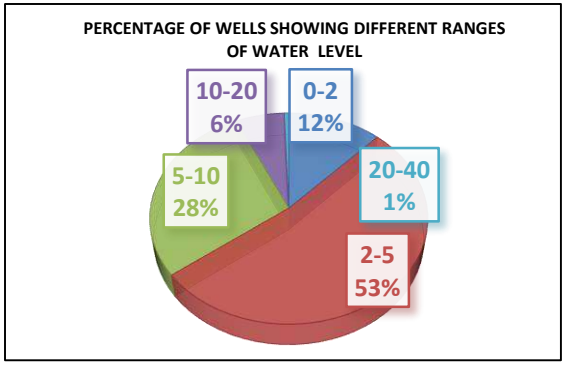

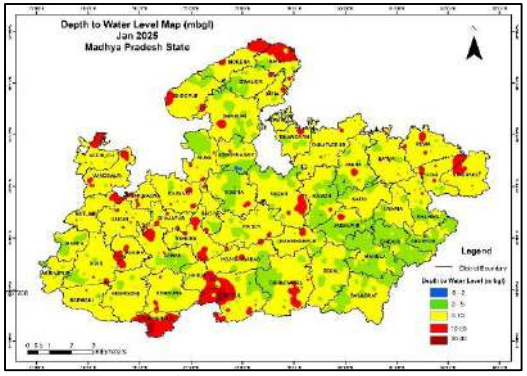

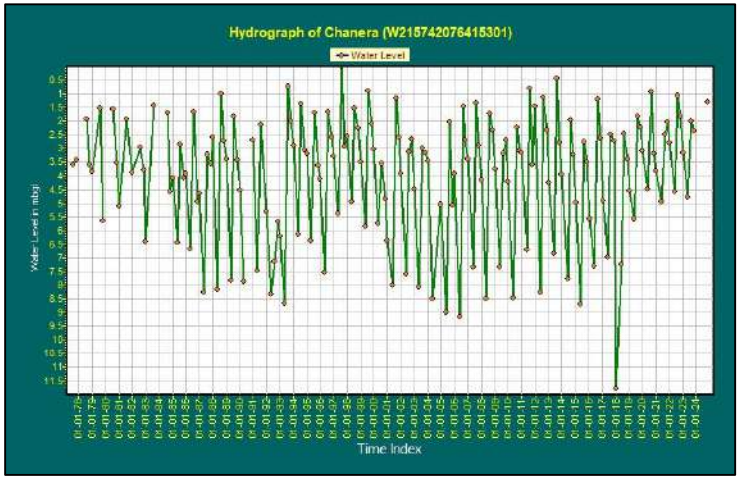

GROUND WATER LEVEL BULLETIN
JANUARY 2025
MADHYA PRADESH

ABSTRACT

Ground Water Level Scenario during January 2025 highlighting the findings, status of ground water level in different aquifers and its seasonal, annual and decadal comparison.

CGWB, NORTH CENTRAL REGION, BHOPAL, MADHYA PRADESH

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, evapo-transpiration etc., whereas anthropogenic influences include pumpage 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, March/April/May, August and November. The regime monitoring started in the year 1969 by Central Ground Water Board. A network of **1854** observation wells called **National Hydrograph Network Stations (NHNS)**, located all over Madhya Pradesh is being monitored.

2.0 STUDY AREA

Madhya Pradesh is located in the central part of India and is a land-locked state, bordered on the west by Gujarat, on the northwest by Rajasthan, on the northeast by Uttar Pradesh, on the east by Chhattisgarh and on the south by Maharashtra State. It has a geographical area of 3,08,252 km^2 and is situated between north latitudes 21˚ 04' and 26˚ 54' and east longitudes 74° 00' and 82° 50'. There are 55 districts, 313 community development blocks and 4 urban areas in Madhya Pradesh.

The population of state as per census 2011 is 7, 25, 97, 565, population density of 236 persons per km^2 area. Out of total population, 75% lives in the villages and their main occupation are agriculture.The important urban areas in the state are Bhopal, Indore, Jabalpur, and Gwalior. Dhupgarh in Pachmarhi is the highest point in the state. MadhyaPradesh comprises several linguistically and culturally distinct regions, of which the major regions are

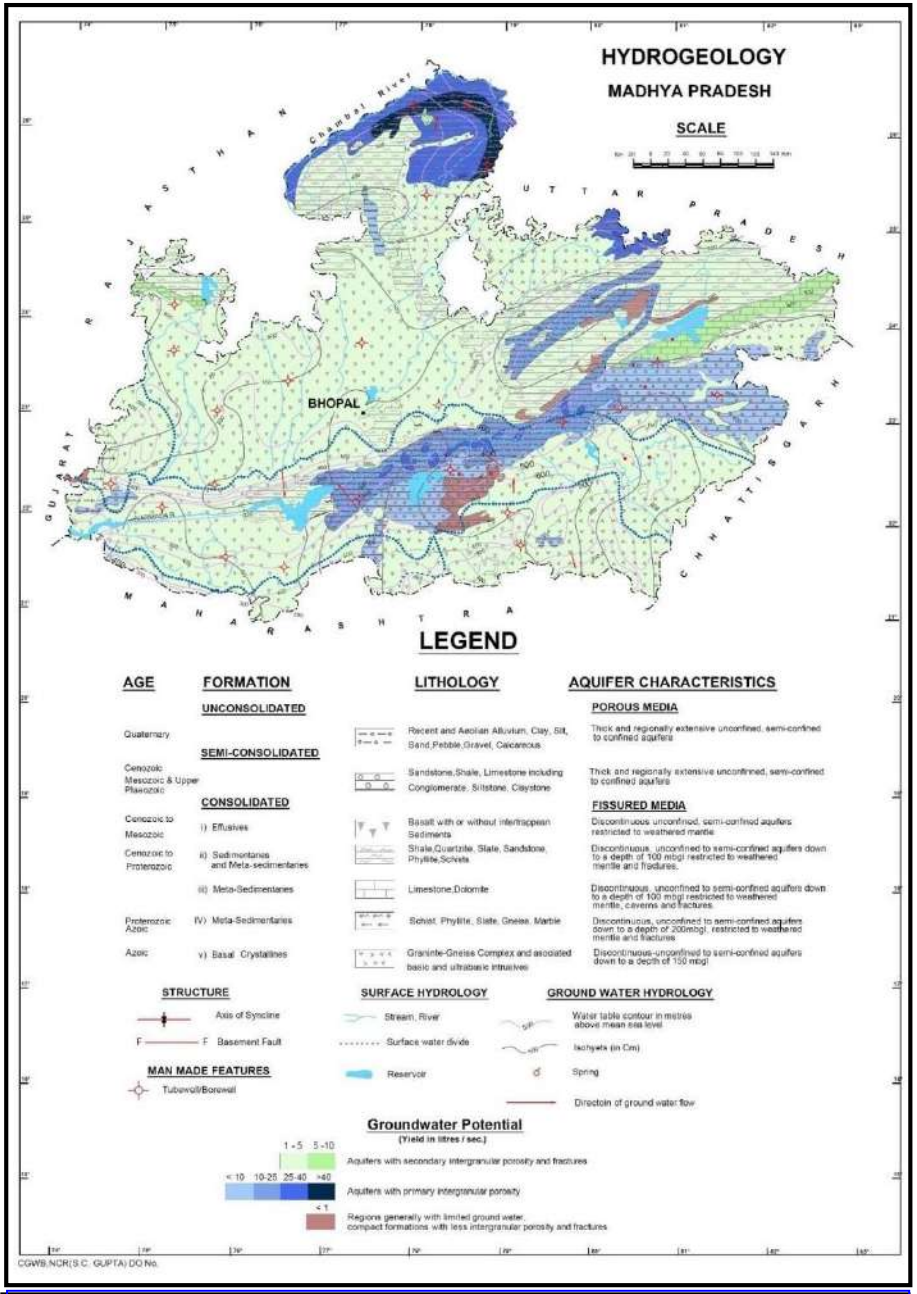

Figure-1: Map showing major aquifers and Hydrogeology of Madhya Pradesh

Malwa Plateau Region which is located in the northwest of the state and north of the Vindhya Range, with its distinct language and culture. Indore is the major city of the region, while Ujjain is a town of historical importance. Bhopal, the capital city lies on the extension of Malwa Region and on the edge of Bundelkhand Region. **Nimar Region** is located in the western portion of the Narmada River valley, lying south of the Vindhyas in the southwest portion of the state. Khandwa, Khargone, Burhanpur and Barwani are the major district of the Nimar Region. **Bundelkhand** is a region of rolling hills and fertile valleys in the northern part of the state, which slopes down toward the Indo-Gangetic plain to the north. This region encompasses Gwalior, Sagar, Damoh, Panna, Chhatarpur and Tikamgarh Districts. **Chambal region** is located in the north-western parts of the state. This region is comprised of Sheopur, Morena and Bhind Districts. **Baghelkhand** is a hilly region in the northeast parts of the state, which includes the eastern end of the Vindhya Range. Satna, Rewa and Sidhi Districts lie in this region. **Mahakoshal (Mahakaushal)** is the southeastern portion of the state, which includes the eastern end of the Narmada River valley and the Eastern Satpuras. Jabalpur is the most important city in the region. Katni and Jabalpur Districts lie in this region and **Central Vindhyan and Satpura Region** is occupying most parts of the central Narmada River valley. Hoshangabad, Harda and Narsimhapur Districts lies in this region.

3.0 GROUND WATER LEVEL MONITORING

The North Central Region office of CGWB, based at Bhopal, monitors the ground water wells spread all over the state. As on January 2025, **1854** monitoring wells are located in 55 districts of Madhya Pradesh including dug wells **(1378),** Observatory Wells & piezometers **(476).** Water samples are collected from these wells during November to identify groundwater quality issues ineach area. District-wise distribution of Ground Water Monitoring Wells in Madhya Pradesh during January 2025 is given in table 1.

monitoring wells are shown in **Figure 2**. All monitoring wells are monitored four times in a given hydrological year in the months of May (pre monsoon) (20th to 30th day), August (20th to 30th day), November (post monsoon) (1st to 10th day) and January (1st to 10th day). The long-term data generated during these monitoring seasons are important for computation, comparison and analysis of ground water utilization and its availability. The district-wise breakup is given in Table 1.

