

World Conference on Disaster Reduction

Cluster 5

Session 5.6

Case studies on Preparedness for effective response

The state and subject of initial response of disasters (rescue and evacuation) in Japan

**Fire and Disaster Management Agency
Government of Japan**

I .The General Disaster Condition

The Natural Disasters in the World from 1998 to 2002
The World's Earthquake and Plate Distribution
The General Disaster Situation in Japan, 2004

II .Public

Emergency Fire Response Team
Disaster prevention administration radio network
Simplified Earthquake Damage Estimation System

III Self Help • Mutual Help

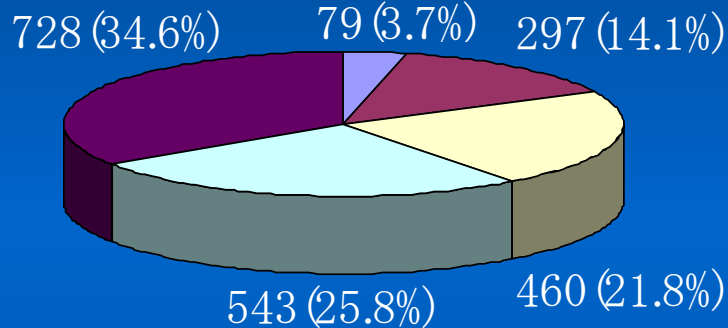
Voluntary disaster preventing organization
Volunteer Fire Corps

I .The General Disaster Condition

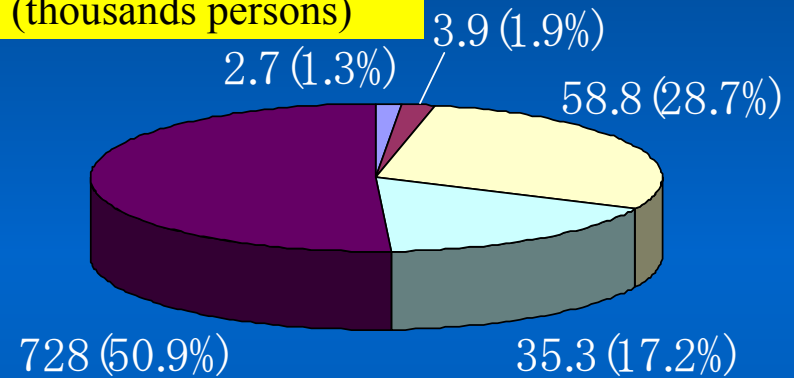
The Natural Disasters in the World from 1998 to 2002

■ Oceania ■ Europe ■ America ■ Africa

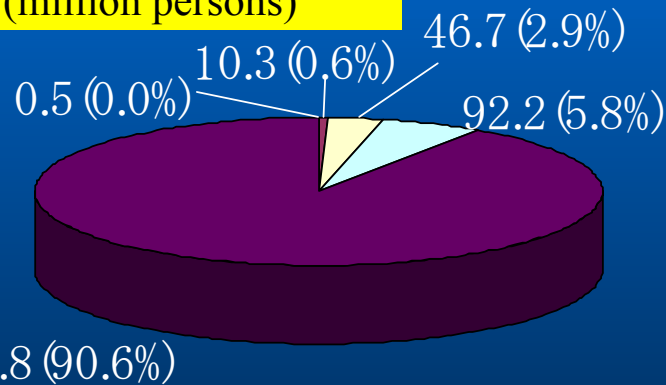
The number of Natural Disasters



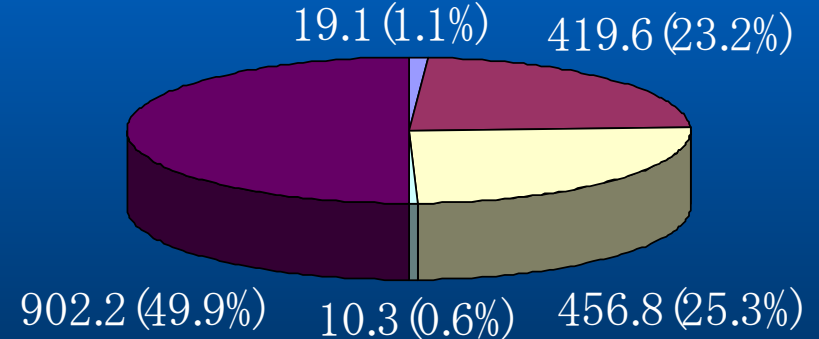
The Number of Deaths (thousands persons)



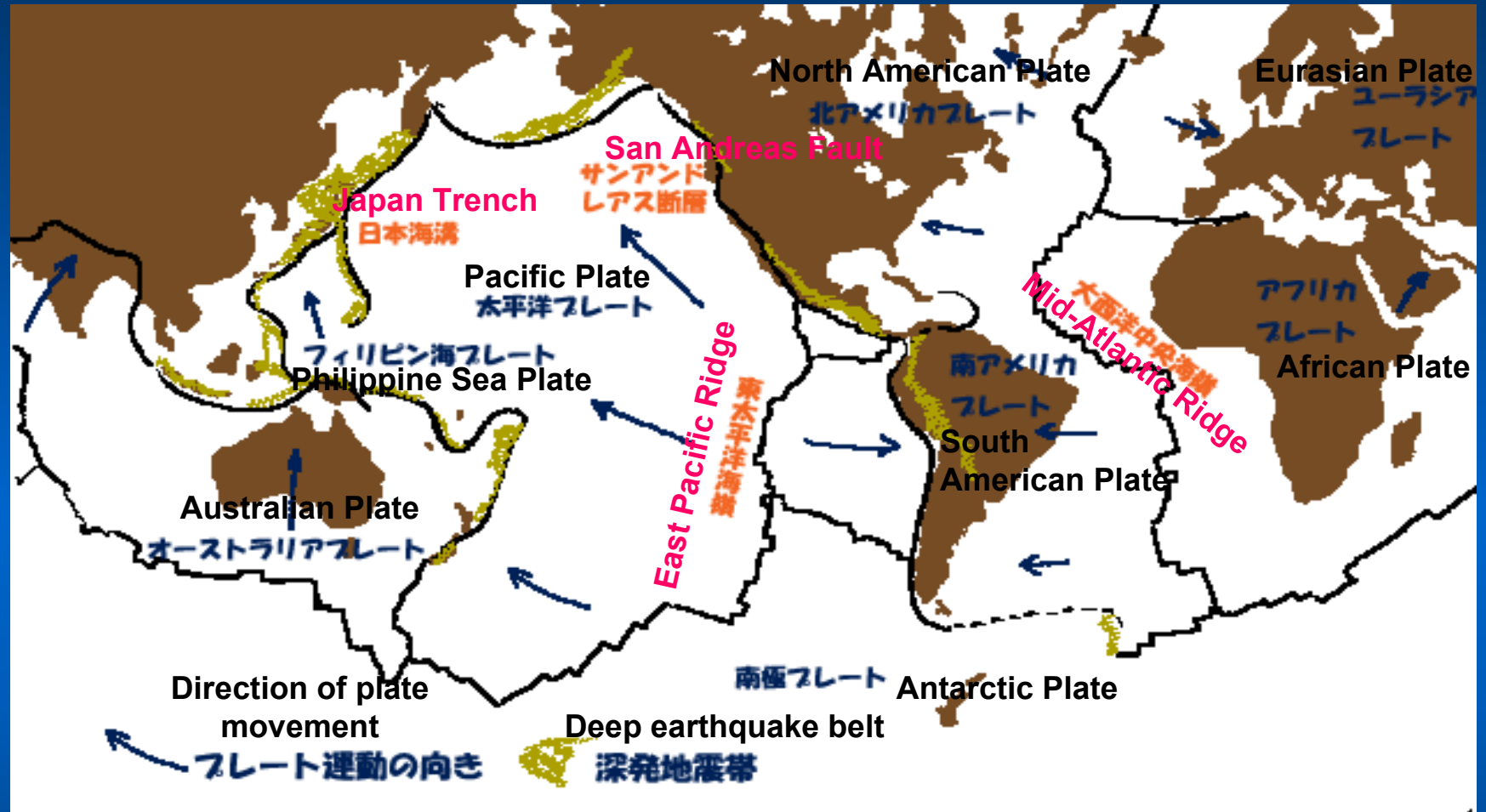
The Number of Victims (million persons)



