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**Tossing the three-day rule**

By Eric Holdeman

Emergency Management, v. 6, no. 3, p. 72

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I've always been a strong supporter of disaster public education. My first exposure to it was in 1992 when I worked at the Washington state Emergency Management Division and was responsible for starting the state's first public education program.

When I moved to the county level as a local director, I made sure we had an active disaster education program. After 9/11, the homeland security grants that followed provided an opportunity to fund a much more robust regional public education program. We formed a regional group to select a campaign slogan, 3 Days, 3 Ways, and then promoted it using a variety of mass media that included TV, radio, billboards and bus signs. We even partnered with the Seattle Mariners for stadium signage. Then Hurricane Katrina hit and it was clear that telling people to be prepared for just three days was not enough. The challenge was that the national message coming from FEMA and the American Red Cross had always been three days of preparedness. I called people I knew at the national offices of both organizations to see if they were considering changing their message. They said no.

To maintain a message consistent with national standards, we modified our materials to warn people to prepare for a minimum of three days.

Now we have another catastrophe in Japan, an industrialized and modern nation with the world's third largest economy. Japan is touted as the most prepared country in the world. When you observe the damages there and think about the types of mega-disasters that are possible in the U.S., it's easy to see why it's time to toss the three-day message and level with our communities. People need to be prepared to be self-sufficient for at least a week.

There are several reasons to make this switch.

We need to be honest with people and manage their expectations. If we tell them three days, we should be prepared to respond to their needs at the end of that time. For catastrophes, it is not a good planning assumption that we will be able to respond to individuals within three days.

The military's planning figure is to be one the ground by 100 hours after the event. If you look at previous responses, it takes a long time to get personnel and equipment in place and to the point where they can make a significant difference.

Disaster response is all about logistics and moving supplies and equipment. This is not a simple task, especially when transportation systems have been impacted. As one speaker so eloquently stated, "Logistics—if it were easy it would be called taxes."

*(continued on page 3)*

# *TsuInfo Alert*

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WASHINGTON STATE DEPARTMENT OF  
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Peter Goldmark - Commissioner of Public Lands

(continued from page 1)

I don't expect that the aforementioned national programs will change their disaster preparedness messaging. That does not compel us to make the same mistake. It's time to come clean and be real with our constituents. One of my mantras is, "Don't promise what you can't deliver." When it comes to disaster preparedness, slogans might best be stated as: You're on your own for a week, baby!

While I really liked the 3 Day, 3 Ways message, the problem is that it's not realistic and just plain not true.

Eric Holdeman is the former director of the King County, Washington, Office of Emergency Management. His blog is located at [www.disaster-zone.com](http://www.disaster-zone.com) ♦

### Follow-up to March earthquake/tsunami in Japan

These links highlight the scientific research, response and recovery happening in Japan. They seemed the most representative sampling. Space alone made it necessary to give readers brief summaries with links to the full text.

#### Overview

Great pictorial and scientific overview of March earthquake/tsunami, with maps and charts:

<http://www.mccohi.com/tsunami/honshu.ppt>

#### Human interest stories/ Eyewitness accounts

INSIGHTS: Coexisting with Nature: Reflections after the devastating earthquake in Japan, by Junko Edahiro (of JEN, an international nongovernmental organization engaged in disaster relief) about her stay in Ishinomaki. <http://www.ens-newswire.com/ens/may2011/2011-05-31-insedahiro.html>

A moment's devastation, a long road to recovery (Kitakami, Japan) <http://worldblog.msnbc.msn.com/news/2011/06/05/6790819-a-moments-devastation-a-long-road-to-recovery>

We return to the Japanese town wiped off the face of the Earth by the tsunami (Minamisanriku, Miyagi Prefecture) <http://www.mirror.co.uk/news/top-stories/2011/05/22/we-return-to-the-japanese-town-wiped-off-the-face-of-the-earth-by-the-tsunami-115875-23146956/>

How one Japanese village defied the tsunami <http://abcnews.go.com/International/wireStory?id=13595106>

Fudai is the village that survived — thanks to a huge wall once deemed a mayor's expensive folly and now vindicated as the community's salvation.

The 3,000 residents living between mountains behind a cove owe their lives to a late leader who saw the devastation of an earlier tsunami and made it the priority of his 4-decade tenure to defend his people from the next one.

His 51-foot (15.5-meter) floodgate between mountainsides took a dozen years to build and meant spending more than \$30 million in today's dollars. Go to website for complete story.

Japanese photographer getting tsunami and earthquake victims to smile

<http://www.ksby.com/news/japanese-photographer-getting-tsunami-and-earthquake-victims-to-smile/>

Koji Mizutani has taken pictures of more than 5,000 smiles. Now, he hopes his pictures will encourage survivors of Japan's recent earthquake and tsunami.

Last month [April], Koji traveled to hard-hit Miyagi prefecture to take pictures of children smiling, then printed those pictures on umbrellas.

Saturday in Tokyo, people opened their umbrellas to show off their smiles. "Our smiles can be the hope of the future," he said during the event.

Full story at website given above, with photo.

Japanese scientists hope lone pine brings back 70,000 destroyed by tsunami

<http://www.ongo.com/v/1045414/-1/75DCB8AD1841DDB0/japanese-scientists-hope-lone-pine-brings-back-70000-destroyed-by-tsunami>

Before the March tsunami in Japan, about 70,000 red and black pines grew on a stretch of beach about 1.2 miles long. Only one tree, about 270 years old, survived the disaster.

Patient care at hospitals hit by loss of files in tsunami <http://www.yomiuri.co.jp/dy/national/T110625003054.htm>

"At least 14 hospitals in Iwate and Miyagi prefectures lost their medical records in the March 11 tsunami, according to a Yomiuri Shimbun survey, making it difficult to verify patients' medical histories and courses of medication.

Numerous records were washed away or rendered illegible by the water, the survey found. However, Ishinomaki Municipal Hospital in Miyagi Prefecture suffered minimal losses because it had digitized its data and kept backup copies at a hospital in Yamagata." Full story at website given above.

Stone tsunami monument found in Iwate city <http://mdn.mainichi.jp/mdnnews/news/20110626p2a00m0na017000c.html>

OFUNATO, Iwate -- A large stone tsunami monument claimed to have been buried for many years has

been uncovered in an area of this city struck by the March 11 tsunamis.

The monument, about three meters wide and two meters tall, was uncovered near the Yoshihama coast by a group that included 82-year-old resident Masao Hanokizawa.

According to Hanokizawa, the stone was originally washed ashore by a large tsunami, either in 1896 or 1933. He says he remembers "climbing on top of the monument and playing." Full story at website given above.

Small 'Noah's Ark' to ride out tsunami for sale in Japan  
<http://en.rocketnews24.com/2011/05/29/small-noahs-ark-to-ride-out-tsunami-for-sale-in-japan/>

Named the "Ise Ark," the small, pod-like lifeboat was designed by the construction company Ise Industry to provide shelter during a tsunami.

According to the product's homepage: "The Ise Ark is an super-buoyant, steel-structured, indestructible, reinforced floating vessel that won't sink or be caught under the waves during a tsunami. You will be safe and secure, no matter how big a wave!" Full article at website given above.

#### Science reports

Chilean ocean radar detected tsunami  
[http://www.hydro-international.com/news/id4824-Chilean\\_Ocean\\_Radar\\_Detected\\_Tsunami.html](http://www.hydro-international.com/news/id4824-Chilean_Ocean_Radar_Detected_Tsunami.html)

The research group lead by Prof. Dante Figueroa from the University of Concepcion in Chile, has reported that their WERA radar system was able to capture the signal of the tsunami that struck northeast Japan in March 2011. This is the first time ever than an ocean radar detected an approaching tsunami. Full report at URL given above.

'Two-faced rupture' made Japan tsunami so big  
[http://www.msnbc.msn.com/id/43159123/ns/technology\\_and\\_science-science/t/two-faced-rupture-made-japan-tsunami-so-big/](http://www.msnbc.msn.com/id/43159123/ns/technology_and_science-science/t/two-faced-rupture-made-japan-tsunami-so-big/)

Atmosphere above Japan heated rapidly before M9 earthquake (MIT)  
<http://www.technologyreview.com/blog/26773/>

Infrared emissions above the epicenter increased dramatically in the days before the devastating earthquake in Japan, say scientists.

Tsunamis send mysterious waves into atmosphere  
<http://www.livescience.com/8782-tsunamis-send-mysterious-waves-earth-atmosphere.html>

Like an uninvited guest at a party, these tsunami-generated waves go barging into parts of the ionosphere where they're not generally seen, causing a ruckus among the particles that live there. The waves cause anomalies in GPS data, and may allow scientists to someday better

pinpoint the origin and magnitude of a tsunami. Full story at URL given above.

Japanese tsunami stood at 132.5 ft  
<http://www.telegraph.co.uk/news/worldnews/asia/japan/8645094/Japanese-tsunami-stood-at-132.5ft.html>  
<http://www.dailyindia.com/show/451623.php>

#### Recovery problems

Japan tackles mountains of trash left in tsunami's wake  
<http://www.csmonitor.com/World/Asia-Pacific/2011/0715/Japan-tackles-mountains-of-trash-left-in-tsunami-s-wake>

Japanese cities leveled by the March tsunami are now left with more trash than they would normally dispose of in a century. Recycling it all is a daunting task...the country is committed to recycling it all.

Foul-smelling fish and seaweed plague survivors of earthquake and tsunami.  
[http://shoal.in/2011/05/28/foul-smelling-fish-and-seaweed-plague-survivors-of-earthquake-and-tsunami-mainichi-daily-news/\(cached\)](http://shoal.in/2011/05/28/foul-smelling-fish-and-seaweed-plague-survivors-of-earthquake-and-tsunami-mainichi-daily-news/(cached))

"Though local governments have been concentrating on removing debris in the quake- and tsunami-ravaged regions, they have not been able to find space for rotting marine harvest—a lot of which spilled from aqua-farming and fish-processing facilities washed ashore by the tsunami and now increasingly covered in flies."

Japanese tsunami debris field to hit West Coast  
[http://seattletimes.nwsource.com/html/localnews/2014670743\\_flotsam03.html](http://seattletimes.nwsource.com/html/localnews/2014670743_flotsam03.html)  
[http://www.times-standard.com/ci\\_18356804?source=most\\_viewed](http://www.times-standard.com/ci_18356804?source=most_viewed) ♦

## REGIONAL NEWS

### ALASKA

#### **Tsunami warning delayed; Sirens activated after alert canceled; Hundreds evacuate Spit**

By Michael Armstrong, staff writer  
Homer News, posted June 24, 2011  
<http://homernews.com/stories/062411/Tsunami-warning-delayed-Siren.shtml>

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An unknown problem in the National Weather Service Emergency Alert System caused warning sirens for Homer to sound about an hour after the West Coast and Alaska Tsunami Warning Center issued a tsunami warning for the Aleutian Islands from Unimak Pass to Amchitka Pass.

The warning was issued after a 7.3 earthquake hit at 7:10 p.m. Thursday about 20 miles southeast of Amukta Pass west of Dutch Harbor.

The rest of coastal Alaska, including Homer and Kachemak Bay, had only an information alert. Hundreds of people on the Homer Spit and in low-lying areas evacuated after sirens went off about 8:15 p.m. Thursday night.

"People were running down this boardwalk with clothes falling out of their luggage and heading for the high road," said Jimmy Lower, owner of Boss Hoggz Restaurant on the Big Bear Boardwalk. "The cars were lined up all the way to Coal Point. People were honking and kind of panicking."

As happened March 10 with a similar siren warning after the Japanese earthquake, Homer was not in danger from a tsunami.

By the time the sirens sounded, authorities knew that Homer would not be affected by a tsunami. Homer Police had received the warning through its federal emergency warning line and then that the warning was canceled, said Homer Police Lt. Randy Rosencrans. Police officers went to the Homer Spit and low-lying areas to notify people an evacuation was not needed.

Some people evacuating the Spit drove along Ocean Drive and over Beluga Slough to evacuate. The official route is to turn right off the Spit onto Kachemak Drive and continue toward high ground.

Officials with the Kenai Peninsula Borough Office of Emergency Management and the Alaska Division of Homeland Security and Emergency Management also knew the tsunami warning center alert should have turned on a tone or radio signal from the National Weather Service on the Emergency Alert System. That tone automatically triggers tsunami sirens in the borough — even if borough communities aren't under an actual tsunami warning.

The NWS alert radio issued a cancellation of the warning, but coincidentally the first warning alert then went through.

"It was very peculiar," said Eric Mohrmann, director of the borough Office of Emergency Management. Mohrmann got an email alert on his Blackberry from the tsunami warning center of the earthquake and went to his office about 7:30 p.m. to monitor the situation.

Police heard two siren warnings, one with an order to evacuate and a second canceling the warning, Rosencrans said. Police got dozens of calls after the sirens went off. With three dispatchers on duty police had no problems handling calls. Officers said the first loudspeaker message came through clearly, the second message was garbled.

The borough sent out reverse-911 calls to all phone numbers with a message saying the siren alert was incorrect. A press release went out to local media.

The tsunami warning center also puts out notices on its website at [wcatwc.arh.noaa.gov](http://wcatwc.arh.noaa.gov). That website shows

recent earthquakes, predicted tsunami speeds and alert areas.

Dave Anderson, program director for KBBI AM-890, used the tsunami warning center website to get information that Homer was not affected by a possible tsunami. The loudspeaker message that went out with the sirens said to tune in to TV and radio stations for more information.

"The phones were just going nuts," Anderson said. Anderson had heard the sirens go off while he was eating at AJ's Old Town Steakhouse. He went to KBBI and met program manager Terry Rensel there to start getting information out. Anderson sent out alerts about every 3 minutes as he and Rensel got more information. The Homer News also posted a web update about 9 p.m.

Under the system set up by the National Weather Service Emergency Alert System, if any area in coastal Alaska gets a tsunami warning, the alert tone goes out and sirens in all coastal communities go off — even if, as happened Thursday and in March, Homer did not have an actual tsunami warning. The National Weather Service has said that it can't commit to a date when the system could change to alert coastal areas by region instead of statewide.

The alternative is for borough emergency managers to notify local emergency services dispatchers to trigger sirens locally, Mohrmann said.

"We can reduce the possibility of false alarms by taking it off the radio system, but that increases the possibility of an error by putting it on the local dispatchers," he said.

There is one reliable warning that a tsunami will affect an area.

