

REMOTE SENSING APPLICATION FOR DISASTER MANAGEMENT IN INDONESIA

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PRESENTATION OUTLINES

- **Remote Sensing Facilities at LAPAN**
 - LAPAN Ground Stations
 - Data Availability
- **Remote Sensing Application for Disaster Mitigation**
 - Hotspot, Burned Area Mapping, Drought Monitoring, Potential of Flood Monitoring, Hazard Mapping, and Disaster Emergency Response
- **Development of SIMBA Center**
- **UAV Development**
- **National, Regional, and International Network**
 - National Network, Sentinel Asia, ADRC, RSO UN SPIDER

Ground Station Locations and Coverages



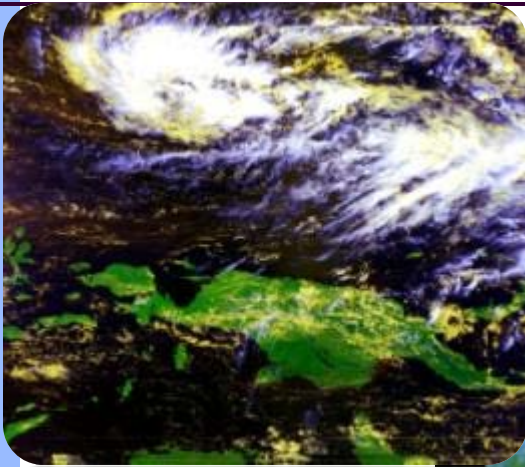
Ground Station Facilities - Jakarta



■ Data:

- MTSAT-1R
- NOAA/AVHRR
- Terra/Aqua MODIS
- Feng Yun-1D
- Landsat-7/ETM+
- SPOT-4
- ENVISAT (kerjasama dengan ESA)
- SAR Imagery
- etc

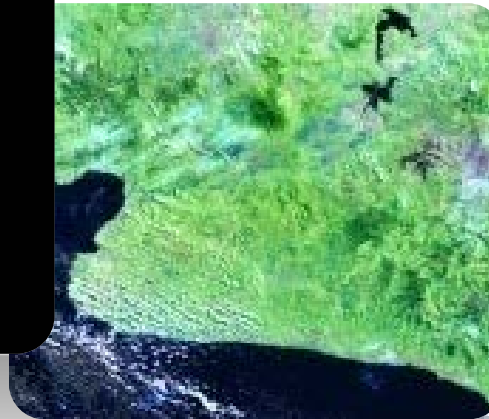
Data Availability



NOAA



MODIS



LANDSAT



SPOT

Data Availability



SPOT-5



EROS-1A



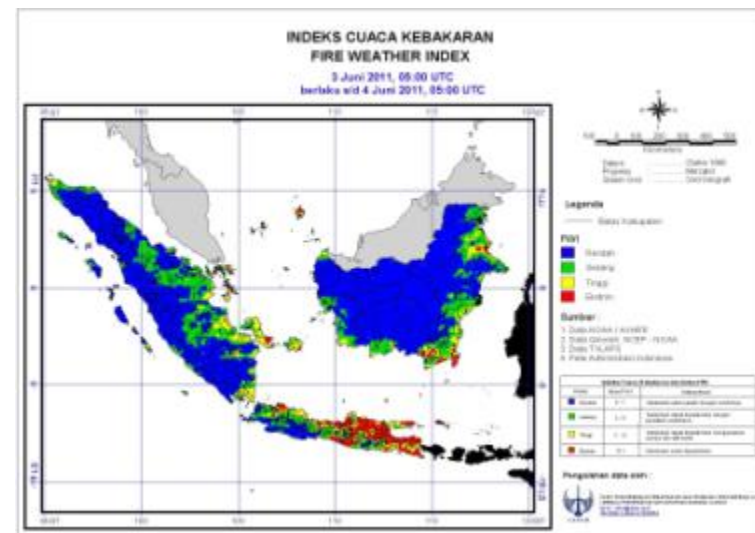
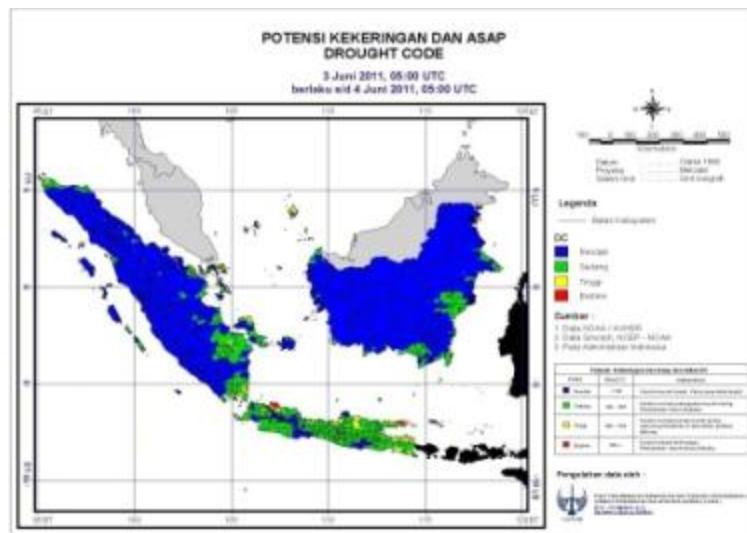
Ikonos



Quickbird

Remote Sensing Application for Disaster Mitigation

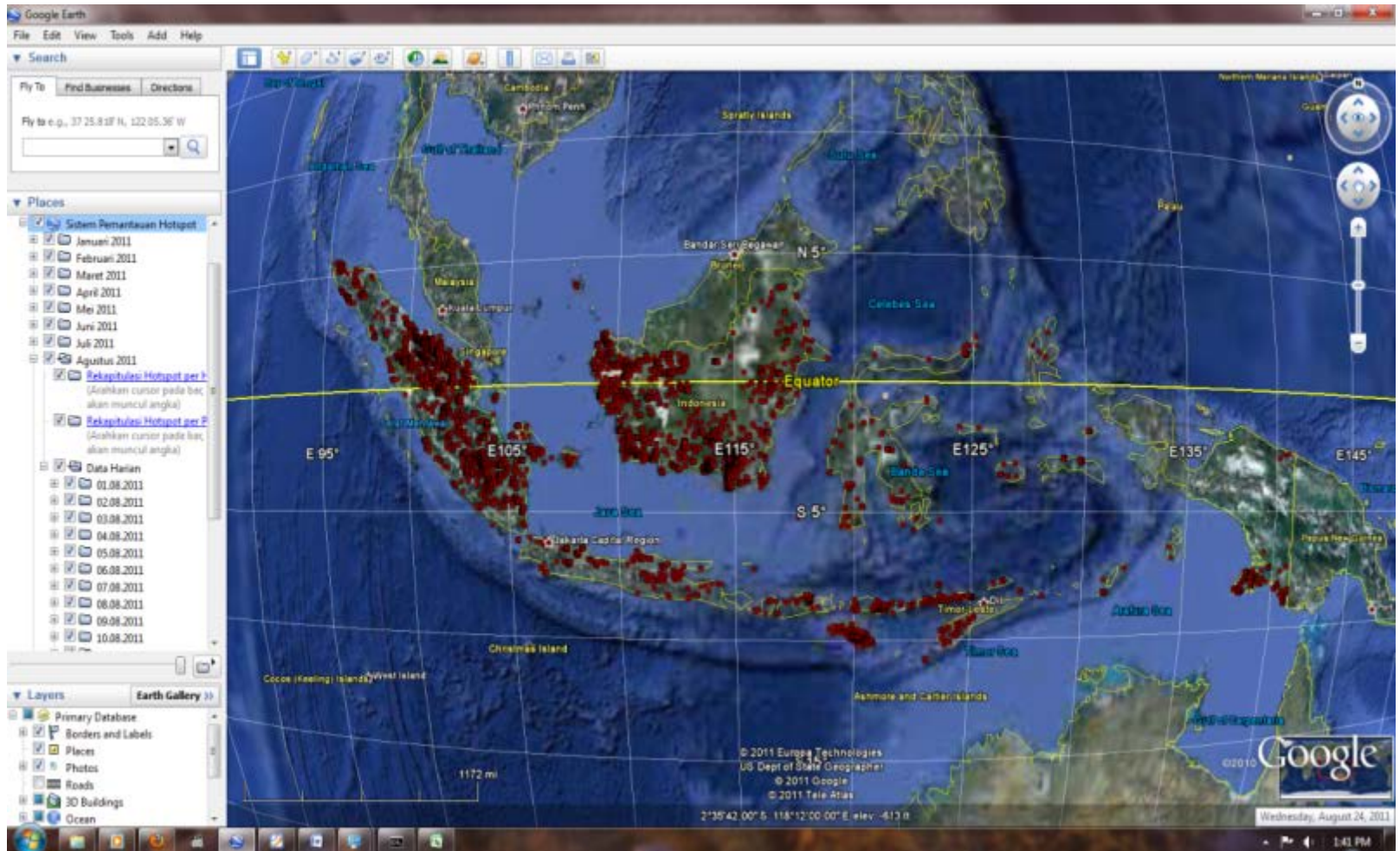
FIRE DANGER RATING SYSTEM (FDRS)



