The 3rd Joint Project Team Meeting
for Sentinel Asia STEP 3 (JPTM2016)
19th-21th January, 2016
at Ml. Lavinia Hotel, Colombo, Sri Lanka

Status of Space Technology

Application for DRR in Lao PDR

Virany SENGTIANTHR
Remote Sensing Center (RSC)
Natural Resources and Environment Institute (NREI)
Ministry of Natural Resources and Environment (MoNRE)

Outline

1. Introduce to RSC;
2. Organization Chart;
3. The status of Space Technology Application for DRR & Sentinel Asia activities;
4. Expected /Discussion and
5. Future work plan of RSC 2014-2020.

Introduce to RSC

- **Remote Sensing Center** (RSC), Natural Resources and Environment Institute (NREI), under the Ministry of Natural Resources and Environment (MONRE).
- One of the main duties of RSC **is to be the main coordinator and** manager of the Space Technology Applications, focusing on the RS and GIS at the national level.

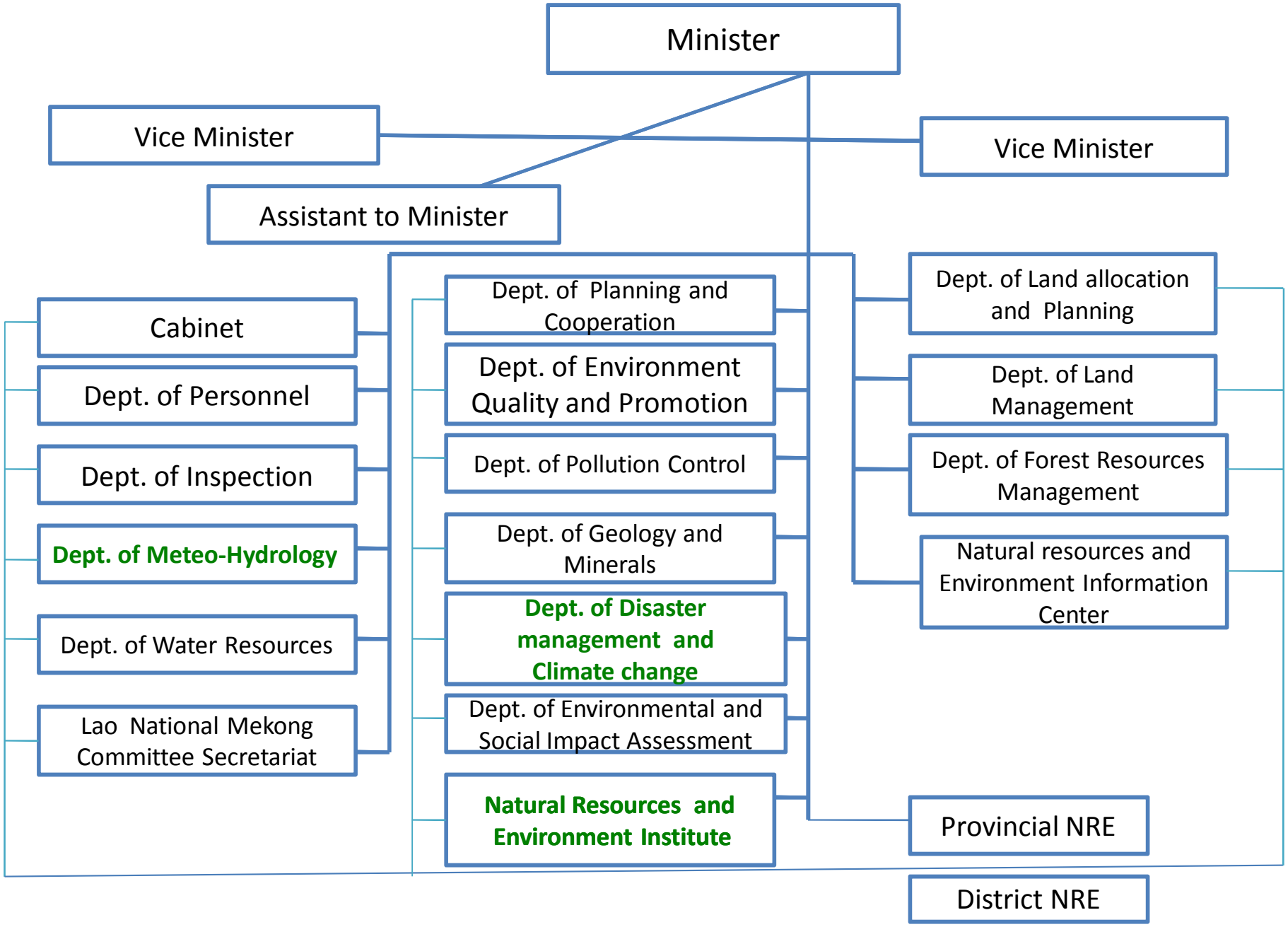
Introduce to RSC

- It has been steadily recognized that the RS and GIS System are among the important tools to support the realization of the national sustainable development, specifically in the effective environment management, appropriate disaster management as well as in ensuring sustained use of natural resources.

Vision

To be a center of the national focal point on the applications of Remote Sensing and GIS in natural resources and environment as well as natural disaster research.

Organization Chart of MONRE



Type of disaster in Laos

- **Natural Disaster:**
  - **Flood (river flood and flash flood)**
  - **Drought**
  - **Local Storm ,**
  - **Hail**
  - **Tropical Cyclone, Southwest Monsoon,**
  - **Landslide**
  - **Earthquake**
- **Man-made**
  - **UXO**
  - **Fire**

The main hazards in Lao PDR are flood and drought Both are dependent on the amount of rainfall.

