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**Demystifying freak waves [not tsunamis]**

By Mary Caperton Morton

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[www.earthmagazine.org](http://www.earthmagazine.org)

For centuries, sailors' tales of giant killer waves appearing out of otherwise calm seas were dismissed as myth, along with mermaids and sea monsters. Then on New Year's Day in 1995, a rogue wave taller than an eight-story building arose out of previously flat waters in the North Sea and slammed into an oil platform. Since then, scientists have been scouring the world's oceans for these rogue waves to determine where and how they form. The "where" was solved several years ago; now scientists have taken a stab at answering the "how."

Soon after the North Sea monster wave event, a consortium of European Union scientists formed Project MaxWave to study the phenomenon of rogue waves. Using satellites, MaxWave scientists detected dozens of 30-meter-plus waves in the waters off eastern North America, Scandinavia, South Africa, Antarctica and Japan.

"MaxWave found that these rogue waves occur much more frequently than anyone expected," says Wolfgang Rosenthal of the GKSS Research Center in Geesthacht, Germany, who worked on MaxWave. "They usually form in strong current systems near the edge of continental shelves where the currents and waves pull against each other." But in 2003, by the end of MaxWave, the physics of how rogue waves form in calm waters still remained unknown.

Normally, large waves in the open sea break up into progressively smaller waves over time, but now a team of physicists says that the opposite can happen as well: Smaller waves can spontaneously combine and concentrate into one massive wave. So far, the team, lead by Peter McClintock of the University of Lancaster in England, has only demonstrated this so-called reverse cascade mechanism in a liquid helium wave tank, a model that McClintock says operates under the same basic principles as ocean waves. The team reported its findings in *Physical Review Letters* in August (2008).

"We didn't set out to study rogue waves," McClintock says, "but the implications of our findings are quite astonishing." Previously it was thought rogue waves would need giant stretches of open ocean to form, but the wave tank model shows that huge waves can form very quickly in a limited space. That means that these waves could form anywhere at anytime.

Data from MaxWave have been used to create a worldwide WaveAtlas of freak wave events. Rosenthal says it may be possible to revisit some of these hot spots and watch for signs of the reverse cascade mechanism. "It's going to be very difficult to test this hypothesis in the ocean," he says. "But it's a very interesting finding."

*Earth*, October 2008, p. 24. ♦

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## Scientists continue research of tsunami potential in the VI

by: Department of Disaster Management

Sun, March 01, 2009 | 12:06 am AST

<http://www.bviplatinum.com/news.php?section=article&source=1235880347>

From: BVI Platinum News - [www.bviplatinum.com](http://www.bviplatinum.com)

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A team of United States research geologists have returned to the Virgin Islands to continue a paleoseismic study of Anegada. The scientists began their research of possible tsunami activity in the Territory in March 2008. "Our goal is to reduce the uncertainty or speculation of the threat of tsunamis in the Virgin Islands," said lead scientist Dr. Brian Atwater of the United States Geological Survey (USGS). "It is very difficult to respond to a threat if the threat is vague. If you are an emergency manager or if you are an engineer, you want to know as exactly as possible how big is it going to be, how often it is going to happen," added Dr. Atwater.

Using geology, the scientists are working towards getting a better understanding of the evidence of over-wash of older beaches on the island's north shore that have caused a number of ponds to form, breaking the older beach line. Dr. Atwater stated the group is exploring a few reasons for the over-wash such as the threat of tsunami or major storm surge. The main tsunami being considered is the Lisbon tsunami of 1755 that originated in Portugal with waves that extended as far north as Cuba.

The 1960 category 4 hurricane Donna could also be a possibility for the over-wash. However, after the team's findings of shells and other fragments of the north shore further inland, scientist are now considering the probability of a recently undocumented storm surge that was greater than Donna and not as far back as the Lisbon tsunami.

This project is estimated to continue for a few years until scientists can determine the reasons for the physical changes and over-wash of Anegada's north shore. The conclusions of this project is expected to help the Department of Disaster Management (DDM) have a better understanding of the threat of tsunamis as well as the development of inundation maps for such a threat.

Director of DDM, Sharleen DaBreo said, "Having a clear understanding of our threats in the Territory will help us develop appropriate mitigation measures to safeguard against such threats. We are hoping that this research will help us better map storm surge. Inundation maps will tell us, if there is a major event, the likelihood of how far inland the sea can besiege our islands."

The group of six researchers will conclude this round of their research with a presentation of their findings thus far to various members of the Public Service at DDM next week Wednesday. Funding for this research was provided by the United States Nuclear Regulatory Commission that

is responsible for power-plant safety. The US NRC is interested in finding out if there is a tsunami hazard at sites of proposed nuclear power plants on the U.S. Atlantic seaboard.

Researchers Dr. Brian Atwater and Bruce Jaffe (below) investigate sedimentation in a salt pond in Anegada. Scientists are working towards understanding the evidence of over-wash of older beaches on the island's north shore which can determine the Territory's threat of a tsunami. ♦



Photo credit: DDM

## New "Hurricane" wavemaker installed at OSU

By David Stauth, 541-737-0787

Contact: Dan Cox, 541-737-3631

Press releases: 4-29-09

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CORVALLIS, Ore. – The Hinsdale Wave Research Laboratory at Oregon State University has completed installation of a new \$1.1 million "hurricane" wavemaker that's the largest of its type in the nation, able to more accurately simulate the types of waves and flooding that can cause billions of dollars in damage.

Researchers plan to use the new technology in a series of major research projects, involving scientists from all over the world, to study the impact of hurricanes and tsunamis on structures and how these events lead to flooding that can overtop a levee or cause severe coastal erosion.

The new system was funded by the National Science Foundation. The state of Oregon, through its Engineering Technology Innovation Council, also provided another \$1 million to upgrade offices and laboratories at the center.

"We now have an advanced research facility that will help us learn more about how to reduce hurricane damage, deal with major storms and prepare for tsunamis," said Dan Cox, professor of civil engineering and director of the laboratory. "This is a national asset, an investment made here in Oregon in part because the NSF recognizes

that we're committed to sharing the facility in collaboration with other researchers from all over the U.S. and the world."

The "hurricane" waves produced by the new system are not actually driven by wind, but are "long period," shallow water waves much like those generated by sustained hurricane-force winds or tsunami events. The previous system was better suited to producing taller waves.

A full schedule of research projects will begin soon. This summer, the new system will be used to study tsunami impacts on wooden structures – a topic of considerable importance to Oregon, which is at significant risk of a tsunami from major earthquakes on the Cascadia Subduction Zone.

This fall, a study will begin on how hurricane-forced waves can overtop levees and what effect that has, in a study funded by the Department of Homeland Security. Another initiative will look at the impact of heavier storms and coastal erosion on vegetation, which may be an increasing concern with the sea level rise anticipated from global warming. And other work is planned to study the survivability and mechanical durability of wave energy systems, in collaboration with OSU scientists and private industry.

The real value of the new system, Cox said, is the size of the wave it can create.

"Because the materials used for coastal construction – wood, concrete and steel – have complicated properties, they cannot be studied easily at small scale," Cox said. "The new wavemaker is bigger and improves the accuracy of our research and applicability to real-world structures."

Prior to this, the U.S. had no coastal research facilities able to simulate hurricanes and other extreme storms that were large enough to minimize the effects of scaling. The new large-stroke, piston-type wavemaker will allow precision, large-scale studies, enabling safer and more cost-effective design of coastal infrastructure such as bridges, levees and buildings. This will lead to better practices for the repair and retrofit of existing structures and improved design codes for new construction. The facility will also improve education and outreach to people living in areas susceptible to coastal storms.

More than half of the U.S. population lives within 50 miles of the coast and the civil infrastructure along the nation's coasts, which is worth more than \$3 trillion, is vulnerable to coastal storms. According to a 2007 report from the National Science Board, the economic and societal impacts of extreme events such as hurricanes are expected to escalate in coming years.

The Hinsdale Wave Research Laboratory is a shared-use, international facility operated by the OSU College of Engineering. No other facility in the U.S. matches the size and performance of the basins, and only a handful of facilities in the world can operate at near-prototype ocean conditions. Due to the lab's sophisticated information

technology systems, researchers worldwide can participate remotely in experiments at the facility.

