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 **Volume 8, Number 5, October 2006**

Disaster Myths…First in a Series

DISASTER MYTHS AND THEIR IMPLICATIONS FOR DISASTER PLANNING AND RESPONSE

By Henry W. Fischer III, Center for Disaster Research & Education, Millersville University of Pennsylvania
From: Natural Hazards Observer, v. 31, no. 1, September 2006
http://www.colorado.edu/hazards/o/sept06/sept06.pdf
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NHO Editor's Note: As recent events have demonstrated, the perpetuation of myths following a disaster is yet another by-product of ineffective planning, education, response, and reporting. To foster awareness and further discussion and action on the issue of disaster myths, the next six *Observers* will each feature an article related to disaster mythology.

The article below represents the first in the series. It served as a general introduction to the topic, explaining what disaster myths are and the implication for the acceptance of these myths as truth. The next four articles will address specific myths: panic, dead bodies and disease, looting, and role abandonment. A concluding article will focus on how disaster myths are perpetuated and what can be done to counteract them or avoid perpetuation altogether.

Our perception determines reality for each of us. This perception of reality then forms the basis of our determined appropriate response. If, for example, we meet and you perceive that my extended hand is a friendly gesture, you may respond by grasping my hand and moving it up and own. If you perceive that my extended hand is a threat against your person, you may decide to respond with a fist, an expletive, or turn and run away. In other words, you take action based on what you believe to be real.

What I am describing is a basic sociological tenet that forms the basis of human interaction and social structure. For approximately half a century, disaster researchers have observed a persistent disconnect between the *perception* of certain disaster-related events and the *actual* events. The perceived reality for many citizens, mass media reporters, elected officials, and public policy makers, including many emergency management workers, has been that civil disorder and disease are among the most challenging and important issues they will confront and must prepare to mitigate in every disaster.

The reality for disaster researchers differs dramatically. They stress the importance of a much different set of issues related to disaster mitigation, planning, and response. A tale of two such divergent realities leads us to two paths. The first is

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It is assembled by
Lee Walkling, Librarian,
and is published bi-monthly by the
Washington Department of Natural Resources, Division of Geology and Earth Resources.

This publication is free upon request and is available in print (by surface mail),
and at http://www.dnr.wa.gov/geology/tsuinfo/index.html.
Participants in the TsuInfo program can request copies of reports listed in this issue from:
Washington Geology Library
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Division of Geology and Earth Resources
1111 Washington Street SE, MS 47007
Olympia, WA 98504-7007
360/902-1473
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WASHINGTON STATE DEPARTMENT OF
Natural Resources
Doug Sutherland - Commissioner of Public Lands

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NOAA
U.S. DEPARTMENT OF COMMERCE

(*continued from page 1*)
the one most traveled: continue to base much of disaster preparation plans and response on the perception that civil unrest and disease are the primary issues to be mitigated. The second and least traveled: move away from the disaster mythology and mitigate demonstrable problems. I argue for the road less traveled.

Disaster mythology and the problem with myth-generated planning

A disaster myth is a misperception that often directs the focus of government officials and responders away from the needs of victims and toward the combating of false realities. In the United States, in particular, belief in disaster mythology is very strong. The most prevalent myths are behavioral and organizational. Panic, evacuation misbehavior, disaster shock, emotional dependency, looting, price-gouging, and role abandonment are among the common perceptions of what constitutes reality in a disaster.

Often during disaster, death and injury rates are inflated, rumors of martial law spread like wildfire, and spontaneous volunteers and unwanted donations of goods flow to the scene based on the myth that anyone and anything can provide welcome relief. Another widely accepted myth is that dead bodies pose health risks for the living.

More specifically, fear of panic delays evacuation orders until evacuation is absolutely necessary, at which point a full and successful evacuation is no longer feasible. Rumors of looting hamper evacuation efforts and direct law enforcement personnel to protect property rather than save lives. Long-held belief about dead bodies and disease lead to mishandling of and disrespect for the dead and yet another shift in focus away from saving lives. And, unwelcome volunteers and donations result in resources that cannot be effectively managed or utilized and that often further complicate response efforts by introducing needs of their own.

Myths are perpetrated through the media, community leaders (governmental and nongovernmental), as well as through members of the general populace. The fear generated by these myths often trumps the fear of potential disaster impact realities, such as storm surge, flooding, chemical spills, and lack of electricity, food, and water. This perception leads to a very different disaster response than most researchers would recommend.

Katrina proved the power of hearsay. In the storm's aftermath, a great deal of media attention was given to describing rapes, murders, and other wild behavior in the New Orleans Superdome. Most of these atrocities did not occur. Those that did may be directly related to the herding of people into what they believed to be a shelter and then not providing them with adequate food, water, and other necessities. Media reports of the deviant behavior affected the response by shifting the focus of the response to responder safety and ultimately slowing the flow of help that was so desperately needed.

When myths are accepted as truth, precious time and resources are misdirected, populations become problems when they can really be assets, and the real problems of mitigation, planning, and response go unrecognized. Even when a myth is not accepted as truth, emergency workers may often hesitate to publicly refute it for fear of looking foolish or further hindering appropriate protective behavior. A city manager once told me that he knows looting is rare in a disaster. Nevertheless, to encourage his citizens to evacuate, he has to convince them that looting will be prevented.

Another challenge to myth busting is that when one myth becomes reality, e.g., looting in Hurricane Katrina, the perception is reinforced as a problem to be reckoned with in every disaster. Implications for this type of reaction are policies that reinforce the dangers mentioned above (e.g., militarization of disaster response). Ultimately, myth perception means that unnecessary damage, injuries, and loss of life may be incurred.

Observations versus perceptions

The perception that disasters automatically result in human depravity and disease is not supported by the evidence. Do some of the myths ever become reality? Yes. However, there are more important mitigation, planning, and response issues encountered in any disaster. Looting did occur in Katrina. While it was portrayed as deviant, much of it was found to be for food and water and other life supporting materials. A better organizational response would have eliminated the suffering that led to this behavior and its characterization. Also, thefts occur everyday and everywhere in nondisaster time. Perspective is needed. Life is more important than property.

