



Contents

Volume 5, Number 2, April 2003

Special Features

Tsunamis in Great Britain--Past, Present, and Future?
Tsunami 'Turned Britain into an Island Overnight', by David Derbyshire 7
Tsunamis in England, by David Long.....8
Mega-Tsunami Report from England.....9
How to Demonstrate an Impact Tsunami..... 10
Additional British Tsunami/Earthquake Links.....10

Departments

Tsunami Program News..... 1
Hazard Mitigation News 5
Workshops, Etc.....6
Infrequently Asked Questions 11
Websites 13
Conferences/Training/Seminars.....13
New Tsunami Mitigation Materials Added to the Library14
Video Reservations 17
Directories 19

TSUNAMI PROGRAM NEWS

**NOAA's National Weather Service Presents
"TsunamiReady" Certification to Homer, Alaska**
by Tracey Lake, 907-271-4767

<http://www.nws.noaa.gov/pa/homer-alaska.html> reprinted with permission

Homer, AK, Jan. 27 – NOAA's National Weather Service today honored Homer, Alaska, with a TsunamiReady designation. The community was also recognized for achieving the StormReady designation during a ceremony held in Homer.

"Today we are making history by honoring Homer for establishing a way to better protect citizens from tsunamis and severe weather threats," said NWS Alaska Region Director Richard Przywarty. "These communities have demonstrated a strong commitment to putting the infrastructure and systems in place that will save lives and protect property in the event of these damaging and hazardous events."

The TsunamiReady and StormReady programs are voluntary preparedness programs that establish guidelines for communities to follow for tsunami and severe weather readiness. TsunamiReady and StormReady communities have adopted the requirements set by NWS in the areas of communications, warning reception and dissemination, public outreach and awareness programs and administrative planning.

To receive the TsunamiReady and StormReady designations, Homer successfully met the readiness criteria and was approved by an advisory board made up of local emergency managers, representatives from the Alaska Division of Emergency Services and the NWS. Official Tsunami-Ready and StormReady signs will be posted on roadsides entering the community.

"Preparation and advance warning are vital factors in tsunami readiness. Citizens in a seaside community, such as Homer, which is in an area prone to earthquakes, must understand the importance of moving to high ground or inland immediately in case a tsunami occurs," said Paul Whitmore of the West Coast/Alaska Tsunami Warning Center. "When disasters occur, a StormReady or TsunamiReady community will be better prepared for its citizens."

(continued, p. 3)

The Richard H. Hagemeyer Tsunami Mitigation Award

The National Hazard Mitigation Program announces a call for nominations for this year's Richard H. Hagemeyer Tsunami Mitigation Award. The award recognizes the project or program that most exemplifies building tsunami-resistant U.S. coastal communities. Groups or individuals concerned with tsunami mitigation are eligible for the award. Nominations are encouraged for projects and programs that address one or more of the following areas: improving tsunami education; providing tools and training for construction, land use planning, and/or emergency planning and response in tsunami inundation zones; creating and strengthening links within and among coastal communities and states to support long-term tsunami mitigation; improving the tsunami mitigation science infrastructure; or encouraging local innovation and sponsorship of tsunami mitigation programs.

Nomination forms and supporting materials must be received by September 1, 2003. Complete information is available at <http://www.pmel.noaa.gov/tsunami-hazard/Hagemeyeraward.htm>.

TsuInfo Alert

is 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).

It is assembled by
Lee Walkling, Library Information Specialist and
Connie J. Manson, Senior Library Information Specialist,
and is published bi-monthly by the
Washington Department of Natural Resources, Division of Geology and Earth Resources.

This publication is free upon request and is available in print (by surface mail),
electronically (by e-mail), and at <http://www.wa.gov/dnr/htdocs/ger/tsuinfo/index.html>

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

Washington Department of Natural Resources
Division of Geology and Earth Resources

P.O. Box 47007

Olympia, WA 98504-7007

ph: 360/902-1472 or 360/902-1473

fax: 360/902-1785

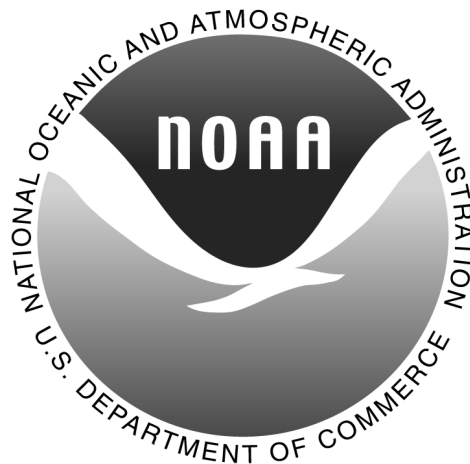
e-mail: lee.walkling@wadnr.gov or connie.manson@wadnr.gov

The views expressed herein are those of the authors and not necessarily those
of NOAA, the Washington Department of Natural Resources, or other sponsors of
TsuInfo Alert.



WASHINGTON STATE DEPARTMENT OF
Natural Resources

Doug Sutherland - Commissioner of Public Lands



Oregon Senate Proposes Tsunami Legislation

with thanks to

Mark Darienzo, Oregon Emergency Management

Senate Bill 650 is working its way through the 72nd Oregon Legislative Assembly, 2003 Regular Session. The Bill (reprinted below) requires lodging facilities to post tsunami information and establishes a uniform tsunami warning signal.

Typographic note: Matter underlined in an amended section is new. Matter ~~lined out~~ is existing law to be omitted. New sections are underlined.

LC 2396--Senate Bill 650

Sponsored by Senator MORRISETTE; Senators MESERLE, C STARR, Representatives BROWN, HOPSON, KRIEGER, MARCH, VERGER (at the request of Joint Interim Uniform Tsunami Response Planning Task Force)

SUMMARY

The following summary is not prepared by the sponsors of the measure and is not a part of the body thereof subject to consideration by the Legislative Assembly. It is an editor's brief statement of the essential features of the measure as introduced.

Requires Office of Emergency Management to establish tsunami warning information, evacuation plans and uniform tsunami warning signal. Requires transient lodging facilities located within tsunami inundation zones to post tsunami warning information and evacuation plans.

A BILL FOR AN ACT

Relating to tsunami warning system. Be It Enacted by the People of the State of Oregon:

SECTION 1. (1) As used in this section: (a) 'Transient lodging facility' means a hotel, motel, inn, condominium, any other dwelling unit or a public or private park that is made available for transient occupancy or vacation occupancy as those terms are defined in ORS 90.100. (b) 'Tsunami inundation zone' means an area of expected tsunami inundation, based on scientific evidence that may include geologic field data and tsunami modeling, determined by the governing board of the State Department of Geology and Mineral Industries, by rule, as required by ORS 455.446 (1)(b) and (c). (2) A transient lodging facility that is located in a tsunami inundation zone shall post tsunami warning information and evacuation plans developed under subsection (3) of this section. (3) The Office of Emergency Management shall adopt, by rule, tsunami warning information and evacuation plans required under subsection (2) of this section to be posted by a transient lodging facility located in a tsunami inundation zone. (4) A transient lodging facility that is: (a) A hotel, motel, inn, condominium or other similar facility shall post the tsunami warning information and evacuation plans in each guest room. (b) A single-family dwelling unit shall post the tsunami warning information

and evacuation plans in at least one prominent location in the dwelling unit.

(c) A public or private park shall post the tsunami warning information and evacuation plans in at least one prominent location, such as the office, the pay station or another central location in the park at which park information is distributed to park users.

SECTION 2. The Office of Emergency Management shall adopt, by rule, a uniform tsunami warning signal, including specification of the type, duration and volume of the warning signal and the location of warning signal delivery devices, for use on the Oregon coast.

SECTION 3. (1) The requirements under section 1 (2) and (4) of this 2003 Act to post tsunami warning information and evacuation plans apply to a transient lodging facility on or after October 1, 2004.

(2) The Office of Emergency Management shall adopt the administrative rules required by sections 1 (3) and 2 of this 2003 Act not later than July 1, 2004.

Results of the August-September 2001 Washington State Tsunami Survey

The Institute of Geological & Nuclear Sciences science report 2002/17 by D. Johnston, D. Paton, B. Houghton, J. Becker, and G. Crumbie (Institute of Geological & Nuclear Sciences Limited, Lower Hutt, New Zealand, June 2002) studied 3 of the 4 phases of hazard preparedness: improving communities' hazard knowledge and risk perception, promoting intentions to adopt preparatory measures, and converting intentions into actual behavior.

"The overall conclusion of this study is that the hazard education program to date has been successful in terms of promoting knowledge and awareness of the tsunami hazard amongst coastal Washington residents. Preparedness, perhaps predictably, is lagging behind awareness at this time. The survey points to the need for some additional strategies to deal with the visitor population and the need to augment existing program with initiatives that translate this awareness into enhanced preparedness." (p. vi)

Tsunami Forecast Guidance Workshop

from Frank González, Leader, PMEL Tsunami Program;
Director, TIME Center NOAA/PMEL, Seattle

A Workshop on Far-Field Tsunami Forecast Guidance was organized and held on 21 January 2003 by the NOAA Center for Tsunami Inundation Mapping Efforts (TIME), at the Pacific Marine Environmental Laboratory (PMEL). Participants included the Directors of the NOAA Tsunami Warning Centers, and TIME Center and University of Hawaii scientists actively collaborating on this problem. The work is aimed at improving the speed and reliability of tsunami warnings --a major goal of the U.S. National Tsunami Hazard Mitigation Program. The strategy is to integrate real-time tsunami measurements with numerical

modeling technology to provide an interpretive tool for emergency management and Tsunami Warning Center decision-makers. Discussions focussed on appropriate scientific methodologies and on practical development, implementation and testing strategies. A Workshop Report is in preparation.

Washington School Education Assessment

submitted by Dave Nelson
 Emergency Management Division
 Camp Murray, WA 98430-5122
 Telephone (253)512-7075; Fax (253)512-7207
 Email: d.nelson@emd.wa.gov

The Washington State Emergency Management Earthquake Program Division has entered into a contract with David Johnston, PhD, from the Institute of Geological & Nuclear Sciences Limited to continue to survey students and select population bases of Pacific County and Grays Harbor County.

Overview of the Survey

This study is designed to provide information concerning various aspects of hazard awareness, perceptions, and preparedness in a sample of Washington school children.

The following areas will be addressed:

- * risk perceptions,
- * psychological factors (level of hazard-related upset in children and parents, coping ability),
- * physical preparedness (both factual and behaviorally-based),
- * exposure to previous hazards,
- * exposure to previous hazards education programs,
- * hazard-related communication with parents and teachers,
- * information searching on the part of the child,
- * perceptions of social support.

The primary purpose of this survey is to gather information concerning children's current levels of awareness, risk perceptions, and physical and emotional preparedness that can then be used to maximize the effectiveness of current educational programs.

Thus, the goals of this survey are:

- * To document the current level of awareness and perceptions of hazards.
- * To assess discrepancies between fact and perceptions.
- * To document the effectiveness of current educational programs.

