



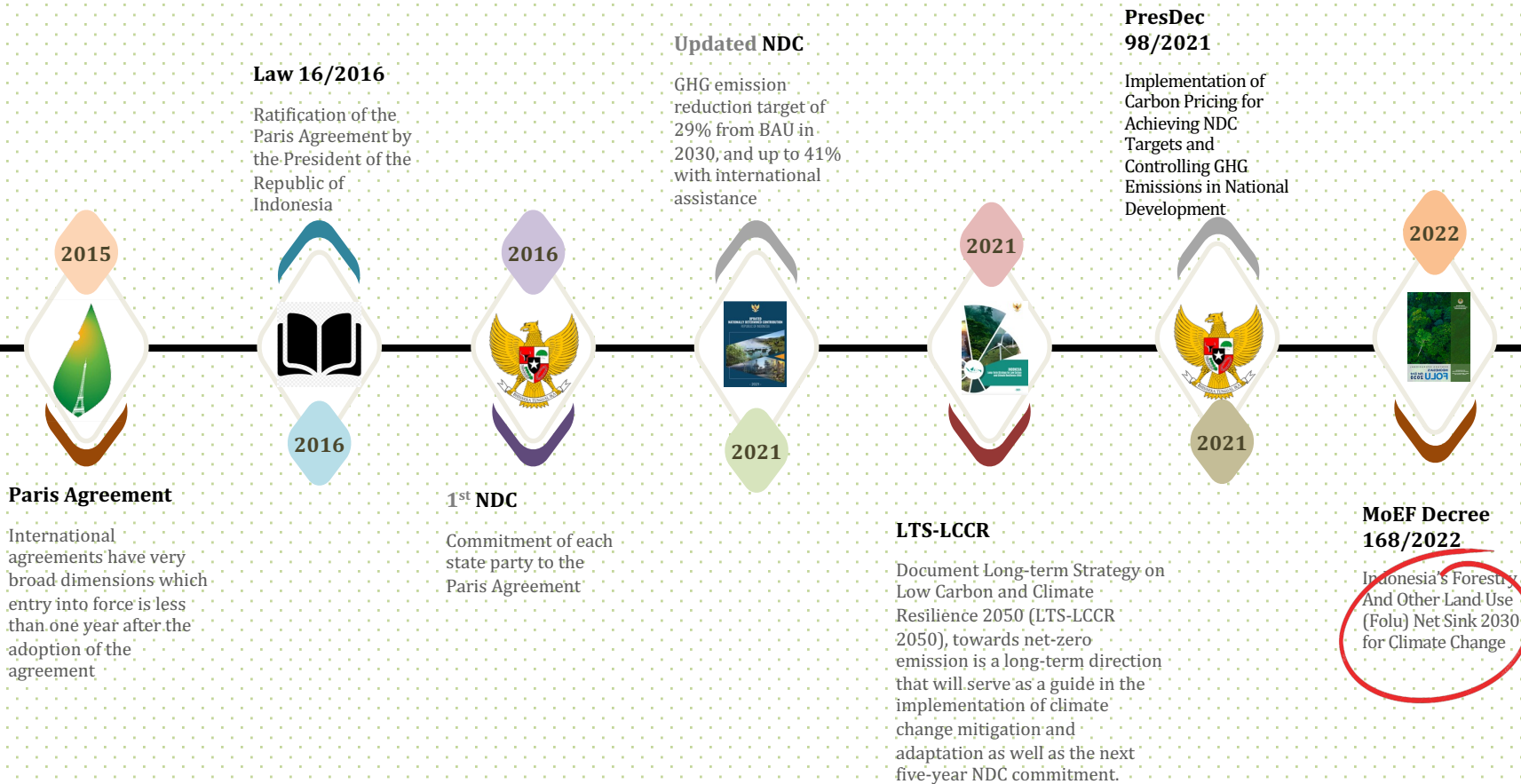
Location : *Londerang, Jambi*
15 May 2022

*International Workshop
on Land Cover/Land Use Changes, Forestry,
and Agriculture in South/Southeast Asia*

Phnom Penh, 8-10 Aug 2022

Role of Forest and Land Fire Management on Indonesia's FOLU Net Sink 2030

Israr Albar
Directorate of Forest and Land Fire Management
Ministry of Environment and Forestry, Indonesia



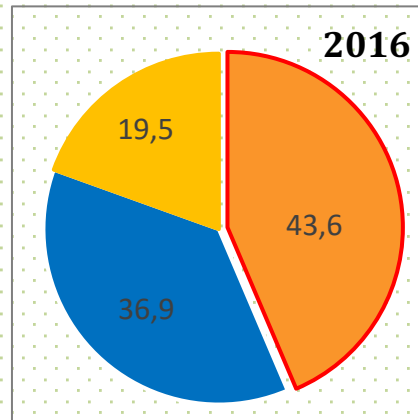
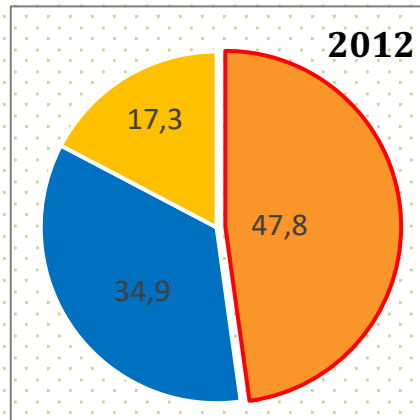
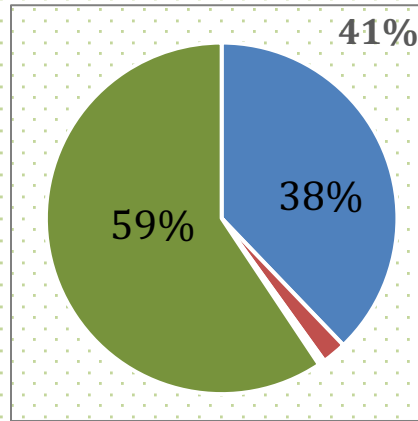
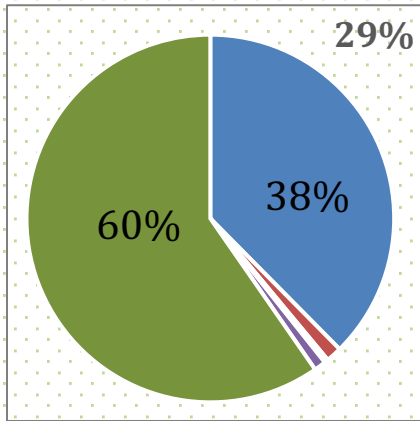


Sector	2010	2030			2030 Reduction			
		MTonCO2e			MTonCO2e		% of Total BAU	
		BAU	CM1	CM2	CM1	CM2	CM1	CM2
Energy*	453,2	1.669,0	1.355,0	1.407,0	314,0	441,0	10,9	15,38
Waste	88	296,0	285,0	270,0	11,0	26,0	0,4	0,91
IPPU	36	69,6	66,9	66,4	2,8	3,3	0,1	0,11
Agriculture	110,5	119,7	110,4	115,9	9,3	3,8	0,5	0,13
FOLU**	647	714,0	217,0	68,0	497,0	692,0	17,3	24,13
TOTAL	1334,7	2868,3	2034,2	1927,2	834,0	1166,1	29,1	40,65

*Including fugitive **Including peat fire

CM1 = Counter Measure (*unconditional mitigation scenario*)

CM2 = Counter Measure (*conditional mitigation scenario*)



