

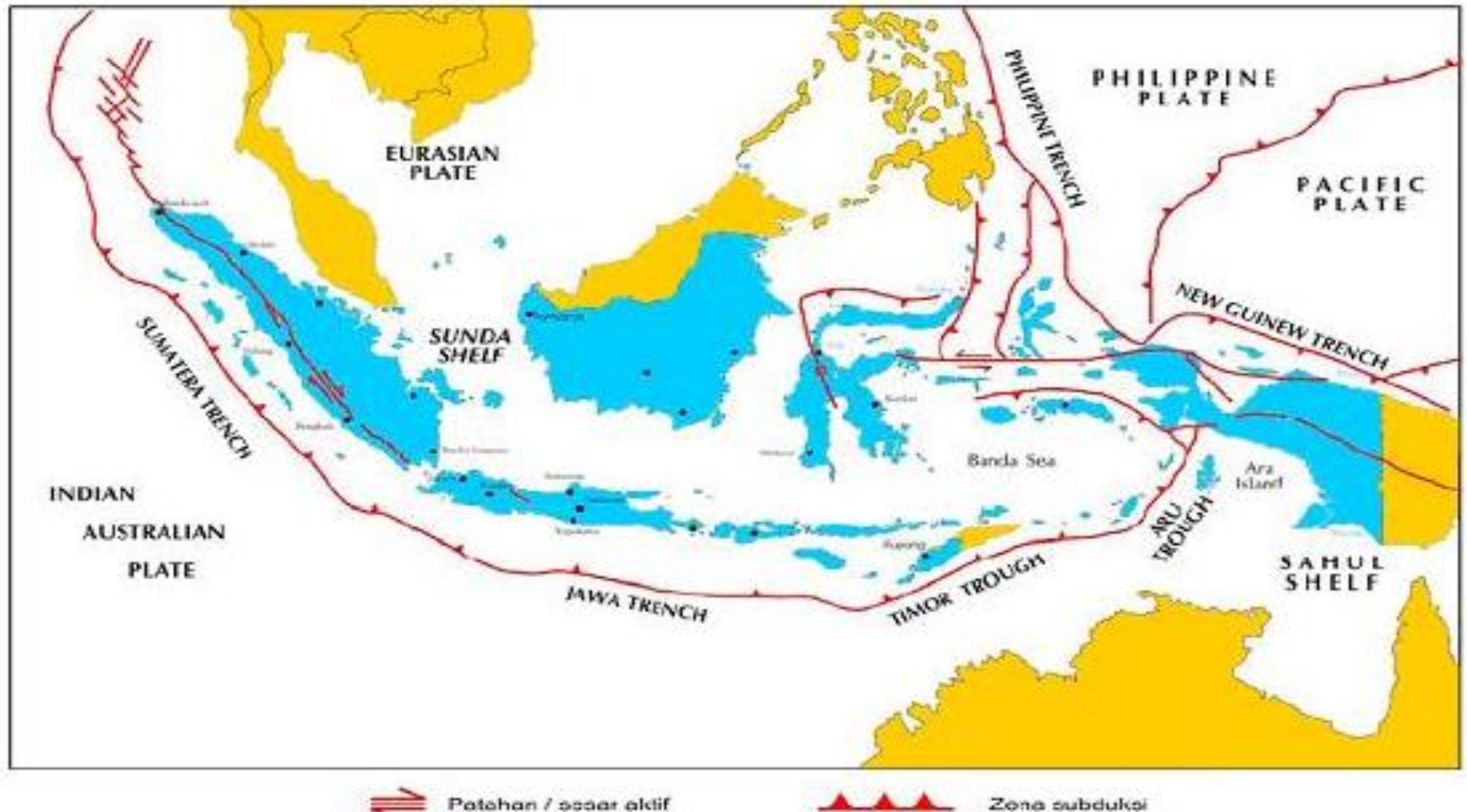
SESSION III

HAZARD MAPPING, RISK ASSESSMENT, AND INSURANCE COVERAGE OF NATURAL CATASTROPHE RISK

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Geological Position of Indonesia



