

Disaster Preparedness in Shizuoka

Shizuoka is a beautiful, excellently located prefecture. It's got sea views and mountains (including Mount Fuji, the tallest mountain in Japan), and is relatively close to both Tokyo and Kyoto. A placement in this prefecture is a dream come true for many JETs.

However, all of this comes with the price of being prepared for natural disasters, should they occur. This is certainly not a Shizuoka-specific problem, but given the geography of the prefecture, there are three large-scale disasters that you need to be ready for, just in case.

These are:

1. The Tōkai earthquake
2. Tsunamis
3. Mt. Fuji eruption

There is also the minor, but more frequent problem of:

4. Typhoons and landslides

Each of these will be explained in detail under their relevant headings, along with how to be prepared and act, should that phenomenon come about.

A list of resources to help you with disaster preparedness in general will also be placed at the end of this article.

1. The Tōkai earthquake.

The Tōkai earthquakes are major earthquakes that have occurred regularly every 100 to 150 years in the Tōkai region of Japan. This area is centred largely on Shizuoka prefecture. Significant earthquakes have struck in 1498, 1605, 1707 and 1854, and in 1969 it was pointed out that another great shallow earthquake was possible in the "near future".

This means that Shizuoka prefecture is very overdue a large earthquake, which is predicted to have a magnitude of 8.0, with large areas shaken at the highest level in the Japanese intensity scale, 7.

To give you an idea of what those numbers indicate, here is their descriptions on the Richter scale, and the Japanese (Shindo) seismic intensity scale:

8.0–8.9	Great	X or greater ^[29]	Major damage to buildings, structures likely to be destroyed. Will cause moderate to heavy damage to sturdy or earthquake-resistant buildings. Damaging in large areas. Felt in extremely large regions.
9.0 and greater			At or near total destruction – severe damage or collapse to all buildings. Heavy damage and shaking extends to distant locations. Permanent changes in ground topography.

7 (7) / 6.5 and up	Thrown by the shaking and impossible to move at will.	Most furniture moves to a large extent and some jumps up.	In most buildings, wall tiles and windowpanes are damaged and fall. In some cases, reinforced concrete-block walls collapse.	Most or all residences collapse or receive severe damage, no matter how earthquake-resistant they are.	Most or all buildings (even earthquake-resistant ones) suffer severe damage.	Electrical, gas and water service are interrupted.	The ground is considerably distorted by large cracks and fissures, and slope failures and landslides take place, which can change topographic features.
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In order to prepare for an earthquake, the first thing you must do is put together a disaster kit. This should contain the following (bolded are essential, non-bolded are still important, but slightly more optional):

- **Water:** 4 litres of water per person, per day for drinking and sanitation
- **Food:** 3 days worth of non-perishable, easy-to-prepare foods (canned, shelf stable)
- Plastic (saran) wrap, paper cups and plates, utensils (wrap to avoid washing)
- Manual can opener
- First aid kit including essential medications, prescriptions
- Flashlight with extra batteries
- Portable radio with extra batteries
- Filter mask
- Whistle
- Sanitation and personal hygiene items
- Garbage bags & plastic ties for personal sanitation, garbage
- Blankets (emergency)
- Warm clothes, change of clothes
- Copies of important documents, ID
- Passport, 30,000 yen in cash
- Family and emergency contact information

You can buy semi-prepared kits in some homeware stores like Nitori, Jumbo Encho, and D2, and stores such as Nojima and Tokyu Hands. Keep an eye out for them if you do not want to build a kit from scratch.

1) Emergency Supplies Checklist (examples)



List of Important Items

常に持ち歩くものリスト

Have the following items on you at all times.

