



Sentinel Asia

Reports of Steering Committee and APRSAF28

8th Joint Project Team Meeting
September 16, 2023

Co-Chair of Steering Committee
Koji Suzuki

1. Concept of Sentinel Asia Strategic Plan

“Challenges for Disaster Risk Reduction by a Collaboration between Space and Disaster Management Agencies”
Not only the Disaster Response but all Disaster Risk Reduction Cycles.

MITIGATION

- Hazard Map
- Early Warning
- Success Story
- Pre-disaster monitoring

RECOVERY

- Mid/Long-term monitoring
- Recovery Status



PREPADNESS

- Training
- Capacity Building
- Standard Operation Procedure (SOP)

RESPONSE

- Emergency Observation
- Data Analysis
- Damage Assessment

2. Steering Committee Members

The Steering Committee(SC) is the advisory committee for strategic management of Sentinel Asia(SA).

The purpose of SC is to discuss and define the management strategy of SA for its sustainability and affordability on the use of space technology and applications to contribute to substantial disaster risk and damage reduction in Asia-Pacific region.

There are **12** organizations as Steering Committee Members
ADRC and GISTDA are current Co-Chairs



MOHAMMED BIN RASHID SPACE CENTRE



2. Steering Committee Members

12 organizations

ADRC and GISTDA are current Co-Chairs

Organization of Steering Committee	
Asian Disaster Reduction Center	ADRC
Asian Institute of Technology	AIT
Center for Remote Imaging, Sensing and Processing	CRISP
Geo-Informatics and Space Technology Development Agency	GISTDA
Indian Space Research Organization	ISRO
International Water Management Institute	IWMI
Japan Aerospace Exploration Agency	JAXA
Mohammad Bin Rashid Space Centre	MBRSC
Philippine Institute of Volcanology and Seismology	Phivolcs
Taiwan Space Agency	TASA
Vietnam Academy of Science and Technology – Space Technology Institute	VAST-STI
Yamaguchi University	YU

3. Dates of SC Meetings

Year	Date	Meeting Type	Host
2020	1/21-22	SC Face to Face	Hosted by ISRO
	6/23	Web Meeting	
	11/4	Web Meeting	
2021	3/15	Web Meeting	
	8/5	Web Meeting	
	11/11	Web Meeting	
2022	2/21	Web Meeting	
	7/20	Web Meeting	
	10/10-11	SC Face to Face	Hosted by AIT
2023	3/13	Web Meeting	



3.1 Face to Face Meeting in 2020 hosted by ISRO

- Steering Committee Meeting in January 2020
- Co-organized with ISRO

3.2 Major Discussion Themes of Face to Face Meeting in 2020 hosted by ISRO

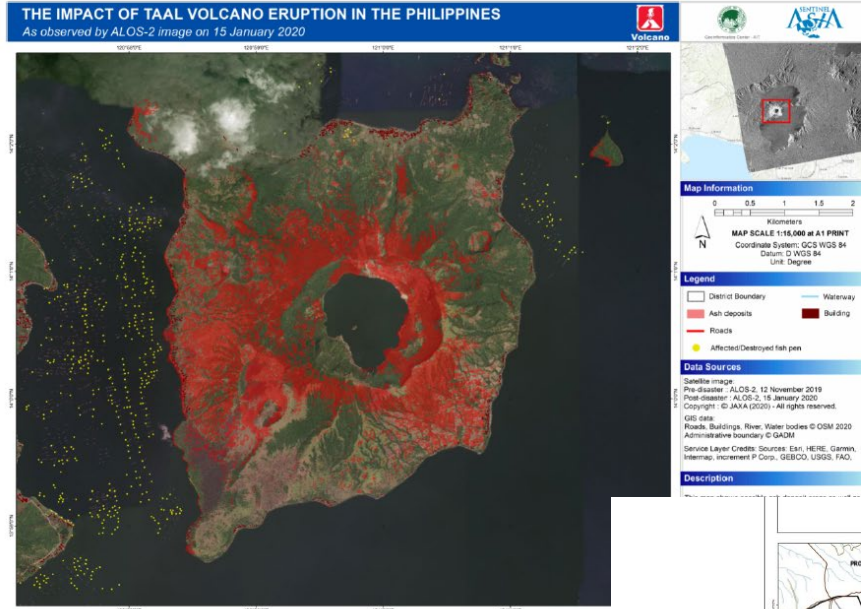
- ISRO made four presentations on their activities related to the disaster management.
- **ISRO's DMS Programme** (Dr. G.S. Rao)
- **Space Inputs for Disaster management** (Dr. P V N Rao)
- **Spatial Flood Early Warning for Disaster Risk Reduction – Role of Space Technology** (Dr. K H V Durga Rao)
- **Regional Landslide Early Warning along Selected Road Corridors in India** (Dr. Tapas Martha)