In disaster time, the community of human beings does not normally break down. In sharp contrast with the image commonly perceived, survivors are not apathetic or panic-stricken. Looting behavior and price-gouging are exceedingly rare. Also, police and fire personnel usually stay on the job, putting the needs of victims and the duty they have sworn to uphold before their own personal needs, concerns, and safety.

In reality, an emergent norm process occurs that results in the adoption of those behavioral guides that subscribe to the belief, or value, that humans in trouble must be helped. Survivors share their tools, food, equipment, and especially, their time. Groups of survivors tend to emerge to respond to each others' needs. They search for the injured and the dead, they provide support, and they being clean-up activities. We need to incorporate the survivors, the would-be victims, as resources who participate in the response before and after impact: they are part of

the solution, not the problem. Treating the public as the problem only makes things worse.

Conclusion

So we find that reality and popular perception usually diverge—so what? Emergency personnel, elected officials, the mass media, and citizens tend to plan for and respond to those events they anticipate encountering before, during, and after a disaster. If, as is commonly found, they plan to respond to myth, they will not be prepared to respond to reality. If we plan to focus on controlling deviant behavior, we are unprepared to effect a successful evacuation. Time, energy, and resources are then misdirected away from a focus on the timely transport of potable water, food, medical personnel, and other necessities. The result? Unnecessary suffering will likely be added to that already experienced by the victims and the responders.

Final observations

If you perceive that I know what I am talking about on the subject at hand, you will probably embrace the message and seek to spread the word accordingly. On the other hand, if you perceive that I am yet another in a long line of eggheads who are detached from real world experience, then you are likely to ignore the word and reinforce what I claim to be myth. Doubters should ask themselves, how did the response to Hurricane Katrina work for us?

Learn more

If you would like more information about disaster myths and behavioral and organizational mitigation, planning, and recovery challenges, search HazLit, the Natural Hazards Center's online library database, at www.colorado.edu/hazards/library/. Recommended authors to search include, by are not limited to, Claude de Ville de Goyet, Erik Auf der Heide, Thomas E. Drabek, Russell R. Dynes, Henry W. Fischer III, Dennis S. Mileti, David N. Neal, Brenda D. Phillips, E. L. Quarantelli, Kathleen J. Tierney, Tricia Wactendorf, and Dennis E. Wenger. ♦

NEWS

Oregon workshop

For our on-going free public education programs on the Southern Oregon Coast, planners from agencies, businesses, and organizations are presenting our 2nd annual workshop titled: "The Earthquake Tsunami Connection: Disaster Preparedness 2006" It will be held at the Southwestern Oregon Community College, Hales Center on October 21, 2006 from 9am to 1pm. This years workshop will have presenter Jay Wilson from Oregon Emergency Management talking about the Cascadia Subduction Zone hazards off the Oregon Coast. It will also feature local entities presenting preparedness tips for the public including building survival kits for home, school, businesses, and pets. Donations from NOAA and National Weather Service, and Methane Energy Corporation, assisted with printing of a local disaster preparedness booklet with a theme of being Aware, Preparing, and Responding to Disasters. Donations from Bay Area Hospital, and many local businesses made it possible to purchase American Red Cross Kits and other kit materials to give away in a drawing for the participants at the end of the workshop and for refreshments during breaks.

From: Kathleen Hornstuen, SWOPSA Secretary, PO Box 1632, Coos Bay, OR 97420

NOAA buoys

Recently, NOAA completed the expansion of its deep-ocean buoys which assess and report on tsunamis. Four new DART stations were added to Alaskan waters and two existing stations were upgraded to DART II. The U.S. DART system now has 19 stations.

NOAA ,working with more than 60 nations and the European Commission, is continuing development of a global tsunami monitoring network.

Ford Island tsunami center breaks ground

Pacific Business News (Honolulu) - August 28, 2006 http://pacific.bizjournals.com/pacific/stories/2006/08/28/daily10.html (Reprinted with permission)

The National Oceanic & Atmospheric Administration broke ground on a new $250 million NOAA facility on Pearl Harbor's Ford Island after releasing a study that said it will be safe there. The facility, for which actual construction may still be months away, will include the Pacific Tsunami Warning Center, now based in Ewa Beach.

The report, written by seven Seattle researchers and funded by NOAA, said the highest projected inundation of Pearl Harbor under any computer model was five feet.

"Model results show no inundation at the NOAA building suite for any of these simulations," the report said.

The report makes no mention of the low-level, partially-floating bridge that provides the only road to Ford Island, which is also home to a Navy-Marine Corps computer nerve center, a Navy financial accounting center, and military housing.

Public Employees for Environmental Responsibility issued its own report in June criticizing NOAA for preferring to base a tsunami warning center so close to sea level when Hawaii state and local officials wanted it next to the civil defense center inside Diamond Head.

"The Ford Island site is reachable only by a single, partly floating bridge that must be raised to allow the Navy vessels to escape the harbor," the PEER report said. "Ford Island would also have to be evacuated in the event of a tsunami, if NOAA followed its own protocols, but if the bridge is raised evacuation may not be possible."

Disaster risk reduction begins at school

On June 15, the United Nations International Strategy for Disaster Reduction (ISDR) and its partners launched its 2006-2007 World Disaster Reduction Campaign: "Disaster Risk Reduction Begins at School." With the premise that more needs to be done to protect children from disasters, the campaign has two main objectives: promote disaster reduction education in school curricula and improve school safety. The campaign aims to inform and mobilize governments, communities, and individuals to fully integrate disaster risk reduction into school curricula in high risk countries and to build or retrofit school buildings to withstand natural hazards.

Key partners include the United Nations Educational, Scientific and Cultural Organization (UNESCO); United Nations Children's Fund (UNICEF); Action-Aid International, the International Federation of Red Cross and Red Crescent Societies; and the ISDR's thematic cluster on knowledge and education. For more information, including a press kit, case studies, a list of events, and online resources, visit www.unisdr.org/wdrc-2006-2007/.

From: Natural Hazards Observer, v. 31, no. 1, p. 3.

