Final Workshop for Weather Index Insurance Project -Dushanbe, Tajikistan

GEOINFORMATICS CENTER

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Final Workshop for UNDP Weather Index Insurance Project

The final workshop for a UNDP-funded project titled "Feasibility Study of Weather Index Insurance (WII) for Tajikistan" was held on May 24, 2022, in Dushanbe, Tajikistan.

The workshop focused on a way forward for weather index insurance in Tajikistan, including discourse with a private insurance company to roll out weather index insurance products in Tajikistan.

Mr. Oleg Ilyshev, First Secretary, Embassy of the Russian Federation in Tajikistan delivered opening remarks. The workshop was moderated by Dr. Manzul Kumar Hazarika, GIC Director. During the workshop, GIC Research Specialist Lakmal Deshapriya gave an overview of the project background and discussed the baseline data available to initialize weather index insurance products.

The project was initiated to assess the feasibility of introducing Weather Index Insurance (WII) for agriculture sector in Tajikistan as a low-cost alternative to conventional indemnity-based agriculture insurance products. WII eliminates the need for in-field verifications of the insurance claims and thereby reduces the administrative costs to make them cheaper and attractive for farmers. This is particularly well-suited for developing counties, where small-scale farming plays an important role in the economy.

This project was implemented by the Geoinformatics Center (GIC) of the Asian Institute of Technology, Thailand, and Sanasa (continued on next page)

Final Workshop for Weather Index Insurance Project (cont.)

Sanasa Insurance Company Ltd (SICL), Sri Lanka.

The project was initiated in September 2021 with an inception workshop. During the project period, various activities took place such as a review of baseline data, analysis of the criteria for selection of study area and crops, and development of methodology for the design and development of prototype WII products.

Presentation at the Weather Index Insurance Final Workshop

Agriculture Statistics Field Mission for Ground Truth Data

GIC is working with FAO-RAP to explore ground truth data collection approaches to benefit agricultural statisticians in the Asia-Pacific Region.

Data collection took place from May 30 – June 03 in Banphot Phisai district, Nakhon Sawan, Thailand.

GIC is using the data collected to test the Sen2Agri system for automated crop detection. Crop mask results can be improved by providing additional input in the form of ground truth data. In-situ ground truth data were collected at Banphot Phisai for the four major crop classes found in the district including sugarcane, rice, maize, and cassava.

The team from GIC used two open-source mobile applications to collect the ground truth data: QField by QGIS and Collect Mobile by Open Foris. The Open Foris project was started by the Food and Agriculture Organization of the United Nations for forestry applications. Over time, Open Foris has evolved into a suite of applications to handle data collection and processing tasks. Specific to our purposes, Open Foris Collect and Collect Mobile were utilized for data collection. Open Forest Collect is a desktop application for creating highly customizable electronic surveys. Completed surveys can be exported to Collect Mobile for in-situ data collection.

QField operates as an extension of QGIS with similar functionality to the desktop application, for example, visualization of layer-based vector and raster files and vector file-based data collection. QGIS projects are exported to QField to populate vectors including point, line, and polygon data types. A key feature of QField is the ability to load high resolution base maps which aids in navigation to in-situ ground truth points.

Unmanned aerial vehicles (UAV) were used as an additional source of ground truth data. Very high-resolution images were collected for five flying heights ranging from 90m – 5m at in-situ data collection sites. Higher altitude images were used to relate the UAV images to high resolution satellite imagery, while lower altitude images were used as near-ground evidence of crops growing at the field level. The UAV image approach for ground truthing was especially useful for collecting ground truth data at field centers to prevent crop disturbance as well as for accessing plots that were not accessible on foot due to obstructions in the field like fences, thick vegetation, and canals.

Sen2Agri is a system developed by the European Space Agency to automate crop detection for Sentinel-2 and Landsat 8 satellite imagery. Users enter minimal parameters like area of interest and crop season start/end dates and Sen2Agri automatically begins to download available satellite imagery based on those specifications. Sen2Agri then runs through a process of automated analysis to extract crops from the imagery including atmospheric correction, cloud-free mosaic construction, NDVI and LAI vegetation status indicators, binary crop mask, and crop type map.

Lao PDR Climate Atlas Launch Event

From FAO's project "Strengthening Agro-climatic Monitoring and Information Systems (SAMIS) to improve adaptation to climate change and food security in LAO PDR", an Atlas of Climatology and Agro-climatology for Laos is born. This atlas is a study of climate and agroclimate in the Lao People's Democratic Republic for the period 1990–2019 based on the downscaling of long-term observation data. It is the first Agro-climatic Atlas ever produced for South-East Asia!

