



INDONESIAN NATIONAL INSTITUTES OF AERONAUTICS AND SPACE (LAPAN) REMOTE SENSING ACTIVITIES

22 July 2019

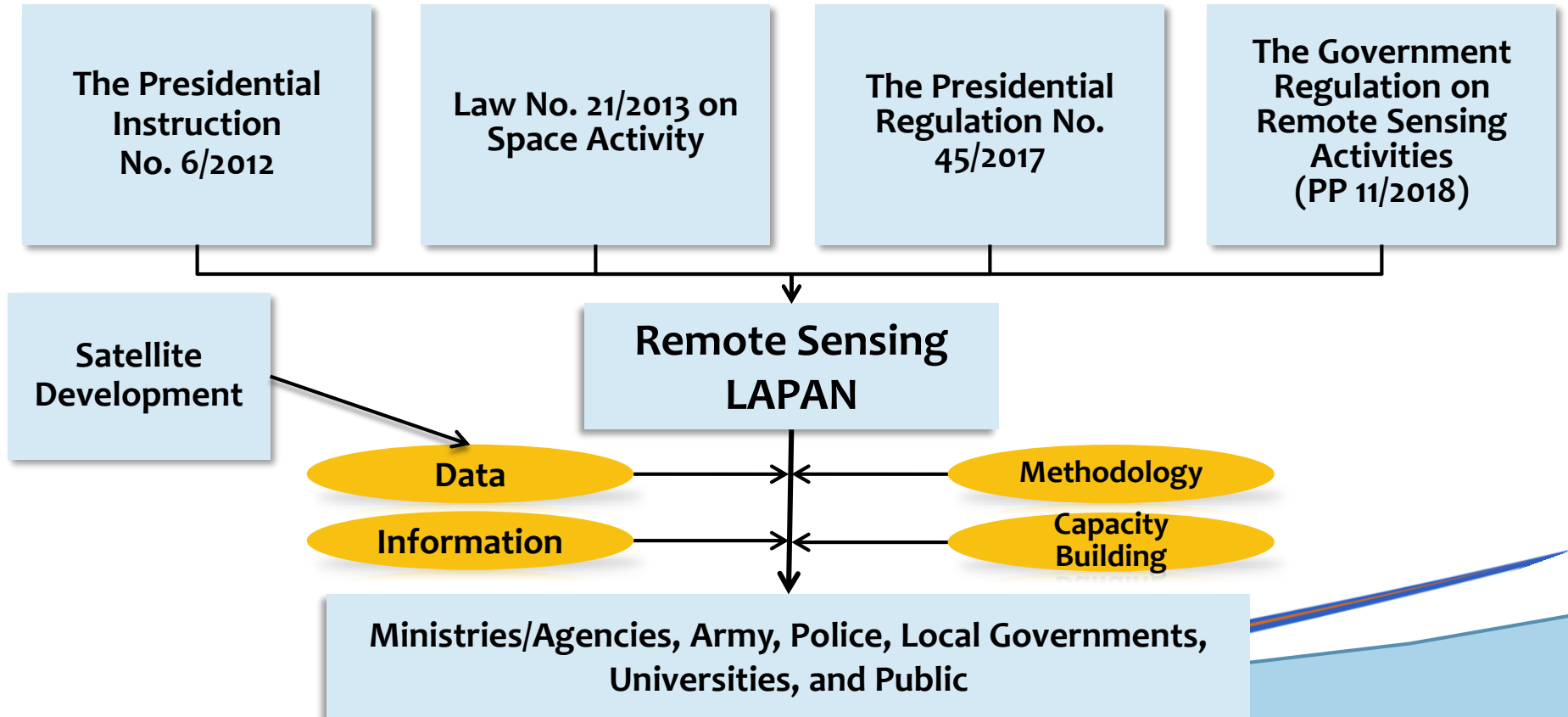


Presentation Online

- The role of LAPAN on Remote Sensing Activities in Indonesia
- Satellite Technology Development
- Remote sensing data providing
- Remote Sensing applications
- Remote Sensing for SDGs (Sustainable Development Goals)
- Disseminations, Collaborations, and Capacity Building program
- Conclusions

