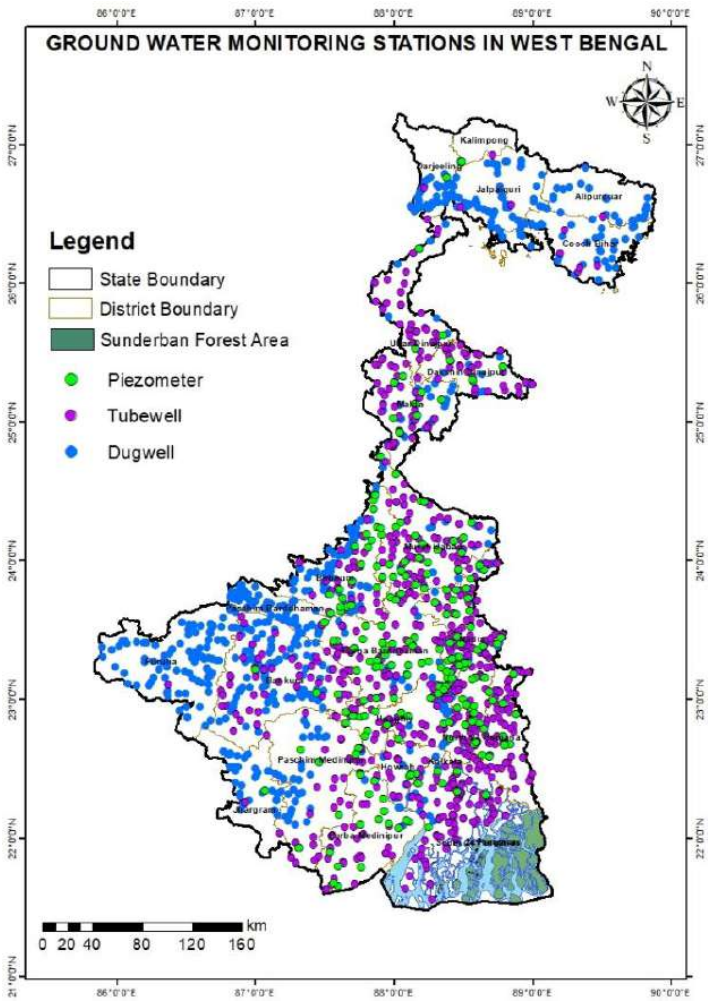

GROUND WATER LEVEL BULLETIN

January 2025

WEST BENGAL

ABSTRACT

Present Bulletin prepared on ground water scenario of West Bengal highlighting the findings, status of ground water level in different aquifers and its seasonal, annual and decadal fluctuation during January 2025.

CGWB, Eastern Region Kolkata

1.0 INTRODUCTION

Groundwater bulletin is prepared by Central Ground Water Board (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.

In West Bengal, ground water monitoring was started since 1976 when most of the ground water structures were mainly dug wells and the development of the ground water resource was very limited. It is only after 1985; actual ground water development started in irrigational sector and took its full swing from 90s. Accordingly, Ground Water Monitoring Stations (GWMS) for monitoring of water level data were also changed in different periods. However, from late 90s, these old wells are being replaced by well-defined piezometers in phased manner with an expectation that in near future, this effort will provide better result.

Groundwater levels are being measured by CGWB, ER four times a year in West Bengal viz., in the months of April (Pre-monsoon) (20th to 30th), August (Mid-monsoon) (20th to 30th), November (Post-monsoon) (1st to 10th) and January (1st to 10th) ; 2 times in Andaman and every month in Sikkim (through Participatory monitoring since June,2024).

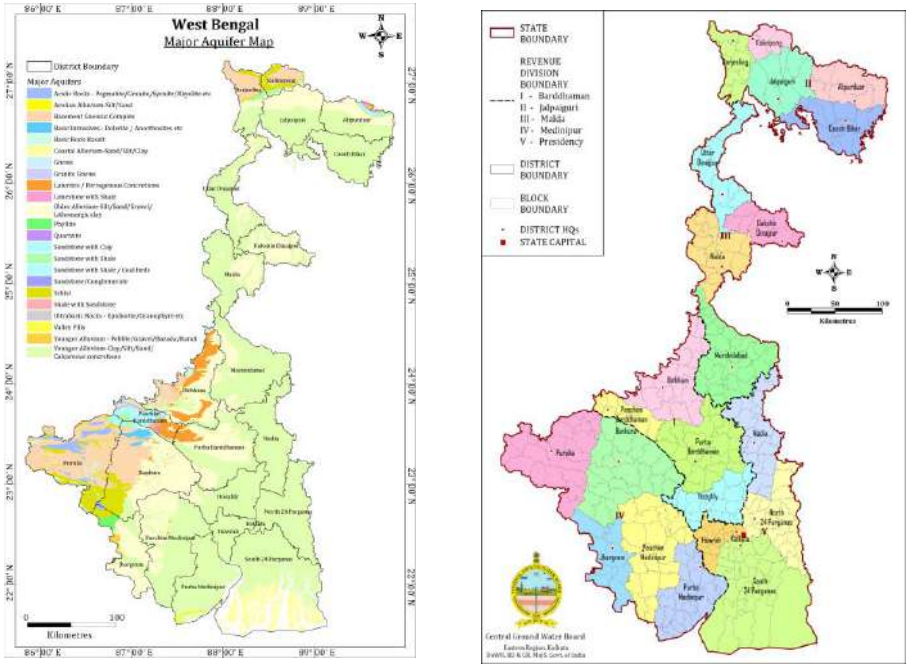

Figure-1: Map showing major aquifers and administrative divisions of West Bengal

2.0 STUDY AREA

The Eastern Region of Central Ground Water Board has jurisdiction over the State of West Bengal having an area of 88752 km^2, Andaman & Nicobar Islands (UT) having an area of 8,249 sq. km. (Andaman-6408 sq. km., Nicobar-1841 sq. km.) and Sikkim (7096 sq.km.).

The State of West Bengal is divided into 5 Divisions (Barddhaman, Jalpaiguri, Malda, Medinipur & Presidency) incorporating 23 Districts, which are further subdivided into 66 Sub-Divisions; 344 Community Development Blocks; 3,347 Gram Panchayats; 40,218 Villages (37,469 Inhabited villages with 2,03,80,118 Households); 924 Census Towns(127 Municipal & 785 Non-Municipal); 118 Municipalities and 7 Municipal Corporations. The state extends between N Latitudes, 21^0 31' 0", 27^0 33' 15" and E Longitudes, 85^0 45' 20", 89^0 33'0". Physiographically, the area incorporates extra – peninsular region of the north, peninsular mass of the south – west, and alluvial and deltaic plains of the south and south-east (figure-1).

Broadly, West Bengal has nine major physiographic divisions – Himalayan Zone, Sub-Himalayan Zone, Barind Uplands, Degraded Plateaus, Plateau Fringe Zones, Upper Gangetic Delta, Reclaimed Lower Gangetic Delta, Non-Reclaimed Lower Gangetic Delta and Medinipur Coastal Plains.

3.0 GROUND WATER LEVEL MONITORING

Central Ground Water Board, Eastern Region, has set up a network of 1732 monitoring wells known as National Hydrographic Network Stations (NHNS) in West Bengal which includes: Dugwells- 695, Handpumps-751 and Piezometers-286 {including 206-DWLR installed PZ}.

In the state of West Bengal during January 2025, 1718 wells were monitored (figure-2). Few wells could not be monitored due to various reasons like inaccessibility, filled up, installation of pump units, road damaged, gate locked, etc.

The district-wise breakup of the water level monitoring stations is given in Table-1

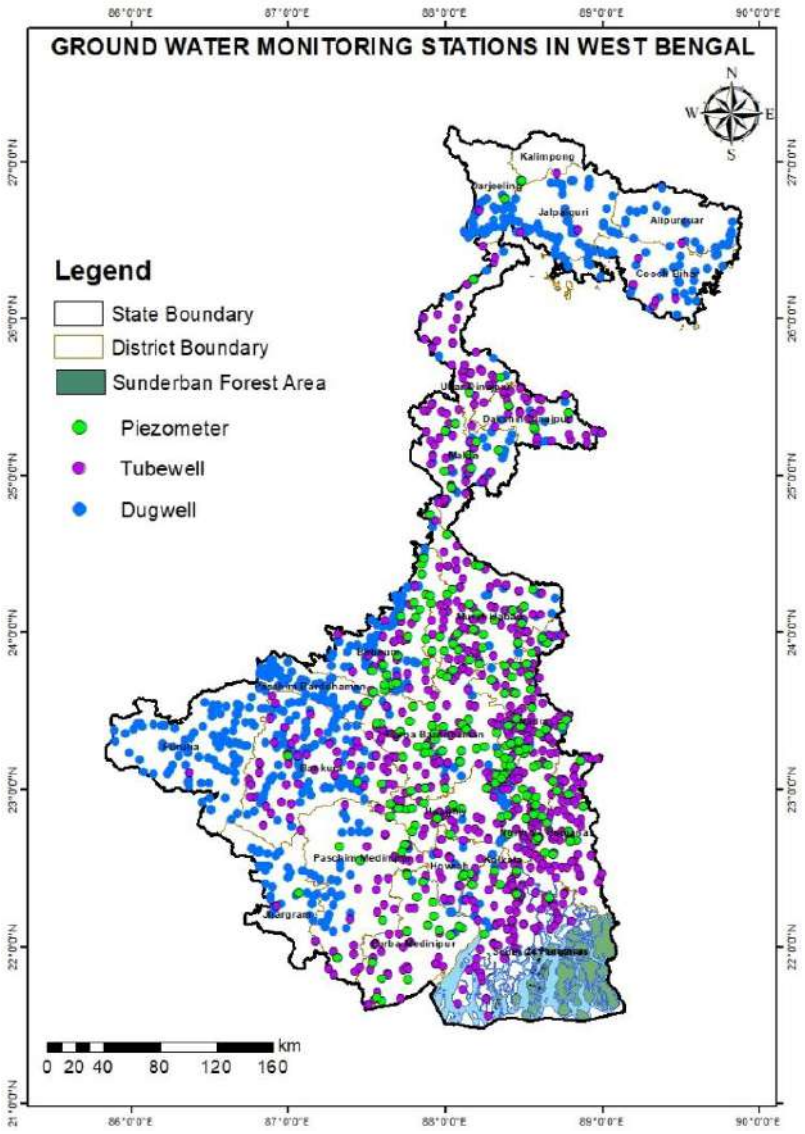

Figure- 2: Map showing locations of monitoring wells (NHNS) in West Bengal

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

Sl. No	Name of the District	Number of GW Monitoring Stations				
		Dug Well	Piezometer	Handpump	Spring	Total
West Bengal						
1	Alipurduar	23	0	1	0	24
2	Bankura	97	9	49	0	155
3	Birbhum	93	23	39	0	155
4	Dakshin Dinajpur	9	12	29	0	50
5	Darjeeling	40	1	2	0	43
6	Haora	18	1	15	0	34
7	Hugli	26	31	61	0	118
8	Jalpaiguri	48	0	3	0	51
9	Jhargram	30	5	5	0	40
10	Kochbehar	33	0	3	0	36
11	Kalimpong	0	0	2	0	2
12	Kolkata	4	4	12	0	20
13	Maldah	24	8	32	0	64
14	Murshidabad	18	54	72	0	144
15	Nadia	14	40	93	0	147
16	N- 24 Parganas	6	14	86	0	106
17	Paschim Barddhaman	59	9	3	0	71
18	Paschim Medinipur	32	7	31	0	70
19	Purba Barddhaman	17	21	61	0	99
20	Purba Medinipur	2	23	32	0	57
21	Purulia	89	8	0	0	97
22	S-24 Parganas	8	14	98	0	120
23	Uttar Dinajpur	5	2	22	0	29
	Total	**695**	**286**	**751**	**0**	**1732**

4.0 RAIN FALL

In 2025, as the south-west monsoon wind retreated in post-monsoon season, West Bengal experienced less rainfall in all parts of the region. In North Bengal (Darjeeling, Kalimpong, Jalpaiguri, Alipurduar, Coach Behar, Uttar and Dakshin Dinajpur) total 13 mm precipitation is occurred during January 2025 and it is lower than the normal rainfall over the region. However, no rainfall takes place over the western part (Birbhum, Bankura, Purulia, Pachim and Purba Burdwan) , Southern part (Howrah, Hugly, Pachim and Purba medinipur, Jhargram, Kolkata, North and South 24 Parganas) and The middle part (Maldah, Mursidabad and Nadia) of West Bengal, which are 100% deficit rainfall compared to normal rainfall. January 2025 is the driest month of the year for the region.

