

Posters 2012 Humboldt – Del Norte – Mendocino County Fairs



Featuring tsunami debris, resilience and the importance of education

Welcome to the 2012 Earthquake - Tsunami Room

"Peace of Mind in Earthquake Country"

*What you need to know to
protect yourself and your family
BEFORE the next
Earthquake or Tsunami strikes*

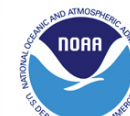


Living on
SHAKY GROUND
HOW TO SURVIVE EARTHQUAKES AND TSUNAMIS IN NORTHERN CALIFORNIA

Redwood Coast
Tsunami Work Group
a member of the
Earthquake Country Alliance
We're all in this together



Cal E-M-A
CALIFORNIA EMERGENCY
MANAGEMENT AGENCY



HUMBOLDT STATE UNIVERSITY

The Most Important Take Home Message



1) SURVIVE THE EARTHQUAKE

You can't survive the tsunami if you don't make it through the earthquake first. If you are outside, just drop down to the ground and stay put - try to avoid power lines, tree limbs and anything that could fall.

2) KNOW YOUR ZONE

Are you in a tsunami zone? If YES, then head to high ground or inland away from the coast as soon as you can safely walk. Do take the time to put on your shoes - walking on debris strewn streets can be hazardous. If you aren't in a hazard zone - stay where you are.

3) TSUNAMIS ARE TRICKY

Tsunamis can come from directions you don't expect and just when you think it's all over, another big surge may arrive. The first surge won't be the biggest and it's not uncommon for waves to arrive for 12 hours and sometimes much longer. Stay away from the coast until officials say it is safe to return



King Salmon Gains TsunamiReady Recognition

King Salmon gains TsunamiReady recognition

The magnitude 6.1 aftershock was a much greater disaster than the Sept 3 M 7.0 mainshock, even though it was nearly 11 times smaller in terms of energy.



- **Location:** The 6.1 was only 3 miles from Christchurch, compared to 30 miles for the larger event. The very strong ground shaking in the Sept 3 earthquake was focused in an unpopulated area, sparing Christchurch. On February 21, Christchurch bore the brunt of the strongest shaking.



The team that made the King Salmon TsunamiReady recognition possible: (from left to right) Alison Talbot PG&E, Troy Nicolina NOAA NWS, Kevin Miller Cal EMA, Roberto Arroyo PG&E, Rick Wilson CGS, Kathy Moley Pacific Watershed & Assoc., Dan Larkin Humboldt Co. Sheriff's Office OES, (inset) Jimmy Smith Humboldt Co. Board of Supervisors.

What About Tsunami Debris?

When will debris arrive here?

Some debris has already arrived along the West Coast. Debris may arrive along the Northern California coast this year and continue to arrive for several years.

What will it look like?

The tsunami debris is widely dispersed and will be mixed in with the typical trash that washes up on our beaches all of the time. It will include floating material such as wood, plastics, floats, and containers.

Is it radioactive?

It is highly UNLIKELY that the tsunami debris is radioactive.

- The nuclear releases occurred after the debris was washed out to sea.
- The debris found on the Japanese coast outside of Fukushima, and elsewhere in the Pacific has not shown any radioactivity.

Hazardous - Call 911

Oil or chemical drums, gas cans, or propane tanks may be hazardous. If you think the debris poses a risk to health and safety, contact authorities right away.

Not Hazardous

Post your observations at DisasterDebris@noaa.gov or call the U.S. Coast Guard National Response Center 1-800-424-8802.



Fishing boat offshore Alaska



Modeled debris field



Motorcycle Graham Island



Dock Newport Island

The Importance of Education, Tsunami Heroes & Heroines:

Tilly Smith

On December 26, 2004, Tilly Smith was a 10 year-old British School Girl on holiday in Phuket Thailand with her family. She observed the ocean suddenly changing in character and, having studied about tsunamis two week previously in her geography class, thought it looked like the video she had seen on the 1946 tsunami in Hawaii. She told her parents she thought a tsunami was coming, they told other people on the beach to evacuate and the hotel manager (from Japan) told everyone to go to the upper floors of buildings. She is credited with saving the lives of 100 people.