DHS weighs in on catastrophic plans

The U.S. Department of Homeland Security (DHS) has issued results from its national assessment of the country's catastrophic planning capabilities. Responding to directives from the president and Congress following Hurricane Katrina, the *Nationwide Plan Review: Phase 2 Report* (174 pp.) examines whether existing emergency operations plans for states and urban areas are sufficient for managing a catastrophic event and presents conclusions on actions needed for improvement. These findings and conclusions will be addressed by a New National Preparedness Task Force.

Conducted in all 56 states and territories and 75 urban areas over six months, the review is the most comprehensive assessment of emergency operations plans to date relative to planning for a catastrophic event. The two-phase review began with self-assessments of key planning components followed by peer reviews conducted by teams of former state and local homeland security and emergency management officials. Assessed as sufficient, partially sufficient, or not sufficient to manage a catastrophic event, the majority of components fell into the partially sufficient category.

While the review found that most areas of the country are prepared to handle standard disaster situations, all levels of government need to improve emergency operations plans for catastrophic events such as a major terrorist attack or category 5 hurricane. Several areas, including evacuation, attention to populations with special needs, command structure, and resource management, were noted as needing significant attention.

Download a copy of the report at www.dhs.gov/interweb/assetlibrary/Prep_NationwidePlanReview.pdf.
The press release and two fact sheets are available at www.dhs.gov/dhspublic/display?content=5695.

From: Natural Hazards Observer, v. 31, no. 1, p. 8-9.

Executive order: Public alert and warning system

In an Executive Order issued in late June, the president called for a strengthening of the nation's public alert and warning system to ensure that under all conditions the president can communicate with the American people. Specifically, the order charges the secretary of the U.S. Department of Homeland Security (DHS) with implementing an effective, reliable, integrated, flexible, and comprehensive system to alert and warn the American people in situations of war, terrorist attack, natural disaster, or other hazards to public safety and well-being.

The secretary of DHS is required to submit to the president a plan for the implementation of this order, together with any recommendations he finds appropriate, by the end of September 2006. Executive Order 13407 is in the June 26, 2006 Federal Register, v. 71, no 124, p. 36975-36977, which can be found in any federal depository library and online at www.gpoaccess.gov/fr/ and at www.whitehouse.gov/newws.releases/2006/06/20060626.html.

From: Natural Hazards Observer, v. 31, no. 1, p. 8.

FEMA issues two new recovery strategies

To improve the quality, speed, and accountability of federal disaster support to state and local partners, the Federal Emergency Management Agency (FEMA) has issued recovery strategies for mass-sheltering and housing assistance and debris removal operations. These new strategies reflect important lessons learned from Hurricane Katrina and outline a framework for guiding federal and state operational responses to presidentially declared emergencies and disasters.

The mass-sheltering and housing assistance strategy includes a protocol to dispatch field registration personnel and mobile registration intake centers to shelters to proactively seek out and register evacuees for FEMA assistance. It also addresses temporary housing in states outside the disaster area, evacuee return transportation options, transitional sheltering, and changes to how certain forms of financial assistance may be implemented and expedited. Access the strategy at www.fema.gov/pdf/media/2006/rs-2006-1.pdf.

The debris removal operations strategy summarizes key actions of the federal government and defines eligible private and public debris as it pertains to reimbursable removal; describes the circumstances under which the federal government will initially manage debris removal operations; reflects recent changes to equalize cost-share application; and establishes the roles, responsibilities, and

expectations of federal, state, and local governments. A key component of this strategy is the Debris Removal Contractor Registry (https://ci.hsin.gov/sup3_nerr/default.aspx), a nationwide registry that allows debris removal companies to list their capabilities and availability to help emergency managers establish debris removal contracts and agreements in advance of a disaster. Access the strategy at www.fema.gov/pdf/media/2006/rs-2006-2.pdf.

From: Natural Hazards Observer, v. 31, no. 1, p. 10.

Science and Technology Center for Coastal Margin Observation and Prediction

The National Science Foundation has funded a 5-year cooperative agreement to establish a center to study coastal margins using integrated observation and predictiton technologies as critical infrastructure for research, education, and knowledge transfer. The rationale for the center is that coastal margins are among the most densely populated and developed region in the United States and there is a critical need for improved understanding of coastal margins and the stresses placed on them by natural events and human activities. The principal investigators are Antonio M. Baptista, John A. Barth, Bruce A. Menge, Peter Zuber, and David L. Martin of the Oregon Health and Science University, Department of Environmental and Biomolecular Systems.

From: Natural Hazards Observer, v. 31, no. 1, p. 14.

National Preparedness Month

September was National Preparedness Month, as well as NOAA Weather Radio Awareness Month.

Washington held a statewide earthquake and tsunami drill on September 13. A test tsunami warning message was issued from NOAA's Palmer, Alaska, Center coupled with a statewide Emergency Alert System message over radio and television stations.

The alert message initiated tsunami loudspeaker warnings to coastal residents and instructed inland residents to "drop, cover, and hold" for personal earthquake protection in their residences, schools and workplaces.

WEBSITES

http://www.colorado.edu/hazards/

2006 Annual Hazards Research and Applications Workshop. "Each summer, hazards researchers, professsionals (federal, state and local government officials and representatives from nonprofit organizations and private industry), and other interested individuals convene for the Natural Hazards Center's Annual Hazards Research and Applications Workshop. Participants debate, explore, and share information on a wide variety of issues. This year, sessions included discussions about recovery after Hurricane Katrina, grand challenges for disaster reduction, and the state of federal emergency management (among others).

Brief session summaries, abstracts of research presented, and descriptions of current participant projects and programs are available online (URL above).

http://nthmp-history.pmel.noaa.gov/index.html

Archive site of the National Tsunami Hazard Mitigation Program, 1995-2005

http://nctr.pmel.noaa.gov/

new NOAA Center for Tsunami Research

http://nctr.pmel.noaa.gov/database_devel.html

Recent and historical tsunami events and relevant data (including links)

http://nctr.pmel.noaa.gov/database_devel.html

Latest Tsunami Event Messages
Latest message for North America's West and East Coasts, and US Gulf of Mexico Coasts
Latest message for Hawaii, all U.S. interests in the Pacific outside the West Coast/Alaska Tsunami Warning Center area of responsibility, most countries in the Pacific and around its rim. Includes Puerto Rico and the Virgin Islands

http://www.noaawatch.gov/

NOAAWatch, a Web site from the National Oceanic and Atmospheric Administration (NOAA), is a Web portal offering information about ongoing environmental events and explains NOAA's role in prediction, monitoring, and recovery. It integrates NOAA data, products, observations, satellite images, and more to provide public access to current information on a number of environmental threats, such as oil spills, hurricanes, tsunamis, and space weather, all on one site. Permanent features include the present weather outlook and warnings, satellite image of the day, and educational pages. NOAAWatch went live on June 1, the first day of the 2006 hurricane season.

