



# Preparedness for Meteorological Disasters in Okinawa Region *- for Your Safety -*

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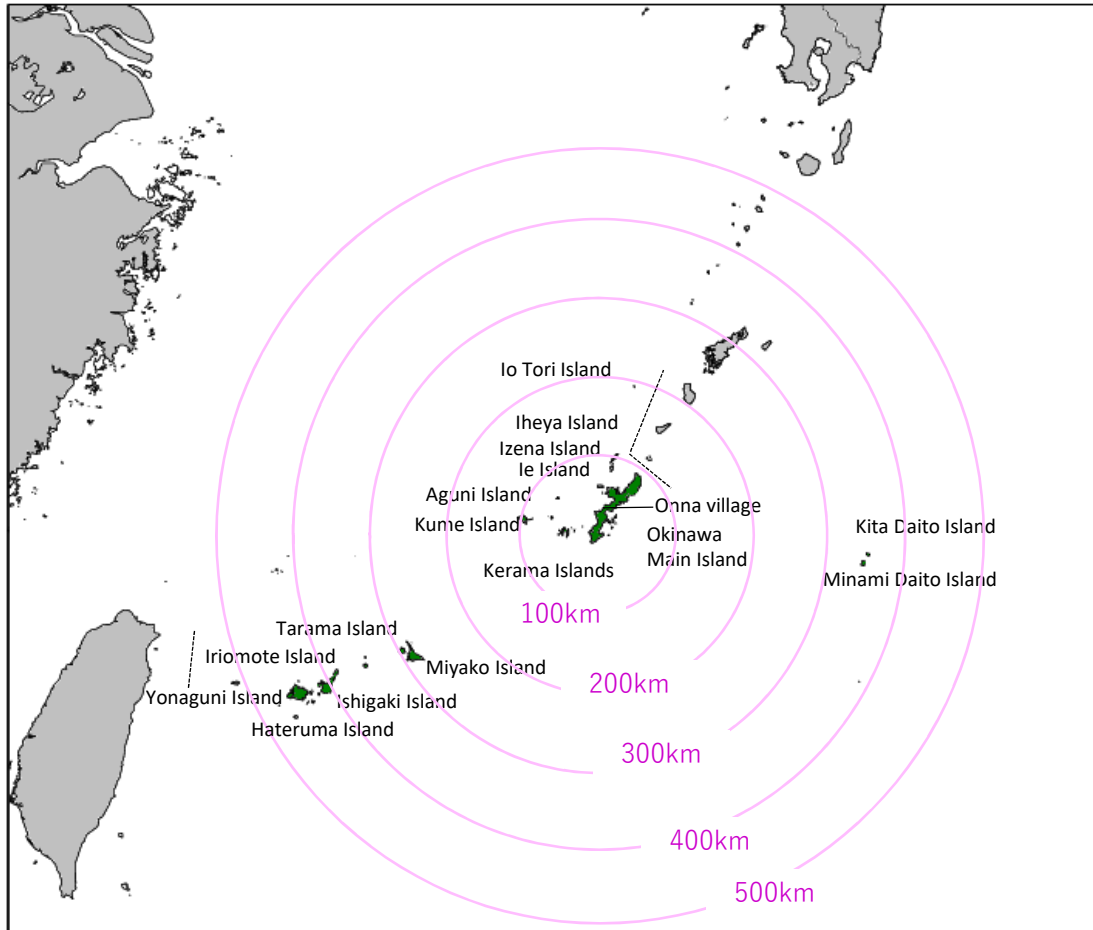
# Outline

- Meteorological/Climatological Characteristics in Okinawa
- Meteorological Disasters in Okinawa
- Other Natural Disasters (Earthquake, Tsunami, Volcano)
- How to Prevent Yourself from Weather Disasters
- How to Find Weather Information

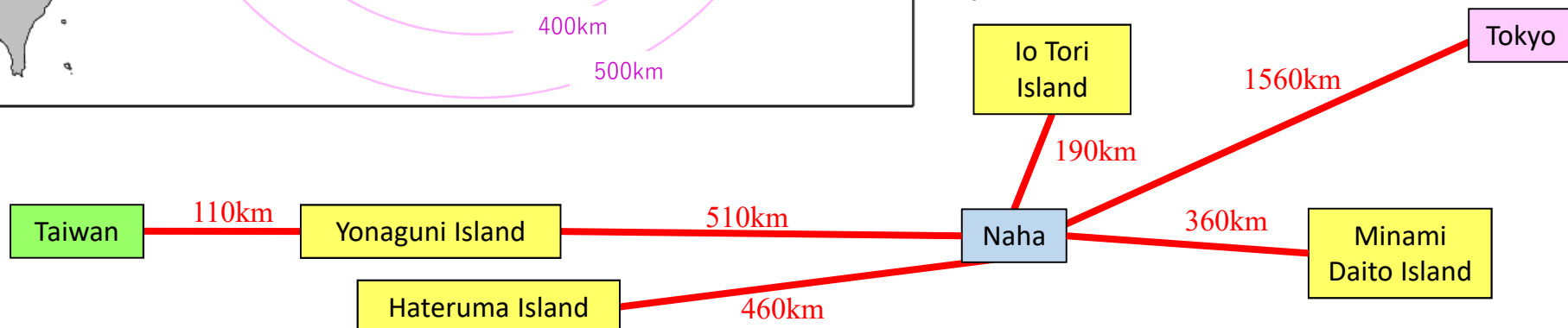
# Meteorological/Climatological Characteristics in Okinawa

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# Okinawa Prefecture

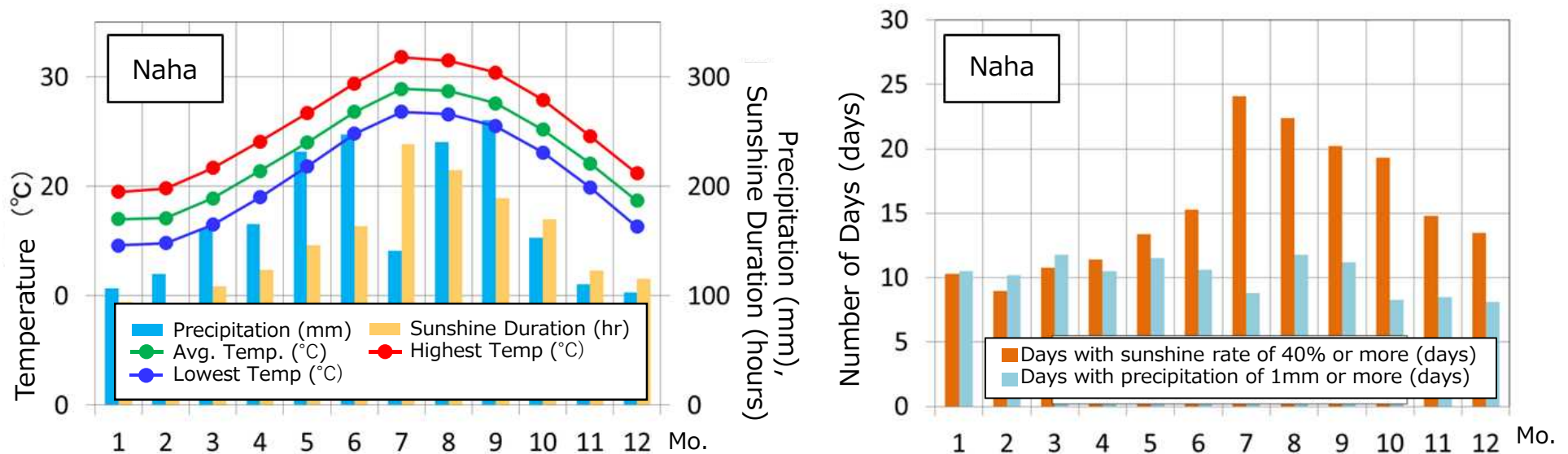


- Has an area of approximately 1,000 km from east to west, and approximately 400km from north to south.
- Consists of 160 large and small islands (including 47 inhabited islands.)
- Has 11 cities, 11 towns and 19 villages.
- The area of Okinawa prefecture is 2,281km<sup>2</sup>.
- The population of Okinawa prefecture is 1,450,000.



# Characteristics of Weather in Okinawa Region

- Located in subtropical zone between 20°N-30°N with hot and humid climate affected by the ocean.
- Average temperature in Naha is the highest in July (28.9°C) and the lowest in January (17.0°C) with difference of 12°C; the yearly temperature difference is small compared with other parts of Japan, which makes Okinawa region a warm climate throughout the year.
- The wind from the oceans rarely makes temperature in Okinawa region be extremely hot (as maximum temperature over 35°C) even in the summer.
- It rains a lot during rainy season (from May to June) and from August to September (often affected by tropical storms).
- Little rainfall in July (right after the rainy season) and winter season.
- Sunshine duration is the longest in July with sunshine rate of 40% or more.



Average temperature, precipitation, and sunshine duration in Naha

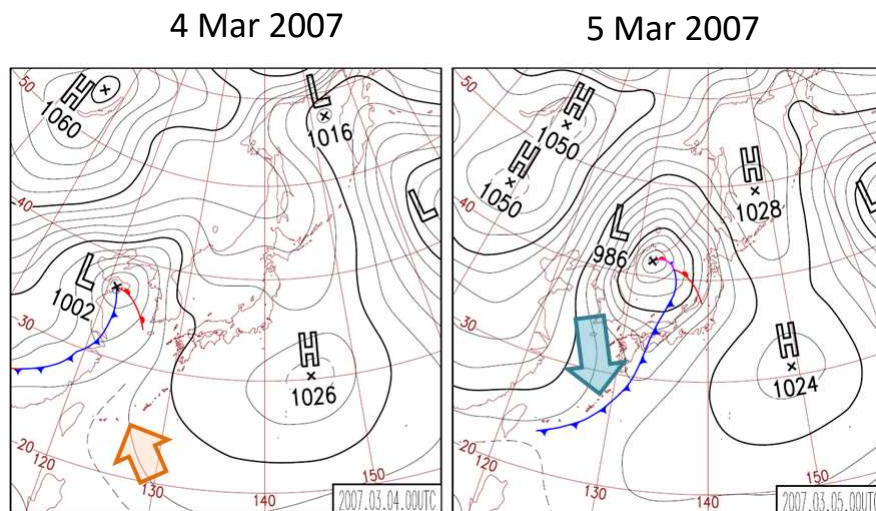
# Characteristics of Weather in Okinawa Region

- High temperature • high humidity • heavy rain
- Number of tropical storms approached : average of 7.4 per year (average of 11.4 per year in total in Japan)
  - Damages by strong wind, flood, landslide, high coastal wave, storm surge, salt water
- Drought damage (small amount of rainfall, small river basin area)
- Marine accident (low pressure in winter, monsoon (seasonal wind))
- Number of tornadoes confirmed is the most in Japan

	Naha	Tokyo
Annual Rainfall	2040.8 mm	1528.8 mm
Annual Avg. Temp	23.1°C	15.4 °C
Annual Avg. Humidity	74 %	65 %
Highest Temp	35.6 °C (9 Aug 2001)	
Lowest Temp	4.9 °C (20 Feb 1918)	
<b>Snow (Sleet) Record</b>		
Miyazato, Nago-city, 24 Jan 2016, 21:48, Temp 5.5 °C		
Janado, Kumejima, 24 Jan 2016, 21:15, Temp 5.2 °C		
Janado, Kumejima, 17 Feb 1977, 00:35, Temp 8.8 °C		

# Spring (March – May)

- Migratory low pressure and high pressure alternately move eastward across the East China Sea. Temperature increases (decreases) in front (back) of low pressure due to warm southerly (cold northerly) flow. This causes temperature to change in short-term cycle; sometimes it will be hot and humid, and in other days it will be cold.
- East China Sea depression sometimes develops rapidly and passes through around Okinawa. This is often called in Okinawa as “*Ningwachi Kajimaai*” (February wind rotation).

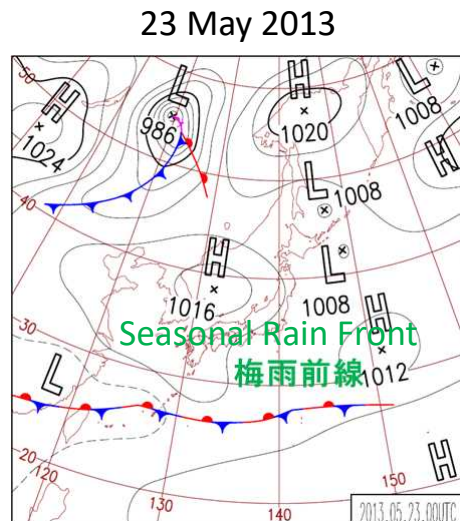


Surface analysis chart (4-5 March 2007: passing of cold front associated with low pressure)

Cold front (associated with low pressure) passing through Okinawa area caused strong wind. On 4 Mar 2007, max wind speed of 15.8m/s (S) was observed in Ishigaki Island, but on 5 Mar, after the cold front passed, wind direction suddenly changed and the max wind speed of 26.1m/s (ENE) was observed.