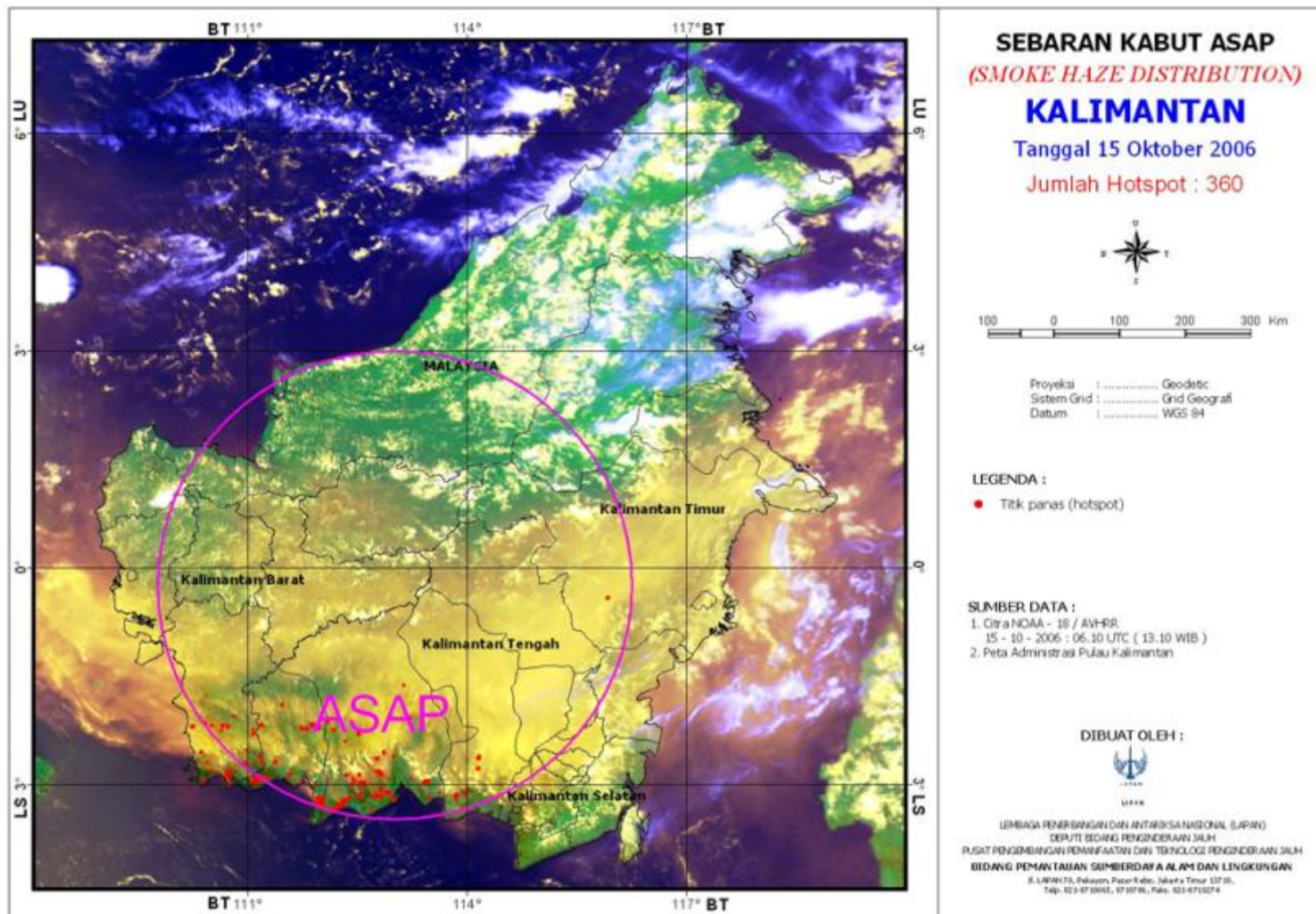
Hotspot Monitoring



Hotspot (Google Kml)



Haze Monitoring



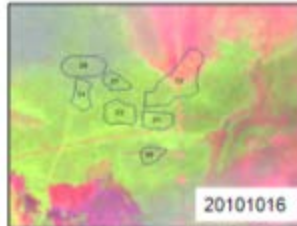
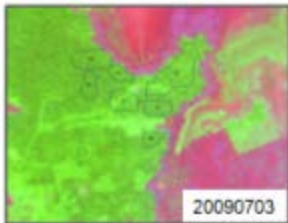
Burned Area Mapping



LOKASI STUDI
BUKIT KAPUR -
DUMAI

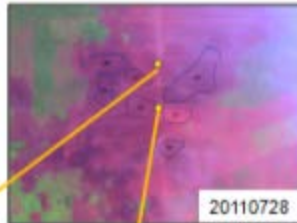
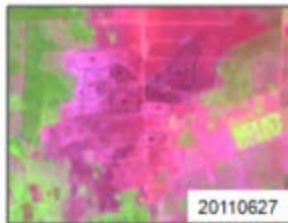
SEBELUM TERBAKAR
(PRE-FIRE)

RGB (SWIR-NIR-RED) SPOT-4



SESUDAH TERBAKAR
(POST-FIRE)

RGB (SWIR-NIR-RED) SPOT-4

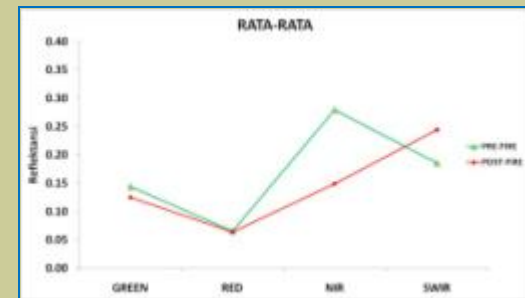


SURVEY LAPANGAN
DUMAI
2011-08-21

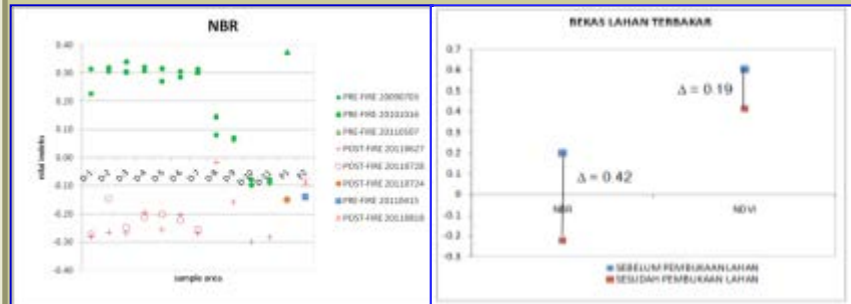


Sumber data: SPOT-4 dari stasiun bumi Pare-pare

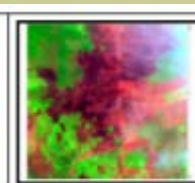
Sensitivitas kanal pada lahan bekas terbakar



Pemilihan Metode



PRE-FIRE (20101016)

