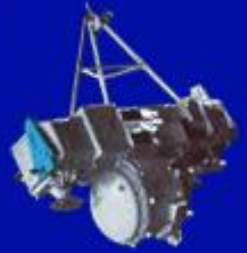


Remote sensing data uses and supply in Vietnam



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Content



- Uses of remote sensing data in Vietnam
- Roles of National Department of Remote Sensing Department (NRSD)
- VNREDSat-1 satellite and data providing capability



Major Remote Sensing users in Vietnam

- Ministry of Natural Resource and Environment (MONRE)

- + **National Remote Sensing Department**

- + Vietnam Surveying and Mapping

- + General Department of Land Administration

- + General Department of Environment

- + Vietnam Administration of Sea and Island

.....

- Remote sensing units in various Ministries

- + Forest Inventory and Planning Institute (FIPI);

- + National Institute for Agriculture Planning & Projection (NIAPP);

- + Army Mapping Services;

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- Vietnam Academic Science and Technology (VAST)

- + Spatial Technology Institute

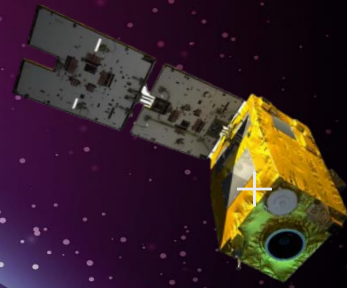
- + Geographical Institute

- + Physical Institute

- + Vietnam National Space Centre

.....

- Universities



Use of remote sensing data in Vietnam



❖ MONRE

Required a large amount of remote sensing data for management and monitoring of natural resource, environment protection, disaster prevention & mitigation, climate changes ..

Creating, updating topographic and thematic map (Land use map, wetland map, mangrove...); developing and maintaining national remote sensing database; Land resource assessment, planning, monitoring ...* **National-wide Land inventory program every 5 years;**

Water resource management and monitoring (surfaces, underground water, dams, reservoirs, transboundary water management...); pollution detection, management, monitoring (oil spill, waste ...), environment impact assessment

...

Natural disaster management: floods, landslides, forest fire, erosions ...

❖ MARD

Forest management, mapping, planning and monitoring

* National –wide forest resource inventory 2013 -2016

Rice, crop monitoring ...

Aquaculture farming ...

NATIONAL REMOTE SENSING DEPARTMENT (NRSD)



- 1980 – Remote Sensing Centre (RSC) belong to State Dep. of Geodesy and Cartography.
- 1994 – Remote Sensing Centre (RSC) belong to General Depart. Of Land Administration (GDLA);
- 2002 – RSC of Ministry of Natural Resources and Environment (MONRE);
- 2008 - National Remote Sensing Centre (NRSC) of MONRE
- 01/08/2013 - National Remote Sensing Department (NRSD) of MONRE
 - + Governmental Administration of Remote Sensing activities in Vietnam.
 - + Application of Remote Sensing for natural resource management and monitoring, environment protection, climate change, mapping, natural disaster prevention and mitigation (Traditional tasks);

FUNCTIONS RELATED TO REMOTE SENSING DATA

- Management of remote sensing ground stations network, national remote sensing database, exploitation and using of national remote sensing data; management of remote sensing technology application and development in the whole country;
- Collecting and analyzing remote sensing data requirements from various organizations and users, development of annual and every 5 years acquisition and processing plan;
- Establishment, updating, management and operation of national remote sensing database and metadata; data publishing and providing to agencies, organizations in accordance with regulations of Law;
- Evaluation and making comments on programs, projects using government budget to purchase data from foreign providers;

FUNCTIONS RELATED TO REMOTE SENSING DATA

- Since late 1990s, the Remote Sensing Centre, GDLA (now is NRSD, MONRE) has been given a task by Vietnamese Government to:
 - + Purchase satellite imagery from the foreign suppliers using government budgets based on demand of users in Vietnam.
 - + Process purchased satellite imagery to produce various value-added products and re-distribute to government agencies in Vietnam according to their needs.