Method -- Participants and Setting --Phase 1 (2003)

Several schools will be targeted to take part in the survey and representing a range of demographics and areas (both urban and rural). The selection of schools is open but at least four should be selected in each of phase 1. Approximately 100 children in the 7th Grade from each school will be invited to participate.

Washington State Tsunami Study – Focus Groups Phase 2

Introduction

A survey of over 300 residents' and visitors' (non-residents) perceptions of tsunami hazards was carried out along the west coast of Washington State during August and September 2001. The study was concerned with quantifying people's understanding of tsunami hazards on the Washington coast, their knowledge regarding the Washington State tsunami warning system, their preparedness to deal with tsunami activity, and providing information that could be used for baseline measurement.

Focus Groups

Phase 2 of the research is due to commence 26 February 2003 and will consist of a series of focus groups in at least two communities. The aim of the focus groups is to explore residents' attitudes and ideas of tsunami risk and preparedness. Understanding these attitudes is also important to our research. These issues can be investigated more thoroughly in a group discussion.

There will be three types of groups with 6 to 15 people in each group and the meetings will last about 1 hour.

Coastal Area (e.g. Ocean Shores, Long Beach etc)	Inner Harbor Area (e.g. Hoquiam, Aberdeen, Raymond etc).
Business group Volunteers/community group Seniors group	Business group Volunteers/community group Seniors group

HAZARD MITIGATION NEWS

Landslides on 30 December Cause Two Tsunamis in Italy

Reprinted with permission from the *Bulletin of the Global Volcanism Network* (v. 27, no. 12, Dec. 2002)

Stromboli, Aeolian Islands, Italy (38.79°N, 15.21°E; summit elev. 926 m)

Following heightened seismicity during June-July 2002 that culminated in an explosion on 24 July (*Bulletin of the Global Volcanism Network*, v. 27, no. 7), major activity lessened until late December.

On 28 December, an effusive eruption started at the base of Crater 1 of the NE Crater in the summit area. This eruption ended on 29 December and a helicopter-borne thermal camera survey that day revealed three lava flows that had spread in the eastern Sciara del Fuoco and had reached the sea. Along the coast, the joined flows were ~300 m wide, but were no longer being fed.

Visibility improved on 30 December, when a new survey found an eruptive fissure running NE. The fissure started from the base of Crater 1 at ~700 m elevation and spread down to ~600 m elevation, along a length of ~200 m. On 30 December observers saw a ~200-m-long lava flow emitted from the base of the fissure, spreading in the upper Sciara del Fuoco into a small depression.

Landslides and tsunami. On 30 December at 1315 and 1322 two landslides formed along the Sciara del Fuoco. They reached the sea accompanied by fine (0.1 mm grain-size) wet dust falling on the SE flank of the island (from rock collisions during the landslides). The volume of the first landslide was estimated at $\sim 6 \times 10^6 \text{ m}^3$ of rock while the second was smaller at $\sim 5 \times 10^6 \text{ m}^3$ of rock. These landslides detached the lava from the 28 December eruption along the slope together with a large portion of the ground below.

The large volume of rock crashing into the sea caused two tsunamis, each with waves several meters high. The waves spread onto the villages of Stromboli and Ginostra damaging buildings and boats and injuring several people (according to news reports, six people were evacuated by helicopter and taken to two hospitals on Sicily). Large waves were reported on the northern coast of Sicily, 60 km S of Stromboli. The two separate landslides were formed from two distinct bodies of rock, and left a ridge on the Sciara del Fuoco wall between them. This ridge may collapse in the future; its volume is estimated to be similar to that of the first landslide.

As of 6 January 2003, the effusive eruption and thin lava flows continued along the Sciara del Fuoco. Two vents located at ~500 m and ~300 m elevation in the middle of the Sciara del Fuoco were feeding two narrow flows that merged and reached the sea. Occasional small landslides from the unstable walls of the Sciara covered the lava flows with a thin talus. Concern over another major landslide had diminished due to several small-volume rockfalls from the

walls of the depression. The summit craters had not shown any explosive activity since the start of the eruption on 28 December, and no earthquakes were recorded by the indigenous seismic network. Two shocks recorded by INGV seismic stations were directly related to the spreading of the two landslides on the Sciara del Fuoco.

Previous tsunamis at Stromboli occurred in 1930, 1944, and 1954. These were related either to paroxysmal eruptive activity, to landslides along the Sciara del Fuoco, or to pyroclastic flows, but not associated with lava flow venting.

Background. Spectacular incandescent nighttime explosions at Stromboli volcano have long attracted visitors to the "Lighthouse of the Mediterranean." Stromboli, the NE-most of the Aeolian Islands, has lent its name to the frequent mild explosive activity that has characterized its eruptions throughout much of historical time. The small, 926-m-high island of Stromboli is the emergent summit of a volcano that grew in two main eruptive cycles, the last of which formed the western portion of the island. The Neostromboli eruptive period from about 13,000 to 5,000 years ago was followed by formation of the modern Stromboli edifice. The active summit vents are located at the head of the Sciara del Fuoco, a prominent horseshoe-shaped scarp formed about 5,000 years ago as a result of slope failure that extends to below sea level. The modern volcano has been constructed within this scarp, which funnels pyroclastic ejecta and lava flows to the NW. Essentially continuous mild strombolian explosions, sometimes accompanied by lava flows, have been recorded at Stromboli for more than a millennium.

Information Contacts: Sonia Calvari, Istituto Nazionale di Geofisica e Vulcanologia (INGV); Sezione di Catania (URL: <http://www.ct.ingv.it/>; Email: calvari@ct.ingv.it); Stromboli On-Line (URL: <http://www.stromboli.net/>).

Global Volcanism Program, Department of Mineral Sciences, National Museum of Natural History, Room E-421, Smithsonian Institution, Washington DC 20560-0119
from: <http://www.volcano.si.edu/reports/bulletin/content.cfm?issue=2712&display=complete>

See also: <http://www.volcano.si.edu/world/volcano.cfm?vnum=0101-04>

New Applied Disaster and Emergency Studies Program

The recently established "Applied Disaster and Emergency Studies" (A-DES) program at Brandon University in Brandon, Manitoba, uses a liberal arts and sciences approach to foster an appreciation for the interdisciplinary nature of the hazards and disaster field.

The program is designed to be completed in four academic years through a highly interactive, practically-oriented curriculum. Students will gain a solid theoretical and applied foundation in the natural sciences, emphasizing elements of modern society and the environment as they pertain to risks, disaster, and emergency responses, as well as mitigation, organizational development, and resources

management.

This program is available on-line through the university's distance education program as well. Detailed information, including eligibility, course descriptions, and a list of

faculty, is available from A-DES, Faculty of Science, Brandon University, Brandon, Manitoba, R7A 6A9, Canada; (204) 727-9768; e-mail: ades@brandonu.ca.

from: Disaster Research 385, March 20, 2003

WORKSHOPS, ETC.

International Research Committee on Disasters

The International Research Committee on Disasters (IRCD), a group of sociologists active in disaster policy and administrative research, would like to call your attention to a number of committee updates ranging from membership renewal at special rates, new publications, web-based referral service, to an IRCD-supported electronic web-based journal, "Contemporary Disaster Review."

Readers who are interested in either submitting items to Contemporary Disaster Review or becoming a reviewer, should contact Hank Fischer of Millersville University at hank.fischer@millersville.edu.

from: Disaster Research 385, March 20, 2003

Request for Public Comments

In December 2002, the Partnership for Public Warning (PPW) convened a meeting of public warning experts from government, industry, academia and the nonprofit community. The purpose of this meeting was to draft a national strategy for improving the nation's public warning capability.

PPW is now seeking public comments on the draft strategy. All interested parties are welcome to participate in this process. Comments must be signed in order to be considered and must include contact information for the commentator(s). It is PPW's intent to make the comments available for public inspection at the end of the process. However, upon receipt of a written request, PPW will keep the identity of the commentator confidential.

Comments are due no later than Friday, April 18, 2003. The draft document may be found, along with instructions for sending comments, at <http://www.partnershipforpublicwarning.org/ppw/natlstrat.html>. You may also contact PPW directly at Mail Stop N655, 7515 Colshire Drive, McLean, VA 22102-7508; (703) 883-2745.

from: Disaster Research 384, February 28, 2003

Student Volunteers Wanted!

The Canadian Center for Emergency Preparedness (CCEP) is inviting applications from qualified volunteers to participate in the 13th World Conference on Disaster Management (WCDM) to be held June 22-25, 2003, in Toronto, Ontario. WCDM will provide opportunities for training and networking among emergency management, business continuity, emergency health care, risk assessment, and security professionals world-wide, and for the organizations that supply and service these professions. Volunteers receive complimentary conference registration in return for their efforts.

Full details for interested students are posted at <http://www.wcdm.org> (click on "volunteer").

6 *TsuInfo Alert*, v. 5, no. 2, April 2003

from: Disaster Research 384, February 28, 2003

Papau New Guinea 2002 earthquake/tsunami website announced

On February 11, José Borrero announced the webpage detailing the recent surveys of the September 9, 2002 Papua New Guinea earthquake and tsunami (<http://www.usc.edu/dept/tsunamis>). Click on the world map, then click on PNG 2002. Or type in the direct URL: <http://www.usc.edu/dept/tsunamis/PNG2002/>.

Hazard Mitigation Listserv

HAZARDMIT, a hazard mitigation listserv is a moderated open forum for hazard mitigation practitioners from around the world to share information on hazard mitigation practices and programs.

The list contains several hundred subscribers from a variety of backgrounds. To subscribe, go to <http://www.mitigation.com/mailman/listinfo/hazardmit>.

from: Disaster Research 383, February 14, 2003

Spring Internship Available

There is a good possibility of a spring internship opportunity with the Federal Emergency Management Agency (FEMA)'s Emergency Management Higher Education Project. Work would involve helping develop and participating in the 6th Annual Emergency Management Higher Education Conference, to be held June 4-5, 2003. For complete details students may contact Wayne Blanchard at the Emergency Management Institute, National Emergency Training Center, FEMA, 16825 South Seton, N 430, Emmitsburg, MD 21727; (301) 447-1262; e-mail: wayne.blanchard@fema.gov.

from: Disaster Research 384, February 28, 2003

April Is...

**Tsunami Awareness Month in Hawaii
and
Disaster Preparedness Month in Washington**

May 4-10, 2003 Is...

**Emergency Preparedness Week in Canada
(www.pep.bc.ca/index.html)**

TSUNAMIS IN GREAT BRITAIN-- PAST, PRESENT, AND FUTURE?

Editor's note: Because *Tsunami Alert* co-editor Lee Walkling will soon be wandering the gardens of Devonshire, she decided to make this "The England Issue." Yes Virginia, England *has* been struck by tsunamis in the past and could be in the future!

