?*

→ Yes. In this revised version, improvements have been made to explain and to justify the methodology.

5. *Are the results sufficient to support the interpretations and conclusions?*

→ Yes. Results were satisfactorily exploited to support authors' statements. Limitations associated to the results are clearly discussed.

6. *Is the description of experiments and calculations sufficiently complete and precise to allow their reproduction by fellow scientists (traceability of results)?*

→ Yes. Improvements have been made to explain and to justify the methodology, especially regarding the modeling process.

7. *Do the authors give proper credit to related work and clearly indicate their own new/original contribution?*

→ Yes.

8. *Does the title clearly reflect the contents of the paper?*

→ The revised title reflects the content of the manuscript.

9. *Does the abstract provide a concise and complete summary?*

→ Yes, the abstract is complete.

10. *Is the overall presentation well-structured and clear?*

→ Yes, in this revised version, improvements have been made in the organization of the sections. The manuscript is clearly argued and articulated in a logical way. Arguments of the authors on manuscript organization are convincing in the context of this study.

11. *Is the language fluent and precise?*

→ The manuscript is easier to follow in comparison to the initial version. Improvements have been made accordingly.

12. *Are mathematical formulae, symbols, abbreviations, and units correctly defined and used?*

→ Yes.

13. *Should any parts of the paper (text, formulae, figures, tables) be clarified, reduced, combined, or eliminated?*

→ No more in this revised version. The manuscript is clear, issues pointed out have been taken into account and errors fixed accordingly.

14. *Are the number and quality of references appropriate?*

→ Yes.

15. *Is the amount and quality of supplementary material appropriate?*

→ Yes, in this revised version, the supplementary material has been clarified and fit now the editorial guidelines.

Benjamin Gérard