



# SATELLITE REMOTE SENSING APPLICATIONS FOR AGRICULTURE IN LAPAN

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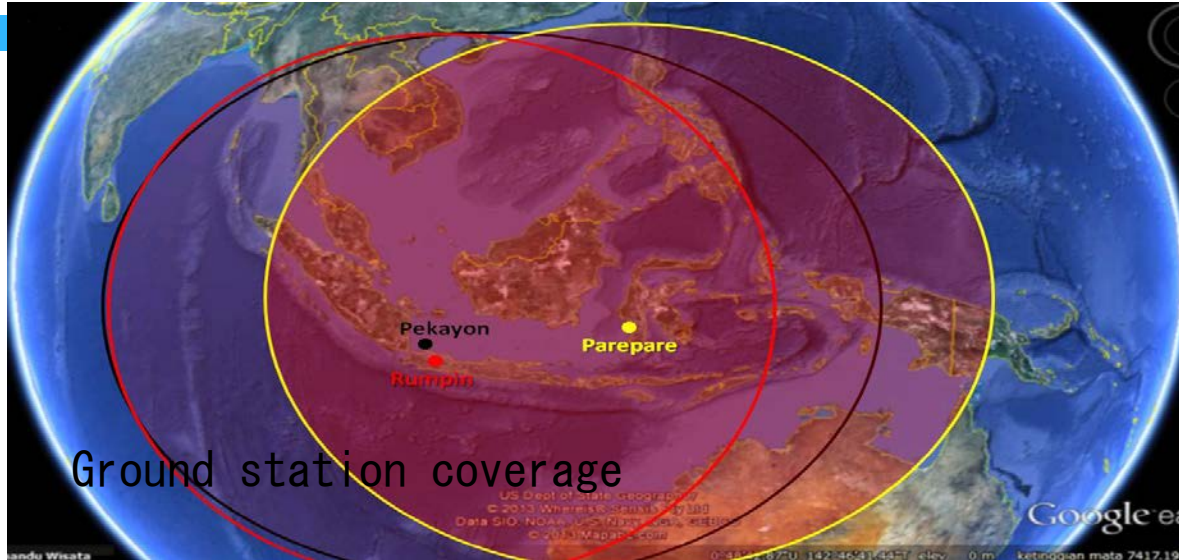
*GEOSS ASIA PASIFIC CONFERENCE, TOKYO, 11-13 January 2017*

- Indonesian Space Act, remote sensing
- Remote Sensing data Indonesia
- Data Distributions
- Application for Agriculture
- Data flow and processing to other institutions

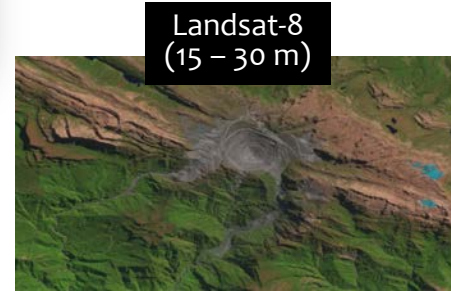
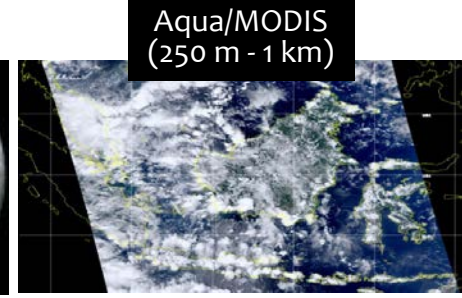
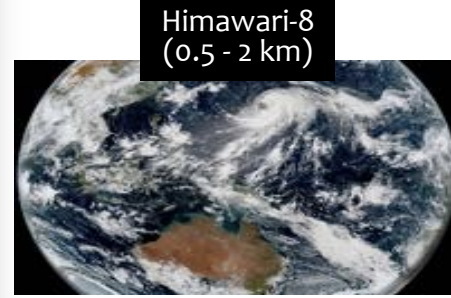
Substances related to remote sensing activities, such as:

- ❑ Planning, developing and operating **satellites and remote sensing ground stations** (articles 16 and 17).
- ❑ **Procurement** of high-resolution remote sensing data (article 18).
- ❑ Preparation of **the standard methods and the data processing quality** (article 19).
- ❑ Organizing the storage and distribution of data through **the National Remote Sensing Data Bank** as a network node remote sensing data in the National Spatial Data Network System (article 20).
- ❑ Establish **guidelines for the use and dissemination of remote sensing information** (article 22).

