Times Standard

Not My Fault: An open letter about preparedness to Cal Poly Humboldt President Dr. Carvajal

Lori Dengler for the Times-Standard

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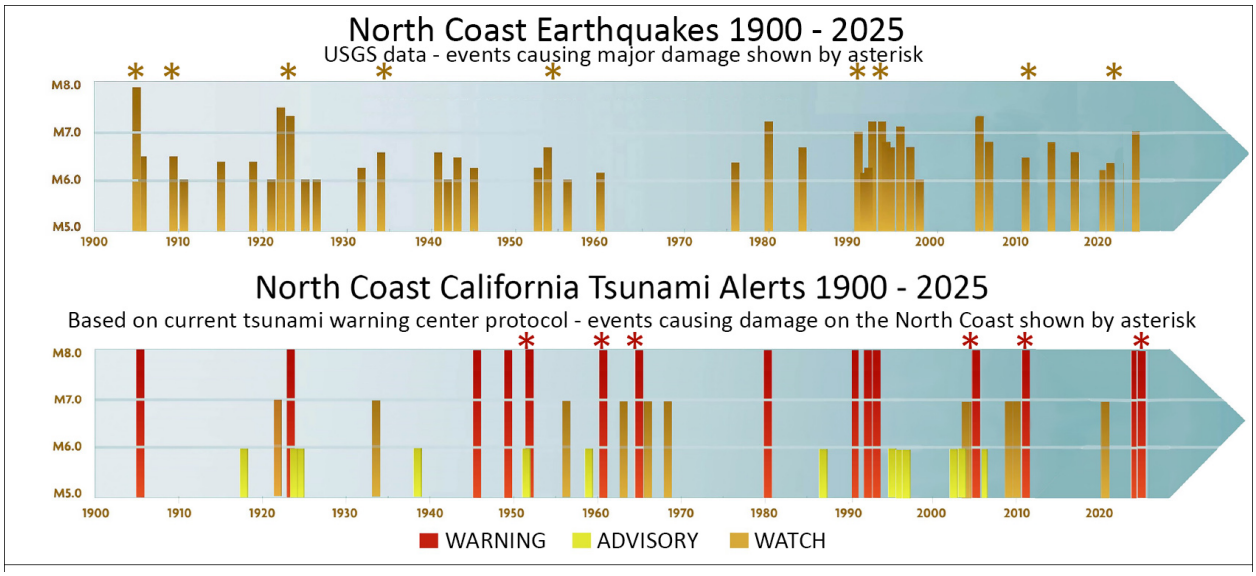

Timelines for North Coast earthquakes of magnitude 6 and larger (top) and events for which our area was placed in a tsunami alert status (bottom) since 1900. Asterisks note earthquakes that caused major damage (intensity VIII or higher), or tsunamis that caused damage to Crescent City harbor. Note that the two timelines don't match perfectly: local earthquakes smaller than magnitude 7 won't trigger tsunami alerts and major distant earthquakes coming from other parts of the Pacific will.

This week Cal Poly Humboldt's new president, Dr. Richard Carvajal, took over the University reins, our 9th president since its founding as Humboldt Normal School in 1913. I've been at Humboldt under the last five and have high hopes that the Carvajal era will steer our institution on a steady course of academic excellence.

It won't be easy. This is a hard time for institutions of higher learning and there are multiple economic, cultural, and political pressures at work to rile the seas. I want to elevate an issue that might not be near the top of your list of concerns – preparedness. The last year has been relatively quiet from a seismic perspective but that could change in an instant with the potential to make everything else moot.

Welcome back to earthquake country. You have Humboldt roots and have first-hand experience of our shaky terrain. It's not an academic issue to you; a few seconds of strong ground shaking can completely disrupt a community. Experiencing quakes is a big advantage in understanding

their importance, but it's a different kettle of fish when you are responsible for the health and safety of the entire academic community.

I've made it my unofficial duty to prep new Humboldt presidents on our natural hazard terrain. While you have felt our quakes, you might not be aware of how unique our area is when it comes to earthquake and tsunami hazards. We have more earthquakes and larger ones than any other part of the contiguous 48 states. The same forces that created Humboldt County's beautiful coastline, trigger nearly half of the total seismic energy released on average annual basis in the US mainland.

We have pretty good earthquake data going back to the mid 1800s when journalists first established newspapers in the Humboldt Bay region. We also have oral histories of the Yurok, Tolowa, Wiyot, Hupa and other peoples who lived in this area for millennia before then. Paleoseismology, the geologic study of prehistoric quakes has pushed our timeline even further back, much of that research done by generations of Humboldt Geology faculty and students. The Mendocino triple junction where three great fault systems meet is less than 40 miles from campus and the Cascadia megathrust, the only fault system in the lower 48 states capable of unleashing a magnitude 9 temblor, sits an ominous 8 miles beneath us.

The first well documented North Coast quake occurred in 1853. Since then, 48 earthquakes of probable magnitude 6 and larger have occurred in our area and an additional 26 earthquakes in the M5 range close enough to population centers to cause damage. Fortunately, most have been centered offshore or in remote areas with few people nearby and caused only moderate damage. But 14 on this list were major events, knocking down chimneys, tossing houses off foundations, triggering fires, and causing losses.

