TsuInfo Alert

prepared by the Washington State Department of Natural Resources on behalf of the
National Tsunami Hazard Mitigation Program
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Contents **Volume 8, Number 6 December 2006**

Disaster Myths…Second in a Series

PANIC AND THE VISION OF COLLECTIVE INCOMPETENCE

By Russell R. Dynes
From: Natural Hazards Observer, v. 31, no. 2, November 2006
http://www.colorado.edu/hazards/o/archives/2006/nov06/nov06c.html
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As is the case with every myth, panic has complex origins and meanings. It is an emotional word that has been used and emphasized in different ways at different times throughout history. Widely used today, it is often associated with social response to a disaster. It is expected by officials and laypeople, and perpetuated by media and popular culture, that when disaster strikes, panic will ensue, and social norms will break down. This, however, is not the case.

In this article, I will comment briefly on the mythological origin of the term and on its frequent use as a descriptor of psychological states before moving to its common use as a predictor of collective irrationality and incompetence. (For those who wish to examine some of the research literature, a list of resources follows.) I will end by discussing how emergency management is often organized to deal with predicted vulnerabilities rather than to mobilize social capital to deal with actual threats.

The Origin of "Panic"

The *Longman Dictionary of Psychology and Psychiatry* defines panic as "an acute reaction involving terror, confusion, and irrational behavior."(1) This is the definition that is most often attributed to disaster behavior. The word itself has its origins in Greek mythology and is attributed to Pan, a pipes-playing god with the horns, legs, and ears of a goat, who was known for instilling great and unfounded fear in solitary travelers as well as herds of animals and crowds of people, which sent them fleeing, or stampeding, in panic. He was also considered to be the antithesis of Apollo, the measure of culture and sophistication. Get the picture?

Panic as Emotional Self-Description

In modern societies that emphasize individualism and psychological states, panic is frequently used to describe our personal reaction to problematic situations, which are unexpected and possibly threatening and uncertain. A number of years ago, my wife and I were seated in the next to the last row of an airplane when, shortly after takeoff, we were informed that the plane needed to return to the airport. On landing, we were emphatically told to evacuate the plane; the tail engine was on

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NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
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(*continued from page 1*)
fire. As the doors opened and the slides deployed, those in front of us moved out and so did we. The hundred or so passengers and the crew got out safely. At the time, I recalled an ancient Chinese proverb that of the 36 ways to escape danger, running away is the best. And so we ran, along with the others, until we regrouped in a field a safe distance from the burning plane. While fear was a factor, the decision to remove ourselves from danger required reasoning and was the rational choice; we did not panic.

In conversations back at the terminal, I was struck by the extensive use of the term panic. I was equally struck by the lack of comment on our very successful evacuation. As one of the last ones out, I noted that passenger behavior during the evacuation was much more rational and courteous than it had been earlier when we loaded the plane for takeoff. I am confident that in retelling their experiences later, most passengers described the panic rather than the successful evacuation.

Panic as Collective Irrationality

As previously mentioned, the more conventional meaning of panic centers on the notion of irrational and rapid physical flight in situations considered dangerous to the persons involved. It is also often believed that panic is contagious (if one person panics and flees, others will follow, which exacerbates the problem). While panic flight is not unheard of, it is extremely rare in disasters and similar kinds of crisis, and the notion that panic behavior spreads through contagion has been widely discredited. There is no empirical evidence that supports the broad application of this definition of panic to disaster behavior. On the contrary, decades of disaster research shows that people behave rationally in the face of danger, acting to protect themselves as well as others. Simply put, people do not regress to stampede behavior.

The assumption that in a disaster people will flee danger without any rational thought and without regard for others has disastrous policy implications. It enforces the misconception that information about potential threats should be withheld from the public to avoid having to control hoards of people fleeing in panic. When officials buy-in to the belief that people are ill-equipped to handle bad news, they fail their citizens by denying them crucial preparedness and warning messages and delaying evacuation orders, often until it is too late.

It is not clear how the mythology of Pan moved so easily into contemporary reality. Researchers have been unable to determine at what point in history the notion emerged that panic undermined society's ability to deal with threats and danger. Certainly, such themes have been implicit in religious texts and in political histories. There was considerable discussion after World War I about reputed panic among military troops. Charles Fritz once mentioned to me, only partly in jest, that most of the reports that emphasized the occurrence of irrational panic were written by colonels to their commanding generals. These reports explained the rational actions of their troops as they withdrew from impossible situations. Situations created by their colonels' irrational orders. So, where was the panic?

In other words, imputations of panic are made by those in charge when people behave differently and even more rationally than expected. The theme of the inability and inadequacy of civil society to deal with new emergent threats has been rather consistent. In the beginning of the Atomic Age, Val Peterson, director of the Federal Civil Defense Administration under Dwight D. Eisenhower, published "Panic—The Ultimate Weapon" in *Collier's*, a popular U.S. weekly, suggesting that "mass panic—not the A-bomb—may be the easiest way to win a battle, the cheapest way to win a war."(2) And, more recently, a terrorism expert posited that panic caused by terrorism could lead to the collapse of civil society.(3)

Some have suggested that we have seen an increase in the market for fear in recent times. Almost every profession is now working on worst-case scenarios of biblical proportions—greater earthquakes, worldwide pandemics, global warming, more hurricanes, even asteroids. We have become more inventive in constructing possible combinations; terrorists, for example, might destroy an atomic energy plant in an urban area during an earthquake. And the media and popular culture, especially movies, regularly provide us with visual images of panicky mobs rushing toward the exit of civilization.

Accepting the Panic Myth as Truth

Unfortunately, without the ability to predict the future, and given current attitudes about human behavior, we often build our models of emergency management with an emphasis on controlling panic rather than recognizing our social resources for problem solving and empowering our citizens. We move in the direction of government paternalism and away from developing local self-sufficiency. Instead of increasing knowledge of threats, there is emphasis on controlling and restricting knowledge to official sources.