TSUNAMI 'TURNED BRITAIN INTO AN ISLAND OVERNIGHT'

by David Derbyshire and Roger Highfield

(Filed: 13/09/2001)

A massive underwater landslide off Norway 8,000 years ago triggered a series of 30 ft waves that may have turned Britain into an island virtually overnight.

The waves swept over eastern Scotland, scattered settlements of hunter gatherers and may have breached the land bridge between England and the Continent.

Although sea levels were encroaching on the bridge, the tsunami may have hastened the process, the British Association for the Advancement of Science conference in Glasgow heard this week.

For the full news report and map: <http://www.telegraph.co.uk/connected/main.jhtml?xml=/connected/2001/09/13/ecnba3.xml>

Evidence for the tsunami comes from a 10-inch wide band of sediment found in the cliffs of east and north Scotland and in Norway. Radiocarbon dating showed it was dumped about 7,800 years ago.

Prof David Smith, a geologist at Coventry University, said the appearance of the sediment coincided with a massive landslide on the sea floor at Storegga, Norway.

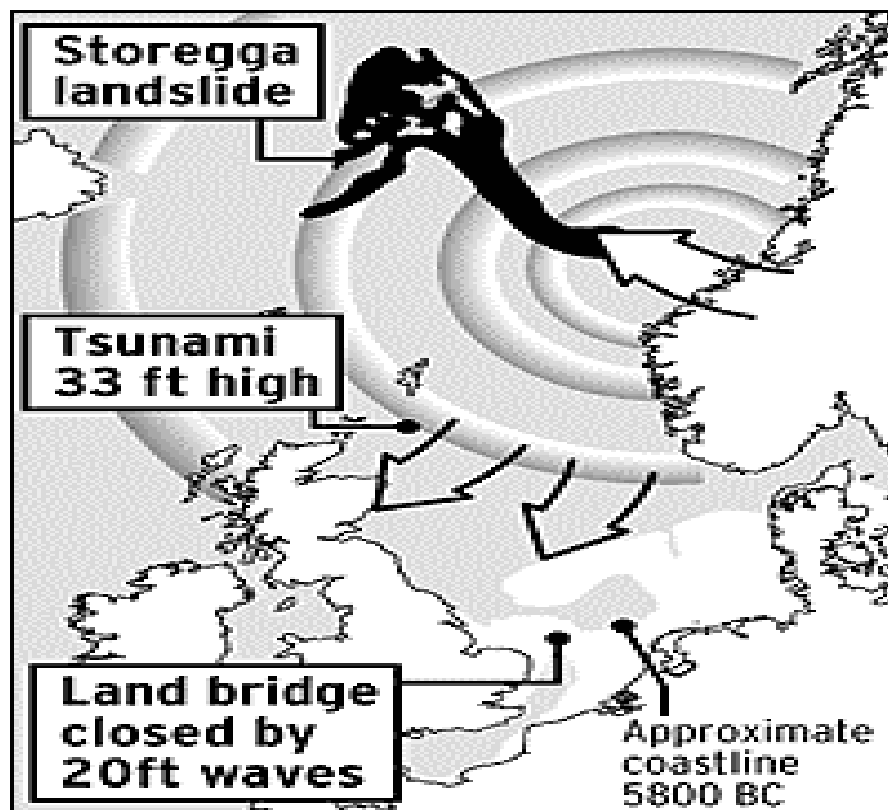
Sediments that had been swept into the sea over thousands of years by glaciers suddenly slipped, covering an area of sea floor as big as Scotland. The cause of the landslide is unknown but the movement sent ripples across the North Sea that hit Britain, Norway and Denmark.

Sea levels were several yards lower than this week and Britain was connected to Holland and Denmark by a low-lying bridge of land. The waves would have swept over the land bridge, possibly cutting off Britain temporarily. The waves threw sediment up around 20ft higher than sea level.

Prof Smith said: "When a tsunami strikes there are often only a few waves. In 5,800 BC there were probably three or four big waves reaching the coast of Scotland." At the time, sea levels were rising as ice sheets and glaciers retreated. Without the weight of ice pushing Scotland down, northern Britain was rising.

He added: "It was about the same time that Britain was beginning to be isolated from the European mainland. Obviously it may have hastened the separation from the mainland."

Archaeologists discovered the site of a hunting community at Inverness from the same period where a wave had scattered tools over a wide area and then covered them with sediment.



© Copyright of Telegraph Group Limited 2003.

from:

<http://www.telegraph.co.uk/connected/main.jhtml?xml=/connected/2001/09/13/ecnba3.xml>

TSUNAMIS IN ENGLAND

by

David Long, British Geological Survey,
email 11 March 2003

Within England there is historical written evidence for the Lisbon tsunami event of 1755 reaching the southwestern corner of England (St Mounts Bay) and geological evidence for tsunami sedimentation within shallow coastal lakes in the Scilly Isles. Seiches associated with the earthquake were extensively reported throughout the UK. At the other end of England there is geological evidence that the tsunami associated with the Storegga Slide (c7200 C14 years BP) deposited sediments within coastal sequences close to Lindisfarne, northern Northumberland. This is the southern limit of extensive geological evidence along the eastern and northern coasts of Scotland for this tsunami. Run-ups in excess of 20m have recently been confirmed at the heads of inlets in the Shetland Isles.

The rarity of such events probably explains the absence of inundation maps. Repetition of the Storegga Slide is limited to at most once every interglacial.

Research into these events is currently being undertaken by Dr. A. G. Dawson (Coventry University) and Dr. S. Bondevik (Tromsø University, Norway) particularly examination of the evidence on Shetland, the northernmost part of the United Kingdom.

Here follows a reference list that probably includes the majority of studies:

- Dawson, A. G.; Foster, I. D. L.; Shi, Shaozhong; Smith, D. E.; Long, David, 1991, **The identification of tsunami deposits in coastal sediment sequences: Science of Tsunami Hazards**, v. 9, no. 1, p. 73-82.
- Dawson, A. G.; Long, David; Smith, D. E., 1988, The Storegga slides--Evidence from eastern Scotland for a possible tsunami: *Marine Geology*, v. 82, no. 3-4, p. 271-276.
- Dawson, A. G.; Long, David; Smith, D. E., 1991, Tsunamis: Disaster Management, v. 3, no. 3, p. 155-160.
- Dawson, A. G.; Long, David; Smith, D. E.; Shi, Shaozhong; Foster, I. D. L., 1993, Tsunamis in the Norwegian Sea and North Sea caused by the Storegga submarine landslides. In Tinti, Stefano, editor, *Tsunamis in the world--Fifteenth International Tsunami Symposium, 1991*: Kluwer Academic Publishers Advances in Natural and Technological Hazards Research 1, p. 31-42.
- Dawson, A. G.; Shi, S.; Smith, D. E.; Long, David, 1993, Geological investigations of tsunami generation and long-term tsunami frequency. In Merriman, P. A.; Bro-witt, C. W. A., editors, *Natural disasters--Protecting vulnerable communities*: London, Thomas Telford, p. 140-146.
- Dawson, A. G.; Smith, D. E.; Long, D., 1989, Early Flan-drian tidal surges in the Tay estuary, Scotland [letter]: *Journal of Quaternary Science*, 4, p. 273.
- Dawson, A. G.; Smith, D. E.; Long, D., 1990, Evidence for a tsunami from a mesolithic site in Inverness, Scotland: *Journal of Archaeological Science*, v. 17, no. 5, p. 509-512.
- Dawson, A. G.; Smith, D. E.; Long, D., 1990, Tsunami risk in northwestern Europe [abstract]: *Annales Geophysicae Special Issue, European Geophysical Society XV General Assembly*, p. 333.
- Dawson, S.; Smith, D. E.; Ruffman, A.; Shi, S., 1996, The diatom biostratigraphy of tsunami sediments: examples from Recent and Middle Holocene events: *Physics and Chemistry of the Earth*, v. 21, no. 1-2, p. 87-92.
- Dawson, S.; Smith, D. E., 2000, The sedimentology of middle Holocene tsunami facies in northern Sutherland, Scotland, UK.: *Marine Geology*, v. 170, no. 1-2, p. 69-79.
- Harbitz, C., 1992, Model simulations of tsunamis generated by the Storegga Slides: *Marine Geology*, v. 104, p. 1-21.
- Henry, R. F.; Murty, T. S., 1992, Model studies of the effects of the Storegga slide tsunami: *Science of Tsunami Hazards*, v. 10, no. 1, p. 51-62.
- Long, David, 2000, The Storegga slide and its impact on Scotland: *International Landslide Research Group Newsletter*, v. 14, no. 5, Dec. 12, 2000.
- Long, David; Dawson, A. G.; Smith, D. E., 1989, A Holo-cene example of the tsunami risk to northwestern Europe [abstract]: *Terra Abstracts*, 1, p. 108.
- Long, David; Dawson, A. G.; Smith, D. E., 1989, Tsunami risk in northwestern Europe--A Holocene example: *Terra Nova*, v. 1, no. 6, p. 532-537.
- Long, David; Holmes, Richard, 2001, Submarine landslides and tsunami threat to Scotland. In U.S. National Oceanic and Atmospheric Administration, *Proceedings of the International Tsunami Symposium 2001*, and, *Review of the U.S. National Tsunami Hazard Mitigation Program*: U.S. National Oceanic and Atmospheric Administration Pacific Marine Environmental Laboratory, p. 355-366.
- Long, David; Smith, D. E.; Dawson, A. G., 1989, A Holo-cene tsunami deposit in eastern Scotland: *Journal of Quaternary Science*, v. 4, no. 1, p. 61-66.
- Smith, D. E.; Cullingford, R. A.; Haggart, B. A., 1985, A major coastal flood during the Holocene in eastern Scotland: *Eiszeitalter und Gegenwart*, v. 35, p. 109-118.
- Smith, D. E.; Dawson, A. G.; Long, D., 1990, Tsunami waves in the North Sea: *New Scientist*, no. 1728, 4th August 1990, p. 30-33.

**MEGA-TSUNAMI REPORT FROM ENGLAND--
MEGA-TSUNAMI TO DEVASTATE U.S. COASTLINE**

Benfield Greig Hazard Research Centre Press Release

from: <http://www.bghrc.com/>

Reprinted with permission from Patrick Edwards, University College London Media Relations

A tsunami wave higher than any in recorded history threatens to ravage the US coastline in the aftermath of a volcanic eruption in the Canary Islands, UK and US scientists will report today. Locations on both African and European Atlantic coastlines--including Britain--are also thought to be at risk.

The new research, a collaboration between Dr. Simon Day of the Benfield Greig Hazard Research Centre at UCL and Dr. Steven Ward of the University of California, reveals the extent and size of the mega-tsunami, the consequence of a giant landslide that may be triggered by a future eruption of the Cumbre Vieja volcano.

Previous research by Simon Day and colleagues predicted that a future eruption would be likely to cause a landslide on the western flank of Cumbre Vieja. A block of rock approximately twice the volume of the Isle of Man would break off, travelling into the sea at a speed of up to 350 kilometres per hour. The disintegration of the rock, this earlier study predicted, would produce a debris avalanche deposit extending 60 kilometres from the island. The energy released by the collapse would be equal to the electricity consumption of the entire United States in half a year.

