

**FIG**

Kathmandu, Nepal 14–16 November

**REGIONAL CONFERENCE 2024**

*Climate Resilient Land Governance and Disaster Resilience: Safeguarding Land Rights*



*Presented at the FIG Regional Conference 2024,  
14-16 November 2024 in Kathmandu, Nepal*

# Capacitating Southeast Asia through the use of Geospatial Technology and Earth Observation Data for Improved Decision-Making

**Rishiraj Dutta and Ogulgerek Annayeva**  
Asian Disaster Preparedness Center  
Thailand



ORGANISED BY



PS-02: Disaster Resilience  
Paper ID: 12925

PLATINUM SPONSOR





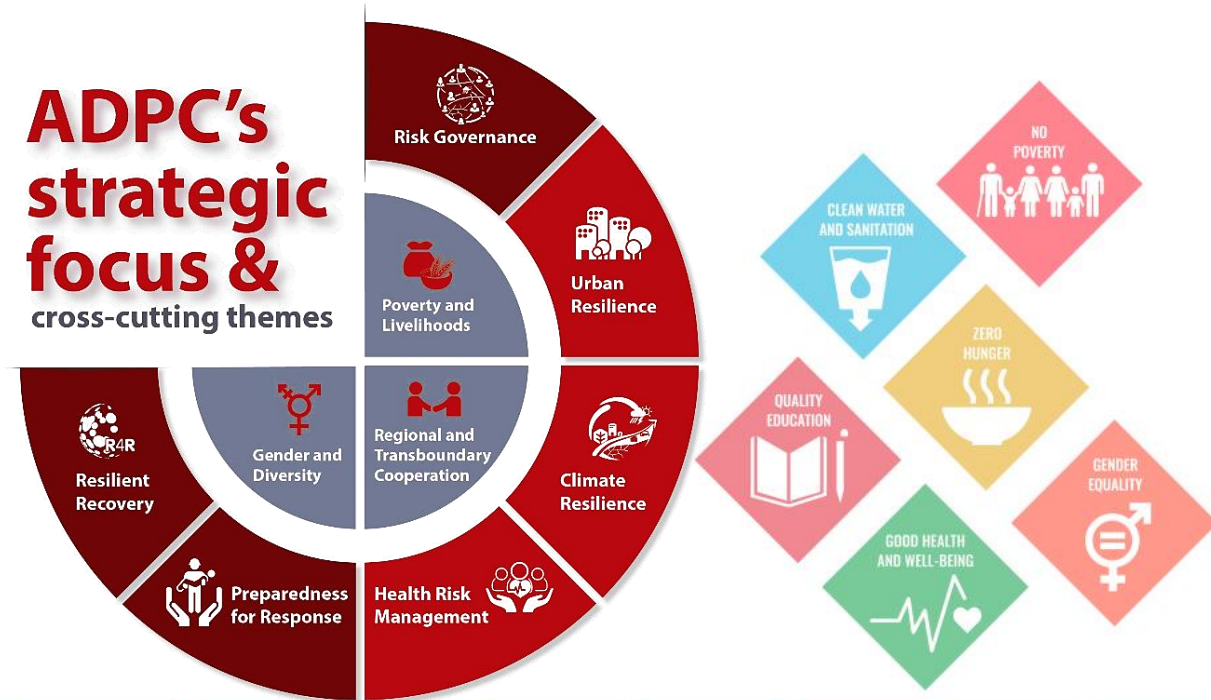
## ADPC, who we are?

- Intergovernmental Organization.
- Governed by its 9 founding Member States of Bangladesh, Cambodia, China, India, Nepal, Pakistan, the Philippines, Sri Lanka, and Thailand.



*“Working to build the resilience of people and institutions to disasters and climate change impacts in Asia and the Pacific”*