Emergency response has become the province of experts and therapists. The only role for citizens is as victims. While we may understand our vulnerabilities, we are not so good at recognizing our own capabilities and resilience. Local knowledge and local resources are devalued and the emphasis on external assistance undercuts the importance of local coping skills. In addition, the emphasis on external intervention discounts existing social networks and local social capital in order to create victims to help. Threats and disasters create problems for people, but they do not create problem people. In most disaster situations, people work together and help each other (at times to their own detriment). They likely feel fear, but they

rarely panic. I could conclude with the usual advice—do not panic—but that would be gratuitous.

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CONGRATULATIONS

Guam officially declared TsunamiReady and StormReady

In August 2006 NOAA officially recognized Guam as the first U.S. territory to become "TsunamiReady" and "StormReady" after meeting NOAA's preparedness requirements.

'Our people must remain in a constant state of preparedness as our location continues to prove that natural disasters are always imminent," Governor Camacho said. "We are proud to receive this recognition and will continue working to improve our community's readiness to ensure the safety of our people."

Governor Comacho and other officials were presented with the official documentation and the special readiness signs during a ceremony on August 25, 2006 at the Royal Orchid Hotel, Tumon.

TsunamiReady and StormReady designations must be renewed every three years.

From:
http://www.guamgovernor.net/content/view/425/2/

Tsunami Glossary

T (continued)

Tsunami risk…..The probability of a particular coastline being struck by a tsunami times what is exposed to tsunami damages and casualties along that coast. In general terms, risk is the hazard times the exposure.

Tsunami source…..Point or area of tsunami origin, usually the site of an earthquake, volcanic eruption, or landslide that caused large-scale rapid displacement of the water to initiate the tsunami waves.

Tsunami velocity (shallow water velocity)…..The velocity of an ocean wave whose length is sufficiently large compared to the water depth (i.e., 25 or more times the depth).

Tsunami wave length…..The horizontal distance between similar points on two successive waves measured perpendicularly to the crest. The wave length and the tsunami period give an information on the tsunami source. For tsunami generated by earthquakes, typical wave length range from 20 to 300 km. For tsunami generated by landslides, the wave length range from hundreds of meters to tens of kilometers.

Tsunami zonation (tsunami zoning)…..Designation of distinctive zones along coastal areas with varying degrees of tsunami risk and vulnerability for the purpose of disaster preparedness, planning, construction codes, or public evacuation.

Tsunamigenic….Having generated a tsunami: a tsunamigenic earthquake, a tsunamigenic landslide.

U

UNESCO…..United Nations Educational, Scientific and Cultural Organization.

W

Water level (Maximum)…..Difference between the elevation of the highest local water mark and the elevation of the sea level at the time of the tsunami attack. This is different from maximum runup because the water mark is often not observed at the inundation line, but may be halfway up the side of a building or on a tree trunk.

Wave crest…..1. The highest part of a wave; or 2. that part of the wave above still water level.

WDC…..World Data Center. ♦

NEWS

Third Tsunami Symposium of the Tsunami Society, Honolulu, Hawaii, USA, 23-25, May 2006

The Third Tsunami Symposium of the Tsunami Society took place 23-25 May 2006 at the East-West Center at the University of Hawaii (UH) in Honolulu. Dr. Gary Ostrander, UH Vice Chancellor for Research, gave the welcoming address. Other welcoming addresses were given by Dr. Barbara Keating, Symposium Chairperson and Tsunami Society President, and by Dr. Charles Mader, Symposium Program Chairman and editor of *The Science of Tsunami Hazards*. The Symposium included several theme sessions over a three-day period, poster presentations, a banquet and awards ceremony, and a field trip after its conclusion. The Third Tsunami Symposium was a very successful conference attended by many scientists from several countries.

Emphasis in the Third Tsunami Symposium program was given to the Indian Ocean tsunami of 26 December 2004 and what was learned from it. Several members of the Tsunami Society had participated in extensive surveys of nations affected by the disaster and reported on their findings. Papers were presented on the US response to the Indian Ocean tsunami, field observations, numerical modeling and tsunami risk management.

The 2006 Tsunami Symposium program, abstracts and complete presentations were published in a special Tsunami Symposium issue of *The Science of Tsunami Hazards*, which can be found at http://www.sthjournal.org/tsabst/prog.htm.

From: *Tsunami Newsletter,* v. 38, no. 3, p. 23-24.

Quileute tsunami drill goes off without a hitch
2006-10-05
by DIANE URBANI DE LA PAZ
Peninsula Daily News
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LAPUSH -- The sea and sky could not have been bluer or more tranquil -- until 10 a.m., when two horn blasts sent dozens of children scurrying to their big yellow bus.

``Hustle, hustle," teachers said as the Quileute Tribal School students clambered on. Then came the motorized stampede for the A-Ka-Lat (``top of the hill") Center in Wednesday's tsunami drill at the Quileute Reservation. Two school buses lumbered down the driveway as a few women darted in front of them en route to their cars. Then a long line of vehicles headed for higher ground.

The drill's goal was to gather some 200 people on the 1-square-mile reservation at the center on By-Yak Way within 15 minutes. The school buses made it in six minutes. And the whole community had assembled in the center's gym in nine minutes, said incident commander and LaPush Police Chief Bill Lyon.

From: http://www.peninsuladailynews.com/sited/story/html/264497

Nearly $2 million granted to Geophysical Institute for tsunami education
Kathy Bertram, University of Alaska Fairbanks
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Alaska is no stranger to the devastating effects of tsunamis. The state has experienced 37 since the 1800s, three of which are known around the world for the amount of destruction they caused: the 1964 Alaska Tsunami, the 1958 Lituya Bay Tsunami and the 1946 Aleutian Tsunami. Alaska is prone to tsunamis because of two factors: our enormous amount of coastline and our tendency for large earthquakes. The Alaska Tsunami Education Program (ATEP), a new project developed by staff at the Geophysical Institute, aims to use Alaska's risk of tsunamis as a springboard for polishing students' math and science skills. Developers received $1,815,453 from the United States Department of Education to push ATEP to fruition and work has begun on the K-12 curriculum.

