

# VNREDSat-1 and VIETNAM DATA PROVIDER NODE (DPN)

Space Technology Institute, VAST

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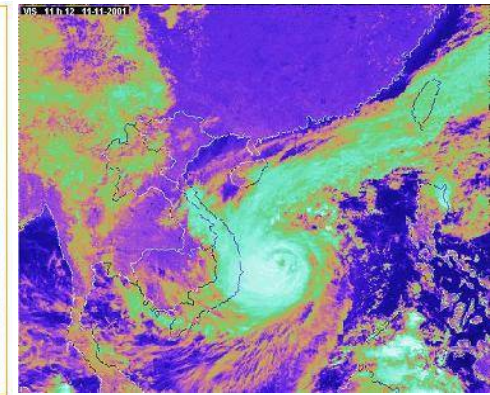
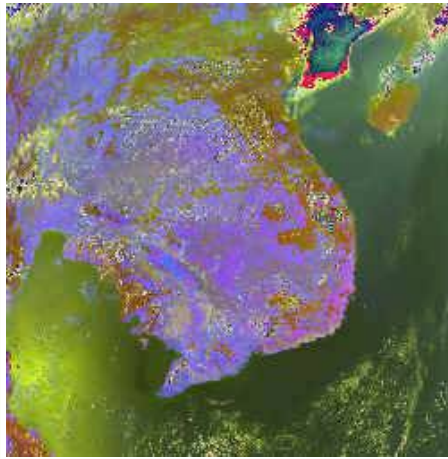


# **Main activities and achievements by STI**

- **Satellite and ground station technology**
- **Applications of remote sensing, GPS and GIS**
- **Control and exploitation of VNREDSat-1 system**

# Satellite and ground station technology

- Pioneer in research, design and manufacture of receiving stations for polar and geostationary metrological satellites.



*WEAFAX APT receiving system*

*GMS/MT-SAT/FY-2 receiving system*



*NOAA receiving system*



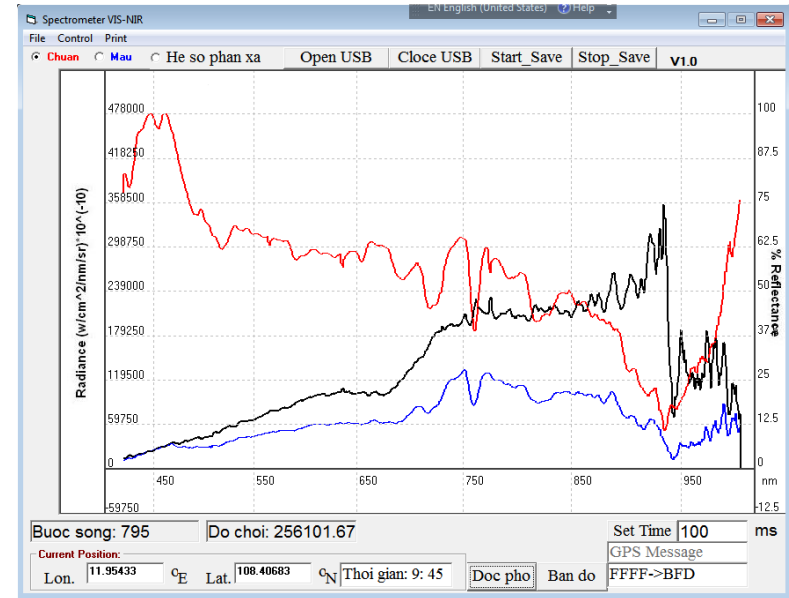
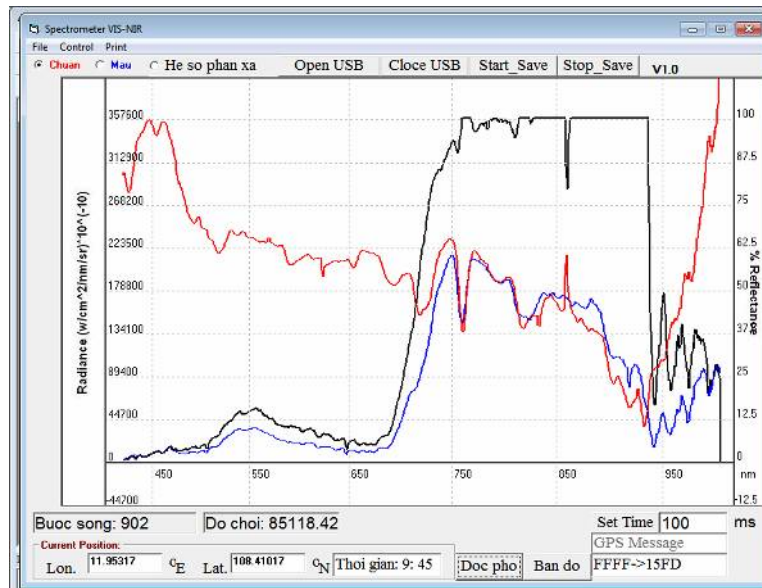
*Utilization of NOAA receiving systems in natural disaster management*



