



Sentinel Asia
Disaster Management Support
System

Wild Fire Working Group

**Impact to future global
warming**

Carbon Cycle

Sink

Source

**Contribution to Kyoto
Protocol**

**Sustainable Forest
Management**

Reports on Wild Fire Monitoring at first workshop

**Thailand, Singapore,
Malaysia, Indonesia,
Mongolia, Siberia,
Australia**



NUS
National University
of Singapore

**Centre for Remote
imaging, Sensing and
Processing**

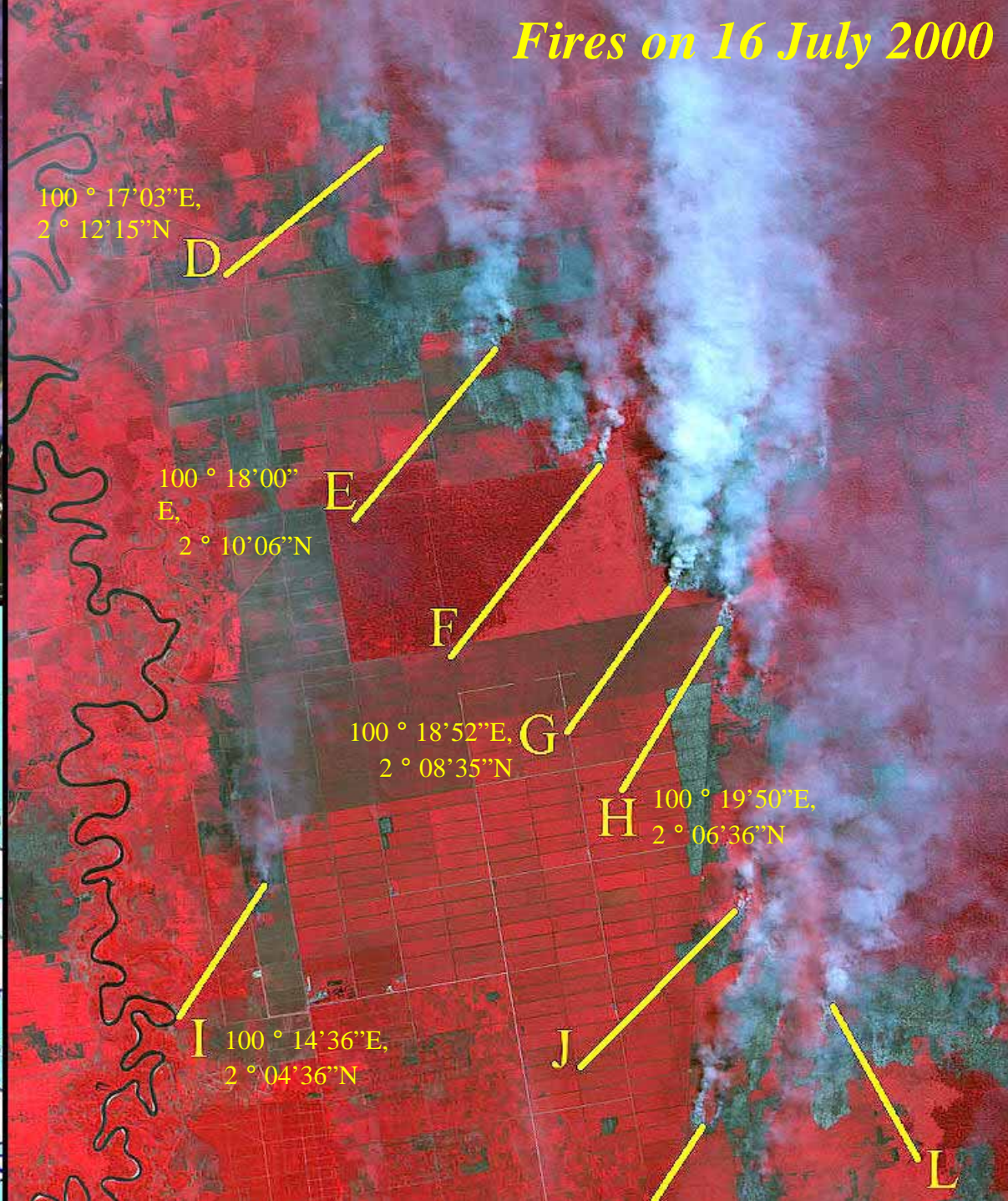
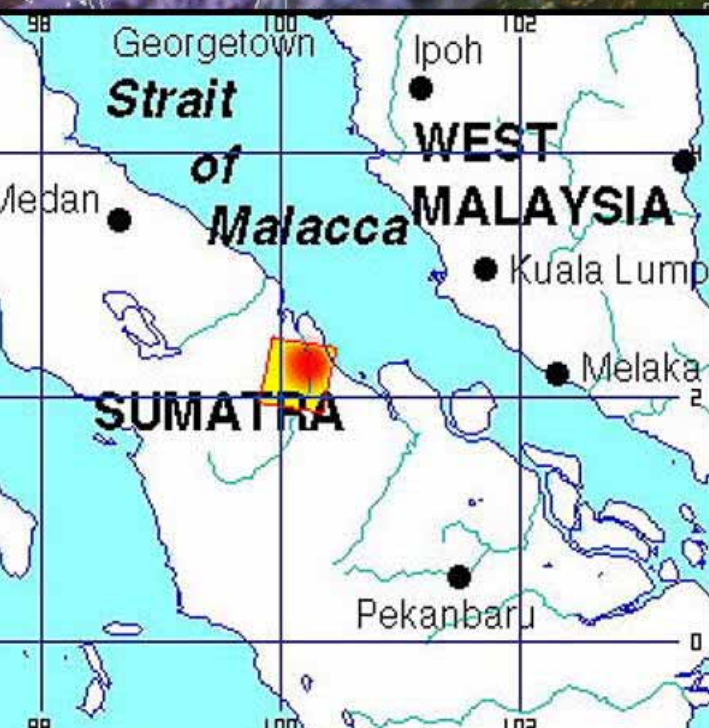
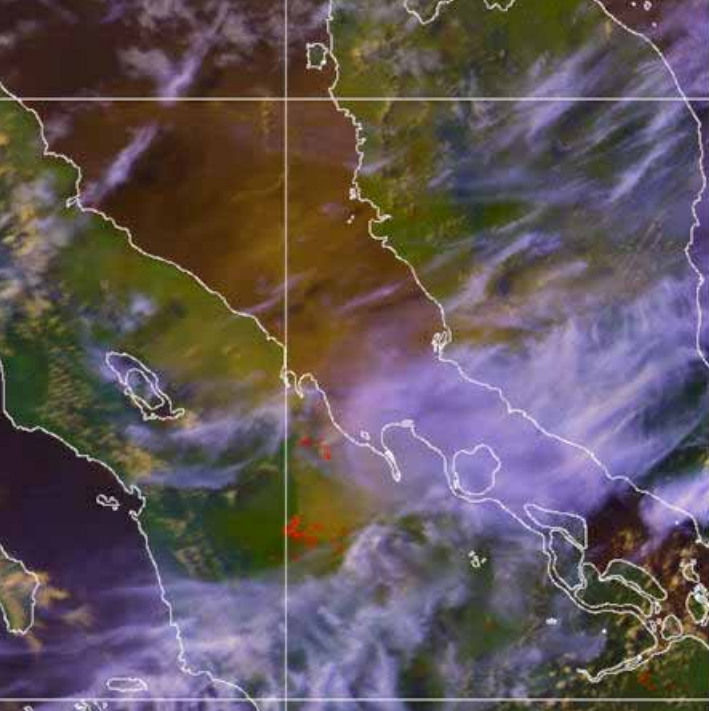
Forest Fire Monitoring with Remote Sensing

