



Capacity Building for National-wide Search and Rescue Team and Preparedness of Earthquake Catastrophe

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Outline of Presentation

1. Risk Assessment and Disaster Preparedness
2. Cases Analysis of SAR Operation in Recent Earthquake Disasters
3. Global Earthquake Disasters and Emergency Responses
4. On-site USAR Teams Distribution and Coordination in Earthquake Disasters
5. Capacity Assessment and Buildings of National-wide SAR Systems
6. Recommendations

1. Risk Assessment and Disaster Preparedness

**5-6 times of death in first
11 years of 21/20 century**

The total death caused by earthquakes in global scale is 1700,000 in 20 century. But in the first 10 years of this century, the total death caused by earthquakes is about 800,000 people, five times more than the total death of the first 10 years in last century.

Earthquake Catastrophe and Features of EM and SAR

1. Emergency.
2. Huge square.
3. A plenty of casualty.
4. Serious damages of infrastructures.
5. Communication break off and very difficult to get disaster situation.
6. The lower degree of emergency response, and lower effective in early stage.
7. Limited objective of SAR and week decision making in early stage.
8. Self-saving and saving each other, local SAR resources in early stage.

Seismic and induced risks must be assessed

It is necessary to classify the risks of earthquake disaster and its induced landslides and mudflows and to identify the high risk area locally, and to make the preparedness.

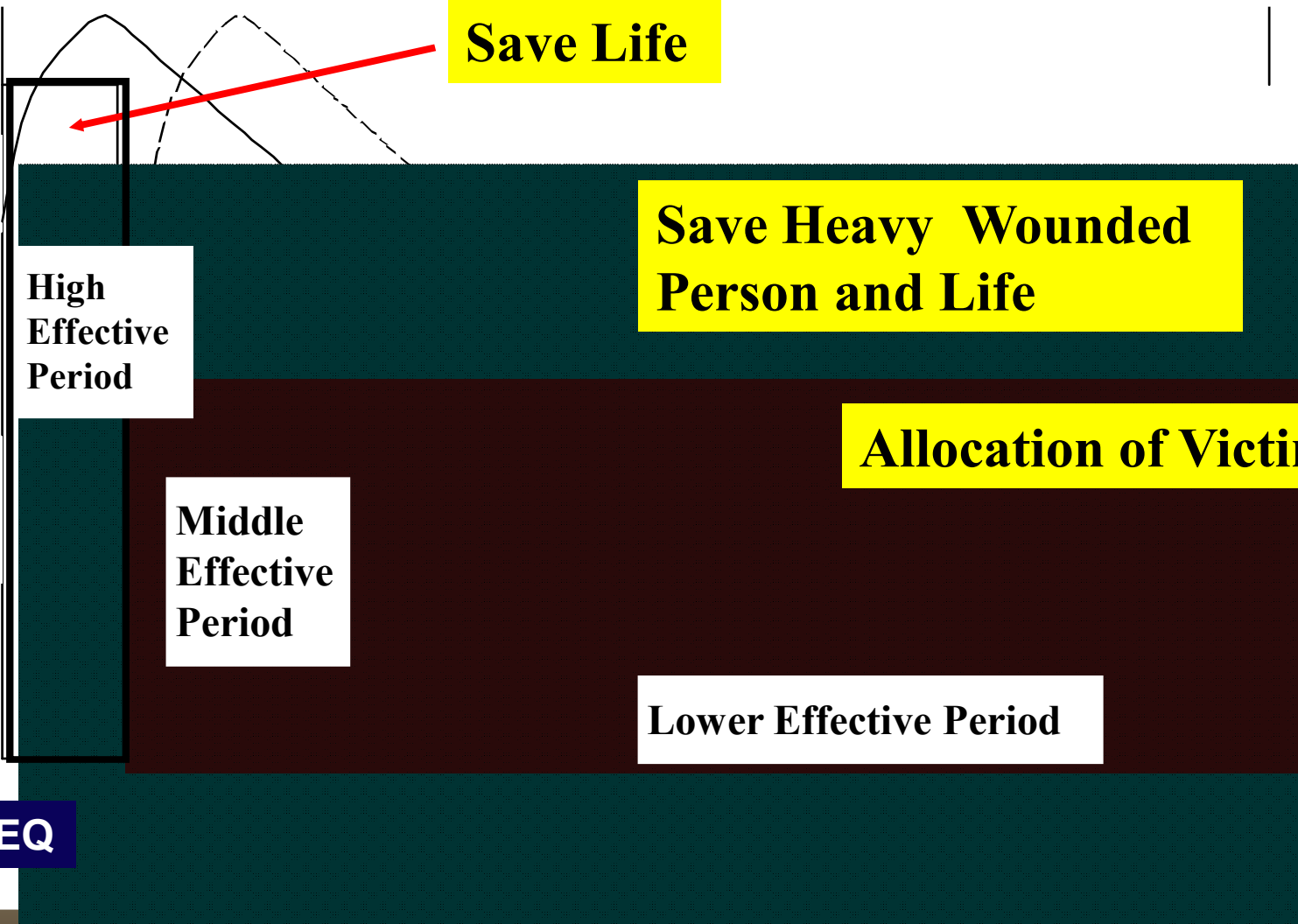
It is necessary to estimate the death toll and direct economic losses by the scenario earthquake so that the local gov. could assess and build up the USAR capacity and local SAR's capabilities.

Results of Cases Analysis

The capacity of how to realize the real-time early warning and emergency evacuation before disaster, on-site emergency and efficient organization of SAR operation , coordination during disaster is the key for huge mass disaster mitigation and emergency.

Many SAR cases show that First Responders are the main efficient on-site SAR powers, the local SAR powers are the dominate resources, but NSAR team is the flag for disaster SAR operation.

