

# Global Map: A Tool for Disaster Mitigation for the Asia and Pacific Region

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# Outline

- Antecedents of Global Map
- Vision, origin and purpose of Global Map
- The current status of Global Map
- Global Map and disaster mitigation and management
- Conclusions and the way ahead

# Antecedents of Global Map

- Penck (1892) proposes international 1:1 million map of the world (IMW)
- 1909: work begins
- 1913: USA withdraws
- Two world wars slow progress
- IMW taken over by UN in 1951
- 1989: project came to an end with less than half sheets completed

No clear consistent vision and manageable objectives

## The vision, origin and purpose of Global Map

- 1992: UNECD → Agenda 21 → Need for global environmental data to aid decision making
- 1992: First international workshop on Global Mapping target date for Version 0 of Global Map – the year 2000
- 1996: International Steering Committee for Global Mapping (ISCGM) established
- 1997: Global Map accepted as a formal part of the Implementation of Agenda 21 at the 19<sup>th</sup> Special Session of ECOSOC. Specifications of Global Map finalized at the first Global Map Forum
- 1998: ISCGM, with endorsement of the UN, formally invites the national mapping organizations of the world to participate in Global Map.

## Vision, origin and purposes (continued)

- Use of existing datasets for Version 0 of Global Map
- Version 0 released in 2000 to demonstrate viability of Global Map
- Support of USGS
- Capacity building support from Japan (GSI, MLIT, JICA)

## Vision, origin and purposes (continued)

- World Summit for Sustainable Development, Johannesburg, 2002
- Global Map endorsed in the Declaration and the Implementation document
- The importance of Global Map is part of a much wider, long term commitment by the Government of Japan to provide sustainable support for environmental initiatives.

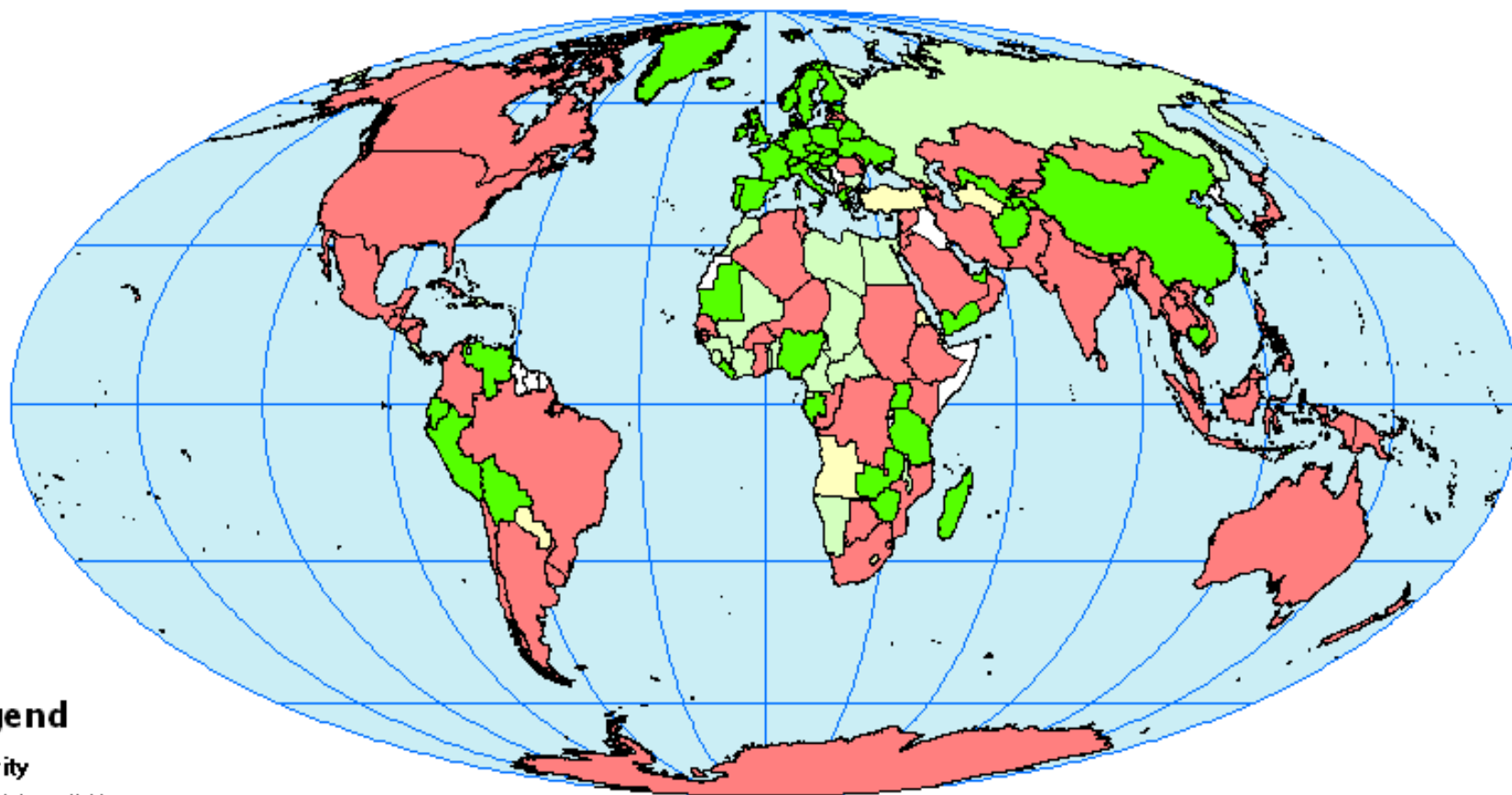
# The Present Situation

- 164 countries and 16 regions participating in Global Map – 96% of existing territorial surface
- Data released for 60% of earth's surface by area and 52% by population
- Data for many other countries undergoing verification
- Version 1 of Global Map released June 5, 2008
- Global Map is an Operational Global Spatial Data Infrastructure.

