

Andhra Pradesh Floods: November 2021

Post Event Analysis

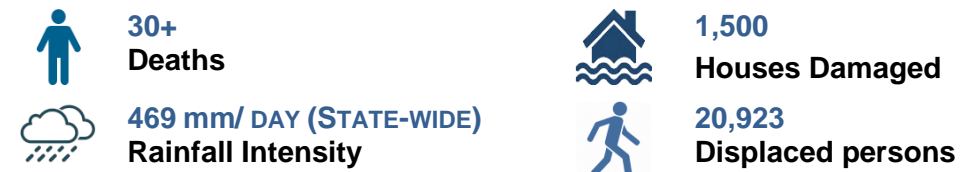
Intense rainfall over last weekend has led to floods and water-logging in many parts of southern Andhra Pradesh, washing away villages, breaching dams, blocking railways and roadways, and causing heavy losses to life and property. The south-eastern coast of India has been facing heavy rainfall over the last month owing to the formation of low pressure areas attributed mainly to the north-east monsoons and cyclonic systems. The rains accompanied by lightning and thunderstorms have been wreaking havoc in the south-eastern states. The states have been receiving above average rainfall. Flash floods and riverine floods, besides water-logging, have been common phenomena for the last four weeks.

Heavy showers wreaked havoc in southern Andhra Pradesh, causing flash floods in the four Rayalseema districts, namely, Chittoor, Kurnool, Kadapa and Anantapur. Over 30 people have lost their lives and around 100 people have been washed away by the floods. The connectivity via railways and roadways was disrupted to a great extent leaving hundreds of vehicles stranded and trains diverted and cancelled. Although rainfall intensity reduced, the districts continued to suffer the consequences of the deluge.

Damage and Loss

Kadapa district reported a death toll of 13, being the highest among the other districts affected. Three buses of the Andhra Pradesh Road Transport Corporation (APSRTC) were stuck in floods in Mandpalle, Akepadu and Nandaluru villages in Kadapa district. On Friday, November

19, 2 lakh cusecs of flood water flowed out of the Annamaya project leaving a trail of destruction in the villages situated in the downstream under Rajampet constituency. In Kadiri, Anantapuram district, a building collapsed on another building, killing 7 people. In Chittoor, 4 people were killed in rain related incidents. In Nellore district, a constable placed in the State Disaster Response Force at Vizianagaram drowned while carrying out a rescue operation in Damaramadugu village in Nellore district. In neighbouring Anantapuramu district, 10 people stranded in the Chitravati river flood at Veldurthi village were rescued by the Indian Air Force personnel, who specially flew in from Yelahanka Air Force Station in Karnataka. The IAF team carried out a winching operation using a Mi-17 helicopter to rescue the ten people, who were stuck in a JCB. The JCB itself was trying to rescue four people in a car caught in the flood.



The Andhra Pradesh government estimated around 1,500 houses, valued at over Rs 5 crores, were damaged as a result of the deluge. Another 488 houses remained marooned. The road bridge across the Papagani, connecting Kadapa and Tadipatri towns, collapsed on Sunday due to gushing flood waters. In Tirupati, the 500-year old Rayalacheruvu tank developed minor breaches, following which evacuation warning was issued by the district administration. In Nellore district, majority of the losses were attributed to release of over 2 lakh cusecs of water from the Somasila reservoir.

A huge damage to livestock was also reported in the districts. Over 600 cattle were killed and 3,232 chickens perished. About 1,800 small cattle

Flood Advisory



like sheep and goat were also killed in the deluge, causing a total loss of over Rs 2.31 crore. Agricultural crops covering 2 lakh hectares and horticultural crops covering 20,000 hectares were damaged. Roads in the districts are heavily damaged cutting off communication. Many culverts, causeways and bridges suffered extensive damage due to the flash floods.

Relief and Rescue

A total of 243 relief camps were opened in the four Rayalseema districts. 20,923 persons evacuated from flood-hit areas were evacuated to safe places. In the affected districts, the Indian Air Force, NDRF, SDRF, Police and Fire Services personnel saved over 60 people from the flash floods. The AP Transco has been taking steps to restore the inundated 132 kv sub-stations and ensuring power supply in flood-hit districts. The Government had announced ex-gratia payment of Rs 5 lakh each to the families of those killed due to floods.