*VIS-NIR Spectrometer*



*Spectrometer onboard UAV*



Optical & Near-infrared spectrum

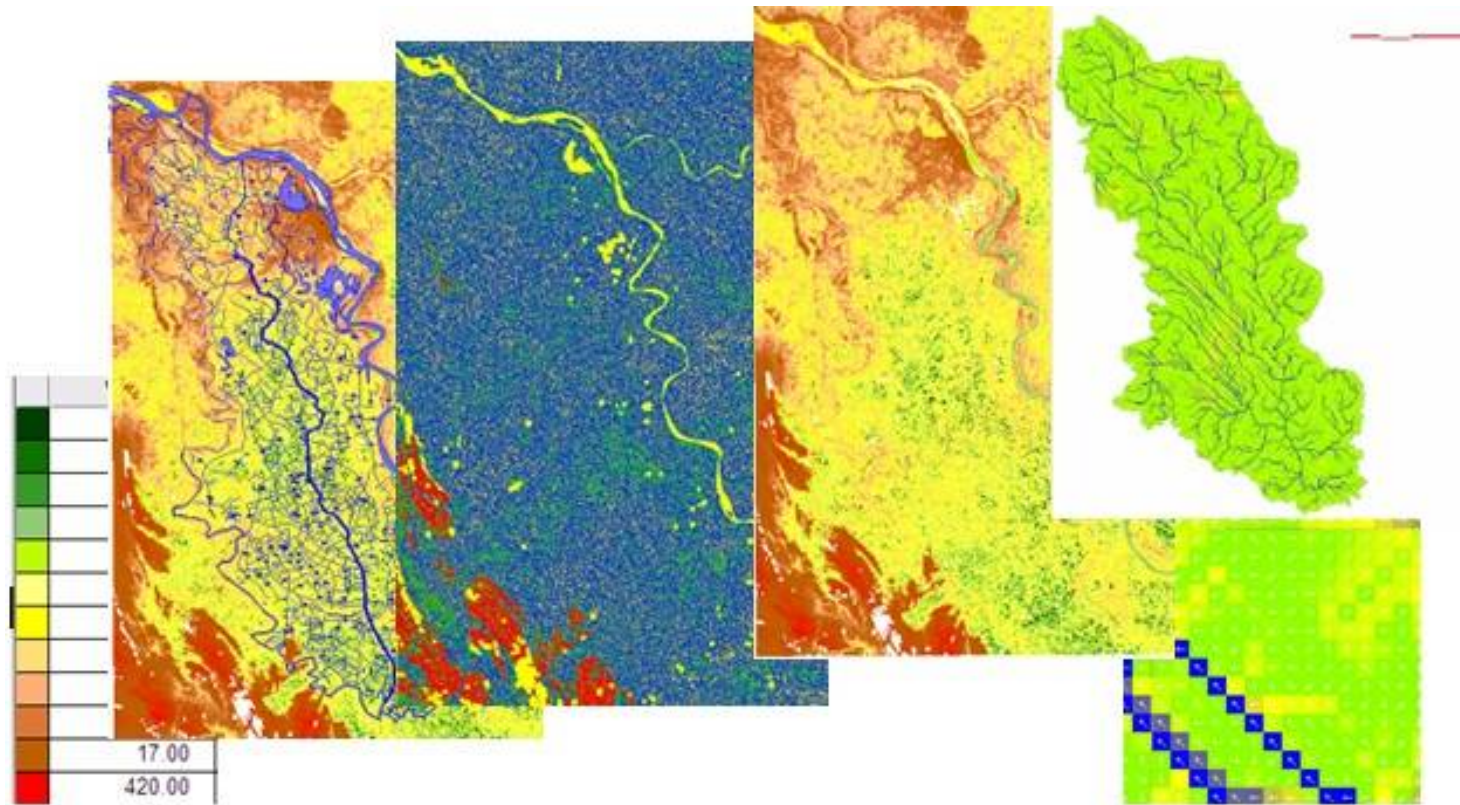