# Progress of Global Mapping Project

As of 2009-01-16

International Steering Committee for Global Mapping



## Legend

### maturity

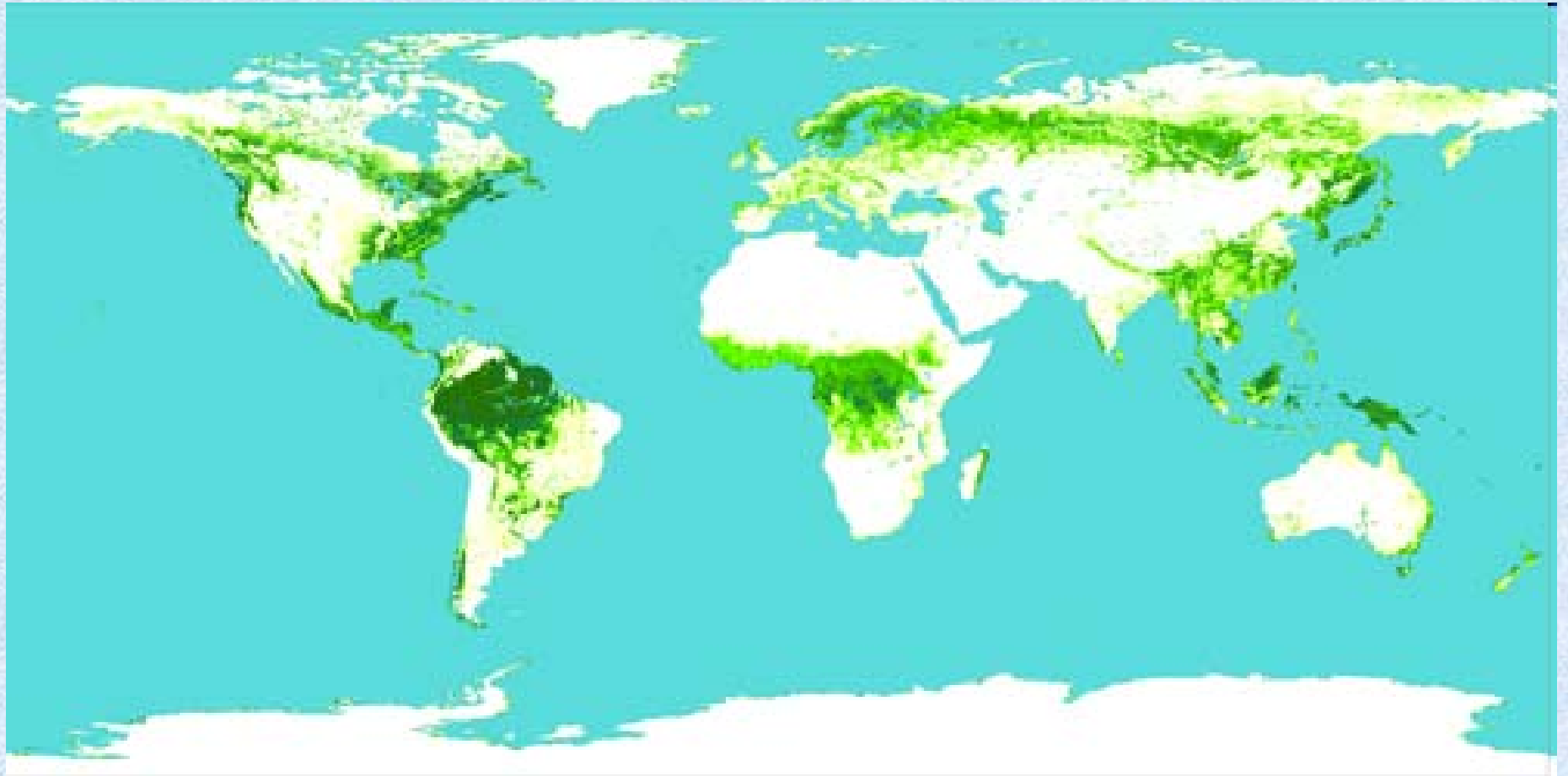
- data available
- data for verification
- developing data
- considering joining the project
- not participating in the project

Most elevation data of current Global Map are compiled from GTOPO30, contribution of United States of America.

