



TsuInfo Alert

prepared by the Washington State Department of Natural Resources on behalf of the

National Tsunami Hazard Mitigation Program

a state/federal partnership funded through the National Oceanic and Atmospheric Administration (NOAA)

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REPORT FROM GUAM

Campaign launched to build awareness and disprove misconceptions about tsunamis on Guam

The Guam Homeland Security/Office of Civil Defense (GHS/OCD), through support from the National Tsunami Hazard Mitigation Program (NTHMP), has launched an aggressive 6-month media campaign to fulfill the urgent need for tsunami awareness to its residents and visiting tourists. A series of advertisements in the print media and commercial spots on both television and radio started in September 2011, kicking off National Preparedness Month. The campaign focuses on basic information and safety tips, and addresses the misconception that Guam is not susceptible to tsunami impacts.

Recent tsunami events around the world, most notably the September 2009 Samoa-Tonga local tsunami, and the March 2011 earthquake and tsunami disaster in nearby Japan, have brought the issue of inadequate tsunami education to the forefront. An unprecedented level of fear and concern arose among island residents as they witnessed the live television coverage of a tsunami devastating a country familiar to island residents and so geographically close to home. The lack of tsunami education, at that time, was quite evident as residents reacted strongly to the issuance of Guam's tsunami warning status from the Pacific Tsunami Warning Center. Undoubtedly, increased education and better tsunami awareness would have lessened the anxiety within the community.

In the past, much of the hazard outreach and education activities were focused on typhoons and earthquakes, which are the most frequent natural hazards that can strike Guam. In addition, emergency planning efforts of the island's emergency management stakeholders have centered on these same hazards. Many stakeholder agencies have only recently begun to consider tsunamis in their Continuity of Operations (COOP) planning. The rarity of destructive tsunami events on Guam and the absence of historical data have much to do with the common misconceptions about tsunamis. Moreover, the lack of scientific research targeted to Pacific island tsunami vulnerabilities led to years of misleading statements made by past public officials strongly suggesting that Guam is not vulnerable to tsunamis.

In 2008, a partnership was formed between the Pacific Risk Management 'Ohana' (PRiMO) and the National Oceanic and Atmospheric Administration (NOAA) Center for Tsunami Research, to conduct a pilot study of Guam. As part of this pilot project, NOAA's Pacific Marine Environmental Laboratory (PMEL) developed a tsunami forecast capability for Guam. The collaborative effort led to research funded by NOAA's National Ocean Service and resulted in the publication of the NOAA Special Report: *Tsunami Hazard Assessment for Guam*, completed in May, 2010.

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WASHINGTON STATE DEPARTMENT OF
Natural Resources
Peter Goldmark - Commissioner of Public Lands

(continued from page 1)

This comprehensive hazard assessment identified Guam's tsunami threat and addressed the widely mistaken belief that Guam is not at risk for tsunami hazards, by providing the following scientific conclusions:

Guam is NOT totally protected by the coral reefs.

- The reef is not a sufficient barrier to prevent tsunami impact at the coastline.
- Because of the steep bathymetry around the island, the reef extent is very short, and thus not enough to fully dissipate all tsunami energy.

The Marianas Trench DOES NOT provide Guam with protection from tsunamis.

- The 1993 Mariana tsunami is known to have impacted Guam, although the impact is not clear, as damage from the concurrent massive earthquake and a nearby tropical storm may have overshadowed any tsunami damage.
- The trench itself does not dissipate energy nor does it act to steer waves away from Guam.
- The tsunami energy directivity may cause a tsunami from specific source regions to produce significant impact and pose a significant hazard to Guam.
- The trench region, at the intersection of two geologically old continental plates, has a high seismic slip rate of 22 mm/yr. Rather than offering "protection" to the island, the trench is a potential source of tsunami generation.

Guam's lack of a significant continental shelf DOES NOT prevent tsunami impact.

- The Maldives has a similar offshore geology to Guam and was inundated following the Sumatra tsunami in 2004, showing the lack of a continental shelf does not necessarily prevent tsunami inundation.

Source: NOAA OAR Special Report, Tsunami Hazard Assessment Special Series: Vol. 1, *Tsunami Hazard Assessment for Guam* (May 2010)

Inclusion of hazard assessment data from the report will further validate our efforts to promote the importance of tsunami preparedness on Guam. The media campaign, along with an ongoing dissemination of various outreach materials, will convince the public to effectively prepare for and respond to tsunami warnings issued for the island. Distribution of localized materials has expanded for products such as the "What's a Tsunami?" coloring book and the Guam Tsunami Wheel, which lists evacuation routes, assembly areas, safety tips, and other basic tsunami information. To promote awareness to a wider audience, multi-lingual tsunami safety brochures have been printed in Chamorro, Japanese, Chinese, Korean, and Tagalog languages.

Submitted by Edeine Camacho,
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REGIONAL REPORTS

ALASKA

City takes steps to take control of tsunami warnings

By Michael Armstrong Staff writer, Homer News
http://homernews.com/stories/072711/news_ctstt.shtml
July 27, 2011

Reprinted with permission

After two tsunami siren alerts this year that incorrectly triggered a tsunami warning for Homer and other Kachemak Bay communities, the Homer City Council on Monday passed a resolution authorizing officials to opt out of the automated tsunami warning system. In the latest false alert on June 23, an erroneous signal sent by the National Weather Service - Alaska turned on tsunami sirens moments after the Northwest Coast and Alaska Tsunami Warning Center had canceled a warning.

The city of Seldovia also is considering opting out of the system, said Seldovia City Manager Tim Dillon, who attended Monday's meeting. "It was chaotic," he said of June's false warning. "We've got to fix it. When it comes to training individuals and educating individuals, you can't cry wolf. ... Right now the way this system works, it just doesn't work."

Seldovia contracts with Homer Police for emergency dispatch services, and if Homer opts out and Seldovia joins Homer, police dispatchers would trigger sirens and issue warnings here and in the village across Kachemak Bay. Kodiak also has local control of sirens.

"During the last event, sirens did not go off," Homer City Manager Walt Wrede said of Kodiak. "There was calm in the streets."

Dispatchers already can issue local warnings, said Homer Police Chief Mark Robl. Homer Police had controlled sirens in the 25 years before the Kenai Peninsula Borough Office of Emergency Management installed new warning sirens and went to the automated system. Robl said if Homer has a strong earthquake nearby, dispatchers are trained to turn on sirens and not wait for the tsunami warning center's analysis and bulletin.

"From all the seminars I've been to on tsunamis, the greatest risk to residents comes from that sharp, local event," Robl said.

Under the automated system, the tsunami warning center sends out a bulletin to the National Weather Service and other agencies. Homer Police get those bulletins by fax, by email and by radio over the Emergency Alert System. The EAS also goes to radio and television broadcasters and NOAA weather radio.

Sam Albanese of the National Weather Service - Alaska attended the council meeting and explained what went wrong. Staffers on duty the night of the June 23 event had trouble following written instructions and sent out the EAS signal too late. "The mix-up has been corrected," he said.

Council member Francie Roberts raised a concern about redundancy in the warning system. Robl recommended another radio frequency backup to trigger the sirens. Borough Emergency Manager Eric Mohrmann, also at the meeting, said radios would need to be upgraded. Signals also would need to reach Seldovia and possibly Port Graham and Nanwalek.

"Building in the redundancy in that critical infrastructure is very, very important," he said. "There's a lot of work ahead of us."

In the Kenai Peninsula Borough Assembly report, assembly members Bill Smith and Mako Haggerty asked if Port Graham and Nanwalek officials had been contacted about Seldovia and Homer opting out. Wrede said he hadn't done that and would contact them.

Under the enhanced 911 system for the borough, all 911 calls first go to a central Kenai office and then are directed to Homer Police if within HPD's dispatch service area. Port Graham and Nanwalek are not in HPD's dispatch area, Wrede said Wednesday.

Also this week, U.S. Sen. Lisa Murkowski, R-Alaska, sent a letter to National Weather Service Assistant Administrator John Hayes asking him to review the NWS's tsunami warning system.

"I understand that the National Weather Service may be requiring sirens to go off in every coastal city when there is a tsunami warning, regardless of location," Murkowski wrote. "If this is true, is this absolutely necessary or is there a more effective strategy that can be utilized? I am concerned that if the sirens go off when there is no real threat, we reduce the effectiveness of this vital warning system."

CALIFORNIA

Bodega Bay radar used for salmon but detected tsunami

By Bob Norberg, The Press Democrat, 9-5-2011
<http://www.pressdemocrat.com/article/20110905/articles/110909759>

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EAST COAST (USA)

Quake a wake-up call for eastern U.S.

By Christa von Hillebrandt-Andrade

August 26, 2011

Reprinted with permission

The East Coast of the United States was shaken up by a moderate earthquake on Tuesday that was felt from Maine to Florida, Virginia to Illinois. On TV we saw people run out of buildings, thinking it might be a terrorist attack. Social media was buzzing with comments and testimonies.

Although seismologists, historians and emergency managers have recognized the potential for an earthquake along the East Coast for years, most people were caught by surprise and so responded inappropriately. The ground doesn't shake as much in the East as it does in California, Alaska, the Pacific Northwest, Puerto Rico or the Virgin Islands. But because of the great concentration of population and infrastructure in the East, it's an area of immense risk.

Since earthquakes are infrequent in this region, most people don't know earthquake preparedness measures. Instead of running out of buildings, they should have dropped, covered and held on. Earthquakes are natural phenomena that become disasters when we don't prepare adequately -- or are not educated in proper measures.

The 2004 tsunami is an example of a rare event catching people unprepared, with catastrophic results. In December of that year, more than 230,000 lives were lost in countries around the Indian Ocean. Residents and tourists were taken by surprise -- they were not warned, nor did they recognize the natural signs.

Just this past March, Japan was struck by a tsunami much larger than any in historical memory. Although the country had a state-of-the-art tsunami warning system -- which indeed saved tens of thousands of lives -- the infrequency of such a mega-tsunami led many to underestimate the threat.

In the Caribbean, we have been working for almost 15 years on our "forgotten danger," tsunamis, which have claimed over 3,510 people just in the past 160 years, more than in Alaska, Hawaii and the West Coast of the US during the same time period. But we still do not have a tsunami warning center in the region.

In earthquake country, children are taught and practice in schools to "drop, cover and hold." Radio and TV announcements and newspapers remind people they need to practice sound earthquake design, anchor down furniture, have insurance and be ready to be on their own for many hours, if not days, when a big one strikes. Earthquakes become part of the culture.

Just the way people who live in the eastern United States prepare for hurricanes, storms and terrorist attacks, the region needs to become earthquake-ready. This could save their lives at home, in another part of the country or the world.

In 2004, Tilly Smith, a 10-year-old girl from England vacationing in Thailand, saved countless lives because she had learned in school about tsunamis, recognized the natural warning signs and, with her mother, guided people to safety. Earthquake and tsunami education and preparedness are important for all, everywhere.

Just as individuals need to prepare, local, state and federal government officials need to perform earthquake hazard assessments to determine and enforce building codes and take other measures to protect lives and property. As we saw on Tuesday, earthquakes can and will strike at any moment. We can't afford to let their infrequency lull us into inaction. This earthquake was a wake-up call.

<http://www.cnn.com/2011/OPINION/08/26/andrade.quake.wake.up.call/>

No laughing matter: Media report on all things D.C. earthquake—Except preparedness

Disaster Research 572, August 25, 2011

<http://www.colorado.edu/hazards/dr/currentdr.html>
Reprinted with permission

Let's face it—rigorous East Coast earthquake drills are hard to come by. That's why it's a shame to see the one Mother Nature provided on Tuesday fall by the wayside.