3.3 Example of Presentations in SC Face to Face Meeting in 2020 hosted by ISRO

Introduction of Volcanic Hazard Ranking Map by AIT

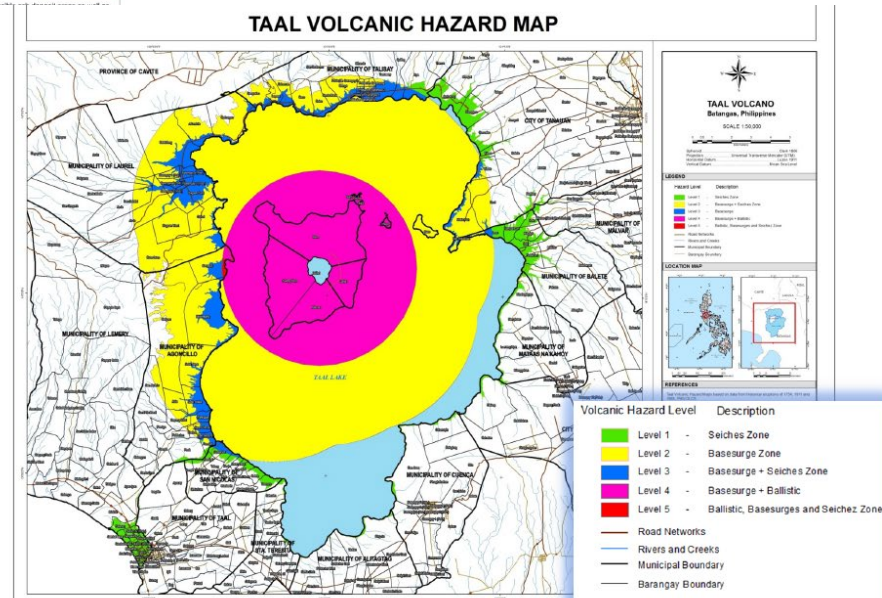
VAPs for Taal Volcano Eruption



Data Providers (Sentinel Asia) :
JAXA , GISTDA

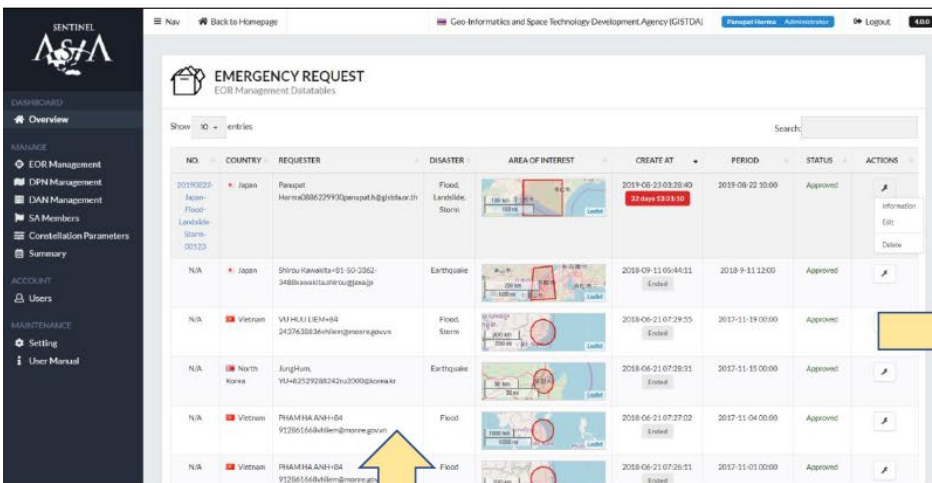
VAP produced on 2020-Jan-15







Flood areas were detected using the thresholding technique.

