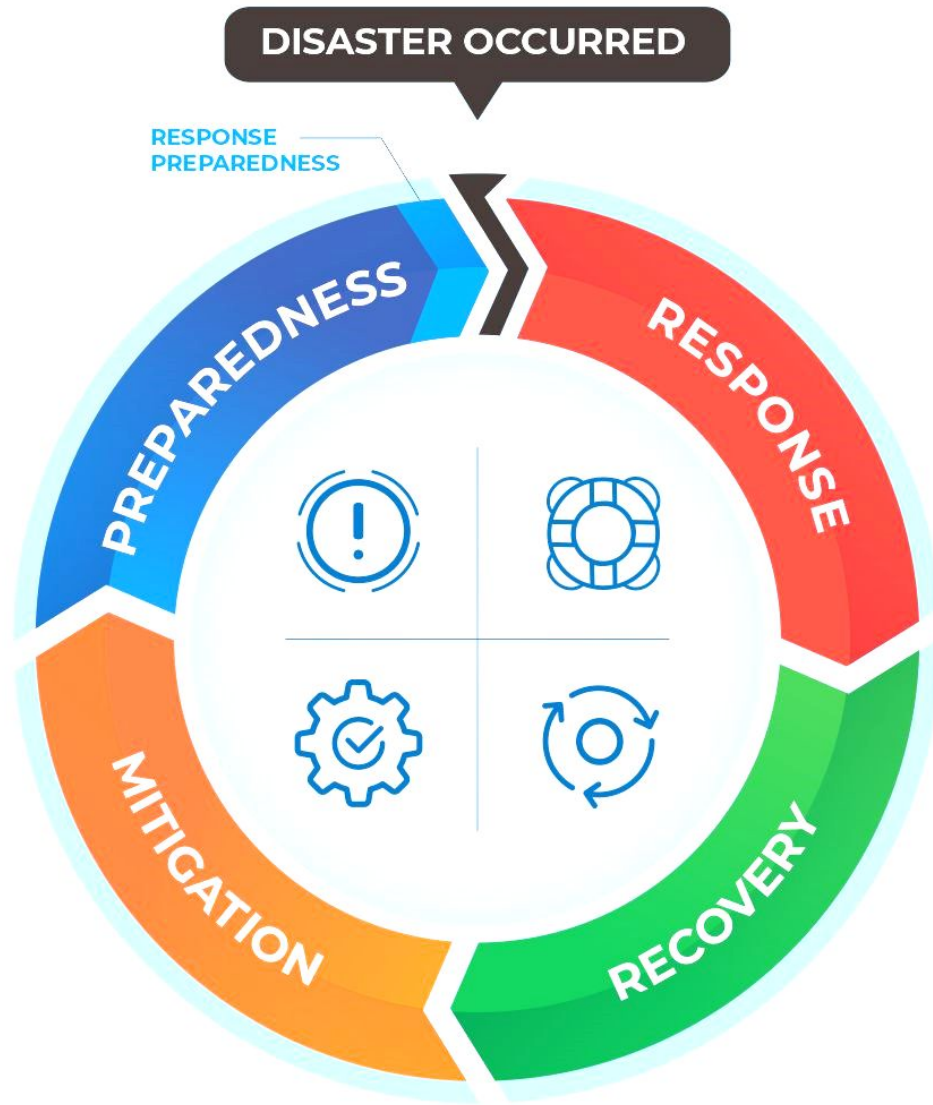


A satellite-style image of the Earth showing Southeast Asia, including the Malay Peninsula, Sumatra, Java, and the Indonesian archipelago. The land is shown in shades of green and brown, while the oceans are a deep blue. The Earth's curvature is visible on the right side.

