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Preparation and Actions for Typhoons and Heavy Rain

In recent years, the damage from not only earthquakes but also large typhoons and heavy rains has become more severe. Expressions such as “once in several decades” or “once in several centuries” have become commonplace, and there are many situations where conventional wisdom no longer applies. But that doesn’t mean that you cannot do anything.

You can minimize the damage by making your preparations more thorough. Understand the characteristics of wind and flood damage, which differ from earthquakes, and take countermeasures.

Voice from experience

I created a “My Timeline” and simulated evacuating with my whole family.

(60s, 2019 Typhoon Hagibis)

Voice from experience

There was an evacuation advisory but I didn’t evacuate, and the water rose up to the stairs of my house. I realized it was necessary to evacuate early.

(60s, 2019 Typhoon Hagibis)



Voice from experience

I regret not making use of the experience from past disasters. I didn’t think much about the heavy rain caused by the passing front. I have decided to follow evacuation orders.

(60s, August 2012 Heavy Rains)



Weather-related Disaster Risks Due to Climate Change

Climate change is becoming more serious as the world's average temperature rises due to greenhouse gas emissions and other factors.

Various changes brought about by abnormal weather

Predicted impact of climate change

Rising temperatures



- Annual average temperature rises by **approximately 1.4°C / 4.5°C** (increase in the number of extremely hot days and sweltering nights)

More powerful typhoons



- Stronger rain and winds from typhoons
- Strong typhoons will be more frequent

Rising sea levels



- Coastal sea level rises by **approximately 0.39 m / 0.71 m**

Heavier rain



- Annual maximum daily precipitation increases by **approximately 12% (approx. 15 mm) / 27% (approx. 33 mm)**
- The frequency of over 50 mm/h of rain falling increases by **approximately 1.6x / 2.3x**.

The blue text indicates the predicted outcomes if the targets set in the 2015 Paris Agreement are achieved, and the red text indicates the predicted outcomes if no additional measures are taken beyond the current situation.

*Created based on Ministry of Education, Culture, Sports, Science and Technology and Japan Meteorological Agency, "Climate Change in Japan 2020"

Climate change is threatening everyday life

As temperatures rise, sea levels will also rise, making storm surge flooding more likely to occur, especially in areas at sea level.



Weather Conditions that Require Special Caution

Due to the recent abnormal weather, what requires attention is the fact that the way that rain falls has changed. In particular, damage from torrential rains occurs all over Japan almost every year and is no longer a rare occurrence.



Torrential rain

Rain that falls heavily over a period of several hours in one location, resulting in rainfall ranging from one to several hundred mm. Such rain causes disasters such as serious sediment disasters and the flooding of houses.

Typhoons

The strength of a typhoon is determined by the maximum wind speed near its center. The strongest level is an "extreme" typhoon, which can cause wooden houses to collapse.

Rainbands

A phenomenon that causes heavy rain when cumulonimbus clouds form in a line and pass over or stagnate in generally the same place. Although it is currently difficult to make accurate forecasts due to the complex factors involved, the Japan Meteorological Agency issues warnings of the possibility of heavy rain due to a rainband about half a day in advance. Be aware of the danger of heavy rain disasters and confirm your evacuation actions early.



Knowing Your Community's Risk of Wind and Flood Damage From Hazard Maps

It is understood that wind and flood damage is not only caused by rainfall, but also by the topography and characteristics of land, such as alluvial plains that are below the level of rivers and are likely to suffer flooding, and areas that are at risk of sediment disasters. Be sure to check your municipality's hazard maps in advance and learn about the dangers.

Check the hazard map

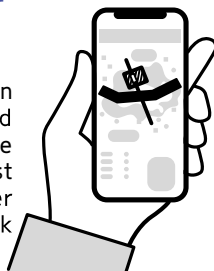
A hazard map is a map created for each municipality that displays areas where damage is expected and where to evacuate. Because the damage caused by floods, inland flooding, sediment disasters, and storm surges differ, be sure to check each type of disaster. It also shows the depth of flooding for each area, for example, if an area floods to a depth of 3 m, the first floor of buildings will be submerged, and if an area floods to a depth of 5 m, the second floor will be submerged.