Schools in 16 villages within Aleutians East, Kodiak Island, and Lake and Peninsula Boroughs are targeted for ATEP. The program calls for collaboration among school districts, Alaska Native organizations, government agencies and research institutes. ATEP developers also work closely with the Alaska Earthquake Information Center, within the Geophysical Institute, and the West Coast/ Alaska Tsunami Warning Center in Palmer, Alaska.

Through ATEP, students become familiar with the signs of an impending tsunami and learn how to react to them. Students learn, for example, that if the tide goes out suddenly, or an earthquake rumbles in a coastal community, there is a chance a tsunami may strike the area. If children know and share these basic principles with their family and friends, it could curb the destruction from future tsunamis in the state. Students also work on service-oriented projects that involve mapping rural communities, and pinpointing areas of local cultural significance. The projects help students develop workforce applicable skills, according to Kathy Bertram, principal investigator for ATEP.

"The Alaska Tsunami Education Program blends science instruction with Alaska Native cultural traditions," Bertram said. "ATEP builds a bridge between students and their communities to increase local interest in public schooling. Working with local officials and scientists also provides career focus."

The Alaska Tsunami Education Program is modeled after a handful curricula developed by Berry Bertram and her team at the Geophysical Institute, including the successful Aurora Alive, Volcanoes Alive, and the Arctic Climate Modeling programs. All of these projects couple Native knowledge with scientific concepts to bolster student success.

From: http://www.eurekalert.org/pub_releases/2006-10/uoaf-nm100506.php

Great Earthquake Tsunami Sources—Empiricism & Beyond, Menlo Park, California, USA, 21-22 April 2006

A tsunami sources working group at the USGS Menlo Park (led by Stephen Kirby, Eric Geist, and Willie Lee) held a workshop on April 21-22, 2006 that was co-sponsored by the Coastal & Marin Geology and Earthquake Hazards Programs of the USGS. The theme of the workshop was Great Earthquake Tsunami Sources—Empiricism & Beyond Empiricism. In support of efforts to upgrade tsunami warning capabilities, the main objective of the workshop was to determine whether or not there are geologic or tectonic controls on the occurrence of M> 8.5 earthquakes along the world's subduction zones. This workshop was well attended by over 90 scientists from around the world, including Australia, Canada, Germany, Japan, New Zealand, Puerto Rico, Taiwan, and Thailand. Results from this workshop provided guidance on new directions for future tsunami research.

Workshop details, including presentation abstracts, can be found at http://walrus.wr.usgs.gov/tsunami/workshop/index.html.

From: *Tsunami Newsletter,* v. 38, no. 3, p. 23.

New preparedness initiative for older Americans and individuals with disabilities

The U.S. Department of Homeland Security (DHS) has joined forces with AARP, the American Red Cross, the National Organization on Disability (NOD), and the National Fire Protection Association (NFPA) to help older Americans and individuals with disabilities prepare for emergencies. The DHS' Ready campaign, AARP, Red Cross, and NOD developed two new brochures that highlight the key preparedness steps older and disabled Americans and their families and caretakers should take before emergencies occur and the NFPA produced *Emergency Evacuation Planning Guide for People with Disabilities* to help individuals with disabilities and businesses prepare for emergency evacuations.

Additionally, NFPA is including evacuation planning for people with disabilities in its series of emergency evacuation workshops. For free copies of the brochures, call (800) 237-3239 or visit www.ready.gov/. NFPA's planning guide will be available for free download later this year at www.nfpa.org/.

From: Natural Hazards Observer, v. 31, no. 2, p. 8-9. http://www.colorado.edu/hazards/o/archives/2006/nov06/nov06f.html#stafford

Annual Stafford Act updates

Under the authority of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, each year the Federal Emergency Management Agency (FEMA) adjusts the statewide per capita impact indicator (per capita cost of a disaster that qualifies a state for disaster assistance) and reexamines the maximum dollar amounts available for assistance under the Individuals and Households Program (IHP) and for Small Project Grants to state and local governments and eligible private nonprofit facilities. This year's adjustments are based on an increase in the Consumer Price Index for All Urban Consumers, as published by the U.S. Department of Labor, of 3.8 percent. For any single disaster or major emergency declared on or after October 1, 2006, the statewide impact indicator is $1.22 (the countywide indicator is $3.05), the maximum amount of IHP financial assistance provided to an individual or household is $28,200, the maximum amount of repair assistance is $5,600, the maximum amount of replacement assistance is $11,300, and the maximum amount of any Small Project Grant is $59,700.

Details about these revisions are available in the October 10, 2006, *Federal Register*, Vol. 71, No. 195, pp. 59513-59514, which can be found in any federal depository library and online at www.gpoaccess.gov/fr/. To learn more about the maximum amount of IHP assistance, contact Berl Jones at (202) 646-4235. For information about the other adjustments, contact James A. Walke at (202) 646-3834. Send written correspondence to FEMA, 500 C Street SW, Washington, DC 20472.

From: Natural Hazards Observer, v. 31, no. 2, p. 7 http://www.colorado.edu/hazards/o/archives/2006/nov06/nov06f.html#stafford

Public schools will receive radios for use in emergencies

Following the successful pilot program last year, the ongoing partnership of the National Oceanic and Atmospheric Administration (NOAA), the U.S. Department of Education, and the U.S. Department of Homeland Security has launched the completion of the nationwide project to distribute a NOAA Public Alert Radio, also known as NOAA Weather Radio All Hazards, to every public school in America. In late September, 80,000 radios were shipped to schools across the country to augment the 2005 pilot program.

NOAA Public Alert Radios help safeguard the children in America's schools. With 24/7 capability and battery backup, the radio is always on guard to alert school personnel to severe weather conditions, terrorist threats, and other emergencies, even when other communication lines are unavailable. Find out more about the program at http://public-alert-radio.nws.noaa.gov/.

