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TSUNAMI PROGRAM NEWS

Summary Report of the Tsunami Hazard Mitigation Steering Group Meeting

May 10-11, 2000, Seattle, Washington

http://www.pmel.noaa.gov/tsunami-hazard/may00_summary_report.html

Attendees

Steering Group: Eddie Bernard, NOAA; Lori Dengler, State of California; Richard Przywarty, NOAA; Brian Yanagi, State of Hawaii; Richard Hagemeyer, NOAA; Laura Kong, State of Hawaii; Craig Weaver, USGS; George Crawford, State of Washington; Carl Cook, FEMA ; Timothy Walsh, State of Washington; Scott Simmons, State of Alaska; Mark Darienzo, State of Oregon; Roger Hansen, State of Alaska ; George Priest, State of Oregon; Richard Eisner, State of California

Guests : Steve Hammond, NOAA; Charles McCreery, NOAA/PTWC; Robert Kamphaus, NOAA; Tom Sokolowski, NOAA/WC/ATWC; Frank Gonzalez, NOAA; David Oppenheimer, USGS; Chris Fox, NOAA; Michael Hornick, FEMA Region IX; Hal Mofjeld, NOAA; Lt Alan Yelving-

ton, USCG; Vasily Titov, NOAA; Kerre Martineau, Alaska Dept. of Military & Veterans Affairs; Marie Eble, NOAA; Costas Synolakis, USC; Jean Newman, NOAA; Ted Buehner, WCM Seattle; Jana Goldman, NOAA/OAR Public Affairs

Overview

Dr. Bernard presented the introductory remarks and welcomed everyone to the Pacific Marine Environmental Laboratory. All attendees introduced themselves. The current budget status for the National Tsunami Hazard Mitigation Program was discussed. Available funds from the FY 2000 budget are \$2,028,000. Inundation Mapping: TIME will receive \$176,340 and the states of Alaska, California, and Hawaii will divide equally \$176,340. Warning Guidance Upgrades: Seismic upgrades will receive \$705,360 to install 26 sites and DART will receive \$617,190 to maintain 2 buoys and install 1 new buoy. Mitigation efforts will receive \$352,680 overall with the states equally dividing \$291,000. New developments will be discussed concerning landslide enhanced tsunami maps for southern California, the East coast tsunami concern, and the next five years of Phase II of the Program.

The Program is not included as a line item in the NOAA FY 2001 Budget although supported by Department of Commerce and the National Oceanic and Atmospheric Administration (NOAA); the Program was cut from the Presidential budget by the Office of Management and Budget.

Action item: States were requested to send letters of support for the program for the FY 2001 budget to Congressional members in the next two weeks. Action: All states.

Review of action items from the previous meeting:

- Best Cell Size to use in Inundation Maps (requested by all)
Action: TIME Center to provide some numerical modeling guidance to Steering Group members.

Closed: Covered under Inundation Mapping section below.

- States requested Adobe Acrobat (.pdf) version of TsuInfo Alert Newsletters be available on the web

Action: Connie Manson

(continued, p. 3)

TsuInfo Alert

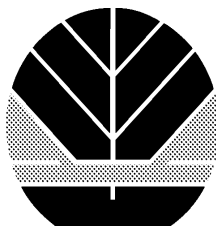
is published bi-monthly by the Washington Department of Natural Resources, Division of Geology and Earth Resources. This publication is free upon request and is available in print (by surface mail), electronically (by e-mail), and at <http://www.wa.gov/dnr/htdocs/ger/tsunami.htm>

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.walking@wadnr.gov

prepared by
Connie J. Manson, Senior Library Information Specialist
and
Lee Walking, Library Information Specialist



WASHINGTON STATE DEPARTMENT OF
Natural Resources
Jennifer M. Belcher - Commissioner of Public Lands

(continued from p. 1)

- Steering Group request for an article on the multi-state partnership for the *TsuInfo Alert* Newsletter

Action: Bernard, Eisner, Dengler

Closed: Article appeared in January-February 2000 edition of the newsletter

- Mitigation Subcommittee agreed to revisit the issue of how best to get tsunami warning information to end users

Action: Mitigation Subcommittee

Open: See Mitigation Action Item on MOA

- Draft of Tsunami Warning Systems: Guidance for State and Local Officials

A draft of the warning system guidance document was distributed to the Steering Group members for review in April. *Action:* Mark Darienzo/Local Warning Subcommittee

Open

- Public Affairs

Requested to put generic media kit on the web page

Closed

- Domain list of tsunami videos by public/non-public domains on the web page.

Closed

Project Impact Presentation

Carl Cook, FEMA, made a presentation to the group on Project Impact. With Project Impact--Building Disaster Resistant Communities, FEMA is changing the way America deals with disasters. Project Impact helps communities protect themselves from the devastating effects of natural disasters by taking actions that dramatically reduce disruption and loss. Project Impact is basing its work and planning on three simple principles: preventive actions must be decided at the local level; private sector participation is vital; and long-term efforts and investments in prevention measures are essential. FEMA would like to have an operating plan for use in the aftermath of a tsunami event. The NSW helps to get on-site assessment after disasters.

Action item: There was considerable discussion on how to confirm the availability of resources after a disastrous event. The group formed an ad hoc committee to formalize the next steps. This committee will consist of: Richard Przywarty, Frank Gonzalez, Eddie Bernard, George Priest, and Costas Synolakis.

Action: Richard Przywarty, Frank Gonzalez, Eddie Bernard, George Priest, and Costas Synolakis

Underwater Landslides Presentation

Professor Costas Synolakis gave a presentation on underwater landslides and their effects, illustrated by animations of Skagway, Alaska; Ismir Turkey; and the San Clemente fault generated tsunami (Titov).

NOAA Weather Radio Presentation

Ted Buehner, Warning Coordination Meteorologist, NWS, Seattle, gave a presentation on Washington NOAA

Weather Radio. NOAA Weather Radio is a major way to reach the target audience in a timely manner with a tsunami watch/warning message. The most recent NOAA Weather Radio transmitter has just become operational in test mode on Mt. Octopus. This transmitter bridges the gaps in coverage caused by the terrain on the Washington coast. This station also provides Emergency Alert System reception to Forks, Washington, broadcasters. As soon as all licensing and leasing agreements are complete, the station will be fully operational. Funding for this project was provided by the state tsunami warning group.

Develop NOAA/State Coordination and Technical Support

The full windows version of the Historical Tsunami Data Base for the U.S. is almost complete. Work has begun on a beta version of the HTDB for the Caribbean.

Improve Seismic Networks

All new stations will be installed by 2001. Delays have been caused by weather and equipment problems (slow to arrive or defective) as well as an underestimation of the manpower needed to install the new stations. The dedicated 128Kbps circuit from HVO to PTWC is now operational after many months of effort. This circuit allows PTWC to have access to continuous seismic waveforms for all CREST stations installed at HVO as well as most analog channels. The new Quake Data Distribution System (QDDS) was discussed. This new system is an on-line real-time reporting system. QDDS is designed as a hub and leaf system with two hubs, one in Menlo Park, California, and the other in Reston, Virginia. Much discussion ensued on how to word the messages that would go out with tsunami warnings and on how to get the quake information down to the city level. Discussion also focused on determining the best method for dissemination of quake information and on what information (on quakes below magnitude 6.5) states need.

Action item: Develop state requirements for earthquakes below magnitude 6.5.

Action: Lori Dengler.

Deploy Tsunami Detection Buoys

The DART test mooring (D123) was recovered off the coast of Monterey, California in February 2000. DART mooring D130 was deployed on March 21, 2000. To date, D130's data return rate has been 100%. Moorings deployed in October 1999 at D157 and D165 will be recovered and new moorings deployed in August 2000. One new mooring is planned for deployment at 175 degrees west longitude.

Produce Inundation Maps

The inundation mapping progress report was given by Lt. Kamphaus. Frank Gonzalez, co-director TIME, presented an overview of PMEL tsunami programs (National

Tsunami Hazard Mitigation Program: TIME and DART moorings; NOAA: Facility for the Analysis and Comparison of Tsunami Simulations (FACTS), and DOD/NASA: Short-term Inundation Forecasting for Tsunami (SIFT). TIME's purpose is to assist Pacific states in the development, maintenance, and upgrade of inundation maps; to archive bathymetry and topographic data; and to develop computational bathymetry and topographic models. In January 2000, Vasily Titov became co-director of TIME and the center moved to PMEL at Seattle, Washington. Lt. Kamphaus will be leaving for sea duty in early June and his replacement will not be in place until December 2000.

Action item: The Steering group requested an assessment of lessons learned and how to go forward on where and how to map areas.

Action: TIME to collect and summarize data.

At the last meeting, TIME agreed to attempt to summarize the existing knowledge on the best cell size to use for inundation mapping and provided the following conclusions/recommendations to Steering Group members: inundation computations (moving, not solid boundaries) are essential for producing the inundation maps; at least 150-100m cell size is required for inundation computations to produce useful guidance; models with 50-30m cell size seem to capture most of the important local inundation features; and use the best resolution bathy-topo data available.

Closed

Mitigation

Mark Darienzo presented the Mitigation Subcommittee report covering state activities since the last meeting as well as budget issues and plans for the future.

Action item: There was considerable discussion concerning a common plan (MOA) for mitigation procedures. The group decided to form a subcommittee to collect procedures now in place and analyze them and report back. The subcommittee will post their findings on tsuhaz by the end of June and report their next steps via conference call by the end of July 2000.

Action: The subcommittee members are: Mark Darienzo, Tim Walsh, Richard Eisner, George Priest, Gary Brown, Brian Yanagi, Michael Hornick, and Chris Jonientz-Trisler.

Action item: States suggested that a web site be established to house Power Point presentations from all five states.

Action: States, PMEL

Local Tsunami Warning Systems

Action item: The third draft of the *Tsunami Warning Systems: Guidance for State and Local Officials* was given to Steering Group members for review and comments. Comments due May 31, 2000.

Action: M. Darienzo, all Steering Group members.

Mark Darienzo reported that he would like to hold a workshop to discuss warning systems in general in the

spring of 2001 in either Portland or Seattle. Final recommendations on local warning systems will come from the workshop next spring.

