

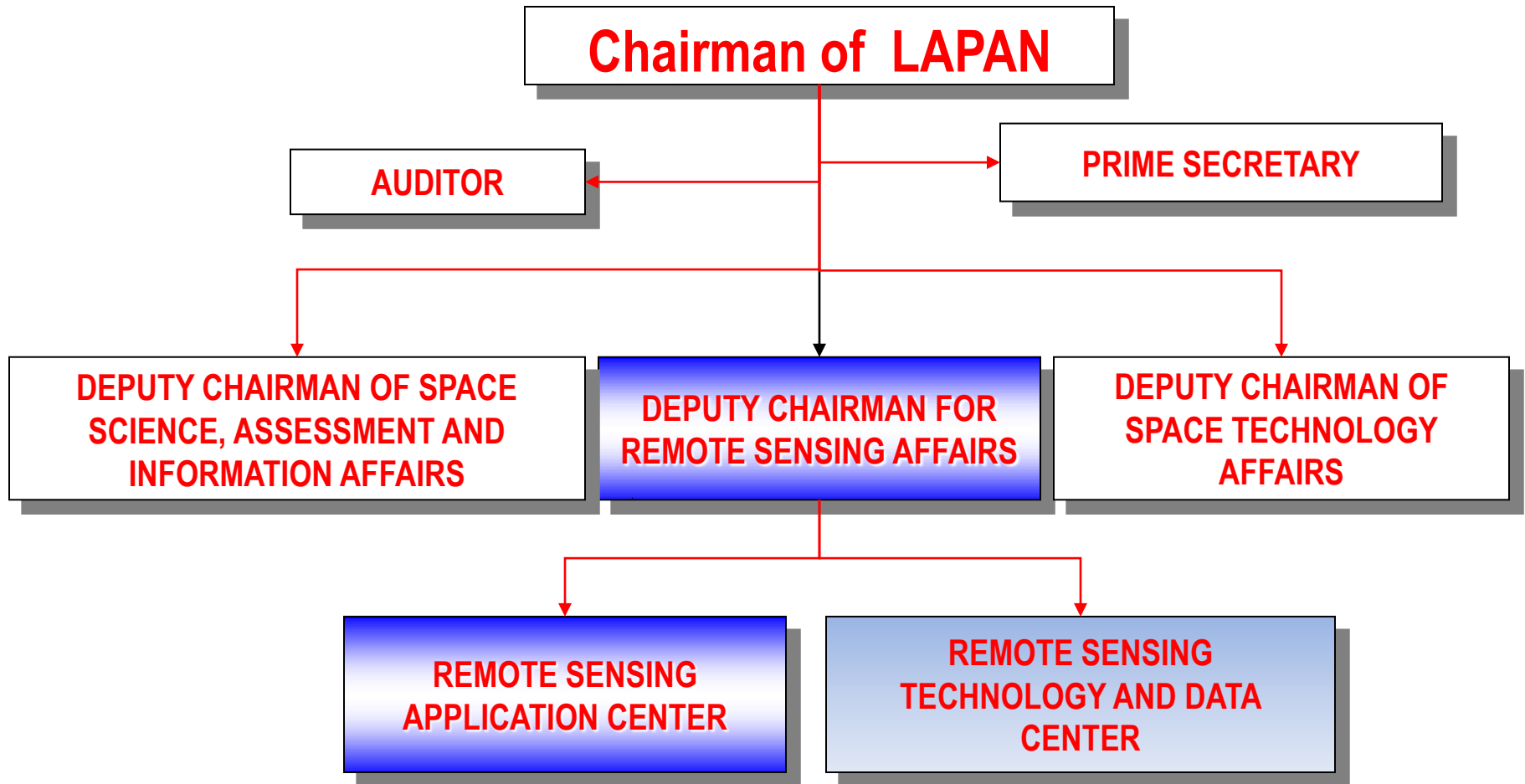
A large satellite image of Earth from space, showing the Indonesian archipelago and surrounding regions. The image is centered on the equator and shows the green landmasses, blue oceans, and white clouds. A dark blue horizontal band is overlaid across the center of the image, containing the title and speaker information.

**REMOTE SENSING  
DATA DISTRIBUTION POLICY  
INDONESIA EXPERIENCE**

**Dedi Irawadi  
Director of  
Remote Sensing Technology and Data Center  
LAPAN**

Kuala Lumpur, September 30, 2015

# Remote Sensing



# National Policy on Remote Sensing



- Presidential Special Instructions : INPRES No. 6 Tahun 2012
- Indonesian Space Law : UU RI No. 21 Tahun 2013 tentang Keantariksaan

# Presidential Special Instruction



## Inpres No. 6 tahun 2012 tentang Penyediaan, Penggunaan, Pengendalian Kualitas, Pengolahan, dan Distribusi Data Satelit Penginderaan Jauh Resolusi Tinggi

### Kewajiban LAPAN:

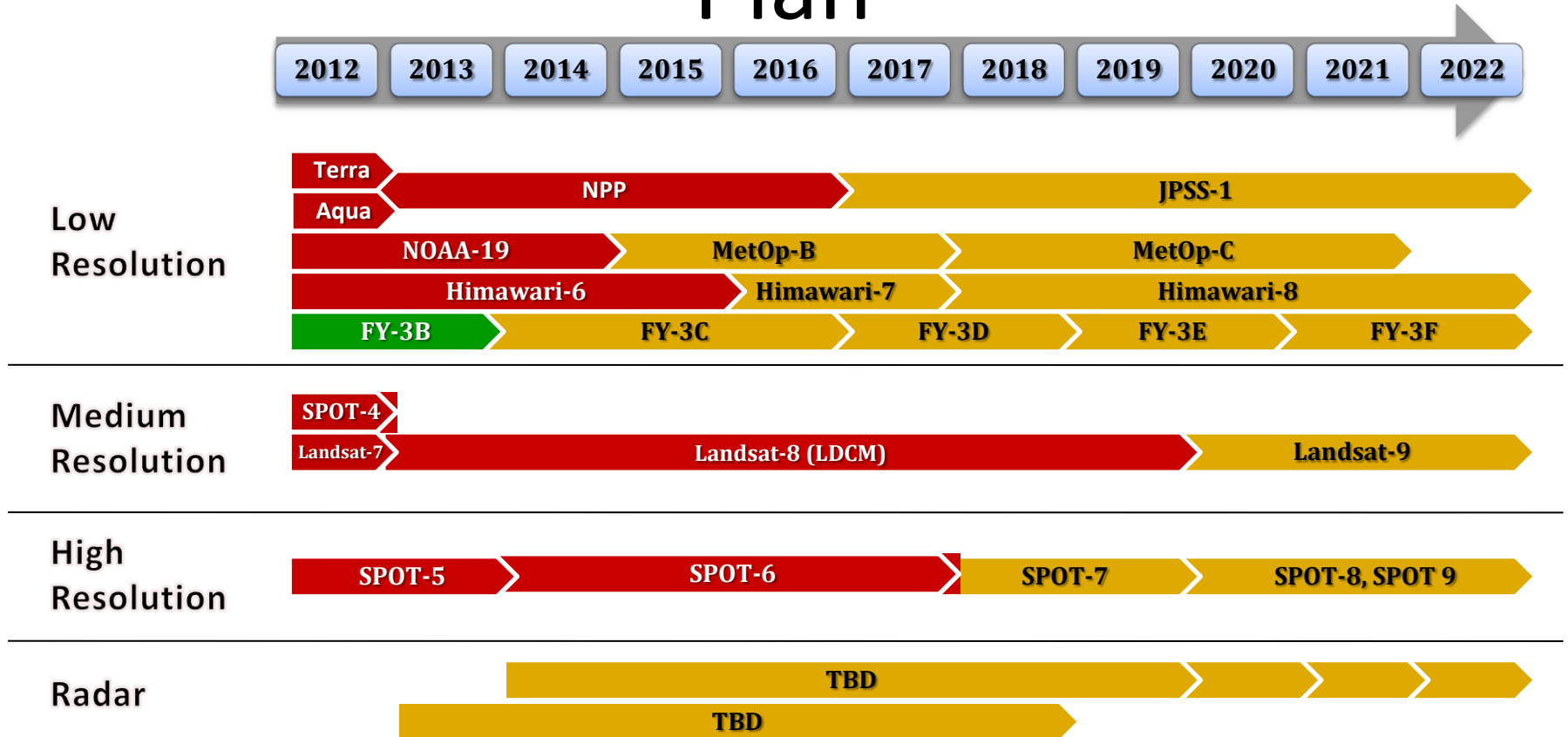
- a. menyediakan data satelit penginderaan jauh resolusi tinggi dengan lisensi Pemerintah Indonesia;
- b. meningkatkan kapasitas dan operasi sistem akuisisi data satelit penginderaan jauh resolusi tinggi;
- c. melaksanakan penyediaan data satelit penginderaan jauh resolusi tinggi sesuai dengan ketentuan Peraturan Perundang-undangan;
- d. melakukan pengolahan atas data satelit penginderaan jauh resolusi tinggi berupa koreksi radiometrik dan spektral;
- e. membuat metadata atas data satelit penginderaan jauh resolusi tinggi sesuai dengan Standar Nasional Indonesia;
- f. melakukan penyimpanan data satelit penginderaan jauh resolusi tinggi; dan
- g. bersama Badan Informasi Geospasial melakukan pengendalian kualitas terhadap data satelit penginderaan jauh resolusi tinggi.

# Indonesia Law on Space



- LAPAN is the only institution to plan, build and operate Remote Sensing Satellites and Ground Stations (article 16 and 17)
  - LAPAN is the only institution to procure remote sensing high resolution data for Government of Indonesia ( article 18).
  - LAPAN should establish standard methodology and quality for processing (article 19)
  - Data management and distribution is operated by RS Data Bank (article 20)
  - LAPAN should developed standard for application and dissemination of information (article 22)
-

# Remote Sensing Data Acquisition Plan



- Data has been receiving by LAPAN currently
- Data will be received by LAPAN in the near future
- Satellite will be launched and data planned to be received by LAPAN