Figure 1: View of a flooded area in southern Andhra Pradesh

Rainfall Scenario

RMSI has analysed the rainfall scenarios observed in Andhra Pradesh from 18th to 22th November and the forecasted rainfall for 23th and 24th November.

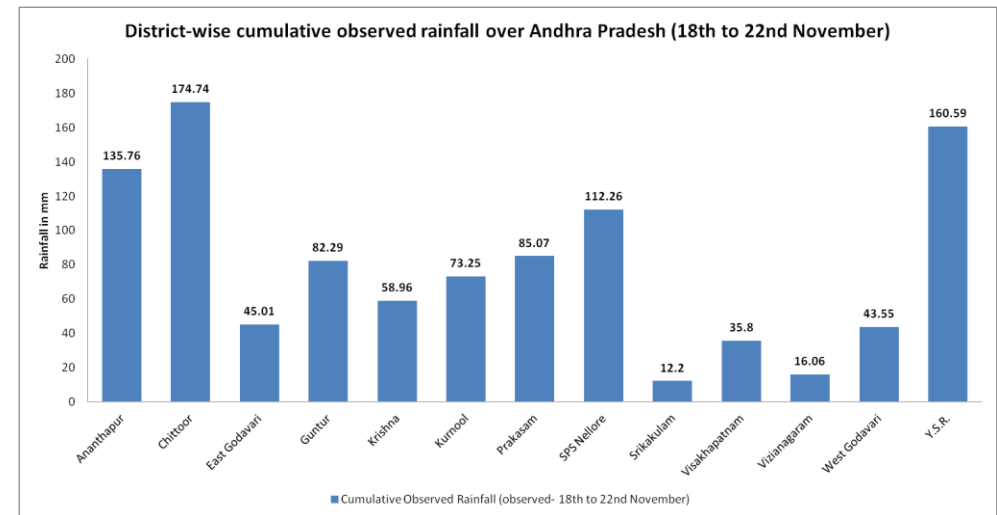


Figure 2: District-wise cumulative observed rainfall over Andhra Pradesh

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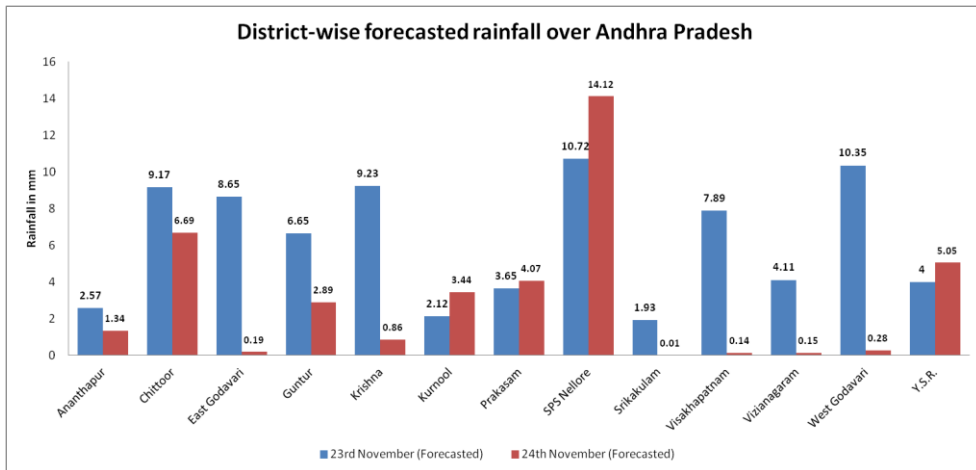


Figure 3: District-wise forecasted rainfall over Andhra Pradesh

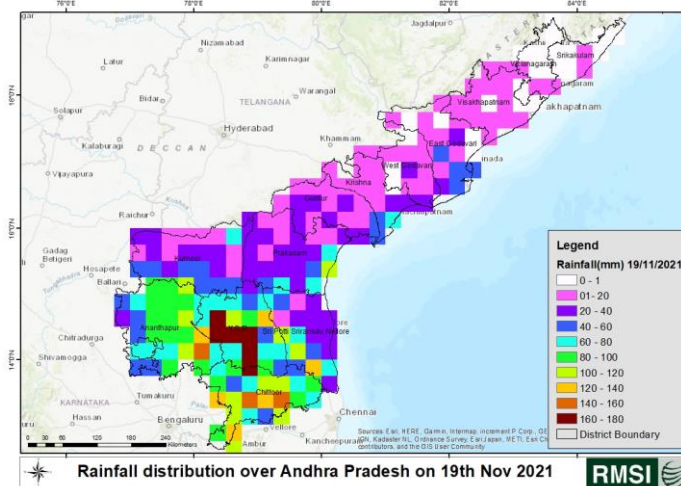


Figure 5: Rainfall Distribution (observed) over Andhra Pradesh -19th November 2021

