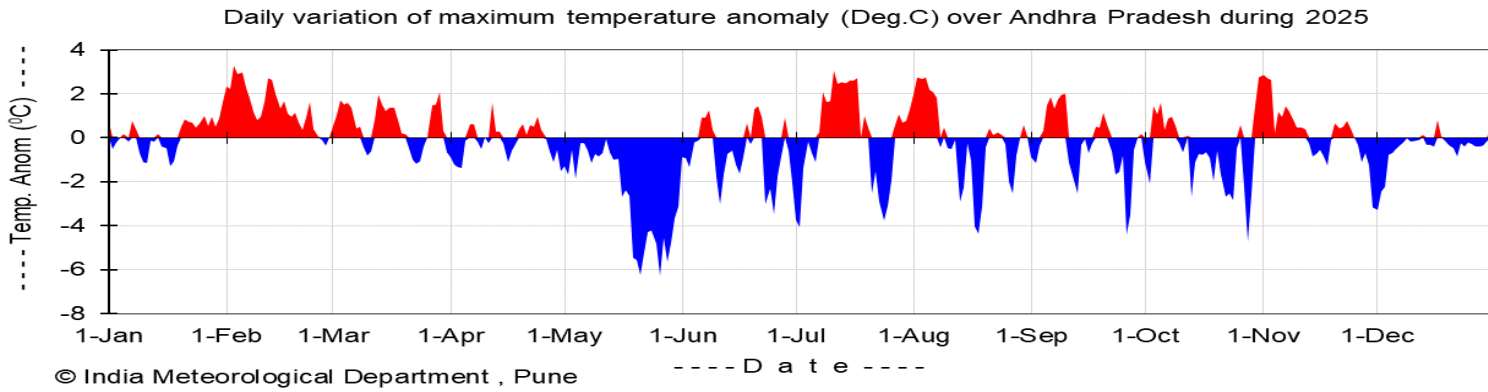




भारत सरकार
Government of India
पृथ्वी विज्ञान मंत्रालय(एम. ओ. ई. एस.)
Ministry of Earth Sciences (MoES)
भारत मौसम विज्ञान विभाग
INDIA METEOROLOGICAL DEPARTMENT
लवायु अनुसंधान एवं सेवाएँ
CLIMATE RESEARCH AND SERVICES

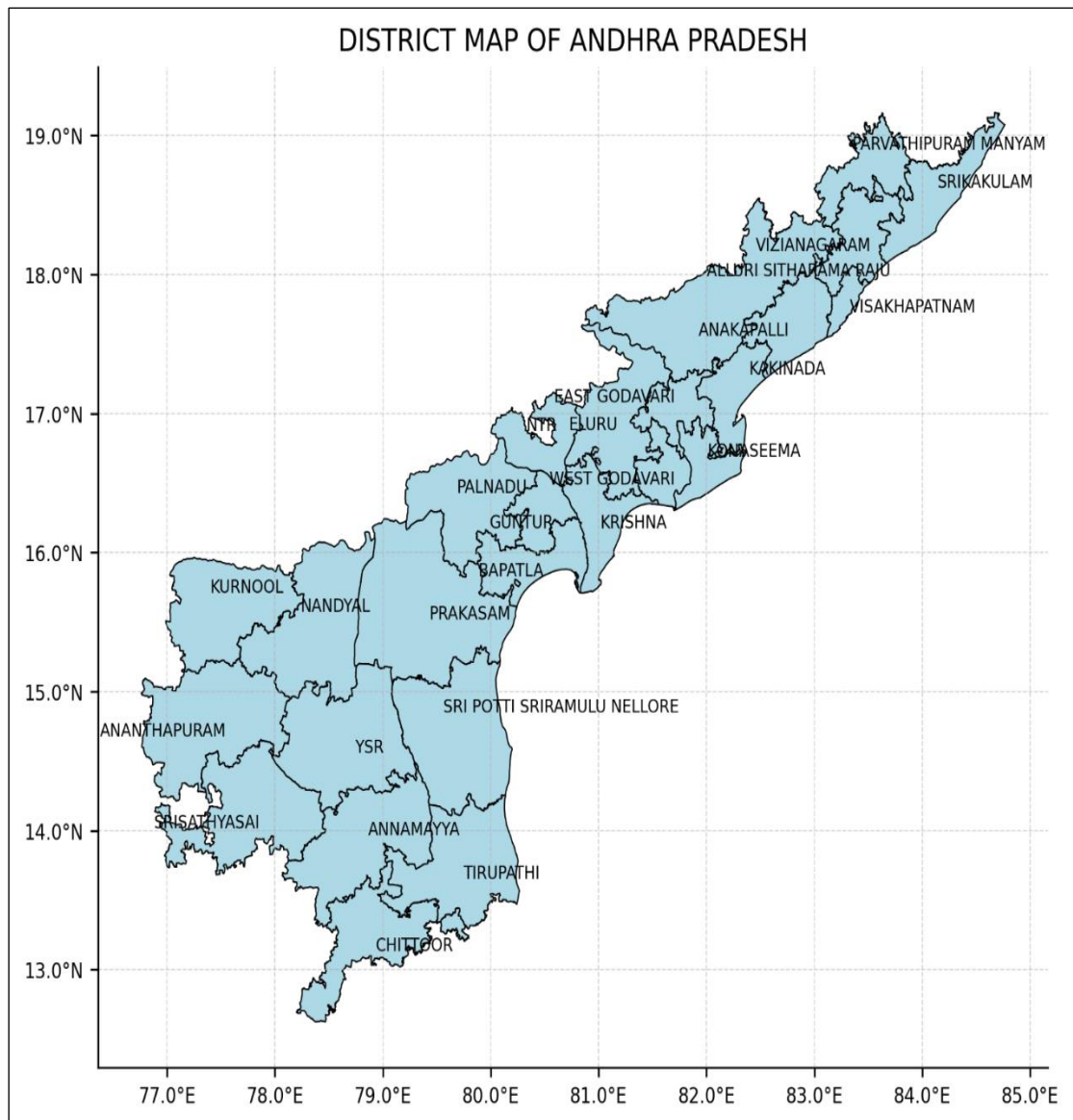


आंध्र प्रदेश राज्य के लिए जलवायु पर वक्तव्य: २०२५

STATEMENT ON CLIMATE FOR THE STATE OF ANDHRA PRADESH: 2025

द्वारा जारी/ ISSUED BY

जलवायु निगरानी और प्रागुक्ति समूह / Climate Monitoring and Prediction Group
जलवायु अनुसंधान एवं सेवाएँ का कार्यालय/ Office of Climate Research and Services
भारत मौसम विज्ञान विभाग / India Meteorological Department
पुणे 411005 / Pune 411005



आंध्र प्रदेश राज्य के लिए जलवायु पर वक्तव्य: २०२५
Statement on Climate for the state of Andhra Pradesh:
2025

जलवायु अनुसंधान एवं सेवाएँ का कार्यालय
O/o Climate Research and Services,
India Meteorological Department,
Pune 411 005

Preamble:

It gives me immense pleasure to share this scientific document titled, "Statement on Climate for the state of Andhra Pradesh for 2025" jointly prepared by office of Climate Research and Services, India Meteorological Department, Pune (Ministry of Earth sciences) and the Government of Andhra Pradesh. The statement of climate is attempting to capture the regional climate variability of the state especially with reference to weather parameters like; temperature and rainfall which has huge impact on various sectors like Agriculture, Health, Power, Water Management and many other critical domains. The information on severe weather analysis is also presented in this along with statistics which could be, one of the important inputs for state for its Planning Purpose, Disaster managements issues and over all the economic sustainability and growth. With the continuous projections of climate scientists globally, indicating the possibility of increase in the severe weather events along with its severity, both at global and regional level, this Annual Update will be very useful to all concerned. The data used in this analysis is from 1901 to 2025 (125 years). I am sure this yearly update with climatological perspectives, will create more awareness among all the stake holders, users in the state about the climate of the state and would enable to move parallely with relevant global and regional scientific directives or advisories in the coming time.