# Remote Sensing Ground Stations

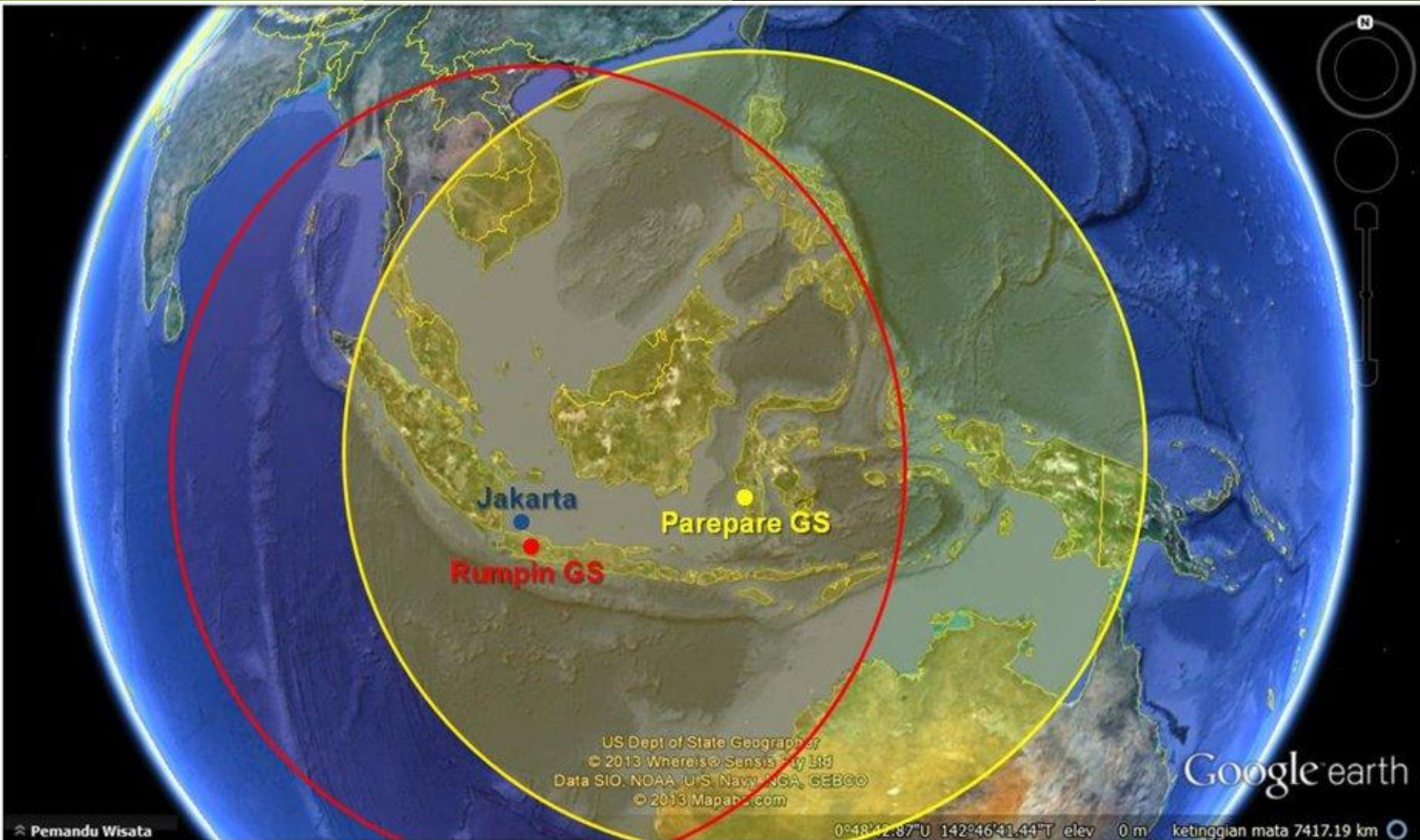


**Parepare Ground Station  
(South Sulawesi)**



**Rumpin Ground Station  
(West Java)**

# Ground station footprints





# RS National Data Bank

- **Facilities:**  
Acquisitions,  
Processing, Data  
Management,  
and Data  
Distributions



# Data acquired at LAPAN's Remote Sensing Ground Stations



**A**

## High Res.

- Terra/Aqua
- NPP
- NOAA-18/19
- Metop
- MTSAT-1R



**B**

## Medium Res.

- Landsat-7
- Landsat-8



**C**

## High Res.

- SPOT-6
- SPOT-7



# Other available data

- SPOT-2
- SPOT-4
- ALOS AVNIR
- ALOS PALSAR
- ALOS PRISM
- Rapid Eye
- Ikonos
- QuickBird
- World View
- Geo Eye
- Pleiades
- RadarSat
- TerraSar-X



# Terra/Aqua MODIS catalog



User | History Login | History Download | Status | Katalog | Informasi Modis | Logout Ayom

## MODIS Process Monitoring

### Katalog

Tentukan satellite dan level Pencarian

Satellite: All Level:  True Color  Level 1  level 2

Tanggal Awal Pencarian

Tahun : 2013 Bulan : October Tanggal : 1

User | History Login | History Download | Status | Katalog | Informasi Modis | Logout Ayom



The map displays NDVI data for Indonesia and surrounding regions. A legend in the bottom-left corner indicates: NDVI Rendah (yellow), NDVI Sedang (green), NDVI Tinggi (dark green), and Awan (grey). A timeline at the top of the map shows the date 1/1/2013. The map is overlaid on a Google Earth interface.

### Informasi Data MODIS

NDVI	2010	2011	2012	2013
	<input type="checkbox"/> Aqua	<input type="checkbox"/> Aqua	<input type="checkbox"/> Aqua	<input type="checkbox"/> Aqua
		<input type="checkbox"/> Terra	<input checked="" type="checkbox"/> Terra	<input type="checkbox"/> Terra

RGB	2010	2011	2012	2013
			<input type="checkbox"/> Terra	<input type="checkbox"/> Terra

SST	2010	2011	2012	2013
	<input type="checkbox"/> Aqua	<input type="checkbox"/> Aqua	<input type="checkbox"/> Aqua	<input type="checkbox"/> Aqua

EVI	2010	2011	2012	2013
			<input type="checkbox"/> Aqua	<input type="checkbox"/> Aqua
			<input type="checkbox"/> Terra	<input type="checkbox"/> Terra

Hot Spots	2010	2011	2012	2013
				<input type="checkbox"/> Aqua
				<input type="checkbox"/> Terra

US Dept of State Geographer  
Data SIO, NOAA, U.S. Navy, NGA, GEBCO  
© 2013 Google  
© 2013 Whereis® Seno & Lili Ltd

Google earth  
Eksplorasi Eksponansi

# Landsat-5/7/8 data catalog



**landsat catalogue** POWERED BY pinkmatter

## Landsat-8 RCC data

Map Satellite

Search Details Basket Coverage

**Mission**

<input type="checkbox"/> Landsat	<input type="checkbox"/> L1T	<input type="checkbox"/>
<input type="checkbox"/> Landsat5	<input type="checkbox"/> L1GT	<input type="checkbox"/>
<input type="checkbox"/> Landsat7	<input type="checkbox"/> MD	<input checked="" type="checkbox"/>
<input type="checkbox"/> Landsat8		
OLI_TIRS	<input checked="" type="checkbox"/>	

**Spatial Coverage**

Upper Left  
Lat: 10 0000 Long: 92 0000

Lower Right  
Lat: -12 0000 Long: 145 0000

Select Area

- Indonesia
- Australia
- Canada
- Africa
- Sumatra
- Jawa
- Sulawesi
- Sulawesi
- Palau
- Maluku
- Bali
- Irian Jaya

**Temporal**

From: 1970-01-01 To: 2013-10-17

Today  
This Month  
This Year  
Forever

**Cloud Cover**

0% 20% 40% 60% 80% 100%

Find Products

Products found: 89

Map data ©2013 AutoNavi, GBRMPA, Google, Kingway MapT, SK planet, ZENRIN Terms of Use

# High Resolution catalog

The screenshot displays the 'IMAGE CATALOG BANK DATA PENGINDERAAN JAUH NASIONAL - BDPJN LAPAN' web interface. The top navigation bar includes 'Welcome', 'Register', 'Login', and 'Forgot Password'. The left sidebar contains navigation options: 'Browse Dataset', 'Basic Search', 'Advance Search', and 'User Stat'. Below these are 'Help...' and 'Browse Dataset by' categories: 'Administrative Boundaries', 'Datasets', and 'Mosaic Datasets'. A 'Satellite' thumbnail is also present. The 'Area Options' section includes radio buttons for 'Intersecting' (selected) and 'Fully within'. The 'Maximum Result' section has radio buttons for '10', '50', '100', and '250' (selected). The 'Acquisition Date' section includes a 'Date Range (Y-M-D ex. 2014-01-31)' input field and a checked 'Don't Clear Previous Result' option. The main map area shows Southeast Asia and Indonesia with city labels like Medan, Kuala Lumpur, Singapore, Jakarta, and Surabaya. A scale bar indicates 400km and 300mi. The bottom control bar includes 'Search/ Browse Result', 'My Catalog', and 'My Cart' tabs, along with 'Clear Search Result', 'Remove Selected Result', and 'Remove Unselected Result' buttons. A 'Filter Search Result:' dropdown is set to 'data every page'. The bottom table header lists columns: Title, Dataset, Aq/Prd, P/K, R/J/F, Sensor, Level, Cloud, BBox, Preview, Add to, and Remove.

Alamat : <http://bdpjn-catalog.lapan.go.id/>

# Remote Sensing Application Activities

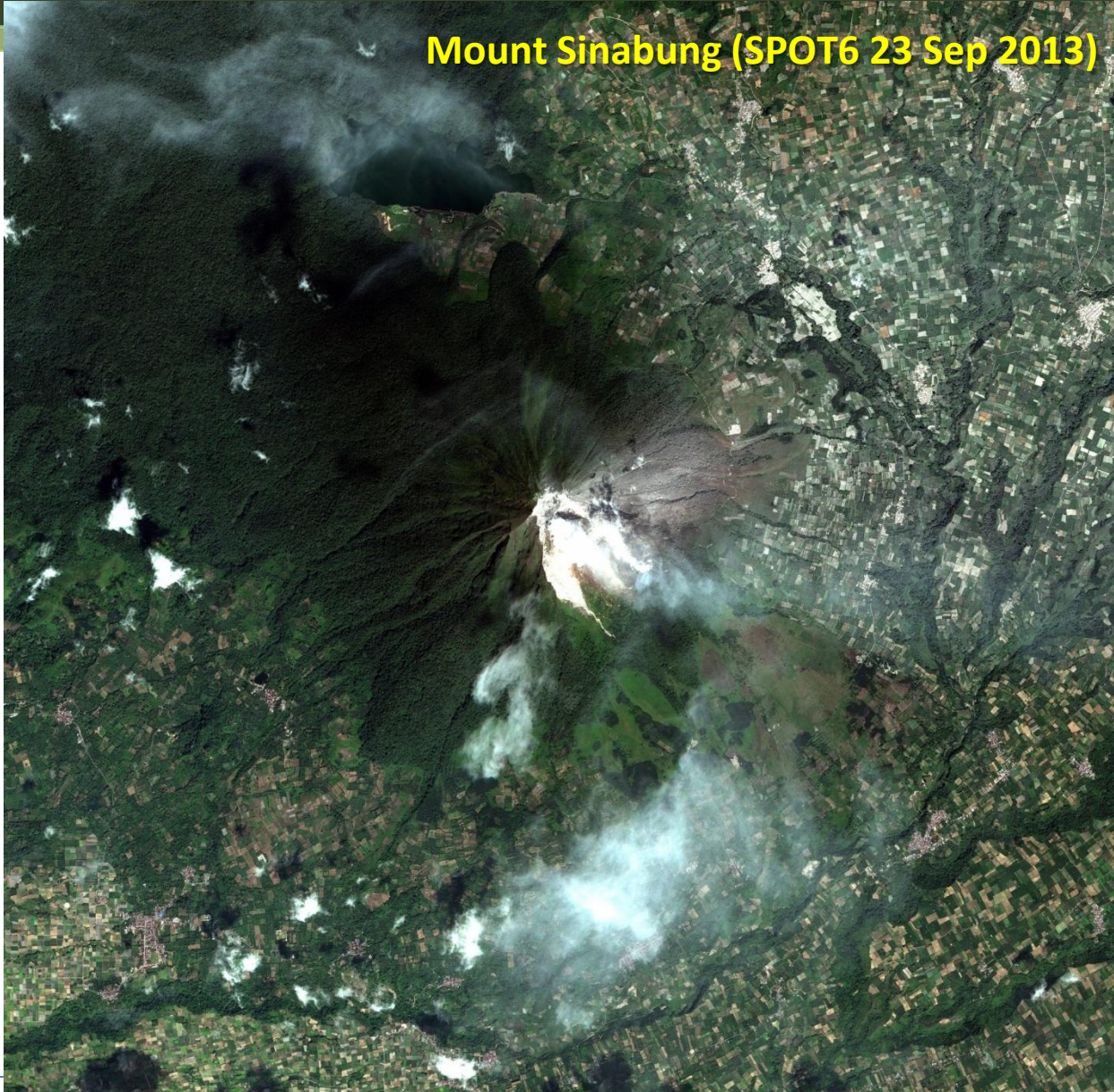
## High Resolution

---

# Volcanic mountains monitoring



Mount Sinabung (SPOT6 23 Sep 2013)





# Flood mitigation



Manado (SPOT6 31 Jan 2014)