Amount of Damage (100 million dollars)



World Geographical Distribution of Hypocenters and Plate Boundary



The earthquake is distributed not equally but **along the plate boundary** all over the world.

- **Pacific Plate:** : Japan Islands, Aleutian, North and South America, Philippines Islands
 - **The Atlantic, Eurasia, Mediterranean, Turkey, Himalayas, Indonesia Islands**
- ➡ Though it is rare, many plates are convergent along the Japan Islands in the world.

Major Disasters in Japan during 2004

The damage caused by storms and floods

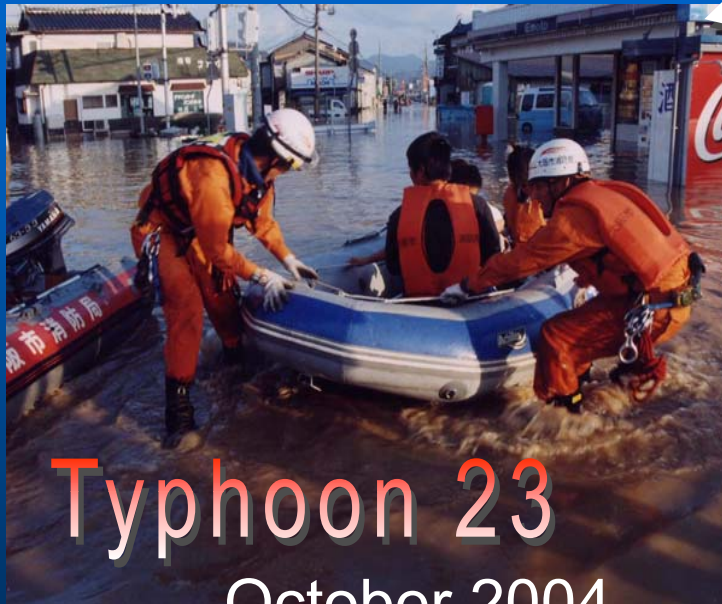
		Dead and injured				Damage of dwelling house					Headquarters for disaster countermeasures		Emergency Response level (FDMA)		
		Deaths	Missing	Injured		complete collapse	half collapse	partial collapse	above floor level	under floor level	prefecture	municipality	first level	second level	third level
				severe	light										
Typhoon 6	18th Jun~	2	3	21	97	1	5	169	4	44	3	257			
<i>Torrential Rains in Niigata, Fuku</i>	13th Jul	16		3	1	70	5,354	94	2,149	6,208	1	50		○	
<i>Torrential Rains in Fuku</i>	18th Jul ~	4	1	4	15	66	135	229	4,052	9,675	1	9		○	
Typhoon 10, 11	31st/Jul	3		3	16	11	20	62	274	2,601	3	158	○		
Typhoon 15	17th Aug~	10		6	22	16	88	663	400	2,326	3	27	○		
Typhoon 16	28th Aug~	14	3	43	240	33	127	8,564	14,512	32,296	11	639	○		
Typhoon 18	7th Sep~	41	4	214	1,144	129	1,181	55,671	1,570	6,607	11	734	○		
Typhoon 21	26th Sep~	26	1	27	71	92	779	1,982	5,197	14,339	4	346	○		
Typhoon 22	7th Oct ~	7	2	15	151	135	287	4,508	1,561	5,485	4	290	○		
Typhoon 23	18th Oct ~	94	3	119	432	774	7,322	10,244	13,761	39,148	13	796		○	

Torrential Rains in Niigata and Fukushima

July 2004



富士地産院景観 平13 観覧 第397号



Typhoon 23

October 2004



Torrential Rains in Fukui

July 2004

The General Disaster Situation in 2004

(As of January 5)

Earthquake

The hypocenter	Date	Magnitude	Seismic intensity	Dead and injured	Damage of buildings	tsunami warning	Fire	Emergency Response Level (FDMA)		
								first level	second level	third level
Kii-hantou-oki	5th/ Sep	6.8	Lower 5	light injury 6		tsunami advisory		○		
Tokai-do-oki	5th/ Sep	7.4	Lower 5	severe injury 6 light injury 33	partial collapse 4	tsunami warning	1	○		
Ibaragi-ken-nanbu	6th/ Oct	5.7	Lower 5	light injury 4				○		
Nigataken-tuyetsu	23rd/ Oct	6.8	7	casualties 40 severe injury 480 light injury 4,066	complete collapse 2,842 half collapse 10,568 partial collapse 88,524		9			○
		6	upper 6							
		6.5	upper 6							
		5.7	Lower 6							
	27th/ Oct	6.1	Lower 6							
Kushiro-oki	29th/ Nov	7.1	upper 5	injured 51	partial collapse 3				○	
Nemuro-hananto-oki	6th/ Dec	6.9	upper 5	injured 10		tsunami advisory			○	
Rumoi-shichonanbu	14th/ Dec	6.1	upper 5	injured 8					○	

Niigata-Ken-Tyuetsu Earthquake

October 2004



II. Public Help

Emergency Fire Response Team

What is the Emergency Fire Response Team

- The unit that mobilizes over a very wide area and all prefectures based on the measures demand of Commissioner of Fire and Disaster Management Agency to be engaged in information gathering, fire extinguishing, rescue, etc., when large-scale disaster occurs domestically.
- It founds the based on the experience of the Great Hanshin Earthquake. There are 2,821 corps (about 35,000 constituents) now.

