NATIONAL INSTITUTE OF
AERONAUTICS AND SPACE

Earth observation activity in Indonesia

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Law of the Rep. of Indonesia No. 21 of 2013 on Space Activities

Remote sensing activities (*articles 15-23*):

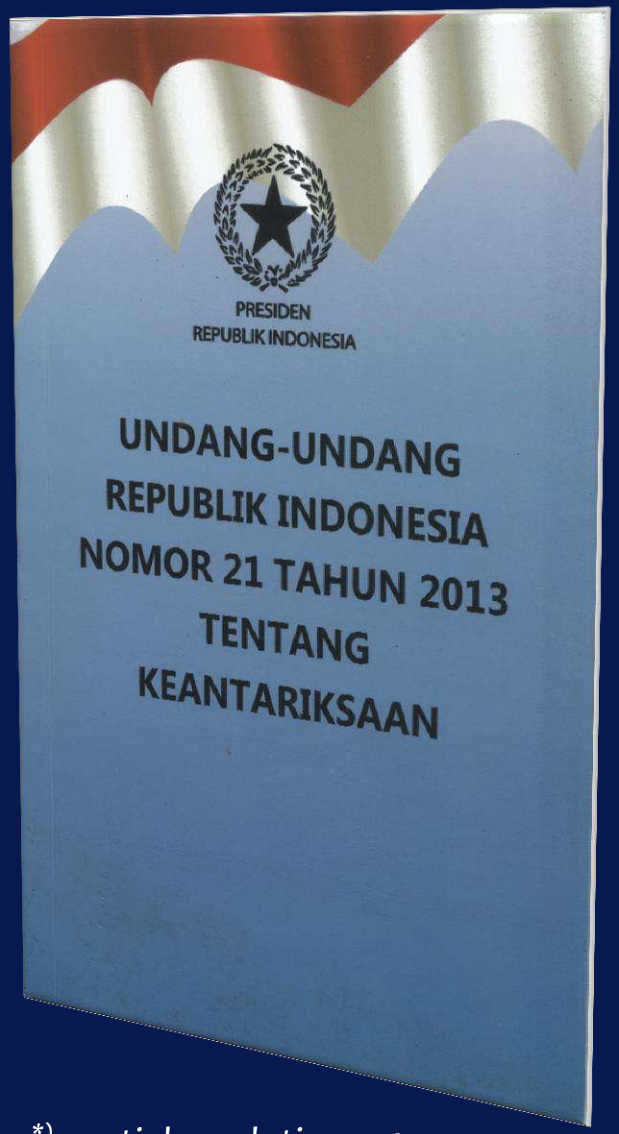
- **Data acquisition**

  High resolution data*) for government institutions and local governments is only provided by LAPAN.
- **Data processing**

  Data processing and its quality should refer to methodology established by LAPAN.
- **Data storing and distribution:**

  LAPAN implements data storing and distribution through National Remote Sensing Data Bank.
- **Data applications and information dissemination**

  Data applications and information dissemination should be designated to the guidance assigned by LAPAN.

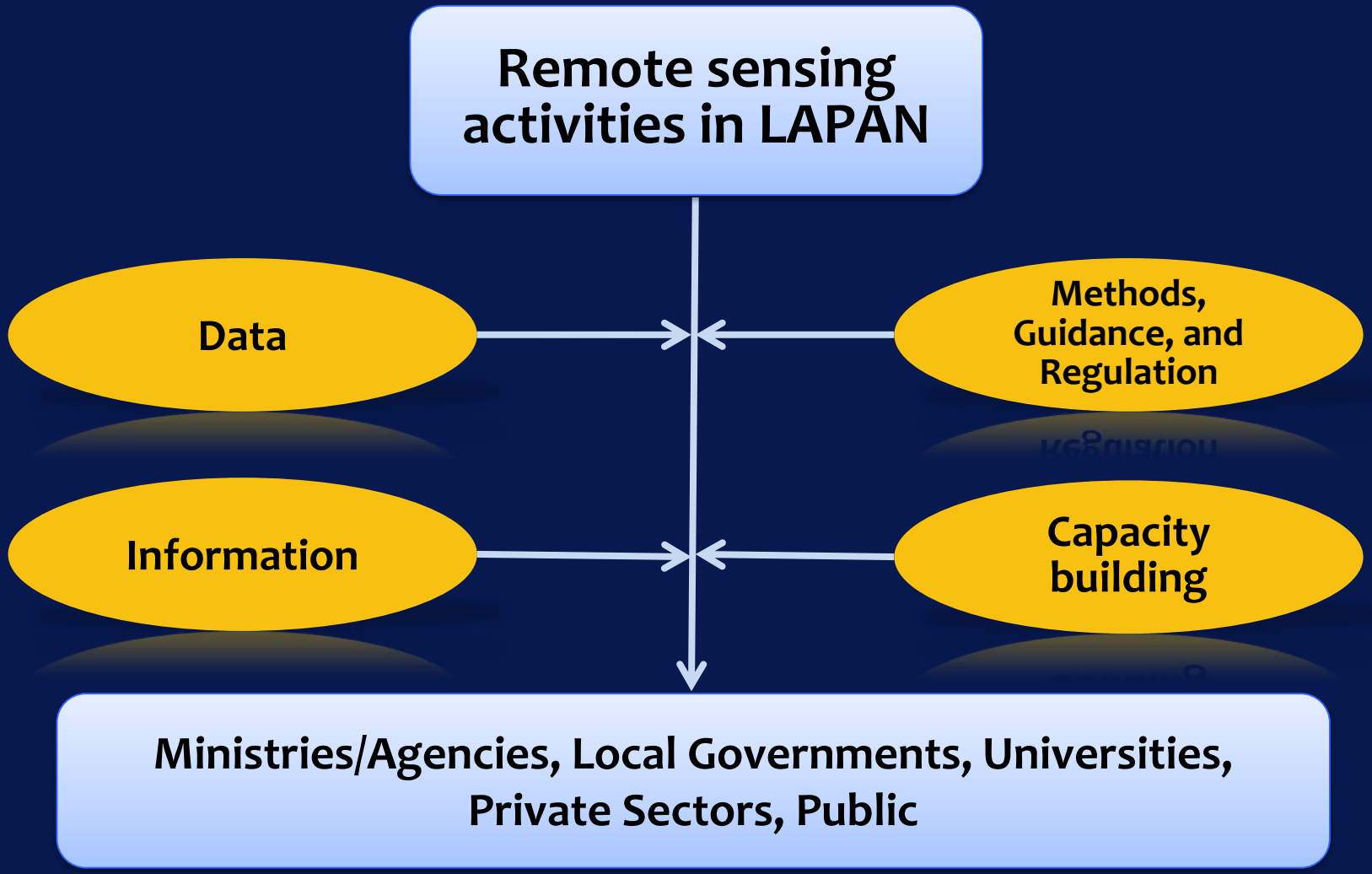


*) *spatial resolution < 4 m*

Government Regulation No. 11 of 2018 on Procedures for Carrying Out Remote Sensing Activities

- Data acquisition
- Data processing
- Data storing and distribution
- Data applications and information dissemination

Remote sensing activities in LAPAN



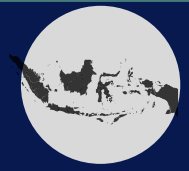
OVERVIEW OF ONE MAP POLICY (OMP) IN INDONESIA

Presidential Regulation NO. 9/2016

On Acceleration of One Map Policy Implementation with Map Accuracy Level on 1:50,000 scale

(enacted on 4 February 2016)

OMP'S OBJECTIVES



1 STANDARD REFERENCE DATABASE GEO-PORTAL

OMP'S BENEFITS

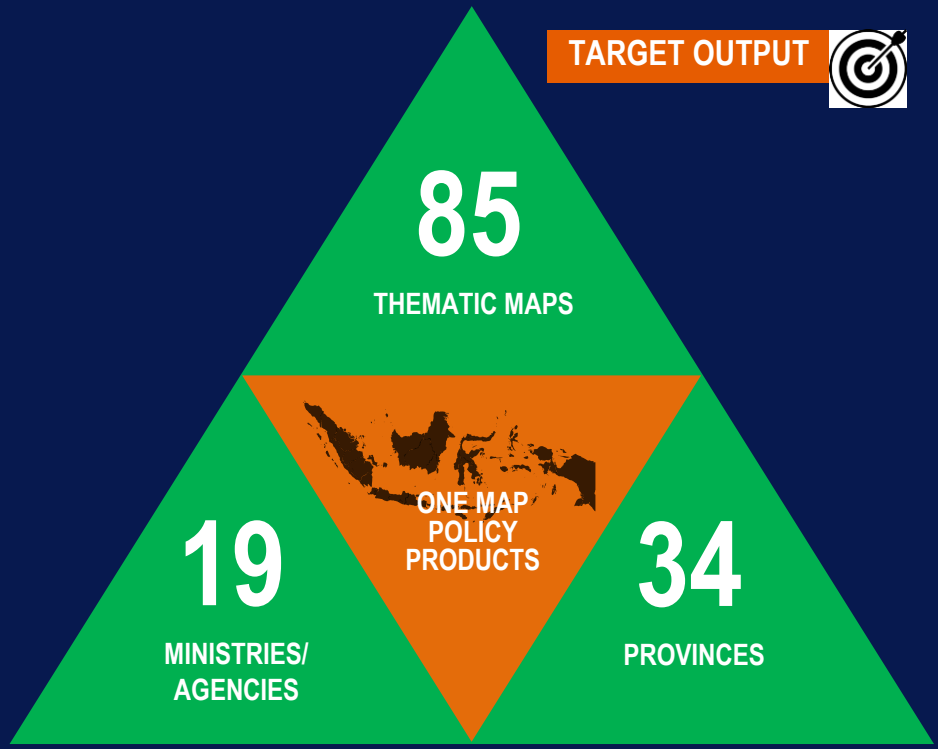
As a basis for:

- Baseline of spatial data improvement
- Spatial planning accuracy
- Accuracy for policy development and decision making

MAIN OMP'S ACTIVITIES

Compilation | **Integration** | **Synchronization**

TARGET OUTPUT



One Map Policy is an effort to **make accurate and accountable map** as a basis in **development planning and spatial use** by all stakeholders.

ONE MAP POLICY AFTER 2019

To ensure OMP after 2019, **mid-/long-term roadmap is currently prepared** to ensue the sustainability and completeness of OMP. OMP's geospatial data will be synergized with statistical data from National Statistics Bureau (BPS) to support SDG's target.

GRAND DESIGN

Acceleration of One Map Policy will not end to only 85 thematic maps, but **it can be continued to other thematic maps** that can be used to support economic equity, social welfare, and national development. In addition, **85 thematic maps have to be updated regularly.**

UPDATING AND ADDING THEMATICS MAPS

Advancement of map's accuracy have to be done to higher scale gradually. Geospatial Information Agency (BIG) have to prepare base map with higher scale and to prepare mapping standardization needed.

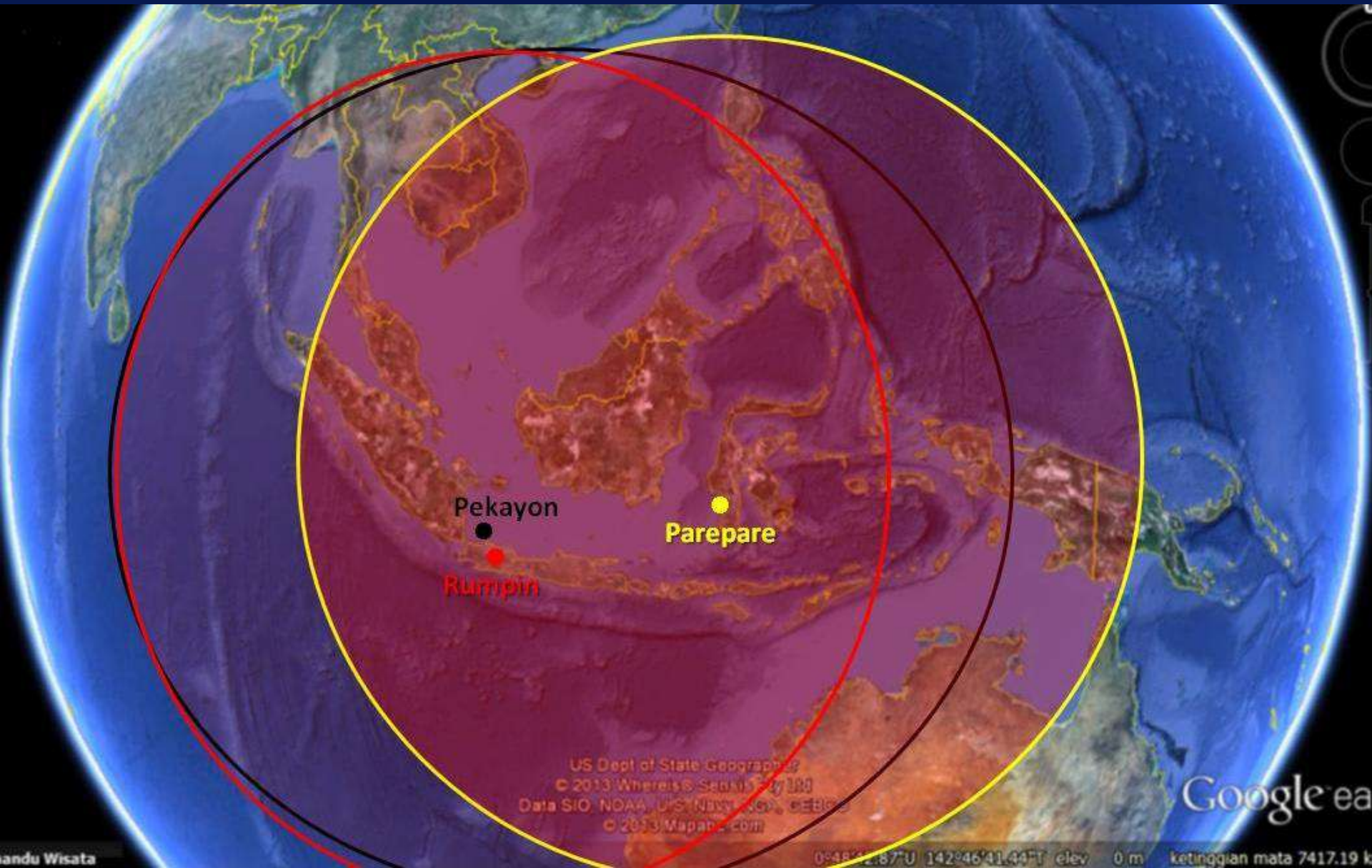
UPGRADING MAPS' DETAILS/ACCURACIES

Synchronization Process will be continued **to solve overlapping conflicts** in permits and spatial/land use

SYNCHRONIZATION OF OVERLAPPING LAND USE

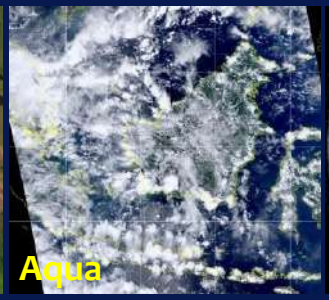
Some technical and strategic aspects of One Map Policy **need to be improved** to support the continuity of One Map Policy after 2019, so the OMP's products should be expanded, updated, and used **to support national/local development planning based on spatial data/information**.

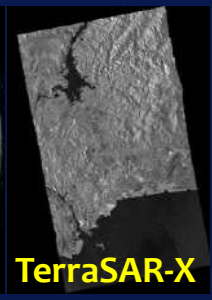
Antenna coverage



Optical and SAR data acquired at LAPAN Remote Sensing Ground Stations

Very high res. (50 cm)	High res. (1.5 m)	Medium res. (15 dan 30 m)	Coarse res. (≥ 250 m)	SAR (≤ 40 m)
• Pleiades 1A • Pleiades 1B	• SPOT-6 • SPOT-7	• Landsat-7 • Landsat-8	• Terra • Aqua • S-NPP • NOAA-18 • NOAA-19 • NOAA-20 • MetOp-A • FY-3B/3C • Himawari-8	• TerraSAR-X • TanDEM-X



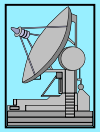


Data acquisition, processing, management, and information dissemination system

Parepare Ground Station

Data acquisition and processing system (Terra, Aqua, S-NPP, Landsat-7/8, SPOT-6/7 Pleiades, TerraSAR-X, TanDEM-X)

Rumpin Ground Station



Data acquisition and processing system (Terra, Aqua, Landsat-7/8)

Jakarta Ground Station

Data acquisition and processing system (NOAA-18/19/20, FY-3B/3C, MetOp-A, Himawari-8)

Data Center (Jakarta)

Data processing (geometric and radiometric correction, cloud masking, and mosaicing)