# Forest Fire



**SPOT-6 (res. 1.5m)**  
**Siak, Riau (18 Jun 2013)**



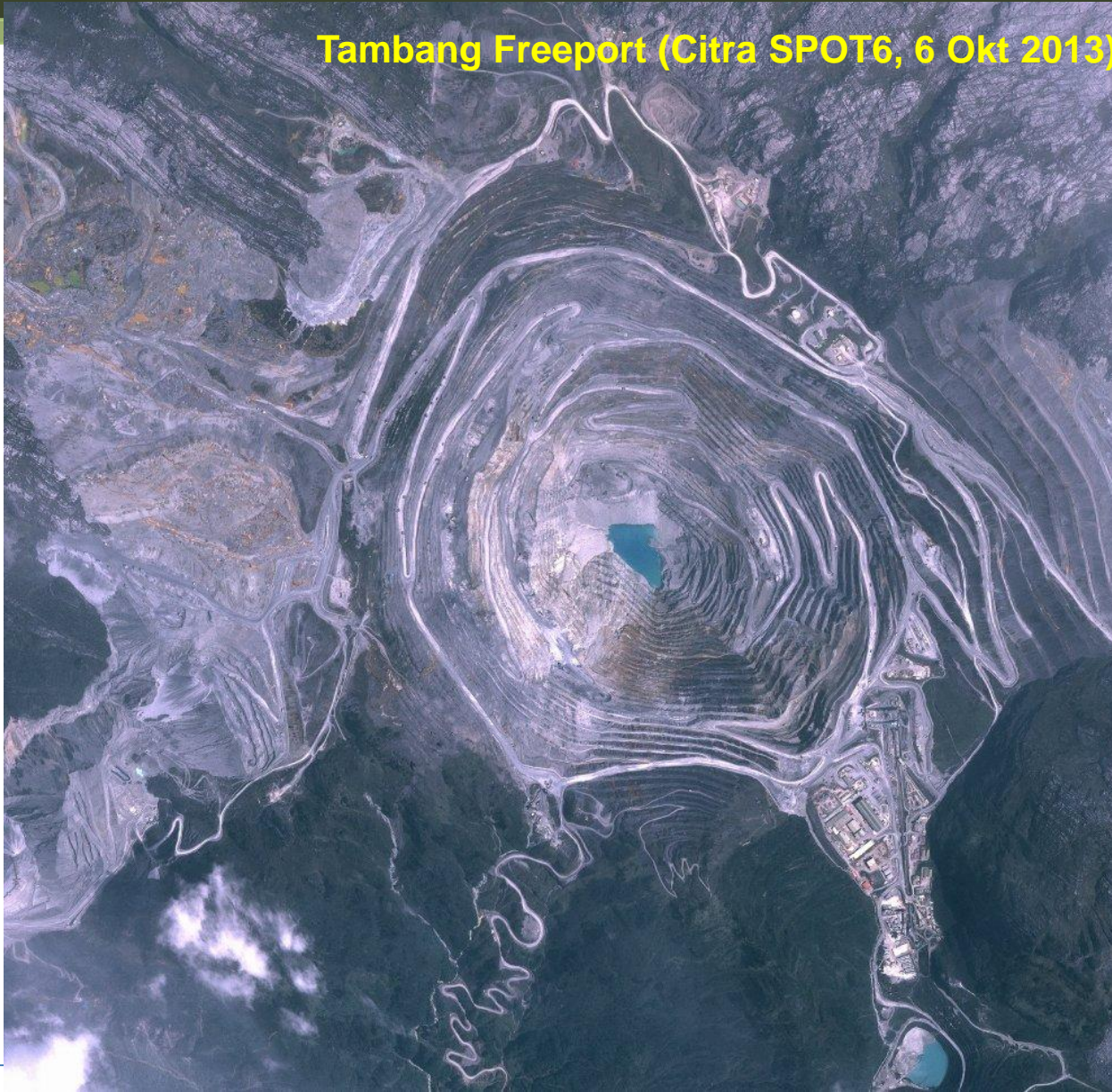
# Environment



**Kapuas Kalteng  
(Citra SPOT6, 5 Mei 2013)**

# Mining activities

Tambang Freeport (Citra SPOT6, 6 Okt 2013)



# Mapping for taxation (1)

PETA WAJIB PAJAK - Mozilla Firefox

File Edit View History Bookmarks Tools Help

PETA WAJIB PAJAK

localhost/512/PetaSIG.aspx?q=MAP&lat=&lon=&zoom=&a=PENERIMAAN&ar=


LAT:  LON:  Cari WP Input WP Home

TAMPILAN PETA MAP ATRIBUT PENERIMAAN KELURAHAN PEKUNDE

Keterangan :

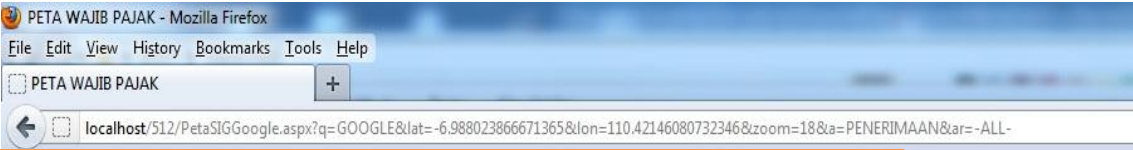
- Objek yang ditampilkan maksimal adalah 300 Objek yang terdekat dengan Koordinat yang dipilih / diklik.
- Gunakan tombol kanan / kiri / atas / bawah untuk menggeser Peta. Keterangan gambar sebagai berikut:

NIHIL 1 s.d. 1jt 1jt s.d. 10jt 10jt s.d. 100jt 100jt s.d. 1M Diatas 1M



Windows taskbar: @DTU MR An..., 22. Contoh For..., 22. Contoh For..., Lap\_Mitigasiris..., Untitled - Not..., PETA WAJIB P..., EN, 9:30, 14/11/2014

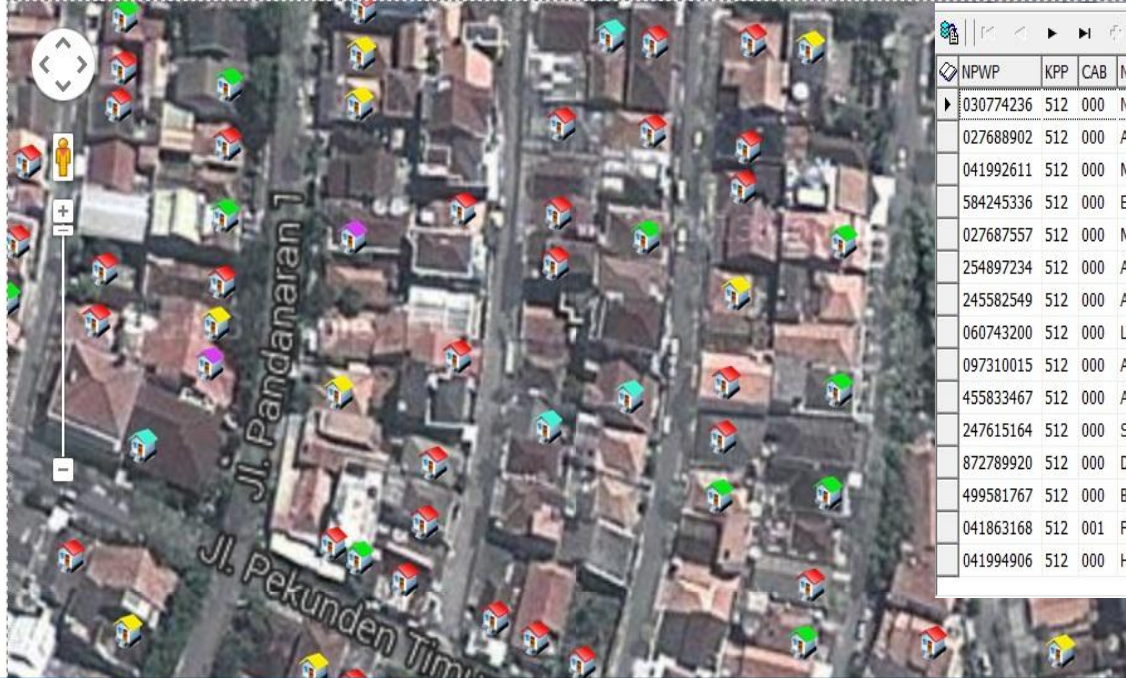
# Mapping for taxation (2)



## CONTOH TAMPILAN APLIKASI NEW PADI

Keterangan :

- Objek yang ditampilkan maksimal adalah 300 Objek yang terdekat dengan Koordinat yang dipilih / diklik.
- Gunakan tombol kanan / kiri / atas / bawah untuk menggeser Peta. Keterangan gambar sebagai berikut:



NPWP	KPP	CAB	NAMAWP	LAT	LON
030774236	512	000	NUSANTARA SENTOSA	-6.989093082399532	110.42849510908127
027688902	512	000	AMARA PRIMATIGA	-6.988447835204909	110.42689563325803
041992611	512	000	MITA SETIAWAN.NY.	-6.988596922978056	110.42702974370877
584245336	512	000	ESTHER SYLVIA HADIMAN	-6.988700751934839	110.42712093881528
027687557	512	000	MANNA PRIMA UTAMA	-6.9898455312112	110.42718799404065
254897234	512	000	ANDREAS ARYONO PUJIANTO	-6.989203922706343	110.42684198907773
245582549	512	000	AGUS SUTRISNO	-6.989299764696639	110.42673738292615
060743200	512	000	LIEM KING LOEN	-6.989366321622788	110.42664082340161
097310015	512	000	ADJEG TARIUS	-6.989491448618276	110.42673738292615
455833467	512	000	AGUS WIBOWO PRAKOSO	-6.989555343241346	110.42679639152448
247615164	512	000	SANTOSA BUDI UTAMA	-6.989619237855687	110.42686612895886
872789920	512	000	DAVID SETIAWAN MIHARJO	-6.989723066585341	110.4269814639465
499581767	512	000	BENY KURNIAWAN	-6.990268832605555	110.42704315475385
041863168	512	001	POEI LIEN NIO	-6.990103771730091	110.4271236210243
041994906	512	000	HENDRI NURALIM	-6.990018578997365	110.42699219278256



# Medium Resolution

# Forest/non forest monitoring

First product :

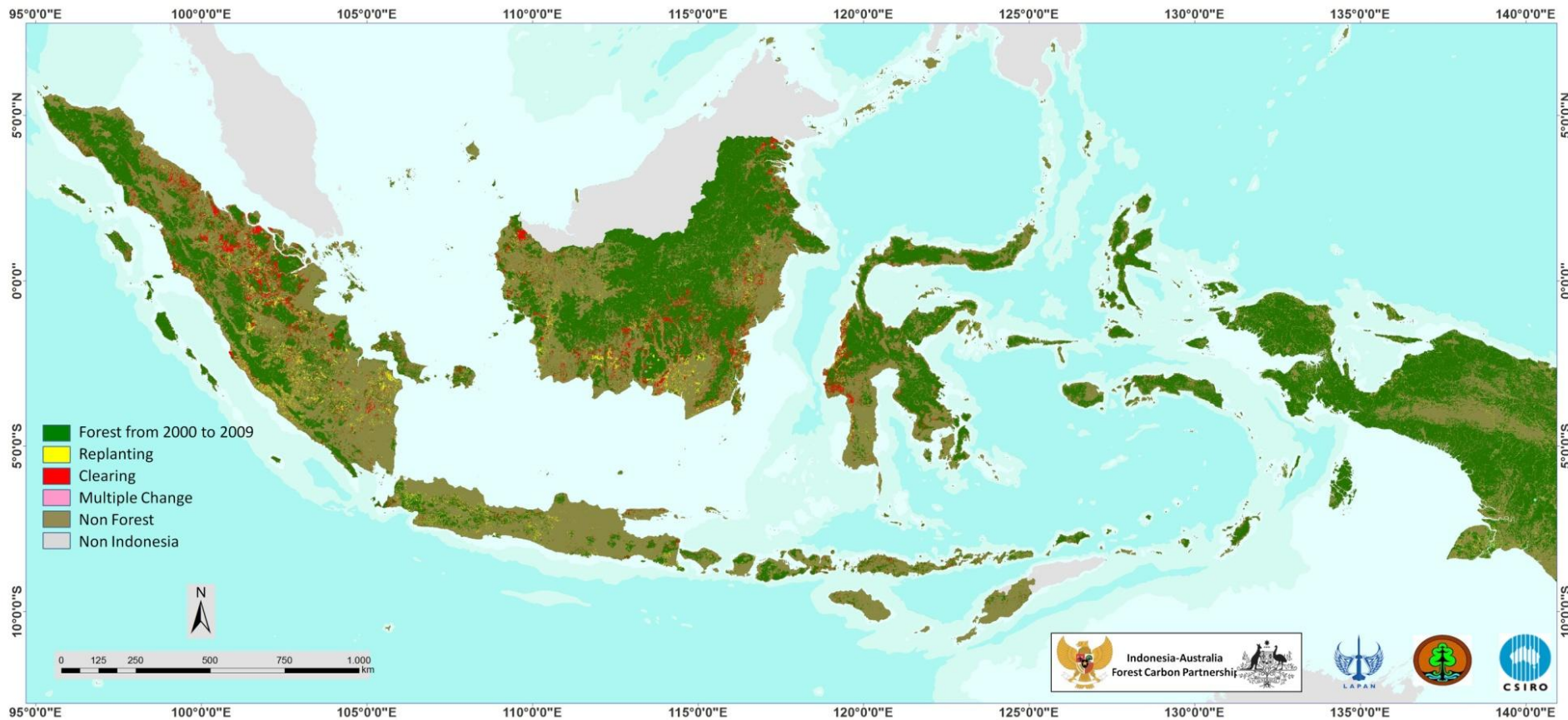
1. Forest-non forest (annual, 2000 – 2009)
2. Tree Loss /clearing (annual, 2000 – 2009)
3. Replanting (annual, 2000 – 2009)
4. Forest Loss and Gain (2000 to 2009)

