



Side Event on The Role of Geospatial Information in Measuring and Monitoring the Sustainable Development Goals: Disaster risk reduction, sustainable development, and global urbanization

Seventh Session of the Open Working Group on Sustainable Development Goals

10 January 2014

The Role of Geospatial Information in Disaster Risk Reduction and Sustainable Development in Japan

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Disaster Cycle



Great East Japan Earthquake on 11 March 2011

- Earthquake:

Epicenter: Off coast of northeast Japan

Magnitude: **9.0**

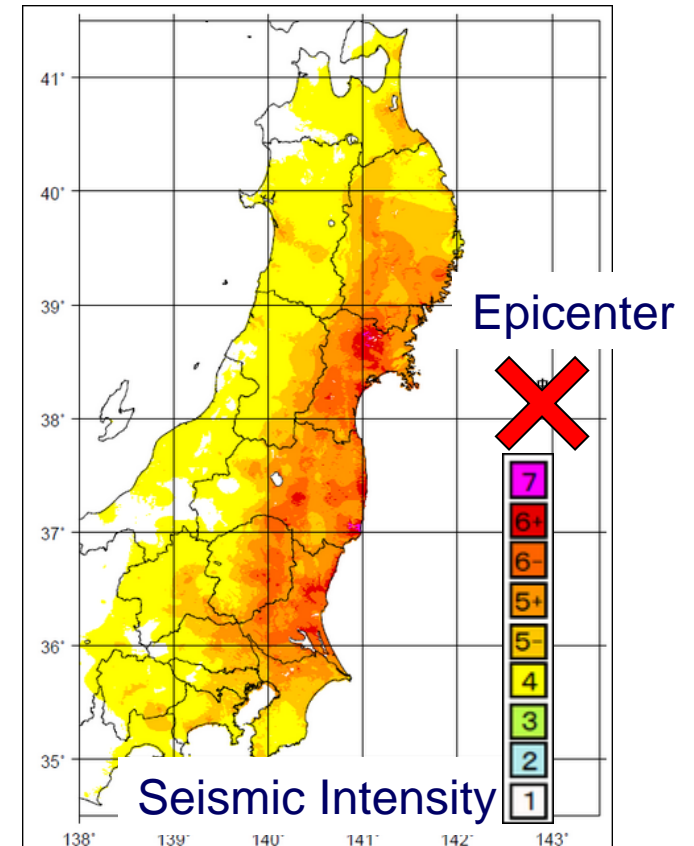
Fault: Length **450km**, Width **200km**

- Tsunami:

- Highest elevation reached: **43m**

- Inundated areas: **561 square km**

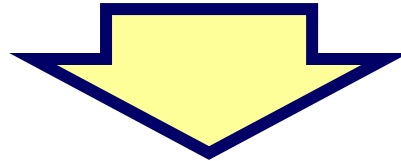
- Nuclear meltdown



Lessons learned

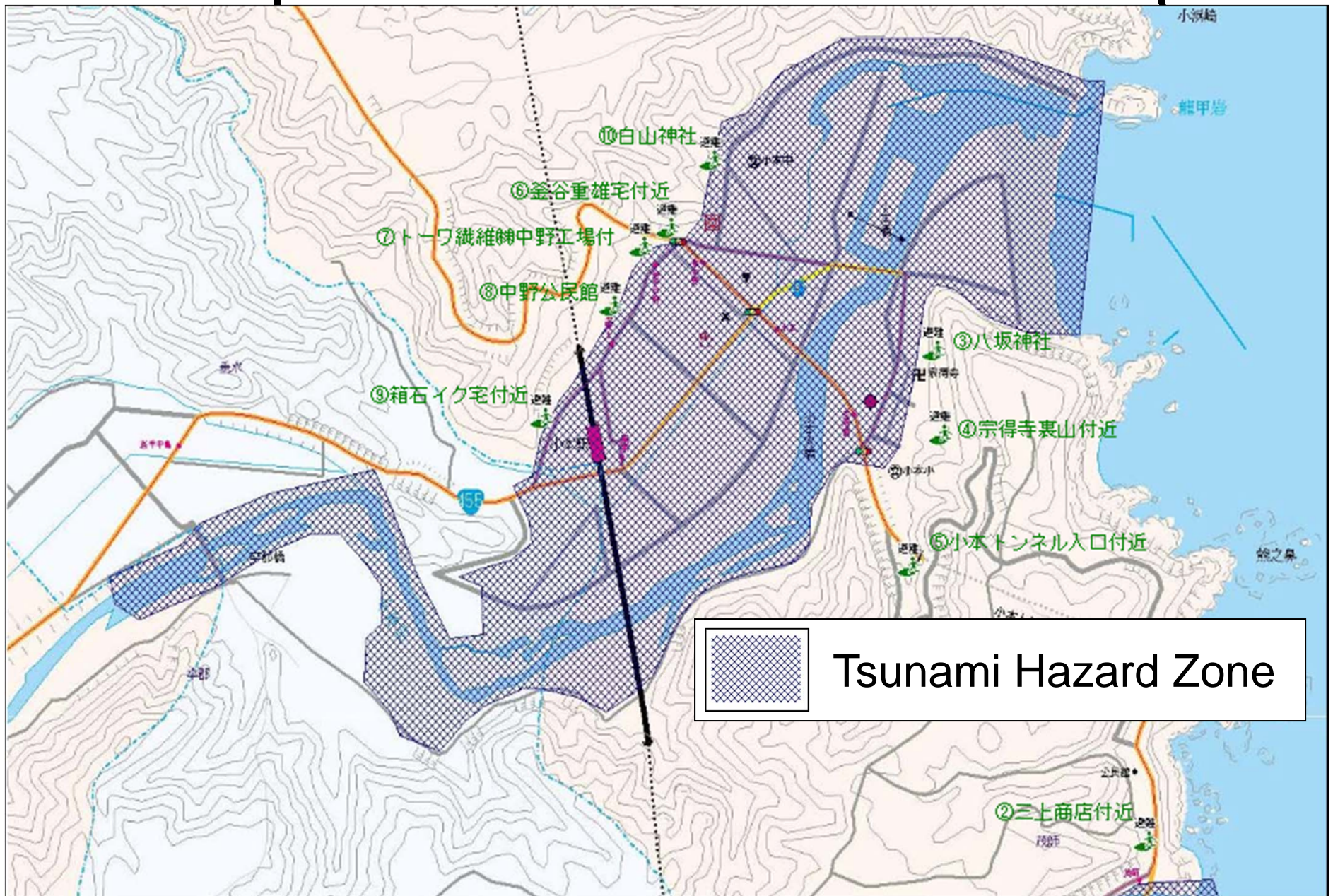
Government of Japan/World Bank

“exclusive reliance on **structural measures** will ultimately prove ineffective and **must be supplemented with nonstructural measures** and a basic understanding of the uncertainties surrounding the estimation of events such as earthquakes and tsunamis.”



“the new, balanced approach incorporates **community-based prevention and evacuation** and other nonstructural measures such as **education, risk-related finance and insurance, and land-use regulation.**”

