Thailand Forest Fire Monitoring by Earth Observation Satellites: The On Going Tasks

Siri Akaakara
Veerachai Tanpipat, D.Eng.

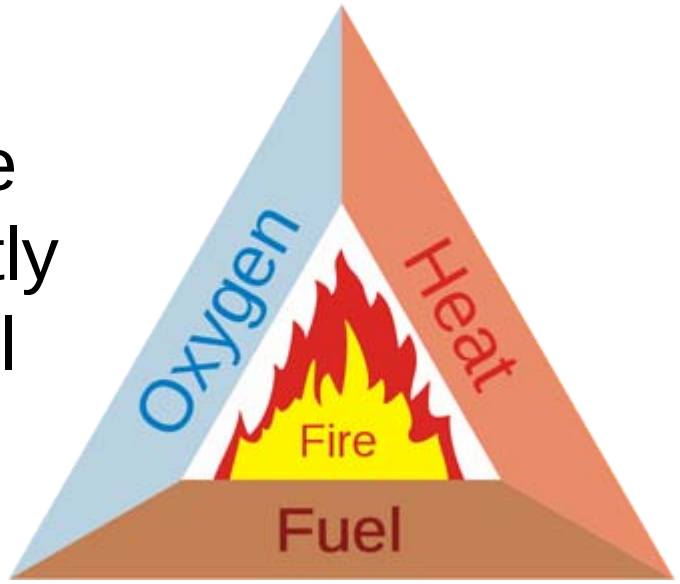
Facing Climate Change Impact with Science & Technology:
From Urban Flood to Forest Fire
24 March 2011, 14:15 – 15:00
Room# CC-309 Science Park

- What are wildfires?
- DNP’s forest fires detection methods
- Misconceptions about Hotspot Information
- Types of Fire Information Needed
- Current Situations
  - Thailand Daily Hotspot Report; Field Validation
- Lacks
- Needs
- On going activities
  - Shorten hotspot daily report in collaboration with GISTDA, GOFC-GOLD and FIRMS
  - Fire SensorWeb with NASA JPL/GSFC
  - Fire Locating and Modeling of Burning Emissions (FLAMBE')
- Challenges

What are wildfires?

Wildfires (or bushfires in Australia) are fires that are burning freely in the wild in an uncontrollable manner.

To have a fire, the triangle of fire needs to be perfectly met without one, a fire will never be created.



Wildfires have two main types which are grass fires and forest fires.

There are three main types of forest fires in the world.

1. Ground or Surface Fires
2. Crown Fires
3. Underground Fires

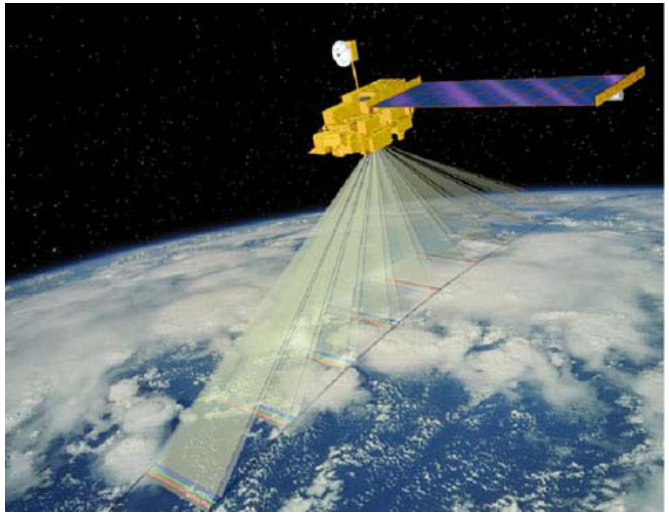
Fires are essential tool for tree regeneration and usually occur annually during the dry season.

Unfortunately, the major causes of forest fires are related to activities of those who live in the rural areas not the natural - gathering of forest non-timber products, agricultural debris burning, incendiary fire starting, hunting, and carelessness

DNP's forest fires detection methods

1362

Public Report




16 10:35

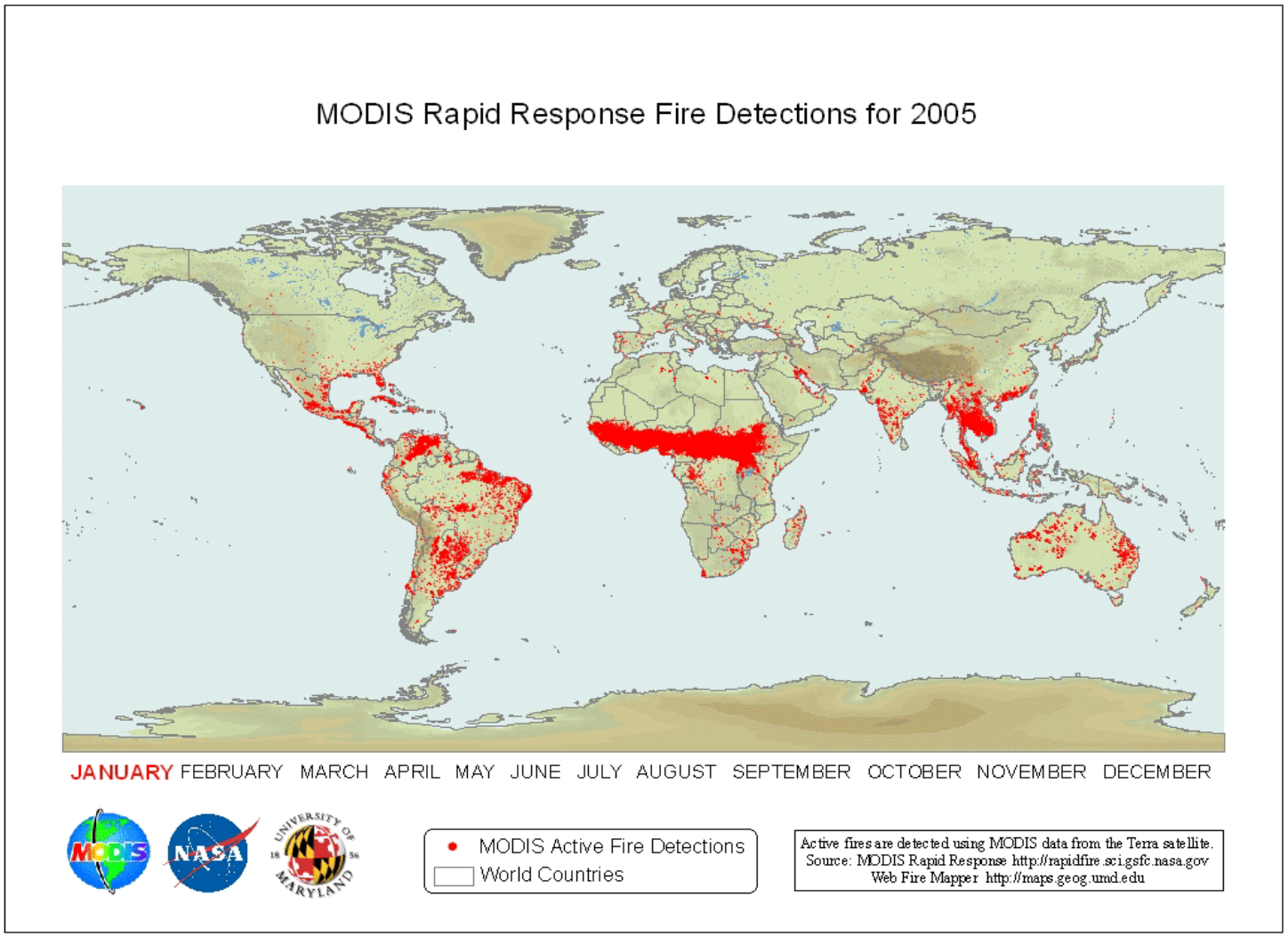

16 12:59


1012
16 13:00


16 13:01

Misconceptions about Hotspot Information

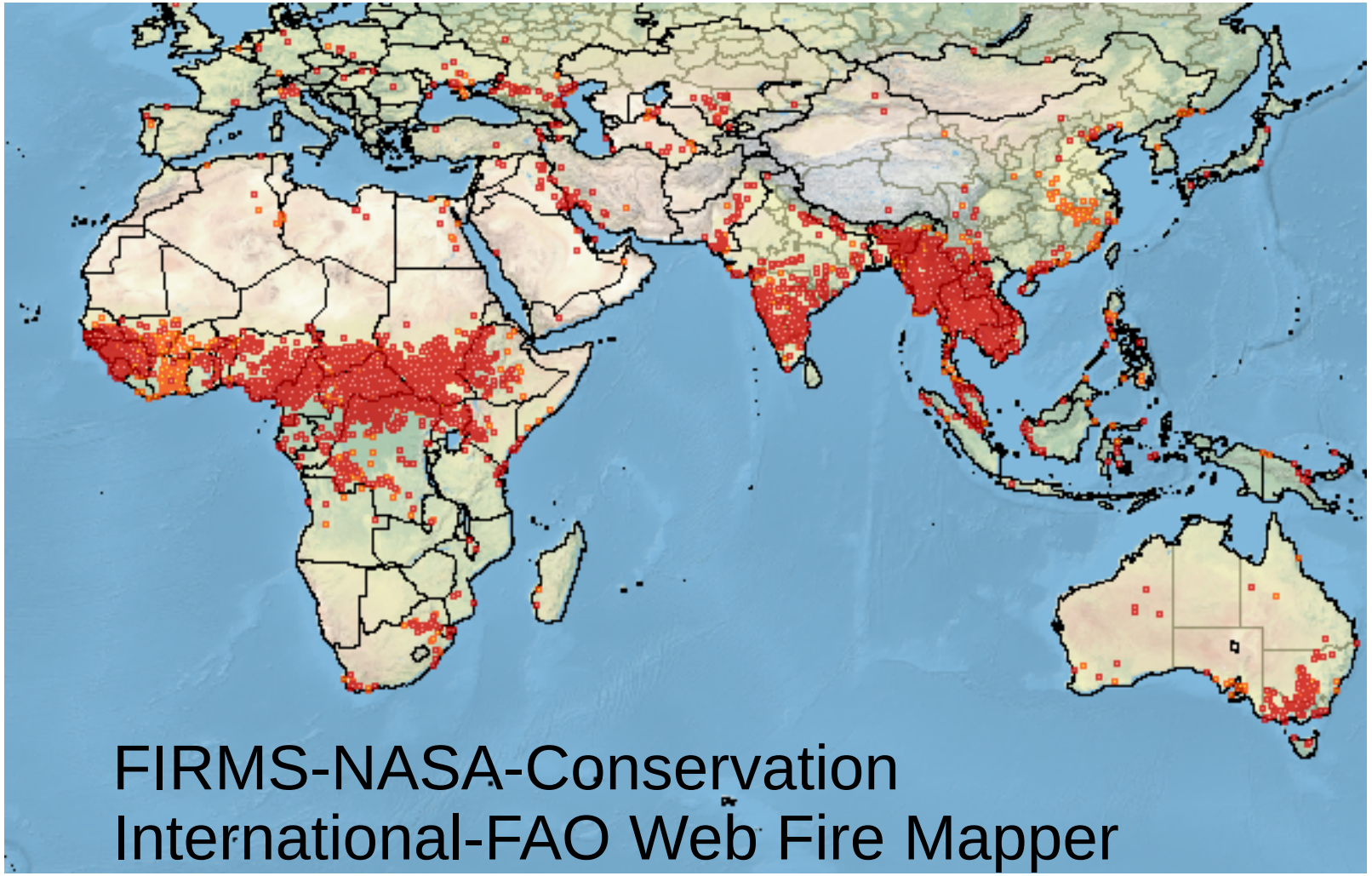
A hotspot is a point, so it does not take space in a map.



Chris Justice

Misconceptions about Hotspot Information

A hotspot is a point, so it does not take space in a map.



Web Fire Mapper: Thailand

Home Web Fire Mapper

NOTICE: These ArcIMS Web Fire Mapper maps will be phased out within the next few months and will have limited technical support.

Please use the open source version of Web Fire Mapper and contact us with concerns, questions or feedback.

Vectors

- [x] World Countries
- [x] World Countries (outline)
- [ ] SE Asia Waters (TRFIC) (1:13000000)*
- [ ] SE Asia Roads (TRFIC) (1:13000000)*
- [ ] SE Asia Railroads (TRFIC) (1:13000000)*
- [ ] SE Asia Cities (TRFIC) (1:13000000)*
- [ ] Protected Areas: IUCN 1 to 6 (WDPA 2006)
- [ ] Thailand Railroads
- [ ] Thailand Roads
- [ ] Thailand Streams
- [ ] Thailand Forests
- [ ] Thailand Provinces

Active fire detections

Active fire detections

- [x] Fires Last 24 hours
- [ ] Fires Last 48 hours
- [ ] Fires Last 7 days
- [ ] MODIS Active Fire Detections - November 2000 - 2004
- [ ] MODIS Active Fire Detections - 2005
- [ ] MODIS Active Fire Detections - 2006
- [ ] MODIS Active Fire Detections - 2007
- [ ] MODIS Active Fire Detections - 2008
- [ ] MODIS Active Fire Detections - 2009

Images (high speed internet connection recommended)

- [x] Elevation and Rivers (WDPA)

Open Map

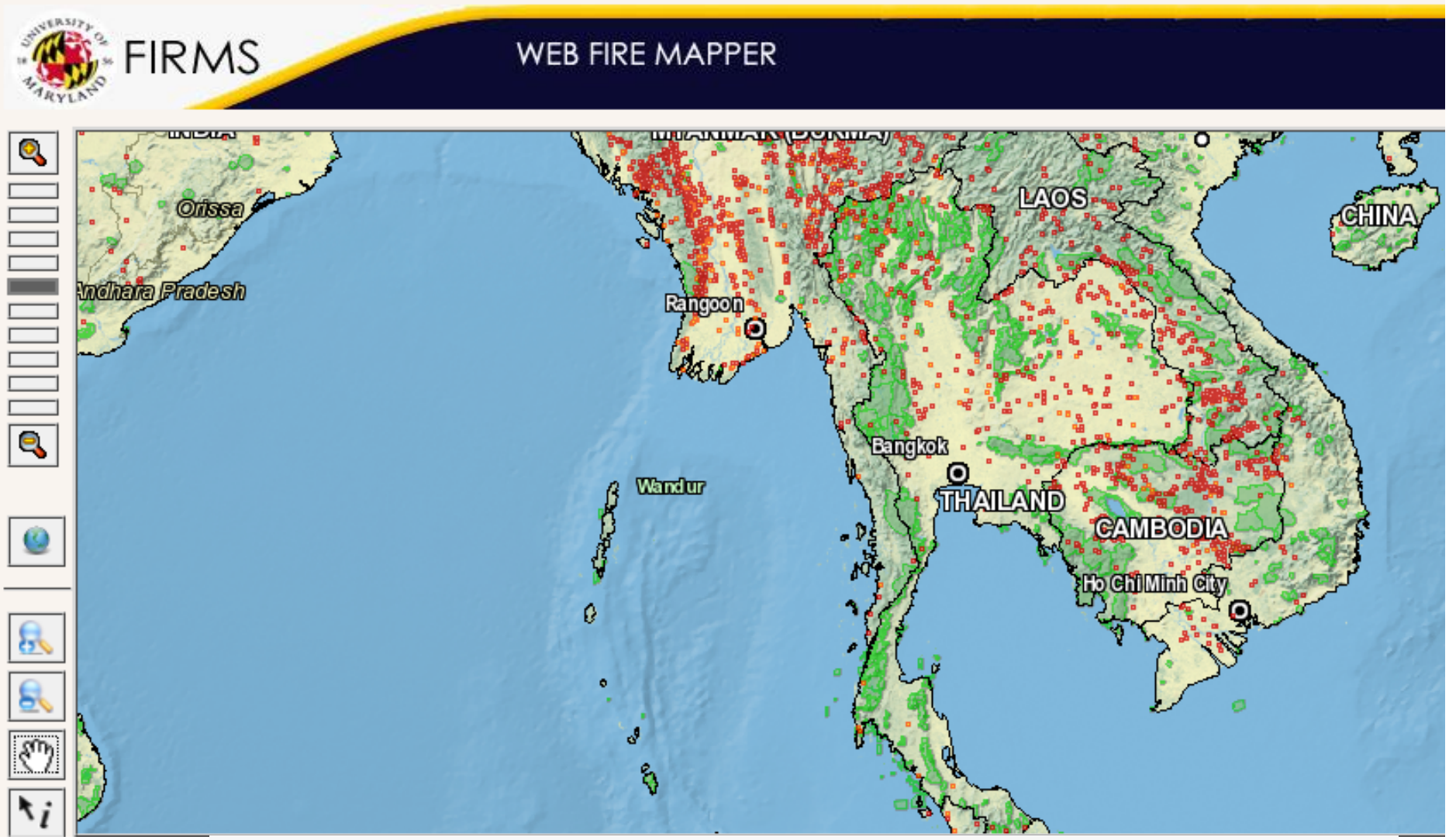
Note : * Represents the scale at which the layer is turned on.

