** March 2024 News from Sentinel Asia Project Office **

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1. [News] Emergency Observation of Disasters (as of 28 March)

(1) Flood in Central Java Island, Indonesia, on 15 March, 2024 (GLIDE Number FL-2024-000026-IDN)

Flooding triggered by high-intensity rain struck central Java, Indonesia, on 14 March, causing confusion and damage.

According to ReliefWeb, as of 21 March, the flood displaced 542 people, affecting the same number of households in Pekalongan City, central Java.

The Central Java Province regional disaster management agency continues to coordinate with its counterpart in Pekalongan City regarding flood developments.

https://reliefweb.int/report/indonesia/indonesia-flooding-pekalongan-city-central-java-14-mar-2024

The National Research and Innovation Agency (BRIN) made an Emergency Observation Request (EOR) to Sentinel Asia on 20 March.

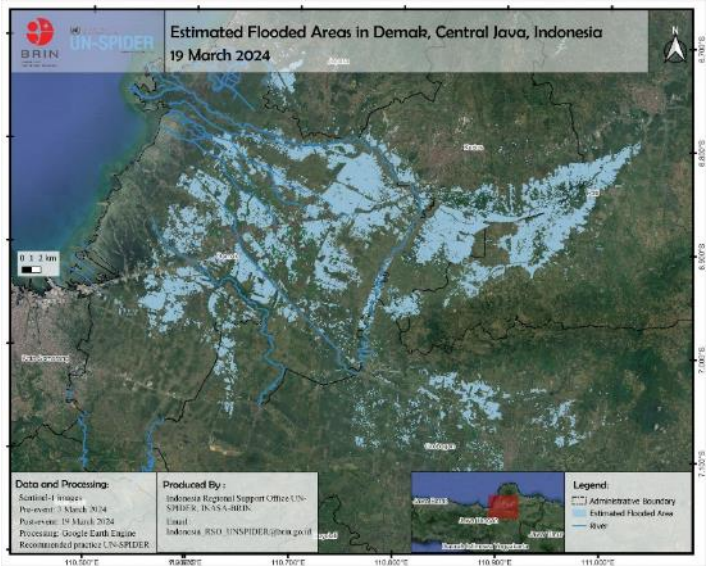
Among DPNs, JAXA, TASA, ISRO, and CRISP provided their data. Among DANs, JAXA, AIT, EOS, BRIN, and MBRSC provided their VAPs.

Information on the latest response by Sentinel Asia is available at the link below.

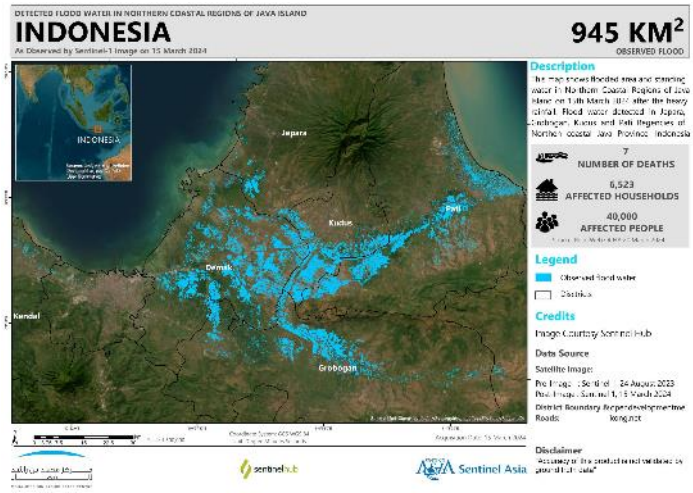
https://sentinel-asia.org/EO/2024/article20240315ID.html