About the OSU Hinsdale Wave Research Laboratory: The O.H. Hinsdale Wave Research Laboratory is a leading center for research and education on coastal engineering, nearshore science, modeling of coastal dynamics, coastal hazard mitigation and the study of tsunamis. Major support for the facility is provided through the National Science Foundation's Network for Earthquake Engineering Simulation program. ♦

### **Tasmanian authorities are preparing a comprehensive action plan to warn the public about tsunamis.**

By Mark Worley

April 19, 2009 02:00am

themercury.com.au (Hobart, Tasmania, Australia)

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From:

[http://www.themercury.com.au/article/2009/04/19/67821\\_todays-news.html](http://www.themercury.com.au/article/2009/04/19/67821_todays-news.html)

Six at-risk communities on Tasmania's southeast and east coasts have been targeted by the State Emergency Service and Tasmania Police for information briefings about the tsunami threat. The communities are Kingston-Blackmans Bay, Cremorne-Lauderdale, Orford-Triabunna, Bicheno-St Helens, Port Arthur and Bruny Island.

A set of scientific and historical reports about the threat of tsunamis is being collated by state and federal government bodies. Though the reports are yet to be released, the SES has provided the *Sunday Tasmanian* with preliminary information which shows:

- About 16 "large-wave events" have been recorded anecdotally since European settlement in Tasmania 200 years ago.
- A scientific study of coastal areas in the South-East indicates two or three "tsunami-type events" may have hit Tasmanian shores in the past 4000-5000 years.

The new information about the threat of tsunamis to Tasmania's coastline comes just two weeks after nearly 50,000 copies of the pamphlet *Tsunami Information for Recreational Boaters* were mailed to members of Tasmania's boating community. Thousands more *Tsunami Awareness* brochures have been distributed to councils and schools around Tasmania's coastal areas. The pamphlets describe what people should do in the event of a tsunami.

The information also comes after the State Government referred to tsunamis in its response to Walker Corporation's controversial Ralphs Bay canal development proposal. In its submission to the Resource Planning and Development Commission, the State Government said Walker's project documentation on tsunami hazards was insufficient.

## OPINION

But despite the intensive public awareness campaign, SES assistant director Chris Beattie says Tasmanians should not feel alarmed. "The key message we are trying to get across is that communities can make themselves aware of the threat quite easily by reading one of the brochures or attending one of the information sessions," Mr Beattie said. "We don't want people to feel alarmed or threatened. This is an unquantified risk we are looking at. When we talk about tsunamis, we tend to think of catastrophic walls of water similar to those witnessed during the Indian Ocean Boxing Day tsunami in 2004. There are a lot of smaller occurrences that may slip by without even being noticed."

"Clearly, the 2004 tsunami was a trigger for Australian authorities to prepare for the worst-case scenario and there has been a considerable amount of work done to develop the right emergency communication and education materials."

Mineral Resources Tasmania, Geoscience Australia and the New Zealand-based Institute of Geological and Nuclear Sciences have been involved in mapping the potential threat of tsunamis to Tasmania.

Mr Beattie, who has co-ordinated the research and emergency communication program for Tasmania, says anecdotal evidence had been compiled, showing about 16 "large-wave events" have been recorded since European settlement in Tasmania 200 years ago. "Some of those have been as small as a rise of 35cm in the water at Fortescue Bay, while others have been old reports of people getting washed out to sea," Mr Beattie said. "We have to remember a lot of these reports are old and very hard to confirm."

Mr Beattie also said MRT had drilled a number of holes in southeastern Tasmania -- including at areas on Bruny Island and in the Clarence Municipality -- to study possible remnants of previous tsunamis.

"Scientists looked in areas where fossils and other evidence seemed to be out of place, when compared against the usual tidal flows," he said. "Then they were able to carbon date when that evidence may have been deposited. Preliminary evidence shows there may have been two or three potential tsunamigenic events to hit Tasmania in the past 4000-5000 years. In saying that, there may be other things at play which caused the evidence to end up where it did." ♦



### Five issues for thought and discussion

The five abstracts reprinted below summarize articles about 5 different aspects of emergency management and disaster prevention. Copies of the full articles can be requested (see page 2 for contact information).

Abstracts from *Research Digest*, v. 1, no. 2, p. 6, 7, 8 (University of Colorado, Natural Hazards Center, 2007) <http://www.colorado.edu/hazards/rd/>

#### 1) Non-profit organization and public collaboration:

Kapucu, Naim, 2007. Non-profit response to catastrophic disasters: *Disaster Prevention and Management*, v. 16, no. 4, p. 551-561.

This article aims to examine the role of non-profit organizations in response to catastrophic disasters. It uses the context of the September 11, 2001 attacks on the World Trade Center in New York City to study the emergence of public non-profit networks in response to an actual event. The case study utilizes the data from content analyses from news reports in *The New York Times*; situation reports from FEMA; interviews with public and non-profit managers; and archival documents. The findings of the study emphasize the importance of well-coordinated collaboration between the public and non-profit sector organizations in effective disaster response operations. This type of network constitutes a field of substantial interest to democratic societies that are seeking to manage problems of public service delivery with innovative means at reasonable cost. The article's theoretical framework draws upon the literature in inter-organizational networks and social capital. The research applies this framework to study the relationships that emerged among public and non-profit organizations following the World Trade Center disaster on September 11, 2001, in New York City.

#### 2) Obstacles to emergency management

McEntire, David A., 2007. The historical challenges facing emergency management and homeland security: *Journal of Emergency Management*, v. 5, no. 4, p. 17-22.

This article discusses 13 challenges facing emergency management and homeland security. These include the tension between national security and the all-hazards approach, apathy, the disconnect between development and disasters, the subsidization of risk, the paper plan syndrome, a reactive approach, a first-responder orientation, limited budgets, insufficient personnel, heavy work loads, political appointees, poor management, and politics. The article concludes with a discussion and recommendations for the future.

### 3) Cost-benefit analysis of FEMA hazard mitigation grants

Rose, Adam; Porter, Keith; Dash, Nicole, and others, 2007. Benefit-cost analysis of FEMA hazard mitigation grants: *Natural Hazards Review*, v. 8, no. 4, p. 97-111.

Mitigation decreases the losses from natural hazards by reducing our vulnerability or by reducing the frequency and magnitude of causal factors. Reducing these losses brings many benefits, but every mitigation activity has a cost that must be considered in our world of limited resources. In principle, benefit-cost analysis (BCA) attempts to assess a mitigation activity's expected net benefits (discounted future benefits less discounted costs), but in practice this often proves difficult. This paper reports on a study that applied BCA methodologies to a statistical sample of the nearly 5,500 Federal Emergency Management Agency (FEMA) mitigation grants between 1993 and 2003 for earthquake, flood, and wind hazards. HAZUS-MH was employed to assess the benefits, with and without FEMA mitigation in regions across the country, for a variety of hazards with different probabilities and severities. The results indicate that the overall benefit-cost ratio for FEMA mitigation grants is about 4:1, though the ratio varies from 1.5 for earthquake mitigation to 5.1 for flood mitigation. Sensitivity analysis was conducted and shows these estimates to be quite robust.

### 4) Emergency child care

Shores, Elizabeth F.; Heath, Jamie; Barbaro, Erin; Barbaro, Michael C.; Grace, Cathy, 2007. Putting young children on disaster maps—The challenges of child care data integration: *Journal of Emergency Management*, v. 5, no. 4, p. 47-55.

The purpose of this paper is to determine the capacity for and degree of data sharing for the purpose of emergency preparedness of the child care sector, among child care agencies, and between child care agencies and emergency management agencies in 12 states. A survey of federal and state child care agencies; evaluations of federal and state datasets; analysis of hurricane and earthquake risk areas; analysis of U.S. Census Bureau data on population aged 1-4 years in counties (located in Alabama, Arkansas, California, Florida, Georgia, Louisiana, Mississippi, Missouri, North Carolina, South Carolina, Tennessee, Texas); and the feasibility of merging five or more early childhood services datasets from each state are studied. Little data sharing occurs within or between the two sectors in the 12 states under study, putting at least 2 million children under school age at risk of being overlooked in disaster response and effectively excluding the child care sector from state recovery plans. Improved data sharing among agencies within the child care sector and between the child care sector and the emergency management sector is crucial to mitigate the risks for children

aged 0-4 and to include them among vulnerable populations that receive top priority in first response, as well as to include the child care sector in economic redevelopment after major disasters.

