

# TsuInfo Alert

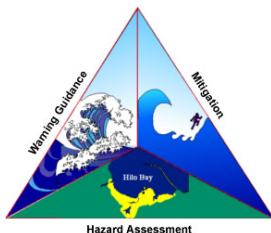
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## National Tsunami Hazard Mitigation Program

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## Rep. Bonamici introduces bipartisan tsunami warning bill

U.S. Congressional Press Release: August 1st, 2014

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Washington, D.C. – Congresswoman Suzanne Bonamici (OR-01) and Congressman Dana Rohrabacher (CA-48) introduced a bill today to strengthen tsunami detection and warning systems, improve response and resiliency, and better protect communities vulnerable to a tsunami.

“The Tsunami Warning, Education, and Research Act will improve the country’s understanding of the threat posed by tsunami events. The legislation will improve the forecasting and notification systems, support local community outreach and preparedness and response plans, and develop supportive technologies,” Congresswoman Bonamici said. “Three years ago, the world witnessed the overwhelming power and destruction of a tsunami when Japan experienced a massive earthquake off its coast. The waves caused by the Tohoku earthquake near Japan reached as far as the West Coast of the United States and caused damage to the coast in my home state of Oregon and the coast of California. This bill helps to address the risk faced by communities on both coasts and in the Gulf of Mexico by improving our mitigation and research program and enhancing community outreach and planning.”

The legislation, which has the support of Science, Space, and Technology Chairman Lamar Smith (R-TX) and Ranking Member Eddie Bernice Johnson (D-TX), strengthens the tsunami warning system so it is capable of forecasting tsunami arrival and damage estimates. The bill strengthens the National Oceanic and Atmospheric Administration’s hazard mitigation program through additional technical and financial assistance to communities and it establishes a working group to provide advice on tsunami science and technology. The bill also supports development of community-based outreach and education programs to ensure community readiness and resilience. Also sponsoring the bill are Oregon’s two other members with coastal areas in their districts, Representatives Peter DeFazio (OR-04) and Kurt Schrader (OR-05).

“I’m proud to cosponsor the Tsunami Warning, Education, and Research Act of 2014,” Congressman Dana Rohrabacher said. “We have seen time and again the devastating impacts that tsunami can have. We must learn more about tsunami events, provide better and more accurate tsunami forecasting, and reduce impacts on at-risk communities. This legislation will do that, and help us make certain that all of America’s coastal communities are adequately prepared and properly warned for any tsunami event, all in a fiscally responsible manner.”



See press release: <http://bonamici.house.gov/press-release/rep-bonamici-introduces-bipartisan-tsunami-warning-bill>



WASHINGTON STATE DEPARTMENT OF  
**Natural Resources**

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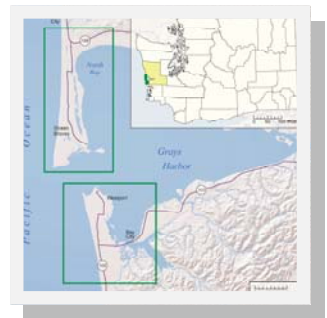


The views expressed herein are those of the authors and not necessarily those of NOAA, the Washington Department of Natural Resources, or other sponsors of TsuInfo Alert.

## **Landslide and liquefaction maps for the Ocean Shores and Westport peninsulas, Grays Harbor County, Washington: Effects on tsunami inundation zones of a Cascadia subduction zone earthquake**

By Stephen L. Slaughter, Timothy J. Walsh, Anton Ypma, and Recep Cakir, WA Division of Earth Resources

