

INDONESIAN PEAT FIRES AND EMISSION REDUCTION THROUGH PREVENTION ACTIVITIES

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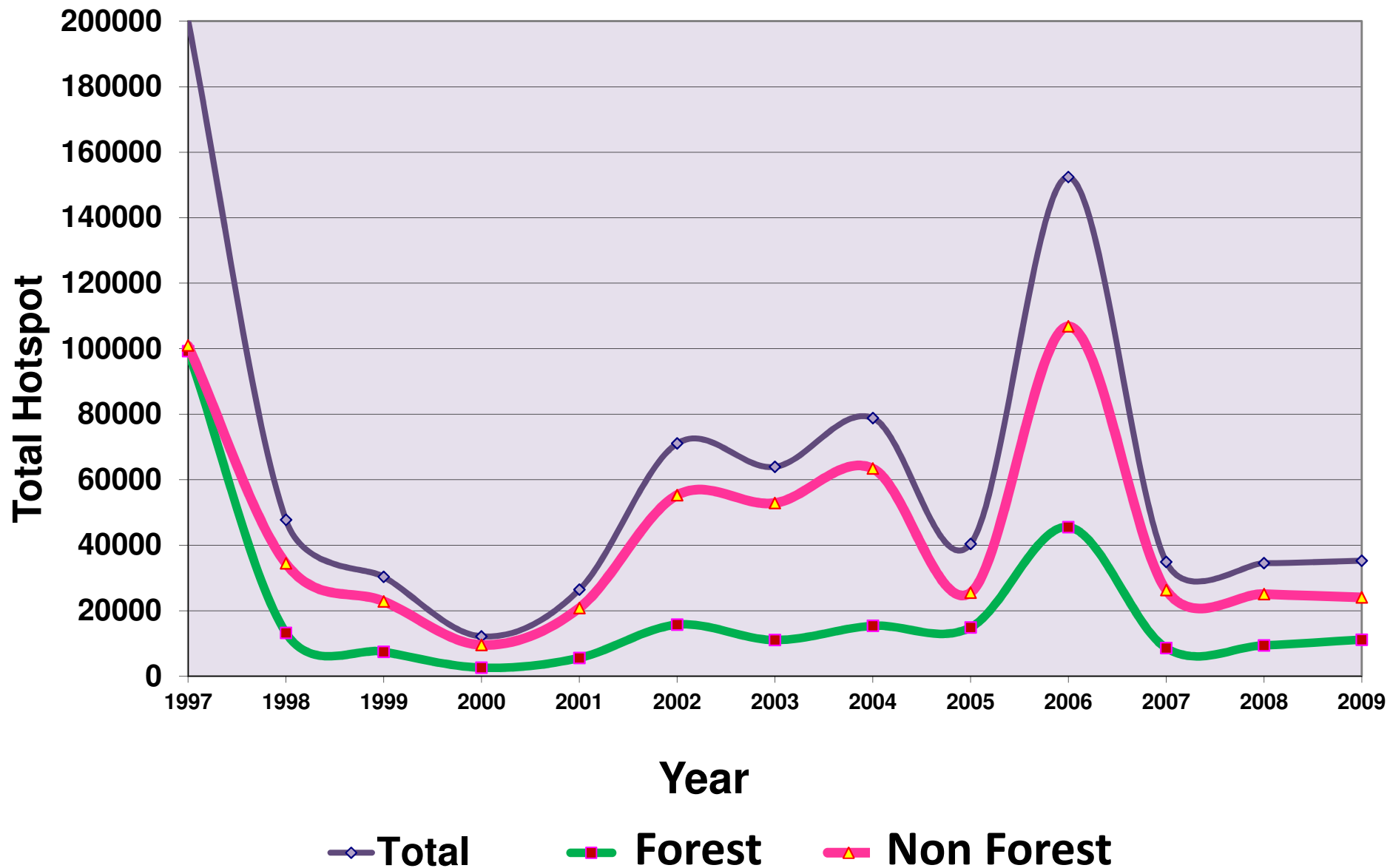


**FOREST FIRE LABORATORY
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INDONESIA**

INDONESIAN FOREST FIRES

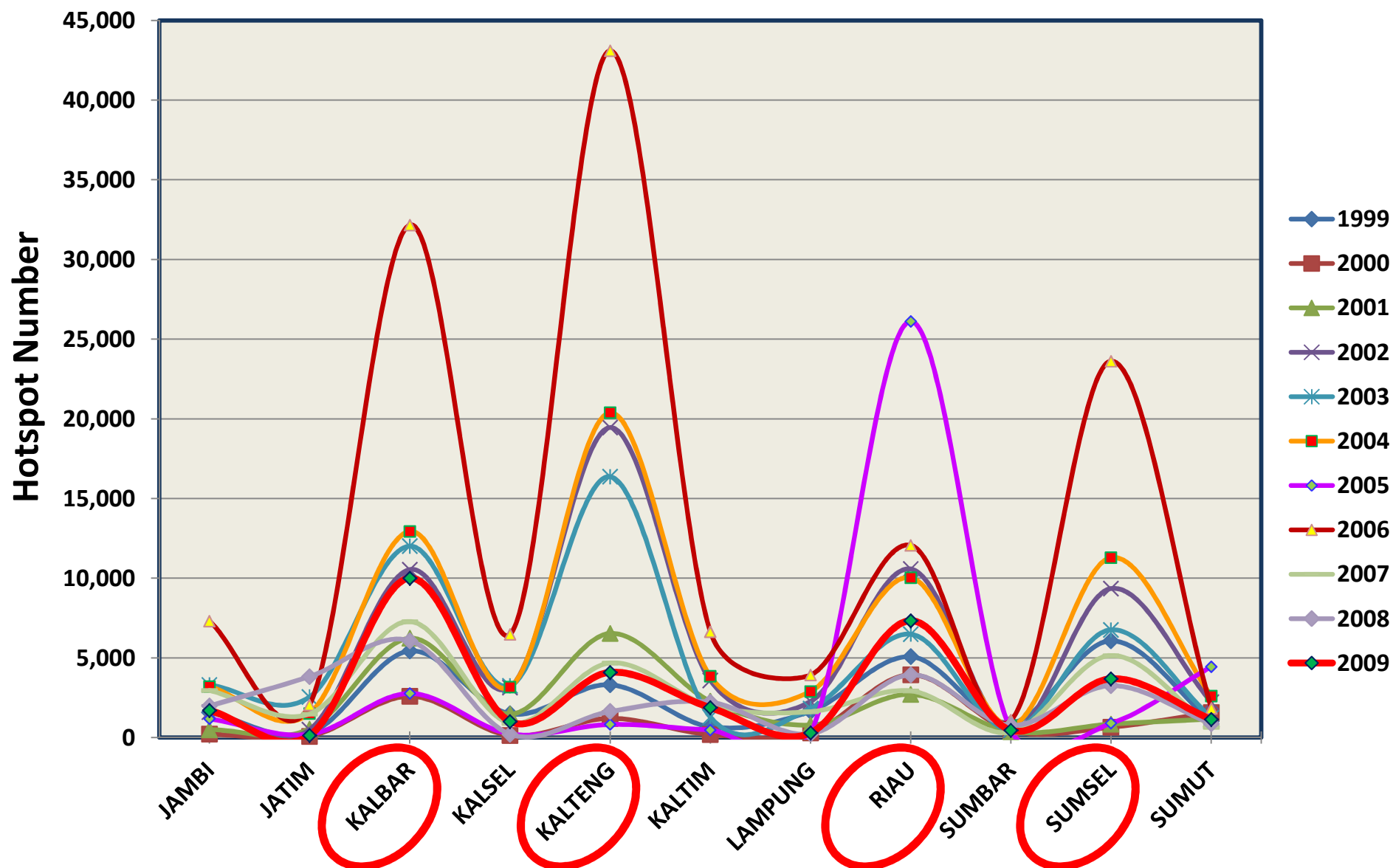
No.	Year	Remarks (ha)
1	15,510 BC-1650 AD	Firstly recognized in East Kalimantan
2	1877	Recorded for the first time
3	1915	80,000
4	1982/1983	3,600,000
5	1987	66,000
6	1991	500,000
7	1994	5,110,000
8	1997/1998	10-11,000,000
9	2006	8,000,000