### 5) Heritage preservation

Spennemann, Dirk H. R.; Graham, Kristy, 2007. The importance of heritage preservation in natural disaster situations: *International Journal of Risk Assessment and Management*, v. 7, no. 6-7, p. 993-1001.

Natural disasters impact the human-created environment. Affected are both the general built environments as well as those few places that a community cherishes as representing their past achievements, aspirations and tribulations—their cultural heritage sites. Natural disasters are localized events and have the ability to cause extensive loss and destruction to a community's cultural heritage. Cultural heritage management ("historic preservation") aspires to protect such places from environmental decay as well as natural disasters, with technical solutions the modus operandi of choice. Disaster managers have traditionally always regarded the protection of cultural heritage places as very low on their list of priorities. This paper shows the centrality of cultural heritage to the emotional wellbeing of an affected community in the disaster-recovery phase and argues that the protections of key cultural heritage items should be regarded as akin to the treatment of critical infrastructure.

Reprinted with permission from the University of Colorado at Boulder, Natural Hazards Center, Institute of Behavioral Science. ♦

### Required reading by emergency managers

Big earthquake coming sooner than we thought, Oregon geologist says

By Lori Tobias, The Oregonian

Sunday April 19, 2009, 9:32 PM

[http://www.oregonlive.com/news/index.ssf/2009/04/big\\_earthquake\\_coming\\_sooner\\_t.html](http://www.oregonlive.com/news/index.ssf/2009/04/big_earthquake_coming_sooner_t.html)

The article is straightforward. But the reader feedback is truly illuminating and fairly depressing. Tsunami public education doesn't seem to have made an impression, been widespread enough, or started earlier enough in the educational process. It would seem that the tsunami community must fund more K-12 outreach.

**Material added to the NTHMP Library,**  
May - June 2009

Note: These, and all our tsunami materials, are included in the online (searchable) catalog at <http://www.dnr.wa.gov/ResearchScience/Topics/Geology/PublicationsLibrary/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.

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Drabczyk, Anne L., 2007, Ready, set, go--Recruitment, training, coordination, and retention values for all-hazard partnerships [abstract]: Research Digest, v. 1, no. 2, p. 2.

Dunbar, Paula K., 2007, Increasing public awareness of natural hazards via the Internet [abstract]: Research Digest, v. 1, no. 2, p. 2.

Gow, Gordon, 2007, Disaster mitigation and communications research in Canada--Towards a responsive innovation agenda [abstract]: Research Digest, v. 1, no. 1, p. 1-2.

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Geophysical Union Transactions), v. 89, no. 23, Supplement, p. WP8.

Johnston, Jeanne Branch; Dudley, Walter C., 2009, Pacific Island tsunami resilience planning guide: Disaster Preparedness Solutions, Inc., 1 v.

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Mattsson, Eskil; Ostwald, Madelene; Nissanka, S. P.; Holmer, Bjorn; Palm, Matilda, 2009, Recovery and protection of coastal ecosystems after tsunami event and potential for participatory forestry CDM-- Examples from Sri Lanka: Ocean & Coastal Management, v. 52, no. 1, p. 1-9.

McEntire, David A., 2007, The historical challenges facing emergency management and homeland security: Journal of Emergency Management, v. 5, no. 4, p. 17-21.

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Witter, Robert C.; Zhang, Yinglong; Priest, George, 2007, Reconstructing hydrodynamic flow parameters of the 1700 tsunami at Ecola Creek, Cannon Beach, Oregon. IN External research support--Final technical reports--Funded research, Pacific Northwest:U.S. Geological Survey, [55 p.].

Yanagisawa, Hideaki; Koshimura, Shunichi; Goto, Kazuhisa; Miyagi, Toyohiko; Imamura, Fumihiko; Ruangrassamee, Anat; Tanavud, Charlchai, 2009, The reduction effects of mangrove forest on a tsunami based on field surveys at Pakarang Cape, Thailand and numerical analysis: *Estuarine, Coastal and Shelf Science*, v. 81, no. 1, p. 27-37.

Zhu, Yuanqing; Liu, Shuangqing; Wen, Yanlin; Xue, Yan, 2009, A new method to analyze the tsunami incitement process and site-selection for tsunami observations in China's eastern sea: *Science of Tsunami Hazards*, v. 28, no. 2, p. 129-141. ♦

## NEWS

### Here a Tweet, There a Tweet

While spring weather brings the chirping of birds, spring disasters have brought about tweets of a different kind. From Fargo flooding to Italian earthquakes to volcanoes in Alaska, Twitter has gained much attention as a means of communicating during disasters--but despite all the Twitter chatter, there are many who just don't get it.

Why would they? People sign up, get a feed and a fill it with continuous bursts of 140 characters or less in what, to some, might seem like the most nonsensical and narcissistic exercise known to man. Yet there are some (and Natural Hazards Center researcher Jeannette Sutton [<http://spot.colorado.edu/~suttonj/>] is one) that would argue Twitter has an intrinsic networking value on both sides of the tweet.

Although a lot of research and news reports focus on Twitter users making organic social connections and communicating information during disaster, emergency managers can also use the tool to their advantage, even during downtime.

"Part of it is that you can develop a familiarity with your audience," Sutton said, adding that that could lead to building community trust, increased understanding of what emergency managers do, and a direct market for preparedness and event information. Furthermore, each Twitter user represents their entire network--"purchasing power" that you don't generally get from e-mail blasts or other media.

But still, to get the full advantage, some network grooming is required. While everyone from FEMA (<http://twitter.com/femainfocus>) to the CDC (<http://twitter.com/cdcemergency>) has Twitter feeds, that doesn't mean they're doing it right. Anyone with a 140-character attention span is bound to be a least a little fickle, so agencies would do well to balance useful information with insider views and other more "social" items.

On the flip side, when emergency business is booming, Twitterers can provide eyewitness reports and information from the scene, but emergency agencies would have to have the resources to sift the chaff from the grain, Sutton said.

"There might be a lot of value there because people could be sharing information about needed resources," she said. "One of the problems with Twitter though is that we haven't found a way to manage the information yet. For the most part, it's going to be on the level of chatter or noise."

Of course, there are some that get Twitter, but just think it's a bad idea. A recent and rather vigorous discussion on the International Association of Emergency Managers listserved concerns about authenticity of information, usurped emergency agency identities, and



old-fashioned information overload as reasons the industry might want to steer clear of the new technology.

Still, if you're ready to try this at home, you might find you're in the company of many who've discovered the unexpected marketing advantage of the free site—at least one agency has used it to divert site-crushing web traffic caused by disasters and others have used it to send updates from accident scenes, according to a recent Government Technology article ([http://www.govtech.com/gt/articles/579338?id=579338&full=1&story\\_pg=1](http://www.govtech.com/gt/articles/579338?id=579338&full=1&story_pg=1)). Considering the cost, it's a lot of bang for the buck.

From: *Disaster Research* 523, April 9, 2009

### **Federal budget plans for disasters**

Rather than assume the nation won't be hit by expensive disasters, President Barack Obama's federal budget includes—for the first time—contingency funds to deal with them.

Assessing the statistical likelihood of disasters for any given year, the budget allots \$88.2 billion in disaster funds for 2010-2014, and \$225.5 billion for 2010-2019. Official disaster declarations have been increasing over the last 55 years or so, according to the Federal Emergency Management Agency. For instance, there were seven official disasters in 1958. By 2008, there were 75. There have been an average of 32 disasters a year in the United States since 1953.

“One can never know what kind of disaster or unexpected emergency may occur that will require the help of the federal government,” according to the budget statement, *A New Era of Responsibility*. “If we do not account for these costs as we project the federal government's future fiscal health, we run the risk of allowing these unforeseen events to cause even more economic pain and derail our long-term growth... This omission is irresponsible, and has permitted past administrations to project deficits that were lower than were likely to occur.”

From: *Natural Hazards Observer*, v. 33, no. 5, p. 2.

### **Hazards we hadn't worried about before**

Seventy-five percent of the candidates for jobs in the Massachusetts fire and ambulance services are either overweight or obese, according to researchers from the Boston University School of Medicine and three other Boston-based institutions.

Of 370 young recruits who took pre-placement physical exams between October 2004 and June 2007, “only about 22 percent were of normal weight, 43.8 percent were overweight, and 33 percent were obese,” according to a release about the study. The researchers also found today's young recruits are significantly heavier than recruits from the 1980s and 1990s.