Rescue Rate



EQ

Save Life

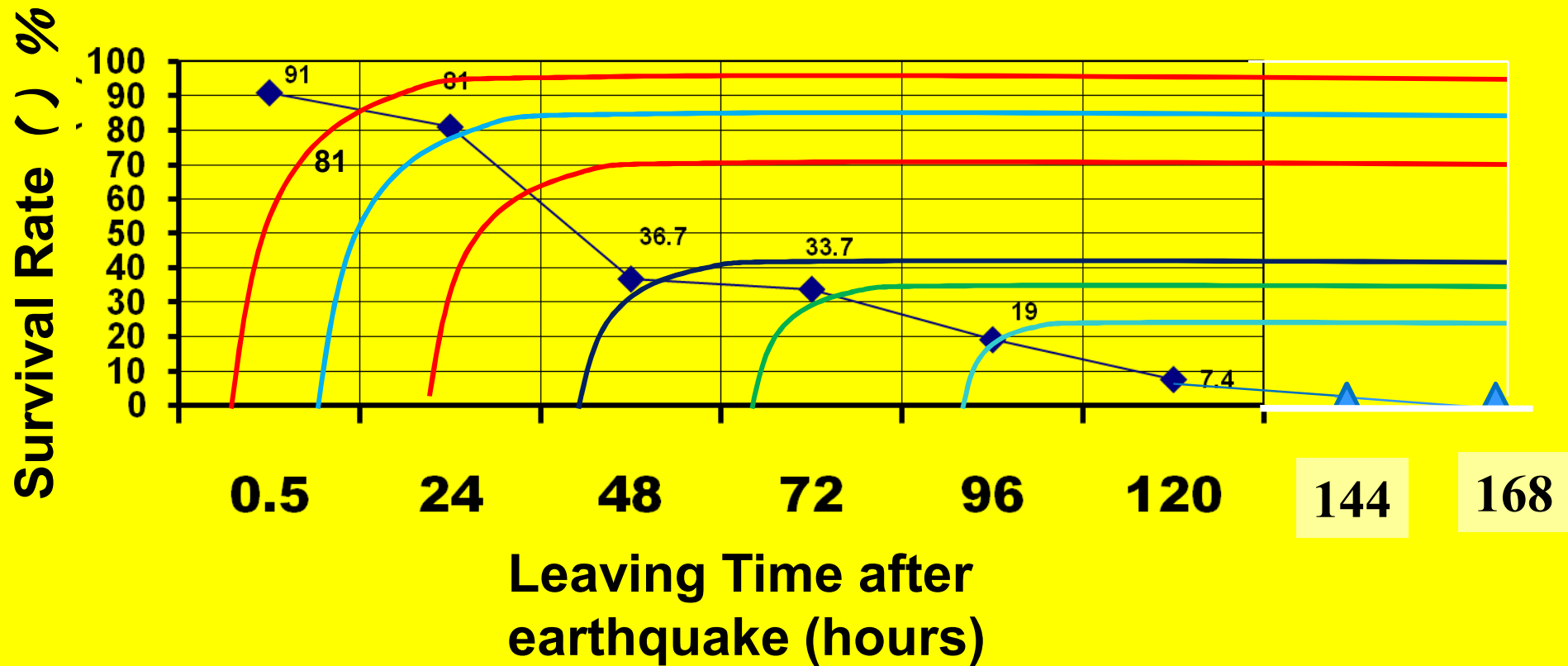
Save Heavy Wounded Person and Life

Allocation of Victims

Lower Effective Period

days

Survival Rate/Rescue Rate



: Average Survival Rate

: Arriving Time of USARs Distribution

Response to Catastrophe

1. 1 Risk Assessment
- 1.2 Emergency-Preparedness
- 1.3 Emergency-Plan
- 2.1 Emergency-Response
- 2.2 Disaster Information-Collection
- 3.1 SAR Arrangements
- 3.2 On-site Coordination
- 3.3 Rescue Resources Arrangements
4. Allocation of Homeless People
5. Recovery and Reconstruction

1. Emergency Preparedness
2. Emergency Response
3. Emergency SAR
4. Allocation of
5. Recovery and Reconstruction

2. Cases Analysis on SAR Operation of Recent Earthquake Disasters

Simulated Accelerated Map of Chile Earthquake by CEA and NERSS

**Death Toll is 850 Persons, 5
days finish rescue operation.**

Domestic and neighboring country teams were mobilized to the disaster hit area



Rescue Operation of Chinese Government

30 minutes after getting parameters of Haiti earthquake, we estimate that the earthquake will cause catastrophe. Two hours later to start up the CISAR, 7 hours later departure from Beijing..

Rescue Operation of UN

69 international USAR team in Haiti. OSOCC set up in the airport.

Rescue Operation of Haiti Government

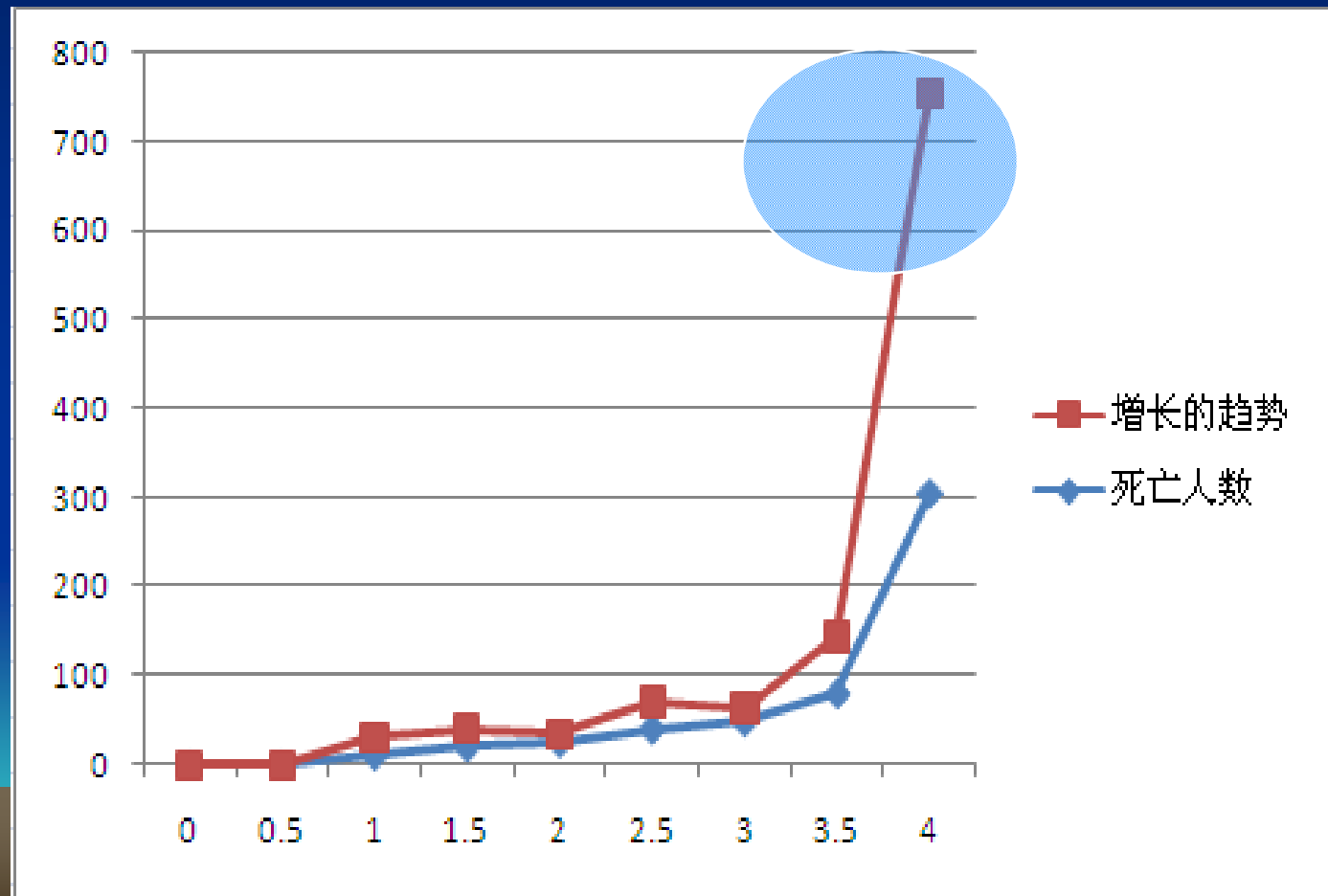
No response, no rescue team.

Fast Estimation of Earthquake Disaster

We estimate the death toll of Chile earthquake will be 1000 14 hours later of the earthquake.

CISAR did not operate in this earthquake.