The 5.8 magnitude quake, centered in Mineral, Virginia, lasted about 30 seconds and could be felt from Maine to Georgia and as far west as Pennsylvania, according to the New York Times. In the nation's capital, people streamed into the streets, twittered breathlessly about the experience (or lack thereof), and jammed cell networks, presumably to check in with loved ones and learn what to do next.

The media—faced with a dearth of death, damage, and other sobering destruction to report—did the best they could with on-camera evacuations, shaking web cams, and at least one ridiculously far off picture of a cracked spire on the Washington National Cathedral.

Considering the laughable news coverage, perhaps the jocularity that followed was inevitable. Earthquake humor began spanning the country before the first of the aftershocks rolled in. Despite the potential seriousness of the largest known quake in the region, the media was all too happy to compile lists of facetious blog posts and Twitter hilarity, with humor running the gamut from the political to the comedic. Most, however, focused on waggish non-

event references, perhaps best depicted by this iconic tribute. And at least one person found love.

Of course, an earthquake is no laughing matter, so there was the obligatory coverage of doomsday statements by zealots. Pat Robertson said it “means that we're closer to the coming of the Lord,” according to the Washington Post, and DemocracyNow! featured a variety of extremists blaming loose morals and same-sex marriage for the shaking.

Given the breadth of the ballyhoo and the deficiency of disaster, it might seem as if every possible quake angle had been covered. But what's been mostly missing so far is a meaningful conversation about earthquake preparedness.

With people jamming phone lines and running into the street (that drop, cover, and hold on isn't just for Californians, you know), it would have been a great chance to remind the East Coast what to do in an earthquake.

Don't be mistaken, plenty of emergency managers and preparedness pundits pointed people to safety resources on their Web sites and blogs, and so did some mainstream media sources. A Washington Post blog made a brief mention of earthquake preparedness while discussing other things people should do in disasters. And an Associated Press piece talked about how the earthquake highlighted the evacuation difficulties D.C. was likely to encounter in a larger event.

But as of Thursday morning, a Google news search for “earthquake preparedness in Washington, D.C.” revealed precious little attention from major news sources, with the exception of this buried gem from the Washington Post: D.C. police chief needs remedial quake training.

Luckily, D.C. Police Chief Cathy Lanier's praise of Washingtonians who did exactly the wrong thing when the quake struck inspired columnist Robert McCarty to write a column on the right thing.

And that's good news, especially if Lanier's attitude is indicative of others in D.C.—even after McCarty pointed out her faux pas, she had this to say: “Thousands of people did what their instinct told them to do, which is get out,” she told him. “No matter what we tell people, if I'm in a building like I was in yesterday, and it was shaking violently, I'm not getting under a desk. I'm leaving the building.”

HAWAII

Rebuilding Waikuaaala after Kona tsunami (video)

<http://www.bigislandvideonews.com/2011/08/15/video-rebuilding-waikuaaala-after-tsunami-at-kahuluu-kona/>

August 15, 2011

Video by Lynn Beittel
Text reprinted with permission

KAILUA-KONA, Hawaii: The community gathered to lend a hand to the cherished Kahalu'u Beach Park on Saturday, part of the Kokua Kahalu'u effort organized by the Kohala Center, Hawaii County and supported by other local groups and businesses.

The Wai'kua'a'ala pond, once the royal bath for Hawaiian alii, was restored by heavy lifting volunteers under the direction of Kelii Freitas, a county worker and stone mason versed in the old style. Organizers said the March 11th tsunami that battered the Kona coast presented an opportunity to refurbish the pond that had fallen under disrepair.

This past weekend's effort comes after a larger effort organized just a few days after the tsunami. An account can be found in the Kohala Center's July/August Leaflet:

On March 11, 2011, the first tsunami waves hit the 4.2-acre Kahalu'u Beach Park, transforming it into a massive lake. As the water receded over the next few days, the extent of the damage the waves had wreaked upon the park became apparent. "Fish lay flapping on the sand. Tables and signs were tossed and torn apart like toys," says Cindi Punihaole, The Kohala Center's (TKC) Outreach and Volunteer Coordinator.

Huge boulders were strewn across the small sandy beach, and sand and rock filled Waikua'a'ala, reducing it to a mere 10 x 10 unrecognizable pond. Debris riddled the area, and 1,000-pound concrete barricades were washed into the middle of the parking lot. The small park pavilion was undermined as the waves battered and broke through the concrete rock walls in front and to the south.

On March 14, Bob Fitzgerald, County Parks and Recreation Director, working under the direction of kupuna (Hawaiian elder) Mitchell Fujisaka, a long-time family member of Kahalu'u, authorized emergency dredging of Waikua'a'ala Pond. The Kohala Center issued an island-wide call for volunteers to assist with the park clean-up. On Thursday, March 17, over 100 volunteers from Waimea, Ka'u, Pa'auilo, Kohala, Waikoloa, North and South Kona—even some of our homeless neighbors at Kahalu'u—turned out to participate in the first Kōkua Kahalu'u Day.

"We are fortunate to be able to live in such a beautiful place with such beautiful people," says Punihaole. "I extend a heartfelt mahalo to everyone who willingly gave of their time to help repair our beloved Kahalu'u Beach and Bay. I especially want to thank the County workers, the volunteers from the University of the Nations, and Starbucks and KTA

SuperStores, who provided breakfast pastries, coffee and tea, and lunch for all of the volunteers," she says. The Kohala Center organizes a number of Kokua Kahaluu days over the year.

The URL above will take you to the video.

INDONESIA

Indonesia to helm tsunami service

Indonesia has been appointed to a team of three countries responsible for the safety of 25 other tsunami-prone Indian Ocean nations, the UN Agency for Development (UNDP) said.

Since the devastating 2004 Indian Ocean tsunami, Indonesia and its neighbors have depended on warnings from an interim advisory service provided by agencies in Hawaii and Japan, UNDP said in a statement.

Starting in 2012, the service will be superseded by the Indian Ocean Tsunami Warning and Mitigation System operated by Indonesia, India and Australia.

The new system was announced at a workshop in Jakarta on Monday supported by the UN Agency for Development (UNDP) and IOC/UNESCO.

Full story at

<http://www.thejakartaglobe.com/news/indonesia-to-helm-tsunami-service/467925>

The Regional Workshop on Standard Operating Procedures for Tsunami Warning and Emergency Response. Jakarta, 19 – 23 September 2011

http://portal.unesco.org/geography/en/ev.php-URL_ID=14632&URL_DO=DO_TOPIC&URL_SECTION=201.html

This workshop is led by Chair Working Group 3 of ICG/IOTWS, Mrs. Irina Rafliana, from the Indonesian Institute of Sciences (LIPI) and organized jointly between BMKG, UNESCO/IOC, and UNDP funded by the UNESCAP Multi Donor Trust Fund. 18 out of 24 Indian Ocean countries are represented in the workshop, with participants from the National Tsunami Warning Centres (NTWCs), National Disaster Management Offices (NDMOs) and media.

This workshop was decided at the 8th Session of the Intergovernmental Coordinating Group for Indian Ocean Tsunami Warning System (ICG/IOTWS) in Melbourne in May 2011. Its primary purpose is to bring the Indian Ocean Regional Tsunami Service Providers (RTSPs), NTWCs, NDMOs and regional media groups together to help prepare the IOTWS for the implementation of the new Regional Tsunami Service Provider (RTSP), which will become operational on 12 October, following the IOWave11 exercise.

The launch of the RTSP service in the Indian Ocean marks a significant milestone for the IOTWS and represents the culmination of 6 years of development and preparation since the ICG decided to develop its own regional tsunami warning capability in December 2005.

Since the Indian Ocean tsunami on 26 December 2004, UNESCO through its Intergovernmental Oceanographic Committee (IOC) has played a major role in overseeing the development of the Indian Ocean Tsunami Warning System. The ICG/IOTWS Secretariat has assumed a crucial role in facilitating the implementation of the Indian Ocean Tsunami Warning System by arranging meetings of the ICG and its working groups, by ensuring the flow of information and reports between the Member States, and by continuously monitoring and updating work and implementation plans.

The importance of Standard Operating Procedures in tsunami warning and emergency response at National Tsunami Warning Centres and at Disaster Management Organisations was recognised and identified as a weakness during capacity assessment missions to Indian Ocean Member States undertaken between 2005 and 2007. Recognising this need, IOC UNESCO in collaboration with the International Tsunami Information Centre has since 2008 been conducting a programme of training workshops with the support of the UNESCAP Multi Donor Trust Fund to develop the necessary capacity in the Indian Ocean and Southeast Asia region.

At the national level, UNESCO/IOC and the UNESCO Regional Science Bureau for Asia and the Pacific established the Jakarta Tsunami Information Centre in 2006 to support the coordination of tsunami information and to promote preparedness and awareness in Indonesia. From early 2010, with the support of the UNESCAP Multi Donor Trust Fund the JTIC expanded its role to support the development of awareness and education materials in Thailand, the Philippines, Timor Leste and Indonesia. At its last session in Melbourne, the ICG/IOTWS decided to support the expansion of JTIC's role to become an information centre for the wider Indian Ocean region.

With the RTSP service scheduled to commence on 12 October, this workshop is both timely and important. The IOWave11 exercise will provide the countries of the region with an opportunity to evaluate their readiness for this new service. It is essential that they are prepared for the new warning products they will receive from the RTSPs and that their Standard Operating Procedures have been adapted accordingly.

In his closing, he expressed his appreciation to BMKG for hosting the workshop, UNDP for their support in organising the event, UNESCAP and

UNESCO IOC for their financial support. Special thanks go to all resource persons who came from different part of the world and all colleagues who have worked so hard in the preparation of this workshop.

MAINE

Maine's TsunamiReady progress

From: Elizabeth Barton –Natural Hazards Planner
Maine Emergency Management

In 2009 Maine Emergency Management Agency was awarded a grant to take the first steps to become ready in the event of a tsunami hitting Maine's shores. As it was very unclear what the state's actual risk was from a tsunami, Maine Emergency Management partnered with Maine Geological Survey to look further into this. Stephen Dickson, Marine Geologist was the lead in this research but was assisted by Mike Foley, Senior Geologist and Peter Slovinsky, Marine Geologist.

It was determined that Maine's greatest tsunami threat would be generated by an earthquake near the Puerto Rican Trench. This was the scenario used to do a model of the impact on Maine's coast. William Knight from WCATWC did the actual model run with data provided by Maine Geological Survey.

One of the stumbling blocks encountered was the varied level of detail available for digital elevation modeling. Maine has recently had Lidar flown along the entire coast but this data was not yet available so older DEM had to be employed. Run up was not able to be modeled due to the varying level of detail available. However the average wave height was determined to be between 1 and 2 meters.

The geologists at Maine Geological Survey looked at other mapping namely the Hurricane Evacuation Study done in 2007 by the Army Corp of Engineers. Inundation maps were generated from this study. By comparing these maps to the level of wave height it was determined that inundation levels similar to a Category 1 hurricane could be expected from the Tsunami that was modeled. This gave Maine a visual to use for planning purposes and to identify areas of high risk.

MEMA contracted with Horsley-Whitten, a consulting firm in Massachusetts, to develop a Tsunami Response plan that addressed the level of attention and detail needed at the State level of response. The firm also wrote a generic guidance document for the Coastal Counties so that they could write plans specific to their county. This guidance was then shared downward to the local coastal municipalities.

