

Response to Earthquake and Tsunamis

Apr 4, 2018



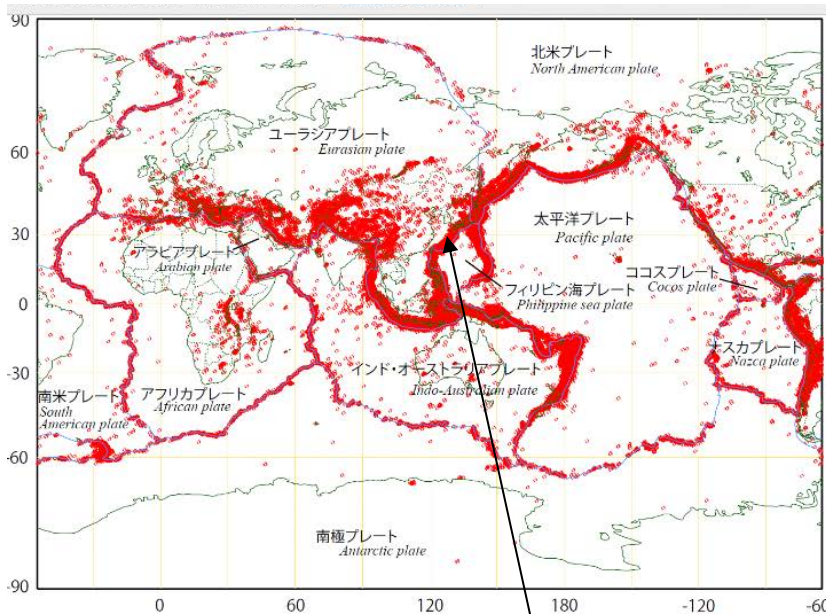
OKINAWA INSTITUTE OF SCIENCE AND TECHNOLOGY GRADUATE UNIVERSITY

沖縄科学技術大学院大学

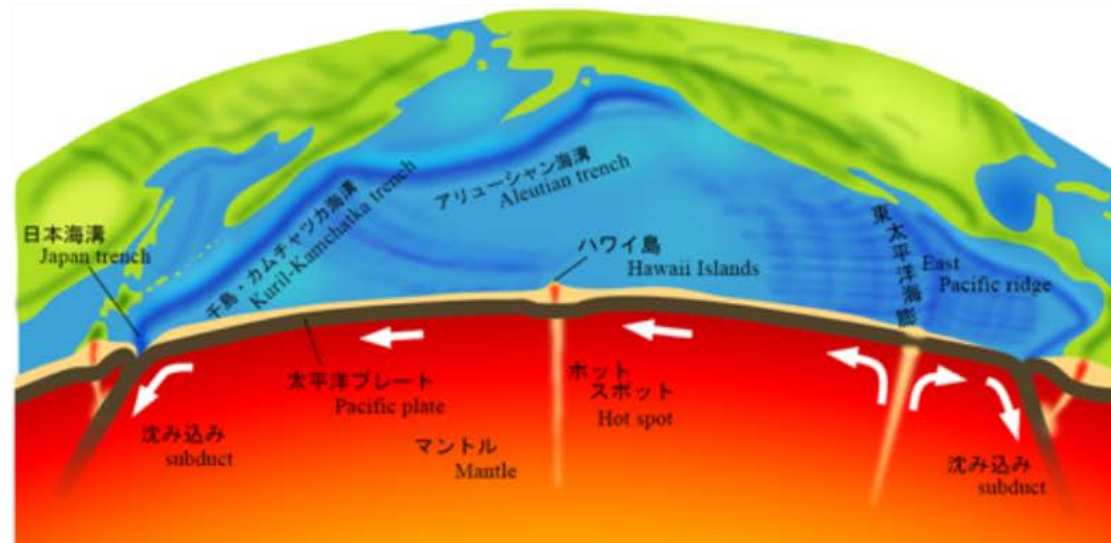
Emergency Response Coordinator

Earthquakes in the world

Red dots show the places where earthquakes occurred in the world



