ESCAP
Economic and Social Commission for Asia and the Pacific

UN-GGIM
UNITED NATIONS COMMITTEE OF EXPERTS ON GLOBAL GEOSPATIAL INFORMATION MANAGEMENT

Leveraging digital innovation in geospatial applications for disaster risk reduction and sustainable Development in Asia and the Pacific

12 November 2024

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Secretariat of UN-GGIM-AP

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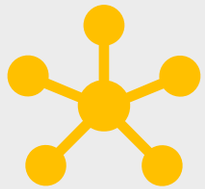

Mitigate the disaster risk through digital innovation

03

Leverage innovative geospatial technology applications

- Asia and the Pacific is emerging as a hub of global digital transformation.
- Asia and the Pacific is uniquely positioned to scale-up digital innovative technologies.
- Closing the digital divide is a precondition for realizing the full sustainable development potential of digital innovation.
- Create a supportive environment for scaling up digital innovations with high impact on sustainable development.
- Strengthen regional digital cooperation to the accelerated implementation of the Sustainable Development Goals

Early Warnings for All

ESCAP's regional strategy: transboundary solutions

Disaster risk hotspots

Leveraging intergovernmental cooperation

Catalytic financing through the Trust Fund

Empower existing institutions

ESCAP/WMO Typhoon Committee

RIMES

MRC Mekong River Commission for Sustainable Development

Innovative solutions for climate adaptation

Impact-based forecasting

Innovative applications of geospatial data

ESCAP | DECADE OF ACTION | RISK AND RESILIENCE PORTAL
An Initiative of the Asia-Pacific Disaster Resilience Network

National Adaptation Plans

Committee on Disaster Risk Reduction

SUSTAINABLE DEVELOPMENT GOALS

SENDAI 7 TARGETS CAMPAIGN

ESCAP Economic and Social Commission for Asia and the Pacific

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UNGGIM-AP - 56 Member States

Executive Board

President: Indonesia

Vice Presidents (3): India, Japan, Singapore

Board Members (9): Australia, China, Fiji, Islamic Republic of Iran, Malaysia, Mongolia, Nepal, Republic of Korea (the), Russian Federation (the)

WG1 - Geodetic Reference Frame (Chair: Japan)

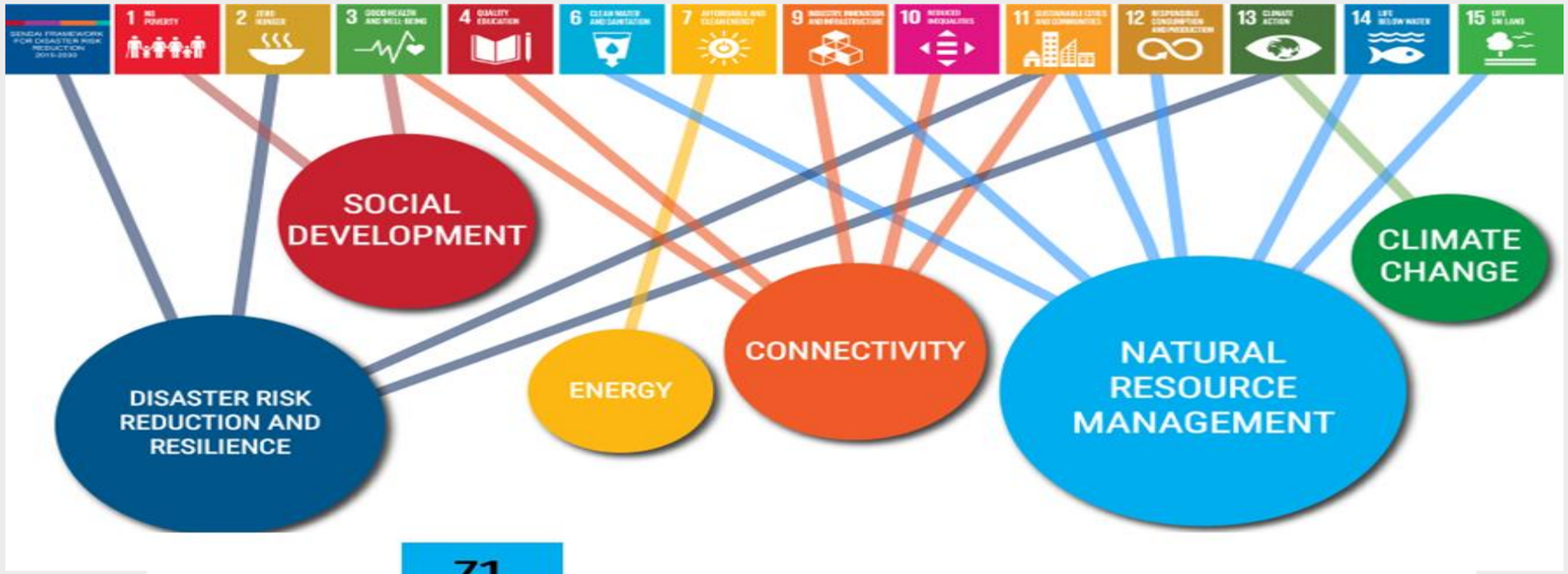
WG2 - Cadastre and Land Management (Chair: Singapore)

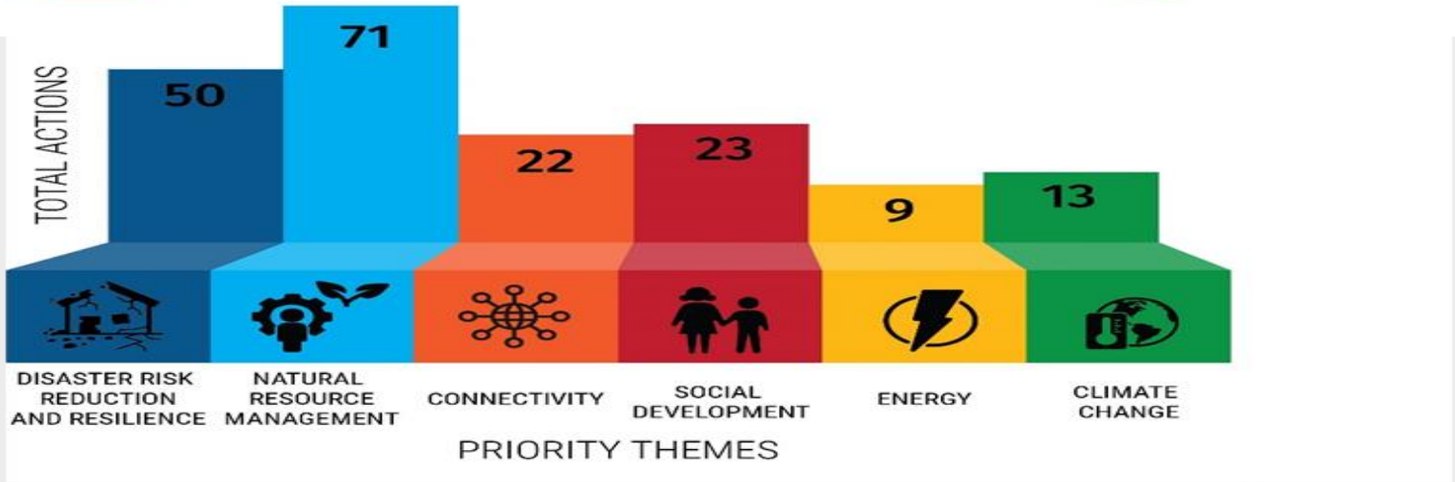
WG3 - Integrating Geospatial Information and Statistics (Chair: Islamic Republic of Iran)