From: Natural Hazards Observer, v. 31, no. 2, p. 8 http://www.colorado.edu/hazards/o/archives/2006/nov06/nov06f.html#stafford

2007 UN Sasakawa Award for Disaster Reduction nomination process

The 2007 nomination process for the United Nations (UN) Sasakawa Award for Disaster Reduction is underway. The intent of the prestigious award is to recognize individuals and institutions from around the world who contributed, through innovative practices and outstanding initiatives, to reducing the risk and vulnerabilities of communities to natural hazards. The award is worth approximately $50,000 and will be shared among the Sasakawa laureate and recipients of the Certificates of Distinction and Merit. It will be presented at a special ceremony on the International Day for Disaster Reduction, October 10, 2007. Nominations are due June 29, 2007. To find out more, download a nomination booklet from www.unisdr.org/eng/sasakawa/2007/Sasakwa-Award-2007-English.pdf.

From: Natural Hazards Observer, v. 31, no. 2, p. 6 http://www.colorado.edu/hazards/o/archives/2006/nov06/nov06g.html#un

Pets get recognition in disasters

By signing the Pets Evacuation and Transportation Standards Act of 2006 (Public Law 109-308), the president authorized amendment of the Robert T. Stafford Disaster Relief and Emergency Assistance Act to ensure that state and local emergency preparedness operational plans address the needs of individuals with household pets and service animals following a major disaster or emergency. Read the law in any federal repository library or on the Library of Congress website at http://thomas.loc.gov/.

From: Natural Hazards Observer, v. 31, no. 2, p. 11. http://www.colorado.edu/hazards/o/archives/2006/nov06/nov06f.html#stafford

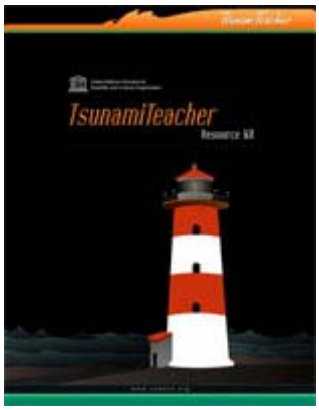
PERI/ICMA launch Emergency Management Network

The Public Entity Risk Institute (PERI) and the International City/County Management Association (ICMA) have joined together to launch the National Emergency Management Network (NEMN)—a national network that enables local governments to work together to augment their emergency response and recovery capacity. The NEMN program includes a combination of training, information resources, and tools that prepare and link local governments and organizations.

Membership in the NEMN is available to public entities on an annual subscription basis and includes access to educational and training resources and NEMN software technologies that aid in visualizing, sharing, deploying, and managing emergency response and recovery resources. For more information and to join the NEMN, visit www.nationalemergencymanagementnetwork.com/ or call (866) 460-6366.

From: Natural Hazards Observer, v. 31, no. 2, p. 17. http://www.colorado.edu/hazards/o/archives/2006/nov06/nov06g.html#peri

PUBLICATIONS



TsunamiTeacher

As a contribution to the building of training to support the communication of tsunami risk to the public, the IOC of UNESCO has developed the *TsunamiTeacher Information and Resource Toolkit*. The Toolkit brings together a wealth of new and existing information on tsunamis into a single, reliable, and verified global resource that is widely accessible to people, groups and governments around the world. *TsunamiTeacher* aims to build awareness and capacity to respond and mitigate the impact of tsunamis through the sharing of knowledge, research, and best practices. Materials are available that can be adapted to develop locally relevant responses. A feature of the Toolkit is the ability to customize training modules for different audiences.

Training Modules target the Media, Educational Systems, and the Public and Private Sectors, including governments, non-government organizations, businesses, and community groups. Within the government sector, a large amount of training material has been assembled on earthquake and tsunami science and research, tsunami events, and the building of tsunami warning and mitigation systems. These topics include hazard and risk assessment, operational warning and dissemination systems, tsunami emergency response, alerting, and preparedness, environmental, engineering mitigation and policy, and education and outreach. Resource materials are provided as examples and guidance for decision-makers.

TsunamiTeacher is supported both as a dynamic, electronic, on-line resource that will be continually reviewed, updated, and added to by experts, and as an off-line set of DVDs which will run on PC and Macintosh platforms. The base language is English, with translations presently planned into Bahasa Indonesia, Bangladesh Bangla, French, Spanish, and Thai.

From: http://www.tsunamiwave.info/

The Newfoundland tsunami of November 18, 1929—An examination of the twenty-eight deaths of the "South Coast Disaster:"

By Alan Ruffman and Violet Hann: *Newfoundland and Labrador Studies*, v. 21, no. 1, p. 97-148. The report includes 2 maps, 11 photographs, 57 endnotes, and 10 tables.

Alan Ruffman has been a student of the 1929 "Grand Banks" earthquake and tsunami since 1986 and has done considerable historic seismicity work in Atlantic Canada. He has just returned from Tamil Nadu in southeast India where he was looking for geological traps for historic and palaeotsunamis that will have impacted the coasts long before the December 26, 2004 tragic Indian Ocean event. He is a Research Associate of the Maritime Museum of the Atlantic in Halifax and is an Honourary Research Associate at the Dalhousie University Department of Earth Sciences.

Violet Hann grew up as Violet Hillier in Muddy Hole, Lamaline on the Burin Peninsula. She was a founding member of the Family History Society of Newfoundland and Labrador, Inc. and is currently preparing a history of Lamaline. She is a widely-versed student of genealogy of the communities of the Burin and is directly related to victims of the 1929 tsunami in Taylor's Bay and Point au Gaul.

This even, often referred to as the "Grand Banks" earthquake, still stands as Canada's most tragic known historic earthquake despite the West Coast of Canada's close proximity and obvious vulnerability to the offshore Cascadia subduction zone. The 1929 tsunami was caused by a landslide shaken loose by a magnitude 7.2 earthquake. The reason for the 1929 earthquake some 18 km below the ocean floor and other aftershocks in the Laurentian Slope Seismic (LSP) source zone is not yet well understood by geoscientists.

From: Alan Ruffman, letter, 9-29-2006

The Orphan Tsunami of 1700

Online book review by George Pararas-Carayannis http://library.lanl.gov/tsunami/ts241.pdf

Long-Term Community Recovery Planning Process: A Self-Help Guide

2005. 106 pp. Free online. Federal Emergency Management Agency; www.fema.gov/pdf/rebuild/ltrc/selfhelp.pdf. This guide is intended to provide state, tribal, and local governments with a framework for implementing their own long-term community recovery (LTCR) planning process after a significant disaster event. It provides step-by-step guidance for implementing an LTCR planning program, incorporates case studies for each of the steps in an LTCR program, offers guidance and suggestions for involving the public in the recovery program, and provides a method for developing an LTCR plan that is a flexible and useable blueprint for community recovery.