# Good Practices from Southeast Asia for supporting Sentinel Asia Step-3

Peeranan Towashiraporn, ADPC

**2023 Sentinel Asia Joint Project Team Meeting**  
*Jakarta, Indonesia*



Sentinel Asia's Step-3 is expected to not only use satellite observations for emergency **response** but also to cover the entire disaster management cycle including **mitigation, preparedness** and **recovery** phase after a disaster.



# Satellite Data for Disaster Preparedness

## SERVIR Southeast Asia: A REGIONAL GEOSPATIAL HUB

A partnership between USAID, NASA and the Asian Disaster Preparedness Center (ADPC)



WEATHER AND CLIMATE



WATER RESOURCES AND DISASTERS

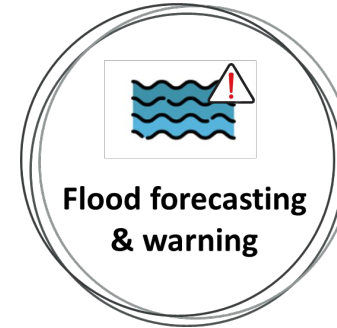


AGRICULTURE AND FOOD SECURITY



LAND COVER / LAND USE AND ECOSYSTEMS

## Supporting Early Warning



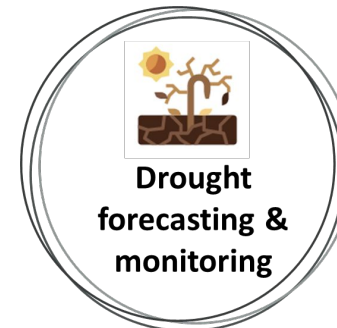
Flood forecasting & warning

Improve accuracy of precipitation and increase lead-time from 7 days to 15 days and integrate in MRC-FEWS



Flash Flood Guidance

Integrate near real-time storm severity and potential impacts with MRC-FFGS



Drought forecasting & monitoring

Provide various drought indices through MDCW.

Enhance flood and drought risk management through RAT-Mekong

## Extreme Hydrological Events

- Flood: The average annual cost of floods in the LMB ranges from **US\$60-70 million**. Cambodia and Viet Nam alone commonly account for approximately two-thirds of the region's total annual flood damage.
- Drought: Yields of rice and other lifeline crops plummet as a result of water shortages and saltwater intrusion in the Mekong Delta. Water levels become critically low, making transport of goods and services difficult or even impossible.

Accurate, timely, and continuous water-related data are key to managing floods and drought.





# Supporting Better Riverine Flood Forecasting in the Mekong Countries

## SHORT RIVERINE FORECAST



## MEDIUM RIVERINE FORECAST

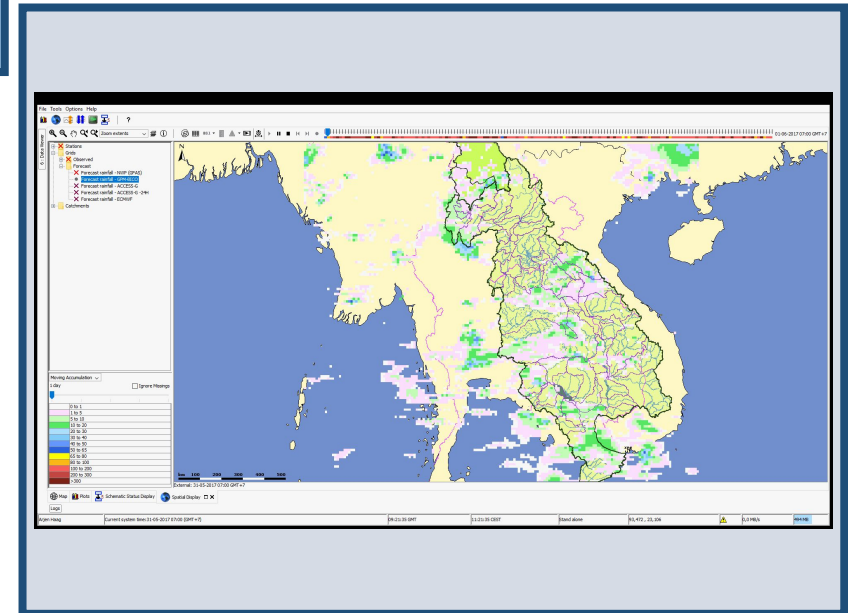


Bias corrected rainfall forecast

CHIRPS-GEFS  
0.05 res  
(15/10days)