From: Natural Hazards Observer, v. 31, no. 1, p. 11.

http://www.helpindisaster.org/

HelpinDisaster.org: Disaster Volunteer Registry

https://disastersafe.redcross.org/

American Red Cross: Disaster Victim Safe and Well Registry

http://www.northeastcenter.com/links_disability_resources_in_a_disaster.htm

Disability resources in an emergency from the Northeast Center for Special Care.

http://eden.lsu.edu/issues_View.aspx?issueID-9DC4F45E--D715-4577-8AFF-BCC29D5BEEC5

Extension Disaster Education Network: Children and Disasters

http://www.unisdr.org/eng/library/biblio/isdr-%20biblio-1-tsunami-2006.pdf

United Nations International Strategy for Disaster Reduction Library: ISDR-BIBLIO 1: Tsunami.

PUBLICATIONS

Tsunami Glossary

International Oceanographic Commission and International Tsunami Information Centre. 2006. 40 pp. FREE online. United Nations Educational, Scientific, and Cultural Organization; +33 1 45 68 39 83 (France); http://ioc3.unesco.org/itic/contents.php?id=328.

This glossary has been updated to include information on the recent establishment of global intergovernmental coordination groups for tsunami warning and mitigation and to include and improve the definition of terms. Available in English, Spanish, and French, it consists of six sections: tsunami classification; general tsunami terms; surveys and measurements; tide, mareograph, sea level; acronyms and organizations; and bibliography.

From: Natural Hazards Observer, v. 31, no. 1, p. 20.

GIS and Emergency Management in Indian Ocean Earthquake/Tsunami Disaster

2006. 40 pp. FREE online. ESRI; (909)793-2853; info@esri.com; http://www.esri.com/library/whitepapers/pdfs/gis-and-emergency-mgmt.pdf.

The objectives of this ESRI white paper include addressing how, after the 2004 Indian Ocean earthquake and tsunami, geographic information systems (GIS) supported rescue and recovery efforts and continue to support rehabilitation efforts, identifying and reporting on implementations of technology and the associated issues and barriers, describing the GIS data and products that were important to the efforts and those that would have been useful if available, and describing how technology can help prevent catastrophes in this region of the world.

From: Natural Hazards Observer, v. 31, no. 1, p. 20.

Facing Hazards and Disasters: Understanding Human Dimensions

ISBN 0-309-10178-6. 2006. 408 pp. $67.00. National Academies Press; (202) 334-3313; (800) 624-6242; www.nap.edu/.

Social science research conducted since the late 1970s has contributed greatly to society's ability to mitigate and adapt to natural, technological, and willful disasters. However, as evidenced by recent events, hazards and disasters research and its application could be greatly improved. This report includes over thirty recommendations for the hazards and disasters community. Notably, comparative research should be conducted to refine and measure core components of societal vulnerability and resilience to hazards of all types, address the special requirements of confronting disasters caused by terrorist acts, and advance knowledge about mitigation, preparedness, response, and recovery related to disasters having catastrophic physical and social impacts. Moreover, strategic planning and institution building are needed to address issues related to the management and sharing of data on hazards and disasters, sustain the momentum of interdisciplinary research, advance the utilization of social science findings, and sustain the hazards and disasters research workforce.

From: Natural Hazards Observer, v. 31, no. 1, p. 16.

Regional Disaster Resilience: A Guide for Developing an Action Plan

By the Infrastructure Security Partnership (TISP). ISBN 0-7844-0880-7. 2006. 44 pp. FREE. American Society of Civil Engineers; tisp@tisp.org; www.tisp.org/rdr_guide.

This guide was developed by the TISP Regional Disaster Resilience Committee, which is made up of practitioners, policy makers, and technical and scientific experts from across the nation. It provides a strategy to develop the necessary level of preparedness for communities to manage major disasters. It provides key definitions and a set of common assumptions that underpin users with the ability to examine and leverage existing approaches, tools, and technologies and to foster standardization across interdependent infrastructures and regions.

From: Natural Hazards Observer, v. 31, no. 1, p. 16.

Communicating with the Public Using ATIS during Disasters: Concept of Operations

2006. 35 pp. FREE online. U.S. Department of Transportation (DOT) Intelligent Transportation Systems (ITS) Joint Program Office; www.itsdocs.fhwa.dot.gov/JPODOCS/REPTS_TE/14262.htm.

This document is part of a study being conducted for the Federal Highway Administration Office of Operations and the DOT ITS Joint Program Office. The purpose of the study is to examine what information needs to be communicated to evacuees and other travelers under disaster conditions and how the advanced traveler information system assets of a state's department of transportation or other transportation agency can be effectively used to deliver such information. This document details a concept of operations for dissemination of information to the traveling public during a disaster, illustrating how agencies need to interface with each other and what information needs to be shared.

From: Natural Hazards Observer, v. 31, no. 1, p. 17.

Natural Disaster and Disaster Risk Reduction Measures: A Desk Review of Costs and Benefits

Environmental Resources Management. Draft Final Report. 2005. 45 pp. FREE online. Department for International Development (United Kingdom); www.dfid.gov.uk/pubs/files/disaster-risk-reduction.study.pdf.

This document reports the results of a study commissioned to provide an understanding of the economic impacts of disasters, at both macro and local level, and to assess the associated costs and benefits of disaster risk reduction measures. It features a literature review; a discussion of disaster risk reduction measures, including benefits of implementation and ways to estimate benefits; and case studies that illustrate the benefits of implementing comprehensive disaster risk reduction programs.

From: Natural Hazards Observer, v. 31, no. 1, p. 17.