The new model--which provides further insights into the consequences of the collapse--predicts that the landslide would create an exceptionally large tsunami with the capability to travel great distances and reaching speeds of up to 800 kilometres per hour. Immediately after Cumbre Vieja's collapse a dome of water 900 metres high and tens of kilometres wide will form only to collapse and rebound. As the landslide continues to move underwater a series of wave crests and troughs are produced which soon develop into a tsunami 'wave train' which fuels the waves progress. After only 10 minutes, the model predicts, the tsunami will have moved a distance of almost 250 kilometres.

The greatest effects are predicted to occur north, west and south of the Canaries. On the West Saharan shore waves are expected to reach heights of 100 metres from crest to trough and on the north coast of Brazil waves over 40 metres high are anticipated. Florida and the Caribbean, the final destinations in the North Atlantic to be affected by the tsunami, will have to brace themselves for receiving 50 metre high waves--higher than Nelson's column in London, some 8 to 9 hours after the landslide. Towards Europe waves heights will be smaller, but substantial tsunami waves will hit the Atlantic coasts of Britain, Spain Portugal and France.

For tsunamis striking flat-lying coastline regions such as Florida, calculating the inundation distance--the extent to which water penetrates inland taking the form of fast moving floods after waves break--is crucial to assessing potential damage. Dr. Day and his colleagues estimate inundation distances in the region of several kilometres from the coast. Accurate estimates of the scale of economic loss are yet to be made but are thought to be in the multi trillion USD range.

Placing the results of the Cumbre Vieja model in its wider context, Dr. Simon Day, and Post-doctoral Research Fellow at UCL, said:

"Anyone planning a holiday to the Canary Islands and the islanders themselves need not panic. Cumbre Vieja is not erupting so the short-term and medium-term risks are negligible."

Dr. Day continued: "The collapse will occur during some future eruption after days or weeks of precursory deformation and earthquakes. An effective earthquake monitoring system could provide advanced warning of a likely collapse and allow early emergency management organisations a valuable window of time in which to plan and respond."

"Eruptions of Cumbre Vieja occur at intervals of decades to a century or so and there may be a number of eruptions before its collapse. Although the year to year probability of a collapse is therefore low, the resulting tsunami would be a major disaster with indirect effects around the world. Cumbre Vieja needs to be monitored closely for any signs of impending volcanic activity and for the deformation that would precede collapse."

For further information, contact: Patrick Edwards, Head of Media Relations, Tel: 020 7679 1621, Email: media@ucl.ac.uk. David Reid, Media Relations Assistant, Tel: 020 7679 1618, Mob: 07904 921751, Email: d.reid@ucl.ac.uk.
from: <http://www.bghrc.com/>

Notes:

"Cumbre Vieja Volcano; Potential Collapse and Tsunami at La Palma, Canary Islands," by Ward and Day was published in the September 2001 edition of Geophysical Research Letters.

Page contains links to "Giant landslides at volcanic ocean islands and the mega-tsunami threat in the Atlantic Ocean", by Dr. Simon Day, a diagramme showing mega-tsunami, and photographs of Cumbre Vieja volcano on La Palma (Canary Is.).

**HOW TO DEMONSTRATE AN IMPACT TSUNAMI--
"ONLY IN ENGLAND--ROYAL INSTITUTION CHRISTMAS LECTURES--AN INSIDER'S REPORT"**

by Simon Conway Morris

<http://www.joh.cam.ac.uk/publications/eagle97/Eagle97-Only.html>

Editors' note: For the full report on the making of the televised Royal Institution Christmas lectures (1997?) which have their share of humor and tragedy, see the website given above. *TsuInfo Alert* is only reprinting the section on the tsunami demonstration.

"What was the best demonstration? In my opinion it was the illustration of what happens when a meteorite--it doesn't have to be that large, say 300 metres across--hits the ocean. A lot of kinetic energy is released, hardly surprising if something the size of the Albert Hall hits the Earth at 40 kilometres a second. The net result are tsunamis (or tidal waves) that radiate out from the point of impact. They are travelling fast, but in the open ocean they would hardly be noticed so low is their wave height. But things change dramatically when the tsunami approaches the land. As the water progressively shallows, the energy contained within the tsunami is concentrated so that the wave now rears up until it hits the coastline as a massive wall of water, 100 metres high. Graphic stuff, but in a lecture theatre? The idea came from Herbert Huppert in DAMTP, ably assisted by Mark Hallworth. A long tank was procured, with a sloping shelf at one end. It was then filled with two liquids, water dyed blue to represent the ocean overlain by colourless par-

affin (yes, that's the atmosphere). The floor of the tank therefore was submerged, except for the highest part of the shelf which represented the land and so was tastefully arranged with model houses. Dropping a rock into this 'ocean' doesn't work, we tried it. But the principle of energy transfer is easily achieved by constructing a lock at one end, filling it with more blue water and then, having explained the idea to the audience, releasing it. The result was remarkable and frightening. As expected a low wave moved along the interface between water and paraffin, heading towards the 'city' at the opposite end of the tank. Crossing the slope the wave steepened dramatically and surged over the model houses. Replayed in slow motion the demonstration was even more chilling; the audience had been given something to think about. These threats are real. Rocks do fall out of the sky, and if one hit the Atlantic Ocean the surrounding sea-boards would be inundated as tsunamis washed over our coasts. As the physicists who undertook the calculations[27] pointed out, maybe we should reconsider the legends of the destruction of Atlantis."

27. See the paper by J.G. Hills & M.P. Goda in *The Astronomical Journal*, vol. 105, p. 1114-1144 [1993].

ADDITIONAL BRITISH TSUNAMI/EARTHQUAKE LINKS

"*Seabed gas crystal formations linked to tsunami*" (Possible cause of Storegga landslide)

"While scientists who study the so-called Storegga Slide with the tools of geology, biology and seismography are not sure what triggered it, they are fairly certain a mysterious crystalline solid composed of water molecules intertwined with methane gas, known as methane or gas hydrates, played a role."

<http://www.planetark.org/dailynewsstory.cfm?newsid=8455>

Giant wave 'will hit Britain at 500mph', by Robert Uhlig, Technology Correspondent (filed 29/08/2001)

"A massive landslide caused by a volcanic eruption in the Canary Islands would create a giant wave that would hit the coast at up to 500mph."

<http://www.telegraph.co.uk/news/main.jhtml?xml=/news/2001/08/29/nwave29.xml>

Sediments on the east coast of Scotland demonstrate tsunami threat (British Geological Survey website)

"The studies in eastern Scotland have been followed by work elsewhere in Europe and in North America, allowing conclusions to be made on the nature of the stratigraphic evidence for tsunamis. These studies have in turn led to identification of tsunami "fingerprints", which have enabled a better understanding of the magnitude and worldwide distribution of tsunamis in both the recent and geologic past. This in turn has enabled us to assess the effect of tsunamis as agents for coastal geomorphic change, their magnitude and relation to coastal topography and offshore bathymetry, and their distribution."

<http://www.geolsoc.org.uk/template.cfm?name=TsunamisWhaHae>

Submarine landslides and tsunami threat to Scotland in Proceedings of the International Tsunami Symposium 2001, p. 355-366

full-text is available at http://www.pmel.noaa.gov/its2001/Separate_Papers/1-12_Long.pdf

Infrequently Asked Questions

compiled by Lee Walkling

How often do tsunamis affect the UK?

Not very often, as the Atlantic has fewer tsunamis in general than the Pacific or Indian Oceans, and it is difficult to identify small tsunamis without the otherwise energetic tide gauge records. However, two famous examples in the historical record may be quoted.

Storegga landslip. Along the coasts of the northern North Sea, Norwegian sea and north eastern Atlantic ocean a very prominent sand layer was originally thought to have been deposited by a storm surge. More recently, it has been attributed to a large tsunami circa 7,100 years ago. This event was generated in the Norwegian sea as a result of the Second Storegga submarine slide, one of the world's largest underwater slides.

Lisbon earthquake (1755). Probably the most destructive tsunami in Europe during historical times occurred on 1 November 1755. An earthquake (now known as the Lisbon Earthquake) took place 200 km offshore from Portugal. The subsequent tsunami destroyed a large part of Lisbon and raised sea levels at Newlyn (Cornwall, UK) by up to 3 metres in ten minutes.

from: <http://www.pol.ac.uk/home/insight/faq2.html#11>

In what year did London have two large earthquakes?

An earthquake shook London on the 8th of March 1750 at half past five in the morning. It awoke people from their sleep and frightened them out of their houses. A servant maid in Charterhouse-square, was thrown from her bed, and had her arm broken; bells in several steeples were struck by the chime hammers; great stones were thrown from the new spire of Westminster Abbey; dogs howled in uncommon tones; and fish jumped half a yard above the water.

London had experienced a shock only a month before, namely, on the 8th of February 1750, between 12 and 1 o'clock in the day. At Westminster, the barristers were so alarmed that they imagined the hall was falling."--*William Hone, The Everyday Book. Vol. 1 (1827) at 175.*

from: <http://www.researchlibrary.net/earthquakes.htm>

For more information on historical earthquakes in London, go to www.storyoflondon.com. On the left side of the screen find "Main Menu" and scroll down to "Topics." Click on "London's Disasters" and scroll down to "Earthquakes in London."

Is there an eyewitness report for any of the 1750 London earthquakes?

"...concerning the second earthquake felt by us at London, on the 8th of March [ed. note: 1750]. A shepherd belonging to Mr. Secretary Fox at Kensington (the sky being

perfectly serene, and clear) was much surprised with a very extraordinary noise in the air, rolling over his head, as if cannon close by. He likewise thought, that it came from the north-west, and went to the south-east: a motion quite contrary, to what must have been the case, if it were really of cannon. This noise passed rushing by him; and instantly he saw the ground (a dry, and solid spot) wave under him, like the face of the river. The tall trees of the avenue, where he was, nodded their tops very sensibly, and quivered like a shaken spear. The flock of sheep immediately took fright, and ran all away together, as if dogs had pursued them. A great rookery in the place, were equally alarmed, and after an universal clangor, flew away; no less than if chased by hawks."

from: Stukeley, William, 1756, *The philosophy of earthquakes, natural and religious; Or an inquiry into their cause, and their purpose*, 3rd ed.: London, A. and C. Corbett, 1756.

What theory was offered to explain the cause of the 1750 London earthquakes?

William Stukeley was the first to assume in an treatise in *Philosophical Transactions* that electricity is the cause of these earthquakes.