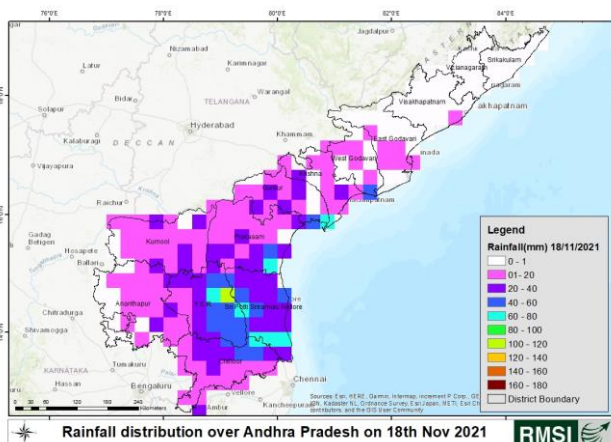


Figure 4: Rainfall Distribution (observed) over Andhra Pradesh -18th November 2021

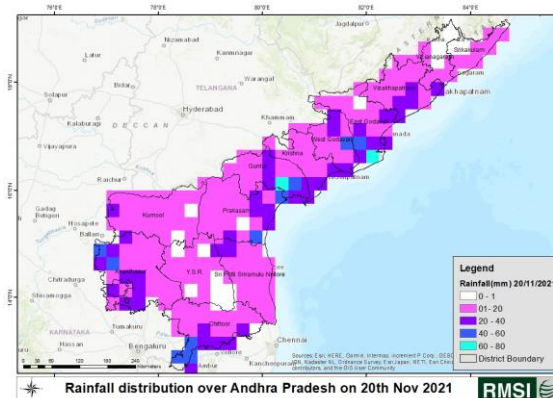


Figure 6: Rainfall Distribution (observed) over Andhra Pradesh -20th November 2021

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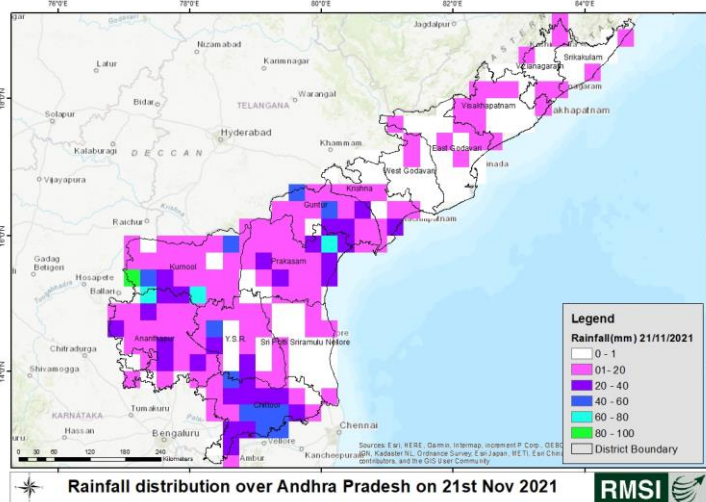


Figure 7: Rainfall Distribution (observed) over Andhra Pradesh -21th November 2021

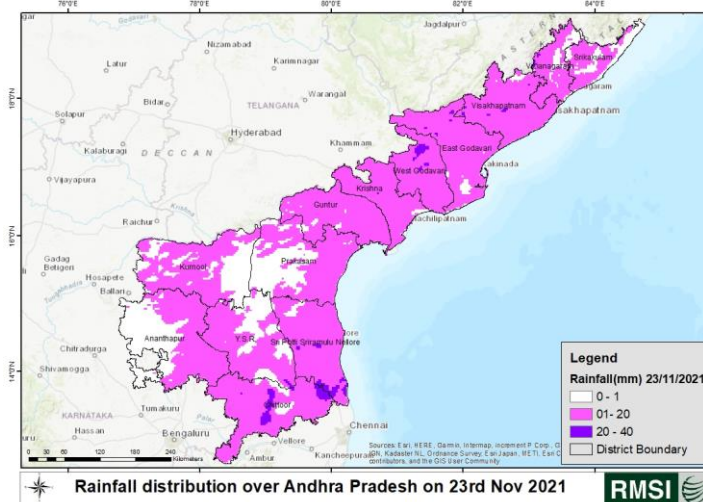


Figure 9: Rainfall Distribution (forecasted) over Andhra Pradesh -23th November 2021

