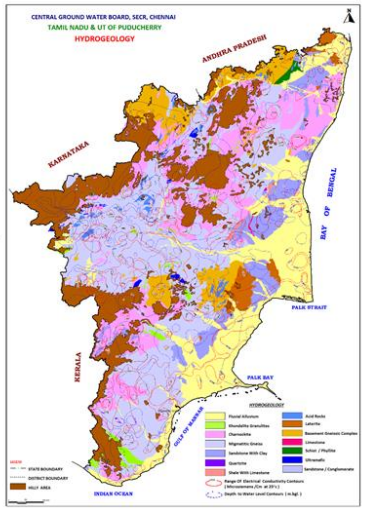

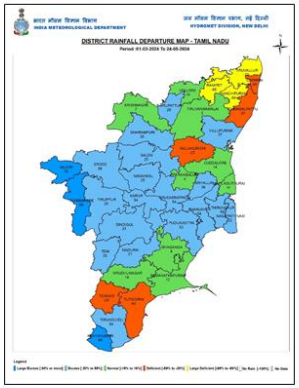

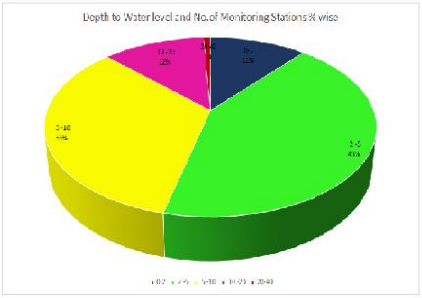

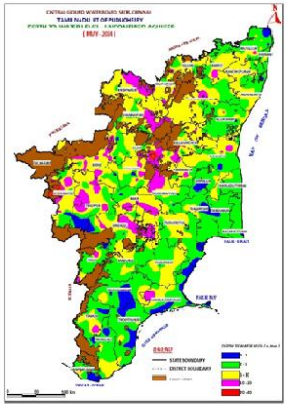

GROUND WATER LEVEL BULLETIN

MAY 2024

TAMILNADU & UT OF PUDUCHERRY

ABSTRACT

Ground water level Scenario during May - 2024 highlighting the findings, status of ground water level in different aquifers and its annual and decadal comparison

CGWB, SOUTH EASTERN COASTAL REGION, CHENNAI

1.0 INTRODUCTION

Groundwater 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 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. The regime monitoring started in the year 1969 by Central Groundwater Board.

2.0 STUDY AREA

The state of Tamil Nadu has a geographical area of 1,30,058 sq. km. and is situated between N. Latitudes 08º00" and 13º30' and E. Longitudes 76º15' and 80º18'. The state is bounded by the Bay of Bengal in the east, the Indian Ocean in the south, the state of Kerala in the west and the states of Karnataka and Andhra Pradesh in the north. For administrative purposes, the state is divided into 38 districts, 317 Taluks, 1202 Firkas and 16744 Revenue Villages. A major part of the Union Territory of Puducherry comprising Puducherry and Karaikal regions occurs as small enclaves in Tamil Nadu. Figure.1 Shows the major aquifer and Administrative division of the State

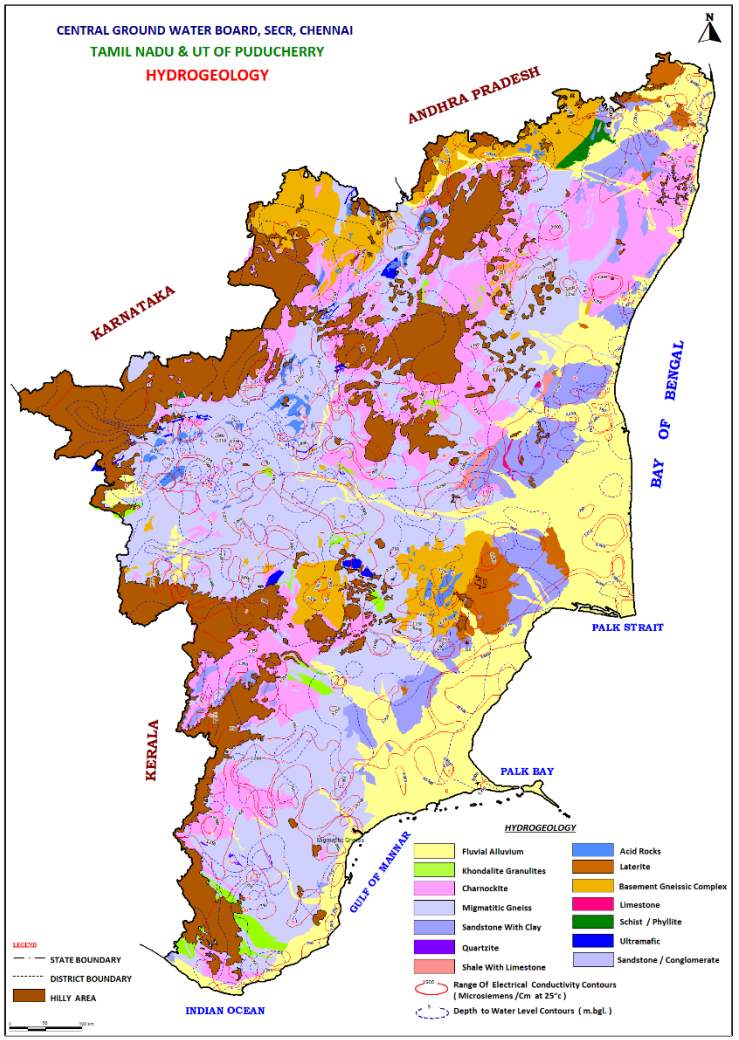

Figure-1: Map showing major aquifers of Tamilnadu

The state of Tamil Nadu is divided into four physiographic units viz. (i) Coastal Plains, (ii) Eastern Ghats, (iii) Central Plateau and (iv) Western Ghats. The coastal plains stretch over a distance of about 998 km. from Pulicat Lake to Cape Comorin, ranging in elevation between 2 and 30 m above mean sea level. The coastal plains are further sub-divided into (a) the Coromandel Coast comprising parts of the districts of Tiruvallur, Kancheepuram and Cuddalore, (b) the alluvial plain of Cauvery delta extending over Nagappattinam, Thanjavur Thiruvarur districts and (c) the dry southern plains comprising parts of Pudukkottai, Ramanathapuram, Tuticorin, Tirunelveli and Kanyakumari districts.

The chain of flat-topped hills of Javadis, the Shevroy, the Kalrayan and the Pachamalai hills, which are joining Cardamom hills in the south, form the Eastern Ghats. These hills rise steeply above plateau level to 1160 m above mean sea level in the Javadi hills and to 1645 m above mean sea level in the Shevroy hills.

Between the Eastern and Western Ghats lies the plateau area known as the "Central Plateau" comprising the districts of Erode and Coimbatore with elevations between 150 and 610 m above mean sea level thereby giving rise to an undulating topography. West of the region lies the broad Palghat gap between the Nilgiri and Anaimalai Hills. Between Cauvery River and the Palghat gap lies an extensive low plateau rising gradually from 120 to 180 m above mean sea level, along the tributaries of the Cauvery River, to 365 to 455 m above mean sea level in the west.

The plateau is fringed on the west by a group of high hills known as the Western Ghats, comprising the western part of the Nilgiri, Madurai and Kanyakumari districts. On the other side of the Palghat gap, the high mountains of the Peninsula dominate. These are the Nilgiri in the north, Anaimalai Hills, Palani and Cardamom hills in the south, with a summit level of 1830 to 2440 m above mean sea level rising sharply
from the plateau.

3.0 GROUND WATER LEVEL MONITORING

There are 1488 observations wells under groundwater monitoring regime of South Eastern Coastal Region as on May 2024. There are 749 dug wells and 739 piezometers. As the dug wells are invariably tapping and reflecting unconfined aquifer. Water levels were monitored all these wells four times in a year (May, August, November and January). The District wise breakup is given in Table-1.