Flood Hazard Map (Bureau of Construction, Tokyo Metropolitan Government)

Check the disasters that may occur around you

Check the hazard maps to ascertain whether you are in an area at risk of flooding or sediment disasters, and if so, to what extent. Check the route from your home to the evacuation area, as well as from your nearest station and other places you often visit. The Disaster Preparedness Tokyo app also includes a "Flood risk map" which you can also use.



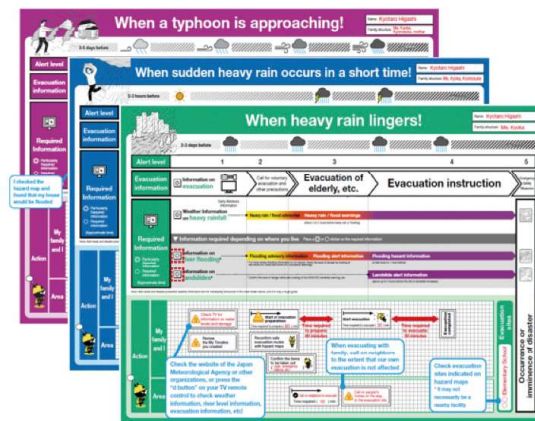
Creating a Tokyo My Timeline

Decide what actions to take in a disaster

A My Timeline is a chronological list of actions that you will take in the event of a disaster, which you decide in advance. "Tokyo My Timeline" allows you to organize appropriate evacuation actions in advance, while acquiring the knowledge necessary to evacuate from storm and flood damage.

Check local risks at the same time

Tokyo My Timeline covers river flooding, storm surges, and sediment disasters, and allows you to create evacuation plans tailored to the characteristics of your area. It is important to consider appropriate evacuation actions while checking the hazard maps and flood risk map on the Disaster Preparedness Tokyo app.



The Tokyo My Timeline is also included in the Disaster Preparedness Tokyo app. Use it to gather necessary information in the event of a disaster to evacuate more safely!

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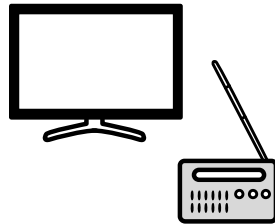


Knowing the Latest Weather and Traffic Information

During the period from early summer to autumn, natural disasters are more likely to occur due to heavy rain and storm surges caused by typhoons and fronts. Also, unlike earthquakes, information about typhoons can be obtained ahead of time, so gathering information is essential.

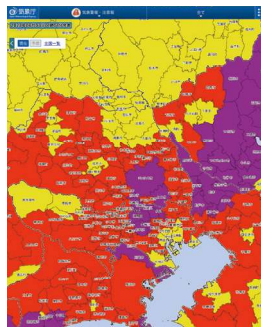
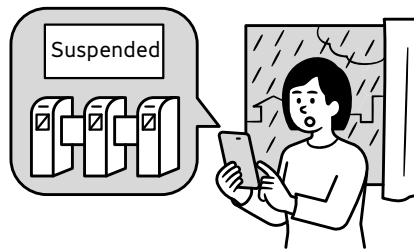
Understand the types of warnings and information

In addition to warnings, organizations including the Japan Meteorological Agency release various types of disaster prevention weather information in stages over time. Understand the meaning of each and check the actions you should take.



Check information about public transport suspensions early

Recently, the suspension of railway operations is often planned when a typhoon is expected to approach nearby. To avoid trouble, check the railway company's website and social media in advance.



Japan Meteorological Agency KIKIKURU



Protecting Yourself from Wind and Flood Damage

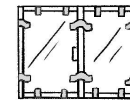
Prepare inside and outside your home

If you know that heavy rain or a typhoon is approaching, be sure to prepare both inside and outside your home. By knowing what to do in advance, you won't have to rush when the time comes, and you can minimize the damage.