Example of Tsunami Hazard Maps



Elevation Signs



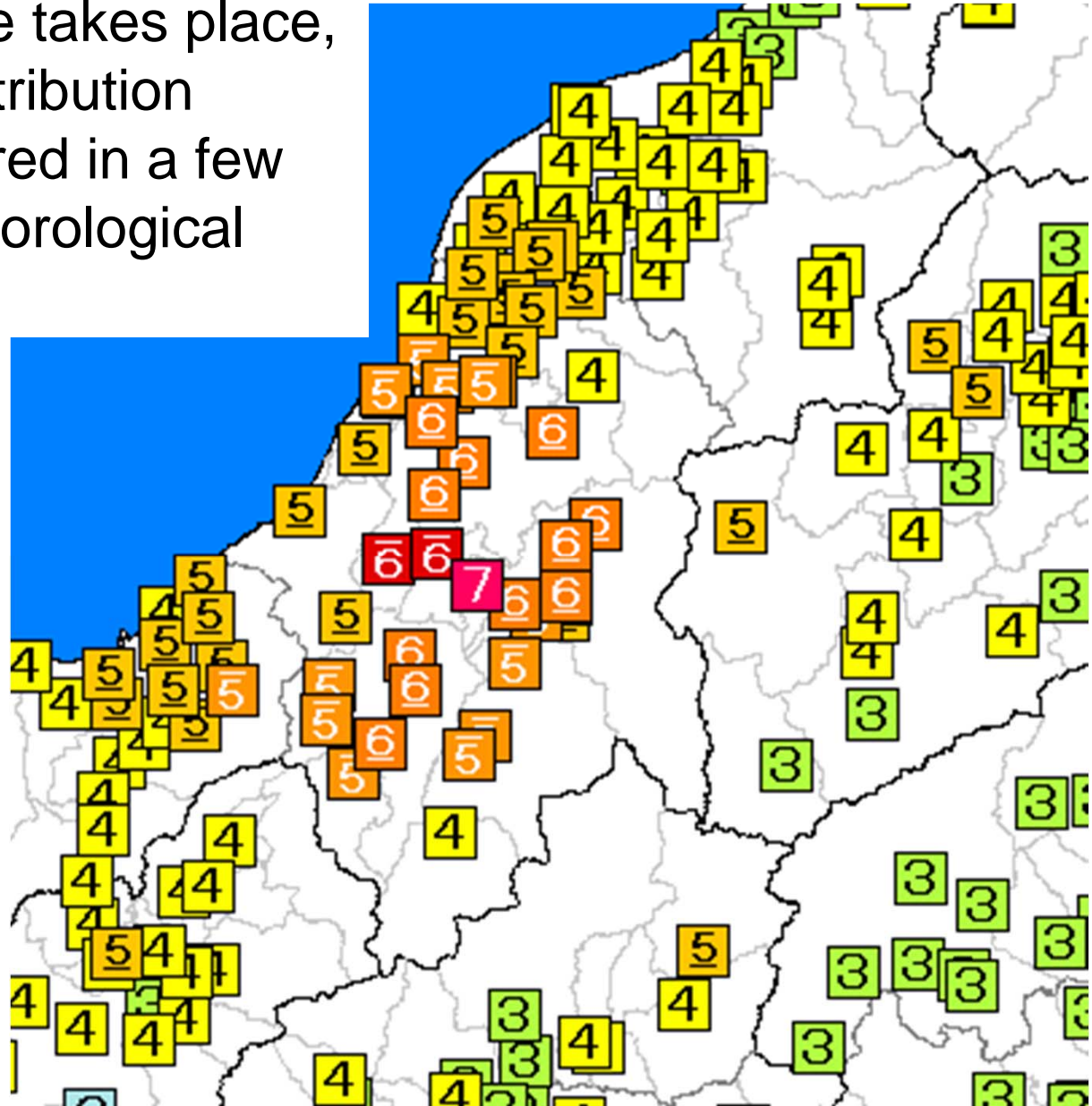
Detailed Elevation Data



Prompt Response to an Earthquake

When an earthquake takes place, seismic intensity distribution information is prepared in a few minutes by the meteorological agency.

Seismic
Intensity



Potential Hazard Risk Levels

Seismic intensity and elevation data together with other geospatial information can be combined to predict the distribution of potential hazard areas in less than 30 minutes.

