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POLLEN ANALYSIS OF THE LAS YEGUAS PALEOSEISMIC TRENCH SITE, CHOLAME SEGMENT OF THE SAN ANDREAS FAULT, CALIFORNIA

We used sedimentologic and pollen analyses of overburden from a paleoseismic site near Las Yeguas Canyon in south-central California (LY4, Young et al, 2002) to determine if the San Andreas fault had ruptured in a post-1857 earthquake and to constrain the timing of a tectonic fracturing. Previous workers (Stone et al., 2002) sited fracturing and lateral thinning of what they interpreted as a massive, non-bioturbated debris flow (Unit 2b) as evidence for lateral and vertical offset and assigned a post-1857 age date based on historic pollen types. Sedimentologic analysis of trench stratigraphy revealed a low energy depositional environment for Unit 2b, and that it had been densely bioturbated. Detailed pollen analysis of sediments from the excavation revealed a complex mixing history of pollen types, therefore negating the previous age assignment for Unit 2b, but confirming the age of tectonically induced fractures. The identification of 12 pollen samples for 2 meters of stratigraphic section revealed the existence of 3 pollen horizons and the identification of several exotic pollen types, which include Salsola, Erodium, and Eriogonum. Salsola, often referred to as tumbleweed or Russian Thistle, was first introduced to North America in accidental shipments with flaxseed to South Dakota in 1873 (Kirkpatrick, 1992). The tectonic fractures observed at LY4 are the same age or slightly younger than the sediments containing Salsola, thus indicating that the fracturing could be related to triggered slip from a Parkfield event, such as the 1877 or 1881 earthquakes, or creep.