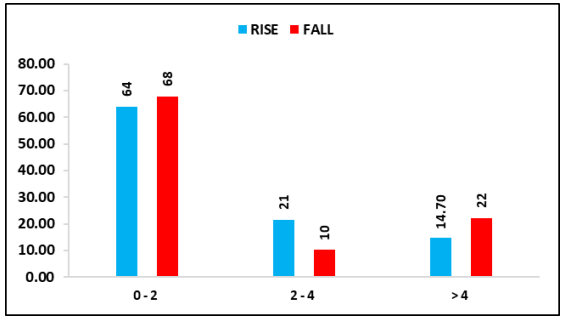

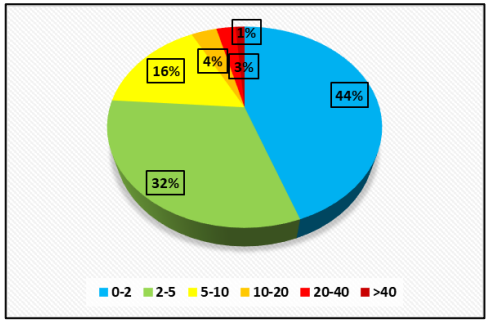

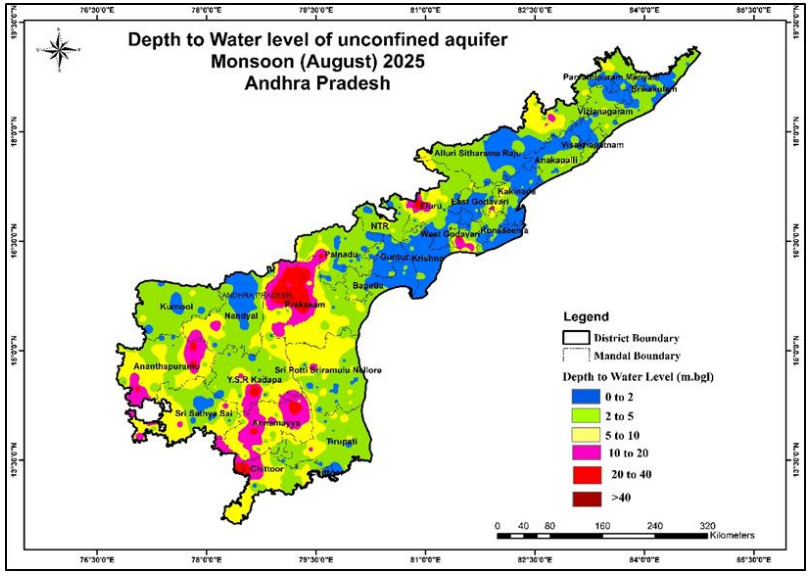

GROUND WATER LEVEL BULLETIN

AUGUST 2025

ANDHRA PRADESH

ABSTRACT

Ground water level Scenario during August 2025 highlighting the findings, status of ground water level in unconfined aquifers and its annual and decadal comparison.

CGWB, SOUTHERN REGION, HYDERABAD

1.0 INTRODUCTION

Groundwater level bulletin is prepared by CGWB depicting changes in groundwater regime of the country through different seasons. It is an effort to obtain information on groundwater levels through representative monitoring wells. The important attribute of groundwater regime monitoring is groundwater level.

The natural conditions affecting the groundwater regime involve climatic parameters like rainfall, evapotranspiration etc., whereas anthropogenic influences include pumpage from the aquifer, recharge due to irrigation systems and other practices like waste disposal etc.

Groundwater levels are being measured by Central Ground Water Board four times a year during January, May, August and November. The regime monitoring started in the year 1969 by Central Groundwater Board. As on 30.03.2025, a network of 1446 observation wells called **National Hydrograph Network Stations (NHNS)**, located in Andhra Pradesh is being monitored.

2.0 STUDY AREA

Andhra Pradesh State is the 7th largest state in India covering geographical area of 1,62,975 Km^2. It lies between North latitude 12° 37' and 19° 09' and East Longitude 76° 45' and 84° 47'. The State is bordered on the east by Bay of Bengal (coastline length~970 km), south by Tamil Nadu and Karnataka, west by Karnataka and Telangana and north by Telangana, Chhattisgarh and Odisha states. Administratively, the state is divided into 26 districts and governed by 668 revenue mandals with 28123 revenue villages. Total population of the state (2011 census) is ~8.45 crores (with male-female ratio of 993) of which 66.64% lives in rural area and 33.36% in urban area. The average density of population is 308 persons/km^2. The overall growth in total population during decade is ~9.2 % (2001 to 2011 census).

