TsuInfo Alert

prepared on behalf of the

National Tsunami Hazard Mitigation Program

by the Washington Department of Natural Resources

Contents

Volume 3, Number 3, June 2001

New publication now available.

*Designing for Tsunamis: Seven Principles for Planning and Designing for Tsunami Hazards***,** the 60-page multi-state mitigation project of the National Tsunami Hazard Mitigation Program is now available *(*see ordering information on page 2). The seven principles are:

1 Know your community's tsunami risk,
2. Avoid new development in tsunami run-up areas to minimize future tsunami losses,
3. Locate and configure new development that occurs in tsunami run-up areas to minimize future tsunami losses,
4. Design and construct new buildings to minimize tsunami damage,
5. Protect existing development from tsunami losses through redevelopment, retrofit, and land reuse plans and projects,
6. Take special precautions in locating and designing infrastructure and critical facilities to minimize tsunami damage, and
7. Plan for evacuation.

The book includes a glossary, a list of resources for local government officials and the public, and a bibliography**.**

Designing for Tsunamis will also be available as a PDF file on the PMEL tsunami hazard website: http://www.pmel.noaa.gov/tsunami-hazard/Designing_for_Tsunamis.pdf

TSUNAMI PROGRAM NEWS

National Tsunami Hazard Mitigation Steering Group Meeting [Note: This information is from the meeting agenda. The minutes will be published in the next *TsuInfo Alert.*]

The group met May 16 and 17, 2001 at the Oregon Department of Transportation Public Meeting Room in Portland.

On the first day, they planned to:

-- Review annual report
-- Discuss individual state programs and plans
-- Discuss multi-state programs and plans
-- Discuss 2001 plans and budgets
-- Review action items from last meeting (Bernard)
-- Develop State/NOAA Coordination & Technical Support (Hagemeyer)
-- Improve Seismic Networks (Oppenheimer/Weaver)
-- Tsunami Detection Buoys (Bernard)
-- Inundation maps (Gonzalez)
-- Mitigation Programs (Jonientz-Trisler)
-- Multihazard Advisory Map Initiative Update (Michael Hornick, FEMA)

On the second day, they were scheduled to:

-- Discuss the TWEAK Proposal
-- Review of Program Elements continued (if needed)
-- Discuss preparation for the August Program Review
-- Presentations by Dr. Solomon Yim and Curt Peterson
-- PAWG Report
-- Other Business

NEWS BRIEFS

House Subcommittee Holds Hearing on Nisqually Quake

On March 21, 2001, the newly created Subcommittee on Research of the House Committee on Science conducted a hearing to examine how the National Earthquake Hazards Reduction Program (NEHRP) affected the impacts of the Washington State Nisqually earthquake on February 28. The hearing, "Life in the Subduction Zone: The Recent Nisqually Quake and the Federal Efforts to Reduce Earthquake Hazards," highlighted improved understanding of earthquake processes in order to better mitigate impacts.

(continued, p. 3)

TsuInfo Alert

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),
electronically (by e-mail), and at http://www.wa.gov/dnr/htdocs/ger/tsunami.htm

TsuInfo Alert and the TsuInfo document delivery program are made possible by a grant from the Federal Emergency Management Agency via the Washington Military Department, Division of Emergency Management.

Participants in the TsuInfo program can request copies of reports listed in this issue from:

Library
Washington Department of Natural Resources
Division of Geology and Earth Resources
P.O. Box 47007
Olympia, WA 98504-7007
ph: 360/902-1472 or 360/902-1473
fax: 360/902-1785
e-mail: connie.manson@wadnr.gov or lee.walkling@wadnr.gov

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Connie J. Manson, Senior Library Information Specialist
and
Lee Walkling, Library Information Specialist

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

(continued from p. 1)

The subcommittee heard testimony regarding NEHRP research and other activities conducted by the four principal federal agencies involved in the program: FEMA, the U.S. Geological Survey, the National Science Foundation, and the National Institute of Standards and Technology. The testimony also addressed damage caused by the quake, ground failure, liquefaction, characteristics of earthquakes in the Pacific Northwest generally, characteristics of the Nisqually quake, earthquake hazard assessment, geologic and structural effects of the quake, remote sensing, and hazards planning. The hearing charter and prepared testimony are available on the subcommittee's web site: http://www.house.gov/science/reshearings.htm.

from: Disaster Research 344, April 19, 2001

Online Hazards Maps: What are the Risks to Your Community?

Through the Project Impact initiative, FEMA and ESRI have formed a National Partnership in part aimed at providing multihazard maps and information to U.S. residents, business owners, schools, community groups, and local governments via the Internet. The information provided here is intended to assist in building disaster resistant communities across the country by sharing geographic knowledge about local hazards.

Go to www.esri.com/hazards. You can create custom hazard maps on the Web! Enter a location and select from several hazard types to help determine disaster risks in your community.

from: 2001 Disaster Resource Guide for Emergency & Crisis Management, Disaster Recovery, Business Continuity, p. 46
(also available online: www.disaster-resource.com)

The Seattle Post-Intelligencer graciously permitted us to reprint their February 1, 2001 editorial,

Prepare for Tsunamis

in the June, 2001 printed issue of *TsuInfo Alert*.
They asked, however--and we were pleased to comply-- that we not include it in our online edition,
but instead refer users to it at:

http://seattlep-i.nwsource.com/opinion/wave.shtml

Shaping Hazard Perception via the Net: A Hazards Center Working Paper

The Natural Hazards Center's newest Working Paper (#106) examines how the public's understanding of hazards and risks is being shaped by the Internet. In "Construction of Hazard Perception and Activism on the Internet: Amplifying Trivial Risks and Obfuscating Serious Ones," the author, California State University, Long Beach geographer Christine M. Rodrigue, states that "social construction of hazard policy entails a risk assessment dialogue between technical experts and public interest activists and between each of these and elected risk management policy makers. These dialogues have traditionally taken place in the frequently distorting presence of broadcast and print media . . . The advent of the Internet has fundamentally altered these discussions. . . . Early results have included an impressive empowerment of individual activists vis-a-vis the corporate interests that dominate traditional media, as well as tremendous citizen pressure on risk management decision makers. This is a blade that cuts both ways, however, with new opportunities for demagoguery and for hijacking the . . . trust by which most people make political decisions on issues far beyond their training." This paper illustrates both the advantages and dangers of Internet political organizing through case studies of a technological and a natural hazard controversy.

The paper is available on the World Wide Web at http://www.colorado.edu/hazards/wp/wp106/wp106.html. A complete index of working papers is available from http://www.colorado.edu/hazards/wp/wp.html.

from: Disaster Research 344, April 19, 2001

ASCE Updates/Converts NEHRP Rehabilitation Guidelines to Preliminary Standard

[Adapted from the "MCEER Information Service News" - http://mceer.buffalo.edu/infoService/enews/default.asp]

The American Society of Civil Engineers (ASCE), under a cooperative agreement with the Federal Emergency Management Agency (FEMA), has completed a project to update and convert the "NEHRP [National Earthquake Hazards Reduction Program] Guidelines for the Seismic Rehabilitation of Buildings" (FEMA-273) and the related "NEHRP Commentary" (FEMA-274) into a mandatory language "Pre-standard and Commentary for the Seismic Rehabilitation of Buildings" (FEMA-356). This pre-standard is now available for use.

In addition, "Global Topics Report on the Pre-standard and Commentary for the Seismic Rehabilitation of Buildings" (FEMA-357), which documents the nature of and rationale for the technical changes made in the conversion of the guidelines into the pre-standard, is also available.

The completion of the pre-standard is the first step in turning FEMA 356 into an ASCE/American National Standards Institute (ANSI) approved national consensus standard. In this process, recent research results and technical advancements have been incorporated into the pre-standard if deemed appropriate by the project team and approved by the ASCE Standards Committee on Seismic Rehabilitation.

The ASCE Standards Committee on Seismic Rehabilitation of Buildings has unanimously voted to accept FEMA-356 as the basis of a voluntary consensus standard, which, upon its completion, will be suitable for reference by building codes and inclusion in contracts. In 2001, the Standards Committee is balloting members and otherwise pursuing the formal standard development process. For more information, contact ASCE's Standards Coordinator, Kim Brubaker, ASCE, 1801 Alexander Bell Drive, Reston, VA 20191; e-mail: kbrubaker@asce.org.

Free copies of both FEMA-356 and FEMA-357 are available from the FEMA Document Distribution Center, P.O. Box 2012, 8231 Stayton Drive, Jessup, MD 20794-2012; 1-800-480-2520; fax: (301) 362-5335.

from: Disaster Research 344, April 19, 2001

Instructors Manual for Business and Industry Emergency Management Course Available

The Capital Area Chapter of the American Red Cross is making the "Instructors Manual" for its very successful Emergency Management Planning Workshop for Business, Industry and Government available so that others can offer this course within their community. The workshop uses the FEMA/American Red Cross "Emergency Management Guide for Business and Industry" as its participant workbook. The "Instructors Manual," Power Point workshop presentation on CD, and the workshop video are available for $125.00 from the Disaster Services Office, Capital Area Chapter, American Red Cross, 187 Office Plaza Drive, Tallahassee, FL 32301.