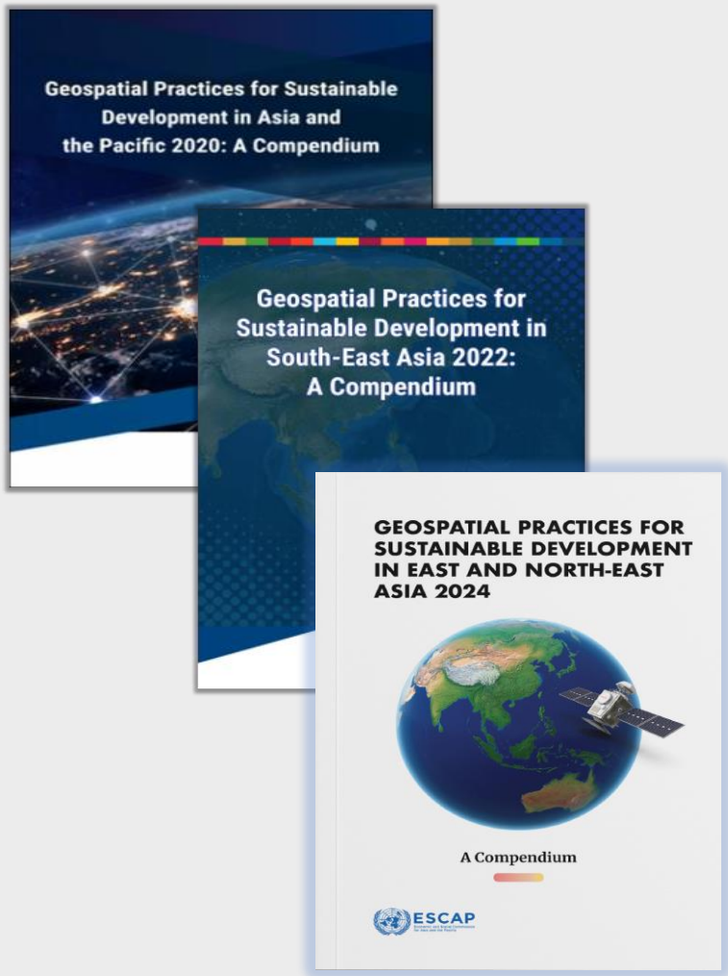
WG4 - Integrated Geospatial Information Framework (Chair: India)

Regional Committee of United Nations Global Geospatial Information Management for Asia and the Pacific

Asia-Pacific Plan of Action on Space Applications for Sustainable Development (2018–2030)







https://m.youtube.com/watch?si=m_xkONND6Sg4HCEq&v=Tk-HK9nwcbA&feature=youtu.be

Geospatial Good Practices Database and Dashboard

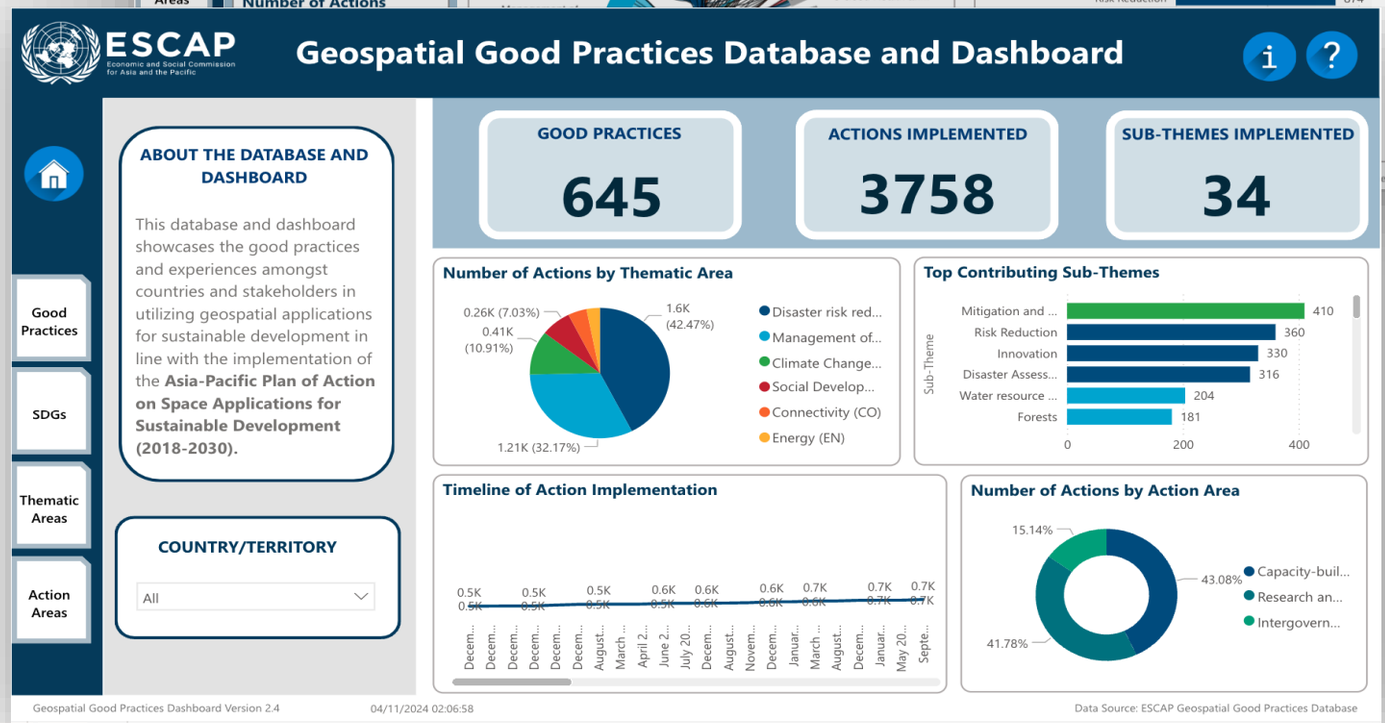
Collect, **store**, and **share good practices** on space applications in support of sustainable development