Great Hanshin-Awaji Earthquake

January 1995

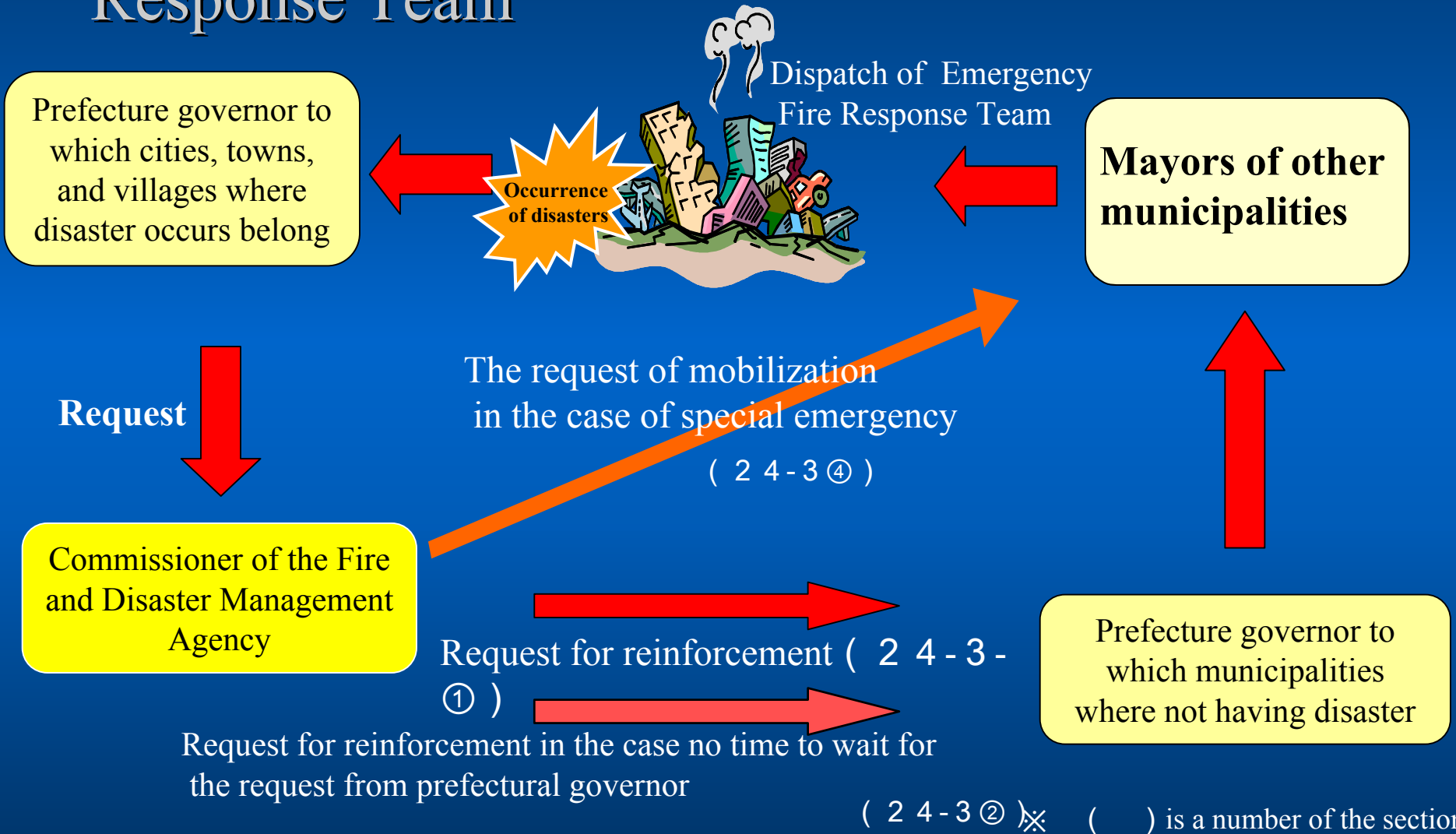


国土地理院京展 平13論説 第347号



II. Public Help

The Scheme of Dispatch of Emergency Fire Response Team



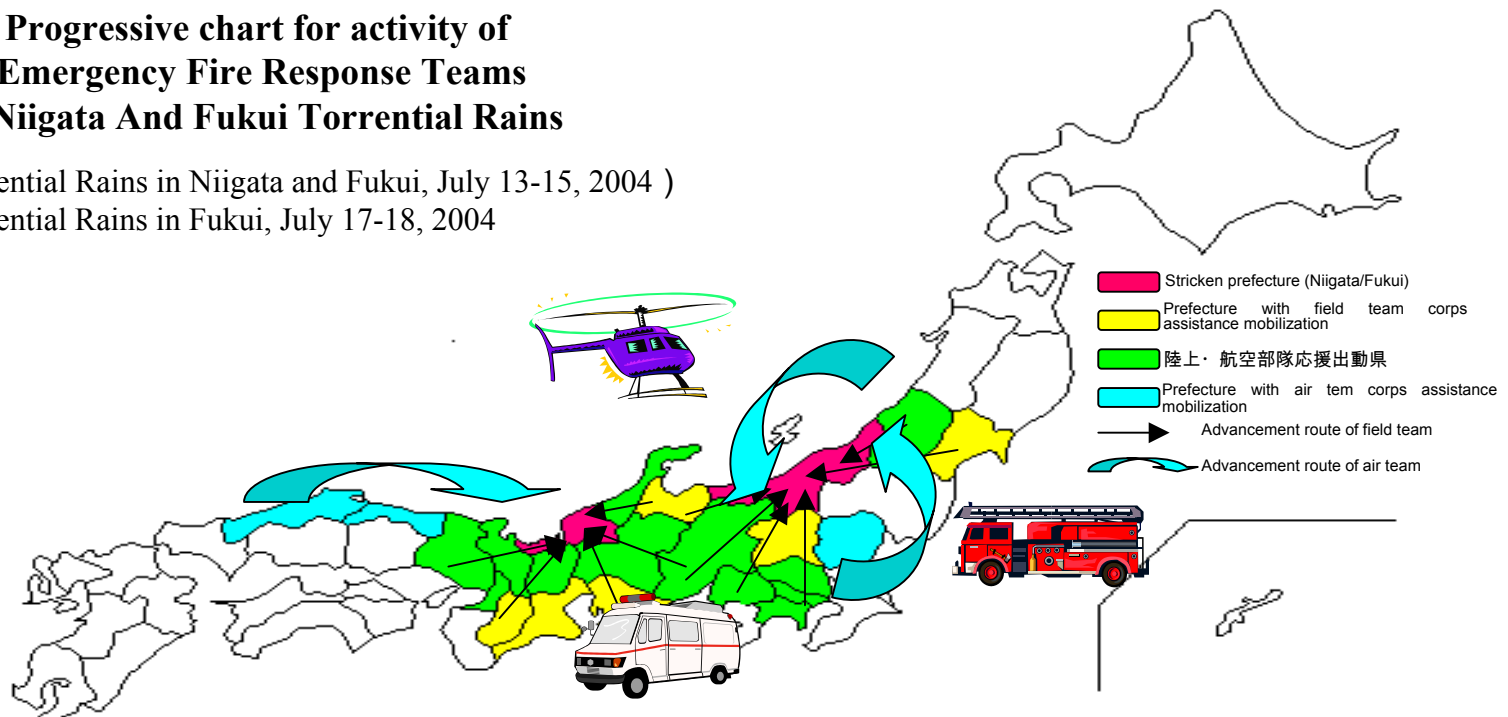
II. Public Help

Activity of Emergency Fire Response Teams in Fukui Torrential Rains, July 2004

- Niigata Prefecture .. 171 team (693 members) from 12 prefectures rescued 1,855 people
- Fukui Prefecture .. 159 team (679 members) from 12 prefectures rescued 338 people.

