



# TsuInfo Alert

prepared by the Washington State Department of Natural Resources on behalf of the  
**National Tsunami Hazard Mitigation Program**  
 a state/federal partnership funded through the National Oceanic and Atmospheric Administration (NOAA)

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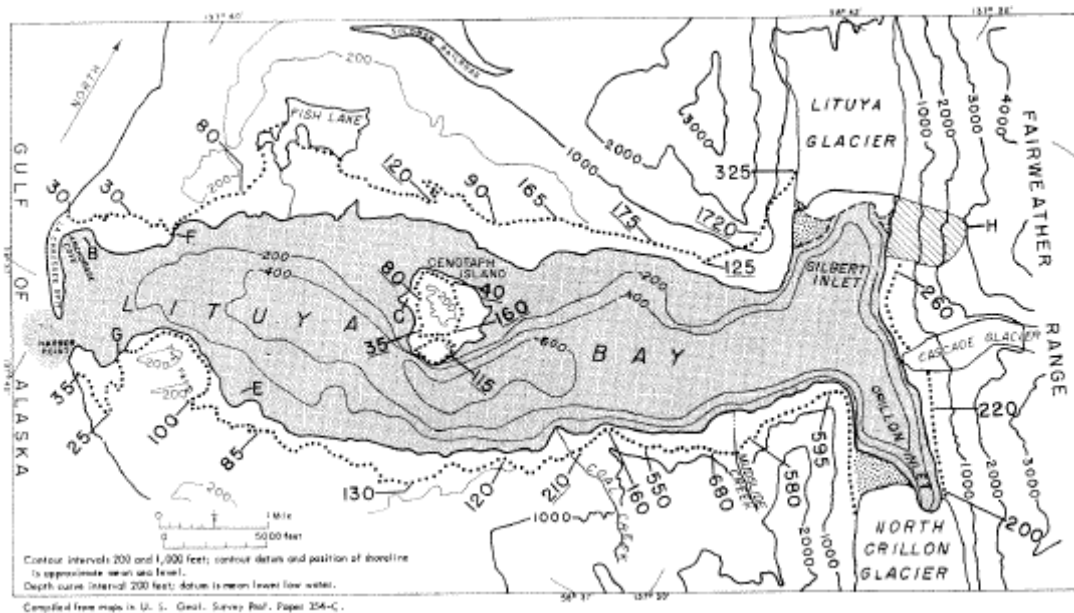
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**50<sup>th</sup> ANNIVERSARY OF LITUYA BAY TSUNAMI, July 9, 1958**

**The Alaska Earthquake of July 10, 1958\*: Giant wave in Lituya Bay**

By Don J. Miller

Bulletin of the Seismological Society of America, v. 50, no. 2, excerpts p.257-259.



Map: U.S. Geological Survey Professional Paper 354-C

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



(Continued from page 1)

Lituya Bay, a T-shaped, nearly landlocked tidal inlet, heads in a trench along the Fairweather fault about 30 miles northwest of the instrumental epicenter of the July 9, 1958, major earthquake in southeastern Alaska. Within 1 to 3 minutes after they were awakened by the earthquake, fishermen on boats in the outer part of Lituya Bay saw water surge high over a spur and move out from the head of the bay in a giant wave front. The wave swept 7 miles along the shores to the mouth of Lituya Bay in about 4 minutes, destroying the forest over an area of 4 square miles and sinking two boats. Trees were washed out to a maximum altitude of 1,720 feet, about 8 times the maximum height of damage heretofore attributed to a tsunami breaking on an ocean shore or to a localized wave caused by the falling or sliding of a solid mass into a lake or bay.

#### Setting and eyewitness accounts of the wave

Three trolling boats, each about 40 feet long, were in the outer part of Lituya Bay at the time of the July 9, 1958, earthquake and giant wave. The *Edrie*, with Howard G. Ulrich and his 7-year-old son aboard, was anchored in about 5 fathoms of water near the south shore, about 1 2/3 miles from the [bay] entrance. This boat rode out the wave with little damage. The *Badger*, with Mr. and Mrs. William A. Swanson aboard, was anchored in about 4 fathoms of water in Anchorage Cove, near the north shore. This boat was carried across La Chaussee Spit by the wave and sank in the ocean some distance from the shore, the Swansons escaping in a small skiff. The *Sunmore*, with Mr. and Mrs. Orville Wagner aboard, was anchored near the *Badger* at the beginning of the earthquake, but was under way nearer the entrance when the wave arrived. This boat went down with her crew.

The wave was first sighted at the head of the bay between 1 minute and 3 minutes after the onset of the earthquake, according to the estimates of fishermen aboard the boats, or at about 10:18 p.m. This is about sunset at this latitude and time of year. The head of the bay was clearly visible, except for the part hidden behind Cenotaph Island from viewpoints on the boats. According to U.S. Coast and Geodetic Survey tide tables, the tide was ebbing and the water level in the bay was less than a foot above mean tide stage.

Survivors of the Lituya Bay disaster have recounted their experience with exceptional clarity and detail, considering the terrifying circumstances under which their observations were made. The eyewitness accounts were recorded promptly, further enhancing their scientific value. Vivid descriptions of the earthquake and wave in Lituya Bay are given in the published story told by Ulrich (1958) and in the story told on July 10 by Swanson, which was recorded on tape and broadcast by radio station KJNO, Juneau, and published in part (*Daily Alaska Empire*,

1958a; *Alaska Sportsman*, 1958). From these sources, from correspondence with Ulrich in October, 1958, and from an interview with Swanson on July 16, 1958, the writer has compiled two eyewitness accounts (Miller, 1960, p. 57-59), which are further condensed here.

Account of H. G. Ulrich.—On being awakened by violent rocking of the *Edrie*, Ulrich went on deck to watch the effects of the earthquake—described as violent shaking and heaving, followed by avalanching—in the mountains at the head of Lituya Bay. About 2 1/2 minutes after he first felt the earthquake, Ulrich heard a “deafening crash” originating at the head of the bay and in Gilbert Inlet he saw a disturbance “like an explosion or a glacier sluff,” with a wave coming out of the lower part and water dashing over the spur southwest of the inlet. Mid-way between the head of the bay and Cenotaph Island the wave appeared to be a straight wall of water from shore to shore, possibly 100 feet high in the center. When the wave reached the *Edrie*, 2 1/2 to 3 minutes after it was first sighted, the front appeared very steep and 50 to 75 feet high. An anchor chain about 240 feet long snapped as the boat rose with the wave. The boat was carried toward and probably over the south shore and then, in the backwash, toward the center of the bay. The water surface returned to about normal level after the giant wave passed but was very turbulent, with much sloshing back and forth from shore to shore and with steep, sharp waves as much as 20 feet high. After 25 to 30 minutes the bay again became calm. Floating logs covered the water near the shores and were moving out with the ebb tide toward the center and the entrance.

Account of W. A. Swanson.—A little more than a minute after he was awakened by vibration of the *Badger*, but probably before the end of the earthquake, Swanson saw, at the head of Lituya Bay, what he took to be the Lituya Glacier, which “had risen in the air and moved forward so that it was in sight.” After a while “the glacier dropped back out of sight and there was a big wall of water going over the point” (the spur southwest of Gilbert Inlet). Swanson next noticed the wave dash up on the south shore in the vicinity of Mudslide Creek. The wave as it passed Cenotaph Island appeared to be about 50 feet high in the center of the bay, and to slope upward toward the shores. About 4 minutes after it was first sighted, the wave reached the *Badger*, still at anchor. The boat was lifted up and carried across La Chaussee Spit, riding stern first just below the crest of the wave, like a surfboard. The wave crest broke just outside the spit and the boat hit bottom and foundered.

\*Called the July 10<sup>th</sup> earthquake because it was clocked in at 0616 July 10 1958 (UT). It was July 9, 10:16 PM local time.

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### **The changing roles and responsibilities of the local emergency manager—An empirical study**

By Steven D. Stehr

*International Journal of Mass Emergencies and Disasters*, v. 25, no. 1, p. 37-55 (2007)

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A number of observers have speculated that a "new" style of emergency management has emerged in the United States in the aftermath of the attacks of September 11, 2001. To date, there has been relatively little empirical evidence marshaled to assess this claim. This article reports the results of an on-going project designed to track how the staff of an office of emergency management in a large urban region allocate their time on a routine basis. This project began in the late 1990s allowing for a year-by-year comparison of time allotted to different emergency management functions. Among the findings reported here are that prior to 2002 emergency management staff spent the majority of their time on hazard preparedness projects but this time allocation shifted dramatically when a variety of federal homeland security grants became available to state and local governments. This shift in responsibilities may be a sign that domestic security concerns have supplanted the all-hazards approach to emergency management at the local level. But this paper argues that it may also be a product of the manner in which federal homeland security grants are administered and the dynamics of the intergovernmental structure of emergency management in the U.S.

#### **Introduction**

The terrorist attack of September 11, 2001, the creation of the federal Department of Homeland Security (DHS), and the devastation wrought by Hurricane Katrina on the city of New Orleans and other parts of the Gulf Coast in 2005 have led to renewed interest in the role local emergency managers play in implementing disaster policy and plans. Periodic reassessments of the structure and operation of emergency management in the United States is not an unusual occurrence. For example, the history of disaster assistance and relief policy can be characterized as having brief periods of intense political activity typically following a major disaster or a series of disasters, followed by longer periods where interest in the subject wanes (May 1985a). In addition, the role of well-publicized disasters as "focusing events" leading to policy

agency change has been well-documented (Birkland 1999). Finally, prior discussions of the evolution of emergency management have often highlighted the extent to which changes in federal-level policies affect the role of local emergency managers (Drabek 1991). What is missing from the current debate is empirically-based evidence of the impacts on local emergency managers of the most recent changes in disaster policy.

A number of distinguished students of disasters and hazards have argued that a "new" emergency management has evolved since September 11 featuring a movement away from all-hazards planning, a single-minded focus on planning for and responding to the threat of terrorism, a reemergence of the command and control approach to responding to emergencies, and a marginalization of the mitigation function which had gained popularity during the 1990s (Ellemor and Barnett 2005; Schneider 2004; Mileti 2005; Haddow and Bullock 2005; Hite 2003). The National Academy of Sciences and the Federal Emergency Management Agency Higher Education Project have each sponsored workshops in the last several years where practitioners and scholars speculated on the future of emergency management<sup>1</sup>. These discussions, however, are taking place without a clear understanding of what functions local emergency managers actually perform on a routine basis. This article seeks to inform the debate about the role of the contemporary emergency manager by reporting the results of a time accounting project initiated by the King County (Washington; USA) Office of Emergency Management (OEM). Since 1999, the staff members of the OEM have tracked their hourly time commitment to various functions and programs. This allows for a year-by-year comparison of how the emergency management staff in a large, urban county facing numerous natural and man-made threats expends their time. The results reported here show that dramatic changes in programmatic focus have indeed taken place in the activities of the OEM staff over the past eight years. Although I do not claim that broad generalizations can be made on the basis of one case study, I do believe that this research can provide a starting point for a more empirically-based discussion of the contemporary role of the local emergency manager.

This article proceeds as follows. First, it offers a brief summary of the evolution of emergency management in the U.S. This discussion helps to frame the current debate on the role of the local emergency manager in a post-September 11 world. It then discusses the characteristics of the research setting and the elements of the OEM time accounting system. Next it presents and analyzes the yearly time data focusing on how external factors have affected the OEM staff's allocation of duties. The article concludes with a brief discussion of the implications of this research and what these findings might mean for the future of emergency management.

