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Technical Report Series

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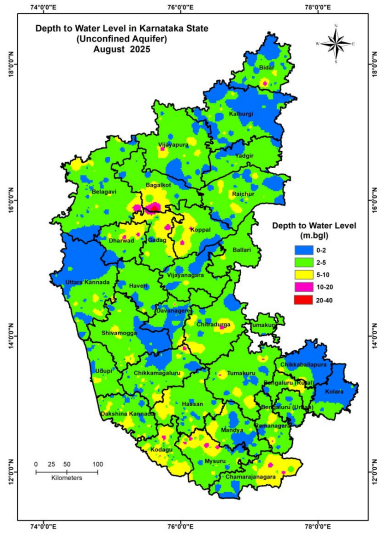
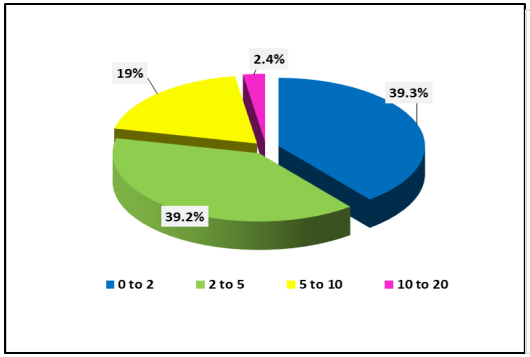
GROUND WATER LEVEL BULLETIN AUGUST 2025

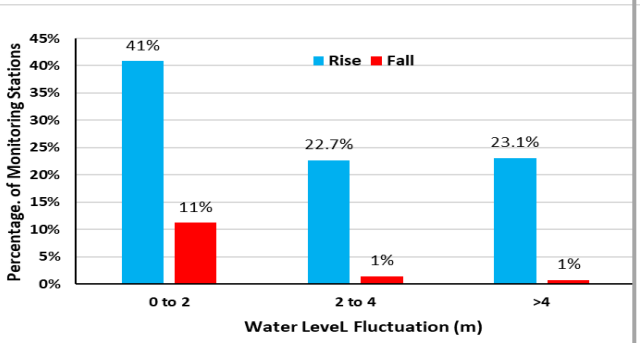
KARANATAKA STATE

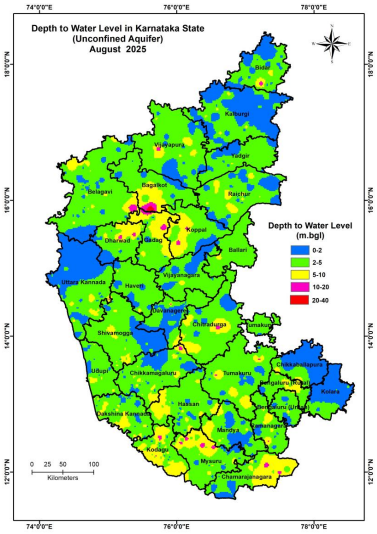


Central Ground Water Board
South Western Region
Bengaluru

October 2025







GROUND WATER LEVEL BULLETIN AUGUST 2025
KARANATAKA STATE

ABSTRACT

This report details the groundwater level scenario in Karnataka for August 2025 monitoring. The analysis is based on data from a network of 1232 dug wells distributed across the state's diverse hydrogeological units. Between June and August 2025, the State received a total rainfall of 725 mm, which is 5 percent more than the normal of 691 mm.

The depth to water level across most of the state (98%) is within 10 meters below the ground level (m bgl). Compared to pre-monsoon levels (May 2025), 87% of wells showed a rise in water levels, reflecting significant recharge. Year-on-year comparisons of August 2025 water level data highlights a positive trend, with 62% of wells showing a rise over August 2024 levels, and 91% over August 2023. Furthermore, 84% of wells recorded rise in water levels in August 2025 when compared with the decadal average (2015–2024).

The report concludes with recommendations for sustainable groundwater management, emphasizing rainwater harvesting and water conservation to ensure long-term water security.

Central Ground Water Board,
South Western Region, Bangalore

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1 INTRODUCTION

The groundwater bulletin is a periodical publication by the Central Ground Water Board (CGWB) that depicts the changing groundwater regime of the Karnataka State across different seasons. It is an effort to obtain critical information on groundwater levels through a network of representative monitoring wells. The groundwater regime is influenced by natural climatic parameters like rainfall and evapotranspiration, as well as anthropogenic factors such as groundwater extraction for various uses, recharge from irrigation systems, and water conservation practices. The CGWB has been monitoring groundwater levels since 1970. Measurements are taken four times a year: January, May (Pre-Monsoon), August, and November (Post-Monsoon). As on March 2025, the National Hydrograph Network Stations (NHNS) in Karanataka consists of 2292 monitoring wells including 1322 dug wells and 970 piezometers.

2 STUDY AREA

The state of Karnataka has a geographical area of 1, 91, 761 sq. km. and is situated between N. Latitudes 11°31" and 18°45' and E. Longitudes 74°12' and 78°40'. For administrative purposes, the state is divided into 31 districts and 234 taluks. Physiographically, the state is categorized into four units namely Northern plain, Southern Plain, Coastal area and Hilly region. Karnataka state is drained by the rivers Krishna, Cauvery, Godavari, West flowing minor rivers, Palar, Pennar and Ponnaiyar.

