TsuInfo Alert

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

National Tsunami Hazard Mitigation Program

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

Contents

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REGIONAL REPORTS

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Alaska Division of Geological and Geophysical Surveys

As part of the National Tsunami Hazard Mitigation Program (NTHMP), UAGI and ADGGS are collaborating on a tsunami-inundation mapping project with funding from NOAA. *Tsunami Hazard Maps of the Kodiak Area, Alaska* (DGGS Report of Investigations 2002-1) was the first product of this effort in Alaska.

Inundation modeling has been completed for Homer and Seldovia, and maps are in preparation. In conjunction with this program, UAGI is upgrading and augmenting the seismic network with modern digital broadband seismic stations. All 21 planned sites have been installed. Other current UAGI earthquake-hazards research projects include:

• Accurate cataloging of ground-motion characteristics and spatial parameters of Alaskan earthquakes

• Crustal deformation measurements using GPS and SAR interferometry

• Cooperative project with Norway for joint seismic monitoring of the Arctic

• IRIS/PASCAL transect across the Alaska range to evaluate crust & upper mantle structure

• Modeling of three-dimensional seismic wave propagation throughout Alaska using the Arctic Regional Supercomputer (Cray)

• Study of crust and upper mantle attenuation in Alaska

• Upgrade and expansion of the Alaska seismic network through the federally funded Advanced National Seismic System (ANSS). Twenty-one new digital strong-motion instruments were installed in 2002 (10 in Fairbanks, 3 in Juneau, 3 in Valdez, 1 in Kodiak, and 4 in Anchorage).

Submitted by Rod Combellick, Alaska Division of Geological & Geophysical Surveys and Roger Hansen, University of Alaska Fairbanks.

Alaska Division of Emergency Services

The State of Alaska, Division of Emergency Services (ADES) strives to meld its mitigation, earthquake, and tsunami programs to prepare the population for future hazards. We take great pride in our partnerships with the University of Alaska Fairbanks Geophysical Institute, Alaska Department of Natural Resources Division of Geological and Geophysical Surveys, West Coast / Alaska Tsunami Warning Center, National Weather Service, National Oceanographic and Atmospheric Administration's Pacific Marine Environmental Laboratory and Tsunami Inundation Mapping Effort, Alaska Department of Transportation and Public Facilities, and Alaska's boroughs, local, and tribal governments to name a few. Very few projects would be accomplished without quality partnerships and willing participation.

ADES aggressively supports and funds the Municipality of Anchorage's (MOA) Building Safety Division's *Post- Disaster Damage Assessment Program(PDDA)*. MOA's PDDA Coordinator, Vince McCoy, organized eight Post-Disaster Damage Assessment courses resulting in an increase of 62 trained Damage Assessment evaluators State-wide. The Matanuska Valley School District increased its

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(continued from p. 1)
preparedness programs for schools by sending 62 of their maintenance personnel and day custodians to the Rapid Evaluation Program for Schools.

The Anchorage School district continued to use the same program in their school system enhancing their commitment to preparedness. McCoy also conducted courses in Critical Building and Shelter Survey, Non-Structural Hazard Reduction in Schools, Post Disaster Rapid Evaluation of Educational Facilities, and Wind and Flood Damage Assessment throughout the State. Through his efforts, the U.S. Postal Service's offices and hubs within Alaska adopted the PDDA system for its use, which will have a direct benefit to the State's ability to respond skillfully and quickly to future disaster assessment needs virtually anywhere within Alaska. This program is very effective in training people from a variety of businesses in rapid assessment of their building after a seismic event as depicted in the following comments from one of Vince's attendees: "I have attended the course three other times - twice in California and once in Idaho and without a doubt this is the best I have ever attended." It should be noted that six of The MOA's Post-Disaster Damage Assessment evaluators were used during the Denali fault earthquake to evaluate structural damage in that event. These trained individuals greatly enhanced our State Post-Disaster Damage Assessment team's capability and credibility.

Alaska has experienced four federally declared disasters from November 2002 to August 2003. One of them was the Denali 7.9 earthquake, the largest earthquake in the world for 2002. It occurred in the central interior of Alaska affecting many rural residents as well as several western communities in Washington, Oregon and California. This event created a great opportunity for DES mitigation personnel to take the "Quake Cottage" earthquake simulator and the "Earthquake Resistant Model Home" on the road to provide earthquake preparedness and mitigation outreach to some of Alaska's remote communities which experienced damage and trauma.

Additionally, DES mitigation staff made presentations to special event participants of the US Army Corps of Engineers, British Petroleum, Providence Hospital, Mt McKinley and Spenard Lions Clubs of Anchorage, AK; Kenai River Festival, Elmendorf AFB Air Show, College Gate Elementary School Safety Day; the Seward AK Elementary; Mirror Lake AK Middle Schools; and the Share Fairs, organized by the University of Alaska Fairbanks, in Soldotna, Fairbanks, and Anchorage. All of these events resulted in personal contact with approximately 7800 attendees and participants at these highly effective outreach opportunities.

The State's tsunami partnership with the National Weather Service, the West Coast / Alaska Tsunami Warning Center, and the Red Cross led to significant mitigation program results. The group conducted remote community assistance visits into Chenega and Tatitalek early in the year and assisted the Cities of Homer and Sitka, Alaska with becoming TsunamiReady, furthering preparedness initiatives for Alaska's population and its visitors.

The Tsunami Inundation Mapping project on Kodiak Island, sponsored by NOAA and State of Alaska, was completed and published mid 2002. This project provides potential tsunami mapping coverage to five at-risk communities on Kodiak Island, Alaska. Coordination with local officials helped tailor the inundation maps with information vital to their needs. These maps will assist the communities prepare for and mitigate against potential tsunamis. The Alaska Division of Geological and Geophysical Surveys produced the final maps for planning and distribution by the local government and emergency management. The Homer and Seldovia mapping project is in the interim stage of tsunami modeling with draft maps produced for interpretation between the partners in the program. The Homer/Seldovia effort should be completed early in 2004.

The City of Nome, with State of Alaska assistance, became the second city in the nation to complete a FEMA-approved Local Hazard Mitigation Plan. Mitigation planning is now one of our primary points of focus even during this hectic period recovering from our eventful disaster-filled year. All-Hazard Mitigation Plans interface with Homeland Security Plans, Emergency Operation Plans, Comprehensive Community Plans, Pre-Disaster Mitigation Program initiatives, and Hazard Mitigation Grant Program requirements to enable information sharing on hazard identification, vulnerability analysis and risk assessments. Effective coordination and partnering will greatly reduce duplication of effort benefiting each of our stakeholders and partners.
Submitted by R. Scott Simmons, Alaska Division of Emergency Services.

American Samoa Office of the Governor Territorial Emergency Management Coordinating Office

The Territory of American Samoa, a U.S. possession since April 1900, is located in the central South Pacific Ocean. The Territory is 2,300 miles southwest of Hawaii and about 1,600 miles northeast of New Zealand. Located within the Tropic of Capricorn, and 14° south of the equator, American Samoa consists of 7 islands; Tutuila, Aunu'u, Ta'u, Olosega, Ofu, Swains, and Rose Atoll. The total landmass area for the Territory is about 76 square miles. Tutuila, at 53 square miles, is the largest and oldest of the islands. It is the seat of government and business. The total population of American Samoa is 60,000 at last census. The official language is Samoan and English, the latter being secondary.

Earthquakes in American Samoa originate from the Tonga Trench (Tonga-Kermadec Trench), more than 100 miles southwest of the Samoan Islands. The Tonga Trench is a seafloor geographic and tectonic feature created by the collision of the Pacific Plate that subducts westward beneath the Australian Plate. The Pacific-Australian subduction zone is considered an area of high

seismic activity, and the collision of these two plates is a source of large but distant earthquakes felt in American Samoa. American Samoa does not have any seismic recording instruments, and is required to access seismic recordings from the Independent State of Samoa, located some 50 miles away.