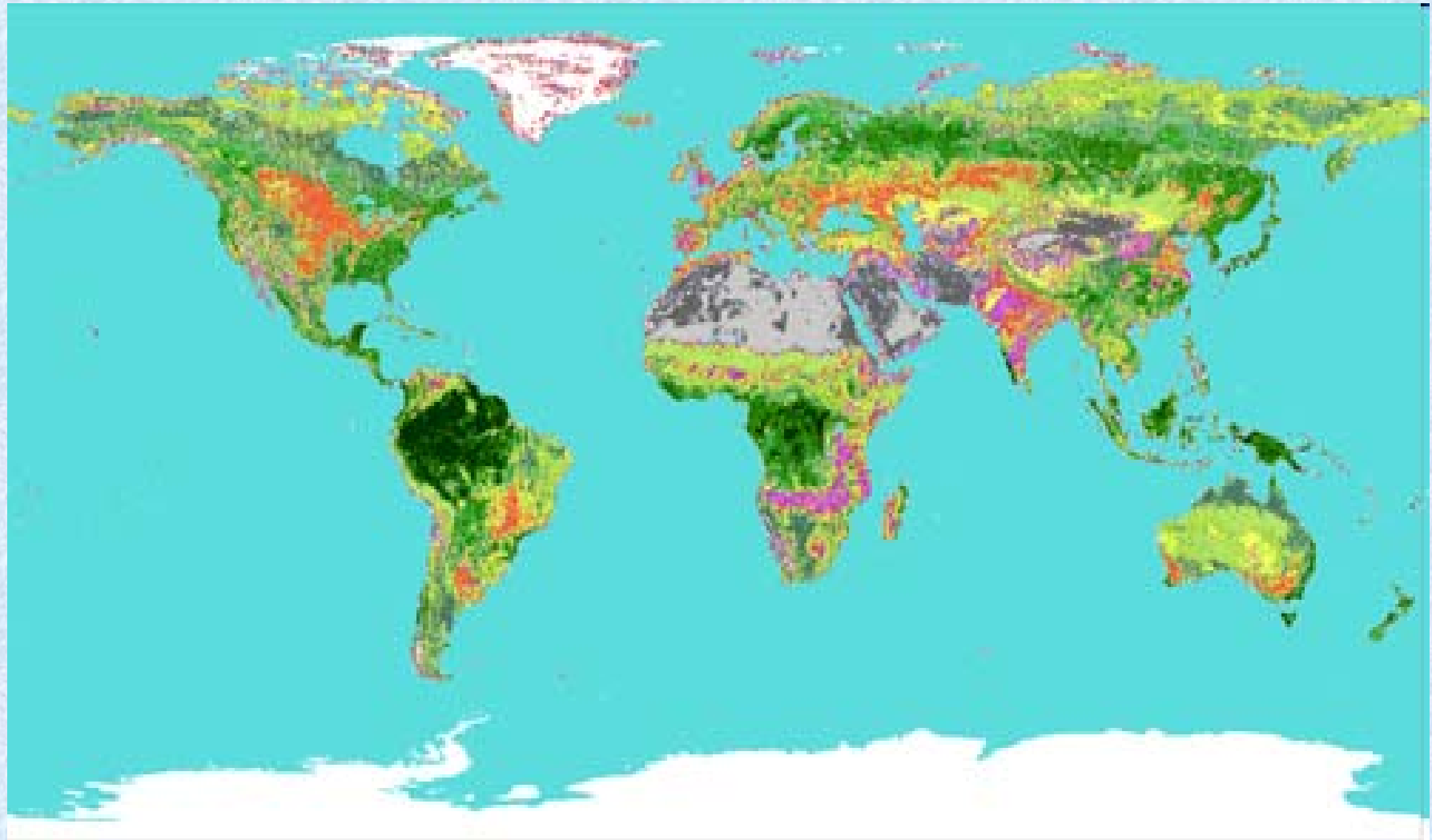
This map is for the purpose of reference and the boundaries in this map are not authorized by any organizations.



# Percentage Tree Cover



# Percentage Land Cover



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## Global Map and Disaster Mitigation and Management

- Impact of Disasters
- 2007: 300 disasters, 236,000 deaths, 200 million people displaced or injured, \$280 billion in property and infrastructure damage (UN Report, May 17, 2009)
- Smaller scale disasters unreported or under-reported - impact possibly double that reported above
- Geophysical, biological, man-made

## Disaster Mitigation and Management (continued)

- Good geoinformation required
- Data visualization, especially mapping, a basic element in all forms of disaster mitigation and management as well as risk assessment

## Disaster Mitigation and Management (continued)

- Access to data and sharing of data of special importance
- Major problems of access to and interoperability of geospatial information
- Technical, administrative and political barriers
- Hurricane Katrina – extensive geospatial information not effectively used

## Disaster Mitigation and Management (continued)

- Global Map not initially designed with disaster mitigation and management in mind
- Increasing priority application for Global Map
- Since 2004 base maps available on UN Relief Web (UNOCHA) within 48 hours

## Disaster Mitigation and Management (continued)

<b>Date</b>	<b>Disaster</b>	<b>Country or Region</b>
20 December 2004	Earthquake & tsunami	Sumatra, Indian Ocean
17 February 2006	Landslide	Leyte Island, Philippines
Middle May 2006	Volcanic eruption	Mt. Merapi, Indonesia
17 May 2006	Earthquake	Java Island, Indonesia
17 July 2006	Earthquake & tsunami	Java Island, Indonesia
16-17 August 2006	Volcanic eruption	Mt. Tungurabua, Ecuador
2 April 2007	Earthquake & tsunami	Solomon Islands

## Disaster Mitigation and Management (continued)

<b>Date</b>	<b>Disaster</b>	<b>Country or Region</b>
21 August 2007	Earthquake	Peru
13 September 2007	Earthquake	Sumatra, Indonesia
Middle November 2007	Cyclone	Bangladesh
Early May 2008	Cyclone	Southern district of Myanmar
12 May 2008	Earthquake	Sichuan, China
29 October 2008	Earthquake	Western district of Pakistan
5 April 2009	Earthquake	Middle district of Italy