This statement on climate of 2025 also includes the inputs like loss and damage data due to severe weather and other weather-related factors from the Government of Andhra Pradesh. I wish that such joint ventures and integrated approach will yield more benefits to the society, state and in turn to our Nation.

Looking forward for your feedback and will work together.

*K. C. Sai Krishnan,
Head, Climate Research and Services,
India Meteorological Department,
Pune.*

March 2026

HIGHLIGHTS

The Andhra Pradesh State averaged annual mean land surface air temperature (27.82 °C) during 2025 was slightly cooler (anomaly -0.09 °C) than its Long Period Average (LPA) for the period 1991-2020. The state this year was comparatively cooler than the record-breaking warmth of 2024 (+0.62°C, the warmest year on record for the state since 1901).

In 2025, the below-normal annual mean temperature was mainly driven by below normal maximum temperatures during the pre-monsoon, monsoon and post-monsoon seasons. However, in contrast the winter season with mean temperature anomaly of +0.6°C was the fourth warmest since 1901. Notably, due to comparatively early arrival of the southwest monsoon in the state, the mean temperature over the state in month of May (with anomaly -1.9 °C) was the sixth coolest since 1901.

Out of 26 districts of the state, 11 received excess rainfall (+20% to +59% of its LPA), 14 received normal rainfall (-19% to +19% of its LPA). Data of one district remains unavailable.

Objective

The objective of this brief report is to provide the analysis of state's temperature, rainfall and extreme weather events that occurred during 2025. This report will be useful for various stakeholders and general public who are interested on the latest weather and climate conditions and its impact in 2025.

Introduction

India Meteorological Department (IMD) is the official agency responsible for providing operational weather and climate services required for the country in various sectors. IMD provides climate services through its office of the Climate Research and Services (CRS) situated in Pune. As a part of its climate monitoring activities, the CRS office, in coordination with IMD's state Meteorological Centers and state governments has decided to issue the statement of annual climate every year since 2021 for each individual state in line with the annual statement of climate issued for the country. This statement provides important information about the monthly, seasonal and annual state averaged temperature, rainfall and Standardized Precipitation Index (SPI) for the year 2025, along with long term trends for some parameters. Additionally, it includes state-specific information related to various extreme weather and climate events experienced during 2025.

Temperature

The monthly, seasonal and annual maximum, minimum and mean temperature anomalies averaged over the state of Andhra Pradesh for the year 2025 is given in the **Fig.1**. The anomalies were computed based on the LPA for the period 1991-2020. Top 10 warmest/coolest months/seasons are marked on the graph. It is worth noting that the pre-monsoon, monsoon and post-monsoon seasons were relatively cooler for the state especially in respect of maximum temperature during 2025. However, in contrast the winter season (January-February) with mean temperature anomaly of $+0.59^{\circ}\text{C}$ was the 4th warmest and maximum temperature was the second warmest (anomaly of $+0.7^{\circ}\text{C}$) for the state since 1901. Notably, due to comparatively early arrival of the southwest monsoon in the state, the mean temperature over the state in month of May (with anomaly -1.9°C) was sixth coolest since 1901. As a combined effect, the Andhra Pradesh State averaged annual mean land surface air temperature (27.82°C) during 2025 was slightly cooler (anomaly -0.09°C) than its Long Period Average (LPA) for the period 1991-2020. The state this year was comparatively cooler than the record-breaking warmth of 2024 ($+0.62^{\circ}\text{C}$, the warmest year on record for the state since 1901). The highest/lowest maximum temperature anomaly of $+1.4^{\circ}\text{C}/-2.7^{\circ}\text{C}$ occurred in February/May, while the highest/lowest minimum temperature anomaly of $+0.6^{\circ}\text{C}/-1.1^{\circ}\text{C}$ was recorded in February/May.

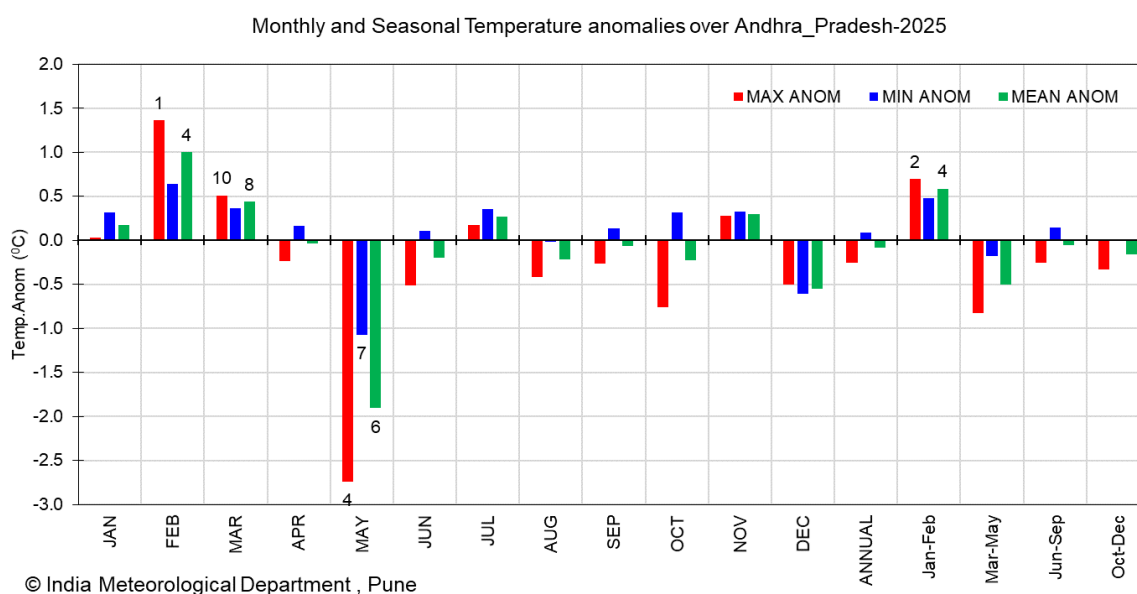


Fig. 1: Monthly and Seasonal Maximum, Minimum and Mean Temperature anomalies averaged over Andhra Pradesh during 2025. The anomalies were computed from the LPA base period of 1991-2020. The numbers above/below the bar indicate top 10 warmest/coolest ranking since 1901

The spatial pattern of annual maximum, minimum and mean temperature anomalies over Andhra Pradesh during 2025 is given in **Fig 2**. The temperature anomalies across most parts of the state were in between -1.0°C to $+0.5^{\circ}\text{C}$. However, southeast parts of Andhra

Pradesh viz. adjoining parts of Chittoor, Annamayya, Tirupathi and Sri Potti Sriramulu Nellore districts experienced minimum temperatures that were above normal by more than $+0.5^{\circ}\text{C}$.