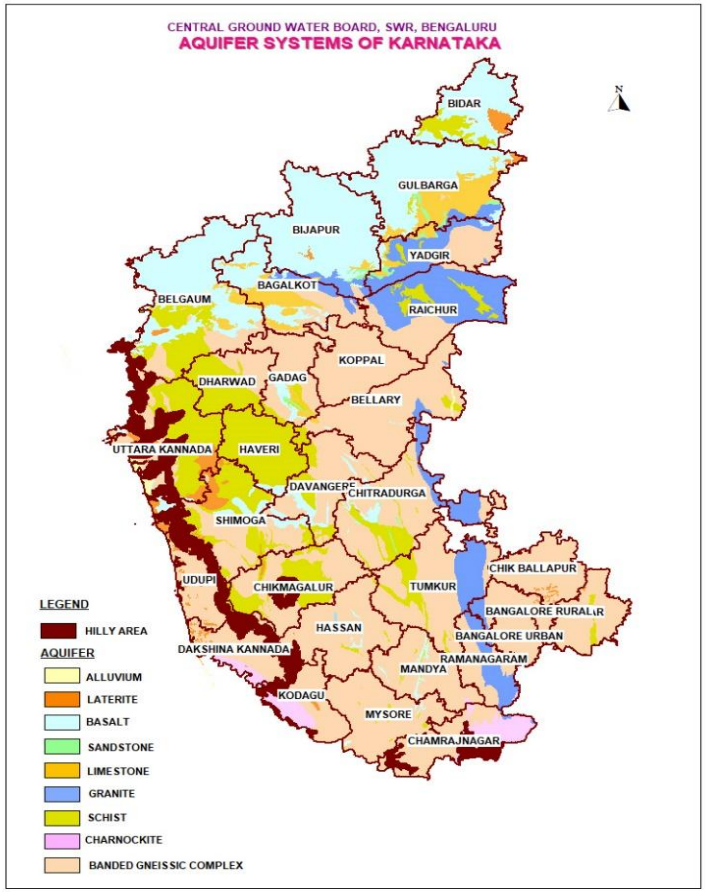

Figure 1: Map showing major aquifers and administrative divisions of the state/study area

The state of Karnataka is underlain by geological formations ranging in age from Archaean to Recent. Major portion of the State is covered by Peninsular Gneisses, Granites and Dharwarian Schists of Archaean age. Substantial area in the northern part of Karnataka is underlain by basalts, which form a continuation of the Deccan Traps occurring in Maharashtra. The sedimentaries comprising Bhima and Kaladgis occupy a small area in the northern districts. The recent alluvium is restricted to a narrow belt in the coastal area and along stream courses.

3 GROUND WATER LEVEL MONITORING

The Central Ground Water Board, South Western Region, continuously monitors the groundwater regime in Goa on a quarterly basis. The established network comprises 2292 monitoring wells including 1322 dug wells and 970 piezometers, located in diverse hydrogeological units.

For the August 2025, groundwater levels were monitored in 1232 dug wells of 747 piezometers. The remaining stations were not monitored due to inaccessibility, pump fitted etc. The district-wise breakup of the water level monitoring stations in Karnataka is given in Table-1.

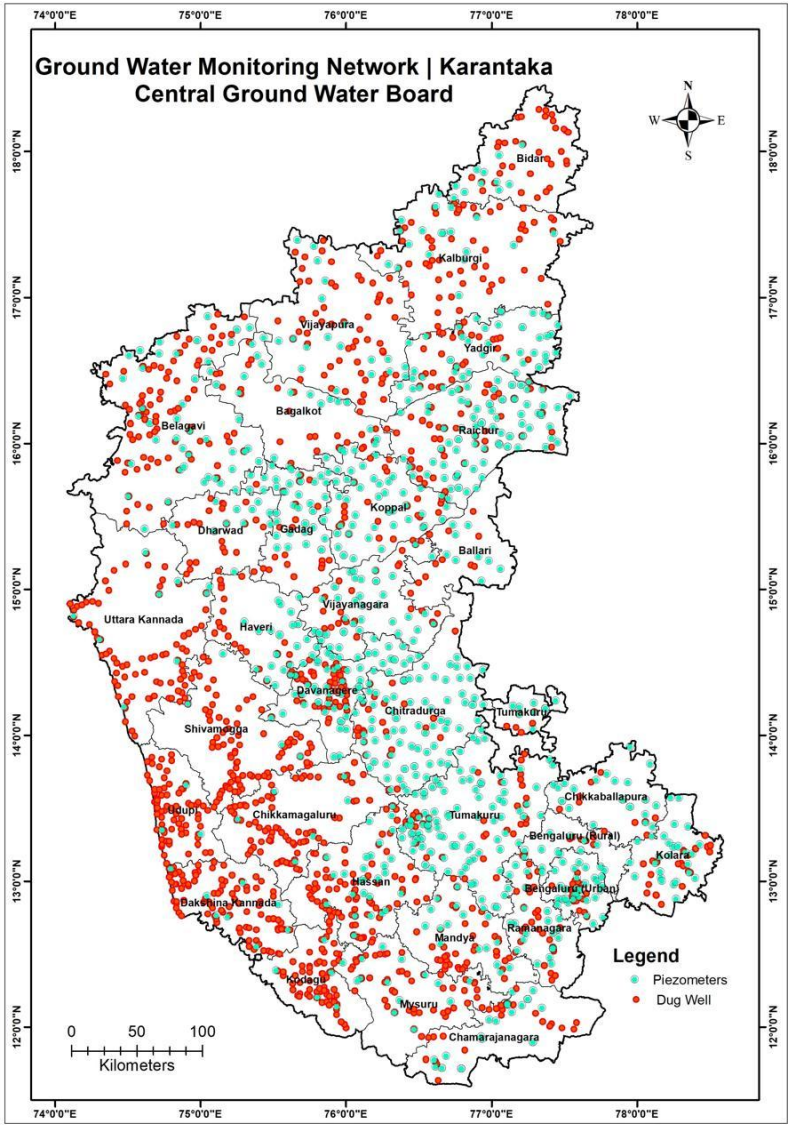

Figure. 2 Map showing locations of monitoring wells (NHNS) in the state/study area

