Tsunami/Storm Surge Disaster Prevention Station
Guidebook

2-1-64 Enokojima, Nishi-ku, Osaka 550-0006
Tel: 06-6541-7799
Hours: 10 a.m. - 4 p.m.
Closed: Tuesday (if a Tuesday falls on a national holiday, closed on the following weekday), plus year-end and New Year holidays
Admission: free
Access: approx. 2 min-walk from Exit 7 and 1 min-walk from Exit 10 of Osaka City Subway Awaza Sta. (Chuo Line and Sennichimae Line)
*Please use public transportation.
*No smoking is allowed on the premises. No food or drinks are allowed inside the building.
**Osaka below Sea Level**

**Our City Is below Sea Level**

A city below sea level, Osaka has been often inflicted by tsunami and tidal surge disasters. Take a look at our city below sea level! Imagine how terrifying it would be to be swamped by seawater!

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**Areas below Sea Level**

Areas below sea level are land areas whose surface is lower than the average sea level at high tide. In Osaka, at the beginning of the Showa period a large volume of underground water was pumped up for industrial use, causing serious problems such as subsidence. In Osaka Prefecture, there are approximately 40 km² of areas below sea level, home to approximately 1.08 million people.

Using a model of Osaka Prefecture, a film offers a visible explanation on the prefecture’s characteristics, where people and properties are concentrated in coastal areas below sea level.
Overcoming Disasters, Reliable Countermeasures against Tidal Surges

Remembering Tidal Surge Disasters

The Tidal Surge Disaster Tunnel provides information on Osaka’s three largest typhoons to date. Displayed in the tunnel are typhoon pictures and news films, as well as a diorama of a submerged city. The tunnel is a symbolic space allowing you to feel as if you were lost in a disaster area, stirring up anxieties.

Muroto Typhoon, September 21, 1934
In front of Osaka Station, Kita-ku
Overview of water into the area around Osaka Station formed a considerable current, seriously damaging transportation systems.

Jane Typhoon, September 3, 1950
Around Chikusa, Minato-ku
This typhoon was unexpected; there was no time left to cope. The government started emergency rescue efforts in what was a very urgent situation.

Second Muroto Typhoon, September 16, 1961
Dojima River, Kita-ku
One hour after arrival of tidal surge, the area around Nakanoshima Bridge was totally submerged, turning the street into a raging river.

Functions of Tidal Surge Protection Facilities

Tidal surge disasters due to large typhoons, such as the Muroto Typhoon, Jane Typhoon and Second Muroto Typhoon, claimed and devastated the lives of many people. Based on the lessons learned from past disasters, tidal surge protection facilities are now established along seashores, on riversides and in other areas below sea level, in order to prevent the areas from being submerged.

Tide Gate
Takihata River Tide Gate

Coastal Improvement
Around Hanami Park

Super Levee
Around Kyocera Dome Osaka

Drainage Pump Station
Hashimoto River Drainage Pump Station

Tide Protection Gate
Shiniagawa River Tide Protection Gate

As a symbol of facilities to protect people in Osaka from tidal surge disasters, a real iron gate is set up inside the building, helping you learn about reliable countermeasures against tidal surges, with an explanation of the functions and mechanisms of various disaster protection facilities. Using a movable model, explanation is also offered on an archetypal flood gate, which is rare in the world.

Flood Prevention Teams in Our Community
Who shuts the tide protection gates when there’s a threat that our city might be flooded in a typhoon or other disaster? Most such gates are actually shut by flood prevention teams.

To deal with such emergencies, flood prevention teams work very hard to protect you and your daily life.
Tsunami Dangers Different from Tidal Surge Dangers

Using the Lessons of History into the Future

Tidal surges and tsunamis are quite different in terms of how they occur, their cycles and characteristics. While it’s possible to predict in advance the occurrence of tidal surges, it is impossible to make detailed predictions of tsunamis. Large tsunamis often strike disastrously when people forget how terrifying previous disasters were.