Table 2 District wise rainfall data January 2025

District	Cumulative rainfall (mm) during Jan 2025
Cooch Behar	0.9
Darjeeling	2.6
Jalpaiguri	2.6
Malda	0
North Dinajpur	0
South Dinajpur	0
Bankura	0
Birbhum	0
Burdwan	0
East Midnapore	0
Hooghly	0
Howrah	0
Kolkata	0
Murshidabad	0
Nadia	0
North 24 Parganas	0
Purulia	0
South 24 Parganas	0
West Midnapore	0
Jhargram	0

Figure-3: Rainfall distribution (in mm) and deficient rainfall (in %) over west Bengal during Jan 2025. Deficient rainfall is estimated by the comparing normal rainfall and actual rainfall. Source: IMD

5.0 GROUND WATER LEVEL SCENARIO (JANUARY 2025) for WEST BENGAL

5.1 SHALLOW AQUIFER (UNCONFINED)

5.1.1 DEPTH TO WATER LEVEL

Depth to Water Level in Unconfined Aquifer (January 2025)

Depth to water level during January 2025 was measured from 1718 ground water monitoring wells. A total of 728 numbers of GWMS in shallow aquifers were measured. Water level of less than 2 m bgl was recorded in 18% of wells in phreatic aquifers. Similarly in 57% of wells, water level was observed between 2-5 m bgl. 5-10 m bgl was recorded in 22% of wells and 10-20 m bgl in only 2% of wells. None of the well in phreatic aquifers showing water level beyond 20 m bgl (Figure-4 & 5).

The depth to water level map of January 2025 depicts that water level in the entire state is within the range of 2-5 and 5-10 m bgl except for few isolated patches showing water level in the range of >10 m bgl.

Deepest water level was recorded at Amlai, 21.2 m bgl in Nalhati-I block of Birbhum district and shallowest water level 0.01 mbgl was found at Dhatrigram in Kalna-I block Purba Bardhaman district.

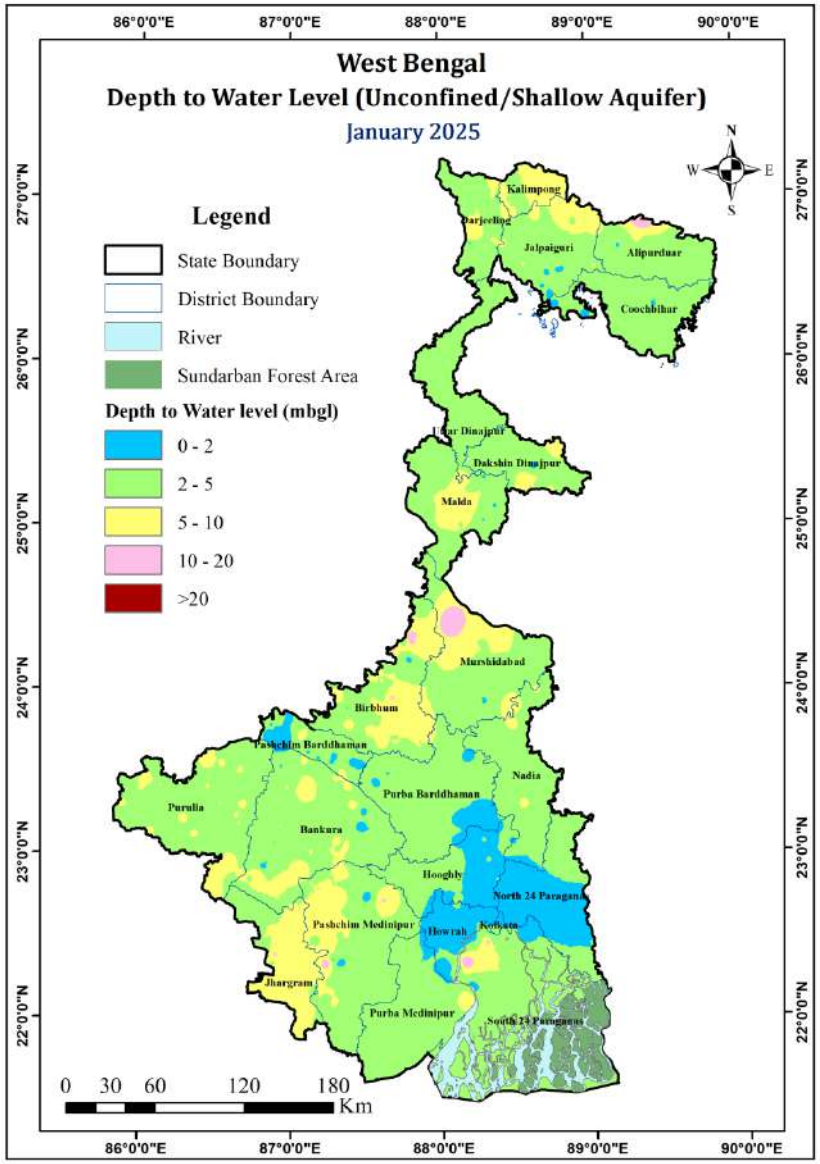

Figure-4: Depth to water level of unconfined aquifer during January 2025

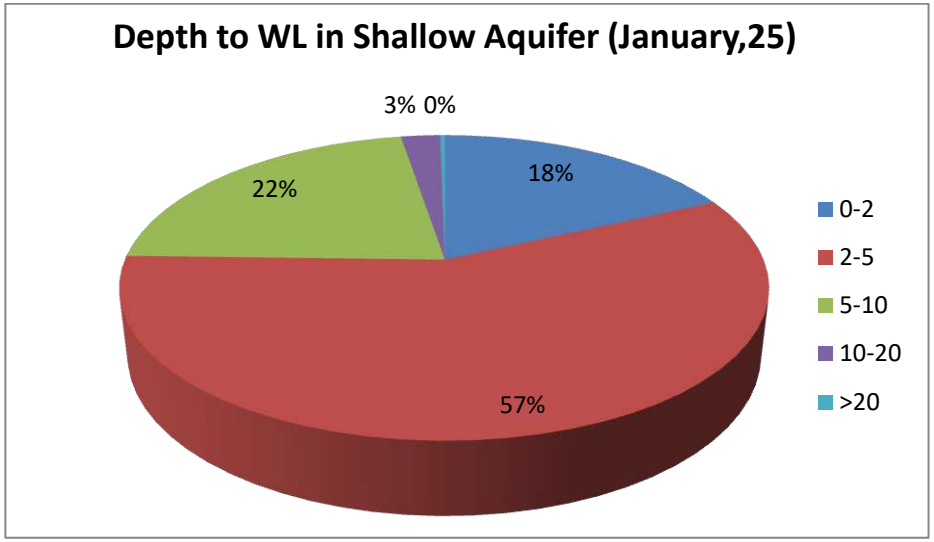

Figure-5: Percentage of wells in different water level ranges in Unconfined aquifer (January 2025)

5.1.2 SEASONAL FLUCTUATION IN WATER LEVEL

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

In shallow aquifers out of 636 wells analyzed, 550 wells showing rise and only 86 wells shows falling water level (figure-6 &7).

In shallow aquifers in rising category 57% of wells are within the fluctuation of 0-2m, 22% are in 2-4m and 8% of wells are in the range of more than 4m. In the falling category 12% of wells are showing falling trend in 0-2m category, 1% of wells are in the range of 2-4m and only 3 wells are showing >4m fluctuation of water level.

The rise in water level is observed in all the districts of the State. Fall is observed only in 13% of the well in the category of 0-2 & 2-4 m as isolated patches observed in N-24 Parganas, Howrah, Hooghly, Jhargram, Paschim Medinipur, Murshidabad.

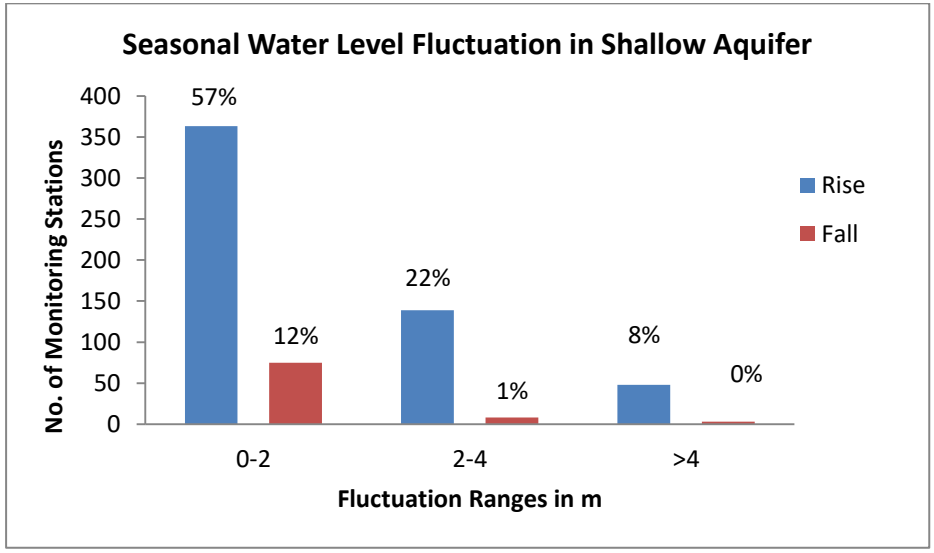

Figure-6: Percentage of wells showing rise and fall in WL in unconfined aquifer (April 2024 to January 2025)

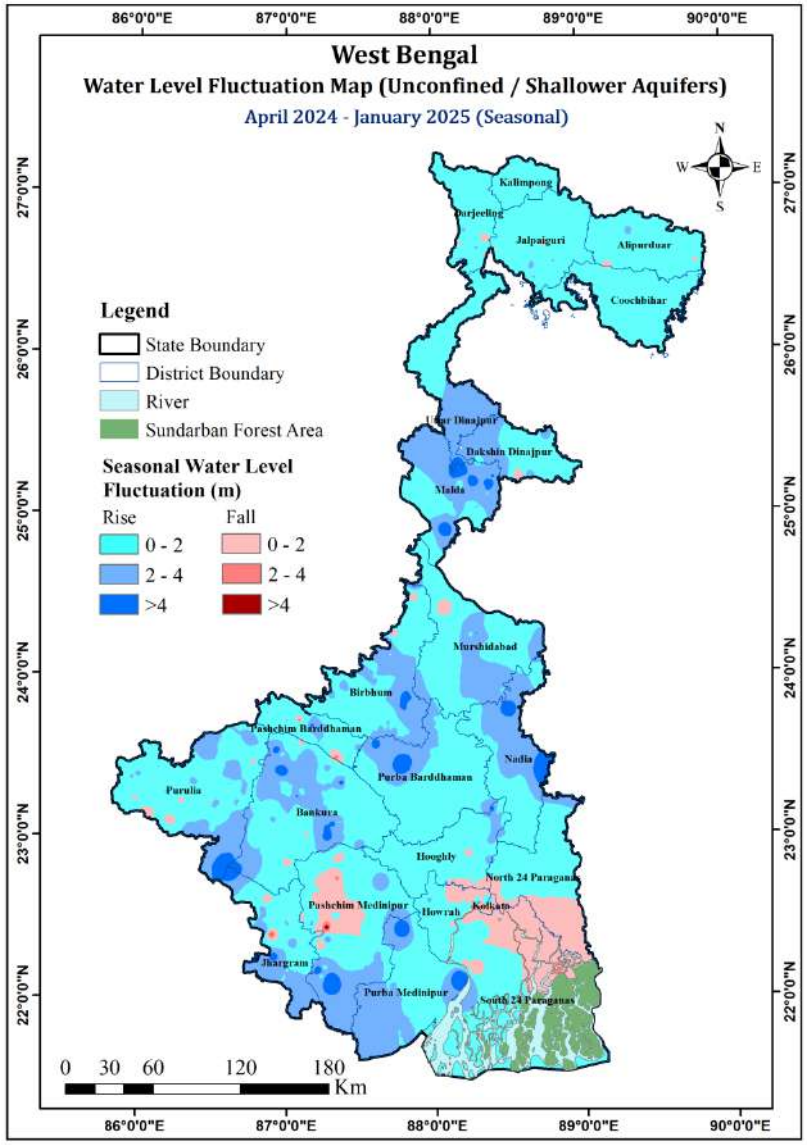

Figure-7: Seasonal water level fluctuation in unconfined aquifer (April 2024 to January 2025)

5.1.3 SEASONAL FLUCTUATION IN WATER LEVEL

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

In shallow aquifers out of 688 wells analyzed, 60 wells showing rise and 628 wells shows falling water level (figure-8 &9).