"One of the things that's very clear: If persons feel an earthquake that lasts more than 20 seconds they should evacuate low-lying areas — period," Mohrmann said.

"That's the most important notification you will receive — the ground violently shaking," said Jeremy Zidek, public information officer for the Alaska Division of Homeland Security and Emergency Management. "In Homer with the Spit, as much notification that you can give people, that can be the difference between life and death."

Mohrmann said he, borough Mayor Dave Carey and city officials in the borough will hold a teleconference next week to talk about Thursday's event.

One change from the March tsunami warning was the use of the reverse 911 call-out. Mohrmann said his office hopes to extend that to cell phones as soon as details can be worked out to make that happen and allow people to sign up. His office also is looking at how to allow local police and fire departments direct access to the emergency alert broadcast system.

"I feel bad for the people down there who heard this and disrupted their lives and were very concerned. I regret that occurred," Mohrmann said. "However, what's better?"

To have something like this that occurs or have an actual tsunami and they're not getting any warning at all?"

A small tsunami was generated by the earthquake, with a wave about 2 inches at Midway Island, 2.5 inches at Adak and 3.8 inches at Nikolski, said Guy Urban, a geophysicist with the West Coast and Alaska Tsunami Warning Center.

The National Weather Service in Anchorage could not be reached to explain why the tone alert did not sound in a timely manner.

## CALIFORNIA

### **Congratulations to San Diego for becoming Tsunami-Ready**

"Mayor Jerry Sanders announced Thursday that the city of San Diego has been certified "tsunami prepared."

Sanders accepted a letter of recognition on behalf of the city from the National Oceanic and Atmospheric Administration, which certified San Diego's tsunami and storm preparedness.

"We're the largest city in the nation to receive the certification," Sanders said.

From: <http://ranchobernardo.patch.com/articles/san-diego-certified-as-tsunami-prepared>

### **Monterey, California CERT clears beaches during tsunami threat**

The Monterey, California CERT was activated in March 2011 to help clear beaches in the event that the deadly tsunami that struck Japan also struck the Monterey area.

Working in seven teams, 39 CERT members assisted local law enforcement in patrolling the Monterey coastline, asking beach goers to leave the area, and giving regular reports on the tidal conditions via radio. Each CERT member had access to a hand-held radio with a special VHF frequency dedicated to CERT broadcasts.

The use of the CERT's new E-spender paging system made it simple to quickly activate the team, said Demetrius Castros, who is a lead CERT instructor and member of the Monterey CERT Advisory Committee.

The system allows an authorized user to send an e-mail, which is then digitized into robo-calls that provide voicemail and text messages. The benefit of this system over a traditional phone tree is that a single person can activate an entire CERT simultaneously in a matter of minutes.

"Traditional phone trees take a long time, and it's sometimes hard to get a hold of people," said Castros. CERT members patrolled the beaches until the predicted surge threat was over at 9:00 AM. Although Monterey only faced a 2-foot surge in its waters, the threat to the California coast was very real. The neighboring community of Santa Cruz, 17 miles away, faced \$15 million

in damage to its harbor facilities caused by the tsunami wave.

"Though the tsunami did not strike our area hard, I was proud to know that 39 people showed up to do whatever they needed to do to help. It was a terrific show for our program to have so many come out at such an early hour," said Castros.

For more information, contact [montereycert@hotmail.com](mailto:montereycert@hotmail.com).

From: CERT in Action!  
<http://www.citizencorps.gov/cert/certinaction/monterey-ca.shtm>

## CHINA

### **South China Sea tsunami early warning system expected by 2015**

According to China's State Oceanic Administration, a total of nine countries along the coast of South China Sea are joining together to build a South China Sea tsunami early warning system, which can notify countries within 10 minutes before a tsunami happens, and the system will be completed in 2015. Complete story at <http://english.peopledaily.com.cn/90001/90776/90882/7391091.html>

## ENGLAND

### **EMU Limited detects the English Channel 'tsunami'**

A network of coastal tidal and wave monitoring stations maintained by Southampton, UK-based EMU Limited recorded the progress of the waves caused by this week's minor tsunami along the south coast. A massive underwater landslide in the Atlantic 200 miles off the Cornish coast is believed to be the cause of a small tsunami along the south coast, which created waves of between 0.5 and 0.8 metres and resulted in abnormal tidal records at the Channel Coastal Observatory and Plymouth Coastal Observatory shore stations.

From:

<http://www.oceanologyinternational.com/page.cfm/action=Archive/ArchiveID=1/EntryID=1659>

## GREECE

### **Repeated tsunamis, not earthquakes, buried ancient Olympia in Greece**

A series of tsunamis might have submerged and later buried the ancient city of Olympia in Greece, a new research has revealed, contradicting earlier beliefs that earthquake destroyed the city in 551 AD.

Olympia, believed to be the origin place of the Olympic Games, was located about eight or even more kilometers further inland from the sea that provides strong evidence of devastation by tsunamis, Andreas Vott of the Institute of Geography of Johannes Gutenberg University Mainz, Germany, told Discovery News.

According to Vott, who is investigating the paleo-tsunamis that occurred along the coastlines of the eastern Mediterranean over the last 11,000 years, strong evidence for repeated tsunamis came from the presence of molluscs, snail shells and the remains of marine protozoa.

“The sediments were transported inland at high speed and energy, reaching Olympia although the site lies some 108 feet above sea level,” he said.

Supporting his investigation, Vott said that Western Greece has a historical account of having one tsunami every eight to 11 years on average.

Olympia is believed to be the sacred ground of Greeks and consisted of worship and games buildings. Excavation of the site has also revealed many art works, including statues of Gods.

From:

<http://www.ibtimes.com/articles/180001/20110714/repeated-tsunamis-and-not-earthquakes-buried-ancient-olympia-in-greece.htm>

## HAWAII

### **Tsunami: Learning from experience in Hawaii**

Coastal Services, v. 14, no. 4, July-August 2011, p. 4-5, 9. Reprinted with permission

About four hours after the magnitude 9.0 earthquake devastated Japan in March, tsunami waves generated by the quake struck the western Hawaiian Islands, destroying homes and resorts, killing significant wildlife, and strewing toxic debris along protected beaches. While Hawaii’s coastal resource managers were well prepared for a tsunami event and no human lives were lost, lessons were learned that may benefit other managers in areas at risk from tsunamis, storm surge, or coastal flooding.

“We are very fortunate not to have suffered any loss of human life or other tragedy, as have the people in Japan, and for that we are very grateful,” says Barry Stieglitz, project leaders for the Hawaiian and Pacific Islands National Wildlife Refuges. “But this tsunami was indeed a disaster at many levels, including for wildlife.”

Among the key lessons managers cite are the importance of ongoing public education and outreach; not just having a plan in place, but continually practicing it; and the need for better coordination and planning after an event, which should include everything from sounding the all-clear to addressing the emotional needs of personnel, as well as having emergency regulations in place that ensure speedy rebuilding that results in a stronger and more protected shoreline.

“It’s not a matter of if a tsunami or other disaster will strike, but when,” cautions Dolan Eversole, Hawaii Sea Grant extension agent and NOAA Sea Grant Coastal Storms Program Pacific regional coordinator. “People need to be prepared and be proactive.”

### Urban impacts

The tsunami waves arrived in Hawaii a little before midnight on March 10, continuing through the early hours of March 11, says Stieglitz.

On the inhabited islands, five hours of warning was enough to move visitors and residents safely to evacuation centers or higher ground, says Quince Mento, Hawaii County Civil Defense administrator.

On the island of Oahu, 3-foot waves rushed ashore in Honolulu, swamping Waikiki’s beach and surging over the breakwall, but stopping short of the area’s high-rise hotels. On the western side of the Big Island—where most of the damage to urban areas occurred—10-foot waves damaged and destroyed homes and resorts, and inundated many areas with sand and debris

Overall estimates of damage in Hawaii exceed \$30.6 million, with more than \$14 million coming from the Big Island alone.

### Out in the field

In remote research camps in the uninhabited Hawaiian Islands Refuge, which is part of the Papahānaumokuākea Marine National Monument, staff members and volunteers were having diverse experiences, says Stieglitz.

On Midway Island, 60 to 70 staff members and contractors were secured in the third floor of an air-conditioned World War II military bunker and were able to monitor tsunami waves in real time on island tide gauges. They maintained Internet access throughout the event and were able to follow online media reports.

“Everybody knew what to do,” says Stieglitz. “They had a plan that was rehearsed, and everything went well.” In the much smaller and more primitive tent camp on Laysan Island, where the highest elevation is a 30-foot dune, short-term researchers and volunteers waited for tsunami waves sitting in life rafts tethered to a metal emergency shelter wearing immersion suits to protect them from hypothermia should they be swept into the North Pacific. With limited communication, they waited for hours in the dark listening to the series of waves.

“They had a plan in place, but they did not rehearse it, and that was a problem for us,” Stieglitz says.

The experience of the tsunami and the resulting devastation on the island, which included the beaches being littered with unidentified barrels of toxic materials and old military munitions, was emotionally traumatic for some staff members and volunteers.

Although their stint on the island wasn’t due to end for several weeks, “we ended up evacuating them fairly quickly,” Stieglitz says. “You have to make people’s emotional well-being the priority.”

### Wildlife impacts

Wildlife in the refuge was also severely impacted, Stieglitz says. More than 110,000 Laysan and black-

footed albatross chicks—about 22 percent of the year’s albatross production—were lost as a result of the tsunami and two severe winter storms in January and February. At least 2,000 adults were also killed. A number of other seabird species were killed, but their numbers are unknown.

Biologists are confident that, absent any other stressors, the albatross population could rebound from this event, Steiglitz says, but “we remain concerned about the compounding effects of this tsunami on the existing stresses of invasive species, global climate change, incidental mortality from longline fishing, and other threats to albatross and other wildlife populations.”

#### Practice, practice, practice

What consistently went well during the event, managers say, was not only having a tsunami plan in place, but actively practicing the plan

“I think practice, practice, and developing good relationships with partner agencies so that you know them on a personal level before an event helps facilitate the process,” says Mento.

“I think we’ve got the before part down pretty good,” agrees Bethany Morrison, a planner for the County of Hawaii. “We just need to keep people educated and aware.”

#### Ongoing education

Other managers also point to the need for ongoing education and outreach to a variety of audiences ranging from residents and government personnel to the media and hotel staff members.

“In gauging the success of our past outreach efforts, I believe there has been a positive impact,” says Ann Ogata-Deal, planning and policy analyst with the Hawaii Coastal Zone Management Program. “We held a training session focused on educating the medial and hotel security. These are two very critical partners in tsunami mitigation.”

Eversole points to numerous Sea Grant outreach efforts as being important, including several hazards publications targeting county planners and engineers, as well as residents.

Ogata-Deal notes, “Just looking at things overall, it takes many years of work to see significant, long-lasting results. You can’t always point to one thing that made the difference in any hazard event. It’s more of the combined outreach efforts of many different people over extended periods of time that makes a difference.”

#### The aftermath

Where more emphasis is needed, managers agree, is in planning for what happens after an event. Mento cites the need for better statewide communication for determining when it is safe to go back to coastal areas and open beaches and marinas. “Varying definitions of ‘all

clear’ took us by surprise. If people can’t go back to their businesses and homes, then it’s not all clear.”

There is also interest with the degree of coordination among local and state and federal offices that focus on hazard preparedness, and on their highly positive interactions with NOAA and Sea Grant,” Grau says. “The recovery and rebuilding coordination is where we can still improve and are working towards that collectively.”

He adds that criteria for rebuilding need to be planned before an event so that the area comes back stronger and more resilient to future tsunamis or storms. Better documentation of the damage immediately after the event is also needed, notes Morrison.

#### Almost normal

Three months after the tsunami, the areas that were most impacted, are “almost back to normal,” Mento says.

“The recovery has gone pretty well.

“The lessons learned from this event are being incorporated into plans for the “next one,” Stieglitz says.

“With global climate change, there’s more of an imperative now to be prepared for all these types of events. You have to plan, practice, plan for the aftermath, and practice.”

He adds, “We’ve learned a lot from past experiences and have really improved our response. Next time, we’ll do this a little bit better.”

## NEW ZEALAND

### Assessing tsunami risk

“We’re starting off the new consultation discussions in Whitianga as its unique geography means it’s considered the centre most at risk from the impacts of tsunami,” says Thames-Coromandel District Council (TCDC)’s strategic relationships manager Peter Wishart.

Particular attention is being paid to the possibility of a major quake in the Tonga-Kermadec undersea trench to the north-east of New Zealand causing a big tsunami that would take only a short time to arrive.

“While new data on the Tonga-Kermadec trench doesn’t provide cause of immediate alarm, we are beginning discussions with east coast communities about the future management of tsunami risks,” says Peter.

The entire report is available at <http://www.sunlive.co.nz/news/13423-assessing-tsunami-risk.html>

### Locals welcome tsunami warning plan

A million-dollar tsunami siren system for vulnerable low-lying suburbs in Tauranga is being welcomed by the local community as a ‘desperately needed service.’ Full article available at

<http://www.bayofplentytimes.co.nz/local/news/locals-welcome-tsunami-warning-plan/3954009/>



## OREGON

### **Oregon passes resilience plan resolution**

On April 18, 2011, the state of Oregon's House of Representatives unanimously passed HR 3, 58-0 (with two absent). Sponsored by Rep. Deborah Boone of Cannon Beach, the resolution directs the Oregon Seismic Safety Policy Advisory Commission (OSSPAC) to deliver an Oregon Resilience Plan to the legislative assembly by February 28, 2013, with the goal of protecting lives and keeping commerce flowing during and after a Cascadia megathrust earthquake and tsunami.

The hope is that HR 3 will put safety bonds on the agenda for the 2013 budget cycle. The measure also resolves that the strengthening of collapse-prone public structures be recognized as top investment priorities, that the state invest in additional evacuation options for coastal communities, that the state establish critical transportation and energy infrastructures, and that seismic resilience be viewed as a necessary complement to environmental sustainability. To view the complete resolution, visit <http://www.leg.state.or.us/11reg/measures/hr1.dir/hr0003.en.html>

From: EERI Newsletter, v. 45, no. 6, p. 4 (June 2011)

### **Witnesses to the 1964 tsunami sought**

Oregon's Department of Geology and Mineral Industries (DOGAMI) wants to talk to anyone who was living in Tillamook County on March 27, 1964, when the great Alaska earthquake triggered a distant tsunami that swept down the west coast of the United States.