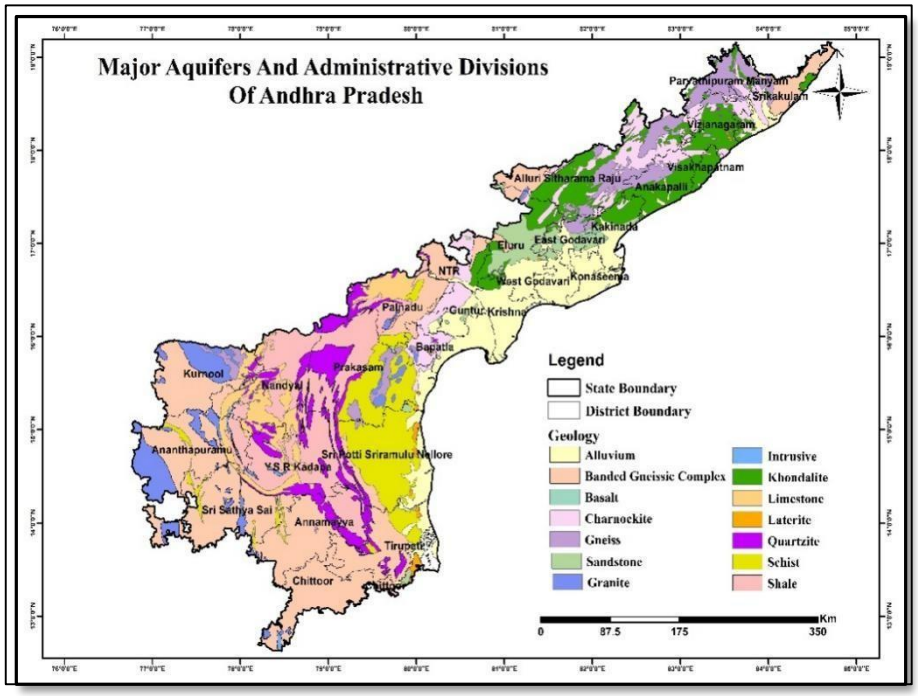

Figure-1: Map showing Major Aquifers and Administrative Divisions of Andhra Pradesh

Physiographically, Andhra Pradesh State can be divided into three distinct zones, viz., Coastal plains, Eastern Ghats and Western pediplains. The first two zones stretch from north-east to south-west in a narrow strip while 3rd zone occupy rest of the area. The elevation ranges from 0 to > 600 m above mean sea level (a.msl). Godavari and Krishna rivers and their tributaries drain the northern and central part, while Pennar river drains southern part of state before joining Bay of Bengal. There are 3 major basins and 11 medium river basins in the state.

The state is underlain by diverse rock types of different geological ages from Pre-Cambrian to Recent. 85% of the State is underlain by hard rock formations like Archaeans, Pre-Cambrians, Cuddapahs, Kurnools and Deccan traps. The remaining 20% is underlain by soft rocks including Gondwanas, Rajahmundry sandstone and Recent Alluvium **(Fig.1).**

3.0 GROUND WATER LEVEL MONITORING

Central Ground Water Board, Southern Region, is monitoring the changes in groundwater regime in Andhra Pradesh state on quarterly basis continuously. This is facilitated by a network of monitoring stations in the State located in diverse hydrogeological and geomorphic units. The number of operational wells till March 2025 was 1446 which include 656 dug wells and 790 piezometers. In August 2025, 1446 wells monitored. The number of operational wells after completion of August 2025 monitoring stands at 1446 which include 656 dug wells and 790 piezometers **(Fig.2)**. The district-wise breakup of the water level monitoring stations is given in **Table-1**.

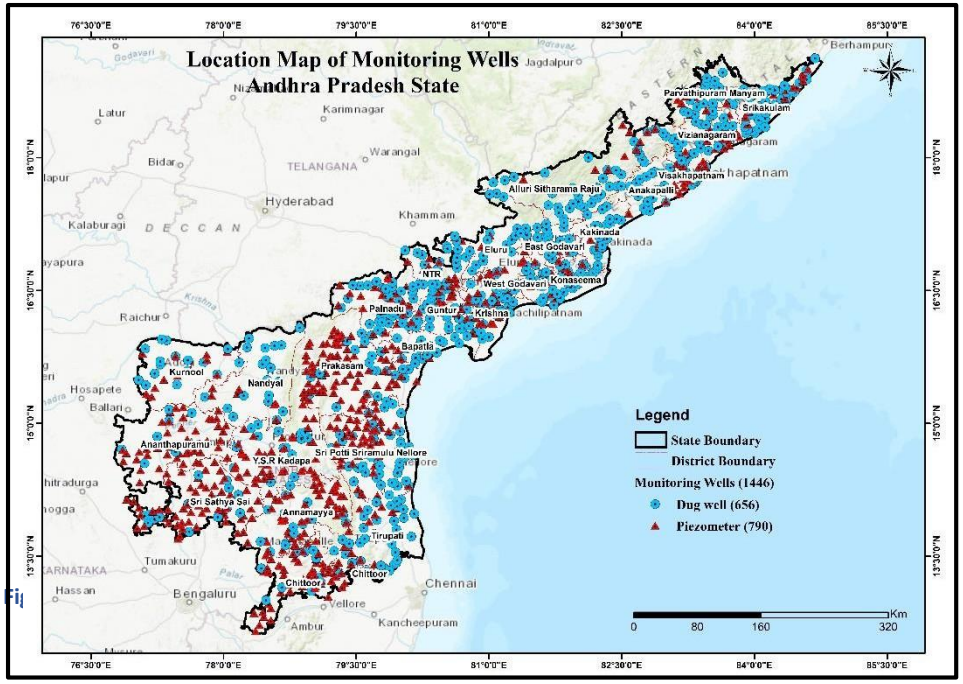

Figure- 2: Map showing locations of monitoring wells (GWMWS) in Andhra Pradesh state

Table-1: District-wise distribution of water level monitoring stations

SR. No.	District	Number of Water Level Monitoring Stations				
		2023	2024	2025		
		Total	Total	DW	PZ	Total
1	Alluri Sita Rama Raju	56	57	40	13	53
2	Anakapalli	23	28	24	4	28
3	Ananthapuramu	67	66	8	58	66
4	Annamayya	79	83	18	63	81
5	Bapatla	35	36	24	12	36
6	Chittoor	84	85	13	70	83
7	East Godavari	26	42	29	12	41
8	Eluru	51	25	20	4	24
9	Guntur	35	55	33	21	54
10	Kakinada	29	41	23	18	41
11	Konaseema	39	30	23	7	30
12	Krishna	81	85	27	55	82
13	Kurnool	29	32	17	15	32
14	Nandyal	24	27	22	5	27
15	NTR	29	39	19	19	38
16	Palnadu	67	74	45	28	73
17	Parvathipuram Manyam	27	28	22	6	28
18	Prakasam	116	122	23	98	121
19	Sirkalulam	51	111	44	64	108
20	SPS Nellore	128	91	16	72	88
21	Sri Sathya Sai	43	80	51	29	80
22	Tirupati	48	50	34	15	49
23	Visakhapatnam	20	32	15	16	31
24	Vizianagaram	44	45	30	14	44
25	West Godavari	33	36	21	14	35
26	YSR Kadapa	70	73	15	58	73
	Total	**1334**	**1473**	**656**	**790**	**1446**

4.0RAINFALL

The rainfall data collected and compiled from weekly and monthly weather reports from Andhra Pradesh Water Resources Information and Management System (APWRIMS) are used to analyze the rainfall for the period of June 2025 to August 2025 **(Fig.3)**. **Table-2** gives the district-wise rainfall data for the period of June 2025 to August 2025 & June 2024 to August 2024, Normal and the departure of June-August 2025 rainfall with other periods.