In shallow aquifers in rising category 8% of wells are within the fluctuation of 0-2m, 3 wells are in 2-4m and 2 wells are in the range of more than 4m. In the falling category 49% of wells are showing falling trend in 0-2m category, 29% of wells are in the range of 2-4m and 13% wells are showing >4m fluctuation of water level.

The fall in water level is observed in all the districts of the State. Rise is observed only in 8% of the well in the category of 0-2 as isolated patches observed in N-24 Parganas, Nadia, Murshidabad, Malda, Dakshin Dinajpur.

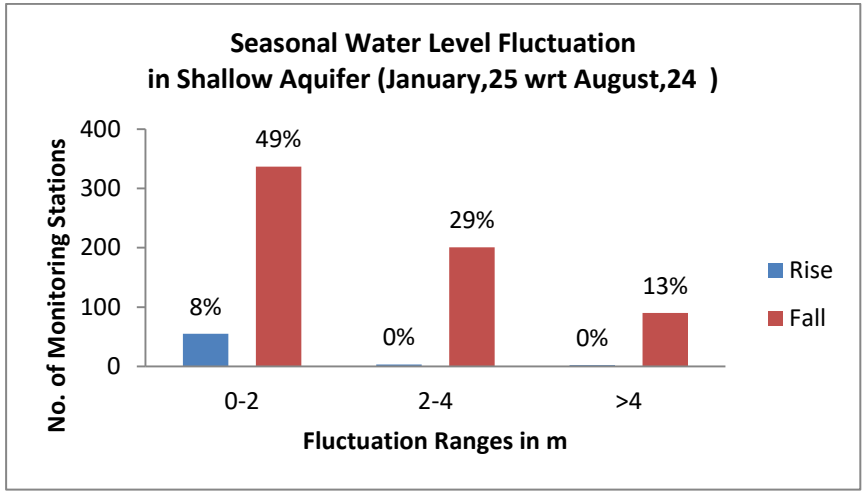

Figure-8: Percentage of wells showing rise and fall in WL in unconfined aquifer (August 2024 to January 2025)

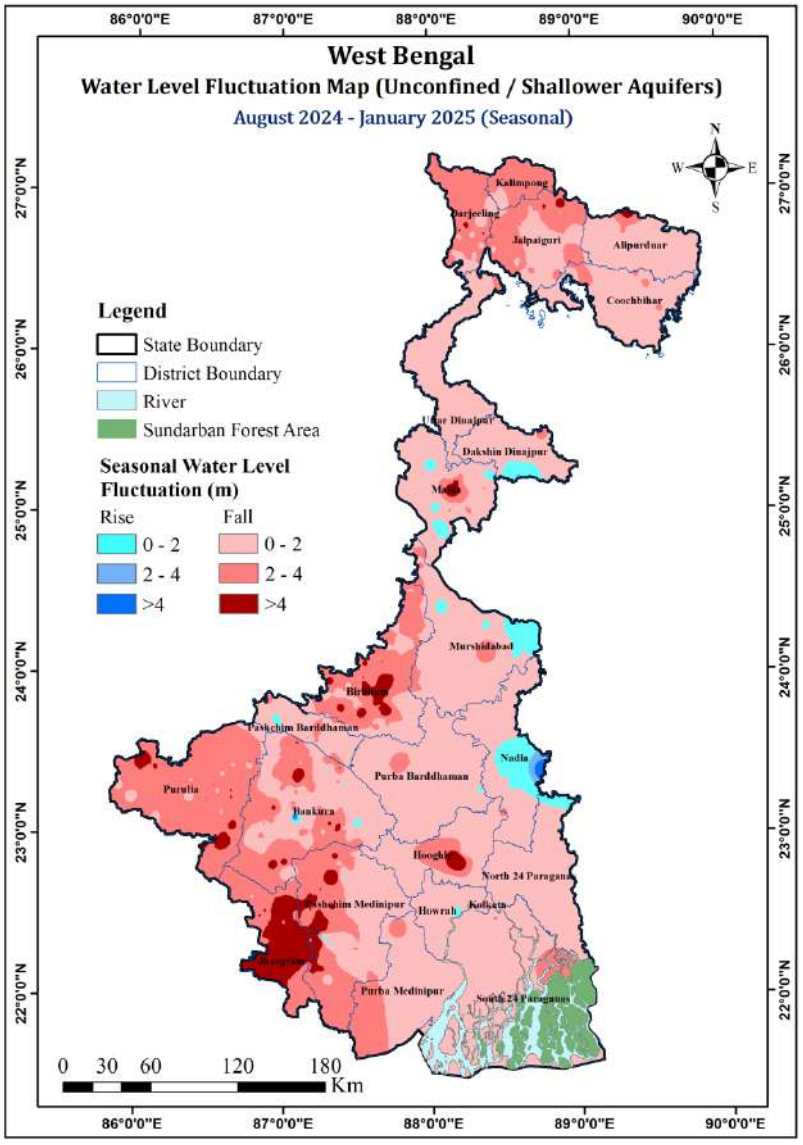

Figure-9: Seasonal water level fluctuation in unconfined aquifer (August 2024 to January 2025)

5.1.4 SEASONAL FLUCTUATION IN WATER LEVEL

Seasonal Fluctuation of Water Level in Unconfined Aquifer

(Nov 2024 to January 2025)

In shallow aquifers out of 683 wells analyzed, 81 wells showing rise and 602 wells shows falling water level (figure-10 &11).

In shallow aquifers in rising category 10% of wells are within the fluctuation of 0-2m, 1% wells are in 2-4m and 1% wells are in the range of more than 4m. In the falling category 69% of wells are showing falling trend in 0-2m category, 15% of wells are in the range of 2-4m and 4% wells are showing >4m fluctuation of water level.

The fall in water level is observed in all the districts of the State. Rise is observed only in 12% of the well in the category of 0-2 as isolated patches observed in Nadia, Purba Bardhaman, Bankura, Paschim Medinipur, Bankura, Howrah, Hooghly, S24 Parganas.

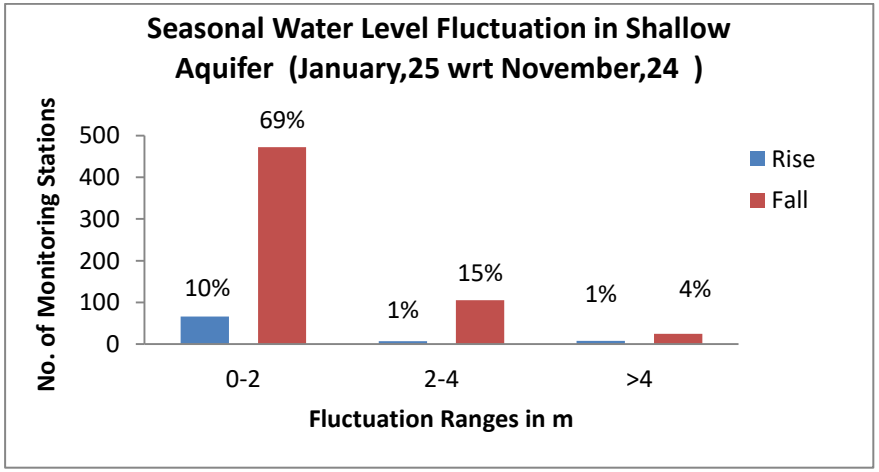

Figure-10: Percentage of wells showing rise and fall in WL in unconfined aquifer (November 2024 to January 2025)

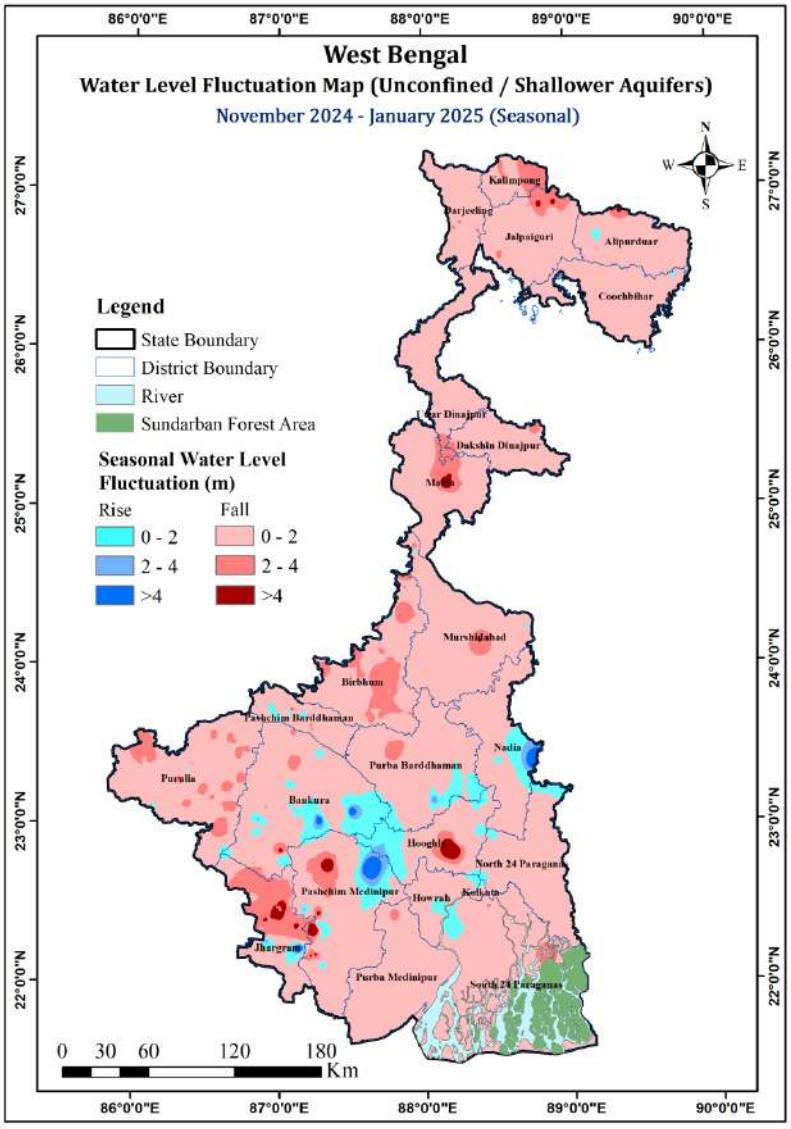

Figure-11: Seasonal water level fluctuation in unconfined aquifer (November 2024 to January 2025)

5.1.5 ANNUAL FLUCTUATION IN WATER LEVEL

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

In shallow aquifers out of 686 wells analyzed, 338 wells showing rise and 348 wells shows falling water level (figure-8 & 9).

In shallow aquifers in rising category 44% of wells are within the fluctuation of 0-2m, 3% are in 2-4m and 2% of wells are in the range of more than 4m. In the falling category 46% of wells are showing falling trend in 0-2m category, 4% of wells are in the range of 2-4m and 1% of wells are showing >4m fluctuation of water level.

