

# Learn about typhoons and floods

Why have we seen an increase in major disasters caused by torrential rains and typhoons in recent years? Let's examine the damage.

01

## Damage in Nagano Prefecture caused by Typhoon Hagibis in 2019

Nagano Prefecture was hit by extremely heavy rain and winds from October 12 to 13, 2021 due to Typhoon Hagibis. Emergency heavy rain warnings were issued for 43 municipalities, and information on the flooding of the Chikuma River was also announced. In the Chikuma River basin, many homes, schools, public facilities, and medical institutions were seriously damaged by flooding due to collapsed seawalls, burst embankments, and overtopping. In addition, roads were damaged, trees were toppled, landslides occurred, and power was cut off over a wide area, causing extensive damage to vital infrastructure and lifelines. Typhoon Hagibis caused unprecedented heavy rainfall, taking precious lives and painfully impacting the livelihoods of survivors. We can never know when another devastating disaster like this will strike again. We need to learn from past disasters and apply the lessons learned to improve future disaster preparedness efforts.

02

## Past disasters that occurred in Kofu City

From September 11 to 12, 2000, an autumn rain front that had been stagnant over Honshu became active due to the inflow of warm and humid air from Typhoon Saomai, resulting in heavy rainfall over a wide area of Japan. The torrential rains brought a 24-hour rainfall of 294.5 mm to Kofu City, the highest recorded by the Kofu District Meteorological Observatory since it started observations.



Flood damage in Nagano City

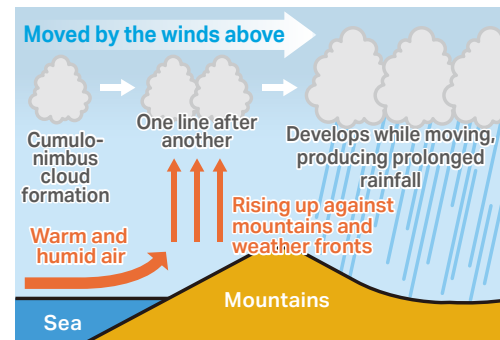
Photo courtesy of NPO Disaster and Disaster Prevention  
Volunteers Miraikai



Nigori River tributary, Takakura River flooding

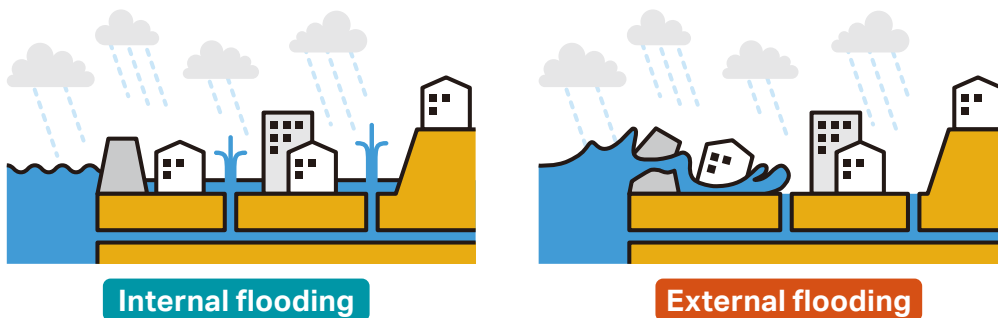
## Let's learn about why 'linear rainbands' are important

As the name suggests, linear rainbands are rain clouds that present in lines. Linear rainbands are made up of a group of cumulonimbus clouds that produce intense rainfall and tend to stay in the same place for several hours. Because of the risk of a landslide or other large-scale natural disaster, the Japan Meteorological Agency has begun operating a 'Linear Rainband Occurrence Information' system.



## Internal and external flooding

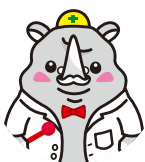
Internal flooding refers to the gradual inundation of urban areas when rainfall exceeds the processing capacity of drainage channels and sewage pipes. External flooding refers to a phenomenon in which river water overflows a levee or bursts an embankment, causing water to flow into an urban area. Even areas far from rivers are at risk of flooding.