NDC

FOLU

Energy

BUR-GHG Emission

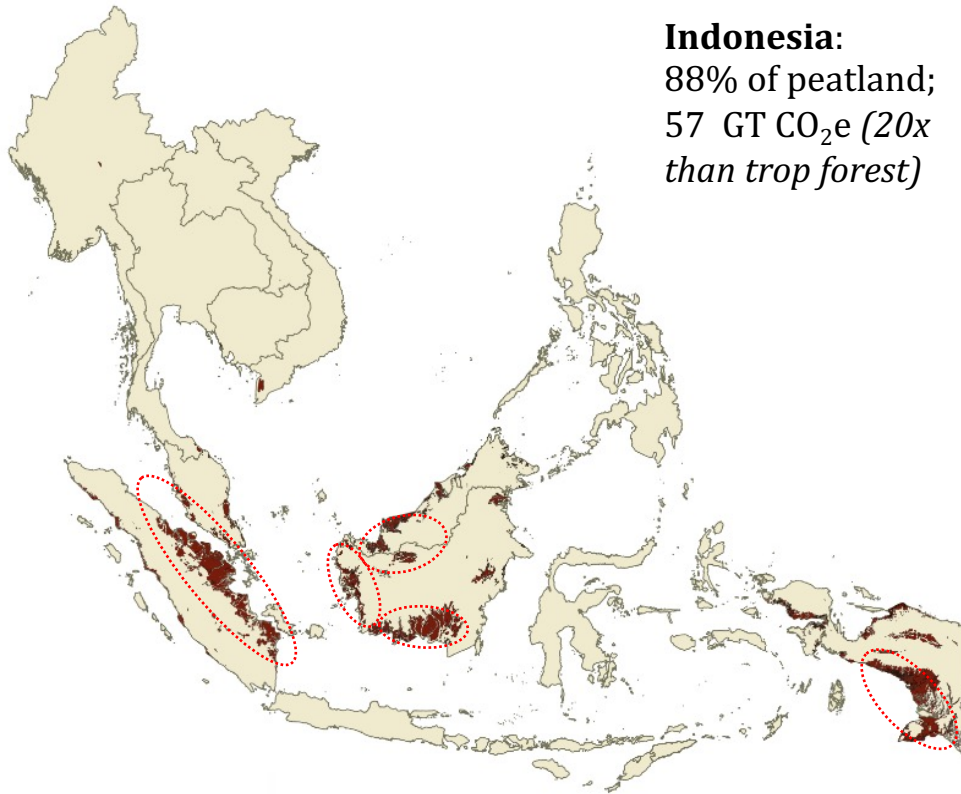
Peat fire

Energy

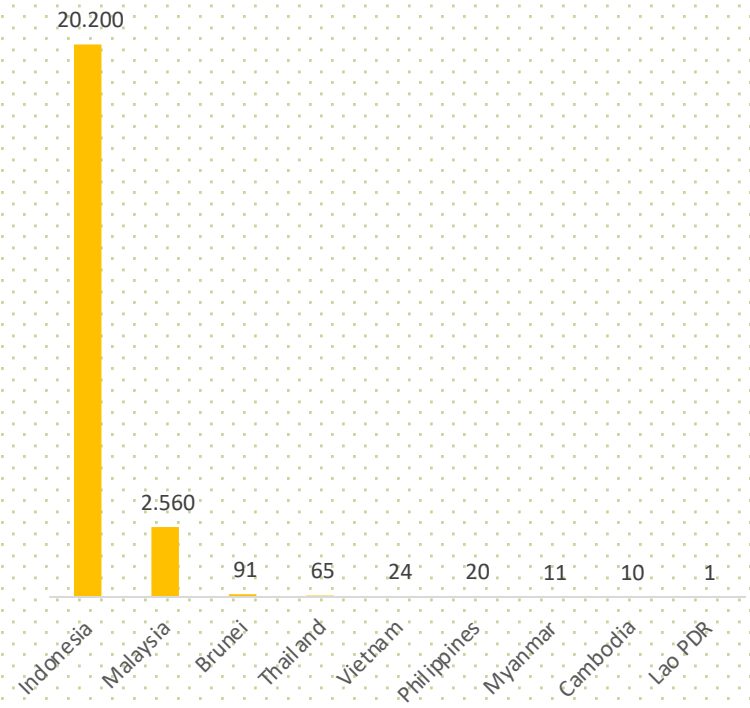
Others

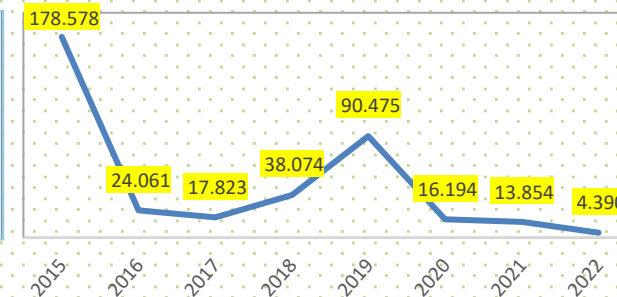
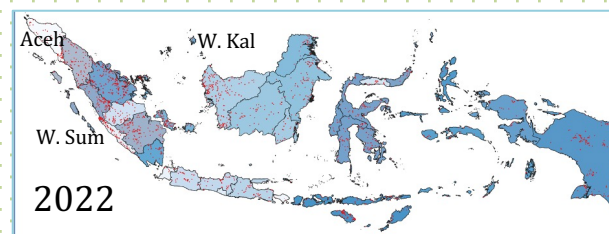
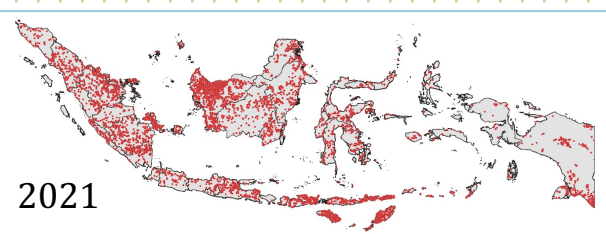
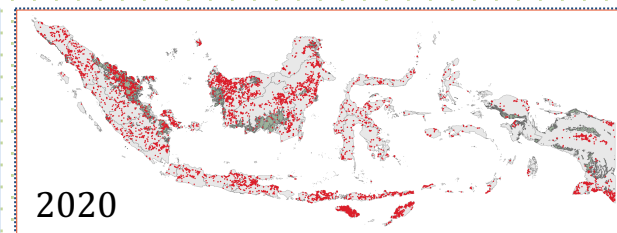
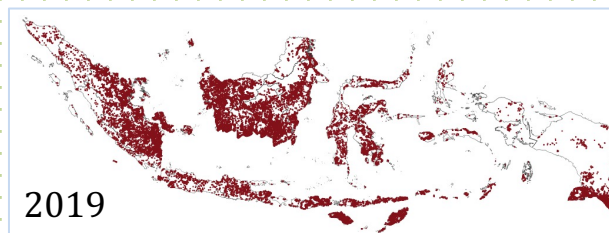
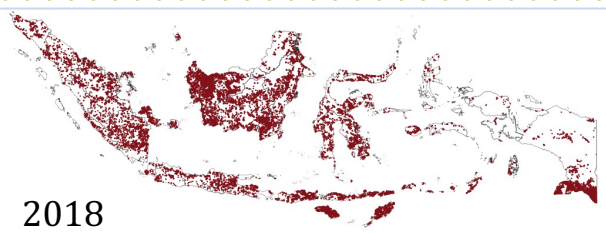
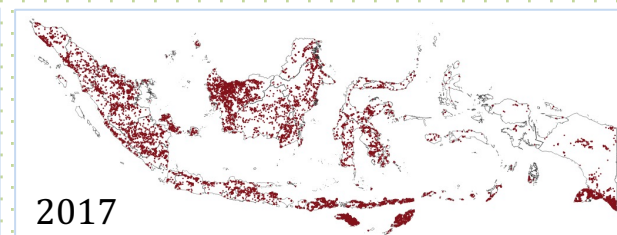
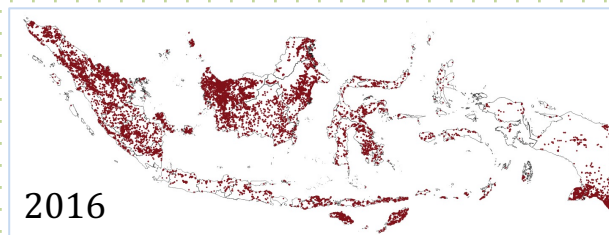
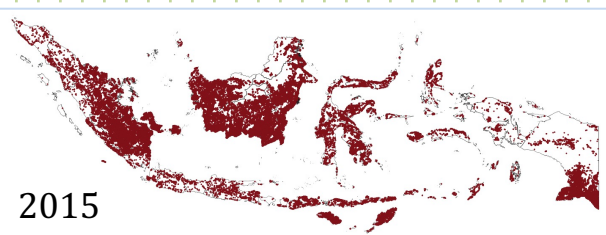
1st Biennial Update Report 20152nd Biennial Update Report 2018

Reducing fires and peat management are the **keys** to reducing emissions from FOLU sector