# Remote Sensing Data Facility



# Data received by LAPAN Ground Stations



**Low resolution**  
( $\geq 250$  meter)

- Terra/Aqua
- SNPP
- NOAA-18/19
- MetOp
- Himawari-8

**Medium resolution**  
(15 - 30 meter)

- Landsat-7
- Landsat-8

**High resolution**  
( $\leq 1.5$  meter)

- SPOT-6
- SPOT-7



# Other available data

**Pleiades (50 cm)**



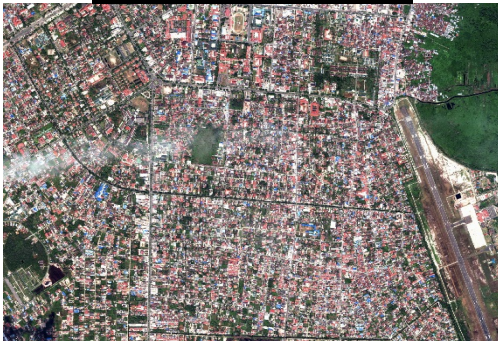
**Quickbird (61 cm)**



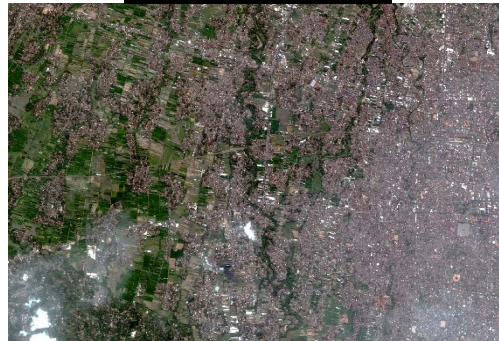
**WorldView-2 (50 cm)**



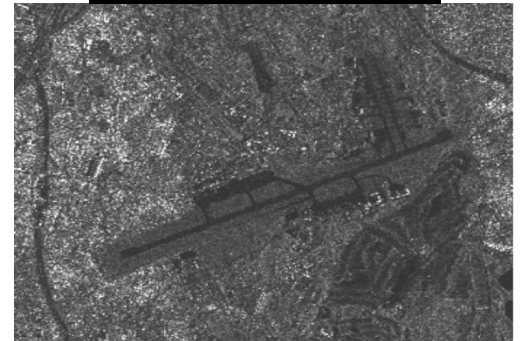
**WorldView-3 (31 cm)**



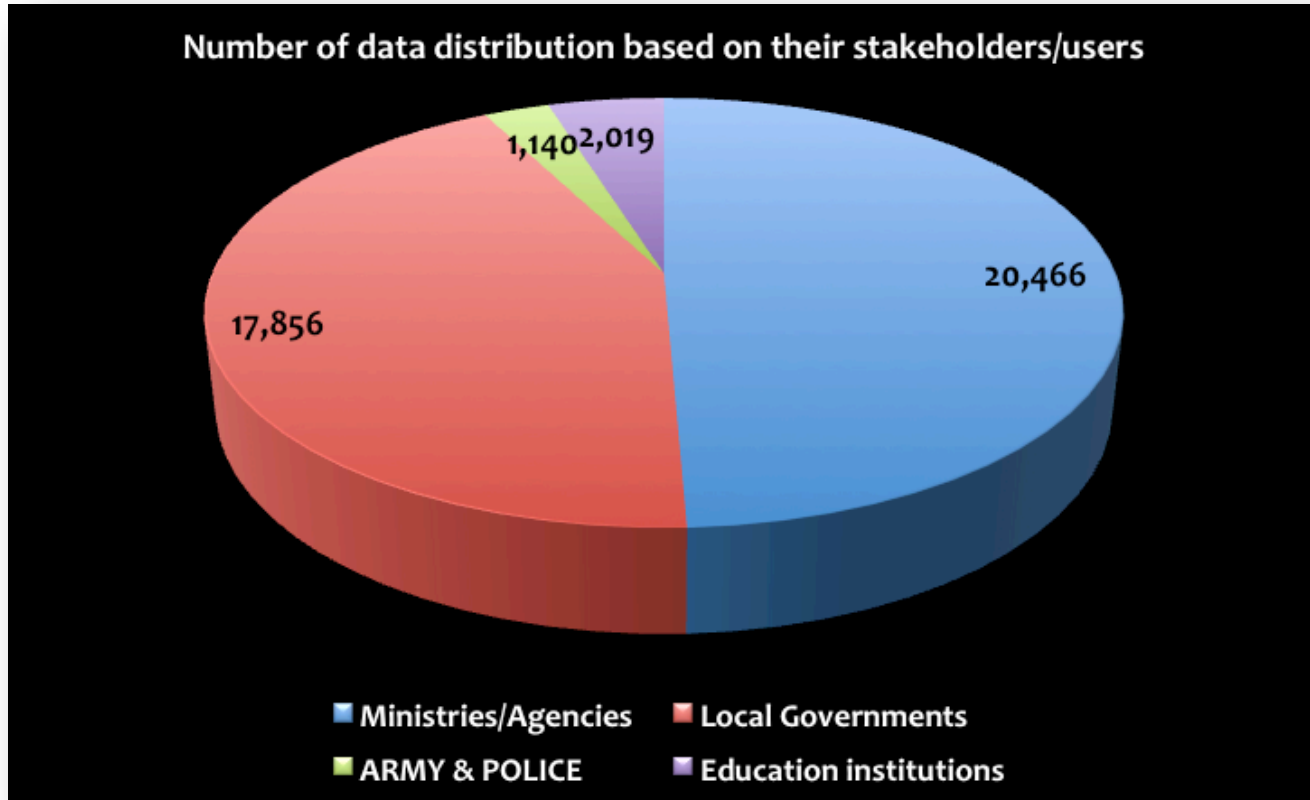
**Geoeye-1 (41 cm)**



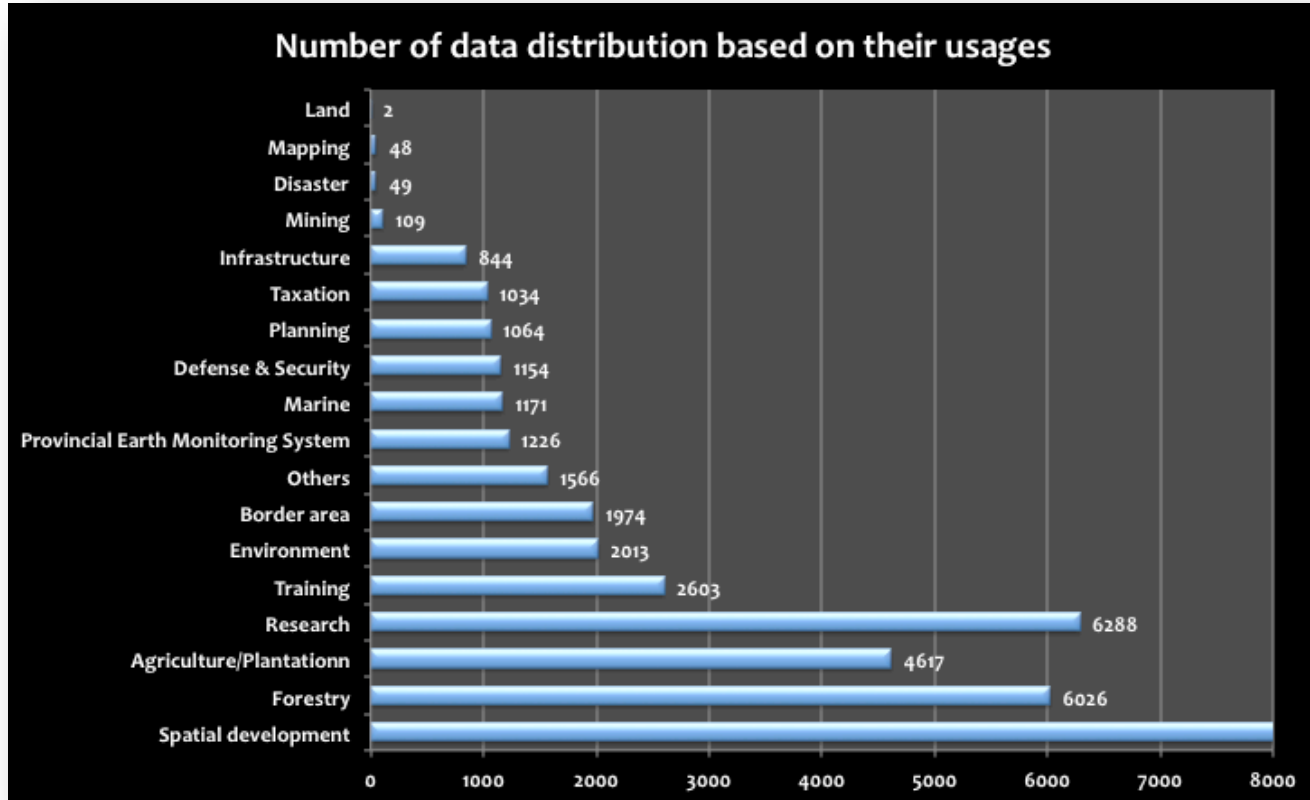
**TerraSAR-X (3 m, 18 m)**



# Data distribution (Jan – Jul 2016)

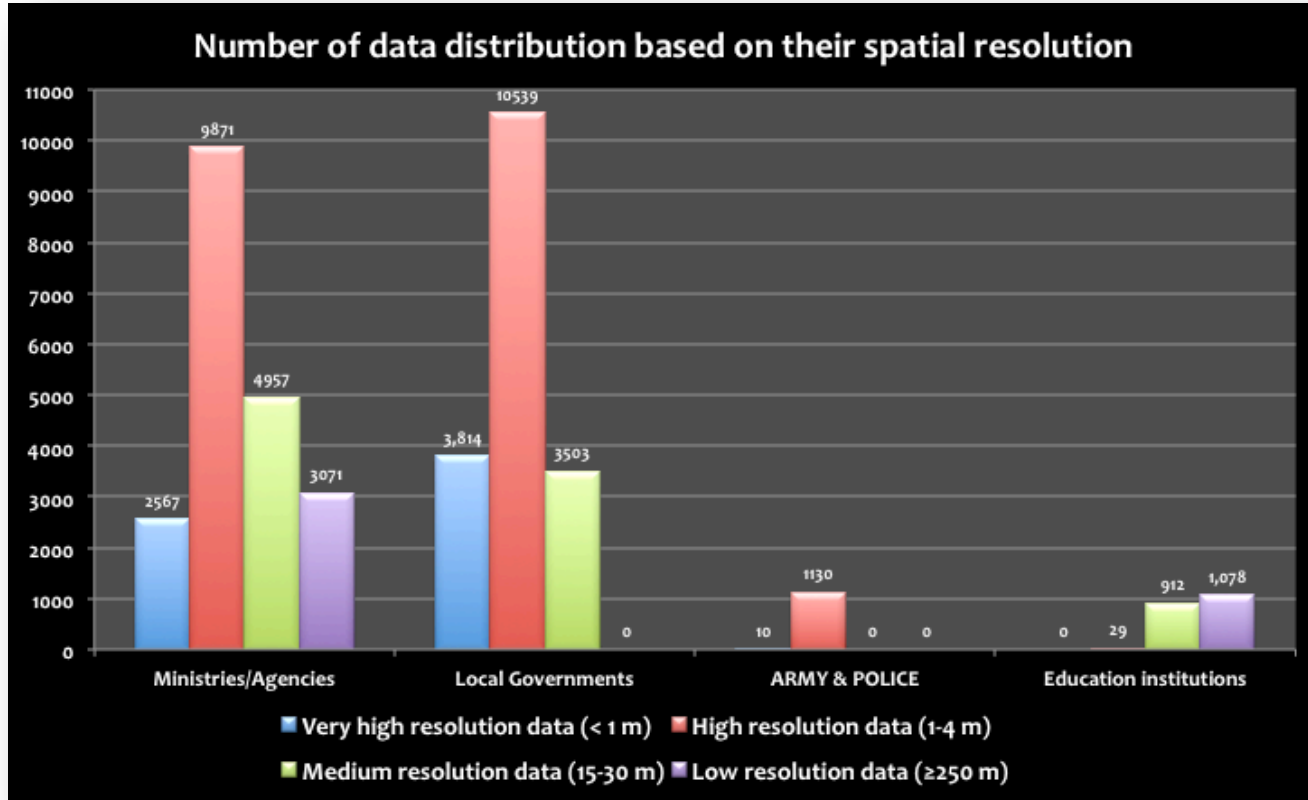