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

Sl.NO	District	Total Number of Dug Well	Total Number of Piezometer
1	Bagalkot	25	23
2	Ballari	11	9
3	Bangalore Rural	10	15
4	Bangalore Urban	21	46
5	Belgaum	84	44
6	Bidar	34	11
7	Bijapur	58	19
8	Chamarajanagar	22	26
9	Chikballapur	9	24
10	Chikmagalur	76	6
11	Chitradurga	25	81
12	Dakshin Kannada	93	8
13	Davanagere	42	59
14	Dharwad	24	12
15	Gadag	20	43
16	Hassan	60	20
17	Haveri	75	27
18	Kalaburgai	24	28
19	Kodagu	73	5
20	Kolar	23	28
21	Koppal	23	49
22	Mandya	41	16
23	Mysore	56	35
24	Raichur	43	94
25	Ramnagara	26	22
26	Shimoga	78	4
27	Tumkur	40	111
28	Udupi	74	3
29	Uttar kannada	78	9
30	Vijayanagar	25	45
31	Yadgir	29	47
	Total	**1322**	**969**

4 RAINFALL AND CLIMATE

Rainfall Monsoon Months of June, July & August 2025

In Karnataka State, the year is generally divided into four seasons. These are: dry season (Jan-Feb), premonsoon season (Mar-May), Monsoon season (Jun-Sep) and post monsoon season (Oct-Dec). The pre monsoon season is characterised by heavy rains often accompanied by hail. The Indian summer monsoon, the harbinger of hope for the farmers, normally sets in the state by the first week of June and covers the entire state in about two weeks' time. It starts withdrawing by the end of September and totally goes out of the state by the middle of October. Bulk of the annual rainfall is contributed by the south west monsoon. It is replaced by the winter monsoon, which is relatively dry. Significant rainfall occurs due to passing depressions/cyclones. The rainfall in various districts/regions/taluks has been classified as Excess (E), Normal (N) and Deficit (D) as per following criteria.

Excess : 120% of normal or more
Normal : 81% to 119% of normal
Deficit : 80% of normal or less

Based on the above classification, districts falling under the above-mentioned three classes of Karnataka and as well as for the State as a whole for pre-monsoon season during 2025 has been presented below.

The rainfall data collected and compiled from Karnataka State Natural Disaster Management Cooperation (KSNDMC), GoK for the period June 2025 - August 2025. Table 2 gives the district-wise rainfall data for the period June to August 2024 & 2025, normal and the departure of June - August 2025 rainfall with other periods. In general, the showers are received during June- August are considered for the analysis. During the period (June to August 2025), the State had received a total rainfall of 725 mm, which is 5 percent more than the normal of 691 mm. Rainfall was Excess in 8 districts, Normal in 22 districts and Deficit in 1 district (Table 2). Map showing the district-wise rainfall distribution in Karnataka State for the period of June to August 2025 period is given as Fig.3.

Table.2: District-Wise Cumulative Rainfall and Percentage Departure, During June to August 2025

S. No.	District	June - August 2025 Actual (mm)	June - August 2024 Actual (mm)	June - August 2025 Normal (mm)	%DEP From 2024	%DEP From Normal	Category
1	Bagalkote	312	317	225	-2	39	Excess
2	Ballari	208	357	230	-42	-10	Normal
3	Belagavi	595	732	476	-19	25	Excess
4	Bengaluru Rural	308	347	274	-11	12	Normal
5	Bengaluru Urban	282	379	288	-26	-2	Normal
6	Bidar	498	441	482	13	3	Normal
7	Chamarajanagara	153	314	193	-51	-21	Deficit
8	Chikkaballapura	254	323	257	-21	-1	Normal
9	Chikkamagaluru	1125	1455	1178	-23	-4	Normal
10	Chitradurga	206	280	174	-26	18	Normal
11	Dakshina Kannada	2983	3268	3052	-9	-2	Normal
12	Davanagere	382	445	285	-14	34	Excess
13	Dharwad	446	439	394	2	13	Normal
14	Gadag	333	281	239	19	39	Excess
15	Hassan	688	892	617	-23	12	Normal
16	Haveri	363	430	409	-16	-11	Normal
17	Kalaburagi	484	463	401	5	21	Excess
18	Kodagu	1923	2146	1965	-10	-2	Normal
19	Kolar	246	333	238	-26	3	Normal
20	Koppala	278	306	238	-9	17	Normal
21	Mandya	217	291	187	-25	16	Normal
22	Mysuru	274	430	310	-36	-12	Normal
23	Raichur	320	361	290	-11	10	Normal

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S. No.	District	June - August 2025 Actual (mm)	June - August 2024 Actual (mm)	June - August 2025 Normal (mm)	%DEP From 2024	%DEP From Normal	Category
24	Bengaluru South	246	327	260	-25	-5	Normal
25	Shivamogga	1622	1950	1792	-17	-9	Normal
26	Tumakuru	292	416	212	-30	38	Excess
27	Udupi	3764	3888	3617	-3	4	Normal
28	Uttara Kannada	2542	3128	2392	-19	6	Normal
29	Vijayanagar	291	365	265	-20	10	Normal
30	Vijayapura	377	350	248	8	52	Excess
31	Yadgir	429	400	357	7	20	Excess
	State	**725**	**691**	**691**	**5**	**5**	**Normal**

