

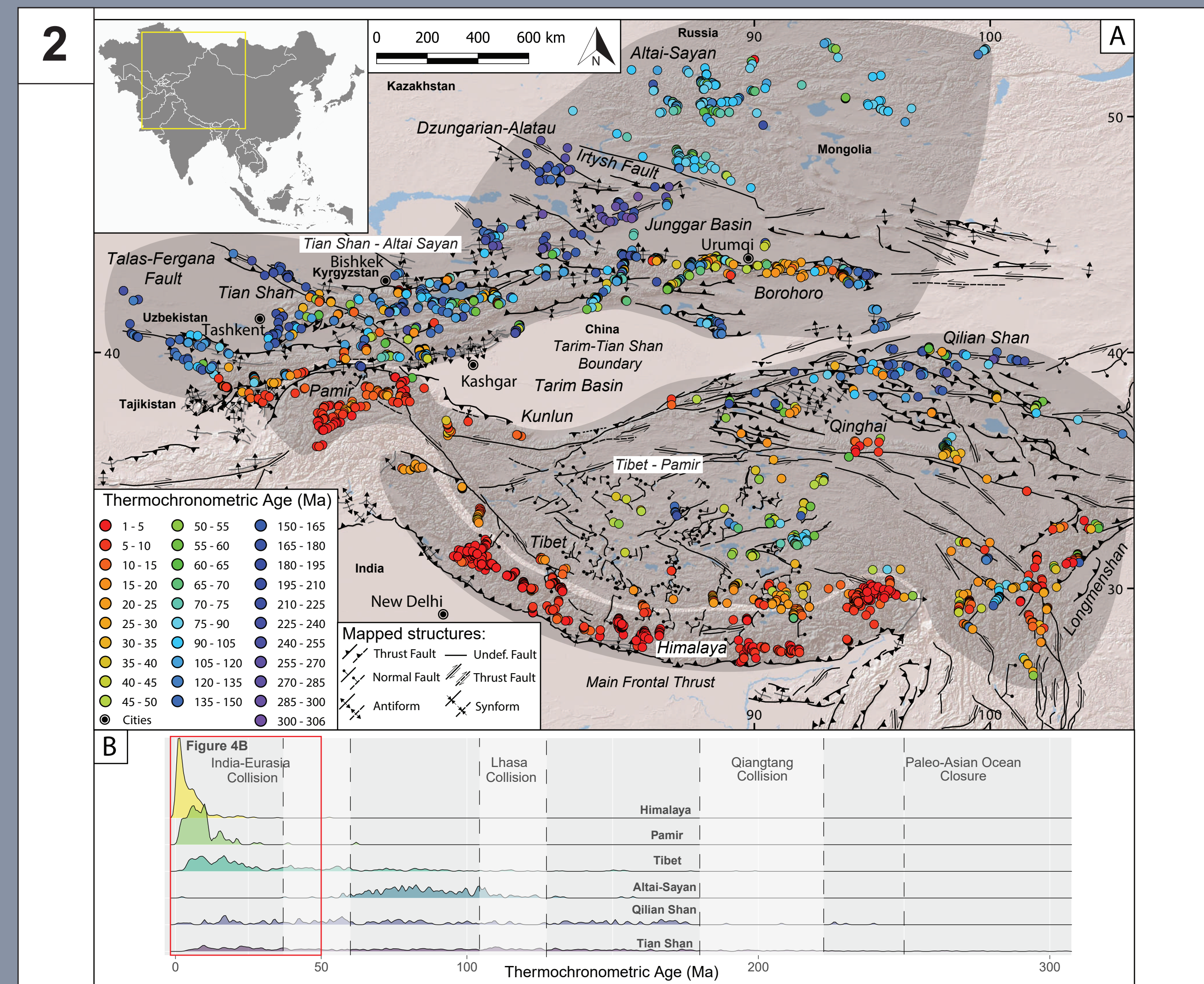
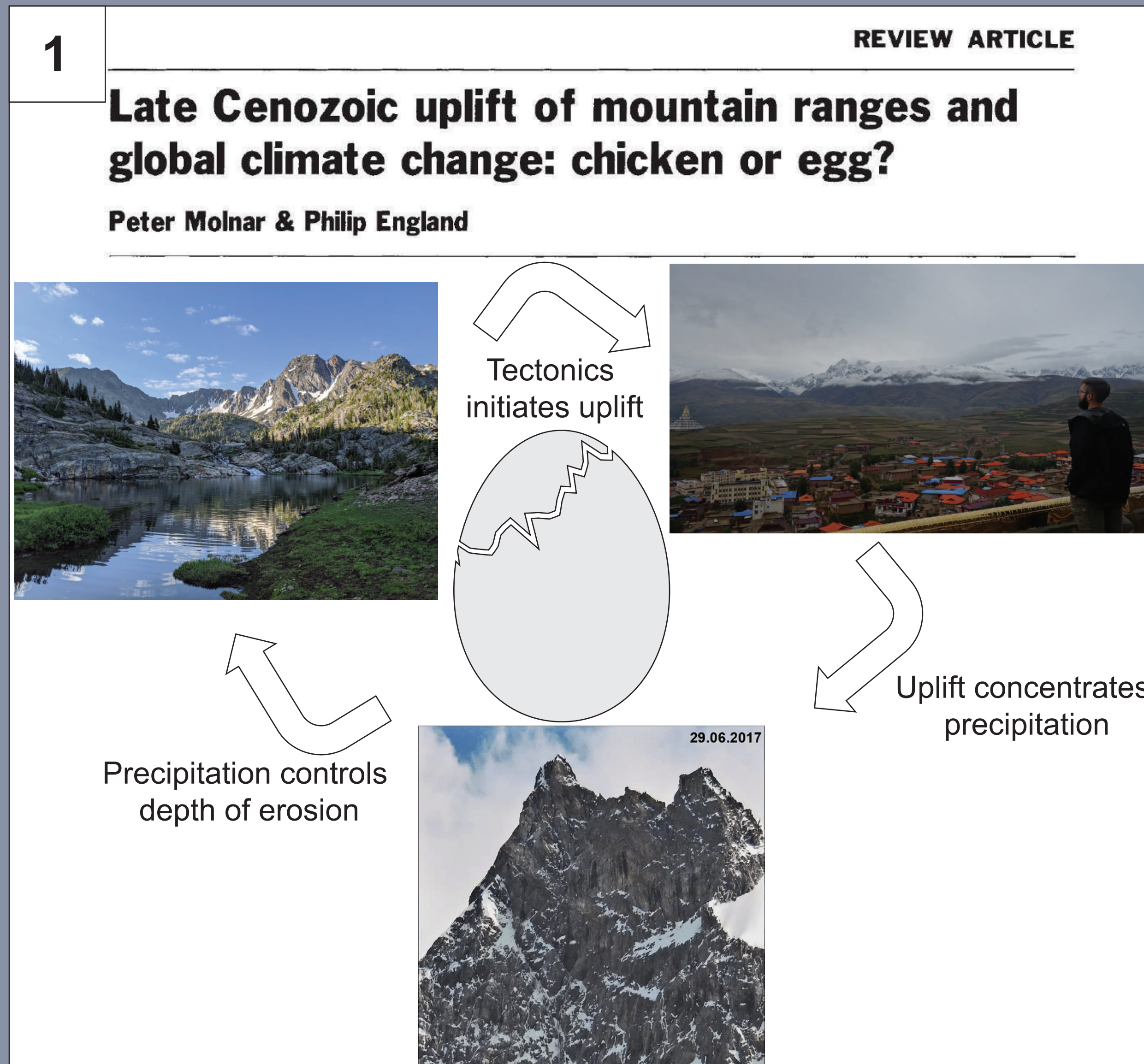
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