Death toll estimation after earthquake in 14 hours



Time sequence of the rescue teams arriving at the disaster sites

14:28
Earthquake
took place

Self-saving and saving each other

School, police, and the governments in the disaster

Mining rescue team in the disaster area

County level fire rescue team and the armed forces

Toops of Chengdu Area

CISAR

Rescue teams form the neighboring provinces and mining rescue teams

Rescue teams from farther provinces

International rescue teams

Begin

23 provinces

End

0.0h

0.5h

1 — 2h

8.0h

May 13

May 14

May 15

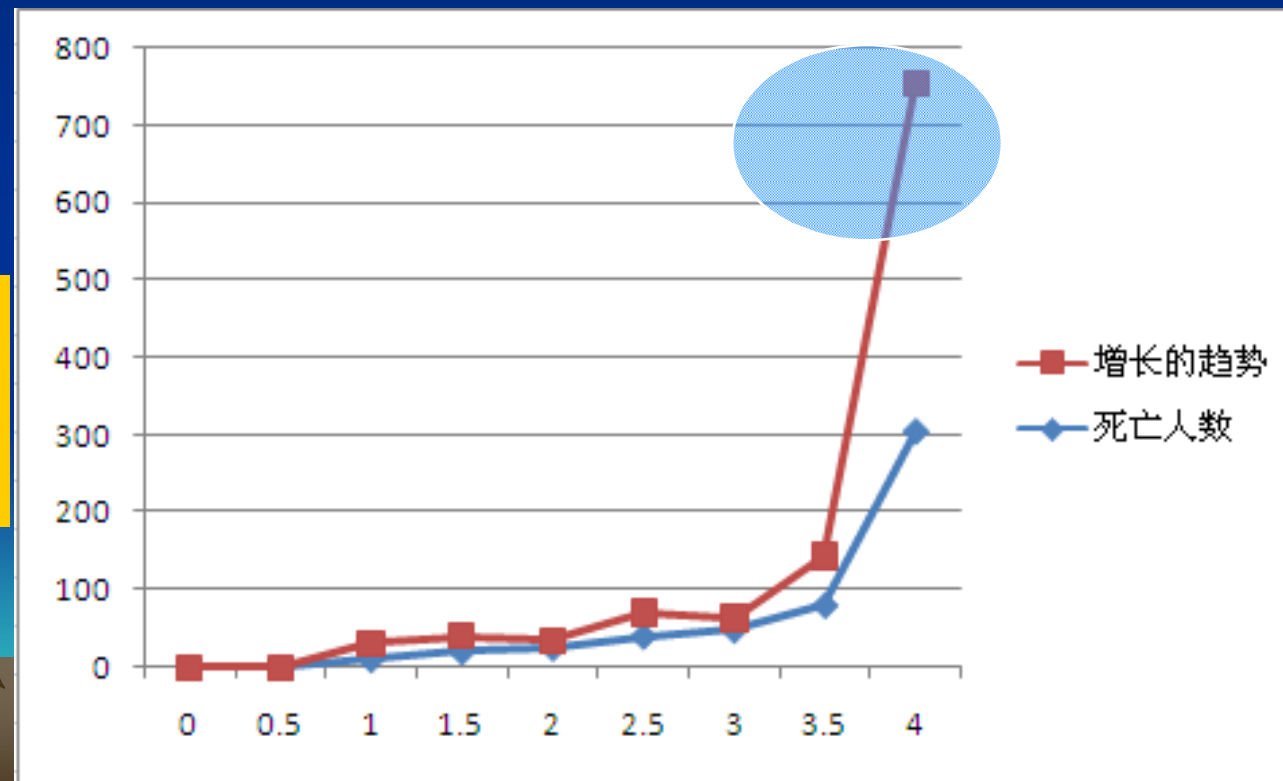
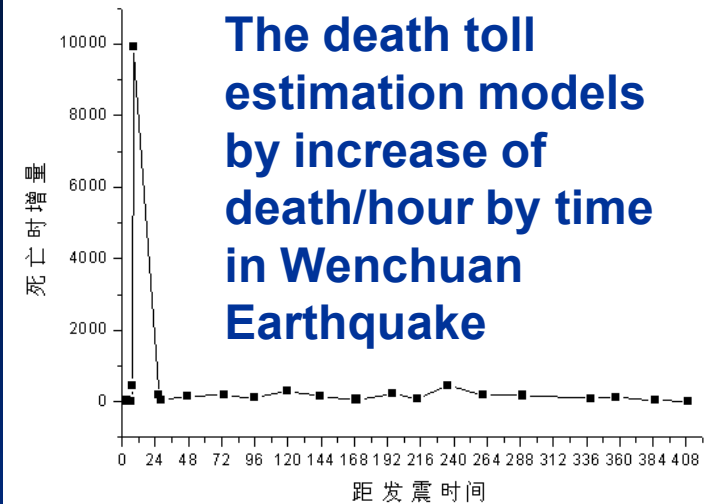
May 20

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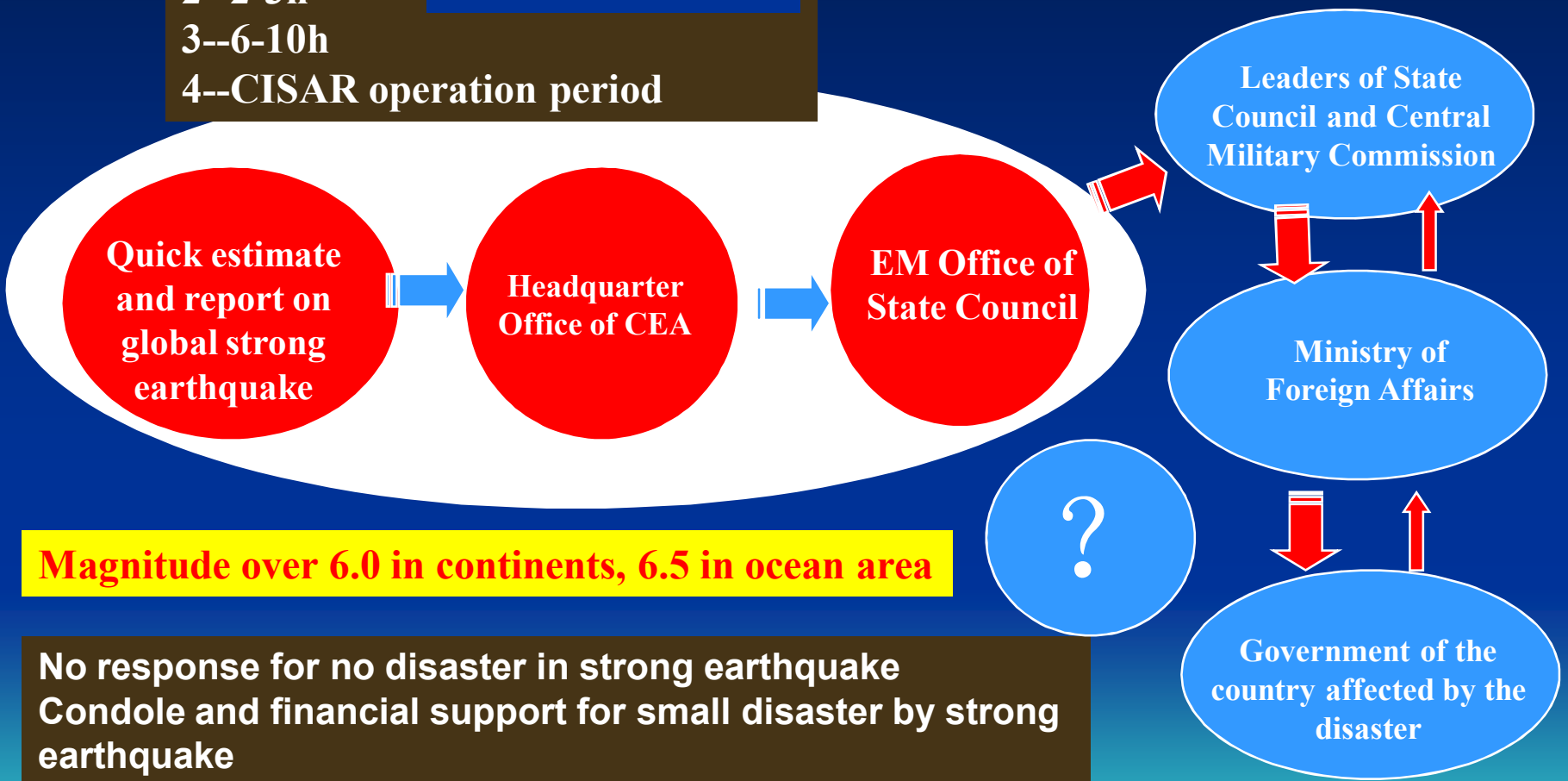
3. Global Earthquake Disasters and Emergency Responses