Disaster Statistics from 1999-2015

No	Year	Types of Damage	Damage Cost/(USD)	Place of Damage
1	1999	Flood	7,450,000	Central
2	2000	Flood	12,500,000	Central and southern
3	2001	Flash flood	8,000,000	Central and southern
4	2002	Large flood, flash flood and landslide	24,454,546	Northern, Central and southern
5	2003	Drought	16,500,000	Northern and Central
6	2004	Flood	20,750,000	Southern
7	2005	Flash flood and landslide	218,304,000	Central and southern
8	2006	Flood and strong wind	3,207,968	Northern, central and southern
9	2007	Flood and drought	997,960	Central
10	2008	Large flood	485,902,186	Northern and Central
11	2009	Flash flood and Typhoon	58 million	Southern
12	2011	Flood / Tropical storms Haima, (June) and Nok-Ten, (August)	12 million, (Xayaboury province) or 174 million in Laos	Northern, Central and southern
13	2013	Large flood	280 million	Southern
14	2015	Winter storm		Hatxayphong district, Vientiane capital city (18/02/2015)
15	2015	Flood		Bolikhamxay province, 2-6 August 2015

The status of Space Technology Application for DRR & Sentinel Asia activities

Sentinel Asia in Lao PDR

Emergency Request:

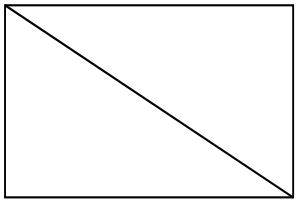
1. The observation request User Name (UN) and Password (PW), by Sentinel Asia website and submit EOR completed form as well as request to the ADRC/JAXA;
2. Sharing information between line agency and research node such as AIT, JAXA, ADRC, etc;
3. Report to the Ministry of Natural Resources and Environment-MoNRE.

Monitor and Access the area of flood/real time/before / after; drought; forest fire

SA Emergency Request Form

Lat: 18˚ 24"

Long:103˚ 40



Lat: 18˚ 23"

Long:103˚ 42

Flood in Saravanh Province, Lao PDR, 2013.

The heavy rain in Saravan province during 18-24 September, 2013 caused flood in to three district such as Vapi district, Khongsedone district and Saravan district around Xedone basin area.

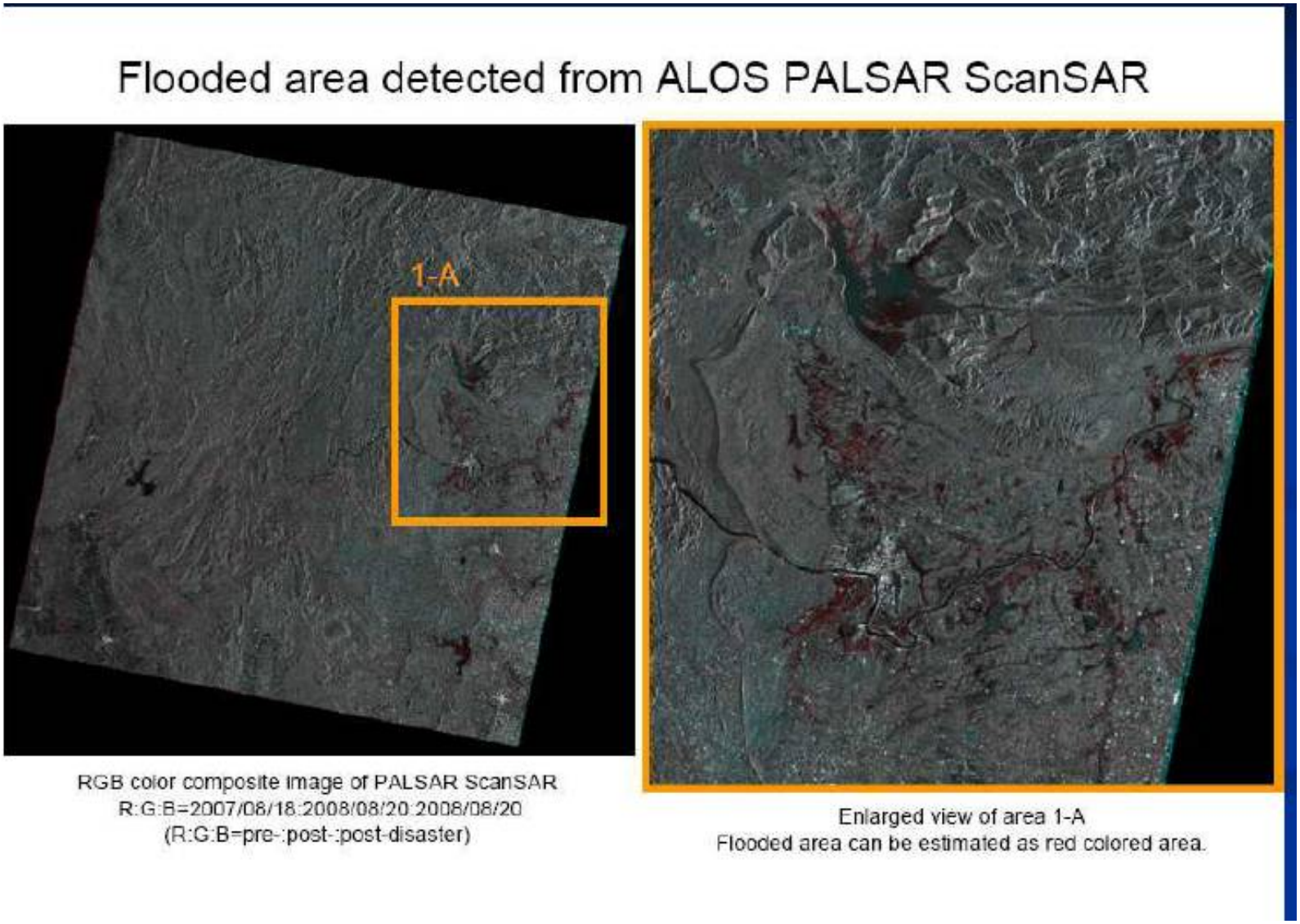
About 187 villages and 10,683 household affected by flooded. (Vientiane May newspaper dated 06 November 2013)

