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.

Chetco River fault (Class A) No. 898

Last Review Date: 2002-05-31

citation for this record: **Personius, S.F., compiler, 2002, Fault number 898, Chetco River fault, 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	The northeast-striking Chetco River fault is mapped in Mesozoic bedrock in the northern Klamath Mountains part of the Cascadia subduction zone [781]. This area is characterized by accreted terranes of Jurassic through Cretaceous rock. The fault is mapped as a high-angle reverse(?) fault with a down-to-the-southeast sense of displacement. Other faults with similar trends in the region, such as the Whaleshead fault zone [897], are part of regional dextral shear zones, but no evidence of lateral displacement has been described along the Chetco River fault. The fault apparently offsets vertically a 125-ka marine-terrace surface approximately 30 m across the Chetco River near Brookings. As with other folds and faults located in the Cascadia forearc, it is unknown if coseismic displacements on this fault are always related to great megathrust earthquakes on the subduction zone, or whether some displacements are related to smaller earthquakes in the North American Plate.

Name comments	The Chetco River fault was informally named and described by Kelsey and Bockheim (1994 #4108). The fault is not shown on geologic maps of the region (Dott, 1971 #4160; Beaulieu and Hughes, 1976 #4161; Ramp and others, 1977 #4146; Walker and MacLeod, 1991 #3646).
County(s) and State(s)	CURRY COUNTY, OREGON
Physiographic province(s)	PACIFIC BORDER
Reliability of location	Poor Compiled at 1:250,000 scale. *Comments:* The fault trace is from the approximately 1:135,000-scale figure 6 of Kelsey and Bockheim (1994 #4108).
Geologic setting	The northeast-striking Chetco River fault is mapped in Mesozoic bedrock in the northern Klamath Mountains part of the Cascadia subduction zone [781]. This area is characterized by accreted terranes of Jurassic through Cretaceous rock (Blake and others, 1985 #4103). As with other folds and faults located in the Cascadia forearc, it is unknown if coseismic displacements on this fault are always related to great megathrust earthquakes on the subduction zone, or whether some displacements are related to smaller earthquakes in the North American Plate.
Length (km)	8 km.
Average strike	N5°W
Sense of movement	Reverse *Comments:* The fault is mapped as a high-angle reverse (?) fault with a down-to-the-southeast sense of displacement (Kelsey and Bockheim, 1994 #4108). Other faults with similar trends in the region, such as the Whaleshead fault zone [897], are part of regional dextral shear zones, but no evidence of lateral displacement has been described along the Chetco River fault (Kelsey and Bockheim, 1994 #4108).
Dip Direction	W
Paleoseismology	

studies	
Geomorphic expression	The Chetco River fault apparently offsets a 125-ka marine-terrace surface approximately 30 m across the Chetco River near Brookings, but has no other geomorphic expression (Kelsey and Bockheim, 1994 #4108).
Age of faulted surficial deposits	The Chetco River fault apparently offsets marine terrace surface number 3; this terrace has been correlated with the 125-ka sea-level highstand by Kelsey and Bockheim (1994 #4108).
Historic earthquake	
Most recent prehistoric deformation	late Quaternary (<130 ka) *Comments:* The Chetco River fault apparently offsets a 125-ka marine-terrace surface approximately 30 m, and thus has been active in the late Quaternary (Kelsey and Bockheim, 1994 #4108). The fault is not shown on active fault maps of Goldfinger and others (1992 #464), Pezzopane (1993 #3544), Geomatrix Consultants, Inc. (1995 #3593), and Madin and Mabey (1996 #3575).
Recurrence interval	
Slip-rate category	Between 0.2 and 1.0 mm/yr *Comments:* Kelsey and Bockheim (1994 #4108) measured about 30 m of vertical offset across a 125-ka marine-terrace surface near Brookings, but did not discuss possible lateral displacement. The vertical slip data suggest a moderate long-term slip rate.
Date and Compiler(s)	2002 Stephen F. Personius, U.S. Geological Survey
References	#4161 Beaulieu, J.D., and Hughes, P.W., 1976, Land use geology of western Curry County, Oregon: State of Oregon, Department of Geology and Mineral Industries Bulletin 90, 148 p., 12 pls., scale 1:62,500. #4103 Blake, M.C., Jr., Engebretson, D.C., Jayko, A.S., and Jones, D.L., 1985, Tectonostratigraphic terranes in southwest Oregon, *in* Howell, D.G., ed., Tectonostratigraphic terranes of the Circum-Pacific Region: Circum-Pacific Council for Energy and Mineral Resources Earth Science Series, Number 1, p. 147-157.

#4160 Dott, R.H., Jr., 1971, Geology of the southwestern Oregon Coast west of the 124th meridian: State of Oregon, Department of Geology and Mineral Industries Bulletin 69, 63 p., 2 pls.

#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.

#464 Goldfinger, C., Kulm, L.D., Yeats, R.S., Mitchell, C., Weldon, R., II, Peterson, C., Darienzo, M., Grant, W., and Priest, G.R., 1992, Neotectonic map of the Oregon continental margin and adjacent abyssal plain: State of Oregon, Department of Geology and Mineral Industries Open-File Report 0-92-4, 17 p., 2 pls.

#4108 Kelsey, H.M., and Bockheim, J.G., 1994, Coastal landscape evolution as a function of eustasy and surface uplift rate, Cascadia margin, southern Oregon: Geological Society of America Bulletin, v. 106, p. 840-854.

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

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

#4146 Ramp, L., Schlicker, H.G., and Gray, J.J., 1977, Geology, mineral resources, and rock material of Curry County, Oregon: State of Oregon, Department of Geology and Mineral Industries Bulletin 93, 79 p., 2 pls.

#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.

Questions or comments?

Facebook Twitter Google Email
Hazards