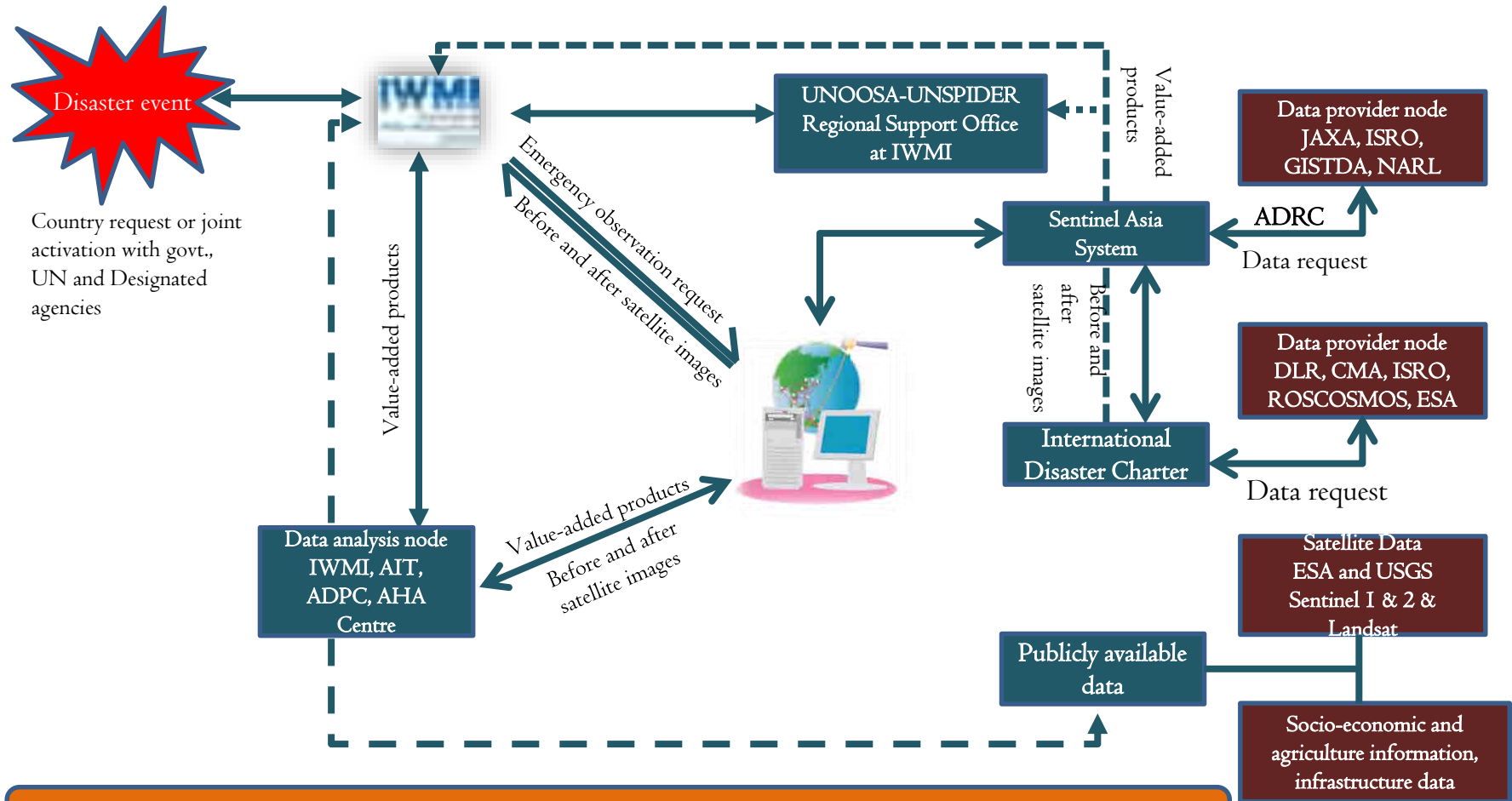


# IWMI's Rapid Emergency Response Mechanism (RERM)



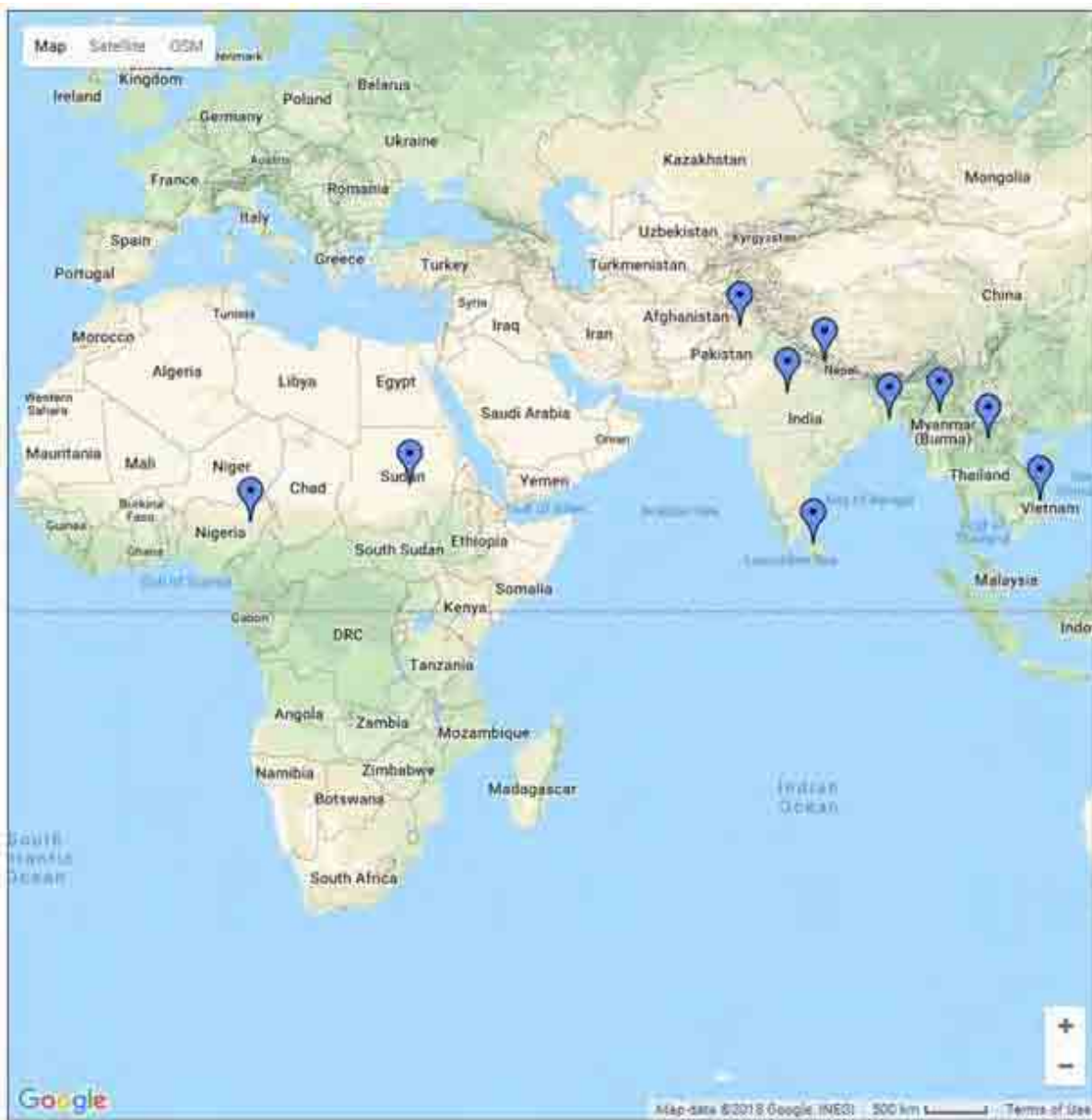
International Water Management Institute (IWMI), Sri Lanka  
by  
Niranga Alahacoon

# IWMI Rapid Response mapping (RERM) Approach



Disaster charter activation supports in emergency response & relief support; Post Disaster impact assessment; Disaster risks assessment; risk transfer solutions through index insurance; rehabilitation and recovery assessment

