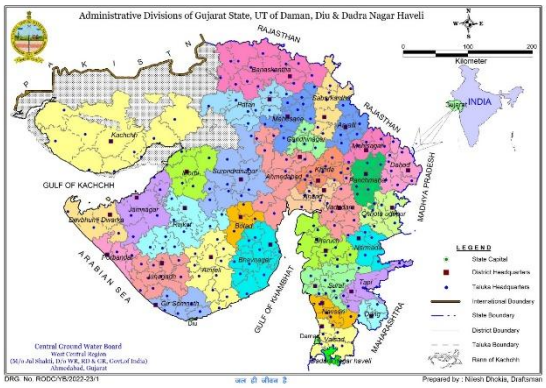
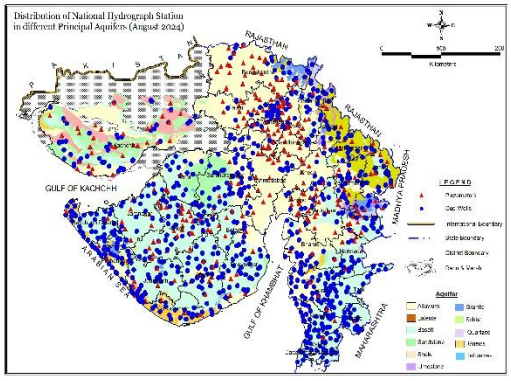
GROUND WATER LEVEL BULLETIN

AUGUST 2025

Gujarat





ABSTRACT

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

CGWB, WEST CENTRAL REGION, GUJARAT

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1. Introduction

Groundwater bulletin is prepared by CGWB, WCR, Ahmedabad 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 attributes of groundwater regime monitoring are groundwater level. The natural conditions affecting the groundwater regime involve climatic parameters like rainfall, evapotranspiration etc., whereas anthropogenic influences include pumping 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. Initially, the monitoring commenced in the year 1969 with the establishment of 82 observation wells spread uniformly over the entire state, and since then, the number of stations were added regularly so as to get proper hydrological information of different hydrogeological and geo-morphological units.
A network of 1293 observation wells (881 wells in unconfined aquifers) called National Hydrograph Network Stations (NHNS), as on 31.08.2025, located all over the Gujarat state is being monitored. Administrative map shown in Fig.-1.

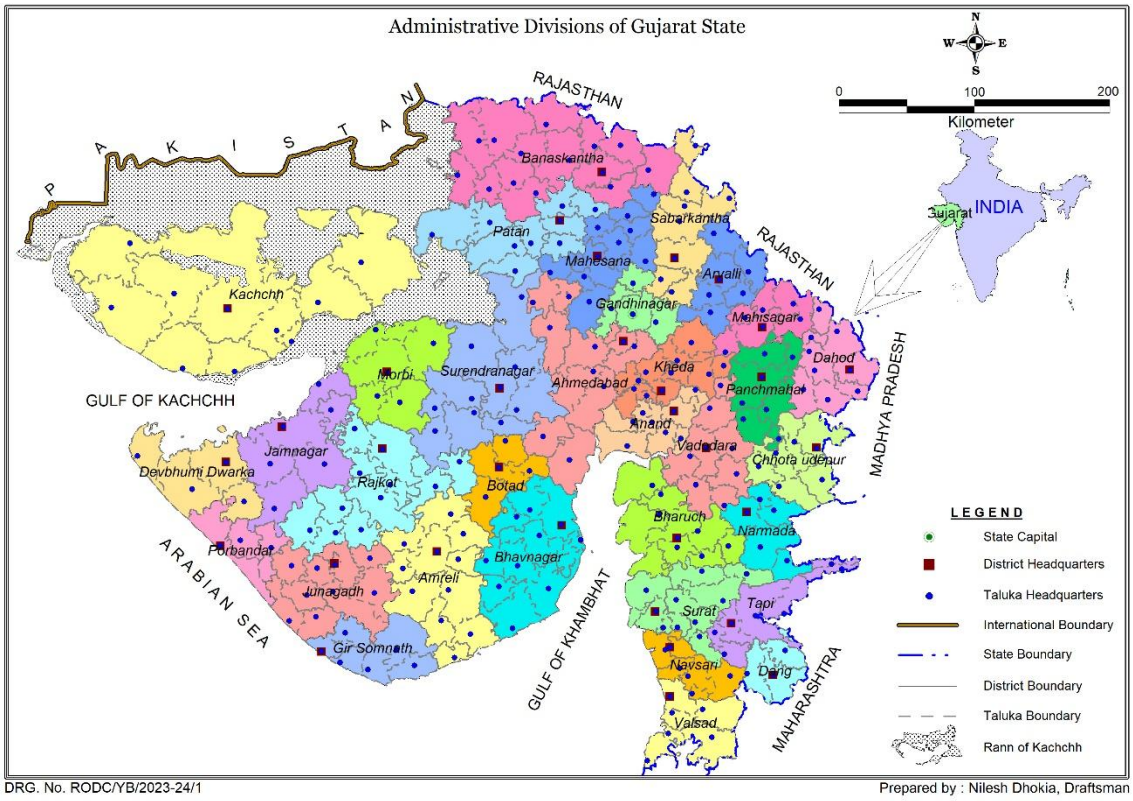

Figure 1: Map showing administrative divisions of Gujarat State

2. Study Area

The Gujarat is one of India's most prosperous states is situated along the western coast of India between North latitudes 20° 06' 00" to 24° 42' 00" and East longitudes 68° 10' 00" to 74° 28' 00" (Figure. 1). It has nearly 2340 km long coastline, which is the longest as compared to any other state in the country. It is extending from Lakhpat in north to Daman in south. The State has common boundaries with the states of Rajasthan, Madhya Pradesh and Maharashtra and shares International border with Pakistan in northwest.

Gujarat is fifth largest state in India by area, covering about 1,96,024 km^2. There are 18,225 villages and 348 towns in Gujarat including 16 towns with more than 1,00,000 populations. The total population of the State is 60,439,692 and has a sex ratio of 918 females for every 1000 males of which 31,491,260 are males and 28,948,432 are females (as per 2011 census).