DEPARTMENT OF GEOGRAPHY
AT THE UNIVERSITY OF MARYLAND, COLLEGE PARK

Questions or Comments? Contact us

http://maps.geog.umd.edu/activefire_html/checkboxes/thailand_checkbox.htm

Now Change to http://firefly.geog.umd.edu/firemap/



This material is based upon work supported by the National Aeronautics and Space Administration under Cooperative Agreement No. NNS06AA04A issued through the Decision Support Program and from the United Nations Food and Agriculture Organization.

Types of Fire Information Needed

- Fire History
- Fire Danger/Susceptibility (Weather and Satellite data)
  - –Fuel type, structure, fuel condition, fire weather
- Fire Behavior related information
  - –Weather, topography, fuel load and condition
- Fire Occurrence / Location
  - –Tactical (within 15 minutes, local)
  - –Strategic (daily briefings, regional coverage)
- Fire Emissions and Related Information (NRT and Regional)
  - –Fuel load and condition, combustion completeness
  - –Distributions of emissions products (trace gases, particulates) – air quality, atmospheric composition
- Fire Characterization (fire intensity)
- Burned Area (near real time, monthly, annual)
- Fire Severity
- Immediate Post Fire Assessment
  - –Fire severity > ecosystem damage – remedial actions
  - –Fire recovery
- Long-term trends in fire regimes

Pre-Fire

Active Phase

Post-Fire

Chris Justice

Current Situations: Daily Hotspot Report

FIRMS

FIRE INFORMATION FOR RESOURCE MANAGEMENT SYSTEM

Search

- Home
- About
- Web Fire Mapper
- Email Alerts
- Active Fire Data
- MODIS Subsets
- Resources
- FAQs
- Contributors
- Links

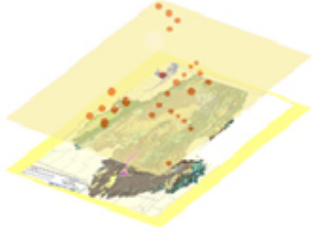
The Fire Information for Resource Management System (FIRMS) integrates remote sensing and GIS technologies to deliver MODIS hotspot/fire locations to natural resource managers and other stakeholders around the World. FIRMS is funded by NASA and builds on Web Fire Mapper, a web mapping interface that displays hotspots/fires detected by the MODIS Rapid Response System delivering near real-time hotspot/fire information to users to support fire managers around the World. Read more...

FIRMS delivers MODIS hotspot/fire information through:
(i) Email and Cell phone text messages (Global Fire Email Alerts)
(ii) Interactive WebGIS (Web Fire Mapper)
(iii) Latest hotspot/fire data downloads (ESRI Shapefiles, Text Files, NASA WorldWind Plugin Google™ Earth KML, OGC WMS)
(iv) Subsets of MODIS images

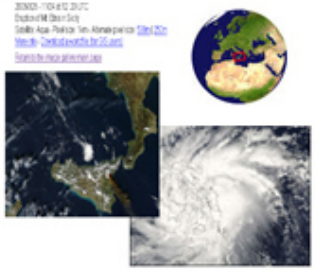
Click on the graphics below to access the different services:

EMAIL ALERTS

ACTIVE FIRE DATA

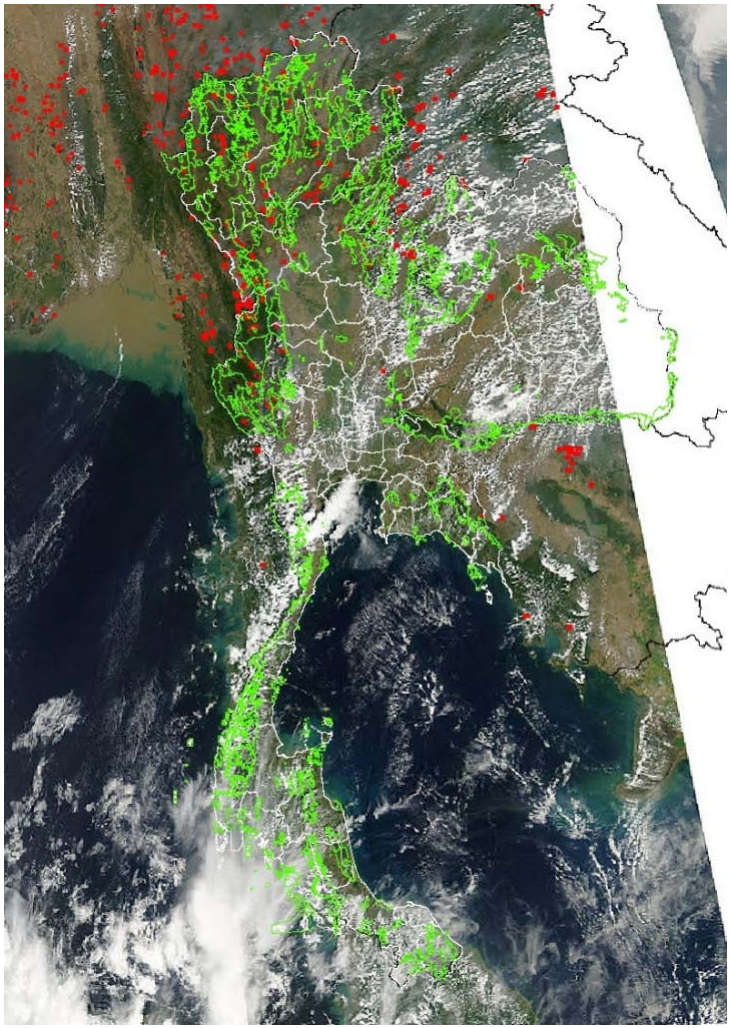


MODIS SUBSETS

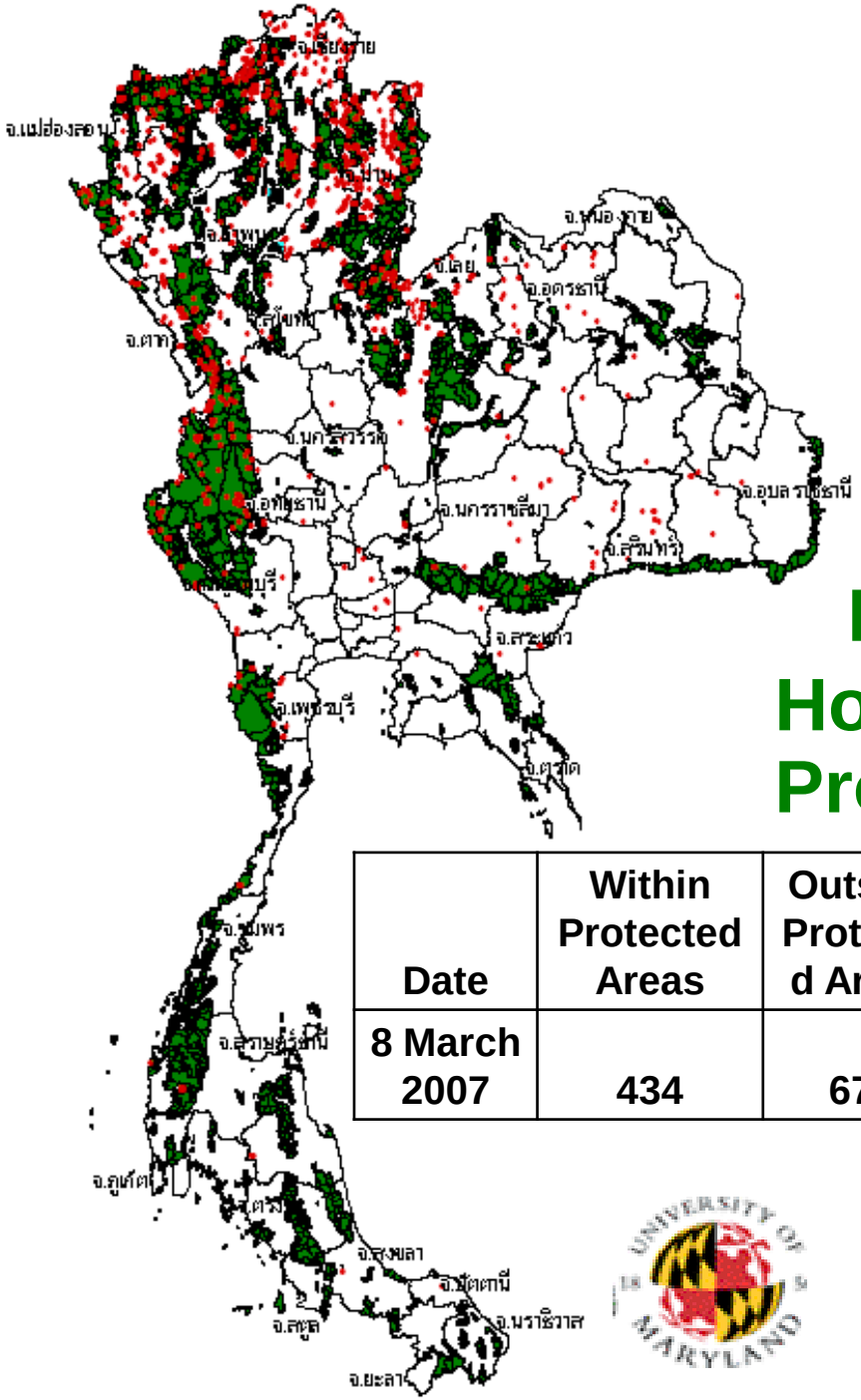


WEB FIRE MAPPER

Daily report contains hotspots within protected, reserved, and agriculture areas



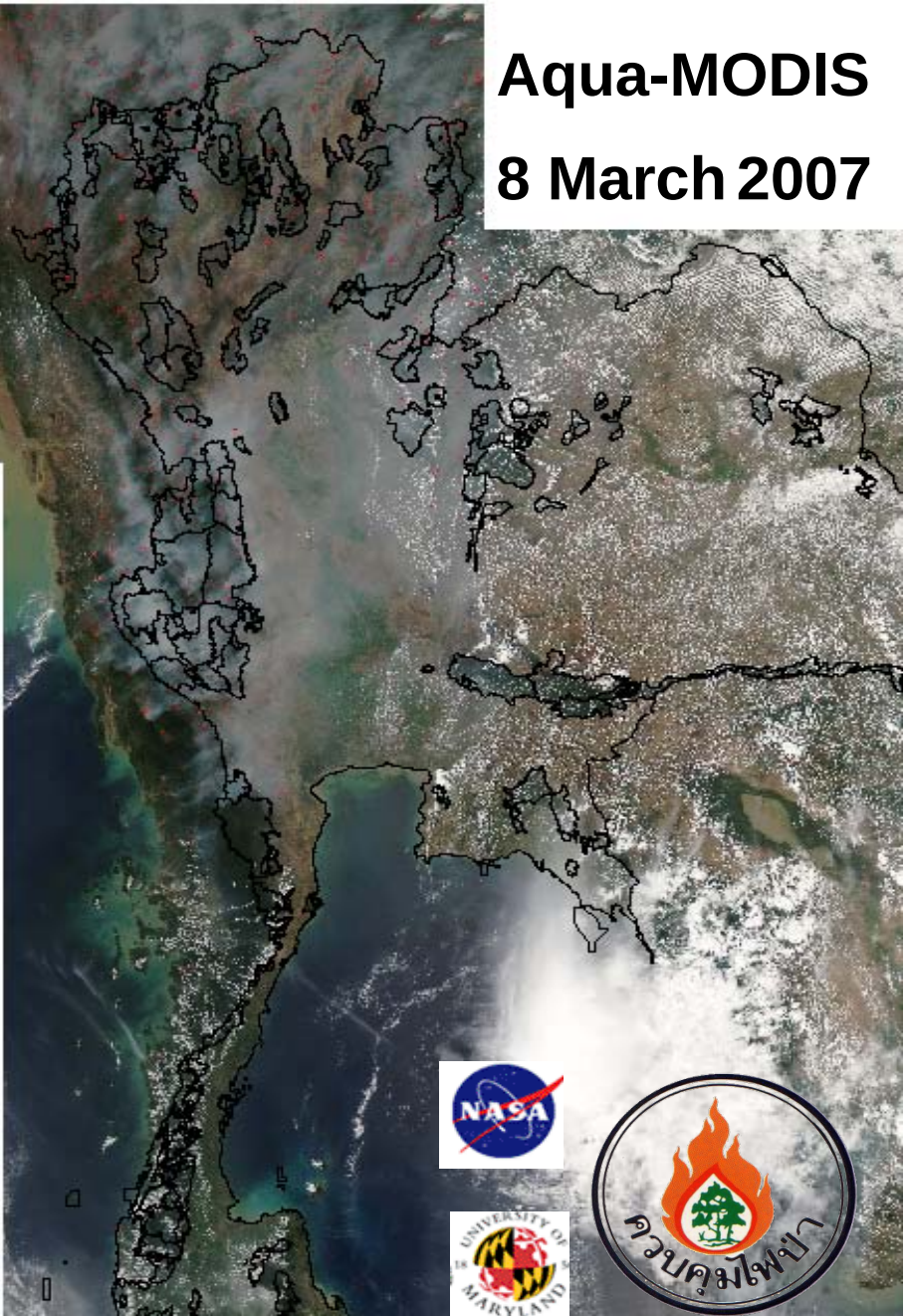
Source: http://www.dnp.go.th/forestfire/hotspot/