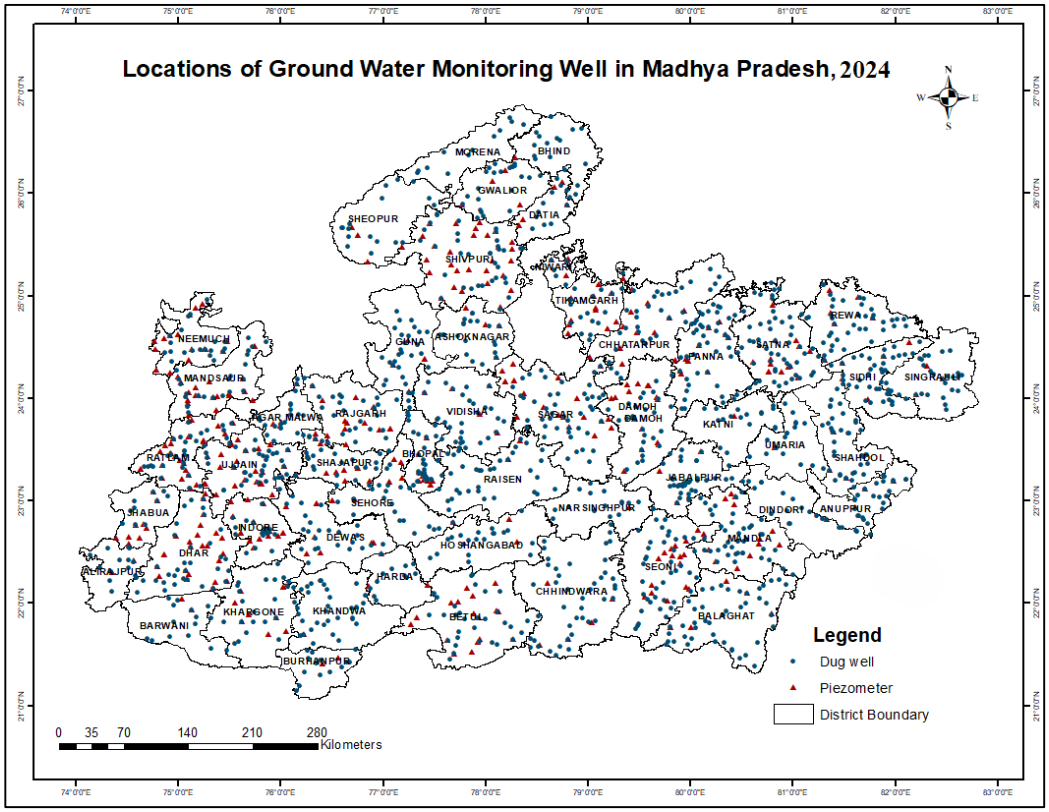

Figure- 2: Map showing locations of monitoring wells (NHNS) in Madhya Pradesh

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

District	Number of GW Monitoring stations (Jan 2025)		
	DW	Pz/OW	Total
Agar Malwa	20	3	23
Alirajpur	14	2	16
Anuppur	24	4	28
Ashok Nagar	21	5	26
Balaghat	43	5	48
Barwani	13	2	15
Betul	34	18	52
Bhind	17	1	18
Bhopal	30	13	43
Burhanpur	13	2	15
Chhatarpur	33	17	50
Chhindwara	32	4	36
Damoh	26	15	41
Datia	11	5	16
Dewas	26	10	36
Dhar	32	29	61
Dindori	19	1	20
Guna	30	4	34
Gwalior	25	4	29
Harda	13	2	15
Indore	23	19	42
Jabalpur	36	5	41
Jhabua	10	9	19
Katni	16	1	17
Khandwa	34	1	35
Khargone	23	9	32
Maihar	19	7	26
Mandla	39	13	52
Mandsaur	21	22	43
Mauganj	13	1	14

District	Number of GW Monitoring stations (Jan 2025)		
	DW	Pz/OW	Total
Morena	9		9
Narmadapuram	18		18
Narsimhapur	14	1	15
Neemuch	20	14	34
Niwari	5	5	10
Pandhurna	10	3	13
Panna	44	13	57
Raisen	34	3	37
Rajgarh	27	16	43
Ratlam	29	28	57
Rewa	28	5	33
Sagar	50	21	71
Satna	34	8	42
Sehore	25	8	33
Seoni	41	12	53
Shahdol	37	3	40
Shajapur	23	10	33
Sheopur	17	3	20
Shivpuri	36	32	68
Sidhi	38	6	44
Singrauli	30	3	33
Tikamgarh	16	14	30
Ujjain	35	29	64
Umaria	16	1	17
Vidisha	32	5	37
Total	**1378**	**476**	**1854**

4.0 RAIN FALL

The rainfall data is collected from the India Meteorological Department on a daily basis and on a monthly basis too. Rainfall data for the Years 2024 and 2023, and the percentage departure of rainfall from normal given in table 2. On the basis of the data of table 2, a rainfall map is prepared and given in the figure 3. Madhya Pradesh state received normal rainfall in 2024 as compared to 2023, 28 % more rainfall is seen in 2024 compared to rainfall of 2023. In the year 2024 highest rainfall (1586.93 mm) observed in Alirajpur District and lowest rainfall (815.6 mm) in Rewa District. Highest percentage rainfall departure from Year 2022 is observed in Sheopur District (90%) and lowest in Rewa District (-25%).

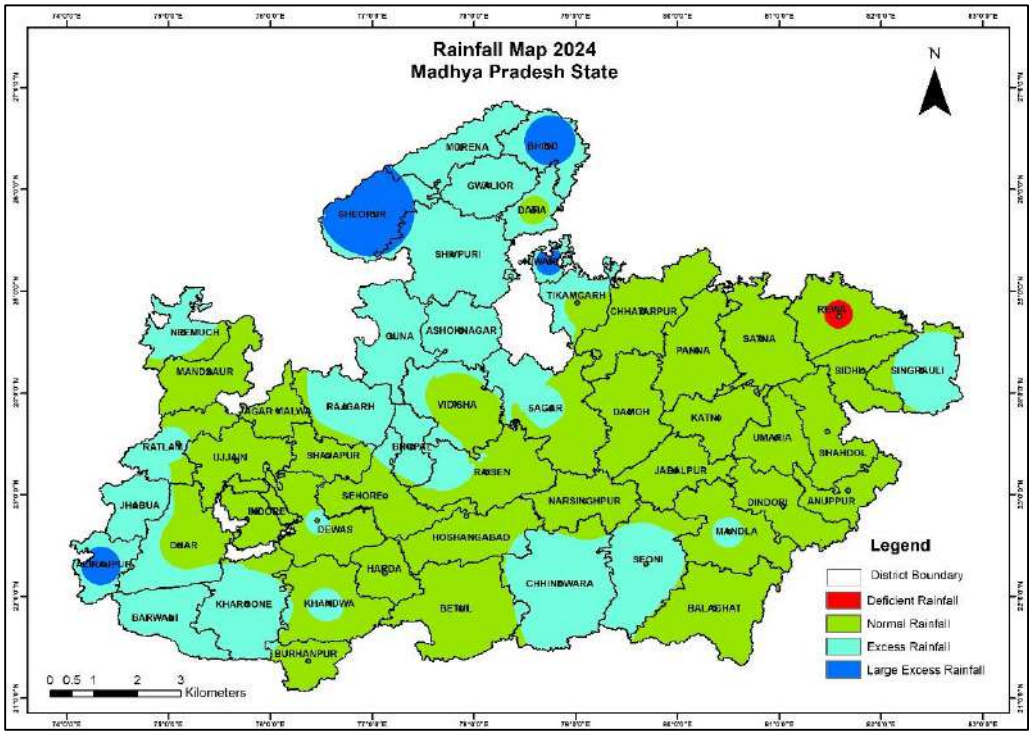

Figure- 3: Rainfall Map of Madhya Pradesh, 2024

Table-2: District wise variability of rainfall in Madhya Pradesh (2024)

Sr No	Name of the District	Rainfall 2023 (mm)	Rainfall 2024 (mm)	Normal Rainfall	Percentage Departure	Status 2024
1	AGAR-MALWA	889.8	1103.8	997.5	15%	Normal
2	ALIRAJPUR	987.9	1586.93	1239.4	71%	Large Excess
3	ANUPPUR	1155.8	1348.99	941.4	20%	Excess
4	ASHOKNAGAR	587	1138.75	1000.8	23%	Excess
5	BALAGHAT	1207.8	1335.68	1088.9	-4%	Normal
6	BARWANI	721.1	939.21	1183.2	30%	Excess
7	BETUL	1095.6	1217.82	1130.1	6%	Normal
8	BHIND	785.5	1178.89	941.5	72%	Large Excess
9	BHOPAL	1084.5	1457.9	1197.1	38%	Excess
10	BURHANPUR	679.7	966.233	1051.8	16%	Normal
11	CHHATARPUR	770.4	1103.47	775.6	6%	Normal
12	CHHINDWARA	1183.8	1545.04	1086.9	37%	Excess
13	DAMOH	827.3	1300.8	986.7	9%	Normal
14	DATIA	1111.7	904.05	1068.5	9%	Normal
15	DEWAS	922.3	1180.11	949.3	22%	Excess
16	DHAR	693.5	994.664	1018.1	14%	Normal
17	DINDORI	1177.8	1426.06	992.8	9%	Normal
18	GUNA	604.7	1251.2	1047.8	22%	Excess
19	GWALIOR	1177.4	1224.88	876.1	51%	Excess
20	HARDA	1283.3	1188.28	911.8	2%	Normal
21	INDORE	1123.2	939.933	1075.6	1%	Normal
22	JABALPUR	1094	1264.49	899.3	2%	Normal
23	JHABUA	914	1195.03	871.8	27%	Excess
24	KATNI	1012.7	1149.03	856.2	12%	Normal
25	KHANDWA	918.3	1053.98	669.4	22%	Excess
26	KHARGONE	702.2	1022.32	1038.1	31%	Excess
27	MANDLA	1178.7	1641.32	956.2	23%	Excess
28	MANDSAUR	640.2	935.836	737.3	5%	Normal
29	MORENA	1131.7	995.217	745.4	40%	Excess

