

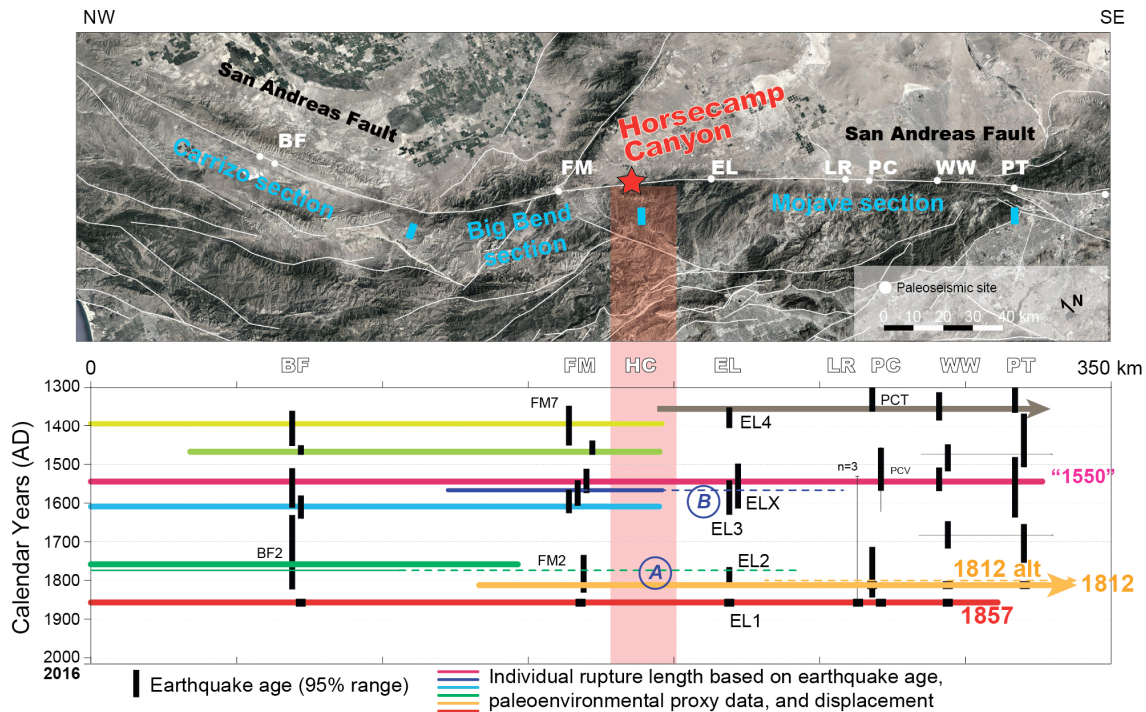
2017 SCEC Report

**Testing the spatio-temporal record of paleo-earthquakes on the Mojave section of the San Andreas fault: Preliminary investigations of the Horse Camp Canyon site**

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Most of our efforts thus far have been directed towards obtaining permits to begin preliminary reconnaissance excavations at the promising San Andreas fault paleoseismic site at Horse Camp Canyon. We conducted an extensive and very lengthy permitting process working with the science director of the Tejon Ranch Conservancy (the non-profit organization brought into being to administer much of Tejon Ranch through the Tejon Ranch Conservation and Land Use Agreement) and the California Department of Fish and Wildlife administrator in charge of CEQA (California Environmental Quality Act) review for the site. After receiving preliminary assurances from both that the project would likely be allowed to proceed, the Science Director of the Conservancy approached the Tejon Ranch Company (owners of the land at the site) for final permission, and the request was denied. It is our understanding that this denial was not final, and was awaiting resolution of several pending lawsuits regarding possible future development on the Ranch, and that we might be granted permission to begin our reconnaissance excavations at the site following their resolution. Thus, we are currently in a holding pattern regarding eventual excavation of the site. There is apparently nothing that we can do to speed the process, so we are being patient. As soon as the permitting issues are resolved, we do plan to conduct the research as proposed.



**Figure 1.** Maximum rupture length diagram for last 716 years on the southern San Andreas Fault modified from Scharer et al., 2017, to include new paleoseismic age data from Elizabeth Lake (Bemis et al., in prep).

Upper: Map shows location of paleoseismic sites used in reconstruction and their position along fault sections.

Lower: Extent of paleo-ruptures (colored horizontal lines) is based on the 95% range of paleo-earthquake ages (black vertical lines) as well as paleoenvironmental proxy data and displacement at some sites. Ends of ruptures are placed midway between sites if no endpoint is known. The proposed Horse Camp Canyon site is located at a key change between the Big Bend and Mojave sections: at most half of the earthquakes can be correlated across the red section. Note A: The northern termination of the 1812 earthquake(s) is uncertain due to radiocarbon dating uncertainties. At this location, either the solid yellow or the dashed green line can be correct. Note B: Earthquake ELX (dashed dark blue line) may or may not be the same as EL3, because the evidence for ELX occurs within a massive soil that can not be stratigraphically connected to the rest of the earthquakes (EL1-EL4). Note: FM7 and EL4 were argued not to be separate ruptures despite temporal overlap by Scharer et al. (2017) based on paleoenvironmental proxy data.

Note that the “1550” event remains the only rupture in the past 700 years to cross all of the sections like the historic 1857 rupture.