The Washington Division of Geology and Earth Resources (WADGER) participates in the National Tsunami Hazard Mitigation Program to assess tsunami hazards along the Washington coast, particularly those generated by nearby faults such as the Cascadia subduction zone (CSZ). Currently, many coastal communities have tsunami evacuation routes and assembly areas based on mapping of potential inundation areas from a tsunami initiated by a CSZ earthquake on the Washington coast (WADGER, 2007a,b, 2012; Walsh and others, 2000, 2002a,b, 2003, 2005). These evacuation routes and evacuation areas had not been compared to areas of potential ground failure that could initiate from a CSZ earthquake. Earthquake-induced ground failures could adversely affect tsunami evacuation by blocking or damaging evacuation routes, potentially rendering them impassable, or impeding an efficient and rapid vehicular evacuation. We have concentrated part of our technical program on earthquake-induced ground failures, including soil liquefaction and landslides, in order to improve evacuation planning for tsunamis that would inundate coastal areas in less than an hour after earthquake ground shaking. This report assesses the earthquake-induced ground failure potential for the communities of Ocean Shores and Westport in Grays Harbor County, Washington (Fig. 1). Note that the peninsulas are officially named Point Brown to the north and Point Chehalis to the south; however, we will refer to the peninsulas as the respective cities built on them, Ocean Shores and Westport. We consider here both soil liquefaction and landslide initiation.



See full report and maps: [http://www.dnr.wa.gov/publications/ger\\_ri38\\_ocean\\_shores\\_westport\\_liquefaction.zip](http://www.dnr.wa.gov/publications/ger_ri38_ocean_shores_westport_liquefaction.zip)

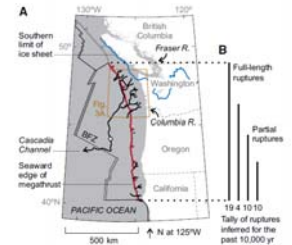
# TSUNAMI RESEARCH

## Rethinking turbidite paleoseismology along the Cascadia subduction zone

By Brian F. Atwater, Bobb Carson, Gary B. Griggs, H. Paul Johnson, and Marie S. Salmi

*Journal: Geology, 2014*

**Abstract:** A stratigraphic synthesis of dozens of deep-sea cores, most of them overlooked in recent decades, provides new insights into deep-sea turbidites as guides to earthquake and tsunami hazards along the Cascadia subduction zone, which extends 1100 km along the Pacific coast of North America. The synthesis shows greater variability in Holocene stratigraphy and facies off the Washington coast than was recognized a quarter century ago in a confluence test for seismic triggering of sediment gravity flows. That test compared counts of Holocene turbidites upstream and downstream of a deep-sea channel junction. Similarity in the turbidite counts among seven core sites provided evidence that turbidity currents from different submarine canyons usually reached the junction around the same time, as expected of widespread seismic triggering. The fuller synthesis, however, shows distinct differences between tributaries, and these differences suggest sediment routing for which the confluence test was not designed. The synthesis also bears on recent estimates of Cascadia earthquake magnitudes and recurrence intervals. The magnitude estimates hinge on stratigraphic correlations that discount variability in turbidite facies. The recurrence estimates require turbidites to represent megathrust earthquakes more dependably than they do along a flow path where turbidite frequency appears limited less by seismic shaking than by sediment supply. These concerns underscore the complexity of extracting earthquake history from deep-sea turbidites at Cascadia.



Access full article: <http://geology.gsapubs.org/content/early/2014/07/29/G35902.1.abstract>

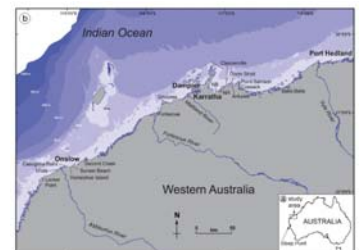
## Wrack line signatures of high-magnitude water-level events on the northwest Australian coast

By John Dodson, Ian Eliot, Matthew Eliot, Catherine Chague-Goff, and James Goff

*Journal: Marine Geology, 2014*

The Pilbara coast is affected by both intense tropical cyclones directing storm surges and high waves from the N and NW, and tsunamis generated off Indonesia. Wrack lines of shell and other skeletal material commonly occur not only 2–5m above Australian Height Datum (AHD) but also up to 10m AHD. They occur in distinct bands and may be continuous for several kilometres but are usually disjunct for tens of kilometres.