# Data distribution (Jan – Jul 2016)



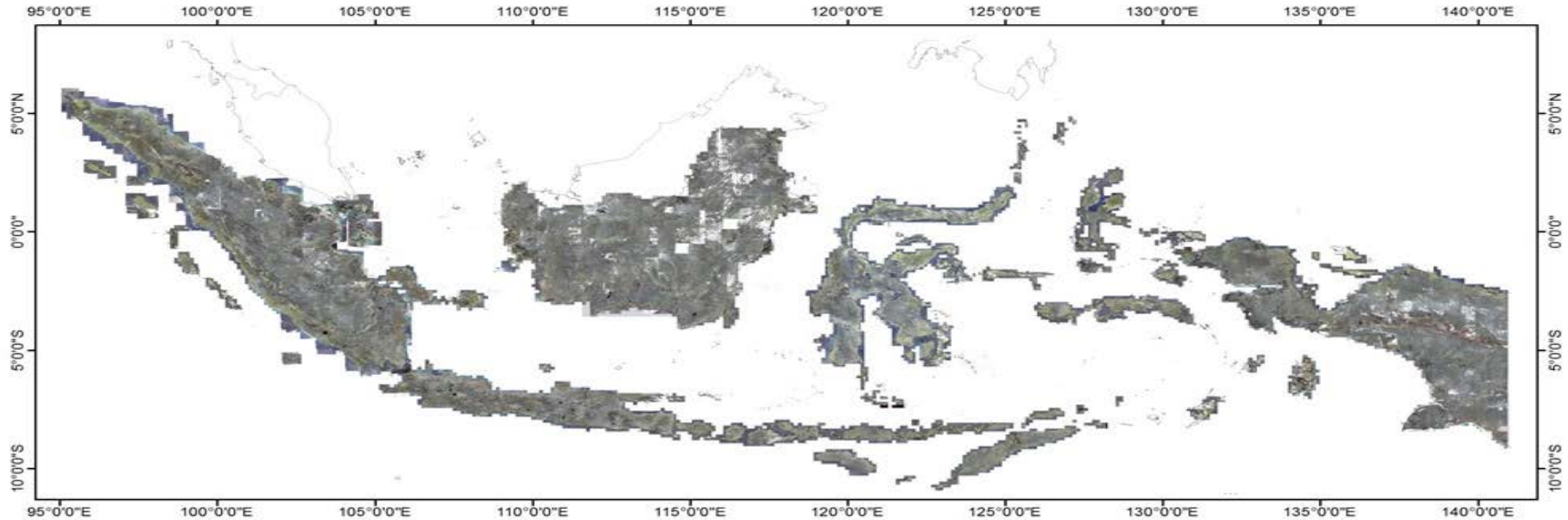


# Data distribution (Jan – Jul 2016)



# Paddy field area mapping

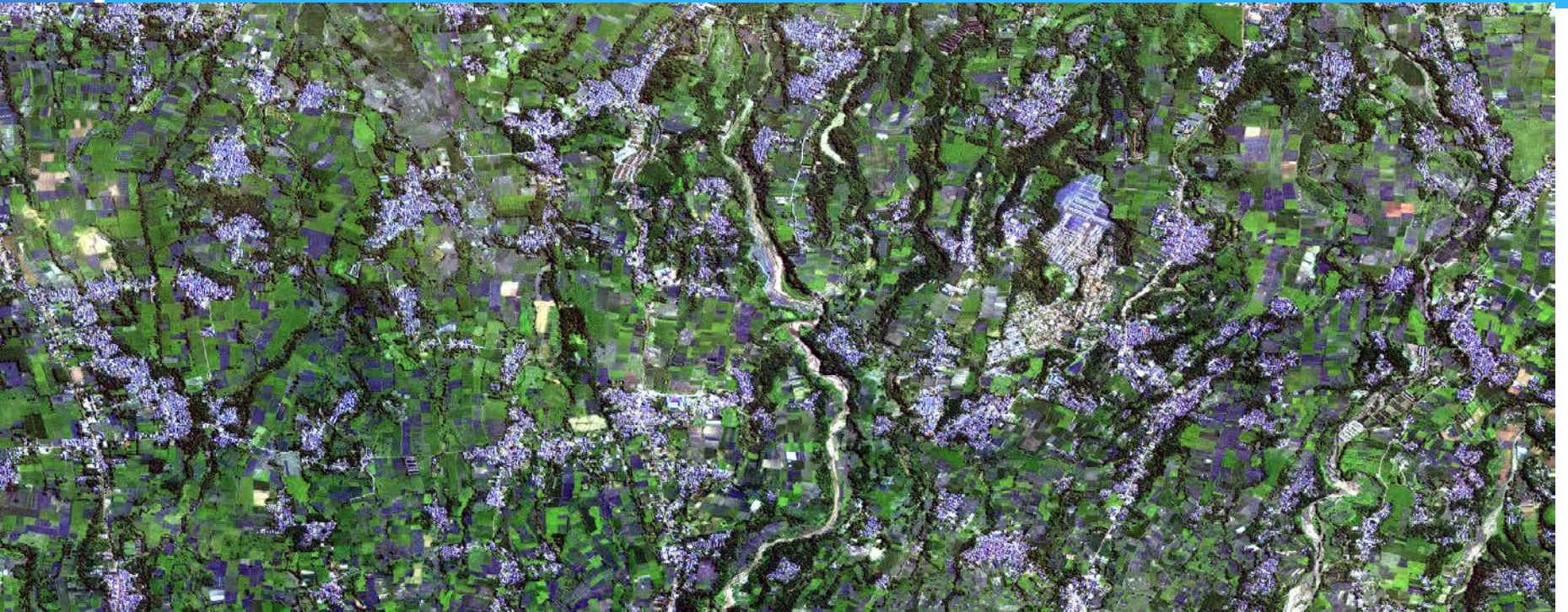
# Mosaik SPOT-5/6/7 (Jan 2013 – Okt 2016)



## Keterangan:

- Sumber data: SPOT-5/6/7 (tanggal 22 Jan 2013 – 19 Okt 2016)
- Luas cakupan: sekitar 96% dari luas daratan Indonesia







MOZAIK SPOT 6/7 TAHUN 2013-2015 SAWAH DI KARAWANG, JAWA BARAT





MOZAIK SPOT 6/7 TAHUN 2013-2015 SAWAH DI BANTUL, D. I. YOGYAKARTA





MOZAIK SPOT 6/7 TAHUN 2013-2015 SAWAH DI PURWOREJO, JAWA TENGAH

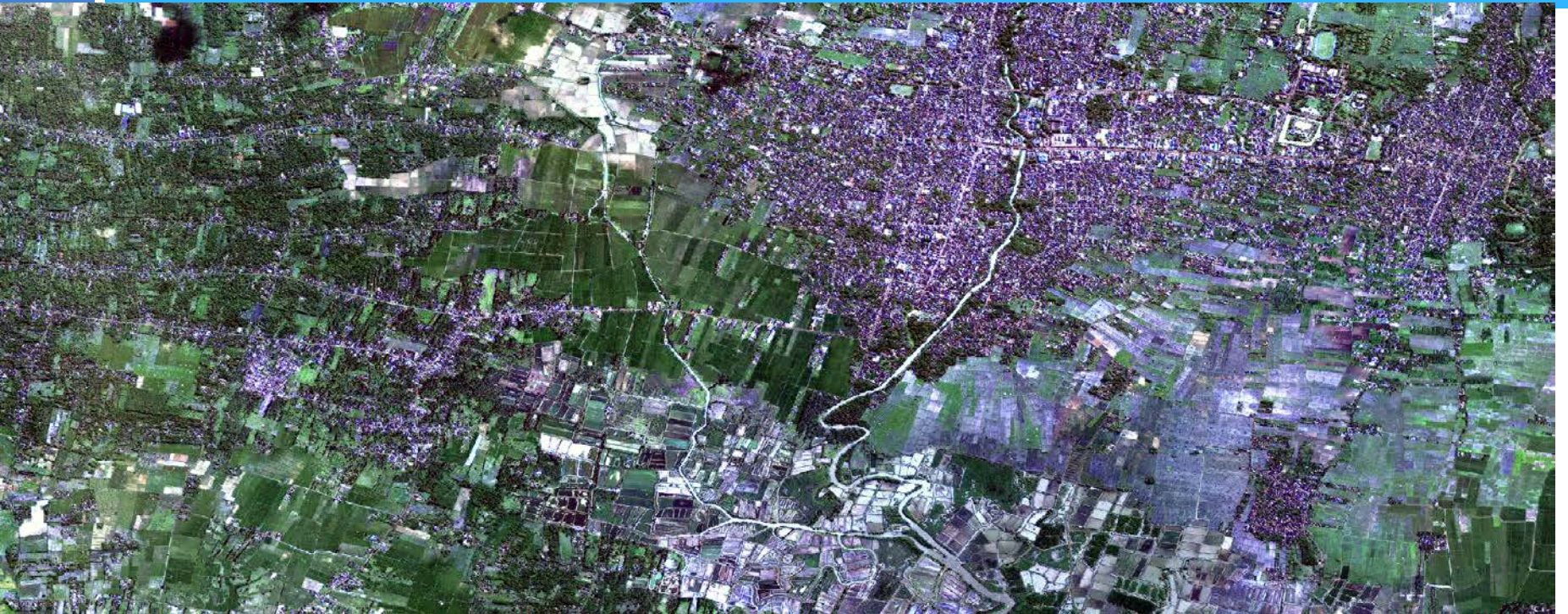








MOZAIK SPOT 6/7 TAHUN 2013-2015 SAWAH DI BALI

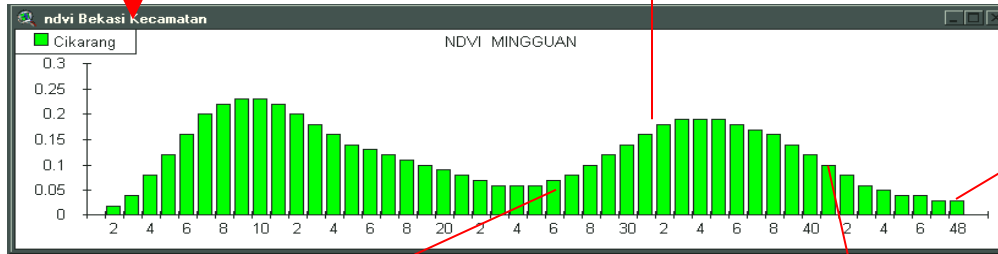
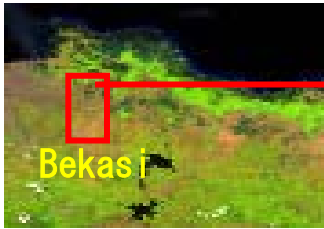


