



Disaster Response to the Great Kumamoto Regional Flood of July 12, 2012

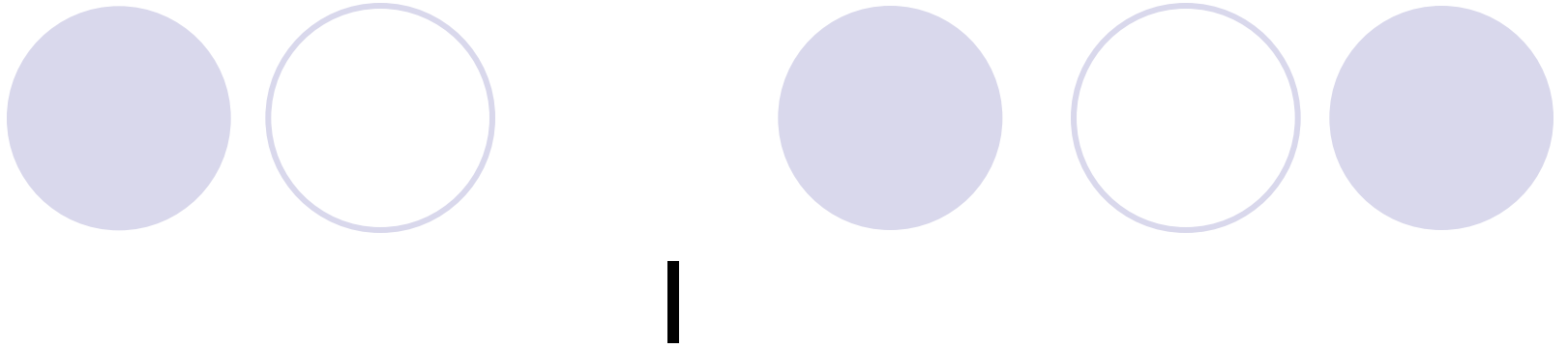
Moritoshi Iseri

Deputy Director, Disaster and Crisis Management Administration Division,
Office of the Governor, Kumamoto Prefecture



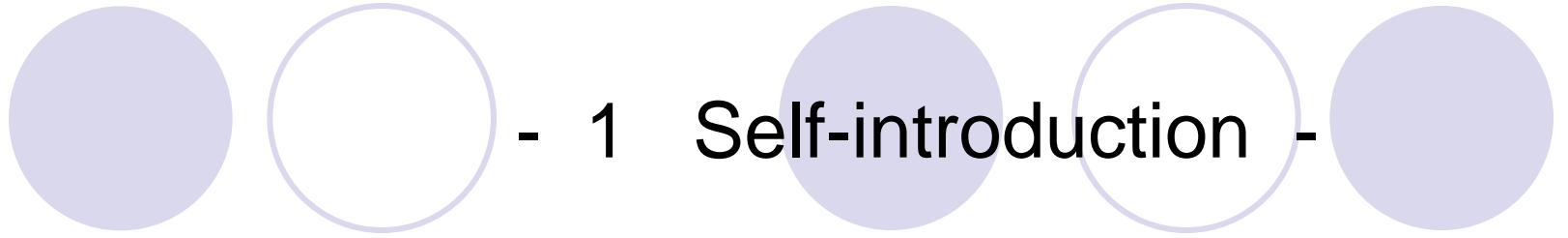
Today's Talk

- I Self-introduction, Introduction of Kumamoto Prefecture
- II About the Great Kumamoto Regional Flood
- III Division of Responsibilities Between Agencies During Disaster Response
- IV Coordination Between Agencies
- V Restoration and Reconstruction
- VI About the Kumamoto Prefectural Disaster Management Plan
- VII Issues Raised by Disaster Response
- VIII Addressing the Issues (Preparing for Disaster)



1 Self-introduction

2 Introduction of Kumamoto
Prefecture



Office: Disaster and Crisis Management
Administration Division, Office of the Governor,
Kumamoto Prefecture

Name/Position: Moritoshi Iseri, Deputy Director

Age: 54 (b. 1959)

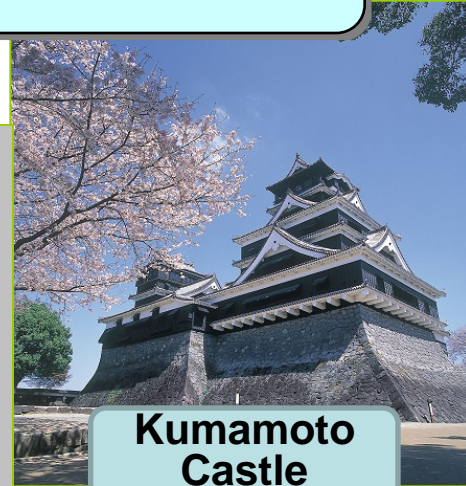
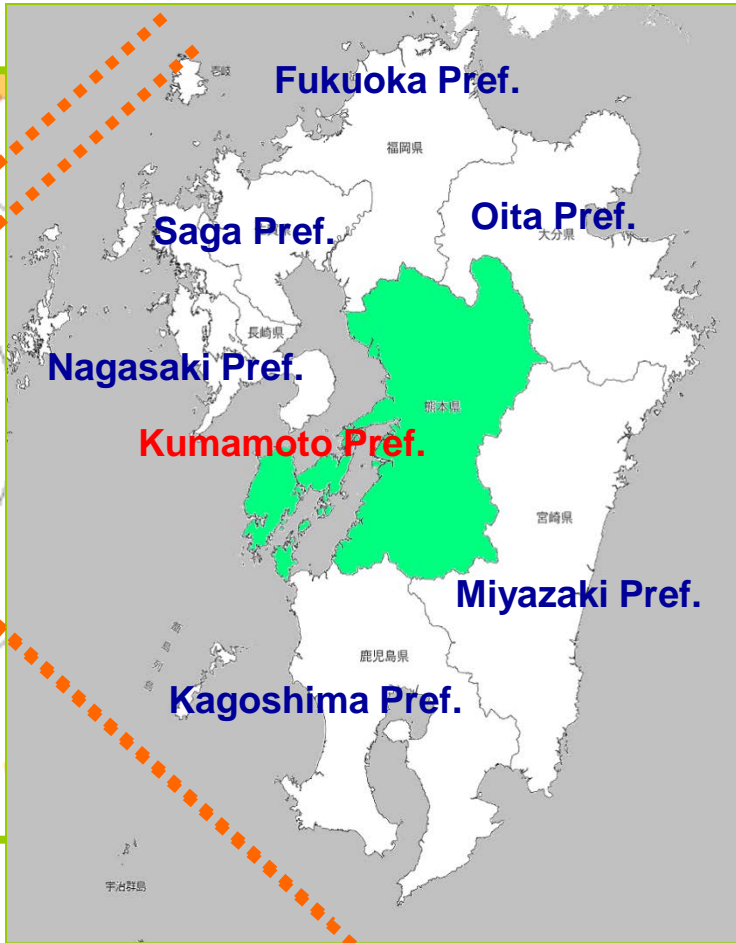
Work history:	April 1984	Joined Kumamoto Prefectural Office
	April 2007~	Responsible for Crisis Management
	April 2013~	Responsible for Crisis Management and Disaster Prevention

- 2 Introduction of Kumamoto Prefecture -

1) Location of Kumamoto

2) Major Disasters in Kumamoto

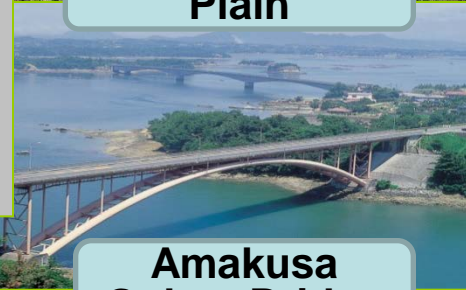
Location of Kumamoto



Kumamoto Castle



Aso Kusasenri Plain



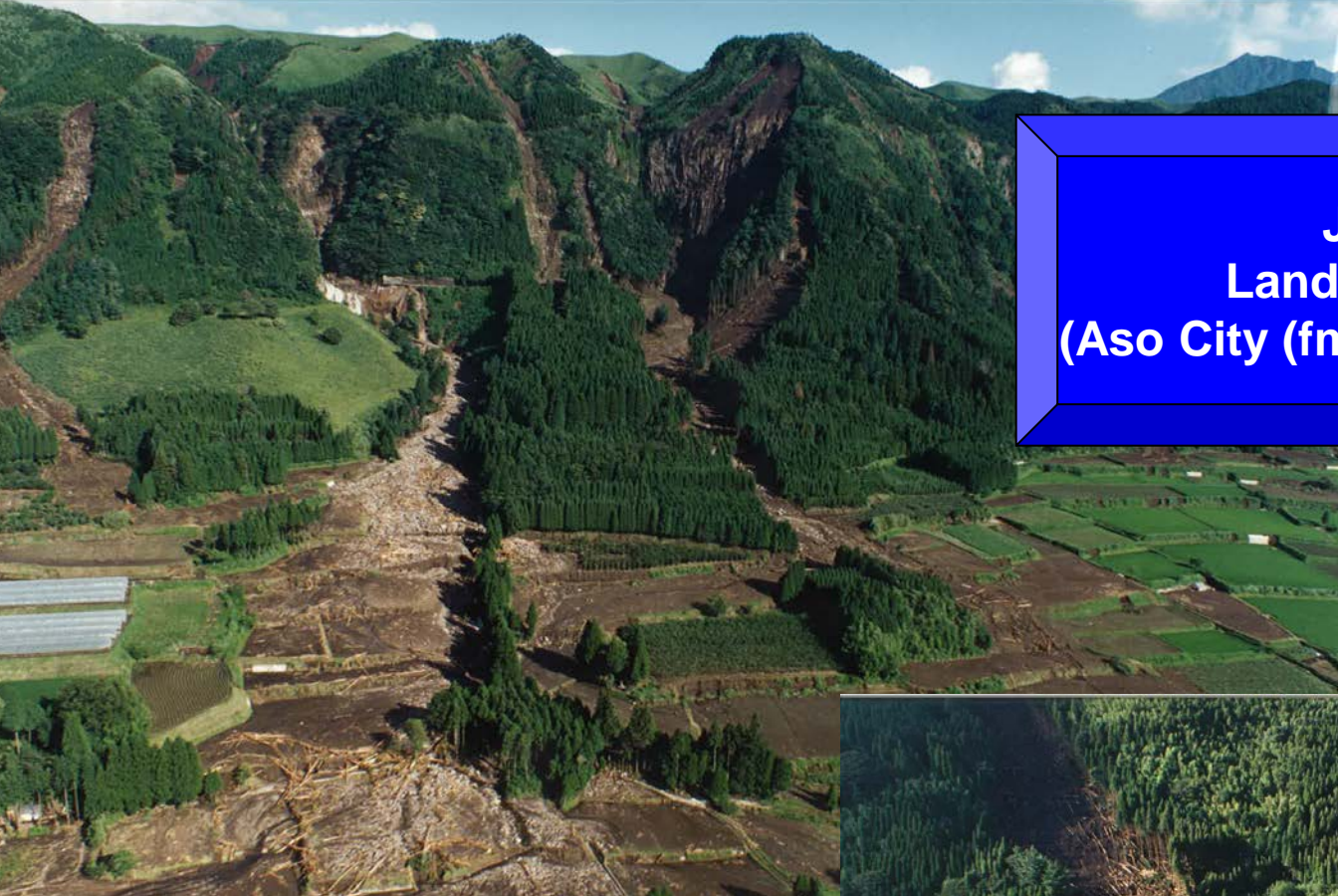
Amakusa Gokyo Bridge

2) Major Disasters in Kumamoto



Record of Disasters in Recent Years (more than 10 people dead)

