TsuInfo Alert

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

National Tsunami Hazard Mitigation Program

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

Contents **Volume 6, Number 6, December 2004**

Amateur Radio Operators Vital in Disaster Response

Natural Hazards Observer, v. 29, no. 2, p. 22, November 2004
http://www.colorado.edu/hazards/o/nov04/nov04i.html#radio

Amateur radio operators have a history of providing supplemental communications to local, regional, and state emergency operations. The recent spate of hurricanes in the southeast United States was no exception. Three organizations that played roles in the emergency operations are Hurricane Watch Net (HWN), the Radio Amateur Civil Emergency Service (RACES), and the Amateur Radio Emergency Service (ARES).

The HWN consists of a group of licensed amateur radio operators trained and organized to provide essential communications support to the National Hurricane Center (NHC) during times of hurricane emergencies. Its primary mission is to disseminate tropical cyclone advisory information to the Caribbean, Latin America, and the United States. The HWN activates whenever a hurricane is within 300 miles of projected landfall or becomes a serious threat to a populated area, gathering ground-level weather data and damage reports and conveying that information to the hurricane forecasters in the NHC. Operators are strategically dispersed throughout the hurricane-prone regions to provide a continuous path of communications from storm-affected areas to the NHC.

Unlike the HWN, which operates in advance of a storm, RACES is not activated until an event results in a formally declared disaster, and response becomes a governmental action. RACES was originally created to support communications during civil defense emergencies, but the role of the operators now includes support to local emergency management during other types of disasters and emergencies. More formal than ARES, it is supported by the U.S. Department of Homeland Security (DHS) and its responsibilities are laid out in the Federal Emergency Management Agency's *Civil Preparedness Guide* available at http://www.fema.gov/library/civilpg.shtm.

Although similar to RACES, ARES has a much more informal relationship with DHS. As a result, ARES operators can self-deploy (they do not need to be officially activated) and thus play a role in a wider range of incidents and are often activated earlier than RACES operators. Many operators are involved in both organizations and can easily switch roles (from ARES to RACES) once a disaster is formally declared. Among other things, these operators supplement communication at emergency operations centers and shelters by assisting with interagency communications, providing an alternative means of communication when traditional methods are unavailable, and freeing-up emergency personnel to focus on other things. Fully trained to work within the incident command system, they are also included in exercises and drills and often incorporated into local emergency response plans. For more information about these organizations and their contributions to community safety and security, visit them on the Web.

Hurricane Watch Net http://www.hwn.org/

Amateur Radio Station at the National Hurricane Center http://www.fiu.edu/orgs/w4ehw/

Radio Amateur Civil Emergency Service http://www.races.net/

Amateur Radio Emergency Service http://www.ares.org/

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This publication is free upon request and is available in print (by surface mail),
and at http://www.dnr.wa.gov/geology/tsuinfo/index.html.
Participants in the TsuInfo program can request copies of reports listed in this issue from:
Washington Geology Library
Washington Department of Natural Resources
Division of Geology and Earth Resources
1111 Washington Street SE, MS 47007
Olympia, WA 98504-7007
360/902-1473
fax: 360/902-1785
e-mail: lee.walkling@wadnr.gov

Ham radios tune in at Capitol—Operators compete at annual amateur event
by Scott Gutierrez, The Olympian, June 27, 2004
Reprinted with permission of The Olympian

The radio crackled as Aaron Samuels tried to establish contact with the ham operator somewhere in Arizona.

Each time Samuels cut in, he sounded out "November-Tango-Seven-Hotel," the call sign for the Olympia Amateur Radio Society. After a few intense moments, Samuels, 29, of DuPont, finally swapped call signs with the operator on the other end, earning the Olympia group points in the national competition to see who can make the most "contacts" during the annual Amateur Radio Field Day.

"I have to walk that off," Samuels said, shaking off some tension inside one of three recreational vehicles set up as mobile communications centers for the event Saturday on the Capitol Campus.

Each year, ham operators and enthusiasts gather across the country to participate in the field day. The goal of the event is to see how many contacts local clubs can make in a 24-hour period. Olympia's group planned to stop today at 11 a.m. after an all-nighter.

The event is designed to practice what ham operators would do in an emergency or disaster, when telephone lines and cell phones are inoperable. For Saturday's event, operators brought in recreational vehicles, portable generators and their own antennas, setting up everything just like it was an emergency, said Tom Dennis, unit leader for Thurston County's Amateur Radio Emergency Service.

One RV Saturday belonged to the Thurston County sheriff's office; another belonged to the Intel Amateur Radio Emergency Service, which joins Olympia's event annually.

The Amateur Radio Relay League, or the ARRL, tallies the results of the nationwide competition. Ham radios can reach listeners almost anywhere in the world. Two years ago, one Olympia ham enthusiast made contact with the International Space Station.

During last year's event, the Olympia group made about 1,200 contacts, Dennis said.

Washington state has about 22,000 licensed ham radio operators, according to the Western Washington chapter of the ARRL.

Dennis said the Olympia Amateur Radio Society has 138 members and the emergency radio service has 39 members. The emergency radio service provides support to rescue operations and law enforcement and helps with communications at events such as the Lakefair parade.