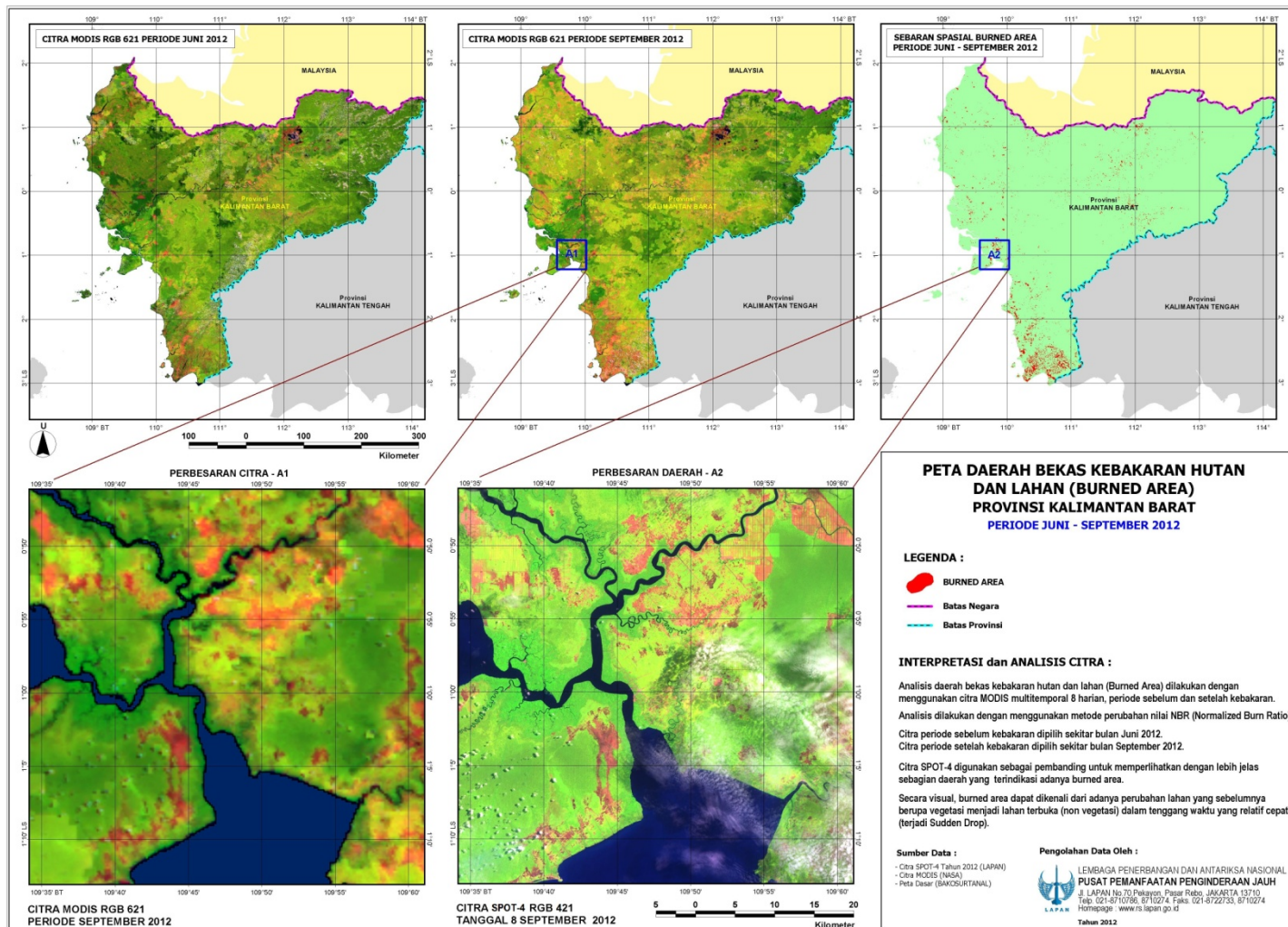


POST-FIRE (20110728)

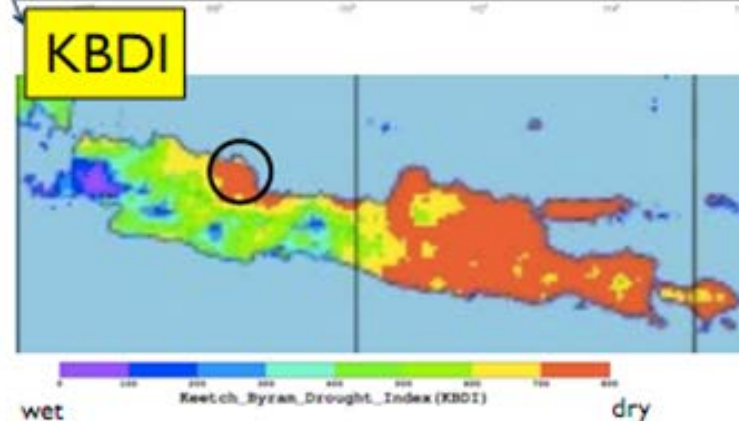
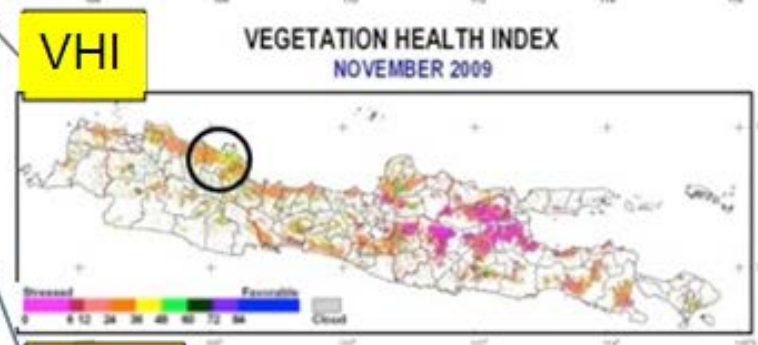
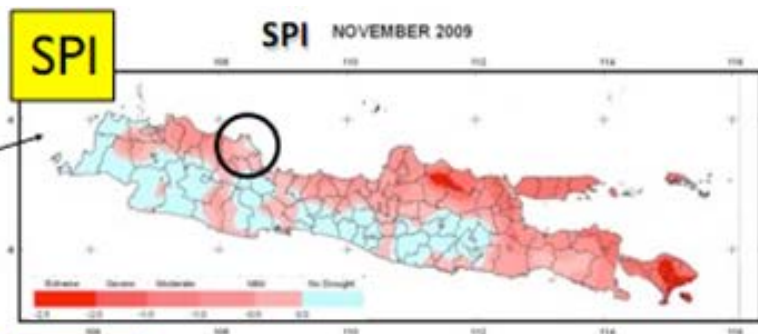
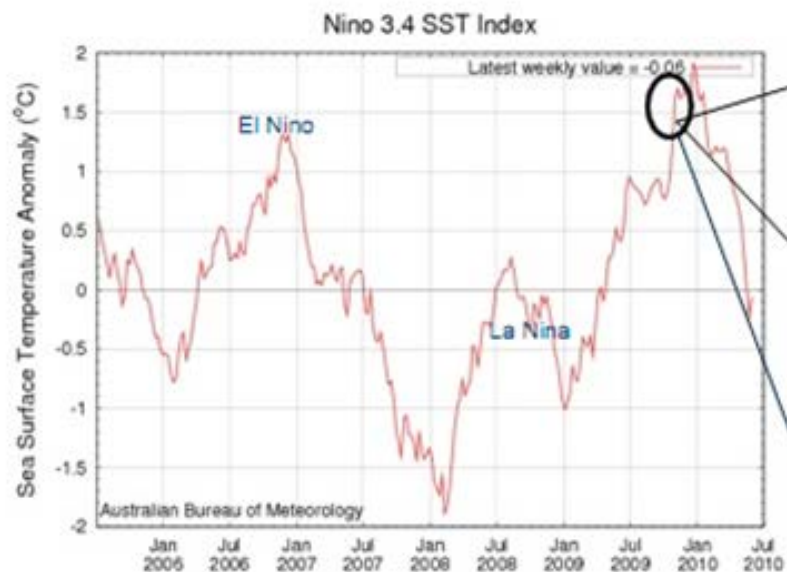


Lahan bekas Terbakar

Example of Burned Areas

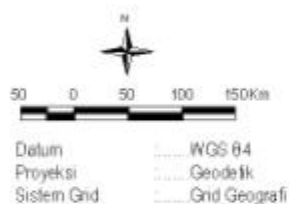
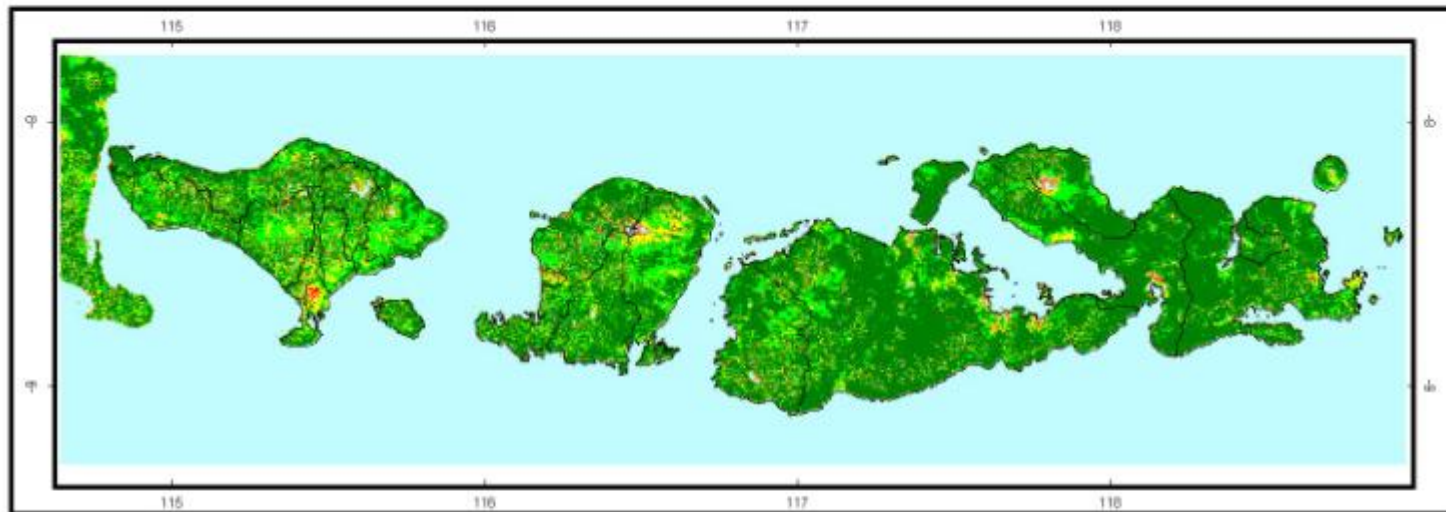


Drought Monitoring



Monitoring of Vegetation Greenness

TINGKAT KEHIJAUAN VEGETASI LAHAN BALI - NUSA TENGGARA BARAT 1-16 FEBRUARI 2012



Keterangan :

- 1. Air
- 2. Lahan Terbuka
- 3. Sangat Rendah
- 4. Rendah
- 5. Sedang
- 6. Tinggi
- Batas Administrasi

Sumber Data:

- 1. Data Terra-MODIS
- 2. Batas Administrasi NTT

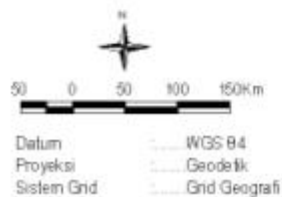
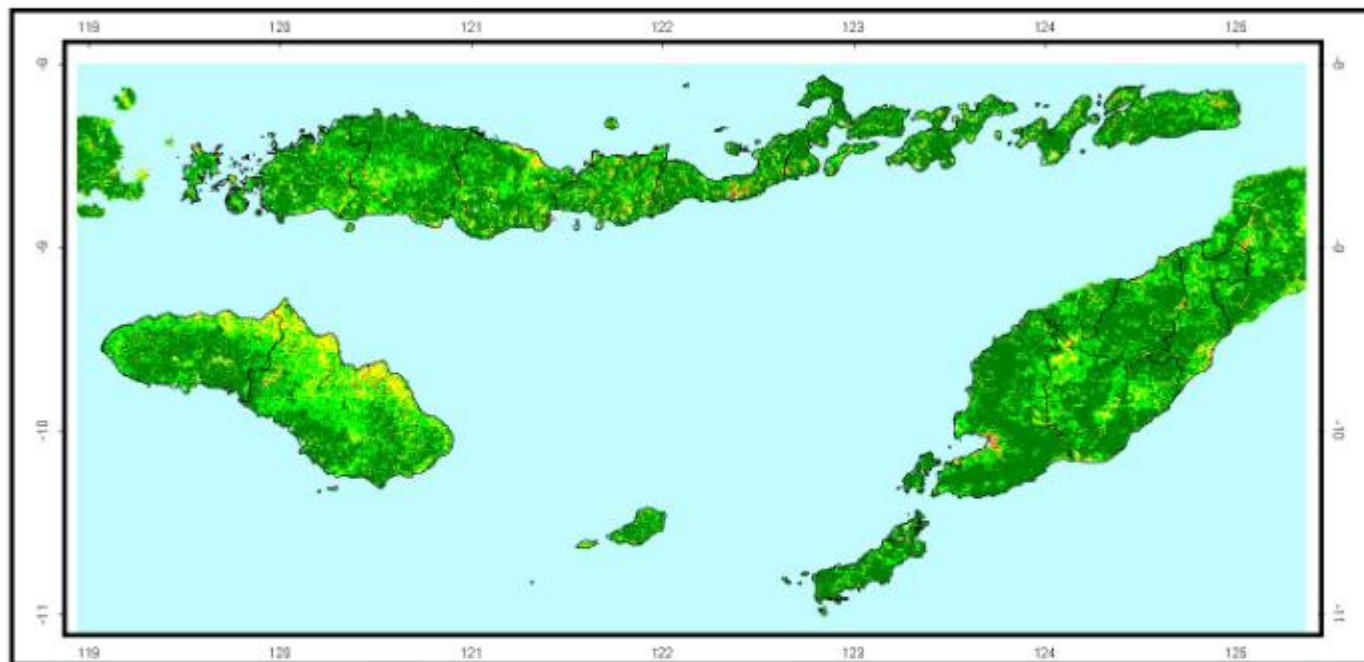
Pengolahan Data Oleh :



PUSAT PEMANFAATAN PENGINDERAAN JAUH
LEMBAGA PENERBANGAN DAN ANTARIKSA NASIONAL
email: simba@lapan.go.id
<http://www.lapan.go.id/simba>

Monitoring of Vegetation Greenness

TINGKAT KEHIJAUAN VEGETASI LAHAN NUSA TENGGARA TIMUR 1-16 FEBRUARI 2012



Keterangan :



Sumber Data:

1. Data Terra-MODIS
2. Batas Administrasi NTT

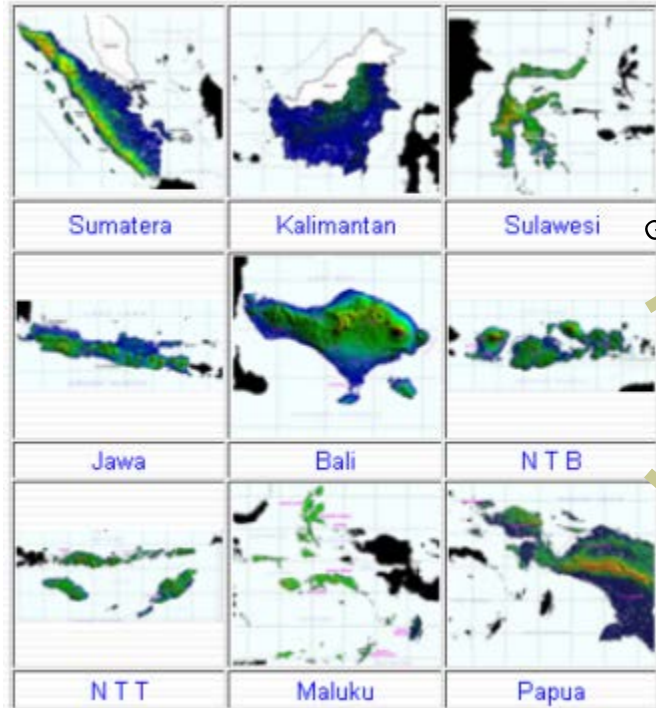
Pengolahan Data Oleh :