The Samoan island chain was created by a 'hot spot' or soft spot in the earth's crust, which allows the escape of magma, creating submarine volcanoes that eventually form islands. The only currently active volcano in the American Samoa region is the submarine volcano Vanilulu'u. The Ofu-Olosega volcano last erupted in 1866, and the other volcanoes in the region have been silent for thousands of years. In 1995 a shallow earthquake swarm was recorded in the region of the Vanilulu'u submarine volcano. These events are precursors to potential volcanic activity and are usually not a threat to the islands in regards to earthquakes.

American Samoa is classified by FEMA as Seismic Zone 3, which means it will experience earthquake ground shaking of approximately 0.2g peak horizontal acceleration, and light-to-moderate building damage one chance in 500 per year. (10% probability of experiencing at least 0.2g every 50 years). This Seismic Zone 3 designation considers all probable earthquake sources affecting American Samoa, local and distant, and translates their effects into different estimates of ground shaking.

Submitted by Evelyn Tu'ugaolo Stevens of the Territorial Emergency Management Coordinating Office (TEMCO) within the Office of the Governor, American Samoa Government.

California Governor's Office of Emergency Services

California Governor's Office of Emergency Services (OES) conducted a number of activities in partnership with state and federal agencies during 2002-03. Activities range from funding of the California Integrated Seismic Network to preparation of materials on the nonstructural retrofit of school facilities. While budget constraints have limited flexibility, progress continues to be made in promoting hazard mitigation and in maintaining public awareness and preparedness.

Disaster Resistant California Conference

California OES, in partnership with the Collaborative for Disaster Mitigation at San Jose State University convened the third annual Disaster Resistant California (DRC) Conference in April, 2003. The annual meeting focused on multiple threats and mitigation approaches that are applicable to earthquakes, fires, floods, and weapons of mass destruction (WMD). More than 400 local and state officials attended the DRC conference.

National Tsunami Hazard Mitigation Program

Staff from OES and the California Geological Survey continue to participate in the National Tsunami Hazard Mitigation Program through the development of inundation projections for coastal communities and by providing support for development of evacuation planning.

Submitted by Dallas Jones, Director, California Governor's Office of Emergency Services.

Hawaii State Civil Defense

The State of Hawaii continues to accelerate its earthquake, tsunami and volcano preparedness and mitigation programs. The coordination of State programs was conducted through three Hawaii State Civil Defense sponsored volunteer groups—the Hawaii State Earthquake Advisory Committee, Tsunami Technical Review Committee, and Lava Flow Mitigation Technical Committee which involves Federal, State and county agencies; private sector organizations; the University of Hawaii; and the Pacific Disaster Center.

Earthquakes

• Posted a "Construction Guide on Strengthening Existing Houses in Hawaii Against Hurricanes and Earthquakes" on a state hazard mitigation website: *www.MotherNature-Hawaii.com*.

• Conducted statewide professional structural and non-structural seismic safety workshops instructed by structural engineers from the US Department of Interior, Bureau of Reclamation.

• Successfully implemented HAZUS Earthquake Loss Estimation Methodology using a newly constructed Building Inventory Database for Maui and Hawaii Counties that yield more accurate loss estimation results.

• Provided technical expertise and support for the adoption of International Building Code seismic standards in the high hazard island of Hawaii.

• Conduct an ongoing State Department of Transportation Bridge Seismic Retrofit Program that strengthens structures on the islands of Hawaii and Oahu.

Tsunamis

• Conducted "Unprecedented Local Tsunami Statewide Exercise" on April 1, 2003, to test recently revised rapid public emergency alert and coastal evacuation procedures.

• Conducted periodic exercises with Civil Defense staff on Distant Tsunami Emergency Response Procedures.

• Continuously plan and coordinate distant and local tsunami emergency response procedures with Federal, State and county government agencies.

• Successfully conducted April 2003 Tsunami Awareness Month with Media Workshop.

Volcanoes

• Published a comprehensive State of Hawaii Lava Flow Mitigation Plan.

• Successfully organized and conducted a Cities on Volcanoes 3 international conference in July 2003 at the University of Hawaii, Hilo, attended by over 300 volcanologists, emergency managers, public officials, and social scientists.

The Federal Emergency Management Agency (FEMA) and the National Oceanic and Atmospheric Administration (NOAA) National Tsunami Hazard Mitigation Program fund the State of Hawaii's Earthquake-Tsunami-Volcano Programs.
Submitted by Brian S. Yanagi, Hawaii State Civil Defense.

Department of Geology and Mineral Industries and Oregon Emergency Management

Earthquakes

OEM coordinated and conducted Quakex 2003, a statewide 9.0 Cascadia Subduction Zone earthquake and tsunami exercise in April, 2003. Over 100 Federal, State and local agencies, non-profits and businesses participated. An earthquake/tsunami forum series for businesses was held at Chamber of Commerce luncheons in Newport. It included science, vulnerability, and mitigation components. Oregon voters passed two ballot measures that amend the Oregon constitution and authorize the state to issue general obligation bonds for seismic rehabilitation of public education and emergency service buildings. The Oregon Seismic Safety Policy Advisory Commission (OSSPAC) is considering setting up an interim task force to develop strategies to obtain funding for the general obligation bonds. The Department of Geology and Mineral Industries (DOGAMI) is working with higher education to determine the vulnerability of university buildings on seven state university campuses. DOGAMI completed Clackamas County's hazard mapping and HAZUS analysis projects. An additional accelerometer was tied to the University of Washington network. DOGAMI disseminated information from the American Society of Civil Engineers (ASCE) Lifeline damage reconnaissance of the Algerian earthquake of May 2003. Partners for Loss Prevention completed a nonstructural retrofit of a day care center in Gladstone in coordination with OEM and Clackamas County

Tsunamis

A detailed inundation map was completed for Waldport. Standardized tsunami evacuation map brochures completed in previous years were posted on the DOGAMI website: *http://sarvis.dogami.state.or.us/earthquakes/Coastal/Tsubrochures.htm.* New tsunami evacuation map brochures were completed for Netarts/Oceanside, Manzanita/ Nehalem, Gleneden Beach/Lincoln Beach and Bandon. Large format "entering" and "leaving tsunami hazard zone" signs were installed on Highway 101 in three localities on the southern Oregon coast. An application was submitted to the Travel Information Council's Historic and Geologic Marker Program for installation of a native legend/tsunami interpretive sign for Siletz Bay. The sign design has been completed and shows a dramatic scene of native people trying to escape the Cascadia tsunami of 1700. Efforts are underway to conduct a tsunami evacuation time study in Seaside. A bill (Senate Bill 650) was introduced in the Oregon legislature that would require all lodging facilities to post tsunami information. The bill was passed on in March, 2003 to the State Senate Ways and Means Committee with a recommendation to pass it, but no action has been taken. For the 2003 WSSPC conference, OEM organized the tsunami field trip and the TsunamiReady breakout session and DOGAMI organized the Portland Walking Tour. A number of educational guides have been completed and are in the process of being released as publications. A lodging facility evacuation and response guide was finished. A guide for installation of tsunami warning and evacuation signs is completed. Also completed was a guide explaining the procedures for compliance with Oregon Senate Bill 379. Senate Bill 379 was passed in 1995 and restricts new construction of critical and essential facilities in the officially designated tsunami inundation zone. DOGAMI recently posted on its website: *http://sarvis.dogami.state.or.us/earthquakes/Coastal/Tsubrochures.htm*, maps of the official tsunami inundation zone for Senate Bill 379. These maps cover the entire Oregon coastline.
Submitted by Mark Darienzo, Oregon Emergency Management.