Role of the U.S. Coast Guard in tsunami maritime response planning

Lt. Alan Yelvington briefed the Steering Group on the role of the Coast Guard in tsunami response planning for the maritime industry. Coast Guard missions include operations, marine safety, aids to navigation, and a Federal Response Plan. Customers include ports and harbors, commercial carriers, charter boats, fishing fleets, recreational boaters, and live-aboards. He covered the aspects of Federal response planning and customer needs as well as how the Coast Guard and other response teams can work together.

Tsunami-Ready Community Proposal

Richard Przywarty, Director, NWS Alaska Region, briefed the group on a proposal for a "Tsunami Ready Community." The proposal is based on the NWS "Storm Ready Program" which has been quite successful. He proposed that the Steering Group as a body should endorse and codify a "Tsunami Ready Program." The designation as a "Tsunami Ready Community" would mean that a community has met a minimum standard of tsunami education, awareness, and preparation and has been awarded the "Tsunami Ready Community" designation. The objectives of the Tsunami Ready Program would be to promote an active partnership in promoting tsunami awareness in the emergency management and the general community. The Program would establish a Tsunami Ready certification process and create a certifying board. The benefits of the program are that the communities would be recognized by a national body of scientific experts, the community would be at least more aware and better ready in the event of a tsunami, it would receive a visual certificate, and have access to funding sources not available otherwise.

Action item: By our November Steering Group meeting: Richard Przywarty will prepare a short implementation plan based on Lori Dengler's Strategic Implementation Plan for Tsunami Mitigation Projects (NOAA Technical Memorandum ERL PMEL-113).

Action: Each state, agency that has information and suggestions on how to make the Tsunami Ready Program work, send the information to Richard Przywarty as soon as possible. Richard Przywarty will draft a straw plan and e-mail it to the Steering Group requesting points of contact. He will collaborate with Lori Dengler on the plan.

Alaska Tsunami Sign Program

Scott Simmons reported on the sign program in Alaska. He showed various adaptations of the sign developed to meet special needs such as evacuation sites and shelter locations.

Public Affairs Report

Ann Thomason presented the highlights of the Program's Media Coverage since the October 1999 meeting (copies given to each member). Jana Goldman asked that the group members keep her and Ann Thomason informed when they meet/talk to media. Jana will e-mail the tsuhaz list to inform everyone of upcoming media events, opportunities, articles, etc. Jana also said she would try to help us get a tsunami b-roll and will add this item to her budget request for next year. Jana also put in her FY 2001 budget a request for \$1000 for development of a tsunami rolodex card for reporters with contact information and our web site address. Kerre Martineau, State of Alaska, discussed the upcoming (previously postponed) Sitka sign dedication, newly developed educational materials (pens, mouse pads, pamphlets, etc.), and other public affairs activities in the State of Alaska. The State of Washington is putting the finishing touches on a 30 second Public Service Announcement which was shown to the Steering Group for comments. California has held five workshops on map projections and the Local Tsunami Response Guidance document. (See Tsunami Mitigation Subcommittee Report for other mitigation/education/public affairs activities).

Action item: The Steering Group requested that we do other backgrounders on tsunami issues. Specific issues need to be selected.

Action: Steering Group to determine issues for backgrounders, PAWG to create and post backgrounders on web site.

The Next Five Years (Phase II-sustained efforts)

The Tsunami Hazard Mitigation Plan calls for assessment of the Tsunami Hazard Mitigation Program after 5 years. To fulfill this requirement, the first day of the International Tsunami Symposium in August 2001 will be devoted to a review of the Tsunami Hazard Mitigation Program. The program will be reviewed by tsunami experts. In order to obtain reviewers 6-9 months in advance an ad hoc sub-

committee is needed.

Action item: Ad hoc subcommittee to be named by Bernard to nominate reviewers.

Action: Bernard

FY 2001 Budget:

Plan for a \$2.3m budget. We should be able to meet the targets in the plan except for mapping.

Action item: All programs/states were asked to draft their 2001 budget numbers and submit them to Eddie Bernard by July 31, 2000. Eddie will compile the figures and redistribute them to all members. Final budgets should be ready for presentation at the Subcommittee meeting in November.

Action: All

NSF Modeling Support:

George Priest stated that the program needs more ongoing support for modeling. He suggested that perhaps NSF could designate a program for tsunami modeling research to which modeling proposals could be written.

Action: E. Bernard to contact C. Astill at NSF concerning this suggestion.

Meeting Dates and Locations for 2000

May 9-11, 2000, PMEL, Seattle, Washington

November 14-16, Hilo, Hawaii

Change in Format For November Meeting

The Mitigation Subcommittee requested that the meeting format be altered at the November meeting so that the Subcommittee meets from 8 a.m. to 12 noon on Tuesday, November 14. The full Steering Committee meeting would then begin at 1 p.m. on Tuesday, November 14 and run through Wednesday, November 15. Thursday, November 16 would be a day for field trips. The group agreed to this change in format.

L ANOTHER REMINDER 7

Send in any notices, awards, events or articles about YOUR state, its programs, and people before the first of the publication month. (Jan-Feb. issue deadline is Feb. 1; March-April issue deadline is April 1, etc.).

OR add *TsuInfo Alert's* name and address to the mailings you get for your state, concerning mitigation, tsunamis and emergency planning, so that we can learn about programs beyond Washington state.

Tsunami Inundation Mapping, May 2000 Progress Report

by

F. González and R. Kamphaus (NOAA/PMEL/TIME)

from: <http://newport.pmel.noaa.gov/time/reports/may2000stat.html>

From reports provided by: A. Baptista (OGI), M. Darienzo (OEM), T. Walsh (WA DNR), J. Borrero (USC), R. Hansen and E. Suleimani (UAFGI), Gerard Fryer, and K. F. Cheung (U of H at Manoa).

I. Summary of Inundation Mapping Status by Location

(see status map at <http://newport.pmel.noaa.gov/time/status.html>)

Oregon

1. Siletz Bay - Completed in 1995 by Priest et al. and published as GMS-99 by DOGAMI. Note that this work was done pre-NTHMP support; it is included in this list simply for completeness.
2. Newport (Yaquina Bay) - Completed December 1997 and published as DOGAMI Report IMS-2 and Open-file report O-97-34.
3. Seaside - Completed July 1998 and published as DOGAMI Report IMS-3.
4. Astoria - Completed October 1999 and published as DOGAMI Report IMS-11.
5. Warrenton - Completed October 1999 and published as DOGAMI Report IMS-12.
6. Gold Beach - Model runs completed and reviewed. Draft inundation map submitted and reviewed by local officials. Final product delayed by numerical problems in the Hunter Creek area. Additional model comparisons to resolve these problems in progress. MOST model results show similar inundation, but less extensive flooding in the Hunter Creek area.
7. Coos Bay - OGI has been awarded the modeling contract (5 May 99) for this area. The contract duration is approximately one year. [NOTE: This contract also includes work in Washington.] Digital elevation and bathymetry data gathered into GIS database. Target completion date is 31 Aug 2000.
8. Priority Communities - Oregon has ranked additional communities for future inundation mapping. They are, in order (highest listed first): Waldport (Alsea Bay); Rockaway; Florence; Pacific City; Bandon; Winchester Bay-Reedsport; Brookings

Washington (see status map at <http://newport.pmel.noaa.gov/time/Images/status.jpg>)

1. Gray's Harbor (Gray's Harbor County) - 1:24,000 scale inundation maps completed in October 1999 and supplied to the county. The maps cover the outer coast from Moclips to the county line south of Grayland and the inner harbor around the cities of Aberdeen and Hoquiam. They are the 7-1/2 minutes quadrangles named: Moclips, Copalis Beach, Copalis Crossing, Westport, Hoquiam, Aberdeen, Point Brown, and Grayland.

A 1:100,000 scale map was completed in November

1999 and released at a series of community meetings. A final report describing the modeling techniques and the maps is in progress with Walsh as lead author.

2. Willapa Bay / Long Beach Peninsula (Pacific County) - 1:24,000 scale inundation maps completed in October 1999 and supplied to the county. The maps cover the outer coast from the county line south of Grayland to Ilwaco and the inner harbor around the cities of Raymond and South Bend. They are the 7-1/2 minutes quadrangles named: Grayland, North Cove, Bay Center, South Bend, Raymond, Oyster-ville, Ocean Park, and Cape Disappointment.

A 1:100,000 scale map was completed in November 1999 and released at a series of community meetings. A final report describing the modeling techniques and the maps is in progress with Walsh as lead author.

3. Port Angeles / Port Townsend - OGI has been awarded the modeling contract (5 May 99) for this area. The contract duration is approximately one year. [NOTE: This contract also includes work in Oregon.] Good bathymetry data is available for the Port Angeles area. The data for the Port Townsend area is older and of poorer quality. Additional bathymetry data may need to be located. Target completion date is 31 Aug 2000.

California (see the California site identification map at <http://www.pmel.noaa.gov/tsunami/time/CAsite.html>)

1. San Francisco Area - Final model runs made, draft map completed. Final runs were made on a 100 meter grid for the target shoreline, 300 meter elsewhere, using a 30 km by 15 km seismic source in varied locations; runup values were similar to those observed during the PNG field survey. The draft map, based on a 12 meter maximum runup, was presented at a local tsunami planning meeting and is under review.
2. Santa Barbara Area - Final model runs made, draft map completed. Final runs for this area were made on a 500 meter grid with a supplemental 250 meter grid for the Santa Barbara Channel; results for both grids were identical. Both seismic and landslide sources were used in simulations, with landslide sources placed offshore of Santa Barbara (where there is evidence of past slope failures) producing the largest runups (15 meters). The draft map, based on a 9 meter runup, was presented at a local tsunami planning meeting and is under review.
3. Los Angeles / Long Beach Area - Final model runs made, draft map completed. Final runs for this area were also made on a 500 meter grid with a supplemental 250

meter grid for the Santa Monica Bay and the Palos Verdes Peninsula. Both seismic and landslide sources placed inside Santa Monica Bay were used in simulations. Again, landslide sources produced the largest runups (well over 10 meters). The draft map, based on a 12 meter runup, was presented at a local tsunami planning meeting and is currently under review.