Let's check together!



I was surprised to learn that there is a risk of flooding even if there is no river nearby. But if the area has never been flooded before, is there really anything to worry about?



In recent years, natural disasters have become more intense and frequent, resulting in a very serious situation. Flooding can happen anywhere at any time. Do not let your guard down and fall into the trap of believing certain areas are safe. In particular, the Kofu Basin has many rivers flowing through it and is exposed to natural conditions that make it prone to flood damage, so it is important to be well informed and prepared.

## | Typhoons and Floods |

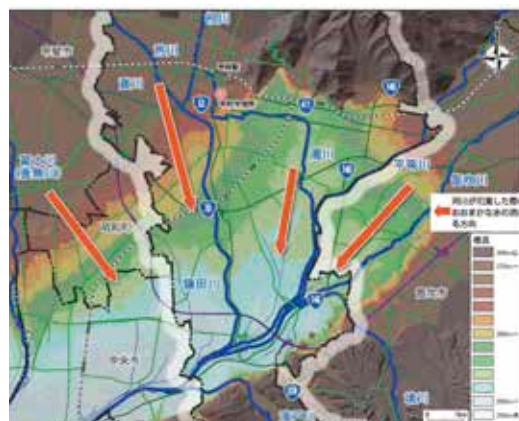
# Preventing damage from typhoons and floods

Check disaster risks around your home by referring to the flood hazard map and learn how to gather accurate information and take action in case of emergency.

01

## Let's learn about Kofu City's topography!

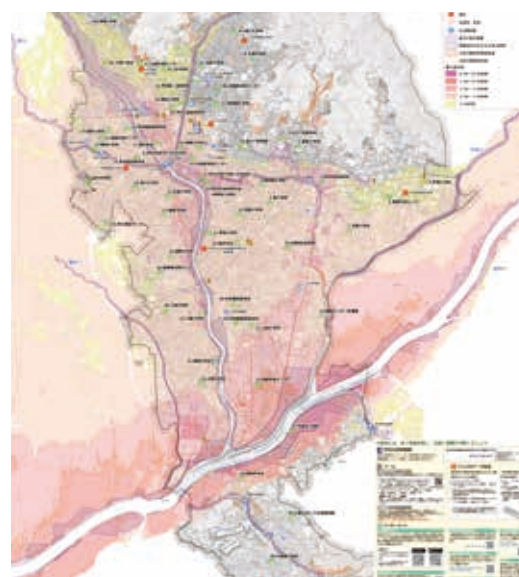
The Kofu Basin, located between the mountains to the north and south of the city, has many rivers flowing through it, including the Fuefuki River and Kamanashi River, with its natural conditions making it prone to flooding. The city is characterized by a variety of topographic features, including steep slopes and lowlands, meaning frequent torrential rains often result in flooding and inundation of low-lying areas. In these areas, stay away from rivers and run to higher ground to evacuate during floods.



02

## Check the flood hazard map!

This map shows the areas and depths of inundation that can be expected in the event that each river floods due to the largest possible rainfall, as well as designated evacuation shelters. Understand in advance what to expect in the event of flooding, and confirm safe evacuation routes and evacuation sites, as well as how to contact family members.



Kofu City Flood Hazard Map



03

## Check disaster prevention information from Kofu City!

In order to disseminate evacuation information such as evacuation orders and information on the opening of evacuation shelters, information is shared using various means of communication. See pages 35 and 36 for details.

Government  
emergency radio  
system

Email



TV datacasting



Internet

## Evacuation information and actions to take

When an Alert Level 3 or higher is issued, the basic rule is to evacuate to a safe place to ensure one's own safety. By Alert Level 4, evacuate to designated evacuation shelters, safe homes of relatives and acquaintances, and move to higher ground immediately.

