Forecast of seismic intensity induced by anticipated earthquakes in the city of Suita

The map at right presents forecast seismic intensity in the event of an earthquake in the Uemachi Fault Zone, which would inflict the greatest damage in Suita. The seismic intensity of such an earthquake is forecast to be at least 6.5 in virtually all districts of the city and 7 in some of them. In addition, the Nankai Trough Earthquake is forecast to induce tremors with a seismic intensity of 6.0 - 6.4 in all districts of the city.

Seismic intensity and tremor situation

Seismic intensity of upper 5

- It is difficult to walk without holding onto something.
- Many dishes and books fall from shelves.
- Furniture that is not fixed into place may topple.
- Walls made of unreinforced concrete blocks may collapse.

Seismic intensity of lower 6

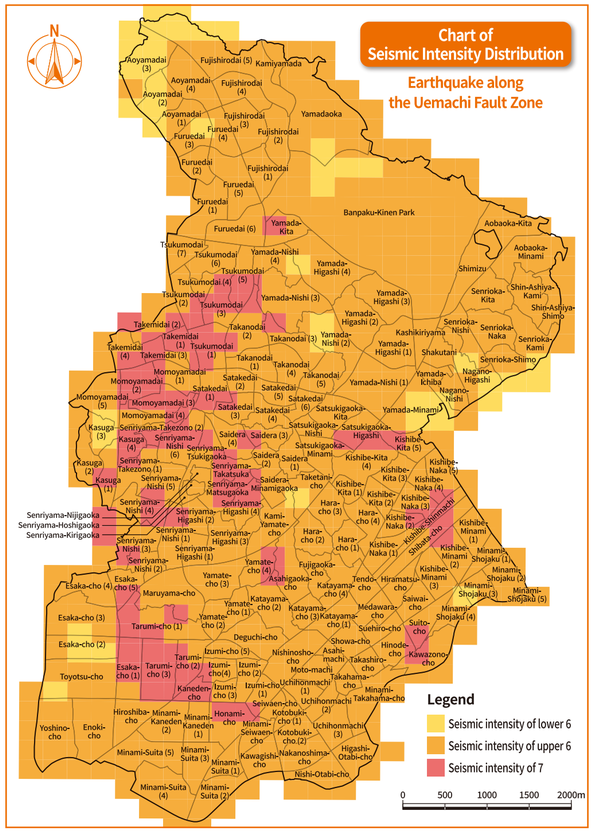
- It is difficult to stand.
- Most furniture that is not fixed into place moves over the floor, and some pieces topple.
  Doors may become impossible to open.
- Wall tiles and windowpanes may break and fall off.
- The roof tiles on wooden structures with a low seismic resistance may fall, and the building may tilt. Some such structures may collapse.

Seismic intensity of upper 6

- You cannot move unless you crawl. You may be knocked down.
- Almost all furniture that is not fixed into place moves over the floor, and many pieces topple.
- Many wooden structures with a low seismic resistance tilt or collapse.
- Large fissures open up on the ground, and there occur large-scale landslides and collapse of hills and mountains themselves.

Seismic intensity of 7

- Even more wooden structures with a low seismic resistance tilt or collapse.
- In rare cases, even wooden structures with a high seismic resistance may tilt.
- More buildings with a steel-reinforced structure but low seismic resistance collapse.



Source: "Estimate of Earthquake Damage in Suita" (outline edition)

Rainfall intensity and fall

Hourly amount of rainfall (mm)	Forecast terminology	Anticipated damage
10 - less than 20	Fairly strong rain	Caution is necessary if the rainfall continues for a long time.
20 - less than 30	Strong rain	Water may overflow from gutters etc.
30 - less than 50 * 1	Intense rain	Water may bubble up from manholes.
50 - less than 80	Extremely intense rain	Stormwater may flow into underground malls.
80 or more	Torrential rain	There is a high risk of a large-scale disaster.