Resolution : 0.00025 deg (~25 meter)

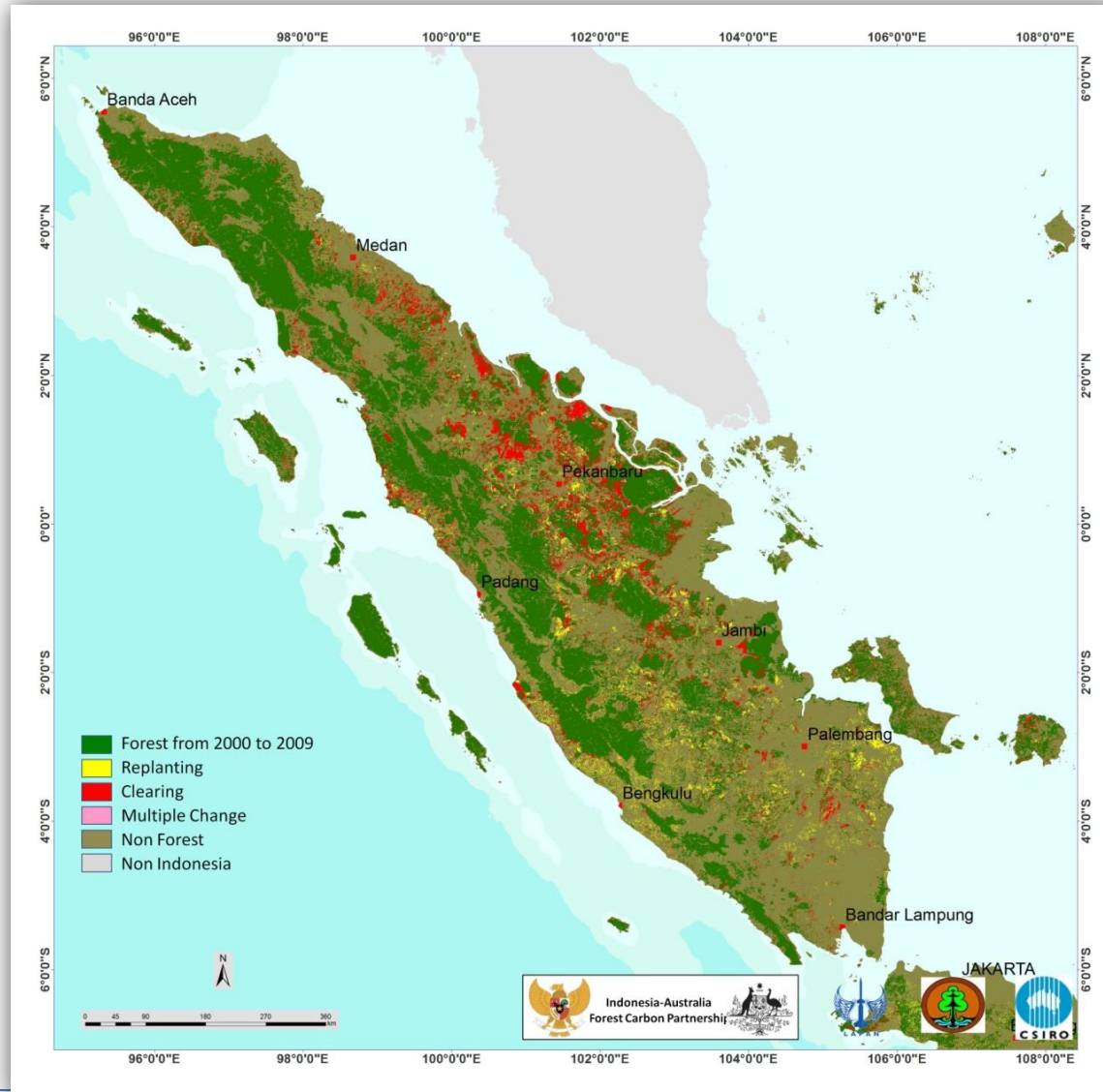
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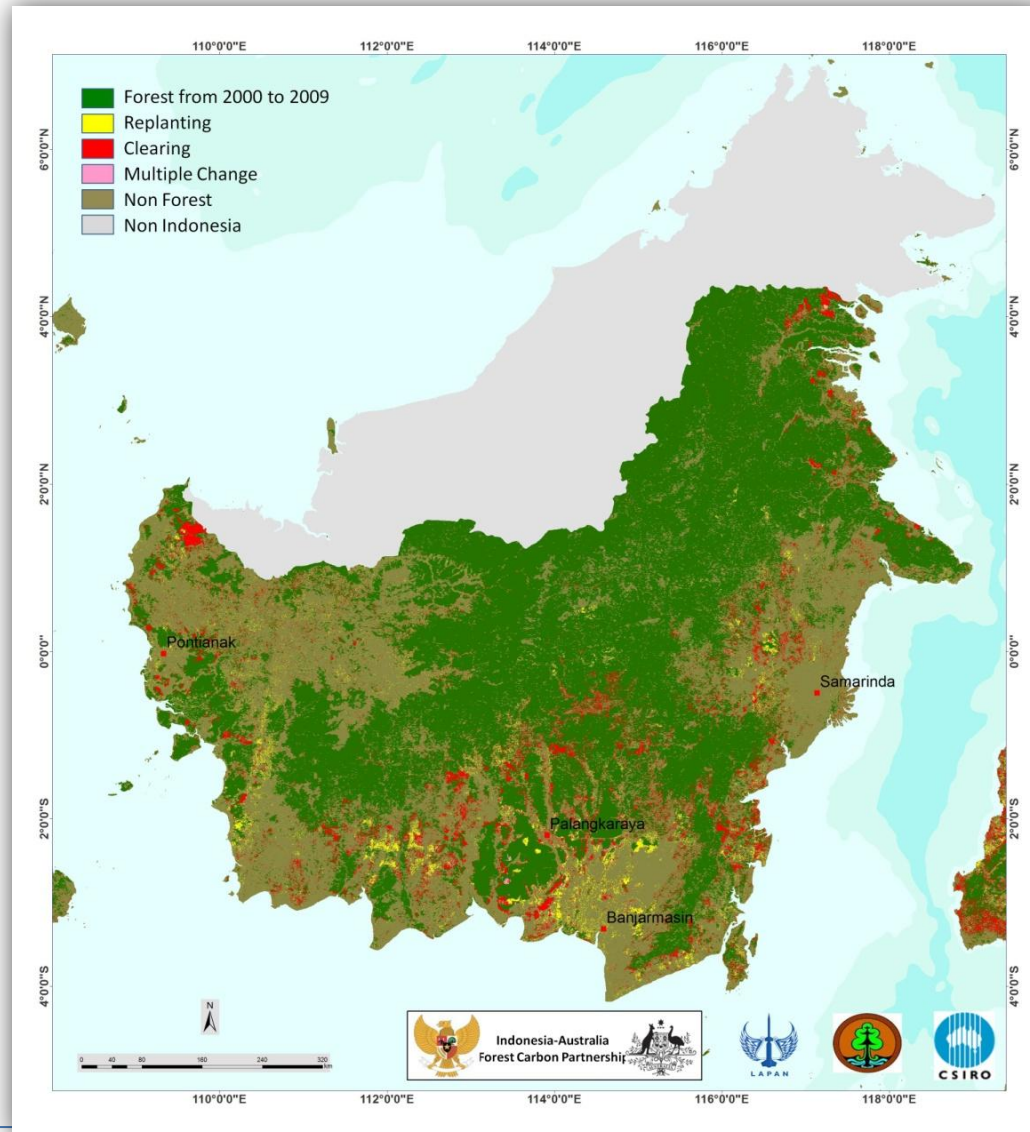
# Forest cover loss and gain (Indonesia, 2000-2009)



