

# California quake occurred in very seismically active region

December 22 2022, by John Antczak

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The big earthquake that rocked the far north coast of California on Tuesday originated in an area under the Pacific Ocean where multiple tectonic plates collide, creating the state's most seismically active region.

The Mendocino Triple Junction is the meeting place of the Gorda, Pacific and North American plates, massive moving slabs of Earth's crust that are also known as [lithospheric plates](#).

## WHAT'S HAPPENING?

The small Gorda Plate—often referred to jointly with the Juan de Fuca Plate to the north—is diving under the North American plate in a process called subduction. It is part of what scientists call the Cascadia subduction zone, which stretches from Northern California into Canada.

"In this Triple Junction area, it's a complicated jigsaw puzzle," said Lori Dengler, professor emeritus of geology at Cal Poly Humboldt.

Tuesday's magnitude 6.4 earthquake occurred at 2:34 a.m. southwest of the small Humboldt County community of Ferndale, about 210 miles (345 kilometers) northwest of San Francisco. The quake was centered offshore and numerous aftershocks have followed.

Initial analysis by the U.S. Geological Survey points to the Gorda Plate as the quake's source.

"The location, depth and faulting mechanism indicate that this event likely occurred within the subducting Gorda Plate," the USGS said.

## DOES THIS HAPPEN OFTEN?

It was the latest in a long history of large quakes that have struck the lightly populated region of redwood forests and quaint Victorian homes as the plates grind against each other.

The USGS said that in the past century there have been at least 40 other earthquake of magnitude 6 or larger, including six quakes of magnitude 7 or larger, within 155 miles (250 kilometers) of where Tuesday's quake was centered.

The quake occurred one year to the day after the nearby Dec. 20, 2021, Petrolia quake. That [quake](#) was actually two overlapping quakes of magnitudes 6.2 and 5.7, according to the USGS.

"We have hundreds of faults in the vicinity of what we call the Triple Junction," Dengler said. "It's just been sheared up. There are all sorts of pieces."

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