Progressive chart for activity of Emergency Fire Response Teams in Niigata And Fukui Torrential Rains

Torrential Rains in Niigata and Fukui, July 13-15, 2004)
Torrential Rains in Fukui, July 17-18, 2004



II. Public Help

Activity situation of Emergency Fire Response Team on Torrential Rains, July 2004

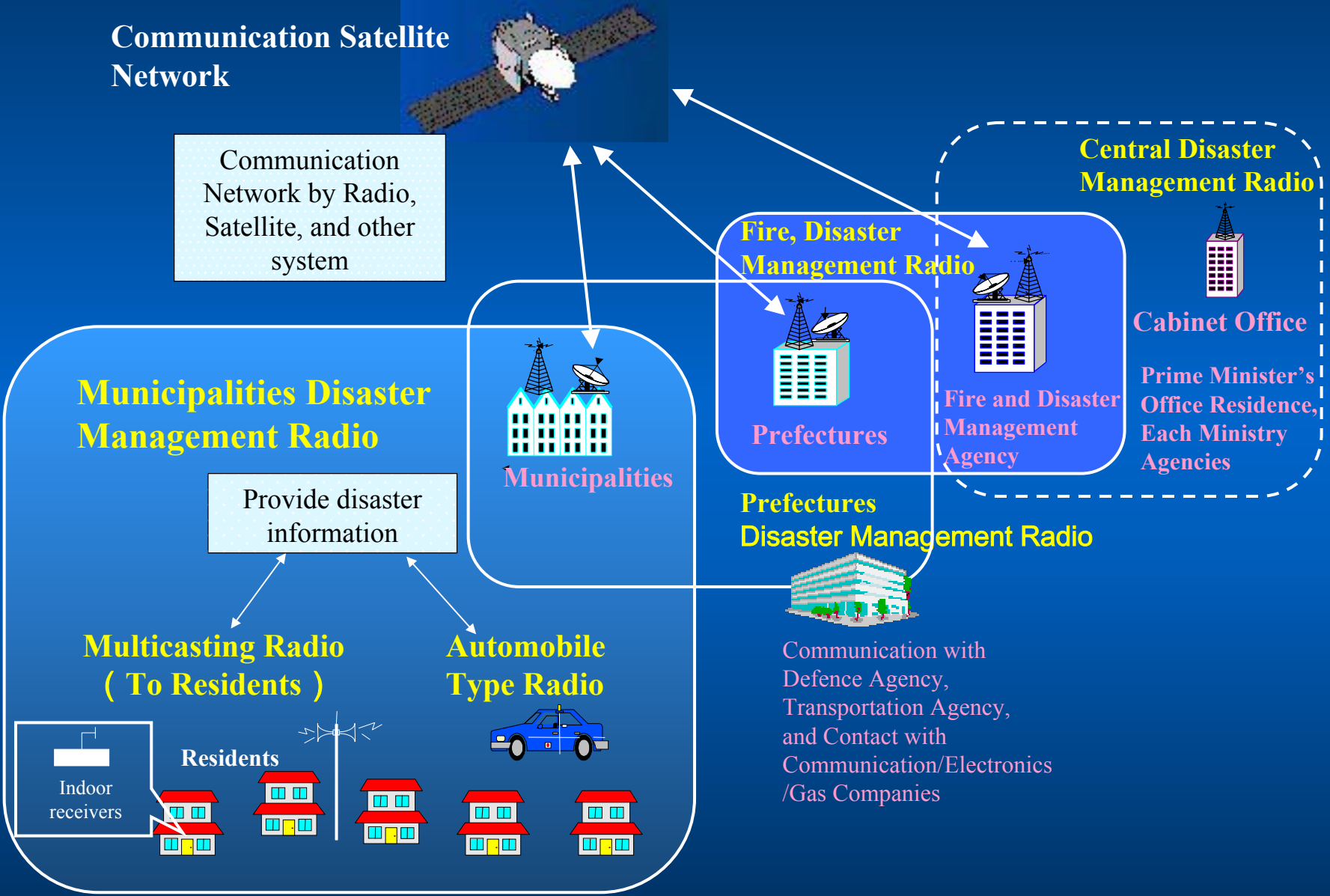
Tokyo Unit in Niigata and Fukui
Torrential Rains



Kyoto Unit in Fukui Torrential Rains

II. Public Help

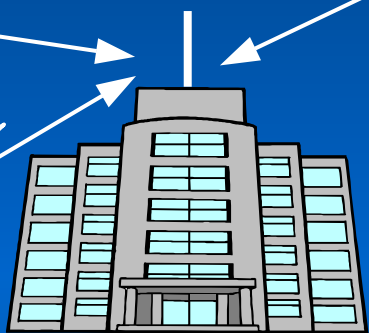
Communication Network to Residents



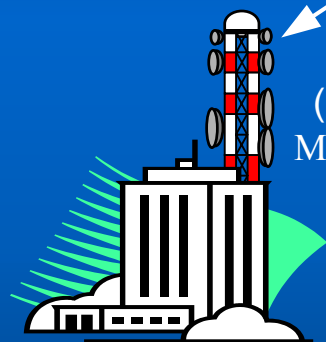
II. Public Help

Information for Warning Disaster Management Radio

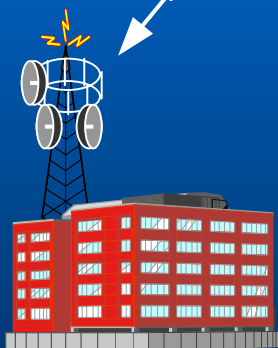
Fire and Disaster Management Agency,
Ministry of Internal Affairs and Communications



(City Government Disaster Countermeasures Headquarters)
Movement system base station/Multicasting system base station