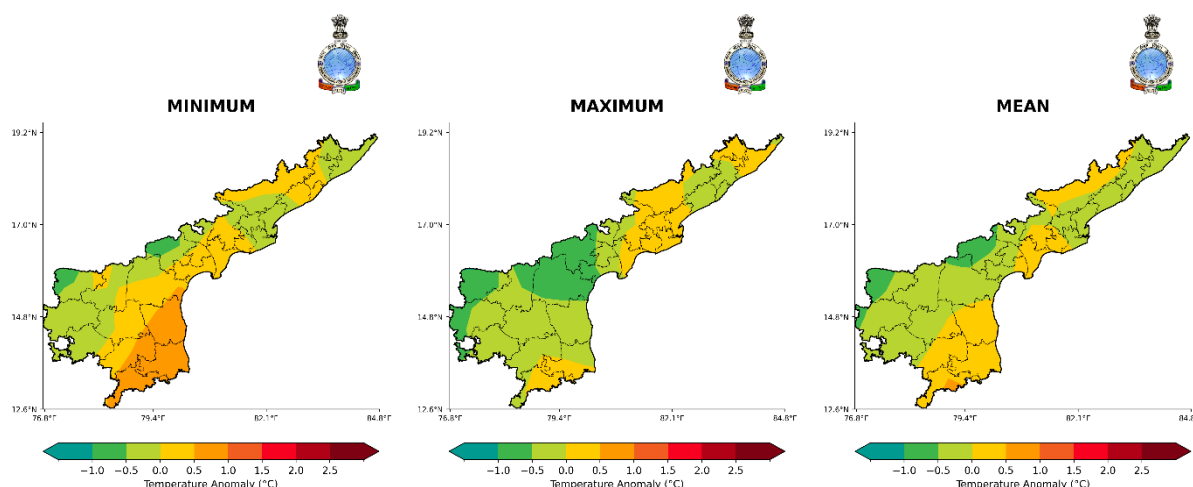


Fig. 2: Spatial pattern of Annual Minimum, Maximum and Mean Temperature anomalies over Andhra Pradesh during 2025. The anomalies were computed from LPA for the base period of 1991- 2020

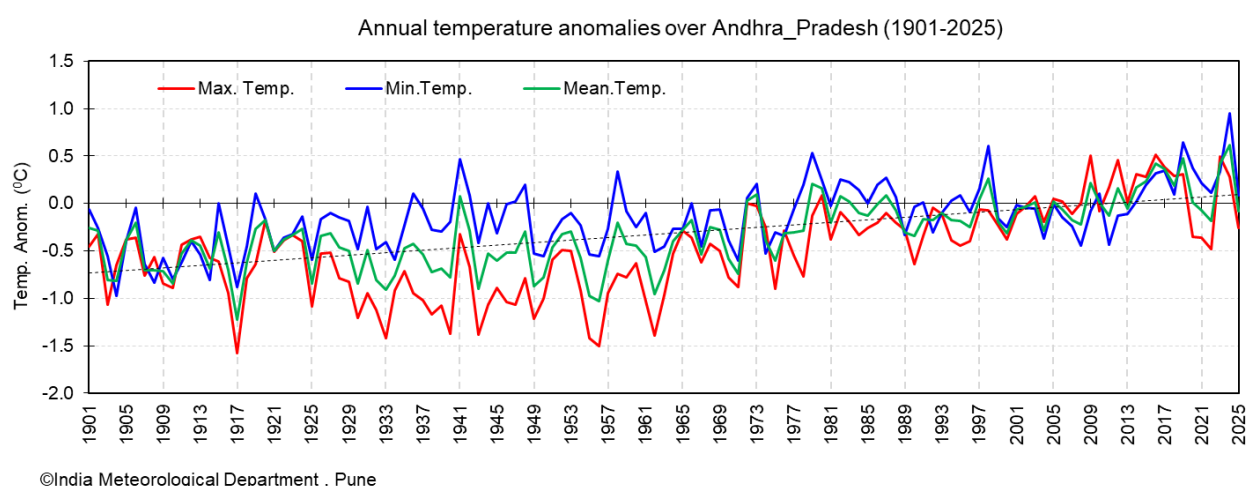


Fig. 3: Annual maximum, minimum and mean land surface air temperature anomalies averaged over the State of Andhra Pradesh for the period 1901-2025. The anomalies were computed with respect to the base period of 1991-2020.

[The dotted blackline indicates the linear trend in the annual mean temperature time series]

The time series of variation of annual maximum, minimum and mean land surface air temperature anomalies averaged over the state for the period 1901-2025 is given in **Fig 3**. A significant increasing trend of $+0.67^{\circ}\text{C} / 100$ years is observed in the state-averaged annual mean temperature for the period 1901-2025. This trend is more pronounced in terms of maximum temperature ($+0.82^{\circ}\text{C} / 100$ years) compared to minimum temperature ($+0.52^{\circ}\text{C} / 100$ years). The five warmest years on record for Andhra Pradesh, in order, are 2024(anomaly $+0.616^{\circ}\text{C}$), 2019($+0.473^{\circ}\text{C}$), 2023($+0.416^{\circ}\text{C}$), 2016($+0.415^{\circ}\text{C}$) and 2017($+0.365^{\circ}\text{C}$).

Fig.4(a and b) shows daily variation of minimum and maximum temperature anomalies during the year, respectively. The anomalies were computed with respect to the base period of 1991-2020. The state was relatively cooler in terms of both minimum and maximum temperature during May and December and warmer during February and March. During the monsoon period (July–September), maximum temperatures frequently stayed below normal, while minimum temperatures fluctuate closer to normal, with brief warm and cool phases.

