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First tsunami warning exercise in the Pacific Ocean

A Pacific-wide tsunami exercise was held May 16-17, 2006, named Pacific Wave '06. It was conducted by the Intergovernmental Coordination Group for the Pacific Tsunami Warning and Mitigation System (ICG/PTWS). More than 30 countries of the Pacific Rim took part, including some island states in the South Pacific. The May 16 scenario was that a tsunami generated by a 9.2 magnitude earthquake near Chile sent a wave across several Pacific islands and on to New Zealand and Australia. The May 17 test began with emails and faxes; and alarms sounded in monitoring stations in the participating nations to signal a mock 8.8 magnitude earthquake off the coast of the main northern island of Luzon in the Philippines.

“The exercise will place all Pacific Basin countries into a Tsunami Warning that will require countries to practice its emergency response decision-making for the arrival of a destructive Pacific-wide tsunami upon its shores, and depending on the country, be conducted to the step just prior to public notification. The exercise will take focus on two components of the warning system: the evaluation and issuance of the warning message by tsunami warning centres, and the national and/or local response and warning dissemination mechanism once a warning is received by emergency authorities.

During the first stage, the scenario of a destructive tsunami crossing the Pacific will be simulated through communication of messages by the Pacific Tsunami Warning Center (PTWC) and other warning centres, including sub-regional centres such as the West Coast/Alaska Tsunami Warning Center (WC/ATWC) and the Japan Meteorological Agency's Northwest Pacific Tsunami Advisory Center (NWPTAC). Tsunami bulletins will be transmitted from the tsunami warning centres to 7x24 Tsunami Focal Points and/or designated national emergency authorities responsible for tsunami emergency response. A compressed exercise time schedule is planned in order to complete the drill in a timely manner that will allow maximum engagement by all stakeholders.

In the second stage, decision-making and notification down to the last stage before public notification should be simulated. This stage should be conducted the same day or within the following days and include notifications to the emergency management authorities of a single coastal community so as to sufficiently practice the end-to-end process. Countries plan to taken special care to ensure that the public is not inadvertently alarmed.” (From: ICG/PTWS, http://ioc3.unesco.org/ptws/exercise_pacific_wave_06.htm)

(continued on page 3)

TsuInfo Alert

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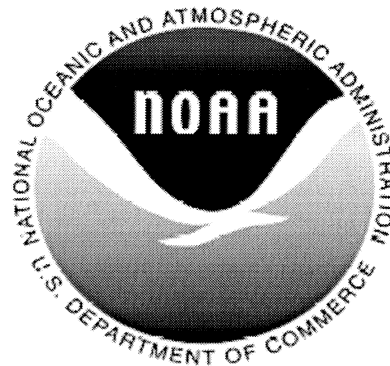
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WASHINGTON STATE DEPARTMENT OF
Natural Resources
Doug Sutherland · Commissioner of Public Lands



(continued from page 1)

A Pacific Wave '06 bulletin:

TSUNAMI EXERCISE MESSAGE NUMBER 001
PACIFIC TSUNAMI WARNING CENTER
1904 UTC 16 MAY 2006
TO: PARTICIPANTS OF PACIFIC WAVE 06 TSUNAMI EXERCISE.

ALL OTHERS PLEASE IGNORE.

SUBJECT: EXERCISE PACIFIC WAVE 06

REFER TO SCENARIO 1 - PTWC BULLETIN 1
THIS MESSAGE IS ONE OF A SERIES OF MESSAGES THAT ARE BEING ISSUED AS PART OF THE PACIFIC WAVE 06 TSUNAMI EXERCISE. THE EXERCISE IS TO TEST COMMUNICATIONS AND ACTIONS THAT WOULD BE NEEDED IN THE EVENT OF AN ACTUAL TSUNAMI. PARTICIPANTS IN THE EXERCISE SHOULD REFER TO THE PACIFIC WAVE 06 EXERCISE MANUAL. SCENARIO 1 - PTWC BULLETIN 1
THIS IS ONLY AN EXERCISE.

A team chaired by Australia coordinated the exercise and included representatives from NOAA's PTWC and West Coast/Alaska Tsunami Warning Center, the IOC Northwest Pacific Tsunami Advisory Center and the International Tsunami Information Center.

From:

<http://www.pacificislands.cc/pina/pinadefault2.php?urlpinaid=22168>

The major participants in yesterday's tests [May 16] were Chile, Peru, Ecuador, Colombia, Panama, Costa Rica, Nicaragua, El Salvador, Guatemala, Mexico, Honduras, Australia, United States, Canada and several Pacific islands. Today [May 17], the main participants included the Philippines, Indonesia, Vietnam, Cambodia, Thailand, Malaysia, Singapore, Taiwan, South Korea, Japan, Russia, China and several Pacific islands.

From:

<http://www.guardian.co.uk/tsunami/story/0,,1776974,00.html>

"Several hours before the start of the drill, a real 7.4-magnitude earthquake rocked New Zealand, and a 6.8-magnitude quake later hit western Indonesia. No damage or injuries were reported. Scientists in Hawaii went ahead with the drill because no tsunami warning had to be issued for either quake."

From:

http://seattlepi.nwsourc.com/local/6420AP_Tsunami_Drill.html

"A magnitude 5.8 earthquake disrupted a simulated tsunami warning drill Wednesday [May 17] on the remote South Pacific island country Tonga, an official said."

From:

<http://www.canada.com/topics/news/oddities/story.html?id=8fcf0e1a-ae02-46b3-8610-08366673bb19&k=19763>

A report evaluating the success of the exercise will be presented during the next IOC Executive Council meeting in late June [2006].

Additional information

[www.prh.noaa.gov/ptwc] about the Pacific Tsunami Warning Center is available at the NOAA Web site.

For more details:

► <http://usinfo.state.gov/xarchives/display.html?p=washfienglish&y=2006&m=May&x=20060519175755cmretrop0.4661676&t=livefeeds/wf-latest.html>
<http://www.zeenews.com/znnew/articles.asp?aid=295998&sid=WOR>
<http://tvnz.co.nz/view/page/411319/715985>
<http://www.upi.com/InternationalIntelligence/view.php?StoryID=20060517-104834-5704r>
http://english.people.com.cn/200605/18/eng20060518_266620.html ♦

Editor's note: Just think *tsunami* when you read *Katrina* and *hurricane*. This article applies to most if not all natural disasters.

Storm-Weary Staff Members' Emotional Health a Manager Priority

While Katrina is the most notorious storm, an onslaught of hurricanes since the summer of 2004 has impacted coastal resource managers in every state and territory from the Caribbean to Texas.

The homes and belongings of many staff members, or their immediate families, have been destroyed or severely damaged, and their lives disrupted. Coastal management office buildings have been flooded, equipment and files have been lost, and natural resources damaged.

Coastal management staff members have not been immune to the emotional toll that the repeat hurricanes and the resulting destruction have had on many Gulf Coast residents. In some cases, staff members who evacuated to other areas decided not to come back.

"You can't be surrounded by so much devastation and not be emotionally impacted," says Kerry St. Pé, program director of the Barataria-Terrebonne National Estuary Program in Louisiana. "It's taken a serious emotional toll on every coastal resident."

"I'm really concerned with our staff," says L.G. Adams, manager of the Weeks Bay Reserve in Alabama. "This past year Tropical Storm Arlene, Hurricanes Cindy,

Dennis, and then Katrina all came through our neighborhood. . . We're storm weary."

Staff members in Louisiana's Coastal Management Division headquarters have been emotionally impacted by Katrina, even though their homes and offices are located in Baton Rouge—80 miles inland from New Orleans—and damage to the area was primarily downed trees and power outages, says Jim Rives, acting administrator for the division, which is part of the Louisiana Department of Natural Resources.

"It's stressful when you don't know where your mother is, like I didn't," says Rives. Many people had evacuees staying with them and had friends and family who lost homes and belongings.

"You almost have survivor's guilt," Rives says. "You don't want to show how much it bothers you when so many are worse off than you are."

Addressing staff members' stress is a priority for many coastal managers in hurricane-prone areas.

"You've got to be patient with your staff," advises Jan Boyd, director of Coastal Ecology in the Mississippi Department of Marine Resources.

Boyd notes that Mississippi coastal program staff members are requiring additional time off, flexibility with time schedules, and even a more relaxed dress code. "I'm much more lenient," he says.

"People need a little extra consideration during these times. It's put our priorities in a different place."

Staff members at the Florida Keys National Marine Sanctuary had to evacuate, or prepare to evacuate, for Hurricanes Dennis in July, Katrina in August, Rita in September, and Wilma in October. "By the time Wilma hit us, we were already pretty tattered and our emotions were pretty raw," says Billy Causey, sanctuary manager.

Wilma did significant damage to the sanctuary and many employee homes, including flooding Causey's.

"People can be stressed emotionally and not know it," says Causey. "Some of our early healing work is to bring our team together and focus on getting our staff members' homes and personal lives back in order as quickly as possible."

Causey adds, "The big thing is to get people to talk about it and share their stories. It's important to hear what your people's greatest concerns and challenges are, and then try to get them the assistance that they need."

"Human resources are just that—human," advises Adams. "Their emotions and stress are factors that shouldn't be ignored."

From: Coastal Services, v. 9, no. 3, p. 5
<http://www.csc.noaa.gov/magazine/2006/03/> ♦

World Data Center/National Geophysical Data Center's tsunami data archive

By Paul K. Dunbar, Kathy Brantley, and Kelly Stroker

Eos (American Geophysical Union Transactions), v. 86, no. 52, p. 5

The WDC for Solid Earth Geophysics (including tsunamis) is operated by NOAA's National Geophysical Data Center (NGDC). NGDC is one of three environmental data centers within the National Environmental Satellite, Data and Information Service (NESDIS). Operating both World and National Data Centers, WDC/NGDC is now providing the long-term archive, data management, and access to national and global tsunami data for research and mitigation of tsunami hazards. Archive responsibilities include the global historic tsunami event and runup database, the bottom pressure recorder data, and access to event-specific tide-gauge data, as well as other related hazards and bathymetric data and information. The WDC/NGDC Worldwide Tsunami Database includes more than 2,400 events since 2,000 BC and more than 7,200 locations where tsunamis were observed. Times of generating earthquakes, tsunamis arrival times, travel times, first motion of the wave, and wave periods are included in the database.