Senior DOGAMI geologist George Priest is producing a series of state-sponsored tsunami evacuation and inundation zone maps. Ground truth observations from the 1964 event are critical to that effort, particularly maximum water elevations referenced to existing structures and the extent of inundation experienced.

From: North Coast & Cannon Beach Citizen, June 2, 2011

### **Oregon CERT activated to prepare for tsunami**

When the 8.9-magnitude earthquake and resulting tsunami struck Japan on March 11, 2011, residents of the coastal Oregon town of Astoria were concerned that a tsunami wave would also strike their area, which lies near the mouth of the Columbia River. Bracing for the worst, area fire department personnel advised people in low-lying areas of the possible inundation zone to move to higher ground. The Astoria CERT was activated at 5:30 AM to stage a relocation center for anyone who responded to these warnings.

A dozen CERT members from Astoria and neighboring towns Lewis and Clark reported to a local elementary school to set up a tsunami shelter. They brewed coffee and prepared food for the firefighters who had been up all night trying to warn people to relocate, as well

as for citizens who came to weather a possible tsunami wave. The CERT staged these activities from its "CERTmobile" a former ambulance that not only has food-preparation space, but also holds emergency equipment, including chainsaws, generators, floodlights, traffic signs, and radios for all law enforcement and amateur radio channels. The CERT coordinators kept in constant contact with amateur radio operators observing conditions along the coast.

The CERT members staffed the post until it became clear later that morning that their area would not be hit by the tsunami, although parts of the southern Oregon and northern California coasts were damaged.

"We were really, really fortunate that the waves were minimal," said Dorothy Davidson, who, with her husband Bill, shares leadership of the Astoria CERT. However, Davidson noted that the tsunami had an unanticipated benefit for her team: her CERT events have been unusually well-attended since March. "A horrible situation turned out to be a blessing," said Davidson. "It reinforced the idea that a distant event could affect [local residents]."

Even though the tsunami did not reach her community, Davidson was glad her CERT was ready in the event of a tragedy. "We're calling people at 5:30 in the morning, and they actually come; that says a lot," noted Davidson. "That's volunteerism at its best."

For more information, contact Dorothy Davidson at [lightning@gmail.com](mailto:lightning@gmail.com).

From: CERT in Action!

<http://www.citizenincorps.gov/cert/certinaction/astoria-or.shtm>

### **Coast cities may link with Japan on tsunami research**

By Nancy McCarthy, The Daily Astorian

Posted: Tuesday, July 12, 2011 10:49 am | Updated: 2:07 pm, Tue Jul 12, 2011.

Reprinted with permission from The Daily Astorian of Astoria, Oregon.

CANNON BEACH — In an effort to "learn by example," four coastal cities may be paired with four Japanese cities to determine how to prepare for – and recover from – a massive earthquake and tsunami. A state geotechnical engineer, Yumei Wang, is seeking funds to enable state and local representatives from Oregon to study how four Japanese cities are recovering from Japan's massive earthquake and tsunami on March 11.

Wang told the Oregon Seismic Safety Policy Advisory Commission, which met in Cannon Beach Monday, that she would request \$20,000 from the Cascadia Region Earthquake Workgroup to help pay for six people to travel to Japan.

They would study recovery efforts in four cities that are similar in population and geography to Astoria, Seaside, Cannon Beach and Newport.

The workgroup is a nonprofit coalition of private and public representatives working to help communities throughout the Cascadia Region reduce the effects of earthquakes and related hazards, such as tsunamis.

Wang, who works for the Oregon Department of Geology and Mineral Industries and leads the state's efforts to reduce earthquake risks, said she also is seeking another \$20,000 from other sources for the study.

The purpose, she said, is to "learn what happened and how the Japanese are dealing with rebuilding and recovery."

Information from the study would be shared through workshops in Oregon, Washington, California and British Columbia where the Cascadia fault line lies, Wang said. A member of the seismic safety commission, Wang asked the commission to support the proposal, but the commissioners said they didn't have enough information about the project to provide that support.

Wang said she would submit the proposal to the Cascadia Region Earthquake Workgroup next week without the commission's support.

Her proposal calls for comparing specific Japanese cities with Oregon cities, based on population, geography and economic base. The pairings proposed are:

- Ofunato, Japan, paired with Astoria: Ofunato's population is 19,073. At least 314 people died in the disaster and 150 are missing, equaling 2.4 percent of the population. Ofunato has a fishing industry and a port.

- Rikuzen-Takata, Japan with Seaside/Gearhart: Of 16,640 Rikuzen-Takata residents, 1,506 died and 652 are missing, totaling 13 percent. One-third of the city's employees were lost. Some news reports said the town had been almost completely flattened.

- Onagawa, Japan with Cannon Beach: Onagawa lost 12.8 percent of its 8,048 residents: 479 are dead and 555 are missing. Waves reached 49 feet high there and spread two-thirds of a mile inland. Of the town's 25 designated evacuation sites, 12 were inundated.

- Kesennuma with Newport: At least 957 people are dead and 538 are missing, equaling 3.7 percent of this port city's population of 40,331. Fishing and associated industries make up about 85 percent of the city's jobs.

Information brought back from visits to these towns and discussions with emergency managers there could be incorporated into "resiliency" plans being prepared by the seismic safety commission to keep Oregon safe, Wang said.

The Oregon Legislature adopted House Resolution 3 during the 2011 session, requiring the seismic commission to oversee the state's efforts to reinforce schools and other buildings for potential earthquakes and to provide emergency transportation routes and energy supply networks. The commission is required to submit an "Oregon Resilience Plan" to the Legislature by Feb. 28, 2013.

Trip considered

If the study is funded, those who would travel to Japan include Wang; state Rep. Debbie Boone, D-Cannon Beach, a member of the seismic commission and the sponsor of HR 3; Jay Raskin, architect and former Cannon Beach mayor who has proposed that the city build a tsunami evacuation building; Allison Pynch, an engineer with experience in post-disaster design and analysis; Carol Skowron, representing Mercy Corp, an organization working on recovery efforts in Japan; and an American Red Cross representative, yet to be determined.

Wang, who recently visited the devastated area in Japan, joined two other members of the seismic commission who had made similar visits.

All three told stories of seeing destroyed buildings, bridges, oil and gas facilities, schools and hospitals. They showed slides of some buildings that remained standing, including a five-story reinforced concrete building that acted as an evacuation building. Although debris reached the third story of the five-story building, people made it to the roof. When the waves reached the roof, some were saved by holding onto the railing of a steel guardrail. But survivors were there for days without emergency supplies, food or water. They were exposed to freezing temperatures and snow.

Kent Yu, a seismic commission member and a structural engineer, showed slides of toppled buildings, destroyed ports and a bay filled with wooden debris from houses and other buildings.

Some people chose not to evacuate for several reasons, Yu said. They may have lost electrical power and communications systems and couldn't hear the warning, they couldn't move quickly because of disabilities or they thought they were in a safe zone and the tsunami wouldn't reach them.

The local governments in some coastal cities were "decapitated," the commissioners said, with the destruction of government buildings and loss of records, as well as the deaths of city officials. Surviving residents had no way to register for any services that could be provided. Temporary housing was unavailable for at least 40,000 to 50,000 people.

In addition, restrictive privacy laws preventing the release of medical information meant that social service workers could not obtain medical data on at least 20,000 people with disabilities needing medication or other help, said Jay Wilson, a hazard mitigation coordinator for Clackamas County in Oregon City.

All three commissioners described the massive amounts of debris that piled up during the tsunami. Some observers have estimated there are 29 million tons of vehicles, oil tanks, wood from houses, steel frames from office buildings and boats littering the portion of Japan's coastal area hit by the disaster.

“This trip really affected me,” Wilson said. “Walking through 12 communities, what we saw was harrowing. It was a post-apocalyptic landscape.

“I had to internally face the fact that this is going to happen to us someday,” he said.

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### **CREW evaluation of Japan’s coastal communities for Cascadia resilience planning**

From: CREW project proposal form, provided by Yumei Wang, [excerpts only]

The main objective of this proposed work is to learn from the 3.11 Japanese disaster on how to best prepare coastal communities for Cascadia earthquake and tsunamis, and to encourage better preparations in Cascadia region coastal communities. This will be accomplished by forging a small unique Oregon based team of multi-disciplinary leaders (in policy, technical, and recovery) to travel to four communities in Japan to learn about their pre-, during- and post-disaster situation, and to share those lessons with four similar communities in Oregon. We believe that by targeting similar communities in Oregon and Japan and making explicit ties between the communities it will broaden the understanding of future Cascadia damage to key stakeholders, both in Oregon as well as the broader Pacific Northwest. The information will be aggressively and purposefully shared, which will promote more effective pre-disaster risk reduction actions.

Five key issues to be evaluated in the four pairs of communities:

- Performance of governance structures and their services
- Performance of public schools, including student evacuation procedures
- Performance of hospitals and medical facilities, including medical staff and patient outcomes
- Understanding special transportation considerations for isolated communities
- Status of city rebuilding & economic recovery plans

The communities selected:

- Onufato (Iwate Prefecture), Astoria
- Rikuzen Takata (Iwate Prefecture), Seaside
- Kesunnuma (Miyagi Prefecture), Newport
- Onagawa (Miyagi Prefecture), Cannon Beach

### **Lessons learned and recommendations for Oregon Seismic Safety Policy Advisory Commission (OSSPAC) following the great Japan earthquake of March 11, 2011**

[http://www.oregongeology.org/sub/earthquakes/RecommToOSSPAC\\_7-8-2011.pdf](http://www.oregongeology.org/sub/earthquakes/RecommToOSSPAC_7-8-2011.pdf)

## PANAMA

### **Tsunami sensor detects mysterious background signal in Panama**

Press release June 6, 2011

An unusual signal detected by the seismic monitoring station at the Smithsonian Tropical Research Institute's research facility on Barro Colorado Island results from waves in Lake Gatun, the reservoir that forms the Panama Canal channel, scientists report. Understanding seismic background signals leads to improved earthquake and tsunami detection in the Caribbean region where 100 tsunamis have been reported in the past 500 years.

As part of a \$37.5 million U.S. presidential initiative to improve earthquake monitoring following the devastating tsunami in the Indian Ocean in 2004, a seismic sensor was installed on Barro Colorado Island in 2006. The sensor is one of more than 150 sensors that comprise the U.S. Geological Survey's Global Seismographic Network.

Barro Colorado Island is a hilltop that was isolated by the waters of the reservoir created when the Chagres River was dammed to form Lake Gatun, a critical part of the Panama Canal. The Barro Colorado seismic monitoring station is a collaboration between the U.S. Geological Survey, the U.S. National Oceanic and Atmospheric Administration, the University of Panama and STRI.

Ultra-sensitive devices at the station pick up a large range of ground motion from felt earthquakes to nanometer-scale seismic background noise. The instruments at the station include very sensitive broadband seismometers used to detect distant earthquakes and low-gain accelerometers that measure ground movement and withstand violent local earthquakes and explosions.

The sensors detect signals from many different sources that include cars, boats and machinery operating up to several kilometers away. They also pick up the background "hum of the Earth" caused by ocean waves breaking on continental shelves around the world.

Scientists noticed that sensors on Barro Colorado recorded an intriguing wave pattern at an intermediate frequency. They suspected that this pattern could be caused by standing waves in Lake Gatun. Standing waves, also known as "seiches," are common in enclosed bodies of water like lakes and harbors where waves moving in opposite directions interact. By installing a water-level detection meter along the shoreline, researchers confirmed that changes in the water level of the lake correspond to the unusual seismic signal.

This is not the first report of seiches in Lake Gatun. Earlier reports correlated the release of methane gasses in the sediments below the canal to seiches and bottom currents in the lake. The Panama Canal Authority provided data about the depth of the Canal channel and of Lake Gatun that the authors used to model wave patterns in the lake.

Boat traffic and wind speed correlate with the unusual wave pattern, which was more common during the day than it was at night, but more information is needed to confirm what is actually causing the waves.

This report, published in the Journal of Geophysical Research, provides a new method to quantify the impact of water movements as recorded by land-based seismometers. A more exact understanding of the seismic signals resulting from water movements will improve estimates of other phenomena like tsunami impacts.

The Smithsonian Tropical Research Institute, headquartered in Panama City, Panama, is a unit of the Smithsonian Institution. The Institute furthers the understanding of tropical nature and its importance to human welfare, trains students to conduct research in the tropics and promotes conservation by increasing public awareness of the beauty and importance of tropical ecosystems.

Website: [www.stri.org](http://www.stri.org). STRI Herbarium: [www.stri.org/herbarium](http://www.stri.org/herbarium).

Citation: D.E. McNamara, A.T. Ringler, C.R. Hutt and L.S. Gee (2011), Seismically observed seiching in the Panama Canal, J. Geophys. Res., 116, B04312, doi: 10.1029/2010JB007930.

[http://www.eurekalert.org/pub\\_releases/2011-06/stritsd060211.php](http://www.eurekalert.org/pub_releases/2011-06/stritsd060211.php)

## VIETNAM

### Bac Lieu to set up 14 tsunami watch posts

BAC LIEU — Bac Lieu Province, situated in the Cuu Long (Mekong) Delta, plans to set up 14 tsunami observation posts along the East Sea coast in order to warn people of the approach of life threatening waves. The location for each post was decided upon following a survey of the province's 53-km coastline by search and rescue teams.

The capital Bac Lieu City will have four posts, while the Hoa Binh and Dong Hai districts will have five each. From: <http://vietnamnews.vnagency.com.vn/Social-Issues/212054/Bac-Lieu-to-set-up-14-tsunami-watch-posts.html> June 7, 2011

## WASHINGTON

### Towers planned on WA coast as tsunami safe havens

Twenty-nine towers, parking structures and elevated berms may be built on the Washington coast as emergency sites where people could ride out a tsunami.

The "vertical elevation" sites would be able to withstand a 30-foot wave and would be available to residents and tourists with a 30-minute warning.

The Daily World reports Project Safe Haven is a joint effort of the National Oceanic and Atmospheric Administration and the state Emergency Management Division. The University of Washington is helping run community meetings to decide where the towers would be placed.

Twenty locations are planned at Ocean Shores and nine in the Westport area.