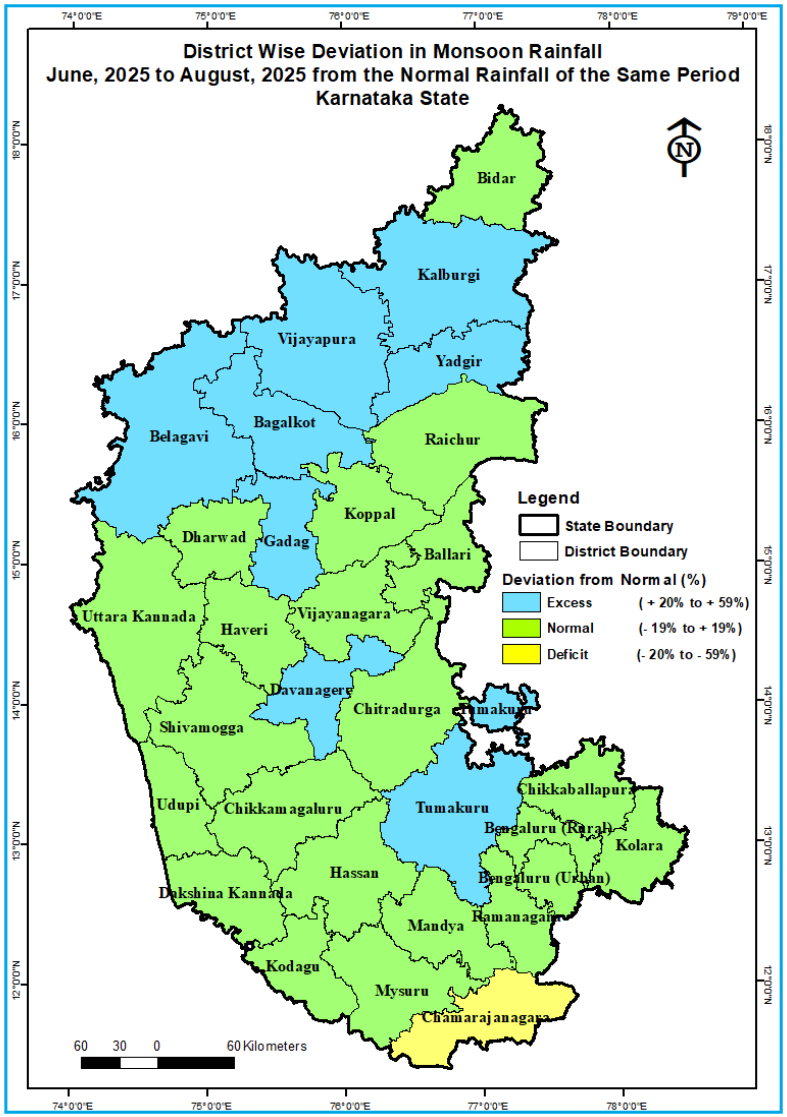

Fig. 3: Rainfall Deviation (June 2025 to August 2025) from Normal Rainfall

5 GROUND WATER LEVEL SCENARIO OF UNCONFINED (SHALLOW) AQUIFER

5.1 DEPTH TO WATER LEVEL SCENARIO IN KARNATAKA STATE DURING AUGUST 25.

An analysis of the water level data from 1232 monitored dug wells reveals the following salient features for August 2025:

- The depth to the water level ranged from a minimum of 0.01 meters below ground level (m bgl) observed in 4 locations to a maximum of 30.65 m bgl, recorded in Lakhamapur village, Badami district.
- The depth to water level over major part of the State lies within 10 m bgl i.e. **98%** of wells analysed, while **2%** of wells show depth to water level more than 10 m bgl range.
- Depth to water level of less than 2 m bgl has been recorded in around 39.3 % of wells analysed and depth to water level in the range of 2 to 5 m bgl has been recorded in 39.3% of wells analysed and noted in all the districts
- Depth to water level in the range of 5 to 10 m bgl has been recorded in 19% of wells analysed and noted in almost all districts.

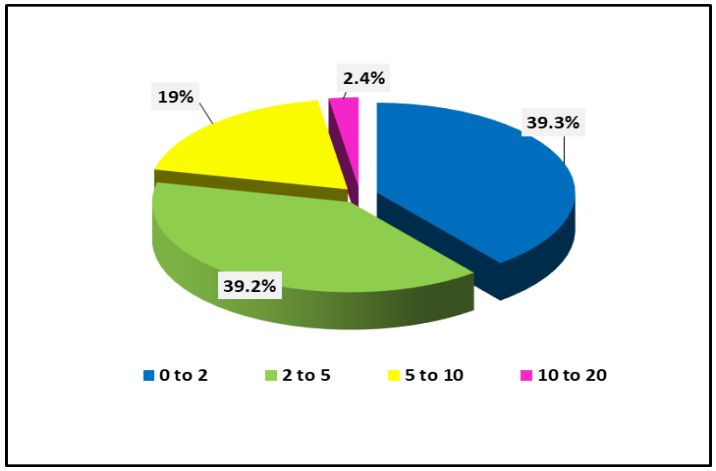

Figure 4: Percentage of wells in different water level ranges in an unconfined aquifer.

- Depth to water level in the range of 10 to 20 m bgl has been recorded in 2.4% of wells analysed and observed in all districts and majorly in parts of Bagalkote, Koppal, Dharwad, Gadag, Chitradurga, Chamarajnagara, Kodagu, Mysuru and Hassan districts.
- Greater than 20 m bgl: The deepest water levels were observed in only two locations: P Basavanahalli village, Mysuru (21.45 m bgl) and the aforementioned Lakhamapur village, Badami (30.65 m.bgl).

