

Dear Editor,

Thank you for your constructive and positive feedback.

We have taken the comments and suggestions from the 3rd round review with great care, and made the following minor revisions to enhance the clarity, accuracy, and overall quality of our work:

The other seismic shot records are provided as supplementary material: the other seismic shots' P-wave record section (on a reduced time scale) corresponding to the different shotpoints (including ZB0, ZB2-7) and identified seismic phases are provided in the attached document.

Moving the sections "Code/data availability", "Author contributions", and "Competing interests" before references. (line 449-463)

Double check the grammar throughout the whole manuscript again. Some mirror corrections were done, including:

- **Line 17** We indicate that "BOC" is the abbreviation for "Beishan Orogenic Collage"for the first occurrence in Abstract section.
- **Line 20** Beishan Orogenic Collage->BOC
- **Line 73** yield->yields
- **Line 343** delete "the"
- **Line 360** add a new reference published recently about the Cezonoic crustal deformation of the Qilian Shan in the text, and list it in the references
- **Line 437-439** rephrased this part in the Conclusion section. Because the slip rate is not observed by us, we should not list it as our main conclusion.

Track Changes Document: We have prepared a track changes version of the manuscript, highlighting all the revisions made.

Revised Manuscript: The revised manuscript is attached for your review.

Sincerely,

Xiaosong