### The evolution of emergency management

To better understand the contemporary debate regarding the role of the local emergency manager a brief discussion of the evolution of emergency management is necessary. The modern practice of emergency management began during the 1950s with an early focus on civil defense activities owing to “cold war” tensions (Drabek 1991; Haddow and Bullock 2003). Only later did an uneasy alliance develop between civil defense concerns and the management of other types of disasters. Most discussions of the evolution of emergency management note that until recently many local emergency managers had relatively limited roles in the proactive management of risk and the focus of their efforts was primarily on responding to episodic emergencies and disasters. This was due in part to the relatively low importance that most communities placed on managing disasters and hazards in the face of competing priorities such as economic development (Platt 1888; Stehr 2006). As a result, emergency managers in the past typically had few resources to draw upon, were not usually well-versed in the principles of emergency management outside of their disciplinary specialty, and were generally isolated from other aspects of the community decision making (Tierney, Lindell, and Perry, 2001, p.124).

Most observers trace the transformation of modern emergency management to the concerns expressed in a report released in 1978 by the National Governors’ Association (Petak 1985; Drabek 1991; Britton 1999). This report was instrumental in the decision to create the Federal Emergency Management Agency (FEMA) in 1979 which attempted to unify a highly fragmented approach to managing disasters at the federal level. Perhaps more significantly, the report was the first to fully articulate the concept of comprehensive emergency management which recognizes that the mitigation, preparedness, response and recovery activities of disaster planning need to be viewed from a unified perspective. This more holistic approach to emergency management was eventually codified in federal law with the passage of the Robert T. Stafford Disaster Relief and Emergency Assistance Act of 1988 which, among other things, required communities to plan to mitigate risks associated with reoccurring natural hazards. Changes were also taking place at this time in the level of professionalization in the ranks of emergency managers, a trend documented by Thomas Drabek (Drabek 1987; 1990).

The mid-to-late 1990s might be considered the “golden age” of emergency management in the U.S. FEMA under the leadership of James Lee Witt, took steps to encourage more comprehensive disaster planning at the regional and local levels. For example, FEMA launched a national initiative to promote community-based disaster mitigation called Project Impact: Building Disaster Resistant Communities. This project was designed to incorporate decisions about risk and risk-avoidance into the

very fabric of community planning. It promoted the idea of building partnerships between community stakeholders as a way to encourage sustainable economic development through the recognition that disasters occur owing to interactions between the physical and built environments. The concept of “community resilience” also gained prominence during this time period. Dennis Mileti defines the concept this way: “Local resiliency with regard to disasters means that a locale is able to withstand an extreme natural event without suffering devastating losses, damage, diminished productivity, or quality of life and without large amounts of assistance from outside the community” (Mileti 1999, pp. 32-33).

Although there is wide variation in the practices of particular communities, it seems warranted to conclude that by the close of the last century the principles underlying the practice of emergency management had changed significantly when compared to earlier time periods. Generally speaking, the role of the local emergency manager had evolved from focusing on the challenges posed by isolated emergencies and disasters, to a more holistic approach attempting to integrate mitigation, preparedness, response and recovery activities, and finally to a broader role involving political and organizational institution building, and strategic thinking about sustainable development and community resilience. Significant changes were about to take place that would once again alter the landscape of emergency management.

The first of these changes was the election of George W. Bush in 2000. Bush appointed Joe Allbaugh, his 2000 campaign manager and an individual with no background in emergency management, as the director of FEMA. The administration decided to cancel Project Impact and to undertake a major reorganization of FEMA (Haddow and Bullock 2003). These actions led a number of people in the emergency management community to question the Bush administration’s commitment to all-hazards planning (Tierney 2005; Haddow and Bullock 2003). The second change occurred dramatically on September 11, 2001 with the terrorist attacks in New York City and at the Pentagon near Washington, D.C. Following September 11, planning to detect and prevent terrorist attacks all but eliminated federal-level interest in natural disasters in general and hazard mitigation projects in particular. Significantly, FEMA was stripped of its cabinet-level status and was placed within the newly created DHS. These changes have been widely criticized by both emergency management practitioners and by prominent members of the academic community who study extreme events (Holdeman 2005; Tierney 2005).

In the view of some observers, a single-minded focus on deterring terrorism violates two fundamental principles of emergency management: the *all-hazards* approach to planning that emphasizes vulnerability and risk assessments that take into account all types of events, and *comprehensive emergency management* which focuses on

integrating loss-reduction strategies across the different phases of disasters (mitigation, preparedness, response, and recovery). It is likely that this state of affairs contributed to some of the problems experienced during the response to Hurricane Katrina (Somers 2005). More generally, it highlights some of the problematic aspects of “share governance” between federal and sub-national stakeholders in the implementation of disaster policies (May 1985b; May and Williams 1985).

Although the impacts of these events on the practice of emergency management at the state and local levels have not been extensively studied, some clues emerge from a series of reports released by the Century Foundation (formerly the 20<sup>th</sup> Century Fund). In 2002 the Century Foundation commissioned reports on the homeland security activities in four states—Pennsylvania, Texas, Washington, and Wisconsin.<sup>2</sup> These reports were intended to assay the changes taking place in state and local emergency management following the creation of DHS. The final reports are remarkable similar in their central findings. One theme that emerges from these reports is that state and local officials in the four states continue to believe that the all-hazards approach to managing extreme events is the most appropriate path to follow. However, many of these officials also believe that federally-based homeland security directives and funding priorities created an imbalance where preparedness for natural disasters suffered as the focus on terrorism-related events increased (Kettl 2003). In addition, these reports detail the extent to which homeland security efforts have become an “add-on” responsibility for local emergency managers without the necessary levels of funding and guidance to prepare for and respond to the whole range of threats—both natural and man-induced—facing their communities. Finally, the reports emphasize both the necessity and the desirability of creating regionally-based organizational arrangements to manage homeland security funding from the federal government (Comfort 2003; Stehr 2003). The large influx of new grant dollars targeted at domestic security beginning in 2002 raised fears among officials representing smaller communities and rural areas that they would be left out. Regionally-based structures were intended to allay these fears and to more equitably manage and distribute federal homeland security grant dollars.

As this brief summary of the evolution of emergency management makes clear, the overall context in which local emergency managers do their jobs has undergone substantial change. But what have been the impacts of these changes on the activities of a regional office of emergency management?

The research setting: King County Washington

King County is located in the Central Puget Sound area in the western part of Washington State. The county is large and very diverse in terms of both its physical and social makeup. Approximately 1.8 million people live in

the county—making it the 12<sup>th</sup> largest in the U.S.—and over 80 different languages are spoken by its inhabitants. There are 39 cities (the largest being Seattle) and over 125 special purpose districts in the county.

The King County region faces a wide variety of both natural and human-induced threats and, as a consequence, it has a relatively sophisticated and professionalized emergency management planning and response structure. The county has experienced 23 presidential disaster declarations ranging in severity from riverine flooding to the magnitude 6.8 Nisqually earthquake in 2001. Several major earthquake fault lines crisscross the region, and Mount Rainier, which is near the city of Seattle, poses the threat of volcanic lahars should it erupt as Mount St. Helens did in 1981 [sic]. Since 2001, the city of Seattle and the surrounding region has consistently appeared near the top of lists of areas thought to be at an elevated risk for a terrorist attack. The Puget Sound region is an important international transportation center with a major airport, numerous seaport and seaplane bases, and over 2,000 miles of coastline. The state operated an extensive ferry system in the Puget Sound region that serves over 26 million people each year. The county is also in close proximity to the Canadian border.<sup>3</sup> Other potential targets and threats facing homeland security planners include food safety (the seaports in Seattle and Portland, Oregon funnel much of the Pacific Northwest’s agricultural production into the region), urban water system safety, oil and gas pipeline security, and electrical power generating plants.<sup>4</sup> As a consequence of these and other threats, the city of Seattle and King County together have administered over \$100 million in grants from DHS since 2002 (King County 2006).

The King County Office of Emergency Management time accounting system

The King County OEM in its current form was established in 1991. Prior to that time, the OEM was formally part of the county sheriff’s department. As of January 2007, the OEM had 17 staff members working at its headquarters in the Regional Communications and Emergency Coordination Center in Renton, Washington. This represents a large increase in staffing capacity compared to 1999 when a total of six employees worked at OEM. The current staff includes the director and assistant director, four administrative support employees, and eleven program officers who are responsible for functional specializations such as public education, homeland security, planning and logistics, training and exercises, and operations and regional planning. The operating budget in fiscal year 2007 was approximately \$1.5 million.

Beginning in 1999, the Director of the OEM instituted a time accounting system for all staff employees. Similar in concept to the “billable hours” technique employed by law firms, this system was implemented in order to better track how employees were allocating their work

time to different projects. Individual employees report on a daily basis the number of hours they spend on specific activities such as administration, training and exercises, emergency operations center activations, public education, meetings with other public safety officials, regional hazard planning, response to individual emergencies, and managing public assistance programs. The time spent on these specific activities and projects is then aggregated to reflect the number of hours allocated to each phase of the cycle of hazard planning: mitigation, preparedness, response, and recovery. In addition, time spent on administrative duties is also calculated. Beginning in 2002, the creation of DHS and a large increase in homeland security activities necessitated the creation of an additional category. Obviously, these calculations require some judgment on the part of the reporting staff because there is not always a clear separation between the phases of disaster planning implementation. That said, many of the activities fit relatively easily into one of the four phases or into the homeland security program management category. In addition, because the system has been in place for some time a high degree of consistency has been achieved.

#### Data and analysis

Table 1 shows the OEM staff's yearly allocation of time by project type between the years of 1999 and 2006. The total number of staff hours expended increased dramatically during this period from 12,417 hours to 31,921 hours, an increase of approximately 155%. This, of course, reflects the increase in staffing levels from six employees in 1999 to seventeen employees in 2006. From an overall perspective, the data show that relatively little staff time was allocated to mitigation, response, and recovery activities during the reporting period. Indeed, on average only 7% of total staff time was expended per year on these three phases of hazard preparation and response (2.6% on mitigation, 3.1% on response, and 1.3% on recovery). One explanation for the relatively low levels of time expended on response and recovery is that these activities do not take place unless there is a relatively large-scale emergency or disaster within the county's jurisdiction. The year in which the highest percentage of time was spent on response and recovery (9.5% in 2001) coincides with the year of the Nisqually earthquake. However, since the earthquake's epicenter was in neighboring Pierce County and it did not cause widespread damage, a large-scale mobilization on the part of King County OEM was not required.

Another explanation for the relative lack of time allocated to response and recovery by OEM staff can be traced to the intergovernmental structure of the emergency management system in the U.S. This system distributes responsibility for mitigation, preparedness, response and recovery activities widely among government jurisdictions and to various disciplinary-based specializations.

For example, the King County OEM has no so-called first responder capacity *per se*. These responsibilities fall on local jurisdictions such as cities who maintain law enforcement, fire protection, and emergency medical services agencies. The primary role of the OEM in the Incident Response System is to coordinate the activities of other agencies at the county and municipal levels, and provide public information to the media and the general population via the Joint Information Center. This decentralized system may also explain why the amount of time expended on mitigation activities at the county level is relatively small. Mitigation activities are largely undertaken by cities and municipalities who have the primary legal authority to impose land-use planning requirements, regulate building codes, and to use other mitigation tools. Thus, the county-level emergency management role in mitigation in this case is limited to coordinating regional hazard planning.

If the OEM staff was not spending much time on mitigation, response and recovery activities, what projects were occupying their time? On average, the largest allocation of staff time during the time period studied was devoted to preparedness activities (39.7%), to homeland security grant management (31%) beginning in 2002, and to administrative functions (22.3%).<sup>5</sup> But, these eight-year averages mask significant changes that took place in the roles and responsibilities of the county emergency management team.