KWOH Loeng Keong

Director, CRISP

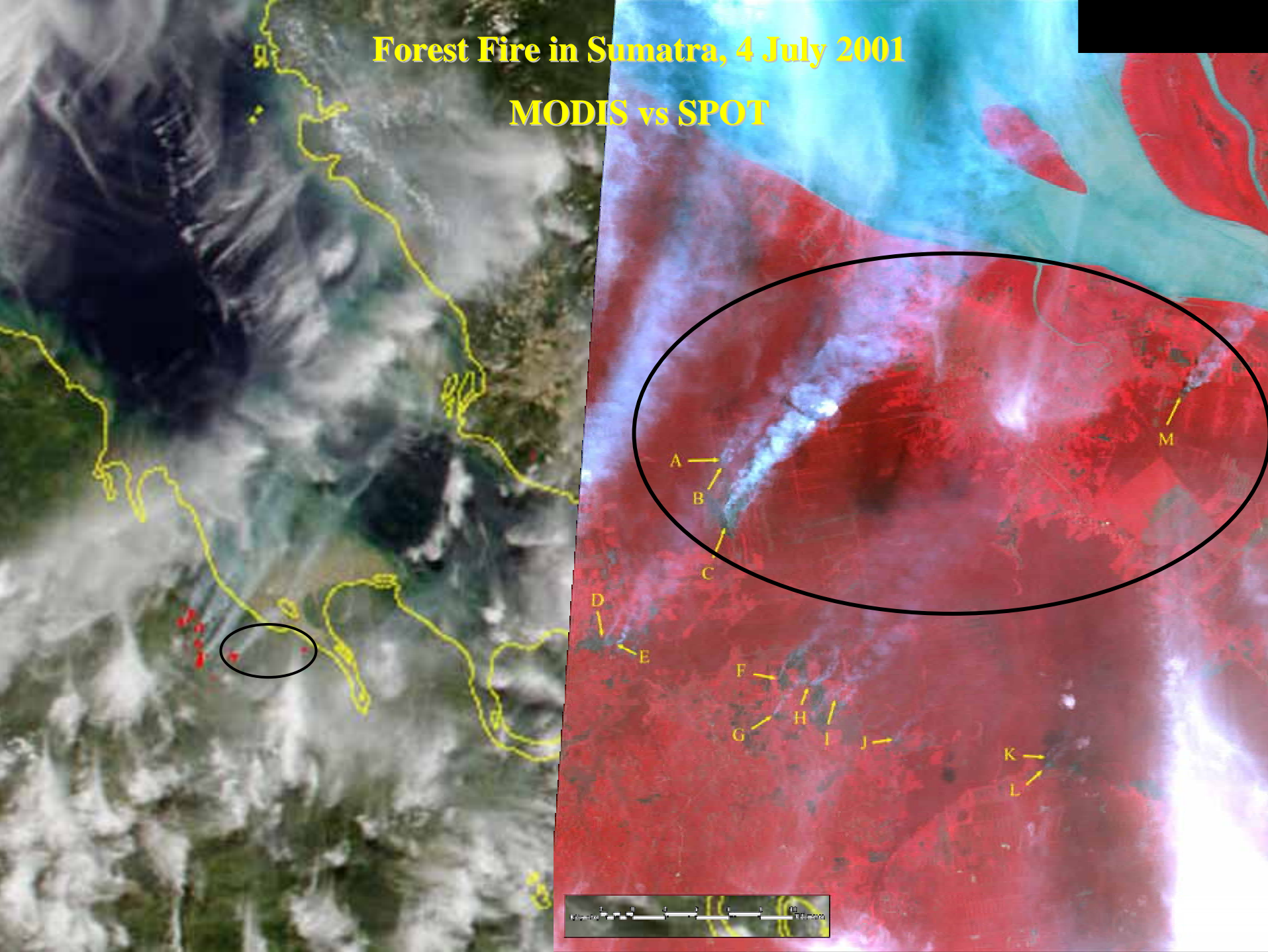
27 June 2006

Fires on 16 July 2000

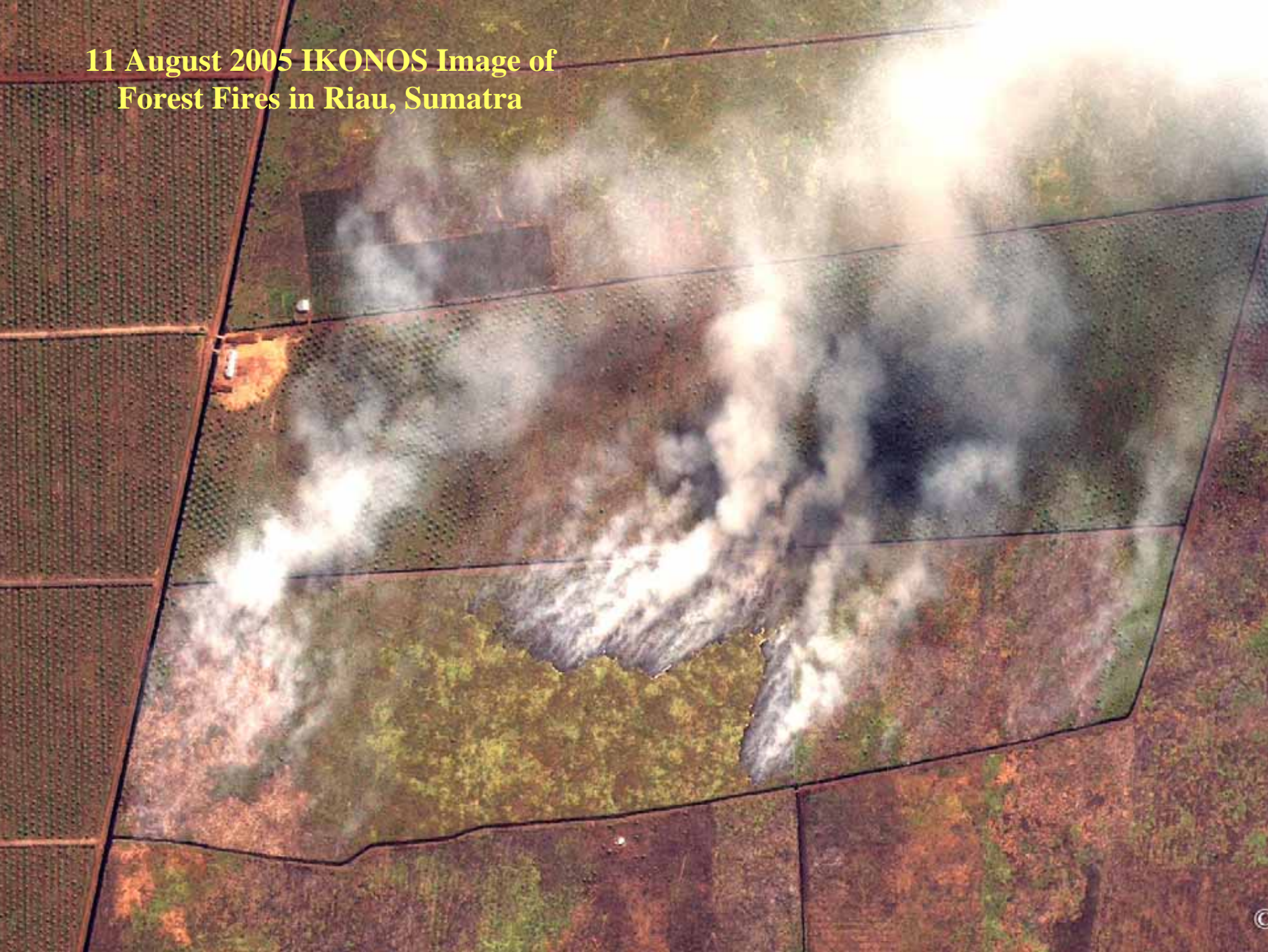


Forest Fire in Sumatra, 4 July 2001

MODIS vs SPOT



**11 August 2005 IKONOS Image of
Forest Fires in Riau, Sumatra**





NATIONAL DISASTER AND REMOTE SENSING IN MALAYSIA

Siti Atikah Mohamed Hashim

Malaysian Centre for Remote Sensing

2nd JPTM Meeting, Bangkok, Thailand

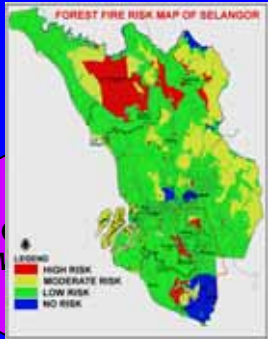


FOREST FIRE MANAGEMENT SUPPORT SYSTEM

EARLY WARNING

FOREST FIRE DATA AND INFORMATION

EMERGENCY RESPONSE MAP
FOREST FIRE ALERT SYSTEM
HOTSPOT MAP
ACTIVE FOREST FIRE MAP
FOREST FIRE SUSCEPTIBLE MAP
FOREST FIRE DAMAGED MAP
FOREST FIRE RISK MAP



GIS
MODELLING

FOREST FIRE DATABASE



MACRES HQ

MITIGATION & RELIEF

BKN

PKOB

PUSAT KAWALAN OPERASI
BENCANA – FOREST FIRE

DISASTER RESPONSE
TEAMS



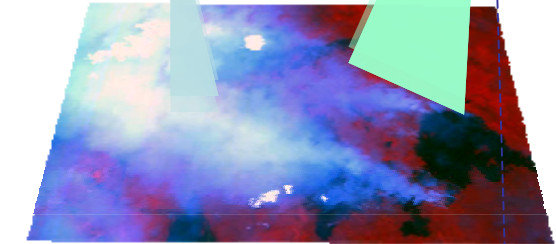
Jabatan Bomba dan Penyelamat
DOE, DOF
PDRM, ATM, JPA3, RELA, SMART
JMG
Jabatan Pengairan dan Saliran
Jabatan Perkhidmatan Kaji-cuaca
Majlis Tempatan
Jabatan Kebajikan Masyarakat
