

# **INDONESIA EMERGENCY QUICK RESPONSE TO THE WEST SUMATRA EARTHQUAKE**

*National Coordinating Agency for Surveys and Mapping (BAKOSURTANAL)*



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Jl. Raya Jakarta-Bogor, INDONESIA





A topographic map of Indonesia with a grid overlay. A red star marks the epicenter of an earthquake near Padang, West Sumatra. A yellow box with a red star and the text 'Pusat Gempa 30 September 2009' is placed over the star. A blue circle highlights the star. A red dashed line with white dots runs along the coast of Sumatra. Other geographical features like 'SELAT KARIMATA' and 'SELAT BANGKALA' are labeled. Major cities like Singapore, Pekanbaru, and Palembang are also marked.

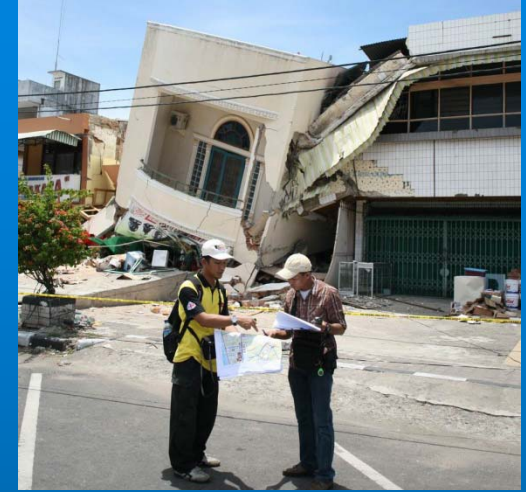
## Epicentrum

*Wednesday September 30, 2009.  
Padang city, and the surrounding,  
located in West Sumatera province  
was devastated by earthquake at  
magnitude 7.6 Richter Scale. The  
undersea epicenter location was  
Lat.:  $0.84^{\circ}\text{S}$  ; Long.:  $99.65^{\circ}\text{E}$  ;  
epicenter depth was 80 km, and  
 $\pm 57$  Km north-west of Padang city  
which have  $\pm 900.000$  inhabitants*



## ***EARTHQUAKE AT WEST OF SUMATERA***

- ❖ The death toll from the earthquake was more than 800 people. Around 200 people were reported missing and more than 2000 people got injured. This is excluded more than 600 people who were buried by the earthquake-triggered landslides happened in four villages located in the mountainous areas surrounding the city of Padang.



- ❖ More than 133,000 houses, shops, offices were destroyed while over 110,000 others suffered damages. Some large commercial buildings, hospitals, hotels, mosques and churches were even completely destroyed.

- ❖ Many infrastructures such as roads and bridges were fractured and brought down. This isolated people in remote areas, and broke supply lines of food, drinking water and medical to this people.