Old technology met new technology at this year's event. A few years ago, software engineers from Intel developed a computer program that kept track of their radio contacts and the call signs of operators they already communicated with, since the contest doesn't award points for talking to someone twice.

In the past, cables had to be strung between the vehicles to make that happen. This year, three computers were linked through a wireless network, said Duane Braford, an Intel software engineer and ham operator who built the program in his free time.

Before the computer program, operators would have to compare their logs at the end of the event and cut out any duplicates, which wasted time for reaching as many people as possible, he said.

The winner of the visual-arts contest for this year's Earth Science Week contest, was eight-year-old Jeffrey Colgrove, Jr., from Mandeville, Louisiana for this colorful drawing of a tsunami. American Geological Institute (AGI) hosted three national contests to celebrate Earth Science Week. The art contest for elementary-school children, of which this drawing was the winner, was entitled "Active Earth." The overall theme of the 2004 Earth Science Week was "Living on a Restless Earth." http://www.earthsciweek.org/contests

Summary Report on Dr.V.Gusiakov's trip to Fiji and New Zealand (June 26–July 14, 2004)

The main purpose of the trip to Fiji and New Zealand was the participation in the IOC/ UNESCO – SOPAC sponsored Workshop on Tsunami Awareness in the SW Pacific that was held on 1-3 July in Suva, Fiji, in conjunction with the regional preparatory workshop prior to the 2nd World Conference on Disaster Management to be held in Kobe, Japan in 2005. The objective of the Workshop was to raise the awareness on tsunami hazards, to study needs of the users of tsunami information, and to discuss and develop the appropriate tsunami mitigation plans for the Pacific island countries.

The workshop brought together the key technical agencies responsible for the earthquake and tsunami monitoring and the disaster management agencies from the vulnerable countries of Papua New Guinea, Solomon Islands, Vanuatu, New Caledonia, Samoa, American Samoa, Tonga, Cook Islands and Fiji. The UNESCO/IOC International Tsunami Information Center, and the U.S.'s Pacific Tsunami Warning Center, which operates the international tsunami warning system, have made available their staff as resource scientists for the Workshop. Additionally, Japan, New Zealand, Indonesia, Russia and Australia, members of the International Coordination Group for the Tsunami Warning System in the Pacific (ICG/ITSU) sent their representatives to attend the workshop and provide their expertise. Agenda of the Workshop is enclosed as Appendix 1 (go to website given below).

The presentation, entitled "Seismicity and Tsunami History - Use of GTDB for Hazard ID and Risk Assessment", was given by Dr.V. Gusiakov on the Day Two within the "Hazard Assessment" Session. The GTDB (Global Tsunami Data Base) is a joint IUGG/ITC and ICG/ ITSU Project directed to improving the catalogization of historical tsunamis in the world ocean by means of organizing them in the form of a computerized database. The database consists of the three main parts: the catalog of tsunamigenic events with their basic source parameters, the catalog of the observed run-up heights and the Pacific-wide catalog of historical earthquakes (nearly 230,000 events) from prehistoric times till present. The current version of the database (5.1 of June 15, 2004) covers the period from 47 B.C. to present time and contains 1,444 entries in the tsunamigenic event catalog and almost 7,100 run-up heights provided with the exact geographical coordinates of the observational sites.

The tsunami and earthquake catalogs, collected within the HTDB Project, are embedded inside a specially developed GIS-type graphic shell WinITDB (Integrated Tsunami Data Base) for easy data retrieval, visualization and processing. The WinITDB shell operates on Windows PC platforms with no additional co-located software required. The full version of the database, including the textual descriptions of tsunami manifestation (about 240 events) and some additional reference information related to the tsunami problem, is distributed on the CD-ROM. The Web-version of the database for the Pacific is maintained by the NTL/ICMMG on the following Website: http://tsun.sscc.ru/htdbpac.

In the presentation, it was stressed that in its present state, the GTDB data set contains almost all the historical data for the Pacific published in the earlier tsunami catalogs and can be considered as the most complete and reliable historical tsunami data set available in digital domain. However, the process of the data compilation and editing is still far from completion. A wealth of data exists in regional and local sources. These data are scattered in numerous publications (reports of regional conferences, journals, newspapers, original reports, etc.) most of them being unavailable outside the region of origin. Besides, quite often these data are published in languages other than English. Further improvement of the database quality and completeness can be done only with the help of regional or national coordinators who are working in the regions and have access to the local sources of information. In this relation, the Fiji workshop provides a good opportunity for establishing the direct contacts between database compilers and its potential users in the SW Pacific island countries.

The presentation was followed by numerous questions of the workshop participants concerning the possibilities of the WinITDB software and the ways of how the users can add their own data into the graphic shell. Fifteen copies of the WinITDB package were distributed among the representatives of the island countries (distribution list is enclosed as Appendix 2), several participants were provided with the technical help on the WinITDB installation on their laptops. The importance of application of the WinITDB data and software in the implementation of the Pacific Regional Strategic Plan for Disaster Risk Reduction was stressed in the Workshop Recommendations.