Daily Hotspots Products

Date	Within Protected Areas	Outside Protected Areas	Total
8 March 2007	434	675	1112

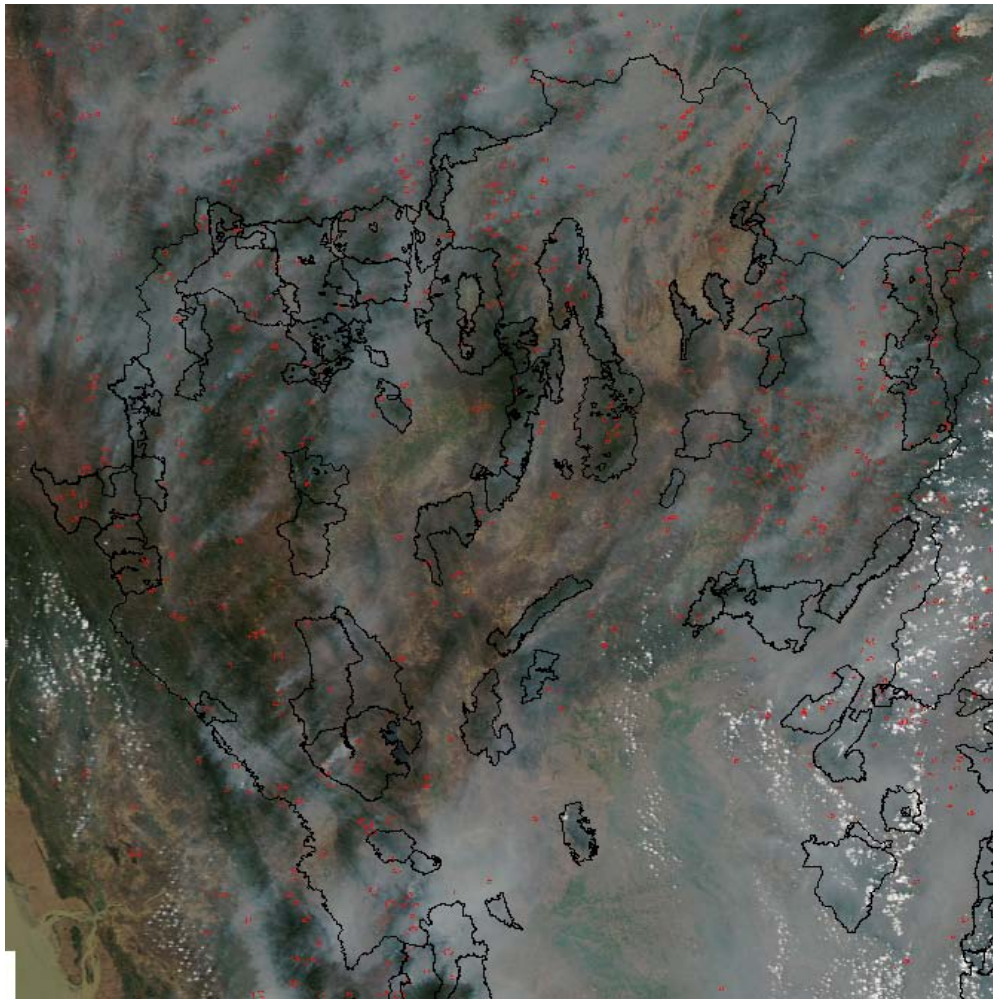
MODIS Images



Aqua-MODIS

8 March 2007

Zoom in Northern Thailand Aqua-MODIS 8 March 2007



Forest Fire

Daily report contains hotspots within protected, reserved, and agriculture areas

ข้อมูล Hotspots ในพื้นที่ป่าอนุรักษ์ ประจำวันที่ 28 กุมภาพันธ์ 2553

ว/ด/ป	เวลา	LAT	LONG	POINT_X	POINT_Y	ดาวเทียม	ตำบล	อำเภอ	จังหวัด	ชื่อพื้นที่	สถานีฯที่รับผิดชอบ
28/2/2010	13.25	6.420	101.743	803440	710445	Aqua	ลุโบะบือซา	ยี่งอ	นราธิวาส	อ่าวมะนาว - เขาต้นหยง	สถานีควบคุมไฟป่านราธิวาส
28/2/2010	13.30	12.869	102.491	878979	1425223	Aqua	คลองใหญ่	โป่งน้ำร้อน	จันทบุรี	คลองเครือหวายเฉลิมพระเกียรติฯ	
28/2/2010	13.30	14.578	99.125	513464	1611655	Aqua	ด่านแม่แฉลบ	ศรีสวัสดิ์	กาญจนบุรี	เขื่อนศรีนครินทร์	
28/2/2010	13.30	14.913	98.299	424605	1648822	Aqua	ปิล๊อก	ทองผาภูมิ	กาญจนบุรี	ทองผาภูมิ	
28/2/2010	13.30	15.124	98.886	487751	1672044	Aqua	ชะแล	ทองผาภูมิ	กาญจนบุรี	ทุ่งใหญ่นเรศวร	
28/2/2010	13.30	15.126	98.903	489578	1672265	Aqua	ชะแล	ทองผาภูมิ	กาญจนบุรี	ทุ่งใหญ่นเรศวร	
28/2/2010	13.30	15.138	98.900	489256	1673592	Aqua	ชะแล	ทองผาภูมิ	กาญจนบุรี	ทุ่งใหญ่นเรศวร	
28/2/2010	13.30	15.159	98.879	487001	1675916	Aqua	ชะแล	ทองผาภูมิ	กาญจนบุรี	ทุ่งใหญ่นเรศวร	
28/2/2010	13.30	15.161	98.895	488720	1676136	Aqua	ชะแล	ทองผาภูมิ	กาญจนบุรี	ทุ่งใหญ่นเรศวร	
28/2/2010	13.30	15.235	98.858	484751	1684323	Aqua	ชะแล	ทองผาภูมิ	กาญจนบุรี	ทุ่งใหญ่นเรศวร	
28/2/2010	13.30	15.333	98.749	473058	1695173	Aqua	ไล่โว่	สังขละบุรี	กาญจนบุรี	ทุ่งใหญ่นเรศวร	
28/2/2010	13.30	15.383	98.717	469630	1700708	Aqua	ไล่โว่	สังขละบุรี	กาญจนบุรี	ทุ่งใหญ่นเรศวร	
28/2/2010	13.30	15.386	98.734	471455	1701038	Aqua	ไล่โว่	สังขละบุรี	กาญจนบุรี	ทุ่งใหญ่นเรศวร	
28/2/2010	13.30	14.257	98.783	476592	1576160	Aqua	วังกระแจะ	ไทรโยค	กาญจนบุรี	ไทรโยค	
28/2/2010	13.30	14.261	98.777	475945	1576603	Aqua	วังกระแจะ	ไทรโยค	กาญจนบุรี	ไทรโยค	
28/2/2010	13.30	14.374	98.748	472831	1589104	Aqua	ไทรโยค	ไทรโยค	กาญจนบุรี	ไทรโยค	สถานีควบคุมไฟป่าไทรโยค-เขาแหลม
28/2/2010	13.30	13.407	99.362	539191	1482174	Aqua	บ้านคา	กิ่งบ้านคา	ราชบุรี	แม่น้ำภาชี	สถานีควบคุมไฟป่าราชบุรี
28/2/2010	13.30	14.811	98.823	480955	1637429	Aqua	ชะแล	ทองผาภูมิ	กาญจนบุรี	ลำคลองงู	
28/2/2010	13.30	14.817	98.826	481278	1638093	Aqua	ชะแล	ทองผาภูมิ	กาญจนบุรี	ลำคลองงู	
28/2/2010	13.30	14.831	98.939	493437	1639635	Aqua	ชะแล	ทองผาภูมิ	กาญจนบุรี	ลำคลองงู	
28/2/2010	13.30	14.834	98.928	492254	1639967	Aqua	ชะแล	ทองผาภูมิ	กาญจนบุรี	ลำคลองงู	
28/2/2010	13.30	14.837	98.943	493867	1640298	Aqua	ชะแล	ทองผาภูมิ	กาญจนบุรี	ลำคลองงู	
28/2/2010	13.30	14.867	98.864	485370	1643620	Aqua	ชะแล	ทองผาภูมิ	กาญจนบุรี	ลำคลองงู	

สรุปรวมปีงบ 53 | พื้นที่ป่าอนุรักษ์ | พื้นที่ป่าสงวนแห่งชาติ | พื้นที่เกษตร

Electronic report to responsible parties in the field

สรุป Hotspot ปีงบประมาณ 2553

ว/ด/ป	พื้นที่ป่าอนุรักษ์	พื้นที่ป่าสงวนแห่งชาติ	พื้นที่เกษตรกรรม	รวม	หมายเหตุ
1-31/10/2009	**2**	**4**	**55**	**61**	-
1-30/11/2009	**5**	**42**	**267**	**314**	-
1-31/12/2009	**42**	**267**	**1203**	**1512**	-
1-31/1/2010	**108**	**584**	**1797**	**2489**	-
1/2/2010	25	105	171	301	-
2/2/2010	2	19	18	39	-
3/2/2010	22	51	106	179	-
4/2/2010	13	13	34	60	-
5/2/2010	3	18	45	66	-
6/2/2010	21	54	38	113	-
7/2/2010	8	11	33	52	-
8/2/2010	54	96	97	247	-
9/2/2010	6	16	22	44	-
10/2/2010	73	163	144	380	-
11/2/2010	24	23	31	78	-
12/2/2010	35	101	95	231	-
13/2/2010	33	76	58	167	-
14/2/2010	14	52	45	111	-
15/2/2010	94	135	141	370	-
16/2/2010	13	35	50	98	-
17/2/2010	92	147	163	402	-
18/2/2010	10	13	26	49	-
19/2/2010	48	105	147	300	-
20/2/2010	50	40	22	112	-
21/2/2010	23	46	48	117	-
22/2/2010	148	182	99	429	-
23/2/2010	20	54	31	105	-
24/2/2010	190	313	134	637	-

สรุปรวมปีงบ 53 | พื้นที่ป่าอนุรักษ์ | พื้นที่ป่าสงวนแห่งชาติ | พื้นที่เกษตร

Ready

Daily Summary

SITUATION REPORT
REPORT FROM NATIONAL MONITORING CENTRES TO ASEAN CENTRE

Weekly Report to ASEAN Center

1. General Information

Office Reference No. :

From : National Park, Wildlife and Plant Conservation Department THAILAND

To : Interim ACC, ASEAN Secretariat

Day / Date / Time : 28 November 2010 11:05 AM

2. General Description of the Incident (please provide general description of the incident, cause of fire, affected area, impact on human health and environment, possible threats and risks, problems encountered, and other relevant information)

3. Fire Related Information

1. No :
2. Location :
3. Number of fire :
4. Latitude :
5. Longitude :
6. Size (ha) :
7. Type of fire : Surface fire
8. Fuels : Undergrowth, litter, grass
9. Topography : Mountainous
10. Causes (natural, incendiary, accidental, unknown) : Human - caused
11. Resources currently mobilised/actions taken : Forest Fire Control Stations within areas
12. Additional resources required (gaps) : -

4. Preparations and Action Taken (In addition to Box 3, please summarise preparations and actions taken in response to the current situation)

Action taken under Fire Suppression Mobilization Plan level 1 (Situation under control)

5. Possibility of Resource Requirements (Based on Box 3, please indicate where additional resources will be helpful to fill up the gaps)

-

6. Others (please describe if there is any impact to community (threats to human lives, endangered species) – fire located near residential areas, industrial areas or ecologically-sensitive areas; provide other information that not fall into the above categories)

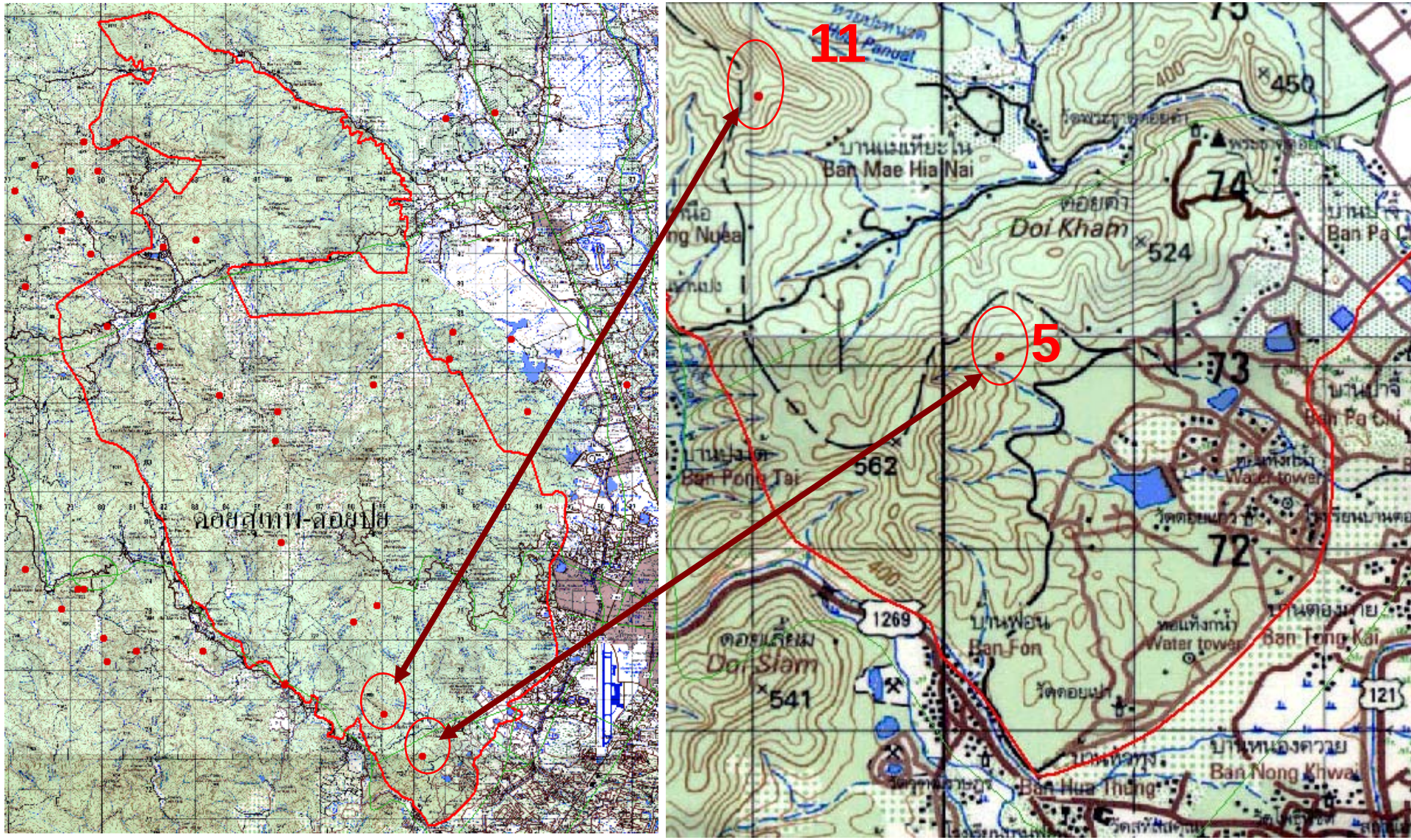
-

Signed by:

Prayoonyong Nhuchaiya / Chonthida Chernkhuntod

Forest Technical Officer
Forest Fire Control Division
National Park, Wildlife and Plant Conservation Department
Thailand.