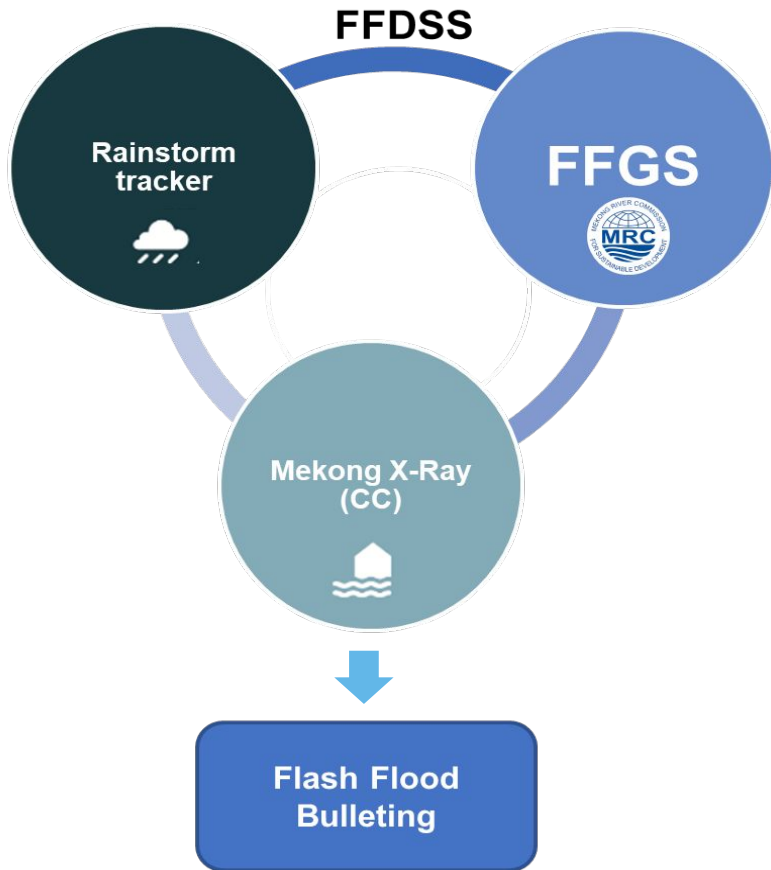
Bias-corrected and downscaled version of NCEP Global Ensemble Forecast System precipitation forecasts.

## MRC-FEWS



**Improve accuracy of precipitation and increase lead-time from 7 days to 15 days and integrate in MRC-FEWS**

# Integrate near real-time storm severity and potential impacts with MRC-FFGS



## Rainstorm Tracker

Spatiotemporal analysis for rainstorms



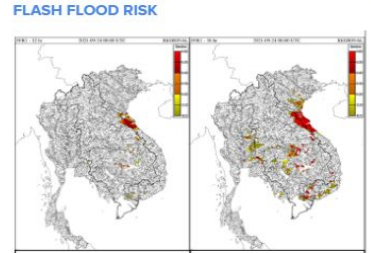
Mekong River Commission Secretariat (MRC) Regional Flood and Drought Management Center (RFD/DMC)

### Flash Flood Mekong Bulletin

On 13 October 2021 at 06:00 UTC (01:00 PM Local time)