# Paddy's growth phase monitoring



# Paddy's growth phase monitoring (Indonesia)

Citra Satelit MODIS (resolusi 250 – 1000 m)



Vegetative



Bare



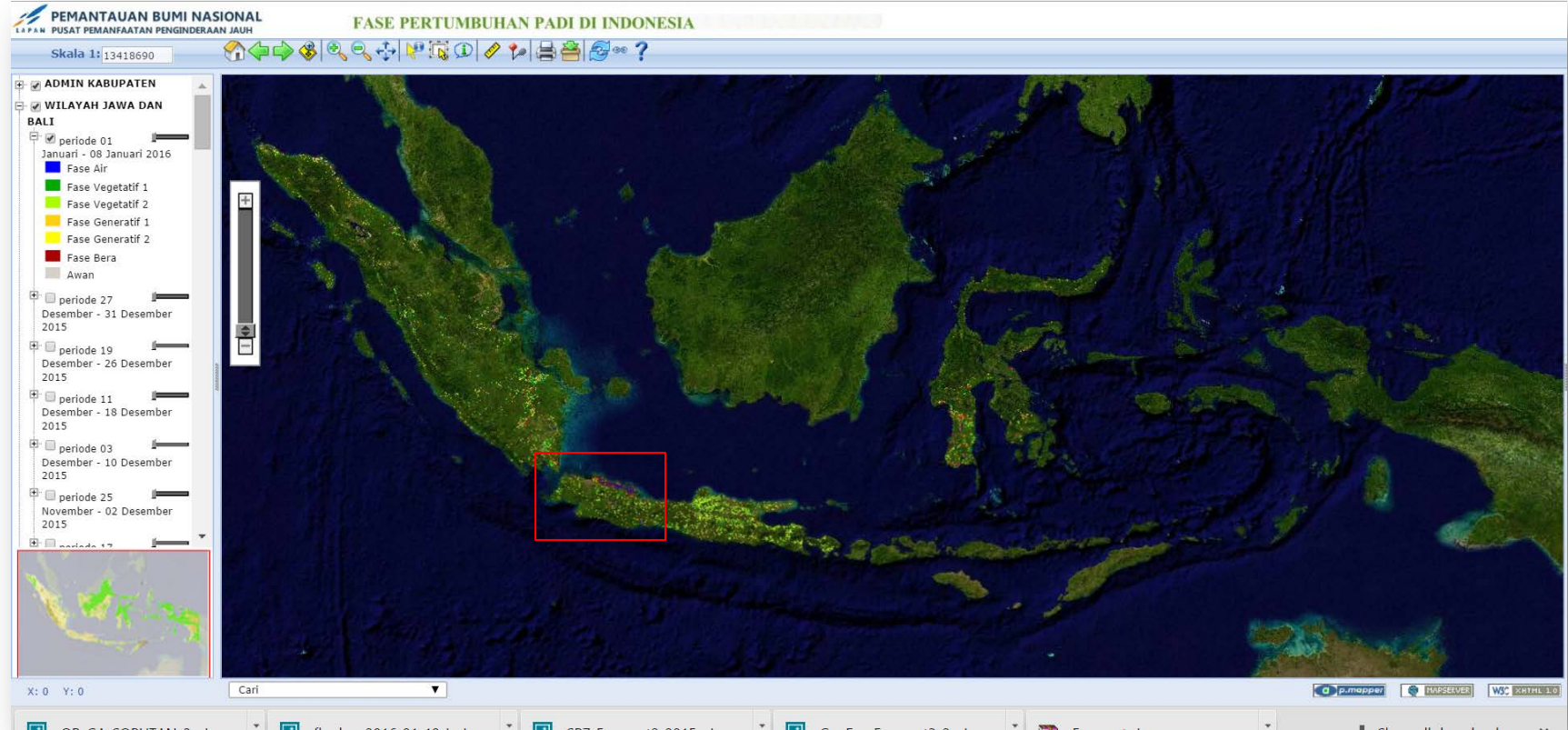
Water



Generative

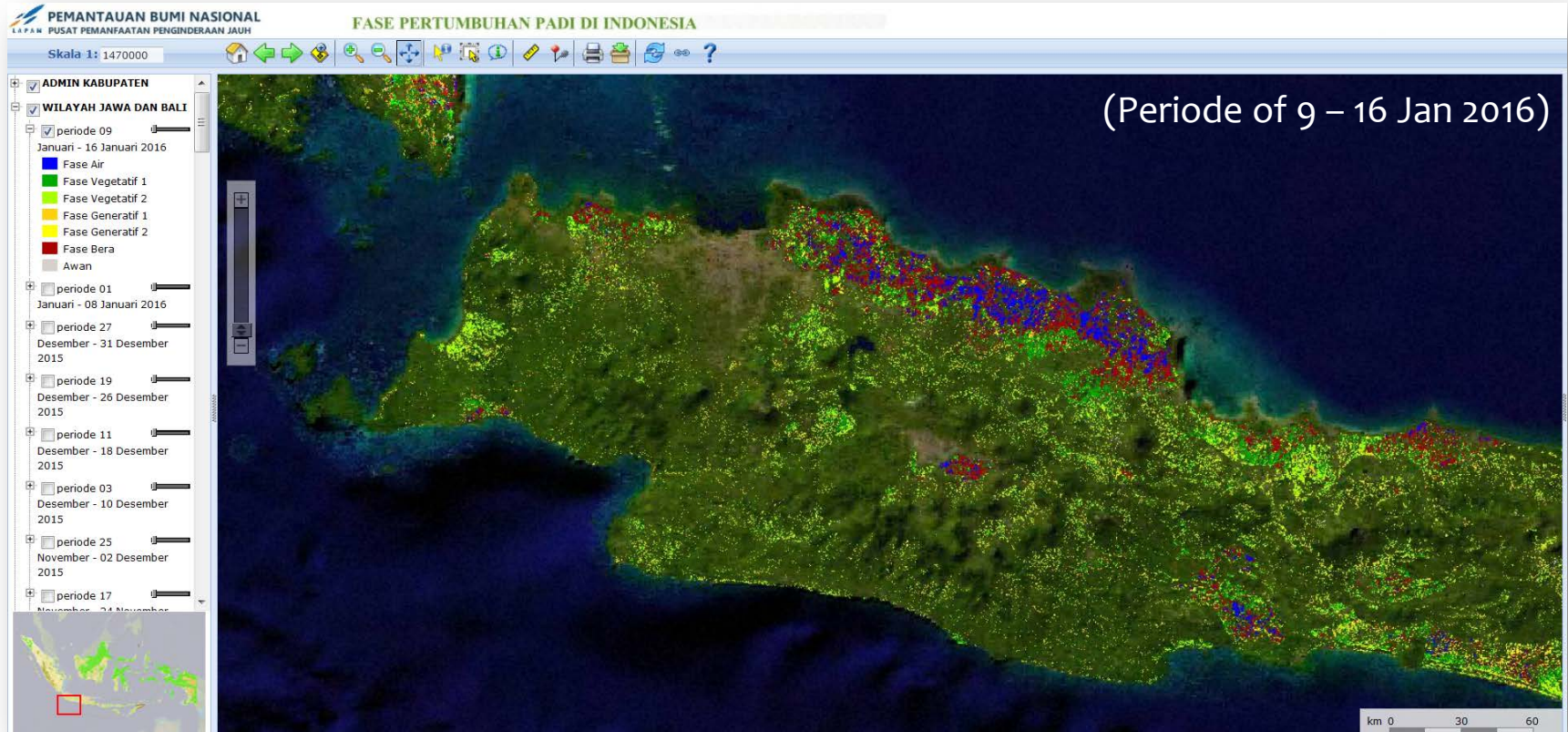


# Paddy's growth phase monitoring (Indonesia)

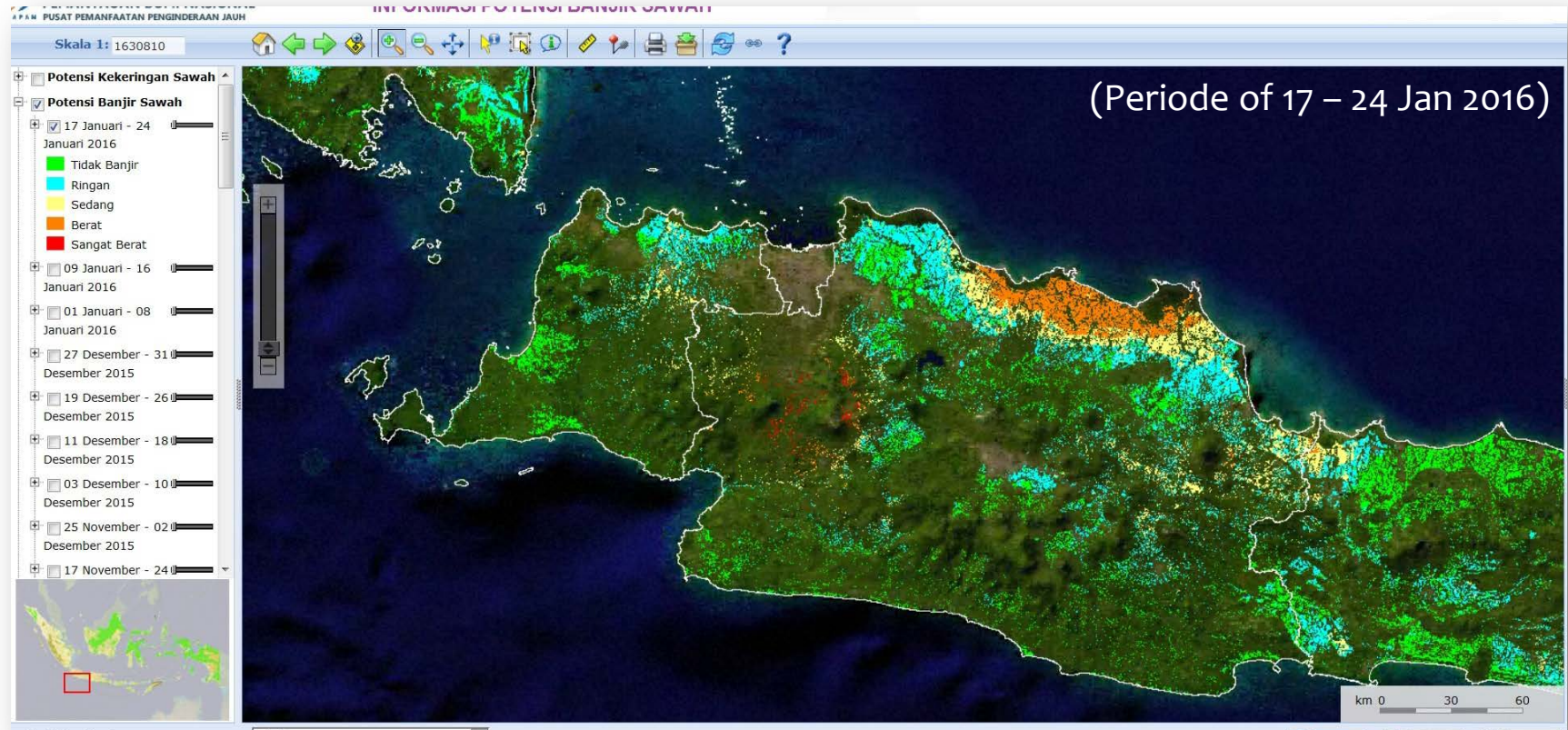




# Paddy's growth phase monitoring (West Java Province)

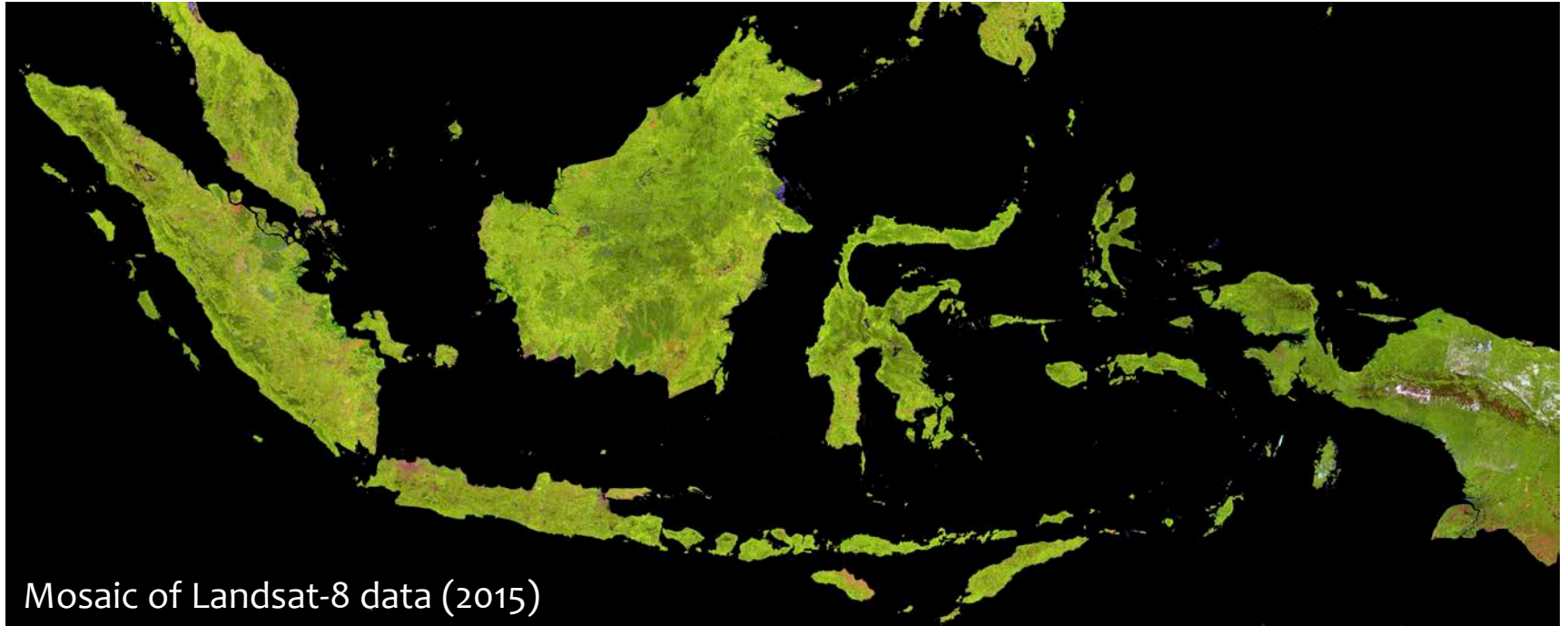