MEMA had been polishing the Emergency Evacuation Annex to the State Emergency Operations

Plan. One of the missing components was the lack of signage to mark evacuation routes away from the coast. The tsunami grant was used to identify locations of signs, fabricate those signs and then have them installed. Again MEMA coordinated with another State agency Maine Department of Transportation, to fabricate and install the signs. In total there were 130 locations identified for signs. As of June 2011 all signs have been installed.

There was a bit of surprise and discussion from Maine coastal residents about the signs. Mainers have a reputation of being rugged individualists who have withstood many of nature's curve balls. They tend to have an attitude that they can weather anything Mother Nature throws at them. MEMA understands this but wants to protect both Maine's citizens as well as the thousands of tourists that visit Maine and flock to its beautiful and very extensive coast. In an effort to inform the public about tsunamis and Maine's risk a brochure was produced and printed. It has been distributed to each of the eight coastal Counties, the Harbor Masters Association, and Dept. of Marine Resources. The American Red Cross also took a supply to share when holding work-shops. The balance will be used through MEMA's preparedness program at workshops, conventions and any opportunities to interact with the public.

In May, two tabletop exercises were held to begin to work through the response plan the State had developed and to test how the Counties and their municipalities would respond in the event of a tsunami. The participation was very encouraging perhaps due to the timing. The exercises were held after the earthquake in Japan and the resulting tsunami in that country. Global events such as this have a tendency to make people look more closely to their risk to natural disasters.

The exercise attendees were first introduced to the grant and its objectives. Then a scientific piece was presented first from John Jensenius of the National Weather Service in Gray, Maine then by Stephen Dickson of the Maine Geological Survey.

The information presented made Maine's risk more understandable. Maine Geological Survey created maps for the two southern most counties, showing where Category 1 inundation could be expected to further illustrate the potential damage.

The After Action Report for the exercises identified two planning issues for the Counties and their municipalities. One was to take a close look at the inundation maps for each coastal community, identify any at risk people or structures within them, and develop a plan on how to move those people to a safe zone. Second is to identify what those safe zones are and make them public knowledge. The After Action

Report is being shared with the coastal communities so they can work to improve their response plans.

There were at least two areas that were identified as having a higher risk from inundation: Portland Harbor and Higgins Beach in Scarborough. There is potential for these communities to take steps to make their communities TsunamiReady. These are not the only communities at risk so all coastal communities will be encouraged to consider becoming Tsunami-Ready.

MALDIVES

UN expert urges Maldives to tackle displacement caused by climate change

<http://www.un.org/apps/news/story.asp?NewsID=39111&Cr=displace&Cr1=>

UN News Centre, 21 July 2011

An independent United Nations human rights expert has urged Maldives to put in place measures to handle internal displacement caused by climate change and natural disasters – an issue the Indian Ocean nation is all too familiar with having experienced the 2004 tsunami.

“Climate change is very real in the Maldives and its effects on rights, including the right to housing, safe water and livelihoods, are being felt on many islands,” said Chaloka Beyani, the Special Rapporteur on the human rights of internally displaced persons (IDPs).

“The suffering caused by coastal erosion, salination, rising sea levels, and more frequent storms and flooding is all too obvious to be ignored,” he said after a six-day mission to the country.

“It is also essential to put in place climate change induced displacement preparedness measures applying a human rights-based approach, and mechanisms for the participation of affected communities,” he added.

The expert said that addressing the “real and clearly visible” impacts of climate change on the ordinary lives of the people of the Maldives through mitigation and adaptation measures is “necessary and urgent,” and will require partnerships with the international community.

Mr. Beyani also highlighted the need for a law on disaster risk reduction to ensure the implementation of the Strategic National Action Plan for Disaster Risk Reduction and Climate Change Adaptation 2010-2020. He also called on the Maldivian Parliament to enact the law on disaster management that has been pending for some time.

At the same time, the law professor and Zambian national stressed that legislation and policy should

address internal displacement, including that resulting from climate change.

In the event of internal displacement, affected persons will need protection and assistance in finding “durable” solutions, said Mr. Beyani. These could include a return to an affected island if it is still habitable, local integration in the location where they sought refuge or resettlement in another part of the country. These decisions must be voluntary and informed, and affected communities must be consulted and have the opportunity for meaningful participation in all decisions affecting them.

Mr. Beyani said the lessons learned from the internal displacement caused by the 2004 Indian Ocean tsunami should inform and be integrated into future legislation and policies. He also stressed that urgent attention be given to the situation of tsunami victims, 1,600 of whom were still living in very difficult conditions in temporary shelters.

The expert carries out his activities in an independent and unpaid capacity and reports to the Geneva-based UN Human Rights Council. His full report on the visit to the Maldives will be presented in March 2012.

NEW ZEALAND

Remembering Christchurch: New Zealand moves on but doesn't forget

New Zealand has launched an innovative project to create disaster memory archives after its recent earthquakes, including the events that wreaked havoc in Christchurch between September 2010 and June 2011. There's indication that the oral histories, photographs, memoirs, and collections of online documents and mementos will not only record the event, but also help people heal.

“Whenever I go down to Christchurch, or talk to Christchurch friends, they always say they are getting on with their lives and don't think about the earthquake so much now, but as soon as I open up the topic, half an hour later they're still talking about it,” Jamie Mackay, a Web team leader for QuakeStories, told New Zealand's The Press. “I think it's just tapping into that somehow and getting people to get over the hurdle of actually writing it down.”

QuakeStories, which allows people to share their quake experiences online, is a project of New Zealand's Ministry for Culture and Heritage. Other archives include an oral history project that will be available at the National Library of New Zealand and a photograph collection that will eventually be online in the library's Timeframes catalog, but which can be viewed now in photographer Ross Becker's Web album.

Traditional archives of quake-related objects are also being curated and related Web sites and social media are being indexed. Eventually all the archives will be consolidated under what's to be known as the Ceismic consortium. The consortium, based at Canterbury University, will build a database of the human effects of the earthquake.

“We've got all the geotechnical expertise, we've got all the engineering expertise, but the quakes are primarily about the impact on people,” said Paul Millar, an arts professor who helped conceptualize the idea. “I thought it would be important to record people's stories and to capture as many media files as possible and also chart the process of the recovery. Do longitudinal studies, keep going back to people and find out how they are getting on. Chart patterns of migration and do geospatial mapping.”

Although the Ceismic concept is based on projects like the September 11 Digital Archive and the Hurricane Digital Memory Bank, its breadth, organization, and timing are unique. In a way, Millar notes, the ravaged city is the perfect place to pull off such a project and have it work well.

“Christchurch is in a very geographically defined area,” he said. “We're relatively First World so we have a high technology uptake. The impact has gone across all the social strata. We're a very unfortunate ideal test case.”

From: Disaster Research 571, August 11, 2011

Editor's Note: This report reminds readers of the pioneering work done by the Pacific Tsunami Museum (<http://www.tsunami.org/>) in Hawaii, saving survivor stories of Hawaiian tsunamis, as well as those in the Indian Ocean and the Pacific since 1985. Their longstanding work has created a huge archive (written and videotaped) at the Pacific Tsunami Museum. I emailed Walter Dudley to get the details on their work. His response:

“...the collection of stories was begun in 1985 for my first tsunami book (co-author Min Lee)¹ published in 1988. After the founding of the museum in 1994 story collecting began in earnest, with videotaping begun in 1998. The co-founder of the museum, Jeanne Johnston, was instrumental in the collection of stories and has served as the main interviewer in Hawaii, Alaska and India, which adds up to about 250 survivor interviews.

Jeanne had experienced a catharsis when she shared her story with me back in 1993 and her recurrent nightmares had finally ceased. She hoped that others would experience the same release and closure, especially knowing that their stories would be used for tsunami education to save lives. (Jeanne now works for FEMA.) James [Goff, of the Australian-Pacific Tsunami Research Centre] worked with me in

Thailand following the 2004 tsunami, and he and Catherine [Chague-Goff, Joint Appointment – Research Fellow – UNSW and Australian Nuclear Science and Technology Organisation (Institute for Environmental Research)] helped organize and direct our expeditions to Sri Lanka, Sumatra, Java, and the Maldives. Thanks to two volunteer assistants in Samoa, Angela Jowitt and Jackie Faasisila, we were able to collect powerful interviews in both American Samoa and Samoa, which provided the inspiration and basis for a book: *Surviving a Tsunami - Dealing with Disaster*, written for intermediate age children, being printed as we speak and scheduled to come out next week (end of September).

The stories from Hawaii, India, Sri Lanka, Thailand, and Indonesia are featured in different exhibits at the Pacific Tsunami Museum. Survivor stories we collected in Alaska about the 1964 Alaska earthquake and tsunamis are now featured in exhibits at local museums in Seward, Kodiak and Valdez (installed this past June). Our museum archive now contains upwards of 400 tsunami survivor interviews including first-hand accounts of the tsunamis of 1923, 1946, 1952, 1957, 1960, 1964, 1975, 2004, 2006, and 2009. Our next project coming up in 2012, is to collect survivor stories in Chile about the great 1960 earthquake and tsunami, and the 2010 event, a volunteer effort with assistance from the Rotary Clubs in Chile.”

1. Dudley, Walter C.; Lee, Min, 1888, *Tsunami!*: University of Hawaii Press.

More details can be found in the following references:

Johnston, J, Bird, D., Goff, J. and Dudley, W. (in press) An examination of hazard communication logs and public response during the 1946 and 1960 tsunamis that impacted Hilo, Hawai‘i. Geological Society Special Publication Number xxx.

Dudley, W.C., Whitney, R., Faasisila, J., Fanolua, S., Jowitt, A., Chan-Kau, M., 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. 7, no. 1-2, p. 201-206.

Dudley, W., Goff, J., Chagué-Goff, C., Johnston, J., 2009, Capturing the next generation of cultural memories - video interviewing of tsunami survivors. *Science of Tsunami Hazards*, v. 28, p. 154-170.]

OREGON

Memo to: News and Assignment Editors
From: OSU News and Research Communications
9-6-11

Subject: Media availability, landslide/tsunami demonstration on Wednesday, Sept. 7

A colorful and interesting research project is being done at the Hinsdale Wave Research Laboratory at OSU, and scientists will be available to speak with any interested print or broadcast news media representatives on Wednesday, Sept. 7, at 10:30 a.m. to discuss the study and demonstrate a simulated “landslide” from a collapsing mountain into the Tsunami Wave Basin.

The project funded by NSF through the NEES program, which has been under way for several years now, is studying a little understood type of tsunami – one caused by either an underwater or terrestrial landslide into a large lake, bay or the ocean. Such tsunamis are quite different from those caused by large earthquakes, and can actually create even larger waves. The landslides can be triggered by earthquakes or simply unstable geologic formations.

Although their effects are usually more localized than those caused by major earthquakes, these “mega-tsunamis” caused by landslides have reached wave heights of 300 feet or more. The goal of the current research is to better understand such events and ultimately help prepare for them and mitigate loss of life.

The actual demonstration will feature a conical island about seven feet tall with a substantial amount of debris coming off of it into the Tsunami Wave Basin. The research is being conducted by Hermann Fritz from the Georgia Institute of Technology. He will be available for media interviews at 10:30 a.m. Wednesday, and the simulated tsunami will be done at 11 a.m. It cannot be immediately repeated, so any media who are interested should plan their arrival time appropriately. The Hinsdale Wave Research Laboratory is at 35th Street and Jefferson Way on the west end of the OSU campus.