Forest Fires 1997 - 2009



Highest Distribution of Hotspots

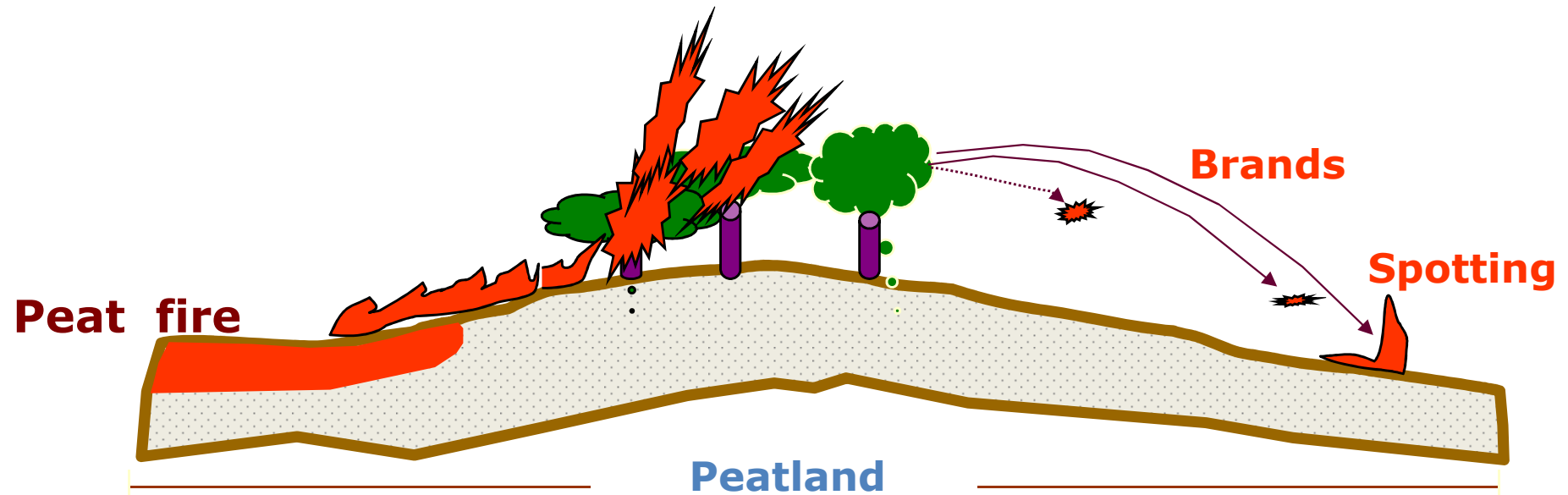
1999 - 2009





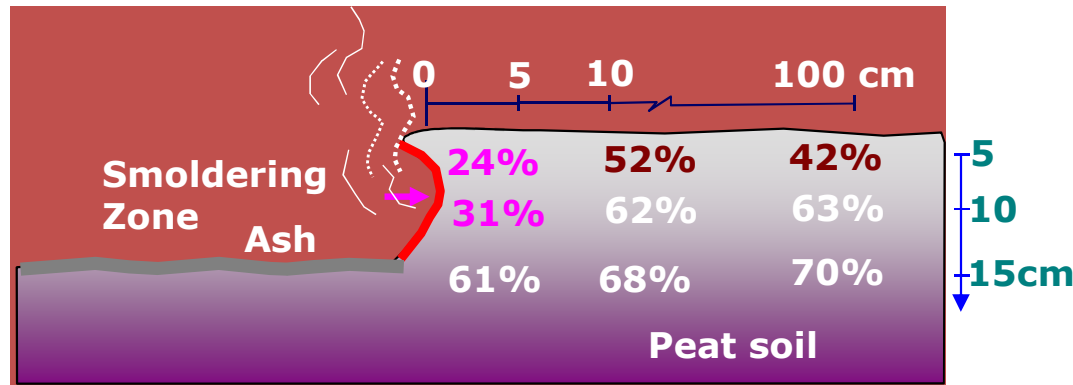


Fire propagation regimes in tropical peatland



(Aswin Usuf, 2011)