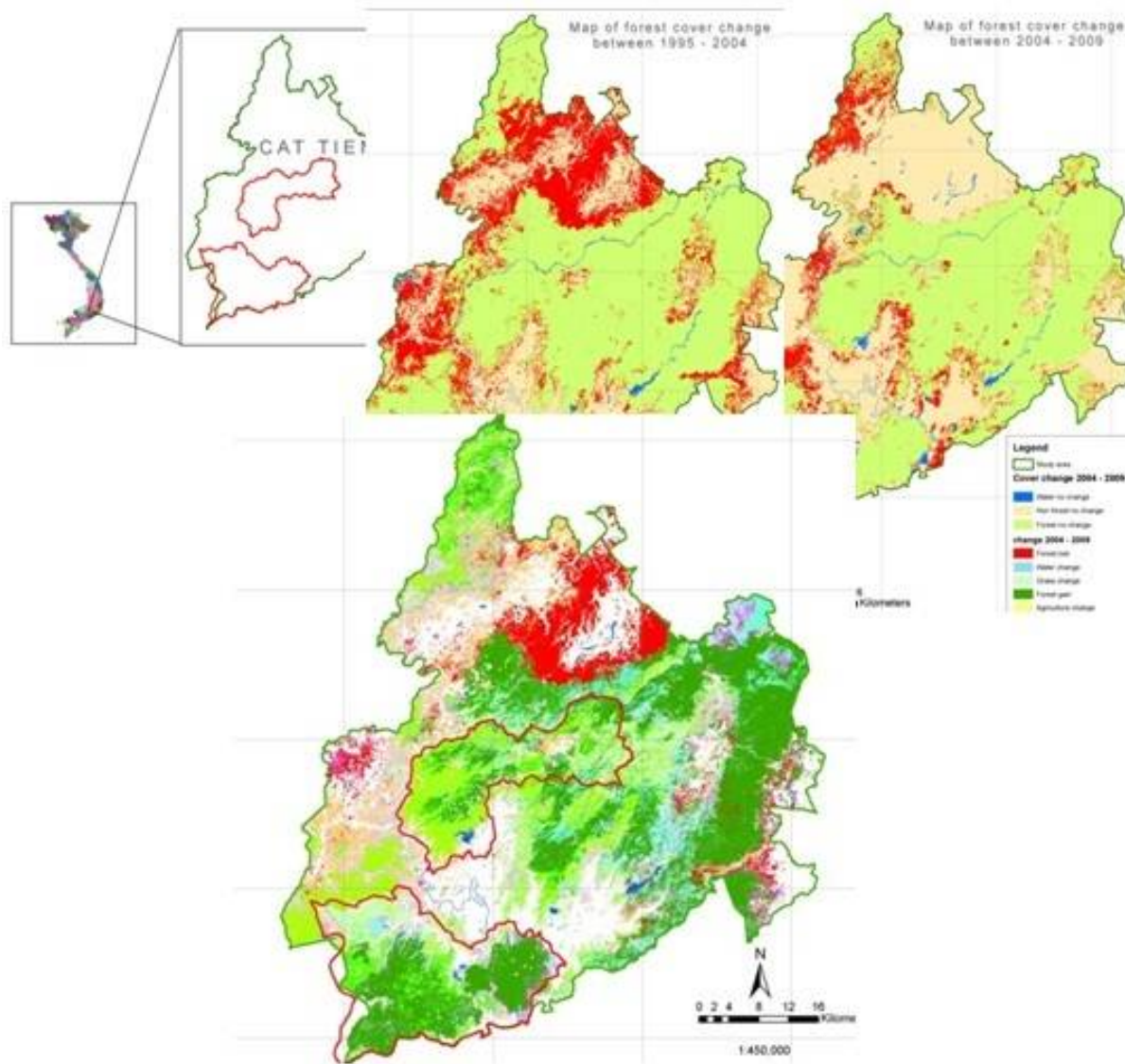
UAV & its application for monitoring forest fires, drought /flood, water quality, ship and oil spill, etc (VAST program)

