Asian Conference on Disaster Reduction 2014 (ACDR2014)

Session1: HFA progress and challenges toward a post HFA

Sharing Good Practices from a Local Government : Hyogo / DRI

4 March 2014

- ***D***isaster ***R***eduction and Human Renovation ***I***nstitution ***(DRI)***
  - Director, Research Department
  - *Masahiko MURATA*

The Great Hanshin-Awaji Earthquake

➢Outline of the Damage>

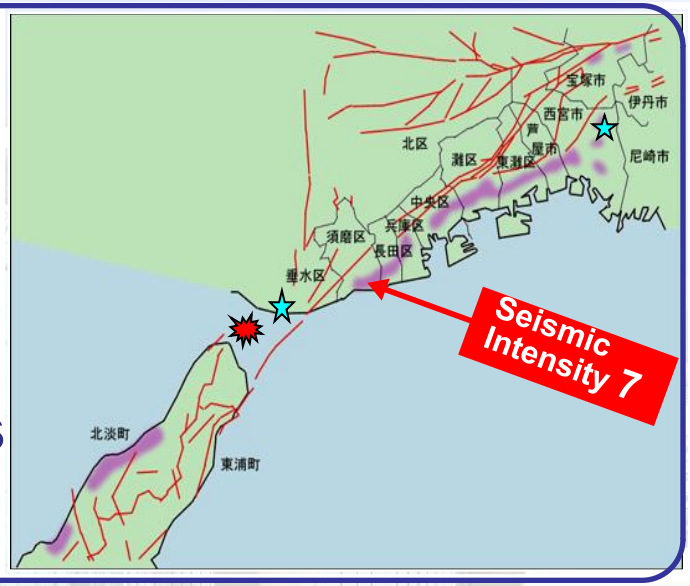
5:46 a.m. on January 17, 1995

Scale：M 7.3　Depth：16 Km

Dead：6,434　Injured：43,792

Financial damage: 10 tri¥($100bil)
(2.5% of national GDP)

Com/ Half destroyed: 249,180 bld'gs



The GHA Eq. Reconstruction Plan
(Hyogo Phoenix Plan *1995-2005*)

Basic View: Creative Reconstruction

i.e. "Build Back Better than Before"

Key Principle:

Creation of a Disaster-Resilient Metropolis where People Can Live Safely and Securely

Anticipation of the

HFA 2005-2015

HFA Progress and Challenges toward a post HFA by Hyogo / DRI along with 5 Priorities for Action

1. Ensure that DRR is a national and a local priority with a strong institutional basis for implementation
2. Identify, assess and monitor disaster risks and enhance early warning
3. Use knowledge, innovation and education to build a culture of safety and resilience at all levels
4. Reduce the underlying risk factors
5. Strengthen disaster preparedness for effective response at all levels

1 Governance and Institutional Arrangements-1)

Ensure that DRR is a national and a local priority with a strong institutional basis for implementation

Achievements

1) **Improvement of the Disaster and Risk Management System of Hyogo**

2) **Establishment of the Kansai Governments Union *(UKG)***

1) Improvement of the Disaster and Risk Management System of Hyogo

- Creation of Superintendent of Emergency Management
- Establishment of the Disaster Management Center with Standby Accommodation (24-hour Monitoring for quick response)
- Formation of Network of 6 Regional Emergency Management Bases with stored foods and items

1-1) Improvement of the Disaster and Risk Management System of Hyogo

Emergency Headquarters Control Room

Hyogo Prefectural Emergency Management & Training Center (54 ha)

Miki Earthquake Disaster Memorial Park (202ha)

Dis. Management Center

Storage warehouse (under the stand of the athletic stadium 5000m2)

1 Governance and Institutional Arrangements -2)

2) Establishment of the Kansai Governments Union *(UKG)*

Region wide Union:

- A special local public entity with an assembly and administrative commissions (Article 284 of the Local Autonomy Act)
- Flexible and multifaceted response to region wide administrative needs beyond prefectural boundaries.

Profile:

- Established: December 1, 2010
- Member prefectures(6+1): Shiga, Kyoto, Osaka, Hyogo, Wakayama, Tokushima, (Tottori) (Kobe, Osaka, Sakai, Kyoto City joined later)

Aim:

- Achieving a decentralized society

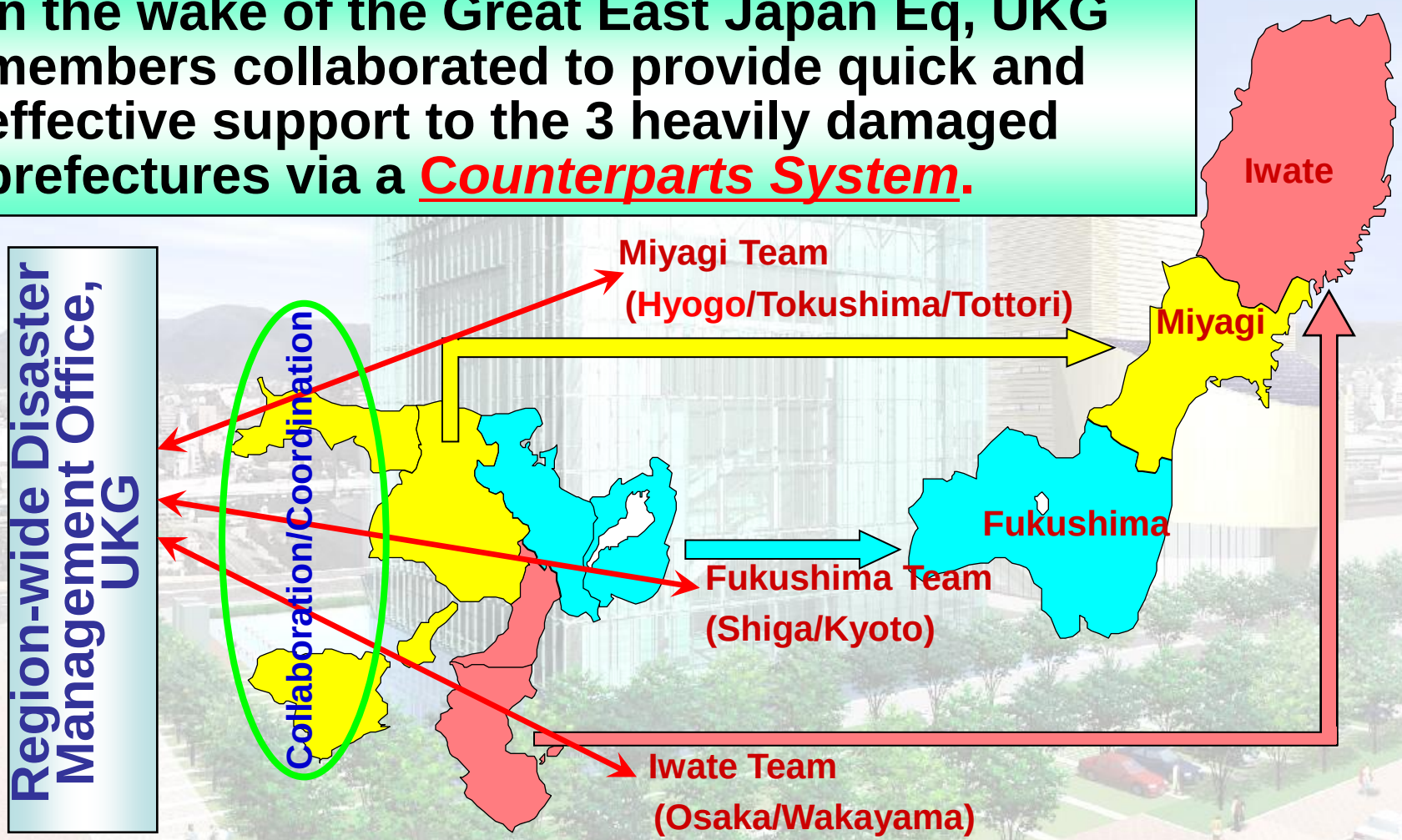
  Region dependent decision making on their own accountabilities
- Accountable for the region wide administration of the entire Kansai Region

  A single management through unified management & operation of transportation and logistics infrastructure in the Kansai Region.
- Taking on administrative tasks of local branches of the national government

  Dissolving duplication of the national and local governments to create a streamlined, efficient system.