# IWMI RERM different countries



## South Asia

- ☐ Sri Lanka
- ☐ India
- ☐ Pakistan
- ☐ Nepal
- ☐ Bangladesh

## South East Asia

- ☐ Myanmar
- ☐ Laos
- ☐ Vietnam

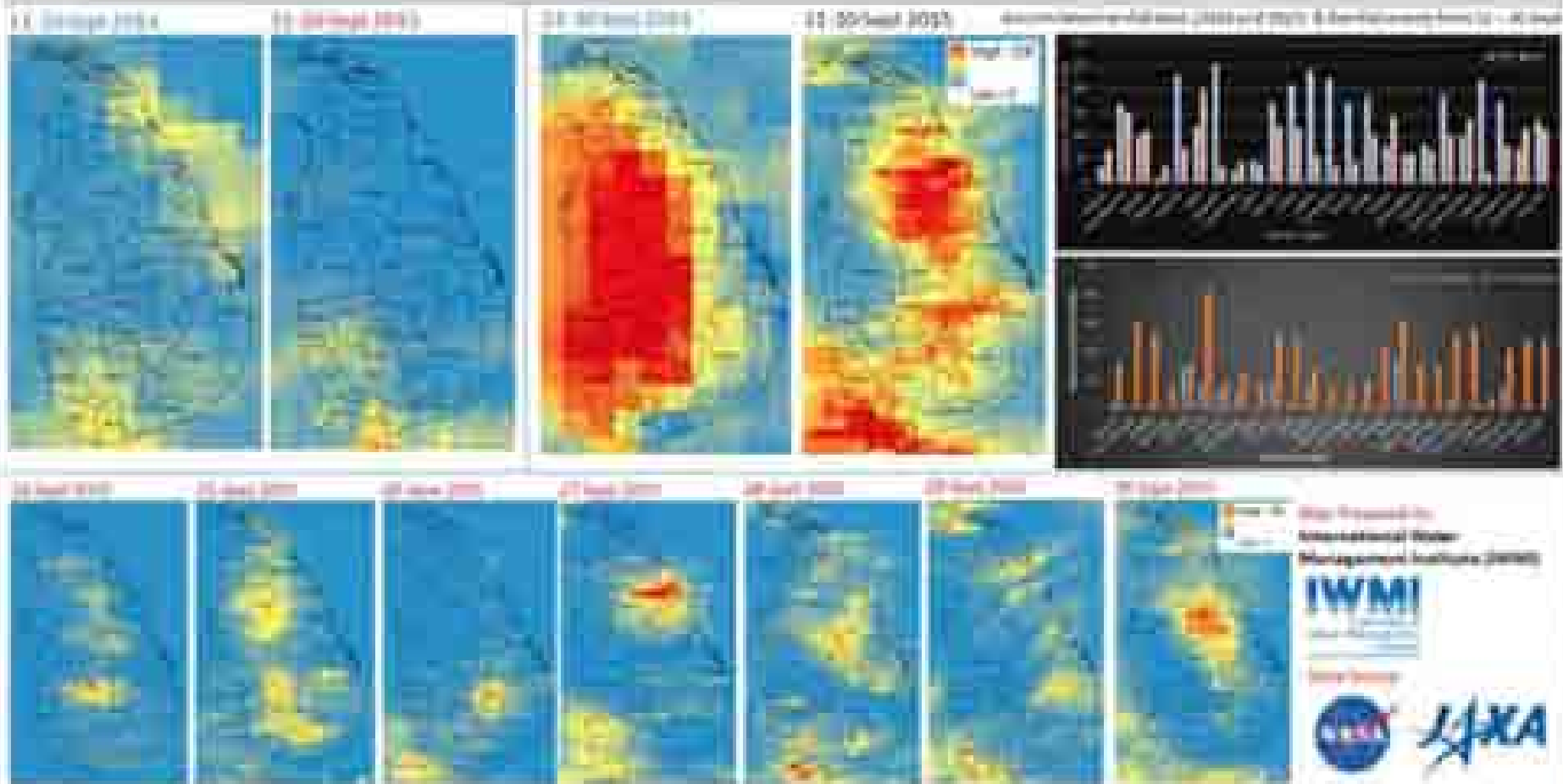
# 2015 FLOODS IN SRI LANKA MONITORED USING SATELLITE RAINFALL ESTIMATES

10 August 2015  
in south days of  
week 11

Satellite rainfall estimates from Global Precipitation Mission (GPM) and Tropical Rainfall Measuring Mission (TRMM) revealed extensive flooding in Sri Lanka caused by unusually strong monsoonal rainfall over the period 10 September - 30 September 2015.

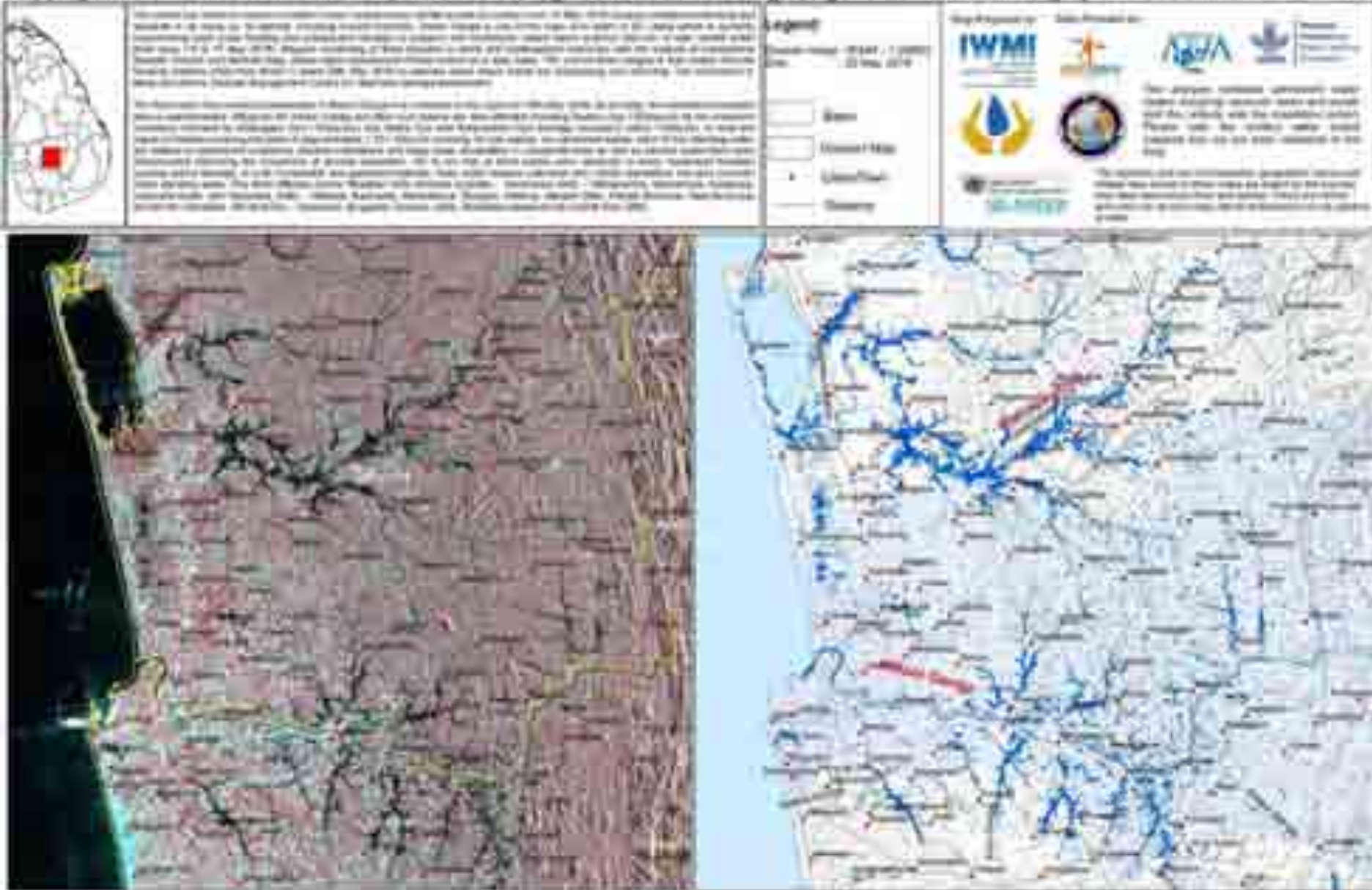
The exceptional rainfall occurred mostly in the Southern, North-west and the Province of Sri Lanka. Massive flooding was reported in the districts of Baddegama, Battaramulla and in parts of Colombo, Galle and Matara. The accumulated rainfall was about 2 to 3 times as high as compared to the rainfall in the same period in 2014. For example, the southern province alone has accumulated an average rainfall of more than 100mm from 14 to 30 Sept. 2015, compared to 30mm in 2014. 30 days' total rainfall pattern in 2015 vs. 12 days in 2014; Matara 18 June in 2015 vs. 7 June in 2014; Polonnaruwa 10 June in 2015 vs. 5 June in 2014.

From the GMR, however, it found 18,937 farmers have been affected by the adverse weather conditions prevailing in the Southern Province for several days. The Disaster Management Centre (DMC) said, the DMC had received reports from the 181 villages for impact of rising water levels, especially by coastal villages located in the Galle District.