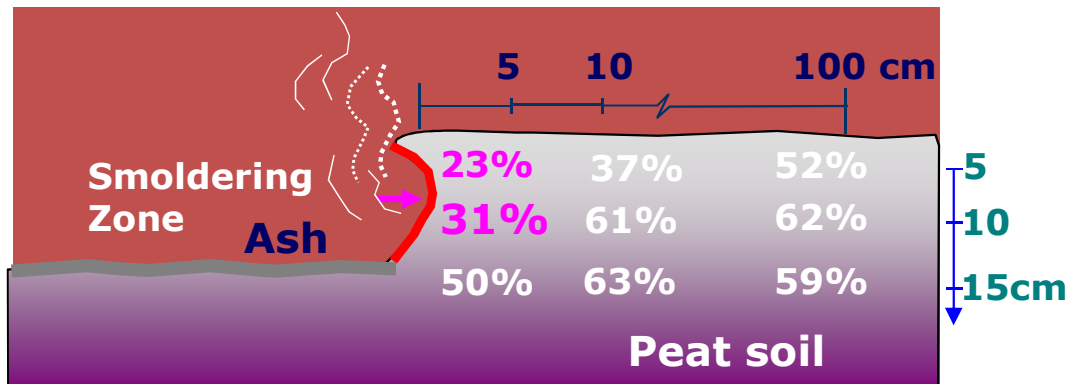
Peat moisture near smoldering zone



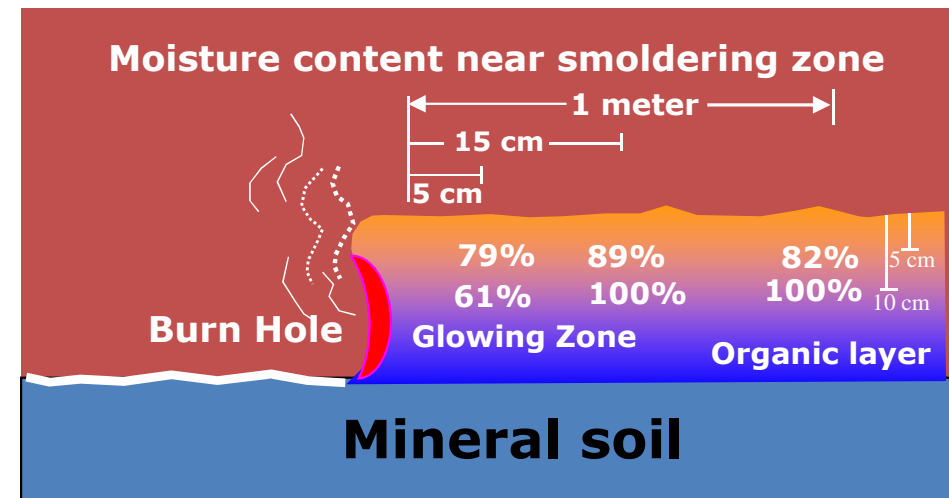
Plot 3



Smoldering zone



Plot 5



Peat moisture near smoldering zone in Seney NWR Michigan USA (Hungerford, 1996)

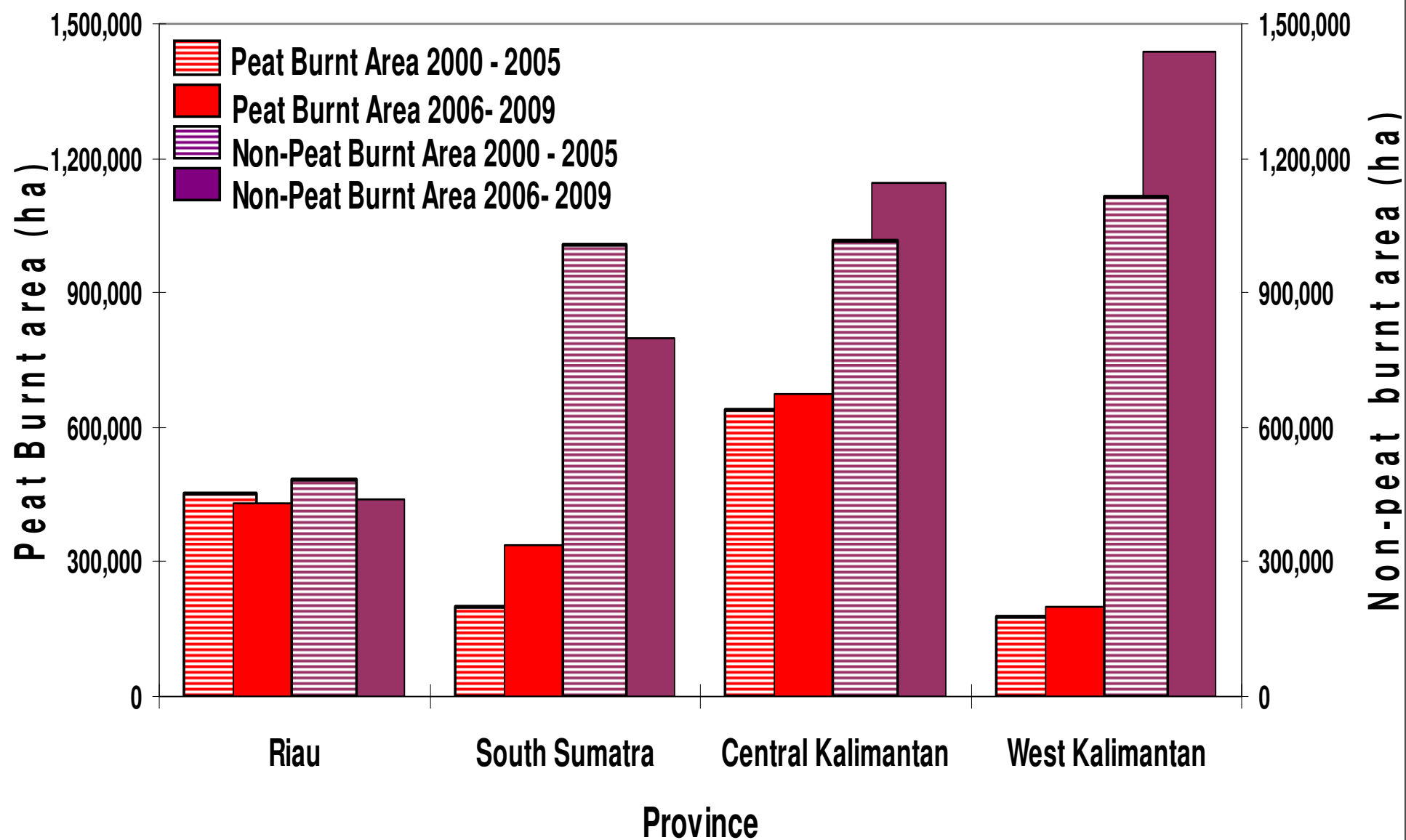
Peat moisture near smoldering zone at plot 3 and 5

(Aswin Usuf, 2011)

Smoke Haze Map - 19 Oct 2006 (04:00pm)

South China Sea





BURNT AREA (2000-2009)

Province	Burnt area (ha)
Riau	1,803,610.72
South Sumatra	2,341,078.03
SUMATRA	4,144,688.75
Central Kalimantan	3,476,373.91
West Kalimantan	2,930,145.31
KALIMANTAN	6,406,519.22
TOTAL	10,551,207.97

Peat

Province	2000-2005	2006-2009
Riau	452,694.74	429,982.56
South Sumatra	200,211.01	335,463.21
Central Kalimantan	639,220.44	673,325.78
West Kalimantan	178,180.51	197,867.38
Total	1,470,306.7	1,636,638.93

Non-peat

Province	2000-2005	2006-2009
Riau	439,060.93	481,872.49
South Sumatra	797,412.46	1,006,991.35
Central Kalimantan	1,145,497.53	1,018,330.16
West Kalimantan	1,439,657.47	1,114,439.95
Total	3,821,628.39	3,621,633.95