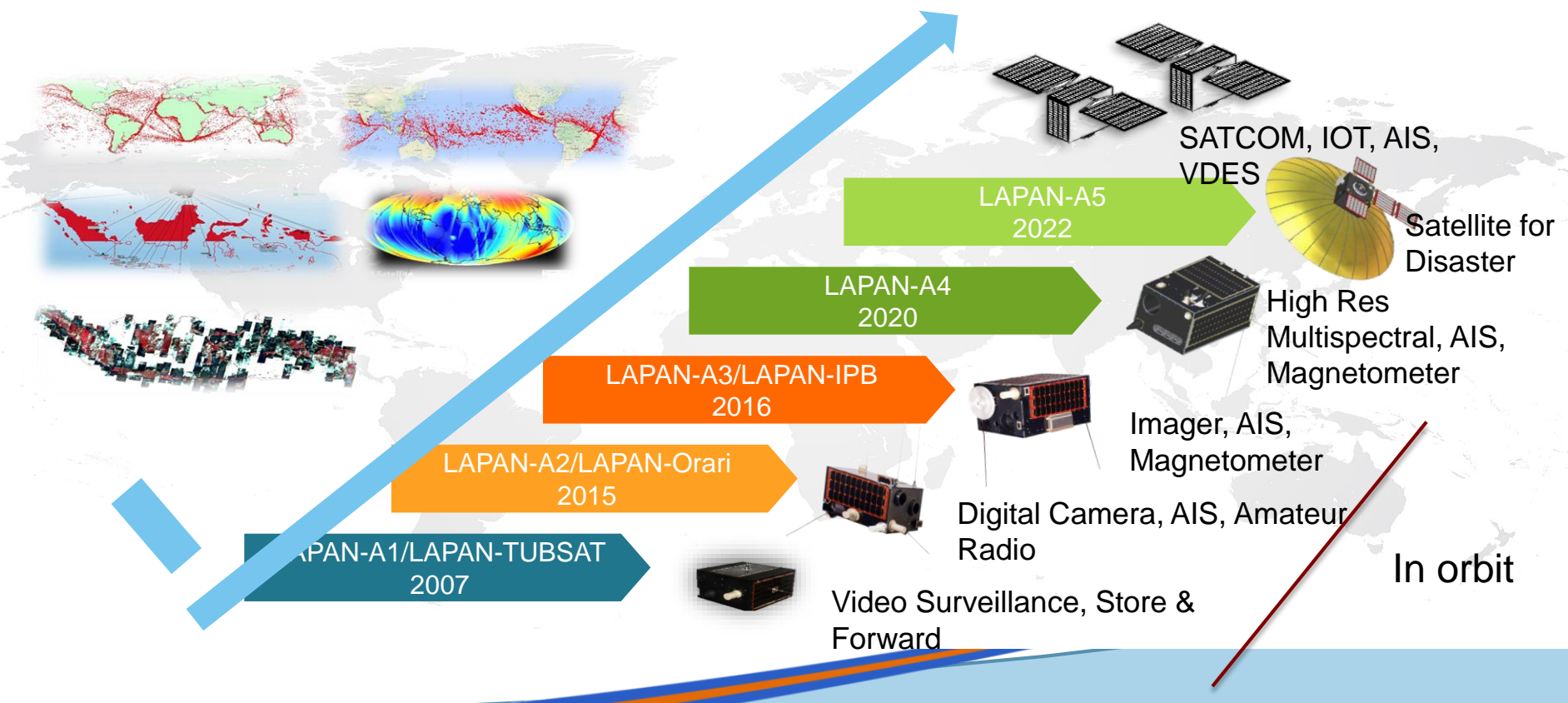


The role of LAPAN on Remote Sensing Activities in Indonesia





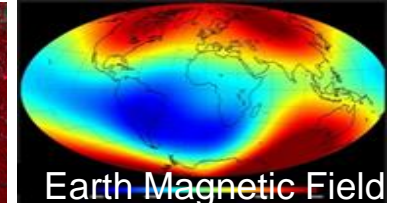
Satellite technology Development





LAPAN-A3/LAPAN-IPB SATELLITE

MISSION : Earth Observation, Maritime Surveillance, Scientific in Polar Orbit



Power

- 5 Solar Panel x 14 Watt
- Lithium (3 x 12 Ah)

Comm

- 2 TTC(UHF, FFSK, 1200 bps)
- X-Band (8200 Mhz, 105 Mbps)
- S-Band (2220 Mhz, FM and BPSK)

Data Handling

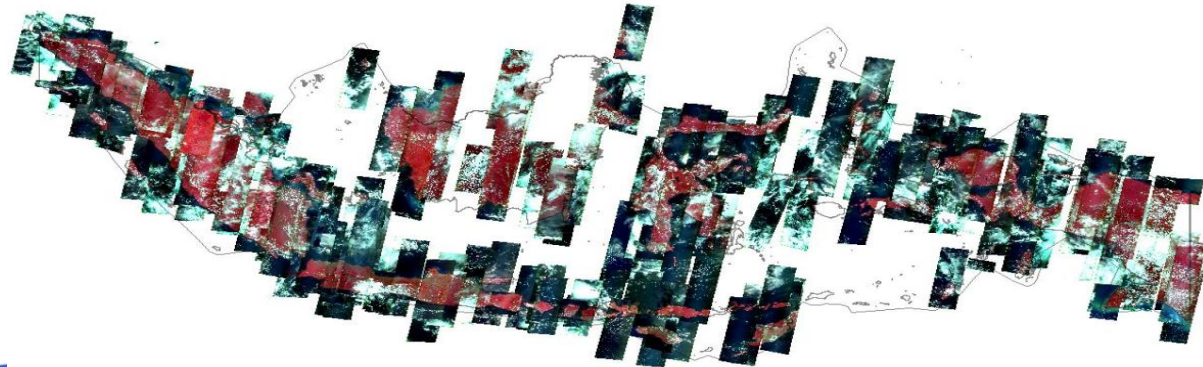
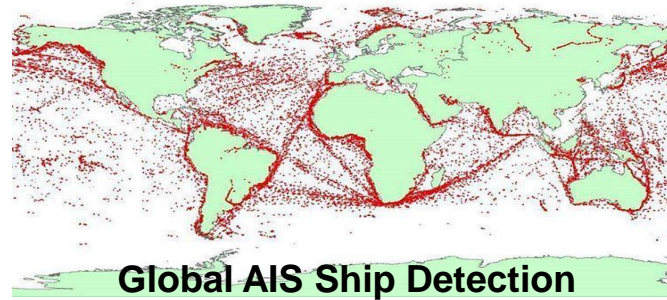
- 32 bit RISC processor

Attitude Control

- 4 Wheel, 4 Gyro, 2 Star Sensor, 6 SunSensor

Payload

- Camera 1 (pushbroom multispektral, RGBNir), Res 15 m, Swath120 Km