Date	Cause	Affected area	Human toll
July 1972	Flooding caused by torrential rains	Amakusa/Kuma area	123 dead or missing
November 1973	Fire (Taiyo Dept. Store)	Kumamoto City	103 dead
July 1982	Flooding caused by torrential rains	Ashikita/Kuma area	24 dead or missing
June 1984	Flooding caused by torrential rains	Itsuki Village	16 dead or missing
August 1985	Flooding caused by typhoon	Amakusa/Ashikita area	12 dead
June 1990	Flooding caused by torrential rains	Aso area	17 dead
September 1999	Tidal flood caused by typhoon	Shiranui Town	12 dead
July 2003	Avalanche caused by torrential rains	Minamata City	19 dead
July 2012	Avalanche caused by torrential rains	Aso area	23 dead, 2 missing



**June 1990
Landslide Disaster
(Aso City (fmr. Ichinomiya Town))**



September 23-24, 1999
Tidal Flood Disaster
(Shiranui Town, Uki City)

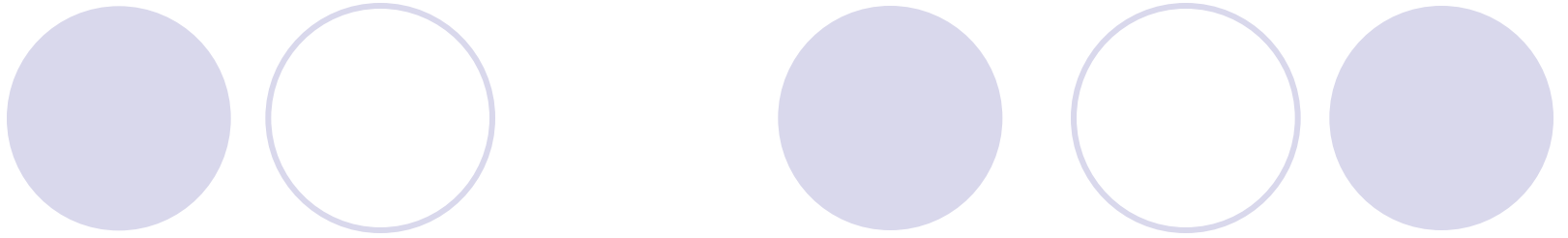


**July 19, 2003
Avalanche Disaster
(Minamata City)**



**July 12, 2012
Great Kumamoto Regional Flood
(entire prefecture affected)**





II About the Great Kumamoto Regional Flood

1 Rainfall Overview

2 Extent of Damage

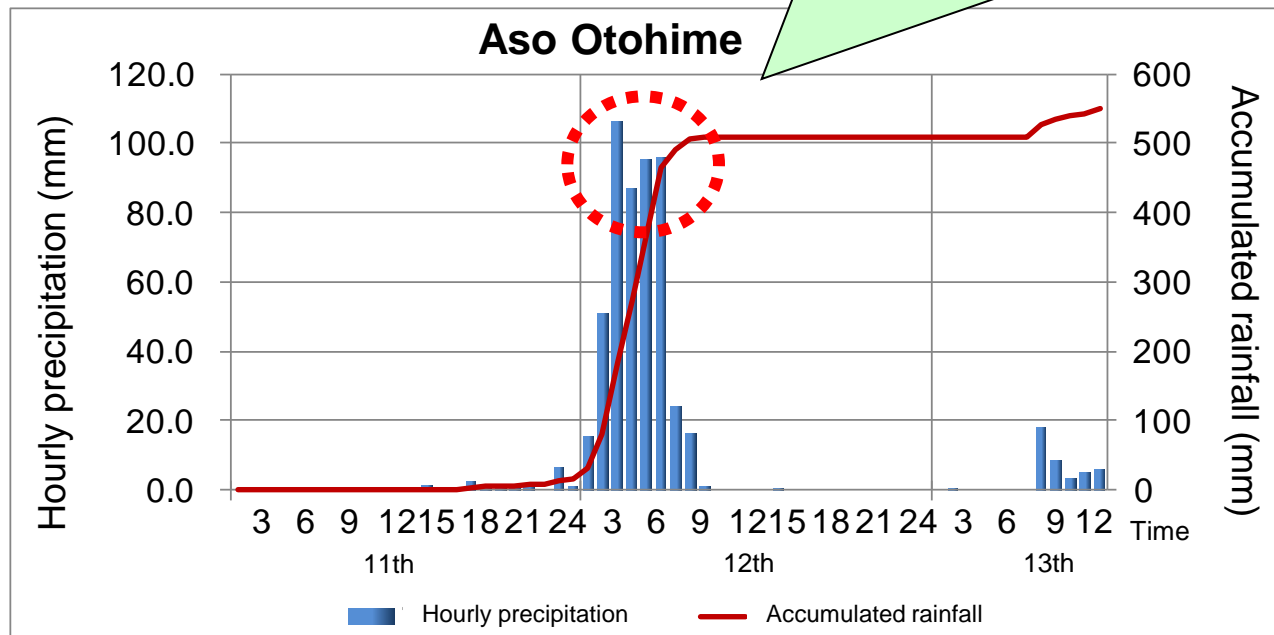
1. Rainfall Overview

(Adapted from Kumamoto Local Meteorological Observatory Data for July 13, 2012)

AMeDAS precipitation timeline
(July 11-13, 12pm)

"It was a torrential rain like none we'd ever seen"
[July 12, 6:45, Kumamoto Local Meteorological Observatory]

Rainfall over five hours during the night measured nearly half the total rainy season average



[Reference]

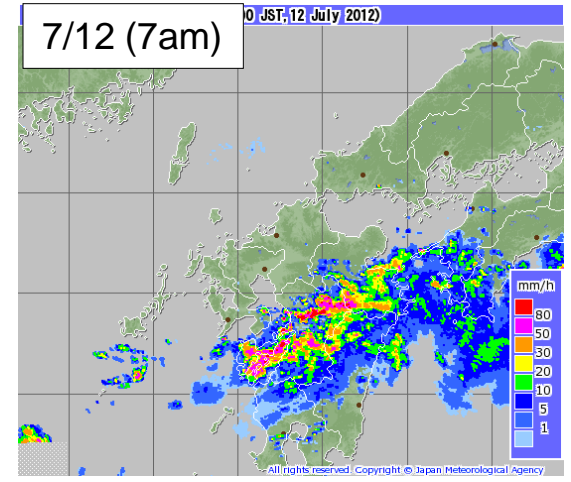
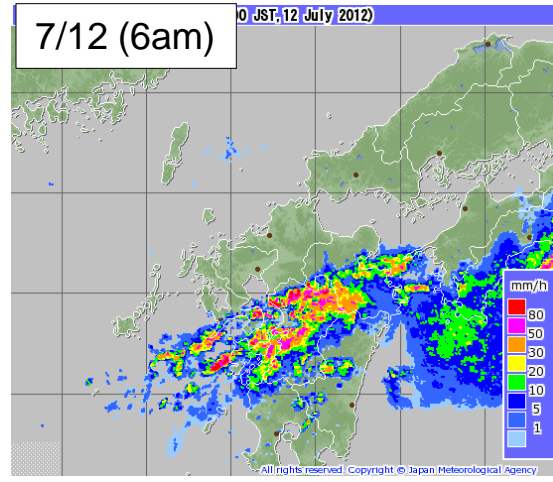
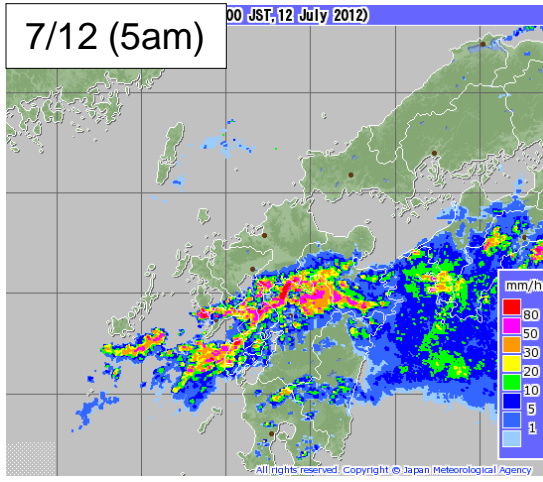
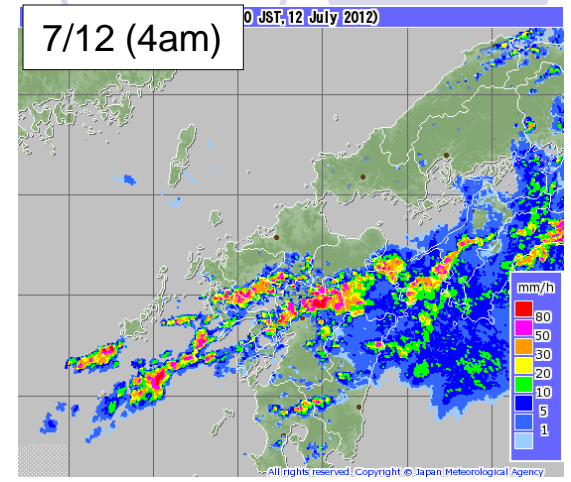
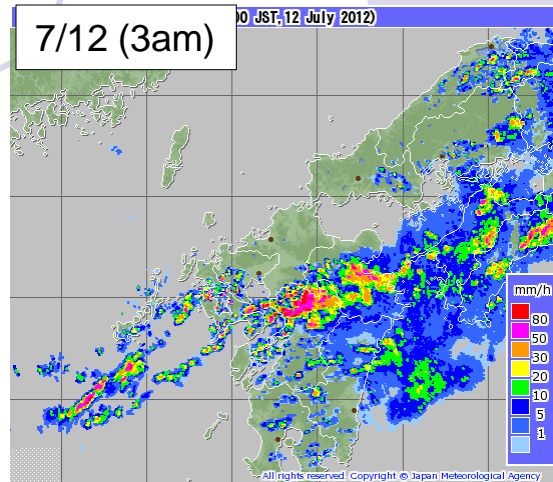
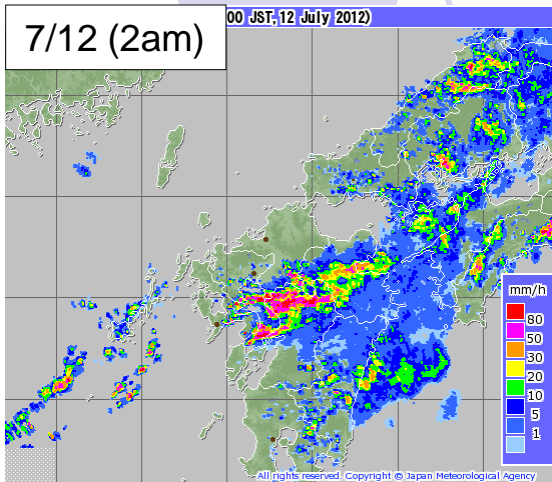
Aso Otohime rainfall