Sr No	Name of the District	Rainfall 2023 (mm)	Rainfall 2024 (mm)	Normal Rainfall	Percentage Departure	Status 2024
30	NARMADAPURAM	735.4	1420.9	904.7	5%	Normal
31	NARSINGHPUR	1314.4	1247.2	818.8	10%	Normal
32	NEEMUCH	1129.5	1066.97	940.9	28%	Excess
33	NIWARI	1021	1433.17	721.5	70%	Large Excess
34	PANNA	980.4	1190.01	1078.8	0%	Normal
35	RAISEN	768.8	1401.12	868.1	20%	Excess
36	RAJGARH	1243	1347.5	884.2	40%	Excess
37	RATLAM	1045.7	1202.41	789.1	22%	Excess
38	REWA	698.9	815.683	719.3	-25%	Deficient
39	SAGAR	1006.8	1410.98	825.3	21%	Excess
40	SATNA	600	909.791	644.3	-13%	Normal
41	SEHORE	738.6	1265.91	1259.1	10%	Normal
42	SEONI	1282.5	1602.55	776.9	38%	Excess
43	SHAHDOL	961	1187.93	1084.6	7%	Normal
44	SHAJAPUR	677.5	996.46	893	2%	Normal
45	SHEOPUR	750.9	1373.18	914.5	90%	Large Excess
46	SHIVPURI	965.3	1309.49	1070.3	52%	Excess
47	SIDHI	715.4	1377.47	905.9	19%	Normal
48	SINGRAULI	722.9	1304.6	666.4	34%	Excess
49	TIKAMGARH	908.7	1161.7	787.3	16%	Normal
50	UJJAIN	899.4	898.967	884.4	-6%	Normal
51	UMARIA	963.7	1133.67	1023.3	-8%	Normal
52	VIDISHA	945.5	1221.79	949.5	11%	Normal

5.0 GROUND WATER LEVEL SCENARIO (JANUARY 2025)

5.1 UNCONFINED AQUIFER

5.1.1 DEPTH TO WATER LEVEL

Depth to Water Level in Unconfined Aquifer (January 2025)

The depth to water level of 1378 wells is used for the analysis. Analysis of depth to water level data shows water levels vary between 0.6 m bgl in Panna District to 31.2 m bgl in Burhanpur District. Water level of less than 2 m bgl is recorded in 3.2% of wells, between 2 to 5 m bgl in 31.6% of wells, between 5 to 10 m bgl in 51% of wells,between 10 to 20 m bgl in 14.01% of wells, between 20-40 m bgl in 0.07% of wells.

Shallow water level of less than 2 m bgl as isolated patches in parts of Ashok Nagar, Panna, Dindori, Vidisha, Gwalior, Mandla and Betul etc. Water level of 2 to 5 m bgl is around 18-20% of the state mainly covering Mid to South-East District namely Mandla, Anuppur, Shahdol, Dindori, Damoh, Sagar, and Dewas. 51 % area of the state is covered by depth to water level of 5 to 10 m bgl is observed in Chattarpur, Hosangabad, Sehore, Dhar, Rewa, Morena, Rajgarh, Khargone, Dhar and Barwani districts etc. Water level of 10 to 20 m bgl is covered in 14% of the State area. Water levels of 20 to 40 m bgl have been observed mainly in Burhanpur, Betul, and Bhind district.

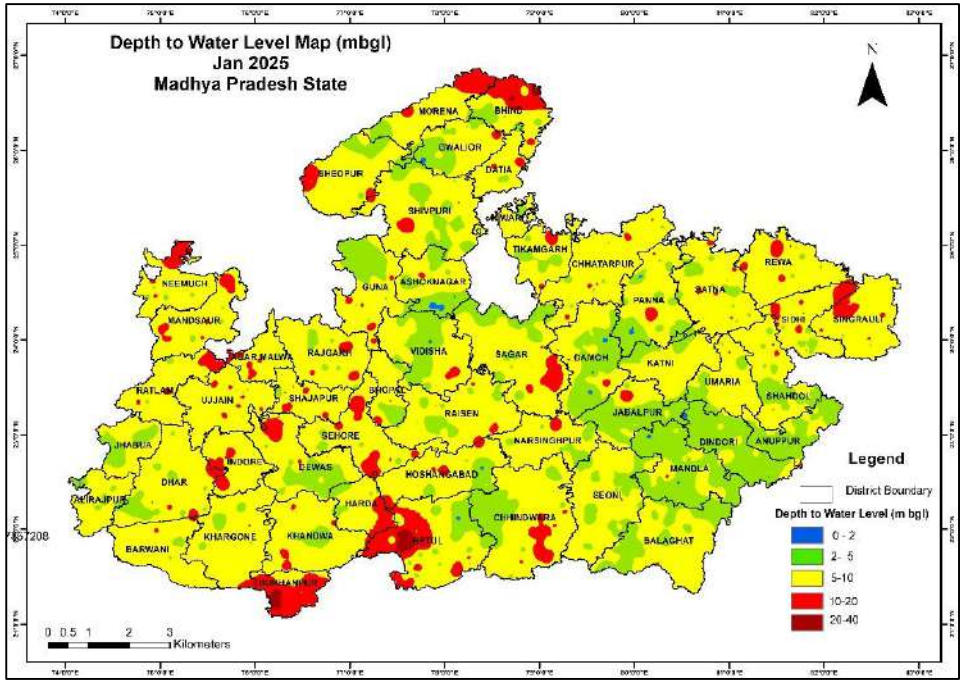

Figure-4: Depth to water level of unconfined aquifer during Jan 2025.

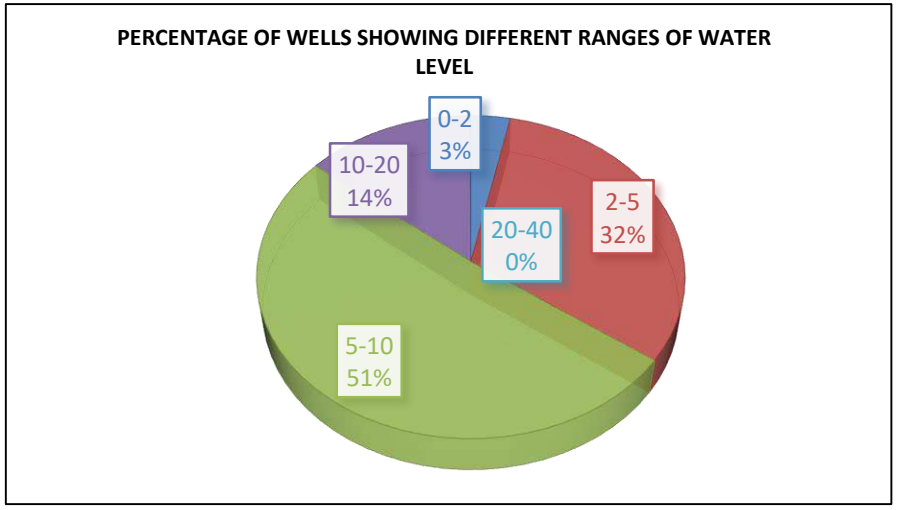

Figure-5: Pie Chart of Depth to water level of unconfined aquifer during Jan 2025.

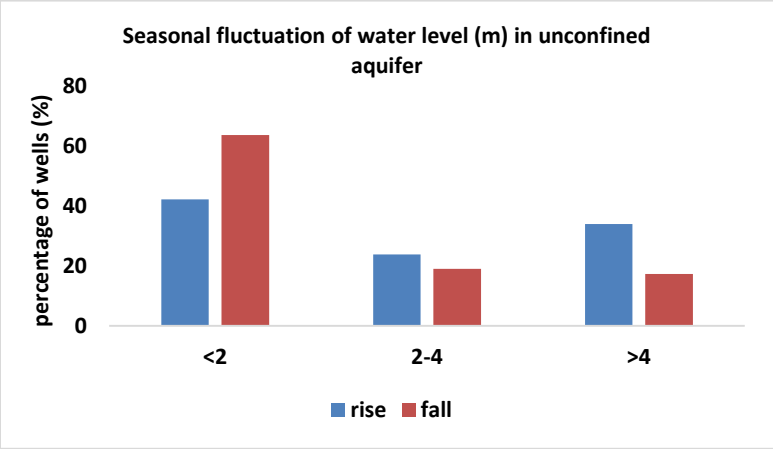

Figure-6: Percentage of wells showing rise and fall in WL in unconfined aquifer (May 2024 to Jan 2025)

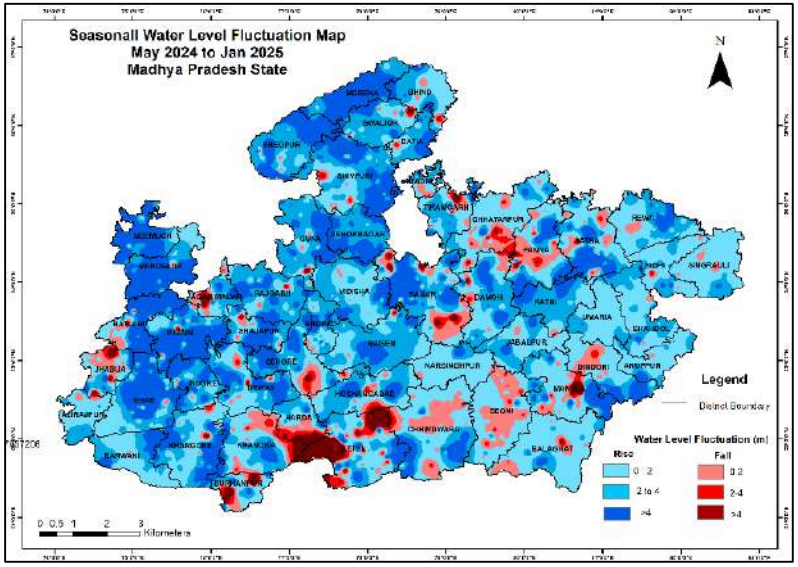

Figure-7: Seasonal water level fluctuation in unconfined Aquifer (May 2024 to Jan 2025)

5.1.2.1 SEASONAL FLUCTUATION IN WATER LEVEL (May 2024 to Jan 2025)

5.1.2.1 SEASONAL FLUCTUATION IN WATER LEVEL (May 2024 to Jan 2025)

Rise in Water Levels:

Out of 1257 wells, water level rise of less than 2 m is recorded in 42.19 % wells, 2 to 4 m in 23.08% wells and more than 4 m in 33.9% of the wells. Water level rise of less than 2 m is seen mostly in South-Eastern Districts like Dindori, Mandla, Seoni, Singauli, Jabalpur, Balaghat and Narsinghpur etc. Water level rise of 2 to 4 m is observed in districts mainly Rajgarh, Guna, Ashoknagar, Sagar and Vidisha. Rise of more than 4 m is observed in parts of majorly (Northern MP) as well as all districts.