The WDC/NGDC Worldwide Marine Environmental Laboratory (PMEL) developed deep ocean tsunameters for the early detection, measurement, and real-time reporting of tsunamis in the open ocean. The tsunameters were developed by PMEL's Project DART (Deep-ocean Assessment and Reporting of Tsunamis). A DART system consists of a seafloor bottom pressure recording (BPR) system capable of detecting tsunamis as small as 1 cm, and a moored surface buoy for real-time communications. An acoustic link is used to transmit data from the BPR on the seafloor to the surface buoy. The data are then relayed via a GOES satellite link to ground stations for immediate dissemination to NOAA's Tsunami Warning Centers and PMEL. These systems were deployed near regions with a history of tsunami generation, to ensure measurement of the waves as they propagate towards threatened U.S. coastal communities and to acquire data critical to real-time forecasts. Currently, there are eight BPR's located near Alaska, Hawaii, Chile, and in the equatorial Pacific.

The WDC/NGDC is now providing access to bottom pressure recorder (BPR) data from 1986 to the present. The BPR database includes pressure and temperature data from the ocean floor. All of the WDC/NGDC tsunami and significant earthquake databases are stored in a relational database management system. These data are accessible over the Web as tables, reports, interactive maps, and custom CD-ROMs. URL:
<http://www.ngdc.noaa.gov/seg/hazard/hazard.s.shtml> ♦

[California]: Committee says state's coast is vulnerable to a devastating tsunami

By Michael Picarella

Thousand Oaks Acorn

May 11, 2006

<http://www.toacorn.com/news/2006/0511/Community/024.html>

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Experts say a tsunami, a large destructive ocean wave caused by an underwater earthquake or some other movement of the earth's surface, could hit and destroy the nearby coast.

The December 2004 tsunami in Thailand devastated coastal areas, bringing worldwide attention to tidal waves. The Ventura County Sheriff's Office of Emergency Services (OES) is preparing for a tsunami in the event one hits the nearby coast.

"A statewide tsunami steering committee is chaired by the state Governor's Office of Emergencies and it consists of all 15 coastal counties and state agencies," said Dale Carnathan, a program administrator for the Ventura County Sheriff's OES.

"Here in Ventura County, (the OES) started working together to update the information and the tools that we have available locally to respond in the case of a tsunami."

More than a dozen tsunamis with waves 3 feet or higher have struck California since 1812. Six of them caused damage.

"Typically, there's a damaging tsunami in the Pacific Ocean about once every seven years," Carnathan said. "It's been a while since we've had a damaging tsunami in this area-more than 100 years. However, if you go down the coast toward Orange County, they actually took some damage from the 1964 Alaska earthquake-generated tsunami."

The areas most at risk in the area include Port Hueneme, Oxnard, Naval Base Ventura County, elements of Ventura, and the Rincon and Malibu coastlines.

"We've been represented on the statewide emergency committee for many years," Carnathan said. "And then in June of last year, (the local OES) had a countywide meeting at a single location where we brought in a number of different people from all the different jurisdictions that could be affected. And basically, we brought in all the scientists and told those jurisdictions what the risks were and used that as a stimulating event to get them to commit resources to help us put together a joint plan for the county." The Ventura County OES has been at work ever since.

"We're in the final stages of developing a plan that we'll be presenting to the public shortly," Carnathan said. "We've identified the areas at risk. We're identifying routes and tools to get people out of the areas at risk. We're identifying special needs facilities. . . . With other agencies, we're coordinating our evacuation routes so that we don't put too much of a load on any one area. We're also working with agencies to identify areas where people could be staged and then picked up by mass transit to get them out of the area. We're identifying shelter sites as well."

Carnathan said local jurisdictions would present the tsunami plans when they're available. Information will also be at www.vcsdorg/oes/.

Preparing for tsunamis isn't as difficult as it might seem, Carnathan said. First, you must determine whether you live, work or play in a danger zone. If you're within two miles of the coast, identify a location at least 100 feet above sea level to go if a tsunami strikes. Develop a family plan and assemble an emergency supply kit.

If you feel a strong earthquake when you're on the coast or learn about a tsunami watch or warning, move inland or to higher ground immediately. Stay away from the coast. Waves may continue for several hours and travel several times faster than people can walk, run or drive. ♦

REMINDER

The most overlooked or forgotten item on most disaster preparedness checklists is CASH. When disasters occur, electricity is usually affected, making ATMs, credit cards and check-verification devices unusable. In most cases, merchants will want cash. Be prepared.

Urban Risk Reduction's Role in Sustainable Development

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City and Regional Planning Department

California Polytechnic State University—San Luis Obispo

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When asked how sustainability applies to urban risk reduction, Alejandro Linayo, who teaches in a graduate disaster reduction degree program in Venezuela, said that the question needs to be reversed. In Linayo's view, it is more appropriate to ask how urban risk reduction applies to sustainability. With sustainable development being an end state that benefits society, urban risk reduction becomes a set of actions that supports sustainability. This article adopts Linayo's construct and explores urban risk reduction's potential contribution to our present understanding of sustainability. It argues that risk reduction can be an effective tool to help sustain cities and to aid positive future development. Some evidence supporting this argument will be provided here in brief case examples.

To be effective, risk reduction should be viewed holistically (by public, private, and civil society sectors) and integrated into public and private practices at all spatial and organizational levels. This is in keeping with the notion of incorporating sustainability and public risk management into comprehensive emergency management to broaden its impact and its applications to social betterment.(1)

There is ongoing discussion around the globally accepted definition of sustainability: development that meets the needs of the present without compromising the ability of future generations to meet their own needs.(2) However, an emerging consensus by European Union scholars posits that sustainable urban development has four components: ecological integrity (the ability to maintain various levels of ecological balance), equity (encompassing social and economic concerns), public participation (in the decision making process and in establishing social preference for means of improvement), and futurity (the capacity to sustain desired levels of urban development at given resource use rates over time).(3) This second model is appropriate to use here as it focuses on the city as well as the role that populations play in sustainability practices.

In practical terms, sustainability actions occur as both formal and informal processes.

Formal processes reflect institutional adoption through laws, programs, and operations, and the informal processes reflect social practice in everyday lives. An example of a formal process is

EDUPLAN hemisférico, an Organization of American States-supported hemispheric plan of action for the reduction of vulnerability to natural hazards in the education sector. The plan is divided into three areas: physical infrastructure, citizen participation, and academic aspects. Successful plan implementation means educational buildings are adequate and safe, citizens are educated and trained, and students of all ages are empowered with the knowledge to make their homes and communities safer places to live.

Sustainable development can be most beneficial in countries where large populations of urban poor are subject to high levels of vulnerability. Thus, this article has greater applicability to countries with large urban poor populations. Nevertheless, the reader should find some parallels and benefits for all countries. Using Alan Lavell's dual risk construct, we begin to understand that the poor face high levels of "everyday" risk (getting enough food, drinking water, transport to work) as well as hazards risk.(4) To provide the poor with sustainable urban development benefits, both types of risks must be addressed. Improving public health and providing low-polluting transport, for example, will improve the capacity of the poor to cope with everyday risk and to better confront hazards risk. This leads to a policy position that addresses the sustainable development equity component: the most productive way for urban risk reduction to contribute to sustainability is to address present identified risks through structural and non-structural actions while lessening vulnerability to future hazards events through other appropriate means.

Case Examples

To show the importance of participation, here are examples of risk reduction and sustainable development in practice.

In the Aguán River Valley in Honduras, communities use self-administered early warning systems to monitor river flooding. They have chosen to rely on community network building, focusing on strong horizontal relations (internal to the community) with secondary linkages to national weather information services. Responsibilities are clear and enforced by tradition and custom. River gauges are monitored by teams trained by local emergency management councils and when the water rises, signals are sent to an appointed villager who rings a bell to alert residents of the need to evacuate or take protective actions. This collective protection practice is appropriate and

sustainable and requires the local populace to adequately understand risk and its consequences.

The community of José Cecilio del Valle in San Salvador, El Salvador, an irregular settlement (occupation of nontitled land) of working poor families, is on the edge of a deep ravine and is subject to earthquakes, floods, and landslides. Since they are near the city's employment center, the people do not wish to move: a common attitude in poor countries. Collectively, the community chose to engage in risk reduction. Youth brigades are used on new construction, hazard mitigation drainage works are integrated into lot building construction, technical capacity is increased via strong ties with an international non-governmental organization, and families in extreme risk areas in the ravine are relocated to reconstituted sites on the ridge. The residents became part of the process rather than simply taking part in a process designed by others. These actions contribute to ecology integrity, equity, and safety. José Cecilio del Valle is more sustainable now as a result of these efforts.

The town of Ocotol in Nicaragua was hit hard by Hurricane Mitch in 1998. Its response was to rebuild lost housing in an area already identified in the town plan as less risk-prone. The new houses were constructed of adobe block made in a city-owned factory. The use of renewable building materials and local labor contributed to the community sustainability effort. A key success factor was the relationship that existed prior to the hurricane between the municipality and decentralized international cooperation organizations. Communication and trust had been built that supported a sustainable recovery process. The Ocotol experience is an example of renewable resource use, equity, institutional guidance for sustainable recovery, and sustainable development based on local control.