Alert level		Evacuation and other information
<b>5</b>	 A disaster has occurred/ will occur imminently	<b>KINKYŪANZEN KAKUHO</b> <b>緊急安全確保</b> <b>Take action to protect your life *1</b>
<b>Always evacuate by Alert Level 4!</b>		
<b>4</b>	 High risk of disaster	<b>HINANSHIJI</b> <b>避難指示</b> <b>Evacuation Order *2</b>
<b>3</b>	 Risk of disaster	<b>KŌREISHATŌ HINAN</b> <b>高齢者等避難</b> <b>Evacuation of vulnerable residents (elderly, etc.) *3</b>
<b>2</b>	 Worsening weather conditions	<b>Heavy Rain, Flood, and Storm Surge Advisories (Japan Meteorological Agency)</b>
<b>1</b>	 Weather conditions may worsen in the future	<b>Early Warning Information (Japan Meteorological Agency)</b>

\*1 Since municipalities cannot always reliably assess the status of a disaster, an Alert level 5 is not always issued.

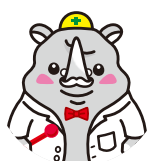
\*2 Evacuation orders will be issued at the same time as evacuation advisories issued prior to the 2021 revision of the Disaster Countermeasures Basic Act.

\*3 At Alert Level 3, people other than vulnerable residents (elderly, etc.), should begin to suspend their usual activities, if necessary, prepare to evacuate, or voluntarily evacuate if they feel they are in danger.

Let's check together! /



What can I do to reduce damage from typhoons and floods?  
Please tell us what we can do to prepare on a daily basis!



Typhoon and flood damage can be predicted to some extent, so daily preparations and staying up to date with the latest information can minimize damage to an extent. It is a good idea to plan a safe route to the designated evacuation shelter using a hazard map and practice walking there. Please note that extra time may be required if you are evacuating with vulnerable residents (elderly, etc.), or if the disaster occurs at night. Have a family meeting about disaster preparedness and confirm how you plan to keep in touch and where to evacuate.



## | Typhoons and Floods |

# Keeping yourself safe in the event of a typhoon or flood ①

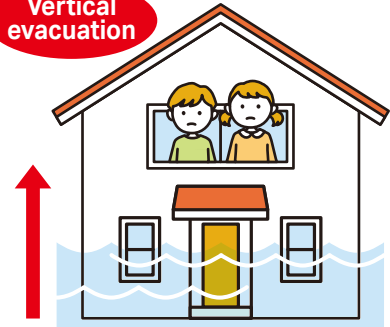
When inundation or flooding occurs, you could be exposed to dangers that are unimaginable in everyday life. Find out what dangers are present and identify the correct actions to take.

01

## Consider dispersed evacuation!

When the danger of flooding increases, people in hazardous areas need to evacuate to a safe place to protect themselves. However, there is no need for those who are in a safe place to go to an evacuation shelter. In addition, from the viewpoint of preventing the spread of COVID-19, "dispersed evacuation," which avoids the so-called three Cs (closed spaces, crowded places, and close-contact settings), is very effective. Since flood damage can be predicted to some extent in advance, consider evacuating ahead of time to the homes of relatives or acquaintances in a safe location, or to a tall building.

In areas where flooding is expected to be less than three meters, if your home is deemed safe for evacuation to the second floor or you are on the second floor or above of an apartment building, staying home is regarded as another form of evacuation. After first confirming that your home is safe, make the necessary preparations for home evacuation, such as stockpiling enough food to last until the water recedes.

Vertical  
evacuation

Take refuge in a high building such as the second floor of a house

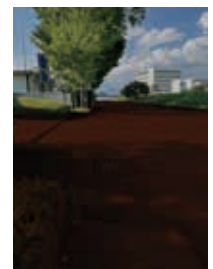
02

## Flood water is not clear!

During floods, rivers flow more violently than usual due to increased water volume caused by heavy rains and other factors, so the flood water is usually muddy. Roads that are flooded with muddy water are dangerous as there are many hidden obstacles such as waterways and sinkholes!