# Spring (March – May)

- “Baiu/Tsuyu” (rainy season in Japan) starts from early May (around 9 May in normal), about one month earlier compared with mainland of Japan, and ends around 23 June. The rainy season is called “*Su-man* (season of grain full) *Bo-su* (season of grain in ear)”.
- Stationary front around Okinawa area, with warm and humid air from the south, often develops cumulonimbus, which cause heavy rain or torrential rain. On the other hand, this also is the season to store agricultural water needed for midsummer.



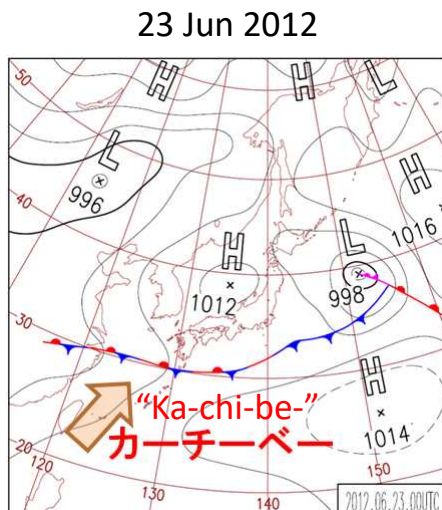
Surface analysis chart (23 May 2013: rainy season)

On this day (the rainy season started from around 11 May), active stationary front caused very heavy rain, especially in southern part of Okinawa Main Island; 204 mm of daily precipitation was observed in Naha (equivalent to one-month precipitation amount in May).



# Summer (June – August)

- Stationary front is activated and often causes very heavy rain in June. Towards the end of June, the North Pacific high gradually extends westward and covers the region; it means the end of the rainy season.
- The wind around the North Pacific high, together with the wind toward the stationary front, causes strong south/southwest wind. This is called “*Ka-chi-be-*” (southern wind on summer solstice).
- After the rainy season (around 23 June), the North Pacific high covers the region, bringing warm humid air, with more sunny, hot, and humid days.



Southern wind (“*Ka-chi-be-*”: summer solstice southern wind), signifying the beginning of summer, follows the northbound seasonal rain front. Since this date, pressure stabilized, blowing strong southern wind, covered by high atmospheric pressure, bringing sunny days.

Surface weather analysis (23 Jun 2012: beginning of the end of rainy season) (“*Ka-chi-be-*”))

# Summer (June – August)

- In August, the region is often affected by tropical storm. The number of genesis of tropical storms in August is 5.9 in normal and the number of tropical storms approaching Okinawa region in August is 2.2 in normal (both are the highest in the year); this situation increases precipitation.
- Since Okinawa region is surrounded by the ocean, it hardly becomes an extremely hot day (with max high temperature of 35°C or more), unlike in the mainland of Japan.

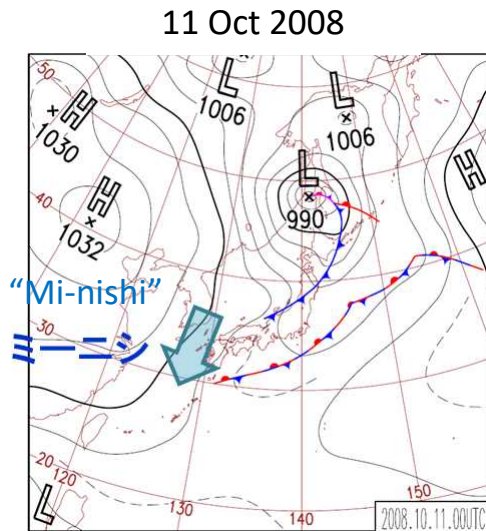


While Okinawa region was covered by the North Pacific high, the tropical storm around the Philippines brought hot and humid air to the region. On this day, it was sunny during the daytime with highest temperature of 33.1°C in Okinawa region, but the atmospheric conditions became unstable by the evening, which caused heavy rain and thunderstorm. Dairy precipitation of the day was 48.5 mm.

Surface analysis chart (12 Aug 2013: midsummer)

# Autumn (September – November)

- The North Pacific high weakens in autumn, and low pressure and high pressure alternately pass through Japan from west to east. In this situation, the temperature in the region gradually decreases with a cycle of warm day and cold day.
- Around October, stationary front moves to south of Kyushu Island and the continental high pressure brings northeast monsoon. The first day of northeast monsoon (replacing southeast monsoon in summer) is called “*Mi-nishi*” (new northern wind) in Okinawa.
- As the northeast wind gradually blows stably and the temperature decreases, the region enters the winter season.

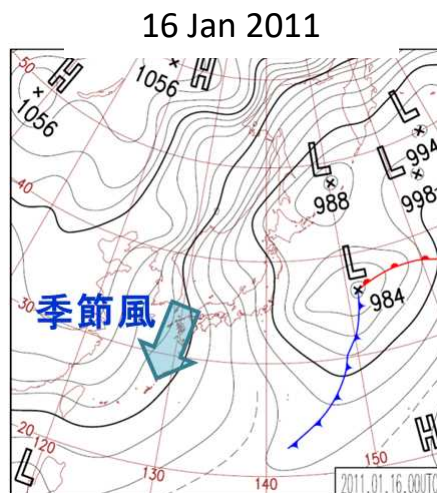


Surface analysis chart (11 Oct 2008: “*Mi-nishi*” (new northern wind))

There was low pressure around Hokkaido, while the continental high extended from the west. It caused a temporary winter pressure pattern in Okinawa region; the northeast monsoon blew from the cold high pressure.

# Winter (December – February)

- Atmospheric pattern with high pressure in west and low pressure in east appears during the winter season. This is known as “winter pressure pattern.”
- Siberian high covers the East China Sea, isobars around Okinawa region become congested, and strong winter monsoon from the East China Sea blows towards Okinawa. As the winter monsoon becomes warm and contains a lot of water vapor during the travel on the sea, there are a lot of cloudy and rainy days in winter season.
- The winter monsoon blows from north/northeast in Okinawa region, while it blows from west/northwest in Honshu Island. As the direction of the wind hardly changes for a long period, it increases wave height.



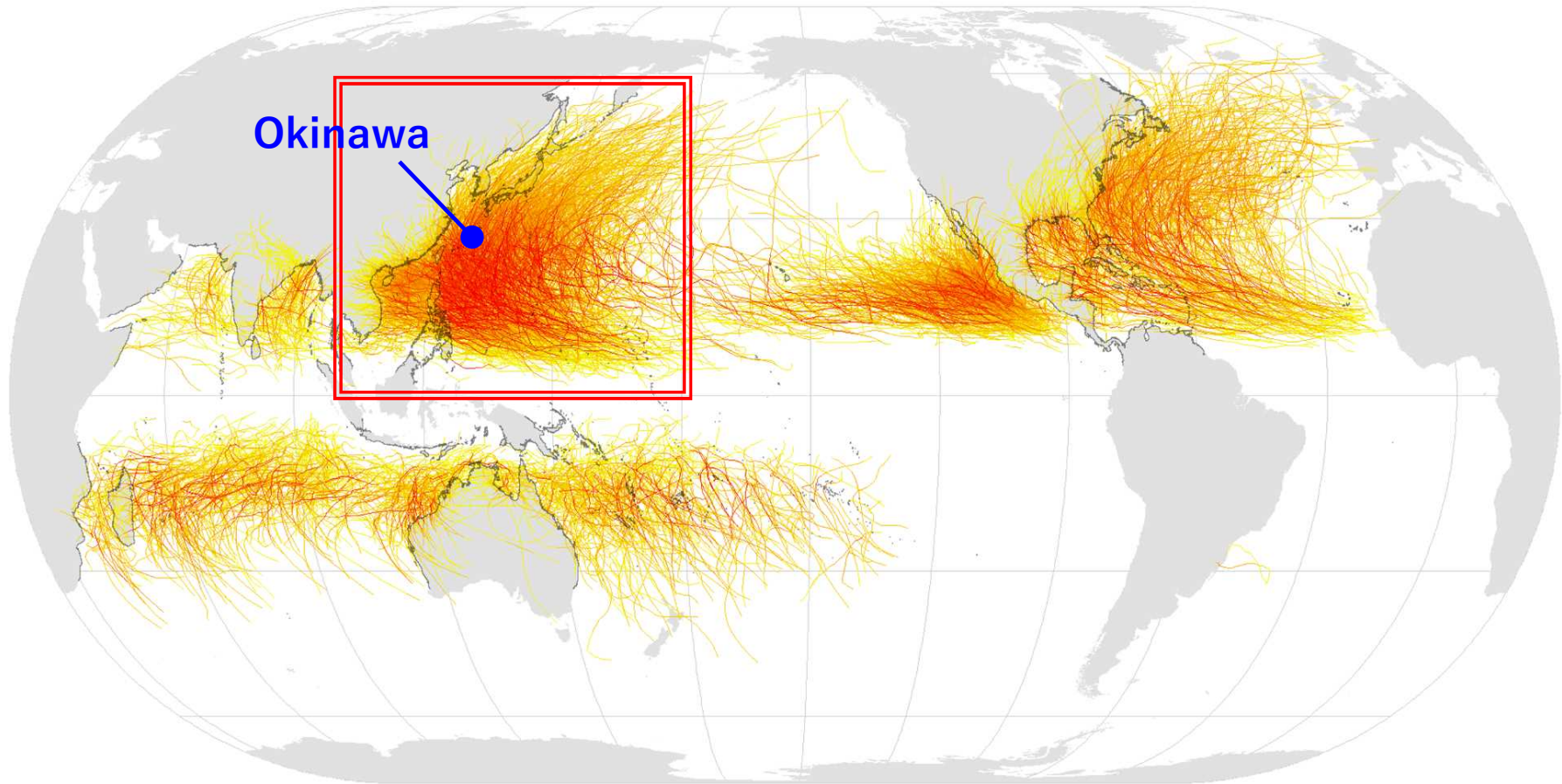
Surface analysis chart ( 16 Jan 2011: winter season)

Siberian high over Eurasia and low pressure in the east of Japan creates a “winter pressure pattern with high pressure in west and low pressure in east.” Cold air from Siberian high blew toward Japan. This cold air caused cloudy and rainy cold days in Okinawa, where the lowest temperature was 9.3°C and highest was 12.3°C in Naha.