Washington Military Department Emergency Management Division (EMD) and Washington Department of Natural Resources, Division of Geology and Earth Resources (DGER)

Washington State continues to focus on reducing the impact of earthquakes and other geologic hazards by providing public education and the necessary tools for communities to become more disaster resistant. Examples of the Program's activities include the following accomplishments in Federal Fiscal Year 2003:

*The Emergency Management Council's (EMC) Seismic Safety Committee (SSC) reviewed and updated "*A Policy Plan for Improving Earthquake Safety in Washington - Fulfilling our Responsibilities*", dated December 1, 1991. The draft plan gives current policy recommendations based on the current seismic hazard assessment of the state and will be published later in 2003. The policy recommendations are being reviewed and a strategy developed to identify various approaches for implementing the recommendations. *The Washington State 2003 Legislature adopted the International Building Code (IBC) series which will go into effect in July 2004.

*The Hazard Mitigation Grant Program (HMGP) from the Nisqually Earthquake (FEMA-1361) has funded 25 projects around the State. These projects include seismically retrofitting several fire stations, schools, water district storage systems, major bridges, and low-income homes.

*Additionally, 21 grants were provided to public entities around the state to develop and adopt natural hazard mitigation plans in accordance with Section 322 of the Disaster Mitigation Act of 2000.

*DGER is developing a statewide liquefaction susceptibility and NEHRP soil map that is scheduled to be published in September 2004.

*EMD recognized the need to disseminate time-critical hazard information on natural and man-made hazards to the public on beaches and in high traffic areas. With the help of state contractors we developed a new notification system that is supported by the NOAA Weather Radio, with the first prototype being installed July 2, 2003 in Ocean Shores, Washington. A public education program also was developed to improve the impacted communities' understanding of the tsunami hazard, the warning system and actions they should take if a tsunami occurs.

*We continued the collaborative effort with FEMA Region X to teach HAZUS locally to the public and private sectors. HAZUS courses were followed up with one-on-one training within the local jurisdiction to ensure that HAZUS-99 was correctly used. Washington State, Whatcom County and the City of Bellevue participated in the beta test of HAZUS-MH. Washington began working with FEMA HQ & FEMA Region X on implementation of HAZUS-MH. The Washington and Oregon HAZUS Users Groups met jointly in October 2003.

*In the spirit of complying with the DMA 2000 and Washington Growth Management Act, a Puget Sound Tsunami Sources Workshop was organized by NOAA's TIME Center, the USGS, EMD and DGER. The purpose of this workshop was to develop quantitative descriptions of potential tsunami sources suitable for Puget Sound tsunami inundation modeling and develop recommendations for improving the scientific basis for source specification and tsunami modeling. The publication is presently in press and will be available in September 2003 from EMD or NOAA/PMEL.

*DGER has also published tsunami inundation maps for Elliot Bay, Seattle, Neah Bay and La Push, Washington.

*April is designated "Disaster Preparedness Month" in Washington State. The theme of the campaign is "Prepare Because You Care." Local jurisdictions, state agencies, schools, businesses, and the public receive distributed materials. A significant activity is a statewide earthquake "Drop, Cover and Hold" drill with over a million citizens participating.

*In partnership with the National Tsunami Hazard Mitigation Program, EMD, DGER and California OES sponsored a workshop to investigate whether building designs were available to adequately address both high seismic loading (Zone 4 or equivalent in the IBC) and a tsunami inundation area. Recommendations from this workshop will lead to an RFP for developing guidance for retrofitting buildings to withstand both the earthquake and tsunami and be available for vertical evacuation of people.

Submitted by George Crawford, Washington Military Department Emergency Management Division (EMD) and Tim Walsh, Washington Department of Natural Resources Division of Geology and Earth Resources (DGER).♦

Alaska Earthquake March 27, 1964. Barge, 60 feet long and 25 feet wide, was broken loose from its mooring by a violent local wave in Port Nellie Juan, turned upside down, and deposited among the trees 200 feet from the shoreline about 30 feet above mean lower low water. Photo by G. Plafker, 1964. Figure 16, U.S. Geological Survey Professional Paper 542-G. Professional Paper-0542
Digital File:ake00003 From: http://137.227.241.37/cgi-bin/libcginw.cgi?SAME=1001Alaska+Earthquake+m%40Alaska+Earthquake+1964%40

The Difference Between Cats and Dogs: Considering the Social Cultural Dimensions of Communicating

by Suzanne Frew, The Frew Group, Oakland, California

Originally printed in Natural Hazards Observer, v. 28, no. 5, p. 10-11
(online: http://www.colorado.edu/hazards/o/may04/)
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"This is Annie, our kitty," I nervously tried to explain to Christina, my newly adopted 27-month-old daughter, shortly after we returned from Russia last year. Over the next few weeks, David, my husband, and I worked hard to teach her the differences between Annie, our high-strung Burmese cat, and Sonya, the big, lumbering good-natured dog next door. One day after sharing her sippy cup with Sonya she raced back to our house, found our shy feline family member cowering in a chair and began shoving her drinking cup into Annie's tiny mouth, now barely visible beneath the terrified yellow eyes. "No, honey!" I cried, pulling her away as Annie's claws sprang into defense.

No matter how many times we had softly patted the cat and spoke or signed "gentle, gentle," clearly, neither our limited verbal communication skills nor our sign language were successfully getting the species lesson across. Then it dawned on me. Christina's world had been limited to living only with the other children and caretakers within the walls of her Russian orphanage. We were focused on cats and dogs. She didn't understand the simple concept of animal.

Re-Examining Community

How often do we try to communicate risk and loss prevention messages to an audience that doesn't understand our frame of reference? How often do we assume a shared perception of life, a shared world view, or the same religious context when we talk about why a river floods, the earth shakes, houses fall down, or people die from natural, technological, and human-caused disasters? The perceptions of risk of a 20-year-old atheist Angelo shopkeeper are most likely quite different from those of a 30-year-old devout Catholic Latino social worker, a 40-year-old Indian Hindu computer programmer, a 50-year-old Chinese Buddhist homeowner, or a 60-year-old Muslim grandfather, recently relocated from Lebanon to live with his beloved family. Each of these individuals holds equally important perspectives about culture, community, family, spiritual realities, life, and openness to lifestyle or environmental change, and yet all of them together can comprise what disaster management professionals often simply refer to as an urban "community."

In order to effectively communicate the disaster risk prior to an event, or help in recovery afterwards, the characteristics and specific needs of the world's richly diverse local populations-the communities within a community-need to be thoroughly addressed.

Unfortunately, due to time, money, agency protocols, or lack of understanding of the critical role culture plays in perception and action, most disaster risk communicators utilize a generic "one message fits all" outreach approach. In doing so, critical social and cultural identities-invalu-able clues to furthering the success of the risk reduction and recovery outreach effort-are lost. As a result, risk messages are not heard, or if heard, not believed or personalized, which leads to actions not being taken, losses incurring, and recovery being less effective or timely than it could have been.

Turning Data into Intelligence

Fighting fierce competition presented by other message campaigns and by life in general is difficult. This challenge is particularly formidable if the desire is to create a sustained communication campaign, not just a one-shot message. Researchers and practitioners alike often correctly identify risk reduction problems. Unfortunately, the messages addressing these issues are created and expressed in their most raw, fundamental form, and often reflect the culture and psychology of the creators, not the target audiences.

This transfer of information, knowledge, or research is conducted without considering how the message will be heard, understood, or applied by those to whom it is directed. When data are transferred without being made into usable intelligence, the message is inevitably lost. The missing step is the act of incorporating the psychology and conditions of the target community and the uniqueness of their complex decision-making process into message creation. When we as practitioners and/or researchers ignore the ever-shifting social landscape, most risk communication efforts are unsuccessful, or at best, unsustainable.

This common disconnect takes place in the most advanced American communities as well those around the world. These socio-cultural challenges are particularly difficult in areas such as Southeast Asia, the most disaster prone region of the world. Unlike South or Central America, Southeast Asia does not share a single landmass, language, or culture. Differences in such things as core religious philosophies and cultural traditions impact the ability to create and share a common risk framework. The ability to efficiently expedite important new risk reduction assessments, technologies, and analytical applications is hampered by these differences, which also stand in the way of moving data application into community implementation.