GEJ Support System by the UKG
<Counterpart System>

In the wake of the Great East Japan Eq, UKG members collaborated to provide quick and effective support to the 3 heavily damaged prefectures via a *Counterparts System*.



Mobility, Efficiency, Speed, Continuity, and Accountability

--- Positive Speedy Support without waiting for Requests ----

2 Risk Identification and Early Warning

Identify, assess and monitor disaster risks and enhance early warning

Achievements

1) Evaluation of Nankai-trough Great Eq. & Tsunami
2) Implementation of J-Alert (Immediate Emergency Information Dissemination System)
3) Delivering Satellite Phones to villages which are prone to be isolated

○ Phoenix Disaster Management System

Launched in 1997, revised in 2004

○ Hyogo Emergency Net

Launched in 2005, provided in 5 languages

2-1) Evaluation of Nankai-trough Great Earthquake

Possible Great Earthquakes

Metropolitan

M7 class: impending to some extent

Tokai

Could happen at any moment

Tonankai/Nankai

Possible in the first half of this century

NB) Lines show major 98 faults.
In Japan, there are about 2,000 active faults, which can cause quakes at any moment, at any place.

Trench-type quakes near Chishima & Japan Trenches

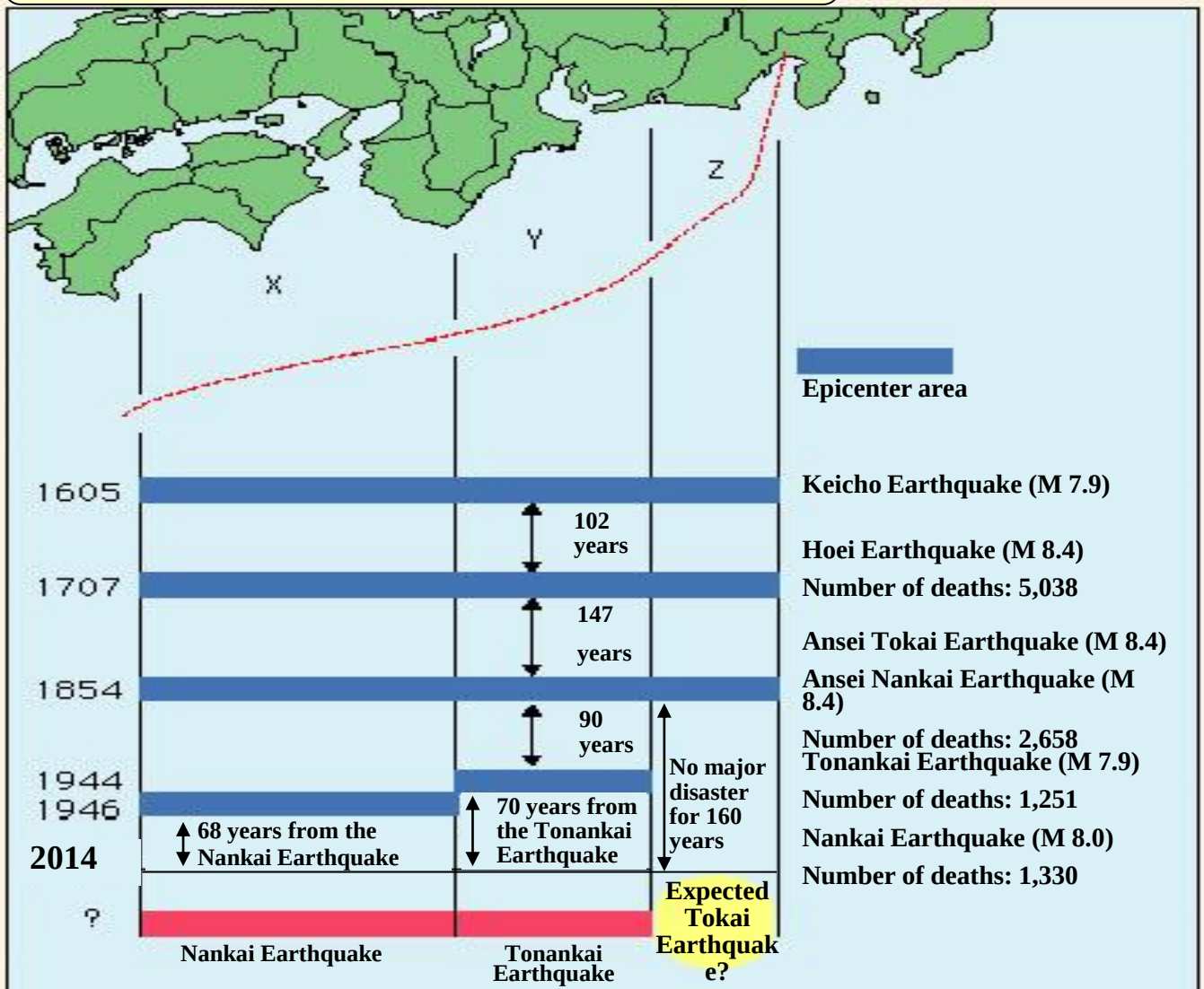
About once every 40 years

2011.3.11 Great East Japan Earthquake

Red: Magnitude 8 class
Others: Magnitude 7 class

2-1) Evaluation of Nankai-trough Great Earthquake

Occurrence Probability



Tokai Earthquake

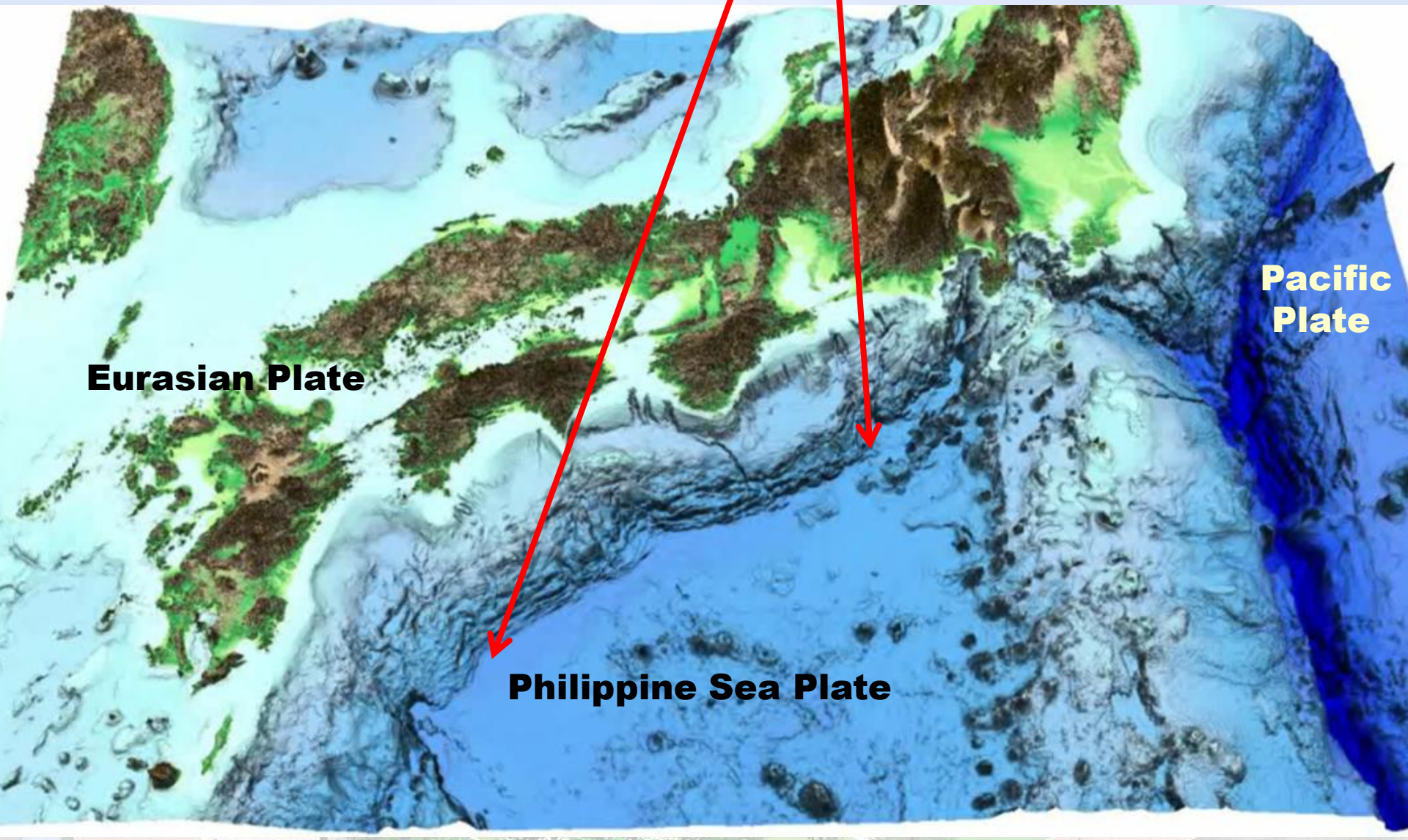
- Epicenter: Suruga trough
- Probability: May occur at any time