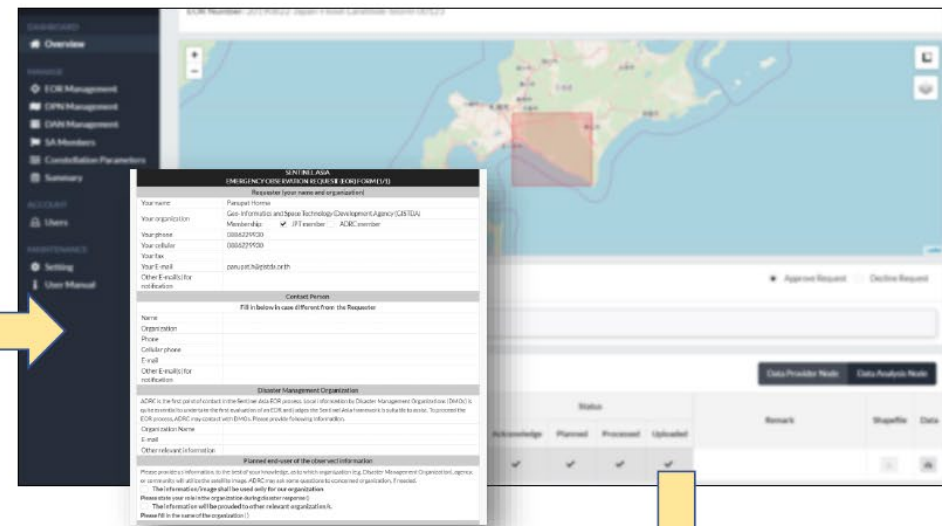


3.3 Example of Presentations in SC Face to Face Meeting in 2020 hosted by ISRO

GISTDA introduced OPTEMIS: Emergency Observation Data Management System



NO.	COUNTRY	REQUESTER	DISASTER	AREA OF INTEREST	CREATE AT	PERIOD	STATUS	ACTIONS
2019020	Japan	Pasopit Horn088229930@pasopit.hq@isroface.jp	Flood, Landslide, Storm		2019-09-23 03:20:40	2019-09-22 10:00	Approved	Information, Edit, Delete
	Japan	Shirou Kawakita+01-50-3362-3488@isroface.jp@isroface.jp	Earthquake		2018-09-11 05:44:11	2018-9-11 23:00	Approved	
	Vietnam	VU HUU LEM+84-2437638336@vungreong.gov.vn	Flood, Storm		2018-06-21 07:29:55	2017-11-19 00:00	Approved	
	North Korea	JungHun, YU+8212928242@y2000@korear.kr	Earthquake		2018-06-21 07:28:31	2017-11-15 00:00	Approved	
	Vietnam	PHAMHA ANH+84-912186156@hnm@monre.gov.vn	Flood		2018-06-21 07:37:02	2017-11-04 00:00	Approved	
	Vietnam	PHAMHA ANH+84-912186156@hnm@monre.gov.vn	Flood		2018-06-21 07:26:11	2017-11-01 00:00	Approved	



EMERGENCY OBSERVATION DATA MANAGEMENT SYSTEM

Requester (your name and organization)

Your name: Pasopit Hornu
 Your organization: Geo-Informatics and Space Technology Development Agency/GISTDA
 Your phone: 0884229100
 Your cellular: 0884229100
 Your fax:
 Your email: pasopit.hq@isroface.jp
 Other E-mail/cor: not available

Check Person
 IIS is below to use ID from the Requester

Name:
 Organization:
 Phone:
 Cellular phone:
 E-mail:
 Other E-mail/cor: not available

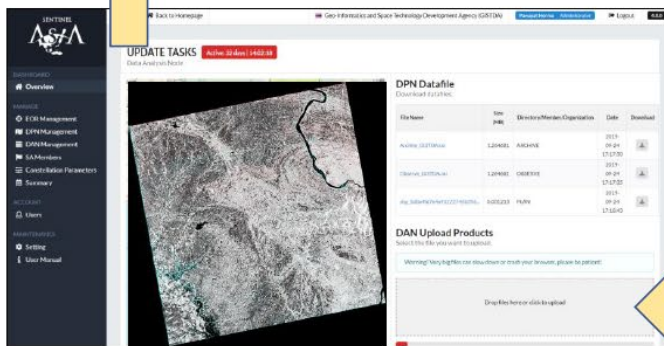
Disaster Management Organization
 ADRC is the first point of contact in the Sentinel Asia EOD process. Local information to Disaster Management Organization (DMO) is also needed to determine the first evaluation of an EOD and assign the Sentinel Asia member to suitable resource. To represent the EOD process of EOD management and EODs, please provide following information:

Please provide information in the past or your knowledge, organization responsible for Disaster Management Organization agree or currently will all active satellite image, ADCRC can use some operations concerned or participation, if needed.
 This information is for use only for the use only for the use organization.
 Please state user role in the organization being requested.
 This information will be provided to other relevant organizations if:
 Please fill in the name of the organization.

Please specify use of the above information

Status: Approved Request, Decline Request

Data Provider Node: Data Provider Node



UPDATE TASKS Active 30 items | 1488 KB

Data Analysis Tools

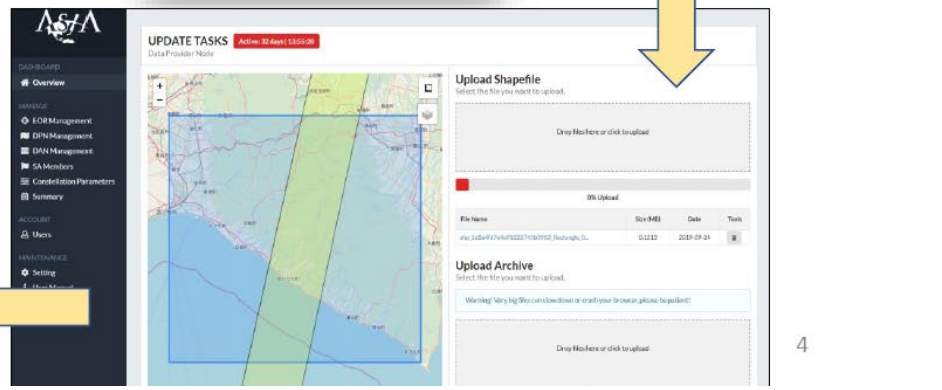
DPN Datafile
Download Datafile

File Name	Size	File	Date	Download
Active_02072018	1294KB	ANDKANS	09-24-17 17:00	
02072018	1294KB	02072018	08-24-17 17:00	
02_0207201802072018_02072018	1402KB	PLN	08-24-17 16:40	

DAN Upload Products
Select the file you want to upload.