# Meteorological Disasters in Okinawa

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# Tropical Cyclones



Tracks of tropical cyclones (1945 - 1990)



# Categorization of Tropical Cyclones

Categorization of TCs in the western North Pacific

Max wind speed	Categorization in Japan	International Categorization
~ 33 kt	Tropical Depression	Tropical Depression
34 kt ~ 47 kt	Taifu	Tropical Storm
48 kt ~ 63 kt		Severe Tropical Storm
64 kt ~ 84 kt	Taifu (strong)	Typhoon
85 kt ~ 104 kt	Taifu (very strong)	
105 kt ~	Taifu (violent)	

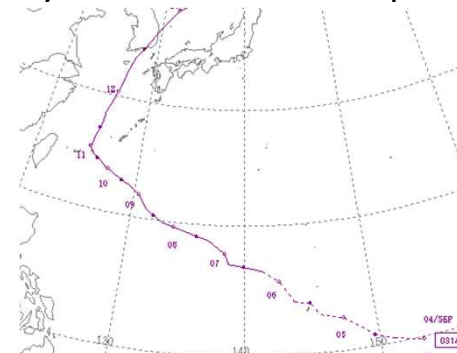
# Disaster caused by Tropical Cyclone (T0314 MAEMI)



Taken in Miyako Island on 11 Sep 2003



Control Tower of Miyako Airport

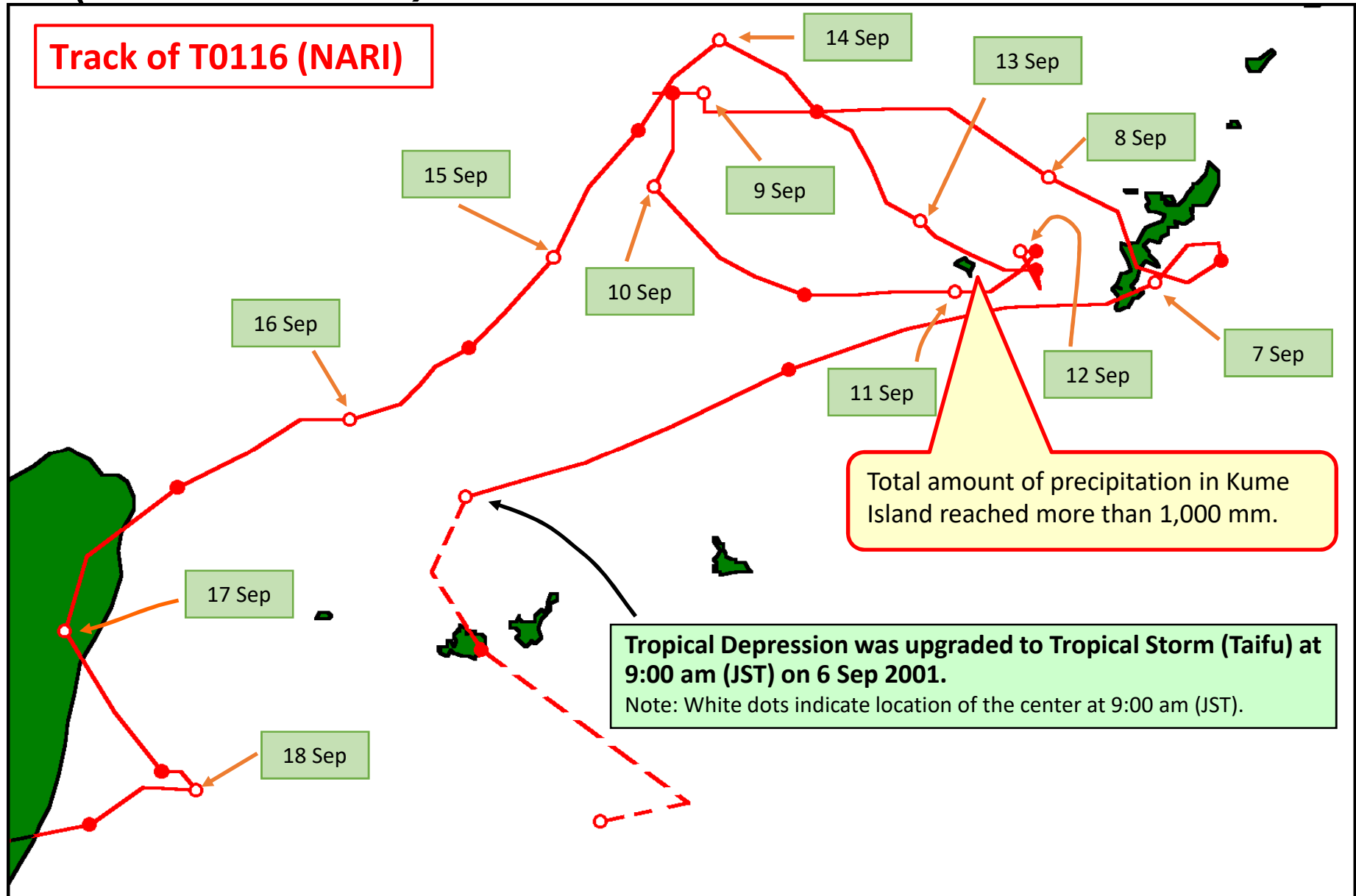


The Maximum instantaneous wind speed of 74.1 m/s (approx. 144kt) and the minimum sea-level pressure of 912.0hPa were observed at Miyakojima Meteorological Office.



# Disaster caused by Tropical Cyclone (T0116 NARI)

## Track of T0116 (NARI)



# Disaster caused by Tropical Cyclone (T0116 NARI)



Inundation above floor level in Tonaki Island caused by a heavy rain on 15 Sep 2001 (photo by courtesy of the Ryukyu Shimpo)



A road collapsed about 6 meters caused by a heavy rain on 9 Sep 2001 (Kyam, Uruma city)



# Disaster caused by Tropical Cyclone (T1824 TRAMI)

Fence on a bank damaged by high wave (Mizugama, Kadena town)



Flood caused by high wave (Yamanoha, Nago city) (photo by courtesy of Nago city)



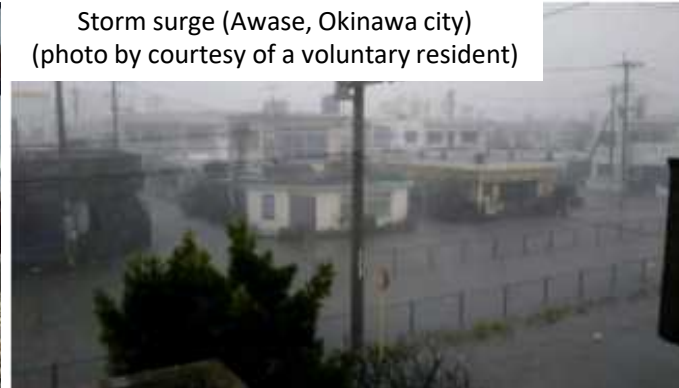
Flood caused by high wave (Yamanoha, Nago city) (photo by courtesy of Nago city)



Bank damaged by high wave (Mizugama, Kadena town)



Storm surge (Awase, Okinawa city) (photo by courtesy of a voluntary resident)

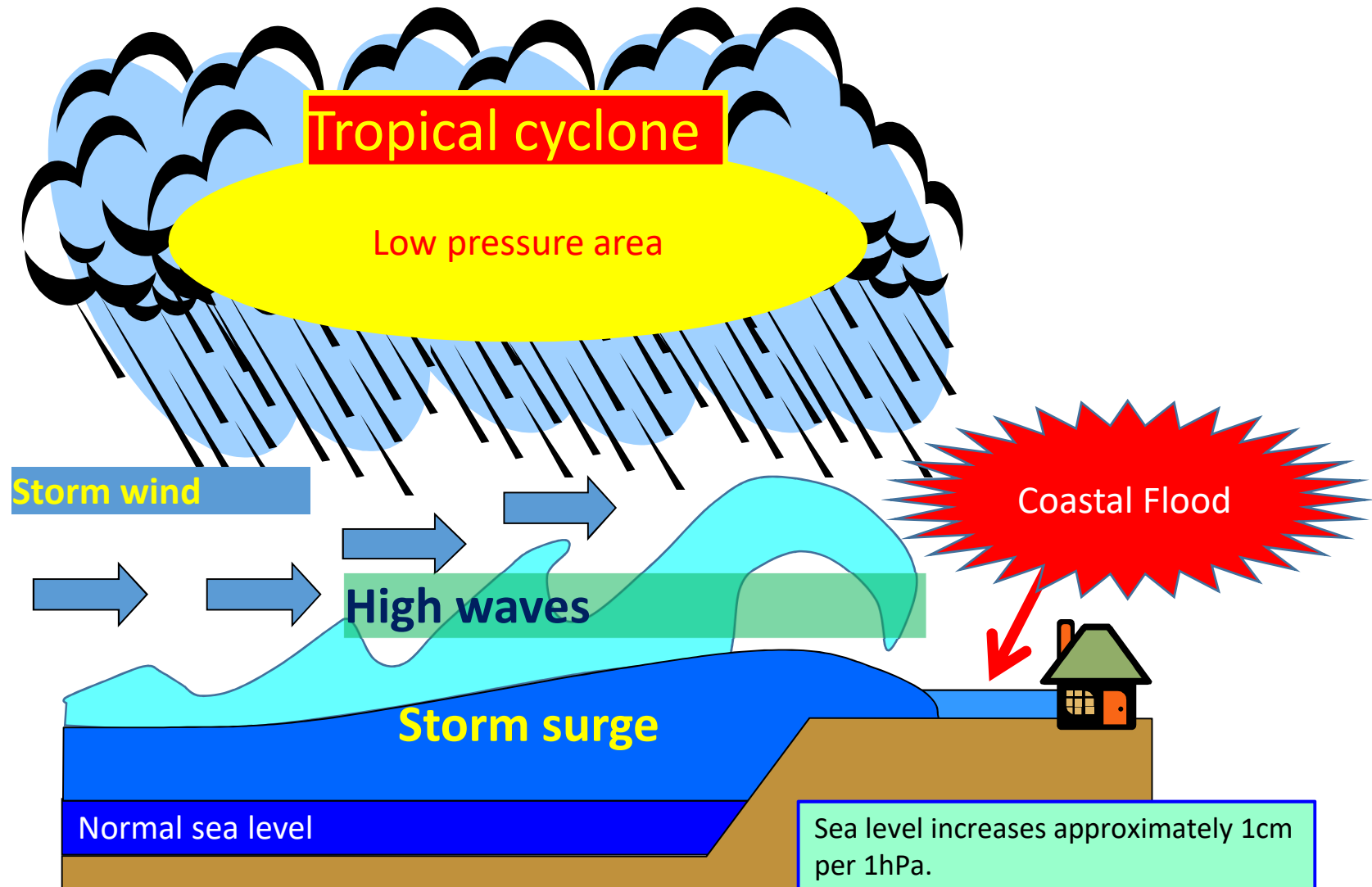


Track of the tropical cyclone (T1824)



High tide and approaching Tropical Cyclone TRAMI (T1824) caused storm surge, and some areas in Okinawa Main Island were damaged by coastal flood. After the peak, some banks were damaged by high waves caused by west gale.

# Mechanism of coastal flood caused by tropical cyclones



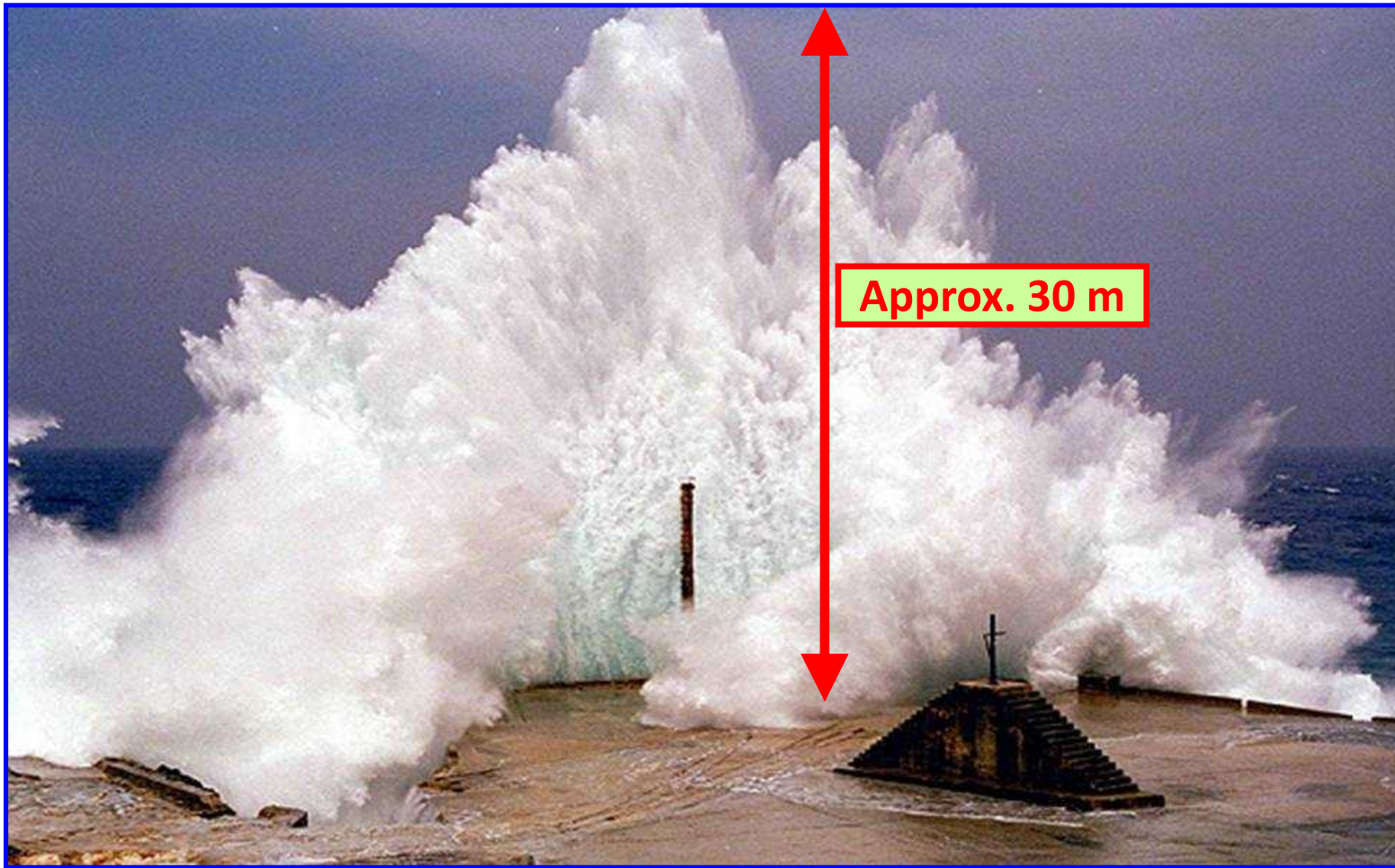
# Example of coastal flood due to a combination of high wave and storm surge



Coastal flood due to a combination of high wave and storm surge caused by T9713 (Winnie) on 17 Aug 1997  
(photo by courtesy of the Ryukyu Shimpo)



## Example of coastal flood due to high wave



Taken in Minami-Daito Island

# Human damage caused by torrential rain

An extra edition of newspaper reported that four workers were missing in the Gahbu river (Higawa, Naha-city) on 19 August 2009.

