

Response to Reviewer 2

We sincerely thank the reviewer for the critical and detailed assessment. Although we understand that the reviewer will not evaluate the manuscript again, we respond fully here, both for the discussion record and because these comments have substantially reshaped the paper. We will also response to your comments point-by-point during the revision and make relevant modifications in the revised manuscript.

We accept that Section 2.3, the pivotal section, was poorly described. It has been completely rewritten, and the specific questions raised by the reviewer will be detailed in our revised manuscript, including: 1) the used grid (both codes are Eulerian grid); 2) the communications between two codes (Fig. 1 is revised and the methodology is more detailed to described the information transfer between the two codes); 3) the horizontal velocity problem and unrealistic river networks (we are grateful to you for notifying us about the artifacts. The Eulerian advection treatment of the landscape evolution model itself may result artifacts in some cases. And we can confirm that this artifact is not generated by the coupling module. Instead, we find it's a problem of FastScape when the advection velocity is large, and the uplift velocity is small). Furthermore, the drop of the random noise in the landscape evolution modeling (for better comparison between models) is the crucial reason. On the other hand, we have also provided the resolution tests (which are crucial for landscape modeling) which is another important factor.

The Discussion will be rebuilt with four subsections covering verification and computational performance, the comparison with existing coupled models and the positioning of our contribution relative to the state of the art, the necessity of fully 3D coupling, and the limitations and scope of applicability. The Conclusions have been rewritten to state concretely what was implemented, how it was verified, what it costs, and what its limitations are, without broad geodynamic claims.

We thank the reviewer again. The demand for clarity on the grid treatment and the criticism of the river networks directly triggered the diagnostic work that now underpins the revised manuscript.