次のものを常に持ち歩きましょう。

Residence Card
在留カード

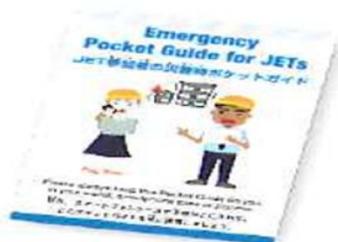
Health Insurance Card
健康保険証



健康保険証

This Pocket Guide
このポケットガイド

Telephone card and/or 10 yen coins
テレフォンカードまたは小銭

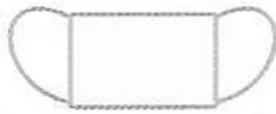


Telephone card



After a disaster has occurred, it may take time to receive help and supplies, etc. In addition to the items listed in the Pocket Guide, please prepare the following items.

Keep your items in a backpack, so that you can easily take everything with you if you need to evacuate.



Masks
マスク



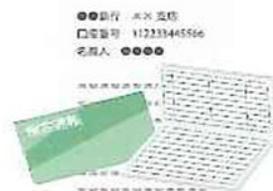
Toilet paper
トイレトペーパー



Disposable hand warmers ("Kairo")
使い捨てカイロ



Sanitary items
生理用品



Copy of your bankbook
銀行通帳の写し



Personal seal ("Hanko", "Inkan")
印鑑

Emergency List (Digest Edition)



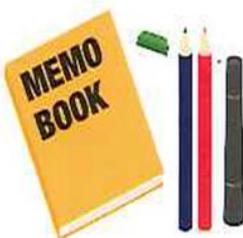
Wet tissues
ウェットティッシュ



Spare clothes (including underwear)
着替え(下着を含む)



First aid kit (including medicines that you take regularly)
救急セット(いつも飲んでる薬を含む)



Pen / paper
筆記用具



Flashlight and radio
懐中電灯、ラジオ



Spare pair of glasses or contact lenses
予備のメガネまたはコンタクトレンズ

After the disaster (earthquake, or even tsunami) has passed, if your house is still inhabitable, you may be able to return home. However, water, gas, and electricity systems may be down for an extended period of time, so it is a good idea to have the following:

- A portable canister-gas powered stove
- Extra water
- Extra non-perishable food

2) Emergency Rations Checklist (examples)

In order to continue supporting yourself at home, you should have 1 week of both water and food set aside.

Estimate for 1 week (per person)

Drinking water



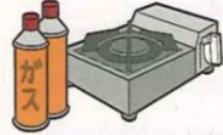
3L per day x 7 days = 21L

Food



3 meals x 7 days = 21 meals

Portable gas stove/gas cartridges



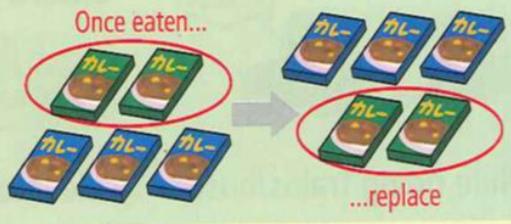
A portable gas stove will allow you to prepare hot food in case of an emergency.

One gas cartridge can boil 1.5L of water approx.. 10 times

Rolling stock method (Use and replace)

This method of storing rations involves using everyday and emergency food supplies that you consume regularly. Having a system in place to use older supplies first will allow you to rotate stock more effectively.

Space should be made at home to store adequate drinking water.



Examples of Foodstuffs

Retort packs, canned goods, instant ramen, pastas, seasonings, dried foods, root vegetables (vegetables that can be stored at room temperature), freeze-dried vegetables, dry fruits, etc.

- Consider how you could put together a week's worth of meals from food items such as these.
- Get in the habit of using canned and dry foods on a regular basis.
- Once items are consumed replace them, ensuring that stock is regularly refreshed.
- Regularly try and compare different canned and retort products to discover ones that suit your tastes.

You are not familiar eat, you will stress that it is not delicious meal. Precisely because emergency, what you are accustomed to eat from the usual, favorite food is to stabilize the feeling will be the force to survive the difficulties.