Information from: The Daily World,  
<http://www.thedailyworld.com>  
From:  
[http://seattletimes.nwsources.com/html/localnews/2015223949\\_apwatsunamitowers.html](http://seattletimes.nwsources.com/html/localnews/2015223949_apwatsunamitowers.html) ♦

### Summary of the NTHMP Warning Coordination Subcommittee Telecon, July 11, 2011

Attendees:	
Melinda Bailey	NWS SR TPM
Rainer Dombrowsky	State of Maryland
Jim Goltz	State of California
Jeff Lorens	NWS WR TPM
Chip McCreery	PTWC
Dave Nelson	State of Washington
Erv Pettys	State of Alaska
Cindi Preller	NWS AR TPM
Jen Rhoades	NTHMP
Administrator	
Kevin Richards	State of Hawaii
Althea Rizzo	State of Oregon
Paul Whitmore	WCATWC
Mark Willis	NWS ER TPM
Charles Wilson	State of Alabama

### Agenda:

1 - Level of Alert diagram and proposed NWS Western Region diagram.

**Background:** This item came up after the Japan tsunami. WCMs in NWS Western Region proposed a revised graphic to indicate the time-dependence of the Watch versus the impact-dependence of the Warning/Advisory/Info Stmt. The graphic which has been used for the last four years shows a linear ordering of Warning, Advisory, Watch, Information Statement. One idea behind the NWS WR revision is that Tsunami Watches are EAS alerted (at least in some locations) while Tsunami Advisories are not. The revised graphic helps indicate why. Others have expressed that the existing graphic is in wide use, is easy to understand, and should continue to be used. Should we continue to use the existing graphic, or migrate to one similar to that proposed in NWS WR?

**Discussion:** Althea reviewed the two documents and highlighted the differences between the two. The original document developed by Cindi was recently reformatted for the NTHMP Media Guide. Jeff provided some of the motivation for developing a new graphic. Erv mentioned that the new graphic may cause confusion due to the left-to-right orientation. Dave and Melinda indicated a preference to keep as is. Mark suggested adding a statement to better explain the Watch in the original graphic which Kevin agreed and further suggested removing numbers

from the version in the Media Guide. Rainer expressed that the new graphic better matched with other NWS alerts and should be used. Chip and Melinda proposed changing the TIS wording in the original graphic to indicate that on certain occasions an Information Message indicates potential danger. Jim, Jen, and Cindi expressed the graphic should be kept as is. Charles indicated the graphic should be as simple as possible. Paul said the new graphic may lead people to believe that a Watch always precedes a Warning or Advisory which isn't usually the case.

Althea summarized that a large majority want to keep the graphic as is, though modifications to the Watch and Information Statement descriptions and removal of the numbers from the Media Guide version are reasonable changes.

Actions:

- Melinda to provide revised short descriptive text for the Information Statement (Aug. 1).
- Cindi to modify the original graphic with new text for Watch (indicating potential upgrade) & Information Statement (August 31).
- Jen to modify graphic for Media Guide (remove numbers and modify Watch/Info Stmt text as in original - Sept. 30).

## 2 - Use of term "Tsunami Surge Height" versus "Amplitude".

**Background:** In TWC messages, the term used to describe the tsunami elevation at the shore is Amplitude. Recent events have indicated that many people don't understand the term. One proposal is to replace Amplitude with Surge Height or Tsunami Surge Height. Is this a good idea?

**Discussion:** Kevin stated that Amplitude as a term is confusing and it should be changed to Tsunami Surge Height or just Height. Jeff agreed and related that all WR WCMs preferred Tsunami Surge Height. Mark disagreed and stated that when the question was brought up on the east coast they thought the term would get confused with storm surge from tropical or extra-tropical cyclones. Melinda supported that idea and stated that most people even in the Gulf don't understand the term Storm Surge. Cindi further agreed saying Storm Surge is different than a Tsunami, so don't use Surge. Other terms were discussed such as runup or inundation, but Althea and Erv pointed out that these terms relate to a different physical parameter than amplitude. Chip suggested that whatever term is used should be vetted internationally so that the different terms aren't used to describe the same thing. Paul asked if there was any consensus internationally; Chip responded not at this point.

Althea suggested an action to collect different terms and talk with customers to see which is the most understandable.

Action:

- Paul to propose several terms (July 31)
- All others will work with their customers to find if there is any of the terms that is best understood (Dec. 31)
- Outcome will be discussed at next NTHMP WCS meeting (Jan., 2012)

## 3 - Origination of Tsunami Warning/Watch from WFOs during local events.

**Background:** WSO Pago Pago recently received authority to originate Tsunami Warnings if no information is received and contact cannot be made with the PTWC after feeling a strong earthquake. WFO San Juan, PR has procedures to issue tsunami danger information through a Special Weather Statement if a strong earthquake is felt and WCATWC or PRSN cannot be reached and have not issued information. WFO Eureka is updating procedures which allow Eureka to originate a local evacuation EAS alert if a strong earthquake is felt and WCATWC cannot be reached and has issued no information. What is the best way for WFOs to respond in event of a strong local quake?

**Discussion:** Charles stated that WFOs issuing tsunami information during an event could lead to conflicting information being disseminated between the WFOs and TWCs. Jim mentioned that timely dissemination of information is most important. Erv stated that for a local event WFOs issuing tsunami information may be acceptable, but it doesn't make sense for a distant event. Jeff and Melinda provided background information on why this started after the 2009 Samoa tsunami and how WR and SR approached the problem. Kevin agreed with the approach, though Althea cautioned about WFOs issuing tsunami products. Paul agreed with this caution stating that tsunami products have set meanings and criteria.

Althea and Paul summarized that there was WCS consensus to support WFOs issuing tsunami information immediately after feeling a strong earthquake given the following conditions: 1) no contact can be made with a TWC, and 2) Tsunami Alert codes and products are not issued.

Action: None

## 4 - Should we initiate an EAS code for Tsunami Advisory?

**Background:** Due to potential danger from Tsunami Advisory level events, several TWC primary customers have indicated the desire to activate EAS for an advisory. Presently, no EAS Tsunami Advisory code exists. Should we take steps to initiate a Tsunami Advisory code for localities that want to activate EAS for an Advisory?

**Discussion:** Washington, California, Hawaii, Oregon, and Alaska supported the development of an EAS code for Tsunami Advisories. Rainer stated that creation of a new code is a lot of work and that other NWS Advisories are not EAS alerted. Jeff furthered this comment and

stated that WR WCMs generally were not in favor of a tsunami advisory code.

Paul summarized that there was strong support for the new code from the states, which justified going forth with actions necessary to institute a new code. Use of the new code would not be mandatory and would be coordinated closely with the Emergency Management and Broadcast communities.

Action:

- Paul will initiate actions necessary with NWS HQ to develop a Tsunami Advisory EAS code (Aug. 31)
- Paul to report on the EAS status at the next NTHMP meeting (Jan., 2012).♦

### **A national test—The first-ever national test through the Emergency Alert System will come from the White House**

By Rick Wimberly

Emergency Management, March/April 2011, p. 42-44

Reprinted with permission

For the first time, the White House will take over the nation's airwaves to speak to the American public through the Emergency Alert system (EAS). The FCC recently ordered all participants in the EAS to take part in a national test later this year. While state and local officials throughout the nation regularly use the EAS, a president has never used it—not even for a test.

And now, government officials want to see how the EAS would work should a president ever need to use it—especially since the state of the national EAS system has been under question. “EAS is an important alerting tool,” according to a 2009 report by the U.S. Government Accountability Office (GAO). “But it exhibits longstanding weaknesses that limit its effectiveness.”

In its report, the GAO cited “a lack of reliability of the message distribution system, gaps of coverage, insufficient testing and inadequate training of personnel” as some of the EAS' weaknesses.

FEMA's Integrated Public Alert and Warning System (IPAWS), in partnership with the FCC, is responsible for the EAS. And in an online “town meeting,” FEMA Assistant Administrator Damon Penn, whose National Continuity Programs Directorate includes IPAWS, recently told broadcasters that “we have to show the courage to test so we know what works and doesn't work.”

IPAWS has initiatives in progress to address concerns, one of which is sharply increasing the number of Primary Entry Point (PEP) stations. PEP stations are the broadcast facilities that first receive alerts and, in effect, relay them to other EAS participants—broadcast, cable and certain satellite programming. FEMA is expanding the number of PEP stations from 37 to 74, noting that the PEP stations will soon cover 90 percent of the nation's population, even without the relay to other EAS parti-

cipants. At the same time, more PEP stations are being added, and all of them are being improved with new generators and tighter security.

A new satellite system will provide another path for communicating with PEP stations. “Satellite infrastructure can be fully integrated with the legacy EAS and initially provides a reliable, redundant commercial system utilizing multiple uplinks and satellites for national level EAS distribution,” the IPAWS website states. “An XM Radio transmission path will be complete in the first quarter of 2010, and direct satellite connectivity will be available to the national PEP stations in the third quarter of 2010.”

Other initiatives include requiring EAS participants to upgrade their equipment to handle the new Common Alerting Protocol (CAP) messaging standard and digital communications. The FCC has given broadcasters, cable operators and EAS satellite program participants until the end of September [2011] to install equipment. This means virtually every broadcast and cable facility in the U.S. will be required to invest several thousand dollars in new equipment. During the online broadcasters' forum, Jim Barnett, chief of the FCC's Public Safety and Homeland Security Bureau, said the commission is evaluating whether to extend the deadline a second time. The original deadline was extended after broadcasters argued that sufficient time had not been provided to get new equipment in place. Penn said equipment testing is under way, and FEMA's Responder Knowledge Base will post names of equipment that passes.

While the enhancements won't be fully in place this year, federal officials still want the test conducted in 2011. Exact timing of the test currently is unknown: Date, time of day and length of the test are White House decisions, Penn told the broadcasters' town hall meeting. Officials will, however, be sensitive to timing, he said, adding that they'd like to avoid hurricane season, Thanksgiving, elections and the Christmas advertising season.

Timing ultimately will be critical, particularly considering that most radio stations, TV stations, cable outlets and certain satellite programming in the nation will be broadcasting the same message at the same time, including attention-getting tones. This has never happened before. Since the early 1950s when the EAS' predecessor was launched, no president has ever seized national programming.

Considering the test's magnitude, public overreaction is a concern. Outreach will be an important part of the test, according to broadcasters and federal officials. Penn said several levels of outreach are needed. The first level is public outreach, “so when people see the message, they won't think it's an emergency.”

Broadcasters are expected to play a big part in public outreach. When two White-House-to-FEMA-to-Alaska tests were conducted—one in 2010 and one in January 2011—broadcasters aggressively provided advance notice of the test to their audiences. “Alaska broadcasters really

made the test a success,” Penn Said. In its order establishing the national test, the FCC said outreach will be a “major aspect of preparation,” and directed its staff to work with federal partners and other stakeholders to “disseminate notice of the test as widely as possible through as many outlets as possible.”

In addition to broadcasters, local emergency management and other public safety officials will also be encouraged to spread the word to the public to help avoid over-reaction. 911 organizations will need to know about it to prepare for calls from concerned citizens.

After the public, Penn said the next level of outreach involves training station operators so they’ll know how to react to the test. However, the biggest part of outreach, Penn said, is to emergency managers. “We need to make them understand how important this is and get their support.”

In fact, Penn encouraged broadcasters to engage state and local emergency managers and help them understand the “importance of what we’re trying to do.”

Emergency managers also need to understand how committed broadcasters are to the EAS, he added. Gordon Smith, president of the National Association of Broadcasters, said alerting is the “highest and best use of broadcasters’ spectrum and facilities.” Even though CAP means “one message can be sent across many platforms,” he said, “broadcast radio and television stations will remain the backbone of EAS.”

Although the CAP protocol may not be in position in time for the national test, it is at the heart of the nation’s alerting plans. Penn told the broadcasters that recent outreach has focused on the state level to show how important CAP messaging is and “how important it is we have a system that’s compatible.” And outreach, he said, is beginning to broaden to local officials.

A number of commercial alert providers have signed up to adapt their technology so they can originate or receive CAP messages through the IPAWS infrastructure that FEMA is building. Through it, alerting authorities from local, state, tribal and territorial agencies will be able to use alert origination tools, mostly from commercial companies, to activate alerts through IPAWS. Those alerts can be disseminated through the EAS or other systems such as the Commercial Mobile Alert System (CMAS).

CMAS will give alerting authorities the ability to send alerts for imminent threats or Amber Alerts to mobile devices in targeted geographic areas without needing the public to sign up.

It’s all part of an initiative, ordered by Congress and the White House, for FEMA to make alerts and warnings effective for not only the president, but also for local officials. This includes providing multiple means of communications. But in a serious event, as the FCC’s Barnett puts it, “EAS may be the only way the president could communicate with the American public.”

Author: Rick Wimberly is president of Galain Solutions, Inc., a consultancy with two practice areas: alerts, notifications and warnings; and selling and marketing to government. He also provides market research, training and government sales assessment services.♦

## NEWS

### Obama issues national preparedness directive

The Obama administration has issued a presidential directive on national preparedness intended to “strengthen the security and resilience of the United States through systematic preparation for the threats that pose the greatest risk to the security of the nation, including acts of terrorism, cyber attacks, pandemics, and catastrophic natural disasters.”

“It is noteworthy that the new presidential policy directive is only the eighth one to be issued by the Obama administration,” says Secrecy News ([www.fas.org/blog/secrecy/](http://www.fas.org/blog/secrecy/)). Presidential directives are fundamental instruments of national policy, setting long-term policy goals on important national issues.

“At this point in the third year of the George W. Bush administration, around 25 presidential directives had been issued. And in the Clinton administration, there had been around 35 directives,” the Web site says. “So this administration is using directives much more sparingly, for reasons that are hard to discern from a distance.”

The document itself directs the Secretary of Homeland Security to develop national preparedness goals within six months—by October 1, 2011.

The directive embraces an all-hazards approach “covering prevention, protection, mitigation, response, and recovery...coordinated under a unified system with a common terminology and approach.”

The policy is expected to provide a planning and execution framework for all levels of government. The homeland security secretary is expected to produce a report to the president based on the new national preparedness goals within a year.

From: Natural Hazard Observer, v. 35, no. 5, p. 5. (May 2011)

### TsunamiReady and StormReady communities

As of July 15, 2011, there were 1772 StormReady® Sites in 48 states, Puerto Rico & Guam:

880 Counties 725 Communities

79 Universities, 10 Indian Nations, 38 Commercial Sites,

19 Military, 15 Government Sites

184 StormReady Supporters

85 TsunamiReady Sites in 10 states, Puerto Rico and Guam

From: <http://www.stormready.noaa.gov/communities.htm>

### **Cal EMA and FEMA sign agreement triggering flow of federal disaster assistance funds**

Tue, 24 May 2011 15:11:40 -0500

Oakland, Calif. -- The California Emergency Management Agency (Cal EMA) and the Federal Emergency Management Agency (FEMA) have signed an agreement that now makes federal Public Assistance (PA) funds available to supplement recovery efforts in Del Norte and Santa Cruz counties including Yurok Tribal facilities located in Del Norte. Both counties are recovering from extensive damages from the Tsunami wave action on March 11, 2011.