More information on this research program is available online, at <http://bit.ly/ocqZaf>

[Note: KVAL 13 ran an article, with a video, on the OSU studies at <http://www.kval.com/news/local/129423673.html>]

PACIFIC COAST

Pacific Coast towns rethink tsunami ‘vertical’ evacuation options

When the next devastating earthquake strikes off the Northwest coast, it is expected to send a tsunami so fast that it could leave coastal communities with perhaps 20 minutes to escape the surge of water.

For small towns like Long Beach, which sits on a long spit just above sea level, the wave’s speed will leave minimal options for getting away: People can

literally run for the hills, but the first elevated areas are more than a mile to the east, difficult to reach and likely unknown to tourists. Or people can try to drive, cramming roads that could be ravaged by the quake and follow the ubiquitous blue evacuation signs — assuming they still exist.

“If you have a major earthquake, God only knows which way those signs are going to point,” said Long Beach city administrator Gene Miles.

Full story at
<http://www.insurancejournal.com/news/west/2011/08/29/212735.htm>

JAPAN

Eyewitness accounts, March 11, 2011 tsunami

Terrifying moments before tsunami revealed

<http://www.yomiuri.co.jp/dy/national/T110823005568.htm>

As the tsunami waters rose around him, one boy desperately stayed afloat by clinging to his evacuation helmet. A refrigerator with no door floated past so he climbed inside, and survived by staying in his ‘lifeboat’ until the danger eventually passed.

Full story at website given above.

Japan: Tsunami still haunting survivors

<http://www.trust.org/alertnet/nes/japan-tsunami-still-haunting-survivors>

A report by child rights organization Plan International, posted Sep. 8, 2011

Witness to disaster: Six months on from Japan’s tsunami

<http://www.dnr.wa.gov/ResearchScience/Topics/GeologyPublicationsLibrary/Pages/tsuinfo.aspx>

“Akiko Iwasaki could see it, the higher ground that would keep her safe. But she couldn’t make it. She was only a few feet away when she was swallowed by a massive wave which carried away cars, houses—basically everything in its path.”

Akiko’s full story is available at the website given above.

Tsunami survivors share their stories

<http://www.mauiveekly.com/page/content.detail/id/503674/Tsunami-Survivors-Share-Their-Stories.html?nav=13>

Three victims of the March earthquake and tsunami in Japan share their heart-breaking stories of survival with [Hawaii] island residents. “In the mere light of the moon, I could see that my house was gone.”

Full story at website given above.

Video of tsunami from inside a delivery truck

http://www.huffingtonpost.com/2011/09/23/japanese-tsunami-footage-2011_n_978146.html#s280815

Amazing footage from a delivery truck's dashboard shows the incredible force of the Japanese tsunami of March 11, 2011.

JAPAN

March 11, 2011 earthquake/tsunami

Follow-up stories

Impact of the Japan earthquake and tsunami on animals and environment

<http://www.greenpeoplenews.com/en/2011/03/22/impact-of-the-japan-earthquake-and-tsunami-on-animals-and-environment/>

Reports from a Japanese veterinarian, The Nature Conservancy, Midway Fish and Wildlife Service, Eastern Island, the Galapagos Islands, India, Nicobar Islands, and Sri Lanka.

Japan towns hit hardest by tsunami stuck in limbo

<http://www.foxnews.com/world/2011/08/06/japan-towns-hit-hardest-by-tsunami-stuck-in-limbo/>

MINAMISANRIKU, Japan – Gazing down on the gray, rubble-strewn valley, as a backhoe lifts twisted metal into one of hundreds of piles, Takako Abe clutches her walker and points to where her house once stood.

From the same hill, she and scores of others watched a huge tsunami obliterate the Japanese fishing town of Minamisanriku on March 11. By June, she could see a few signs of rebirth. The main roads had been cleared, and cars pulled up to gasoline pumps powered by humming generators. Workers raised telephone poles, and about 1,200 temporary houses had gone up.

Still the recovery is only inching along in the hardest-hit towns. Many survivors remain in limbo, gripped by deep fears and uncertainties that raise questions about Minamisanriku's future. Nearly 1,200 of its 18,000 residents are dead or missing. Hundreds more have left to live with relatives or seek jobs elsewhere. Those who remain are conflicted.

Full story (Eyewitness accounts of current conditions) at website given above.

Thousands still homeless months after tsunami (BBC video)

<http://www.bbc.co.uk/news/world-14399551>

4 August 2011 Last updated at 03:00 ET

450,000 people were made homeless by the powerful earthquake and massive tsunami that devastated Japan in March.

Five months on many people are still living in shelters and temporary accommodation. Affected

residents admit that they "must endure" the hard times ahead.

40% of tsunami survivors didn't evacuate quickly
<http://www.yomiuri.co.jp/dy/national/T110817006318.htm>

More than 40 percent of survivors of the tsunami caused by the March 11 earthquake did not evacuate immediately after the quake as they searched for family members or went home, a central governmental report on the disaster has revealed.

The survey was jointly conducted by the Cabinet Office, the Internal Affairs and Communications Ministry's Fire and Disaster Management Agency and the Meteorological Agency last month at temporary housing facilities and evacuation facilities in coastal areas of Iwate, Miyagi and Fukushima prefectures, which were severely hit in the disaster.

According to the survey, 361 of the 870 people interviewed said they did not evacuate immediately.

Complete story at website given above.

Japanese police battle with scrap theft rise in tsunami-hit area

<http://www.platts.com/RSSFeedDetailedNews/RSSFeed/Metals/8234705>

The Japanese police face an uphill struggle against increases in metal scrap theft in the areas hit by the March 11 earthquake and tsunami, police sources said Monday.

The officer, who declined to be named, added that law enforcement bodies face challenges from the limitations of the current Japanese criminal law, that the property ownership needs to be identified, to be called a theft.

Full story at website given above.

Tsunami data facilities need urgent repair

In the event of another major earthquake, the government is currently unable to obtain sufficient data on tsunami for the quake-hit Tohoku region because 11 of the 20 facilities and devices on and off the Pacific coast, from Aomori to Fukushima prefectures, are not in service, it has been learned.

Five of seven GPS-equipped wave recorders off the coast of the prefectures could not record fluctuations in tidal levels during the magnitude-7.3 earthquake on July 10 because they had been damaged by the devastating March 11 tsunami.

In addition to the wave recorder buoys, six of 13 tidal level observation facilities located along the same coastline did not work well during the July 10 earthquake.

Full story at

<http://www.yomiuri.co.jp/dy/national/T110727005888.htm>

Living with the aftermath of Japan's tsunami nightmare

Otsuchi, Japan (CNN) -- Kyoko Ogawa wore the brave face the world associated with Japan's tsunami survivors.

The March 11 catastrophe washed away all her earthly possessions. She watched as her hotel burned to the ground in a gas explosion triggered by the tsunami; a hotel that had been in her family for generations.

She was determined not to let the disaster break her. But after the elation of finding her son alive, the reality of losing her livelihood started to erode the calm facade. She was in turmoil. She was afraid to talk to other people about it because she knew everyone was suffering as much as her, if not more.

They were "ganbaru," she recalls -- enduring, holding on, withstanding, and living with the pain. She couldn't be the only one to lose control.

"I was in shock because I realized that all that was precious to me was gone," she says, six months on from that terrible day. "I didn't know what to do from then on. I became tormented."

That was the start of a slippery slope down a dark trail of despair.

It's a familiar story in Otsuchi, northeastern Japan, where the devastating earthquake and tsunami turned much of the town in Iwate Prefecture into rubble. Today, much of that physical debris has been cleared away. But the emotional wreckage of the survivors is proving much more difficult to remove, as the mental scars from that day linger months later.

Full story at

<http://www.cnn.com/2011/09/06/world/asia/japan-tsunami-suicides/>

AlertNet News Blog—What's happened to Japan's tsunami survivors?

By Megan Rowling, August 3, 2011

<http://www.trust.org/alertnet/blogs/alertnet-news-blog/whats-happened-to-japans-tsunami-survivors/>

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A visit by the U.N. secretary-general to Japan's tsunami-hit northeastern region could draw valuable international attention back to the survivors of the Asian nation's triple disaster.

Nearly five months after a 9-magnitude quake triggered a huge tsunami that devastated towns and villages along the coast and sparked a nuclear crisis in Fukushima, tens of thousands of homeless survivors are still living in evacuation centres in schools and other public buildings, or in hotels, waiting for suitable accommodation.

U.N. Secretary-General Ban Ki-moon leaves on Saturday for Japan, where he'll visit Fukushima to see the devastation firsthand.

Ban will go to an evacuation centre and meet students at a high school in Fukushima city, his spokesman said on Tuesday. In Tokyo, he'll meet Prime Minister Naoto Kan and Foreign Minister Takeaki Matsumoto.

Soon after radiation began leaking from Japan's quake-hit Fukushima Daiichi nuclear power plant, the U.N. chief called for a stronger international nuclear safety regime.

The quake and tsunami killed more than 15,500 people and left nearly 5,000 missing. Several thousand more are recovering from injuries. But since the world's media flooded into the country, beaming back horrific pictures of the destruction, international coverage of the lives of those affected has pretty much dried to a trickle.

These days it's more about the impact on the economy - especially car companies and farming - and the ongoing battle to make Fukushima Daiichi's reactors safe.

Many still in limbo

Yet for those living amid the rubble of tsunami-hit areas, life is far from back to normal. As of mid-July, around 91,500 people were still displaced from their homes, staying in evacuation centres, public housing, hotels and other facilities, or with family and friends, according to the Japanese government. Japanese media say many have yet to move out of evacuation centres because the process of building temporary homes has been beset by problems.

One of the main issues slowing down construction is a lack of suitable land in hilly coastal areas. Some local authorities are reluctant to build prefab homes on prime sites on higher ground near the coast because they will get in the way of reconstruction of permanent houses.

But locating interim houses further away means people don't want to move into them because they aren't close enough to schools and other amenities. Some don't want to lose their entitlement to aid. Others want to stick with the people they know, and stay in their communities.

An aid worker with Church World Service who visited Ishinomaki city in Miyagi prefecture in late June said he saw some shelters built right next to huge mounds of debris, and others located in car parks and school playgrounds.

Nonetheless, the Fukushima prefectural government has said all 557 shelters in the prefecture will shut at the end of October, as alternative accommodation for some 15,000 evacuees is close to being secured, according to Kyodo news agency.

And the BBC reported on Wednesday that people are trying to get on with their lives, even though recovering from the disaster could take decades.

A [video report](#) from Kesenuma and Rikuzentakata towns in the disaster zone shows fishermen back on their boats, children playing baseball - despite losing eight of their teammates - and friends planting a garden with sunflowers.

"Just doing this joyful thing together makes me smile," one woman tells BBC reporter Jenny Hill.

Local governments closing tsunami lost-and-found rooms

The Mainichi Daily News, August 31, 2011
<http://mdn.mainichi.jp/mdnnews/news/20110831p2a00m0na015000c.html>

Reprinted with permission

Local governments in tsunami-hit areas are starting to close rooms holding photographs and other items of unknown ownership recovered from the rubble and must decide what to do with the left over items.

The city of Miyako in Iwate Prefecture closed most of its lost-and-found rooms on Aug. 17, but at least for now, the items will be kept. Lists of the items in storage will be made available.

The Iwate town of Yamada, however, which is closing its rooms at the end of August, will "incinerate or otherwise dispose of items other than photographs of the deceased and mortuary tablets," according to the town's government.