We Can Do Better: Lessons learned for Protecting Older Persons in Disasters

Authors: Mary Jo Gibson and Michele Hayunga. 2006. 88 pp. FREE online. American Association of Retired Persons (AARP); www.aarp.org/research/assistance/lowincome/better.html.

Last December, AARP convened a group of government officials, emergency preparedness and response experts, representatives from relief organizations, and aging and disability advocates to identify lessons learned from Hurricanes Katrina and Rita and to explore workable strategies for the future to better protect older persons in the community and in nursing homes. This conference report addresses three major topics as they relate to older persons: planning and communications, identifying who will need help and what kind of help, and evacuation (i.e., transportation and special needs shelters.)

From: Natural Hazards Observer, v. 31, no. 1, p. 18-19.

CLASSES

New FEMA course targets PIOs

National Incident Management Systems (NIMS) Public Information Systems, IS-702, is a new independent study course offered by the Federal Emergency Management Agency (FEMA). The public information systems described in NIMS are designed to effectively manage public information at an incident, regardless of the size and complexity of the situation or the number of entities involved in the response. The goal of this course is to facilitate NIMS compliance by providing local and state public information officers (PIOs) with the basic information and tools they need to apply the NIMS public information systems and protocols during incident management. Find out more and take the class at www.training.fema.gov/EM/Web/IS/IS702.asp.

From: Natural Hazards Observer, v. 31, no. 1, p. 11.

CONFERENCES

October 19-20, 2006

Joint ITU-T and OASIS workshop and demonstration of advances in ICT standards for public warning, Geneva, Switzerland. Organizers: International Telecommunications Union Telecommunication Standardization Bureau 9ITU-T) and OASIS.

This program is designed to build on the earlier Workshop on Telecommunications for Disaster Relief that emphasized the practical application of standards for public warnings and will identify standardization gaps and provide collaboration opportunities for key players from the public and private sectors. In addition, the workshop will feature an emergency management interoperability demonstration of OASIS Common Alerting Protocol as well as presentations and exhibitions by others active in public warning.

http://www.itu.int/ITU-T/worksem/ictspw/

http://www.oasis-open.org/events/ITU-T-OASISWorkshop2006/

From: Natural Hazards Observer, v. 31, no. 1, p. 25.

October 24-26, 2006

2006 Emergency Preparedness Conference. Vancouver, British Columbia. Organizer: Pacific Northwest Preparedness Society.

This annual conference is attended by delegates from across western Canada that work or volunteer in emergency health and social services, search and rescue, firefighting, or emergency preparedness planning. Themes of the conference will include the impact and aftermath of Hurricane Katrina, avian influenza, pandemic preparedness, animals in disasters, neighborhood preparedness, and the Fraser River flood hazard. Two preconference workshops will help communities with recovery planning for local governments and volunteer management.

http://epc2006.epconference.ca/; (604) 665-6097; info@epconference.ca

From: Natural Hazards Observer, v. 31, no. 1, p. 25.

October 30-November 1, 2006

CPM 2006 East Conference and Exhibition. Orlando, Florida. Sponsor: Contingency Planning and Management (CPM).

This business continuity, emergency management, and security event provides a risk management curriculum for business and government professionals. The objective of the event is to provide a better under-standing of how to unite continuity, emergency management, and security in continuity plans.

(908) 788-0343 x135; CPM2005@witterpublishing.com; http://www.contingencyplanning.com/events/

From: Natural Hazards Observer, v. 31, no. 1, p. 25.

October 31-November 2, 2006

Extension Disaster Education Network (EDEN) 2006 Annual Meeting. Nashville, Tennessee.

The theme of this conference is "Preparing for Disasters" and will focus on sharing disaster education tools. Presentations will cover curriculum/programs, network /capacity building, training, resources/materials, and EDEN programming.

(765) 494-4390; aborron@purdue.edu; http://eden.lsu.edu/2006AM/

October 31-November 2, 2006

Gender and Disaster in Canada: New Thinking, New Directions. Sydney, Nova Scotia. Organizer: International Centre for Emergency Management Studies at Cape Breton University.

Participants at this multidisciplinary workshop will examine gender issues that affect disaster preparedness, response, and recovery in Canada. Participants will explore the roles, contributions, and challenges experienced by Canadian women throughout the emergency management cycle; share practical tools for incorporating gender equality into policies, services, and programs at all levels; and assess prospects for continued networking on issues of gender and disaster in Canada and internationally.

(902) 435-6533; griff@istar.ca; http://www.capebretonu.ca/ICEMS/Events_Gender_06.asp

From: Natural Hazards Observer, v. 31, no. 1, p. 25-26.

December 13-14, 2006

Emergency Preparedness and Response Conference. Washington, DC. Presenters: *Homeland Defense Journal* and National Organization on Disability's Emergency Preparedness Initiative.

This conference will address emergency management planning and response for people with disabilities, the elderly, and pediatric populations. It will bring together national experts to discuss federal sector updates, evacuation, early warning and communication, workplace safety, service animals, and more. Attendees will include federal, state, and local government officials; emergency managers and planners; first responders; and representatives from nongovernmental organizations and the private sector.

(703) 807-2758; pgreenstein@marketaccess.org; http://www.homelanddefensejournal.com/hdl/conf_emergencypreparedness.htm

From: Natural Hazards Observer, v. 31, no. 1, p. 26-27.

March 5-8, 2007

Coastal GeoTools. Myrtle Beach, South Carolina. Organizer: National Oceanic and Atmospheric Administration (NOAA) Coastal Services Center.

Coastal GeoTools will focus on the technical information needs of the nation's coastal programs. The goal of the conference is to help the constituents of the Coastal Services Center address coastal resource management issues through the effective use of geospatial data and tools.

(843) 740-1192; Geo.Tools@noaa.gov; http://www.csc.noaa.gov/geotools.

From: Natural Hazards Observer, v. 31, no. 1, p. 27. ♦

Do you know the hazard in your backyard?

Every year, natural hazards that occur in the United States can result in hundreds of lives lost and cost billions of dollars in the form of disaster aid, disrupted commerce and destroyed public and private properties.