The paper said that the damage was supposed to be caused by local heavy rain.

After a while, the workers were discovered and confirmed to be dead.

号外 沖縄タイムス OOKINAWA TIMES 2009年(平成21年) 8月19日 水曜日

## ガブ川増水 4人不明

### 作業員流され1人救助

那覇市樋川 局地的大雨原因か



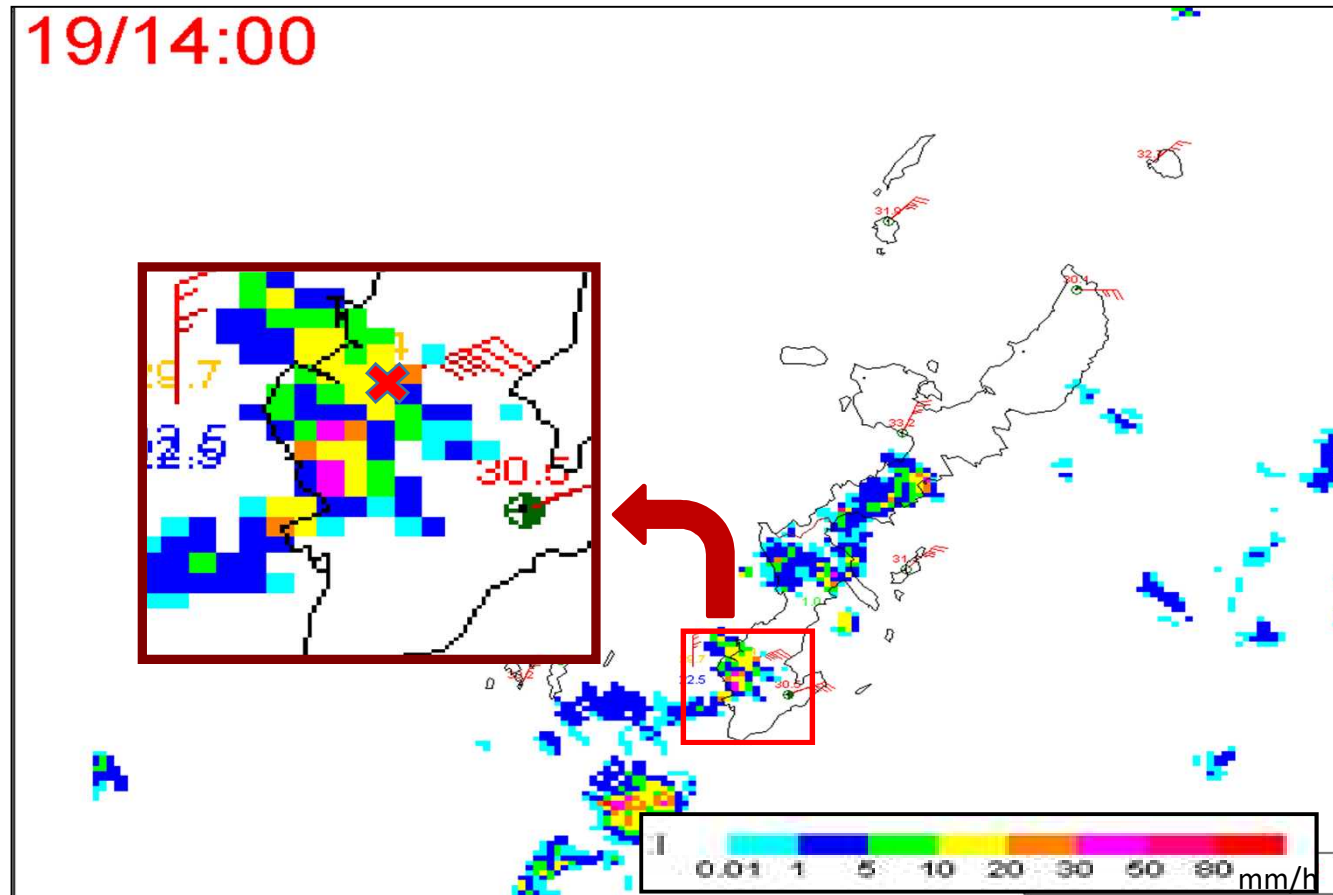
①ガブ川に流され、救助された男性(右から2人目)  
= 19日午後3時45分、那覇市樋川  
②水上バイクを下ろして捜索に入る消防隊  
= 19日午後5時すぎ、那覇市樋川

19日午後2時5分ごろ、那覇市樋川のガブ川で、「1人が流された」と目撃者から119番通報があった。那覇市によると、流されたのは建設会社作業員の男性5人、橋の耐震調査のため作業していたと、局地的な大雨の影響による増水で流されたという。現場は那覇市樋川のガブ川。同河川によると、流された5人のうち19日午後半の男性は同日午後3時50分ごろ、現場から約1キロ離れた同河川志1丁目付近の下流で発見された。男性は目立った外傷などはなく、生命に別害はないという。残り4人は19日現在の行方不明。発見された1人、消防や警察が捜索にあたっているが、同日午後5時現在、発見されていない。関係者によると、橋の耐震調査作業は那覇市や豊見城市の3業者が請け負っていた。

詳しくはあずの紙面をお読みください <http://www.okinawatimes.co.jp/> 購読の申し込みは 0120-21-9674

Okinawa Times (19 Aug 2009 (extra edition))

Torrential rain caused water levels of the river to rise



Radar image at 2:00 pm, 19 Aug 2009

Water levels of the river rapidly increased not only by rainfall at the point but also by pouring from surrounding gutters.



# Flash flood caused by heavy rain

The newspaper reported that 54 people were left behind in river sides of both the Genka river (Nago city) and the Henan river (Ogimi village) due to flash food caused by heavy rain on 5 May 2017.

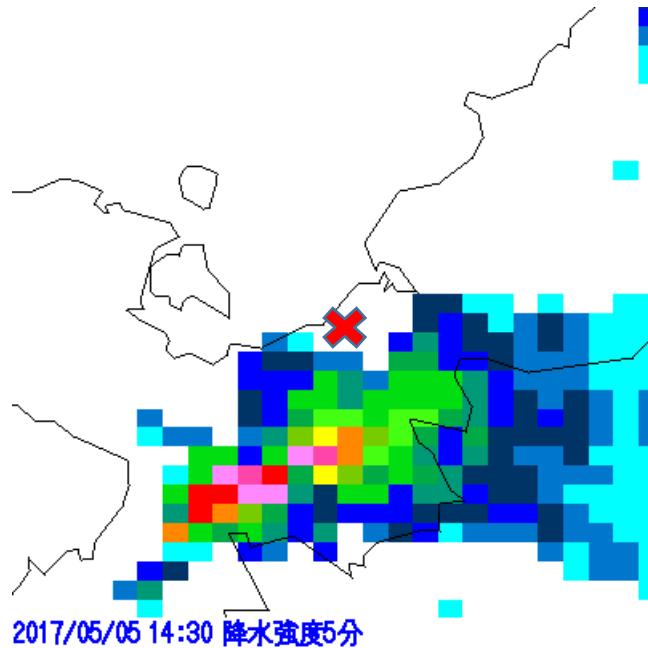
All the people were saved by rescue team.



Okinawa Times (6 May 2017)

# Flash flood caused by heavy rain

According to the newspaper, people left behind said that flash flood suddenly came despite it was not raining there.



Radar image at 2:30 pm, 5 May 2017



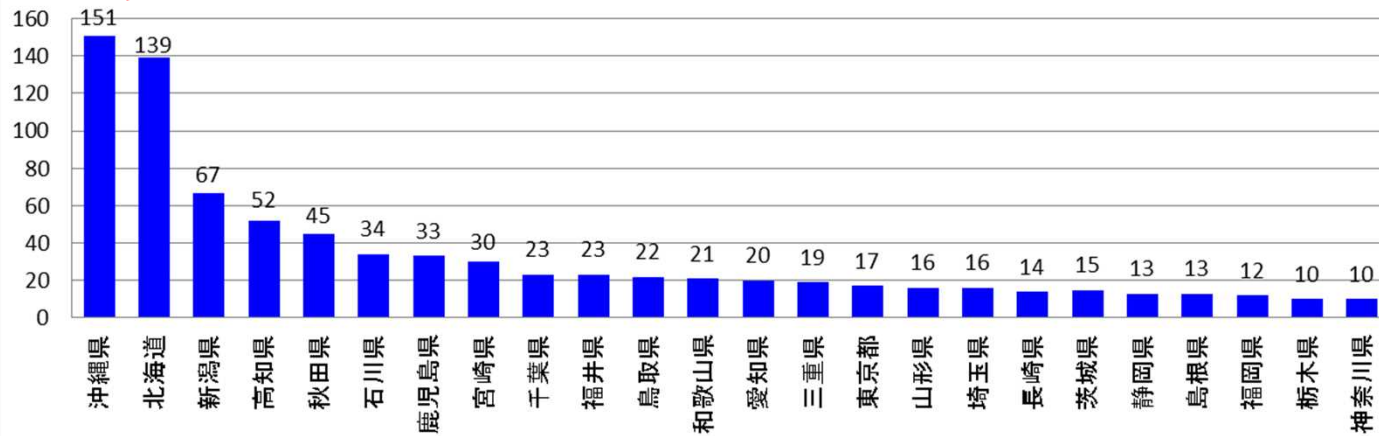
Ryukyu Shimpo (6 May 2017)

# Tornado

Number of tornadoes confirmed by JMA  
(includes waterspout)  
(1991~2018)

Okinawa has the most occurrences in Japan

Number of tornado outbreak confirmed by prefecture (1991 ~ 2018)



The number of tornadoes by prefecture, including waterspout that did not move to onshore, is the highest in Okinawa.

