** December 2022 News from Sentinel Asia Project Office **

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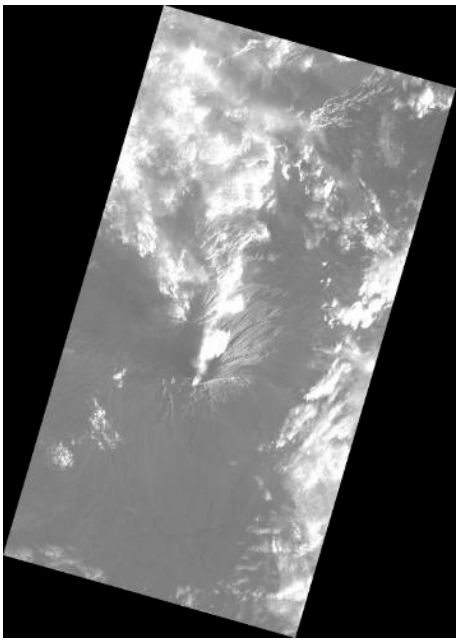
1. [News] Emergency Observation of Disasters (as of 26 December)

   (1) Volcano eruption in Indonesia on 04 December, 2022 (GLIDE Number VO-2022-000373-IDN)

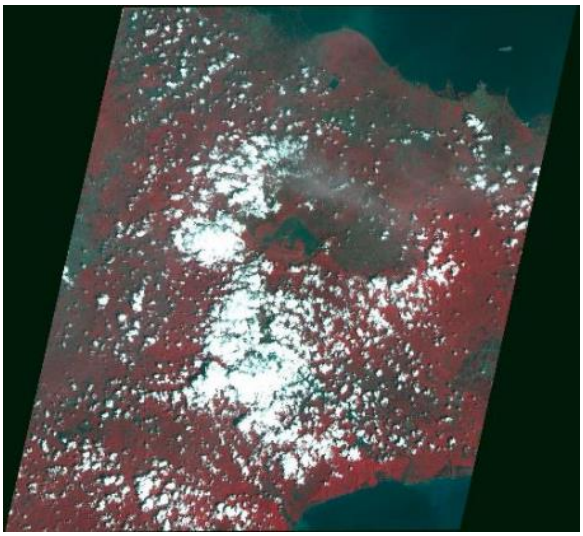
   Semeru Volcano on Java Island, Indonesia, erupted on 4 December. ReliefWeb reported that more than 2,000 people were displaced to shelters. (https://reliefweb.int/disaster/vo-2022-000373-idn)

   The Japan International Cooperation Agency (JICA) made an Emergency Observation Request (EOR) to Sentinel Asia on 5 December, 2022. This EOR was escalated to the International Disasters Charter. The Asian Institute of Technology (AIT) assumed the role of Project Manager for this Charter activation. Among Data Provider Nodes (DPNs), the Centre for Remote Imaging, Sensing and Processing (CRISP), the Geo-Informatics and Space Technology Development Agency (GISTDA), the Indian Space Research Organization (ISRO), the Japan Aerospace Exploration Agency (JAXA), and the National Applied Research Laboratories (NARL) provided data. Among Data Analysis Nodes (DANs), the Mohammed Bin Rashid Space Centre (MBRSC) provided its Value-Added Products (VAPs). Information on the latest response by Sentinel Asia is available at the link below.
   https://sentinel-asia.org/EO/2022/article20221204ID.html

