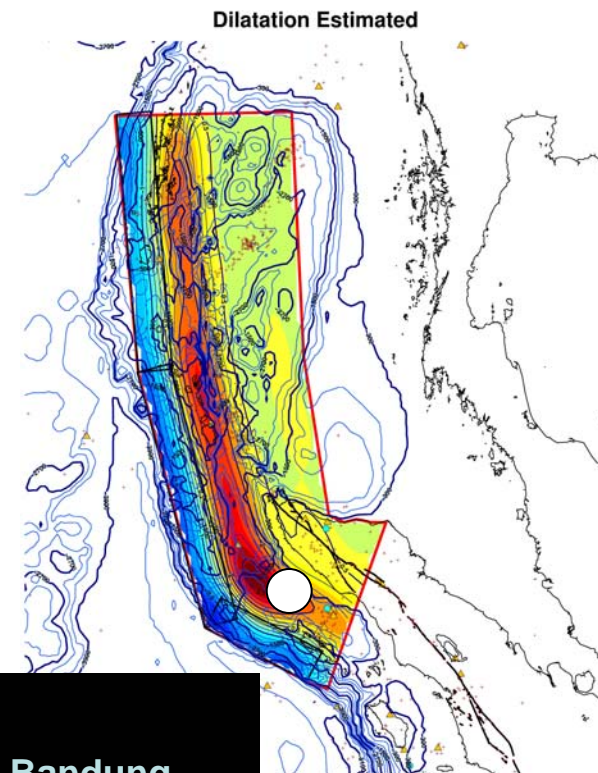
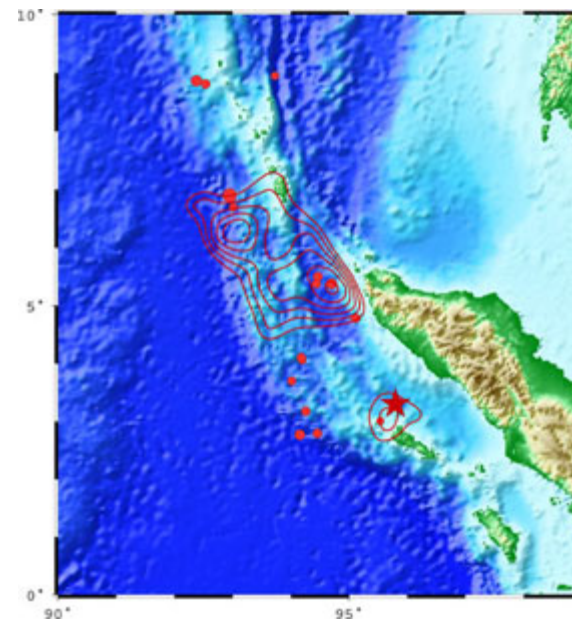
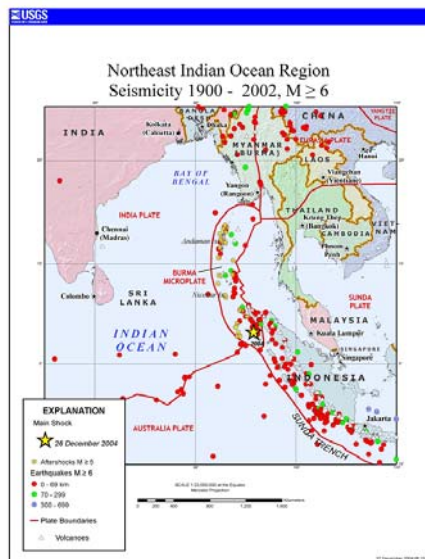