On Sunday, July 4, the meeting was held in the Holiday Inn Hotel in the downtown of Suva with Dr. Stanley Goosby, Chief Scientist of the Pacific Disaster Center (PDC), Kihei, Hawaii, USA. Discussion was centered on the possible participation of the Novosibirsk Tsunami Laboratory in the PDC projects directed to the reduction of tsunami hazard for the Pacific countries. It was decided that Dr.Gusiakov sends to the PDC the list of the NTL projects related to the historical databases and tsunami hazard evaluation for a possible financial support from the PDC. Later this day, the meeting with Dr. Laura Kong,

ITIC Director was held in the Suva Motor Inn Hotel, where the present status of the GTDB Project and the working schedule for 2005 was discussed in detail.

Following the meeting, on Monday, July 5, Dr. L. Kong and Dr. V. Gusiakov met with SOPAC Community Risk Programme Manager Alan Mearns at the SOPAC Headquarters in Suva to outline the strategy for bringing the workshop recommendations forward and into action tasks. It was decided that some of the items can be folded immediately into the CRP Workplan and so there will be an effort to develop on the regional basis awareness materials for distribution at the next SOPAC Disaster Managers Meeting in Papua New Guinea in 2005.

During the visit to the Suva Seismological Observatory on July 5 and 6 the installation of the WinITDB and PDM packages was made and the main functions of both packages were demonstrated to the observatory staff. The historical data on the September 15, 1953 tsunamis in Fiji was updated based on the information provided by Lasarusa Vuetibau, Senior Seismologist of the Observatory. Mr.L.Vuetibau also provided Dr.Gusiakov with the parametric historical catalog of earthquakes in Fiji. The catalog covers the period from 1800 to March of 2004 and contains 1300 events. The catalog was converted into the HTDB format and embedded into the WinITDB graphic shell. For Fiji and its neighborhood (within 14ºS-25ºS, 173ºE-178ºW),it gave an essential improvement in the data completeness (for the period from 1879 to 07/04/2004 regional catalog contains 1881 events against 277 earlier available for this area in the Pacific-wide catalog, built on the basis of global seismic data such as ISC, NEIC, NGDC catalogs).

July 7 was used for traveling from Suva to Nadi by bus, with flying by Air New Zealand on the next day from Nadi to Wellington via Auckland.

A short stay in Wellington (from July 8 to 12, 2004) on the way back from Fiji, was used for the visit to the Institute of Geological and Nuclear Sciences (IGNS). There was a meeting with Dr. Des Darby, Strategic Science Manager of the IGNS, for the discussion of a possible cooperation between the NTL and the IGNS in the filed of tsunami research in the SW Pacific. In the institute, several installations of the WinITDB package were made and new features of the ITDB graphic shell were demonstrated for G. Downes, M. McSaveney and U. Cochran, who used earlier versions of the WinHTDB package in their tsunami studies. As a result of the close work with G..Downes, HTDB Regional Coordinator for New Zealand—Tonga region, the detailed data on the most damageable local earthquake and tsunami (Wellington earthquake of January 23, 1855) were added in the database and provided with adequate references. It was agreed that as soon as the final version of the PDM package is ready (by November of this year), G. Downes will use it for further data compilation and editing for the New Zealand-Tonga region.

In the IGNS, the national seismological catalog for New Zealand was obtained and converted into the HTDB format. The full version of the catalog contains 267,115 events for the period from 1810 up to 30.06.2004 and covers the geographical area within 33ºS – 50ºS and 160ºE – 170ºW. Its level of completeness for this area considerably surpasses the completeness of the global catalogs for this area, and this improvement in completeness is especially remarkable for the pre-instrumental and the early instrumental eras. For the period from 1810 to 1963, the national NZ catalog contains 5,706 event against 44 events available in the Pacific-wide catalog. This example shows how important is the direct access to local and regional sources of data for historical catalog compilation. Completeness of the catalog (in terms of its minimum magnitude threshold) for the period that is comparative or longer than the duration of the main seismic circle (typically, 140–190 years for subduction areas around the Pacific) is prerequisite of any study directed to the long-term seismic and tsunami risk estimation.

Saturday, July 10, was used for participation in the field excursion headed by Dr. Maurice McSaveney, geomorphologist of the IGNS. The purpose of the trip to the Ferry Point, about 35 km SE of Wellington, was to visit the Wairapa Fault that ruptured in 1855 along its 200-km segment from southern Hawkes Bay to the middle of the Cook Strait. This rupture produced the intensity 8 earthquake in Wellington with 2–3 m tsunami waves inside the Wellington Harbour. The maximum tsunami run-up was reported as 9 m in the eastern part of the Pallisier Bay. On the bank of the Okourewa Stream at about 400m off the modern coast line, tsunami deposits consisting of marine sand of up to 10 cm thickness were demonstrated. Stratigraphical position of the layer allows to think that it could be deposited by the 1855 tsunami waves, that reportedly had height up to 5–8 meters at this part of the Pallisier Bay.

The first half of Tuesday, July 13, was used to visit the Te Papa Museum (the National Museum of New Zealand) that has an excellent exhibition devoted to natural hazards of New Zealand and neighboring countries. On Wednesday, July 14, 2004, Dr.V.Gusiakov returned to Novosibirsk (via Auckland, Seoul). For the Agenda and appendices, go to the website.