Land Slides 4

Land Slides 3

Land Slides 2

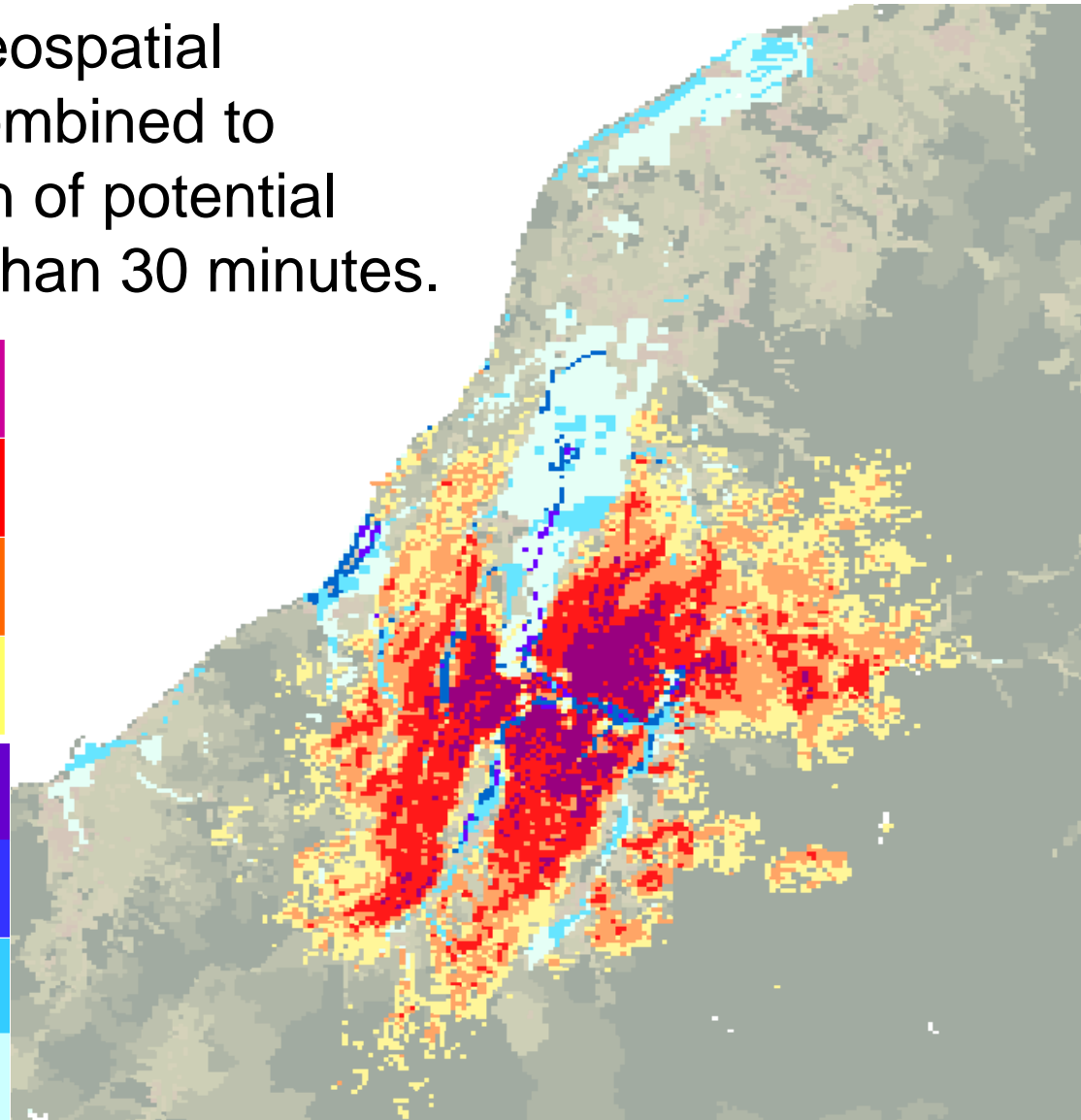
Land Slides 1

Liquefaction 4

