

---

## TSUNAMI PREPAREDNESS

Japan stands as a model

By Winston Ross

*The Register-Guard*

Published: Tuesday, October 25, 2005

**EDITOR'S NOTE:** *Reporter Winston Ross traveled to Japan in August and September as a World Affairs fellow, sponsored by the International Center for Journalists. This is the last of three parts on how Japan prepares for tsunamis.*

Since the year 684, the Japanese people have recorded tsunamis and the earthquakes that spawn them. Stories, statues, monuments, paintings and pictures remind people that they face a constant threat, and that the only way to survive is to race for high ground when the earth shakes.

In Oregon, when the National Weather Service issued a tsunami warning on June 14, chaos ensued. Evacuations in coastal communities were sporadic, at best. Sirens didn't work. People jumped in their cars instead of heading to high ground on foot. Or, worse: They ran to shore to watch the waves roll in. That event - along with last week's tsunami-test malfunction - was a wake-up call for emergency managers on the West Coast.

It's time, they said, for some new ideas.

Japan's culture of preparedness is a worldwide model. Emulating it won't be easy. The seawalls that line its 20,000 miles of coastline would meet fierce opposition in a place like Oregon. Japan's greatest asset in preparing citizens for earthquakes and tsunamis is a past that the United States cannot replicate, and a culture very different from America's.

"Japan is a much more homogeneous society," said Solomon Yim, a civil engineering professor and tsunami expert at Oregon State University's O.H. Hinsdale Wave Research Lab. "Another thing is there are big cities after big cities there, and people are used to very crowded environments. They are a lot less individualistic, and they will listen to government advisers more readily. Our population is more mobile; people from Kansas may never have even heard of tsunamis until they move here."

Japan also heeds the lessons of the past, where the United States has abandoned them. In the late 1800s, Yurok Tribe members manned a plankhouse to watch for tsunamis in modern-day Crescent City, Calif., according to Oregon geologist George Priest. When white settlers arrived, they rejected the practice as "superstition." In Japan, tsunamis are a national issue, garnering attention and energy at all levels of government, taken seriously by all who know of its threats.

Here, it's a coastal problem.

"We have to create the Japanese response from whole cloth," geologist George Priest said, "but without any of the experiences they have with tsunamis."

Although tsunamis are far less frequent here, when the West Coast's Cascadia Subduction Zone decides to rattle again, the magnitude 9 earthquake it's likely to produce will cause the

greatest natural disaster the United States has seen, Priest said. "In terms of loss of life, it would dwarf anything that's ever happened."

That presents emergency managers with a conundrum: How do you keep people aware of an event that hardly ever happens, but poses a greater threat to their property and their lives than any other natural disaster?

### **"Champions" raise awareness**

Seaside and Yachats are two coastal towns well-drilled for a tsunami. But that's no accident. The towns' preparedness comes down to two people: Darci Connor and Frankie Petrick. Connor worked as Seaside's tsunami outreach coordinator for a year, her salary funded by a \$50,000 grant from the National Oceanic and Atmospheric Administration. She recruited block captains all over the city to knock on doors and educate their neighbors about what to do when a tsunami strikes. She organized business workshops and gave speeches at churches, civic groups and schools.

Petrick is the chief of the Yachats Rural Fire Protection District. She's gone door-to-door to talk to people about the threat, and personally organized a drill this spring in which 80 percent of Yachats residents participated.

"They had people on walkers who were able to get where they were supposed to go," Priest said.

These "tsunami champions" are Oregon's best hope of mirroring Japan's approach to educating citizens about earthquakes and tsunamis, Priest said. That's why a consortium of emergency managers called on Congress earlier this year to permanently fund a program that would pay every city on the coast \$30,000 per year to hire its own champion.

A more difficult task may be infusing disaster preparedness into the school curriculum, as Japan does, but it is possible. Oregon Coast schools are required to conduct emergency drills for fires, earthquakes and tsunamis, and state standards include "unintentional injury prevention" at the third-, fifth- and eighth-grade levels, said Gene Evans, a spokesman for the Oregon Department of Education.