(This information, and the other 3 graphics above were taken from the pocket guide you should have been issued at Tokyo Orientation.

Please keep the original guide on your person in case of emergency)

If you find yourself experiencing an earthquake, you should do the following:

- Get under a table or other sturdy object, as falling objects could hit your head (do not rush outside)
- Open a door so you can escape after the initial tremors (doors can get stuck after quakes)
- Quakes can lead to fires – turn off all gas and other fire hazards!
- Beware of aftershocks, which can hit for a while after the earthquake has already subsided.
- Bring your emergency kit as you get out

After the earthquake (or at least the initial tremors) have passed, be aware of the following:

- Do not stand under eaves as tiles, bricks, etc. could fall on you
- Stay away from cliffs and river banks as landslides could occur
- If at home, move up and as far away from a mountain as possible, due to fears of landslides

2. Tsunamis

A common occurrence (in coastal areas) after an earthquake is a tsunami, although it can also be brought about by things such as volcanic eruptions and underwater explosions (including detonations of underwater nuclear devices), landslides, and other underwater disturbances.

The last tsunami to hit Shizuoka prefecture was caused by the Tōnankai earthquake in 1944, which had a magnitude of 8.0. News of the event was downplayed by the authorities in order to protect wartime morale, and as a result the full extent of the damage is not known, but the quake is estimated to have killed 1223 people, the tsunami being the leading cause of the fatalities.

Tsunami waves do not resemble normal undersea currents or sea waves, because their wavelength is far longer. Rather than appearing as a breaking wave, a tsunami may instead initially resemble a rapidly rising tide. They generally consist of a series of waves, lasting from minutes to hours. After the first initial wave of a tsunami, it is advised to be cautious for 12 hours or more, and to be aware that the first wave is not always the largest one. Wave heights of tens of metres can be generated by large events like the ones listed above, and the damage caused by them can be catastrophic. Take a look at this infographic for more detailed information:

Tsunami Height (m)	1	2	4	8	16
Tsunami Shape	Tide	Swell-up	Break after 2 nd Wave	Break at 1 st Wave	
Wooden Houses	Partially Destroyed		Completely Destroyed		
Stone Houses	Endurable			Completely Destroyed	
Reinforced Concrete Houses	Endurable				Completely Destroyed
Fishing Vessels			Damage Occurs	50% Damaged	100% Damaged
Tide Water Control Forests	- Slightly Damaged - Block Drifts - Slight Tsunami			- Partially Damaged - Block Drifts	- Completely Damaged - No Effect
Fish-Culture Rafts	Damage Occurs				
Villages along Coasts			Damage Occurs	50% Damaged	100% Damaged
Splash Wave Height (m)	1	2	4	8	16

Inundation depth (wave height) and scale of disaster (Shuto, 1990)

This is the estimated impact on coastal areas in Shizuoka of a tsunami caused by the Tōkai earthquake:

The numbers in the table are expressed in meters above T.P.

City Town	along the Suruga Trough* Nankai Trough				along the Sagami Trough			
	Level 1 ^{*1}		Level 2 ^{*2}		Level 1		Level 2	
	maximum	average	maximum	average	maximum	average	maximum	average
Kosai City	7	3	15	5	2	1	4	2
Hamamatsu City Kita Ward	1	1	1	1	1	1	1	1
Hamamatsu City Nishi Ward	7	2	14	3	2	1	3	2
Hamamatsu City Minami Ward	7	6	15	13	2	2	3	3
Iwata City	6	5	12	10	2	1	3	2
Fukuroi City	5	5	10	9	2	2	4	3
Kakegawa City	6	5	13	11	2	2	4	4
Omaezaki City	11	7	19	12	3	2	6	4
Makinohara City	11	6	14	11	3	2	5	4
Yoshida Town	5	4	9	7	2	2	4	3
Yaizu City	6	4	10	6	2	2	4	2
Shizuoka City Suruga Ward	7	5	12	8	2	2	5	4
Shizuoka City Shimizu Ward	7	4	11	6	2	2	4	2
Fuji City	3	3	6	5	2	2	4	2
Numazu City	7	4	10	7	4	2	5	2
Izu City	7	5	10	8	2	2	3	2
Nishi-Izu Town	7	5	15	9	2	2	3	2
Matsuzaki Town	8	5	16	12	2	2	4	3
Minami-Izu Town	7	5	26	15	4	2	9	4
Shimoda City	9	4	33	15	5	3	10	5
Kawazu Town	4	3	13	10	4	3	6	5
Higashi-Izu City	3	3	14	8	4	3	6	4
Ito City	3	2	10	5	7	4	8	5
Atami City	2	2	5	4	7	5	9	6