Administratively, Gujarat currently has 33 districts. The capital of Gujarat is Gandhinagar, with Ahmedabad as its largest city. Kachchh is the largest district of Gujarat while Dang is the smallest. Ahmedabad is the most populated district while Dang is the least. There are 252 Talukas (Including 4 Urban) in Gujarat.

3. Ground Water level monitoring

Central Ground Water Board, as a part of its national program, has established a network of observation wells in the state of Gujarat for periodic monitoring of groundwater levels and to study its quality variation in time and space. West Central Region, has set up a network of observation wells known as the Ground Water Monitoring Wells (GWMW's) located all over Gujarat which comprises 881 GWMWs in unconfined aquifers. The distributions of monitoring wells in different districts are given in Table 1. Map showing hydrograph stations monitored and their distribution in different districts is presented as Fig. 2.

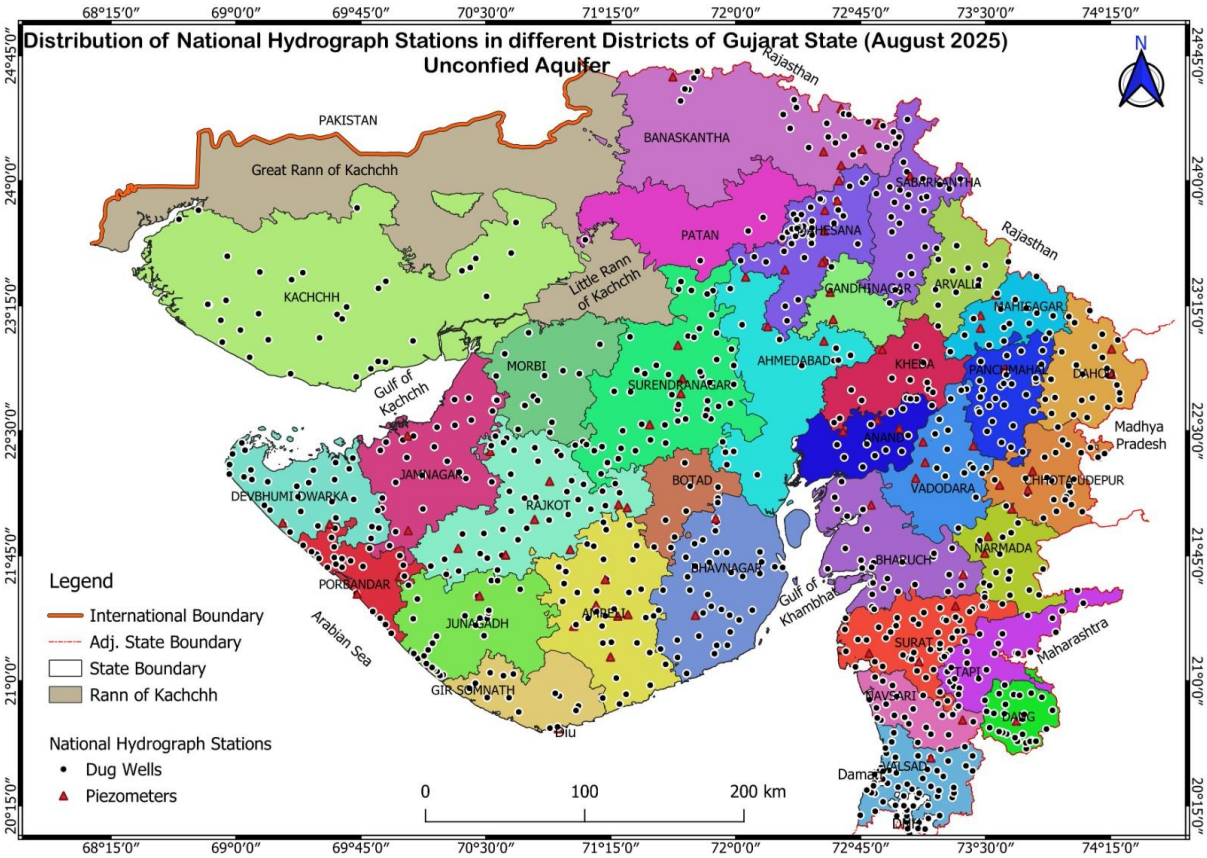

Figure 2 Map showing locations of monitoring wells (NHS) in Gujarat state

Table 1. The distributions of monitoring wells in districts.

S.N.	District	Number of Water Level Monitoring Stations Aug-2025 (Unconfined)		
		Pz	Dug Well	Total
1	Ahmedabad	2	12	14
2	Amreli	6	37	43
3	Anand	3	14	17
4	Arvalli	-	13	13
5	Banas Kantha	8	22	30
6	Bharuch	2	28	30
7	Bhavnagar	2	39	41
8	Botad	-	7	7
9	Chhotaudepur	2	24	26
10	Dahod	2	33	35
11	Dangs	1	29	30
12	Devbhumi Dwarka	1	30	31
13	Gandhinagar	1	-	1
14	Gir Somnath	-	12	12
15	Jamnagar	2	26	28
16	Junagadh	2	25	27
17	Kachchh	2	32	34
18	Kheda	1	11	12
19	Mahesana	10	38	48
20	Mahisagar	3	14	17
21	Morbi	-	14	14
22	Narmada	3	16	19
23	Navsari	1	24	25
24	Panch Mahals	1	26	27
25	Patan	1	4	5
26	Porbandar	2	23	25
27	Rajkot	9	38	47
28	Sabar Kantha	1	26	27
29	Surat	4	52	56
30	Surendranagar	4	51	55
31	Tapi	-	25	25
32	Vadodara	5	15	20
33	Valsad	1	39	40
	Total	**82**	**799**	**881**

4. GROUNDWATER REGIME IN UNCONFINED AQUIFER (August 2025)

4.1 Depth to Water Level

4.1.1 Depth to Water Level in Unconfined Aquifer (August 2025) – Gujarat State

North Gujarat

The depth to water level of less than 2 m bgl is recorded in 18% of wells, between 2 to 5 m bgl in 35% of wells, between 5 to 10 m bgl in 24% of wells, between 10 to 20 m bgl in 17 % of wells, between 20-40 m bgl in 5% of wells and water level more than 40 m bgl is registered in 1 % of wells.

