

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](#).

Faults on the Modoc Plateau (Class A) No. 840

Last Review Date: 2002-12-06

citation for this record: Personius, S.F., compiler, 2002, Fault number 840, Faults on the Modoc Plateau, 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 03:15 PM.

Synopsis	These north-northwest-striking, down-to-the-southwest and down-to-the-northeast normal faults offset late Miocene and Pliocene volcanic rocks of the Modoc Plateau south-central Oregon. They may represent a less active eastern extension of the Klamath Falls graben system [843]. These faults form escarpments up to 450 m high on Pliocene bedrock, and some form small grabens or half grabens filled with Miocene through Quaternary sediment. No fault scarps on Quaternary deposits have been described along these faults.
Name comments	These faults are located east of the Klamath Falls graben in the northwestern part of the Modoc Plateau. They have been mapped by Peterson and McIntyre (1970 #3729) and Sherrod and Pickthorn (1992 #3567). Klinger and others (1996 #3729) include some of these faults in the East Klamath Lake fault zone.
County(s) and State(s)	KLAMATH COUNTY, OREGON
Physiographic	DASIN AND DANCE

province(s)	BASIN AND RANGE
Reliability of location	Good Compiled at 1:100,000 scale. <i>Comments:</i> Location of fault from ORActiveFaults (http://www.oregongeology.org/arcgis/rest/services/Public/ORActiveFaults/MapS downloaded 06/02/2016) attributed to Jenks (2007 #7794).
Geologic setting	These north-northwest-striking, down-to-the-southwest and down-to-the-northeast normal faults offset late middle Pliocene (Sherrod and Pickthorn, 1992 #3567) or Pleistocene (Walker and MacLeod, 1991 #3646) volcanic rocks and Miocene to Pliocene volcanoclastic rocks of the Modoc Plateau in south-central Oregon. They represent a less active eastern extension of the Klamath Falls graben system [843]. Young faults with similar trends are present across the border in the Modoc Plateau, northern California (Gay and Aune, 1958 #4890; Jennings, 1994 #2878).
Length (km)	40 km.
Average strike	N20°W
Sense of movement	Normal <i>Comments:</i> These faults are mapped as normal or high-angle faults by Walker and MacLeod (1991 #3646), Sherrod and Pickthorn (1992 #3567), Pezzopane (1993 #3544), Klinger and others (1996 #3729), and Sherrod and Smith (2000 #5165). Sherrod and Pickthorn (1992 #3567) note that slip indicators on faults in the Klar basin region plunge directly down dip, indicating normal displacement.
Dip	50–60° SW <i>Comments:</i> Fault dips are from exposures of fault planes in the Klamath basin (Sherrod and Pickthorn, 1992 #3567).
Paleoseismology studies	
Geomorphic expression	These faults form prominent, steep, linear escarpments (Swan Lake Rim, Chiloqu Ridge) as much as 450 m high on Plio-Pleistocene (Walker and MacLeod, 1991 #3646) or middle Pliocene (Sherrod and Pickthorn, 1992 #3567) volcanic rocks and Mio- to Pliocene volcanoclastic rocks; the faults form grabens or half grabens filled with Pliocene through Quaternary sedimentary deposits (Walker and MacLeod, 1991 #3646; Sherrod and Pickthorn, 1992 #3567; Klinger and others, 1996 #3729). No fault scarps on Quaternary deposits have been described along these faults, and no obvious lineaments on Quaternary deposits are apparent on 1:24,000-scale topographic maps.