Fall in Water Levels:

Out of 364 wells that have registered fall in water levels, 63.68 % have recorded less than 2 m while 19.02% in the range of 2 to 4 m and remaining 17.19% wells registered water level fall of more than 4 m. Fall of less than 2 m is mainly observed in Seoni, Panna, Harda, Chhindwara and Jabua districts. Fall of 2 to 4 m is observed mainly in Narmadapuram, Sehore, Sagar, Mandla, Seoni, Chhatarpur and Panna districts. Water level fall of more than 4 m is observed in Harda, Betul, Mandla, Agar-malwa, Jhabua and Sagar, Districts.

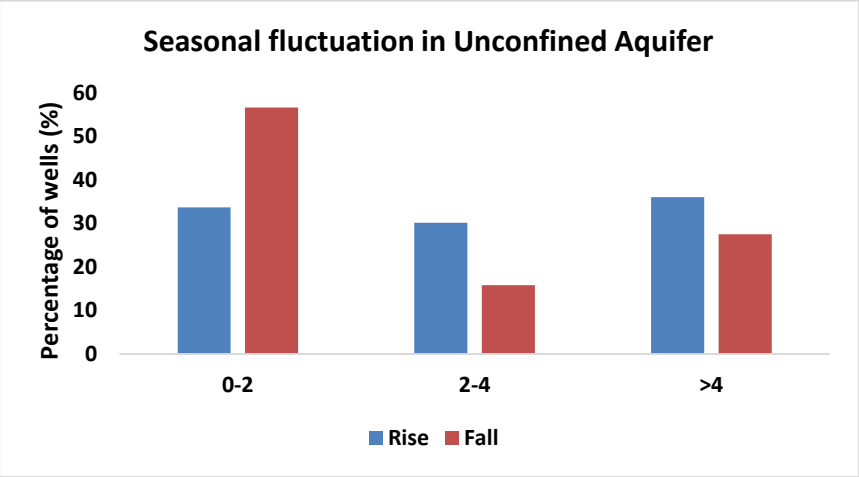

Figure-8: Percentage of wells showing rise and fall in WL in unconfined aquifer (Aug 2024 to Jan 2025)

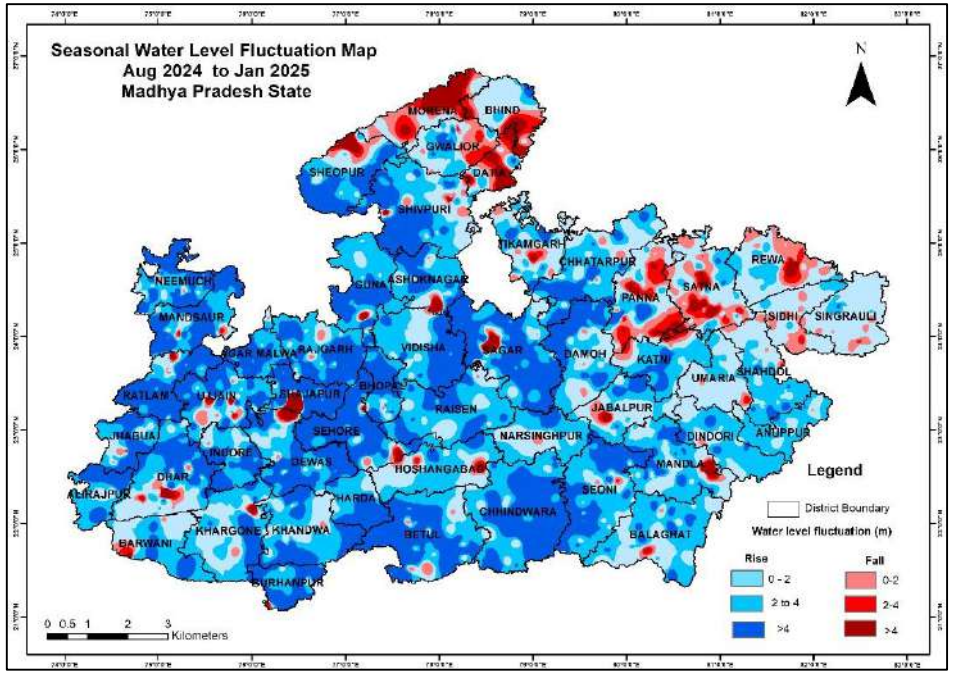

Figure-9: Map of Seasonal WL Fluctuation in unconfined aquifer (Aug 2024 to Jan 2025)

5.1.2.2 SEASONAL FLUCTUATION IN WATER LEVEL (Aug 2024 to Jan 2025)

Rise in Water Levels:

Out of 1479 wells, water level rise of less than 2 m is recorded in 33.7 % wells, 2 to 4 m in 30.15% wells and more than 4 m in 36.10% of the wells. Water level rise of less than 2 m is seen in all of Madhya Pradesh mainly in the districts of Singrauli, Bhind, Dhar, Khargone, Vidisha, Rewa and Umaria etc. Water level rise of 2 to 4 m is observed in districts mainly Raisen, Hosangabad, Vidisha, Balaghat, Khandwa, Shahdol, Shivpuri . Rise of more than 4 m is observed in parts of Eastern MP like in the districts of Ratlam, Sehore, Shajapur, Sagar, Chhindwara, Betul, Sehore, Bhopal etc.

Fall in Water Levels:

Out of 247 wells that have registered fall in water levels, 56.6% have recorded less than 2 m while 15.7% in the range of 2 to 4 m and remaining 27.5% wells registered water level fall of more than 4 m. Fall of less than 2 m is mainly observed in parts of Northern and western districts. Fall of 2 to 4 m is observed mainly in Satna, Rewa, Bhind and Gwalior districts. Water level fall of more than 4 m is observed in Morena, Bhind, Satna, Datia, Mandla, Panna Districts.

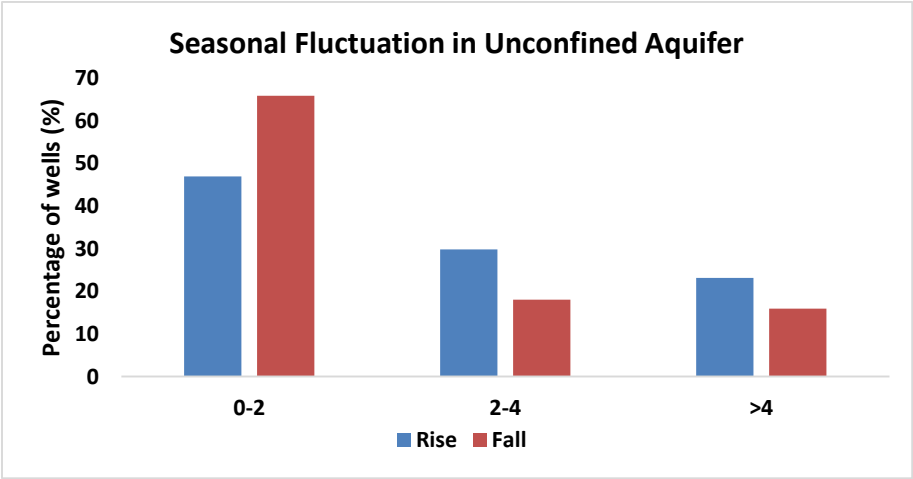

Figure-10: Percentage of wells showing rise and fall in WL in unconfined aquifer (Nov 2024 to Jan 2025)

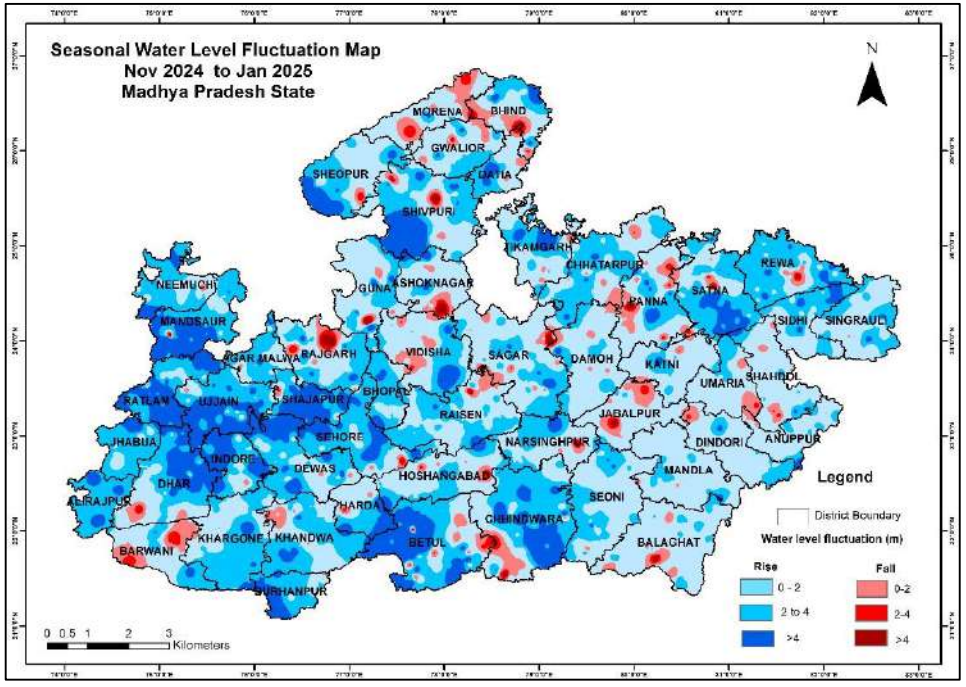

Figure-11: Map showing seasonal WL fluctuation in unconfined aquifer (Nov 2024 to Jan 2025)

5.1.2.3. SEASONAL FLUCTUATION IN WATER LEVEL (Nov 2024 to Jan 2025)

Rise in Water Levels:

Out of 1324 wells, water level rise of less than 2 m is recorded in 46.9% wells, 2 to 4 m in 29.8% wells and more than 4 m 23.1% of the wells. Water level rise of less than 2 m is seen all of Madhya Pradesh. Water level rise of 2 to 4 m is observed in districts mainly Rewa, Chhindwara, Khargone, Bhopal, Dewas, Khandwa and Raisen District. Rise of more than 4 m is observed in parts of Eastern districts like Ratlam, Dhar, Betul, Shivpuri, Shajapur, Ujjain, Dhar and Mandsaur.