Spectrometer (manufactured by STI) used for measuring the reflective spectrum of the natural objects

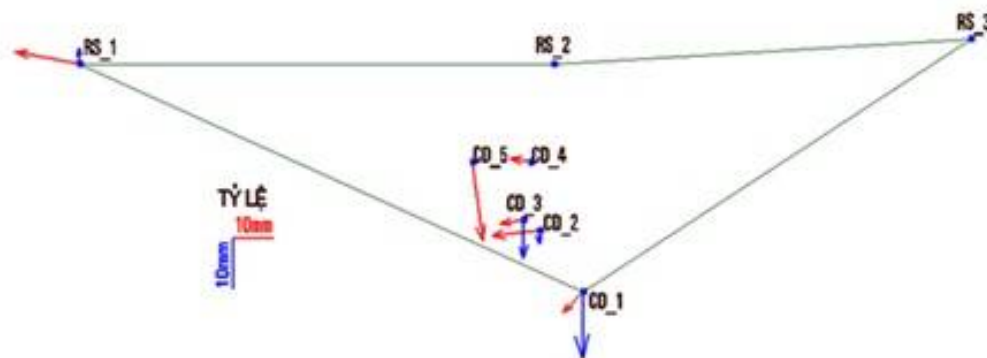
# Applications of remote sensing GPS and GIS



*Integration and modeling of remote sensing information in GIS for Cau River basin, disaster management*



*Assessment on change of forest cover, REDD (Reducing Emissions from Deforestation and Degradation) project Viet Nam*



*Application of high-precision GPS for monitoring of costal building displacement*

**VNREDSat-1 system  
and its contribution as  
SA-DPN**

# VNREDSat-1

(1st VietNam Natural Resource, Environment & Disaster monitoring system)

**Owner: VAST**

**Launch date: 07/5/2013 from Kourou, France**

Resolution: PAN (2.5m) and 4 MS (10m)