**Main conclusion and guidance for flash flood in the Lower Mekong Basin (LMB)**

- In the next 1, 3 and 6 hours there has been detected that flash floods may occur in some areas in the LMB. Details on the location of the flash flood risk areas in the LMB are in the attached excel file and on the webpage: <http://ffw.mrcmekong.org/ffg.php>
- In the next 24-hour, flash flood has been detected may occur at some areas in north and north-central parts in Viet Nam and central and northeast parts of Lao PDR (see figure of FFR1-24h).
- The updated flash flood information will be provided at 8:00 am on 14 October 2021, and available on the webpage

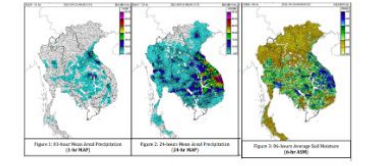


Mekong River Commission Secretariat (MRC) Regional Flood and Drought Management Center (RFD/DMC)

### FLASH FLOODS RISK BY PROVINCE

Province	Households affected	Households displaced	Deaths	Houses affected	Health centres affected	Schools affected
Pursat	18,365	1,891	3	436	1	1
Battambang	38,890	1,331	-	2,812	1	1
Banteay Meanchey	8,538	1,473	6	8,538	6	6
Stung Treng	923	55	-	851	1	1
Preah Vihear	237	-	-	-	-	-
Svay Rieng	26	-	-	-	-	-
Pailin	742	253	1	620	6	6
Kandal	4,157	12	1	3,974	-	-
Kampong Speu	1,697	336	-	626	-	-
Takéo	314	-	-	314	-	-
Phnom Penh	3,131	45	-	2,855	-	-

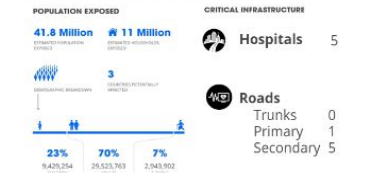
### FFGS OUTPUTS



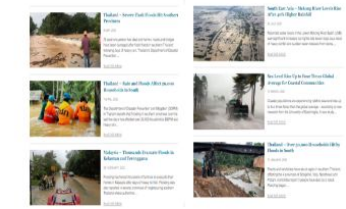
### Rainstorms (24-48 hours)



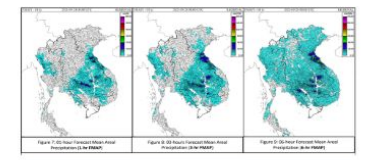
### Critical Infrastructure



### REPORTS



### REGIONAL RAINFALL FORECAST



Regional Flood and Drought Management Center (RFD/DMC)  
 P.O. Box 623 #576, National Road #2, Chak Angre Krom, Meanchey, Phnom Penh, Cambodia  
 Tel: (855-23) 425363, Fax: (855-23) 425363, Email: [floodforecast@mrcmekong.org](mailto:floodforecast@mrcmekong.org)

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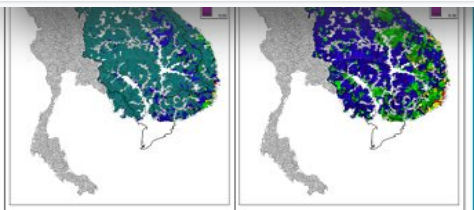
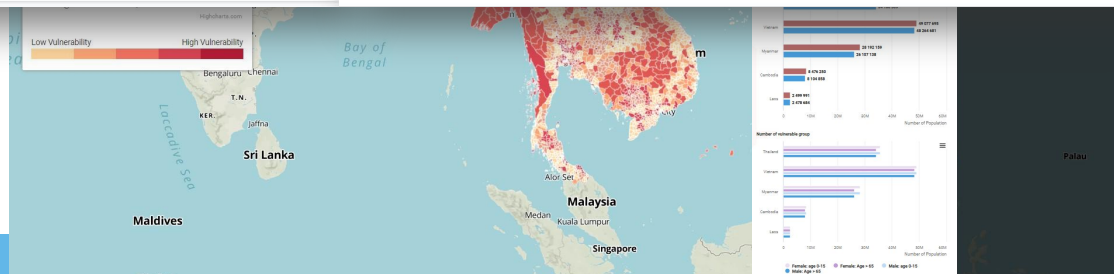