Liquefaction 3

Liquefaction 2

Liquefaction 1

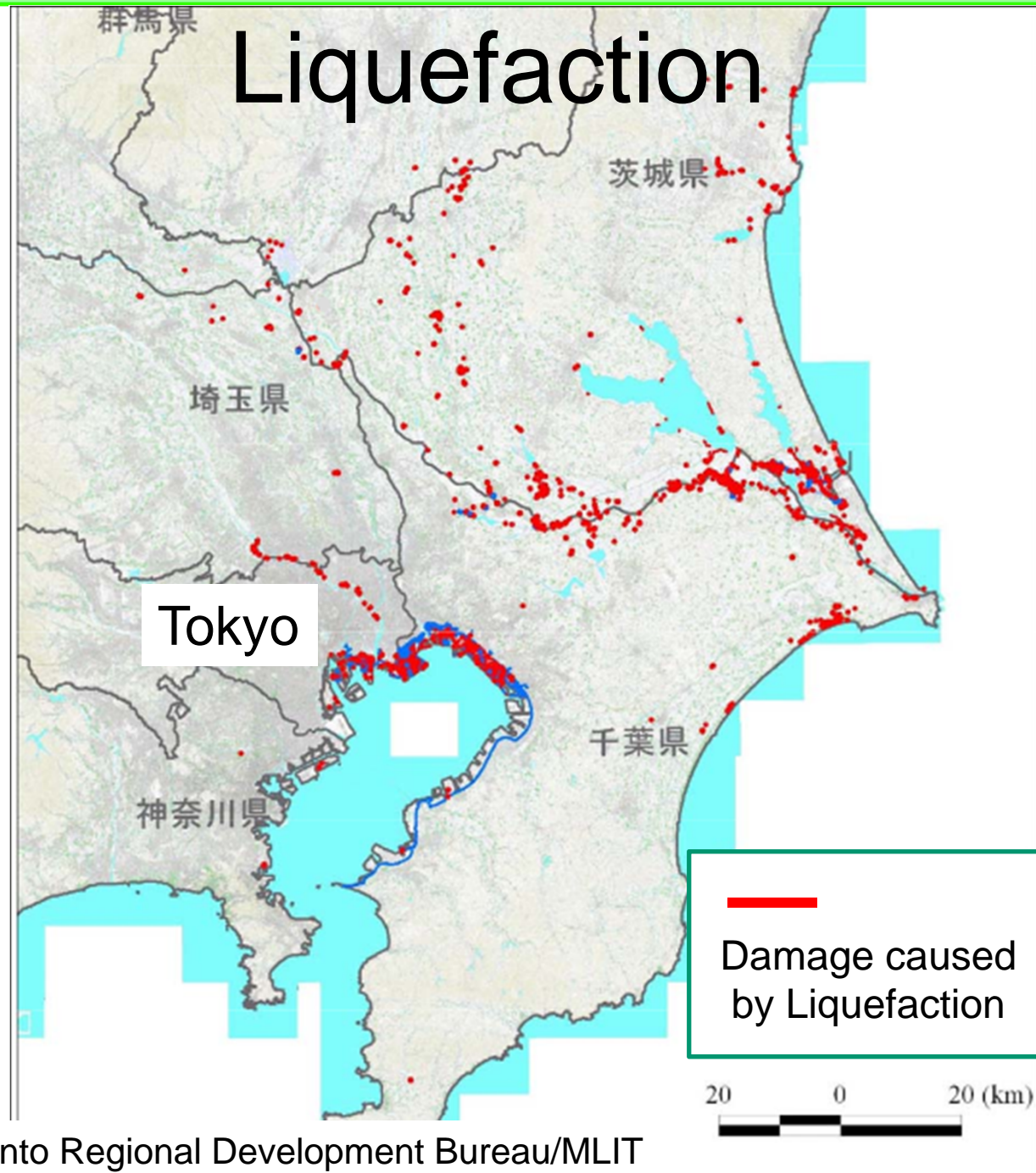


Air Photos of Damaged Areas