From: http://ioc.unesco.org/itsu/contents.php?id=119
International Coordination Group for the Tsunami Warning System in the Pacific, Sept. 20, 2004

New initiative: The International Tsunami Digital Library, facilitating online access to tsunami information

by Cherri M. Pancake and Harry Yeh
from: Tsunami Newsletter, v. 36, no, 2, April-July 2004, p. 9-11. online: http://www.prh.noaa.gov/itic/library/pubs/newsletters/nl_pdf/2004_Apr-July.pdf (page 11)

Relevant and useful information on tsunamis can be difficult to find. Field data and information on lessons learned are buried inside reports maintained by many organizations, in different formats, and representing distinct interests and perspectives. Historical accounts, photographs, eyewitness interviews, etc. are dispersed in libraries, news archives, agency files, and private collections. The International Tsunami Digital Library (ITDL) is a collaborative effort to develop a shared repository for tsunami resources.

Unlike a physical library, this digital library will not exist anywhere in its entirety. Instead, the ITDL will provide a "portal" (integrated web-based environment) for searching, browsing, and viewing materials that actually reside on websites around the world. A user chooses from questions that other people (including tsunami experts) have posed, or types in a new question. Like other web search engines, the portal searches for relevant websites and displays a list of results. It also applies recent advances in artificial intelligence to classify the results so that each user receives personalized guidance, suggestions of other queries to try, and information about how to reference the materials for papers, etc.

A prototype has already been developed at Oregon State University (USA) by the Northwest Alliance for Computational Science and Engineering, Hatfield Marine Science Center, and Valley Library. Collaborators at Gunman University (Japan) have been digitizing historical newspaper accounts, while ITIC has begun digitizing historical photos. The ITDL partners invite all *Tsunami Newsletter* [ed. note: and *TsuInfo Alert*] readers to contribute.

Please contact ITDL at diglib@tsunami.orst.edu if:

- you have materials on a website and would like to partner with us to make them easier to access;
- you have materials such as facsimiles of reports, photos, historical documents, videos, audio recordings, drawings, and maps that are already in digital format, even if they're not currently on the web;
- you have materials that you would be willing to scan or otherwise digitize if we can mount them on a website;
- you simply want to point us to web materials that you think are particularly useful.

TSUNAMI NEWS BRIEFS

Large Japanese earthquake generates tsunami

Early November 28, 2004, a 7.0 magnitude earthquake struck the Hokkaido region of Japan. Early reports said it was 50 km below the seabed, 70 km southwest of the Nemuro Peninsula. A tsunami was generated. However at 6:44 AM the Pacific Tsunami Warning Center issued Tsunami Bulletin number 001: "There is no tsunami warning or watch in effect." The full bulletin is online at http://www.prh.noaa.gov/ptwc/wmsg.

Grant awarded

Physical Modeling of 3D Tsunami Evolution Using a Landslide Tsunami Generator. Funding: National Science Foundation. Three years. Principal Investigators: Hermann M. Fritz, Alexander M. Puzrin, and Leonid N. Germanovich, Georgia Tech Research Corporation, 505 10th Street, Atlanta, GA 30332; (404) 385-0866; e-mail: hermann.fritz@gtrep.gatech.edu.

While some tsunamis are triggered directly by seismic impact, others are the result of massive submarine landslides. The long-term goal of this project is to develop a fundamental understanding of the mechanism of tsunamigenic landslides and subsequent tsunami generation, propagation, and run-up, allowing for improved assessment and possible mitigation of the landslide and tsunami hazard. Investigators aim to compensate for an inadequacy of existing data by the physical modeling of three-dimensional tsunami evolution using a novel landslide tsunami generator to help them achieve this goal.
From: Natural Hazards Observer, v. 29, no. 2, p. 20.

New FEMA program tests cell phone alerts

"This is a test of the Emergency Broadcasting System. This is only a test." Sound familiar? Most people are familiar with this annoying 60-second testing program, but when disaster strikes, are you always watching TV? It's not always the case, and that's why FEMA is launching a program that could allow people to be saved by their cells.

In a recent article in the *M.I.T. Technology Review*, writer Eric Hellweg says FEMA has launched a six-month pilot program to upgrade its existing Emergency Alert System to allow it to dispatch alerts to cell phones, pages and network-enabled PDAs that people carry in the affected area. "If a tornado was spotted in your county, for example, you'd get a text message emergency alert on your cell phone," writes Hellweg. However, he does note that the problem is getting the "standards-splintered cell phone industry to agree on a single approach" as to how to make this a reality.

Hellweg says the existing Emergency Alert System is what the television networks use to run the band of scrolling text alerting viewers to weather emergencies. The alert signal originates from a FEMA operations center in

Washington, DC, and is broadcast to 34 radio and television stations around the country, which then relay the signal to affiliates.

FEMA's pilot program, Hellweg says, will initially focus on the Washington [DC] area. The program will use a digital spectrum bandwidth donated by the Association for Public Television Stations, and cellular service providers such as AT&T Wireless, T-Mobile, Cingular, and Verizon Wireless will be able to receive the signal. The plan, Hellweg says, is that the cell providers will then transmit the information to their subscribers.

To read Hellweg's full article, go to http://www.techreview.com/articles/04/10/wo_hellweg100604.asp

From: Continuity e-Guide, October 13, 2004 (A Wednesday Update By Disaster Resource Guide) http://disaster-resource.com/newsletter/subpages/v54/newsclip3v54.htm
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PUBLICATIONS

A Geospatial Framework for the Coastal Zone: National Needs for Coastal Mapping and Charting.