To help educate the public about the threat of natural hazards, the U.S. Geological Survey (USGS) has launched a new Web site and seven easy-to-understand fact sheets on earthquakes, floods, hurricanes, landslides, tsunamis, volcanoes and wildfires. The hazards Web site highlights resources and information available from the USGS and provides links to the individual hazards Web pages for more detailed information. The Web site and fact sheets can be accessed at http://www.usgs.gov/hazards/.

"At the USGS, it is our goal to provide scientific research and analysis that help the public make informed decisions on where natural hazards occur, how severe they may be, how to react to each hazard and how to safeguard people and communities, " said USGS Acting Director P. Patrick Leahy. "If we can use our science to help save lives and minimize the damage caused by natural hazards, we have achieved an enormous goal—helping to prevent natural hazards from becoming disasters.

The USGS has the lead federal responsibility to provide notifications to the public about earthquakes, volcanoes and landslides. These notifications enhance public safety and reduce losses through effective forecasts and warnings based on the best possible scientific information. The USGS plays a supportive role to other federal agencies for flooding, wildfires, hurricanes, tsunamis, and coastal storms.

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. ♦

Tsunami Glossary

T (continued)

Tsunami amplitude…..Usually measured on a water level record, it is: 1. the absolute value of the difference between a particular peak or trough of the tsunami and the undisturbed water level at the time, 2. half the difference between an adjacent peak and trough, corrected for the change of tide between that peak and trough. It is intended to represent the true amplitude of the tsunami wave at some point in the ocean. However, it is often an amplitude modified in some way by the response of the tide gauge.

Tsunami damage…..Loss or harm caused by a destructive tsunami. More specifically, the damage caused directly by tsunamis can be summarized into the following: 1) deaths and injuries; 2) houses destroyed, partly destroyed, inundated, flooded, or burned; 3) other property damage and loss; 4) boats washed away, damaged or destroyed; 5) lumber washed away; 6) marine installations destroyed; and; 7) damage to public utilities such as railroads, roads, electric power plants, water supply installations, etc. Indirect secondary tsunami damage can be: 1) damage by fire of house, boats, oil tanks, gas stations, and other facilities; 2) environmental pollution caused by drifting materials, oil, or other substances; 3) outbreak of disease of epidemic proportions which could be serious in densely populated areas.

Tsunami dispersion…..Redistribution of tsunami energy, particularly as a function of its period, as it travels across a body of water.

Tsunami earthquake…..An earthquake that produces an unusually large tsunami relative to the earthquake magnitude (Kanamori, 1972). Tsunami earthquakes are characterized by a very shallow focus, fault dislocations greater than several meters, and fault surfaces smaller than for normal earthquakes. They are also slow earthquakes, with slippage along their faults occurring more slowly than would occur in normal earthquakes.

Tsunami generation…..Tsunamis are generated primarily by tectonic dislocations under the sea, which are caused by shallow focus earthquakes along areas of subduction. The upthrusted and downthrusted crustal blocks impart potential energy into the overlying water mass with drastic changes in the sea level over the affected region. The energy imparted into the water mass results in tsunami generation which is energy radiating away from the source region in the form of long period waves.

Tsunami hazard assessment…..For each coastal community, an assessment of the tsunami hazard is needed to identify populations and assets at risk, and the level of that risk. This assessment requires knowledge of probable tsunami sources (such as earthquakes, landslides, volcanic eruption), their likelihood of occurrence, and the characteristics of tsunamis from those sources at different places along the coast. For those communities, data of earlier (historical and paleotsunamis) tsunamis may help quantify these factors. For most communities, however, only very limited or no past data exist. For these coasts, numerical models of tsunami inundation can provide estimates of areas that will be flooded in the event of a local or distant tsunamigenic earthquake, local landslide, [or volcanic eruption].

Tsunami numerical modeling…..Often the only way to determine the potential runups and inundation from a local or distant tsunami is to use numerical modeling, since data from past tsunamis is usually insufficient. Models can be initialized with potential worst case scenarios for the tsunami sources or for the waves just offshore to determine corresponding worst case scenarios for runup and inundation. Models can also be initialized with smaller sources to understand the severity of the hazard for the less extreme but more frequent events. This information is then the basis for creating tsunami evacuation maps and procedures. At present, such modeling has only been carried out for a small fraction of the coastal areas at risk. Sufficiently accurate modeling techniques have only been available in recent years, and these models require training to understand and use correctly.

Tsunami period…..Amount of time that a tsunami wave takes to complete a cycle. Tsunami periods typically range from 5 minutes to 2 hours.

Tsunami period (dominant)…..Difference between the arrival time of the highest peak and the next one, measured on a water level record.

Tsunami propagation…..Tsunamis travel outward in all directions from the generating area, with the direction of the main energy propagation generally being orthogonal to the direction of the earthquake fracture zone. Their speed depends upon the depth of water, so that the wave undergo accelerations and decelerations in passing over an ocean bottom of varying depths. Variations in tsunami propagation result when the propagation impulse is stronger in one direction than in others because of the orientation or dimensions of the generating area and where regional bathymetric and topographic features modify both the waveform and rate of advance. Specifically tsunami waves undergo a process of wave refraction and reflection throughout their travels. Tsunamis are unique in that the waveform extends through the entire water column from sea surface to the ocean bottom. It is this characteristic that accounts for the great amount of energy propagated by a tsunami. ♦

Material added to the National Tsunami Hazard Mitigation Program Library
September-October 2006

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

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Sever, Megan, 2006, Faster tsunami warnings with GPS: Geotimes, v. 51, no. 8, p. 10. (see article below)

Uchida, Jun-ichi; Abe, Kohei; Hasegawa, Shiro; Fujiwara, Osamu; Kamataki, Takanobu; Irizuki, Toshiaki; Hirakawa, Kazuomi, 2005, Characteristics of a faunal succession of foraminifera in tsunami- deposits and recognition of sauce [source?] area of the Holocene tsunami deposits at Tateyama, southern part of the Boso Peninsula, Eos (American Geophysical Union Transactions), . 86, no. 52, p. F1656.