Jabatan Penerangan
TNB, STMB, NGOs, dll

DETECTION & MONITORING

SATELLITE
REMOTE SENSING



AIRBORNE
REMOTE SENSING



Ground and Air
Surveillance



Fire Watch Tower



MGRS-
TEMERLOH



GOFC-GOLD

Global Observation of Forest and Land Cover Dynamics

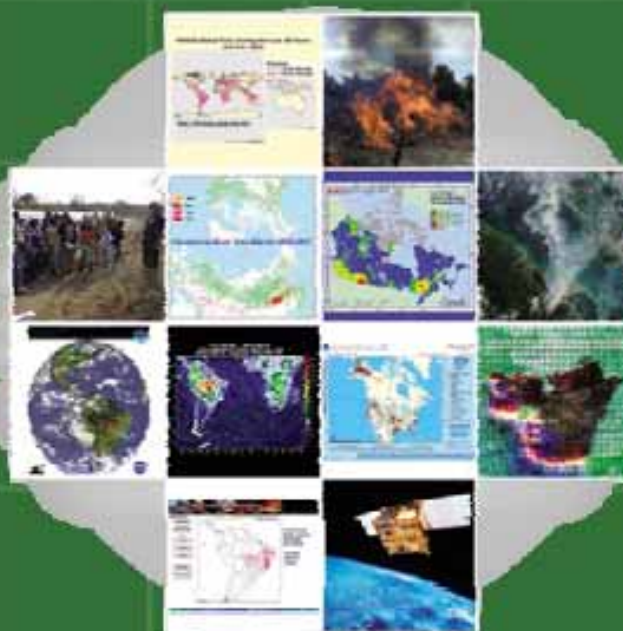


Fire Mapping and Monitoring

The Fire Mapping and Monitoring theme focuses on refining international requirements for fire-related observations and making the best possible use of fire products from existing and future satellite observing systems to support fire management, policy decision-making, and global change research.

Key goals are to ensure enhanced operational fire monitoring from space and ground measurements, better access and use of data, and standard products of known accuracy.

The Fire theme is carried out by an implementation team that works with the GOFC-GOLD regional networks to bring together fire data providers and users to exchange information on capabilities and needs and to promote strengthening of regional and national fire activities.