Shallowest water level recorded at Ambakatch, Dahod district is 0.4 m bgl and deepest water level recorded at Kadi, Mehsana district is 74.83 m bgl

South Gujarat

The depth to water level of less than 2 m bgl is recorded in 48% of wells, between 2 to 5 m bgl in 34% of wells, between 5 to 10 m bgl in 12% of wells, between 10 to 20 m bgl in 5 % of wells, between 20-40 m bgl in 1% of wells.

Shallowest water level recorded at Pardi, Valsad district is 0.58 m bgl and deepest water level recorded at Desar, Vadodara district is 23.1 m bgl

Saurashtra

The depth to water level of less than 2 m bgl is recorded in 32% of wells, between 2 to 5 m bgl in 41% of wells, between 5 to 10 m bgl in 19% of wells, between 10 to 20 m bgl in 5 % of wells, between 20-40 m bgl in 2% of wells.

Shallowest water level recorded at Mojiwana, Porbandar district is 0.11 m bgl and deepest water level recorded at Jetpur, Rajkot district is 52.28 m bgl.

Kachchh

The depth to water level of less than 2 m bgl is recorded in 23.81% of wells, between 2 to 5 m bgl in 26.98% of wells, between 5 to 10 m bgl in 25.40% of wells, between 10 to 20 m bgl in 15.87 % of wells, between 20-40 m bgl in 7.94% of wells.

Shallowest water level recorded at Bhuj, Kachchh district is 0.42 m bgl and deepest water level recorded at Lakhpat, Kachchh district is 38.08mbgl

Map and graph of Depth to Water Level in Unconfined Aquifer (August 2025) shown in Fig.3 and Fig.4 respectively.

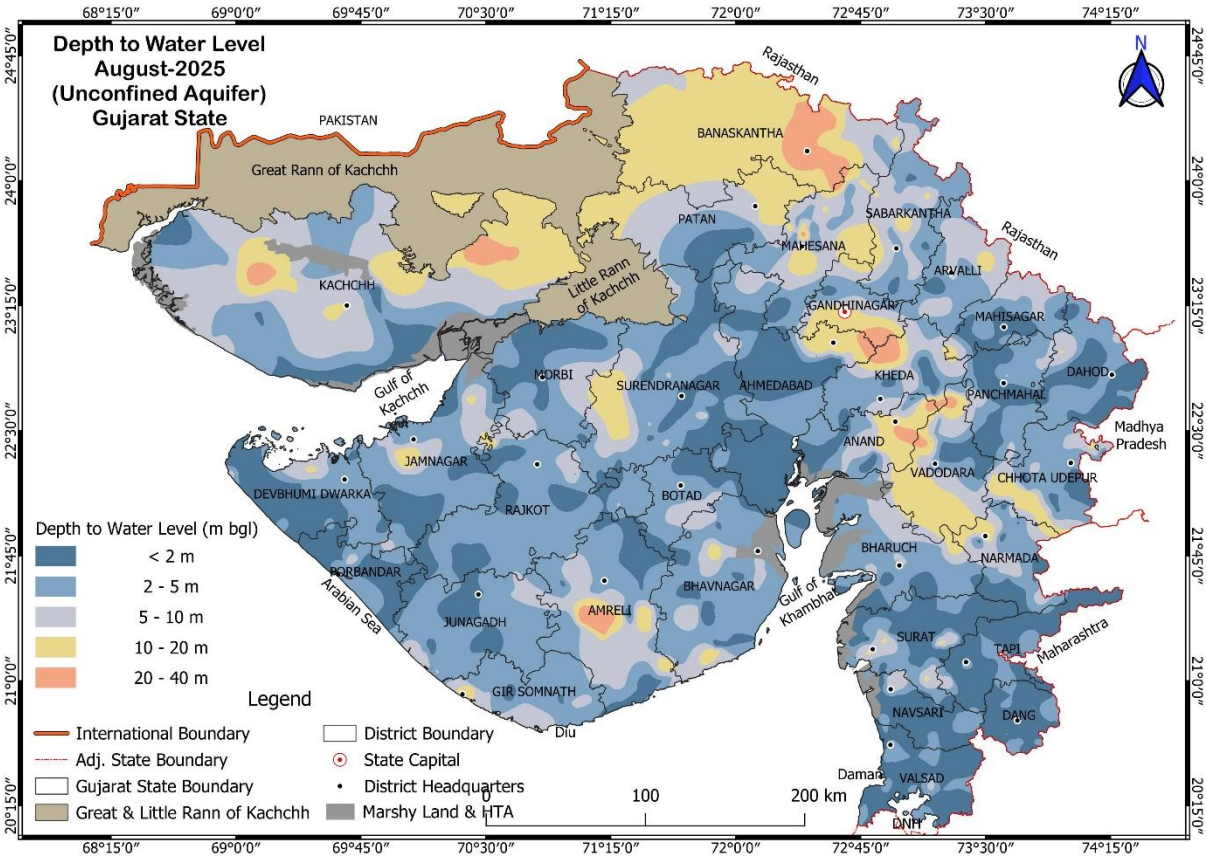

Figure 3: Depth to Water Level in Unconfined Aquifer (August 2025) – Gujarat State