Sharing of implementation progress towards the Plan of Action

Easy-to-use storage and sharing of good practices from around the region

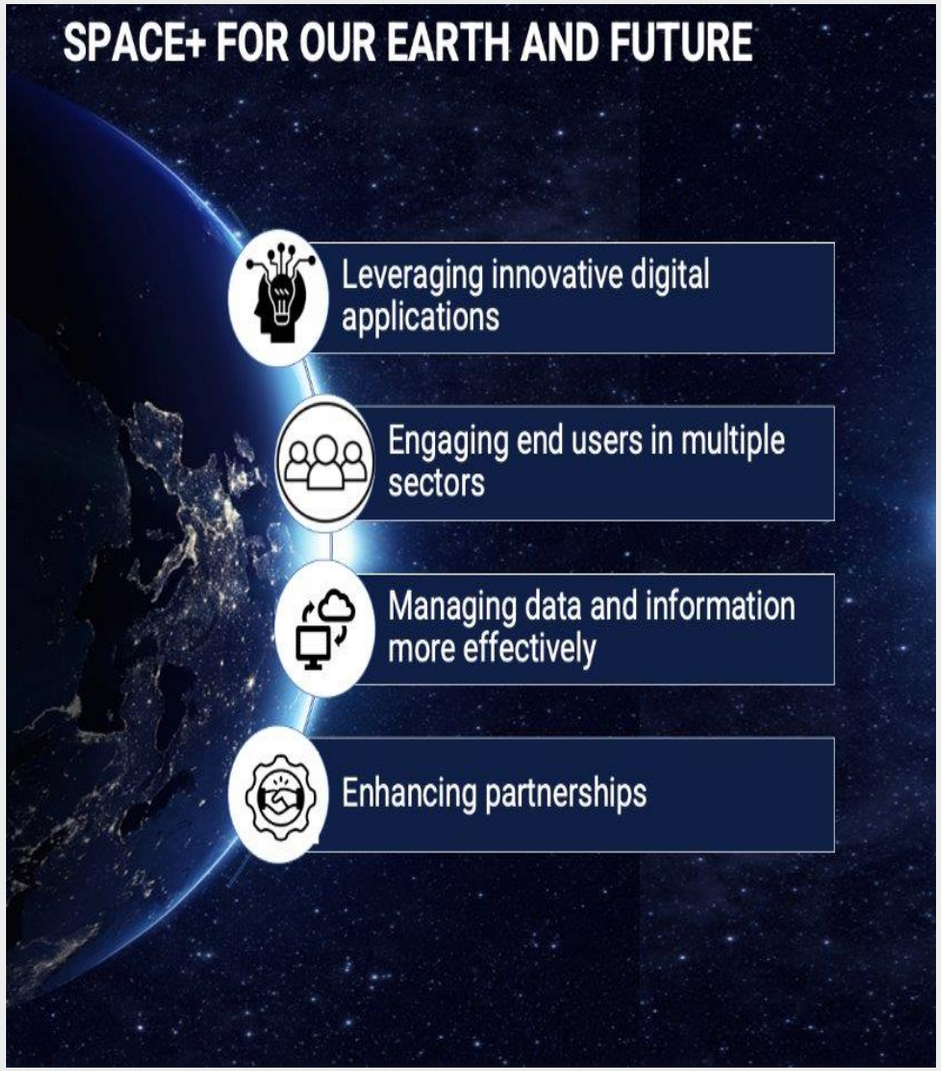
Allowing for data to be **uploaded and shared** via a portal **at any time**

SCAN ME



The 4th Ministerial Conference on Space Applications in Asia and the Pacific

October 2022, in Jakarta



- Data is a special resource; it has value; the value can be measured
- Data with the location and time, can be interoperated across the sectors
- In space and geospatial information applications, NO one can deliver alone; You share more, you gain more
- SPACE+ for our Earth and Future: Transcend the conventional space applications for SDGs
- 4As: Available, accessible, affordable and actionable
- 4Ps: Benefit people and inform practices, processes and policies
- 3Is: Integration, Innovations and interdisciplinary

Youth Forum on Innovative Geospatial Information Applications

ESCAP Economic and Social Commission for Asia and the Pacific
GISTDA
AIR
MAE FAH LUANG UNIVERSITY
MGA MULTI GNSS ASIA
BRIN BADAN RISET DAN INOVASI NASIONAL
unitar United Nations Institute for Training and Research
UNOSAT United Nations Satellite Centre
ARTSA ASEAN RESEARCH AND TRAINING CENTER FOR SPACE TECHNOLOGY AND APPLICATIONS

https://youtu.be/Sd_C24xvvtE?feature=shared

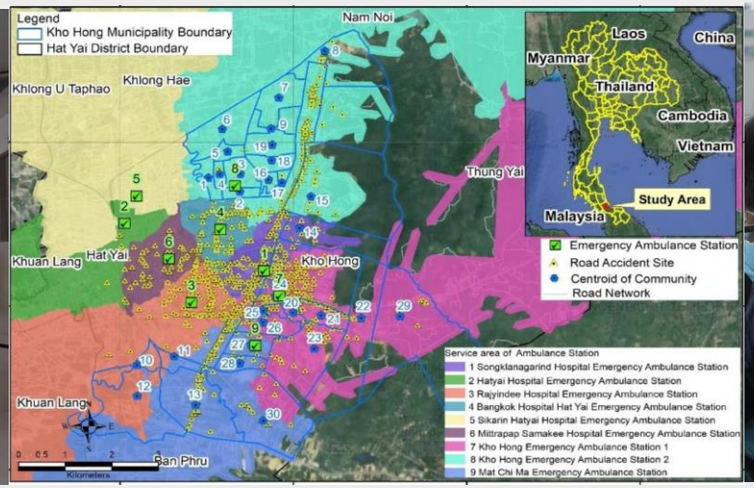
In response to the UN General Assembly Resolution (45/72 of 11th December 1990) endorsing the recommendations of UNISPACE-82, the United Nations Office of Outer Space Affairs (UN-OOSA) prepared a project document (A/AC.105/534) envisaging the establishment of Centers for Space Science and Technology Education in the developing countries. In 1994, a UN team conducted an evaluation mission of six countries in Asia-Pacific region. Based on the report of the evaluation mission, UN-OOSA notified India as the host country for the establishment of the **Centre for Space Science and Technology Education in Asia and the Pacific (CSSTEAP)**. The Centre was established in India on November 1, 1995, under an agreement signed initially by 10 member countries of the region. The Centre is hosted by the Government of India, with the Department of Space (DOS) as the nodal agency. DOS has made available appropriate facilities and expertise to the Centre through the Indian Institute of Remote Sensing (IIRS) at **Dehradun,** the Space Applications Centre (SAC) at Ahmedabad and the Physical Research Laboratory (PRL) at Ahmedabad, India.

