

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

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This is a brief comment explaining the important implications of the gravel deposit along the South Fork American River that I noted previously. The first figure shows the topographic position of these Eocene-Oligocene gravels relative to the valley floor and the younger volcanic deposits. As far as I can tell, there is only one way to explain this stratigraphic sequence, and I show this in the second figure. At the top of this second figure, I've drawn a sketch of the cross-section shown in the first figure: the Miocene volcanics cap the interfluvial and the gravels are lower down, about 150 m from the valley floor. Below this sketch, I show the general sequence of events that created this cross-section. The canyon was cut before the Eocene and then was filled with the auriferous gravels. This was then followed by some incision into the gravel but then the

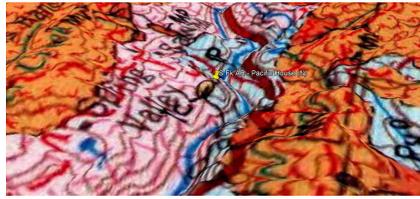
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valley was filled once again, this time by a series of rhyolitic and andesitic eruptions (of course, there would have been incisional episodes in between the eruptions). After the end of these large eruptions in the Pliocene, nearly all of this fill has been eroded away; only the deposits on the low-gradient interfluvial and some scattered deposits within the canyons remain. This, then, is a classic cut-and-fill stratigraphic sequence and highlights why the elevation of the lowest volcanic deposits cannot be used to calculate basement incision as the authors have done. Although this example comes from the South Fork American River, the general principle applies to the Middle Fork American/Rubicon as well (and, in fact, to all northern Sierran rivers).

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The pin shows the location of the Eocene-Oligocene gravels. The pink is granitic bedrock and the orange is Miocene volcanics.

Fig. 1. Fig 1

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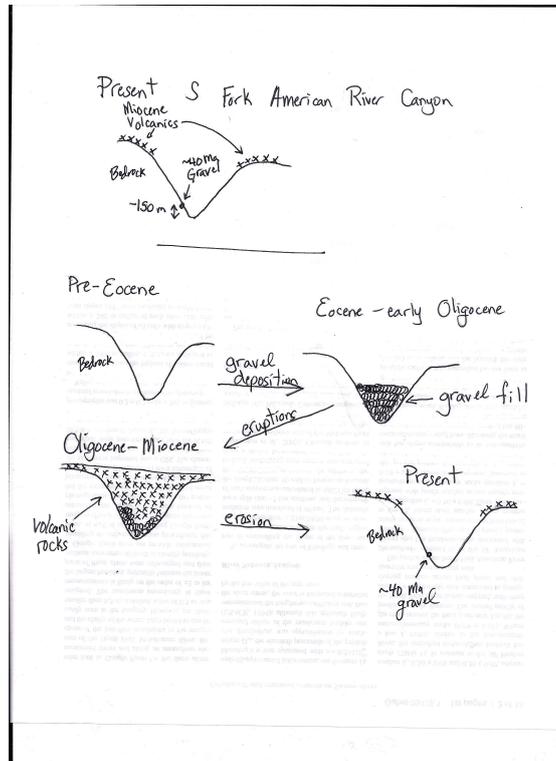


Fig. 2. Fig 2

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