Field Validation

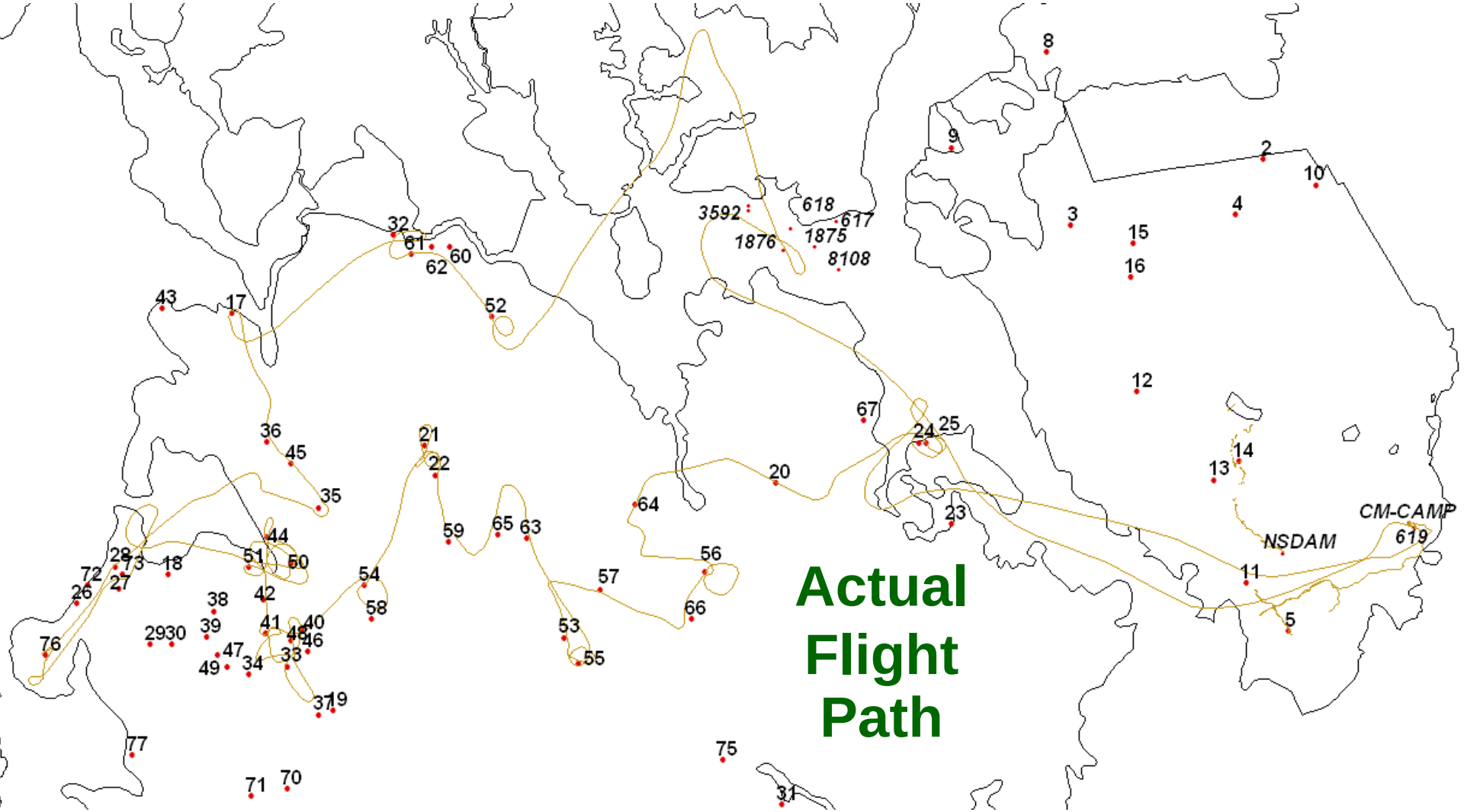


N18.762, E98.896

Field Validation

By Helicopter, Max height 500 Meters, 108 minutes, 40 locations

Field Validation



Field Validation

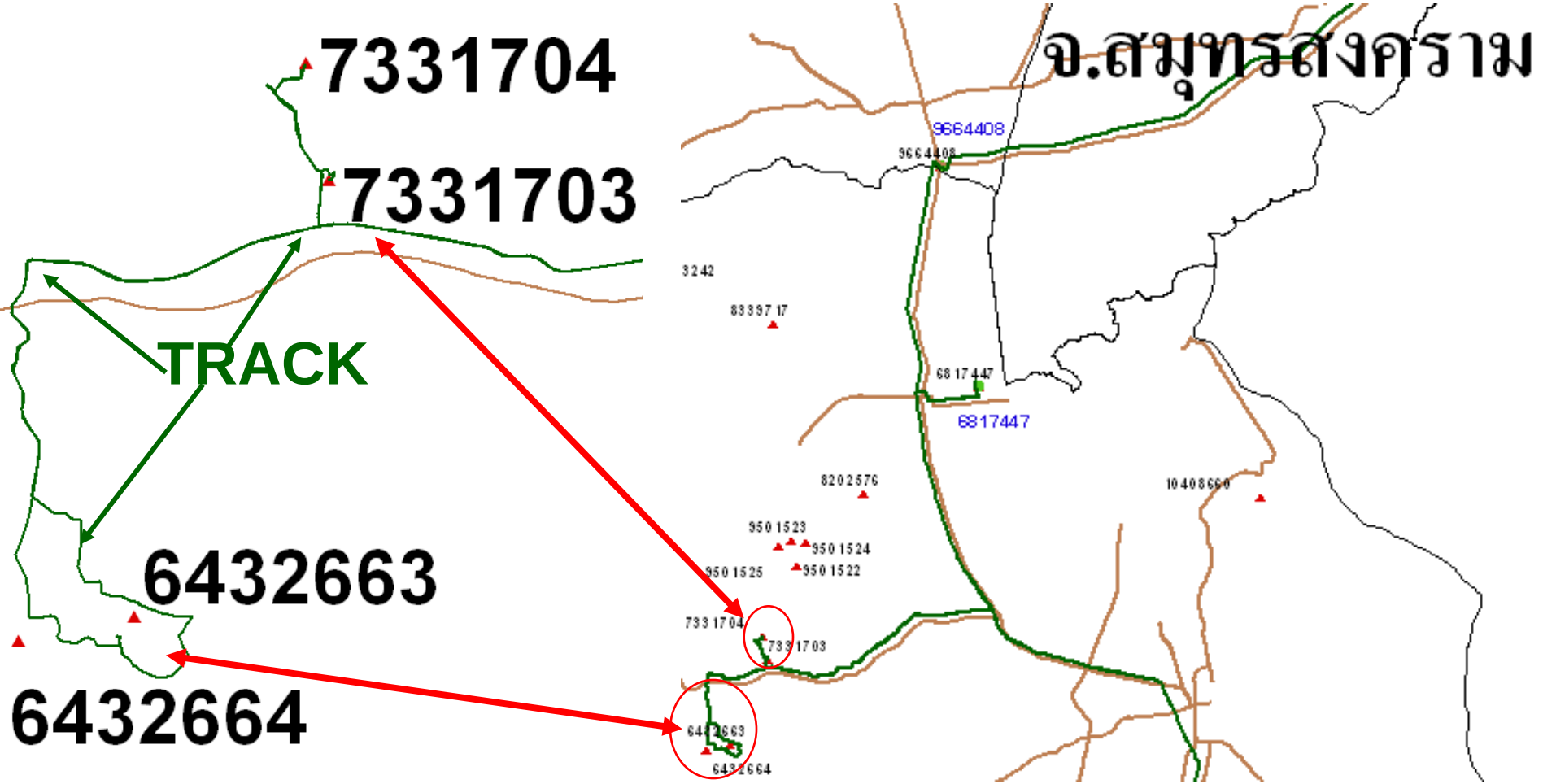
N18.765, E98.742

Field Validation

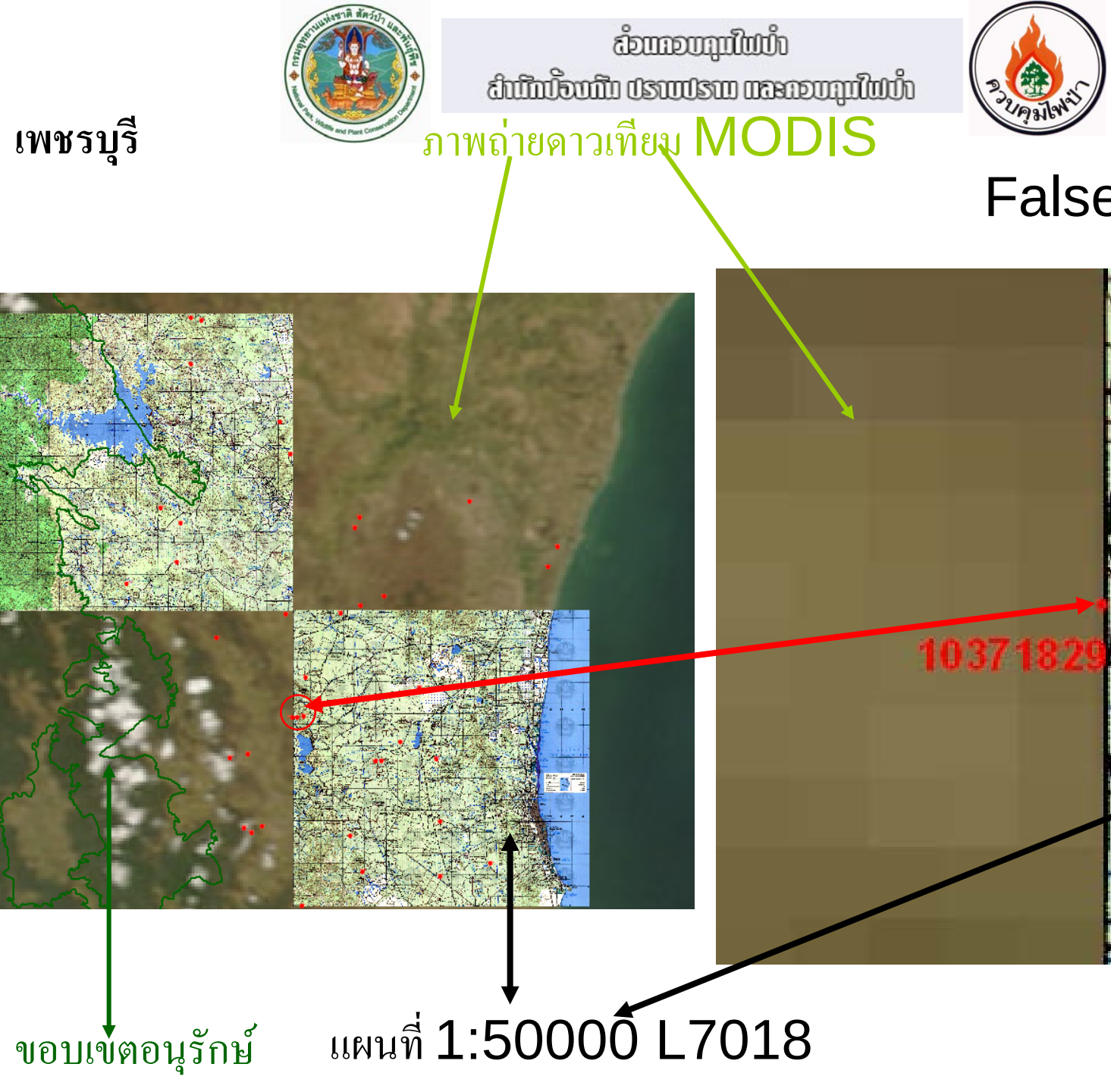
N18.748, E98.617




เพชรบุรี



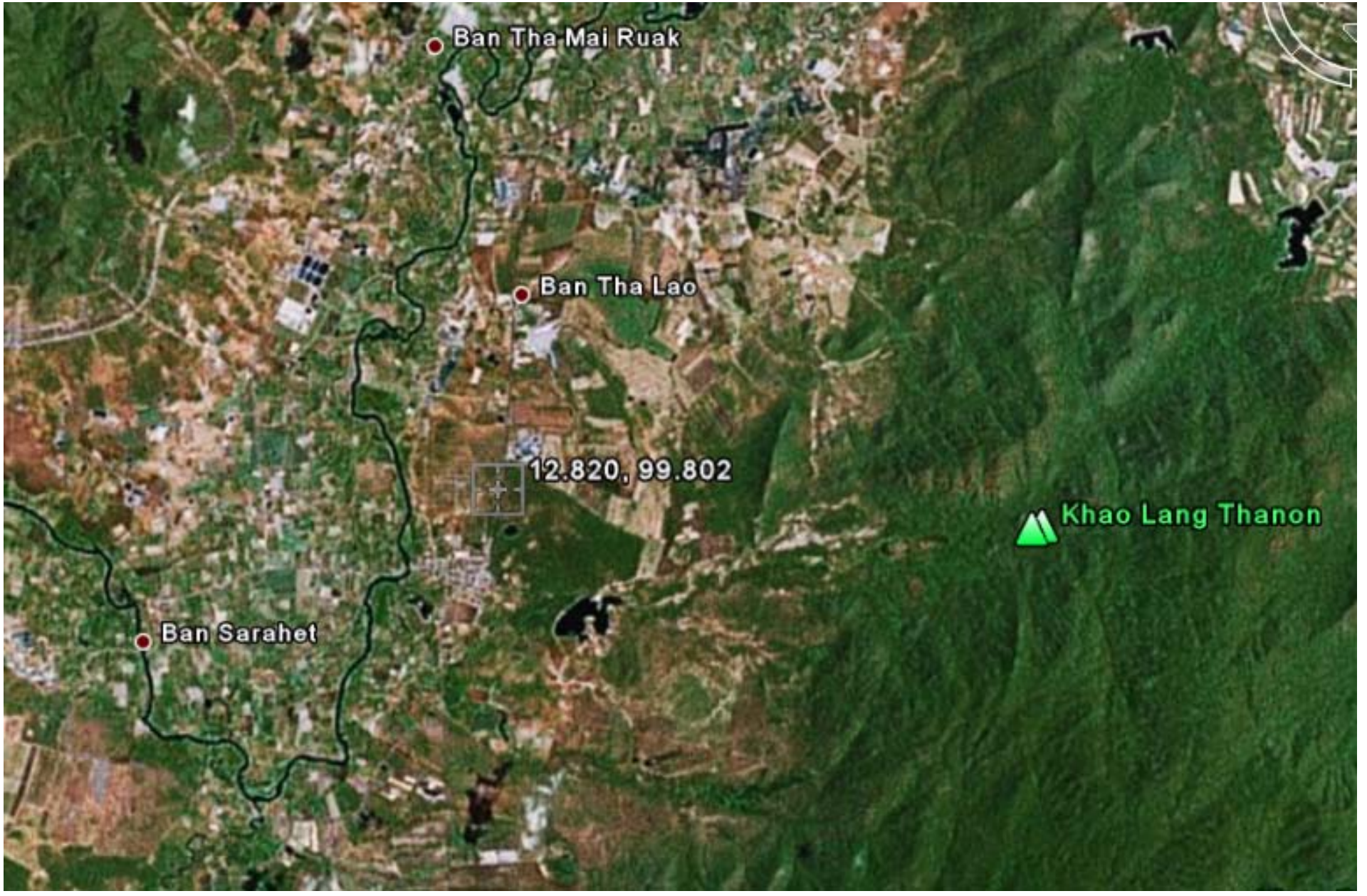
False Positive


ส่วนควบคุมไฟป่า
สำนักป้องกัน ปราบปราม และควบคุมไฟป่า
ควบคุมไฟป่า
เพชรบุรี
ภาพถ่ายดาวเทียม MODIS
False Positive
82
10371829
3400
ขอบเขตอนุรักษ์
แผนที่ 1:50000 L7018