4. San Diego Area - Additional runs in progress. A 100 meter grid for the target shoreline and 300 meter grid elsewhere has been completed and used to run several simulations of PNG sized landslides sources. Final runs will be made using a 30 km by 15 km seismic source. Preliminary maximum runup values are about 10 meters.

Alaska (see the Alaska site identification map at <http://www.pmel.noaa.gov/tsunami/time/AKsite.html>)

A revised 1964 source scenario was constructed using data from a combined tsunami waveform inversion and geodetic data to get a more detailed slip distribution (Johnson and others 1996). The revised scenario will be used as the worst case scenario for the Kodiak area inundation studies.

Due to the proximity of the three study areas (City of Kodiak, USCG Base, and Women's Bay), all are presently included in the same numerical grid. The finest resolution grid is presently 2.67 arc seconds (44 meters x 82.4 meters). The Kodiak inundation modeling code now incorporates 5 different grids of varying resolution (6 min, 2 min, 24 sec, 8 sec, and 2.667 sec).

The final grid requirements were revised by UAFGI last week; TIME is preparing the final grids. The final grid spacing is planned to be about 22 m x 27 m or (8/6)" x (8/9)". This was possible due to special high resolution topography and bathymetry coverage in this region. This resolution may not be possible for future work.

Future Work:

ADES (Brown and Simmons) convened a meeting / teleconference including ADES personnel, representatives of the scientific community in Alaska, TIME, and the WC&ATWC to refine the 'short list' of communities for future work. Future work will be supported by the Alaska Science and Technology Foundation (ASTF) funded proposal led by Roger Hansen at UAFGI. The meeting produced a prioritized list of nine communities as follows: 1. Seward - cannot be mapped until better bathymetry data available; 2. Sitka; 3. Sand Point; 4. Homer; 5. Seldovia - should be mapped concurrently with Homer; 6. Unalaska; 7. Yakutat; 8. Whittier; 9. Cordova - cannot be mapped until better bathymetry data available.

Hawaii (see the Hawaii site identification map at <http://www.pmel.noaa.gov/tsunami/time/HISite.html>)

Initial one-dimensional inundation modeling and mapping was performed in 1989-1991 using state funds; evacuation maps were published in 1991. Some maps in Oahu were updated in 1997 using federal funds; entry into the

county GIS system was initiated in 1997. Additional modeling will update and refine the published inundation maps.

Hawaii issued two contracts for tsunami modeling in late 1999 --one for distant tsunami modeling and one for local tsunami modeling. Work on both contracts is underway and moving well.

Distant Tsunami Modeling -- Contract awarded to University of Hawaii at Manoa (UH) team led by Dr. Kwok Fai Cheung.

The Cornell Multigrid Coupled Tsunami Model (Liu) is used to compute a database of synthetic tsunami waveforms at tide gauges. Tide gauges in restricted waterways and harbors are not used in the analysis. Two computational models have been developed: one covers the Aleutian-Alaska and Japan-Kuril-Kamchatka source region, and the other covers the Peru-Chile source region. The final product will be a FORTRAN program with a built-in database of unit synthetic waveforms. The input will be recorded waveforms at tide gauges near the tsunami source and the output will be expected tsunami waveforms and confidence intervals near the Hawaiian Islands. The completion date of the contract is Fall 2000.

Local Tsunami Modeling -- Contract awarded to University of Hawaii at Manoa, Principal Investigator is Dr. Gerard Fryer. The modeling code TSUNAMI-2 (Imamura's code) has been implemented and used on a 9-arc second bathymetric grid to model tsunami propagation in Hawaii. Significant work in locating and incorporating multibeam bathymetry data and newly acquired AVIRIS data into the modeling database has been accomplished. For a graphic showing the location of various data sources; see <http://www.soest.hawaii.edu/tsunami/hawaiiibathy.jpg>. The Kalaupana tsunami of 1975 has been approximately modeled. It will be refined to obtain better constraints on tsunamigenic sources in Hawaii. Preliminary modeling for a magnitude 7.5 earthquake in South Kona has been completed. The results can be seen at: <http://www.soest.hawaii.edu/tsunami/zmax.jpg>. The completion date of this contract is also Fall 2000.

II. Evacuation Map Status by Location

A. Oregon

Oregon Emergency Management (Darienzo) has worked with many coastal communities on preparing pamphlet-size Tsunami Evacuation Maps. In communities where detailed inundation mapping has not been completed, Priest's 1995 Tsunami Hazard Maps were used to construct the evacuation maps.

Evacuation maps have been completed for: [1] Bandon (Coquille River), [2] Manzanita, [3] Salmon Cove (Umpqua River), [4] Cannon Beach (updated spring 2000) [5] Waldport, [6] Yachats, [7] Lincoln City, [8] Florence, [9] Seaside, [10] Gearhart, [11] Arch Cape, [12] Warrenton, [13] Astoria, [14] Reedsport, [15] Gardiner, and [16] Winchester Bay.

Additional maps are being developed for: [1] Newport, [2] Depoe Bay, [3] Curry County, and [4] Nestucca Fire District.

B. Washington

Washington DNR (Walsh) and Washington Emergency Management (Crawford) have worked with the coastal counties on preparing pamphlet-size Tsunami Evacuation Maps and Flyers. Evacuation maps have been completed for: [1] Grays Harbor County and [2] Pacific County.

III. Links to Submitted Progress Reports

A. Oregon and Washington-- OGI Report, by Antonio

Baptista at <http://www.pmel.noaa.gov/tsunami/time/reports/ormay00stat.html>

B. California -- USC Report, Jose Borrero at <http://www.pmel.noaa.gov/tsunami/time/reports/camay00stat.html>

C. Alaska -- UAF GI Report, by Roger Hansen and Elena Suleimani at <http://www.pmel.noaa.gov/tsunami/time/reports/akmay00stat.html>

D. Hawaii -- Local tsunami inundation mapping, U of H at Manoa, by Gerard Fryer at <http://www.pmel.noaa.gov/tsunami/time/reports/hil1may00stat.html>; Distant tsunami inundation modelling, U of H at Manoa, by K. F. Cheung at <http://www.pmel.noaa.gov/tsunami/time/reports/hi2may00stat.html>

CREST Status Report –October 23, 2000

by

David Oppenheimer - USGS

from: <http://www.pmel.noaa.gov/tsunami-hazard/crestnov00.html>

Activity: Consolidated Reporting of EarthquakeS and Tsunamis (CREST)

Warning Centers: During the past 6 months there was no activity conducted at the Warnings Centers by CREST project personnel, except for support of telemetry links.

Seismic Network instrumentation: Installations of seismic instrumentation continue as weather and equipment inventories permit:

AEIC: Five sites are operational, and two additional sites will be online soon. Permits and field surveys are complete from 3 sites, but installation is not possible during the winter months. Permit process has begun at 8 other sites. In addition, continuous data from two non-CREST sites (McKinley) are being telemetered to ATWC/WC. Malfunctioning sensors continue to hamper progress because they require that they be returned to the manufacturer for repair.

ATWC: Two sites are operational. Data logger for Sand Point is scheduled for delivery in November. It will be installed as weather permits.

NCSN: Three sites are operational. Satellite VSAT's for 7 sites arrived mid-October and data loggers are expected to arrive in November. On receipt of equipment, sites will be installed as weather permits. We anticipate installing 2-3 additional sites over the winter and 3 VSAT's.

HVO: Hawaii is fully operational.

PNSN: Six sites are operational. One site will be installed this fall. Noise tests were made at four sites on the Oregon coast where BPA microwave telemetry exists. Installation will commence following approval by BPA. Permitting is underway at 3 sites that utilize free telemetry by the Washington State Patrol microwave system, Seattle

Water Department, and Washington Department of Natural Resources, and installation will commence upon approval. Equipment exists for installation at four additional sites, but no specific locations have been identified.

UO: UofO installation is fully operational.

UCB: Proposed telemetry configuration from Cahto Peak to Laytonville, CA proved to be untenable and plan was abandoned. This cooperative site will tentatively be installed at Alder Springs in the spring pending approval by California Department of Water Resources and transmitted to Berkeley (and USGS) via a combined spread spectrum/ Frame Relay circuit.

Communications: All links are up and functioning. We are considering upgrading the capacity of the Golden-to-ATWC/WC from 56kbps to 128kbps. Investigations are underway to improve connectivity, capacity, and cost savings through utilization of VBNS networking with priority service.

Algorithms: ShakeMap implementation is complete in NC and is in production. Efforts were devoted to integration of non-NCSN data sources into ShakeMap utilizing an Oracle DBMS as a staging platform for peak ground motion parametric information.

ML magnitude computation software is being released to entire community pending code documentation.

Moment tensor code from UCB has still not been integrated into Earthworm. It's moving to the front burner soon.

Tsunamis in the News: Public Affairs Activities and Media Coverage
from: <http://www.pmel.noaa.gov/tsunami-hazard/FY00publicaffairsreport.htm>

Jana Goldman NOAA/OAR Public Affairs prepared a press release on the triggering of the tsunami test buoy off the coast of Monterey following the October 16, 1999, Hector Mine Earthquake. The buoy detected the earthquake and went into tsunami mode. No tsunami was detected and the equipment worked just as designed.

Jan. 25, 2000: Seattle Times article on front page, "Big Fears: giant quake and tsunami." Focused on the 300th anniversary of the killer tsunami that struck the U.S. West Coast. Article by Eric Sorensen. Article also appeared on the Seattle Times web page under the title "Killer Wave Hit 300 Years Ago; Coastal Cities Are Preparing Again." On that same date, KOMO-TV 4 (ABC) interviewed E. Bernard and featured a good piece on the 5:30 p.m. news and KIRO-TV 7 (CBS) interviewed F. Gonzalez and did a short piece on the 5 p.m. news.

Jan. 2000 Article entitled, "In Search of the Great White Wave: Tsunami detection buoys to improve warning system," appeared in the Winter edition of *Northwest Science and Technology* magazine.

In April 2000, the California Office of Emergency Services held a workshop in Anaheim, California, on the newly discovered undersea slopes off the coast of southern California. These slopes are similar to the ones in Papua New Guinea and could cause an underwater landslide and tsunami in southern California. The Los Angeles Times featured a large article about the conference.

Apr. 13, 2000: Contacted by Eric Riddle, Evening Magazine (KING-5 TV, NBC) for footage on tsunamis for a feature to be aired next week. We forwarded a copy of V. Titov's Aonae simulation model.

