

GEOINFORMATICS CENTER NEWSLETTER

April 2024



GIC as the Co-Chair of Sentinel Asia Steering Committee

The 22nd Meeting of Sentinel Asia was held at Taiwan Space Agency (TASA) from 30 to 31 January 2024. During the 22nd Steering Committee meeting of Sentinel Asia, GIC Director - Dr. Manzul Kumar Hazarika was elected as the Co-chair of Sentinel Asia, along with the appointment for GISTDA Thailand. The elected co-chair position has been effectively charged for two years since 1 February 2024.

In this issue

Highlighted Events & Snapshots

Knowledge Sharing: Technical and General

Geospatial Product

GIC, AIT-UNEP Partnerships in Tackling Plastic Pollution

Highlighted
Events

The Asian Institute of Technology, Thailand, has a prolonged partnership with the UN Environment Programme's Regional Asia Pacific Office to deliver the region's best practices for plastic pollution. In this opportunity, GIC is the technical expert for plastic monitoring discussions.

In the section with the ASEAN region on the Cost of Inaction and Action held on 1 February 2024, GIC discussed institutionalized data for plastic waste with experts from Mahidol University and Circular and Sustainable Solutions, Thailand.



A group photo during Cost of Inaction and Action of Plastic Pollution Workshop (top) and Plastic Pollution Monitoring in Pacific Islands Countries (down).



highlighted topics:



Aiming for the prove of concepts in data collection, analysis, and reporting in plastic waste.



Keeping on the open source for the scalability of the solutions, foster the community enhancement.



Evidence-based decision making and enable the monitoring solutions to the known polluted areas.

a lesson learnt

After being implemented in the Mekong Region, the pLitter and plastic monitoring solutions were applied to other challenges in Pacific Island Countries. The solutions were showcased during the workshop session on 8 March 2024.

Along with the Mekong River Commission and DHI experts, UNEP introduced GPML, in which digitalization is the key to enabling communications among stakeholders.

Later, GIC introduced the roadmap pace in 10 steps. A plastic roadmap refers to the simple yet concurrent approach to understanding what is needed and what will be addressed as the solutions.

Digitalization in Disaster and Multi-hazard Risk Assessment


A disaster management training session was successfully conducted in collaboration with The Asian and Pacific Training Centre for Information and Communication Technology for Development (APCICT/ ESCAP) and the United Nations Platform for Space-based Information for Disaster Management and Emergency Response (UN-SPIDER).

In this training series, GIC explored topics related to multi-hazard risk assessment, risk estimation, and the element-at-risk. The digital tool (RiskChanges) is included as the key point.



In-person training on risk management theoretical session with Prof. Cees (ITC, Netherlands) in Nepal



 National Disaster Risk Reduction and Management, Nepal



 West Sumatra Officials, Indonesia

for practitioners

Digital tools were applied to the more extended training series. Like the training in Nepal, GIC conducted four training days, including theoretical understanding and hands-on practice.

For the technical working group, digital tools applied by understanding the theory behind the risk assessment, and managing the hazard input data for the calculation.

for decision maker

Decision makers come up with strategic plans for policy-making in disaster management.

In the online session with Indonesian officials, GIC focused more on the platform's information delivery capabilities. Digital tools create the working space and transferable information, to enable the smart data driven governance.

GIC Mini Open House: Geospatial Technology and Futures

Highlighted
Events:
Snapshots



Snapshots of the open house and presentation by Dr. Manzul K Hazarika (Director of GIC)

The Geoinformatics Center held a mini open house for the AIT community on 19 February. The open house aimed to showcase the latest work and portfolios of GIC, which can foster collaboration within the community.

Some of the showcased portfolios included:

- Disaster response community with Sentinel Asia,
- Smart monitoring of plastic using the AI-enabled CCTV and ICT systems on plastic leakage,
- Agro-ecological zonation tools,
- Geospatial portal for managing the risk and multi-hazard,
- and other IoT products related to drones.

GIC has welcomed more than 30 participants from the AIT community and six from outside organizations.

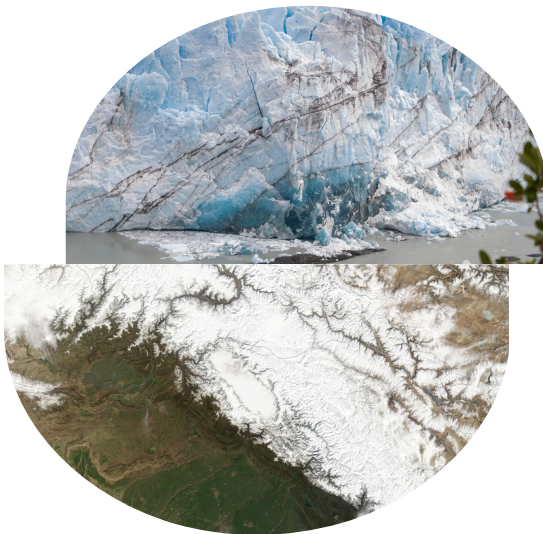


GIC team demonstrate AI-enabled CCTV

Here are some highlighted geospatial process and its product, according to the programs run under GIC!