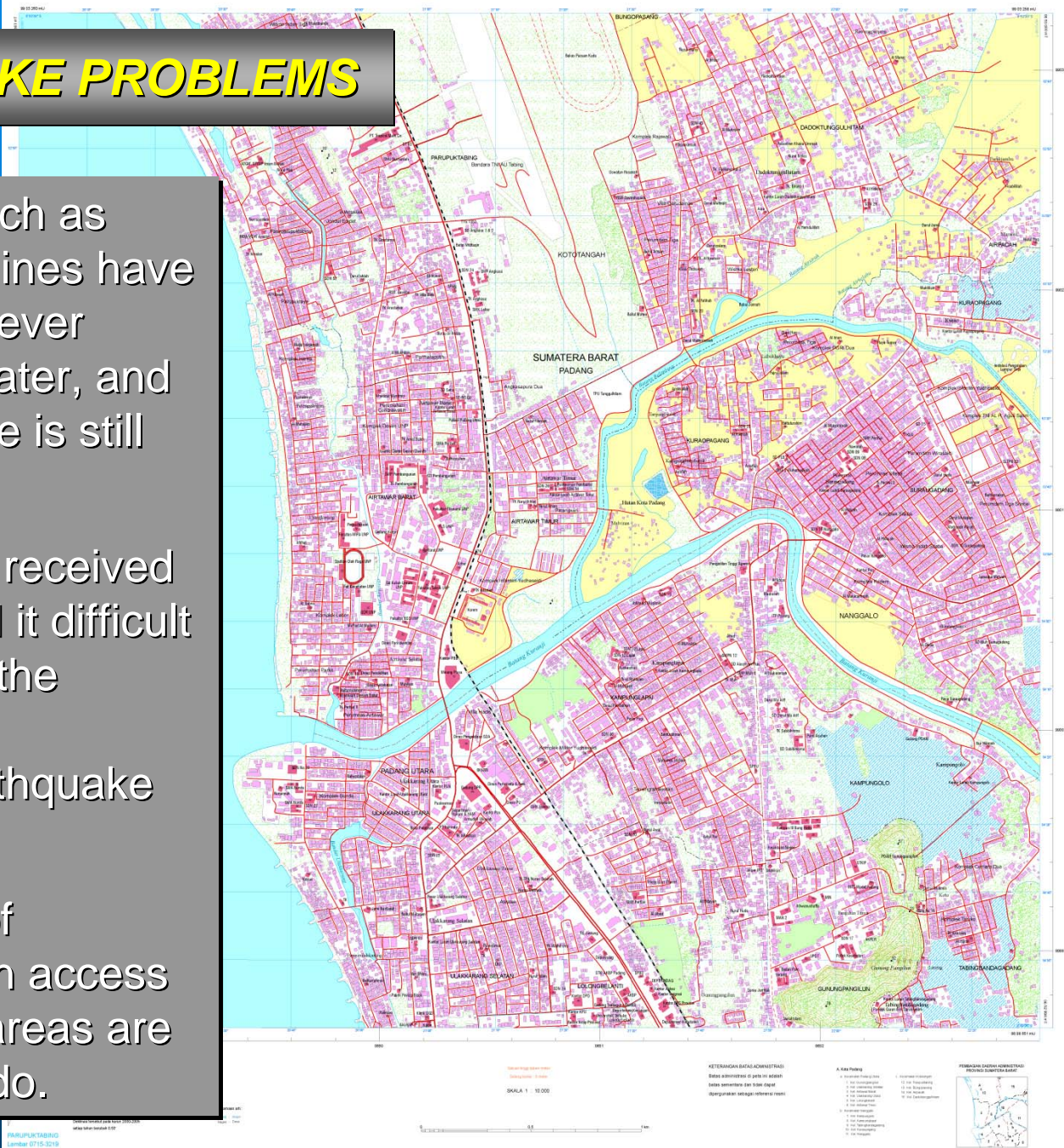


# POST EARTHQUAKE PROBLEMS

Some basic needs such as electricity, telephone lines have been recovered. However distribution of food, water, and medicine to the people is still have a big problem.

The government now received a lot of food but found it difficult to distribute because the government had little information of the earthquake victims whereabouts.

The reconstructions of infrastructures to open access to people in isolated areas are also another work to do.



PETA RUPABUMI INDONESIA  
 1 : 10.000  
 Lembar 0715-3219  
**PARUPUKTABING**  
 Skala 1: 2008

**PARUPUKTABING LEMBAR 0715-3219**

INSTITUT TEKNOLOGI SEPULUH NOVENBER (ITS)  
 SURABAYA

DISUSUN OLEH:  
 Nama, No. Matrikulasi, Kelas, Semester, Jurusan

REVISI NO. 01  
 2010/06/10

**KETERANGAN**

**RENDASISAN BANGUNAN LAYANAN**

- 1. Jalan
- 2. Lapangan
- 3. Tempat Parkir
- 4. Lapangan Olahraga
- 5. Lapangan Bola Basket
- 6. Lapangan Bola Voli
- 7. Lapangan Tennis
- 8. Lapangan Badminton
- 9. Lapangan Sepakbola
- 10. Lapangan Hoki
- 11. Lapangan Golf
- 12. Lapangan Equestrian
- 13. Lapangan Anggar
- 14. Lapangan Dayung
- 15. Lapangan Senam Artistik
- 16. Lapangan Judo
- 17. Lapangan Taekwondo
- 18. Lapangan Karate
- 19. Lapangan Boks
- 20. Lapangan Catur
- 21. Lapangan Oseanografi
- 22. Lapangan Birolinguis
- 23. Lapangan Ilmu Hukum
- 24. Lapangan Ilmu Ekonomi
- 25. Lapangan Ilmu Kesehatan
- 26. Lapangan Ilmu Pertanian
- 27. Lapangan Ilmu Perikanan
- 28. Lapangan Ilmu Kelautan
- 29. Lapangan Ilmu Kehutanan
- 30. Lapangan Ilmu Matematika
- 31. Lapangan Ilmu Fisika
- 32. Lapangan Ilmu Kimia
- 33. Lapangan Ilmu Biologi
- 34. Lapangan Ilmu Geografi
- 35. Lapangan Ilmu Sejarah
- 36. Lapangan Ilmu Sastra
- 37. Lapangan Ilmu Bahasa
- 38. Lapangan Ilmu Pendidikan
- 39. Lapangan Ilmu Keguruan
- 40. Lapangan Ilmu Psikologi
- 41. Lapangan Ilmu Sosiologi
- 42. Lapangan Ilmu Antropologi
- 43. Lapangan Ilmu Arkeologi
- 44. Lapangan Ilmu Musik
- 45. Lapangan Ilmu Seni Rupa
- 46. Lapangan Ilmu Desain
- 47. Lapangan Ilmu Komunikasi
- 48. Lapangan Ilmu Perencanaan
- 49. Lapangan Ilmu Administrasi
- 50. Lapangan Ilmu Hukum
- 51. Lapangan Ilmu Kedokteran
- 52. Lapangan Ilmu Farmasi
- 53. Lapangan Ilmu Keperawatan
- 54. Lapangan Ilmu Kesehatan Masyarakat
- 55. Lapangan Ilmu Kesehatan Lingkungan
- 56. Lapangan Ilmu Kesehatan Masyarakat
- 57. Lapangan Ilmu Kesehatan Lingkungan
- 58. Lapangan Ilmu Kesehatan Masyarakat
- 59. Lapangan Ilmu Kesehatan Lingkungan
- 60. Lapangan Ilmu Kesehatan Masyarakat

**KETERANGAN BAWAH**

Peta ini dibuat secara komputer menggunakan data PDR dan Geotiff tahun 2007. Atas nama dan gambar ini di buat dengan cara digital hasil pemrosesan gambar menggunakan perangkat elektronika tahun 2008.