Note: tsunami heights are rounded off to one decimal place in centimeters and rounded up to the nearest integer.

*1 Maximum estimated heights for three scenarios; Tokai Earthquake, Tokai· Tonankai Earthquake and Tokai· Tonankai· Nankai Earthquake

*2 Maximum estimated heights for an Earthquake along the Nankai Trough among the case #1, #6 and #8 provided by the Cabinet Office (2012).

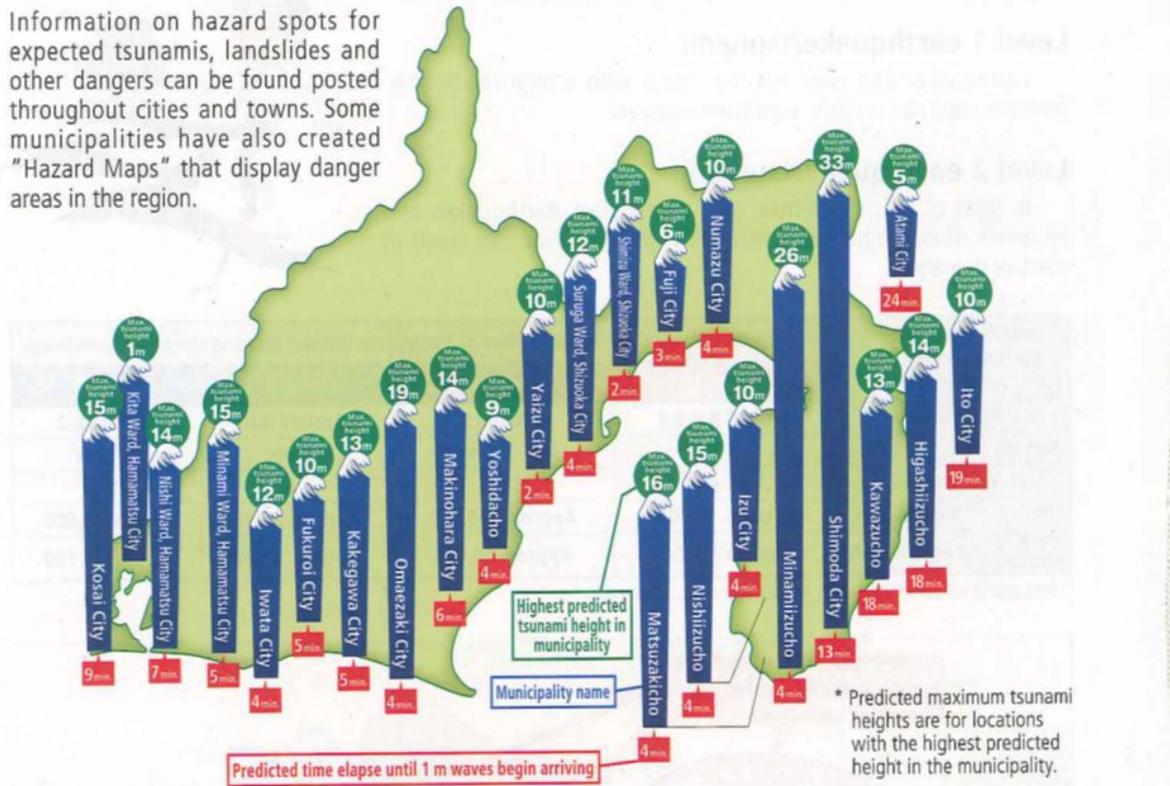
(This information was taken from a paper entitled “Earthquake Preparedness in Shizuoka Prefecture, Japan”, which was published in 2014 by Shizuoka Prefecture.)