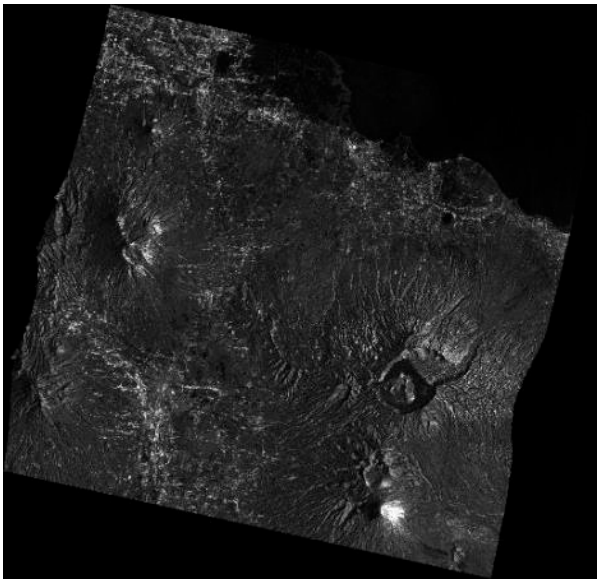


Post-disaster satellite image (TELEOS-1) provided by CRISP

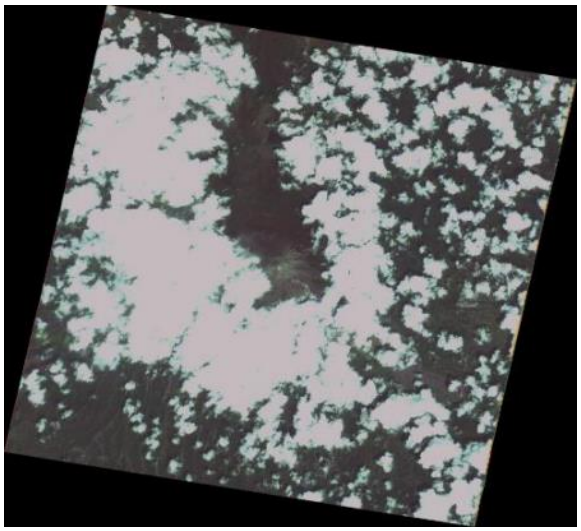
Post-disaster satellite image (THEOS-1) provided by GISTDA



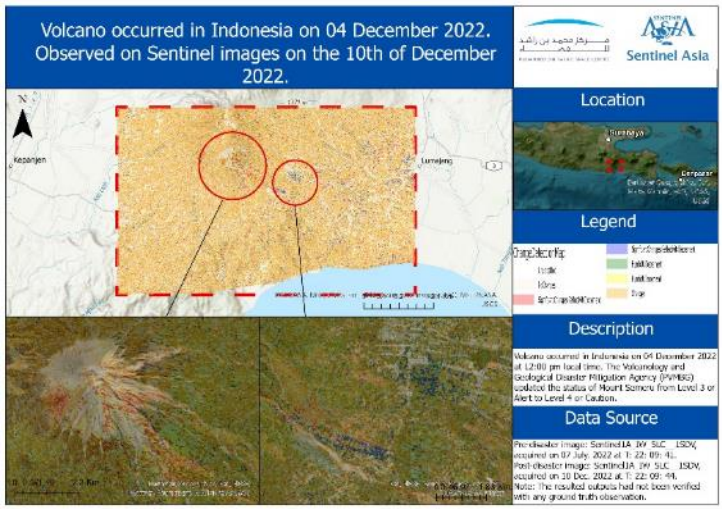
Post-disaster satellite image (Cartosat-3) provided by ISRO



Post-disaster satellite image (ALOS-2) provided by JAXA



Post-disaster satellite image (FORMOSAT-5) provided by NARL



Value-Added Product by MBRSC

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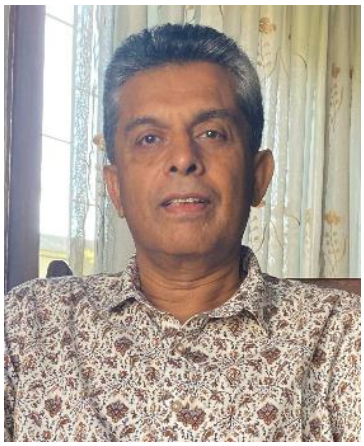
2. [Interview] Dr. Lal Samarakoon, PhD; Former Director of GIC-AIT; former co-chair of Sentinel Asia Steering Committee

Lal Samarakoon, PhD; Former Director of GIC-AIT; former co-chair of Sentinel Asia Steering Committee



Dr. Lal Samarakoon was the first director of the Geoinformatics Center (GIC) of the Asian Institute of Technology (AIT), concurrently holding a position as a Visiting Scientist of JAXA seconded to AIT. He started his space technology career in early 1990 after completing his graduate studies in Japan. He has worked for Japanese industry before leading GIC for about 15 years. He has contributed to Sentinel Asia from the very beginning and was instrumental in establishing GIC as the first Principal Data Analysis Node (PDAN) of SA. He was one of the co-chairs of the SA Steering Committee since its inception in 2017 until 2022.

Sentinel Asia Secretariat:
First, the Sentinel Asia (SA) secretariat would like to express its appreciation for your work as a Co-chair of the Sentinel Asia Steering Committee (SC). AIT participated in Sentinel Asia from the very beginning and has contributed to today's success of SA. With that, could you tell us the story of AIT's participation in SA, as a former director of GIC-AIT?

Dr. Lal Samarakoon:
First of all, let me thank you for giving me this opportunity to discuss my experience of working for SA in the past 15 years. To answer your question, let me give you a background on how GIC-AIT joined SA to work together to improve the SA system.