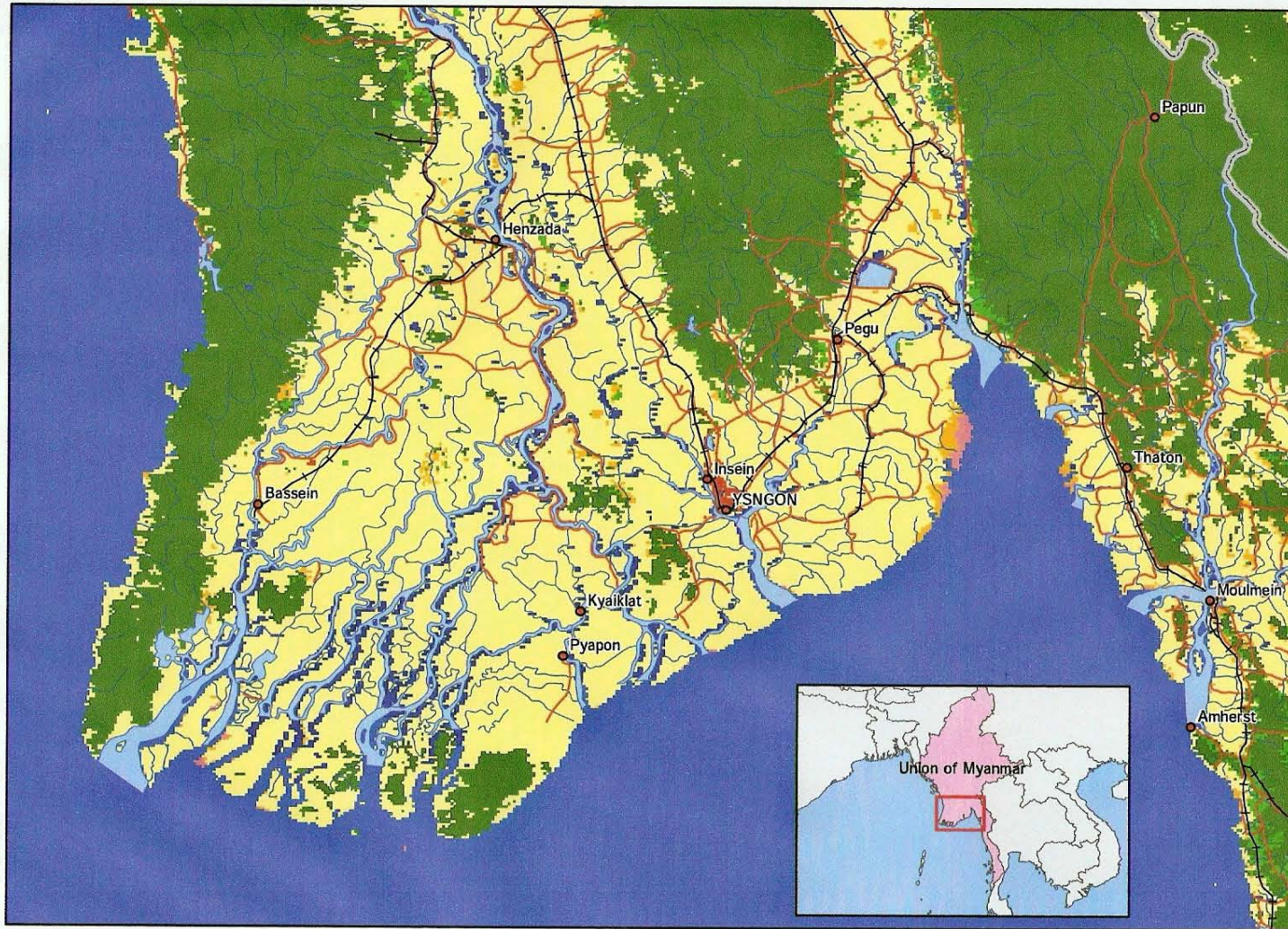


## Disaster Mitigation and Management (continued)

<b>Date</b>	<b>Disaster</b>	<b>Country or Region</b>
20 September 2009	Typhoon	The Philippines
1 October 2009	Earthquake	Sumatra, Indonesia
2 October 2009	Earthquake	Samoa Islands
5 October	Floods	India

# Global Map of the central district of Union of Myanmar

GLIDE Number: TC-2008-000057-MMR  
(GLIDE: Global Unique Disaster Identifier)



## Legend

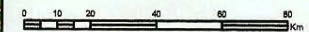
	International Boundary
	Built-up area
	Railway
	Road
	River
	Inland Water

## Land Use

	Forest
	Mixture
	Grassland/Shrub
	Agricultural Area
	Wetland
	Barren Area
	Built-up Area
	Drainage/Water
	Ocean

Data Source :  
Global Map Myanmar Ver. 1.0  
• Survey Department of Myanmar/ISCGM)

## Scale



1:2,000,000 scale printed in A4 format  
1:1,400,000 scale printed in A3 format

May 7, 2008

GSI • <http://www.gsi.go.jp/>  
ISCGM <http://www.iscgm.org/>

ISCGM = International Steering Committee for Global Mapping

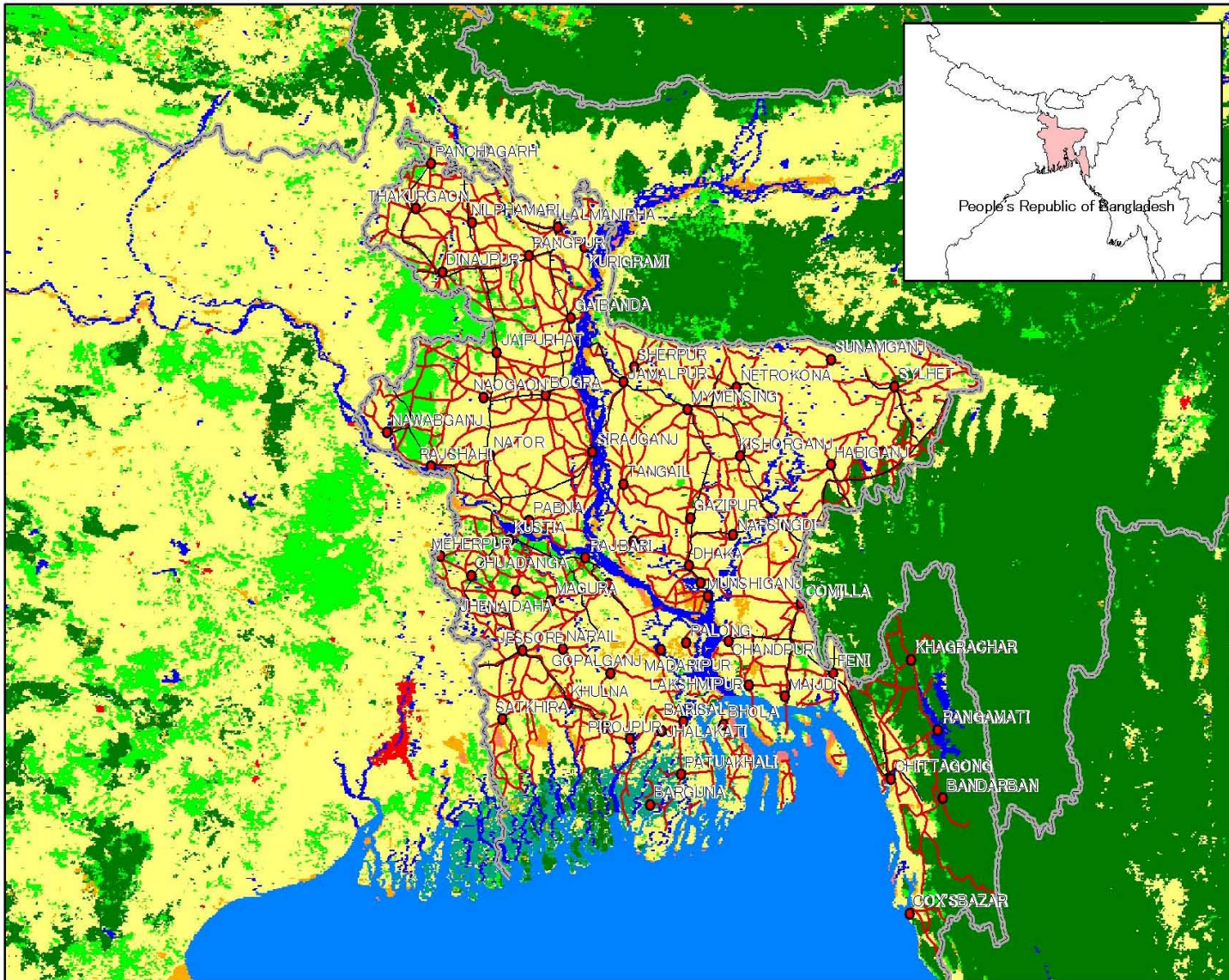
Geographical Survey Institute, Japan / Secretariat of ISCGM