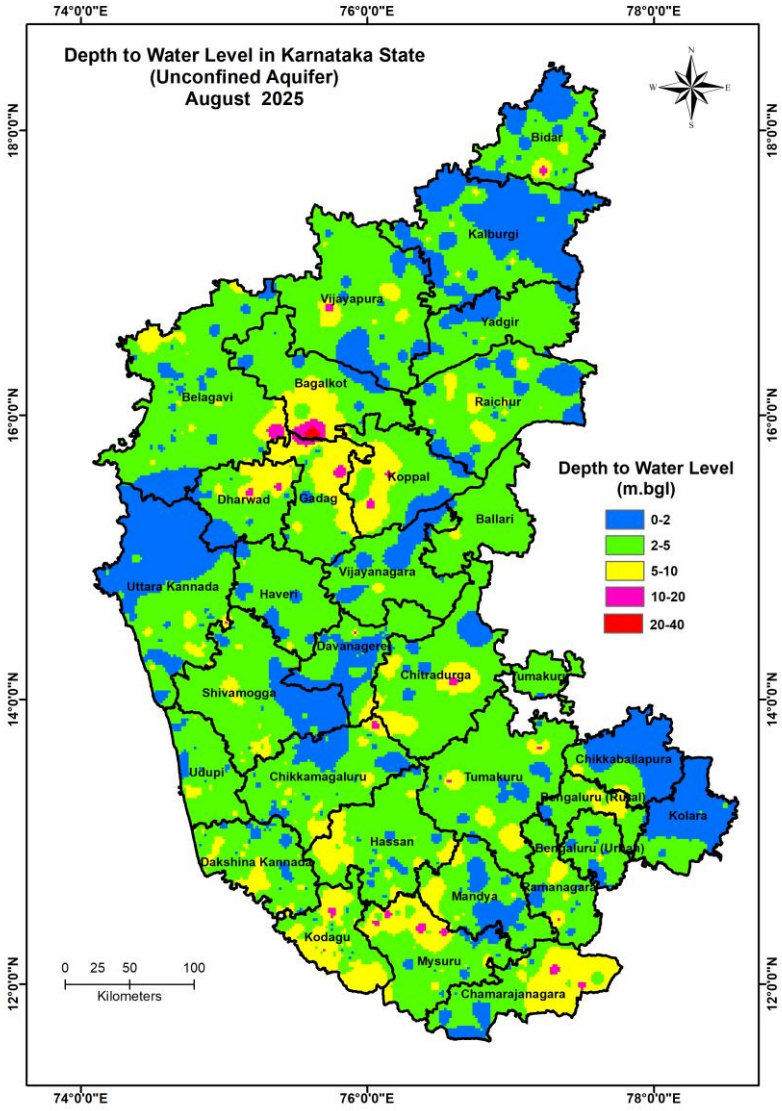

Figure 5: Depth to water level of unconfined aquifer during August 2025

5.2 SEASONAL FLUCTUATION IN WATER LEVEL

5.2.1 SEASONAL FLUCTUATION OF WATER LEVEL IN UNCONFINED AQUIFER (MAY 2025 TO AUGUST 2025)

A comparison of water levels between May 2025 to August 2025 shows a rise in 87% of analyzed wells and a fall in the remaining 13%. This percentage-based distribution is presented graphically in Figure 6. The corresponding annual fluctuation in the shallow aquifer's water level is spatially plotted in Figure 7.

- Rise in the water level in the range of 0-2 m has been observed in **41%** of wells and 2-4 m rise has been observed in **22.7%** of wells in all the districts. Rise in the water level in the range of >4 m has been observed in **23.1%** of wells analysed except, Kolar, Koppal, Bengaluru Rural, Bellary and Bengaluru Urban.
- The fall in water level in the range of 0-2 m has been observed in 11% of wells analysed and noted in all the districts except Dharwad and Udupi. The fall in water level in the range of 2-4 m is observed in only 1% of wells and fall in water level more than 4 m has been observed in only 1% of wells analysed and reported in Raichur, Ramnagara, Tumkur, Uttara Kannada districts.

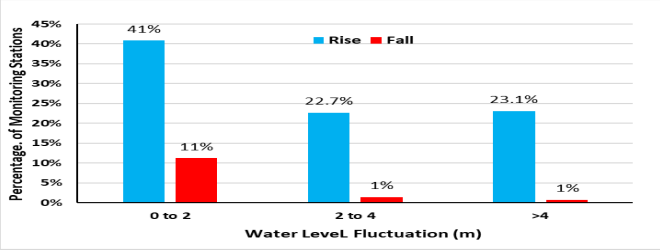

Figure 6: Percentage of wells showing rise and fall in WL in an unconfined aquifer. (May 2025 to August 2025)

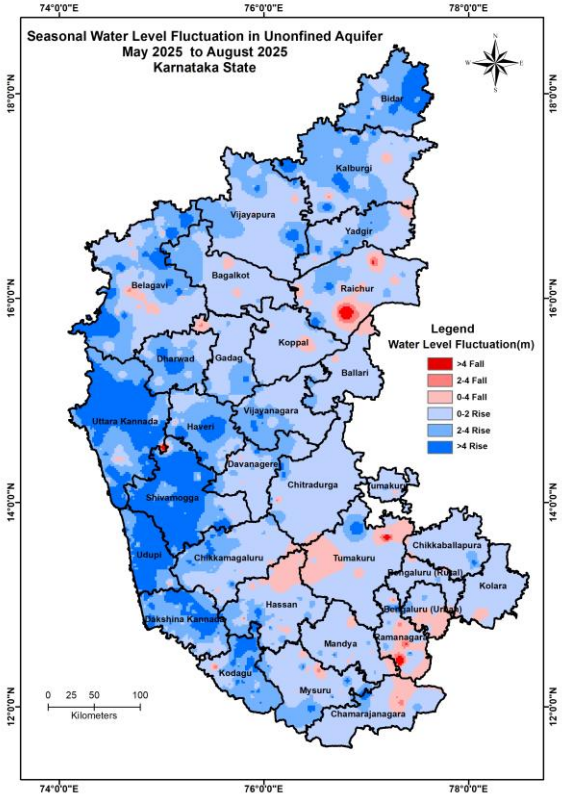

Figure 7: Seasonal water level fluctuation in unconfined aquifer (May 2025 to August 2025)

5.3 ANNUAL FLUCTUATION IN WATER LEVEL

5.3.1 ANNUAL FLUCTUATION OF WATER LEVEL IN UNCONFINED AQUIFER (AUGUST 2024 TO AUGUST 2025)

A comparison of water levels between August 2024 and August 2025 shows a rise in 62% of analyzed wells and a fall in the remaining 38%. This percentage-based distribution is presented graphically in Figure 8. The corresponding annual fluctuation in the shallow aquifer's water level is spatially plotted in Figure 9.

- Rise in the water level in the range of 0-2 m has been observed in 45% of wells and 2-4 m has been observed in 11% of wells in all the districts. Rise in the water level in the range of >4 m has been observed in 5.4% of wells analysed and observed in the districts except Bagalkote, Bengaluru Rural, Chamarajanagar, Chikkaballapura, Hassan, Haveri, Kodagu, Mysuru, Raichur, Ramanagara and Udupi districts.
- The fall in water level in the range of 0-2 m has been observed in 32% of wells analysed and noted in all the districts except, Chikballapur, Vijayanagar and Kolar districts. The fall in water level in the range of 2-4 m is observed in 4% of wells and the fall in water level more than 4 m has been observed in 2% of wells analysed and reported in Belagavi, Chamarajanagar Chikkamagaluru, Chitradurga, Dakshina Kannada, Gadag,

Hassan, Kodagu, Mysuru, Raichur, Shivamogga, Tumakuru and Uttara Kannada districts.