We are here



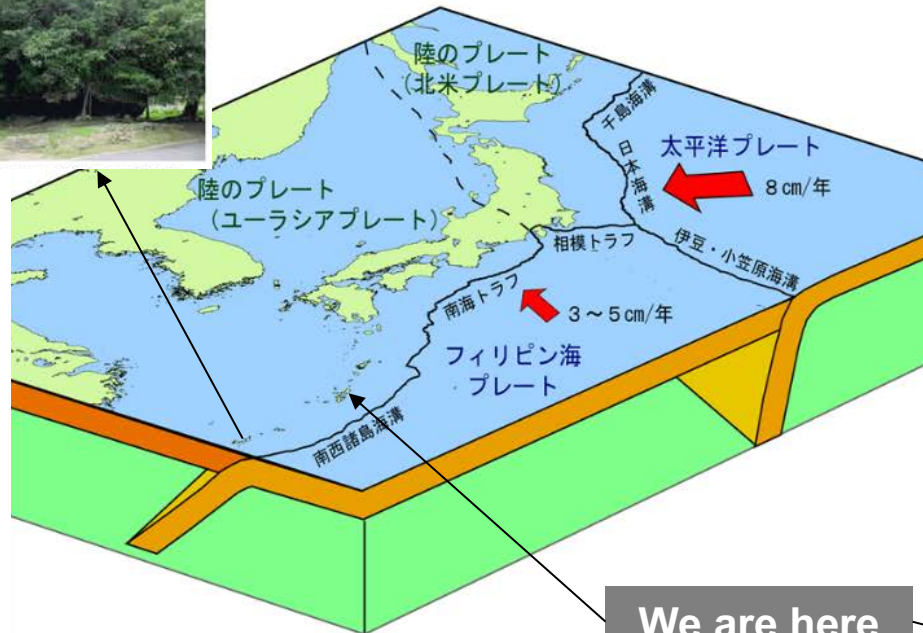
Japan Meteorological Agency

Annual distribution of all epicenters in 2015



A rock (500-600t)

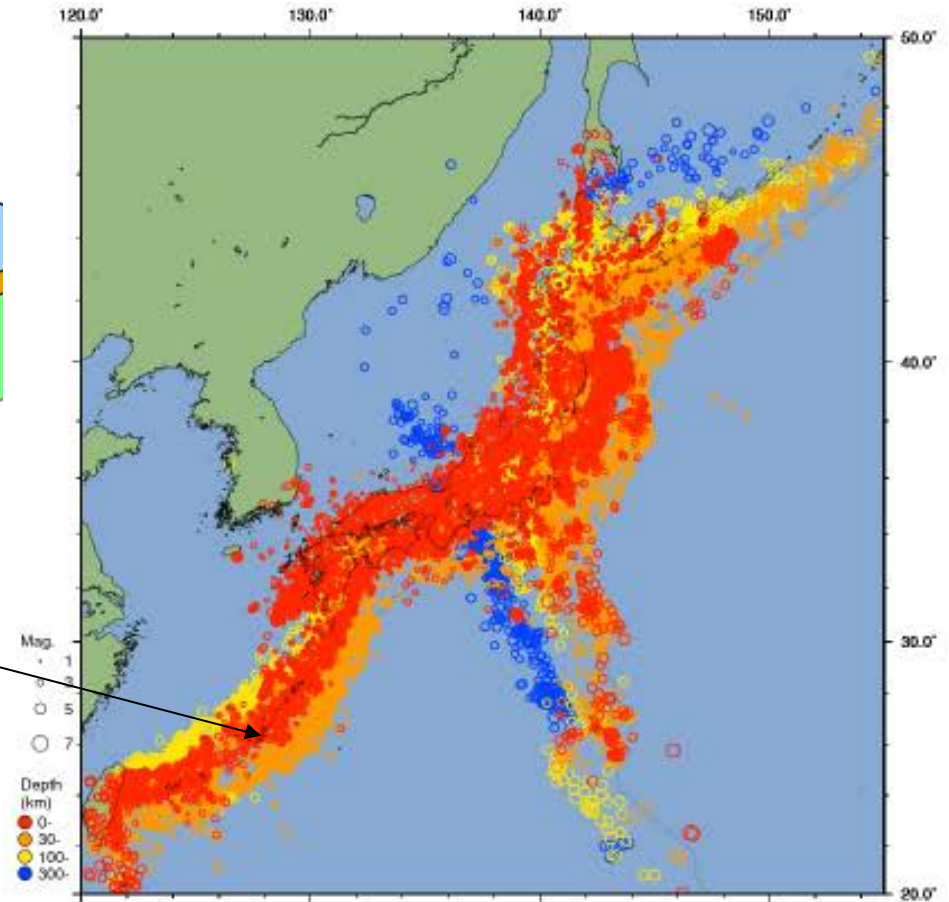
*Remnant of Tsunami in 1771



八重山の明和大津波

*The Ishigaki Is has experienced huge tsunamis 4 times in the past.
Tsunami height was 20 to 30m.