Let’s learn from our forerunners who experienced large scale tsunami disasters, and use their lessons into the future.

**Summary of Monument Description**

A large tsunami occurred, devastating structures and causing fires. When the disaster began to subside, a large tsunami swamped the area, generating a backward flow approximately 2 m of deep muddy water toward Hijishibori. All the bridges on the Ajiwara and Kazawa Rivers were washed away. Ships were wrecked, generating mountains of ship debris along the rivers. Believing it would be safe to stay on the water during an earthquake, some people evacuated to boats or small huts built on riverbeds. The tsunami, however, claimed the lives of many people who had escaped to boats. But few people knew about the tragedy, once again causing the loss of many lives. This monument seeks to let future generations know of the tragedy, with the hope that the monument’s inscription continues to be well-read to ensure it can always be clearly read.

**DYNAcUBE - Tsunami Disaster Experience Theater**

An earthquake off the Kii Peninsula! Tsunami Warning!

Osaka swamped in a muddy, rushing current!

The use of special effects and CG makes you feel as if you’re in a worst-case scenario. What would you do in such a situation?

**Earthquakes and Tsunamis throughout the World**

Earthquakes occur almost every day somewhere in the world, causing large tsunami disasters. Past large tsunamis generated in the Pacific Ocean and Indian Ocean devastated not only the epicenters but also many coastal countries located far from the centers.

**DYNAcUBE is a theater where dynamic images are displayed seamlessly on the front, right and left sides, even on the floor. The use of sound effects generated by a floor vibro-acoustic speaker further makes you feel as if you were caught in a real tsunami. This facility helps you experience the fear of tsunamis in an overwhelming, dynamic atmosphere.**

**Summary of Monument Description**

A strong earthquake lasted two days. A tsunami suddenly struck the area, releasing ships berthed along riversides, shaking and destroying them. Eight bridges were also washed away. The earthquake and tsunami devastated homes and warehouses. The fear was totally beyond description. Nevertheless, since people already knew that many had died in the Hiei Earthquake and Tsunami as a result of evacuating to boats, they evacuated to wide shrines, precepts, causing no injuries.

In other places around seashores and riversides, many people died after evacuating to rivers by boat; such boats were hit with large ships that had been washed away by the tsunami. Never evacuate to rivers or boats during a strong earthquake. It is important to be aware that a strong earthquake is often followed by a tsunami.
Tsunami Dangers Different from Tidal Surge Dangers

Imminent Tsunamis and Their Countermeasures

What are the Tonankai and Nankai Earthquakes?
The earth is covered by approximately 10 bedrocks called "plates." Earthquakes often occur on plate boundaries. In the Nankai Trough, one such boundary, earthquakes happen when the deformation generated by plate subduction reaches the limit, causing a sudden basement slip. When this happens at the sea bottom, the vibration from the slip is conveyed to the ocean's surface, generating tsunamis.

Occurrence Cycle of Tokai/Tonankai/Nankai Earthquakes

It has been identified that giant earthquakes occurred in the Nankai Trough in the past in a 90- to 150-year cycle. It has also been found that, in the three expected epicenter areas, three earthquakes often occur together in a short period of time. More than 150 years have now passed since the last Tokai Earthquake, suggesting there should be no surprise if a giant earthquake occurs tomorrow.

Preparation for Tonankai/Nankai Earthquakes: Tsunamis and Shakes

Tsunamis generated by the Tonankai/Nankai Earthquakes will hit Osaka coastal areas in the near future. This section provides information on recent research results, such as earthquake and tsunami occurrence mechanisms and expected disaster scales and areas. To help you enjoy learning about these, this section features a wide variety of exhibits, aerial photographs displayed on the section floor, a 3-D hazard map, films, and panels depicting actual tsunami heights.