C02 EMISSION

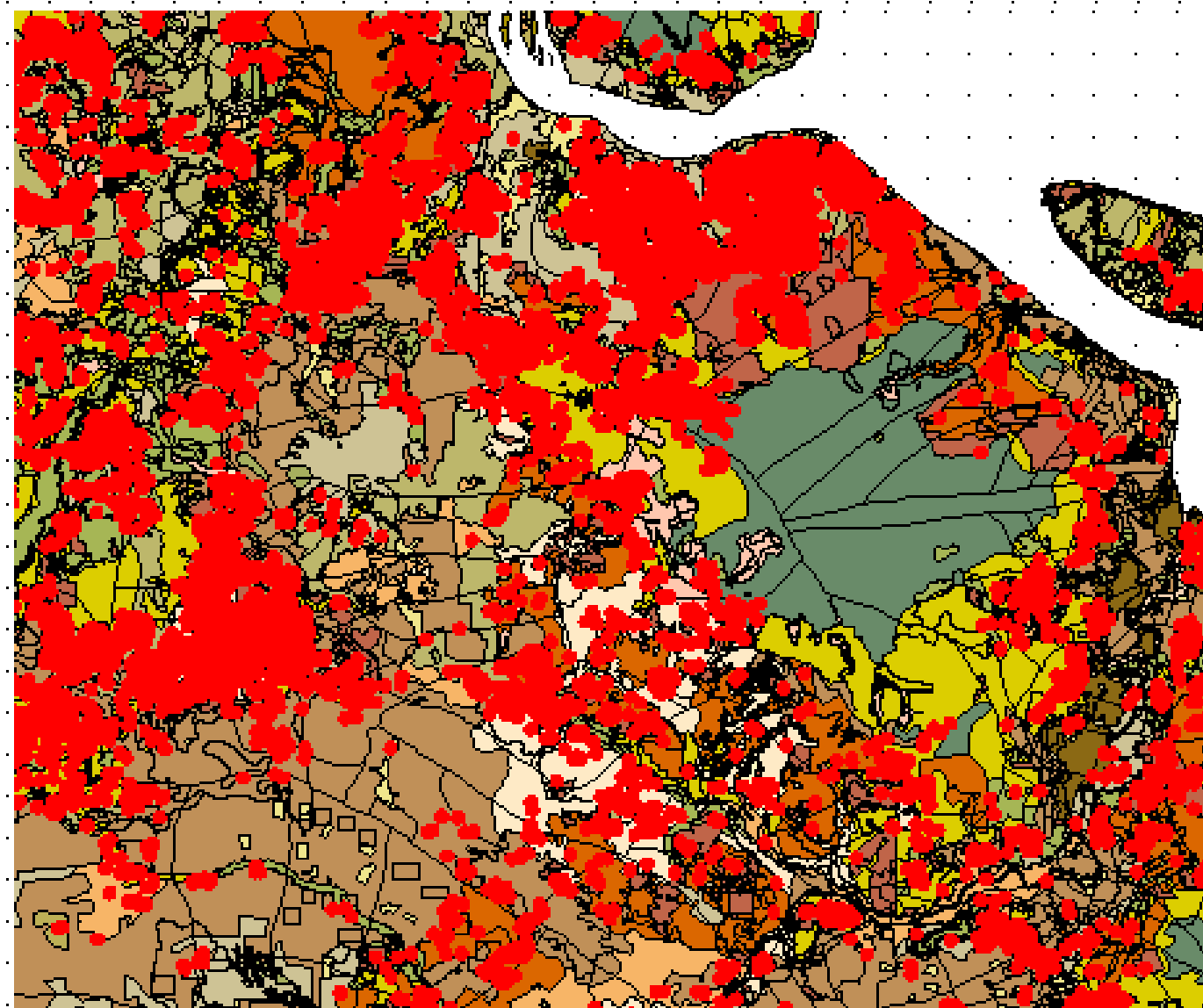
FIRES ON PEAT

Province	2000-2005	2006-2009
Riau	1,0641,59.36	1,046,347.24
South Sumatra	451,215.04	706,853.54
Central Kalimantan	1,856,530.89	1,951,667.59
West Kalimantan	577,749.46	1,856,530.89
Total	3,949,654.75	5,561,399.26

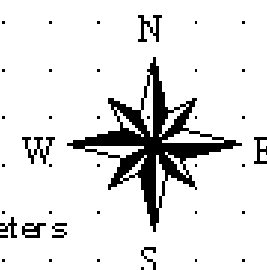
FIRES ON MINERAL SOIL

Province	2000-2005	2006-2009
Riau	3,437,058.77	3,825,063.27
South Sumatra	4,868,042.98	6,834,500.14
Central Kalimantan	9,252,991.92	8,180,427.71
West Kal.	11,989,502.06	10,002,068.31
Total	29,547,595.73	28,842,059.43

Burnt Area Bengkalis, 2000 - 2010



- Butter 1 of Riau_hic-0808-cont50up.dip
- Riau-Ju-In 1st.dip
- Bare land
- Cloud
- Crop Plantation
- Dry Cultivation Land
- Dry Cultivation Land with Shrub
- Fish Pond
- House
- Mining
- Oil Palm
- Primary Dry Land Forest
- Primary Mangrove Forest
- Primary Swamp Forest
- Rice land
- River
- Secondary Dry Land Forest
- Secondary Mangrove Forest
- Secondary Swamp Forest
- Shrubland
- Swamp
- Swamp Shrubland
- Timber Plantation
- Transmigration
- Water Body



30 0 30 60 90 120 Kilometers

(CHALLENGE) TO THE EMISSION REDUCTION

>>> INDONESIA (BAPPENAS,2009)

- emissions from oxidation of 220 Mt CO₂/yr
- fire emissions estimate of 470 Mt CO₂/yr
- loss of AGB of 210 Mt CO₂/yr

TARGETS:

- Reduction of hotspots in Kalimantan, Sumatera and Sulawesi -20% per year
- Area of forest burned reduced -50% compared to the condition of year 2008
- Increased capacity of local government and community in controlling forest fire hazard in 30 Operational Areas

WHAT HAD BEEN DONE ?

The Cooperation Agreement for Indonesian National Guidelines Signed

➤ As a consequence of the fires and smoke pollution in Indonesia between 1982 and 1994 a cooperation agreement was made to develop a project "Integrated Forest fire Management in Indonesia Phase I: National Guidelines on the Protection of Forests against Fires".