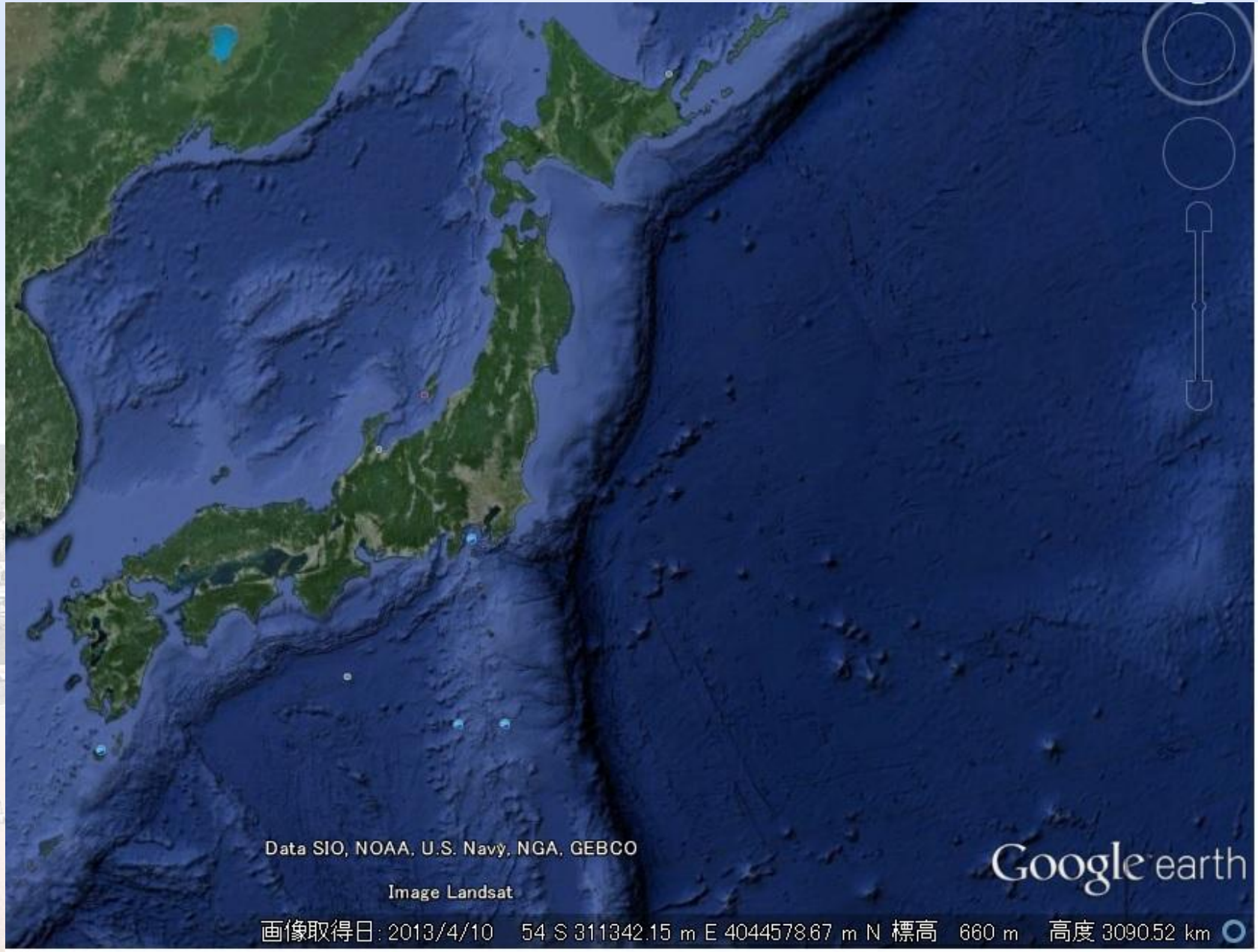
Tonankai / Nankai Earthquake

- Epicenter : Nankai trough
- Probability : about 70%

Will Occur Jointly

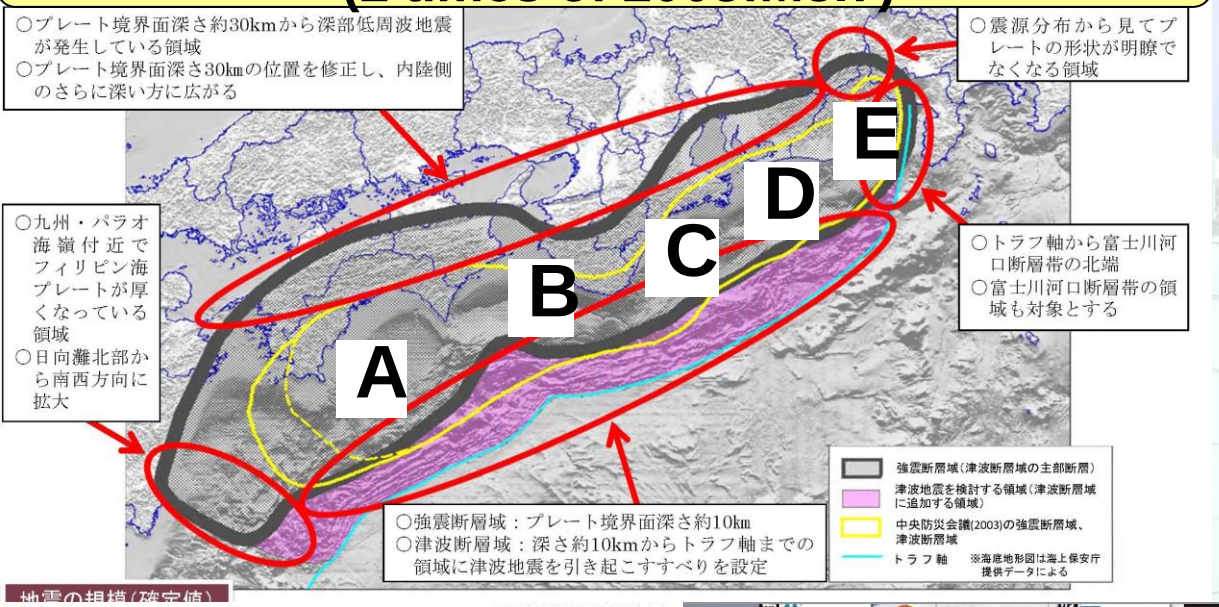
Nankai Trough

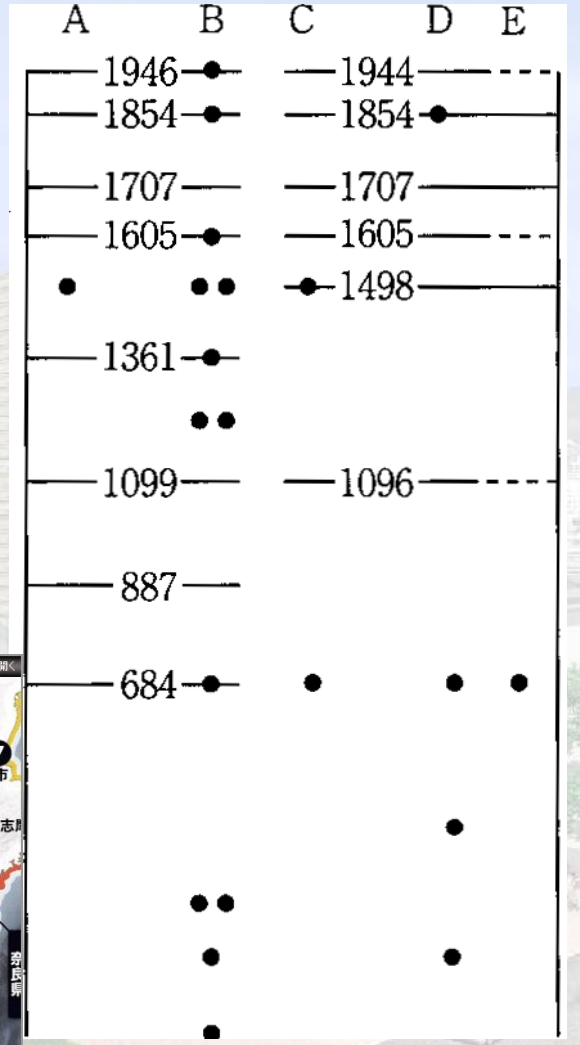



Data SIO, NOAA, U.S. Navy, NGA, GEBCO
Image Landsat
Google earth
画像取得日: 2013/4/10　54 S 311342.15 m E 4044578.67 m N 標高　660 m　高度 3090.52 km

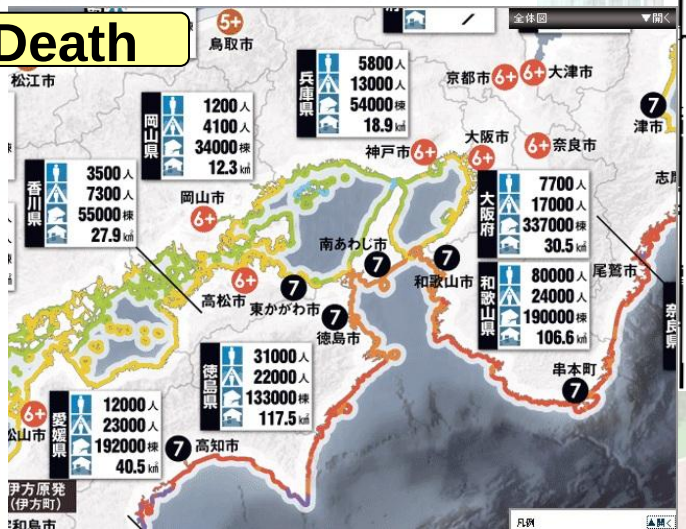
Estimation of the Greatest Eq. and the Damage

Expanded Epicenter Area Dec. 2011: M9 (2 times of 2003:M8.7)





Worst Scenario: 320,000 Death



Estimation of the Greatest Tsunami Height

Movement of the CAO Japan

Guidelines for Tonankai and Nankai Earthquake Emergency Response Activities (Reduce Damage by half)

Action in Hyogo prefecture

Regional Dis. Management Plan based on past maximum Ansei-Nankai Earthquake （in 1854, M8.4）