Dots show the places where earthquakes occurred around Japan

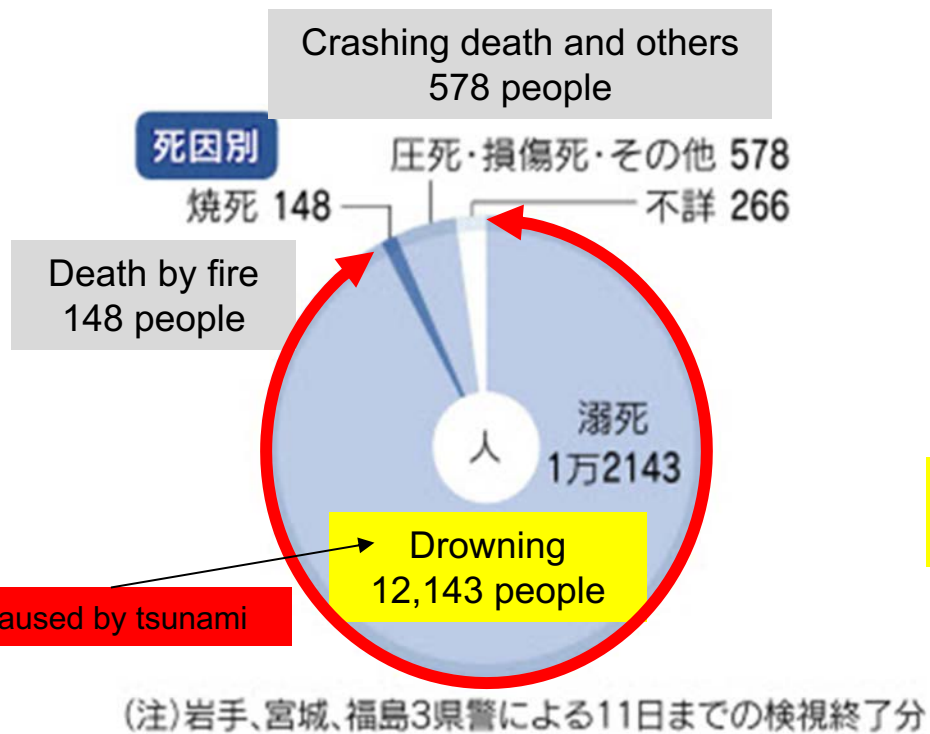


Japan Meteorological Agency

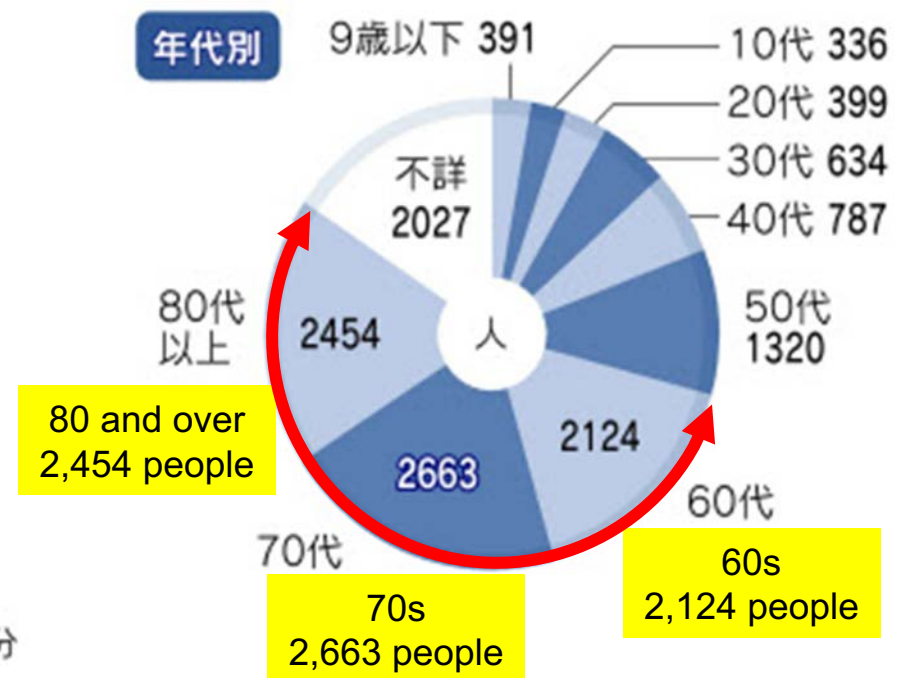
Statistics of death toll in 2011 The Great East Japan Earthquake

The earthquake occurred at 2:46 pm, Mar 11, 2011

Causes of death



Ages



Nikkei newspaper, Apr 11, 2011

Seismic intensity scale

5 upper



Difficult to walk

6 lower



Low earthquake resistance

Difficult to remain standing

Japan Meteorological Agency

6 upper



Low earthquake resistance

Impossible to move without crawling

7



High earthquake resistance

Likely to lean

Likely to lean or collapse

Response to Earthquake

If you feel a tremor,

At home, or OIST campus

- Protect your head and shelter under a table.
 - Don't rush outside.
 - Don't worry about turning off the gas in the kitchen/labs when shaking in the earthquake.
- After the tremor subsided, turn off the gas etc.

*See the video “Earthquake Early Warning” presented at the last slide

While driving

- Don't slow down suddenly.
- Turn on your hazard lights to alert other drivers.
- Then slow down smoothly, pull over to the left and stop.