- Camera 2 (Color CCD, Effective Picture Element 2000x2000 pixels, Swath 7 km, Res 3.5 m, 1000 mm lens)
- AIS (Automatic Identification System)
- Earth Magnetic Field



Launched 22 Juni 2016

Data acquisition, processing, and management systems



Optical and SAR data acquired by LAPAN Remote Sensing Ground Stations



Low resolution optical imagery (≥ 250 m)

- Terra/Aqua
- S-NPP
- NOAA-18/19/20
- MetOp-A
- Himawari-8
- FY-3B/C



Medium resolution optical imagery (15 - 30 m)

- Landsat-7
- Landsat-8



High resolution optical imagery (1,5 m)

SPOT-6/7



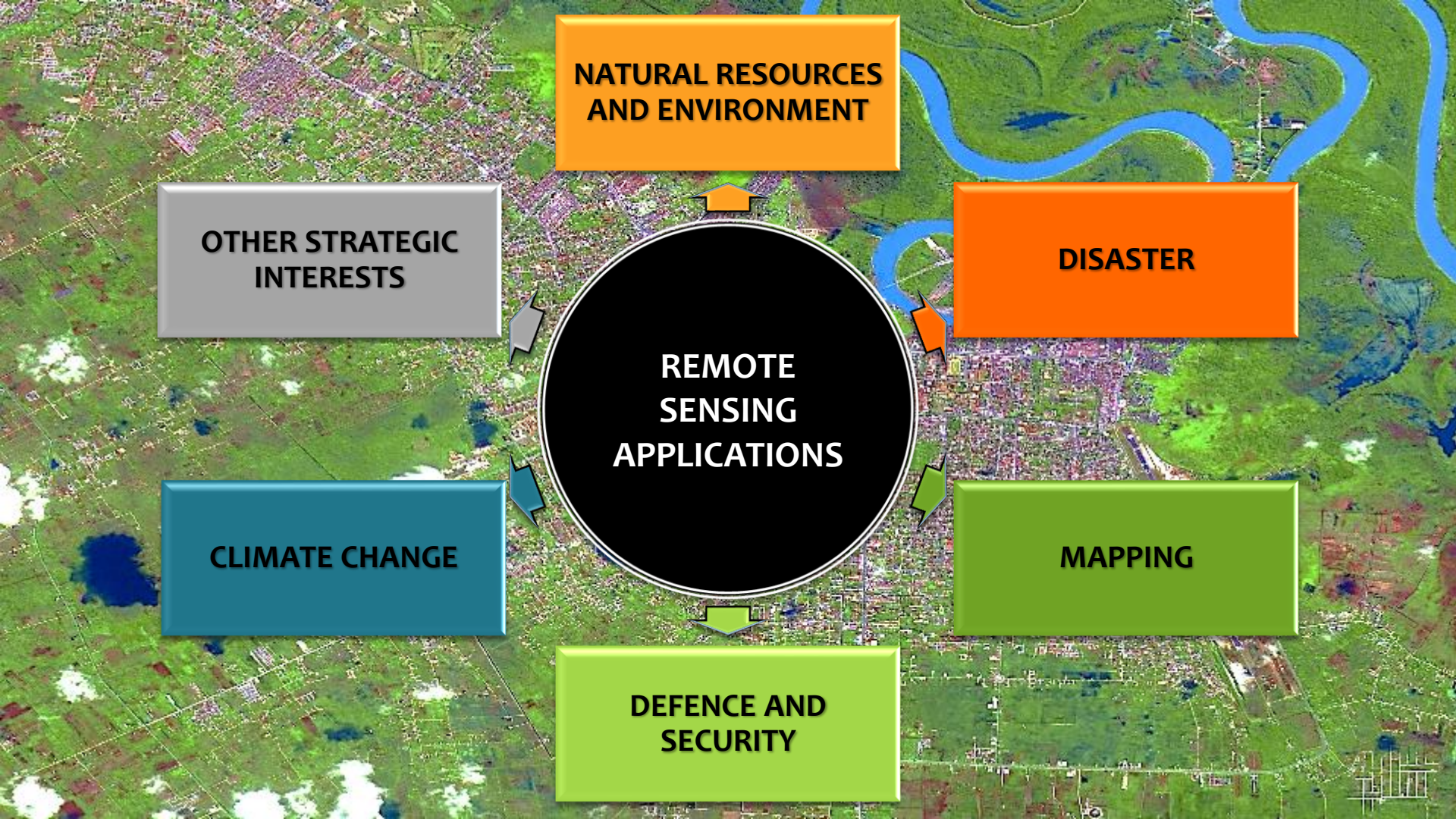
Very high resolution optical imagery (50 cm)