Figure 1: 01 hourly of Flash Flood Guidance (FFG) values on 27 October 2017 at 00:00 UTC (07:30 local time)  
 01 hourly show high-risk flash flood occurrences in Viet Nam. For more detail information on flash flood risk areas please click on link below.  
 Figure 2: 03 hourly of Flash Flood Guidance (FFG) on 27 October 2017 at 00:00 UTC (07:30 local time)  
 03 hourly show high-risk flash flood occurrences in Lao PDR and Viet Nam. For more detail information on flash flood risk areas please click on link below.

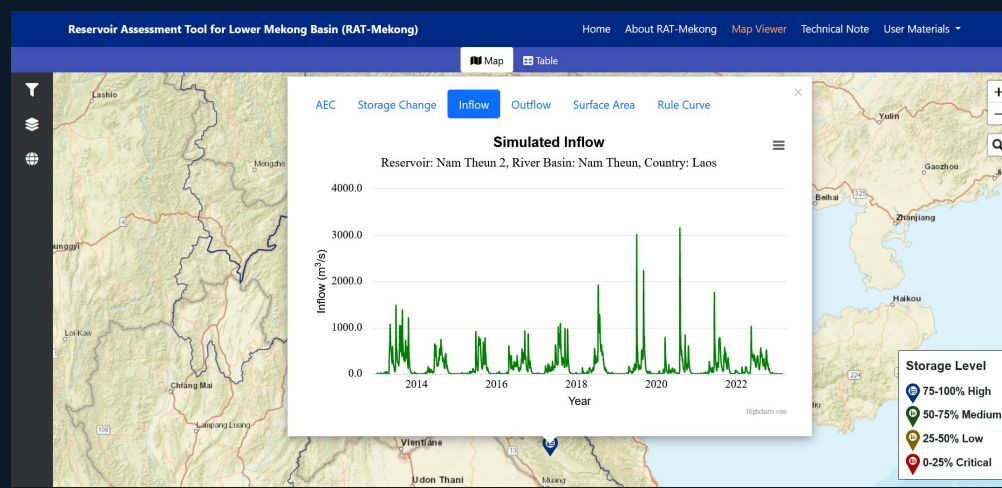
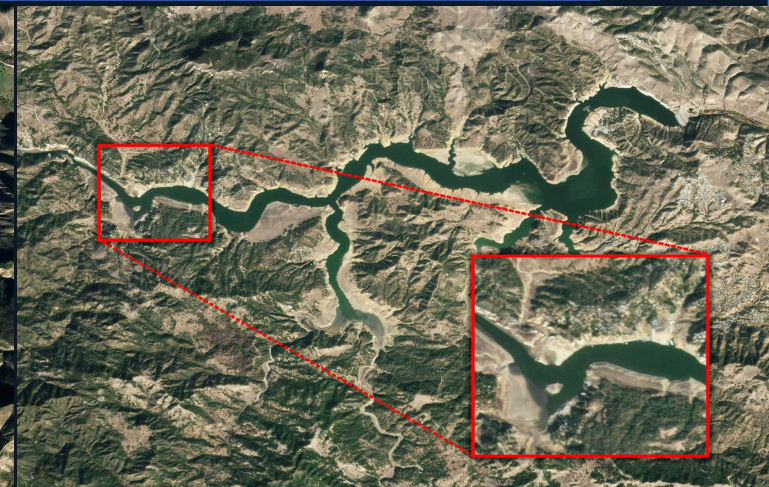
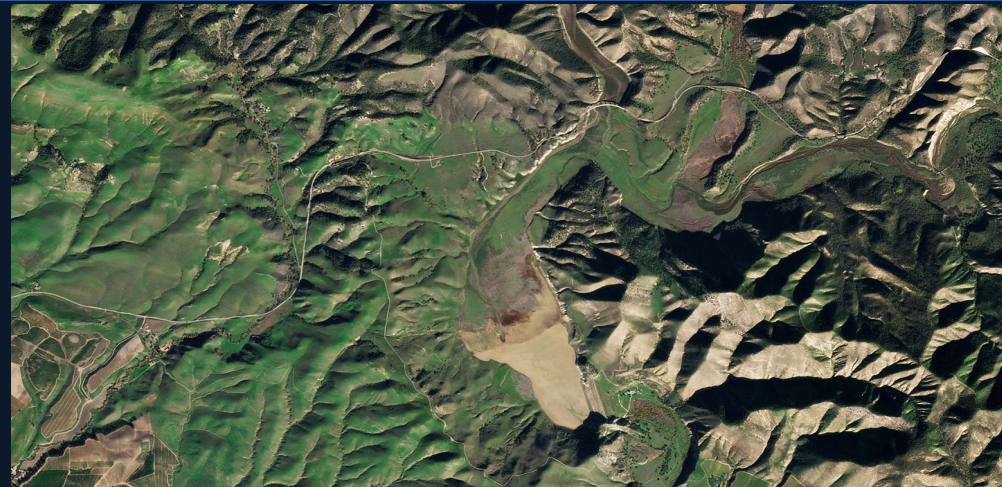




