DISSEMINATION OF REMOTE SENSING FOR DISASTER EMERGENCY RESPONSE IN INDONESIA

United Nations International Conference on Space-based Technologies for Disaster Risk Reduction
Beijing, China, 11-12 September 2019

Remote Sensing Applications Center
Kusumaning Ayu Dyah Sukowati
Outlines

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Background, Current monitoring system

02 Remote Sensing Activities for Disaster Emergency Response

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Introduction
Background, Current monitoring system
Introduction
Background, Current monitoring system

R&D Capacity
- Upgrade and improvement product information
- More national and international publication
- Support more journal national
- Support more topic research
- Patent document

Sourcing Absorptive Capacity
- Upgrade human resources
- Certificate ISO 9001/2015
- International speakers publication
- International conference speakers

Research and Development Capacity

Dissemination Capacity

Dissemination Capacity
- Cooperation national and international
- More cooperation non research/research
- Research contract
- National appriciate
- National reference
- Socio-economic benefit

“Center of Excellence in Remote Sensing”
Role of LAPAN on Remote Sensing Activities in Indonesia (Act No. 21/2013)

Substances related to remote sensing activities, such as:

- Planning, developing and operating satellites and remote sensing ground stations (articles 16 and 17).
- Procurement of high-resolution remote sensing data (article 18).
- Preparation of the standard methods and the data processing quality (article 19).
- Organizing the storage and distribution of data through the National Remote Sensing Data Bank as a network node remote sensing data in the National Spatial Data Network System (article 20).
- Establish guidelines for the use and dissemination of remote sensing information (article 22).
Remote Sensing Activities for Disaster Emergency Response
Remote Sensing Activities for Disaster Emergency Response

Applications: Remote Sensings

- Natural Resources and Environment
- Strategic, Economic etc
- Base Map
- Defense and Security
- Climate Change
- Disaster
Remote Sensing Activities for Disaster Emergency Response

- Easy Use
- Easy Access
- Fast delivery
- Fast process
- Quick response
- High Quality
- Accurate
Available Systems at LAPAN for Disaster Emergency Response
Remote Sensing Activities for Disaster Emergency Response

Before

Early Warning System

During

Disaster Monitoring

After

Damage area mapping
Remote Sensing Activities for Disaster Emergency Response

STANDAR OPERASIONAL PROSEDUR
TANGGAP DARURAT BENCANA

STANDARD OPERATING PROCEDURES
DISASTER EMERGENCY RESPONSE
International collaboration

- Access to and develop the capacity to use all types of space-based information to support the full disaster management cycle
- Connect to the disaster management and space communities
- Capacity building and institutional strengthening
Agreement Regional Support Office

• Quick response team that responsible for providing disaster information
• Development of procedural guideline on emergency response in countries
• Development of booklet on lessons learned about the forest fires in Indonesia for the UN-SPIDER Knowledge Portal
International Charter

• Active in Sentinel Asia and International Charter “Space Major Disaster” in the South East Asia region
• Acted as a data analysis node of Sentinel Asia
• Contributed to the International Charter as project manager as well as value-added providers
<table>
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<tr>
<th>Date of activation</th>
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<th>Location of Event</th>
<th>Charter Requestor</th>
<th>Project Management</th>
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<td>01/08/2001</td>
<td>Flood and Landslide</td>
<td>Nias Island</td>
<td>DFID, Chad Operation</td>
<td>TIM UK, CSA</td>
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<td>06/02/2004</td>
<td>Earthquake</td>
<td>Papua</td>
<td>UNOOSA on Behalf of UNOCHA</td>
<td>UNOSAT</td>
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<td>26/12/2004</td>
<td>Earthquake, Tsunami</td>
<td>Indian Ocean</td>
<td>ISRO, NRSA, UNOOSA, CNES</td>
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<td>27/12/2004</td>
<td>Tsunami, Earthquake</td>
<td>Indonesia, Thailand</td>
<td>UNOOSA on Behalf of UNOPS</td>
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<td>25/04/2006</td>
<td>Predicted Eruption</td>
<td>Java</td>
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<td>27/05/2006</td>
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<td>Java</td>
<td>USGS on Behalf of LAPAN</td>
<td>PDC</td>
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<td>27/09/2009</td>
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<td>Padang, Sumatra</td>
<td>UNITAR on Behalf of UNICEF</td>
<td>UNITAR/UNOSAT</td>
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<td>28/10/2010</td>
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<td>Mentawai Island</td>
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<td>03/11/2010</td>
<td>Volcano eruption</td>
<td>Merapi, Java</td>
<td>USGS on Behalf of PVMBG</td>
<td>VDAP</td>
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<td>Volcano</td>
<td>Sinabung, Sumatra</td>
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<td>13/02/2014</td>
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<td>Mount Kelud</td>
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<td>LAPAN</td>
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<td>Banjarnegara, Java</td>
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<td>AIT</td>
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<td>29/09/2018</td>
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<td>23/12/2018</td>
<td>Oceanwave</td>
<td>Sunda strait</td>
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<td>LAPAN</td>
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<tr>
<td>19/03/2019</td>
<td>Floods</td>
<td>Papua</td>
<td>ADRC on Behalf of LAPAN</td>
<td>AIT</td>
</tr>
</tbody>
</table>
MT. KELUD ERUPTION
Type of Event: Volcano