National Research Council of the National Academies. ISBN 0-309-09176-4. 2004. 168 pp. $30.00. A PDF version is $20.50. This publication may be read online for free. Available from the National Academies Press, 500 Fifth Street, NW, Box 285, Washington, DC 20055; (202) 334-3313, (800) 624-6242; http://www.nap.edu/.

In order to understand and address the effects of natural and anthropogenic forces in the coastal zone, a holistic multidisciplinary framework is required to account for the interconnectivity of processes within the system. The foundation of this framework is accurate geospatial information—information depicted on maps and charts. This publication identifies and suggests mechanisms for addressing national needs for spatial information in the coastal zone. It identifies high priority needs (social, economic, and environmental), evaluates the potential for meeting those needs based on the current level of effort, and suggests steps to increase collaboration and ensure that the nation's need for spatial information in the coastal zone is met in an efficient and timely manner.
From: Natural Hazards Observer, v. 29, no. 2, p. 25

Developing Tsunami-Resilient Communities

Edited by E. N. Bernard, *Developing Tsunami-Resilient Communities--The National Tsunami Hazard Mitigation Program* has been announced for an early 2005 publication date.

"Tsunamis remain an ever-present threat to lives and property along the coasts of most of the world's oceans. Because of the geographical extent of U.S. coastlines, an earthquake in Alaska can generate a local tsunami for Alaskans and, hours later, a distant tsunami for Hawaii and the west coast populations. This volume chronicles the development and accomplishments of a State/Federal partnership created to reduce tsunami hazards along U.S. coastlines--the National Tsunami Hazard Mitigation Program. By integrating hazard assessment, warning guidance, and mitigation activities, the program has created a roadmap and a set of tools to develop communities resilient to local and distant tsunamis. Among the set of tools are tsunami forecasting, educational experiments, early alerting systems, and design guidance for tsunami-resilient communities.

The papers are descriptive texts written for the non-specialist. This book will be of interest to coastal community planners, emergency managers, responders, natural hazard policy makers, partnership builders, researchers in oceanography, seismology, and social science, educators, and other researchers/practitioners in the field of natural hazard impacts and risk assessment." (From the publisher).

Tsunami Newsletter

The April-July 2004 issue of the ***Tsunami Newsletter*** (ITIC) is available online at http://www.prh.noaa.gov/itic/library/pubs/newsletters/nl_pdf/2004_Apr-July.pdf

"Pacific Tsunami Warning Center: Sea level data for measuring Pacific Rim-generated tsunamis" is the second part of a series of articles "describing the current state of operations of the Richard H. Hagemeyer Pacific Tsunami Warning Center (PTWC)." It is available online at http://www.prh.noaa.gov/itic/library/pubs/newsletters/nl_pdf/2004_Apr-July.pdf (page 9-11).

Ocean Fury: Tsunamis in Alaska

This new video is available in either DVD or VHS versions, $25 each, credit card, PO, or check. Order toll-free at 1-888-789-0090

CONFERENCES/WORKSHOPS

February 3-6, 2005

26th Annual International Disaster Management Conference. Sponsors: Emergency Medicine Learning & Resource Center, Florida Emergency Medicine Foundation, Florida College of Emergency Physicians. Orlando, Florida. This conference was designed to meet the educational needs of all persons and agencies involved with emergency preparedness, response, and disaster recovery. For more information, visit http://www.emlrc.org/disaster2005.htm.
From: Natural Hazards Observer, v. 29, no. 2, p. 14

February 9-11, 2005

International Conference on Coastal Hazards.

Sponsors: SASTRA Deemed University, Indian Geological Congress. Thanjavur, India. This conference will address natural and human-induced coastal and marine hazards and how the international community can work together to reduce the occurrences of these events and minimize their adverse impacts. For more information, contact H.R. Vasanthi, Coastal Hazards Conference, CARISM, SASTRA Deemed University, Thanjavur-613 402, India; e-mail: vasanthi@biotech.sastra.edu; http://www.sastra.edu/icch/.
From: Natural Hazards Observer, v. 29, no. 2, p. 14

May 8-11, 2005

Solutions to Coastal Disasters 2005. Sponsors: American Society of Engineers (ASCE); Coasts, Oceans, Ports, and Rivers Institute. Charleston, South Carolina**.** The inaugural Solutions to Coastal Disasters Conference in 2002 created a productive exchange of ideas among professsionals worldwide. This second generation conference will share lessons learned since 2002 as well as creative new solutions to coastal disasters. Conference topics will focus on the science and management of erosion, hurricanes, coastal storms, tsunamis, seismic events, climate change, sea level rise, and wind hazards. Papers must be submitted by December 15, 2004. For more information, contact ASCE, 1801 Alexander Bell Drive, Reston, VA 20191; (703) 295-6300; e-mail: conferences@asce.org; http://www.asce.org/conferences/cd05/.
From: Natural Hazards Observer, v. 29, no. 2, p. 14

May 24-27, 2005

The International Emergency Management Society (TIEMS) invites you to the Faroe Islands during May 24-27, 2005 for its 12th Annual Conference 2005! The islands are situated in the heart of the Gulf Stream between Scotland and Iceland in the North Atlantic ocean. Coming to the conference will give you an opportunity to see these unique islands and learn its history, while you take part in TIEMS annual event, where we bring together international emergency management experts presenting and discussing international emergency management issues of importance to all of us. The theme is "Critical Infrastructures and System Failures."