Apr. 21, 2000: At the Anaheim Tsunami Workshop sponsored by California Office of Emergency Services, E. Bernard was interviewed by Kenneth Reich, L.A. Times. Article appeared both in print and on the web site on Apr. 27.

Apr. 24, 2000: E. Bernard filmed by Pioneer Productions for a program entitled, "Stormforce II" for the Discovery Channel. Release date estimated to be early winter 2000.

May 2-3, 2000: Following an article in the May edition of *Geology* on the possibility of an East Coast landslide-produced tsunami, Dr. Bernard was contacted for telephone interviews by the following print media: Seth Borenstein, Knight-Ridder Newspapers; Dan Eggen, Washington Post; Bob Williams, Nando Times, Raleigh, N.C.; Scott Harper, Virginian-Pilot; Dick Kerr, *Science* magazine; Jack Sherwood, Soundings; and John MacNeil, *U.S. News & World Report*. E. Bernard was also interviewed live for 2 separate broadcasts on MSNBC TV. USA Today.com conducted a telephone interview with E. Bernard. Mallory Pinkard, WABC Radio, Baltimore, MD, and Uri Schwartz, German TV conducted telephone interviews with E. Bernard. USA

Today.com conducted a telephone interview with E. Bernard.

Jana Goldman prepared a tsunami fact sheet for reporters for the Spring AGU meeting in June.

Jun. 9, 2000: Discovery Channel taped interview with Frank González for program to air in fall called "Storm Warning."

Jun. 10, 2000: Article in *Science News*, Vol. 157, No. 24, pp. 378-380, entitled "Tsunami! At Lake Tahoe," quotes Hal Mofjeld: "Our main concern would be the tourists who might not be prepared for an event like this."

Jun. 18, 2000: NBC News Dateline rebroadcast of interview with Dr. Bernard and Dr. D. J. Baker on tsunamis with new information (provided by phone to reporter by Eddie).

Jul. 17, 2000: NOAA Press Release; Underwater Landslides, Slumps May Intensify Tsunamis, say Scientists.

Jul. 18, 2000: ABC NEWS.com article, "Threat of Giant Waves?" features quotes from Eddie Bernard. Weather Channel online feature, "Killer waves have new origin," featured quotes from Eddie Bernard.

Jul. 24, 2000: ENN News (online) featured article, "Underwater landslides stir bigger tsunamis," featured quotes from Eddie Bernard.

Jul. 2000: *Natural Hazards* issue 22/1 (July), p. 75-93, article, "Forecasting the Heights of Later Waves in Pacific-Wide Tsunamis," by Hal Mofjeld, Frank González, Eddie Bernard, and Jean Newman.

Aug. 6, 2000: Learning Channel broadcast of "Disaster Detectives" segment on "Water" features interview with Dr. Bernard and Hugh Milburn and shows deployment of the DART buoys

Sep. 6, 2000: Hawaii Civil Defense Debuts the documentary: "Tsunami: Waves of Destruction." The Honolulu Advertiser did an article and an editorial about Hawaii's tsunami awareness education and mitigation program.

Sep. 11, 2000: NOAA press release on the dedication of the NOAA Weather Radio station on Mt. Octopus, WA. Washington Military Department Emergency Management Division also did a press release. KXRO radio broadcast the dedication ceremony.

Delores Clark, NWS Pacific Region Public Affairs, reported that the Pacific Tsunami Warning Center hosted groups of visitors in August. *Boy's Life* magazine contacted her for updated tsunami information for a story to be published in the magazine in the October or November issue. ITIC has a German student summer intern. FEMA Project Impact people plan to meet with PTWC soon to work up a tsunami element for Hawaii's Project Impact Programs.

Lori Dengler reported that they held the Earthquake/Tsunami Room again at the Humboldt County Fair in August. This year's theme was Great Cascadia Earthquakes

Past and Future. Exhibits and staffing were provided by Humboldt State University, College of the Redwoods, OES, PG&E, Humboldt County Office of Education, Red Cross, NWS, Redwood National Park, Caltrans, CDMG, North-coast Emergency Medical Services, Humboldt County Health Department, and several local consulting companies. The public has been very enthusiastic. The REDI/CUBE computer display simulated a 3.9 earthquake 17 minutes after the fair opened. It was a hit.

September was Weather Radio Awareness Month in

Tsunami News

Event, 16 November 2000

A magnitude 8.0 earthquake occurred near Rabaul, Papua New Guinea at 0455 GCT, 16 November 2000, that generated a locally destructive tsunami. A magnitude 7.7 aftershock followed about 3 hours later. The USGS data is as follows: 0455 GCT, 4.0S 152.3E, M8.0 and 0742 GCT, 5.2S 153.1E, M7.7. The Associated Press release, dateline Port Moresby, reads as follows:

"A huge earthquake shook the Pacific Ocean just off the coast of Papua New Guinea today, generating a tsunami that crashed ashore and damaged a supermarket and other buildings. There were no immediate reports of injuries but communications were cut with Rabaul and nearby Kokopo, the two towns in the area of northeast Papua New Guinea where the tsunami hit.

"Japan's Meteorological Agency said the undersea quake registered 7.8 magnitude. The U.S. Geological Survey put it at 8.0. Quakes that strong can cause heavy damage and casualties in populated areas. The quake's epicenter was 20 miles off Rabaul, said John Minsch, a geophysicist with the U.S. Geological Survey's National Earthquake Information Center in Denver, Colo.

"Aftershocks were still being felt two hours after the quake, said a supervisor with Lihir gold mine, about 90 miles to the north of Rabaul, in New Ireland province. 'There is no damage in Lihir, and I don't think there's big damage at Rabaul. I was able to speak to someone there before the phones went,' the mining supervisor said. 'That person told me a small tidal wave came ashore at Rabaul and near Kokopo.'"

FEMA Announces Disaster Resistant Universities

To help colleges and universities limit future property and economic damage due to natural disasters, the Federal Emergency Management Agency (FEMA) has launched a Disaster Resistant Universities initiative. The program provides about \$100,000, to be matched equally by the receiving institution, to enable universities to assess their vulnerabilities to natural hazards and to implement strategies to limit damage before disasters occur. Five campuses have been selected as initial participants: Tulane University, the University of Alaska-Fairbanks, the University of Miami,

Washington state. The Washington State Emergency Management Division did a big feature on NOAA weather radio on its web site and featured a 30 second audio public service announcement featuring Vice President Gore. The new Mt. Octopus NOAA Weather Radio transmitter was dedicated on September 11. Media coverage of the dedication included radio spots by KPLU, KXRO, and KIRO radio. Washington Emergency Management Division and NOAA/NWS both prepared press releases for this event.

the University of North Carolina-Wilmington, and the University of Washington-Seattle.

The project began with a University of California-Berkeley study of the economic consequences of a disaster on that school and its surrounding community and state. Concluding that such a disaster would have severe economic consequences, UC-Berkeley also developed a plan to limit future disaster losses and guidelines for other universities to use.

The Disaster Resistant Universities initiative will encourage these new participants to identify risks and undertake preventive actions at the local level, establish public-private partnerships, and encourage long-term efforts and investments in risk reduction. For more information, contact FEMA, Mitigation Directorate, Project Impact, 500 C Street, S.W., Washington, DC. 20472; and/or see: http://www.fema.gov/nwz00/nwz00_56.htm.

from: Disaster Research 331 - October 19, 2000

Congratulations!

"Washington Emergency Management Division (EMD) employees were winners of two National Awards in Excellence presented by the Western States Seismic Policy Council at the National Earthquake Risk Conference September 20 in Seattle. Barbara Thurman, EMD public educator, won in the Educational Outreach to Schools category for her work on EMD's 1999 "Prepare Because You Care" campaign. George Crawford won in the Educational Outreach to Business/Government category for his work in the Building Earthquake Resistant Coastal Communities program."

from: Emergency Responder, September-October 2000, p. 4.

An Invitation from FEMA for Nominations of Exemplary Practices

In keeping with its goal of building a strong and effective emergency management system, FEMA continues to search for creative ways and means to better utilize resources at the federal, state, and local levels, as well as in the private and volunteer sectors.

With "Partnerships in Preparedness" as its theme, FEMA's "Compendium of Exemplary Practices in Emergency Management" provides an avenue for forging

cooperation and leveraging emergency management talent and resources throughout the public and private sectors, and pays tribute to those who have developed such practices. The agency is currently soliciting nominations to be included in next year's compendium. A panel of FEMA partners comprised of representatives from the state and local emergency management community screens all nominations for inclusion in the compendium against the following five criteria:

- The program has implemented/demonstrated results
- The program is replicable/easy to transfer
- The program is cost effective
- The program is innovative
- The program has a broad scope of impact

Each nomination should include names of knowledgeable individuals who can provide further information. Nominations and suggestions are welcome at any time. For complete details or a nomination form, contact: Compendium of Exemplary Practices in Emergency Management, PT-SL Room 614, FEMA, 500 C Street S.W., Washington, DC 20472, or see: <http://www.fema.gov/pte/exempract.htm>

from: Natural Disaster 332, November 3, 2000

An Invitation to Join a New Discussion List on Emergency Public Information

Dear Colleagues,

I'd like to invite you to join a new mailing list for discussion of Emergency Public Information (EPI) tasks, tools, and techniques in California and beyond. The "Cal-EPI" list is a new forum for discussion of technology issues such as EAS and EDIS, to be sure, but also a community of shared interests where emergency managers, journalists, and others can discuss and cooperate on the larger challenges of alerting, informing, and reassuring the public during emergencies.

Interested? Then join the conversation by sending e-mail to "Cal-EPI-request@incident.com" with the word "subscribe" in the body of your message. We're looking forward to having you with us!

Art Botterell (E-mail: acb@incident.com)

from: Natural Disaster 332, November 3, 2000

NEMA and Friends Launch Emergency Management Accreditation Program

Recognizing that state and local emergency management programs play a crucial role in creating safe communities and reducing disaster impacts, a dozen national organizations have cooperatively developed the Emergency Management Accreditation Program - EMAP.