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

S.No	District	DW	PZ	Total
1	Ariyalur	9	15	24
2	Chennai	18	6	24
3	Coimbatore	23	62	85
4	Cuddalore	30	81	111
5	Dharmapuri	22	19	41
6	Dindigul	27	15	42
7	Erode	58	53	111
8	Kancheepuram	39	48	87
9	Kanyakumari	13	9	22
10	Karaikal	4	5	9
11	Karur	12	14	26
12	Krishnagiri	17	33	50
13	Madurai	17	34	51
14	Nagapattinam	16	12	28
15	Namakkal	43	30	73
16	Nilgiris	8	2	10
17	Perambalur	16	5	21
18	Pondicherry	5	12	17
19	Pudukkottai	18	21	39
20	Ramanathapuram	24	5	29
21	Salem	42	14	56
22	Sivaganga	11	6	17
23	Thanjavur	15	4	19
24	Theni	13	35	48

S.No	District	DW	PZ	Total
25	Thiruvannamalai	19	26	45
26	Tiruchirapalli	42	21	63
27	Tirunelveli	30	46	76
28	Tiruppur	10		10
29	Tiruvallur	36	14	50
30	Tiruvarur	6	3	9
31	Tuticorin	24	15	39
32	Vellore	32	29	61
33	Villupuram	34	28	62
34	Virudhunagar	16	17	33
	Total	**749**	**739**	**1488**

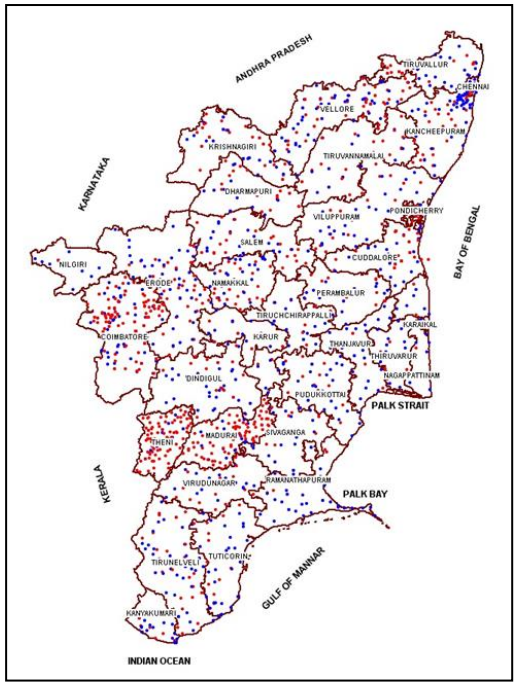

Figure- 2: Map showing locations of monitoring wells (NHNS) in Tamilnadu

4.0 RAINFALL

The rainfall data collected and compiled from weekly and monthly weather reports from India Meteorological Department were used to analyze the rainfall for the period March 2024 to May 2024. Figure.3 gives the district-wise rainfall departure for the period 1st March 2024 to 24th May 2024.

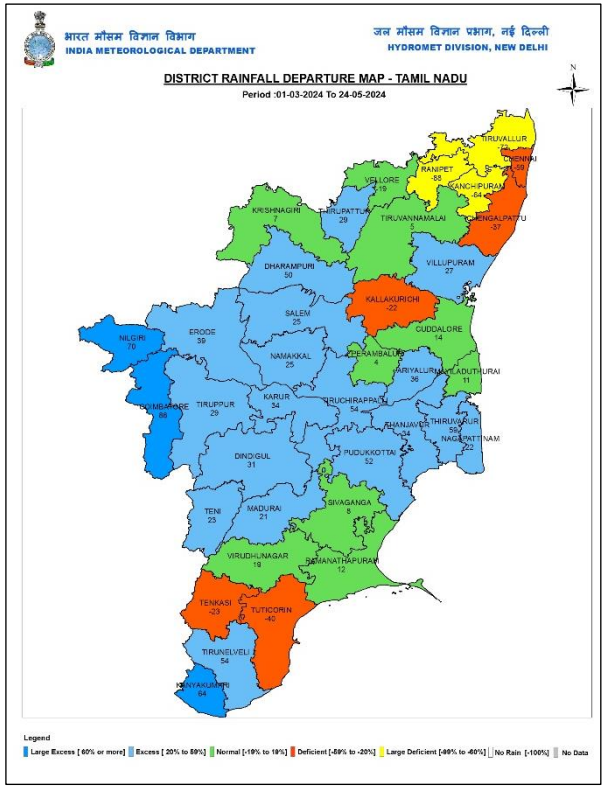

Figure-3: Rainfall departure (March 2024 to May 2024) from normal rainfall

5.0 GROUND WATER LEVEL SCENARIO (MAY 2024)

5.1 Shallow Aquifer (Unconfined)

5.1.1 Depth to Water Level

The statement showing the distribution of ground Water Monitoring wells along with depth to water levels in phreatic aquifer in different depth ranges is presented in Table-2 and Figure.4 and 4a. depicts the ground water scenario in May 2024.

1. A perusal of the water level data reveals that the depth to water level ranged from 0.35 m bgl (Tirunelveli district) to 38.75 m bgl (Namakkal District) in Tamilnadu and UT of Puducherry.
2. Overall, 87.32 % of the wells monitored in the state and UT are in <10 m bgl range and spread over entire State of Tamilnadu.
3. 11.88 % of wells show depth to water level between 10 to 20 m bgl in Coimbatore, Cuddalore, Dharmapuri, Erode, Kanyakumari, Namakkal, Perambalur, Salem,Theni, Thiruvallur, Thiruchirapalli, Vellore and Villupuram districts.
4. Less than 1 % of wells show depth to water level more than 20 m bgl in Erode, Coimbatore, Tiruppur and Namakkal districts.
5. Depth to water level of less than 2 m bgl has been recorded in 11.21% of wells analysed and noted in all over the State except Madurai, Thiruvannamalai, Tiruppur, Vellore and UT of Puducherry.
6. Depth to water level in the range of 2 to 5 m bgl has been recorded in 42.59 % of wells analysed and noted in all the districts.
7. Depth to water level in the range of 5 to 10 m bgl has been recorded in 33.51 % of wells analysed and noted in all over the State except Karaikal region of UT of Puducherry and, Nagapattinam and Tiruvallur districts.

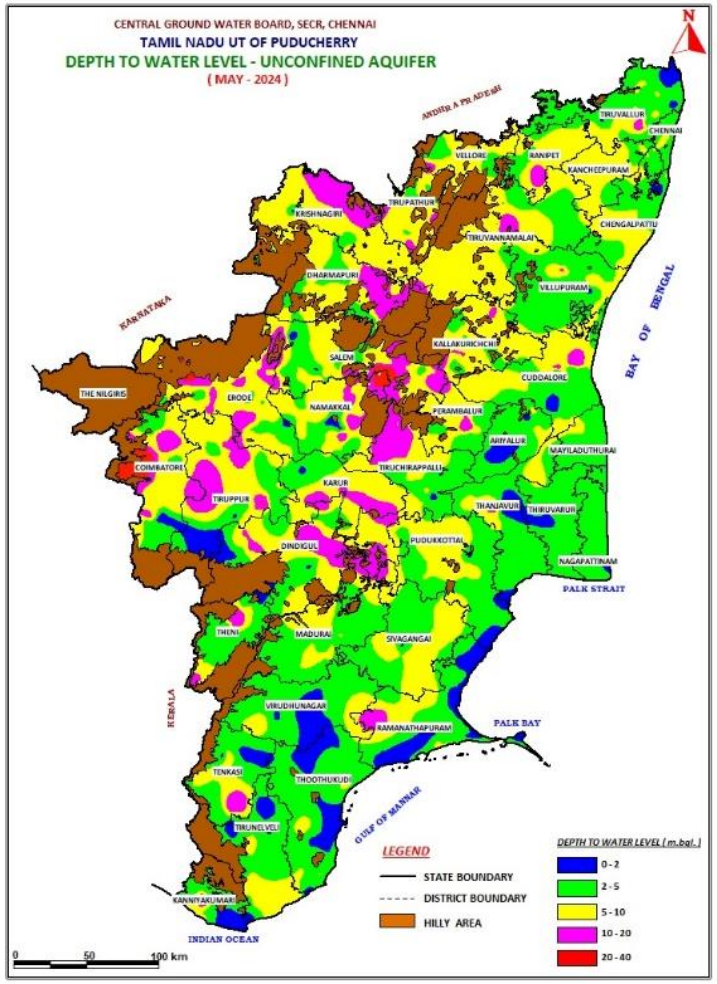

Figure-4: Depth to water level of unconfined aquifer during May 2024.