Pleiades-1A/B



Synthetic Aperture Radar (SAR)

TerraSAR-X/TanDEM-X



**NATURAL RESOURCES
AND ENVIRONMENT**

**OTHER STRATEGIC
INTERESTS**

DISASTER

**REMOTE
SENSING
APPLICATIONS**

MAPPING

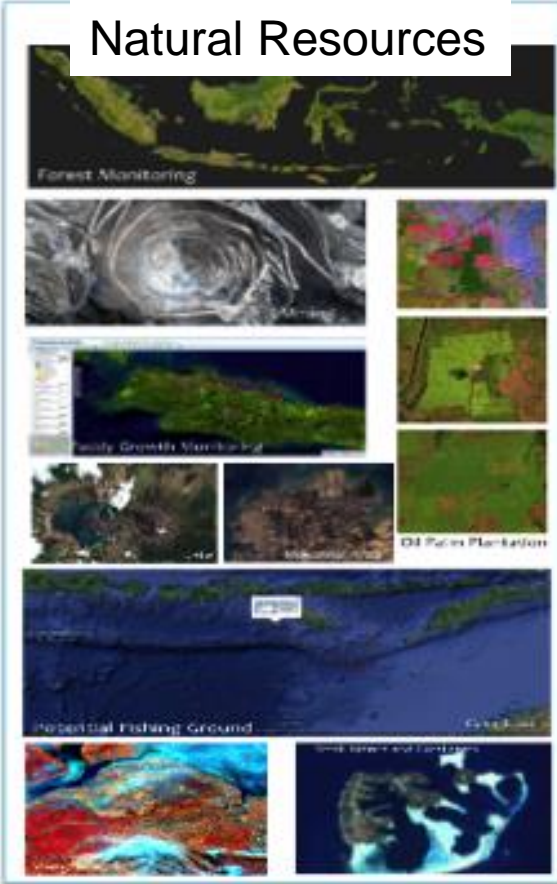
CLIMATE CHANGE

**DEFENCE AND
SECURITY**

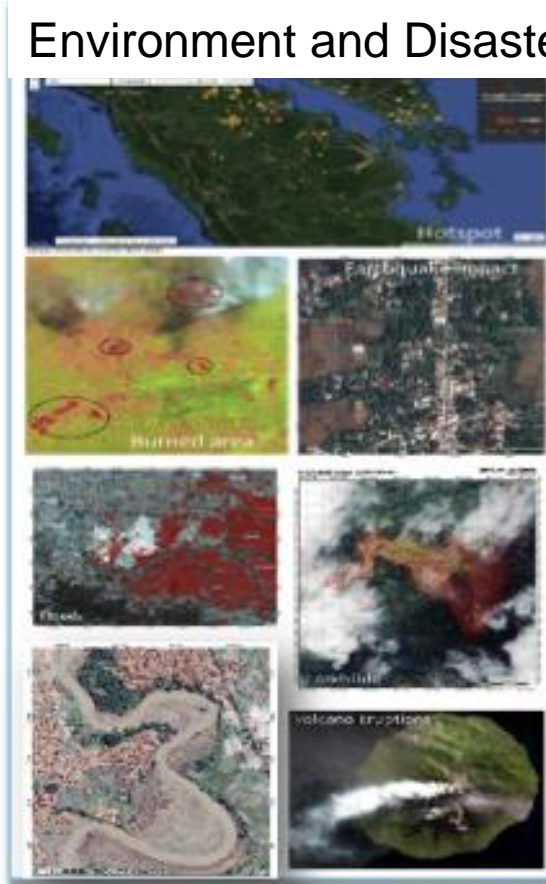


Remote Sensing Application

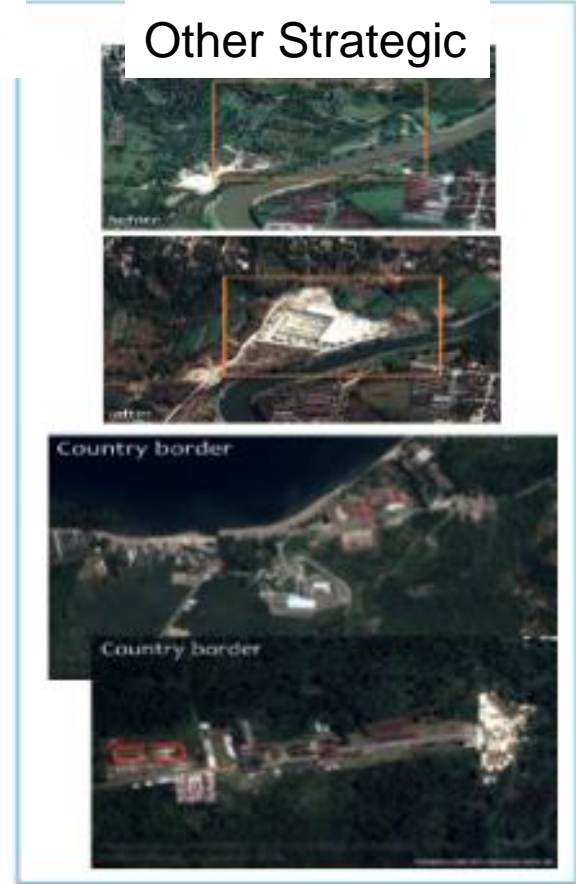
Natural Resources



Environment and Disaster

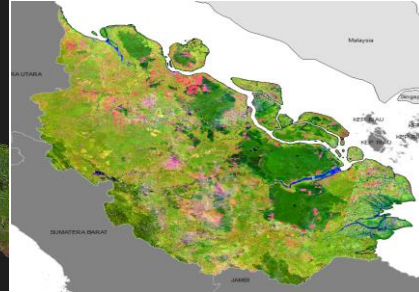


Other Strategic



Land Resources Applications

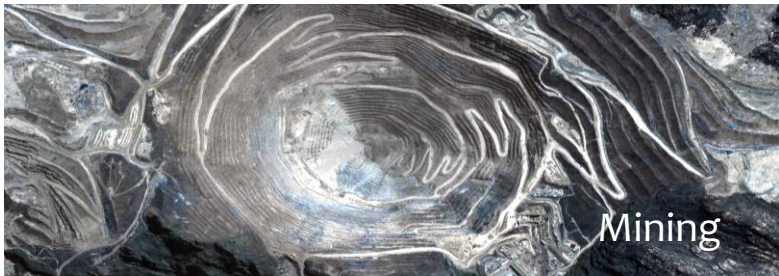
Forest Monitoring



Pembukaan lahan



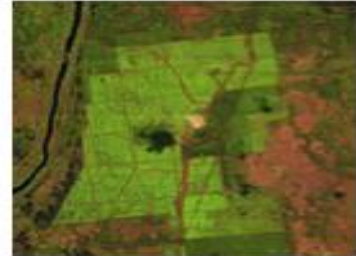
Mining



Industrial Area



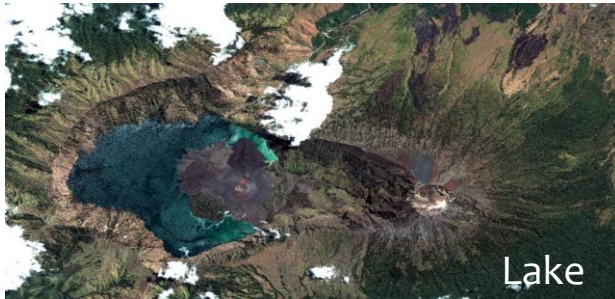
Pertumbuhan



Paddy Growth Monitoring



Lake



Panen



Oil Palm Plantation

Coastal and Marine Application

Small Islands

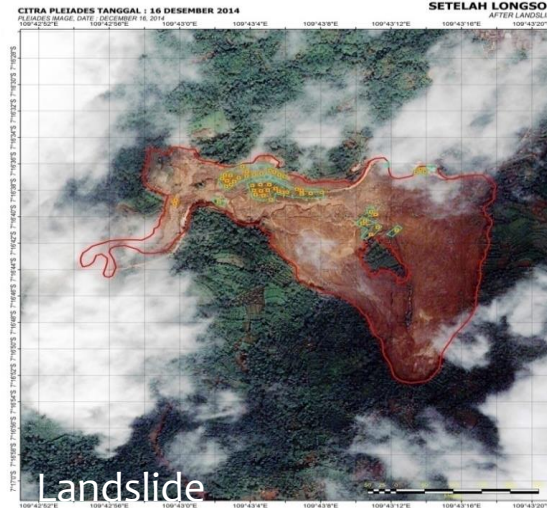
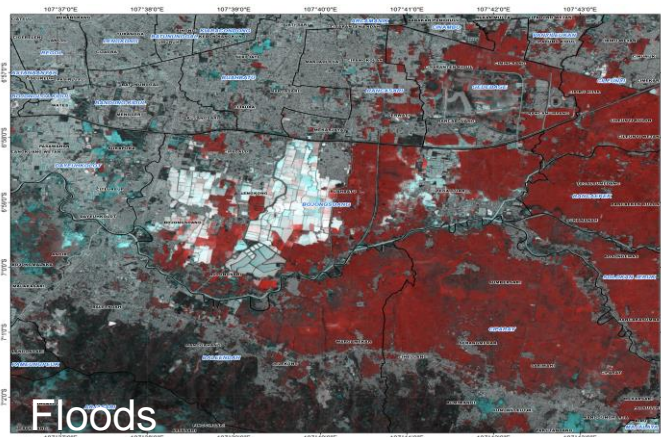
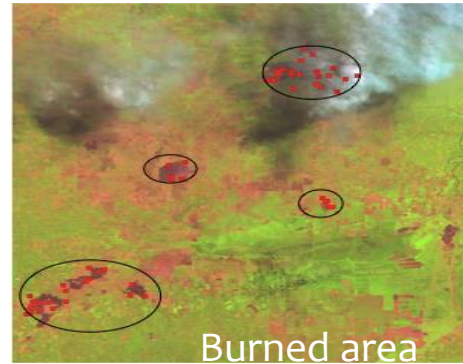
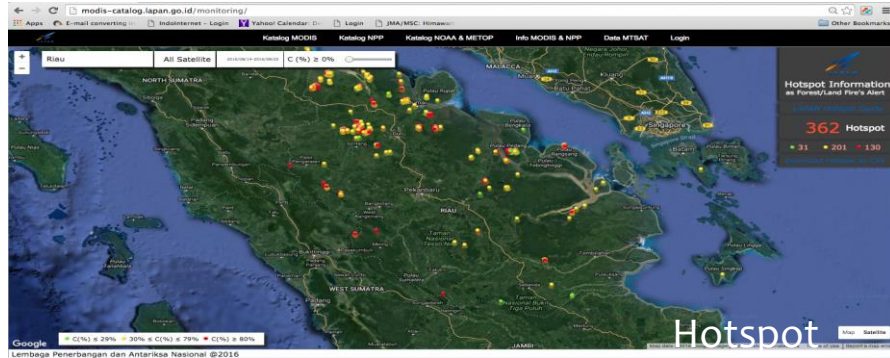