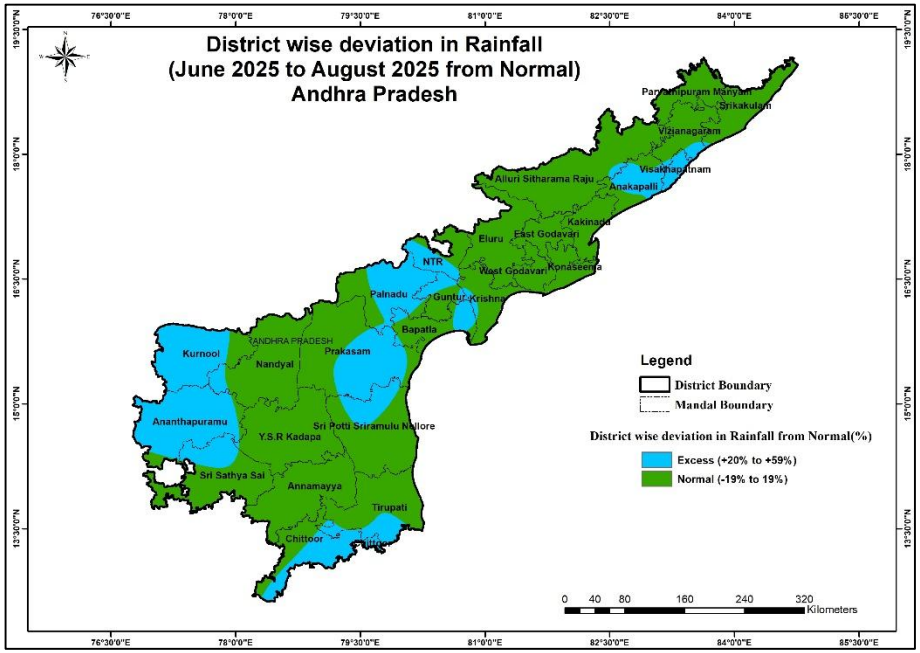

Figure-3: Rainfall deviation (June 2025 to August 2025) from normal rainfall.

Table-2: District-wise variability of rainfall in Andhra Pradesh (2024 to 2025)

District	June-2025 to August 2025 (mm)	June-2024 to August 2024 (mm)	Normal (mm)	Departure from 2024 (%)	Departure from Normal (%)	Category
Alluri Sitharama Raju	667.2	788.8	710.0	-15%	-6%	Normal
Anakapalli	574.7	632.2	478.6	-9%	20%	Excess
Ananthapuramu	267.0	385.3	208.8	-31%	28%	Excess
Annamayya	297.9	318.1	265.3	-6%	12%	Normal
Bapatla	424.3	479.6	346.8	-12%	22%	Excess
Chittoor	397.6	439.5	305.6	-10%	30%	Excess
East Godavari	549.9	828.9	602.6	-34%	-9%	Normal
Eluru	615.4	943.6	594.1	-35%	4%	Normal
Guntur	500.2	627.6	426.9	-20%	17%	Normal
Kakinada	479.7	669.2	490.6	-28%	-2%	Normal
Konaseema	459.2	777.0	582.1	-41%	-21%	Deficit
Krishna	441.8	703.3	482.0	-37%	-8%	Normal
Kurnool	351.8	401.0	282.0	-12%	25%	Excess
Nandyal	379.0	462.7	370.3	-18%	2%	Normal
NTR	654.9	842.5	583.2	-22%	12%	Normal
Palnadu	437.9	470.9	351.6	-7%	25%	Excess
Parvathipuram Manyam	539.8	668.4	558.2	-19%	-3%	Normal
Prakasam	305.8	308.9	237.7	-1%	29%	Excess
Sri Potti Sriramulu Nellore	180.4	253.9	216.7	-29%	-17%	Normal
Sri Sathya Sai	249.6	372.3	230.8	-33%	8%	Normal
Srikakulam	484.1	596.1	501.2	-19%	-3%	Normal
Tirupati	341.4	358.4	290.0	-5%	18%	Normal
Visakhapatnam	552.7	559.9	430.5	-1%	28%	Excess
Vizianagaram	555.6	626.5	482.3	-11%	15%	Normal
West Godavari	485.6	842.6	607.1	-42%	-20%	Deficit
Y.S.R Kadapa	250.8	313.9	286.6	-20%	-13%	Normal
State	**438.7**	**561.8**	**420.1**	**-22%**	**4%**	**Normal**

5.0 GROUND WATER LEVEL SCENARIO (AUGUST 2025)

5.1 SHALLOW AQUIFER (UNCONFINED)

5.1.1 DEPTH TO WATER LEVEL

Depth to Water Level in Unconfined Aquifer (August 2025)

Analysis of depth to water level data of 775 wells shows water levels vary between 0 m (Chittoor District) to 61 m bgl (Prakasham district). Water level of less than 2 m bgl is recorded in 44.6% of wells, between 2 and 5 m bgl in 31.6% of wells,between 5 and 10 m bgl in 16.2% of wells, between 10 and 20 m bgl in 3.6% of wells, 20-40 mbgl in 2.7% of wells and >40 mbgl in 1.3% of wells. Due to Good monsoon rainfall, most of the districts experienced normal or excess rainfall, which led to shallow water level of less than 5 mbgl in 76% of the State **(Fig.4)**.