<http://gofc-fire.umd.edu>

Key Issues for Sentinel Asia

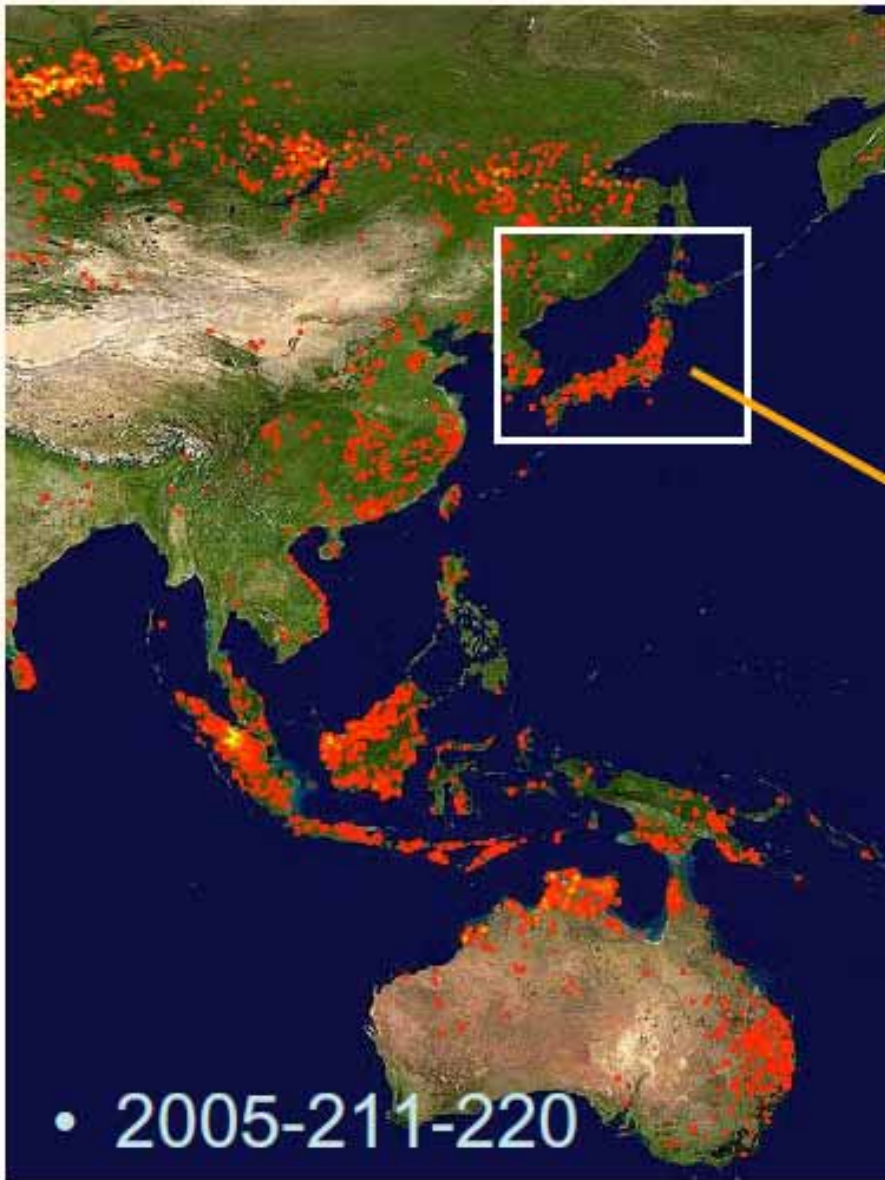
- Establish FTP exchange system from all hotspot data producers (MACRES, CRISP, LAPAN, GA, Hokkaido etc.)
- Promote the use of **nighttime** MODIS data (better with clouds!?)
- Establish special project on “Hotspot Harmonization and Validation” across Sentinel Asia coverage area.



GOFC-GOLD

❖ Hot Spot
(Fire) Detection
Algorithm

Overestimation



Japan
is not
a fire country

Objective of Sentinel Asia Wild Fire Network

Disaster Management Support System

**How we can reduce damage
induced by wild fire?**

Wild Fire Control

Fire Warning (Fire Danger Warning)