Expected Height of Tsunami

In 2003, Osaka Prefecture conducted a tsunami simulation on the assumption that the largest-scale Nankai Earthquake would occur (also examining tsunamis expected to hit coastal areas in terms of height, arrival time and current speed.) The tsunami heights indicated here are expected maximum heights based on the assumption that earthquakes occur at high tide.

- Earthquake Scale: M8.4
- Epicenter: Shikoku - Wakayama Offshore
Knowledge to Protect Your Life from Tsunami Disasters

Study Salon

Must-Dos before and after Evacuation

It is important to prepare for earthquakes and tsunamis in your daily life to protect yourself. Let’s learn together!

Correct knowledge and appropriate actions can save you and your family in an emergency.

5 Points when a Tsunami Strikes

1. Be alert to tsunamis when you feel an earthquake! Quickly get away from the sea or river!

2. Gather accurate information from TV, radio, etc.

3. Evacuate together with others around you immediately after the release of evacuation information.

4. Evacuate on foot to higher ground or to the third floor or higher in a building.

5. Tsunamis can strike again! Stay at your evacuation site until the evacuation order has been lifted!

Signs Indicating Tsunami Hazards

"Tsunami Hazard Zone Sign” and “Tsunami Evacuation Area Sign” are approved as tsunami evacuation signs by the International Organization for Standardization (ISO). The "Tsunami Awareness Sign” is used on tsunami hazard maps.

How to Get Tsunami Information

The Japan Meteorological Agency releases Earthquake Early Warnings immediately after the occurrence of an earthquake, and Tsunami Warnings/Advisories when the tsunami is expected to be followed by a tsunami. Such information is systematically provided to you immediately in a variety of ways.

Importance of Family Meetings on Disaster Prevention

It is important to have occasional family meetings to decide in advance where each person will meet if they cannot contact each other when a disaster strikes.

Conferring the Evacuation Site Location

Decide where you will meet your family if you are separated from each other in times of disaster.

Conferring your evacuation site location by viewing tsunamis and checking solid objects.

Conferring the Evacuation Path Location

Keep your emergency kit near the entrance of your home.

Emergency Safety Countermeasures on Your Home

Choose a safety corner where you can stay in the house. If you are instructed to evacuate, do so using the evacuation path.

Conferring How to Get in Contact

Decide how to get in contact with each other, such as by posting messages at home, and confirm telephone numbers of relatives living outside your prefecture.

Stock at Home

Always prepare stockpiles to sustain you and your family for about three days, in case water, gas, power and other utility services are disrupted.

Food

Water

Portable Gas Stove

Prepare non-perishable foods and beverages in advance.

Check the water supply in your household.

A portable gas stove is useful in case you need to cook food.

Keep your water supply in one place.

Emergency Kit

- Prepare a backpack with emergency items to easily take with you in the event of evacuation.
- Just in case, write your name, address, contact and other information to identify you.
- Keep the emergency kit tight for smooth evacuation. It is recommended that an emergency kit for a man and a woman weigh up to 15 kg and 10 kg, respectively.
- Check the kit items at least two or three times a year for items that have expired, and replace them with fresh ones.

Preparation for Earthquakes and Tsunamis - Disaster Prevention Building

Osaka Prefecture is developing a collective management (remote monitoring, control, and notification, etc.) of tide gates and iron tide protection gates for opening/closing operations. As a disaster prevention center in western Osaka for such a sophisticated development, the Tsunami/Storm Surge Disaster Prevention Station seeks to further enhance public awareness of tsunami and flood surge disasters.

Observation and Operation Room

Established in the Disaster Prevention Building, the Observation and Operation Room is a 24/7 operation room for tide gates and flood gates. During emergencies, the room serves as a media press center for Osaka Prefecture with relevant organizations.

Tsunami/Storm Surge Disaster Prevention Station (Disaster Prevention Building)

West Osaka, Minato-ku, Osaka City

constructed under the law of the Act on Coordination of Disaster Prevention and Risk Management in 1995.

The building was completed in June 2007.

Accurate information gathering comes first! Keep information provided by TV and radio.