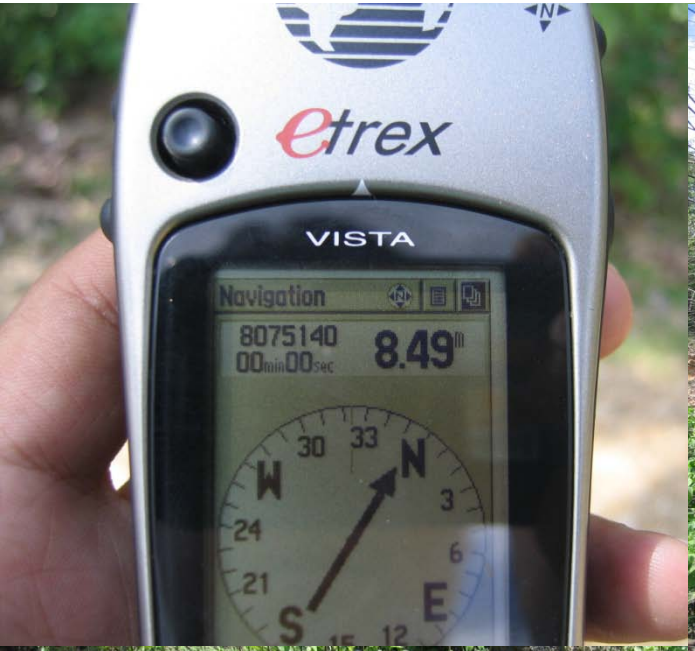
จุดที่ 3 6930017. **(12.623, 99.820)** False Positive




ดาวเทียม **IKONOS Google Earth** False Positive



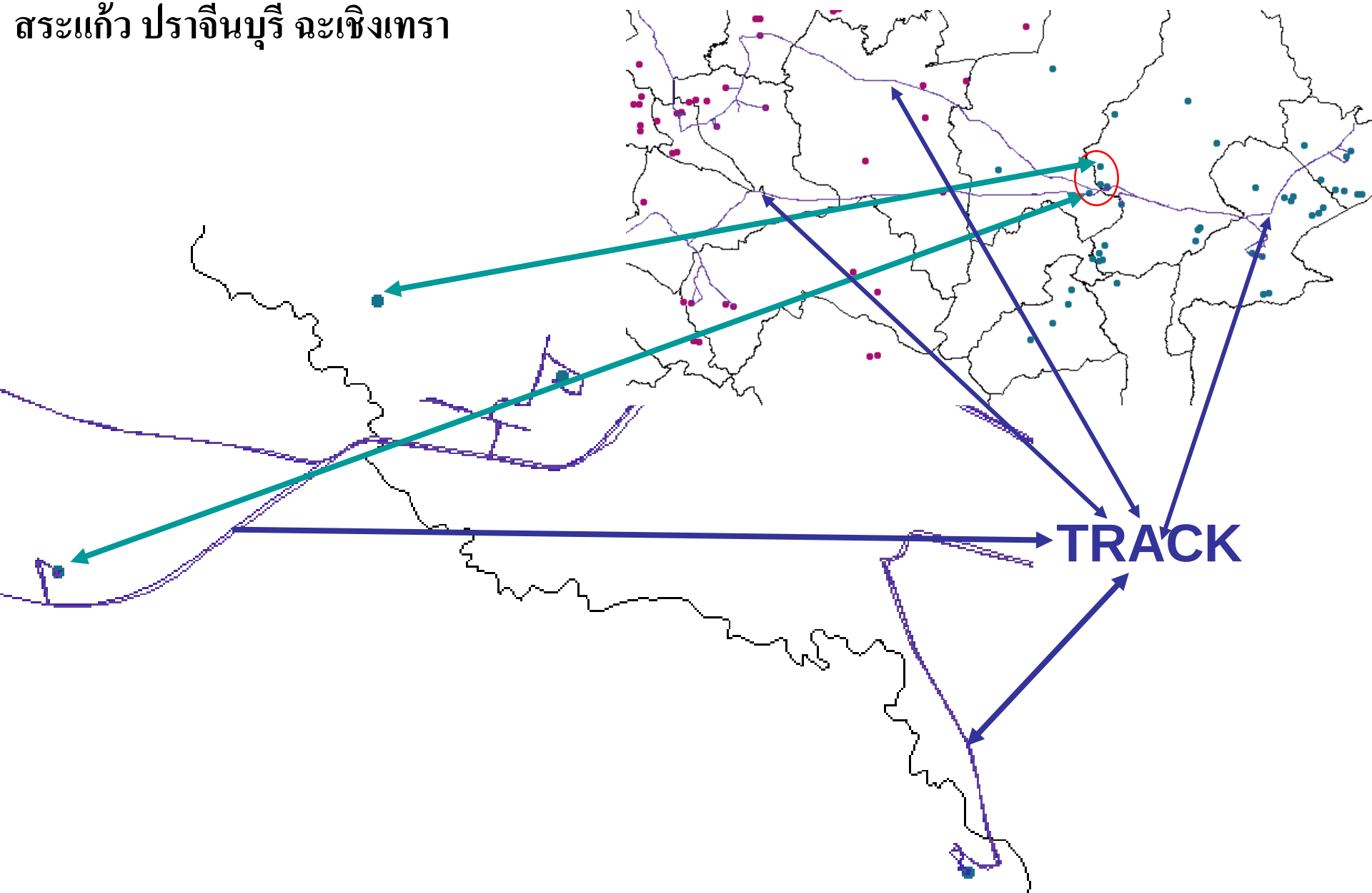
จุดที่ 11 8075140 (12.820, 99.802) False Positive



เพชรบุรี

จุดที่ 12 8075138 (12.829, 99.806) ไม่ไหม้ **False Alarm**

สระแก้ว ปราจีนบุรี ฉะเชิงเทรา



ดาวเทียม Quick Bird PointAsia.com


ไป แต่ยังไม่ถึงพิกัด
อาจคิดว่าไม่มี
ร่องรอยไฟไหม้
แต่ .....

พิกัดไฟไหม้ดาวเทียม 7151234 (N13.750, E102.233)

ดาวเทียม Quick Bird PointAsia.com

ดาวเทียม IKONOS Google Earth

พิกัดไฟไหม้ดาวเทียม 8757963 (N14.069, E101.555) ไม่ไหม้ **False Alarm**

สระแก้ว ปราจีนบุรี ฉะเชิงเทรา

ส่วนควบคุมไฟป่า
สำนักป้องกัน ปราบปราม และควบคุมไฟป่า

พิกัดไฟไหม้ดาวเทียม 7751280 (N13.770, E102.174) ไม่ไหม้ **False Alarm**

Field Validation

MODIS Hotspot Validation over Thailand

Veerachai Tanpipat [1,*], Kiyoshi Honda [1] and Prayoonyong Nuchaiya [2]

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Table 2. Hotspot validation summary within protected areas by 138 forest fire stations.

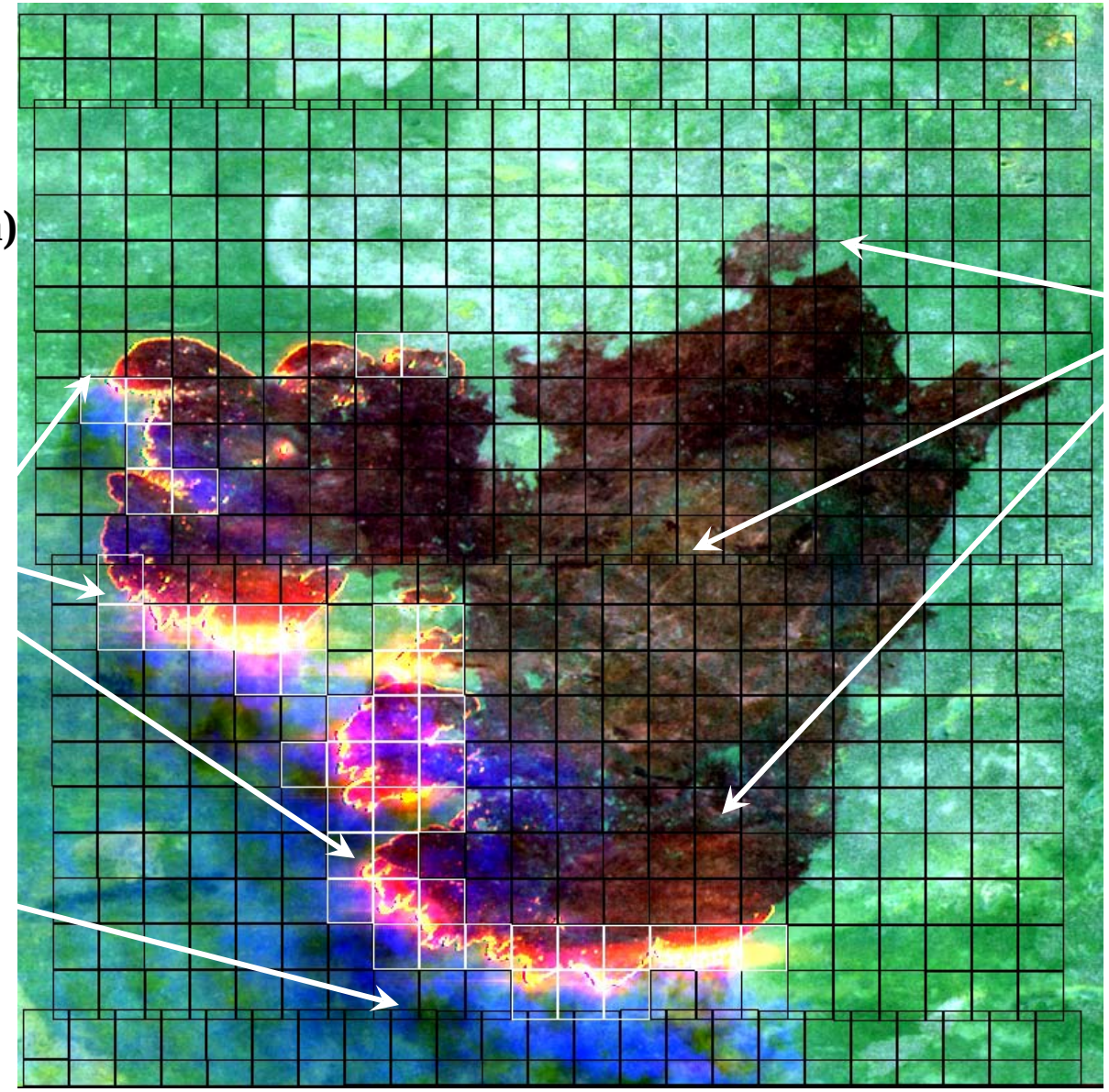
Recording period of hotspots	Hotspots	Validated	%Validated	Found	%Found	Not Found	%Not Found
1. Mar 07–Apr 07	2,114	478	22.61	439	91.84	39	8.16
2. Oct 07–Apr 08	4,167	773	18.55	739	95.60	34	4.40
3. Dec 08–May 09	4,308	972	22.56	948	97.53	24	2.47
Total	10,589	2,223	20.99	2,126	95.64	80	4.36

Source: Forest Fire Control Division, National Park, Wildlife, and Plant Conversation Department, 2009.

Validation of TERRA MODIS Fire Detections using ASTER (Simultaneous High Resolution Acquisition with MODIS)

Aug 17 2001
09:08 UTC
18.8S 19.9 E

(NE Namibia)



White squares: MODIS fire pixels

Burn scar

R: 2.16 µm
G: 1.65 µm
B: 0.56 µm

Fire fronts

Smoke

Conservative Algorithm for Global Application

(Csiszar, Giglio et al)

Lacks

1. Fundamental basic agreement such as using the same detection sensors.

2. Understanding of smog and haze behaviors, what they really do such as how high smog starts to turn when it start to rise up in the air?

3. A better size estimation of burned areas by RS and ground validation

Lacks Cont'd

4. Operational mind set.

5. Really near real time active fire monitoring system by satellite (within 15 minutes, GEOS with sensor like MSG-SEVII).

6. Minimal communication with Global fire task team such as GOLD-GOFC, really need more interactions.

Lacks Cont'd

7. People who really do the job do not have enough chances to attend more workshops and meeting (Need support funding).

8. Systematic drought monitoring and Fire Weather Index, the ASEAN one is not practical, too coarse, need details in district or provincial scale

Needs

1. High or very high resolution images such as ASTER, ALOS/PALSAR, IKONOS, QuickBird, or WV-1/2 to get a closer look at the severe forest fires when needed in time.

2. Technology transfer in any possible ways including technical supports from Global Fire Task Team.

3. Solid collaboration among agencies within the Thailand.

4. Get real involve with on going Global fire task team's activities.

Needs Cont'd

5. Develop a reliable and stable smog and haze monitoring system for national operation.

6. Faster delivery time of same quality MODIS hotspots as get from MRRS (need GISTDA's supports with correct hotspot information).

7. Put a request to have a Geostationary Satellite which has fire detection capability

8. Support funding to attend international meetings and workshops.

On Going Activities

1. Shorten delivery time of MODIS active fire products (hotspots) to within 1 hr, including possibility of using MTSAT to monitor smog and haze with GISTDA's ground receiving station by helping from Ms. Anja A. Hoffmann and Dr. Diane Davie

2. Fire SensorWeb with EO-1-ALI and Hyperion by Dr. Steve Chien, Dr. David Mclaren and Dr. Daniel Tran, NASA JPL's team (developed by NASA-GSFC/JPL), trigger by MODIS fire alert email!!!

Collection of baseline images was done from the in the last week of December 2010 to the third week of February 2011. DNP supports LANDSAT-5 images of 2009 and 2010 to the team.