“These professionals perform highly psychologically and physically stressful work and are therefore at high risk for cardiovascular events,” says Stefanos Kales, an

assistant professor at Harvard Medical School and one of the study's authors. “Sudden incapacitation during duty puts these emergency responders, as well as their colleagues and the public, in danger.”

From: *Natural Hazards Observer*, v. 33, no. 5, p. 4.

### **Fiji monitor records 12cm tsunami**

“The Mineral Resources Department needs \$2 million to upgrade its monitoring device equipment to be able to monitor earthquakes in the Pacific and tsunami warnings. Senior seismologist Laisiasa Vuetibau said their equipment was last upgraded in 2002.”

The Pacific Tsunami Warning Centre in Honolulu did issue a warning to Fiji about the March 2009 earthquake and tsunami, which sent a 12-centimetre tsunami wave to the island.

Full story:

<http://www.fjitime.com/story.aspx?id=117290>

### **American Samoa to discuss tsunami preparedness**

After the panic caused by the earthquake in Tonga in March, American Samoa's governor Togiola Tulafono met with department leaders to discuss an update to the local preparedness plan.

From:

[www.rnzi.com/pages/news.php?op=read&id=45481](http://www.rnzi.com/pages/news.php?op=read&id=45481)

### **7<sup>th</sup> Annual Tsunami Story Festival—Tsunami first responders**

The persons called on to rescue and retrieve survivors and victims in dangerous and treacherous situations were honored this year at the Seventh Annual Tsunami Story Festival. Entitled “Tsunami First Responders”, the event was held on Sunday, April 5th at Sangha Hall, Hilo.

These were the stories of neighbors and friends who recounted what they experienced as they were called on in the tsunamis of 1946 and 1960 to warn, document what was happening, and to rescue and retrieve victims.

Telling their stories were policemen Teruo Morigaki and Robert “Steamy” Chow, National Guardsman Yukio Takeya, Mortician Larry Dodo, Red Cross volunteer Curtis Narimatsu, Boy Scout Ron Furukawa and Dr. Walter Dudley, who told the story of the ill-fated naval rescue attempts at Laupahoehoe.

From:

[http://www.tsunami.org/storyfestfirst\\_responders.html](http://www.tsunami.org/storyfestfirst_responders.html)

### **Federal grant will buy equipment to remotely control tsunami sirens**

Jessie Faulkner/The Times-Standard  
Posted: 03/18/2009 01:17:00 AM PDT  
Reprinted with permission

Thanks to a \$118,000 U.S. Department of Commerce grant -- which the Board of Supervisors voted to authorize Tuesday -- the Humboldt County Office of Emergency Services will be able to purchase the equipment to remotely activate tsunami sirens in low-lying areas.

The grant will provide the means for the county to install “controllers” at four sites already equipped with tsunami warning sirens: King Salmon, Orick, Samoa and Shelter Cove, as well as purchase six more for additional sites. Those sites will also be equipped sirens previously donated by Pacific Gas & Electric Co.

“There are places in Humboldt County that really do need additional warning systems,” said Dan Larkin, the program coordinator with the Office of Emergency Services, part of the Humboldt County Sheriff’s Office.

“(The) Office of Emergency Services will administer the subgrant, oversee purchasing items, and work with the Redwood Coast Tsunami Work Group and other local agencies to install and implement tsunami warning system equipment,” the staff report stated.

The controllers, which will allow the sirens to be activated from a remote location, can cost up to \$20,000 per site. The county will pay the upfront costs of purchasing the necessary controllers for each site, with the grant providing 100 percent reimbursement.

Under the provisions of the grant, the work needs to be done by the end of September. Larkin said they were attempting to get a one-year extension, but that’s not a certainty so the county will have to act quickly.

Humboldt County Sheriff Gary Philp said the tsunami warning efforts were really possible through a partnership with the county and other organizations, such as the National Weather Service, who will receive the tsunami warnings and activate the sirens.

Jessie Faulkner can be reached at 441-0517 or [jfaulkner@times-standard.com](mailto:jfaulkner@times-standard.com).

From: [http://www.times-standard.com/localnews/ci\\_11939431](http://www.times-standard.com/localnews/ci_11939431) (Serving Eureka and California’s North Coast)

### **Texas turns to Twitter for emergency weather updates**

Hurricane season is now approaching, and some officials in Texas are turning to the Internet’s hot-test new social networking site to find more ways to up-date citizens when severe weather strikes.

According to an article on the KFDA NewsChannel 10 website in Amarillo, Texas, the Amarillo, Potter, Randall Office of Emergency Management is “looking to help save lives through Twitter this year.”

What is Twitter? It is a social networking website invented three years ago, and asks people to answer the question “what are you doing?” Now officials are hoping to use the service to update people in the event of severe weather and evacuations.

“It is a tool where we can provide very short warning messages to cell phones, pagers, and other things via the Internet,” Kevin Starbuck, the Emergency Management coordinator for the APROEM, told the news outlet.

Twitter allows users to follow other people’s short messages and updates, and can be used on the Internet or cell phone.

“The ultimate goal is for everyone to know what’s going on and if something were to happen then they could get information,” Maribel Martinez, the Emergency Management Assistant Coordinator, and OEM tweek told the publication. “One tweet and say hey we’re expecting thunderstorms for that day, or a chance for tornados and they can instantly receive that message.”

To read the full article, click here:

<http://www.newschannel10.com/Global/story.asp?s=10051630&clienttype=printable>

From: <http://disaster-resource.com/newsletter/2009/subpages/v278/newsclip4.htm> Continuity e-GUIDE, A Wednesday Update by Disaster Resource Guide, April 1, 2009

### **Utilize government funding to improve backup and emergency communications**

One of the goals of the historic Broadband Stimulus Plan is to increase access to broadband communications for public safety organizations. Many agencies are already taking advantage of the available funding opportunities to support their communications initiatives. Act now to access your piece of the share before funding runs out!

For any public safety agency, the ability to keep communications running in the face of emergencies or natural disasters is critical. On-scene personnel must have constant access to voice and data, even when local network services are down. More and more organizations are leveraging the benefits of satellite to keep communications always running - no matter what.

Satellite provides reliable backup and emergency communications to ensure critical communications always stay online and to enable coordination with other agencies and support personnel. With satellite technology, emergency communications services can be integrated with your existing infrastructure and deployed in a matter of weeks!

From: *DRJ's Informational Update* For Tuesday, May 19, 2009, Disaster Recovery Journal [[drj@drj.ccsend.com](mailto:drj@drj.ccsend.com)]

### **FEMA, prepare thyself**

Officials at the Federal Emergency Management Agency are scurrying to fill gaps in their preparedness plans after a response exercise indicated the agency might face challenges in a real emergency, according to an Associated Press article in the [Houston Chronicle](#) Monday.

The exercise, held three weeks ago, showed weaknesses in FEMA’s ability to evacuate those with special needs and get food and water into disaster areas immediately after an event. President Barak Obama—who noted the United States is more likely to be hit by a hurricane than a terrorist attack—said he’d be “very angry” if the agency was caught with it’s plans down in the wake of a disaster, according to the article.

Homeland Security Secretary Janet Napolitano said federal officials were “redoubling efforts” to fill gaps, but they weren’t the only ones that needed to keep their preparedness slates clean. Freshly-minted FEMA Administrator Craig Fugate encouraged the public to be vigilant, as well. “There are a lot of folks that are going to need very specific help that should not have to compete with the rest of us who could have and should have done the things to protect our families,” he said at a news conference.

That same day, Fugate and Napolitano teleconferenced with governors from states at risk of a hurricane strike, according to a [FEMA press release](http://www.fema.gov/news/newsrelease.fema?id=48446) (<http://www.fema.gov/news/newsrelease.fema?id=48446>). The meeting gave FEMA officials an opportunity to answer questions and update states on federal preparedness—including prepositioned assets, evacuation planning, and emergency communications.

The preparedness parley comes in advance of the recognized hurricane season beginning June 1 and National Hurricane Preparedness Week, which starts Sunday. For more on Preparedness Week resources and events, see FEMA's [Hurricane Season 09](http://www.fema.gov/hazard/hurricane/hu_season09.shtm) site ([http://www.fema.gov/hazard/hurricane/hu\\_season09.shtm](http://www.fema.gov/hazard/hurricane/hu_season09.shtm)).

