Nishio City Storm Surge Hazard Map

Rivers and Harbor Section, Construction Department, Nishio City
TEL: 0563-65-2151
Crisis Management Section, Crisis Management Office, Nishio City
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How to use the hazard map

The storm surge hazard map provides information such as areas expected to be flooded and evacuation shelters in the event of a storm surge. Be sure to check the danger level of your local area, where to obtain information, and evacuation tips as a matter of normal practice, and if there is a risk of a disaster occurring, evacuate immediately from the danger zone.

Discuss with your family regularly

It is important to prepare before the occurrence of a disaster such as a storm surge or flooding in order to take appropriate action without panicking when it is necessary.
It is important to discuss with your family and neighbors how to prepare for disasters and what to do in the event of a disaster.

Step 1 Check the location of your home and evacuation shelters.

Check the location of your home and evacuation shelters by referring to the location of national and prefectural roads, schools and public facilities.

Step 2 Confirm areas that may be hazardous during a storm surge.

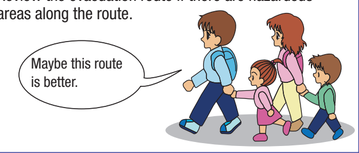
Confirm areas that may be hazardous during a storm surge such as waterways and harbors near your home.

Step 3 Set up evacuation routes while avoiding dangerous areas.

Be sure to set up evacuation routes while avoiding areas that may be hazardous during a storm surge as confirmed at ②.

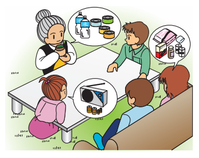
Step 4 Actually walk through the evacuation route to ensure that it's safe.

Actually walk the route while discussing with your family and neighbors.
Review the evacuation route if there are hazardous areas along the route.



Step 5 Prepare Emergency Supplies and stockpiled items.

Refer to the "Emergency supplies and Stockpiled items" listed on the right and prepare the items you will need during a disaster.



Step 6 Fill in Our Family's Disaster Prevention Note.

Check the designated emergency evacuation shelter and the designated evacuation shelter on a regular basis, and fill in the "Our Family's Disaster Prevention Note". Write down contact information for family members, acquaintances, relatives, etc. to confirm your safety.

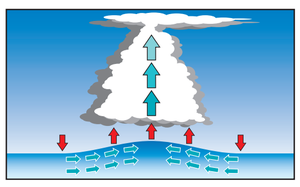
How storm surges occur and the difference between storm surges and tsunami

How storm surges occur

A storm surge is a phenomena in which the sea level rises considerably when a typhoon or a developed low-pressure weather system approaches land.
When the tide level rises due to a storm surge and high waves surge towards the coast, seawater may cross over embankments to cause flood damage. Areas particularly vulnerable to damage from storm surges are areas of land at sea level near the coast, the inner area of bays, and beaches with deep submarine topography.
There are two main mechanisms that cause storm surge as shown below. The sea level is sucked up by a low pressure weather system and wind blows the sea towards land.

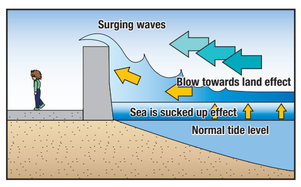
Sea level is sucked up by a drop in atmospheric pressure

The center of a typhoon or low pressure weather system has an atmospheric pressure lower than the area surrounding it. Therefore, air at the surrounding area, where atmospheric pressure is high, pushes against the sea while air at the center sucks the sea level upwards. This results in the sea level rising at the center of the typhoon or low pressure weather system.



Wind blows the sea towards land

When strong winds continue to blow towards coastal areas due to a typhoon or low pressure weather system, sea water is blown into coastal areas so the sea level rises near the coast.



The difference between storm surges and tsunami

The biggest difference between a storm surge and a tsunami is how they occur. While a storm surge occurs due to such things as a typhoon or low pressure weather system, a tsunami occurs because of earthquake or submarine volcanic activity. In comparison with earthquakes and volcanic activity, which are the main cause of a tsunami, typhoons and low pressure weather systems are easily measured so the occurrence of a storm surge is characterized by the fact it can be easily predicted.

