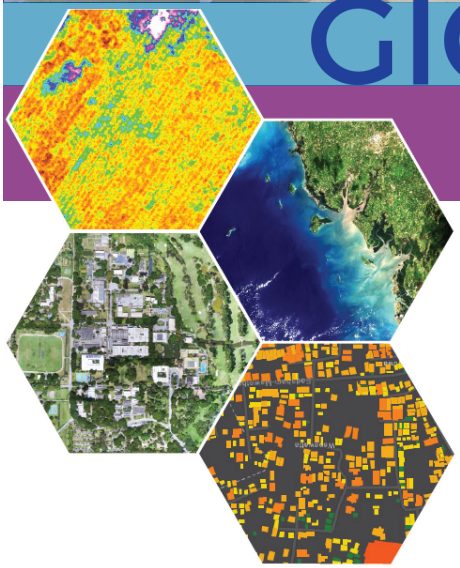
Volunteers gather to cleanup Ku Du Beach in Ubon Ratchathani, Thailand

GIC

GEOINFORMATICS CENTER

JANUARY 2020 NEWSLETTER



In This Issue

GIC and UNEP Partner to Fight Marine Plastic

In 2019 the Geoinformatics Center began working in conjunction with United Nations Environment Program (UNEP) to address marine macroplastics in the Mekong River Basin and Ganges River Basin. The following highlights the progress made through the project thus far.

In August 2019 representatives from GIC participated in an expert group meeting to promote countermeasures to marine plastics in Southeast Asia and India. GIC presented its approach to plastic monitoring, including a comprehensive multi-faceted approach to macroplastic point sources, a web portal to access related geospatial data, a mobile application for reporting plastic hotspots, and a hydrologic analysis of Mekong river basin plastic distribution characteristics.

Later in September, GIC teamed up with UNEP, Pirika Inc (Japan), and Trash Hero to locate sources and pathways of major plastic leakage in Chiang Rai Province by hosting a World Cleanup Day event. The event focused on Chiang Rai Beach, a popular riverside attraction located in Chiang Rai's Rop Wiang sub district. More than 60 volunteers attended the event and collected 305.5 kg of litter from Chiang Rai Beach. GIC provided participants with access to a Survey 123 application for data collection throughout the event and recorded 360° images of the site. Pirika Inc.

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GIC and UNEP Partner to Fight Marine Plastic (cont.)

GIC Staff participated in a countermeasures expert group meeting

implemented their innovative Albatross survey device to sample the Mae Sai, Ruak, Ing and Mae Kham river tributaries for microplastics.

Next, GIC, UNEP, and Pirika sought to identify plastic leakage scenarios at a second site, this time in eastern Thailand's Ubon Ratchathani Province. The team partnered with Ubon Ratchatani Municipality to clean up Ku Du beach, located along the Mun river. Over 100 participants from Ubon Ratchathani University and Ubon Ratchathani Rajabhat University turned out for the event. GIC carried out UAV missions at Ku Du Beach to capture high resolution imagery of the event site. Orthomaps were later created to compare the site before and after the cleanup.

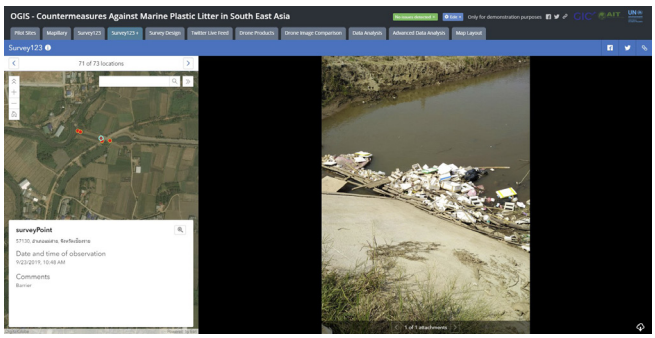
Following the community outreach events, UNEP invited GIC to share it experiences in fighting marine plastics at a 4-day workshop at UNESCAP in Bangkok. The workshop, titled *Sea of Solutions 2019*, was organized by UNEP, the Coordinating Body on the Seas of East Asia, and the Swedish Government as a forum in which people of various professional backgrounds could explore solutions to the marine plastic problem. GIC's Dr. Kavinda Gunasekara contributed to a parallel session focusing on how data mining, deep learning, and population mapping can be applied to fighting plastic pollution. Dr. Gunasekara also led a side session which addressed the importance of region-based plastic leakage models.

Moving forward in 2020, GIC will continue working with its partners to collect data on point source plastic pollution at additional sites to form a regional model of the Mekong and Ganges River Basins. The project will conclude by the end of March 2020.