Information, particularly if somewhat boring and ho-hum (which science and mitigation can sometimes be as compared to many "sexier" media-intensive issues), needs to be placed into a context that makes sense to the recipient. The social, political, economic, and cultural landscape of our individual audiences needs to be the basic

platform from which we skillfully craft relevant campaign strategies and messages.

By including the softer sciences in risk communications, ones that address the theoretical underpinnings of cross cultural communications, honor multiple world views, and examine reasons for social vulnerability, a more effective, holistic approach can be taken to reach those most at risk.

Crafting New Approaches

Three particularly memorable experiences during my nine years as a Public Information Officer/Mitigation Education Outreach Coordinator for FEMA confirm the need for such crafted approaches: first, working in the Federated States of Micronesia in the Western Pacific Ocean where traditional U.S. mainland outreach approaches and distribution networks weren't practical; second, working with the Navajo where symbols were most readily accepted by the elders; and third, in the Northridge Earthquake recovery, where we engaged with many diverse communities within the Los Angeles area "community." In each of these field experiences, we took risks, stumbled a bit, and eventually embraced the uniqueness of local populations through cultural attentiveness, research, and non-traditional approaches.

The identifiable roles in disaster information and risk communications are often closely linked (e.g., risk communications, community outreach, education, training, public awareness, and public information). While each term has different meanings and interpretations, all of them share a common goal of informing a target audience. Perhaps there is wisdom to be shared among these roles and from those of other industries as well.

In my recent work with emergency management initiatives in Asia, I have embraced an approach well utilized in health care and advertising-social marketing. Consider an applicable definition of social marketing for our industry: the process through which we market the risk communications message to our target audience by learning their cultural identifiers and crafting a customized outreach approach and message to address their uniqueness. As in traditional social marketing, by doing our homework, being other-oriented, addressing cultural indicators in the assessment stage, and risking non-traditional approaches, we can establish a communications framework that leads to creative, more personalized, and successful outreach opportunities.

Hopefully, we can all learn from our experiences. My most insightful one was right at home. Now, over a year later, Christina's favorite toys have turned out to be her stuffed animals, several large and small bears, two dogs, a unicorn, and a Ms. Kitty (sadly, the real kitty died), and her mommy, a more enlightened, if not a bit more tired, cross-cultural communicator.♦

NSF Caribbean Tsunami Workshop

March 30-31, 2004, Puerto Rico

The Puerto Rico Tsunami Warning and Mitigation Program

Introduction

Lander et al. (2002) reported that since 1498 there have been 91 “tsunamis” in the Caribbean region. Among them, Lander et al. has verified that twenty-seven are true, verifiable tsunamis and additional nine wave events are considered to be very likely true tsunamis. In fact, in the Caribbean Sea region we have all of the potential tsunami-generating sources: submarine earthquakes, subaerial or submarine landslides, and underwater explosions. According to Jansma and Mattioli (2003), Puerto Rico and the northern Virgin Islands sit within a broad zone of deformation between two larger plates: the North American to the north and the Caribbean to the south. This separate microplate moves approximately 15 mm/yr relative to North America and 3 mm/yr relative to the Caribbean. This means that offshore faults along which earthquakes can occur must separate Puerto Rico from both the North American and Caribbean plates. The landslide-tsunami threat for the island comes from the existence of the Puerto Rico Trench just north of the island, along which there is evidence of a large slump, with a potential volume of approximately 900-1500 km3 (Schwab et al., 1993; Grindlay, 1998) and many other smaller ones (ten Brink and Smith, 2003). Finally, the underwater explosion tsunami threat comes from the presence of an active underwater volcano, called Kick’em Jenny, which lies at the southeastern Caribbean just north of the island of Grenada.

NOTE: Some of the references given in this summary can be found on this WEB page.

It is not strange then that the northeastern corner of the Caribbean, the region encompassing the islands of Hispaniola, Puerto Rico, and the United States and British Virgin Islands, has experienced three destructive earthquake tsunamis in the last 136 years: 1867, 1918, and 1946. All three tsunamis affected the island of Puerto Rico, with the one in 1918 doing great damage along the west coast of the island (Mercado and McCann, 1998). This “forgotten hazard” has led state and federal agencies to sponsor a series of workshops and projects with the purpose of evaluating the magnitude of this threat. The University of Puerto Rico Sea Grant College Program sponsored a Caribbean Tsunami Workshop in 1997 and sponsored, and co-sponsored, a series of studies (McCann and Mercado, 1997; McCann, 1998; Grindlay, 1998; Mercado, 2001; Lynett and Liu, 2002; Mercado, 2002) that set the stage for the Puerto Rico Tsunami Warning and Mitigation Program (PRTWMP).

The two and a half years long PRTWMP was funded by the USA Federal Emergency Management Agency and the University of Puerto Rico. It consisted of six tasks: 1) preparation of tsunami flood maps for the whole island; 2) education about this "forgotten hazard" in the Caribbean (including a video, tsunami drills at two public schools, workshops and the installation of tsunami warning signs along beaches); 3) local (Puerto Rico) and regional (Caribbean) seismic wave form analysis for rapid determination of earthquake source parameters; 4) development of a tsunami warning and advisories protocol for the

Caribbean region; 5) preparation of a PC-Windows based Atlantic and Caribbean Historical Tsunami Database; and 6) participation in meetings of the USA National Tsunami Hazard Mitigation Program.

It is the purpose of this site to summarize the most important results from each task.
From: http://poseidon.uprm.edu/welcome.html

Part of the PRTWMP team. From left to right, Prof. Aurelio Mercado, Mr. Harry Justiniano, Dr. Havidán Rodríguez, Mrs. Maritza Pagán and Mrs. Christa von Hillebrandt. Team members not shown include Dr. Victor Huérfano and Dr. Carlos Mendoza.♦

Tsunami Warning Services in the Australian Region
1998 press release from the
Commonwealth Bureau of Meteorology
From: http://www.bom.gov.au/announcements/media_releases/tsunami.shtml
Reprinted with permission

In the Pacific Ocean the Tsunami Warning System (ITSU) has been set up to provide Pacific basin countries with surveillance and monitoring of tsunamigenic earthquakes, and for providing warnings to member countries when tsunamis are expected to be generated. The Pacific Tsunami Warning Centre (PTWC) in Hawaii has overall responsibility for issuing tsunami advices and warnings to ITSU members. It is operated by the National Weather Service of the USA. It advises appropriate authorities of the occurrence of an earthquake, and indicates whether or not a tsunami has been confirmed and provides estimates of travel time across the Pacific. It is not however in a position to predict actual run-up heights for the eventual landfall of a tsunami in Australia, as this depends on the complexities of coastal geography and offshore bathymetry.

There are currently no international arrangements in place for tsunami warnings in the Indian Ocean.

In Australia the Bureau of Meteorology has responsibility for issuing tsunami warnings. For areas covered by the PTWC the warnings are issued by the Bureau under guidance from the PTWC. At the present time the Australian Tsunami Warning System (ATWS) is being established by the Bureau of Meteorology, the National Tidal Facility (NTF), the Australian Geological Survey Organisation (AGSO) and Emergency Management Australia (EMA), with the involvement of the RMIT Seismology Research Centre and the Centre for Earthquake Research in Australia (CERA).

The ATWS will provide tsunami warning services to all Australian coasts. AGSO will provide the seismological expertise (earthquake detection and analysis). NTF will provide sea-level monitoring expertise (tsunami detection). EMA will provide expertise in community education, human communication and disaster management liaison. The Bureau of Meteorology provides communications, scientific support and warning provision/dissemination. CERA and the Seismology Research Centre will provide technical support.