Source : <http://draft2pena.files.wordpress.com/2008/05/gempa11.jpg>

Disaster Event in Indonesia

Disaster	Year							Total
	2002	2003	2004	2005	2006	2007	2008	
Earthquake	6	10	11	9	20	12	8	76
Tsunami following earthquake	0	0	1	0	1	0	0	2
Volcanic eruption	3	4	5	2	5	4	1	24
Landslide	48	70	54	50	73	56	39	390
Flood following landslide	17	37	9	13	31	45	22	174
Flood	51	159	285	248	328	152	197	1,420
Windstorm	14	30	65	47	84	75	56	371
Abrasion	0	6	8	6	14	29	8	71
Technology failure	4	13	8	7	18	6	3	59
	143	329	446	382	547	379	334	2,587

Source : Badan Penanggulangan Bencana Nasional

Lesson from Last Earthquakes in Indonesia



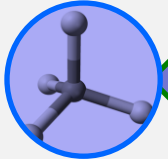
Public Awareness Program



People Migration from coastal zones



Early Warning System Development

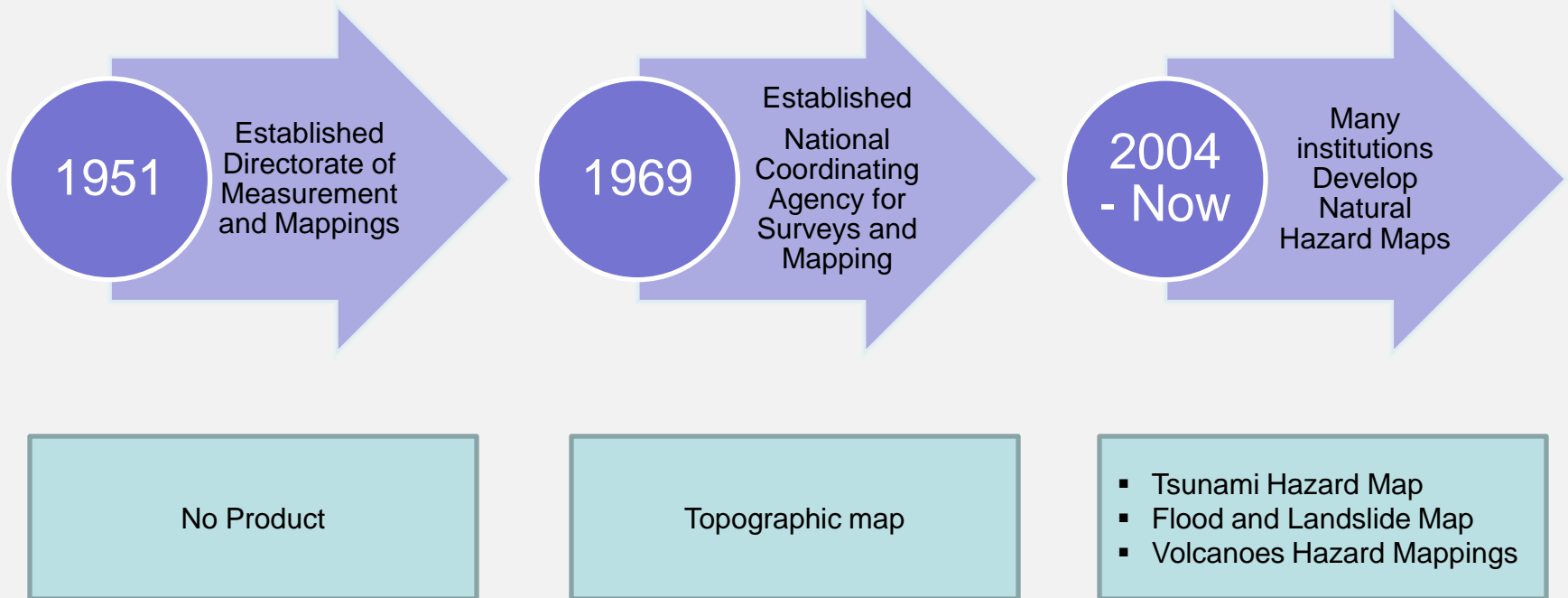


Coordination Improvement

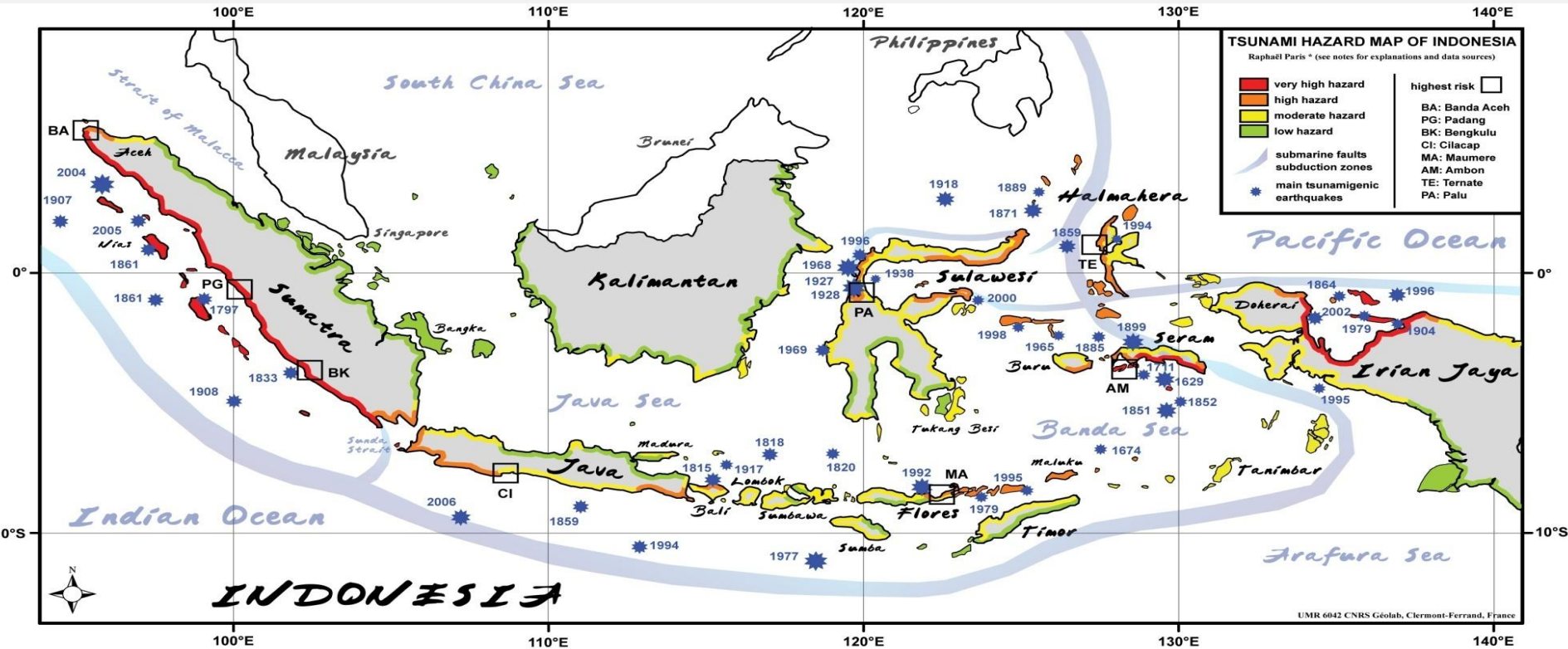


The role of the media

History of Natural Hazard Maps

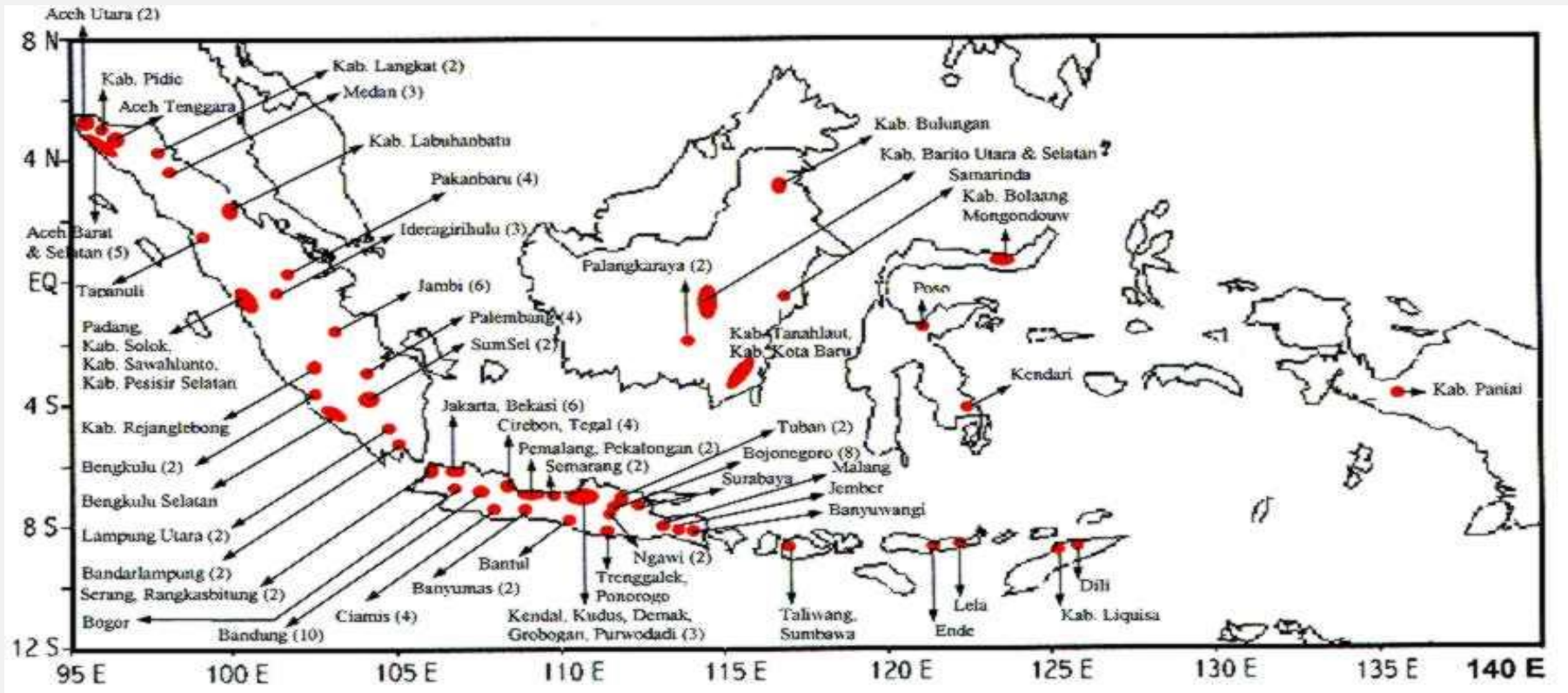


Tsunami Hazard Map



- In 2006, Ministry of Energy and Mineral Resources Republic of Indonesia (DESDM) have finished to maps 21 tsunami prone areas in Indonesia
- Beside DESDM, there are several institutions also built Tsunami Hazard Map. For example, Provincial Government of West Sumatera, in cooperation with Study Center of Andalas University and Alfred Wegener Institute (AWI) German, have built integrated tsunami hazard map of West Sumatera

Flood and Landslide Hazard Map



Source : http://upc.uplink.or.id/IMG/peta_daerah.jpg

- In 2006, DESDM has finished the mapping of flood and landslide hazard for Java region.
- The map is built by overlaying the data of geological condition, rainfall, and vegetation condition of the area.
- Other Flood Hazard is built by joint cooperation between Ministry of General Work, Meteorological, Climatological, and Geophysical Agency, and Bakosurtanal