Prefectural
Government



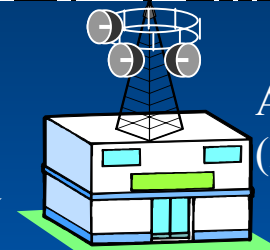
Fire Division Headquarter



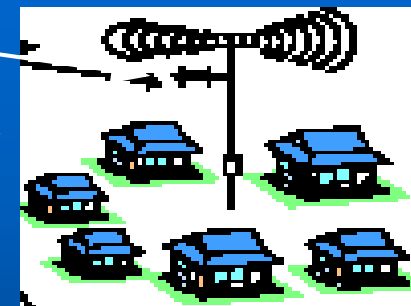
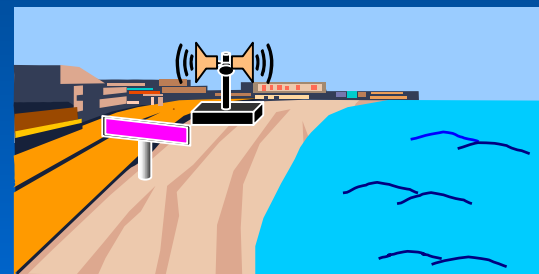
Indoor Receivers



Public-Relations Vehicles
(Fire engines)



A Speaker
(Roof-top Installation Type)



A Speaker
(On-Street Installation Type)



Public-Relations Vehicles
(Official Vehicles)

IV. Public Help

Outline of the DPRC System

Feature

- Information can be transmitted to the resident all at once.
- It is extremely effective to the transmission of information when warning weather, evacuation, and shelter information.
- Interactive information transmission by digitalization (words information such as telop, still pictures, and sounds)

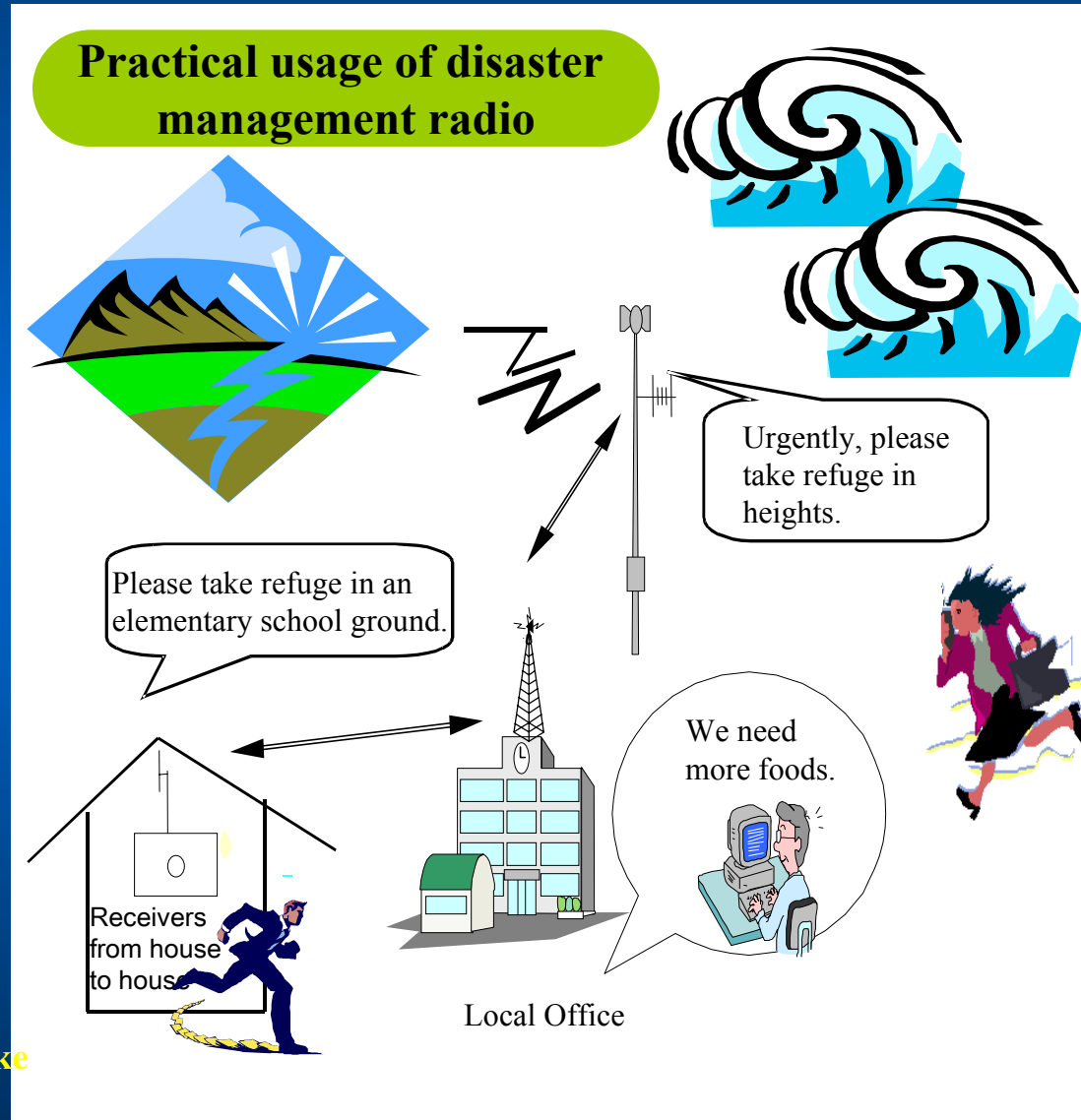
Supplied Situation, 2005 March

Total # of municipalities **3,155**
of supplied municipalities **2,138**
(Rate of fully supplied **67.8%**)

Financial Support

- Subsidy for fire fighting disaster prevention equipment maintenance
- Supplementary rate 1/3 (normal time)
1/2

(In the case section-4-1 is applied Earthquake Disaster Prevention Special Act)



II .Public Help

The goal of TSUNAMI warning system

- The goal

 - The going forth of the warning itself is not a goal !!

 - The goal is make it possible for residents to “evacuate” to the safe place from the approaching TSUNAMI by 800 km/h.