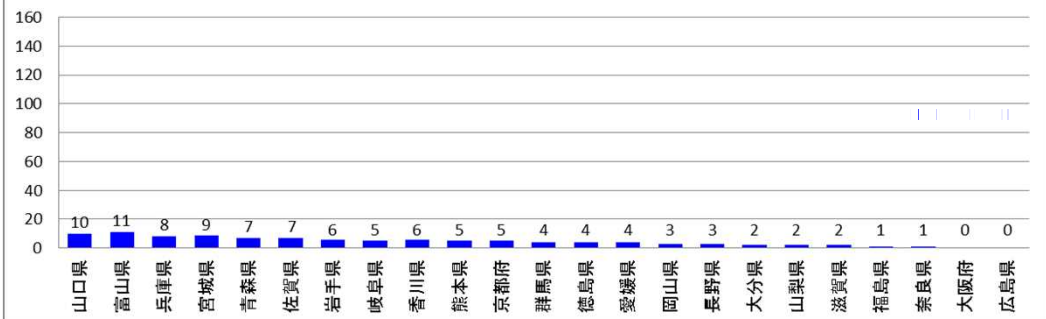
Note: Number of tornadoes confirmed over land are Hokkaido, Okinawa, Kochi, Akita, Miyazaki, Kagoshima (in the order from highest confirmed prefecture)



Provided by Gala Aoi Umi

18 Aug 2010 Cape Zanpa, Yomitan-son

Number of tornado outbreak confirmed by prefecture (1991 ~ 2018)



# Tornado (Water spout)



15 May 2017, Yomitan village

# Other Natural Disasters (Earthquake, Tsunami, Volcano)

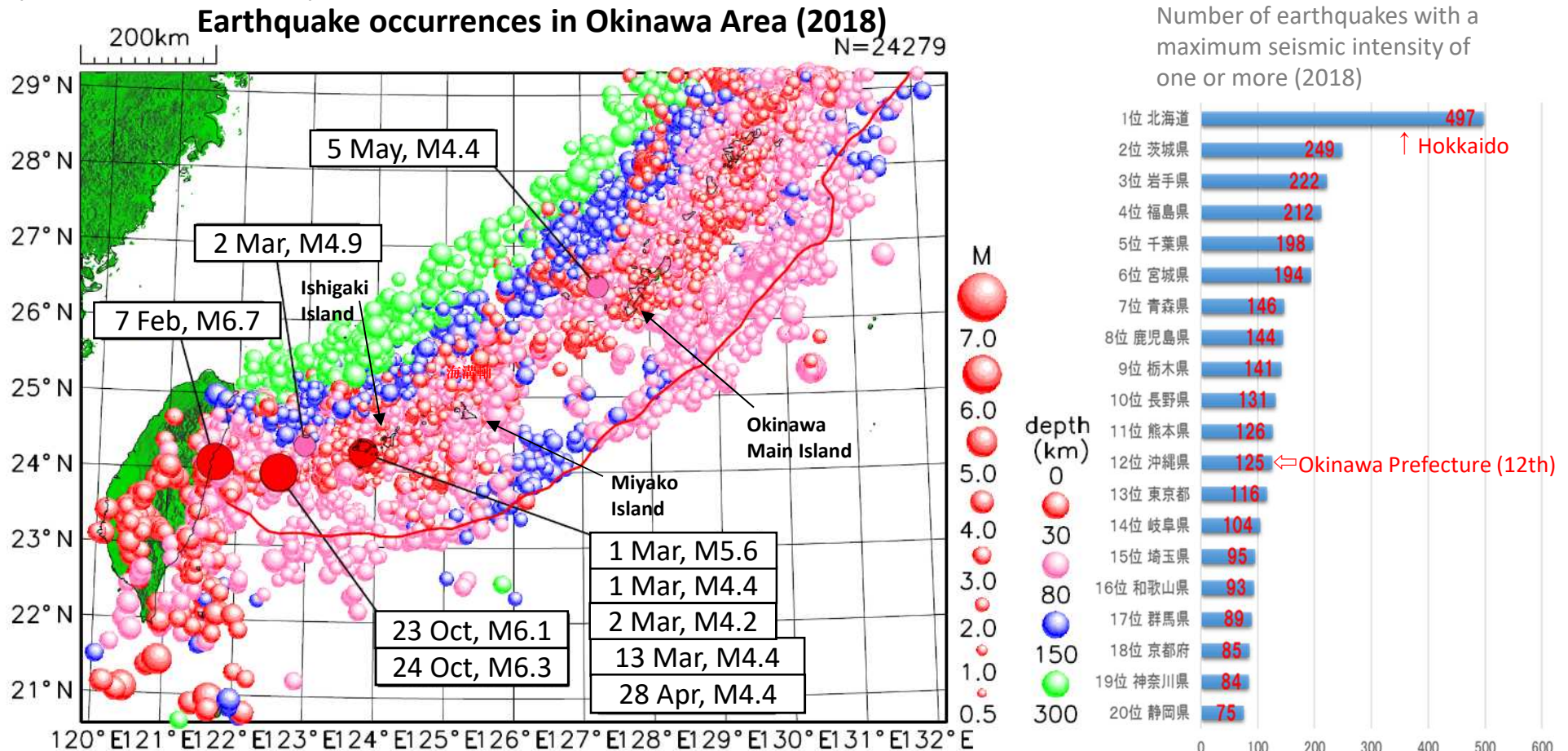
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# Earthquake Activities in Okinawa Area

In surrounding seas of Okinawa Area, there is the Ryukyu trench, a boundary between the Philippine Sea Plate and Eurasian Plate, where seismic activities are active.

24,274 earthquakes, which includes an earthquake with a maximum seismic intensity of 5 lower (at Iriomote Island), were observed in 2018.



— A red solid line indicates a center of the Ryukyu trench

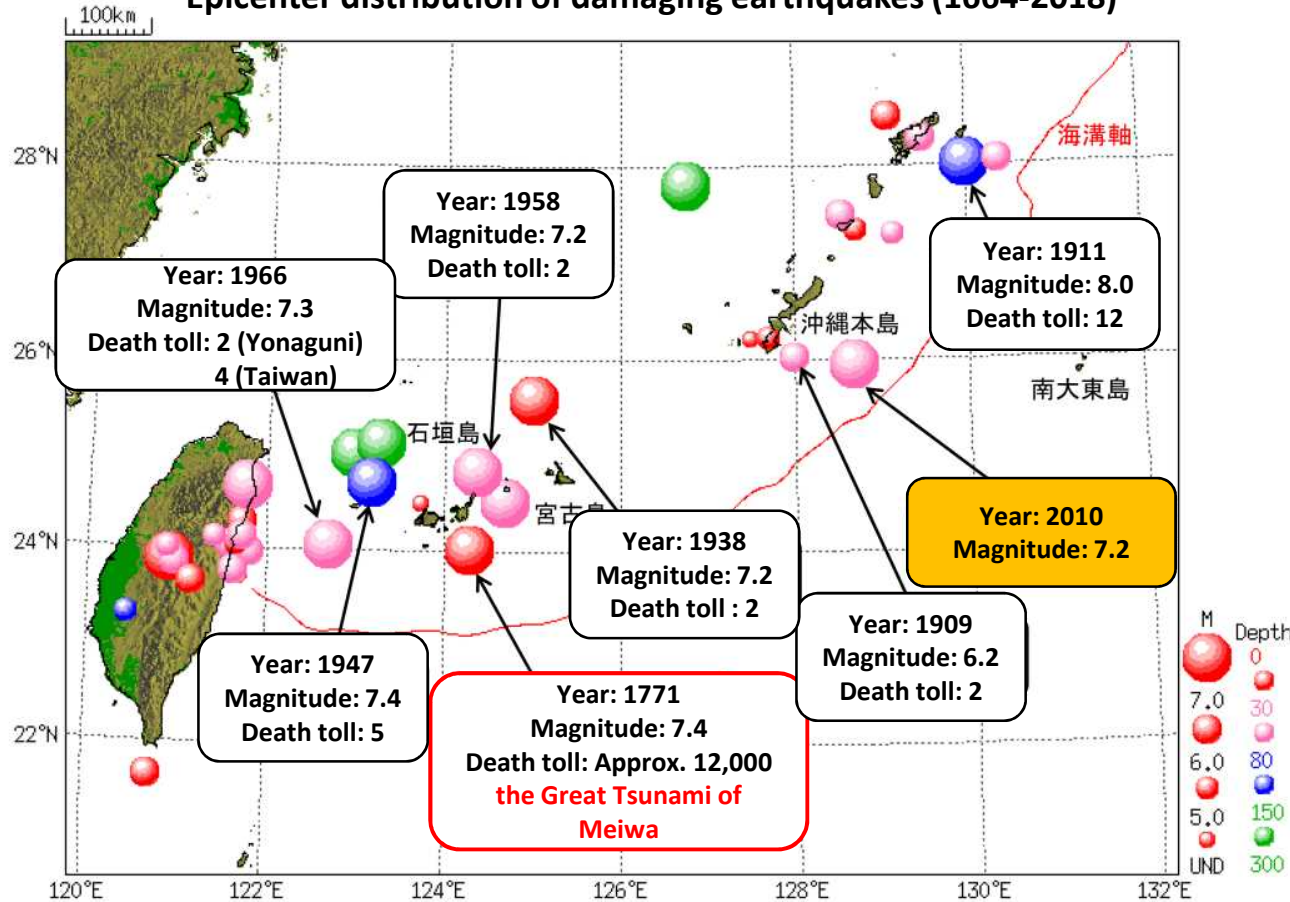
# JMA Seismic Intensity Scale

## Human perception and reaction, indoor situation, outdoor situation

Seismic intensity	Human perception and reaction	Indoor situation	Outdoor situation
0	Imperceptible to people, but recorded by seismometers.	-	-
1	Felt slightly by some people keeping quiet in buildings.	-	-
2	Felt by many people keeping quiet in buildings. Some people may be awoken.	Hanging objects such as lamps swing slightly.	-
3	Felt by most people in buildings. Felt by some people walking. Many people are awoken.	Dishes in cupboards may rattle.	Electric wires swing slightly.
4	Most people are startled. Felt by most people walking. Most people are awoken.	Hanging objects such as lamps swing significantly, and dishes in cupboards rattle. Unstable ornaments may fall.	Electric wires swing significantly. Those driving vehicles may notice the tremor.
5 Lower	Many people are frightened and feel the need to hold onto something stable.	Hanging objects such as lamps swing violently. Dishes in cupboards and items on bookshelves may fall. Many unstable ornaments fall. Unsecured furniture may move, and unstable furniture may topple over.	In some cases, windows may break and fall. People notice electricity poles moving. Roads may sustain damage.
5 Upper	Many people find it hard to move; walking is difficult without holding onto something stable.	Dishes in cupboards and items on bookshelves are more likely to fall. TVs may fall from their stands, and unsecured furniture may topple over.	Windows may break and fall, unreinforced concrete-block walls may collapse, poorly installed vending machines may topple over, automobiles may stop due to the difficulty of continued movement.
6 Lower	It is difficult to remain standing.	Many unsecured furniture moves and may topple over. Doors may become wedged shut.	Wall tiles and windows may sustain damage and fall.
6 Upper	It is impossible to remain standing or move without crawling. People may be thrown through the air.	Most unsecured furniture moves, and is more likely to topple over.	Wall tiles and windows are more likely to break and fall. Most unreinforced concrete-block walls collapse.
7		Most unsecured furniture moves and topples over, or may even be thrown through the air.	Wall tiles and windows are even more likely to break and fall. Reinforced concrete-block walls may collapse.

# Historic Earthquakes in Okinawa Area

Epicenter distribution of damaging earthquakes (1664-2018)



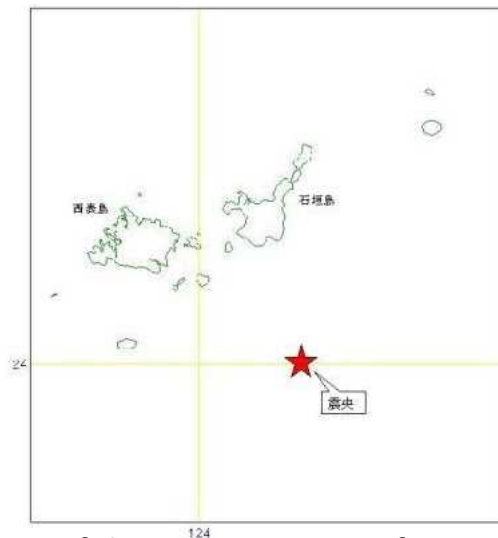
Katsuren-jo Castle Ruins (Uruma city)  
with seismic intensity of 4  
27 February 2010

An earthquake with a magnitude of 7.2 occurred around Okinawa Main Island (about 100km east-southeast of Naha city) at 5:31 am on 27 February 2010, by which maximum seismic intensity of 5 lower was observed at Itoman city.



# The Great Tsunami of Meiwa

- In 1771, at around 8:00 am on 24 April, an earthquake with a magnitude of 7.4 occurred around 35km south-southeast of Ishigaki Island (24.0N 124.E).
- The earthquake caused few damages but triggered a massive tsunami, which killed approximately 12,000 people lived in Miyako/Yaeyama Islands.