## ADPC's strategic focus & cross-cutting themes



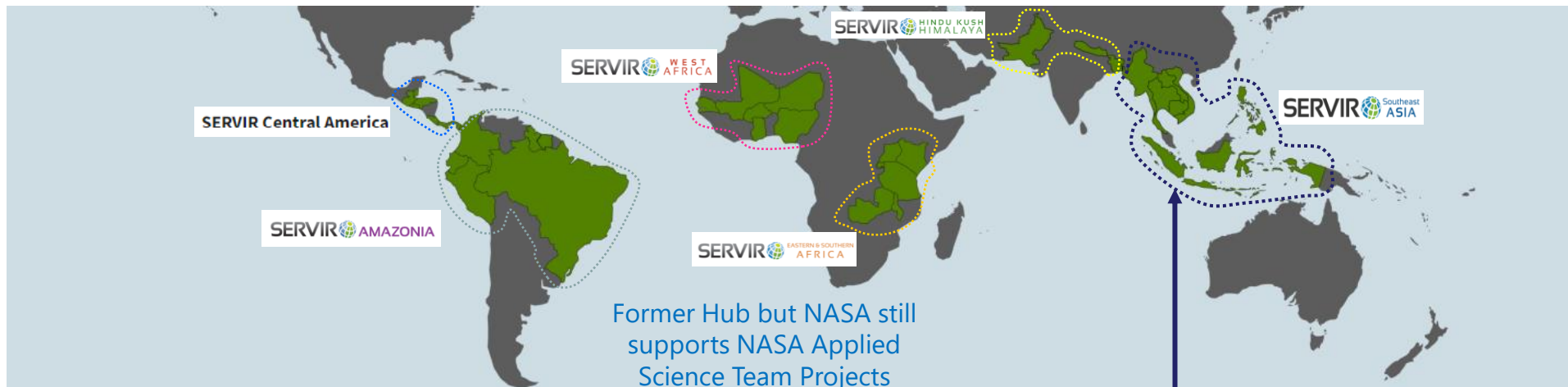
# FIG

# Kathmandu, Nepal 14–16 November REGIONAL CONFERENCE 2024

Climate Responsive Land Governance and Disaster Resilience: Safeguarding Land Rights



“SERVIR works in more than 50 countries in Africa, Asia, Central and South America. In partnership with regional, technical organizations, SERVIR has established regional "hubs" within selected host institutions.”



<https://servir.adpc.net/>

ORGANISED BY



PLATINUM SPONSOR



# FIG

Kathmandu, Nepal 14–16 November

# REGIONAL CONFERENCE 2024

Climate Responsive Land Governance and Disaster Resilience: Safeguarding Land Rights



## What we do??

Works to streamline access to data and imagery from satellites so analysts can integrate this information into tools and models that are accessible to those who need it most.

*Empowers decision-makers with tools, products, and services to act locally on climate-sensitive issues such as disasters, agriculture, water, ecosystems and land use.*

*Leverage advanced technology platforms and prioritize a demand-driven approach to activities in the Southeast ASIA region to better respond to a changing climate.*



ORGANISED BY



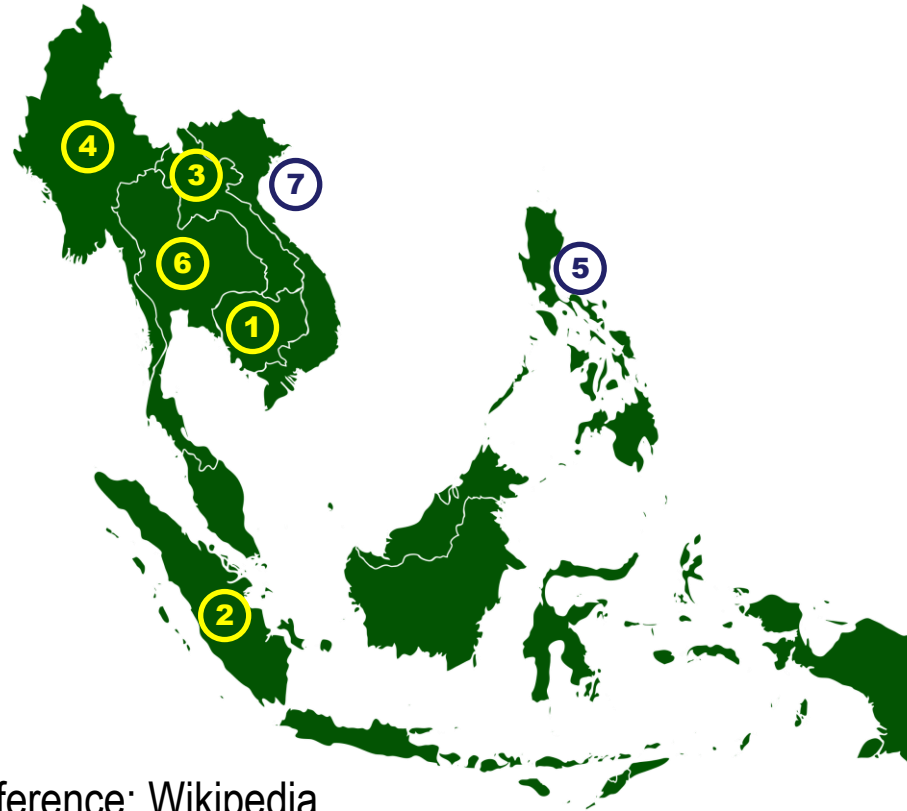
PLATINUM SPONSOR





## SERVIR Southeast Asia!! Where do we work??

1. Cambodia
2. Indonesia
3. Lao PDR
4. Myanmar
5. Philippines
6. Thailand
7. Vietnam



Overall focus for ASEAN

Map Reference: Wikipedia



# FIG

Kathmandu, Nepal 14–16 November

# REGIONAL CONFERENCE 2024

Climate Responsive Land Governance and Disaster Resilience: Safeguarding Land Rights