*See the video “Earthquake Early Warning” presented at the last slide

Outdoors

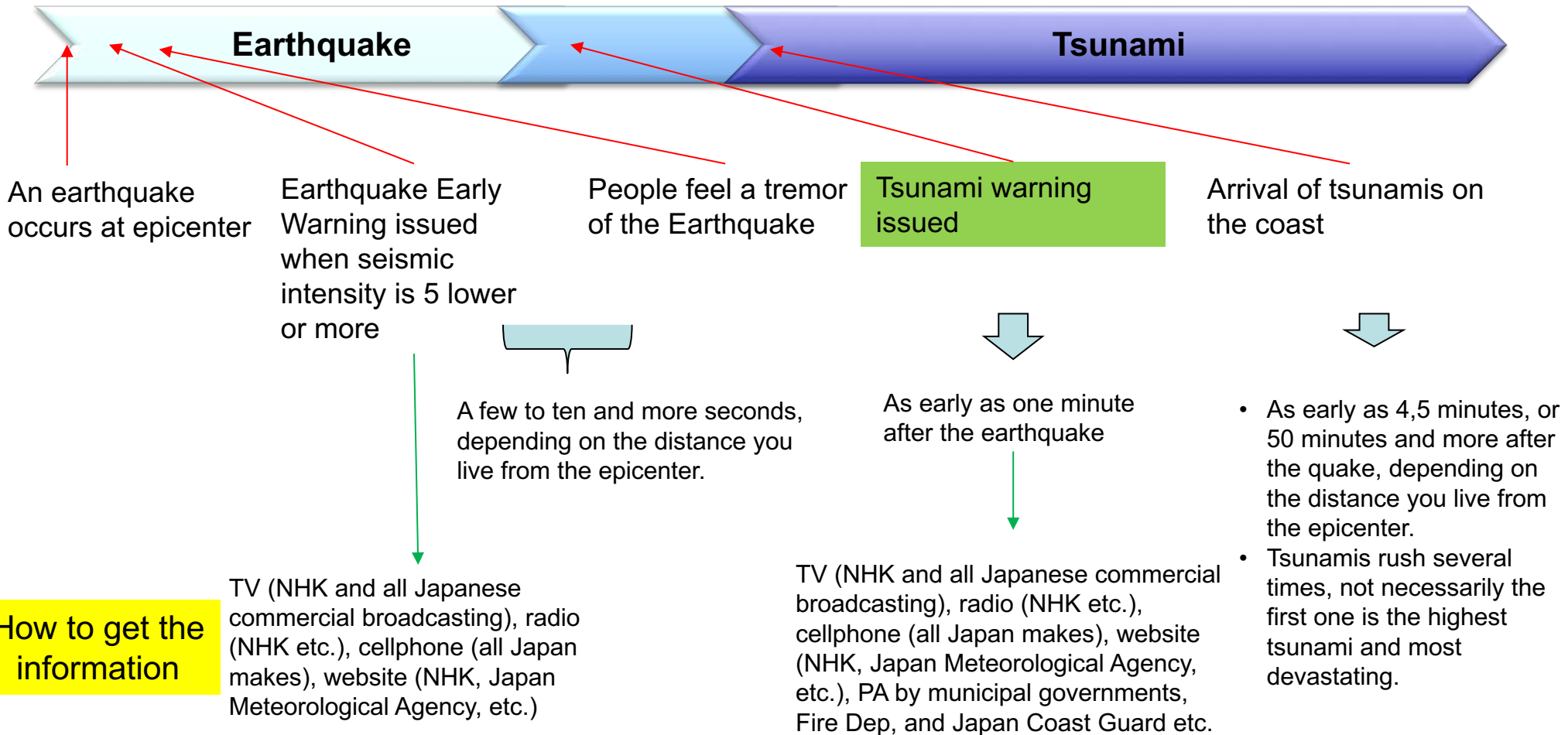
- Look out for collapsing concrete-block walls.
- Be careful of falling signboards and broken glass.
- Protect your heads and keep way from those objects.

In elevators

- The elevator stops at the nearest floor, then get off immediately.

Concept of tsunami warning after the earthquake

*Not all earthquakes trigger tsunamis.



*See the video “Earthquake Early Warning” presented at the last slide

Response to Tsunami

Major Tsunami Warning (Ou Tsunami Keihou), or Tsunami Warning (Tsunami Keihou)



- Immediately evacuate to a tsunami evacuation area/building.
- Be aware of 2nd wave, stay there until the warnings are lifted.

***Major Tsunami Warning with Huge Tsunami**=the same scale of tsunamis we had in 2011 the Great East Japan Earthquake, in some places tsunami height exceeded 30 m.

*Major Tsunami warning=tsunami height, 3m or more.

*Tsunami warning=tsunami height, 1-3m.



2011 the Great East Japan Earthquake

Onboard a ship (small craft)



In/near a port

- Dock at the wharf/pier, immediately evacuate to a higher ground/tsunami evacuation area.

Near coastal area

- Escape offshore as far as possible.

Follow the direction by Japan Coast Guard if available.

Tsunami Advisory (Tsunami Chuihou)



At beach



Immediately get out of the water,
evacuate to a higher ground.

*Tsunami advisory=tsunami height, 0.2-1m.

Tsunami evacuation area in OIST

*OIST main campus is located more than 50 m above sea level. You stay here in case Major Tsunami Warning with Huge Tsunami was issued by the Japan Meteorological Agency.