Warning! Very High! No can download or upload your to create, please to product!

Drop files here or click to upload



UPDATE TASKS Active 30 items | 1301 KB

Data Provider Node

Upload Shapefile
Select the file you want to upload.

Drop files here or click to upload

US Upload

File Name	Size (KB)	Date	Task
02_020720180207201802072018_02072018	1402 KB	2017-09-24	

Upload Archive
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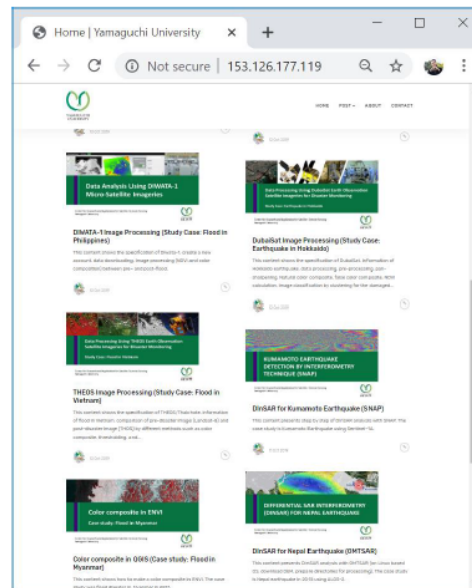
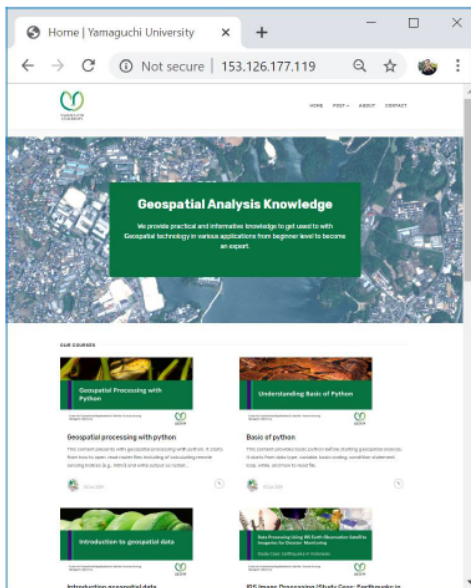
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3.3 Example of Presentations in SC Face to Face Meeting in 2020 hosted by ISRO

Online Education Materials for creating Value Added Products

Yamaguchi University Resource (website)

- Collect materials and procedure how to analysis geospatial data especially for disaster application
- Implement to our students and university network to be able to join data analysis activity for emergency case



<http://bit.do/eduweb>

3.3 Example of Presentations in SC Face to Face Meeting in 2020 hosted by ISRO

IWMI:

Linking Sentinel Asia Activities to Sendai Framework

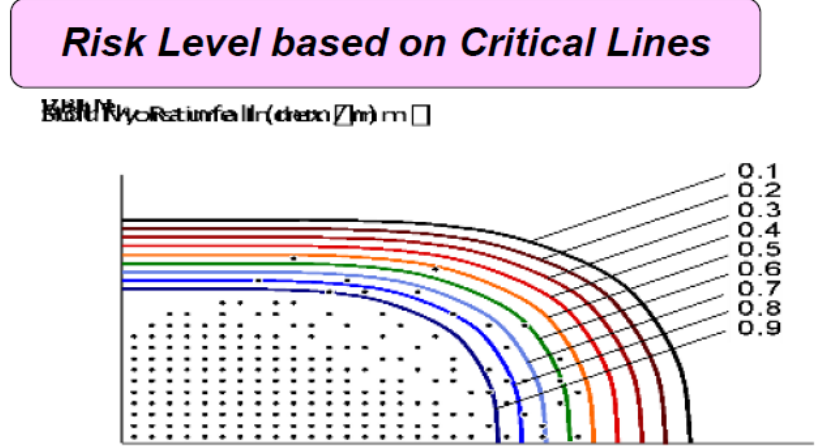
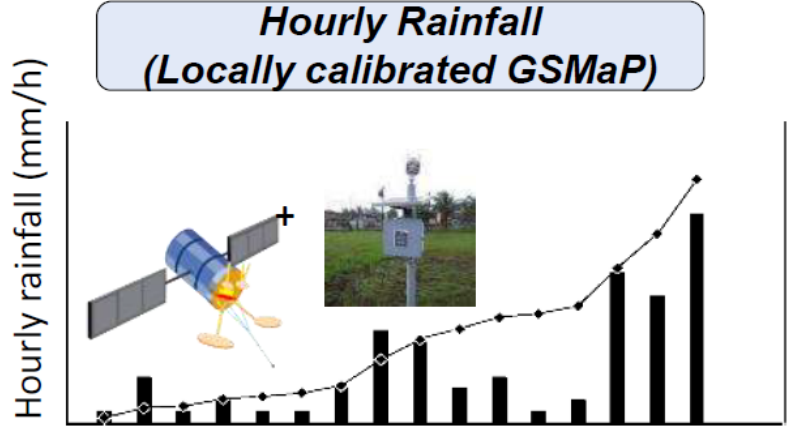
4 PRIORITIES FOR ACTION	<p>Priority 1 Understanding disaster risk <i>Policies and practices for DRR should be based on an understanding of disaster risk in all its dimensions of vulnerability, capacity, exposure of persons and assets, hazard characteristics and the environment.</i></p>
	<p>Priority 2 Strengthening disaster risk governance to manage disaster risk <i>Disaster risk governance at the national, regional and global levels is of great importance for an effective and efficient management of disaster risk.</i></p>
	<p>Priority 3 Investing in disaster risk reduction for resilience <i>Public and private investment in DRR are essential to enhance the economic, social, health & cultural resilience of persons, communities, countries, their assets, as well as environment</i></p>
	<p>Priority 4 Enhancing disaster preparedness for effective response, and to “Build Back Better” in recovery, rehabilitation and reconstruction <i>Strengthened disaster preparedness for response, recovery, rehabilitation and reconstruction are critical to build back better</i></p>