# Enhance Flood and Drought Management through Reservoir Monitoring and Forecasting



**RAT-Mekong**  
Contributing to  
a sustainable water  
management



## MRC Data and Information Services

Search MRC's scientific data

### Monitoring Services

The MRC, together with its Member Countries operates extensive monitoring networks

- Hydrology & river monitoring
- Flood monitoring & forecasting
- Drought monitoring
- Discharge & sediment monitoring
- Environmental health monitoring
- Water quality monitoring
- Fisheries monitoring
- Reservoir Monitoring**



# Enhance Drought Monitoring and Forecasting in the Lower Mekong Region

**MEKONG DROUGHT AND CROP WATCH**

INTERACTIVE MAP CREATE BULLETIN HOW TO USE

DROUGHT CROP YIELD

Mekong

### Current Conditions

Map Updated: 2023-06-26

<24D  <16D  <8D  CURRENT

Leaflet | Google Earth Engine

### Outlooks

Map Updated: 2023-05-20

1M  2M  3M

Leaflet

**Intensity of Current Conditions**

- No Drought
- Moderately Dry
- Severely Dry
- Extremely Dry
- No Data

**Map Download**

[Current Conditions](#)

⚠ Please click here if you cannot download data

**Outlook Warning**

- None
- Watch
- Warning
- Alert

**Map Download**

[1M](#) [2M](#) [3M](#)

⚠ Please click here if you cannot download data

## Drought Early Warning Lower Mekong Basin

Date: 09-02-2020

### Weekly Forecast Combined Drought Index (CDI)

- D4 (Exceptional Drought)
- D3 (Extremely Drought)
- D2 (Severely Drought)
- D1 (Moderate Drought)
- D0 (Normal Condition)

- Mekong River
- Country Boundary
- Catchment Boundary
- Lower Mekong Basin Boundary

Scale: 1:10,000,000

300 225 150 75 0 300 km

The drought monitor focus on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Disclaimer: This drought monitoring and forecasting map is calculated based on the satellite imageries with no ground verification. MRC does not guarantee the values and accuracy of the products nor be responsible for any risks of using the products.