Coral reefs

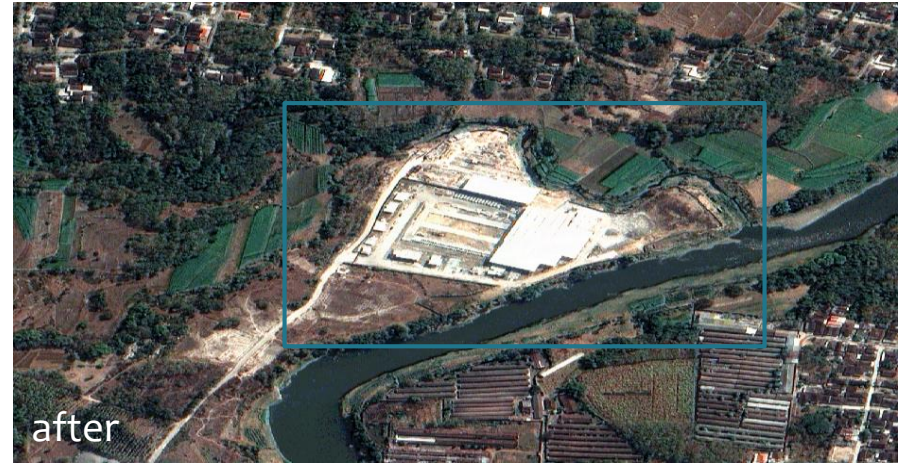
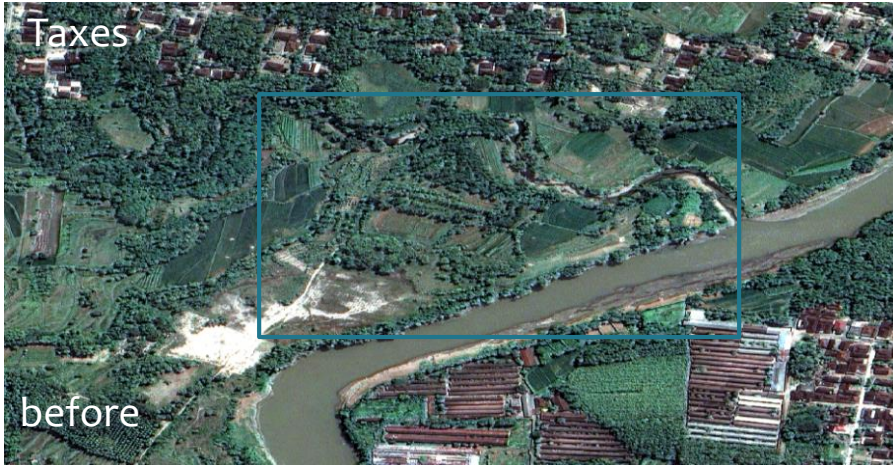




Environment and Disaster Mitigation



Other Strategic Application

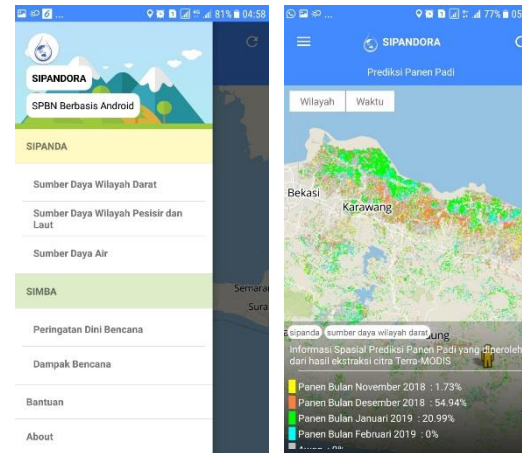
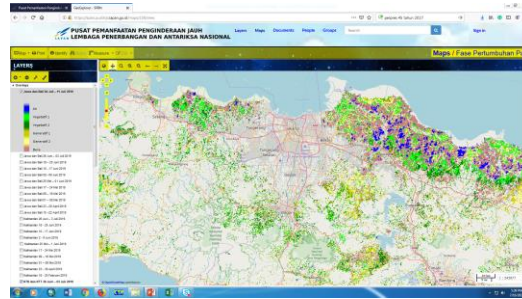


The Program:

Development of Earth Observation System

*The Presidential Regulation No. 45/2017

**The Government Regulation on Remote Sensing Activities (PP 11/2018)



Digital Service Platform:
Web & android based

The Products:

1. Paddy Growth
2. Oil Palm
3. Forest Changes
4. Water Resources
5. Green Area/city planning
6. Mangrove
7. Coral reefs
8. Bathymetry
9. Ocean Water Quality
10. Potential Fishing ground
11. Aquaculture
12. Potential Landslide
13. Potential flood
14. Fire danger rating system
15. Forest fires monitoring
16. Volcano monitoring
17. Oil spills
18. Disaster response

SUSTAINABLE DEVELOPMENT GOALS



Satellite Earth Observations in support of the SDGs

CEOS - Special 2018 Editions



□ : significant contributions

▣ : limited contribution

SUSTAINABLE
DEVELOPMENT
GOALS

Remote Sensing for SDGs



The Products:

- 4. Water Resources
- 9. Ocean Water Quality
- 17. Oil spills



The Products:

- 4. Green Area/city planning



The Products:

- 1. Paddy Growth
- 2. Oil Palm



The Products:

- 3. Forest Changes
- 12. Potential Landslide
- 13. Potential flood
- 14. Fire danger rating system
- 15. Forest fires monitoring
- 16. Volcano monitoring
- 18. Disaster response



The Products:

- 6. Mangrove
- 7. Coral reefs
- 8. Bathymetry
- 10. Potential Fishing ground
- 11. Aquaculture



Dissemination systems: Online Data Access

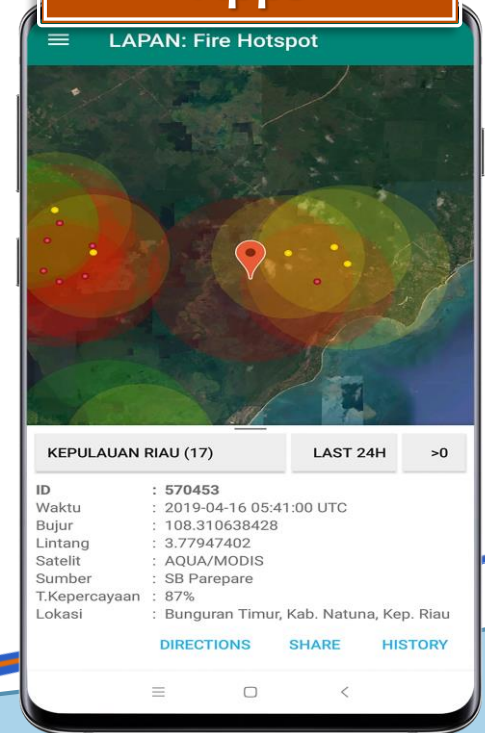
- <http://inderaja-catalog.lapan.go.id/dd4> (Data Catalog)
- <http://spbn.pusfatja.lapan.go.id/> (national earth monitoring system)
- <http://pusfatja.lapan.go.id/index.php/databaselitbang> (research database)
- <http://pusfatja.lapan.go.id/index.php/publikasi> (research publication)
- <http://pusfatja.lapan.go.id/sipanda/> (natural resources information)
- <http://pusfatja.lapan.go.id/simba/> (disaster mitigation information)
- <http://pusfatja.lapan.go.id/simba/tanggapbencana/index.php/home> (Disaster emergency response)
- <http://jurnal.lapan.go.id/index.php/ijreses> (online scientific journal)
- http://jurnal.lapan.go.id/index.php/jurnal_inderaja (online scientific journal)