Early Fire Detection

Forecasting Fire Expansion

Early Fire Control

Full Suppression

Restoration of damaged forest



**Satellite
Information**

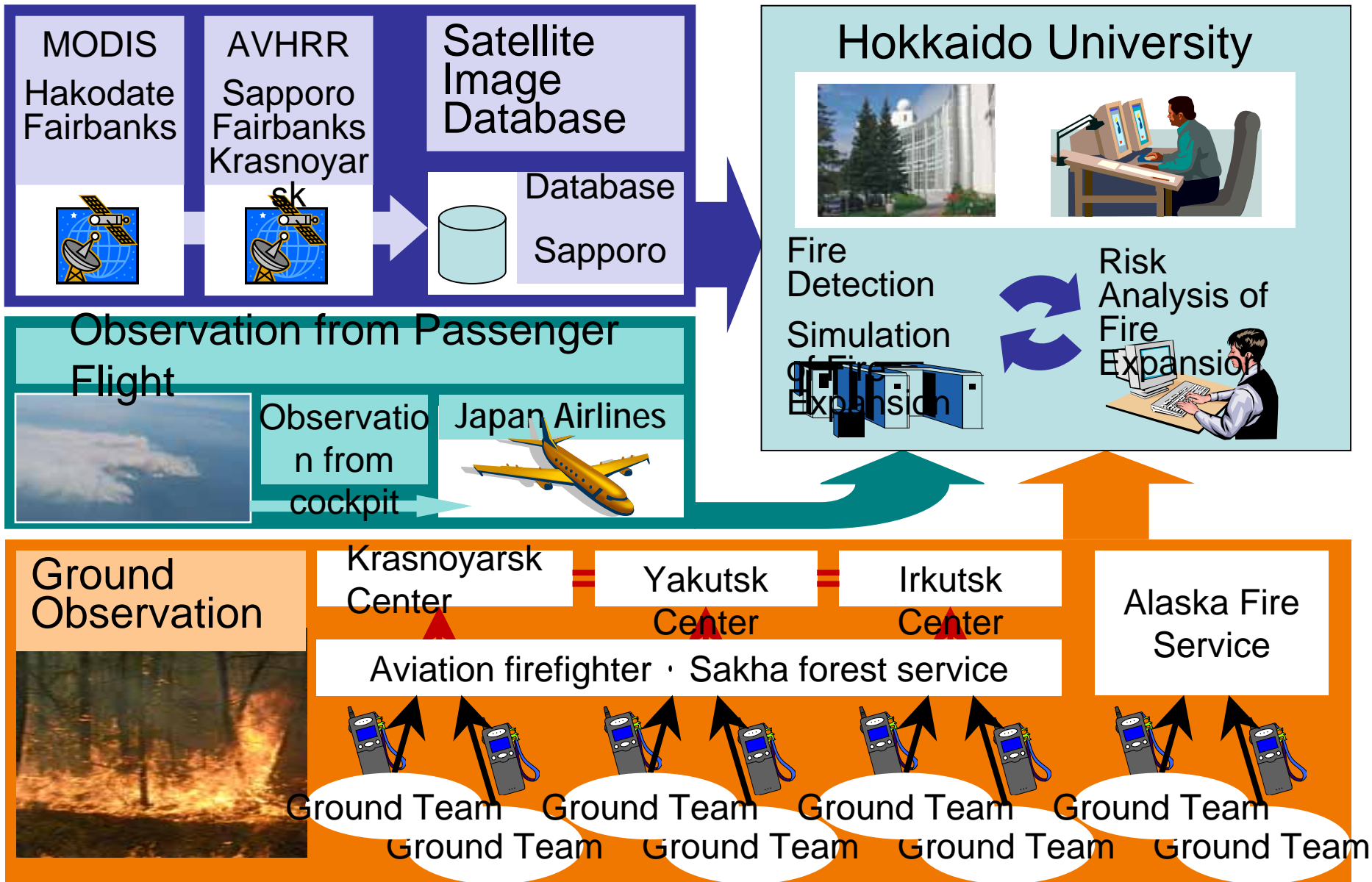
Early Fire Detection by Satellite

**Improvement of Detection
Algorithm**

MODIS NOAA AVHRR

**Validation of Forest Fire Detection
Algorithm by Ground Truth Data**

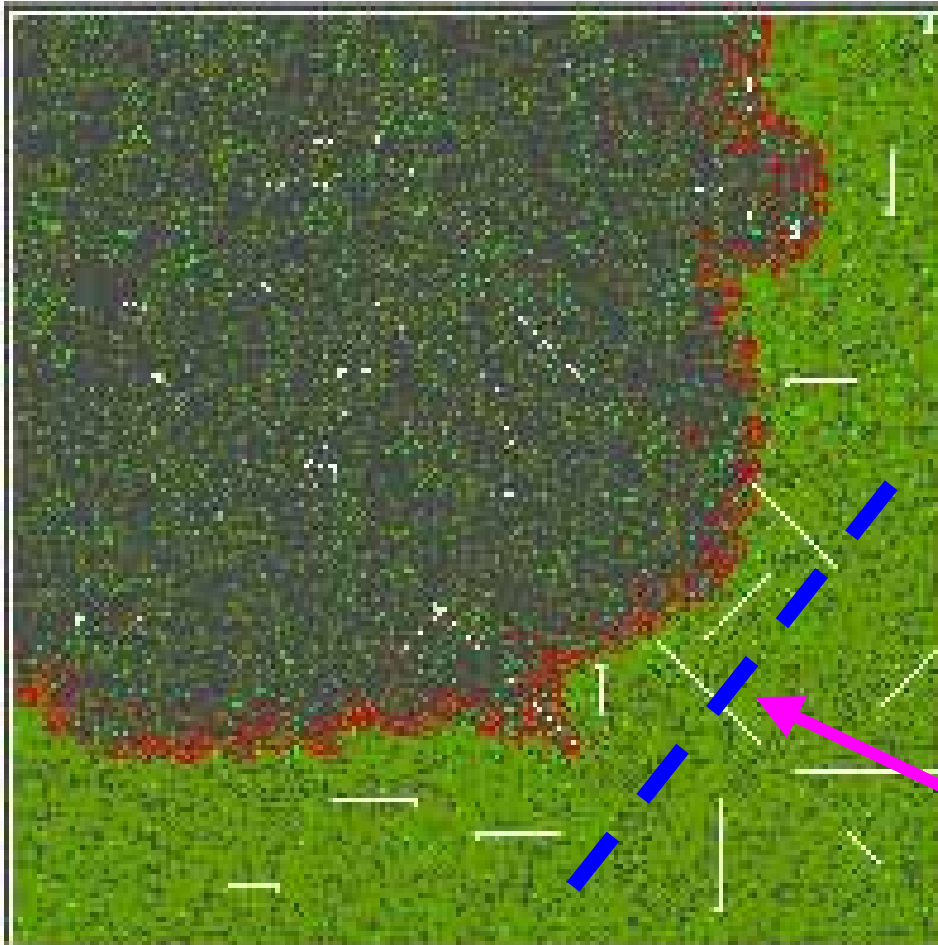
Boreal Forest Fire Control Initiative



Fire Control Management



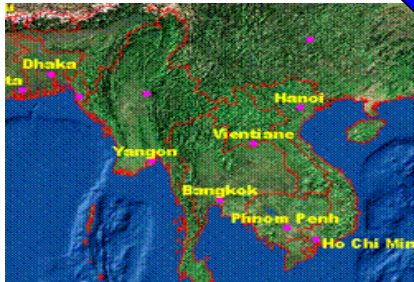
Fire Expansion Forecast



Sentinel Asia (MODIS Wildfire Monitoring)



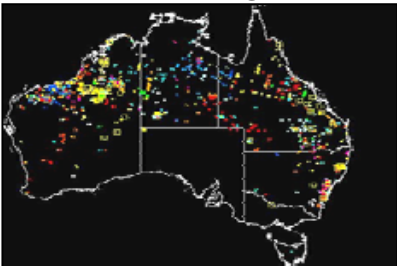
Hokkaido Univ.



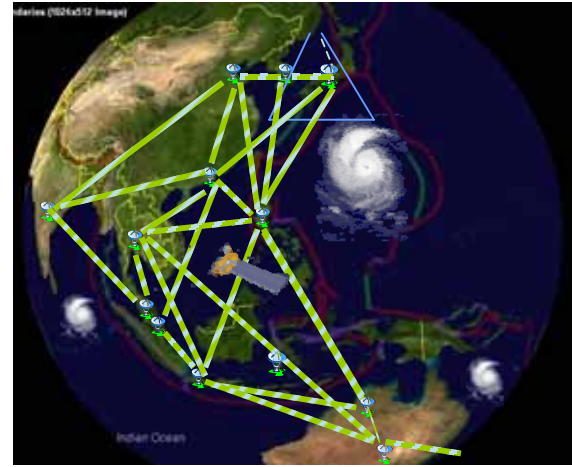
AIT/Tokyo Univ (Thailand)



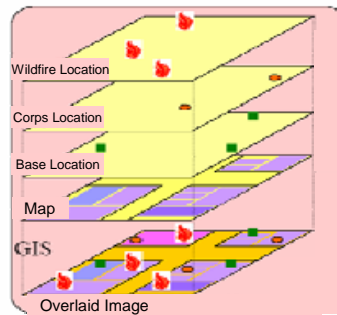
CRISP (Singapore)



CSIRO (Australia)



Satellite observation network



Integration by Digital Asia
Web-GIS interface

(Keio Univ.)



Wildfire map of Asia

Requirements for better Disaster Management Support System

International Cooperation for Network System Operation

Validation of better detection algorithm

Better understanding fire behavior

Better performance of value added information

Summary of first working group meeting

It is a reasonable way to make a grouping among the members of wild fire control initiative. There are some agencies or institutions which already equipped MODIS Receiving facility and provided hot spot information to public domain. On the other hand, some countries are not capable to obtain real time or semi real time hot spot information. The agencies or