

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](#).

Prescott Valley grabens (Class A) No. 949

Last Review Date: 1996-10-03

Compiled in cooperation with the Arizona Geological Survey

citation for this record: Pearthree, P.A., compiler, 1996, Fault number 949, Prescott Valley grabens, 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 03:14 PM.

Synopsis

Evidence for young movement on the Prescott Valley grabens consists of a series of three north- to northwest-trending, narrow, shallow physiographic troughs formed in upper Cenozoic deposits along the western margin of a broad structural and physiographic basin (Prescott Valley-Chino Valley). Alluvium of inferred upper Pleistocene age is displaced about 4 m, middle Pleistocene alluvium is displaced less than 11 m, and Holocene to uppermost Pleistocene alluvium is not faulted. From these relations, recurrent late Quaternary faulting is strongly suggested, but constraints on the age of the youngest rupture and the fault slip rate are poor.

Name comments	Mapped and named by Menges and Pearthree (1983 #2073).
County(s) and State(s)	YAVAPAI COUNTY, ARIZONA
Physiographic province(s)	BASIN AND RANGE
Reliability of location	Good Compiled at 1:250,000 scale. <i>Comments:</i> Trace based on aerial photo interpretation at 1:130,000 scale; trace transferred to 1:250,000-scale topographic base map.
Geologic setting	These faults are located in the Transition Zone in the upland portion of the Basin and Range province. The Prescott Valley grabens are along the western margin of a large, probably complex structural and physiographic basin. Faulting has occurred along or very near the contact between bedrock (Precambrian granite and middle Tertiary basalt) and upper Cenozoic basin-fill alluvium.
Length (km)	9 km.
Average strike	N16°W
Sense of movement	Normal <i>Comments:</i> Inferred from regional relations.
Dip Direction	E; W
Paleoseismology studies	
Geomorphic expression	Faulting is expressed as three relatively narrow and shallow physiographic troughs (grabens) in a left-stepping, en echelon pattern along basin margin. Fairly gentle scarps on eroded, upper Cenozoic basin-fill deposits are as much as about 15 m high, scarps on middle Pleistocene deposits are about 10 m high, and scarps on possible upper Pleistocene alluvium are 3-4 m high.
Age of faulted surficial deposits	Late Cenozoic, middle Pleistocene, possibly upper Pleistocene. Age estimates are very rough, based on regional stratigraphic correlations.

Historic earthquake	
Most recent prehistoric deformation	middle and late Quaternary (<750 ka) <i>Comments:</i> Upper Pleistocene alluvium may be faulted, but it is more certain that middle Pleistocene alluvium is faulted. Holocene to uppermost Pleistocene alluvium (ca. <30 ka) is not faulted.
Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr <i>Comments:</i> A low slip rate is inferred based on 4 m of offset of possible upper Pleistocene (ca. 100-150 ka) alluvium and less than 11 m of offset of middle Pleistocene (ca. 150-750 ka) alluvium.
Date and Compiler(s)	1996 Philip A. Pearthree, Arizona Geological Survey
References	#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.

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