

Interactive comment on “Geomorphic signatures of the transient fluvial response to tilting” by Helen W. Beeson and Scott W. McCoy

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We agree that the stratigraphic record of valley cut-and-fill (in which valleys were filled with gravels and then evacuated) could look identical to that of bedrock incision in response to recent tilt (in which incision below gravels is interpreted as a response to surface uplift) and thus based only on the stratigraphic record it is difficult to discriminate the two possible histories. In the valley cut-and-fill interpretation, gravel deposits must have been at least as thick as their current height above the valley bottom. However, taking the upper North Fork American as an example, this implies that the gravels were at least 700 m thick, filling the canyon beneath the minimum elevation of deposits preserved on the canyon edge. Given that the maximum measured thickness of auriferous gravel deposits is 140 m (Cassell et al., 2011), this scenario seems less likely than

C1

late Cenozoic tilting that does not require deposits thicker than observed elsewhere in the range.

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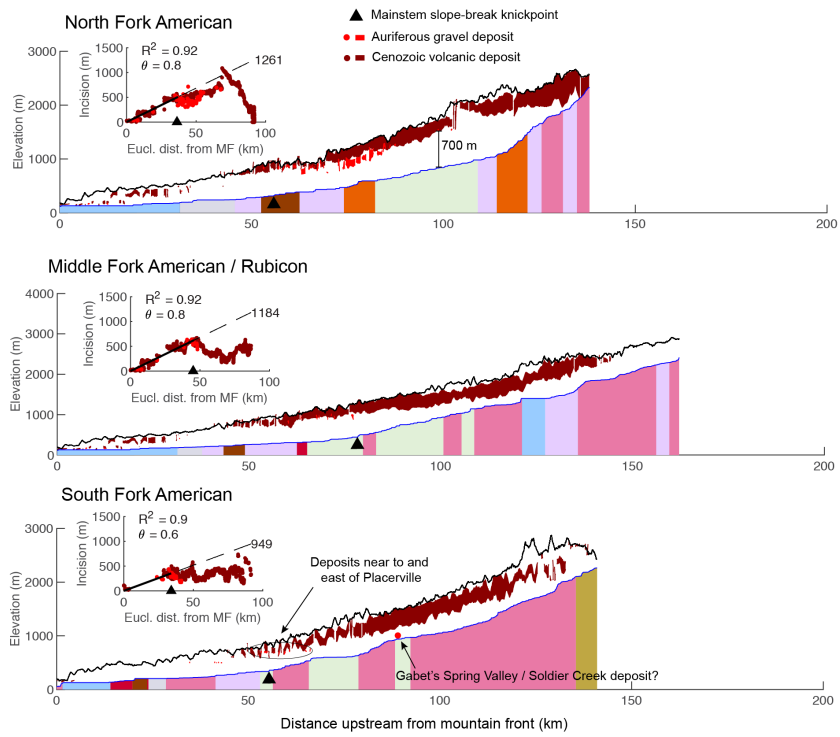


Fig. 1. American River longitudinal profiles with surface geology, Cenozoic volcanics and Eocene auriferous gravels. Insets show depth of canyon in basement below volcanics and gravels.