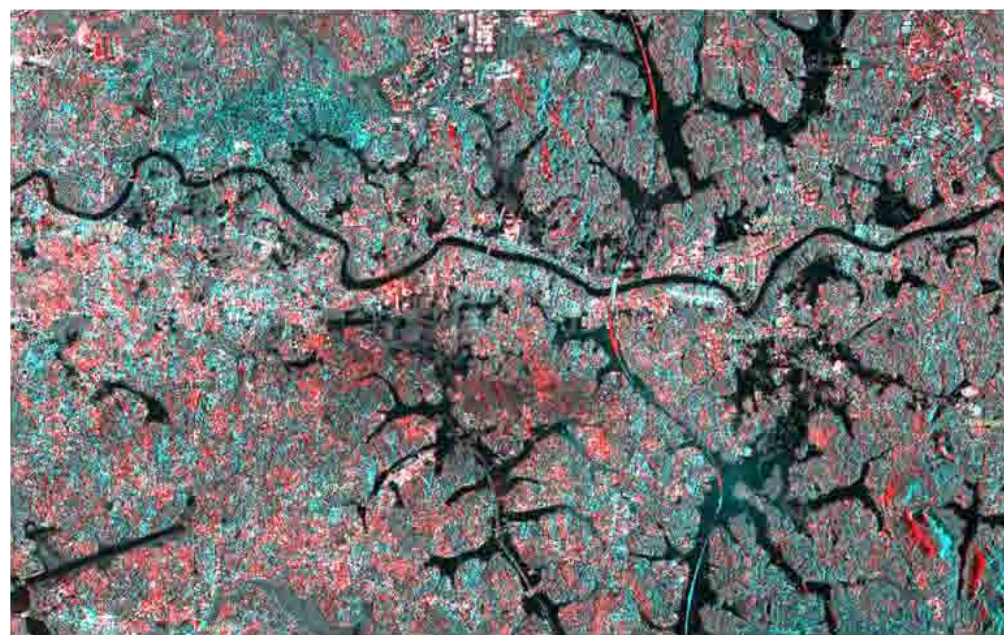
# Sri Lanka Flood – 2016

Mapping Flood Extent for Colombo, Gampaha and Kurunegala and its surrounding using RSAT - 1 Satellite Imagery



# Rapid assessment on flood impact

**Current flood situation for major flood rivers and administrative units based on IRS RISAT and DLR TerraSAR-X1 Images (20<sup>th</sup> and 21<sup>st</sup> May 2016)**



*Note: Fused images of two different dates (20<sup>th</sup> May and 21<sup>st</sup> May 2016) to determine flood receding areas. Black areas denotes areas in both the images are flooded and the light grey explains the withdrawal of standing waters along the Kelani Ganga river*

*Statistics on basin wise flood affected areas for the AOI satellite imagery*

Basin Name	Basin Area	Flood Affected area in sq.km
Attanagalu Oya	1087.81	165.319
Deduru Oya	2772.89	353.496
Kelani Ganga	2341.53	168.119
Rathambala Oya	556.21	59.003
Kalu Ganga	3079.08	100.707
Karsmbalan Oya	779.80	153.995
Maha Oya	1709.14	186.066
Total flood affected area		1186.70

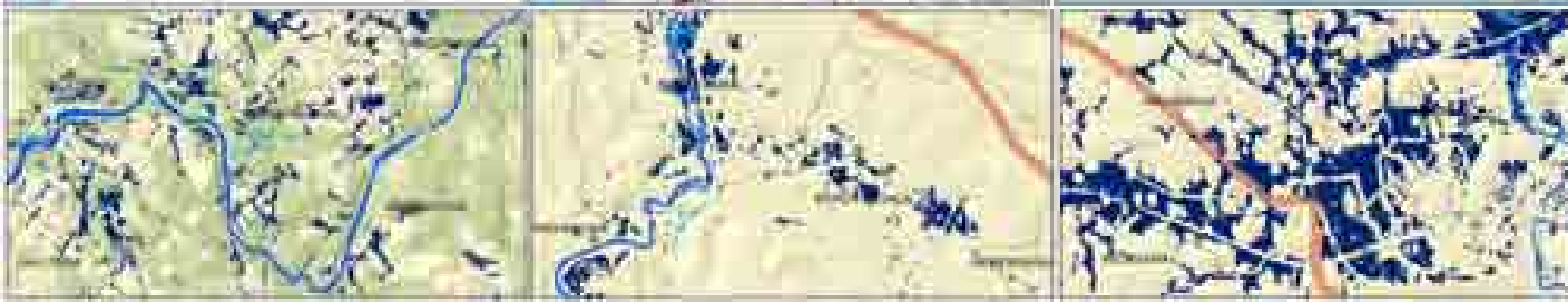
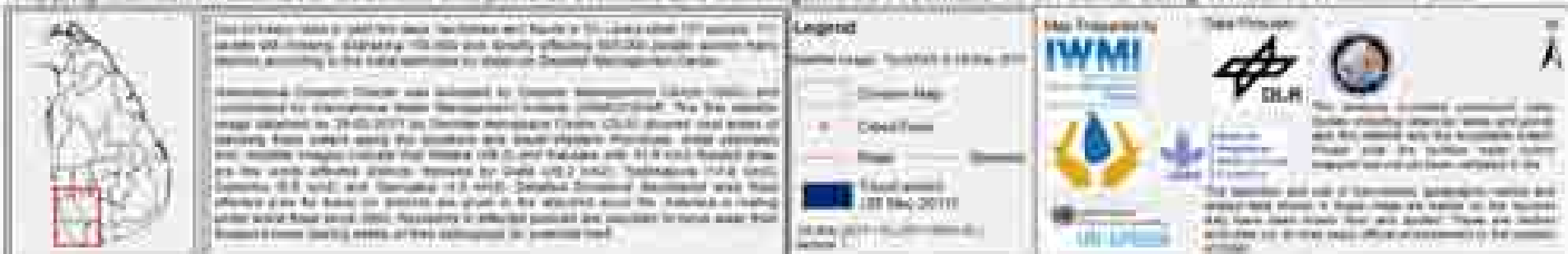
*Statistics on district wise flood affected areas for the AOI satellite imagery*

Basin Name	Flood Affected area in sq.km
Kurunegala	552.97
Gampaha	218.12
Puttalam	160.29
Colombo	94.53
Kegalle	83.21
Kalutara	79.13