Table 2: Depth to Water level (May 2024) & Distribution of Percentage of Observation Wells

District	No. of Wells Analysed	Depth to Water Table (mbgl)					
		No. of Wells Showing Depth to Water Table (mbgl) in the Range of					
		0-2	2-5	5-10	10-20	20-40	>40
Ariyalur	9	1	5	3	0	0	0
Chennai	18	2	13	3	0	0	0
Coimbatore	23	3	3	11	5	1	0
Cuddalore	30	3	15	10	2	0	0
Dharmapuri	22	1	7	5	9	0	0
Dindigul	27	4	8	7	8	0	0
Erode	58	3	14	26	12	3	0
Kancheepuram	39	3	21	15	0	0	0
Kanyakumari	13	3	6	3	1	0	0
Karaikal	4	1	3	0	0	0	0
Karur	12	1	5	5	1	0	0
Krishnagiri	17	2	2	11	2	0	0
Madurai	17	0	11	6	0	0	0
Nagapattinam	16	1	15	0	0	0	0
Namakkal	43	6	10	16	10	1	0
Nilgiris	8	3	4	1	0	0	0
Perambalur	16	1	5	8	2	0	0
Pondicherry	5	0	3	2	0	0	0
Pudukkottai	18	3	8	7	0	0	0
Ramanathapuram	24	9	11	3	1	0	0
Salem	42	3	14	16	9	0	0
Sivaganga	11	1	4	6	0	0	0
Thanjavur	15	2	6	6	1	0	0
Theni	13	2	6	3	2	0	0
Thiruvannamalai	19	0	6	11	2	0	0
Tiruchirapalli	42	1	13	17	11	0	0
Tirunelveli	30	7	16	6	1	0	0
Tiruppur	10	0	4	4	1	1	0
Tiruvallur	36	4	24	6	2	0	0
Tiruvarur	6	1	5	0	0	0	0
Tuticorin	24	9	10	5	0	0	0
Vellore	32	0	13	16	3	0	0
Villupuram	34	2	16	12	4	0	0
Virudhunagar	16	2	13	1	0	0	0
Total	**749**	**84**	**319**	**251**	**89**	**6**	**0**
%	**100.00**	**11.21**	**42.59**	**33.51**	**11.88**	**0.80**	**0.00**

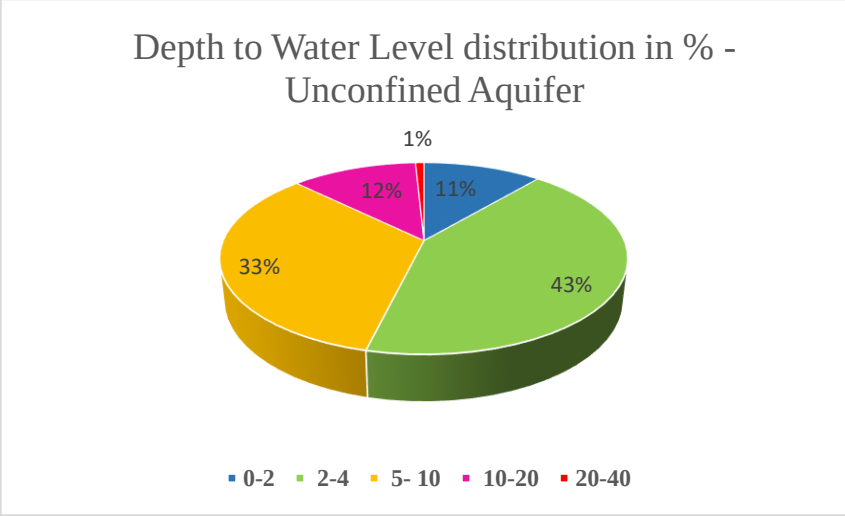

Figure-4a: Depth to water level of unconfined aquifer during May 2024.

5.1.2 Annual Fluctuation (May 2023 – May 2024)

Annual fluctuation of water level is calculated by comparing the water level of the particular period during last year with water level of the same period of current year. This indicates the impact of ground water development and ground water recharge during one year. Positive fluctuation indicates improved recharge over and above ground water development and negative fluctuation indicates increased ground water development over and above the recharge

The water level data for May 2024 were compared with water level for the period May 2023. The district-wise distribution of Ground water monitoring wells falling in different ranges of water level fluctuation is presented in Table-3 and Figure.5 & 5a. A comparison of water level shows a rise in 55.36 % and a fall in 44.64 % of the wells. Both the rise and fall is mainly in 0-2 m range.

1. The entire state and UT of Puducherry have recorded rise in more than 50% wells except Dindigul, Erode, Karur, Krishnagiri, Namakkal, Perambalur,Trichy, Vellore and Villupuram districts.
2. Rise in the water level in the range of 0-2m has been observed in 35.12 % of wells analysed, and found all over the state and UT of Puducherry.
3. Rise in the water level in the range of 2-4 m has been observed in 10.38 % of wells analysed and noted all over the state except Cuddalore, Erode, Karaikal, Krishnagiri, Nagapattinam, Perambalur, Sivaganga, Thanjavur and Thiruvannamalai districts.
4. Rise in water level more than 4 m has been observed in 9.86 % of wells analysed and noted mainly in Coimbatore, Erode, Kanyakumari, Namakkal, Pudukkottai, Tirunelveli, Salem, Tiruppur, Tiruvallur and Tuticorin districts.
5. The fall in water level in the range of 0-2m has been observed in 25.95 % of wells analysed and noted all over the state and UT of Puducherry except Kanyakumari, Nagapattinam, Nilgiris and Ramanathapuram districts.
6. The fall in water level in the range of 2-4m has been observed in 10.38 % of wells analysed and noted all over the state except Dharmapuri, Kanyakumari, Madurai, Nilgiris, Ramanathapuram, Sivaganga, Thanjavur, Theni, Thiruvannamalai, Tirunelveli, Tiruppur, Tuticorin and Virudhunagar districts and UT of Puducherry.
7. Fall in water level more than 4 m has been observed in 8.30 % of wells analysed and noted isolated patches in some districts mainly in Erode, Krishnagiri, Namakkal, Salem and Trichy districts.

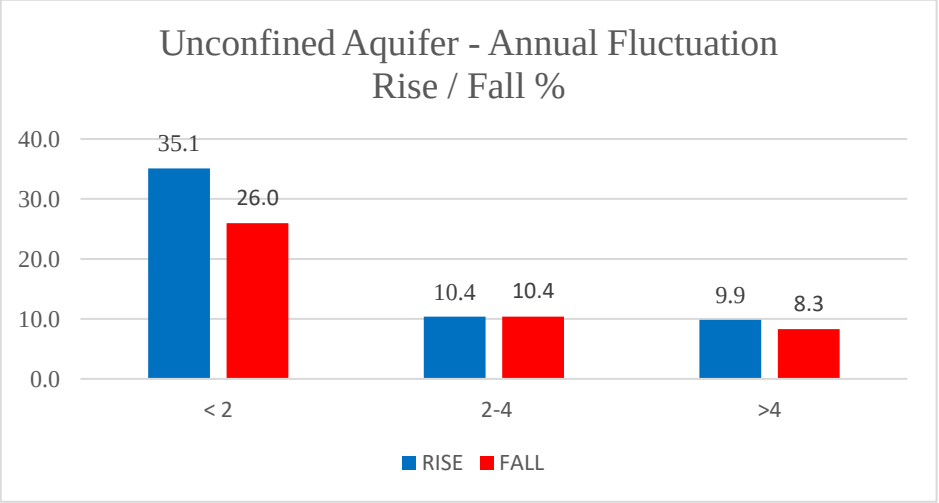

Figure-5: Annual Fluctuation Rise and Fall % Unconfined aquifer May 2024 – May 2023