➤ The cooperation agreement between:

>> The International Tropical Timber Organization (ITTO),

>> The Common Fund for Commodities (CFC),

>> The Directorate General of Forest protection and Nature Conservation, Ministry of Forestry,

>> Faculty of Forestry, Bogor University of Agricultural Sciences,

<<< signed on 21 October 1996

Curriculum of Basic Training consisted of :

- A. Law, Regulation and Policy on Forest Fire Management,
- B. Basic knowledge on forest fire,
- C. Forest fire management,
- D. Fuel source management,
- E. Fire detection,
- F. Fire control equipment,
- G. Fire control technique and strategy, and
- H. Mopping up

- Training instructors come from staff and experts:
- Directorate General Nature Protection and Conservation (PHPA),
- Faculty of Forestry IPB,
- GTZ,
- JICA
- USA

FIRE DANGER RATING SYSTEMS

- FUNDED BY CIDA-PROJECT, SEA-FDRS STARTED AROUND 2000
- INDONESIAN SIDE:
 - + MINISTRY OF FORESTRY
 - + BPPT
 - + BMG
 - + UNIVERSITY
 - + LAPAN (Indonesian Aeronautical and Space Agency)
- FIELD WORKS, DATA COLLECTING, STRENGTHENING THE COLLABORATION, MODELING, CALIBRATING, MAPPING, SPREADING
- OPERATIONAL COMMENCED ON AUGUST 2002
- THE PRODUCTS: MAP (FOR EARLY WARNING)
- CALIBRATING AND ADAPTATING: ??????????

MINISTRY OF FORESTRY

- As a strong commitment to reduce fire occurrences in Indonesia, since 2002 Government of Indonesia through Ministry of Forestry (MoFr) has built Manggala Agni Fire Brigade in 10 fire prone provinces (North Sumatra, Riau, Riau Island, Jambi, South Sumatra, West Kalimantan, Central Kalimantan, South Kalimantan, East Kalimantan, South Sulawesi) with total number of 30 Operational Area (*Daerah Operasi/Daops*).
- The Brigade, consists of 107 groups with 1.605 personnel, is equipped with complete infrastructure (including office, equipments, storage, etc).
- Additionally the MoForestry has established fire brigades in 30 National Park and Natural Resources Conservation Unit (*Balai Konservasi Sumber Daya Alam/BKSDA*) which consist of 60 groups of fire brigade with 900 personnel.

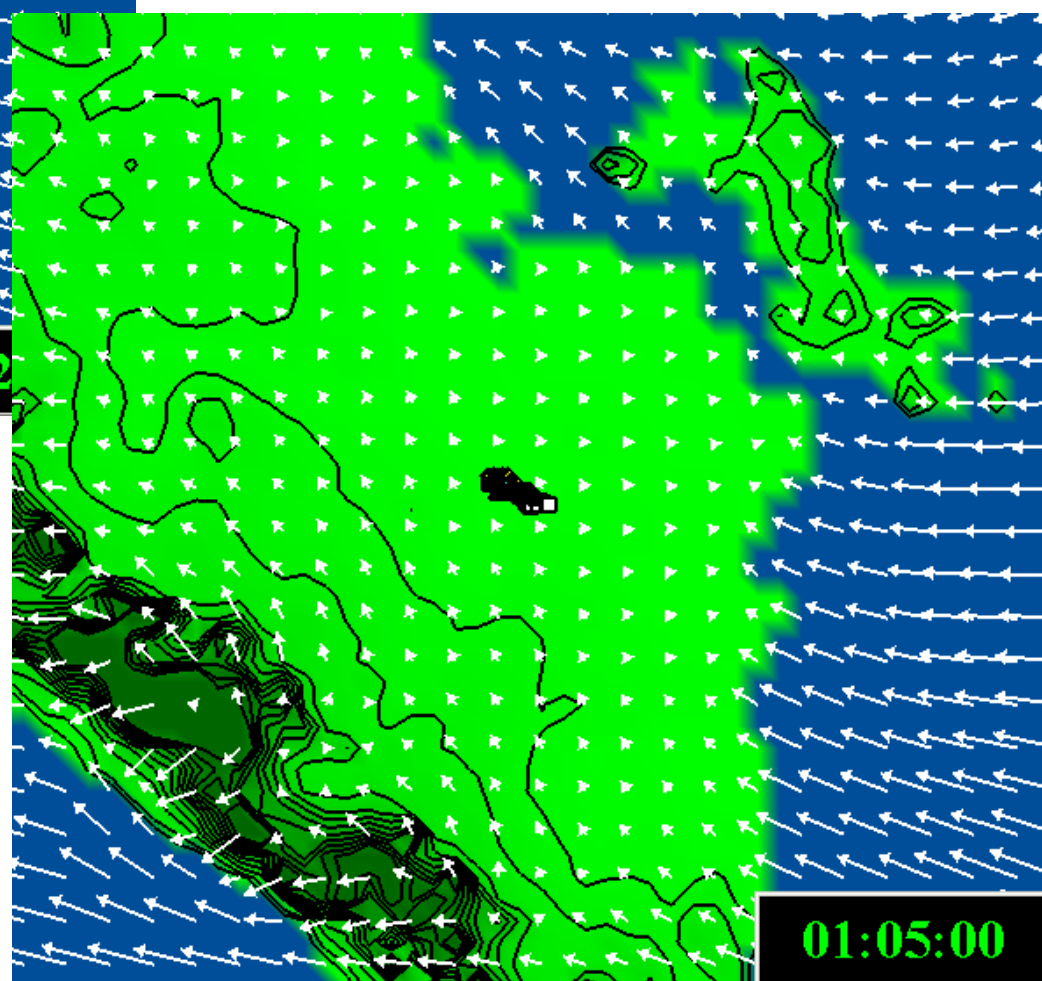
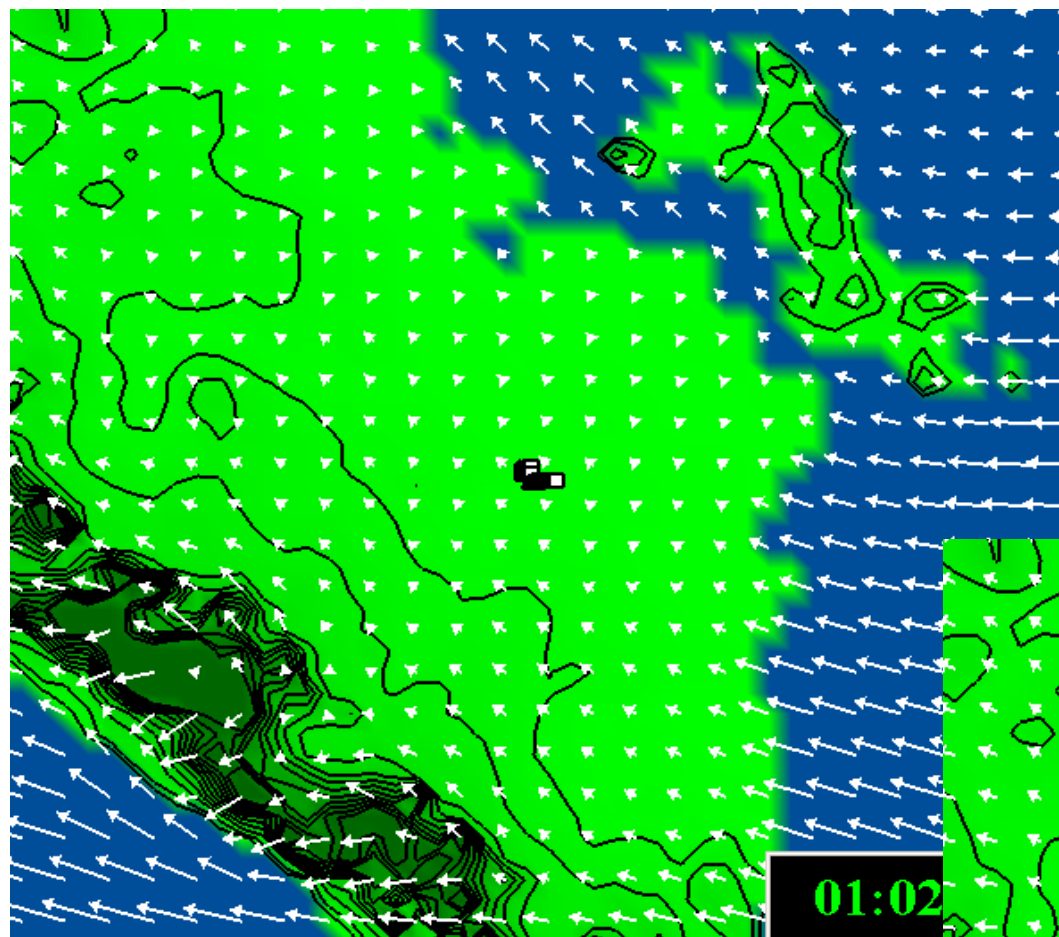
- To strengthen the fire early warning system, supported by the AusAid and the Landgate International (from the government of Western Australia), MoF has worked closely with the Indonesian Aeronautical and Space Agency (LAPAN) to develop Indofire hotspot monitoring system using MODIS satellite.
- This system was launched in October 2009 and can be accessed through <http://indofire.dephut.go.id> or <http://indofire.lapanrs.com>.