Marikina, a city near Manila in the Philippines, has adopted a sustainability approach in its Safety Plan, which is designed to make the city more secure for economic development through urban risk reduction. As the local culture does not like the word disaster, the word safety is used as a symbolic and functionally inclusive term that civil society understands and supports. In the Safety Plan, risk reduction is an objective for all municipal departments, which serves the overall objective of sustainable development in this area of high seismic and flood risks. The plan was assembled through an intensive process of citizen involvement that built awareness of risk reduction and support for the restriction of growth of irregular settlements in high-risk locations. The

Marikina case supports the United Nations' position that disaster risk management is not an independent discipline. It is multisectorial in nature, requiring support from all sectors of society.

The City of Berkeley, California, is an example of what Paul Farmer, executive director of the American Planning Association, calls "making self-interest a common interest." Berkeley has become more sustainable by investing in retrofitting urban facilities as well as private residences. The majority of the public buildings that would be needed in a disaster have been upgraded along with 65 percent of the city's individual residences. The city is flexible and creative in waiving fees, providing subsidies to those in need, and adjusting administrative procedures to promote citizen involvement and participation by low-income households. Of course, this is an expensive process, but it represents long-term support and involvement of the electorate and local government agencies in reducing risk and making the city more sustainable. As in José Cecilio del Valle, the citizens of Berkeley became part of the process, not mere participants, and this has proved to be a positive experience.

Lessons Learned

Keeping people out of harm's way is a difficult task. Urban risk reduction can play a part by adopting flexible practices and supporting the four components of sustainability: ecological integrity, equity, public participation, and futurity. Taking action to help the poor lower their everyday risk is the best form of "self-interest becoming common interest." The case examples show that it is not always laws or governments that encourage adoption of risk reduction practices. A certain level of engagement between sectors that are able and willing to take action is needed. If replicated at scales from the neighborhood to the regional, this engagement of commonly held beliefs joined by adequate resources will yield many societal benefits. Engagement becomes the thread that ties diverse stakeholders together, each accepting responsibility to use and share resources in some aspect of sustainable urban development.

(1) Britton, N.R. 1998. Safeguarding New Zealand's future: Emergency management's role in shaping the nation.

<http://unpan1.un.org/intradoc/groups/public/documents/APCITY/UNPAN019477.pdf>.

(2) Mileti, D.S. 1999. *Disasters by design*. Washington, DC: John Henry Press.

(3) Curwell, A., M. Deakin, M. Symes, eds. 2005. *Sustainable urban development: Volume 1: The framework and protocols for environmental assessment*. London: Routledge.

(4) Lavell, A. 2003. Sustainable development and risk reduction in the Lower Lempa Valley, El Salvador: Experiences with local participation. http://www.desenredando.org/public/articulos/2003/sdrrllv-sa/sdrrllv-sa_abr-24-2003.pdf.

From: Natural Hazards Observer, v. 30, no. 4, p. 9-10. Also available: <http://www.colorado.edu/hazards/o/mar06/mar06d.html> ♦

[Oregon]: Tsunami 'buddy system' introduced in Yachats

By Laura Eberly

News-Times, Newport, Oregon, Sept. 30, 2005
Reprinted with permission

As Americans join together to support fellow citizens victimized by recent disasters along the nation's southern coast, Lincoln County residents would do well to bear in mind their own geography and the very real threat that looms just off-shore. Time and again, geologists have warned it is not a question of if a tsunami will occur, it is a question of when.

Yachats resident Betty Johnston is not waiting for the next disaster before taking action to protect the lives of her family and neighbors. Spurred by events that transpired during the June 14 West Coast tsunami warning - issued after a 7.0 earthquake shook the seafloor 85 miles off the coast of Northern California - Johnston has created a system designed to ensure the evacuation of those community members who need a little help getting to safety.

Johnston is the primary care provider for her daughter, Dana, and Dana's friend Larry. Dana and Larry are developmentally disabled and live independently in their home near Johnston's residence in Yachats. Every Wednesday, the village holds tsunami evacuation drills and Johnston has practiced regularly with Dana and Larry going from their homes to the designated tsunami safety zone east of U.S. Highway 101 and up the Second Street hill.

Despite their extensive preparation, however, when the actual warning came, Johnston found they weren't as ready as she had hoped.

"I didn't even know it was happening until my son called me from Eugene," she said. "He called and said, 'Have you seen on TV that there's an evacuation?' And I said no. I thought that Dana was home with her dog and Larry was at the (Yachats) Lions Club. This was the first real

evacuation, and I was concerned whether they made it up the hill."

When Johnston and her partner, Phil Felkner, realized neither Dana nor Larry was at home, they got into their cars and began looking for the pair. "Dana was walking her dog Dolly, and I saw her in front of Clark's Market," Johnston recalled. "A friend had picked her up right in front of me and they went up Second Street, so I followed them up (in my van, although) I knew we were not supposed to take our cars up the hill."

To avoid traffic congestion, Yachats residents have been asked not to drive their vehicles during a tsunami evacuation; also, the Yachats Rural Fire Protection District must be able to evacuate its apparatus from the fire station to the safety zone of the Second Street hill.

"Eventually, Phil found Larry," Johnston continued. "They had been looking for Dana because she wasn't home, and (Dana and Larry) know to do the drill together." Phil drove Larry to the bottom of Second Street, and they walked up the hill.

"Larry should not run or walk fast, he has a slight issue with one of his lungs and gets out of breath very easily. Eventually, though, we all got up the hill," Johnston said. "The next thing I knew, two ladies brought an elderly lady to me where I was sitting in my van and said, 'Could you watch her, she's just fallen down.' She had driven halfway up Second Street and tried to get her dog out of her pickup, and she tripped on the dog's leash and hit the pavement. I said I'd be glad to watch her. She said that she didn't feel good and that she was cold, and I had a blanket in the car so I sat her down and covered her up."

After the fire department gave the all clear signal around 9:30 p.m., Johnston was unsettled by the way events had played out during what could have been a very real emergency.

"The next day I thought, you know something really needs to change. And I thought about other elderly people that I know - one lives right across the street from Dana and Larry and he's in a wheelchair; and I know a lady with a walker," she said. "And then Dana and Larry, of course, who, during a drill are perfectly fine to get up the hill, but in the real thing ... I'm not sure."

Moved to action, Johnston drafted a letter that she delivered to Yachats Mayor Sue Smith. In the letter, she recounted her experience during the tsunami evacuation warning, and suggested that primary care providers be supplied with "some kind of card posted in the car to give us permission to drive our cars to retrieve those who need help to get up the hill.

She also asked if there were some way to "identify within the city limits those people who live

alone and are elderly or developmentally disabled, like Dana and Larry, who in all probability need extra help dealing with the tsunami evacuation. Can we see to it that these people have a buddy to call, or even a couple of people who would be willing to see they get up the hill safely? A buddy system, if you will."

With Mayor Smith's support, Johnston approached Fire Chief Frankie Petrick of the Yachats Rural Fire Protection District. "I went over and talked to Frankie and she liked the idea and we started talking about how we could organize it by neighborhood," Johnston said. "The neighborhoods in Yachats are very close and they could identify those people who need help."

With Petrick on board, Johnston created the first sign prototype using a bold design of a wave and two persons walking, a graphic reminiscent of the official tsunami evacuation zone logo used by the State of Oregon. After checking that it was legal to use the design (the logo is public domain), she had several signs printed for distribution in the community.

"The idea is to have those people we identified as needing help to put this in their window, and whoever is their buddy takes it down" when the person has safely evacuated the home, Johnston said. She also created signs designed to hang on the rearview mirror of the "tsunami buddy's" vehicle "to tell firemen that we're okay to go up the hill," she said.

"The people who have any kind of disability, mental or physical, need to be helped. We're asking people, neighbors or relatives, to make sure to check on whomever they are assigned to, and if (the sign is) down, then you can go about your business," Johnston said. "After all, aren't we here to help each other? Let's get back to that."

For more information and to register with the Tsunami Buddy program in Yachats, contact Petrick at the Yachats Rural Fire Protection District, 547-3266. Organizers in other communities interested in implementing the program in their areas are encouraged to contact Johnston at 547-4934.

Petrick strongly encourages all coastal residents to have a survival kit packed and ready, and noted the Yachats Rural Fire Protection District stocks four-day survival kits available for purchase. Residents should also have an emergency plan in place that includes a way for all household members to contact one another in case of emergency (such as checking in with a relative who lives outside the area) and an established evacuation route and destination. For

more information about emergency preparedness visit www.redcross.org/preparedness.

From:

<http://www.newportnewstimes.com/articles/2005/09/30/news/news03.txt> ♦

[Betty Johnston is teaching a class; see page 16]

Can science better inform policy? Connecting scientific insights to social values for effective policy making in the wake of natural disasters, By Breena Holland, Steve Peters, Joan Ramage, and Dork Sahagian
Eos (American Geophysical Union Transactions), v. 86, no. 52, p. 33 [abstract]

Natural events such as the recent hurricanes (Katrina and Rita) that battered the U.S. Gulf coast are well known risks that have been increasing in frequency and/or intensity, exacerbated by coastal subsidence and global sea level rise. Independent of any increase in actual frequency or intensity, societal vulnerability depends on how coastal infrastructure, social, economic and political systems are designed to reduce risk. The scientific community has been notoriously inadequate in effectively communicating these risks to coastal planners and policy-makers, in part because of language barriers and differences in mindset. Scientists tend to call for protection from a broad spectrum of all known natural hazards, which is impractical given limited financial resources and political currency. These shortcomings can be addressed by connecting scientific findings to the range of values that concern policy-makers. These include economic impacts, implication for equity and the distribution of risk, impact on non-economic opportunities, relevance to individual rights, inherited vulnerabilities of voters children, and a host of other considerations outside the sphere of normal scientific endeavor. As such, it behooves the scientific community to collaborate with social scientists in finding new ways to clearly relate the physical impacts to social values. Clarification of the multiple ways in which scientific information is relevant to social values will help avoid the "sky is falling" syndrome by focusing attention on the events that have the most important societal impacts and high probabilities of occurrence. The most important cases within this sociopolitical context should thus become evident and be more easily compared with other important social issues such as crime and healthcare. In order to achieve this, it will be necessary to relate information about the quantitative impacts of natural disaster to qualitative values that matter in policy choices. In considering

the reconstruction of New Orleans, fundamental issues of economic impact, equality, equity, and opportunity remain, even while levees are being strengthened, and neighborhoods rebuilt. If scientific realities are not addressed in the context of these social and ethical dimension of formulating public policy, New Orleans will be at least as vulnerable as it was when recently devastated by Hurricane Katrina. Furthermore, heightened public interest in natural disasters that tends to follow events such as this provide an opportunity to make progress on reducing the most important environmental risks to the population by providing integrated scientific, economic, social, and ethical input into the policy-making process. ♦

Tsunami Glossary

R

Reference sea level.....The observed elevation differences between geodetic bench marks are processed through least-squares adjustments to determine orthometric heights referred to a common vertical reference surface, which is the reference sea level. In this way, height values of all bench marks in the vertical control portion of a surveying agency are made consistent and can be compared directly to determine differences of elevation between bench marks in a geodetic reference system that may not be directly connected by lines of geodetic leveling. The vertical reference surface in use in the United States, as in most parts of the world, approximates the geoid.

