Earthquake Report: 2019.06.23
M 5.6 Petrolia (& USGS Seismicity 1919-2019 M ≥ 5.0)

Second Invariant of Strain Rate, 10⁻⁹/year: 0.1 0.25 0.5 1 2 4 8 16 32 64 128 256 500

UNAVCO — Nevada Geodetic Laboratory

Jason R. Patton
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USGS Google Earth

Depth to Slab (km): 0 50 100 150 200 250 300 350 400 450 500 550 600 650 700

Magnitude: 8 7 6 5 4 3 2 1

Depth (km)
- 0 - 33
- 33 - 70
- 70 - 150
- 150 - 300
- 300 - 500
- 500 - 800

USGS Quaternary Fault and Fold Database
- Historic
- Holocene / Latest Pleistocene
- Late Quaternary
- Mid-Late Quaternary
- Quaternary

Normal Fault | Thrust Fault | Strike-Slip Fault (Top View / Side View / Side View)

SHAKING	Not felt	Weak	Light	Moderate	Strong	Very strong	Severe	Violent	Extreme
DAMAGE	None	None	None	Very light	Light	Moderate	Moderate/heavy	Heavy	Very heavy
PGA(%g)	<0.05	0.3	2.76	6.2	11.5	21.5	40.1	74.7	>139
PGV(cm/s)	<0.02	0.13	1.41	4.65	9.64	20	41.4	85.8	>178
INTENSITY	I	II-III	IV	V	VI	VII	VIII	IX	X+

Cascadia subduction zone

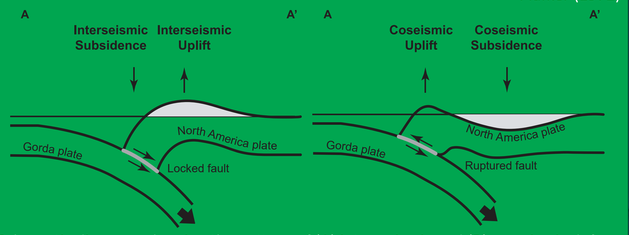
Chaytor et al. (2004)
Nelson et al. (2004)



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 ~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 witha 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.

2019 BFZ Sequence
Juan de Fuca plate
Blanco fracture zone
Cascadia subduction zone
Pacific plate
Gorda Rise
North America plate
Gorda plate
Mendocino fault
2019.06.23
M 5.6
Bartlett Springs fault
San Andreas fault
Maacama fault
Pacific plate
100 km
N

