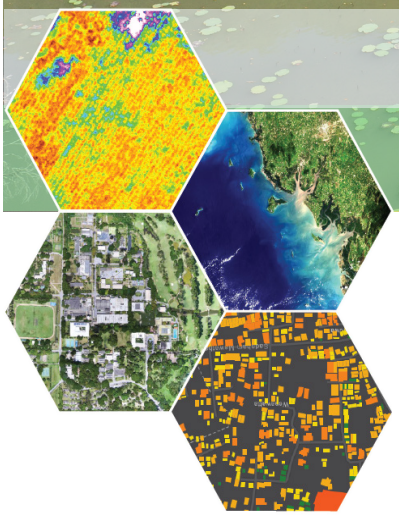
GEOINFORMATICS CENTER

April 2023 NEWSLETTER



In This Issue

International Training Programs for Indian Universities

The Geoinformatics Center recently conducted two training programs from January 30 to March 3, focusing on utilizing geospatial technologies for Precision Agriculture and Climate Smart Agriculture. The first program, called the International Training on Applications of Google Earth Engine, IoT, and Drones for Precision Agriculture, aimed to provide participants with practical skills and knowledge in using IoT, drones, GNSS, and robotics for precision agriculture. This program covered key areas such as cloud processing platforms (GEE), sensor networks, multispectral drones, and climate data processing. The second program, called the International Training on Advanced Technologies for Climate Smart Agriculture, aimed to provide participants with knowledge and applications in using advanced technologies for climate-smart agriculture. Thirty five participants from Mahatma Phule Krishi Vidyapeeth (MPKV) and Vasantrao Naik Marathawada Krishi Vidyapeeth (VNMKV) participated in these two training programs. Additionally, the participants had the opportunity to go on a study tour to deepen their understanding of the practical applications of these technologies in the field.

Participants engage in a hands-on drone mapping practical

Promotion of Community Resilience Against Plastic Pollution and Climate Change in The Mekong River Basin

Plastic pollution is becoming a major threat to the Mekong River Basin and the millions of people who depend on it for their livelihoods. The negative impacts of macro-plastics that clog sewage systems include exacerbating the effects of natural hazards caused by climate change, such as floods from storms. Moreover, the negative impacts of microplastics on living organisms in the river are not yet fully understood, which highlights the need for coordinated action to address the socioeconomic and environmental vulnerabilities of riverine communities.

To address these environmental issues, representatives from the government, civil society, research, academia, and business sectors convened at the Royal Princess Larn Luang Hotel in Bangkok from March 7-9, 2023. The aim of the gathering was to take stock of the latest developments and scaling plans to end plastic pollution in the Mekong River Basin. High-level panel discussions and thematic sessions focused on investments and international cooperation, the latest tools and technologies, and broader awareness and capacity-building to promote best practices.

The Geoinformatics Center (GIC) presented their work during this event on behalf of the UNEP Phase 3 project. GIC-AIT developed an AI-enabled CCTV system to detect and identify floating plastic litter in the riverine setting, which was implemented through proof-of-concept studies that involved installing two CCTV units in Bangkok, Thailand and 12 units in Can Tho, Vietnam. The involvement of GIC-AIT in this project illustrates that their technological solution is scalable and applicable across the Mekong region, providing a promising tool to combat plastic pollution in the river basin.

Mr. Sriram Reddy Mandhati presenting the work carried out by GIC during UNEP Phase 3

Youth Forum on Innovative Use of Geospatial Information

The Youth Forum organized by members and associate members of the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP) aimed to inspire and involve young people in the space sector. This event primarily focused on showcasing geospatial technology practices among the youth, which included prototypes and alumni from the ESCAP Centre for Space Science and Technology Education in Asia Pacific (CSSTEAP). The co-organizers for this event were GIC-AIT, UN-ESCAP, Multi GNSS Asia, GISTSA, ARTSA, and The University of Hong Kong.

During the opening ceremony, Dr. Manzul Kumar Hazarika delivered a welcome speech that emphasized the importance of Geographic Information System (GIS) technology in various fields such as disaster management, agriculture, and pollution management. In addition, Dr. Kittiphon Boonma presented GIC's digital solution, pLitter, which uses AI, computer vision, and geospatial technology to monitor plastic pollution. The presentation highlighted the real use cases of pLitter in countries where it has been implemented, its software suites (pLitter Street, pLitter CCTV, and pLitter Mobile), and outreach activities.