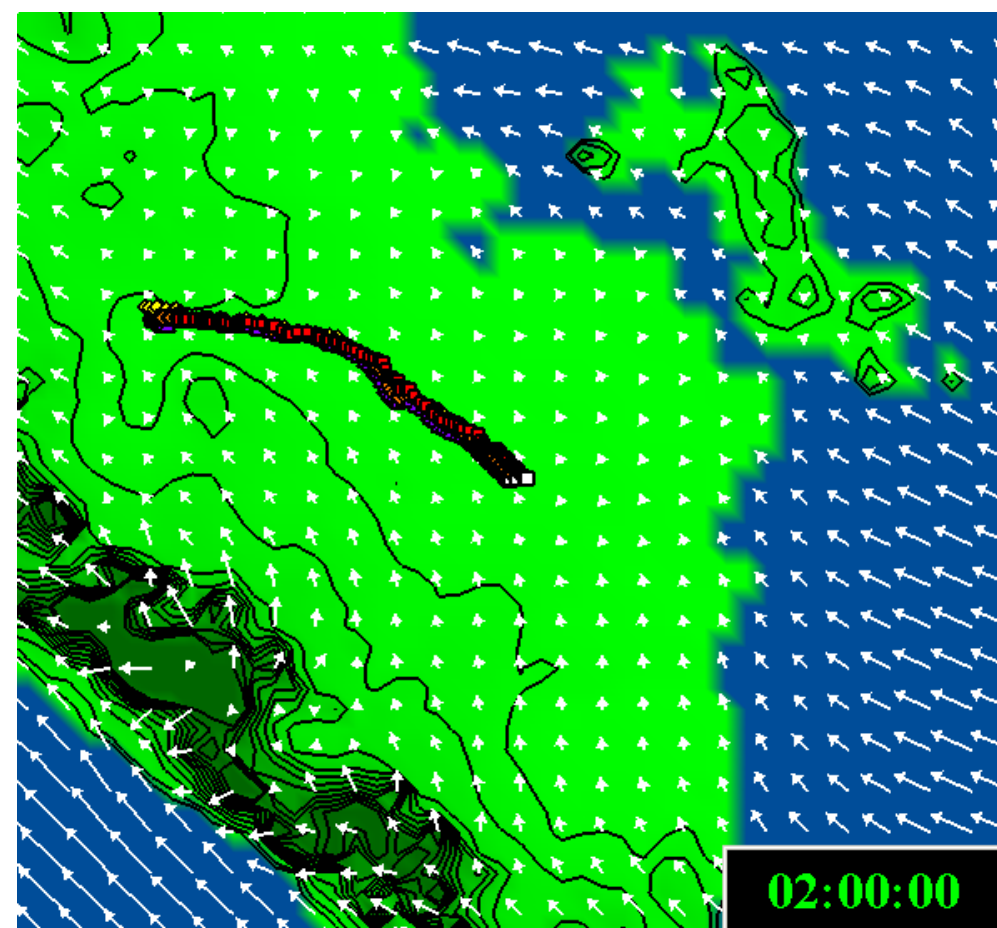
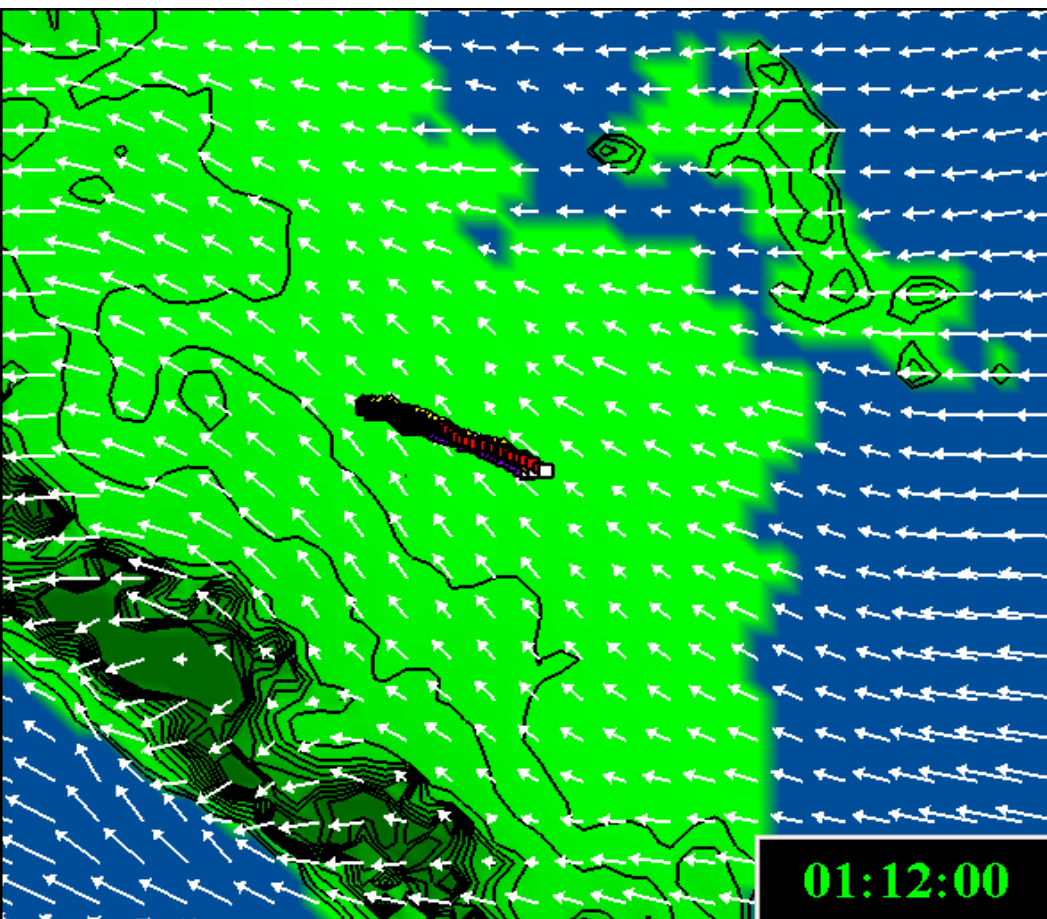
PREVENTION