Table : 3 Annual Water level fluctuation - May 2024 with May 2023 -Unconfined

District	Water level fluctuation						No of wells recorded rise	No of wells recorded fall
	Range of rise (m)			Range of fall (m)				
	< 2	2-4	> 4	< 2	2-4	>4		
Ariyalur	4	2	0	2	1	0	6	3
Chennai	5	3	0	2	1	1	8	4
Coimbatore	4	2	5	5	3	1	11	9
Cuddalore	13	0	1	4	1	1	14	6
Dharmapuri	5	5	0	6	0	4	10	10
Dindigul	7	1	1	7	3	2	9	12
Erode	12	0	3	10	12	10	15	32
Kancheepuram	15	6	2	9	1	1	23	11
Kanyakumari	3	1	5	0	0	1	9	1
Karaikal	2	0	0	1	0	0	2	1
Karur	3	1	0	4	1	1	4	6
Krishnagiri	2	0	1	2	5	3	3	10
Madurai	6	3	1	1	0	0	10	1
Nagapattinam	6	0	0	0	1	0	6	1
Namakkal	5	4	3	6	7	5	12	18
Nilgiris	4	1	1	0	0	0	6	0
Perambalur	3	0	0	8	1	1	3	10
Pondicherry	1	1	0	2	0	0	2	2
Pudukkottai	5	1	3	6	3		9	9
Ramanathapuram	11	2	2	0	0	0	15	0
Salem	13	2	3	11	2	3	18	16
Sivaganga	4	0	1	4	0	1	5	5
Thanjavur	5	0	1	3	0	1	6	4
Theni	5	2	1	1	0		8	1
Thiruvannamalai	6	0	1	7	0	1	7	8
Tirunelveli	10	5	6	3	0	1	21	4
Tiruppur	2	4	4	3	0	1	10	4
Tiruvallur	10	3	4	8	4	1	17	13
Tiruvarur	3	1	0	1	0	0	4	1
Trichy	3	1	1	11	2	6	5	19
Tuticorin	9	4	4	1	0	0	17	1
Vellore	5	1	2	11	7	1	8	19
Villupuram	6	2		10	5	1	8	16
Virudhunagar	6	2	1	1	0	0	9	1
Total	**203**	**60**	**57**	**150**	**60**	**48**	**320**	**258**
%	**35.12**	**10.38**	**9.86**	**25.95**	**10.38**	**8.30**	**55.36**	**44.64**

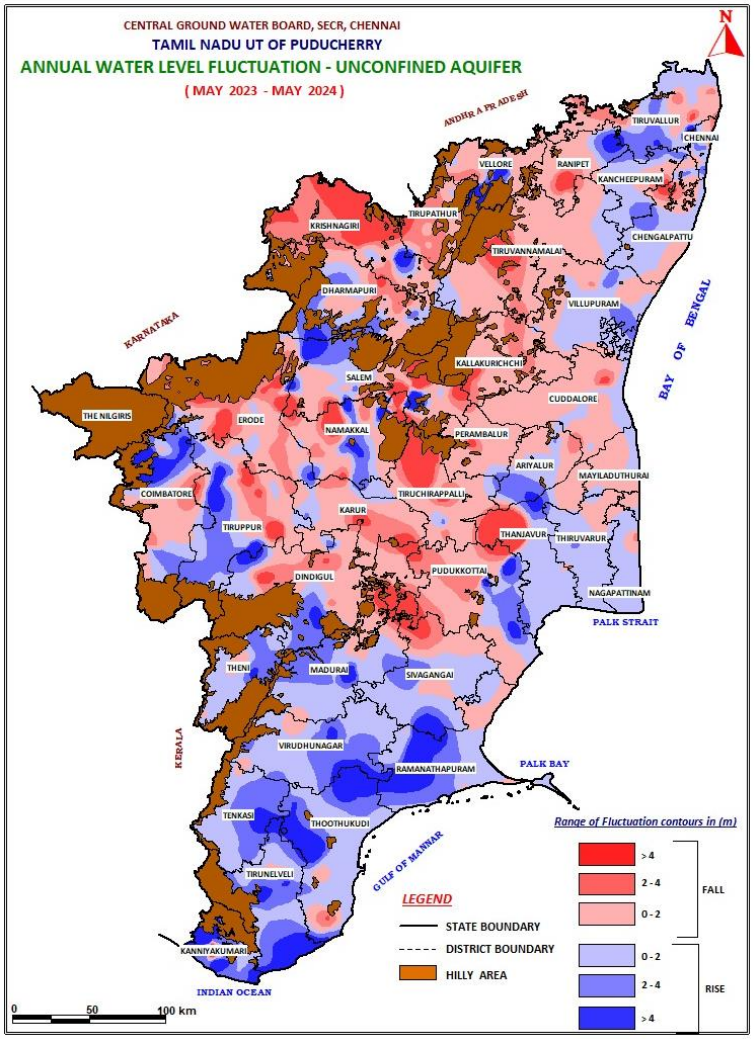

Figure-5: Annual Fluctuation map of unconfined aquifer May 2024 – May 2023

5.1.3 Decadal Fluctuation

Decadal Fluctuation of Water Level in Unconfined Aquifer (Decadal Mean May (2014-2023) to May 2024)

The distribution of hydrograph network stations falling in different ranges of fluctuation is presented in Table-4 and Figure.6 and 6a. A comparison of water levels shows that a rise in the water level is recorded in 76.95 % of wells analysed, while 23.05 % recorded fall. While rise is more in 0-2 m range and the fall is also in the same range.

1. The most of the districts of Tamil Nadu and UT of Puducherry have recorded rise in more than 50% wells.

2. Rise in the water level in the range of 0-2m has been observed in 43.94 % of wells analysed, noted all over the State and UT of Puducherry.

3. Rise in the water level of 2 to 4 m has been observed in 20.22 % and of wells analysed and noted all over the state except Karaikal region of UT of Puducherry.

4. Rise in the water level more than 4 m has been observed in 12.80 % and of wells analysed and noted all over the state except Ariyalur, Chennai, Karur, Nagapattinam, Thanjavur, Tiruvarur and Trichy districts and Karaikal and Puducherry of UT of Puducherry.

5. The fall in water level in the range of 0-2m has been observed in 16.58 % of wells analysed and spread most the districts in the State except Kanyakumari, Nagapattinam, Nilgiris, Theni districts and UT of Puducherry.

6. The fall in water level in the range of 2-4m has been observed in 3.77 % of wells analysed and noted mainly in Coimbatore, Dharmapuri, Dindigul, Erode, Namakkal, Salem, Tiruppur, Trichy and Vellore districts

7. The fall in water level more than 4 m has been observed in 2.70 % of wells analysed and noted as isolated pockets mainly in Coimbatore, Dharmapuri, Dindigul, Erode, Kanyakumari, Salem, Theni, Tirunelveli, Tiruppur, Tiruvallur, Trichy and Villupuram districts.

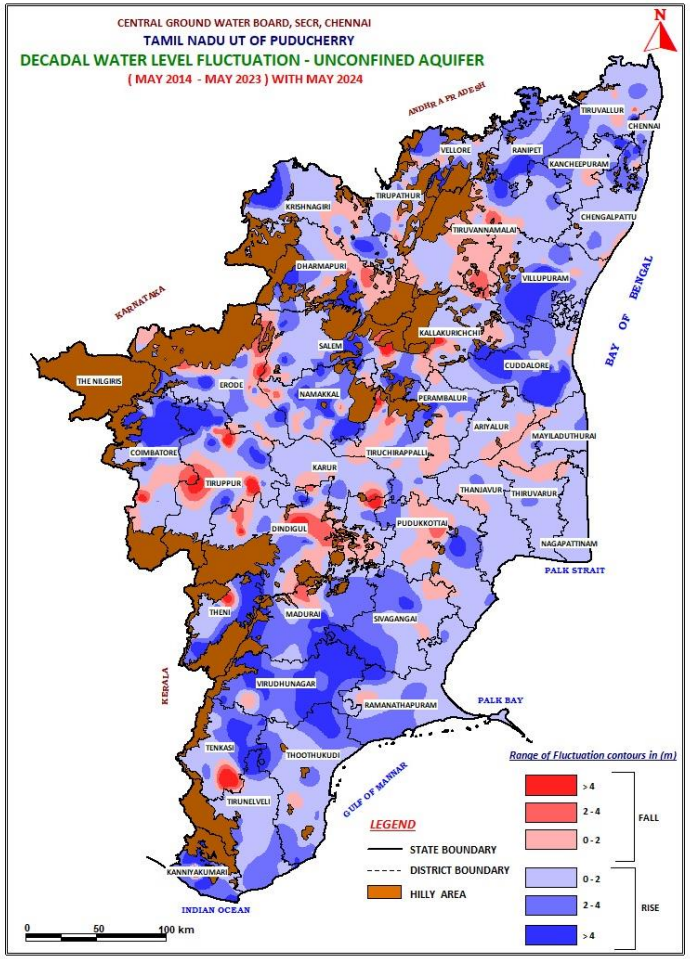

Figure-6: Decadal Fluctuation of Water Level in Unconfined Aquifer

Table 4: Decadal Water level fluctuation - May 2024 with Decadal average of May 2014-23 -Unconfined

