



Glacial defeat of river incision into southeast Tibet?

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A considerable amount of research has focused on how and when the Tibetan Plateau formed in the wake of tectonic convergence between India and Asia. Although far less inquiry has addressed the controls on river incision into the plateau itself, widely accepted theory predicts that major fluvial knickzones in the eastern Himalayan syntaxis at the southeastern plateau margin should erode rapidly, driving a wave of incision back into the plateau.

Preservation of the plateau edge thus presents something of a conundrum that may be resolved by either differential rock uplift matching erosional decay, or retardation of bedrock river incision in this region where abundant monsoonal precipitation excludes the widely accepted idea that aridity limits dissection of the plateau.

Here we report morphologic evidence showing that depression of the regional Holocene equilibrium line altitude by ca. 420 m was sufficient to produce moraine dams on major rivers and substantially impede river incision into the southeastern edge of the Tibetan Plateau around Namche Barwa through the coupled effects of upstream impoundment and interglacial aggradation. We propose that stabilization of the resulting highly focused river incision could further contribute to initiating a locus of rapid exhumation referred to as a tectonic aneurysm.