Batas-batas administrasi nasional dan antar desa/ desa kelurahan ditentukan dengan menggunakan Peta 1:10.000 sebagai acuan dengan menggunakan gambar dan informasi peta yang telah diterbitkan dan dimutakhirkan.

Jika terdapat tanggapan dan/atau saran yang berkaitan dengan peta ini, pengirim harap menyampaikan kepada BAKOSURTANAL, Jl. Jendral Sudarto Keban, Jakarta dan/atau ke:

A. Rupa Jember-Rupa No. 41-Gading, Kap. Pte. 021 8750 1294

**PETUNJUK PEMBACAAN KARTOGRAF GEODESI**

Simbol	Maksud	Bentuk
(Symbol)	Simbol	(Symbol)
(Symbol)	Simbol	(Symbol)

**PETUNJUK PEMBACAAN KARTOGRAF UTAM**

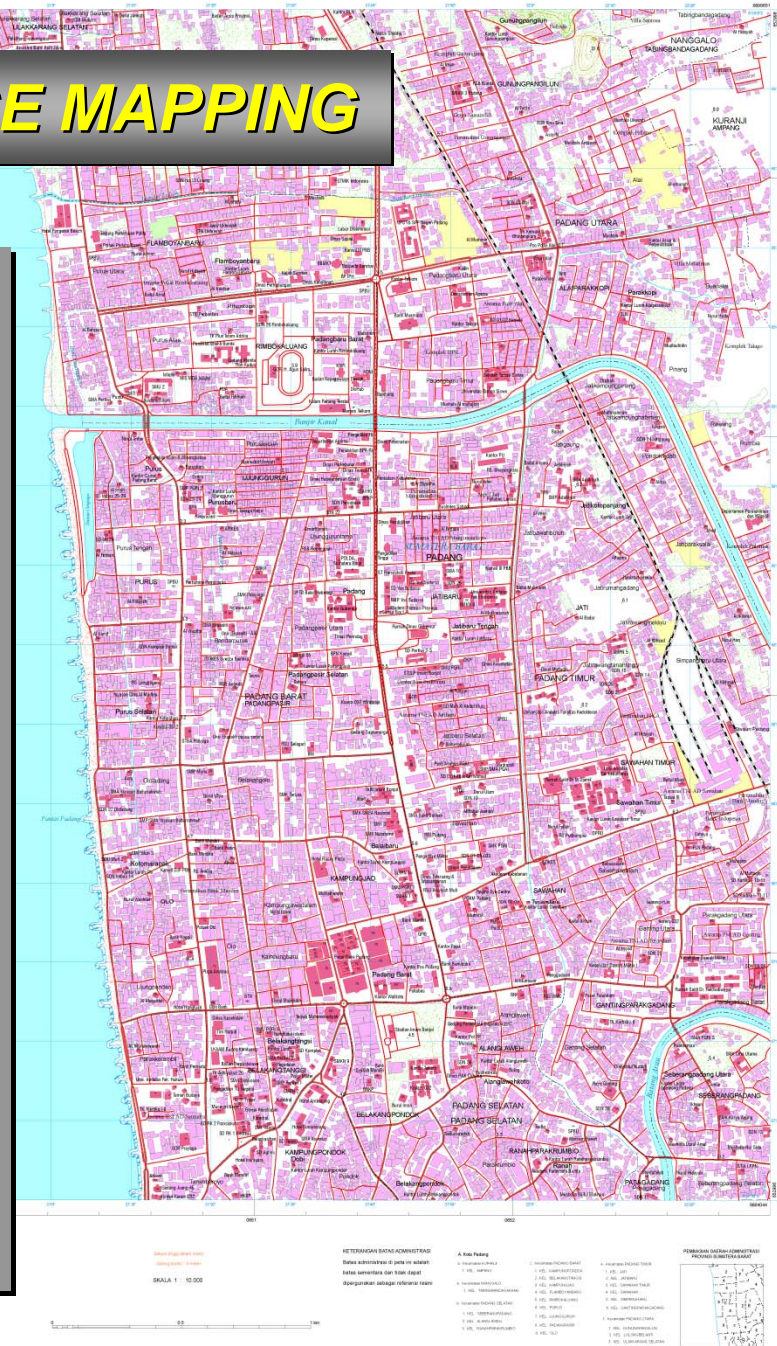
Simbol	Maksud	Bentuk
(Symbol)	Simbol	(Symbol)
(Symbol)	Simbol	(Symbol)

PARUPUKTABING  
 Lembar 0715-3219



# EMERGENCY QUICK RESPONSE MAPPING

- ❖ The National Coordinating Agency for Surveys and Mapping (BAKOSURTANAL) of Indonesia took a quick response to this disaster.
- ❖ BAKOSURTANAL along with other government agencies and private sectors agreed to supply geo-spatial data and information to be utilized in Padang for disaster management.
- ❖ Three maps needed for this purpose :
  - Disaster Prone Areas Map,
  - Emergency Quick Response Map,
  - Rehabilitation and Reconstruction Map.