Aprilia Nidia Rinasti from GIC presented waste management studies' integration with geospatial technology under projects and ongoing R&D works. The presentation primarily focused on the workflow integration and conclusion results in several locations, including the pilot cities from the CounterMEASURE phase-II project and JAIF-IGES Supporting NAP in Myanmar. Furthermore, Swun Wunna Htet presented GIC's open-source Python package for agroecological zoning (AEZ), PyAEZ. The presentation highlighted the various modules of the software and how to implement them in any AEZ project or to simulate crop suitability.

Training on Digital Technologies for Disaster Risk Management (DRM)

The Nepal National Training on Digital Technologies for Disaster Risk Management (DRM) was a three-day event organized in collaboration with the National Disaster Risk Reduction and Management Authority (NDRRMA). The training was conducted in a hybrid mode with four lecture sessions provided on-site and the remaining four sessions online by resource persons from Bangkok and the Netherlands. The Kathmandu Marriott Hotel served as the venue for the training, with 45 participants attending from national agencies and private organizations such as the Ministry of Urban Development, the Ministry of Federal Affairs and General Administration, and the Nepal Armed Police Force, among others.

Mr. Anish Ratna Shakya from the Geoinformatics Center delivered presentations on the Introduction of ICT in Disaster Mitigation and Prevention on behalf of the center. During the presentations, participants were introduced to the RiskChanges platform that used global free satellite and remote sensing data for disaster management.

On day 1, the participants were given lectures on DRM, data necessary for DRM, and ICT for risk assessment and visualization. They were also introduced to various freely available applications for downloading satellite, DEM, and thematic data, along with different ways of emergency mapping through Sentinel Asia and The International Charter Space and Major Disasters. Nepal was also invited to join the International Charter, given its susceptibility to geophysical and hydro-meteorological hazards. Day 2 featured a demonstration of the RiskChanges platform, followed by a demonstration of retrieving freely available global datasets from the internet. After lunch, participants attended lectures on using ICT in disaster prevention, mitigation, and preparedness. They also played a virtual disaster risk management and risk communication game called "Stop Disasters!" On day 3, lectures related to ICT for disaster response and recovery were given, and the participants discussed their experiences of disaster recovery after the Gorkha earthquake in 2015.

The NDRRMA presented their different works and plans in disaster risk reduction and management, emphasizing the need for support and knowledge transfer from international agencies and institutions. The ICT in the DRM scenario of Nepal was considered better than expected, as the country already had the necessary resources but needed sustainable management and capacity building. The NDRRMA was optimistic about joining the International Charter for emergency mapping. Overall, the training provided valuable insights and knowledge about digital technologies for DRM, which can aid in better disaster management and preparedness in the future.