The Establishment of Environment and natural resources Monitoring System (ENRMS)



- **Protocol Vietnam-France cooperation- 2003**
- **Partner: EADS**
- **Duration: 2006-2009**

To establish:

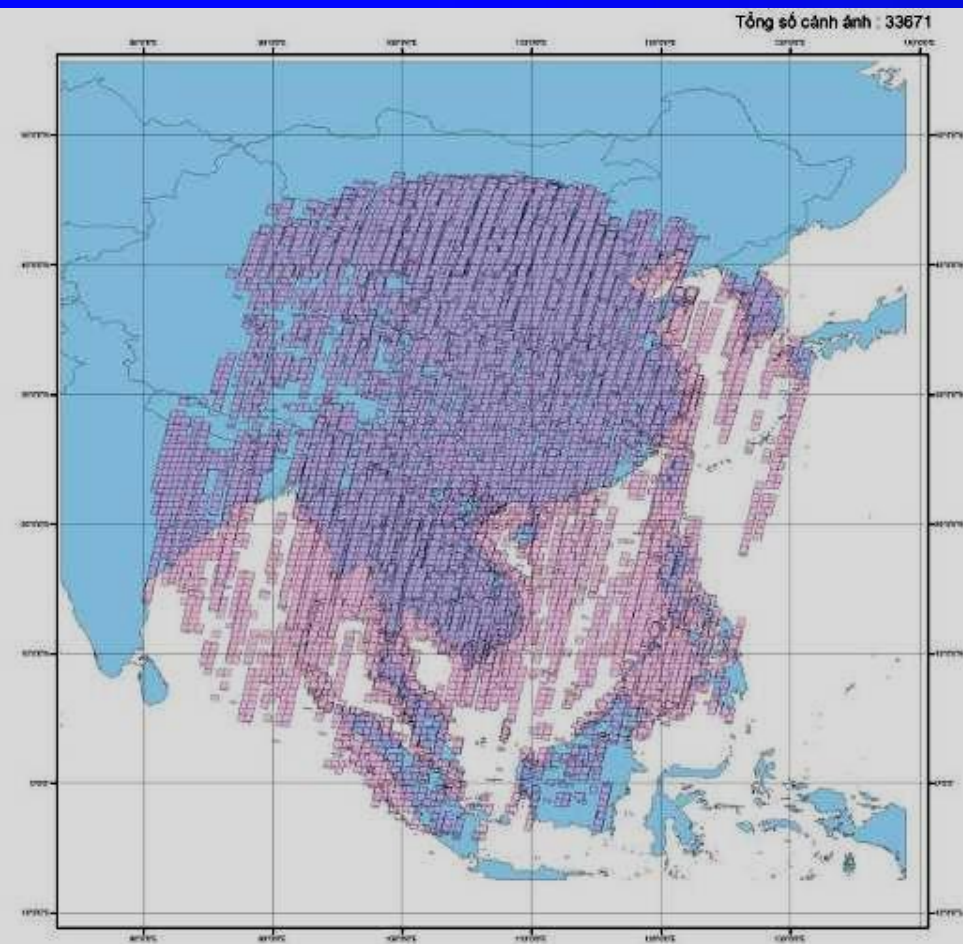
- ✓ A Remote sensing Ground Receiving Station of VietNam (VNGS);
- ✓ A National Data Center for image processing and distribution to government agencies (NDC);
- ✓ Remote sensing Data Utilization System including 15 agencies (DUS);
- ✓ Technology transfer for operation of system.

Vietnam Ground Station (VNGS)

- Located at Hanoi, the Capital city of Vietnam;
- Become to operation since November 2008;
- Receiving data from SPOT2, SPOT4, SPOT5, ENVISAT ASAR and ENVISAT MERIS;
- **Since 2013, the VNGS has been upgraded to received and process satellite imagery from the Vietnamese satellite VNREDSat-1**