Shallow water level of less than 2 m bgl is mainly observed in parts of Guntur, Krishna, East Godavari, Konaseema and Alluri Sitharama districts. Water levels of 2–5 mbgl are found all over the State, mainly in parts of Chittoor, Kurnool, Tirupati, Palnadu and Alluri Sitharam Raju districts. 5 to 10 m bgl of water levels covering major part of State is mainly observed in parts of Southern, South western and parts of eastern districts. 10 – 20 m bgl water level is found in parts of Chittoor, Annamayya, Prakasham, Ananthapuramu and Annamayya districts. Deeper water levels exceeding 20 meters found in small patches in Prakasham, Annamayya and Chittoor districts **(Fig.5)**.

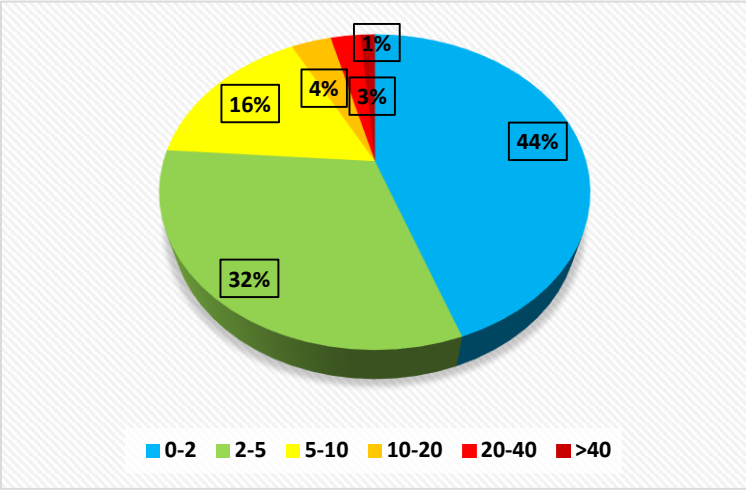

Figure-4: Percentage of wells in different water level ranges in unconfined aquifer.

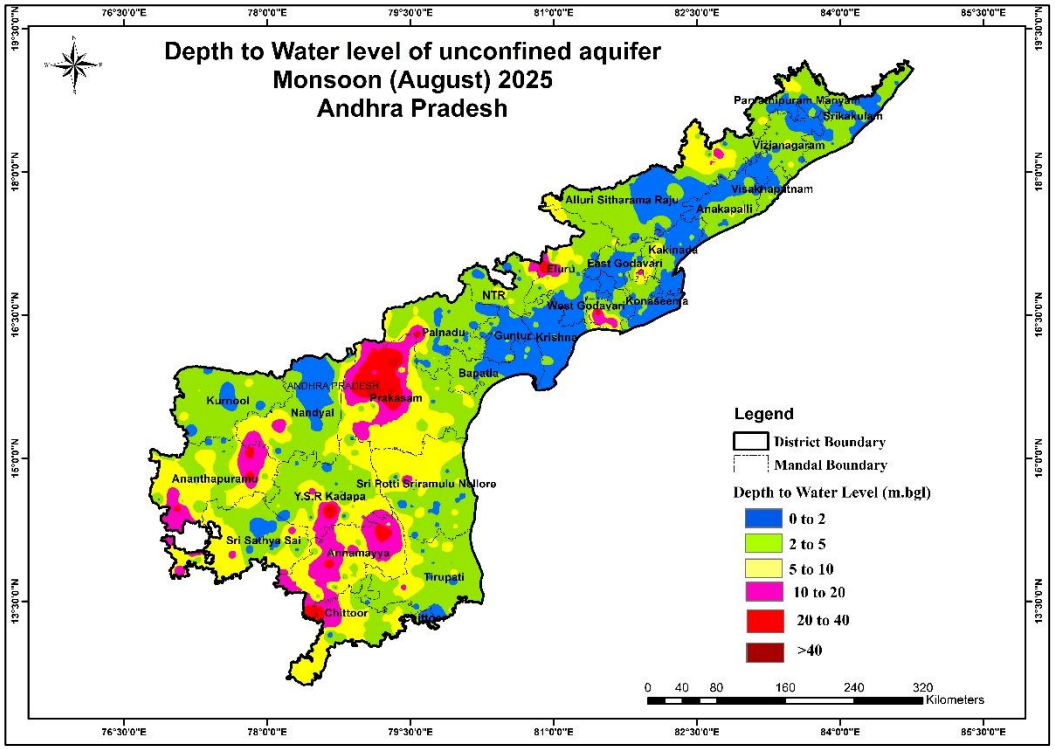

Figure-5: Depth to water level of unconfined aquifer during August 2025.

5.1.2 SEASONAL FLUCTUATION IN WATER LEVEL

Seasonal Fluctuation of Water Level in Unconfined Aquifer (May 2025 to August 2025)

Analysis of data of 699 wells shows that water level rise is recorded in 80% wells (562 wells), water level fall is recorded in 20% wells (137 wells).

Rise in Water Levels:

Out of 562 wells, water level rise of less than 2 m is recorded in 62.63% wells, 2 to 4 m in 24.5% wells and more than 4 m in 12.8% of the wells. Water level rise of less than 2 m is seen all over the state mostly in parts of Alluri Sitharama Raju, Nandyal, Palnadu and Kurnool districts. Water level rise of 2 to 4 m is observed mainly in Ananthapuramu, NTR, Chittoor, Vizianagaram, Srikakulam and Parvathipuram Manyam districts. Rise of more than 4 m is seen majorly in Palnadu, Y.S.R Kadapa, Annamayya, Eluru and East Godavari districts.