Preparation outside your home

Fix shutters and screen doors

Secure them firmly with curing tape to prevent them from being blown away by the wind.



Clean gutters and drains

Water will overflow if they become blocked with litter. Placing sandbags in areas that are likely to flood is also effective.

Move outdoor objects indoors

Move planters, ornaments, clothes-drying poles, etc. indoors or secure them firmly to prevent them from being blown away by the wind.



Fill up your car with gas

You will be able to keep warm in your car and charge your smartphone if the power goes out.



Preparation inside your home

Fill the bathtub with water

Filling the bathtub with water is extremely useful, as you can use the water to wash your hands or flush the toilet if the water is cut off.



Apply shatterproof film to window glass

This will prevent injuries if the window glass breaks due to a flying object. Close the curtains and lower the blinds too.



Charge your smartphone and computer

Keep your smartphone and laptop fully charged in case the power goes out. You can also use your laptop to charge your smartphone.



Criteria for Deciding to Evacuate

If you may need to evacuate, check the information frequently and make a decision early. If you live in a safe area, or if the wind and rain are already so intense that it's dangerous to go outside, also consider staying at home.

Key points for deciding to evacuate

One of the criteria for deciding whether to evacuate is the disaster prevention information that uses "alert levels." Under this system, the government has defined disaster prevention information such as evacuation information and weather information into five levels of alertness, so that local residents can intuitively understand the degree of risk of a disaster and take appropriate evacuation actions.

Alert level	Actions to take	Evacuation information
Alert level 5	Take the most appropriate action to protect your life	Emergency safety measures
Alert level 4	All persons should evacuate	Evacuation order
Alert level 3	Elderly people, people with disabilities, young children, etc. and their support persons should evacuate.	Evacuation of the elderly, etc.
Alert level 2	Confirm your own evacuation actions	Heavy rain, flood or storm surge advisory
Alert level 1	Be prepared for disaster	Early warning information (possibility of warnings being issued)

Everyone should evacuate by alert level 4

This calls for immediately taking action to protect your life in a safe place. However, at alert level 5, there is life-threatening danger and a disaster has already occurred or is imminent, and this alert level is not always issued, so it is necessary to evacuate by alert level 4, without waiting for it to reach alert level 5.

Try to Evacuate Early

Pay attention to disaster prevention weather information

It is important to collect accurate information in order to protect yourself from typhoons and torrential rain. Also, as there are different types of information, it is important to correctly understand the caution levels.



Disaster prevention weather information

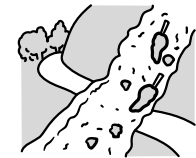
Advisory

Announced when there is a risk of a disaster occurring due to heavy rain, flooding, strong wind, etc.



Sediment-disaster alert bulletin

Announced when a heavy rain warning (sediment disaster) has already been announced and conditions are such that a life-threatening sediment disaster could occur at any time.



Warning

Announced when there is a risk of a serious disaster occurring due to heavy rain, flooding, extreme wind, etc.



Emergency warning

Announced when there is a very high risk of a serious disaster occurring due to heavy rain, heavy snow, extreme wind, blizzard, waves, or storm surges of a particularly abnormal level.



Source: Japan Meteorological Agency "Weather warnings and advisories" from the Japan Meteorological Agency website

Preparing to Evacuate During Wind and Flood Damage

Please check weather information and disaster preparedness apps frequently to get the latest information. Also, be sure to know the location of the evacuation center and your evacuation route so that you don't get lost in the rain when the time comes.

Prepare an emergency backpack in advance

You should have a backpack filled with disaster preparedness goods at all times. In case of heavy rain, pack a change of clothes, a towel, and a rain cover.



Avoid dangerous places

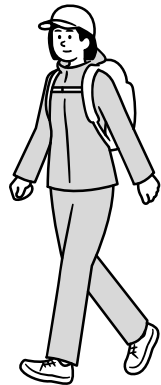
There are websites where you can see the water level of rivers in Japan via live cameras. Never go to see a river out of curiosity.