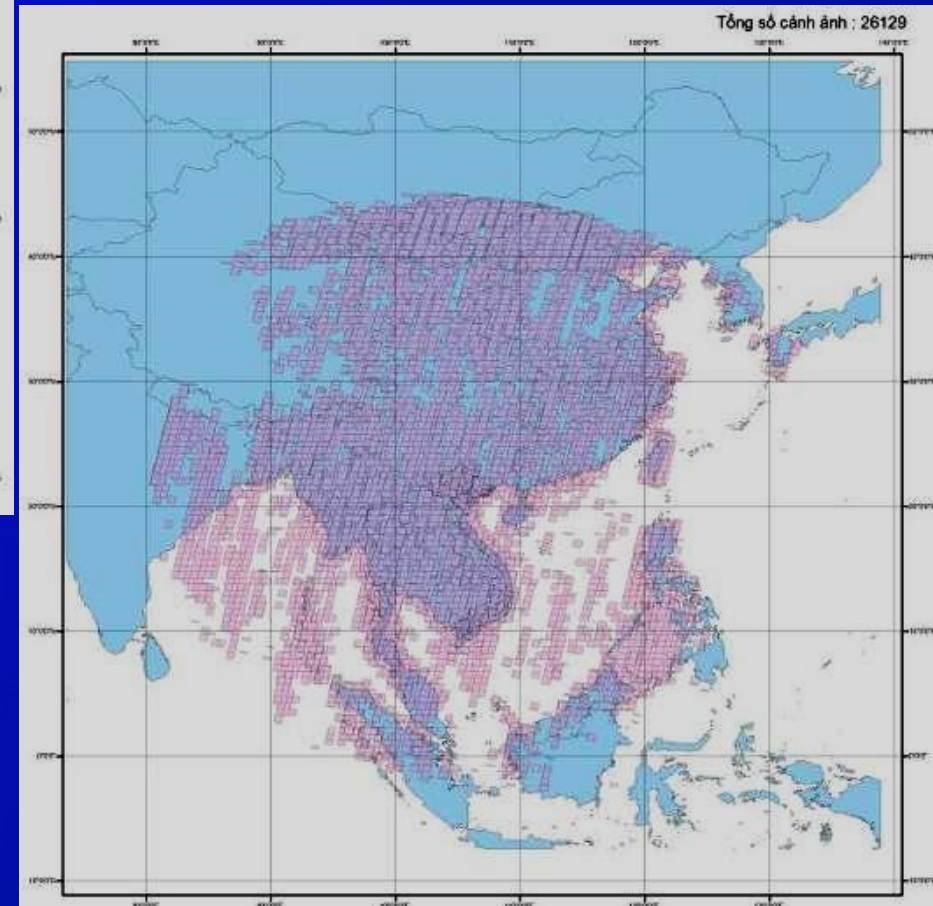
SPOT 2 RECEPTION



- Nearly 100,000 scenes has been received over the receiving cycle;
- About 30,000 scenes SPOT2 images lesser than 25% cloud cover;
- The reception of this data has stopped as the SPOT2 satellite di-orbited in 2010.