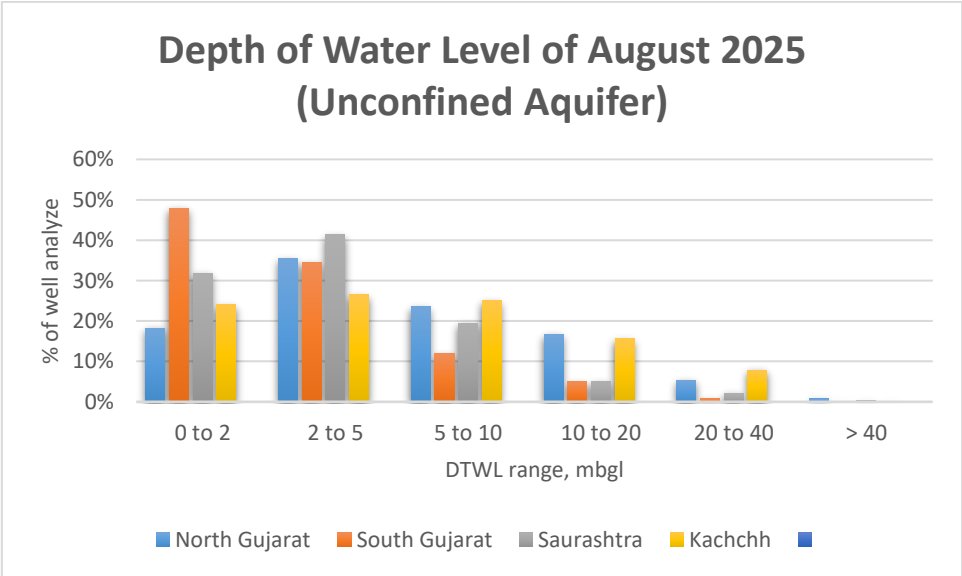

Figure 4: Well wise categorisation of depth to water level (Unconfined)

4.2 Annual Water Level Fluctuation in Unconfined Aquifer

4.2.1 Annual Comparison of Ground Water Level of August 2025 with August 2023

Rise in water levels:

Out of 324 wells, water level rise of less than 2 m is recorded in 34.2% wells, 2 to 4 m in 12.9% wells and more than 4 m in 10.1% of the wells. Water level rise of less than 2 m is seen in all the districts except in Ahmedabad, Aravalli and Gandhinagar districts. Rise of more than 4 m is significantly observed in Dahod, Panch mahals, Sabar kantha, kachchh districts.

Fall in water Levels:

Out of 243 wells that have registered fall in water levels, 32.6% have recorded less than 2 m while 6% in the range of 2 to 4 m and remaining 4.2% wells registered water level fall of more than 4 m. Fall of less than 2 m is seen in almost all the districts of Gujarat Expect Morbi District. Fall of 2 to 4 m is observed mainly in Amerli, Jamnagar and Surendranagar region. Fall of beyond 4 m is observed in Amreli, Jamnagar and Surendranagar districts. Map and graph of Annual Water Level Fluctuation (August 2023 to August 2025)- Unconfined shown in Fig.5 and Fig.6 respectively.

