

## **Not My Fault: 2017 midterm earthquake report card – how’s it shaking?**

Lori Dengler/For the Times-Standard

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I’ve been out of the country for most of the past month. On my return several people mentioned the June 24th earthquake. And what did I miss? “It was a little jiggle”, or “I didn’t feel it but my friend did” and similar reports. The mighty quake that I had missed turned out to be a 4 near Petrolia. No surprise about the size or location. Cape Mendocino and the adjacent offshore area is the most seismically active region of the lower 48 states and we typically have four or five magnitude 4 or larger quakes within 15 miles of the Cape each year. The questions and comments about the little 4 got me thinking – what kind of a seismic year has it been on the North Coast so far and, for that matter, elsewhere in the world.

We just passed the 2017 halfway point. In the past six months, there have been 143 earthquakes of magnitude 2 or larger in the North Coast area including four in the M 4 range. Over half were offshore, 50 were within ten miles of Cape Mendocino and 53 were reported felt. The largest earthquake so far? M 4.2, 135 miles west of Crescent City and too far offshore to be felt. The June 24th M 4.0 that people asked me about was the most widely felt quake of the year – over 400 people reported their observations to the USGS “Did You Feel It” web site.

My gut feeling was that this has been a pretty quiet year so far. But it is important to back up hunches with data. Thanks to the USGS web site [quake.usgs.gov](http://quake.usgs.gov), this is easy to do. Just click on the Latest Earthquakes link and select Search Earthquake Catalog. You can spend hours compiling lists and maps of earthquake activity anywhere. I looked at the past ten years and found that the average number of M 2 and larger quakes for the first half of the year was about 200; the high was 328 back in 2014. But these numbers pale with the first half of 1992 with a first half total of 1500! The explanation for that surge 25 years ago is pretty easy. April 25th and 26th 1992 was the Cape Mendocino earthquake sequence that triggered numerous aftershocks.

My hunch was confirmed – this year was the quietest of the bunch. Not only fewer M 2s and larger, but fewer 4s as well.

Since I had the web site opened, it was easy to do a similar search for earthquake activity in the contiguous 48 states. Only nine earthquakes of M 4 and larger have been recorded in the lower 48 so far this year – and the largest was a 4.4. The average over the past ten years has been around 30, and most years there’s been at least one quake to reach the magnitude 5 level.

No reason to stop with the US – next, let’s look at the whole globe. I used M 6 and larger earthquakes for this comparison, as the global seismic network has been good enough to catch all quakes of this size and larger for many years. In the first half of 2017, 47 earthquakes of M 6 or larger are listed, the largest a magnitude 7.9 in Papua New Guinea. Only one other earthquake made the M 7 range so far this year. The average over the past decade is 82, and most years have tallied up seven to nine quakes in the M 7 range by now.

Fewer big earthquakes doesn’t always mean less impacts, but so far this year, we’ve been lucky in that category too. While seventeen earthquakes caused casualties so far this year, impacts were localized and the total is only 81. “Average” numbers don’t make a lot of sense when it comes to earthquake impacts as they vary wildly from year to year. In 2014, there were only 14 deaths in the first half of the year while 2010 and the Haiti quake claimed somewhere between 160,000 and 316,000 lives.

From the perspectives of the North Coast, the continental US and the globe, it really has been a quieter than average year for earthquakes so far. What does this mean? Not a whole lot. Six months is an arbitrary and short window from which to look at earthquake patterns. 2004 had also been a relatively quiet year for earthquakes when, in mid-December I was compiling my annual earthquake summary. On December 23, a magnitude 8.1 earthquake struck in a remote area south of New Zealand. It made a nice addition to my report – and was easy to make a small correction. Three days later, the magnitude 9.1 struck Indonesia and Andaman Islands and triggered the catastrophic Indian Ocean tsunami and my report went out the window.

It is tempting to say that Mother Nature has decided that with all the other earth shaking events of the past six months, she decided to take a snooze. But our activities have nothing to do with the forces that drive

earthquakes. We have no easy tools for determining when seismicity patterns are about to change. What we do have control over is how we build human communities in earthquake country and what we do to prepare for them in advance.

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