The idea of the SA was initially proposed at the Asia-Pacific Regional Space Agency Forum (APRSAF) in November 2004 following multiple discussions. I was lucky to be involved in those discussions as one of the pioneer members, as I was a Visiting Scientist of JAXA since 2003. At the same time, I was the director of GIC-AIT established in 2003 combining the GIS Application Center (GAC) and the Asian Center for Research on Remote Sensing (ACRoRS) established by Prof. Shunji Murai and Dr. Kiyoshi Honda, respectively.
The idea of the SA was later approved to be promptly implemented as a pilot project at APRSAF-12

held in Kitakyushu, Japan, in October 2005. My major role as JAXA Visiting Scientist based at GIC-AIT was the promotion of the use of satellite data and capacity building in the Asia-Pacific. I was positioned in an advantageous place at GIC to use the GIC-AIT network to reach various institutes in the region for networking to promote SA activities. Whenever I had a chance to participate in regional meetings such as the United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP) and the International Strategy for Disaster Reduction (ISDR), or during a country visit for research or training activities, I always publicized SA and discussed the benefits of being a user/partner of SA.
After a couple of years of good work, I managed to establish GIC-AIT as the first PDAN of SA. GIC has been given this credential after producing a considerable number of Value Added Products (VAPs), demonstrating the expertise of data analysis in the region and contributing to capacity building. Since then, I believe that GIC is doing a great job supporting the region making timely VAP products and sharing these products with respective user agencies. I am happy for leading GIC as the first PDAN of SA since the early stages of SA and thankful to the staff for their excellent work for the region.

Secretariat:
As we said, we are grateful for your co-chairship at SC. Is there anything that you found impressive at SC?

Dr. Samarakoon:
The SC of the SA is a great idea to enhance the system, to improve its efficiency, to adjust for user and provider needs, and to provide a stage for brainstorming. All the SC members seem to be happy about the discussions and progress of activities; however, I believe that we had more room to improve and that there are still areas to do better in. The idea of an SC, an independent gathering where a few volunteers can sit and chat about ways to improve the system, was brought up during APRSAF meetings and was eventually endorsed at APRSAF 21 in 2014.
The first SC meeting was held in Bangkok in early 2017, hosted by the Geo-Informatics and Space Technology Development Agency (GISTDA), where we started to talk and brainstorm about SA's strategic plan. The ideas that came up during the meeting were documented and I made the first draft of the strategic plan under five thematic areas for consideration at the Joint Project Team Meeting of SA. This provided a platform to share the requirements of SA and share them with the expertise of participating agencies. I believe that SC members who took the leading role did a good job providing essential technical and procedural guidance to improve SA data distribution and VAP creation systems. I am happy to be one of the co-chairs of the SC from its beginning until the 2022 meeting in Bangkok. I enjoyed working with co-chair Mr. Koji Suzuki of Asian Disaster Reduction Center (ADRC) and all the SC members and am thankful for their positive contribution. Having said that, I should also note here that the strategic plan we designed in 2017 needs revisions to adopt new technologies as well as new development in IT technology to strengthen SA.

Secretariat:
Did you have any policy or strategy in supporting SA's operation through your co-chairship?

Dr. Samarakoon:
I was one of the co-chairs since the beginning of SC in 2015. With my experience working with JAXA, other space agencies in Asia, disaster risk reduction (DRR) agencies, and international organizations, it was easy for me to reach out to many experts and DRR- and space-related leaders in the region. One of the discussions and the concerns at the SC was how to get all the participants motivated. I always wanted everyone's participation and collaboration to strengthen the SA. I wanted to be independent while chairing SC meetings so that I would be able to discuss and observe all the discussions from the perspective of other members and partners. I appointed a staff member to represent GIC at SC meetings, as I didn't want to take the floor as the director of GIC. That helped me to be the co-chair even after I left GIC, I believe. So, my strategy as the co-chair was to be proactive, collaborative, and independent.

Secretariat:
During your time at GIC and after that, GIC continues to provide VAPs. Are there any Emergency Observation Requests (EORs) that stand out, and why?