Provides 3-month forecast (updated weekly)

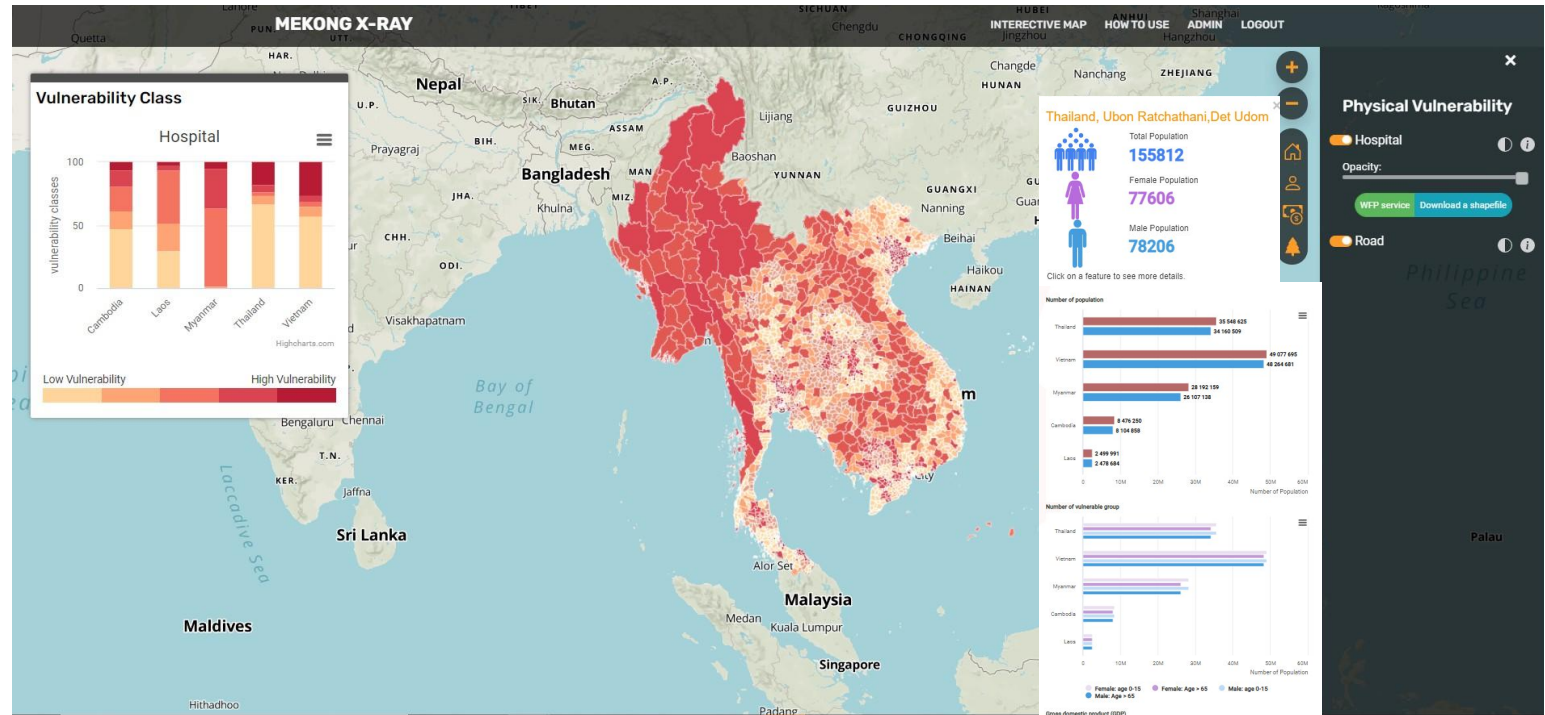
Integrated MDCW within MRC to support Drought Early Warning



# Enhancing **Anticipatory Actions** for Disaster and Climate Resilience



Centering our efforts  
to the last mile  
*Leave no one behind*



A group of children sitting on the grass in an outdoor setting, some making peace signs. The background shows a grassy field and some buildings.

**THANK YOU**

[peeranan@adpc.net](mailto:peeranan@adpc.net)

We harness the **power of Satellite Data** and Geospatial Information to amplify diverse voices and shape services that **leave no one behind**