- Since 2010, for the periode of 5 years, MoFr and Japan International Agency (JICA) has developed a new project of the Community Development of Fires Control in Peatland Area, which is located in Siak District – Riau as well as Bengkayang and Kubu Raya District – West Kalimantan.
- This 510 million Yen or approximately US \$ 5.7 mililion project is aimed to strengthen the capacity building of local people in peat forest and land fire prevention.

COMMUNITY BASED FIRE MANAGEMENT

- Furthermore, during the period of 2006-2010 (and will be continued in the future), MoFr developed Fire Community (*Masyarakat Peduli Api/MPA*) with total number of 8.830 personels in 19 provinces : North Sumatra, West Sumatra, Riau, Jambi, South Sumatra, Lampung, Bengkulu, West Java, Central Java, East Java, Yogyakarta, Bali, West Nusa Tenggara, West Kalimantan, Central Kalimantan, South Kalimantan, East Kalimantan, South Sulawesi and Central Sulawesi. This MPA is the front liner in preventing forest fires in the areas which are closed to the communities.





Readiness Level for Fire Management

Determination of Readiness Level follows Fire Danger Rating, Weather forecasting, Hotspot, Smoke-Haze conditions, and Fire Management Activities

normal

Level III

Level II

Level I

1

Regularly monitor, analyse and process all information and reporting of fire data from field patrols, weather station as well as internet

Regularly monitor, analyse and process all information and reporting of fire data from field patrols, weather station as well as internet

Regularly monitor, analyse and process all information and reporting of fire data from field patrols, weather station as well as internet

Daily monitor, analyse and process all information and reporting of fire data from field patrols, weather station as well as internet

2

Update and disseminate fire information regularly to Field Office, CFR Posko as well as other adjacent plantations .

Update and disseminate fire information regularly to Field Office, CFR Posko as well as other adjacent plantations .

Update and disseminate fire information minimum 5 days a week to Field Office, CFR Posko as well as other adjacent plantations .

Update and disseminate fire information daily to Field Office, CFR Posko as well as other adjacent plantations .

3

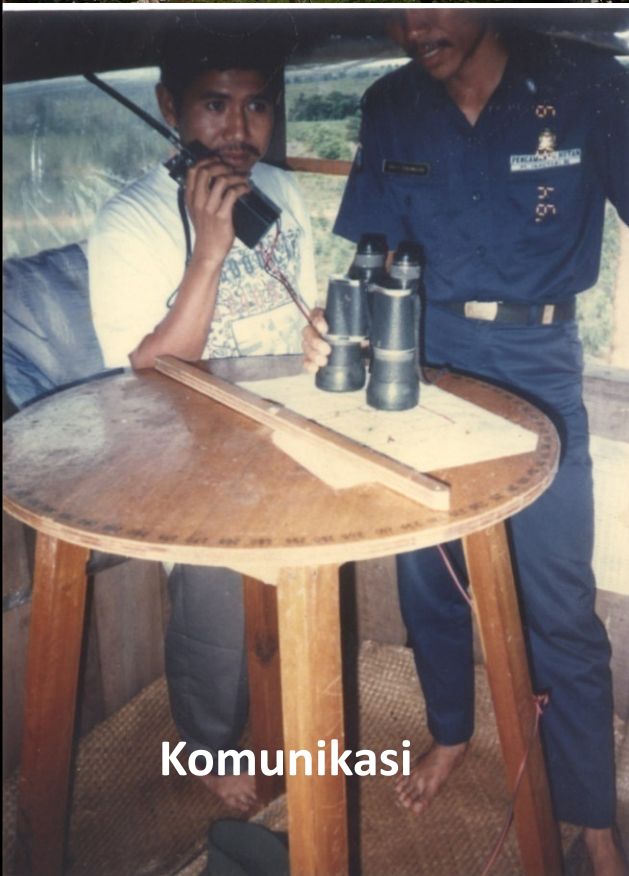
No patrols or tactical detection necessary