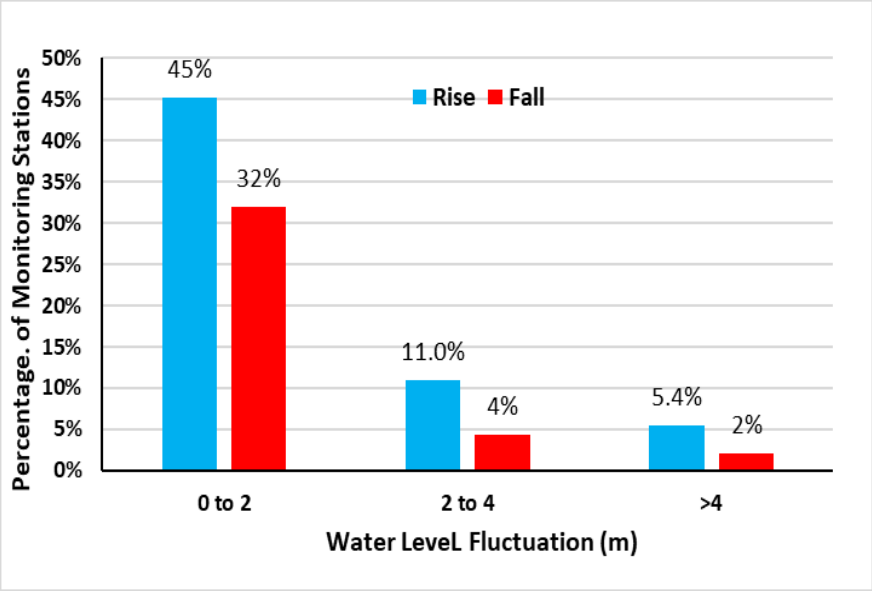

Figure 8: Percentage of wells showing rise and fall in WL in an unconfined aquifer. (August 2024 to August 2025)

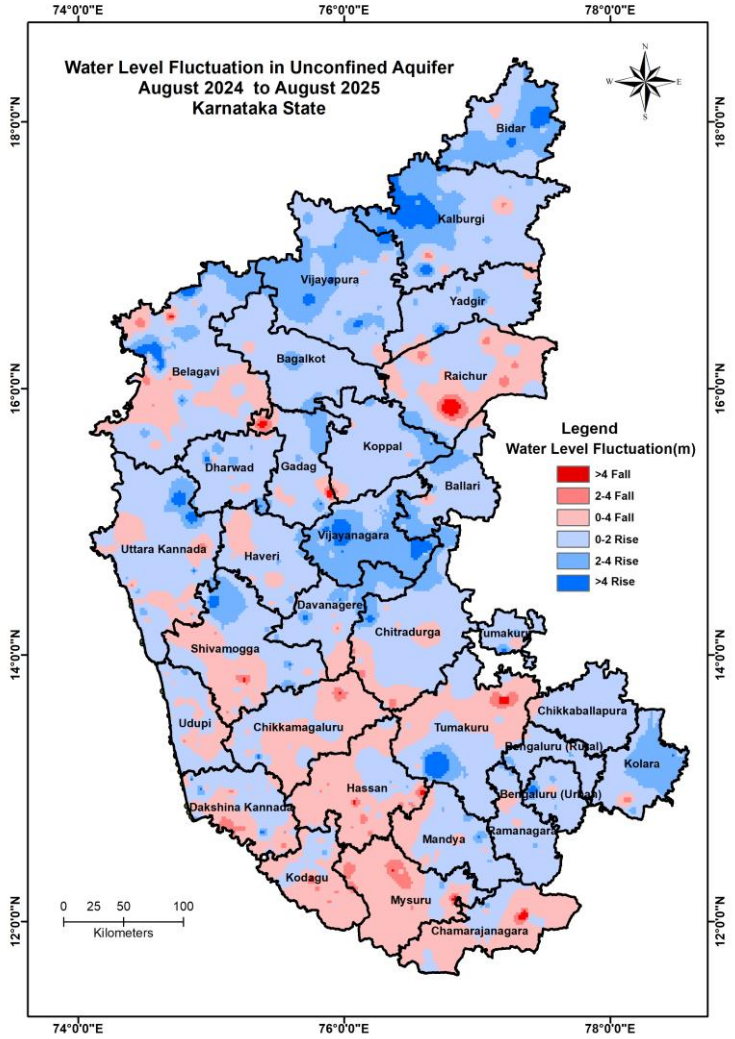

Figure 9: Annual water level fluctuation in unconfined aquifer (August 2024 to August 2025)

5.3.2 ANNUAL FLUCTUATION OF WATER LEVEL IN UNCONFINED AQUIFER (AUGUST 2023 TO AUGUST 2025)

- A comparison of water level between August 2023 and August 2025 shows that a rise in the water level is recorded in **91%** of wells analyzed & fall of water level recorded in **9%** of wells analysed. This percentage-based distribution is presented graphically in Figure 10. The corresponding annual fluctuation in the shallow aquifer's water level is spatially plotted in Figure 11.

