



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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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:

- ☐ Siren      ☐ Radio      ☐ TV      ☐ Civil Defense      ☐ Fire Dept  
☐ Police      ☐ Telephone      ☐ Internet      ☐ Other (explain) \_\_\_\_\_

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 receded 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:

	Time	Heights (feet or meters)	Location and Observation
First wave:	_____	_____	_____
Second wave:	_____	_____	_____
Third wave:	_____	_____	_____
Fourth wave:	_____	_____	_____
Fifth wave:	_____	_____	_____
Other waves:	_____	_____	_____

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) from 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):

	Slope	Distance
<input type="checkbox"/> Sand	_____	_____
<input type="checkbox"/> Driftwood	_____	_____
<input type="checkbox"/> Rocks to cobble size	_____	_____
<input type="checkbox"/> Boulders	_____	_____
<input type="checkbox"/> Other (describe) _____	_____	_____

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):

Type:	Type of construction:	Foundation:	Damage:			
<input type="checkbox"/> High-rise building	_____	_____	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
<input type="checkbox"/> Low-rise building	_____	_____	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
<input type="checkbox"/> Split-level houses	_____	_____	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
<input type="checkbox"/> Single-level houses	_____	_____	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
<input type="checkbox"/> Breakwaters	_____	_____	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
<input type="checkbox"/> Piers	_____	_____	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
<input type="checkbox"/> Docks	_____	_____	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
<input type="checkbox"/> Wharfs	_____	_____	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
<input type="checkbox"/> Light houses	_____	_____	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
<input type="checkbox"/> Bridges	_____	_____	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
<input type="checkbox"/> Overpasses	_____	_____	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
<input type="checkbox"/> Dams	_____	_____	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
<input type="checkbox"/> Railroad tracks	_____	_____	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
<input type="checkbox"/> Roads	_____	_____	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
<input type="checkbox"/> Other	_____	_____	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4

Describe \_\_\_\_\_

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.