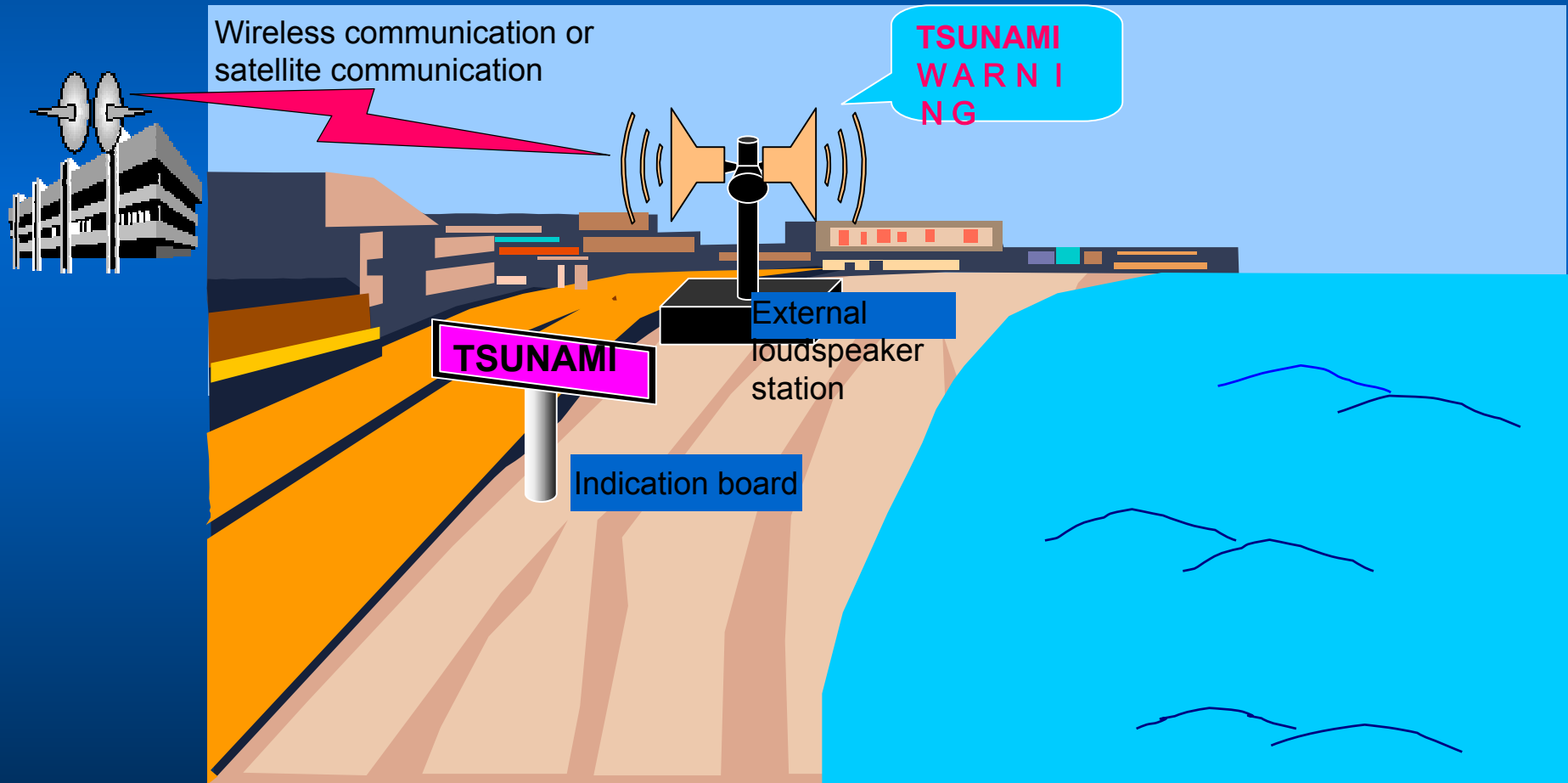
- We have only a few minutes ~ around 20 or 30 minutes !

 - Indian Ocean TSUNAMI : reached the north part of Sumatra in fifteen minutes.

 - Hokkaido-nansei-oki-earthquake TSUNAMI (JAPAN) : in 3 ~ 5 minutes , over 10 m height Tsunami reached.

Reporting and Notification by Loudspeakers and Sirens

- Using loudspeakers is an effective measure to catch the attention of people in a specific area.
- Announcement using loudspeakers can transmit information from 3 to 500 m; using a siren, it can be transmitted from 1 to 2 km.



II. Public Help

SIMPLIFIED EARTHQUAKE DAMAGE ESTIMATION SYSTEM

Developed by National Research Institute of Fire and Disaster

http://www.fri.go.jp/cgi-bin/hp/index_e.cgi

Anyone can quickly and easily estimate damage for an earthquake.

Location, magnitude, and time of occurrence.

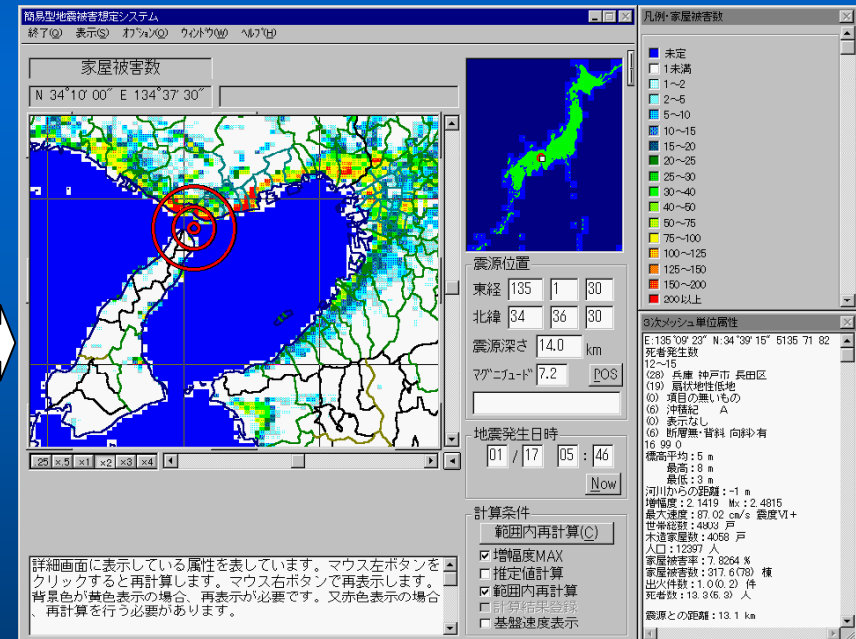
GIS

DATA

Surface topography, elevation
The Digital National Land Information (DNLI)
Population, Structures
National Census data

ESTIMATION METHOD

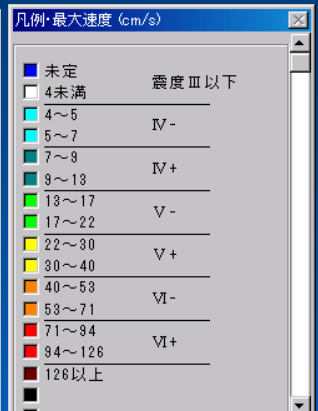
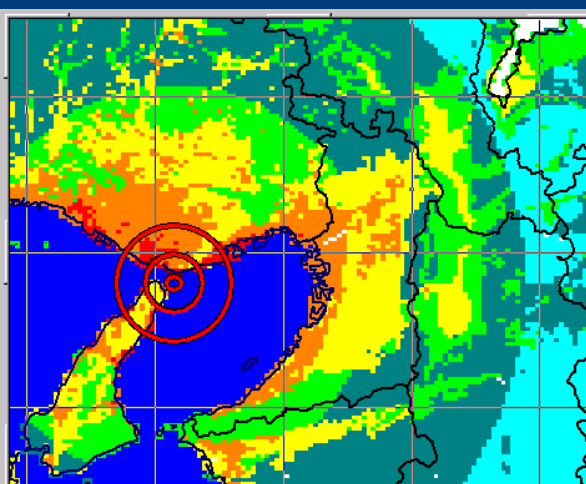
Ground motion
Numbers of collapsed wooden houses,
fires and
deaths.