Fall in Water Levels:

Out of 137 wells that have registered fall in water levels, 76.7% have recorded less than 2 m while 24.5% in the range of 2 to 4 m and remaining 12.8% wells registered water level fall of more than 4 m. Fall of less than 2 m is mainly observed in Bapatla, Nellore, Tirupati and Annamayya district. Fall of 2 to 4 m is observed mainly in parts of Annamayya Bapalta and Prakasham districts. Fall of >4 m is mainly observed in Chittoor Alluri Sitharama Raju and Y.S.R Kadapa districts **(Fig. 6 &7)**.

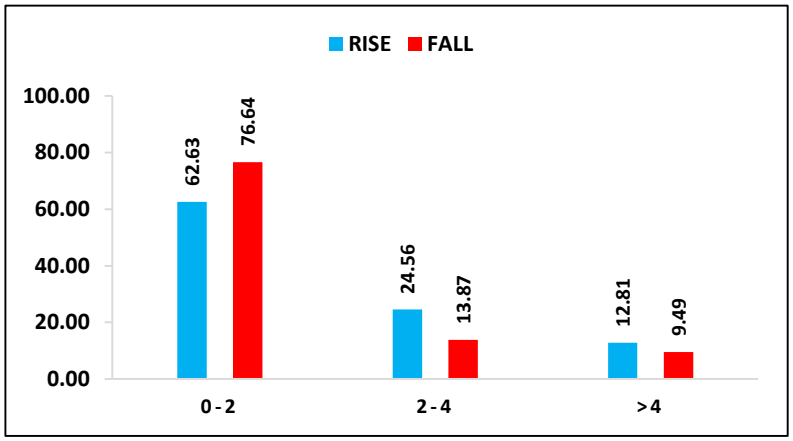

Figure-6: Percentage of wells showing rise and fall in WL in unconfined aquifer (May 2025 to August 2025)

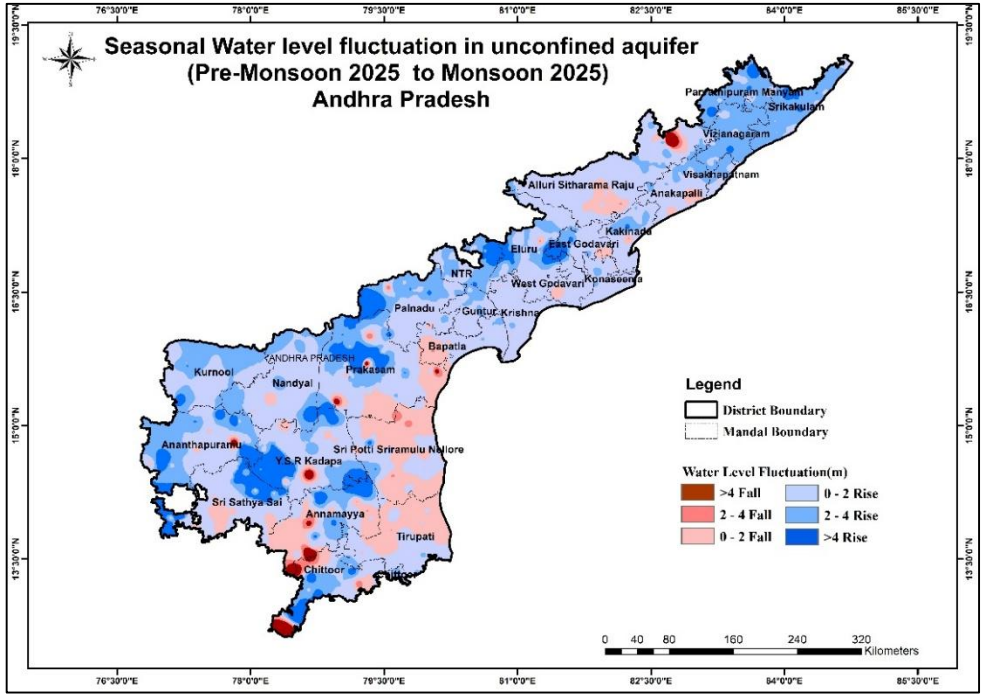

Figure-7: Seasonal water level fluctuation in unconfined aquifer (May 2025 to August 2025)

5.1.2 ANNUAL FLUCTUATION IN WATER LEVEL

Annual Fluctuation of Water Level in Unconfined Aquifer (August 2024 to August 2025)

Analysis of data of 744 wells shows that water level rise is recorded in 84% wells (626 wells), water level fall is recorded in 16% wells (118 wells).

Rise in Water Levels:

Out of 626 wells, water level rise of less than 2 m is recorded in 64% wells,2 to 4 m in 21.4% wells and more than 4 m in 14.7% of the wells. Water level rise of less than 2 m is seen in almost all of districts of the state mainly in Northern, South eastern, South western and North eastern parts. Water level rise of 2 to 4 m is observed mainly Kurnool, Ananthapuramu, Alluri Sitharama Raju, Tirupati and Vishakhapatnam districts. Rise of more than 4 m is seen majorly in Alluri Sitharama Raju, Prakasham, Nandyal, East Godavari, Sri Sathya Sai and Annamayya districts.

Fall in Water Levels:

Out of 118 wells that have registered fall in water levels, 68% have recorded less than 2 m while 10% in the range of 2 to 4 m and remaining 22% wells registered water level fall of more than 4 m. Fall of less than 2 m is mainly observed in parts of Eluru, Nandyal and Vizinagaram districts. Fall of 2 to 4 m is observed mainly in Prakasham, Y.S.R Kadap and Eluru districts. Fall of >4 m is mainly observed in Eluru, West Godavari, Prakaham, Annamayya, Chittoor, and Y.S.R Kadapa districts **(Fig. 8 & 9)**.

