

# **Geo-information as Disaster Management Tools in Aceh and Nias, Indonesia: a Post Disaster Area**

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# Introduction

December 26 Tsunami costs:

- More than 200.000 lives
- 21.000 houses destroyed
- 800.000 people were displaced
- IDR 41.4 trillion loses

# Rehabilitation & Reconstruction of Aceh & Nias (1)

## Master Plan (1)

- Spatial layout & land affairs sector plan
- Natural resources & environment sector plan
  - Infrastructure & housing sector plan
  - Economic & manpower sector plan
  - Education & health sector plan
- Religious, social cultural & human resources sector plan

# Rehabilitation & Reconstruction of Aceh & Nias (2)

## Master Plan (2)

- Religious, social cultural & human resources sector plan
  - Legal sector plan
  - Public order, security & resilience sector plan
- Implementation of good governance & supervision
  - Funding

# Rehabilitation & Reconstruction of Aceh & Nias (3)

## Progress (1)

5-years master plan stages:

- Emergency response stage (Jan'05-Mar'05)
  - Rehabilitation stage (April'05-Dec'06)
  - Reconstruction stage (July'06-Dec'09)

# Rehabilitation & Reconstruction of Aceh & Nias (4)

## Progress (2)

Emergency response stage:

- Evacuation
- Continuous health treatment
- Relocation
- Fulfilment of basic needs
- Cleaning up the ruins

# Rehabilitation & Reconstruction of Aceh & Nias (5)

## Progress (3)

Rehabilitation stage:

- Coordinated by BRR
  - Manuals
- Rehabilitation Projects
- Reconstruction of infrastructures



# Geo-information in Aceh&Nias(1)

## Challenges

- Nature of application
- Status of geo-information

# Geo-information in Aceh&Nias(2)

## Characteristics

- Quick decision
- Many actors are involved
- Decision under severe time and psychological pressure
  - Lots of uncertainty
  - External pressure
- No assessment criteria

# Geo-information in Aceh&Nias(3)

## Disaster Management phases in Aceh&Nias(1)

Pro-activeness:

SEAMERGES'S GPS crustal deformation monitoring since 2004

- 49 GPS monitoring stations in Indonesia, Malaysia&Thailand

2.ITB's GPS crustal deformation

- West Java geodynamics monitoring
- Volcanoes displacement



# Geo-information in Aceh&Nias(5)

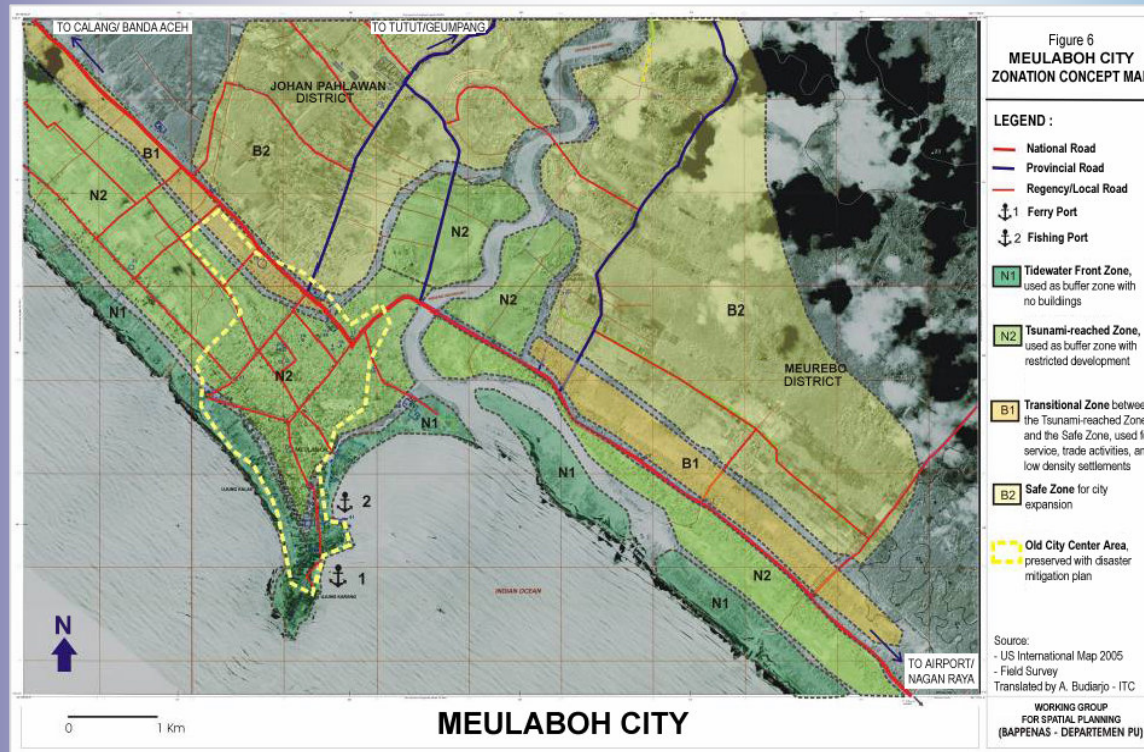
## Disaster Management phases in Aceh&Nias(2)