Understanding Giant Thrust of West Coast of N. Sumatra Earthquake

Before, Present & The Possibility of Future Effect



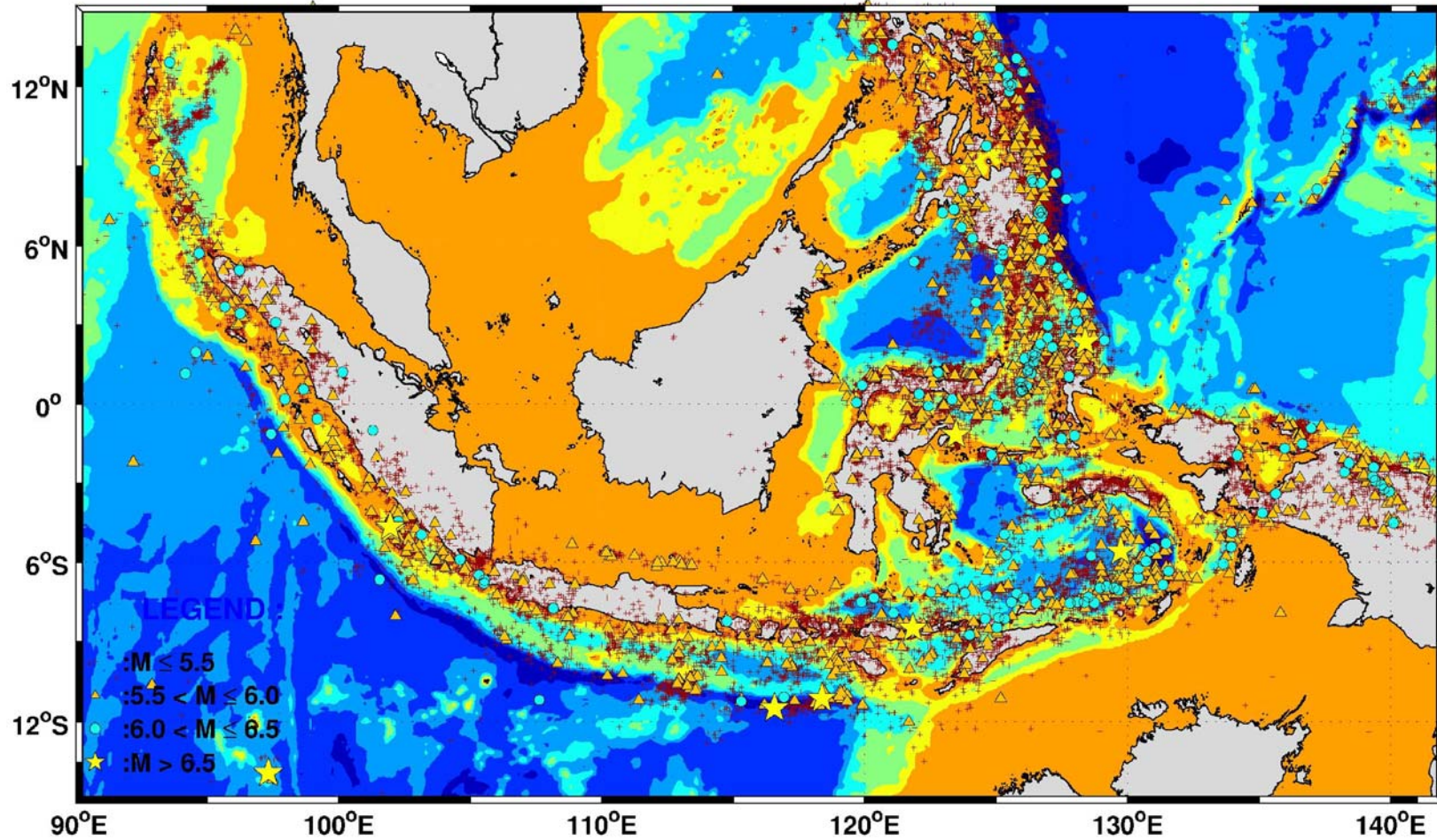
Wahyu Triyoso

Geofisika & Meteorologi, FIKTM, ITB-Bandung

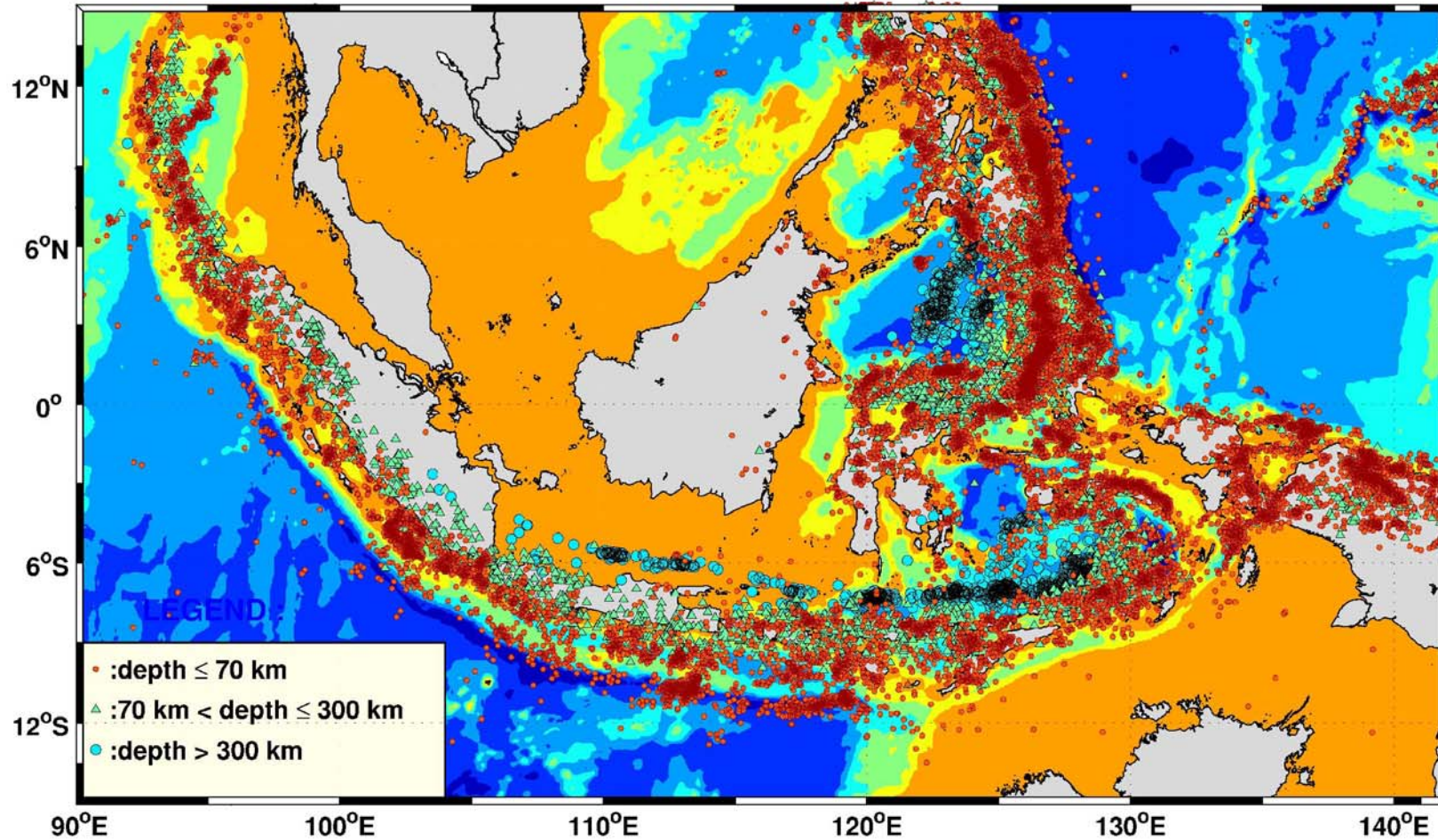
Tsunami Research Group, KPP Kelautan ITB

wahyu@geoph.itb.ac.id

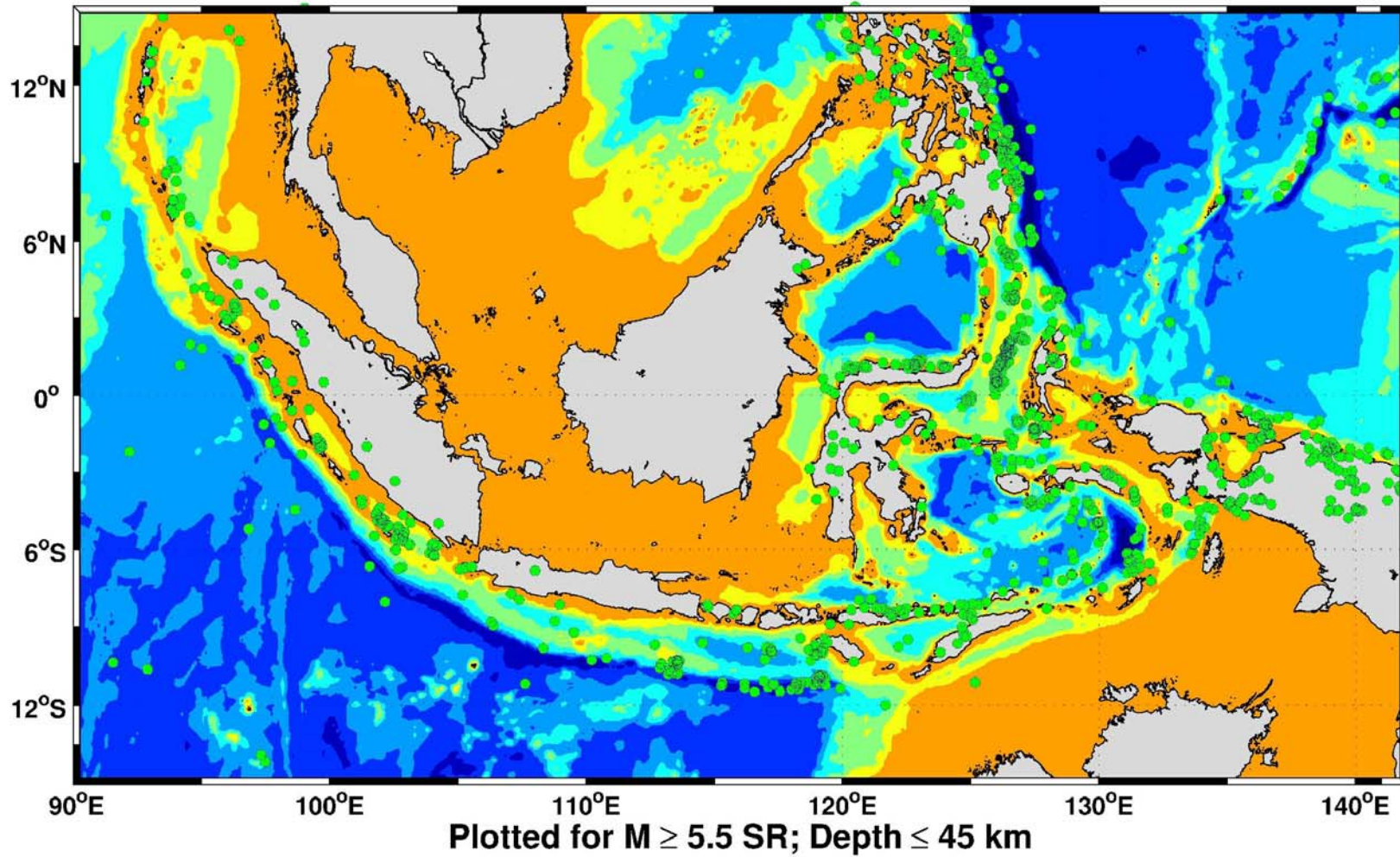
Peta Kegempaan di Indonesia (1964–2003, Source Data: Engdahl, 1998, 2004)