The most important change reflected in these data is the percentage of time devoted to hazard preparedness activities over time. In 1999, 2000 and 2001, approximately three-quarters of staff time were spent on preparedness projects. These activities included training and exercises, logistics, maintenance of the emergency operations facility, public education efforts, and meetings with other public safety personnel from around the region to enhance coordination. Beginning in 2002, effort devoted to preparedness began to decline as more staff time was allocated to homeland security grant management.<sup>6</sup> In fact, by 2003 about the same amount of time was spent on homeland security grant management (36.3%) as on preparedness activities (36.6%). By 2005, slightly more than half of all staff time was expended on homeland security projects while only about 22% was spent on preparedness activities. In the final year for which data is available the amount of time allocated to homeland security grant management declined to 34.3% while the level spent on preparedness projects increased over the prior year to 32.9%.

One explanation for these changes in time allocation can be traced to how federal homeland security grants have been implemented. There are seven major DHS grant programs which make allocations to state and local governments: the State Homeland Security Grant Program (SHSGP), the Urban Area Security Initiative (UASI),

Table 1. Employee Time Allocation by Project Type, King County (WA) Office of Emergency Management, 1999-2006\*

Project type	1999	2000	2001	2002	2003	2004	2005	2006	Average
Admin	18.5% (2292)	17.3% (1740)	15.3% (1629)	19.3% (2495)	13.7% (2193)	30.7% (9130)	23.2% (7355)	24.5% (7810)	22.3%
HLS grants	0.0% (0)	0.0% (0)	0.0% (0)	15.3% (1979)	36.3% (5784)	45.3% (13472)	50.6% (15999)	34.3% (10962)	31.0%
Mitigation	3.3% (409)	4.3% (433)	2.0% (217)	5.0% (653)	10.4% (1664)	1.8% (545)	0.4% (112)	0.2% (64)	2.6%
Preparedness	73.4% (9109)	76.5% (7686)	73.2% (7812)	58.2% (7537)	36.6% (5839)	20.7% (6165)	21.9% (6935)	32.9% (10517)	39.7%
Response	4.9% (607)	1.6% (160)	5.1% (546)	0.2% (31)	1.0% (155)	0.8% (250)	3.2% (1010)	6.3% (2007)	3.1%
Recovery	0.0% (0)	0.3% (32)	4.3% (462)	2.0% (259)	2.0% (316)	0.6% (171)	0.7% (230)	1.8% (561)	1.3%
Total	100% (12417)	100% (10051)	100% (10666)	100% (12954)	100% (15951)	100% (29733)	100% (31641)	100% (31921)	100% (155334)

\* Numbers in parentheses denote hours of time per year dedicated to each function by all staff employees. Total hours do not include sick leave, vacation time or vacant positions.

the Law Enforcement Terrorism Prevention Program (LETPP), the Emergency Management Performance Grant Program (EMPG), the Metropolitan Medical Response System (MMRS), the Citizen Corps Program (CCP), and the Critical Infrastructure Protection Program (CIP—funded only in FY 2003) (Maguire and Reese 2006). Funds for five of the seven programs—SHSGP, LETPP, CIP, EMPG, and CCP—are appropriated and allocated to state governments for use in conjunction with units of local government.<sup>7</sup> As noted earlier, the reports commissioned by the Century Foundation emphasized that states were utilizing a region-based approach to administering federal homeland security funding. This is certainly the case in the state of Washington (Stehr 2003). Since King County and the surrounding area is home to approximately 60% of the state of Washington’s six million residents and the region is believed to be at a high level of risk for a terrorist attack, a significant portion of the state’s federal homeland security grant funds have been funneled into the area. According to figures calculated by the Congressional Research Service, the state of Washington received a total of \$225.69 million in homeland security grant funds between fiscal year 2003 and 2006 (Maguire and Reese 2006, p. 51). As Table 2 shows, approximately 45 percent of these funds over the four years were allocated to King County with the majority of these monies being distributed among its regional partners through sub-grants (King County 2006).

As the largest county in the most populated and hazard prone region of the state, King County OEM was the logical candidate to manage a large amount of federal to state “pass through” funding for local homeland security activities. This region-based approach to administering homeland security grants reinforces what is already a highly decentralized emergency preparedness and response system. There are 165 separate governmental jurisdictions in King County when cities, school districts, and special use districts are included, and each of them has responsibility for some aspect of disaster preparedness. Approximately forty separate jurisdictions or agencies were allocated funding for individual projects funded by DHS in the King County region between 2003 and 2006.<sup>8</sup> Thus, the King County OEM has played a central role in the management of federal homeland security grants and this fact is reflected in the distribution of staff time. The relative decline in the time devoted to homeland security grant management in 2006 is partially attributable to a conscious effort on the part of OEM leadership to shift the management of federal grants to temporary staff members who were hired through those grants.<sup>9</sup> This frees up permanent employees to work on other projects. But the decline is also due to the fact that total federal homeland security funding to state and local governments has gone down each year since 2003. Nationwide these grant funds have decreased by 40.1% when comparing FY 2006 to FY 2003 (Maguire and Reese 2006, p. 56). In Washington state, DHS grants



Table 2. Federal Homeland Security (HLS) Grants Allocated to the State of Washington and to the King County Region, FY 2003-2006 (All dollar amounts in millions)

Percent	FY2003	FY2004	FY2005	FY2006	Total	Change 2003-2006
State of Washington	\$79.08	\$65.50	\$45.32	\$35.79	\$225.69	-54.7%
King County	\$46.50	\$26.80	\$21.10	\$ 7.50	\$101.90	-83.9%
Percentage of State HLS Funds Administered by King County OEM	58.8%	40.9%	46.6%	21.0%	45.2%	

Source: Maguire and Reese 2006; King County 2006.

have declined by 54.7% over the same time period, and in the King County region they have decreased by nearly 84% (see Table 2). One consequence of this decline in funding is that there are fewer sub-awards for OEM to manage. As other federal budget priorities squeeze out homeland security funding for state and local governments another round of changes in the role of the local emergency manager may soon be upon us.

#### Summary and conclusions

What are some of the implications of the research reported here? One interpretation is that critics of the current approach to emergency management and homeland security in the U.S. are correct in arguing that the federal focus on domestic security has led to decline in preparedness activities for natural hazards at the regional level. It is reasonable to assume that prior to 2002 preparedness activities were primarily focused on naturally-occurring events. This interpretation cannot be completely confirmed using the data reported here because it does not address activities undertaken by other government jurisdictions in the region. For example, the city of Seattle has continued to fund Project Impact largely through its own resources. In any case, mitigation was not a focal area for county-level OEM staff prior to 2002, the year in which federal emergency planning initiatives were refocused on terrorism. But, as was noted earlier, mitigation projects are likely to be the responsibility of local governments. Certainly, the data reported here show that there was a pronounced decline in time allocated to county-level preparedness projects from 2002 to 2005. The question is to what extent did this state of affairs lead to a decrease in public safety? It would be useful from a comparative perspective to gather data of the type reported here in other settings including rural areas, and jurisdictions that confront a different array of hazards than does King County, Washington. For example, we might find that areas with more recent, frequent or severe environmental hazards shifted less of their staff time to homeland security efforts in the aftermath of September 11 or returned more

quickly to a natural hazards focus once the immediacy of the terrorist threat was gone.

Another way to view these research findings is to focus on the extent to which the region-based approach to homeland security grant funding may have reinforced efforts to enhance inter-governmental and inter-agency collaboration. The fact that homeland security became such a high priority to state and local governments not only renewed interest in the emergency management function but also created an environment where regional partnerships became more attractive. In the case of King County, a number of structures and program have been instituted to facilitate regional planning for homeland security. For example, the Emergency Management Advisory Committee (created in 1992) for the Central Puget Sound area expanded its responsibilities in 2002 to provide input on regional homeland security funding priorities. This group has 26 members representing a wide variety of public and private interests. Other committees and workgroups in the region are undertaking similar efforts. Prior research has shown that one of the critical components of effective policy implementation when many agencies and jurisdictions are involved is the presence of an entity that facilitates the creation and maintenance of relationships of the inter-organizational networks (Provan and Milward 1995; 2001). Along this same line of inquiry, a number of studies have examined the operation qualities and effectiveness of disaster preparedness networks and the role they play in enhancing community hazards planning (Kirschenbaum 2004; Lindell, Whitney, Futch and Clause 1996; Gillespie and Colignon 1993). While it is beyond the scope of this research to speculate on the causes and consequences of network building, it is clear that the King County OEM has played a central role in facilitating a regional approach to hazard planning.

This research highlights the extent to which changes in federal level priorities can impact local level emergency management operations. Periodic changes in the makeup of the Congress and the leadership of the executive branch often leads to alterations in federal emphases in

the area of disaster planning policy. This makes long-term planning problematic at the local and regional level. Thus, the ability to cope with uncertainty is a critical aspect of the job of the emergency manager.

Approximately eight years ago in these pages [IJMED] Neil Britton asked, "Whither the Emergency Manager?" (Britton 1999). Among the challenges he identified were developing a better understanding of what role emergency managers play in community decision making and what skill sets they should possess. One could conclude on the basis of the research reported here that increasingly emergency managers must have well-developed skills in the area of managing intergovernmental relations. A number of factors including the high profile nature of the attacks of September 11 and Hurricane Katrina, the rising economic and social costs of disasters, the increasing number of people living in hazardous areas, and the ongoing threat of terrorist attacks have led many communities to embrace a more active role in emergency management. These factors have also led to a clearer understanding of the importance of intergovernmental and interorganizational partnerships to enhance public safety (U.S. GAO 2002). As a consequence, the emergency manager of the future will need to understand and embrace the multi-disciplinary and intergovernmental aspects of contemporary emergency management.

#### Acknowledgement

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#### Notes

<sup>1</sup>References to these two workshops can be found at Hite (2003) and Mileti (2005).

<sup>2</sup>These reports may be accessed at the Century Foundation's website ([www.homelandsec.org](http://www.homelandsec.org)) under the Homeland Security Project. Visited February 9, 2007.

<sup>3</sup>It is noteworthy that Ahmed Ressam was apprehended at a ferry terminal in Port Angeles, Washington in December 1999 attempting to enter the U.S. from Canada in a car loaded with explosives. These explosives were intended to be used in a terrorist attack at the Los Angeles International Airport.

<sup>4</sup>For more information on the variety of hazards facing this region see Stehr (2003).

<sup>5</sup>Four staff members are exclusively dedicated to administrative support duties including a confidential secretary, an administrative specialist, and a finance officer. The director, the assistant director, and various project officers also code their time as "administration" when their duties are not directly related to program management.

<sup>6</sup>It could be argued that the addition of more staff meant that the same amount of hours could be spent on preparedness activities even though the relative percentage declined. But Table 1 shows that the total amount of preparedness hours in 2003 (5839) was about 36% less than in 1999 (9109). Only in 2006 did the total hours allocated to the preparedness function reach the 1999 levels.

<sup>7</sup>The other two programs—UASI and MMRS—provide grant dollars directly to urban areas.

<sup>8</sup>The list of individual projects can be found at [www.metrokc.gov/homelandsecurity](http://www.metrokc.gov/homelandsecurity). Visited February 9, 2007.

<sup>9</sup>This insight was provided in a personal communication with the Assistant Director of the King County OEM. ♦

Detecting tsunami genesis and scales directly from coastal GPS stations

By Y. Tony Song

Eos (American Geophysical Union Transactions), v. 88, no. 52, pt. 2, Supplement, p. F1836-1837.