# Potential for flooding in rice field areas (West Java Province)



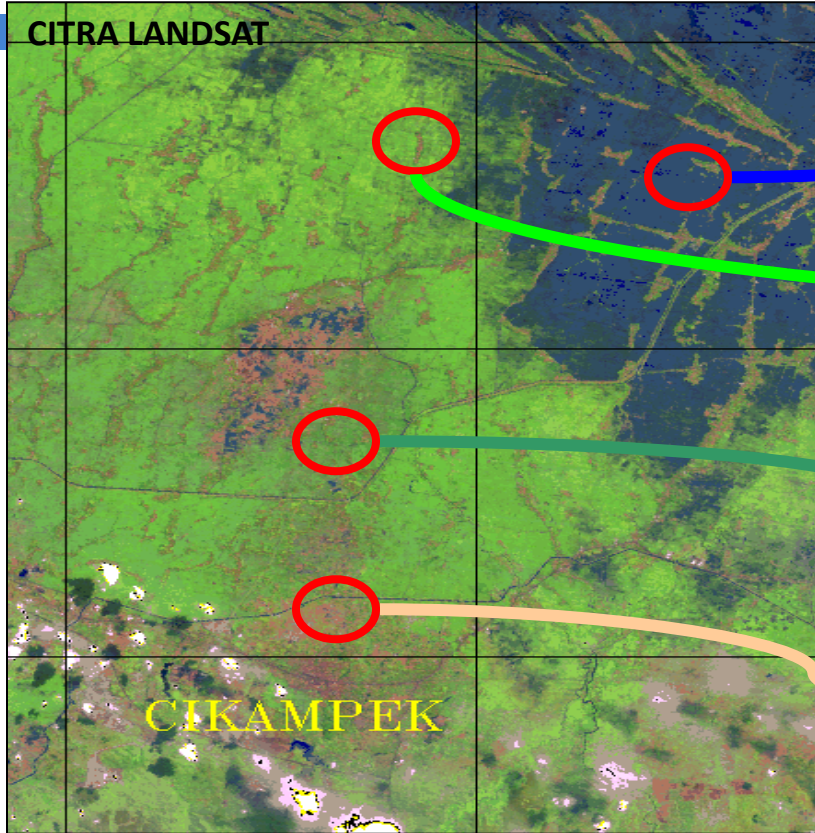


# Providing landsat 8 data (every 3 month)





# Paddy's growth phase monitoring (Indonesia)

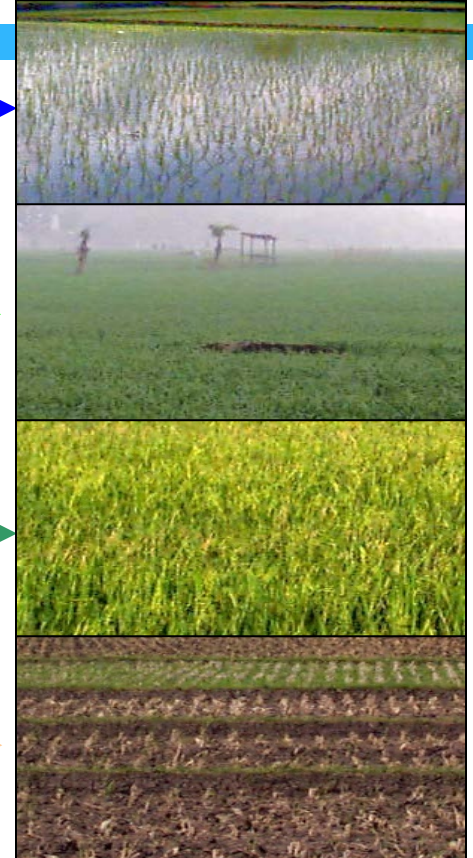


Water  
0 - 1 month

Vegetative  
1 - 2 month

Generative  
> 2 bulan

Bare

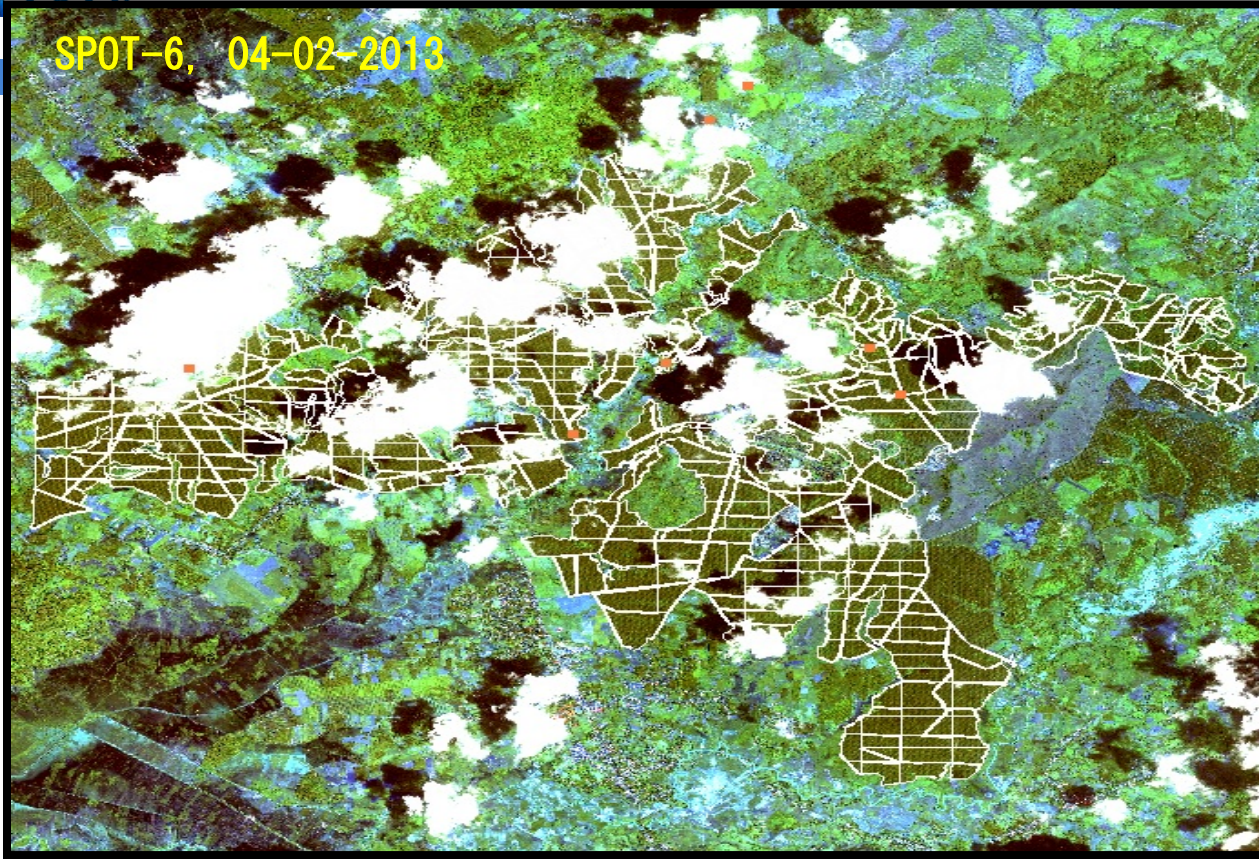


# Paddy's growth phase monitoring

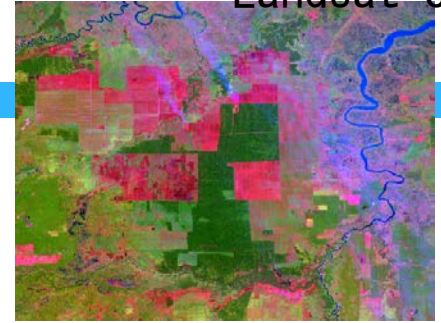