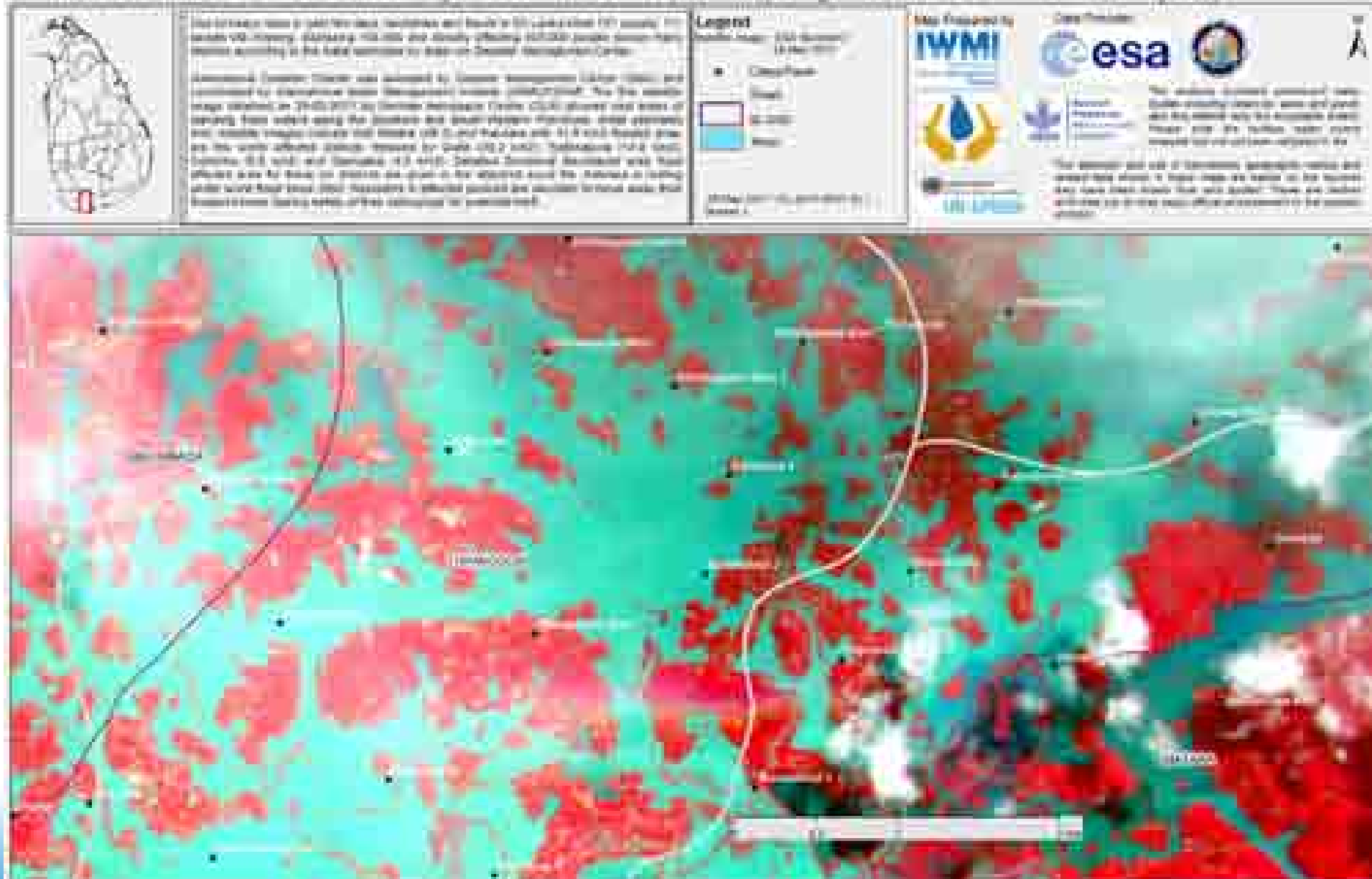
# Sri Lanka Flood -2017

Mapping invasion extent for *Southern* and nests of *Woolberts* and *Salsburgmura* *Phrynosoma* in Sri Lanka using Terra8.85.X Statistical Data



# Sri Lanka Flood -2017

Closest view of Matara town and its surroundings in Southern Province (Sri Lanka) using ESA Sentinel-2 satellite data (28May2017)



## Total Flood extent 2017



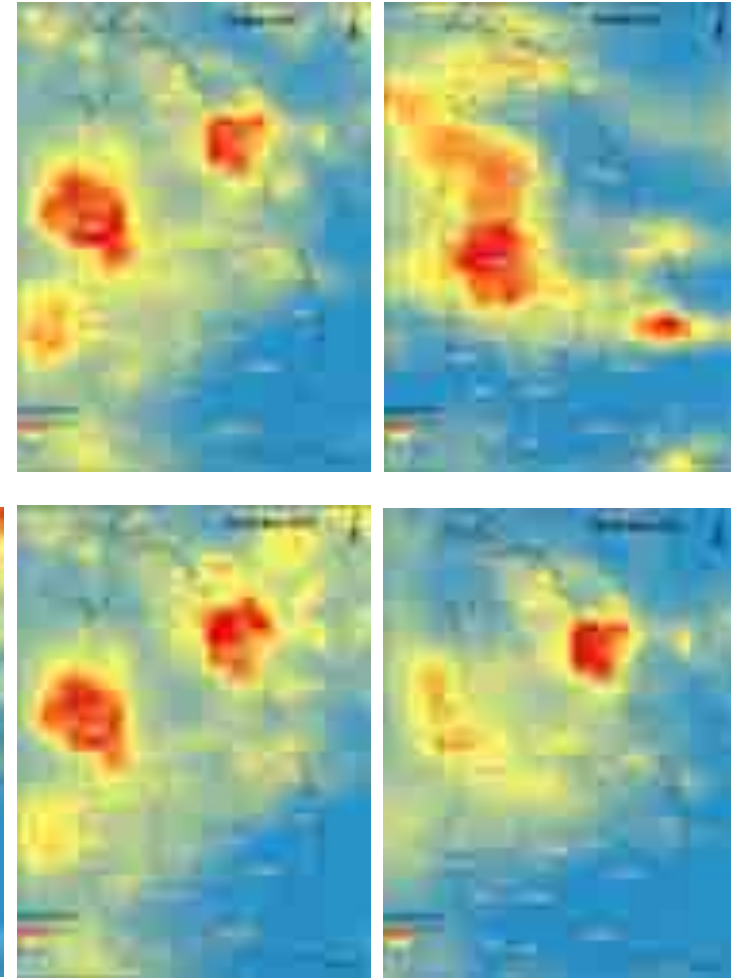
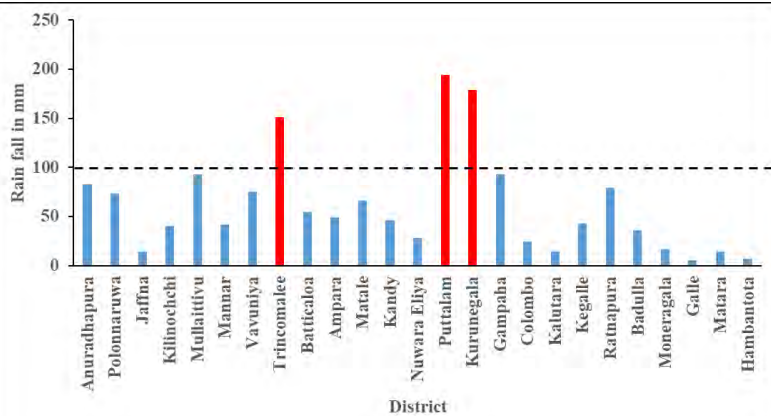
# Sri Lanka Flood -2018

Satellite rainfall estimation from Global Precipitation Mission (GPM) revealed high rainfall in Sri Lanka caused by the usual strong monsoon over the period of week (20 to 26 of May 2018). Fifteen districts have been already affected by extreme rainfall and several major rivers as Kelani Ganga, Kalu Ganga, Gin Ganga, Nilwala Ganga have started to overflow and still under minor flood level. In addition main rivers, Mahaoya, Attanagalu Oya overflow and few major tanks spill are reported in Kurunegala and Puttalam district.

In last 24 hours (25 of May 2018) as per GPM estimates, precipitation has reduced and only three districts have recorded more than 80mm precipitation, which are as follows **Kurunagala (178.7 mm)**, **Puttalam (194.30mm)**, Trincomalee (151.3mm) and all the other districts are less than 60mm.

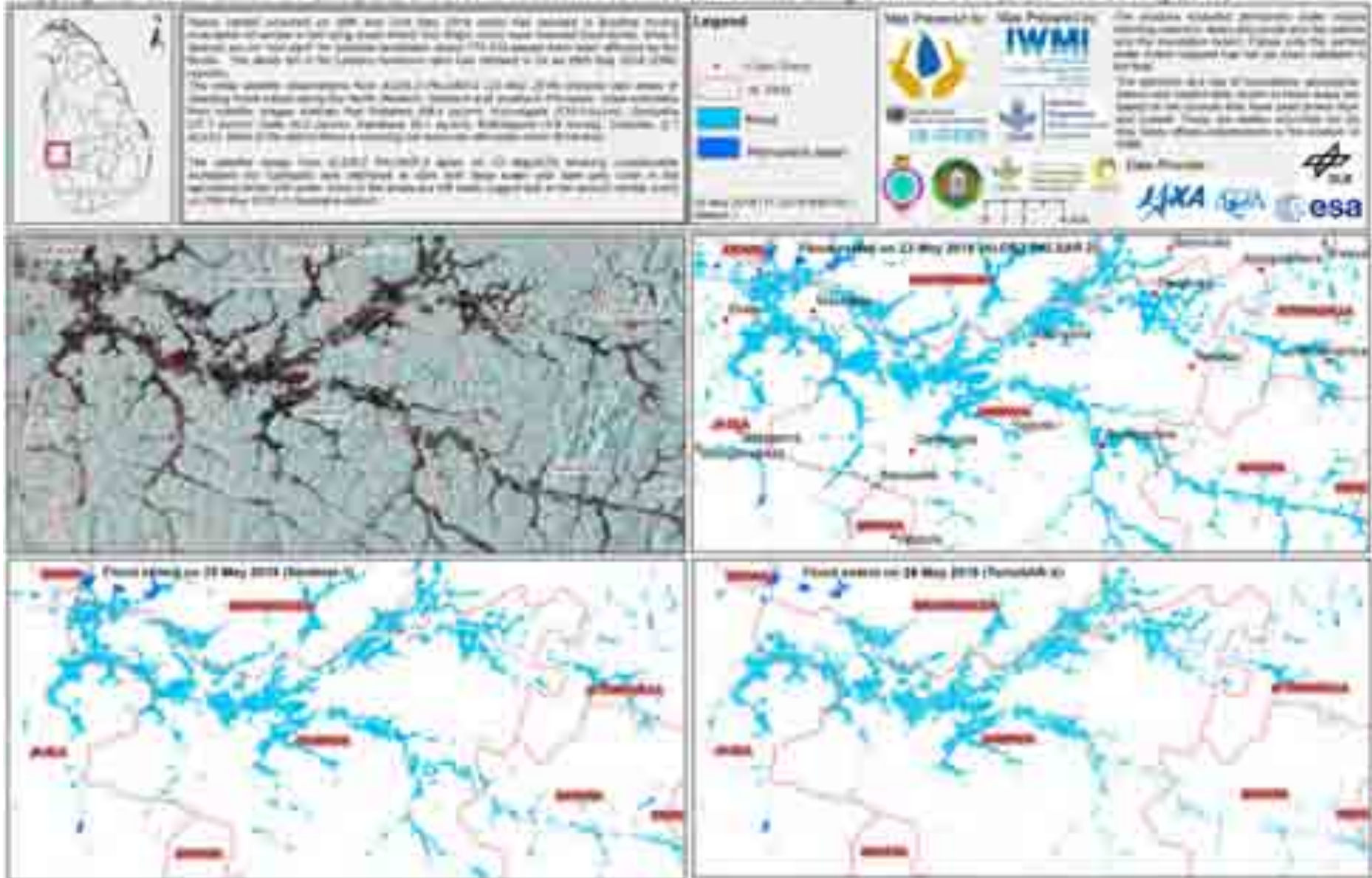
According to the Disaster Management Center (DMC) reports on 28<sup>th</sup> May 2018 at 13.00hrs, totally 174,310 peoples have been affected while 25 casualties reported so far.