Different from the conventional approach to tsunami warnings that rely on earthquake magnitude estimates, we have found that coastal GPS stations are able to detect continental slope displacements of faulting due to big earthquakes, and that the detected seafloor displacements are able to determine tsunami source energy and scales instantaneously. This method has successfully replicated three historical tsunamis caused by the 2004 Sumatra earthquake, the 2005 Nias earthquake, and the 1964 Alaska earthquake, respectively, and has been compared favorably with the conventional seismic solutions that usually take hours or days to get through inverting seismographs. Because many coastal GPS stations are already in operation for measuring ground motion in real time as often as once every few seconds, this study suggests a practical way of identifying tsunamigenic earthquakes for early warnings and reducing false alarms.

OPINION

**Shadowed by the glare of 1906 are faceless future dangers**

By John E. Vidale

University of Washington

From: *Seismological Research Letters*, v. 77, no. 4, p. 419-420.

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In the tradition of girding against bygone debacles more than future threats, both due to their searing memory and their ease of study, considerable effort has been directed to reconstructing the 1906 San Francisco earthquake and the 1811–1812 New Madrid earthquakes. The recurrence of these M7 to M8 events may well bring a costly and deadly toll. However, as earthquake cycles alternate between accumulation and release of strain energy, both regions may still be early on their journey to the next earthquake, while considerable and possibly greater danger lies elsewhere.

The Cascadia subduction zone, with its overlying landslide-salted and volcano-peppered mountains cradling the metropolises of Seattle, Portland, and Tacoma, offers a counterpoint. This editorial, I admit, is motivated by the daunting chore for the Pacific Northwest Seismic Network of shadow-boxing threats the most recent appearances of which have not been documented by Hearst newspapers and nanotech gauges. The lessons apparent here may apply to many regions of the world.

The 800-pound catfish of Cascadia geopyrotechnics is a recurrence of the 1700 M9 earthquake, which had slip of 20 m along most of the northern California, Oregon, Washington, and Vancouver Island coasts. This marginally prehistoric great earthquake was first noticed in the 1980s, much later than other comparable North American earthquake risks currently causing concern. Earlier, during the rise of the metropolises, the megathrust was considered most likely aseismic, so the possibility of M9+ events was given short shrift.

The Christmas 2004 Sumatra earthquake is an extreme analog for the recurrence of such an earthquake in the wake of unhurried preparations. While the rate of such megathrust earthquakes may leave previous events out of sight, they are an uncomfortable risk. The estimated average recurrence interval is 500 years, and the Gutenberg-Richter distribution forecasts additional lesser events that can still pack a punch.

The potential for devastation in such an M9 earthquake is poorly understood. This problem is being faced more directly with additional research. We are trying to estimate the extent of the locked zone with geodetic measurements, thermal modeling, analogy with other subduction zones, and perhaps the location of slow earthquakes under the accretionary prism as well as episodic tremor and slip. The spatial pattern of strong shaking may be distorted and fortified by critical reflections off the subducting Moho and reverberation in the deep

Puget Sound basins. The stratigraphy in offshore canyons may reveal the timing, magnitude, and repeatability of earthquakes across several millennia.

On the volcanic front, the 1980 eruption of Mt. St. Helens is firmly in our consciousness and monitoring effort, consistent with our what-have-you-done-to-me-lately hazard mitigation attitude. Less clear in our view are Mt. Hood looming over Portland and Mt. Rainier over Seattle. Ten of the Cascade volcanoes are listed as “very high threat” in a 2005 report, and all save St. Helens have “limited” or “minimal” monitoring, with lone seismometers as the sentries on a few of them.

Verdant mountains, world-class sedimentary basins, and inland waters breed additional hazards. An M7.2 earthquake broke the Seattle fault in 900 A.D., for example. It shook the bejeebers out of the current location of the heart Seattle and swamped the shores of Puget Sound with a several-meter tsunami. Also, every few centuries, lahars slosh down now well-populated valleys. Although a seismometer-based lahar early warning system is now in place to watch two valleys near Mt. Rainier, urban sprawl places ever more people onto the already congested routes for escape when the alarms sound, if they work.

The dangers of the Seattle fault were calibrated only a few years ago. From new mapping and trenching, the nearby South Whidbey Island fault, which splits the ground between Seattle and Everett to the north, has garnered a similar degree of earthquake hazard. Mapping such regional crustal faults under the dense canopy of trees and through the glacier-scoured landscape has to wait for acquisition of LIDAR swathes, which are yet far from complete.

Also imperative is the timely distribution of information about such geophysical natural events. Recognizing these needs, geophysical monitoring is gaining support. The state of Washington has this year started to invest in regional monitoring, in return for the promise of modernized seismic products such as rapid estimates of shaking, damage, and aftershock probability, and exploration of earthquake early warning systems. The regional network will capture a dozen or more of the broadband USArray Bigfoot seismic sites rotating through the Pacific Northwest before the instruments escape to the east. The EarthScope project, well underway, and the future NEPTUNE project to instrument the offshore Juan de Fuca plate, offer the promise of a deeper view of deformation and subduction plumbing and mechanics, likely with hazard mitigation benefits. (cont. on page 26)

**Amharic** is a [Semitic language](#) spoken in North Central [Ethiopia](#) by the [Amhara](#). It is the second most spoken Semitic language in the world, after [Arabic](#), and the "official working" language of the Federal Democratic Republic of Ethiopia. (See page 18)



## Warnings on the horizon--Air patrol pilots take their new tsunami alert system to the skies

By Winston Ross

*The Register-Guard*, Eugene, Oregon

Published: February 26, 2008 12:00AM

<http://www.registerguard.com/csp/cms/sites/dt.cms.support.viewStory.cls?cid=69543&sid=1&fid=1>

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BROOKINGS-- The Cessna 337 Skymaster lifts off smoothly on a clear day with nothing but a light chop rolling out of the Chetco River basin to ruffle its feathers, then banks north along the Oregon Coast, rising high enough for a glimpse at the Cascades in Southern Oregon. It's a flawless day for an airplane ride. But this isn't a pleasure cruise, and much of the south coast is about to find out why.

"This is a test," blares a pre-recorded message from a tiny MP3 player hooked to a foam-enclosed speaker on the plane's right side. "This is a test of the Civil Air Patrol airborne public address system."

From inside the cabin, of course, this missive is loud and clear. Within a few minutes, however, pilot, Scott Bakker, gets word that his message has done some traveling.

"I'm sitting in my office with the windows open," crackles a voice on the FM radio. It's Curry County Sheriff's Capt. Dennis Dinsmore. "I could hear everything you said."

And another piece of feedback, a few minutes after that: "Be advised, that speaker is working in midtown Crescent City." The speaker can be heard from up to 3 miles away, in fact, at 1,000 or more feet above ground. The distance makes it perfect for its intended use: to warn the south coast of an impending tsunami. Within 20 minutes, Bakker says, he or one of the other handful of pilots trained to fly the Skymaster or its speaker-equipped counterpart, a Cessna 182 Skylane, can be airborne and enroute to a half-dozen population centers from Coos Bay to Eureka, Calif., broadcasting "Attention, attention. This is an official warning. A tsunami is imminent. Go to high ground," in between siren blasts.

Bakker and the other pilots with the U.S. Air Force auxiliary unit, the Civil Air Patrol, are supplied with pagers from the Curry County Sheriff's Office, linked to the county's tsunami warning system. When the pagers go off, the pilots head to the airport. In rural areas such as the south coast, where Curry County's 15 operational stationary sirens are sporadic and people might not be listening to their radios or watching their televisions, Bakker's planes may be the first to warn thousands of people.

"It's going to help us immensely," said Mike Brace, emergency coordinator for the Curry County Emergency Services Department. "As far as we know, it's one of a kind on the coast. It's a great leg in the stool, with the airplane, tsunami sirens and radio stations, to get as many venues as we can to get the alert out to people.

"The idea for an airborne tsunami warning system came about after the retired Pelican Bay State Prison guard got a phone call in December 2006 that made him feel helpless," he said. On the line was Spencer Kim, in a desperate hunt for his son James, stranded in the Rogue wilderness in December 2006 with his wife and their two daughters. The elder Kim wanted Bakker's help, as commander of the local Civil Air Patrol. But there was nothing Bakker could do. "The Air Force told us to stand down," Bakker said. As the nation would later learn, James Kim died of hypothermia after hiking away from his family to look for help. By the time Spencer Kim hired a private helicopter and another volunteer searcher spotted the rest of his family, his son was dead, if only for a few hours. Bakker wonders whether things might have been different if he'd been free to use the Civil Air Patrol's planes without a request from authorities.

So he formed a nonprofit group, the Guardians from Above, that operates with its own budget and can act independently of an official order. "I wasn't going to let another day go by where I'd have to tell a family member I couldn't help them," Bakker said.

After founding the Guardians, Bakker figured he could use the planes to warn residents of an oncoming tsunami, Bakker said. He found a company called Power Sonix in California that had just put a sophisticated new speaker system on the market, at an asking price of \$10,000. The company agreed to donate one to the Guardians' effort if he'd secure the Federal Aviation Administration's approval to install them in airplanes. That required hiring an engineer to design plans, plus the installation cost itself, but Bakker was game. Earlier this year, Bakker got the government go-ahead and is now ready to launch if disaster strikes.

Officials around the country are taking notice, too. A Civil Air Patrol chapter in Hawaii is looking to buy eight of the systems for use with tsunami warnings there. And Bakker said he's been approached by officials in Wisconsin who want to use the system to warn people in the event of an emergency at one of the state's nuclear power plants. The loudspeaker can also be used in search and rescue efforts for purposes such as coaxing reluctant children from wooded hiding places. Sometimes lost youngsters think they're in trouble and won't let themselves be discovered by searchers, Bakker said. Whether Bakker's planes will be able to effectively warn people in the event of a major tsunami can't be known until it happens, however.

There are also distant threats, offering emergency officials ample time to warn the public. The last time anyone died in Oregon and Northern California from a tsunami was in 1964, when the Good Friday earthquake in Alaska created a tsunami that killed 12 people in Crescent City, Calif., and four on the Oregon Coast. That event came with hours of warning. But the worst-case scenario for the Oregon Coast involves an earthquake generated

from the Cascadia Subduction Zone, which lies only 50 to 70 miles offshore. A quake along that fault line is expected to have a magnitude of 9.0, which would cripple many bridges and roads and liquefy the sand upon which thousands of buildings along the coast now sit. The resulting tsunami could reach shore in as little as 10 minutes. "We tell people here that the ground shaking is your siren," Brace said. "If the ground shakes, move to high ground." ♦

### **Airborne tsunami alert triggers wave of text messaging**

5:00AM Tuesday November 27, 2007

*New Zealand Herald*, reprinted with permission

The Bay of Plenty has a new tool in its arsenal of tsunami warning systems after a successful trial of helicopter-mounted loudspeakers.

Text messages started coming in as soon as "testing 1, 2, 3, 4, 5" started booming down to people under the path of the TrustPower TECT rescue helicopter at the weekend. Within an hour of the 45-minute flight from Waihi Beach to Pukehina coming to an end, Civil Defence and Emergency Management operations manager Alan Pearce had received nearly 70 texts.

Mr Pearce said the public address system was primarily to alert people on the coast to move inland. The Indonesian tsunami proved that moving as far as possible inland maximised the chances of survival.

"It is getting people away from where the threat is greatest, and that's the coastline." Positioning himself at the end of the Mount Main Beach, he started hearing the sound test quite clearly when the helicopter was about 700m away. It lasted until the noise of the helicopter drowned out the speakers about 150m out.

The flight showed the announcement was most clearly heard in the direction the speakers were facing, which was the direction the helicopter was flying. Installing another pair of speakers facing inland would give more quadrant coverage, but Mr Pearce said a single pair of speakers was still pretty effective.