The following graphic also shows how long tsunami waves are expected to take to form after the earthquake:

Tsunamis Predictions for Shizuoka Prefecture

Tsunamis occurring along Suruga/Nankai Troughs
 Predicted height of large tsunamis caused by a level 2 earthquake, released June 27, 2013

Information on hazard spots for expected tsunamis, landslides and other dangers can be found posted throughout cities and towns. Some municipalities have also created "Hazard Maps" that display danger areas in the region.



If you live in a coastal region, get to higher ground immediately after an earthquake hits. If you can, bring your portable emergency kit.

Most areas likely to be affected by tsunamis have designated emergency buildings that are built to be higher than, and withstand the force of, oncoming waves. Please talk to your coworkers, supervisors, or neighbours to learn where the buildings near you are located.

3. Mt. Fuji eruption

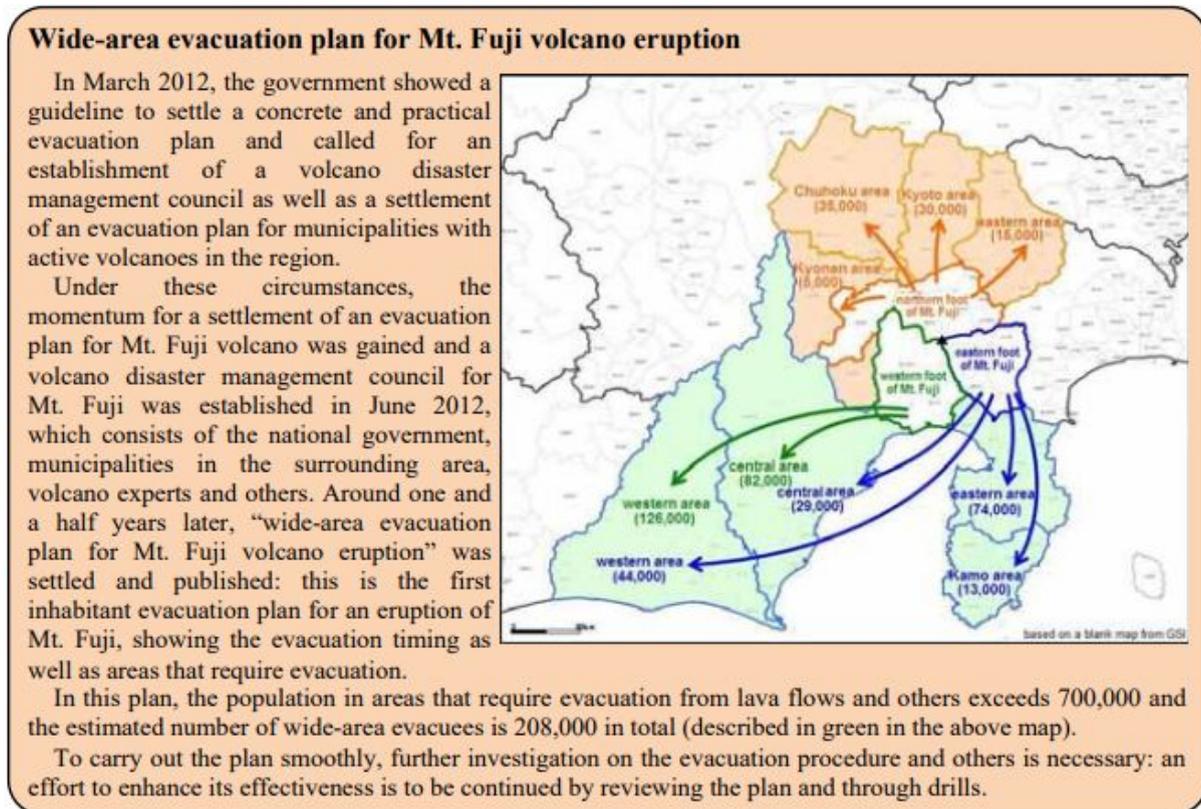
The last eruption of Mt. Fuji was in 1707, several weeks after The Great Hōei Earthquake. The earthquake had registered about 8.7 on the Richter scale, it created enough seismic activity to compress the magma chamber in the inactive Mt. Fuji.