Accumulated rainfall of 25 May 2018

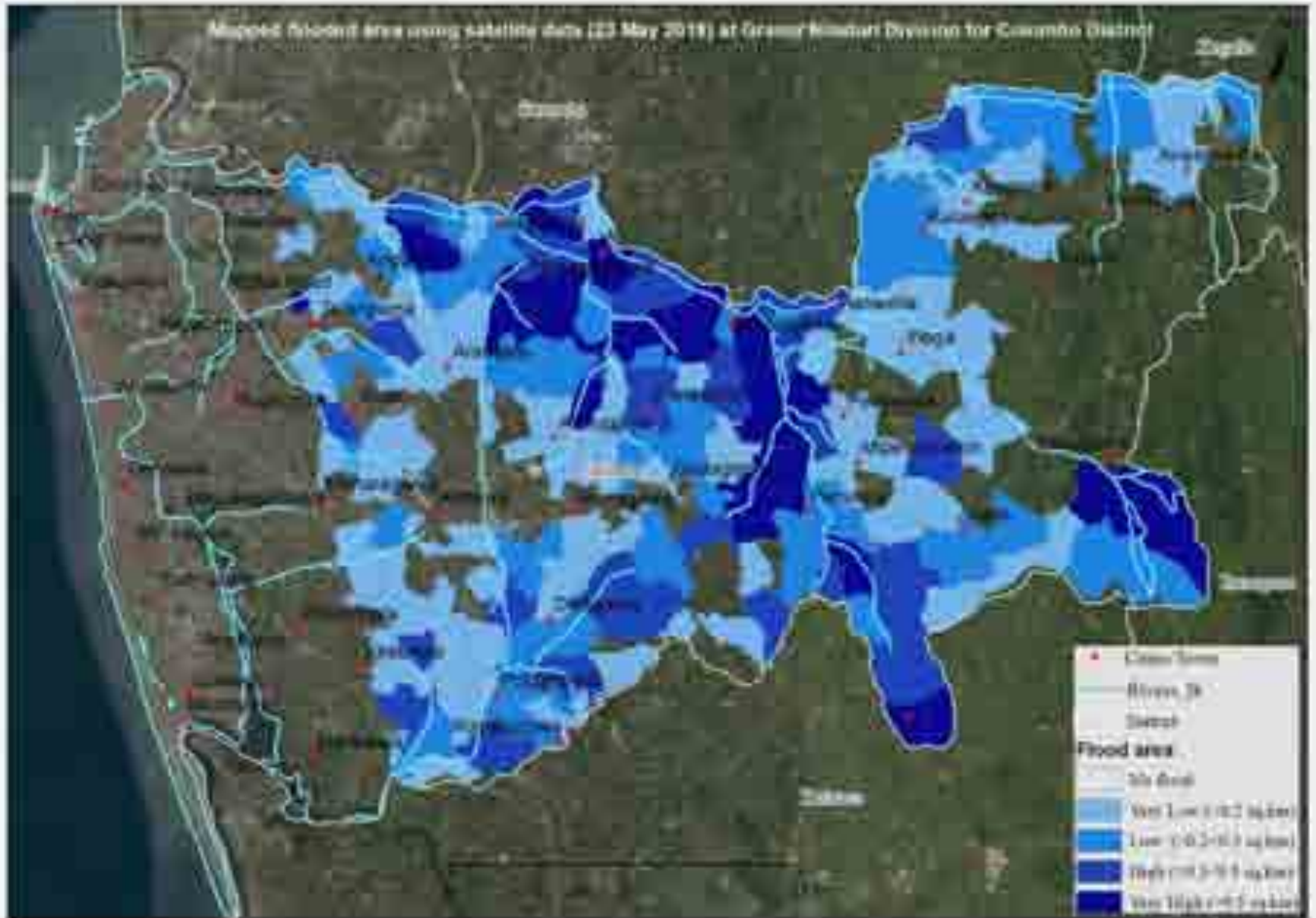


# Sri Lanka Flood -2018

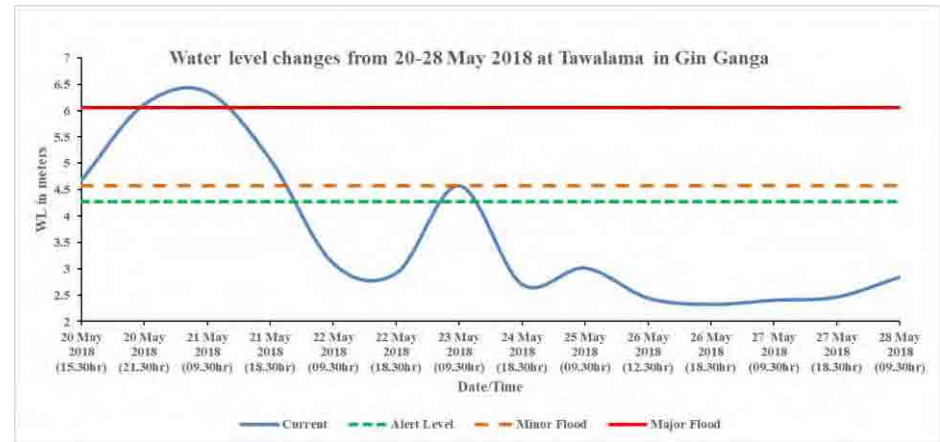
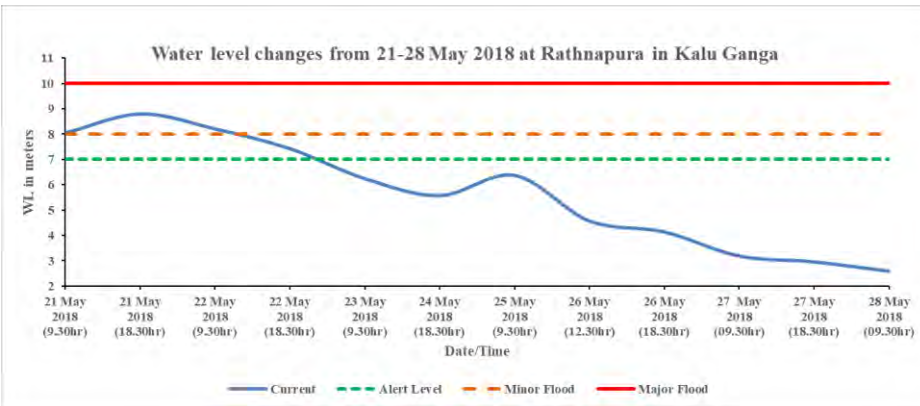
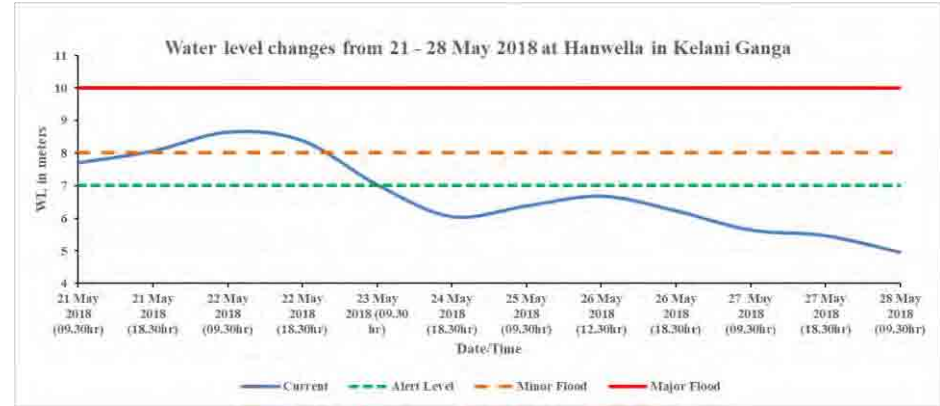
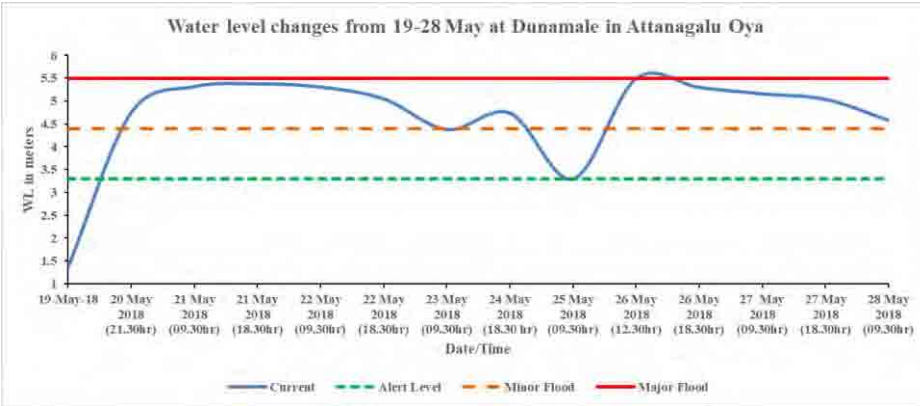
Mapping inundation extent for Gampaha District in Western Province (Sri Lanka) using Satellite Data (23,25 and 28 May 2018)