The launch event for the Atlas took place on the 3rd of May 2022. The aim of the event is to present the Atlas to partners, donors, and potential users such as government departments (Ministry of Natural Resources and Environment (MONRE – Laos), and Ministry Agriculture and Forestry). The launch event is also intended to raise awareness for the project, as well as for data availability, among Laos' policy-making units.

Dr. Manzul Kumar Hazarika, Director of the Geoinformatics Center at AIT (GIC-AIT), gave a presentation on "Institutional Capacity Building in Climate Downscaling under SAMIS Project" at the event, which showcased GIC's contributions towards the capacity development training which enabled Lao government officials to carry out climate downscaling processes (dynamical and statistical) on their own. The GIC team also helped optimize the model and carried out both statistical and dynamical downscaling of 30 years' worth of historical climate data. Laos' future climate projections (60 years: 2031-2090) of 5 variables were carried out using statistical downscaling method, under IPCC Assessment Report 5 'Representative Concentration Pathways (RCPs)' scenarios.

'Climatology and agroclimatology atlas of the Lao People's Democratic Republic' is available for download at: https://www.fao.org/publications/card/en/c/CB9713EN

On the 'SAMIS project': https://www.fao.org/documents/card/en/c/I7755EN/

On the 'Land Resources Information Management Systems (LRIMS)': https://www.fao.org/geospatial/resources/tools/lrims/en/

Local news report on the launching event: (Laotian) https://www.youtube.com/watch?v=3B9z7VgjTD0

Publications

In June, GIC published a peer-reviewed journal article titled GIS and Remote Sensing-Based Approach for Monitoring and Assessment of Plastic Leakage and Pollution Reduction in the Lower Mekong River Basin in MDPI Sustainability. The paper highlights GIC's efforts for monitoring plastic leakage in the Lower Mekong River Basin which took place in 2021 and early 2022.

The abstract and full article can be found here: https://www.mdpi.com/2071-1050/14/13/7879

GIC Staff Participates in Texas Waste Management Workshop

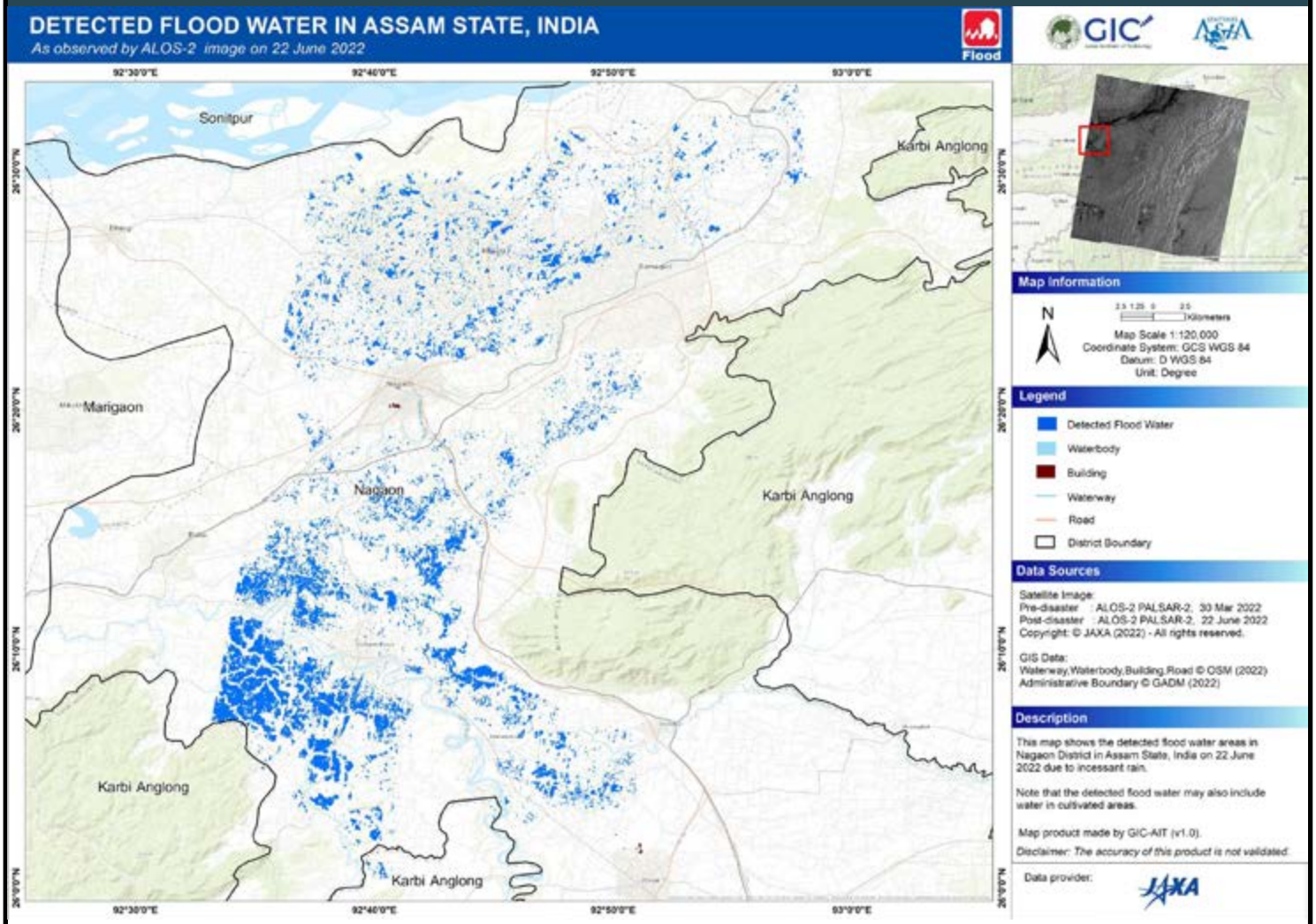
GIC research associate Aprilia Nidia Rinasti participated in the International Solid Waste Association - Solid Waste Institute for Sustainability (ISWA-SWIS) at the University Texas of Arlington (ISWA-SWIS) Winter School 2022: Summer Edition.