Annual rainfall: 2,800mm
(Rainy season: 1,100mm)

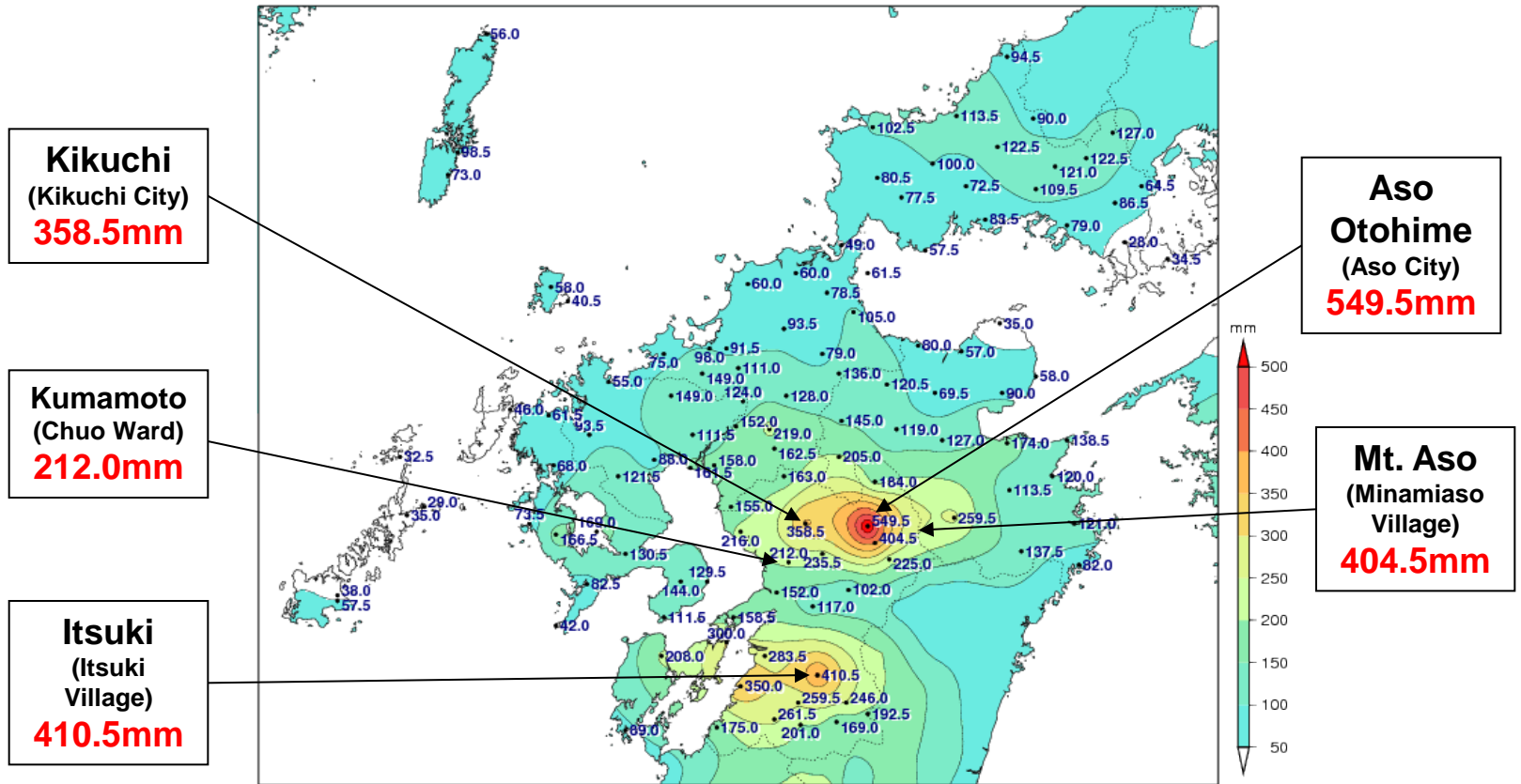
Highest ever-recorded rainfall

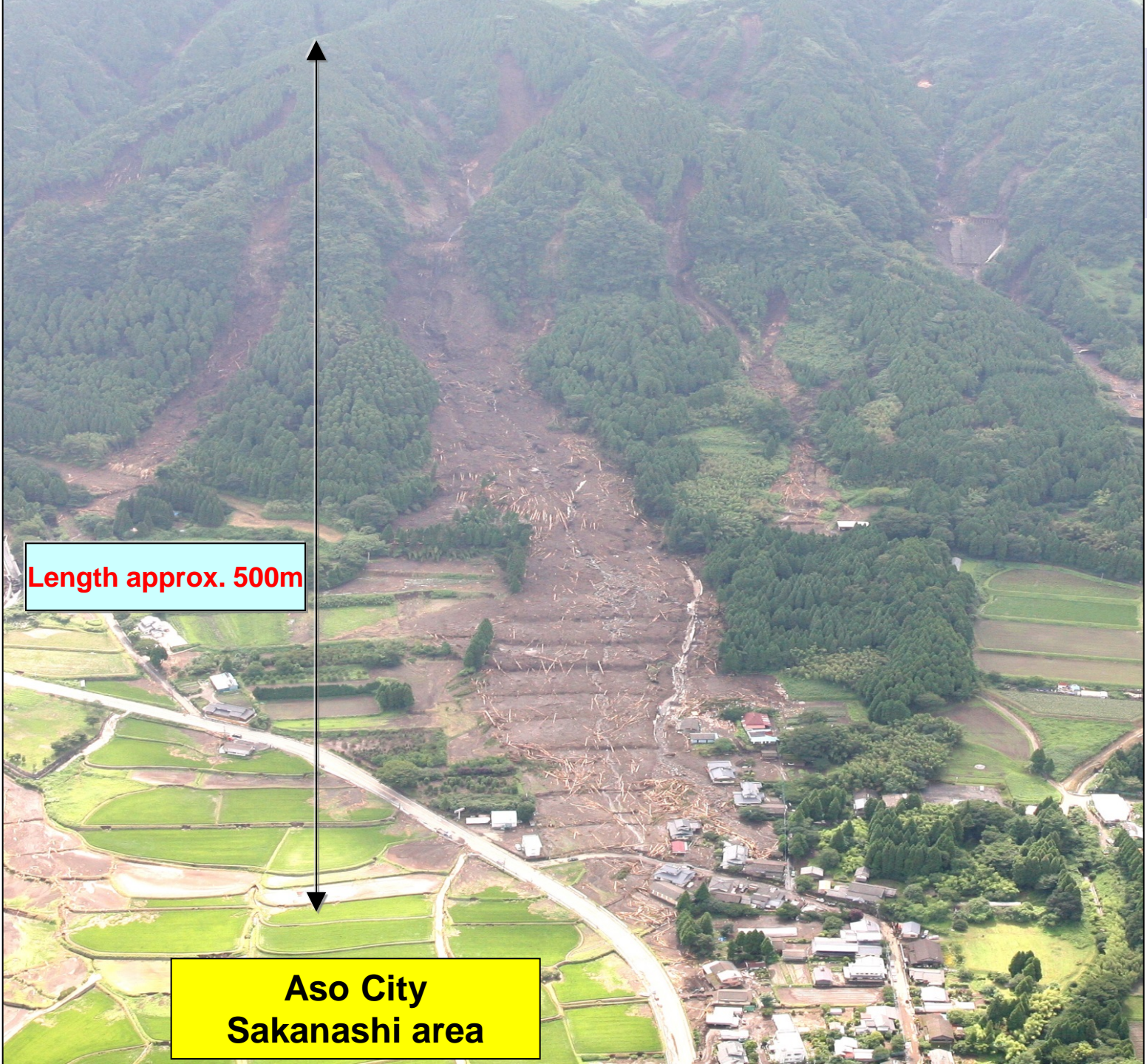
◇ Aso Otohime (Aso City) 1h: **108.0mm** 3h: **288.5mm** 24h: **507.5mm**

Weather radar imagery (July 12, 2am-7am, one-hour increments)



AMeDAS precipitation timeline (July 11, 2am - July 13, 12pm)





Length approx. 500m

**Aso City
Sakanashi area**

Shirakawa river system drainage map

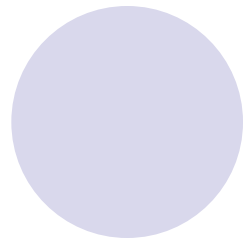
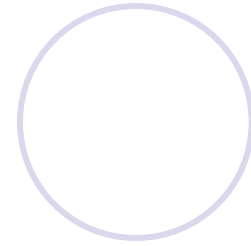
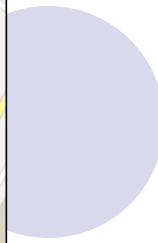


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	流域界
	市町村界
	J R

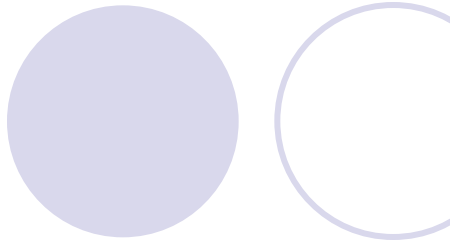




Aso City Kario area



**Kumamoto City
Jinnai area**



**Kumamoto City
Jinnai area**

2. Damage Overview

Note: Some figures are still under review and may be revised in the future.