Normal road



Road covered with flood water

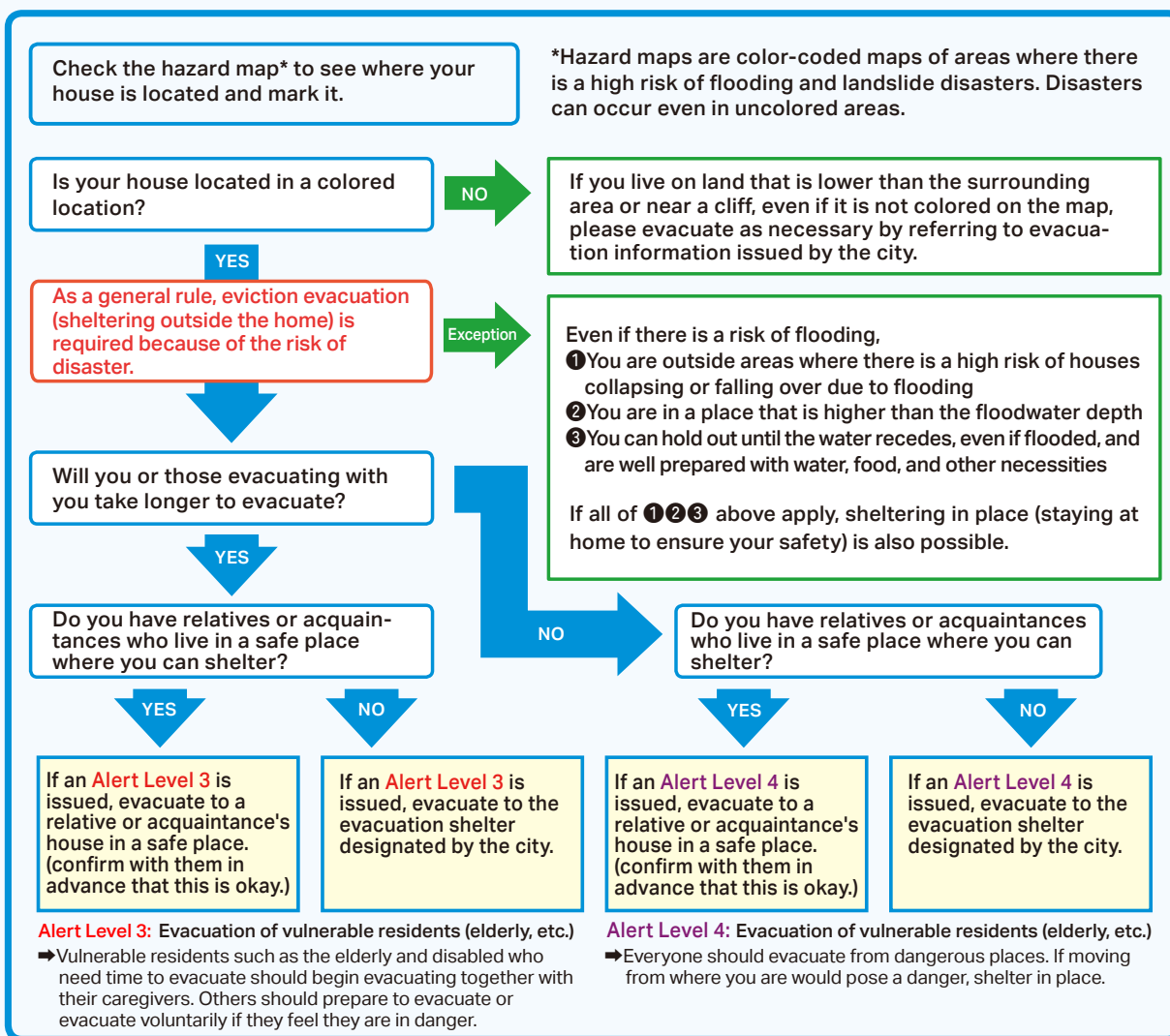
03

## Choose appropriate shoes and trousers!

Bare legs and boots are strictly forbidden. Sneakers that can be laced up are recommended. Manholes, gutters, and other hazards lurk beneath the surface of the water. Use a search stick (such as an umbrella) to check that the path ahead of you is safe.



## Flowchart for deciding whether to evacuate



Created based on the 'Evacuation Action Decision Flow' on the Disaster Management website managed by the Cabinet Office of Japan.

### Let's check together! /



What precautions should I be aware of when evacuating and what measures should I take if I do not evacuate and stay at home?