# Identifikasi perkebunan sawit

SPOT-6, 04-02-2013



Landsat-8



Land clearing



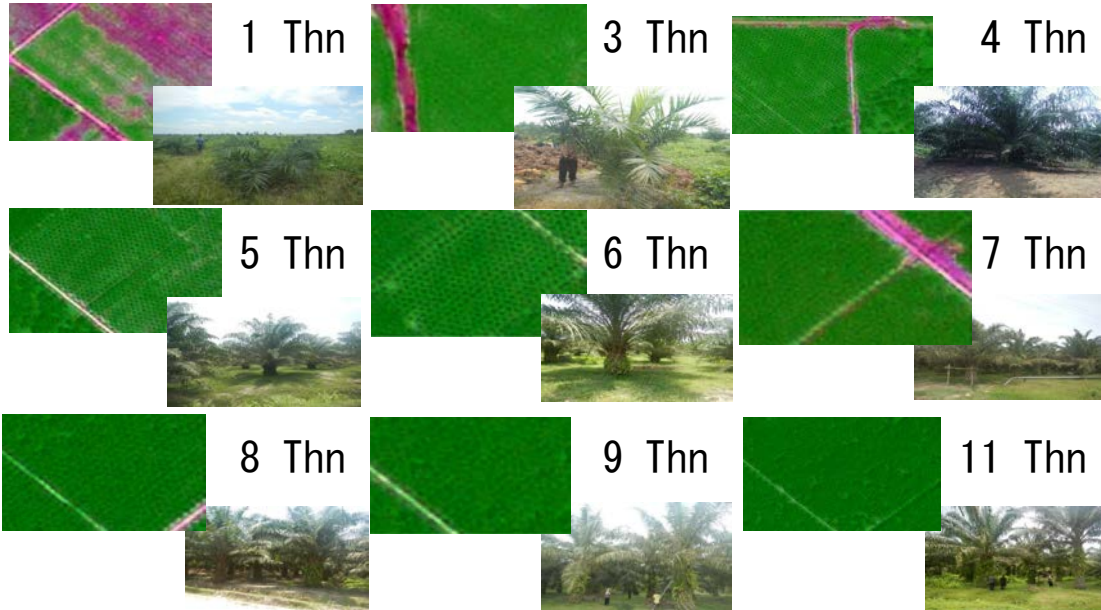
growth



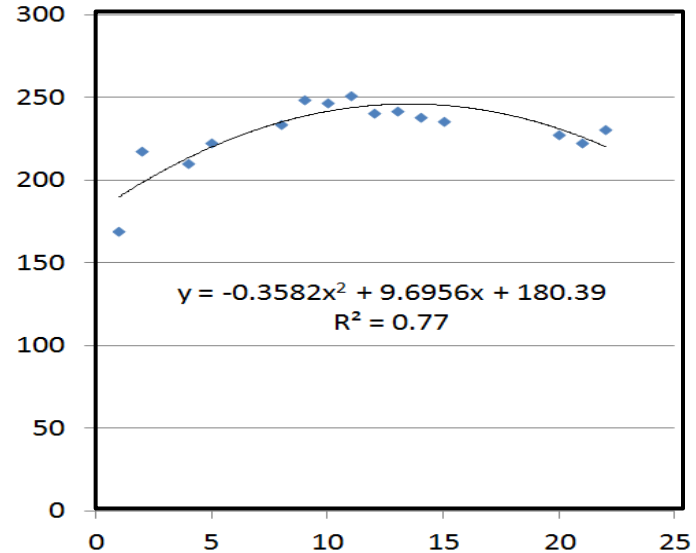
harvest

# Model estimasi umur kelapa sawit dengan data SPOT-6

## Umur sawit dengan komposit RGB citra SPOT-6



## Umur sawit vs. NDVI



# Water resources applications



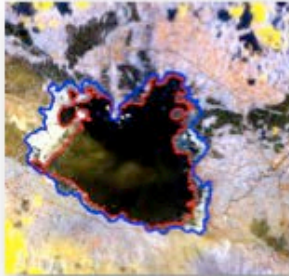
# Limboto lake (Gorontalo Province)