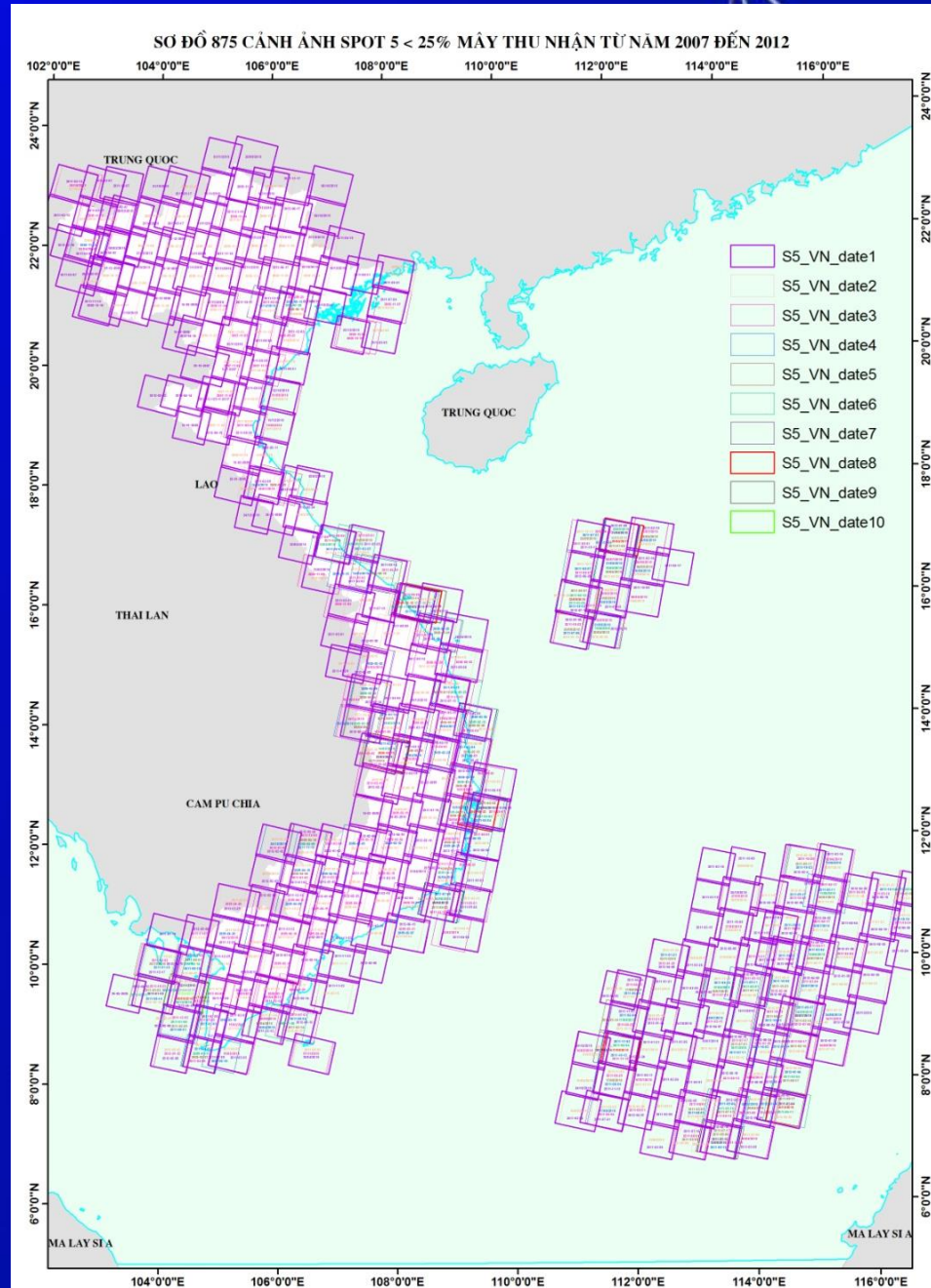
SPOT4 RECEPTION

- Normally receive two passes per day in the receiving cycle;
- More than 200 000 scenes has been received and stored in the Station;
- Thousands SPOT4 data with cloud cover less than 25%;



SPOT5 RECEPTION

- Normally, Acquisition ordering should be 15 days in advance;
- More than 10,000 scenes has been received in the Station.



VNREDSat-1

(VietNam small satellite for natural Resource, Environment
& Disaster management)

Project Owner: VAST
Prime contractor: EADS Astrium
Launch time: 07/5/2013 at Kourou, France

Mission: Earth observation in PAN and 4 MS spectral bands

Revisit time: **3 days**

Orbit characteristics: **SSO**, **680 km** altitude

LTAN : **10:42 PM**

Spatial resolution: **2.5m (PAN)** and **10m (MS)**

Platform: **600 mm x 570 mm x 500 mm**

Total mass: **~130kg**

Life-time: **5 years (guaranteed)**

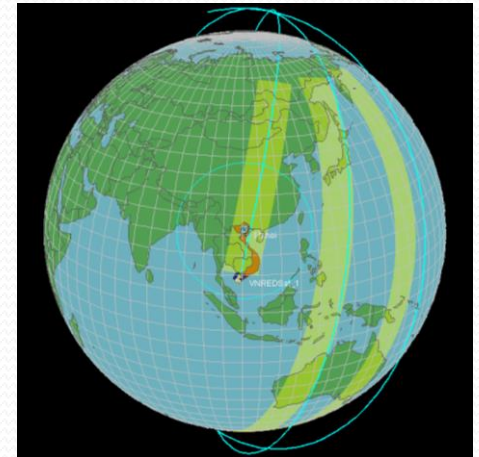
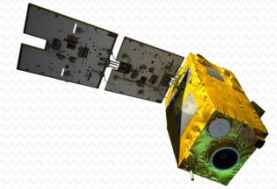
Imaging modes: single shot, scanning, stereo

Swath : **17.5 km**

Strip length: **823 km (PAN + MS)**

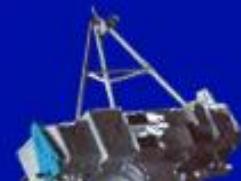
Number of acquired images per day: **100 scenes**