It is dangerous to go outside after the rain or wind becomes stronger. Start evacuation as early as possible. If the risk of disaster is low and you are staying home, keep your smart phones and tablets charged in case of a power outage. This is important for gathering information and keeping in touch with others. Fill your bathtub with water in case the water supply is disrupted and keep a backpack with emergency supplies nearby in case you need to evacuate. During high winds, stay away from windows as they are dangerous.

## | Typhoons and Floods |

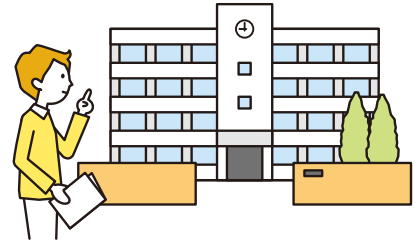
# Keeping yourself safe in the event of a typhoon or flood ②

Think about where and how to evacuate and what to take with you and discuss specific evacuation steps with your family in advance.

01

## Check evacuation sites and routes!

Evacuation sites are designated according to the type of disaster, such as earthquake, flood, or landslide, etc. Therefore, it is necessary to confirm in advance the evacuation site and route according to the disaster, as well as the hazardous areas.

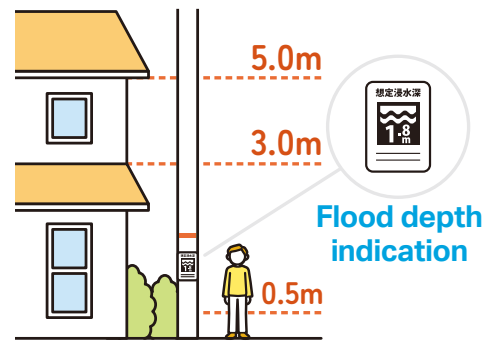


02

## Check flooding from the side!

If the depth of flooding is three meters or greater, flood water is expected to reach the floor level of a building's second floor. In two-story houses, a delay in evacuation will result in a dangerous situation, so please pay attention not only to evacuation information but also to water level information.

The red lines mark where the estimated depth of flooding would actually reach.



03

## Check for hazards around your home!

There can be unexpected dangers lurking around the houses where we live our daily lives. Keep plants, propane gas cylinders, and other items tidy so that they do not fall or topple over during strong wind and rain caused by typhoons. Also, check the strength of block walls and roof tiles.

### □ Balcony

Potted plants, clotheslines, and other items that could be blown away should be brought indoors.

### □ Roof

Check for any cracks, breaks, misalignments, or separating of roof tiles.

### □ Exterior wall

Check for any cracks in mortar-finished walls. Check for any rotting or lifting of wood siding.

### □ Fence

Check for any cracks or damage to the walls around the house.

### □ Propane gas

Check that the propane gas cylinder is secured

### □ Guttering and drains

Check that guttering and drains aren't clogged with fallen leaves and sediment.

### □ Window panes

Check for any cracks or rattling of window frames.



## Create your own 'My Timeline'!

My Timeline is a pre-determined timeline of actions to be taken in the event of a disaster. Discuss necessary evacuation steps according to your family structure and living environment and create your own personalized My Timeline.

The city promotes the creation of My Timeline to organize where to evacuate to and evacuation steps in advance. By deciding where to evacuate to and organizing what steps to take according to the alert level, including evacuation information and weather information summarized in the table here, you can prepare yourself for evacuation and make it easier to take appropriate evacuation steps when necessary.

In addition, if each person's evacuation destination, etc. can be determined in advance and this information can be shared with fellow community members, it will not only lead to prompt evacuation action, but also better support.