"I thought the test was effective in the form it is at - I'm encouraged." The helicopter-mounted speakers add to existing warning systems including the Meerkat alarm network that was tested along the Main Beach a few weeks ago. Mr Pearce said the system needed refining to maximise efficiency. The test showed that a deeper voice was more effective through the ex-Japanese police helicopter speakers. And although the efficiency of the speakers dissipated the further sideways people were from the helicopter, one text message was received from inside a house. Hearing responses from people in the same street ranged from clear to faint.

Mr Pearce said it could only be part of a toolbox of measures because getting a helicopter aloft depended on the weather. All systems were designed to alert people to

tune in to their radio or TV to make an informed decision about evacuating away from the coast, rather than fleeing in a mindless panic, he said.

From: Bay of Plenty Times (New Zealand)

[http://www.nzherald.co.nz/category/story.cfm?c\\_id=68&objectid=10478449](http://www.nzherald.co.nz/category/story.cfm?c_id=68&objectid=10478449) ♦

### **Insights into the problems of communicating tsunami warnings and tsunami awareness education from decision loop analysis of behavior during the 2004 Indian Ocean tsunami** [abstract],

by Peter Fahey and Simon J. Day:

Eos (American Geophysical Union Transactions), v. 88, no. 52, pt. 2, Supplement, p. F1436.

Decision loop analysis allows us to interpret video and photograph evidence of the behavior of people in Sumatra, Thailand and Sri Lanka during the 2004 Indian Ocean earthquake and tsunami, and to identify problems in communication of tsunami warnings to the general population. Decision loop analysis identifies four steps in the response to a threat: observation (of warning signs); orientation (recognition of the significance of those warning signs); decision (on what response to make); action (implementation of that response). In the case of the Indian Ocean tsunami, lack of tsunami awareness generally caused the decision loop to break down at the orientation stage, even where observation of the incoming waves was reinforced by shouted warnings. Where the orientation step was made early, evacuations were often successful. In the zone of strongest felt seismic intensity the population was subject to information overload (even though damage was often limited) and spent the time between the earthquake and the arrival of the tsunami responding to the earthquake: this blitzkrieg effect is a significant obstacle to near source tsunami mitigation. In other cases, the loop broke down at the decision stage: frequently fatal decision about where to go emphasize the need for clearly signposted tsunami evacuation routes. Decision loop analysis therefore highlights the different components needed in Education for Self Warning and Voluntary Evacuation (ESWAVE) as part of tsunami mitigation. The abundant video and photograph recordings of the 2004 tsunami provide much material for this approach, similar to the films of volcanic eruptions by Maurice and Katia Krafft that have been used to raise awareness of volcanic hazards after the 1985 Armero lahar disaster. ♦

**Ilokano** is the 3rd most-spoken language of the Republic of the [Philippines](#). Being an [Austronesian language](#), it is related to such languages as [Indonesian](#), [Malay](#), [Fijian](#), [Maori](#) (of [New Zealand](#)), [Hawaiian](#), [Malagasy](#) (of [Madagascar](#)), [Samoan](#), [Tahitian](#), [Chamorro](#) (of [Guam](#)) and the [Northern Mariana Islands](#)), [Tetum](#) (of [East Timor](#)), and [Paiwan](#) (of [Taiwan](#)). (See page 18)

## NEWS

### **Tsunami barrels--City council approves new 55-gallon barrels for food**

By Donald Allison

*Seaside Signal*

Created: Thursday, April 17, 2008

Reprinted with permission

In order to prepare for the next big tsunami, Seaside City Councilors [Oregon] on Monday unanimously approved the purchase of 120 cache barrels that will be used to store food on higher ground in case of emergency.

The 55-gallon barrels would be placed in people's homes in the city's five tsunami evacuation zones in the city, said Planning Director Kevin Cupples.

"We had hoped we only needed 60, but after some trial runs we found we needed twice as many barrels," Cupples said. "We had a taste test of the food, and although none of it is spectacularly tasty, we got the best."

Cupples said the next step is finding volunteers in the tsunami evacuation areas who can store the barrels. Cupples also credited the Tsunami PREP volunteers for their hard work in putting together a master list for the barrels.

The funding for the tsunami cache barrels came from a federal appropriation from Congressman David Wu's office.

Mayor Don Larson thanked the volunteers and said the barrels would help Seaside residents survive after a large tsunami. Regarding a recent newspaper article stating that Cannon Beach was the best prepared coastal city in Clatsop County for a tsunami, Larson said, "Tell them who in the county is really prepared."

From:

[http://seasidesignal.com/articles/2008/04/17/news/local\\_news/doc48078a880793c354088974.txt](http://seasidesignal.com/articles/2008/04/17/news/local_news/doc48078a880793c354088974.txt)

### **Tsunami info cards now available for tourists**

By Gillian Riddell

*Westerly News*, with files from [canadiangeographic.ca](http://canadiangeographic.ca).

Reprinted with permission

Information about the risk of a tsunami on the West Coast will be prominently featured for visitors to the region this summer.

"We're not saying that it will happen or that it could even happen within any of our lifetimes," said Crystal Ironside, emergency social services director for the District of Tofino [Canada]. "But the risk is there."

Brightly coloured cards and brochures outlining what to do if an earthquake hits or tsunami alert is declared are being made available to local businesses, including hotels and resorts by Tofino's emergency social services.

Making visitors more aware of the danger of a tsunami may be new to Tofino, but other areas around the Pacific Rim have been doing it for years, according to Ironside.

The cards titled "Tsunami Safety" tell residents and visitors to "drop and hold" until an earthquake is over and then move immediately inland and away from low-lying coastal areas.

The cards also advise residents or visitors to:

- Go on foot if at all possible;
- Do not wait for an official warning;
- Do not pack or delay going;
- Do not return to the beach to watch and;
- Wait for an all-clear from local emergency officials before returning to low-lying areas.

The cards also say a tsunami may come in a few minutes and large waves may continue to come onshore for several hours.

A grant from the Union of BC Municipalities is funding the brochure program. Ironside said the goal of the information cards is that every accommodation provider will have tsunami information available for greater community readiness in case of an emergency.

"We don't know when we may need this information but it is important to have it accessible," said Ironside. "We've been accused of fear-mongering but this is a reality."

The most recent tsunami to hit the coast of British Columbia was the devastating wave that resulted from a magnitude 8.5 earthquake off of Anchorage Alaska on March 27, 1964. The resulting tsunami in the early hours of the following day created a 4.3 metre wave that all but destroyed Hot Springs Cove and hit other areas along the coast including Bamfield, Tofino, and Ucluelet. The wave travelled up the Alberni Inlet destroying more homes and properties in Port Alberni and causing more than \$10 million dollars in damages at the time.

Just four years earlier, in October 1960 a 9.5 magnitude earthquake off of Chile created a 1.2 metre wave that hit Tofino. This was the same earthquake that created the tsunamis that hit Hilo, Hawaii, killing more than 60 people.

From:

<http://www.canada.com/components/print.aspx?id=f52e74f1-cfe6-4eee-ad0c-6fa8f70158e1&k=76811&sponsor=>

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### **Regional Tsunami Warning Centre for Indian Ocean**

Chennai, April 12, 2008—The Indian National Centre for Ocean Information Services (INCOIS), the Hyderabad-based research institute on ocean research and information, has been honoured by the Intergovernmental Oceanographic Commission (IOC) by appointing it as the Regional Tsunami Warning Centre for the entire Indian Ocean area.

For the complete report by Kumar Chellappan:

[http://howrah.org/india\\_news/9277.html](http://howrah.org/india_news/9277.html) Howrah News Service online.

### **Tsunami warning system in Tasman**

A \$70-million early warning system is being set up to record any earthquakes that could trigger a tsunami that would hit Australia. Two deep ocean sensors have been placed alongside the Puysegur Trench, a potentially volatile six-kilometre deep ditch in the south Tasman Sea off New Zealand.

For the full story by Eamonn Duff (4-13-2008):  
<http://www.theage.com.au/news/national/tsunami-warning-system-in-tasman/2008/04/12/1207856921271.html>

### **Malaysia starts phase II of Tsunami Early Warning System**

KUALA LUMPUR, April 8 (Xinhua)—Malaysia has started implementing the second phase of the National Tsunami Early Warning System to ensure effective monitoring and issuance of warnings on earthquakes and tsunamis in the region, Science, Technology and Innovation Minister Maximus Ongkili said on Tuesday.

For the full story:  
[http://news.xinhuanet.com/english/2008-04/08/content\\_7941484.htm](http://news.xinhuanet.com/english/2008-04/08/content_7941484.htm)

### **Beware tsunami risk off East Coast--Gas eruptions could cause huge tidal waves**

(Follow-up story to “Undersea cracks along continental shelf could trigger tsunamis along U.S. East Coast,” *TsuInfo Alert*, v. 10, no. 2, p. 24)

“A team of scientists reports that a system of large depressions in the ocean floor off the Virginia and North Carolina coasts appear to have been caused by gas eruptions, strengthening the theory that an Atlantic tsunami someday is possible.

“The gas is trapped under layers of sediment on the shelf edge until some circumstance causes it to escape, blowing holes in the seafloor to form these large pock-mark features we thought were cracks,” team leader Neal Driscoll of the Woods Hole Oceanographic Institution said.”

For the full story:  
<http://www.cbsnews.com/stories/2000/05/02/tech/main191003.shtml>

### **Tsunami survivors helped by swimming ability**

Posted on the ABCNews (Australian Broadcasting Corporation) website on May 15, 2008 was the results of a “survey of survivors of the 2004 tsunami in Aceh [showing] survival rates were dramatically increased among teenagers and middle-aged people who could swim.” The Alliance for Safe Children and UNICEF conducted the survey.

From:  
<http://www.abc.net.au/news/stories/2008/05/15/2245938.htm>

### **Emergency text alerts to cell phones approved**

Federal regulators have approved a plan to create a nationwide text message emergency alert system that could be used to alert affected populations during natural disasters and other emergencies, the Associated Press has reported.

A 2006 federal law that requires the Federal Communications Commission to upgrade emergency alert systems and develop ways to better alert the public about emergencies led to the development of this project, which should be in effect by 2010.

Cell phone carriers' participation is voluntary, but the plan is receiving strong support from the industry, according to the AP. Customers may not be charged for receiving alerts and will have the option to opt out of the program. Additionally, the emergency alerts would be delivered with a unique audio tone to distinguish them from normal messages.

According to the plan, three types of messages are proposed:

- 1) National Alerts from the president, including for terrorist attacks or natural disasters
- 2) Imminent threats like university shootings, hurricanes, and tornadoes
- 3) Amber Alerts, which are reserved for abducted children

Read the Associated Press article at  
<http://www.nytimes.com/2008/04/10/washington/10alert.html>.

From: Disaster Research 500, April 24, 2008, Natural Hazards Center, University of Colorado at Boulder

### **National Response Framework in effect**

The Federal Emergency Management Agency (FEMA) has announced that the National Response Framework (NRF), successor to the National Response Plan, went into effect on Saturday, March 22, 2008.

The NRF focuses on response and short-term recovery, and articulates the doctrine, principles, and architecture by which the nation prepares for and responds to all-hazard disasters across all levels of government and all sectors of communities. The NRF also focuses on preparedness and encourages a higher level of readiness across all jurisdictions in a streamlined document that is less bureaucratic and more user-friendly than its predecessor.

On January 22, 2008, the NRF was initially released following an extensive process of outreach and coordination among DHS and key stakeholders representing federal, tribal, state, and local governments; non-governmental agencies and associations; and the private sector.

More information on the NRF is available at <http://www.fema.gov/emergency/nrf/>. The complete FEMA press release is available at <http://www.fema.gov/news/newsrelease.fema?id=43018>.

