

# Earthquake Report: 2016 Annual Summary - Cascadia Earthquakes $M \geq 4.0$



## Cascadia subduction zone

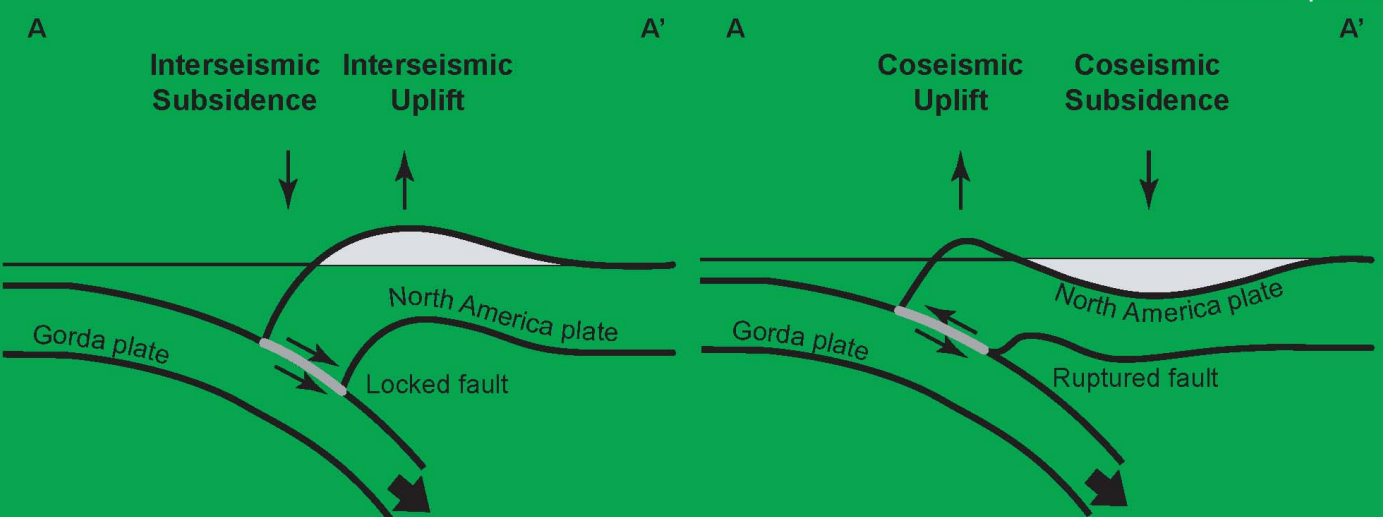
Chaytor et al. (2004)  
Nelson et al. (2004)