From: FEMA (Federal Emergency Management Agency) [fema@service.govdelivery.com] May 24, 2011

### **Samoa rebuild after tsunami**

New villages have sprung up in the hills of Samoa where once only plantations blossomed. More than 5200 people were directly affected by the 2009 tsunami and about 80 per cent of them have left their destroyed homes and rebuilt further inland on higher ground.

Full article posted July 16, 2011 at website:  
<http://www.stuff.co.nz/national/politics/5291393/Samoa-rebuilds-after-tsunami>

## **WEBSITES**

### **<http://www.wvu.edu/huxley/resilience/Student/StudentWork.html>**

Wonder what the next generation of hazards researchers makes of the Disaster Mitigation Act of 2000? Cruise over to Western Washington University's Resilience Institute and find out. Students at the institute examined the act and created Web sites critiquing its implementation in 10 states. Whether you're a hardened planner or just want to know more, it never hurts to get fresh eyes on an old topic.

From: Disaster Research 569, June 2, 2011

### **<http://petlab.parsons.edu/redCrossSite/games.html>** Games for Disaster Preparedness

Games are the hottest path to preparedness lately, with a bevy of offerings to help folks learn about everything from earthquake-proofing homes to managing floodplains. This initiative, by the Parsons The New School of Design's PETLab and the Red Cross/Red Crescent Climate Centre, focuses on games that promote good decision making during crises. The games, both computer assisted and low tech, can go a variety of places to reach even the most vulnerable communities.

From DR 568, May 19, 2011

### **<http://blogs.planning.org/postdisaster/RecoveryNews>**

This American Planning Association blog features research updates, information, and podcasts on post-

disaster building recovery. The newly launched blog is part of a Federal Emergency Management Agency-funded effort to replace the association's Planning for Post-Disaster Recovery and Reconstruction.

From DR 568, May 19, 2011

### **[http://www.empower-](http://www.empower-women.com/mc/page.do?sitePageId=46823&orgId=emp)**

### **[women.com/mc/page.do?sitePageId=46823&orgId=emp](http://www.empower-women.com/mc/page.do?sitePageId=46823&orgId=emp)**

EMPOWER—the Emergency Management Professional Organization for Women's Enrichment—isn't a new resource, but one that bears revisiting. EMPOWER helps women in emergency management advance their careers with networking, mentoring and education opportunities. Visitors to the EMPOWER Web site will find library and career resources, social media connections, and access to events like an online webinar on community perspectives on Haiti's recovery.

From DR 568, May 19, 2011

## **PUBLICATIONS**

### ***EARTH: Waves of Disaster: Lessons from Japan and New Zealand***

Alexandria, VA – On Feb. 22, a magnitude-6.1 earthquake struck Christchurch, New Zealand, killing nearly 200 people and causing \$12 billion in damage. About three weeks later, a massive magnitude-9.0 earthquake struck northern Honshu, Japan. The quake and tsunami killed about 30,000 people and caused an estimated \$310 billion in damage. Both events are stark reminders of human vulnerability to natural disasters and provide a harsh reality check: Even technologically advanced countries with modern building codes are not immune from earthquake disasters.

Both events also offer lessons to be learned, as EARTH explores in the June features "Don't Forget About the Christchurch Earthquake" and "Japan's Mega-quake and Killer Tsunamis." What could have been done to prevent or mitigate the damage in both countries? And what can similar locations around the world learn?

Furthermore, how did the March temblor and tsunami off the coast of Japan complicate the picture of foreshocks and aftershocks? Discover what these events are teaching scientists about earthquakes.

These stories and many more can be found in the June issue of EARTH, now available digitally (<http://www.earthmagazine.org/digital/>) or in print on your local newsstands.

For further information on the June featured articles, go to <http://www.earthmagazine.org/earth/article/44b-7db-5-11> and <http://www.earthmagazine.org/earth/article/44c-7db-5-11>

The October 2011 issue of <i>TsuInfo Alert</i> will feature program information from NTHMP participant GUAM.
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### ***Disaster Law***

Editors: Daniel A. Farber and Michael G. Faure, 2010. ISBN: 978-1-84844-431-7. Hardcover, 704 p., \$306, Edward Elgar Publishing, [www.e-elgar.com](http://www.e-elgar.com)

This book reprints critical review articles on the law of natural hazards and disasters. The articles cover the legal problems in disaster prevention and mitigation, response, insurance, and government provided compensation. "Disaster law" has not been much of a unified discipline, an oversight which this book attempts to rectify by drawing a coherent legal context for the entire spectrum of disaster preparation and response.

From: *Natural Hazards Observer*, v. 35, no. 5, p. 17. (May 2011)

### ***Early warning practices can save lives: Selected examples***

By the United Nations Secretariat of the International Strategy for Disaster Reduction, 2010, 77 p. Free download at

[www.preventionweb.net/english/professional/publications/v.php?id=15254](http://www.preventionweb.net/english/professional/publications/v.php?id=15254).

Ever since the 2004 Indian Ocean tsunami roared ashore and killed 230,000 people, the issue of early warning systems has taken a higher priority in international emergency management. This ISDR report looks at case studies of systems that have been put in place around the world.

The first part examines a few systems, especially in various nations in Asia and Africa, examining how a participatory approach to building the system within the community has led to acceptance and understanding. The findings also show that clear responsibilities and structures are essential for an effective system. "Early warning systems should build upon existing structures," the report finds.

The second section "highlights the importance of risk assessments---that evaluate the conditions in the hazard prone area before developing or implementing early warning systems." This stresses the technical and data gathering needs required to assemble a warning that both addresses the threats faced, and is meaningful to the population that the system is designed to warn.

From: *Natural Hazards Observer*, v. 35, no. 3, p. 17-18.

[http://www.preventionweb.net/files/15254\\_EWSBLLfinalweb.pdf](http://www.preventionweb.net/files/15254_EWSBLLfinalweb.pdf)

### ***Building community disaster resilience through private-public collaboration***

By the National Research Council, 2010, 131 p. ISBN:978-0-309-16263-0. Free download at [www.nap.edu/catalog.php?record\\_id=13028](http://www.nap.edu/catalog.php?record_id=13028) or \$29.70 for print version from the same website.

Community resilience in the face of disasters is the new frontier for research and action. It is a truism of disaster response that the people on the scene are the real "first responders." And the people in the community are the ones who determine how well it bounces back from a catastrophe. But it remains unclear why some communities do better, others worse.

This report focuses on the value of public-private cooperation in developing a resilient community. "The private and public sectors each have resources, capabilities, and access to different parts of the community. Through their collective efforts to identify interdependencies, needs, and resources in advance, a community can significantly improve its disaster resilience," the report says.

These collaborations must be carefully nurtured, the National Academies committee says. They work better when formed from the grass roots, from the communities themselves, and are then widened to be inclusive of all the community stakeholders. This also requires paying attention to the process itself. "Effective decision making is grounded in trusted relationships and common purpose. Because different community sectors and populations are motivated by different factors, the collaborative structure itself will be strongest if it is trusted and perceived as neutral, nonpartisan, and focuses on the greater good of the community."

The committee came up with a crisp list of "overarching guidelines" to pursue successful public-private resiliency strategies, as well as suggestions for a research strategy to learn from these efforts and apply them to other communities. "Because most resilience-focused collaborative efforts are largely in nascent stages throughout the nation and because social environments and vulnerability to hazards evolve rapidly, a program of research run parallel to the development of collaborative efforts is imperative, and embedding research within collaborative efforts is ideal," the report says.

From: *Natural Hazards Observer*, v. 35, no. 3, p. 18.

### ***Hazard mitigation: Integrating best practices into planning.***

By James C. Schwab, editor, 2010, 146 p. ISBN: 978-1-932364-84-2, \$60 (softcover) American Planning Association, [www.planning.org](http://www.planning.org).

I'm the sort of person who, when the check engine light goes on in the car, I think, "I'll wait. Maybe it'll fix itself." This book has harsh words for me. Under its heading "What Does Not Work," the first item is "Procrastination."

This book explores the role of planners in dealing with emergencies. It discusses planning procedures, public involvement, assessing mitigation efforts before a disaster, and many other aspects of planning that affect how disasters can be avoided or ameliorated if they do occur.

The importance of planning in disaster management is becoming more critical, more widely recognized, and at the same time more controversial. To take only the most obvious example, preventing or limiting development in floodplains is almost certain to send developers and homeowners into paroxysms of protest.

*Hazard Mitigation* provides case studies of large, intermediate, and small jurisdictions. Clearly written and effectively organized, it should be on the bookshelf of every planner and emergency manager.

From: *Natural Hazards Observer*, v. 35, no. 2, p. 17.

### ***Adapting to climate change: A planning guide for state coastal managers***

By National Oceanic and Atmospheric Administration Office of Ocean and Coastal Resource Management, 138 p. Free download at [coastalmanagement.noaa.gov/climate/adaptation.html](http://coastalmanagement.noaa.gov/climate/adaptation.html).

For most people involved in coastal planning, this guide will start at chapter three where the authors start in on the planning process. The first 20 pages or so lay out the potential impacts of climate change. It is essential to include this, of course, but it seems unlikely that any coastal planners are only now awakening Rip van Winkle-like to the perils facing the coasts.

So that's the why. But the rest of the project is the "how." The book moves logically from planning and goal setting through vulnerability assessment, adaptation, and plan implementations and maintenance. The book also cites a wide variety of publications, training, and resources to achieve the goals set out.

NOAA was a little slow to acknowledge the whole climate change thing, but this guide is an admirable practical effort in catching up.

From: *Natural Hazards Observer*, v. 35, no. 2, p. 18

### ***Tsunami—To survive from tsunami***

By Susumu Murata, Fumihoko Imamura, Kazumasa Katoh, Yoshiaki Kawata, Shigeo Takahashi, and Tomotsuka Takayama, 2010, 302 p. ISBN: 978-981-4277-47-1. Hardcover \$68. World Scientific Publishing. [www.worldscientific.com](http://www.worldscientific.com)

This book begins with an exploration of the Great Indian Ocean tsunami of Dec. 2004, then moves to damages from tsunamis generally, using many case studies. The bulk of the book is devoted to calculation of the damage that can be expected from these hazards, depending on wave height and other factors.

This is a technical book, very thorough, especially enlightening about engineering in tsunami zones.

From: *Natural Hazards Observer*, v. 35, no. 2, p. 19

## **CONFERENCES**

### **Nov 12 – Nov 17**

The Stakes are High for Emergency Managers. 59th

IAEM Annual Conf. & EMEX 2011. Las Vegas, NV. Sessions encourage the exchange of ideas on collaborating to protect lives and property from disaster.

## **CALENDAR OF EVENTS**

### **September 2011**

#### **National Preparedness Month**

The theme this year - A Time to Remember. A Time to Prepare. - is designed to encourage National Preparedness Month activities that will:

- Honor Our First Responders
- Encourage Service to Community
- Emphasize that Preparedness is a Shared Responsibility

Citizens are encouraged to collectively support each other, neighbor to neighbor, in planning and preparing for a disaster; get an Emergency Supply Kit, make a Family Emergency Plan, and become informed about emergencies and their appropriate response. Concrete, simple steps do make a difference. By getting involved with local community efforts, anyone can ensure that everyone becomes better prepared.

It is important that organizations and individuals receive this information and participate by:

- Registering as a National Preparedness Month Coalition Member at [www.Ready.gov/community](http://www.Ready.gov/community)
- Conducting a preparedness activity
- Joining a local Citizen Corps Council
- Sharing information with others

The Ready Campaign offers a toolkit, including templates, resources, and tips to assist you with promoting emergency preparedness. You will also find an NPM calendar where you can post your events and see activities going on in your state. The Ready Campaign is standing by to help at [npm@fema.gov](mailto:npm@fema.gov).

From: Citizen Corps News Digest for July 12, 2011  
FEMA (Federal Emergency Management Agency)  
[fema@service.govdelivery.com](mailto:fema@service.govdelivery.com)

Also: <http://community.fema.gov>

### **November 9, 2011**

FEMA, in coordination with the Federal Communications Commission (FCC) and the National Oceanic and Atmospheric Administration (NOAA), will conduct the first nationwide Emergency Alert System (EAS) Test on Nov. 9, at 2:00 PM EST. FEMA, the FCC, and NOAA's vision for improving the EAS includes first testing the readiness and effectiveness of the EAS as it currently exists today, and then testing continually to identify necessary improvements so that the system can better serve U.S. communities by delivering critical emergency information.♦

### Scientists aglow after big discovery during tsunami

By Jim Borg, posted July 16, 2011

[http://www.staradvertiser.com/news/20110716\\_\\_Scientists\\_aglow\\_after\\_big\\_discovery\\_during\\_tsunami.html](http://www.staradvertiser.com/news/20110716__Scientists_aglow_after_big_discovery_during_tsunami.html)

Honolulu Star Advertiser

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Researchers using a camera on Maui have photographed the glow from atmospheric pressure disturbances generated by the March 11 tsunami, raising hopes that the technique could be used to predict the arrival of future waves. Figure →

The first observation of its kind was made from the Air Force Maui Optical and Supercomputing Station atop Haleakala by scientists in France, Brazil and the United States.

The March 11 earthquake in Japan generated a seismic sea wave that devastated parts of northern Honshu and caused millions of dollars of damage in Hawaii.

On the open ocean, such waves move at 500 mph but are only an inch high. Nevertheless, they put pressure on the atmosphere, scientists say.

"The atmosphere gets less and less dense as you get higher, and that allows the amplitude of the wave to grow," Jonathan Makela, a professor of electrical and computer engineering at the University of Illinois, Urbana-Champaign, said by phone Thursday.

At an altitude of 155 miles, the wave pressure interacts with the charged plasma of the ionosphere, which creates a faint red glow, Makela said.

"The light that we're looking at is red, but it is very, very dim," he said. "It's not something you could see with the naked eye."

On March 11, Makela awoke at home in Illinois to find emails from French collaborator Philippe Lognonne, who had heard about the quake. He asked Makela to recalibrate the camera, called the Cornell All-Sky Imager, to pick up the tsunami phenomenon, which had been predicted in the 1970s but never observed. Makela did so and hit pay dirt in the pre-dawn darkness atop the 10,023-foot peak.