The fictional version of the story of "Inamura no-hi," in which a Japanese villager set fire to his own rice stacks to help his neighbors flee from an oncoming tsunami, is available in English. In fact, the Oregon Department of Geology has an English-language video version of the tale. Sharing stories like this are a good way to capture students' attention, Evans said.

### **Similarities and differences**

As warnings go, Japan and the United States both have dense networks of seismographs in earthquake-prone areas, and the technology they use is similar and shared between the two countries, said Paul Whitmore, director of the West Coast/Alaska Tsunami Warning Center in Palmer, Alaska.

The main difference between the systems is that Japan issues expected tsunami arrival times before it actually registers the wave on tide gauges or with pressure-monitoring cable. The United States waits until its tide gauges or ocean-bound buoys detect a wave.

"They're a little more aggressive about issuing an expected impact," Whitmore said of the Japanese. But in some cases, he added, that rush leads to underestimates. "We don't do it because there's a significant number of earthquakes where the tsunami is far bigger than what you'd expect based on magnitude."

After the Sumatra quake, Oregonians learned that half of the six buoys the weather service operates in the Aleutian Islands don't work (they've since been repaired), prompting the U.S. Senate in July to pass a Tsunami Preparedness Act that will add 30 more buoys on the Pacific, Gulf and Atlantic coasts by the end of 2007, if signed by the president. The bill provides grants for universities to conduct regional assessments of tsunami-vulnerable areas - a task Oregon has completed.

### **Warning systems**

Japan pledges to warn its citizens within three minutes of a quake, night or day - which is feasible in that country because most people get their information from the same source: the Japan Broadcasting Corp. In the United States, the goal is five minutes during the daytime and 10 at night, when there's no one staffing the Alaska warning center, which covers the West Coast. The National Oceanic and Atmospheric Administration will add enough staff for a 24-hour presence by April 2006, which should improve U.S. warning times, Whitmore said.

The media buy-in is a tougher question, Whitmore acknowledged. Different radio and television stations carried conflicting reports about the West Coast tsunami warning on June 14, for example.

Also, since Japan operates six regional centers, compared to the one that covers the West Coast, it can more specifically tailor warnings to a particular region.

"They do have this very robust system of warnings," Priest said. "But there are some geological differences that make that system less applicable for our coast. They have two or three big subduction zone faults that tend to rupture on relatively short lengths. They don't get the big magnitude 9 ruptures, and as a result, what generally happens is a relatively short segment of the coastline gets the direct impact of the local tsunami. The rest comes from a distant source, so they really benefit from a fast warning system. In a Cascadia Subduction Zone tsunami, there's absolutely no time for that kind of warning system to make a difference."

What Whitmore would like to see the United States imitate is Japan's regular, "end-to-end" tests of the warning system. While U.S. weather service officials frequently test communications at the Palmer center, the practice alerts don't make it all the way to first responders in local communities. The June 14 event exposed alarming gaps in preparedness at all levels - including conflicting bulletins from the weather service. End-to-end tests could smooth out some of the kinks, he said.

### **Hazard maps**

Another important piece of tsunami preparedness is hazard mapping. Geologists use computer programs to simulate tsunamis, taking into account not only the size of a quake and force of a wave but the undersea geology and shape of the land it would hit, which can change the shape of a tsunami drastically and alter the best escape routes.

Both countries use the software to prepare hazard maps for vulnerable cities, but the effort is expensive. Emergency managers in Oregon have asked Congress for \$7.8 million to continue mapping coastal areas and for public education. But they worry now that the Pacific Coast could wind up with less than it had before, because senators from Eastern states are lobbying for sizable amounts of the money to be spent there - despite the fact that Gulf and Atlantic Ocean tsunamis are far less likely.

Japan has the edge when it comes to tsunami prediction, said Brian Yanagi, deputy director of the International Tsunami Information Center in Hawaii, because it has more historical data to plug into the computer models.