Occurrence of Great East Japan Earthquake

"Unexpected" is not acceptable Thorough action to protect lives

CAO

Study of the greatest Earthquake ・Tsunami

Mar *2012: Seismic intensity and Tsunami Height*

Aug 2012: Inundation forecast map

Mar 2013: Damage Estimation

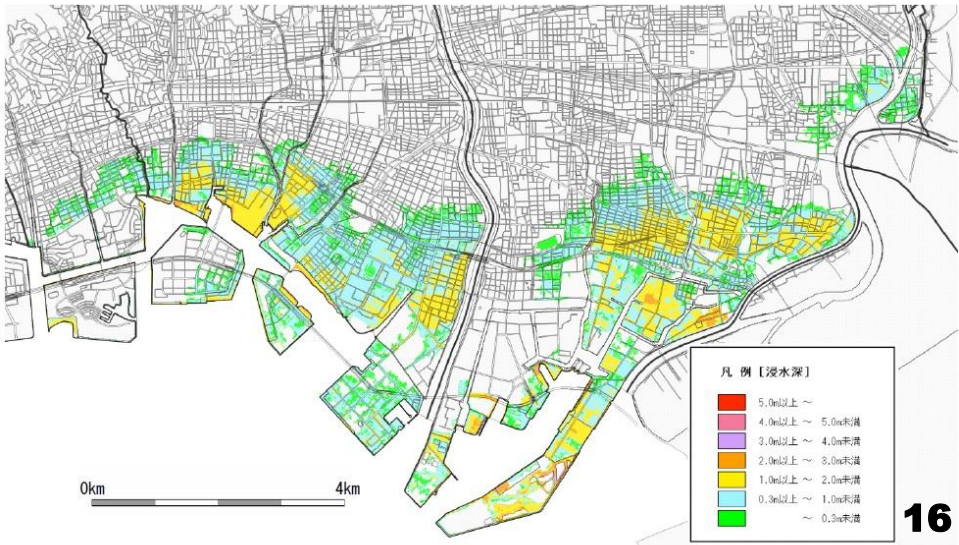
Hyogo

Estimation of Tsunami height and inundation Area

- Provisional Estimation of the L2(max) Tsunami inundation (Published Oct 2011-Mar. 2012)
- Precise Estimation of L2 Tsunami inundation (Published 2013 Dec-2014Feb)

Estimated Tsunami Height

	Hyogo 2013 (2011Double provisional)	CAO Estimation (2012/8/29)
Kobe	3.9 (4.2)m	4m
Amagasaki	4.0 (5.0)m	5m
Nishinomiya	3.7 (5.2)m	5m
Ashiya	3.7 (5.0)m	5m
Sumoto	5.3 (7.3)m	6m
Minami Awaji	8.1 (10.9)m	9m
Himeji	2.5 (5.1)m	4m