Value-Added Product by AIT

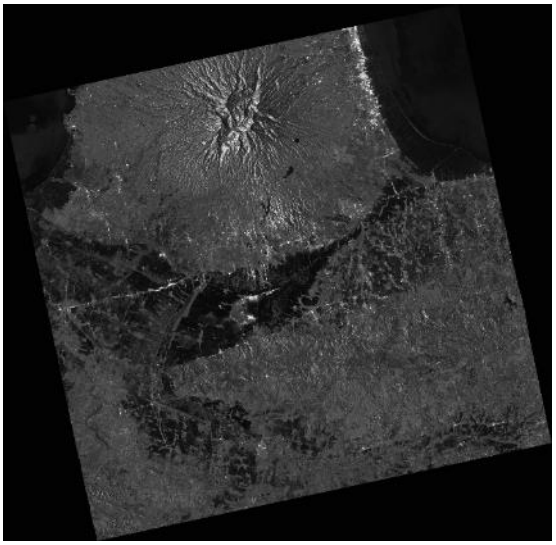
Value-Added Product by EOS



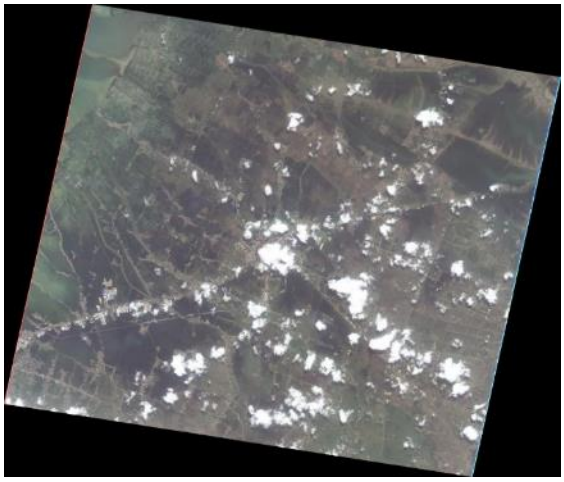
Value-Added Product by BRIN



Value-Added Product by MBRSC

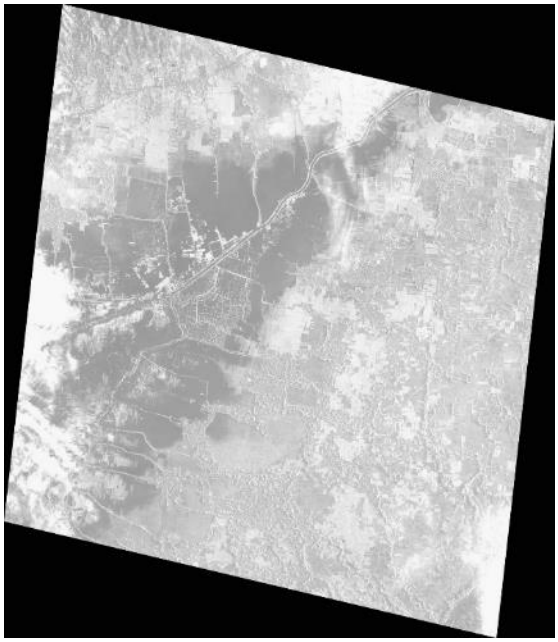


Post-disaster satellite image (ALOS-2) provided by JAXA



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

Post-disaster satellite image (Resourcesat-2) provided by ISRO



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

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2. [Interview] Ms. Litea Biukoto and Mr. Kaliopate Tavola, The Pacific Community (SPC)

The Pacific Community (SPC) is a longtime member of Sentinel Asia, originally having joined as South Pacific Applied Geoscience Commission (SOPAC), which is now the Geoscience, Energy and Maritime Division (GEM) of SPC. SPC has 27 member countries and territories in the Pacific region. They support their members in the event of disasters as Sentinel Asia's Joint Project Team (JPT) member as well as its Data Analysis Node (DAN), including sending Emergency Observation Requests (EORs).

The Sentinel Asia Secretariat interviewed Ms. Litea Biukoto and Mr. Kaliopate Tavola to introduce

their contribution to the area and to Sentinel Asia.

Ms. Litea Biukoto

Mr. Kaliopate Tavola

Sentinel Asia Secretariat

SPC has participated in Sentinel Asia since the very beginning. Can you introduce your organization and activities for our readers?

SPC

SPC is the principal scientific and technical organization in the Pacific region, proudly supporting development since 1947. We are an international development organization owned and governed by our 27 country and territory members, 5 of them metropolitan countries. SPC works across key sectors through its technical divisions – Climate Change and Environmental Sustainability; Educational Quality and Assessment; Fisheries, Aquaculture & Marine Ecosystems; Geoscience, Energy and Maritime; Human Rights and Social Development; Land Resources; Public Health; and Statistics for Development.

SPC, through its Geoscience, Energy and Maritime, coordinates regional disaster risk management activities in the Pacific: https://gem.spc.int/key-work/DCRP.

