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10 years ago at 2:46 pm JST on 3/11 (or 9:46 pm 3/10 in the PNW), the Japan Trench megathrust slipped 60-80 meters in one go. The movement launched a tsunami that was among the largest ever seen with water run-up to 38 meters in places (124 feet: an 11 story building).

More than 18,000 people lost their lives in the tsunami, a disaster of unimaginable proportions. But it has been estimated that 330,000 were in the tsunami inundation zone at the time of the quake. That is, more than 90% were able to reach safety.

Preparation matters. Awareness of the hazard and what to do if you feel a long and strong earthquake is the way to be prepared. Long and strong means "get gone." But only after the shaking is over. Buildings that are resilient can be key "vertical evacuation structures."

The earthquake itself, despite minutes of severe shaking in populated areas, surprisingly didn't cause many casualties at all. Japan had learned many lessons from previous quakes and had built for safety during the quake, and resilience for recovery afterward.

These are lessons we must take to heart in the Pacific Northwest where, to the best of our geo-knowledge, an earthquake of similar size and perhaps similar tsunami took place 321 years ago, and will again someday.

Before that quake, most seismologists in Japan knew very well that the Japan Trench could have very large earthquakes and tsunami, as it had done before as recently as in 1896 and 1933. But they thought the maximum magnitude possible was much less than 9.0.

But there was geologic evidence of tsunami deposits, showing that the Jogan quake of July 13, 869 CE was similarly huge. On an August 2011 field visit to the tsunami inundation zone, Daisuke Sugawara (Tohoku U) showed us soil slices of the thousand year old evidence.

Seismology doesn't go back far enough to get the full picture. In Japan, the historic record goes back well over 1000 years, so the Jogan was a known event. Its size was not; we need the science of paleoearthquakes and paleotsunamis to extend the story.

Another surprise: in 2011, it was controversial science to suggest that subduction quakes could have fault slip all the way to the sea floor. Our team studying Nankai Trough (another part of Japan) had just found geo-evidence of shallow seismic slip in fault core samples.

And then this Tohoku quake happened, and the massive fault slip to the surface became clear and undeniable. Now we know this is not only possible, but may even be typical of the biggest earthquakes.

That August, I landed at the Sendai Airport, on the very runway I had seen being inundated by the tsunami on many news videos. Violent shaking at the airport went on for minutes. Yet 5 months later, it was hard to even see evidence of it.

The most important thing is to have learned something from March 11, 2011, to understand the Earth better and to help prevent future suffering from disasters. Japan still has a high likelihood of future tsunamis, as does Cascadia. Let's be ready.

And just to end on a poignant but perhaps lighter note: JAMSTEC seismologist Kiyoshi Suyehiro opens a bottle of tsunami sake -- a bottle that had literally been washed away from a warehouse by the water and later salvaged. You can see the water damage on the label.