SENTINEL ASIA
EMERGENCY REQUEST FORM

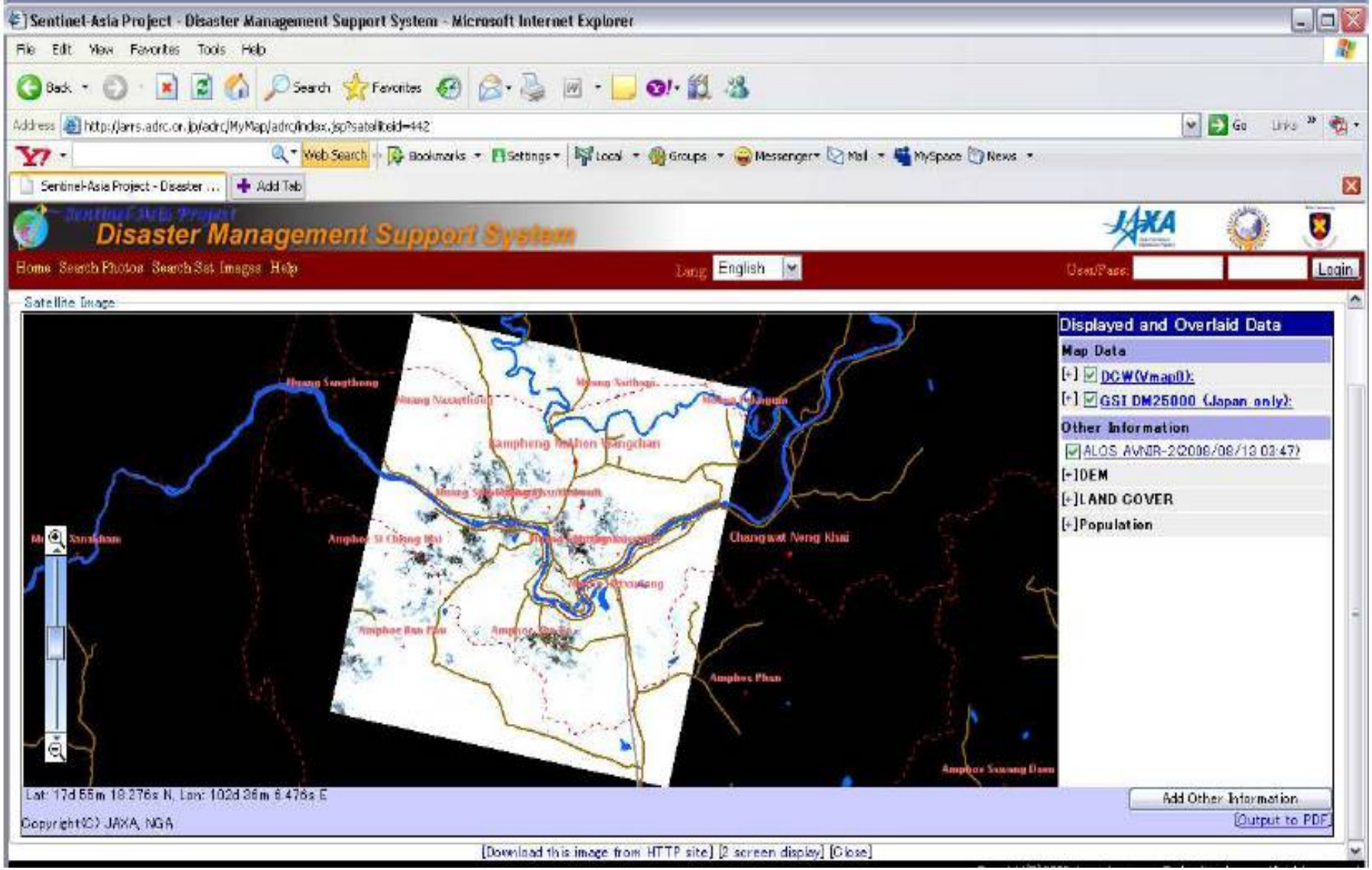
Call ID (To be filled by ADRC) :	
Date and time of the call	
Date (dd/mm/yyyy, UTC)	
Time (UTC)	
Local time zone	
Name of the organization and caller	
Name	
Organization	Ministry of Natural Resources and Environment ☐ ADRC member ☒ JPT member
Phone	
Cellular Phone	
Fax	
E-mail	
Emergency type	
☐ Flood ☐ Landslide ☐ Storm ☐ Fires ☐ Volcano ☐ Earthquake ☐ Ice hazard ☐ Industrial danger ☐ Other :	
Approximate date and time of occurrence	
Date (dd/mm/yyyy, UTC)	
Time (UTC)	
Local time zone	
Area details	
Area Name / Country	
☐ Circular zone	Coordinates of center point Latitude : ° ° N/S Longitude : ° ° E/W Radius : km
☐ Rectangular zone	Coordinates of corners Lat. : ° ° N/S Lon. : ° ° E/W Lat. : ° ° N/S Lon. : ° ° E/W
Comments or special instructions	

Request Sentinel Asia in case emergency:

Coordinate, Pictures, sharing data information…



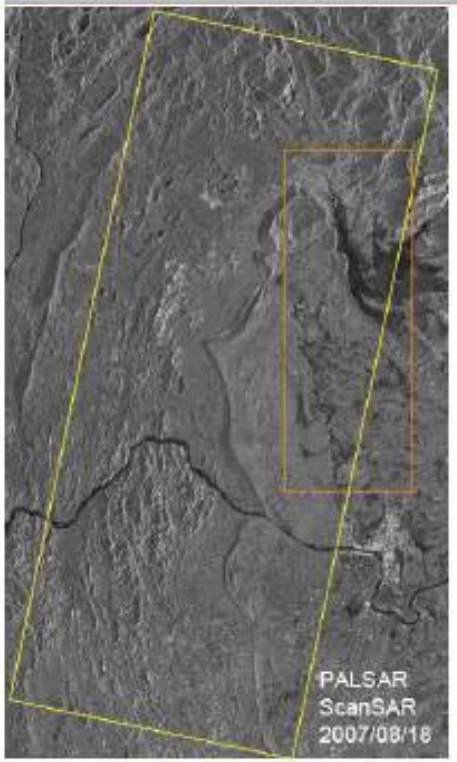
Access the Sentinel Asia through sharing data information

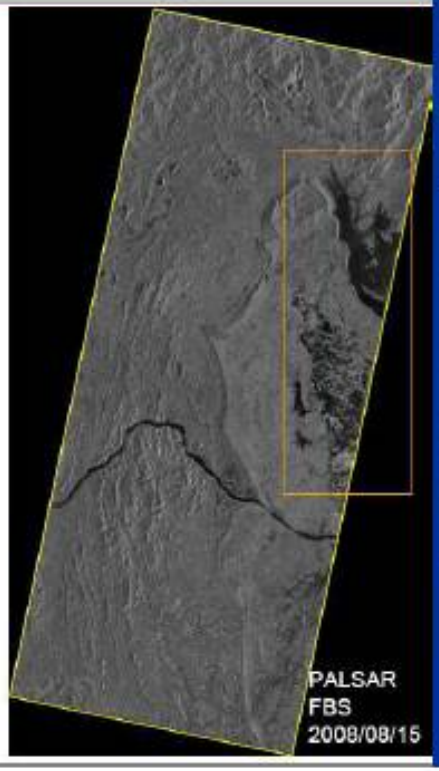


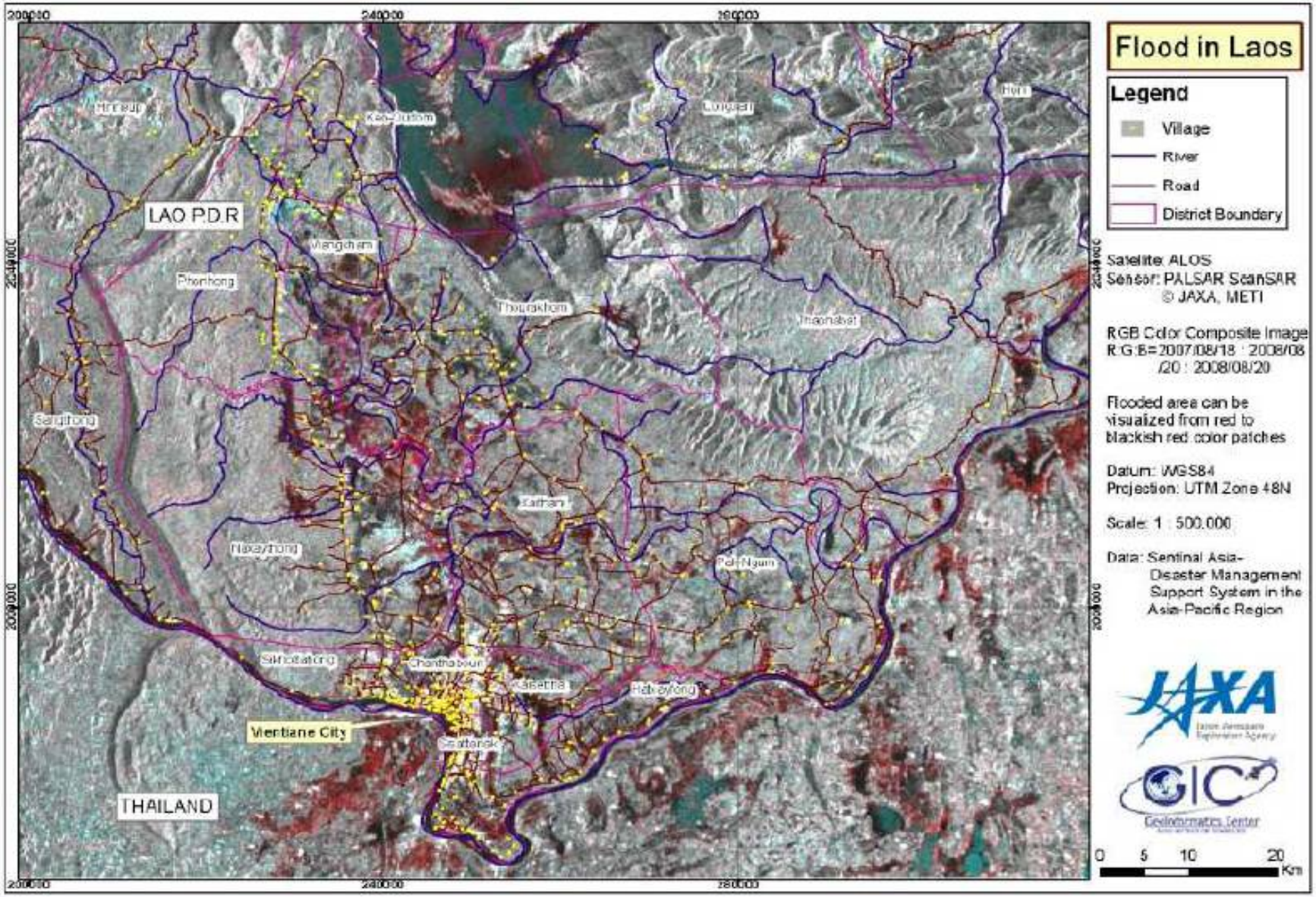
RSC/JAXA/ADRC: Field survey on flood area in Vientiane Capital City and Vientiane Province