Revisit: **3 days**

Orbit: **SSO, 680 km altitude**

LTAN : **10:42 PM**

Mass: **~130 kgs**

Design lifetime: **5 years**

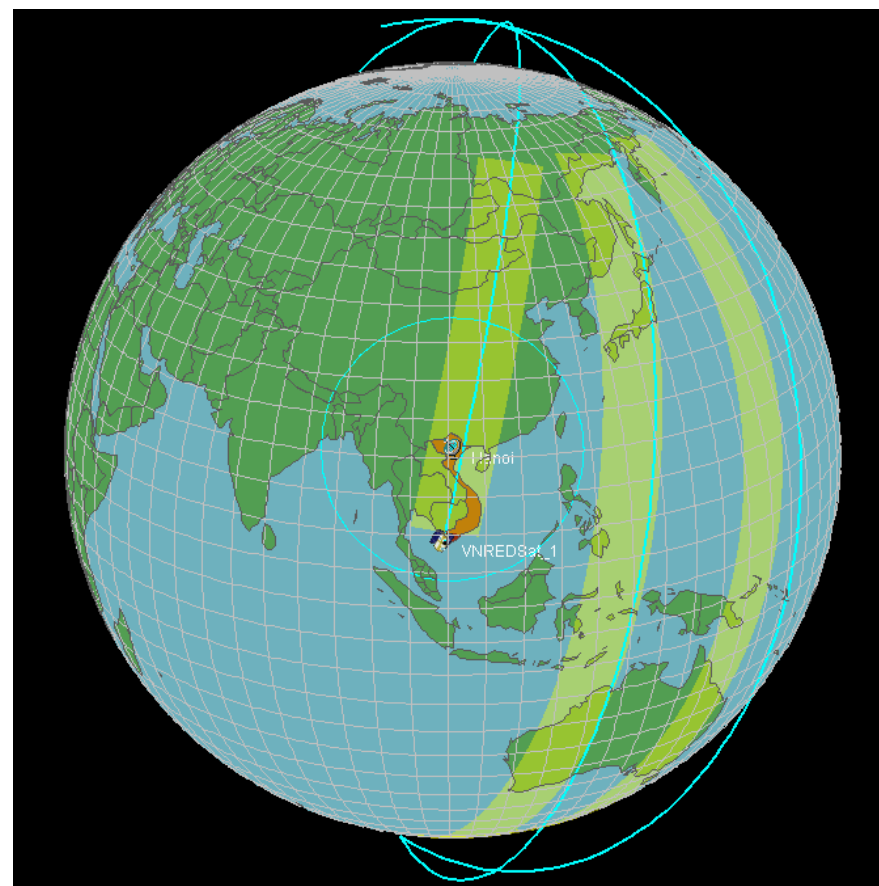
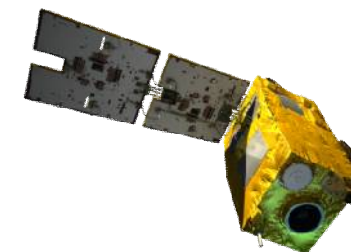
Imaging mode: single shot, scanning, stereo