The Capital Area Chapter has been offering its Emergency Management Planning Workshop for Business, Industry and Government since 1997 and provided training to over 300 organizations. For additional information on the workshop, see: http://www.tallytown.com/redcross.

from: Disaster Research 345, May 3, 2001

Revised June EENET Schedule

Below is a list of satellite broadcasts scheduled by the Federal Emergency Management Agency's Emergency Education Network (EENET). All presentations begin at 2:00 p.m. unless otherwise indicated.

June 20 - National Alert Broadcast - see the EENET web page below for topics

June 27 - "Consequence Management News, Equipment, and Training" (CoMNET) Magazine.

Note: Satellites and transponders vary for these programs, see the EENET web site - http://www.fema.gov/emi/eenet.htm - for broadcast details. Additional broadcasts are frequently added. For the most current listing, or to sign

up for regular e-mail updates about EENET events, see the EENET web page above.

from: Disaster Research 345, May 3, 2001

Books from PAHO

The Pan American Health Organization (PAHO), Regional Office for the Americas of the World Health Organization, has recently published the following books:

- *Natural Disasters: Protecting the Public's Health*
- *Mental Health Services in Disasters: Manual for Humanitarian Workers*
- *Mental Health Services in Disasters: Instructor's Guide*
- *Principles of Disaster Mitigation in Health Facilities*
- *Natural Disaster Mitigation in Drinking Water and Sewerage Systems: Guidelines for Vulnerability Analysis*

To obtain a copy of any of these books or learn more about their content, visit PAHO's on-line bookstore: http://publications.paho.org; or contact Mylena Pinzon, Publications Program, PAHO/WHO; e-mail: pinzonmi@paho.org; tel: (202) 974-3049.

from: Disaster Research 345, May 3, 2001

Seeking Information on Efforts to Create a Market for Safe Construction

I have a research project on government efforts to encourage private firms in the building trades to help develop a market for safe construction. I am particularly interested in firms participating as partners in FEMA's Project Impact and firms working through the Blue Sky Foundation and similar nonprofit foundations or organizations. Any suggestions will be appreciated, including references to the literature on private instruments of public policy.

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from: Disaster Research 346, May 17, 2001

World Disasters Report

World Disasters Report 2000 is published by the International Federation of Red Cross and Red Crescent Societies and is described as an essential tool of libraries, universities and research centers. The report is designed to deliver a high-value package of information and analysis on all aspects of contemporary emergencies. A copy may be ordered by contacting Eiron, Inc., PO Box 40072, Washington DC 20016, USA. (202) 966-3249; fax (202) 244-0913; e-mail eironinc@aol.com.

*from: Un*scheduled Events, v. 19, no.1, May 2001, p. 4

HPN seeks Spanish-language partners

The London-based Humanitarian Practice Network (HPN) exists to stimulate critical analysis, advance the professional learning and development of those engaged in and around humanitarian action, and improve practice. It produces information, analysis and practical resources on humanitarian policy and practice, aspects of conflict management, disaster prevention, relief and development linkages, and protection. The HPN is looking for potential partner organizations to produce and disseminate its material in Spanish. If your organization has an interest in Spanish-speaking audience, please contact Rebecca Lovelace at the Humanitarian Practice Network of the Overseas Development Institute at fax (44-20) 7922-0399; e-mail: hpn@odi.org.uk. Visit HPN's website to download the latest issue of Humanitarian Practice, a twice-yearly magazine for the humanitarian community: http://www.odihpn.org.uk

from: Disasters - Preparedness and Mitigation in the Americas, issue no. 83, April 2001, p. 3

Another Infrequently Asked Question....

How many State Emergency Management Agencies have websites?

"There are 48 SEMA home pages that could be found on the Internet. No home pages were found for the Arkansas and West Virginia SEMAs, and the Hawaii SEMA's home page was restricted to users with an authorized password."

from: International Journal of Mass Emergencies and Disasters, v. 19, no.1, March 2001, p. 91

However, on June 5, 2001, the website Links to State Emergency Management Agencies (http://www.osp.state.or.us/oem/Related%20Web%20Sites/states.htm) found these URLs, including pages for Arkansas, Hawaii, and West Virginia:

Alaska: http://www.ak-prepared.com/
California: http://www.oes.ca.gov/
Hawaii: http://www.scd.state.hi.us/
Oregon: http://www.osp.state.or.us/oem/
Washington: http://www.wa.gov/wsem/

GEOLOGICAL RECORDS OF TSUNAMI EVENTS

by
Dr. Simon Day
Benfield Greig Hazard Research Centre, University College London
prepared as part of the Tsunami Risks Project sponsored by the
UK NERC/DTI/Insurance Industry TSUNAMI initiative and the UK's Health and Safety Executive (HSE).

An alternative approach to determining the long-term frequency of the larger tsunamis in particular is that of investigating geological evidence for both tsunamis themselves and for the causative events. The former approach is often most relevant in the case of earthquake-generated tsunamis, whereas large submarine landslides and volcano lateral collapses produce highly distinctive deposits which can be readily identified in the geological record.

Tsunami deposits

Known occurrences of tsunami deposits fall into two main categories: sand sheets and boulder beds.

Tsunami sand sheets in coastal marshes: the example of Cascadia

The northern Pacific coastline of the United States, in Oregon and Washington, contains a large number of coastal estuaries, lagoons and marshes which under normal circumstances are isolated from the ocean by sand dunes on coastal spits. For much of the time these coastal areas are marked by the gradual accumulation of mud and the growth of salt-tolerant woodland on top of the mud. However, excavations have shown that interbedded with the muds are laterally extensive-- extending inland by distances of several hundreds of metres to kilometres-- sheets of sand. Furthermore, the deposition of each sand sheet is followed immediately by a return to deeper-water estuarine conditions, indicating sudden subsidence of the coast by up to 2 to 3 metres.

This very characteristic sequence is repeated up to a dozen times along parts of this coastline. Investigations by Atwater and others (summarized in Atwater et al., 1997) have shown that each repetition marks the occurrence of a large subduction zone earthquake offshore from Oregon and Washington, leading to coseismic coastal subsidence (Fig. 1) and the generation of a tsunami which impacts the coastline, strips off sediment from the coastal beaches and dunes, and deposits this in the lagoons and estuaries as the sand sheets.

C-14 dating of trees killed by the earthquakes and coseismic subsidence, and of organic material in the intervening muds has shown that these dozen earthquake tsunami events have occurred over the past 7000 years or so, with recurrence intervals of about 300 to 700 years and the last event about 300 years ago, consistent with the inference that this event produced the 26th January, 1700 A.D. tsunami in Japan. Tsunami deposits and archaeological evidence of subsidence from this event and from some of the others are found all along the Oregon-Washington coastline and as far north as central Vancouver Island, implying that the source events were most probably giant subduction zone earthquakes with rupture lengths of several hundred kilometres and Mw ? 9. The recurrence interval and the size of the 26 January 1700 tsunami in Japan are also consistent with this, as is the distribution of turbidite sands offshore. Interestingly, the coastal tsunami sedimentation record in Cascadia is accompanied by Native American legends and episodes of village abandonment at coastal settlements excavated by archaeologists which are also consistent with the occurrence of major tsunamis along this coastline.

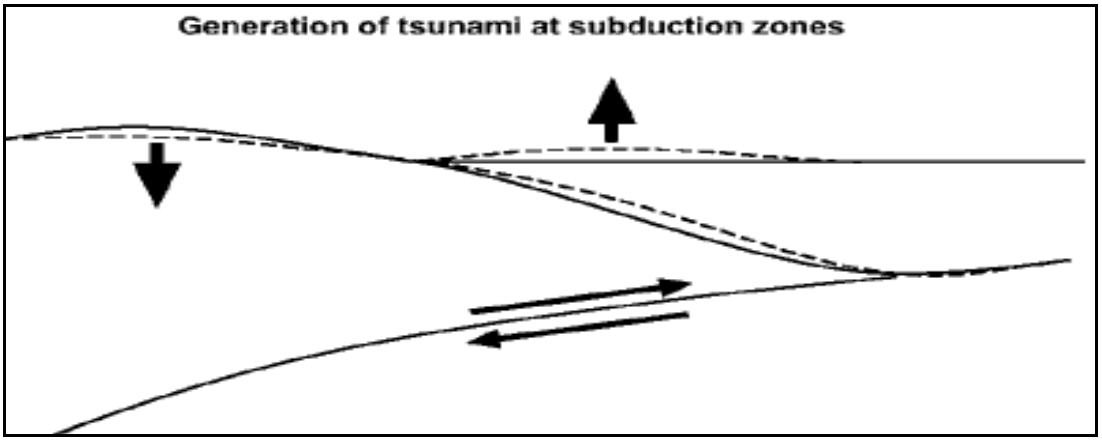


Figure 1. Generation of tsunami at subduction zones

The record from Oregon and Washington is perhaps the most complete and impressive record of prehistoric tsunami deposits from anywhere in the world. Comparable deposits have however been found in estuaries and on coastal plains in a number of places around the world (for example, the Storegga landslide tsunami deposits in northern Scotland), and also compared with more recent deposits such as those from the 1755 Lisbon tsunami in Portugal. These studies indicate that:

1. The deposits are highly distinctive, as a result of rapid deposition from fast-flowing, sediment laden water in a single flooding (or at most a few floodings), and are easily distinguished by both their sedimentology and large lateral extent from storm deposits.
2. The preservation of the deposits is patchy, most especially toward the landward limit of the inundation zone, and highly dependent upon the occurrence of favourable conditions for preservation such as in lagoons or estuaries.
3. There is an abundance of material in the deposits suitable for C-14 radiometric dating and dating by other means.