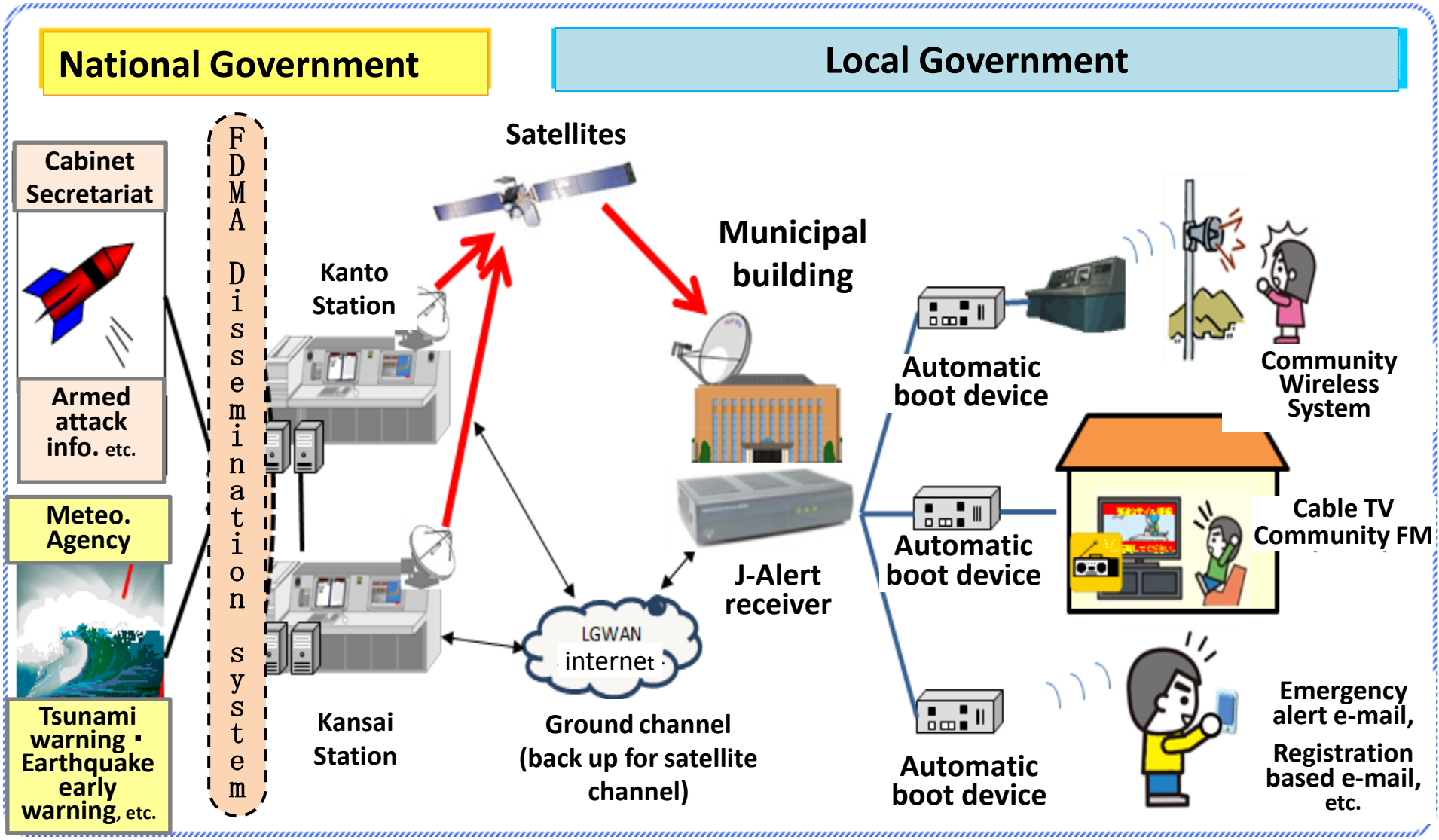
2-2) Implementation of J-Alert
<Immediate Emergency Information Dissemination System>

Outline of J-Alert System

- The Immediate Emergency Information Dissemination System (J-ALERT) is a system that disseminates Weather-related Information from the JMA and Emergency-related Information from the Cabinet Secretariat to local governments through satellites and immediately activates boot devices of municipalities automatically, and realizes immediate dissemination of emergency information directly to the public.
- Fire and Disaster Management Agency (FDMA) sends information number and target area code, etc. and all local governments receive them.
- Only municipalities that correspond to those area codes will provide automatic information dissemination by pre-recorded voice or texts for each information code.

2-2) Implementation of J-Alert

J-Alert Conceptual Diagram



2-2) Implementation of J-Alert

Status of J-ALERT Implementation at municipalities

(As of May 2013)

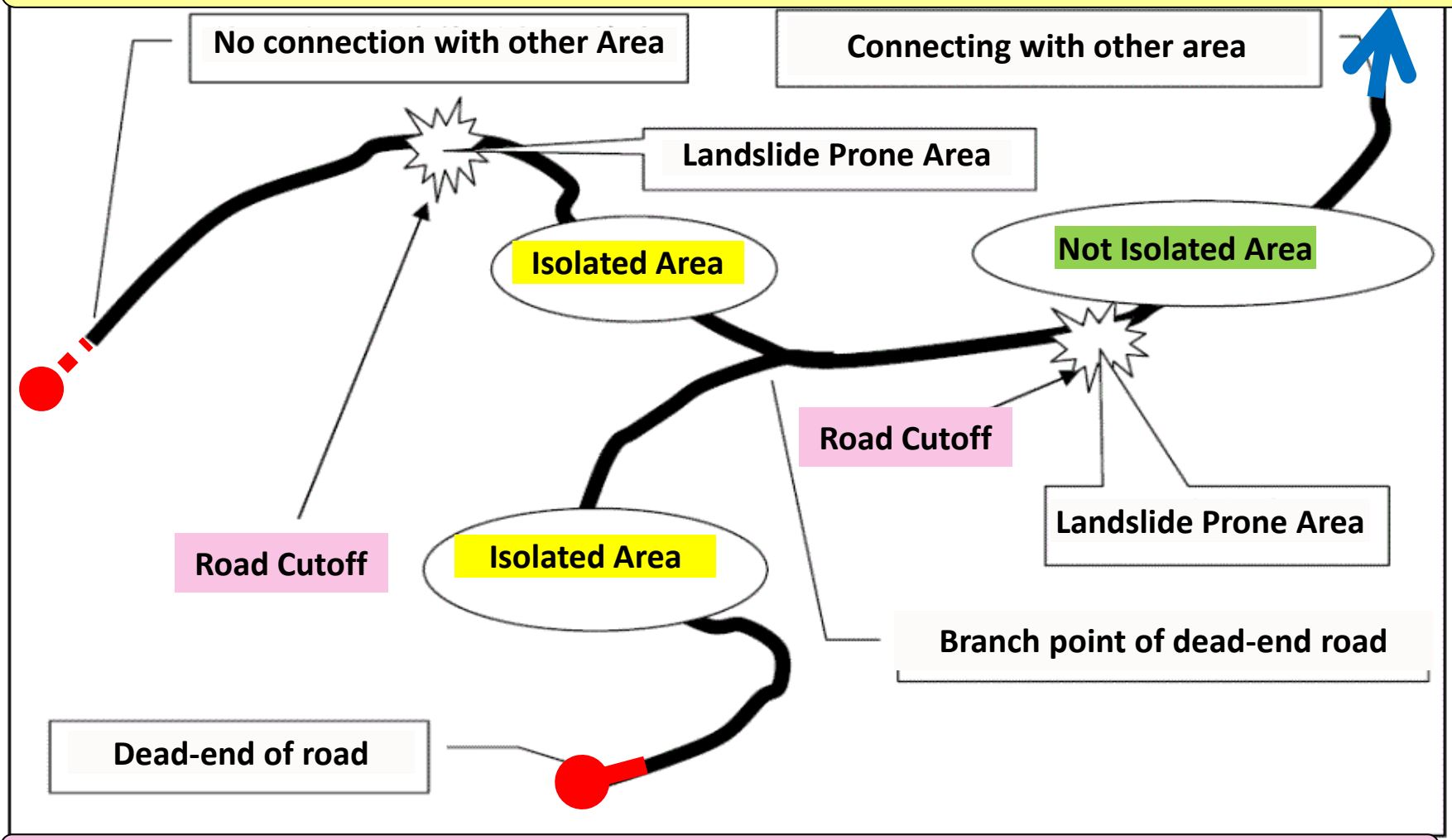
- **Municipalities already installed J-Alert Receiver :**
  1,735 / 1,742 (99.6%)
  <Hyogo: 41 / 41 (100%) >
- **Of those, already installed automatic boot device (*) :**
  1,359 / 1,742 (78.0%)

<Hyogo: 30/41(73.2%); May 2013→41/41 (100%); Mar.2014>

(*) On receiving info. by J-Alert receiver, activates boot device without any operation by personnel at each municipality and immediately disseminates the message to the public.

2-3) Delivering Satellite Phones to Villages which are Prone to be Isolated

456 Villages are prone to be isolated* in Hyogo



* No Access by car because of road cutoff etc.