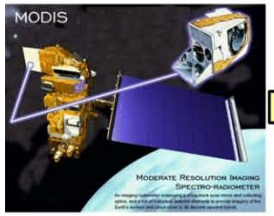
On Going Activities (Con't)

3. Experimental using Fire Locating and Modeling of Burning Emissions (FLAMBE')- NexSat of US NAVY and 7 SEAS Mission by NASA/GSFC to monitor smog and haze in northern Thailand during this fire season

4. Participating at Worldfire 2011 at Sun City, South Africa, 9-13 May 2011 particularly

The 1st GOFC-GOLD Fire - Inter Regional Network Meeting in order to get more technology and collaborations supports.

Thailand Fire Hotspot Daily Report Flow Chart



NASA

Land Atmosphere Near real-time Capability for EOS (LANCE)

MODIS Rapid Response System

FIRMS

Fire Hotspot Email Alert

GISTDA

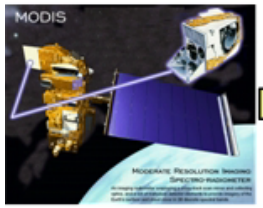
TerraScan By SeaSpace

Not in Operation Yet

Expert Analysis

USERS

Thailand Fire SensorWeb Flow Chart



Land Atmosphere Near real-time Capability for EOS (LANCE)

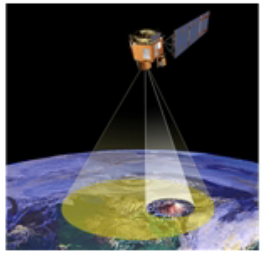
MODIS Rapid Response System

FIRMS

Jet Propulsion Laboratory
California Institute of Technology

Calculate Priority Weight Score

Earth Observing-1



Jet Propulsion Laboratory
California Institute of Technology

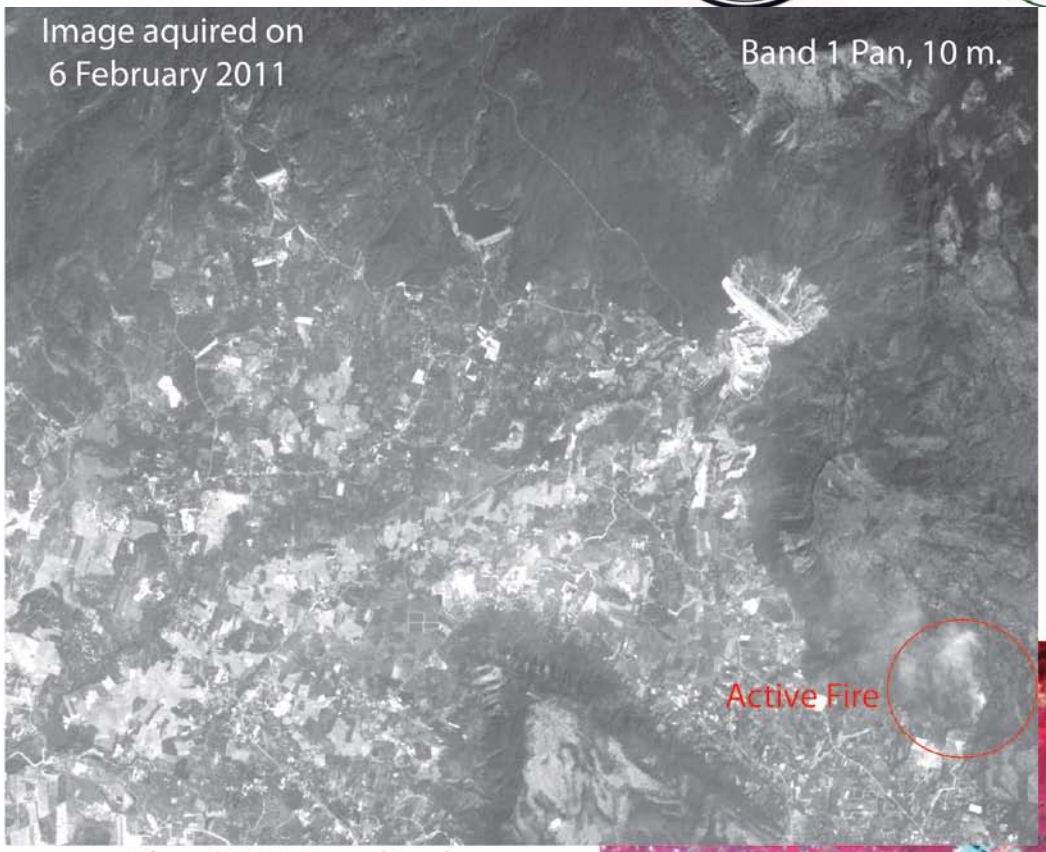
Fire SensorWeb Server

Fire SensorWeb Server

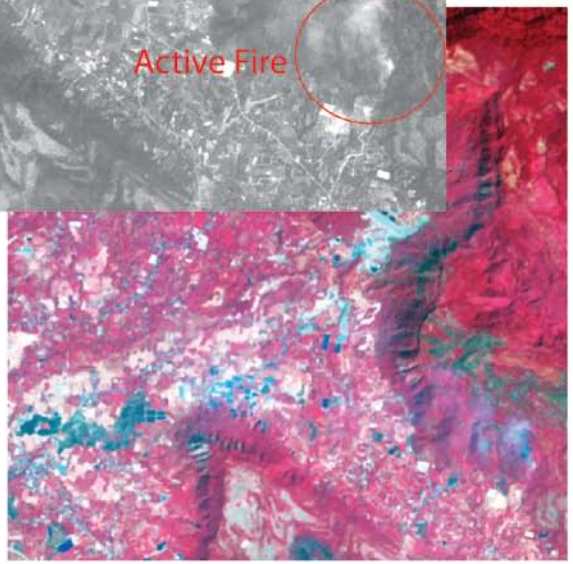
Expert Analysis

USERS

The 1st ALI Image



Khao Yai National Park



Band 8-5-3, 30 m.

Band 5-4-3, 30 m

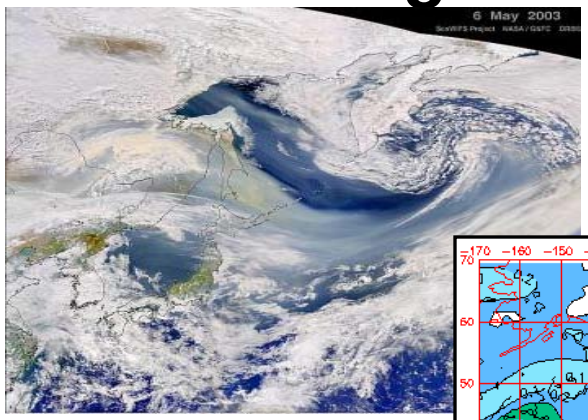
Thailand Fire SensorWeb

By Earth Observing One (EO-1)
Advanced Land Imager (ALI)

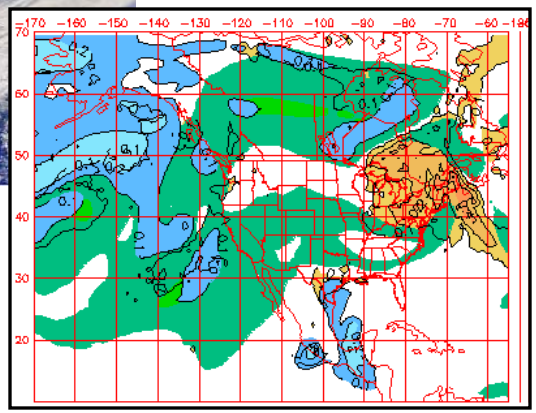
NASA

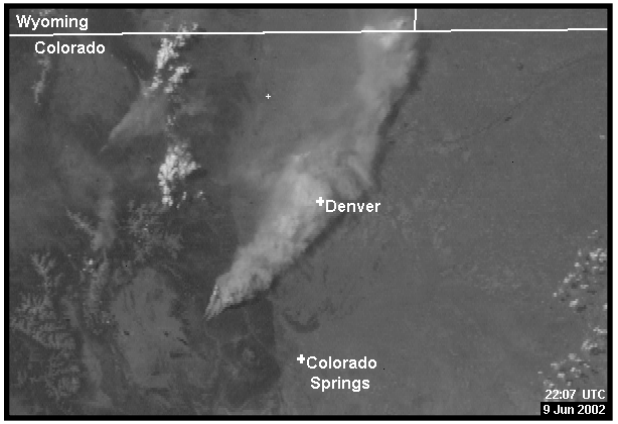
JPL
Jet Propulsion Laboratory
California Institute of Technology

GOES Geostationary Monitoring
Monitoring Transport of Biomass Burning Aerosols



Smoke Transport Across
Pacific from Siberia
6 May 2003

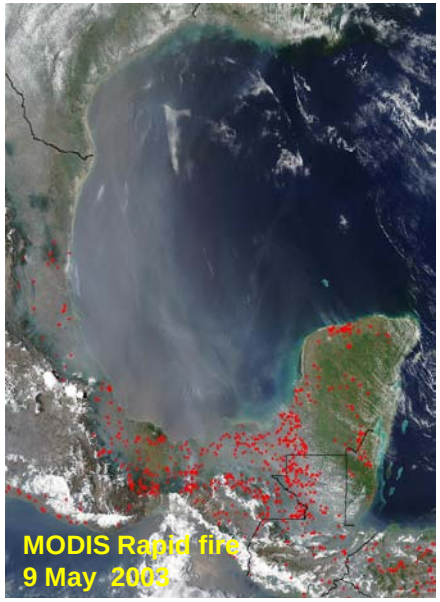




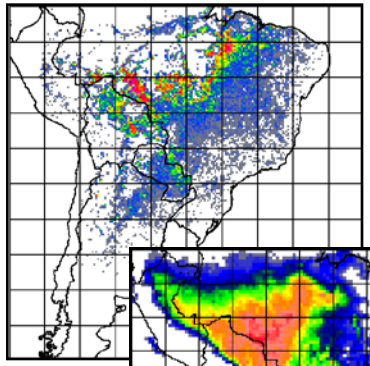
GOES-11 Rapid Scan Visible Imagery (1 km)
22:07, 9 June 2002 – 00:50, 10 June 2002
Courtesy of CSU - CIRA

Before

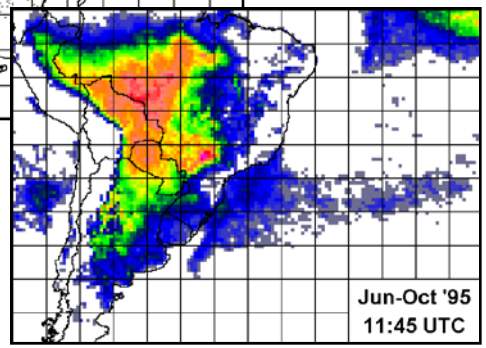
After



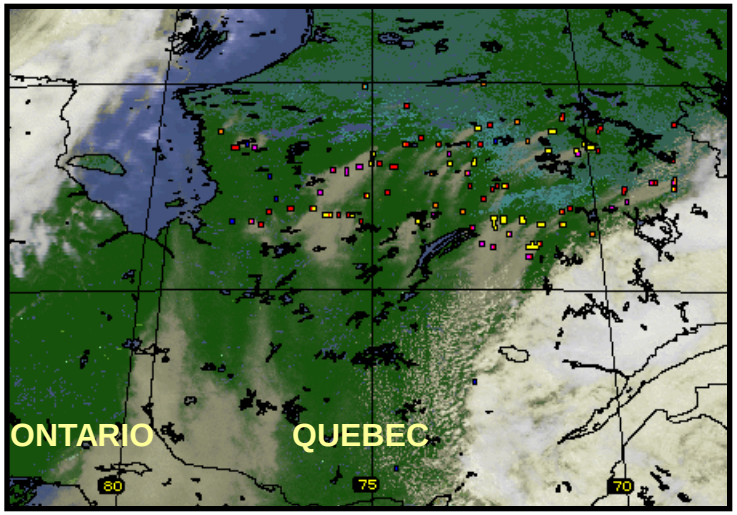
Smoke Transport Across
Gulf of Mexico
9 May 2003



GOES
Fire Product
Jun-Oct 1995



GOES
Smoke
Coverage



Wildfires in Quebec, Canada
6 July 2003 at 17:45 UTC

(Prins et al)

Smog and Haze Monitoring By 7 SEAs

Welcome to the 7 SEAS Data Repository!

7SEAS Main Page

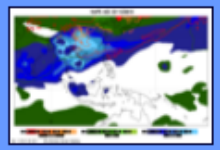
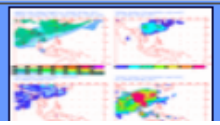
Data Use Policy Privacy Policy

Images and data shown for Latest	Change the Day	Previous Day Next Day	Reset

Related links:

Aerosol Forecasting:	Remote Sensing:	Weather:
NAAPS	NEXSAT Satellite Imagery	FNMOC NOGAPS Forecasts SE Asia
COAMPS0-OS VE	AERONET (Sun photometry)	NCEP/GFS Forecasts SE Asia
	AERONET BAMGOMAS (Synergy tool)	FNMOC NOGAPS Forecasts Indian Ocean
	FLAMBE (Biomass burning)	NCEP/GFS Forecasts Indian Ocean
	MODIS RGB Near Rapid Response Sets (Imagery)	FNMOC WW3 Forecasts Indian Ocean
	NRL Remote Sensing (Imagery)	Malaysian Meteorological Department
	MISR Data Collects for VBBE	Environment Agency
	VBBE COAMPS Plots	
	NASA LaRC FlashFlux	
	NASA/NRL/CRISP MPLNET	

