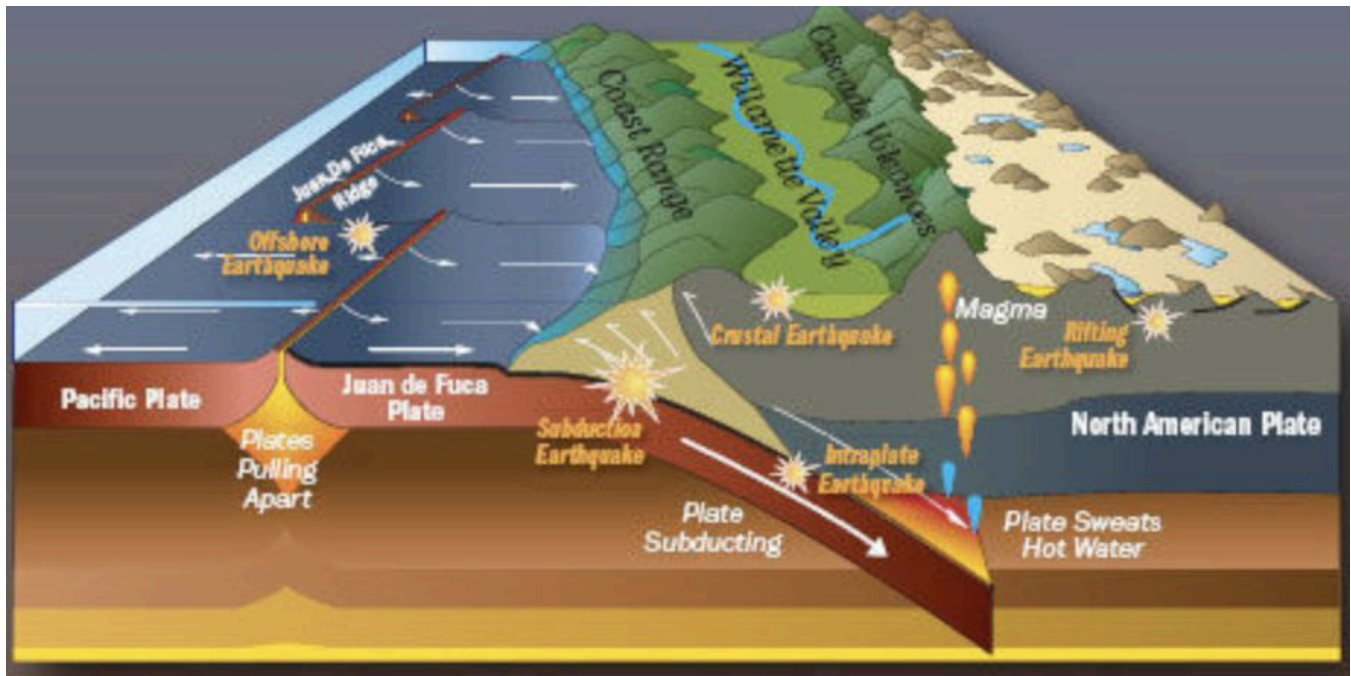


Massive Cascadia earthquake hit NW Coast in January 1700

January 25, 2023



It's a January night on the north Oregon coast. The sun has been down for several hours and it's dark. A quarter moon hangs in the winter sky, with the rhythmic sound of waves breaking on the beach.

A slight tremor shakes the ground; barely noticeable. Then an unusual sound that gets louder as it approaches. Suddenly, the ground begins to violently roll and shake. This lasts for almost 5 minutes. As suddenly as it began, the shaking stops.

The noise recedes into the distance. For a short period of time, all is quiet. Strangely, the ocean has pulled away from the shore, followed by a wave that pushes onto the beach, like a very large sneaker wave. 20 minutes have passed since the shaking stopped when another sound like distant thunder is heard, rapidly getting closer and louder.

A massive wall of water 50 feet high crashes onto the beach, destroying everything in its path as it quickly sweeps inland. It's just after 9:00 PM on January 26th, 1700.

There has just been a full rupture of the offshore Cascadia Subduction Zone, and the entire coastline of the Pacific Northwest has been hit with a magnitude 9.0 earthquake and massive tsunami, with the devastation

extending for hundreds of miles up and down the coast from Vancouver Island to Northern California.

The 700 mile-long Cascadia Subduction Zone is the result of the oceanic Juan de Fuca and Gorda plates subducting (sliding underneath) the much larger North American plate. These plates don't slide smoothly past each other; they lock together and slowly build up pressure for centuries until a sudden, explosive release.

The long chain of inland Cascade volcanoes extending from southern British Columbia to northern California is a result of this subduction zone. Wherever you find a chain of volcanoes, you'll find a subduction zone, whether it's the southern coast of Alaska, the western coast of Chile, or Indonesia. Subduction zones produce the planet's most powerful earthquakes. The magnitude 9.5 Valdivia subduction zone earthquake that hit the coast of Chile in May of 1960 was the most powerful quake ever recorded. The second most powerful quake ever recorded was the magnitude 9.2 "Good Friday

Earthquake" that struck near Prince William Sound on the south coast of Alaska in March of 1964. The magnitude 9.1 subduction zone earthquake and tsunami that struck SE Asia in December 2004, killing over 225,000 people in 14 countries, was the third most powerful quake ever recorded. And the magnitude 9.0 Tohoku subduction zone earthquake and tsunami that struck the east coast of Japan in March of 2011, killing almost 20,000 people, was the fourth most powerful quake ever recorded.

For years, geologists didn't think the Pacific Northwest was affected by large earthquakes, until the mid-1980's, when a young geologist named Brian Atwater began digging around in the coastal marshes and stream banks of the Washington coast; discovering convincing evidence of massive earthquakes and tsunamis that had devastated coastal areas in the past. Using dendrochronology (tree rings) the date of the last great earthquake was an estimate, but the exact date was elusive, until old Japanese tsunami records were examined by seismologist Kenji Satake. In late January of 1700, the coast of Honshu Island in Japan was hit by an "orphan tsunami"; a 16-foot tsunami with no accompanying earthquake, which had traveled thousands of miles across the Pacific ocean from the west coast of North America, the result of a monster subduction zone quake 60 times more powerful than the earthquake that would destroy San Francisco in 1906. This 1700 date fit squarely in the middle of the tree ring estimates, and agreed with the oral histories of several native Northwest tribes, including the Makah, Hoh, Quileute, Duwamish and Yurok, which told of this violent event happening on a winter night.

Thursday, January 26th marks the 323rd anniversary of this massive earthquake and tsunami. By drilling into turbidites (undersea landslides) geologist Chris Goldfinger has determined that there have been 41 Cascadia Subduction Zone earthquakes over the past 10,000 years, with intervals between quakes as short as 110 years, and as long as 1,050 years.

19 of these have been full ruptures of the subduction zone, while the other 22 have been partial ruptures. There is no way to predict when the next one will hit, but research by Goldfinger hints that Cascadia quakes come in clusters, and that southern sections of the subduction zone rupture more frequently than northern sections.

Compared to countries like Japan, the Pacific Northwest is woefully unprepared in terms of hardened infrastructure, emergency preparedness and general earthquake resiliency. 80 miles off the north Oregon coast, at the toe of the continental slope, the Cascadia Subduction Zone sits silently, with plates locked and pressure building.

Some day it will rupture. We need to be ready when it does.