From: Natural Hazards Observer, v. 31, no. 2, p. 19. http://www.colorado.edu/hazards/o/archives/2006/nov06/nov06i.html#pubs

ISDR-BIBLIO

The U.N. International Strategy for Disaster Reduction has started a new bibliographic compilations series entitled *ISDR-BIBLIO*. Much like CRID's *Biblio-des* series, each new edition will be dedicated to a specific hazard or aspect of disaster reduction. The first edition is devoted to tsunamis, in commemoration of the earthquake of December 2004 that triggered a devastating tsunami in the Indian Ocean, causing the death of almost 300,000 people and extensive damage in many countries. Included in the catalogue are descriptions of major academic, technical and scientific publications on tsunamis, reports produced the U.N. agencies, as well as audiovisual material on the subject. Future editions of *ISDR-BIBLIO* will feature material related to the theme of the World Disaster Reduction Campaign or other specific requests. For additional information contact the UN/ISDR Library for Disaster Reduction at darricau@un.org, or visit www.unisdr.org/library.

From: Disasters—Preparedness and Mitigation in the Americas, issue 105, p. 6.

Multi-Jurisdictional Mitigation Planning: State and Local Mitigation Planning How-To Guide Number Eight

The Federal Emergency Management Agency (FEMA) has released the latest guide in its mitigation planning how-to series: *Multi-Jurisdictional Mitigation Planning: State and Local Mitigation Planning How-To Guide Number Eight* (FEMA 386-8, 52 pp.). This guide provides suggestions to local governments in preparing multijurisdictional mitigation plans. A multijurisdictional hazards mitigation plan is a plan jointly prepared by more than one jurisdiction and may include any county, municipality, city, town, township, school district or other special district, council of governments or other regional organization, Indian tribe or Alaska Native village, or unincorporated area. Multijurisdictional plans pose special considerations that single jurisdictional plans may not face; but there are benefits as well, such as plan preparation cost savings, shared staff and resources, and comprehensive approaches to mitigating hazards that cross jurisdictional boundaries. Download a copy of the new guide, which is only available online, and learn more about the other guides in the series at www.fema.gov/plan/mitplanning/planning_resources.shtm.

From: Natural Hazards Observer, v. 31, no. 2, p. 8 http://www.colorado.edu/hazards/o/archives/2006/nov06/nov06f.html#stafford

An ADA Guide for Local Governments: Making Community Emergency Preparedness and Response Programs Accessible to People with Disabilities

The U.S. Department of Justice (DOJ) has released a newly revised and expanded version of its publication *An ADA Guide for Local Governments: Making Community Emergency Preparedness and Response Programs Accessible to People with Disabilities* (11 pp.). The guide is designed to help local government planners, first responders, and emergency staff prepare for and meet the unique needs of people with disabilities during natural and civil emergencies. The guide identifies potential problems in notifying, evacuating, transporting, sheltering, and providing information to people with disabilities during emergencies and offers solutions for preventing or minimizing those problems. The guide can be viewed or downloaded from www.ada.gov/emergencyprep.htm or ordered from (800) 514-0301, (800) 514-0383 (TTY).

From: Natural Hazards Observer, v. 31, no. 2, p. 8. http://www.colorado.edu/hazards/o/archives/2006/nov06/nov06f.html#stafford

Disaster Response and Recovery* and *Emergency Planning (textbooks)

The following textbooks are the first two in an emergency management series from Wiley Higher Education. They present the core concepts and principles that are essential in any position that requires emergency management and first responder training. Each book is supported by instructor manuals, test banks, PowerPoint presentations, and companion Web sites. John Wiley & Sons; (877) 762-2974; www.wiley.com/go/pathways/.

Disaster Response and Recovery. David A. McEntire. ISBN 0-471-78974-7. 2007. 504 pp. $51.95. This text, which is based on the academic literature and practical understanding, provides an overview of disasters, the actors that are involved in emergency management, and the diverse theoretical frameworks from which postdisaster activities may be approached. After addressing the most salient functions performed when disasters strike (e.g., warning, evacuation, search and rescue, debris removal, donations management, etc.), it examines typical challenges to be expected during response efforts along with tools and techniques to enhance the ability to protect lives, reduce property damage, and minimize disruption.

*Emergency Planning***.** Ronald W. Perry and Michael K. Lindell. ISBN 0-471-92077-0. 2007. 519 pp. $51.95. In order for a community to be truly prepared to respond to any type of emergency, it must develop effective emergency planning. This textbook guides readers through the steps of developing these plans, offering a number of strategies that will help ensure success. It delves into the patterns of human disaster behavior, social psychology, and communication as well as the basics of generic protective actions, planning concepts, implementation, and action.

From: Natural Hazards Observer, v. 31, no. 2, p. 19. http://www.colorado.edu/hazards/o/archives/2006/nov06/nov06i.html#pubs

State and Regional Responses to Disasters: Solving the 72-Hour Problem

Jill D. Rhodes and James Jay Carafano. 2006. 8 pp. Free online. Heritage Foundation; www.heritage.org/Research/HomelandDefense/bg1962.cfm. The authors of this "backgrounder" suggest that better planning at a regional level could prevent shortfalls in disaster response. Specifically, they recommend that a regional tier be added to the response process between the state and federal tiers. Regional programs, in conjunction with U.S. Department of Homeland Security regional offices, could then provide states with support during incidents that are too large for a state to manage on its own but that do not require a full federal response.