Forest Fires monitoring for public

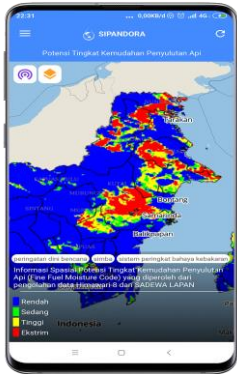
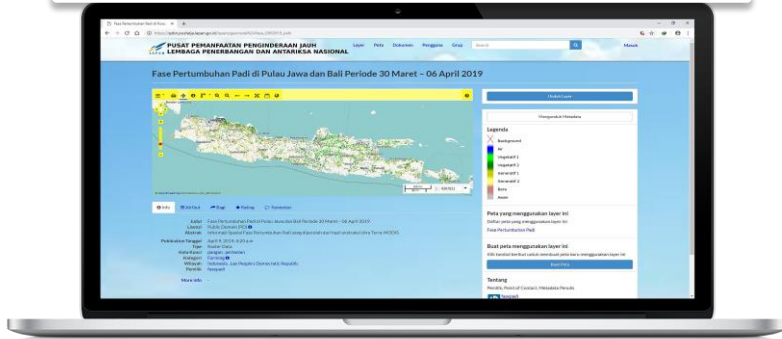
<http://modis-catalog.lapan.go.id/monitoring/>



Android and IOS Apps

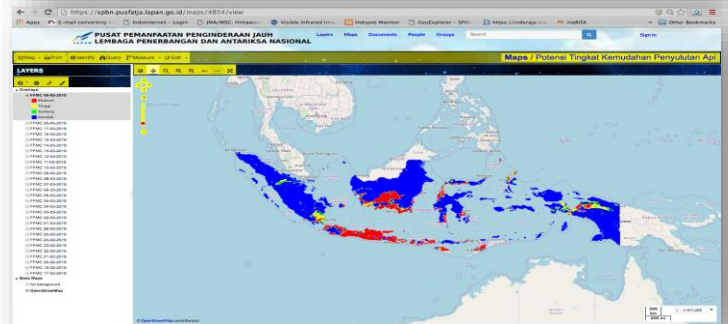
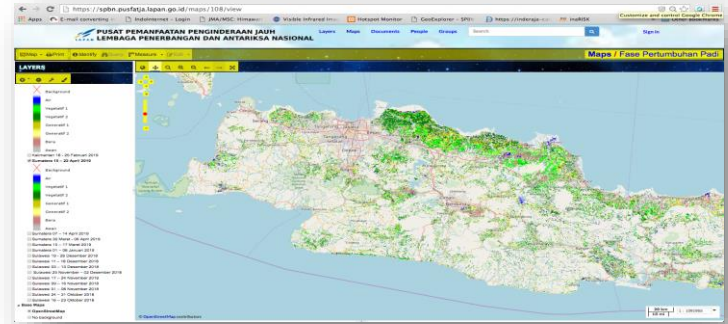


<http://spbn.pusfatja.lapan.go.id>



SIPANDORA

Android Based Earth Observation System





ZPPI AUTOMATIC PROCESSING



Information dissemination to the public



Newspaper (online & printed)

Pikiran Rakyat ONLINE
PERSEB BANDUNG RAYA JAWA BARAT NASIONAL POLITIK LUAR NEGERI
Jumat, 27 November 2015 - 18:42

Lapan: 2,08 Juta Hektare Hutan dan Lahan Terbakar

NASIONAL
Oleh Oktafendi, 2015 - 17:06

AGUS IBU KEPALA...
... soal kebak...

Nasional Register | Login

KOMPAS.COM
Jumat, 27 November 2015

HOME NEWS BUNDARI BOLA TENIS ENTERTAINMENT OTOMOTIF HEALTH FINANCE PROPERTI TRAVEL FOTO VIDEO TV FORUM

Nasional: Ragam Kegiatan Interaksi Warga Suka-Suka Pantauan

News / Nasional

Lapan: Tahun Ini, Dua Juta Hektar Hutan Hangus Terbakar

Jumat, 30 Oktober 2015 | 13:07 WIB

Seorang anggota Komunitas Pecinta Alam Karakelang sedang membantu memadamkan kebakaran hutan dan lahan di Kabupaten Kepulauan Talud.

JAKARTA - KOMPAS.com — Lembaga Penerbangan dan

Press conference with BNPB



News on TV media

Bencana Kabut Asap, Ini Titik Sebaran Hotspot Hasil Pantauan Lapan

SEBARAN asap kebakaran (Data MODIS, Sumatera, 4 September 2015)

KABUT ASAP SUDAH DARURAT

LIVE METRO TV PRIMETIME NEWS

18:22 24 KIOS DAN BUMAH TERBAKAR DI KLENDER JAKTIM • MENDAGREBU

SPECIAL EVENT

DARURAT ASAP NASIONAL

National level collaborations



BADAN INFORMASI
GEOSPASIAL



BMKG



B N P B



KEMENTERIAN KOORDINATOR
BIDANG KEMARITIMAN



KEMENTERIAN KEUANGAN
REPUBLIK INDONESIA



KEMENTERIAN
KESEHATAN
REPUBLIK
INDONESIA



KEMENTERIAN PERTANIAN
REPUBLIK INDONESIA



KEMENTERIAN
PEKERJAAN UMUM DAN
PERUMAHAN RAKYAT



Kementerian PPN/
Bappenas



KEMENTERIAN NEGARA LINGKUNGAN HIDUP
DAN KEHUTANAN
REPUBLIK INDONESIA



National level collaborations



KEPOLISIAN NEGARA
REPUBLIK INDONESIA



PT PERIKLANAN NUSANTARA (PERSERO)



WRI INDONESIA



Ministerial meeting



MoU between LAPAN and local government



Universities

- ❑ Gadjah Mada University
- ❑ Bandung Institute of Technology
- ❑ Surabaya Institute of Technology
- ❑ Bogor Agricultural University
- ❑ University of Indonesia
- ❑ Brawijaya University
- ❑ Diponegoro University
- ❑ Hasanudin University
- ❑ Riau University
- ❑ Etc.



International Collaborations

Remote Sensing Data Providers:

- USGS
- Astrium DS
- Digital Globe
- CAST/SSTC

Remote Sensing Applications:

- GIC-AIT
- RSO UNSPIDER
- Sentinel Asia – JAXA
- Safe Project – JAXA
- G4INDO

Remote Sensing Applications (*cont.*):

- Airbus DS
- JICA
- UNWFP
- GIZ
- CIFOR
- JCP-3 (INAFLOOD)
- CSIRO

International Collaborations



JICA



CSIRO



Wageningen Univ.