International responding procedures for strong earthquake and severe disaster of Chinese Government

Task of National Earthquake Response Support Service (NERSS)

- 1--0.5h
 - 2--2-3h
 - 3--6-10h
 - 4--CISAR operation period
- Since 2007**



Magnitude over 6.0 in continents, 6.5 in ocean area

No response for no disaster in strong earthquake
Condole and financial support for small disaster by strong earthquake
Rescue operation for huge disaster by strong earthquake

Quick Response, quick decision-making, rescue starting up, and on-site operation

60-70 times response/year
1-2 years/rescue in large disaster

Classification of Earthquake Disaster Grades

Grades of disaster	Critical Level		Early decision
	Death Toll	GDP /Economic Losses	High density population area
Catastrophe	Over 300	Over 1%	Large than 7.0
Serious Disaster	50 – 299		6.5 – 7.0
Moderate disaster	20 – 49		6.0 – 6.5
Light disaster	Less 20		5.0 – 6.0

Earthquake Disaster Response Levels

According to our work and experiences, there are 3 type response levels to earthquake disasters:

Green

- Type1: NO response Level (no any action)

Orange

- Type2: Intermediate response Level (such as Information support/dispatch of the working group/financial and material assistance)

Red

- Type3: Advanced Response Level (CISAR and all related agency will be activated/national level)

Onsite Commanding System

Real Time Telecommunication



Personal Based

Vehicle based

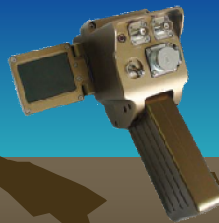
Air-Plane Based

All Weather Information
Collection End Users

All Weather Information
Collection End Users

All Weather Information
Collection End Users

All Weather Monitoring Instruments



Video for all weather—night no electricity, fog, dust, thinner cloud

INTERNATIONAL USAR RESPONSE ENTITIES

- **UN OCHA (Office of Coordination for Humanitarian Affairs)**
- **LEMA (Local Emergency Management Authority)**
UNDAC (United Nations Disaster Assessment and Coordination)
- **USAR (Urban Search and Rescue)**
- **OSOCC (On-Site Operations Coordination Centre)**
RDC(Reception Departure Centre)
- **Virtual OSOCC**

4. On-site Coordination in Earthquake Disasters



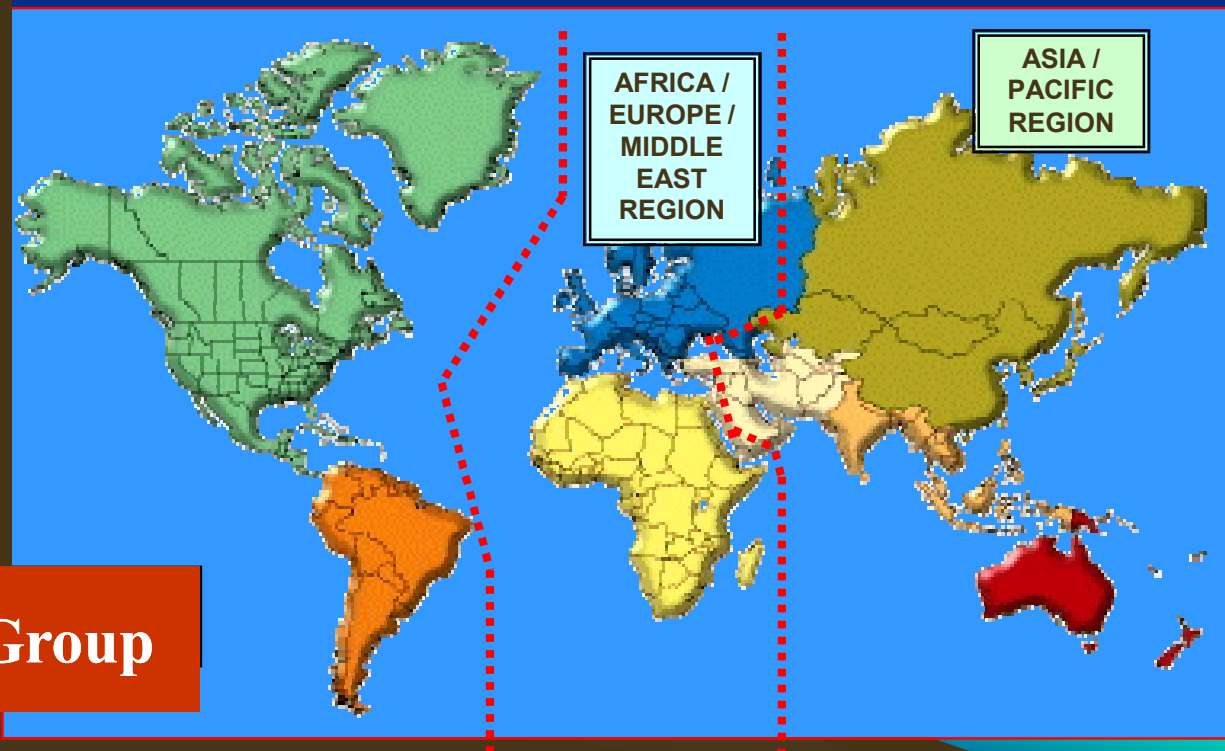
INSARAG – Guideline

Its purpose is to provide a platform for information exchange to

- define standards for international USAR assistance
- develop methodology for international cooperation and coordination in earthquake response.

INSARAG is an inter-governmental network under the United Nations umbrella, which deals with urban search and rescue (USAR) response issues.