From: *Disaster Research* 525, May 20, 2009

### **Natural Hazards Center lately: redux**

You might have noticed a flurry of activity at the Natural Hazards Center lately, but if not, let us catch you up. We’ve been busy looking for new ways to communicate and have several new offerings:

*Disaster Research*, now in HTML. One of the most obvious changes, if you’re reading this newsletter from your e-mail, is that we can now send *Disaster Research* in an easy-to-read HTML format. Of course, if you (or you’re e-mail client) liked your lightweight, plain-text version better, you can change your preferences by clicking the link at the bottom of this e-mail. You can also update your information with more details on professional or research interests and affiliations. We’ll use the information to focus *Disaster Research* to its audience.

We’re on Twitter. In between editions of *Disaster Research* and the *Natural Hazard Observer*, we come across tons of great information we want to share, but how? Twitter solves our problem by letting us send out info 140 words at a time. Check out our Twitter stream—we’re HazCenter (<http://twitter.com/HazCenter>). Don’t Tweet? You don’t have to—click on the link and you can scroll through our posts like a regular Web site.

Hazards Workshop, full steam ahead! There’s been lots of movement in the planning of our [Annual Natural Hazards Research and Applications Workshop](#). Our focus this year will be on hazards and the economy, with tracks on organizational and government relationships, community planning and recovery, assessing risk, training and

preparedness, and cutting across disciplines and cultures. We’re adding information on sessions and speakers every day, so check back often for new info.

From: *Disaster Research* 525, May 20, 2009

### ***Ocean of an Old Man***

A report by Prithwish Ganguly on May 25, 2009 (<http://www.dnaindia.com/report.asp?newsid=1258853>) told of first-time filmmaker Rajesh Shera’s film *Ocean of an Old Man*, which was inspired by the 2004 Indian Ocean/Sumatra tsunami. He cast 14 children who were actual tsunami victims, having lost someone from their family in the catastrophic tsunami.

Rajesh plans to give away all the proceeds from the movie’s box office receipts to needy people living on Nicobar Island, which was hard hit by the tsunami.

“Rajesh said, “I have worked in many rehabilitation centres after the tsunami in Andaman and Nicobar Islands and there I met many victims who left an impression on me. So, after I went through these emotionally overpowering moments, I decided that I should make a film on it.”

From:

<http://www.dnaindia.com/report.asp?newsid=1258853>

## **PUBLICATIONS**

### ***Natural hazards analysis—Reducing the impact of disasters***

by John C. Pine. 2009/ISBN 978-1-4200-7038-5. 285 p. CRC Press, Taylor & Francis Group  
[www.taylorandfrancis.com](http://www.taylorandfrancis.com)

This book can serve as a text for anyone assessing the impact of disasters in both quantitative and qualitative fields. It takes a broad approach to hazards from its initial definition of natural hazards and their varying impacts on areas around the globe to its chapter on planning for sustainable and disaster resilient communities. The book is peppered with examples from Hurricane Katrina. The handbook “emphasizes resilient policies, rather than rigid philosophy” when assessing and responding to disaster.

From: *Natural Hazards Observer*, v. 33, no. 5, p. 16.

## **WEBSITES**

<http://emergency.unt.edu/>

UNT Emergency Planning, Preparedness, and Readiness Information Students at the University of North Texas now have a new resource to help them prepare for emergencies and disasters—and so do their parents and professors. The UNT Emergency Planning site has a little something for everyone with information on making a plan, how to get emergency and medical training, campus services, and much more.

From: *Disaster Research* 523, April 9, 2009

<https://slightlymorbid.com/>

Slightly Morbid

When you die, who will be the faces weeping over your casket? C'mon, you know you've thought about it--now SlightlyMorbid.com lets you make a list and shoot off some last words, even after you've "left the building." And, according to the site's owners, it's just as useful to let people know you're still alive after a disaster strikes your area. Those living in danger zones could find the one-time fee, ranging from \$10 to \$50, quite a bargain either way.

From: *Disaster Research* 523, April 9, 2009

<http://www.n-din.org/>

NDIN Information Network

The National Disaster Interfaith Network has a new "e-bulletin board" papered with disaster news, research, events, and resources aimed at helping the faith-based community deliver services to those in need. Those looking for information on best practices, preparedness initiatives, or anything else to give them an edge in serving disaster victims can browse online, or sign up for the INET newsletter.

From: *Disaster Research* 523, April 9, 2009

<http://training.fema.gov/EMIWeb/IS/is26.asp>

FEMA Distribution Course for State and Local Governments

The Federal Emergency Management Agency, along with the U.S. Army Corps of Engineers, has created a self-directed course to help state and local governments effectively distribute emergency supplies during disasters. The course, along with an accompanying video and guide, is available online or by mail.

From: *Disaster Research* 523, April 9, 2009

<http://www.fema.gov/about/divisions/cpg.shtm>

Comprehensive Preparedness Guide 101

The Federal Emergency Management Agency has just put the finishing touches on the first in a series of Preparedness Guides. The debut guide--*Developing Emergency Operation Plans*--will be useful for everyone from government officials to nonprofit planners. Upcoming guides will focus on special needs planning, household pets and service animals, the fusion center/emergency operations center interface, and specific hazards.

From: *Disaster Research* 524, April 23, 2009

<http://www.citizen corps.gov/>

Citizen Corps website.

[http://www.virtualdisasterviewer.com/vdv/select\\_event.php](http://www.virtualdisasterviewer.com/vdv/select_event.php)

Virtual disaster viewer

Although areas affected by earthquakes are often off-limits immediately following the event, the Virtual Disaster Viewer allows users to access information about

building damage, humanitarian response, infrastructure loss, and landslides on the fly. The viewer allows users to see satellite imagery of an area pre- and post-event, based on a number of analysis categories. An overlay of images is available for easy comparison. The project—powered by the efforts of ImageCat, the Earthquake Engineering Research Institute, the Multidisciplinary Center for Earthquake Engineering Research, and others—began with data on the May 2008 Wenchuan Quake and recently added data on the L'Aquila earthquake in April.

From: *Disaster Research* 525, May 20, 2009

<http://www.vine.net/>

Microsoft Vine

Vine, which Microsoft bills as a "game-changing social Web application," is meant to help family and friends keep in touch during emergencies. Accessible by desktop (Windows only), Web, text, and e-mail, Vine combines alert reporting, Facebook-like status updates from your peeps, and news reports. Other information, such as Twitter feeds, are expected to be added soon. The software is still in beta testing—enter your e-mail on the site and you could be chosen to give it a whirl.

From: *Disaster Research* 525, May 20, 2009

<http://www.mentalhealthamerica.net/go/information/get-info/coping-with-disaster>

Coping with disaster factsheet

Mental Health America created this collection of resources to assist people dealing with the effects of natural disasters, war, and terrorism. Information for caregivers and responders, such as *Blueprint for Responding to Public Mental Health Needs in Times of Crisis* and *Mental Health America's Emergency Response Task Force*, are also included.

From: *Disaster Research* 525, May 20, 2009

## CONFERENCES, SYMPOSIA

**June 17-18, 2009**

[National Disaster Reconstruction EXPO](#)

National Disaster Reduction, Restoration and Recovery, BNP Media, and others. New Orleans, Louisiana. Cost and Registration: \$99, open until filled.

This conference provides a forum for disaster professionals to better prepare and respond to catastrophic events, as well as create effective disaster networks that promote cooperation in all professional sectors.

From: *Disaster Research* 525, May 20, 2009

**June 21-24, 2009**

National conference on community preparedness—International Association of Emergency Managers and the Department of Homeland Security, Alexandria, Virginia.

This conference is aimed at those seeking to create safer, stronger, and better-prepared communities, regardless of the hazards faced. Attendees will share best practices in collaborative emergency planning, discuss preparedness outreach and education, discover innovative funding approaches, and receive updates on preparedness research.

From: *Natural Hazards Observer*, v. 33, no. 5, p. 23.

### August 9-12, 2009

The 2009 National Conference on Community Preparedness: The Power of Citizen Corps, is being hosted by FEMA's Community Preparedness Division at the Hyatt Regency Crystal City Hotel in Arlington, VA. The conference is open to all who are interested in making their communities safer, stronger, and better prepared for all types of hazards. It will bring together approximately 600 state and local elected officials, emergency management, fire and police services, public health and emergency medical services, non-governmental organizations, private business and industry, advocacy groups, and members of the public.