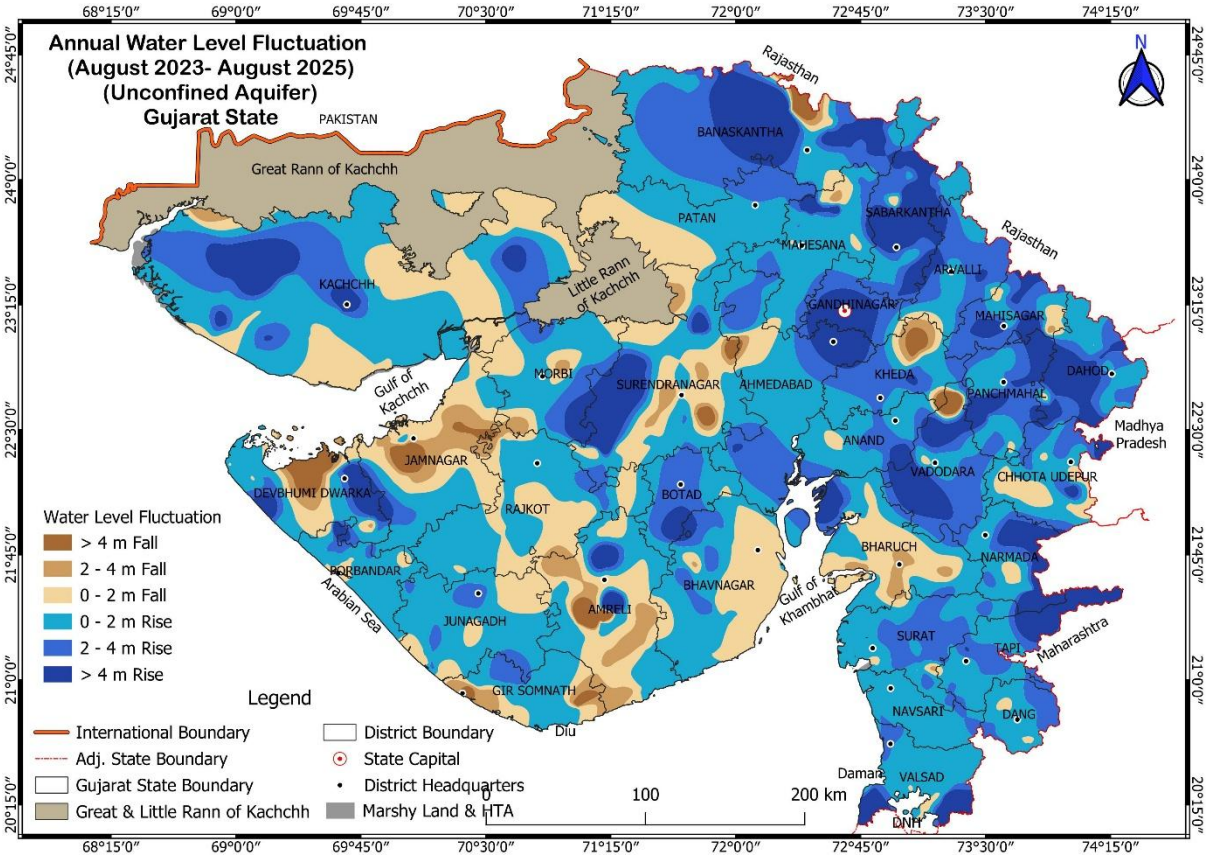

Figure 5 Annual Water Level Fluctuation (August 2023 to August 2025)- Unconfined

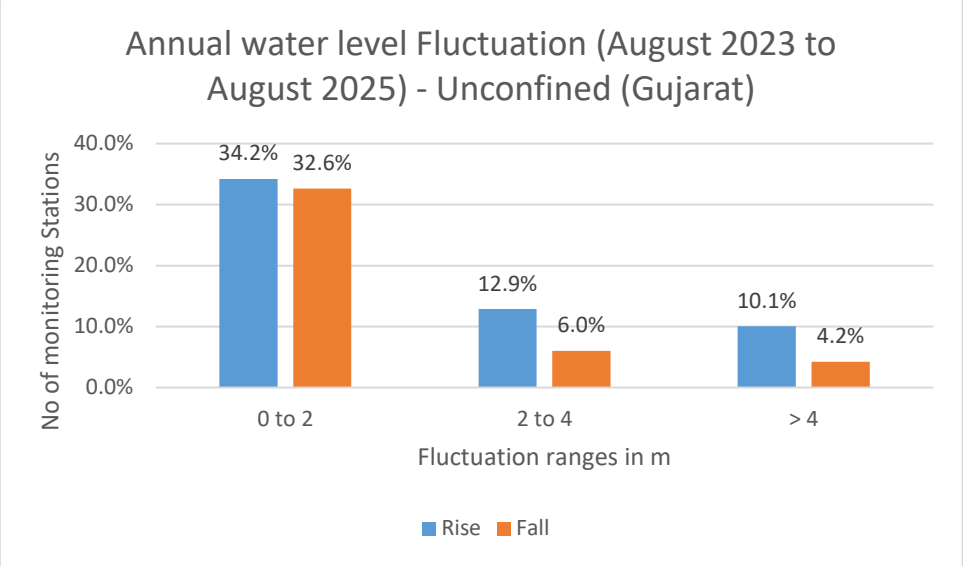

Figure 6 Annual Water Level Fluctuation (August 2023 to August 2025)- Unconfined

4.2.2 Annual Comparison of Ground Water Level of August 2025 with August 2024

Rise in Water levels:

Out of 460 wells, water level rise of less than 2 m is recorded in 39.5% wells, 2 to 4 m in 10.5% wells and more than 4 m in 6.8% of the wells. Water level rise of less than 2 m is seen in all the districts except in Gandhinagar district. Rise of more than 4 m is significantly observed in Ahmedabad, Tapi, Sabarkantha, Amreli, Bhavnagar, Junagarh, Devbhumi Dwarka, Gir Somnath, Porbandar, districts.

Fall in Water Levels:

Out of 351 wells that have registered fall in water levels, 34.5% have recorded less than 2 m while 5.9% in the range of 2 to 4 m and remaining 2.8% wells registered water level fall of more than 4 m. Fall of less than 2 m is seen in almost all the districts of Gujarat. Fall of 2 to 4 m is observed mainly in BanasKantha, Mahesana, Sabarkantha , Bharuch, surendranagar, region. Fall of beyond 4 m is observed in Amreli, Jamnagar, Morbi, Surendranagar districts. Map and graph of Annual Water Level Fluctuation (August 2024 to August 2025)- Unconfined shown in Fig.7 and Fig.8 respectively.