"Our history is only a few hundred years old," Yanagi said. "They have a lot more data to work with, to use scientifically in tsunami models that forecast the inundation and wave run-up."

### **Hardware that can help**

Seawalls clearly aren't the best idea for the United States, for aesthetic and environmental reasons, experts agree. But there's plenty of other "hardware" Japan uses that could work well here, including rotating sirens, solar-powered lighting along evacuation routes, alarms in houses, and shelters built to withstand tsunamis and store emergency supplies.

In a report on the shortcomings of June 14, the Oregon Emergency Management office listed more sirens as its chief recommendation. Several cities are now in the process of adding sirens, and the U.S. Forest Service installed one in Tillamook County's Sand Lake Recreation Area, which hosts up to 5,000 visitors on busy weekends. It was the first warning siren to be installed at a recreation site on national forest land, and it may in the future be directly linked to the weather service's warning system, to shorten the time period between a warning and the siren sounding.

Sirens also are being considered in Oregon State Parks that lie in tsunami-prone areas. The emergency managers' request to Congress includes a plea for \$1.3 million annually for grants to build shelters along the coast with stockpiles of food, medical supplies, power generators, shovels and an emergency communications network.

State agencies are now negotiating with the developers of an eight-story, 250-condo-

minium complex in Seaside - "built like a bomb shelter," according to earth sciences information officer James Roddey - to use in emergencies, because evacuations there are difficult, thanks to the low-lying landscape and abundance of flood-prone rivers. The building has a five-story parking garage and enough space in safe areas to hold every resident in town, Roddey said.

Many coastal residents own portable weather radios that can alert them of approaching tsunamis, although many of them didn't work on June 14. The National Weather Service allows people to sign up on its Web site to receive tsunami alerts via e-mail and text messages on their cell phones, and a private system called "Connect and Protect" offers similar options. Some counties, including Lane, have installed a "reverse 911" system that will call every resident in danger within minutes of a tsunami warning.

In August, Gov. Ted Kulongoski signed Senate Bill 2, which directs the Oregon Department of Geology and Mineral Industries to assess the earthquake safety of schools, colleges, police and fire stations and hospitals statewide. Three other yet-to-be-signed bills would establish state grants and authorize the sale of bonds to strengthen those buildings. And a bill sponsored by state Sen. Bill Morrisette, D-Springfield, requires hotels and restaurants on the coast to provide tsunami information to their customers and that the state develop a uniform tsunami warning system. But it's an unfunded mandate.

Disaster kits aren't prominent in American department stores. But there are plenty of supplies available for people to prepare an emergency backpack. The quake in Indonesia and hurricanes Katrina and Rita, closer to home, have provided Americans with horrifying pictures of natural disasters in recent months. Whether that will be enough to galvanize the public into a culture of preparedness remains to be seen.

*Winston Ross can be reached at (541) 902-9030.*

## INSIDE

- **Preparations:** Yaizu, a port city of 120,000, takes tsunami evacuation plans seriously / **A9**

---

## SIGN UP FOR TSUNAMI WARNINGS

Both the National Weather Service and a private service, called "Connect and Protect," offer ways for residents to be alerted via e-mail or text messages on cell phone when a tsunami alert is issued.

**National Weather Service site:** [wcatwc.arh.noaa.gov](http://wcatwc.arh.noaa.gov). Click "Get it by e-mail."

**Connect and Protect:** [www.rainsnet.org/programs/connect\\_protect/index.asp](http://www.rainsnet.org/programs/connect_protect/index.asp)

## Help Hurricane Victims

Donate to the Disaster Relief Fund Providing Shelter, Food & Support

Public Service Ads by Google

[Advertise on this site](#)

### **Integrated Tower Systems**

Worldwide Fleet of Portable Tower Systems,  
Cows, Self-Support Towers

### **Firefighter RED Wristband**

Says TYFD 24 - 7 - 365 Buy one, or start a fundraiser.

[Ads by Google](#)