○ Human Toll (as of July 27, 9am)

	No. of people	Breakdown by municipality
Dead	23	Aso City 21, Minamiaso Village 2
Missing	2	Aso City 1, Takamori Town 1
Heavy injury	3	Minamiaso Village 2, Aso City 1
Light injury	8	Kumamoto City 3, Kikuchi City 2, other
Total	36	

[Reference]
Fukuoka 4, Oita 3
Fukuoka 2
Fukuoka 10, Oita 3
Fukuoka 16, Oita 6

[Acts Applicable to Municipalities]

○ **Disaster Relief Act**
Kumamoto City, Aso City, Ubuyama Village, Takamori Town, Minamiaso Village

○ **Act Concerning Support for Reconstructing Livelihoods of Disaster Victims**
All municipalities within the prefecture

○ Housing Damage (as of July 27, 9am)

	No. of homes	Breakdown by municipality
Complete destruction	125	Kumamoto City 61, Aso City 44, Minamiaso Village 9, Sagara Village 3, Itsuki Village 3, other
Partial destruction	140	Kumamoto City 104, Aso City 30, Ozu Town 2, Itsuki Village 2, Minamiaso Village 1, other
Above-floor flooding	1,912	Aso City 1,357, Kumamoto City 362, Kikuchi City 72, Kikuyo Town 29, Ashikita Town 29, other
Below-floor flooding	1,748	Aso City 989, Kumamoto City 283, Kikuchi City 117, Ashikita Town 101, Kikuyo Town 52, other
Partial damage	67	Aso City 50, Kikuchi City 4, Ashikita Town 4, Kumamoto City 3, other
Total	3,992	

● Total damages 68,198 million yen

(major industries)

- Public facilities and infrastructure 15,405 million yen
- Agriculture, forestry, and fishing 45,669 million yen
- Commerce and manufacturing 4,765 million yen
- Educational facilities 508 million yen
- Welfare and medical facilities 1,288 million yen
- Environment and life 459 million yen
- Police facilities 51 million yen

Note: Damages reflect current known figures and may be subject to revision in the future.

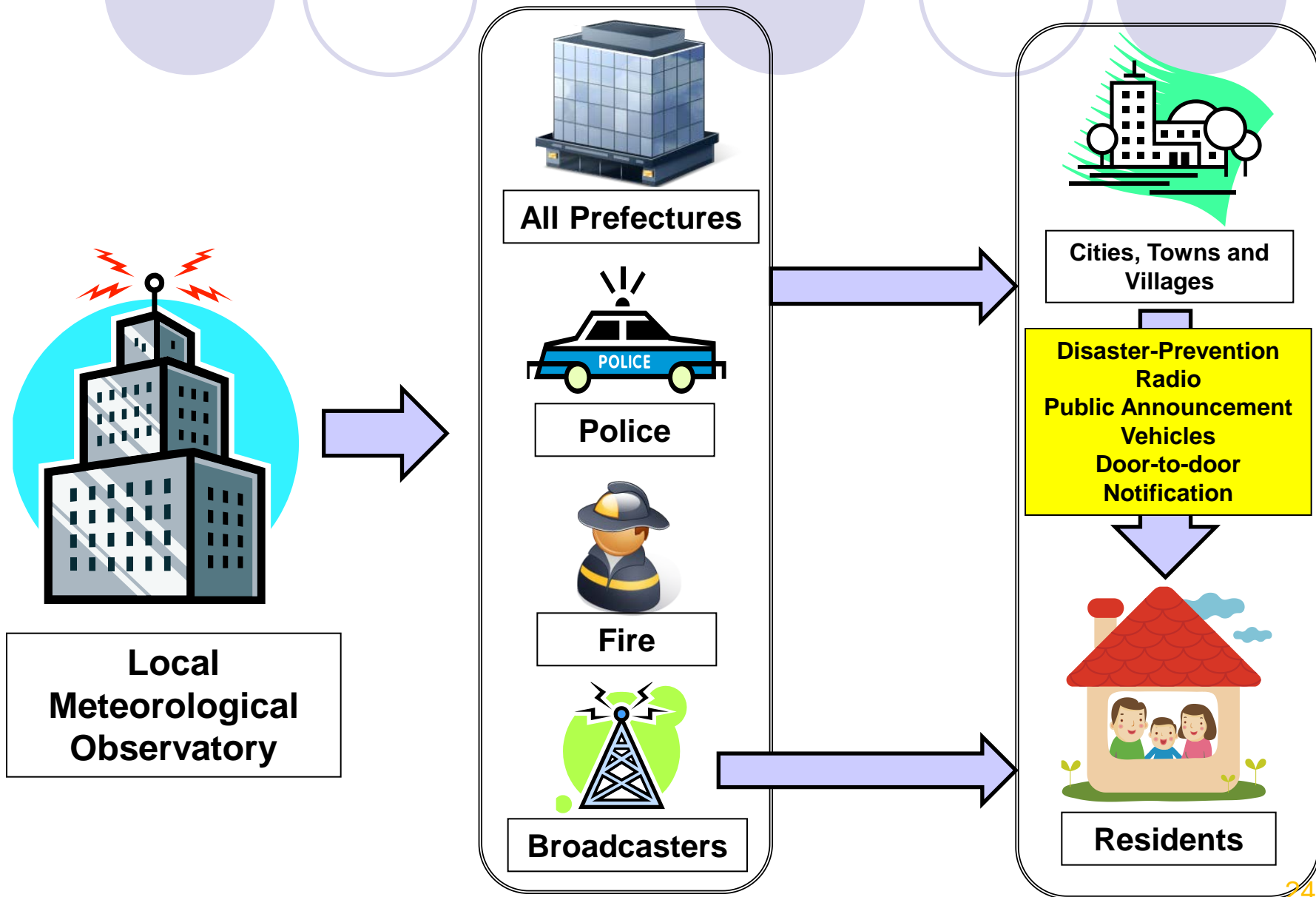
(Reference) Past Disasters

Year	Disaster	Damages (million yen)
1990	Flooding caused by torrential rains (Aso-Ichinomiya Avalanche Disaster)	100,192
1999	Typhoon 18 (Bart) Disaster (Shiranui-Matsuai Tidal Flood, etc.)	108,616
2003	Minamata Avalanche Disaster	17,613

III Division of Responsibilities Between Agencies During Disaster Response (Especially Extraction and Rescue)

- 1 Disaster-Prevention Information Flow of Communication
- 2 Extraction and Rescue
- 3 Resident Evacuation and Disaster Victim Support

1. Disaster-Prevention Information Flow of Communication



2. Extraction and Rescue

1) Self-Defense Forces

- At request of municipal mayor in the event of a disaster, the prefectural governor requests a disaster-relief operation by the Self-Defense Forces
- Upon receiving the request, the Self-Defense Forces dispatches forces to the affected area to perform a disaster-relief operation, including extraction and rescue.





2) Police

- When a disaster has occurred, or may occur, police gather information, perform extraction and rescue operations, guide evacuation, secure emergency transit routes, and take other such disaster security measures.

3) Fire Departments and Volunteer Fire Corps

- Established by municipalities. (Fire departments are established by a municipality or partial affairs association)
- Fire departments and Volunteer Fire Corps prevent and minimize damage due to fire, flood, earthquake and other disasters, and transfer injured and sick people caused by disasters, etc.

Overview of Extraction and Rescue Operations

- Between July 12-14, cooperation between the following agencies led to the confirmed extraction/rescue of 329 lives.
 - Fire departments, Volunteer Fire Corps
 - Kumamoto Prefectural Police
 - Ground Self-Defense Forces
 - Kumamoto Coast Guard Office
 - Kyushu Regional Development Bureau of the Ministry of Land, Infrastructure, Transport and Tourism
 - Kumamoto Construction Association
 - Kyushu Rescue Dog Association
 - Affected municipalities, Kumamoto Prefecture

- Deployment
 - SDF: 3,974 persons total/day (July 12-19)
 - Prefectural police: 3,144 persons total/day (July 12- September 17)
 - Fire departments (13 within prefecture): 1,441 persons total/day (July 12-16)

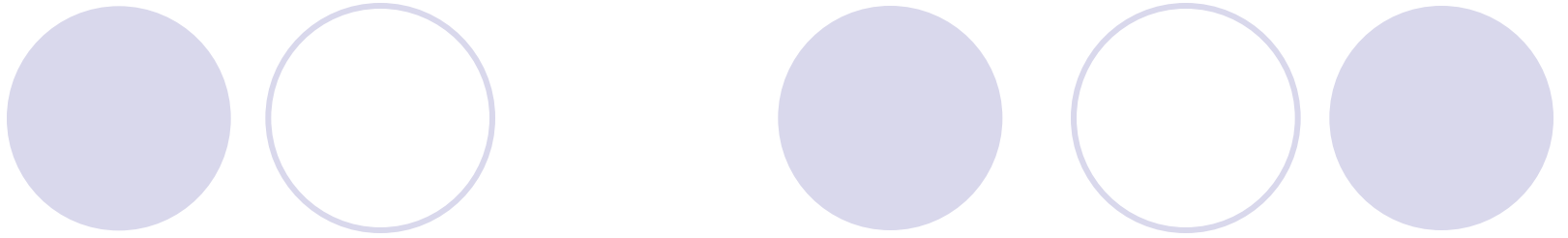
3. Resident Evacuation and Disaster Victim Support

○ Resident Evacuation

- ▪ Municipal officials, Volunteer Fire Corps, and voluntary disaster prevention organizations coordinate to **lead/evacuate residents** to municipality-designated evacuation centers.
- ▪ Police perform **traffic control, etc.**