In a lost-and-found room there, Fumeko Takahashi, 53, searched for pictures of her deceased mother-in-law and father-in-law amongst crowded personal items that included preserved umbilical cords, often saved in Japan.

"I hope there will be an extension (of how long the rooms are open)," she said.

In Minamisanriku, Miyagi Prefecture, where lost-and-found rooms are scheduled to be closed at the end of August, it has not been decided what to do with the leftover items.

Meanwhile, the city of Sendai, which closed its rooms at the end of July, intends to open them again, adding in items collected after the rooms were closed.

The cities of Ofunato and Rikuzentakata in Iwate, and the cities of Kesenuma and Ishinomaki in Miyagi are continuing to run their lost-and-found rooms for the time being because it is still unclear when the rubble from the tsunami will be cleared and the belongings in them recovered.♦

OPINION

How to out-smart a tsunami—Following the loss of life caused by Japan's tsunami, a small non-profit organisation is planning ahead in Indonesia

By Peter Singer, 17 May 2011

<http://english.aljazeera.net/indepth/opinion/2011/05/2011512125613509435.html>

When the earthquake and tsunami hit Japan in March, Brian Tucker was in Padang, Indonesia. Tucker was working with a colleague to design a refuge that could save thousands of lives if - or rather, when - a tsunami like the one in 1797 that came out of the Indian Ocean, some 600 miles southeast of where the 2004 Asian tsunami originated, strikes again.

Tucker is the founder and president of GeoHazards International, a nonprofit organisation whose mission is to reduce death and suffering due to earthquakes in the world's most vulnerable communities. Padang is one of those communities. Just to its north-west, in Banda Aceh, 160,000 lives were lost in the 2004 tsunami. Now, geologists say, the fault that triggered that tsunami is most likely to rupture farther south, putting low-lying coastal towns like Padang, with a population of 900,000, at high risk of a major earthquake and tsunami within the next 30 years.

In Banda Aceh, the tsunami killed more than half the city's population. In Padang, according to an estimate by the director of the city's disaster management office, a similar tsunami could kill more than 400,000 people.

Tucker says that he has stood on the beach in Padang, looking out at the ocean and trying to imagine what it would be like to see a five-metre-high wall of water stretching across the horizon, bearing down on the city.

Now that we have seen the footage of the tsunami that hit Japan, the demands on our imagination have been lessened - except that we have to imagine away the sea walls that Japan had built to reduce the impact of the tsunami.

True, those walls did not work as well as had been hoped, but Japan was nonetheless much better prepared for a tsunami than Padang is. In Padang, even with advance warning of a tsunami, higher ground is too far away, and the narrow streets too choked with traffic, for many people to get to safety in time.

GeoHazards International is therefore working on a more practical idea, which it calls a Tsunami Evacuation Raised Earth Park (TEREP). The idea is to build small hills in low-lying parts of the city, with level tops that could be used as parks or sports fields. With the few minutes' warning that an earthquake's strong shaking would automatically provide, people could walk to a TEREP and be safe above the highest level a tsunami could reach.

Such raised earth parks are a low-cost solution to the tsunami danger in low-lying coastal areas. They use only local materials, provide a valuable community resource in normal times, and have the potential

to save hundreds of thousands of lives when a tsunami strikes.

Nevertheless, GeoHazards International lacks the resources to build anything like enough TEREPs to meet the need. After 20 years of operation, the organisation remains tiny, especially when compared to organisations like the Red Cross, which primarily do disaster relief work. People are willing to donate hundreds of millions of dollars to help people after a disaster - even after a disaster in a wealthy country like Japan - but are unwilling to invest anything like the same amount to save lives before a predictable disaster strikes.

One reason for this is that preventing a disaster does not make good television. People give to identifiable victims. If we build raised earth parks, we will never see the people who, but for our aid, would have died; no orphans in desperate need will appear on the nightly news.

But isn't it much better to keep parents safe than to help orphans after their parents have been killed? This is a situation in which we must stretch our imagination, to understand and be motivated by the good that we are doing. Unfortunately, not everyone can do that.

Another reason why we do not give to prevent disasters should be familiar to anyone who has ever delayed going to the dentist because the prospect of serious pain in the coming weeks or months just wasn't as motivating as the reluctance to face some more immediate slight discomfort. We tell ourselves that maybe we won't get a toothache after all, even though we know that the odds are that we will.

Most of us are not very good at giving proper weight to future events, especially if they are uncertain. So we may tell ourselves that the geologists could be wrong, and perhaps no tsunami will hit Padang in the next 30 years, and by then perhaps we will have new and better technologies for predicting them, giving people more time to get to higher ground.

Instead, we should be guided by the best estimates of the chances that an intervention will save lives, as well as by the number of lives that would be saved, and the cost of saving those lives. The evidence suggests that building raised earth parks in places like Padang is very good value indeed.

[Peter Singer is professor of bioethics at Princeton University. His most recent book is *The Life You Can Save*]. ♦

Volunteers fill unmet needs: Long-term recovery volunteers seek to fill unmet needs [excerpt]

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

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

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.

For more information about this disaster, go to www.nccrimecontrol.org and click on the red “April Tornadoes” tab. More information is also available at www.fema.gov.

FEMA’s mission is to support our citizens and first responders to ensure that as a nation we work together to build, sustain, and improve our capability to prepare for, protect against, respond to, recover from, and mitigate all hazards.♦

Switching it up at USGS: Applegate explains how a staid institution is finding a new groove

From: Disaster Research 570, July 28, 2011
<http://www.colorado.edu/hazards/dr/currentdr.html>

For more than a century, the U.S. Geological Survey has delivered the straight-up science needed to navigate natural hazards—but not anymore. When it comes to dispatching science in and ahead of a crisis, the times are a-changin’.

“We’re increasingly moving—in order to make the information the most useful and usable that it can be—moving from a sort of traditional area of hazard assessment into more risk based information,” USGS Associate Director for Natural Hazards David Applegate recently said in his keynote speech at the 36th Annual Natural Hazards Workshop. “The bureaucracy of the USGS is changing and it’s changing in a way that has the potential to be beneficial for our ability to be effective in the hazards arena.”

A restructuring of the organization by strategic areas, rather than areas of scientific expertise, is among those changes, Applegate said.

“For 130 years the survey was organized by where you got your degree,” he told attendees. “We had a geology discipline, a mapping discipline, a water resources discipline. Now we’re organized in these mission areas ... natural hazards being one of those.”

Now that the Survey is “undisciplined,” more attention can be paid to strategic areas: climate and land use change; core science systems; ecosystems; energy and minerals and environmental health; water; and of course, natural hazards.

The natural hazards mission area is responsible for coastal and marine geology, earthquake hazards, geomagnetism, global seismographic networks, landslides, and volcanoes. It also coordinates information across all hazards and facilitates USGS response activities after an event.

The natural hazards mission includes advancing hazards understanding, developing monitoring and communications infrastructure, characterizing hazards, assessing risk, and improving forecasting. The USGS already has statutory responsibility for keeping citizens informed of earthquakes, landslides, and volcanic eruptions, and provides support that allows other programs—such NOAA’s tsunami alert system—to meet their responsibilities as well.

Even with so much on its plate, the natural hazards mission of the USGS has taken a new approach to providing “richer information that will be actionable by the emergency responders,” Applegate said.

A suite of products fits that goal, including ShakeMaps, the newly improved PAGER earthquake assessment system, and the Volcano Disaster Assistance Program. But even as these do a better job giving people the resources they need than ever before, it’s the recent spate of demonstration products—the Great ShakeOut scenarios and ArkStorm—that really embody the new approach, Applegate said.

“This whole notion is about trying to do a better job of delivering our information in such a way that we can help people improve resilience in communities,” he said.

“Trying to take hazard information and then build upon that to make the hazards real enough to be able to think about the possible, not just the probable, and play it all out to be able to look at the consequences. When we asked at the outset of this project what do emergency managers want, this was the top thing that they wanted”

The scenario approach has been wildly successful in bringing together a lot of people of differing expertise—from the man on the street to first responders to transportation and utility crews—to examine what’s going to happen in their area of responsibility when disaster strikes. The end result is hopefully a bigger, clearer picture than any one discipline could have provided alone.

“We have a lot of geoscientists in our midst but we do also have capabilities beyond that, but we particularly need to reach out and that’s what this has been about,” Applegate said. “Getting the earth science information, the engineering information, the social science information and putting together the building blocks of a scenario like this.”

More scenarios, including a tsunami and a wild-fire scenario, are in the works. And as the USGS begins creating 10-year science strategies for each mission area, it looks like there’s no going back to the your-father’s-geological survey way of thinking. After all, Applegate said, the risk reduction approach just makes sense.

“We know that in science and crisis the best thing you can do is what you do ahead of the crisis,” he said. “The interest here is can we do that outside the crisis, because after all to do it within the crisis is about the worst possible time.”♦

NEWS

Name change

The Australian Tsunami Research Centre has changed its name to reflect the full scope of its work. It is now the Australian-Pacific Tsunami Research Centre.

Applegate USGS Associate Director for Hazards

U.S. Geological Survey Director Marcia McNutt recently announced that David Applegate has been selected as the agency’s associate director for natural hazards.

Applegate came to the USGS in 2004 as the first senior science advisor for earthquake and geologic hazards. In that capacity, he has provided oversight of the earthquake hazards, global seismographic network, and geomagnetism programs.

Since 2006, Applegate has chaired the National Science and Technology Council’s Subcommittee on Disaster Reduction, an interagency body providing guidance to the White House Office of Science and Technology Policy. He is widely recognized for his passion and ability to communicate science in terms that nontechnical audiences can understand. He is an invaluable scientific voice for media, policy-makers, and the public in the face of natural disasters, and received the USGS Shoemaker Award for Lifetime Achievement in Communication in 2010.

Applegate received degrees in geology from Yale University and the Massachusetts Institute of Technology (A.B.S. and Ph.D., respectively). He currently is an adjunct full professor at the University of Utah’s Department of Geology and Geophysics.

Applegate played a central role in establishing the USGS Coalition, an alliance of 71 organizations, including EERI, united by a commitment to the continued vitality of the USGS geological, hydrological, and mapping programs. The Coalition supports increased federal investment in essential USGS programs.

For more information, visit <http://www.usgscoalition.org>. [See also article on page 15
From: EERI Newsletter, v. 45, no. 7, July 2011, p. 7.

Christa von Hillebrandt-Andrade elected president of the Seismological Society of America

“Christa von Hillebrandt-Andrade is a well recognized expert on tsunamis and seismology,” said Mary Lou Zoback, board member of SSA and chair of the nominating committee. “Her leadership will provide SSA an opportunity to strengthen its interaction and involvement with Latin American seismologists.”

From: GeoSpectrum, Summer 2011, p.12.

Public Entity Risk Institute shifts means to the end

The Public Entity Risk Institute will soon see with new eyes. The organization, which has long provided risk management resources geared toward public entities, small businesses, and nonprofits, announced Monday that it will shift its focus to direct funding of public risk management efforts.

“This operational shift helps PERI meet its core mission to offer practical enhancement of public risk management by directing efforts and funds to exactly the level where they can be most useful,” PERI Board Chair Deb Carson stated in a [news release](#).

According to the news release, the organization’s staff and existing structure will be dismantled while the bookstore, resource library, and Web site will remain.