Agility : +/- 35 degrees

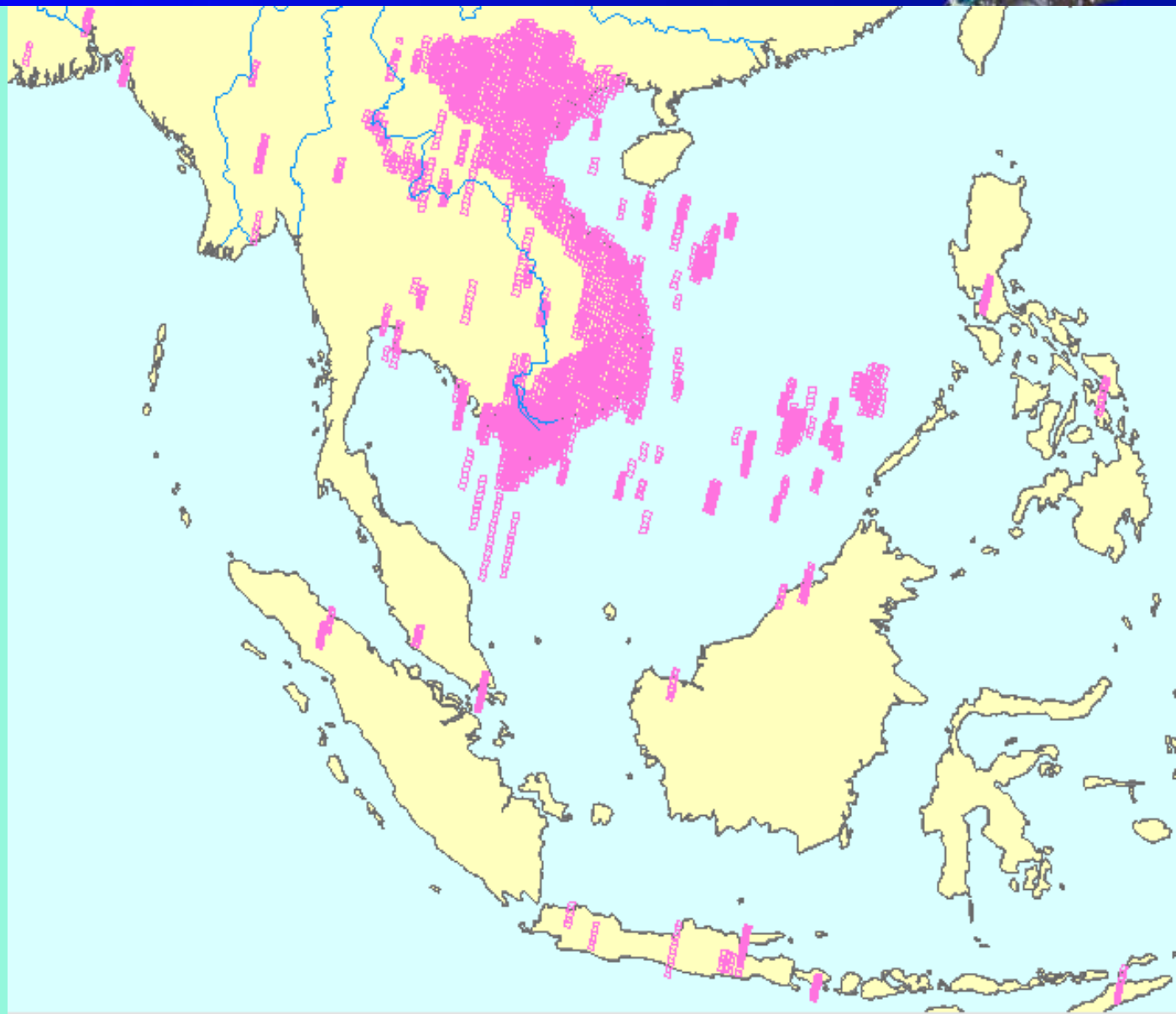




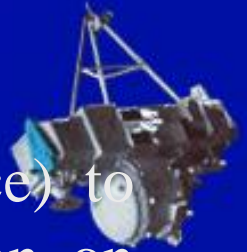
VNREDSAT-1 ACQUIRED IMAGES



The VNGS has
successfully received
more than 50 000
VNREDSat-1 scenes
Which has been
taken and
downlinked from the
VNREDSat-1 satellite



REMOTE SENSING DATA SUPPLY



- Every year NRSD send data request forms (twice) to government users in Vietnam to collect information on need of remote sensing data in Vietnam;
- Based on the total data request, NRSD will place an order to VAST for tasking VNREDSat-1 satellite and acquiring satellite images.
- VNREDSat-1 satellite telemetry will be received and process at VNGS ground station of the NRSD and deliver to users according to their request.
- NRSD also calculate amount of remote sensing data that are beyon capability of VNREDSat-1 satellite and propose the Government to purchase satellite images from foreign suppliers to meet requirements of users.





Thank you for your attention