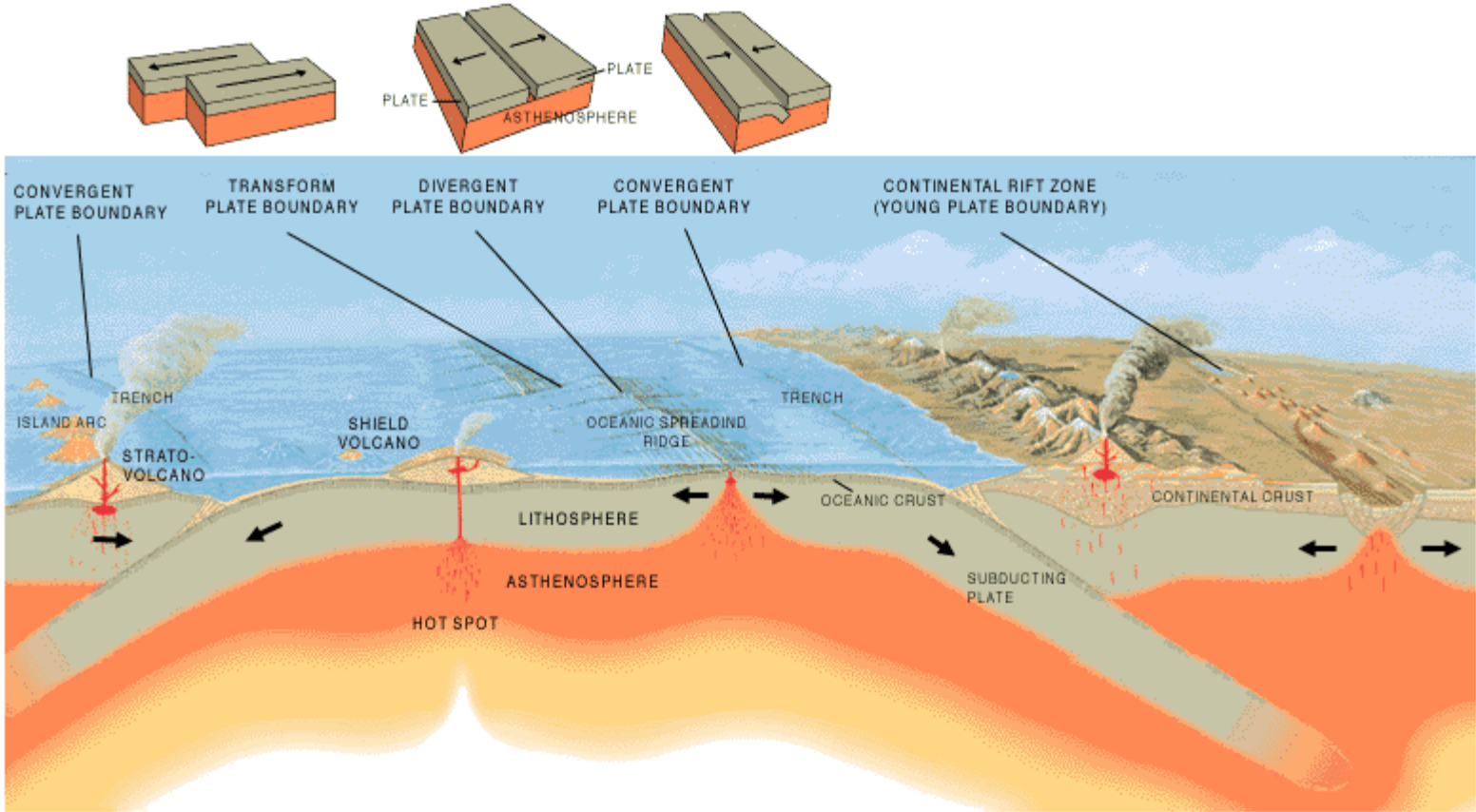
Peta Kegempaan di Indonesia (1964–2003, Source Data: Engdahl, 1998, 2004)



Peta Kegempaan di Indonesia (1964–2003, Source Data: Engdahl, 1998, 2004)



Global Tectonic Model



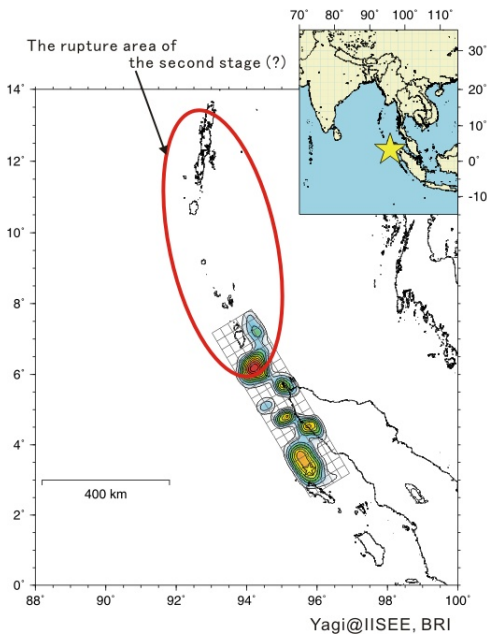
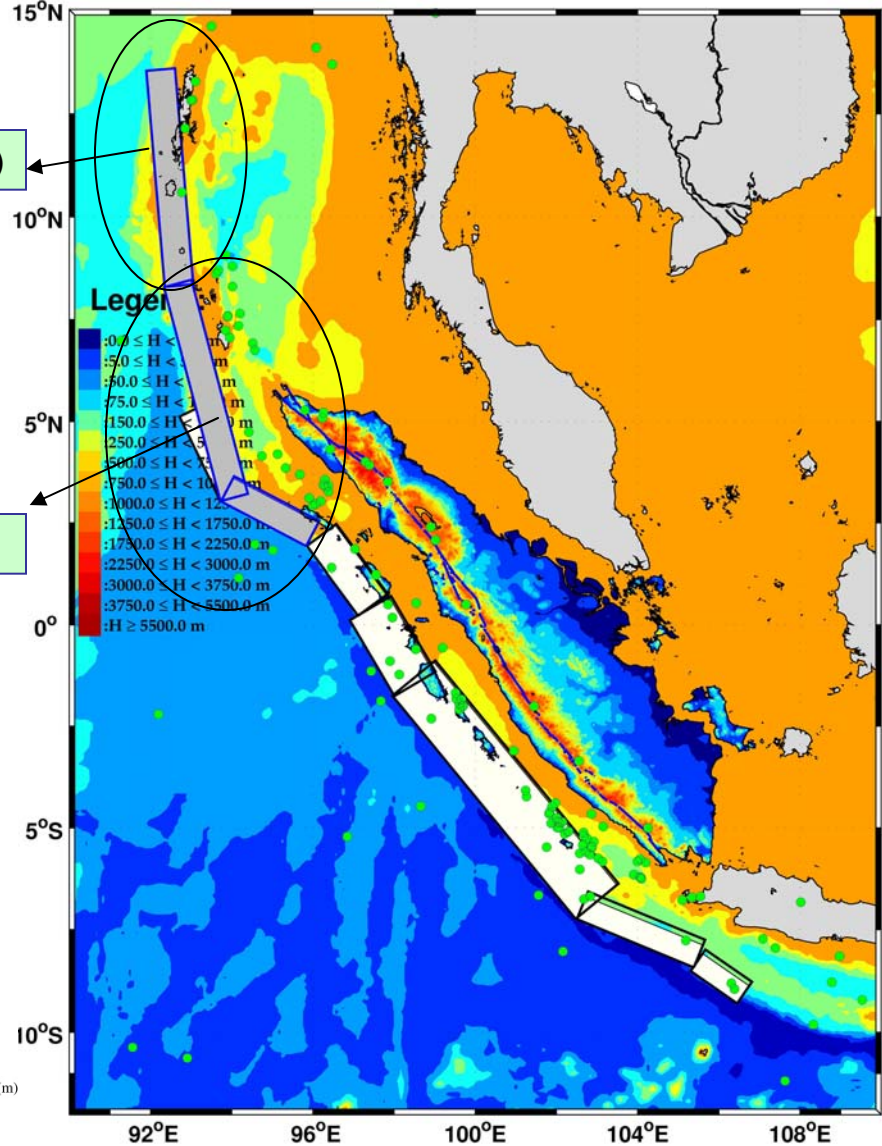
Giant Thrust Earthquake & Faulting