# Sri Lanka Flood -2018



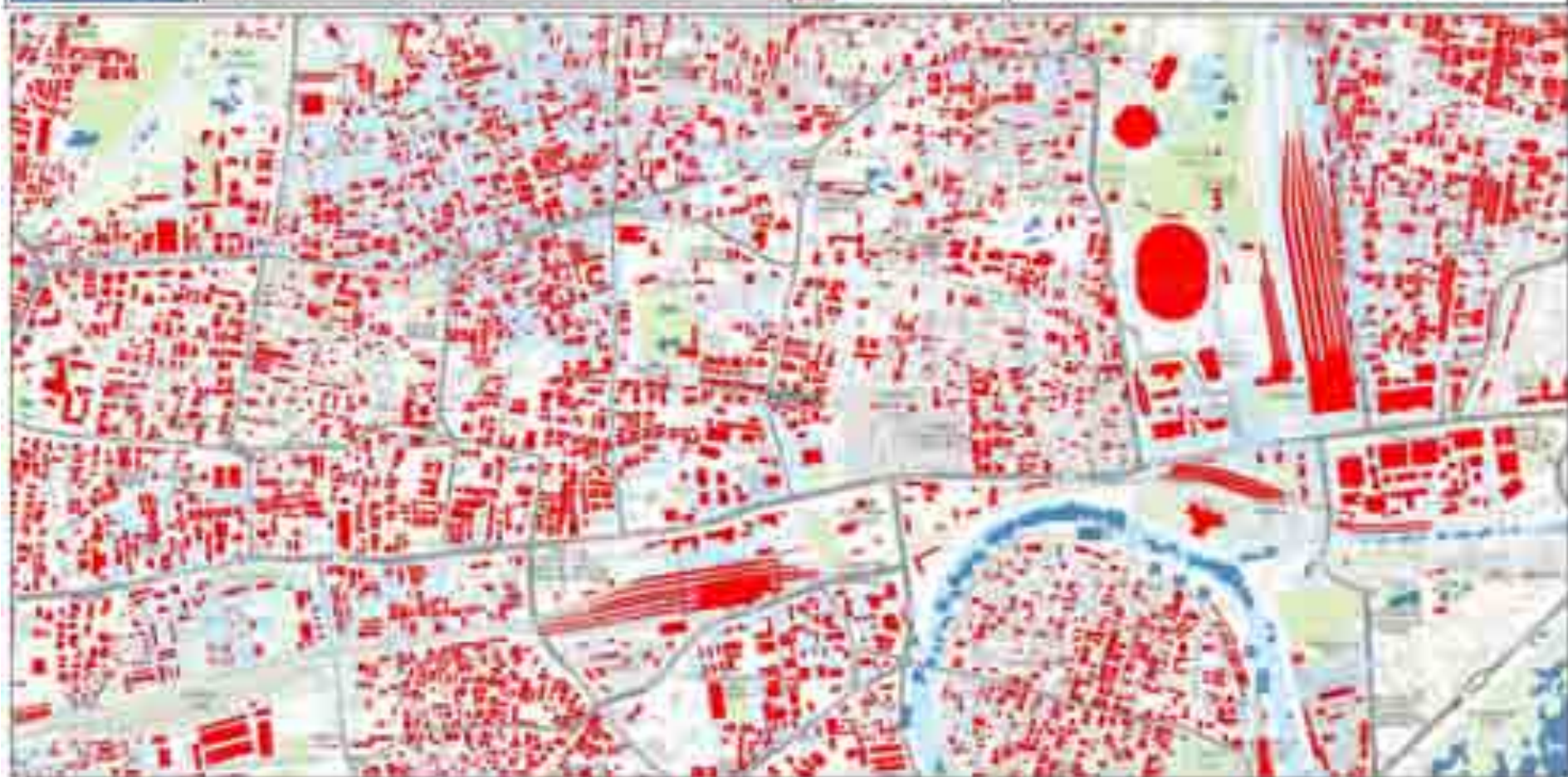
# Sri Lanka Flood -2018



Data source – Irrigation Department Sri Lanka (Data received on 25 May 2018)