Attendees at the 2009 National Conference on Community Preparedness will:

- Share best practices on collaborative emergency planning
- Discuss preparedness outreach and education for targeted populations
- Learn innovative approaches to funding
- Hear updates on DHS/FEMA initiatives
- Get updates on findings from citizen preparedness research
- Hear about successful training and exercises
- Share volunteer management practices
- Network with other Citizen Corp participants

For more information:

[www.iaem.com/NCCP2009.htm](http://www.iaem.com/NCCP2009.htm)

From *Citizen Corps Bulletin*, v. 3, no. 1, p. 2

## RESEARCH, STUDIES, GRANTS

### Perceived risk and compliance with a mandatory evacuation order

Funding organization: National Science Foundation, \$19,986, 18 months. Principal investigator: Susan Weller, University of Texas Medical Branch at Galveston.

This study focuses on risk perception among people who did and did not comply with a mandatory hurricane evacuation order, as well as the civil defense authorities who issued the order. On September 11, 2008, a mandatory evacuation order was issued for Galveston Island as Hurricane Ike approached. But when the storm hit, approximately 40 percent of the population had not evacuated. The study uses qualitative methods (in-depth, open-

ended, ethnographic interviews) to elicit reasons, motives, and beliefs about what a "mandatory" evacuation means, why people did or did not comply, what they might do next times and why, and what they would like others to know when given a mandatory order in the future.

The goal is to understand whether there are important differences in the understanding of risk between those who issue mandatory evacuation orders and the public who is expected to respond to them.

From: *Natural Hazards Observer*, v. 33, no. 5, p. 19. ♦

#### STATE EMERGENCY MANAGEMENT OFFICES

*updated 3-31-2006*

Alaska Dept of Military & Veteran Affairs  
Division of Homeland Security & Emergency Mgmt.  
PO Box 5750

Fort Richardson, AK 99505-5750  
(907) 428-7000; toll-free 800-478-2337  
Fax (907) 428-7009

<http://www.ak-prepared.com/>

California Office of Emergency Services  
3650 Schriever Ave.

Mather, CA 95655  
(916) 845-8510; Fax (916) 845-8910

<http://www.oes.ca.gov/>

Hawaii State Civil Defense, Dept. of Defense  
3949 Diamond Head Road

Honolulu, HI 96816-4495  
(808) 733-4300; Fax (808) 733-4287

<http://www.scd.state.hi.us>

Oregon Division of Emergency Management  
PO Box 14370

Salem, OR 97309-50620  
(503) 378-2911; Fax (503) 373-7833

<http://www.oregon.gov/OOHS/OEM/>

Washington State Military Dept.  
Emergency Management Division

Camp Murray, WA 98430-5122  
(253) 512-7067; Fax (253) 512-7207

<http://emd.wa.gov>

Provincial Emergency Program  
455 Boleskin Road

Victoria, BC V8Z 1E7 Canada  
(250) 952-4913; Fax (250) 952-4888

<http://www.pep.bc.ca/> ♦

This list must be updated. Please send me Contact information for each U.S. coastal state's emergency management office, department, agency, division. ([lee.walkling@dnr.wa.gov](mailto:lee.walkling@dnr.wa.gov))

## EMERGENCY MANAGEMENT OFFICES

(added November 30, 2007)

American Samoa Territorial Emergency Management Coordination (TEMCO); American Samoa Government  
P.O. Box 1086  
Pago Pago, American Samoa 96799  
(011)(684) 699-6415; (011)(684) 699-6414 FAX

Office of Civil Defense, Government of Guam  
P.O. Box 2877  
Hagatna, Guam 96932  
(011)(671) 475-9600; (011)(671) 477-3727 FAX  
<http://ns.gov.gu/>

Guam Homeland Security/Office of Civil Defense  
221B Chalan Palasyo  
Agana Heights, Guam 96910  
Tel:(671)475-9600; Fax:(671)477-3727  
[www.guamhs.org](http://www.guamhs.org)

CNMI Emergency Management Office  
Office of the Governor  
Commonwealth of the Northern Mariana Islands  
P.O. Box 10007  
Saipan, Mariana Islands 96950  
(670) 322-9529; (670) 322-7743 FAX  
[www.cnmimeo.gov.mp](http://www.cnmimeo.gov.mp)

National Disaster Management Office  
Office of the Chief Secretary  
P.O. Box 15  
Majuro, Republic of the Marshall Islands 96960-0015  
(011)(692) 625-5181; (011)(692) 625-6896 FAX

National Disaster Control Officer  
Federated States of Micronesia  
P.O. Box PS-53  
Kolonias, Pohnpei - Micronesia 96941  
(011)(691) 320-8815; (001)(691) 320-2785 FAX

Palau NEMO Coordinator, Office of the President  
P.O. Box 100  
Koror, Republic of Palau 96940  
(011)(680) 488-2422; (011)(680) 488-3312

Puerto Rico Emergency Management Agency  
P.O. Box 966597  
San Juan, Puerto Rico 00906-6597  
(787) 724-0124; (787) 725-4244 FAX

Virgin Islands Territorial Emergency Management - VITEMA  
2-C Contant, A-Q Building,  
Virgin Islands 00820  
(340) 774-2244; (340) 774-1491 ♦

Please send updates, changes, corrections, additions to  
[lee.walkling@dnr.wa.gov](mailto:lee.walkling@dnr.wa.gov)

## Citizen Corps website and contacts

Citizen Corps website <http://www.citizencorps.gov/>  
National Citizen Corps Office [citizencorps@dhs.gov](mailto:citizencorps@dhs.gov)

FEMA Region I (CT, NH, MA, ME, RI,VT) Timothy Looby:  
[Timothy.Looby@dhs.gov](mailto:Timothy.Looby@dhs.gov)

FEMA RegionII (NJ, NY, PR, VI) Terrence Flynn:  
[Terrence.Flynn@dhs.gov](mailto:Terrence.Flynn@dhs.gov)

FEMA Region III (DC, DE, MD, PA, VA, WV) Angela Manos:  
[Angela.Manos@dhs.gov](mailto:Angela.Manos@dhs.gov)

FEMA Region IV (AL, FL, GA, KY, MS, NC, SC, TN) Candace Burrell:  
[Candace.Burrell@dhs.gov](mailto:Candace.Burrell@dhs.gov)

FEMA Region V (IL, IN, MI, MN, OH, WI) Jim Opoka:  
[James.Opoka@dhs.gov](mailto:James.Opoka@dhs.gov)

FEMA Region VI (AR, LA, NM, OK, TX) Shari Brand:  
[Shari.Brand@dhs.gov](mailto:Shari.Brand@dhs.gov)

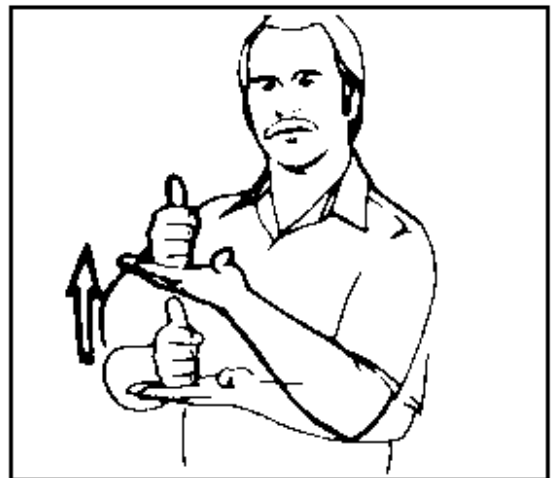
FEMA Region VII (IA, KS, MO, NE) Chuck Gregg:  
[Chuck.Gregg@dhs.gov](mailto:Chuck.Gregg@dhs.gov)

FEMA Region VIII (CO, MT, ND, SD, UT, WY) Stephanie Poore:  
[Stephanie.Poore@dhs.gov](mailto:Stephanie.Poore@dhs.gov)

FEMA Region IX (AZ, CA, HI, NV, AS, GU, CNMI, FSM, RMI)  
Teresita Badua-Larsen: [Teresita.Badua-larsen@dhs.gov](mailto:Teresita.Badua-larsen@dhs.gov)

FEMA Region X (AK, ID, OR, WA) Fred Bretsch:  
[Fred.Bretsch@dhs.gov](mailto:Fred.Bretsch@dhs.gov)

From: *The Citizen Corps Bulletin*, v. 3, issue 1, p. 3. ♦



Sign language: help, assist

From: <http://bullock.htmlplanet.com/asl.help.html>

To see animation of the sign being given:  
[http://www.masterstech-home.com/The\\_Library/ASL\\_Dictionary\\_Project/ASL\\_Tables/Communicator/H/Help.html](http://www.masterstech-home.com/The_Library/ASL_Dictionary_Project/ASL_Tables/Communicator/H/Help.html)

## 1946 Hilo tsunami survivor shares her story

By [Ned Rozell](#)

Published Sunday, May 17, 2009

This column is provided as a public service by the Geophysical Institute, University of Alaska Fairbanks, in cooperation with the UAF research community. Ned Rozell is a science writer at the institute.

