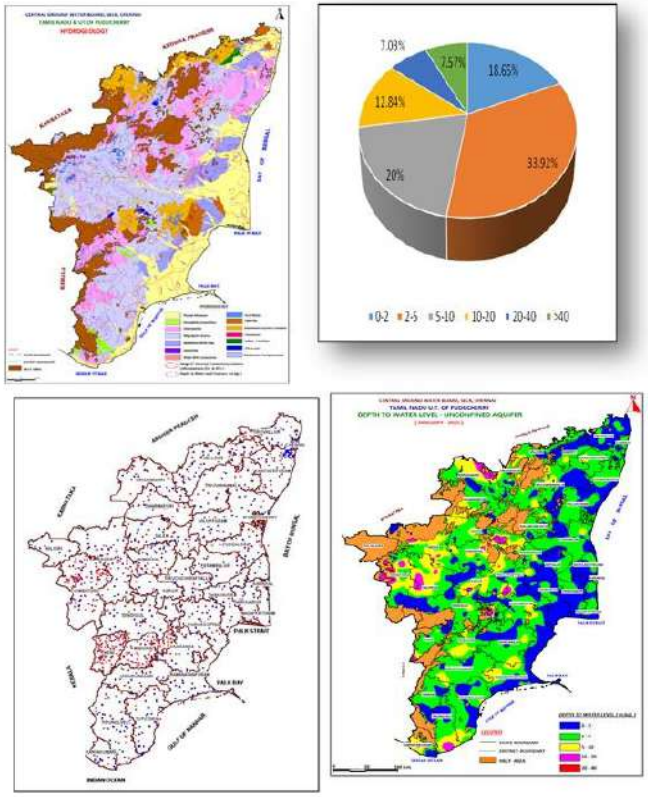

GROUND WATER LEVEL BULLETIN
JANUARY 2025
TAMILNADU & UT OF PUDUCHERY

ABSTRACT

Ground water level Scenario during January – 2025 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 08°00" and 13°30' and E. Longitudes 76°15' and 80°18'. 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 units of the State.

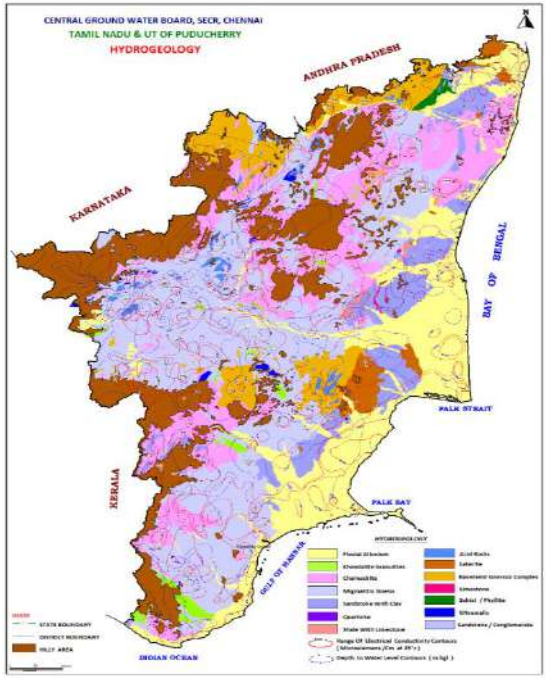

Figure1:Map showing major aquifers and administrative divisions of Tamil Nadu and UT of Puducherry

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

Central Ground Water Board, South Eastern Coastal Region, is monitoring changes in ground water regime Tamil Nadu State and UT of Puducherry 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 after completion of January 2025 monitoring stands at 1488 which include 774 dug wells and 740 Piezometers. The district-wise breakup of the water level monitoring stations is given in **Table-1**

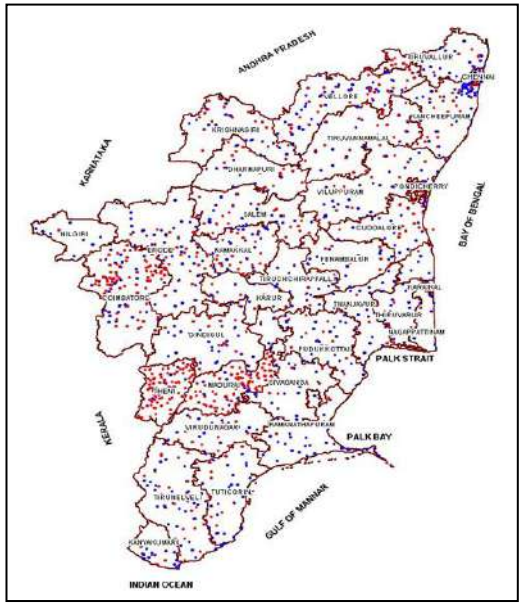

Figure-2:Maps howinglocationsofmonitoringwells(NHNS) in Tamil Nadu and UT of Puducherry

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

SR.No.	District	DW	PZ	Total
1	Ariyalur	11	14	25
2	Chengalpattu	20	27	47
3	Chennai	15	6	21
4	Coimbatore	25	64	89
5	Cuddalore	30	71	101
6	Dharmapuri	24	19	43
7	Dindigul	26	15	41
8	Erode	61	58	119
9	Kallakurichi	17	13	30

SR.No.	District	DW	PZ	Total
10	Kancheepuram	23	30	53
11	Kanyakumari	13	8	21
12	Karur	13	15	28
13	Krishnagiri	18	30	48
14	Madurai	17	33	50
15	Mayiladuthurai	5	1	6
16	Nagapattinam	11	11	22
17	Namakkal	44	31	75
18	Nilgiris	7	2	9
19	Perambalur	16	5	21
20	Pudukkottai	22	22	44
21	Ramanathapuram	26	3	29
22	Ranipet	10	7	17
23	Salem	43	12	55
24	Sivaganga	12	6	18
25	Tenkasi	11	11	22
26	Thanjavur	13	2	15
27	Theni	13	34	47
28	Tirunelveli	22	37	59
29	Tirupattur	11	4	15
30	Tiruppur	9	0	9
31	Tiruvallur	44	25	69
32	Tiruvannamalai	20	18	38
33	Tiruvarur	6	3	9
34	Toothukudi	23	15	38
35	Trichy	41	16	57
36	Vellore	11	21	32
37	Villupuram	17	20	37
38	Virudhunagar	16	17	33
	Puducherry (UT)			
1	Karaikal	4	2	6
2	Puducherry	4	12	16
	Total	774	740	1514

4.0 RAINFALL

The rainfall data collected and compiled from weekly and monthly weather reports from India Meteorological Department were used to analyse the rainfall for the period 01.01.2025 to 12.02.2025. Figure.3 shows the district-wise rainfall distribution for the period 1st January 2025 to 12h February 2025. District-wise distribution of Rainfall from 1st January 2025 to 12h February 2025.is given in Table-2.

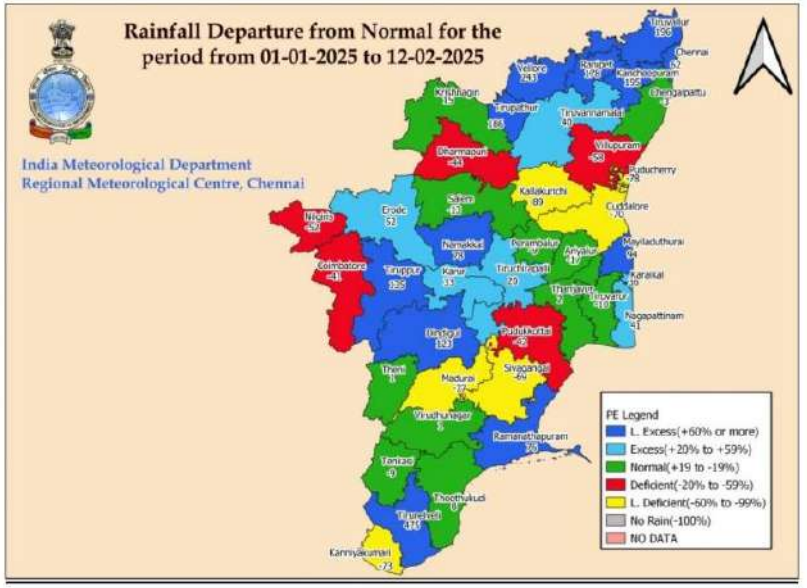

Figure-3: Rain fall distribution (01.01.2025 to 12.02.2025) from normal rainfall

Table-2:District-wise distribution of Rainfall from 01.01.2025 to 12.02.2025

RAINFALL STATEMENT			
	Seasonal rainfall for the period from 01-01-2025 to 12-02-2025		
Districts	Actual (mm)	Normal *(mm)*	Departure (%)
Ariyalur	16.4	19.7	-17
Chengalpattu	15.7	16.2	-3
Chennai	39.6	24.5	62
Coimbatore	5.7	9.6	-41
Cuddalore	9.4	30.9	-70
Dharmapuri	2.9	5.1	-44
Dindigul	37.8	17	123
Erode	9.4	6.2	52
Kallakurichi	1.7	15.4	-89
Kanchipuram	40.4	13.7	195
Kanyakumari	6.4	24	-73
Karaikal	84.8	62.5	36
Karur	8.5	6.4	33
Krishnagiri	3.9	3.4	15
Madurai	3.3	14	-77
Mayiladuthurai	80.8	41.6	94
Nagapattinam	72.7	51.6	41
Namakkal	10	5.6	78
Nilgiris	11.9	25	-52
Perambalur	11.5	12.7	-9
Puducherry	5.7	26.1	-78
Pudukottai	8.9	15.4	-42
Ramanathapuram	66.4	37.7	76
Ranipet	25.8	9.3	178
Salem	4.8	5.5	-13
Sivagangai	5.9	19.2	-69
Thenkasi	33.2	36.3	-9

RAINFALL STATEMENT			
	Seasonal rainfall for the period from 01-01-2025 to 12-02-2025		
Thanjavur	29.4	28.8	2
Theni	18.7	18.6	1
Tirunelveli	30.1	40	475
Tirupathur	12.3	4.3	186
Tiruppur	13.6	5.8	135
Tiruvallur	47.9	16.2	196
Tiruvannamalai	16.6	11.9	40
Tiruvarur	32.8	36.4	-10
Toothukudi	26.5	24.6	8
Tiruchirapalli	12.9	10.8	20
Vellore	28.1	8.2	243
Villupuram	6.3	14.9	-58
Virudhunagar	20.8	20.6	1
Tamilnadu	24.7	16.8	47
Tamilnadu Puducherry&Karaikal	24.7	16.9	46

Largely deficient	**Deficient**	**Normal**	**Excess**	**Large Excess**	**No rain**
-60% to -99%	**-20% to -59%**	**-19% to +19%**	**+20% to +59%**	**≥ 60%**	**-100%**

5.0 GROUND WATER LEVEL SCENARIO (JANUARY 2025)

5.1 Shallow Aquifer (Unconfined)

Depth to Water

5.1.1 Depth to Water Level

The depth to water level of 774 wells is used for the analysis. Analysis of depth to water level data of 774 wells shows water levels ranged from 0.05m bgl (Kancheepuram district) to 30.35 m bgl (Coimbatore District) in Tamil Nadu and UT of Puducherry. Water level of less than 2 m bgl is recorded in 34.88 % of wells, between 2 to 5 m bgl in 44.19% of wells, between 5 to 10 m bgl in 17.44 % of wells, between 10 to 20 m bgl in 3.23 % of wells, between 20-40 m bgl is less than 1% of wells.