Archived Air Photos

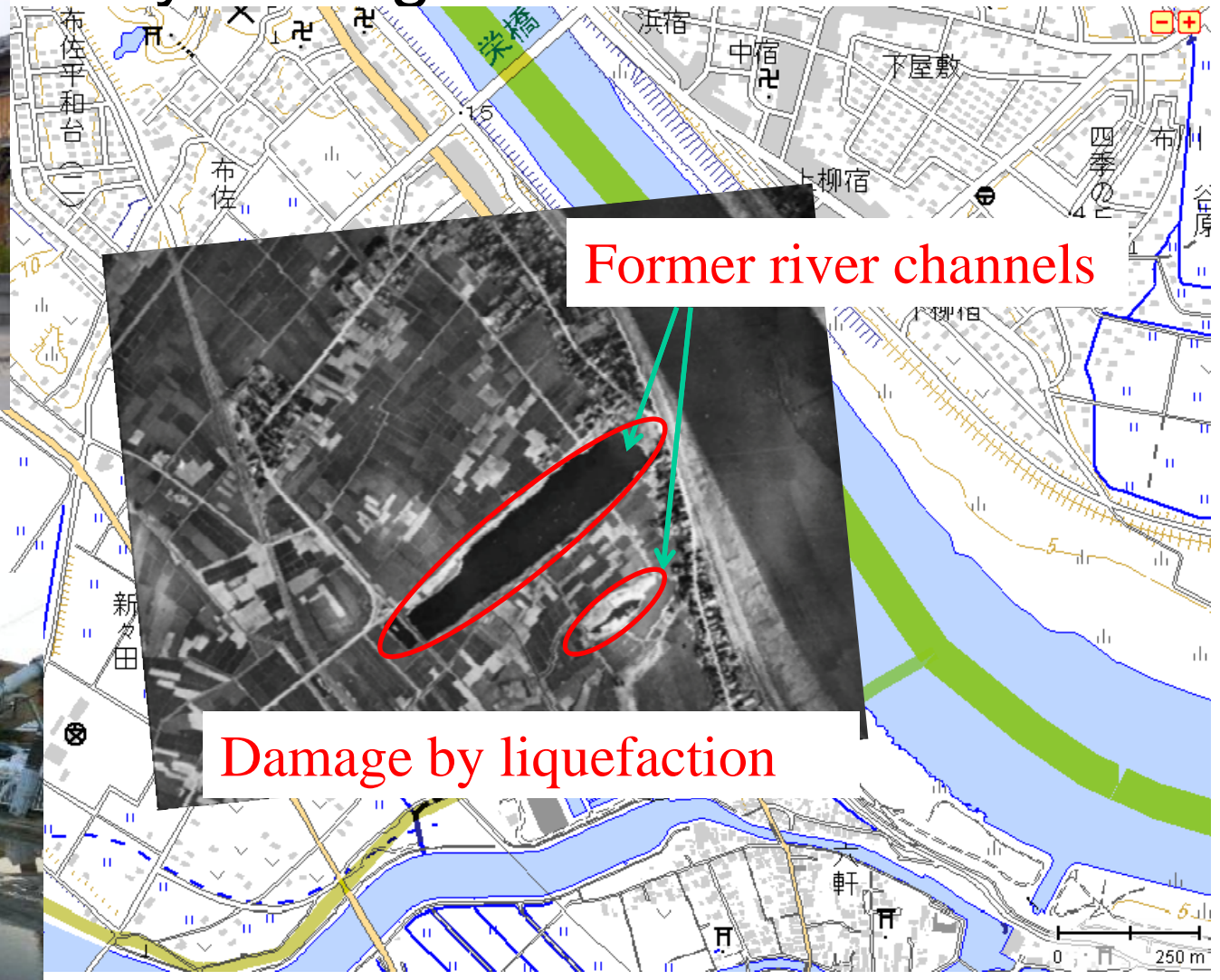
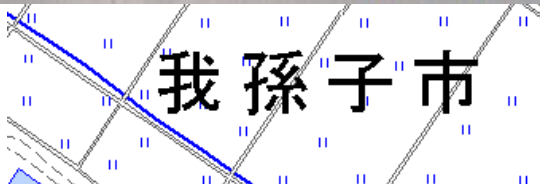