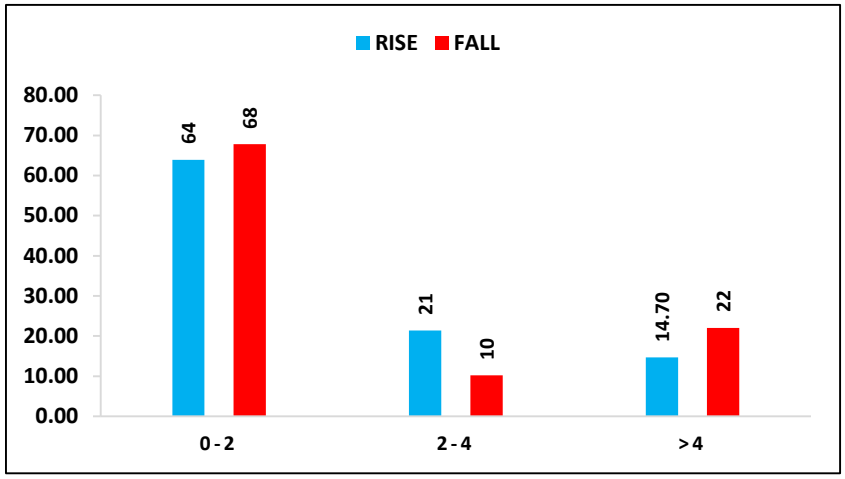

Figure-8: Percentage of wells showing rise and fall in WL in unconfined aquifer (August 2025 to August 2025)

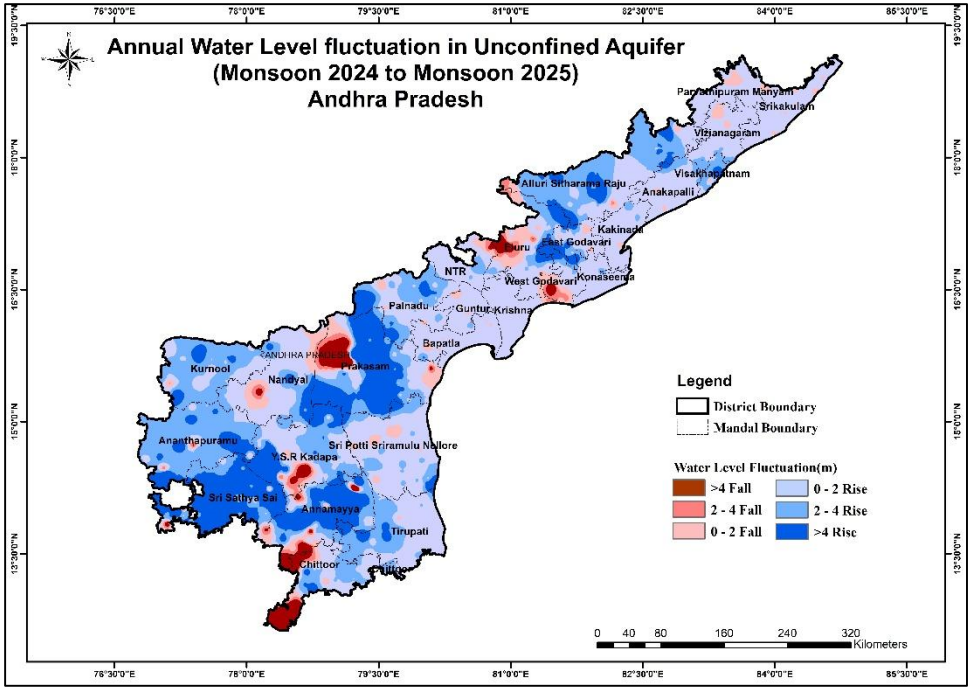

Figure-9: Seasonal water level fluctuation in unconfined aquifer (August 2024 to August 2025)

Annual Fluctuation of Water Level in Unconfined Aquifer (August 2023 to August 2025)

Analysis of data of 729 wells shows that water level rise is recorded in 77% wells (563 wells) and water level fall is recorded in 23% wells (166 wells).

Rise in Water Levels:

Out of 563 wells, water level rise of less than 2 m is recorded in 72.2% wells, 2 to 4 m in 17.2 % wells and more than 4 m in 10.4% of the wells. Water level rise of less than 2 m is seen in all of the districts of the State. Water level rise of 2 to 4 m is mainly observed in Praksham, Palnadu, Ananthapuram and Sri Sathya Sai districts. Water level rise of more than 4 m is significantly observed in parts of Palnadu, Prakasham, Y.S.R Kadapa, Sri Sathya Sai districts.

Fall in Water Levels:

Out of the 166 wells that have registered fall in water levels, 61.4% have less than 2 m while 17.4% in the range of 2 to 4 m and remaining 21% wells registered water level fall of more than 4 m. Fall of less than 2 m is recorded in parts of Parvathipuram Manyam, Srikakulam, Eluru, Alluri Sitharama Raju, Prakasham, Annamayya, Ananthapuram and Nandyal districts. Fall of 2 to 4 m is observed in Eluru, Prakasham, Annamayya and Ananthapuram districts. Fall of more than 4m is recorded mainly in parts of Alluri Sitharama Raju, Eluru, Prakasham, Chittoor, Y.S.R Kadapa, Annamayya and Ananthapuram districts**(Fig. 10 & 11)**.