The state is dominated by 0-2m fluctuation category. Rise of less than 2 m in water level is seen in all the districts of the State, significantly in Nadia, Murshidabad, Coochbehar, Darjeeling, Alipurduar, Purba Bardhaman and parts of N-24 Parganas Paschim Medinipur, Dakshin Dinajpur district. Fall of less than 2 m in water level is mainly observed in parts of S-24 Parganas, Purba & Paschim Medinipur, Jhargram, Purulia, Birbhum, Howrah, Hooghly, Malda and Bankura districts. Fall and rise of beyond 2 m is observed as isolated patches.

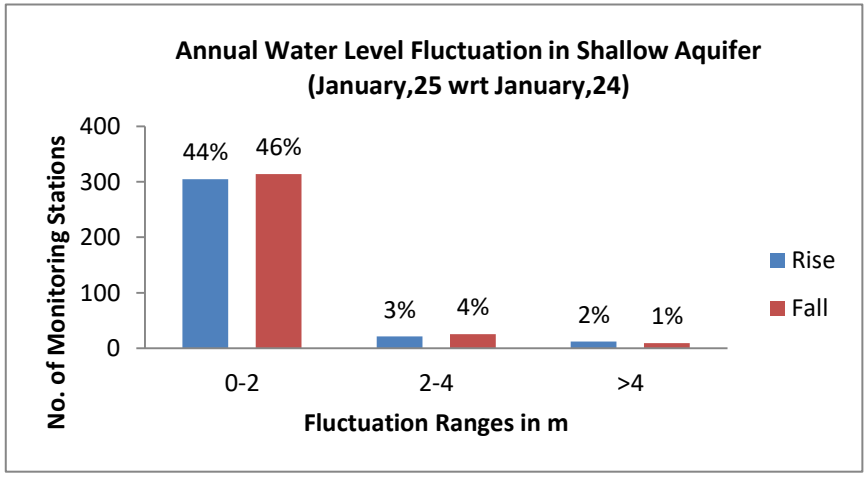

Figure-12: Percentage of wells showing rise and fall in WL in unconfined aquifer (January 2024 to January 2025)

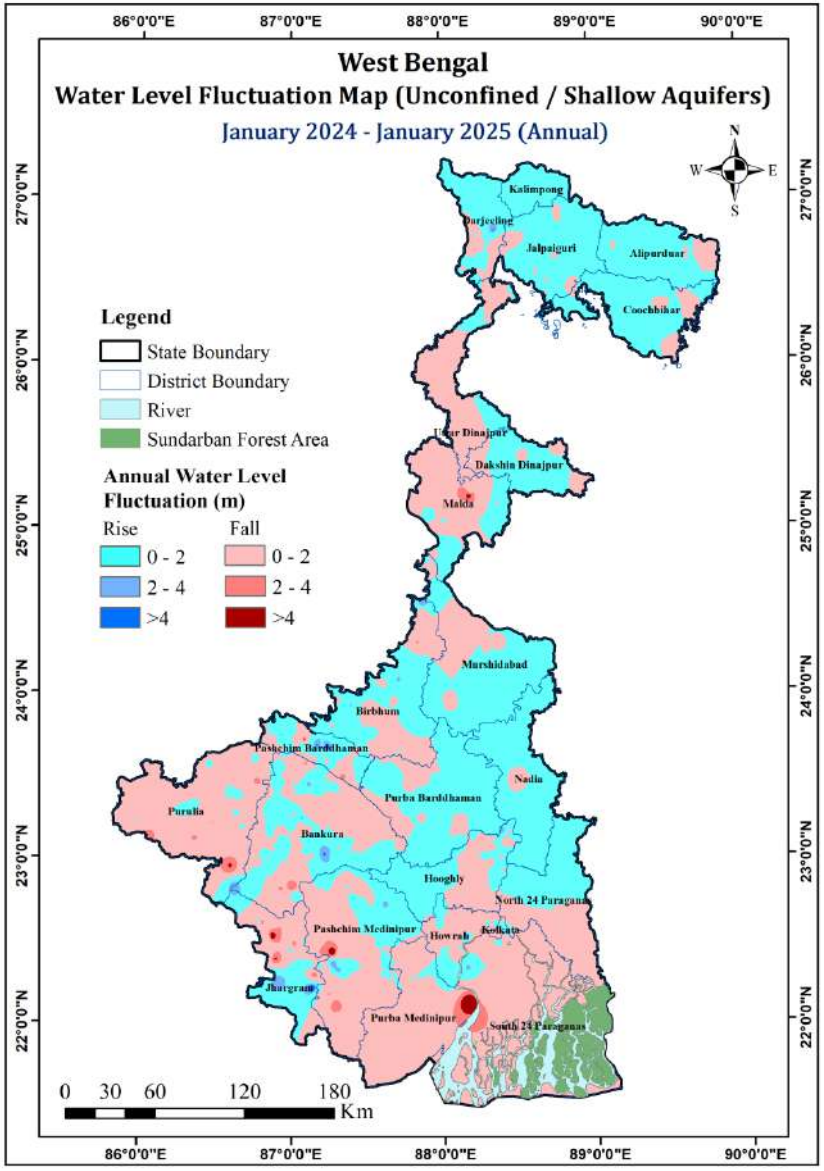

Figure-13: Annual water level fluctuation in unconfined aquifer (January 2024 to January 2025)

5.1.6 ANNUAL FLUCTUATION IN WATER LEVEL

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

In shallow aquifers out of 669 wells analyzed, 392 wells showing rise and 277 wells shows falling water level (figure-14 & 15).

In shallow aquifers in rising category 52% of wells are within the fluctuation of 0-2m, 4% are in 2-4m and 2% of wells are in the range of more than 4m. In the falling category 37% of wells are showing falling trend in 0-2m category, 3% of wells are in the range of 2-4m and 2% of wells are showing >4m fluctuation of water level.

The state is dominated by 0-2m fluctuation category. Rise of less than 2 m in water level is seen in all the districts of the State, significantly in Nadia, N-24 Parganas, Purba Bardhaman, Birbhum, Malda, Paschim Bardhaman, Dakshin Dinajpur and parts of Murshidabad Paschim Medinipur, Jhargram district. Fall of less than 2 m in water levelis mainly observed in Coochbehar, Darjeeling, Alipurduar, S-24 Parganas, Purba & Paschim Medinipur, Jhargram, Purulia, Birbhum, Howrah, Hooghly, Malda and parts of Bankura, Malda districts. Fall and rise of beyond 2 m is observed as isolated patches.

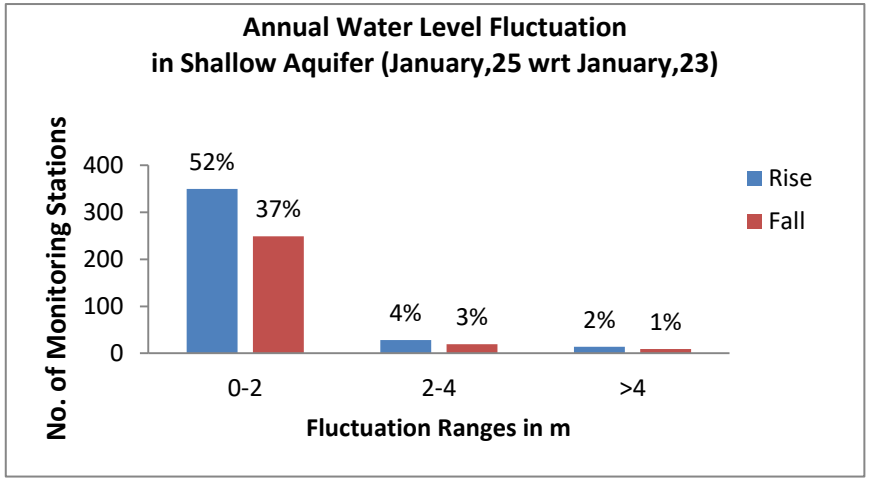

Figure-14: Percentage of wells showing rise and fall in WL in unconfined aquifer (January 2023 to January 2025)

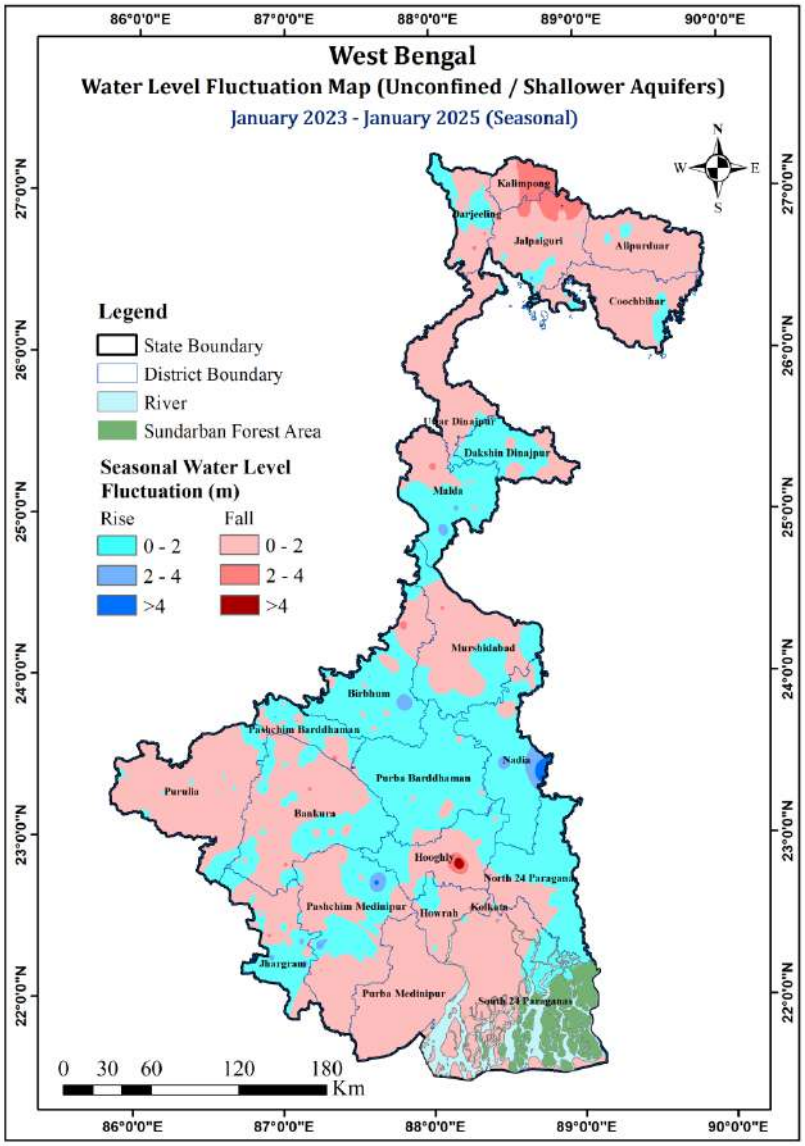

Figure-15: Annual water level fluctuation in unconfined aquifer (January 2023 to January 2025)

5.1.7 DECADAL FLUCTUATION IN WATER LEVEL

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

In shallow aquifers out of 704 wells analyzed, 467 wells showing rise and 237 wells shows falling water level (figure-10 & 11).

For shallow aquifers, in rising category 60% of wells are within the fluctuation of 0-2m, 5% are in 2-4m and 2% of wells are in the range of more than 4m. In the falling category 30% of wells are showing falling trend in 0-2m category, 3% of wells are in the range of 2-4m and 1% of wells are showing >4m fluctuation of water level. From the water level fluctuation map it can be seen water level fluctuation is mainly in the range of 0-2 m and can be observed in most of the district of the State. 2-4 m fluctuation is observed in isolated pockets.