Regional tsunami.....A tsunami capable of destruction in a particular geographic region, generally within about 1000 km of its source. Regional tsunamis also occasionally have very limited and localized effects outside the region. Most destructive tsunami can be classified as local or regional, meaning their destructive effects are confined to coasts within a hundred km, or up to a thousand km, respectively, of the source—usually an earthquake. It follows that the majority of tsunami related casualties and property damage also come from local tsunami. Between 1975 and 1998 there have been at least eighteen in the Pacific and its adjacent seas resulting in significant casualties and/or property damage.

Regional tsunami warning.....Message issued initially by PTWC based only on seismic information to alert all participants of the

possibility of a tsunami and advise them that a tsunami investigation is underway. Those areas that are within 0 to 3 hours from the estimated time of arrival of the first wave are placed in a Tsunami Warning status. Those areas within 3 to 6 hours are placed in a Tsunami Watch status. The Warning will be followed by additional bulletins until it is either upgraded to a Pacific-wide Tsunami Warning or until it is cancelled.

Rise.....The upward change or elevation in sea level associated with a tsunami, a hurricane, a tide, or some long term climatic effect.

Run-up.....(1) Difference between the elevation of maximum tsunami penetration (inundation line) and the sea-level at the time of the tsunami attack.

(2) Elevation reached by seawater measured relative to some stated datum such as mean sea level, mean low water, sea level at the time of the tsunami attack, etc., and measured ideally at a point that is a local maximum of the horizontal inundation.

(3) In practical terms, run-up is only measured where there is a clear evidence of the inundation limit on the shore.

Run-up distribution.....Set of tsunami run-up values measured or observed along a coastline. ♦

Scandinavian paleotsunami discovered

“145 million years ago Scandinavia was hit by a tsunami, probably more intense than the one that hit Southeastern Asia in December 2004. Traces of this ancient tsunami are still left and these have been discovered by the geologists Vivi Vajda and Jane Wigforss-Lange at Lund University. The scientific results will soon be published in the journal *Progress in Natural Science*.

Vajda and Wigforss-Lange ...found a probable cause for the tsunami. Norwegian scientists had in 1996 discovered a 145 million old crater at the bottom of Barents sea, North of Scandinavia. The crater was called the Mjölfnir crater, named after the hammer which the god Thor used to fight giants with. The impact was catastrophic. It created a crater in the Mesozoic shelf of around 40 km in diameter and about 3.6 km deep and generated major shockwaves and tsunamis that travelled across the shelf.”

From:

<http://www.physorg.com/news67610144.html>

NEWS

Wayne Johnston, contributor and friend to *TsuInfo Alert*, passed away April 10, 2006 in Heidelberg, Australia. His enthusiasm and hard work will be missed. He not only contributed to tsunami awareness, but was even more active in the field of firefighting. A fitting tribute can be found at:

<http://forums.firehouse.com/showthread.php?t=81164&goto=nextoldest>. Another Memorial will soon be posted on the DGER website <http://www.dnr.wa.gov/geology/pubs/dgernews/>.

Ocean Agency Expands U.S. Tsunami Warning System: Five deep-ocean, tsunami-detection buoys installed in Atlantic Basin

By Cheryl Pellerin

Washington – To expand the U.S. tsunami warning system, the U.S. National Oceanic and Atmospheric Administration (NOAA) has installed five deep-ocean assessment and reporting of tsunami (DART) buoy stations off the U.S. East and Gulf coasts and the Caribbean. The latest buoy station, off the coast of Louisiana, joins stations off South Carolina, Florida and two off Puerto Rico.

"These buoys are a first line of defense in providing citizens of the Atlantic, Caribbean and Gulf regions with a comprehensive tsunami warning system," said NOAA Administrator Conrad Lautenbacher.

"The DART stations are an advanced technology," he added, that will help protect densely populated tourist destinations in the regions and protect their economic resources.

NOAA's Pacific Marine Environmental Laboratory (PMEL) in Seattle designed and built the DART system to provide real-time tsunami detection as waves travel across the open ocean.

Tsunami detection

The newly installed stations, called DART II, are a more robust design than previously installed stations. DART II stations are equipped with advanced two-way satellite communications that let forecasters receive and retrieve critical data, NOAA said.

The agency expects the network to total 39 DART II buoy stations by 2008 – 32 in the Pacific and seven in the Atlantic Basin.

NOAA received more than \$17 million in supplemental funding in fiscal year 2005 and

almost \$9.7 million in fiscal year 2006 to expand the U.S. tsunami warning system.

Since receiving the funding, NOAA's tsunami warning centers have expanded their services to provide tsunami watches and warnings to the entire U.S. Atlantic Coast, Gulf of Mexico, Puerto Rico, the U.S. Virgin Islands and Eastern Canada.

These regions now can receive tsunami warnings and watches through NOAA Weather Radio All Hazards and the Emergency Alert System, just as they would be notified of tornadoes, flooding or other hazards.

International technical outreach

Internationally, through the U.S. Indian Ocean Tsunami Warning System program, U.S. agencies will spend \$16.6 million over two years to help develop early warning capabilities for tsunamis and other hazards in the Indian Ocean, and support the International Oceanographic Commission in developing an international warning system for 16 countries.

Until early warning systems are complete for the Indian Ocean and the Caribbean, NOAA, along with the Japan Meteorological Agency, is providing interim warning guidance from its Pacific Tsunami Warning Center in Hawaii.

Currently, in addition to the five new DART buoys, NOAA has 11 DART buoys in the Pacific Ocean – 10 operated by NOAA, one by Chile – and the agency plans to contribute two DART buoys to the Indian Ocean early warning system.

NOAA has made designs and documentation for the deep-ocean buoys freely available on its Web site to any interested nation or company, and PMEL Director Eddie Bernard helped design a system of 23 deep-ocean buoys that could become one part of a complete Indian Ocean early warning system.

Additional information is available on the U.S. government Indian Ocean Tsunami Warning System Web site.

Tsunami ready

The DART network is just one component of a comprehensive tsunami warning system.

"We have made important strides in enhancing our communication networks so East Coast residents and visitors can receive tsunami watches and warnings," Lautenbacher said.

The work, he said, includes upgrading NOAA's network of tide stations, working to staff the tsunami warning centers around the clock, producing forecast models for at-risk communities, transferring technology from research to operations and providing public education.

NOAA's effort to help communities prepare for tsunami and other weather events, called the TsunamiReady program, is designed to educate local emergency management officials and their constituents and promote a well-designed tsunami emergency response plan for each community.

TsunamiReady promotes tsunami hazard preparedness as a collaboration among federal, state, and local emergency management agencies, and NOAA is working to transfer the program to other nations at risk.

System of systems

In President Bush's proposed 2007 budget, the administration is requesting \$21 million to strengthen the U.S. tsunami-warning program.

"Maintaining and upgrading the DART network and all components of the warning system is an ongoing effort," Lautenbacher said.

"We are already investigating new technologies to build an all hazards warning capability as part of the Global Earth Observation System of Systems [GEOSS]," he added.

The 61-nation, U.S.-led GEOSS is a system-in-development for monitoring the Earth that seeks to integrate the world's widely distributed Earth-observing networks of surface-based, airborne and space-based environmental monitoring instruments.

Such a system will help mitigate the impact of tsunami and other disasters, forecast weather months in advance and more effectively predict climate change, El Niño weather patterns, drought, malaria outbreaks and other global changes.

The intergovernmental ad hoc Group on Earth Observations has developed the framework of a 10-year GEOSS implementation plan whose work begins this year.

A map of DART locations and information on tsunami are available on the NOAA Web site.

From:

<http://usinfo.state.gov/gi/Archive/2006/Apr/18-762169.html>

For more information on the first set of Atlantic Basin buoys, see also <http://www.noaanews.noaa.gov/stories2006/s2613.htm>

Certification in disaster medicine responds to growing need

Recent events have exposed a nationwide shortage of physicians appropriately trained to respond to disasters. To address this issue, the American Board of Physician Specialists established the American Board of Disaster

Medicine to foster, coordinate, build, and facilitate partnerships between disaster medicine specialists and all levels of government and the private sector.

Physicians from a range of backgrounds are needed to enable comprehensive response when disaster strikes. The board will begin accepting applications on May 1, 2006, and plans to administer the first examination in the fall of 2006.

For more information, visit

www.abpsga.org/certification/disaster_medicine/index.html or contact William Carbone, American Association of Physician Specialists; e-mail: wcarbone@aapsga.org.