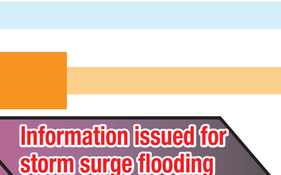
Information content announced during a disaster and associated evacuation action

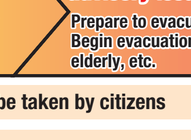
Typhoon approaches — Obtain weather information from TV and radio, etc.
Storm surge advisory issued — Prepare to evacuate if required. Begin evacuation of the elderly, etc.
Storm surge warning issued — Begin evacuation if required ➡ Finish evacuating
Information issued for storm surge flooding — Act to save your life

Warning level	Actions to be taken by citizens	Nishio City (*Information that urges citizens to take action)	Japan Meteorological Agency, etc. (*Information from the Japan Meteorological Agency, etc. corresponding to the warning level)
5	**People who have not evacuated yet from the danger zone should take the best action possible to save their life** This is a life-threatening situation. If you were late to escape the disaster, ensure your own safety and take action to protect yourself	**Take emergency safety measures** The disaster has already occurred and is imminent Remain safe and protect yourself from harm *This information is not always issued.	**Information for storm surge flooding**
4	**Finish evacuating everyone from the danger zone** Finish your evacuation before it becomes difficult to evacuate due to strong winds and flooded roads, etc. ■Either quickly evacuate to the evacuation shelter or a safe place or ensure safety by remaining indoors ■If you are in a situation where leaving the house will place you in life-threatening danger, evacuate to the nearest safe place or evacuate to a safer location in your house ■Help each other to evacuate	**Evacuation instructions** A situation with increased risk of damage or harm occurring A situation in which everyone finishes evacuating	**Storm surge warning or Storm surge special warning**
3	**Elderly persons should evacuate immediately from the danger zone** ■Be prepared to evacuate at any time ■Obtain accurate information ■Elderly and physically disabled persons should start evacuating	**Elderly evacuation** A situation with a risk of damage or harm occurring A situation to begin evacuating people who need time to evacuate	**Advisory with a high possibility of changing to a storm surge warning**

Horizontal Evacuation (leaving the home to evacuate) and Vertical Evacuation

Rapid evacuation is important during a disaster. However, in a situation of near imminent danger such as when information for storm surge flooding has been announced, reckless evacuation must be avoided whenever possible. In such a situation, a decision must be made to evacuate to high locations (vertical evacuation) such as nearby tall sturdy buildings that are two stories or higher, and not just move away from the danger zone (vertical evacuation) after receiving orders to evacuate the elderly or yourself.





Evacuate to the 2nd floor or higher of a building on the opposite side of a cliff if there is a danger of a landslide.
Do whatever it takes to protect yourself!!

If you cannot reach an evacuation shelter, consider evacuating to a higher floor of a nearby building or to the second floor or higher of your home temporarily and wait for rescue.

Criteria for announcing each type of information

Information for storm surge flooding
Announced when the tide level at the baseline station located on a shore with a well-known water level (a coastal area where storm surge may cause considerable damage) has reached the storm surge special danger water level.

Storm surge special warning
Announced when a storm surge is predicted due to a strong typhoon or low pressure weather system that occurs **once in a few decades**.

Storm surge warning
Announced **when there is a risk of a serious disaster occurring** after the tide level rises significantly due to a typhoon or low pressure weather system

Storm surge advisory
Announced **when there is a risk of a disaster occurring** after the tide level rises significantly due to a typhoon or low pressure weather system. There are 2 levels of storm surge advisory. Warning level 3 is used when there is a high possibility of the advisory changing to a warning while warning level 2 is used when there is no mention of the advisory possibly changing to a warning.

Early warning information (possibility that a warning will be issued)
The Japan Meteorological Agency announces early warning information when there is a possibility of severe weather such as a storm surge, strong winds, surging waves and heavy rainfall that may require a warning to be issued 5 days in advance.
Pay attention to any developments in the weather situation after this has been announced.