2-3) Delivering Satellite Phones to Villages which are Prone to be Isolated

- When disaster occurs, to keep communication with all remote villages (besides land-line phone and mobile phone, which may be disconnected in case of large disasters) is important to secure villagers' lives
- Hyogo decided to deliver satellite phones or other communication facilities to 456 isolation prone remote villages
- 178 Villages (39%) got Satellite Phones with back-up battery and portable power generator (by LPG gas/ not gasoline) by financial support of the Pref. Government
- 136 Villages have other radio communication system
- Other villages have foot paths to neighboring villages, which have satellite phone

3 Knowledge and Education

Use knowledge, innovation and education to build a culture of safety and resilience at all levels

Achievements

1) Human resource development at *DRI*

- **Education programs at Maiko High school (Environment and Dis. Mitigation Course), Education Center for Dis. Red. of Uni. of Hyogo**
- **Publishing of Dis. Man. Manuals for foreign residents, Guide book for family**

3-1) Human resource development at *DRI*

The Great Hanshin-Awaji Earthquake Memorial

Disaster Reduction and Human Renovation Institution (*DRI*) Since 2002

(West Bild.)

(East Bild.)

Executive Director
Dr. Yoshiaki Kawata

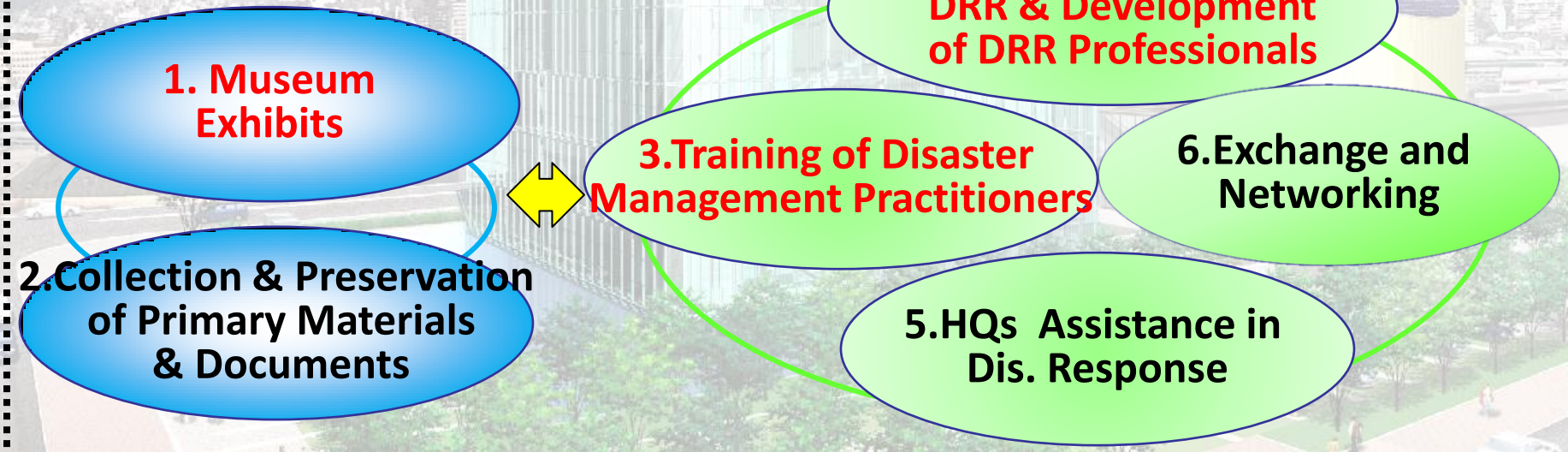
The outline of the DRI

Mission

Realizing a safer and more secure civil society

- ***Cultivating a Disaster Resilient Culture, reducing social risk and vulnerability***
- ***Developing Policies for Disaster Reduction***

6 Main Functions



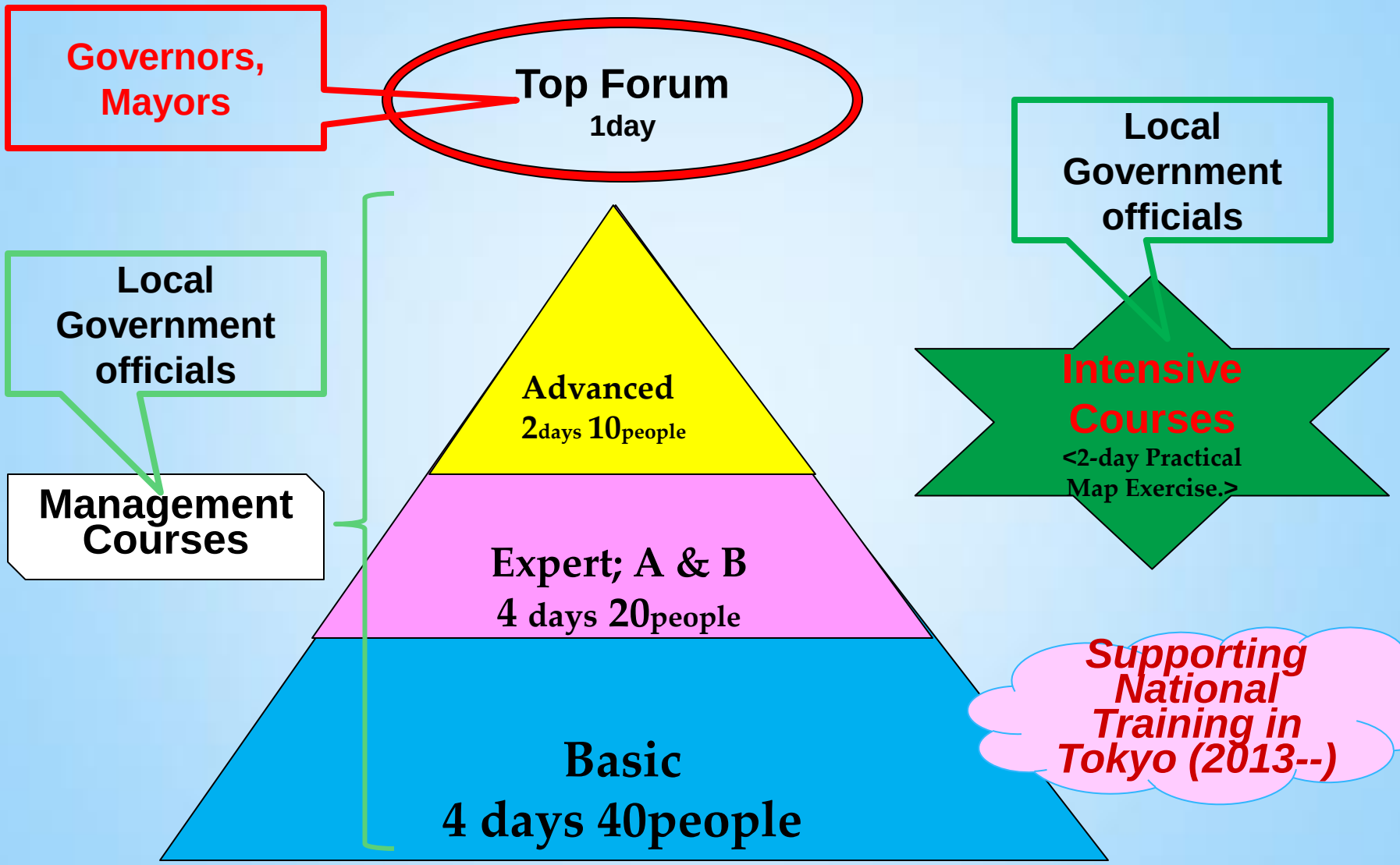
Experiences and lessons from the Great Hanshin-Awaji Earthquake

DRR Education through Museum Exhibit

World's Largest DRR Educational Museum

- **Around 500,000 visitors every year to learn Kobe Experiences <Got 5 mil. Visitors on 27 July 2012>**
- **60% are students for school excursion**
- **5% from abroad**
- **Staff of local governments, Community dis. man. personnel**

Training of Disaster Management Practitioners



4 Underlying Risk

Reduce the underlying risk factors

Achievements

1) Hyogo 5-year Infrastructure Implementation Plan for Tsunami Disaster Reduction

2) Reinforcement of buildings (Houses, Public Buildings)

○Phoenix Mutual Aid System for Housing Recovery

Great East Japan Eq. & Tsunami

Great Tsunami (Much higher than the previous estimation and plan) overflowed seawalls and destroyed them, and caused extreme damage