Indonesia:
88% of peatland;
57 GT CO₂e (20x
than trop forest)

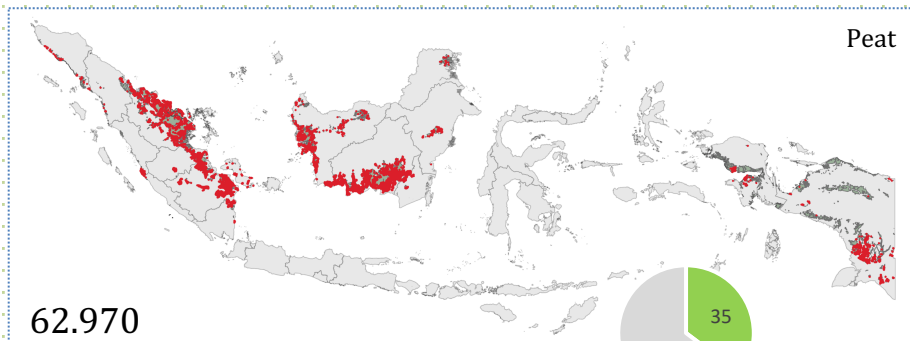
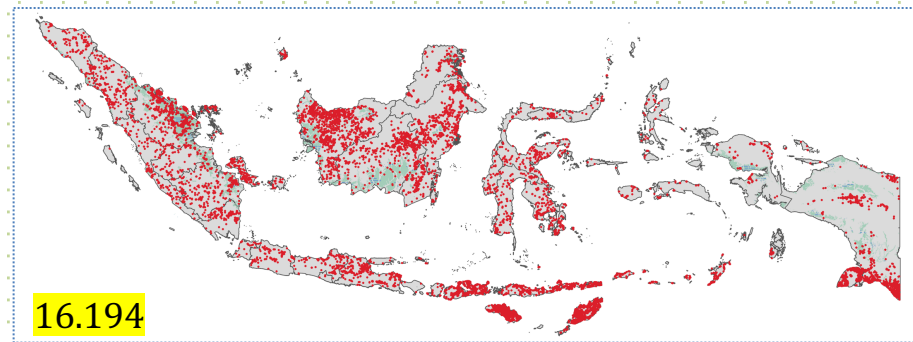
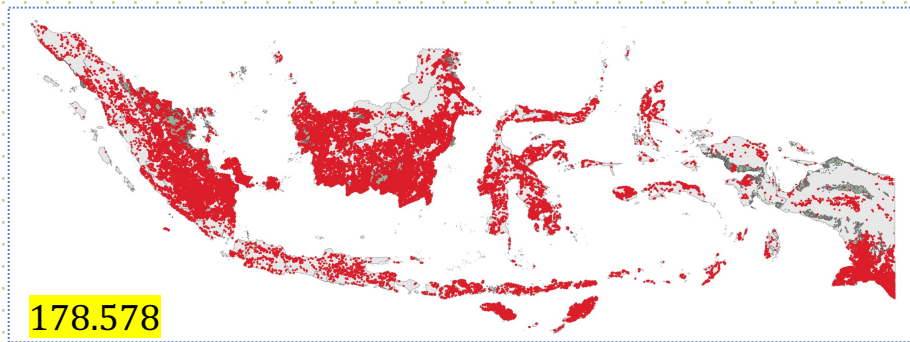




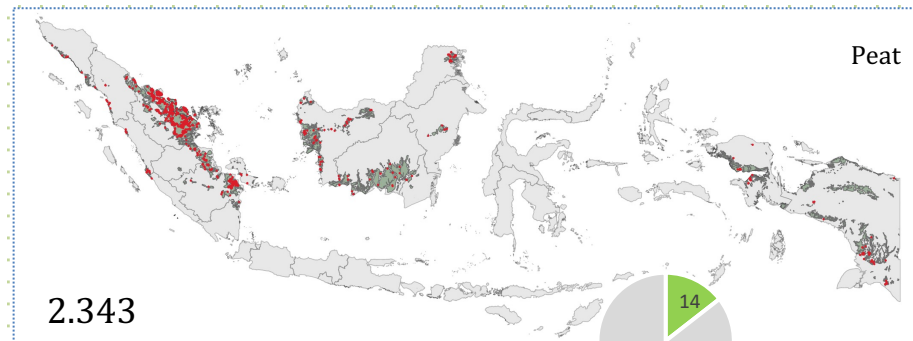
2015 and 2019 the highest active fire detected in Indonesia

as of July 12, 2022

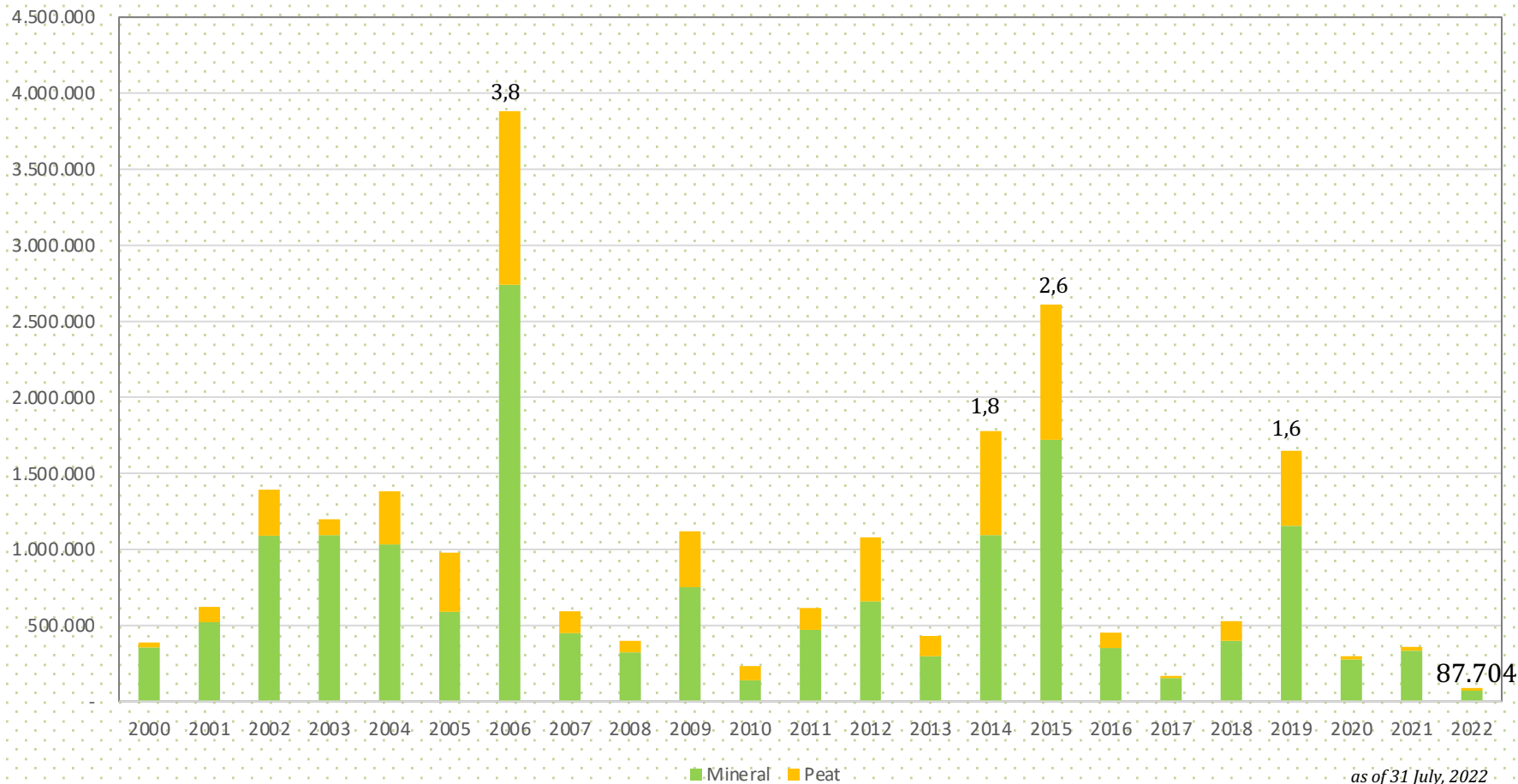
1.537 fire occurrences in **Sumatera** and **Kalimantan** (2022)