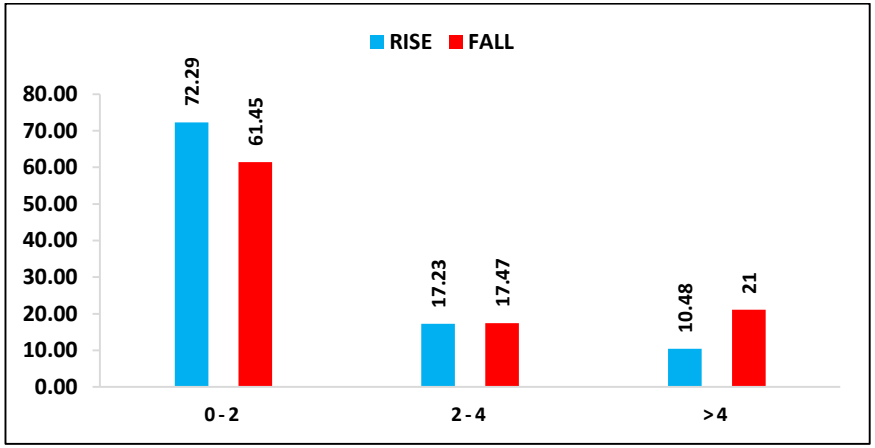

Figure-10: Percentage of wells showing rise and fall in WL in unconfined Aquifer (August 2023 to August 2025)

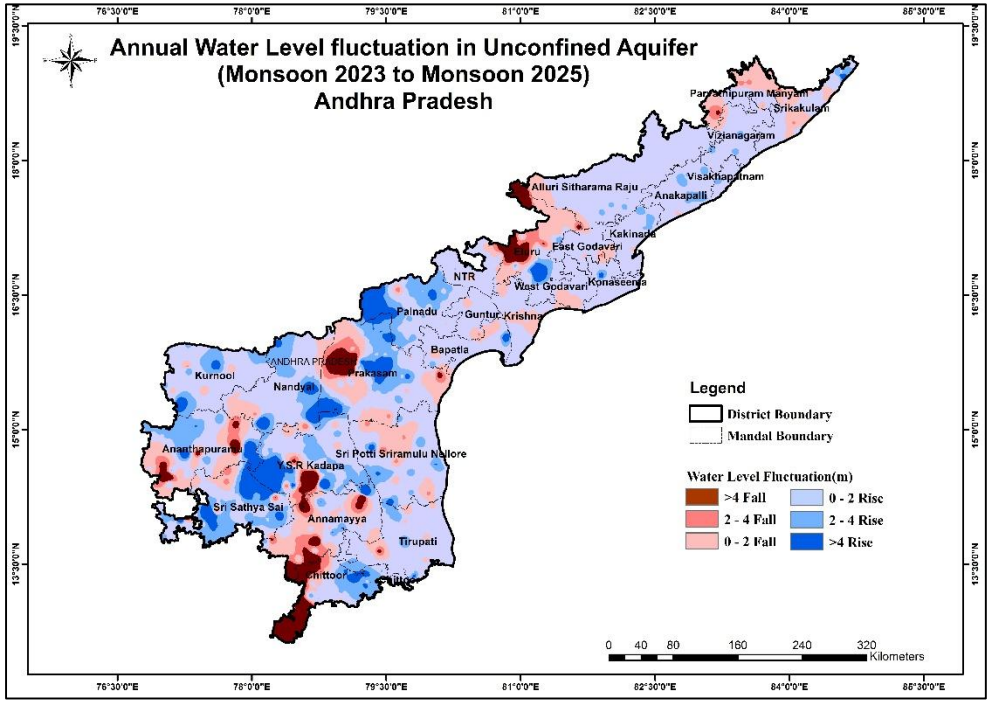

Figure-11: Annual water level fluctuation in unconfined Aquifer (August 2023 to August 2025)

5.1.4 DECADAL FLUCTUATION IN WATER LEVEL

Decadal Fluctuation of Water Level in Unconfined Aquifer (Decadal Mean to January 2025)

Analysis of data of 774 wells shows that water level rise is recorded in 58% wells (449 wells), water level fall is recorded in 42% wells (325 wells).

Rise in Water Levels:

Out of 449 wells, water level rise of less than 2 m is recorded in 78 % wells, 2 to 4 m in 14% wells and more than 4 m in 8% of the wells. Water level rise of less than 2 m is seen in all of the districts of the State mainly in Northern and north eastern States. Water level rise of 2 to 4 m is mainly observed in patches, Kurnool, Y.S.R Kadapa, Sri Potti Sriamulu Nellore and East Godavari districts. Water level rise of more than 4 m is observed in parts of districts of East Godavari, Y.S.R Kadapa, Sri Sathya Sai, Nandyal and Kurnool.

Fall in Water Levels:

Out of the 325 wells that have registered fall in water levels, 55% have recorded less than 2 m while 18% in the range of 2 to 4 m and remaining 27% wells registered water level fall of more than 4 m. Fall of less than 2 m is recorded in parts of Srikakulam, Vizinagaram, Kakinada, West Godavari, Konaseema, Ananthapuramu, and Annamayya districts. Fall of 2 to 4 m is observed in West Godavari, Tirupati, Chittoor, Prakasham, Sri Potti Sriramulu Nellore and Ananthapuramu districts. Fall beyond 4 m is recorded mainly in parts Prakasham, West Godavari, Annamayya, Chittoor, Ananthapuramu, Nandyal, Y.S.R Kadapa and Eluru districts**(Fig. 12 & 13)**.

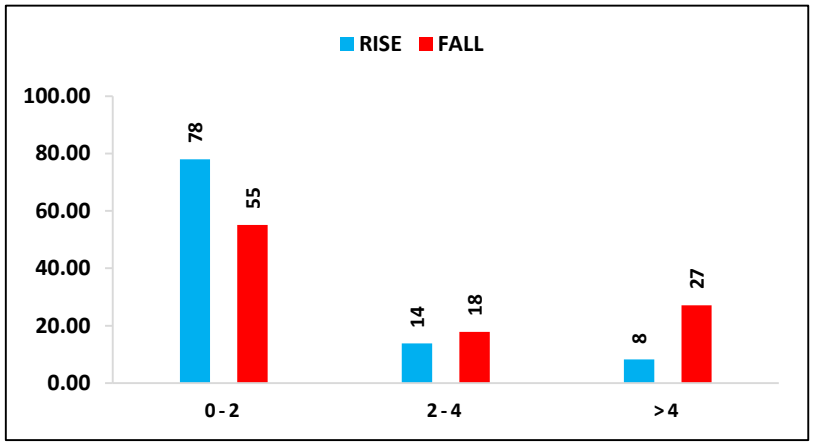

Figure-12: Percentage of wells showing rise and fall in WL in confined Aquifer (Decadal Mean to August 2025)