7 GLOBAL TARGETS	Reduce	Increase
	<p>Mortality/ global population 2020-2030 Average << 2005-2015 Average</p>	<p>Countries with national & local DRR strategies 2020 Value >> 2015 Value</p>
	<p>Affected people/ global population 2020-2030 Average << 2005-2015 Average</p>	<p>International cooperation to developing countries 2030 Value >> 2015 Value</p>
	<p>Economic loss/ global GDP 2030 Ratio << 2015 Ratio</p>	<p>Availability and access to multi-hazard early warning systems & disaster risk information and assessments 2030 Values >> 2015 Values</p>
	<p>Damage to critical infrastructure & disruption of basic services 2030 Values << 2015 Values</p>	

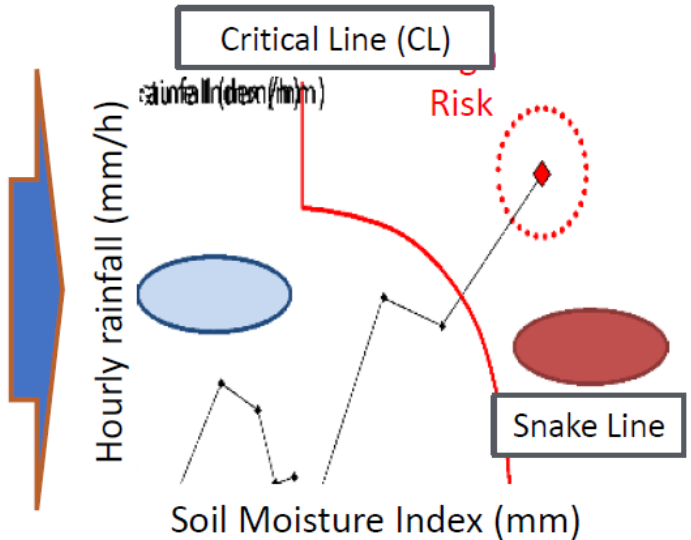
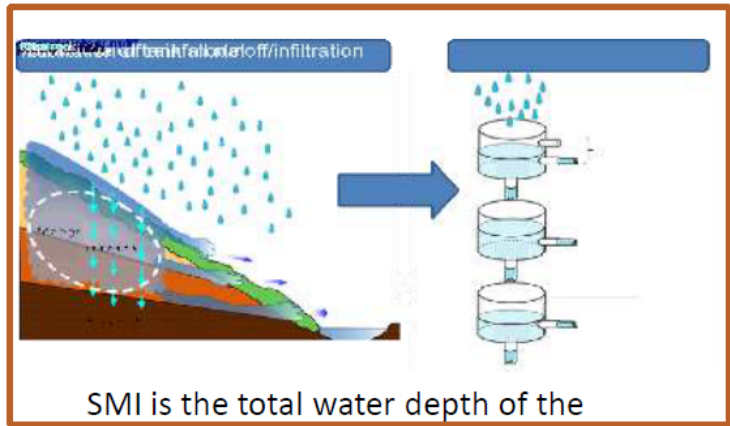
3.3 Example of Presentations in SC Face to Face Meeting in 2020 hosted by ISRO

Phivolcs: Successful Application of SA to Disaster Response

Sentinel Asia Success Story Methodology in the Philippines proposal to be Expanded to Cordillera Administrative Region



Soil Moisture Index (estimated from tank model)



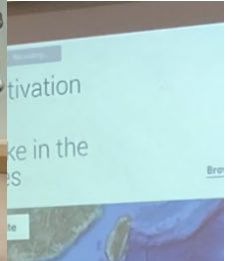
3.4 Face to Face Meeting in 2022 hosted by AIT

GEOINFORMATICS CENTER

- Steering Committee Meeting in October 2022
- Co-organized with GIC-AIT



3.4 Face to Face Meeting in 2022 hosted by AIT



3.5 Major Discussion Themes in SC FtoF 2022

Some of the major themes discussed in the meeting.