## Thematic Areas

Agriculture & Food Security



Air Quality & Health



SERVIR SEA works in 5 thematic areas

Water Security



Weather & Climate Resilience



Ecosystem & Carbon Management



ORGANISED BY



PLATINUM SPONSOR



# FIG

# Kathmandu, Nepal 14-16 November

# REGIONAL CONFERENCE 2024

Climate Responsive Land Governance and Disaster Resilience: Safeguarding Land Rights



## Decision Support Tools

These high quality user-tailored decision support tools and applications have been developed to address on-the-ground issues, empowering decision-makers to act locally on climate-sensitive challenges such as disasters, agriculture, water management, ecosystem protection and land use.



**Regional Land Cover Monitoring System**  
This system guides users in applying peer-reviewed methods and cloud computing power to produce a wide variety of high-quality land cover information products that can be updated regularly and consistently.



**Satellite Radar-derived Virtual Rain and Stream Gauge Data Service**  
This service provides near real-time rainfall and stream height data from publicly available satellite measurements by creation of a virtual network of rain gauges and stream gauges at points widely



**ClimateSERV**  
This tool allows development practitioners, scientists/researchers, and government decision-makers to visualize and download historical rainfall data, vegetation condition data, and 180-day forecasts of rainfall and...



**Mekong Air Quality Explorer**  
Air quality is fast becoming a critical challenge across SERVIR regions. Each year, the World Health Organization estimates 7 million deaths occur globally as a result of air pollution exposure, with 2 million of these...



**Rainstorm Tracker**  
Rainstorm Tracker tool is an operational storm analyzer developed to monitor and alert authorities about the severity of rainstorm events over the Lower Mekong Basin in near-real-time. This system employs a 4D object...



**Cambodia Protected Area Alerts System**  
Cambodia Protected Area Alerts System monitors near real-time forest changes and external threats including deforestation, forest fires and floods within the PreyLang Wildlife Sanctuary, a protected area in Cambodia. is a...



**Historical Flood Analysis Tool**  
Currently, there is lack of systematic flood risk analysis through collection of local knowledge in order to inform emergency planning, which although critical, takes significant resources and can introduce bias and human...



**Biophysical M&E Dashboard**  
Biophysical M&E Dashboard supports USAID, Cambodia in monitoring and managing large scale sustainable landscape management projects by using satellite data to determine landscape conditions before and after project...



**Gender Equality Monitoring (GEM) Platform**  
This platform is developed to address two key issues: gender data gap at sub-national level, and accessibility to gender statistics which is critical to examine and track changes in gender inequality.



**The Hydrologic Remote Sensing Analysis for Floods (HYDRAFloods)**  
A publicly available, web-based, near real-time flood monitoring tool designed to improve flood monitoring systems using freely available satellite remote sensing data, HYDRAFloods uses Artificial Intelligence (AI) to...



**Reservoir Assessment Tool for Lower Mekong Basin (RAT-Mekong)**  
RAT-Mekong is a web application for forecasting hydrologic impacts and operating patterns of existing and planned reservoirs in the Lower Mekong Region.



**Mekong X-Ray**  
The Mekong X-Ray is an open-source, web-based decision support tool for multidimensional flood vulnerability assessment, including mapping physical, social, economic, and environmental dimensions to support flood risk...



**HYDROMET-BOX**  
HYDRO-MET Box is an easy-access platform for hydro-meteorological data in Lower Mekong Region



**Landslide Hazard Assessment for Situational Awareness for Lower Mekong Region (LHASA-Mekong)**  
The LHASA-Mekong incorporates Earth Observation (EO)-based products and artificial intelligence (AI) models in a flexible decision support system to quantify landslide hazard and exposure over the Lower Mekong Region



**Land and Agriculture Monitoring Project (LAMP)**  
SERVIR Southeast Asia developed the Land and Agriculture Monitoring Project (LAMP) tool in response to a need expressed by stakeholders, who require insight and reports on the effectiveness of biodiversity and...



**Southeast Asia Drought Watch (SEADW)**  
Droughts in Southeast Asia negatively impact ecosystem services, food and water security, and biodiversity. These impacts are exacerbated by climate change, further highlighting the need for improved governance and...