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# Map of People's Republic of Bangladesh and its Vicinity by Global Map

GLIDE Number: TC-2007-000208-BGD  
(GLIDE: Global Unique Disaster Identifier)



GSI <http://www.gsi.go.jp/>  
ISGM <http://www.isgcm.org/>

The boundaries in this map are not authorized by any organizations.

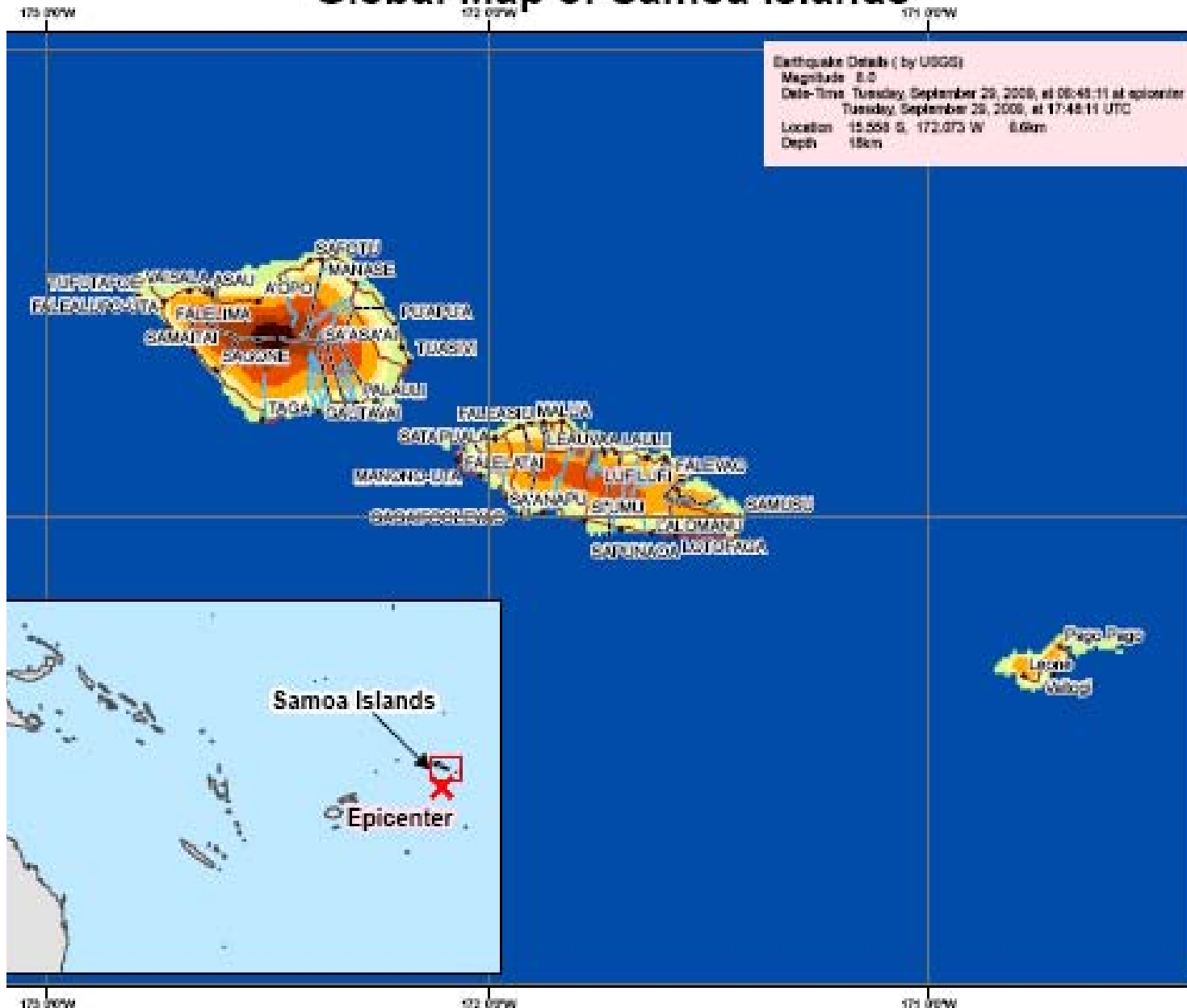
ISGM = International Steering Committee for Global Mapping