U.S. Government Accountability Office, 2006, U.S. tsunami preparedness--Federal and state partners collaborate to help communities reduce potential impacts, but significant challenges remain: U.S. Government Accountability Office GAO-06-519, 60 p. ♦

Faster tsunami warnings with GPS
Megan Sever
http://www.agiweb.org/geotimes/aug06/NN_tsunami.html

When the December 2004 Sumatra earthquake struck, seismometers determined in a matter of seconds that it was big. But the instruments originally estimated its magnitude to be about 8.0, indicating essentially no risk of a major ocean-wide tsunami. Not until five hours after the quake struck did researchers revise the estimate to 9.0 or greater, which meant a high risk for a major tsunami. In the meantime, tsunami waves, moving at jet-speeds, had already crossed the Indian Ocean and violently crashed ashore in Thailand, India, Sri Lanka and elsewhere.

Indeed, time is of the essence when a giant earthquake strikes, especially underwater. Now, a team of researchers says that they have found a new way — using GPS — to more quickly determine if the quake is large enough to produce an ocean-wide tsunami.

The new technique relies on the global GPS network, in which stations are located all over the world, says Geoff Blewitt, a geophysicist at the University of Nevada in Reno. In the June 13 online *Geophysical Research Letters*, Seth Stein, Blewitt and colleagues reported that GPS stations can record even millimeter-sized permanent ground shifts caused by earthquakes hundreds to thousands of kilometers away from the epicenter.

The GPS stations "are very sensitive to the size of an earthquake and will pick up on the size of the earthquake within a matter of minutes," says Stein, a seismologist at Northwestern University in Evanston, Ill. — something seismometers cannot do above magnitude 8 or so. That's because seismometers only measure relatively "short-period" seismic waves in real time, which do not get bigger once an earthquake gets above a certain magnitude threshold, he says. Above a magnitude 8, the seismic waves become "ultra-long-period waves," which take a matter of hours to be measured.

The problem for tsunami warnings, Blewitt says, is that a magnitude-8 earthquake would not set off an ocean-wide tsunami, but a magnitude-8.5 or larger earthquake in the right location would. Thus, as happened for the Sumatra earthquake, he says, the seismometers' warning could come too late.

To test how GPS could help with tsunami warnings, the researchers analyzed data from 38 GPS stations up to 7,500 kilometers from the Sumatra quake's epicenter, and found permanent ground movement within a few minutes of the quake's strike. If these GPS stations had been transmitting data in real time, and a communication structure had been in place to provide adequate warnings, it is possible that some of the tragic loss of life could have been prevented, Stein says.

Any plan to make GPS stations part of a tsunami warning network, says Fred Pollitz, a researcher at the U.S. Geological Survey in Menlo Park, Calif., would require real-time communications and a better density of stations. While some areas of the world, such as the subduction zone off Japan and the Cascadia subduction zone along the U.S. Pacific Northwest and Canada, are already covered with a network of GPS stations, other areas, such as the Chilean subduction zone, have very few stations, he says. Thus, more stations would be needed to create a

reliable global tsunami warning system that does not produce false alarms.

Additionally, Pollitz says, researchers need to better work out the algorithms to fully calculate tsunami risk based on an earthquake's size and the ground movement measured by GPS. Despite such logistical issues, however, Stein's team "convinced me that tsunami warning using GPS is feasible," says Vasily Titov, a researcher at the Pacific Marine Environmental Laboratory in Seattle, Wash. "This is very exciting work."

From: Geotimes, v. 51, no. 8, p. 10. ♦

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updated 3-31-2006

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Tsunami fears and bay development
Leo Sears
Eureka Times Standard, posted September 15, 2006
http://www.times-standard.com/fastsearchresults/ci_4342493
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Worldwide headlines about tsunami damage in and around Humboldt Bay [California]. That's the possible scenario being considered by the staff of the Coastal Commission. Those engaged in researching the archeological data feel there is good evidence that tsunamis of 20 feet or more have hit this area in the past. Whether it will happen again or how soon is anybody's guess.

But given the recent tsunami disasters on the other side of our pond, those responsible for granting permits in vulnerable areas want to play it safe. They are considering requirements that housing in potentially affected areas be built not less than 30 feet above sea level.

One of my first thoughts about the possible new guidelines was how it would affect the investment that has gone into the new housing being planned for Samoa [Humboldt Bay]. I assumed that, with the exception of King Salmon and perhaps Fields Landing, it wouldn't have as much effect on projects on the landward side of the bay. But a quick lesson in the mechanics, or more correctly the hydraulics, involved revealed that it could be even worse inside the bay.

There are many variables, but the fact that the rapid outflow of water before a tsunami would be severely restricted by having to flow through the entrance to the bay makes the possible surge into the bay even higher.

The possible need for revised tsunami standards was brought to the fore, at least in part, by a study commissioned by the developers of the Samoa project. The findings of the study are being used by the commission's staff in the development of recommended guidelines to be brought before the full Coastal Commission for adoption.

The Samoa project developers have been actively working with commission staff to revise their plans for the 100-150 new homes they had expected to build.

The mixed use development envisioned for about 50 acres of waterfront property between the Samoa Bridge, Humboldt Bay/Eureka Slough and the railroad, including a new affordable housing neighborhood, has been put on hold. They say they are waiting to see what the Coastal Commission does regarding the Samoa project, which is much further along.

The proposed ecology center next to the Adorni Center, including their individual huts, will surely have to go back to the drawing board. Anyone looking at new housing projects around the bay is going to have to rethink their plans in light of the possible new guidelines.

At present they are contemplating a recommendation of 30 feet (to give a 10-foot safety factor over the available archeological evidence) that would only apply to residential housing. The current thinking is that most

other permitted uses would still only require warning and evacuation plans.

Whatever the Coastal Commission finally decides, it's bound to be a new ballgame at the lower coastal elevations, and it is already affecting the plans for hundreds of new affordable housing units. ♦

INFREQUENTLY ASKED QUESTIONS
COMPILED BY LEE WALKLING

WHO WOULD DARE MAKE YET ANOTHER FILM ABOUT THE 2004 INDIAN OCEAN EARTHQUAKE AND TSUNAMI?

Ben Katz Productions is said to plan an independent drama, *Hereafter*, to be filmed early in 2007 in Thailand. It will star David Straithairn as an American clothing designer searching for his wife and children after the tsunami separates them. The script is by Michael Patwin, who will direct the film.

The press release says the filmmakers will donate a portion of the money to charity. [Editor's note: it will have to make a profit for this promise to be kept].