Compiled by Kanto Regional Development Bureau/MLIT

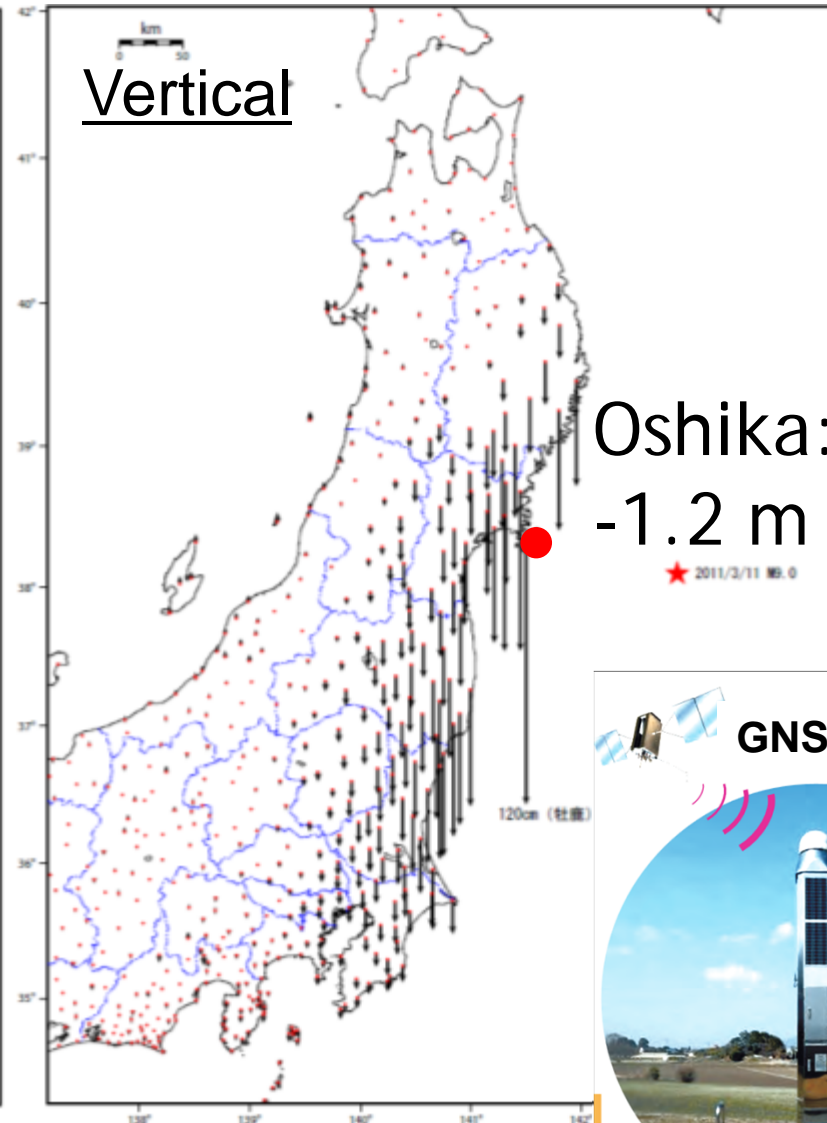
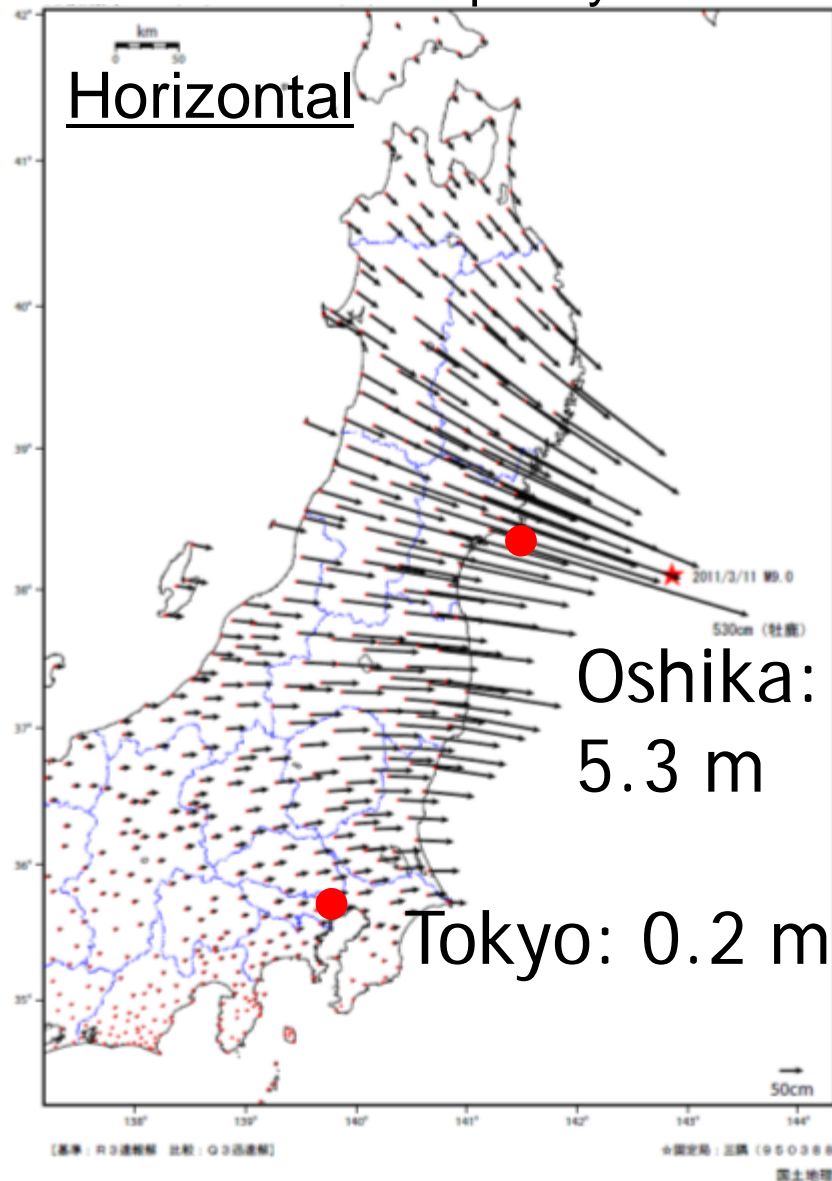
Hidden Vulnerability

Development conceals vulnerability that can be revealed only through historical records.



Ground Surface Movement

A well-established geodetic reference system detects ground surface movement and quickly identifies the affected areas.



Geodetic Reference Frame



Prepared by Geoscience Australia

Amendment to Disaster Countermeasure Law

- Basic Act for Disaster Countermeasures
 - To protect land and property of the country/people from hazards by making necessary institutional arrangements and other measures including financial provisions
 - 24 designated organizations including Geospatial Information Authority of Japan are Mandated to gather and share information on disasters, while **maximizing the use of geospatial information.**