Their findings appear in the online edition of *Geophysical Research Letters*.

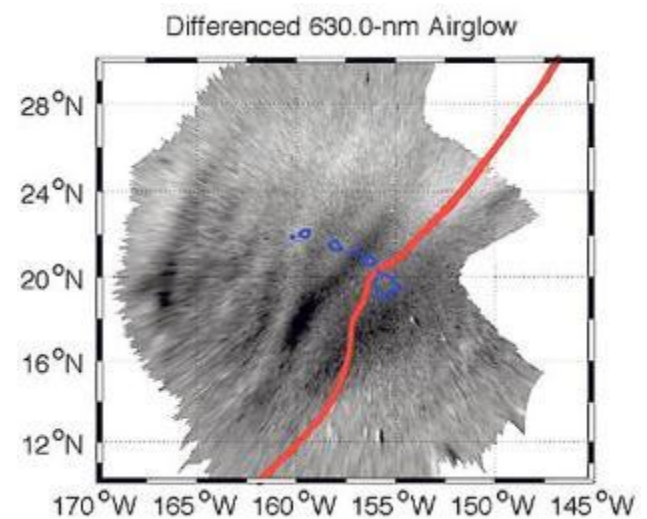
Makela and colleagues found that the first ionospheric "chemiluminescence" preceded the ocean wave by about an hour, leading them to propose a space-based system for tsunami early warning.

The Haleakala camera can detect such ionospheric glow only on clear moonless nights, but a similar camera in geosynchronous orbit could detect it day or night, Makela said.

Currently, scientists rely on ocean buoys and models to track and predict the path of a tsunami.

Makela's normal research at Haleakala is focused on how the ionosphere affects radio signals. The tsunami findings were a "happy accident," he said.

"It shows the importance of having instruments out in the field taking data, because you never know what you're going to see," he said. ♦



### Thermal anomalies seen on AVHRR images preceding and following the Izmit, Turkey, Mw 7.4 mainshock of August 17, 1999

By Recep Cakir, Shelton S. Alexander, Attila H. Eronat

Advanced Very High Resolution Radiometer (AVHRR) satellite images show a prominent thermal anomaly covering the portions of the fault system ruptured by this major earthquake and the adjacent area. The anomaly pattern was stable until near the time of the mainshock on August 17, 1999; approximately two days prior to the event there was an apparent change (instability) in the anomaly pattern. The pattern continues to change following the main shock with localized thermal anomalies appearing where the larger aftershocks subsequently occur. Similar, but less extensive, AVHRR thermal anomalies are associated with Ms 6.3 earthquake that occurred on June 27, 1999 near the city of Adana in southern Turkey. Possible explanations of increasing temperature seen on the thermal channels of the AVHRR images include: tectonically induced stress and strain along the active fault(s) in the epicentral area; changes in the hydrogeological regime bring warm water to shallower depths; and emissions of carbon dioxide and methane into the air inducing a greenhouse heating effect in the atmosphere near the surface. These and other possible causes for the observed anomalies are still being investigated.

From: *Eos* (American Geophysical Union Transactions), v. 80, no. 46, p. F671-672. ♦

### **The man has a PLAN: New alert system targets location for safety warnings**

Emergency managers will soon have the nation on speed dial thanks to new technology that sends emergency alerts directly to the cell phones in a targeted area. The new system—called the [Personal Localized Alerting Network](#), or PLAN—was announced last week in New York, one of the first areas where the messages can be received.

Although many agencies offer emergency text alerts, PLAN is different in that users get messages whenever they're in harm's way. The technology uses a special chip to allow officials to send off-the-band alerts—not text messages—directly to cellular handsets in a defined area, so those with PLAN-enabled phones will get the notice whether they're from out of town or even if networks are down.

“Communications technology—and in particular mobile broadband—has the potential to revolutionize emergency response,” Federal Communications Commission Chairman Julius Genachowski said recently at the [program's launch](#). “Our communications networks need to be reliable and resilient in times of emergency.”

PLAN, which is better known in emergency management circles by its working title, the Commercial Mobile Alert System, was created by the FCC and the Federal Emergency Management Agency in partnership with AT&T, T-Mobile, Verizon, and Sprint. Users don't have to sign up for the service. It's active whenever they buy a phone with a PLAN chip installed, including some phones sold now. By April 2011, all phones sold by the four participating companies will receive PLAN alerts.

The PLAN technology is part of the larger [Integrated Public Alert and Warning System](#) effort, or IPAWS. The new mobile alerts are meant to supplement existing television and radio alerts from the Emergency Alert System.

"The traditional alerts on radio and TV are still important, and they will continue, but more and more, mobile devices are becoming essential. You have them with you," Genachowski told [USA Today](#). "In the event of a major disaster, government authorities can get lifesaving information to you quickly."

That information will include three types of alerts: amber alerts, messages about “imminent threat to life,” and presidential alerts, according to the FCC. Phone owners can opt out of the first two, but presidential alerts won't be optional for those with PLAN-enabled phones.

Eventually, the idea is to have PLAN on all phones and local agencies able to send alerts, according to the [Washington Post](#). For now, mobile carrier participation is optional and local governments are responsible for the cost of any upgrades needed to use the system. Public opinion of the technology has also been hushed, although at least one blogger has commented on the Orwellian possibilities.

“I don't know about you but I am not terribly keen on having a special chip on my phone that is mandated by the U.S. government,” writes Ed Hansberry in [InformationWeek](#). “They don't have an entirely trustworthy record when doing things that are designed to protect us.”

From: Disaster Research 568, May 19, 2011 ♦

### **Material added to the NTHMP Library July-August 2011**

Note: These, and all our tsunami materials, are included in the online (searchable) catalog at <http://www.dnr.wa.gov/ResearchScience/Topics/GeologyPublicationsLibrary/Pages/washbib.aspx>. Click on SEARCH DATABASE, then type 'tsunamis' in the Subject field to get a full listing of all the tsunami reports and maps in the collection.

Abe, Kuniaki, 2011, Synthesis of a tsunami spectrum in a semi-enclosed basin using its background spectrum: *Pure and Applied Geophysics*, v. 168, no. 6-7, p. 1101-1112.

Altinok, Y.; Alpar, B.; Ozer, N.; Aykurt, H., 2011, Revision of the tsunami catalogue affecting Turkish coasts and surrounding regions: *Natural Hazards and Earth System Sciences*, v. 11, no. 2, p. 273-291.

Alvarez-Gomez, J. A.; Aniel-Quiroga, I.; Gonzalez, M.; Otero, L., 2011, Tsunami hazard at the western Mediterranean Spanish coast from seismic sources: *Natural Hazards and Earth System Sciences*, v. 11, no. 1, p. 227-240.

Apotsos, Alex; Gelfenbaum, Guy; Jaffe, Bruce; Watt, Steve; Peck, Brian; Buckley, Mark; Stevens, Andrew, 2011, Tsunami inundation and sediment transport in a sediment-limited embayment on American Samoa: *Earth-Science Reviews*, v. 107, no. 1-2, p. 1-11.

Arcas, D.; Chamberlin, C.; Lagos, M.; Ramirez-Herrera, M.; Tang, L.; Wei, Y., 2010, Near field modeling for the Maule tsunami from DART, GPS and finite fault solutions [abstract]: *Eos (American Geophysical Union Transactions)*, 2010 Fall Meeting, U21B-07 online.

Borrero, Jose C.; McAdoo, Brian; Jaffe, Bruce; Dengler, Lori; Gelfenbaum, Guy; Higman, Bretwood; Hidayat, Rahman; Moore, Andrew; Kongko, Widjo; Lukijanto, Peters, Robert; Prasetya, Gegar; Titov, Vasily; Yulianto, Eko, 2011, Field survey of the March 28, 2005 Nias-Simeulue earthquake and tsunami: *Pure and Applied Geophysics*, v. 168, no. 6-7, p. 1075-1088.

Bressan, L.; Tinti, S., 2011, Structure and performance of a real-time algorithm to detect tsunami or tsunami-like alert conditions based on sea-level records analysis:

Natural Hazards and Earth System Sciences, v. 11, no. 5, p. 1499-1521.

Cassidy, J. F.; Boroschek, R.; Ventura, C.; Huffman, S., 2010, Ground shaking and earthquake engineering aspects of the M8.8 Chile earthquake of 2010--Applications to Cascadia and other subduction zones [abstract]: Eos (American Geophysical Union Transactions), 2010 Fall Meeting, U21B-08, online.

Chague-Goff, Catherine; Schneider, Jean-Luc; Goff, James R.; Dominey-Howes, Dale; Strotz, Luke, 2011, Expanding the proxy toolkit to help identify past events—Lessons from the 2004 Indian Ocean tsunami and the 2009 South Pacific tsunami: Earth-Science Reviews, v. 107, no. 1-2, p. 107-122.

Clark, Kate; Power, William; Nishimura, Yuichi; Kautoke, Richard 'Atelea; Vaiomo'unga, Rennie; Pongi, Aleki; Fifita, Makameone, 2011, Characteristics of the 29th September 2009 South Pacific tsunami as observed at Niuatoputapu Island, Tonga: Earth-Science Reviews, v. 107, no. 1-2, p. 52-65.

Dengler, Lori; Uslu, Burak, 2011, Effects of harbor modification on Crescent City, California's tsunami vulnerability: Pure and Applied Geophysics, v. 168, no. 6-7, p. 1175-1185.

Didenkulova, Ira; Pelinovsky, Efim, 2011, Runup of tsunami waves in U-shaped bays: Pure and Applied Geophysics, v. 168, no. 6-7, p. 1239-1249.

Dudley, Walter C.; Whitney, Rosy; Faasisila, Jackie; Fonolua, Sharon; Jowitt, Angela; Chan-Kau, Marie, 2011, Learning from the victims--New physical and social science information about tsunamis from victims of the September 29, 2009 event in Samoa and American Samoa: Earth-Science Reviews, v. 107, no. 1-2, p. 201-206.

Earth Imaging Journal, 2011, Disaster response in Japan--Geospatial community to the rescue: Earth Imaging Journal, v. 8, no. 3, p. 10-14.

Etienne, Samuel; Buckley, Mark; Paris, Raphael; Nandasena, Aruna K.; Clark, Kate; Strotz, Luke; Chague-Goff, Catherine; Goff, James; Richmond, Bruce, 2011, The use of boulders for characterising past tsunamis--Lessons from the 2004 Indian Ocean and 2009 South Pacific tsunamis: Earth-Science Reviews, v. 107, no. 1-2, p. 76-90.

Federal Emergency Management Agency, 2010, Catalog of FEMA earthquake resources: Federal Emergency Management Agency P-736A, 32 p.  
<http://www.fema.gov/library/viewRecord.do?&=3538>

Fritz, Hermann M.; Borrero, Jose C.; Synolakis, Costas E.; Okal, Emile A.; Weiss, Robert; Titov, Vasily V.; Jaffe,

Bruce E.; Foteinis, Spyros; Lynett, Patrick J.; Chan, I-Chi; Liu, Philip L.-F., 2011, Insights on the 2009 South Pacific tsunami in Samoa and Tonga from field surveys and numerical simulations: Earth-Science Reviews, v. 107, no. 1-2, p. 66-75.

Fritz, H. M.; Hillaire, J. V.; Moliere, E.; Mohammed, F.; Wei, Y., 2010, Tsunamis triggered by the 12 January 2010 earthquake in Haiti [abstract]: Eos (American Geophysical Union Transactions), 2010 Fall Meeting, U13A-0013, online.

Fujii, Yushiro; Satake, Kenji; Nishimae, Yuji, 2011, Observation and modeling of the January 2009 West Papua, Indonesia tsunami: Pure and Applied Geophysics, v. 168, no. 6-7, p. 1089-1100.

Gelfenbaum, Guy; Apotsos, Alex; Stevens, Andrew W.; Jaffe, Bruce, 2011, Effects of fringing reefs on tsunami inundation--American Samoa: Earth-Science Reviews, v. 107, no. 1-2, p. 12-22.

Gisler, Galen; Weaver, Robert; Gittings, Michael, 2011, Calculations of asteroid impacts into deep and shallow water: Pure and Applied Geophysics, v. 168, no. 6-7, p. 1187-1198.

Giuliani, G.; Peduzzi, P., 2011, The PREVIEW Global Risk Data Platform--A geoportal to serve and share global data on risk to natural hazards: Natural Hazards and Earth System Sciences, v. 11, no. 1, p. 53-66.

Goff, J., 2011, Evidence of a previously unrecorded local tsunami, 13 April 2010, Cook Islands--Implications for Pacific Island countries: Natural Hazards and Earth System Sciences, v. 11, no. 5, p. 1371-1379.

Goff, James; Chague-Goff, Catherine; Dominey-Howes, Dale; McAdoo, Brian; Cronin, Shane; Bonte-Grapetin, Michael; Nichol, Scott; Horrocks, Mark; Cisternas, Marco; Lamarche, Geoffroy; Pelletier, Bernard; Jaffe, Bruce; Dudley, Walter, 2011, Palaeotsunamis in the Pacific Islands: Earth-Science Reviews, v. 107, no. 1-2, p. 141-146.

Goff, James; Lamarche, Geoffrey; Pelletier, Bernard; Chague-Goff, Catherine; Strotz, Luke, 2011, Predecessors to the 2009 South Pacific tsunami in the Wallis and Futuna archipelago: Earth-Science Reviews, v. 107, no. 1-2, p. 91-106.

Goff, James; Dominey-Howes, Dale, 2011, The 2009 South Pacific tsunami--Editorial: Earth-Science Reviews, v. 107, no. 1-2, p. v-vii.

Gonzalez, Tania, 2011, Tsunami and storm surges—Similarities and differences: AEG News, v. 54, no. 2, p. 14-17.