Natural Hazard Mitigation Association

The Natural Hazard Mitigation Association was formed in late 2008 to meet the need for a multihazard mitigation support group working across hazard categories and management methods. NHMA works for societal change by elevating the value of hazard mitigation so that natural hazards do not cause disasters, suffering, and misery for people, property, the environment, and taxpayers. The group promotes education, policies, and activities that mitigate current and future losses, costs, and human suffering unnecessarily caused by unwise development practices.

To join NHMA or for more information, please go to www.NHMA.info.

From: *Natural Hazards Observer*, v. 36, no. 1, p. 3.

Mediterranean tsunami warning system passes first test

The first test of the communication network of the United Nations-backed tsunami early warning system for the North-eastern Atlantic and the Mediterranean was carried out successfully on August 10 2011, paving the way for the establishment of regional tsunami warning centres, the UN News Centre said.

Tsunami warning focal points of 31 countries in the region took part in the test of the system, which was first established in 2005 by the Intergovernmental Oceanographic Commission (IOC) established under the UN Educational, Scientific and Cultural Organisation (UNESCO).

Full story at

[:http://sofiaecho.com/2011/08/11/1137548_mediterranean-tsunami-warning-system-passes-first-test](http://sofiaecho.com/2011/08/11/1137548_mediterranean-tsunami-warning-system-passes-first-test).

A national early warning system?

Japan's early warning system for major earthquakes and tsunamis likely saved thousands of lives when a magnitude 9.0 temblor rumbled offshore of the nation's east coast on March 11. The quake set off a 30-foot-high tsunami that inundated many coastal communities.

The nation's interconnected warning system, which links public and private infrastructure, is capable of slowing high-speed trains, stopping elevators, and delivering warning alerts to citizens through a variety of devices, including radio, tv, text messaging and loudspeakers.

Nevertheless, more than 25,000 people were killed or are missing—making it the second-worst natural disaster in the nation's history.

Like Japan, the U.S. West Coast and sections of the Midwest sit atop active seismic zones. But there are several key differences in the two industrialized nations.

Panel experts during a FEMA forum conceded that a U.S. early warning system is only in nascent stages. California is currently testing warning technology, but it's only a prototype, said David Applegate, senior science adviser for earthquake and geologic hazards for the U.S. Geological Survey. The U.S. also doesn't have an overarching national warning system for tsunamis, though Hawaii, California, Oregon, and Washington have their own, according to William Carwile, associate administrator of response and recovery at FEMA.

From: *Emergency Management*, July-August 2011, p. 14

PUBLICATIONS

Journal of Hazard Mitigation and Risk Assessment

The National Institute of Building Sciences launched the first edition of *Journal of Hazard Mitigation and Risk Assessment* with a Spring 2011 issue featuring the topic "Building to Mitigate Risk."

The journal's subtitle explains it is "an official publication of the National Institute of Building Sciences Multihazard Mitigation Committee. The message from Henry L. Green, President of the National Institute of Building Sciences (p. 5) says the Institute is committed to improving the nation's resiliency and to providing guidance on how to mitigate losses from natural and manmade disasters.

The table of contents for the first issue include articles on lessons learned from recent earthquakes, green building practices & natural hazard resistance, FEMA's updates on safe rooms, and more.

You can sign up for a free subscription at www.nibs.org.

Tsunami warning and preparedness—An assessment of the U.S. tsunami program and the nation's preparedness efforts

This 2011 report was prepared by the National Research Council, Division of Earth and Life Studies, Ocean Studies Board, Committee on the Review of the Tsunami Warning and Forecast System and Overview of the Nation's Tsunami Preparedness.

Chapters include information on the tsunami threat in the United States, aligning priorities with societal risks from tsunamis, education and preparedness of individuals, communities, and decision makers, tsunami detection and forecasting, and long-term reliability and sustainability of warning center operations. This thorough report is available online at http://www.nap.edu/openbook.php?record_id=12628&page=R1

[Editor's note: it has become a standard reference for me. It would be helpful to every emergency manager in the NTHMP, as well as coastal legislators.]

***Natural Hazards Observer*, v. 36, no. 1, September 2011**

This journal is always a source of thoughtful and thought-provoking reports. The current issue is particularly good, with more articles than I could reprint in full in *TsuInfo Alert*. Check it out online...you'll benefit from new perspectives and opinions, and you will be able to enjoy Rob Pudim's cartoons and drawings.

From:
http://www.colorado.edu/hazards/o/archives/2011/sep11_observerweb.pdf

Community Recovery from Disaster Symposium papers

Papers from the March 2011 online symposium "Community recovery from disaster" can be accessed from

<https://www.riskinstitute.org/peri/content/view/1118/5/>.

More than 400 people registered for this symposium, hosted by the Public Entity Risk Institute and moderated by EERI member Laurie Johnson. Topics included the physical dimensions of recovery, the role of community capitals in disaster recovery, economic challenges after a disaster, a comprehensive view of recovery of the whole community, and the disaster assistance framework. Participants had access to a preview of the book, *Planning for Post-Disaster Recovery: A Review of the United States Disaster Assistance Framework*, by Gavin Smith of the University of North Carolina Hazards Center, which is now available for \$49.95 from the online PERI Bookstore.

From: EERI Newsletter, v. 45, no. 8, p. 6.

Geospatial techniques in urban hazard and disaster analysis

By Pamela S. Showalter and Yongmei Lu, eds. 2010. ISBN: 978-90-481-2237-0. 452 p. \$187 (hardcover). Springer. www.springer.com

This volume is a compilation of research in the use of geographic information systems in disasters. It looks at methods for creating models for sea level rise; studying atmospheric pollution, wildfire, and food security; applying GIS to management systems in response to earthquakes; using the technologies during hurricanes; and other disaster applications. One of these studies concludes that geospatial techniques are not uniformly implemented during response and recovery to hurricane, based on an analysis of Hurricane Katrina.

The editors notes that the use of geospatial techniques in disasters has matured rapidly. As recently as 2002 "a book describing different methods applied to disaster research devoted one chapter to the use of a single type of geographic technology." And now we have this volume, with more than 450 pages, 151 illustrations and 21 chapters of the subject.

From: *Natural Hazards Observer*, v. 35, no. 6, p. 10
http://www.colorado.edu/hazards/o/archives/2011/jul11_observerweb.pdf

Integrating emergency management studies into higher education: Ideas, programs, and strategies

By Jessica A. Hubbard, editor. 2010. ISBN: 978-0-9793722-4-7. 220 p. \$45. Public Entity Risk Institute. www.riskinstitute.org.

This is the conference proceedings of the Federal Emergency Management Agency's third annual Emergency Management Higher Education Conference. It covers a wide variety of topics important to educators, including curriculum, local strategies for disaster mitigation, long-term recovery, tribal emergency management and other topics.

One chapter of this book gives a snapshot of the emergency management community, including course enrollment and employment potential for graduates of university EM programs. The outlook is optimistic: "No longer is the community will to tolerate being put in the corner as if it is an afterthought or an aside. Its growing strength, identity, and momentum are both undeniable and seemingly unstoppable."

From: *Natural Hazards Observer*, v. 35, no. 6, p. 11
http://www.colorado.edu/hazards/o/archives/2011/jul11_observerweb.pdf

Building safer communities: Risk governance, spatial planning and responses to natural hazards

By Urbano Fra Paleo, editor. 2009. ISBN: 978-1-60750-046-9. 296 p. \$196 (hardcover). IOS Press. www.iospress.com

Don't build in the floodplain. Build earthquake resistant buildings. Use your head.

Some of the simple rules of risk management are easy to outline, but hard to implement. This collection of seventeen papers from a variety of disciplines examines the issue of "spatial planning" in avoiding the accumulation of risk in the face of hazards.

Natural hazards are unavoidable, the volume says, but the accumulation of risk is not.

In the opening essay, The University of North Carolina's Philip Berke and Gavin Smith note that while "knowledge about the causes and consequences of hazards is increasing...losses continue to rise dramatically." They present five sets of choices for com-

munities to plan for mitigation to promote disaster resiliency.

This volume present a thorough, balanced approach to community planning for disasters. It also steps a little outside the boundaries of the risk realm to discuss some of the philosophical approaches to environmental risk management, the precautionary principle, and the question of the human relationship with nature inherent in planning for hazard reduction. From: *Natural Hazards Observer*, v. 35, no. 6, p. 13 http://www.colorado.edu/hazards/o/archives/2011/jul11_observerweb.pdf

The Asian tsunami: Aid and reconstruction after a disaster

By Sisisra Jayasuriya and Peter McCawley in collaboration with Bhanupong Nidhiprabha, Budy P. Resosudarmo, and Dushni Weerakoon. 2010. ISBN 978-1-84844-692-2. 273 p. \$100.53 (hardcover) Edward Elgar Publishing. www.e-elgar.com

This joint project of the Asian Development Bank Institute and Edward Elgar Publishing is based on “the idea that national researchers in Asia should be provided with an opportunity to critically examine the emergency relief, humanitarian response, and reconstruction efforts in their respective countries to the great Asian tsunami of 2004.”

An ambitious goal. The books offers a cautionary tale. “One of the main lessons of the delivery of assistance following the 2004 Asian tsunami is that much confusion and conflict is inevitable in the immediate aftermath of such situation,” the authors write. “Local emergency institutions in poor countries are almost always greatly over-stretched in crises of this kind. The international community rarely responds much better either.”

So what is one to do? “The policy implication,” the book says, “is that within the extremely limited funding available to support emergency relief measure in poor countries, much greater priority needs to be given to strengthening local preparedness rather than funding delayed responses in the aftermath of the event.”

From: *Natural Hazards Observer*, v. 36, no. 1, p. 17

Cross-training for first responders

By Gregory S. Bennett. 2010. ISBN: 978-1-4398-2653-9. 263 p. \$69.95 (hardcover). CRC Press. www.crcpress.com.

When someone says “cross-training,” we usually think about lacing up the Nikes, running a couple of miles, then hitting the weight room, maybe a little yoga thrown in. A strenuous workout to be sure, but not as tough as the cross-training program that Gregory Bennett envisions in his book. Bennett wants a cross-training program that allows emergency first

responders to talk to each other, understand each other, and be able to act effectively on the information exchanged.

The communication difficulties experienced in disasters have been well-documented. The classic example in the popular mind is the inability of New York City fire and police departments to communicate with each other on Sept. 11, 2001. But in many cases Bennett is talking about even a more basic level of communication. “Police cruisers” are pretty much the same all over the United States. Okay. How about a fire truck? A fire truck and fire engine are not the same thing. A “bus” might be a school bus, or in some jurisdictions it’s a vehicle used to transport the sick and injured.

Bennett says that on the West Coast a “tanker” is a fixed wing aircraft used to collect and drop water and retardant on wildfires. The same plane is called a “fixed wing aircraft” on the East Coast.

Bennett wants professional and volunteer first responders to get on the same page on these issues and more sophisticated ones as well. The National Incident Management System is making some strides in this direction, he says, but it will take some years before its effects are felt extensively. *Cross-training for first responders* explains the kind of training necessary to overcome the emergency response communications gap.

From: *Natural Hazards Observer*, v. 36, no. 1, p. 17

Catastrophes! Earthquakes, tsunamis, tornadoes, and other earth-shattering disasters

By Donald Prothero. 2011. ISBN: 978-0-8018-9692-7. 326 p. \$30 (hardcover). The Johns Hopkins University Press, www.press.jhu.edu

This book fits neatly under the “all-hazards” heading because it’s about, well, all hazards—except maybe epidemics. I didn’t see much about epidemics. But it has the rest of the bases covered. Prothero is an engaging writer, who frames his book in the context of geology, beginning with the contentious issue of catastrophism and uniformitarianism. They were contentious in the 18th century, anyway, and they echo some of their romance still, especially in the popular debates about evolution.