Swath: **17.5 km**

Length: **823 km (PAN + MS)**

Scenes/day: **100**

Agility : **+/- 35 degrees**



# Spectral bands

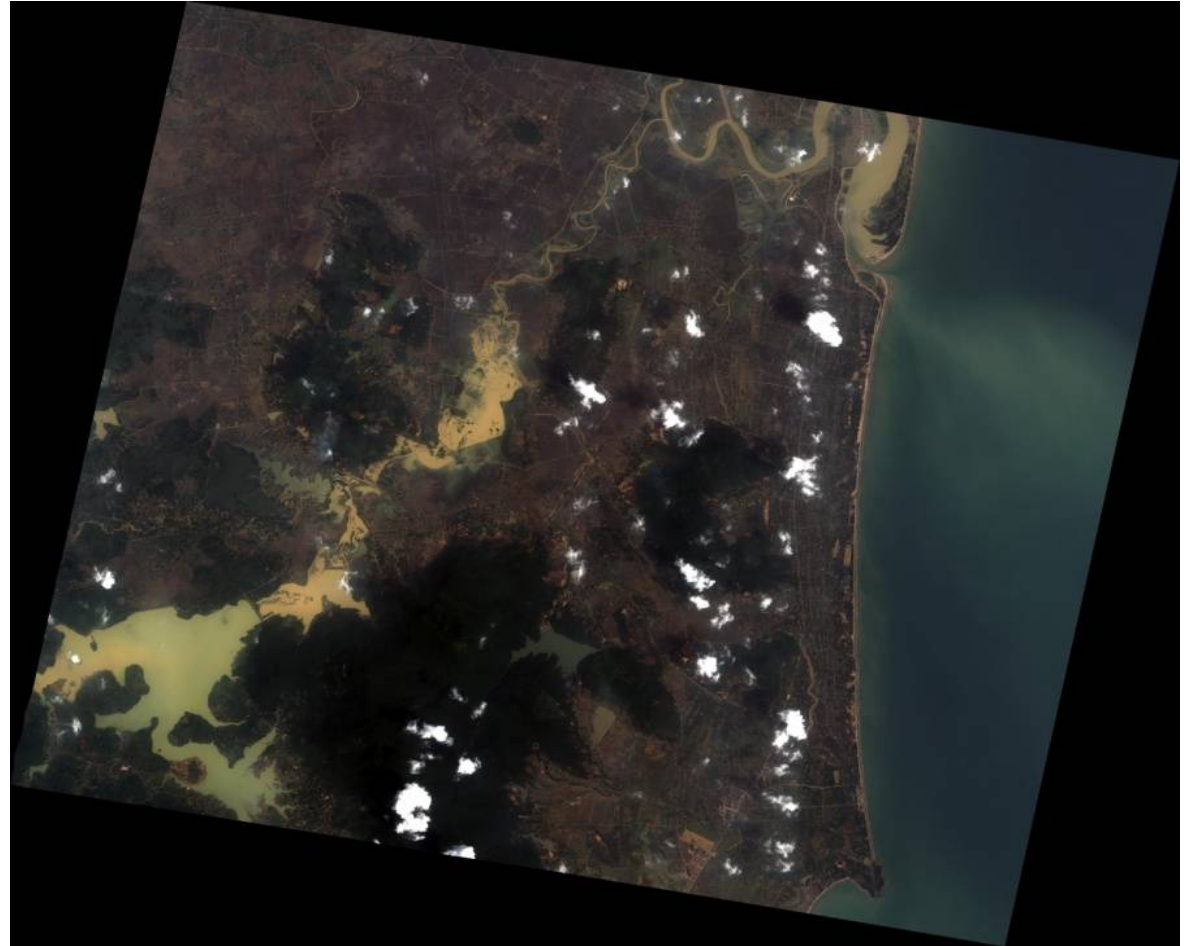


Band	Name	Lower Band Edge (μm)	Upper Band Edge (μm)
Panchromatic	PAN	0.45 +/- 0.02	0.75 +/- 0.02
Blue	B1	0.45 +/- 0.02	0.52 +/- 0.02
Green	B2	0.53 +/- 0.02	0.59 +/- 0.02
Red	B3	0.625 +/- 0.02	0.695 +/- 0.02
Near-Infrared	B4	0.76 +/- 0.02	0.89 +/- 0.02



## Typical applications of VNREDSat-1

- Land use mapping
- Agriculture
- Forest management
- Environment and territory (oil spill, water, atmospheric pollution)
- Island and coastal management
- Disaster management: monitoring, early-warning, assessment, ...



*VNREDSat-1 image dated 4/10/2013 over  
Nghe An Province.  
Flood caused by hydro-power plant*