【岩手県宮古大橋付近】

【岩手県大船渡地区】

To secure lives and property, enough preparedness for the coming Nankai Trough Great Eq. and Tsunami is Crucial

→Developed *'Hyogo 5-year Infrastructure Implementation Plan for Tsunami Disaster Reduction'* in Feb. 2013

4-1) Hyogo 5-year Infrastructure Implementation Plan for Tsunami Disaster Reduction

Level 1 Tsunami
Equivalent level of Ansei-Nankai Earthquake
Once in 100 years

○ **Basic idea of measures**

Protect from overflow of tsunami by seawall

○ **Measures to be taken**

Tsunami disaster prevention measures	①Upgrading of Seawall <secure the height, maintenance for the soundness> ②Quick and Secure Closedown of Water Gates (sluice gates) <automation, remoteness, motorization>
Evacuation support measures (Common to the L2)	1)Evacuation Support for Road-users, such as highways (building of stairs for evacuation, etc.) 2)Provide Real-time Information to the public (monitoring camera in port) 3)Awareness raising for DRR, Dissemination of DRR Learning Conducting Evacuation Drills **4)Designation of tsunami evacuation buildings**

Level 2 Tsunami
The greatest classification (M9.0)
Once in 1000 years

○ **Basic idea of measures**

Accept overflow partially, but reduce inundation damage by improving of the structure of seawall.

Also, promoting evacuation measures.

○ **Measures to be taken**

Reinforcement of Existing facilities	①Overflow and back-flow countermeasures **Reinforcement of backside of seawall against overflow and back-flow of overflowed wave**
Tsunami damage reduction	①Reduction of Tsunami overflow area **Relocation of sluice gates to downstream** ②Waterproofing of water drainage pumping station **Relocation of mechanical and electrical equipment to higher place**
Evacuation Support	Common to the L1

Level2 Tsunami Countermeasures (Implementation of Resilient Seawalls)

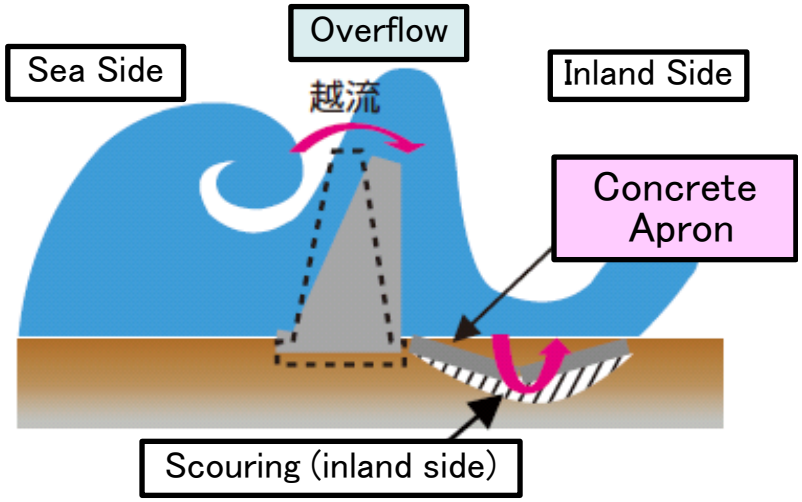
Target: Seawalls, which may overflow by L2 Tsunami

Aims: Reinforce seawalls to be Resilient (not to be easily broken) by

①Tsunami Power

②Scouring (by overflowing; inland side)

③Scouring (by back-flow; both side)



Methods : Reinforcement of Concrete Apron

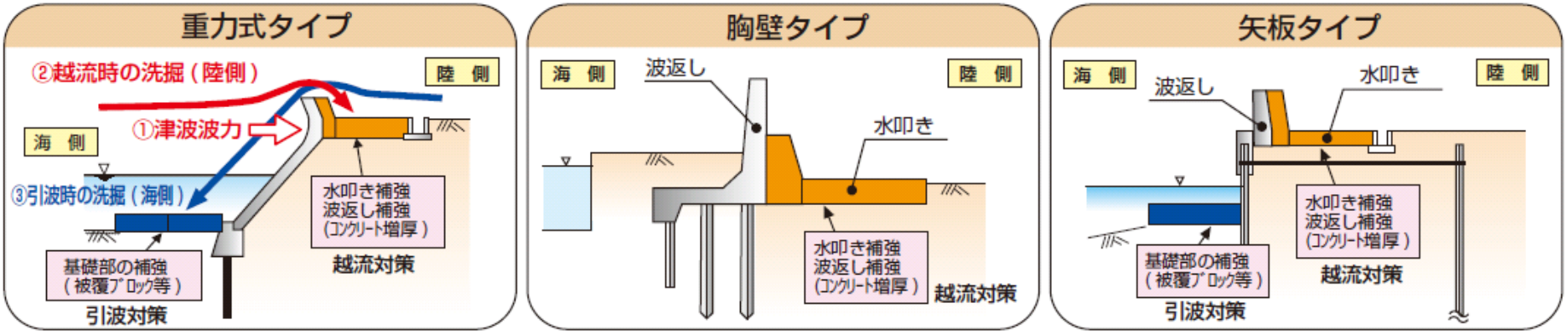
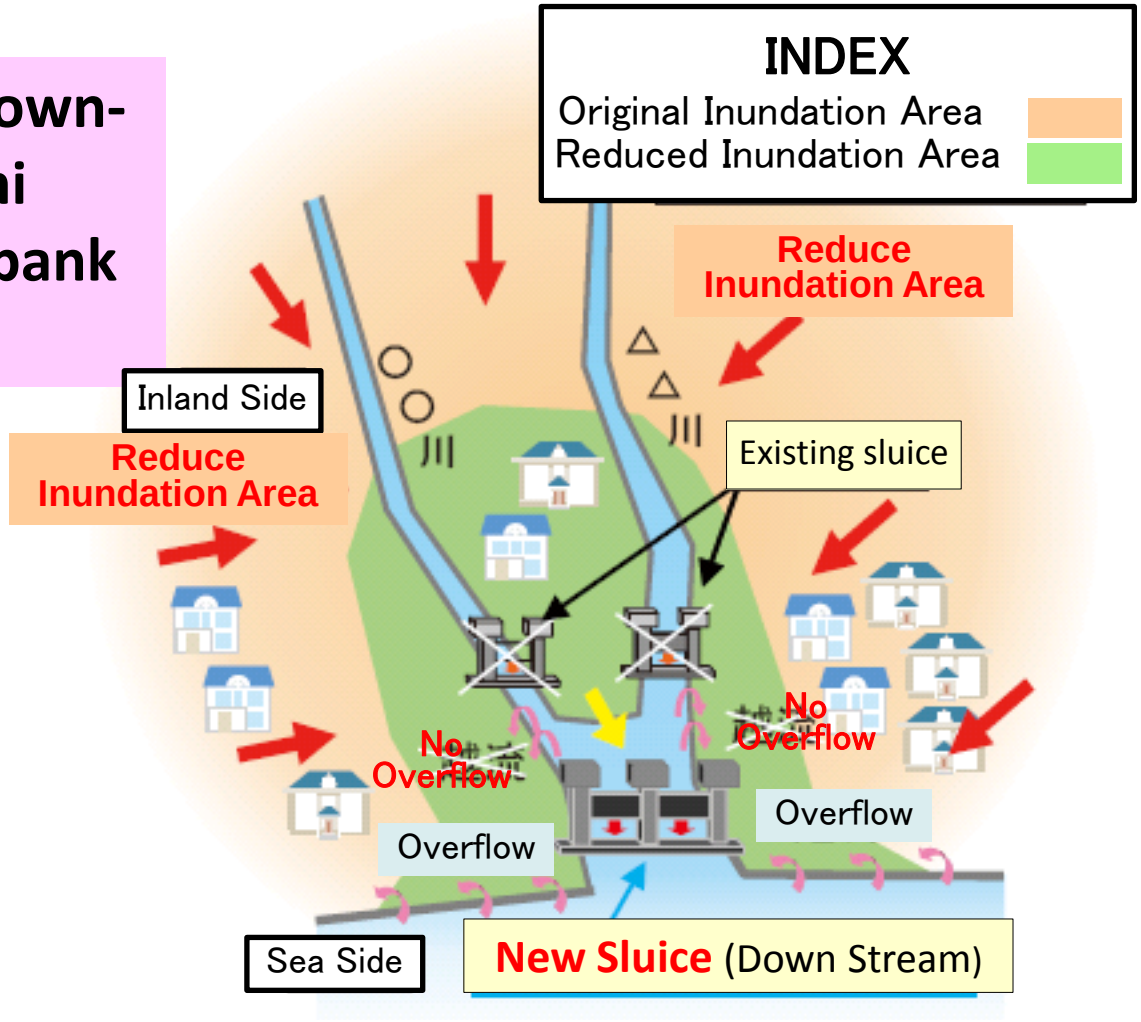


