

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](#).

Cape Foulweather fault (Class A) No. 884

Last Review Date: 2002-05-31

citation for this record: Personius, S.F., compiler, 2002, Fault number 884, Cape Foulweather 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 03:14 PM.

Synopsis	The Cape Foulweather fault is a down-north, northeast-striking fault that offsets marine-terrace platforms at Whale Cove, and inland, offsets Miocene through Eocene volcanic and sedimentary rocks in the Oregon Coast Range. Vertical offsets of about 20 m of the approximately 80 ka Newport marine terrace and about 80 m of the approximately 125 ka Yachats marine terrace across the projected trace of the Cape Foulweather fault indicate repeated displacements in the late Quaternary. As with 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 on the North American Plate.
Name comments	The Cape Foulweather fault was originally mapped by Schlicker and others (1976 #3983) and Snively and others (1976 #3985), and was named by Kelsey and others (1996 #4111).
County(s) and	LINCOLN COUNTY, OREGON

State(s)	LINCOLN COUNTY, OREGON
Physiographic province(s)	PACIFIC BORDER
Reliability of location	Good Compiled at 1:62,500 scale. <i>Comments:</i> Location of fault from ORActiveFaults (http://www.oregongeology.org/arcgis/rest/services/Public/ORActiveFaults/MapServer downloaded 06/02/2016) attributed to 1:62,500-scale mapping of Snively and others (1976 #3985).
Geologic setting	The Cape Foulweather fault is a down-north, northeast-striking fault that offsets marine-terrace platforms at Whale Cove. Inland, the fault offsets Miocene through Eocene volcanic and sedimentary rocks in the Oregon Coast Range (Schlicker and others, 1973 #3983; Snively and others, 1976 #3985). This fault cannot be projected offshore structures mapped in seismic-reflection profiles (Kelsey and others, 1996 #4111; McNeill and others, 1998 #4089). 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)	10 km.
Average strike	N°E
Sense of movement	Reverse, Left lateral <i>Comments:</i> The Cape Foulweather fault offsets marine-terrace platforms down to north at Whale Cove (Kelsey and others, 1996 #4111). Kelsey and others (1996 #4111) assign this displacement to a fault mapped in bedrock in this location by Schlicker and others (1973 #3983) and Snively and others (1976 #3985). However, the fault mapped by Schlicker and others (1973 #3983) and Snively and others (1976 #3985) is shown with a down-south displacement direction. Faults with similar attitudes are shown as normal faults on the cross section of Schlicker and others (1973 #3983), and as reverse faults on the cross section of Snively and others (1976 #3985). Kelsey and others (1996 #4111) concluded that most active faults along the Oregon coast are oblique-slip faults, with left lateral and either extensional or contractional dip slip. Given the north-south orientation of maximum horizontal compression in northwestern Oregon (Vanderbeek and others, 1991 #4127), a reverse sense of slip may be most reasonable for the dip slip component.
Dip	60° S.

	<i>Comments:</i> Schlicker and others (1973 #3983) and Snavely and others (1976 #39 report a 60° south dip on the fault they map at Whale Cove. This dip direction is opposite the down-to-the-north direction apparent in offset marine terrace platform (Kelsey and others, 1996 #4111).
Paleoseismology studies	
Geomorphic expression	The Cape Foulweather fault is mapped on the basis of offset marine-terrace wave platforms (Kelsey and others, 1996 #4111), but no other geomorphic expression of the fault has been described.
Age of faulted surficial deposits	The Cape Foulweather fault offsets the approximately 80 ka Newport and the approximately 125 ka Yachats marine terraces at Whale Cove (Kelsey and others #4111).
Historic earthquake	
Most recent prehistoric deformation	late Quaternary (<130 ka) <i>Comments:</i> Pezzopane (1993 #3544), Geomatrix Consultants, Inc. (1995 #3593), Madin and Mabey (1996 #3575) do not show these structures in their Quaternary compilations. If the faulted marine terrace platforms described by Kelsey and others (1996 #4111) are correlative with approximately 80 ka and approximately 125 ka marine highstands, then this fault has displacement in the late Quaternary.
Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr <i>Comments:</i> Kelsey and others (1996 #4111) measured vertical offsets of about 20 m on the approximately 80 ka Newport marine terrace and about 80 m of the approximately 125 ka Yachats marine terrace across the projected trace of the Cape Foulweather fault.
Date and Compiler(s)	2002 Stephen F. Personius, U.S. Geological Survey
References	#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. #4111 Kelsey, H.M., Ticknor, R.L., Bockheim, J.G., and Mitchell, C.E., 1996, Quaternary upper pl. deformation in coastal Oregon: Geological Society of America Bulletin, v. 108, no. 7, p. 843-860.

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

#4089 McNeill, L.C., Goldfinger, C., Yeats, R.S., and Kulm, L.D., 1998, The effect of upper pl. deformation on records of prehistoric Cascadia subduction zone earthquakes in Stewart, I.S., and Vita-Finzi, C., eds., Coastal tectonics: Geological Society Special Publication No. 146, p. 321-342.

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

#3983 Schlicker, H.G., Deacon, R.J., Olcott, G.W., and Beaulieu, J.D., 1973, Environmental geology of Lincoln County, Oregon: State of Oregon, Department of Geology and Mineral Industries, Bulletin 81, 171 p., 6 pls.

#3985 Snavely, P.D., Jr., MacLeod, N.S., Wagner, H.C., and Rau, W.W., 1976, Geologic map of the Cape Foulweather and Euchre Mountain quadrangles, Lincoln County, Oregon: U.S. Geological Survey Miscellaneous Investigations Map I-868, 1 sheet, scale 1:62,500.

#4127 Werner, K.S., Graven, E.P., Berkman, T.A., and Parker, M.J., 1991, Direction of maximum horizontal compression in western Oregon determined by borehole breakout: *Tectonics*, v. 10, no. 5, p. 948-958.

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