From: *Disaster Research* 498, March 27, 2008, Natural Hazards Center, University of Colorado, Boulder.



### **FEMA's Strategic Plan released**

On April 16, 2008, the Department of Homeland Security's (DHS) Federal Emergency Management Agency (FEMA) released its Strategic Plan for Fiscal Years 2008-2013. The new plan supports DHS Secretary Michael Chertoff's goal of improving both national preparedness and emergency response.

Within this plan are five goals for FEMA: 1. Lead an integrated approach that strengthens the nation's ability to address disasters, emergencies, and terrorist events 2. Deliver easily accessible and coordinated assistance for all programs 3. Provide reliable information at the right time for all users 4. FEMA invests in people and people invest in FEMA to ensure mission success 5. Build public trust and confidence through performance and stewardship.

The Plan and a "Plan-in-Brief" are available online at <http://www.fema.gov/about/strategicplanfy08.shtm>.

From: *Disaster Research* 498, March 27, 2008, Natural Hazards Center, University of Colorado, Boulder.

### **Mediterranean tsunami warning systems**

Greek and Italian scientists, working with UNESCO, are developing an early warning system in the Mediterranean and hope to begin having tsunami readiness tests in the Aegean and southern Ionian Seas. The entire system should be functional by 2011. Currently 3 seismograph systems are in operation, and six sea-level gauges are planned.

### **CRID receives award from the Elsevier Foundation**

The Regional Disaster Information Center for Latin America and the Caribbean (CRID) received a US\$40,000 award from the Elsevier Foundation, a world renowned publisher in the area of medicine and health sciences.

The award was for the category "Innovative libraries in developing countries." The Foundation provides annual grants to libraries in developing countries to enhance their capacity in the fields of science, technology, and medicine. The award will be used to strengthen the Central American Network for Disaster and Health Information, as well as the Andean Network of Virtual Libraries for Disaster Prevention and Relief. The award recognizes the work of CRID, which, for more than a decade, has given specialists and the general public access to disaster-related information, thereby promoting a culture of prevention. For more information, write to [Isabel.lopez@crid.org.cr](mailto:Isabel.lopez@crid.org.cr).

From: *Disasters—Preparedness and Mitigation in the Americas*, issue 109, March 2008, p. 3.

## **WEBSITES**

<http://www.fema.gov/pdf/emergency/nrf/whatsnew.pdf>

Earlier this year the Department of Homeland Security (DHS) unveiled the National Response Framework (NRF), the guidelines for domestic incident response

roles, responsibilities, and relationships. The NRF replaces the National Response Plan, and this four-page fact sheet from DHS explains the differences between the two documents.

From: *Natural Hazards Observer*, v. 32, no. 5, p. 19. Natural Hazards Center, University of Colorado at Boulder.

[http://www.ready.gov/america/about/instructional\\_index.html](http://www.ready.gov/america/about/instructional_index.html)

The Department of Homeland Security (DHS), in partnership with The Advertising Council, has created instructional videos to help educate and empower Americans to prepare for and respond to all kinds of emergencies. The first set of the Ready America instructional videos, released in English and Spanish, are designed to detail how American families can get an emergency supply kit, make a family emergency plan, and be informed about the different types of emergencies in their community.

From: *Natural Hazards Observer*, v. 32, no. 5, p. 19. Natural Hazards Center, University of Colorado at Boulder.

<http://www.gdnonline.org>

The Gender and Disaster Network (GDN) has launched an updated version of its website, which contains recent resources and information in the gender and disaster field. The site features a more updated look with simple navigation tabs; a resources area, which hosts the Gender and Disaster Sourcebook; and the Knowledgebase, containing key resources, reports, practical guides, and case studies on gender relations in disaster contexts.

From: *Natural Hazards Observer*, v. 32, no. 5, p. 19. Natural Hazards Center, University of Colorado at Boulder.

[http://www.brookings.edu/events/2008/0114\\_disasters.aspx](http://www.brookings.edu/events/2008/0114_disasters.aspx)

This web site presents a summary of activities from a January discussion titled "Fires, Floods, Earthquakes and Tsunamis: A Human Rights Perspective for Major Natural Disasters," which was sponsored by the Brookings Institution. Included in the summary are transcripts, speeches, and reports presented during the event.

From: *Natural Hazards Observer*, v. 32, no. 5, p. 19. Natural Hazards Center, University of Colorado at Boulder.

<http://www.disaster-zone.com>

"Disaster Zone: Emergency Management in the Blogosphere" is dedicated to sharing information about the world of emergency management and homeland security. This blog present interesting information on all aspects of disaster prevention, mitigation, preparedness, recovery, and response.

From: *Natural Hazards Observer*, v. 32, no. 5, p. 19.  
Natural Hazards Center, University of Colorado at Boulder.

<http://sis.nlm.nih.gov/outreach/specialpopulationsanddisasters.html>

The U.S. National Library of Medicine (NLM) has launched a website for special populations that addresses preparedness for emergencies and disasters. The site contains information on safety measures, evacuation, preparedness, etc., for the disabled, the elderly, people with hearing and sight impairment, women, children, diabetics, indigenous populations, and foreigners, among others. In addition, it presents lessons learned from disasters caused by Hurricanes Katrina and Rita and the attacks on the World Trade Center. The site includes laws and regulations and a preparedness guide for the government and its agencies.

From: *Disasters—Preparedness and Mitigation in the Americas*, issue 109, March 2008, p. 6.

[http://www.oxfam.org.uk/resources/policy/conflict\\_disasters/downloads/oxfam\\_india\\_rethinking\\_disasters.pdf](http://www.oxfam.org.uk/resources/policy/conflict_disasters/downloads/oxfam_india_rethinking_disasters.pdf)

“Rethinking Disasters: Why Death and Destruction is not Nature's Fault but Human Failure.” This report is part of a series of papers that seeks to educate the members of public about issues on development and humanitarian policy issues. The information in the report is meant to aide advocacy, campaigning, education, and research.

This report addresses following topics: consequences of poor policies and inaction; environmental challenges caused by climate change; disaster risk reduction; and recommendations for the future.

From: *Disaster Research 500*, April 24, 2008,  
Natural Hazards Center, University of Colorado at Boulder

[http://www.ukresilience.info/upload/assets/www.ukresilience.info/vulnerable\\_guidance.pdf](http://www.ukresilience.info/upload/assets/www.ukresilience.info/vulnerable_guidance.pdf)

Identifying People Who Are Vulnerable in a Crisis: Guidance for Emergency Planners and Responders Civil Contingencies

This guidance document from the United Kingdom Civil Contingencies Secretariat is intended for those who develop local action plans and need to identify groups of people who may be vulnerable in an emergency. The document recommends four stages in identifying vulnerable populations: Building Networks, Creating Lists of Lists, Agreeing on Data Sharing Protocols and Activation Triggers, and Determining the Scale and Requirements.

From: *Disaster Research 498*, March 27, 2008,  
Natural Hazards Center, University of Colorado, Boulder.

<http://www.weather.gov/rss/>

NOAA's NWS RSS LIBRARY

Really Simple Syndication (RSS) is a family of web formats used to publish frequently updated digital content. Most commonly used to update news articles and other content that changes quickly, RSS feeds may also include audio files (PodCasts) or even video files (VodCasts). Users of RSS content use programs called feed 'readers' or 'aggregators' (newer versions of Web browsers offer built in support for RSS feeds): the user 'subscribes' to a feed by entering the link of the RSS feed into their RSS feed reader; the RSS feed reader then checks the subscribed feeds to see if any have new content since the last time it checked, and if so, retrieves the new content and presents it to the user.

## PUBLICATIONS

### *Family emergency plan*

[http://emd.wa.gov/publications/pub\\_index.shtml](http://emd.wa.gov/publications/pub_index.shtml)

Plans are available in the following languages:

[English](#) (PDF) [Amharic](#) (PDF) [Arabic](#) (PDF) [Cambodian](#) (PDF) [Chinese](#) (PDF) [Farsi](#) (PDF) [Ilocano](#) (PDF) [Korean](#) (PDF) [Laotian](#) (PDF) [Romanian](#) (PDF) [Russian](#) (PDF) [Serbo-Croatian](#) (PDF) [Somaly](#) (PDF) [Spanish](#) (PDF) [Tagalog](#) (PDF) [Tigrigna](#) (PDF) [Ukrainian](#) (PDF) [Vietnamese](#) (PDF) [See also boxes on pp. 12 & 14]

### *World Disaster Report*

Discrimination in disaster situations is the focus of the 2007 edition of the *World Disaster Report*, published by the International Federation of Red Cross and Red Crescent Societies. The publication examines which groups suffer the greatest discrimination, how this is manifested, and how vulnerabilities among these groups increase in disaster situations. It focuses on the elderly, people with disabilities, minorities, and women. At times, discrimination is exacerbated by attitudes that originate within communities or families.

The document makes recommendations on how to ensure that the needs of marginal and vulnerable communities are taken into account in disaster prevention programs. It emphasizes that these groups must receive adequate and timely assistance during emergencies and be included in recovery activities after a disaster. The report points out that it is the responsibility of international agencies and of governments to identify and address discriminatory attitudes and processes.

Race, color, gender, language, religion, politics, opinion, social or national origin, and economic conditions are only some of the causes of discrimination that can compromise how certain groups access international and local assistance during disasters. The document is available at [www.ifrc.org](http://www.ifrc.org).

From: *Disasters—Preparedness and Mitigation in the Americas*, issue 109, March 2008, p. 6.

## Research Digest

The Natural Hazards Center is proud to announce the second issue of its new electronic publication titled *Research Digest*—a quarterly online compilation of recent research related to hazards and disasters. It provides the complete references and abstracts (when available) for current research in the field. The aim of *Research Digest* is to advance and communicate knowledge on hazard mitigation and disaster preparedness, response, and recovery within an all-hazards, interdisciplinary framework.

The current issue includes more than 175 articles cataloged between August and mid-November 2007. Check out the past and present issues online at <http://www.colorado.edu/hazards/rd>.

From: *Disaster Research* 498, March 27, 2008, Natural Hazards Center, University of Colorado, Boulder.

## Variations in city exposure and sensitivity to tsunami hazards in Oregon

By Nathan Wood, 2007.; U.S. Geological Survey Scientific Investigations Report 2007-5283, 37 p. <http://pubs.er.usgs.gov/usgspubs/sir/sir20075283>

## Tsunami—The Great Waves [Chinese translation]

*Tsunami—The Great Waves*, the long-standing publication of the ITIC, has been translated into Chinese by the Hong Kong Observatory. This 12-page glossy brochure provides information on what a tsunami is, how fast and how big they can be, what causes them, and describes programs undertaken to mitigate this hazard, including the development of tsunami warning centers, research programmes, and safety rules describing what to do when a tsunami attacks your coastline.

*Tsunami—The Great Waves* in Chinese is available for the first time. A second translation into a simpler form of Chinese was also undertaken and will soon be available. The brochure is also available in English, Spanish, and French. It was designed and published by ITIC, with support from the UNESCO/IOC Tsunami Programme, the USA National Oceanic and Atmospheric Administration (NOAA), Laboratoire de Geophysique of France, the National Marine Environmental Forecasting Centre of the State Oceanic Administration of China (NMEFC), and the Hong Kong Observatory (HKO). The brochure is on the ITIC website: <http://ioc3.unesco.org/itic/contents.php?id=351>.

From: *Tsunami Newsletter*, v. 39, no. 3 (April-June 2007), p. 14.