2015



2020



PREVENTION

- **Regulations & Strengthening** Coordination
- **Early warning** and **early detection**
- **Integrated Fire Prevention Patrol**
- **Campaign** and capacity building
- Land Clearing **Without Burning** Practices (PLTB)
- **Fire Care Community**
- **Weather Modification** (peat re-wetting)



SUPPRESSION

- **Ground** suppression
- **Joint suppression** (Inter-agencies)
- Air Operation: **Water bombing**, Surveillance



POST FIRE

- **Law Enforcement**
- **Burned area** estimation



1997



NOAA

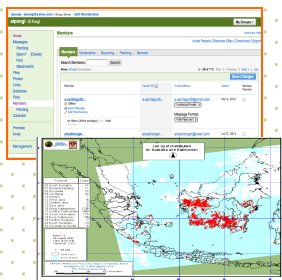
- Ground station Bogor-Jakarta
- Dissemination: radio, fax, email



2001

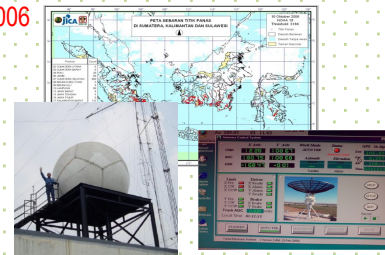
Dissemination :

- Radio
- Fax
- Email
- TV

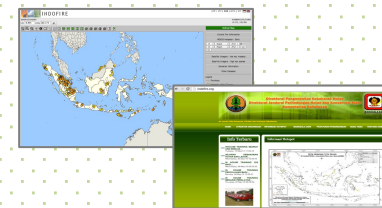


Mailing list Sipongi at yahoo groups

2006

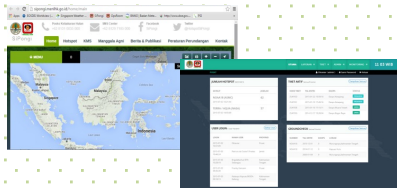
L-X band rooftop (dome)-relay
NOAA, Terra/Aqua hotspot

2009-2011

Collaboration Indonesia–Australia
www.indofire.org

2014-2016

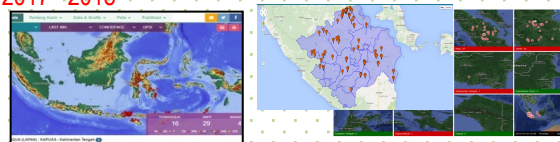
Re-launch Sipongi

www.sipongi.menlhk.go.id

Integration Sipongi and KMS

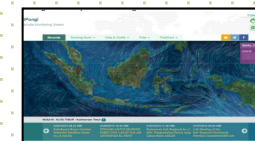
- Fully automatic
- Dual Interface (Public and Internal)
- NOAA only
- Social media (Facebook and twitter)

2017– 2018



- Hotspot (NASA and LAPAN) Terra Aqua, NOAA and SNPP
- Cluster hotspot → for ground check
- Update every 30 minute
- Social media (Instagram, Youtube)

2019

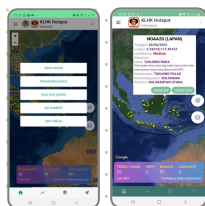


- Landsat hotspot from LAPAN and NASA
- Mobile app (Android)
- SMS blast (with Ministry of Informatics)
- Online based Reporting (private sector)

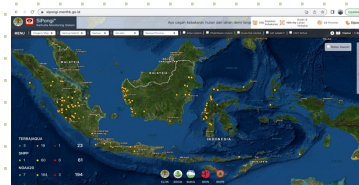
2020



- Refresh dashboard,
- Added GC direction on Mobile app (Android)



2021



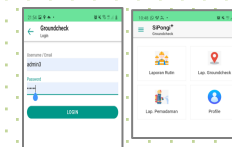
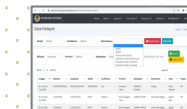
- Sipongi+
- Weather forecasts, peat water level, LFC
- Mobile app (IOS)



2022



- Refresh Dashboard
- Shp automatic
- Online Based Report (GC and Suppression)



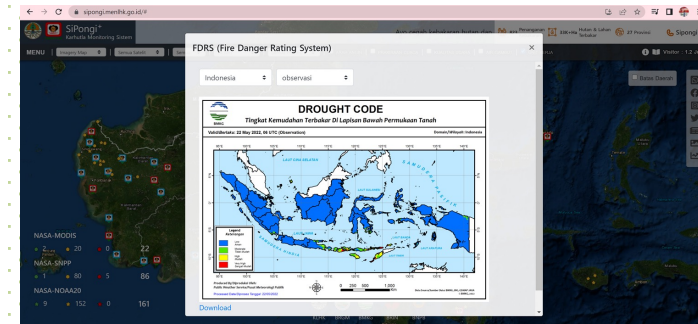


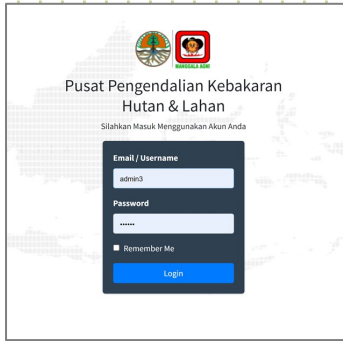
Data and Information in SiPongi Public :

- Hotspot
- Wind direction
- Weather forecasting
- Air quality
- Peat water level
- LFC (Daops) Location
- Burnt area and emission
- Regulation
- News
- **Private Sector Reporting**

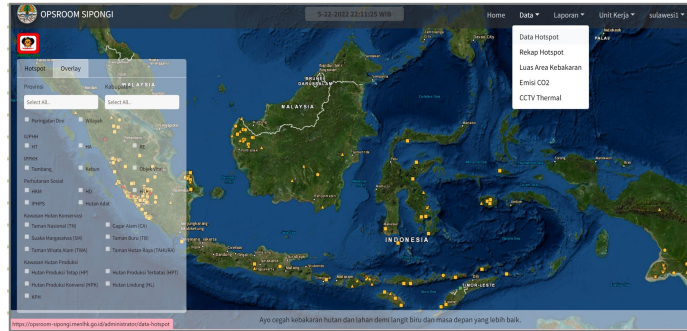
**Private Sector
Online Reporting** →
Registration needed

Fire Danger Rating
System → Data from
BMKG (Indonesian
Meteorology,
Climatology and
Geophysics Agency)

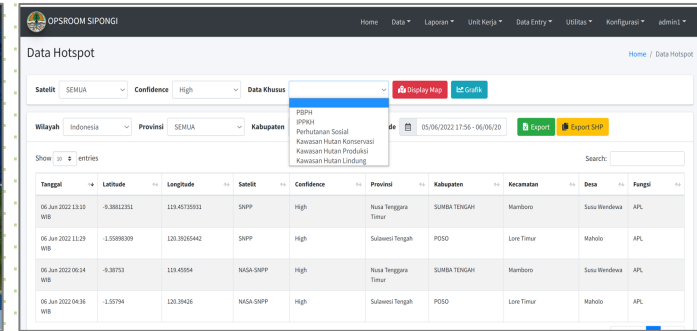




Internal MoEF only
Registration needed



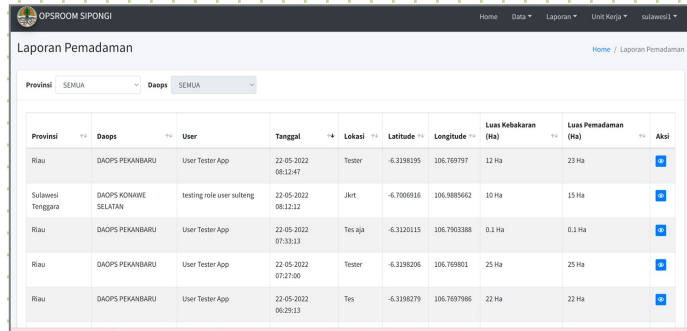
Overlay map with many function



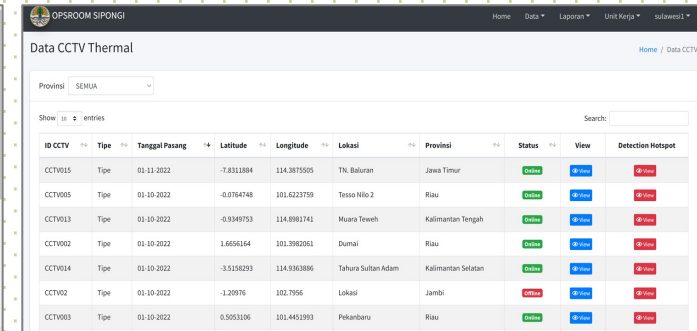
Hotspot based on land cover, etc and automatic shp