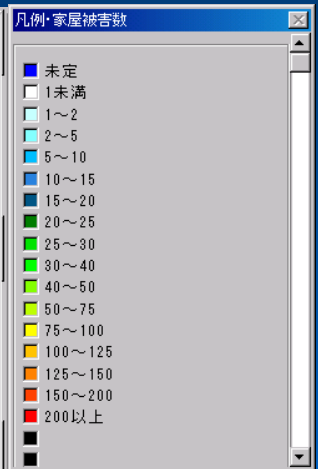
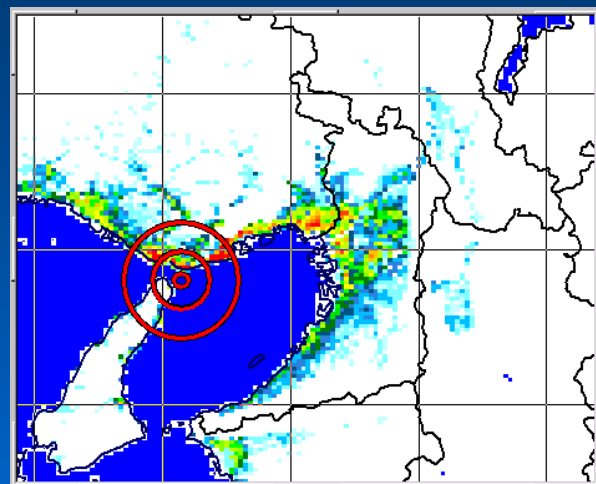
An output window of the Simplified Earthquake Damage Estimation System

II. Public Help

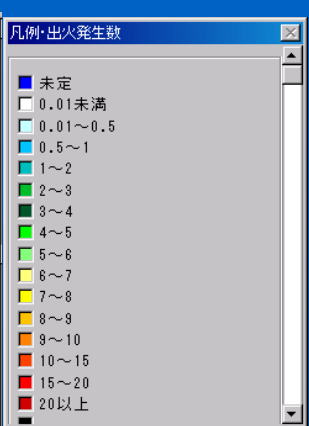
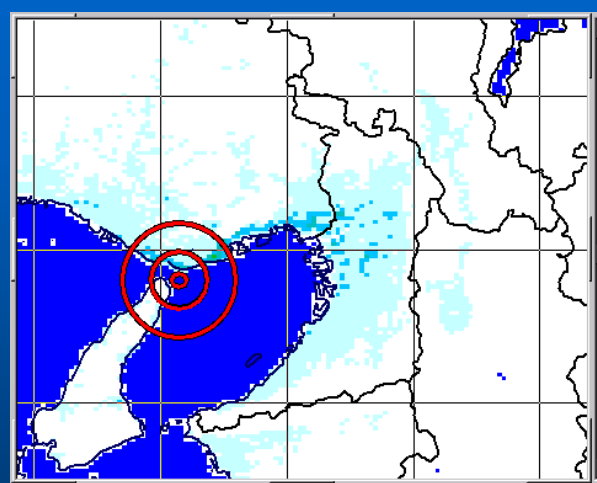
Result of Estimation



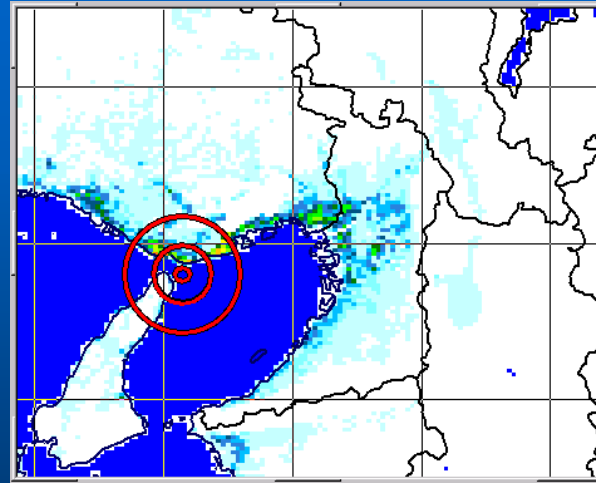
Ground motion



Numbers of collapsed wooden houses



Numbers of fires



Numbers of deaths by house collapse

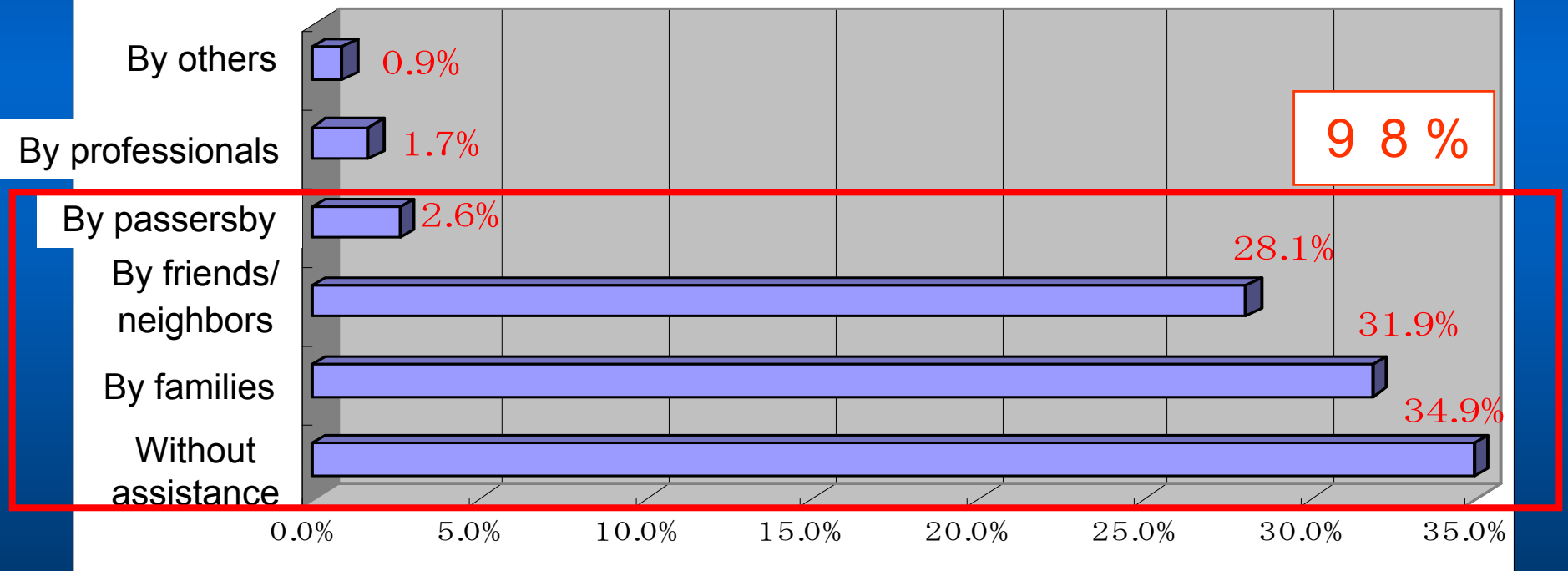
Manner of utilization : Emergency response in immediate aftermath of earthquake
Establishment of Disaster prevention plan