Fall in Water Levels:

Out of 232 wells that have registered fall in water levels, 65.9% have recorded less than 2 m while 18.10% in the range of 2 to 4 m and remaining 15.9% wells registered water level fall of more than 4 m. Fall of less than 2 m is mainly observed in patches in Bhind, Morena, Rewa, Chhindwara, Barwani, Jabalpur districts. Fall of 2 to 4 m is observed mainly in Ashoknagar, Jabalpur, Barwani, and Balaghat districts. Water level fall of more than 4 m is observed in Ashoknagar, Jabalpur, Barwani, and Balaghat, Panna, and Rajgarh district.

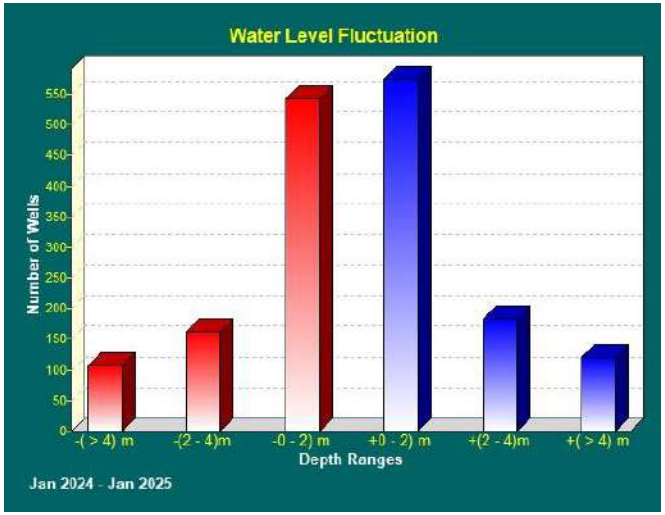

Figure-12: Percentage of wells showing rise and fall in WL in unconfined aquifer (January 2024 to January 2025)

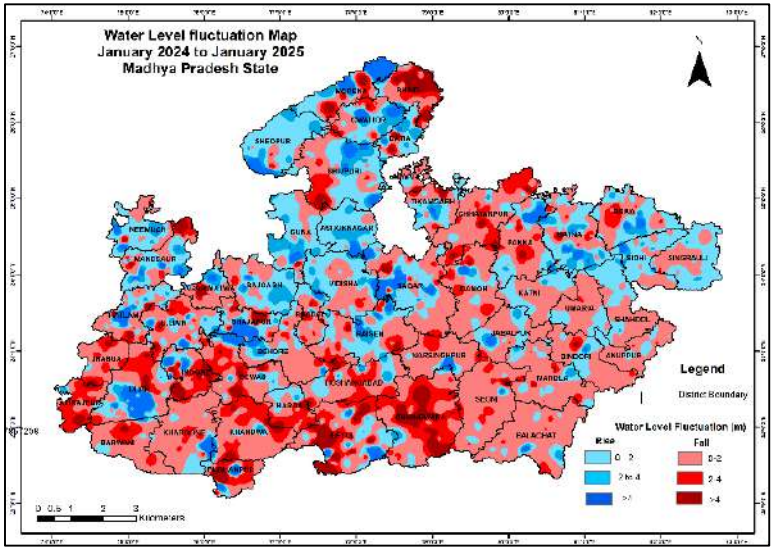

Figure-13: Annual water level fluctuation in unconfined aquifer (Jan 2024-Jan 2025)

5.1.3. ANNUAL FLUCTUATION IN WATER LEVEL

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

Rise in Water Levels:

Out of 584 wells that have observed rise in water levels, 63.18% have recorded rise of less than 2 m whereas 18.8% in the range of 2 to 4 m and remaining 17.9% wells observed water level rise of more than 4 m. Rise of less than 2 m is mainly observed in parts of Northern, and North-western districts like Gwalior, Shivpuri, Sheopur, Neemuch, Mandsaur, Guna, Rewa, Sidhi, Singrauli and Satna districts. Rise of 2 to 4 m is observed mainly in Sagar, Ratlam, Satna, Sehore, Raisen and Panna. Rise of beyond 4 m is observed significantly in Murena, Shajapur, Neemuch Gwalior, Shivpuri and Dhar Districts.

Fall in Water Levels:

Out of 987 wells, water level fall of less than 2 m is recorded in 68.08% wells, 2 to 4 m in 19.14% wells and more than 4 m in 12.7% of the wells. Water level fall of less than 2 m is seen mainly in Southern and south-east districts mainly Barwani, Khargone, Khandwa, Seoni, Balaghat and Mandla districts. Water level fall of 2 to 4 m is observed mainly in districts such as Chhindwada, Harda, Khandwa, Betul and Alirajpur. Fall of more than 4m is observed in almost all the district except part of Northern Region.

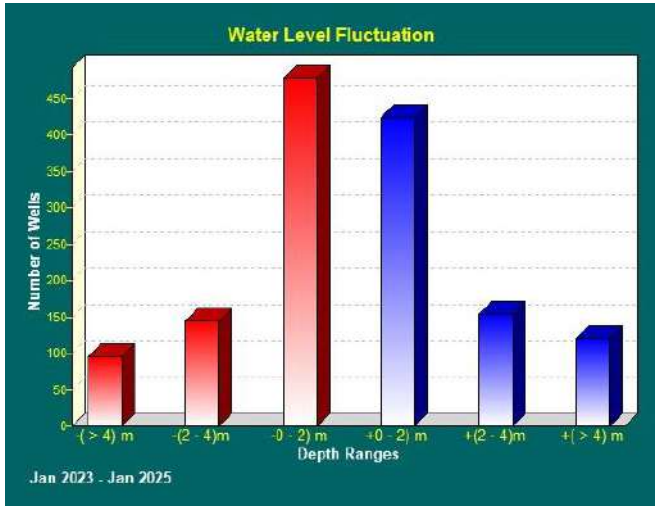

Figure-14: Percentage of wells showing rise and fall in WL in unconfined aquifer (January 2023 to January 2025)

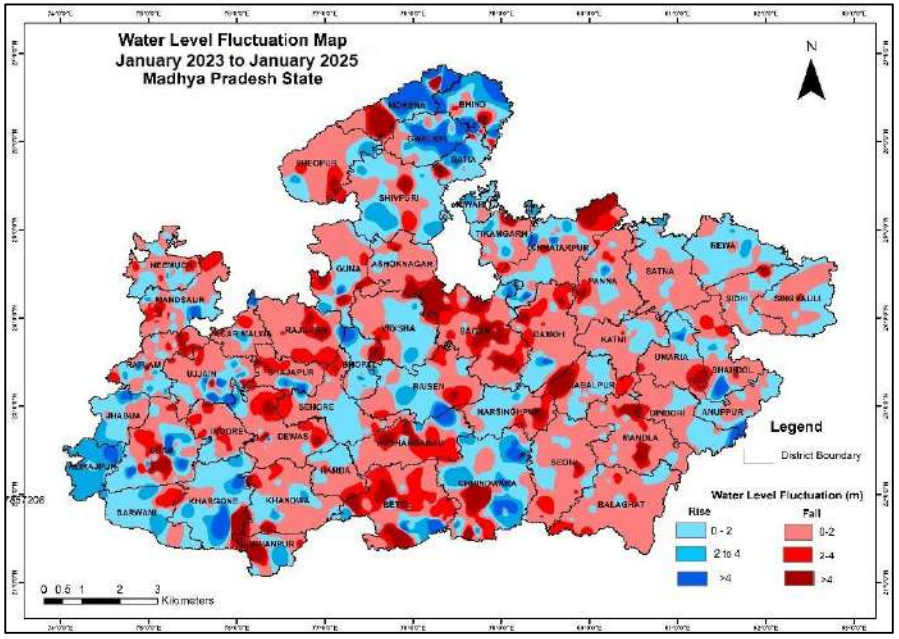

Figure-15: Water Level Fluctuation Map (January 2023 to January 2025)

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

Rise in Water Levels

Out of 678 wells showing rise in water level, water level rise of less than 2 m is recorded in 63.7% wells, 2 to 4 m in 18.8% wells and more than 4 m in 17.4% of the wells. Water levelrise of less than 2 m is seen in Morena, Gwalior, Bhind, Chhindwara, Khargone, Ujjain, Shahdol districts. Water level rise of 2 to 4 m is observed mainly in districts such as Shivpuri, Raisen, Ujjain, Alirajpur, Barwani, Khargone, Shivpuri and Ratlam Districts. Rise of more than 4 m is significantly observed significantly in Rewa, Jhabua, Chhindwara, Khargone, Barwani, Jhabua, and Bhopal District.

Fall in Water Levels

Out of 514 wells that have registered fall in water levels, 72.17% have recorded less than2 m while 14.59% in the range of 2 to 4 m and remaining 13.22% wells registered water level fall of more than 4 m. Fall of less than 2 m is mainly observed in all over the state mainly in parts Sheopur, Balaghat, Dindori, Satna, Damoh, Khandwa, Dewas, Ujjainb, Katni and Ashoknagar districts. Fall of 2 to 4 m is observed mainly in Chattarpur, Betul, Mandla, Sagar, Dewas, Hosangabad, Raisen and Shahdol districts. Fall of beyond 4 m is observed as as isolated patches significantly Morena, Chattarpur, Umaria, Mandla, Dewas, Burhanpur, Dhar, Betul, Sagar, Jabalpur, Narsinghpur, Rajgarh and Ashoknagar Districts.