Seaside House

Actions and Evacuation Route when Major Tsunami Warning (Ou Tsunami Keihou) issued



1. Protect yourself. Shelter under a table/desk if tremors occur.
2. Do not rush outside.
3. After tremors have subsided, turn off the gas, switch off the power, if used.
4. Obtain information from TV, radio, internet about the tsunami.
5. If a major tsunami warning with huge tsunami height is issued, evacuate to the building of the Onna Sub Base ASDF. Do not use a car because the roads will be congested with traffic. Do not return until the warning is lifted. (If you have directions at the base by the Commander, follow it.)

Major tsunami warning with huge tsunami height means tsunamis as large as those seen after the Great East Japan Earthquake of 2011 (over 30m in some places) may hit.

Marine Science Station

Seragaki Tsunami Evacuation Site



Tsunami evacuation area at your house

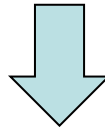
Prepare for Major Tsunami Warning with Huge Tsunamis (Ou Tsunami Keihou, Kyodai Tsunami)

- You spend most of the year at your home.
- There is a high possibility of experiencing an earthquake at your home.
- Most casualties were caused by Tsunamis that occurred after the 2011 The Great East Japan Earthquake.
- Highly recommended you know tsunami evacuation areas near your house.

How to find proper tsunami evacuation areas

1. Know the meaning of sign boards.
2. Study the hazard map.
3. Know the sea level of evacuation area.

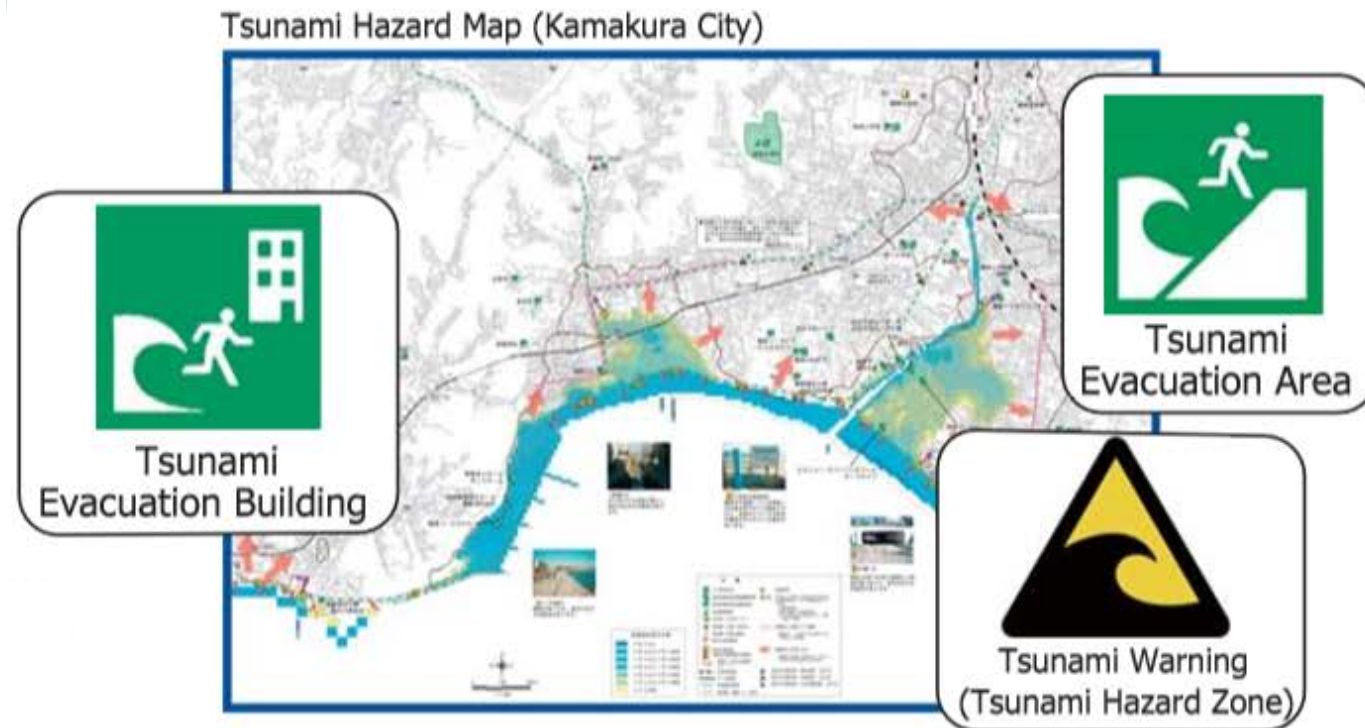
(more than 30m above sea level is preferable)