Our Family's Disaster Prevention Note / Emergency Supplies / Stockpiled Items

Meeting place

By disaster	Meeting place	Evacuation site (first choice)	Evacuation site (second choice)

Family or other contact information

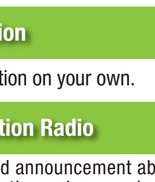
*Relatives and acquaintances outside the affected area should also be listed.

Full name	Phone number	Email address

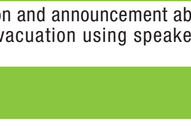
Emergency Supplies (example)

☐Emergency bag

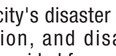
Food items
☐Hard biscuits and crackers
☐Drinkable water

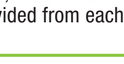


Clothing
☐Jackets
☐Underwear
☐Socks
☐Blankets



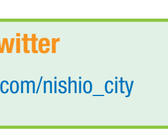
Household items
☐Flashlight
☐Portable radio
☐Tissue paper
☐Work gloves, gloves
☐Contact lens
☐Dentures



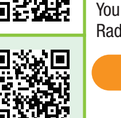


Sanitary items
☐Towels
☐Toilet paper
☐Mask
☐Disposable diapers
☐Sanitary pads
☐Portable toilet
☐Thermometer
☐Disinfectant

First-aid supplies
☐First-aid kit
☐Medicine, medication notebook



Valuables
☐Cash (including coins)
☐Savings bankbook, seal



Other
☐Helmet

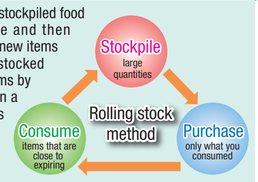
Stockpiled items

Prepare at least 3-days' worth of supplies (1-week's worth if possible) and store them in your home or your car.

Stockpiled items (examples)
☐Drinkable water (about 3 liters per person per day)
☐Food (rice, instant noodles, retort pouch food, chocolate, etc.)
☐Fuel (portable gas stove, spare gas cylinder, lantern, etc.)
☐Blanket, towel blanket, sleeping bag
☐Toiletries
☐Pots, kettle
☐Disposable chopsticks, paper plates, paper cups, etc.
☐Cling film, aluminum foil
☐Wet tissues, toilet paper
☐Sanitary pads
☐Ethanol disinfectant
☐Protective footwear
☐Blue sheet
☐Newspapers
☐Disposable hand warmers
☐Portable toilet
☐Spare glasses, hearing aid, walking stick
☐Tools (rope, shovel, etc.)

Rolling stock method

"Rolling stock" is a method of consuming stockpiled food and drinkable water before they expire and then replenishing what you have consumed with new items to constantly maintain a fixed amount of stocked items. This prevents wasting stockpiled items by consuming those that are close to expiry on a regular basis and also ensures that items remain usable because they have not expired when they are needed during a disaster.



Where to obtain information

Remain active in obtaining weather information and evacuation information from the TV, radio and Internet when it is necessary. Evacuation facilities listed on the hazard map are subject to change after the map has been created. Therefore, be sure to check the **Nishio City Disaster Prevention App and Website** for the latest information. Look up information as a matter of normal practice whenever possible.

Obtain information

Strive to obtain information on your own.

Disaster Prevention Radio

Provides information and announcement about disaster information and evacuation using speakers installed throughout the city.

Internet

Information on the city's disaster prevention efforts, disaster information, and disaster prevention information will be provided from each organization's website.

Nishio City Website
https://www.city.nishio.aichi.jp/

Nishio City Twitter
https://twitter.com/nishio_city

Nishio City Facebook
https://www.facebook.com/kohonishio/

Nishio City LINE official account
@nishiocity

Aichi Prefectural Bureau of Disaster Prevention and Safety Website
https://www.pref.aichi.jp/bousai/

Nagoya District Meteorological Observatory
https://www.jma-net.go.jp/nagoya/

Japan Meteorological Agency Kikikuru (Risk Map) Nishio City
https://www.jma.go.jp/bosai/#area_type=class20s&area_code=2321300&pattern=rain_level

Television and Radio Broadcasting

Provides information using emergency broadcasts and text information via the TV and radio. Disaster information transmitted by the government during a disaster can also be viewed via terrestrial digital broadcast data broadcasting. Use the d button (data broadcasting) on your remote control.