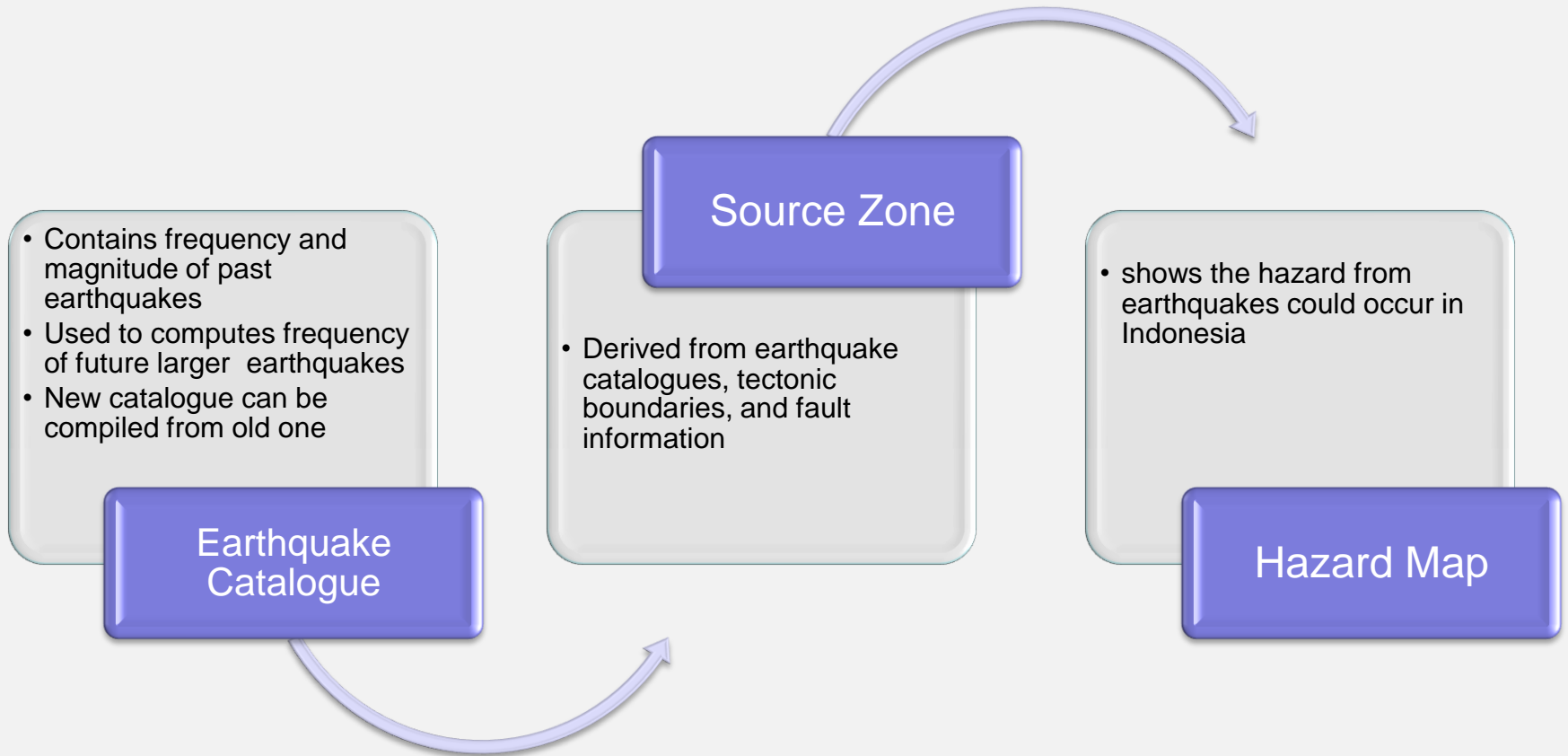
Volcanoes Hazard Map



Source : http://upload.wikimedia.org/wikipedia/commons/thumb/f/f5/Map_indonesia_volcanoes.gif/500px-Map_indonesia_volcanoes.gif