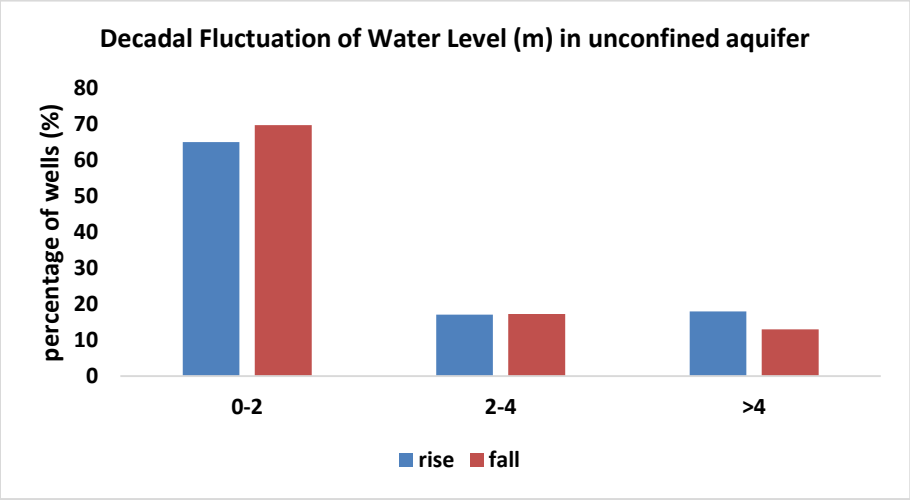

Figure-16: Percentage of wells showing rise and fall in WL in Unconfined Aquifer (Decadal Mean Jan (2015-2024) to Jan 2025)

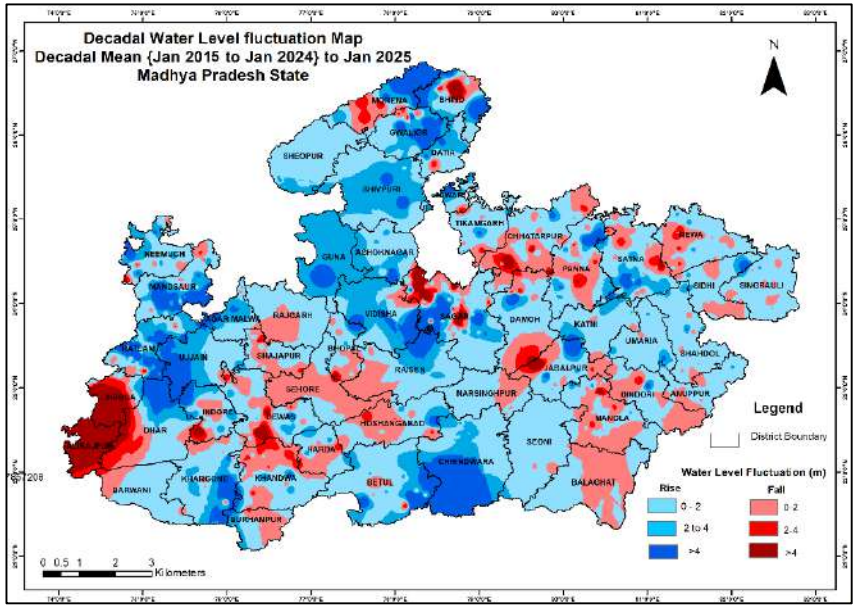

Figure-17: Annual water level fluctuation in unconfined Aquifer (Decadal Mean Jan (2015-2024) to Jan 2025)

5.1.4. DECADAL FLUCTUATION

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

Rise in Water Levels:

Out of the 669 wells that have registered rise in water level, 65.02% have recorded rise of less than 2 m while 17.05% in the range of 2 to 4 m and remaining 17.9% wells registered water level rise of more than 4 m. Rise of less than 2 m is observed all over the state and significantly in parts of in Seoni, Dhar, Singrauli, Umariya, Sheopur, Narsinghpur, Tikamgarh, Jabalpur districts. Rise of 2 to 4 m, recorded in mainly in North-eastern and Northern districts mainly in Guna, Shivpuri, Satna, Vidisha, Ujjain, Neemuch, Ratlam districts. Water level rise of more than 4m is observed mainly in Northern districts significantly. The districts facing rise of more than 4m are Chhindwara, Gwalior, Morena, Ratlam, Ujjain, Khargone, Satna, Raisen, Guna, Ashoknagar, Shivpuri, Bhind districts.

Fall in Water Levels:

Out of 331 wells that have register fall in water level, water level fall of less than 2 m is recorded in 69.7% wells, 2 to 4 m in 17.22% wells and more than 4 m in 12.9% of the wells. Water level fall of less than 2 m is seen in patches, significantly in Balaghat, Mandla, Dindori, Narsinghpur, Jabalpur, Rajgarh, Shajapur, Chhatarpur and Panna districts. Water level fall of 2 to 4 m is observed mainly in Panna, Rewa, Satna, Barwani, Jhabua and Dewas District. Water level fall of more than 4m is observed all over the State mainly in Alirajpur, Jhabua, Sagar, Jabalpur, Bhind, Indore districts.

5.2 DEEPER AQUIFER (CONFINED/ SEMI-CONFINED)

5.2.1 DEPTH TO PIEZOMETRIC LEVEL

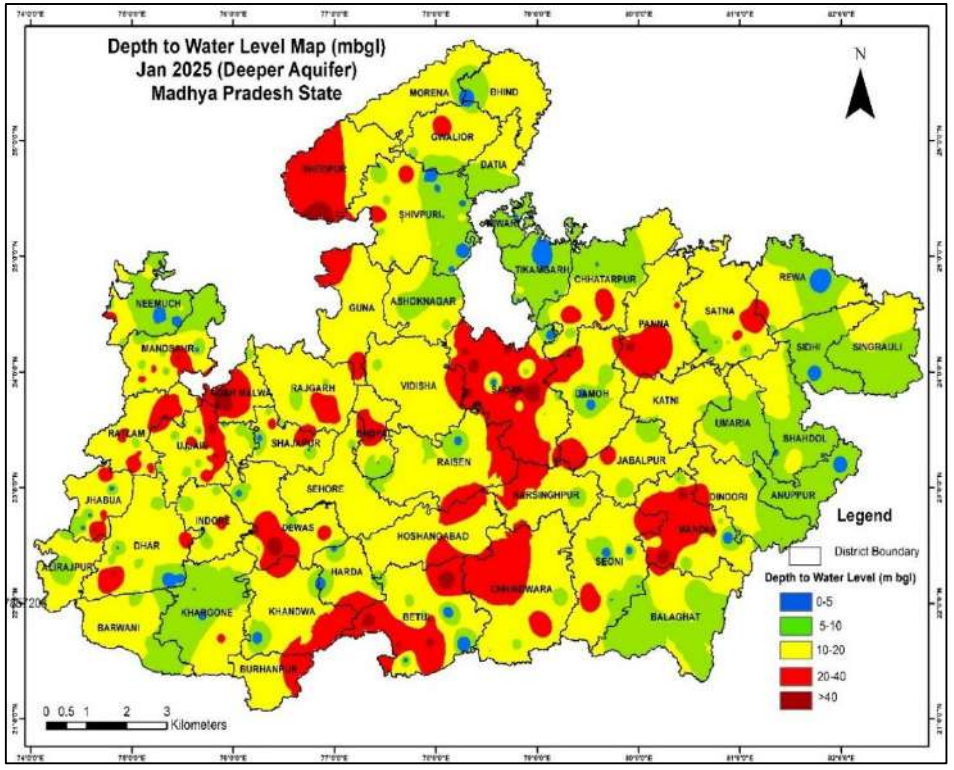

Figure-18: Depth to water level Map for deeper aquifer in Jan 2025

Water level of 0 to 5 m bgl is found in small patches in Rewa, Shivpuri, Tikamgarh, Damoh and Sidhi districts. Piezometric level of 5 to 10 m bgl is covered in 25% of the state area and observed mainly in Anuppur, Khargone, Alirajpur, Neemuch, Ashoknagar, Balaghat, Umariya, Singhrauli and Shahdol districts. Piezometric levels of 10 to 20 m mainly observed in Dhar, Guna, Gwalior, Satna, Katni, Vidisha, Harda, Sehore and Hoshangabad districts. The water level greater than 40 m observed in Betul, Dewas, Agar Malwa, Mandla, Sheopur and Panna district.

Piezometric level between 0-5 mbgl is observed in 18.5% of the wells, between 5-10 mbgl in 29.6% of the wells, 5-10 mbgl in 33.6% of the wells, 10-20 mbgl in 12.16% of the wells and deeper water level of more than 40 mbgl in 5.9% of the wells.