ORGANISED BY



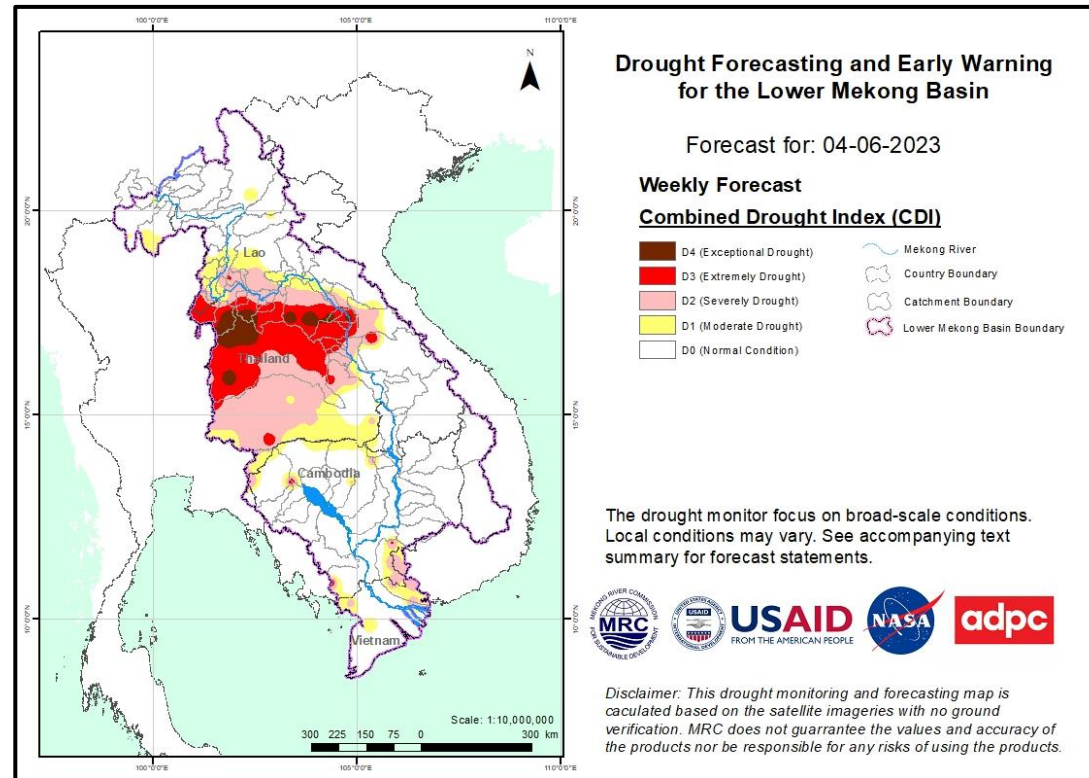
PLATINUM SPONSOR





## Customization of Mekong Drought and Crop Watch at Mekong River Commission (MRC)

- Adopted a well-tested drought tool from SERVIR SEA (currently being used for providing drought weekly forecast for the Lower Mekong Basin)
- System is using 5 km drought products (both nowcast and forecast)







## Enhance the Monitoring Capabilities of the Mekong River Commission

### Monitoring and analysis

**Real-time Rainstorm tracker system**

**MRC Flash Flood Guidance System**

**Flash flood analysis**

**Exposure analysis using Mekong X-Ray**

### Warning and communication

**MRC Outlook bulletin**

**National reports and situational updates from multiple partners**

**Social Media reports**

Source: The Mekong Flood and Drought Forecast TV on 5 September 2024 (facebook)

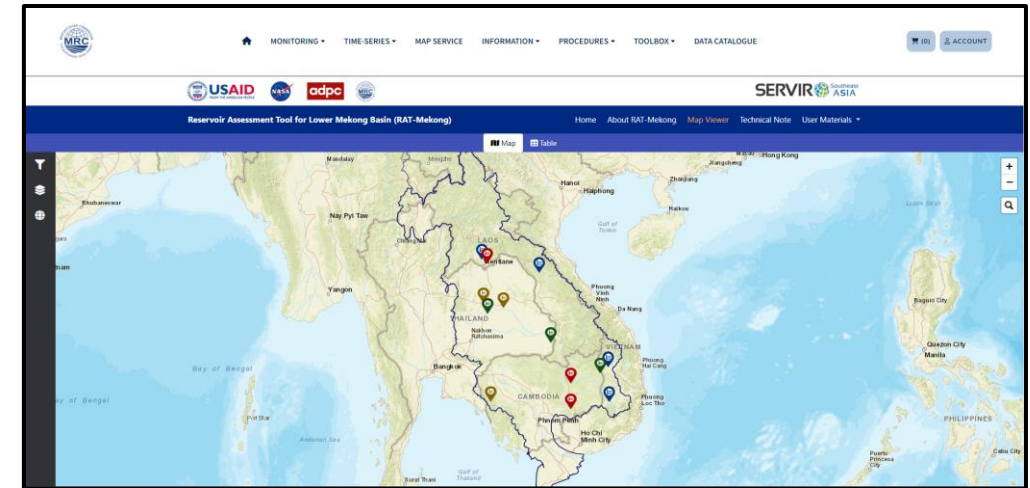
Local and national organization from **4 Countries Laos, Cambodia, Vietnam, Thailand\***, regularly receive flash flood bulletins from MRC supported from by SERVIR SEA