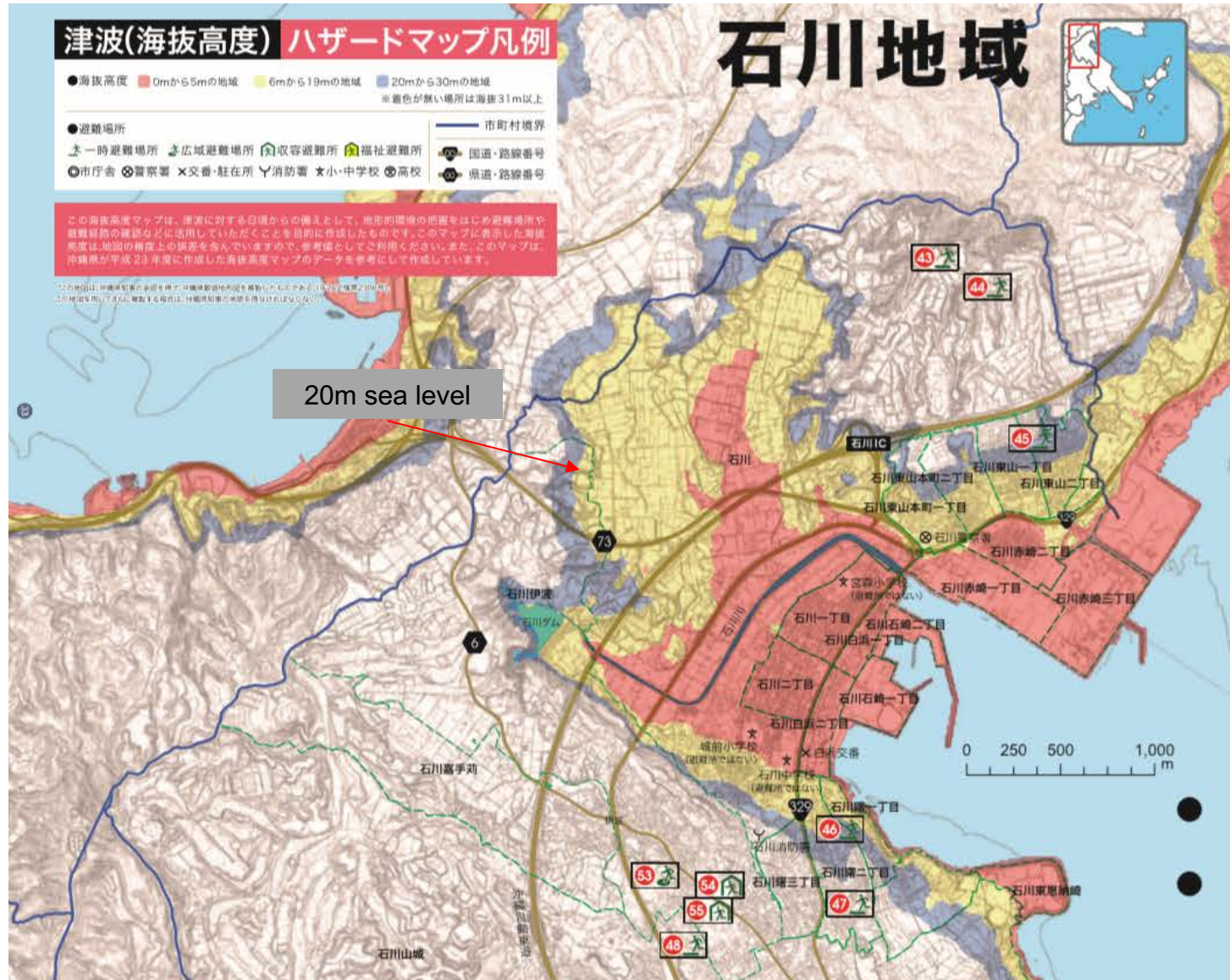
4. Walk to the tsunami evacuation area and know the time needed to arrive there from your house.

(JMA announces estimated time of tsunami arrival to your town)