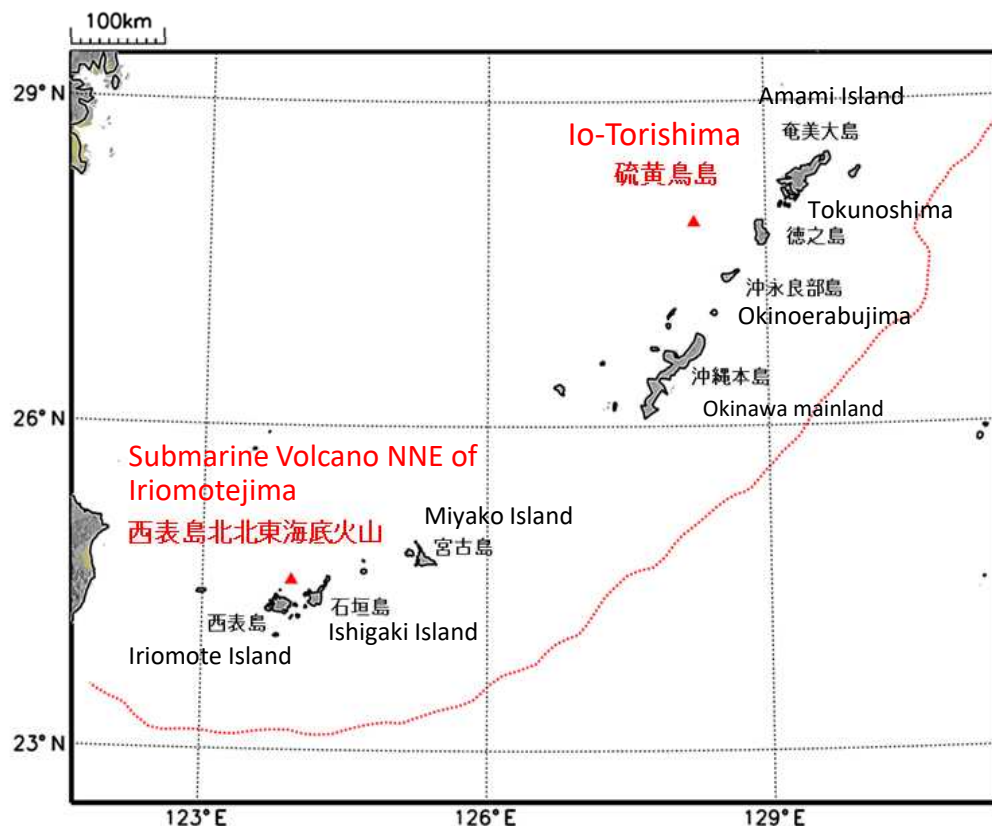
Epicenter of the great tsunami of Meiwa (estimated location based on investigations of ancient documents)



One of the tsunami rock in Ishigaki Island, called "Tsunami-ufuishi"

# Active Volcanoes in Okinawa Region

There are active volcanoes in Okinawa !



These volcanoes are currently quiet with no signs of eruption.



## **Io-Torishima**

According to the historical record, there are nine eruptions so far. In the 1959 eruption, 3,000 m of plume was observed, and mud and sulfur flowed out reached several hundred meters offshore; 86 residents evacuated and emigrated out of the island.

## **Submarine Volcano NNE of Iriomotejima**

Suddenly erupted on 31 Oct 1924. A large amount of pumice stone produced by the eruption covered the sea surface nearby, and then were flowed to various places in Japan by the Kuroshio Current.

# How to Prevent Yourself from Weather Disasters

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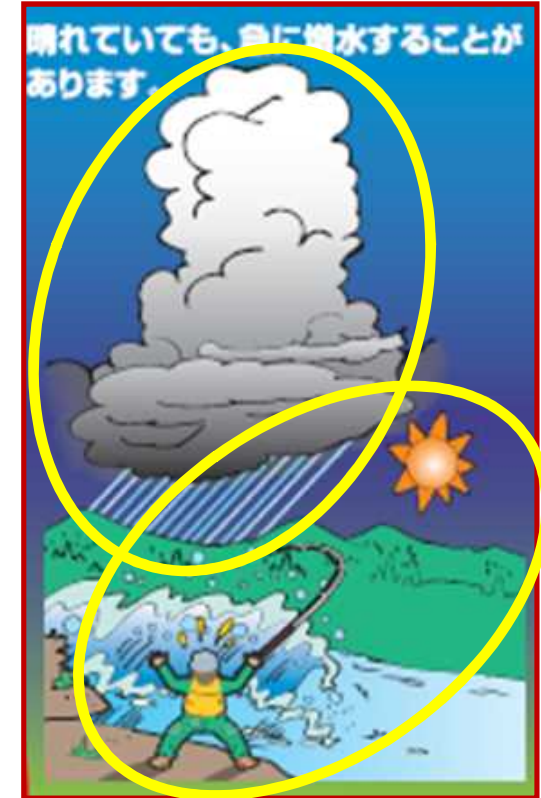
# Preparedness for Approaching “Taifu”

- Lock windows and shutters; reinforce if necessary.
- Clean gutters and drains.
- Fasten items that are likely to be blown away by the wind or store them inside the house.
- Close curtains and blinds in case objects hit the windows.
- Be sure to have flashlights, portable radios and batteries, emergency food, and other emergency supplies.



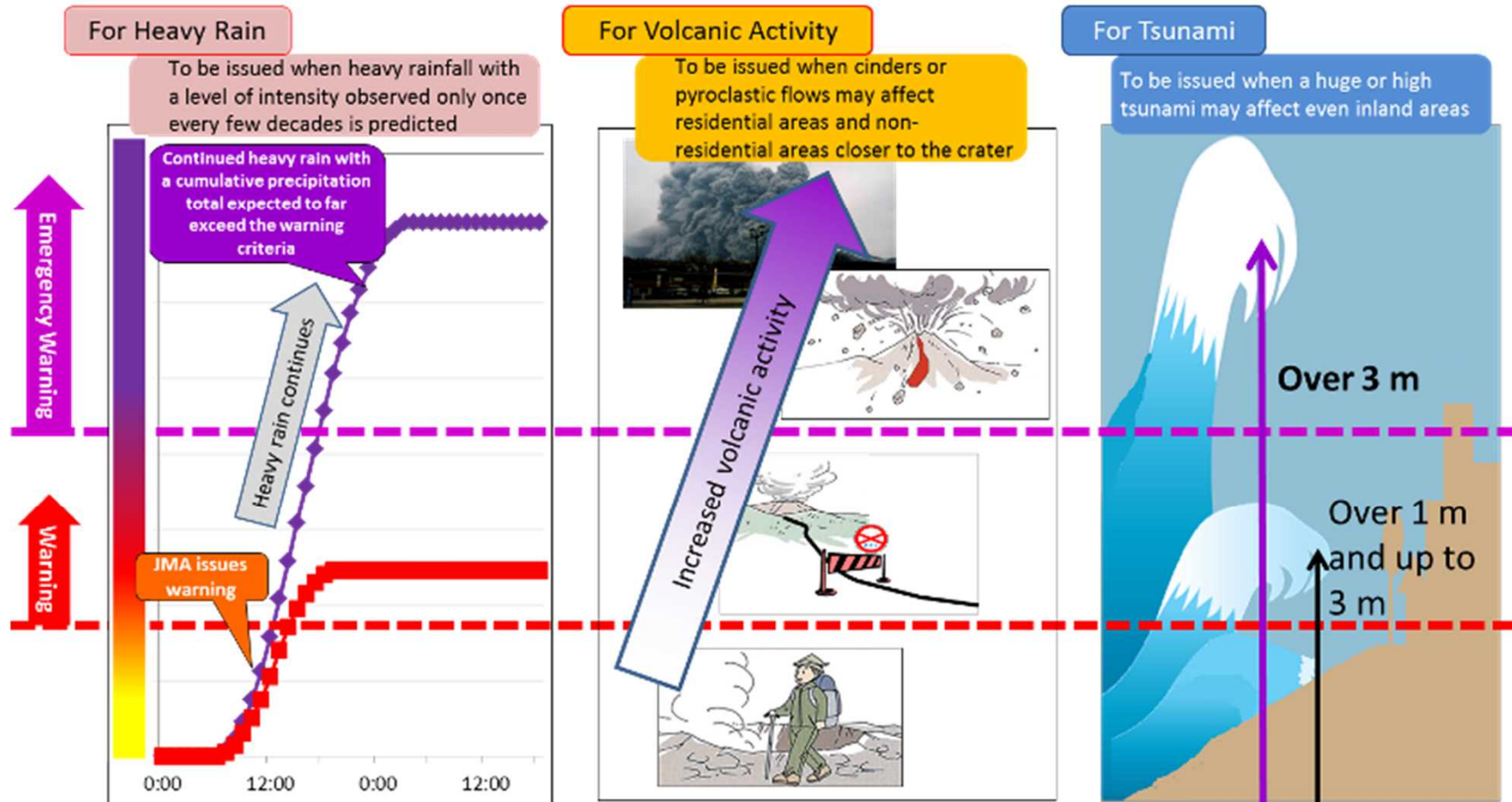
# Cautionary Points during Summer Picnics

- Strong sunshine and unstable atmospheric condition in summer season develops convective clouds, may cause heavy rain upstream of the river.
- Under the situation above, the water level of the river downstream may suddenly increases even though it is sunny.
- Stay away from rivers when forecast suggests rapid change of weather.