From: Natural Hazards Observer, v. 31, no. 2, p. 19. http://www.colorado.edu/hazards/o/archives/2006/nov06/nov06i.html#pubs

Seaside, Oregon Tsunami Pilot Study—Modernization of FEMA Flood Hazard Maps

Open-File Report 2006-1234. 2006. 161 pp. Free online. U.S. Geological Survey; http://pubs.usgs.gov/of/2006/1234/. Federal Emergency Management Agency (FEMA) flood insurance rate map guidelines do not currently exist for conducting and incorporating tsunami hazard assessments that reflect the substantial advances in tsunami research achieved in the last two decades. This report documents the results of a tsunami pilot study carried out in Oregon as part of FEMA's Map Modernization program to develop an improved probabilistic tsunami hazard assessment methodology and to provide recommendations for improved tsunami hazard assessment guidelines.

From: Natural Hazards Observer, v. 31, no. 2, p. 25. http://www.colorado.edu/hazards/o/archives/2006/nov06/nov06i.html#pubs

Joint Evaluation of the International Response to the Indian Ocean Tsunami: Synthesis Report

John Telford, John Cosgrave, and Rachel Houghton. 2006. 178 pp. Free online. Tsunami Evaluation Coalition; +44 (0)20 7922 0300 (United Kingdom); alnap@odi.org.uk; www.tsunami-evaluation.org/. This report synthesizes five Tsunami Evaluation Coalition thematic evaluation reports, their substudies, and other materials related to the humanitarian response to the 2004 Indian Ocean earthquake and tsunami. It provides a brief overview of the impact of the event on the affected region and presents an account of the response, from the immediate relief phase through stabilization to the beginnings of

recovery. Lessons and recommendations are based on the principle recommendation for a fundamental reorientation of the humanitarian sector to shift emphasis from delivery to support and facilitation of the relief and recovery priorities of affected populations. Also available are the thematic evaluations: *Coordination of International Humanitarian Assistance in Tsunami-Affected Countries* (91 pp.); *The Role of Needs Assessment in the Tsunami Response* (123 pp.); *Impact of the Tsunami Response on Local and National Capacities* (120 pp.); *Links between Relief, Rehabilitation and Development in the Tsunami Response* (102 pp.); and *Funding the Tsunami Response* (59 pp.).

From: Natural Hazards Observer, v. 31, no. 2, p. 25. http://www.colorado.edu/hazards/o/archives/2006/nov06/nov06i.html#pubs

Mass Emergencies

Four years before the International Research Committee on Disasters (RC 39) launched its peer-reviewed journal, the *International Journal of Mass Emergencies and Disasters*, fourteen issues of a short-lived predecessor, *Mass Emergencies*, had been published.

Created by E. L. Quarantelli and Jiri Nehnevajsa and published by Elsevier Scientific of Amsterdam, four volumes of *Mass Emergencies* appeared from 1975 through 1979. Some classic articles are to be found in this earlier journal which was abruptly discontinued by the publisher.

Now the complete contents of the old *Mass Emergencies* are available free of charge on the Internet. The URL is www.massemergencies.org. Each article and book review is a separate PDF document which may be viewed onine, downloaded and saved, or printed.

From: Unscheduled Events, v. 25, no. 3, p. 9.

Contemporary Disaster Review

Also launched recently was an electronic journal of reviews, *Contemporary Disaster Review*. CDR is an online journal hosted by the Department of Sociology and Anthropology at Millersville University (Pennsylvania, USA). It is freely available to researchers, practitioners, and media personnel as well as the general public. *CDR* was created by Henry Fischer, who remains its editor. The URL is http://muweb.millersville.edu/~cdr/.

From: Unscheduled Events, v. 25, no. 3, p. 4.

WEBSITES

http://www.stormready.noaa.gov/tsunamiready/homepage
http://www.weather.gov/directives/sym/pd01018002curr.pdf application form

Apply for TsunamiReady designation.

http://www.pmel.noaa.gov/tsunami/time.

Current Tsunami-Related Warning and Mitigation Projects: Alaska, California, Hawaii, Oregon, and Washington, in cooperation with NOAA's National Tsunami Hazard Mitigation Program, have been modeling possible tsunami events that could occur on their coasts. Progress to date on the inundation mapping effort for each of these states is accessed at the URL given above.

From: WSSPC Tsunami Center webpage: http://www.wsspc.org/TsunamiCenter/index.html

www.disastersrus.org/

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Last updated: 11-24-2006. Created by: Craig Fugate This is a private web site and reflects my personal opinions. For a look at my day job, visit www.floridadisaster.org --home page of the Florida Division of Emergency Management.

http://sustainlane.com/article/840/Cities+by+Category+Ranking%3A+Natural+Disaster+Risk.html

Natural Disaster Risk for U.S. Cities

www.tallytown.com/redcross/educate.html

American Red Cross Capital Area Chapter (Florida): Disaster Education, Preparedness, Planning, and Mitigation Library

www.emergencymgmt.com/

New Magazine: *Emergency Management*

www.massemergencies.org/

Old journal now online: *Mass Emergencies*

http://database-dkkv.dyndns.org/

Online Database: International Projects and Concepts for Disaster Prevention

CLASSES, SEMINARS, WORKSHOPS

New Course to Serve People with Disabilities after Disaster

Serving People with Disabilities following Disaster is a new course form the American Red Cross to better prepare employees and volunteers to serve victims of disasters. In developing the course, the Red Cross partnered with the U.S. Department of Homeland Security Office of Civil Rights and Civil Liberties and organizations such as the National Organization on Disability and the National Spinal Cord Injury Association. The course consists of a 45-minute online self-study, an eight-hour instructor-led class, and a two-hour tabletop exercise. To learn more

about this and other Red Cross courses, contact your local Red Cross chapter. To find your local chapter, visit www.redcross.org/where/where.html.

From: Natural Hazards Observer, v. 31, no. 2, p. 18. http://www.colorado.edu/hazards/o/archives/2006/nov06/nov06g.html#peri

ICS Overview for Executives/Senior Officials Course Available for Download

The Federal Emergency Management Agency's new Incident Command System (ICS) Overview for Executives/Senior Officials, G402, has proven to be quite popular. As a result, although distribution of "G" courses is typically limited to regional training managers and state training officers, the course has been posted to the Emergency Management Institute (EMI) Web site for download. EMI stresses that these course materials are intended to be delivered in an instructor-led classroom training. It is not a self-paced, self-study, or computer-based training course. Access the materials at www.training.fema.gov/EMIWeb/pub/g402.asp (sign-in required).