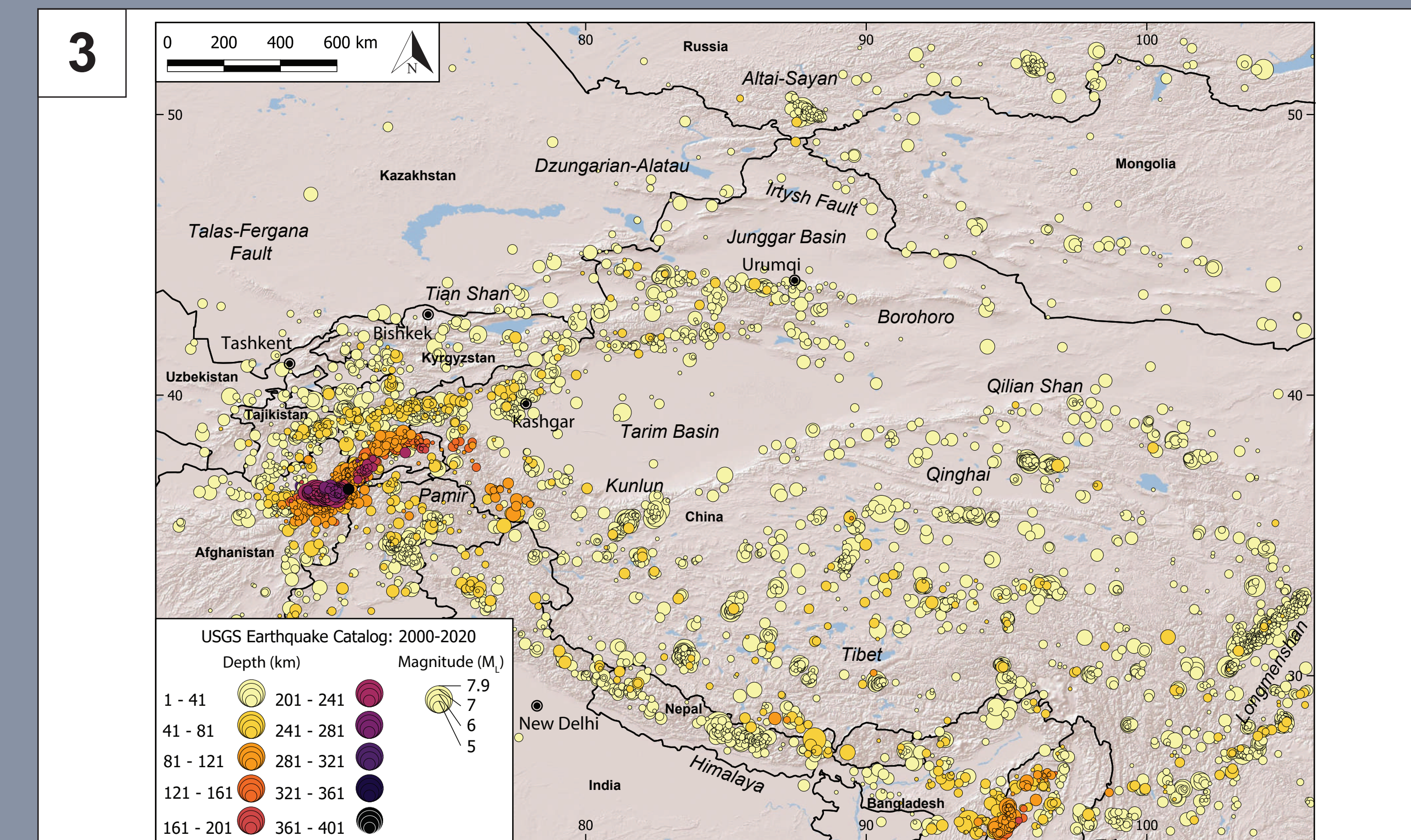
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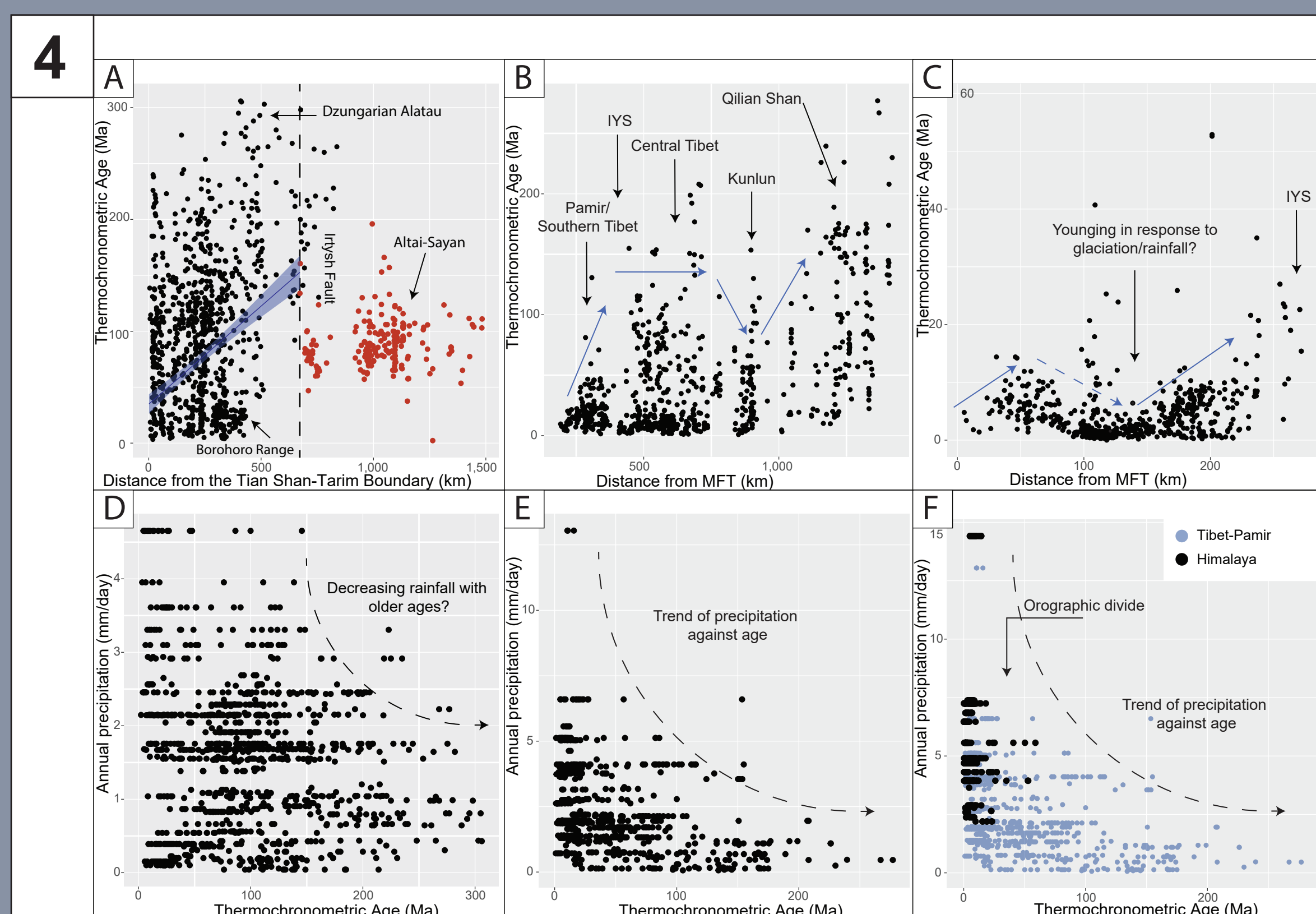
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To quantify erosion across Central Asia, we compiled ~2,500 thermochronometric base-met dates across major topographic features. These data broadly show a trend of older ages in the interior transitioning to younger ages towards the active India-Asia margin.