From: Natural Hazards Observer, v. 30, no. 5, p. 12

NOAA Collaborates with Australian Counterparts

The National Oceanic and Atmospheric Administration (NOAA) has signed an agreement with Australia's Bureau of Meteorology to formalize their commitment to improving meteorological and hydrological forecasting. The five-year agreement is accompanied by an implementation strategy for Australia to adopt the digital forecast process developed by NOAA's National Weather Service. A second component to the agreement is the enhancement of international tsunami warning systems. The technology exchange will help Australia and the United States support the Intergovernmental Oceanographic Commission's Indian Ocean Tsunami Warning System and accelerate Australia's capacity for planning, deploying, applying, and operationally supporting deep-ocean tsunami detection platforms, such as the U.S. Deep-Ocean Assessment and Reporting Tsunamis (DART) buoy stations. Additional cooperation will occur in the areas of warning system design and exchange of sea-level data related to these warning systems. Read the press release at www.publicaffairs.noaa.gov/releases2006/mar06/noa06-031.html.

From: Natural Hazards Observer, v. 30, no. 5, p. 9

Improving FEMA's Response Capabilities

In February, the U.S. Department of Homeland Security (DHS) announced several new measures intended to strengthen the Federal Emergency Management Agency's (FEMA) essential functions for more effective response to disasters. Areas specifically targeted for improvement include logistics, customer service and intake procedures, the debris removal process, and communications. The new measures are designed to improve DHS' ability to build integrated homeland security capabilities, eliminate unnecessary bureaucracy, serve disaster victims more effectively, and empower FEMA to act

with efficiency and urgency when fulfilling its response and recovery responsibilities.

To begin strengthening FEMA, DHS' fiscal year 2007 budget request asks for increased funding—specifically, a 10 percent increase in FEMA's budget over the budget for fiscal year 2006. The request also includes resources to upgrade FEMA's Emergency Alert System, increase procurement staff and overall capabilities, improve capital infrastructure and information technology, and strengthen overall mitigation, response, and recovery capabilities. For more information, read the fact sheet at www.dhs.gov/dhspublic/display?content=5413.

From: *Natural Hazards Observer*, v. 30, no. 5, p. 6

National Voluntary Organizations Active in Disasters (NVOADS)

By James Hill

NVOAD coordinates planning efforts by many voluntary organizations responding to disaster. Before a disaster strikes, the member organizations typically get together and provide more effective and less duplication in service. This serves as a method of convenience for volunteers from various organizations to work together in a crisis. Think of it as a one-stop shop, hub, or command center for individuals and organizations to come together and strategize for a disaster.

NVOAD uses the following concepts to serve member organizations: communication, cooperation, coordination, education, leadership development, mitigation, convening mechanisms, and outreach. NVOAD is not to be confused with a delivery service organization. It upholds the privilege of its member base to remotely provide relief and recovery services, while expecting them to do so cooperatively. NVOAD is committed to the premise of familiarization prior to having to actually respond to a natural disaster. Any organization wishing to become a member of NVOAD must fully demonstrate their capability to work within the parameters that are upheld by the member of NVOAD.

The NVOAD organization is a thirteen-member board of directors that gathers four times a year to provide guidance for the achievement of NVOAD goals. This board includes representatives of the membership and three representatives from state or U.S. Territory VOADS. Some of the current members of the board are representatives of the following organizations: American Red Cross, The Salvation Army, National Organization for Victim Assistance,

Menmonite Disaster Service, America's Second Harvest, Points in Light Foundation, United Methodist Committee on Relief.

There are various terms and principles for NVOAD Membership. The Principles of Membership include organizations that are national in scope and purpose, voluntary organizations that have voluntary memberships and constituencies that qualify under the IRS guidelines as a non-profit organization.; and active in disaster organizations that has a stated policy of commitment of resources such as personnel, funds, and equipment to meet the needs of those who are affected by disaster without discrimination. As a condition of this membership, it is a requirement to comply with Principles of Membership and agreement with the purpose of NVOAD, a willingness to participate in the commitment of resources to carry out functions of NVOAD, be represented at annual meetings and all members are expected to participate in a least one standing committee.

The National Voluntary Organization Active in Disasters is an organization that I have never been exposed to. From one perspective that is a blessing because it means that neither I nor my family has been a victim or participant in a natural disaster or catastrophe. But the other perspective is that it is unfortunate that this organization is not one that has a brand name and well recited mission statement. The planning and organization of resources is imperative to the success of relief efforts. As we have discovered from the Tsunami and Katrina relief efforts, the massive amounts of volunteers and resources are available. However, we need better management, preparedness, planning, coordination, leadership, and unity to prevail in a time of crisis. NVOAD is an important organization filled with traditional people who are similar to me and I commend them for their involvement in disaster relief efforts.

From: Crisis and Emergency Management Newsletter, v. 10, no. 2, March 2006
Institute for Crisis, Disaster, and Risk Management (The George Washington University)
http://www.seas.gwu.edu/%7Eemse232/march2006_17.html

Oahu due to get tsunami evacuation signs

According to a May 4th newspaper article, Oahu had no tsunami evacuation signs, mostly due to resistance from the tourist industry. Maui has more than 30 signs, and Hawaii has its share. Apparently the 2004 Sumatra/Indian Ocean tsunami is changing attitudes and making clear the need for evacuation signs and good warning systems. A first sign on Oahu is going up near Hanauma Bay, with approximately 130 other signs to be added at places decided

upon by both the hotel industry and the local civil defense officials.

WEBSITES

www.alnap.org/tec/

The Tsunami Evaluation Coalition (TEC) is an effort by aid agencies to improve humanitarian systems by learning from the response to the 2004 Indian Ocean tsunami. The TEC is working on five thematic evaluations: coordination; needs assessment; impact on local and national capacities; linking relief, rehabilitation, and development; and the international community's funding response, including an assessment of the role of the media. An initial report is available here.

From: *Natural Hazards Observer*, v. 30, no. 5, p. 19

www.cityofseaside.us/tsunamiinfo/

The City of Seaside, Oregon, has developed this tsunami education and information Web site to educate community members about the city's tsunami preparedness activities and to provide educational information, community and business resources, and other useful tools.

From: *Natural Hazards Observer*, v. 30, no. 5, p. 20

<http://water.usgs.gov/wid/index-hazards.html>

The U.S. Geological Survey added the following fact sheets to their series on hazards: Volcano Hazards—A National Threat, Wildfire Hazards—A National Threat, Hurricane Hazards—A National Threat, Tsunami Hazards—A National Threat, Flood Hazards—A National Threat, and Landslide Hazards—A National Threat. Other fact sheets are also available.

From: *Natural Hazards Observer*, v. 30, no. 5, p. 17

www.fema.gov/media/newhomepage.shtm.

FEMA.gov Gets Makeover. On April 6, the Federal Emergency Management Agency (FEMA) launched a redesign of its Web site FEMA.gov to better serve those who look to the site for timely and accurate emergency and disaster information. The new site has been restructured to make it easier for citizens, emergency personnel, businesses, and federal, state, and local government agencies to quickly find the information they need on the agency's disaster training, preparation, mitigation, response, and recovery efforts and services.

In developing the new site, FEMA conducted a year-long usability study of their Web

site and implemented recommendations from victims of disasters and those involved in disaster response and recovery efforts. FEMA will conduct ongoing usability testing of the site and analysis of Web metrics (including user research, customer comments, Web traffic re-ports, and the American Customer Satisfaction Index, an industry standard for measuring Web site performance over time) to continually improve the site. FEMA will listen to and work with users to ensure that the site continues to be an effective tool for disseminating information about the agency's national and regional emergency management efforts and services.

To learn more about the redevelopment of FEMA.gov, visit

www.fema.gov/media/newhomepage.shtm.

From: *Natural Hazards Observer*, v. 30, no. 5, p. 8

<http://www.sanjoseca.gov/emergencyServices/sanjoseprepared/video.htm>

This site is the (hazards and preparedness)Video Lending Library of the Office of Emergency Services, San Jose, California. Video reservations can be made at (408) 277-4595.

PUBLICATIONS

Natural Hazards Review

v. 7, no. 2, May 2006

"Natural hazards—The multihazard approach" p. 39

"The *Natural Hazards Review* promotes knowledge and technology toward the goal of reducing death and destruction due to natural disasters. Natural hazards such as earthquake, flood, and wind are generally perceived by many as quite different and unique natural phenomena, which in many ways they are. However, they are much alike in their impacts on humankind, such as casualties and the destruction of the built environment, and also in the framework for their analysis and mitigation. Whether it be an earthquake, flood, or hurricane, many of the issues of preparedness, land-use planning, regulation of the built environment, education of the public, emergency planning, and other aspects are the same or quite similar. As a result, it is being increasingly recognized that mitigation of one natural hazard in isolation is inefficient, and that an integrated multiple hazard, or *multihazard*, approach to natural disasters is required.

This Special Theme issue of the *Natural Hazards Review* is devoted to the multihazard approach, in particular as embodied in HAZUS-MH, a software program released earlier this year by the Federal Emergency Management Agency, that models wind, flood, and earthquake disasters and their effects on the built environment and society.

HAZUS is a free advanced software package that states and local communities can use for estimating losses from disasters. The earthquake version of HAZUS has been in use since 1997, and was described in detail in the November 1997 edition of *Earthquake Spectra*. With the release of HAZUS, the *Natural Hazards Review* was chosen as the venue to feature the new multihazard technology version of HAZUS. This Special Theme issue begins with an article describing the history of the development of HAZUS. The core of the issue are articles on the methodologies supporting the hurricane, flood, and earthquake models.

With this Special Theme issue of the *Natural Hazards Review*, it is the intent of the Co-Editors and the authors to disseminate information on multihazards analysis in general, and HAZUS in particular, to the academic and professional communities for the struggle against the effects of natural hazards. The Co-Editors wish to thank the Board of the Natural Hazards Review for affording an entire issue to this important topic.”

By Charles Scawthorn, Philip J. Schneider, and Barbara A. Schauer.