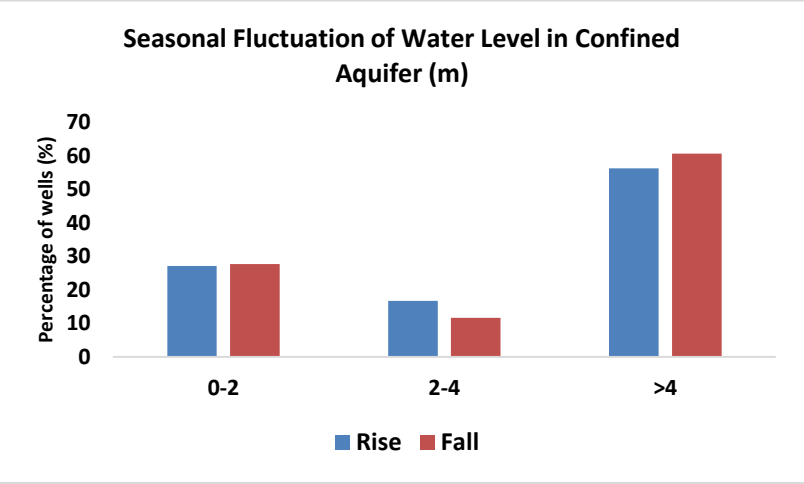

Figure-19: Percentage of well showing Seasonal Fluctuation of Water Level in Confined Aquifer (m) May 24 to Jan 25

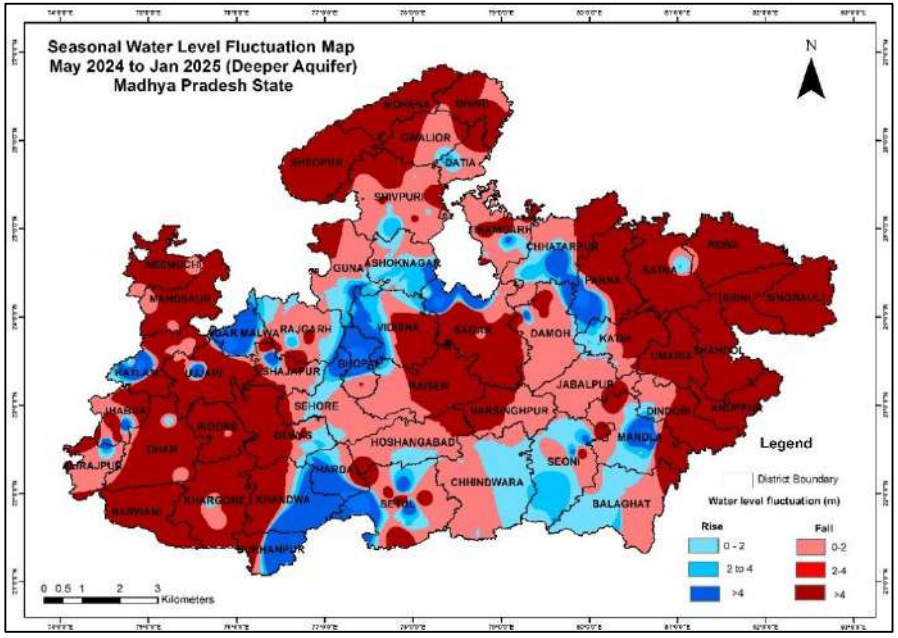

Figure-20: Seasonal Fluctuation of Water Level in Confined Aquifer (m) Map May 24 to Jan 25

5.2.2. SEASONAL FLUCTUATION IN PIEZOMETERIC LEVEL

5.2.2.1. SEASONAL FLUCTUATION IN PIEZOMETRIC LEVEL OF CONFINED/SEMI-CONFINED AQUIFER (May 2024 to Jan 2025)

Rise in Water Levels:

Out of 48 wells, water level rise of less than 2 m is recorded in 27.08 % wells, 2 to 4 m in 16.67% wells and more than 4 m in 56.35% of the wells. Water level rise of less than 2 m is seen mostly in Chhindwara, Balaghat, Chattarpur, Ashoknagar etc. Water level rise of 2 to 4 m is observed in districts mainly Seoni, Ashoknagar, Guna, Katni and Sehore. Rise of more than 4 m is observed in parts Burhanpur, Bhopal, Vidisha, Chattarpur, Panna, Mandla and Agar Malwa etc.

Fall in Water Levels:

Out of 112 wells that have registered fall in water levels, 27.6 % have recorded less than 2 m while 11.6% in the range of 2 to 4 m and remaining 60.7% wells registered water level fall of more than 4 m. Fall of less than 2 m is mainly observed in Northern and Central districts like Gwalior, Shivpuri, Raisen, Damoh, Hosangabad, Jabalpur, Guna, Rajgarh and Sehore. Fall of 2 to 4 m is observed mainly in very few southern districts. Water level fall of more than 4 m is observed in Most of the part of MP mainly in Sheopur, Morena, Bhind, Dhar, Barwani, Indore, Khandwa, Alirajpur, Singrauli, Sidhi, Rewa, Alirajpur and Umaria Districts.

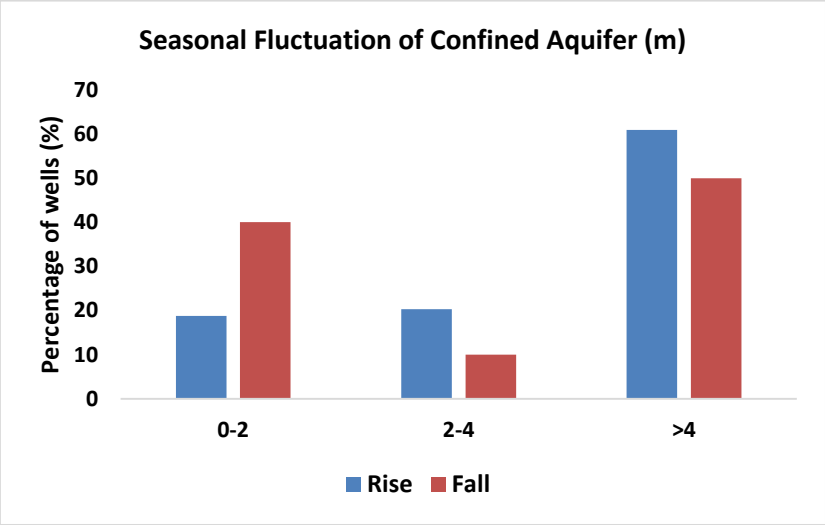

Figure-19: Percentage of well showing Seasonal Fluctuation of Water Level in Confined Aquifer (m) between Aug 2024 and Jan 2025

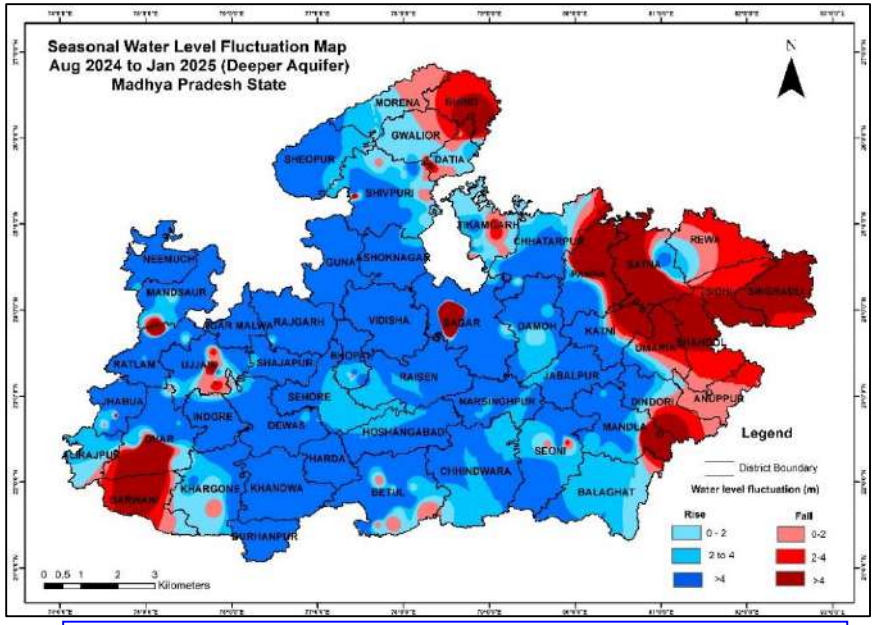

Figure-20: Seasonal water level fluctuation in confined Aquifer

5.2.2.2. SEASONAL FLUCTUATION IN PIEZOMETRIC LEVEL OF CONFINED/SEMI-CONFINED (Aug 2024 to Jan 2025)

Rise in Water Levels:

Out of 133 wells, water level rise of less than 2 m is recorded in 18.8 % wells, 2 to 4 m in 20.3% wells and more than 4 m in 60.9% of the wells. Water level rise of less than 2 m is seen mostly in Sehore, Khargone, Balaghat, Seoni, Alirajpur, Gwalior district etc. Water level rise of 2 to 4 m is observed in districts Morena, Sehore, Khargone, Mandsaur, Damoh,Shivpuri and Balaghat district. Rise of more than 4 m is observed in most of the district mainly in parts of Sheopur, Shivpuri, Guna, Ashoknagar, Vidisha, Rajgarh, Shajapur, Sehore, Dewas, Khandwa, Burhanpur, Ratlam, Jhabua, Neemuch and Damoh etc.

Fall in Water Levels:

Out of 40 wells that have registered fall in water levels, 40% have recorded less than 2 m while 10% in the range of 2 to 4 m and remaining 50% wells registered water level fall of more than 4 m. Fall of less than 2 m is mainly observed in Morena, Rewa, Alirajpur and Ujjain districts. Fall of 2 to 4 m is observed mainly in Bhind, Rewa, Dindori, Barwani districts. Water level fall of more than 4 m is observed in Satna, Panna, Singrauli, Mandla, Dindori, Bhind, Barwani and Sidhi Districts.

5.2.2.3. SEASONAL FLUCTUATION IN PIEZOMETRIC LEVEL OF CONFINED/SEMI-CONFINED (Nov 2024 to Jan 2025)

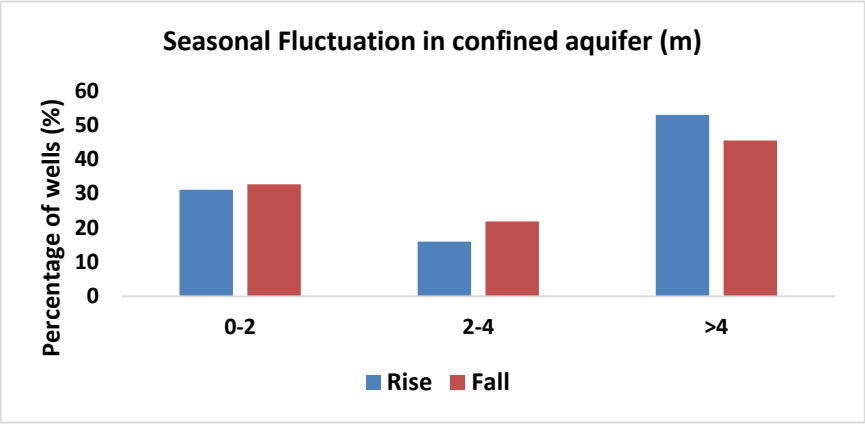

Figure-21: Percentage of wells showing rise and fall in WL in confined Aquifer (Between Nov 2024 to Jan 2025)