Rógvi Finnsson Johansen, TIEMS International Councilor and Conference Host of TIEMS2005, issued a first TIEMS2005 invitation (PDF, 803 KB). More information about the conference will be posted on this website frequently. http://www.tiems.org/files/pdf/CfP_12th_Annual_TIEMS_Conference.pdf

Material added to the National Tsunami Hazard Mitigation Program Library
November - December 2004

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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U.S. National Oceanic and Atmospheric Administration Alaska Sea Grant College Program; Alaska Division of Homeland Security and Emergency Management; University of Alaska, Fairbanks, Geophysical Institute, 2004, Ocean fury--Tsunamis in Alaska: Moving Images, 1 DVD, 25 min.

Whelan, Franziska; Kelletat, Dieter, 2003, Submarine slides on volcanic islands--A source for mega-tsunamis in the Quaternary: Progress in Physical Geography, v. 27, no. 2, p. 198-216.

Interviews with Dr. Frank Gonzalez:

Found at: http://www.pmel.noaa.gov/tsunami/Faq/

1)*What was the reason you started doing research on tsunami patterns? What do you hope to accomplish with this tsunami research and how long will it take? How far do you think you are from your goal?*

Understanding tsunami patterns is very important, because the DART buoys are very expensive to build, deploy and then maintain, so we can't put as many of them out in the ocean as we would like to. That means that when a tsunami is generated, we might only get one or two measurements of the tsunami. So we'll have an incomplete picture of what's going on in other parts of the ocean. For example, the DART buoy might be in a part of the ocean where the tsunami is small, but there may be other parts of the ocean without a DART buoy where the tsunami is very big. So we don't get a measurement of the big part of the tsunami. But if we understand tsunami patterns for a whole lot of different earthquake sizes and locations, then we can compare these patterns with the DART measurements we have, and find the pattern that agrees best with the measurements. If we find one that agrees well with the DART measurements, then we have some confidence in using the pattern to predict the wave height in places that we don't have measurements. So the numerical model that generates the patterns can be thought of as a tool to "fill in the gaps" that exist in the measurements. However, the tsunami problem is very difficult and complex, so our models, even though they are accurate enough to give us useful guidance, are not perfect. So we have to develop this warning tool as carefully as we can, because peoples lives are at stake, and that takes time. We hope to finish our tsunami pattern development for Hawaii in about 3 years, and we hope to have a network of six DART buoys in about 2 years.
From:
http://www.pmel.noaa.gov/tsunami/Faq/x031_iv_fg02

2) *Are tsunamis measured on a scale similar to those of tornadoes and hurricanes?*

There is a tsunami intensity scale, although it is not used much anymore. Nowadays, tsunamis are usually described by their heights at the shore and the maximum run-up of the tsunami waves on the land. From:
http://www.pmel.noaa.gov/tsunami/Faq/x026_iv_fg03

3) *Are tsunamis more (or less) dangerous on islands or on normal coasts? Is Hawaii hit so often because it's an island or because it's "in the way" of most tsunamis in the Pacific ? I read somewhere that the most dangerous tsunamis for Hawaii are those generated by local earthquakes (on the islands itself). I don't understand: wouldn't the tsunami flee the island if it's generated by it? The*

article seemed to suggest that an earthquake under one of the islands implied a violent tsunami on Hawaiian beaches shortly after.

Because Hawaii is in the middle of the North Pacific and because this ocean is surrounded by a many earthquake/tsunami generating regions, Hawaii tends to receive many trans-oceanic tsunamis. Also, volcanic islands tend to have steep, unstable slopes where landslides can occur. The southeastern coast of the Island of Hawaii (with active volcanoes and ground movement) has had two major landslides in the past 150 years that have generated dangerous tsunamis.

While most of the tsunami energy does radiate out to sea, some remains near the coast. There are two reasons for this. The first is that tsunami waves tend to turn toward shallow water and can be trapped near the coast in the form of 'edge waves'; these can propagate right around an island. The second is the reflection of tsunami waves that occurs when the wave encounter the sharp change in water depth between the shallow areas just off the coast and the deep ocean water farther away from the island. The reason that the landslide tsunamis reach the beach so quickly is that they have only a short distance to propagate away from the landslide area before they reach the beach.

From:
http://www.pmel.noaa.gov/tsunami/Faq/x032_iv_fg01

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October 10, 2004, PMEL won the Department of Commerce's Gold Medal, the highest honor given by the Department, for the development and successful transfer to operations of DART, a real-time tsunami detection system.

The award citation is:
NOAA Research's Pacific Marine Environmental Laboratory (PMEL) and the National Data Buoy Center of NOAA's National Weather Service have jointly transferred to operations a new moored buoy system, developed by PMEL, to provide accurate and timely warning information for tsunamis. An earthquake and subsequent tsunami on November 17, 2003 provided the opportunity to test the new system, which led to the timely cancellation of a tsunami warning and avoided an evacuation in Hawaii at a cost savings of $68M.

