Late Pleistocene structural evolution of the Camarillo fold belt

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The Camarillo fold belt (CFB) in the Western Transverse Ranges poses a significant seismic hazard to nearly one million people living in Southern California, yet few published geologic or geochronological data from this fold belt exist.

The CFB is composed of several actively growing folds that are developed along the western extent of the highly segmented Simi fault zone, which extends for 40 km through urbanized Ventura and Los Angeles Counties.

This research includes five balanced cross sections that are used to determine the magnitude of fault and fold related deformation.

In addition, eight new absolute ages on deformed sedimentary strata exposed at the surface and in three paleoseismic trenches are presented and used to quantify the local timing and rates of fault slip across the fold belt, which is critical to assessing earthquake hazard.

The results presented by Duane E. DeVecchio and colleagues show that local deformed sedimentary strata are an order of magnitude younger than previously thought, fault slip rates are comparable to other study fold belts in Southern California (0.8-1.4 mm/yr), and discrete faults within the fold belt are younger toward the west.

A model of punctuated lateral fault propagation is proposed to explain westward growth of the Simi fault, which occurs in discrete pulses that

are separated by intervals of fault displacement accumulation and fold amplification during constant fault length conditions.

Lateral fault growth is limited in space and time by an orthogonal north-striking fault set, which juxtaposes a series of west-plunging anticlines that decrease in structural relief and age toward the west.

More information: Duane E. DeVecchio et al., Earth Research Institute, University of California, Santa Barbara, CA 93106-9630, USA. *Lithosphere*. Posted online 28 Feb. 2012; print issue: April 2012; doi: 10.1130/L136.1