INSARAG Regional Group



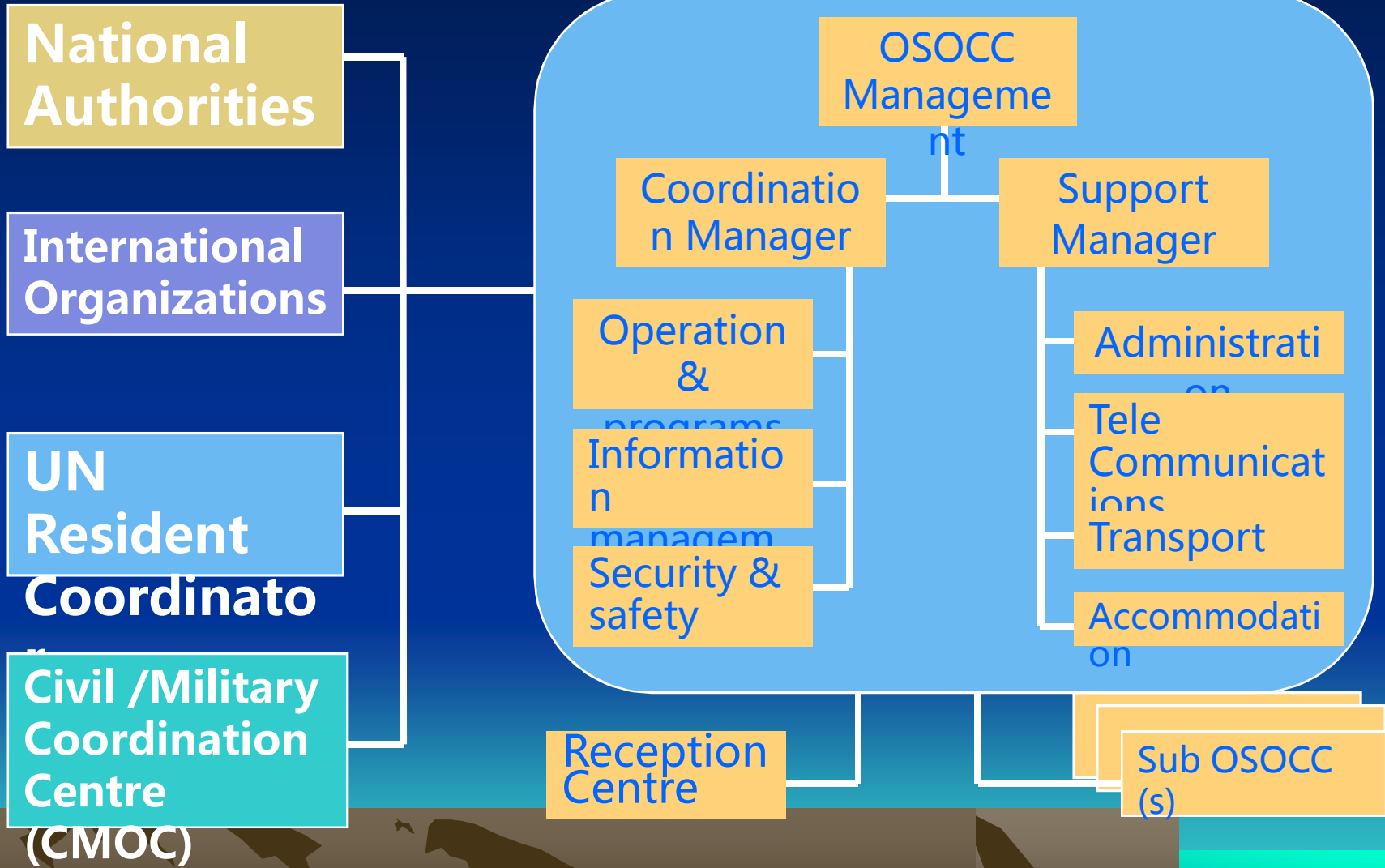
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INSARAG Guidelines

- The INSARAG Guidelines provide guidance for the preparation and deployment of USAR teams in international disaster response operations
- The following phases are covered
 - Preparedness
 - Activation
 - Operation
 - Reassignment/stand-down
 - Return to home base
- The Guidelines also discuss generic topics related to international disaster response. Amongst other things, these include:
 - Classification of Light, Medium and Heavy SAR Team
 - the OSOCC concept

The On-Site Operations Coordination Centre



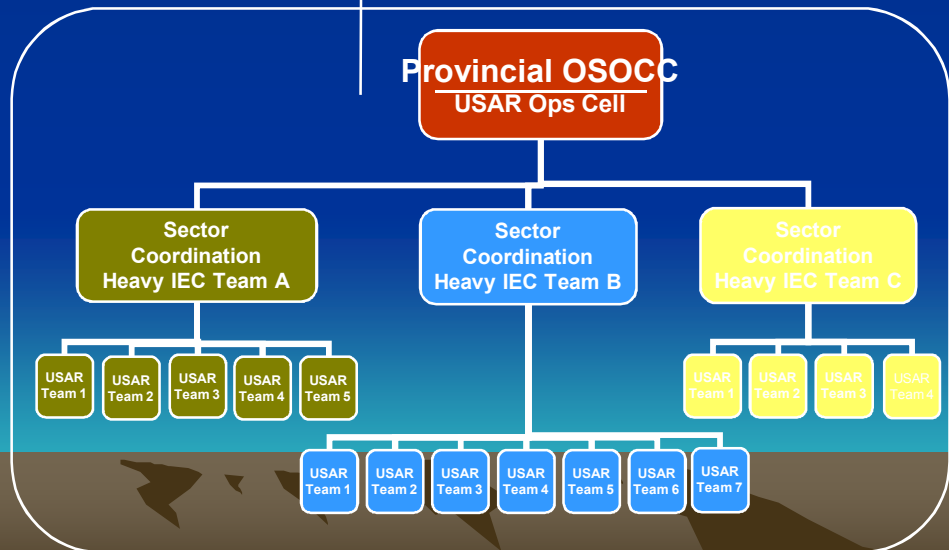
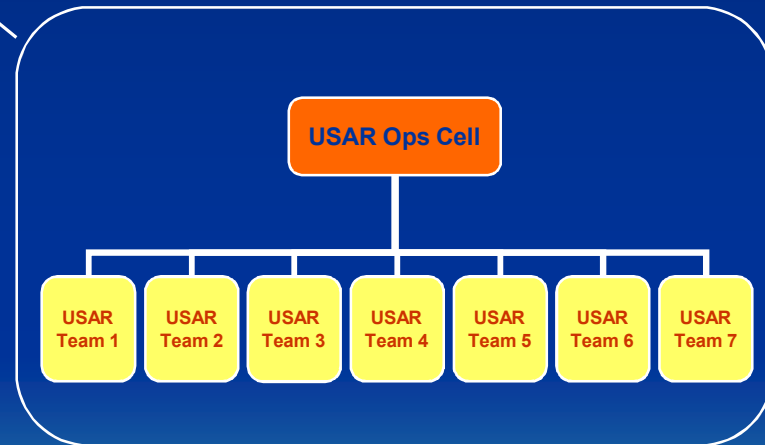
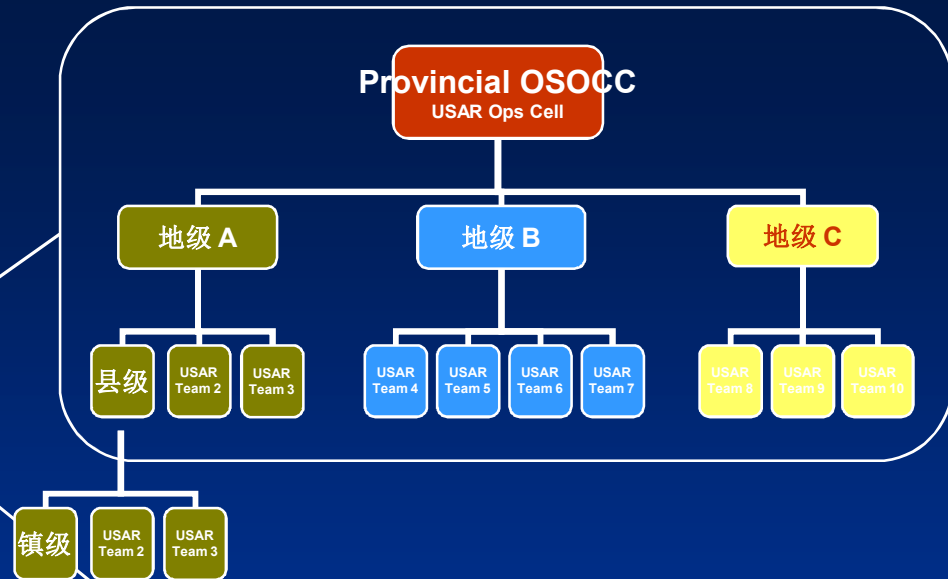


Would an Ops Cell with some Sector Coordinating teams work here?
Did it?