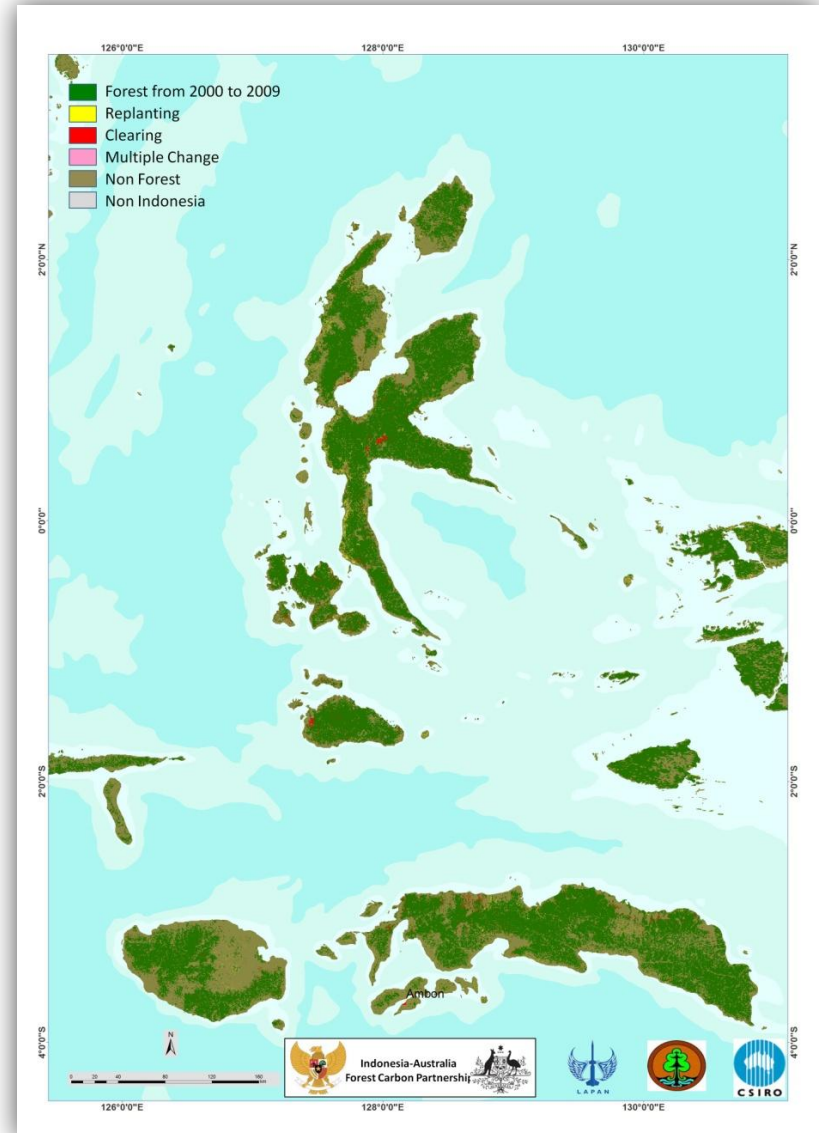
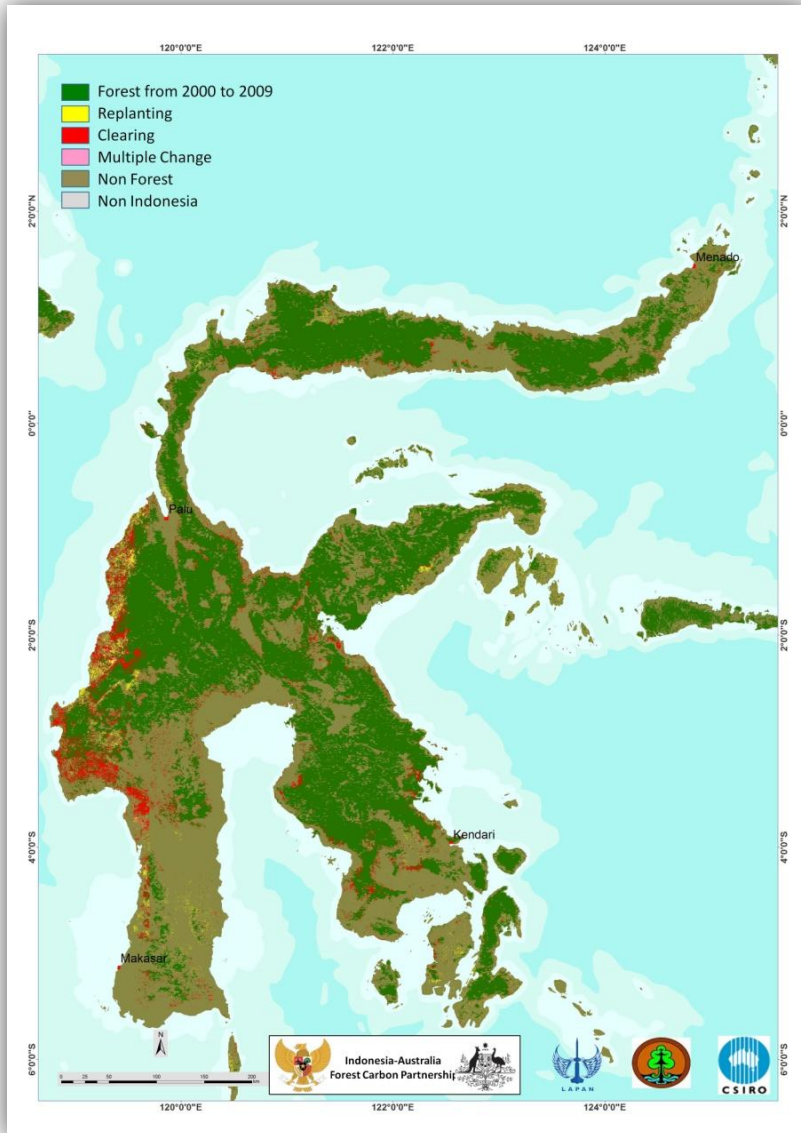
# Forest cover loss and gain (Sumatera, 2000-2009)



# Forest cover loss and gain (Kalimantan, 2000-2009)



# Forest cover loss and gain (Sulawesi and Maluku, 2000-2009)



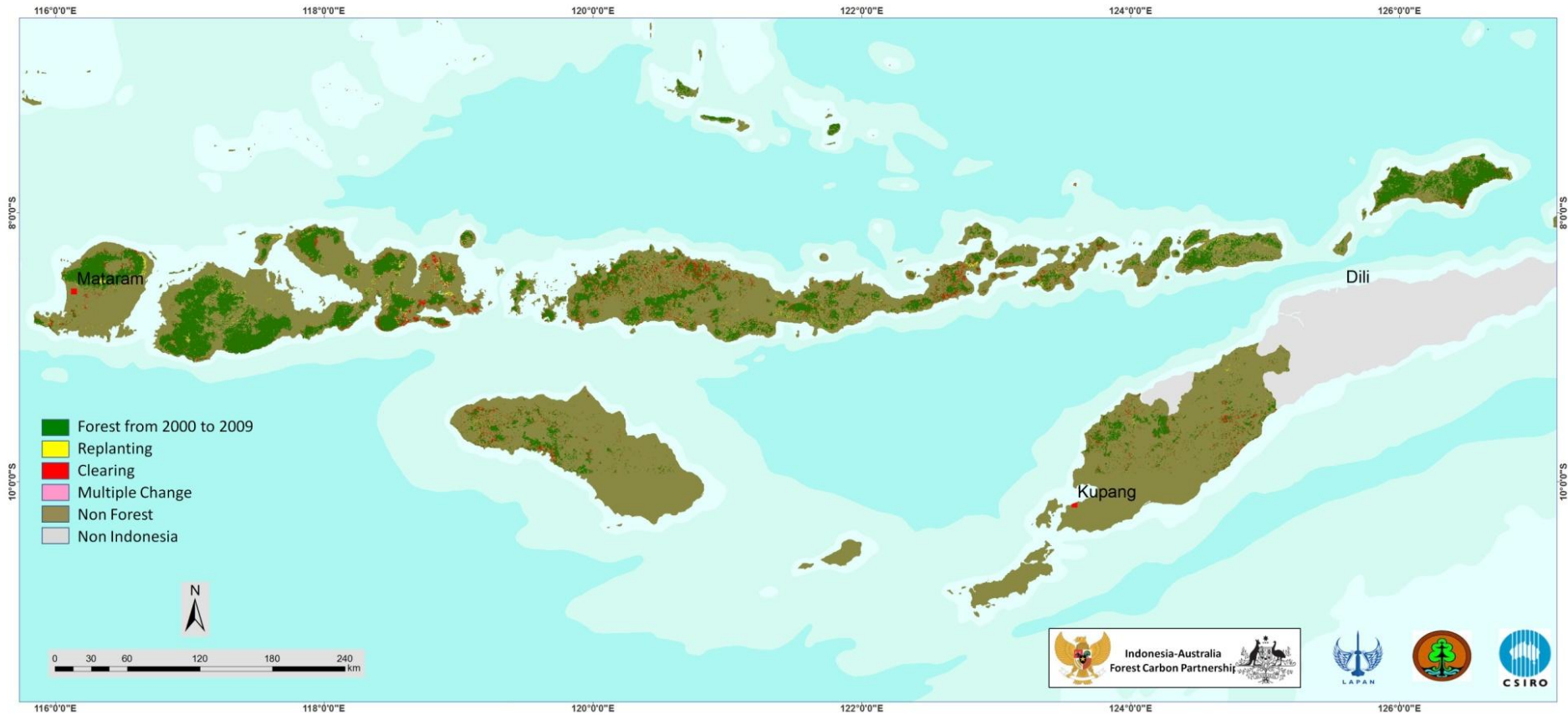
# Forest cover loss and gain (Papua, 2000-2009)



# Forest cover loss and gain (Java, 2000-2009)



# Forest cover loss and gain (Nusa Tenggara, 2000-2009)



# Low Resolution

---



# Forest Fire Monitoring (1)



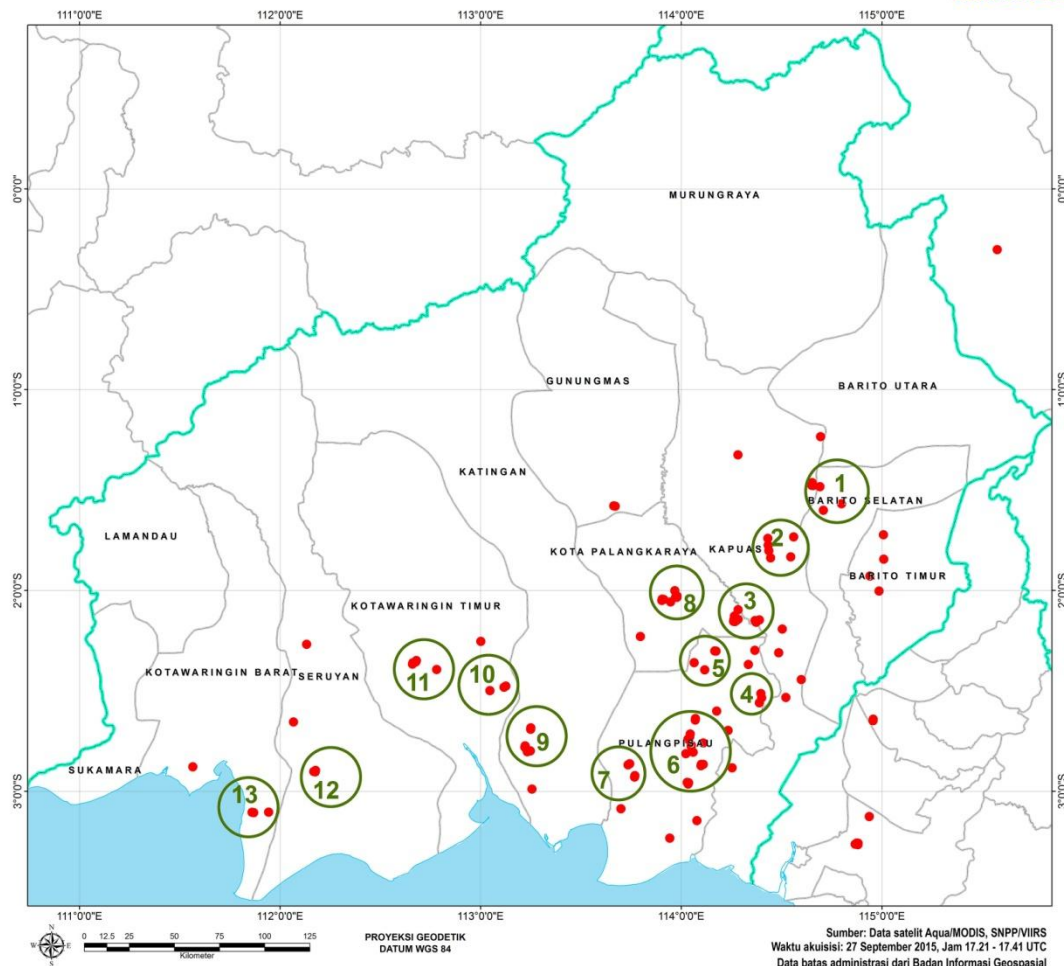
**DEPUTI BIDANG PENGINDERAAN JAUH  
LEMBAGA PENERBANGAN DAN ANTARIKSA NASIONAL**

DEPUTY FOR REMOTE SENSING AFFAIRS  
INDONESIAN NATIONAL INSTITUTE OF AERONAUTICS AND SPACE

Jl. Kalisari No.8, Pekayon, Pasar Rebo, Jakarta 13710, Indonesia  
Telp. 021-87110065, Faks. 021-8722733. E-mail: tmtanggapbencana@lapan.go.id. http://pusfatja.lapan.go.id

**RESPON TANGGAP DARURAT BENCANA BERBASIS DATA SATELIT PENGINDERAAN JAUH  
DISTRIBUSI DAN LOKASI TITIK PANAS (HOTSPOT)**

**PROVINSI KALIMANTAN TENGAH  
TANGGAL 28 SEPTEMBER 2015 JAM 00.21 - 00.47 WIB**



**Legenda :**

- Titik panas (hotspot)  
Tingkat kepercayaan >=80%
- Batas wilayah provinsi
- Batas wilayah kota/kabupaten
- Garis pantai

**Jumlah Hotspot: 110**

**Lokasi Hotspot:**

No	Bujur (°)	Lintang (°)	Kabupaten/Kota
1	114.692	-1.482	Barito Selatan
2	114.434	-1.773	Kapuas
3	114.269	-2.144	Kota Palangkaraya
4	114.401	-2.533	Pulangpisau
5	114.167	-2.300	Pulangpisau
6	114.043	-2.727	Pulangpisau
7	113.769	-2.921	Pulangpisau
8	113.980	-2.027	Kota Palangkaraya
9	113.233	-2.802	Katingan
10	113.126	-2.475	Kotawaringin Timur
11	112.662	-2.359	Kotawaringin Timur
12	112.169	-2.901	Seruyan
13	111.861	-3.104	Kotawaringin Barat