○ Disaster Victim Support

- ▪ At evacuation centers, municipal officials, voluntary disaster prevention organizations, resident volunteers, private corporations and others cooperate to provide evacuees with **blankets, food, and other supplies.**
- ▪ In the event of a large-scale evacuation, **the Self-Defense Forces** will provide **civil support.**



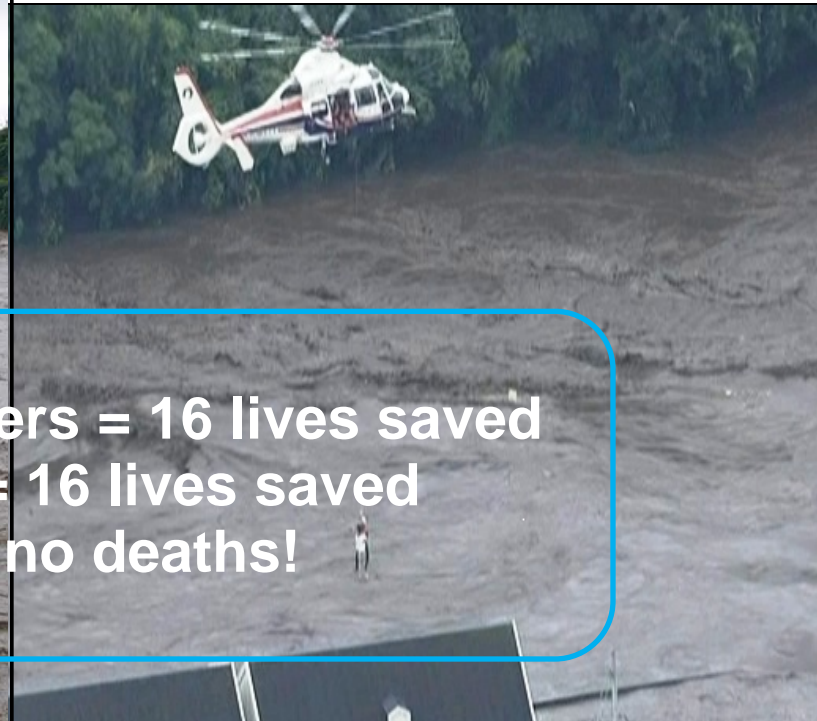
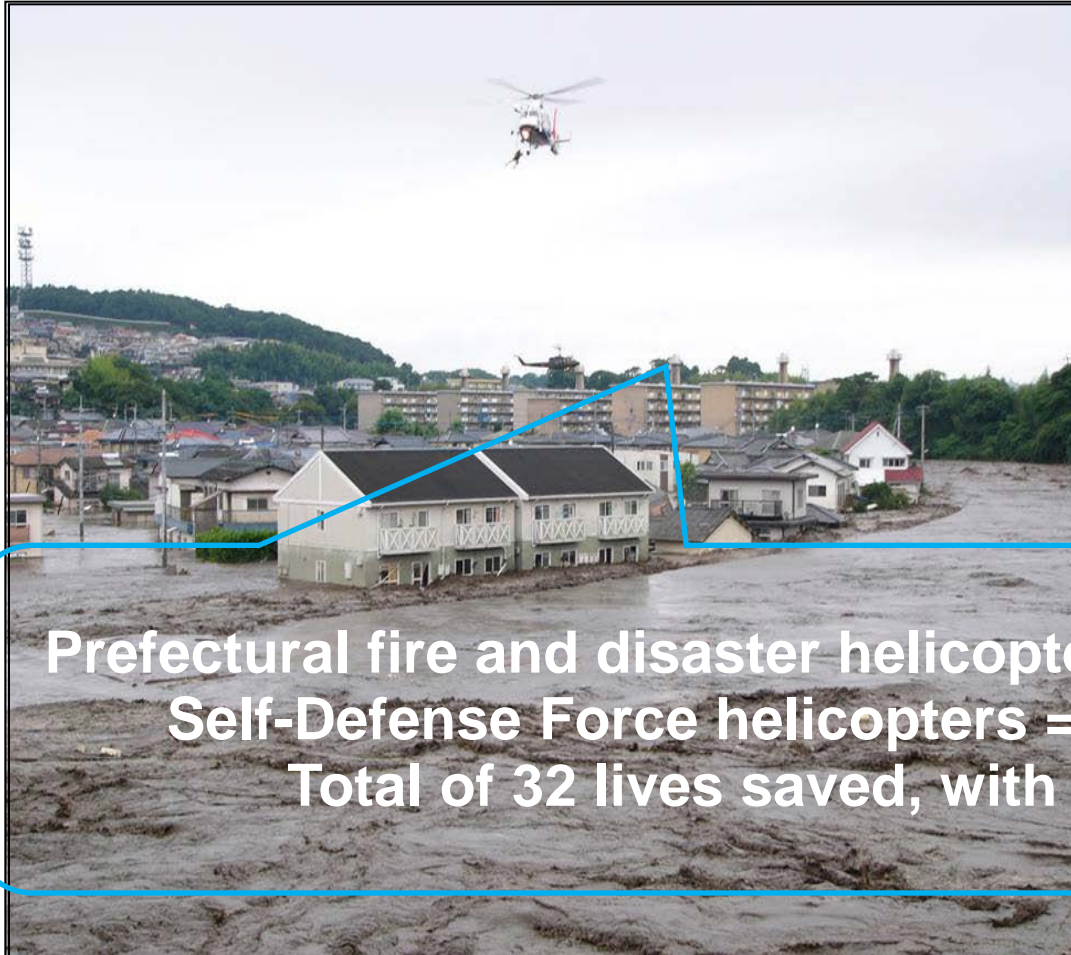
IV Coordination between Participating Agencies during the Disaster Response

1 Examples of Coordination

2 Examples of Activities Coordination by Participating Agencies

1. Coordination Example

(1): Tatsuta-Jinnai area, Kumamoto City



Prefectural fire and disaster helicopters = 16 lives saved
Self-Defense Force helicopters = 16 lives saved
Total of 32 lives saved, with no deaths!



An aerial photograph showing a city with a river in the center. The river is wide and appears to be overflowing or has a large section of water. The surrounding urban area is densely packed with buildings and houses. The water is a dark, muddy brown color. The overall scene suggests a major flooding event.

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2012

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1. Coordination Example

(2): Avalanche site in Aso City



- At the request of the prefecture, the Kumamoto Construction Association helps prepare the area to search for missing persons by clearing the roads (removing dirt, cutting fallen trees, etc.) with heavy equipment and other construction-industry technology.

1. Coordination Example

(3): Supporting local governments whose services are impacted by the disaster

○ Communicating disaster-prevention information

Data-entry for area-emails to provide evacuation recommendations and avalanche warning updates is performed by the prefecture on behalf of impacted local governments.

○ Dispatching prefectural officials to affected municipalities

Prefectural officials are dispatched to affected municipalities to assist them with Headquarters for emergency response affairs and medical and health affairs

2. Activities Coordination Between Agencies, Example (1): Prefectural headquarters for emergency response meeting



2. Activities Coordination Between Agencies, Example (2): Activities coordination meeting between participating agencies in Aso City



2. Activities Coordination Between Agencies, Example (3):



Inside the Headquarters for emergency response created inside the Aso City Hall, Self-Defense Forces and police share a room where they exchange information on their daily activities

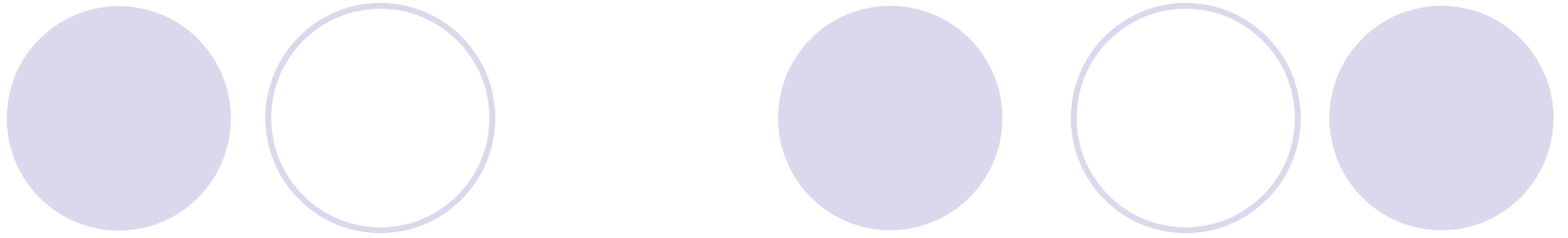


2. Activities Coordination Between Agencies, Example (4)-1: On-site headquarters operational drill during isolated response drill



2. Activities Coordination between Agencies, Example (4)-2: 2013 Disaster Field Drills for Isolated Regions in Kumamoto Prefecture





V Restoration and Reconstruction

The Great Kumamoto Regional Flood Restoration and Reconstruction Plan

– Engage in reconstruction with devotion and passion, envisaging one’s own family in need –

[Outline of the restoration and reconstruction plan]

- © Clearly lay out an overview of the status and direction of efforts in order to appropriately advance restoration and reconstruction with a greater sense of speed
- © Share the plan with participating agencies and accomplish rapid restoration and far-sighted “creative reconstruction”

The Three Principles of Restoration and Reconstruction

- 1 Minimize the distress of the people affected
- 2 Aim for creative reconstruction, not simply a return to how things were
- 3 Link the restoration and reconstruction to the further development of Kumamoto