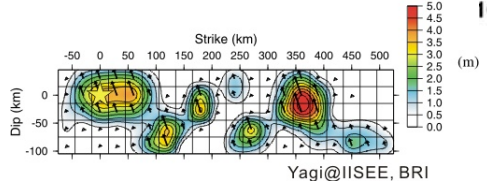
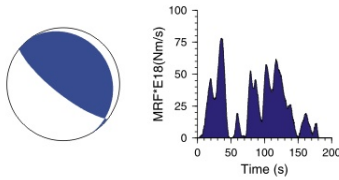
M 7.5 (Second Stage Break)

M 9.0 (First Stage Break)

Peta Kegempaan di Sumatra & Sekitarnya (1964–2003; $M \geq 5.5$; $H \leq 45$ km)



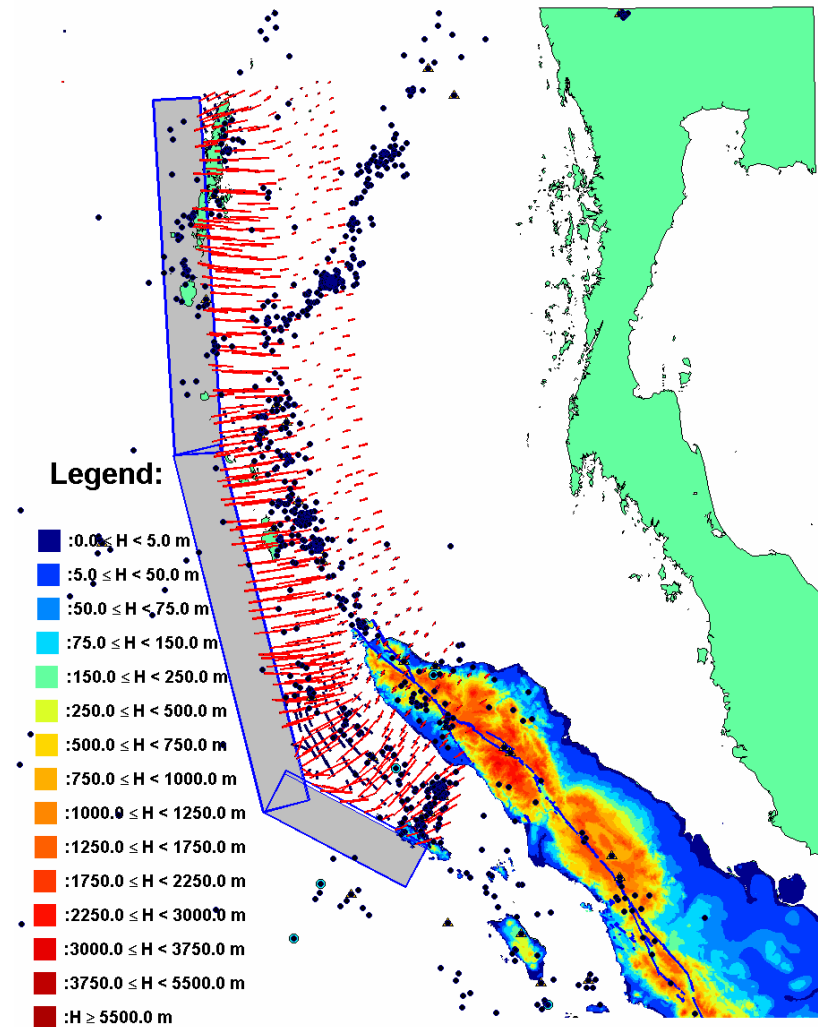
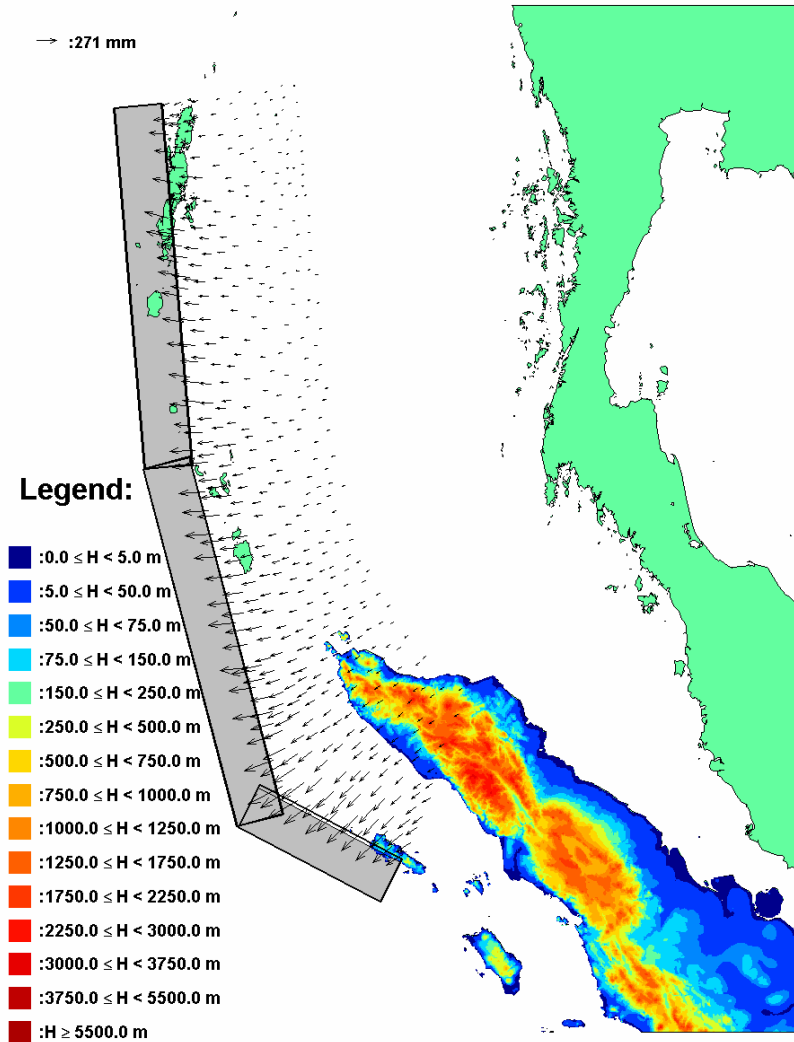
OFF COAST OF NORTHERN SUMATRA
 Moment = $0.4461E+22$ (Nm), $M_w = 8.4$
 (Strike,Dip,Slip) = (329.0, 15.0, 110.0)



After Wahyu Triyoso, Dec, 31st, 2004)