S.No	District	Water level fluctuation						No of wells recorded rise	No of wells recorded fall
		Range of rise (m)			Range of fall (m)				
		< 2	2-4	> 4	< 2	2-4	>4		
1	Ariyalur	5	1	0	3	0	0	6	3
2	Chennai	12	2	0	1	0	0	14	1
3	Coimbatore	9	2	7	2	1	2	18	5
4	Cuddalore	13	5	7	5	0	0	25	5
5	Dharmapuri	4	4	3	7	2	2	11	11
6	Dindigul	8	6	2	6	3	2	16	11
7	Erode	19	13	6	12	3	5	38	20
8	Kancheepuram	20	8	6	5	0	0	34	5
9	Kanyakumari	4	4	4	0	0	1	12	1
10	Karaikal	3	0	0	1	0	0	3	1
11	Karur	10	1	0	1	0	0	11	1
12	Krishnagiri	8	2	2	5	0	0	12	5
13	Madurai	4	7	4	1	1	0	15	2
14	Nagapattinam	15	1	0	0	0	0	16	0
15	Namakkal	13	8	10	8	4	0	31	12
16	Nilgiris	6	1	1	0	0	0	8	0
17	Perambalur	4	6	2	3	1	0	12	4
18	Pondicherry	3	1	0	0	0	0	4	0
19	Pudukkottai	9	2	2	4	1	0	13	5
20	Ramanathapuram	14	5	1	4	0	0	20	4
21	Salem	14	12	7	6	2	1	33	9
22	Sivaganga	5	2	2	2	0	0	9	2
23	Thanjavur	8	2	0	5	0	0	10	5
24	Theni	3	5	4	0	0	1	12	1
25	Thiruvannamalai	7	2	1	8	1	0	10	9
26	Tirunelveli	15	7	5	2	0	1	27	3
27	Tiruppur	3	1	2	1	2	1	6	4
28	Tiruvallur	22	8	1	4	0	1	31	5
29	Tiruvarur	4	1	0	1	0	0	5	1
30	Trichy	17	7	0	11	2	2	24	15
31	Tuticorin	13	7	3	1	0	0	23	1
32	Vellore	13	9	2	4	4	0	24	8
33	Villupuram	16	4	3	9	1	1	23	11
34	Virudhunagar	3	4	8	1	0	0	15	1
	Total	**326**	**150**	**95**	**123**	**28**	**20**	**571**	**171**
	%	**43.94**	**20.22**	**12.80**	**16.58**	**3.77**	**2.70**	**76.95**	**23.05**

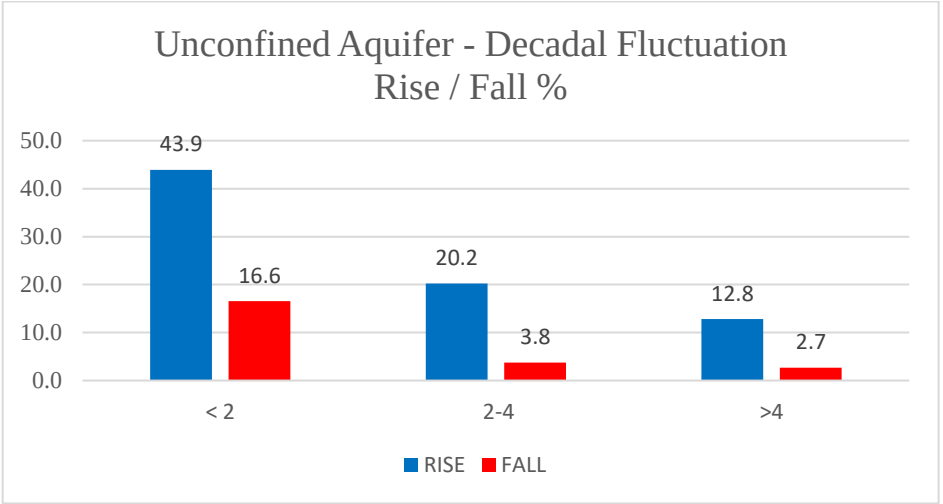

Figure-6a: Decadal Fluctuation of Water Level in Unconfined Aquifer Rise Fall %

5.2 Deeper Aquifer (Confined)

5.2.1 Depth to water level (May 2024)

Depth to Piezometric surface has been recorded from piezometers spread all over the state both in Hard rock and soft rock areas. The statement showing the depth to piezometric surface is given in Table-5. The ground water Scenario of Confined aquifer during May 2024 is depicted in Figure.7. Salient features of the depth to piezometric surface during May 2024 are given below.

1. The depth to piezometric surface ranged from 0.08 m bgl (Ramanathapuram district) to 97.44 m bgl (Erode District) in Tamil Nadu and UT of Puducherry.
2. 62.14 % of wells have recorded depth to piezometric surface of less than 10mbgl noted in all the districts except in Ariyalur district.
3. 16.96 % of wells show depth to piezometric surface between 10 to 20 mbgl

noted in all the district except Chennai, Madurai, Perambalur, Sivaganga, Thanjavur, Tuticorin and Virudhunagar Districts and UT of Puducherry.

4. 11.67 % have recorded piezometric surface between 20 to 40mbgl noted in all the districts except Chennai, Kanyakumari, Karur, Madurai, Nilgiris, Perambalur, Tirunelveli, Tuticorin districts.

5. 9.23 % have recorded more than 40 mbgl noted in Ariyalur, Coimbatore, Cuddalore, Dharmapuri, Dindigul, Erode, Karur, Krishnagiri, Pudukkottai, Salem, Vellore, Villupuram and UT of Puducherry.

6. Depth to piezometric surface of less than 2 m bgl has been recorded in 4.88 % of wells analysed and this has been noted in Coimbatore, Madurai, Erode, Tirunelveli, Tuticorin, Vellore, Villupuram and Virudhunagar districts.

7. Depth to piezometric surface in the range of 2 to 5 m bgl has been recorded in 27.41 % of wells analysed and noted in all the districts except in the districts of Ariyalur, Nagapattinam, Ramanathapuram, Sivaganga, Tiruvarur and UT of Puducherry.

8. Depth to piezometric surface in the range of 5 to 10 m bgl has been recorded in 29.85 % of wells analysed and noted in all the districts except in the districts such as Ariyalur and Nilgiris.

Table-5: Frequency distribution of depth to Piezometric surface (May 2024) & Distribution of Percentage of Observation Wells

District	No. of Wells Analyzed	Depth to Piezometric surface in the range of (mbgl)					
		0-2	2-5	5-10	10-20	20-40	>40
Ariyalur	12				1	3	8
Chennai	5		4	1			
Coimbatore	57	2	7	20	16	7	5
Cuddalore	77		2	4	7	24	40
Dharmapuri	19		1	7	5	4	2
Dindigul	15		3	3	6	2	1
Erode	53	3	8	28	7	4	3
Kancheepuram	44	4	30	7	1	2	
Kanyakumari	9	1	3	2	3		
Karaikal	5		1	1	3		
Karur	8		2	3	1		2
Krishnagiri	31		7	7	12	3	2
Madurai	33	6	10	17			
Nagapattinam	11			2	7	2	
Namakkal	31	1	6	12	9	3	
Nilgiris	2		1		1		
Perambalur	5		2	3			
Pondicherry	14		1	1		11	1
Pudukkottai	20		1	13	2	2	2
Ramanathapuram	5	1		2	1	1	
Salem	13		3	7	1	1	1
Sivaganga	5			3		2	
Thanjavur	4		1	1		2	
Theni	33	1	12	6	8	6	
Thiruvannamalai	25		7	14	3	1	
Tirunelveli	59	6	26	18	9		
Tiruvallur	15		5	5	4	1	
Tiruvarur	1			1			
Trichy	27	1	8	5	10	3	
Tuticorin	15	3	9	3			
Vellore	28	2	3	15	5	2	1
Villupuram	39	3	28	5	3		
Virudhunagar	17	2	11	4			
Total	**737**	36	202	220	125	86	68
%	**100**	4.88%	27.41%	29.85%	16.96%	11.67%	9.23%