Nov 13, 2008

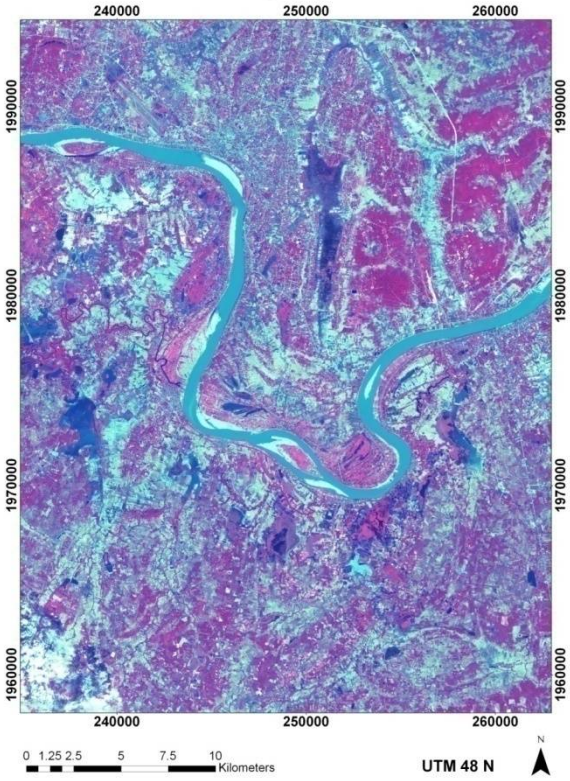
Field survey :
ADRC/JAXA/RSC






Flood in Laos
Legend
Village
River
Road
District Boundary
Satellite: ALOS
Sensor: PALSAR ScanSAR
© JAXA, METI
RGB Color Composite Image
R:G:B=2007/08/18 : 2008/08/20 : 2008/08/20
Flooded area can be visualized from red to blackish red color patches
Datum: WGS84
Projection: UTM Zone 48N
Scale: 1 : 500,000
Data: Sentinal Asia-Disaster Management Support System in the Asia-Pacific Region
LAO P.D.R
THAILAND
Vientiane City
Phonhong
Thoulakhom
Thaphabat
Saisettha
Hadxaifong
Nakaithong
Sikhottabong
Chanthabouri
Geoinformatics Center
0 5 10 20
Km

Lao PDR/GIC-AIT: Flood Hazard Mapping using ALOS/ PALSAR, 2009.

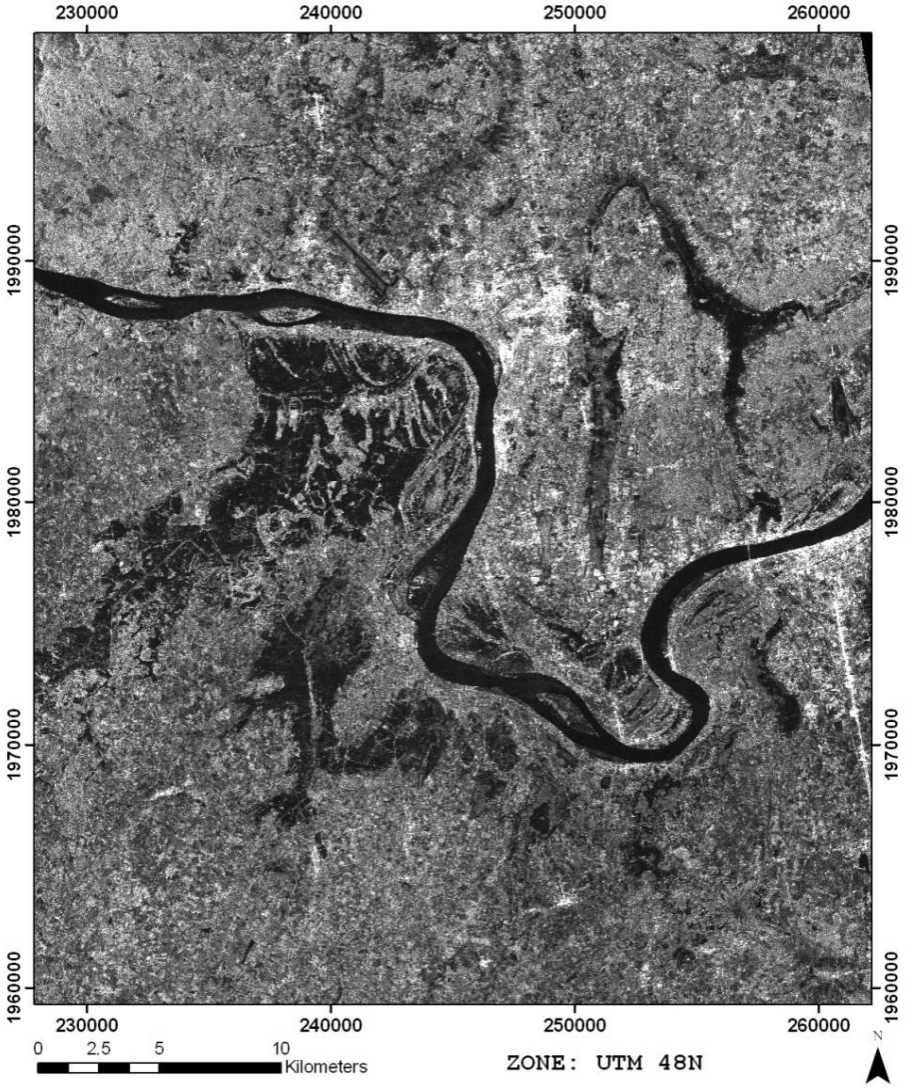


Hatsayphong District, Vientiane

11-15 August 2008

ALOS PALSAR (Wet Date, Sept 3, 2008)
Parts of Hatsayphong District, Lao PDR
Polarization: HH

ALOS PALSAR (Wet Date, Sept 3, 2008)
Parts of Hatsayphong District, Lao PDR
Polarization: HV



Field Survey on Ketsana Tropical Storm-Flooded in Attapu Province, Lao PDR , September 30, 2009.