Both earthquakes in London, 8 February and 8 March 1749 [1750] and another earthquake on 30 September 1750, which was noticed in vast parts of England, gave rise to this new, hitherto unknown attempt of explanation. In the latter earthquake no fire, vapour or smoke could be detected, thus all theories failed which tried to attribute the causes of earthquakes to subterranean winds, fires or chemical explosions.

from: <http://www.univie.ac.at/Wissenschaftstheorie/heat/heat-1/heat105f.htm>

In response to the London earthquakes, what famous Protestant clergyman wrote a sermon in 1750, "The Cause and Cure of Earthquakes," giving many details about the 1692 Port Royal earthquake and tsunami?

Charles Wesley. The full text is available online at <http://wesley.nnu.edu/sermons/129.htm>. His journal entries for the year include:

Thur., February 8th. There was an earthquake in London.

Fri., March 9th. Many flocked to the morning word; and were yet more stirred up thereby. I have scarce ever seen so many at intercession. At the chapel I preached on the occasion, from Psalm xlvii., with very great awakening power.

Sat., March 10th. I expounded Isai. xxiv., a chapter I had not taken much notice of, till this awful providence

explained it: "Behold, the Lord maketh the earth empty, and maketh it waste, and turneth it upside down, and scattereth abroad the inhabitants thereof. The foundations of the earth do shake. The earth is utterly broken down, the earth is clean dissolved, the earth is moved exceedingly. The earth shall reel to and fro like a drunkard, and shall be removed like a cottage; and the transgression thereof shall be heavy upon it; and it shall fall, and not rise again."

Wed., April 4th. Fear filled our chapel, occasioned by a prophecy of the earthquake's return this night. I preached my written sermon on the subject, with great effect, and gave out several suitable hymns. It was a glorious night for the disciples of Jesus.

Thur., April 5th. At four I rose after a night of sound sleep, while my neighbours watched. I sent an account to M. G., as follows :-

"The late earthquake has found me work. Yesterday I saw the Westminster end of the town full of coaches, and crowds flying out of the reach of divine justice, with astonishing precipitation. Their panic was caused by a poor madman's prophecy: last night they were all to be swallowed up. The vulgar were in almost as great consternation as their betters. Most of them watched all night: multitudes in the fields and open places: several in their. Many removed their goods. London looked like a sacked city."

from: <http://wesley.nnu.edu/charles/1750a.htm>

Who was the first to *correctly* explain the cause of earthquakes?

The cause of earthquakes was stated correctly in 1760 by British engineer John Michell, one of the first fathers of seismology, in a memoir where he wrote that earthquakes and the waves of energy that they make are caused by "shifting masses of rock miles below the surface." [He also described black holes!].

from: <http://earthquake.usgs.gov/4kids/facts.html>

Is there a patron saint of tsunamis?

TsuInfo Alert couldn't find any. However there are several patron saints of earthquakes and volcanoes, according to the Patron Saints Index (www.catholic-forum.com/saints/pst00245.htm).

Saint Agatha is the patron saint of earthquakes, natural disasters and volcanic eruptions.

St. Emidius is the patron saint of earthquakes, as is St. Francis Borgia and St. Gregory Thaumaturgus.

St. Januarius is the patron saint of volcanic eruptions.

The Kozak Collection includes an image of St. Alexius, said to be a patron saint of earthquakes.

Tsunami Animations on the Web

Note: QuickTime movies are very large and may take a few minutes to download. Movies are a non-standard part of the internet and may not load for all viewers.

<http://walrus.wr.usgs.gov/tsunami/>

Includes:

- Hypothetical Tsunami along the Pacific Northwest Coast: Phase 1; QuickTime 64kB; Animated GIF 110kB.
- Hypothetical Tsunami along the Pacific Northwest Coast: Phase 2; Low Resolution (QuickTime) 4.5 MB; High Resolution (QuickTime) 8.5 MB
- 1998 Papua New Guinea Tsunami: Earthquake Source; Low Resolution (QuickTime) 0.6 MB; Low Resolution (aGIF) 1.4 MB; Medium Resolution (QuickTime) 1.4 MB High Resolution (QuickTime) 13 MB
- Animation of the Tsunami from the 1906 San Francisco Earthquake: Small Scale (QuickTime) 10MB; Large Scale (QuickTime) 17MB
- Preliminary Animation of the 23 June 2001 Peru Tsunami: Medium Resolution (QuickTime) 9.7 MB; High Resolution (QuickTime) 19.4 MB

More tsunami videos/animations:

- <http://weather.about.com/gi/dynamic/offsite.htm?site=http%3A%2F%2Fwww.usc.edu%2Fdept%2Ftsunamis%2Fvideo%2F>
- <http://www.pbs.org/wnet/savageearth/animations/tsunami/main.html>

Tsunami modeling simulations:

- <http://bullard.esc.cam.ac.uk/~taylor/Tsunami.html>
- <http://www.pmel.noaa.gov/tsunami/research.html>
- <http://walrus.wr.usgs.gov/tsunami/GIFanimation.html>
- <http://newport.pmel.noaa.gov/time/animations2.html> (SW Washington coast)
- <http://newport.pmel.noaa.gov/time/anims/ghasper.html> (Grays Harbor, WA)
- <http://courses.dce.harvard.edu/~environment/kst/hokkaido-tsunami-animation.html> (Japan Sea)

WEBSITES

<http://www.oregongeology.com/earthquakes/Coastal/Tsumapsbycity.HTM>

Tsunami hazard maps for the Oregon coast and other tsunami links

<http://www.usc.edu/dept/tsunamis> (click on world map, then click on PNG 2002), or <http://www.usc.edu/dept/tsunamis/PNG2002/>

This webpage details the recent surveys of the September 9, 2002 Papua New Guinea earthquake and tsunami.

<http://www.citizen corps.gov>

Citizen Corps, created to help coordinate volunteer activities to make our communities safer, stronger, and better prepared to respond to any emergency situation, has recently revised its web site to make it more user-friendly.

from: Disaster Research 384, February 28, 2003

<http://www.aspc.org/site/PageServer?pagename=emergency>

New York City's Association for the Prevention of Cruelty to Animals (ASPCA) web site contains information on emergency pet preparedness that includes a step-by-step plan for protecting pets.

from: Disaster Research 384, February 28, 2003

CONFERENCES/WORKSHOPS/SEMINARS

Apr 22, 2003 Bay Area (see additional dates, below)

"How to Create a Business Continuity Plan...That Works!" is an intensive, one-day workshop developed by Judy Bell, CEM, and sponsored by Disaster Survival Planning Network (DSPN). It addresses the fundamental elements of disaster response and business continuity planning, and it features video interviews of Business Continuity Managers who relate their experiences in creating effective plans. The videos expose attendees to best practices in a very compact program. Those interviewed include representatives from Toyota, Macy's, CalPERS, and California State Franchise Tax Board. DRII-certified practitioners will receive 8 continuing education credits for attending this session. For detailed workshop information or to register online, see www.disaster-survival.com/workshop.html or call (800) 601-4899. Discounts are available to multiple attendees from the same company and to members of certain professional associations.

Here's the current workshop schedule:

Apr 22	Bay Area	May 22	Houston
Apr 24	Reno	June 24	Seattle
May 20	Atlanta	June 26	Los Angeles

April 22-23, 2003

2003 Partners in Emergency Preparedness Conference.

Sponsor: Washington State University. Bellevue, Washington. This conference is designed for emergency management and continuity professionals from business and industry, government, education, nonprofit, and volunteer organizations. Sessions include continuity planning, critical infrastructure protection, public health preparedness, bioterrorism, urban wildland response, and effective information flow within an emergency operations center. This conference also offers a series of sessions related to schools and non-profit organizations such as volunteer coordination and training, epidemics, and grant writing. For more information, contact Conferences and Professional Programs, P.O. Box 645222, Washington State University, Pullman, WA, 99164-5222; (509) 335-3530; e-mail: wsuconf@wsu.edu; <http://capps.wsu.edu/emergencyprep/>.

from: Natural Hazards Observer, v. XXVII, no. 4, p. 12

August 26-29, 2003

A Krakatou Workshop to be held in Indonesia to commemorate the 120th anniversary of the eruption of Krakatou is being planned by the Meteorological and Geophysical Agency (MGA). For more information, contact Dr. Guhna-wa Ibrahim, Director General of MGA (gunib@bmg.go.id) or Dr. Fauzi Rades, Coordinator of National Earthquake Center MGS (fauzi@bmg.go.id).

September 5-10, 2003

NEMA 2003 annual conference. Seattle, WA., Elliott Grand Hyatt Hotel. Additional information will be available in June.

September 29-October 3, 2003

ITSU-XIX will be held in Wellington, New Zealand at the Wellington Convention Center. "Continuing the tradition of previous ITSU Sessions, ITSU-XIX will be preceded by a joint IUGG/ITSU Workshop that will be entitled "Tsunamis in the South Pacific." The Workshop will take place between 25 and 26 September, at the Wellington Convention Center. The event will be organized jointly by the IUGG Tsunami Commission (IUGG/TC), the Institute of Geological and Nuclear Sciences (GNS) of New Zealand, and ICG/ITSU. The convenors will be Viacheslav Gusiakov (Russia), FranHoise SchindelJ (France) and Gaye Downes (New Zealand). The objectives of the Wellington workshop are: (1) to review the situation with tsunami observations and preparedness in the South Pacific area; (2) to analyze the regional features in tsunami generation, propagation and impact; (3) to exchange national experiences on the development of countermeasures; (4) to formulate recommendations on the actions required for tsunami disaster reduction."

from: Tsunami Newsletter, v. 35, no. 1, p. 10.

October 14-15, 2003

The Fourth International Disaster and Emergency Readiness Conference will be held in London, England. The

conference is co-sponsored by the European Commission (Directorate General-Environment), the United Nations Office for the Co-ordination of Humanitarian Affairs (UN OCHA), and the International Air Transport Association (IATA). The goal of the conference is to develop comprehensive disaster avoidance, readiness, and response through integrated emergency management by bringing together international organizations, national governments, and private business.

The sponsors have issued an invitation for presentation suggestions and a call for papers, particularly case studies that deal with disaster and emergency readiness. The major themes for 2003 are:

- * integrating planning and response from governmental and non-profit agencies and organizations;
- * managing disasters in cities and urban environments;
- * terrorism and the threat from nuclear dirty bombs, chemical or biological attacks;
- * coordinating and controlling immediate response and recovery; standards for certification and training for emergency management;
- * managing international cooperation for disasters which cross borders.

Abstracts and proposals for panel discussions, tutorials, and workshops are due no later than March 1, 2003. Submissions must be in English and e-mailed to ider@andrich.com. Complete submission guidelines are available at

<http://www.andrich.com/ider/>.

from: Disaster Research 383, February 14, 2003

July 27-31, 2004

Geo-Trans 2004. Sponsor: Geo-Institute of the American Society of Civil Engineers (ASCE). Los Angeles, California. This conference will focus on geotechnical engineering for transportation projects such as bridges, tunnels, underground structures, rail and highway corridors, and systems engineering. Seismic design, risk assessment, geographic information systems, and retaining structures are among the topics to be presented. Complete information is available from ASCE, 1801 Alexander Bell Drive, Reston, VA 20191; (703) 295-6350; e-mail: conf@asce.org; <http://www.asce.org/conferences/geotrans04/>.

from: Disaster Research 385, March 20, 2003

PUBLICATIONS

Tsunami Newsletter (ITIC), February 2003.