Before the Hōei earthquake, another earthquake named Genroku had struck Japan in 1703. This earthquake affected both Kanagawa and Shizuoka prefectures, and measured about 8.2 in the Richter Scale. It caused seismic activity similar to the Hōei earthquake. Many articles find a correlation between the two earthquakes, concluding that without both, the Hōei eruption would've not happened.

This background is important as it directly relates to the situation today. In 2011, the Tohoku earthquake, which had a magnitude of 9 on the Richter scale, raised the pressure within the magma chamber of Mt. Fuji, in much the same way that the Genroku quake did. This means

that another large earthquake within a relatively short time frame (potentially the Tōkai earthquake), may cause an eruption of Mt. Fuji.

Mt. Fuji is almost consistently monitored by seismic experts, and if dangerous levels of pressure are detected, an evacuation of areas that would be highly affected will be carried out. This is detailed in the image below:



(This information was taken from a paper entitled “Earthquake Preparedness in Shizuoka Prefecture, Japan”, which was published in 2014 by Shizuoka Prefecture.)

If you are in one of the three evacuation areas, your local city hall, coworkers, or neighbours may have more detailed information, so try to do some research of your own!

4. Typhoons and landslides

Between August and early September, typhoons are a common occurrence in Japan, and although they sound frightening, and can cause some issues, they are usually only minor and can be dealt with easily.

Typhoons are tropical storms, meaning they are a combination of heavy rain and strong winds. These conditions can often delay or cancel trains, so if you must travel, checking the JR website before taking a train in a typhoon is strongly advised. The English service information can be found at this address, and updates every 30 minutes:

<http://sp.traininfo.jr-central.co.jp/en/>

The heavy rain of a typhoon can also cause landslides in mountainous areas. If you have a Japanese phone, you will get alerts warning you of potential evacuations due to severe weather. If you do not have a Japanese phone, or would like english information, check the weather conditions on the Japan Meteorological Agency website at this address:

<http://www.jma.go.jp/jma/indexe.html>

Also be aware that typhoons may cause flash flooding if you are situated near a river or other body of water. If this is the case, move to higher ground.

Useful resources

<u>Word</u>	<u>Reading</u>	<u>Meaning</u>
地震	jishin	Earthquake
余震	yoshin	Aftershock
避難	hinan	Evacuation
土砂災害	doshasaigai	Landslide
洪水	kouzui	Flood
噴火	funka	Eruption

CLAIR's multilingual app for foreign residents:

<http://www.clair.or.jp/tagengo/index.html>

Shizuoka Prefecture Facebook page:

<https://www.facebook.com/infoshizuoka.eng>

Shizuoka Prefecture Twitter page:

<https://twitter.com/mtfujishizuoka>

Earthquake notification app (yurekuru call):

Android: <https://play.google.com/store/apps/details?id=jp.co.rcsc.yurekuru.android&hl=en>

iPhone: <https://itunes.apple.com/jp/app/yurekuru-call/id398954883?l=en&mt=8>