Chronology of Miocene-Pliocene deposits at Split Mountain Gorge, Southern California: A record of regional tectonics and Colorado River evolution

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**ABSTRACT**

Late Miocene to early Pliocene deposits at Split Mountain Gorge preserve a record of basinal response to changes in regional tectonics, paleogeography, and evolution of the Colorado River (CR). The base of the Elephant Trees Formation, dated with magnetostratigraphy at 8.1 ± 0.4 Ma, provides the earliest well dated record of extension in the SW Salton Trough. The oldest marine sediments are ca. 6.3 Ma. The nearly synchronous timing of marine incursion in the Salton Trough and northern Gulf of California region supports a model for localization of Pacific-North America plate motion in the Gulf at ca. 6 Ma. The first appearance of CR sand at the Miocene-Pliocene boundary (5.33 Ma) suggests rapid propagation of the river to the Salton Trough, and supports a lake-spillover hypothesis for initiation of the lower Colorado River.