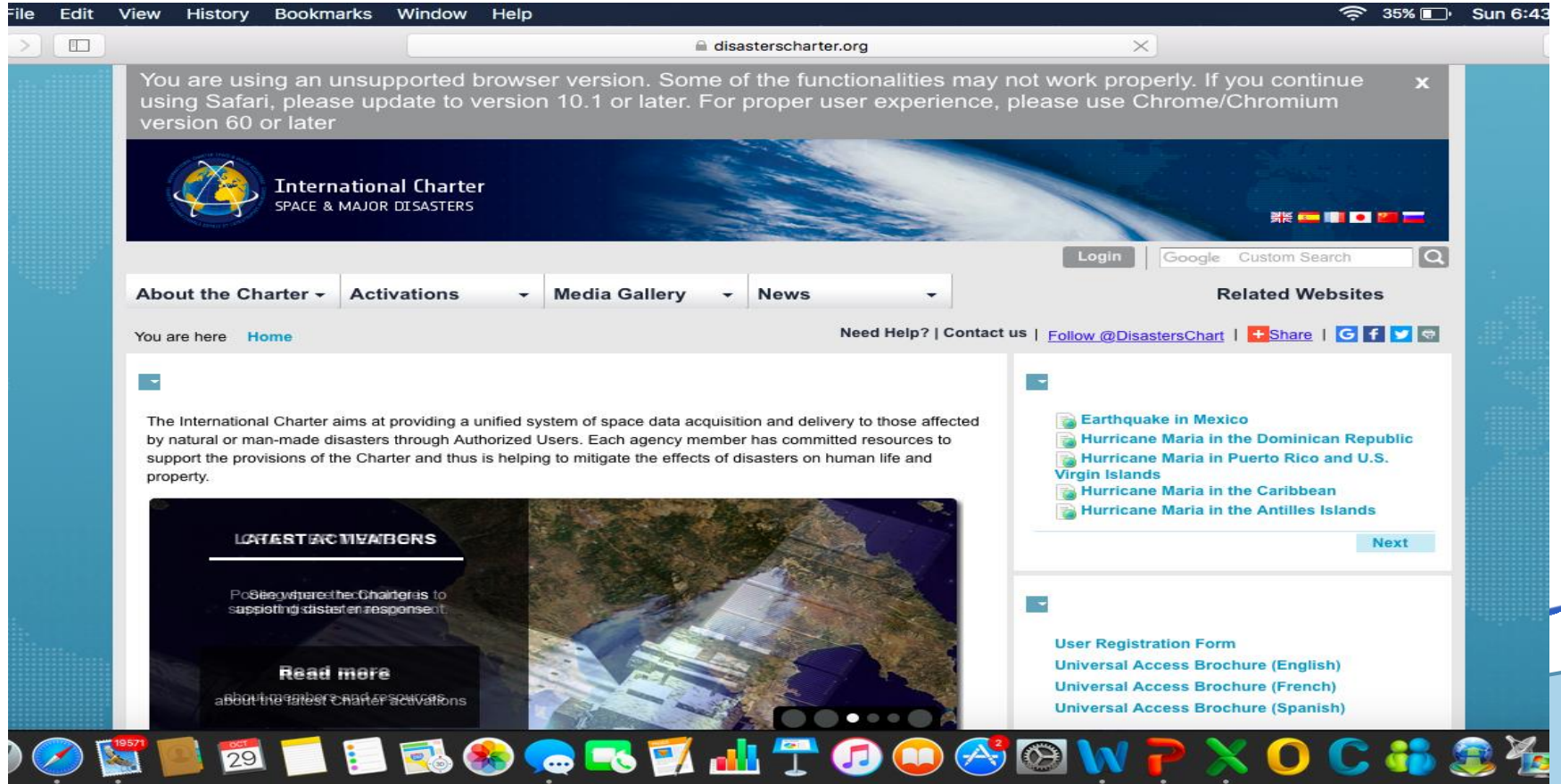
JAXA



GIZ



AIT



The screenshot shows a web browser window displaying the homepage of the International Charter on Disaster. The browser's address bar shows the URL `disasterscharter.org`. A notification at the top of the page states: "You are using an unsupported browser version. Some of the functionalities may not work properly. If you continue using Safari, please update to version 10.1 or later. For proper user experience, please use Chrome/Chromium version 60 or later." The website header features the LAPAN logo and the text "International Charter SPACE & MAJOR DISASTERS" against a background of Earth from space. Navigation menus include "About the Charter", "Activations", "Media Gallery", and "News". A search bar with "Google Custom Search" and a "Login" button are also present. The main content area includes a paragraph about the charter's mission, a "LATEST ACTIVATIONS" section with a "Read more" link, and a "Related Websites" sidebar listing recent events like "Earthquake in Mexico" and "Hurricane Maria in the Dominican Republic". The bottom of the image shows a macOS dock with various application icons.



The screenshot shows the UN-SPIDER Knowledge Portal website. The header includes the United Nations logo, the text "UNITED NATIONS Office for Outer Space Affairs", and the "UN-SPIDER KNOWLEDGE PORTAL" title. Below the title is the tagline "Space-based information for Disaster Management and Emergency Response" and a search bar. A navigation menu contains links for Home, Space Application, Risks & Disasters, Links & Resources, Advisory Support, Network, Projects, News & Events, and About Us. The main content area features a large satellite image of a forest fire with the heading "Booklet on Forest Fires by LAPAN". Below this is a paragraph: "The Indonesian National Institute of Aeronautics and Space (LAPAN), one of UN-SPIDER's Regional Support Offices, has published the booklet entitled 'Lessons Learnt from Forest and Land Fires in Indonesia'. Read more about it...". A section titled "Explore the Knowledge Portal" contains four columns of text and images: "How can space technology be applied in case of disaster and risk management?" (with a black image), "Where can I access satellite data, products and other resources?" (with a satellite map image), "Who are the users of space technology in disaster and risk management?" (with a group of people image), and "Which services can UN-SPIDER offer to Member States?" (with a person image).

English Español Français

UN-SPIDER KNOWLEDGE PORTAL

Space-based information for Disaster Management and Emergency Response

Search...

Home Space Application Risks & Disasters Links & Resources Advisory Support Network Projects News & Events About Us

Booklet on Forest Fires by LAPAN

The Indonesian National Institute of Aeronautics and Space (LAPAN), one of UN-SPIDER's Regional Support Offices, has published the booklet entitled "Lessons Learnt from Forest and Land Fires in Indonesia". Read more about it...

Explore the Knowledge Portal

How can space technology be applied in case of disaster and risk management?

