भारत सरकार
अन्तरिक्ष विभाग
राष्ट्रीय सुदूर संवेदन केन्द्र
बालानगर, हैदराबाद-500 037, तेलंगाण, भारत
टेलिफोन : +040-23879572-76
+040-23879261-65
फैक्स : +040-23878648

सत्यमेव जयते

Government of India
Department of Space
National Remote Sensing Centre
Balanagar, Hyderabad - 500 037, Telangana, India
Telephone : +040-23879572-76
+040-23879261-65
Fax : +040-23878648

Dr. A V Suresh Babu
Head, Flood Mapping & Hazard Assessment Division
Disaster Management Support Group

Phone: 040-23884544,
e-mail: flood@nrsc.gov.in

Date: Dec 06, 2023

No: NRSC/DMSG/2023/CY/AP/07

Dear Sir,

Sub: Andhra Pradesh Heavy Rains 2023 - Michaung Cyclone - Near Real Time Inundation Mapping using satellite data

As you are aware, National Remote Sensing Centre is carrying out 'Near Real Time Flood Mapping' using multi-sensor satellite data. Heavy rains were reported in Andhra Pradesh state in first week of Dec 2023 due to Michaung Cyclone. We have analyzed RISAT-1A (EOS-04) CRS SAR data on 06 Dec 2023 and a map is generated showing flood inundation / standing water in rain affected areas in coastal districts of Andhra Pradesh. The map along with a brief report is enclosed herewith for your kind information.

A shape file (GIS format) of spatial inundation layer is sent to Andhra Pradesh State Remote Sensing Application Centre (APSAC) & APSDMA (Andhra Pradesh State Disaster Management Authority) by e-mail for further value addition and dissemination to user departments.

Further, we request you to visit flood page in Bhuvan portal (https://bhuvan-app1.nrsc.gov.in/disaster/disaster.php?Id=flood) NDEM portal (https://ndem.nrsc.gov.in) for better visualization of flood extent in Andhra Pradesh State.

We will continue to keep a watch on the situation and update the information as and when satellite data is available. You may please share the field reports received during this event for correlating the field situation during satellite image analysis. Please provide feedback on the information being provided.

With kind regards

Yours sincerely,
(A V SURESH BABU)

As per the distribution list enclosed in the report.

Mapping and Monitoring of Flood situation in Andhra Pradesh State -Michaung Cyclone -Dec 2023

The severe cyclonic storm "MICHAUNG" over west central bay of Bengal along and off south Andhra Pradesh coast moved northwards and crossed south Andhra Pradesh coast close to south of Baptla during 1230 to 1430 hours of 5th December 2023 as a Severe Cyclonic Storm . Heavy rains were witnessed during first week of December 2023 due to the impact of this Severe cyclone storm - Michaung Cyclone. Water level reported beyond danger level in Kalangi River and there are several low lying areas which were reported to be under flood inundation due to cyclone event (Source: News Media, IMD, CWC)

As part of Disaster Management Support Programme of ISRO, National Remote Sensing Centre (NRSC) Flood Disaster Team is keeping a constant watch on the flood situation for enabling the acquisition and interpretation of multi-sensor satellite data for identification of flood inundation areas generation of flood inundation map. RISAT-1A (EOS-04) CRS SAR data of 6th Dec 2023, is acquired and analysed (Refer Table-1).

Table-1 Satellite Data acquired over Flood Affected Area

S No	Date	Satellite/Sensor	Districts affected
1	06-12-2023 (0600 Hrs)	RISAT-1A (EOS-04) CRS SAR	Potti Sriramulu Nellore, Tirupathi, Prakasam districts

Satellite data is geometrically rectified and flood inundation layer is extracted. The inundation layer is integrated with district boundaries layer, for estimation of district wise inundation statistics as shown Table-2. Based on the analysis of satellite data, It is observed that flood inundation exists in parts of coastal districts to an extent of 158,628 Ha covering Potti Sriramulu Nellore, Tirupathi, Prakasm districts.

Table-2 :District-wise inundated area statistics

S. No.	District	Inundated Area (Ha)
1	Potti Sriramulu Nellore	83867
2	Tirupathi	56416
3	Prakasm	18344
Total		**158628**

Disclaimer : This Map is prepared on rapid mapping mode for immediate use and sharing amongst official agencies. Map provides preliminary results. Flood inundation may include rain water accumulation / flood water in low lying areas. All geographic information has limitations due to the scale, resolution, date and interpretation of the original source materials. No ground verification is done.

Dissemination of Flood Maps and Reports	
Govt of India	• Additional Secretary, MHA • Joint Secretary, DM, MHA • Control Room, MHA • Director General, NDRF, MHA • Joint Secretary , NDMA, MHA • Control Room, NDMA, MHA • Director, Flood Control Authority , CWC, MoJS • Flood Monitoring Directorate, CWC MoJS • India Meteorological Department (IMD)
ISRO/DOS	• Scientific Secretary, ISRO • Director, EDPO,ISRO • Associate Director, EDPO, ISRO • Director, NRSC • Associate Director, NRSC • Deputy Director (RSA) & PD, RRES, NRSC • Group Director, DMSG, NRSC
Concerned State Govt.	• Relief Commissioner, Andhra Pradesh • Secretary, APSDMA • Executive Director, APSDMA