  
 PETA RUPABUMI INDONESIA  
 1 : 10.000  
 Lembar 0715-3216  
**PADANG**  
 Edisi 1 - 2006

BAKOSURTANAL  
 Badan Koordinasi Survei dan Pemetaan Nasional  
 Jl. Raya Arafat No. 100, Jakarta 10110  
 Telp. (021) 52006000  
 Fax. (021) 52006001  
 E-mail: bakosurtanal@bakosurtanal.go.id

PADANG LEMBAR 0715-3216

**METERAN:**  
 1:10.000  
 1 cm = 100 m

**LEGENDA:**  
 (Detailed legend for symbols and colors used on the map)

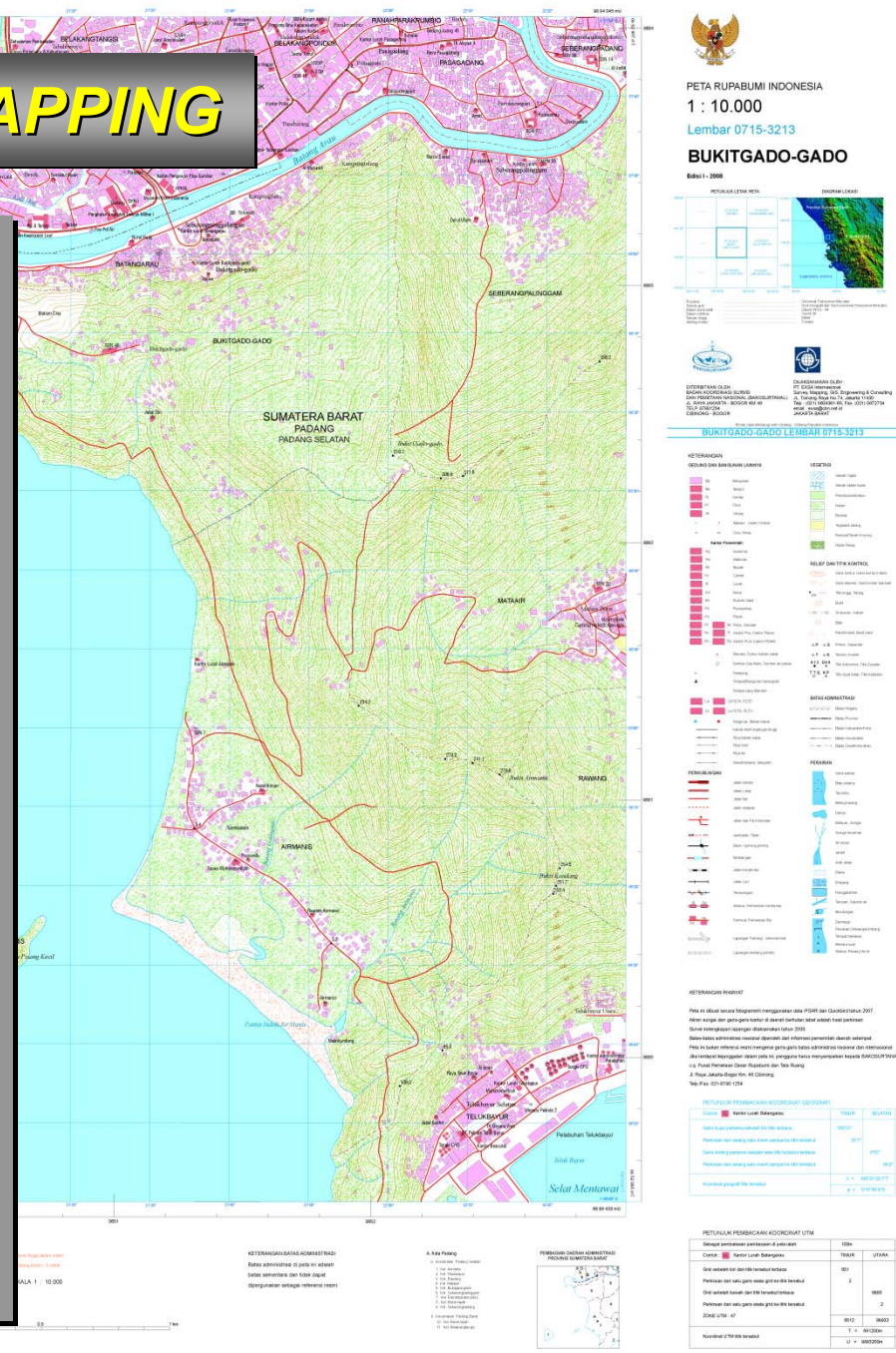
**PERUBAHAN:**  
 (List of changes and updates to the map)

**PETALAK PEMERIKSAAN KECERDASAN LITERASI:**  
 (Table with columns for name, title, and date)



# EMERGENCY QUICK RESPONSE MAPPING

- ❖ The Disaster Prone Areas Map will be used before the disaster happened, because in the map there is regulation for making or not making human activities in the designated areas.
- ❖ The Emergency Quick Response Map is produced and used just after the disaster to help save the people trapped in the destroyed buildings and to distribute food, water, medical supplies. This map is produced on-site by mapping all damaged objects in the field, location of food supply, drinking water and medical supply.
- ❖ The third map is a map that is used for rehabilitation and reconstruction of the disaster area.