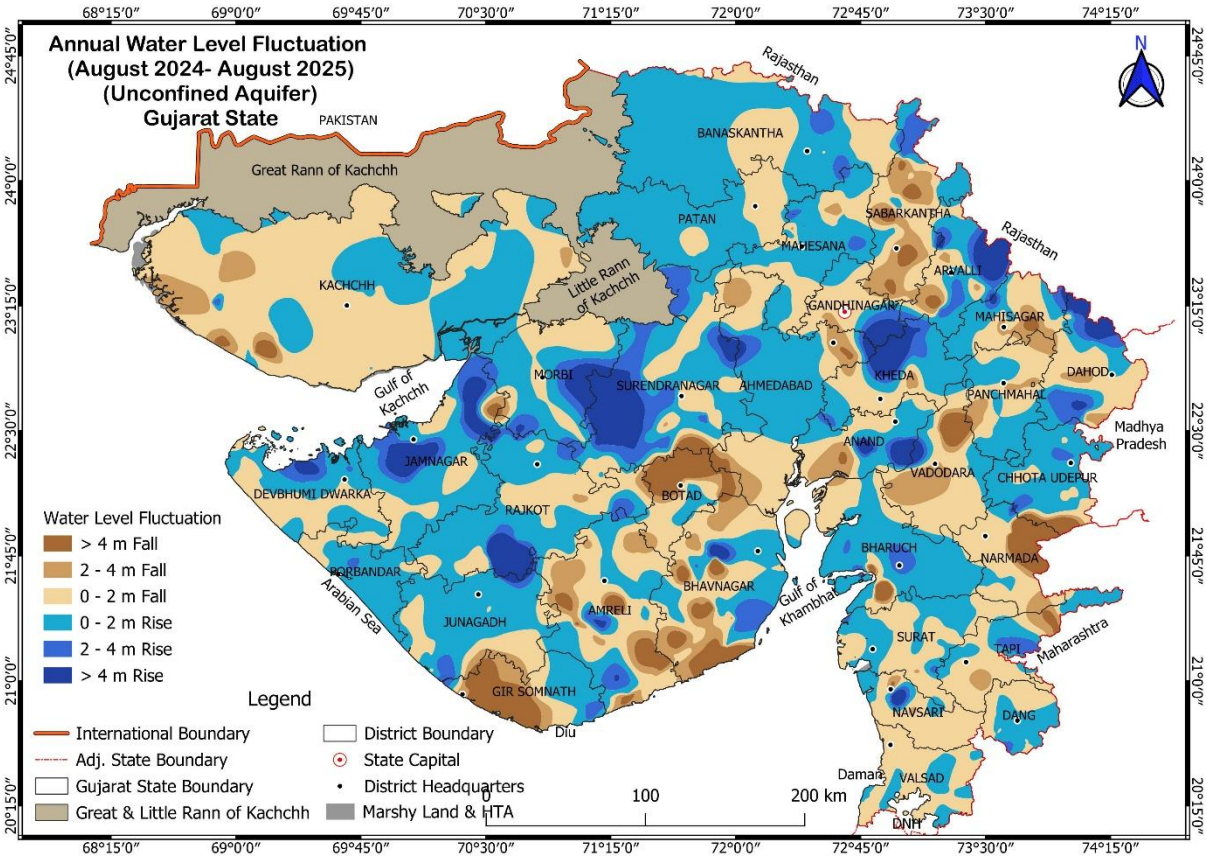

Figure 7 Annual Water Level Fluctuation (August 2024 to August 2025)- Unconfined

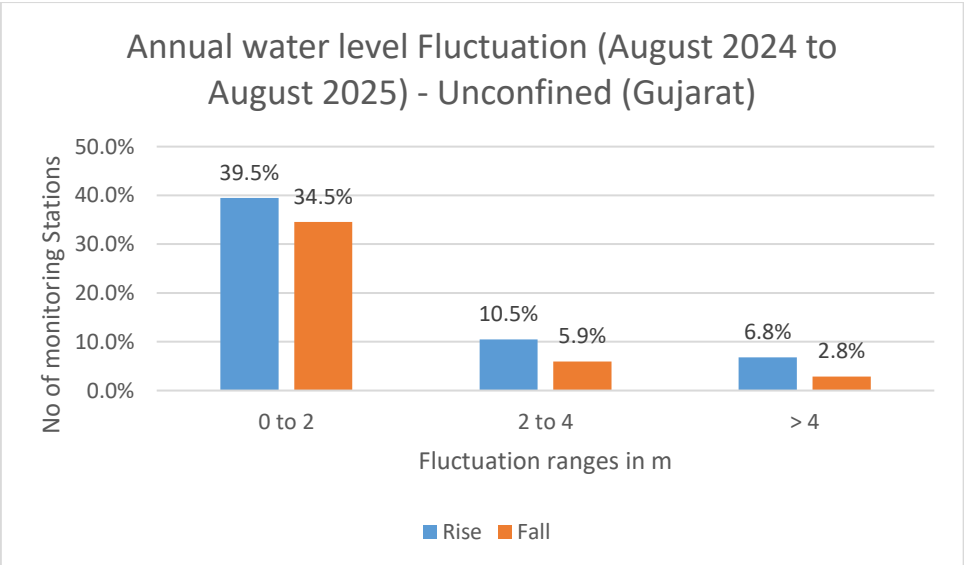

Figure 8 Annual Water Level Fluctuation (August 2024 to August 2025)- Unconfined

4.3 Seasonal Water Level Fluctuation

4.3.1 Seasonal Water Level Fluctuation (May 2025 to August 2025)- Unconfined Aquifer, Gujarat state

Out of 653 Well analysed in the Gujarat state about 89.9% area have recorded the rise and 10.1% have recorded fall in water level between May 2025 to August 2025. Rise in water level is observed in all districts of Gujarat state. In the state, the maximum rise of 37.45 m is at Junagarh district whereas the maximum decline of 10.12 m is observed at Gir Somnath district.

In North Gujarat region, water level rises mainly observed in 86.9% of the total well analysed and maximum rises (42.8%) are in the range greater than 4 m. The fall of water level observed in 13.1% of wells analysed.

The 90.2% of the total wells in the area of south Gujarat have recorded rise and maximum (45.6%) in the range greater than 4 m of rise in the region in August 2025 as compared to May 2025. The fall is 9.8% of total well and maximum (8.3%) in the range of 0 to 2 m.

Over all 90.6% of total well analysed are shown rise in water level in the entire Saurashtra region. About 50.6% of areas have shown rise of water level greater than 4 m all the districts of Saurashtra region. Fall of water level is observed in 9.4% of wells analysed all over the region. The fall > 4 m is observed in Amerli, Gir Somnath and Surendranagar districts of Saurashtra region.

In Kachchh, 94% of the total well analysed recorded rise in water level. The rise is mostly in the range of 0 to 2 m and is observed in 66% of the total well. The total fall of water level has been observed in 6% of the total well in the region. Map and graph of Seasonal Water Level Fluctuation (May 2025 to August 2025)- Unconfined Aquifer, Gujarat state shown in Fig.9 and Fig.10 respectively.