Perekaman data oleh:  
PUSAT TEKNOLOGI DAN DATA PENGINDERAAN JAUH - LAPAN

Pemutakhiran, kompilasi & interpretasi data oleh:  
PUSAT PEMANFAATAN PENGINDERAAN JAUH - LAPAN

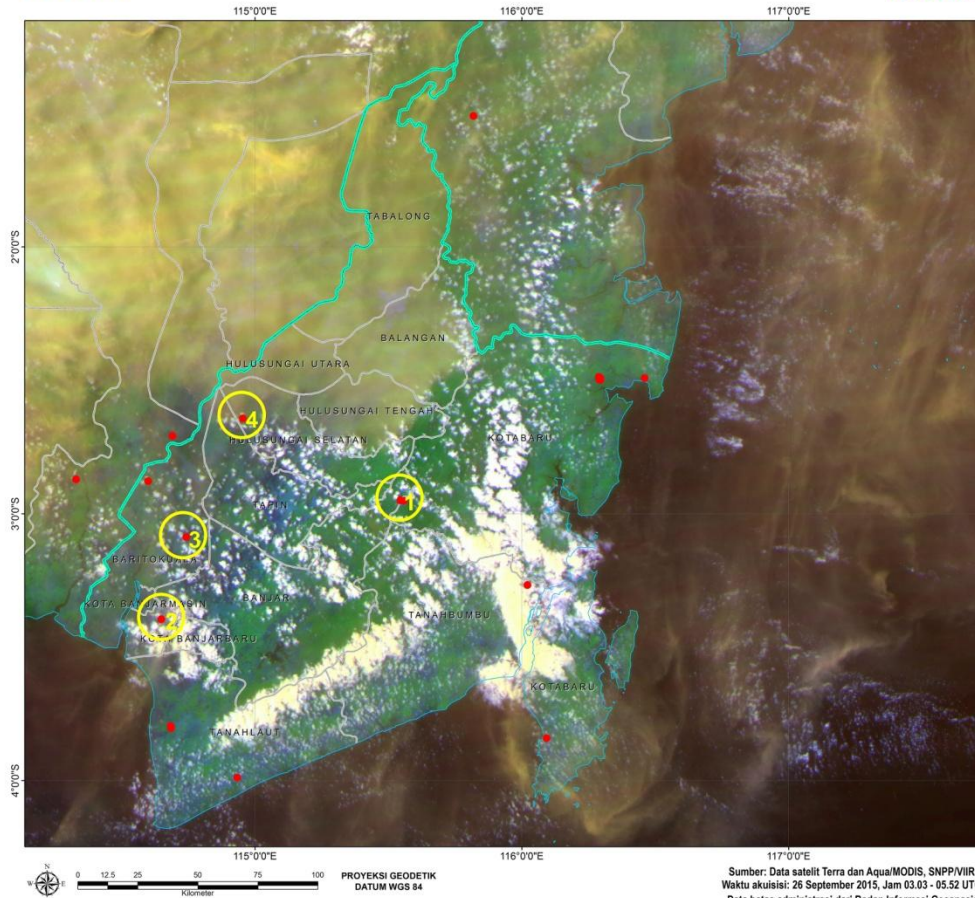
# Forest Fire Monitoring (2)



**DEPUTI BIDANG PENGINDERAAN JAUH**  
**LEMBAGA PENERBANGAN DAN ANTARIKSA NASIONAL**  
 DEPUTY FOR REMOTE SENSING AFFAIRS  
 INDONESIAN NATIONAL INSTITUTE OF AERONAUTICS AND SPACE  
 Jl.Kalisari No.8, Pekayon, Pasar Rebo, Jakarta 13710, Indonesia  
 Telp.021-8710065, Faks. 021-8722733. E-mail: tmtanggapbencana@lapan.go.id. http://pusfatja.lapan.go.id

**RESPON TANGGAP DARURAT BENCANA BERBASIS DATA SATELIT PENGINDERAAN JAUH**  
**DISTRIBUSI DAN LOKASI TITIK PANAS (HOTSPOT)**  
**SERTA SEBARAN ASAP KEBAKARAN LAHAN/HUTAN**

**PROVINSI KALIMANTAN SELATAN**  
**TANGGAL 26 SEPTEMBER 2015 JAM 10.03 - 12.52 WIB**



**Legenda :**

- Titik panas (hotspot)  
Tingkat kepercayaan >=80%
- Batas wilayah provinsi
- Batas wilayah kota/kabupaten
- Garis pantai
- Asap kebakaran
- Asap dan awan
- Awan

**Lokasi Hotspot:**

NO	Bujur (°)	Lintang (°)	Kabupaten/Kota
1	115.560	-2.954	Kotabaru
2	114.649	-3.403	Banjar
3	114.745	-3.086	Barito Kuala
4	114.946	-2.630	Hulu Sungai Selatan

Perekaman data oleh:  
 PUSAT TEKNOLOGI DAN DATA PENGINDERAAN JAUH - LAPAN

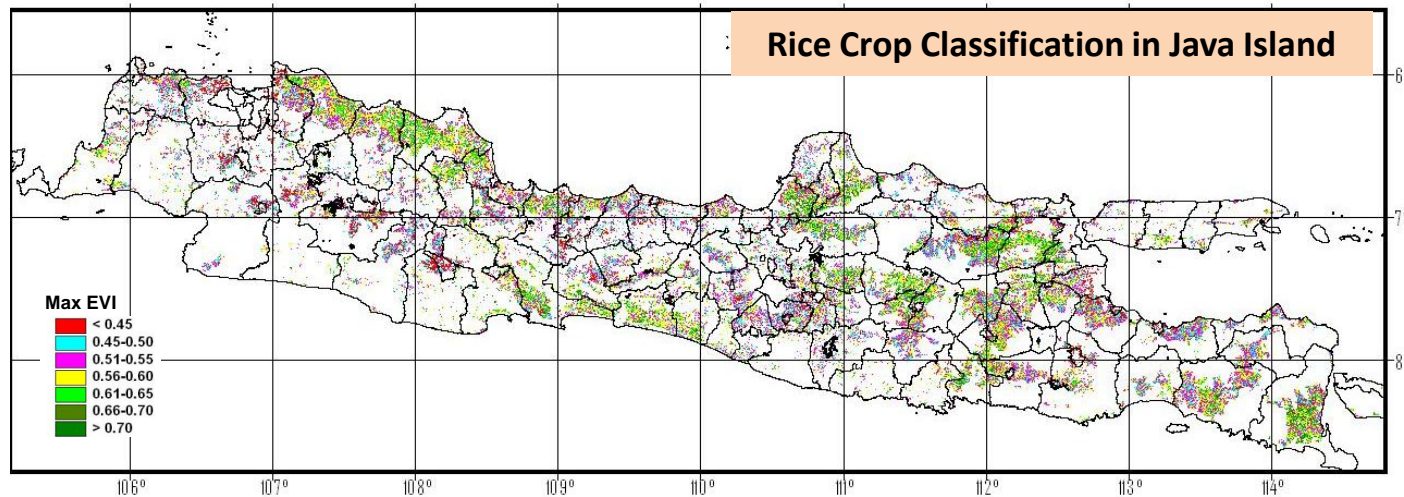
Pemutakhiran, kompilasi & interpretasi data oleh:  
 PUSAT PEMANFAATAN PENGINDERAAN JAUH - LAPAN

# Rice Crop Classification (MODIS)



- Data Source : Enhanced Vegetation Index (EVI) MODIS 8 days

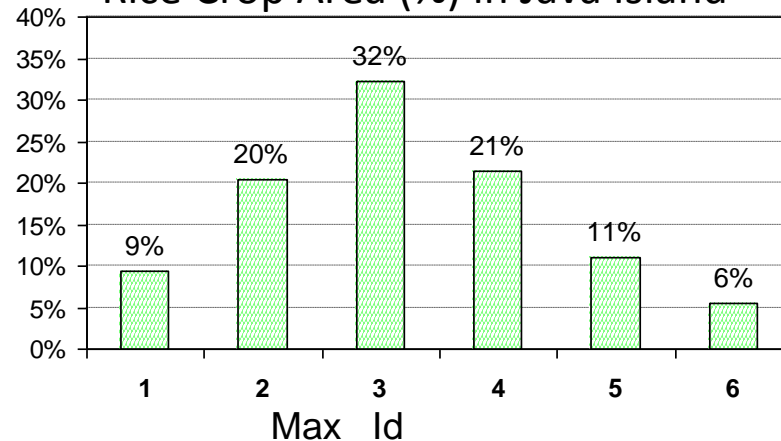
Period : October 2008 – March 2009



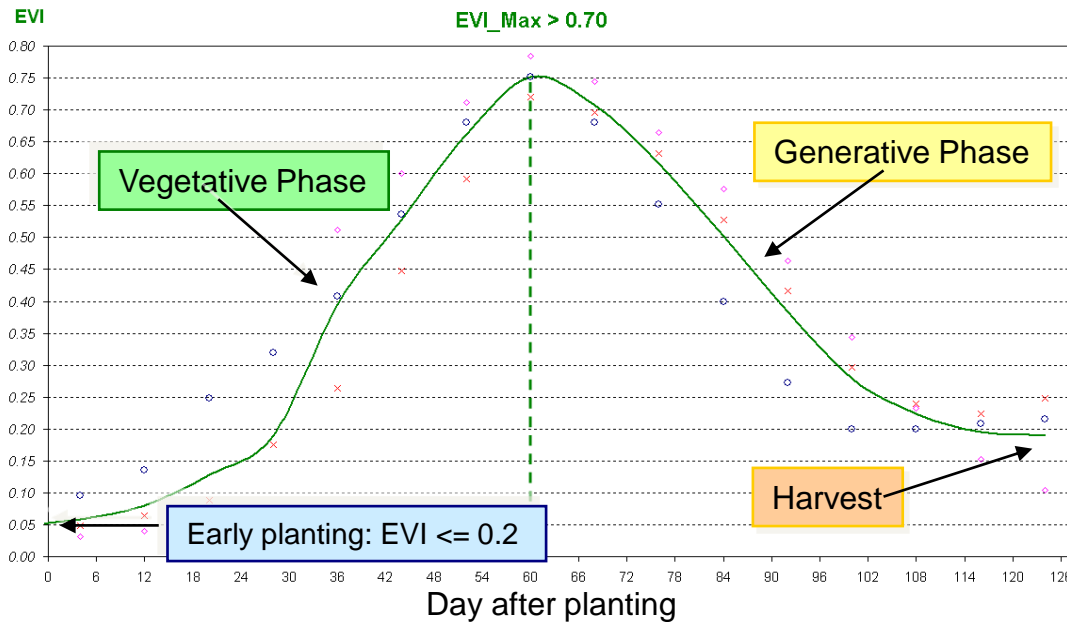
There are 6 types of EVI Profil for Rice Crop in Java Island

No	EVI_Max	Max_Id
1	0.45-0.50	1
2	0.51-0.55	2
3	0.56-0.60	3
4	0.61-0.65	4
5	0.66-0.70	5
6	> 0.7	6