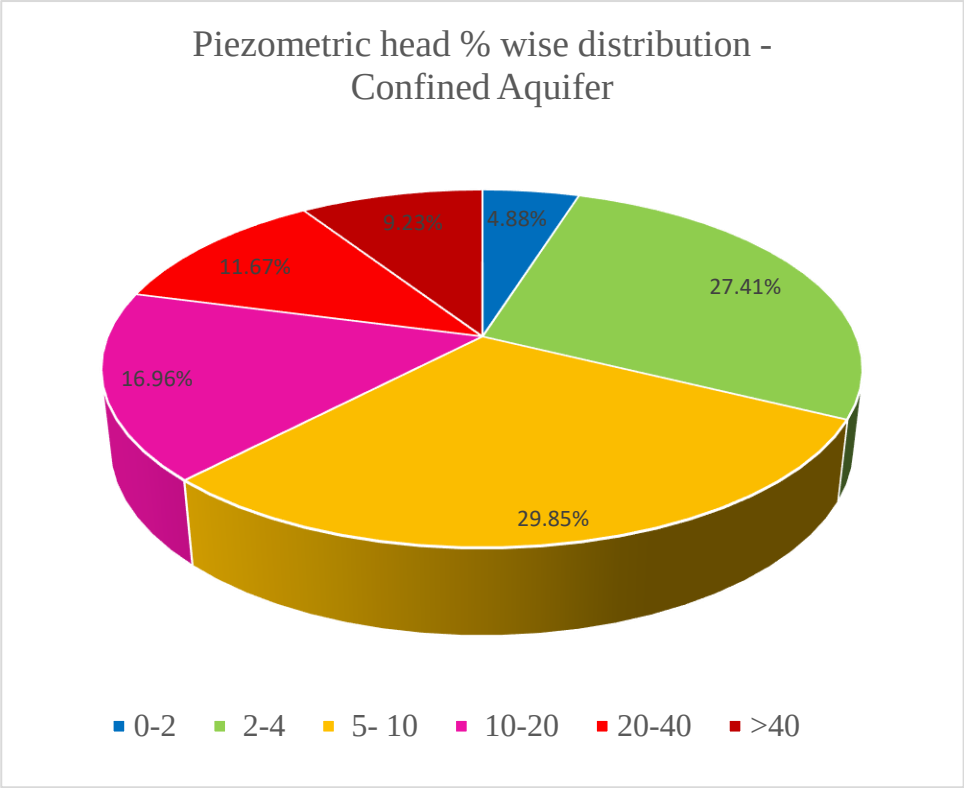

Figure-7a : % wise Distribution of Depth to water level of confined aquifer during May 2024

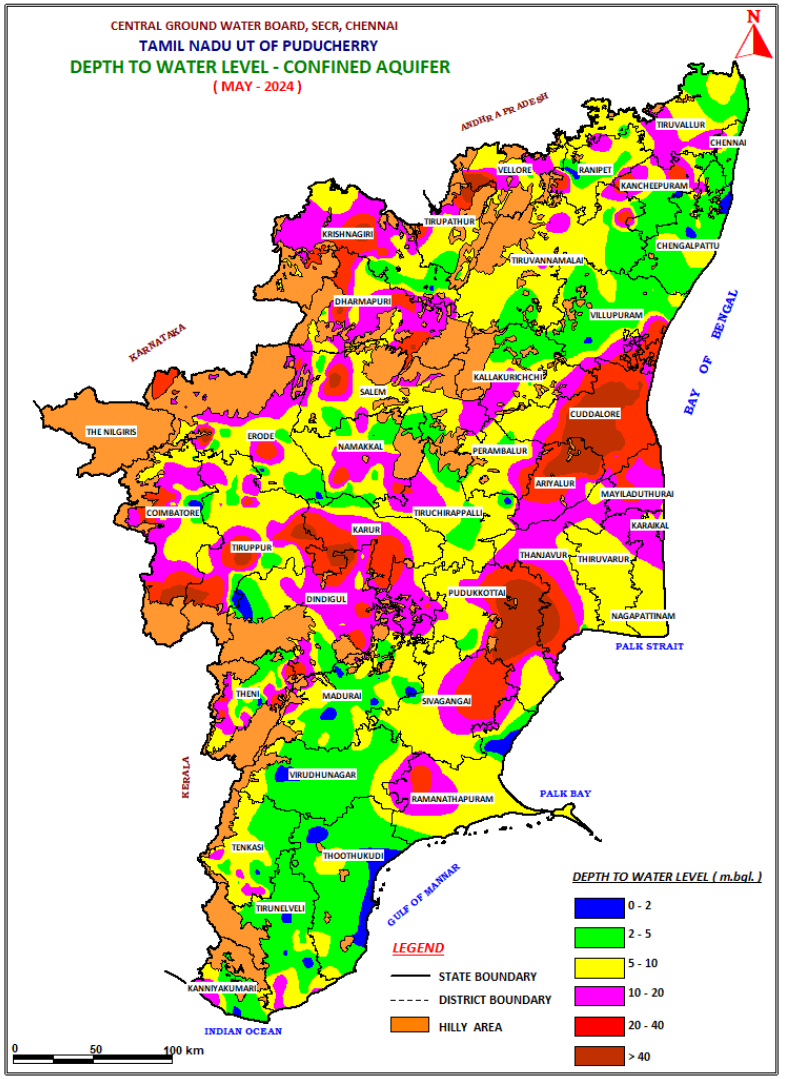

Figure-7: Depth to water level of confined aquifer during May 2024

5.2.2 Annual Fluctuation (May 2023 –May 2024)

The Piezometric surface data of May 2024 were compared with that of, May 2023. The district-wise distribution of Ground water monitoring wells falling in different ranges of water level fluctuation is presented in Table-6 and Figure.8. A comparison of water level shows a rise in 41.93 % and a fall in 58.07 % of the wells. Both the rise and fall is mainly in 0-2 m range.

1. The Most of the Districts of the state have recorded fall in more than 50% wells except Chennai, Kanyakumari, Madurai, Theni, Tirunelveli, Tuticorin and Virudhunagar districts.
2. Rise in the water level in the range of 0-2m has been observed in 26.97 % of wells analysed, spread all over the State except Dharmapuri, Perambalur, Ramanathapuram, Thanjavur, Tiruppur and Karaikal region and Puducherry of UT of Puducherry.
3. Rise in the water level in the range of 2-4 m has been observed in 8.66 % of wells analysed and noted mainly in Coimbaotre, Kanyakumari, Madurai, Theni, Tirunelveli, Tuticorin and Virudhunagar Districts.
4. Rise in water level more than 4 m has been observed in 6.30 % of wells analysed and noted in Ariyalur, Coimbatore, Cuddalore, Kancheepuram, Madurai, Theni, Tirunelveli, Tiruvallur and Virudhunagar districts.
5. The fall in water level in the range of 0-2m has been observed in 27.56 % of wells analysed and noted all over the state except Chennai, Kancheepuram, Kanyakumari, Ramanathapuram, Thanjavur, Tiruppur and Tuticorin districts and Karaikal region of UT of Puducherry.
6. The fall in water level in the range of 2-4m has been observed in 14.37 % of wells analysed and noted mainly in Coimbatore, Cuddalore, Erode, Krishnagiri, Namakkal, Perambalur, Pudukkottai and Thiruvannamalai districts.
7. Fall in water level more than 4 m has been observed in 16.14 % of wells analysed and noted all over the state except Chennai, Kanyakumari, Madurai, Nagapattinam, Perambalur, Ramanathapuram, Thanjavur, Tiruppur, Tuticorin, Virudhunagar and UT of Puducherry.