Prothero combines the anecdotal and scientific in his pursuit of knowledge about the world’s perfidy. He looks at the 1906 San Francisco earthquake (“The Birth of Modern Seismology”), the Indian Ocean tsunami of 2004, the 1902 eruption of Pele, and many other famous disasters.

He also makes a bow to the changing climate, a mention of which is essential in any modern study, whether catastrophist or uniformitarian.

One topic Prothero examines that is often omitted from books like this is a discussion of mass-ex-

inctions. Because they have so far affected mostly non-human animals, most disaster researchers don't pay much attention to extinction. Prothero casts some welcome cold water on the recent trend to blame all or most of the mass extinctions on impacts from extraterrestrial bodies.

From: *Natural Hazards Observer*, v. 36, no. 1, p. 17-18

Building community disaster resilience through private-public collaboration

By the Committee on Private-Public Sector Collaboration to Enhance Community Disaster Resilience, Geographical Science Committee, National Research Council. 2011. ISBN: 978-0-309-16263-0. 142 p. \$34.95 (softcover). National Academies Press. www.nap.edu/catalog.php?record_id=13028.

In the current climate, the public sector alone can't be expected to shoulder all the burdens in emergencies. Collaborative arrangements with the private sector are always desirable and often essential to enhance a resilient response to stress. "Collaborative arrangements emerge when key public- and private-sector actors recognize that individual and community goals cannot be effectively achieved through independent efforts alone," this report says.

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 identifies several key topics for research: why collaboration works or fails; ways of accounting for different outcomes that result from alternative partnership-building strategies; prediction; partnership legitimacy, effectiveness, mainstreaming, and institutionalization; and appropriate metrics for quantifying the costs and benefits from collaboration and resilience-building efforts.

From: *Natural Hazards Observer*, v. 36, no. 1, p. 18

WEBSITES

<http://www.ready.gov/america/getakit/tech.html>
Get Tech Ready

Twitter and text messaging can be excellent resources, but if you're not down with technology before disaster strikes, chances are you'll be out of the loop. That's why the Federal Emergency Management Agency has created this guide on the best ways to use technology in disaster. From checking your bank account to checking on your brother, this handy Web site has lots for those who are lost, and even a few things for the tech-savvy survivor.

From: *Disaster Research 573*, Sept. 8, 2011

[http://www.apctoolkits.com/vulnerablepopulation/Equity in Emergency Response](http://www.apctoolkits.com/vulnerablepopulation/Equity%20in%20Emergency%20Response)

If addressing the health needs of vulnerable populations in emergencies sometimes seems like a daunting task, never fear. Public Health—Seattle and King County has put together a powerful toolkit that can help local health departments learn to work with groups serving vulnerable communities, include at-risk people in planning, and increase preparedness. Document templates, case studies, training exercises, and a variety of other tested resources will help public health professionals get a handle on helping the entire community.

From *Disaster Research 572*, August 25, 2011

<http://www.echominnesota.org/webinar-communicating-without-english>

Communicating Without English in an Emergency

Emergency communication is difficult enough without grappling with language barriers, but what happens in communities with limited English skills? This webinar not only helps local leaders and non-profits plan for this scenario, but also has a companion planning guide and template to help them put their newly found knowledge on paper. The webinar is available for download at the Emergency and Community Health Outreach (ECHO) Minnesota Web site, along with a plethora of other great resources for bringing preparedness to immigrant communities.

From *Disaster Research 572*, August 25, 2011

<http://www.eqclearinghouse.org/2011-03-11-sendai/files/2011/03/Japan-SocSci-Rpt-hirez-rev.pdf>

The March 11, 2011, Great East Japan (Tohoku) Earthquake and Tsunami: Societal Dimensions

It's difficult to underestimate the challenges faced by Japan after an earthquake and tsunami leveled large swaths of its coast and spawned a high-level nuclear emergency. Nearly 100 days after the disaster, the Earthquake Engineering Research Institute sent an 11-person Learning from Earthquakes reconnaissance team to examine the impacts. The report details what they learned about emergency management, casualties, emergency shelter and housing, economic impacts, debris management, and recovery planning.

From *Disaster Research 572*, August 25, 2011

CONFERENCES

October 31-November 2, 2011

IRDR Conference 2011, Integrated research on disaster risk. Beijing, China

The theme for this year's conference is 'Disaster risk: Integrating science and practice.' Sessions will focus on characterization of hazards, understanding decision making, and reducing risk through "knowledge-based actions." No one discipline can address these issues, the conference materials say, so it hopes to launch an interdisciplinary approach to practical disaster reduction.

www.irdinternational.org/conference2011.php

From: *Natural Hazards Observer*, v. 36, no. 1, p. 23

November 22-24, 2011

Sumatra Tsunami Disaster and Recovery 2011 and South China Sea Tsunami Workshop
Tsunami and Disaster Mitigation Research Center
Banda Aceh, Indonesia

These workshops will present new research and practices in earthquake and tsunami disaster management. Topics include numerical simulations and tsunami models, risk mapping and evacuation routes, city planning and restoration after earthquakes and tsunamis, community-based disaster risk management, and disasters and food security.

From: *Disaster Research 573*, Sept. 8, 2011

January 17-19, 2012

International Disaster Conference
International Disaster Conference and Expo, New Orleans, Louisiana

This conference presents public- and private-sector best practices in emergency management, homeland security, and disaster preparation, response, recovery, and mitigation. Session topics include business continuity planning, national security, global emergency preparedness, and private sector emergency management resources. Independent training courses in business continuity and emergency management will also be offered.

From: *Disaster Research 573*, Sept. 8, 2011

RESEARCH GRANTS

When online is off: Communicating in disaster following the February 22, 2011 Christchurch, NZ earthquake

National Science Foundation grant #1138901. One year. Principal investigator Jeannette Sutton, University of Colorado at Colorado Springs.

The February 22, 2011 earthquake in Christchurch, New Zealand, an aftershock of a larger earthquake in September 2010, caused significant infrastructure and economic damage, and loss of life, in a modern city with similar population characteristics as U.S. metropolitan communities. In the days and weeks following the earthquake, various risk commu-

nication strategies were used to reach individuals affected by the ongoing aftershocks, including online networked communications.

This project examines the effects of reliance on online communications on individual coping ability and community recovery, and on the role of networked online communication among those directly affected by disaster. These questions will be examined through a series of focus groups and a household survey in the disaster-affected area.

The project will address the effect of networked communications, and its absence, on coping post disaster and has the potential to inform at the local, state, and national levels and to improve resiliency in U.S. communities.

www.nsf.gov/awardsearch/showAward.do?AwardNumber=1138901

From: *Natural Hazards Observer*, v. 36, no. 1, p. 20

Post-disaster structural data collection following the 11 March 2011 Tohoku, Japan tsunami

National Science Foundation grants #1138710 and #1138699. One year. Principal investigators Ian Robertson, University of Hawaii and Michael Olson, Oregon State University.

The tsunami triggered by the March 11, 2011 magnitude 9.0 earthquake off Tohoku, Japan, created widespread structural damage in cities along the Japanese coastline. Careful documentation of flow depth and structural response resulting from this tsunami will provide data that can be used to validate tsunami inundation models and corresponding methodologies for calculating structural response due to the inundation.

This research will collect time sensitive impact data in Japan from this tsunami that will soon be lost, as buildings and infrastructure in the affected areas are repaired or demolished. The study will focus on collecting detailed, localized data in several of the most severely damaged areas of the coastline in the Miyagi and Iwate prefectures, rather than a general survey of all the inundation areas, which has been undertaken by other local and international reconnaissance teams.

The reconnaissance team will collect high resolution, ground based LIDAR data. The LIDAR data will be used to generate virtual models that can be queried for measurements such as flow depths, observed maximum run-up, and scour depths at key sites. These will be complemented with manual measurements and analysis of videos and photographs. The LIDAR data will also provide detailed dimensional data for the structures to be studied.

The focus in specific areas of study will provide the data needed for validation of the tsunami inundation model. Furthermore, the structural properties

of both damaged structures and undamaged structures will be used to determine hydrostatic, hydrodynamic, and impact forces applied during the tsunami inundation. This field reconnaissance will help resolve several key questions in the tsunami design provisions regarding flow velocities and momentum of tsunami bores and/or wave surges over land and scouring, as well as gain information on overarching questions on risk-based design criteria and the ultimate capabilities of structures to resist a maximum credible tsunami. www.nsf.gov/awardsearch/showAward.do?AwardNumber=1138710

From: *Natural Hazards Observer*, v. 36, no. 1, p. 20

Disasters, resilience, and vulnerability of fishing communities in post-tsunami Japan.

National Science Foundation grant #1137856. One year. Principal investigator Bonnie McCay, Rutgers University New Brunswick.

This research will study the rebuilding efforts in Japanese coastal fishing towns damaged by the recent earthquake, tsunami, and nuclear power crisis. The focus will be on how combined natural and human disaster affect community responses. Previous research on the relationships between disaster, vulnerability, and resilience have led in different directions, depending on whether the disasters are understood as caused by human or natural agency. In these accounts, natural disasters encourage communities to work together to develop better systems in the future, while human-made problems, such as air and water pollution, disproportionately affect vulnerable communities and limit their ability to rebuild. Building upon and contributing to social scientific theories on resilience, vulnerability, and nature-culture relationships, this project will investigate the cultural and political outcomes of dual (natural and human-caused) disasters. The research will comprise historical and ethnographic fieldwork, including archival research, open-ended and semi-structured interviews, and participant observation, in two Japanese fishing towns for which the researchers have baseline data.

By addressing the responses in coastal Japan over five months shortly after the disaster, with follow-up research several months later, this project will be sensitive to any changes that may occur as time passes. It will investigate early and middle-term responses to the extraordinary disaster as a way to shed light on the complex relationships among “natural” and “human” hazards, resilience, and vulnerability, offering important lessons for researchers and policy makers.

www.nsf.gov/awardsearch/showAward.do?AwardNumber=1137856

From: *Natural Hazards Observer*, v. 36, no. 1, p. 21♦

New publication

Bulletin of the Atomic Scientists

“Fukushima: The myth of safety, the reality of geoscience,” by Johannes Noggerath, Robert J. Geller and Viacheslav K. Gusiakov

Online at: <http://bos.sagepub.com/content/67/5/37>

Material added to the NTHMP Library

Sept-Oct 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.

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Cultural and historical recovery is important to every community and country

Part 1: US, Preparedness plan

Part 2: Japan, Recovery reality

FEMA Historic Preservation Unit important during recovery from a disaster (USA)

Release Date: April 7, 2011; Release Number: 1954-009

<http://www.fema.gov/news/newsrelease.fema?id=54202>

FORT MONMOUTH, N.J. -- Historic New Jersey enjoys a wealth of important notable properties which define the cities and communities in which they reside; places that continue to play an important role in the history of America. From the 1719 Trent House, once home to the man for whom the State's capitol is named, to the Garden State's famous light-houses, each site is unique in character and age. Their well-being is important in preserving our heritage and maintaining the attraction they hold for visitors to the State.

During disaster recovery, FEMA's Environmental Planning and Historic Preservation Cadre (EHP), plays a critical role in helping FEMA applicants understand the importance of compliance with environmental and cultural regulations so they may make informed planning decisions when repairing or rebuilding a damaged historical site.