CSSTEAP

The **Regional Centre for Space Science and Technology Education in Asia and the Pacific** (China) (Affiliated to the United Nations) (**RCSSTEAP** for short) was established in November 2014. The Centre is located on the main campus of Beihang University, Beijing, China. The Centre, as an education and training entity supported by the Committee on the Peaceful Uses of Outer Space (COPUOS), seeks to contribute to the implementation of the “Programme on Space Applications” promoted by COPUOS and to the enhancement of the education and training level as well as application capacity of space science and technology in the member States of the Centre through capacity building, information communication, training programmes, etc. Total-RCSSTEAP

Building institutional capacity for the use of integrated spatio-temporal data in local SDGs monitoring and decision-making

Pilot cities: Makassar and Bandung, Indonesia; Songkhla, Thailand



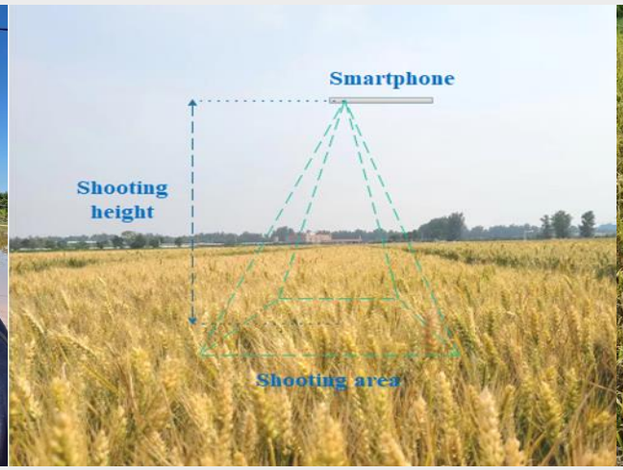
BRIN
BADAN RISET DAN INOVASI NASIONAL

GISTDA

PSU PRINCE OF SONGKLA UNIVERSITY

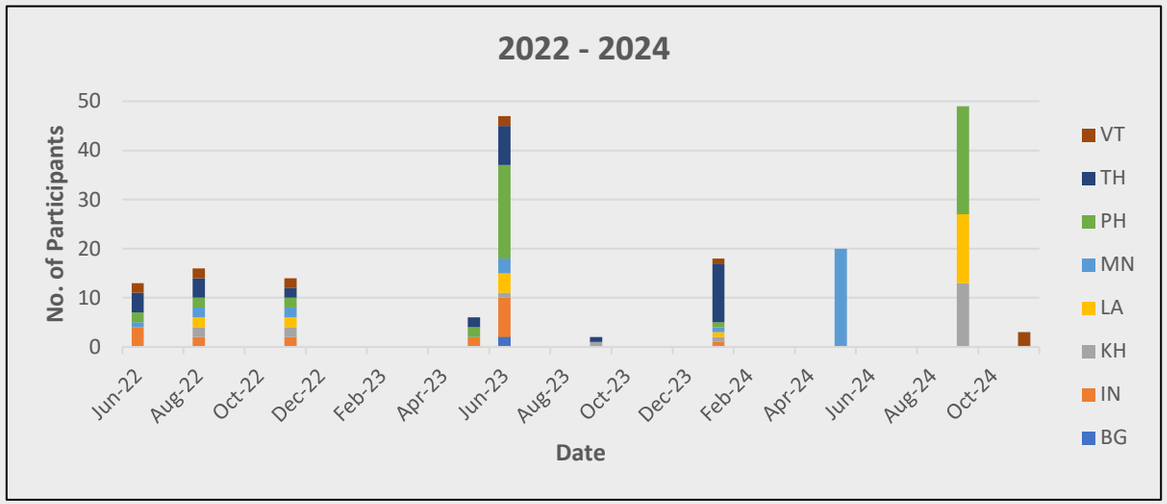
UN-GGIM-AP
REGIONAL COMMITTEE OF UNITED NATIONS GLOBAL GEOSPATIAL INFORMATION MANAGEMENT FOR ASIA & THE PACIFIC

Building resilient agricultural in the Lower Mekong Basin



Partnership

Building the Pan-Asia Partnership for Geospatial Air Pollution information



	2022	2023	2024	Sum
BG	0	2	0	2
IN	8	10	1	19
KH	4	2	14	20
LA	4	4	15	23
MN	5	3	21	29
PH	6	21	23	50
TH	10	11	12	33
VT	6	2	4	12
Sum	43	55	90	188