The workshop was held from June 06-17, 2022. With a focus on city-level solid waste management, the two-week program provided a comprehensive understanding of sustainability options for waste management problem including innovative digital solutions.

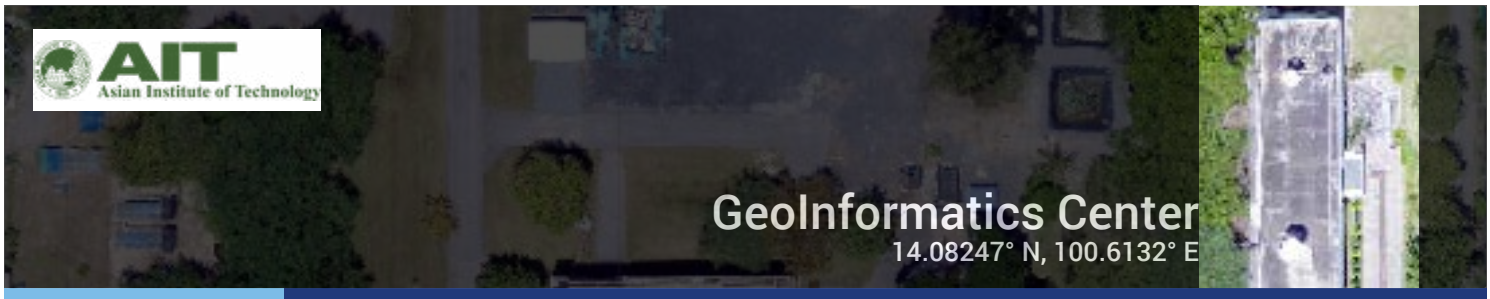
A gala dinner and award ceremony was held on the final day of the event in which participants were declared SWIS Ambassadors, enriching the networking opportunities of the solid waste association.

Award Ceremony at the Gala Dinner

Featured Sentinel Asia Value Added Product: India Flood - June 2022



The above image is a valued added product (VAP) created by GIC depicting flooding in Assam, India, brought on by the annual monsoon. Low-lying areas, as well as the city of Silchar, were especially hit hard with flooding. Residential ruin is extensive with 138,000 houses totally or partially damaged. In the wake of the flooding, 700,000 people have been affected and 179 have lost their lives. Nearly 300,000 people have been relocated to relief camps where they receive shelter and supplies. GIC operates as the Principal Data Analysis Node (P-DAN) for the Sentinel Asia Program, a collective managed by the Asia-Pacific Regional Space Agency Forum to aid in disaster management with space technology. Maps like the one above are disseminated to national governments and line agencies during disasters to improve response activities.



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