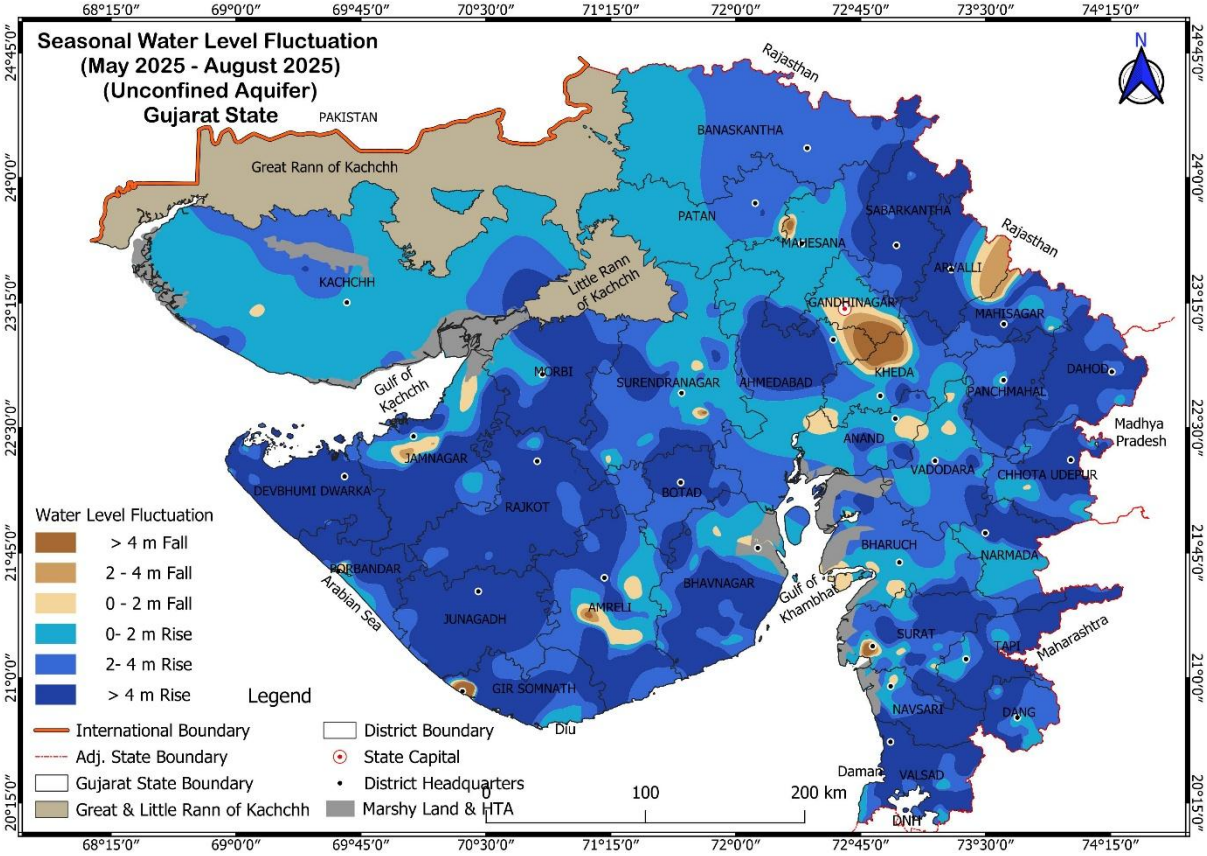

Figure 9 Seasonal Water Level Fluctuation (May 2025 to August 2025)- Unconfined Aquifer, Gujarat state

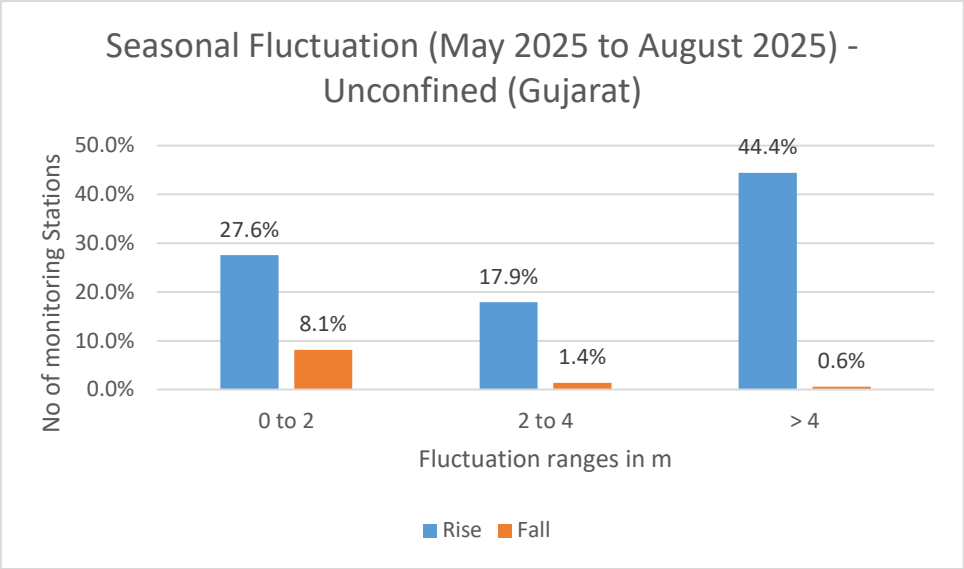

Figure 10 Seasonal Water Level Fluctuation (May 2025 to August 2025)- Unconfined Aquifer, Gujarat state

4.4 Decadal Water level Fluctuation

4.4.1 Decadal Water level Fluctuation: Decadal average of August (2015 to 2024) to August 2025 in Unconfined Aquifer

A comparison of the water level of the August 2025 with the average water level of the August for last one decade (2015-2024) reveals that there is the rise in 60.80% of well analysed. Rise is mostly in the range of 0 to 2 m (36.2% of total wells). Fall in water levels is observed in 39.2% of well analysed. The maximum rise of 14.65 m is recorded in Botad district whereas the maximum decline of 8.81 m is recorded in Devbhumi Dwaraka district.

In *North Gujarat*, 60.6% of wells have shown rise and mostly in range of 0 to 2 m (31.8 % of wells). Rise of more than 4 m is prominently observed in, Mahisagar, Panch Mahal, and Sabarkantha districts. The fall of 39.4% in water level is observed in the almost all area of north Gujarat where > 4m observed in Aravalli, Banaskantha and Mahesana districts.

South Gujarat has experienced the rise in 60.3% of wells analysed whereas 39.7% shows fall The rise of water level mainly observed in range of 0-2 m (45.9%). More than 4 m of fall in water level shows only in Navsari district of South Gujarat region.

In *Saurashtra* region, 61.5% of total well shows the rise in water level where as 38.5% shows the fall. The fall of water level mainly observed in range of 0-2 m (33.8%). The rise in water level is observed in all districts of the Saurashtra region and rise of more than 4 m in water level is observed 13.9% wells of Saurashtra region.

In Kachchh, 60% of the wells analysed have recorded the rise in water levels whereas 40% shows the fall. Fall is mostly (31.1% of wells) in the range of 0 to 2 m. Rise is observed

mostly in the range of 0-2 meter (28.9 % wells) and more than 4-meter rise is shown in 11.1% wells analysed. Map and graph of Decadal Fluctuation in Unconfined Aquifer Decadal average of August (2014 to 2024) to August 2025 shown in Fig.11 and Fig.12 respectively.