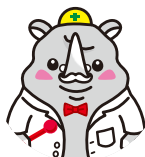
### Example

My Evacuation Action Plan (My Timeline)					
Alert level	1	2	3	4	5
Evacuation information	Information urging citizens to take action. From 'Alert Level 2', the city will issue	Preparation and other cell phone	KŌREISHATŌ HINAN 高齢者等避難 Evacuation of Vulnerable Residents (Elderly, Etc.)	HINANSHUJI 避難指示 Evacuation Order	KINKYŪANZEN KAKUHO 緊急安全確保 Take action to protect your life
Weather information, water level information	Heavy rain Landslides Flooding Flood warnings and advisories for designated rivers	Early Warning Information	Heavy Rain Advisory Flood Advisory Flooding Advisory Information Flooding Advisory Water Level Gale Advisory	Heavy Rain Warning Flood Warning Flood Warning Information Evacuation Warning Water Level Storm Warning	Landslide Alert Information Heavy Rain Emergency Warning
My shelter	OO School	My plan	Check the hazard map Check weather information and river level information Check evacuation routes, emergency supplies, and stockpiles Charge my cell phone	Check evacuation information and evacuation shelter opening status using the Disaster Preparedness App. Contact family members, etc. Prepare to go to the evacuation site	Write down when to start evacuating. *If you are evacuating by car to distant relatives' homes, you need to start evacuating earlier, taking into account possible road flooding and traffic congestion.
Evacuation route	On foot	Write down where you will evacuate to, how you will evacuate, and how long it will take to do so.	Write down any tasks to be carried out before evacuation.	Write a checklist of what things you need when preparing to evacuate.	Write a checklist of what things you need when preparing to evacuate.
Time required to evacuate	4	5	6	7	8
Preparations for evacuation	Confirm evacuation sites and routes Turn off fire sources, shut the doors, turn off the main circuit breaker	Buy necessary items Notify family and relatives about the evacuation site	Confirm evacuation information and evacuation shelter opening status using the Disaster Preparedness App. Contact family members, etc. Prepare to go to the evacuation site	Confirm evacuation information and evacuation shelter opening status using the Disaster Preparedness App. Contact family members, etc. Prepare to go to the evacuation site	Confirm evacuation information and evacuation shelter opening status using the Disaster Preparedness App. Contact family members, etc. Prepare to go to the evacuation site
Confirmations	Food and drinking water Cell phone Daily medications	Health insurance card Rain gear and change of clothes	Health insurance card Rain gear and change of clothes	Health insurance card Rain gear and change of clothes	Health insurance card Rain gear and change of clothes

Let's check together!



Is there anything we can do on a daily basis to ensure safe evacuation in the event of an actual impending disaster?



Create your own evacuation action plan, My Timeline, by organizing "when" and "what." In the process of creating My Timeline, you can also increase your level of disaster awareness by checking flood hazard maps and other information to learn about local flood risks. Make it a habit for all members of your family to think about disaster preparedness on a daily basis and be ready just in case.





# Create your own My Timeline!

My Timeline is only a guide for action. Please check evacuation and weather information frequently and act flexibly according to the situation.

## My Evacuation Action Plan (My Timeline)

Alert level		1	2																
Evacuation information	Information urging citizens to take action. From 'Alert Level 3', the city will issue	Prepare for evacuation by checking weather and other information on TV, radio, internet, cell phones, etc.																	
	Weather information, water level information, etc.	Heavy rain Landslides Flooding Flood warnings and advisories for designated rivers River water level information Windstorms	Early Warning Information Heavy Rain Advisory Flood Advisory Flooding Advisory Information Flooding Advisory Water Level Gale Advisory																
Action required		<input type="checkbox"/> Check weather and evacuation information <input type="checkbox"/> Prepare for evacuation by checking evacuation routes, emergency supplies, etc.																	
My shelter _____ Evacuation route _____ Time required to evacuate _____		<div>My plan</div> <table border="1"> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> </table> <div>Preparations for evacuation</div> <div> <input type="checkbox"/> Confirm evacuation sites and routes  <input type="checkbox"/> Turn off fire sources, shut the doors, turn off the main circuit breaker  <input type="checkbox"/> Buy necessary supplies  <input type="checkbox"/> Notify family members about the evacuation         </div>																	

**Confirmation of emergency supplies and stockpiles**

☐ Food and drinking water   
 ☐ Health insurance card   
 ☐ Cash  
☐ Cell phone   
 ☐ Daily medications   
 ☐ Rain gear and change of clothes