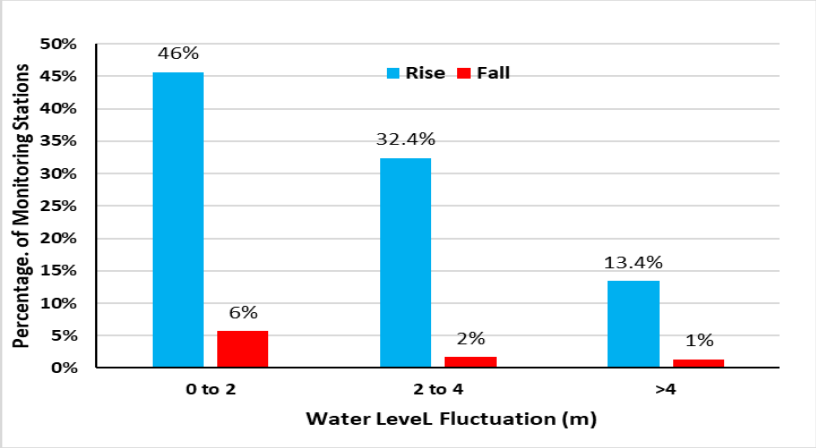

Figure 10: Percentage of wells showing rise and fall in WL in an unconfined aquifer. (August 2023 to August 2025)

- Rise in the water level in the range of 0-2 m has been observed in 46% of wells analysed and observed all over the State. Rise in the water level in the range of 2-4 m has been observed in 32.4 % of wells analysed in all the districts. Rise in water level more than 4m has been observed in 13.4% of wells analysed in all over the State except Bellary, Bengaluru Rural, Chikkabalapur, Koppal and Ramnagara districts.

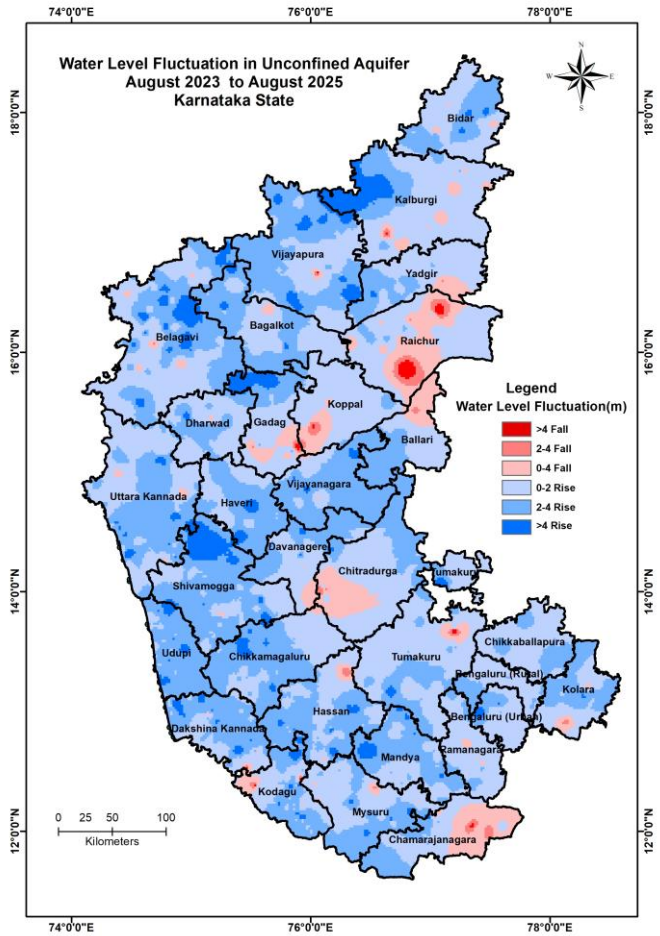

Figure 11: Annual water level fluctuation in unconfined aquifer (August 2023 to August 2025)

- The fall in water level in the range of 0-2 m has been observed in 6% of wells analyzed and the fall in water level in the range

of 2-4 m is observed in 2% of wells. The fall in water level more than 4 m has been observed in 1% of wells analysed and reported in Chamarajanagara, Chitradurga, Dakshina Kannada, Gadag, Kalaburagi, Kodagu, Koppal, Raichur, Tumakuru, Uttara Kannada, and Vijayapura districts.

5.4 DECADAL FLUCTUATION IN WATER LEVEL

5.4.1 DECADAL FLUCTUATION OF WATER LEVEL IN UNCONFINED AQUIFER (DECADAL MEAN AUGUST (2015-2024) TO AUGUST 2025)

- A comparison of August 2025 water levels with the decadal average (2015-2024) shows that a rise in the water level is recorded in **84%** of wells analysed and fall of water level recorded in **16%** of wells analyzed. This percentage-based distribution is presented graphically in Figure 12. The corresponding annual fluctuation in the shallow aquifer's water level is spatially plotted in Figure 13.
- Rise in the water level in the range of 0-2 m has been observed in 55% of wells and 2-4 m has been observed in 20.2 % of wells analysed in all over the state except Chitradurga and water level more than 4m has been observed in 9.1% of wells analysed in all over the State except Bellary, Chamarajanagara, Chikkaballapur, Kolar, Koppal, Ramnagara and Udupi districts.
- The fall in water level in the range of 0-2 m has been observed in 13% of wells analyzed and the fall in water level in the range of 2-4 m is observed in 2% of wells analyzed and mainly in Chitradurga, Uttar Kannada, Hassan and Belagavi districts. The fall in water level more than 4 m has been observed in 1% of wells analysed and reported in Chamrajnagara, Dakshina Kannada, Gadag, Kodagu, Tumkuru and Uttara Kannada districts.

