Jump to Navigation

Quaternary Fault and Fold Database of the United States

As of January 12, 2017, the USGS maintains a limited number of metadata fields that characterize the Quaternary faults and folds of the United States. For the most up-to-date information, please refer to the interactive fault map.

Alma Mesa faults (Class A) No. 941

Last Review Date: 2016-03-01

Compiled in cooperation with the New Mexico Bureau of Geology & Mineral Resources and the Arizona Geological Survey

citation for this record: **Pearthree, P.A., and Jochems, A.P., compilers, 2016, Fault number 941, Alma Mesa faults, in Quaternary fault and fold database of the United States: U.S. Geological Survey website, https://earthquakes.usgs.gov/hazards/qfaults, accessed 12/14/2020 03:12 PM.**

Synopsis	The Alma Mesa faults comprise a series of short, north northeast-trending fault in the Alma Basin, very near the Arizona-New Mexico border. Based on photointerpretation, it is apparent that the faults displace early Pleistocene to Pliocene relict alluvial fans. Houser (1994 #2131) inferred that some faults in the Alma Basin have been active as recently as the late Pleistocene, but no clear evidence for or against younger movement has been documented for the Alma Mesa faults.
Name	Mapped and named by Menges and Pearthree (1983 #2073); also

comments	mapped by Houser (1994 #2131); part of a group of several faults, most of which are in New Mexico and are only mentioned here.
County(s) and State(s)	GREENLEE COUNTY, ARIZONA CATRON COUNTY, NEW MEXICO
Physiographic province(s)	BASIN AND RANGE
Reliability of location	Good Compiled at 1:24,000 scale. *Comments:* Based on interpretation of 1:130,000 and 1:24,000-scale aerial photos.
Geologic setting	This fault is near the northwestern margin of the deeply dissected late Cenozoic Alma Basin, which extends eastward to the Mogollon Mountains in New Mexico. Based on regional correlations, the basin probably filled to its maximum level in the late Pliocene or early Quaternary. Modern streams are entrenched as much as 200 m below the highest level of Pliocene-early Pleistocene alluvial fan remnants.
Length (km)	15 km.
Average strike	N23°E
Sense of movement	Normal *Comments:* Inferred from topography across the faults and from regional relationships.
Dip Direction	E; SE; W; NW
Paleoseismology studies	
Geomorphic expression	Faulting is expressed as large (estimated <20 m from topographic maps), but fairly gentle fault scarps on very high-level alluvial fan remnants. Faults commonly control the course of local, small (first to third order) drainages.
Age of faulted surficial deposits	Pleistocene to Pliocene. Age estimates are based on geomorphic surface characteristics, topographic position of faulted units, and regional correlations.
Historic	

earthquake	
Most recent prehistoric deformation	undifferentiated Quaternary (<1.6 Ma) *Comments:* Constraints on the age of youngest movement are weak. The faults cuts upper Pliocene to lower Quaternary alluvial-fan deposits. Younger deposits in this area are very limited in extent, and where present, it is not clear whether they are faulted.
Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr *Comments:* No more than 20 m of displacement has occurred during the past 1_2 m.y.; the long-term slip rate is low.
Date and Compiler(s)	2016 Philip A. Pearthree, Arizona Geological Survey Andrew P. Jochems, New Mexico Bureau of Geology & Mineral Resources
References	#2131 Houser, B.B., 1994, Geology of the late Cenozoic Alma basin, New Mexico and Arizona, *in* Chamberlin, R.M., Kues, B.S., Barker, J.M., and McIntosh, W.C., eds., Mogollon Slope, west-central New Mexico and east-central Arizona: New Mexico Geological Society, 45th Annual Field Conference, Guidebook, p. 121-125. #2073 Menges, C.M., and Pearthree, P.A., 1983, Map of neotectonic (latest Pliocene-Quaternary) deformation in Arizona: Arizona Geological Survey Open-File Report 83-22, 48 p., scale 1:500,000.