“OPSRROOM SIPONGI”

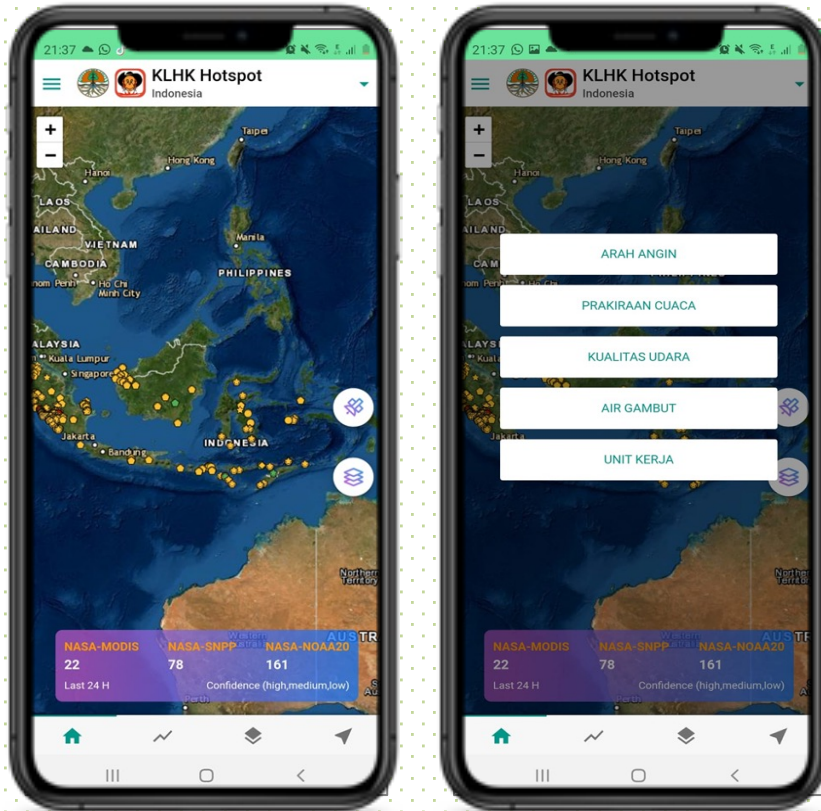
- 9 leveling user (Admin, Operator, User)
- Manage data and information in SiPongi Public
- Switch the resource (LAPAN/NASA)
- Instant reporting from all of data in internal interface
- Early warning SMS Blast
- Data stock-tacking



Groundcheck and Suppression Report

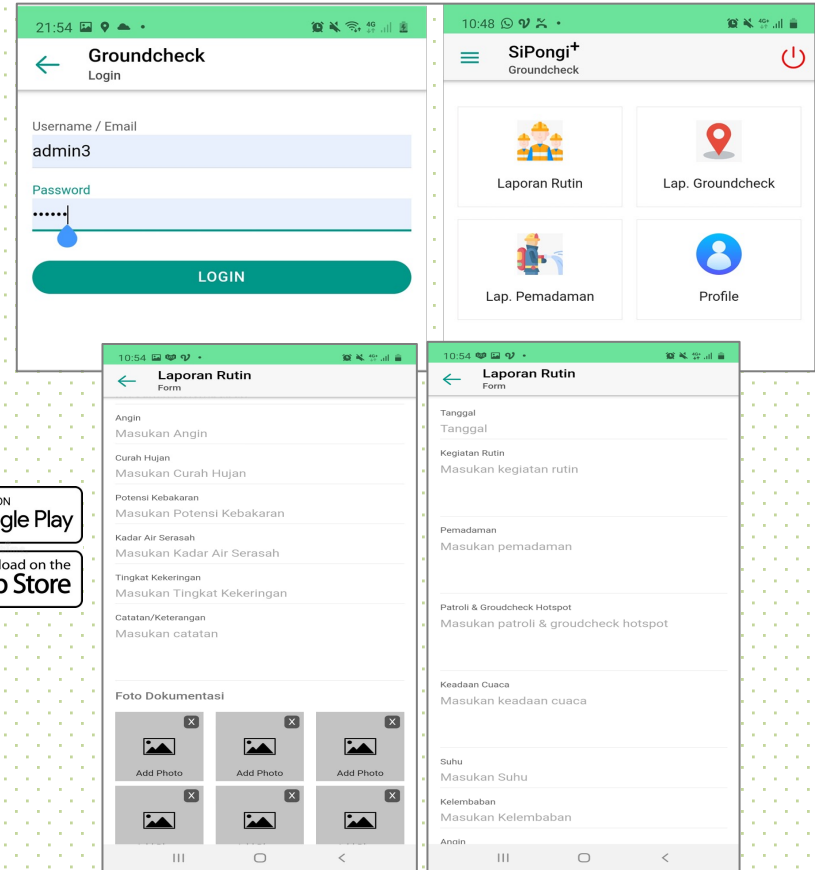


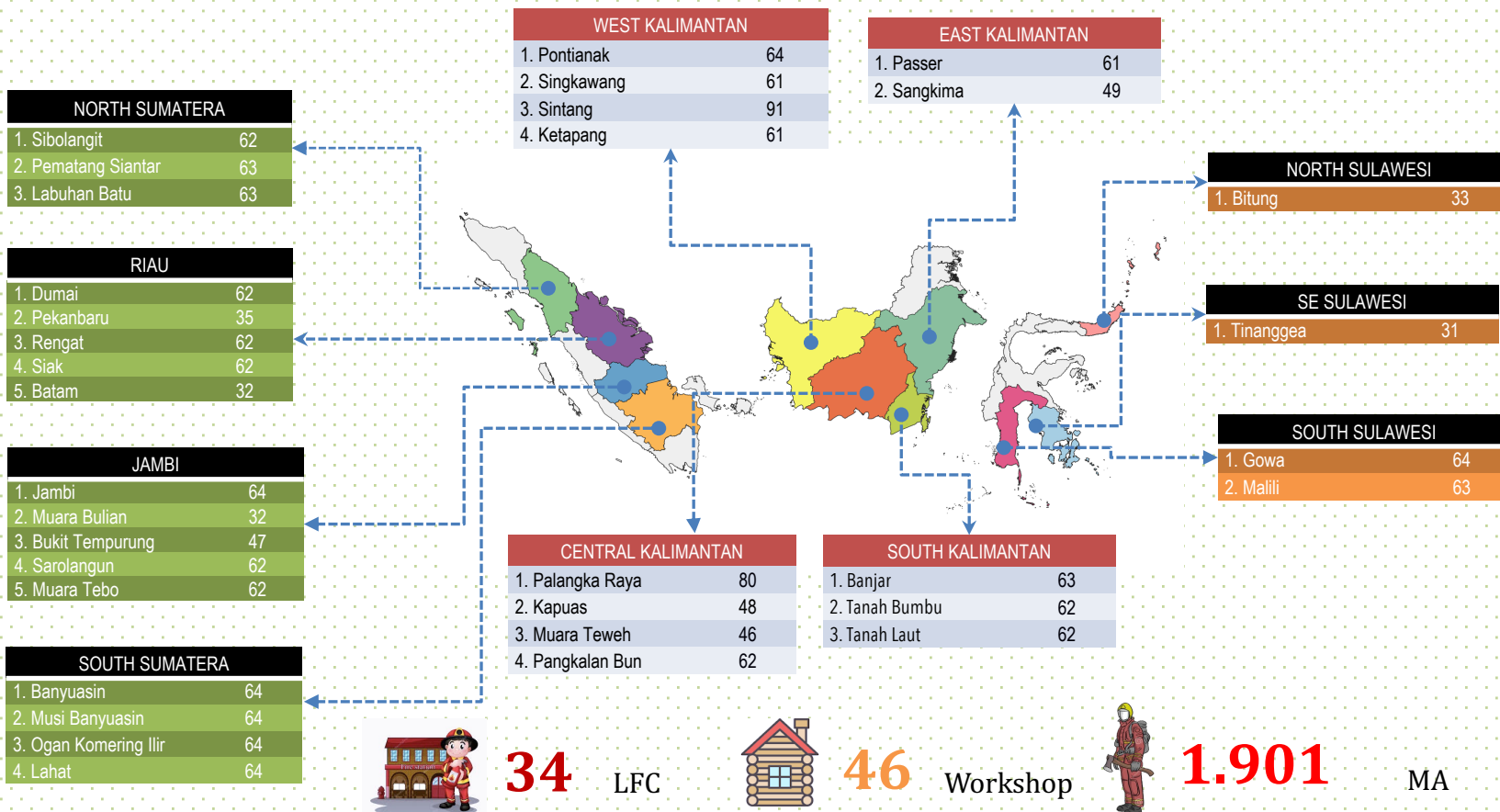
CCTV thermal data from 15 locations in Indonesia