Mechanic Aspect of Giant Thrust Earthquake & Faulting

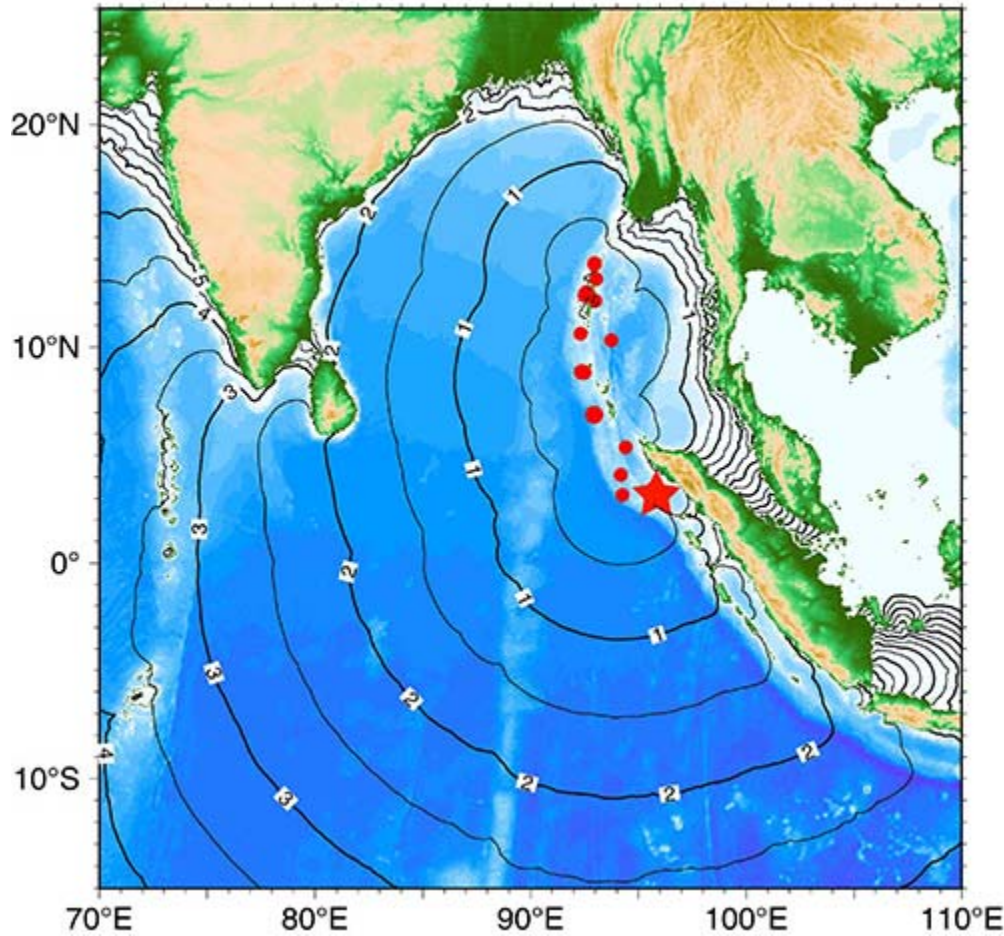
Displacement Estimated



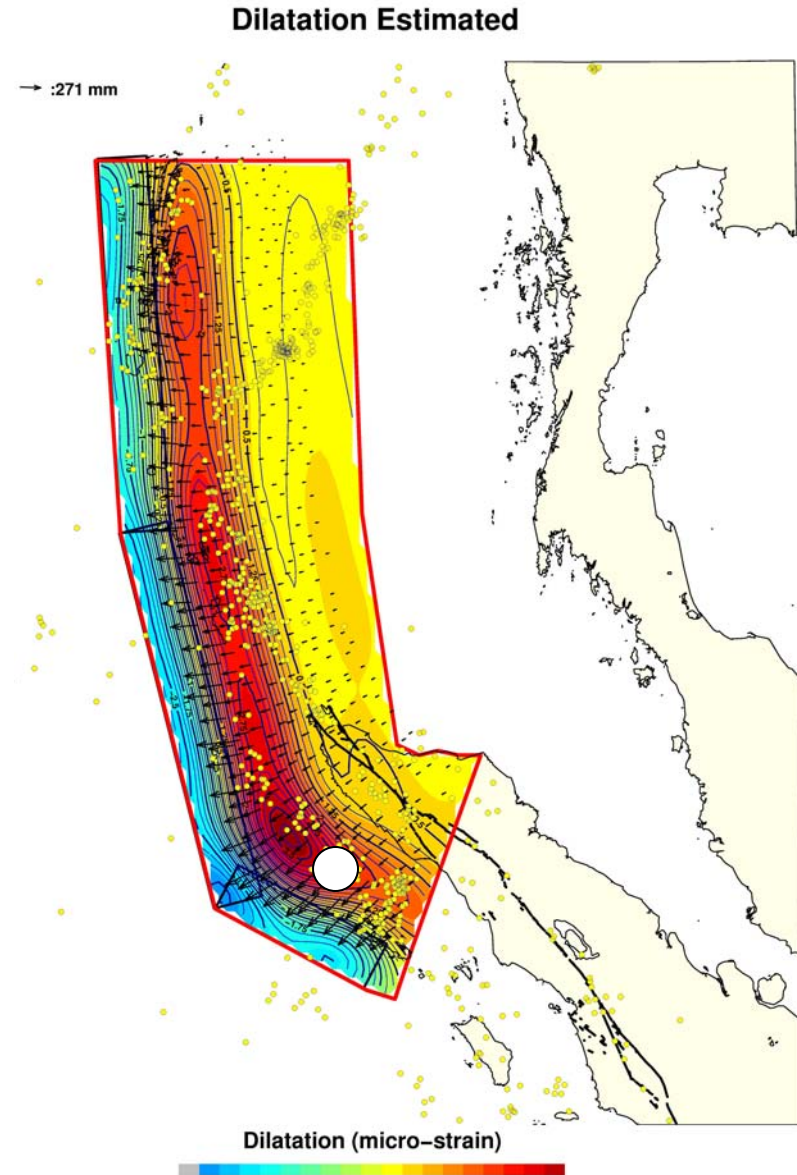
Compression (black) & Extension (red)

After Wahyu Triyoso, Dec, 31st, 2004)

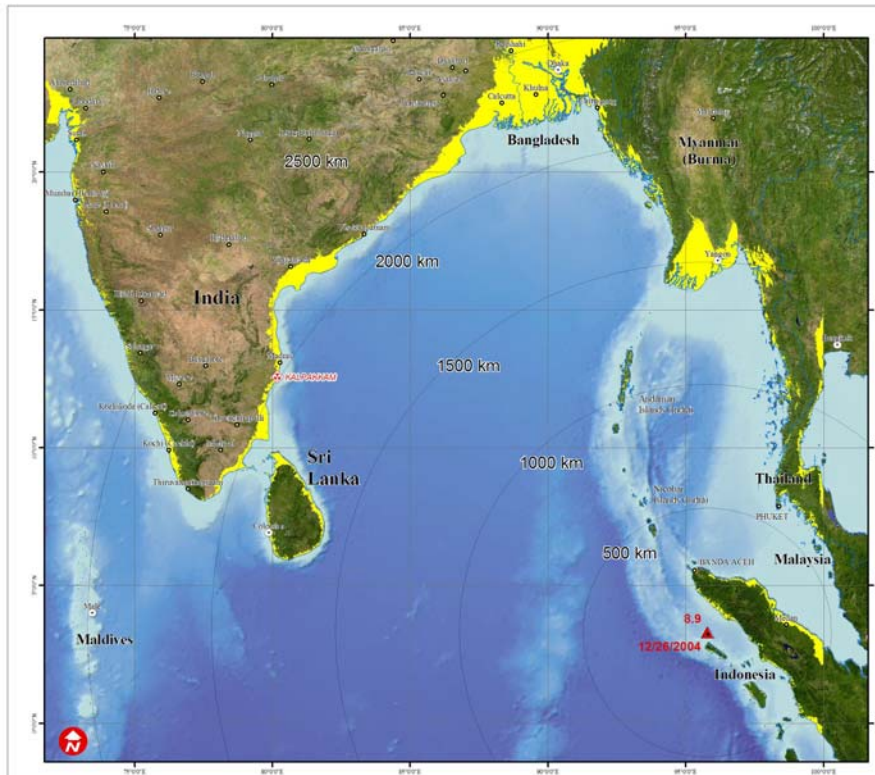
Understanding Tsunami Generation Zone



Estimated Tsunami Travel Time
(After Kenji Satake, 28 Dec, 2004)



Understanding Tsunami Generation Zone & Tsunami Affected Areas



Regional Map of Tsunami-Affected Areas

28 December 2004

This map illustrates coastal areas under 20 meters in elevation, as shown in bright yellow. This low-lying coastal zone is not a direct indication of areas affected by the 26 December 04 Tsunami—only those areas which may have suffered damage. For example, although Bangladesh is almost entirely under 20m in elevation, extensive swamps and limited settlements along the coast resulted in few casualties.