Data storing

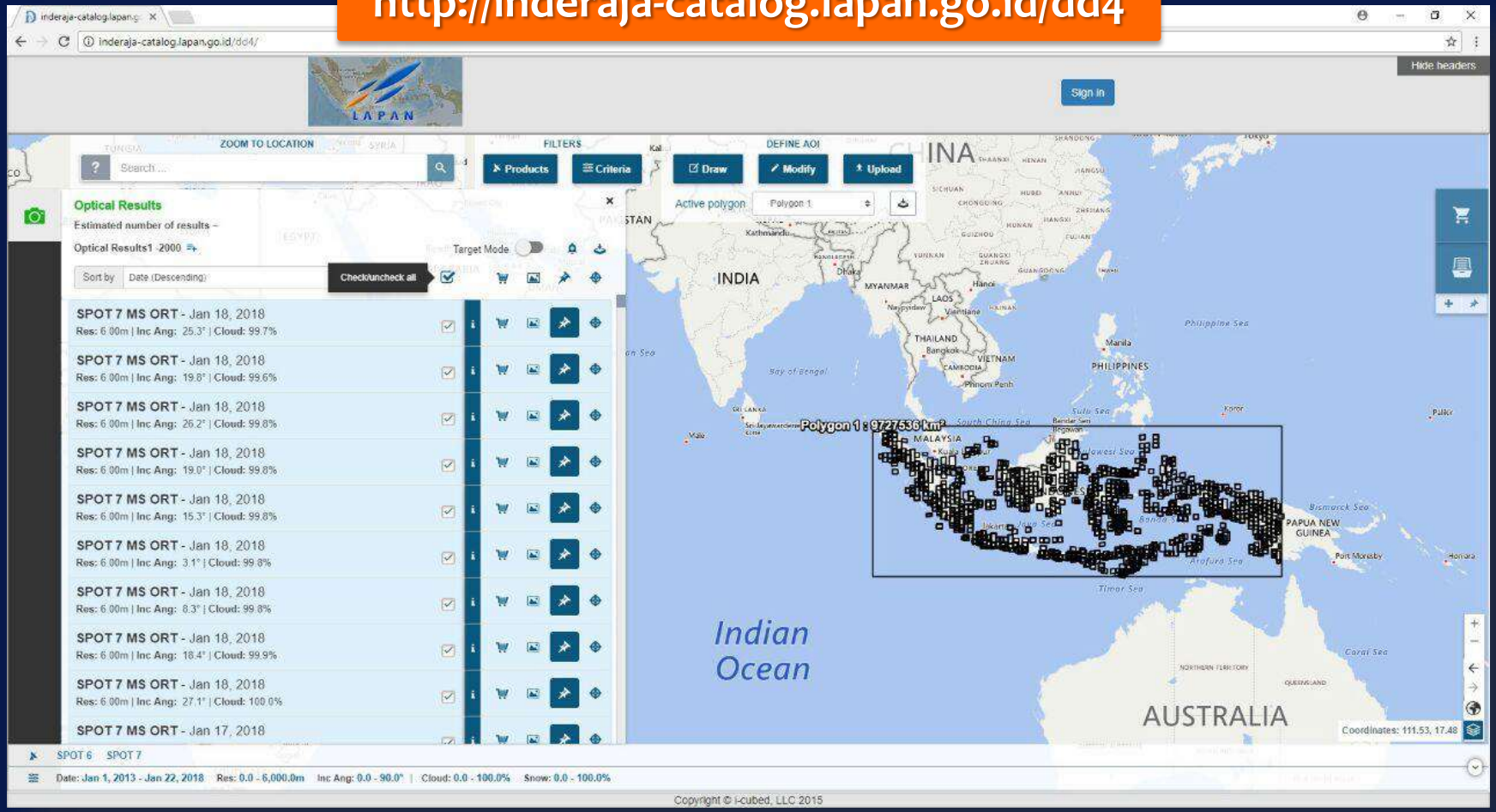
Data cataloging

Information

- Remote Sensing Applications Center
- Ministries/Agencies
- Local Governments
- University
- Public

Remote sensing data catalog

http://inderaja-catalog.lapan.go.id/dd4

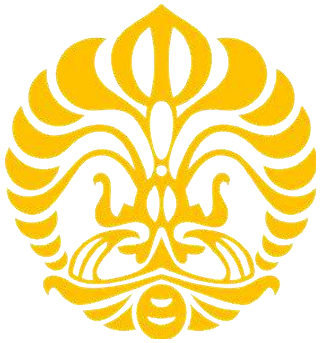


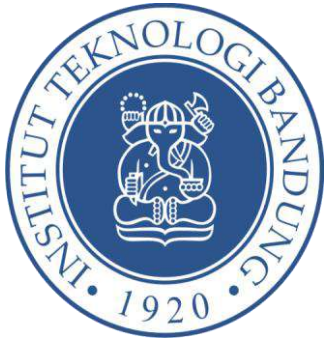
Cooperation with Ministries/Agencies

KEMENTERIAN
KESEHATAN
REPUBLIK
INDONESIA

Kementerian Pertar

Cooperation with Universities and Private Sectors

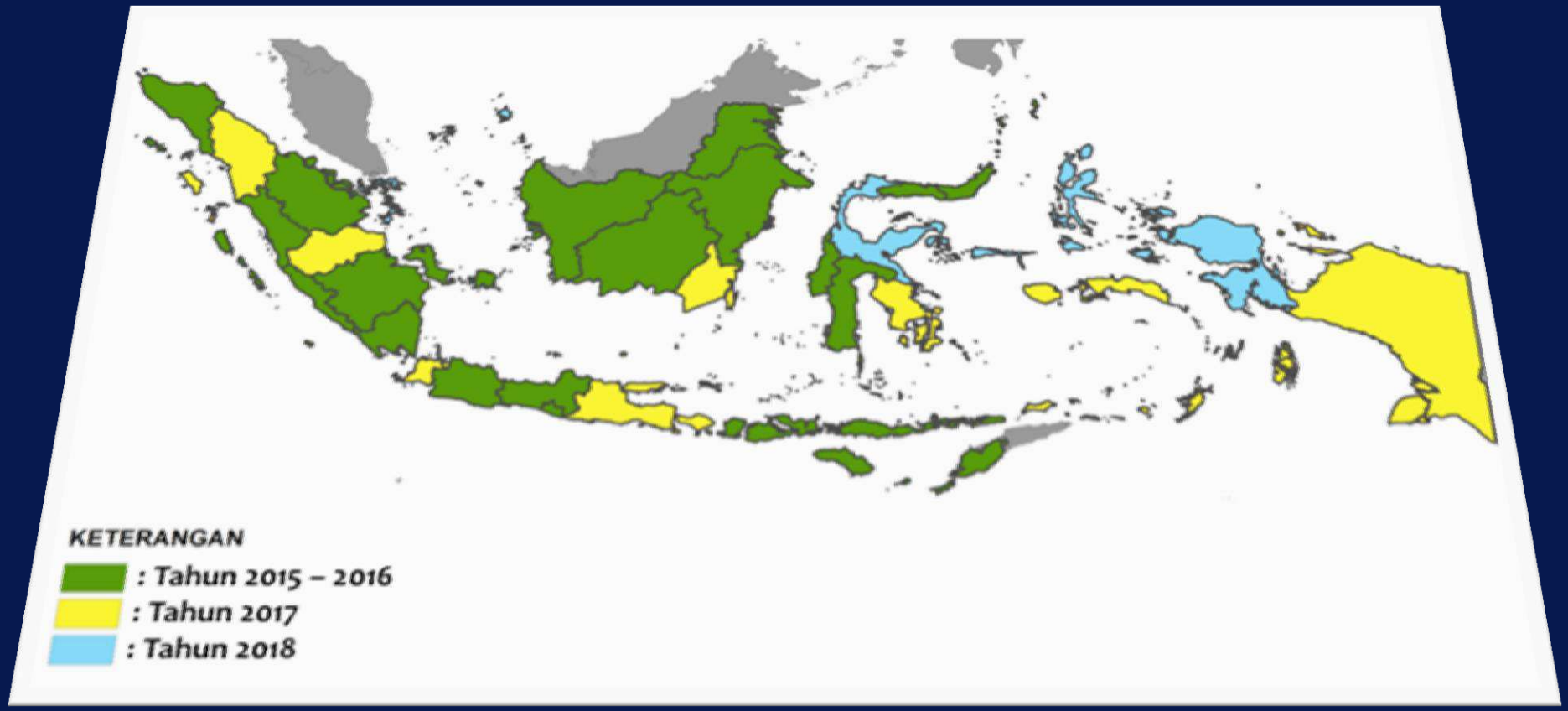




PT PERIKANAN NUSANTARA (PERSERO)

WRI INDONESIA

Cooperation with Local Governments



Remote sensing-based information Agriculture

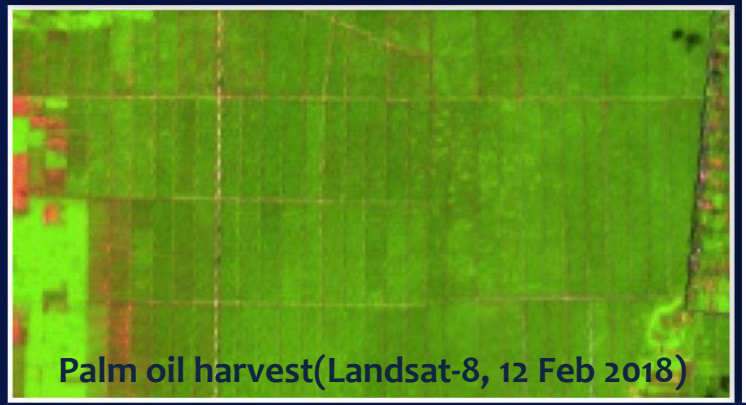
http://spbn.pusfatja.lapan.go.id/maps/108