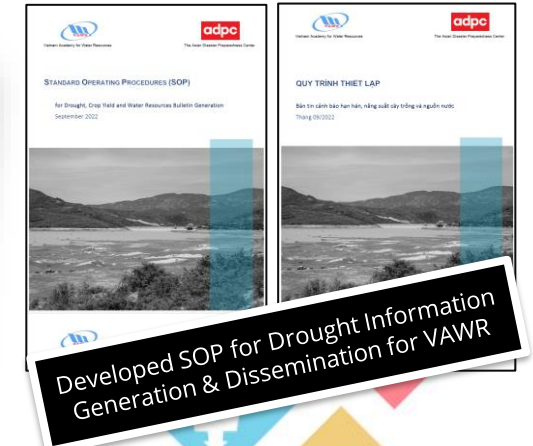
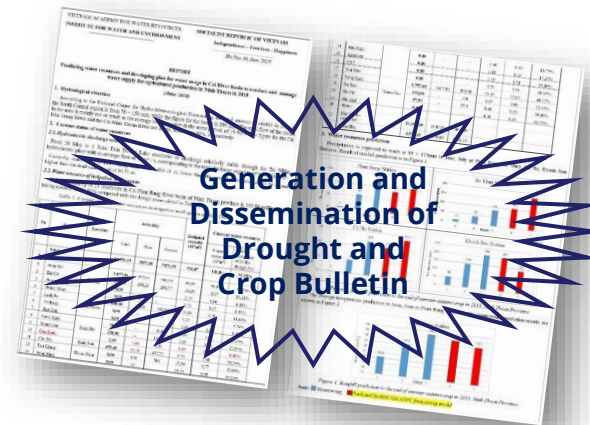
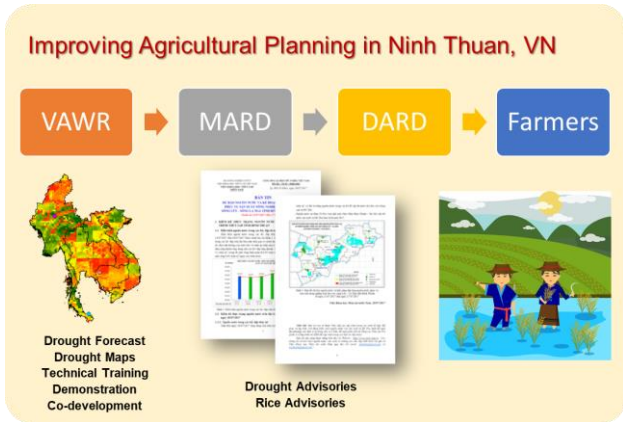
## Mekong River Commission (MRC) Adopts Reservoir Assessment Tool for Lower Mekong Basin

- The information produced by RAT-Mekong is intended for supporting reservoir monitoring by the MRC and its member countries for flood and drought management in the Lower Mekong Basin (LMB)
- Near Real-Time reservoir monitoring tool using satellite observations and a hydrologic model
- Helps fill the data gap in reservoir monitoring at the basin scale due to limited in-situ data and restriction of data-sharing policy





## Viet Nam Adopts Mekong Drought and Crop Watch for Improved Decision-Making



- **Decision-makers:** Dept of Water Resources (Ministry of Agriculture and Rural Development, MARD), Prime Minister, Ministry of Natural Resources and Environment (MoNRE)
- **Implementing partners:** Vietnam Academy of Water Resources (VAWR) under MARD
- **Beneficiaries:** Water resource managers, farmers, communities in Ninh Thuan and Binh Dinh Provinces in VietNam