Volunteers ready to clean up plastic waste at Chiang Rai Beach

Volunteers assess the waste they collected at Ku Du Beach, Ubon Ratchathani

Left Location of plastic accumulation is recorded for further analysis
Below: GIC's web-based system displays locations of fluvial plastic accumulation with site imagery available



8th International Conference on Agricultural Statistics and Expert Group Meeting

Representatives from GIC attended the Eighth International Conference on Agricultural Statistics (ICAS) in New Delhi, India from November 18 -21, 2019. During the four-day conference, the latest concepts in agriculture statistics were addressed in a series of plenary sessions, breakout sessions falling under ten different themes, and poster sessions.

Bill Gates, Co-Chair of the Bill and Melinda Gates Foundation, led the opening ceremony at the National Agricultural Science Complex by giving a presentation focusing on his organization's research projects in India.

One of the recurring ideas throughout the conference was interest in integrating geospatial technology into agricultural statistics. Plenary sessions called for supplementing current practices with remote sensing analysis and GNSS data. While there were two breakout sessions dedicated to remote sensing, the overall atmosphere of the conference suggested this field was relatively new to attendees, indicating tremendous potential for future collaborations.

ICAS also featured a number of side events to explore concepts in agriculture statistics for select conference attendees. FAO-RAP and GIC-AIT jointly organized a side event titled Expert Group Meeting on the Use of Cost-effective Technologies for Agricultural Censuses and Surveys. The side event was held on November 22 & 23, 2019 at the same venue as ICAS. Twenty-two participants from

Bill Gates delivers the opening address at ICAS

9 countries attended the event, including Bhutan, Bangadesh, Lao PDR, Papua New Guinea, Nepal, and Timor Leste, representing statistics bureaus and agricultural ministries from their respective countries.

During the expert group meeting representatives from each country presented their experiences with agriculture census. Experience varied greatly, with some countries having completed agriculture census already, while others had never completed one and were still in the early planning phase. Of particular interest were presentations from the Timor Leste Census Bureau. Not only had Timor Leste competed its first ever agriculture census in 2019, but also included the use of the latest technologies to accomplish it, including tablet-based computer assisted personal interview (CAPI) software, as well as using GNSS receivers to record measurements at enumeration sites.

Indian Agriculture Graduate Students Train at GIC

In November 2019 a group of 20 graduate students from India's Mahatma Phule Agriculture University participated in a month long training course at GIC.

Their training focused on applications of geospatial technology to agriculture. Training modules included an introduction to unmanned aerial vehicles with hands-on sessions, the fundamentals of programming in Python for geospatial data, and land cover classification in Google Earth Engine. While the group has a diverse background in agriculture ranging from agronomists to crop geneticists, they reported that the skills learned at GIC would be beneficial to their individual ongoing research efforts.


Students perform a song during a cultural night at GIC

Uttarakhand Decision Support System Project Completed

An "Integrated Geospatial Platform, Database, and Applications for DRM in Uttarakhand" was launched by the honorable Cabinet Minister, Shri Subhod Uniyal at an event organized in city of Dehradun on 20 December 2019. The Integrated Geospatial Platform developed under the World Bank funded Uttarakhand Disaster Recovery Project implemented following the 2013 cloudburst in Uttarakhand. The platform is expected to provide the necessary data for informed decision-making and improve coordination among the various stakeholders to save life and property in Uttarakhand. Unveiling the platform, Minister Shri Uniyal highlighted the importance of having a decision support system for an effective disaster post-disaster response.

Dr. Manzul Hazarika, Director of Geoinformatics Center, AIT, who led the project on behalf of AIT revealed that the Geospatial Platform will enhance the efficacy of the existing early warning system in Uttarakhand by securing data and information from various national and international sources. Upon receiving the information, the Emergency Operation Centers (EOCs) can prepare early warnings and relay to the concerned officials and volunteers in the districts. The platform will also bring an NDMA compliant Incident Response System (IRS) by providing inventory of resources drawn from the India Disaster Resource Network as well as by facilitating the updating the inventory of resources and skills available in the state and local governments agencies.

Dr. Girish Chandra Joshi, Deputy Program Manager thanked all the stakeholders for their support to make the project successful and he hoped that all the relevant agencies from the Uttarakhand Government will be able to take advantage of the Geospatial Platform and contribute to an effective disaster management in the state.