This recognition illustrates the role of a NOAA research laboratory in:

Identifying a major problem in NOAA operations (too many tsunami false alarms)

Using science to formulate an appropriate solution (detect tsunamis in the deep ocean)

Developing technology to apply the science (bottom pressure instruments, acoustic modems, high latitude buoys, satellite communications, systems integration)

Testing the performance and reliability of the technology through incremental prototypes (solving intermittent hardware and software problems, redesigns due to component obsolescence)

Transferring the science and technology to NOAA Operations (cultural adjustments, training, training, and more training)

Ensuring that the system works as designed to solve NOAA operational problem (1 inch tsunami detected in deep ocean, data reported in real time, tsunami warning cancelled)

Raising the funds to accomplish items 1-6. (5 states identified the problem). From:
http://www.pmel.noaa.gov/tsunami/news_goldmedal.htm

Recent TsunamiReady Communities

Date	Community	State
06/30/2001	Ocean Shores	Washington
01/10/2002	Long Beach	Washington
01/18/2002	Seward	Alaska
05/29/2002	Crescent City	California
08/12/2002	Cannon Beach	Oregon
06/04/2002	Quinault Indian Tribe	Washington
09/09/2002	Homer	Alaska
07/07/2003	Sitka	Alaska
10/07/2003	Kodiak City	Alaska
06/21/2004	University of California Santa Barbara (UCSB)	California
10/05/2004	Manzanita	Oregon

From: http://wcatwc.arh.noaa.gov/tsunamiready/community. htm

VIDEO RESERVATIONS

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

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

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

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

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

Cascadia: The Hidden Fire–An Earthquake Survival Guide; Global Net Productions, 2001. 9.5 minutes. A promo for a documentary about the Cascadia subduction zone and the preparedness its existence demands of Alaska, Oregon and Washington states. Includes mention of tsunamis.

Not Business as Usual: Emergency Planning for Small Businesses, sponsored by CREW (Cascadia Regional Earthquake Workgroup), 2001. 10 min. Discusses disaster preparedness and business continuity. Although it was made for Utah, the multi- hazard issues remain valid for everyone. Websites are included at the end of the video for further information and for the source of a manual for emergency preparedness for businesses.

Adventures of Disaster Dudes (14 min.) Preparedness for preteens. American Red Cross.

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

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

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

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

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

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

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

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

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

Protecting Our Kids from Disasters (15 min.) Gives good instructions to help parents and volunteers make effective but low-cost, non-structural changes to child care facilities, in preparation for natural disasters. There is an accompanying booklet. Does NOT address problems specifically caused by tsunamis.

The Quake Hunters (45 min.) A good mystery story, explaining how a 300-year old Cascadia earthquake was finally dated by finding records in Japan about a rogue tsunami in January 1700

Raging Planet; Tidal Wave (50 min.) Produced for the Discovery Channel in 1997, this video shows a Japanese city that builds walls against tsunamis, talks with scientists about tsunami prediction, and has incredible survival stories.

Raging Sea: KGMB-TV Tsunami Special. (23.5 min.) Aired 4-17-99, tsunami preparedness in Hawaii.

The Restless Planet (60 min.) An episode of "Savage Earth" series. About earthquakes, with examples from Japan, Mexico, and the 1989 Loma Prieta earthquake.

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

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

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

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

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

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

Who Wants to be Disaster Smart? (9 min.)Washington Military Department/Emergency

Management Division. 2000. A game show format, along the lines of *Who Wants to be a Millionaire*?, for teens. Questions cover a range of different hazards.

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

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(continued on next page)

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http://www.pep.bc.ca

Tsunami Media Kit

A handy resource that can be printed out and made into kits for use when answering media requests.

These links and others are found on website: http://www.pmel.noaa.gov/tsunami-hazard/ mediakit.htm

Tsunami Hazard Awareness Handout with web address

National Tsunami Hazard Mitigtion Program brochure (prints on 8-1/2 x 14" paper)

NOAA Tsunami Backgrounder

NOAA Weather Radio

Tsunami Warning System in the Pacific (brochure) (8-1/2 X 11")

International Tsunami Information Center Media Resources

If An Earthquake Occurs (Handout)

List of Tsunami Videos available

Tsunami Trivia Game

Surviving a Tsunami--Lessons from Chile, Hawaii, and Japan contains true stories that illustrate how to survive a tsunami and how not to survive a tsunami. The booklet is an educational tool meant for those who live and work or who visit coastlines that tsunamis may strike. Copies of the booklet can be obtained from USGS Information Services, Box 25286, Denver, CO 80225, by calling 888-ASK-USGS.

International Tsunami Information Center

ITIC Tsunami Newsletter

Infrequently Asked Questions

compiled by Lee Walkling

If Hawaii gets a tsunami warning, where is the safest place to watch for the tsunami?

On your computer—as long as the computer is elevated and inland. You can watch a live video stream of Hilo Bay from a camera on the rooftop of the Pacific Tsunami Museum at http://www.tsunami/org/hilobaycam.htm. Of course, we hope you never see one, live or virtual!

Which country would receive a flutwellen warning?

In Germany, the term for tsunami is "flutwellen." The French call tsunamis "raz de mare" and South Americans call them "marimotos."