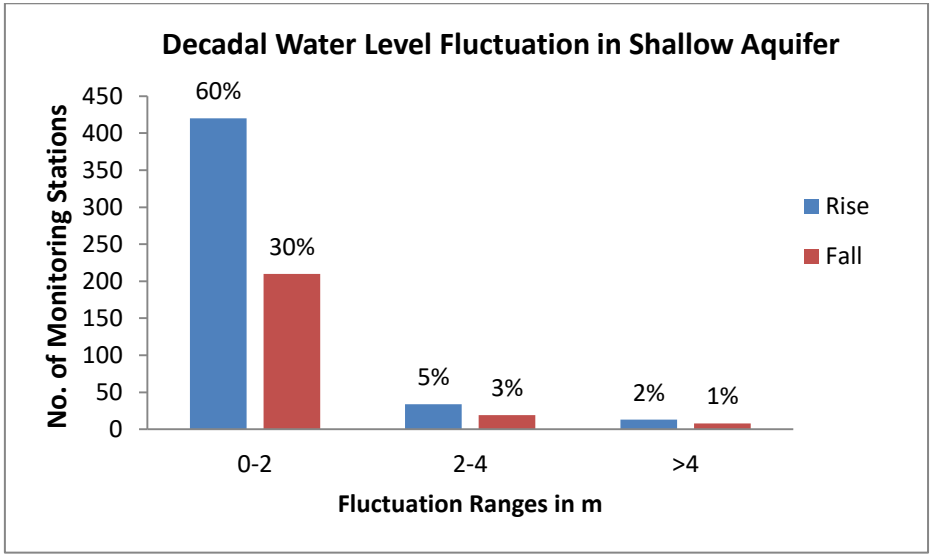

Figure-16: Percentage of wells showing rise and fall in WL in unconfined aquifer (Decadal Mean January (2015-2024) to January 2025)

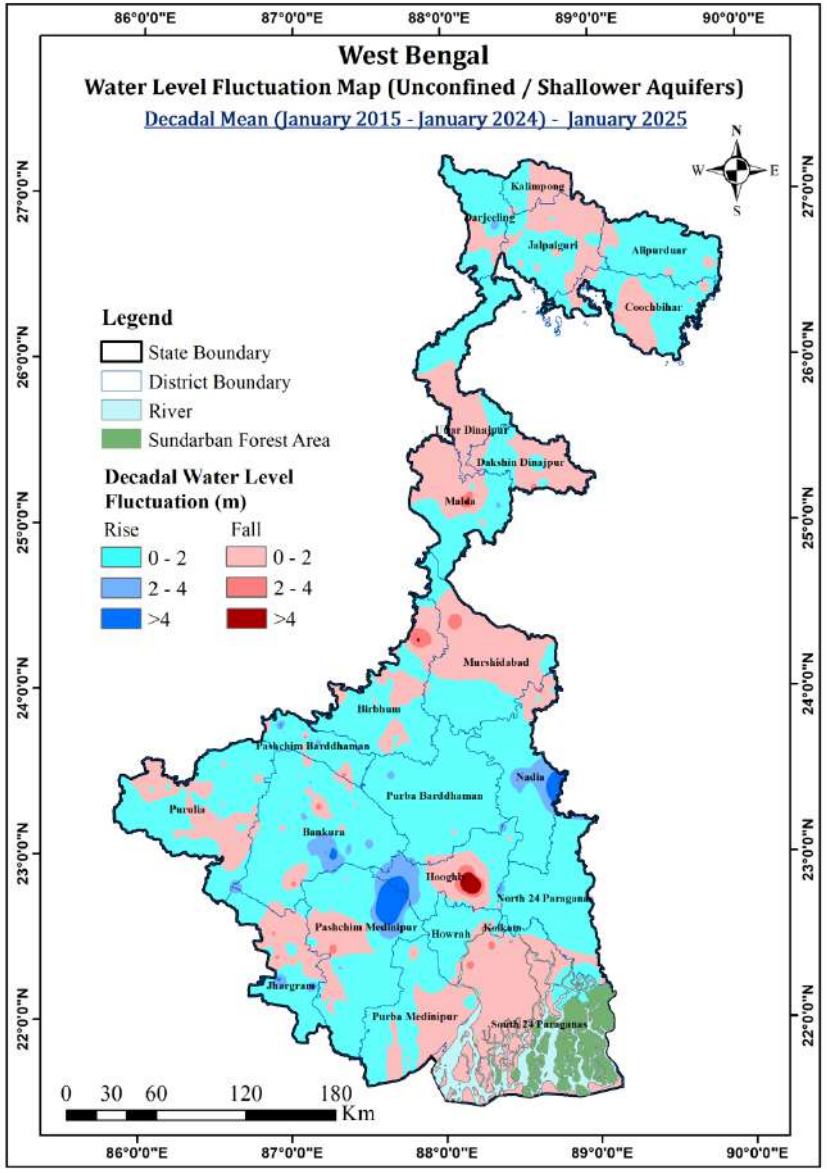

Figure-17: Decadal water level fluctuation in unconfined Aquifer (Decadal Mean January (2015-2024) to January 2025)

5.2 DEEPER AQUIFER (CONFINED/ SEMI-CONFINED)

5.2.1 DEPTH TO PIEZOMETRIC LEVEL

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

The ground water level data January 2025 in deeper aquifers indicate that out of the total 990 wells analysed, only 1% of wells are showing water level less than 2 m bgl, 23% wells are showing water level in the depth range of 2-5 m bgl, 31% number of wells are showing water level in the depth range of 5-10 m bgl, 31% wells are showing water level in the depth range of 10-20 m bgl and 14% wells showing water level in the depth range beyond 20m bgl.

The maximum depth to water level of 35.59 m bgl is observed at Charkolgram in Nanoor block of Birbhum district and lowest water level 0.85 m bgl was found at Khas Balanda in Haroa block of N 24 Parganas District (Figure-12 & 13).

From the depth to water level map of January 2025 for deeper aquifers, the water level within 0-2 m bgl occurs as isolated patches. The water level in the range of 2-5 m bgl is in northern district covering Darjeeling, Alipurduar, Jalpaigudi and Kochbehar districts and also in parts of Purulia, Bankura, Nadia, Murshidabad, Malda, N 24 Parganas and Dinajpur districts. Water level between 5-10 m bgl is found mostly in eastern and western part of the State in parts of Paschim Medinipur, Jhargram, Bankura, Purulia, Paschim Bardhaman, Nadia, Murshidabad N 24 Parganas and Darjeeling, Kalimpong, Jalpaigudi district in the north. In the central part of the state water level is mostly deep between 10 to 20 m bgl covering the districts of Purba Bardhaman, Hooghly, Howrah, Bhirbhum, Murshidabad, Paschim & Purba Medinipur Malda, Dakshin Dinajpur Darjeeling and Kalimpong districts. Deepest water level >20 m bgl covered the central part of the State.

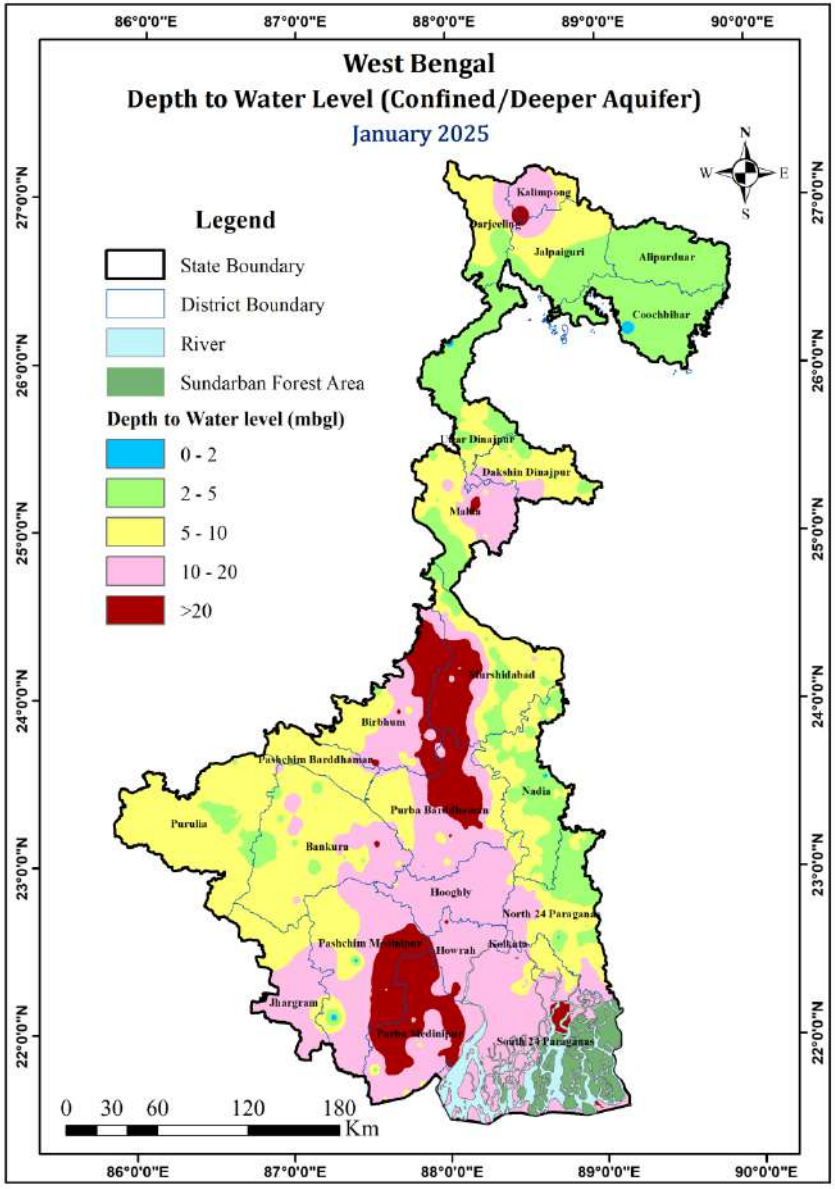

Figure-18: Depth to piezometric Level in deeper aquifer in January 2025

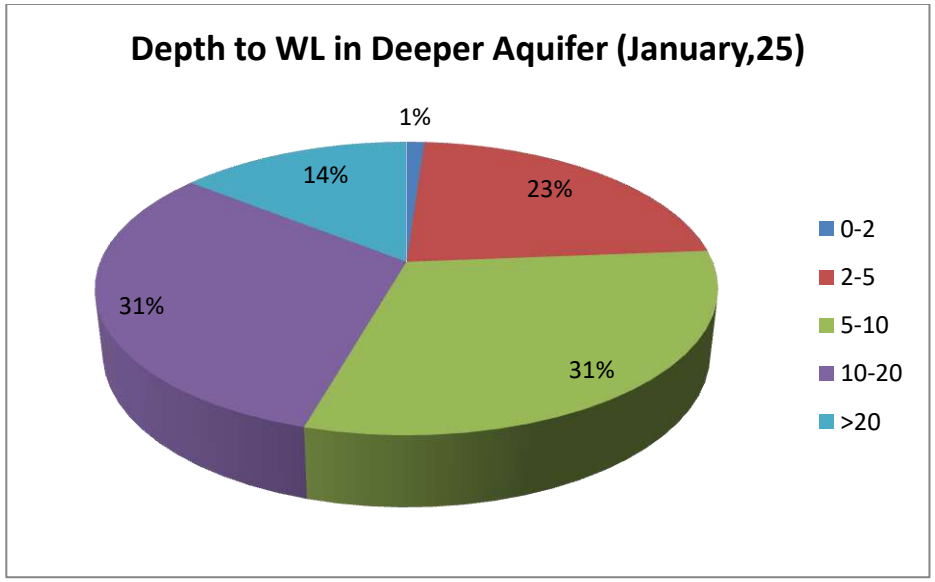

Figure-19: Percentage of wells in different piezometric levels (January 2025)

5.2.2 SEASONAL FLUCTUATION IN PIEZOMETRIC LEVEL

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

In deeper aquifers out of 848 wells analyzed, 661 wells showing rise and 187 wells shows falling water level (figure-14 &15).

In deeper aquifers in rising category 43% of wells are showing 0-2m fluctuation, 22% showing 2-4m fluctuation and 13% of wells are in the range of more than 4m. In the falling category 12% of wells are showing falling trend in 0-2m category, 5% of wells are in the range of 2-4m and 5% of wells are showing >4m fluctuation of water level.

The rise in water level is observed in all the districts of the State. Fall is observed as isolated patches.