## Cambodia Uses SERVIR SEA'S Data for Humanitarian Assistance

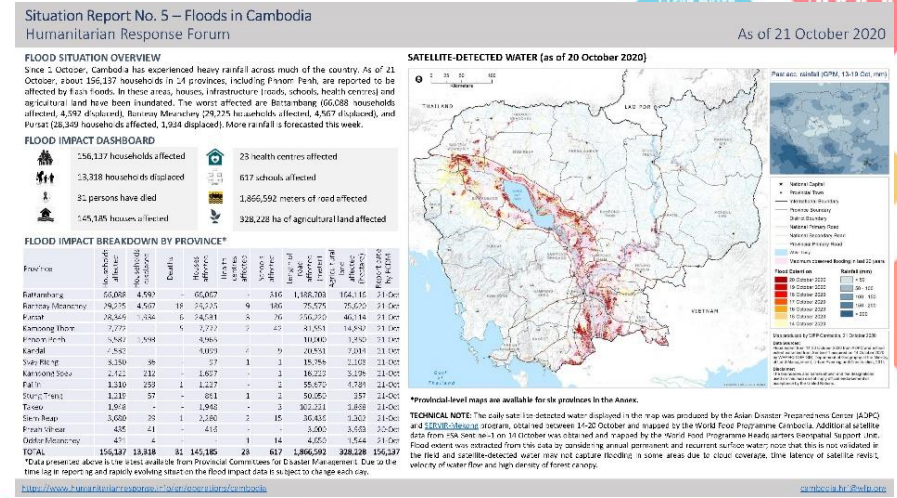


Source: AKA Agence Kampuchea Presse

Source: Phnom Penh Post, "Prism warning system upgraded," July 20, 2020

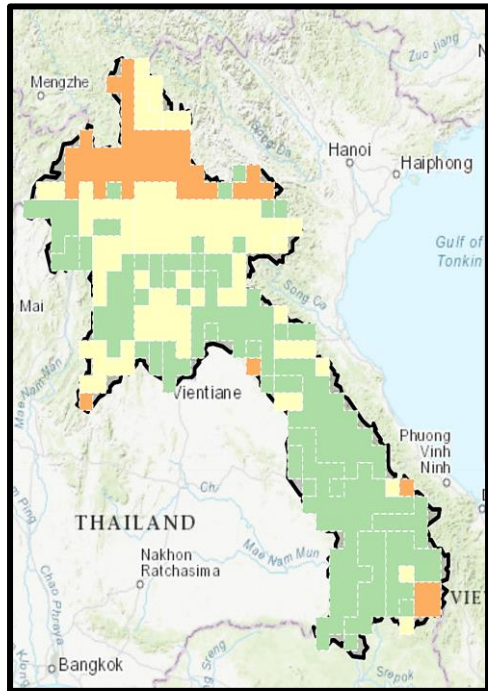
In October 2020, WFP adopted ADPC's HYDRAFloods, satellite-derived flood inundation maps, utilizing the data to guide humanitarian aid actions amid significant flooding in Cambodia. Ongoing evaluations reveal that the HYDRAFloods tool was essential in allocating over \$2.2 million in aid, aiding more than 200,000 individuals impacted by the floods in 2020.

**"Our maps were used to guide humanitarian responses to Cambodia flooding in Oct 2020."**





## Laos Adopt SERVIR SEA Data to Update Laos Climate Service for Agriculture (LaCSA) System



- Existing “Strengthening Agro-climatic Monitoring and Information Systems” (SAMIS) project of FAO
- LaCSA provides two innovative products – (1) a provincial seasonal bulletin which covers the entire country and is updated on a monthly basis, at the end of each month (2) a weekly bulletin, at the beginning of each week, with recommendations on rice productivity as well as pest and disease information for several pilot locations in Lao PDR.
- *Incorporating high resolution drought indices into LaCSA in Lao PDR.*



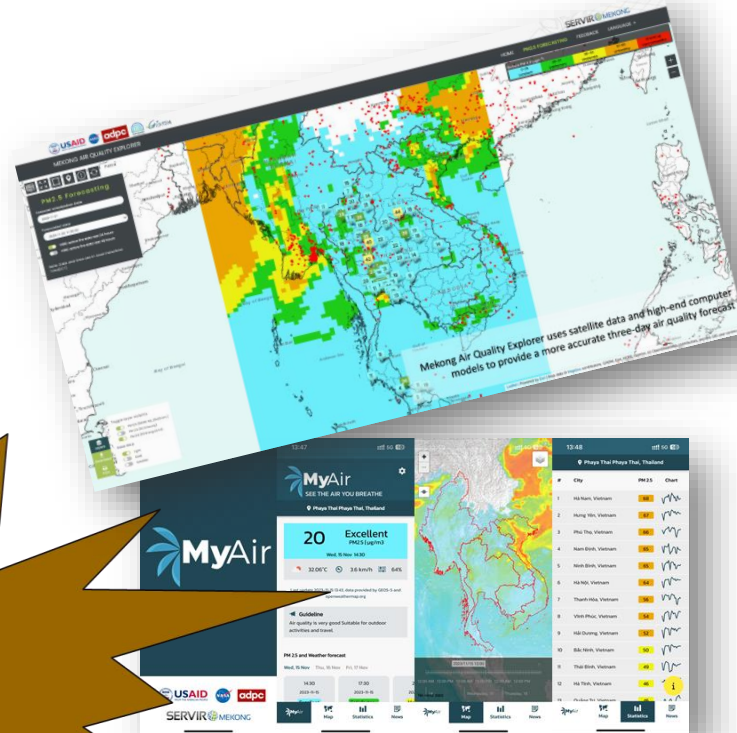


## Thailand’s Pollution Control Department Adopts Air Quality Explorer

On November 23, 2020, Pollution Control Department (PCD) of Thailand held the launch event to promote the use of the tool on PCD’s website.