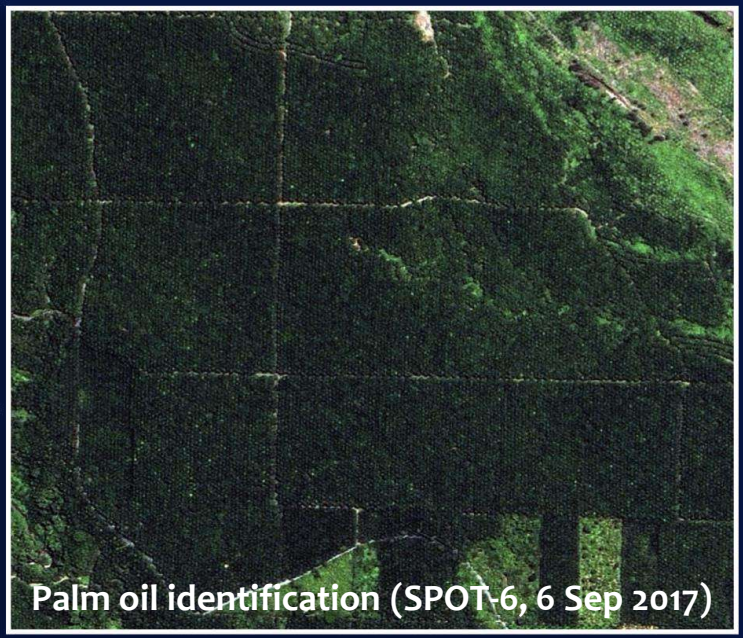
Paddy growth phase
(Period: 28 Jul – 4 Aug 2018)

Remote sensing-based information Forestry


Palm oil clearing (Landsat-8, 25 Jul 2014)

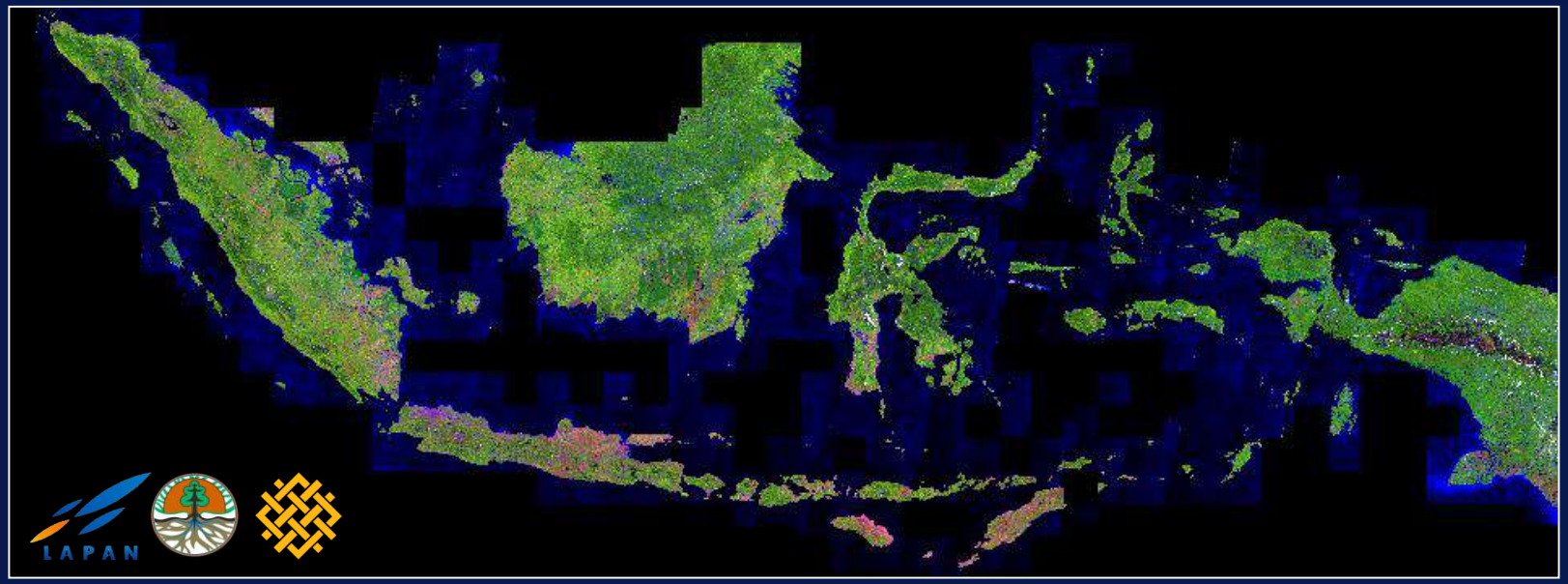

Palm oil growth (Landsat-8, 21 Aug 2018)

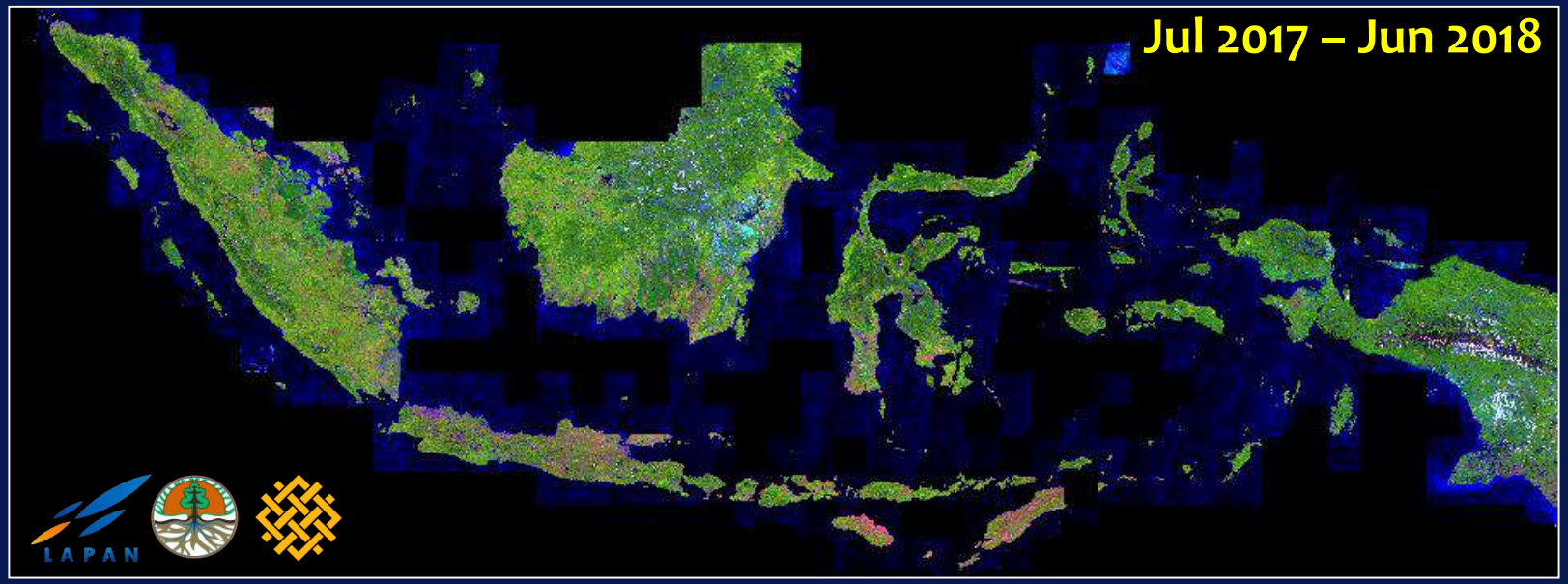

Palm oil harvest(Landsat-8, 12 Feb 2018)


Palm oil identification (SPOT-6, 6 Sep 2017)