Overall, 97 % of the wells monitored in the state and UT are in <10 m bgl range and spreaded over entire Tamil nadu. 3.23 % of wells show depth to water level between 10 to 20 m bgl noted mainly in Coimbatore, Erode, and Trichy districts. Less than 1 % of wells show depth to water level more than 20 m bgl in Coimbatore and Namakkal districts. Depth to water level of less than 2 m bgl has been recorded in 34.88 % of wells analysed and noted in all over the State except UT of Puducherry. Depth to water level in the range of 2 to 5 m bgl has been recorded in 44.19% 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 17.44 % of wells analysed and noted in all over the State except Karaikal region of UT of Puducherry and Chennai, Tiruvarur & Tiruvallur districts.

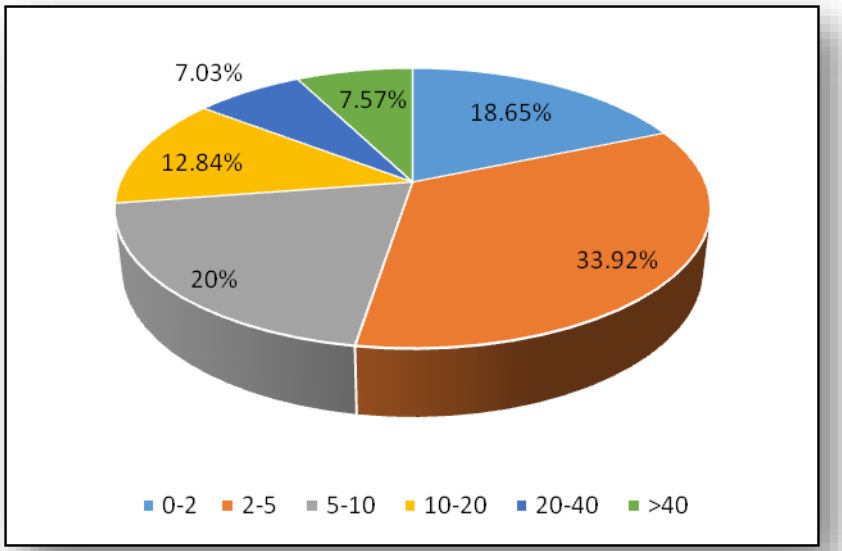

Figure-4: Percentage of wells in different water level ranges in unconfined aquifer.

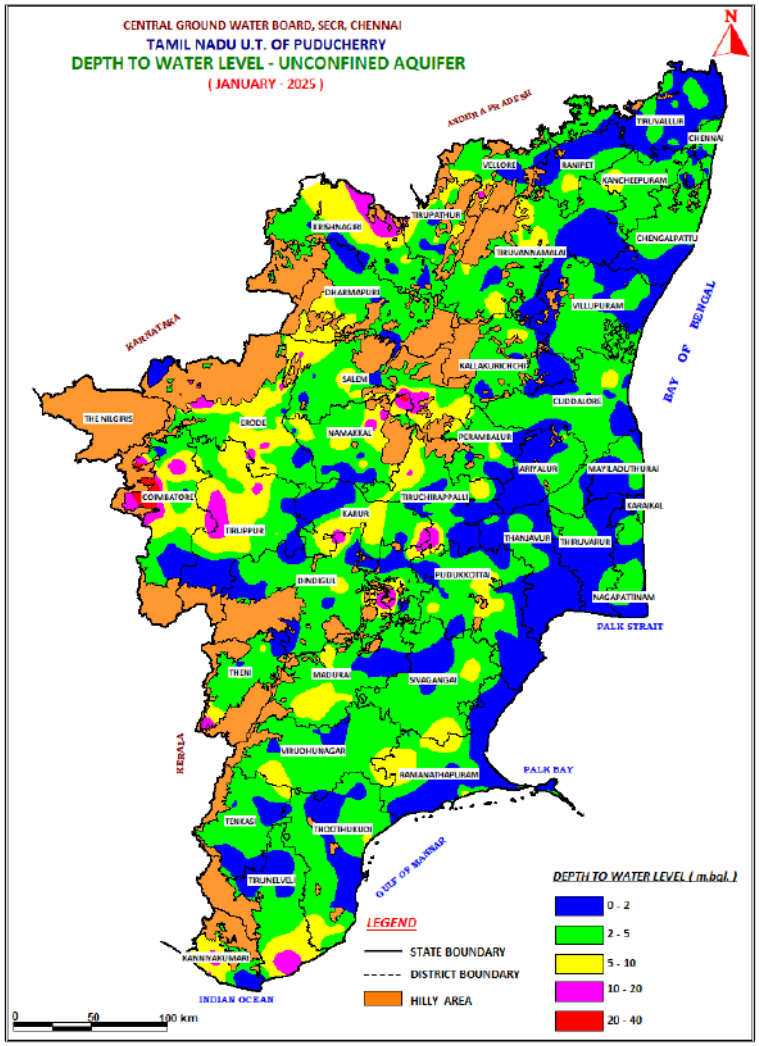

Figure-5:Depth to water level of unconfined aquifer during January 2025.

5.1.2 SEASONAL FLUCTUATION IN WATER LEVEL

Seasonal Fluctuation of Water Level in Unconfined Aquifer (May 2024 & January 2025)

Rise in Water Levels:

Out of 717 wells, water level rise of less than 2 m is recorded in 42.40% wells, 2 to 4 m in 24.27 % wells and more than 4 m in 20.22 % of the wells. Water level rise of less than 2 m is seen in all the districts. Water level rise of 2 to 4 m is observed in all the districts except in districts such as Kanyakumari, Karaikal, Nilgiris and Theni. Rise of more than 4 m is significantly observed in Erode, Dharmapuri,Namakkal, Salem, Trichy and Villupuram districts.

Fall in Water Levels:

Out of 717 wells, water level fall of less than 2 m is recorded in 10.60% wells, 2 to 4 m in 1.53% wells and more than 4 m in less than 1% of the wells. Water level fall of less than 2 m is seen in all the districts, except in Ariyalur, Chennai, Sivaganga, Tiruvarur, Vellore and Villupuram districts. Water level fall of 2 to 4 m is observed mainly in districts such as Cuddalore, Dharmapuri, Kanyakumari, Namakkal, Tirunelveli, Trichy and Virudhunagar districts. Rise of more than 4 m is significantly observed in Ariyalur, Erode ,Kanyakumari , Trichi and Vellore districts.

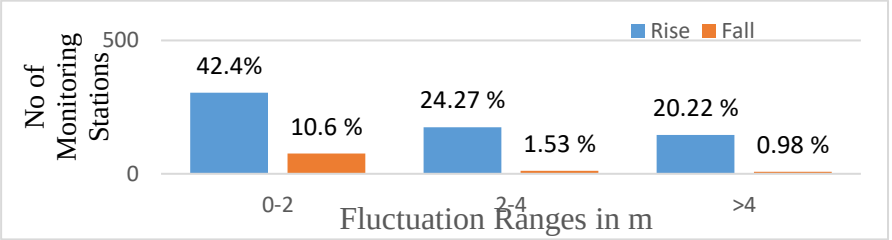

Figure-6: Percentage of wells showing rise and fall in WL in unconfined aquifer (May 2024 & January 2025

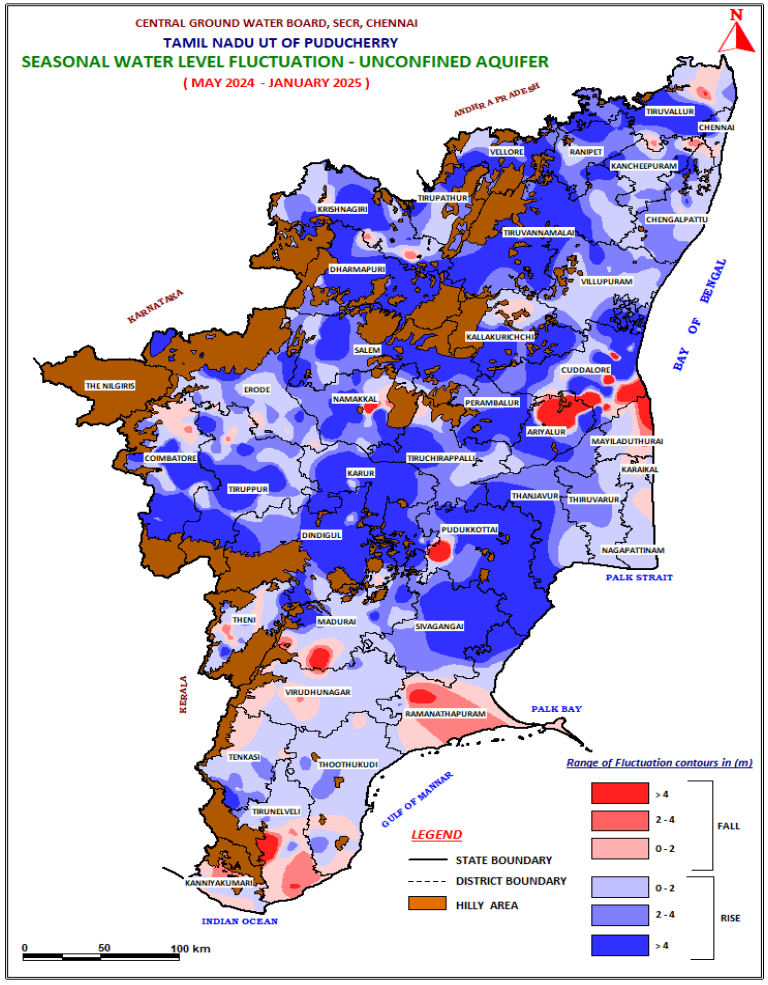

Figure-7: Seasonal water level fluctuation in unconfined Aquifer (May 2024 & January 2025)

Seasonal Fluctuation of Water Level in Unconfined Aquifer (August 2024 & January 2025)

Rise in Water Levels:

Out of 748 wells, water level rise of less than 2 m is recorded in 48.53% wells, 2 to 4 m in 22.59 % wells and more than 4 m in 11.76 % of the wells. Water level rise of less than 2 m is seen in all the districts. Water level rise of 2 to 4 m is observed in all the districts except in districts such as Nilgiris and Virudhunagar. Rise of more than 4 m is significantly observed in Erode, Dharmapuri, Namakkal, Trichy and Perambalur districts.

Fall in Water Levels:

Out of 748 wells, water level fall of less than 2 m is recorded in 14.57% wells, 2 to 4 m in 1.74% wells and more than 4 m in less than 1% of the wells. Water level fall of less than 2 m is seen in all the districts, except in Ariyalur, Karaiakl, Karur, Ramanathapuram,Sivaganga and Tiruvarur districts. Water level fall of 2 to 4 m is observed mainly in districts such as Erode, Nilgiris and Salem. Rise of more than 4 m is significantly observed in Namakkal, Salem and Trichi districts.