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# Global Map of Samoa Islands

GLIDE Number: TS-2009-000210-WGM  
(GLIDE: Global Unique Disaster Identifier)



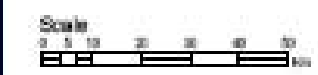
## Legend

- Airport
- Settlement
- Built-up Area
- Political Boundary Line
- Road
- River
- Inland Water

## Elevation (m)

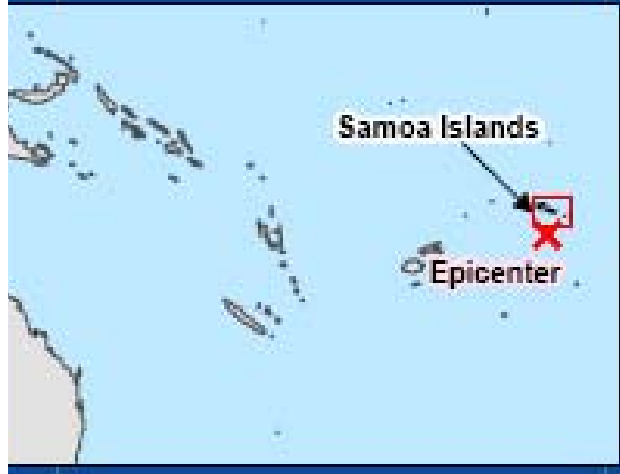
- 0
- 0 - 50
- 50 - 100
- 100 - 200
- 200 - 500
- 500 - 1,000
- 1,000 - 1,500
- 1,500 -

Data Source:  
 Vector data:  
 Global Map of Samoa version 1  
 (Global Map of Samoa @ ISCGM/Samoa)  
 VMAP0 (NSA)  
 Elevation data: Global Map version 0



1:1,400,000 scale printed in A4 format

Oct. 2, 2009



ISI: <http://www.gsi.go.jp/>  
 ISCGM: <http://www.iscgm.org/>

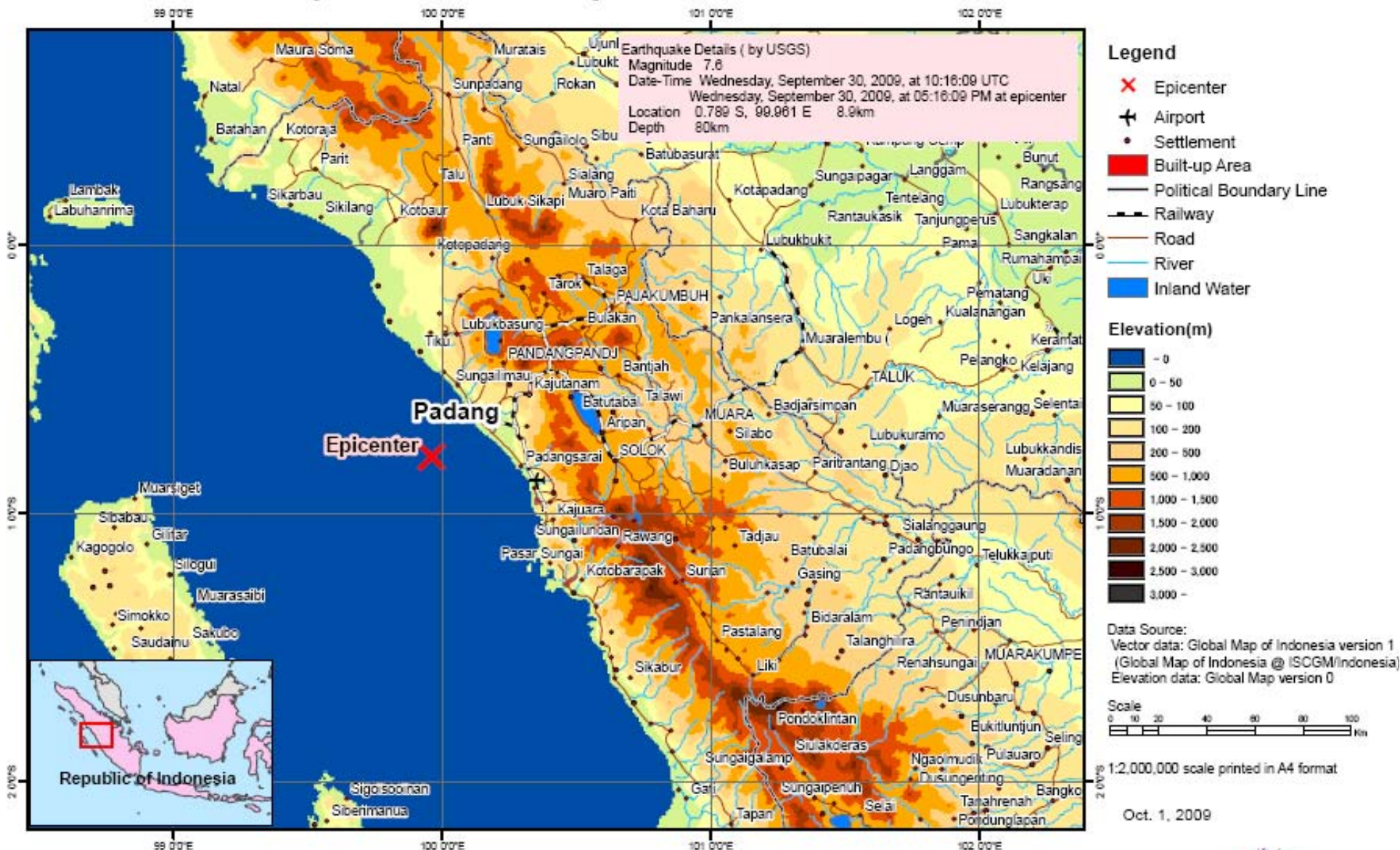
Geographical Survey Institute, Japan / Secretariat of ISCGM