From: <http://scitation.aip.org/nho>

Natural Hazards: Earth's Processes as Hazards, Disasters, and Catastrophes

Authors: Edward A. Keller and Robert H. Blodgett. ISBN 0-13-030957-5. 2006. 432 pp. \$52.00. Available from Pearson Education, One Lake Street, Upper Saddle River, NJ 07458; (800) 922-0579; e-mail: he-csweb@pearsoned.com; www.prenhall.com/.

This college-level, nontechnical survey of Earth's surface processes that have direct impacts on humanity is designed to help instructors guide nonscience majors through these processes and their societal repercussions. Instructional resources include *Hazard City: Assignments in Applied Geology*, a CD-ROM that comes free with every text.

From: *Natural Hazards Observer*, v. 30, no. 5, p. 24

West Coast Tsunami Warning, June 14, 2005.

Service Assessment. 2005. 29 pp. Free. Available from the National Weather Service (NWS), Office of Climate, Water, and Weather Services, 1325 East-West Highway, Silver Spring, MD 20910; www.weather.gov/os/assessments/pdfs/WestCoastTsunamiFinal.pdf.

As the result of a June 2005 earthquake off the coast of California, a tsunami warning was issued by the West Coast and Alaska Tsunami Warning Center. Although a small tsunami was generated, it was determined to be nondestructive and the warning was cancelled. The warning prompted the successful evacuation of numerous coastal communities and beaches, created a large amount of public interest, and generated national media coverage; however, not all aspects of the warning system functioned properly. This assessment examines NWS operations and services and provides 19 recommendations for possible improvements in areas such as the systems used to disseminate information, the content of the messages, and the public response to the warning.

From: *Natural Hazards Observer*, v. 30, no 5, p. 25

Wave of Destruction: The Stories of Four Families and History's Deadliest Tsunami

Author: Erich Krauss. ISBN 1-59486-378-4. 2006. 256 pp. \$24.95. Published by Rodale, 33 East Minor Street, Emmaus, PA 18098; (610) 967-5171, (800) 914-9363; e-mail: info@rodale.com; www.rodalestore.com/.

This book tells the stories of four Thai families who escaped the 2004 Indian Ocean tsunami but not the horror that followed. It begins with a history of the village and the families and then depicts their experiences with the tsunami, from the arrival of the water to the hunt for the missing and the road to recovery.

From: *Natural Hazards Observer*, v. 30, no. 5, p. 26

Assessment of Capacity Building: Requirements for an Effective and Durable Tsunami Warning and Mitigation System in the Indian Ocean—Consolidated Report for 16 Countries Affected by the 26 December 2004 Tsunami

IOC/INF-1219. 2005. 195 pp. Available free online from UNESCO; <http://ioc3.unesco.org/indotsunami/nationalassessments.htm>.

Between May and Sept. 2005, national assessments of 16 countries in the Indian Ocean were conducted to identify capacity-building needs and support requirements for developing an Indian Ocean Tsunami Warning System. This report summarizes the results of the assessments conducted by UNESCO's Intergovernmental Oceanographic Commission, the United Nations International Strategy for Disaster Reduction, the World Meteorological Organization, and others.

From: *Natural Hazards Observer*, v. 30, no. 5, p. 26

CLASSES / WORKSHOPS

Are You Ready?

This FEMA class, taught by Yachats [Oregon] resident Betty Johnston will be held August 26, 2006, at the Yachats Common.

The "Are You Ready" program is comprised of information presented during the first three hours of the more extensive CERT (Citizens Emergency Response Team) training, a preparedness course designed "for people who want to go a step further than their families and reach out to their communities to augment the efforts of volunteer firemen, EMTs, and such," Johnston said.

She will teach from the "Are You Ready?" workbook provided by FEMA, and also share information specific to the Yachats area. "I've done a lot of research about earthquakes and tsunamis and will interject many of the facts that I have learned," she said. "Also in the class, I will go over the physical hazards of Yachats; that means what (geography) are we sitting on here, how an earthquake is going to affect it, and what other hazards may also occur - do we have landslides? Well, we could."

For more information, go to <http://www.newportnewstimes.com/articles/2006/04/26/community/community02.txt>

CONFERENCES / SYMPOSIA

June 18-21, 2006

16th World Conference on Disaster Management—Emergency Management and Business Continuity Working Together. Metro Toronto Convention Centre, Toronto, Ontario, Canada. For more information: www.wcdm.org

June 19-20, 2006

Global Amateur Radio Emergency Communications Conference (GAREC-2006). Organizer: International Amateur Radio Union. Tampere, Finland. This conference will review the latest technological and operational developments in the application of the amateur radio service to emergency communications and the cooperation with institutional partners in emergency response and disaster relief. This is a parallel event to ICEC-2006 (see previous). To learn more, e-mail hans.zimmermann@ties.itu.int; www.rientola.fi/oh3ag/garec/.

From: Natural Hazards Observer, v. 30, no. 5, p. 13

August 23-24, 2006

7th Natural Hazards Management Conference 2006. Organizer: Institute of Geological and Nuclear Sciences Limited (GNS). Christchurch, New Zealand. This conference will provide a forum to discuss the integration of hazards information into effective risk management, including best practice planning, new technologies and advances in science applications, natural hazards mitigation for industry, and creating resilient communities by integrating science into practice. The target audience is emergency managers, planners, risk assessors, asset and utility managers, and natural hazards researchers and scientists. To learn more, contact Daryl Barton, GNS Science, 1 Fairway Drive, Avalon, PO Box 30-368, Lower Hutt, New Zealand; +(04) 570 1444; e-mail: d.barton@gns.cri.nz; www.gns.cri.nz/news/conferences/.

From: Natural Hazards Observer, v. 30, no. 5, p. 14

September 6-8, 2006

8th Annual Technologies for Critical Incident Preparedness Conference and Exposition. Sponsors: U.S. Department of Homeland Security Science and Technology Directorate, U.S. Department of Justice National Institute of Justice, and U.S. Department of Defense Office of the Assistant Secretary of Defense for Homeland Defense. Atlanta, Georgia. This conference will highlight the technologies and tools currently available and being developed for the emergency responder community. It will offer opportunities for emergency responders, business and industry representatives, academics, and elected federal, state, and local stakeholders to network, exchange ideas, and address common critical incident technology and preparedness needs and solutions. To learn more, e-mail Lisa Hecker at lhecker@ctc.org; www.regonline.com/eventinfo.asp?EventId=88623.

From: Natural Hazards Observer, v. 30, no. 5, p. 14

September 17-20, 2006

Fall World 2006. Organizer: *Disaster Recovery Journal*. San Diego, California. This conference will focus on all aspects of disaster recovery, contingency planning, and business continuity. Attendees will gain knowledge and information through sessions, workshops, exercises, and networking opportunities. An exhibit hall will showcase the latest industry trends, products, and services. Among other things, attendees can participate in a real-time disaster simulation (limited to 200 participants). For more information, call (314) 894-0276 or e-mail drj@drj.com; www.drj.com/conferences/sd2006/.

From: Natural Hazards Observer, v. 30, no. 5, p. 15

November 7-10, 2006

6th Asian Seismological Commission General Assembly/Symposium on Earthquake and Tsunami Disaster Preparedness and Mitigation. Bangkok, Thailand. This event will focus on increasing understanding of the physical processes of the 2004 Indian Ocean earthquake/tsunami, sharing scientific knowledge and technology, strengthening multidisciplinary cooperation in the field of earthquake/tsunami preparedness and mitigation policy, and enhancing the observation networks and data exchanges in the Asia Pacific and Indian Ocean regions. To learn more, contact the Local Organizing Committee, Thai Meteorological Department, 4353 Sukhumvit Road, Bang Na, Bangkok 10260, Thailand; e-mail: asc2006_loc@tmd.go.th; <http://asc1996.netfirms.com/asc2006/>.

From: Natural Hazards Observer, v. 30, no. 5, p. 16

CONTRACTS AND GRANTS

Social Communication Networks for Early Warning in Disasters.

Funding Institution: National Science Foundation, \$70,789, one year. Principal Investigator(s): Malik Magdon-Ismael (Mark K. Goldberg and William A. Wallace), Rensselaer Polytechnic Institute, Computer Science Department, Lally 2nd Floor, 110 8th Street, Troy, NY 12180; (518) 276-4857; e-mail: magdon@rpi.edu.

Technology alone cannot ensure that information is delivered to all users in a timely and meaningful fashion. How information flows through a society is intertwined with the social network dynamics of the society. The purpose of this project is to gather data on how the global communication network functioned during Hurricane Katrina in terms of its use by various social groups. The research aims to provide insights into how emergency warning messages can be propagated through the social network. It will start by building an understanding of the nature of the communication network in New Orleans and the Gulf Coast and the nature of the social group structure that overlays this network.

From: Natural Hazards Observer, v. 30, no. 5, p. 21-22.

Search for an Indian Ocean Paleotsunami Record along the Andaman Coast, Thailand.

Funding Institution: National Science Foundation, \$19,475, one year. Principal Investigator(s): Brady Rhodes (Matthew Kirby), California State University, Fullerton, Department of Geological Sciences, 800 North State College, MH-341A, Fullerton, CA 92834-9480; (714) 278-2942; e-mail: brhodes@fullerton.edu.

Prior to the 2004 Indian Ocean tsunami, there was no impetus for a tsunami warning system in the Indian Ocean partly because there are very few known records of previous tsunamis in the region. Efforts to understand the future tsunami hazard depend on knowledge of the prehistoric tsunami chronology. This project aims to verify the existence of paleotsunami deposits in coastal marshes of Phuket, Thailand, and provide a preliminary Holocene depositional chronology for the Andaman region to help dispel the myth that this was a one-time event and lend momentum to tsunami hazard preparation along the densely populated and rapidly developing Andaman coast.

