Thank you for your detailed response to my comments. I have a few follow-up points below.

Caveats about climate's role in fluvial and hillslope processes

I appreciate the authors adding additional introduction and discussion regarding the likely climate dependency of the diffusion coefficient, and the limits of interpreting climate in terms of only a change in mean rainfall. At the present there's still a little bit of a mix of calling what you are testing rainfall or climate. I don't think you need to remove every reference to climate, but it might be worth clarifying what you test throughout.

Making use of dimensionless numbers

The addition of the Peclet number is appreciated, but not quite applied correctly. If you were to nondimensionalize your governing equation, you would find that P^m must go with k_d if you are to obtain a dimensionless equation that has Pe as the governing parameter. You can check that this approach isn't quite correct by examining the dimensions of your equation. The fluvial erosion term is:

$$E = k_d(PA)^m S^n$$

Erosion must be [L/T], and P is [L/T], so k_d must be $\left[\frac{L^{1-3m}}{T^{1-m}}\right]$. The equation for Pe:

$$Pe = \frac{k_d l^{2m+1}}{k_{hl}}$$

Would therefore not be dimensionless. The right one will be:

$$Pe = \frac{k_d P^m l^{2m+1}}{k_{hl}}$$

For an example of how the dimensionless number winds up appearing in the governing equation, see Bonetti et al. (2020), who arrive at a very similar number they call C_I (Equal to Perron et al. (2009)'s Pe when n=1). For the same reason, to get an advection timescale with the right dimension, you will need to include P^m. As a result, changing rainfall changes Pe and the advection timescale associated with the streampower model. This should be included in your analysis of the model scenarios.

One final point

Line 172: "doubling only the diffusion coefficient reduces the surface roughness by ~15% and, surprisingly, increases the mean elevation by ~20%" This is the effect observed by many, but described in depth by Litwin et al. (2025). That paper might be helpful for understanding some more of your results because it focuses on the influence of diffusion on channel profiles, albeit at steady state.

References

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Perron, J. T., Kirchner, J. W., & Dietrich, W. E. (2009). Formation of evenly spaced ridges and valleys. *Nature*, *460*(7254), 502–505. https://doi.org/10.1038/nature08174