The National Emergency Management Association (NEMA), National League of Cities, Federal Emergency Management Agency, National Governors Association, U.S. Department of Transportation, and several other

organizations helped create EMAP to promote continuous improvement of both state and local emergency management programs. EMAP provides national standards through which emergency management programs can both demonstrate success and accountability and determine areas and issues where resources are needed.

Because gauging the capabilities of state and local programs before a disaster strikes is a major challenge for government and community leaders, the goal of EMAP is to provide a meaningful, voluntary accreditation process that can be used by state, territorial, and local programs. By offering consistent standards and a fair accreditation process, the EMAP developers feel that the program will strengthen communities' abilities to prepare for and respond to all types of hazards, from tornadoes and earthquakes to school violence and bioterrorism. Accreditation is voluntary and not tied to any funding. Again, its intent is to encourage examination of strengths and weaknesses, pursuit of corrective measures, and communication and planning among different sectors of government and the community - particularly in light of new, emerging problems such as changing climate and weather patterns and the threat of terrorism.

In 2001, this new program will pilot test accreditation standards and procedures within two state emergency management programs. Following these tests, EMAP will refine its procedures and materials and offer the accreditation process to all U.S. state and territorial emergency management programs. In 2002, the program expects to pilot test the accreditation process among local emergency management programs. The process will include an application, self-assessment, on-site assessment by an outside review team, and committee and commission review of compliance with EMAP standards; it will also require re-accreditation every three years.

EMAP currently operates under the auspices of and with staff support from NEMA. Collaboration with interested organizations and individuals as well as use of existing assessment and standards materials have helped minimize initial costs. The developers intend the program to become self-supporting through application and re-accreditation fees. In the near future, the current EMAP steering committee will be superseded by a nine-member commission with broad representation, and as soon as is practical the commission will be incorporated as an independent entity.

For more information about EMAP, contact Emily DeMers, Accreditation Coordinator, NEMA, c/o Council of State Governments, P.O. Box 11910, Lexington, KY 40578-1910; (859) 244-8210; fax: (859) 244-8239; e-mail: edemers@csg.org; WWW: <http://www.nemaweb.org>.

from: Disaster Research #333 - November 17, 2000

**TsuInfo Program: Status and Year 2000 Accomplishments--
Summary of the Report to the National Tsunami Hazard Mitigation Steering Committee**
by
Connie Manson and Lee Walkling, TsuInfo Program
November 8, 2000

“Outstandingly excellent!” says Al Aya, Cannon Beach Fire Protection District

The TsuInfo program has continued to be successful, and continues in the patterns from the first year.

While we continue to collect books and reports on tsunami hazards and mitigation, those are rarely requested by the program participants. More popular materials, like videos, are quite regularly requested.

There are currently 246 subscriptions to *TsuInfo Alert*. The geographic distribution is: 2 in British Columbia; 99 in Washington; 48 in Oregon; 18 in California; 25 in Alaska; 5 in Hawaii; 44 to U.S. Congress; 6 other (one each for: MD, NJ, NY, VA, 2 in CO)

As requested by the Steering Committee, the issues are now up on the Internet, available via our website at <http://www.wa.gov/dnr/htdocs/ger/tsindex.html>. Additionally, the newsletter frequency was changed from monthly to bi-monthly, as approved by the steering committee.

We included a brief questionnaire with the October issue to assess the value of the newsletter. The newsletter continues to be very well received, and it appears the readers are very satisfied with the mix of news and articles we've been presenting.

Answers to *TsuInfo Alert* Evaluation Questionnaire (39 replies received):

Do you wish to continue receiving *TsuInfo Alert* newsletter?
34 Yes (This could have been further broken down into categories YES, YES!!, and **YES!!!!**)
5 No (Replies included: Not a threat to my inland office; Not directly related to the work we do; I've changed positions; Retired)

Do you keep back issues of the newsletter?
30 Yes; 4 Some; 4 No

What articles or features have you found most useful for your work?
6 web site information
5 Tsunami News
5 News Briefs
3 all
2 research
2 Infrequently Asked Questions
2 Directory
2 history of coastal events
2 special features
2 mitigation materials
1 each for: articles on Pacific Coast; bibliographies; planning; updates; Natural hazard facts; tsunami and earthquake risks on Oregon and Washington coasts; Northern California related info; video lending library; coastal events; projects of other coastal areas; Cascadia zone research; publications; book reviews; Baby Sitter's Emergency Instructions; mapping information; publication reviews

What articles or features do you read each month?
12 All
5 tsunami news
4 news briefs
3 new web sites
2 book reviews
2 mitigation materials
2 Most

2 IAQ
1 each for: Front page article; Scan all; Planning; research; updates; natural hazard facts; listings; keynote article; special features; publications.

What type of articles, or what specific topic(s) would you like to see included in future issues?
5 more of the same
3 more historic studies
3 current tsunami news
3 progress of inundation mapping of ALL western US coast 2
tsunami warning systems
1 each for: news briefs; tsunami-proof building design; tsunami mitigation suggestions for hotels/resorts; more Northern California related info; Puget Sound tsunami info; planning; evacuation; occasional bio or contact info on researchers; more trivia/factoids; GIS/mapping

Have you ordered materials or books mentioned in *TsuInfo Alert*? If so, approximately how many?
14 No
5 Yes: 1 to 2 times
4 Yes: 6 times or more
2 Yes: 3 to 5 times
2 Not yet
1 Yes: I've borrowed videos
1 No, but I've visited the websites

How would you rate the overall usefulness of the *TsuInfo Alert* newsletter?
21 Excellent
13 Good
0 OK
1 Not very useful (from the 'not directly related to the work we do' person)
0 Useless

Tsunami--Nature's Most Spectacular Event

by

Gene Woodwick, Director
Ocean Shores Interpretive Center
Ocean Shores, Washington

Grays Harbor, Washington lies at the edge of the Cascadia subduction zone. Ocean Shores, on the northern lip of the harbor, is one of southwest Washington's fastest growing coastal communities. Its major industry is tourism. The challenge of the Ocean Shores Interpretive Center was how to educate the public about the very real threat of a tsunami without disturbing the economic growth and without giving the local citizens nightmares. With the help of the Washington State Department of Natural Resources, Division of Geology and Earth Resources (DNR), a plan was developed to present the science of tsunami as a spectacle of nature.

Tsunami Educational Cooperators included, Pat Pringle, volcanologist and Tim Walsh, head of Geological Environmental Service and the DNR head librarian, Connie Manson of the National Tsunami Hazard Mitigation Program; Brian Atwater, geologist of the U.S. Geological Survey; William P. Steele, University of Washington, Pacific Northwest Seismographic Network Program; Karen Frinnel-Hanrahan, director, Grays Harbor Emergency Management, and David Yamaguchi, dendrochronologist.

Program elements included educational poster displays on the buried lowlands of the Copalis Beach, Washington area, and geological and seismological evidence of a 1700 subduction earthquake resulting in tsunami waves on the local coastline. Displays include tsunami travel times, historical records of local wave events and earthquakes, tsunamis and Indian legends, explanations of the real-time ocean sensor warning system, and the Cascadia subduction zone. A map of the modeled flooding from a large, localized subduction earthquake certainly drew the interest of homeowners. In-house information and agency publications were greatly appreciated by visitors. Several videos were shown at various times with "The Quake Hunters" being the most well received.

The Ocean Shores Interpretive Center, now in its third year of seasonal operation by the City is housed in a former medical office. While the small quarters and hallway displays did not provide optimal viewing or as coherent learning as would be desirable, over 8,000 people visited the Center during the season and viewed the displays.

Hands-on displays of wood gathered from the Copalis event by Brian Atwater and the tree ring slab from David Yamaguchi's study were first viewed by visitors with a puzzled "I don't get it" look. Once they were led through the explanation of the study dates on both displays, that look turned to "Wow! Isn't that cool!"

Ace Hardware of Ocean Shores donated the use of the new NOAA weather radio that brought home the reality of a real local hazard in a reassuring manner. While it brought

across the message that the display was not just a scientific "maybe", it gave local people and part-time residents an option in dealing with the seriousness of the event.

The display of the real time ocean sensors is popular. Those sensors transmit data from ocean bottom detectors to the surface, and then relay that information via satellite to three state warning centers. The display is enjoyed by the folks interested in gadgets and provides reassurance to the more worried visitors.

The most common question was "what happened here during the Alaskan earthquake?" followed by "when will the next 'big one' hit?" Photos of damage to the Copalis River bridge and local oral historical information helped visitors understand the effects of large, local earthquakes and tsunamis. Most people were skeptical of the timeline of repetitive events until they were shown the charts and records amassed by research. Humor helped in the one-to-one public education. Gentle teasing--about building a new center from the funds we would make from the accurate prediction of the next event, to parking "arks" in the backyard "just in case"--opened dialog with people uncomfortable with either the science or the serious hazard. The cadre of local citizens who serve as hosts for the Center verbalize their own feelings about living in a hazard zone and how they deal with the information from public safety agencies and scientific studies. This opened up questions and deeper interest in the displays.

A number of local realtors toured the Center displays. Their fears that such public information would affect the burgeoning market were allayed by the scientific presentation. They all took the offered literature to be better self-educated and to explain the hazards to their customers. The hazardous aspect of property ownership is difficult to ignore in Ocean Shores since the big, blue and white, tsunami evacuation route signs are posted throughout the city.

This information about coastal hazards is new to most of our visitors. They may understand "tsunami" and "earthquake" but they cannot explain those events to their own satisfaction and could not grasp the possible magnitude of those events in a coastal situation. It's important, then, that they can take materials about these hazards home with them. Atwater made sure the Center was well supplied with his *Surviving a Tsunami--Lessons from Chile, Hawaii, and Japan* (U.S. Geological Survey Circular 1187)--the most popular report about the hazards. Other reports were provided by DNR and Grays Harbor Emergency Management. Seventeen teachers asked for further resource material as they planned to use the topic as a teaching unit during the 2000-2001 school year. Providing copies of these reports is

an important aspect of the public education program.

A “hot” item was a free refrigerator magnet or sticker provided by Grays Harbor Emergency Management. The Center is a family-oriented facility so the smaller children loved the turtle “drop and hold” stickers, adults were given the safety rules magnet but the round stickers were reserved for teenagers only. Teens, the hardest age group to educate, brightened up when they found out they were special. Another reason for giving them only to teens was to talk about the importance of the signs as a public safety measure. Since more than 200 of the signs have been stolen since they were first installed, the most likely bedrooms now decorated by signs are teens and college students.