- Ioki, Kei; Tanioka, Yuichiro, 2011, Slip distribution of the 1963 Great Kurile earthquake estimated from tsunami waveforms: *Pure and Applied Geophysics*, v. 168, no. 6-7, p. 1045-1052.
- Jaffe, Bruce; Buckley, Mark; Richmond, Bruce; Strotz, Luke; Etienne, Samuel; Clark, Kate; Watt, Steve; Gelfenbaum, Guy; Goff, James, 2011, Flow speed estimated by inverse modeling of sandy sediment deposited by the 29 September 2009 tsunami near Satitoo, east Upolu, Samoa: *Earth-Science Reviews*, v. 107, no. 1-2, p. 23-37.
- Johnsson, Mark, 2011, The Tohoku earthquake of March 11, 2011--A preliminary report on implications for coastal California: *California Coastal Commission*, 21 p.
- Kirby, S.; von Huene, R., 2010, Selection criteria for future geohazards-motivated research under the NSF MARGINS successor program [abstract]. IN *GeoPRISMS*, a successor to MARGINS--Draft science plan; Appendix E, White Lamont-Doherty Earth Observatory, MARGINS Office, 2 p.
- McAdoo, Brian G.; Ah-Leong, Joyce Samuelu; Bell, Lui; Ifopo, Pulea; Ward, Juney; Lovell, Edward; Skelton, Posa, 2011, Coral reefs as buffers during the 2009 South Pacific tsunami, Upolu Island, Samoa: *Earth-Science Reviews*, v. 107, no. 1-2, p. 147-155.
- Moore, Andrew; Goff, James; McAdoo, Brian G.; Fritz, Hermann M.; Gusman, Aditya; Kalligeris, Nikos; Kalsum, Kenia; Susanto, Arif; Suteja, Debora; Synolakis, Costas E., 2011, Sedimentary deposits from the 17 July 2006 western Java tsunami, Indonesia--Use of grain size analyses to assess tsunami flow depth, speed, and traction carpet characteristics: *Pure and Applied Geophysics*, Online First, May 4, 2011.
- Nicolisky, D. J.; Suleimani, E. N.; Hansen, R. A., 2011, Validation and verification of a numerical model for tsunami propagation and runup: *Pure and Applied Geophysics*, v. 168, no. 6-7, p. 1199-1222.
- Nosov, Mikhail A.; Kolesov, Sergey V., 2011, Optimal initial conditions for simulation of seismotectonic tsunamis: *Pure and Applied Geophysics*, v. 168, no. 6-7, p. 1223-1237.
- Okal, Emile A., 2011, Tsunamigenic earthquakes--Past and present milestones: *Pure and Applied Geophysics*, v. 168, no. 6-7, p. 969-995.
- Okal, Emile A.; Borrero, Jose C.; Chague-Goff, Catherine, 2011, Tsunamigenic predecessors to the 2009 Samoa earthquake: *Earth-Science Reviews*, v. 107, no. 1-2, p. 128-140.
- Okal, Emile A.; Synolakis, Costas E.; Kalligeris, Nikos, 2011, Tsunami simulations for regional sources in the South China and adjoining seas: *Pure and Applied Geophysics*, v. 168, no. 6-7, p. 1153-1173.
- Omira, R.; Baptista, M. A.; Miranda, J. M., 2011, Evaluating tsunami impact on the Gulf of Cadiz coast (north-east Atlantic): *Pure and Applied Geophysics*, v. 168, no. 6-7, p. 1033-1043.
- Power, William; Gale, Nora, 2011, Tsunami forecasting and monitoring in New Zealand: *Pure and Applied Geophysics*, v. 168, no. 6-7, p. 1125-1136.
- Reese, Stefan; Bradley, Brendon A.; Bind, Jochen; Smart, Graeme; Power, William; Sturman, James, 2011, Empirical building fragilities from observed damage in the 2009 South Pacific tsunami: *Earth-Science Reviews*, v. 107, no. 1-2, p. 156-173.
- Richmond, Bruce M.; Buckley, Mark; Etienne Samuel; Chague-Goff, Catherine; Clark, Kate; Goff, James; 2011, Deposits, flow characteristics, and landscape change resulting from the September 2009 South Pacific tsunami in the Samoan islands: *Earth-Science Reviews*, v. 107, no. 1-2, p. 38-51.
- Roger, J.; Baptista, M. A.; Sahal, A.; Accary, F.; Allgeyer, S.; Hebert, H., 2011, The transoceanic 1755 Lisbon tsunami in Martinique: *Pure and Applied Geophysics*, v. 168, no. 6-7, p. 1015-1031.
- Schlurmann, T.; Siebert, M., 2011, The capacity building programmes of GITEWS--Visions, goals, lessons learned and re-iterated needs and demands: *Natural Hazards and Earth System Sciences*, v. 11, no. 2, p. 293-300.
- Schone, T.; Illigner, J.; Manurung, P.; Subarya, C.; Khafid; Zech, C.; Galas, R., 2011, GPS-controlled tide gauges in Indonesia--A German contribution to Indonesia's tsunami early warning system: *Natural Hazards and Earth System Sciences*, v. 11, no. 3, p. 731-740.
- Schone, T.; Pandoe, W.; Mudita, I.; Roemer, S.; Illigner, J.; Zech, C.; Galas, R., 2011, GPS water level measurements for Indonesia's tsunami early warning system: *Natural Hazards and Earth System Sciences*, v. 11, no. 3, p. 741-749.
- Sepic, J.; Vilibic, I., 2011, The development and implementation of a real-time meteotsunami warning network for the Adriatic Sea: *Natural Hazards and Earth System Sciences*, v. 11, no. 1, p. 83-91.
- Strunz, G.; Post, J.; Zosseder, K.; Wegscheider, S.; Muck, M.; Riedlinger, T.; Mehl, H.; Dech, S.; Birkmann, J.; Gebert, N.; Harjono, H.; Anwar, H. Z.; Sumaryono; Khomarudin, R. M.; Muhari, A., 2011, Tsunami risk

assessment in Indonesia: Natural Hazards and Earth System Sciences, v. 11, no. 1, p. 67-82.

Suleimani, Elena; Nicolsky, Dmitry J.; Haeussler, Peter J.; Hansen, Roger, 2011, Combined effects of tectonic and landslide-generated tsunami runup at Seward, Alaska during the Mw 9.2 1964 earthquake: Pure and Applied Geophysics, v. 168, no. 6-7, p. 1053-1074.

Suppasri, A.; Koshimura, S.; Imamura, F., 2011, Developing tsunami fragility curves based on the satellite remote sensing and the numerical modeling of the 2004 Indian Ocean tsunami in Thailand: Natural Hazards and Earth System Sciences, v. 11, no. 1, p. 173-189.

Tachibana, Toru; Tsuji, Yoshinobu, 2011, Geological and hydrodynamical examination of the bathyal tsunamigenic origin of Miocene conglomerates in Chita Peninsula, central Japan: Pure and Applied Geophysics, v. 168, no. 6-7, p. 997-1014.

Tonini, R.; Armigliato, A.; Pagnoni, G.; Zaniboni, F.; Tinti, S., 2011, Tsunami hazard for the city of Catania, eastern Sicily, Italy, assessed by means of worst-case credible tsunami scenario analysis (WCTSA): Natural Hazards and Earth System Sciences, v. 11, no. 6, p. 1217-1232.

Tonini, Roberto; Armigliato, Alberto; Tinti, Stefano, 2011, The 29 September 2009 Samoa Island tsunami-Simulations based on the first focal mechanism solutions and implications on tsunami early warning strategies: Pure and Applied Geophysics, v. 168, no. 6-7, p. 1113-1123.

United Nations International Strategy for Disaster Reduction, 2010, Early warning practices can save lives-- Selected examples: United Nations Secretariat of the International Strategy for Disaster Reduction, 67 p.

van Zijll de Jong, Shona L.; Dominey-Howes, Dale; Roman, Carolina E.; Calgaro, Emma; Gero, Anna; Veland, Siri; Bird, Deanne K.; Muliaina, Tolu; Tuiloma-Sua, Dawn; Afioga, Taulagi Latu, 2011, Process, practice and priorities--Key lessons learnt undertaking sensitive social reconnaissance research as part of an (UNESCO-IOC) international tsunami survey team: Earth-Science Reviews, v. 107, no. 1-2, p. 174-192.

Weber, Lisa C.; Abbott, Dallas H.; Nitsche, Frank; Carbotte, Suzanne M.; Breger, Dee; Subt, Cristina, 2010, The quest for a novel paleosalinity indicator--Did tsunami events generated by an extraterrestrial bolide cause a change in salinity in the Hudson River circa 2300 BP? [abstract]: Geological Society of America Abstracts with Programs, v. 42, no. 5, p. 598. ♦

**State Offices and agencies of emergency management:**

<http://www.fema.gov/about/contact/statedr.shtm>

Gives mailing addresses, phone and fax numbers, websites. Does not give personnel names or job titles.

**National Tsunami Hazard Mitigation Program (NTHMP) Partners:**

<http://nthmp.tsunami.gov/partners.html>

(Does not give personnel names or job titles)

National Oceanic and Atmospheric Administration (NOAA)

The United States Geological Survey (USGS)

Department of Homeland Security/Federal Emergency Management Agency (DHS/FEMA)

National Science Foundation (NSF)

State, Territorial, and Commonwealth Partners:

Alaska

Hawaii

Oregon

Washington

California

Texas

Louisiana

Mississippi

Alabama

Florida

Georgia

South Carolina

North Carolina

Virginia

Maryland

Delaware

New Jersey

New York

Rhode Island

Connecticut

Massachusetts

New Hampshire

Maine

Puerto Rico

Guam

American Samoa

U.S. Virgin Islands

Northern Mariana Islands

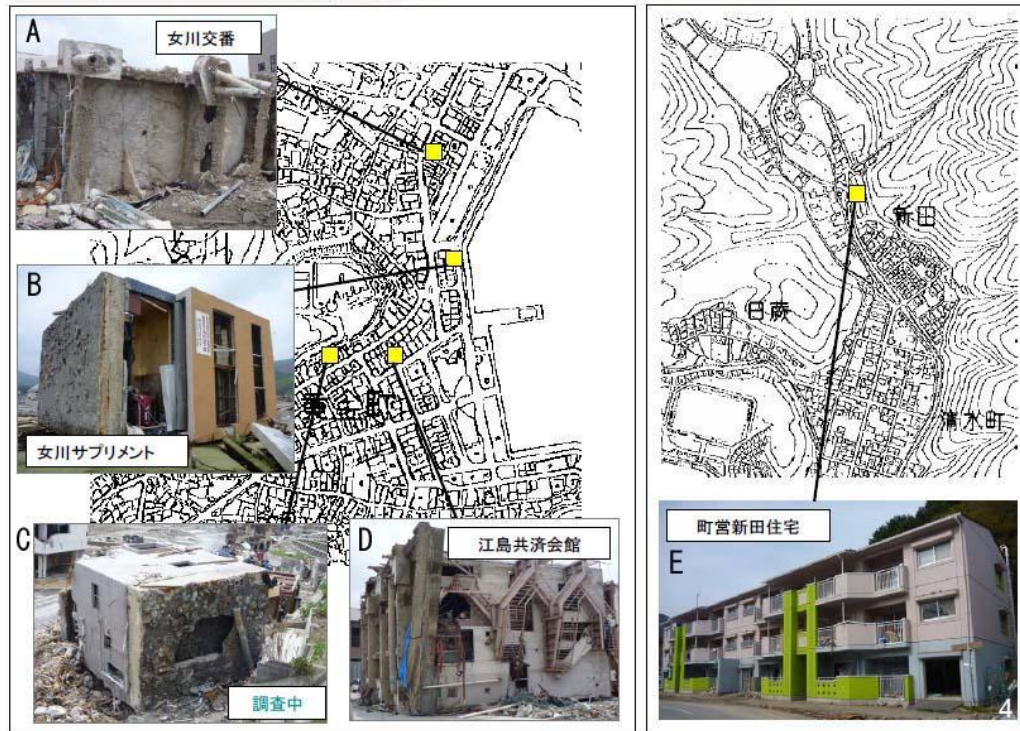
Marshall Islands

5-20-2011 ♦

CONGRATULATIONS to Christa von Hillebrandt-Andrade upon being elected President of the Seismological Society of America. Christa is the manager of the Caribbean Tsunami Warning Program and a well-recognized expert on tsunamis and seismology.

Onagawa Tsunami Memorial Park

Onagawa Tsunami Memorial Museum



The town and people of Onagawa decided on June 10 [2011], to leave four reinforced-concrete buildings in order to make future generations not forget the tsunami disaster.



The mass of debris stretches for miles off the Honshu Coast. Photo courtesy of U.S. Navy.

<http://manoa.hawaii.edu/news/article.php?aId=4328>

Watch YouTube video animation of estimated route and timescale of debris crossing the Pacific Ocean:

<http://www.youtube.com/watch?v=riNmxxd9nKw> ♦



# INFREQUENTLY ASKED QUESTIONS

How long will it take the debris from the March 11, 2011 Japanese earthquake/tsunami to reach the U.S. West Coast?

**How long will it take the debris from the March 11, 2011 Japanese earthquake/tsunami to reach the U.S. West Coast?**

According to <http://www.telegraph.co.uk/news/worldnews/asia/japan/8437632/Massive-floating-rubbish-islands-from-Japan-tsunami-spotted-on-Pacific.html> debris should hit the U.S. shores in 1-3 years.

For the story on “Massive floating rubbish islands from Japan tsunami spotted on the Pacific” visit the URL above.

“Massive floating rubbish islands of houses, cars and bodies almost 70 miles in length from the Japanese tsunami are causing chaos in the shipping lanes of the Pacific Ocean as it heads for the west coast of the United States.”

See also the animated video of estimated route and travel time on YouTube:

<http://www.youtube.com/watch?v=riNmxxd9nKw>

How do DART buoys work?

“DART buoys include a tsunometer on the ocean floor that measures wave height and water pressure at 15-second intervals and then predicts what the wave height will be in the next interval. The wealth of data allowed scientists to estimate the intensity, wave height and projected time of landfall for the tsunami that struck Japan (March 11, 2011). This lead time gave local authorities around the world the ability to close beaches along the Pacific Rim and evacuate low-lying areas in advance.”

From: Emergency Management, May/June 2011, p. 14.

What is UTC, how is it determined, and why is it necessary?

UTC (Universal Time Coordinated, Temps Universel Coordonné) is an official standard for the current time. UTC evolved from the former GMT (Greenwich Mean Time) that once was used to set the clocks on ships before they left for a long journey. Later GMT had been adopted as the world's standard time. One of the reasons that GMT had been replaced as official standard time was the fact that it was based on the mean solar time. Newer methods of time measurement showed that the mean solar time varied a lot by itself.

The following list will explain the main components of UTC:

- Universal means that the time can be used everywhere in the world, meaning that it is independent from time zones (i.e. it's not local time). To convert UTC to local time, one would have to add or subtract the local time zone.
- Coordinated means that several institutions contribute their estimate of the current time, and UTC is built by combining these estimates.