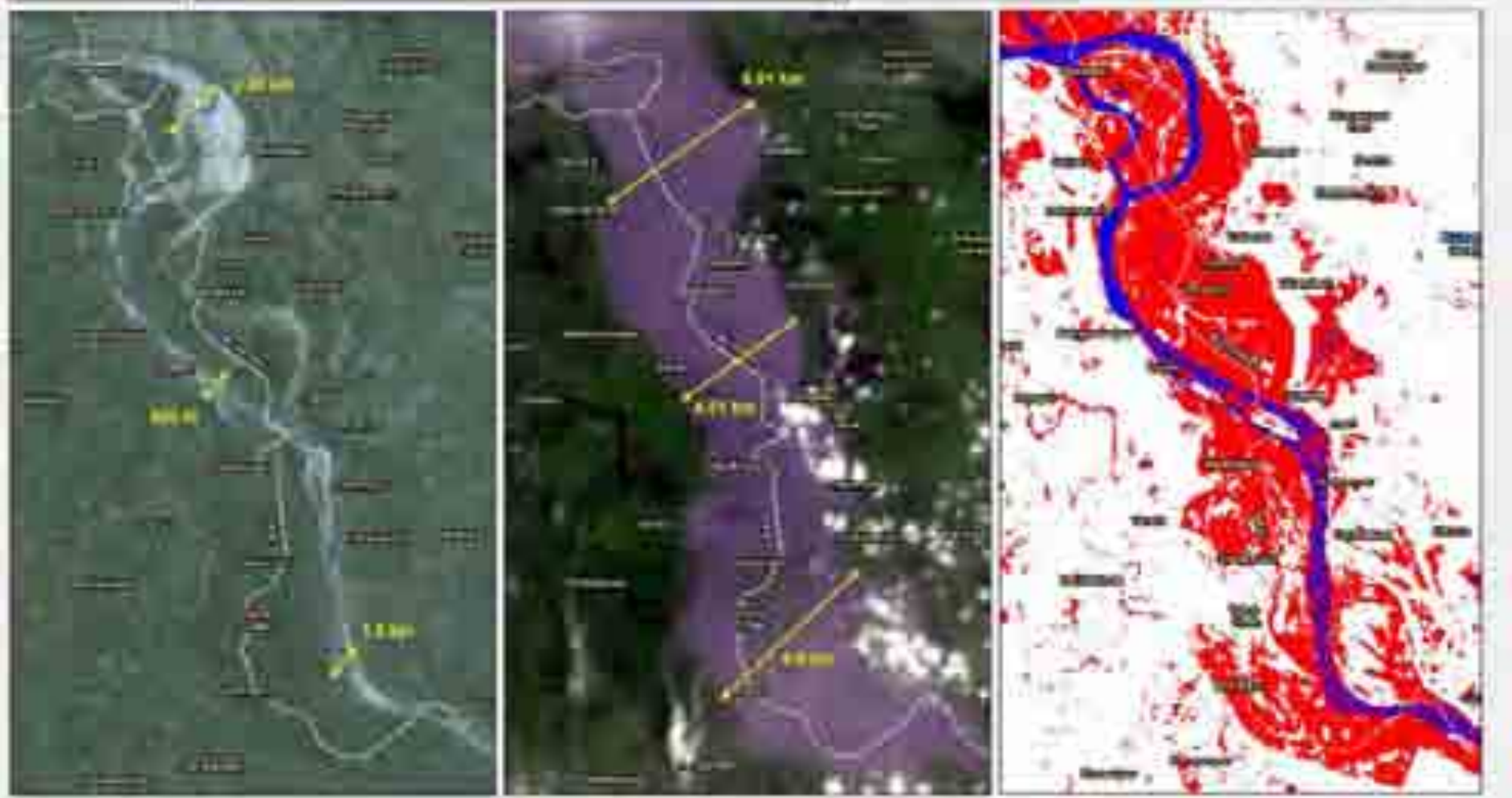
# India Flood -2015

#### Second Wave of Catastrophic Flooding in Chennai (Tamil Nadu), India



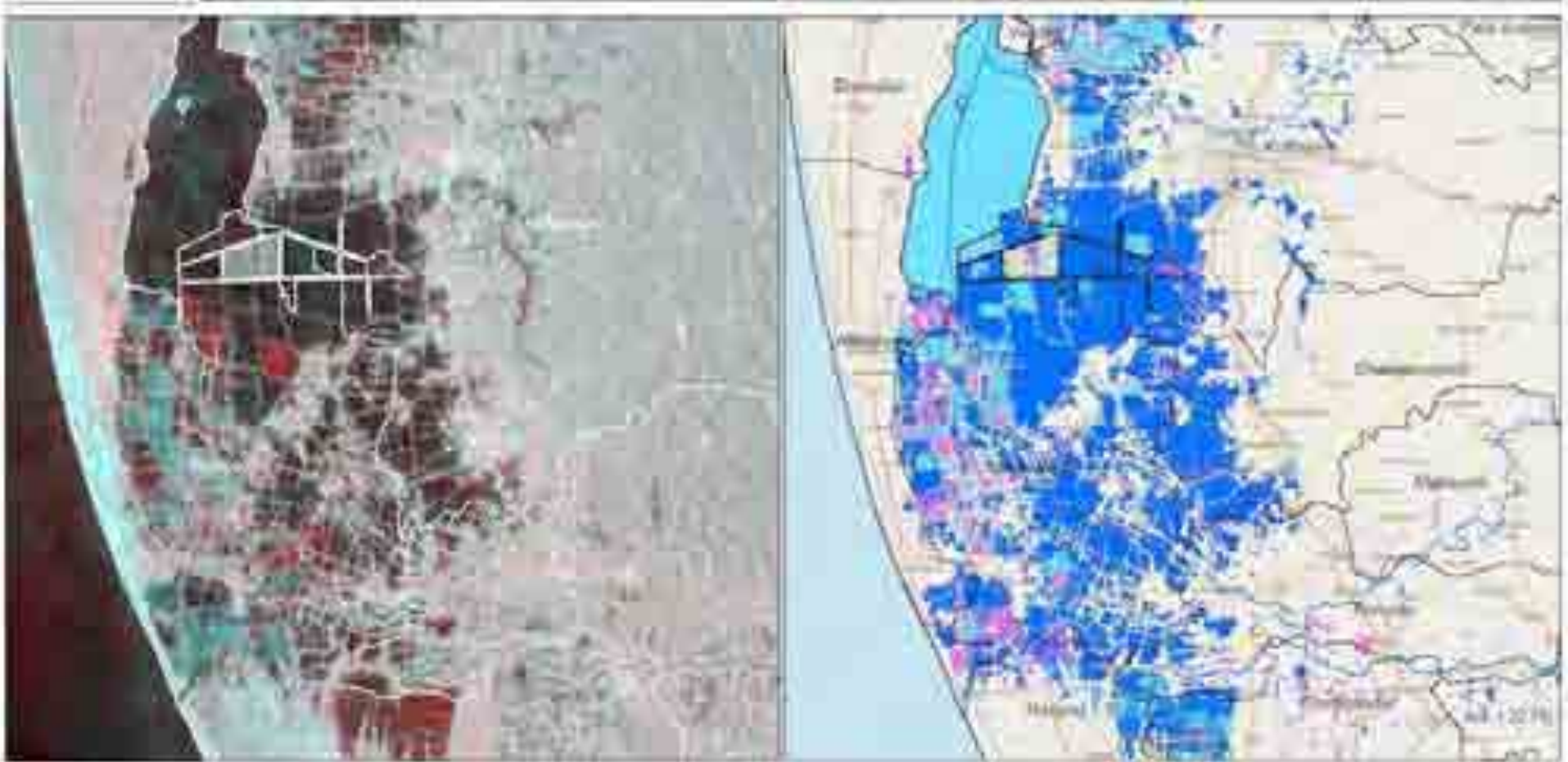
## India Flood -2017

Mapping inundation extent in the Ganda river and its surroundings (Bihar, India) using ISRO RESOURCE SAT-2 AWFS Satellite Data



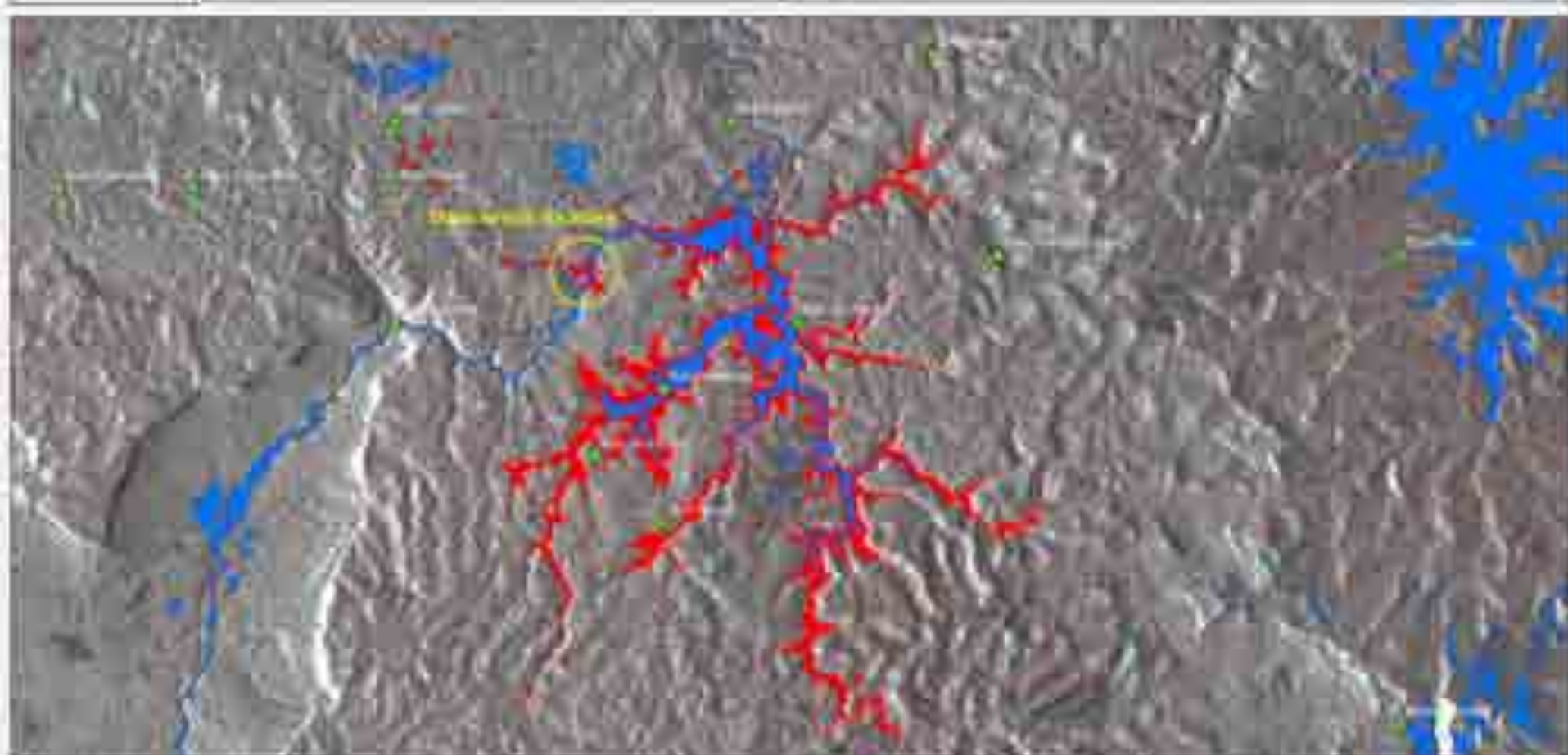
# India (Kerala) Flood -2018

Mapping Floods in Alappuzha & Kottayam District, State of Kerala (INDIA) using ALOS2 PALSAR2 Images (14 August 2018)