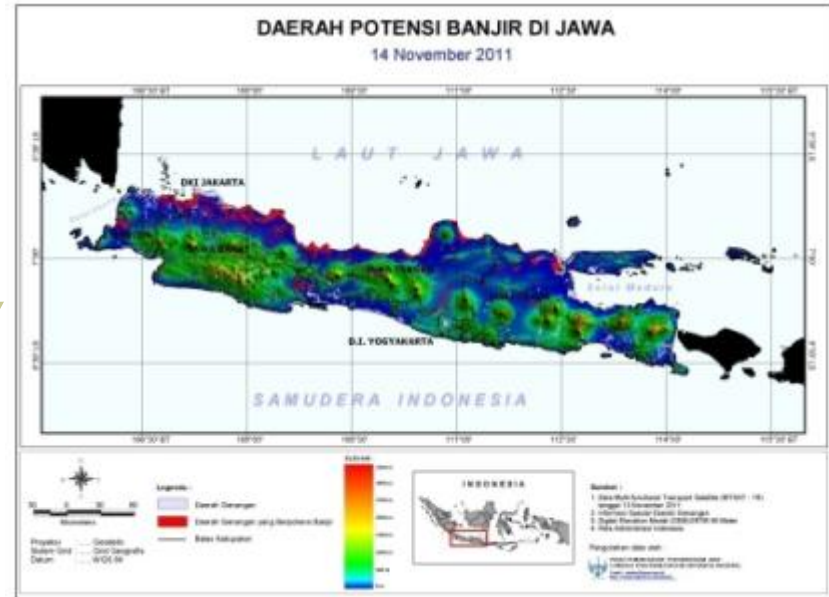
PUSAT PEMANFAATAN PENGINDERAAN JAUH
LEMBAGA PENERBANGAN DAN ANTARIKSA NASIONAL

email : simba@lapan.go.id
<http://www.lapan.go.id/simba>

Potential of Flood Monitoring



Gambar



Tabel

DAERAH POTENSI BANJIR DI JAWA

Tanggal 14 November 2011

Berdasarkan data MTSAT-1R tanggal 13 November 2011 pukul 00.00 - 23.00 UTC

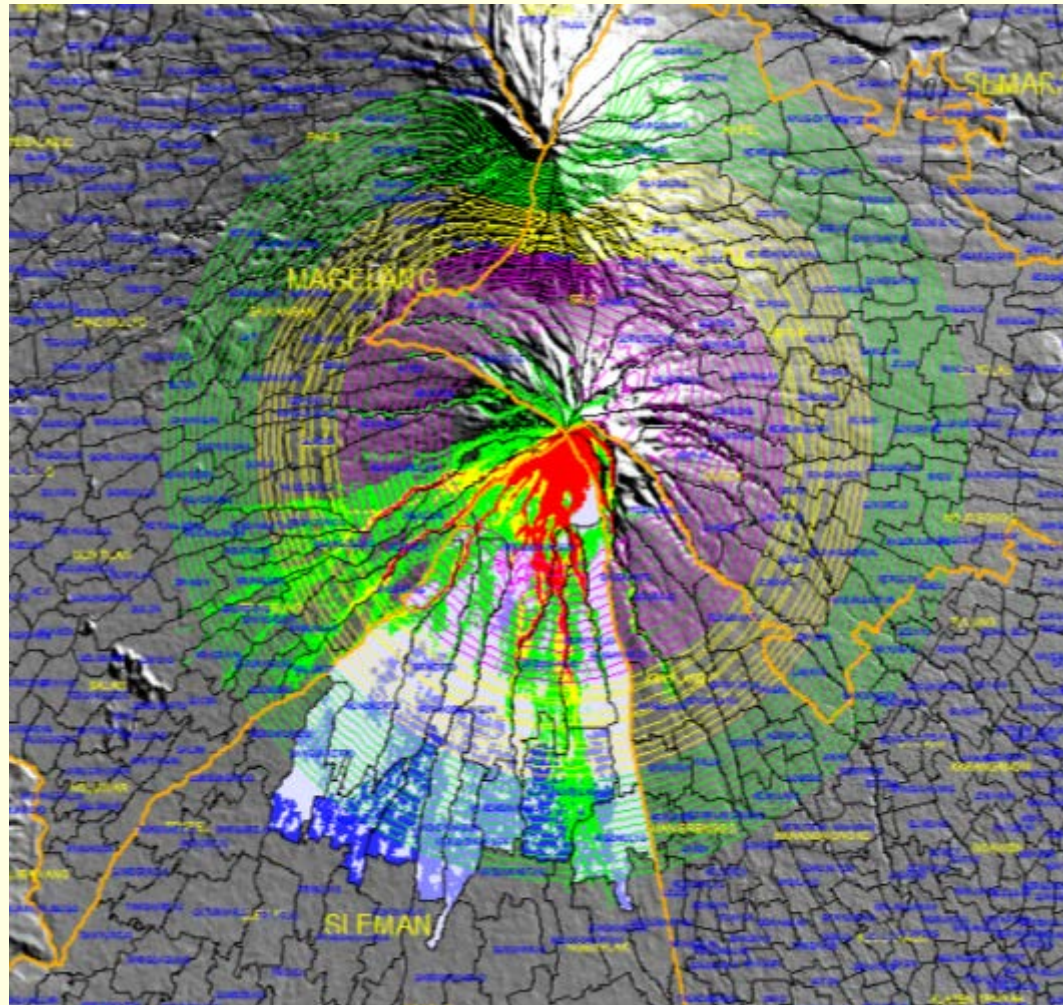
NO	KABUPATEN	PROVINSI
1	Kota Tangerang	BANTEN
2	Lebak	BANTEN
3	Pandeglang	BANTEN
4	Tangerang	BANTEN
5	Kota Jakarta Barat	DKI JAKARTA
6	Kota Jakarta Pusat	DKI JAKARTA
7	Kota Jakarta Selatan	DKI JAKARTA
8	Kota Jakarta Timur	DKI JAKARTA
9	Kota Jakarta Utara	DKI JAKARTA
10	Bandung	JAWA BARAT
11	Bekasi	JAWA BARAT
12	Bogor	JAWA BARAT
13	Ciamis	JAWA BARAT
14	Cianjur	JAWA BARAT
15	Cirebon	JAWA BARAT
16	Garut	JAWA BARAT

DATA:

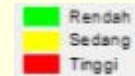
1. Potensi hujan harian dari MTSAT (24 jam)
2. Daerah genangan dari PU Kimpraswil yang sudah divalidasi dengan DEM SRTM 90 m dan data Landsat 7 ETM+ tahun 2003

Merapi Hazard Mapping

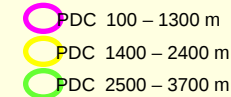
Zonasi Daerah Potensi Bencana Gunung Api Merapi



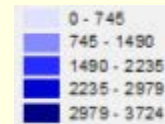
Peluang aliran material vulkanik



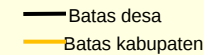
Zona PDC



Kerentanan penduduk (siang)



Batas administrasi



Sumber data:

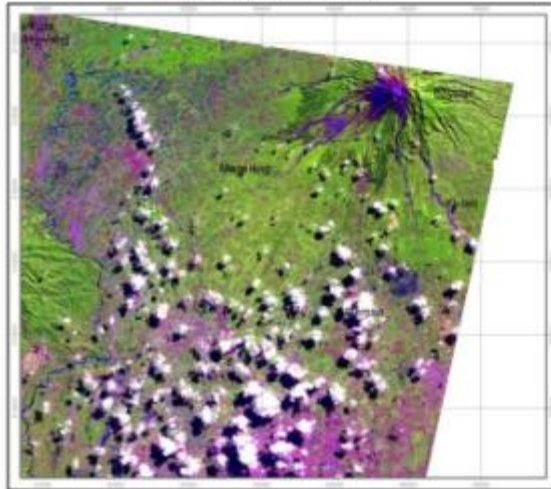
- DEM SRTM USGS
- SPOT-4 29-06-2009
- Data BPS Sleman 2009

Diolah oleh:
Pusfatja

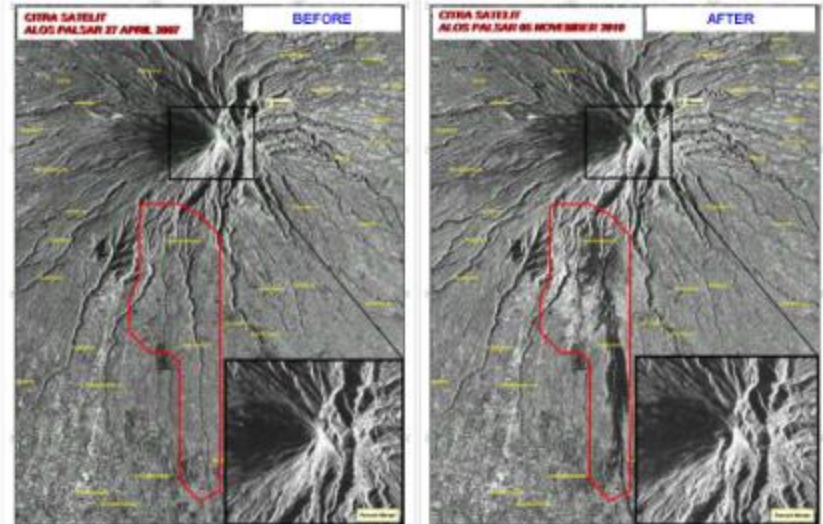


DISASTER EMERGENCY RESPONSE

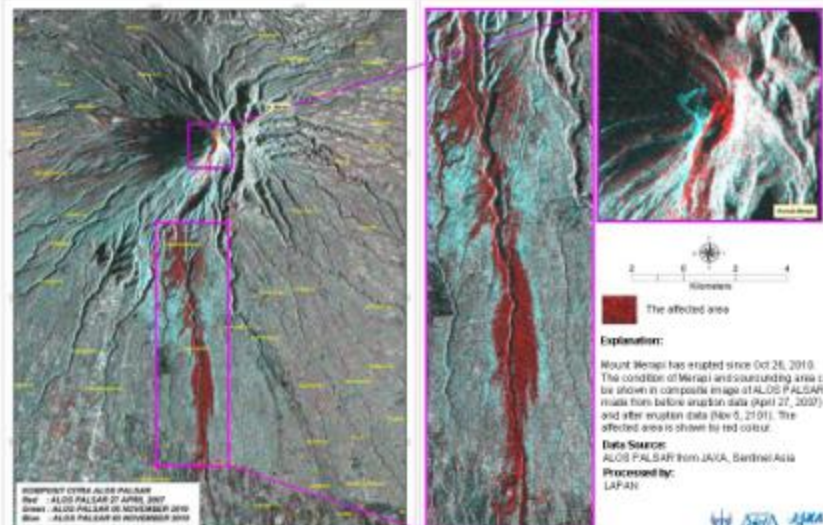
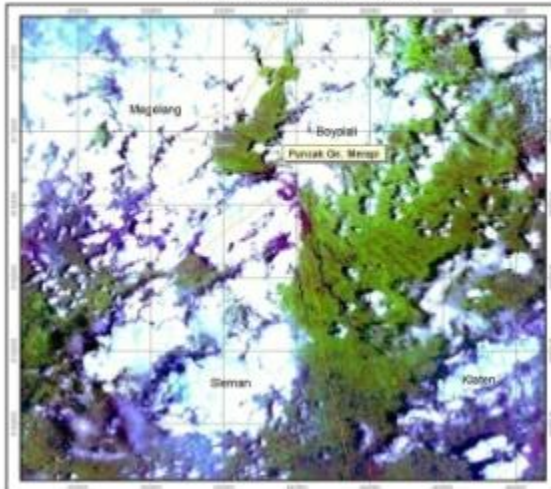
PETA CITRA SATELIT SPOT-4 TANGGAL 9 JUNI 2009
WILAYAH GUNUNG MERAPI