ISCGM = International Steering Committee for Global Mapping

# Global Map of the central part of Sumatra Island

GLIDE Number: TS-2009-000211-IDN  
(GLIDE: Global Unique Disaster Identifier)



GSI <http://www.gsi.go.jp/>  
 ISCGM <http://www.iscgm.org/>

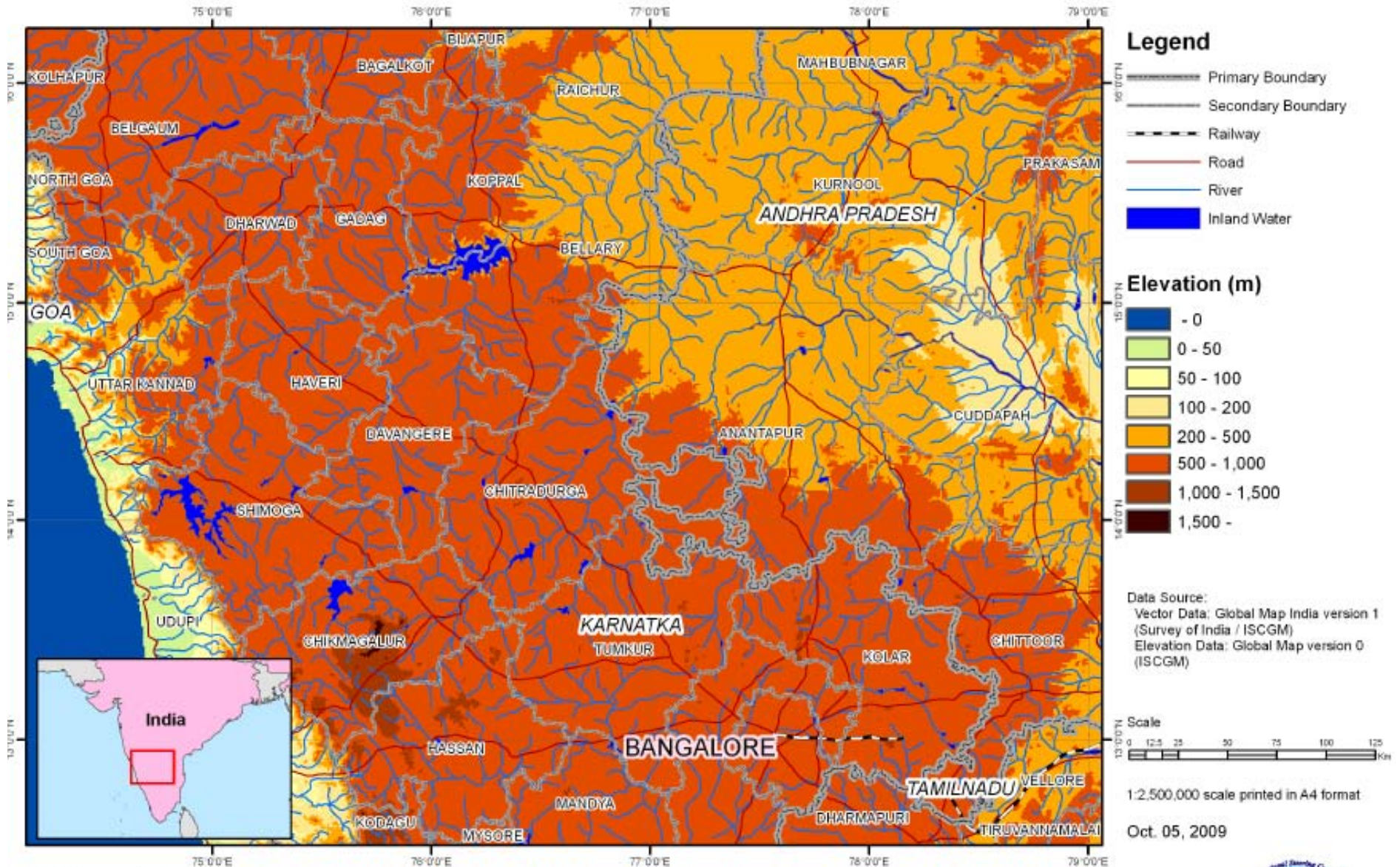
ISCGM = International Steering Committee for Global Mapping

Geographical Survey Institute, Japan / Secretariat of ISCGM



[iscgm.org](http://iscgm.org)