Sign boards



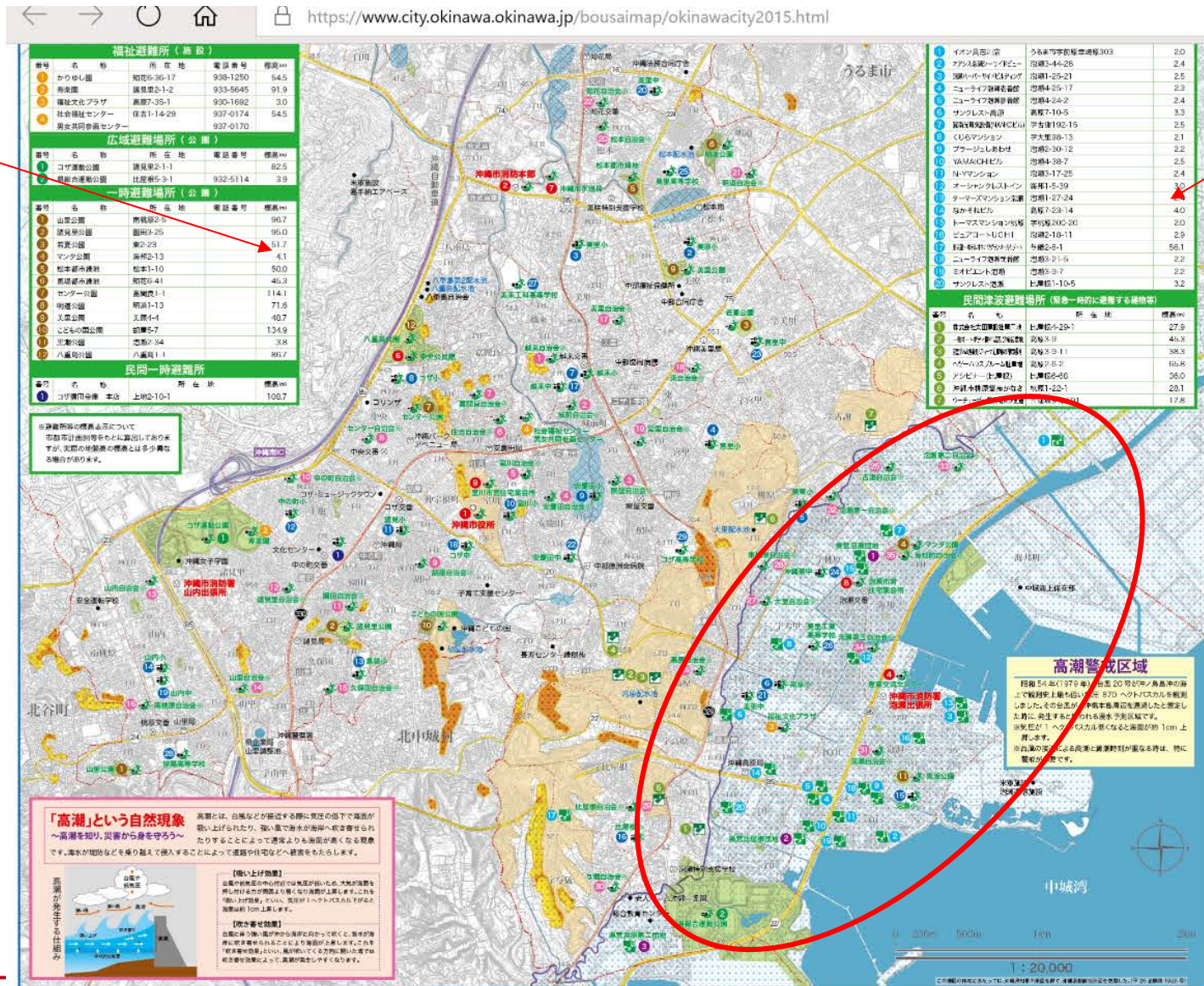
Hazard map issued by city government



Hazard map issued by city government

Sea level

Sea level



Hazard map issued by Okinawa city government

Hazard map posted by prefectural government

1

Okinawa Prefectural Government website

<http://www.pref.okinawa.jp/site/chijiko/kohokoryu/foreign/index.html>



2

Click Geographic Information System

3

Geographic Information System



4

Click Sea Level Map

5 Select the area you live



沖縄県地図情報システム

沖縄県地図情報システムは、沖縄県が提供する地図情報システムです。

[トップページ](#) > [ご利用上の注意](#) > [位置選択](#) -地図を表示する位置を選択-

表示マップ: 津波浸水想定図 (H26年度) ▼

郵便番号・住所から探す

[一覧表から選択する場合はこちらから](#)

目標物から探す

[小学校](#)
[中学校](#)
[国の機関](#)

[地方の機関](#)
[保健所](#)
[特別支援学校](#)

[警察](#)
[消防](#)
[大学専修学校等](#)

[病院](#)
[郵便局](#)
[高等学校](#)

[山地](#)
[河川、湖沼](#)
[幼稚園](#)

[陸域自然地名](#)
[海域、海岸地形](#)
[島等](#)

[信号交差点](#)
[小学校](#)
[中学校](#)

[高等学校](#)
[大学](#)
[特別支援学校](#)

[その他学校](#)

主要施設から選択する

[沖縄県庁](#)
[那覇市役所](#)
[沖縄市役所](#)

[石垣市役所](#)
[浦添市役所](#)
[名護市役所](#)