# Emergency Warning

## Emergency Warning Overview



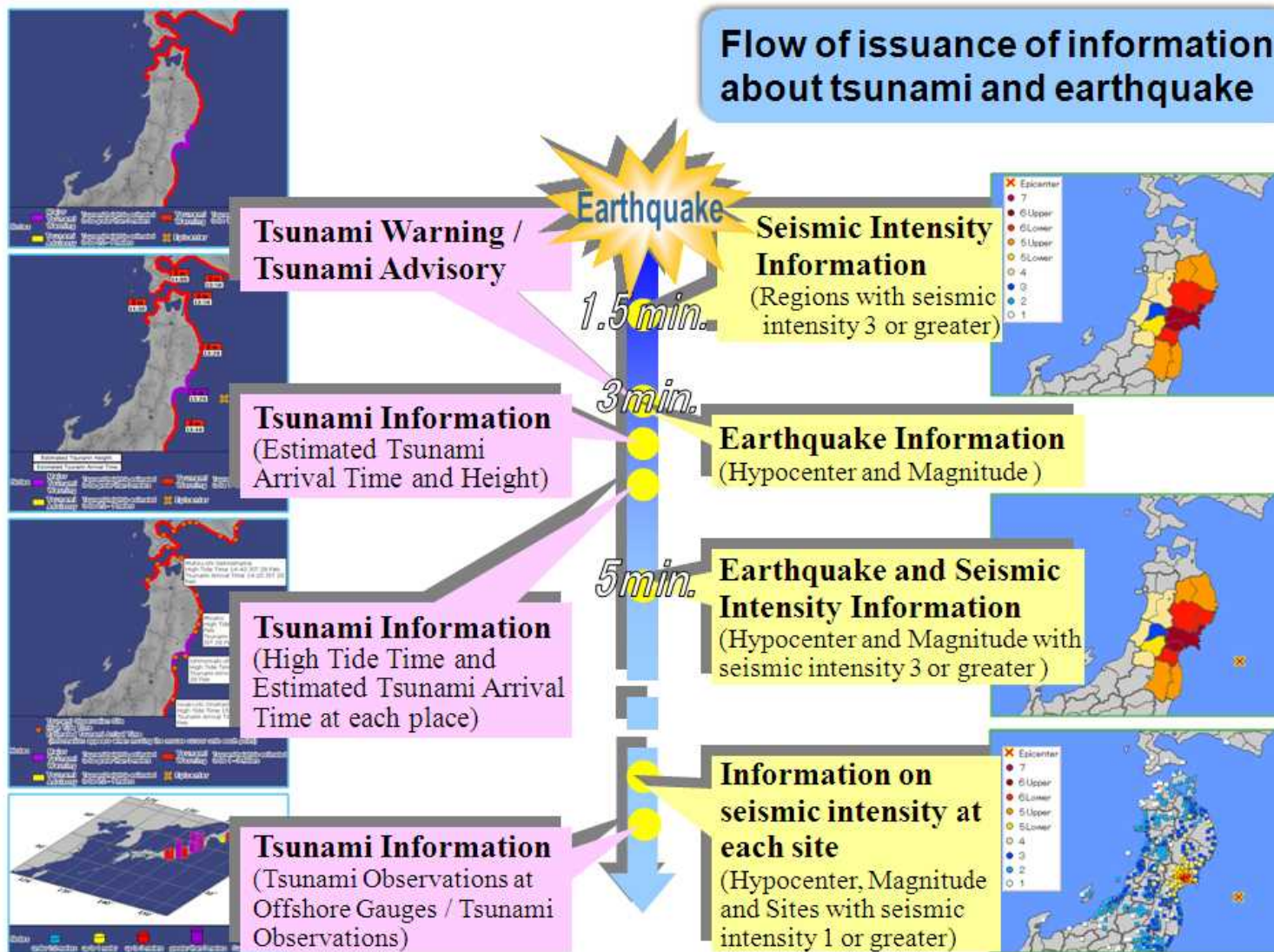


# Weather Warnings/Advisories

## Examples of municipal and resident responses to weather Warnings/Advisories

		Weather Warning/Advisory type							Municipal responses	Resident responses
		Heavy rain		Storm	Storm surge	High waves	Heavy snow	Snowstorm		
		Sediment incident	Inundation							
Emergency Warning (Significant likelihood of catastrophe)	Sediment Incident Alert	Heavy rain Emergency Warning (sediment incident)	Heavy rain Emergency Warning (inundation)	Storm Emergency Warning	Storm surge Emergency Warning	High wave Emergency Warning	Heavy snow Emergency Warning	Snowstorm Emergency Warning	<ul style="list-style-type: none"> <li>Immediately urge residents to take all possible steps for self-protection</li> <li>Alert residents to the issuance of an Emergency Warning and highlight the exceptionally dangerous situation</li> </ul>	<ul style="list-style-type: none"> <li>Take immediate action for self-protection (head to an evacuation center, or if it is dangerous to go outside, evacuate to a safer place within the building)</li> </ul>
Warning (Chance of catastrophe)		Heavy rain Warning (sediment incident)	Heavy rain Warning (inundation)	Storm Warning	Storm surge Warning	High wave Warning	Heavy snow Warning	Snowstorm Warning	<ul style="list-style-type: none"> <li>Urge residents to evacuate</li> <li>Issue evacuation advisories and orders to areas as necessary</li> <li>Prepare for emergency response</li> <li>Issue evacuation preparedness information to trigger evacuation of people requiring assistance</li> <li>Establish evacuation centers</li> <li>Disseminate Warnings to residents</li> </ul>	<ul style="list-style-type: none"> <li>Start voluntary and early evacuation or follow evacuation advisories/orders</li> <li>For Storm Warnings, evacuate to a safe place</li> <li>Report abnormalities to municipalities and other authorities</li> <li>Stay away from hazardous places</li> <li>Prepare for evacuation</li> </ul>
Advisory (Possible development of serious adverse conditions)		Heavy rain Advisory		Gale Advisory	Storm surge Advisory	High waves Advisory	Heavy snow Advisory	Snowstorm Advisory	<ul style="list-style-type: none"> <li>Patrol areas requiring caution</li> <li>Advise residents to pay attention</li> <li>Monitor weather bulletins and information on rainfall conditions</li> <li>Prepare to call out relevant officials</li> </ul>	<ul style="list-style-type: none"> <li>Check emergency supplies</li> <li>Check evacuation routes and centers</li> <li>Check windows and storm shutters</li> <li>Monitor weather bulletins on TV, radio and JMA's website</li> </ul>






# Information about Tsunami and Earthquake





# Tsunami Warning/Advisory

Tsunami Warning/Advisory categories and action to be taken

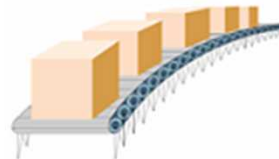
	Estimated maximum tsunami height		Action to be taken	Expected damage
	Quantitative expression	For huge earthquakes		
Major Tsunami Warning	over 10 m (10m < height)	Huge	<p>Evacuate from coastal or river areas immediately to safer places such as high ground or a tsunami evacuation building.</p> <p>Tsunami waves are expected to hit repeatedly. Do not leave the evacuation location until Tsunami Warnings are cleared.</p> <p>Keep evacuating to higher and higher ground wherever possible!</p>  <p>Educational video "Escape the Tsunami" (JMA)</p>	<p>Wooden structures are expected to be completely destroyed and/or washed away; anybody exposed will be caught in tsunami currents.</p>  <p>(Most wooden structures washed away due to the tsunami in 2011)</p>
	10m (5m < height ≤ 10m)			
	5m (3m < height ≤ 5m)			
Tsunami Warning	3m (1m < height ≤ 3m)	High	<p>Tsunami waves will hit, causing damage to low-lying areas. Buildings will be flooded and anybody exposed will be caught in tsunami currents.</p>  <p>Toyokorocho (2003)</p>	
Tsunami Advisory	1m (20cm ≤ height ≤ 1m)	(N/A)	<p>Get out of the water and leave coastal areas immediately. Do not engage in fishing or swimming activities until Advisories are cleared.</p> 	<p>Anybody exposed will be caught in a strong tsunami currents in the sea. Fish farming facilities will be washed away and small vessels may capsize.</p> 

- Tsunamis may hit before warnings are issued if the source region is near the coast. Be sure to evacuate when shaking occurs.
- Tsunami heights may exceed estimations due to coastal topography and other factors in some regions. Evacuate to higher ground.
- Tsunami Forecasts (Slight Sea Level Change) are issued if the estimated tsunami height is less than 20 cm and no damage is expected, or if slight sea level changes are expected after Tsunami Advisories are cleared.

# Earthquake Early Warning



Controlling trains



Controlling factory lines  
--> To mitigate damage



To prevent traffic accidents



Controlling elevators  
--> To prevent people from being trapped



At home  
--> To enable personal protection



Suspending work in progress  
--> To avoid mistakes



Workers performing hazardous tasks  
--> To secure safety



Alerting schools and assembly halls  
--> To guide evacuation

# For more information

Leaflet on the JMA's website:

## ***Emergency Warning System - A New Service to Protect Life***

[https://www.jma.go.jp/jma/en/Emergency\\_Warning/Leaflet\(Emergency\\_Warning\\_System\).pdf](https://www.jma.go.jp/jma/en/Emergency_Warning/Leaflet(Emergency_Warning_System).pdf)

**Emergency Warning System**  
- A New Service to Protect Life -

Great East Japan Earthquake (2011)

Miyakejima volcanic eruption (2000)

Typhoon Talas (2011)

Massive damage is caused by natural phenomena of extraordinary magnitude in Japan, as exemplified by the major tsunami caused by the 2011 Great East Japan Earthquake and heavy rain caused by Typhoon Talas in the same year. In response to these natural hazards, the Japan Meteorological Agency (JMA) issued warnings and various other messages. However, in some cases there was no effective means of informing municipalities and residents of a significant risk of imminent fatal disaster in association with natural phenomena on a scale far exceeding the regular warning criteria, and existing warnings and other information did not prompt residents to evacuate urgently. Based on these experiences, JMA introduced a system of Emergency Warnings on 30 August, 2013, to highlight such hazards.

Japan Meteorological Agency (JMA)  
1-3-14 Ottemachi, Chiyoda-ku, Tokyo 100-8122, Japan  
Tel: +81-3-3211-4965  
Fax: +81-3-3211-2032 (For the deaf)  
JMA Website: <http://www.jma.go.jp/jma/indexe.html>  
About Emergency Warning: [http://www.jma.go.jp/jma/en/Emergency\\_Warning/ew\\_index.html](http://www.jma.go.jp/jma/en/Emergency_Warning/ew_index.html)

気象庁  
Japan Meteorological Agency

# How to Find Weather Information

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# JMA's website (English language)

(Japan Meteorological Agency)

<http://www.jma.go.jp/jma/indexe.html>

**Home** Weather/Earthquakes Services Publications/Periodicals News Releases For NMHSs

Warnings/Advisories Forecasts Radar Satellite Temperature Wind Precipitation

Updated at: 16:56 JST, 19 June 2019 All Warnings/Advisories

Emergency Warning Warning Advisory No Warning/Advisory

**Portals**

- >>The 2018 Hokkaido Eastern Iburi Earthquake -Portal- **New!**
- >>The Heavy Rain Event of July 2018 -Portal-
- >>The Earthquake in Osaka-Fu Hokubu on 18 June 2018 -Portal-

Pay Attention to the Risk of Heat Illness Kusatsu-Shiranesan (Mt. Kusatsu-Shirane) Portal

Information at a glance Volcanic Information for Mountaineers The 2016 Kumamoto Earthquake Portal

Ontakesan (Mt. Ontake) Portal Emergency Warning Advisory Emergency Warning System Launched 2011 Great East Japan Earthquake -Portal-

**Weather, Climate & Earthquake Information**

**Warnings/Advisories**

- Weather Warnings/Advisories
- Real-time Landslide Risk Map
- Marine Warnings Weather/Volcano
- Tropical Cyclone Information

**Earthquakes and Volcanoes**

- Tsunami Warnings/Advisories, Tsunami Information
- Earthquake Information
- Volcanic Warnings
- Eruption Notice
- Volcanic Ash Fall Forecasts
- Volcanic Ash Advisories

**Weather Forecasts and Analysis**

- Daily Forecasts
- Distribution/Three-hourly Forecasts
- One-week Forecasts
- Marine Forecasts
- Early Warning Information on Extreme Weather
- Seasonal Forecasts
- Weather Maps
- Analysis & Forecasts of Precipitation
- Radar & Nowcasts (Precipitation, Thunder and Tornadoes)
- High-resolution Precipitation Nowcasts
- Aeolian Dust Observation/Prediction

**Himawari-8/9**

- RA II WIGOS Project Newsletter Vol. 10 No. 1 (20 March 2019)
- HimawariCast News Letter No.10 (26 February 2019)
- Himawari-8 Maintenance (31 January 2019)

**Useful information**

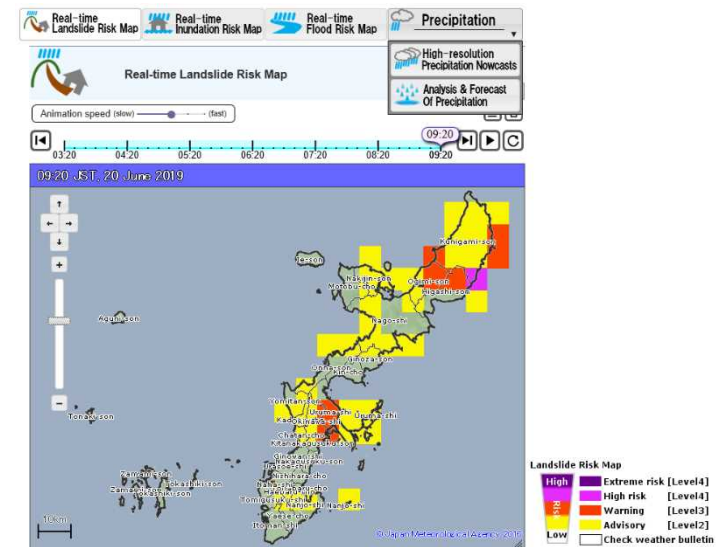
- General information, User's Guide, Operational Information, Dissemination/distribution, HimawariRequest, Himawari Real-Time Image, RSMC for Nowcasting, Image gallery

**News Releases**

- WMC Tokyo published a new report on the outline of the latest operational NWP system (8 May 2019) **New!**
- RSMC Tokyo - Typhoon Center Technical Review No. 21 (26 April 2019) **New!**
- The WMO World Data Centre for Greenhouse Gases (WDCGG) begins provision of data from the Greenhouse Gases Observing Satellite (GOSAT) (22 March 2019)
- Incorporation of Standardized Precipitation Index (SPI) for drought monitoring into the ClimatView tool (20 March 2019)
- Tokyo Climate Center: TCC News No. 55 (19 March 2019)

# Risk Maps and Precipitation Nowcast/Forecast (English language)

- Real-time Landslide Risk Map  
<https://www.jma.go.jp/en/doshamesh/index.html>
- Real-time Inundation Risk Map  
<https://www.jma.go.jp/en/suigaimesh/inund.html>
- Real-time Flood Risk Map  
<https://www.jma.go.jp/en/suigaimesh/flood.html>
- High-resolution Precipitation Nowcasts  
<https://www.jma.go.jp/en/highresorad/index.html>
- Analysis & Forecast of Precipitation  
<https://www.jma.go.jp/en/kaikotan/index.html>



Real-time Landslide Risk Map

# Real-time Landslide Risk Map

Color	Commentary	Evacuation information to be considered in relation to issuance for designated landslide-prone areas in accordance with related information (e.g., Landslide Alert Information* and Real-time Landslide Risk Maps) reported by the Cabinet Office	Equivalent Alert Level
	Equivalent to Landslide Alert Information* (based on observed rainfall) This level indicates extreme risk with conditions comparable to those accompanying past landslides. Landslides may have already occurred. Take urgent steps to ensure safety if evacuation is not complete.	Evacuation order	4
	Equivalent to Landslide Alert Information* (based on forecast rainfall) Potentially fatal landslides may be imminent at this level. Evacuate immediately from designated landslide-prone areas and surrounding ground as the situation requires.	Evacuation advisory	
	Equivalent to Heavy Rain Warning Careful attention should be paid to the possibility of landslides. Prepare for early evacuation.	Evacuation preparation alert	3
	Equivalent to Heavy Rain Advisory Attention should be paid to the possibility of landslides. Follow JMA weather bulletins and monitor the situation in consideration of rainfall intensity and duration.	—	2
	Below Heavy Rain Advisory level Follow JMA weather bulletins and monitor the situation in consideration of rainfall intensity and duration.	—	—

\* This alert information relates to debris flows and concentrated slope failures.

