UNESCO IOC International Tsunami Information Centre
World Data Center for Solid Earth Geophysics – Tsunamis
U.S. Geological Survey, National Earthquake Information Center

TSUNAMI QUESTIONNAIRE
27 FEBRUARY 2010 CHILE TSUNAMI

Please return this questionnaire to:

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Honolulu, Hawaii 96813
USA
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We request information on your tsunami observations. Please answer only questions you have firsthand knowledge of. In addition to the questions below, please provide any other comments describing the tsunami and its impact.

1. Was a tsunami, tidal wave or other unusual water wave activity along nearby coastal areas noted by you or anyone in your community near the date and time indicated on the opposite page? □ Yes □ No
   If No, please complete item 2 and return this form.
   Date __________________ Time __________________ AM □ PM □ Standard Time □ Daylight Time

2. To be completed by person filling out this form
   Name ______________________________________________________________________________
   Address ______________________________________________________________________________
   City ___________________________________ Country ___________________________________
   State ___________________________________ Zip Code _______________________
   Tel ___________________________________ Fax ___________________________________
   E-mail ___________________________________
   Profession, gender, age__________________________

   Where were you during the earthquake and the tsunami? (a hill, a house, a boat, etc.)________
   Place name (town, village, colony, topographic) __________________________(locate on maps or air photos)

   TSUNAMI ALERT INFORMATION

3. Did you have knowledge/expectation that a tsunami would come? □ Yes □ No
4. If yes, but what do you know and how did you know it? __________________________
   Did you have experience of or knowledge of previous events? __________________________

5. Did you receive a tsunami alert, information bulletin, watch, or warning? □ Yes □ No
6. If yes, indicate type and at what time(s):
   □ Alert __________
   □ Bulletin _____ □ Watch __________ □ Warning _______

7. If yes, how did you learn of the alert, warning, bulletin, or watch? If more than one, please indicate order:
8. What was your response to the alert, warning, bulletin or watch? If more than one, please indicate order:
- Did nothing
- Evacuated
- Waited for further instructions
- Other (explain) ________________________________

9. What was the response of different segments of the population (elderly, disable, minors and children, etc)?
_____________________________________________________________________________________

10. How effective were response planning, operation, and evacuations?_____________________________________

11. Were there obstacles during the evacuation? _______________________________________________________

12. What preparedness actions had you taken well before the tsunami?_____________________________________

TSUNAMI WAVE OBSERVATIONS

We are interested in documenting the sea water appearance before, during, and after the tsunami (boiling, foaming, etc.). Specifically, did the water recede or not before the first tsunami wave arrived?

Were there any sounds (noise) before or during the arrival of the tsunami and of what type?

Were there tsunami-excited seiches in semi-enclosed bays, tsunami generated bore waves traveling up-rivers, trapping, refraction or diffraction of tsunami waves around islands and edge waves along the continental shelf, coastal water piling due to intense hurricane or typhoon winds simultaneous to the arrival of the tsunami?

Were there any evidences and effects of tsunami-induced flows and currents (estimate magnitude and direction if possible).

What was the situation before the tsunami? (meteorological conditions, sea-level, light conditions, sounds or noise, etc. _______________________________________________________________________________________

13. Did you see unusual waves?   □ Yes   □ No

14. If yes, indicate the location and type of water body where you observed the wave:
- Open coast
- Bay
- Harbor
- Estuary

Location _____________________________________________________________________________________

15. Indicate the direction the wave came from:
- North
- South
- East
- West

16. Indicate the direction the wave went to:
- North
- South
- East
- West

17. Indicated the slope of the shore where you observed the wave:
- Level
- Gently sloping
- Steep
- Vertical

18. Were there any other natural phenomena at or near the time of the tsunami?
- None
- Earthquake
- Landslide
- Volcanic activity
- Other (describe) _____________________________________________________________________________