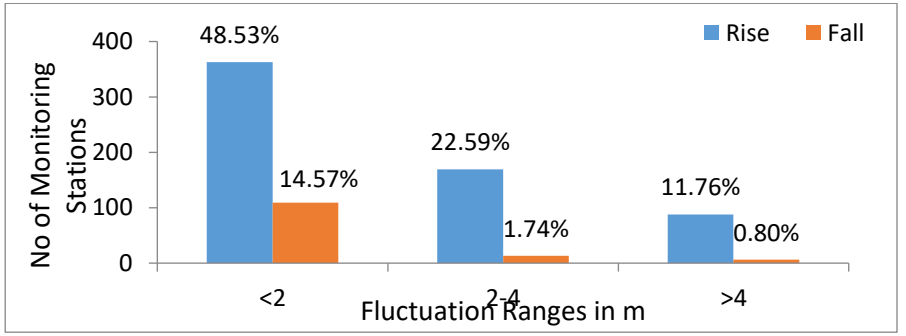

Figure-8: Percentage of wells showing rise and fall in WL in unconfined aquifer (August 2024 & January 2025

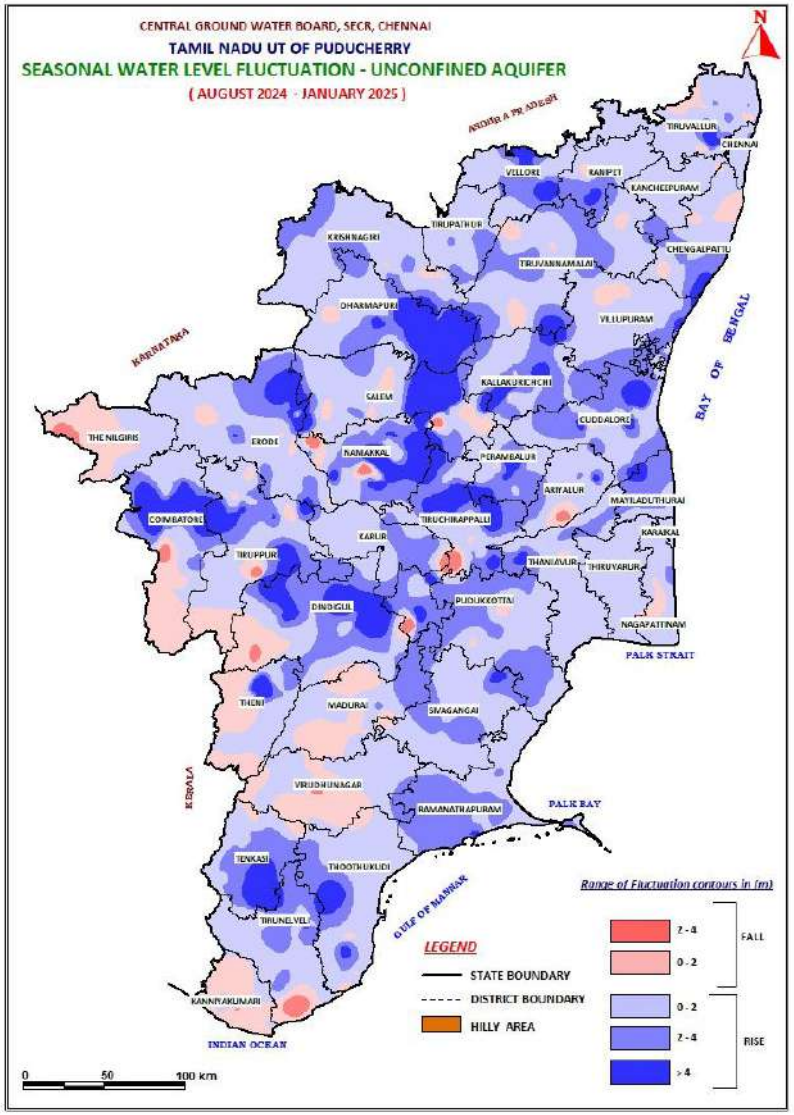

Figure-9: Seasonal water level fluctuation in unconfined Aquifer (August 2024 & January 2025)

Seasonal Fluctuation of Water Level in Unconfined Aquifer (November 2024 & January 2025)

Rise in Water Levels:

Out of 741 wells, water level rise of less than 2 m is recorded in 45.34 % wells, 2 to 4 m in 9.72 % wells and more than 4 m in 5.13 % of the wells. Water level rise of less than 2 m is seen in all the districts except in Kanyakumari, Nilgiris and Tiruvarur districts and Karaikal Region . Water level rise of 2 to 4 m is observed in all the districts mainly in Cuddalore, Dindigul, Tirunelveli, Ramanathapuram and Villupuram districts. Rise of more than 4 m is significantly observed in Dharmapuri, Trichy and Tirunelveli districts.

Fall in Water Levels:

Out of 741 wells, water level fall of less than 2 m is recorded in 35.49% wells, 2 to 4 m in 2.97% wells and more than 4 m in less than 1.35% of the wells. Water level fall of less than 2 m is seen in all the districts. Water level fall of 2 to 4 m is observed mainly in Erode, Kanyakumari and Salem districts. Rise of more than 4 m is significantly observed in Kanyakumari and Salem districts.

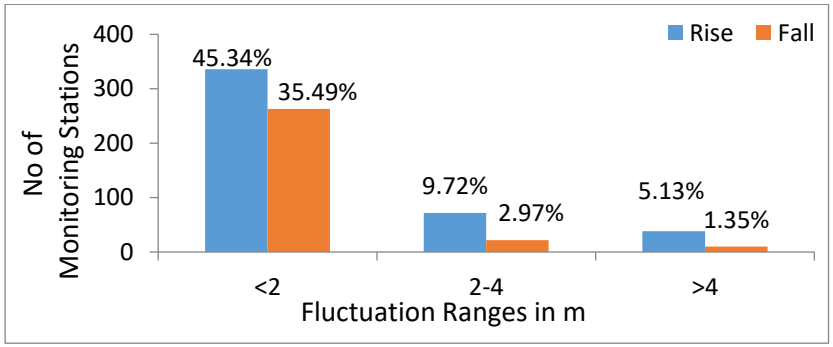

Figure-10: Percentage of wells showing rise and fall in WL in unconfined aquifer (November 2024 & January 2025

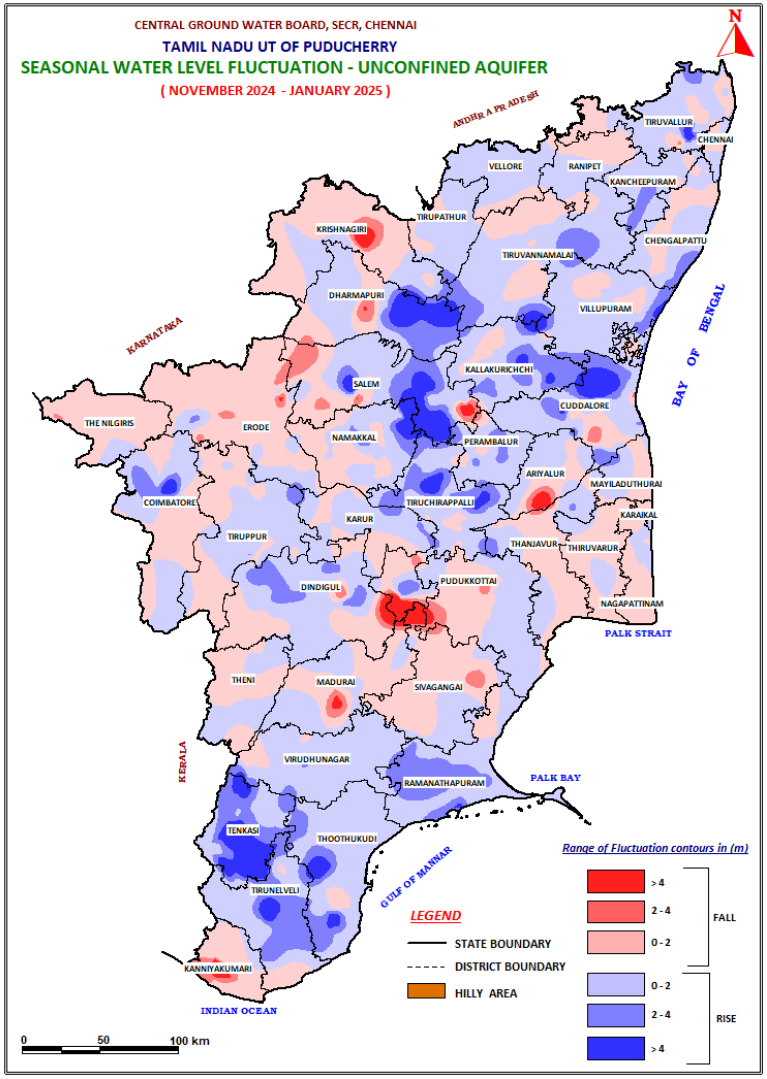

Figure-11: Seasonal water level fluctuation in unconfined Aquifer (November 2024 & January 2025)

5.1.3 ANNUAL FLUCTUATION IN WATER LEVEL

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

Rise in Water Levels:

Out of 725 wells, water level rise of less than 2 m is recorded in 36.97% wells, 2 to 4 m in 5.79 % wells and more than 4 m in 2.07% of the wells. Water level rise of less than 2 m is seen in all the districts except in Krishnagiri district. Water level rise of 2 to 4 m is observed mainly in districts such as Erode, Theni and Tirunelveli. Rise of more than 4 m is significantly observed in Salem and Tirunelveli districts.

Fall in Water Levels:

Out of 725 wells, water level fall of less than 2 m is recorded in 39.17% wells, 2 to 4 m in 9.93 % wells and more than 4 m in 6.07% of the wells. Water level fall of less than 2 m is seen in all the districts except Karaikal region of UT of Puducherry. Water level fall of 2 to 4 m is observed mainly in districts such as,Erode, Krishnagiri, Namakkal, Salem, Trichy and Vellore. Rise of more than 4 m is significantly observed in Dharmapuri, Erode, Namakkal and Trichy districts.

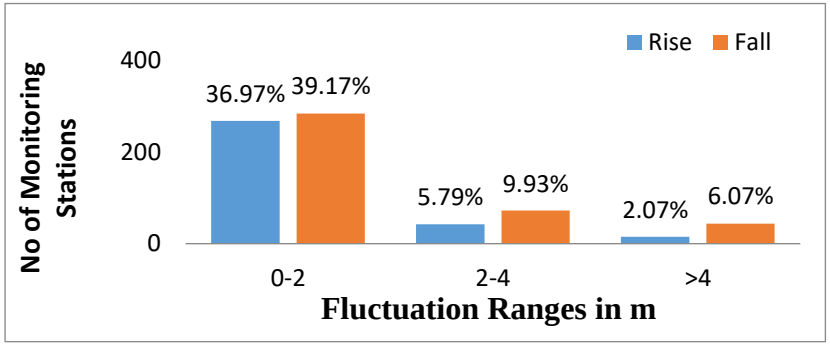

Figure 12: Percentage of wells showing rise and fall in WL in unconfined aquifer (January 2024 &January 2025)

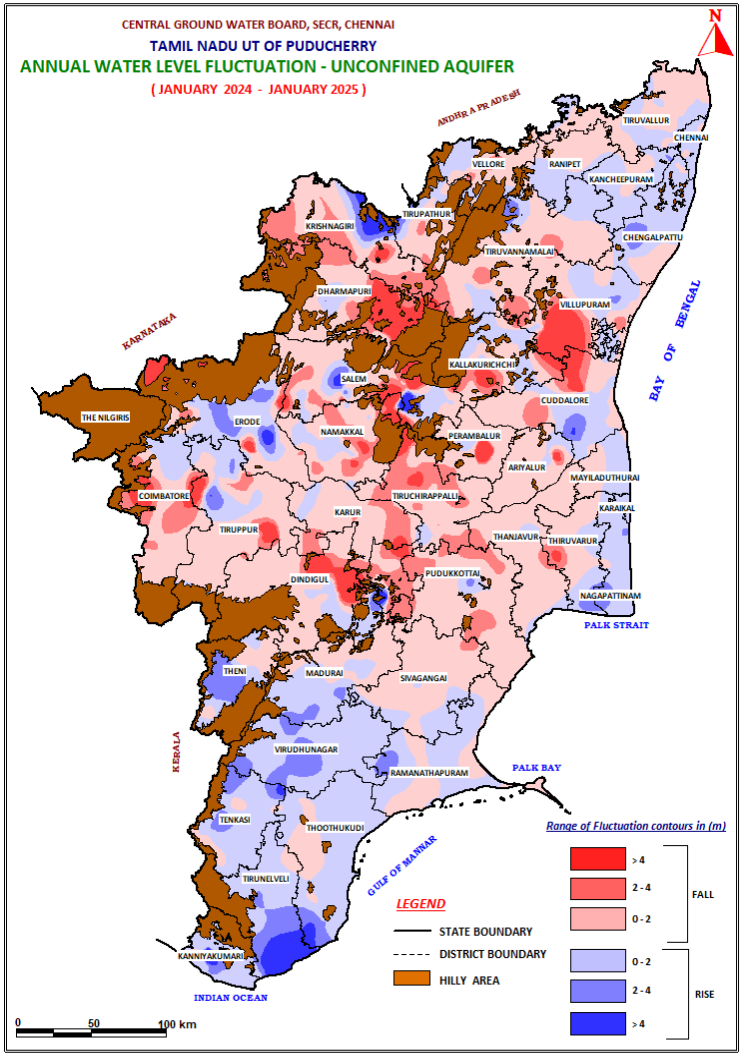

Figure-13 Annual water level fluctuation in unconfined aquifer (January 2024 & January 2025)

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

Rise in Water Levels:

Out of 731 wells, water level rise of less than 2 m is recorded in 46.24% wells, 2 to 4 m in 8.48% wells and more than 4 m in 5.61 % of the wells. Water level rise of less than 2 m is seen in all the districts, except Nilgiris.Water level rise of 2 to 4 m is noted in all the districts except Ariyalur, Dindigul, Kanyakumari, Karur,Nilgiris, Sivaganga, Theni and Tiruppur districts. Rise of more than 4 m is significantly observed in Trichy,Dharmapuri and Tirunelveli districts.