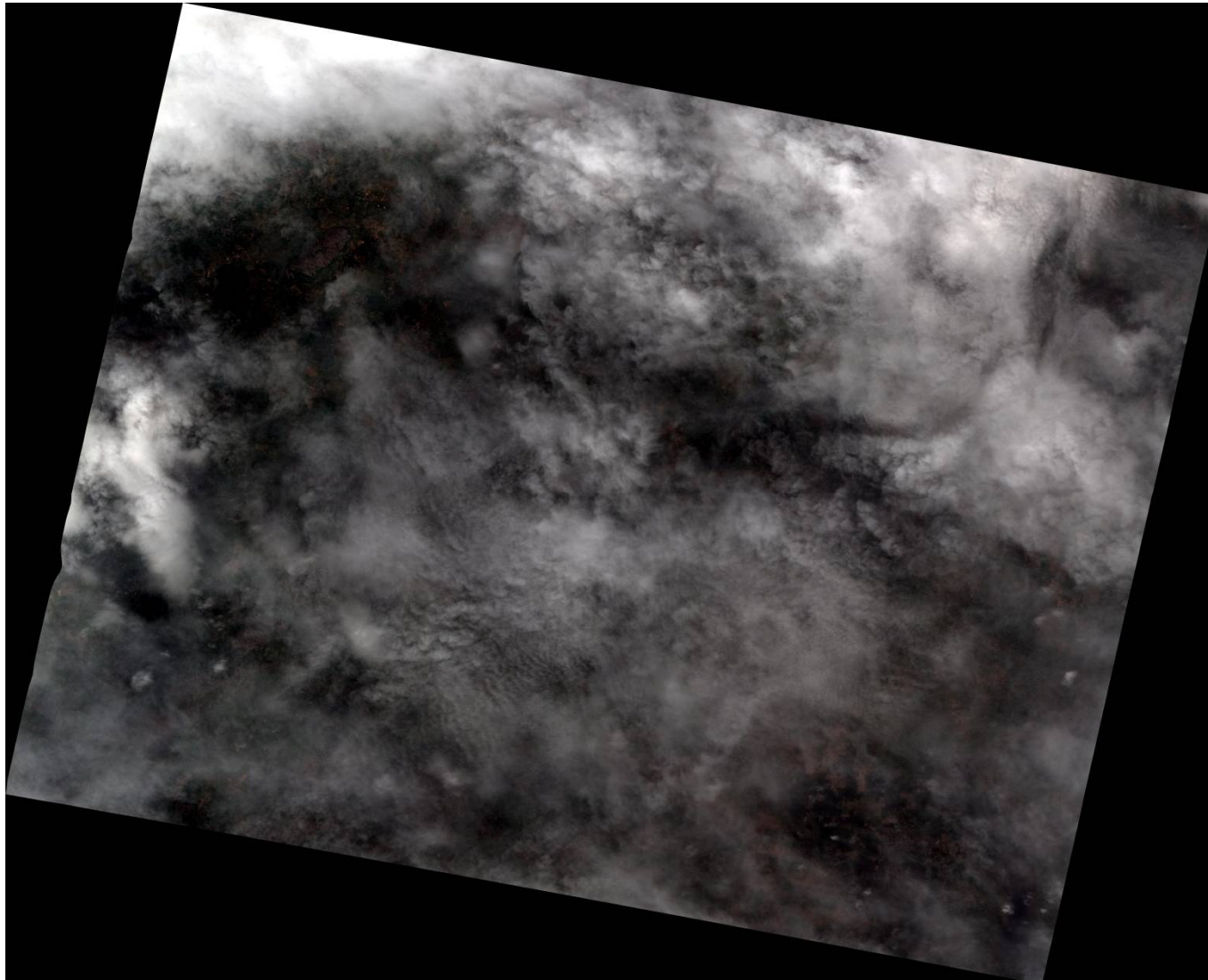


## VNREDSat-1 as a SA-DPN

- 18/11/2015: VNREDSat-1/STI accepted as a SA-DPN/DAN
- VNREDSat-1 responses to SA and UNESCAP:

No.	Area	Disaster	Date of image	Date of request	Requester
1	Souther Luzon and Vasasy, Philippines	Typhoon	17/12/2015	15/12/2015	ESCAP
2	Tamil Nadu, India	Flood	3/12/2015	2/12/2015	SA
3	Kathmandu, Nepal	Earthquake	4/5/2015	27/04/2015	ESCAP
4	Gandaki, Nepal	Earthquake	1/5/2015	27/04/2015	ESCAP
5	Vanuatu, Australia	Cyclone	18/03/2015	16/03/2015	ESCAP
6	Tacloban, Philippine	Typhoon	10/12/2014	9/12/2014	SA
7	Vishakhapatnam, India	Cyclone	15/10/2014	13/10/2014	ESCAP
8	Srinagar, India	Flood	18/09/2014	15/09/2014	ESCAP
9	Muzzaffargarh, Pakistan	Flood	18/09/2014	15/09/2014	ESCAP
10	Ludian, China	Earthquake	8/8/2014	6/8/2014	ESCAP
11	MH370	Missing	11/3/2014	10/3/2014	GISTDA
12	Jakarta, Indonesia	Flood	16/01/2014	15/01/2014	SA
Total scenes received: 283 scenes					
ESCAP: Economic and social Commission for Asia and the Pacific					
GISTDA: Geo-Informatics and Space Technology Development Agency, Thailand					
SA: Sentinel-Asia					

VNREDSat-1 image over Tamil Nadu, India (3/12/2015) –  
Emergency Observation request by SA dated 2/12/2015



VNREDSat-1 image over Tacloban, The Philippines (10/12/2015) –  
Emergency Observation request by SA dated 9/12/2015





VIỆN CÔNG NGHỆ VŨ TRỤ  
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**THANK YOU VERY MUCH**

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