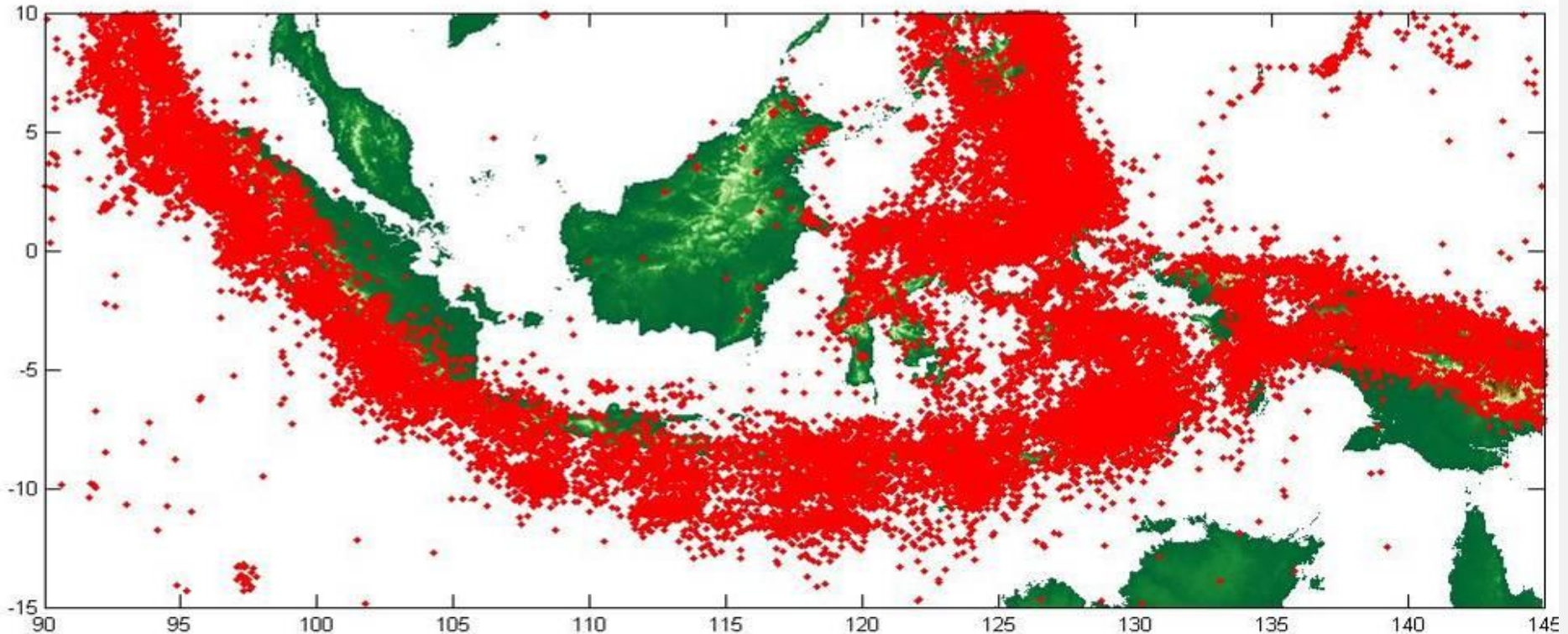
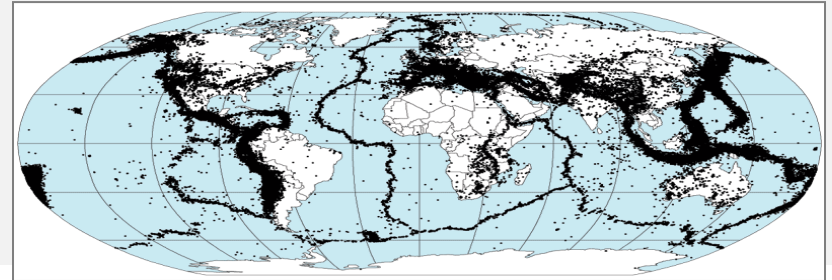
- In 2005, Bakosurtanal in cooperation with Ministry of General Work, and Meteorological, Climatological, and Geophysical Agency started the project of volcanoes hazard mapping.
- At the end of 2007, 38 volcano hazard maps successfully finished. The map is completed with evacuation route in case of eruption.