Fall in Water Levels:

Out of 731 wells, water level fall of less than 2 m is recorded in 31.19% wells, 2 to 4 m in 5.88% wells and more than 4 m in 2.60 % of the wells. Water level fall of less than 2 m is seen in all the districts.. Water level fall of 2 to 4 m is observed in all the districts except in districts such as Ariyalur, Nagapattinam, Nilgiris,Perambalur, Ramanathapuram and Karaikal & Pondicherry regions of UT of Puducherry. Fall of more than 4 m is significantly observed in Erode, Salem and Thiruvannamalai districts.

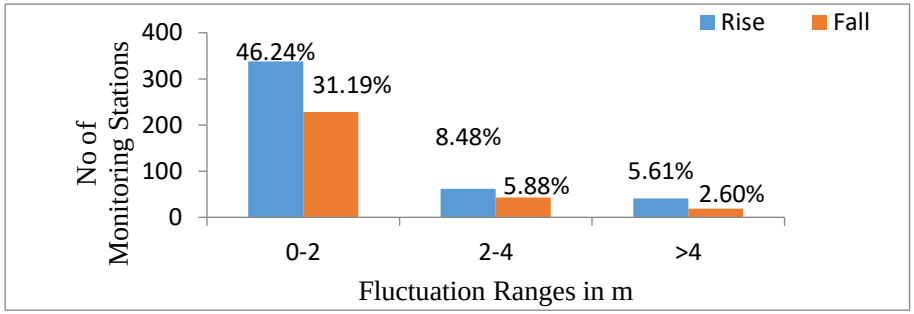

Figure-14: Percentage of wells showing rise and fall in WL in unconfined aquifer (January 2023 January 2025)

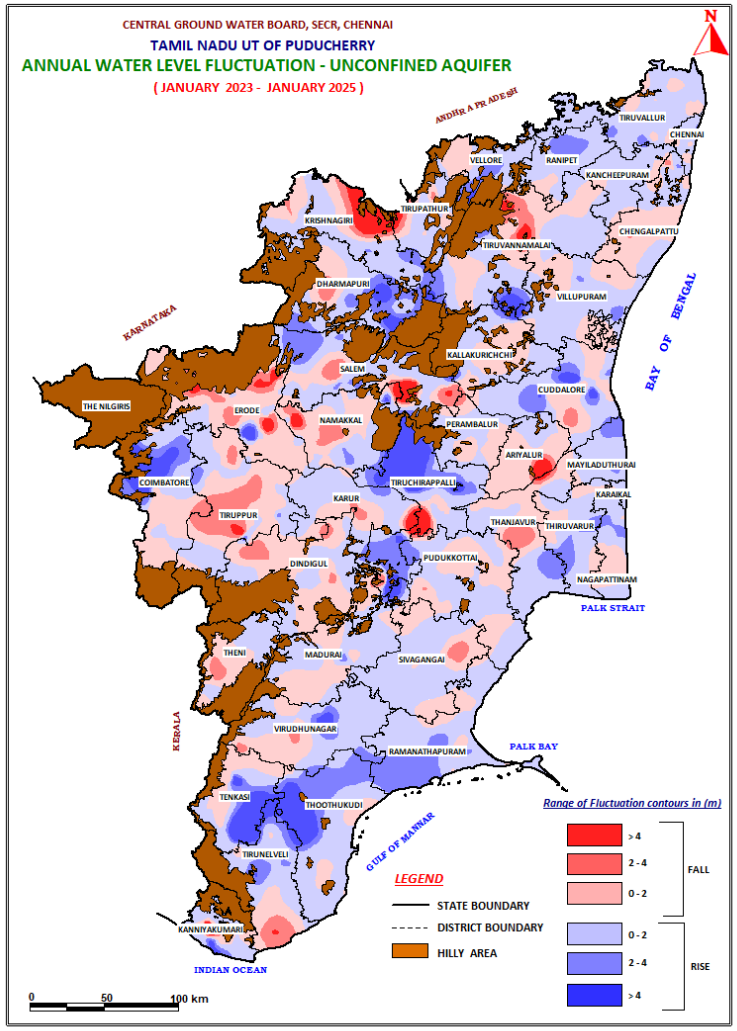

Figure-15: Annual water level fluctuation in unconfined aquifer (January 2023 & January 2025)

Annual Fluctuation of Water Level in Unconfined Aquifer (January 2022 to January 2025)

Rise in Water Levels:

Out of 615 wells, water level rise of less than 2 m is recorded in 13.33 % wells, 2 to 4 m in 2.93% wells and more than 4 m in 1.79 % of the wells. Water level rise of less than 2 m is seen in all the districts, except in Ariyalur, Nagapattinam, Nilgiris, Perambalur, Thanjavur, Tiruppur ,Vellore and UT of Puducherry.Water level rise of 2 to 4 m is observed mainly in districts such as Coimbatore, Namakkal and Sivaganga districts. Rise of more than 4 m is significantly observed in Erode, Namakkal and Theni districts.

Fall in Water Levels:

Out of 615 wells, water level fall of less than 2 m is recorded in 60.33% wells, 2 to 4 m in 16.75% wells and more than 4 m in 4.88% of the wells. Water level fall of less than 2 m is seen in all the districts. Water level fall of 2 to 4 m is observed all the districts except in Chennai, Tiruvarur and UT of Puducherry. Fall of more than 4 m is significantly observed in Erode, Salem, Tiruppur and Trichy districts.

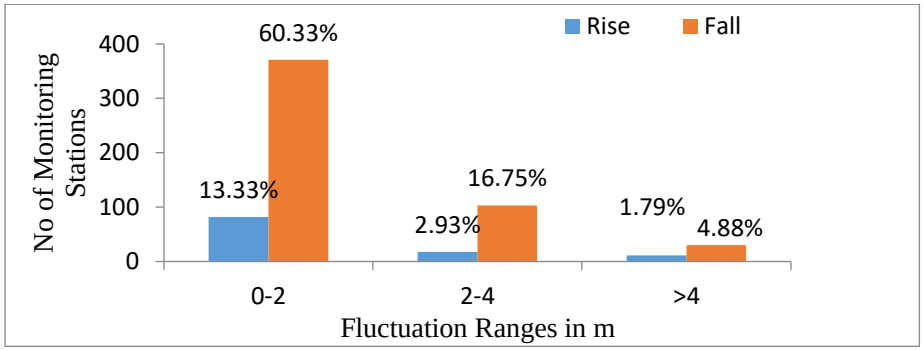

Figure-16: Percentage of wells showing rise and fall in WL in unconfined aquifer (January 2022 & January 2025)

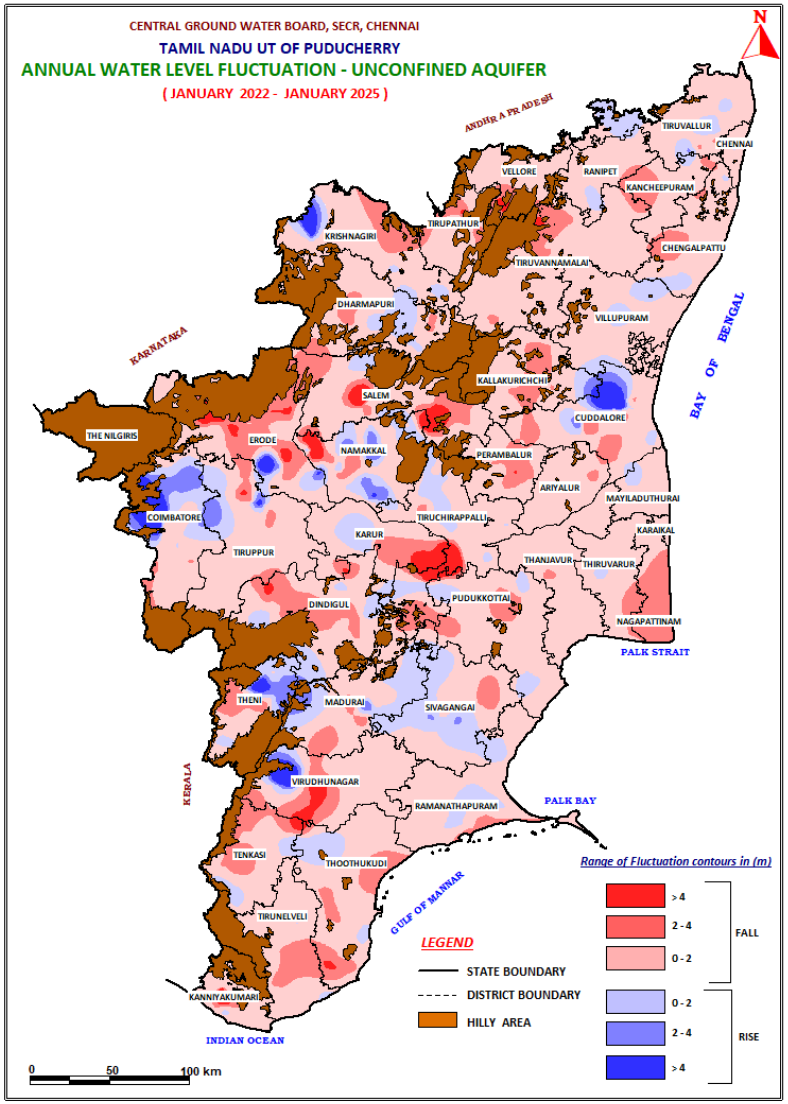

Figure-17: Annual water level fluctuation in unconfined aquifer (January 2022 & January 2025)

5.1.4 Decadal Fluctuation

Decadal Fluctuation of Water Level in Unconfined Aquifer (Decadal Mean January (2015-2024) to January 2025

Rise in Water Levels:

Out of 766 wells, water level rise of less than 2 m is recorded in 45.04% wells, 2 to 4 m in 16.06 % wells and more than 4 m in 13.45 % of the wells. Water level rise of less than 2 m is seen in all the districts except Nilgiris.Water level rise of 2 to 4 m is observed mainly in districts such as Dharmapuri, Krishnagiri, Namakkal,Tiruvallur, Trichy, Vellore and Villupuram and rise of more than 4 m is significantly observed in Trichy, Coimbatore and Namakkal districts.