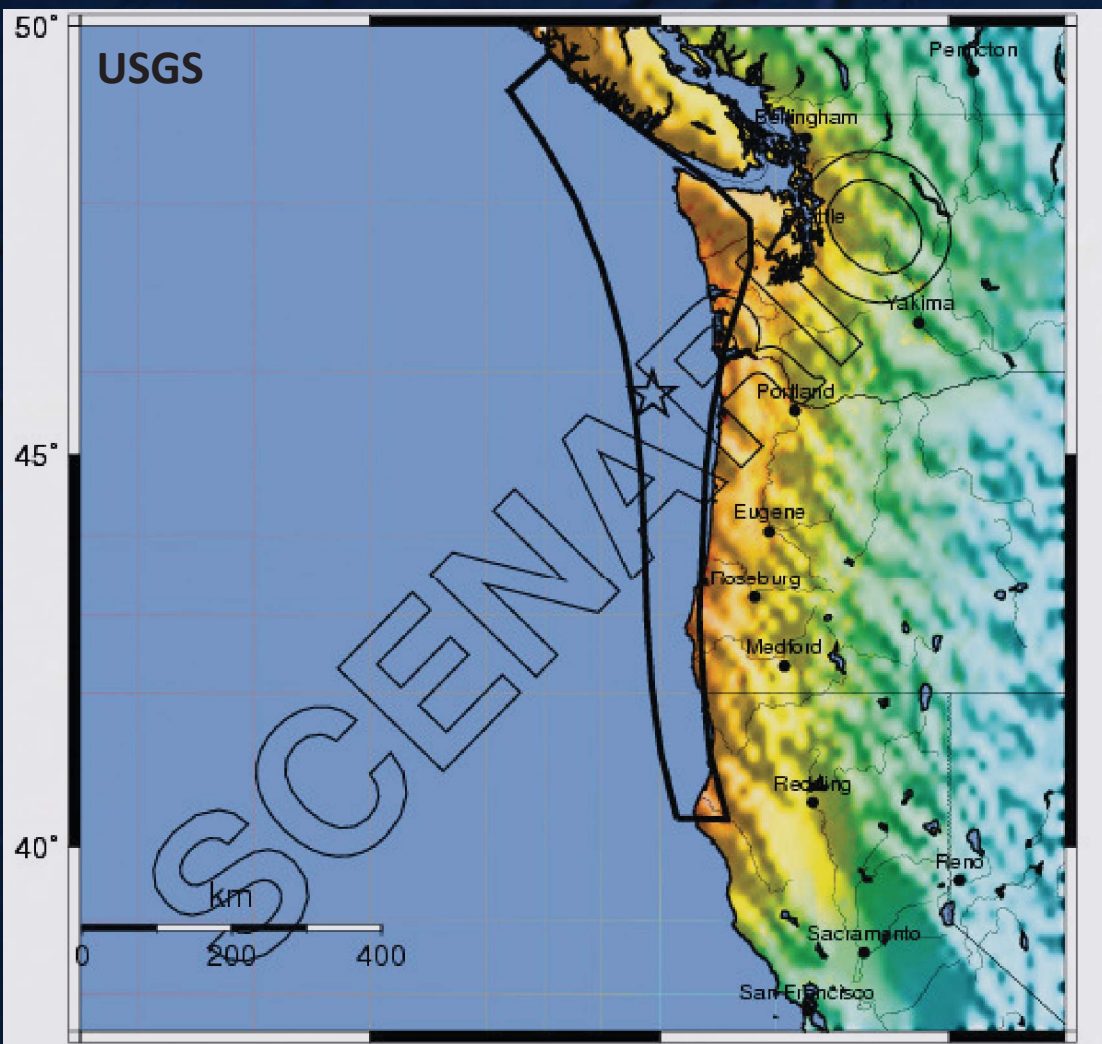
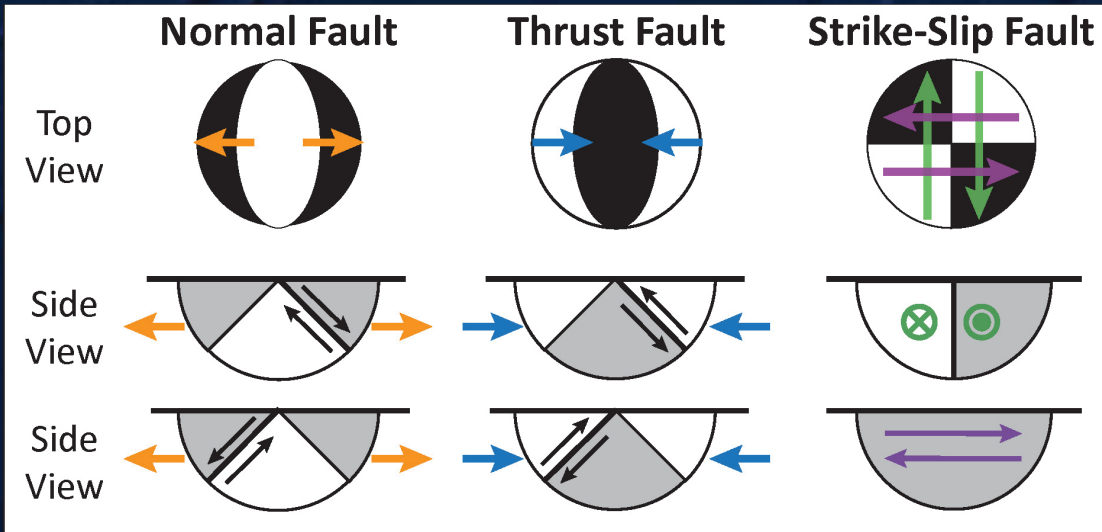
Plate configuration for the Cascadia subduction zone (CSZ). The Juan de Fuca and Gorda plates are subducting northeastwardly oblique beneath the North America plate at  $\sim 36$  mm/yr in the Humboldt Bay region. Paleoseismic core sites (marine and terrestrial) are plotted as circles.