- Capital
- Large Town
- ▲ Epicenter
- ⊕ Nuclear Power Plant
- International Border
- Elevation under 20m

Disaster Type: Tsunami
 Disaster Date: 26 December 2004
 Data Source: GLCF, NASA, USGS
 Sensors: Modis-Terra mosaic
 Elevation Data: SRTM30/ETOPO2
 Resolution: 1km
 Scale: 1:12,000,000 for A3 Prints
 Datum: WGS-84
 Projection: Geographic coordinates
 Map Produced: 28 December 2004

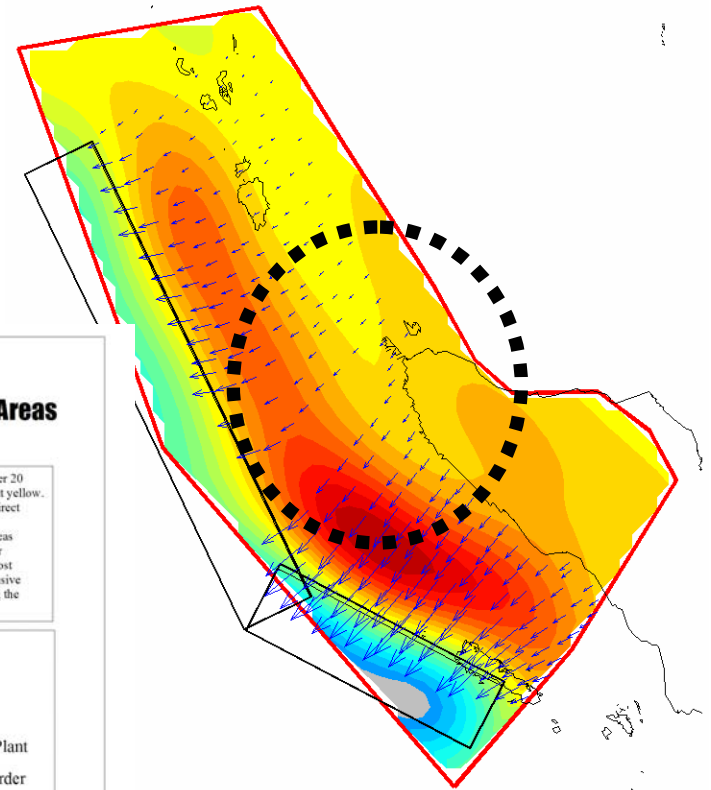
The depiction and use of boundaries, geographic names and related data shown here are not warranted to be error-free nor do they necessarily imply official endorsement or acceptance by the United Nations.

UNOSAT
 satellite imagery for all

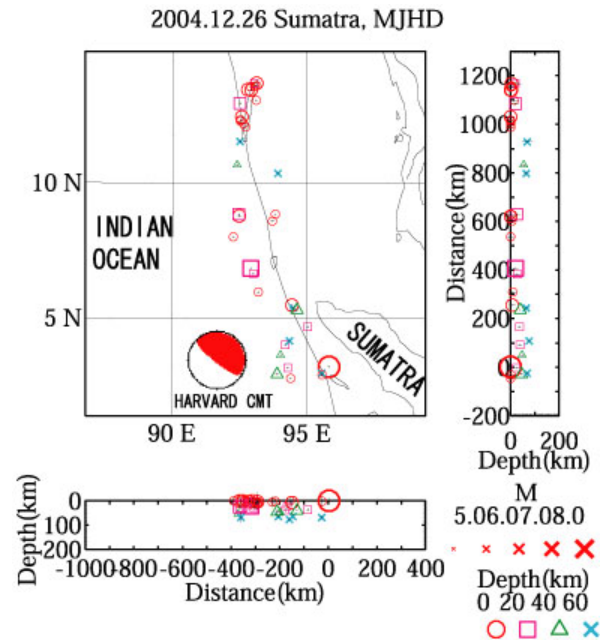


This map was produced for the UNOSAT project headed by UNITAR and executed by UNOPS. UNOSAT is a UN-private consortium providing satellite imagery and related geographic information to UN humanitarian and development agencies, and their implementing partners. Please see www.unosat.org for additional information.

The International Charter on Space and Major Disasters aims at providing a unified system of space data acquisition and delivery to those affected by natural or man-made disasters through authorized users. Since 1 July 2003 the Charter is available to support the UN with satellite imagery. Please contact the UN Office for Outer Space Affairs for further information (ooasa@un.org).

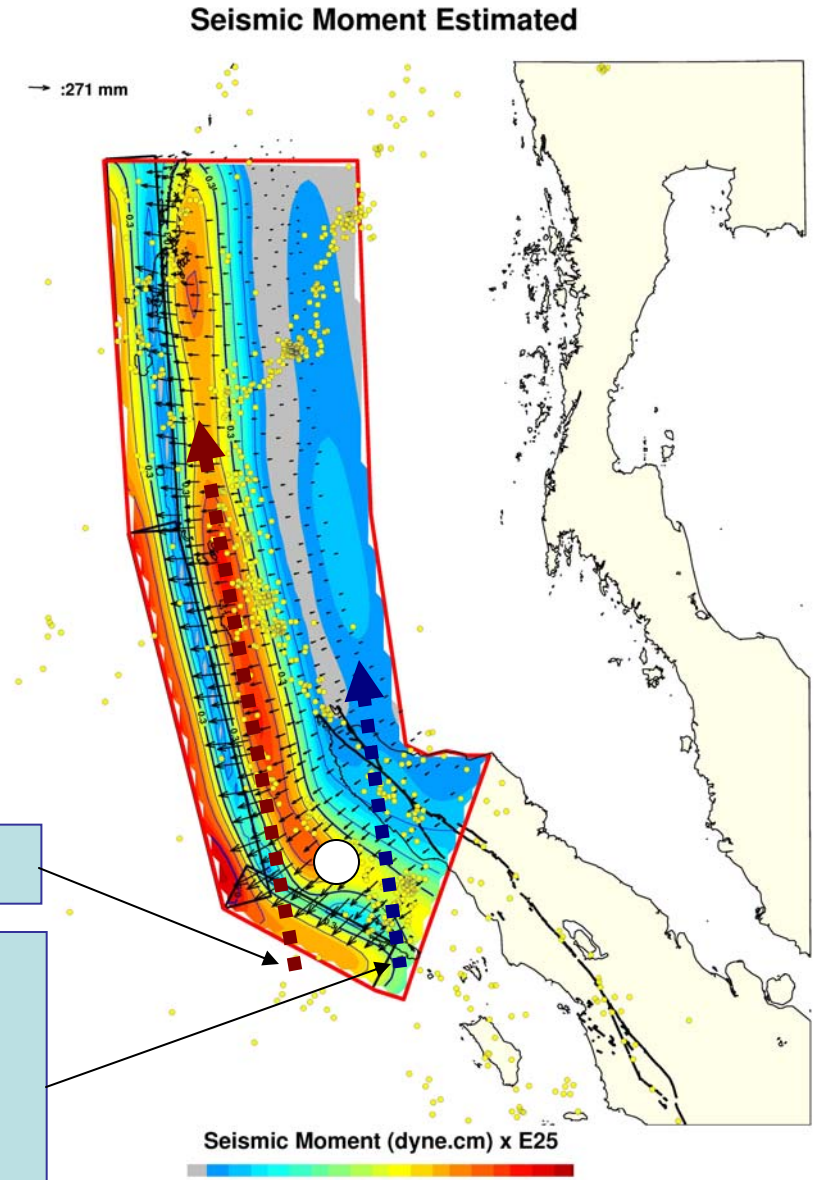


What do we need to Learn & Consider To the Post Giant Thrust of Northern Sumatra Earthquake !!!