Process of Earthquake Mapping



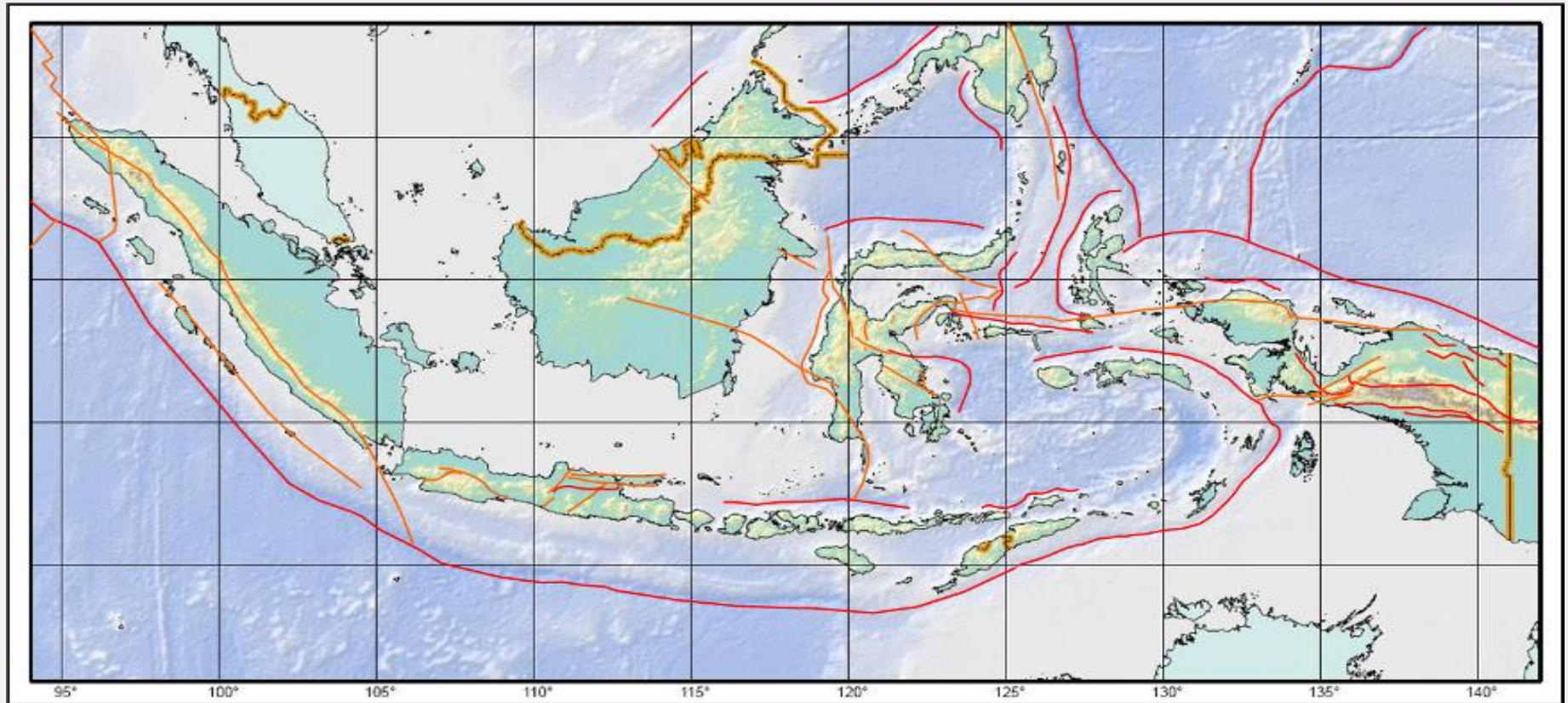
Earthquake Catalogue

World's and Indonesia's Earthquake Epicenter Map for Earthquake with Magnitude > 5.0
Almost 20% of Damageable and tsunamigenic Earthquake Occurred in Indonesia.