From: Natural Hazards Observer, v. 31, no. 2, p. 11. http://www.colorado.edu/hazards/o/archives/2006/nov06/nov06f.html#stafford

Postgraduate Certificate: Study and Management of Geological Risks—Geneva, Switzerland: April 16–June 15, 2007.

Organizer: Université de Genève, Centre d'Etude des Risques Géologiques. The objective of this course is for students to develop expertise in the field of natural risk mitigation by integrating it into the planning of sustainable development. The course offers a multi-disciplinary approach to the search for solutions for a society confronted with natural risks and aims to develop experts who can advise the public and private sectors to take preventive measures to reduce the impact of natural disasters. Applications are due November 30, 2006. CERG-Secrétariat +41 22 379 66 02 (Switzerland); cerg@unige.ch; www.unige.ch/hazards/

From: Natural Hazards Observer, v. 31, no. 2, p. 30. http://www.colorado.edu/hazards/o/archives/2006/nov06/nov06j.html

New ICC Disaster Certifications

The need for assistance during disaster recovery prompted the International Code Council (ICC) to offer two new professional certifications to assess practical competency in using codes and standards. The Disaster Response Inspector certification illustrates an individual's ability to inspect, evaluate, and document structural damage and qualifies individuals to assist any community in its disaster assessments. The Coastal and Flood Plain Construction Inspector certification brings an added layer of protection to coastal developments and communities with designated floodplain zones and qualifies individuals to inspect coastal homes and businesses to ensure structures meet code requirements. To learn more, visit www.iccsafe.org/certification/ or call (888) 422-7233 x33806.

From: Natural Hazards Observer, v. 31, no. 2, p. 18. http://www.colorado.edu/hazards/o/archives/2006/nov06/nov06g.html#peri

SYMPOSIUM, CONFERENCES

February 8-9, 2007

National Conference on Disaster Planning for the Carless Society—New Orleans, Louisiana**.** Organizers: University of New Orleans Transportation Center, New Orleans Regional Planning Commission, and Regional Transit Authority. Hurricanes Katrina and Rita revealed how vulnerable carless residents are in emergency situations. Evacuation plans in most major cities across America fail to adequately take into account the needs of the elderly, disabled, and transit dependent populations. The goal of this conference is to bring together government officials, professionals, and experts to discuss how we can better prepare to help those who most need it. www.carlessevacuation.org/

From: Natural Hazards Observer, v. 31, no. 2, p. 29. http://www.colorado.edu/hazards/o/archives/2006/nov06/nov06j.html

May 13-16, 2007

15th World Conference in Disasters and Emergency Management—Amsterdam: The Netherlands**.** Organizer: World Association for Disaster and Emergency Medicine. This congress aims to catalyze thought processes and to come up with very clear products to better prepare experts, organizations, and governments for the next disaster or crisis. The central themes will be preparedness, knowledge, training, and networks. Attendees will include policy makers, researchers, clinicians, responders, planners, administrators, and other experts from around the world who have interest in the most urgent medical and humanitarian problems of the 21st century. +31 (0)20 444 8444 (The Netherlands); www.wcdem2007.org/; paog@vumc.nl

From: Natural Hazards Observer, v. 31, no. 2, p. 31. http://www.colorado.edu/hazards/o/archives/2006/nov06/nov06j.html ♦

The 2006 Index will be printed in the February 2007 issue of *TsuInfo Alert.*

Materials added to the NTHMP Library collection, November-December 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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Western States Seismic Policy Council Awards in Excellence

The Western States Seismic Policy Council (WSSPC) is pleased to announce that Lloyd S. Cluff of Pacific Gas & Electric Company, San Francisco, California, and Christopher Rojahn of Applied Technology Council, Redwood City, California, were awarded the 2006 WSSPC Lifetime Achievement Award in Earthquake Risk Reduction.

The awards were presented at the 1906 Earthquake Anniversary Conference, at the WSSPC Awards / Disaster Resistant California Luncheon, Wednesday April 19, at the Moscone Center in San Francisco, California.

WSSPC created the award to recognize outstanding leaders in earthquake risk reduction. This person will have demonstrated throughout his or her career an extraordinary commitment, level of service, and contribution to the application of earthquake risk reduction to public policy.

Lloyd Cluff is being recognized for his achievements during his 45-year career as a world-renowned expert in earthquake geology, well-published research scientist, public policy champion of earthquake safety, inspiring educator, sought-after consultant, president and board member of many professional organizations, and successful business leader. As a geologist in the private sector, Lloyd has used the lessons learned from his investigations of significant earthquakes to improve engineering design practices, seismic safety, and earthquake preparedness.

Under Christopher Rojahn's leadership as Executive Director of the Applied Technology Council, ATC has expanded from an emerging organization in earthquake engineering to a major contributor to earthquake risk reduction. ATC projects undertaken and completed during Chris' tenure have established the basis for earthquake engineering practice in the United States and have greatly influenced public policy in earthquake risk reduction.

For more informations on Lloyd S. Cluff: http://www.wsspc.org/Awards/2006/Cluff%20WSSPC%202006.pdf

For more information on Christopher Rojahn: http://www.wsspc.org/Awards/2006/Rojahn%20WSSPC%202006.pdf ♦

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updated 3-31-2006

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CONGRATULATIONS

NOAA designates Onslow County as TsunamiReady

On October 1, 2006, Onslow County [North Carolina], along with its coastal communities of Swansboro, North Topsail Beach and Marine Corps Base Camp Lejeune, became the first North Carolina County to be deemed TsunamiReady by the National Oceanic and Atmospheric Administration (NOAA).

NWS meteorologist in charge Tom Kriehn stated "NOAA has expanded its tsunami detection and warning capability since the Indian Ocean tsunami and community preparedness programs like TsunamiReady are key components of this effort. Ultimately, it's the public's ability to react to such warnings that completes the chain in an effective tsunami warning process. Becoming a TsunamiReady community helps accomplish this".