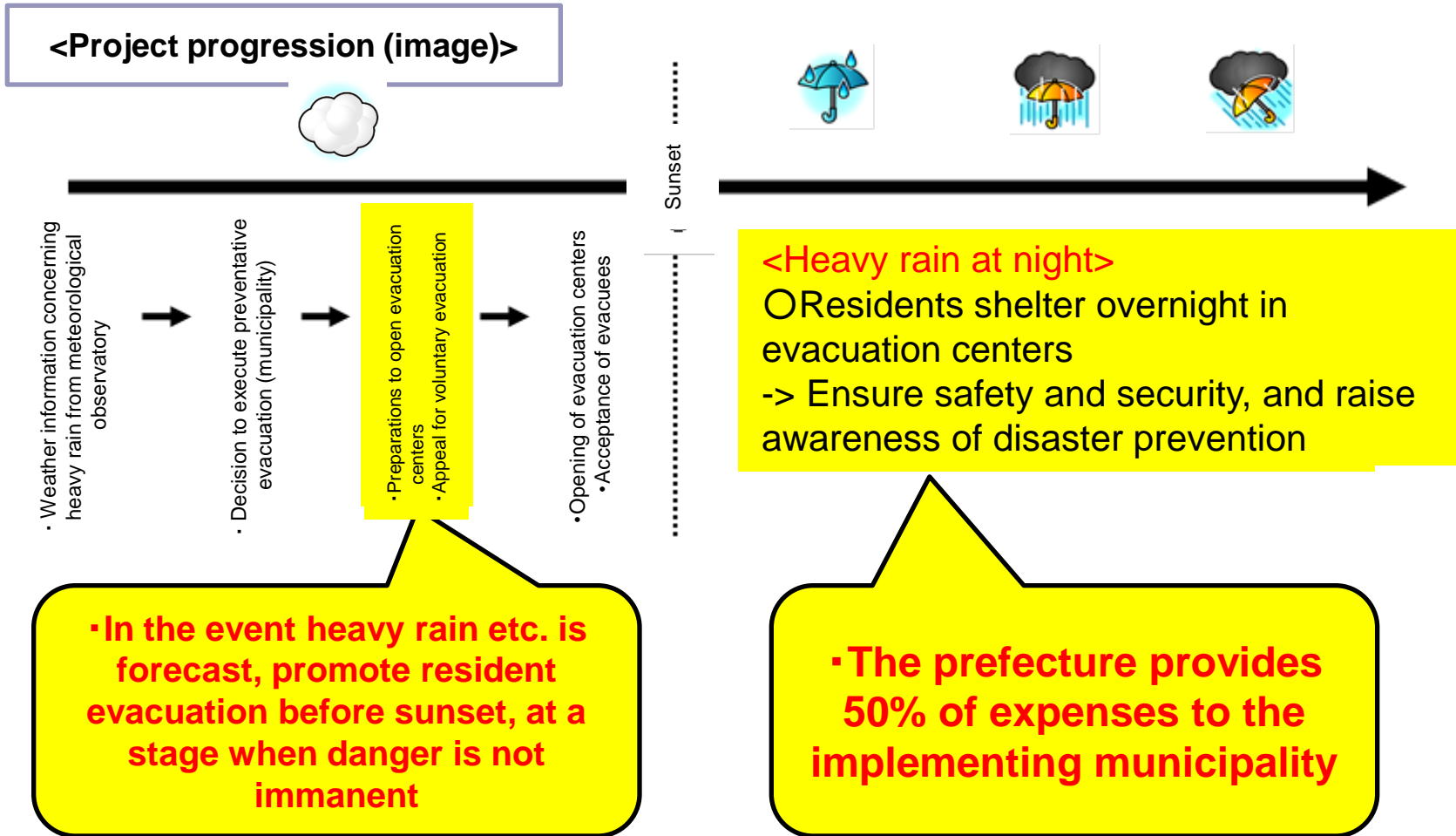
The Basic Policy for Restoration and Reconstruction



- I Strengthening of Disaster Prevention and Mitigation Systems
- II Restoration of Daily Life
- III Restoration of the Regional Economy
- IV Restoration and Reconstruction of the Social Infrastructure that Supports the Region

I Strengthening of Disaster Prevention and Mitigation Systems

Resident evacuation model demonstration project (preventative evacuation)



II Restoration of Daily Life (1)

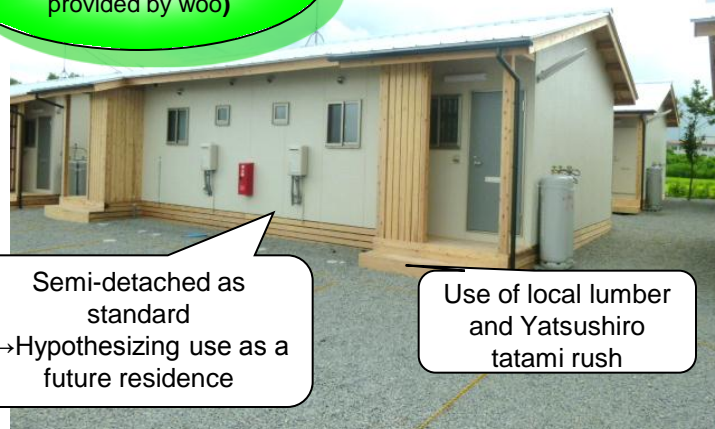
○ Construction of emergency temporary wooden housing

- Construct temporary wooden housing to facilitate a peaceful lifestyle during evacuation
- Decide a model plan for the temporary housing, hypothesizing reuse in the future

○ “Home-for-All” Project

- Construct a “Home-for-All ” as a place for inhabitants of the temporary housing to gather and relax.

Temporary housing
(warmth and comfort provided by woo)



Semi-detached as standard
→Hypothesizing use as a future residence

Use of local lumber and Yatsushiro tatami rush

Home-for-all
(provision of recreation area)



Kumamoto Prefecture support for affected residents
The Aso “Home-for-all” Project (Aso City)

Provision of a timbered lounge made from local lumber



II Restoration of Daily Life (2)-1

○ Selection of a temporary scrap-yard for disaster refuse

- Existing scrap-yards submerged by the flood.
- A school lunch center is located near the temporary scrap-yard, making disease control and the urgent processing and closure of the temporary scrap-yard an issue.



○ Suitable processing of disaster refuse

- Unsorted refuse brought into the temporary scrap-yard in the rush to restore the affected area.
- Sorting the massive quantity of refuse resulting from the disaster is a major challenge.



II Restoration of Daily Life (2)-2

- Measures for processing the disaster refuse
 - Selection of temporary scrap-yard in advance
 - Strict dumping of sorted disaster refuse only
 - Conclusion of agreements with private contractors for the collection and carriage of disaster refuse, and for disease control

III Restoration of the Regional Economy (1)

[Farming, fishing, and forestry]

○ Elevation of farmland for viable agriculture in future and the promotion of farmland consolidation, large-scale compartmentalization, and the development of undeveloped farmland

- Elevation of farmland using sediment influx [5 locations, 74 ha]
- Consolidation of farmland under a custodian based on the intentions of farmers
- Large-scale compartmentalization of farmland

Initiative to elevate farmland using sediment influx



Receiving the sediment



Land readjustment



After elevation (image)

III Restoration of the Regional Economy (2)

[Promotion of tourism]

○Public works appropriate to the Aso region with the aim of World Heritage List registration

- ◆ The following was proposed after holding focused working groups with the cooperation of Kumamoto University specialists
 - Scenery control in public works (construction with consideration for the scenery, etc.)
 - Reuse of materials discharged in the disaster as a method to preserve cultural scenery
- ◆ Proposals accepted and implement by the establishment of erosion control and soil conservation facilities

Impression of the completed works



Erosion control facility using local stone
(Aso City)



Wooden permanent form soil conservation
facility constructed using local lumber
(Ubuyama Village)

IV Restoration and Reconstruction of the Social Infrastructure that Supports the Region (1)

[Roads] Radical measures for Takimurozaka on National Route 57

Government requested to develop the highway intersecting Kyushu in an exploitable form
New project decided in May 2013, designated as a section of the Naka-Kyushu Odan Road for maintenance



Before restoration



Disaster restoration works underway on the current road (Nov. 2013)

◆ Project overview

- Commissioning body: Ministry of Land, Infrastructure, Transport and Tourism
- Project start: FY 2013
- Section: 6.3 km (tunnel: 4.6 km)
- Planning specifications: Two lane, 80 km/h
- Project cost: 23 billion yen (FY2013: 50 million yen)

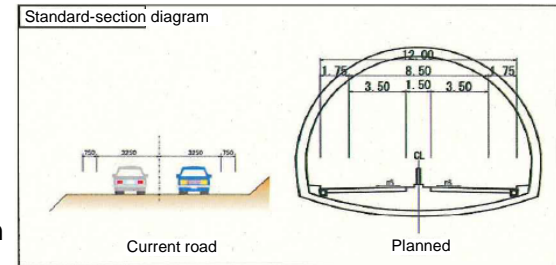


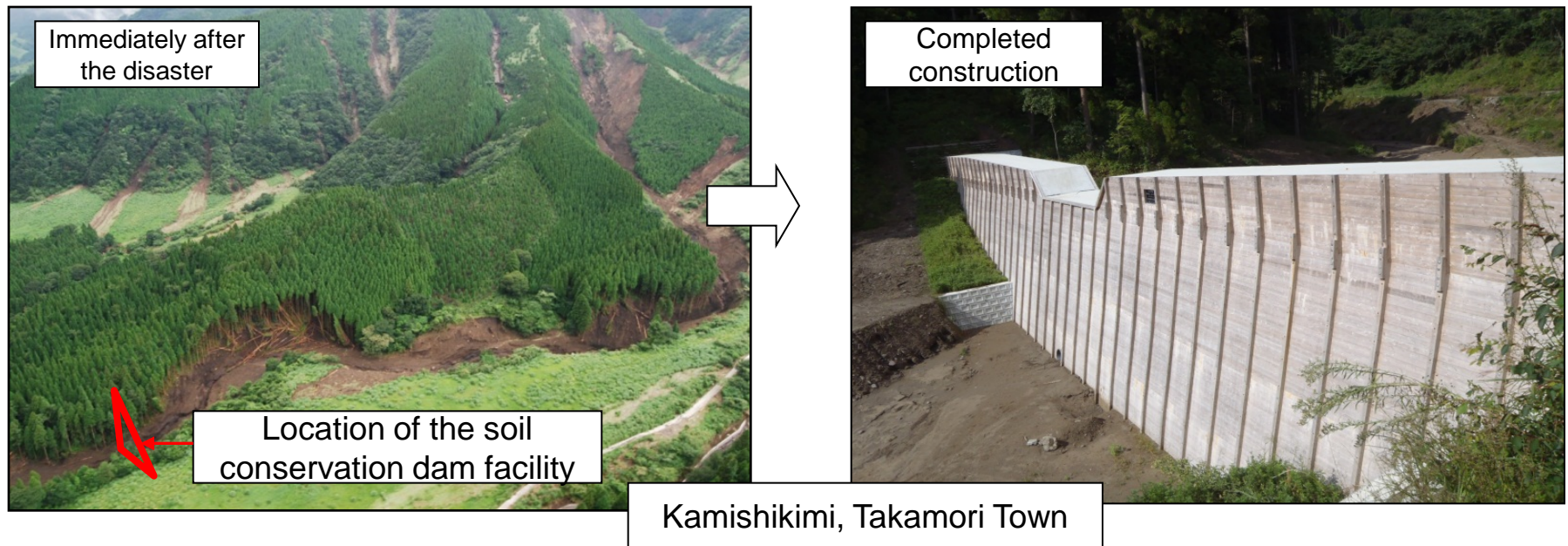
Image of the Takimurozaka road maintenance (produced by Kumamoto Prefecture from Ministry of Land, Infrastructure, Transport and Tourism data)