19. What was the water condition before the tsunami waves arrived?
- Calm
- Ripples
- Swells
- Choppy
- Heavy surf
- Stormy

20. Describe any sounds at the time of arrival?
- Drum
- Thunder
- Airplane
- Rain
- Car
- River
- Train
- No Sound
- Other __________________________

21. Did the water recede before the first tsunami wave arrived?   □ Yes   □ No

22. Indicate the nature of the tsunami wave(s):
- Fast rising and falling tides
- Breaking waves (swell with white caps)
- Calm, slow flooding
- Like a river
- Wall (bore)
- Other ___________________________________________________________________________________
23. Describe any sounds or noise, or other unusual happening before or during the tsunami wave arrival.
_________________________________________________________________________________

24. How many times did the water rise (How many waves were there)? __________________________

Local time - from clocks, TV programmes, etc.
How much time was there between the main earthquake shock and the tsunami wave arrival _______
(Note that an aftershock may come between the main shock and the tsunami arrival time)
Did the water completely withdraw and came back again? ______________________________

Were there bores, eddies in rivers or bays, or changes in water color?
What was the relative size of the waves? (which one was largest, etc.)? _______________________

Please give times and heights of the waves at your location:

<table>
<thead>
<tr>
<th>Time</th>
<th>Heights (feet or meters)</th>
<th>Location and Observation</th>
</tr>
</thead>
<tbody>
<tr>
<td>First wave: __________________</td>
<td>______________________</td>
<td>__________________________</td>
</tr>
<tr>
<td>Second wave: __________________</td>
<td>______________________</td>
<td>__________________________</td>
</tr>
<tr>
<td>Third wave: __________________</td>
<td>______________________</td>
<td>__________________________</td>
</tr>
<tr>
<td>Fourth wave: __________________</td>
<td>______________________</td>
<td>__________________________</td>
</tr>
<tr>
<td>Fifth wave: __________________</td>
<td>______________________</td>
<td>__________________________</td>
</tr>
<tr>
<td>Other waves: __________________</td>
<td>______________________</td>
<td>__________________________</td>
</tr>
</tbody>
</table>

25. How far inland did the water travel from high-tide shoreline at your location?

☐ A few feet (up to few m) ☐ Up to 165 feet (50 m) ☐ Up to 330 feet (100 m)
☐ Up to 80 feet (25 m) ☐ Up to 245 feet (75 m) ☐ More than 330 feet (100 m)

Please provide additional descriptions.

Location and Description  ________________________________________________________________
_____________________________________________________________________________________

TSUNAMI IMPACT AND DAMAGE

26. Describe the types of tree damage observed (if any):

☐ Small limbs broken  ☐ Tree less than 2” diameter broken (5 cm)
☐ Trees from 2” to 8” diameter broken (5-20 cm)  ☐ Trees greater than 8” diameter broken (20 cm)
☐ Trees uprooted  ☐ Total destruction of vegetation

27. Describe effects on other types of vegetation:
_____________________________________________________________________________________

28. Did the water move debris inland (seaward) form the shoreline?

Inland: ☐ Yes ☐ No; Seaward: ☐ Yes ☐ No

29. If yes, identify large rocks, significant debris, houses, ships, etc moved by the tsunami (and where they were before).

30. Make a drawing if necessary.

31. Indicate the predominant type of debris, how far inland (or seaward) beyond the high (low) tide shoreline the debris was moved, and the slope of the shore (i.e. level, gentle, steep):

<table>
<thead>
<tr>
<th>Slope</th>
<th>Distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sand</td>
<td></td>
</tr>
<tr>
<td>Driftwood</td>
<td></td>
</tr>
<tr>
<td>Rocks to cobble size</td>
<td></td>
</tr>
<tr>
<td>Boulders</td>
<td></td>
</tr>
<tr>
<td>Other (describe)</td>
<td></td>
</tr>
</tbody>
</table>

32. Were there any permanent changes in sea level after the tsunami? ☐ Yes ☐ No

What were the changes in the land surface caused by the tsunami?