MOUNT MERAPI ERUPTION FROM ALOS PALSAR DATA - CENTRAL JAVA - INDONESIA



PETA CITRA SATELIT SPOT-4 TANGGAL 28 OKTOBER 2010
WILAYAH GUNUNG MERAPI



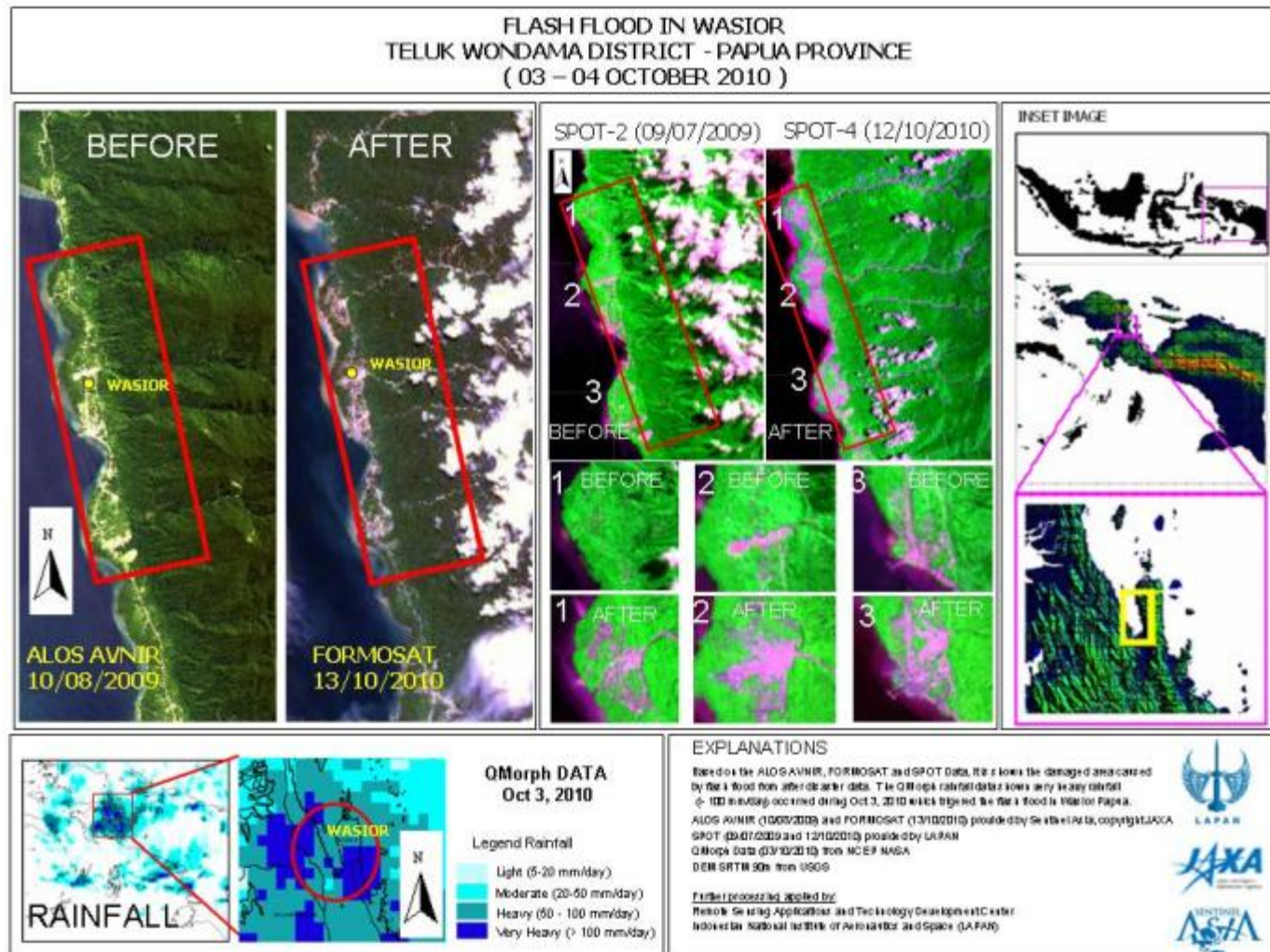
DISASTER EMERGENCY RESPONSE

TSUNAMI 25th October 2010 - MENTAWAI ISLANDS, INDONESIA Central Pagai - Damage Extent Map

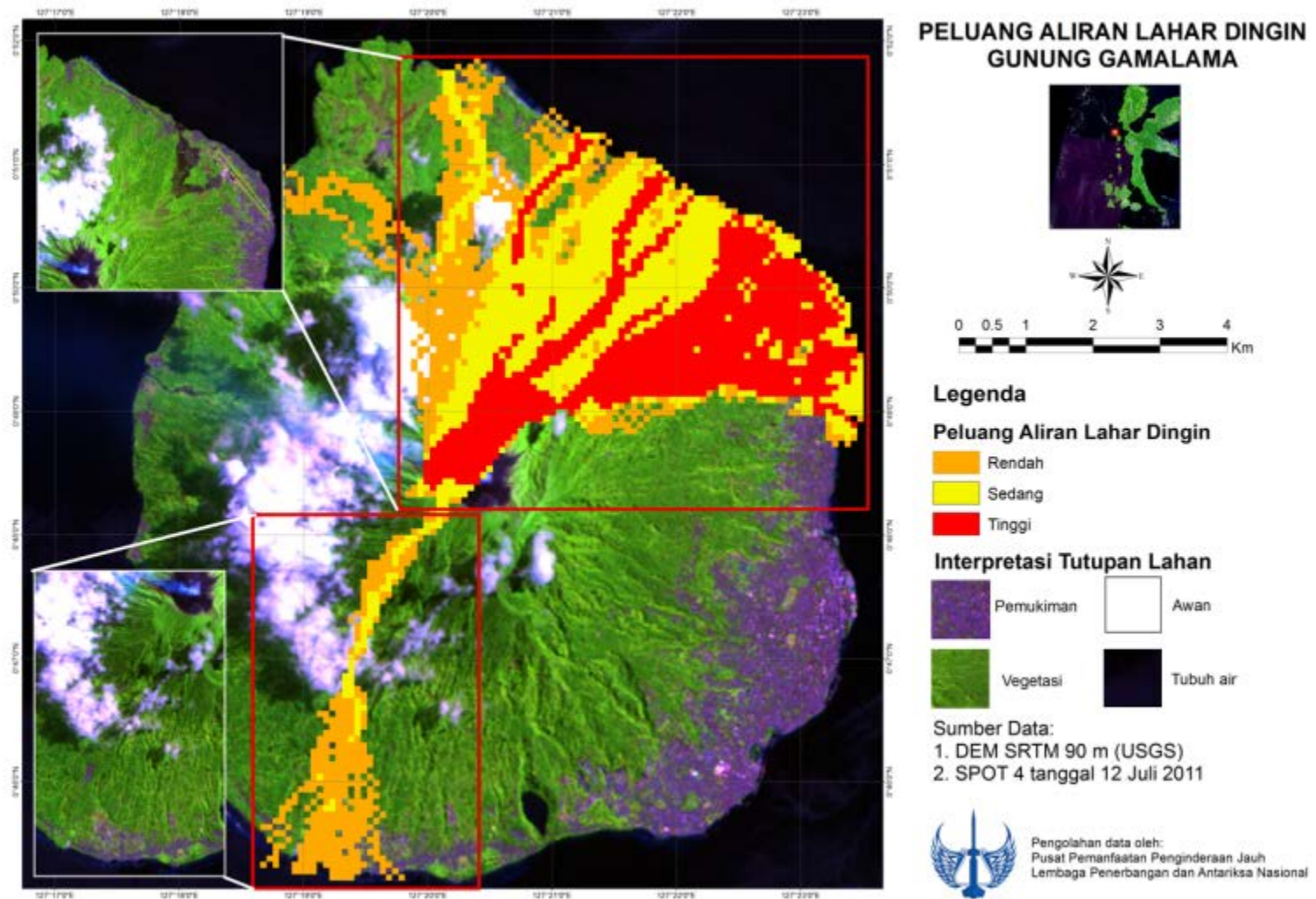


Flash Flood (Wasior, Papua) 4 Oct 2010

(ALOS AVNIR, FORMOSAT – JAXA, SPOT4– LAPAN)