A trial of the ATWS has been underway in Western Australia, primarily focusing on the highly economically sensitive North West shelf area, which is an area of high tsunami vulnerability. As part of the implementation of the System, an upgrade to the tide gauge on Christmas Island in the Indian Ocean is planned. This will provide a state of the art early warning post for tsunamis which may be generated in the seismically active trench south of Java. A project to calculate likely run-up values for tsunamis for key Australian coastal areas is also planned. This project is not yet fully funded, but will provide essential information with which objective forecasts of likely tsunami height can be made for vulnerable coastal areas.

At the most recent meeting on the ATWS (late June 1998), it was decided that agreement on the plan for the ATWS, including a National Tsunami Warning Plan, would be in final draft form for the next meeting scheduled for the late spring of 1998. Subject to funding arrangements and organisational approvals, it is anticipated that the ATWS will be operational before the middle of 1999.♦

Commonwealth Bureau of Meteorology
http://www.bom.gov.au/

Seeding the Seafloor with Observatories -- Scientists extend their reach into the deep with pioneering undersea cable networks

By Alan Chave, Senior Scientist
Applied Ocean Physics & Engineering Dept., Woods Hole Oceanographic Institution
Reprinted with permission

Feb. 23, 2004 — It would be a lot easier to explore the deep ocean, if we only had some electrical outlets and phone jacks on the seafloor. With 21st century technology, we are starting to install some.

On land, earth scientists can plug their instruments into electric power lines or rig them with solar panels to make long-term measurements of earthquakes, the planet's magnetic field, and other episodic or ongoing geophysical processes. But many of Earth's most fundamental, planet-shaping processes occur only beneath the ocean, where deploying similar instruments has presented unique challenges.

Expeditions to remote ocean regions are typically more expensive and time-consuming than land-based expeditions. Marine scientists are also limited by the availability of ships and must contend with corrosion problems peculiar to ocean environments. And without sunlight or a continuous electricity supply, scientists have had a limited capacity to supply power to instruments and data recorders in the ocean.

As a result, the record of land-based measurements contrasts starkly with the near-total absence of long-term geophysical data from the seafloor. Instead, ocean scientists tend to have a lot of snapshots of what is happening in the ocean. Since three-quarters of the earth is covered by ocean, that's like trying to monitor the dynamics of a household by observing events for just a few hours a month in only the living room and one bedroom.

Long-term presence on the seafloor

To comprehend Earth's dynamic behavior, ocean and earth scientists must do more than observe small regions for short periods. Advances in communications, robotics, computers, and sensor technology now make it possible to get wider and longer views of the oceans.

Remotely operated vehicles (ROVs) and autonomous underwater vehicles (AUVs) can work longer and deeper, and with ever-growing abilities. Fiber-optic cables and other communications technologies allow more data to be transferred at greater speeds. And with new materials, we can develop hardy instruments that can withstand harsh seafloor conditions.

Establishing a long-term presence in the oceans is no longer a dream. At the H2O "cabled" seafloor observatory (midway between Hawaii and California), the world's second deep-sea science station has been setting a new scientific precedent since 1998 (the first was established off Japan in 1993).

Next year, the Monterey Accelerated Research System (MARS) project will begin full-time observation of phenomena in Monterey Canyon off California. And by the end of the decade, ocean scientists hope to wire and network an entire tectonic plate for observation through the North East Pacific Time-integrated Undersea Networked Experiments (NEPTUNE) program.

These initial outposts on the ocean frontier will allow us to examine in detail the interactions that shape the seafloor, generate earthquakes, fuel volcanoes, form ore and oil deposits, transport sediments, circulate currents, and support life in deep-ocean environments.

Bringing the power of the Internet to the seafloor, these cabled observatories will connect scientists in their labs directly to submarine experiments. Scientists will be able to monitor and adjust instruments, or to dispatch AUVs to observe episodic events that previously went undetected. These observatories will also offer students and the public an unprecedented, intimate view of ocean exploration in action.

H20—a pioneering observatory

In 1998, Woods Hole Oceanographic Institution (WHOI) and University of Hawaii researchers seized an opportunity to take a significant first step toward opening the relatively unexplored submerged regions of Earth to more thorough examination.

Beneath 5,000 meters of water (16,400 feet), a submarine telephone cable called Hawaii-2 (HAW-2) stretched across the seafloor from Hawaii to California. AT&T laid the cable in 1964, but when it broke in 1989, the company looked to its fiber-optic future and decided not to fix it. Instead, they donated the cable to the scientific community.

The HAW-2 cable is like a long extension cord delivering electrical power to the seafloor and providing a means for two-way, shore-to-seafloor communications. With funding from the National Science Foundation (NSF), a WHOI/Hawaii science team developed and built a junction box to be spliced into one end of the HAW-2 cable. The junction box is like an eight-socket power strip for the seafloor.

No longer constrained by battery power and limited data recorders, we could install instruments to take continuous measurements of slowly evolving Earth processes and rapidly occurring events. The dream of America's first long-term, deep-ocean observatory became a reality with the establishment of the Hawaii-2 Observatory, or H2O.

The first two instruments plugged into H2O included a seismometer and a deep-water pressure gauge. The seismometer records seismic waves generated by earthquakes, allowing scientists to locate and study the sources. The pressure gauge aids researchers in detecting

tsunamis, large waves generated by earthquakes in the open ocean.

In the summer of 2003, H2O got its first renovation. The junction box was raised, upgraded with the latest communications and power interfaces, and lowered again to the seafloor.

In 2005, several new instruments are scheduled to be installed. Magnetometers and other instruments will be set up as part of a seafloor geomagnetic observatory. A new benthic biology experiment, which includes digital cameras and sediment traps, will be able to observe what is living on and falling to the deep ocean floor. A 1.5-kilometer (1-mile) cable will be laid from the junction box to a borehole where another more sensitive seismometer will be deployed.

MARS and VENUS

The next step for deep-ocean observatories is to incorporate fiber-optic communications, allowing high-speed, high-bandwidth transfer of science data and computer commands. In the fall of 2002, NSF provided the funding to build a test bed for fiber-optic cabled observatories—a proving ground for the next generation of seafloor observatories.

The Monterey Accelerated Research System (MARS) will consist of 70 kilometers (44 miles) of submarine cable laid out from a shore station along the northern side of the Monterey Canyon to a single science node located 1,200 meters (almost 4,000 feet) below the ocean surface. The science node will serve as a power and data-transfer station for instruments.

Ocean scientists from around the world will be able to design new instruments and then test them by plugging into one of MARS's four standardized ports. Each port will support data transfers of up to 100 megabits per second—comparable with some of the fastest land-based commercial data networks. The cable also will supply up to 10 kilowatts of power—enough to supply a few terrestrial houses, and several orders of magnitude more power than can be supplied with batteries.

Partners in the MARS program include the Monterey Bay Aquarium Research Institute (MBARI), Woods Hole Oceanographic Institution, the University of Washington (UW), and National Aeronautics and Space Administration's Jet Propulsion Laboratory (JPL).

The University of Victoria (UV) is simultaneously developing a complementary shallow-water test bed—known as the Victoria Experimental Network Under the Sea (VENUS)—in the Strait of Georgia and Saanich Inlet between Vancouver and Victoria, British Columbia.

On to NEPTUNE

Just off the coast of the Pacific Northwest of Canada and the United States lies an ocean scientist's dream. Nearly all of the major Earth-shaping features and processes—seafloor volcanism, hydrothermal vent systems, earthquakes, seafloor spreading, and subduction zones—converge in a reasonably small geographic area. At its coastal edge, sediments from the North American continent pour into the deep sea, while the waters teem with life in the Pacific Northwest's great fisheries.

Quite simply, the Juan de Fuca tectonic plate is a comprehensive natural laboratory for ocean science. The plate's proximity to shore and relatively small size make it a cost-effective candidate for incremental but eventually extensive cabling.