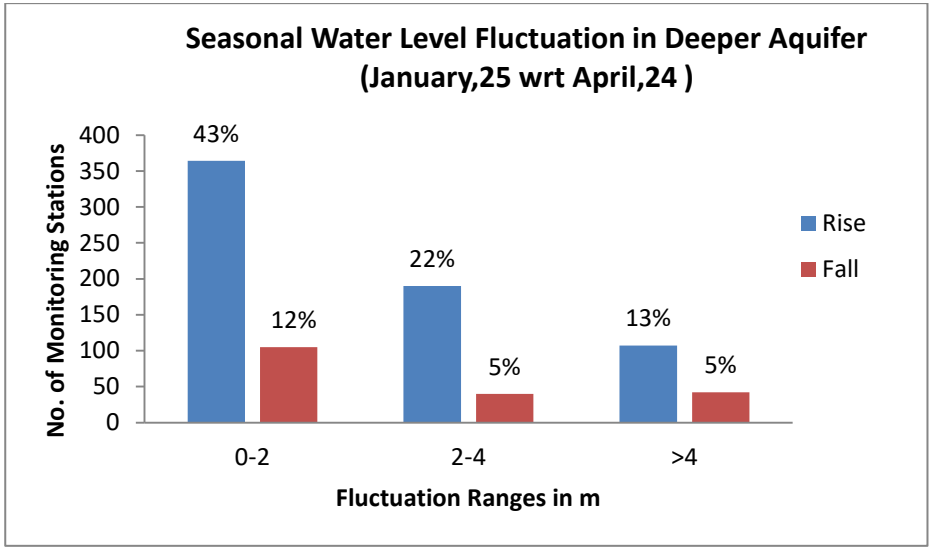

Figure-20: Percentage of wells showing rise and fall in WL in Confined aquifer/ semi-confined aquifer (April 2024 to January 2025)

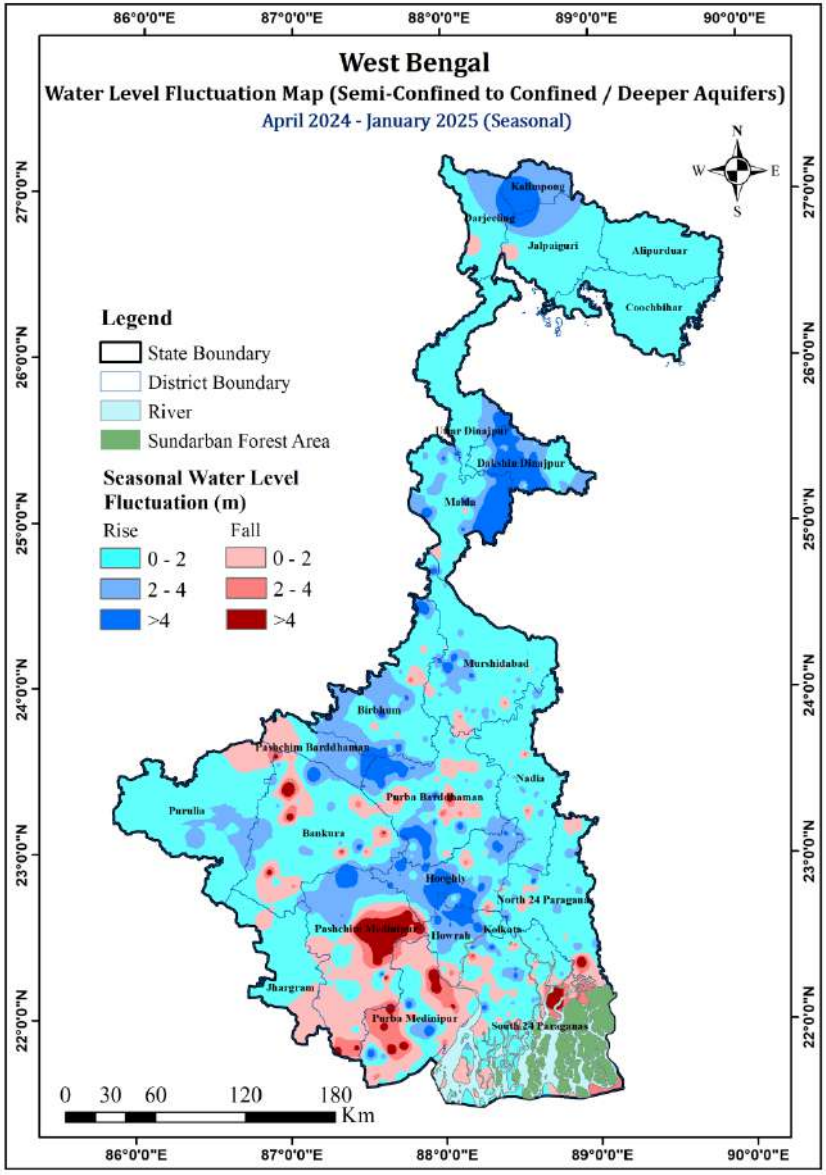

Figure-21: Seasonal water level fluctuation in in Confined aquifer/ semi-confined aquifer(April 2024 to January 2025)

5.2.3 SEASONAL FLUCTUATION IN PIEZOMETRIC LEVEL

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

In deeper aquifers out of 744 wells analyzed, 305 wells showing rise and 439 wells shows falling water level (figure-22 &23).

In deeper aquifers in rising category 24% of wells are showing 0-2m fluctuation, 8% showing 2-4m fluctuation and 8% of wells are in the range of more than 4m. In the falling category 31% of wells are showing falling trend in 0-2m category, 15% of wells are in the range of 2-4m and 13% of wells are showing >4m fluctuation of water level.

The fall in water level is observed in all the districts of the State. Rise is observed as isolated patches.

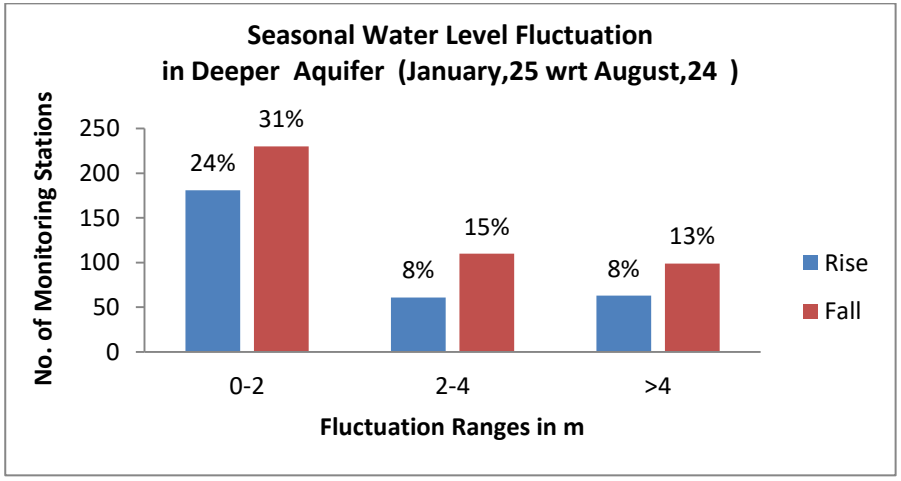

Figure-22: Percentage of wells showing rise and fall in WL in Confined aquifer/ Semi-confined aquifer (August 2024 to January 2025)

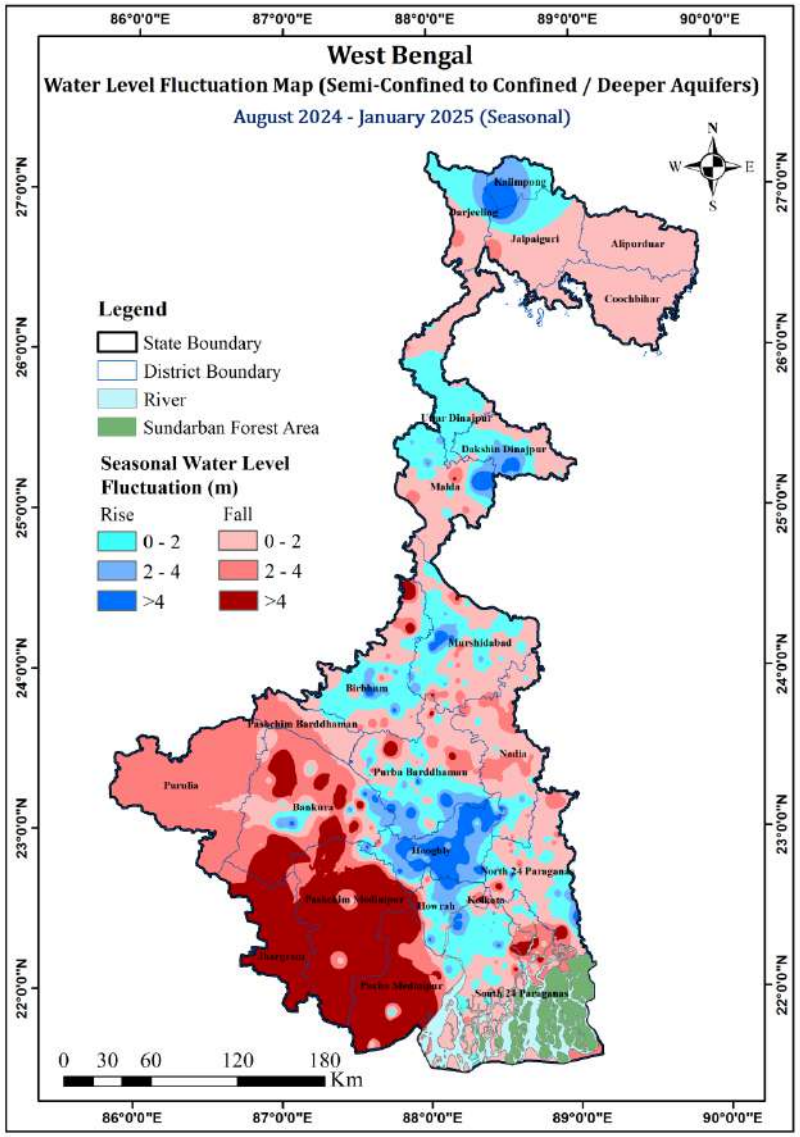

Figure-23: Seasonal water level fluctuation in in Confined aquifer/ Semi-confined aquifer(August 2024 to January 2025)

5.2.4 SEASONAL FLUCTUATION IN PIEZOMETRIC LEVEL

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

In deeper aquifers out of 881 wells analyzed, 225 wells showing rise and 656 wells shows falling water level (figure-24 & 25).

In deeper aquifers in rising category 20% of wells are showing 0-2 m fluctuation, 3% showing 2-4m fluctuation and 3% of wells are in the range of more than 4m. In the falling category 48% of wells are showing falling trend in 0-2m category, 14% of wells are in the range of 2-4m and 12% of wells are showing >4m fluctuation of water level.

The fall in water level is observed in all the districts of the State. Rise is observed as isolated patches.