Sentinel Asia Secretariat

Could you also introduce the framework whereby SPC shares information on disasters with the Pacific countries and your cooperation with these countries in emergency response, including in the case of Sentinel Asia's Emergency Observation Requests (EORs)?

SPC

SPC convenes the annual Regional Disaster Managers Meeting to facilitate the coordination of disaster risk management activities in the Pacific, including providing policy guidance, information sharing, and identifying future direction for resourcing.

Areas where we work with the National Disaster Management Offices and other government

agencies:

- Early warning and preparedness
- Recovery planning, particularly with Post-Disaster Needs Assessments
- Risk assessments – exposure mapping. Post-disaster technical assessments, information management.
- Training and capacity development – design and delivery of accredited and non-accredited training, workshops. Supporting peer-to-peer exchanges, conducting exercises and drills.
- Resource mobilization

Sentinel Asia Secretariat

Regarding the past Emergency Observation Requests (EORs) from SPC and SOPAC, could you tell us the memorable cases and how the data from Sentinel Asia was used in those cases?

SPC

Tropical Cyclone Harold in April 2020. The cyclone passed through Fiji and Vanuatu during a time when COVID-19 travel restrictions were in place. As with other activations in the Pacific, the images captured and the information products delivered were the first impressions of areas affected and the extent of impact. While the government through the National Disaster Management Office was planning its efforts, we were able to have initial discussions with UNDP (United Nations Development Program) and the Department of Strategic Policy, Planning and Aid Coordination on the need for a PDNA (Post-Disaster Needs Assessment).

Sentinel Asia Secretariat

In Pacific countries, the main targets of Earth observation are floods caused by storms, and volcanic eruptions, we suppose, along with your EORs. Could you tell us what satellite data and value-added-products are useful for your activities?

SPC

We would like to have more high-resolution satellite data for building footprint extraction to inform some of the work we do around exposure mapping and asset modelling.

The challenge with using visible imagery immediately after weather-related events is cloud cover. Satellite imagery acquired sometime after an event is also useful as the effect ‘footprint’ is still quite visible.

The geographic footprint of a disaster is useful particularly when trying to gauge the extent of impact. In the case of tropical cyclones, though the response effort is often prioritized near the track, areas that are also affected by rain and flooding are potentially farther away. Ensuring that these areas are adequately serviced can be assisted with the provision of maps showing areas affected.

Sentinel Asia Secretariat

Does anything stand out as memorable in your experience with Sentinel Asia activities?

SPC

The Secretariat has reached out to check if an activation is needed when requests are not forthcoming. I've also found the Secretariat to be very responsive when requests are submitted.

Sentinel Asia Secretariat

What do you think of the merits of Sentinel Asia, for example, image processing by DAN in a timely manner?

SPC

The timely image processing is valuable. Requests can be made with relative ease.

Sentinel Asia Secretariat

At JPTM 2023 held in this September, you introduced your activities including the Digital Earth Pacific project and capacity building program. Do you have any programs that can be shared with Sentinel Asia members?

SPC

The Digital Earth Pacific (DEP) aims to simplify the utilization and accessibility of decades' worth of satellite data, enabling decision-makers throughout the Pacific region. This digital infrastructure ensures that every Pacific nation has the necessary access to tools, technologies, and capabilities for consistent monitoring and tracking of challenges related to climate change, food insecurity, or disaster risk. It provides decision-ready products that are regularly updated with each satellite overpass.

The platform can be accessed by Sentinel Asia Members https://digitalearthpacific.org/

Sentinel Asia Secretariat

Do you have any expectations of Sentinel Asia, and at the same time, what SPC can contribute to Sentinel Asia?

SPC

SPC is providing a lot more data online, which may be useful to DANs. This data includes population statistics and locations of communities.

Sentinel Asia provides a valuable service to the Pacific region. Sharing applications of satellite data

used by other small islands or coastal communities would be useful.

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3.[Interview] Mr. Kabir Uddin, International Center for Integrated Mountain Development (ICIMOD)

The International Centre for Integrated Mountain Development (ICIMOD) cooperates and supports its eight member countries in Hindu Kush Himalaya (HKH) region, including disaster response and many other aspects. They also contributed to Sentinel Asia for a long time.

Sentinel Asia secretariat interviewed Mr. Kabir Uddin, GIS and Remote Sensing Specialist at ICIMOD to introduce their disaster management activities and contribution to Sentinel Asia.