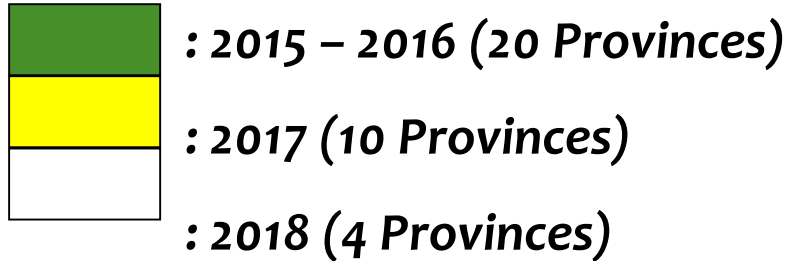
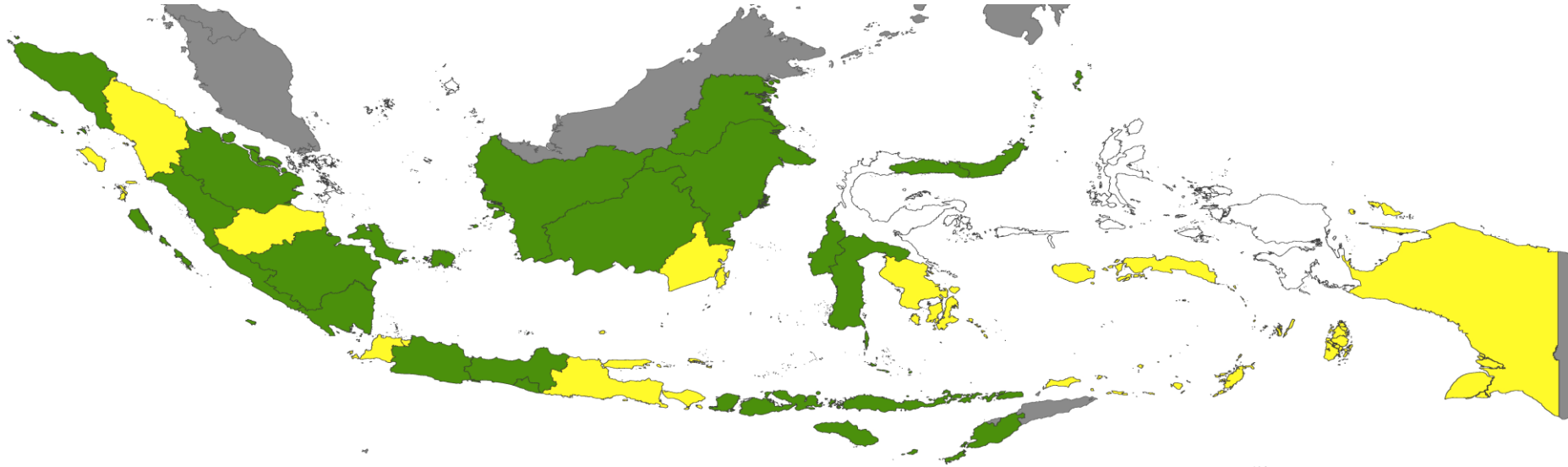
Where can I access satellite data, products and other resources?

Who are the users of space technology in disaster and risk management?

Which services can UN-SPIDER offer to Member States?

sources

Province level collaborations



Province Monitoring Systems

General:

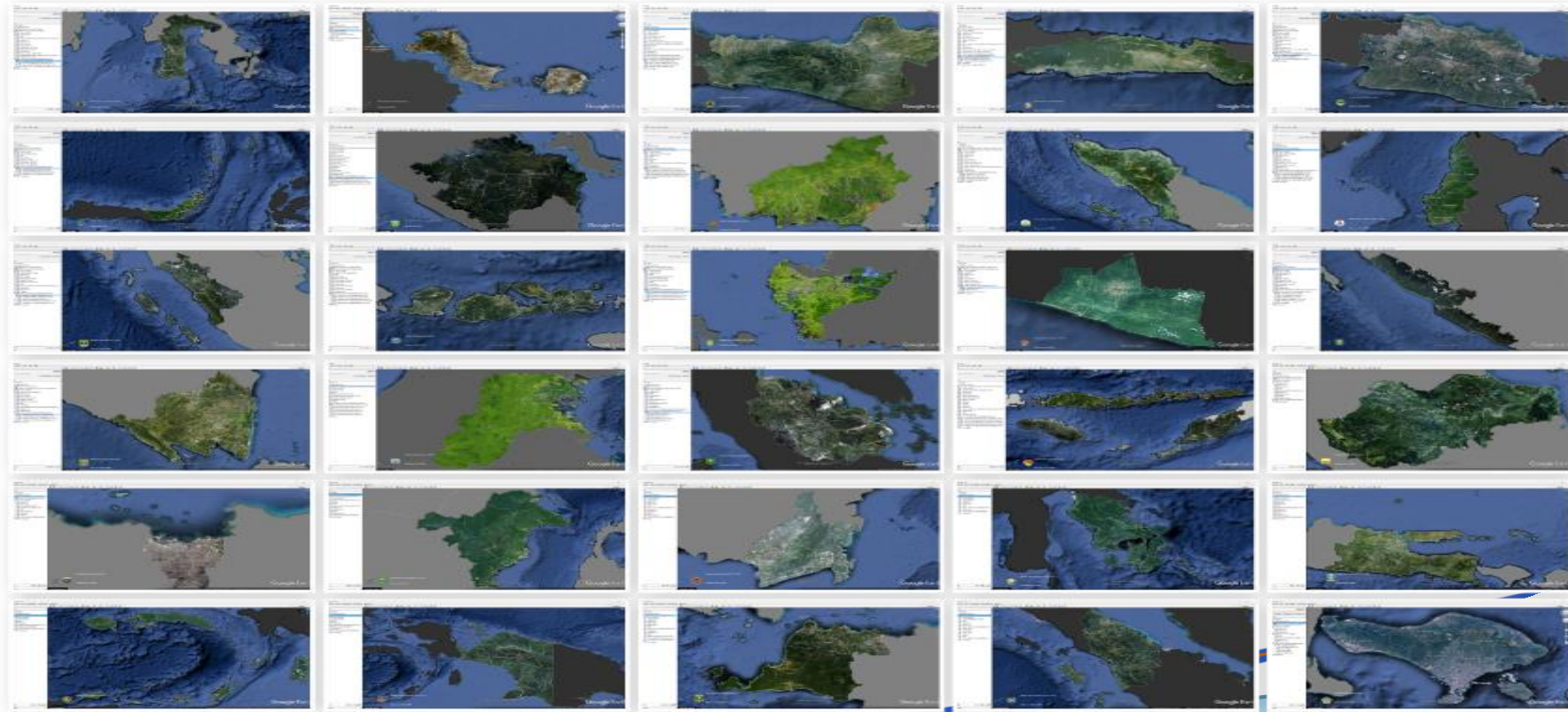
- Based on Google Earth
- Data and informations from LAPAN.
- Can be integrated to other thematic data e.g. people distribution

Contents:

- Landsat-8 Mosaics
- SPOT-6/7 Mosaics
- Very high remote sensing data
- Deforestation (yearly update)
- Paddy Growth Monitoring (8-days update)
- Potential Fishing ground (daily update)
- Mangrove (yearly update)



Collaboration with 30 provinces (Prototypes of the Provincial Earth Observation System)



Capacity building for Province Staffs



- Remote sensing activities at LAPAN are from satellite technology development, providing remote sensing data, application, and providing products deriving from remote sensing data
- The collaboration and capacity building program will strengthening the remote sensing human resources in Indonesia
- Now, LAPAN try to support SDGs using the remote sensing activities



Thank you

www.pusfatja.lapan.go.id