地図から探す

地図上でクリックすると、クリックした位置の地図を表示します。



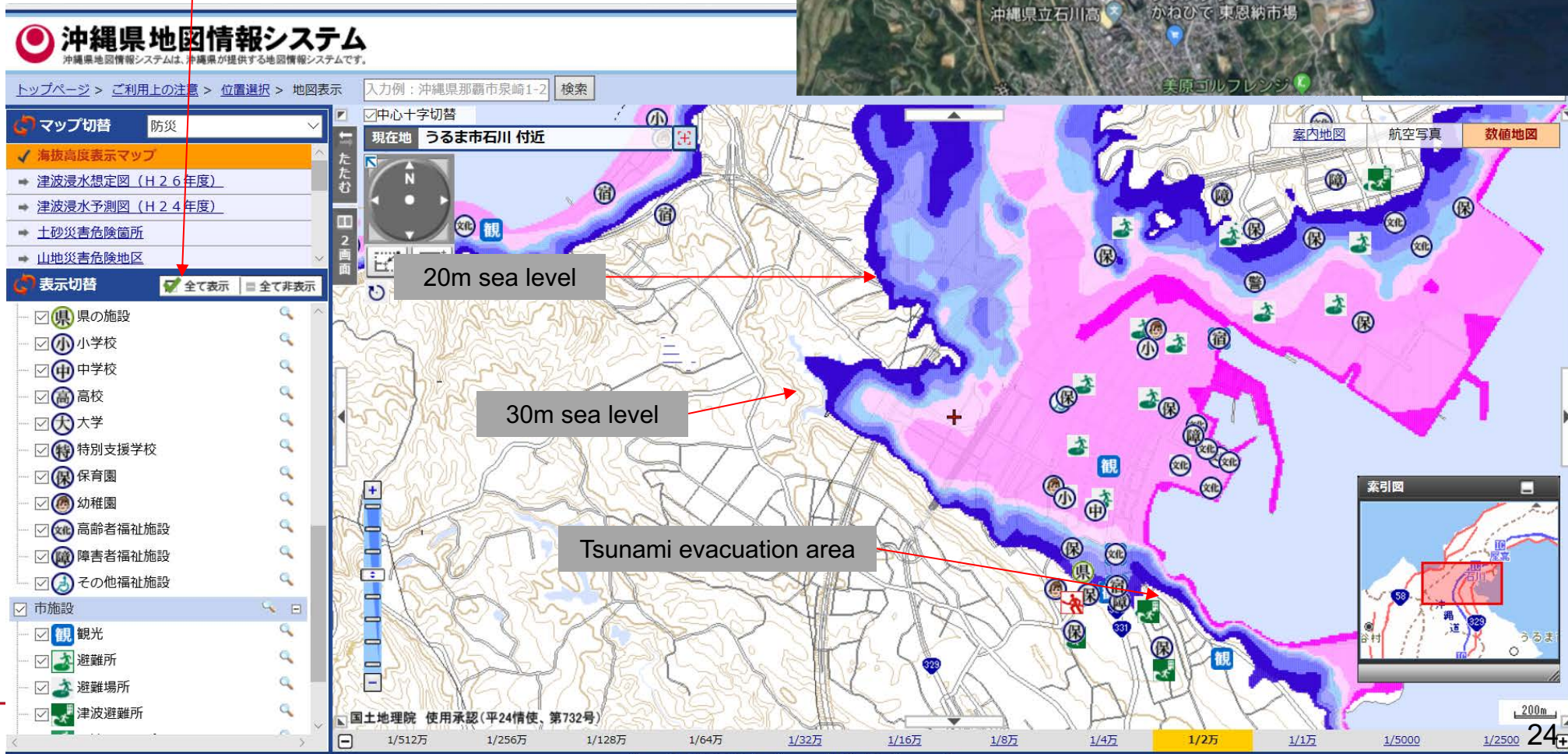
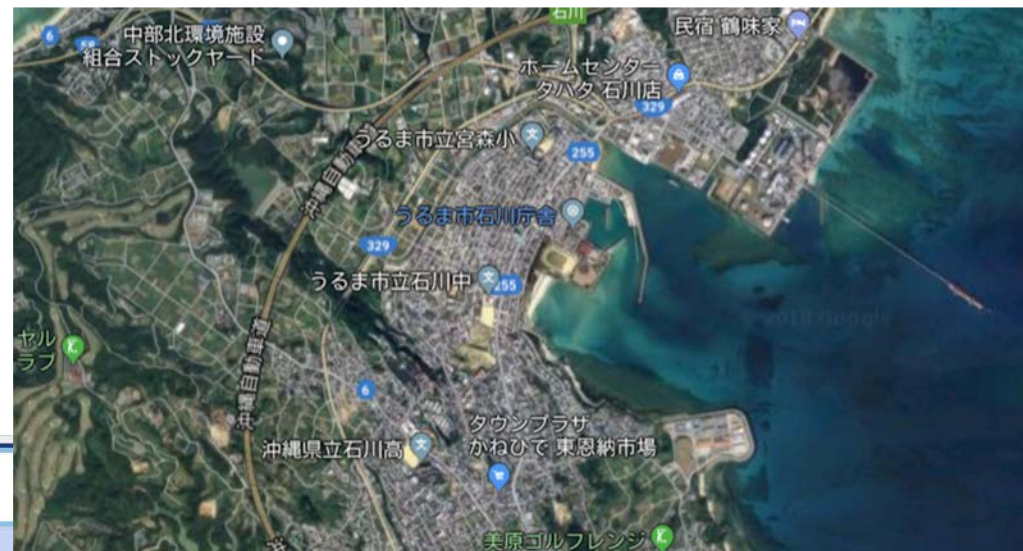


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Sea Level Map Uruma city

6

Click here for presenting all items



B Sea level

A [Click here for more information](#)



**For You and your Family's Safety,
Walk to a nearest tsunami evacuation area
from your house Once.**

Send these messages to your colleagues

Earthquake Early Warning

The video introduces you how to react at the moment of earthquake in addition to actions to be taken if you receive the Earthquake Early Warning.



Japan Meteorological Agency