*“Data collected using the Mekong Air Quality Explorer tool will enable Thai authorities to design better response strategies to tackle air pollution, particularly from agricultural burning and forest fires - the two major causes of air pollution across Thailand.”*

*The three-day air quality forecasts will provide authorities with credible foresight to conduct risk assessments and launch preventive measures.*





## Cambodia Adopts Protected Area Deforestation Alerts



Protected Area Alerts System provides information on forest disturbance all year-round for the whole country and is fully functional and available for public use

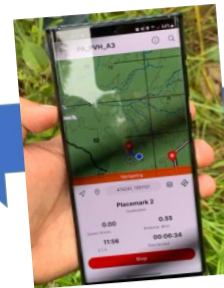


Protected Area Alerts System in Cambodia support REDD+

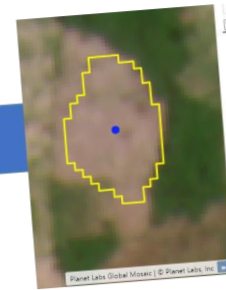


### Outputs

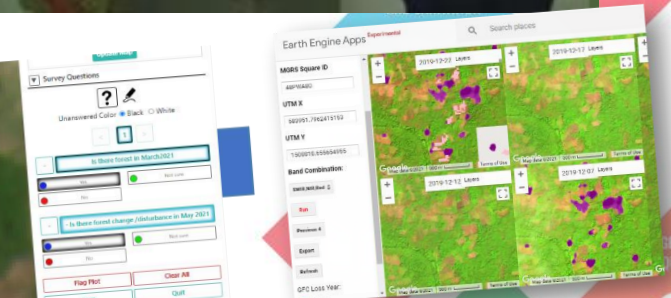
The Protected Area Alert System integrated with the SMART system for end-users



SMART connect



Online Validation System



Cambodia Forest Alert System



# FIG

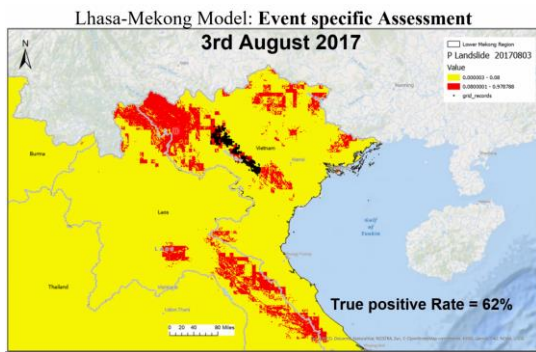
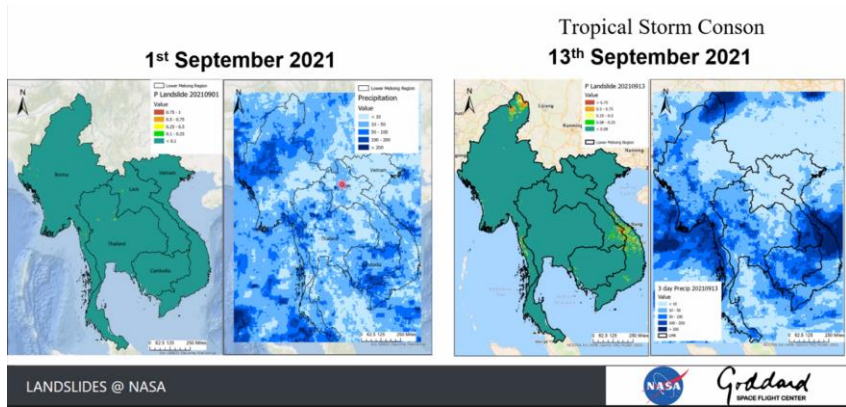
# Kathmandu, Nepal 14-16 November

# REGIONAL CONFERENCE 2024

Climate Responsive Land Governance and Disaster Resilience: Safeguarding Land Rights



## Thailand's Department of Mineral Resources Adopts Landslide Hazard Assessment for Situational Awareness for Lower Mekong Region (LHASA-Mekong)



ORGANISED BY



PLATINUM SPONSOR





# FIG

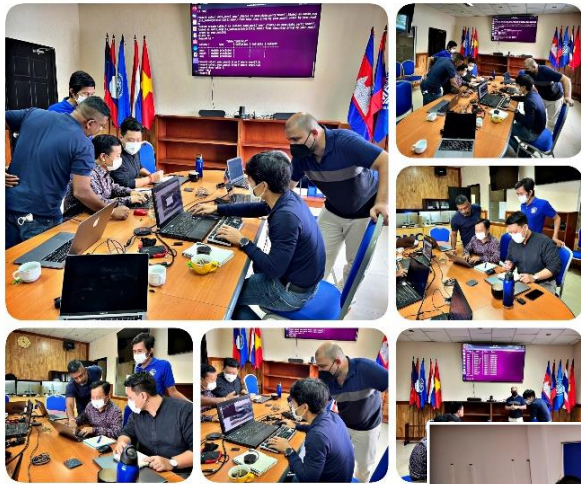
# Kathmandu, Nepal 14-16 November

# REGIONAL CONFERENCE 2024

Climate Responsive Land Governance and Disaster Resilience: Safeguarding Land Rights