Dr. Samarakoon:
When addressing emergency response, we tried our best to communicate with local agencies for many reasons. One of the main reasons is to determine local agency requirements, what information they would like to have extracted, at what scale, etc.
One interesting case that I can remember was from Myanmar. From the Department of Meteorology and Hydrology (DMH) of Myanmar, a request was submitted to SA to find the reason for a sudden water level increase in a northern city. DMH suspected several possible reasons such as sudden and intensive precipitation in the river basin, excessive snowmelt, burst or breach of a lake, etc. We collected various data including GSMaP, ALOS, etc. and provided DMH various VAPs based on those satellite data. Observation on time series GSMaP showed high-intensity rainfall over the basin and we were happy to provide very good satellite-based products to identify the reason for DMH with evidence. On the other hand, we realized that requirements can be better addressed by combining various observations.
Another interesting case was in Sri Lanka where we could mobilize the local Disaster Management Center (DMC) to visit a few places and check data during flood map creation. We worked closely with a survey group to compare mapping results and then extrapolate them over a large area in Colombo. In this activity, DMC noticed that Synthetic Aperture Radar (SAR) data showed a promising application in flood mapping; particularly in rainy conditions, there are some concerns regarding urban mapping due to the double bounce scatter of radar. Both these cases involved dealing with the crisis as well as developing technological know-how because it was possible to get local agency participation. So, how to get local agencies involved in the VAP creation and sharing process will always be an interesting issue.

Secretariat:
Since the launch of SA, the SA satellite fleet keeps growing. Are there any satellites or data that

stand out, and why?

Dr. Samarakoon:
Although for the last few years I do not work directly with satellite data, from my experiences with several flood disasters in the region where we usually have prevailing cloud cover on rainy days, SAR data are more significant than optical data. I don't think it would be good idea to compare agencies that provide satellite data to SA, but I could say that the SAR data of JAXA has many advantages over other optical data in flood inundation mapping or flood dynamics monitoring as well as following the recovery. It would be great if SA-SC could start a discussion on NASA-ISRO SAR mission (NISAR) under the SA program for emergency response.

Secretariat:
We suppose that a certain level of skills is necessary for making VAPs and capacity building is important to keep such engineers. Could we have your opinion on such capacity building?

Dr. Lal Samarakoon:
Typically, we used to teach the principles of remote sensing, sensors, interaction with the atmosphere, energy reactions, etc. while discussing how we could interpret satellite data to ground objects through hands-on training. In today's IT world and given the solution-oriented nature of problem-solving strategies, I believe that typical capacity building may not be necessary. Nowadays, the trend is to create solution-oriented systems and tools that people can access over the internet and cloud systems without any requirements, or with limited knowledge of remote sensing systems. Therefore, guidance and demonstrations on how to use these cloud-based facilities are currently in need to use satellite data more efficiently and in a timelier manner. Developing some tools based on the needs of end users is something that we need to invest time and effort in. I would prefer research by institutes like AIT, the University of Tokyo, and Yamaguchi University with various types of data and come up with solution and tools for end users to use as they wish. Some tools like SAR-Flood, Optical-Flood, Flood-Changes would be ideal for end users to use with SA data over a cloud-based system.

Secretariat:
Cooperation with other countries and other institutions is indispensable to delivering the VAPs to affected areas in a timely manner. Could we have your opinion on maintaining and developing such cooperation?

Dr. Lal Samarakoon:
This is always a challenge. How to bring end-use agencies on board and maintain good collaboration is a topic to continue at SC. SA PDANs and some DANs are working tirelessly to produce VAPs in time and provide them to relevant agencies in a timely manner but always some questions remain regarding the timing of the products, product requirements, product accuracy, etc. Therefore, it is necessary to have end-user agency collaborations within the SA system to make the best use of VAP products.

Although such collaborations are happening in some countries, still we have to make efforts to bring onboard several DRR agencies in the region to better prepare the VAPs for emergency disaster response programs. In this regard, I believe that having collaborators such as ADRC serves to improve and establish a closer relationship with DRR agencies to promote the use of VAPs and find ways to deliver VAPs to the most appropriate user during a given disaster.

Secretariat:
Recently, the number of organizations, from both the public and private sectors, in the field of disaster management is growing, with part of them relating to the Disasters Charter. From a viewpoint of disseminating information to affected areas smoothly, what kind of relations should SA have with these organizations?

