To
Amy East
Editor
Journal of Geophysical Research - Earth Surface

Dear Associate Editor,

We thank you for overseeing the review of our manuscript and for your constructive feedback. We also appreciate the opportunity for being able to revise our work. For your convenience, we attach the revised manuscript with tracked changes. Below we summarize the changes we made in response to your comments. We believe that these amendments are within the scope of the minor revisions requested:

- **Landslide Inventory Limitations**:
    - We expanded the Discussion (5.2) regarding the possible limitations of our landslide inventory, considering especially the limiting influence of dense vegetation and cloud cover on landslide detection.
    - We added two representative examples of mapped landslides, including optical imagery from Google Earth, to provide some visual evidence.
    - We also included a brief discussion on the completeness and uncertainties associated with our landslide inventory. We now refer to a “sample” of landslides in the Methods, Results, and Discussion; the reviewers may concede that it is next to intractable to generate a “complete” landslide inventory for a study area of this size. Originally, we had also referred to “mapped” landslides to make this point clear.
- **Plain Language Summary**:
    - The Plain Language Summary is now incorporated into the revised manuscript.
- **Clarity Improvements**:
    - We refined the suggested line-specific statements:
        - Specifically, "some attraction" has been revised to **"exhibiting a tendency toward"** for improved clarity and tone.
        - "or inherits from" has been revised to **"or is inherited from"** for grammatical precision.
        - "stepness" has been corrected to **"steepness"** to fix the typographical error.
        - The word **"especially"** has been removed from LN 32-33 for conciseness.
        - The geographic location name has been corrected to **"Coast Ranges"** instead of "Coastal Ranges" in LN 59.
        - "eventually" has been moved to follow **"should"** in LN 77 for improved sentence flow.
        - LN 100-103 has been streamlined to: **"We aim to evaluate whether digital topographic data can effectively identify stages of landscape evolution and tectonic activity, and assess their influence on the spatial distribution of observed landslides."**
        - LN 124: All numbers have been updated to use commas instead of decimals for consistency.

        - LN 133: The phrase has been updated to remove "(ultra-)mafic" entirely for simplicity.
        - LN 149: A dash has been added between **"north"** and **"trending"** for grammatical correctness.
        - LN 186: The word **"entire"** has been removed for conciseness.
        - LN 258: The period after **"(2017)"** has been removed for proper formatting.
        - LN 409: The parentheses around **"(Montgomery et al., 2001)"** have been removed for improved readability.
        - LN 445: We clarified the motivation statement to resolve any possible contradiction. The text now reads: **"Although our findings reveal no clear spatial association between landslides and major knickpoints, this result underscores the complexity of landscape dynamics and highlights the need to explore additional controlling factors."**
    - Figure 6A has been clarified with fewer abbreviations, improved labeling, and better organization of the x-axis.

Thank you again for your feedback and for facilitating the review process.

Response to Reviewer 1

Dear Dr. Boulton,

We sincerely appreciate your positive assessment of our manuscript and your thoughtful comments. Below, we outline the revisions made in response to your feedback:

- **Use of Terminology**:
    - We have replaced the term “equilibrium” with “dynamic equilibrium” or “quasi-steady state” throughout the manuscript, where applicable, to reflect the transient nature of landscape evolution.
- **Minor Language Edits**:
    - The manuscript has been refined for clarity, including corrections to specific lines (e.g., LN 12, LN 18, LN 21, LN 32-33, LN 59, LN 77, LN 100-103, LN 124, LN 133, LN 149, LN 186, LN 258, LN 409, LN 445). Please refer to the replies to the Associate Editor for more details.
- **Figures**:
    - Re Figure 2A, the major fault structures were added as requested, providing additional geological context to enhance interpretation. Thank you for this helpful suggestion.
    - Figure 3: We chose to show the basins as the focus of this figure. Catchment outlines are plotted in Figures 6 and 7 to avoid unduly busy plots.
    - Figure 4: Prehistoric and recent landslides have been combined in a single map with distinct symbols.
    - Figure 6A: The legend has been moved to avoid overlapping with the data, improving readability.
    - Figure 10: The symbol for transient divides has been changed to improve clarity.

Response to Reviewer 2

Dear Reviewer,

We are grateful for your detailed and insightful comments. Below, we address your feedback and describe the corresponding revisions:

- **Geological Setting (LN 129-134)**:
  - We have expanded the description of the geological units, including their dominant rock types and ages, to provide additional context for the study area. Unfortunately, we have no representative data on the competence or shear strength of these rock types in terms of slope stability.
- **Landslide Inventory Section**:
  - We split the section "Landslides and the Drainage Network" into two new sections: **"Landslide Inventory"** and **"Drainage Network."** The "Landslide Inventory" section includes new data and some statements on the landslide distribution based on elevation, slope, rainfall, geology, and land cover.
- **Clarification on Geological Lineaments (LN 221-222):**
  - We clarified how geological lineaments were used to estimate the influence of the tectonic history on landslide occurrence. The manuscript now explains that lineament density was cross-checked with fault systems, showing a high coincidence. Lineament density is also correlated with landslide density at the catchment scale, showing spatial coincidences in the Cauca canyon and southeastern areas. Our revised text now highlights the influence of tectonic activity on transitional catchments and its connection to morphometric variables.
- **χ Coordinate Values (LN 249):**
  - We streamlined the explanation to introduce the χ coordinate values: **"Perron and Royden (2013) proposed the 'integral method' of slope-area analysis, which normalizes river profiles by drainage area, allowing comparison of the steepness of channels across basins of different sizes while being less subject to topographic noise. This method transforms the river profile's horizontal coordinate into a new variable called χ, which has units of distance but accounts for longitudinal variations in the drainage area (Mudd et al., 2014)."**
- **Figures**:
  - **Figure 1**: Geological terranes are displayed in this figure, as requested, while ensuring clarity in the visualization.
  - **Figure 2A/B**: In Figure 2A, geological terranes were not included to avoid visual saturation; they are already shown in Figure 1. In Figure 2B, lineaments are presented as densities in units of km/km² due to their large quantity, making individual lines impractical for display. The legend was updated for clarity.
  - **Figure 4**: Prehistoric and recent landslides have been combined in a single map with distinct symbols.
  - **Figure 6A**: The legend has been moved to avoid overlapping with the data, improving readability.
  - **Figure 8**: The legend was moved to avoid overlap.
  - **Figure 10**: Migrating drainage divides have been clarified with improved symbols, and the symbol for transient divides has been changed for better readability.

- **Figure 4**: Prehistoric and recent landslides have been combined in a single map with distinct symbols.
- **Figure 10**: We have added a sentence to the manuscript clarifying how migrating drainage divides were determined and mapped. Migrating drainage divides have been clarified with improved symbols and labeled rivers.

We hope these revisions address your comments. Please let us know if further clarifications are needed.

We hope these revisions meet the expectations of the reviewers and the Editor. Please let us know if further changes are needed.

Sincerely,

Edier Aristizabal, Oliver Korup