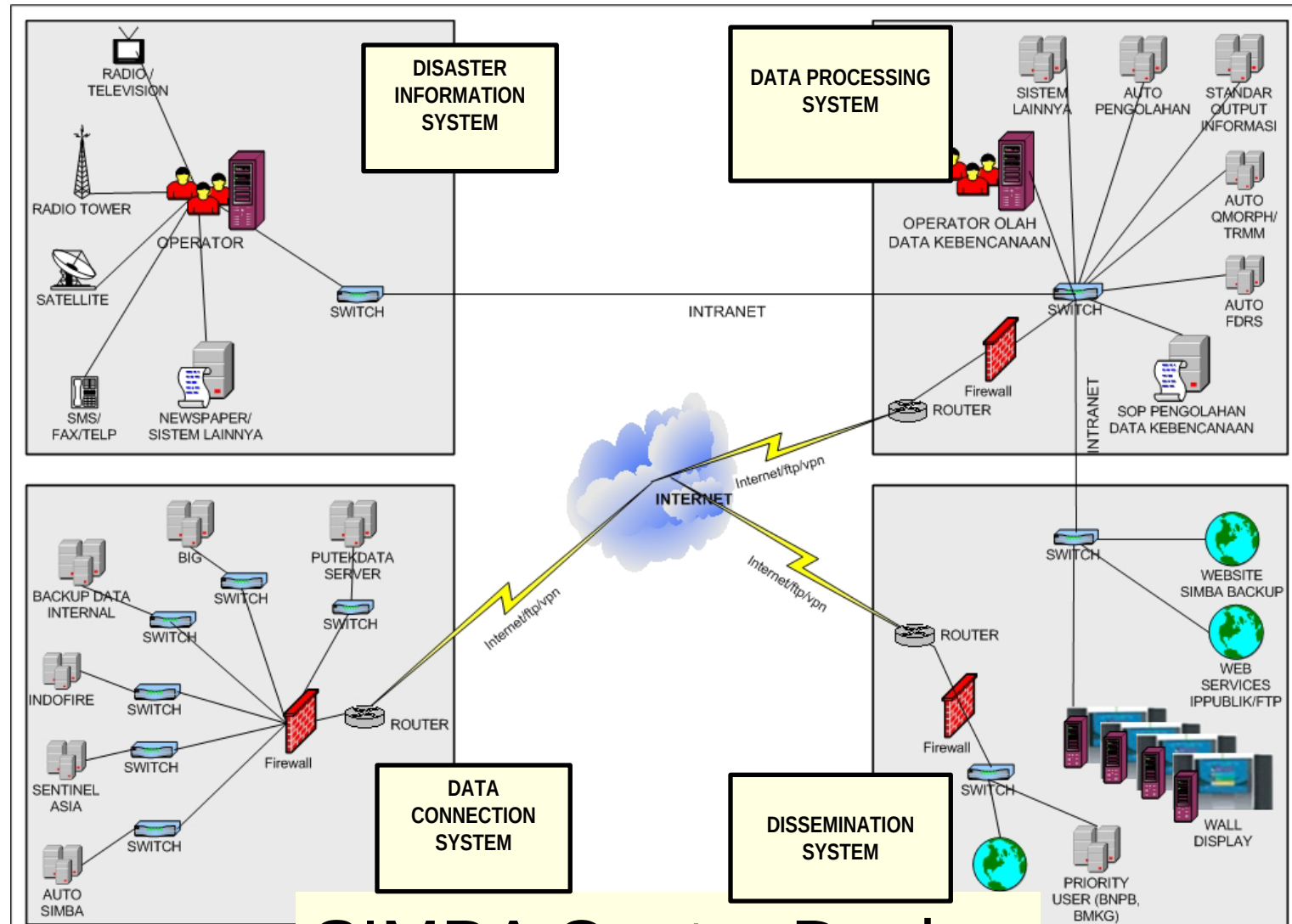
DISASTER EMERGENCY RESPONSE



Pengolahan data oleh:
Pusat Pemanfaatan Penginderaan Jauh
Lembaga Penerbangan dan Antariksa Nasional

Development of SIMBA Center

SIMBA Center (Information Center for Disaster Mitigation)



SIMBA Center Design

UAV Development

UAV Technology Development

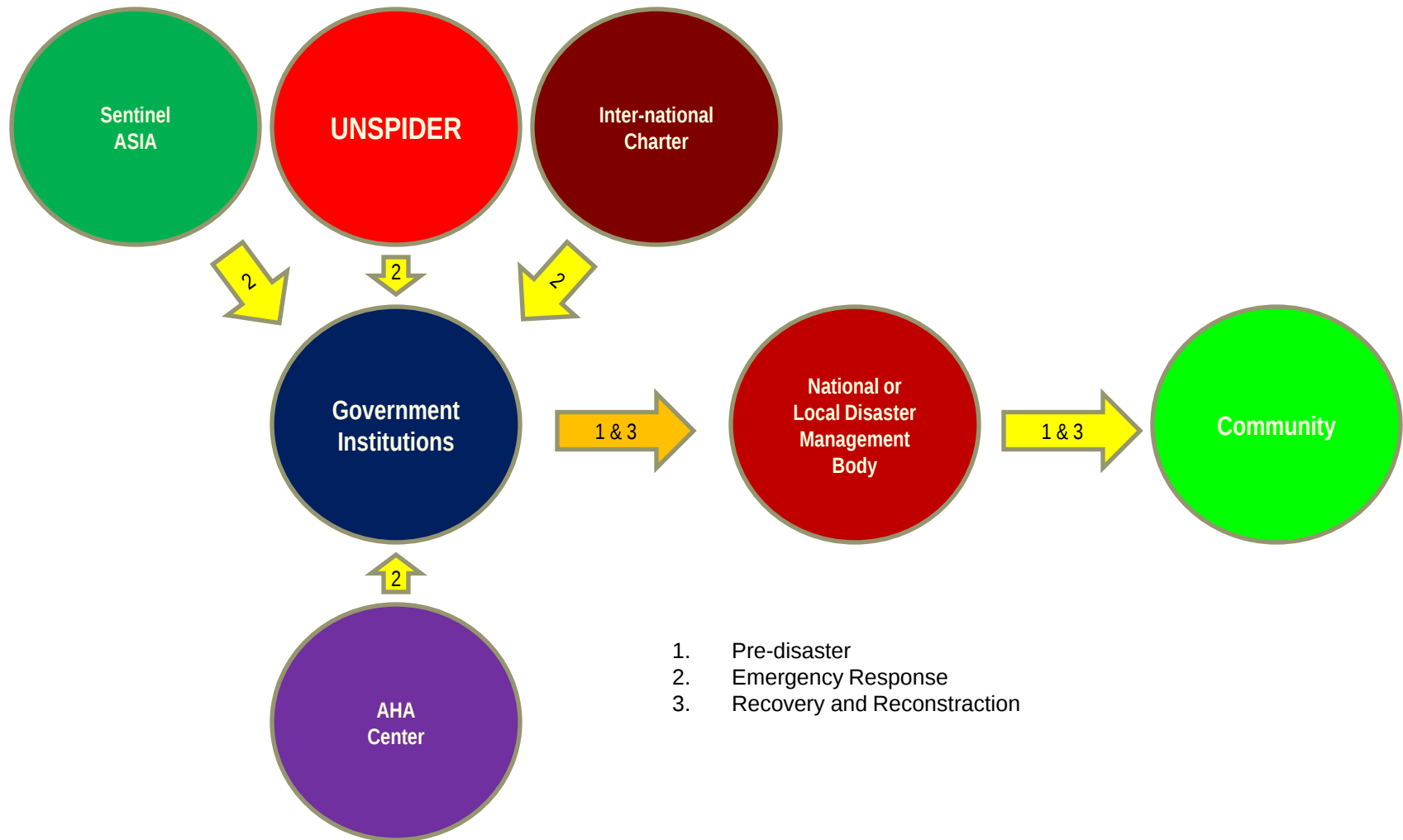


Result of UAV Picture



National, Regional, and International Network

National Network



Regional Network (Sentinel Asia)

The screenshot shows the Sentinel Asia website with a green header and navigation menu. The main content area is divided into sections for Emergency Observation, Current Topics, and a list of regional servers. The footer contains logos of partner organizations and a copyright notice.

SENTINEL Asia

UserID: password:

HOME Announce About Sentinel Asia JPT Member FAQ Contact US Links Site Policy

WEB GIS

- Emergency Observation
- Wildfire Monitoring
- Flood Monitoring
- MTSAT Imagery
- Capacity Building
- Library

Welcome To Sentinel Asia Web Site

Sentinel Asia is a voluntary basis initiative led by the APRSAF (Asia-Pacific Regional Space Agency Forum) to support disaster management activity in the Asia-Pacific region by applying the WEB-GIS technology and space based technology, such as earth observation satellites data.

Emergency Observation

- 06/Nov/2011 Flood in Vietnam
- 21/Oct/2011 Flash flood in Myanmar
- 01/Oct/2011 Flood in Cambodia
- 04/Aug/2011 Flood in Thailand
- 04/Oct/2011 Flood in Vietnam
- 27/Sep/2011 Flood in Philippines
- 21/Sep/2011 Flood in Japan
- 18/Sep/2011 Earthquake in India
- 15/Sep/2011 Flood in Pakistan
- 03/Sep/2011 Flood in Japan

[more...](#)

Current Topics

- 10/Mar/2011 Indonesia Regional Server is opened ! [link...](#)
- 22/Dec/2010 Fiji Regional Server is opened ! [link...](#)
- 30/Nov/2010 Vietnam Regional Server is opened ! [link...](#)
- 19/Nov/2010 Nepal Regional Server is opened ! [link...](#)
- 29/Sep/2010 Mongolia Regional Server is opened ! [link...](#)
- 29/Sep/2010 Taiwan Regional Server is opened ! [link...](#)
- 29/Sep/2010 Philippine Regional Server is opened ! [link...](#)
- 29/Sep/2010 Thailand Regional Server is opened ! [link...](#)

[more...](#)

SENTINEL Asia

Logos of partner organizations: JAXA, ISRO, DLR, ESA, CNES, ASI, AIT, ICIMOD, etc.