**MAP OF NUMBERS OF DAMAGED HOUSES  
PADANG EARTHQUAKE - WEST SUMATRA**

Per 11 October 2009



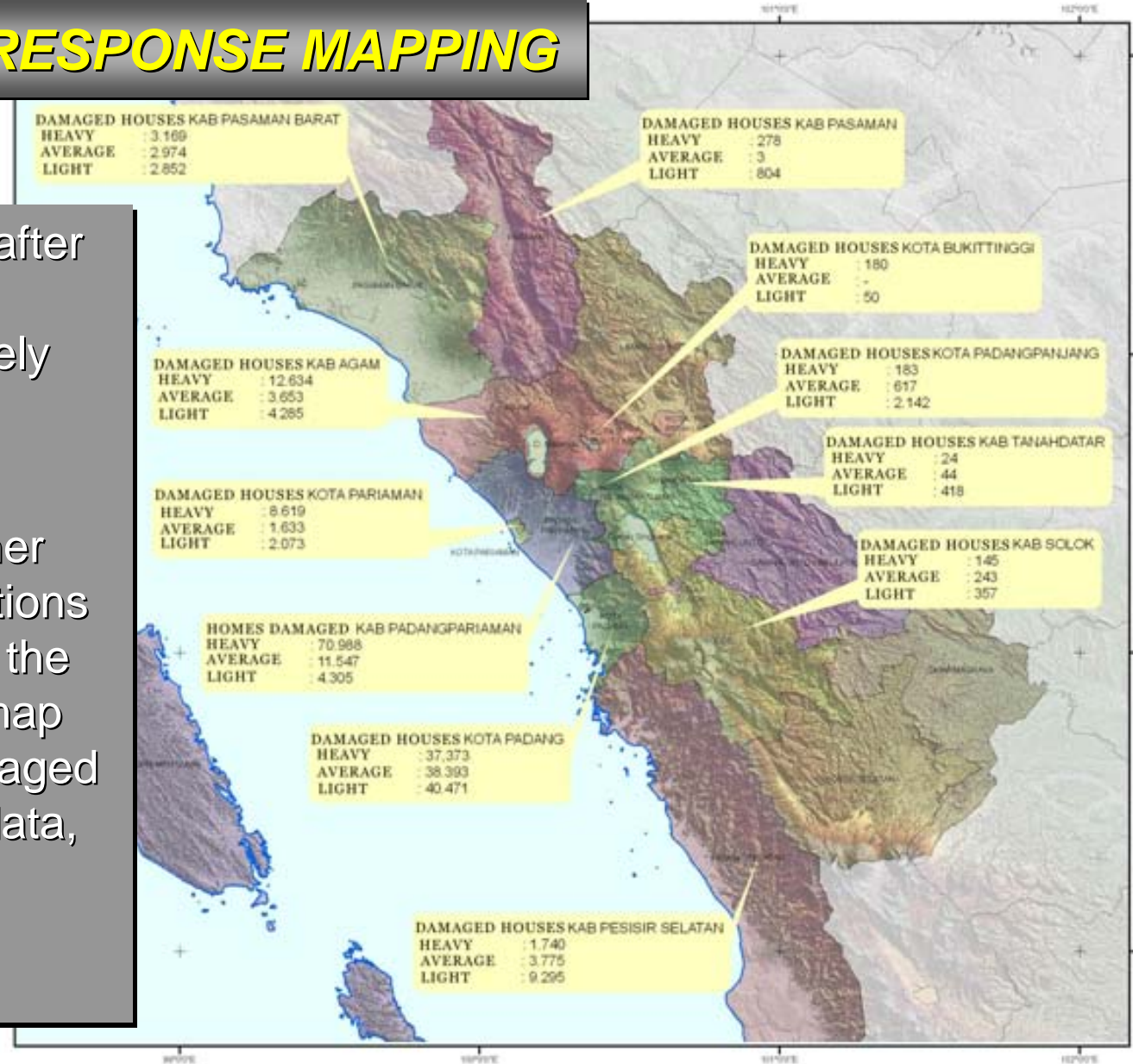
1:1.500.000

Sumber : BAKOSURTANAL  
Data Vektor : Sakorlak PB Sumatera Barat  
Data Tabular : 11 Oktober 2009, 13.00 WIB  
Edisi II : 11 Oktober 2009

# EMERGENCY QUICK RESPONSE MAPPING

BAKOSURTANAL few days after the disaster established a mapping team and immediately sent the team to Padang.

The team was designed to perform coordination with other local and international institutions and organization, to produce the emergency quick response map by collecting casualties, damaged buildings and infrastructure data, processing the data and producing into maps and distributing the maps.





- ❖ National Coordinating Agency for Surveys and Mapping (BAKOSURTANAL),
- ❖ National Agency for Mitigating of Disaster (BNPB),
- ❖ Regional development and Planning Board (BAPPEDA),
- ❖ Regional Public Works Office,
- ❖ WANADRI (Mountain and Jungle Explorer Association),
- ❖ WAINDO-RSGIS Forum,
- ❖ Department of Energy and Mineral Resources,
- ❖ National Space and Aeronautics Agency (LAPAN),
- ❖ Bureau of Central Statistics,
- ❖ World Bank,
- ❖ Non-Government Organizations such as MapAction and ArchNova.