Mitigation:

- Conceptual Zoning Plan

# Geo-information in Aceh & Nias(6)

## Conceptual Zoning Plan



# Geo-information in Aceh&Nias(7)

## Disaster Management phases in Aceh&Nias(3)

Preparedness:

- Manual on spatial planning and land policy
- Better infrastructure for tsunami

Training rescue units

- Emergency&escape plans

# Geo-information in Aceh&Nias(8)

## Disaster Management phases in Aceh&Nias(4)

Response:

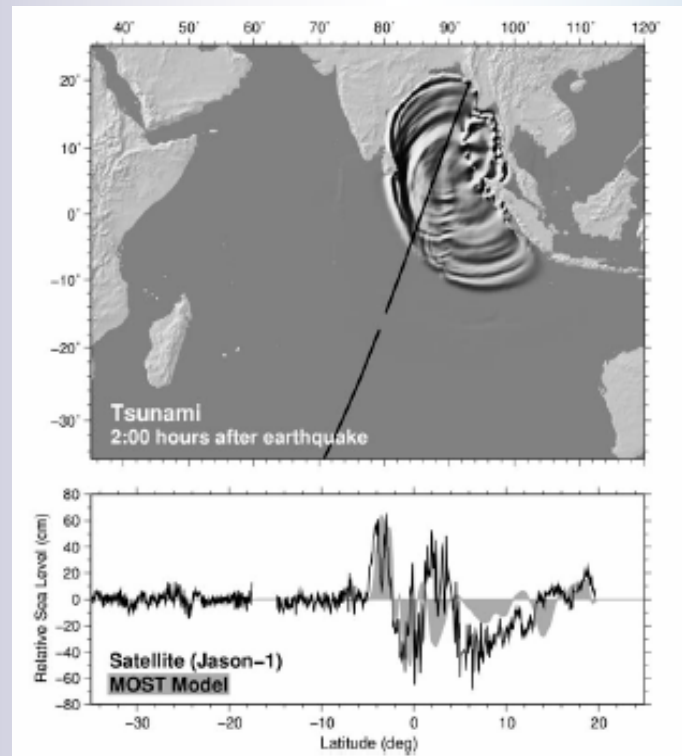
- Radar Altimeter Database System by TU Delft and NOAA

Needs more improvement:

- Long repeated cycle (e.g: TOPEX/Poseidon = 10 days)



# Geo-information in Aceh&Nias(9)



# Geo-information in Aceh&Nias(10)

## Disaster Management phases in Aceh&Nias(5)

Recovery:

- Manual on spatial planning and land policy
  - Participative Land Mapping

# Discussion(1)

Problems on usage of geo-information:

- Outdated geo-information
- Destroyed geo-information
- Authorisations of geo-information by different institution
- Missing of ground benchmark

# Discussion(2)

No early warning system existed!!!

# Conclusion

- Rehabilitation & reconstruction needs geo-information
- Geo-specialist must provide geo-information while needed
- Geo-information acquisition, management, analysis and presentation have to be addressed
  - Develop National Spatial Data Infrastructure
  - Researches on quick response, early warnings, communication and collaboration between emergency teams are needed

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