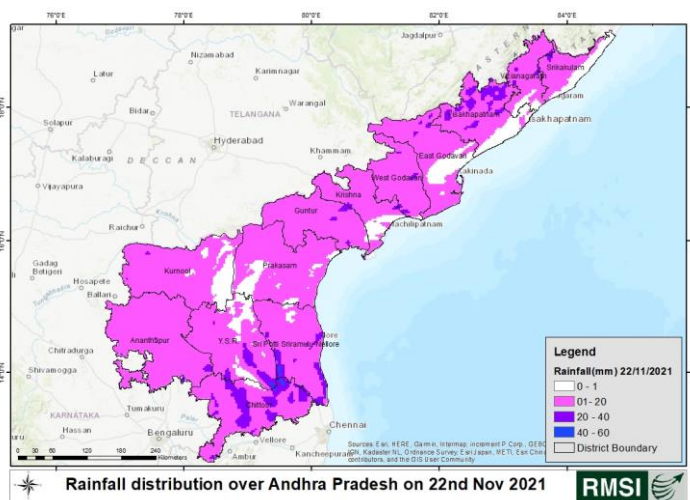


Figure 8: Rainfall Distribution (observed) over Andhra Pradesh -22th November 2021

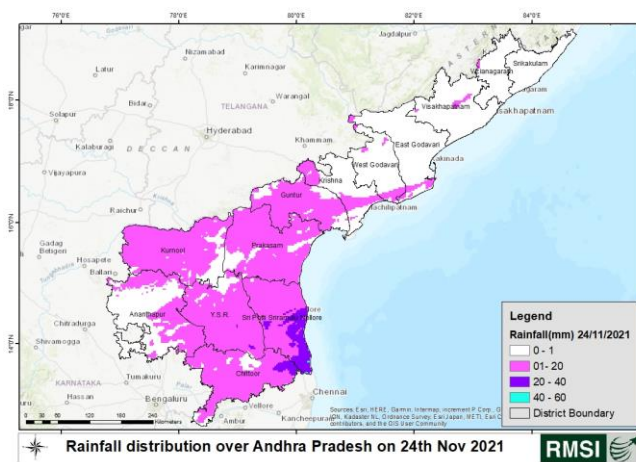


Figure 10: Rainfall Distribution (forecasted) over Andhra Pradesh -24th November 2021

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Flood Scenario

RMSI has analysed the flood scenarios observed in Andhra Pradesh on 20th and 21st November.

reservoir management mechanism integrating early warning systems would reduce the impact to a great level. However, in the long run, a more risk conscious land-use planning is becoming a sine qua non for sustainable development.

Pin-code level flood analysis

RMSI has performed analysis using proprietary models to estimate the areas (pin-codes) that were impacted by floods due to the rainfall information. The following image and tables represent the results of our analysis of pin-codes that were affected by floods due the rainfall on 20th and 21st November.