http://en.wikipedia.org/wiki/Tilly_Smith

<http://www.youtube.com/watch?v=E0yrONL1Q3g>

The Importance of Education, Tsunami Heroes & Heroines:

Abby Wutzler

Abby Wutzler, from Wellington New Zealand, was vacationing in Samoa on September 29, 2009 when she noticed the ocean was withdrawing. She had also been taught about the natural warning signs of a tsunami in school and ran up and down the beach yelling that a tsunami was coming. "I remember looking under my arms and seeing all these trees just crushing and being crushed in the brown water, just swirling around and killing everything in sight," she recounted. Many other tourists credit Abby's warning with saving their lives. For her life-saving efforts, she was presented with a certificate of commendation by New Zealand's Ministry of Civil Defense.



Who is the heroine in this group?
The smallest one of course!

<http://english.cctv.com/program/newshour/20091015/103172.shtml>

The Importance of Education, Tsunami Heroes & Heroines:

Martina Marturana

In the early morning hours of February 27, 2010, Martina Marturana felt a slight tremor that lasted a long time. The 12-year-old who lived on Robinson Curusoe Island, 325 miles off the coast of central Chile, was concerned about the earthquake and told her father. They called her uncle who lived in Northern Chile who told them a massive earthquake had just occurred. She looked out the window and noticed the boats in the harbor moving in an unusual way, and ran to ring an alarm bell in the town square. Eight people died in her village but she is credited with saving over 600!

<http://www.independent.co.uk/news/world/americas/how-12yearold-girl-saved-her-chilean-island-from-catastrophe-1915821.html>

<http://www.youtube.com/watch?v=NKpokUT7zfc>



The Importance of Education, Tsunami Heroes & Heroines:

Aveao Faausu Fonoti, Mayor of Amanave

Aveao shows the bullhorn he used on the morning of September 29, 2009 to notify the residents of his village of Amanave on the island of Tutuilla in American Samoa. He had attended a workshop sponsored by the Samoan Affairs Office for mayors about tsunamis only a few weeks beforehand and remembered that ground shaking was a natural warning. He ran through the village blowing the bullhorn and alerting residents to the danger. Some people tried to ignore him but he was insistent. Although 80% of the buildings in his village were destroyed, no one died and no one was seriously injured.



<http://www.talanei.com/2010/02/amanave-mayor-receives-award-for.html>

<http://www.samoanews.com/viewstory.php?storyid=12748>

The Importance of Education, Tsunami Heroes & Heroines:

Moisés Molina, Iloca Policeman

Moisés Molina was on duty in the Chilean coastal resort town of Iloca when the ground started shaking in the early morning hours of February 27, 2011. He was not from the coast and had not learned about ground shaking as a natural warning sign of a tsunami. But he had seen the tsunami evacuation signs posted in the town and when he saw the ocean change character, he realized it was time to evacuate. He coordinated his police staff and successfully notified everyone, including unsuspecting campers, to evacuate. Thanks to his efforts, no one in Iloca died.

<http://www.youtube.com/watch?v=UwbWa0xIPgc>

www.eqclearinghouse.org/...chile/.../dengler_itst_hsu_preliminary_team_report1.pdf



The Importance of Education, Tsunami Heroes & Heroines:

Mauro Mosciatti, Director Radio Bio Bio

Mauro Mosciatti was the head of Radio Bio Bio, a commercial radio station in Concepción. He was an engineer and concerned about earthquakes. For five years before the M 8.8 Maule earthquake, he put concern into action, checking the building strength, getting generators supplies and making sure that equipment and non-structural elements were secure. Their actions paid off – the studio suffered no damage in the quake and was back on the air in 20 minutes, relaying information, and helping people find shelters, medical supplies and locate missing friends and family. It turned out to be a good business plan too – Radio Bio Bio became national heroes and their listening audience more than doubled in the wake of the disaster..