FEMA's goal is to ensure all federal environmental and cultural resource laws are identified when FEMA funding is to be made available for the restoration of historic sites. The EHP program integrates the protection and enhancement of a State's environmental, historic and cultural resources into FEMA's mission, programs and activities.

"Practical means and measures are used to protect, restore and enhance the quality of the environment, in order to avoid undesirable or unintended consequences," said Bill Vogel, FEMA Federal Coordinating Officer for FEM-1954-DR-NJ, the current disaster recovery effort in New Jersey.

EHP provides expertise and technical assistance to FEMA staff, local, State and Federal partners, and applicants who are tasked with the challenge of pre-

servicing historic, cultural and natural aspects of our national heritage. They help applicants understand what is required under the law and how best to meet these requirements.

Typical environmental and historic preservation laws and executive orders that may apply include the Clean Air Act, Clean Water Act, National Historic Preservation Act, and Floodplains, Wetlands, and Seismic Retrofit Executive Orders.

In a continual partnership with local and state governments, FEMA seeks, through funding grants, to help States recover from a presidentially declared disaster and EHP is careful to advise all applicants to recognize environmental concerns in order to avoid project delays and permit denials. Of particular interest in a state like New Jersey, that is rich in American history, is to ensure that during nicer weather, residents can continue to enjoy a walk through Washington Crossing State Park with its beautiful trails and nature center, or have an imaginary lunch with the creators of the New Jersey State seal at Indian King Tavern in Haddonfield.

FEMA's mission is to support our citizens and first responders to ensure that as a nation we work together to build, sustain, and improve our capability to prepare for, protect against, respond to, recover from, and mitigate all hazards.

Tsunami-struck museum starts recovering collection: Over 150,000 items scattered and damaged (Japan)

By Edan Corkill

Staff writer, The Japan Times Online

Wednesday, June 8, 2011

<http://search.japantimes.co.jp/cgi-bin/nn20110608fl.html>

RIKUZENTAKATA, Iwate Pref. — A pile of small display cases lies in the dirt outside the Rikuzentakata City Museum. With their glass tops smashed into a thousand shards that reflect the sunlight through a layer of dried mud, it's difficult to make out the crushed wings of the small butterflies still pinned inside.

Over two months have passed since the March 11 tsunami that leveled most of this city and completely inundated its two-story museum. For the last six weeks, a small group of city staff, volunteers and Self-Defense Force personnel have been attending to the mammoth task of recovering what is left of a collection of cultural, botanical and zoological artifacts that once numbered over 150,000 pieces.

"You should have seen it here when we arrived," said Koji Maeda, the head of the GSDF's 9th reconnaissance unit stationed in Hirosaki, Aomori Prefecture.

"Initially we were here for corpse-retrieval work, and it took several weeks just to clear enough debris so you could get close to the museum."

Miraculously, the building, which was completed in 1979, remained standing throughout the tsunami. Nevertheless, the power of the wave that hit this area — having smashed through seawalls and a 70,000-tree coastal strip of pine forest — is clear from the fact that two cars were found deep inside the building's windowless first-floor storerooms, and that its second-floor ceilings were largely ripped away.

The other, more sobering indicator of the wave's destructive force is that none of the museum's six full-time staff survived.

"Those are the insect display cases," explained an elderly man whose tired eyes were all that was visible behind his helmet and dust mask. Fumito Honda, as he soon introduced himself, is now a key figure in the attempt to save the museum's collection.

From 1999 to 2006 he served as the museum's director — and was thus responsible for creating much of what the tsunami destroyed.

"I retired five years ago," said the 72-year-old who voluntarily came to the museum site to start helping the recovery work. Surveying the wreckage around him, he continued, "I'm working here like this, but I have to keep reminding myself that it is not a dream or a hallucination. This is all real."

Honda explained that the museum's collection had been particularly significant because it was the oldest public institution of its kind in the Tohoku region, having opened initially in 1959.

It contained a wide range of artifacts, he said, from Jomon Period (10,000-300 B.C.) pottery and insect specimens to artworks such as paintings, as well as historical fishing implements that had been registered as Important Tangible Folk Cultural Properties.

As the tsunami hit the museum, all of those objects were soaked in muddy seawater, battered by rubble and debris and, in some cases it is feared, swept out to sea.

Tsunami damage at Rikuzentakata spread not just to the museum but also to the city office, which has meant that coordination of recovery efforts like those at the museum have been difficult.

On the ground, that task has fallen primarily to Honda and also a former colleague of his, Masaru Kumagai, who had recently divided his time between the Rikuzentakata City Museum and another, smaller museum also located in the city.

They are being aided by the SDF, which says it will remain on the site until the recovery work is complete, and support staff sent from other local governments in the vicinity.

Iwate Prefecture has so far chipped in by instructing its prefectural museum in Morioka to take on the task of restoring insect samples and also paper-made artifacts, such as historical documents and pressed botanical samples, which are particularly vulnerable to seawater damage.

A prefectural museum representative couldn't put a figure on the number of artifacts received there so far, although it is known that they have requested and gained the support of at least 29 other museums nationwide to hasten the restoration work.

Tsutomu Kamata, from Iwate Prefecture's lifelong learning and culture department, which oversees cultural artifacts, said that all of the items currently in the care of the prefectural museum must eventually be returned to the city of Rikuzentakata.

He added that the prefecture will liaise with the national government's Cultural Affairs Agency to restore any of the fishing implements that had been registered as important cultural properties.

The agency, for its part, says it has received requests for equipment from Iwate Prefecture, but not expertise.

"A variety of tools, such as cloths, paper, boxes and special glue has been delivered," explained Motofumi Morishita of the agency's cultural properties department.

All of the agency's support work in tsunami-affected areas, including this provision of equipment to Iwate Prefecture, has been channelled through a specially created "cultural properties rescue committee" consisting of various national associations of museums, galleries, libraries, historians and academics.

In Miyagi Prefecture, which has requested support in the form of both equipment and expertise to rescue its 10 tsunami-damaged museums, the rescue committee has arranged for teams of specialists to travel to the affected museums and recover damaged artifacts. Iwate Prefecture has the option to request similar assistance, but it has not done so to date.

Still, the funding for all work done by the rescue committee comes not from the agency but from the inevitably slim budgets of the committee's member organizations and donations received from the private sector.

The agency's lack of a budget for rescue work necessitates this circuitous funding arrangement. Morishita explained that the agency has requested that funds for such work be included in the second supplementary budget, which is expected to be compiled in summer. But, he said, "we have no idea if that request will be met."

Meanwhile, the fate of paintings held at the Rikuzentakata City Museum appears to be in the

hands of one of the rescue committee's members, the Japanese Council of Art Museums.

Important works by the likes of modernist Genichiro Inokuma (1902-1993) are presently gathering mold on the museum's battered second floor, but according to a representative from the museum council they will most likely soon be moved to a different location for emergency cleaning. Where they will go in the long term is unknown.

Aside from the paper objects that have gone to the Iwate Prefectural Museum and the artworks that will soon move elsewhere, many thousands of other objects recovered at the Rikuzentakata site are now being transported by Honda and Kumagai's team to the city's Oide Elementary School, which is located in a leafy valley about 15 km inland from the city center. The school was recently closed down due to depopulation in the region.

Dozens of large plastic trays and tubs have been set up on the grounds of the school to wash salt from the objects brought there. The objects are then hung out to dry and stored. No decision has been made on how long they will remain at the school, although it could be until the museum is eventually rebuilt — at a date also still undetermined.

Among several staff and volunteers who were unloading objects from the back of a small truck at the school was Aya Suzuki. The 22-year-old explained that although she is a native of Rikuzentakata, she was in Nara Prefecture at the time of the tsunami, attending her graduation ceremony at Tenri University.

"Before the tsunami came, I had been accepted to start work as a curator at the Rikuzentakata City Museum from April 1," she said, as she cradled a "shishimai" lion mask that had been found by the SDF on top of a collapsed building that morning.

"Come April 1 and my place of employment had been washed away," she said. Still, Suzuki's employment with the city's lifelong learning department, which oversees the museum, went ahead. In April she became the first post-tsunami — and hence the only — full-time employee of the Rikuzentakata City Museum.

"I never expected my first task would be to rescue the collection, but our predecessors invested so much energy in building up this museum. We can't let that go to waste," said Suzuki, who is now working with Honda under the direction of Kumagai.

She paused to look at the wooden lion mask, covered in dried mud and cracked in several places, and then carefully carried it inside the school.♦

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

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 in-formation. 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.

NEW Tsunami preparedness in Washington; version 1.0. 32-min. DVD.

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 effect did Japan's March 11, 2011 earthquake/tsunami have on the Antarctic?

The March 2011 earthquake and subsequent tsunami off the coast of Japan did unimaginable damage. The tsunami was several meters high, marching a long way inland, and wiped out entire towns.

It also swept out to sea, expanding across the planet. By the time it hit the Antarctic ice shelf — 13,000 km away, taking less than a day — it was well under a meter high. But water is dense (a cubic meter weighs a ton!) and that much of it hitting the ice can cause it to flex and break.

And that's precisely what happened (this link goes to photographs and a report.

To see the complete story and the amazing **NASA video** of the event, visit <http://blogs.discovermagazine.com/badastronomy/2011/08/14/a-tsunamis-icy-reach/> or NASA's press release and video: <http://www.nasa.gov/topics/earth/features/tsunami-bergs.html>

What is a megathrust earthquake?

A megathrust earthquake is a very large earthquake that occurs in a subduction zone, a region where one of the earth's tectonic plates is thrust under another. The Cascadia subduction zone is located off the west coast of North America. From mid Vancouver Island to northern California the Juan de Fuca Plate is subducting beneath the North American Plate. The two plates are continually moving towards one another, yet become "stuck" where they are in contact. Eventually the build-up of strain exceeds the friction between the two plates and a huge megathrust earthquake occurs.

Answer found at <http://earthquakescanada.nrcan.gc.ca/zones/cascadia/qa-eng.php>

What is the difference between a giant megathrust earthquake and a great megathrust earthquake?

This is a real question. Recent articles have used these distinctions, without any explanation for splitting megathrust earthquakes into two further categories. Can anyone provide an answer for the readers?

Which states and commonwealths have tsunami evacuation maps available?

Alaska, California, Guam, Hawaii, Oregon, Puerto Rico, and Washington, according to the *Tsunami Warning and Preparedness—An assessment of the U.S. tsunami program and the nation's preparedness efforts*. Check the PUBLICATIONS section of this issue for the publication's URL.

What tsunami source is the primary concern on the U.S. Atlantic coast?

Submarine slides are "considered the primary source of potential tsunamis along the U.S. Atlantic coast." The Currituck slide with an estimated volume of 165 km, is among the largest of these. Its simulated tsunamis originate with peak-to-trough amplitudes of several tens of meters. The waves crest about 6 m above sea level as they overtop the sandy barrier between the Atlantic Ocean and Currituck Sound, North Carolina.

The *Tsunami Warning and Preparedness—An assessment of the U.S. tsunami program and the nation's preparedness efforts* report goes on to say:

"How probable are these slides today? Most of the slides off the U.S. Atlantic coast occurred at least 5,000 years ago, the notable exception being Canada's Grand Banks slide, which generated a tsunami that took 28 lives in Newfoundland in 1929. The Currituck slide dates to roughly 25,000-50,000 years ago. Probabilities aside, simulating slides like Currituck requires uncertain estimates of slide size, speed, and duration, all factors in the slides' effectiveness at generating a tsunami."♦