National
OSOCC
Tokyo
USAR Ops Cell

Models of Multi-Sub and Decentralized OSOCC for USAR

National Level OSOCC USAR Ops Cell



5. Capacity Assessment and Buildings of National-wide SAR Systems

National Level

Province Level

Regional Level Regional Level

County Level County Level County Level

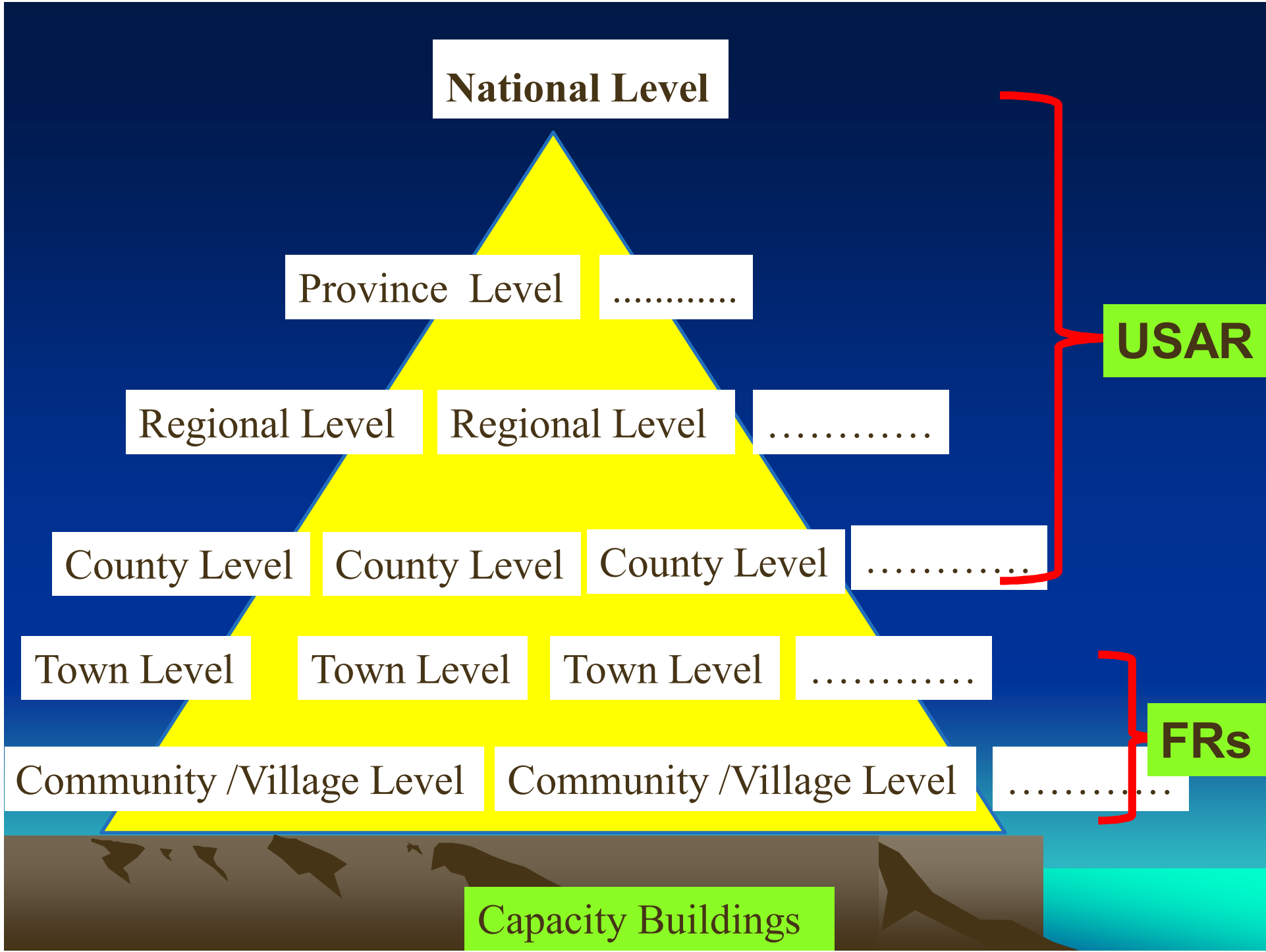
Town Level Town Level Town Level

Community /Village Level Community /Village Level

USAR

FRs

Capacity Buildings



National Level

Province Level

Heavy USAR