What does the top character mean?

Tsunami is a Japanese word with the English translation, "harbor wave." Represented by two characters, the top character, "tsu," means harbor, while the bottom character, "nami," means wave. In the past, tsunamis were sometimes referred to as "tidal waves" by the scientific community. The term "tidal wave" is a misnomer; although a tsunami's impact upon a coastline is dependent upon the tidal level at the time a tsunami strikes, tsunamis are unrelated to the tides.
From: http://soconnell.web.wesleyan.edu/courses/ees106/lecture_notes/lecture15A-106/sld026.htm.

What does Mount St. Helens have to do with mega-tsunamis?

"It was not until the eruption and collapse of Mount St Helens (USA) on 18 May 1980, which initiated the sliding of the northern slope of the mountain with a volume of 2.3 km^3 (Voight et al., 1981), that large landslides on volcanoes began to be discussed as a primary cause for mega-tsunamis."
From: Whelan, Franziska; Kelletat, Dieter, 2003, Submarine slides on volcanic islands--A source for mega-tsunamis in the Quaternary, p. 198-199.

How many mega-tsunamis have there been in the last 2000 years?

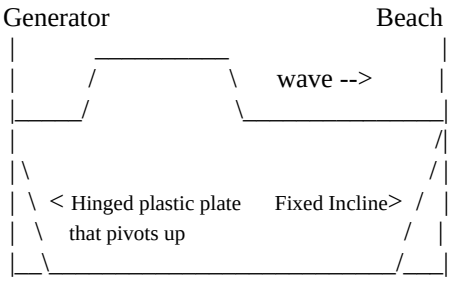
"At least 100 megatsunami in different parts of the world have been recorded in the past 2000 years--but presumably far more have failed to be noticed during historical times and are not mentioned either in written or oral ancient records. Therefore, the topic of paleotsunami requires inevitable sedimentological and geomorphological research. However, field research concerning paleotsunami is astonishingly rare within the scientific approach and only 5% of the existing tsunami literature is related to this subject. Future efforts in paleotsunami research should focus on the geological evidence of these mega-events to clarify their contribution to coastal forming processes."
From: Scheffers, A.; Kelletat, D, 2003, Sedimentologic and geomorphologic tsunami imprints worldwide--A review: Earth-Science Reviews, v. 63, no. 1-2, p. 83-92.

How can we make a homemade simulation of a tsunami?

Dr. Hal Mofjeld (http://www.pmel.noaa.gov/tsunami/Faq/)

Here's an idea that's very similar to laboratory models that are often used to study tsunamis.

Water Tank or Trough (a couple of feet long)
Not to scale



The Generating Plate simulates the upward motion of the earth, creating a "bump" in the water. The resulting wave propagating away toward the beach, or impact area. The wave builds in height as the water gets shallower toward the beach (due the Fixed Incline) and hits the shore. This will probably work best if the Generating Plate is about a foot long and the water is relatively shallow. It can be moved up rapidly using a strong string attached to the side away from the pivot, which can be made with duct tape. The Fixed Incline should be a gentle slope.

The basic idea behind tsunami simulations is to show the three stages of tsunami waves: their generation (usually because the ocean bottom moved up or down, or a landslide hit the water), the propagation of the waves from the source region to the impact site (the shallower the water, the slower and more clearer this shows), and the run-up on land (usually with a sloping incline, possibly with a small model house for effect). There is a trade-off in size between having the wave model large enough so people can see what's going on but small enough to be portable.

If the instructions for science projects allow, I'd make the model out of clear lucite (perhaps coloring the water light blue), 24 inches long, 6 inches high, and 3 inches wide. The model will work even better if it can be longer, say an additional 6 or 12 inches in length. I'd use clear aquarium glue to put the pieces together, so the seams will hold water.

Some science classes require the use of metric units, like centimeters, instead of English units. In this case, multiplying the values in inches by 2.5 will give a reasonable equivalent in centimeters.

The source end can be vertical if the source is a moving bottom or steeply sloping (one-to-one slope) for a landslide. For the sloping source-end, the end-piece would be 8.5 inches long. The moving bottom can be a 2 inch by 6 inch piece of lucite that has strings attached to each corner (so it can be pulled upward quickly to start the tsunami wave). There may need to be some thin spacers attached under the moving bottom to prevent it from forming a strong suction with the real bottom. You can use a strong plastic bag of sand or sugar sliding into the water to simulate a landslide.

The impact slope should be a foot long and glued at an angle from the top where the side walls end diagonally down to the bottom. This provides a slope of about 27 degree (one-to-two). You'll need to experiment with the amount of water in the model. I'll say it would be good to start with one inch (or 2.5 cm) of water. The shallower the water, the slower the waves will travel. If the water is too deep or moving too fast when it hits the far impact end, it may splash out of the model. You can lay a short cover shield over the top of that end if this is a problem. Having paper towels around is not a bad idea, nor is having a funnel to use when pouring the water back into the carrying container.

It's a good idea when doing a tsunami demonstration to mention the way that the way water sloshes back and forth after the first wave hits the impact site is very much the way real tsunamis behave. These tsunamis slosh back and forth in harbors, so the tsunami danger isn't over after the first wave.

Index to 2004 *TsuInfo Alert* newsletters