SPEAKING OF FILMS HELPING THE VICTIMS OF THE 2004 INDIAN OCEAN EARTHQUAKE AND TSUNAMI, HOW ARE U.K. COSTUME DESIGNERS PROVIDING AID IN SRI LANKA?

Go the webpage http://www.telegraph.co.uk/fashion/main.jhtml?xml=/fashion/2006/04/24/eflace22.xml for the full story.

Leela Wathi is "just one of a growing network of women whom the celebrated UK costume designer Andrea Galer (Bleak House, Mansfield Park, Withnail and I) has taken under her wing as part of a project to repair the region's lace-making industry, destroyed by the giant waves of Boxing Day 2004.

"Ever since lace-making was introduced by the Portuguese in the 15th century, Sri Lankan women have been able to supplement what their menfolk earn from fishing," says Galer. "But the tsunami not only destroyed the fishing industry, it destroyed the lace-making industry, too, by frightening off the tourists who bought the lace. I didn't realise the full extent of the problem until I went there last year.""

Sri Lankan lace was used in the recent BBC version of *Jane Eyre* and the BBC dramatization of Trollope's *He Knew He Was Right*.

Andrea Galer and actress Geraldine James have started an enterprise called the Power of Hands to help the Sri Lankan lace-makers find a market for their work, not only in films and high fashion, but around the world.

WHO ARE THE 2007 IRIS/SSA DISTINGUISHED LECTURERS?

Dr. Brian Atwater, of course. And Dr. Anne Sheehan.

The Incorporated Research Institutions for Seismology (IRIS) and the Seismological Society of America (SSA) are pleased to announce the selection of two speakers from the Earth science research community for the fifth annual IRIS/SSA Distinguished Lectures Series:

Dr. Brian Atwater from the U.S. Geological Survey has a presentation titled:
The Orphan Tsunami of 1700 - A Trans-Pacific Detective Story.

Dr. Anne Sheehan from the University of Colorado at Boulder is offering a presentation titled:
Seeing Beneath Mt. Everest: Probing a Breeding Ground of Destructive Earthquakes.

The lecturers will be presenting talks aimed at general audiences throughout 2007. More information is available at http://www.iris.edu/services/lectures/iris_ssa.htm and http://www.iris.edu/services/lectures/iris_ssa/bios_2007.htm

From: Alan Ruffman, Geomarine Associates Ltd. ♦

VIDEO-CD-DVD RESERVATIONS

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

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

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

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

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

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

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

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

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From: http://www.pmel.noaa.gov/tsunami-hazard/tsuhaz.htm
Updated Mar. 31, 2006

Jamaica and U.S. to sign tsunami warning system MOU

Minister of Local Government and Environment, Dean Peart has announced that the Government of Jamaica is in the final stages of dialogue with the U.S. government, regarding a Memorandum of Understanding (MoU) for the establishment of a tsunami early warning system in the island, and the rest of the Caribbean.

"A tsunami warning system is one in which sensory devices planted beneath the sea are capable of detecting a high intensity earthquake and in real time, relay the information via satellite to the various stations across the Caribbean and to the headquarters in Washington for processing and analysis. Following this an advisory where necessary will be dispatched," Mr. Peart explained in his contribution to the 2006/07 Sectoral Debate in House of Representatives last week.

Citing the benefits for Jamaica under this MoU he said these included, "Jamaica receiving a state-of-the-art broad band equipment ready for use in local, regional and global tsunami early warning systems where currently inadequate capability exists".

In addition, the Minister explained, "Jamaica is set to benefit from the significantly upgraded earthquake sensing equipment and data interpretation capabilities. This MoU would see the U.S. government bearing the cost of all equipment, testing of sites, vault construction and training of locals to operate the station".

Mr. Peart further informed that this early warning system would be made up of nine stations, one of which is to be located at Pike in Manchester.

From: Jamaica Information Service, August 2, 2006
http://www.jis.gov.jm/land_environment/html/20060730t130000-0500_9609_jis_jamaica_and_u_s__to_sign_tsunami_warning_system_mou.asp
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Mediterranean tsunami predicted

On Sept. 8, the AP ran a story quoting scientist Gerassimos Papadopoulous of the Athens Institute of Geodynamics who claims that the Mediterranean region could be hit by a major tsunami before the end of the century.

"According to data presented at the First European conference on Earthquake Engineering and Seismology held in Geneva this week, a major tsunami occurs in the Mediterranean about every 136 years. The last one happened in the south Aegean sea in 1956, killing four people and causing shipwrecks and widespread coastal damage."

From:
http://www.hindu.com/thehindu/holnus/008200609080912.htm

Tsunami warning system, right on your desktop

Following the tragic 2004 Indian Ocean tsunami, the world has focused on better ways to detect earthquake-generated tidal waves and warn people that might lie in their path. Cost has always been a major stumbling block, but now an Austrian named Michael Stadler may have come up with a way to detect a potential tsunami for virtually no cost. Almost all computer hard drives include sophisticated vibration sensors, and the data they provide allows the drive to maintain the required position for the read/write heads against the disks. Stadler has developed a program that can access and analyze this data, then share it with other computers connected via a peer-to-peer network. By comparing notes, the computers can ignore vibrations caused by something like your cat jumping onto the desk, and it can even differentiate between earth movements caused by a tsunami vs. normal seismic activity. If all of the correct factors fall into place, the system will sound the alarm, sending warnings to each of the connected computers.

Stadler's web site with the freeware download can normally be found at www.ninsight.at/tsunami/, but as of today it seems that interest in this story has caused his site to crash for now. Check back later if you're interested in grabbing a copy. — Michael Trei

From:
http://blog.scifi.com/tech/archives/2006/09/09/tsunami_warning.html

Tsunami Harddisk Detector

The Tsunami Harddisk Detector utilizes your existing computer hardware to detect earthquakes, which can lead to tsunamis. It is a pure software solution, therefore it can be distributed free of charge.

From: www.ninsight.at/tsunami/

[See also:
http://www.cio.com/blog_view.html?CID=24594/ for a report on the reception of Stadler's Tsunami Harddisk Detector at the Ars Electronic exhibition in Linz, Austria, in early September.]