From: Natural Hazards Observer, v. 30, no. 5, p. 23 ♦

---Mayagüez is TsunamiReady---

U.S. Weather Service Readies Atlantic Communities for Tsunami Warning system in place, now coastal regions must prepare

By Cheryl Pellerin

Washington File Staff Writer; 15 May 2006

Washington – One month after completing the expansion of its tsunami warning system to the U.S. East and Gulf coasts and the Caribbean, the U.S. National Oceanic and Atmospheric Administration (NOAA) National Weather Service (NWS) has recognized Mayagüez as the first TsunamiReady community in the commonwealth of Puerto Rico and the Caribbean.

Mayagüez, the fifth largest city on the island, joins 28 other TsunamiReady communities in seven states. TsunamiReady is a voluntary NWS program designed to educate local emergency management officials and promote well-designed, community-specific tsunami emergency response plans.

“With our expanding tsunami observation and communications network,” said NWS Director David Johnson, “our forecasters already have the capability to monitor conditions and warn for tsunamis in the Caribbean and along the nation’s East and Gulf coasts.”

The NWS, Johnson added, has “also completed deployment of five Deep-ocean Assessment and Reporting of Tsunami DART buoy stations to help protect coastal populations in the region.”

Deep ocean tsunami reporting

The DART system is designed to provide real-time tsunami detection as waves travel across the open ocean.

The new stations are equipped with advanced two-way satellite communications that enables forecasters to receive and retrieve critical data. When the entire system of 39 buoy stations is complete in 2008, seven DARTs will be deployed in the Atlantic Ocean, Caribbean and Gulf of Mexico.

Located on the island's west coast, Mayagüez has a population of 105,000, nearly a third of whom live and work in areas considered vulnerable to a tsunami.

Of particular concern is the Puerto Rico Trench to the northwest. Highly susceptible to seismic activity, the trench is a boundary between the Caribbean, North American and South American tectonic plates.

Since 1848, eight tsunamis have originated there, causing more than 2,500 deaths. In 1918, a 7.5 magnitude earthquake in the trench resulted in a tsunami that killed 116 people in Puerto Rico.

Tsunami ready

Working closely with the NWS forecast office in San Juan and the Puerto Rico seismic network, Mayagüez completed a rigorous set of warning and evacuation criteria to meet the guidelines for TsunamiReady recognition.

"While no community can be tsunami proof, Mayagüez now has the means to minimize the threat to the public," said Bill Proenza, director of the NWS southern region.

To be recognized as TsunamiReady, a community must establish a 24-hour warning point and emergency operations center; develop multiple ways to receive tsunami warnings and alert the public, develop a formal tsunami hazard plan and conduct emergency exercises and promote public readiness through community education. "A tsunami may not strike for many generations, but then again, it could happen within a year," Proenza said. "We now look forward to expanding the program to include other coastal communities and eventually the entire island."

City officials received a recognition letter and special TsunamiReady signs in a ceremony at the municipal building in Mayagüez. The recognition will be in effect for three years before the city under-goes a renewal process.

Information about the National Weather Service and the TsunamiReady program is available at the NOAA Web site.

(The Washington File is a product of the Bureau of International Information Programs, U.S. Department of State. Web site: <http://usinfo.state.gov>)
http://usinfo.state.gov/xarchives/display.html?p=was_hfile-english&y=2006&m=May&x=200605151208451cnir_ellep6.008327e-03&t=livefeeds/wf-latest.html ♦

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Natural hazard mitigation saves lives: An independent study to assess the future savings from mitigation activities

By Meg Prior

One dollar spent on mitigation activities in the United States saves society an average of four dollars in future benefits, according to the new study published by the Multihazard Mitigation Council (MMC) of the National Institute of Building Sciences. The Congressionally mandated study, which examined the effectiveness of federal funding for mitigation projects nationwide, shows that money spent on reducing the risk of natural hazards is a sound investment. In fact, FEMA-funded grants to mitigate the effects of floods, hurricanes, tornadoes and earthquakes between 1993 and 2003 are expected to save more than 220 lives and prevent almost 4,700 injuries over 50 years. Furthermore, mitigation efforts reduce the amount of federal funds spent on disaster response and recovery and avoid decreases in post-disaster tax revenue.

The study was designed to quantify the future savings from hazard mitigation activities, defining benefits as losses to society that were avoided. Although funding was provided by FEMA, the study was conducted by more than 50 national experts independently of the agency. Two types of mitigation activities were addressed; "project mitigations" which include physical measures to avoid or reduce damage from disasters – such as elevating or relocating structures threatened by flood and strengthening structures to resist earthquakes and high winds; and "process" mitigation, which include activities that lead to policies, practices, and projects that reduce risk and loss, including educating decision-makers and fostering improvements in building codes. Experts based their conclusion that mitigation projects do indeed save more money than they cost on a cost-benefit analysis of two main components, empirical research on projects

conducted at the community level and statistical data from representative nationwide projects.

Analysis indicates that FEMA mitigation grants are cost-effective - often leading to additional non-federally funded mitigation projects, and have the greatest benefits in communities that have institutionalized hazard mitigation programs. Interviewees reported that the grants were important in reducing community risks, preventing future damage, and increasing a community's capacity to reduce loss from natural hazards, adding their belief that the grants permitted their communities to attain mitigation goals that may otherwise have fallen by the wayside. Most interviewees felt that the benefits of the grants went beyond that which could be quantitatively measured, including increased community awareness, peace of mind, and a feeling of camaraderie.

The MMC's findings conclude that mitigation is sufficiently cost-effective to warrant federal funding on an ongoing basis both before and during post-disaster recovery because the nation will always be vulnerable to natural hazards. Recommendations stress that mitigation efforts are most effective when carried out on a comprehensive, community-wide, long-term basis and highlight the need for a more systematic data collection system to capitalize on lessons learned. For more information and the full-text study visit the Multihazard Mitigation Council's website at;

<http://www.nibs.org/MMC/mmactiv5.html>

From: Crisis and Emergency Management Newsletter

http://www.seas.gwu.edu/%7Eemse232/february2006_25.html

Institute for Crisis, Disaster, and Risk Management ♦

International group says the Mediterranean area needs a tsunami warning system

May 23, 2006, Nice, France.

"The countries concerned ought to go along with us and be aware of the need for a Mediterranean warning system," said Francois Schindele, a member of an inter-governmental coordination group for such a system for the Mediterranean and Northeast Atlantic. (<http://www.zeenews.com/znnew/articles.asp?aid=297367&ssid=26&sid=ENV>)

The intergovernmental coordination group was created by UNESCO last year.

"The crux of the problem is to define the main early warning centres, of which there ought to be at least two in the Mediterranean area, and to provide funding for their permanent operation," Schindele said. (<http://www.zeenews.com/znnew/articles.asp?aid=297367&ssid=26&sid=ENV>)

**Added to the NTHMP Library
May-June 2006**

Note: These, and all our tsunami materials, are included in the online (searchable) catalog at <http://www.dnr.wa.gov/geology/washbib.htm>. Type 'tsunami' in the Subject field to get a full listing of all the tsunami reports and maps in the collection.

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Collaborating for Risk Reduction: Building GIS Partnerships for Universities and State and Local Emergency Management

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Geographic information systems (GIS) have become indispensable tools for natural hazards planning and mitigation. No other technology can match GIS for visualizing vulnerabilities, opportunities, mitigation, and disaster response strategies, yet many state and local emergency management agencies lack GIS expertise or access. Furthermore, some emergency managers may be intimidated by the technical nature of GIS or fail to see its value for their work, and GIS experts themselves may not understand how to effectively communicate the value of their technology to emergency management officials. The Federal Emergency Management Agency (FEMA) has been working to facilitate collaborative relationships among state and local agencies and institutions of higher education to make better use of GIS resources.

Several such partnerships have emerged as a direct result of the 2005 Geospatial Workshop convened by FEMA's Mitigation Division in Indianapolis, Indiana, in April 2005. The workshop brought together a range of experts from the GIS and natural hazards fields who presented compelling examples of how GIS is being used in real-

world hazards planning and mitigation. It also featured regional breakout discussions that created opportunities for state and local officials to meet GIS scholars from universities and colleges, form relationships with them, and develop joint activities. Those discussions led to the formation of a GIS consortium in Oklahoma, a regional effort in the Midwest to establish partnerships between emergency management agencies and GIS groups, and a number of other state and regional initiatives. To maintain the momentum and encourage participants to continue sharing information, Indiana University-Purdue University Indianapolis, the workshop's host, set up a dedicated listserv for the workshop attendees.

"The workshop was a great opportunity for us," says Connie Dill, state hazard mitigation officer for Oklahoma. Dill had been planning to contact the University of Oklahoma about opportunities to collaborate on GIS applications but was not sure where to begin. At the workshop's regional session she met May Yuan, director of the university's Center for Spatial Analysis, who agreed to (continued on page 27)

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From: <http://www.pmel.noaa.gov/tsunami-hazard/tsuhaz.htm>

Updated Mar. 31, 2006♦

VIDEO RESERVATIONS

To reserve tsunami videos, 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@wadnr.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 information. Narrated by Dr. Eddie Bernard, (with Japanese subtitles).

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

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

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

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. ♦

NOTE: The TsunamiReady Education CD included in the 2005 Earth Science Week kit is available for borrowing, too.

Updated Jan. 23, 2006

Infrequently Asked Questions

Compiled by Lee Walking

Who would you cast in a Tsunami mini-series?

HBO, Kudos Film and Television, and BBC Two are currently filming on location in Phuket and Khao Lake, Thailand. The two-part movie about the 2004 disaster in the Indian Ocean has the working title *Tsunami*, and stars Tim Roth (*Dark Water*), Chiwetel Ejiofor (*Dirty Pretty Things*), Sophie Okonedo (*Hotel Rwanda*), and Toni Collette (*In Her Shoes*). It is directed by Bharat Nalluri and will air later this year.