17 Pandora instruments are installed in 7 countries (as of NOV 2024)

Bangladesh
SPARRSO

Cambodia
MoE

Indonesia
BRIN

Lao PDR
MONRE

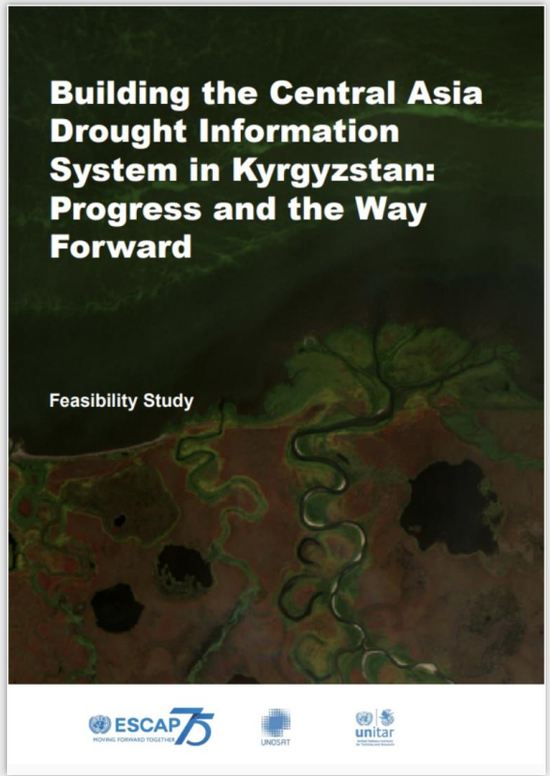
Mongolia
IRIMHE

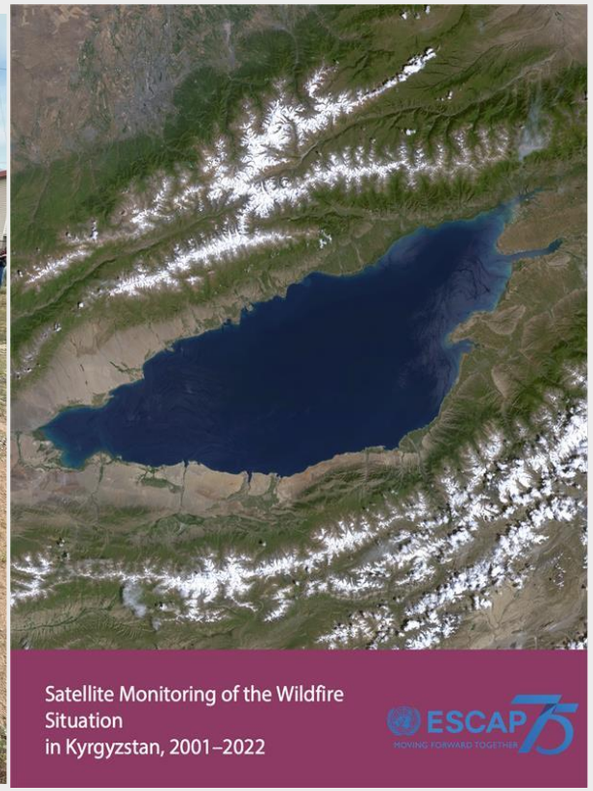
Philippines
PhilSA

Thailand
GISTDA

Viet Nam
MONRE

Central Asia Drought Information System (CADIS) Pilot Project





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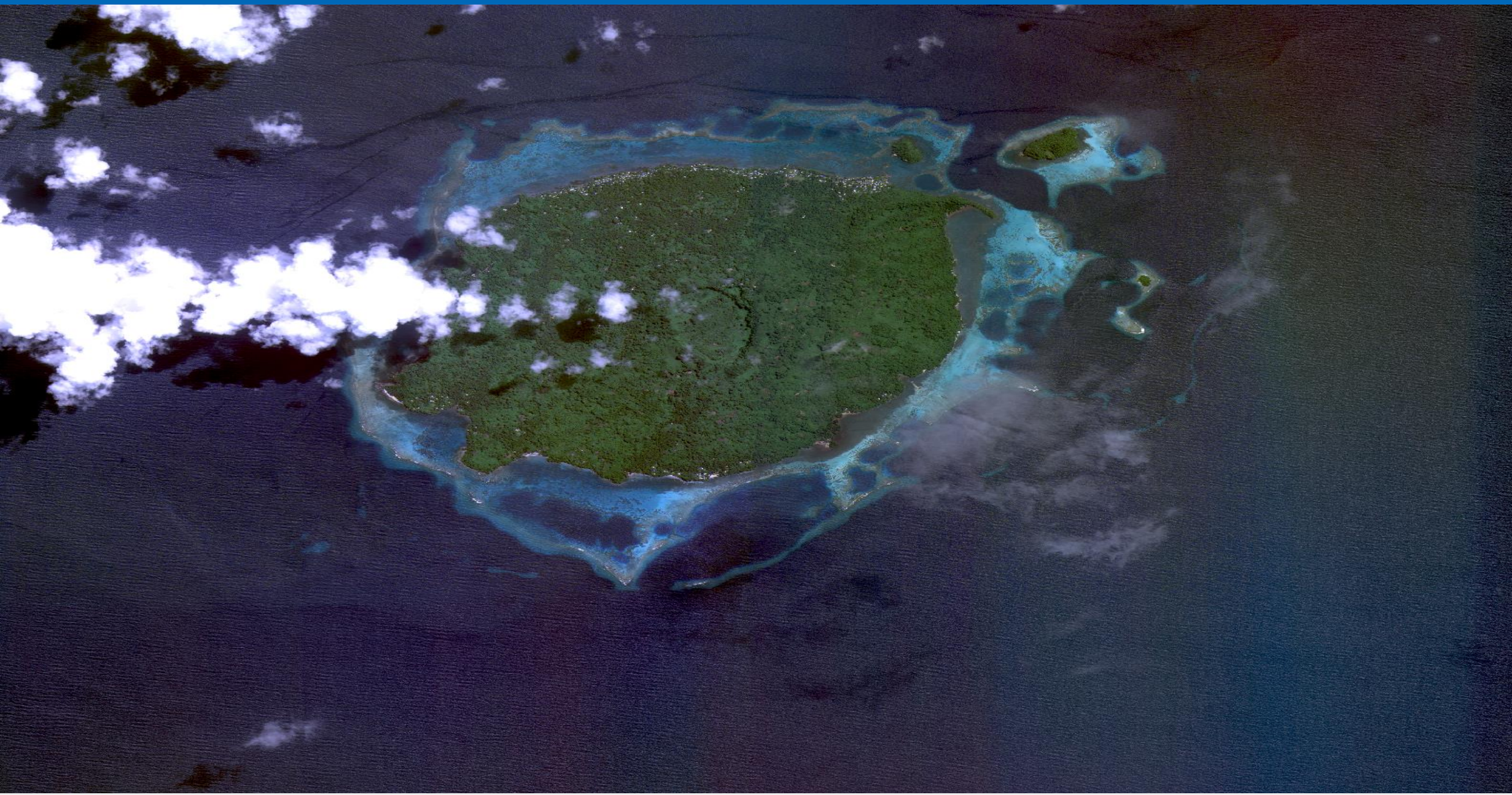