<https://www2.humboldt.edu/kamome/sites/default/files/Chile%20Post%20Tsunami%20Survey%20Blog.pdf>

Scroll to day 5

The Importance of Education, Tsunami Heroes & Heroines:

Junior High students of Unosumai School

In Kamaishi, an Elementary and Junior High School were located just outside of the mapped tsunami hazard zone. The standard procedure was to evacuate to the third floor of the school if a strong earthquake was felt or a tsunami warning was issued.

The Junior High students were part of a special hazards education program and had been taught to:

- Evaluate the situation themselves
- Do as much as you can to make yourself safe
- Take the lead in evacuation

After the earthquake, the Junior High students immediately headed inland to high ground. Elementary school students next door saw them and followed. The older students helped the younger ones get to a safe area and no one died even though both schools were completely destroyed.



The elementary and middle school children practiced evacuation drills (top). On March 11, 2011, they knew exactly what to do ((bottom).

The “Miracle of Kamaishi”

TSUNAMI EDUCATION IN SCHOOLS PAYS OFF

When the 2011 tsunami struck Kamaishi, Japan, an Elementary and Junior High School were located just outside of the mapped tsunami hazard zone.

The Junior High students were part of a special hazards education program and had been taught to:

- **EVALUATE THE SITUATION**

The standard procedure was to evacuate to the third floor of the school if a strong earthquake was felt or a tsunami warning was issued. The students did not stay in their school, but immediately evacuated to the red dot (1) as seen on the map below.

- **DO AS MUCH AS YOU CAN TO MAKE YOURSELF SAFE**

Students could hear and see the tsunami coming and decided their first stop was not safe. They went to the yellow dot (2). They continued to assess their situation and decided the second place wasn't safe either and moved further inland to the green dot (3).



Students run to high ground while the tsunami attacks Kamaishi.



Students and staff at Okawa Elementary School weren't so lucky. The school had no tsunami plan and did not practice evacuation drills. Even though high ground was very close, 74 students and ten teachers died.

Don't Forget About Pets in Your Emergency Planning

BEFORE DISASTER STRIKES

- Make sure your pet has identification such as collar tags and computer chips!
Animals may become separated from you during an emergency.

- Prepare a disaster kit.

If you must evacuate: be sure to attach your shelter's information to collar or cage. Identify a possible caregiver—if recovery takes an extended amount of time it is helpful to find a friend or family member outside of your area that would be willing to care for your pet.

DISASTER SUPPLY KITS

- Arrange with neighbors to check on your pets if you are unable to reach them after an earthquake or other disaster.
- 3-7 days of wet food (this makes them less thirsty)
- 3-7 days of bottled water
- Pet first aid kit
- Disposable garbage bags
- Collar and leash
- Copies of rabies and vaccination records
- A recent photo of you and your pet (for identification purposes)
- Cage liners
- Pet specific items: litter, chew toys to reduce stress.



PRACTICE EVACUATING WITH YOUR PETS – DOGS ON LEASHES AND CATS IN CAGES.

Tsunamis are Tricky

DON'T RELY ON YOUR PAST EXPERIENCE

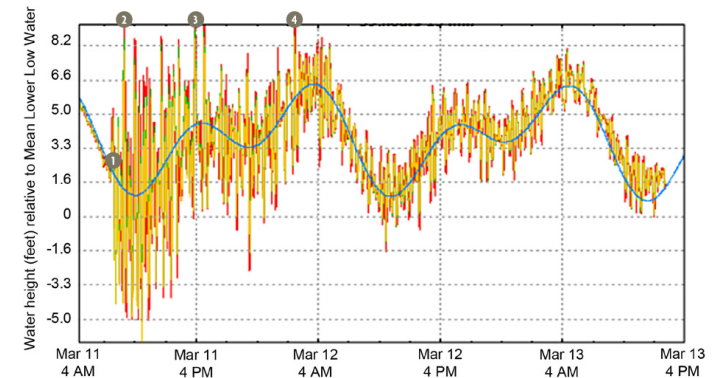
TsunamiS ARE VERY DIFFERENT FROM NORMAL OCEAN WAVES

- Surges may attack from unexpected directions.
- A tsunami may look small from a distance, but by the time you realize how big it is, you might not be able to reach high ground.
- The water moves much faster than it appears. You can't out run it.
- Tsunamis penetrate far onto the shore and can travel miles up coastal rivers.
- You can't surf tsunamis. There is no curling wave or face to surf.
- Even strong swimmers can't survive a tsunami.
- The next tsunami will be different from the last.