Amended after
3.11 Earthquake

The Future We Want: 19th June 2012

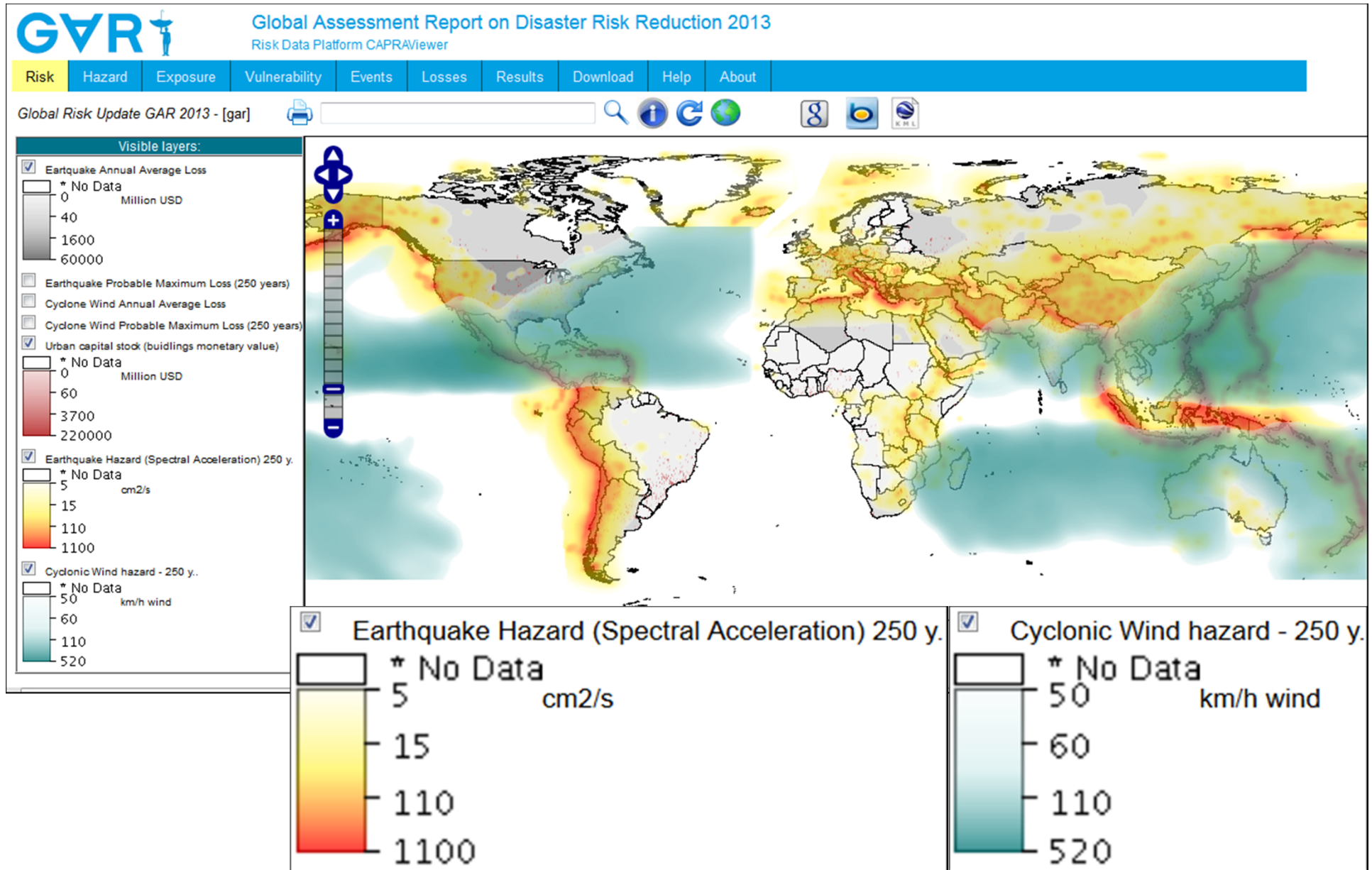
Disaster risk reduction

187. ...We further recognize the importance of comprehensive hazard and risk assessments, and knowledge and information sharing, including **reliable geospatial information**. ...

Technology

274. We recognize the importance of space-technology-based data, in situ monitoring, and **reliable geospatial information** for sustainable development policy-making, programming and project operations. In this context, we note the relevance of global mapping and recognize the efforts in developing global environmental observing systems, ...

Global Risk Assessment



Outcomes of Chengdu Forum

- Urban Hazard Mapping -

- Geospatial information needs to contribute to the post-2015 sustainable development agenda: disaster risk reduction; sustainable development; and the global trend towards urbanization.
- Disasters require a data driven and a geospatial approach – risk, hazard, exposure, vulnerability, communities, infrastructure at risk, etc.

Summary

- Geospatial Information plays a vital role in all phases of disaster cycle and the reduction of disaster risks.
- In view of the global trend towards urbanization, member states should leverage their own capacity of developing, archiving and employing reliable geospatial information in urban areas for improved disaster management.
- Member states should adopt a global geodetic reference frame to take advantage of global navigation satellite systems.

THANK YOU!