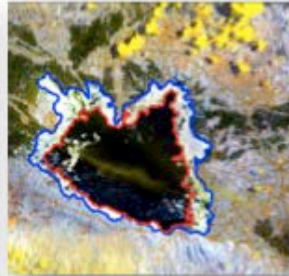
**SPOT-7 data  
(24 Jan 2015)**

# Water surface area monitoring in Limboto lake (Landsat data, 1990 – 2015)

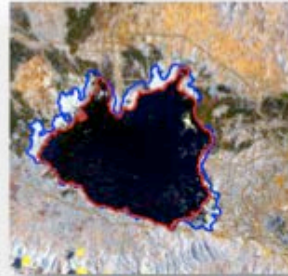
26 Apr 1990



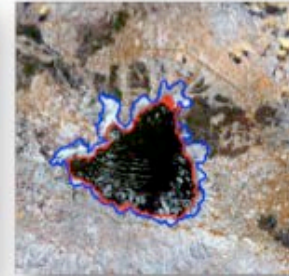
8 Apr 2000



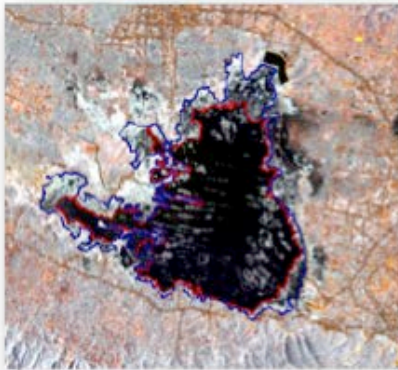
14 Apr 2002



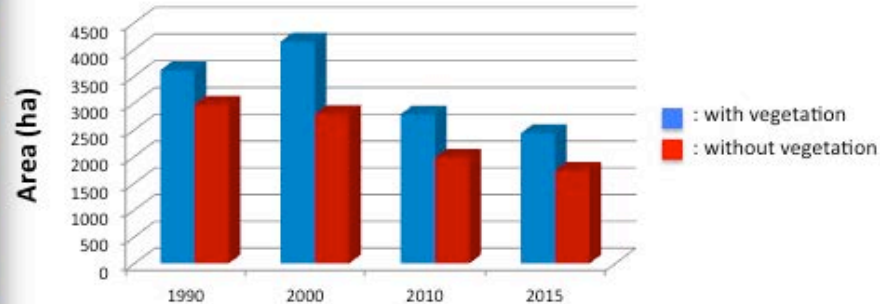
7 May 2010



9 Mar 2015



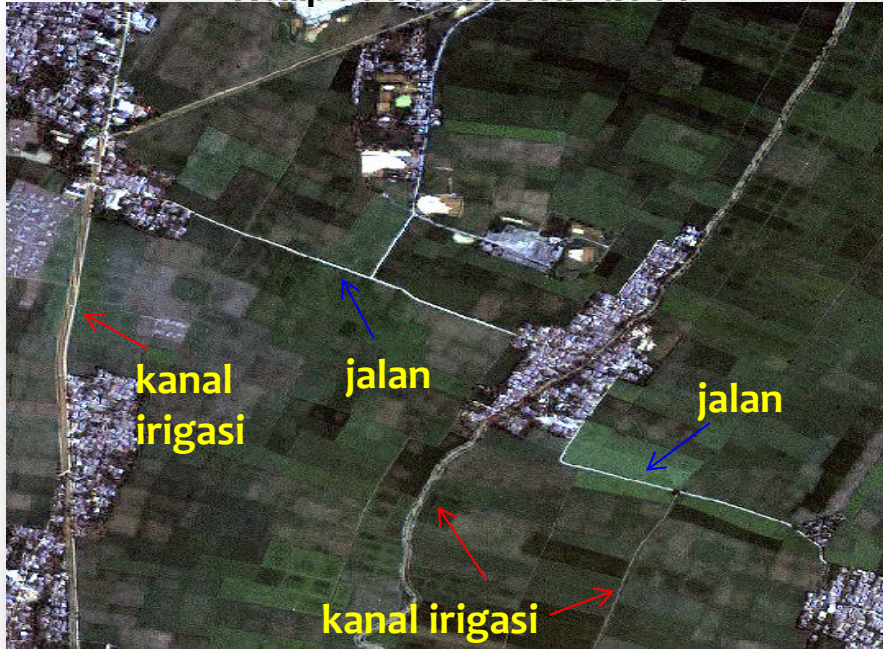
Area change of Limboto lake



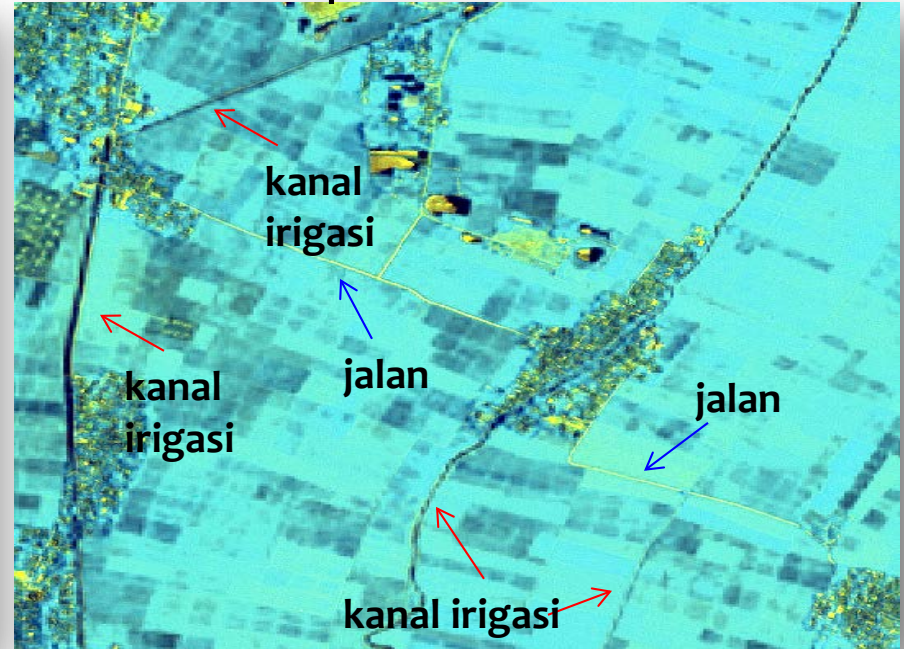


# Identifikasi kanal irigasi (Karawang)

Komposit warna asli



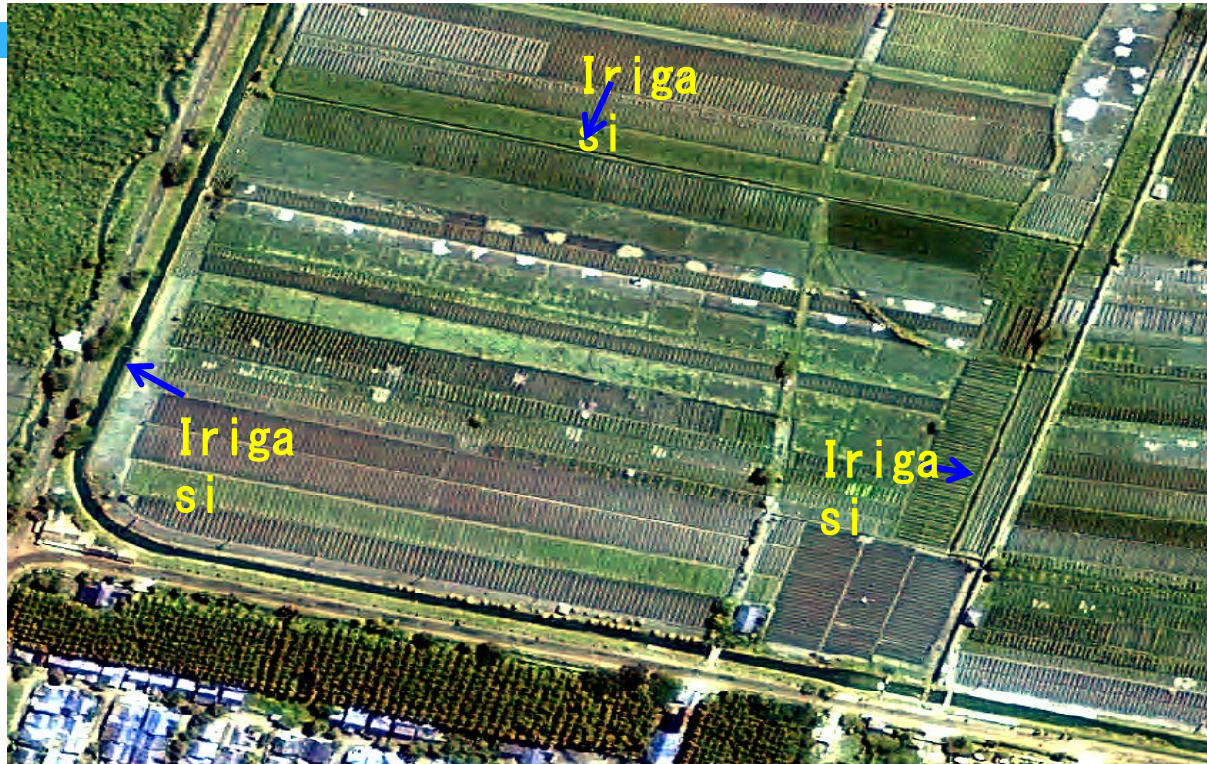
Komposit warna buatan



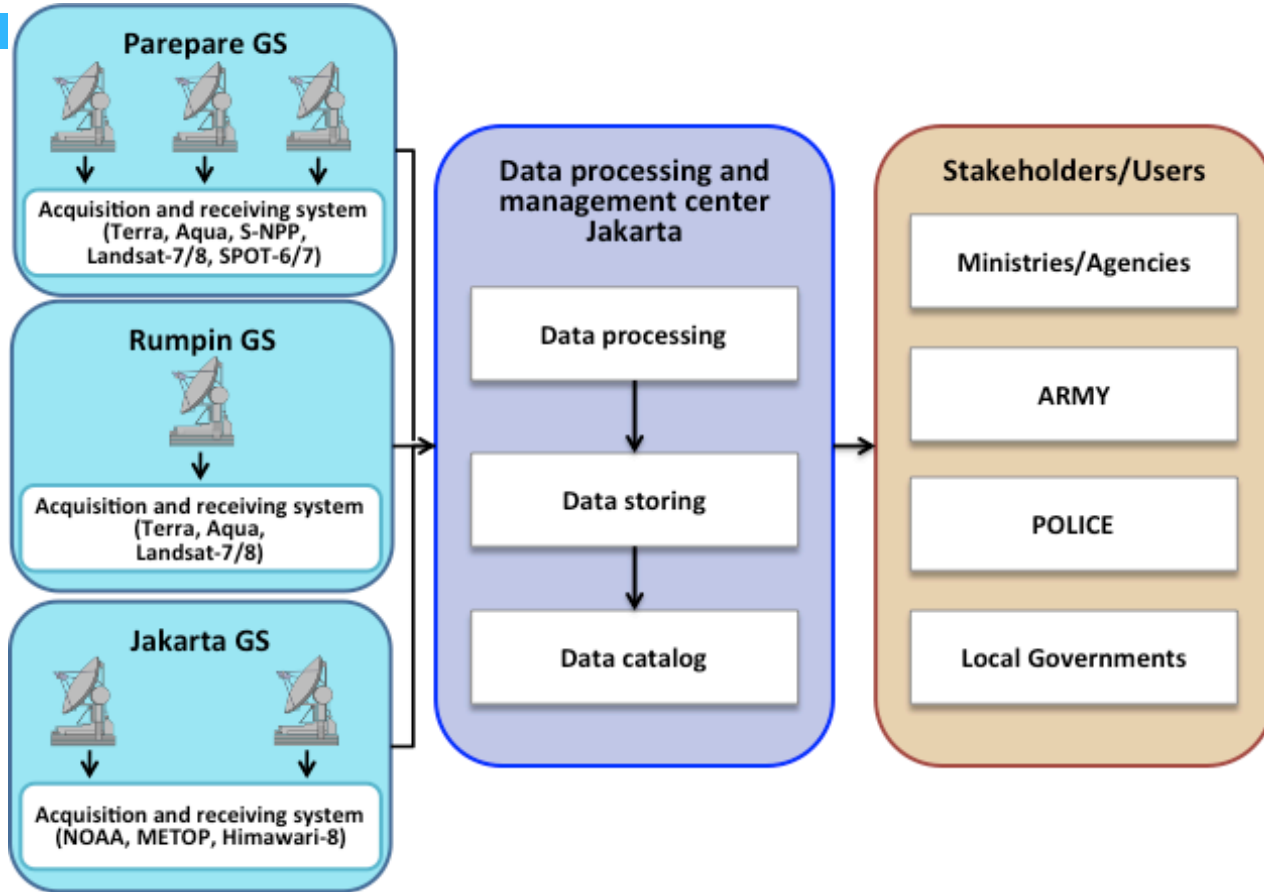
Sumber: data SPOT-6 (3 Okt 2014)



# Identifikasi saluran irigasi dengan data Pleiades



# Data flow and processing to other institutions





# Cooperation with Ministries/Agencies, ARMY, POLICE, and private sectors

## **Ministries/Agencies**

1. Geospatial Information Agency (BIG)
2. Agency for Meteorology, Climatology, and Geophysics (BMKG)
3. National Board for Disaster Management (BNPB)