Who says religion and science don't mix?

Evangelist Pat Robertson announced, on his "The 700 Club" tv show, that God told him that the coasts of America will be struck by storms and something as bad as a tsunami in the Pacific Northwest.

Which tsunami-aid book won a prestigious award in May?

East Meets West, a glossy cook book published by Accent Press in Pembrokeshire, Wales, won the International Gourmand Cook Book Award for a book in aid of tsunami victims of the Asian tsunami.

"The book features recipes by the cream of the culinary world, including Jamie Oliver, Nigella Lawson, Keith Floyd, Gary Rhodes and many more. All profits from the book help mothers and children affected by the tsunami.

Accent founder Hazel Cushion said, "It's a special award by the jury, the most prestigious award of all, so it's a great honour and an enormous endorsement for what we were trying to achieve."

The book's authors, Barbara Jayson and Jenny de Montfort, began the fundraising project after hearing about the disaster."

From:

http://icwales.icnetwork.co.uk/0100news/0200wales/tm_objectid=17106916&method=full&siteid=50082&headline=welsh-publisher-s--tsunami-aid--cookbook-win-award-name_page.html

Has there been a tsunami in Cannes this year?

Indonesian director Garin Nugroho's *Serambi*, a low-budget drama documentary set in the Aceh province where at least 131,000 people died in the 26 December 2004 earthquake/tsunami, has been nominated for an award in the Un Certain Regard category at Cannes 2006.

"*Serambi*, a documentary film, telling a story about ordinary people in Aceh after the tsunami. It is a portrait of human struggle facing into the future, despite the heavy memories of the past.

Serambi has a very strong sense of humanity throughout this film; new friendships are formed, new tasks and activities are performed, the struggle to live and cope with life.

Serambi does not tell story about a great event, but rather, the simple human events that happened after the tsunami. Viewers are invited to experience the spiritual journeys of the characters, who are directly affected by it.

The characters in this film are representing 3 generations: The 12 year old Tari and her friends represent the children generation; Reza, Azhari and Lisa represent the searching young generation; and Usman and Jaelani represent the adult generation.

Serambi is not only a documentary film about people in Aceh after the tsunami. It is a case study."

From: http://www.festival-cannes.fr/films/fiche_film.php?langue=6002&id_film=4360363

How do terrorists exploit tsunamis to destroy Southern California?

You'll have to read Michael Crichton's newest novel, *State of Fear*, to find out.

"The eco-terrorists gain possession of the means to artificially control storms, create violent lightning bolts and cause an undersea landslide through the illegal purchase of seismic equipment and a submarine.

Their grand finale and publicity extravaganza is an attempt to produce a devastating tsunami to hit the shores of California in time for the closing session of a major international climate change conference.

State of Fear presents a persuasive message about the abuse of the biggest media and policy issue of the 21st century facing humanity: climate change.

From: <http://www.sundayindependent.co.za/index.php?fArticleId=3204850&fSecitonId=1083> ♦

(continued from page 23)

participate in a new GIS consortium with Dill's agency and other Oklahoma institutions. The group held its first meeting in August 2005 and launched a plan to use the development of the University of Oklahoma's Natural Hazard Mitigation Plan as an opportunity to build a GIS-based statewide emergency decision support system. "The university has facilities in every county in the state," explains Yuan, so while the university prepares its plan, it will be gathering and analyzing data that the state, counties, and communities can use as well. Ultimately, the plan is to create a user-friendly online tool that communities can use to run their own scenarios.

The Indianapolis workshop built on the success of a May 2004 FEMA workshop for representatives from historically black colleges and universities (HBCUs) in the mid-Atlantic region, their local communities, and their state emergency management offices. As a result of the workshop, which generated funding and training opportunities, a communications network, and enhanced awareness among the HBCUs of the need for emergency preparedness and mitigation in their own institutions, many of the participating colleges and universities have become involved in their counties' hazard mitigation plans. FEMA sponsored a similar conference for HBCUs in the southeastern United States, hosted by Florida A&M University in May 2005, which generated additional collaborative activities for HBCUs and their government partners in a region that suffered so much hurricane damage in the fall of 2004.

Unlike many conferences, where participants meet and then go back home to business as usual, the FEMA workshops focused on generating concrete activities with follow-up to track progress and ensure accountability. "This was not a once-and-done meeting," says Ladd Colston, associate vice president for commercialization and outreach at the University of Maryland, Eastern Shore, which hosted the mid-Atlantic HBCU workshop in 2004. "We proposed next steps at the workshop and called participants afterward to follow up on their progress. We wanted to keep the momentum going." Colston's team set up a listserv to keep participants informed of new opportunities, resources, and conferences, and is creating a Web site on mitigation and emergency management issues for HBCUs and emergency management agencies across the nation. After attending the 2005 HBCU workshop, many participating university officials met with their state and local

emergency managers to assess hazards and mitigation opportunities.

A Natural Alliance

Partnerships with colleges and universities allow state and local agencies to gain access to GIS expertise, technical resources, and research support. For their part, institutions of higher education can benefit from new funding opportunities, an enhanced role in their communities, and better access to data. Partnerships can leverage resources and increase the impact of efforts that otherwise would be undertaken individually. Communities that reduce their vulnerability to hazards and develop strong emergency management plans and alliances offer a safer and more secure environment for everyone.

One of the most promising efforts to bring universities and colleges together with emergency management agencies is underway in Indiana. Six of the state's universities have signed a memorandum of understanding to create an outreach network that will enhance GIS communication and data sharing among state government, political subdivisions, and the business community. The coalition intends to maintain an inventory of university faculty, skills, and research interests; promote GIS educational opportunities for students; and assist the state GIS office in collecting and distributing data from local governments.

"Universities have a long-standing commitment to serving the educational and analytical needs of communities and thus offer a logical network of content experts for providing this support," says Jan Crider, state hazard mitigation officer for the Indiana Department of Homeland Security. "Our projects with the universities in Indiana have created a way to tap into these resources to assist in mitigation planning and projects."

The coalition is coordinated by The Polis Center at Indiana University-Purdue University Indianapolis, which offers GIS education and training, outreach and user group support, and technical assistance, including development of customized applications, and undertakes special studies, such as the ongoing assessment of the earthquake risk to bridges in southwest Indiana.

GIS in Action

"Geospatial data are a cornerstone of mitigation," says Michael Buckley, deputy director of FEMA's Mitigation Division. "GIS helps communities better understand their hazards and how to deal with them." Working with univer-

sities and colleges, state and local emergency management agencies can cost-effectively identify where hazards and vulnerabilities intersect. For example, GIS tools can be used to calculate damages, economic losses, and mitigation benefits, as well as to display risk scenarios to key decision makers and the public. The following examples illustrate GIS in action: The University of New Hampshire's Complex Systems Research Center (CSRC) partnered with FEMA in 1999 to develop 10 digital flood insurance rate maps for three New Hampshire communities under FEMA's Multi-Hazard Flood Map Modernization Program. The maps support floodplain management and preparedness programs, and the new digital format makes the maps easier to obtain and use online. The project allowed CSRC to expand its expertise into new types of mapping for which it is now nationally recognized. CSRC has since been tasked with digitizing and updating an additional 151 map panels for counties in New Hampshire. For more information, visit <http://www.fema.gov/fhm/>.

The North Central Texas Council of Governments coordinates a GIS system for the Dallas/Fort Worth area that includes severe weather maps linked to population data. Emergency managers can see instantly how many people are at risk, the percentage of people living in mobile homes versus multifamily units and single-family homes, and even whether the language spoken in the area is predominantly English or Spanish. Managers can use the information to assess vulnerability and decide which workers to deploy to an affected area. For access to the maps, visit <http://www.dfwinfo.com/weather/graphicalwarnings/nwswarn.asp>.

GIS tools can also help emergency management agencies assess the results of their efforts. After a devastating tornado tore through Oklahoma in 1999, the State of Oklahoma offered a rebate program to encourage the construction of

residential safe rooms. More than 6,000 safe rooms were built through the program, all of which were geocoded and entered into a GIS database. In 2003, another powerful tornado followed nearly the same track as the earlier storm, and by superimposing the storm track on a map of the safe rooms, decision makers and residents could instantly appreciate how many lives had been saved by the program. To view the map, visit <http://www.fema.gov/mit/saferoom/map1.shtm>.

Collaboration with universities and other stakeholders can significantly reduce the cost of developing GIS databases. A group of stakeholders in north central Texas coordinated a bulk purchase of aerial photographs for the region's GIS, reducing their cost by nearly 95 percent. They also organized cooperative purchases of data sets. "The more that play, the less we pay," says John Hunt, GIS manager at the North Central Texas Council of Governments.

Taking the First Step

How do GIS partnerships begin? Communities and states can start by contacting specific faculty, offices, or the president or chancellor of institutions in their area. Colleges and universities can initiate partnerships by contacting their state or local emergency management offices. According to research by the National Academy of Public Administration, partnerships should be approached as a strategic investment. They require a lot of up-front work and resources to get started, and they must be maintained through ongoing attention and oversight, but the results are worth it. "Partnerships are a key component of mitigation," says FEMA's Buckley. "You don't have to go through the mitigation process alone."

<http://www.colorado.edu/hazards/o/jan06/jan06e.html> ♦

[Oregon] KATU tsunami series

KATU 2 (Portland, Oregon) did a series, looking at the Oregon coast's preparedness for earthquakes and tsunamis:

- Geological Time Bomb, The Science of Tsunamis
- Tsunami: The 'worst case scenario' just got worse
- Newport: A city with few resources to warn residents
- Lincoln City: Under funded and waiting for disaster
- Seaside: Effort made to protect people from Tsunami
- Astoria: Red tape entangles tsunami education effort
- Long Beach: Long way to safety from tsunami

From: http://www.katu.com/news/nw_tsunami.asp, which also has links to follow-up stories.