The Cal Poly Humboldt campus has been lucky so far. The strongest ground shaking for most has been centered to the south of us and the most significant events occurred when classes were not in session. Since 1913, only two earthquakes caused very strong shaking on campus property. The June 6, 1932, earthquake just offshore of Arcata caused much non-structural damage on campus and on December 21, 1954, during Christmas break, a M6.5 beneath Fickle Hill only a few miles away had similar impacts.

A university is a unique environment concentrating many young people away from home for the first time. New faculty and staff arrive each term and many have not experienced earthquakes before. Even though campus buildings are constructed to be safe in strong shaking, cabinets can slide, light fixtures fall, and windows break. Certain laboratories can be particularly hazardous when chemicals, furnaces, and ceramics or glassware is used. The overwhelming majority of injuries in California earthquakes are caused by these non-structural hazards, often exacerbated by people not responding appropriately when an earthquake happens.

Keeping our campus community safe is a never-ending process. Assuring that buildings meet current seismic standards is the easy part. Making sure that each incoming cadre of students, staff, and faculty know what to do is harder. Orientations should include what to do when an earthquake occurs. The primary cause of injuries in California earthquakes is moving while the ground is shaking. The further you try to move, the more likely you are to get hurt. Our mantra is STAY PUT: DROP to the ground if physically able, bend over or drop down between the seats in

a lecture hall, COVER the back of your neck with an arm and slide beneath a table or desk in nearby, and HOLD ON.

Our earthquake landscape is different today than when you lived in Humboldt. ShakeAlert notifications are now sent via Wireless Emergency Alert (WEA) to all cell phones where the earthquake is likely to be felt. I've gotten eight of these alerts since the system went live in 2019. The system is based on a dense network of seismic stations that locate, determine magnitude, and estimate likely shaking strength within a few seconds of the rupture. If the earthquake is more than 20 miles away, you should get a second or two to prepare before the strongest shaking hits.

It's not a perfect system. Sometimes the automated system misses an event, and other times overestimates the size of a smaller one. But everyone on campus needs to be aware of the ShakeAlert system. If multiple cell phones start a shrieking in the middle of a class or lab, instructors and students need to respond correctly. The response will differ depending on the setting – lecture, lab, field trips – and should be part of class introductions. I used to spend part of my first two class meetings on safety issues. I'd start with power outages and fire alarms, then move into earthquakes, and end up with active shooters. Most students would tell me I was the only teacher who ever covered these issues, and they appreciated it. My teaching days are more than a decade behind me; I hope it has become more common today.

WEA alerts have also entered the tsunami landscape as well. In the past 14 months, two tsunami WARNINGS have included the Humboldt County coast. On December 5, 2024, a M7 earthquake occurred offshore and for more than two hours the coast from Santa Cruz to central Oregon was placed in a warning. Like the ShakeAlert, a loud squawk wailed on cell phones, but the message is more confusing, telling everyone in the county no matter where they were "You are in danger."

Almost all campus assets are out of the mapped tsunami hazard zone, and few were in areas that needed to evacuate. But the cell phone message didn't provide that information and people who had little awareness of tsunami hazards were freaked out. Massive traffic jams ensued, preventing emergency vehicles and public safety access. A similar situation occurred on July 29th of last year when much of Humboldt County was again placed in a warning after the M8.8 Kamchatka earthquake. Fortunately, classes were not in session but there were community impacts with traffic jams and confusion.

As president of Cal Poly Humboldt, you set the tone for campus preparedness. In 1987, I was part of a team studying how public schools performed during the Whittier earthquake. The results surprised me. I expected that affluence would play an important role. But it was a large elementary school in South LA that had the most impressive planning and response and several of the "rich schools" that had no or few plans. The most important success factor was the priority the school principal or an upper-level administrator made for preparedness activities.

You've got a great team in Risk Management who can bring you up to speed on campus resiliency efforts and where support in needed. I've worked with director Cris Jones Koczera for decades, and she is well aware of our seismic and other hazards. She would be the first to tell you that the level of interest is always high AFTER an event, but rarely BEFORE it occurs. The big

challenge is to change the dynamic and make planning and awareness a priority for everyone even in quiet times.

When former president Rollin Richmond arrived on campus in 2003, I got his attention by pointing out he'd be the one on camera after an earthquake or other disaster struck campus. I hope that there are no significant campus emergencies – either of the natural or human caused variety – during your tenure. But planning, planning, planning, is the way to ensure that if something happens, the risk is minimized, we can respond efficiently and recover quickly. Cal Poly Humboldt has been a leader in understanding our seismic hazards and is at the forefront of new technologies to detect earthquakes. Let's be leaders in campus preparedness as well. Please feel free to pick my brain and I will be glad to buy you a coffee.

Lori Dengler is an emeritus professor of geology at Cal Poly Humboldt, and an expert in tsunami and earthquake hazards. The opinions expressed are hers and not the Times--Standard's. All Not My Fault columns are archived online at https://kamome.humboldt.edu/taxonomy/term/5 and may be reused for educational purposes. Leave a message at (707) 826-6019 or email Kamome@humboldt.edu for questions and comments about this column or to request copies of the preparedness magazine "Living on Shaky Ground."