1	ADRC	QZSS Disaster and Crisis Management Report
2	AIT	Mobile Apps
3	IWMI	Linking Step3 to Sendai Framework for DRR
4	GISTDA	Flood Management System and Rapid data acquisition
5	ISRO IWMI	Capacity Building Webinars Rapid Flood Mapping and Drought Monitoring
6	JAXA	Interaction with JICA; Autonomous Analysis
7	TASA	Emergent Value Added Product; Open Data Cube
8	YU	Online Education Materials; University Data Analysis Network

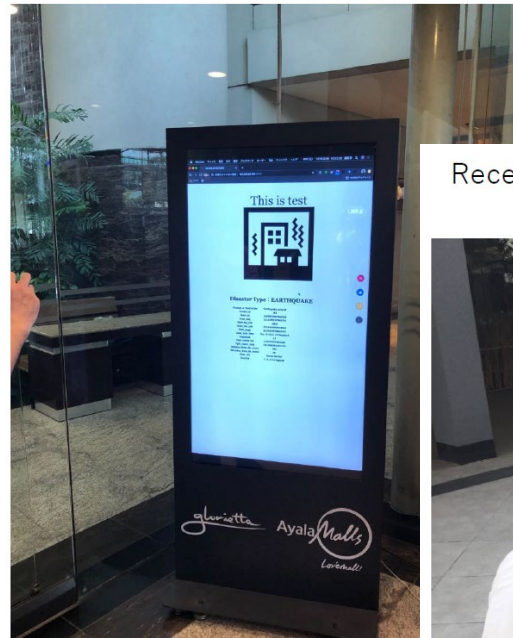
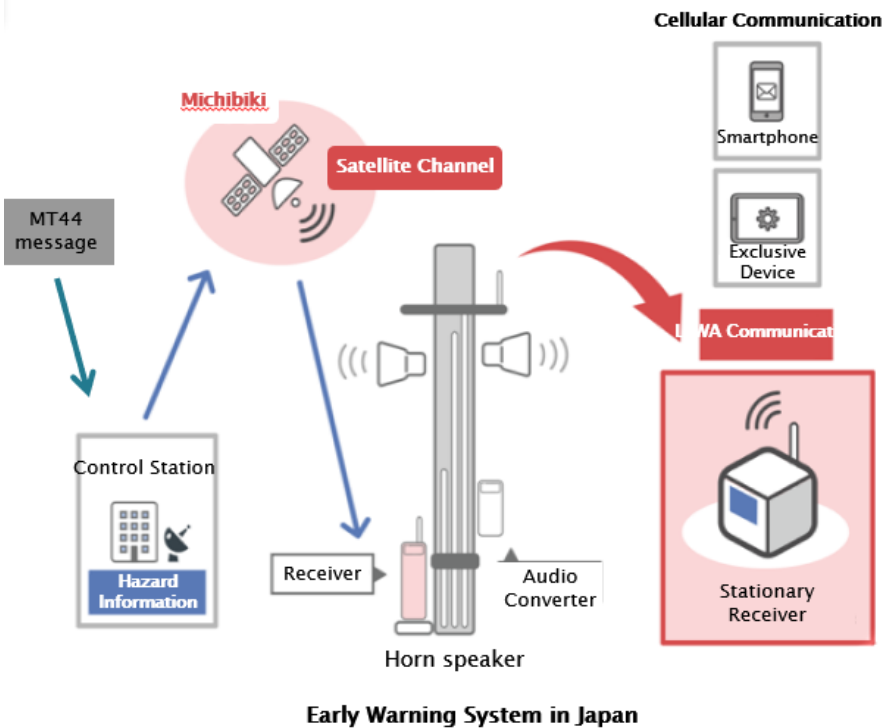
3.5 Example of Presentations in SC Face to Face Meeting in 2022 hosted by AIT

ADRC: Disaster and Crisis Management Report using QZSS

Satellite Report for Disaster and Crisis Management (DC Report) is a service that to publish crisis management information from organizations for disaster prevention. The information is transmitted via Michibiki satellite .

DC Report is generated by Receiving MT44 messages from Disaster organizations.
 MT44: Incident information type (optional format)