Fall in Water Levels:

Out of the 766 wells ,fall in water levels less than 2 m is recorded in 22.72% wells while 1.83% in the range of 2 to 4 m and less than 1 % wells registered water level fall of more than 4 m. Fall of less than 2 m is observed in all districts except Tiruvarur district. Fall of 2 to 4 m, recorded in Cuddalore, Nagapattinam and Tiruvannamalai districts. Fall beyond 4 m is recorded mainly in Salem ,Ariyalur, Kanyakumari and Namakkal districts.

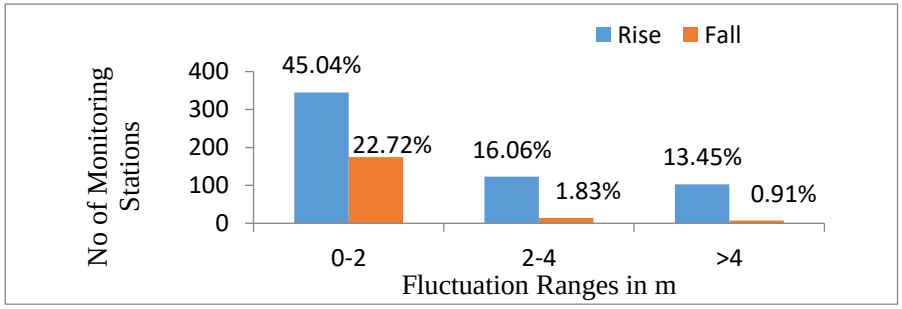

Figure-18: Percentage of wells showing rise and fall in WL in unconfined Aquifer (Decadal Mean January (2015-2024) to January 2025

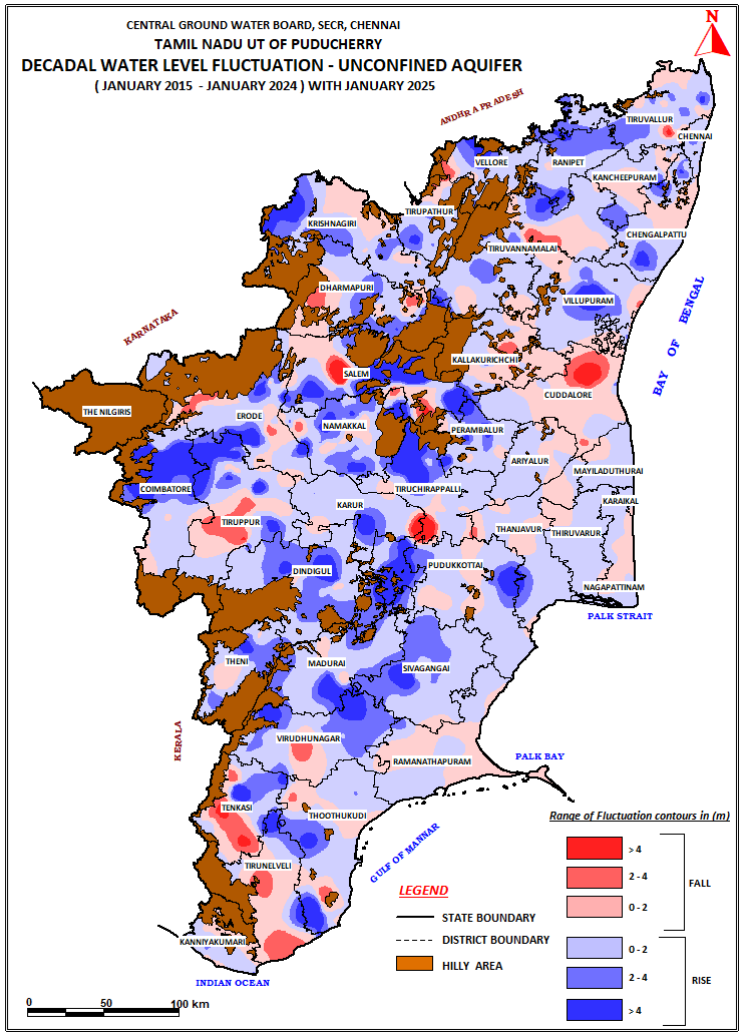

Figure-19: Decadal water level fluctuation in unconfined Aquifer (Decadal Mean January 2015-2024 to January 2025)

5.2 Deeper Aquifer (Semi-Confined / Confined)

5.2.1 Depth to Piezometric Level

Depth to Piezometric Level in Confined/Semi-Confined Aquifer (January 2025)

Analysis of piezometric level data of 740 wells shows piezometric levels vary between 0.08 m bgl (Erode district) to 112.45 m bgl (Cuddalore District) in Tamil Nadu and UT of Puducherry. Piezometric level of less than 2 m bgl is recorded in 18.65 % of wells, between 2 to 5 m bgl in 33.92% of wells, between 5 to 10 m bgl in 20% of wells, between 10 to 20 m bgl in 12.84 % of wells, between 20-40 m bgl in 7.03% of wells and piezometric level more than 40 m bgl is registered in 7.57 % of wells.

Depth to piezometric surface of less than 2 m bgl has been recorded in in all the districts except Ariyalur, Myladuthurai, Nagapattinam, Nilgiris,Salem, Theni ,Tiruvarur and UT of Puducherry, 2 to 5 m bgl has been noted in all the districts except in the districts of Ariyalur, Ramanathapuram and Karaikal region of UT of Puducherry. 5 to 10 m bgl has been noted in all the districts except in the districts such as Chennai, Nilgiris, Sivaganga and UT of Puducherry, 10 to 20 mbgl noted in all the district except Chennai, Perambalur, Thiruvannamalai, Villupuram , Tuticorin and Virudhunagar districts, 20 to 40mbgl noted in all the districts except Chennai, Kancheepuram, Kanyakumari, Madurai, Perambalur,Salem and Karaikal region of UT of Puducherry, more than 40 mbgl noted in Ariyalur, Cuddalore and Pudukkottai districts.

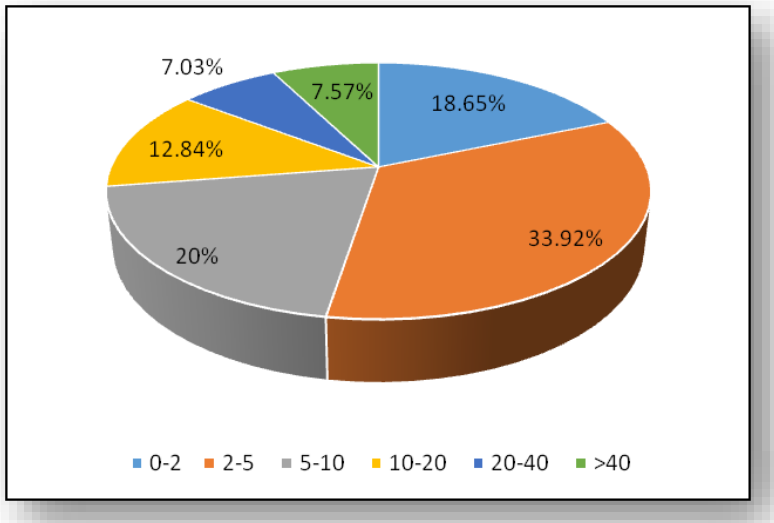

Figure-20: Percentage of wells in different Piezometric level ranges in confined aquifer.

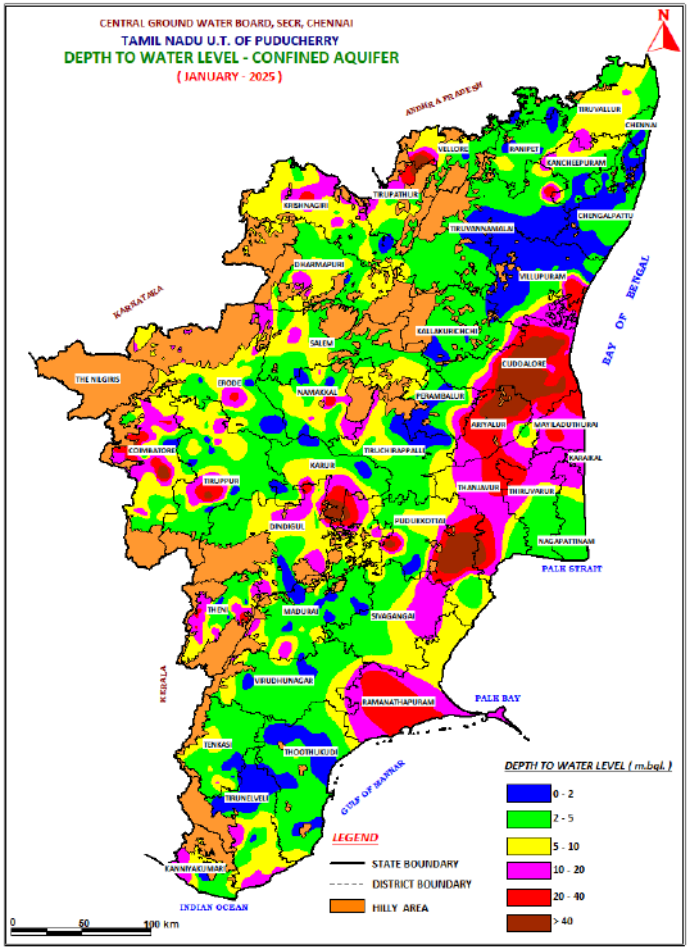

Figure-21: Depth to Piezometric level of confined aquifer during January 2025.

5.2.2 Seasonal Fluctuation in Piezometric Level

Seasonal Fluctuation of Piezometric Level in Confined/ Semi-Confined Aquifer (May 2024 to January 2025)

Rise in Piezometric Levels:

Out of 663 wells, piezometric level rise of less than 2 m is recorded in 27.75% wells, 2 to 4 m in 23.68 % wells and more than 4 m in 31.83% of the wells. Piezometric level rise of less than 2 m is seen in all the districts, except in Chennai, Kanyakumari, Nagapattinam and Virudhunagar districts and Karaikal region of UT of Puducherry. Water level rise of 2 to 4 m is observed mainly in districts such as, Coimbatore, Erode, Kancheepuram and Villupuram districts. Rise of more than 4 m is significantly observed in Coimbatore, Erode, Kancheepuram, Madurai and Tirunelveli districts.

Fall in Piezometric Levels:

Out of 663 wells, piezometric level fall of less than 2 m is recorded in 10.11% wells, 2 to 4 m in 3.17% wells and more than 4 m in 3.47% of the wells. piezometric level fall of less than 2 m is seen almost all the districts, significantly in Coimbatore, Cuddalore, Nagapattinam and Tirunelveli districts. Water level fall of 2 to 4 m is observed mainly in districts such as, Coimbatore, Tirunelveli and Tiruvallur , fall of more than 4 m is significantly observed in Ariyalur, Cuddalore and Tirunelveli districts.