## MEDIA

Earth & Sky Radio Series, hosted by Deborah Byrd, Joel Block, Lindsay Patterson, and Jorge Salazar. (Radio podcasts). Program #5500, *New tsunami warning system may save lives*, available at <http://www.earthsky.org/radioshows/52382/new-tsunami-warning-system-may-save-lives>

## CONFERENCES

### July 11-13, 2008

Doctors for Disaster Preparedness 2008 Meeting—Mesa, Arizona. DDP promotes homeland defense and prudent preparedness for disasters of all kinds, including war or terrorism. Its annual meeting brings together America's foremost authorities on strategic and civil defense, as well as prominent scientists speaking on real threats or manufactured scares. For more information, visit <http://www.oism.org/ddp>.

From: *Disaster Research* 499, Apr. 10, 2008, Natural Hazards Center, University of Colorado

### July 28-31, 2008

2nd Australasian Natural Hazards Management Conference 2008: From Warnings to Effective Response and Recovery—Wellington, New Zealand. This conference is for emergency managers, planners, risk assessors, asset and utility managers, natural hazards researchers, and scientists. Discussions will include the integration of hazard information into effective risk management, including applying hazard information to best practice planning, developing effective warning systems, improving response and recovery from events, and creating resilient communities through integrating science into practice. A “Gendering Disasters” workshop will examine the different ways that gender impacts individual planning and response to natural hazards events in New Zealand and overseas. For more information, see <http://www.hazards-education.org/ahmc/2008/2008index.php>.

From: *Disaster Research* 499, Apr. 10, 2008, Natural Hazards Center, University of Colorado

## CLASSES

### Australian university trains workers for humanitarian agencies

Australia's Darwin University is offering a new degree in Humanitarian and Community Studies, tailored to students interested in working in communities where resources are limited due to geographic or social conditions, or emergencies caused by disasters.

Upon completing the 3-year course, the students will have the possibility of working for the Australian Institute for Welfare and Community Workers, for government or nongovernmental agencies in remote areas, or for agencies like the Red Cross, OXFAM, and Doctors without Borders in the area of logistics. For more information visit [www.edu.edu.au](http://www.edu.edu.au) or write [courses@educ.au](mailto:courses@educ.au).

From: *Disasters—Preparedness and Mitigation in the Americas*, issue 109, March 2008, p. 3. ♦

## Un-natural disasters\*

By Wolf Schäfer

From: *Globality Studies Journal*, May 23, 2008

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The Myanmar cyclone of early May, 2008, began as a purely natural disaster, but the military regime quickly added political action, or inaction, to the storm's devastating footprint. Moving much too slowly to accept aid from the outside world, the junta has piled up scores of preventable deaths through starvation, diarrhea, and diseases like cholera and malaria, which are waiting to take their toll.

The most reprehensible elements of a natural disaster are not natural, but human. Two other recent disasters also made that clear. The Indian Ocean earthquake/tsunami and Hurricane Katrina were severely aggravated by technical, societal and political failures. The acting up of nature is bad enough, but unscrupulous human action, or inaction, is worse. Social and political factors always play a crucial role. They can easily, and decisively, worsen the destruction initially caused by nature.

The human fault in the Indian Ocean earthquake and tsunami of December 2004 was first of all technical: The affected countries had failed to install a tsunami watch, warning, and information system. The removal of sand dunes, coral reefs, and coastal mangrove trees around the Indian Ocean played a supporting role. The event now ranks among the ten deadliest natural disasters. However, the up to 100 feet-high waves of this "natural disaster" could kill a quarter million people only because of human negligence. It was of no help that the Pacific Tsunami Warning Center in Hawaii, an American scientific agency, detected and reported the massive underwater quake. The missing regional warning system was the fault that counted.

In 2005, Hurricane Katrina taught us another lesson about human faults and warning systems. The benefits of accurate forecasting and plentiful lead time were squandered when the Federal Emergency Management Agency (FEMA) held up hundreds of volunteer firefighters in Atlanta for days and thousands of bottles of water on trailer trucks near Camp Beauregard; when the Louisiana National Guard managed to get its barracks flooded and communications equipment and vehicles disabled; and when the local government of New Orleans passed up the chance to evacuate people with the trains Amtrak was pulling out, or to use local school buses.

Katrina, the costliest natural disaster in U.S. history by tens of billions, exposed not only the technical failures of flood walls and levees, but also that a country's wealth does not automatically translate into an optimal disaster protection for all. The third world is not only abroad but also nearby; poverty and inequality are at home in first world nations, too; and lack of leadership and humane concern is not restricted to developing countries.

The aftermath of Cyclone Nargis is establishing a new benchmark for how far an antidemocratic elite in possession of a state will go to keep a hold on power. How many thousands of preventable deaths will its indifference to the suffering of the Burmese people cause?

There are global lessons about Earth's natural disasters that must be learned.

First, we must leave the old concept of "natural" disasters behind; it is no longer applicable and deadens the much-needed sense of global responsibility and capability. No doubt, ice ages, moving continents, growing or shrinking oceans, earthquakes, storms, floods, and meteors have punctuated earth's history. Nature has displaced and wiped out millions of lives without remorse. For most of human history, humans had no choice but to suffer earth's blind violence as fate. Yet the power of human-kind to domesticate earth's nature has grown enormously in the last century. Natural disaster mitigation and prevention have now become possible and are therefore not a luxury, but a global obligation.

Second, we must rejuvenate the ancient idea that "history is the teacher of life" (*historia magistra vitae*). Historical ignorance worsens the natural challenges that earth is throwing at us. As the human race has become responsible for the well-being of life on earth including plants and animals, it must complement its power over nature with a pragmatic history that teaches not only the facts but also the lessons of the past. Useful lessons about successful and unsuccessful interactions between humans and nature can be gleaned from environmental history. It transcends the traditional perspective of the history of nations and explores border-crossing processes like air pollution or the nexus between deforestation of local rain forests and worldwide climatic consequences.

In the last few years, the United Nations Educational, Scientific and Cultural Organization (UNESCO) has led efforts to install an Indian Ocean Tsunami Warning System and further plans for a global warning system. This is a good step. But purely technical fixes are always incomplete. Complete disaster management must include sound social, economic, and political elements.

The May 12, 2008, earthquake in China's Sichuan Province illustrates this clearly (not least because China is more open to the world than is Myanmar). A trembling Earth revealed once more that social ills aggravate natural havoc. China's one-child-per-family-only policy, which in many cases leaves no siblings behind when disaster strikes, and official corruption, which permits and incites rampant low-quality building construction, meant that the Sichuan tremor was able to crush more schools than necessary, kill more children than necessary, and utterly destroy more families than necessary.

\*Originally published as an op-ed in *Newsday* (New York), Sunday May 18, 2008, p. A57. This is a corrected and slightly expanded version with cuts of the op-ed restored.

From:  
<http://www.stonybrook.edu/globality/Views/no2.html>  
May 23, 2008

Mr. Schäfer teaches global history and the history of science and technology at Stony Brook University, where he is the founding director of the Center for Global History. ♦

STATE EMERGENCY MANAGEMENT OFFICES  
*updated 3-31-2006*

Alaska Dept of Military & Veteran Affairs  
Division of Homeland Security & Emergency Mgmt.  
PO Box 5750  
Fort Richardson, AK 99505-5750  
(907) 428-7000; toll-free 800-478-2337  
Fax (907) 428-7009  
<http://www.ak-prepared.com/>

California Office of Emergency Services  
3650 Schriever Ave.  
Mather, CA 95655  
(916) 845-8510; Fax (916) 845-8910  
<http://www.oes.ca.gov/>

Hawaii State Civil Defense, Dept. of Defense  
3949 Diamond Head Road  
Honolulu, HI 96816-4495  
(808) 733-4300; Fax (808) 733-4287  
<http://www.scd.state.hi.us>

Oregon Division of Emergency Management  
PO Box 14370  
Salem, OR 97309-50620  
(503) 378-2911; Fax (503) 373-7833  
<http://www.oregon.gov/OOHS/OEM/>

Washington State Military Dept.  
Emergency Management Division  
Camp Murray, WA 98430-5122  
(253) 512-7067; Fax (253) 512-7207  
<http://emd.wa.gov>

Provincial Emergency Program  
455 Boleskin Road  
Victoria, BC V8Z 1E7 Canada  
(250) 952-4913; Fax (250) 952-4888  
<http://www.pep.bc.ca/>

ALSO:

American Samoa Territorial Emergency Management  
Coordination (TEMCO); American Samoa Government  
P.O. Box 1086  
Pago Pago, American Samoa 96799  
(011)(684) 699-6415; (011)(684) 699-6414 FAX

Office of Civil Defense, Government of Guam  
P.O. Box 2877  
Hagatna, Guam 96932  
(011)(671) 475-9600; (011)(671) 477-3727 FAX  
<http://ns.gov.gu/>

Guam Homeland Security/Office of Civil Defense  
221B Chalan Palasyo  
Agana Heights, Guam 96910  
Tel:(671)475-9600; Fax:(671)477-3727  
[www.guamhs.org](http://www.guamhs.org)  
CNMI Emergency Management Office  
Office of the Governor  
Commonwealth of the Northern Mariana Islands  
P.O. Box 10007  
Saipan, Mariana Islands 96950  
(670) 322-9529; (670) 322-7743 FAX  
[www.cnmiemo.gov.mp](http://www.cnmiemo.gov.mp)

National Disaster Management Office  
Office of the Chief Secretary  
P.O. Box 15  
Majuro, Republic of the Marshall Islands 96960-0015  
(011)(692) 625-5181; (011)(692) 625-6896 FAX

National Disaster Control Officer  
Federated States of Micronesia  
P.O. Box PS-53  
Kolonja, Pohnpei - Micronesia 96941  
(011)(691) 320-8815; (001)(691) 320-2785 FAX

Palau NEMO Coordinator, Office of the President  
P.O. Box 100  
Koror, Republic of Palau 96940  
(011)(680) 488-2422; (011)(680) 488-3312

Puerto Rico Emergency Management Agency  
P.O. Box 966597  
San Juan, Puerto Rico 00906-6597  
(787) 724-0124; (787) 725-4244 FAX

Virgin Islands Territorial Emergency Management - VITEMA  
2-C Contant, A-Q Building,  
Virgin Islands 00820  
(340) 774-2244; (340) 774-1491

**Material added to the NTHMP Library,**  
May – June 2008

Note: These, and all our tsunami materials, are included in the online (searchable) catalog at <http://www.dnr.wa.gov/ResearchScience/Topics/Geology/PublicationsLibrary/Pages/washbib.aspx>. Click on SEARCH DATABASE, then type 'tsunamis' in the Subject field to get a full listing of all the tsunami reports and maps in the collection.

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Biscontin, G.; Pestana, J. M., 2006, Factors affecting seismic response of submarine slopes: Natural Hazards and Earth System Sciences, v. 6, no. 1, p. 97-107.

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## Rural students build model tsunami shelters

Mar 29, 2007

<http://oregonstate.edu/dept/ncs/newsarch/2007/Mar07/tsunami.html>

*This is a press release courtesy of OSU News and Communications: Media contact: Rachel Partin; Source: Rozeanne Steckler*

CORVALLIS, Ore. – An Oregon State University engineer is pioneering a project that enables middle school children to design, build and test tsunami shelters in the classrooms of rural and coastal Oregon schools.

The Tsunami Shelter Challenge aims to increase the technology skills of students by enhancing those of their teachers. The two-year program began in January, funded in part by a \$75,000 grant from Symantec Corporation, and was created by Rozeanne Steckler, director of education at the Northwest Alliance for Computational Science and Engineering at OSU, along with engineering professors Mike Bailey and Harry Yeh.

“Symantec shares OSU’s belief that all children should have the opportunity to learn about the wide range of careers in science and technology,” said Lora Phillips, manager of community relations and corporate philanthropy at Symantec. “The Tsunami Shelter Challenge has found a way to present these topics in an engaging and approachable manner, while showcasing technology’s role in creating a safer world.”