In order to achieve the designation as TsunamiReady, a community must establish a 24-hour warning point and emergency operations center; have more than one way to receive tsunami and severe weather warnings and forecasts to alert the public; create a system that monitors local weather conditions; promote the importance of public readiness; and develop a formal hazardous weather plan, which includes training severe weather spotters and holding emergency exercises. The TsunamiReady Program, developed by the National Weather Service, is designed to help cities, counties and towns in coastal areas reduce the potential for disastrous tsunami-related consequences.

Onslow County joins other larger East Coast communities such as Myrtle Beach, South Carolina and Norfolk, Virginia in achieving this level of emergency preparedness. The Onslow County Multi-jurisdictional Hazard Mitigation Plan, which is a method to ensure a community prepares for and takes measure to mitigate potential local hazards, lists Tsunamis as a potential hazard because of the county's proximity to the coast and the existence of identified tsunami risk factors in the Atlantic Ocean.

In an effort to increase awareness and to improve public safety, Tsunami warning signs have been posted along the County's beaches. In addition, as part of the educational outreach component, Emergency Services has designed a web-EOC space that provides Onslow County and Department of Defense teachers access to educational materials related to the East Coast tsunami threat.

"53% of our nation's population lives on or near a coast. Protecting our coastline population from the poential devastation of hurricanes and other natural disasters is a priority. All coastal communities in the United States are at some risk for a tsunami. We are proud that Onslow County continues to lead the way in preparedness with the dual designation of a TsunamiReady and StormReady community," stated Emergency Services Director Mark Goodman. Onslow County was the first county in North Carolina designated as StormReady in 2000.

From: Media Release, October 3, 2006
http://www.co.onslow.nc.us/main/media_releases/mr_061003a.pdf ♦

Crescent City docks damaged in tsunami surge

An AP report states that on November 15, two docks were destroyed when a 5-foot wave hit the California harbor, causing around $700,000 in damages.

It is believed that the tsunami was caused by the M8.1 earthquake off the coast of Japan. ♦

INFREQUENTLY ASKED QUESTIONS
COMPILED BY LEE WALKLING

WHAT IS THE CURRENT COUNT OF TSUNAMIREADY COMMUNITIES?

As of September 29, 2006 there were 31 TsunamiReady™ Sites in 8 states, Puerto Rico and Guam and 1 TsunamiReady Supporter

From: http://www.stormready.noaa.gov/tsunamiready/ts-communities.htm

WHAT IS QUARTER WAVE RESONANCE AMPLIFICATION?

The term was used in a report in *Science of Tsunami Hazards* v. 23, no. 3, p. 45, by Tad Murty. The author was kind enough to email this explanation:

In a sine wave, the highest positive amplitude (crest) occurs at quarter wavelength, which is an antinode. As the tsunami travels from the deep ocean towards a coastline, the wavelength decreases as it enters into shallow water, but the wave amplitude increases, because of conservation of energy. If it so happens that one-fourth of the wavelength of the incoming tsunami wave matches a linear dimension of a coastal bay or gulf or estuary or an inlet, then the tsunami amplitude increases because of quarter wave resonance. Let me give a practical example.

During the Alaska earthquake tsunami of March 28th 1964, outside of Alaska, the greatest tsunami amplitude of 5.2 m occurred, not at the open coast, but in Port Alberni, located at the head of the Alberni Inlet, on Vancouver Island, in the Province of British Columbia, Canada. This is due to quarter wave resonance amplification of the tsunami in the Alberni Inlet , as the tsunami travelled from the mouth of the inlet to the head of the inlet.

WHICH TSUNAMI-GENERATING MECHANISM HAVE WE OVERLOOKED SO FAR?

Glacial outburst floods.

Speaking specifically about Glacial Lake Agassiz, authors James T. Teller, Tad Murty, N. Nirupama, and P. Chittibabu say, "For thousands of years, the thick Laurentide Ice Sheet covered a large part of northern North America, damming northward-draining rivers. As this ice retreated, large lakes formed along its margin. Glacial Lake Agassiz was the largest of these ice-marginal lakes, covering an area of >800,000 km^2 (more than twice the size of the largest lake in the modern world, the Caspian Sea) before it drained catastrophically into the Labrador Sea. Even before that, Lake Agassiz had periodically released large volumes of water into the ocean via the Great Lakes-St. Lawrence and the Athabasca-Mackenzie River systems. The last and largest of these outbursts released >150,000 km^3 through Hudson Bay and Hudson Strait in 6-12 months; the average flux over that period was ~5 Sv (1 Sv = $1x10^6$ m^3s^{-1}).

When a volume of water this large is discharged into a coastal sea like the Labrador Sea, it may generate a surface flood wave or a tsunami if the water mass is large enough and introduced in a short time. To our knowledge no previous calculations have been made to estimate the potential impact of a flood burst on the generation of solitary waves. Using analogies of tsunamis generated by submarine landslides and ocean earthquakes, the amplitude of a Lake Agassiz generated tsunami is estimated to have been at least 2 m. Directionality considerations, as well as the effect of the Coriolis Force in the Northern Hemisphere, suggest that the resulting tsunami probably traveled 50-100 km along the west coast of the Labrador Sea, south of Hudson Strait where the outburst entered the ocean, before being dissipated. The erosional and depositional effects of historic and prehistoric tsunamis are present in the geological record, and provide guidance in seeking evidence for the Lake Agassiz flood burst and subsequent tsunami. This record may be found along the western coast of the Labrador Sea as well as along the shores of Hudson Strait."

From: Science of Tsunami Hazards, v. 23, no. 3, p. 3 http://library.lanl.gov/tsunami/ts233.pdf

WHO OPERATES THE TWO TSUNAMI WARNING CENTERS AND THE INTERNATIONAL TSUNAMI INFORMATION CENTER?

The National Weather Service (NWS) operates the West Coast/Alaska Tsunami Warning Center (WC/ATWC), Richard H. Hagemeyer Pacific Tsunami Warning Center (PTWC) and International Tsunami Information Center (ITIC).

From: http://tsunami.gov/ ♦

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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