# JMA's website (for Smartphone)

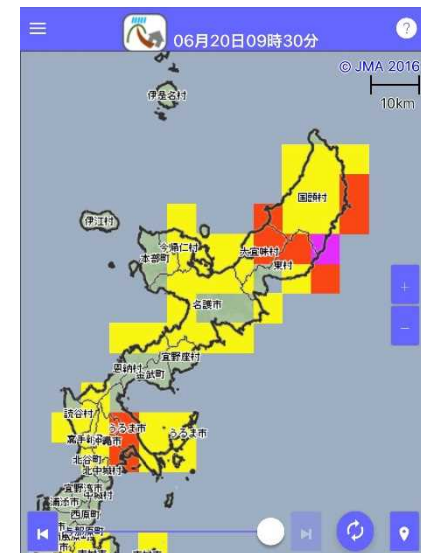


🏠 ホーム		
	雨雲の動き —高解像度降水ナウキャスト—	High-Resolution Precipitation Nowcasts
	今後の雨 —降水短時間予報—	Analysis & Forecast of Precipitation
	土砂災害 —大雨警報(土砂災害)の危険度分布—	Real-time Landslide Risk Map
	浸水害 —大雨警報(浸水害)の危険度分布—	Real-time Inundation Risk Map
	洪水 —洪水警報の危険度分布—	Real-time Flood Risk Map

Menu



Real-time Flood Risk Map



Real-time Landslide Risk Map



# Okinawa Regional Headquarters' website (Japanese only)

<http://www.jma-net.go.jp/okinawa/>

The screenshot displays the homepage of the Okinawa Regional Headquarters of the Japan Meteorological Agency (JMA). The header includes the JMA logo, the text '沖縄気象台' (Okinawa Regional Headquarters, JMA), and navigation options like 'ご意見・ご感想' (Opinion/Suggestion) and '文字サイズ' (Text Size) with buttons for '小' (Small), '中' (Medium), and '大' (Large). A search bar and a checkbox for '沖縄気象台内' (Okinawa Regional Headquarters) are also present.

The main navigation bar contains links for 'ホーム' (Home), '防災情報' (Disaster Information), '各種データ・資料' (Various Data/Materials), '知識・解説' (Knowledge/Explanation), '気象台について' (About the Meteorological Station), '活用メニュー' (Usage Menu), and 'リンク' (Links).

The content area is titled 'トップページ/防災情報' (Top Page/Disaster Information) and features three main panels:

- 気象レーダー・アメダス** (Weather Radar/Ametas): Shows a radar map of the Okinawa region as of 06月19日17時15分. It includes controls for 'レーダー・ナウキャスト' (Radar/Nowcast) and 'アメダス' (Ametas), and options to view '降水' (Precipitation), '雷' (Thunder), and '竜巻発生確度' (Tornado occurrence probability).
- 気象警報・注意報** (Weather Alerts/Advisories): Shows a map of the Okinawa region as of 06月19日16時19分. It includes a legend for '特別警報' (Special Alert), '警報' (Alert), '注意報' (Advisory), and '発表なし' (No release).
- 天気予報** (Weather Forecast): Shows a map of the Okinawa region as of 06月19日17時発表. It includes a legend for '今日の天気' (Today's weather), '明日の天気' (Tomorrow's weather), and '明後日の天気' (The day after tomorrow's weather).


Below these panels are several quick links for '早期注意情報' (Early warning information), '高解像度降水ナウキャスト' (High-resolution precipitation nowcast), '大雨警報(土砂災害)の危険度分布' (Heavy rain alert (landslide disaster) hazard distribution), '大雨警報(浸水害)の危険度分布' (Heavy rain alert (flooding disaster) hazard distribution), and '洪水警報の危険度分布' (Flood alert hazard distribution). There is also a link for '地域時系列予報' (Regional time-series forecast).

The bottom section is titled 'おすすめ情報' (Recommended information) and '新着情報' (New information). The 'おすすめ情報' section features a banner for '沖縄版台風情報' (Okinawa version typhoon information) and '職員募集案内' (Staff recruitment information). The '新着情報' section lists several news items from June 2023, including the start of the '2-week temperature forecast' for Okinawa, the first sighting of a Kumazemi bird, and the opening of the Salsbery flower.

# Calendar for DRR in Okinawa (Japanese only)

(Disaster Risk Reduction)

<http://www.jma-net.go.jp/okinawa/bosaiCal/index.html>



**沖縄気象台**  
Okinawa Regional Headquarters, JMA

T900-8517  
 沖縄県那覇市種川1-15-15 那覇第一地方合同庁舎  
 電話(代表) : 098-833-4281(平日08時30分~17時15分)  
 天気相談所 : 098-833-4290(平日09時00分~17時00分)  
 お天気サービス : 098-833-4284(自動応答)

沖縄気象台HP > 防災カレンダー ■ご意見・ご感想メール >>こちら


防災カレンダー(印刷用)のページ  
防災ミニ知識がいっぱいのPDFファイルが入手できます。

## 沖縄防災カレンダー

昨年へ

### 2019年(令和元年)

積乱雲が近づく兆しを感じたらしばらく避難！



1月	2月	3月	4月	5月	6月	7月	8月	9月	10月	11月	12月
日	月	火	水	木	金	土					
26	27	28	29	30	31	1 気象記念日					
2	3 雲仙岳噴火(1991) クロイワニイニイ初鳴日	4	5	6	7	8 リュウキュウアブラゼミ初鳴					
9	10 中城村上原の大規模な地震 高古島北方沖の地震(1938)	11	12	13	14	15 明治二陸地震(1896) 奄美大島近海の地震(1911)					
16 父の日	17 梅雨前線の影響で連日豪雨	18	19	20 ザルスベリ開花日(那覇の)	21	22 伊平屋村・北谷町/遊泳中 クマゼミ初鳴日(那覇の平)					
23 沖縄慰霊の日	24	25	26	27	28	29 沖縄本島近海の地震(1926)					
30	1	2	3	4	5	6					

『このカレンダーは、過去災害カレンダーです』

- 過去の災害が発生した日に、赤(■)は気象関連、橙(■)は地震・津波・火山関連、青(■)は海難関連の事例の表題を表示しています。各災害の表題にマウスを当てると、その災害についての説明が表示されます。さらに、クリックで詳細な説明が表示されます。
- 日付にマウスをあてると、旧暦、那覇における満潮干潮時刻及び潮位(標高表示、単位cm)、日出日入時刻、気温の平年値が表示されます。

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# Monthly DRR Tips (Japanese only)

<http://www.jma-net.go.jp/okinawa/know/memo/sougou.html>

沖繩気象台  
Okinawa Regional Headquarters, JMA

ご意見・ご感想 文字サイズ 小 中 大

気象庁内  沖繩気象台内  
powered by Google

ホーム 防災情報 各種データ・資料 知識・解説 気象台について 活用メニュー リンク

ホーム > 知識・解説 > 防災一口メモ > 防災一口メモ

## 防災一口メモ

- 防災一口メモ

## 予報業務

- 予報業務の紹介
- 警報・注意報とは
- 特別警報
- 災害発生と関連の高い指標

## 観測業務

- 観測業務の紹介
- 地上気象観測・アメダス
- レーダー観測
- オゾン観測
- 生物季節観測

## 地震火山業務

- 地震火山業務の紹介
- 地震/震度計・津波観測施設
- 大地震・津波に対する心得

## 地球環境・海洋業務

### 防災一口メモ（毎月追加）

沖繩気象台では、自然災害から身を守るための防災知識・意識を高めていただくために、「防災一口メモ」を作成し、関係機関に配布しています。内容は、その季節に注意すべき自然現象についての解説や防災情報の活用方法等です。

「防災一口メモ」に関するお問合せは業務課までお願いします。  
このページでは、沖繩気象台が作成した「防災一口メモ」をPDF形式で掲載しています。

#### 令和元年度（2019年度）

月	気象台総合	地震・津波・火山
6月	<a href="#">紫外線と上手につきあうには</a> <a href="#">PDF形式：225KB</a>	
5月	<a href="#">大雨による災害から身を守るために</a> <a href="#">PDF形式：529KB</a>	<a href="#">「南海トラフ地震臨時情報」等の提供開始について</a> <a href="#">PDF形式：282KB</a>

#### 平成31年度（2019年度）

#### 平成30年度（2018年度）

#### 平成29年度（2017年度）

#### 平成28年度（2016年度）

このサイトには、Adobe社Adobe Readerが必要なページがあります。  
お持ちでない方は左のアイコンよりダウンロードをお願いいたします。

# Multilingual Weather Information

- The Japan Meteorological Agency (JMA) has commenced providing Risk Maps and Precipitation Nowcast in six languages (\*) from 3 July.

<https://www.jma.go.jp/jma/kokusai/multi.html>

- Five more languages (\*\*) will be added as available languages by end of this July.

\* Japanese, English, Chinese, Korean, Spanish, Portuguese

\*\* Indonesian, Vietnamese, Tagalog, Thai, Nepali



# Multilingual Weather Information (sample image)

## Japanese site

国土交通省  
気象庁  
Japan Meteorological Agency

ENGLISH Other Languages

Google カスタム検索 検索

ホーム 防災情報 各種データ・資料 知識・解説 気象庁について 案内・申請

天気 大雨・台風 地震・火山 地図から選択

令和元年06月11日15時発表 11日の天気 ( / : のち、 1: 時々または一時 ) 06月11日15時の気温

災害関連情報

- ▶ 平成30年北海道胆振東部地震
- ▶ 火山活動状況  
□ 永良部島
- ▶ 平成30年7月豪雨の関連情報  
【東海地方】 【近畿地方】  
【中国地方】 【四国地方】

## English site

気象庁  
Japan Meteorological Agency

Japanese Other Languages

Skip Navigation About Us Access Links Site Map

Home Weather/Earthquakes Services Publications/Periodicals News Releases

For NMHSs

# Multilingual Weather Information (sample image)



Home > Other Languages

## Multilingual Information

Languages	Links
English	<a href="#">High-resolution Precipitation Nowcasts</a>
	<a href="#">Real-time Landslide Risk Map</a>
	<a href="#">Real-time Inundation Risk Map</a>
	<a href="#">Real-time Flood Risk Map</a>
简体中文	<a href="#">云雨动态(高清降水实时预测)</a>
	<a href="#">大雨警报(土石流)的危险分布图/土石流警戒判定</a>
	<a href="#">大雨警报(淹水)的危险分布图</a>
	<a href="#">洪水警报的危险性分布图</a>
繁體中文	<a href="#">雲雨動態(高清降水即時預測)</a>
	<a href="#">大雨警報(土石流)的危險分布圖/土石流警戒判定</a>
	<a href="#">大雨警報(淹水)的危險分布圖</a>
	<a href="#">洪水警報的危險分布圖</a>
한국어	<a href="#">비구름의 움직임(고해상도 강수 나우캐스트)</a>
	<a href="#">호우 경보(토사 재해) 위험도 분포/토사 재해 경계 판정 메시지 정보</a>
	<a href="#">호우 경보(침수 피해)의 위험도 분포</a>
	<a href="#">홍수 경보의 위험도 분포</a>
Português	<a href="#">Movimentação das nuvens de chuva (Nowcast de alta resolução)</a>
	<a href="#">Mapa do Grau de estado de alerta para chuva intensa (Desmoronamento)/Informação do perigo de desmoronamento.</a>
	<a href="#">Mapa do Grau de estado de alerta para chuva</a>



简体中文



Español

# Multilingual Weather Information (coming soon!)

- JMA plans to provide the following real-time information in multi-language (\*) by this September.

- Weather warnings/advisories
- Forecasts
- Earthquake
- Tsunami
- Volcano

\* Japanese, English, Chinese, Korean, Vietnamese, Spanish, Portuguese, Thai, Indonesian, Tagalog, Nepali

- Risk Maps, Precipitation Nowcast and the information above will be provided in Khmer, Burmese and Mongolian by next March as well.



Questions?





Thank you!



For any question or comment, please contact [k-kakihara@met.kishou.go.jp](mailto:k-kakihara@met.kishou.go.jp)