Steckler said that science and technology make the biggest impact when their use is directly applicable to students’ lives.

“Since the Indian Ocean tsunami in December, 2004, and Hurricane Katrina in August, 2005, students in Oregon and other coastal states are very aware of the threat that storm surges pose to their communities,” Steckler said.

The purpose of the Tsunami Shelter Challenge is to integrate technology into daily classroom life by providing each teacher with a laptop computer, web camera and classroom projector. Students and teachers will learn computer aided design using a design program called IronCAD, as well as simulation and modeling techniques using custom software written for this project.

The students will then use these tools to design a vertical evacuation shelter capable of withstanding powerful storm surges. Student teams will be responsible for researching, designing and modifying their structures, as well as running simulations, documenting results and repeating the process until the shelter is strong enough to survive disasters.

During the second stage of the program next year, students and teachers will travel to OSU’s Tsunami Wave Basin, the largest facility of its kind in the world, to test their structures with the help of tsunami researchers.

“Students will have the opportunity to see firsthand how their computational models accurately predicted

what happens in an experimental lab, as well as to observe the fundamental role that technology plays at the Tsunami Wave Basin,” Steckler said.

To receive training on their new technology materials, teachers will attend a training workshop at OSU this summer, which will emphasize the importance of gender equity to the program by designing a curriculum that appeals to both boys and girls. A second workshop next year will focus on how to integrate the technology into the teaching of life and physical sciences, math and English.

The multidisciplinary approach that Steckler will emphasize in the later stages of the program is particularly useful to the type of schools participating. These schools have enrollments between 15 and 850 students, and teachers typically teach multiple subjects. Since the technology is a permanent gift to the teachers, Steckler wants them to be able to use it across the curriculum.

“It’s all about choices,” Steckler said. “We want to give more options to the students. We want these rural communities to survive and thrive through education.”

The follow-up story of the tests at the Wave Basin:

“Students conduct tsunami research” ♦

<http://www.kval.com/news/18460054.html>

### Shadowed by the glare of 1906 are faceless future dangers

(continued from page 12)

On this path, we will be forearmed and, as a bonus, enchanted by the natural discoveries that arise from the added probing of our diverse tectonic landscapes.

Without the buzzing of frequent small earthquakes, which keeps the burnt sepia photos from 1906 embedded in our consciousness, we sometimes take nature too lightly. In the Pacific Northwest, as in many other places around the world, we must learn from the past but also look beyond commemoration of past spectacles to keep an objective eye on the geophysical dangers nearer home.

From:

[http://www.seismosoc.org/publications/SRL/SRL\\_77/srl\\_77-4\\_op.html](http://www.seismosoc.org/publications/SRL/SRL_77/srl_77-4_op.html)

Posted: 30 June 2006 ♦

### \*\*Special thanks\*\*

to Paul M. Raynes, Senior Management Analyst II at the Florida Department of Agriculture and Consumer Services’ Division of Food Safety for the FOOD SAFETY IN NATURAL DISASTERS brochure mailed with the printed issue.

## VIDEO-CD-DVD RESERVATIONS

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

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

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

Business Survival Kit for Earthquakes & Other Disasters; What every business should know before disaster strikes (27 min.). Global Net Productions for the Cascadia Regional Earthquake Workgroup, 2003. With CD disaster planning toolkit & other data.

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

Cascadia: The Hidden Fire—An Earthquake Survival Guide (10 min.). Global Net Productions, 2001. A promo for a documentary about the Cascadia subduction zone and the preparedness its existence demands of Alaska, Oregon and Washington states. Includes mention of tsunamis.

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

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

Earthquake...Drop, Cover & Hold (5 min.). Washington Emergency Management Division. 1998.

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

International Tsunami Information Centre, 2004, Tsunami warning evacuation news clips and video footage, UNESCO /IOC International Tsunami Information Centre, 1 **DVD**, 12 min.

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

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

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

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

Ocean Fury--Tsunamis in Alaska (25 min.) VHS and **DVD**. Produced by Moving Images for NOAA Sea Grant College Program, 2004.

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

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

The Quake Hunters (45 min.) A good mystery story,

explaining how a 300-year old Cascadia earthquake was finally dated by finding records in Japan about a rogue tsunami in January 1700

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

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

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

Run to High Ground (14 min.). Produced by Global Net Productions for Washington Emergency Management Division and Provincial Emergency Program of British Columbia, 2004. Features storyteller Viola Riebe, Hoh Tribe. For K-6 grade levels. Have video and **DVD** versions.

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

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

Tsunami: Surviving the Killer Waves (13 min.). 2 versions, one with breaks inserted for discussion time.

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

Tsunami Evacuation PSA (30 sec.). DIS Interactive Technologies for WA Emergency Management Division. 2000.

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

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

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

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

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

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

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



## Infręquently Asked Questions Compiled by Lee Walkling

### **What is the Tamil language term for tsunami?**

Azhii peralai. It means “from the deep...large waves.” “This is the expression for ‘tsunami’ in Tamil, the oldest language in southern India.

For an ancient dialect to have its own phrase for destructive waves triggered by earthquakes, the people of Tamil Nadu likely experienced tsunamis periodically through the centuries, says Halifax scientist Alan Ruffman.”

From: *ScienceDaily*, March 21, 2008;

<http://www.sciencedaily.com/releases/2008/03/080318224409.htm>

### **Can you define *tsunami earthquake*?**

“Tsunami earthquakes” are a class of rare, but devastating slow earthquakes that create tsunami waves much larger than expected from their initial magnitudes. Because these events rupture more slowly than standard “strong” earthquakes, their resultant shaking is much weaker, while they rupture much longer than similarly sized events.

From: *Eos* (American Geophysical Union Transactions), v. 88, no. 52, pt. 2, Supplement, p. F1837-1838.

### **How many new TsunamiReady sites have been announced in fiscal 2008?**

Ten.

Alaska: Valdez

California: Half Moon Bay, Imperial Beach, Laguna Beach, Orick, Samoa, San Mateo County, Seal Beach

Florida: Naval Station Mayport

North Carolina: New Hanover County

From: <http://www.weather.gov/stormready/tsunamiready/ts-communities.htm> ♦

#### Reminder

The Washington Department of Natural Resources recently redesigned their websites and changed their web addresses. If you had links or bookmarks to *TsuInfo Alert* newsletter, they should be changed to:

<http://www.dnr.wa.gov/ResearchScience/Topics/GeologyPublicationsLibrary/Pages/tsuinfo.aspx>



# Helpful Hints

Sanitize all fresh fruit and vegetables with the sanitizing solution (below) before eating.

Clean and sanitize any possibly contaminated but intact food containers with soap, water, and the sanitizing solution (below) before opening.

If you evacuate your home, take your pets with you or place them in a secure boarding facility.

Discard food from freezers and/or refrigerators if the food temperature is over 40 degrees Fahrenheit for 2 hours or more.

Keep freezer and refrigerator doors closed while power is off.

Use dry ice if available to keep foods cold.

#### Drinking Water:

Boil for 1 minute at a rolling boil and cool, or add 15 drops of household bleach per gallon of water. Allow to stand for 30 minutes before using.

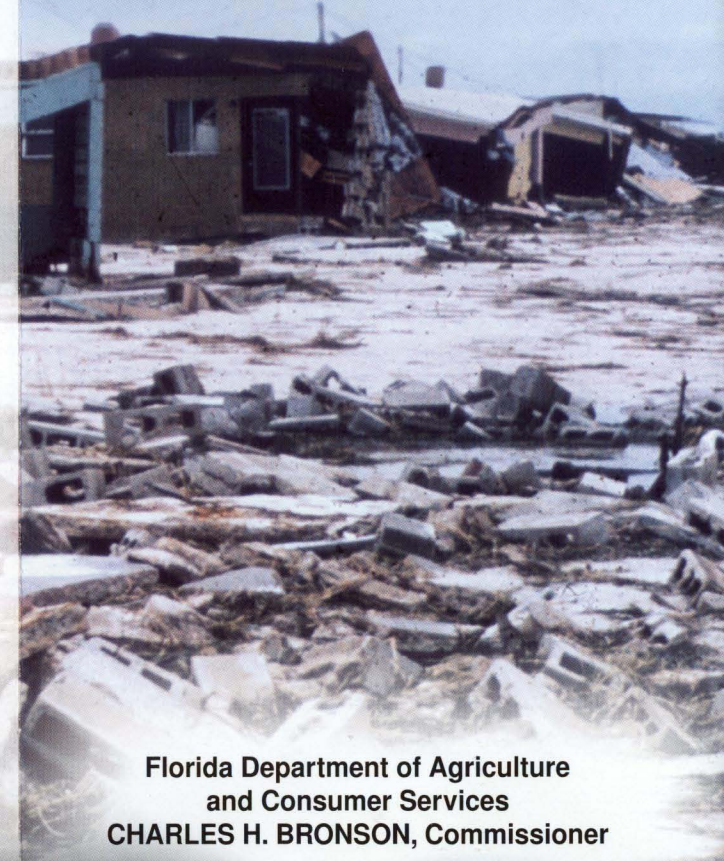
#### Sanitizing Solution:

Add 1 tablespoon of household bleach per gallon of water. Allow to stand for 30 minutes before using.

For more information call 1-800-535-4555 or visit [www.fsis.usda.gov](http://www.fsis.usda.gov) and link to frequently asked questions.

Florida Department of Agriculture and Consumer Services  
Division of Food Safety  
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# Food Safety in Natural Disasters



Florida Department of Agriculture  
and Consumer Services  
CHARLES H. BRONSON, Commissioner

Tornadoes • Floods • Fires • Electrical Outages • Hurricanes



# Emergency Food and Water Supplies

During emergencies you may not be able to obtain water and food.

During emergencies your home food and water supplies may be damaged, deteriorated, or destroyed.

Potable (safe drinking) water is the most critically important food item.

Use only potable water for:

- Drinking
- Cooking
- Making hot or cold beverages
- Making baby formula
- Brushing teeth
- Taking medicines
- Washing wounds

Canned or bottled (shelf stable) foods are best for emergency food supplies.

Bottled water is best for emergency water supplies.

## Never

- ⊗ Drink water from an unknown source or of unknown quality and safety.
- ⊗ Drink tap water during or after a disaster until after water system has been cleared.
- ⊗ Eat hot or cold perishable foods that have been kept for longer than 2 hours at room temperature.
- ⊗ Put food in a non-food container or one used for anything else, such as chemicals.
- ⊗ Eat frozen foods that have warmed to more than 40 degrees Fahrenheit.
- ⊗ Eat food from a can that is swollen or from a jar with a swollen lid.
- ⊗ Eat foods from damaged or previously opened containers or packages.
- ⊗ Eat fresh fruit or vegetables that are not sanitized prior to eating during an emergency situation.
- ⊗ Try to save food in jars or flexible packages if affected by flood water.

## Always

- Prepare in advance with emergency food and water supplies and prescription drugs.
- Store emergency supplies cool, high, and dry until needed.
- Use and replace emergency supplies annually.
- Discard all damaged food, drugs and cosmetics, and any of these items moistened by flood waters.
- Wash and sanitize food containers before opening or drinking from them.
- Clean and sanitize all food contact surfaces and utensils.
- Use a thermometer to ensure refrigerators and freezers are working properly.
- Use household bleach to disinfect water and sanitize food containers and fresh produce.
- Discard severely rusted cans of food.
- Remember to drink an adequate amount of safe drinking water.
- Keep your personal hygiene items dry.

Hurricanes • Tornadoes

Floods

Fires

Electrical Outages