Table 6: Annual Water level fluctuation - May 2024 with May 2023 –Confined

District	Water level fluctuation						No of wells recorded rise	No of wells recorded fall
	Range of rise (m)			Range of fall (m)				
	< 2	2 - 4	> 4	< 2	2 - 4	>4		
Ariyalur	2	1	2	3	0	4	5	7
Chennai	2	0	0	0	0	0	2	0
Coimbatore	16	5	3	15	6	11	24	32
Cuddalore	8	0	3	15	8	8	11	31
Dharmapuri	0	0	0	2	3	6	0	11
Dindigul	2	0	1	4	2	7	3	13
Erode	8	1	1	14	12	5	10	31
Kancheepuram	9	0	2	0	0	2	11	2
Kanyakumari	2	4	1	0	0	0	7	0
Karaikal	0	0	0	0	0	0	0	0
Karur	1	1	0	6	1	3	2	10
Krishnagiri	2	2	0	2	6	6	4	14
Madurai	18	3	2	8	2	0	23	10
Nagapattinam	2	0	0	6	1	0	2	7
Namakkal	2	1	0	10	7	4	3	21
Nilgiris	0	0	1	1	0	0	1	1
Perambalur	0	0	0	2	3	0	0	5
Pondicherry	0	0	0	3	2	0	0	5
Pudukkottai	2	0	1	7	5	5	3	17
Ramanathapuram	0	1	0	0	0	0	1	0
Salem	5	0	0	4	3	2	5	9
Sivaganga	1	0	0	1	1	3	1	5
Thanjavur	0	0	0	0	0	0	0	0
Theni	9	13	2	7	1	1	24	9
Thiruvannamalai	2	0	0	12	5	2	2	19
Tiruchirapalli	2	0	0	6	1	5	2	12
Tirunelveli	13	5	7	2	1	1	25	4
Tiruvallur	2	0	2	3	0	1	4	4
Tiruvarur	1	0	0	1	0	0	1	1
Tuticorin	5	4	1	0	0	0	10	0
Vellore	5	0	1	2	2	2	6	6
Villupuram	5	0	0	3	1	4	5	8
Virudhunagar	11	3	2	1	0	0	16	1
Total	**137**	**44**	**32**	**140**	**73**	**82**	**213**	**295**
%	**26.97%**	**8.66%**	**6.30%**	**27.56%**	**14.37%**	**16.14%**	**41.93%**	**58.07%**

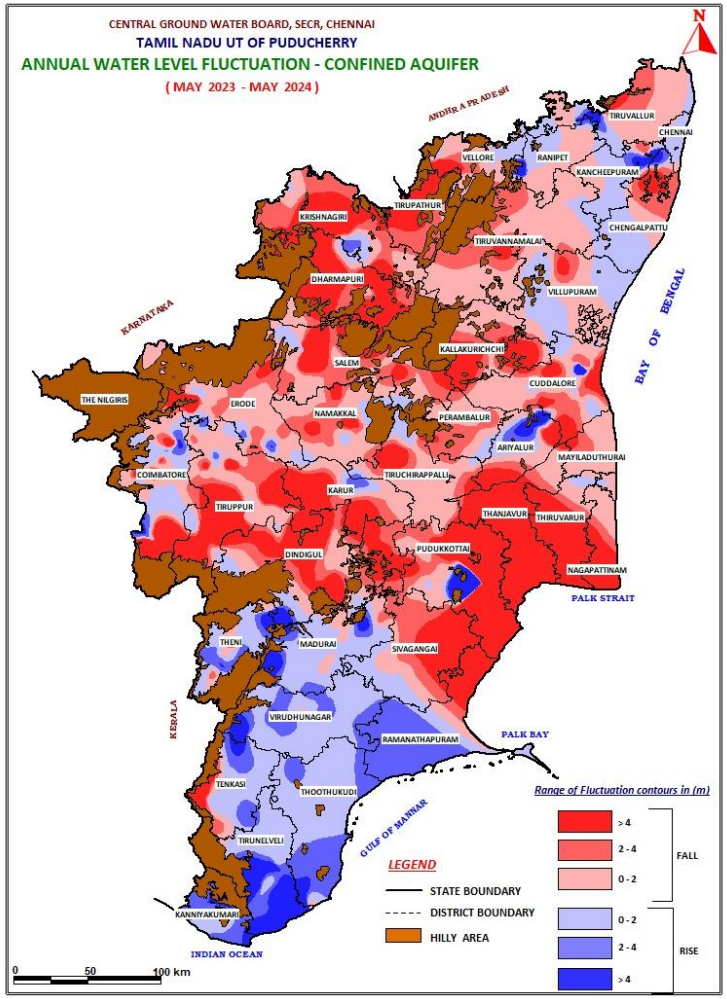

Figure-7: Annual Water Level Fluctuation of Confined Aquifer

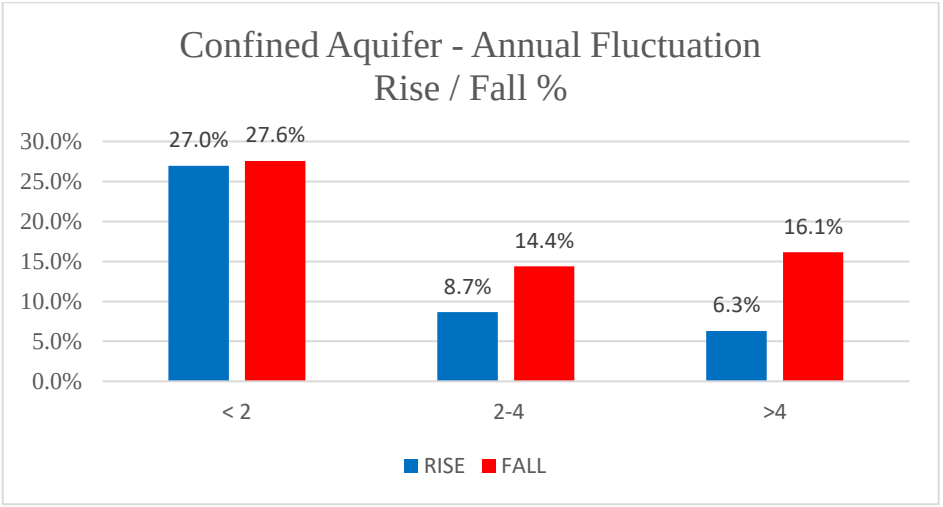

Figure-7a: % Wise Rise & Fall distribution of Annual Water Level Fluctuation in Confined Aquifer

5.2.3 Decadal Fluctuation

The Piezometric surface data of May 2024 were compared with mean water level for the period May 2014-2023. The district-wise distribution of Ground water monitoring wells rising and falling in different ranges of water level fluctuation is presented in Table-7 and Figure.8. A comparison of water level shows a rise in 59.89 % and a fall in 40.11% of the wells. Rise is more in 0-2 m ranges the fall is mainly in 0-2 m range.

1. The entire state and Puducherry region of UT of Puducherry have recorded rise in more than 50% wells, except Ariyalur, Dharmapuri, Karur, Nagapattinam and Namakkal districts.
2. Rise in the water level in the range of 0-2m has been observed in 22.99 % of wells analysed, spread all over the State except in Ariyalur, Dindigul,Karaikal, Nagapattinam, Nilgiris,Thanjavur, Tiruppur and Tiruvarur districts.
3. Rise in the water level in the range of 2-4 m has been observed in 16.04 % of wells analysed and noted all over the State except Chennai, Dharmapuri,

Karaikal, Perambalur, Ramanathapuram, Thanjavur, Tiruppur, Tiruvarur districts and Karaikal region & Puducherry of UT of Puducherry

4. Rise in water level more than 4 m has been observed in 20.86 % of wells analysed and noted major part of the state except in Karur, Nagapattinam, Pudukkottai, Sivaganga, Thanjavur, Tiruppur and Tiruvarur districts and Karaikal region of UT of Puducherry.

5. The fall in water level in the range of 0-2m has been observed in17.83% of wells analysed and noted all over the State except Chennai, Madurai, Nilgiris, Perambalur, Ramanathapuram, Thanjavur, Tiruppur, Tiruvarur, Vellore and Virudhunagar districts and Karaikal region of UT of Puducherry.

6. The fall in water level in the range of 2-4m has been observed in 6.77 % of wells analysed and noted mainly in Coimbatore, Cuddalore, Dharmapuri, Erode, Namakkal and Pudukkottai districts.

7. Fall in water level more than 4 m has been observed in 15.51 % of wells analysed and noted mostly in Ariyalur, Coimbatore, Cuddalore, Dindigul,Erode, Krishnagiri, Pudukkottai, Tiruchirappalli and Vellore districts and UT of Puducherry.