These results mean that although under favourable conditions such deposits provide good indications of the occurrence of tsunamis and even of typical recurrence intervals where a number of successive tsunami deposits have been found (as in Cascadia), their absence (especially on rapidly eroding coastlines) does not imply an absence of tsunamis in the past. Furthermore, they do not usually provide a good indication of inundation distances or tsunami magnitudes, because of the loss of deposits by erosion from the original landward edge of the deposit, or because these were never areas of tsunami sand deposition in the first place. The extent of the remaining deposits only provides a minimum value for the inundation distance of the source tsunami waves. Since these sand sheet deposits are only found on flat coastlines, they never provide runup values comparable to those usually recorded for historical tsunamis, making comparison of the two sets of records difficult.

Boulder Beds

Individual large boulders and localized boulder beds, along with evidence of catastrophic erosion events, have been found along a number of rocky coastlines. Examples from Australia and the Bahamas are described by Young & Bryant (1992), Nott (1997) and Hearty (1997). These have been interpreted as the product of the impact of giant waves (most plausibly tsunamis).

Fast-moving tsunamis (breaking waves, surges and bores) up to several tens of metres in height

Perhaps the most famous examples, however, are the coral gravel and boulder beds from the Hawaiian islands, described by Moore & Moore (1984) and interpreted as the products of giant tsunamis with wave runups of up to 375 metres, produced by oceanic island lateral collapses on the island of Hawaii itself, or by asteroid impacts. These deposits have proved controversial, not least because of the alternative suggestion that they are the remnants of beaches displaced to their present position by uplift of the entire islands since their deposition. However, more recently comparable boulder deposits have been found in the Canary Islands, at 100 metres or more above sea level; and it is known that the Canary Islands have not undergone uplift or subsidence in the relevant period.

A more fundamental problem in the use of these deposits for tsunami hazard analysis is that they are invariably remnants of originally more extensive deposits, or isolated patches of sediment left by largely erosional waves. They therefore provide only limited information (absolute minima) on runup heights or inundation distances, hence upon the magnitudes of the tsunamis involved, and it is likely that comparable tsunamis have occurred without producing any deposits that remain at the present day. They are nonetheless extremely valuable in indicating the past occurrence of giant tsunamis far larger than any in the historical record, with runup heights measured in hundreds of metres.

References

Atwater, B. F.; Hemphill-Haley, Eileen, 1997, Recurrence intervals for great earthquakes of the past 3,500 years at northeastern Willapa Bay, Washington: U.S. Geological Survey Professional Paper 1576, 108 p.

Hearty, P. J., 1997, Boulder deposits from large waves during the last interglaciation on north Eleuthera Island, Bahamas: Quaternary Research, v. 48, no. 3, p. 326-338.

Moore, J. G.; Moore, G. W., 1984, Deposits from a giant wave on the island of Lanai, Hawaii: Science, v. 226, no. 4680, p. 1312-1315.

Nott, Jonathan, 1997, Extremely high-energy wave deposits inside the Great Barrier Reef, Australia--Determining the cause, tsunami or tropical cyclone: Marine Geology, v. 141, no. 1-4, p. 193-207.

Young, R. W.; Bryant, E. A., 1992, Catastrophic wave erosion on the southeastern coast of Australia--Impact of the Lanai tsunami ca. 105 ka?: Geology, v. 20, no. 3, p. 199-202.

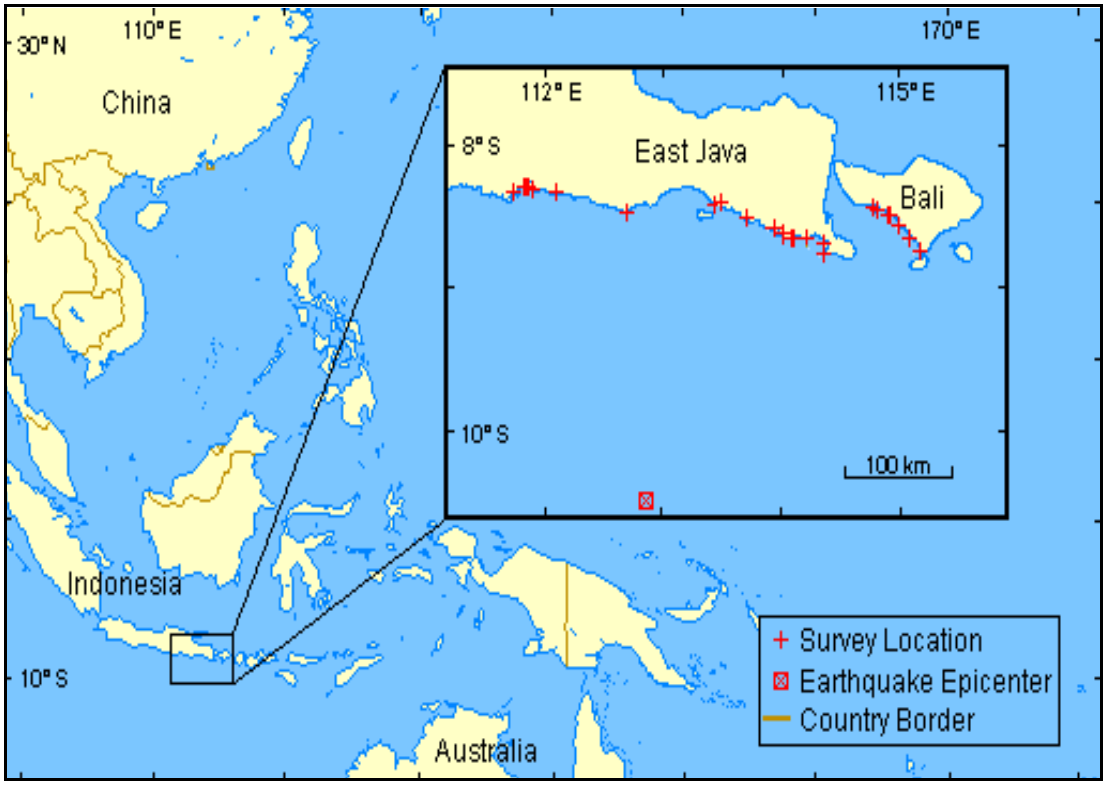
TSUNAMI TSURFING - *DON'T!*

from: http://www.usc.edu/dept/tsunamis/indonesia/java/tsusurf.html

The following are highlights from a Surfer Magazine article in the Fall of 1994 about the East Java tsunami. (submitted by email: jborrero@USC.EDU)