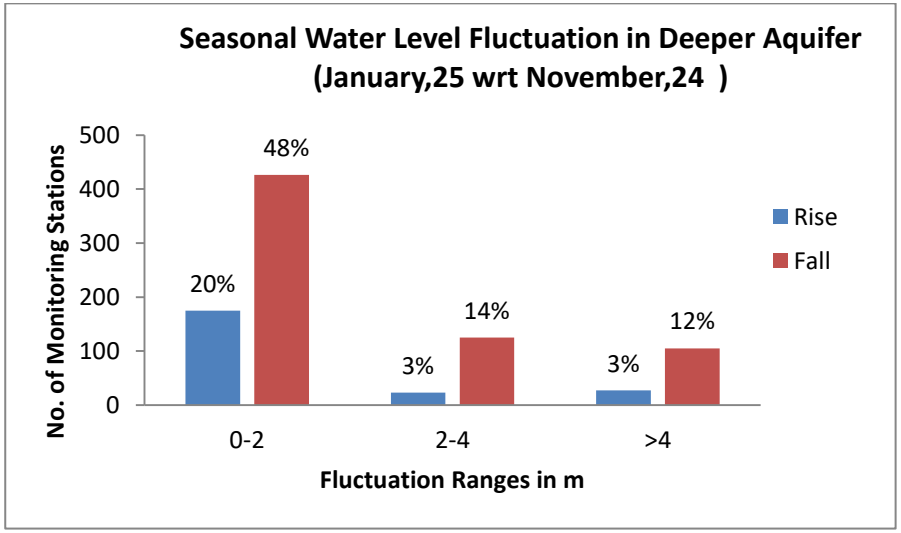

Figure-24: Percentage of wells showing rise and fall in WL in Confined aquifer/ Semi-confined aquifer (November 2024 to January 2025)

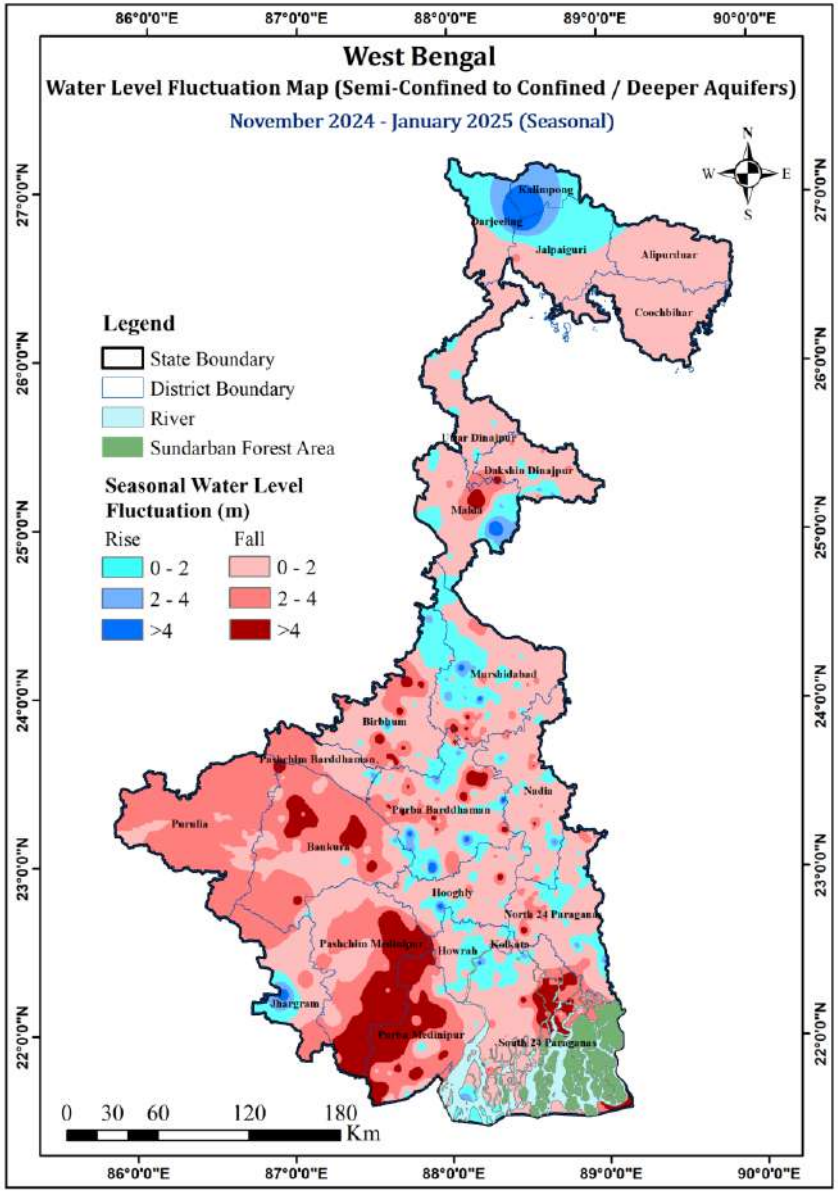

Figure-25: Seasonal water level fluctuation in in Confined aquifer/ Semi-confined aquifer(November 2024 to January 2025)

5.2.5 ANNUAL FLUCTUATION IN PIEZOMETRIC LEVEL

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

In deeper aquifers out of 853 wells analyzed, 435 wells showing rise and 418 wells shows falling water level (figure-26 &27).

In deeper aquifers in rising category 38% of wells are within the fluctuation of 0-2m, 8% are in 2-4m and 5% of wells are in the range of more than 4m.

In the falling category 34% of wells are showing falling trend in 0-2m category, 8% of wells are in the range of 2-4m and 6% of wells are showing >4m fluctuation of water level.

Fluctuation in the range of 0-2 m in water level is seen in almost all the districts of the State. Fluctuation >2 m is observed as isolated patches.

Rise in water level is mostly observed in eastern districts while fall in water level is observed mostly in western districts of the State.

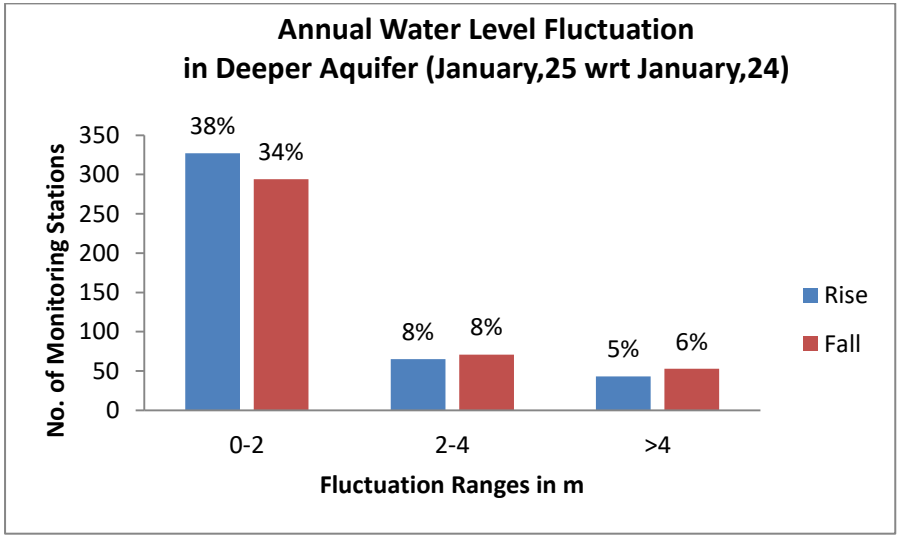

Figure-26: Percentage of wells showing rise and fall in piezometric level in confined/semi-confined aquifer (January 2024 to January 2025)

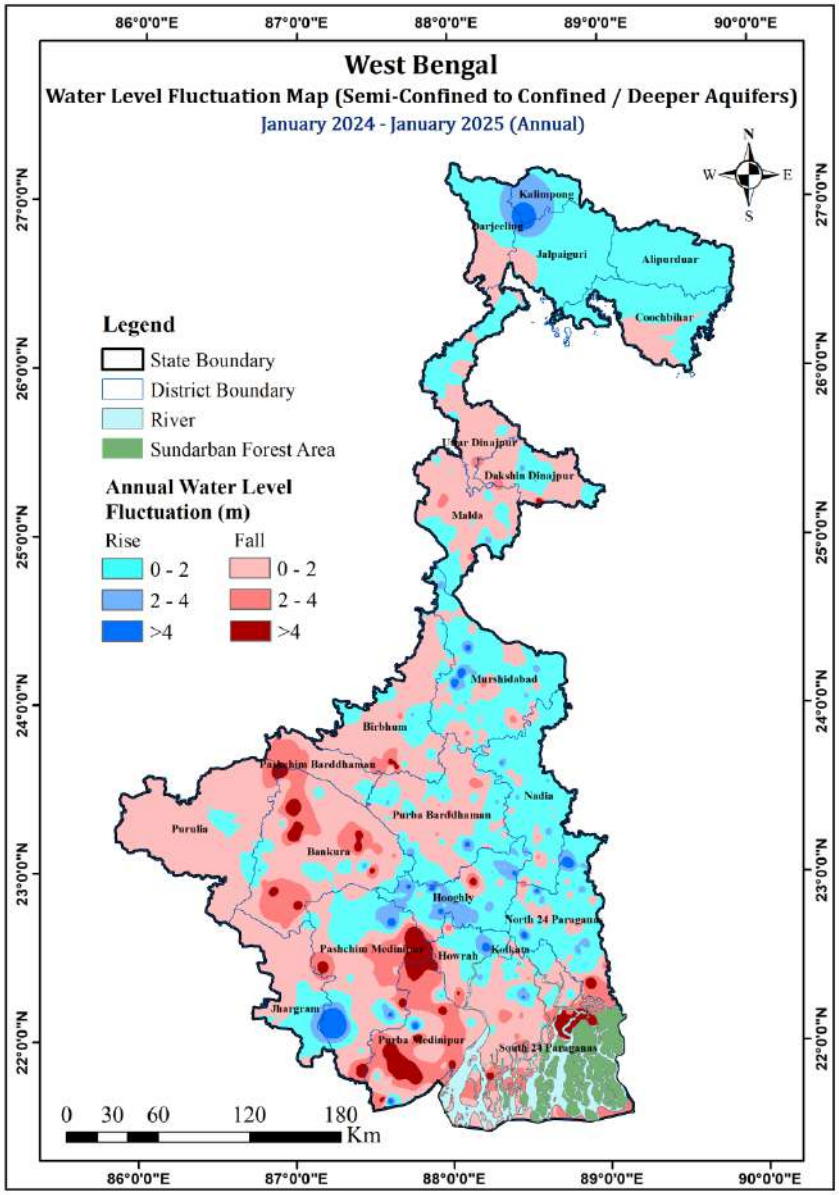

Figure-27: Annual water level fluctuation in Confined aquifer (January 2024 to January 2025)

5.2.6 ANNUAL FLUCTUATION IN PIEZOMETRIC LEVEL

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

In deeper aquifers out of 658 wells analyzed, 395 wells showing rise and 263 wells shows falling water level (figure-28 & 29).

In deeper aquifers in rising category 47% of wells are within the fluctuation of 0-2m, 7% are in 2-4m and 6% of wells are in the range of more than 4m.

In the falling category 28% of wells are showing falling trend in 0-2m category, 7% of wells are in the range of 2-4m and 5% of wells are showing >4m fluctuation of water level.

Fluctuation in the range of 0-2 m in water level is seen in almost all the districts of the State. Fluctuation >2 m is observed as isolated patches.

Rise in water level is mostly observed in eastern districts while fall in water level is observed mostly in western districts of the State.