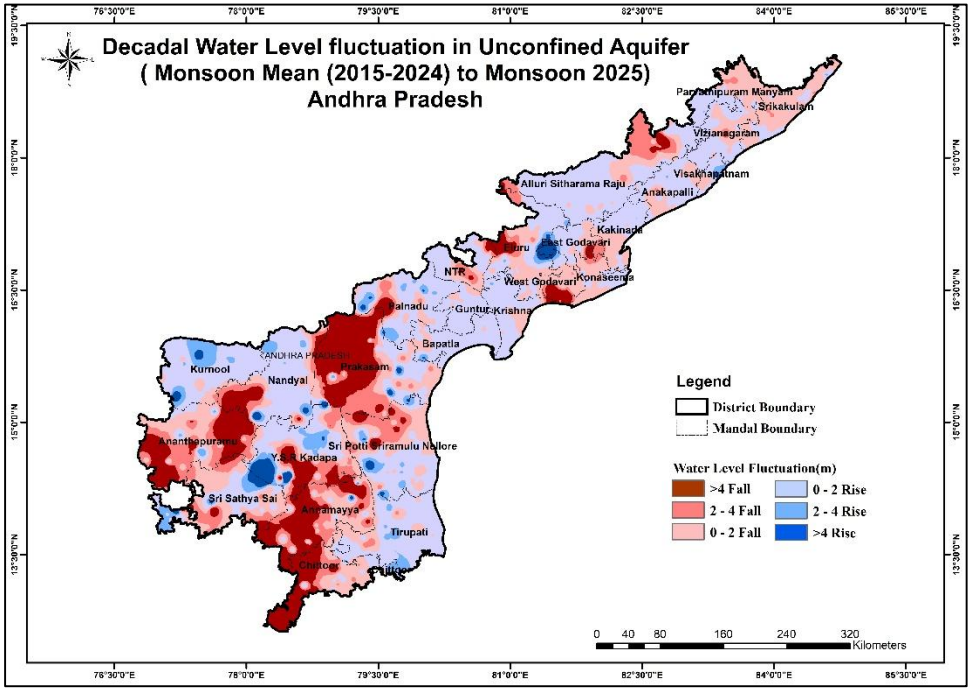

Figure-13: Decadal water level fluctuation in confined Aquifer (Decadal Mean to August 2025)

6.0 SUMMARY

As a component of the National Ground Water Monitoring Programme, the CGWB, SR, Hyderabad conducts monitoring of the ground water conditions on a quarterly basis: in January, pre-monsoon May, August, and post- monsoon November. Additionally, two yearly assessment of ground water quality is performed in May and November. As of March 2025, the Southern Region of the Central Ground Water Board supervises 656 dug wells and 790 piezometers. This comprehensive report aims to portray the variations in the state's groundwater conditions across different aquifers.

During August 2025, 92% of the state's territory exhibited a water depth of up to 10 meters below the ground level in unconfined aquifers. Areas with deeper water levels exceeding 20 meters accounted for 4% of the state's territory in unconfined aquifers mainly in Prakasham, Annamayya and Chittoor districts.

The southwest monsoon rainfall (June–August 2025) in Andhra Pradesh registered a state average of 438.7 mm, which is 22% lower than 2024 (561.8 mm) but still 4% above the long-term normal (420.1 mm), thus placing the season in the Normal category. Out of 26 districts, 7 districts (Anakapalli, Ananthapuramu, Bapatla, Chittoor, Kurnool, Palnadu, and Visakhapatnam) experienced Excess rainfall, while 2 districts (Konaseema and West Godavari) recorded Deficit rainfall. The remaining 17 districts received Normal rainfall, though several showed significant intra-district deviations. Rainfall decline compared to 2024 is evident across most districts, particularly in coastal belts such as Eluru (-35%), Krishna (-37%), Konaseema (-41%), and West Godavari (-42%), which saw sharp drops from last year.

Annual fluctuation analysis (August 2024 to August 2025) indicated that water level rise is recorded in 84% wells. When compared to a two-year water level rise is recorded in 77% wells, suggesting variability depending on localized factors. However, decadal comparisons (Mean Aug 2015-2024 to Aug 2025, shows concerning trend with water level rising in 58% wells and water level falling in 42% wells

7.0 RECOMMENDATIONS

Analysis of groundwater scenario of Andhra Pradesh reveals that the dynamics of groundwater is highly related with the variation in rainfall. Hence the following recommendations are submitted:

- To sustain Monsoon Recharge, efforts must be made to harvest rainwater through check dams, percolation tanks at sites highlighted in Artificial Recharge Master Plan. Also protect and enhance natural recharge zones identified in District Recharge Plan to retain monsoon benefits.
- Promote efficient micro-irrigation techniques like drip and sprinkler irrigation to reduce groundwater extraction and encourage farmers to grow less water-intensive crops in drought-prone regions of Andhra Pradesh. Adopt crop diversification to shift from high-water-consuming crops (paddy, sugarcane) to drought-resistant crops.
- In deep water level zones (>20m), enforce strict regulations on dependency on borewell by implementing incentives for sustainable practices. In Urban areas, dependency on deeper aquifers has to curb by improving surface water supply for domestic use. Promote the reuse of treated water for non-potable purposes to lessen groundwater exploitation.
- Promote afforestation in depleted regions to improve soil moisture retention and groundwater recharge. Select native tree species with deep root systems to enhance percolation and groundwater sustainability.
- Escalate Community Awareness programs to educate farmers and industries on water-efficient practices. Establish community water conservation groups to encourage participatory groundwater management.


CENTRAL GROUND WATER BOARD
1954
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