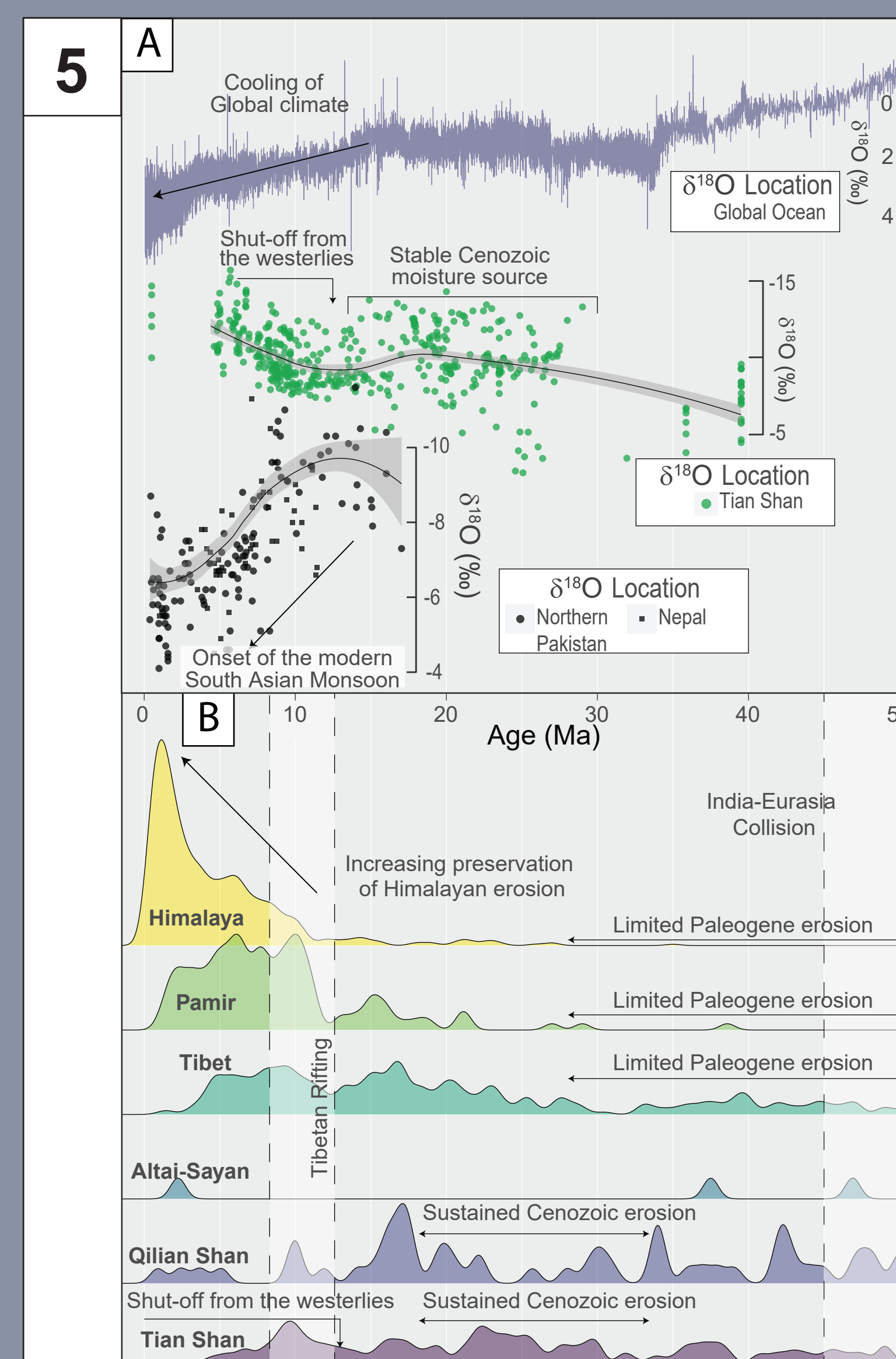


The modern earthquake record shows that Central Asia is currently experiencing widespread, diffuse seismicity. Thus, these thermochronometric trends are preserved despite ongoing crustal deformation in response to the south and eastern convergent plate boundaries.



Comparisons between thermochronometric dates and plate boundaries show that **younger dates are recorded proximal to major structural boundaries**. Suggesting a first-order control of tectonics on erosion.