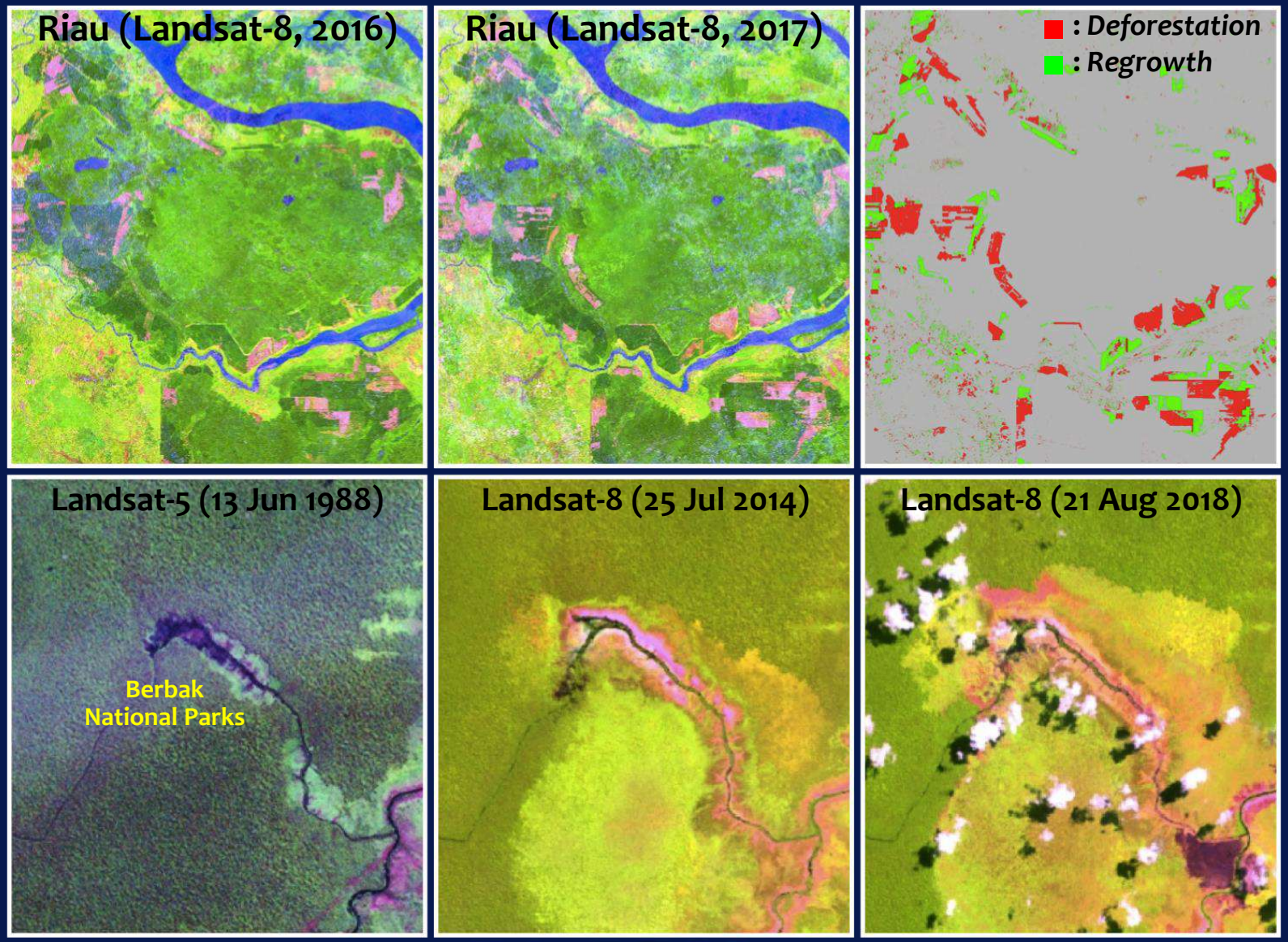

Palm oil identification (Pleiades, 31 Jan 2018)

Annual Landsat-8 data mosaic for land cover updating

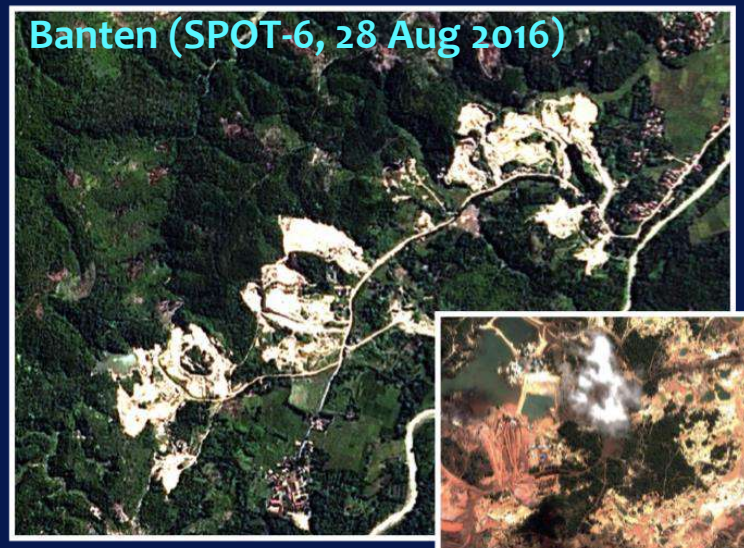


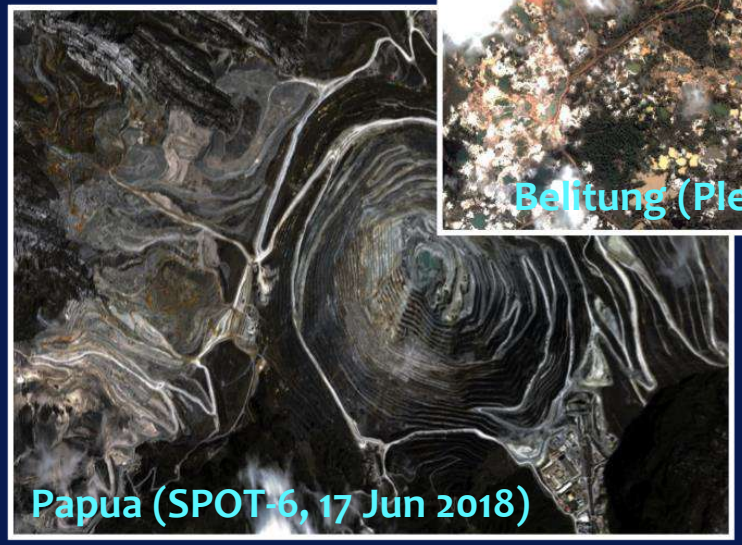


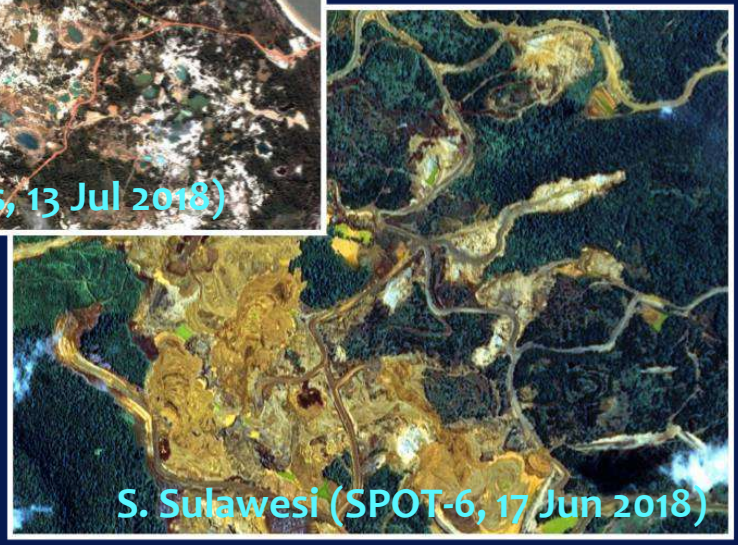
Remote sensing-based information
Forestry