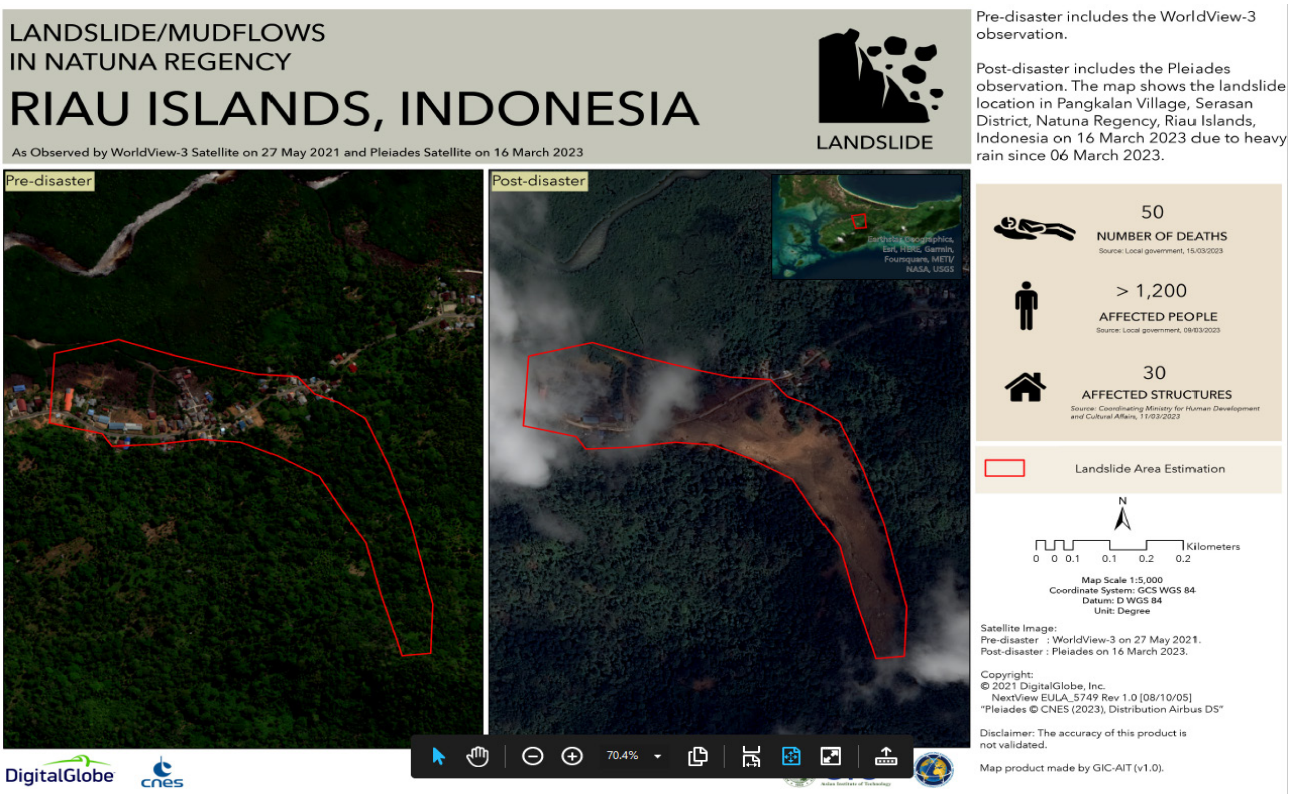
Group photograph of the participants and the resource persons

Monitoring Infrastructures from Space

On January 31st, 2023, Syams Nashrrullah, a representative from the Geoinformatics Center, delivered a lecture during a webinar organized by the European Space Agency (ESA) and Terradue.

The lecture aimed to introduce an advanced surface motion service designed to monitor human infrastructures. During the session, 25 individuals from various countries participated, gaining insight into the practical and science-driven use cases of the cloud-based Geohazard Exploitation Platform (GEP). The GEP leverages multi-temporal Sentinel-1 satellite data to detect millimetric displacements of the earth's surface, providing a comprehensive means to monitor infrastructures such as buildings, roads, railways, pipelines, power networks, airports, and dams. The webinar created an opportunity for scientists and decision-makers to explore the advanced satellite-based technology, and how it can be utilized to gain a better understanding of the potential hazards posed to infrastructures.

IDC Activation 809: Landslide in Indonesia



Value-added product created by Geoinformatics Center

On March 6th, 2023, landslides occurred on the island of Serasan, which is home to approximately 8,000 people. The landslides were triggered by six consecutive days of torrential rains, causing at least 15 deaths and displacing over 1,200 people. The affected individuals were taken to evacuation centers, and rescue teams are still searching for missing persons who may be trapped in houses buried under the mud.

Indonesia, a chain of 17,000 islands with millions of inhabitants living in mountainous areas or near fertile flood plains close to rivers, has been experiencing dozens of landslides and widespread flooding caused by seasonal rains and high tides. To respond the impacts of the disaster, the Asian Disaster Reduction Center (ADRC) on behalf of the National Research and Innovation Agency, Indonesia (BRIN), escalated this activation to the International Disaster Charter (IDC).

Ms. Angsana Chaksan from Geoinformatics Center acted as the project manager for this call, while the National Research and Innovation Agency, Indonesia (BRIN), acted as a value adder. The International Disaster Charter system provided various SAR and Optical satellite images, which were helpful in generating value-added maps. The products generated during the activation were then shared with the end-user/requester, BRIN, to manage the disaster response activities. The authorities are still collecting information about the full scale of casualties and damage in the affected areas.

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