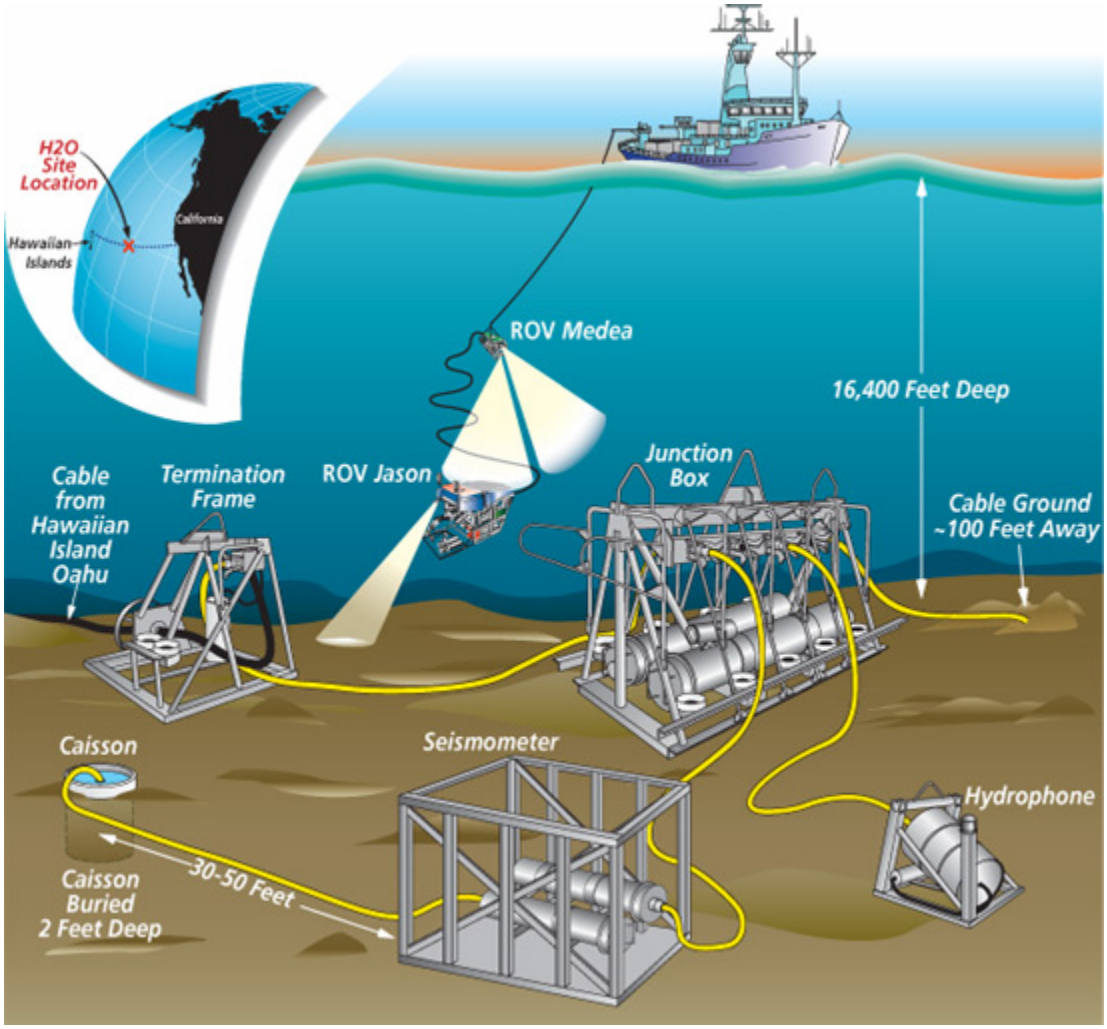
The North East Pacific Time-integrated Undersea Networked Experiments (NEPTUNE) project aims to establish an extensive earth/ocean observatory across and above the Juan de Fuca Plate off the West Coast of the United States and Canada. Researchers are proposing to lay down 3,000 kilometers (1,865 miles) of high-speed fiber-optic submarine cables that will link a series of 30 seafloor nodes, each about 100 kilometers (62 miles) apart. Those nodes would support thousands of assorted measuring instruments, video equipment, and robotic vehicles that could upload power and download data at undersea docks.

Unlike conventional telephone cables, which supply power from shore in a straight line, end to end, NEPTUNE would operate like a power grid, distributing power simultaneously and as needed throughout the network. More than 100 kilowatts of power would flow through the system (roughly the amount of power needed to supply 50 to 100 homes at any given moment).

NEPTUNE would work much like a campus data network (with nodes analogous to buildings and each instrument like a computer workstation). It would provide real-time transmission of data and two-way communications for up to 30 years.

Developers of the NEPTUNE network includes many of the same institutions involved in previously mentioned observatory initiatives (WHOI, UW, JPL, MBARI, and UV). We hope NEPTUNE is operational by 2008. It will cost approximately $200 million to develop, install, and operate through the first five years. An entire network of seafloor instruments, distributed over an area of 500 by 1000 kilometers, would cost less than one satellite or one Coast Guard icebreaker.♦

(SEE DRAWING ON NEXT PAGE)
For additional photographs and illustrations, plus observatory-related links, go to the website http://oceanusmag.whoi.edu/v42n2/chave.html



NEWS

USGS Announces New Science Advisor for Earthquakes

by Butch Kinerney, Public Affairs Specialist, USGS Office of Communications

Dr. David Applegate has been selected as the Senior Science Advisor for Earthquake and Geologic Hazards at the U.S. Geological Survey (USGS). Dr. Applegate will lead the Geologic Discipline's Earthquake Hazards Program and will also provide coordination for geologic hazards across the Bureau.

"January 17 marks the 10th anniversary of the Northridge, California, earthquake, the most costly natural disaster in our Nation's history. The USGS looks forward to Dave's strong leadership of our Earthquake Hazards Program, which provides the science needed to ensure our safety and economic security," said USGS Director Chip Groat.

Dr. Applegate is currently the Director of Government Affairs at the American Geological Institute (AGI), a nonprofit federation of 42 geoscience societies. Before coming to AGI in 1995, he served with the Senate Committee on Energy and Natural Resources as the American Geophysical Union's Congressional Science Fellow. Applegate currently serves on the steering committee of the National Research Council's Disaster Roundtable, co-leads the Congressional Natural Hazards Caucus Work Group and chairs the International Union of Geological Sciences Task Group on Public Affairs. He was the 2003 president of the Geological Society of Washington. In 2002, he received a Presidential Certificate of Merit from the American Institute of Professional Geologists. The AGI Government Affairs Program, under Applegate's leadership, was a 2003 recipient of the USGS John Wesley Powell Award. Dr. Applegate holds a B.S. in geology from Yale University and a Ph.D. in geology from the Massachusetts Institute of Technology, where he did his dissertation on the tectonic evolution of the Funeral Mountains in the Death Valley region of California.

The USGS serves the nation by providing reliable scientific information to describe and understand the Earth; minimize loss of life and property from natural disasters; manage water, biological, energy, and mineral resources; and enhance and protect our quality of life. EQ From: EQ (Earthquake Quarterly), Winter 2004. (http://www.wsspc.org/pubs/news/eq2004winter.pdf)

Second National Coastal Report Announced

On March 9, 2004, the U.S. Environmental Protection Agency (EPA) released the Draft National Coastal Condition Report II (NCCR2), a collaborative effort of EPA, the National Oceanic and Atmospheric Administration, the U.S. Fish and Wildlife Service, and the U.S. Geological Survey. NCCR2 is intended to enhance scientific understanding of coastal conditions and help scientists, environmental managers, and the public make informed decisions to protect coastal resources. When finalized, the report will serve as a foundation for efforts to protect, manage, and restore coastal ecosystems.

The first National Coastal Condition Report assessed the condition of 70% of the nation's estuarine resources, using 1990-1996 data. NCCR2 is based on 1997-2000 data and examines 100% of such resources in the contiguous 48 states and Puerto Rico. Regional conditions are provided using five indicators: coastal habitat, water quality, sediment quality, bottom-dwelling organisms, and fish tissue. NCCR2 shows that conditions in the Southeast, Gulf of Mexico, and the Great Lakes have improved, while the Northeast and the Western coasts remain essentially the same. The data indicate the nation's estuaries continue to be in fair condition.