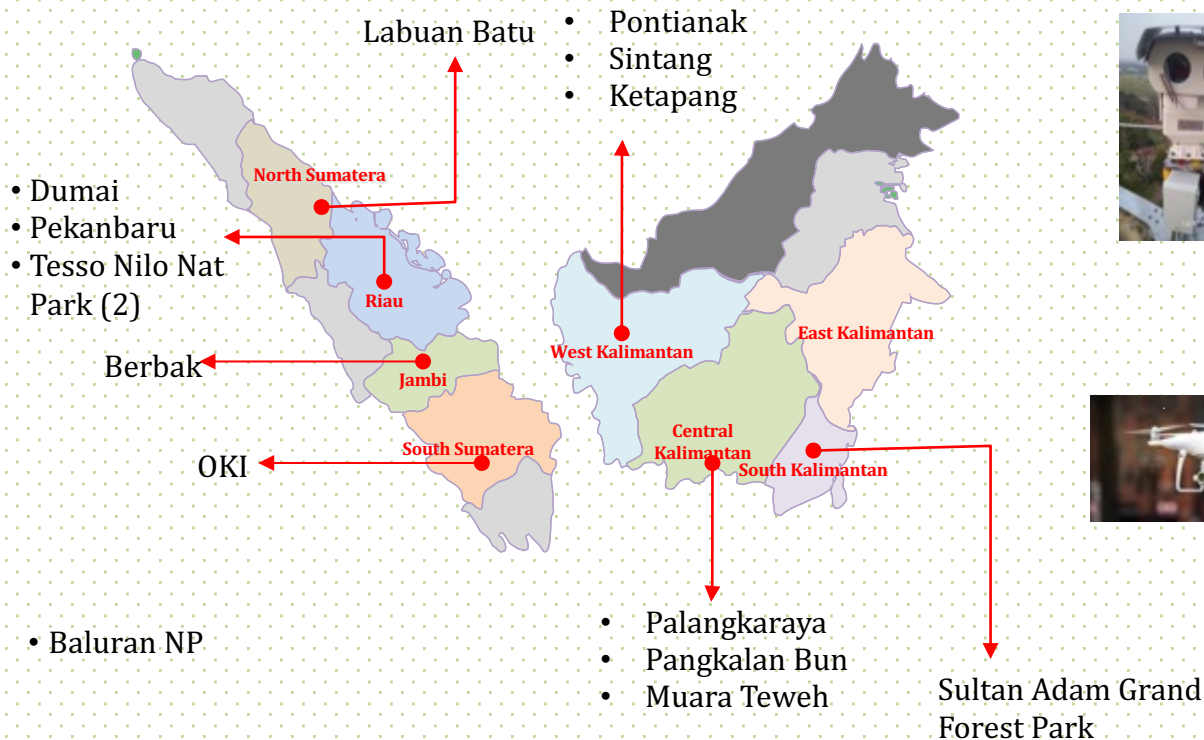
Basically have the same Data and Information with SiPongi Web

Groundchecking and Suppression Reporting → personnel only-registration needed



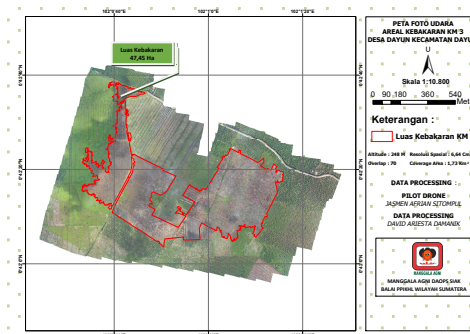


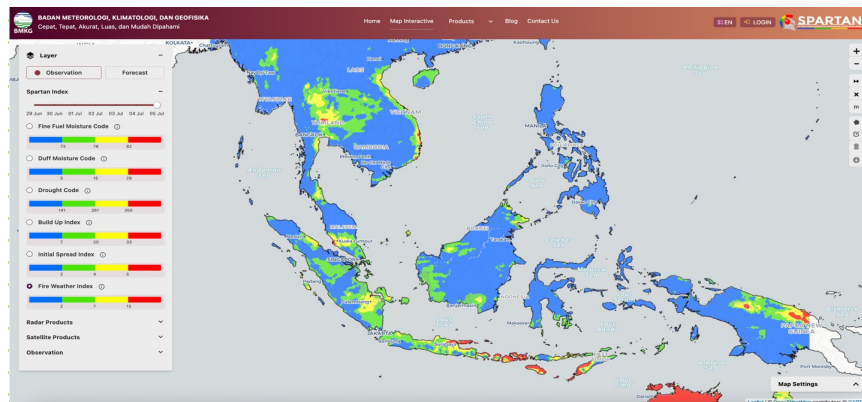
Thermal Camera & Drone



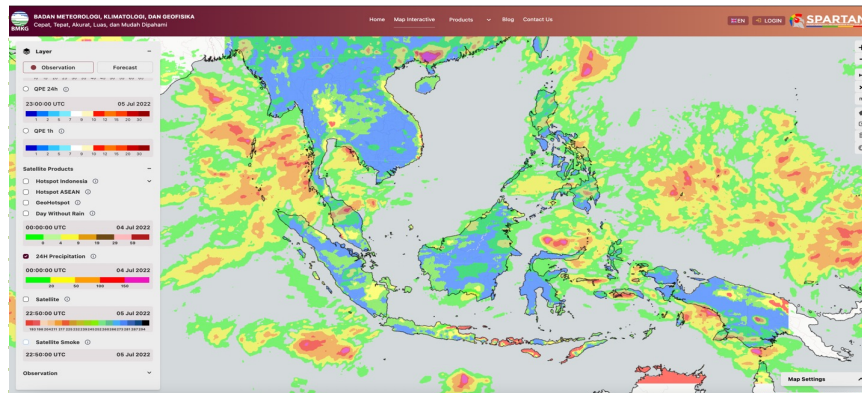
Vis IMG

IR IMG

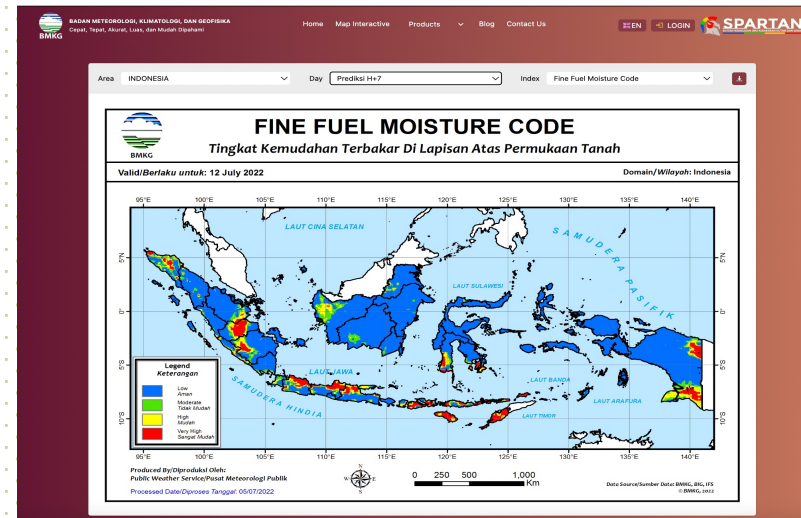

 BA estimation
 Daops Siak, Riau



FWI Observation for ASEAN



24H Precipitation



FFMC Prediction (D+7)

Risk assessment strategies for early detection of ASEAN regions called **SPARTAN** (Integrated and Interactive Forest Fire Warning System). Website: spartan.bmkg.go.id

To build and validate low-cost haze monitoring sensors that can be deployed in remote rural areas to warn rural citizens when too much haze is present.