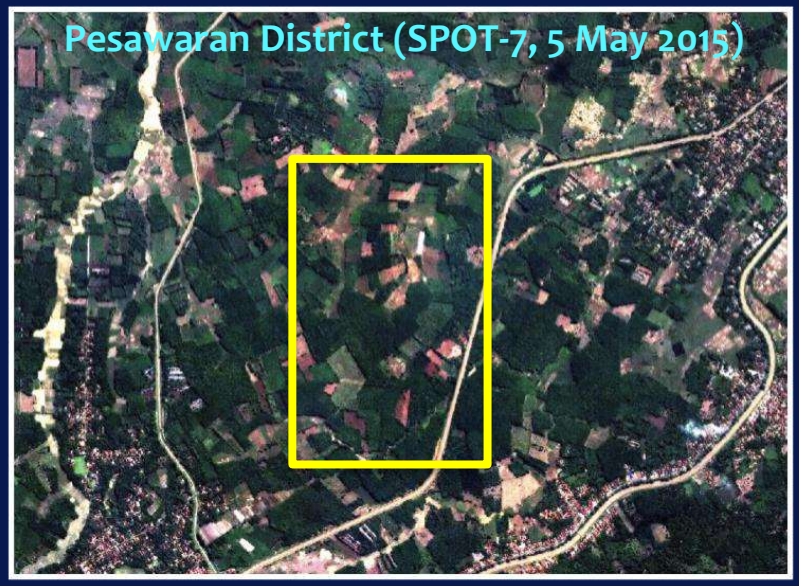
Remote sensing-based information
Mining







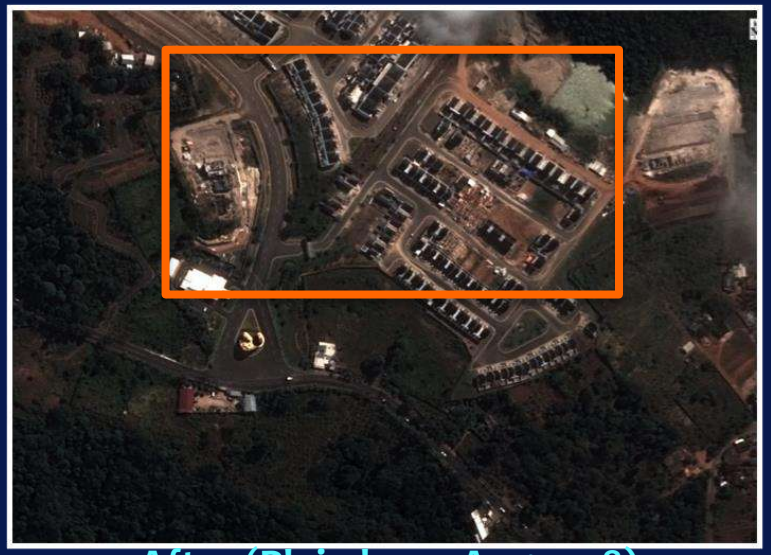
Remote sensing-based information
Spatial Planning



Remote sensing-based information Taxation

Bandar Lampung City

Before (Geoeye, 16 Apr 2011)



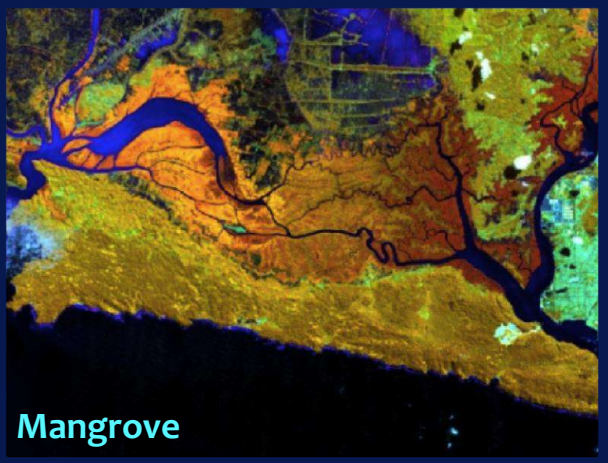
After (Pleiades, 5 Aug 2018)

Remote sensing-based information Fisheries and Marine

Shallow water objects

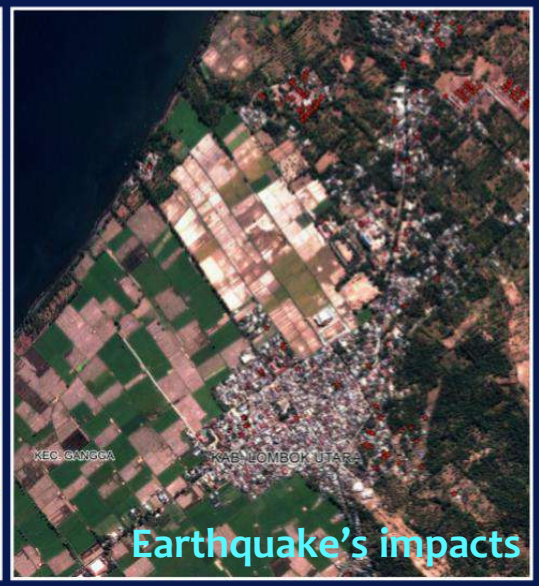
Small islands

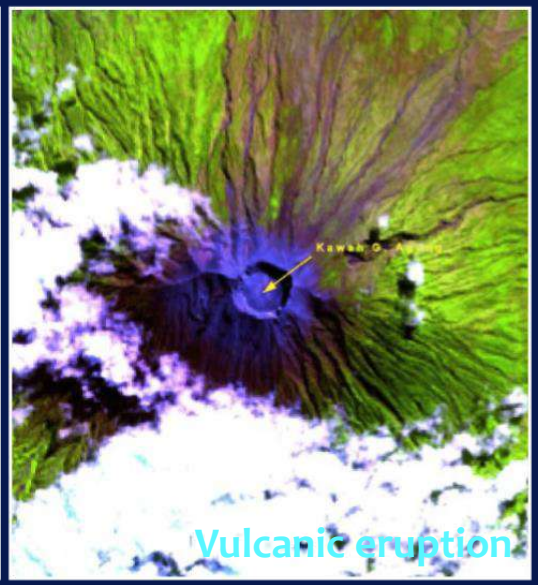
Fishing ground potential zone

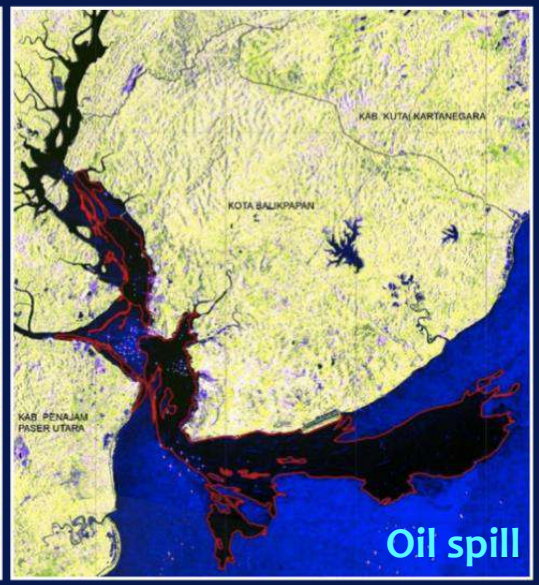


Mangrove

Remote sensing-based information Disasters

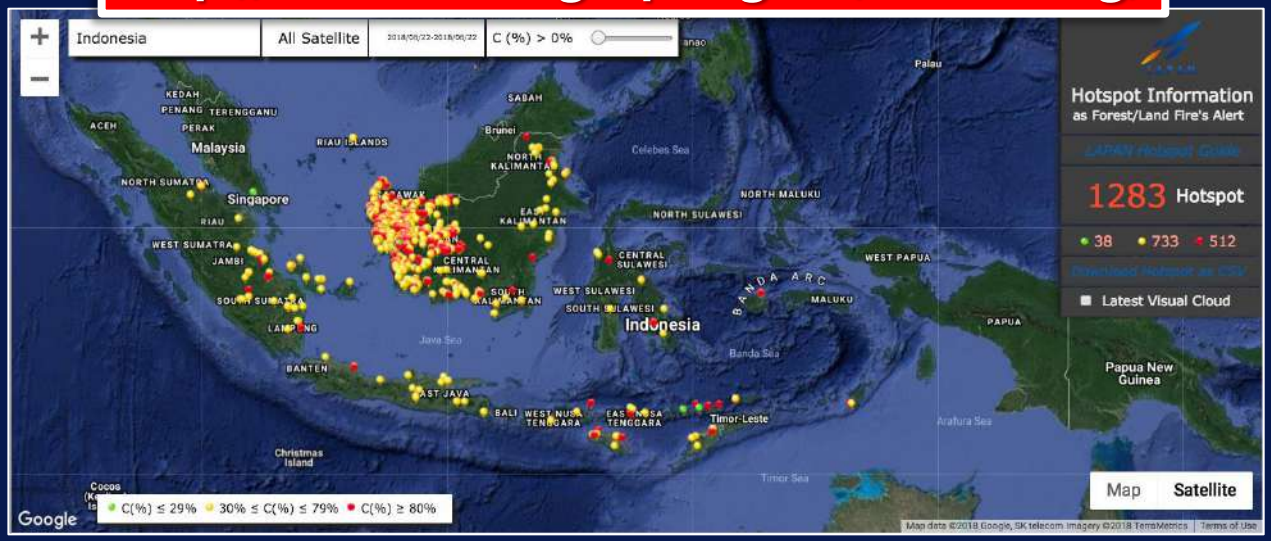






Near-real time hotspot monitoring

http://modis-catalog.lapan.go.id/monitoring/

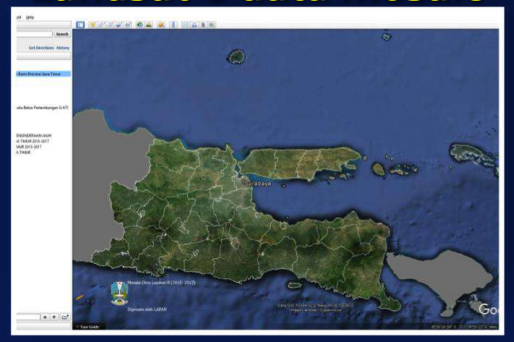


Android dan IOS based application

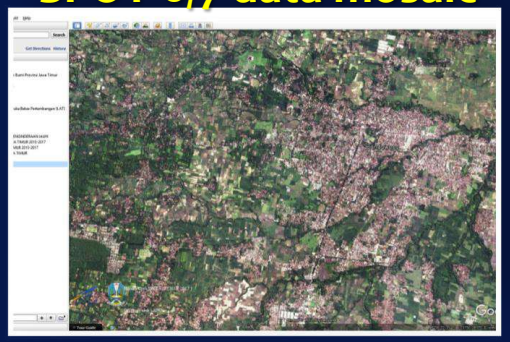
Provincial-based Earth Observation System