This study assesses the potential use of wrack lines to identify extreme high water levels preserved on the coast. Elevated wrack lines occur on open coast dunes, storm bars, cheniers and spits and along lagoonal shores. Twelve wrack line assemblages were identified for the last 2500 years, with eight reported at more than one site and  $\geq 5$  m AHD. Six sites contain wrack lines  $\geq 8$  m AHD, and three reach 10m AHD, higher than any historical tsunami inundation in the region. Ten wrack lines are found at 5–8m AHD, and extend beyond the upper end of any reported storm and cyclone wave heights. Prehistoric wrack lines were also identified at 2–5m AHD and are within the range of marine inundation by surges associated with present day tropical cyclones.



Access full article: <http://www.sciencedirect.com/science/article/pii/S0025322714001984>

# COMMUNITY/PROJECT UPDATES

## Yellow Brick Road Walking Challenge—Quinault Indian Nation, Washington

By Rich Bly, Environmental Health Specialist Quinault Indian Nation



Follow the Yellow Brick Road – the third annual Yellow Brick Road Walking Challenge, organized by the Washington State Quinault Indian Nation (QIN), takes place on September 23<sup>rd</sup> in Taholah, and September 24<sup>th</sup> in Queets. Both events will start at 11am and end around 1pm. The event is a joint effort put on by QIN staff from the areas of environmental health, community planning, nutrition, and diabetes care. Participants receive information on various health topics as they walk the QIN tsunami evacuation routes. The theme encourages folks from all age ranges to participate.



T-shirt design from the first annual Yellow Brick Road Walking Challenge.

## Neighborhood Preparedness Action Group All-County Picnic

By Keppie Keplinger, Deputy Director Jefferson County Emergency Management

Jefferson County, on the Olympic Peninsula in Washington State, is rich with disaster preparedness savvy citizens, thanks in large part, to the Neighborhood Preparedness Action Group known as NPREP, one of many groups of Local2020, Jefferson County's Transition Town.

For the past eight years, this action group, comprised of local citizen volunteers and elected officials, in collaboration with staff from Jefferson County Department of Emergency Management, has worked to establish over 100 neighborhoods of various sizes committed to helping one another in the event of an emergency or natural disaster. The Map Your Neighborhood program is the foundation the NPREP Action Group springs from.



Neighbors work together by utilizing their individual skill sets, becoming aware of any special needs individuals in the neighborhood, maintaining adequate supplies for all to share, and by providing ongoing educational opportunities to all.



In 2013, the NPREP team held their first annual All-County Picnic which provided attendees with informational talks and booths, music, games for kids, hands-on survival techniques—not to mention free corn-on-the-cob! Those new to neighborhood preparedness had an opportunity to meet with NPREP team members and learn about the process of preparing their neighborhoods. This year's picnic was equally successful and provided a wealth of disaster preparedness information to citizens and ample guidance for new neighborhoods to become prepared.

For additional information on this successful program, log into [www.L2020.org](http://www.L2020.org) and click on Emergency Preparedness or contact Jefferson County Emergency Management at 360-385-9368.

# COMMUNITY/PROJECT UPDATES

## Third session of community workshops on tsunami preparedness and response for Dominican Republic

By Christa G. von Hillebrandt-Andrade, Manager US NWS Caribbean Tsunami Warning Program

Two training workshops on tsunami preparedness and response for Dominican Republic were held in Santo Domingo and Las Terrenas on July 14–15 and July 17–18, 2014, respectively. The events were hosted by the Global Foundation for Defense (FUNGLODE), thru its Center for Security and Defense, and the National District and Las Terrenas municipalities. Over 250 participants from neighborhood associations, fire and police departments, Civil Defense, Red Cross, schools, local governments, faith based organizations, hotel associations, and private sector benefited from the lectures and exercises. The objectives were twofold: to encourage the establishment of preventive measures through education; to outline procedures and foster a culture of disaster prevention by empowering local institutions and neighborhoods resulting in the protection of life, property and livelihoods during tsunami events.



Participants developing evacuation maps from session in Las Terrenas. CREDIT: Christa von Hillebrandt-Andrade

The training included presentations and three hands-on exercises on tsunami evacuation mapping, community and organizational standard operational procedures, and a table top with southern and northern Dominican Republic earthquake/tsunami scenarios. The workshop was conducted by a team of eight trainers from Puerto Rico and Dominican Republic, the National Meteorological Organization, the Center for Emergency Operations, Civil Defense, National Emergency Commission, Global Matrix Engineering, Puerto Rico Seismic Network, and the Caribbean Tsunami Warning Program (NWS/NOAA) with support from the Dominican Media Association and IOC/UNESCO. This was the third training session FUNGLODE has hosted in the Dominican Republic since 2012.