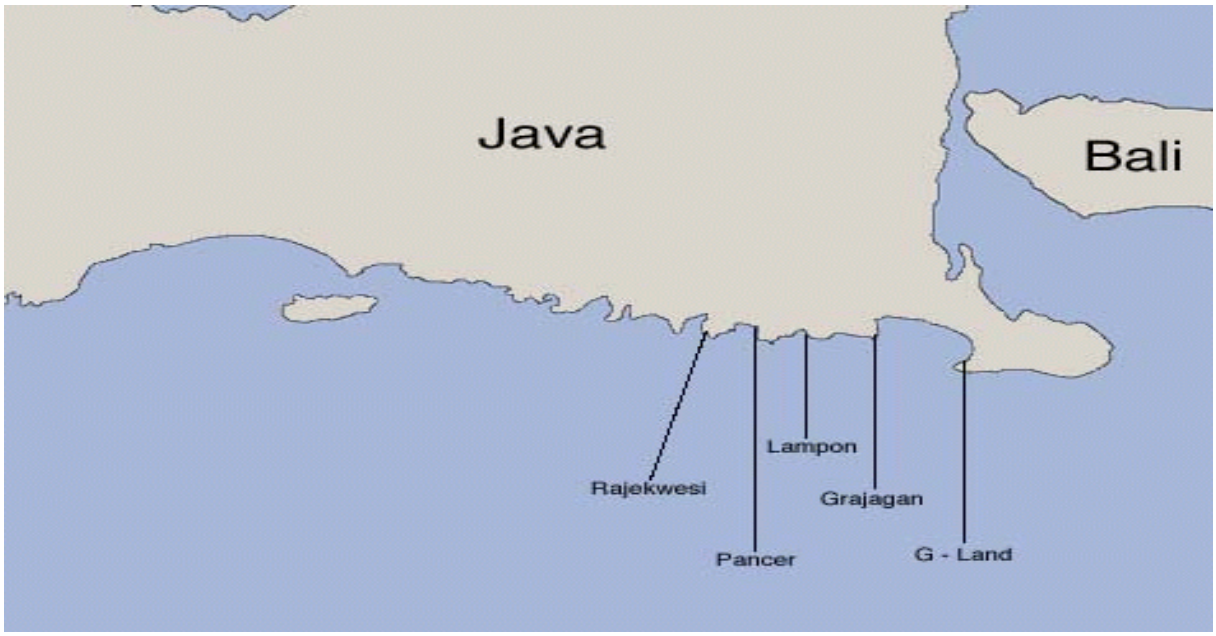
"Six Australian pro surfers experienced the ride of their lives on the night of June 4, 1994, when a tsunami struck their surf camp at G-Land, a famous surfing spot. The six, Richard Marsh, Rob Bain, Shanne Herring, Simon Law, Neal Purchase and Richie Lovett were sleeping in huts at the camp when the 20-foot tsunami waves hit, washing surfers, huts, and everything else at the camp into the jungle. Lovett, who recalls awakening to the sound of a jet taking off, described the experience as 'being hit by a train at full speed'. Marsh, Lovett's hut-mate, thought a tiger was attacking them, but soon realized it was a wave. 'I was completely panicking. It was a matter of surviving, just grabbing onto things to stay above the water, trying to keep all the debris away from my head and, above all, to get a breath.'

"Entangled in debris from their hut, and fighting for air, Marsh and Lovett were swept hundreds of feet into the jungle. 'The hut had disappeared and I was entwined in logs and trees and bits of bamboo,' said Lovett, recalling the experience. 'When the water started to subside, I was stuck with my legs pinned under a whole lot of logs and rubbish.' Of the six, only Lovett was injured badly enough to merit a quick return to Australia for medical attention. The rest, miraculously, received only minor cuts, bruises and abrasions from the experience. When asked for his comments in the days following his brush with death, Lovett responded with a laugh, 'Yeah, I can say I've surfed G-land. I surfed it in a hut through the jungle.'"



Map reprinted with permission. Available at: www.geophys.washington.edu/tsunami/specialized/events/eastjava/eastjava/html. Other information about the June 3, 1994 earthquake and tsunami is at www.geophys.washington.edu/tsunami/specialized/events/eastjava/surveymap.htm

The video, *Raging Planet/Tidal Wave* (Pioneer Productions for the Discovery Channel, 1997, 50 min.) includes an interview with a surfer who was caught in a tsunami off the coast of Peru in 1974!



Map and article reprinted with permission from the USC Tsunami Research Group. from: http://www.usc.edu/dept/tsunamis/indonesia/java/

An earthquake of magnitude Mw 7.6 occurred off the southeast coast of Java Island, Indonesia, at 01h17m local time on June 3, 1994 (18h 17m on June 2 GMT). The epicenter was at 10.5°S, 113.0°, about 240 km from the nearest coast. The shock was felt on east Java island and on Bali Island, but only awakened ten to twenty percent of the inhabitants on even the nearest coasts. No earthquake damage was reported on land. However, about 50 minutes after the main shock, a large tsunami struck southeast Java and southwest Bali, causing serious damage. In total, 223 persons lost their lives, approximately 400 were injured, and more than 1000 houses were destroyed.

In east Java, most of the damage and casualties were concentrated in villages built inside pocket beaches with mild slope and bounded by large steep headlands. The villages of Pancer and Lampon, where some of the most severe damage occurred, were built on sand bars; small rivers run behind them, sandwiching them between the coastline and the river channel. Under normal conditions, this allows for the mooring of fishing boats behind the villages during storms. However, it also allowed for overland flow during the tsunami attack.

The damage at Pancer was reminiscent of the damage resulting from a tsunami which struck El Transito, Nicaragua, in 1992. The conditions were similar: an earthquake of Ms 7.2, centered more than 100 km offshore, resulted in approximately 120 casualties and runup ranging from 5 to 10 m. In Pancer, 118 people were killed, and more than 500 sustained injuries. The maximum measured runup was 9.4 m at the seaside part of the town, and 7.4 m in the center. Surface elevation is about 5 m. Out of a total of 996 houses, 704 were destroyed. Since these houses were home to more than 3,000 people and the tsunami struck at midnight, the mortal-ity of 3.9% can be considered very low.

The residential area of Lampon is in a similar situation, located on a sand bar at the mouth of a river. Sea water invaded the village from both the ocean side and the river side. Runup was measured as 5.4 m in the residential area, and 9.1 m at a point on the seaside. Forty of the 645 residents died, and 65% of the 171 houses were destroyed. Only a few trees had been planted in front of the village, which did virtually restrain the wave.

The village of Rajekwesi suffered the worst damage. The portion of the village fronting a wide beach was flattened to a distance of more than 400 m from the coastline. The beach was completely washed away, and replaced by a 1.8 m high step. Runup measurements ranged from 4.2 to 14.0 m. The peak value was recorded on a steep hillside near a river mouth at the east side of the village.

Damage in west Bali was limited to beach erosion, with runup heights ranging from .5 to 4.1 m. Similar damage was the case along the rest of the Java coast, with runup averaging about 4 m. The tsunami was recorded along the northwestern Australian coastline, about 300 km south of Java, at around 06:15 WST, making the mean travel speed of the tsunami from the source about 350 km/hr.

OPINIONS

by
Bill Murray, retired, Great Falls, MT
and
John Lahr, Seismologist, U.S. Geological Survey, Geologic Hazards Team, Denver, CO

Editor's note: This discussion thread appeared on the Cal-EPI listserv, in March. We were pleased to receive the correspondents' permission to reprint their comments here.

from Bill Murray, responding to a previous letter by John Lahr, dated 3-9-2001, in which he said, "I would argue that 'tis better to give a false alarm than to not warn prior to a real calamity."

Dear John:

Please don't forget: CREDIBILITY is the foundation of any attempt to get the public to ACT. If you consider dissemination of "warnings" to be the EM's only responsibility, your argument is sound. But if the goal is to get people to ACT upon receiving information about a potential threat, false alarms are the worst possible actions. The most persuasive argument for a FULL TIME dedicated LOCAL Emergency Manager is his/her capability to establish local credibility over a long period of time. Someone earlier pointed out the value of establishing a "credible source." I spent nearly 30 years consistently telling "my citizens:" ANYONE can speak but only a specific few should be LISTENED to. This yielded dramatic results: a 2 a.m. evacuation of an entire town that was accomplished without their perceiving a danger; evacuation of nearly 1500 households and 285 mobile homes in 36 hours pending a riverine flood, to name just a few. In recent years, the proliferation of national news sources and the dilution of local emergency management by assigning duties to mid-level individuals buried in agencies with other agendas and identities has virtually guaranteed a lag time between public "warning" and a true perception of the nature and relative danger of a threat. Unless LOCAL governments establish a CONSISTENT and CREDIBLE source that their citizens can learn to rely upon, we are doomed to exchanging messages similar to those now being offered.

from: John Lahr, May 21, 2001

If I may be allowed a response to Bill Murray, I do appreciate Bill's concern with credibility and was not suggesting that it's a good idea to fire off many false alarms! However, there are few cases where one can know in advance with 100% certainty that a particular calamity is going to unfold and cause great damage, whether it be a volcanic eruption, landslide, hurricane, or flood. Without 100% certainty there is always the possibility that a false alarm will be sounded. The higher the potential losses the greater the responsibility to give adequate advance warning, even in the face of uncertainty.

The explosive eruption of Mt. St. Helens in 1980 is a good case in point. No scientist knew with 100% certainty that the volcano was going to erupt, and yet many preparations and evacuations were instituted in the likely event that it would. The risk of losing credibility due to a potential false alarm was outweighed by the scale of the potential disaster. In addition, credibility would have been lost in this case by NOT giving a warning.

from: Bill Murray, May 21, 2001:

I just read the clarification from John Lahr. I fully concur with avoiding temptation to be absolutely certain before issuing a warning. In fact, one of the main challenges to an Emergency Manager is overcoming the caution of the politician and/or "authority" who must give the final order. Once again, the answer is "credibility". If they [elected official/authority] get to know and trust you [Emergency Manager] in day-to-day activities, they tend to follow your advice when the time comes.