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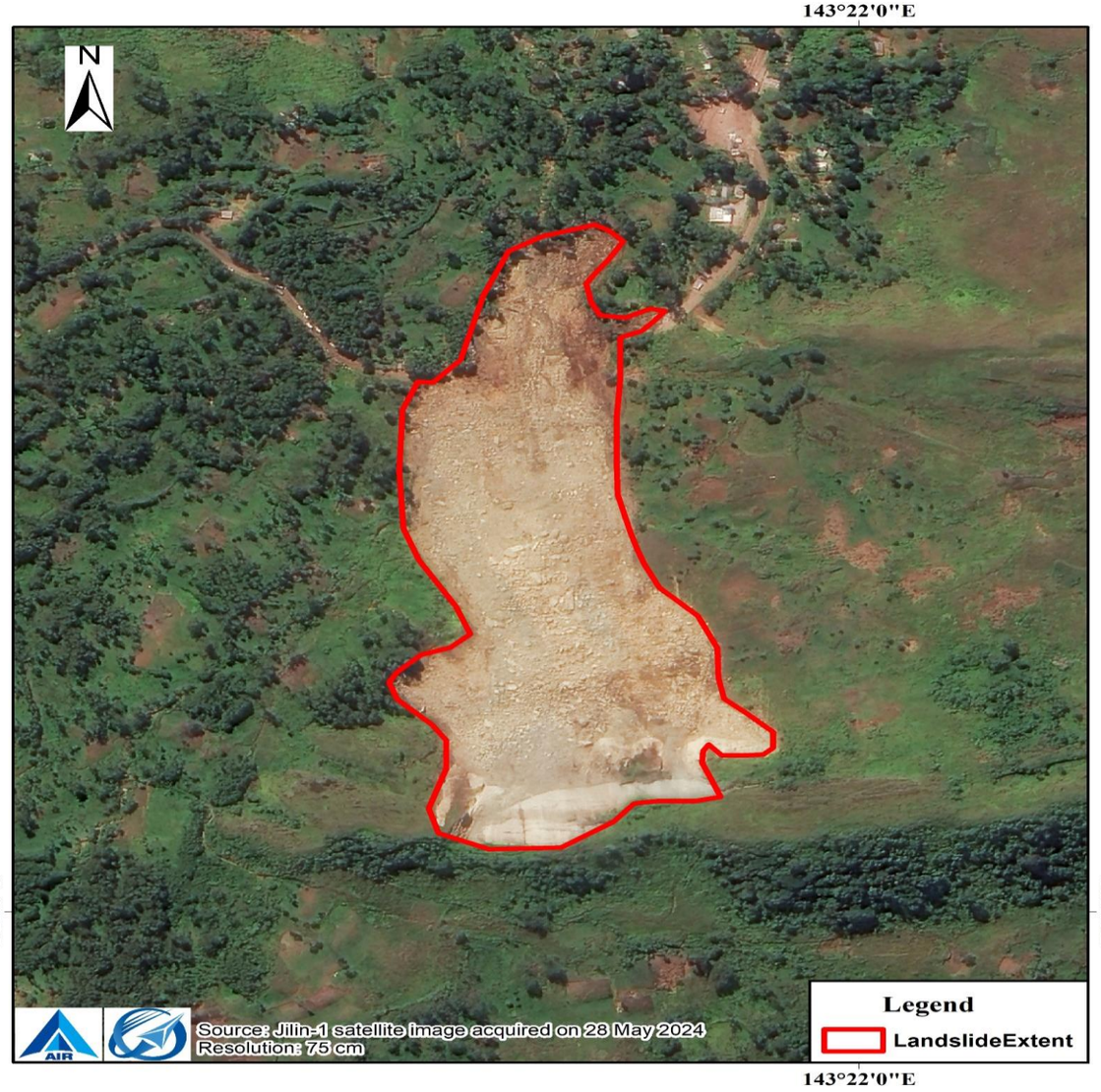
Data Coverage Map of Papua New Guinea Landslide with Chinese High-Resolution Satellites



0 0.06 0.12 Km

Contact: cddr_office@aircas.ac.cn
Support by the Collaborative network of Disaster Data Response (CDDR)

Data Coverage Map of Papua New Guinea Landslide with Chinese High-Resolution Satellites

0 0.06 0.12 Km

Contact: cddr_office@aircas.ac.cn
Support by the Collaborative network of Disaster Data Response (CDDR)

Challenges

- How to address the new divides which will arise from whether countries have the capacity for digitally-driven innovations and apply them for decision-making and development areas

- How to engage end users across multiple sectors, including the private sectors, to strengthen the integration of geospatial information for sustainable development.

- How to engage the youth in the design and delivery of capacity-building activities and knowledge sharing of best practices to promote the adoption of new technologies.

- How to strengthen partnerships at the regional level for more financial and technical supports to countries, in particular, those with special needs.

Leverage digital innovations to accelerate implementing the regional Space Plan of Action

Disaster Risk Hotspot Mapping

Use Big Earth Data, Cloud Computing and AI to decrease the cost and time to generate disaster risk hotspots in Asia and the Pacific.

We are working with countries and cooperation partners to build an ARRAY of tools and apps to address the data and information needs in Asia and the Pacific

2023

Flood Hotspot Mapping

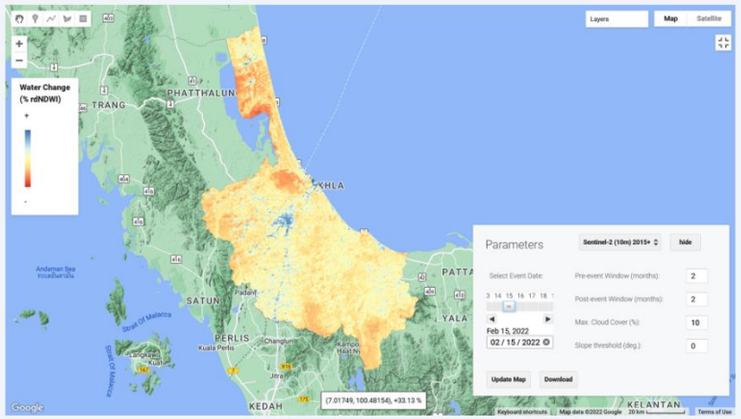
Wildfire Hotspot Mapping

2026

Flood Mapping Tool (floodmapping.inweh.unu.edu)

- Listed in 2022 UN Climate Change Innovations Compendium
- Won the 2021 Popular Science Best of Whats New Award

Massive Open Online Courses (wlc.un.edu)



Active and Passive Satellite Data Analysis Using Cloud Computing for Surface Water/Flood Mapping

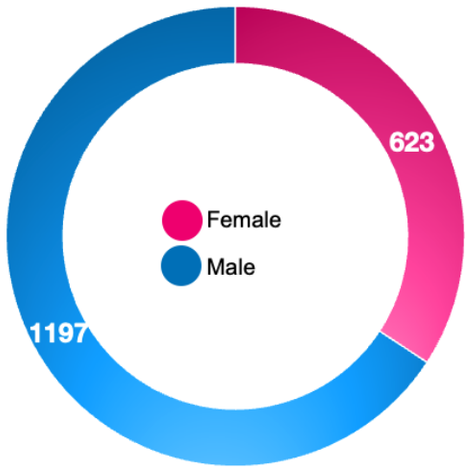
This online course introduces the participants to Earth Engine Code Editor platform and implementation of surface water detection algorithm using passive and active remote sensing.