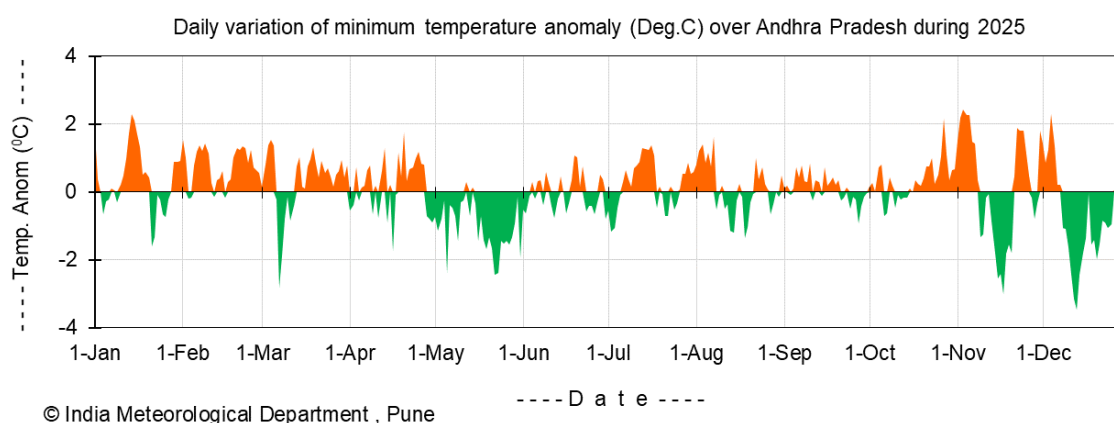


Fig. 4(a): Daily variation of minimum temperature anomaly (°C) over Andhra Pradesh during 2025

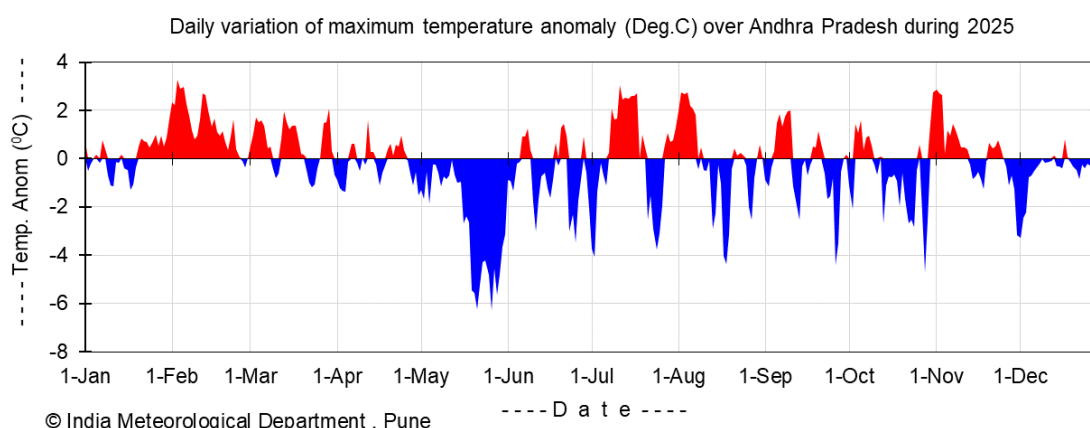


Fig. 4(b): Daily variation of maximum temperature anomaly (°C) over Andhra Pradesh during 2025

Rainfall

Based on 1971-2020 climatology, Andhra Pradesh state as a whole receives 1.8 % of its annual rainfall during the winter season (Jan-Feb), 9.8 % during the pre-monsoon season (Mar-May), 57.0 % during the southwest monsoon season (Jun-Sept) and 31.4 % during the post-monsoon season (Oct-Dec). Although the southwest monsoon season is the primary rainy season for the state, it receives about 40 % of its total rainfall during the pre-monsoon and post-monsoon seasons combined. **Fig.5** shows the annual percentage departure of rainfall over different districts of Andhra Pradesh during 2025. The anomalies were computed based on the 50-year LPA for the period 1971-2020. Out of 26 districts of

the state, 11 received excess rainfall (+20 % to +59 % of its LPA), 14 received normal rainfall (-19 % to +19 % of its LPA). Data of one district remains unavailable.

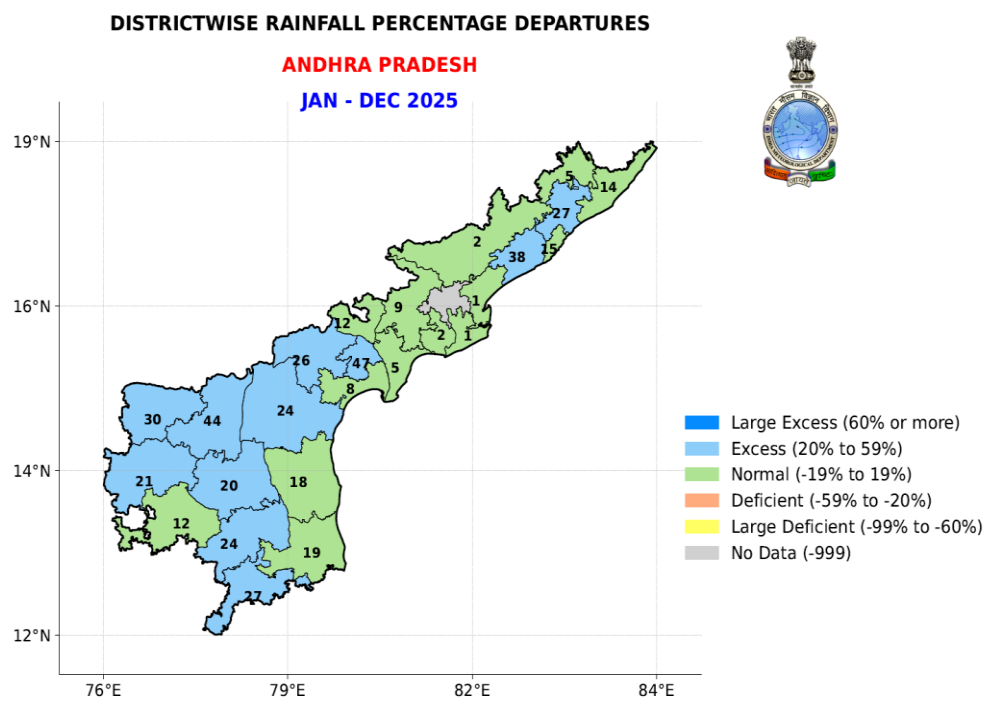


Fig. 5: District-wise annual rainfall percentage departures

The daily variation of rainfall (mm) during the year for the state is shown in **Fig. 6(a)**. The early onset of the southwest monsoon brought substantially above-normal rainfall to the state in May. However, rainfall fell below normal on many days during June and July. With the revival of the monsoon, August and September experienced sustained spells of above-normal rainfall. This pattern continued into October, with the second fortnight recording the highest and most intense rainfall, including a few extreme peaks far exceeding normal levels. After November, rainfall declined sharply, except for few small spells.