CLASSES/WORKSHOPS/TRAINING

The Natural Hazards Research and Applications Information Center is pleased to offer a new training course, "Holistic Disaster Recovery," to be held August 27-30, 2001, in Boulder, Colorado. (See the Insert for details)

The course is intended for decisionmakers and managers working at or with the local level and will teach them, through presentations and exercises, how a community can build sustainability during the recovery period after a natural disaster. This is a broader, more comprehensive way of handling the aftermath of a disaster, and focuses on finding ways to improve many aspects of the community while undertaking the inevitable post-disaster rebuilding and reconstruction.

We urge you to take advantage of this opportunity to learn more about a common-sense approach to disaster recovery.

Contact: Jacquelyn L. Monday, Program Manager
Natural Hazards Research and Applications
Information Center, 482 UCB
University of Colorado
Boulder, CO 80309-0482
(303)492-2149; fax: (303) 492-2151

TSUNAMI TSONGBOOK

from: http://www.tsunamicommunity.org/

Tsunami tsongs have been a staple of field work, meetings, and workshops for decades. New contributions are written each year. The current compendium provided here may not be complete. Some tsongs appear to be in better taste than others, but that is mostly a consequence of having lost the original context. New tsongs are welcome as they are produced.

On Top of a Sand Dune

(Sung to: On Top of Old Smokey)
(By: D. Oppenheimer, K. Moley, T. Lisle, and L. Dengler)

On top of a sand dune
All covered with grass
I see the wave coming
It's moving real fast

Out in Manila
Which way do I go?
Should have looked more closely
At the scenario

The ground started shaking
And down came the gate
We all tried to leave
But it was too late

The water kept rising
It lapped at the door
Of LP's big boiler
It ain't there no more

It raised the Milwaukee
And brought it ashore
It finally rested
On top of Bay Shore

We watched the tanks crumple
Their contents did pour
Across all the pavement
And the flames road the bore

Now all of Manila
Looks like a lagoon
There's 2000 people
On top of this dune.

Mine Eyes Have Seen the Horror

(Sung to: Battle Hymn of the Republic)
(By: C. Synolakis, R. Eisner, and E. Bernard)

Mine eyes have seen the horror
Of the great scenario
Tsunami waves bearing down
On the coastal shore
It's cleaning up the Blue Lake RVs
And little Orick too
The bores are marching on.

Tsunami Preparedness Song

(Sung to: Yesterday)
(By: P. Watts, and E. Bernard)

Yesterday, the ocean seemed so far away
Now I'm running quickly from its spray
No tsunamis yesterday

Suddenly, I'm not half as dry as I should be
There's a breaker overtoppping me
Along with lots of hard debris

Where my wife has gone, I don't know
She couldn't say
I did not prepare, so now I have to pay

Yesterday, should have found a place to run away
Now I need a home in which to stay
Oh, should have planned this yesterday.

That's Tsunami

(Sung to: That's Amore)

When the water rushes out and the fish flop about
That's tsunami
When the water rushes in and you wish you had fins
That's tsunami
When water and debris move around and bust up the town
That's tsunami
When gas tanks catch on fire and look like big funeral pyres
That's tsunami
When the bridges are down and you can't get to high ground
That's tsunami
When help can't arrive and you thank God you're alive
That's tsunami.

The Tsunami of 1964

(Sung to: The Battle of New Orleans)

In 1964, Alaska had a quake
It produced a huge tsunami that affected many states
The tsunami caused a lot of damage and took a bunch of lives
It was a big disaster in many, many eyes

The tsunami bore down, it never stopped a coming
It was much larger than it was a while ago
It was very scary and the people commenced to running
Inland and to high ground where they were supposed to go

They ran through the bushes
They ran up the highway
They ran along the routes to escape the tsunami flow
They ran to the place where the tsunami couldn't reach them
Up to the high ground and to the safety zone.

Tsunami Land
(Sung to: Winter Wonderland)
(By: R. Hansen, R. Kamphaus, M. Mahoney, J. Mullin)

Siren wails, are you listening?
There's a wave, it's a glistening
Awoken at night, you're running with fright
Tsunami starts to inundate the land

In the sand, we have built our houses
Now the waves will come and knock them down
They'll ask "Are you ready?", we'll say, "No man!"
But Chip will warn us if he's still around

Later on, we'll perspire
As we put out the fires
We survived the night, by acting just right
Running all the way to higher ground.

California Tripping
(Sung to: The Battle of New Orleans)
(By: C. Jonientz-Trisler)

(Verse 1)
In 1999 we took a little trip
Along the California coast
To see the mighty slip
We took a little chocolate
And we ate some refried beans
And we met up with Mahoney
Where it wasn't New Orleans!

(Chorus)
Well, we - felt a little shakin'
And we saw the waves a'comin'
There wasn't quite as many as
There was awhile ago
We ran so fast that
The elk couldn't catch us
The wave went to Hawaii
Alaska, Mexico

(Verse 2)
Lori grabbed the map to see
The inundation line
Chris grabbed a latte
Left the drive-thru just in time
Gus was advising
Every coastal town
Richard fired warnings
Till the wires melted down

(Chorus)

(Verse 3)
Robert and Tim went
Down to check the line
Model said they're crazy
But the wave said they were fine
"Ann, go find the buoys",
Said Eddie, "they are mine!"
Ann started running, said
"Boss, I don't have time."

(Chorus)

(Verse 4)
Dave and Roger responded to the group
Who said too many seismologists
Always spoil the soup
We all thought Craig
was lost along the way
But his colleagues saw the chance
To drown him in the bay!

(Chorus)

(Verse 5)
Brian said "No surfin'
On this very scary wave!"
He's confiscatin' boards from
The dudes who won't behave
The other States are sweatin'
Their reports are overdue
We'll put 'em on the rack and
Jeanette will turn the screw!

(Chorus)

(Verse 6)
After all the shakin' and
The sloshin' calmed back down
George and Gary worried
About their northern towns
Rich said Shore would buy a spendy jet
And fly them home in comfort from
Disaster funds they'd get.

(End with Chorus)

WEBSITES

http://www. tsunamicommunity.org/

To help promote interactions and to help disseminate tsunami information, Dr. Philip Watts has developed an archival web site in collaboration with fellow tsunami researchers for you to use and to update: http://www.tsunamicommunity.org/

Some highlights of the web site include a case study of the 1998 Papua New Guinea tsunami and the *Tsunami Tsongbook* now appearing online on the links page.

There is an "ad hoc" committee of tsunami researchers overseeing the content of the web site and an FTP site for you to deposit proposed material. Instructions for images and text are posted on the web site.

This web site is free and open and is intended to grow substantially. Dr. Watts hopes folks will make it a dynamic part of the tsunami community and use it to its fullest potential.

Send comments to:
Dr. Philip Watts
Applied Fluids Engineering, Inc.
http://www.appliedfluids.com/
Private Mail Box #237
5710 E. 7th Street
Long Beach, CA 90803 Tel/Fax: 562-498-9407

http://www.bghrch.com

The Benfield Grieg Hazard Research Centre (BGHRC) at the Department of Geological Sciences, University College London, has recently published the first issue of its newsletter, BGHRC ALERT, via the centre's web site. BGHRC ALERT is designed to disseminate the work of the BGHRC--one of Europe's leading academic hazard research centers--and to help stimulate dialogue and understanding related to contemporary issues in risk science and disaster management. It will be published and available to all, free of charge, four times a year. The BGHRC site, which we've mentioned before (see below), includes much other information resulting from the centre's research; topics range from Atlantic tsunami risks to other geological and meteorological hazards, to NGO initiatives in disaster reduction: the centre's interests span the whole range of issues associated with hazards.

from: Disaster Research 345, May 3, 2001

http://www.bghrc.com

The Benfield Greig Hazard Research Centre in London has recently put up two new publications on the centre's web site. The first is "Guidance Notes on Participation and Accountability in Disaster Reduction," intended to help practitioners in disaster mitigation and preparedness. The notes cover principles and practice, and contain a number of case studies. They are still in draft form, and comments and, particularly, additional case study material are welcome. A copy can be downloaded from the Benfield Greig site - go to the Disaster Management pages and look under "Other Publications."