IV Restoration and Reconstruction of the Social Infrastructure that Supports the Region (2)

[Erosion control and soil conservation]

○ Establishment of soil conservation and erosion control dams with consideration for the scenery

- Establishment of wooden permanent form soil conservation facility using local timber



○ Consideration of support for relocation to a safe place in the region where the landslide disaster occurred

- Residents of the district of the disaster surveyed on their future residence



VI About the Kumamoto Prefectural Disaster Management Plan

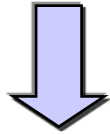
- 1 System of Disaster Management Planning
- 2 Overview of the Kumamoto Prefectural Disaster Management Plan
- 3 Everyday Preparation Based on the Disaster Management Plan
- 4 Operations for When Disaster Strikes

1. System of Disaster Management Planning

National

Basic Disaster Management Plan

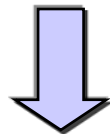
A comprehensive, long-term disaster management plan drafted by the Central Disaster Management Council, **it is the highest-level disaster management plan.**



Prefectural

Prefectural Disaster Management Plan

Drafted by the Prefectural Disaster Management Council in accordance with the Basic Disaster Management Plan. Defines the general operations to be handled by prefecture-level agencies with respect to prefectural disaster management.

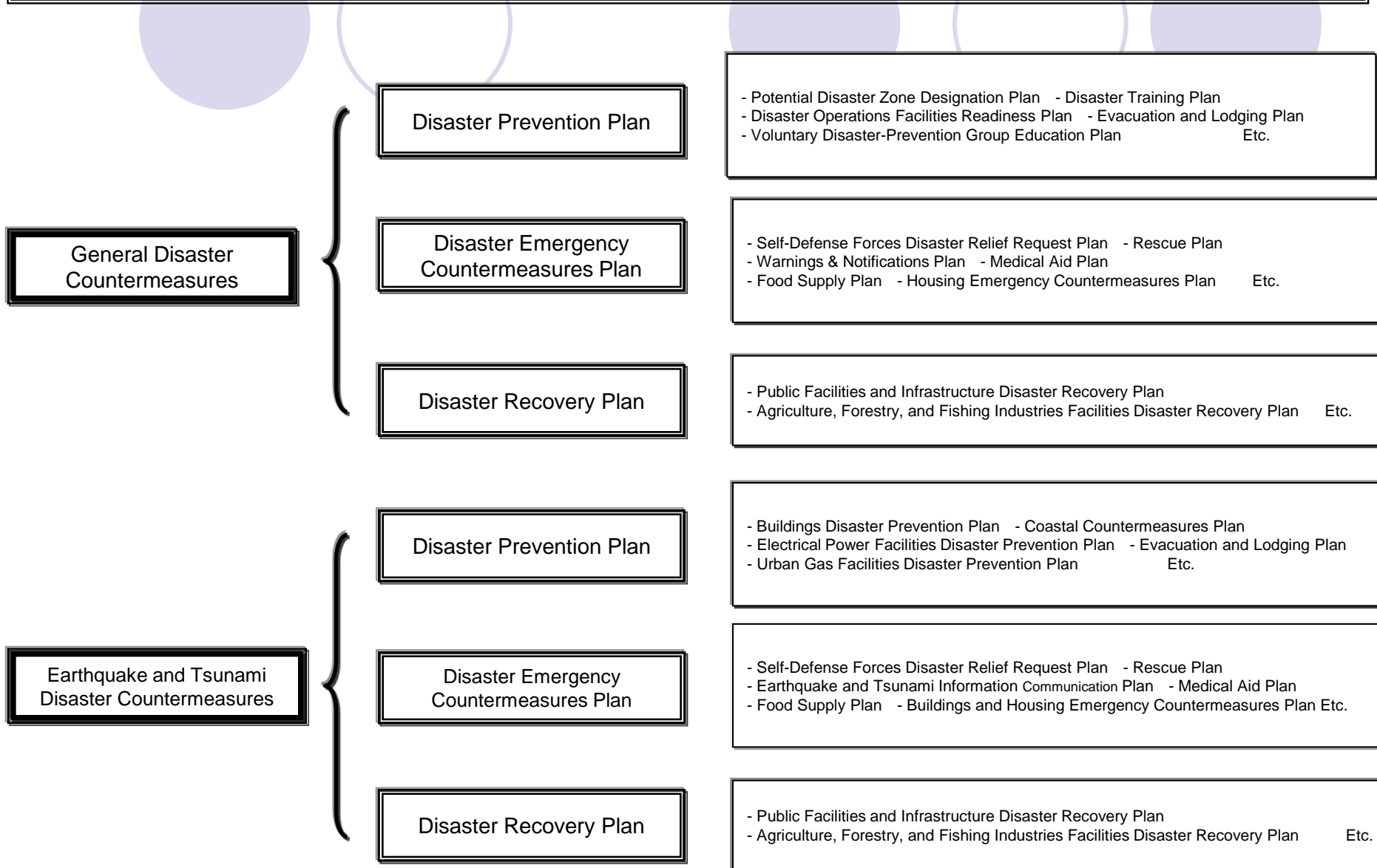


Municipal

Municipal Disaster Management Plan

Drafted by the Municipal Disaster Management Council in accordance with the Basic Disaster Management Plan. Defines the general operations to be handled by municipal-level agencies with respect to municipal disaster management. **It must not contradict the prefectural plan.**

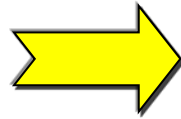
2. Overview of the Kumamoto Prefectural Disaster Management Plan



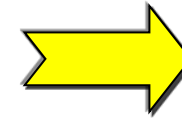
3. Everyday Preparation Based on the Disaster Management Plan

○ Verification of information communication systems between disaster management-related agencies

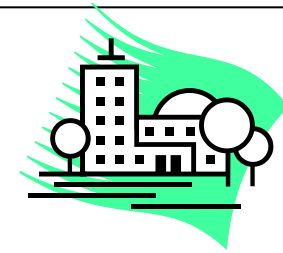
Local Meteorological Observatory



All Prefectures



Cities, Towns, Villages



○ Written agreements to provide support in a disaster ○ Disaster information and education



○ Designation of Emergency Evacuation Sites and Centers

No special provisions in the Basic Act on Disaster Control Measures prior to amendment

The evacuation center in the hypothesized disaster area is impacted in a tsunami or flood

Designated emergency evacuation site

Act amended

Designated evacuation center

An evacuation site to escape from danger when a disaster occurs

A facility where residents etc. who cannot return home can temporarily stay

○ Designation standards

- Sited in a safe district
- A structure secure against flood, debris flow, earthquake, and tsunami, etc.

○ Designation standards

- Has a sufficient area for the number of victims
- Located in a place where transportation of supplies is comparatively easy, etc.

Designated by the head of municipality (from April 2014)

4. Operations for When Disaster Strikes

1 Communicate information quickly and accurately based on regular information communication training

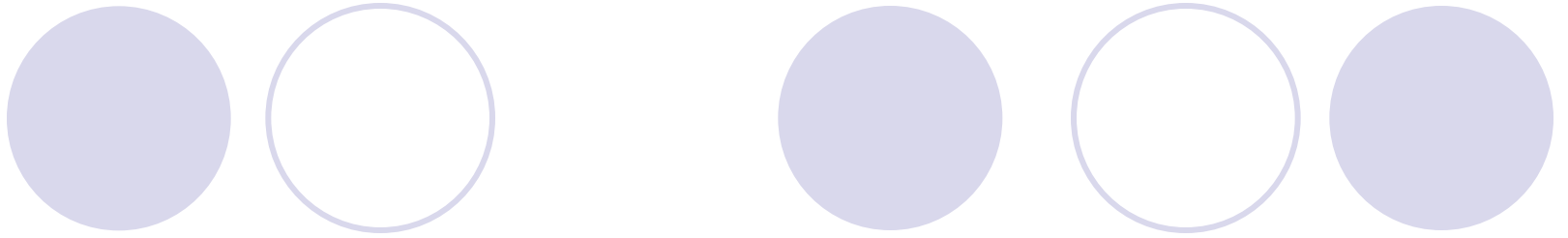


2 Perform avalanche rescue operations in cooperation with construction industry firms that have signed agreements to provide support in a disaster



3 Facilitate quick and smooth disaster evacuations by informing and educating residents about disasters





VII Issues Raised by Disaster Response

- 1 Prefectural Review
- 2 Main Issues Discovered through Prefectural Review

1. Prefectural Review (Review of Disaster Response During Great Kumamoto Regional Flood)

- The following seven categories of activity during the early stages of the post-disaster response were reviewed
 - 1) Communication of weather-related information
 - 2) Evacuation recommendations issued by municipalities, communication to residents
 - 3) Resident evacuation, self-help/collective-help measures
 - 4) Extraction and rescue operations
 - 5) Support for evacuees
 - 6) Personnel support for affected municipalities
 - 7) Response and organization of prefecture's Headquarters for emergency response

2. Main Issues Discovered through Prefectural Review

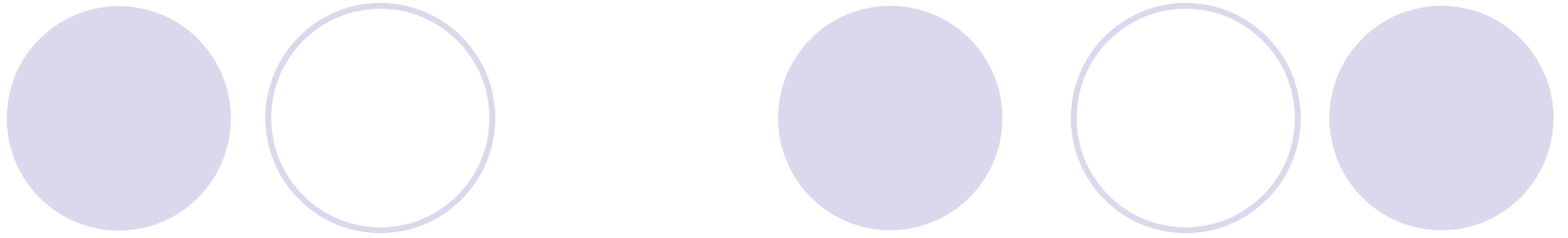
- 1) **Information communication and evacuation conditions during sudden torrential rains in the night**
 - During the night (when asleep), disaster-prevention and administration radio siren cannot be heard.
 - Resident evacuation during torrential rains and lightning strikes poses a threat of secondary damage.
 - Door-to-door notification of evacuation instructions by Volunteer Fire Corps has its limits during torrential rains and lightning strikes.