Enroll Now

Total number of participants 1820

Reporting date: 25 Jan 2024
Course launch date: 28 December 2022

Completion rate 27%



Spatiotemporal Drought Assessment by Leveraging Google Earth Engine Platform

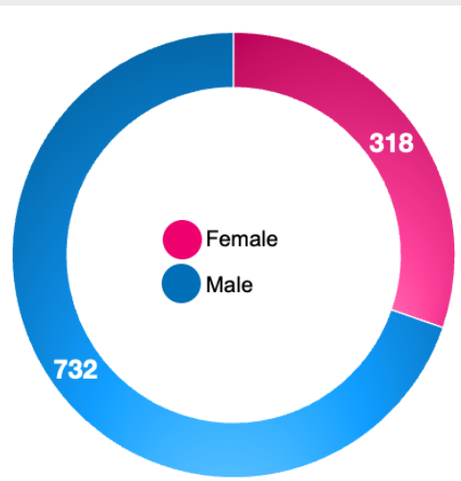
This online course introduces the participants to Earth Engine Code Editor platform and the implementation of drought detection and monitoring algorithm using passive and active remote sensing.

Enroll Now

Total number of participants 1050

Reporting date: 25 Jan 2024
Course launch date: 28 December 2022

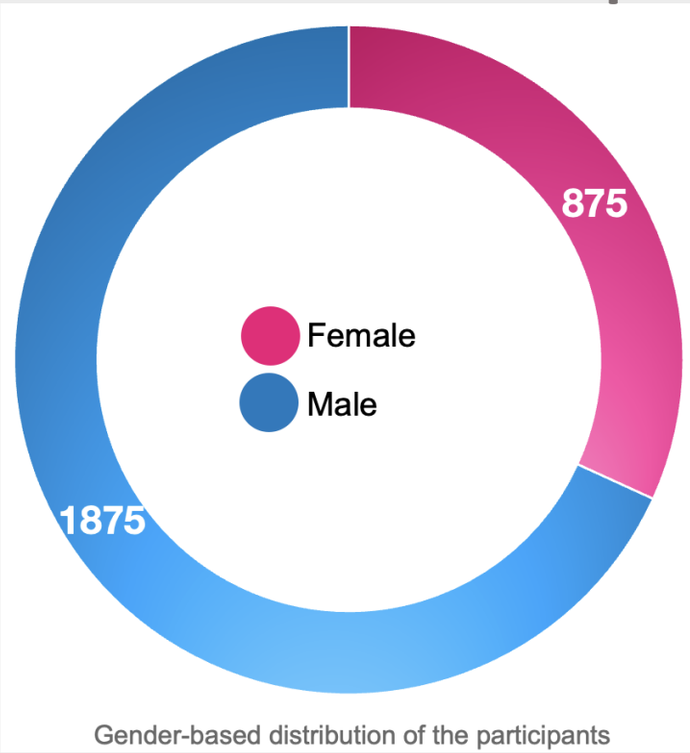
Completion rate 23%



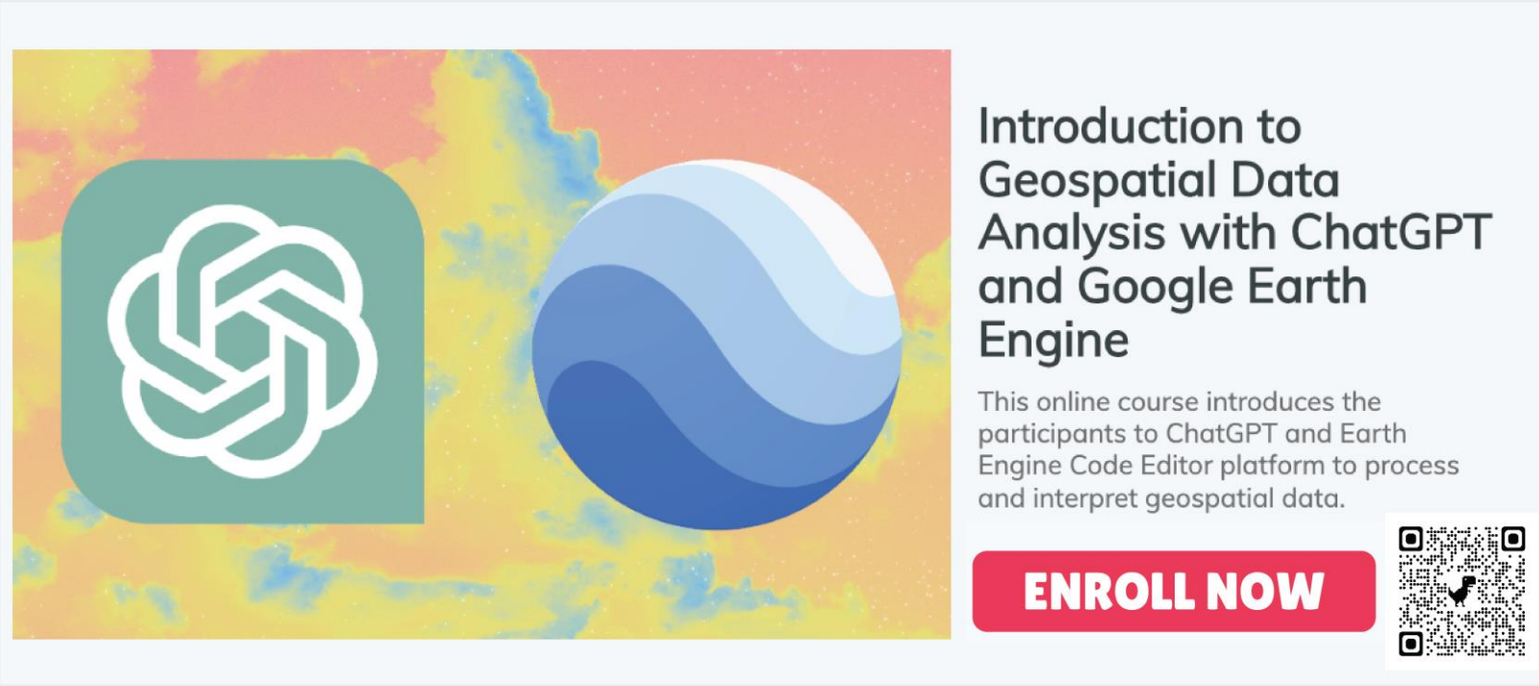
Participants are from universities, research institutes, and government agencies.