<http://www.shoa.cl/oceano/itic/newsletter.html>

Includes a summary of earthquakes in the Pacific occurring December 2002-January 2003, a report on the January 22, 2003 Colima, Mexico earthquake-tsunami, PTWC News, and an executive summary of the 2003 ITSU officers meeting in February 2003.

NEW TSUNAMI MATERIALS ADDED TO THE LIBRARY

February 1 to March 31, 2003

Note: These, and all our tsunami materials, are included in our on-line catalog at <http://www.wa.gov/dnr/htdocs/ger/washbib.htm>
NTHMP participants are encouraged to request copies of these documents; see p. 2.

Alaska

Waythomas, C. F., 2000, Reevaluation of tsunami formation by debris avalanche at Augustine volcano, Alaska: Pure and Applied Geophysics, v. 157, no. 6-8, p. 1145-1188.

California

Eskijian, M. L., 2002, Mitigation of seismic and meteorological hazards to marine oil terminals and other pier and wharf structures in California [abstract]. In Karanci, Nuray; Yalçiner, A. C.; and others, editors, IX international symposium on natural and human-made hazards; Hazards 2002; Symposium theme--Disaster mitigation in the perspective of the new millennium; Book of abstracts: International Society for the Prevention and Mitigation of Natural Hazards, 173 p.

Peters, Robert; Jaffe, B. E.; Gelfenbaum, Guy; Peterson, C. D., 2003, Cascadia tsunami deposit database: U.S. Geological Survey Open-File Report 03-13, 25 p. (Accessed Feb. 25, 2003 at <http://geopubs.wr.usgs.gov/open-file/of03-13/>)

Hawaii

Felton, E. A.; Crook, K. A. W.; Keating, B. H., 2000, The Hulopoe Gravel, Lanai, Hawaii--New sedimentological data and

their bearing on the "giant wave" (mega-tsunami) emplacement hypothesis: Pure and Applied Geophysics, v. 157, no. 6-8, p. 1257-1284.

Fletcher, C. H., III; Grossman, E. E.; Richmond, B. M.; Gibbs, A. E., 2002, Atlas of natural hazards in the Hawaiian coastal zone: U.S. Geological Survey Geologic Investigations Series Map I-2761, 182 p.

Lachman, Roy; Tatsuoka, Maurice; Bonk, W. J., 1961, Human behavior during the tsunami of May 1960: Science, v. 133, no. 3462, p. 1405-1409.

Oregon

Briggs, G. G.; Peterson, C. D., 1992, Neotectonics of the south-central Oregon coast as recorded by late Holocene paleosubidence of marsh systems [abstract]: Geological Society of America Abstracts with Programs, v. 24, no. 5, p. 9-10.

Peters, Robert; Jaffe, B. E.; Gelfenbaum, Guy; Peterson, C. D., 2003, Cascadia tsunami deposit database: U.S. Geological Survey Open-File Report 03-13, 25 p. (Accessed Feb. 25, 2003 at <http://geopubs.wr.usgs.gov/open-file/of03-13/>)

Peterson, C. D.; Darienzo, M. E., 1988, Coastal neotectonic field trip guide for Netarts Bay, Oregon: Oregon Geology, v. 50, no. 9/10, p. 99-106.

Washington

- Jaffe, B. E.; Gelfenbaum, Guy; Richmond, B. M., 1996, Comparison of tsunami deposits from two tsunamis--The 1700 Cascadia tsunami and the 1994 Java tsunami [abstract]: Pacific Congress on Marine Science and Technology, 1996, p. 38.
- Koshimura, Shun-ichi; Katada, Toshitaka; Kawata, Yoshiaki; Mofjeld, H. O., 2002, An estimation method for human casualties due to tsunami inundation flow [abstract]. *In* Karanci, Nuray; Yalçiner, A. C.; and others, editors, IX international symposium on natural and human-made hazards; Hazards 2002; Symposium theme--Disaster mitigation in the perspective of the new millennium; Book of abstracts: International Society for the Prevention and Mitigation of Natural Hazards, p. 112-113.
- Koshimura, Shun-ichi; Mofjeld, Ha. O.; González, F. I.; Moore, A. L., 2002, Modeling the 1100 bp paleotsunami in Puget Sound, Washington: Geophysical Research Letters, v. 29, no. 20, DOI 10.1029/2002GL015170, p. 9-1 - 9-4.
- Peters, Robert; Jaffe, B. E.; Gelfenbaum, Guy; Peterson, C. D., 2003, Cascadia tsunami deposit database: U.S. Geological Survey Open-File Report 03-13, 25 p. (Accessed Feb. 25, 2003 at <http://geopubs.wr.usgs.gov/open-file/of03-13/>)
- Walsh, T. J.; Myers, Ed. P., III; Baptista, A. M., 2003, Tsunami inundation map of the Neah Bay, Washington, area: Washington Division of Geology and Earth Resources Open File Report 2003-2, 1 sheet, scale 1:24,000. (Accessed Mar. 28, 2003 at <http://www.wa.gov/dnr/htdocs/ger/pdf/ofr03-2.pdf>)
- Walsh, T. J.; Myers, E. P., III; Baptista, A. M., 2003, Tsunami inundation map of the Quileute, Washington, area: Washington Division of Geology and Earth Resources Open File Report 2003-1, 1 sheet, scale 1:24,000. (Accessed Mar. 28, 2003 at <http://www.wa.gov/dnr/htdocs/ger/pdf/ofr03-1.pdf>)

Atlantic Islands

- Ward, S. N.; Day, S. J., 2001, Cumbre Vieja volcano--Potential collapse and tsunami at La Palma, Canary Islands: Geophysical Research Letters, v. 28, no. 17, p. 3397-3400.

Canada

- McAdoo, B. G.; Minder, Justin; Moore, A. L.; Ruffman, Alan, 2003, Tsunami deposits from the 1929 Grand Banks earthquake and submarine landslide, Taylor's Bay, Newfoundland [abstract]: Geological Society of America Abstracts with Programs, v. 35, no. 3, p. 82.
- Peters, Robert; Jaffe, B. E.; Gelfenbaum, Guy; Peterson, C. D., 2003, Cascadia tsunami deposit database: U.S. Geological Survey Open-File Report 03-13, 25 p. (Accessed Feb. 25, 2003 at <http://geopubs.wr.usgs.gov/open-file/of03-13/>)
- Rabinovich, A. B.; Thomson, R. E.; Stephenson, F. E.; Titov, V. V., 2002, Analysis and numerical modeling the Peru tsunami of June 23, 2001 for the coast of British Columbia [abstract]. *In* Karanci, Nuray; Yalçiner, A. C.; and others, editors, IX international symposium on natural and human-made hazards; Hazards 2002; Symposium theme--Disaster mitigation in the perspective of the new millennium; Book of abstracts: International Society for the Prevention and Mitigation of Natural Hazards, p. 114-115.

Greece

- Gray, J. P.; Monaghan, J. J., 2003, Caldera collapse and the generation of waves: Geochemistry, Geophysics, Geosystems, v. 4, no. 2, DOI 10.1029/2002GC000411, 28 p.

- Kortekaas, S.; Papadopoulos, G. A.; Ganas, Athanassios; Diakantoni, A., 2002, Geological identification of historical tsunamis in the Gulf of Corinth, central Greece [abstract]. *In* Karanci, Nuray; Yalçiner, A. C.; and others, editors, IX international symposium on natural and human-made hazards; Hazards 2002; Symposium theme--Disaster mitigation in the perspective of the new millennium; Book of abstracts: International Society for the Prevention and Mitigation of Natural Hazards, p. 133-134.
- Lobkovsky, L. I.; Papadopoulos, G. A.; Garagash, I. A.; Kozyrev, O. R.; Mazova, R. K., 2002, On the runup of tsunami generated by submarine landslide in Corinthos Bay, Greece (7 February 1963) [abstract]. *In* Karanci, Nuray; Yalçiner, A. C.; and others, editors, IX international symposium on natural and human-made hazards; Hazards 2002; Symposium theme--Disaster mitigation in the perspective of the new millennium; Book of abstracts: International Society for the Prevention and Mitigation of Natural Hazards, p. 120-121.
- McCoy, F. W.; Heiken, G. H., 2000, Tsunami generated by the Late Bronze Age eruption of Thera (Santorini), Greece: Pure and Applied Geophysics, v. 157, no. 6-8, p. 1227-1256.
- Papathoma, Maria; Dominey-Howes, D. T. M., 2002, Assessing tsunami vulnerability in the Gulf of Corinth (Greece) [abstract]. *In* Karanci, Nuray; Yalçiner, A. C.; and others, editors, IX international symposium on natural and human-made hazards; Hazards 2002; Symposium theme--Disaster mitigation in the perspective of the new millennium; Book of abstracts: International Society for the Prevention and Mitigation of Natural Hazards, p. 125.

Japan

- Baba, Toshitaka; Tanioka, Yuichiro; Cummins, P. R.; Uhira, Kouichi, 2002, The slip distribution of the 1946 Nankai earthquake estimated from tsunami inversion using a new plate model: Physics of the Earth and Planetary Interiors, v. 132, no. 1-3, p. 59-73.
- Tanioka, Yuichiro, 2000, Generation of tsunamis in the Okhotsk Sea caused by the 1994 Great Kuril earthquake: Pure and Applied Geophysics, v. 157, no. 6-8, p. 977-988.

Mexico

- Ortiz, Modesto; González, J. I.; Ramírez-Mondragón, N. A.; Farerras, S. F., 2003, Quick field survey of the 22 January 2003 (M 7.8) Colima-Mexico earthquake-tsunami: Tsunami Newsletter, v. 35, no. 1, p. 3-5.

Morocco

- Tinti, Stefano; El Alami, S. O., 2002, Assessment of tsunami hazard in Morocco through statistical methods [abstract]. *In* Karanci, Nuray; Yalçiner, A. C.; and others, editors, IX international symposium on natural and human-made hazards; Hazards 2002; Symposium theme--Disaster mitigation in the perspective of the new millennium; Book of abstracts: International Society for the Prevention and Mitigation of Natural Hazards, p. 129-130.

New Zealand

- GeoEnvironmental Consultants, 2002, Kapiti Coast District Council--Tsunami hazard and risk: GeoEnvironmental Consultants, 41 p.
- GeoEnvironmental Consultants, 2002, Paleotsunami investigations --Okoropunga and Pukerua Bay: GeoEnvironmental Consultants [under contract to] Wellington Regional Council, 26 p.

GeoEnvironmental Consultants, 2002, Preliminary study of tsunami record on Coromandel east coast: GeoEnvironmental Consultants, 34 p.