2) Support for evacuees

- Evacuation centers took a long time to set up.
- Stockpiled disaster supplies were inadequate.
- Insufficient attention was paid to the perspective of women in an evacuation center with so many people.

3) Support for affected municipalities

- Systems were not in place to dispatch prefectural and other municipal officials to affected municipalities.
- Affected municipalities were too busy with disaster response to request assistance from other agencies.



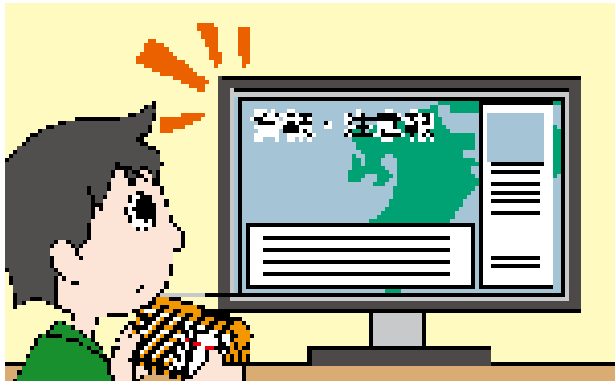
VIII Addressing the Issues (Preparing for Disaster)

- 1 Self-help
- 2 Collective-help
- 3 Public-help

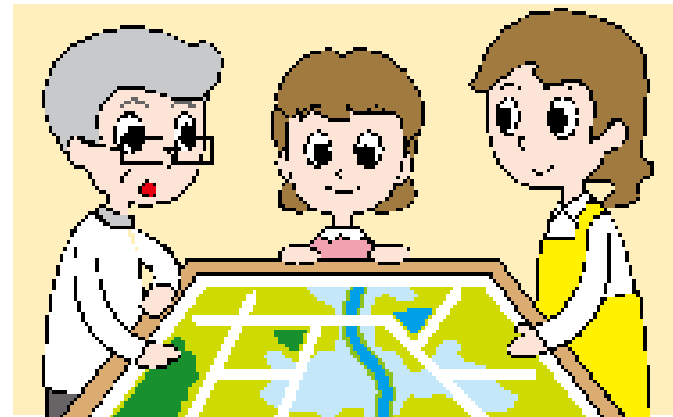
1. Self-help

1) Cultivate resident awareness of disaster prevention

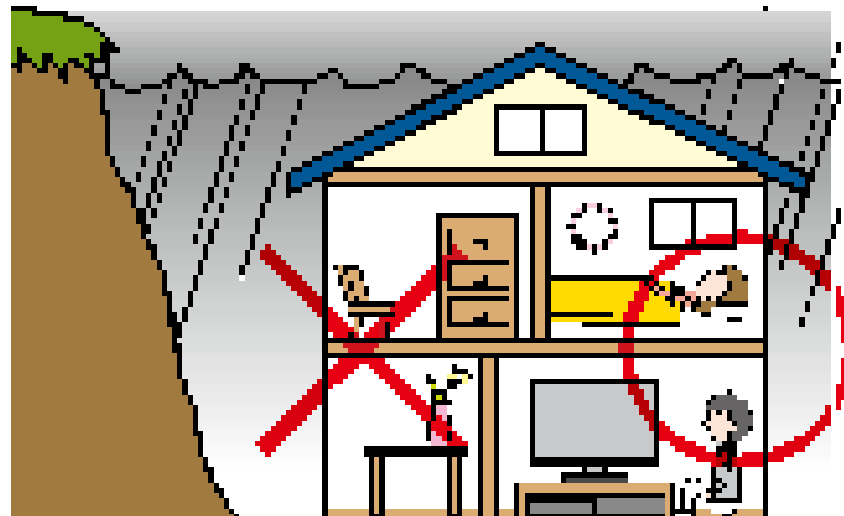
Disaster-prevention
information-gathering



Evacuation-route
readiness

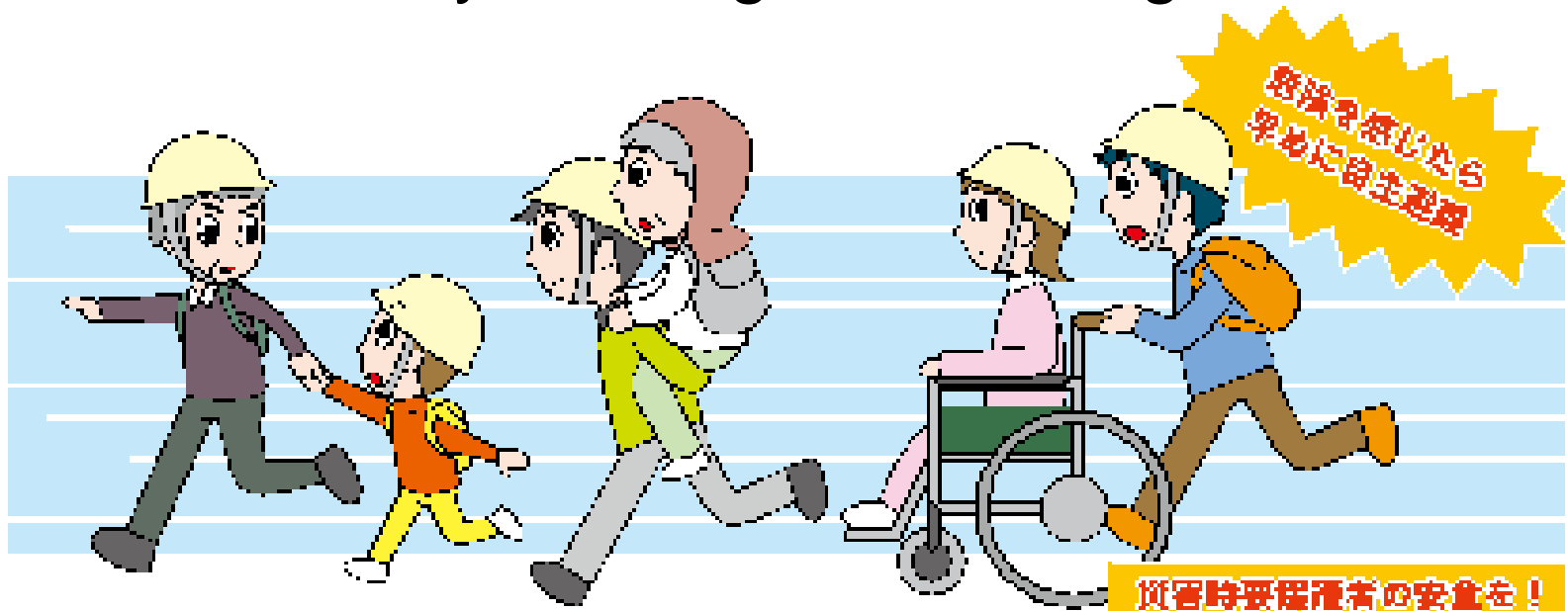


Vertical evacuation,
lateral evacuation



2) Preventative evacuation (early evacuation while still light during late afternoon/early evening)

- When heavy rains in the night are forecasted during the rainy season or a typhoon, perform a preventative evacuation during late afternoon/early evening while still light.



2. Collective-help

1) Encourage formation of voluntary disaster prevention organizations

“Voluntary disaster prevention organizations” are self-organized, regional (usually at the municipal or neighborhood-level) groups that engage in disaster-prevention activities with the purpose of “protecting our region by ourselves.”



2) Stronger resident evacuation drills

Paper drills



Field drills



3. Public-help

- 1) **Strengthen disaster-prevention information communication systems**
 - Important information from weather stations (e.g. record-setting short-term heavy rainfall) should be communicated to the prefecture not only through information systems but also by direct communication by phone.
 - Communications to provide alerts, including future weather predictions, from the prefecture to municipalities should be communicated directly by phone.

2) Support to improve response capabilities of municipal officials

Disaster-prevention training session for municipal officials



Paper drill for municipal officials

3) Strengthen support systems for affected municipalities

- Maintain system to dispatch personnel for large-scale disaster-response work

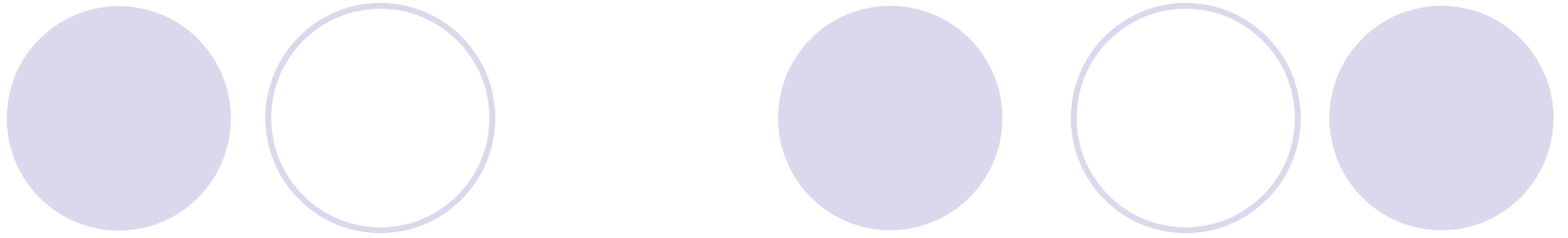
To comprehend disaster information and the needs of affected municipalities, a list of dispatch personnel should be maintained so personnel can be readily dispatched in the event of a large-scale disaster.

- Draft guidelines

To facilitate the smooth operation of evacuation centers, the prefecture should draft guidelines to be distributed to municipalities.

- Encourage official disaster agreements with private sector entities

Support the signing of agreements between private entities and municipal governments so that private entities can provide various forms of support during disasters.



Thank you for listening.



**Disaster and Crisis Management
Administration Division,
Kumamoto Prefecture**