San Andreas Fault Paleoseismic Study

1999 SCEC Internship Project
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Introduction

The purpose of this project was to determine the dates of some prehis
along the San Bernardino (Plunge Creek) segment of the San Andreas fa
information will be useful for correlating other events on the San An
on the San Bernardino segment. It is currently not known if all of t
earthquakes along the San Andreas Fault have actually ruptured the fa
we find evidence that some of the earthquakes have not ruptured this
able to re-examine some important interpretations of activity on this

The recurrence interval for the southern segment of the San Andreas F
estimated at 144 years (Sieh et al., 1997). This calculation is considerin
prehistoric earthquakes ruptured this segment of the fault. If not e
actually ruptured this segment of the fault, the recurrence interval
segment need to be reevaluated.

In digging a trench and analyzing the deformation and offset of the
layer that the fault broke through can be determined. Charcoal samp
from various layers to bracket a date on the earthquake horizon.

The Plunge Creek Paleoseismic Site

The Plunge Creek site is located on in ancient stream channel that ha
by the distal sediment of an alluvial fan. This trench site was chos
the edge of an alluvial fan, the older sedimentation layers will not
depths. A contractor had previously dug several trenches at this sit
San Andreas Fault here. We decided to re-open his trench #4 (figure

A student working on her Masters Degree, Dr. Glenn Sharman, has re-opened the contracto
trench #8 to find evidence for the 1812 earthquake on this segment.
located on the alluvial fan, to allow the younger sedimentation units

Work Completed At The Plunge Creek Site

A trench was dug in two phases, the first was 5 feet deep and the sec
deep. The trench was excavated using a backhoe, and the walls of the
scraped by hand to provide a vertical wall on each side. Nails, tagg
of various colors were used to mark off the extent of the different s
trench was surveyed using a total station, and a computer log plottin
was generated. This grid was then taken back to the trench, where th
were logged by hand onto it. Charcoal samples were then collected fr
different stratigraphic layers as possible, to aid in later dating effor
earthquake horizon be found.

After phase one was finished, the trench was cut back to form benches
deepened to 10 feet. The layers were again tagged with nails and sur
made by hand and charcoal samples were collected from various layers

After the logging was finished, both the trench wall and the logs wer
evidence of faulting. This would include offset layers, sand fissure
terminating, among other things.

Conclusion

The trench did not reveal any clear signs of a fault running through
locate an ancient channel wall, and we believe that the contractor wh
trench mistook this for a fault. We were able to locate the bottom o
and for further study this trench could be deepened to find evidence
events.

The other trench that was re-opened (trench #8), showed evidence of t
samples were collected from layers bracketing the earthquake horizon,
waiting for the lab results. Trench #8 was not in the coarse of the
scoured out the sediment in trench #4.

References

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