## Vertical Motion: Coseismic vs. Interseismic

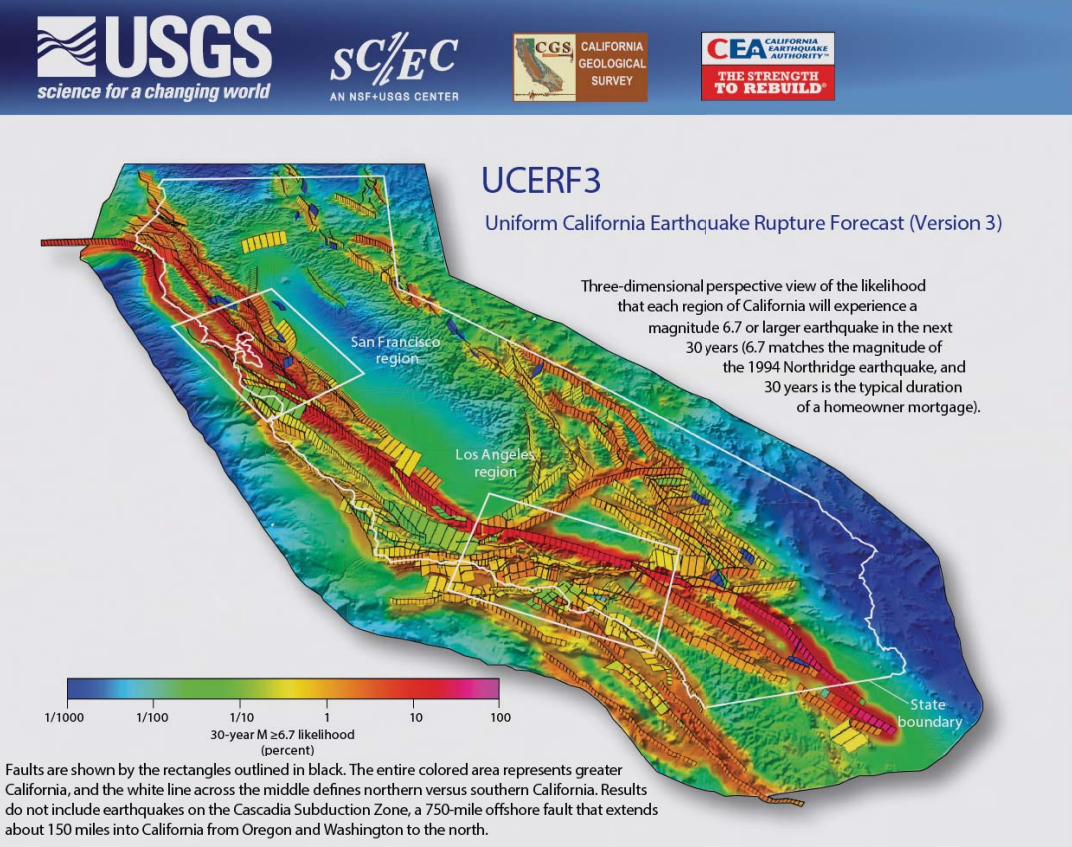
Plafker (1972)



Schematic diagrams showing the pattern of (A) inter-seismic and (B) co-seismic deformation associated with a subduction zone earthquake during an earthquake deformation cycle. Adapted from Plafker (1972) to reflect the spatial pattern of tectonic deformation during the earthquake cycle in Cascadia.



PERCEIVED SHAKING	Not felt	Weak	Light	Moderate	Strong	Very strong	Severe	Violent	Extreme
POTENTIAL DAMAGE	none	none	none	Very light	Light	Moderate	Moderate/Heavy	Heavy	Very Heavy
PEAK ACC (%g)	<.17	.17-1.4	1.4-3.9	3.9-9.2	9.2-18	18-34	34-65	65-124	>124
PEAK VEL (cm/s)	<0.1	0.1-1.1	1.1-3.4	3.4-8.1	8.1-16	16-31	31-60	60-116	>116
INSTRUMENTAL INTENSITY	I	II-III	IV	V	VI	VII	VIII	IX	X+