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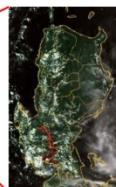
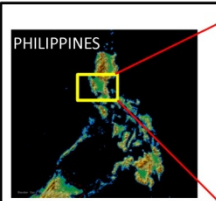
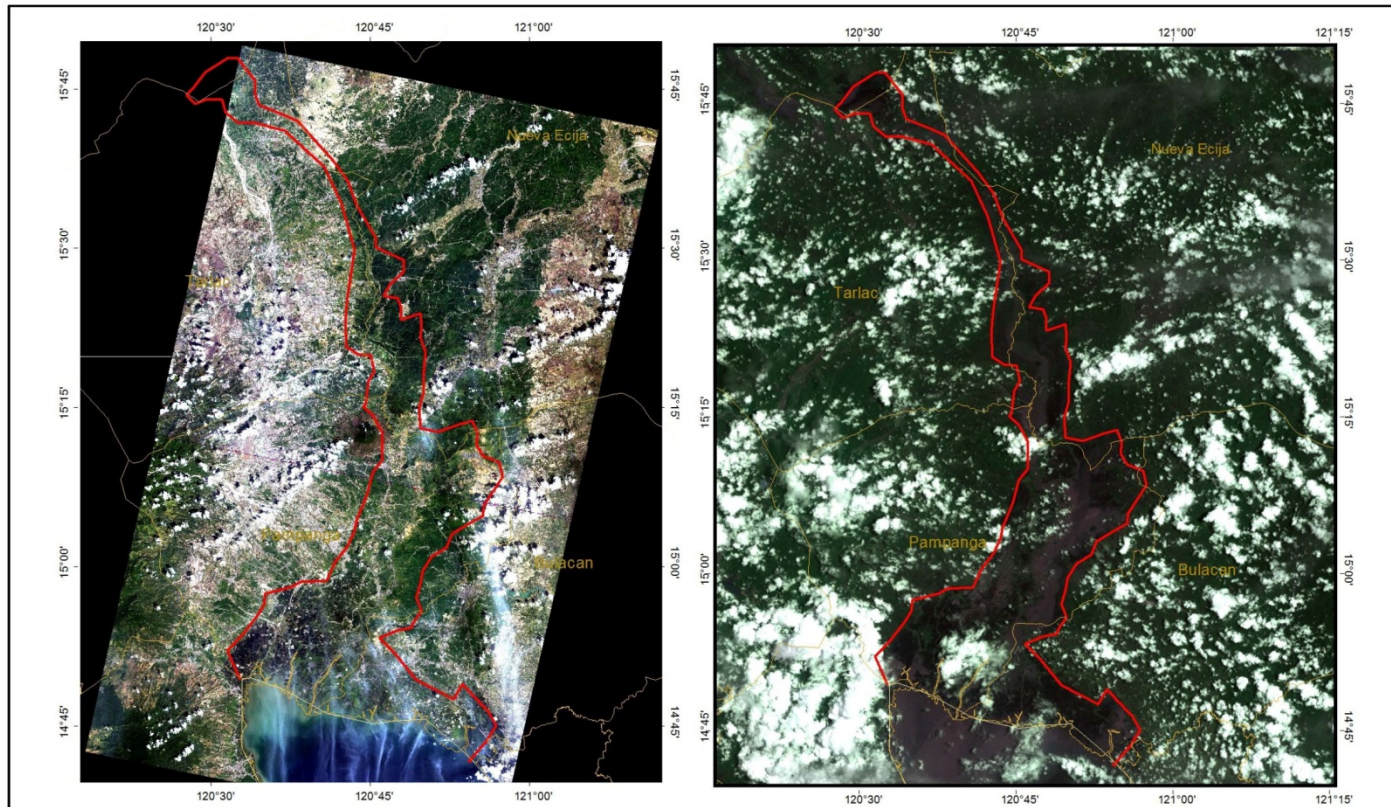
Sentinel Asia (WINDS Antenna)



Flood Mapping in Philippines

FLOOD – LUZON ISLAND, PHILIPPINES

Damage Extent Map



Disaster Situation
Severe flooding in Metro Manila (Philippines) was occurred in August 7, 2012, due to monsoons

Interpretation
This map shows parts of Luzon Island in Pampanga, Nueva Ecija, Bulacan, and Tarlac Provinces, which were most affected by the flood. Optical satellite data were analyzed to highlight the flood impact for selected area, displayed by in the red line zones.

Data Source
Post disaster image: Resourcesat-2/AWIFS (Aug 12, 2012), ISRO
Pre disaster image: ALOS AV2 (Feb 22, 2011), JAXA/METI(JP)

Scale
0 6 12 Kilometers
Projection: Grid Geodetic LatLon
Datum : WGS84

Processing/Analysis
Image processing and map creation by LAPAN:
- Image Mosaic of ALOS AV2
- Image Enhancement of Resourcesat-2/AWIFS
- Visual Interpretation of Resourcesat-2/AWIFS
Map created: August 16, 2012 by LAPAN

Environmental and Disaster Mitigation Division
Remote Sensing Application Center
Indonesian National Institute of Aeronautics and Space (LAPAN)
Jl. LAPAN No. 70, Pekayon, Pasar Rebo, Jakarta 13710
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http://www.lapan.go.id



Training with Asian Disaster Reduction Center (ADRC)



Internasional Network

- UN-SPIDER Team
- Network of Regional Support Offices (RSOs) (13 + 4)
- National Focal Points (45)



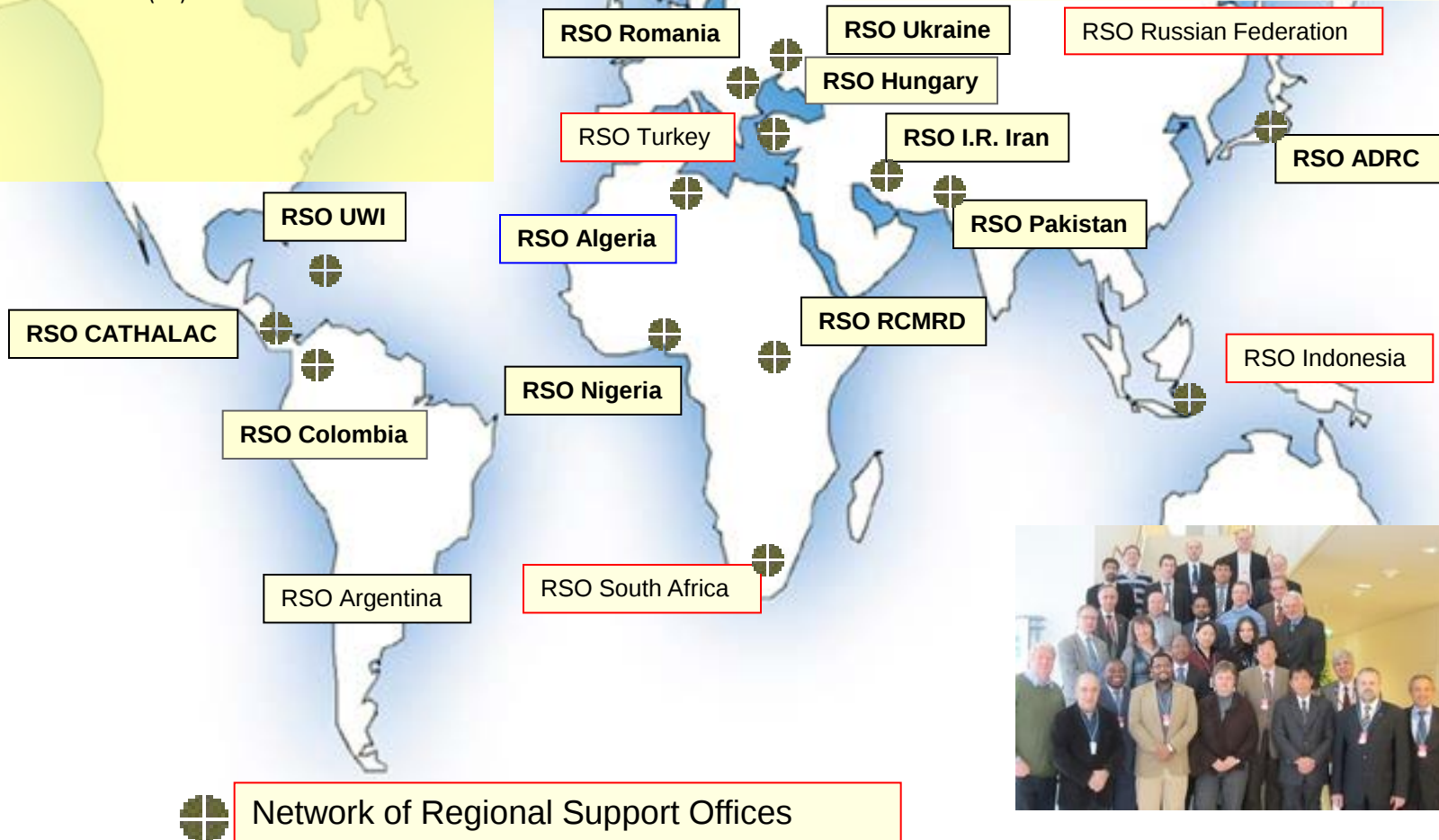
UN-SPIDER
in Vienna



UN-SPIDER
Beijing Office



UN-SPIDER
Bonn Office



Personnيل for RSO UN SPIDER

Steering Committee

Deputy Chairman for RS Affairs
Mr. Taufik Maulana
Director of Remote Sensing Application Center
Mr. Agus Hidayat



Mr. Taufik
Maulana



Mr. Agus
Hidayat

Coordinator

Dr. M. Rokhis Khomarudin
Head of Environment and Disaster
Mitigation Division



Dr. Rokhis Khomarudin

Scientists

Dr. Wikanti Asriningrum
Dr. Bambang Trisakti
Mr. Totok Suprpto
Ms. Nanik S. Haryani
Ms. Parwati Sofan
Ms. Yenny Vetrta
Mr. M. Priyatna
Ms. Kusumaning Ayu
Mr. Fajar Yulianto



Dr. Wikanti A.



Ms. Nanik S.



Ms. Parwati S.



Dr. Bambang T.



Ms. Yenny V.



Mr. Totok
Suprpto



Mr. M. Priyatna



Ms. K. Ayu



Mr. Fajar Y.

Thank you