Projecting the received information with voice message



Receiving QZSS signal through receiver

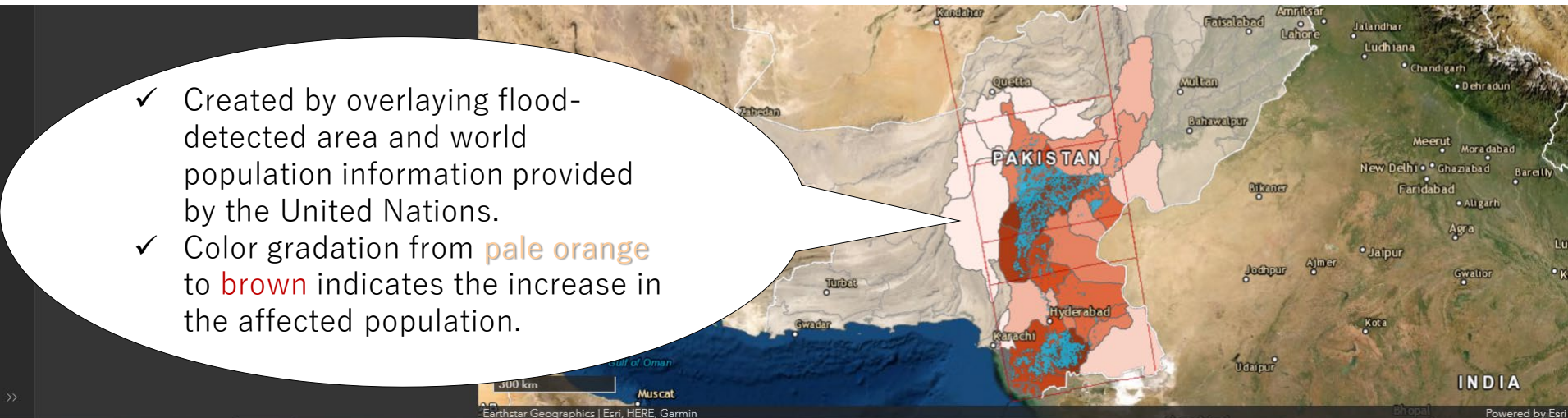


3.5 Example of Presentations in SC Face to Face Meeting in 2022 hosted by AIT

Interaction with JICA in the case of Flood in Pakistan : Statistic information

- ✓ JICA expected the statistical information such as the affected population to understand the scale of the flood impact
- ✓ In this regard, JAXA created below affected population information as a sample and introduced it to JICA

- ✓ Created by overlaying flood-detected area and world population information provided by the United Nations.
- ✓ Color gradation from **pale orange** to **brown** indicates the increase in the affected population.

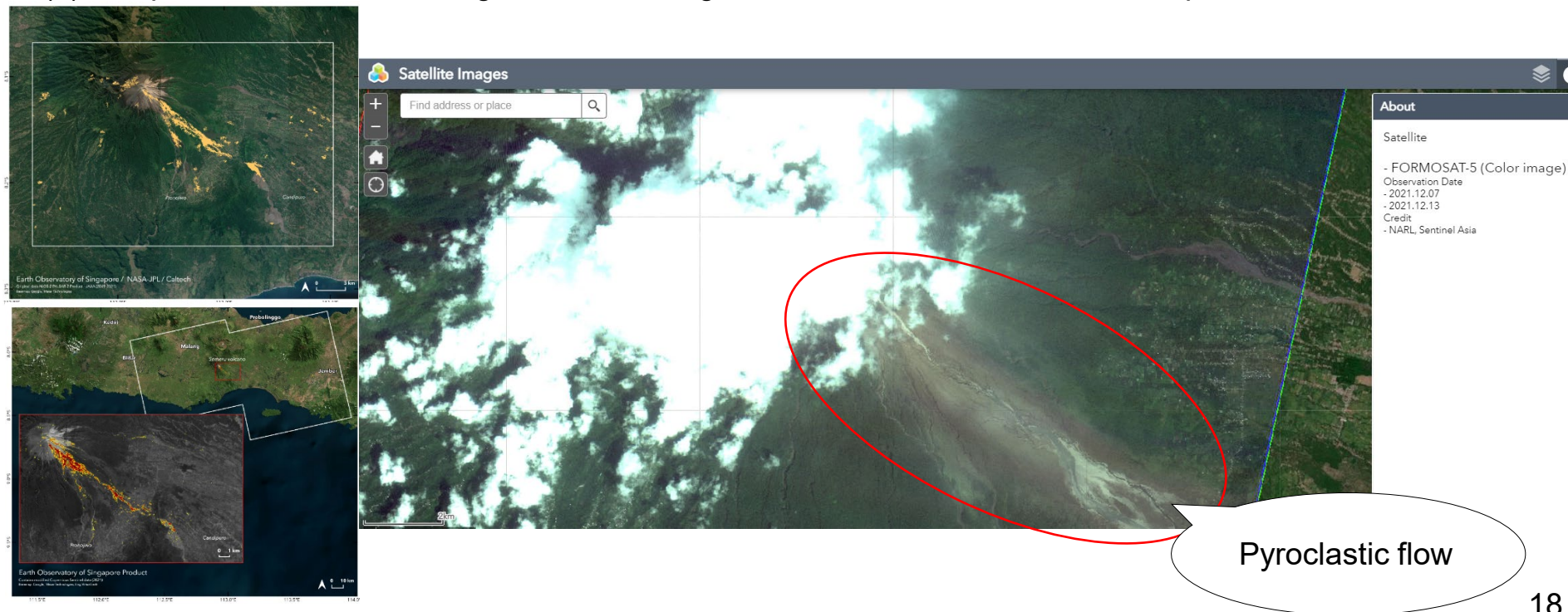


3.5 Example of Presentations in SC Face to Face Meeting in 2022 hosted by AIT

Interaction with JICA In the case of Volcano Eruption in Indonesia December 2021

✓ Thanks to disaster information provided by EOS and optical satellite data from FORMOSAT-5 by TASA on Web-GIS, the JICA expert and the consultant found potential landslide risk information that was hard to acquire from the field survey:

- (1) The pyroclastic potential flow extent around 5km from volcanic crater, the area too hot to enter
- (2) The potential river flow change due to the large amounts of volcanic debris the upstream of river



4. Sentinel Asia Session of APRSAF28

- ✓ Sentinel Asia is an initiative aiming space-based international cooperation for disaster management in the Asia-Pacific region
- ✓ In February 2006, Sentinel Asia was established and started its activities in accordance with the recommendation at APRSAF-12 in October 2005
- ✓ Sentinel Asia Session in Space Application Workshop in APRSAF28 in Vietnam



4.1 Topics of Sentinel Asia Session APRSAF28

1	JAXA	Sentinel Asia Report
2	ADRC	Trend of Emergency Observation Request
3	JICA	Practical utilization of Value-added products (VAPs) for JICA operations
4	EOS	Rapid disaster response using Synthetic Aperture Radar
5	PhilSA	The DHARMA Project: Philippine Space Agency (PhilSA) contribution on the use of Earth Observation (EO) data for Disaster Risk Reduction and Management (DRRM) in the Philippines:
6	GISTDA	GISTDA's space technology and application for disaster management
7	IWMI	Earth Observation data for climate resilience and strengthening disaster risk management
8	ADRC	Satellite Report for Disaster and Crisis Management (DC Report) using EWS for the Asia-Pacific region
9	YU	Development of Mirror Target Calibration for Multiple Optical Satellite Data

4.2 Plenary Session of APRSAF28

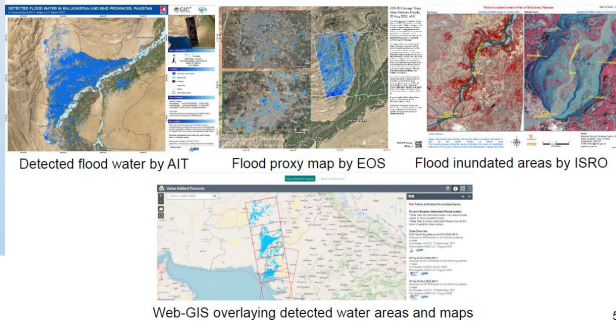
- ✓ Sentinel Asia Plenary Report was presented by Co-Chair of the Steering Committee, Mr. Tatiya Chuentragun of GISTDA, emphasizing the international cooperation and good practices towards Disaster Response and Mitigation.



Mr. Tatiya Chuentragun
Deputy Executive Director,
GISTDA
THAILAND

4.1 Flood in Pakistan in August 2022

- ✓ Provincial Disaster Management Authority (PDMA) of Pakistan requested emergency observation
- ✓ JICA, UNWFP, a Consultant of a World Bank project, and a disaster response NGO asked for their access to the Web-GIS to monitor the impact of flood in Pakistan

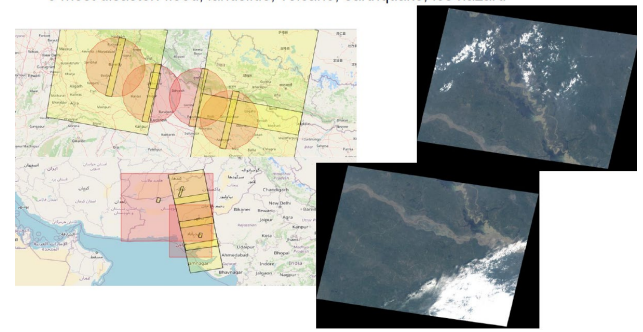


Detected flood water by AIT Flood proxy map by EOS Flood inundated areas by ISRO

Web-GIS overlaying detected water areas and maps

4.3 Thaichote (THEOS-1) Support from October 2021 to October 2022 by GISTDA

- ✓ 38 emergency observation requested from 14 countries
- ✓ GISTDA provide more than 500 imagery (value 65,000 USD)
- ✓ 5 most disaster: flood, landslide, volcano, earthquake, ice hazard



Concept of Sentinel Asia Strategic Plan

“Challenges for Disaster Risk Reduction by a Collaboration between Space and Disaster Management Agencies”

- #### MITIGATION
- Hazard Map
 - Early Warning
 - Success Story
 - Pre-disaster monitoring
- #### RECOVERY
- Mid/Long-term monitoring
 - Recovery Status



- #### PREPADNESS
- Training
 - Capacity Building
 - Standard Operation Procedure (SOP)
- #### RESPONSE
- Emergency Observation
 - Data Analysis
 - Damage Assessment

5. Future Event

- ✓ The 29th session of the Asia-Pacific Regional Space Agency Forum (APRSAF-29)
 - 17 to 21 September 2023, Jakarta, Indonesia
 - Co-organized by BRIN, MEXT, and JAXA

For detail, please refer to below URL:

https://www.aprsaf.org/annual_meetings/aprsaf29/meeting_details.php

https://www.aprsaf.org/annual_meetings/aprsaf29/registration.php

We look forward to meeting you at APRSAF-29 in Indonesia!