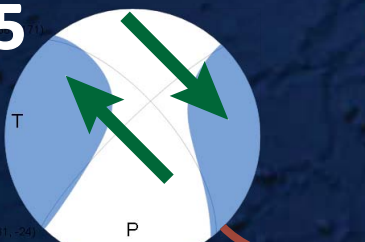
Jason R. Patton  
earthjay.com © 2016

200 km

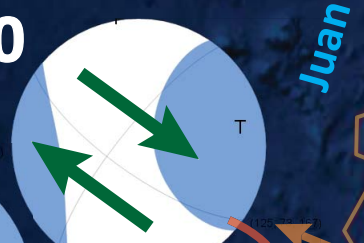


Earthquake Age  
Hour Day Week Older

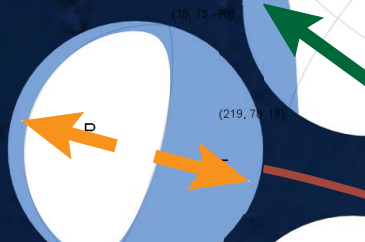
2016.03.18 M 5.5



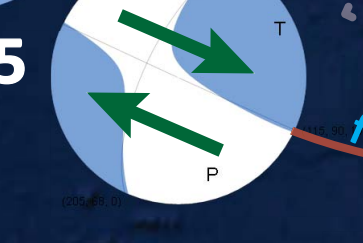
2016.10.09 M 5.0



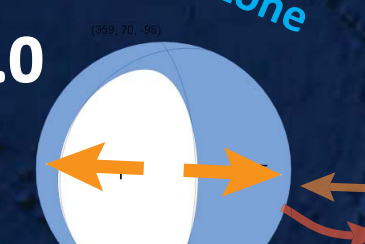
2016.05.20 M 5.0



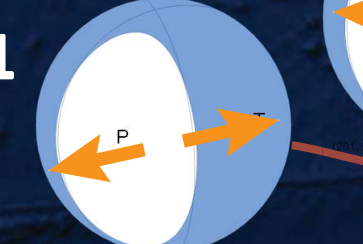
2016.11.28 M 5.5



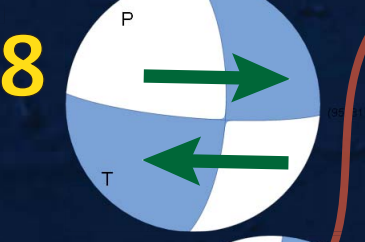
2016.01.30 M 5.0



2016.01.30 M 5.1



2016.12.08  
M 6.5



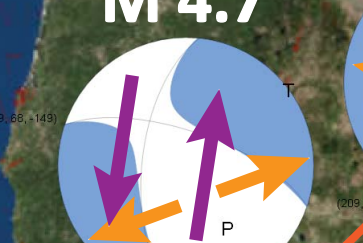
2016.09.03 M 5.6



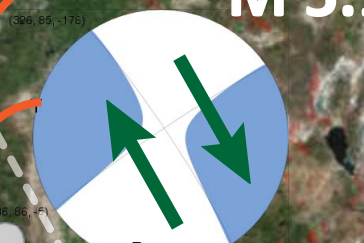
2016.11.06  
