Active faults of the northern Los Angeles basin: Field excursion overview

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From Ziony, 1985
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From Yerkes & others, 1965
Isometric block diagram, basement surface of the Los Angeles basin. Contour interval is 1,000 feet; exposures of basement rocks are patterned; fault surfaces are hachured.
Figure 1. Faults of the LA Basin
Portion of the Los Angeles 2° sheet (Jenkins, 1969, RP 1975)
View northwest from the Baldwin Hills Scenic Overlook of the Los Angeles Basin.
View north from the Baldwin Hills Scenic Overlook of the Los Angeles Basin.

Santa Monica Mountains

Hollywood Fault Zone
View north from the Baldwin Hills Scenic Overlook of the Los Angeles Basin.
Scarp of the Santa Monica Fault on Westgate Ave. (west side) of University High School, West Los Angeles
Scarp of the Santa Monica Fault on Barrington Ave. (east side) of University High School, West Los Angeles
Scarp of the Santa Monica Fault on the Veterans Administration Medical Center grounds, West Los Angeles
Figure 2. Tectonic geomorphologic map of the Santa Monica fault zone and environs based on interpretation of 1926 vintage U.S. Geological Survey 6 ft topographic maps (Sawtelle, Topanga Canyon, and Hollywood quadrangles) and field mapping. Note location of trench site just west of Freeway I-405. B—Brentwood; BH—Beverly Hills; PC—Potrero Canyon; PP—Pacific Palisades; SM—Santa Monica; WLA—west Los Angeles; WW—Westwood.

From Dolan & others, 2000
Figure 3. Detailed map of Veteran’s Administration trench site in west Los Angeles showing major geomorphic features and locations of trenches T-1 and T-2. Location is shown in Figure 2. Numbered lines crossing trenches show locations and strikes of the four largest faults. Locations of creek and scarps adjacent to trench site are from 1927 Fairchild air photo; artificial fill emplaced during construction of Red Cross building has largely obliterated the creek and fill has been added to the upper part of the scarp south of Red Cross building to create a building pad. CPL-2 and CPL-3 denote locations of earlier paleoseismic trenches excavated by Crook et al. (1983; Crook and Proctor, 1992); short lines show strikes of steeply dipping faults exposed in those trenches.
Scarp of Santa Monica Fault and LDS Temple as it “looms over famous Santa Monica Blvd. in Westwood.”
Capitol Records building with scarp of Hollywood Fault in background
Scarp of the Hollywood Fault at La Cienega and Sunset Blvds., Hollywood
Inferred scarp of Hollywood Fault, Fuller Ave. at Hillside St. where it is covered by alluvial fan
Inferred scarp of Hollywood Fault, Fuller Ave. at Hillside St. where it is covered by alluvial fan
Figure 4. Map of the Hollywood fault zone, showing surficial geology and major tectonic and sedimentary landforms. Major fault and fold scarp is shown in black. Faults are dotted where inferred beneath recent alluvium. Bedrock geology is from Dibblee (1991a, 1991b). Lines with opposing double arrows are crests of youthful folds on the ground surface. The word Hollywood is centered on the main business district of downtown Hollywood, which extends approximately from La Brea Avenue eastward to Western Avenue and from Santa Monica Boulevard northward to the mountain front. A—bedrock fault in Elysian Park Hills (Lamar, 1970); H—eastern end of the Sunset Strip at intersection of Sunset Boulevard and Havenhurst Drive; H2O—shallow ground water along Hollywood fault (F. Denison, 1991, personal commun.); K—Kings Road—Sunset Boulevard intersection; N—intersection of Normandie and Franklin Avenues; Oil—linear oil and water seeps at Greystone Park (Crook and Proctor, 1992); SM Flt—Santa Monica fault; BC—Benedict Canyon; BrC—Brushy Canyon; GP—Greystone Park; LC—Laurel Canyon; NC—Nichols Canyon; WBHL—West Beverly Hills lineament; WeHo—West Hollywood.

From Dolan & others, 1997
Figure 5. Geologic map of young features within our detailed study area west of downtown Hollywood. Runyon Canyon, Vista Street, and Outpost Drive fans are shown in shades of gray. Narrow, dark gray horizontal swath shows location of Hollywood fault inferred from subsurface data. Fault scarps inferred from topography are shown by medium gray shading. No scarps are discernible across the recently active parts of the fans. Thick black north-south lines show locations of trenches and borehole transects discussed in text. Secondary strand of Hollywood fault encountered in Fuller Avenue trench is shown by short black line immediately south of borehole OW-34A. Location of Metropolitan Transit Authority subway tunnel excavated as of July 1995 is shown as a dashed line. Triangular facets in northeast corner of figure show possible northeast-trending fault strand. CP-MT—Camino Palmero–Martel Avenue Transect; HA—Hillside Avenue; NLBT—North La Brea transect; WP—Wattles Park; Q shows location of near-surface (<1 m depth) quartz diorite from Crook and Proctor (1992). Topography redrafted from Burbank and Hollywood 1:24 000’ USGS quadrangles (~1926). Contour interval is 1.5 m (5 ft) up to the 500 ft contour, above which the interval is 7.6 m (25 ft).
View south from Griffith Planetarium

- Palos Verdes Hills
- Santa Catalina Island
- Hollywood Fault Zone
View southwest from Griffith Planetarium

- Elysian Park Folds
- Puente Hills
- Mt. Washington & Repetto Hills
- Santa Ana Mountains
- Elysian Park Folds
- Hollywood Fault Zone
View east from Griffith Planetarium
Steeply dipping beds (~40°) of the late Miocene Puente Formation on Glendale Blvd. within the Elysian Park fold system, Echo Park.
Gently dipping beds (~25°) of the late Miocene Puente Formation on Glendale Blvd. within the Elysian Park fold system, Echo Park.
Steeply dipping beds (~40°) of the late Miocene Puente Formation on Glendale Blvd. within the Elysian Park fold system, Echo Park.
Prominent fault scarp of the Raymond Fault, Santa Anita Racetrack parking lot, Arcadia.
Scarp trace of the Raymond Fault at Colorado Blvd., Arcadia
Figure 6. A detailed map of the surficial trace of the Raymond fault with the locations of geomorphological features referenced in the text. Contours are from the Sierra Madre quadrangle, USGS 6-minute Series, 1941. Locations marked with (B, nn) are discussed by Buwalda (1940) on page nn.
Sag area, Lacy Park, San Marino
Lacy Park, Arcadia with inferred left step-over in Raymond Fault
Pasadena Langham Hotel atop scarp of Raymond Fault from Oak Knoll Rd. at Old Mill Rd.
View north up side street in Boyle Heights off Cesar Chavez Blvd. towards Elysian Park folds
View north on Evergreen St. at Evergreen Cemetery of small fold structure
Figure 7. Geologic map of the Elysian Park anticline. The anticlinal axis and major bounding structures are depicted by thick black lines. The thinnest black lines represent trends of secondary folds. East-west–trending, parasitic secondary anticlines in east Los Angeles are numbered 1–4. The Coyote Pass escarpment forms the southern limb of structure 3. Two generations of older alluvium, Qg and Qp, are differentiated at the crest of structure 3, whereas structure 4 is capped by only Qg deposits. Compiled from Bullard and Lettis (1993), Dibblee (1989, 1991), Lamar (1970), Thomas et al. (1961), Quarles (1941), and Soper and Grant (1932).
Can earthquakes be predicted?

From *Science made stupid* by Tom Weller (1985)
The mysterious, innate intuition of some animals

Earthquake's a-comin'.

yup.
OCTOBER 17th, 2013 at 10:17 AM