Mr. Kabir Uddin

Sentinel Asia Secretariat

We appreciate your continued participation in Sentinel Asia and your contribution as a Data Analysis Node (DAN) member. Could you introduce your organization and how you decided to join Sentinel Asia?

Mr. Kabir Uddin

The International Centre for Integrated Mountain Development (ICIMOD) serves as an intergovernmental knowledge and learning hub, dedicated to the well-being of the people residing in the Hindu Kush Himalaya (HKH) region. Headquartered in Kathmandu, Nepal, ICIMOD operates across eight regional member countries – Afghanistan, Bangladesh, Bhutan, China, India, Myanmar, Nepal, and Pakistan. Given the frequent occurrence of disasters such as flooding, earthquakes, and landslides across this vast area, access to remote sensing information is crucial for effective ground assessment and response efforts.

Recognizing the critical role of timely data in disaster management, ICIMOD decided to collaborate with Sentinel Asia, and as a member of the Data Analysis Node (DAN), ICIMOD contributes to space-based disaster management initiatives in the Himalayan region. Sentinel Asia offers rapid observation for major disasters like floods and forest fires, aiding in timely response and mitigation efforts. Notable instances include the response to the Koshi flooding in Nepal in 2008, the flooding in Bhutan in July 2010, and the Pakistan floods in the same year.

In furtherance of our commitment to disaster preparedness, ICIMOD established a receiving station for JAXA WINDS (Wide-band Interworking Engineering Test and Demonstration Satellites) at our Kathmandu headquarters in October 2010. WINDS, a high-speed Internet satellite, played a pivotal role in ensuring uninterrupted communication during emergencies and enhancing connectivity in remote areas. Leveraging WINDS, ICIMOD gained swift access to satellite imagery from Sentinel Asia data providers, facilitating informed decision-making during crises.

While ICIMOD is widely recognized for its expertise in geographic information systems (GIS) and remote sensing, it's important to note that our scope extends beyond disaster management. Nonetheless, disaster preparedness remains a cornerstone of our training initiatives, encompassing areas such as flood mapping and earthquake damage assessment. Through our comprehensive training programs, we empower stakeholders across the region to harness geospatial technologies for effective disaster response and resilience-building endeavors.

Sentinel Asia Secretariat

As you said, ICIMOD responds to the disasters in the HKH mountain area over eight countries. Could you introduce your relations with these countries and how you cooperate with them, including in the case of Sentinel Asia activations?

Mr. Kabir Uddin

ICIMOD maintains strong partnerships with the governments and relevant agencies of the eight regional member countries, fostering collaboration in disaster response and resilience-building efforts. One illustrative example is our response to the devastating 2015 Nepal earthquake. During this crisis, ICIMOD and the Nepal government sought support from countries like Japan, drawing upon their extensive experience in earthquake management. In response, ICIMOD mobilized approximately 30 volunteers alongside our professionals. Temporary tents were erected to accommodate these volunteers, facilitating their active involvement in addressing the needs arising from the disaster.

Similarly, in 2016, when reports of flooding emerged, ICIMOD promptly engaged in providing support by generating inundation maps to aid in response efforts. The assistance rendered by Sentinel Asia during this event garnered significant media coverage, highlighting the effectiveness of satellite-based observations in disaster management. (Refer to: Mapping floods in Bangladesh caused by Cyclone Amphan to support humanitarian response

https://www.icimod.org/article/mapping-floods-in-bangladesh-caused-by-cyclone-amphan-to-support-humanitarian-response/).

ICIMOD's collaborations extend beyond disaster response to encompass various sectors critical for the region's sustainable development. For instance, we closely collaborate with institutions such as the Bangladesh Water Development Board, the Bangladesh Meteorological Department, the Bangladesh Engineering Department, and the Bangladesh Remote Sensing Organization through formal memoranda of understanding (MoUs). Additionally, we engage in informal partnerships with numerous organizations, driven by a shared commitment to addressing regional challenges.

While ICIMOD is often recognized for its expertise in geographic information systems (GIS) and remote sensing, our engagements transcend these domains. While we provide extensive training in GIS and remote sensing, disaster management remains a primary focus area. Through capacity-building initiatives, we empower stakeholders across the region to leverage geospatial technologies effectively, enhancing their preparedness and response capabilities in the face of disasters.