Stakeholders join to celebrate the culmination of the Uttarakhand Decision Support System for Disaster Management Project

GIC Director Honored with Award at ACRS 2019

Professor Shunji Murai presents an award for outstanding contribution to Dr. Manzul Kumar Hazarika at ACRS 2019

While attending the latest meeting of the Asian Conference on Remote Sensing (ACRS), Dr. Manzul Kumar Hazarika, Director of the Geoinformatics Center, was honored with an "Outstanding Contribution Award". ACRS founder Professor Shunji Murai presented the award to Dr. Hazarika.

2019 marked the historic 40th anniversary of ACRS. The conference originated in Bangkok, Thailand in 1979 through the vision of Professor Murai, who is fondly referred to by peers as 'the father of remote sensing in Asia'. The 40th ACRS took place in Daejeon City, South Korea from October 14 – 18, 2019. The theme for the event was "Progress of remote sensing technology for a smart future". Over 800 participants attended the conference, the oldest of its kind in Asia.

Capacity Building in Lao

GIC has been playing an active role to support capacity building for the Strengthening Agro-climatic Monitoring and Information Systems (SAMIS) project in Lao PDR. The capacity building activities have been organized into three phases.

The first phase called for six training courses to support the GIS capabilities of the staff assigned to the SAMIS project. As of writing, four training courses have already been delivered. The first two courses were administered in early 2019, including a training on fundamental GIS analysis for the Lao Department of Meteorology and Hydrology as well as a training on Python and R programming for geoprocessing for the Department of Agricultural Land Management (DALAM). In August 2019 DALAM underwent another two training courses, including one on crop area mapping for production modelling using satellite data, as well as one for forest biomass estimation with satellite microwave data. The first phase will be concluded in January 2020 with an additional two trainings on GIS network analysis and 3D analysis.

A second phase of DALAM capacity building will follow the first one, with a focus on climate forecasting with the weather research and forecasting model (WRF). The second phase will begin at the end of January 2020.

DALAM GIS officers taking part in a hands-on image analysis exercise in Vientiane, Lao PDR

The SAMIS project is a vision of the Food and Agriculture Organization of the United Nations (FAO), the Lao Ministry of Natural Resources and Environment, and the Lao Ministry of Agriculture and Forests to ready the Lao agriculture sector for climate change.