EPA has also signed an agreement with the National Oceanographic Partnership Program, an inter-agency organization, to establish the Integrated Ocean Observing System to improve forecasting of climate change effects on the ocean and preserve and restore healthy marine ecosystems.

A 90-day public comment period on NCCR2 runs through June 8, 2004. EPA is seeking public input concerning the information in the report, the availability of additional data, and the appropriateness of conclusions drawn from the information presented. The NCCR2 report is available on the EPA web site: http://www.epa.gov/owow/oceans/nccr2/index.html.
from: Natural Hazards Observer, v. 28, no. 5, p. 9

Woodbury to leave Washington Emergency Management Division for new position

CAMP MURRAY, WA – Glen Woodbury, Washington Emergency Management Division (EMD) director, today announced he will leave his post July 1 to accept a faculty position with the Naval Postgraduate School's Center for Homeland Defense and Security.

Woodbury has served as the state's emergency management division director since August 1998 and helped direct the state's emergency response and recovery from the Nisqually Earthquake of 2001 and the September 2001 terrorist attacks. He also oversaw the start-up of the division's operations center at Camp Murray in 1998 and Washington's entrance into the Emergency Management Assistance Compact of 48 states, two territories and the District of Columbia.

"The best part of the last six years has been the people I have had the opportunity to work with." Woodbury told emergency management division staff. "I will miss my colleagues and friends throughout the state's emergency response community."

Maj. Gen. Timothy J. Lowenberg, director of the Washington Military Department which oversees EMD, said, "We obviously hate to lose such a dedicated and dynamic leader as Director of our Emergency Management Division.. Our loss, however, is also our gain in that his new position will enable him to even more effectively influence national emergency preparedness and homeland security policy."

Lowenberg said the state military department will embark on an aggressive national search for a new director. "We would like to complete the selection process by the end of June, but the most important consideration is selection of a successor who will sustain the standards of excellence Glen has established during his tenure of office."

Woodbury served as president of the National Emergency Management Association from 2002 to 2003 and played a key role in involving state emergency managers in the home-land security issues of the post 9/11 world.

He first joined the EMD as a duty officer in 1994 after 11 years of U.S. Army service. He served as manager of the division's emergency operations center from 1995 to 1998. EMD has a staff of 107 employees and an annual budget of $117 million.
from: Rob Harper, EMD, April 5, 2004
A full report is available at http://emd.wa.gov/4-pio/newsletters/040304.pdf

Creating a hazards outreach tool for your community

Most coastal programs with minimal geographic information systems (GIS) experience can create a Web site that will allow community members to easily determine their coastal hazards vulnerabilities. Please visit www.csc.noaa.gov/rvat/ and click on the hazards locator tool to see an example, or contact Russell.Jackson@noaa.gov should you have questions.

To create a site like this, you will need the following:

*Spatial data layers--base maps, hazard layers, etc.

*List of potential partners and stakeholders.

*Mitigation plan or the beginnings of one.

*Hazards and information about them (i.e., coastal erosion studies, storm surge zones, [Editor's note: and tsunami inundation data]).

*GIS software.

from: Coastal Services, v. 7, no. 3, p. 1

PUBLICATIONS

First Combined FEMA Training Catalog now Available On-Line and in Print

FEMA has issued its first catalog combining courses for both the National Fire Academy (NFA) and Emergency Management Institute (EMI). The catalog describes the hundreds of courses offered by both training facilities and marks the first time the two institutions have issued a joint directory. Both training facilities are located at the National Emergency Training Center in Emmitsburg,

Maryland. The courses range in length from three days to two weeks and are appropriate for all members of the emergency management and firefighting community. The catalog includes two new courses: Command and General Staff Functions in the Incident Command System *and* Partnering for Fire Defense and Emergency Services Planning.

There is no charge for courses and lodging. Transportation costs are reimbursed. The first semester application period is May 1-June 30, 2004. The 272-page catalog for FY 2005 is available on-line at http://www.usfa.fema.gov/downloads/pdf/publications/fa-273.pdf. A hard copy can be ordered on-line at http://www.usfa.fema.gov/applications/publications or by calling (800) 561-3356.
from: Natural Hazards Observer, v. 28, no. 5, p. 7

The Emergency Alert System (EAS): An Assessment
Created by the Partnership for Public Warning, 2004, this 64 page publication is free. Available on-line from Partnership for Public Warning, 7515 Colshire Drive, MS N655, McLean, VA 22102; (703) 883-2745; http://www.partnershipforpublicwarning.org/ppw/docs/eas_assessment.pdf*; or* e-mail*:* information@ppw.us.

The importance of a unified national warning system is undeniable. Today, the Emergency Alert System (EAS) is one of two systems capable of providing alert and warning information directly to the public. A recent assessment of the EAS reported a number of significant policy, management, and operational challenges. Three main concerns hinder the effectiveness of the EAS. First, the Primary Entry Point (PEP) system cannot be reliably monitored by all state-level EAS entry points and many broadcast stations and cable system headends are not part of the national-level EAS. Second, with no one agency in charge of the system, leadership and support is insufficient. Finally, there is no concerted effort to combine EAS and other alerting techniques with existing and new technologies.

The assessment recommends that in order to create an effective national public warning system, the Department of Homeland Security should take the lead and provide leadership and oversight; improve the PEP system; clearly designate management, operation, and oversight responsibilities; provide funding and resources to support and operate the system; and support a public-private partnership to develop standards, policies, and procedures.
from: Natural Hazards Observer, v. 28, no. 5, p. 19-20

CLASSES/WORKSHOPS/ TRAINING

FEMA Offers On-Line Course to Help Build Partnerships with Tribal Governments

FEMA has released an on-line, independent study course for those working with tribal governments to protect native people and their property against all types of hazards. The course is available to anyone who has an interest in learning more about building partnerships with tribal communities.

Developed by FEMA's EMI, *Building Partnerships with Tribal Governments*, IS 650, includes lessons covering historical and legal perspectives, tribal culture, and challenges in delivering government programs. Those who pass the final exercise receive a certificate of completion. The course is available on-line at http://training.fema.gov/EMIWeb/IS/is650.asp.
from: Natural Hazards Observer, v. 28, no. 5, p. 7.

Crisis Communications Workshop
November 4, 2004

Talk is cheap, but your reputation is priceless.. Come spend a day with several very experienced and nationally-recognized crisis communicators and leave better prepared to make every word count.

Reserve November 4, 2004 on your calendars and plan to attend a daylong workshop on crisis communications. Workshop speakers will focus on the importance of "the message" from creation to delivery. Attendees will receive relevant and practical information and guidance that will enable them to more effectively communicate under pressure.

The workshop is being organized by the Office of Consolidated Emergency Management for Washington County, Nike, Inc., and the Oregon Continuity Planners' Association. It will be hosted at a site in Washington County and will feature Mr. David Ropeik, Director of Risk Communication at the Harvard Center for Risk Analysis; Dr. Robert Howard, President and CEO of Howard & Associates and former Director of Strategic Communications at the National Center for Infectious Disease; and Mr. Vada Manager, Nike's Global Director for Issues Management.

Registration cost for the workshop is $75 and includes all program materials, lunch, and snack service at breaks. Registration materials and a detailed program will be distributed mid-summer. In the meantime, any questions about the workshop can be directed to Scott Porter at the phone number or e-mail address noted below. Scott Porter, Director Office of Consolidated Emergency Management for Washington County (503) 642-0371; scott@ocem.org

WEBSITES/LISTSERVS

http://www.disastereducation.org

The National Disaster Education Coalition (NDEC), in celebration of their tenth year of operation, has launched a website, http://www.disastereducation.org, to describe their coalition, its purpose, and to make freely available their publication "Talking About Disasters: Guide for Standard Messages".