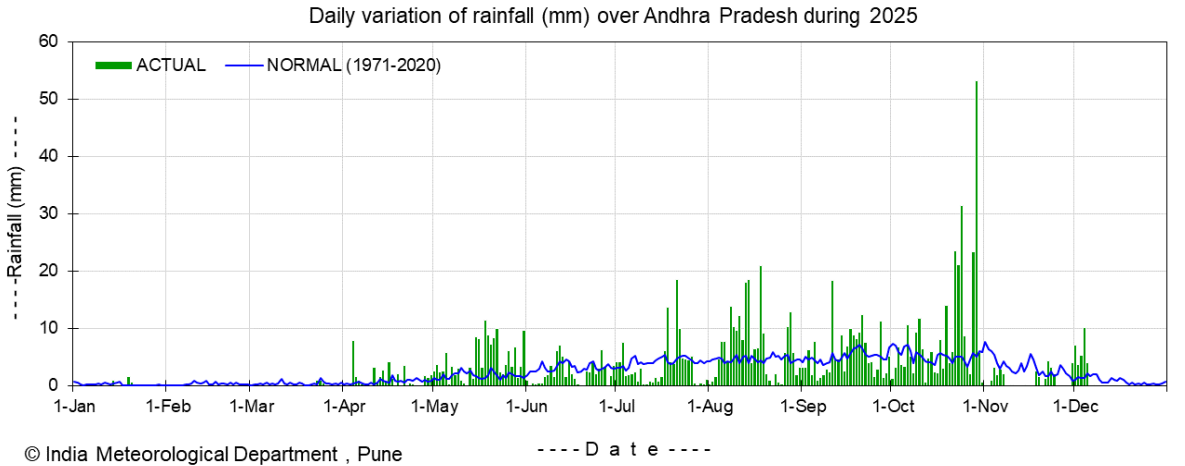


Fig. 6(a): Daily variation of rainfall (mm) averaged over Andhra Pradesh during the year

The time series showing the variation in the percentage departure of seasonal (monsoon and northeast monsoon) and annual rainfall for the state for the period 1901-2025 are shown in **Fig. 6(b), 6(c) and 6(d)** respectively. The departures are calculated with respect to the LPA base period of 1971-2020. During the southwest monsoon season, northeast monsoon season and the year 2025 as a whole, the state received 106%, 121 % and 119 % of its LPA rainfall respectively.

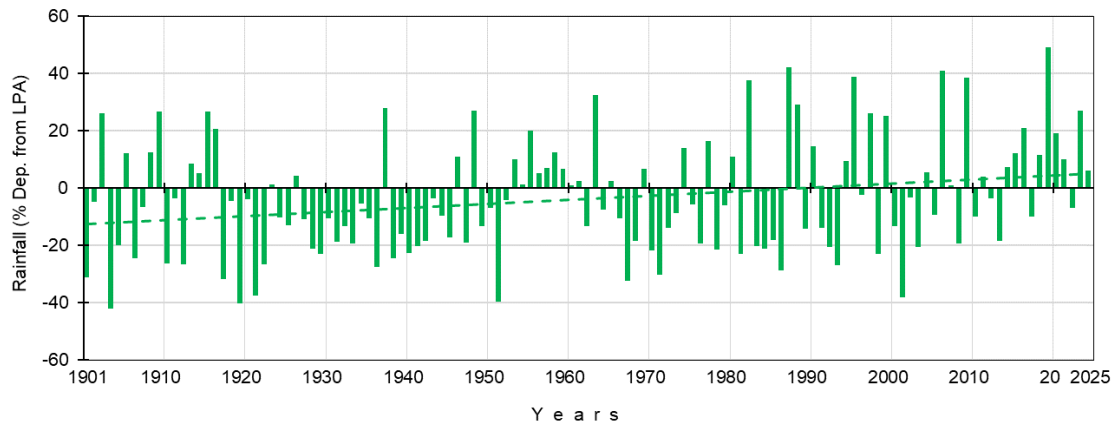


Fig. 6(b): Time series of % departure of southwest monsoon rainfall averaged over Andhra Pradesh (1901-2025)

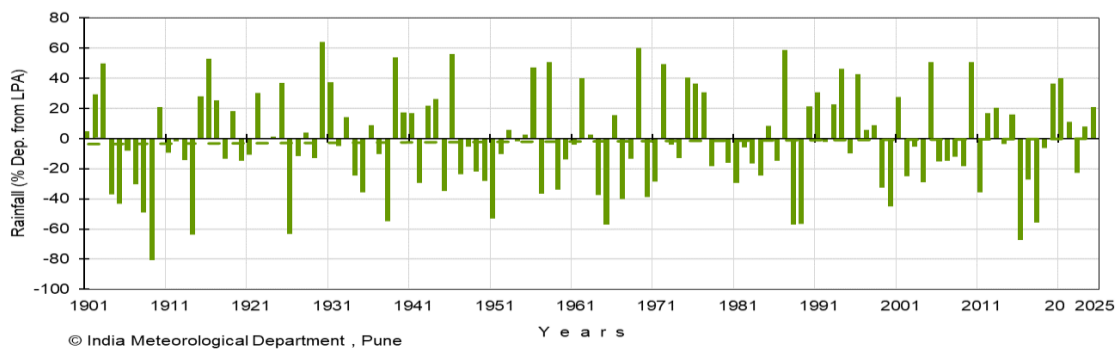


Fig. 6(c): Time series of % departure of northeast monsoon rainfall averaged over Andhra Pradesh (1901-2025)

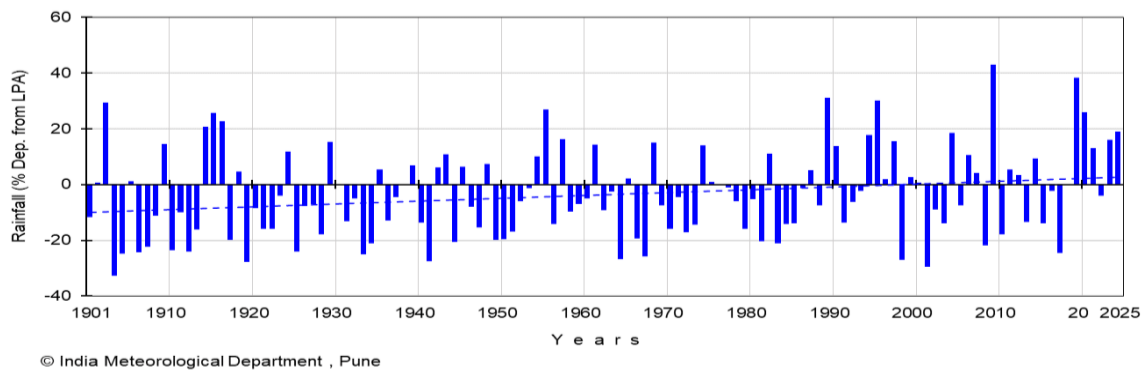


Fig. 6(d): Time series of % departure of annual rainfall averaged over Andhra Pradesh (1901-2025)

Table 1 shows the monthly, seasonal and annual rainfall statistics for the state for the year 2025. The state experienced large excess rainfall during the pre-monsoon season, excess rainfall during the equally important post-monsoon season and normal rainfall during the crucial monsoon season. In contrast, during the winter season which is typically characterized by minimum rainfall, it received large deficient rainfall. Due to these seasonal variations, the rainfall remained in the normal range at the end of the year.