The second publication, "Sustainable Livelihoods and Vulnerability to Disasters," summarizes recent thinking on this topic. In particular, it looks at a sustainable livelihoods framework currently being developed and promoted and includes a list of selected references and sources of information on these subjects. It also comments on issues arising from current theories relevant to work on livelihood options for disaster risk reduction. Copies are also available from the centre web site - go the Disaster Management pages and look under "Working Papers."

from: Disaster Research 344, April 19, 2001

http://www.sba.gov/DISASTER

To support its disaster assistance program, the U.S. Small Business Administration (SBA) has established this web site that not only offers information about the agency and its disaster loan programs, but also provides general information about disaster preparedness, current disasters in which the SBA is active, and other aid programs available from the federal government.

from: Disaster Research 345, May 3, 2001

http://www.eriskcenter.org

The goal of the Risk Management Resource Center is to provide information that can help local governments, nonprofit organizations, and small businesses manage risks effectively. The center is a collaborative effort of the Public Risk Management Association (PRIMA), the Nonprofit Risk Management Center (NRMC), and the Public Entity Risk Institute (PERI). The materials available include conference papers, reports, and publications; databases of information resources; and hundreds of links to other useful Internet sites. Specifically, among its many resources, the site provides the "PRIMAFile" On-line Library - abstracts of materials contained in PRIMA's reference library (complete copies can be ordered on-line); NRMC Risk Management Briefs - 25 free, down-loadable papers summarizing knowledge in various aspects of risk management; papers and presentations from PRIMA, PERI, and NRMC conferences and symposia; PERI's Risk Management Clearinghouse - a database of resources on risk management; as well as numerous other publications, web links, and resources.

from: Disaster Research 345, May 3, 2001

http://www.csc.noaa.gov/
http://www.csc.noaa.gov/products/nchaz/startup.htm

The web site of NOAA's Coastal Services Center (CSC) is entitled "Living on the Coast: Smart Growth Tools on the Internet." One of those tools is the CSC's Community Vulnerability Assessment Methodology (CVAM). Provided on

CD-ROM, this tool is designed to aid federal, state, and local coastal resource managers in conducting community- and state-level hazard risk and vulnerability assessments to mitigate potential damage. Having developed the methodology, the CSC is now in the process of creating accompanying training material and programs. To obtain background information, to see an example of how this tool is being used in one location (New Hanover County, North Carolina), or to request the CVAM CD-ROM, see the second URL above. To learn more about the project, interested persons can also contact the NOAA Coastal Services Center, 2234 South Hobson Avenue, Charleston, SC 29405-2413; (843) 740-1200; fax: (843) 740-1224; e-mail: clearinghouse@csc.noaa.gov.

from: Disaster Research 346, May 17, 2001

coastalhazards.wcu.edu

The "Coastal Hazards Information Clearinghouse" is a joint project of Western Carolina University and the State University of West Georgia. With support from the Public Entity Risk Institute and FEMA, these two schools have created a web site that contains a 10-chapter monograph on coastal hazards, detailed coastal hazard maps for all coastal states, photos of property damage from several recent hurricanes, and a list of coastal hazard links for each state.

from: Disaster Research 347, June 4, 2001

http://www.paho.org/disasters/

The Pan American Health Organization (PAHO) has published three new volumes on disaster medicine and mental health:

- *Stress Management in Disasters*
- *Insight into the Concepts of Stress*
- *Establishing a Mass Casualty Management System*

All three can be downloaded free from the PAHO web site above.

PAHO has also just released the latest version of its "Virtual Health Library for Disasters," which is available both at the web site above and on CD-ROM. This new, expanded version of the "Virtual Disaster Library" incorporates the works of many new partners and collaborators and consequently offers a broad variety of information on disaster preparedness, mitigation, management, and response. This global collection contains more than 300 scientific and technical documents including the most important works on disasters and emergencies published by the many cooperating agencies. It also incorporates a powerful and improved search engine and offers all documents in HTML, and many in PDF, format.

To order the CD-ROM, contact the Pan American Health Organization (PAHO), Disaster Publications, 525, Twenty-third Street, N.W., Washington, DC 20037; e-mail: disaster-publications@paho.org; or the World Health Organization (WHO); e-mail: eha@who.ch.

from: Disaster Research 347, June 4, 2001

LISTSERVS AND DISCUSSION GROUPS

http://groups.yahoo.com/group/emlegislation

A new Yahoo Internet discussion group has been established to disseminate legislation and regulatory notices (such as Federal Register documents and texts of bills) that might affect emergency management professionals. This group will also serve as a forum for discussion of emergency management policy issues. To subscribe send an e-mail to: emlegislation-subscribe@yahoogroups.com, or visit the group's homepage above. The group moderator is seeking to establish partnerships with others who can provide information for the group. If you are interested in such a partnership please contact MaryAnn Marrocolo, e-mail: mmarroco@oem.cn.ci.nyc.ny.us, or mmarrocolo@aol.com. The Group Homepage is http://groups.yahoo.com/group/emlegislation.

from: Disaster Research 344, April 19, 2001

CONFERENCES

June 18-20, 2001
Disaster Resistant California: Reducing Risks Through Partnerships. Host: State of California, Governor's Office of Emergency Services. Sacramento, California: This is a statewide conference promoting partnerships among the public and private sectors to reduce the state's vulnerability to natural disasters. For information and registration, see: http://drc.abag.ca.gov.

from: Disaster Research 346, May 17, 2001

July 15-18, 2001
Natural Hazards Center Workshop: University of Colorado, Boulder, CO. The annual Hazards Center Workshop is designed to bring researchers and practitioners together. For more information visit the Hazards Center Web site at: http://www.colorado.edu/hazards; or contact Mary Fran Myers (303) 492-6818; myersmf@colorado.edu.

*from: Un*scheduled Events, v. 19, no. 1, May 2001, p. 4

July 8-11 (Sunday-Wednesday)
PACON 2001. "Environmental Technologies for Sustainable Maritime Development", San Francisco Airport, Burlingame, CA. Pacon@hawaii.edu, or for the online circular see http://www.hawaii.edu/pacon/pacon2001.html

from: ITIC homepage: http://www.shoa.cl/oceano/itic/conferences.html

August 2001
"Crowding the Rim" Summit: Socioeconomic consequences of natural hazards on countries of the Pacific Rim. Sponsors: Stanford University, the U.S. Geological Survey, the Circum-Pacific Council, and others. Held at Stanford University, Palo Alto, CA. Contact: David Howell, U.S.G.S., M/S 975, 345 Middlefield Road, Menlo Park, CA 94025; (650) 329-5430; fax (650) 329-4999; e-mail: dhowell@usgs.gov. See also www.crowdingtherim.org.

September 8-12, 2001
National Emergency Management Association (NEMA) Annual Conference. Big Sky Resort, Montana. Contact: Tina Hembree, NEMA, PO Box 11910, Lexington, KY 40578; (606) 244-8162; fax (606) 244-8239; e-mail: thembree@csg.org. Also: www.nemaweb.org.

September 16-19, 2001
13th International Disaster Recovery Symposium and Exhibition. Host: Disaster Recovery Journal. Orlando, Florida: Contact: DRJ Registrar, P.O. Box 510110, St. Louis, MO 63151; (314) 894-0276; http://www.drj.com.
from: Disaster Research 345, May 3, 2001

September 24-28, 2001
California Emergency Services Association Annual Conference. Clear Lake, California: See: http://www.cesa.net.
from: Disaster Research 345, May 3, 2001

October 16-18, 2001
Emergency Preparedness Conference. Hosts: British Columbia Ministry for Children and Families, City of Vancouver, Insurance Bureau of Canada, and others. Vancouver, British Columbia, Canada: Contact: Emergency Preparedness Conference, 700 West 57th Avenue, Vancouver, British Columbia V6P 1S1, Canada: (604) 322-8365; fax: (604) 322-8359; e-mail: mrogan@vanhosp.bc.ca.; Internet: http://www.epma.bc.ca/epc/.
from: Disaster Research 345, May 3, 2001

October 21-24, 2001 (Sunday-Wednesday)
Western States Seismic Policy Council Annual Conference 2001 Radisson Hotel Sacramento, Sacramento, CA.

This year's theme is Risk Communication as a Means of Creating Greater Public Awareness and Action, and will feature a plenary session on Risk Communication, featuring Elected officials, and workshop sessions on:

Coming to Consensus on Seismic Hazards and Risk
Communicating Across Disciplines
Communicating with the Media
Legal Ramifications of Risk Communication.