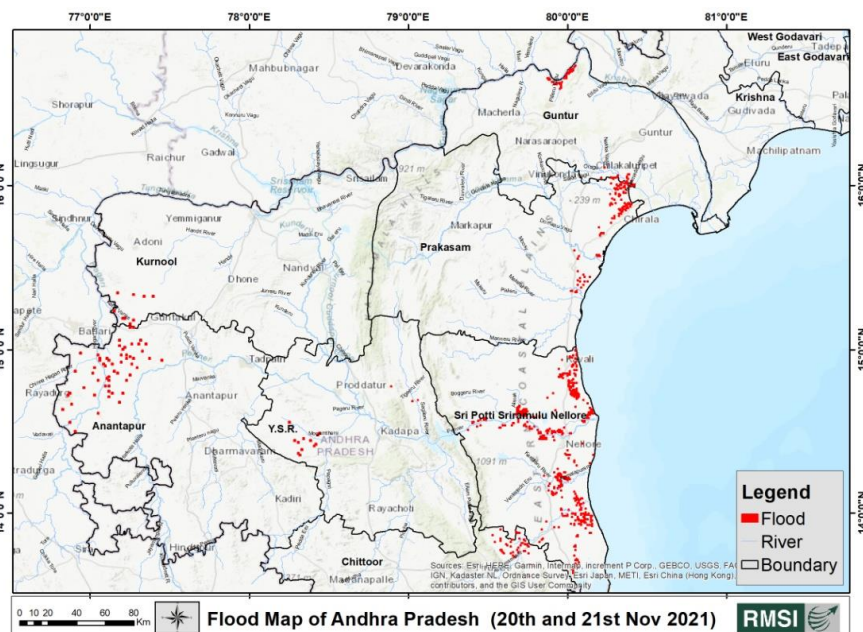


Figure 4: Observed flood scenario over Andhra Pradesh on 20th and 21st November

Rainfall and associated water-logging and flooding events have been causing heavy damage to infrastructure and lives. The Government has been actively involved in rescue and relief operations. However, a more holistic approach to tackling these events is a necessity. Due stress should be laid on prevention rather than just on post-disaster response. On close observation, the villages lying in the downstream regions of reservoirs have been facing the brunt of majority of these weather events. A better

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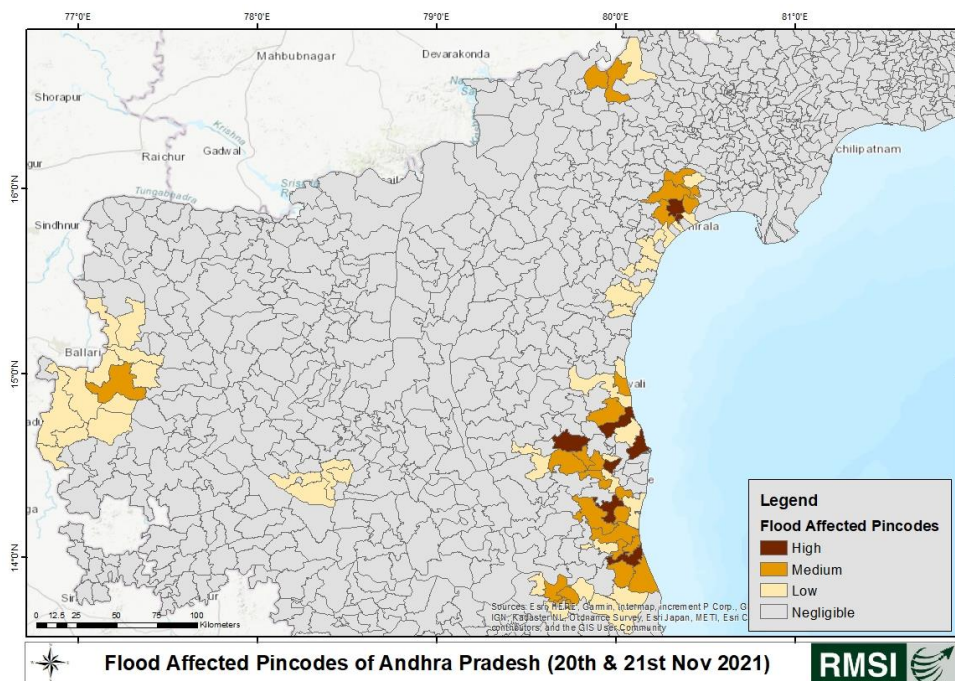


Figure 5: Pin-codes that were affected by floods due the rainfall (20th and 21st November)

Table 1: Pin-codes that were affected by floods due the rainfall (20th and 21st November)

District	High	Medium	Low
Anantapur		515812	515741, 515822, 515832, 515842, 515863, 515865, 515867, 515870, 515871

Chittoor	517536, 517640, 517620, 517641 517642		
Guntur	522113, 522235, 522112, 522409 522317, 522411, 522435		
Kadapa		516321, 516349, 516350, 516391	
Kurnool		518348, 518396	
Nellore	524137, 524152, 524004, 524127, 524003, 524121, 524308, 524318, 524142, 524203, 524123, 524129, 524321, 524415 524305, 524306, 524201, 524303, 524309, 524323, 524315, 524341, 524346, 524403, 524344, 524366, 524405, 524411, 524410 524412, 524413		
Prakasam	523155, 523168	523169, 523170	523001, 523165, 523166, 523180, 523181, 523184, 523186, 523262, 523272, 523274, 523286, 523291

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