<https://canarin.net/seahazemon/map.html>

Thailand : 44 nodes

Philippines : 7 nodes

Indonesia : 3 nodes

Laos : 2 nodes

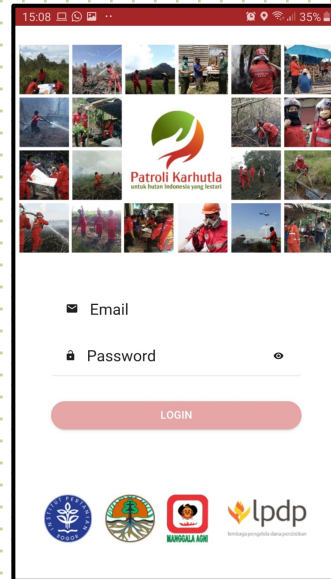


System Monitoring and Reporting Technology for Fire Prevention Patrol (**SMART Patrol Information System** or **SIPP Karhutla**) launched on 29 June 2022

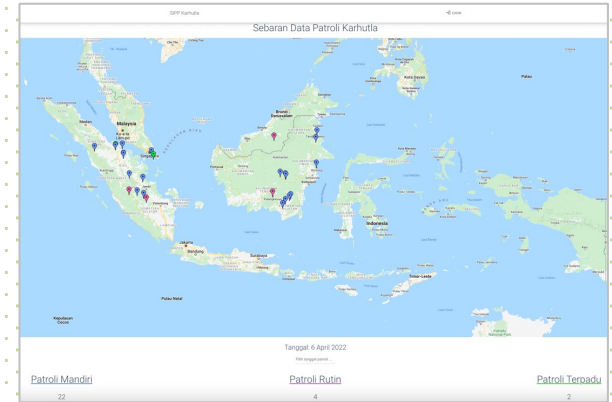
This system developed by IPB University-Ministry of Environment and Forestry



SIPP Karhutla is a computer-based system that is developed in order to manage data and information of patrol activities to support forest and land fire management activities.



Mobile application is used by patrol teams to **collect data** during patrol activities.



Website application has a main function to **manage data/information** and has a function as managerial dashboard

Daily Hotspot Monitoring (MODIS)
(28/3/2022)



South Pesisir Regency, West Sumatera

Ground Check (29/3/2022)

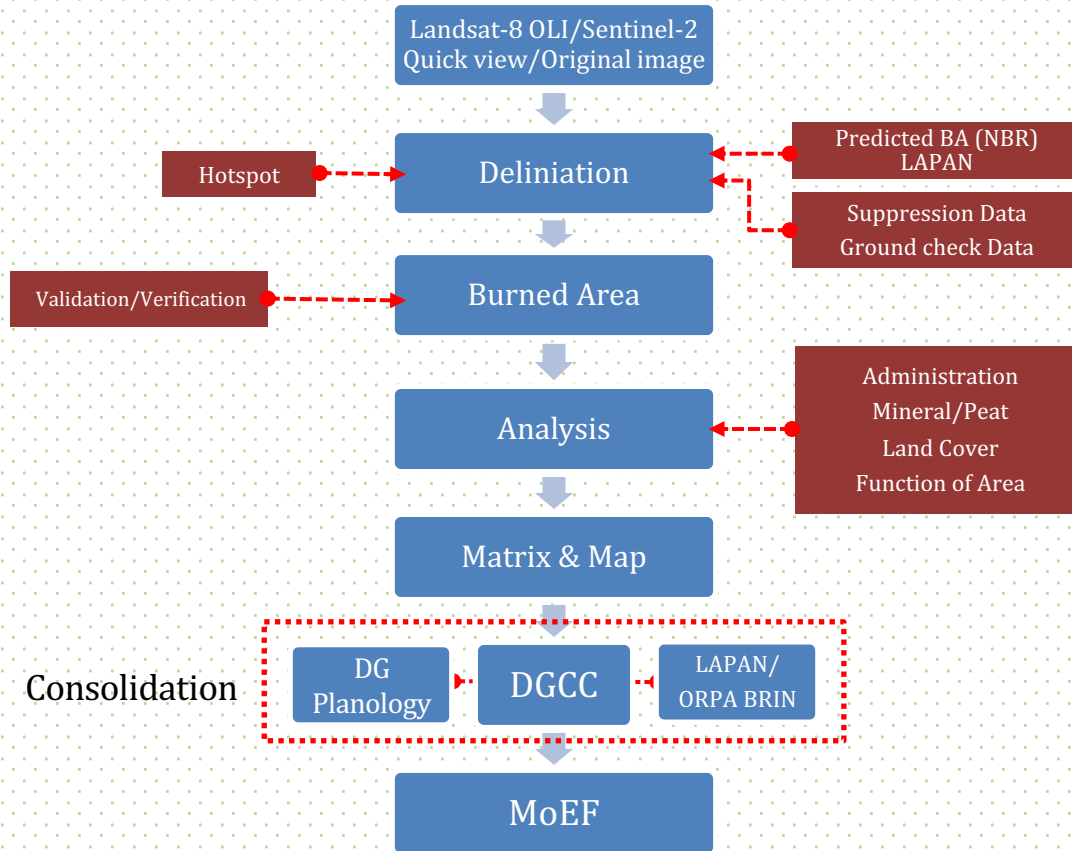


Suppression by Manggala Fire Brigades and stakeholders (30/3-2/4/2022)



Burned area estimation (Landsat/Sentinel) (11/4/2022)





The level of accuracy of the interpretation and delineation of areas forest & land fires are grouped into categories:

H

- Satellite image
- Hotspot
- Suppression coordinate or ground check coordinate

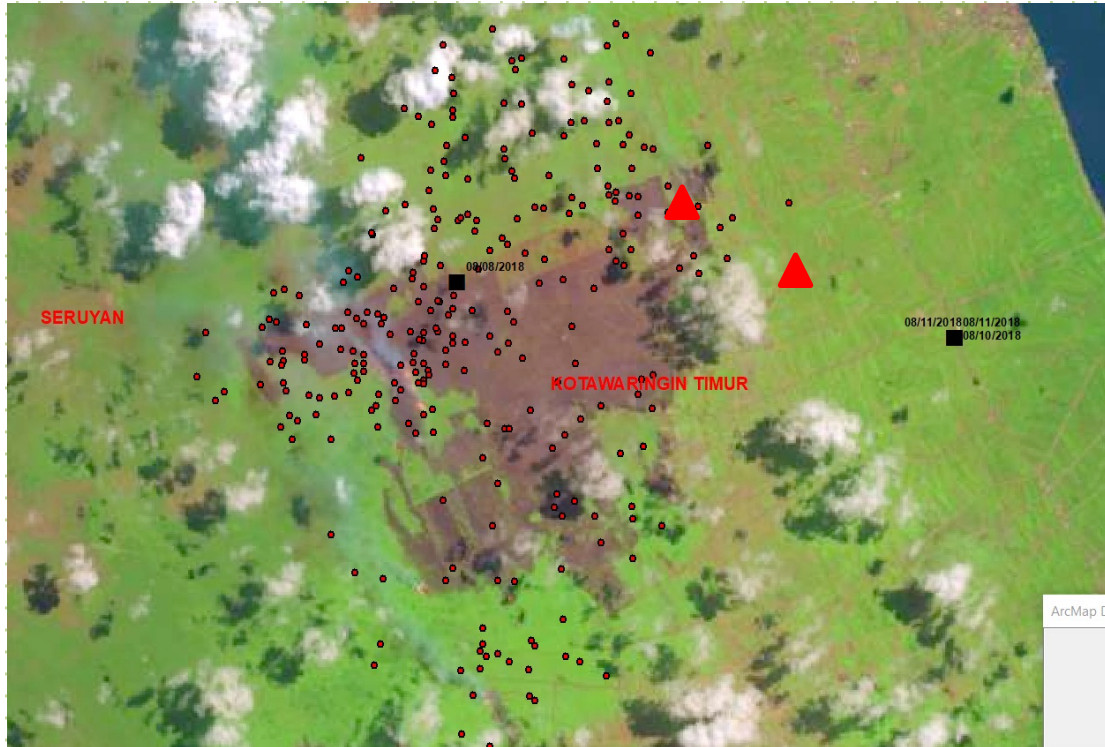
M

- Satellite image
- Hotspot

L

- Satellite image

The categories **H** and **M** are taken into account in the burned area estimation