## ORGANIZATION TO HANDLE THE POST-EARTHQUAKE





## POST-EARTHQUAKE FIELD SURVEYS

Field Surveys of geographic location of damages buildings and infrastructures, buried villages, food supply, and medical supply were carried out by WANADRI and BAKOSURTANAL.

The survey and mapping activities that was carried out in Padang area consisted of :

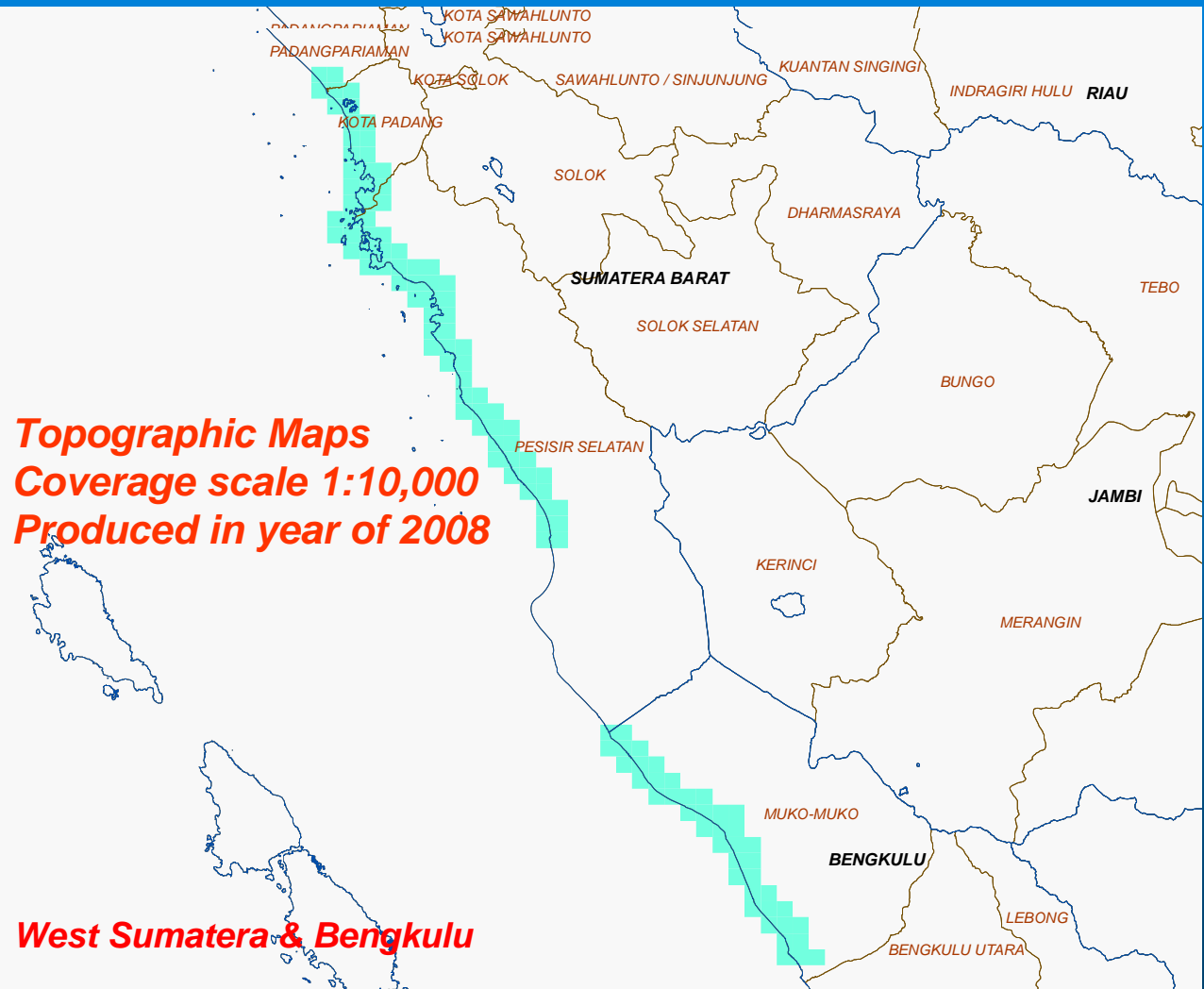
- ❖ Inventory of number of casualties and damaged areas in cities and villages,
- ❖ GPS surveys of damaged buildings and infrastructures,
- ❖ Coordination meeting,
- ❖ Data processing and map production,
- ❖ Data dissemination,





- ❖ Tabular data of damaged infrastructure (roads, bridges) from Regional Public Works Office.
- ❖ Topographic maps of 1:250,000, 1:50,000 1:10,000 scales, from BAKOSURTANAL
- ❖ Atlas maps from BAKOSURTANAL
- ❖ Village admin boundary map and population distribution from BAPPEDA and BPS,
- ❖ Satellite imageries IKONOS of Padang from LAPAN