From: Fairbanks Daily News-Miner

<http://www.newsminer.com/news/2009/may/17/1946-tsunami-survivor-shares-her-story/>

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FAIRBANKS -- On April 1, 1946, the sea floor ruptured just south of Unimak Island in the Aleutians. Seawater displaced by the giant earthquake sent a 100-foot wave into the Scotch Cape lighthouse on Unimak, destroying the concrete structure and killing the five men inside. They probably never knew what hit them in the 2 a.m. darkness.

The residents of Hilo, on Hawaii's big island, were also unaware of the danger surging their way across the North Pacific. Four hours and 20 minutes after the big earthquake in the Aleutians, the first of several tsunami waves reached Hawaii.

Jeanne Branch Johnston, then six years old, was living in Hilo. She remembers a lush neighborhood of coconut trees and brackish ponds that would rise and fall with the tide, and the surrounding sugar plantations where most people earned their wages.

On the morning of April 1, 1946, Johnston was staying over at her grandparents' house in a section of Hilo that was close to the ocean. She was in her pajamas getting ready to go to school and playing with her brother when she heard car horns blaring. She took her brother David, 4, by the hand, and went outside.

The first wave from the giant earthquake had struck Hilo, sort of like a high tide that kept on rising, and had washed out part of the main road before it receded toward the sea. Drivers who didn't realize the road damage were honking at others.

Johnston and her brother looked around at random debris and wondered what had happened, until her brother tugged at her shirt. "There were red ants biting at David's feet," said Johnston, now 69 and living in Kailua, Hawaii. "He started whining and carrying on. I was really interested in staying out there, but he said 'Come on, let's go inside.' So I took him back inside the house, which saved our lives. He and I wouldn't have been here today if it hadn't have been for those red ants."

After Johnston shepherded her little brother back into her grandparents' house, a second tsunami wave roiled through Hilo, this one larger than the first. Looking from a window on the second floor of the house, Johnston saw the ocean had poured in; water had reached the height of her grandmother's clothesline.

"I called my grandmother and said, 'There's water in the backyard,'" Johnston said. "She said, 'Don't worry about it — it's probably just high seas.' I said, 'I think you should come look.' As soon as she looked out the window, she started screaming and ran for my grandfather."

Johnston's grandmother stayed with her grandfather, who didn't want to leave his house despite the insistence of Johnston's uncle, Rod Mason, who seemed to know a larger wave was on its way. A neighbor that Johnston called "Uncle Eddie" took charge and gathered together people who would listen to him.

"Eddie had a machete with him, and obviously had a plan," Johnston said. Eddie knew the best path to safety was to get to higher ground before another wave came in. He guided a group of children — some, like Johnston, still barefoot — into the subtropical forest behind the houses, chopping a path through vines and trees with another man.

"They kept telling us to run," Johnston said. She remembers cutting her feet on sharp lava rocks. The images of water percolating through those rocks and floating, thorny lauhala leaves would appear for years in her dreams.

Eddie and other adults delivered the children to a radio tower and higher ground, where the kids played. When the tsunami had dissipated, the adults gathered up Johnston and the other children and brought them back to the place where they gathered before they went into the jungle.

"(The adults) told us not to go out to the street, but it looked very interesting so I went out there anyway," Johnston said. "I saw a house that was sitting on a bunch of cushions from chairs, then I found out why they didn't want us to go — I saw someone's arm sticking out from underneath a house."

Ninety-six people died in Hilo on that April Fools Day 63 years ago, and 159 died in the entire territory of Hawaii. And, though Johnston's family all survived, the tsunami affected her in profound ways.

"I've realized over the last 20 years that it had a tremendous impact on me emotionally and physiologically," Johnston said. "I never really was in touch with it until I started doing tsunami survivor interviews myself."

University of Hawaii professor Walter Dudley interviewed Johnston in the early 1990s about her experience. Not long after Dudley interviewed her, Johnston stopped having the dream of swimming amid spiky lauhala leaves. She found the storytelling experience so profound that she helped found the Pacific Tsunami Museum and now devotes a good deal of her time to traveling and interviewing tsunami survivors.

"I found that people are captivated by stories, but not very interested in mitigation info," she said. "If you get them interested in stories you can teach them what to do

and how these people were saved. There are always lessons in these stories.”

Johnston will be in Alaska to interview survivors on video in early June, visiting Anchorage, Cordova, Seward, Whittier and Valdez, and will also travel to Kodiak in September. Survivors of the waves generated by the 1964 earthquake who would like to contact Johnston can reach her at [tsunamigal1946@hotmail.com](mailto:tsunamigal1946@hotmail.com). ♦

### Ham Radio Works

#### \*Amateur Radio During and After Disasters

Amateur Radio operators set up and operate organized communication networks locally for governmental and emergency officials, as well as non-commercial communication for private citizens affected by the disaster. Amateur Radio operators are most likely to be active after disasters that damage regular lines of communications due to power outages and destruction of telephone, cellular and other infrastructure-dependent systems.

#### \*Amateur Radio Operators Help Local Officials

Many radio amateurs are active as communications volunteers with local public safety organizations. In addition, in some disasters, radio frequencies are not coordinated among relief officials and Amateur Radio operators step in to coordinate communication when radio towers and other elements in the communications infrastructure are damaged.

#### \*Major Amateur Radio Emergency Organizations

Amateur Radio operators have informal and formal groups to coordinate communication during emergencies. At the local level, hams may participate in local emergency organizations, or organize local "traffic nets." At the state level, hams are often involved with state emergency management operations. In addition, hams operate at the national level through the Radio Amateur Civil Emergency Service (RACES), which is coordinated through the Federal Emergency Management Agency, and through the Amateur Radio Emergency Service (ARES), which is coordinated through the American Radio Relay League and its field volunteers.

[ARES](#) (.pdf) | ([website](#))

[RACES](#) (.pdf) |

[SATERN](#) (.pdf) | ([website](#))

[MARS - Army](#) (.pdf) | ([website](#))

MARS - Air Force | ([website](#))

MARS - Navy | ([website](#))

[SKYWARN](#) (.pdf) | ([website](#))

#### \*Amateur Radio Is Recognized as a Resource by

National Relief Organizations

Many national organizations have formal agreements with the Amateur Radio Emergency Service (ARES) and other Amateur Radio groups including:

[Citizen Corps](#) - Department of Homeland Security

[Federal Emergency Management Agency](#)

[National Communications System](#)

[American Red Cross](#)

[Salvation Army](#)

[National Traffic System](#) | ([What is the NTS](#))

[National Weather Service](#)

[National Oceanic & Atmospheric Administration](#)

[Association of Public Safety Communications Officials](#)

From: <http://emergency-radio.org/hamworks.html> ♦

### Ham radio contests and exercises

The ARRL sponsors numerous [amateur radio contests](#) throughout the year with the biggest of these being November Sweepstakes and the International DX Contest. Other contests and sponsored operating events include Straight Key Night, VHF Sweepstakes, UHF Contest, and 10 GHz and Up Contest. The ARRL also participates as a Headquarters station for the IARU HF World Championship. [Field Day](#) is an annual event organized by the ARRL that includes both a competitive element as well as an emphasis on emergency communications readiness and the promotion of amateur radio.

From: wikipedia ♦

### Historical tsunami databases

1) Historical tsunami database for the Pacific, 47 B.C. to present

Version 2.4 of February 21, 2005

<http://tsun.sccc.ru/htdbpac/>

2) Historical tsunami database for the Atlantic, 60 B.C. to present

Version 2.0 of December 31, 2003

<http://tsun.sccc.ru/htdbatl/>

3) Historical tsunami database for the Mediterranean, 1628 B.C. – 1999 A.D.