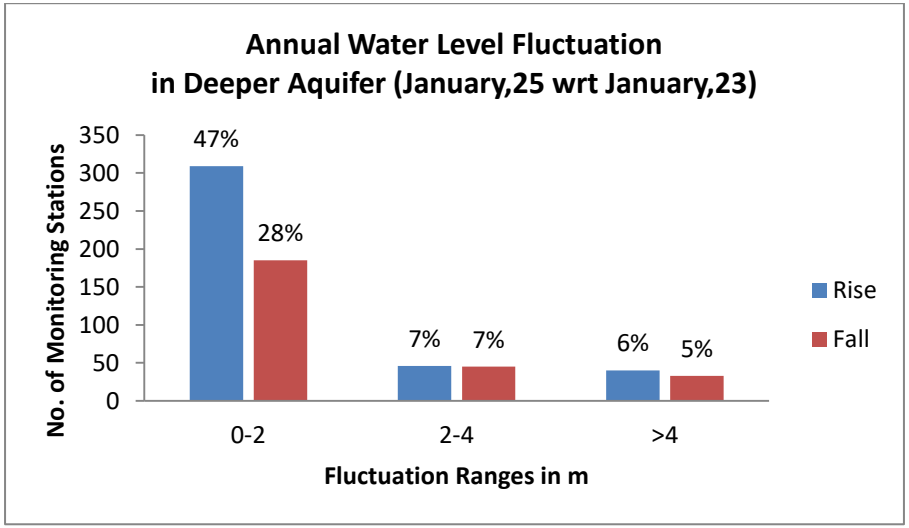

Figure-28: Percentage of wells showing rise and fall in piezometric level in confined/semi-confined aquifer (January 2023 to January 2025)

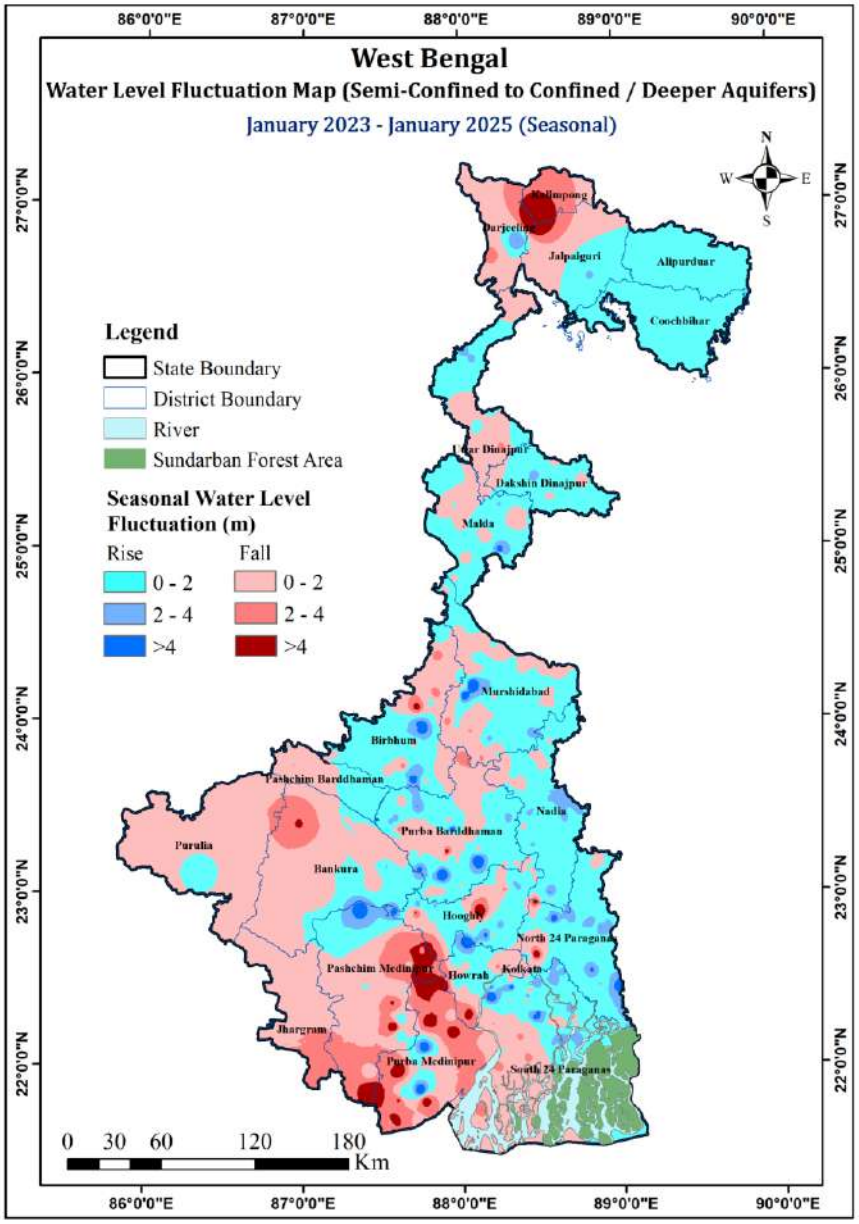

Figure-29: Annual water level fluctuation in Confined aquifer (January 2023 to January 2025)

5.2.7 DECADAL FLUCTUATION IN PIEZOMETRIC LEVEL

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

In deeper aquifers out of 835 wells analyzed, 343 wells showing rise and 492 wells shows falling water level (figure-30 &31).

For deeper aquifers, in rising category 32% of wells are within the fluctuation of 0-2m, 5% are in 2-4m and 4% of wells are in the range of more than 4m. In the falling category 31% of wells are showing falling trend in 0-2m category, 14% of wells are in the range of 2-4m and 14% of wells are showing >4m fluctuation of water level. From the water level fluctuation map it can be seen water level fluctuation is showing declining trend and can be observed in most of the district of the State. Rise in water level is observed as isolated pockets.

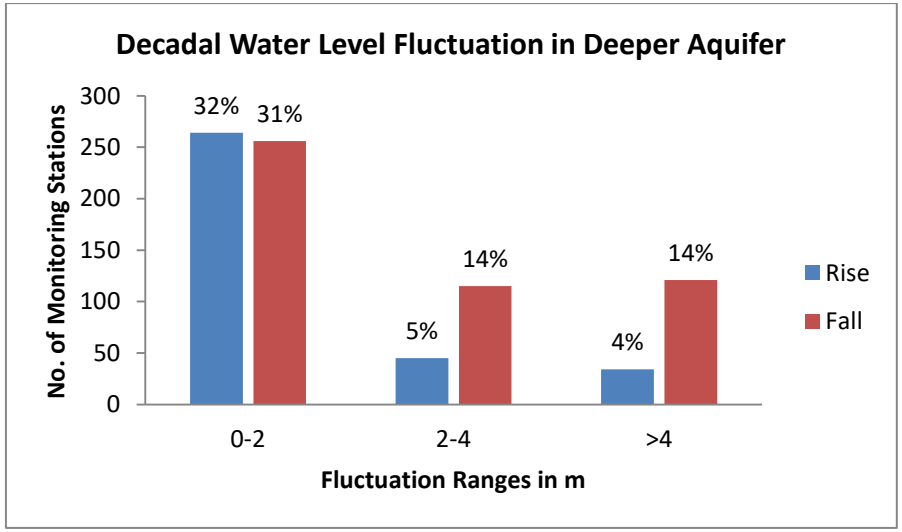

Figure-30: Percentage of wells showing rise and fall in piezometric level in confined/semi-confined Aquifer (Decadal Mean January (2015-2024) to January 2025)

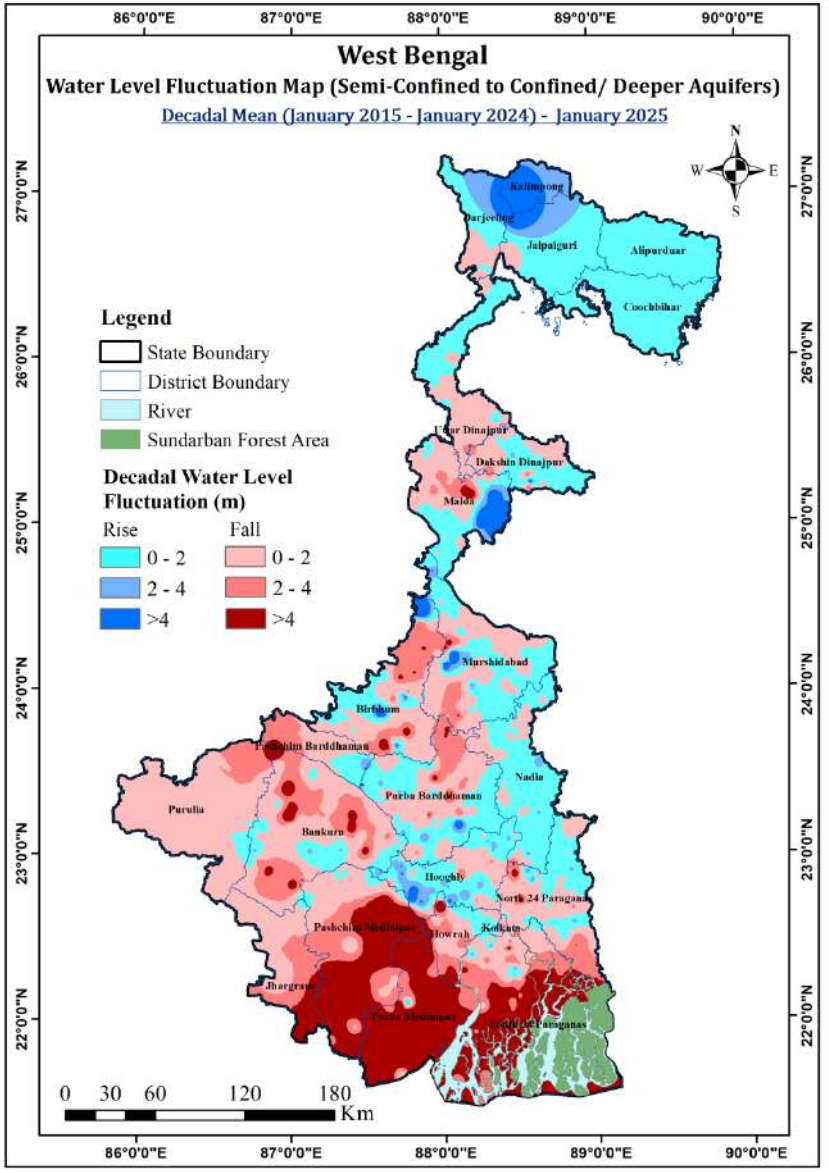

Figure-31: Decadal water level fluctuation in Confined Aquifer (Decadal Mean January (2015-2024) to January 2025)

6.0 SUMMARY

As a component of the National Ground Water Monitoring Programme, CGWB, ER, Kolkata conducts ground water monitoring on quarterly basis in West Bengal: during April (pre-monsoon), August, November (post-monsoon) and January. As on March 2024, the Eastern Region, Kolkata has 1732 GWMS in the State of West Bengal.

During January 2025, around 92% of the West Bengal's monitoring wells exhibit depth to water level within 20 meters below ground level. Deeper water levels of more than 20 m cover only 8% monitoring wells of the State.

The ground water level in West Bengal during January 2025 has been significantly influenced by rainfall. This period witnessed a deficit rainfall. January 2025 is the driest month of the year for the region. Central region of West Bengal experiences significant decline as this region is considered as the rice belt of West Bengal with major irrigation draft.

Seasonal water level fluctuation (April 2024 to January 2025) shows that 82% rise and 18% fall in seasonal water level fluctuation which when compared to the previous year Seasonal fluctuation (April 2023 to January 2024) having 79% rise and 21% fall in water level showing not much difference when compared to the previous year.

Annual water level fluctuation January 2024 to January 2025 shows that 50% rise and 50% fall in annual water level fluctuation which when compared to the previous year Annual fluctuation (January 2023 to January 2024) having 61% rise and 39% fall in water level. The decrease in the percentage of areas with rising water levels (from 61% to 50%) indicates a reduction in the rate of groundwater recharge. This could be due to variations in winter rainfall patterns, increased groundwater extraction.

Similarly, Decadal fluctuation in water level of mean (2015-2024) with respect to January-2025 shows 53% of the area experienced rise and 47% fall in water level, which when compared to the previous year Decadal mean (2014-2023) to January -2025 having 47% rise and 53% fall in water level reveals a positive trend towards replenishment of groundwater, as more areas are showing a rise in water levels compared to the previous period (2014-2023).

7.0 RECOMMENDATIONS

The observed decadal fluctuations in groundwater levels in West Bengal indicate a notable improvement in aquifer system compared to the previous period (2014-2023) wrt January 2024. This shift suggests a significant enhancement in groundwater recharge during (2015-2024) with respect to January-2025.

Based on the observed trends in water level fluctuations, here are some recommendations to maintain or enhance the positive impact on aquifer recharge and water management:

1. **Rainwater Harvesting:** Implementing Roof-top rainwater harvesting systems especially in areas that have seen a fall in water levels
2. **Strengthen Watershed Management:** Development of integrated watershed management plans to protect natural recharge zones and prevent soil erosion.
3. **Sustainable Water Usage:** Encouragement for the adoption of water-efficient agricultural practices, including drip irrigation, rain-fed farming, and drought-resistant crop varieties in areas with declining trend.
4. **Alternate Water Sources:** Promote the use of alternative water sources such as treated wastewater, desalinated water, and surface water storage systems in order to reduce reliance on groundwater which will allow the aquifers to naturally replenish, especially in areas where water levels are declining.

By following these recommendations, it is possible to sustain and improve the aquifer recharge process, ultimately ensuring better water availability for the future use.

CONSERVE WATER FOR FUTURE

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Ganga Rejuvenation Ministry of Jal Shakti, Govt. of India
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