Pacific Ocean and Pacific Islands

- Choi, B.-H.; Lee, J. S.; Pelinovsky, E. N.; Kim, K. O., 2002, Worldwide tsunami propagation from the 1883 Krakatau eruption [abstract]. *In* Karanci, Nuray; Yalçiner, A. C.; and others, editors, IX international symposium on natural and human-made hazards; Hazards 2002; Symposium theme--Disaster mitigation in the perspective of the new millennium; Book of abstracts: International Society for the Prevention and Mitigation of Natural Hazards, p. 110-111.
- Jaffe, B. E.; Gelfenbaum, Guy; Richmond, B. M., 1996, Comparison of tsunami deposits from two tsunamis--The 1700 Cascadia tsunami and the 1994 Java tsunami [abstract]; Pacific Congress on Marine Science and Technology, 1996, p. 38.
- Levin, B. W.; Sasorova, E. V., 2001, On the 6-year tsunami periodicity in the Pacific: *Izvestiya, Physics of the Solid Earth*, v. 38, no. 12, p. 1030-1038.

Puerto Rico

- von Hillebrandt, Christa, 2003, Puerto Rico tsunami protocol meeting held in Mayagüez, Puerto Rico: *Tsunami Newsletter*, v. 35, no. 1, p. 67.

Russia

- Belousov, A. B.; Voight, Barry; Belousova, M. B.; Muravyev, Yaroslav, 2000, Tsunamis generated by subaquatic volcanic explosions--Unique data from 1996 eruption in Karymskoye Lake, Kamchatka, Russia: *Pure and Applied Geophysics*, v. 157, no. 6-8, p. 1135-1143.
- Chubarov, L. B.; Shokin, Y. I.; Simonov, K. V.; Schemel, A. L., 2002, Expert system for tsunami risk estimation for Primorie's coast [abstract]. *In* Karanci, Nuray; Yalçiner, A. C.; and others, editors, IX international symposium on natural and human-made hazards; Hazards 2002; Symposium theme--Disaster mitigation in the perspective of the new millennium; Book of abstracts: International Society for the Prevention and Mitigation of Natural Hazards, p. 123-124.
- Pinegina, T. K.; Bourgeois, Joanne; Bazanova, L. I.; Melekestsev, I. V.; Braitseva, O. A., 2003, A millennial-scale record of Holocene tsunamis on the Kronotskiy Bay coast, Kamchatka, Russia: *Quaternary Research*, v. 59, no. 1, p. 36-47.
- Sasorova, E. V.; Levin, B. W.; Morozov, V. E.; Mostrioukov, Alexander, 2002, Near-shore oceanic earthquakes--Acoustic methods application to the early recognition and tsunami warning system perspective [abstract]. *In* Karanci, Nuray; Yalçiner, A. C.; and others, editors, IX international symposium on natural and human-made hazards; Hazards 2002; Symposium theme--Disaster mitigation in the perspective of the new millennium; Book of abstracts: International Society for the Prevention and Mitigation of Natural Hazards, p. 116.
- Tanioka, Yuichiro, 2000, Generation of tsunamis in the Okhotsk Sea caused by the 1994 Great Kuril earthquake: *Pure and Applied Geophysics*, v. 157, no. 6-8, p. 977-988.

Turkey

- Çakir, T. E.; Yalçiner, A. C., 2002, The observations of 1956 southern Aegean tsunami near the coastal villages of Bodrum Peninsula, Turkey [abstract]. *In* Karanci, Nuray; Yalçiner, A. C.; and others, editors, IX international symposium on natural and human-made hazards; Hazards 2002; Symposium theme--

Disaster mitigation in the perspective of the new millennium; Book of abstracts: International Society for the Prevention and Mitigation of Natural Hazards, p. 142-143.

- Ergin, A.; Balas, C. E., 2002, Risk assessment of Tuzla break-water under tsunami attack [abstract]. *In* Karanci, Nuray; Yalçiner, A. C.; and others, editors, IX international symposium on natural and human-made hazards; Hazards 2002; Symposium theme--Disaster mitigation in the perspective of the new millennium; Book of abstracts: International Society for the Prevention and Mitigation of Natural Hazards, p. 135.
- Talipova, Tatiana; Pelinovsky, E. F.; Yalçiner, A. C.; Kurkin, A. A.; Kozelkov, Andrey; Zaitsev, Andrey, 2002, Modeling of tsunami propagation in the Black Sea [abstract]. *In* Karanci, Nuray; Yalçiner, A. C.; and others, editors, IX international symposium on natural and human-made hazards; Hazards 2002; Symposium theme--Disaster mitigation in the perspective of the new millennium; Book of abstracts: International Society for the Prevention and Mitigation of Natural Hazards, p. 108-109.
- Yüksel, Yalçin; Çevik, Esin; Alpar, Bedri; Özgüven, Oya; Güler, Iñkhan, 2002, Marine structure response due to the eastern Marmara earthquake 1999 in Izmit Bay [abstract]. *In* Karanci, Nuray; Yalçiner, A. C.; and others, editors, IX international symposium on natural and human-made hazards; Hazards 2002; Symposium theme--Disaster mitigation in the perspective of the new millennium; Book of abstracts: International Society for the Prevention and Mitigation of Natural Hazards, p. 127-128. .

Tsunami Modeling

- Fedotova, Z. I.; Chubarov, L. B.; Shokin, Y. I., 2002, Numerical modeling of a tsunami long-wave regime in the coastal zone [abstract]. *In* Karanci, Nuray; Yalçiner, A. C.; and others, editors, IX international symposium on natural and human-made hazards; Hazards 2002; Symposium theme--Disaster mitigation in the perspective of the new millennium; Book of abstracts: International Society for the Prevention and Mitigation of Natural Hazards, p. 139.
- Fujima, Koji, 2002, Numerical simulation of 2D/3D hybrid model for tsunami [abstract]. *In* Karanci, Nuray; Yalçiner, A. C.; and others, editors, IX international symposium on natural and human-made hazards; Hazards 2002; Symposium theme--Disaster mitigation in the perspective of the new millennium; Book of abstracts: International Society for the Prevention and Mitigation of Natural Hazards, p. 106-107.
- Katada, Toshihiko; Kuwasawa, Noriyuki; Yeh, Harry; Koshimura, Shun-ichi; Ishibashi, Akichika, 2002, A GIS-based simulation model of information transmission for tsunami evaluation and refugee reactions [abstract]. *In* Karanci, Nuray; Yalçiner, A. C.; and others, editors, IX international symposium on natural and human-made hazards; Hazards 2002; Symposium theme--Disaster mitigation in the perspective of the new millennium; Book of abstracts: International Society for the Prevention and Mitigation of Natural Hazards, p. 131-132.
- Raichlen, Fredric; Borrero, J. C.; Uslu, Burak; Synolakis, C. E., 2002, Modeling landslides in the laboratory [abstract]. *In* Karanci, Nuray; Yalçiner, A. C.; and others, editors, IX international symposium on natural and human-made hazards; Hazards 2002; Symposium theme--Disaster mitigation in the perspective of the new millennium; Book of abstracts: International Society for the Prevention and Mitigation of Natural Hazards, p. 105.

- Sayin, Erdem; Erden, Dil; Özkan, Neriman; Yalçiner, A. C., 2002, Investigation of tsunami propagation by using the computer model for stratified medium [abstract]. *In* Karanci, Nuray; Yalçiner, A. C.; and others, editors, IX international symposium on natural and human-made hazards; Hazards 2002; Symposium theme--Disaster mitigation in the perspective of the new millennium; Book of abstracts: International Society for the Prevention and Mitigation of Natural Hazards, p. 119.
- Shigihara, Yoshinori; Gotoh, Daichi; Ban, Kazuhiko; Takaoka, Kazuaki; Imamura, Fumihiko, 2002, Hydraulic experiment for a landslide-induced tsunami in an open channel [abstract]. *In* Karanci, Nuray; Yalçiner, A. C.; and others, editors, IX international symposium on natural and human-made hazards; Hazards 2002; Symposium theme--Disaster mitigation in the perspective of the new millennium; Book of abstracts: International Society for the Prevention and Mitigation of Natural Hazards, p. 104.
- Synolakis, C. E.; Okal, E. A., 2002, Far-field theoretical models of tsunamis generated by dislocations and landslides [abstract]. *In* Karanci, Nuray; Yalçiner, A. C.; and others, editors, IX international symposium on natural and human-made hazards; Hazards 2002; Symposium theme--Disaster mitigation in the perspective of the new millennium; Book of abstracts: International Society for the Prevention and Mitigation of Natural Hazards, p. 122.
- Takahashi, Tomoyuki; Hasegawa, Shiro; Kawata, Yoshiaki; Shimada, Hiroaki; Inoue, Masao, 2002, Hydraulic experiment on sedimentation processes due to tsunami run-up [abstract]. *In* Karanci, Nuray; Yalçiner, A. C.; and others, editors, IX international symposium on natural and human-made hazards; Hazards 2002; Symposium theme--Disaster mitigation in the perspective of the new millennium; Book of abstracts: International Society for the Prevention and Mitigation of Natural Hazards, p. 117-118.
- Tarman, H. I.; Kanoğlu, Utku, 2002, Numerical simulation of solitary wave runup on a sloping beach [abstract]. *In* Karanci, Nuray; Yalçiner, A. C.; and others, editors, IX international symposium on natural and human-made hazards; Hazards 2002; Symposium theme--Disaster mitigation in the perspective of the new millennium; Book of abstracts: International Society for the Prevention and Mitigation of Natural Hazards, p. 140.
- Tomita, Takashi, 2002, Characteristics of wave transmitted over flap gate as storm surge barrier [abstract]. *In* Karanci, Nuray; Yalçiner, A. C.; and others, editors, IX international symposium on natural and human-made hazards; Hazards 2002; Symposium theme--Disaster mitigation in the perspective of the new millennium; Book of abstracts: International Society for the Prevention and Mitigation of Natural Hazards, p.144-145.
- Van Dorn, W. G.; Le Méhauté, B. J.; Hwang, L.-S., 1968, Final report--Handbook of explosion-generated water waves; Volume I--State of the art: Tetra Tech, Incorporated Report TC-130 [under contract to] Office of Naval Research, 174 p.
- Tsunami Research (General)**
- Bilek, S. L.; Lay, Thorne, 2002, Tsunami earthquakes possibly widespread manifestations of frictional conditional stability: *Geophysical Research Letters*, v. 29, no. 14, DOI 10.1029/2002GL015215, p. 18-1 - 18-4.
- Karanci, Nuray; Yalçiner, A. C.; and others, editors, 2002, IX international symposium on natural and human-made hazards; Hazards 2002; Symposium theme--Disaster mitigation in the perspective of the new millennium; Book of abstracts: International Society for the Prevention and Mitigation of Natural Hazards, 173 p.
- Mazova, R. K., 2002, Local tsunamis generated by submarine landslides [abstract]. *In* Karanci, Nuray; Yalçiner, A. C.; and others, editors, IX international symposium on natural and human-made hazards; Hazards 2002; Symposium theme--Disaster mitigation in the perspective of the new millennium; Book of abstracts: International Society for the Prevention and Mitigation of Natural Hazards, p. 102-103.