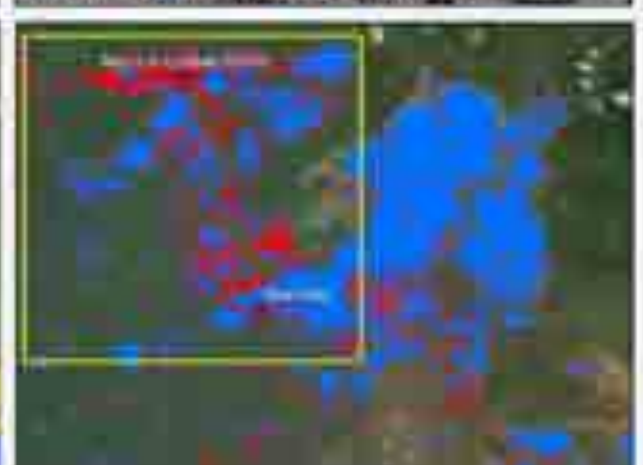
# Lao PDR Dam break -2018

Pre and Post dam break scenario in Attapeu province (Lao PDR) using Sentinel-1 Satellite Data (17 & 25 July 2018)

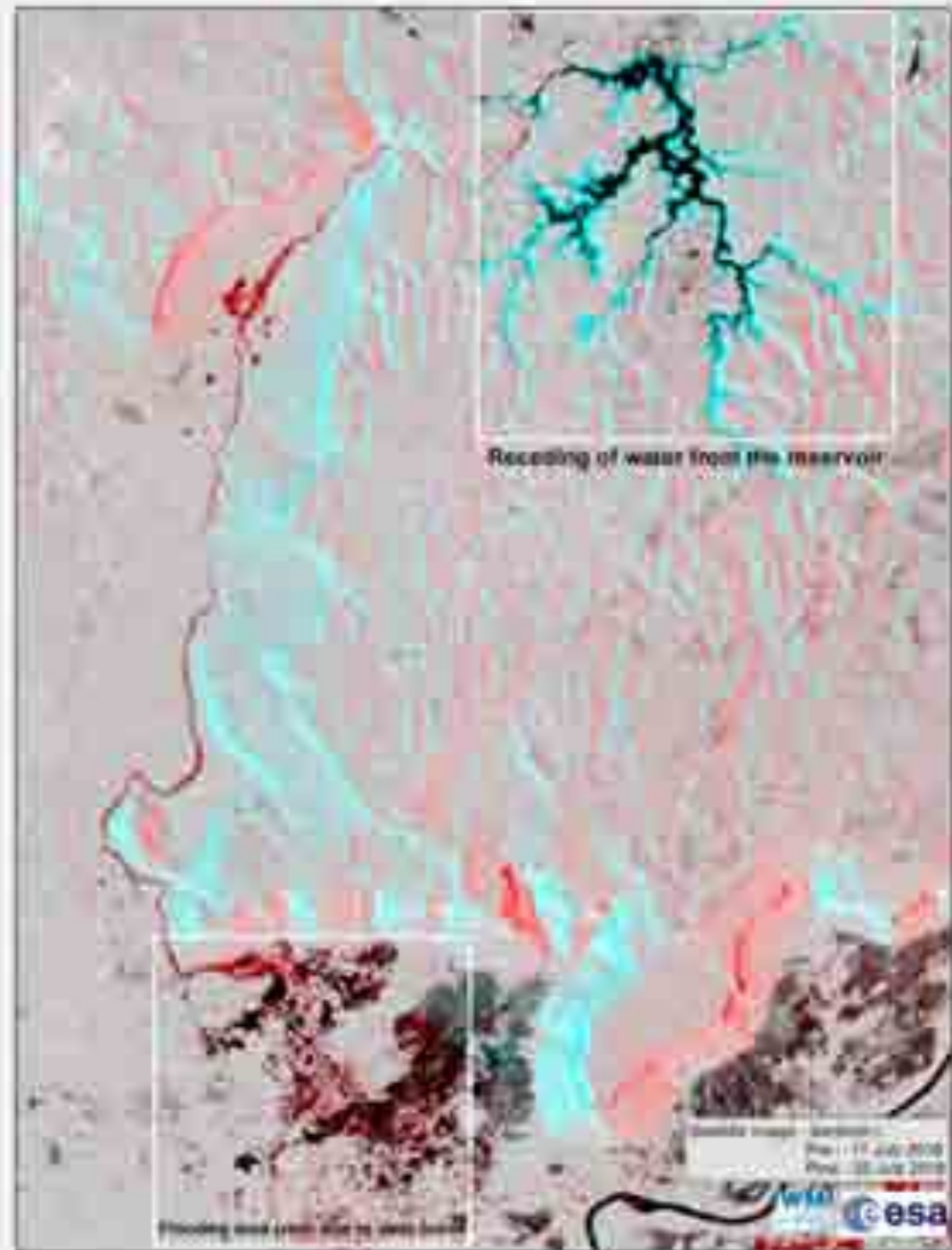


# Lao PDR Dam break -2018

Pre and Post dam break scenario in Attapeu province (Lao PDR) using Sentinel-1 Satellite Data (14 May and 17, 25 July 2018)

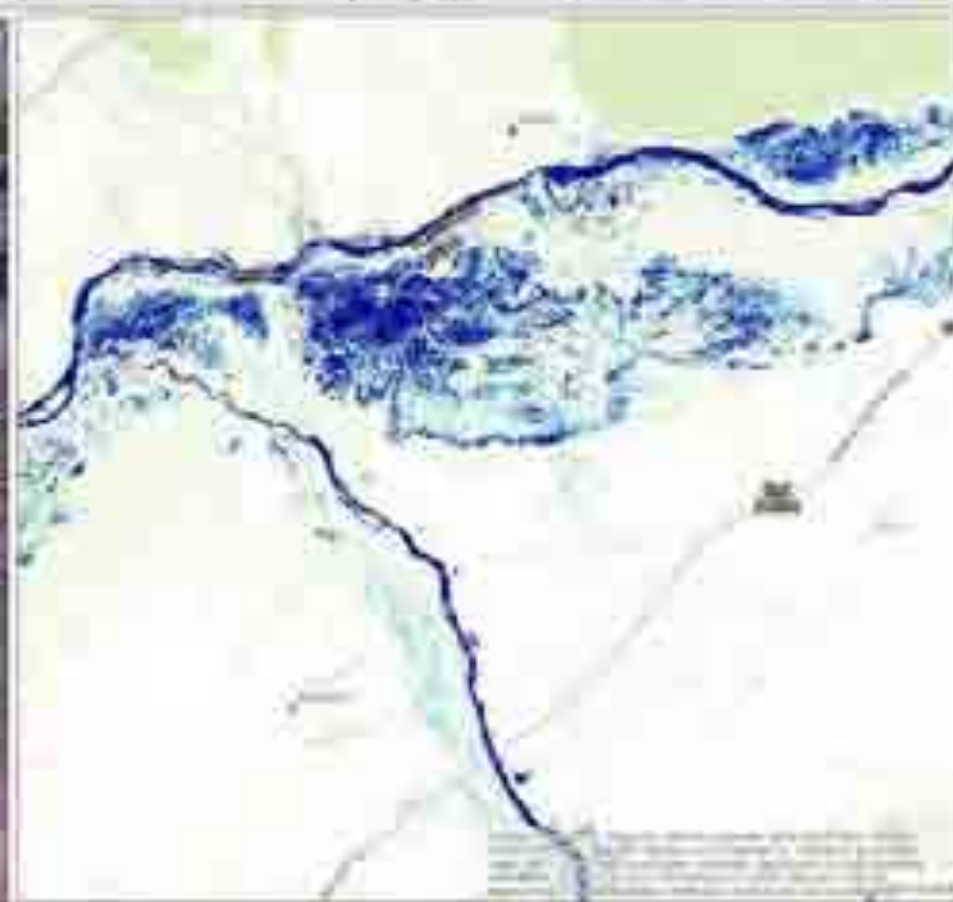


# Lao PDR Dam break - 2018



# Nigeria-2015

Mapping Suitable Flood Resession Agriculture Areas in Benue River, Nigeria using Sentinel-1 Satellite images



# REGIONAL FLOOD RISK MAPPING - SA and



- Mapping algorithm based on MODIS data
- 8-days maps of inundation extent
- Annual maps of maximum inundation
- Inter-annual variation of regional flooding extent





# THANK YOU !

More information visit : [www.iwmi.cgiar.org](http://www.iwmi.cgiar.org)

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