institutions which are capable to provide effective hot spot information are categorized as information provider group. Other members are User group of hot spot information. In the following process for establishment of Disaster management network as Sentinel Asia Program, the wild fire working group will arrange the following action plan for coming two years period.

Hot Spot Information Provider Group

Agency or Institution

Major Coverage Area

Hokkaido University (JAPAN)

Northern Asia

Korean Aerospace Research Institute (Korea)
KARI

Northern Asia

Asian Institute of Technology (Thailand)
(AIT)

South-east Asia

Malaysian Center for Remote Sensing (Malaysia)
(MACRES)

South-east Asia

Centre for Remote Imaging, Sensing
Processing (CRISP) (Singapore)

South-east Asia

National Institute of Aeronautics and Space (Indonesia)
(LAPAN)

South-east
Asia

CSIRO Office of Space Science (Australia)
and Application (COSSA)

Oceania

Hot Spot Information User Group as Country

- Bangladesh (Bangladesh Space Research and Remote Sensing Organization SPARRSO)
- Cambodia (Ministry of Land Management, Urban Planning and Construction, Geography Dept.)
- Lao P.D.R. (Science Technology and Environment Agency STEA)
- Mongolia (National Remote Sensing Center of Mongolia)
- Myanmar (Department of Meteorology and Hydrology)
- Philippines (National Mapping and Resource Information Authority NAMRIA)
- Sri Lanka (Survey Department of Sri Lanka)
- Vietnam (Institute of Physics & Electronics, Vietnamese Academy of Science and Technology VAST)