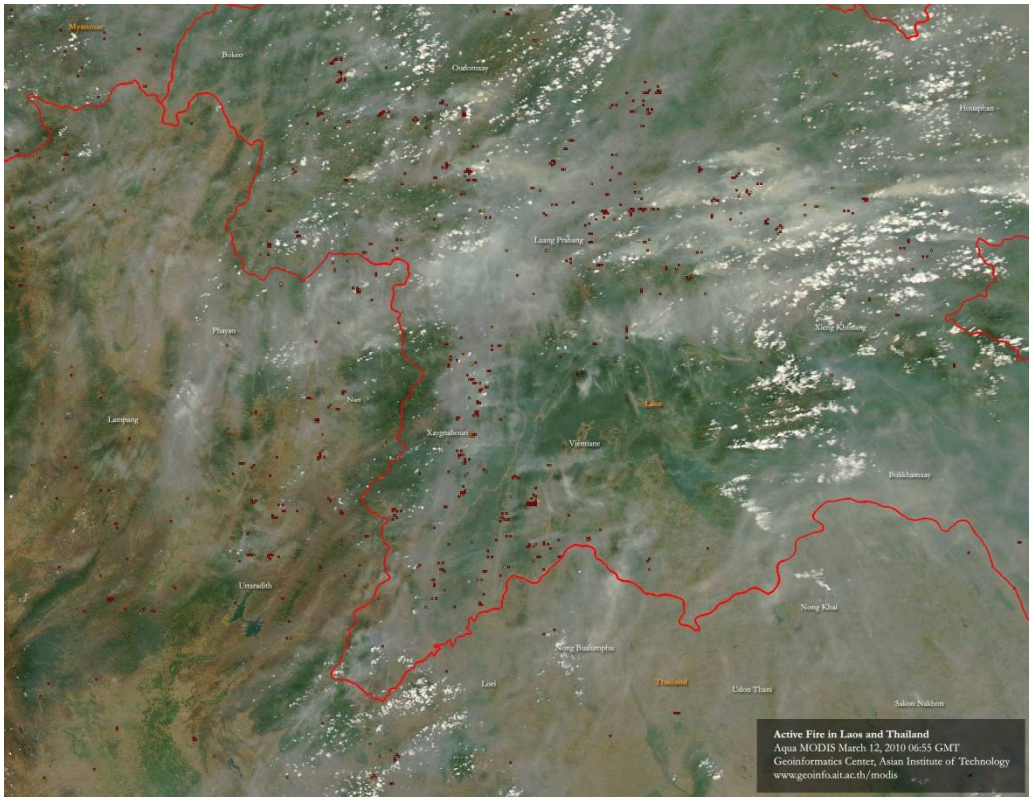
City of Samakkheesay
Attapu province

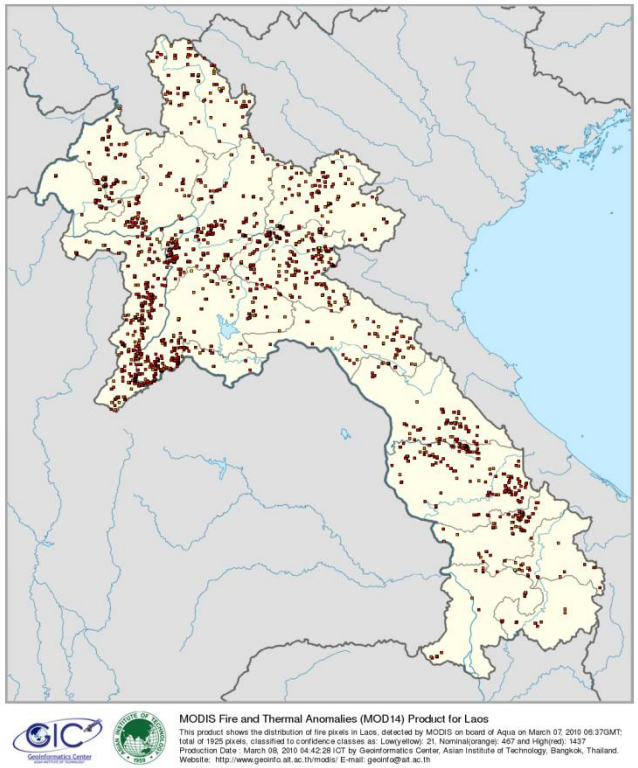
07 June 2010

Technical Transfer from GIC/AIT-RSC, 2009-2010

Overview of the MODIS Fire Information System for Laos

The AIT MODIS Fire Information System for Laos is a near real-time automatic system. The structure is very similar to the existing regional system. It consists of *Product Generation*, *Visualization*, and *Database and Statistical Analysis* systems. The system uses the output information, which generated and transferred by the regional system.