Table 7: Decadal Water level fluctuation - May 2024 with Decadal average of May 2014-23 –Confined

District	Water level fluctuation						No of wells recorded rise	No of wells recorded fall
	Range of rise (m)			Range of fall (m)				
	< 2	2-4	> 4	< 2	2-4	>4		
Ariyalur	0	1	3	1	0	7	4	8
Chennai	2	0	1	0	0	0	3	0
Coimbatore	14	4	15	13	2	11	33	26
Cuddalore	8	4	11	10	8	17	23	35
Dharmapuri	1	0	2	1	2	5	3	8
Dindigul	0	4	2	3	1	5	6	9
Erode	13	1	15	14	3	3	29	20
Kancheepuram	10	3	2	1	0	1	15	2
Kanyakumari	2	4	1	2	0	0	7	2
Karaikal	0	0	0	0	0	0	0	0
Karur	4	1	0	3	1	3	5	7
Krishnagiri	6	1	3	2	2	4	10	8
Madurai	8	13	13	0	0	0	34	0
Nagapattinam	0	1	0	6	1	0	1	7
Namakkal	1	7	3	5	6	3	11	14
Nilgiris	0	1	1	0	0	0	2	0
Perambalur	1	0	2	0	2	0	3	2
Pondicherry	1	0	1	3	1	2	2	6
Pudukkottai	2	1	0	7	3	7	3	17
Ramanathapuram	1	0	1	0	0	0	2	0
Salem	3	2	3	5	0	1	8	6
Sivaganga	2	2	0	1	0	1	4	2
Thanjavur	0	0	0	0	0	0	0	0
Theni	5	9	17	1	1	1	31	3
Thiruvannamalai	6	3	1	9	2	2	10	13
Tiruchirapalli	5	1	1	2	0	4	7	6
Tirunelveli	16	7	3	4	1	1	26	6
Tiruvallur	2	4	1	2	0	2	7	4
Tiruvarur	0	0	0	0	0	0	0	0
Tuticorin	7	5	1	1	0	0	13	1
Vellore	1	2	5	0	1	4	8	5
Villupuram	3	3	3	4	1	3	9	8
Virudhunagar	5	6	6	0	0	0	17	0
Total	**129**	**90**	**117**	**100**	**38**	**87**	**336**	**225**
%	**22.99**	**16.04**	**20.86**	**17.83**	**6.77**	**15.51**	**59.89**	**40.11**

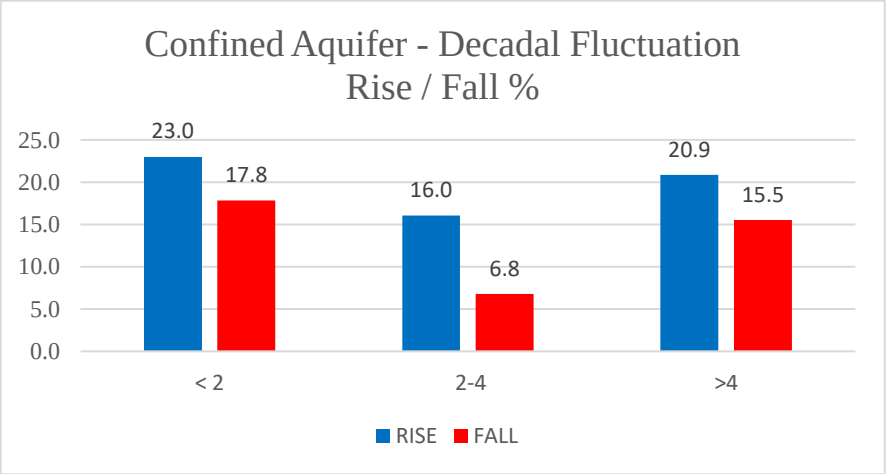

Figure-8a: % wise Distribution of Decadal Water Level Fluctuation in Confined Aquifer

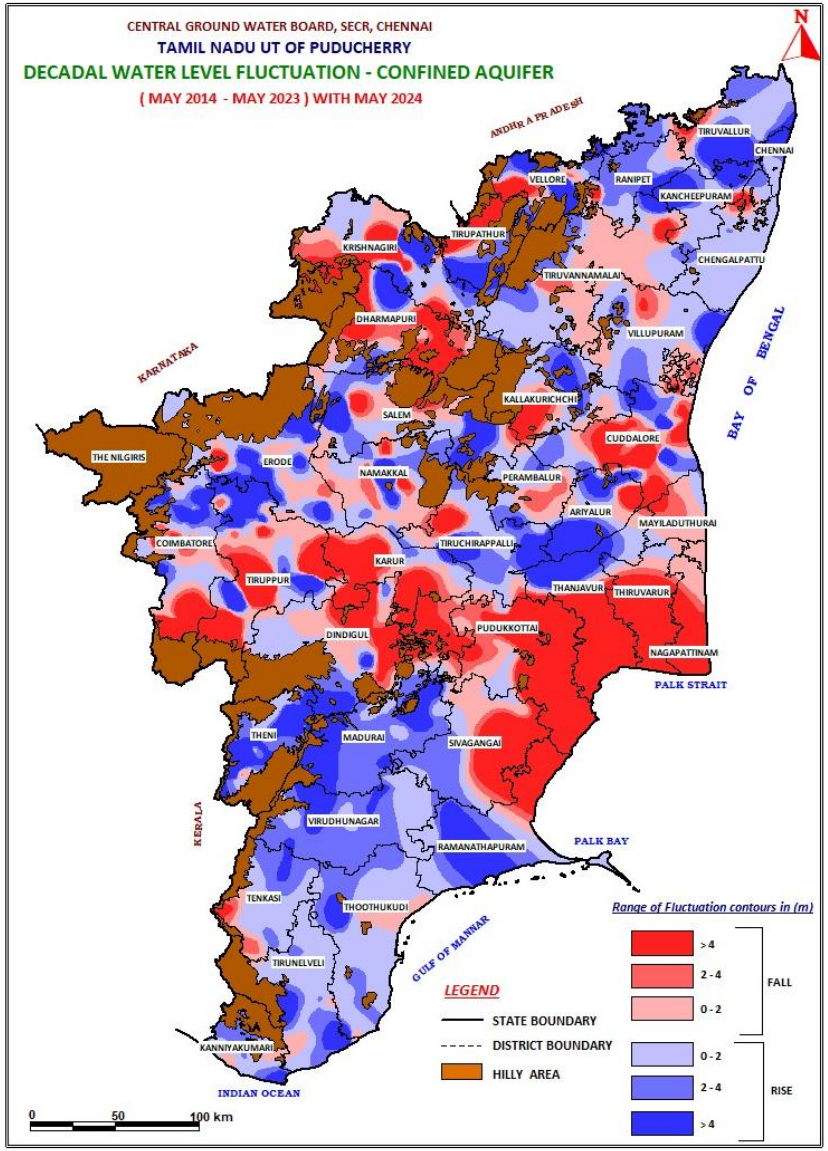

Figure-8: Decadal Water Level Fluctuation of Confined Aquifer

6.0 SUMMARY

As a component of the National Ground Water Monitoring Program, the CGWB, SECR, Chennai conducts monitoring of the ground water conditions on a quarterly basis: in January, pre-monsoon May, August, and post- monsoon November. Additionally, a yearly assessment of ground water quality is performed in May. As on May 2024, the South Eastern Coastal Region of Central Ground Water Board supervises 749 dug wells and 607 piezometers. This comprehensive effort aims to portray the variations in the state's ground water conditions across different aquifers.

A perusal of the water level data reveals that the depth to water level of Unconfined Aquifer ranged from 0.35 m bgl to 38.75 m bgl in Tamil Nadu and UT of Puducherry. Overall, 87.32 % of the wells monitored in the state and UT are in <10 m bgl , 11.88 % of wells show depth to water level between 10 to 20 m bgl, Less than 1 % of wells show depth to water level more than 20 m bgl, Depth to water level of less than 2 m bgl has been recorded in 11.21% of wells analyzed, Depth to water level in the range of 2 to 5 m bgl has been recorded in 42.59 % and Depth to water level in the range of 5 to 10 m bgl has been recorded in 33.51%.

The depth to piezometric surface ranged from 0.08 m bgl to 97.44 m bgl and 60.13 % of wells have recorded depth to piezometric surface of less than 10mbgl noted in all the districts, 17.13 % of wells show depth to piezometric surface between 10 to 20 mbgl, 11.86 % have recorded piezometric surface between 20 to 40mbgl, 10.87 % have recorded more than 40 mbgl, depth to piezometric surface of less than 2 m bgl has been recorded in 4.78 %, depth to piezometric surface in the range of 2 to 5 m bgl has been recorded in 23.72 % of wells and depth to piezometric surface in the range of 5 to 10 m bgl has been recorded in 31.63 % of wells analysed during May 2024

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