Places where there was erosion? Places where it left sediment (deposits)? What did it look like before the tsunami?

Location  ________________________________________________________________

Description  ________________________________________________________________

33. Was there damage to boats of different sizes?
34. What percentage of boats were damaged in the harbour?
- None
- Few (about 5%)
- Many (about 50%)
- Most (about 75%)

35. List types of damage (moorings, types of boats) and describe how they were damaged, such as by waves, strong currents, debris (boats, pirogues).
  
  Location  __________________________________________________________
  Description  ____________________________________________________

**STRUCTURAL DAMAGE**

36. What percentage of buildings or structures were damaged by the wave in your locality?
- None
- Few (about 5%)
- Many (about 50%)
- Most (about 75%)

37. Check the approximate age of the majority of damaged buildings or structures:
- Built before 1945
- Built between 1945 and 1965
- Built between 1965 and 1980
- Built between 1980 and 1990
- Built between 1990 and 2000
- Built after 2000

38. Check the types of buildings or structures, the type of construction (wood, stone, brick, cinderblock, metal, reinforced concrete, etc), the type of foundation (pilings, cinder block, poured concrete, etc.), and the overall extent of damage (1-Slight, 2-Moderate, 3-Severe, 4-Total):

<table>
<thead>
<tr>
<th>Type:</th>
<th>Type of construction:</th>
<th>Foundation:</th>
<th>Damage:</th>
</tr>
</thead>
<tbody>
<tr>
<td>High-rise building</td>
<td>_________________</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Low-rise building</td>
<td>_________________</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Split-level houses</td>
<td>_________________</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Single-level houses</td>
<td>_________________</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Breakwaters</td>
<td>_________________</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Piers</td>
<td>_________________</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Docks</td>
<td>_________________</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Wharfs</td>
<td>_________________</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Light houses</td>
<td>_________________</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Bridges</td>
<td>_________________</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Overpasses</td>
<td>_________________</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Dams</td>
<td>_________________</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Railroad tracks</td>
<td>_________________</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Roads</td>
<td>_________________</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Other</td>
<td>_________________</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Describe  __________________________________________________________</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

39. Describe the predominant type of ground under the majority of damaged buildings or structures:
- Sandy soil
- Marshy
- Fill
- Hard rock
- Clay soil
- Shale
- Don’t know

40. Was the slope of the ground under these buildings or structures:
- Level
- Gently sloping
- Steep

41. How far away from the shoreline were the buildings or structures that were damaged?
- At the shoreline
- Less than 165 feet (50 m)
- Between 165-330 feet (50-100 m)
- Between 330-660 feet (100-200 m)
- More than 660 feet (200 m)

42. Do you know of any injuries or fatalities associated with the wave?
- Yes
- No
  
  If yes, how many injuries?  ____________________  Fatalities?  ______________________
  Circumstances?  _______________________________________________________________

**FOR THOSE WHO WERE IN BOATS OR AT THE BEACH**

43. Where were you before, during and after the event?
  Please describe______________________________________________________________

44. What did the sea surface look like? (e.g., boiling, shaking, foaming ripples or waves)
  Please describe______________________________________________________________
45. Was there damage to the ship/boat?  □ Yes  □ No
   Please describe _______________________________________________________

46. Did you notice any other phenomena? (e.g., fish behavior, light, etc.)
   _______________________________________________________________________

FOR OLDER PERSONS

47. Have you experienced any other tsunamis like this one in your lifetime, at this same or another place?
   When? Where? Please describe such events. ______________________________________
   _______________________________________________________________________

48. Did your parents/grandparents experience any such events?
   When? Where? Please give a brief description ______________________________________

49. Do you know of stories or legends of such events that have been handed down? Please describe.
   _______________________________________________________________________

Thank you for taking the time to fill out this information questionnaire.