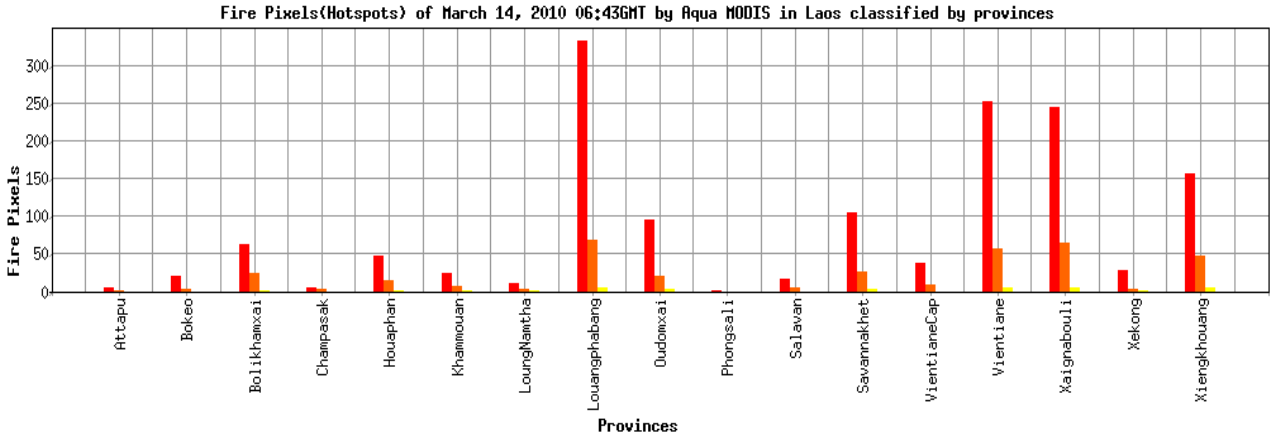


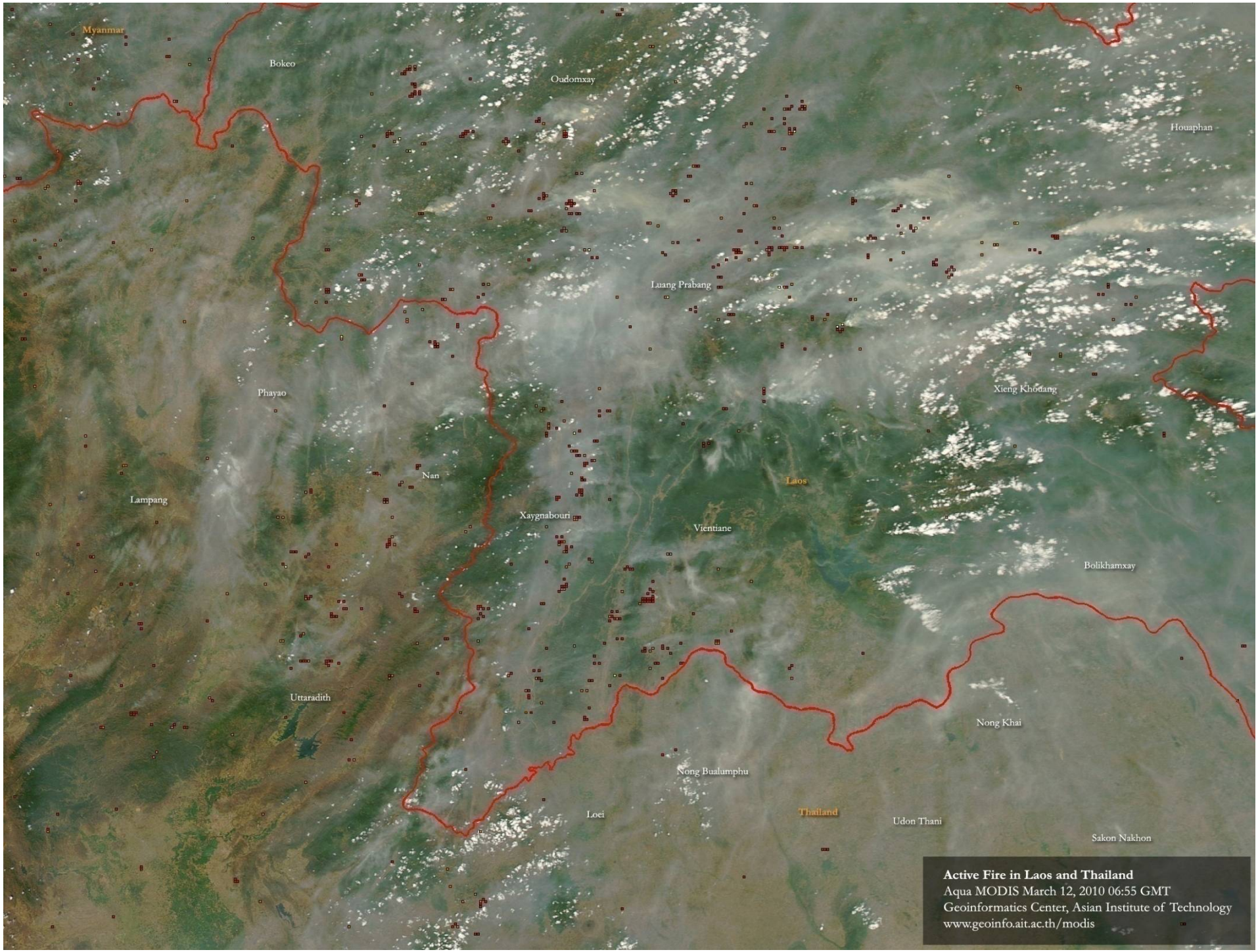


http://www.geoinfo.ait.ac.th/mod14/index_lao0.php

(Shut down now)