4. National Narcotics Agency (BNN)
5. The Audit Board (BPK)
6. Min. of Maritime Affairs and Fisheries (KKP)
7. Min. of Environment and Forestry (KLHK)

8. Min. of Health (Kemenkes)
9. Min. of Finance (Kemenkeu)
10. Min. of Public Works and Public Housing (Kemen. PUPR)
11. Min. of Agriculture (Kementan)

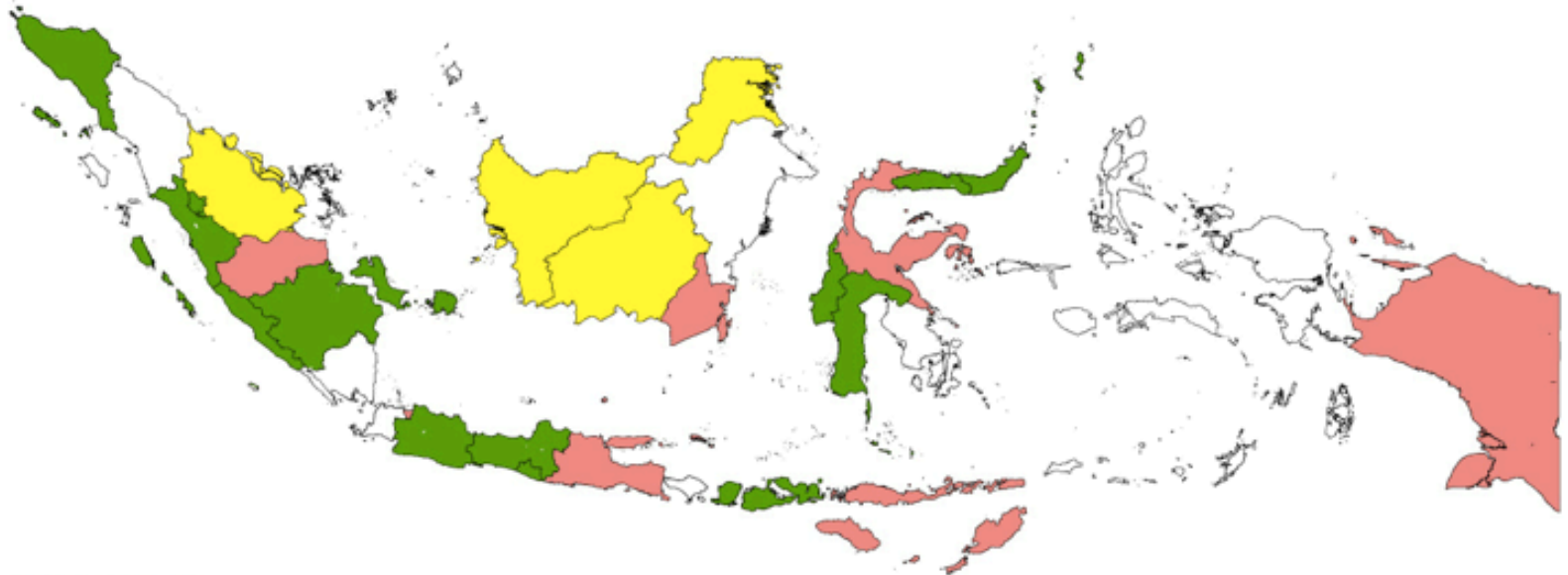
## **ARMY**

## **POLICE**

## **Private sectors**

1. PT. Perikanan Nusantara
2. PT. Citra Sari Makmur
3. PT. Marlin

# Cooperation and cooperation planned with provincial governments



## KETERANGAN

- Green** : Cooperation with 13 Provinces (since 2015 and sem-I 2016)
- Yellow** : Cooperation planned with 4 Provinces (sem-II 2016)
- Red** : Cooperation planned with 7 Provinces (in 2017)
- White** : Cooperation planned with the rest of Provinces (in 2018-2019)



Thank you  
for  
your attention

[www.inderaja.lapan.go.id](http://www.inderaja.lapan.go.id)  
[www.pustekdata.lapan.go.id](http://www.pustekdata.lapan.go.id)  
[www.pusfatja.lapan.go.id](http://www.pusfatja.lapan.go.id)