Online Course

Introduction to Geospatial Data Analysis with ChatGPT and Google Earth Engine



Gender-based distribution of the participants



Total number of participants 2750
Total number of countries 110

wlc.unu.edu

Use cases: improving accuracy and timeliness of flood risk assessment and EW through integration of LLMs into geospatial data analysis_SatGPT

Label images: LLMs will be used to label images with relevant information, such as the type of disaster, the extent of the damage, and the number of people affected.

Classify data: LLMs will be used to classify remote sensing data, such as distinguishing between different types of disasters or different levels of damage.

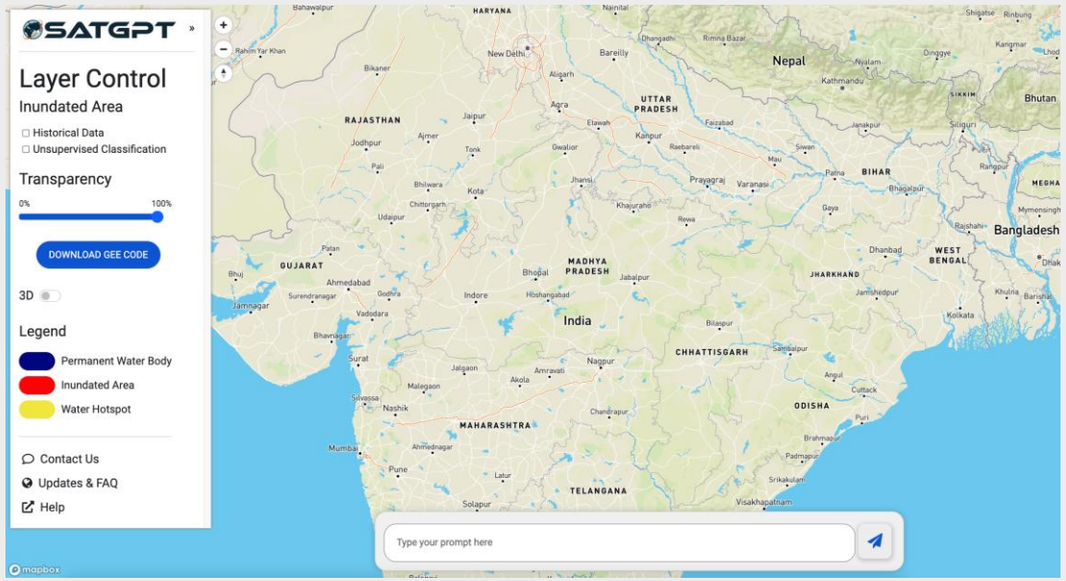
Generate reports: LLMs will be used to generate reports that summarize the findings of remote sensing data analysis and integrate sectoral data to aid decision-making and policy formulation.

Extract features: LLMs will be used to extract features from remote sensing data, such as the location of a disaster, the severity of the damage, and the risk of future disasters.

These functionalities will help generate the following information in a disaster management cycle.

- Identify and track natural hazards in real-time.
- Assess the risk of disasters.
- Warn people about impending disasters.
- Help people to prepare for and respond to disasters.
- Assess the damage caused by disasters.
- Identify the needs of affected communities.
- Prioritize resources for disaster recovery.
- Monitor the progress of recovery efforts.

The potential users include:



- Disaster Management Agencies
- Government Departments and Ministries
- Research Institutions and Scientists
- Non-Governmental Organizations (NGOs) and Humanitarian Agencies
- International Organizations and Donor Agencies
- Public and General Users

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SATGPT

explore more at:
satgpt.net

Virtual Satellite Constellation for Disaster Risk Management (VSC)

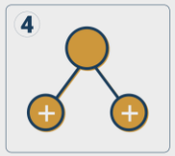
The VSC will develop a mechanism for sharing satellite imagery within Asia and the Pacific to build resilience in disaster risk hotspots

Develop a satellite imagery sharing mechanism for enhanced pre-disaster monitoring of risk in high disaster - low risk countries

Improve the capacity of local governments and disaster management-related agencies to be prepared and manage disasters over their entire cycle

Provide inputs to the spacefaring nations on the design of future satellites and sensors which address national and regional data needs

1. **Set up an informal working group** to work out the operational details and conduct a study to map free and commercial remote sensing data providers and share the catalogue with all member States.



2. **Invite spacefaring countries** to set aside a percentage of their satellite operational time or data archive for use by high disaster-risk and low-capacity countries.

3. **Invite target countries** to identify disaster risk hotspots for satellite imaging.

4. **Match support and demand** for satellite data by the secretariat using the VSC Catalog and form a working group to facilitate data transfer.

5. **Provide technical assistance** to the target countries in hosting, storing, processing and analysing the satellite data.

6. **Share the data requests** with all the spacefaring nations to ensure that the regional needs are addressed in future satellite and sensor design.

7. **Contribute to the Asia-Pacific Plan of Action on Space Applications for Sustainable Development (2018–2030) in the areas of:**

Disaster Risk Reduction and Resilience

Social Development

Management of Natural Resources

Meet the demands with supplies _ pilots selection

- Collect the needs on pre-disaster risk management through a questionnaire and selection of the pilots
- Provide one-to-one training and Q&A for answering the questionnaire in 2024
- Share the needs of pilots with the service/data providers in spacefaring countries in 2024
- Match the needs with the suppliers on specific disasters, such as flood and wildfire, through a regional geospatial datahub and information-sharing framework in 2024-2026
- Provide training on the use of AI for disaster preparedness and policy making, with the integration of the social-economic data of the disaster hotspots in 2024-2025
- Share the experience with other disaster-prone countries in 2025-2026.

THANK YOU

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