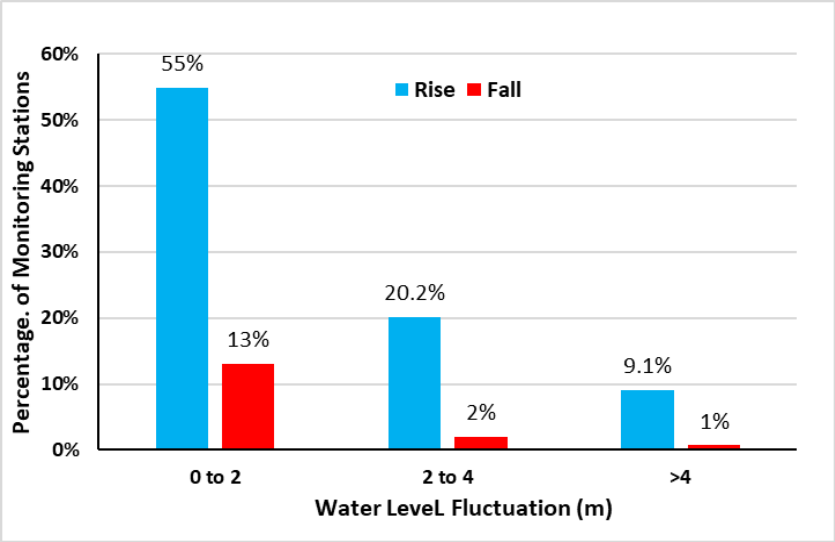

Figure 12: Percentage of wells showing rise and fall in WL in unconfined Aquifer (Decadal Mean August (2015-2024) to August 2025)

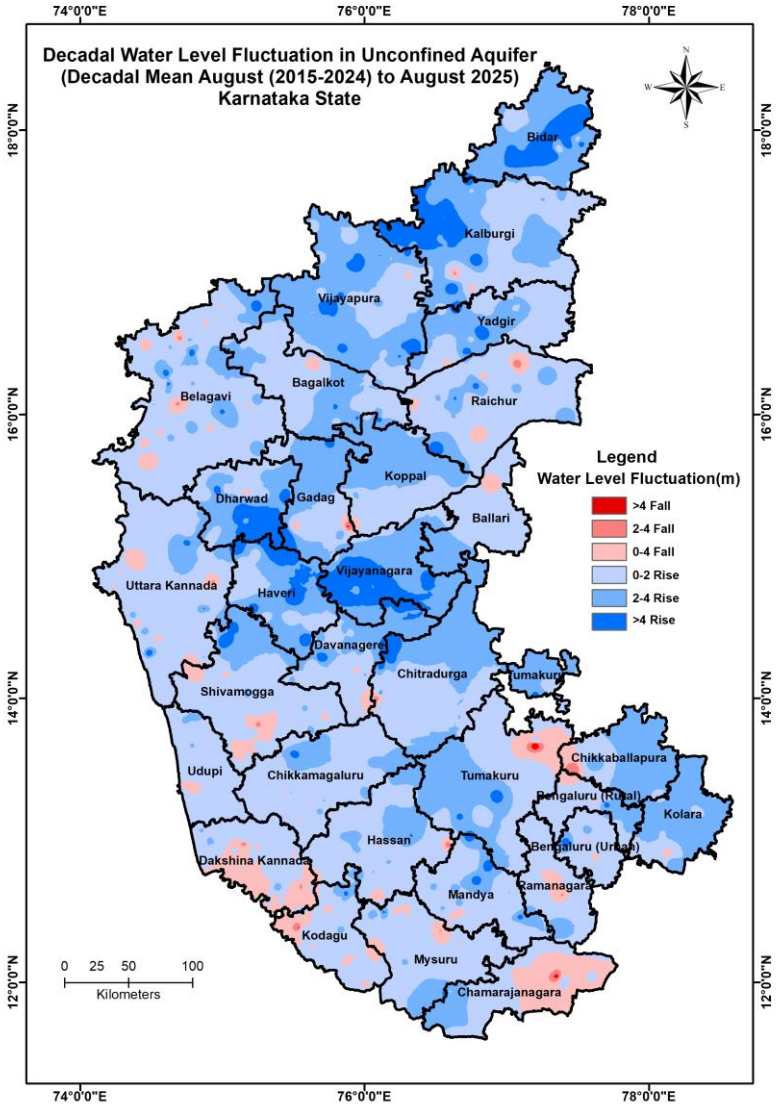

Figure 13: Decadal water level fluctuation in unconfined Aquifer (Decadal Mean August (2015-2024) to August 2025)

6 SUMMARY

The groundwater situation in Karnataka as of August 2025 shows positive indicators, largely influenced by a significantly above-normal pre-monsoon rainfall. The analysis of 1232 monitored dug wells reveals that the water table in the unconfined aquifer is predominantly shallow, with 98% of wells having water levels within 10 meters of the ground surface.

Depth to Water Level in Unconfined Aquifer: The water level in the unconfined aquifer is largely within 10 meters of the surface, with 98% of wells falling in this range. Deeper water levels of more than 10 m bgl are found in 2% of the analyzed wells.

Seasonal Fluctuation in Unconfined Aquifer: Compared to the Pre monsoon (May 2025), 87% of the wells reported rise in water levels, indicating good recharge.

Annual Fluctuation in Unconfined Aquifer: Compared to the previous year (August 2024), 62% of the wells show a rise in water levels, indicating good recharge over major part of the State, however in 38% of the wells fall has been observed owing to the deficit rainfall in previous year. The comparison of August 2025 scenario with August 2023, indicates much better picture with rise being observed in 91% of the analyzed wells.

Decadal Fluctuation in Unconfined Aquifer: The water level of August 2025, when compared to the decadal average (2015-2024),

shows that 84% of the wells show rise in water levels. This suggests that over the last decade, groundwater recharge has generally outpaced extraction. However, about 16% of wells show fall in water level with these declines noted in districts such as Chamrajnagara, Dakshina Kannada, Kodagu, Tumkuru and Uttara Kannada districts.

7 RECOMMENDATIONS

- To enhance the groundwater scenario of Karnataka state utmost effort should be made to harvest the rainwater received during monsoon days and use it for artificial recharge. Periodic maintenance of the structures is also recommended to maintain the efficiency of the structure.
- Abandoned bore wells/dug well can be used to recharge the aquifer utilizing the surplus surface runoff available during rainy days. Master plan for artificial recharge of Karnataka and Goa as well as Naquim reports of CGWB help in selecting sites for artificial recharge structures.
- Point recharge structures are recommended to recharge deeper aquifers.
- Efficient micro irrigation practices can save upto 40% of water.
- Use of Grey water after treatment, opting for water efficient fixtures and low flow plumbing fixtures reduce the stress on groundwater. Low flow technology is normally used in faucets, aerator, shower heads and toilets.