The Coalition's Guide provides standardized safety messages about 13 hazards, including earthquakes, and general disaster preparedness topics. Following each message in the Guide are explanations, statistics, or reasons that reinforce the credibility of the message and that correct myths and misinformation. Contents are

undergoing a revision and will be available in the late Spring of 2004.

The National Disaster Education Coalition is composed of federal government agencies and national not-for-profit organizations that work together to develop consistent educational information for the public about disaster preparedness, and to disseminate that information throughout their own organizations, their respective constituencies, and to the public at large. Members include representatives from FEMA, USGS, American Red Cross, Institute for Business and Home Safety, International Association of Emergency Managers, American Geological Institute, and National Science Foundation.

The goal of the NDEC is to develop, review, and disseminate information and advice on how the public should prepare and respond appropriately to natural and human-caused disasters. NDEC member agencies ensure that disaster safety messaging is appropriate, accurate, research-based, and crafted appropriately for the audience by using understandable language. They recognize that it is important for all agencies to deliver consistent disaster safety messages. All information on the website is in the public domain and all organizations are encouraged to use its contents.

From: EQ (Earthquake Quarterly), Winter 2004.
(http://www.wsspc.org/pubs/news/eq2004winter.pdf)

http://all-hands.net/pn/modules/Downloads/store_folder/REM/Glossaries/ah_glossary_0214.pdf

The All-Hands Community, a free, on-line user-supported community of emergency and continuity professionals with the goal of sharing information, has recently uploaded a comprehensive *Network Glossary of Terms and Definitions* to its web site. Started in 2002, the glossary is a work in progress and currently features over 1,500 terms and definitions gathered from around the world. Free membership in All-Hands is required to view this file.

from: Natural Hazards Observer, v. 28, no. 5, p. 15

http://www.hazardmaps.gov/atlas.php

The Multi-Hazard Mapping Initiative provides an on-line hazards advisory atlas with the goal of foster-ing the collection and exchange of geospatial hazards data, increasing hazard awareness, and establishing map creation standards. Maps can be customized by site visitors in a variety of ways.

from: Natural Hazards Observer, v. 28, no. 5, p. 15

http://training.fema.gov/EMIWeb/pub/register.html

Due to demand, FEMA has created a web site with course materials for *Emergency Planning and Special Needs Populations*, G197. The course is not designed for self-study, but the materials are available on-line.

from: Natural Hazards Observer, v. 28, no. 5, p. 15

market.access@verizon.net

Homeland Defense Radio Weekly *Program Guide* is emailed to you. To sign up to receive this weekly guide email the above address and place PROGRAM GUIDE in the Subject line. Your email address will be added to their list and you will auto-matically get weekly notices of programming and special reports.

Included in the *Guide* for the week of May 17, 2004:

First Responders' Report- :28 and :58 after the hour (Monday-Thursday)

Guarding the Coastline- :23 and :53 after the hour (Monday)

CONFERENCES/ SEMINARS/ SYMPOSIUM

October 14-15, 2004

Fifth Annual International Disaster and Emergency Readiness Forum (IDER). Sponsors: United Nations, International Aviation Transport Association, International Training and Simulation Association, Institute for Civil Defense and Disaster Studies. Moreton-in-Marsh, England. With the increasing concern over national and international security due to the heightened threats of global terrorism, as well as natural and human-made disasters, it is essential for the international community to work together to share information and good practices and integrate disaster response. Conference details can be obtained from Simon Langdon, Insight Consulting Ltd., Churchfield House, 5 The Quintet, Church-field Road, Walton-on Thames, Surey KT12 2TZ UK; tel: +44 1932 241000; e-mail: simon.langdon@insight.co.uk; http://www.andrich.com/ider/.

from: Natural Hazards Observer, v. 28, no. 5, p. 14.

March 7-10, 2005

Coastal GeoTools '05 will be held in Myrtle Beach, South Carolina. It will focus on promoting the understanding and applied uses of geospatial data and tools for coastal resource management. For additional conference information: www.csc.noaa.gov/geotools/. ♦

Alaska earthquake March 27, 1964. Boat beached by tsunami several hundred feet inland from the head of Resurrection Bay. Photo by R. W. Lemke, 1964, USGS

Material added to the National Tsunami Hazard Mitigation Program Library
May - June 2004

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Note: These, and all our tsunami materials, are included in our online (searchable) catalog at http://www.dnr.wa.gov/geology/washbib.htm

Tsunami Community

Tsunami community activities are growing. Tsunami research is maturing. Tsunami scientists are studying new sources. Tsunami hazard mitigation and education are proving effective. Tsunami hazard assessment is becoming applied. Tsunami scenarios are becoming realistic.

This web site, funded by the US National Science Foundation, represents the breadth of research and knowledge in the tsunami community for scientists, policy makers, and disaster managers. The goals of this site are:

- To describe tsunami generation
- To facilitate tsunami hazard mitigation
- To document historical tsunami events
- To provide tsunami benchmark problems
- To distribute seafloor bathymetry data
- To showcase community models
- To provide tsunami case studies
- To simulate future tsunami scenarios
- To gather tsunami web site links

The content of this web site is edited by the ad hoc committee on tsunami community research. Instructions for submitting new text and images via FTP are provided.

http://www.tsunamicommunity.com/TChome.html

VIDEO RESERVATIONS

To reserve tsunami videos, contact TsuInfo Alert Video Reservations, Lee Walkling, Division of Geology and Earth Resources Library, PO Box 47007, Olympia, WA 98504-7007; or e-mail lee.walkling@wadnr.gov

NEW!! Business Survival Kit for Earth-Quakes & Other Disasters; What every business should know before disaster strikes. Global Net Productions for the Cascadia Regional Earthquake Workgroup, 2003. 27 min. With CD disaster planning tool-kit and other information.

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

Earthquake…Drop, Cover & Hold; Washington Emergency Management Division. 1998. 5 min.

Tsunami Evacuation PSA; DIS Interactive Technologies for WA Emergency Management Division. 2000. 30 seconds.

Cascadia: The Hidden Fire–An Earthquake Survival Guide; Global Net Productions, 2001. 9.5 minutes. 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.

Not Business as Usual: Emergency Planning for Small Businesses, sponsored by CREW (Cascadia Regional Earthquake Workgroup), 2001. 10 min. 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.

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

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

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

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.

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

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

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.)

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. There is an 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.

Tsunami and Earthquake Video (60 min.) Includes "Tsunami: How Occur, How Protect," "Learning from Earthquakes," and "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.) Two versions, one with breaks inserted for discussion time.

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

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.♦

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Infrequently Asked Questions

Compiled by Lee Walkling

How high was the largest tsunamis?

The largest tsunami recorded measured 210 feet, about 18 stories above sea level, when it reached Siberia's Kamchatka Peninsula in 1737. From: http://pao.cnmoc.navy.mil/educate/neptune/trivia/large.htm.

Could nuclear testing create a tsunami?

This is a difficult topic to research, because much of the information surrounding nuclear testing is classified. During the Cold War there was fear of tsunamis produced by the detonation of nuclear bombs on the continental shelf off the East Coast of the US. A nuclear bomb was never detonated on the shelf, however a huge explosion did generate a tsunami during World War I. Any large disturbance that displaces a large volume of water can be a potential cause of a tsunami.
From: http://www.tsunami.org/faq.htm#Nuclear

What is run-up and inundation?

When a tsunami approaches a coastline, the wave begins to slow down and increase in height, depending on the topography of the sea floor. Often the first signs of a tsunami are a receding water level caused by the trough of the wave. In some instances though, a small rise in the water level just before the recession, has been observed. Regardless, the incoming wave approaches much like the incoming tide though on a much faster scale. The maximum vertical height to which the water is observed with reference to sea level is referred to as run-up. The maximum horizontal distance that is reached by a tsunami is referred to as inundation. From: http://www.tsunami.org/faq.htm#Nuclear

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