In retrospect, obtaining a model of the ocean floor warning system would have been a real draw but working with space restrictions limited the focus.

The high cost of the videos and the limit on use time of those borrowed from agencies were drawbacks. In the Interpretive Center format such material is better presented on a request basis rather than a weekend one time viewing. Most videos focused on the scary aspects of tsunamis or were safety videos geared towards children and were therefore not the best for public educational purposes. The Center has a reputation for presenting alarming information in an acceptable format. The development of their own video about the local rip-tide hazards, “The Wild Sea,” was purchased by local hotels, chambers and motels to show their guests daily. The summer’s visitor responses indicate a need for a similar video on tsunamis.

The public wanted to know more about the Cascadia subduction zone, offshore fault lines, and the effect offshore canyons and earthquakes have on coastal flooding from earthquakes. Since the Washington coastal areas have been experiencing major erosion in recent years these subjects are of interest, but there is little public information available to distribute. Good charts or inexpensive books for resale were difficult to obtain. The Interpretive Center hosted a two-year display from the state Department of Ecology on the coastal erosion studies. Interest in a one panel display the first year resulted in an entire room display the following year. Visitors to coastal areas are in a relaxed mood when they come to the Center and the casual walk-through interest soon becomes very focused with return visits accompanied by family and friends.

Presentation of the unique aspect of the tsunami as a natural event was a “grabber” for these visitors. Local people had mixed reactions. Some had attended the forums presented by public safety officials and were satisfied that the issue was being addressed. They like living on the coast and prefer this natural hazard to dying from stress in urban areas, drive-by shootings, and other “civilized” hazards. A few immediately declared they were going to sell their homes and move. In subsequent discussions, most of these people had underlying reasons to move such as wanting to be closer to their children, etc. and the tsunami hazard was

the excuse. As in all situations there was that segment of society that becomes deeply alarmed over perceived danger. Repeated visits to see the displays with friends and family and reading the information lessened their fears.

The success of school tours depended upon the age group. Small children were too interested in the rocks in the exhibit room and the animals in other rooms to pay close attention to the total range of the displays. However, small children loved the dendrochronology display and the dates of the Copalis estuary wood. All of them had to try and count the rings in the wood. Secondary school students were the most approachable though introducing them to Brian Atwater as a scientist and explaining the absolute joy he has in his work. One little guy became intrigued by Atwater’s story and was overjoyed when he saw Brian on TV. He made repeated trips to the Center to see the display and to ask questions about Brian. By the end of the season he was “going to grow up and be a scientist and work with Brian Atwater”.

The tsunami hazard display appealed to a few teenagers, but since that’s an age when getting excited about learning is not cool, and being with your parents is definitely not cool, it was fun to spark an interest in teens and to find out their perspective. Their greatest interest was tsunami travel times and the 1700 Japanese log and its ramifications on the studies by Atwater and Yamaguchi.

Various geologists and personnel from Oregon, California and east coast state agencies did not need any explanations and enjoyed perusing the poster exhibits on their own. For other adults, the exhibits provided them with new knowledge. Many made repeat visits to digest more of the information. And it was a joy to see many return as ‘experts’ to tell their friends all about the exhibits--that makes the work worthwhile when people want to share their new knowledge with others.

Since the North Coast of Grays Harbor has always been home to a variety of Indian tribes and the Point Brown peninsula of Ocean Shores was the traditional food gathering area of even more tribes, the displays on tsunamis and Indian oral tradition drew very close attention from Indians who visited the Center. Their history and viewpoint is not often included in public information so this display was welcomed by Indian and non-native peoples alike. Many people would have liked this information in brochure form.

The Ocean Shores Interpretive Center draws its visitors from areas outside the Puget Sound region first of all, closely followed by the Olympia to Everett area, with an amazing number of people from the east coast of the US. The next largest segment is from Oregon, then Colorado/Kansas/Arizona. California and British Columbia rank next. The Puget Sound people wanted to know more about how earthquakes and tsunamis impact their area. Since the city has a large population of part-time home owners, this educational and safety information was welcomed by them. The Center and the Ocean Shores Police Department cooperated

on tsunami route information brochures that many folks took home to post in summer homes for their families and visitors. Out-of-state visitors were more curious as to how the tsunamis relate to Mount St. Helen's volcanic activity. We found that a working seismograph at the Center would be a great draw for all of our visitors. Although many have seen them on news reports, most wished they could see one actually working. Many of the coastal visitors are on their way to St. Helen's following a trip to the beach instead of vice versa and wanted a broader view of this famous tourist

attraction.

A portion of the display will be left in place for the 2001 season. From past experience return visitors will expect to be able to show relatives and friends what they learned last season.

The Ocean Shores Interpretive Center truly appreciates the kindness and the cooperative spirit of all agencies and their staff in making this serious threat an educational opportunity in nature's most spectacular event.

Websites of Distinction!

The Cascadia Megathrust and Tectonic Stress in the Pacific Northwest

<http://walrus.wr.usgs.gov/stress/>, by Eric L. Geist

Outlines the questions being addressed by Geist's research of the Cascadia Megathrust and Pacific Northwest plates. Includes great graphics to help illustrate the findings. Includes ample links to further studies and explanations. Last modified 7-10-97

The July 17, 1998 Papua New Guinea Tsunami

<http://walrus.wr.usgs.gov/tsunami/>, by Eric L. Geist

Thorough study of the Papua New Guinea tsunami, with photos, graphics, links, and animation. Links to current research studies provide up-to-date findings.

Mental Health Workers without Borders

<http://www.mhwwb.org>

"The MHWWB is an international, not-for-profit, non-governmental network of activist mental health workers of all types and professions whose aim is to provide psychosocial assistance following natural and human-caused disasters and to provide technical assistance to developing countries so that they can provide treatment and psychosocial rehabilitation for their citizens. MHWWB encourages family- and community-based approaches to mental health therapy, while respecting cultural variation, drawing on local resources and traditions, and emphasizing community empowerment. The MHWWB Web site includes sections on "Activities," "Human Rights," "Rehabilitation," and "Disasters," with numerous links to sites providing information in these areas. It also offers a downloadable manual, "Coping with Disaster: A Guide to Psychosocial Responses to Disaster." For more information about MHWWB, contact Mental Health Workers Without Borders, c/o Martin Gittelman, 100 West 94th Street, New York, NY 10025; e-mail: mhwwb@mhwwb.org."

from: Disaster Research 306, November 15, 1999

Building Performance Assessment Teams

<http://www.fema.gov/mit/bpat>

Federal Emergency Management Agency Building Performance Assessment Teams (BPATs) are activated

following disasters to assess building and infrastructure performance and subsequently to recommend improvements in construction codes and standards, designs, methods, and materials used for both new construction and postdisaster repair. The BPAT Web site provides current BPAT news, success stories and reports from surveys of recent disasters, as well as complete copies of the BPAT newsletter, "BPAT Update." The latest reports concern the Midwest tornadoes of May 3, 1999 and Hurricane George. FEMA is currently recruiting qualified persons to join the BPAT Roster Database. Details are also available from the BPAT Web site. <http://www.tsunami.gov/ttt/ttt.htm>

If you want to see **tsunami travel time** maps, go to this web site, hosted by the West Coast/Alaska Tsunami Warning Center. It has links to 25 Pacific-wide tsunami travel time maps produced at the WC/ATWC, for locations in Alaska, B.C., Washington, Oregon, California and Hawai'i.

<http://www.animaldisasters.com>

The purpose of the "Animal Management in Disasters" Web site is to provide "a resource to professional emergency managers and animal care providers who have an interest in improving the care of animals and their owners in disasters" (relevant material is provided on the information and publications pages); and to provide "an opportunity for [users] to contribute to the development of training material to help the livestock industry mitigate the impact of disasters" (provided through the meetings, discussion, and discussion summary pages). The newly revised site offers much information about animal management in disasters for pet owners, livestock owners, and farmers, as well as business continuity information for veterinarians and humane shelter managers.

from: Disaster Research 331 - October 19, 2000

<http://www.udel.edu/DRC>

The Disaster Research Center (DRC) at the University of Delaware has announced that effectively immediately DRC publications not copyrighted by others will be available for free downloading from its World Wide Web site. This includes all new publications. DRC publications since 1985 will be on-line by the end of this year, and the

center will attempt to put all its earlier publications from 1963 to 1984 on-line during next year. Paper copies will still be available by mail for those without Internet access. Anyone with questions about this new DRC policy should contact Susan Castelli, DRC Library Coordinator, e-mail: castelli@udel.edu.

from: Disaster Research 331 - October 19, 2000

<http://www.colorado.edu/hazards/ss/ss00.html>

At this year's Silver Anniversary Hazards Research and Applications Workshop, held in Boulder, Colorado, in July, a significant portion of the program was dedicated to looking at the last 25 years of hazards management and research and discussing the discipline's future. Some participant remarks are already available from the Hazard Center's Web site. See, for example: Working Paper #104: "Emergency Management in the 21st Century: Coping with Bill Gates, Osama bin-Laden, and Hurricane Mitch," by Claire Rubin - <http://www.colorado.edu/hazards/wp/wp104/wp104.html>; as well as the many session summaries available from: <http://www.colorado.edu/hazards/ss/ss00.html>.