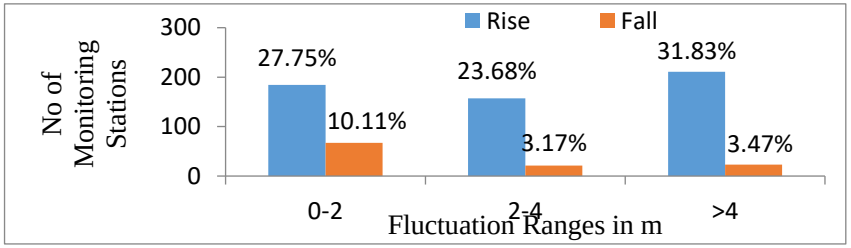

Figure-22. Percentage of wells showing rise and fall in piezometric level in confined aquifer (May 2024 & January 2025)

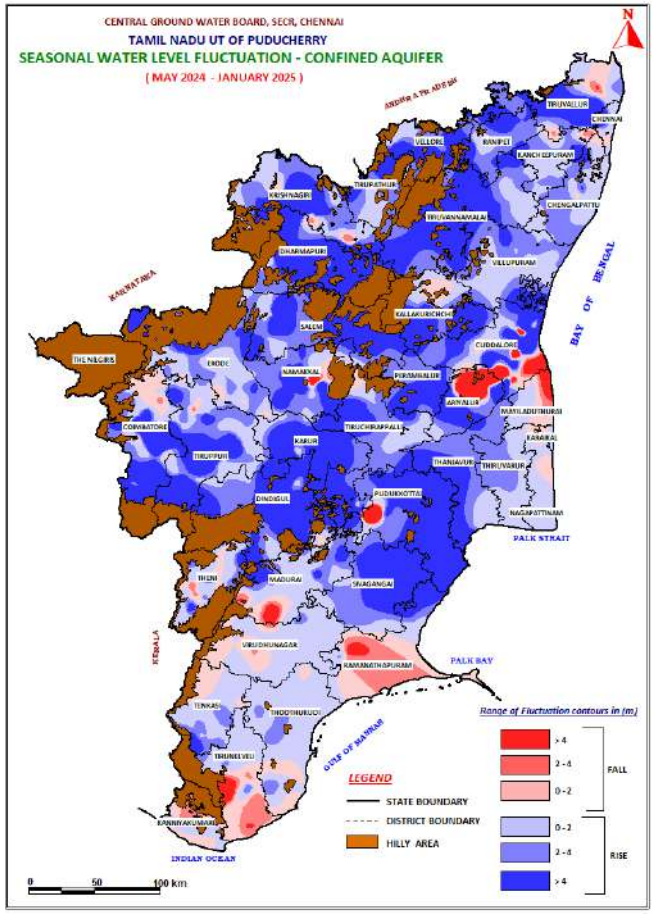

Figure-23: Seasonal water level fluctuation in Confined Aquifer (May 2024 & January 2025)

Seasonal Fluctuation of Piezometric Level in Confined/ Semi-Confined Aquifer (August 2024 to January 2025)

Rise in Piezometric Levels:

Out of 677 wells, piezometric level rise of less than 2 m is recorded in 40.03 % wells, 2 to 4 m in 21.42% wells and more than 4 m in 21.57% of the wells. Piezometric level rise of less than 2 m is seen in all the districts, except in Mayiladuthurai district. Water level rise of 2 to 4 m is observed mainly in districts such as, Coimbatore, Namakkal, Cuddalore and Tirunelveli districts. Rise of more than 4 m is significantly observed in Coimbatore,Cuddalore, Krishnagiri, Namakkal and Pudukkottai districts.

Fall in Piezometric Levels:

Out of 677 wells, piezometric level fall of less than 2 m is recorded in 13.29% wells, 2 to 4 m in 1.48% wells and more than 4 m in 2.22% of the wells. Piezometric level fall of less than 2 m is seen almost all the districts, significantly in Coimbatore, Kancheepuram, Madurai and Tiruvannamalai districts. Water level fall of 2 to 4 m is observed mainly in districts such as, Coimbatore, Cuddalore and Kancheepuram, fall of more than 4 m is significantly observed in Ariyalur, Cuddalore and Coimbatore districts.

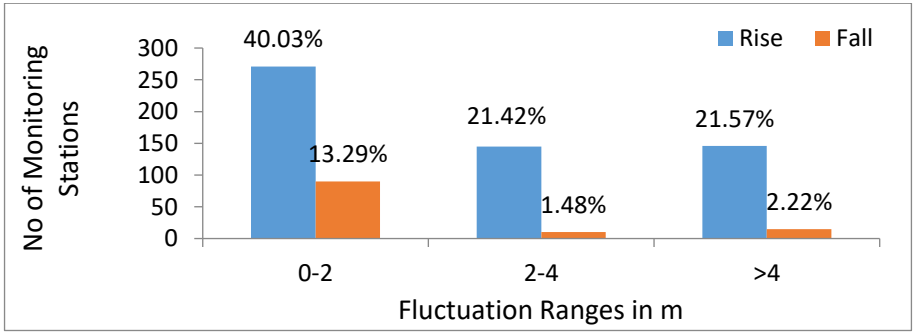

Figure-24 Percentage of wells showing rise and fall in piezometric level in confined aquifer (August 2024 & January 2025)

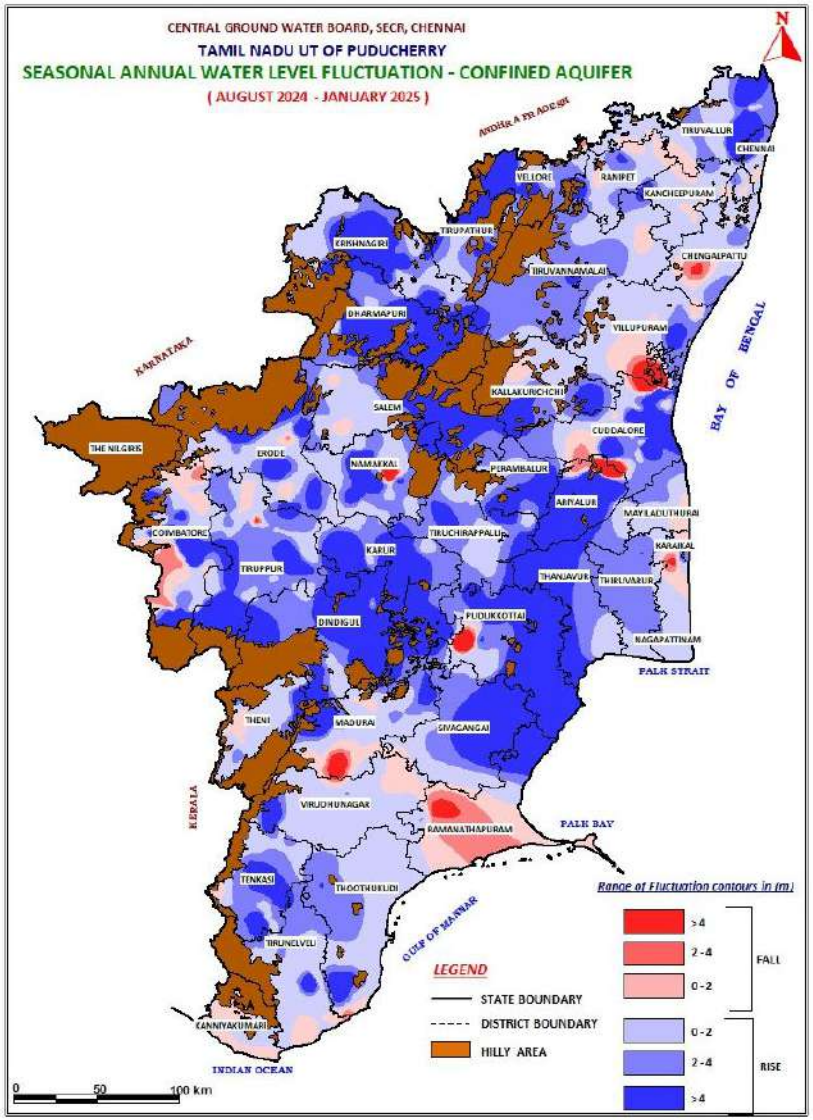

Figure-25: Seasonal water level fluctuation in Confined Aquifer (August 2024 & January 2025)

Seasonal Fluctuation of Piezometric Level in Confined/ Semi-Confined Aquifer (November 2024 to January 2025)

Rise in Piezometric Levels:

Out of 680 wells, piezometric level rise of less than 2 m is recorded in 39.12% wells, 2 to 4 m in 13.09 % wells and more than 4 m in 12.50% of the wells. Piezometric level rise of less than 2 m is seen in all the districts, except in Ariyalur, Mayiladuthurai and Nilgiri districts and Karaikal region of UT of Puducherry. Water level rise of 2 to 4 m is observed mainly in districts such as, Cuddalore, Kancheepuram, Karur and Tirunelveli districts. Rise of more than 4 m is significantly observed in Cuddalore, Erode, Pudukkottai and Tirunelveli districts.

Fall in Piezometric Levels:

Out of 680 wells, piezometric level fall of less than 2 m is recorded in 27.94% wells, 2 to 4 m in 4.12% wells and more than 4 m in 3.24% of the wells. Piezometric level fall of less than 2 m is seen almost all the districts, significantly in Coimbatore, Erode, Kancheepuram, Madurai, Namakkal, Theni and Villupuram districts. Water level fall of 2 to 4 m is observed mainly in districts such as, Coimbatore, Erode and Krishnagiri, fall of more than 4 m is significantly observed in Ariyalur, Cuddalore and Coimbatore districts.

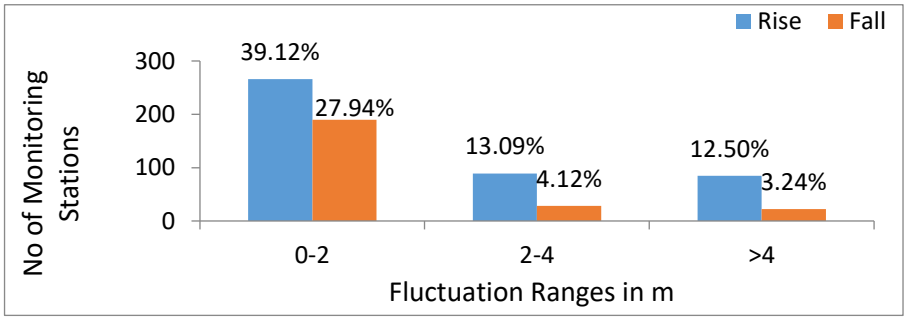

Figure-26 Percentage of wells showing rise and fall in piezometric level in confined aquifer (November 2024 & January 2025)

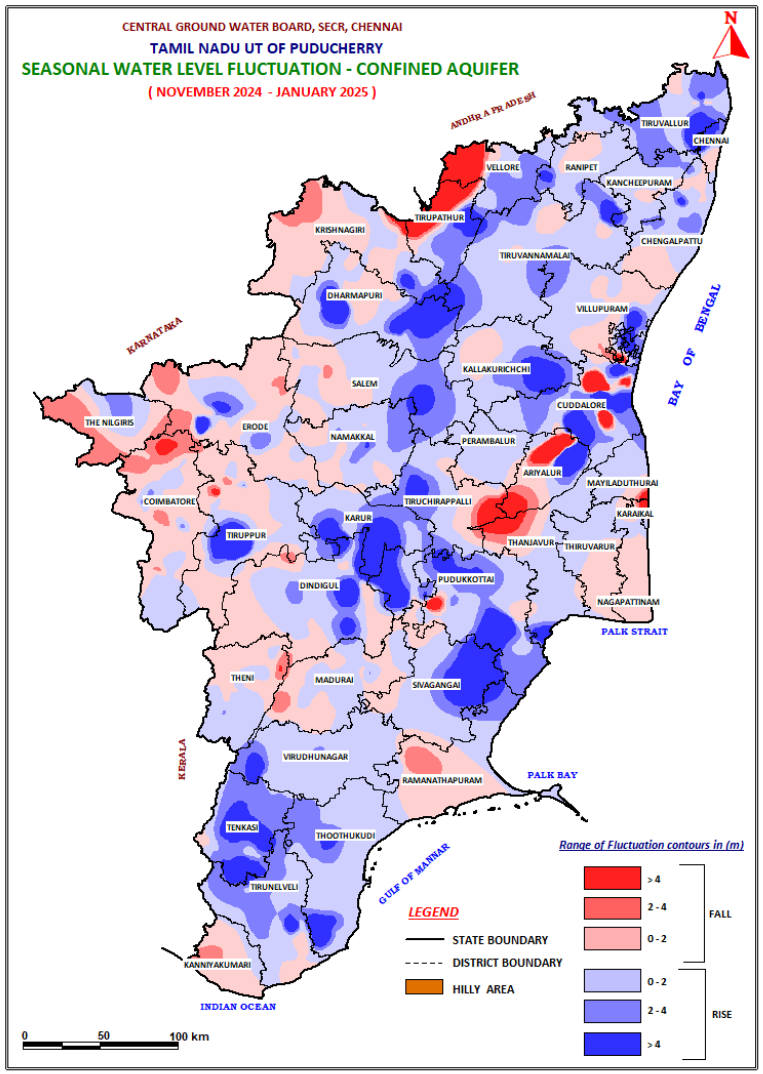

Figure-27: Seasonal water level fluctuation in Confined Aquifer (November 2024 & January 2025)

5.2.3 Annual Fluctuation in Piezometric Level

Annual Fluctuation of Piezometric Level in Confined /Semi-confined Aquifer (January 2024 to January 2025)

Rise in Piezometric Levels:

Out of 554 wells, piezometric level rise of less than 2 m is recorded in 32.31% wells, 2 to 4 m in 9.03% wells and more than 4 m in 10.47% of the wells. piezometric level rise of less than 2 m is seen in all the districts, except Ariyalur, Chennai and Tirunelveli districts and Karaikal region of UT of Puducherry. Water level rise of 2 to 4 m is observed mainly in districts such as, Erode, Cuddalore and Pudukkottai districts. Rise of more than 4 m is significantly observed in Coimbatore, Krishnagiri and Cuddalore districts.