# Global Map of the southern part of India



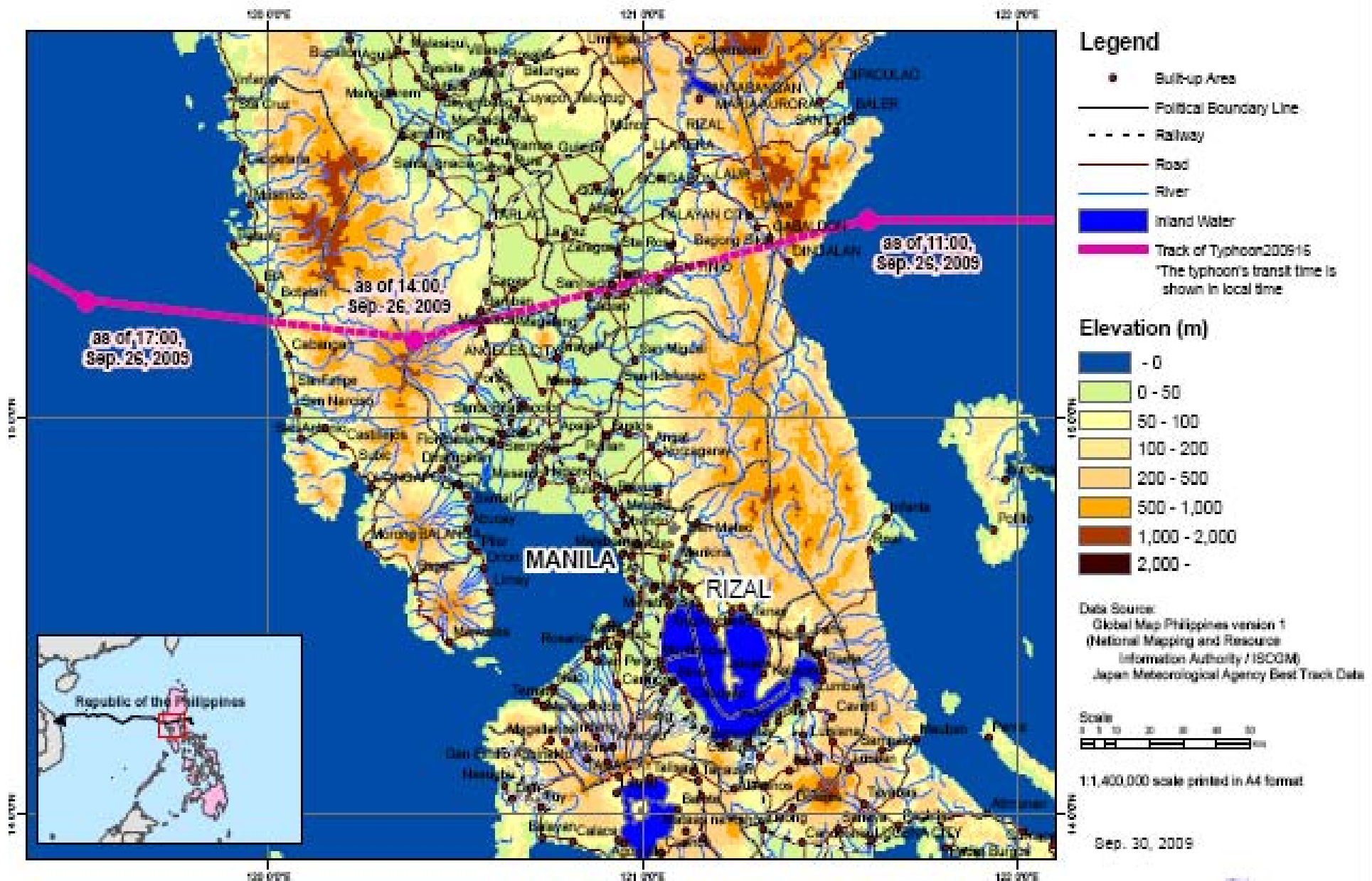
GSI <http://www.gsi.go.jp/>  
 ISCGM <http://www.iscgm.org/>  
 ISCGM = International Steering Committee for Global Mapping

Geographical Survey Institute, Japan / Secretariat of ISCGM



# Global Map of and around Manila, the Philippines

GLIDE Number: TC-2009-000205-PHL  
(GLIDE: Global Unique Disaster Identifier)



## Legend

- Built-Up Area
- Political Boundary Line
- - - Railway
- Road
- River
- Inland Water
- Track of Typhoon200916  
\*The typhoon's transit time is shown in local time

## Elevation (m)

- - 0
- 0 - 50
- 50 - 100
- 100 - 200
- 200 - 500
- 500 - 1,000
- 1,000 - 2,000
- 2,000 -

Data Source:  
Global Map Philippines version 1  
(National Mapping and Resource  
Information Authority / ISCGM)  
Japan Meteorological Agency Best Track Data

Scale  
1 10 20 30 40 50  
km

1:1,400,000 scale printed in A4 format

Sep. 30, 2009



## Disaster Mitigation and Management (continued)

- Global Map institutional network among national mapping agencies of the world in cooperation with international agencies and organizations of all types as important as the base maps produced



## Conclusions

- May 17, 2009: The UN releases first ever Global Assessment Report of Disaster Risk Reduction
- Complex relationships among a variety of strategic, policy, technical, economic and institutional issues
- Concerted and integrated action required if society is to deal more effectively with disaster mitigation and management

## Conclusions (continued)

- Geoinformation a useful role to play but many challenges remain
- Greater integration of geoinformation and much easier and speedy access to data
- At the technical level more effort required to improve interoperability among datasets
- Interoperability science

## Conclusions (continued)

Some progress is being made

- *Best Practices Booklet on Geoinformation for Risk and Disaster Management* (JBGIS and UNSPIDER)
- Aim is “to create a decision support forum based on the knowledge and experience of experts to outline the potential uses of geoinformation technologies to governmental, institutional, and operative decision makers all over the world”
- Available 2010. Global Map will contribute

## Conclusions (continued)

- Chinese Ministry of Science and Technology building “an emergency center for spatial data” which began in July 2007 to coordinate all organizations holding data or utility in disaster mitigation and management
- The creation of national and global spatial data infrastructures, of which Global Map is example, will help but we need to involve all major stakeholders in the creation of NSDIs, not just those responsible for geospatial data. “We need to elevate NSDI to the highest level...NSDI is too important to be left in the hands of the geospatial community” (Jackson, Schell and Taylor, 2009)

## The Way Forward

- High quality geospatial information in an integrated, easily accessible, free or low cost format is fundamental to the effective implementation of disaster mitigation and management strategies. Global Map provides a concrete and ongoing contribution but the way forward lies in greater institutional cooperation among the various organizations involved in the geospatial sciences and increased technical efforts to make various geospatial datasets of utility to disaster mitigation and management much more interoperable.

## The Way Forward (continued)

- Considerable progress is being made in the latter area but effective institutional cooperation at both national and international scales faces numerous political and administrative challenges.