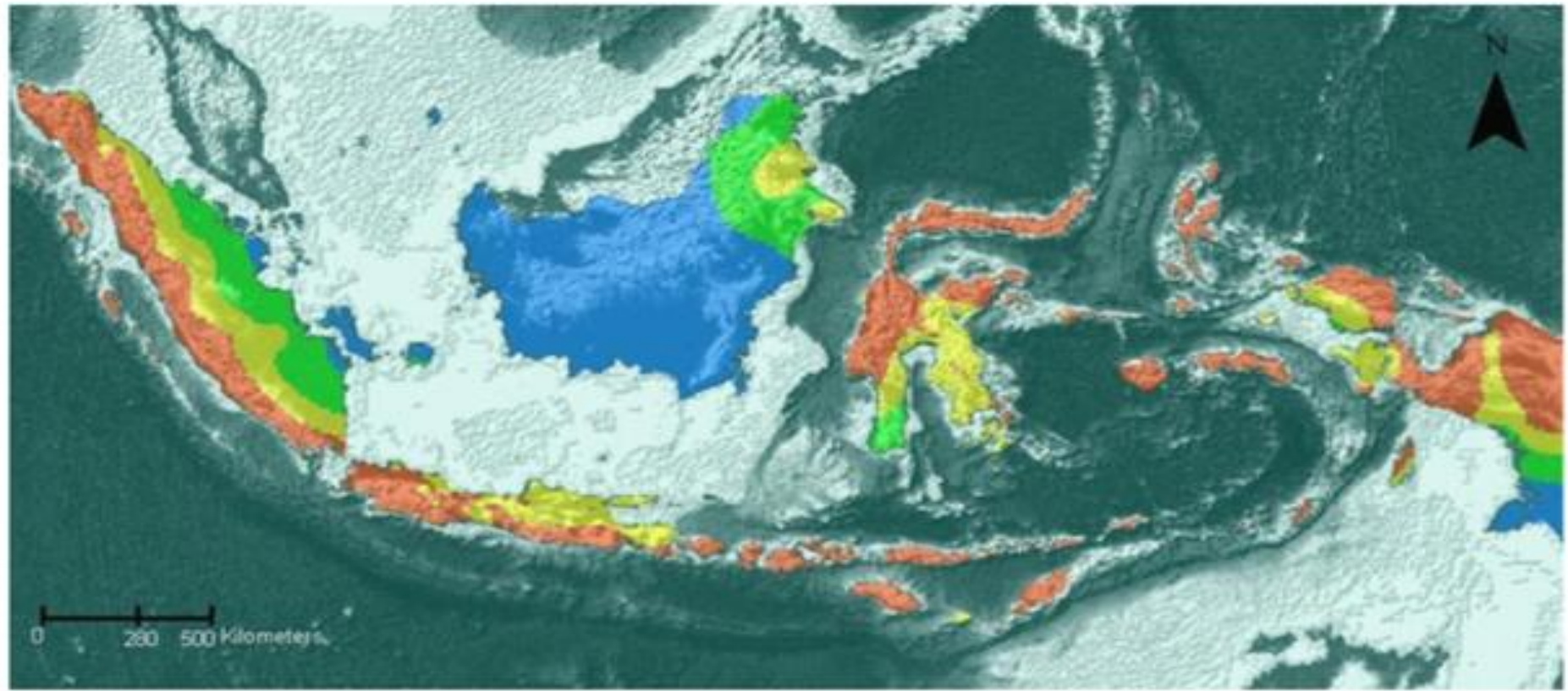
Source: PT Maipark Indonesia

Source Zone



Source : PT. Maipark Indonesia

Hazard Map



Zona I

Zona II

Zona III

Zona IV

Earthquake Map & Insurance

Benefits of such earthquake mapping as follows:

1. To obtain the potential hazard zoning in Indonesia which directly associated with the risk of earthquake.
2. To obtain the standard rate risk of earthquake based on scientific studies of geophysics and seismology wherein divide the potential disaster zone in Indonesia.

Perils Covered by The Indonesian Earthquake Standard Policy

- **Earthquake:** is a shaking or trembling of the earth due to geological phenomena such as tectonic movement and volcanic eruptions.
- **Volcanic Eruption :** is a form of a volcanic activity ejecting volcanic materials i.e. such as lava flows, pyroclastics and or volcanic gasses onto the earth's surface either from a central vent or from fissures of a volcano.
- **Fire and Explosion following Earthquake and or Volcanic Eruption :** is fire and explosion where the proximate cause is earthquake and or volcanic eruption.
- **Tsunami :** is a great sea wave produced by submarine earth movement such as subduction of crustal plates or by submarine volcanic eruption

Conclusion and Recommendation

Hazard Mapping are not integrated

- Natural hazards mapping should be stored and managed by one specific and relevant governmental institution

Standardized hazard mappings have not been documented

- Standardized hazard mappings should be documented and easily accessed by public
- That maps should be regularly updated regularly

Standardized hazard mappings can be useful for us to anticipate the natural hazard potency

- The government should use the standardized hazard mappings to arrange a better city planning

Natural disasters also impact economy sector

- Government should develop natural catastrophe study form economic stability point of view.

THANK YOU