Version 2.0 of December 31, 2003

<http://tsun.sccc.ru/htdbmed/>

by the Intergovernmental Oceanographic Commission

Russian Foundation for Basic Research

Siberian Division, Russian Academy of Sciences

Institute of Computational Mathematics and

Mathematical Geophysics

<http://omzg.sccc.ru/tsulab/> ♦



## VIDEO-CD-DVD RESERVATIONS

To reserve tsunami videos, CDs or DVDs, contact *TsuInfo Alert* Video Reservations, Lee Walkling, Division of Geology and Earth Resources Library, 1111 Washington St. SE, MS 47007, Olympia, WA 98504-7007; or e-mail [lee.walkling@dnr.wa.gov](mailto:lee.walkling@dnr.wa.gov)

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.). CTV-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. ♦



## Infrequently Asked Questions

### What landlocked European nation experienced a seiche approximately 3200 B.C.?

Austria. Recently a huge storm toppled trees in the Mondsee Lake area, exposing the ground underneath and revealing many large boulders. Alexander Binsteiner examined the area, and estimates that a fractured cliff consisting of “50 million cubic meters” of rock fell into the lake causing a seiche of at least five meters (16 feet) to crash into the opposite shore, inundating the settlement there.

For full report: [http://www.thaindian.com/newsportal/health/tsunami-might-have-wiped-off-prehistoric-village-in-austrian-alps\\_100106212.html](http://www.thaindian.com/newsportal/health/tsunami-might-have-wiped-off-prehistoric-village-in-austrian-alps_100106212.html)

### Will there be a tsunami on July 22?

In April a question reported by the Abilene [Texas] online Reporternews asked “I understand that there are predictions of a large tsunami on July 22, in conjunction with a solar eclipse. I didn’t know that they could predict those things so far in advance. How do they do it?”

The answer, in the article entitled “No one can predict tsunami” was “They do it by putting it in an e-mail and sending to millions of people.”

“They” were only correct about the date of the solar eclipse.

From: <http://www.reporternews.com/news/2009/apr/28/no-one-can-predict-tsunami/>

Another website warned of the email hoax:

<http://www.channelnewsasia.com/stories/singaporelocalnews/view/422504/1/.html>

### Where do I find out who belongs to the Washington State/Local Tsunami Work Group (WSLTWG)?

The question is *infrequently asked* because I just read about this group for the first time and cannot find any mention of the members anywhere. Does each coastal state have such a group? If they make themselves known to me, I can add their names and email addresses to the electronic distribution list for *TsuInfo Alert*. –The Editor. ([lee.walking@dnr.wa.gov](mailto:lee.walking@dnr.wa.gov)).

### What do I do if I am in a boat at sea or in a harbor during a tsunami?

“Since tsunamis are imperceptible in the open ocean, do not return to port if you are at sea and a tsunami warning has been issued for your area. Tsunamis can cause rapid changes in water level and unpredictable dangerous currents in harbors and ports. If there is time to move your boat or ship from port to a location where the water is more than 400 meters (1300 feet) deep, you should consider:

\*Most large harbors and ports are under the control of a harbor authority and/or a vessel traffic system. Keep in contact with the authorities should a forced movement of vessels be directed.

\*Smaller ports may not be under the control of a harbor authority. In this case, be sure you have enough time to move your vessel safely to deep water. Small boat owners may find it safest to leave their boat at the pier and physically move to higher ground, particularly in the event of a locally-generated tsunami. Severe weather conditions (rough seas outside of the harbor) could present a greater hazard to small boats, so physically moving yourself to higher ground may be the only option.

\*Damaging wave activity and unpredictable currents can affect harbors long after the initial tsunami impact on the coast. Contact the harbor authority before returning to port to verify that conditions in the harbor are safe for navigation and berthing.”

From: <http://www.prh.noaa.gov/ptwc/faq.php#22>

## BOOK REVIEW

### ***Pacific Island tsunami resilience planning guide--Tsunami hazard mitigation and disaster management***

By Jeanne Branch Johnston and Dr. Walter C. Dudley

2009

Disaster Preparedness Solutions, Inc.

[http://community.csc.noaa.gov/PRI/MO/index.php?option=com\\_docman&task=doc\\_view&gid=36&tmpl=component&format=raw&Itemid=6](http://community.csc.noaa.gov/PRI/MO/index.php?option=com_docman&task=doc_view&gid=36&tmpl=component&format=raw&Itemid=6)

Because work and money has been spent to assess tsunami risk along the populous U.S. coasts and Hawaii, the Pacific Islands have been overlooked in risk assessment/disaster mitigation studies. Jeanne Branch Johnston and Dr. Walter C. Dudley have written a guide, “a compendium [that] presents a collection of tsunami mitigation practices” to aid Pacific Island emergency managers.

“In this compendium we have attempted to outline not only the seismic and hydraulic aspects of the tsunami risk, but also cover assessment, monitoring, and management options for disaster mitigation, preparedness, response and recovery (p. 1-1)”

The second reason for this publication is the need to frame mitigation measures with the culture and geography of the islands in mind. Warning systems, evacuation procedures, and mitigation measures in this region demand customized plans.

Topics covered include hazard assessment, risk assessment, local ordinances and building codes, state hazard mitigation plans, evacuation planning, educational programs and products, warning systems, training and exercises, disaster recovery, and indigenous knowledge.

Too often reports assume that readers know all the current jargon and technical terms. Johnston and Dudley have been scrupulous about providing definitions and explaining acronyms.

*Pacific Island tsunami resilience planning guide* is thorough and detailed. By presenting the reports, maps, plans and procedures already in place in Alaska, Washington, Oregon, California and Hawaii, as well as a sampling of other locales, the Pacific Island emergency managers can select programs or program elements to suit their locations and situations. Many links are included to documents, agencies, and websites for the reader’s convenience. This handbook should be on every Pacific Island emergency manager’s desk. However, it would be just as useful on *any* emergency manager’s bookshelf.

[Editor’s note: in an updated version, there might be an added chapter about the procedures, programs and requirements of special needs populations: disabled, aged, mentally handicapped, rest homes, hospitals, schools, day care centers, and visitors/tourists.] ♦

### **Earth Systems Science Agency proposal**

The July 4, 2008 edition of *Science* magazine featured an article by Mark Schaefer, D. James Baker, John H. Gibbons, Charles G. Groat, Donald Kennedy, Charles F. Kennel and David Rejeski titled *An Earth Systems Science Agency*.

The article proposes combining the USGS and NOAA to create an Earth Systems Science Agency (ESSA). Working closely with NASA, the ESSA would bring together the nation’s top earth scientists to conduct and sponsor research, increase the flow of communication and develop policies and comprehensive information on Earth processes including natural disasters and extreme weather events. ESSA’s portfolio would include ocean, atmospheric, terrestrial, cryosphere, freshwater, and ecological processes and the interaction among them.

From: WSSPC E-Newsletter, Fall 2008, Sept. 24, 2008, p 4. ♦

### **Possibility of Caspian Sea tsunami**

TEHRAN – Although a Caspian Sea tsunami caused by an earthquake is a remote possibility, there is high likelihood that a landslide on the bottom of the Sea can cause a tsunami, the Caspian Sea National Research and Studies Center director stated recently.


Given the slope on the southern part of the sea, there is a possibility of a landslide which can send waves about two meters high, these waves can turn into tsunami afterwards, Homayoun Khoshrovan told reporters in Tehran.

From: [http://www.tehrantimes.com/Index\\_view.asp?code=195884](http://www.tehrantimes.com/Index_view.asp?code=195884)


A full report at <http://www.presstv.ir/detail.aspx?id=96675&sectionid=3510212> ♦

The Tsunami Society will hold its 4<sup>th</sup> International Tsunami Symposium in Toronto, Canada, in July 25-29, 2010, in conjunction and co-sponsorship with the 2010 US-CANADA joint conference on Earthquake Engineering. For more information, visit <http://2010eqconf.org/>

**Second Announcement and Call for Papers**





9th US National and 10th Canadian  
Conference on Earthquake Engineering:  
*Reaching Beyond Borders*



**toronto**  
july 25-29, 2010

9ième Conférence Nationale Américaine et  
10ième Conférence Canadienne de Génie  
Parasismique: *Au delà des Frontières*

Convened jointly by:

 Earthquake Engineering Research Institute	 The Canadian Association for Earthquake Engineering L'Association Canadienne du Génie Parasismique
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