Sessions will include panel discussions, open forums, and roundtable discussions with audience participation aimed toward action to be taken to reduce risks from earthquakes and related hazards. Please visit the WSSPC Web site (http://www.wsspc.org) or contact Patti Sutch, WSSPC Executive Director, at 415-974-6435 or wsspc@wsspc.org for registration and information.
from: ITIC homepage: http://www.shoa.cl/oceano/itic/conferences.html

November 3-7, 2001
International Association of Emergency Managers (IAEM) annual conference and exhibition. Riverside, CA. Contact: IAEM, 111 Park Place, Falls Church, VA 22046-4513; (703) 538-1795; fax (703) 241-5603; e-mail: iaem@aol.com. Also: http://www.iaem.com

December 2-5, 2001
Society for Risk Analysis (SRS) 2001 annual meeting. Seattle, Washington. Contact: SRA, 1313 Dolley Madison Blvd., Suite 402, McLean, VA. 22101; (703) 790-1745; e-mail: sra@burkinc.com. Also: http://www.sra.org

February 24-27, 2002
Solutions to Coastal Disasters 2002. Organizers: Coasts, Oceans, Ports, and Rivers Institute of the American Society of Civil Engineers; Coastal Zone Foundation; and others. San Diego, California: The four main conference tracks are Coastal Storms, Seismic Effects, Impacts on Climate Change, and Shoreline Change. A call for papers has been issued. Contact: Lesley Ewing, California Coastal Commission, 45 Fremont Street, Suite 2000, San Francisco, CA 94105; (415) 904-5291; fax: (415) 904-5400; e-mail: lewing@coastal.ca.gov -or- Louise Wallendorf, Hydromechanics Laboratory, U.S. Naval Academy, 590 Holloway Road, Annapolis, MD 21402-5042; (410) 293-5108; fax; (410) 293-5848; e-mail: lou@usna.edu; Internet: http://www.asce.org/conferences/cd2002/index.html.
from: Disaster Research 345, May 3, 2001

May 28-30, 2002 (Tuesday-Thursday)
Second Tsunami Symposium, The Tsunami Society. P.O. Box 37970, Honolulu, Hawaii 96817 USA. Registration Fee $150 (member); $300 (non-member) Contact Person: Mr. James Lander (303) 497-6446, email: JFL@ngdc.noaa.gov. For more information see http://www.ccalmr.ogi.edu/STH/symp2.html
from: ITIC homepage: http://www.shoa.cl/oceano/itic/conferences.html

JOURNAL TABLES OF CONTENTS
May-June 2001

Circle the title(s) of any article you would like to receive, and mail or email the list to Lee Walkling at the address on page 2.

Australian Journal of Emergency Management, Vol. 16, no. 1, Autumn 2001

Flood insurance, is there a problem?

Community: the concept of community in the risk and emergency management context

Evacuation of a passenger ship--Is panic a major factor?

Government policy on public health, food safety and environmental issues

Assessing the legal liabilities of emergencies

Catastrophe management: Coping with totally unexpected extreme disasters

Dam safety risk treatments

Responding to hazard effects: Promoting resilience and adjustment adoption

Impact of Internet media in risk debates

Coastal Services, Vol. 4, issue 3, May/June 2001

Mississippi brings technology tools to coastal planners

Fiber optic cables

Student input at the heart of Mariana Islands CD-ROM

Beetles help Wisconsin battle against invasive weed

Population boom brings volunteers to New Hampshire

Contingency Planning & Management, Vol. 6, No. 3, May/June 2001

A company event: Paychex puts their plans to the test

Business interruption: A risk management primer

Creating a trusted information environment

The facts and fallacies of indoor air quality

Highlights from CPM 2001

Disasters - Preparedness and Mitigation in the Americas, Issue No. 83, April 2001

Hospital disaster mitigation: From words to deeds

LIDERES 2001: Course slated to take place in Costa Rica

Earthquakes in El Salvador

EQ (Earthquake Quarterly), Winter 2001

WSSPC Awards in Excellence 2001 announcement and application form

WSSPC member agency reports

Project Impact: Forecasting economic disaster - "Port to Port" study measures

impacts from transportation system failure

National Earthquake Risk Management Conference: Summary of policy sessions

A National Priority: Building resilience to natural hazards

icoast, April 8, 2001

The new wave - 2001 coastalmanagement.com awards categories and judges

coastalmanagement.com regulars

monthly survey of integrated coastal management websites

new or updated content @ coastalmanagement.com

icoast, May 2, 2001

icoast awards

The new wave - 2001 coastalmanagement.com awards categories and judges

coastalmanagement.com regulars

monthly survey of integrated coastal management websites

new or updated content @ coastalmanagement.com

International Journal of Mass Emergencies and Disasters, Vol. 19, No. 1, March 2001

Panic or situational contraints [sic]? The case of the *M/V Estonia*

Not context--contexts: An "outside-in" approach to understanding the *Vincennes* shoot-down

Do disasters affect individuals' psychological well-being?

State emergency management agencies' hazard analysis information on the internet

Natural Hazards Observer, Vol. 25, No. 5, May 2001

The impact of Project Impact on the Nisqually earthquake

Developing guidance and expertise on sustainable disaster recovery

Washington Update

Hazard mitigation planning initiative in North Carolina

Natural Hazards Review, Vol. 2, No. 2, May 2001

Envisioning sustainable communities: the questions of disasters

Who is to blame for the failures of sustainable reconstruction projects

Community emergency response training (CERTS)--A recent history and review

Second hazards assessment and sustainable hazards mitigation (Monserrat)

can this town survive? Case study of a buried Philippine town

When disasters and age collide: reviewing the vulnerability of the elderly

Evacuation of health care facilities: a new twist to a Classic Model

2001 Disaster Resource Guide, v. 6
Crisis & Emergency Management - Disaster Recovery - Business Continuity
Emergency Preparedness Exercises
From the Front Lines...The Seattle Earthquake; A Focus on Employee Preparedness
Planning Your Emergency Power Needs
Directory of Industry Professionals
and many other articles
(their online guide: www.disaster-resource.com)

Unscheduled Events, Vol. 19, No. 1, May 2001
IRCD elections
Initiation of an IRCD publication series
ISA RC39 adopts guidelines for three awards
Conferences

Tsunami information in
Spanish, French and English
from the ITIC Home Page (http://www.shoa.cl/oceano/itic/frontpage.html)

NEW! ITIC Newsletter on-line (PDF format)
NEW! Tsunami Glossary (3.7 MB) (PDF format)
NEW! Great Waves in Spanish (Grandes Olas en Español) (1.1 MB) (PDF format)
NEW! Great Waves in French (Les Grandes Vagues) (25 MB) (PDF format)
NEW! Great Waves in English (24 MB) (PDF format)
NEW! Textos de estudio para estudiantes

Tsunamis/Maremotos (Spanish)
ITIC Home Page (english version) and ITIC (en español)
ITSU International Coordination Group for the Tsunami Warning System in the Pacific website
Post Tsunami Survey Field Guide (IOC-Manual - First Edition)
Folleto: "Cómo Sobrevivir a Un Tsunami". 11 Lecciones del tsunami ocurrido en el sur de Chile el 22 de mayo de 1960. (35 MB) (PDF format) (Spanish)
Intra Americas Seas Tsunami Warning System (Project)
(1.5 MB) (PDF format)
Tsunami Master Plan (English, Spanish and French) (6 MB each) (PDF format)
ICG/ITSU Meeting Participation
ITSU-XVII Summary Report
Countries affected by Tsunami Warnings (members and non-members of ITSU)
Tsunami Links (from PMEL-NOAA-USA http://www. pmel.noaa.gov/tsuna)

Tsunami Reading List (a good starting point)

Further Information on ITIC and the Tsunami Warning System in the Pacific may be obtained from:
International Tsunami Information Center
E-Mail: michael.blackford@noaa.gov
Michael Blackford , Director
737 Bishop Street, Suite 2200 Tel: (1 808) 532-6423
Honolulu, HI 96813-3213 Fax: (1 808) 532-5576
USA

VIDEO RESERVATIONS

Place a check mark (T) beside the video(s) you want to reserve; write the date of the program behind the title.
Mail to TsuInfo Alert Video Reservations, Lee Walkling, Division of Geology and Earth Resources Library, PO Box 47007, Olympia, WA 98504-7007; or email lee.walkling@wadnr.gov

___**Adventures of Disaster Dudes** (14 min.)
Preparedness for pre-teens

___**The Alaska Earthquake, 1964** (20 min.)
Includes data on the tsunamis generated by that event

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

___**Disasters are Preventable** (22 min.)
Ways to reduce losses from various kinds of disasters through preparedness and prevention.

___**Disaster Mitigation Campaign** (15 min.) ***NEW***
American Red Cross; 2000 TV spots
Hurricanes, high winds, floods, earthquakes

___**Forum: Earthquakes & Tsunamis** (2 hrs.)
CVTV-23, Vancouver, WA (January 24, 2000)
2 lectures: Brian Atwater describes the detective work and sources of information about the Jan. 1700 Cascadia earthquake and tsunami; Walter C. Dudley talks about Hawaiian tsunamis and the development of warning systems.

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

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

___**Numerical Model Aonae Tsunami - 7-12-93** (animation by Dr. Vasily Titov) and
Tsunami Early Warning by Glenn Farley, KING 5 News
The Glenn Farley portion cannot be rebroadcast.

___**The Prediction Problem** (58 min.)
Episode 3 of the PBS series "Fire on the Rim." Explores earthquakes and tsunamis around the Pacific Rim.