- Google Earth-based system (open source)
- Mosaic data and very high resolution images
- Daily/8-daily/annual information

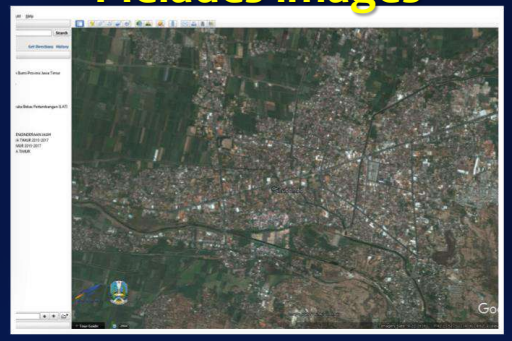
Landsat-8 data mosaic



SPOT-6/7 data mosaic



Pleiades images



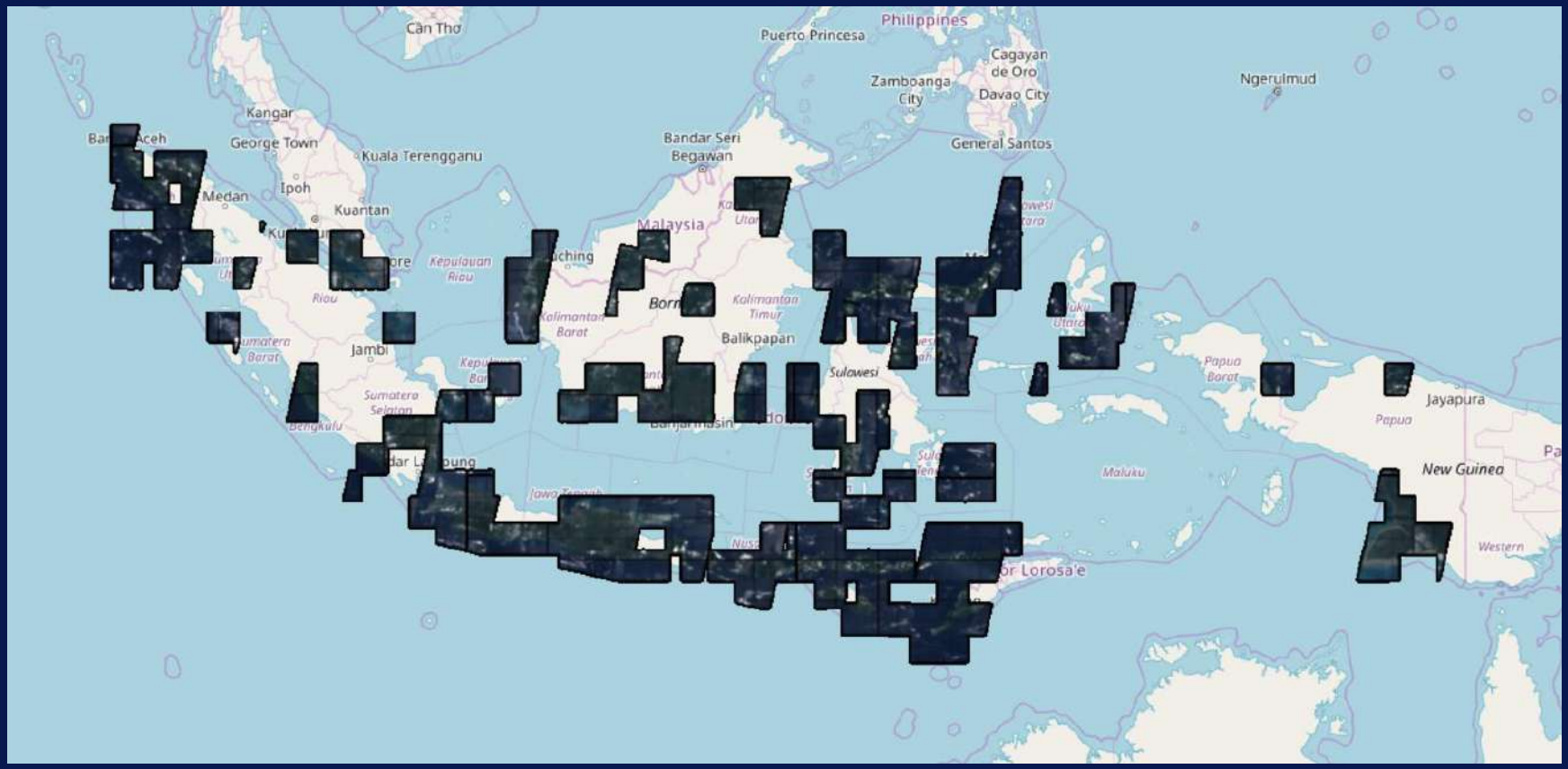
Deforestation

Paddy growth phase

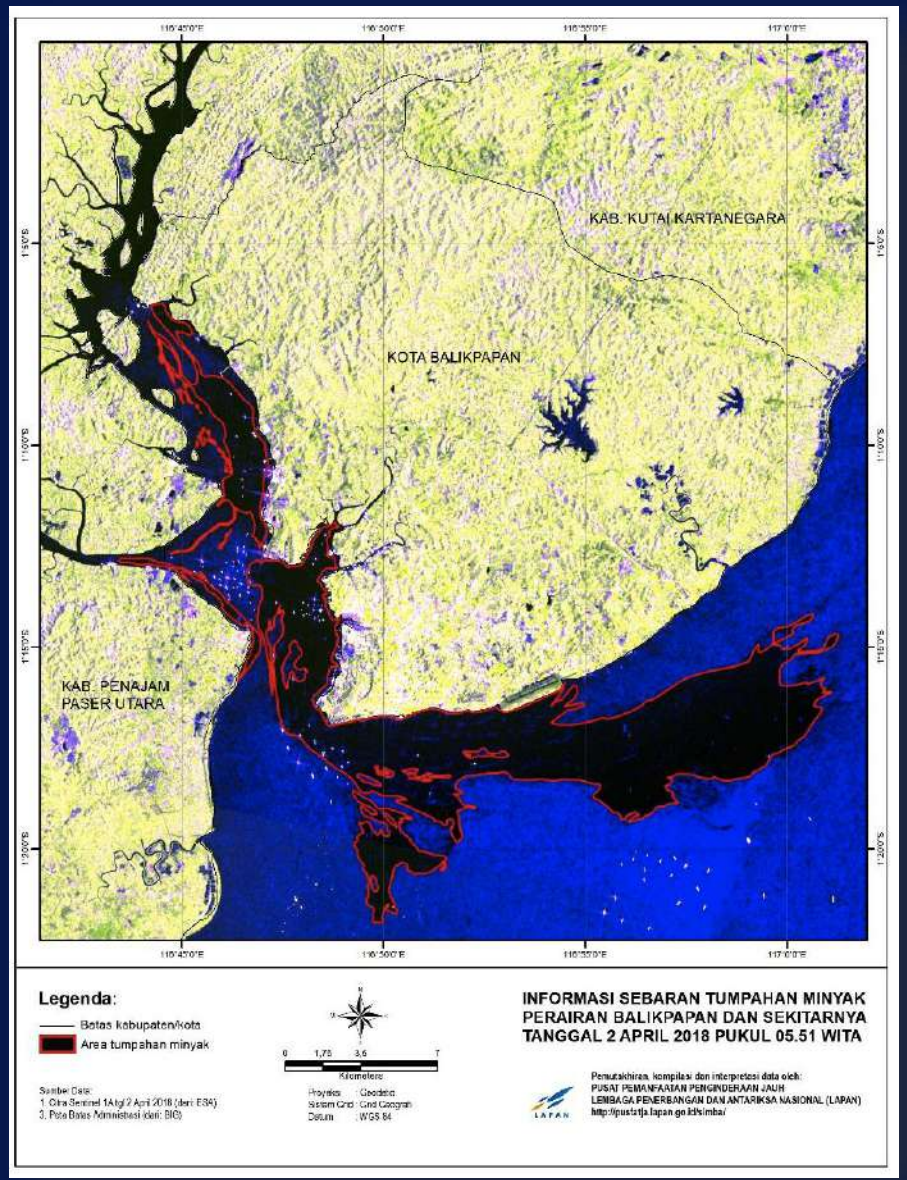
Fishing ground potential

Sentinel-2 data available at LAPAN
(as per 3 Sep 2018)