Fall in Piezometric Levels:

Out of 554 wells, piezometric level fall of less than 2 m is recorded in 32.13 % wells, 2 to 4 m in 9.57% wells and more than 4 m in 6.50% of the wells. piezometric level fall of less than 2 m is seen in all the districts, except Ariyalur, Dharmapuri, Kanyakumari and Perambalur districts. Water level fall of 2 to 4 m is observed mainly in districts such as, Cuddalore, Erode and Theni districts, fall of more than 4 m is significantly observed in Ariyalur, Cuddalore and Tirunelveli districts.

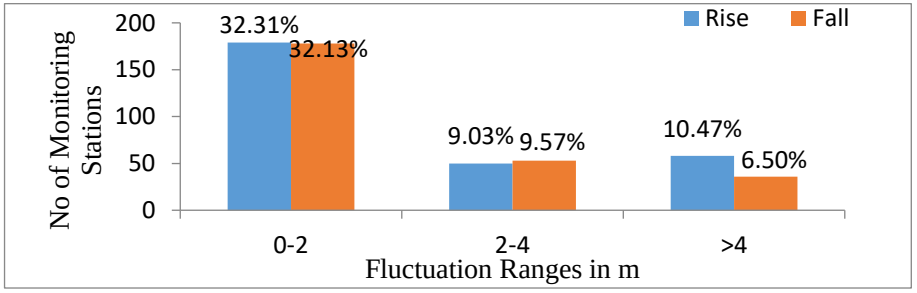

Figure-28.Percentage of wells showing rise and fall in piezometric level in confined aquifer (January 2024 &January 2025)

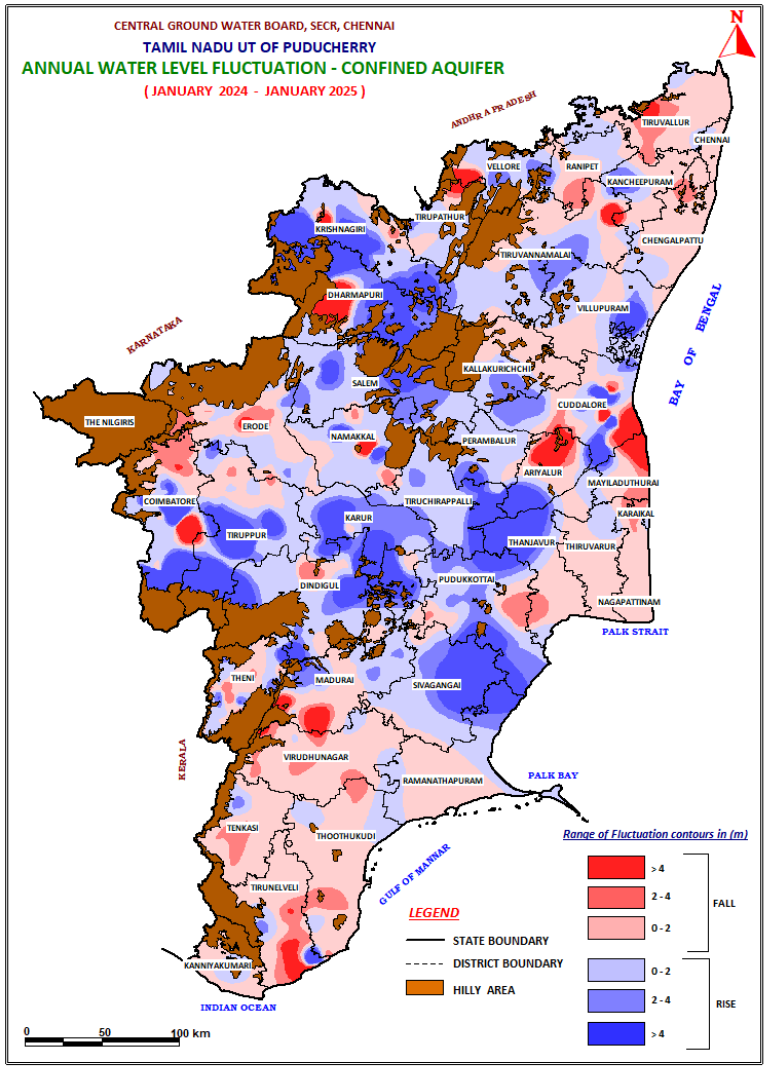

Figure-29: Annual water level fluctuation in confined aquifer (January 2024 & January 2025)

Annual Fluctuation of Piezometric Level in Confined /Semi-confined Aquifer (January 2023 to January 2025)

Rise in Piezometric Levels:

Out of 527 wells, piezometric level rise of less than 2 m is recorded in 34.35% wells, 2 to 4 m in 7.97% wells and more than 4 m in 7.40% of the wells. piezometric level rise of less than 2 m is seen in all the districts, except Ariyalur, Chennai, Sivaganga, Thanjavur and Tiruvarur districts. Water level rise of 2 to 4 m is observed mainly in districts such as Coimbatore, Theni, Dharmapuri, Krishnagiri and Madurai districts. Rise of more than 4 m is significantly observed in Theni, Cuddalore, Theni and Tiruvallur districts.

Fall in Piezometric Levels:

Out of 527 wells, piezometric level fall of less than 2 m is recorded in 31.31 % wells, 2 to 4 m in 8.35% wells and more than 4 m in 10.63% of the wells. piezometric level fall of less than 2 m is seen in all the districts, except in Ariyalur, Kanyakumari, Nilgiris, Ramanathapuram and Karaikal region of UT of Puducherry. Water level fall of 2 to 4 m is observed mainly in districts such as, Cuddalore, Erode and Coimbatore districts. Fall of more than 4 m is significantly observed in Cuddalore, Coimbatore and Ariyalur districts.

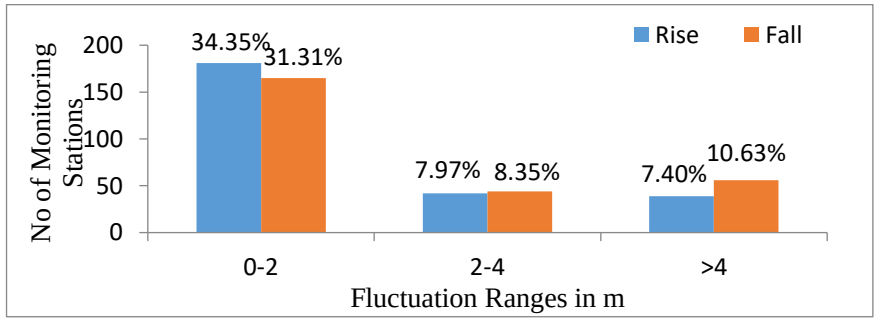

Figure-30: Percentage of wells showing rise and fall in piezometric level in confined aquifer (January 2023 &January 2025)

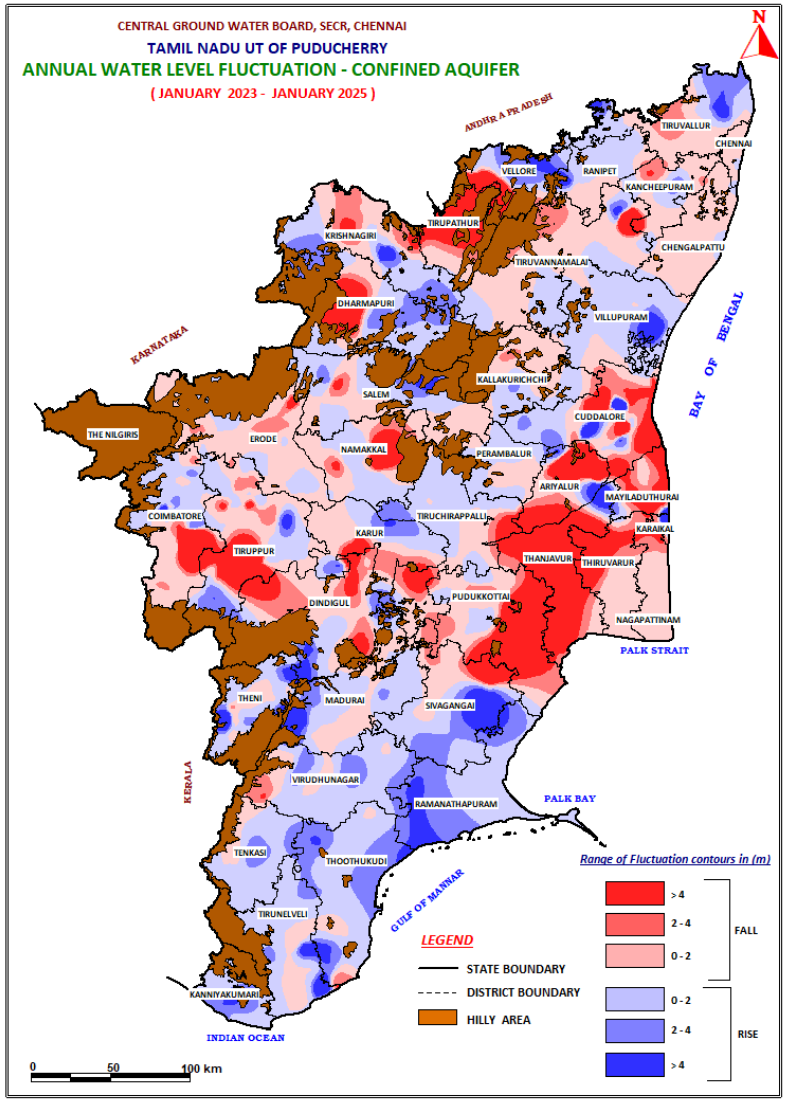

Figure-31: Annual water level fluctuation in confined aquifer (January 2023 & January 2025)

Annual Fluctuation of Piezometric Level in Confined /Semi-confined Aquifer January 2022 to January 2025)

Rise in Piezometric Levels:

Out of 554 wells, piezometric level rise of less than 2 m is recorded in 7.76% wells, 2 to 4 m in 2.71% wells and more than 4 m in 4.33% of the wells. Piezometric level rise of less than 2 m is seen in all the districts, significantly in Erode, Krishnagiri, Madurai and Theni districts. Water level rise of 2 to 4 m is observed mainly in districts such as Madurai, Coimbatore, Sivaganga and Tiruvallur districts. Rise of more than 4 m is significantly observed in Theni, Cuddalore and Erode districts.