___**Protecting Our Kids from Disasters** (15 min.)
Gives good instructions to help parents and volunteers make effective but low-cost, non-structural changes to child care facilities, in preparation for natural disasters. The Institute provides a booklet to use with the video. 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, discussing 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 in California.

___**Tsunami and Earthquake Video** (60 min.)
Includes "Tsunami: How Occur, How Protect," "Learning from Earthquakes," and "Computer modeling of alternative source scenarios."

___ **Tsunami: Killer Wave, Born of Fire** (10 min.)
NOAA/PMEL.
Features tsunami destruction and fires on Okushiri Island, Japan; good graphics, explanations, and safety information. Narrated by Dr. Eddie Bernard, (with Japanese subtitles).

___**Tsunami: Surviving the Killer Waves** (13 min.)
Two version...one with breaks inserted for discussion time.

___**Tsunami Warning** (17 min.)
San Mateo (California) Operational Area Office of Emergency Services.
This is a good public service program, specifically made for San Mateo County. Citizens are told what to do in cases of tsunami watches or tsunami warnings, with specific inundation zones identified for the expected 20-foot tall tsunami. An evacuation checklist is provided, as well as locations of safe evacuation sites. This video gives the impression that all tsunamis are teletsunamis (generated at a source more than 1000 km from the coastline) which therefore provide time for warnings. Locally-generated tsunamis are not discussed.

___**USGS Earthquake Videotapes "Pacific Northwest"**
USGS Open-File Report 94-179-E

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

___**The Wave: a Japanese Folktale** (9 min.)
Animated film to help 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 (Washington) Interpretive Center, this video deals with beach safety, including mention of tsunamis.

Check the title(s) you would like and indicate the date of your program. The video(s) will be mailed one week before the program date. You will be responsible for return postage.

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NEW TSUNAMI MITIGATION MATERIALS

Added to the DGER Library, February through March, 2001

compiled by

Connie J. Manson

Note: **Free reprints of these materials are available**. (See page 2 for ordering information)

mitigation

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Infrequently Asked Questions

compiled by Lee Walkling

Are sand sheets and boulder beds a new trend in bedroom interior design?

No. They are the two main categories known tsunami occurrences fall into. For more, see the summary "Geological records of tsunami events" on page 6 of this issue.

Why does IRIS + USGS = GSN?

"Scientists of the U.S. Geological Survey (USGS) have operated seismographic stations throughout the world for more than 35 years. For the past few years, in cooperation with the Incorporated Research Institutions for Seismology (IRIS---a consortium of more than 90 universities), the USGS has begun to upgrade the system into a state-of-the-art Global Seismographic Network (GSN). The GSN is designed for obtaining high quality data in digital form than can be readily accessed by data users worldwide. Most data are accessed via computer modems. For some stations, the data are reported to orbiting satellites, and thence to the Internet where information can be viewed using the World Wide Web."

from: USGS Fact Sheet 103-97 "Taking the Earth's Pulse"
http://wwwneic.cr.usgs.gov/neis/fact_sheet/FS-103-97/FS-103-97.html

The Global Seismographic Network (GSN) is designed as a fully open, multiuse facility, and its high-quality data are heavily used by a diverse group of seismologists working on problems related to national security, disaster management, hazards assessment, loss reduction, and structure and dynamics of the Earth. The network has been installed and is maintained in cooperation with many international partners who, in most cases, provide facilities to house the instruments and personnel to oversee the security of the station. The majority of GSN stations participate within the framework of agreements between a host organization (academic institution or foreign government agency) and either the USGS or one of the Incorporated Research Institutions in Seismology (IRIS) institutions.

The principal network managers are the USGS Albuquerque Seismological Laboratory (USGS/ASL) and the Institute of Geophysics and Planetary Physics (IGPP), which is funded by NSF through IRIS. The equipment at most foreign GSN stations is serviced by host organization personnel who are trained by the USGS. USGS/ASL and IGPP are responsible for monitoring and supporting station operations as well as data collection and distribution. Tasks include training station operators, providing routine and emergency service visits to network stations, and providing direct financial aid in support of station operations at those sites lacking a host organization (most of these stations reside within the former Soviet Union).

from: http://geology.usgs.gov/gsn.html

Note: A review of the GSN can be found at http://www.agiweb.org/legis105/gseisnet.html. The 11-page article assesses the GSN's impact on the geosciences, lists the international partners, and identifies the 107 (by the end of 1996) GSN stations around the world. The goal is 128 stations in more than 80 countries on all continents.

Is there a GSN station on the seafloor?

Yes. "Beneath 5000 m of water midway between Hawaii and California, the Hawaii-2 Observatory (H2O) rests on the seafloor. Telemetry and power come to this pioneer, deep-ocean scientific observatory via a retired telephone cable, Hawaii-2, donated by AT&T to the Incorporated Research Institutions for Seismology (IRIS) Consortium for the benefit of the scientific community. H2O is the first GSN station on the seafloor. With a suite of wet-mateable connectors on a junction box (j-box), H2O offers marine scientists a new opportunity to deploy and operate remote instrumentation in the middle of the ocean...

...The reuse of retired undersea telephone cables bring electrical power to the seafloor, allowing the scientific community to install equipment for long-term studies and communicate with the instruments in real-time.

The scientific driver for H2O was primarily seismology, but there are new opportunities for geomagnetism, **tsunami studies**, biology, and physical oceanography, among other fields....

...Tsunamis generated by large earthquakes with epicenters from the Gulf of Alaska to Central America will be recorded at H2O within 30 minutes to 2 hours prior to their arrival in the Hawaiian Islands. The H2O data may eventually be incorporated with operational data for the tsunami warning networks...

The Hawaii-2 Observatory was installed in September 1998, and was revisited for maintenance and repair in September 1999 by the R/V *Thomas G. Thompson* and the remotely operated vehicle (ROV) Jason.

excerpted from: Hawaii-2 Observatory Pioneers Opportunities for Remote Instrumentation in Ocean Studies:
Eos, v. 81, no. 15, April 11, 2000, p. 157, 162.
Photos of the H2O junction box can be seen at
www.whoi.edu/science/GG/DSO/H2O/1999/jbox/index.html

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http://www.ak-prepared.com/

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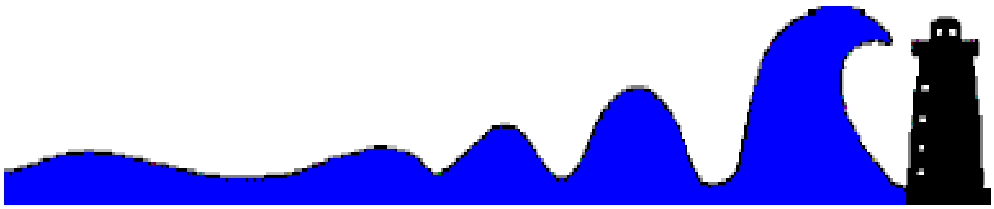

TsunamiReady

TsunamiReady Communities

Program Objectives

TsunamiReady promotes tsunami hazard readiness as an active collaboration among Federal, state and local emergency management agencies, the public, and the NWS tsunami warning system. This collaboration supports better and more consistent tsunami awareness and mitigation efforts among communities at risk. The main goal is improvement of public safety during tsunami emergencies. To meet this goal, the following objectives need to be met:

- j Create minimum standard guidelines for a community to follow for adequate tsunami readiness
- j Encourage consistency in educational materials and response among communities and states
- j Recognize communities that have adopted TsunamiReady guidelines
- j Increase public awareness and understanding of the tsunami hazard
- j Improve community pre-planning for tsunami disasters

from: http://wcatwc.gov/tsunamiready/objectives.htm (6-7-2001)

Benefits

Benefits of becoming a TsunamiReady Community include:

- j Community is more prepared
- j Regularly scheduled education forums
- j Increase contacts with experts (emergency managers, researchers, NWS personnel)
- j Identify community readiness resource needs
- j Improve positioning to receive State and Federal funds
- j Enhances core infrastructure to support other community concerns
- j Permits public to see how their tax money is being spent in hazard programs

from: http://wcatwc.gov/tsunamiready/benefits.htm

For the full text of the TsunamiReady document, go to http://wcatwc.gov/tsunamiready/tready41.htm

For other links to the TsunamiReady program, start at http://wcatwc.gov/tsunamiready/tready.htm

AWARDS

Have you ever visited a coastal website and thought "those guys really do a good job, I wish I could give them something back." Now you can! Icoast is calling for nominations for the world's first awards for achievement in coastal management internet sites. Go to http://www.coastalmanagement.com/nomination1.html

The categories are:

1) Exceptional government coastal management website
2) Inspirational community coastal management website
3) Academic leadership in coastal management website
4) Excellence in integrated coastal management website
5) People's Choice 2001 Coastal Management Website of the Year

from: icoast newsletter special issue, May 19, 2001

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