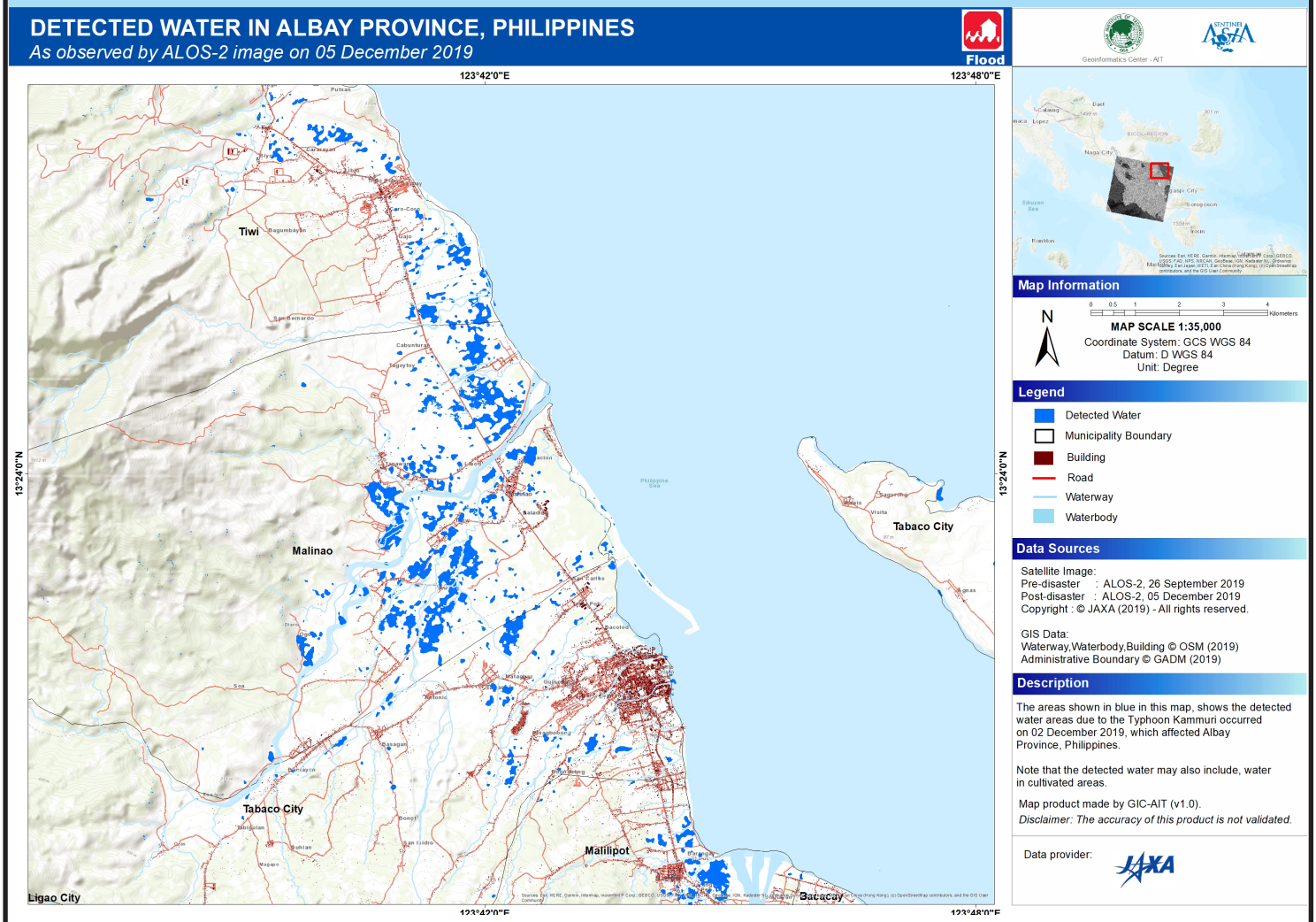
GIC Director at ACDR 2019

The Director of AIT's Geoinformatics Center, Dr. Manzul Kumar Hazarika, took part in the 2019's meeting of the Asian Conference on Disaster Reduction (ACDR 2019) in Ankara, Turkey.

Dr. Hazarika was an active part of the conference, chairing a session titled Recent Challenges and Innovative Approaches for Disaster Risk Reduction and delivering a presentation titled Use of Satellite data for Emergency Response and Development of an Integrated Emergency Management System. The conference, which lasted from November 25 – 27, 2019, was also attended by high level ministers, including H.E. Mr. Suleyman Soylu, Minister, Ministry of Interior, Government of Republic of Turkey as well as H.E. Mr. Taira Masaaki, State Minister of Cabinet Office, Government of Japan.

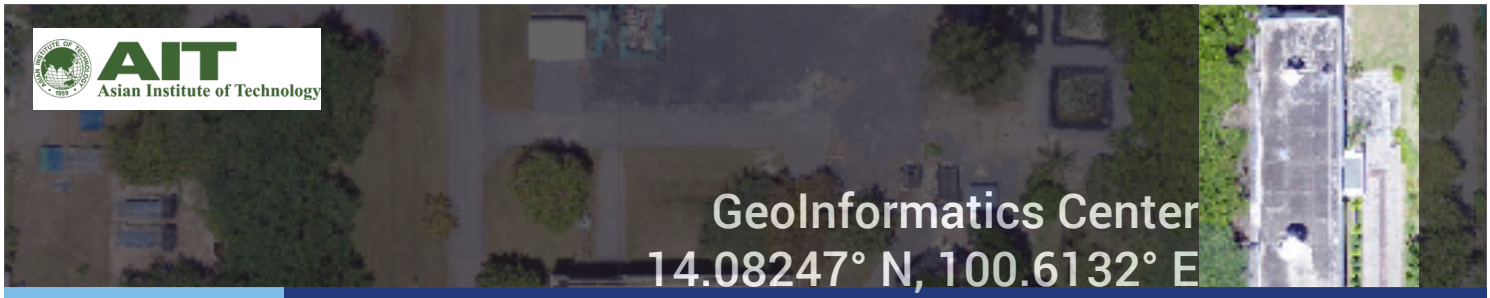
Dr. Manzul Kumar Hazarika delivering a presentation at the 2019 Asian Conference on Disaster Reduction in Ankara, Turkey

Featured Sentinel Asia Value Added Product: Philippines Flood - December 2019



The image above is a valued added product (VAP) created by the Geoinformatics Center for early December 2019 flooding in Albay Province, Philippines. Flood waters appear dark blue in the map, as opposed to the light blue perennial water bodies. The flooding is result of Typhoon Kammuri, a typhoon that struck Luzon island near 2am on December 3, 2019. Around 66,000 residents in affected areas had to flee their homes.

The Geoinformatics Center operates as a Data Analysis Node 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 local governments and associated bodies during times of disaster to improve response initiatives. In 2019 GIC created VAP's for 15 disasters.



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