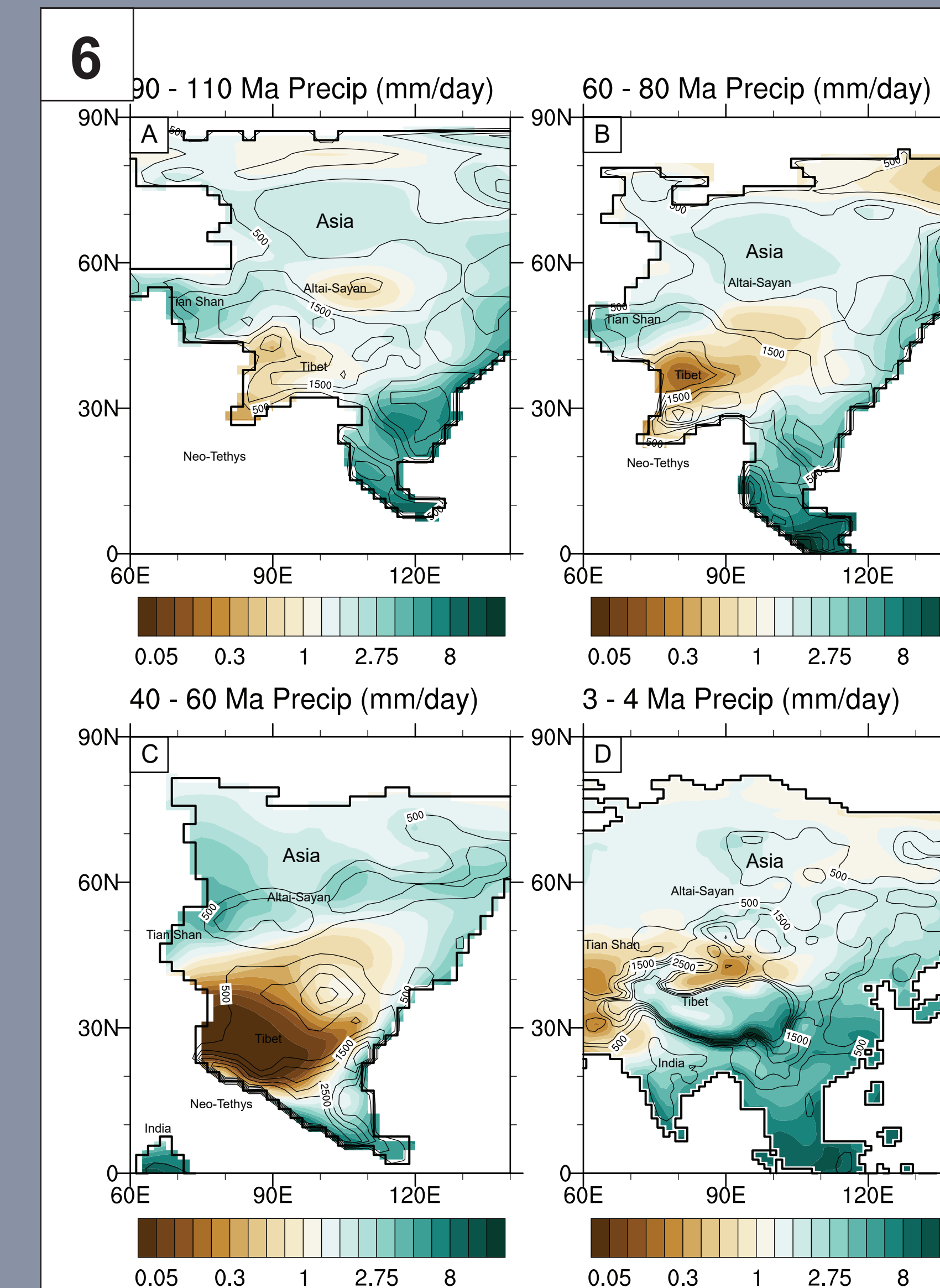
However, comparisons between **thermochronometric date and modern rainfall** show older dates associated with areas of lower precipitation.



The correlation between modern precipitation and thermochronometric dates suggests that **precipitation, or lack thereof, is controlling erosion**. To interrogate this relationship, we compared Cenozoic erosion to paleo-climate proxies.

In the Himalaya, we observe an **increase number of younger thermochronometric dates with the onset of the modern South Asian Monsoon**.

Whereas, the Tian Shan has experienced sustained Cenozoic erosion correlating with a relatively stable Cenozoic moisture source.



These observations suggest that it is **precipitation which in controlling the preserved pattern of erosion across Central Asia**.

Paleoclimate simulations suggest that regions which show limited modern erosion, have experienced arid conditions since the late Cretaceous.

Through analysis of ~2,500 thermochronometric dates across Central Asia, we find that while tectonics serves to nuate the erosional process, climate ultimately acts as the great equalizer of continental-scale erosion.