- Image ✓
- Hotspot ✓
- Suppression Coordinate ✓
- Fire ✓

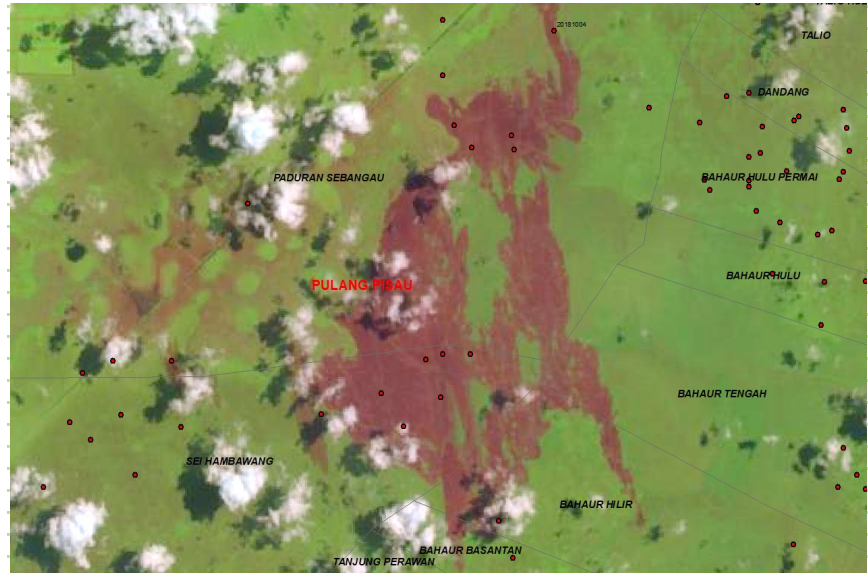
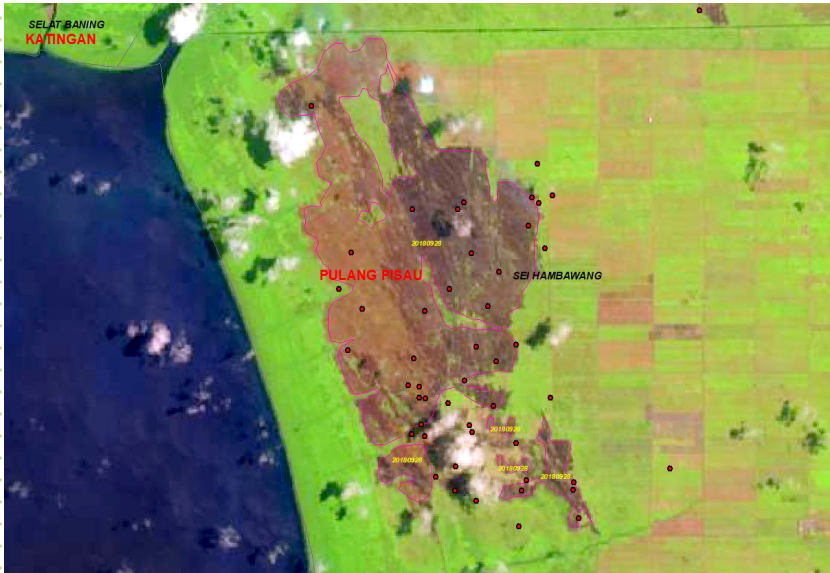


Image ✓

● Hotspot ✓

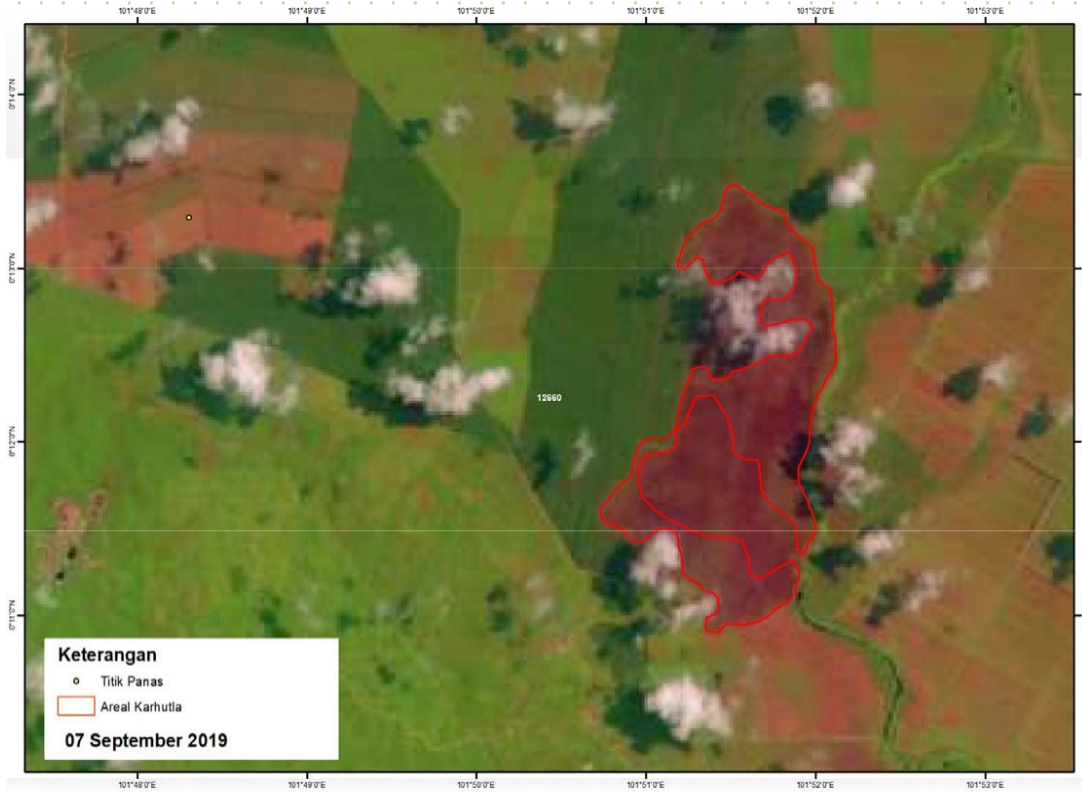


Image ✓



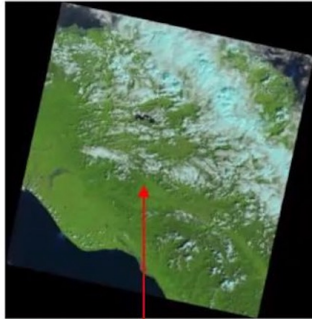
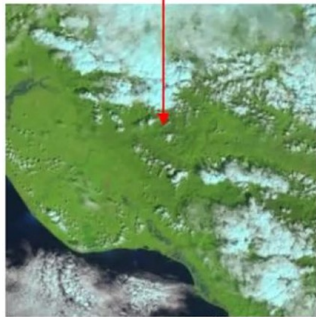
Sentinel-2
10 August 2021

Nusa Tenggara Prov



Sentinel-2
25 August 2021

Image ✓
 ● Hotspot ✓
 🔥 Fire ✓

6 JAN (L9)**14 JAN (L8)****22 JAN (L9)****30 JAN (L8)****9 JAN (S2B)****14 JAN (S2A)****24 JAN (S2A)****29 JAN (S2B)**



- Enhancing SiPongi KMS Capacity
- Integration SMART Patrol to SiPongi KMS
- Exchange knowledge among SEA National Monitoring Center
- Developing semi/automation of burned area estimation
- Exchange knowledge and information among experts and practical on fire management in South East Asia.
- Collaboration on air quality data collection (Thailand, Malaysia, Indonesia) through SEA-Hazemon
- Involvement of scientists and researchers from all partners provides opportunities for interactions improving research and technical competencies.



MANGGALA AGNI

Directorate of Land and Forest Fire Management

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Jl. Jend. Gatot Subroto, Jakarta 10270



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