Wildfire Information, 14 March 2010



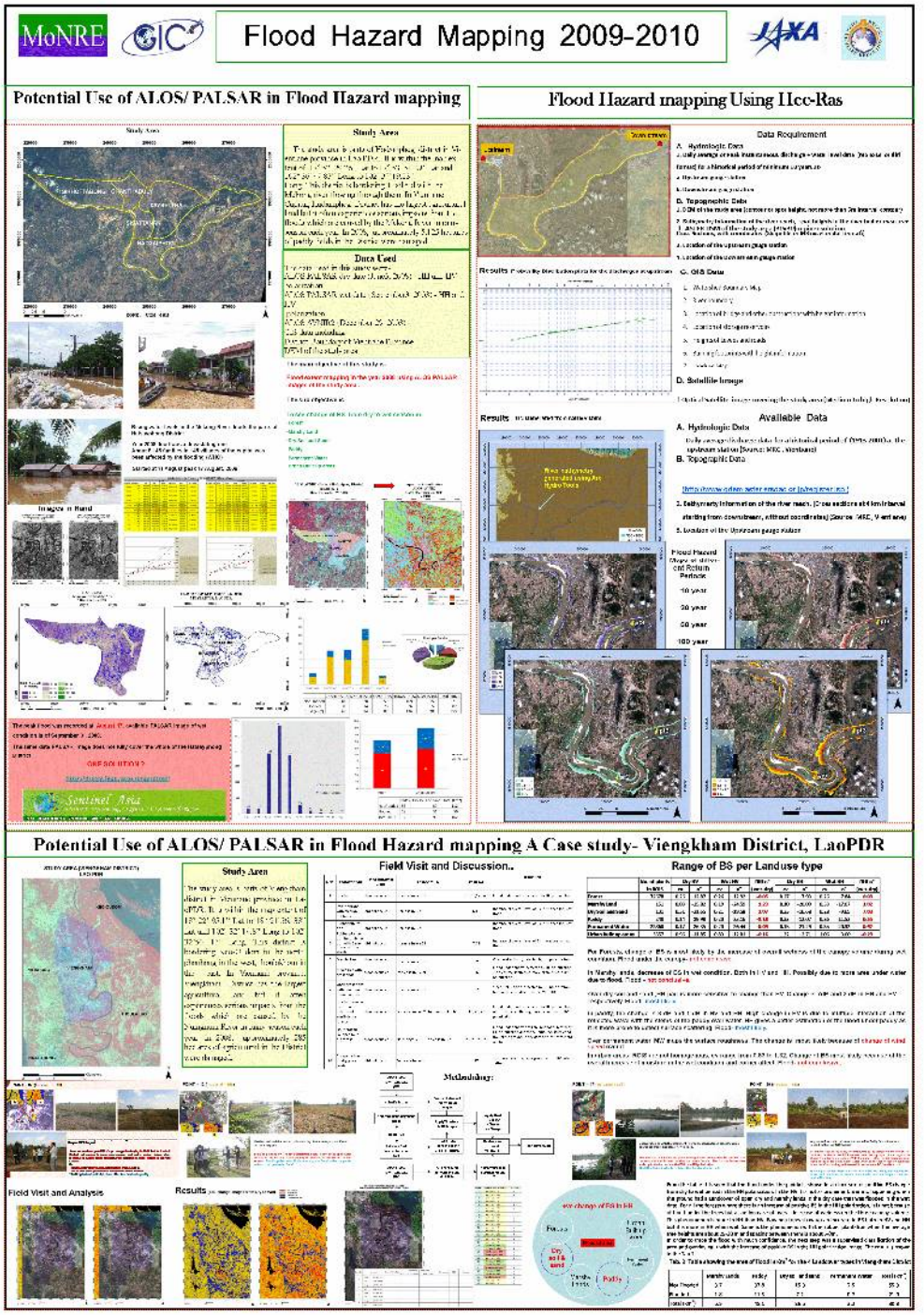

Myanmar
Bokeo
Oudomxay
Houaphan
Luang Prabang
Phayao
Xieng Khouang
Nan
Laos
Lampang
Xaygnabouri
Vientiane
Bolikhamxay
Uttaradith
Nong Khai
Nong Bualumphu
Loei
Thailand
Udon Thani
Sakon Nakhon
Active Fire in Laos and Thailand
Aqua MODIS March 12, 2010 06:55 GMT
Geoinformatics Center, Asian Institute of Technology
www.geoinfo.ait.ac.th/modis

Wildfire:
Field survey and dissemination

-**AIT/RSC**
-**WERO**
-**Area-Village**
-**WREA,**
-**Minister**
-**Report**
-**Policy**
-

Example

JAXA/AIT/Mini-project/Research, Result, 2009-2010



Sentinel Asia STEP 2

The 4th Sentinel Asia System Operation Training was held on 10-12 February 2009 in Vientiane

- Sponsor by JAXA
- Organized by RSC/WERI/WREA
- attended by 13 Asia Pacific countries including 6 ASEAN Member States namely Indonesia, Lao PDR, Malaysia, Philippines, Thailand and Viet Nam.

The 5th Sentinel Asia System Operation Training was held in Colombo, Sri Lanka in 22 – 26 February 2010.

The 6th SAS Operation Training was held in July, 2010, Bangkok, Thailand..

Lao PDR would like to participate the next SA training.

Suggestions

1. Promote and development of the use of RS&GIS in to the natural resources management, environment quality monitoring and disaster risk reduction;
2. National policy and regulation of the application of space technology (especially Remote Sensing technology)
3. Enhancement of National staffs capacity building.
4. Joint Project Research between SA Members/JAXA/ADRC/AIT: Flood, drought, wildfire monitoring and water and climate change by using satellite data;
5. Continue Participate next SA meeting;
6. RSC Will continue SA-STEP3/APRSAF.

RSC/NREI/MONRE: Future Work Plan 2014-2020 On Natural Resources and Disaster Monitoring using the Space Data.

1. **Emergency Request by using ER form;**
2. **Flood Risk Mapping Bolikhamxay province, Lao PDR;**
3. **Drought** Risk Mapping using Remote Sensing and GIS in Savannakhet Province, Lao PDR.
4. **Research/Training/: (RS/GIS/GPS), on soil erosion in Saravan province and Luangnumtha province.**
5. **Fire Monitoring in Lao PDR.**
6. **RSC, NREI, MoNRE would like to continue support Sentinel Asia STEP3 and promotion related to the utilization on space for disaster reduction.**

Flood in Bolikhamxay
2-6 August 2015
Vientiane times newspaper :
-Hadkhay village in Thaphabath district, Borikhamxay province, has shut down its activities after the road into the village was flooded when the Mang River overflowed.
-More than 1,400 families and 4,200 hectares of rice fields have been affected by flooding in the districts of Thaphabath, Borikhan, Pakxan and Pakkading.


Thank you very much
For your kind attention !