Direction of After Shocks

Some Stress is Transferred to the North. It seems that we need to be careful for Stress triggering Earthquake Phenomenon for the Near Future



Before and After Giant Thrust Earthquake

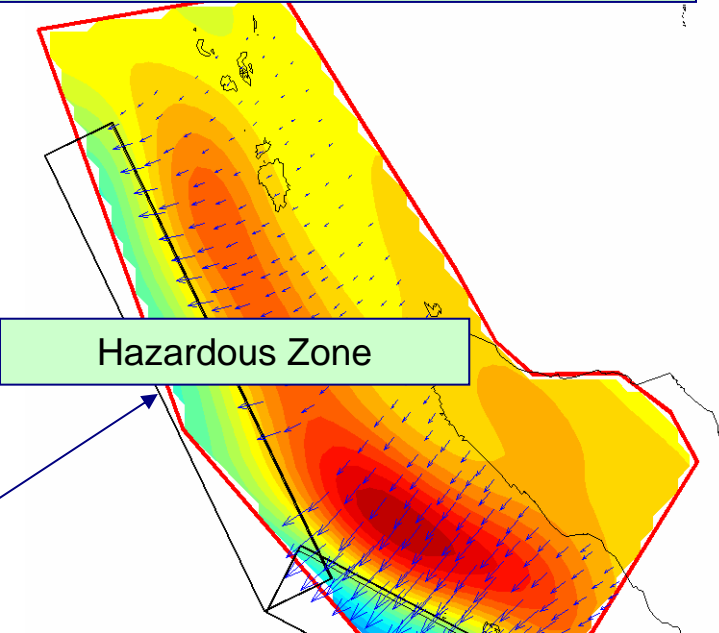
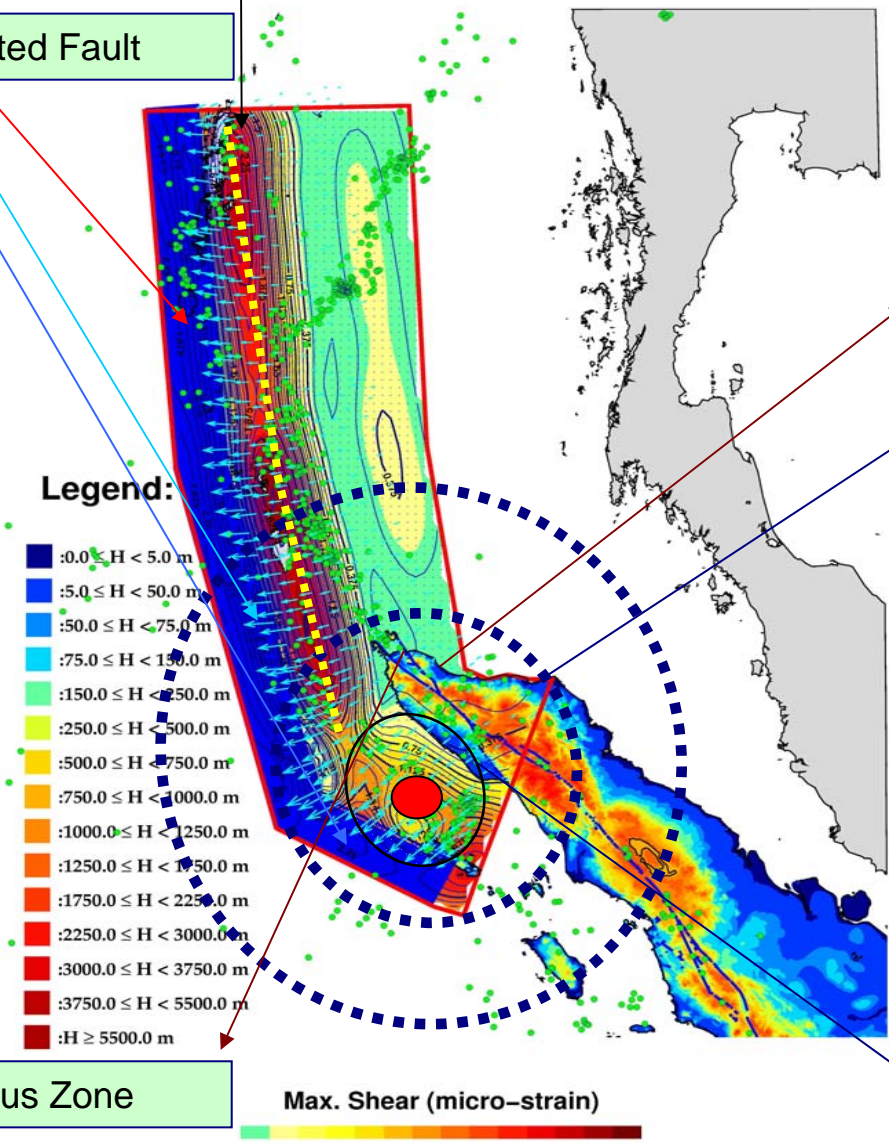


Summarizing Giant Thrust of West Coast of N. Sumatra Earthquake (Dec. 26, 2004; Wahyu Triyoso)

Aftershock Zone
(Almost Elliptical)

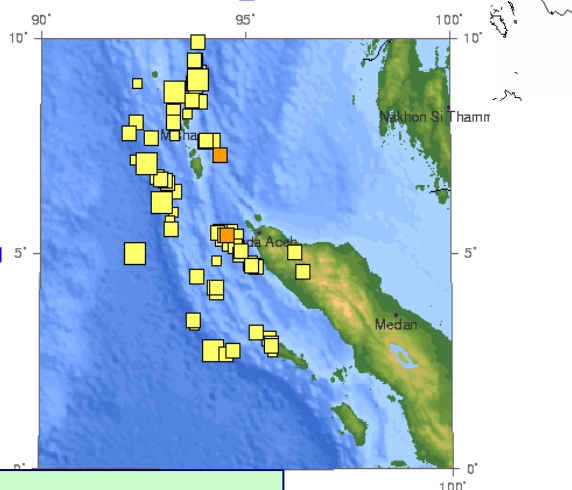
Segmented Fault

Maximum Shear Strain



Hazardous Zone

Sun Jan 2 15:32:24 UTC 2005
65 earthquakes on this map



Hazardous Zone

Hazardous Zone

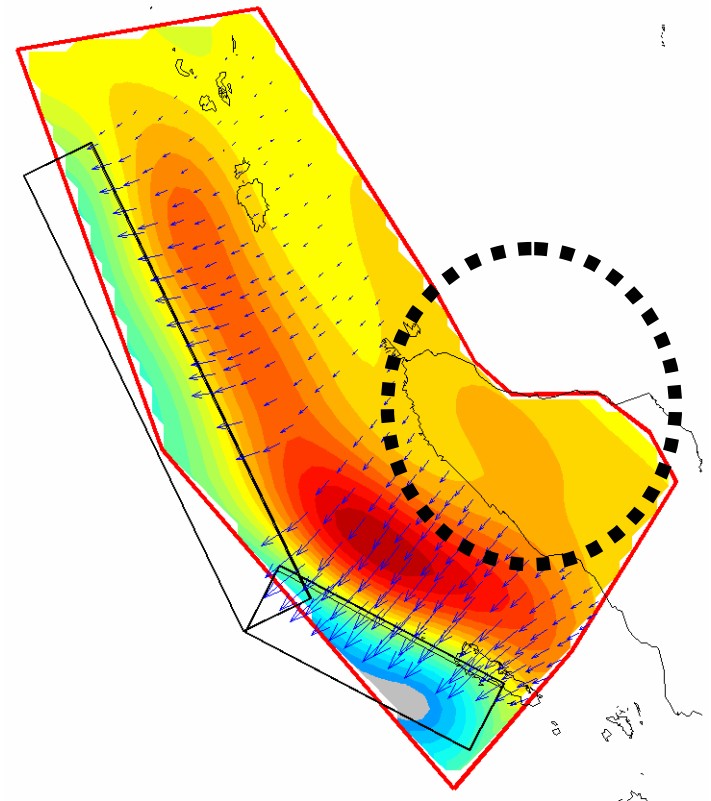
Low Land with Gentle Slope is the most danger area for Tsunami Attack.
Aftershock seems likely will be distributed along Elliptical Zone