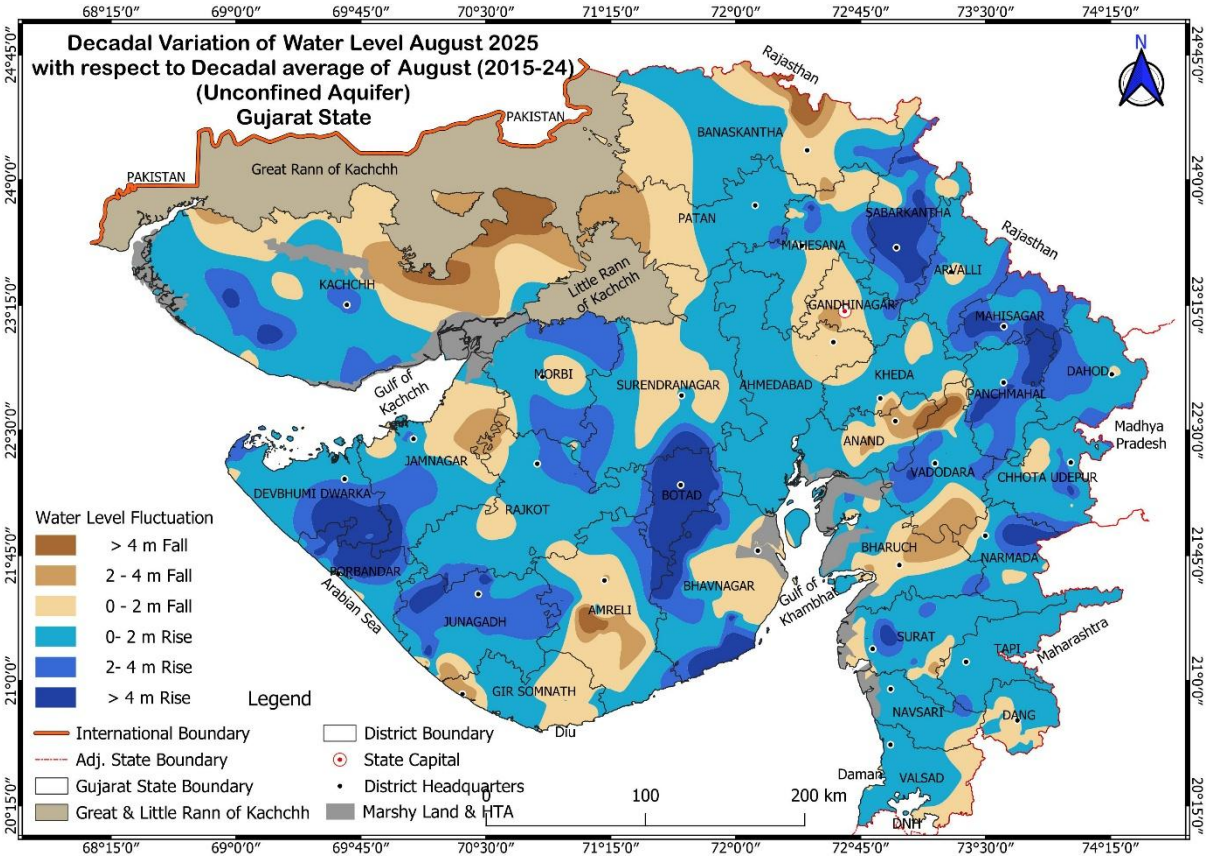

Figure 11 Decadal Fluctuation in Unconfined Aquifer (Decadal average of August (2014 to 2024) to August 2025)

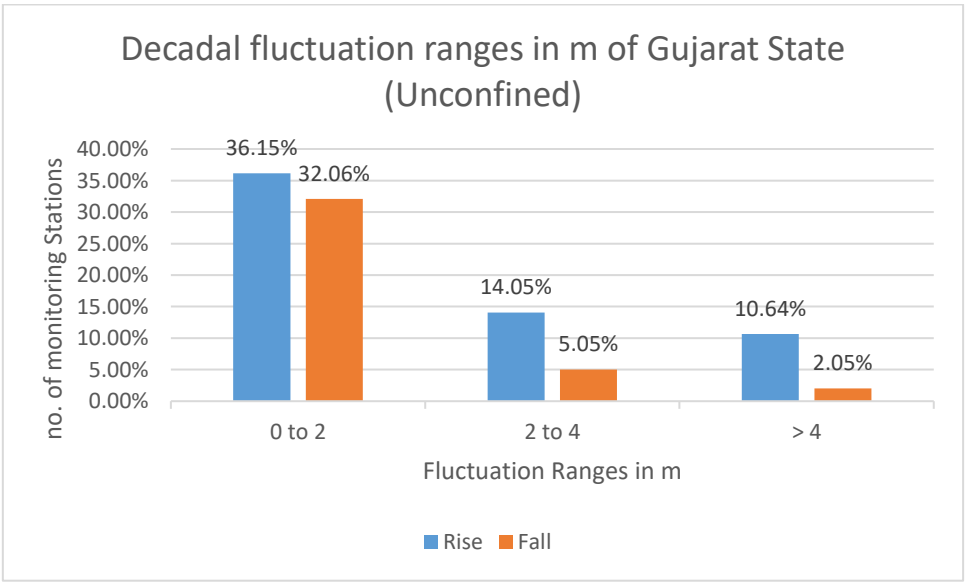

Figure 12 Decadal Fluctuation in Unconfined Aquifer (Decadal average of August (2014 to 2024) to August 2025)

5. Summary

As a component of the National Ground Water Monitoring Programme, the CGWB, WCR, Ahmedabad conducts monitoring of the ground water conditions on a quarterly basis: in January, pre-monsoon, August and post monsoon. As of August 31, 2025, the WCR of the Central Ground Water Board monitored 881 wells in unconfined aquifer. This comprehensive effort aims to portray the variations in the state's ground water conditions in unconfined aquifers.

In August 2025, the depth to water level of less than 2 m bgl is recorded in 31.68% of wells, between 2 to 5 m bgl in 36.74% of wells, between 5 to 10 m bgl in 19.03% of wells, between 10 to 20 m bgl in 9.13 % of wells, between 20-40 m bgl in 3.08% of wells and water level more than 40 m bgl is registered in 0.33 % of wells.

Annual water level fluctuation (August 2023 to August 2025) shows 57.20% rise in water level whereas 42.80% of wells shows fall in water level.

Annual water level fluctuation (August 2024 to August 2025) shows 56.80% rise in water level whereas 43.20% of wells shows fall in water level.

Seasonal Water Level Fluctuation (May 2025 to August 2025) reveals about 89.9% wells have recorded the rise and 10.1% wells show fall in water level.

During August 2025, decadal fluctuation reveals that there is a rise in 60.80% of wells, whereas 39.2% of wells shows fall in water level.