ICIMOD operates on the principle that partnerships, formal or informal, should be driven by the imperative to address pressing needs. Thus, whether through established collaborations or informal engagements, we remain steadfast in our commitment to supporting the region's disaster mitigation efforts to the best of our abilities.

Sentinel Asia Secretariat

About your past 9 Emergency Observation Requests (EORs) to Sentinel Asia, could you tell us how Sentinel Asia observations were used for the disasters?

Mr. Kabir Uddin

Certainly. One notable example of the invaluable role played by Sentinel Asia observations occurred during the devastating floods in India in 2016. Despite India's advanced space infrastructure, the urgency of the situation prompted the disaster management authorities to request our assistance in generating flood inundation maps immediately following the disaster. This instance underscores the critical importance of timely and accurate information in disaster response efforts. The flood inundation map produced by ICIMOD in collaboration with Sentinel Asia provided vital insights into the extent and severity of the flooding, enabling authorities to prioritize and coordinate response activities effectively (refer to: India's Most Flood-prone State Aided by New Satellite Mapping https://www.voanews.com/a/indias-most-flood-prone-state-aided-new-satellite-mapping/3530550.html). Such examples serve as compelling evidence of ICIMOD's contributions to disaster mitigation efforts in the region.

Through our engagement with Sentinel Asia, ICIMOD has leveraged satellite observations to support various emergency response initiatives across the Hindu Kush Himalaya region. These observations have been instrumental in facilitating rapid assessments, informing decision-making, and enhancing the overall effectiveness of disaster response efforts.

Sentinel Asia Secretariat

Among your EORs, were there any cases in which Sentinel Asia was used effectively, and why?

Mr. Kabir Uddin

Indeed, Sentinel Asia has proven to be highly effective, particularly in disaster-prone areas like the expansive Hindu Kush region. The vast geographical coverage of this area necessitates satellite imagery for comprehensive disaster management. Given the time-sensitive nature of disaster response, relying on commercial providers for imagery procurement, while feasible financially, is impractical due to the delays involved. Sentinel Asia addresses this challenge by consolidating various satellite data and products onto a single platform, thereby streamlining access for public and societal benefit. Beyond merely providing data, Sentinel Asia goes a step further by sharing products, especially in instances where organizations lack the capacity for timely data processing and analysis.

One of the notable applications of Sentinel Asia is its effectiveness in flood management. Flooding events often affect large areas, making timely and accurate detection of inundated areas crucial for effective response efforts. Inundation maps generated through Sentinel Asia not only delineate the extent of the flooded areas but also guide authorities in identifying safe locations for temporary shelters (Example: Potential flood hazard zonation and flood shelter suitability mapping for disaster risk mitigation in Bangladesh using geospatial technology https://www.sciencedirect.com/science/article/pii/S2590061721000454). Additionally, flood mapping supports urban planners in developing hazard maps and optimizing land use planning to mitigate future risks.

In summary, Sentinel Asia's comprehensive platform, coupled with its provision of timely products and support, makes it an indispensable tool for disaster management in the Hindu Kush region and beyond.

Sentinel Asia Secretariat

Do you have any memorable EORs in which you processed the observation data as DAN?

Mr. Kabir Uddin

One particularly memorable experience for me was during an Emergency Observation Request (EOR) when our internet connectivity was extremely slow. Downloading just one ALOS satellite scene took us four to five hours, significantly delaying our response efforts. However, in contrast with those challenges, today, accessing ALOS-2 data takes only a couple of minutes, thanks to advancements in technology and infrastructure. Moreover, the availability of tools like the SNAP toolbox has streamlined data preprocessing, making it much more efficient and accessible. Having experienced the frustrations of slow internet and limited resources firsthand, I deeply appreciate the significance of timely information in disaster response.

Reflecting on these experiences, it's evident that our capacity and capabilities have significantly

improved over time. This evolution has translated into more reliable and efficient disaster response efforts. As someone from a disaster-prone region, I understand the vital importance of leveraging technology to enhance our resilience and effectiveness in addressing crises.

Sentinel Asia Secretariat

Do you have any other memorable moments with your Sentinel Asia activities?