M 4.1



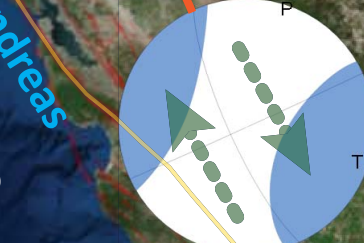
2016.07.21 M 4.5  
M 4.7



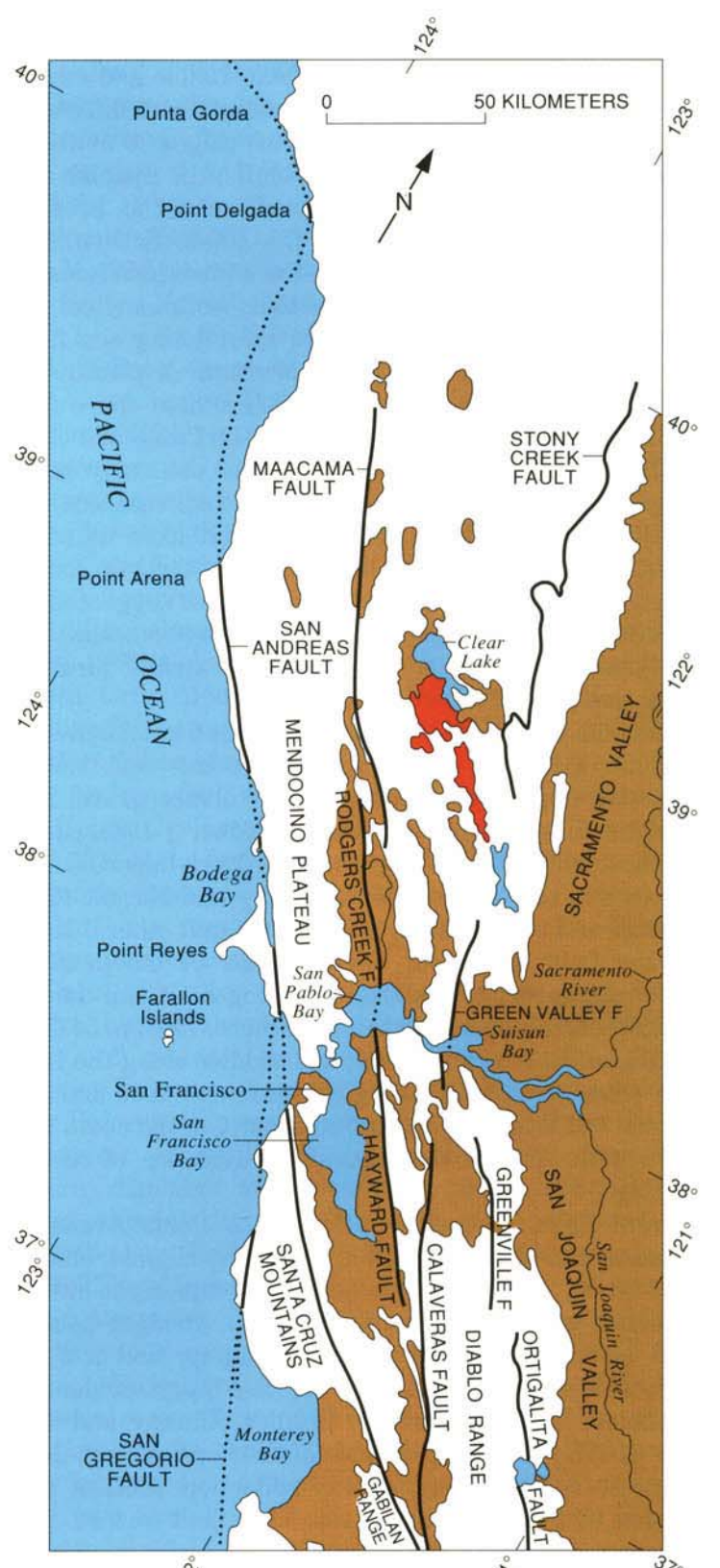
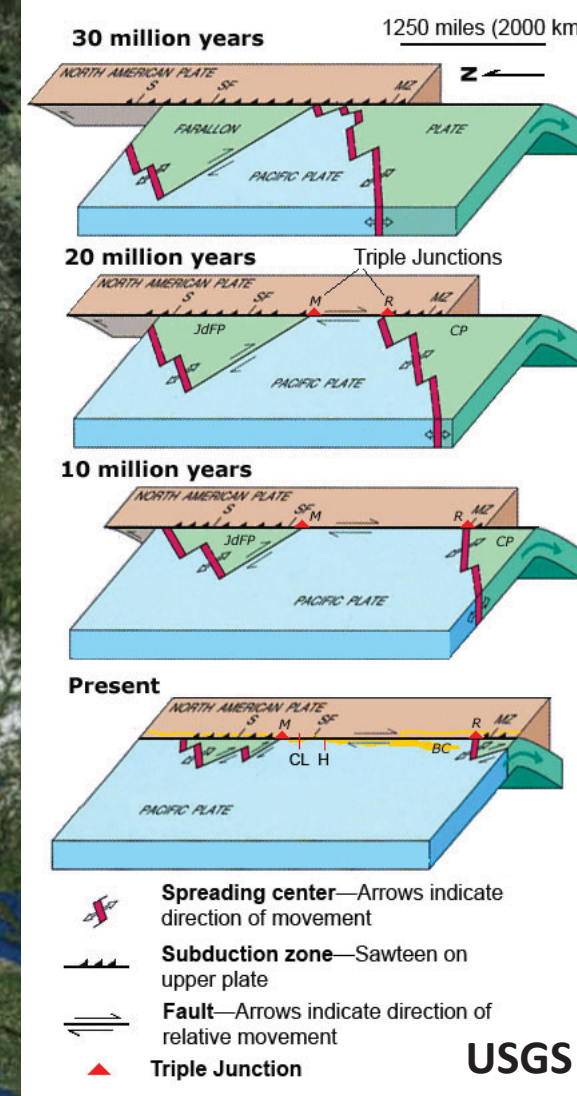
2016.08.10 M 5.1



2016.12.14 M 5.0



2016.08.28



EXPLANATION  
USGS  
Alluvial and estuarine deposits (Quaternary)—Chiefly basin fill; may also include some Pliocene deposits  
Clear Lake Volcanics (Quaternary and Tertiary)—Flows, tuffs, and breccias of dacite and rhyolite and less abundant basalt. Age is late Pliocene to Holocene  
Bedrock (Tertiary and older)—Varied rock types  
Fault exhibiting evidence of Quaternary displacement—Dotted where concealed by water