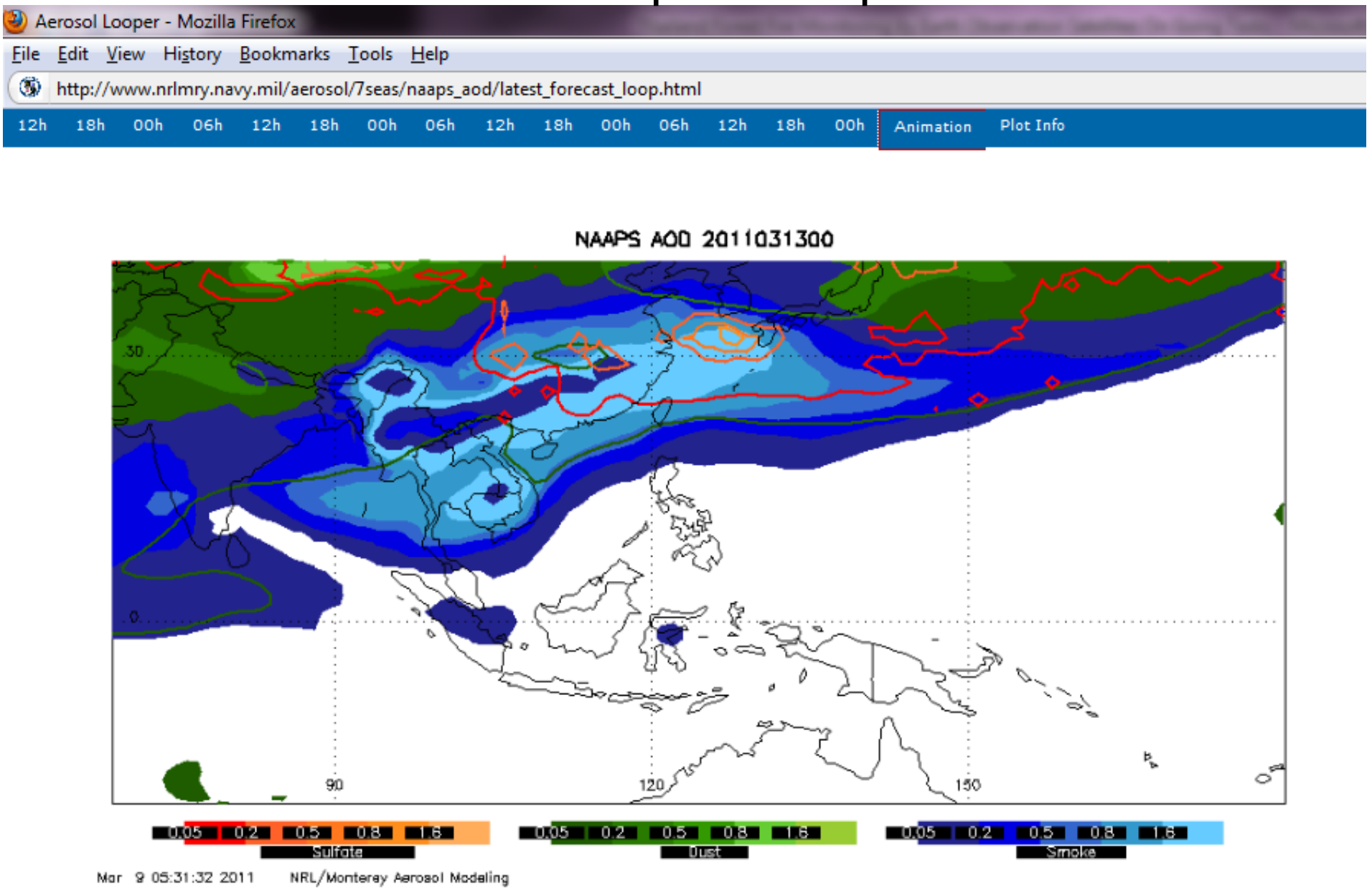
Forecast Products

NAAPS AOD		Current Data: 00 06 12 18 Forecast Graphic	Archived Data Archived Graphics	Download Data Download Graphics
NAAPS Surface Conc		Forecast Graphic	Archived Graphics	Download Graphics

Source: http://www.nrlmry.navy.mil/flambe/7seas/7seas.html

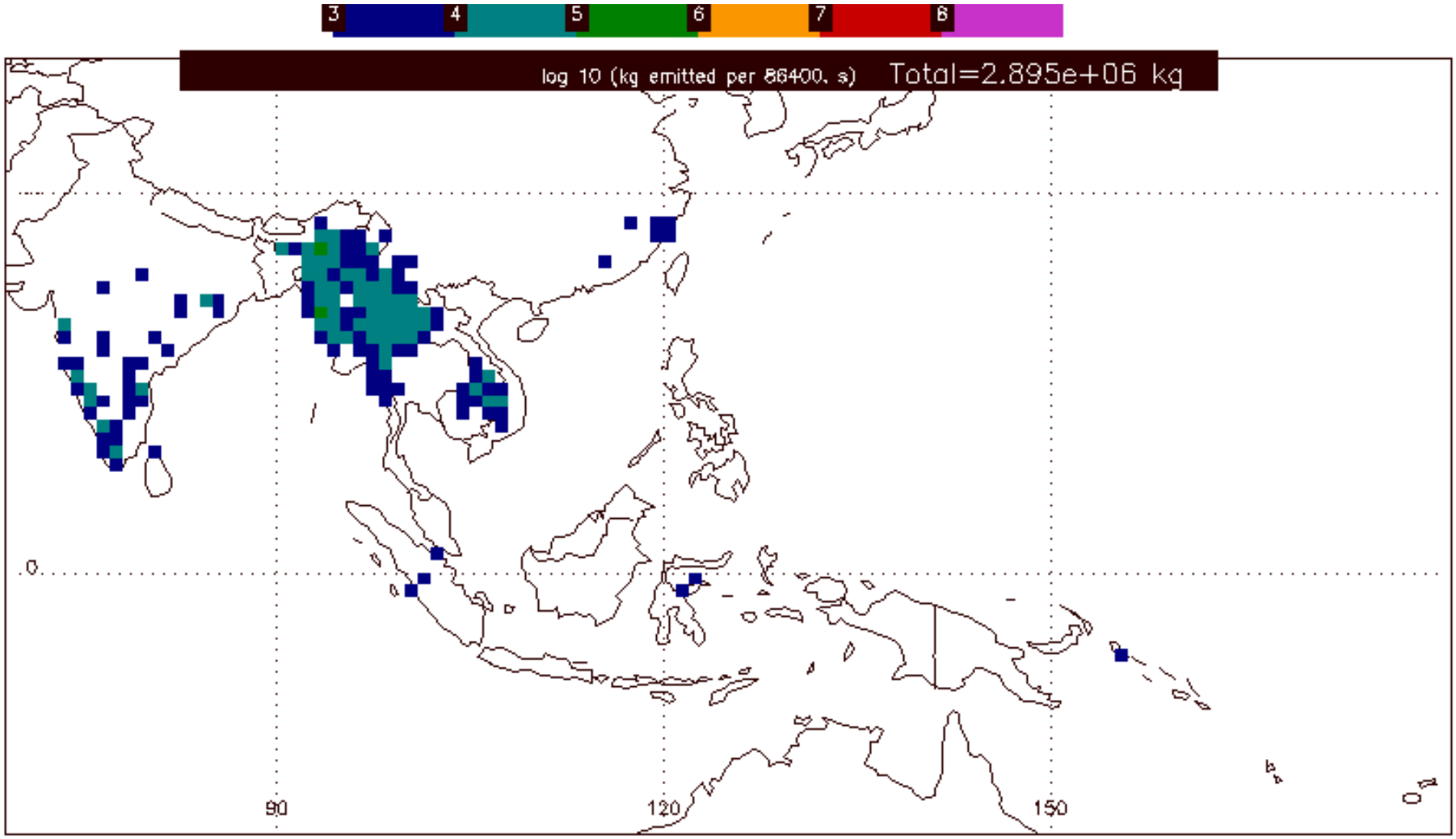
Smog and Haze Monitoring By 7 SEAS

Aerosol Optical Depth



Smog and Haze Monitoring By 7 SEAS

Smoke Flux



Source: http://www.nrlmry.navy.mil/aerosol_web/7seas/smoke_flux/latest.png

WILDFIRE 2011

The 5th International Wildland Fire Conference

Living with Fire

Addressing Global Change through Integrated Fire Management

Sun City, South Africa, 9-13 May 2011

Regional Side Events and Regional Sessions

Joint GOFC-GOLD / Global Wildland Fire Network Meeting (Monday, 9 May 2011)
Draft Agenda (Update Status: 15 February 2011)

Regional Sessions (Wednesday, 11 May 2011): Overview
(Update Status: 09 March 2011)

Detailed Regional Session Agendas

Session I • Session II • Session III • Session IV • Session V • Session VI

The conference will be an Associated Event to the Third Session of the UNISDR Global Platform for Disaster Risk Reduction and will be connected to policy makers of about 180 countries by a panel discussion on video conference.

Wildfire 2011 Press Release (22 February 2011)

Source: http://www.fire.uni-freiburg.de/southafrica-2011.html

Challenges

1. **To obtain high or very high resolution images in time in case of severe forest fires when needed.**

2. **To have solid collaborations among parties in <u>operational manner not only research and development.</u>**

3. **To be totally involve with on going Global fire task team's activities.**

4. **To establish reliable and stable smog and haze monitoring system in operational manner.**

5. **To have faster delivery time of MODIS hotspots.**

6. **To advocate for having MSG-SEVII like Geostationary Satellite cover SE Asia**


Acknowledgements

- Dr. Diane Davies (FIRMS, U. of Maryland),
- Ms. Minnie Wong (FIRMS, U. of Maryland),
- Prof. Dr. Chris Justice (FIRMS, U. of Maryland),
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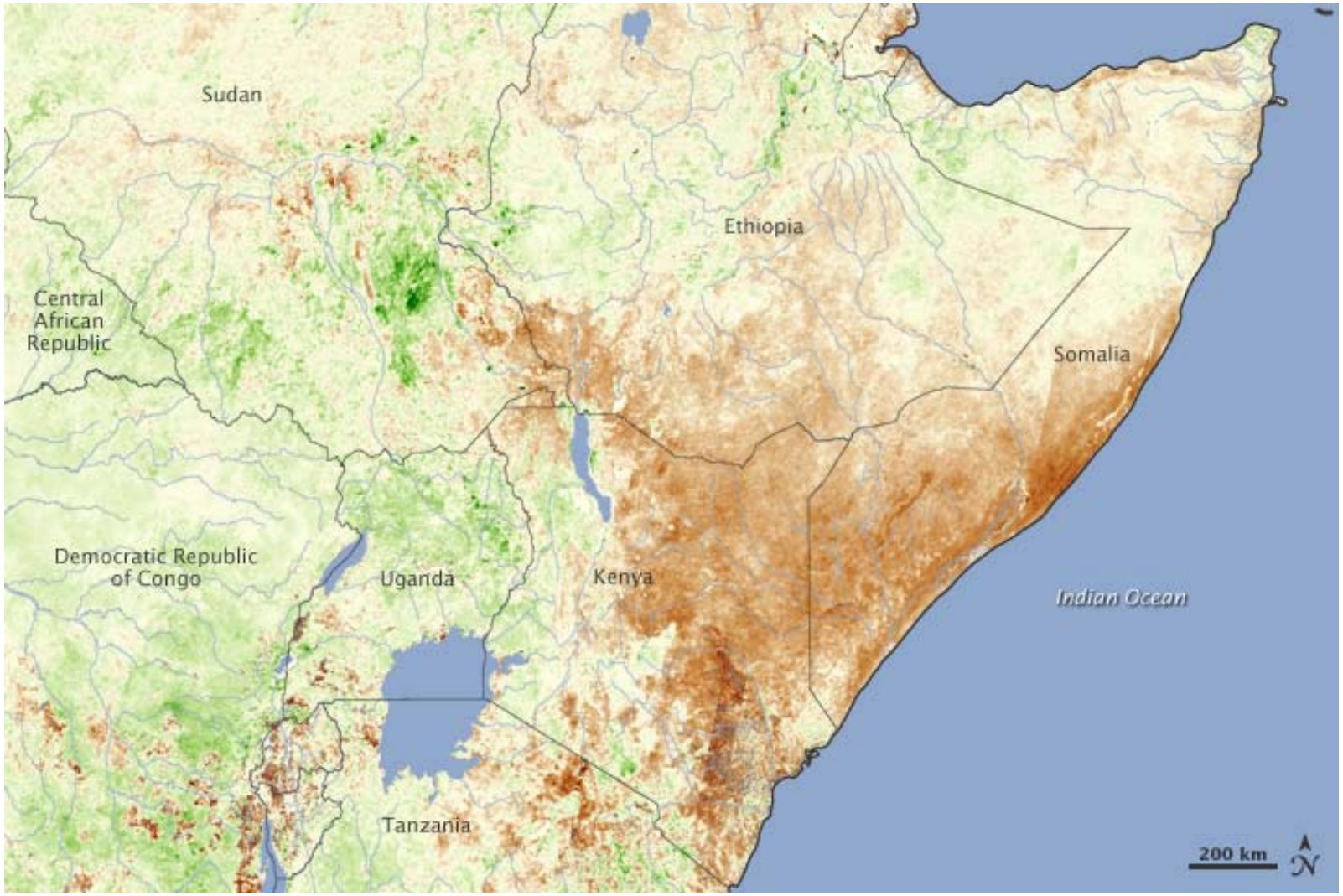
- Prof. Dr. Johann Goldammer (GFMC, U. of Freiburg),
- Ms. Anja Hoffmann (GOLD-GOFC Coordinator),
- Dr. Jeff Schmaltz (NASA/GSFC-MRRS),
- Dr. Stuart Frye (NASA/GSFC),
- Dr. Steve Chien (NASA/JPL),
- Dr. David Mclaren (NASA/JPL),
- Dr. Daniel Tran (NASA/JPL),
- Dr. Edward Hyer (FLAME'/US. NAVY)
- Dr. Ivan Csiszar (NOAA/NESDIS)