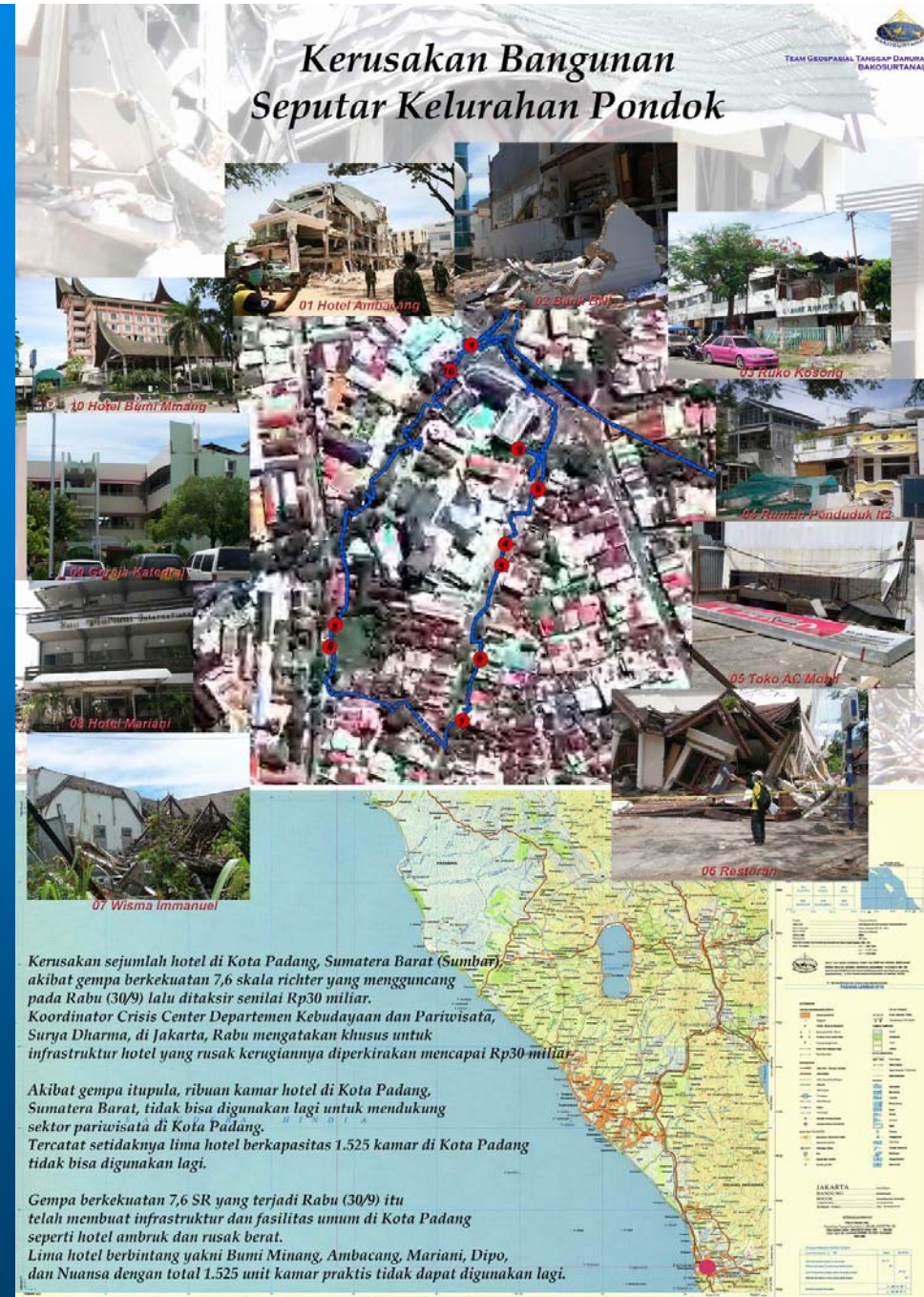
## Data Sources To Produce The Emergency Quick Response Map





## Data Products : *The Emergency Quick Response Map*

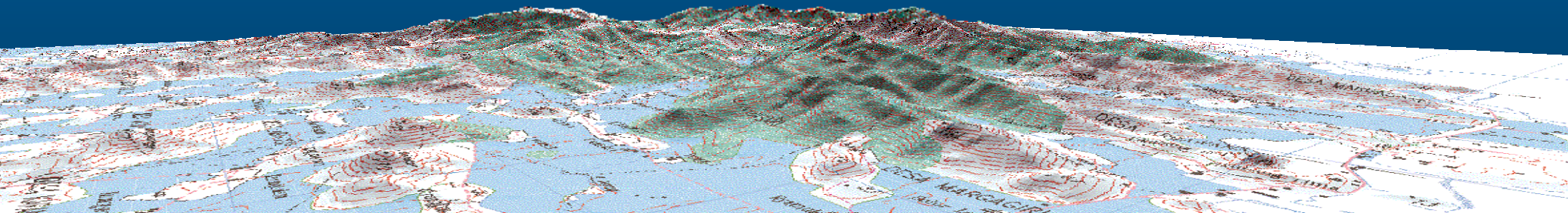
1. Village boundary maps of Padang Pariaman and Agam districts.
2. Casualty and physical damaged map Padang Pariaman district.
3. Casualty and physical damaged map of Pariaman city.
4. Aggregate Casualty Map consisting themes:
  - ❖ number of casualty,
  - ❖ number of damaged houses,
  - ❖ number of destroyed health facilities,
  - ❖ number of broken schools,
  - ❖ number of damaged roads, bridges, and irrigation infrastructures.





