Times Standard

Not My Fault: Where the rubber meets the road: turning research into building safer communities

Lori Dengler for the Times-Standard
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Cascadia connections exercise at the CRESCENT Partners and Applications Workshop in Portland. It provided more discussion time than a formal presentation and a chance to think about who you have solid connections to and what people/organizations are missing (Photo by Andy Clifford/Contributed)

I'm in Portland attending the Cascadia Region Earthquake Science Center (CRESCENT) Partners and Applications meeting. I've met emergency managers, educators, engineers, urban planners, physical and social scientists, and other practitioners with the goal of minimizing impacts of the next great earthquake. There's even a journalist here.

CRESCENT is a three-legged stool. Last week I wrote about the Cores to Code project that brought college students from all over the country to Humboldt and introduce them to paleotsunami research. That effort was part of CRESCENT's workforce development leg, encouraging more young people to pursue careers in the geosciences. This week's meeting emphasized a second CRESCENT leg, establishing partnerships and fostering communication between practitioners and researchers.

CRESCENT is in year two of a 5-year effort to better understand the hazards and reduce impacts from the next Cascadia earthquake before it happens. In 2023, the National

Science Foundation provided funding for a consortium of 16 universities to construct this stool of research, partnerships, and workforce development.

I've been on the Partnerships and Applications Advisory Committee since inception. For me, this is the part of CRESCENT where it succeeds or fails. Sophisticated earthquake and tsunami studies that result only in academic publications are of little use to society at large. What may intrigue a researcher is not always what an emergency manager, dam operator, land use planner, and many others needs to know or expressed in translatable terms. The top-down model of academics thinking we know what you need and handing out a publication is flawed in so many ways.

The last several days have been an opportunity to meet really smart people from so many different disciplines and different regions. The meeting format was short presentations, lots of small group discussions, posters, and field trips. A theme of the meeting was communication – not only how to do it but targeting audiences to communicate with.

We started with a Cascadia connections exercise. The first part was mapping out links between our own organization and the groups we communicate with. I put on my Redwood Coast Tsunami Work Group (RCTWG) hat which gave me a bit of an advantage. The RCTWG was formed in 1996 with the sole purpose of connecting every regional entity with a stake in earthquake/tsunami hazards.

The RCTWG in an organization of the willing with everyone participating as their interests and energy allows. We have no mandates or org charts, and everyone has an equal say. It was easy for me to draw links to government agencies – local, state, federal. We've got strong ties to researchers at a number of universities. We have tribal members and community volunteers, links to media and response organizations. But we haven't connected with everyone. The second part of the exercise was sketching in our gaps, and it was revealing. It's easy to list the most important missing members at the RCTWG table – retail business.

The business community has always been a tough nut to bring into the resiliency community. Large, big box stores like Target, Walmart, and Costco are managed out of the area and despite repeated attempts to make contact about how to respond to tsunami threats (some are in tsunami zones) or reduce shaking hazards, we've hit brick walls.

The small business community poses different problems. Many long-time enterprises have taken measures to become more resilient. Businesses in downtown Ferndale were hit hard in the 1992 quakes and many reinforced shelving and took other measure to reduce nonstructural damage afterwards. It paid off in 2010 when the offshore Eureka earthquake caused much less damage in Ferndale than Eureka although the ground shaking strength was similar.

I applaud individual efforts, but they are hard to sustain as time passes and ownership changes. Owners in areas that haven't recently experienced strong shaking may consider such measures not worth the effort. RCTWG has yet to connect with any local or regional small business organization to develop stronger ties to that community. Small business is a foundation pillar of local economy and extremely vulnerable to disaster. About 85% of

small businesses post 1994 Northridge earthquake were no longer in business two years afterwards.

The Partners and Applications meeting covered a lot of ground in a day and a half. We heard case studies of local and regional efforts targeted at specific hazards like fuel tank resilience and maritime hazards. One of my favorite presentations was from the Southeast Alaska Landslide and Preparedness Project. This is a group with many similarities to the RCTWG – a community-driven network of tribes, local communities, government agencies, and research institutions.

There were sessions on scenarios and data access. We heard reports from the scientific leg of CRESCENT. Each of the working groups and Special Interest Groups have made remarkable progress in less than two years of the Center's existence. Faults capable of producing large earthquakes are now easily viewed for the entire Cascadia region at https://cascadiaquakes.org/cfm/. The Community Velocity Modelers (https://cascadiaquakes.org/cvm/) are well on their way to a regional representation of how the seismic waves will propagate through the earth if an earthquake occurs on any of these faults.

I had a good conversation with Brittany Erickson of the Dynamic rupture group. These are the folks studying rupture processes and earthquake cycles. This is where tsunamis fit – the permanent seafloor deformation that uplifts or drops the water above it sending a tsunami on its way. Tsunami is not the only problem posed by rupture-caused deformation. A great Cascadia earthquake will also deform the land as well, causing subsidence and uplift. And here on the North Coast, we are likely to abruptly find ourselves 60 or more feet closer to Japan as the earthquake slip throws us in that direction.

I have omitted so much of what was covered. I'm easily bored at meetings, but this one engaged my attention for almost all of the time. What sticks with me the most is the enthusiasm of the participants. Roughly 150 people attended (15 remotely) and there was lots of lively conversation in the discussion sessions, during breaks, and over posters. And best of all, most of them were young – lots of early and mid-career people brimming with ideas and different perspectives. Many attended last year's Partners meeting, and I see networks forming and solidifying.

Not all is rosy. Noticeably absent from the meeting was California. There were scientists and a PG&E representative but no emergency managers, tribal folks, or local agencies. There was a larger Canadian presence than California. There is no good excuse as people did have a zoom option to at least weigh in. I led one of the remote discussion groups and found it nearly as productive as the in-person discussions. I'm partly to blame – I could have pushed participation in our area more strongly.

There were also elephants in the room – uncertainty and sustainability. The loss of USGS postdoctoral scholars has severely impacted earthquake research in all areas and the Cascadia region is no exception. Uncertainty in NOAA's budget and personnel casts a cloud over the US tsunami program. While CRESCENT's funding for the next three years still seems to be on track, it is not certain. It was never assured that CRESCENT would last longer than 5 years, but chances were good that a second proposal extending the program

would be successful, especially considering the rate of progress that has been demonstrated to date.

We are still in very early days when it comes to understanding the full threat of a great Cascadia earthquake and the other multiple faults in the Cascadia region capable to producing damaging quakes. Lives, infrastructure, the economy, and our futures are at stake. CRESCENT products will help to understand ground motions and tsunami properties, to better inform planners and responders. This is not the time to close our eyes, ears, and mouths. It's important the effort continues.

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