Action Plan 2006 & 2007

Wild Fire Control Working Group

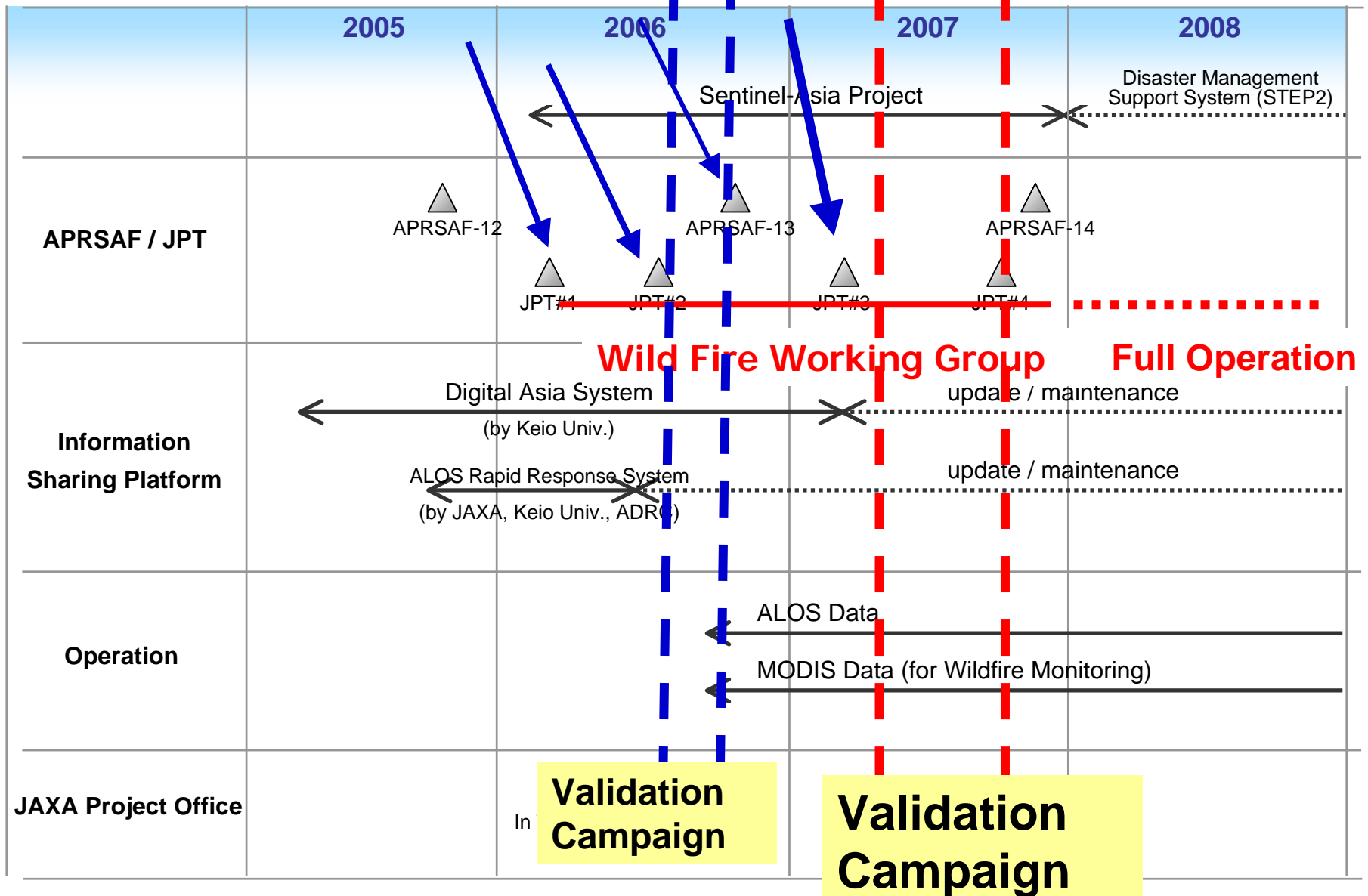
Next Workshop

- **16-18 September 2006**
- **University of Palangka Raya - Palangka Raya – Indonesia**

International Workshop on : Tropical Rain Forest and Boreal Forest Disturbance and Their Affects on Global Warming

- **19-20 September 2006**
at LAPAN Jakarta Validation Experiment Planning
Workshop Information Provider Group

Sentinel-Asia Project Milestone



**Next Workshop will be held in 2007
at Sapporo JAPAN**

Tokyo



Joint meeting between information provider group and user group

Results of last validation campaign

Planning next validation campaign

final goal

To establish wild fire control informatics

To establish better fire control management

To kick off for full operation stage in 2008

Sentinel Asia Wild Fire Working Group Hot Spot Detection Algorithm Validation Campaign

**Comparison between results of
detections by three MODIS Receiving
Stations**

**Comparison between ground truth data
and hot spot data**

**Comparison between NASA Algorithm
(MOD14) and New Algorithm**