Some Opinions

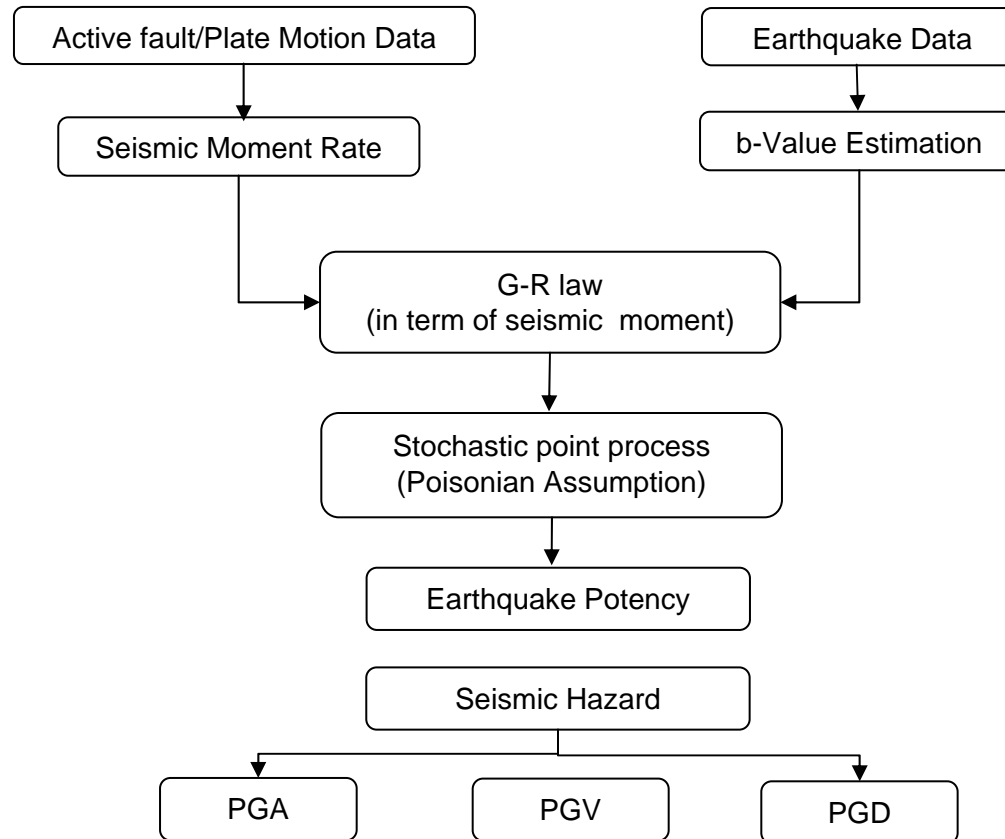
Peta Identifikasi Kemungkinan Gempabumi Besar dan Dangkal di seluruh Indonesia perlu dibuat dengan segera

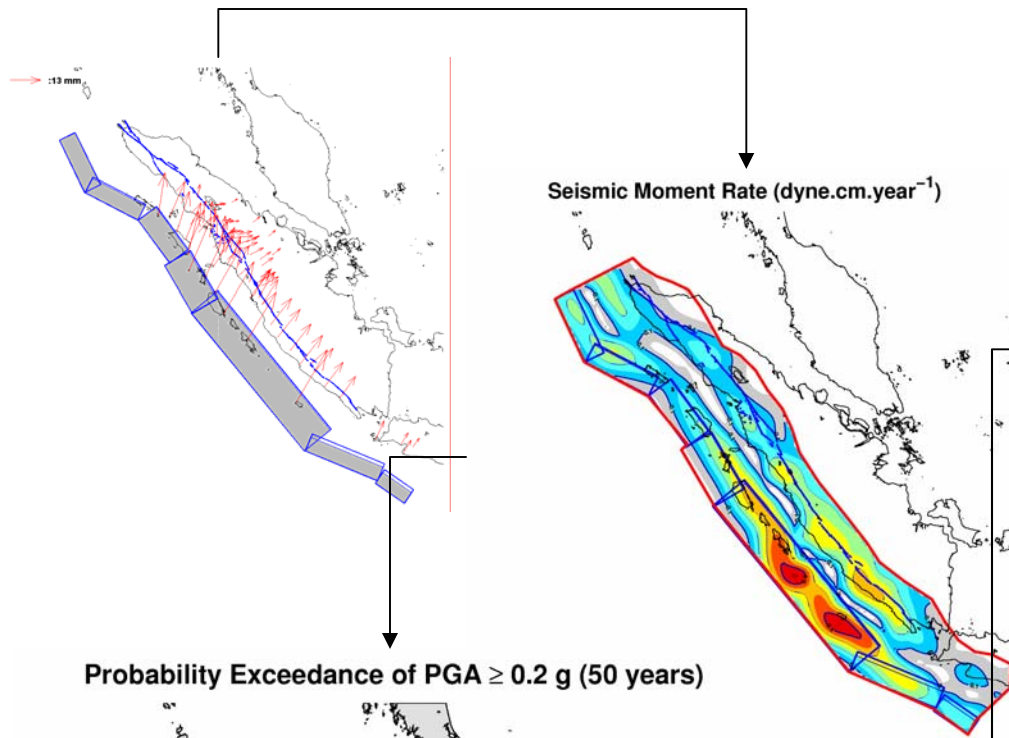
Peta Gempabumi besar disepanjang zona subduksi yang sangat berpotensi menimbulkan Tsunami perlu disusun dengan segera

Perlu Sosialisasi Informasi dalam bentuk pendidikan masyarakat di sepanjang Pantai Selatan di Seluruh Indonesia

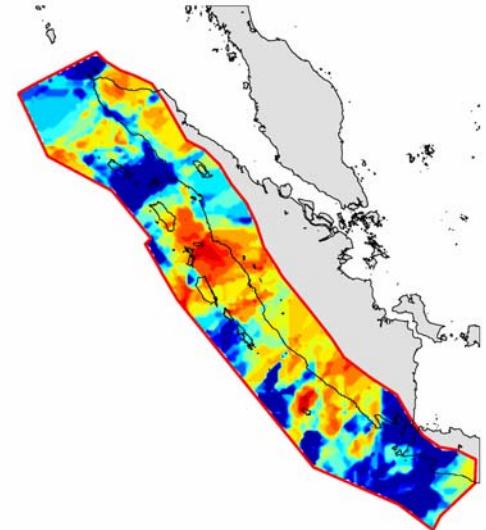


Hazard Algorithm of Overall Sumatra Island

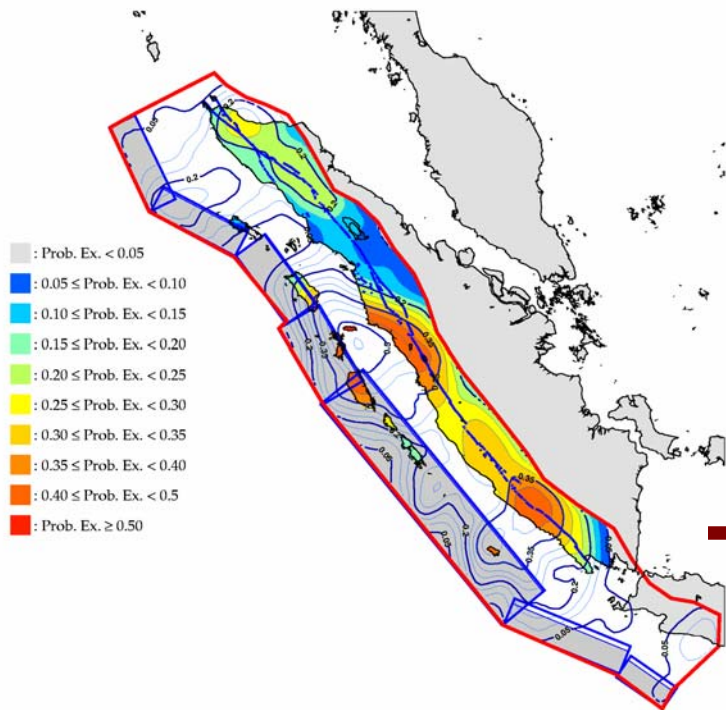




b-value Map (Constant Number: 10; Depth ≤ 45-km)



Probability Exceedance of PGA ≥ 0.2 g (50 years)



PGA of 10% PE Level (50 years)