Rice Crop Area (%) in Java Island



# Rice Crop Growth Model



Data Source : Enhanced Vegetation Index (EVI) MODIS 8 days

**Example of Rice Crop Growth Profile for Max EVI >0.7**

## VEGETATIVE PHASE:

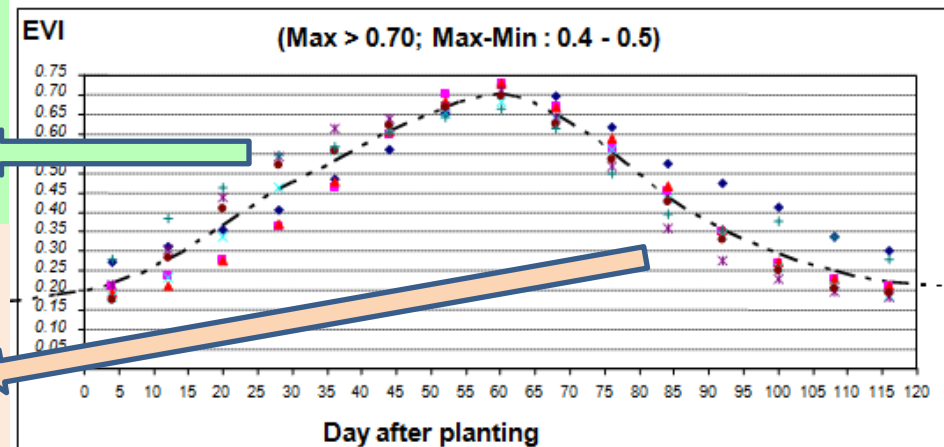
$$Y_{\text{Vegetative}} = 151.868 + 0.4857 X + 0.0289 X^2 - 0.0003 X^3$$

(R<sup>2</sup> = 97.2 %, Standart error= 4.37)

## GENERATIVE PHASE:

$$Y_{\text{Generative}} = 122.19 + 5.581 X - 0.0887 X^2 + 0.0004 X^3$$

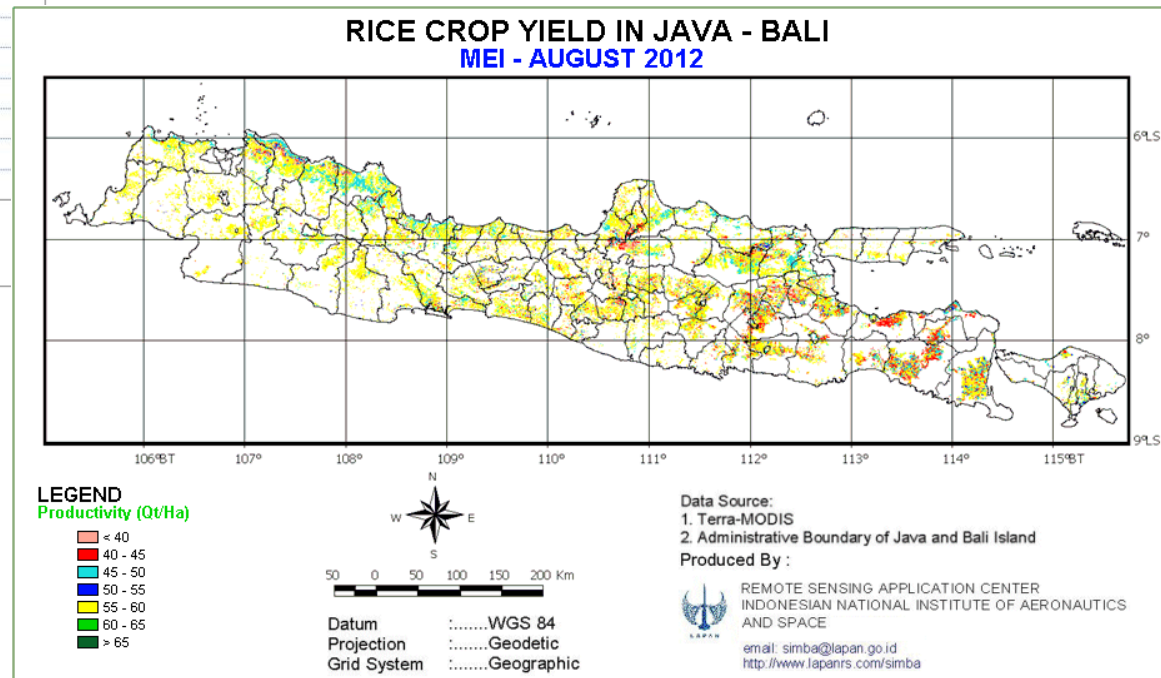
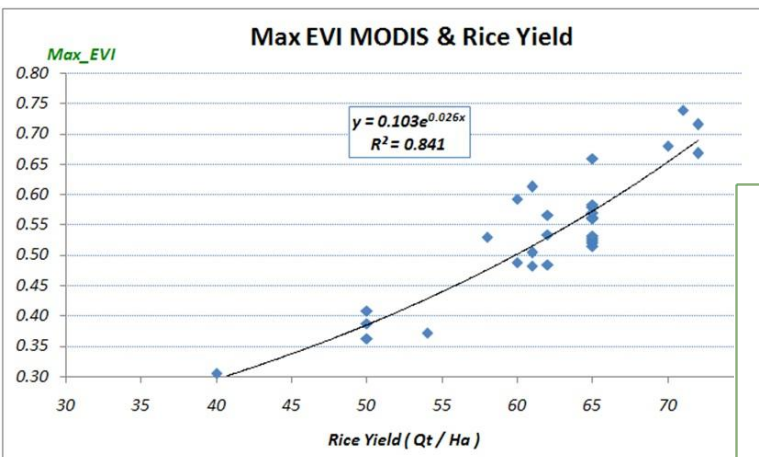
(R<sup>2</sup> = 99.3 %, Standart error= 2.13)



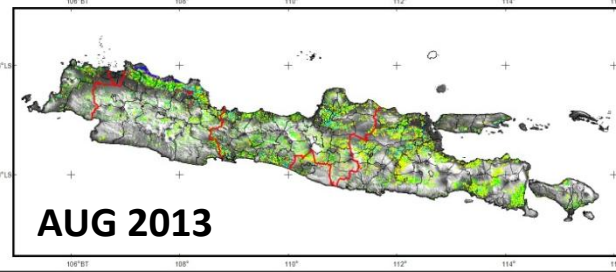
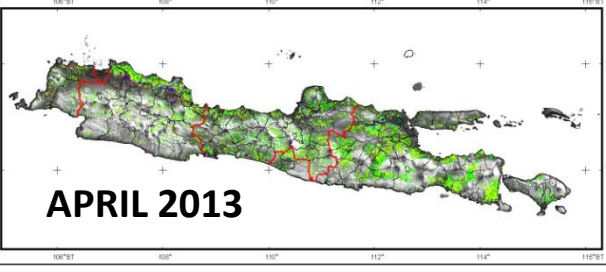
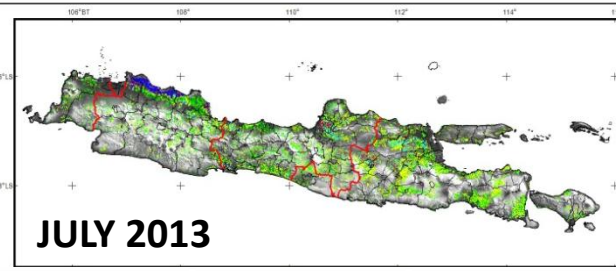
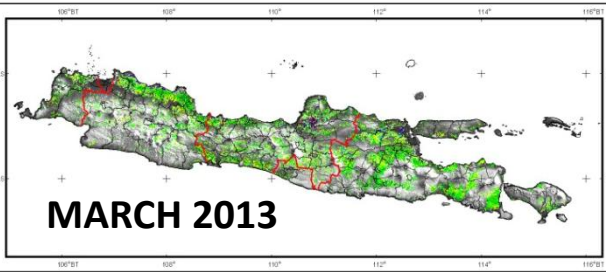
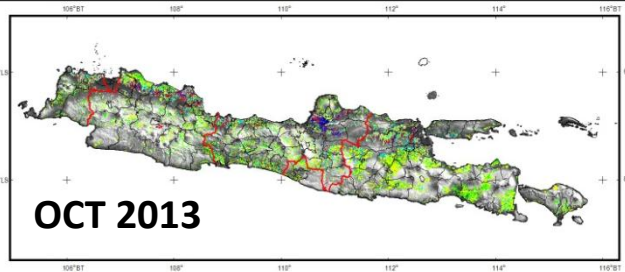
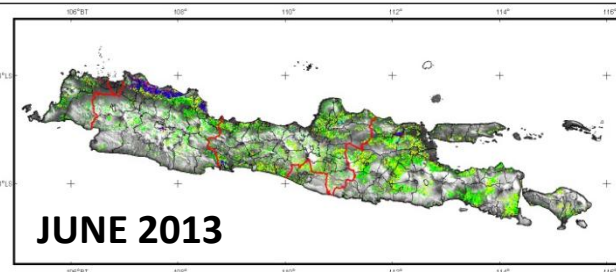
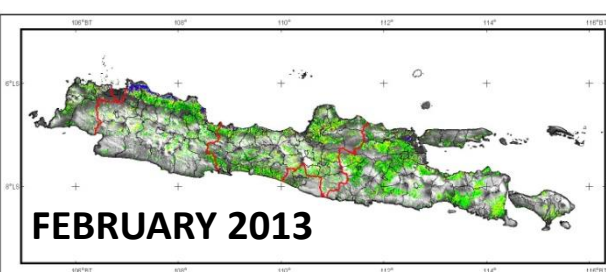
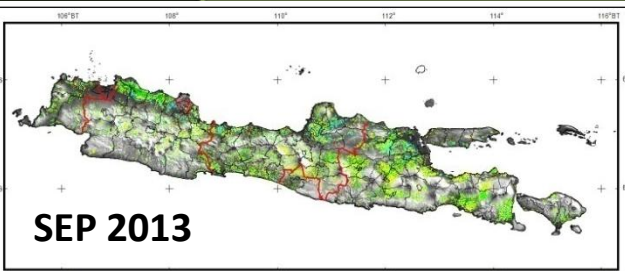
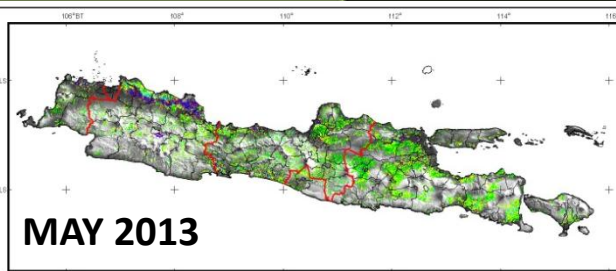
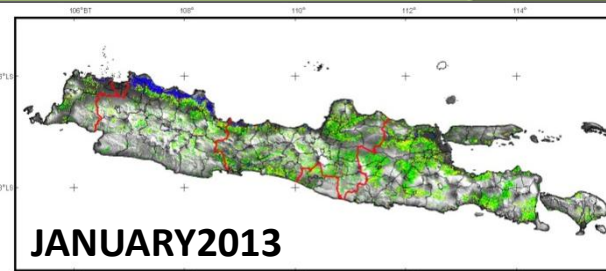
# Rice Crop Productivity Model



- Location: Rice Crop in West Java (Subang, Karawang)
- Data source: - EVI Maximum from MODIS  
- Rice yield from Ministry of Agriculture