TABLE 1

MONTH / SEASON	ACTUAL (mm)	NORMAL (mm)	% DEP.	CATEGORY
JANUARY	3.7	7.3	-49.8	D
FEBRUARY	0.0	9.4	-100.0	LD
WINTER SEASON	3.7	16.7	-78.0	LD
MARCH	2.6	12.2	-78.9	LD
APRIL	38.2	21.9	74.6	LE
MAY	136.4	55.3	146.6	LE
PRE-MONSOON SEASON	177.2	89.4	98.2	LE
JUNE	68.6	94.1	-27.1	D
JULY	115.1	131.1	-12.2	N
AUGUST	210.5	144.3	45.8	E
SEPTEMBER	159.1	152.1	4.6	N
MONSOON SEASON	553.3	521.6	6.1	N
OCTOBER	288.3	161.5	78.5	LE
NOVEMBER	30.7	98.8	-68.9	LD
DECEMBER	30.2	26.9	12.3	N
POST-MONSOON SEASON	348.3	287.2	21.3	E
ANNUAL	1085.4	914.9	18.6	N

CATEGORY	LARGE EXCESS [LE]	+60 % OR MORE
	EXCESS [E]	+20 % TO +59 %
	NORMAL [N]	-19 % TO +19 %
	DEFICIENT [D]	-59 % TO -20%
	LARGE DEFICIENT [LD]	-99 % TO -60 %
	NO RAIN [NR]	-100%

The district-wise trend in annual rainfall for the period 1951-2024 is given in **Fig 7**. Overall, there is a noticeable increasing trend in rainfall across the state, with the southernmost district of Ananthapur showing a significant increasing trend. In contrast, a slight but non-significant decreasing trend in rainfall is observed only in the northern district of Vizianagaram. Data of two districts are not available.

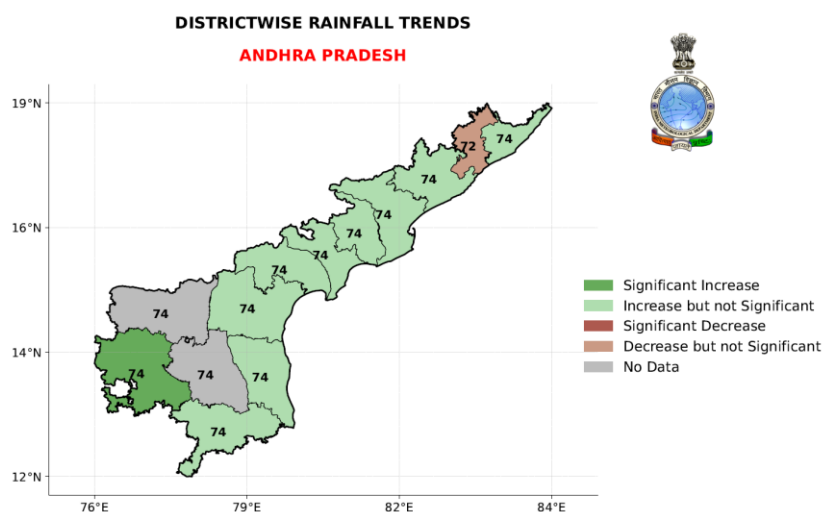


Fig. 7: District-wise annual rainfall Trend for Andhra Pradesh
[Numbers in the bracket for each district indicates the number of years up to 2024 used to calculate the trend]

Standardized Precipitation Index (SPI)

The district-wise annual SPI Map for the state for the year 2025 is shown in **Fig. 8**. The SPI is based on precipitation and serves as a measure of drought. This index yields negative values for drought and positive values for wet conditions. As the wet and dry conditions become severe, the index becomes more positive or negative. Mildly wet conditions were observed across many districts of the state. Moderately wet condition was observed in Vizianagaram, while Guntur district experienced severely wet condition. Data of one district is not available.

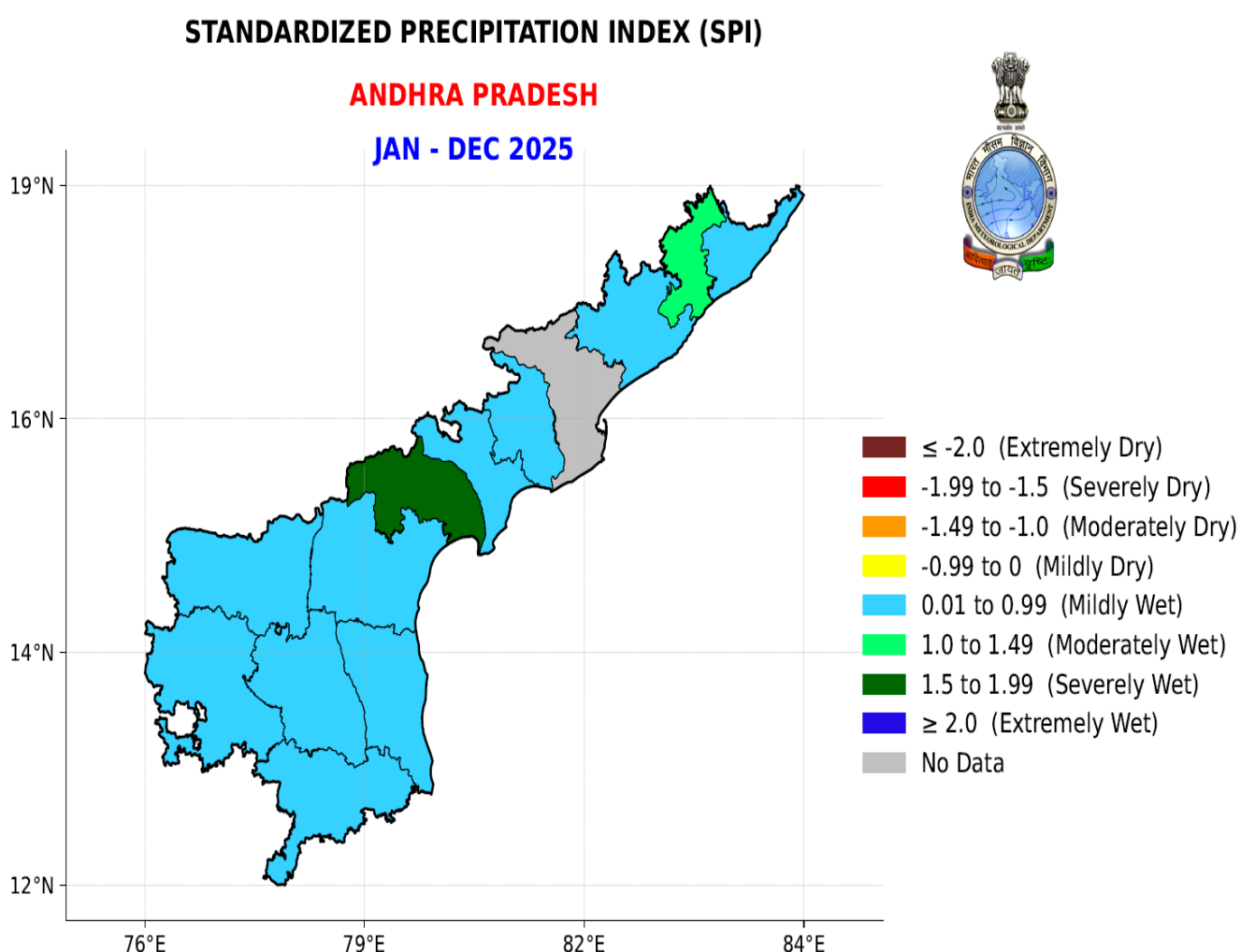


Fig. 8: District wise Annual SPI Map for Andhra Pradesh for the year 2025

Extreme Weather Events

Heavy rainfall (between 64.5-115.5mm), very heavy (115.6-204.4 mm) rainfall and extremely heavy (≥ 204.5 mm) rainfall events were recorded over some stations of Andhra Pradesh during 2025. **Fig.9** shows the location and frequency of occurrence of such events during the year. **Table 2** shows the very heavy and extremely heavy rainfall values with the date of its occurrence and the locations.