* 1: The standard for issuance of a heavy rainfall warning and a flood warning (hourly intensity of 30 mm)
The standard for issuance of a heavy rainfall alert and flood alert (hourly intensity of 45 mm)

Wind intensity and blowing

Average velocity (meters per second)	Forecast terminology	Anticipated damage
10 - less than 15 * 1	Fairly strong wind	People cannot use umbrellas.
15 - less than 20	Strong wind	It is impossible to walk into the wind.
20 - less than 25 * 2	Extremely strong wind	It is dangerous to continue driving a car.
25 - less than 30		The wind begins to topple trees and blow tiles off roofs.
30 or more	Violent wind	The wind begins to blow off roofs and cause the collapse of wooden structures.

* 1: The standard for issuance of a strong wind warning (average velocity of 12 m/s)
* 2: The standard for issuance of a storm alert (average velocity of 20 m/s)

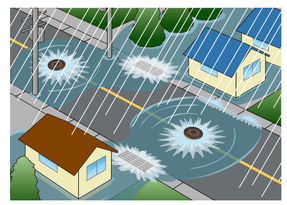
In Typhoon 21 in 2018, violent winds with a maximum velocity exceeding 40 m/s did great damage to houses and other structures in Suita.

Inner water inundation and river water inundation

There are two types of floods: inner water inundation, which occurs when water conduits and sewers become unable to completely remove stormwater runoff, and river water inundation, which occurs when river dikes collapse or rivers overflow from them.

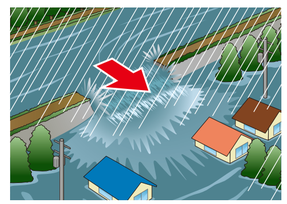
Beginning in 2019, Suita City Government is preparing an inner water inundation hazard map in addition to its flood hazard map. We ask citizens to get an understanding of the mechanism behind flooding, check the districts estimated to be at risk of each type of flooding, and confirm routes for safe evacuation to evacuation shelters etc.

Inner water inundation



Torrential rains concentrated in a short time can cause levels of rainfall exceeding the removal capabilities of water conduits and sewers. Similarly, the rise in river water level may make it impossible for these facilities to drain runoff into rivers. In such cases, storm-water overflows from manholes and gutters, and inundates housing tracts, roads, etc.

River water inundation



When intense rains fall for a long time, the resulting increase in river water level can cause dikes to break or rivers to overflow from the dikes. Please also note that, even if rain is not falling in a certain area, there is a risk of inundation in it due to the same kind of increase in river water level in the event of intense rains in upstream areas.

Timeline in the Event of a Major Earthquake

Earthquake occurrence
- Protect yourself from injury.
- Extinguish any fires once the tremors subside.
- Open doors and windows to secure evaculation routes.

- 3 minutes
- Confirm the safety of your family and neighbors.
- Beware of seismic activity (aftershocks etc.) that occurs after major earthquakes.

- 5 minutes
- Check information on TV, radio, etc.
- Refrain from using the telephone as far as possible.
- If there is a risk of collapse of your house etc., go to a large athletic ground or other temporary evacuation site, bringing along emergency supplies.

- 10 minutes
- When evacuating, use the circuit breaker to cut off the supply of power to the house.
- When evacuating, close all gas taps.
- Go to get your children.

10 minutes - several hours
- Engage in fire-fighting and rescue activity.
- Confirm the safety of acquaintances at the temporary evacuation site.
- Frequently collect disaster and damage information.
- Continue to beware of seismic activity (aftershocks etc.).

Opening of the evacuation shelter
- Live at the evacuation shelter if you cannot live at your home due to its collapse etc.

Bring along stores of food and water (enough for 3 days as a guideline) and other supplies when you evacuate. Food and other relief supplies will not be immediately delivered to the evacuation shelter. Relief supplies will also be provided to people who evacuate at home.

Getting disaster information

Earthquake occurrence

Occurrence of the earthquake will be reported by means of TV, radio, the disaster-prevention administrative wireless system, and emergency bulletin email. (In districts close to the epicenter, these reports may not be received before strong tremors are felt.)