Fall in Piezometric Levels:

Out of 554 wells, piezometric level fall of less than 2 m is recorded in 34.84% wells, 2 to 4 m in 14% wells and more than 4 m in 18.23% of the wells and more than 4 m in 32.13% of the wells. piezometric level fall of less than 2 m is seen in all the districts, significantly in Erode, Coimbatore,Cuddalore,Kancheepuram, Madurai and Tirunelveli districts. Water level fall of 2 to 4 m is observed mainly in districts such as, Coimbatore, Cuddalore, Erode, Namakkal, Salem, Thiruvannamalai and Tirunelveli districts. Fall of more than 4 m is significantly observed in Cuddalore, Coimbatore, Krishnagiri, Namakkal, Pudukkottai and Tirunelveli districts.

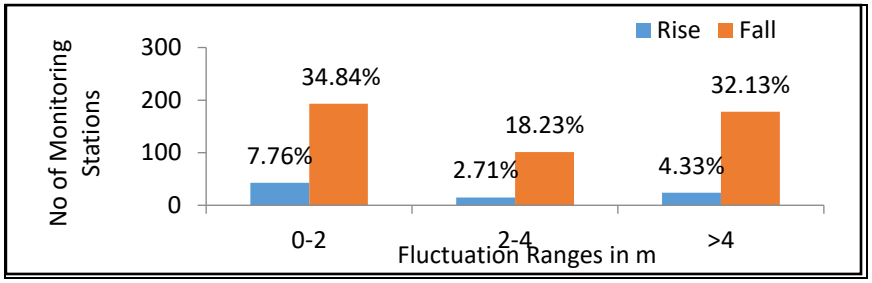

Figure-32: Percentage of wells showing rise and fall in piezometric level in confined aquifer (January 2022 & January 2025)

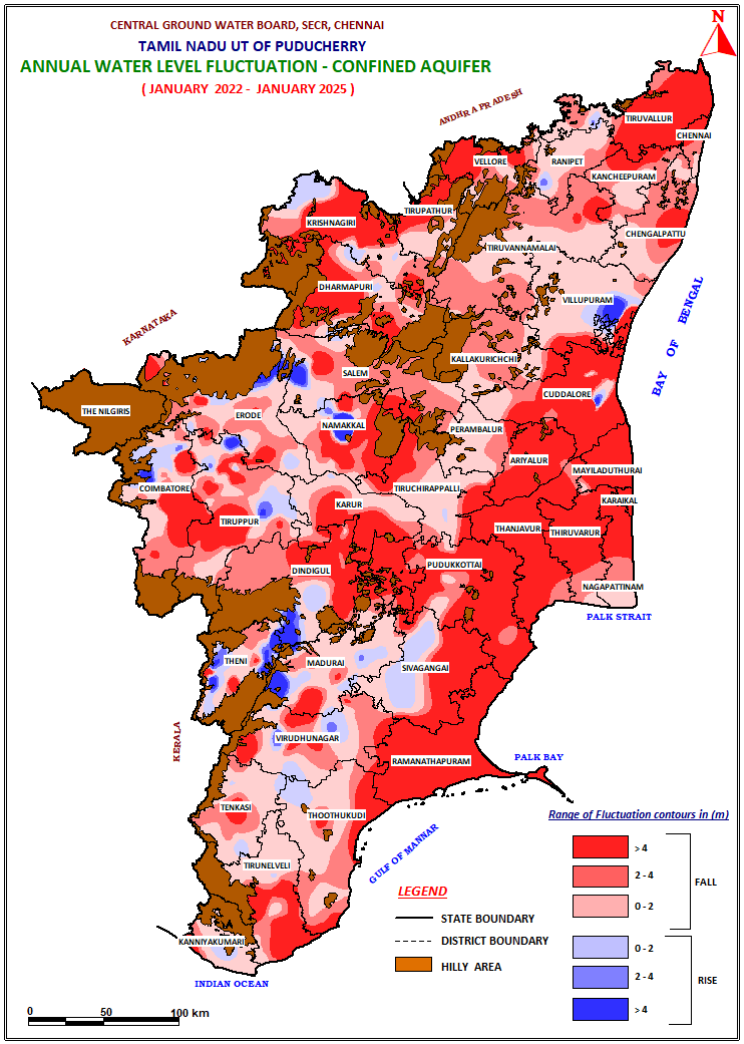

Figure-33: Annual water level fluctuation in confined aquifer (January 2022 & January 2025)

5.2.4 Decadal Fluctuation in Piezometric Level

Decadal Fluctuation of Piezometric Level in Confined/Semi-confined Aquifer (Decadal Mean January (2015-2024) to January 2025)

Rise in Piezometric Levels:

Out of 620 wells, piezometric level rise of less than 2 m is recorded in 28.71% wells, 2 to 4 m in 15.81% wells and more than 4 m in 24.68% of the wells. Piezometric level rise of less than 2 m is seen in all the districts, significantly in Coimbatore, Madurai, Namakkal, Pudukkottai and Tirunelveli districts. Water level rise of 2 to 4 m is observed mainly in districts such as Madurai, Coimbatore, Namakkal, Virudhunagar and UT of Puducherry. Rise of more than 4 m is significantly observed in Coimbatore, Erode, Cuddalore and Thiruvannamalai districts.

Fall in Piezometric Levels:

Out of 620 wells, piezometric level fall of less than 2 m is recorded in 18.87% wells, 2 to 4 m in 4.35% wells and more than 4 m in 7.58% of the wells. Piezometric level fall of less than 2 m is seen in all the districts, significantly in Coimbatore, Erode, Kancheepuram, Namakkal, Tirunelveli and Tuticorin districts. Water level fall of 2 to 4 m is observed mainly in districts such as, Cuddalore, Nagapattinam and Tirunelveli districts. Fall of more than 4 m is significantly observed in Cuddalore, Ariyalur and Tirunelveli districts

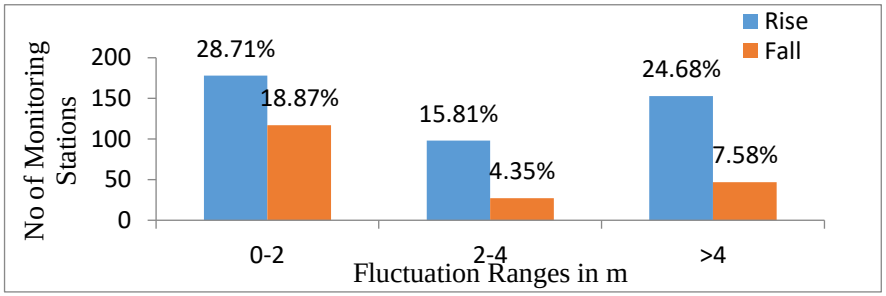

Figure-34: Percentage of wells showing rise and fall in piezometric level in confined Aquifer (Decadal Mean January (2015-2024) to January 2025)

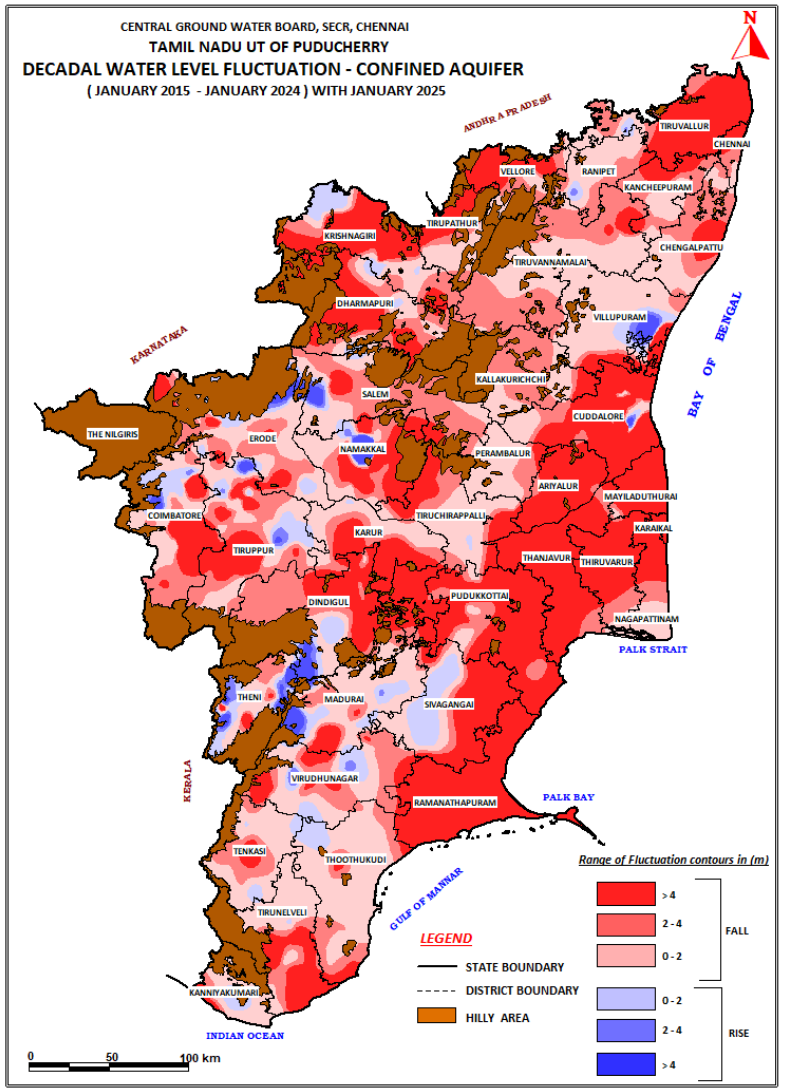

Figure-35: Decadal water level fluctuation in confined aquifer (Decadal Mean January 2015-2024 to January 2025)

6.0 RECOMMENDATIONS

In order to enhance the groundwater scenario of Tamil Nadu state & UT of Puducherry utmost effort should be made to harvest the rainwater received during monsoon days and use it either for ground water recharge or for domestic use. Periodic maintenance of the Rainwater harvesting / Recharges structures is also recommended to maintain the efficiency.

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 Tamil Nadu state & UT of Puducherry, District Recharge Plan and NAQUIM reports of CGWB helps in selecting sites for artificial recharge structures.

Point recharge structures are recommended to recharge deeper aquifers.

Efficient micro irrigation practices can save up to 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

7.0 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 pre-monsoon May, August, November and post- monsoon January . Additionally, a yearly assessment of ground water quality is performed in May. As on January 2025, the South Eastern Coastal Region of Central Ground Water Board supervises 774 dug wells and 740 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 0.05m bgl (Kancheepuram district) to 30.35 m bgl (Coimbatore District) in Tamil Nadu and UT of Puducherry.

Overall, 97 % of the wells monitored in the state and UT are in <10 m bgl range and spread over entire Tamil nadu ,3.23 % 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 34.88% of wells analysed, depth to water level in the range of 2 to 5 m bgl has been recorded in 44.19 % of wells analysed while depth to water level in the range of 5 to 10 m bgl has been recorded in 17.44 % of wells analysed

The depth to piezometric surface ranged from 0.08 m bgl (Erode district) to 112.45 m bgl (Cuddalore District) in Tamil Nadu and UT of Puducherry during January 2025 . Piezometric level of less than 2 m bgl is recorded in 18.65 % of wells, between 2 to 5 m bgl in 33.92% of wells, between 5 to 10 m bgl in 20% of wells, between 10 to 20 m bgl in 12.84 % of wells, between 20-40 m bgl in 7.03% of wells and piezometric level more than 40 m bgl is registered in 7.57 % of wells.