図 5.1.8 防潮堤タイプ別の越流対策・引波対策

Level2 Tsunami Countermeasures 2 (Reduction of Inundation Area)

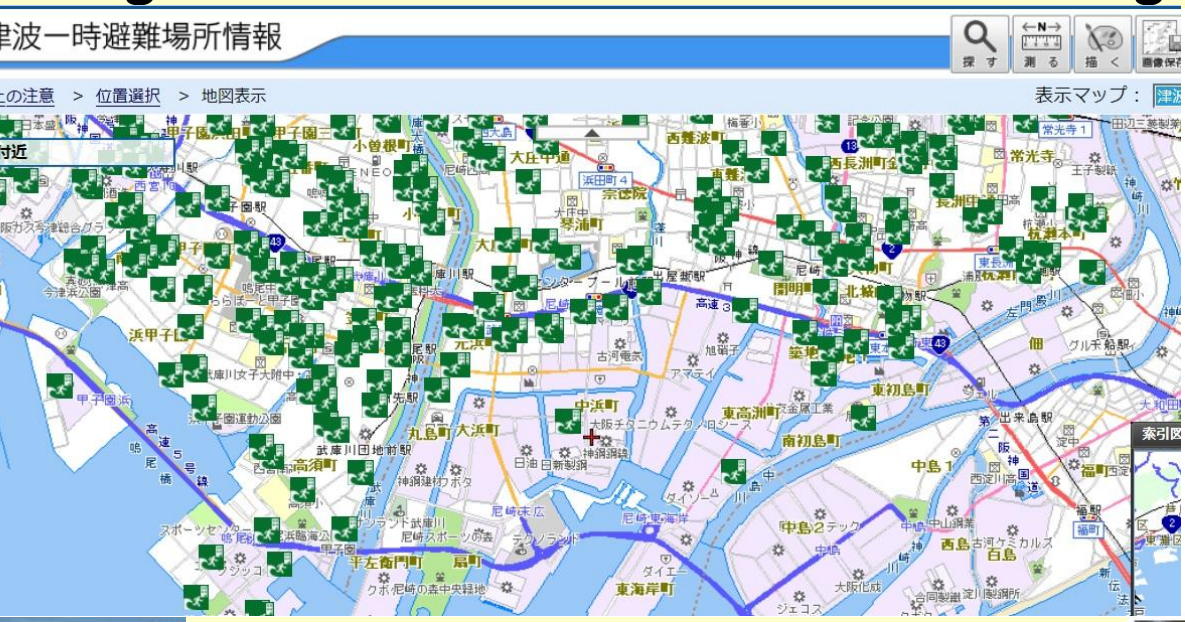
Relocate sluice gates to down-stream, to reduce Tsunami overflow section of river bank and inundation area

Target Rivers (Example):
The Higashi, Nishinomiya



Level 1&2 Tsunami Countermeasures 3 (Evacuation Support)

Designation of Tsunami Evacuation buildings (Published on the Web)



Improvement of Evacuation Routes

Solar Battery and LED for night evacuation

Steps to higher place

32

Level 1&2 Tsunami Countermeasures 3 (Evacuation Support)

‘Let’s Evacuate Together’ Campaign

Organizing of drills at communities

4-2) Reinforcement of buildings (Houses, Public Buildings…)

Reinforcement of buildings against Eq.

Hyogo Promotion Plan of Building Reinforcement

	2006	→	2015
Housing	78.5%	→	97%
Public Building	70%	→	92%

Shaking Examination at **E-Defense**, Hyogo

Without reinforcement

Reinforced House

提供：独立行政法人防災科学研究所

5 Preparedness and Response

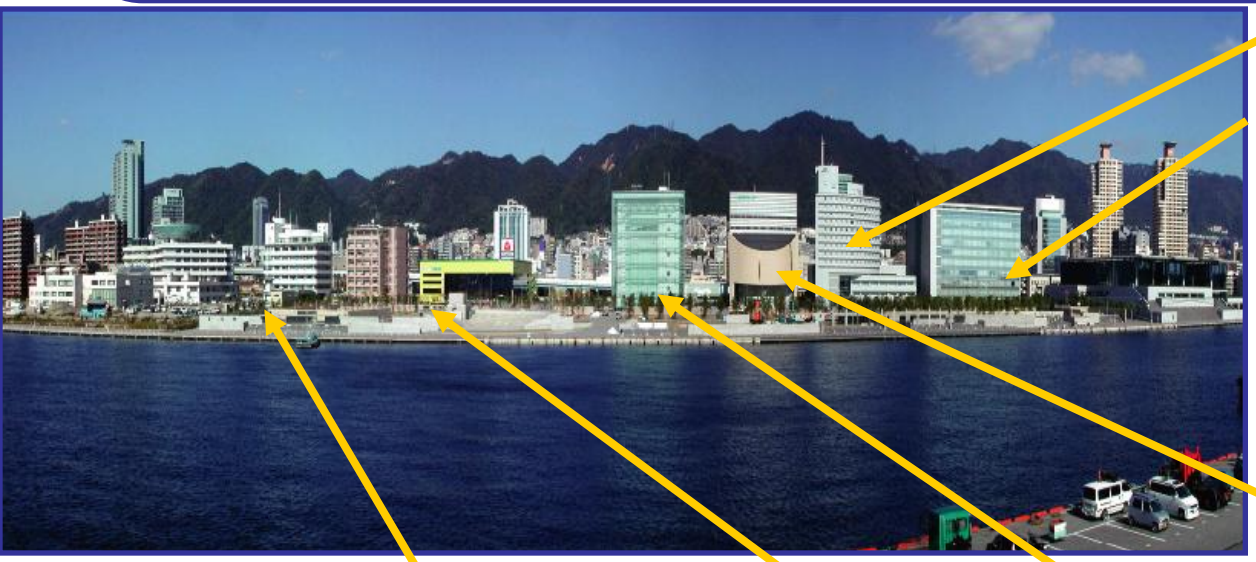
<Strengthen disaster preparedness for effective response at all levels>

Achievements

- DRR Training Courses for Community Leaders (Hyogo Pref. Emergency Management and Training Center)
- Support of Community Disaster Management Groups
- Delivering of BCP guidelines for small and medium–sized companies

Base for International Disaster Management and Humanitarian Support

- DRA in the Kobe New Eastern City Center
- Home to many international institutions related to DRR, medicine, health, and environment, such as UNISDR,OCHA,ADRC, IRP & WHO



- JICA Kansai International Centre
- WHO Kobe Centre
- UNISDR
- UNOCHA
- IRP
- ADRC
- APN Centre
- EMECS
- IGES
- The Great Hanshin-Awaji Earthquake Memorial Research Institution
- Hyogo Earthquake 21st Century research Institute
- Education Center for Disaster Reduction,University of Hyogo
- Disaster Reduction & Human Renovation Institution(DRI)
- Hyogo Emergency Medical Center
- Japanese Red Cross Society Hyogo Chapter
- Hyogo Institute for Traumatic Stress
- Kobe Marine Observatory

● International Organization ● Recovery Base

Thank you for your attention!!!

- ***D***isaster ***R***eduction and Human Renovation ***I***nstitution ***(DRI)***
  - Director, Research Department
  - *Masahiko MURATA*

DRI