Location of Event:
Mount Kelud - Java, Indonesia

Date of Charter Activation:
13 February 2014

Charter Requestor:
Asia Disaster Reduction Center (ADRC) on behalf of Indonesia Institute of Aeronautics and Space (LAPAN)

Project Management: LAPAN
International Charter activation

BANJARNEGARA LANDSLIDE
Type of Event: Landslide

Location of Event: Indonesia

Date of Charter Activation: 15 December 2014

Time of Charter Activation: 01:44:00
Time zone of Charter Activation: UTC+01:00

Charter Requestor:
Asia Disaster Reduction Center (ADRC) on behalf of Indonesian National Institute of Aeronautics and Space (LAPAN)

Project Management: LAPAN
Dissemination Information
Emergency Response Mapping Mt. Sinabung Eruption (21 May 2016, Karo, North Sumatra)
Emergency Response Mapping Fast Flood at Garut District (20 Sep 2016, Garut, West Java)
Emergency Response - Volcano Eruption
Mt. Krakatau (from TerraSar X)
Emergency Response
Soil Liquefaction in Palu, North Sulawesi
Emergency Response
Flood in Papua, Indonesia

Map Information
- Map Scale: 1:5,000
- Coordinate System: GCS WGS-84
- Datum: D WGS 84

Legend
- Drained Boundary
- Vegetation
- Building
- Waterway
- Road

Data Sources
- Satellite image: ALOS-2, 21 March 2019
- Copyright: © ARIA (2019) - All rights reserved.

Description
The areas shown in blue in this map show the probable flooded areas caused by the flood. The flood occurred on 16 March 2019 in Papua Province, Indonesia.

This map was created using ALOS-2 Image acquired on 21 March 2019.
Map produced by TRC-AIT (v1.0).
Disclaimer: The accuracy of this product is not validated.
Emergency Response – Oil Spill
Coastal zone of Balikpapan, Kalimantan (From Sentinel-1A)
Coordination and Distribution Information
Coordination with Disaster Management Agency
Application earth monitoring based android

Link video: [https://www.youtube.com/watch?v=jC6fNeDG_SI](https://www.youtube.com/watch?v=jC6fNeDG_SI)

Content:
- 32 Information Type
- User feedback
Online Data Access

- http://www.pusfatja.lapan.go.id/ (main website)
- http://spbn.pusfatja.lapan.go.id/ (national earth monitoring system)
- http://pusfatja.lapan.go.id/index.php/databaselitbang (research database)
- http://pusfatja.lapan.go.id/index.php/publikasi (research publication)
- http://pusfatja.lapan.go.id/sipanda/ (natural resources information)
- http://pusfatja.lapan.go.id/simba/ (disaster mitigation information)
- http://pusfatja.lapan.go.id/index.php/tanggapbencana (Disaster emergency response)
- http://jurnal.lapan.go.id/index.php/ijreses (online scientific journal)
- http://jurnal.lapan.go.id/index.php/jurnal_inderaja (online scientific journal)
- https://www.youtube.com/channel/UC8gBtJmQkuBtGITTOxHMLw (Youtube Channel)
- https://www.facebook.com/pusfatja (Facebook)
- https://www.instagram.com/pusfatjalapan/ (Instagram)
- https://twitter.com/Pusfatja_LAPAN (Twitter)
Information dissemination to the public

Newspaper (online & printed)

Press conference with BNPB

News on TV media
Disaster synergy activities
Ministry, Local government, army etc

Foto kegiatan sinergi PUI P2I, LIPI; PPET, LIPI; PUSTEKDATA; PUSFATJA; PUSTEBANG; PUSTEKSAT; PSTA
(Bandung, 23 Februari 2018)

Foto kegiatan Kebencanaan di BNPB (BNPB, 04 Oktober 2018)

Pertemuan Sinergi PUI Klaster Mitigasi Bencana (BMKG, 22 Okt 2018)
Capacity building - technical assistance to local government

Training, supervision, and technical guidance
Next Activities – Space Technology Contribution on SDGs
SDG 17: Partnerships for the Goal

- Continue on Disaster Emergency Response Mapping
- Continue as RSO UNSPIDER
- ASEAN Mechanism on Disaster Emergency Response (UN SPIDER – ASEAN SCOSA – UNESCAP)
- JAIF Project on Drought and Flood Monitoring in Paddy Field Area (JAXA-ASEAN SCOSA)
- JAIF Project on Rapid Mapping (TOHUKU University)
- Mapping of land degradation, deforestation, and Landuse/cover change (WRI)