After earthquake occurrence

Information from Suita City Government can be collected from sources such as the city website, official Twitter account, and Facebook account. (The city will also provide information by patrolling PR vehicles and bulletin boards in public facilities.)

Website URL	https://www.city.suita.osaka.jp/
Official Twitter account name	@SuitaCity_Osaka
Official Facebook account name	@suita.city

Search using "Suita City".

- Frequently collect meteorological and damage information by TV, radio, the Internet, and other such means.
- If it is hard for you to get information due to your telephone being out of service, power outage, etc., seek help from a person who is getting information.

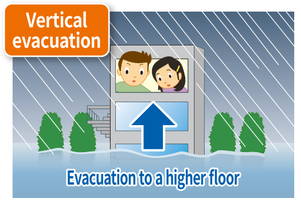
Decision on evacuation

- Even if the government has not issued an evacuation advisory for the start of preparations for evacuation and evacuation of elderly etc. or evacuation order (emergency), make preparations for evacuation on your own initiative in the event of issuance of a storm warning or evacuation advisory in a nearby area.
- Swiftly evacuate when an evacuation advisory or order (emergency) is issued. It generally takes one hour to walk 1.5 - 2 kilometers in the rain at night. It may take even longer if elderly and/or children are along.
- Due to the storm shutters and the noise of the wind and rain, it may be hard for you to hear the call from the city for evacuation. Therefore, make sure to frequently collect information from TV, radio, and other sources.
- If it has become difficult for you to evacuate to the designated evacuation shelter etc., make an emergency evacuation to a sturdy and high building nearby.

Evacuation information will be issued by means such as the disaster-prevention administrative wireless system, emergency bulletin email, and Osaka disaster prevention network. You can also collect information yourself from the TV, radio, Internet, and other sources.

Horizontal evacuation and vertical evacuation

As far as possible, avoid evacuating under dangerous circumstances. Put top priority on assurance of safety. When danger is imminent, it is important to take evacuation action to save your life. Consider not only movement to the designated evacuation shelter (horizontal evacuation) but also movement to tall buildings nearby or to the second or higher floor of your house (vertical evacuation).



Timeline in the event of typhoons (strong rains and winds)

Warning levels	Evacuation information from the city government	Action by you	Meteorological conditions etc.
Warning Level 1		**Reconfirm preparations.** ▶ **Confirm dangerous locations in the vicinity of your home on the hazard map.** ▶ **Confirm the evacuation destination (shelter, building, etc.) and the evacuation route.** ▶ **Prepare emergency evacuation items.**	1 - 3 days before the landing of a typhoon
		▪ Store and prepare supplies to support life even in the event of power outages and water supply discontinuation. ▪ Begin collecting information on the path of the typhoon etc.	
Warning Level 2		▪ Frequently collect meteorological information etc. (from TV, radio, Internet, etc.). ▪ If you are outdoors, go indoors.	Advisory
Warning Level 3	Preparation for evacuation and start of evacuation of elderly etc.	▪ Prepare for evacuation (so that you will be able to evacuate at any time). ▪ Have people needing more time to evacuate (elderly, infants, toddlers, etc.) and the people assisting them start evacuating.	Warning
Warning Level 4	Evacuation advisory	▪ Swiftly start evacuating to a safe place (designated emergency evacuation site etc.).	Information on landslides and water disaster
	Evacuation order (emergency)	▪ Immediately evacuate to a safe place (designated emergency evacuation site etc.). ▪ If it would, on the contrary, be dangerous to go outside, take action for vertical evacuation.	Occurrence of disaster
Warning Level 5	Occurrence of disaster	▪ Disaster is already occurring. Take the best action to save your life.	

* Evacuation information is issued in correspondence with the situation, based on factors such as the cumulative amount of rain and disaster, and the forecast amount of rain. It is not necessarily issued in order following evacuation preparations.