

General Comments

This is my second opportunity to review the manuscript titled "Distributed right-lateral strain at the northern boundary of the Quito-Latacunga microblock" by Harrichhausen et al. Overall, the authors have implemented many of the suggested revisions from the first round, and the introduction, in particular, is notably improved. However, several critical aspects concerning data interpretation and methodology still require closer attention before publication.

1. Slip Rate Calculations and Uncertainty: As you have chosen to retain the cosmogenic ages, it is crucial that the calculated slip rates accurately reflect these data. The current calculations appear arbitrary (e.g., assuming a 12 ka age). I strongly suggest recalculating the slip rates by properly propagating the uncertainties of your actual exposure ages and satellite interpretations. Please see my detailed line-by-line comments on this topic.

2. Over-interpretation of Slip Rates: Regarding the interaction with the Chiles-Cerro Negro Volcano complex, some interpretations are not grounded in the presented data. For example, suggesting geologic slip rates could exceed geodetic slip rates is a significant issue—especially since this claim is repeated in the abstract, discussion, and conclusions—when the data supports a lower slip rate (see my calculations below).

3. Basement Faults and Regional Context: Discrepancies still exist regarding the interpretation of basement faults. The argument for their inactivity remains insufficient. Furthermore, while references to the Romeral Fault System were added, they feel isolated rather than integrated into the regional discussion. The argument currently revolves around faults south of the Chiles-Cerro Negro complex, neglecting the northern portion, which could also be part of the Quito-Latacunga microblock (as correctly depicted in Figure 9).

4. Terminology (Slip Rate vs. Strain Rate): The term "strain rate" is frequently misused throughout the document when referring to "slip rate." Please ensure the correct terminology is used. For example, the caption of Figure 1 mentions "strain rates" from Jarrin et al. (2023), but the GPS vectors are reported in units of mm/yr, which denotes slip/velocity.

Line-by-Line Comments

Line 52: Do you mean the city of Ibarra?

Lines 459-461: For sample ANG-50, the weighted mean exposure age is 14.55 ± 0.65 ka (1σ), while sample ANG-51 is slightly older with a weighted mean of 15.20 ± 0.63 ka. If we assume a maximum displacement of 29 ± 8 m (taken from Figure 5), the mathematically propagated slip rate would be 1.99 ± 0.56 mm/yr (ANG-50) or 1.91 ± 0.53 mm/yr (ANG-51).

Note: These calculated slip rates are roughly half of the proposed 3 mm/yr. Utilizing this statistically driven value would actually better fit your interpretation that the Reservoir Fault accommodates ~66% of the total slip rate proposed by Jarrin et al. (2023). Furthermore, a value of ~2 mm/yr is closer to the rates of the Buesaco and Aranda faults, strengthening your interpretation that the deformation zone could extend toward the northwest. You may keep your minimum and maximum estimates, but I highly recommend sticking to this statistically derived slip rate for your core concluding interpretations.

Line 467: Typo: "...the total 3 mm/yr strain strain rate observed..."

Lines 500-502: Based on the uncertainty propagation mentioned above, the maximum slip rate on the Reservoir Fault is ~2 mm/yr. Without quantitative estimates for the slip rates on the other two structures, proposing that the combined slip rate is greater than 3 mm/yr is speculative and unsupported by the current data.

Lines 509-511: "Therefore, the faults in our study area could have greater earthquake rates and slip rates over the Holocene, resulting in part from volcanic inflation, than the geodetic block model predicts." This claim overstates the results and is not directly supported by your data. I suggest revising this section to rely strictly on your InSAR analysis rather than speculating on Holocene earthquake rates.

Lines 517-518: The text states the Reservoir Fault is more aligned with certain faults, but it is unclear which ones. Polylepis? July 25? The subsequent mention of "bedrock faults"

adds to the ambiguity. Please rewrite this and name the faults explicitly to avoid reader confusion.

Lines 520-52. I recommend removing or revising the interpretation that bedrock faults are inactive based on their absence in pre-existing geological maps. Older mapping efforts were generally not intended to identify neotectonic features or concealed active faults beneath recent deposits. Because of this limitation, the absence of these faults on older maps is not sufficient evidence to conclude they are inactive today.

Lines 526-528: Based on Figure 1, there is virtually no difference between the GPS vectors at the northern boundary of the QL block with respect to Pasto. Given this, how are you testing the hypothesis that local stress changes could be the reason behind the non-reactivation of bedrock faults?