Mr. Kabir Uddin

One particularly memorable experience for me was during Sentinel Asia's Joint Project Team Meeting (JPTM) in Bangkok. The event stands out because it provided me with a valuable platform to share my expertise in flood mapping with fellow participants. Drawing from my extensive experience in this field, I had the opportunity to contribute to discussions and offer support to other members in their flood and inundation mapping endeavors. As a Data Analysis Node (DAN) member, I realized the importance of knowledge dissemination during such gatherings. It was gratifying to see how sharing our experiences and insights could empower others and enhance the collective capabilities of the Sentinel Asia community.

Participating in events like the JPTM reaffirms the significance of collaborative efforts in disaster management. By pooling our expertise and resources, we can strengthen our resilience and effectiveness in addressing the challenges posed by natural disasters.

Sentinel Asia Secretariat

What is the benefit of Sentinel Asia for you, for example, the timely provision of data, and effectiveness in case of disasters?

Mr. Kabir Uddin

The benefits of Sentinel Asia are manifold, particularly in terms of the timely provision of critical data and its effectiveness in disaster response. One of the key advantages of Sentinel Asia is its ability to deliver data promptly during disasters, ensuring that decision-makers have access to crucial information when it matters most. Moreover, the Sentinel Asia platform serves as a valuable centralized repository, aggregating emergency observation data from various space agencies. This consolidation eliminates the need for redundant efforts in sourcing data from multiple sources, streamlining the response process significantly.

Beyond providing raw observation data, Sentinel Asia often shares derived products, which is particularly beneficial for countries with limited resources and capacity for data processing. These products enable governments and organizations to leverage actionable insights derived from satellite observations, enhancing their ability to make informed decisions and effectively manage disaster situations.

In summary, Sentinel Asia's timely data provision, comprehensive platform, and sharing of derived

products play a pivotal role in bolstering disaster response efforts. By facilitating quick and efficient access to vital information, Sentinel Asia contributes significantly to enhancing the resilience and effectiveness of disaster management initiatives.

Sentinel Asia Secretariat

Recently, Sentinel Asia has been considered to contributing to the challenges to solve socio-economic issues, which is mentioned in Nagoya Vision of Asia-Pacific Regional Space Agency Forum (APRSAF)

https://www.aprsaf.org/annual_meetings/aprsaf26/outcome_documents.php

Do you have any ideas on how Sentinel Asia can contribute more to solve these socio-economic issues in the Asian region, including the Hindu Kush Himalaya mountain?

Mr. Kabir Uddin

With the increasing number of satellites and advancements in data analysis techniques, satellite information has emerged as a valuable resource for addressing various socio-economic challenges beyond just disasters. Sentinel Asia, with its extensive satellite imagery and improved data reliability, has the potential to play a significant role in addressing these issues across the Asian region, including the Hindu Kush Himalaya Mountain area.

One avenue for enhancing Sentinel Asia's contributions to socio-economic issues involves closer collaboration with governmental bodies such as the Bureau of Statistics or statistical departments. These entities handle a wide range of reports and data related to socio-economic indicators, including those impacted by disasters. By partnering with such agencies, Sentinel Asia can leverage its satellite information to enhance the accuracy and timeliness of socio-economic analyses and reports. This collaboration could facilitate better-informed policymaking and resource allocation decisions, ultimately contributing to more effective socio-economic development strategies.

In summary, by leveraging its satellite capabilities and fostering collaboration with key stakeholders, Sentinel Asia has the potential to make significant contributions to addressing socio-economic challenges in the Asian region, including the unique socio-economic dynamics of the Hindu Kush Himalaya Mountain area. Continued dialogue, partnership-building, and innovation will be essential in maximizing Sentinel Asia's impact in this regard.

Sentinel Asia Secretariat

What do you expect in Sentinel Asia, and on the contrary, how can you contribute to Sentinel Asia?

Mr. Kabir Uddin

Looking ahead, I see two key areas for improvement within Sentinel Asia. Firstly, there's a need for increased investment and effort in automating various processes involved in extracting information from satellite imagery. Automation can significantly enhance the efficiency and

accuracy of data processing, enabling faster response times and more comprehensive analysis during disasters.

Secondly, building capacity among Data Analysis Node (DAN) members is crucial for improving both the quality and quantity of contributions to Sentinel Asia. I advocate for longer and more consistent training programs, to ensure the effective dissemination of new techniques and technologies. By providing DAN members with continuous learning opportunities, Sentinel Asia can empower them to leverage cutting-edge tools and methodologies in their disaster response efforts.

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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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