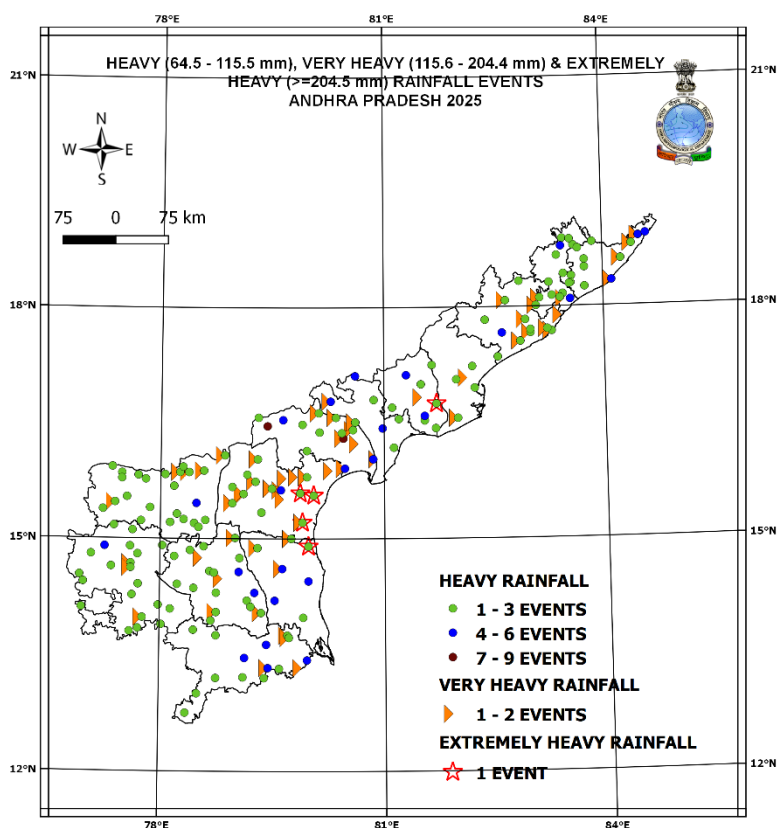


Fig. 9: Location and frequency of heavy, very heavy and extremely heavy rainfall events reported over stations of Andhra Pradesh during the period January to December 2025

Table 2

Very heavy (115.6-204.4 mm) and extremely heavy (≥ 204.5 mm) rainfall #events recorded over stations of Andhra Pradesh during January – December 2025

DATE	STATION NAME	RAINFALL (mm)
15-MAY	ANANTPUR	168.4
	RAPTADU	141.2
28-MAY	KALINGAPATNAM	133.4
	TEKKALI	139.4
17-JULY	SRUNGAVARAPUKOTA	116.4
18-JULY	YERRAGONDAPALEM	122.4
11-AUG	NANDIKOTKUR	131.4
13-AUG	AMARAVATI	142.9
	ATCHAMPET	130.8
	BAPATLA	135
	GUNTUR	132.2
	MANGALAGIRI	194.8
	TENALI	178.4
	AVANIGADA	137.2
	KARAMCHEDU	149.2
14-AUG	AMALAPURAM	133.2
	NANDIGAMA	191.4
	VIJAYAWADA A.P.	129.6
	DENKADA	130.6
	TADEPALLIGUDEM	162.2
	TANUKU	236.6
18-AUG	ANAKAPALLE	122.2
	BHEEMUNIPATNAM	133.6
	CHODAVARAM	141
	PADERU	161.4
	VEPADA	132.8
15-SEP	GUNTUR	125.2
18-SEP	CUDDAPAH	117.8
	PRODDUTUR	120.2
20-SEP	ROYACHOTI	145.4
27-SEP	ASPARI	126.2
3-OCT	MANDASA	163.6
	PALASA	167.8
6-OCT	YELAMANCHILI	121.8
9-OCT	GORANTLA	118.2
13-OCT	KALINGAPATNAM	128.9

DATE	STATION NAME	RAINFALL (mm)
19-OCT	PEDDAPURAM	116.2
22-OCT	ATMAKUR	145.6
	SRIKALAHASTI	184.6
	THOTTAMBEDU	176.8
	KODUR	178.4
24-OCT	KANDUKUR	168.2
	PRODDUTUR	127.6
28-OCT	MANDASA	123.2
	BHEEMUNIPATNAM	144.2
	VISAKHAPATNAM	191
	VISAKHAPATNAM AP	139.6
29-OCT	BAPATLA	122.6
	KAVALI	219.7
	UDAYAGIRI	116.4
	VINJAMUR	122.2
	ADDANKI	185.6
	BESTAVARIPETA	125.4
	CHIMAKURTHI	238.8
	CUMBUM	138.2
	DARSI	194
	KANDUKUR	223.2
	KARAMCHEDU	119.6
	KONAKANAMITLA	157
	MARKAPUR	151.4
	MARRIPUDI	126
	MUNDLAMURU	132.2
	ONGOLE	249.2
	PODILI	175.2
	RACHERLA	129.4
	YERRAGONDAPALEM	128.6
	SRUNGAVARAPUKOTA	117.4
	PORUMAMILLA	127
	ATMAKUR	139.6
	JUPADU BUNGALOW	124.8
	SRISAILAM	196.4

(#: Rainfall figures are for past 24 Hrs. ending on 8:30 Hrs. IST of the date)

The locations impacted by major extreme weather events in Andhra Pradesh during the year 2025 is shown in **Fig 10**. The state experienced flood/heavy rain, lightning/thunderstorms and cyclonic storm events during the year.