## Data Users : *The Emergency Quick Response Map*

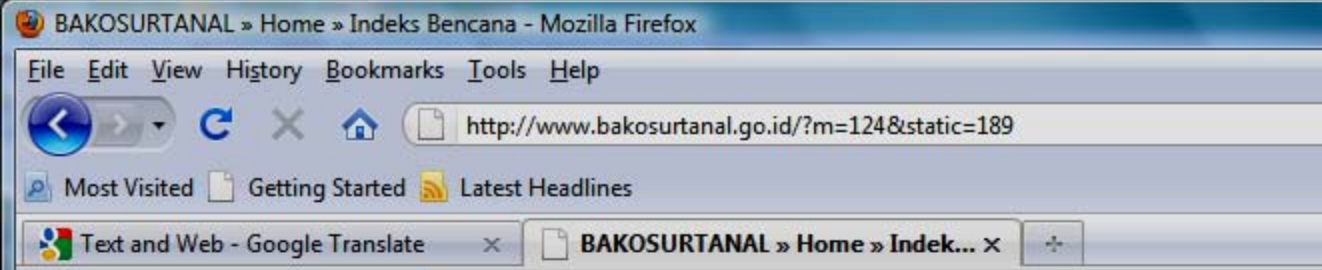
- ❖ Foreign and Local Non-Governmental Organization,
- ❖ International and Local Media,
- ❖ National Agency for Mitigating of Disaster,
- ❖ Police, and Regional and local Government.
- ❖ Most of the foreign and local non-governmental organizations are humanitarian aid organization to distribute the aids they received from the community.





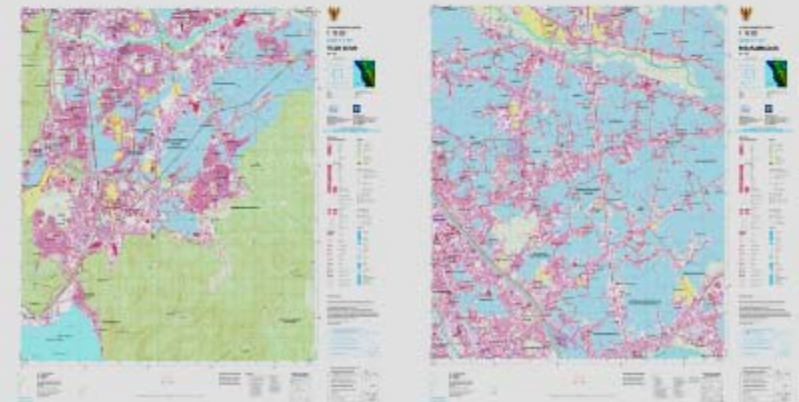
## LESSON LEARNED

- ❖ During the first week after the earthquake, the city of Padang had **no electricity that made communication in the area cut off. It was then not possible to see maps stored in computers or browse from internet.** Printed map proved to be a much better solution to use the geospatial information.
- ❖ The number of people understanding of geospatial in the disaster area should be considerably sufficient, because map reading ability of the domestic humanitarian aid organizations is low.
- ❖ Disaster is not a new happening, but the response of the region to the disaster is not sufficient so that the socialization, exercise, training, of managing of disaster need to be implemented regularly and more frequent.



0715-3216 (2,67 MB)

0715-3219 (3,52 MB)



0715-3221 (5,25 MB)

0715-3224 (4,52 MB)



## LESSON LEARNED

- ❖ For mapping purposes, since maps is the first thing, people needs to response the disaster, the emergency quick response mapping should be improved, in particular the budget for the mapping should be made available promptly and at sufficient amount.
- ❖ The regional government along the predicted disaster regions should provide disaster maps showing areas prone to disaster, so that there will be no human activities in the areas.

The screenshot shows the BAKOSURTANAL website interface. The browser title is "BAKOSURTANAL » Home » Indeks Bencana - Mozilla Firefox". The address bar shows the URL "http://www.bakosurtanal.go.id/?m=124&static=189". The website header includes the BAKOSURTANAL logo and the text "Badan Koordinasi Survei dan Pemetaan Nasional National Coordinating Agency for Surveys and Mapping". A search bar is located in the top right corner. The main navigation menu includes "Home", "Profil", "Layanan Publik", "Geospasial Nasional", "Link", "Kontak", and "Peta". The page content features a "Gempa Sumatera" section with a map of Sumatra, a "Daftar Pulau-Pulau Kecil Terluar" section, and a "SCOSA" section. A sidebar on the left contains a list of links: "Lokasi", "Agenda", "Standarisasi Surta", "Buku Tamu", and "FAQ". The main content area includes a "Download peta RBI skala 1:10.000" link, a "kembali ke halaman sebelumnya" link, and a note "(klik pada peta untuk melihat/mengunduh peta dalam ukuran penuh)". Two map thumbnails are displayed at the bottom of the page.