# Greenness Vegetation



**LEGEND:**  
Greenness Vegetation Level:

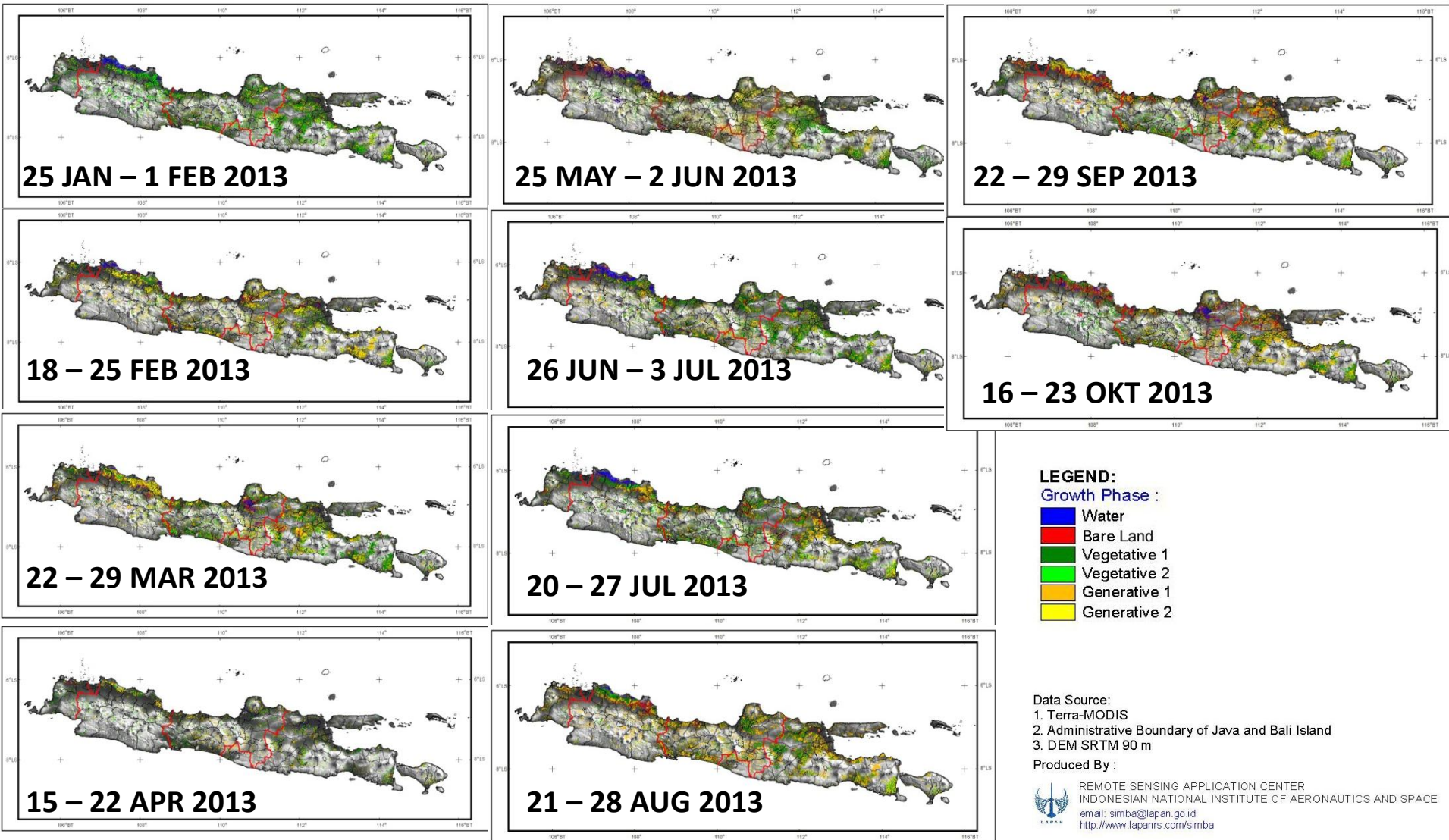
- Water body
- Bare Land
- Very Low
- Low
- Moderate
- High

Data Source:  
1. Terra-MODIS  
2. Administrative Boundary of Java and Bali Island  
3. DEM SRTM 90 m

Produced By :

 REMOTE SENSING APPLICATION CENTER  
INDONESIAN NATIONAL INSTITUTE OF AERONAUTICS AND SPACE  
email: [smba@lapan.go.id](mailto:smba@lapan.go.id)  
<http://www.lapanrns.com/smba>

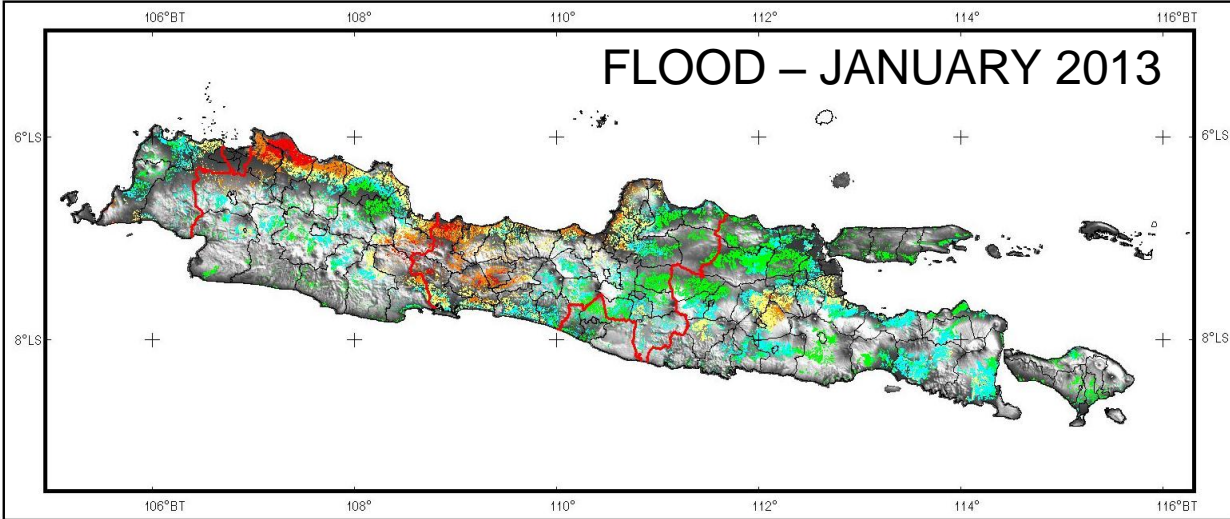
# Growth Phase of Paddy



# Flood and Drought Potential

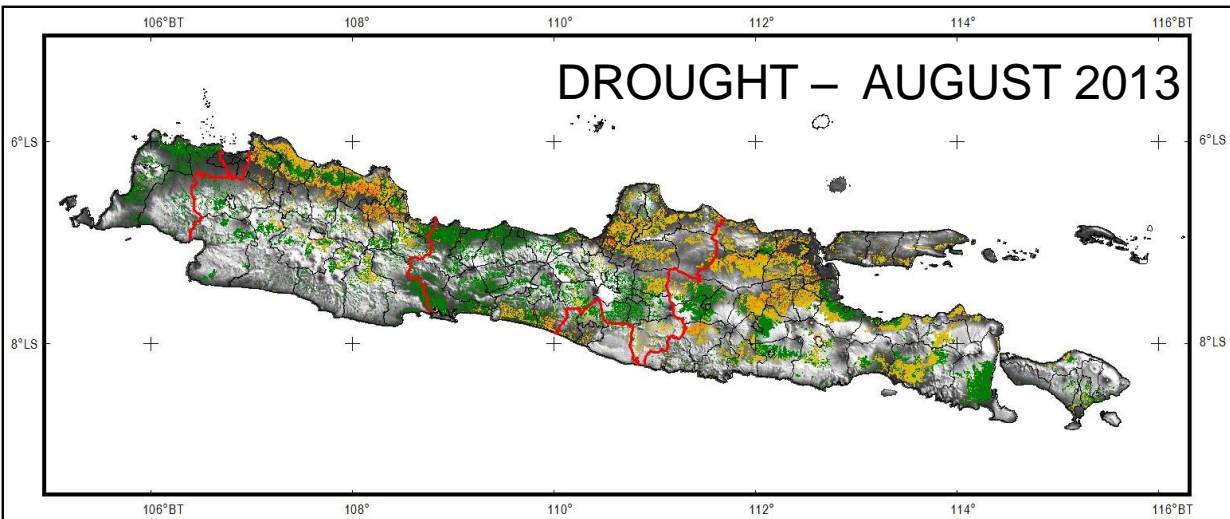


## FLOOD – JANUARY 2013



- LEGEND :**  
Flood Vulnerability :
- Non-flood
  - Low
  - Moderate
  - High
  - Very high

## DROUGHT – AUGUST 2013



- LEGEND :**  
Drought vulnerability:
- Non-drought
  - Low
  - Moderate
  - High
  - Extreme

- Data Source:**
1. Terra-MODIS
  2. TRMM
  3. Administrative Boundary of Java and Bali Island
  4. DEM SRTM 90 m

**Produced By :**



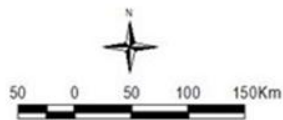
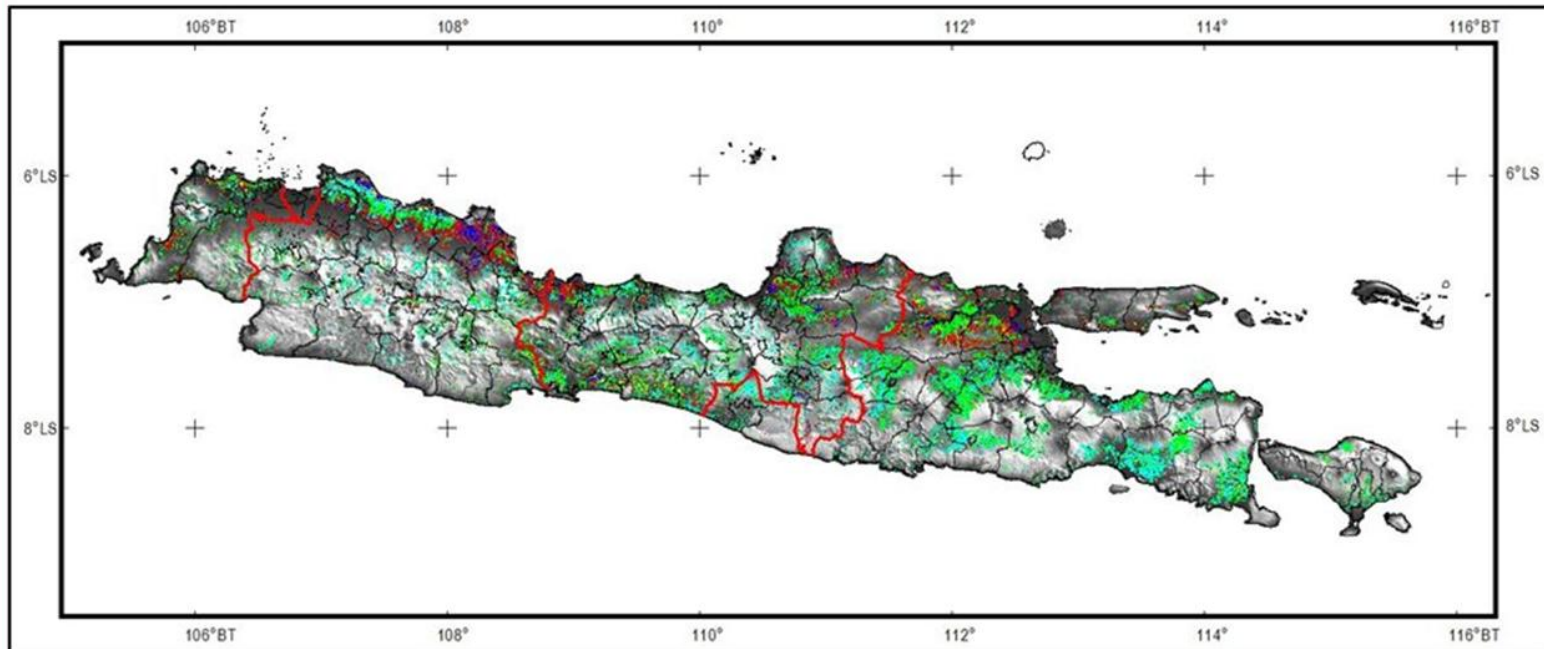
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# Harvest Prediction



## RICE HARVEST TIME IN JAVA and BALI PERIOD SEPTEMBER-DESEMBER 2012



Datum :.....WGS 84  
Projection :.....Geodetic  
Grid System :.....Geographic

### LEGEND : HARVEST TIME :



### Data Source:

1. Terra-MODIS
2. Administrative Boundary of Java and Bali Island
3. DEM SRTM 90 m

### Produced By :



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# Remarks



- Providing RS data for Indonesia is challenging  
→ any available data is good data
  - The need of Satellite RS data (multi sensors & resolution ) is very high → Mechanism for accessing data from international providers is needed.
-

THANK YOU

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# Main activities of Remote Sensing Technology and Data Center

National Remote Sensing Data Bank

Data acquisition

Data processing

Data management

R&D and Operation