Regional Level

Medium USAR

County Level

Light USAR

Town Level

UFRs

Community /Village Level

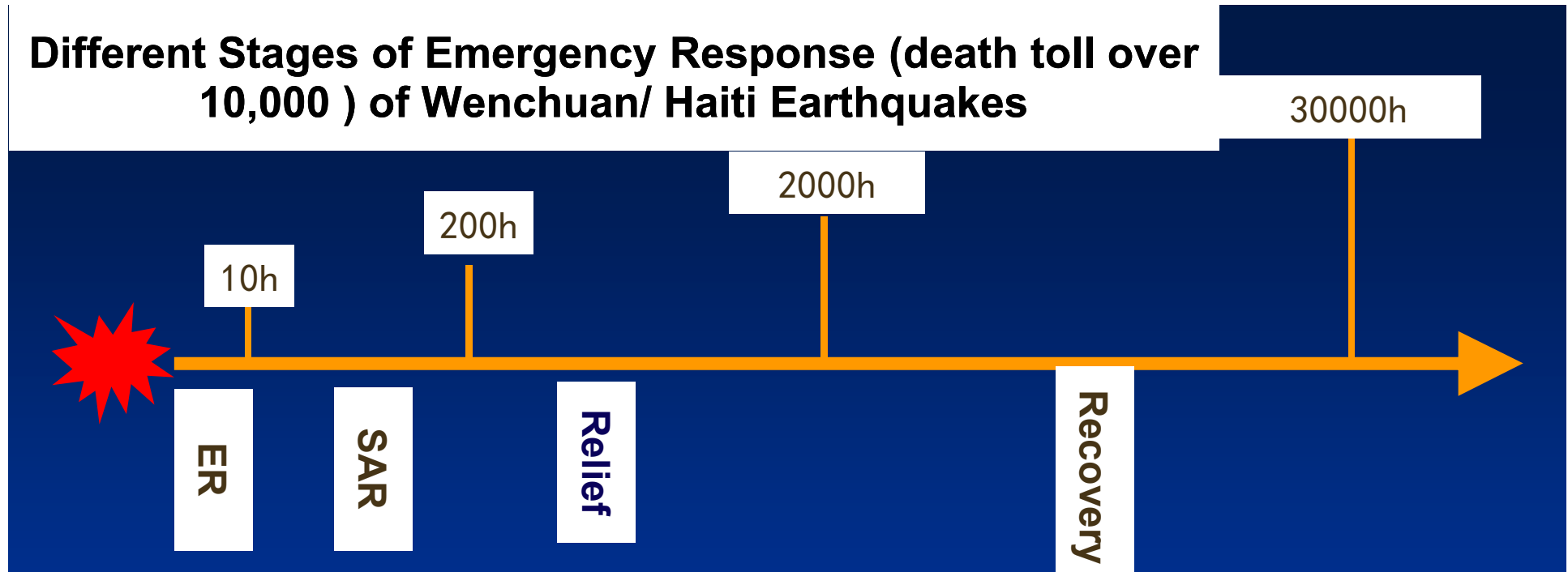
UFRs/FRs

USAR

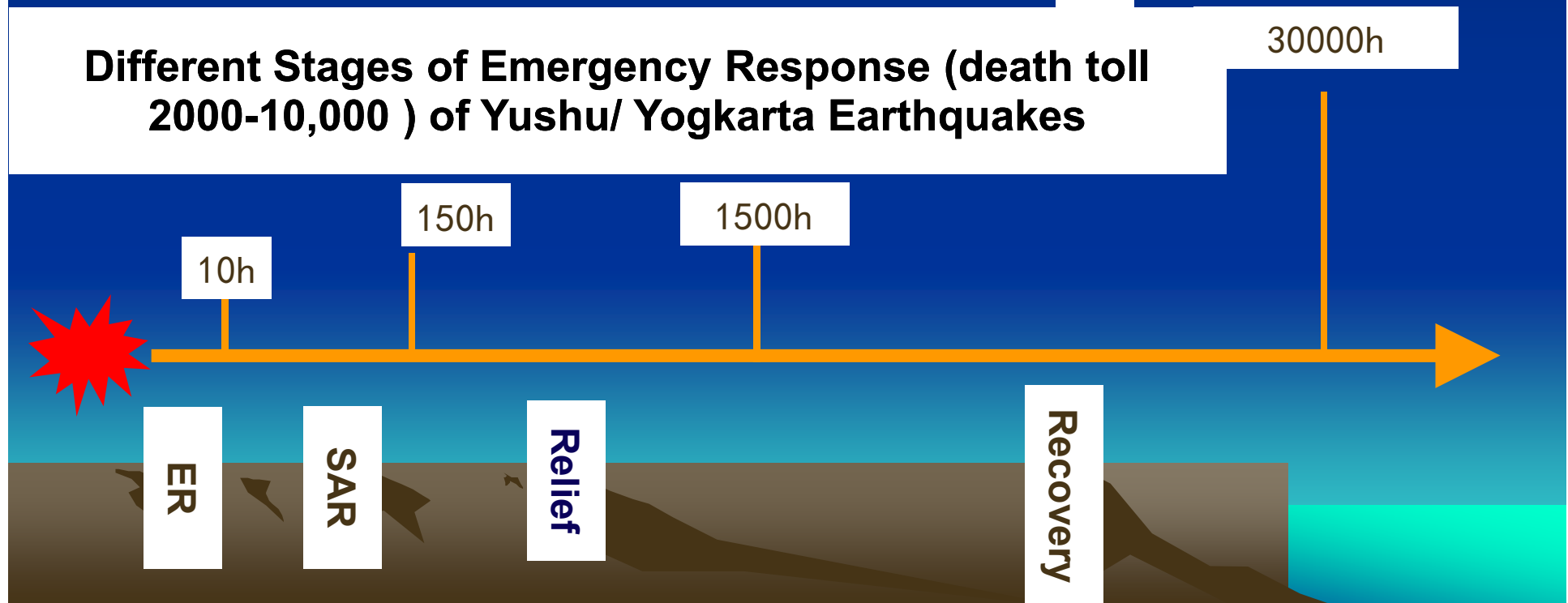
FRs

Capacity Buildings

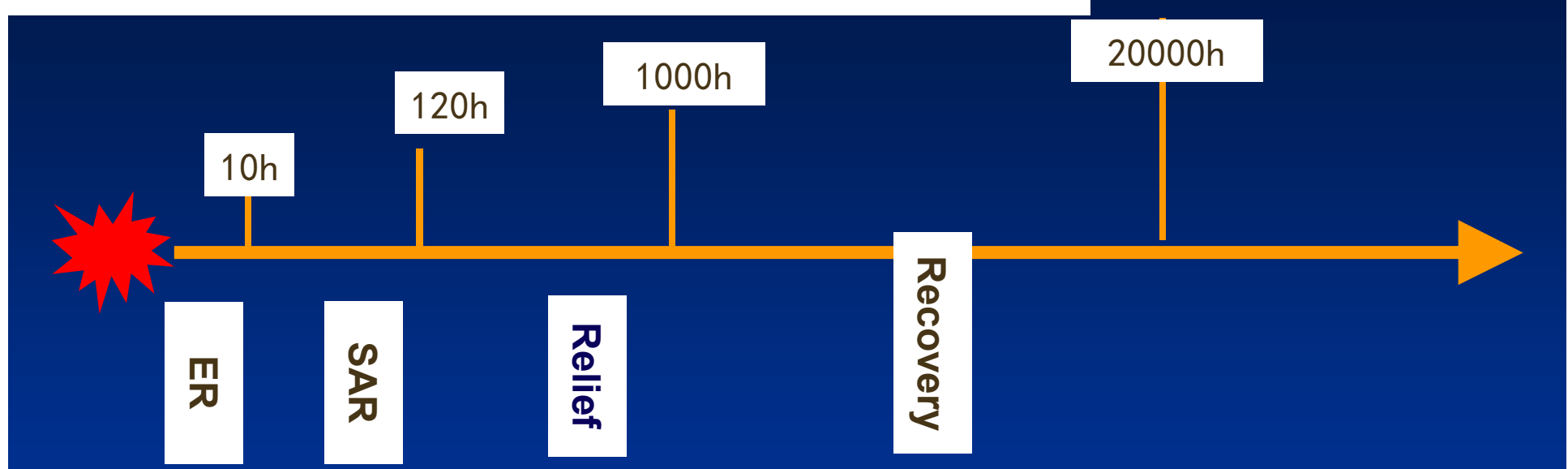
Different Stages of Emergency Response (death toll over 10,000) of Wenchuan/ Haiti Earthquakes



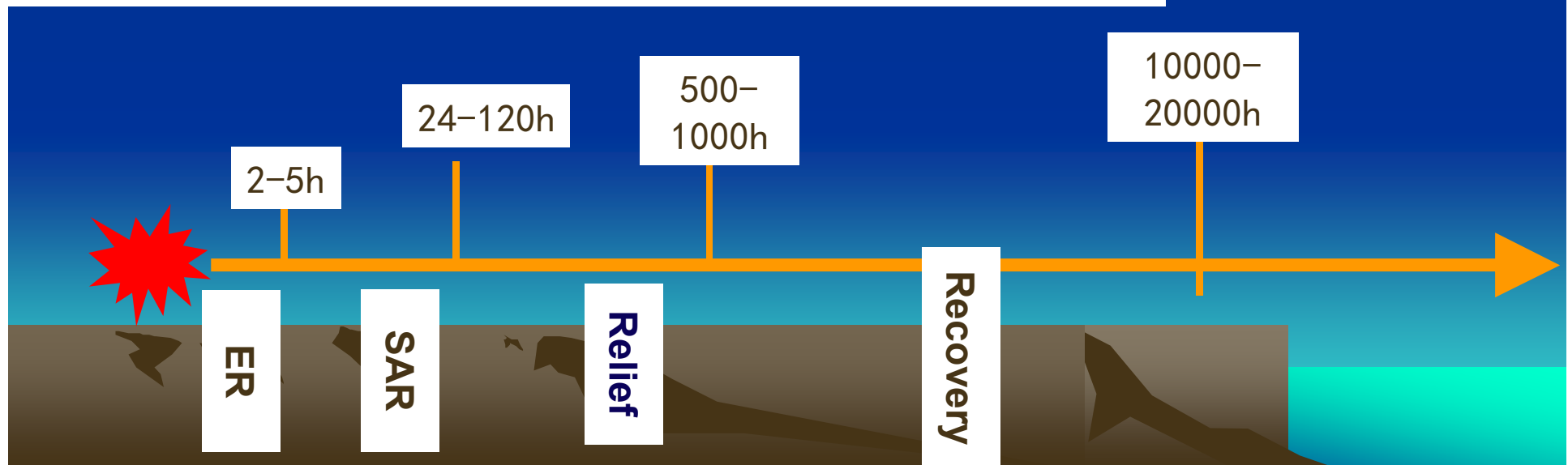
Different Stages of Emergency Response (death toll 2000-10,000) of Yushu/ Yogyakarta Earthquakes