Live camera footage
(Tokyo Metropolitan
Flood Channel)

Emphasize on ease of movement

If the rain is so heavy that you need to evacuate, it will be easier to walk in comfortable sports shoes than in rain boots. Protect yourself with a hat, gloves, and raincoat.



Turn off the circuit breaker when evacuating

Turn off your home's circuit breaker (and solar power generator) when evacuating in order to prevent an accident. Also, there is a risk of electric shock if you use electronic equipment that has been submerged in water. Contact an electronics store or retailer after flood damage.

Precautions When Evacuating During Wind and Flood Damage

Once you are prepared, carefully assess the depth of the water and the road surface conditions at the time of flooding, and always consider the possible dangers before evacuating. However, that does not necessarily mean that you should always move to an evacuation center; instead, you should prioritize actions that will protect your life.

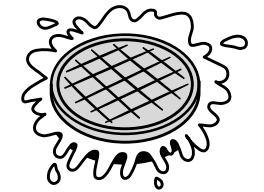
If you live in a low-lying area, "wide-area evacuation" is recommended.

If large-scale flooding occurs in the eastern lowlands, where the elevation is at or below the high tide level, many areas will become flooded. If you live in one of these areas, pay close attention to the weather information and voluntarily undertake "wide-area evacuation" to outside of the area as soon as possible.



Be careful when moving during flooding

Be aware that the covers of gutters and manholes may shift when water is flowing, which can be dangerous. The depth of water that can be walked in is about the height of an adult's knees (about 50 cm), and you must not take unnecessary risk.



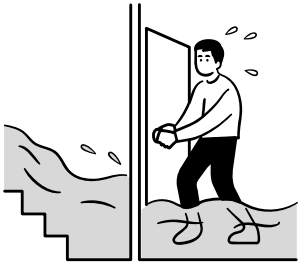
Secure safety indoors (evacuating upstairs)

If a river has overflowed with water, it is possible to secure your safety by moving to and staying on a higher floor if: there is no risk of your house being washed away, the height of your living room is higher than the depth of the flooding, and you have sufficient stockpiles in place to survive even if the floodwaters remain.



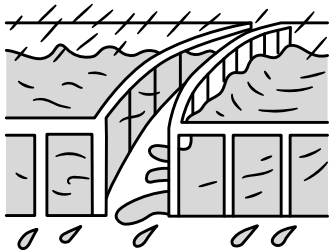
Areas to Avoid During Wind and Flood Damage

Be careful to avoid going close to rivers, irrigation canals, and areas with poor drainage. Avoid underground facilities too, as water can easily flow into them.



Avoid underground and semi-underground areas

Basements are prone to flooding, and often it is impossible to see outside, so there is a risk of being unable to escape. Water can flow in an instant, so be careful.



Rivers and irrigation canals

Stay away from rivers and irrigation canals due to their risk of flooding. People who live along a river should carefully check the local disaster prevention information and prepare to evacuate immediately.



Be aware of “underpass flooding”

You may be unable to move if your car gets submerged in an underpass. The engine of a passenger car may stop if the water reaches a depth of 30 cm or more.

How to Escape a Submerged Car

Break a window with an escape hammer

If you inadvertently drive into a flooded road or your car falls into a pond or river and becomes submerged, the external water pressure may prevent the door from opening. Do not panic in such a case, and use the cutter part of the escape hammer to cut the seatbelts, then use the hammer to break a side window and try to escape.



If you don't have an escape hammer

The seat headrest can be used if you can't find an escape hammer or other tool in the car. You can break the glass by removing the headrest, inserting the metal rods between the glass and the frame, and force it open using the principle of leverage.



Don't panic if you get submerged

It takes a fair amount of time for a car to submerge in water. Even if you cannot open the door at first, the water pressure on the door will decrease as the difference between the water level outside the car and the water level inside the car decreases, so you may be able to open the door. Calmly assess the situation and push the door open as hard as possible.



Source: JAF website