To further this discussion, the Hazards Center has added another paper to its Web site: "The Natural Hazards Research Community: Comments on the 25th Anniversary of the Annual Hazards Research and Applications Workshop," by William A. Anderson, Senior Advisor, Disaster Management Facility, The World Bank. Anderson's remarks, focusing on the history of and prospects for social science disaster research, are available from <http://www.colorado.edu/hazards/ss/ss00/anderson.html>.

from: Disaster Research 332 - November 3, 2000

<http://www.redcross.org/disaster/safety/index.html>

<http://www.redcross.org/disaster/safety/cde.html>

The disaster section of the American Red Cross Web site is a great source of individual, family, and business preparedness and recovery information. The site includes a new, updated listing at the second URL above of all available Red Cross Community Disaster Education resources. Categories of materials include: media, general disaster preparedness, teachers and schools, videos, presenters materials, materials for children, and materials in Spanish and other languages.

from: Disaster Research 332 - November 3, 2000

<http://www.mentalhealth.org/cmhs/EmergencyServices/index.htm>

The Emergency Services and Disaster Relief Branch (ESDRB) of the Center for Mental Health Services (CMHS), part of the U.S. Department of Health and Human Services, in partnership with the Federal Emergency Management Agency, administers the Crisis Counseling Assistance and Training Program, overseeing national efforts to provide emergency mental health services to survivors of presidentially declared disasters. The branch's activities are

divided into three areas:

- Services to individuals and communities affected by disasters
- Services to state and local mental health administrators
- Services to other groups

The ESDRB Web site provides information about each of these areas as well as a half dozen documents and manuals on the provision of mental health services following disaster, including "Psychosocial Issues for Older Adults in Disasters" and a "Best Practices" document that describes exemplary disaster crisis counseling programs implemented across the country.

from: Disaster Research 332 - November 3, 2000

http://www.msc-smc.ec.gc.ca/hazards_assessment/

A Web site has been established dedicated to the currently ongoing Canadian Natural Hazards Assessment Project. The site will act as a source of current information on the project and will be updated and modified as the project progresses. The designers ask interested persons to examine the site and send any suggestions or comments to Lianne Bellisario, Adaptation and Impacts Research Group, Meteorological Service of Canada, Environment Canada, c/o Institute for Environmental Studies, University of Toronto, 33 Willcocks Street, Suite 1016V, Toronto, Ontario, Canada M5S 3E8; (416) 978-0309; fax: (416) 978-3884; e-mail: lianne.bellisario@ec.gc.ca.

from: Disaster Research #333 November 17, 2000

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

<http://165.158.1.110/english/ped/pedhome.htm>

(in either case, click on "Newsletter")

We'd like to remind DR readers that one of the better newsletters on disaster management is available free on the World Wide Web, and specifically note that the latest issue of "Disasters: Preparedness and Mitigation in the Americas," published by the Emergency Preparedness and Disaster Relief Coordination Program of the Pan American Health Organization, includes a four-page supplement describing approximately 18 of PAHO's newest publications on disasters, disaster management, and disaster health. All of these documents are offered for sale but are also provided free via the PAHO Web site. Included are such publications as "Principles of Disaster Mitigation in Health Facilities," "Hurricanes Georges and Mitch," "Natural Disasters: Protecting the Public's Health," "Humanitarian Assistance in Disaster Situations: A Guide to Effective Aid," and many other useful books. See the on-line newsletter for ordering or downloading information.

from: Disaster Research #333 November 17, 2000

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 system
- ___ **Disasters are Preventable** (22 min.)
Ways to reduce losses from various kinds of disasters through preparedness and prevention.
- ___ **Forum: Earthquakes & Tsunamis** (2 hrs.)
CVTV-23, Vancouver, WA (Jan. 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.
- ___ **Numerical Model Aonae Tsunami - 7-12-93** (with 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.
- ___ **The Quake Hunters** (45 min.)
A good mystery story, explaining how a 300-year old Cascadia earthquake was finally dated by finding records of a rogue Japanese 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 versions, one with breaks inserted for discussion.
- ___ **Tsunami Warning** (17 min.)
San Mateo (California) Operational Area Office of Emergency Services. This is a good public service program, 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 only discusses teletsunamis (generated at a source more than 1000 km from the coastline), which allow time for warnings and evacuations. 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. Discusses beach safety, including 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.

Name:

Organization:

Mailing address:

City, State, Zip:

email:

New Tsunami Mitigation Materials
Added to the Dger Library, October and November, 2000

compiled by
Connie J. Manson

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

New Videos!

- Discovery Channel, 1997, Raging planet--Tidal wave: Discovery Communications, Inc., 1 video, 50 min.
- KGMB, 1999, Raging sea--KGMB-TV tsunami special: KGMB [Honolulu, HI], 1 video, 23 min., 30 sec.
- San Mateo Office of Emergency Services, 1991, Tsunami warning: San Mateo Office of Emergency Services, 1 video, 16 min.
- U.S. Agency for International Development, 1998, Disasters are preventable--English version: U.S. Agency for International Development, 1 video, 22 min.

Societal and Planning Considerations

- Bailey, S. C., 2000, Communication hazard information--'What do you mean you've changed your mind?' [abstract]: Geological Society of America Abstracts with Programs, v. 32, no. 7, p. A-333.
- Driedger, C. L., 2000, Effective communication with populations at risk--Examples and advice from the Mount Rainier Volcano Hazard Work Group [abstract]: Geological Society of America Abstracts with Programs, v. 32, no. 7, p. A-333.

Technical Reports (General)

- Shuto, Nobuo, 1993, Tsunami intensity and disasters. *In* Tinti, Stefano, editor, Tsunamis in the world--Fifteenth International Tsunami Symposium, 1991: Kluwer Academic Publishers, p. 197-216.

British Columbia

- Bobrowski, P. T.; Clague, J. J.; Hutchinson, Ian; Grimm, K. A.; Mathewes, R. W., 1999, Paleoseismic tsunami investigations, northern Cascade subduction zone. *In* U.S. Geological Survey, National Earthquake Hazards Reduction Program, External Research Program, annual project summaries, Volume 40, Pacific Northwest: U.S. Geological Survey, 12 p. [unpaginated; downloaded Oct. 17, 2000 from <http://erp-web.er.usgs.gov/reports/annsum/vol40/pn/pn/>].

California

- San Mateo Office of Emergency Services, 1991, Tsunami warning: San Mateo Office of Emergency Services, 1 video, 16 min.
- Smoot, J. P.; Litwin, R. J.; Bischoff, J. L.; Lund, S. J., 2000, Sedimentary record of the 1872 earthquake and "tsunami" at Owens Lake, southeast California: *Sedimentary Geology*, v. 135, no. 1-4, p. 241-254.

Hawaii

- KGMB, 1999, Raging sea--KGMB-TV tsunami special: KGMB [Honolulu, HI], 1 video, 23 min., 30 sec.

Oregon and Washington

- Dickenson, S. E.; Obermeier, S. F., 1998, Ground motions estimates for a Cascadia earthquake from liquefaction evidence. *In* Dakoulas, Panos; Yegian, Mishac; Holtz, Bob, editors, Geotechnical earthquake engineering and soil dynamics III:

American Society of Civil Engineers Geotechnical Special Publication 75, p. 79-90.

- Myers, E. P., III; Baptista, A. M.; Priest, G. R., 2000, Finite element modeling of potential Cascadia subduction zone tsunamis: Oregon Graduate Institute of Science and Technology, 1 v. [downloaded Oct. 11, 2000 from <http://www.ccalmr.ogi.edu/SHT/online/volume17/number1/mbp/>].
- Nelson, A. R.; Jennings, A. E., 2000, Differences in great earthquake rupture extent inferred from tsunami-laid sand and foraminiferal assemblages beneath intertidal marshes at Alsea Bay, central Oregon coast [abstract]: *Geological Society of America Abstracts with Programs*, v. 32, no. 7, p. A-443.
- Priest, G. R.; Baptista, A. M., 1999, Mapping tsunami inundation hazards at Newport, Oregon. *In* U.S. Geological Survey, National Earthquake Hazards Reduction Program, External Research Program, annual project summaries, Volume 40, Pacific Northwest: U.S. Geological Survey, 6 p. [unpaginated; downloaded Oct. 17, 2000 from <http://erp-web.er.usgs.gov/reports/annsum/vol40/pn/pn/>].
- Williams, H. F. L.; Hutchinson, Ian, 2000, Stratigraphic and microfossil evidence for late Holocene tsunamis at Swantown Marsh, Whidbey Island, Washington: *Quaternary Research*, v. 54, no. 2, p. 218-227.

Europe and the Mediterranean

- Cita, M. B.; Aloisi, G., 2000, Deep-sea tsunami deposits triggered by the explosion of Santorini (3500 y BP), eastern Mediterranean: *Sedimentary Geology*, v. 135, no. 1-4, p. 181-203.
- Hieke, W.; Werner, F., 2000, The Augias megaturbidite in the central Ionian Sea (central Mediterranean) and its relation to the Holocene Santorini event: *Sedimentary Geology*, v. 135, no. 1-4, p. 205-218.
- McCoy, F. W.; Heiken, G. H., 2000, The late-Bronze Age explosive eruption of Thera (Santorini), Greece--Regional and local effects. *In* McCoy, F. W.; Heiken, Grant, editors, Volcanic hazards and disasters in human antiquity: Geological Society of America Special Paper 345, p. 43-70.
- Papadopoulos, G. A., 2000, Recent developments in the tsunami research in Greece--A short review. *In* Soloviev, S. L.; Solovieva, O. N.; Go, C. N.; Kim, K. S.; Shchetnikov, N. A., Tsunamis in the Mediterranean Sea 2000 B.C.-2000 A.D.: Kluwer Academic Publishers, p. 173-178.
- Soloviev, S. L.; Solovieva, O. N.; Go, C. N.; Kim, K. S.; Schchetnikov, N. A., 2000, Tsunamis in the Mediterranean Sea 2000 B.C.-2000 A.D.: Kluwer Academic Publishers, 237 p.
- Tinti, Stefano, 2000, Recent progress of tsunami research in Italy. *In* Soloviev, S. L.; Solovieva, O. N.; Go, C. N.; Kim, K. S.; Shchetnikov, N. A., Tsunamis in the Mediterranean Sea 2000 B.C.-2000 A.D.: Kluwer Academic Publishers, p. 179-182.

Indonesia, Australia, Japan

- Tappin, D. R., 1999, Tsunami--The PNG event of July 1998: *Earthwise*, no. 14, p. 7.

Selected Tables of Contents

Beginning with this issue, each *TsuInfo Alert* will include the Tables of Contents of geologic hazard, emergency preparedness, or hazard mitigation journals the Geology Library has received. We currently subscribe to *Building Code News*, *Contingency Planning & Management*, *Disasters-Preparedness and Mitigation in the Americas*, *Emergency Responder*, *Natural Hazards Observer*, *Natural Hazards Review*, *Science of Tsunami Hazards*, *International Journal of Mass Emergencies & Disasters*, *Shore & Beach*, *Tsunami Newsletter (ITIC)*, and *Unscheduled Events*.