JUST WHEN YOU THINK IT IS ALL OVER, A BIGGER SURGE MAY ARRIVE

- First surges are often small; the largest surges may arrive many hours after the first.
- The danger can last a day or longer.
- The water is dangerous even after the tsunami is over – debris and hazardous materials may lurk in the depths.

**STAY AWAY FROM THE COAST UNTIL OFFICIALS
SAY IT IS SAFE TO RETURN.**

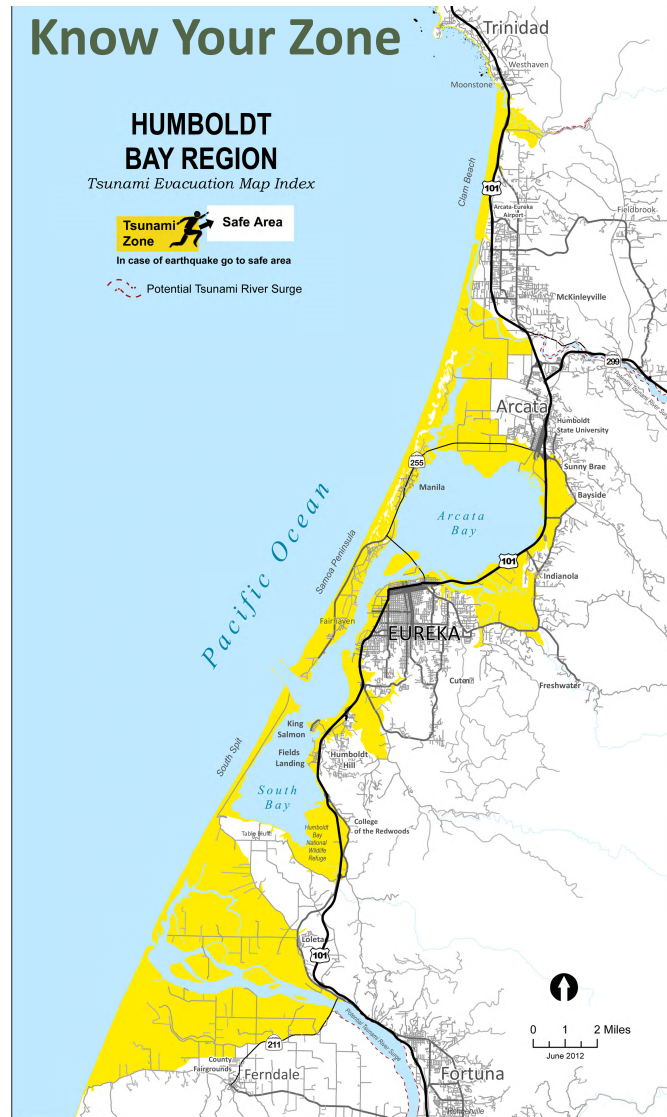


Water level recording from the Crescent City Tide gauge during the Japan tsunami. The blue line is the tidal fluctuation and the yellow/red line shows the actual water height relative to the average low tide height.

Know Your Zone

HUMBOLDT BAY REGION

Tsunami Evacuation Map Index



Put a pin in the map where you live or work. If it is in the white area, you are safe. You do not need to evacuate. If it is in the yellow area, plan an evacuation route. Remember, the earthquake shaking is your warning. Head to high ground or inland as soon as the shaking subsides enough for you to safely move. Go on foot - the ground shaking is likely to have disrupted roads.



This map is designed to help you protect yourself from the biggest tsunami likely to hit our area - a magnitude 9 earthquake on the Cascadia subduction zone. It is based on the best currently available information about tsunamis in our region. The map does not show where the water is likely to flow. It shows safe areas (in white) and areas that may be at risk (in yellow). The map may be change as more information becomes available.

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Humboldt State University/Geography Department

Humboldt State University/Geology Department

NOAA, National Weather Service Eureka Forecast Office

Pacific Watershed Associates

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