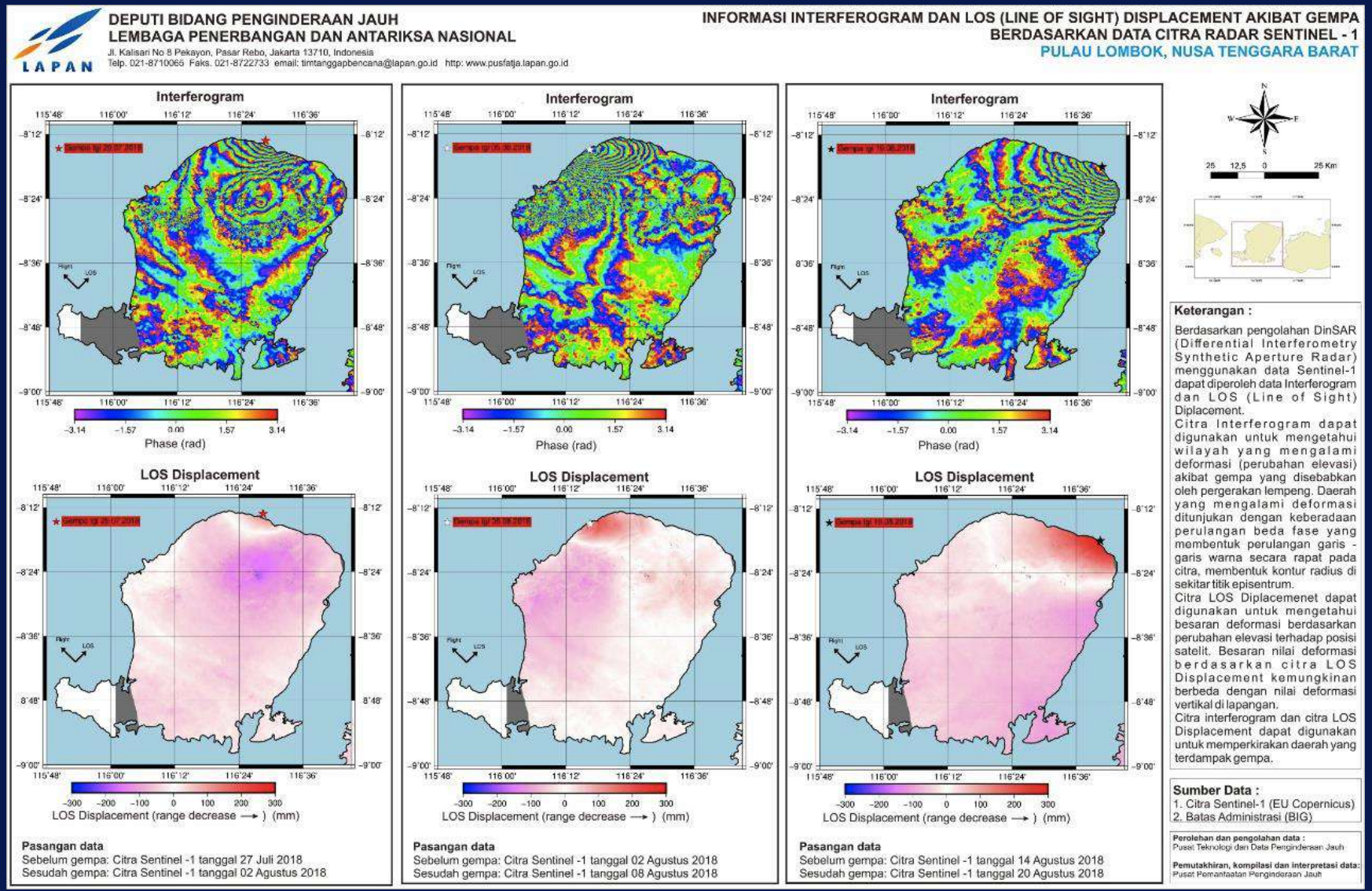
Sentinel-2 data (2017-2018) downloaded from Copernicus Program



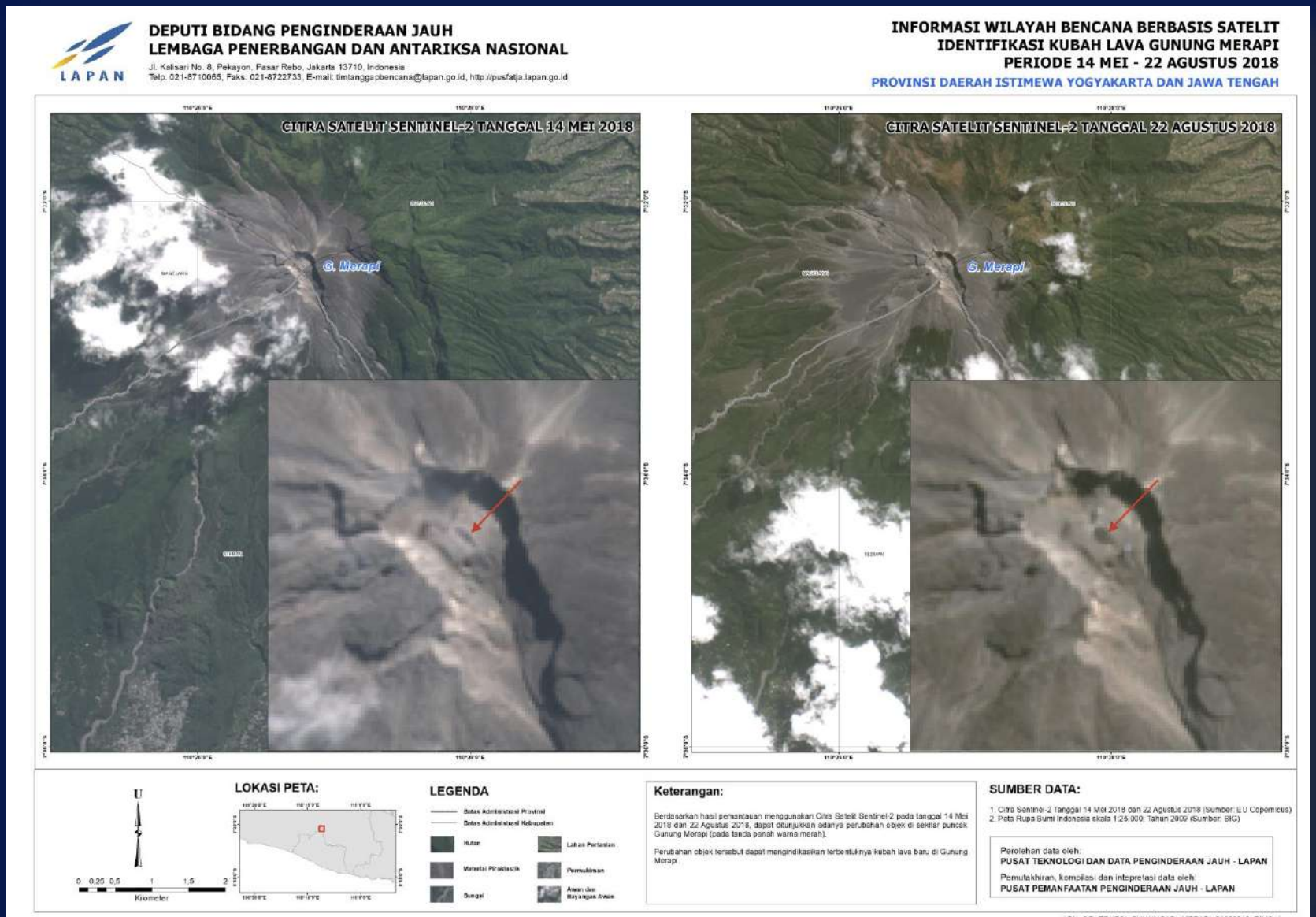
Sentinel-1A data
Oil spill (East Kalimantan Prov., 2 Apr 2018)



Sentinel-1A/B data
Earthquake (N. Lombok District, 5 Aug and 19 Aug 2018)



Sentinel-2 data
Lava dome changes (Mt. Merapi, 14-22 Aug 2018)



European Commission - LAPAN cooperation

- Utilization of Copernicus data in Indonesia:
  - Various types and resolutions of remote sensing data will be available and easy access.
  - Research and development of user-driven applications will be improved.
  - Capacity building of remote sensing technology and applications will be increasing.
- The European Commission and LAPAN cooperation on data access and use of Sentinel data of the Copernicus programme would increase our understanding on the natural resources and their changes for better local development planning.

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Thank you for your attention

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