The UTC second has been defined by the 13th General Conference of Weights and Measures in 1967 as "The second is the duration of 9,192,631,770 periods of the radiation corresponding to the transition between the two hyperfine levels of the ground state of the cesium-133 atom."

Coordinated Universal Time (UTC) is the time standard by which the world regulates clocks and time. Computer servers, online services and other entities that rely on having a universally accepted time use UTC for that purpose.

For more information and the conversion chart, visit <http://www.dxing.com/utcgmt.htm>



## VIDEO-CD-DVD RESERVATIONS

To reserve tsunami videos, CDs or DVDs, contact Lee Walking, Division of Geology and Earth Resources Library, 1111 Washington St. SE, MS 47007, Olympia, WA 98504-7007; or e-mail [lee.walking@dnr.wa.gov](mailto:lee.walking@dnr.wa.gov). **These programs are available to all NTHMP participants, with a 3-week loan period.**

Adventures of Disaster Dudes (14 min.). Preparedness for preteens. American Red Cross.

The Alaska Earthquake, 1964 (20 min.) Includes data on the tsunamis generated by that event.

Business Survival Kit for Earthquakes & Other Disasters; What every business should know before disaster strikes (27 min.). Global Net Productions for the Cascadia Regional Earthquake Workgroup, 2003. With CD disaster planning toolkit & other data.

Cannon Beach Fire District Community Warning System (COWS) (21 min.) Explains why Cannon Beach chose their particular warning system.

Cascadia: The Hidden Fire—An Earthquake Survival Guide (10 min.). Global Net Productions, 2001. A promo for a documentary about the Cascadia subduction zone and the preparedness its existence demands of Alaska, Oregon and Washington states. Includes mention of tsunamis.

Disasters are Preventable (22 min.) Ways to reduce losses from various kinds of disasters through preparedness and prevention.

Disaster Mitigation Campaign (15 min.). American Red Cross; 2000 TV spots. Hurricanes, high winds, floods, earthquakes.

Earthquake...Drop, Cover & Hold (5 min.). Washington Emergency Management Division. 1998.

Forum: Earthquakes & Tsunamis (2 hrs.). CVTV-23, Vancouver, WA (January 24, 2000). 2 lectures: Brian Atwater describes the detective work and sources of information about the Jan. 1700 Cascadia earthquake and tsunami; Walter C. Dudley talks about Hawaiian tsunamis and warning systems.

International Tsunami Information Centre, 2004, Tsunami warning evacuation news clips and video footage, UNESCO /IOC International Tsunami Information Centre, 1 DVD, 12 min.

Killer Wave: Power of the Tsunami (60 min.). National Geographic video.

Mitigation: Making Families and Communities Safer (13 min.) American Red Cross.

Not Business as Usual: Emergency Planning for Small Businesses, sponsored by CREW (Cascadia Regional Earthquake Workgroup) (10 min.), 2001. Discusses disaster preparedness and business continuity. Although it was made for Utah, the multi-hazard issues remain valid for everyone. Websites are included at the end of the video for further information and for the source of a manual for emergency preparedness for businesses.

Numerical Model Aonae Tsunami—7-12-93 (animation by Dr. Vasily Titov) and Tsunami Early Warning by Glenn Farley, KING 5 News (The Glenn Farley portion cannot be rebroadcast.)

Ocean Fury--Tsunamis in Alaska (25 min.) VHS and DVD. Produced by Moving Images for NOAA Sea Grant College Program, 2004.

The Prediction Problem (58 min.) Episode 3 of the PBS series "Fire on the Rim." Explores earthquakes and tsunamis around the Pacific Rim

Protecting Our Kids from Disasters (15 min.) Gives good instructions to help parents and volunteers make effective but low-cost, non-structural changes to child care facilities, in preparation for natural disasters. Accompanying booklet. Does NOT address problems specifically caused by tsunamis.

The Quake Hunters (45 min.) A good mystery story, explaining how a 300-year old Cascadia earthquake was finally dated by finding records in Japan about a rogue tsunami in January 1700

Raging Planet; Tidal Wave (50 min.) Produced for the Discovery Channel in 1997, this video shows a Japanese city that builds walls against tsunamis, talks with scientists about tsunami prediction, and has incredible survival stories.

Raging Sea: KGMB-TV Tsunami Special. (23.5 min.) Aired 4-17-99, tsunami preparedness in Hawaii.

The Restless Planet (60 min.) An episode of "Savage Earth" series. About earthquakes, with examples from Japan, Mexico, and the 1989 Loma Prieta earthquake.

Run to High Ground (14 min.). Produced by Global Net Productions for Washington Emergency Management Division and Provincial Emergency Program of British Columbia, 2004. Features storyteller Viola Riebe, Hoh Tribe. For K-6 grade levels. Have video and DVD versions.

Tsunami and Earthquake Video (60 min.). "Tsunami: How Occur, How Protect," "Learning from Earthquakes," "Computer modeling of alternative source scenarios."

Tsunami: Killer Wave, Born of Fire (10 min.). NOAA/ PMEL. Features tsunami destruction and fires on Okushiri Island, Japan; good graphics, explanations, and safety information. Narrated by Dr. Eddie Bernard, (with Japanese subtitles).

Tsunami: Surviving the Killer Waves (13 min.). 2 versions, one with breaks inserted for discussion time.

Tsunami Chasers (52 min.). Costas Synolakis leads a research team to Papua New Guinea to study submarine landslide-induced tsunamis. Beyond Productions for the Discovery Channel.

Tsunami Evacuation PSA (30 sec.). DIS Interactive Technologies for WA Emergency Management Division. 2000.

TsunamiReady Education CD, 2005, American Geological Institute Earth Science Week kit.

Understanding Volcanic Hazards (25 min.). Includes information about volcano-induced tsunamis and landslides.

UNESCO/IOC International Tsunami Information Centre, 2005, U.S. National Tsunami Hazard Mitigation Program public information products—B-roll footage, tsunami science, warnings, and preparedness: UNESCO/IOC International Tsunami Information Centre, 1 DVD, 57 min.

The Wave: a Japanese Folktale (9 min.) Animated film to start discussions of tsunami preparedness for children.

Waves of Destruction (60 min.) An episode of the "Savage Earth" series. Tsunamis around the Pacific Rim.

Who Wants to be Disaster Smart? (9 min.). Washington Military Department/Emergency Management Division. 2000. A game show format, along the lines of *Who Wants to be a Millionaire?*, for teens. Questions cover a range of different hazards.

The Wild Sea: Enjoy It...Safely (7 min.) Produced by the Ocean Shores Wash. Interpretive Center, this video deals with beach safety, including tsunamis.



NEW! Tsunamis: Know What to Do! (8 min. DVD) ♦

### **Long-term recovery volunteers seek to fill unmet needs** [excerpt]

Release Date: June 8, 2011--Release Number: 1969-067  
<http://www.fema.gov/news/newsrelease.fema?id=55690>

RALEIGH, N.C. – When disaster strikes, volunteers are among the first to help and the last to leave. Now, even as North Carolinians are working with insurance, disaster grants and loans to rebuild their homes, offices, stores, churches and other facilities, many community agencies and volunteer organizations are turning their attention to long-term recovery needs.

“We know there are some survivors who need more assistance than state and federal programs are authorized to provide,” said Federal Coordinating Officer Michael Bolch. “Local long-term recovery committees help with unmet needs.”

A dozen long-term recovery committees and groups, some existing and others newly formed, are now actively developing programs to help survivors of the April 16 storms and tornadoes.

North Carolina Emergency Management and Federal Emergency Management Agency voluntary agency liaisons are working in partnership with North Carolina Voluntary Organizations Active in Disaster and NC Interfaith Disaster Response.

“Volunteers who respond quickly and continue to help others are the unsung heroes of a disaster,” said NC Emergency Management Director Doug Hoell. “We couldn’t do it without them.”

County emergency managers have information to help individuals contact long-term recovery committees. Long-term recovery groups and committees help survivors navigate the various stages of recovery services available. These committees do case work, volunteer recruitment; catalog, store and disperse donated items; arrange rebuilding and repairs; provide spiritual and emotional support, and manage financial grants and donations.

Last Modified: Wednesday, 08-Jun-2011 09:58:32♦

### **Video of the day—Activity on Twitter after the earthquake in Japan**

By Nicholas Jackson, posted July 1, 2011

With Twitter regularly hosting more than 200 million messages every day, we know that the short-form messaging service has grown into something that rivals any other form of electronic communication that we have at our disposal. And that’s just on an average day...

“During major events, people use Twitter to share news and thoughts with friends, family and followers around the world,” according to a recent post on Twitter’s official blog. “Messages originating in one place are quickly spread across the globe through Retweets, @replies and Direct Messages. ...in the face of major disasters like the March 11 earthquake in Japan, the volumes

of Tweets sent per second spiked to more than 5,000 TPS five separate times after the quake and ensuing tsunami.”

Twitter put together a short video to illustrate what the global spread of information looked like in the wake of the devastating earthquake in Japan. The video shows the flow of @replies into and out of Japan before the earthquake hit and immediately after. Because replies directed at Twitter users based in Japan are displayed in pink and messages leaving Japan are shown in yellow, the island nation is transformed into a glowing fireball of activity almost immediately after the quake.

Video: <http://finance.yahoo.com/news/Video-Day-Activity-Twitter-atlantic-2113407539.html?x=0> ♦

### **FEMA outlines U.S. preparedness for catastrophic disasters**

Continuity e-Guide

Federal Emergency Management Agency Administrator Craig Fugate recently spoke to the United States House Transportation and Infrastructure Committee, Subcommittee on Economic Development, Public Buildings, and Emergency Management at the Rayburn House Office Building about "Improving the Nation's Response to Catastrophic Disasters: How to Minimize Costs and Streamline our Emergency Management Programs." A summary of Fugate's testimony follows as reported by <http://www.thegovmonitor.com/>.

According to Fugate, because planning and preparing for catastrophic disasters is a top priority at FEMA, the organization is working to improve its preparedness through a "Whole Community" framework.

"This approach recognizes that FEMA is not the nation's emergency management team. FEMA is only a part of the team. In order to successfully prepare for, protect against, respond to, recover from, and mitigate all hazards, we must work with the entire emergency management community," Fugate said. "This 'Whole Community' includes FEMA and our partners at the federal level; our state, local, tribal and territorial governmental partners; non-governmental organizations like faith-based and non-profit groups and private sector industry; and most importantly, individuals, families, and communities, who continue to be our greatest assets and the key to our success."

Fugate also detailed how FEMA's recent organizational realignment better prepares the organization for future disaster situations. As a part of the new process, under the new Office of Response and Recovery, FEMA has established a new Planning Division that is focused on national, regional and chemical, biological, radiological, nuclear and explosive catastrophic planning efforts.

Also, national efforts have been put into place that focus on improving existing catastrophic event preparedness capabilities in the United States, with a renewed conviction to plan for the most extreme disasters. FEMA

has also expanded its coordination with other federal agencies to smooth and adapt coordination of federal support when it is needed.

Other key disaster preparedness initiatives include: The grouping of federal agencies by capability and type of expertise into 15 Emergency Support Functions (ESFs) to provide the planning, support, resources, program implementation, and emergency services needed during a disaster.

Regional catastrophic planning, and the development of operational plans, is underway for earthquakes, hurricanes, dam failures, improvised nuclear device detonation, evacuation and sheltering of populations during catastrophic events, and preparing for other special events.

Working with state partners to develop "all-hazard" plans based on hazard surveys and risk assessments. The Disaster Emergency Communications (DEC) Division significantly enhanced state and local governments' communications capabilities through supporting the development of communications plans.

The private sector, encompassing trade associations, corporations, academia, and other non-governmental organizations, remain key partners in FEMA's planning and preparedness efforts. FEMA has expanded the use of technology and communication platforms to share best practices across the nation's private sector through a new online library of more than 40 model public-private emergency management partnerships at the state, local and regional levels.

[http://www.thegovmonitor.com/world\\_news/united\\_states/fema-outlines-u-s-preparedness-for-catastrophic-disasters-48090.html](http://www.thegovmonitor.com/world_news/united_states/fema-outlines-u-s-preparedness-for-catastrophic-disasters-48090.html) (the full article)

From: [fema-outlines-u-s-preparedness-for-catastrophic-disasters-48090.html](http://www.thegovmonitor.com/world_news/united_states/fema-outlines-u-s-preparedness-for-catastrophic-disasters-48090.html) ♦

### **Call for abstracts**

Tsunami inundation, risk and vulnerability assessment session, American Geophysical Union  
Deadline: August 4, 2011

The American Geophysical Union is accepting abstracts for the Tsunami inundation, risk and vulnerability assessment session at its fall meeting to be held December 5-9 in San Francisco. Abstracts relating to tsunami damage, inundation impact evaluations, and assessments that enable mitigation, response, recovery, and risk reduction are welcome

### **More websites, from Disaster Research 570, July 28, 2011**

<http://www.vanderbilt.edu/lapop/haiti/2010-Haiti-in-Distress-English.pdf>

Haiti in Distress: The Impact of the 2010 Earthquake on Citizen Lives and Perceptions

This study incorporates a wide array of subject matter in an effort to glimpse the comprehensive and continued human impact of the 2010 Haitian earthquake on its survivors. Conducted by Vanderbilt University's Latin American Public Opinion Project with the support of USAID, the face-to-face survey garnered information on citizen security, political behavior, and socioeconomic conditions before and after the quake. A post-earthquake look at the economy and services being provided is also included.

<http://www.icrc.org/eng/resources/documents/publication/p1067.htm>

International Federation of the Red Cross and Red Crescent Code of Conduct

"Ethics aren't static, they're always changing," said Roberto Barrios, of Southern Illinois University in a Workshop session on disaster management ethics. "You can do harm to others while being ethical within your own framework." Perhaps someday there will be a standard that allows the many people involved in disaster response to assist the often culturally diverse victims of disaster. Until then, the IFRC Code of Conduct for NGOs in Disaster Relief might be a start. The voluntary code attempts to maintain a high standard of behavior in delivering humanitarian aid without limiting the effectiveness of response efforts.

[http://www.usgs.gov/start\\_with\\_science/](http://www.usgs.gov/start_with_science/)

USGS Start with Science

When it comes to making decisions about health and safety, national security, and quality of life, the U.S. Geological Survey intends to start with science—and it wants your help. The Start with Science site serves as an entry point to learn more about USGS science strategy planning, including the creation of 10-year strategies for each of the survey's new mission areas. So stop by, read up, and weigh in.