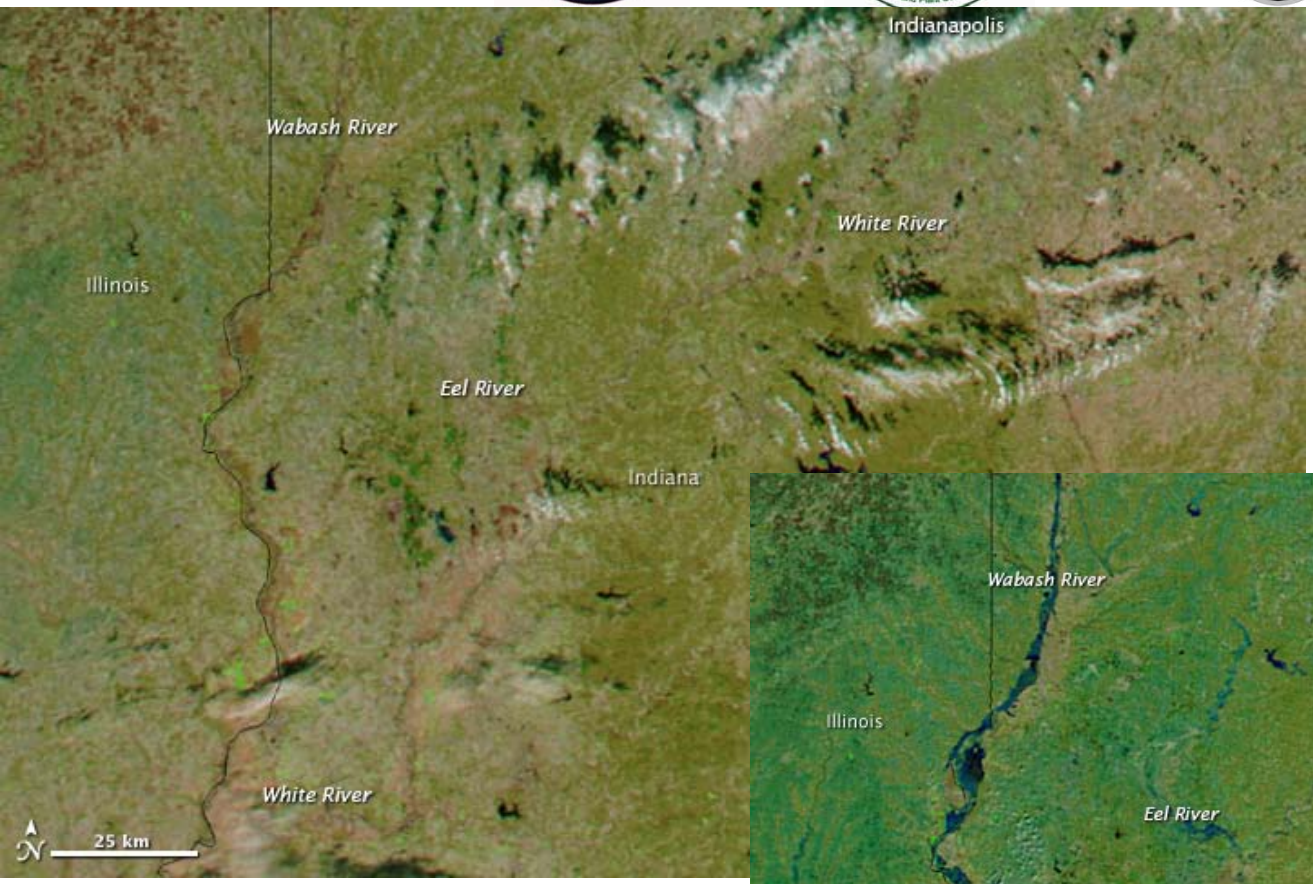
Thank You Very Much

Examples of Others

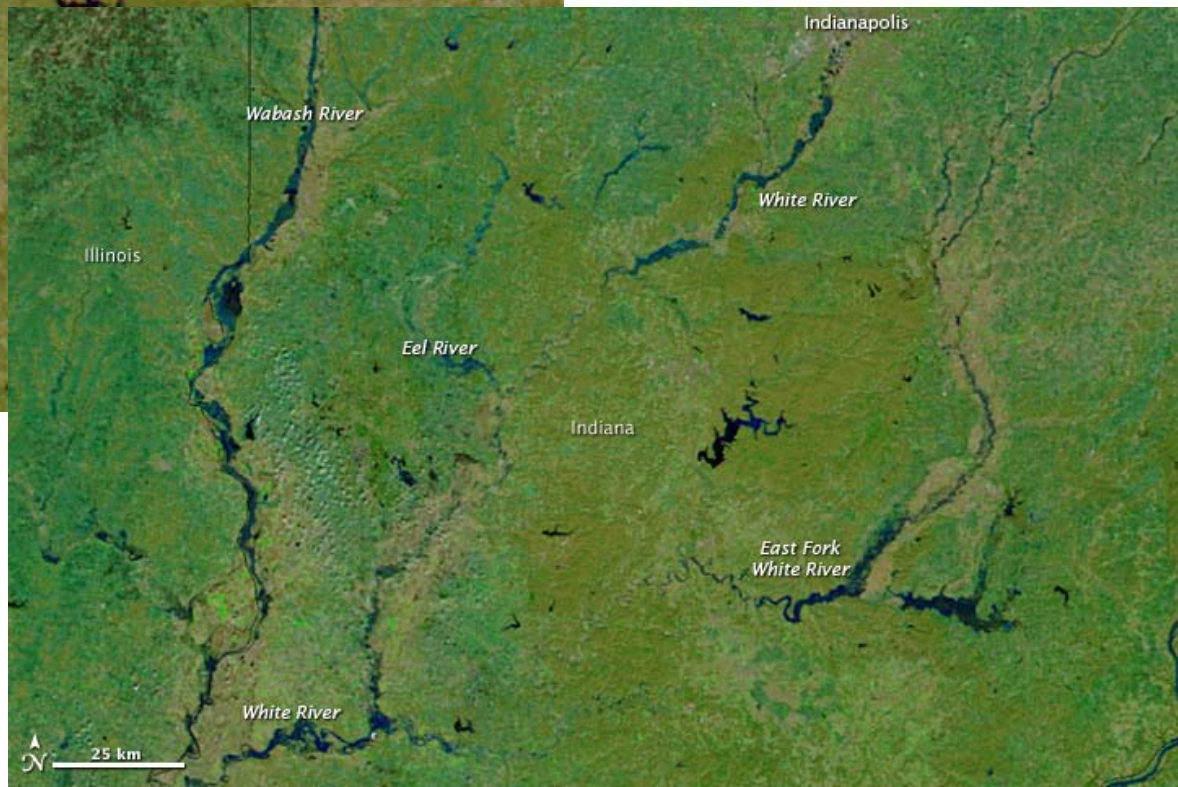
Africa, Drought Monitoring by SPOT



Examples of Others



Midwest USA, Flood Monitoring by MODIS



Examples of Others

Hunza, Landslide by ALI

Examples of Others

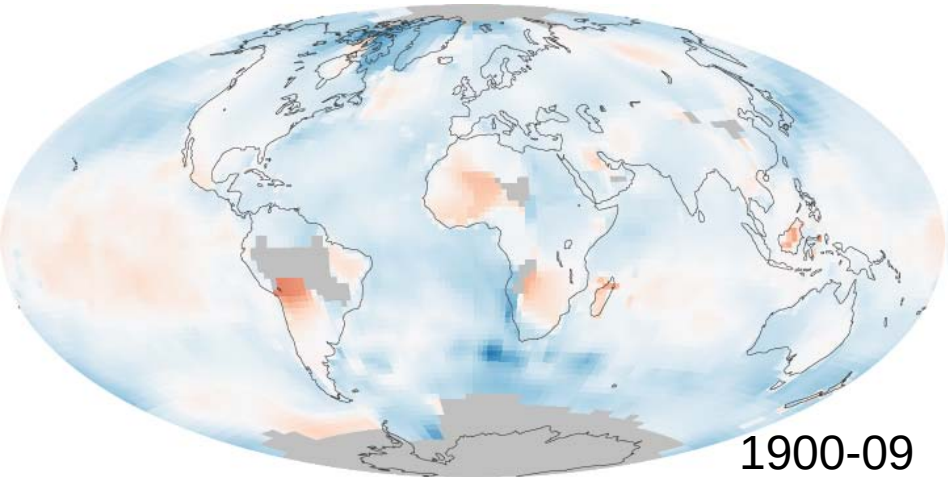
Golf Of Mexico Oil Spill by MODIS

Examples of Others

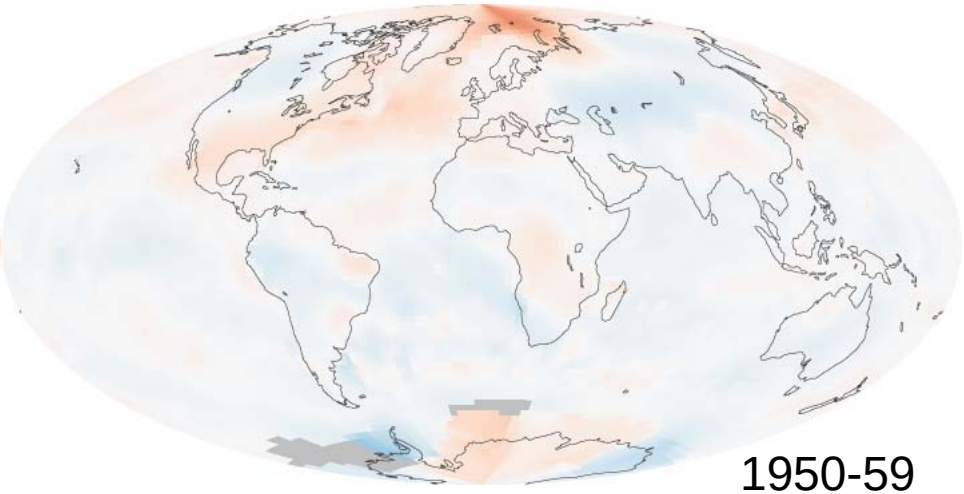
Indian Ocean Severe Storm

Examples of Others

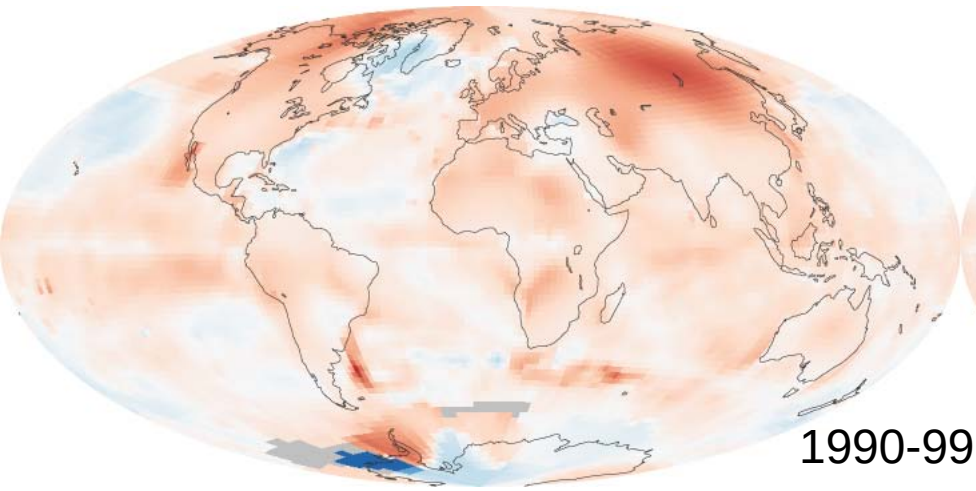
Global Temperature Anomaly



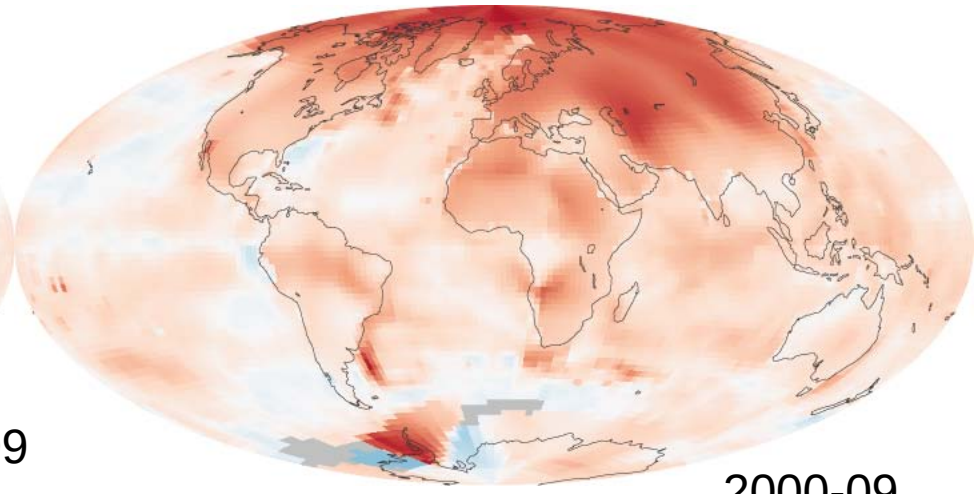
1900-09



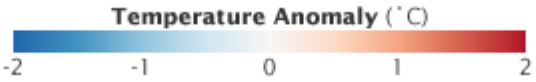
1950-59



1990-99



2000-09

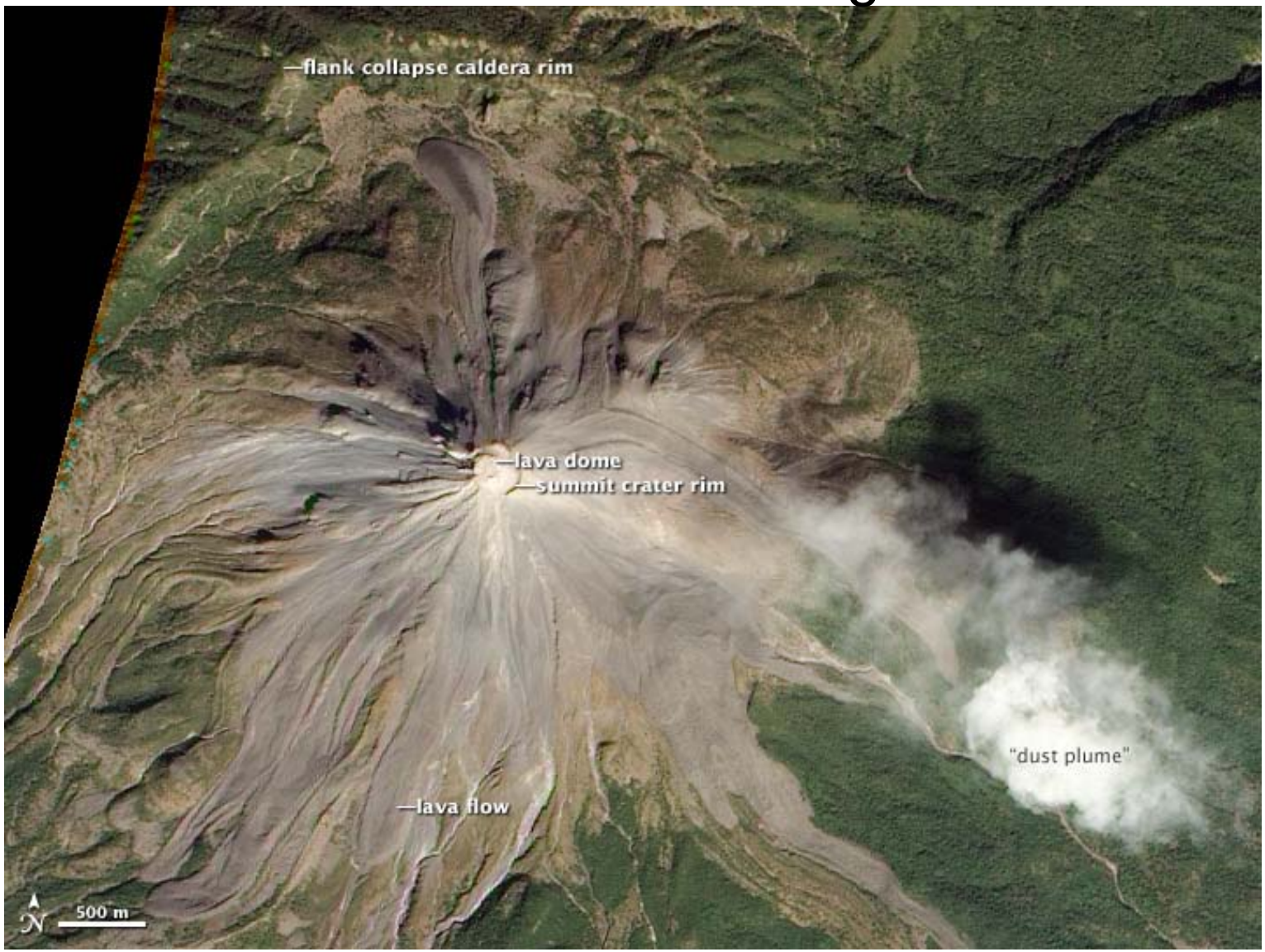


Examples of Others

Hungary, Toxic Spill by ALI

Examples of Others

Volcano Monitoring



Examples of Others

Earthquake Assessment by ALI