	the area. However, Weldon and others (2002 #5648) map lineaments across Quaternary deposits based on interpretation of 1:100,000-scale DEMs of the area.
Age of faulted surficial deposits	These normal faults offset Plio-Pleistocene (Walker and MacLeod, 1991 #3646) and middle Pliocene (Sherrod and Pickthorn, 1992 #3567) volcanic rocks and Miocene Pliocene volcanoclastic rocks. No fault scarps on Quaternary deposits have been described, but Walker and MacLeod (1991 #3646) show Quaternary conglomerate fault contact with Plio-Pleistocene volcanic rocks and Pleistocene fluvial and lacustrine deposits along some of these faults. Sherrod and Pickthorn (1992 #3567) and Sheppard and Smith (2000 #5165) show the same fault sections concealed beneath Quaternary deposits.
Historic earthquake	
Most recent prehistoric deformation	undifferentiated Quaternary (<1.6 Ma) <i>Comments:</i> Pezzopane (1993 #3544) and subsequent compilations (Geomatrix Consultants Inc., 1995 #3593; Madin and Mabey, 1996 #3575; Weldon and others, 2002 #5648) classified these faults as active in the Quaternary (<1.6–1.8 Ma).
Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr <i>Comments:</i> One of the longest of these faults, along the eastern margin of Swan Lake Valley, has a minimum vertical separation of 450 m, based on the height of the Swan Lake Rim, in middle Pliocene (Sherrod and Pickthorn, 1992 #3567) or Plio-Pleistocene (Walker and MacLeod, 1991 #3646) volcanic rocks. Such slip data indicate relatively low rates of long-term slip.
Date and Compiler(s)	2002 Stephen F. Personius, U.S. Geological Survey
References	#4890 Gay, T.E., and Aune, Q.A., 1958, Alturas Sheet: California Division of Mines and Geology Geologic Atlas of California, GAM001, scale 1:250,000. #3593 Geomatrix Consultants, Inc., 1995, Seismic design mapping, State of Oregon Technical report to Oregon Department of Transportation, Salem, Oregon, under Contract 11688, January 1995, unpaginated, 5 pls., scale 1:1,250,000. #7794 Jenks, M.D., 2007, Geologic compilation map of part of the Upper Klamath Basin, Klamath County, Oregon: Oregon Department of Geology and Mineral Industries Open-File Report O-2007-05, 7 p., scale 1:100,000.

#2878 Jennings, C.W., 1994, Fault activity map of California and adjacent areas, locations of recent volcanic eruptions: California Division of Mines and Geology Geologic Data Map 6, 92 p., 2 pls., scale 1:750,000.

#3729 Klinger, R.E., Vetter, U.R., and Ryter, D.W., 1996, Seismotectonic study for Gerber Dam Klamath Project, California-Oregon: U.S. Bureau of Reclamation Seismotectonic Report 96-1, 51 p., 1 pl.

#3575 Madin, I.P., and Mabey, M.A., 1996, Earthquake hazard maps for Oregon: Oregon Department of Geology and Mineral Industries Geological Map Series: GMS-100, 1 sheet.

#3791 Peterson, N.V., and McIntyre, J.R., 1970, The reconnaissance geology and mineral resources of eastern Klamath County and western Lake County, Oregon: Oregon Department of Geology and Mineral Industries Bulletin 66, 70 p., 1 pl. scale 1:250,000.

#3544 Pezzopane, S.K., 1993, Active faults and earthquake ground motions in Oregon: Eugene, Oregon, University of Oregon, unpublished Ph.D. dissertation, 208 p.

#3567 Sherrod, D.R., and Pickthorn, L.B.G., 1992, Geologic map of the west half of the Klamath Falls 1° by 2° quadrangle, south-central Oregon: U.S. Geological Survey Miscellaneous Investigations Map I-2182, 1 sheet, scale 1:250,000.

#5165 Sherrod, D.R., and Smith, J.G., 2000, Geologic map of upper Eocene to Holocene volcanic and related rocks of the Cascade Range, Oregon: U.S. Geological Survey Geologic Investigations Map I-2569, 2 sheets, scale 1:500,000.

#3646 Walker, G.W., and MacLeod, N.S., 1991, Geologic map of Oregon: U.S. Geological Survey, Special Geologic Map, 2 sheets, scale 1:500,000.

#5648 Weldon, R.J., Fletcher, D.K., Weldon, E.M., Scharer, K.M., and McCrory, 2002, An update of Quaternary faults of central and eastern Oregon: U.S. Geological Survey Open-File Report 02-301 (CD-ROM), 26 sheets, scale 1:100,000.

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