## Capacity Building at SERVIR SEA



Spatial Informatics Group, SEI Stockholm Environment Institute, Deltares



Spatial Informatics Group, SEI Stockholm Environment Institute, Deltares

ORGANISED BY

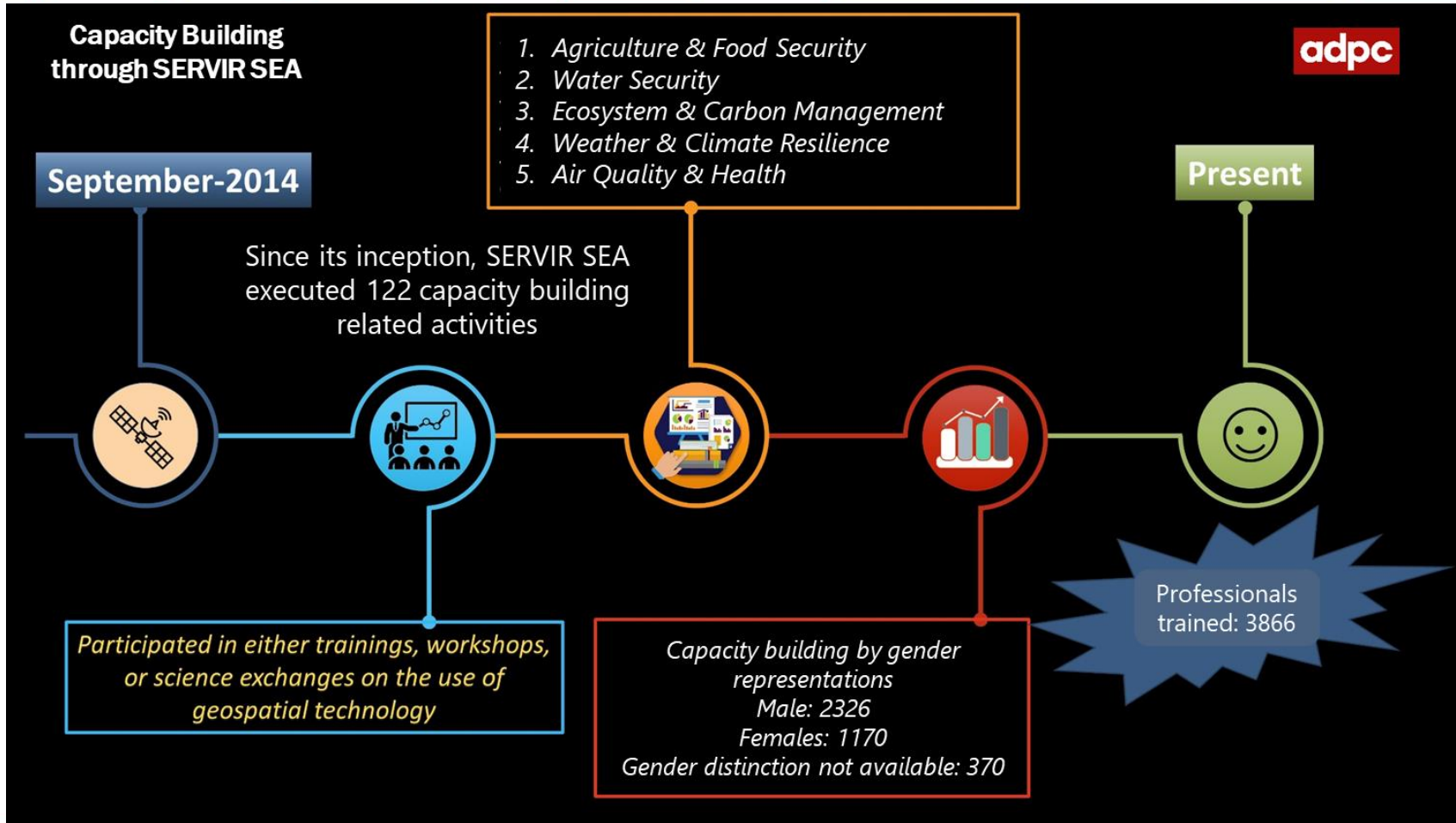


PLATINUM SPONSOR





## Capacity Building at SERVIR SEA



FIG

Kathmandu, Nepal 14–16 November

# REGIONAL CONFERENCE 2024

*Climate Responsive Land Governance and Disaster Resilience: Safeguarding Land Rights*



# Thank You!!



ORGANISED BY



PLATINUM SPONSOR

