

HISTORIC AND PALEOSEISMIC BEHAVIOR OF THE SOUTH-CENTRAL SAN ANDREAS FAULT BETWEEN CHOLAME AND THE CARRIZO PLAIN

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Introduction

In this project, we strive to improve our understanding of the rupture potential of the San Andreas Fault (SAF) in the Parkfield-Cholame-northern Carrizo Plain area, and provide data for evaluating models of fault behavior and seismic hazard in Southern California. This is accomplished by 1) analysis of offset landforms and historic survey data along the northern portion of the 1857 rupture, and 2) paleoseismic trench investigation.

Research Presentations

Arrowsmith, Stone, and Grant presented the results of this work at the SCEC annual meeting. We also presented our results at the fall meeting of the American Geophysical Union:

Stone, E. M., Arrowsmith, J. R., Grant, L. B., Recent Rupture History of the San Andreas Fault Southeast of Cholame in the Northern Carrizo Plain, EOS Transactions AGU, v. 80, p. F735.

Recent Rupture History of the San Andreas Fault Southeast of Cholame in the Northern Carrizo Plain

Our emphasis in the past year was the completion of a paleoseismic investigation along the San Andreas Fault at the LY4 site (Figures 1-4). This included 6 weeks of field effort by Stone, with regular supervision by Arrowsmith and Grant and help from 10 field assistants. We were fortunate to have field review from Fumal, Stenner, and Dawson from the USGS and we hosted a trench party for 6 interested people including a senior Caltrans engineer. Following the field work, we have compiled and analyzed the field data, and prepared and submitted a manuscript to the Bulletin of the Seismological Society of America:

Stone, E. M., Arrowsmith, J. R., Grant, L. B., Recent Rupture History of the San Andreas Fault Southeast of Cholame in the Northern Carrizo Plain, Bulletin of the Seismological Society of America, 36 manuscript pages and 9 figures, submitted 12/23/1999.

Abstract. We conducted a paleoseismic study on the San Andreas fault (SAF) southeast of Cholame, CA to investigate the record of earthquakes within an 80 km paleoseismic data gap that exists between Parkfield and the Carrizo Plain (Figure 1). At the LY4 site, located 37.5 km southeast of Highway 46 along the SAF, we excavated a fault-perpendicular trench on an alluvial fan that emanates from the Temblor Mountains to the northeast and crosses the fault trace at the distal end of the fan (Figures 2 and 3). We found evidence of four ruptures within the stratigraphy. Because of limitations in the production and preservation of datable material, the only age constraints are radiocarbon dates on a paleosol three units below the oldest event horizon and the presence of recently introduced exotic pollen species in an upper unit (Figure 4). The