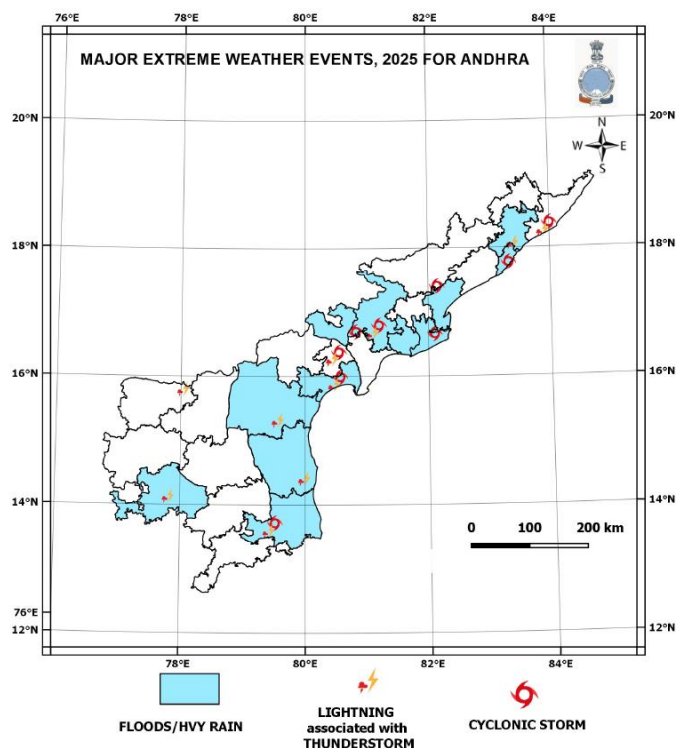


Fig. 10: Locations impacted by major extreme weather events in 2025
(details provided in the Table 3)

Table 3

Major extreme weather events during 2025 which caused loss of human lives*
in Andhra Pradesh

Event	Number of casualties and Date	Season	Affected districts
Lightning associated with Thunderstorm	21 (3, 20 Apr.; 4 to 6, 12, 31 May; 10 Jun.; 13 Sep.; 22 Oct.)	Pre-Monsoon (March to May), Monsoon (June to September), Post-Monsoon (October to December)	Bapatla, Eluru, Guntur, Kurnool, Nellore, Prakasam, Srikakulam, Sri Sathya Sai, Tirupathi, Vizianagaram
Floods and Heavy Rains	8 (30 Apr.; 12, 13 Aug.)	Pre-Monsoon (March to May), Monsoon (June to September)	Ntr, Visakhapatnam
Severe Cyclonic Storm MONTHA	3 (25 to 30 October)	Post-Monsoon (October to December)	Konaseema and parts of Andhra Pradesh

(* : Based on the media reports and the reports from Disaster Management Authorities of the government)

- 4 persons injured, as well as damage to 2,224 hectares of agricultural crops, etc. reported in Bapatla, Eluru, Kakinada, Krishna, Nandyal, Nellore, Ntr, Prakasam, Sri Sathya Sai, Tirupathi, West Godavari districts during 4 to 6 May due to Heavy Rains and Floods.
- Prakasam district was reported by Central Water Commission of India as Extreme Flood Situation during October 2025.
- Nellore, Prakasam, West Godavari districts were affected due to Extreme Heavy Rain during August and/or October 2025.

A Severe Cyclonic Storm "MONTHA," which developed during the post-monsoon season between 25 to 30 Oct. over the Bay of Bengal and crossed the Andhra Pradesh coasts between Machilipatnam and Kalingapatnam close to Narsapur as a Cyclonic Storm, on 28th October, caused damage to both public and private property. Although it did not take a toll of human lives, 42 livestock were perished. It caused destruction of 87,000 hectares of agricultural crops and electric poles, mainly from Bapatla, East Godavari, Eluru, Krishna, Konaseema, Palnadu, Srikakulam, Tirupathi and Visakhapatnam districts of the state.

Fig.11 shows the track of this severe cyclonic storm.

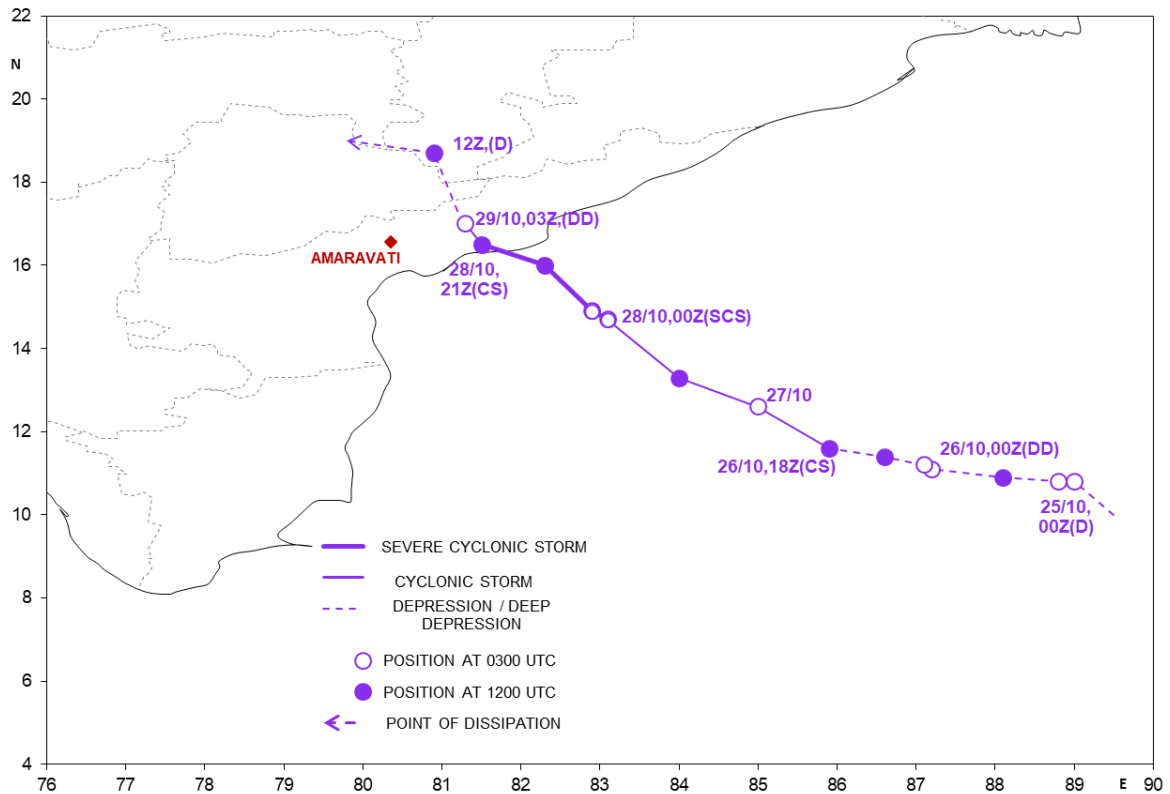


Fig. 11 Track of severe cyclonic storm "MONTHA" (25-30 Oct)

Summary

The Statement on Climate for the state of Andhra Pradesh for 2025 is prepared based on the real-time meteorological observation across the state at the district/block level in different seasons and taking reference of more than 100 years of past climate data for the state. So, the observation made in this report are very important for different sectors like agriculture, health, power, disaster management and water, etc. This joint report is prepared by the India Meteorological Department with the crucial inputs from the state government, which we expect in future as well. It is suggested that with the demanding need at global and regional level related to the climate change for sustainable development, this type of joint reports/ventures would be a path breaking for the society. By saying so, following are the submitted:

- (i) The report may please be circulated to all the concerned ministries/departments of the state government and other relevant stakeholders in the state.
- (ii) Based on the feedback, further course of actions in different climate sectors can be planned, like holding workshops, pilot studies, and any other joint ventures.

Apart from this annual climate statement, India Meteorological Department, Pune comes out regularly with climate updates which are shared on the public domain for the users' benefit. It is suggested to check for these updates regularly on the India Meteorological Department (IMD), Pune website: <https://www.imdpune.gov.in/>.

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