Nishio City Disaster Prevention App and Disaster Prevention Mail

Nishio City has created a smartphone app that collects disaster information for the city (the app must be downloaded). The app can be used to check information such as broadcasts from the Disaster Prevention Radio, evacuation shelters and hazard maps.
You can also check the broadcast contents of the Disaster Prevention Radio via Disaster Prevention Mail (prior registration required).

Disaster Prevention App		Disaster Prevention Mail	
iPhone	Android	bousai.nishio-city2@raiden2.ktaiwork.jp	
QR code to download app		Email address and QR code to register	

Disaster Prevention Radio Telephone Service

You can check broadcasts from the Disaster Prevention Radio over the telephone. Use the phone number below to check information.

☎ 0120-96-8111 (Toll-free)

Emergency Rapid Mail

Evacuation information such as evacuation instructions and other emergency information is sent out automatically to cell phones in Nishio City using the "Area Mail" and "Emergency Rapid Mail" features on cell phones.
Refer to your cell phone's company website for details on how to receive this type of information.

Public Information Vehicle

This is dispatched in the event of a disaster and uses a loudspeaker to call for attention.

Information Transmission Flow

When a disaster is expected due to a storm surge, the Japan Meteorological Agency and Nishio City will send out information over the Disaster Prevention Radio, app, email and Twitter.

Disaster Message Phone
171 (NTT East)

You can confirm your safety and evacuation location by voice message.

How to Use
Dial 171 to receive guidance
For recording 1
For playback 2
Enter the phone number from the area code
If you are in the affected area, enter your home phone number
If you are outside the affected area, enter the phone number of the person in the affected area
(☒☒☒☒) ☒☒-☒☒☒☒

History of Storm Surge Damage

Isewan Typhoon

During Isewan Typhoon, which occurred in September 1959, over 5,000 people either lost their lives or were never found. Approximately 80% of these people were concentrated in Aichi Prefecture and Mie Prefecture, which is related to the fact that a storm surge occurred.
During this typhoon, the highest recorded storm surge in history at 3.55 meters occurred, and as it moved through the Nobi Plain, the largest area of land in Japan at sea level, it caused damage to Nishio City.
This disaster triggered the establishment of the "Disaster Countermeasures Basic Act" in 1961, which became the foundation of Japan's countermeasures against disasters.

Historic landmarks that tell the tale of the storm surge disaster before Isewan Typhoon

Two stone monuments were erected showing the water level from the storm surge damage in front of the gate to Shoboji Temple. The stone monument on the right has a "tsunami marker" to show the storm surge damage from 1889 (Meiji 22) while the stone monument on the left has a "storm surge marker" to indicate the water level from the storm surge damage caused by Typhoon Tess in 1953 (Showa 28).

Shoboji Temple (tsunami marker, storm surge marker)
(Kira-cho Okkawa)

There is a "tsunami commemorative stone monument" that shows the storm surge damage of 1889 (Meiji 22) in front of the gate to Houshuin Temple. This stone monument tells us that the area was flooded by the sea at a height of approximately 4.6 meters at its highest point and that most of the embankment was washed away.

Houshuin Temple (tsunami commemorative stone monument, Kaisho and three realms departed souls monument, Sangai Banrei)
(Kira-cho Yoshida)

On the grounds of Oshima Hachiman Shrine commemorative stone monuments were erected showing the storm surge damage in 1889 (Meiji 22) and for Typhoon Tess in 1953 (Showa 28).

Oshima Hachiman-sha Shrine
(Kira-cho Oshima)

Referenced from the "Disaster Prevention and Mitigation Lessons from Historical Earthquake Records Website" on the Aichi Prefecture Disaster Prevention Office, Disaster Prevention and Crisis Management Section Website.