Patrols or tactical detection performed as needed by local conditions

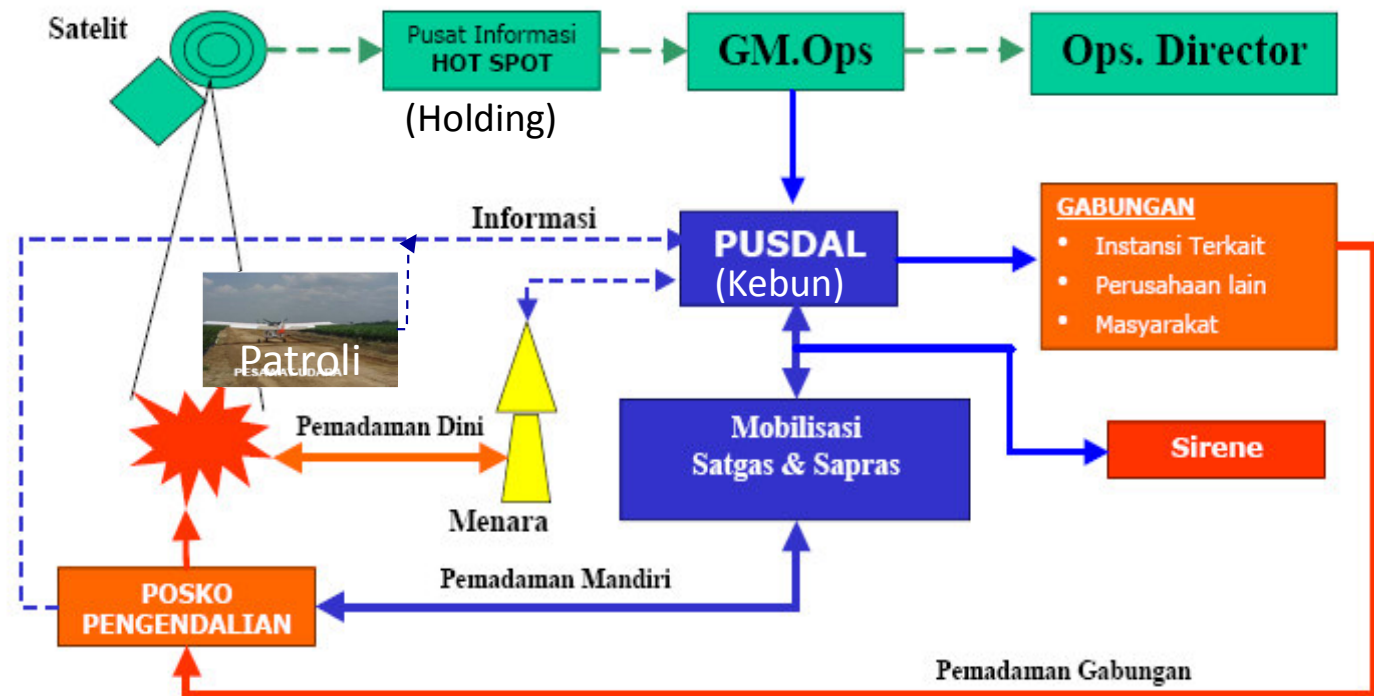
Patrols and tactical detection by CFR member occur minimum 5 days per week

Based on fire information and instructed by forest manager, the Fire Suppression/Prevention Mobilization (FSPM) plan takes place to suppress all vegetation fires in the area

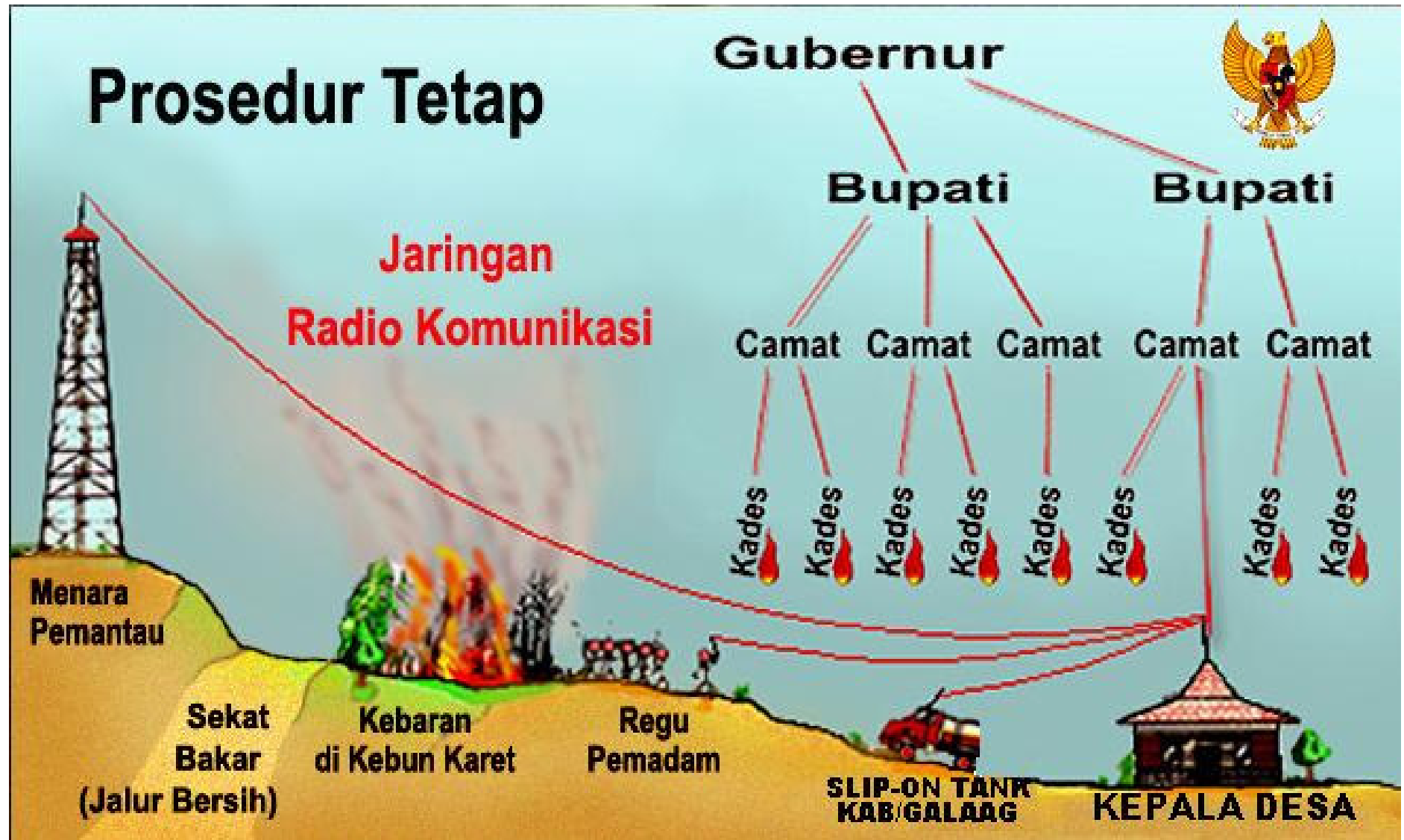
EARLY DETECTION



BAGAN ALIR KOMUNIKASI KEBAKARAN LAHAN DAN HUTAN



PROVINCE LEVEL











KEY ELEMENTS:

- EARLY WARNING/DETECTION
SYSTEMS WORKS
- SPREADING THE INFORMATION
- RESPONSE !!!!!
- ACTIONS !!!!!!!!!!!!!!!

CONCLUSION

- NO MORE FIRE USED FOR LAND PREPARATION
- PREVENTING FIRES THROUGH EARLY WARNING AND EARLY DETECTION SYSTEM
- PREVENTING FIRE IS BETTER THAN SUPPRESSION
- COMPLETED THE AREA WITH INFRASTRUCTURE AND SKILL PERSON WITH REGULARLY TRAINING
- ESPECIALLY FOR PEAT, KEEP WATER TABLE AT LEAST no more than 30 CM BELOW THE GROUND HIGH