VIDEO RESERVATIONS

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

- ___ **New!** Tsunami Chasers. Beyond Productions for the Discovery Channel. 52 minutes.
- ___ Earthquake...Drop, Cover & Hold; Washington Emergency Management Division. 1998. 5 min.
- ___ Tsunami Evacuation PSA; DIS Interactive Technologies for WA Emergency Management Division. 2000. 30 seconds.
- ___ Cascadia: The Hidden Fire--An Earthquake Survival Guide; Global Net Productions, 2001. 9.5 minutes. A promo for a documentary about the Cascadia subduction zone and the preparedness its existence demands of Alaska, Oregon and Washington states. Includes mention of tsunamis. (The full documentary is scheduled for broadcasting on a PBS station in April 2002.)
- ___ Not Business as Usual: Emergency Planning for Small Businesses, sponsored by CREW (Cascadia Regional Earth-quake Workgroup), 2001. 10 min. Discusses disaster preparedness and business continuity. Although it was made for Utah, the multi-hazard issues remain valid for everyone. Web-sites are included at the end of the video for further information and for the source of a manual for emergency preparedness for businesses.
- ___ Adventures of Disaster Dudes (14 min.) Preparedness for pre-teens
- ___ The Alaska Earthquake, 1964 (20 min.) Includes data on the tsunamis generated by that event
- ___ Cannon Beach Fire District Community Warning System (COWS) (21 min.) Explains why Cannon Beach chose their particular system
- ___ Disasters are Preventable (22 min.) Ways to reduce losses from various kinds of disasters

- through preparedness and prevention.
- ___ Disaster Mitigation Campaign (15 min.)
American Red Cross; 2000 TV spots. Hurricanes, high winds, floods, earthquakes
 - ___ Forum: Earthquakes & Tsunamis (2 hrs.)
CVTV-23, Vancouver, WA (January 24, 2000). 2 lectures: Brian Atwater describes the detective work and sources of information about the Jan. 1700 Cascadia earthquake and tsunami; Walter C. Dudley talks about Hawaiian tsunamis and the development of warning systems.
 - ___ Killer Wave: Power of the Tsunami (60 min.)
National Geographic video.
 - ___ Mitigation: Making Families and Communities Safer (13 min.) American Red Cross
 - ___ Numerical Model Aonae Tsunami--7-12-93 (animation by Dr. Vasily Titov) and Tsunami Early Warning by Glenn Farley, KING 5 News (The Glenn Farley portion cannot be rebroadcast.)
 - ___ The Prediction Problem (58 min.)
Episode 3 of the PBS series "Fire on the Rim."
Explores earthquakes and tsunamis around the Pacific Rim
 - ___ Protecting Our Kids from Disasters (15 min.)
Gives good instructions to help parents and volunteers make effective but low-cost, non-structural changes to child care facilities, in preparation for natural disasters. The Institute provides a booklet to use with the video. Does NOT address problems specifically caused by tsunamis.
 - ___ The Quake Hunters (45 min.)
A good mystery story, explaining how a 300-year old Cascadia earthquake was finally dated by finding records in Japan about a rogue tsunami in January 1700
 - ___ Raging Planet; Tidal Wave (50 min.) Produced for the Discovery Channel in 1997, this video shows a Japanese city that builds walls against tsunamis, talks with scientists about tsunami prediction, and has incredible survival stories.
 - ___ Raging Sea: KGMB-TV Tsunami Special. (23.5 min.)
Aired 4-17-99, discussing tsunami preparedness in Hawaii.
 - ___ The Restless Planet (60 min.) An episode of "Savage Earth" series. About earthquakes, with examples from Japan, Mexico, and the 1989 Loma Prieta earthquake in California.
 - ___ Tsunami and Earthquake Video (60 min.)
Includes "Tsunami: How Occur, How Protect," "Learning from Earthquakes," and "Computer modeling of alternative source scenarios."
 - ___ Tsunami: Killer Wave, Born of Fire (10 min.)
NOAA/PMEL. Features tsunami destruction and fires on Oku-shiri Island, Japan; good graphics, explanations, and safety information. Narrated by Dr. Eddie Bernard, (with Japanese subtitles).
 - ___ Tsunami: Surviving the Killer Waves (13 min.)
Two versions, one with breaks inserted for discussion time.
 - ___ Tsunami Warning (17 min.)
San Mateo (California) Operational Area Office of Emergency Services. This is a good public service program, specifically made for San Mateo County. Citizens are told what to do in cases of tsunami watches or tsunami warnings, with specific inundation zones identified for the expected 20-foot tall tsunami. An evacuation checklist is provided, as well as locations of safe evacuation sites. This video gives the impression that all tsunamis are teletsunamis (generated at a source more than 1000 km from the coastline) which therefore provide time for warnings. Locally-generated tsunamis are not discussed.
 - ___ USGS Earthquake Videotapes "Pacific Northwest"
USGS Open-File Report 94-179-E
 - ___ Understanding Volcanic Hazards (25 min.)
Includes information about volcano-induced tsunamis and landslides.
 - ___ The Wave: a Japanese Folktale (9 min.) Animated film to help start discussions of tsunami preparedness for children.
 - ___ Waves of Destruction (60 min.) An episode of the "Savage Earth" series. Tsunamis around the Pacific Rim.
 - ___ Who Wants to be Disaster Smart? (9 min.)
Washington Military Department/Emergency Management Division. 2000. A game show format, along the lines of *Who Wants to be a Millionaire?*, for teens. Questions cover a range of different hazards.
 - ___ The Wild Sea: Enjoy It...Safely (7 min.)
Produced by the Ocean Shores (Washington) Interpretive Center, this video deals with beach safety, including tsunamis.
- Check the title(s) you would like and indicate the date of your program. The video(s) will be mailed one week before the program date.
- Name: Organization:
- Mailing address:
- City, State, Zip:
- email:

DIRECTORIES: NATIONAL TSUNAMI HAZARD MITIGATION PROGRAM STEERING GROUP

FEDERAL

Eddie Bernard, NOAA/PMEL, Chairman,
National Tsunami Hazard Mitigation Pro.
7600 Sand Point Way NE
Seattle, WA 98115-0070
(206) 526-6800; Fax (206) 526-6815
email: bernard@pmel.noaa.gov

Frank González, NOAA/PMEL
7600 Sand Point Way NE
Seattle, WA 98115-0070
(206) 526-6803; Fax (206) 526-6485
email: Gonzalez@pmel.noaa.gov

Michael Hornick, FEMA, Region IX
Building 105, Presidio of San Francisco
San Francisco, CA 94129
(415) 923-7260; Fax (415) 923-7112
email: michael.hornick@fema.gov

Chris Jonientz-Trisler, FEMA, Region X
130 228th Street SW
Bothell, WA 98021-9796
(425) 487-4645; Fax (425) 487-4613
email: chris.jonientz-trisler@fema.gov

Jeff LaDouce, NOAA/NWS
Pacific Guardian Center
737 Bishop St., Suite 2200
Honolulu, HI 96813-3213
(808) 532-6416; Fax (808) 532-5569
email: Jeff.Ladouce@noaa.gov

Richard Przywarty
NOAA/NWS, Alaska Region
222 W. 7th Ave. #23
Anchorage, AK 99513-7575

907-271-5136; fax 907-271-3711
email: Richard.Przywarty@noaa.gov

David Oppenheimer
U.S. Geological Survey
345 Middlefield Road, MS 977
Menlo Park, CA 94025
(650) 329-4792; Fax: (650) 329-5163
email: oppen@usgs.gov

Craig Weaver, U.S. Geological Survey
Box 351650, University of Washington
Seattle, WA 98195-1650
(206) 553-0627; Fax (206) 553-8350
email: craig@geophys.washington.edu

ALASKA

Roger Hansen
Geophysical Institute, University of Alaska
P.O. Box 757320, 903 Koyukuk Drive
Fairbanks, AK 99775-7320
(907) 474-5533; Fax (907) 474-5618
email: roger@GISEIS.alaska.edu

CALIFORNIA

Richard Eisner, Regional Administrator
Governor's Office of Emergency Services
1300 Clay Street, Suite 400
Oakland, CA 94612-1425
(510) 286-0888 or 286-0895;
Fax (510) 286-0853
email: Rich_Eisner@oes.ca.gov

HAWAII

Brian Yanagi, Earthquake Program Man.
Civil Defense Division
3949 Diamond Head Road
Honolulu, HI 96816-4495

(808) 733-4300, ext.552; Fax (808)737-8197
email: byanagi@scd.state.hi.us

Dr. Laura S. L. Kong, Director
International Tsunami Information Center
737 Bishop Street, Suite 2200
Honolulu, HI 96813-3213
email: Laura.Kong@noaa.gov

OREGON

Mark Darienzo
Oregon Emergency Management
595 Cottage Street NE
Salem, OR 97310
(503) 378-2911, ext. 237; Fax (503)588-1378
email: mdarien@oem.state.or.us

George Priest
Oregon Dept. of Geology & Mineral Ind.
800 NE Oregon Street #28
Portland, OR 97232
503-731-4100, Ext. 225; fax 503-731-4066
email: george.priest@dogami.state.or.us

WASHINGTON

Dave Nelson
Washington State Military Department
Emergency Management Division
Camp Murray, WA 98430-5122
(253) 512-7067; Fax (253) 512-7207
email: d.nelson@emd.wa.gov

Tim Walsh
Division of Geology and Earth Resources
P.O. Box 47007
Olympia, WA 98504-7007
(360) 902-1432; Fax (360) 902-1785
email: tim.walsh@wadnr.gov

STATE EMERGENCY MANAGEMENT OFFICES

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

California Office of Emergency Services
P. O. Box 419047
Rancho Cordova, CA 95741-9047
(916) 845-8911, Fax (916) 845-8910
<http://www.oes.ca.gov/>

Hawaii State Civil Defense
Department of Defense
3949 Diamond Head Road
Honolulu, HI 96816-4495
(808) 734-2161; Fax (808)733-4287
E-Mail: rprice@pdc.org <http://iao.pdc.org>

Oregon Division of Emergency Management
595 Cottage Street, NE
Salem, OR 97310
(503) 378-2911 ext 225, Fax (503) 588-1378
<http://www.osp.state.or.us/oem/oem.htm>

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

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

Oh, To Be In England, Now that April's There....



Croyde, England. This award winning sandy beach is just around the corner from Saunton Sands, but because it is smaller it can get crowded. However it is easily accessible, there is plenty of car parking and it is excellent for swimming, surfing, windsurfing etc. The beach is manned with lifeguards.

This Devon beach is currently of extreme interest to co-editor Lee Walkling. Is she really on vacation or is she doing tsunami research? Only her 2003 tax return will tell.



Library
Department of Natural Resources
Division of Geology and Earth Resources
P.O. Box 47007
Olympia, WA 98504-7007