## Learning more about Discovery Bay

By Ian Miller, Coastal Hazards Specialist for Washington Sea Grant

Discovery Bay on the Strait of Juan de Fuca in Washington State is one of the most important sites in this area from a coastal hazards standpoint. Why? Because written in the sediments of the salt marsh at the head of the bay is a record of multiple tsunamis, that are manifested as sand layers sandwiched between layers of peat.



Core sites in the Discovery Bay marsh on 20 June 2014.

CREDIT: UW MaSSAGE Program.

I've visited the Discovery Bay marsh on multiple occasions, and written in more detail about the background of the site and tsunami risk in Washington State in general. On 20 June 2014, though, I had my first opportunity to go out, in partnership with students and faculty from the UW MeSSAGE Program, Carrie Garrison-Laney (a graduate student at UW), and Ron Tognazzini (a retired earthquake engineer) and actually collect some data at the marsh in an effort to better understand the site and how it has been impacted by tsunamis.



Tsunami sand layer in the bank of Salmon Creek, which cuts through the salt marsh at the head of Discovery Bay.

CREDIT: UW MaSSAGE Program.

See full blog post: <http://coastnerd.blogspot.com/2014/06/learning-more-about-discovery-bay.html>

## International Tsunami News Headlines

**Undersea cables set to monitor earthquakes and tsunamis**, Posted on htxt.africa—The International Telecommunications Union (ITU) has joined forces with a number of companies to attempt a rather ambitious task: to equip submarine communications cables with sensors that would be able to relay data such as impending tsunamis or earthquakes.



Around Africa are a number of undersea cables which provide broadband internet to the continent, most notably SAT3, Seacom, Main One, WACS, ACE and EASSy.

LINK: <http://www.htxt.co.za/2014/07/09/undersea-cables-set-to-monitor-earthquakes-and-tsunamis/>

**U.S. capability to respond to the next great disaster**, By Michael E. O'Hanlon, Ian Livingston, and Miranda Melcher, Brookings Institution—With plenty of politically-sparked disasters and crises around the world, readers of the Brookings website might be forgiven for not wanting to hear about additional, imagined catastrophes.

But as the United States thinks ahead to the capacity of its government for handling various hypothetical problems, ranging from the size of its Army and National Guard to its AID and other relief capabilities to its coordination with the NGO and private sector worlds, it is important to have a sense of the possible.

LINK: <http://www.brookings.edu/blogs/up-front/posts/2014/08/12-disaster-response-ohanlon>

**UCD scientists find volcanic seabed off Donegal coast that could cause Irish tsunami**, By Greg Harkin, Independent.ie—A team of scientists has found a previously undiscovered volcanic seabed fault off our west coast which could one day cause a tsunami.



The scientific breakthrough came on the Rockall Bank, a marine bed the size of Ireland which lies more than 500kms out to sea.

Thirteen scientists, led by UCD's School of Geological Sciences, used a remotely operated vehicle at depths of up to one kilometre to find a new slope facing the west coast which could affect Ireland if it were to fracture again.

LINK: <http://www.independent.ie/irish-news/news/ucd-scientists-find-volcanic-seabed-off-donegal-coast-that-could-cause-irish-tsunami-30492082.html>

**Google to provide views of quake-recovering areas recorded from sea**, By Takeshi Aose, The Asahi Shimbun— Google Inc. announced June 18 that Google Street View will have a special section to record the reconstruction process of coastal areas of northeastern Japan that were devastated by the March 2011 Great East Japan Earthquake and tsunami.



Although the Internet search engine operator has already captured images of streets and collapsed buildings in the Tohoku region, the new section will have photos of the coastline taken from the sea off the Sanriku coast to chronicle how the area has recovered from the disaster. The new photos will be available on Google Street View in January.

LINK: <http://ajw.asahi.com/article/0311disaster/recovery/AJ201406190038>