III Self Help · Mutual Help

Disaster prevention activities for preparedness in large-scale disasters by residents

Necessity of disaster prevention improvement with resident

Rescue operations for persons buried alive or trapped
in the Great Hanshin-Awaji Earthquake



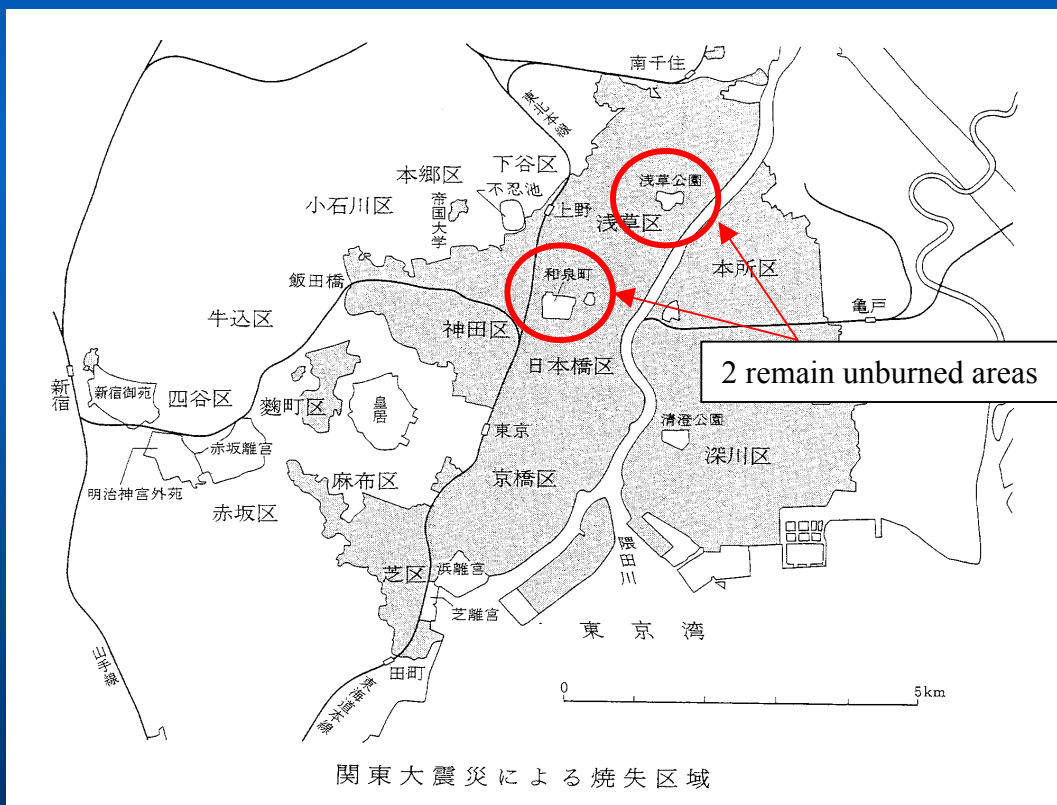
(according to 日本火災学会 : 「Report on the fire in Hyogo-ken-nanbu earthquake」)

III. Self Help · Mutual Help

Activity of Local Voluntary Disaster Management Organization on Great Kanto Earthquake

(September 1, 1923)

- There were only two area, a part of Asakusa and Kanda, remained unburned escaping disappearing because of Local Voluntary Disaster Management Organization's activity



Because of the fire reached the Asakusa park where was shelter destination, Baba Onokichi, who was a head of the 5th fire department 4th unit, destroyed the surrounding private houses with his staffs. He arranged residents in two rows with fully water buckets to send from the pond, climbed the roof in precincts and then prevented fire by water and the fire-hook.

In Kanda Izumi-cho and the Hirakawa town, it succeeded in defense, without obtaining assistance of fire-services at all. Here, the destruction fire fighting and pouring water hand sending with buckets by residents, usage of the power pump before delivery goods, and the sewer played an active part in it.

III Self Help · Mutual Help

What is the activity of Voluntary Disaster Preventing Organizations

In the peacetime

- Dissemination of knowledge for disaster prevention
- Understanding of disaster risk area
- The exercise of disaster prevention drill
- Safety inspection of fire instruments
- Checkout and stocking of materials for disaster prevention

In a time of disaster

- Collecting information and Communicating to the residents
- Fire protection and initial fire fighting
- Evacuation guiding
- Rescue and Emergency relief activity
- Providing water/ food



III Self Help • Mutual Help

Regional Scheme of Disaster Prevention

Fire fighting organizations

Operate everywhere under the jurisdiction of Fire Chief

Respond to the disaster in their own domicile voluntary.

Permanent fire defense
about 150,000 persons

Voluntary Fire Corps
about 920,000
persons

Voluntary disaster
preventing organization
About 28,400,000 persons



Voluntary Fire Corps is a mediator between Permanent fire defense and Voluntary disaster preventing organization

III Self Help • Mutual Help

The general idea of Voluntary Fire Corps

- 1 Officer based on the ordinance
- 2 Deploying under the jurisdiction of fire chief and commissioner of the fire department
- 3 Beholding the public authority ,capable of ordering of evacuation to the residents
- 4 Beholds mobility、 capability, organization power
 - ① Deploying to the disaster under the jurisdiction
 - ② Deploying multilaterally
 - ③ Adequately equipped and disciplined.
 - ④ Deploying in an organized way.

Illustration of the activity

Hanshin-Awaji Earthquake in 1995 ,Jan. 1 In Hokudan-town in Pref. Hyogo (3700 buildings) over 60% buildings are completely collapsed and half collapsed. In Hokudan-town, the member of Voluntary Fire Corps took a main role in rescuing the damaged people under the collapsed buildings. (about 300 people) and, as they understood how the residents live their life, they could be deployed in the initial rescue and confirmation of the safety.

Voluntary Fire Corps Activities



Activities at disaster times



Activities at ordinary times

Activities with residents and drills





International Rescue Team of Japan (I R T) transported two helicopters to



A image of stricken area taken from the helicopter.



IRT transported sufferers and relief goods using the helicopters.



I R T executed ground activity for rescue too.

Proposal



- Construction of the framework by cooperation of countries, areas, and communities
- In order to improve consideration of resident voluntarily consciousness, disaster prevention education is promoted.
- Measures are promoted while relating both the damage control and reduction.
- Construction of the quick information conveyance system to disaster reduction
- Offering the technology and the knowledge from a disaster prevention advanced nation is effective.
- The large-scale disaster, especially based on the Indian Ocean Tsunami at the end of last year, approach by the cooperation between regions and construction to international donor program including developing countries are advanced.
- Installation of the special unit corresponding to large-area disasters such as a special disaster, armed attack terrorisms, and large-scale earthquakes is promoted.