Cryosphere Monitoring

From International Training on Cryosphere Monitoring using Remote Sensing



Tools Google Earth Engine, Remote Sensing & GIS, Image Classification, Time Series Analysis

Data Satellite Imagery (Multispectral & Radar), Station Data

Results

- Satellite-based Snow Dynamics Investigation,
- Glacier & Snow Mapping,
- Uncertainty Analysis

Hydrological Model

From the Seminar with Water Engineering and Management Programme, AIT



Tools Hydrology model in HEC-RAS, GIS Software, Image Data Acquisition

Data Digital Elevation Model (USGS SRTM 30 M)

Results

- Flow scenario model
- Estimation of plastic waste in the water

Spatial Data Management

From the Internal Workshop on Integrating GIS with ArcGIS Capabilities

Tools ArcGIS Server, ArcGIS Online, ArcGIS Enterprise

Data Any kind of spatial data which contains spatially coded and managed sharable access

Results A confluence flow of the data management on local and cloud



The Geodatabase

ArcGIS Server



Flood in Central Java, Indonesia

Sentinel Asia Activation

Geospatial Product

DETECTED FLOOD WATER IN CENTRAL JAVA PROVINCE, INDONESIA

As observed by ALOS-2 image on 18 March 2024



666.82 Km²

OBSERVED FLOOD

This map shows the floodwater areas detected in Demak, Grobogan, Jepara, Kendal, Kudus, and Pati Regencies, Central Java Province, Indonesia, on March 18, 2024, due to heavy rains and also the flood caused by breached embankments.

Note that the detected water may also include water in cultivated areas.

- 7 NUMBER OF DEATH
- > 4,000 EVACUATED PEOPLE
- > 6,500 FLOODED HOUSES

Source: ReliefWeb (OCHA), 20/03/2024

- Survey Location
- Detected Flood Water
- Waterbody
- Building
- Regency Boundary
- Area of Interest
- Road
- Waterway

Satellite Image:

Pre-disaster : ALOS-2 PALSAR-2, 05 February 2024

Post-disaster : ALOS-2 PALSAR-2, 18 March 2024

Copyright: © JAXA (2024) - All rights reserved.

GIS Data:

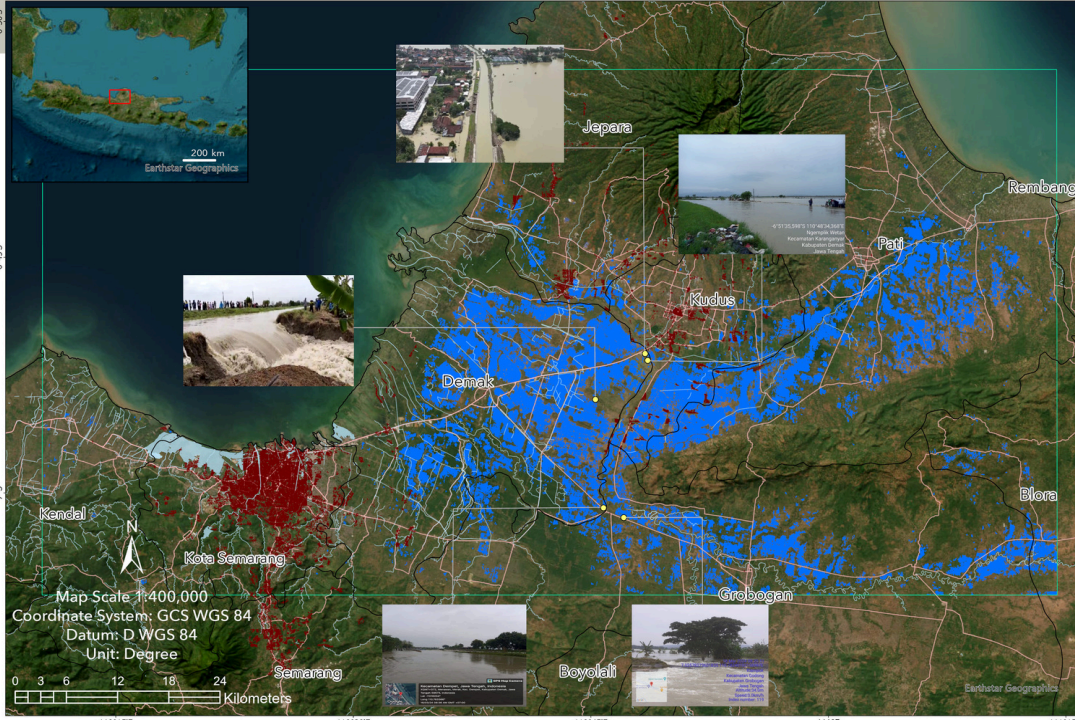
Building, Road, Waterbody and Waterway © OSM (2024)

Administrative Boundary © GADM (2024)

Survey locations & photos source: Ministry of Public Works and Housing (MPWH), Indonesia

Map product made by GIC-AIT (v1.0).

Disclaimer: The accuracy of this product is not validated.



Map of observed flooded area in Semarang City and surrounding, Central Java Province, Indonesia

On 15 March 2024, the northern coastal region of Java Island experienced persistent flooding that lasted over a week. The flood was caused by heavy rainfall for the past weeks, hindrances economic activities and displaced more than 11,500 people, according to the local authority report.

In this activation, GIC provided information about the flooded area based on observations made using Synthetic Aperture Radar (SAR) detection from pre and post-flooding events. The surveyed area covered the most catastrophe area, which has not been subdivided since 13 March.

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