Dr. Samarakoon:
Let me start the answer by discussing the public sector. SA has been primarily dealing with public sector agencies in the region, as they have national mandates and obligations to provide assistance during disaster and recovery.
However, reaching out to the end user and DRR agencies is not always an easy task, as we have to follow the national direction of a given country to reach them. Therefore, it is necessary to determine and prepare a structural strategy to reach out to national DRRs in each country.
On that matter, I can remember that we carried out a few successful national-level meetings in Indonesia, Vietnam, and Myanmar during 2014–2015 in which we tried to connect national DRR agencies with space agencies to establish connections based on each country's structure and set the ground for SA activities and support. During those meetings, the value of SA, accessing VAPs, creating VAPs, and using VAPs within their local GIS systems were demonstrated. Those meetings were quite successful in expanding the local network and reaching out to end users. It would be nice if this effort can be further explored.
The private sector does not have any obligation to help in a disaster situation, but they may like to join the system if they can identify direct or indirect benefits. This would be quite true in disaster preparedness activities, as various private sector DRR models can be linked with satellite data for 2D mapping, large-area estimations, verification, visualization, etc. It is good to see them joining even SC.

Secretariat:
Climate change is a part of the causes of the current growth of natural disasters. What should SA do about this?

Dr. Lal Samarakoon:
It is documented and many researchers have demonstrated that climate change would be one of the reasons for an increase in natural disasters. Addressing climate change, observing climate change indicators, or being involved in climate change action plans are beyond the scope of SA. The SA was launched to support disaster risk management where possible. Whether it is due to climate change or not, the task of SA remains unchanged.

If the disaster and hazard frequency increases, the pressure on the system will increase. Handling of EORs, data acquisition, and sharing will require more resources. Therefore, it is more important to have an automated system for the acquisition of data, processing, and distribution that can accommodate the increasing number of requests in a timely manner.
I have some concerns about the data providers. JAXA is very active but data coming from other regional agencies are somewhat limited. There is a need to renew existing data providers' relationships by getting them more committed to providing data, at least for emergency response. Collaboration support could be further enhanced by proactive bilateral discussions rather than leaving open invitations to data providers.

Secretariat:
As the last question, we would like to have your advice on what is necessary for the implementation of SA Step 3 and the further progress of Sentinel Asia.

Dr. Samarakoon:
I know well that SA is moving toward extending the target to cover the total disaster cycle, that is, to support the region with emergency response as well as preparedness and recovery.
Despite discussing this in several SC meetings, I have not seen any tangible effort from participating agencies to materialize this. It is not that they are not supportive to the idea, but there could be many limitations in data provision.
I believe that this is not an easy task to achieve. Will it be possible to obtain satellite data to acquire information on the preparedness or recovery phase? Which space agency is ready to provide tailored and timely satellite data to address these needs? We know there are some satellite data with an open data policy. In the time to come, some satellites will be launched with an open data policy. Though these data are freely accessible, no satellite data service supports particular pre-disaster or post-disaster activities. Those free data systems are not tailor-made to address given hazards and predict disasters. Such a system will not come to exist, as data needs are very diverse, limiting the serving capacity of satellite programs. But I suggest trying it with data other than earth observation data; GSMaP and Global Navigation Satellite System (GNSS) would be worth to try. These two systems combined with earth observation have shown many potential applications that could help in disaster preparedness and recovery stages.

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3. [Report] Sentinel Asia Annual Report 2021 has been published!

Sentinel Asia's activity report for 2021 has been published. The report features, among others, (i) a detailed review on EORs conducted in 2021 including good practices; (ii) external relations such as news, publications, and reports on conferences; and (iii) an analytical survey of Sentinel Asia's operations.

In 2021, like 2020, Sentinel Asia's annual general meeting "Joint Project Team Meeting (JPTM)" was forced to be called off due to the COVID-19 pandemic. In this regard, this Annual Report provided

JPT members with an alternative opportunity to report their Sentinel Asia-related activities, which would have been provided as part of the JPTM. In response to the invitation by the Sentinel Asia secretariat team, 20 JPT members contributed their activity reports, which are printed in the Appendix section of the Annual Report.

The Annual Report is available on the Sentinel Asia webpage at https://sentinel-asia.org/reports/Reports/SA_Annual_Report_2021.pdf

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4. How to send an Emergency Observation Request

JPT member organizations are entitled to send an Emergency Observation Request (EOR) for disasters in the Asia-Pacific region. Please refer to https://sentinel-asia.org/e-learning/Emergency_Observation_Request.html.

EOR Order Desk:
Asian Disaster Reduction Center (ADRC)
HP: http://www.adrc.asia/
E-mail: sarequest@adrc.asia
FAX: +81-78-262-5546,
TEL: +81-78-262-5540

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5. Using Sentinel Asia Operation System, OPTEMIS

Sentinel Asia launched a new operation system, OPTEMIS. Please refer to the website on how to create an account for OPTEMIS. https://sentinel-asia.org/e-learning/Emergency_Observation_Request.html

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