Different Stages of Emergency Response (death toll 300-2000) of Chile/ Padong Earthquakes



Different Stages of Emergency Response (death toll 25-300) of Yingjiang/ New Zealand



Rescue Operation Response Levels of USAR Teams

1. Rescue Operation Response of CISAR:

International Scale: Death toll is over 2000.

Domestic: Death toll is over 300, or 50 - 299 in special situation.

2. Rescue Operation Response of Provincial Teams: Death toll is between 50-299.

3. Rescue Operation Response of Regional and County Level Teams: Death toll is between 20-49.

4. No Rescue Operation Response: Death toll is less than 20.

Models: USAR TEAMS Needed in Different Levels and Scales of Earthquake Disasters

Suggested Models:

Death toll is over 100,000: More than 200 USAR teams

Death toll is between 10,000-100,000, 100- 200 USAR teams

Death toll is between 2000-10,000, 30- 100 USAR teams

Death toll is between 300-2000, 10- 30 USAR teams

Death toll is between 25-300, 1- 10 USAR teams

6. Recommendations

Capacity Building of National SAR Systems

1. Existing Capacity Assessment

1.1 Risk Profile

1.2 Country's Disaster Management Strategy and National Emergency Response System

1.2.1 Existing Legal Instruments

1.2.2 National Emergency Response Framework

1.3.3 Stakeholders

2. Training Capacity Assessment

2.1 Existing Training for Professional Teams

2.2 Existing Training for the General Public and Communities

3. Existing Equipment and Infrastructure Assessment

3.1 Search and Rescue

3.2 Community Based Activities

3.3 National Infrastructure, Equipment, and Facilities

4. Bottlenecks and Recommendations for Capacity Improvement in one country

4.1 Immediate Search and Rescue Capability Development

4.2 Sustainable Training System Development

4.3 Resilient Disaster Management System Development

5. A Step-by Step Design for SAR Capacity Development in one country

National Level

Province Level

Heavy USAR

Regional Level

Medium USAR

County Level

Light USAR

Town Level

UFRs

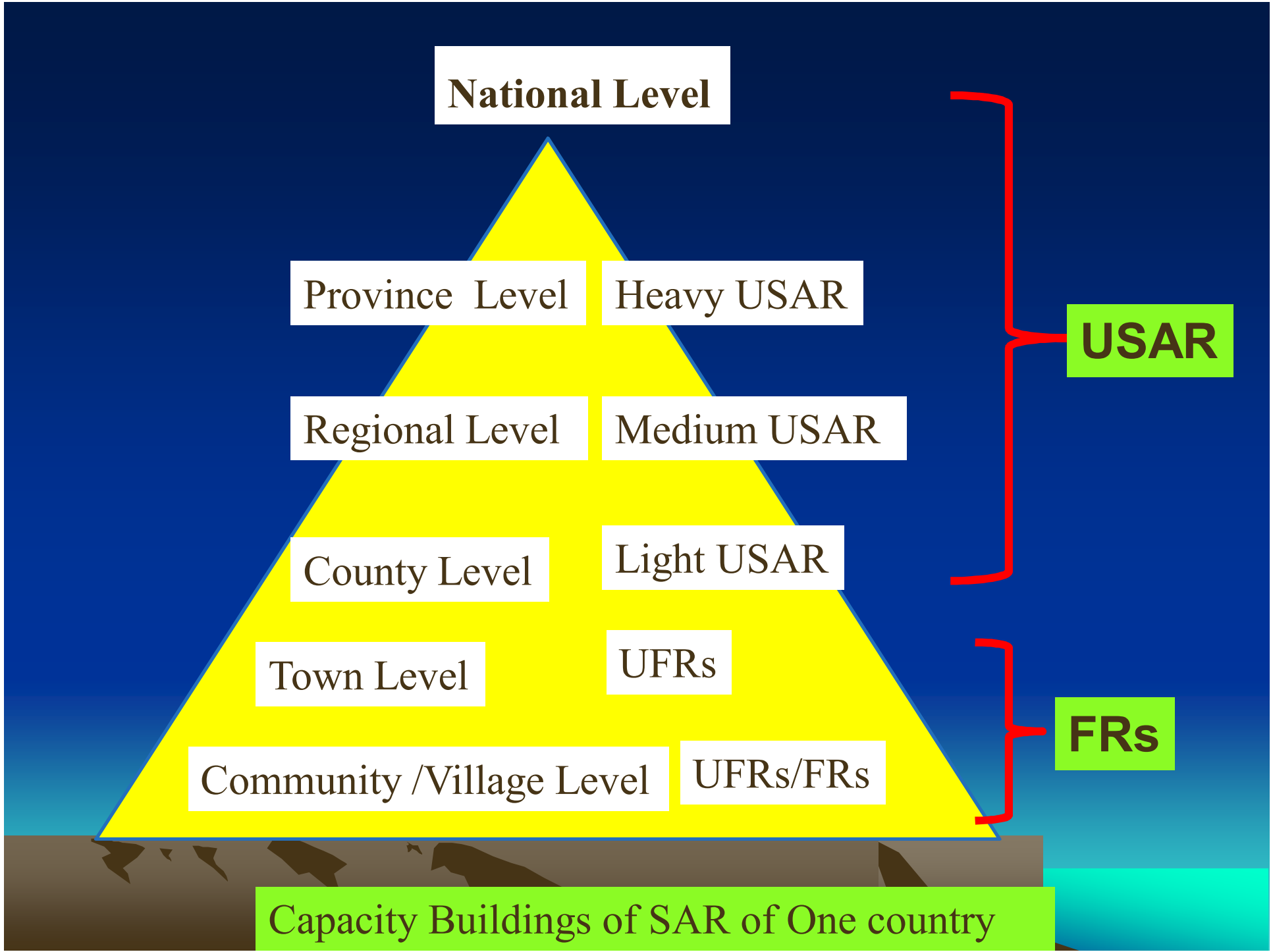
Community /Village Level

UFRs/FRs

USAR

FRs

Capacity Buildings of SAR of One country



Suggestions:

1. Seismic Hazard and Risk Assessment

2. Assessment of Present SAR capacity of one country

3. Capacity Building of SAR systems of one country

4. Capacity Buildings of UFRs in Developing Countries

Thanks a lot !