You may circle the titles of any articles you would like us to mail to you. Fill in your name and mailing address. These requests may be mailed, faxed or emailed to us at the contact numbers given on page 2. There is no charge for this service.

Building Code News, May 2000

Highlights of ICC code development hearings
(Past issues are available at www.ibhs.org)

Contingency Planning & Management,

Volume 5, Number 5

The CPM Perfect Plan 2000.....	p. 20
A Case for Web-based Planning.....	p. 26
Planning for the Perils of e-Commerce.....	p. 29
History in the Making.....	p. 32
Product Source File: Power Sources.....	p. 34
Crisis Management in Schools.....	p. 42

Contingency Planning & Management,

Volume 5, Special Issue

Master Source Buyer's Guide 2000

Building the Perfect Plan (The CPM Master Source Issue is your guide to the information, tools, and resources you need to design and construct a dynamic business continuity plan).

....Purchase plans

....Qualifying vendors

....Completing the deal

....Product and Service listings

....Directory of suppliers

Contingency Planning & Management,

Volume 5, Number 6

Does your plan measure up?.....p. 12

Identifying early plan weaknesses.....p. 16

The value triad: integrating BCP with quality and performance.....p. 17

Y2K 2 BCP.....p. 21

Writing & enforcing effective internet policy.....p. 24

Disasters-Preparedness and Mitigation in the Americas

Issue No. 80 April 2000

Identifying cadavers following disasters: Why?

LIDERES: a course for managers in health, disasters and development

Review of "Natural Disasters: Protecting the Public's Health" and ordering information

PAHO's Library on the Internet: <http://publications.paho.org>

Pan American Health Organization

Disasters-Preparedness and Mitigation in the Americas

Issue No. 81 July 2000

The medical response to natural disasters: Have we learned anything yet?

The ISDR and the Provention Consortium

Disasters-Preparedness and Mitigation in the Americas

Issue No. 82 October 2000

Health: A bridge to peace in Columbia.....p. 1

Hurricane Keith.....p. 1

LIDERES.....p. 2

NLM and CRID join forces to improve access to information on health and disasters.....p. 3

Emergency Responder

September-October 2000

Mt. Octopus transmitter dedicated

Emergency Responder goes electronic

International Journal of Mass Emergencies and Disasters

Volume 17 Number 1

Special Issue "Women and Disasters"

What's gender "got to do with it"?.....p. 5

The intersection of gender and social class in disaster: Balancing resilience and vulnerability.....p.15

Women and housing issues in two U.S. disasters: case studies from Hurricane Andrew and the Red River Valley flood.....p. 39

Women, aging and post-disaster stress: Risk factors for psychological morbidity.....p. 65

An exploratory study of woman battering in the Grand Forks flood disaster: Implications for community responses and policies.....p. 79

Elderly female-headed households in the disaster loan process.....p. 99

Women and local emergency management.....p. 111

"But she's a woman and this is a man's job": Lessons for participatory research and participatory recovery.....p. 123

Natural Hazards Review

Volume 1 Number 4
Public education for earthquake hazards, by Sarah K. Nathe.....p. 191
Building wind damage protection and mitigation using damage bands, by C. O. Unanwa and J. R. McDonald.....p. 197
Emotional injury and the Northridge, California earthquake, by Judith M. Siegel.....p. 204
Practitioners' views of the Natural Hazards Center, by Roy Popkin and Claire B. Rubinp. 212
Debris management planning for the 21st century.....p. 222
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Science of Tsunami Hazards

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Records of prehistoric tsunamis from boulder deposits evidence from Australia, by Jonathan Nott.....p. 3
Predominance of long periods in large Pacific tsunamis, by Kuniaki Abe.....p. 15
Tsunami mitigation for the city of Suva, Fiji, by Gajendra Prasad, Jack Rynn, and Atu Kaloumaira.....p. 35

Shore and Beach

Volume 68, No. 4 October 2000
Small- to medium-scale sand backpassing extends fill life and upgrades protectionp. 2
Simple perspective on cross-shore sediment movement.....p. 3
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Tsunami Newsletter (ITIC)

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Unscheduled Events--Newsletter of the International Research Committee on Disasters (International Sociological Assn.)

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IJMED editor report.....p. 1
Contribution call: Encyclopedia of life support systems & UNESCO.....p. 3
Conferences.....p. 3-4

Mail circled articles to:

- NAME:
- STREET ADDRESS:
- CITY
- STATE
- ZIP

j j j SPECIAL THANKS j j j

The editors of *TsuInfo Alert* thank each and every one who took the time to answer the questionnaire and return it to us. We are grateful for the many kind words and the helpful suggestions.

Book Review:

Tsunami! (2nd ed.), by Walter C. Dudley and Min Lee,
University of Hawaii Press, 1998

"The author's [sic] stated purpose in writing this book is well met - 'that the personal experiences shared herein, together with the explanation of how these giant waves behave, will help...the world to be better prepared for the next tsunami.'

This is not a technical contribution. It is a compendium of eyewitness accounts of tsunamis (37 by my count) that have occurred in the past 150 years. Hawaii is emphasized, but the authors also describe tsunamis that swept Japan, Chile, Indonesia, Alaska, California, the Virgin Islands, Newfoundland, and other locations. The book is up-to-date, including the 1998 destruction in New Guinea, but also reaches back in history to include tsunamis associated with the Lisbon, Vesuvius, and Santorini cataclysms.

Prose style is excellent, but the lack of organization is a drawback. The eyewitness descriptions are vivid, and the tales of heroic rescue efforts are uplifting. Starting with a riveting account of the 1946 disaster at Hilo, Hawaii, the book continues with descriptions of additional tsunamis interspersed with information about the Tsunami Warning System (TWS) and its development, the geology and physics of tsunamis, and causes of tsunamis (submarine slumps and volcanoes as well as earthquakes). The authors (one of them an oceanographer with first-hand experience) also discuss how past lessons can be applied to lessen the effects of future tsunamis. The book closes with a chapter that includes recent developments in monitoring deep ocean waves, shoreline defense, bolide-related events, and other tsunami-related phenomenon.

Instructors in introductory courses in environmental geology, engineering geology, and oceanography, looking for ways to give students a feel for the human consequences of natural disasters, will find this book a good source."

Excerpts of book review by David N. Lumsden,
The University of Memphis, originally printed in the
Journal of Geoscience Education, v. 48, no. 2, (2000), p. 251-252.
Reprinted with permission.

È Holiday Gift Ideas! È

Stocking-stuffers for your loved ones:

flashlights - Have you seen the ones that are pump-action? No batteries needed. Available in some toy stores, hardware stores, and some mail order catalogs.

batteries - (for flashlights, weather radios, smoke detectors, etc.) It's a good idea to replace batteries at least once a year, so why not get into the habit of doing it during the holidays!

glowsticks - Available in hardware stores and from the Red Cross. Also known as lightsticks.

candles - Long-burning varieties are best. Use glowsticks rather than candles if there is any chance that gas lines have ruptured.

whistles - Available at toy and hardware stores. If possible, avoid cheap plastic whistles that could easily break, but any variety is better than none.

waterproof match holder and matches - Camping supply stores, hardware stores.

backpack - Makes a great container and carrier for emergency kit supplies.

gas turn-off wrench - And a zip tie with which to attach it to the pipe near the on/off valve

water heater strap kit - Keep the water heater attached to its water pipes and electrical/gas lines during an earthquake by strapping it to the wall.

Gifts for everyone:

emergency radio-flashlight-siren

combinations - Can be wound up, solar powered or battery powered. Available at local Red Cross chapters and most hardware stores.

NOAA weather radio - See the *TsuInfo Alert*, vol. 1, no. 9 insert for more information on the various features available and where to get them. See *TsuInfo Alert*, vol. 2, no. 5 for two recent weather radio recalls.

Red Cross emergency supply kits - available at local Red Cross chapters, available in different sizes: 4 person family emergency kit; 2 person emergency kit; 1 person emergency kit first aid kits (family kit, sport pack, or personal pack)

To make up your own emergency supply kit, see www.redcross.org/disaster/safety/supplies.html for an extensive list. This Holiday, to begin your supply kit, have each family member buy the Emergency Supply Kit a gift. And remember each year to restock (glowsticks and batteries have 1-2 year shelf lives, for example) and make additions to the collection.

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For general emergency management information, contact:

Alaska Division of Emergency Services
Department of Military & Veterans Affairs
P.O. Box 5750
Fort Richardson, Alaska 99505-5750
(907) 428-7039; Fax (907) 428-7009
<http://www.ak-prepared.com/>

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<http://www.osp.state.or.us/oem/oem.htm>

Washington State Military Department
Emergency Management Division
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Provincial Emergency Program
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Infrequently Asked Questions

compiled by Lee Walking, with thanks to Jose C. Borrero for providing the information

If you use the term "tidal wave," what phenomenon (NOT a tsunami) might you be describing?

The correct term is tidal bore, and the Glossary of Geology defines it as "a large, turbulent, wall-like wave of water with a high, abrupt front, caused by the meeting of two tides or by a very rapid rise or rush of the tide up a long, shallow and narrowing estuary, bay, or tidal river where the tidal range is appreciable; it can be 3-5 m high and moves rapidly (10-15 knots) upstream with and faster than the rising tide. A bore usually occurs after low water of a spring tide."

What other terms are used to describe tidal bores?

In various parts of the world they are called *aegir*, *eagre*, *pororoca* and *mascaRET*. from: <http://www.btinternet.com/~motorboat/bore.htm>

Where in the world can I go to attend an annual festival celebrating a tidal bore?

At the mouth of the Quiantang River in Haining, China, they hold an annual 'festival of the waves.' This year the surge was very high and it caught the crowd off guard. According to news reports, no one was killed, however.

To see the tidal bore, go to website <http://www.usc.edu/dept/tsunamis/video>. Or go to <http://www.usc.edu/dept/tsunami> and click on "Video."

Other links for tidal bores:

<http://boreridersclub.tripod.com/Club.html> (bore surfing!)

<http://www.btinternet.com/~motorboat/bore.htm> (River Severn bore)

<http://www.chinapages.com/zhejiang/jiaxing/jg/e-ly.html> (Haining bore, Quiantang River)



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