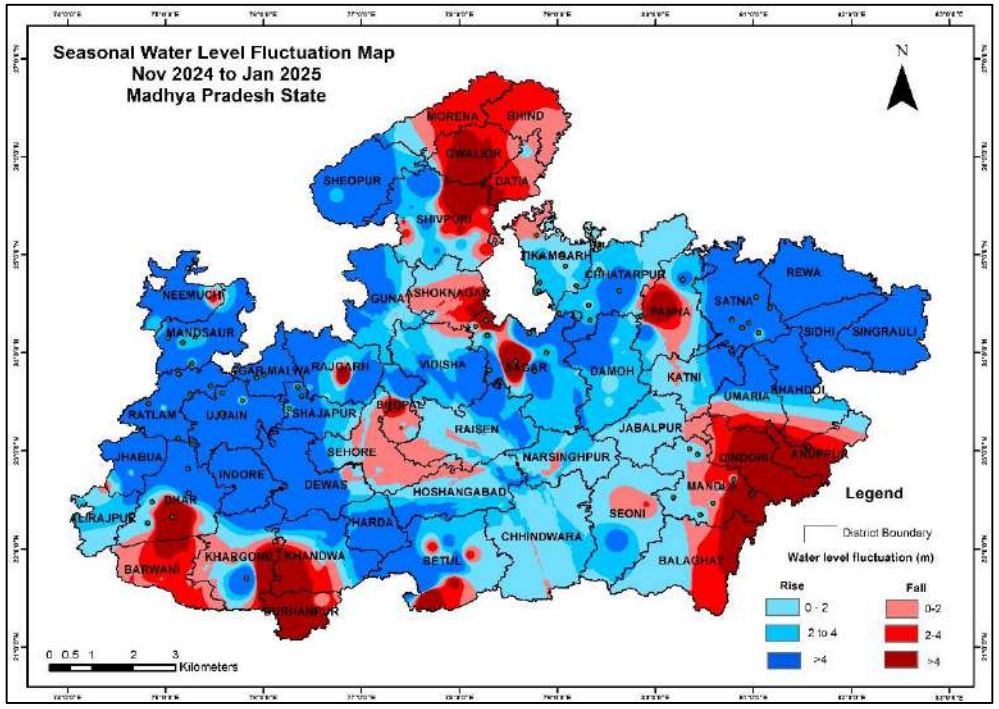

Figure-23: Map of well showing seasonal fluctuation between Nov 2024 to Jan 2025

Rise in Water Levels:

Out of 133 wells, water level rise of less than 2 m is recorded in 31.09% wells, 2 to 4 m in 15.9% wells and more than 4 m in 52.9% of the wells. Water level rise of less than 2 m is seen mainly in Central and North-Central regions like Shivpuri, Jabalpur, Chhindwara, Balaghat, Raisen district. Water level rise of 2 to 4 m is observed in districts mainly Seoni, Shivpuri, Rajgarh, Hosangabad and Damoh district. Rise of more than 4 m is observed in parts of Ratlam, Ujjain, Indore, Dewas, Harda, Neemuch, Sheopur, Rewa, Singrauli, Satna, Shahdol districts.

Fall in Water Levels:

Out of 40 wells that have registered fall in water levels, 32.7% have recorded less than 2 m while 21.8% in the range of 2 to 4 m and remaining 45.4% wells registered water level fall of more than 4 m. Fall of less than 2 m is mainly observed in Bhind, Ashoknagar, Mandla, Barwani, Panna, Seoni districts. Fall of 2 to 4 m is observed mainly in Morena, Bhind, Datia, Panna, Balaghat, Ashonagar, Barwani, Bhopal, Betul districts. Water level fall of more than 4 m is observed in Gwalior, Dindori, Anuppur, Balaghat, Burhanpur, Dhar, Betul, Mandla and Barwani district.

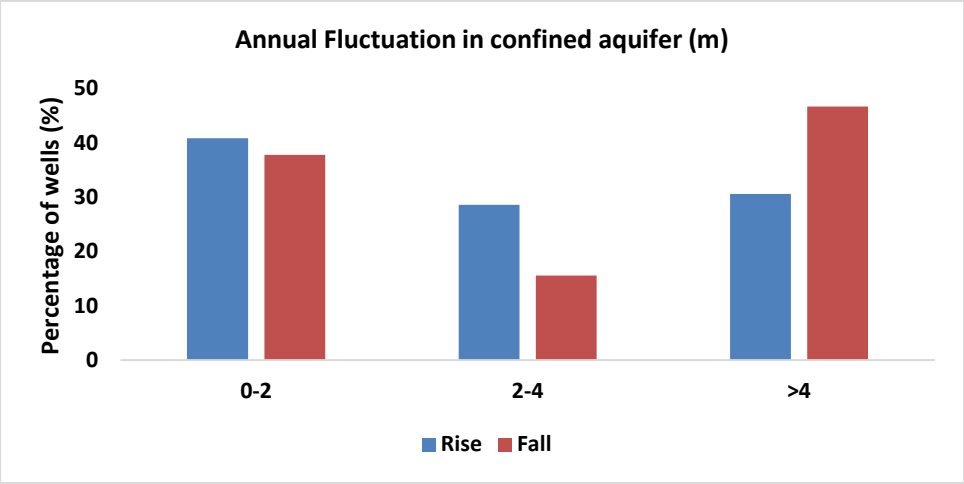

Figure-23: Percentage of wells showing rise and fall in WL in confined Aquifer (Between Jan 2024 to Jan 2025)

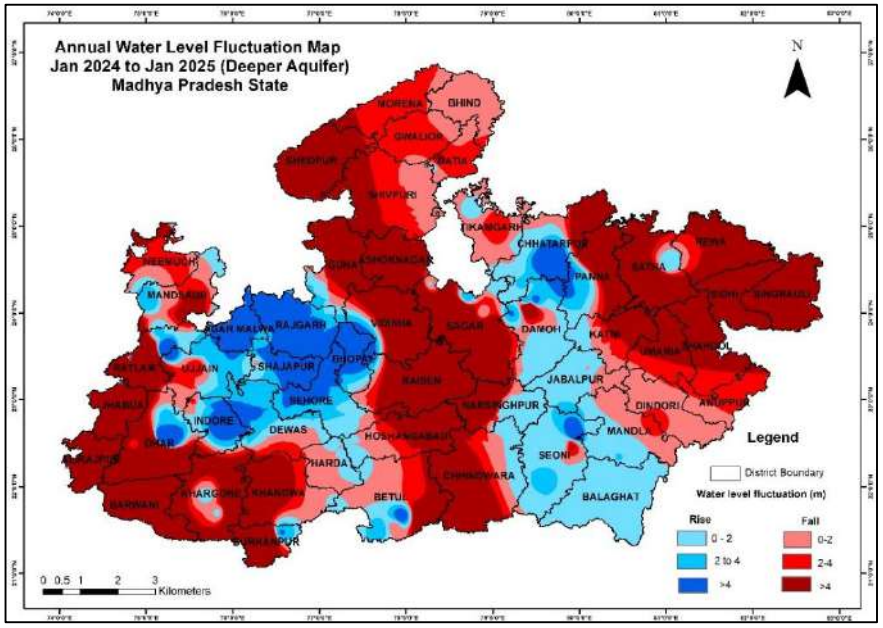

Figure-24: Map of well showing seasonal fluctuation between Jan 2024 to Jan 2025

5.2.3. ANNUAL FLUCTUATION IN PIEZOMETRIC LEVEL OF CONFINED/SEMI-CONFINED (Jan 2024 to Jan 2025)

5.2.3.1. Annual Fluctuation in Piezometric level of confined/semi-confined from January 2024 to January 2025:

Rise in Water Levels:

Out of 49 wells, water level rise of less than 2 m is recorded in 40.8 % wells, 2 to 4 m in 28.5% wells and more than 4 m in 30.6% of the wells. Water level rise of less than 2 m is seen mostly in Jabalpur, Balghat, Seoni, Sehore, Ujjain, Damoh, and Dhar district etc. Water level rise of 2 to 4 m is observed in parts of Western districts mainly district. Rise of more than 4 m is observed in parts of Agar Malwa, Rajgarh, Bhopal, Shajapur, Sehore, Indore, Dhar, Chattarpur district etc.

Fall in Water Levels:

Out of 45 wells that have registered fall in water levels, 37.8% have recorded less than 2 m while 15.5% in the range of 2 to 4 m and remaining 46.7% wells registered water level fall of more than 4 m. Fall of less than 2 m is mainly observed in Bhind, Dindori, Harda, Hosangabad, Mandla, Shivpuri districts. Fall of 2 to 4 m is observed mainly in Morena, Gwalior, Shivpuri, Datia, Dindori, Mandla, Neemuch districts. Water level fall of more than 4 m is observed in Sheopur, Ashoknagar, Guna, Vidisha, Raisen, Hosangabad, Chhindwara, Singrauli, Sidhi, Rewa, Umaria, district.

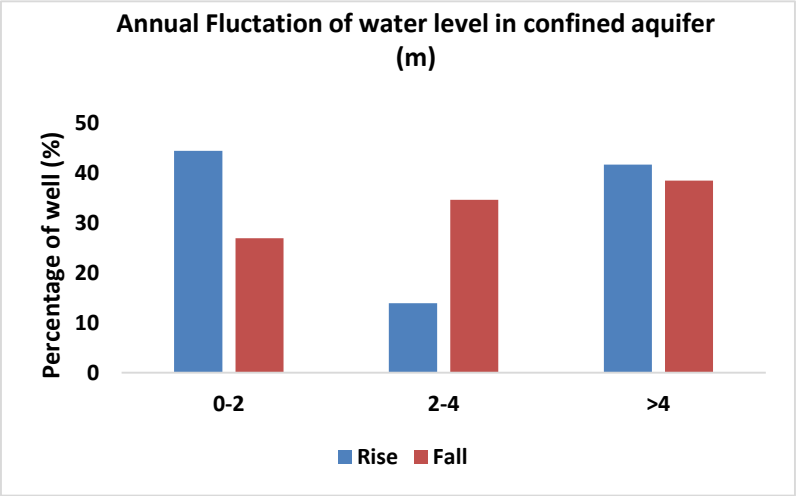

Figure-25: Percentage of wells showing rise and fall in WL in confined Aquifer (Between Jan 2023 to Jan 2025)

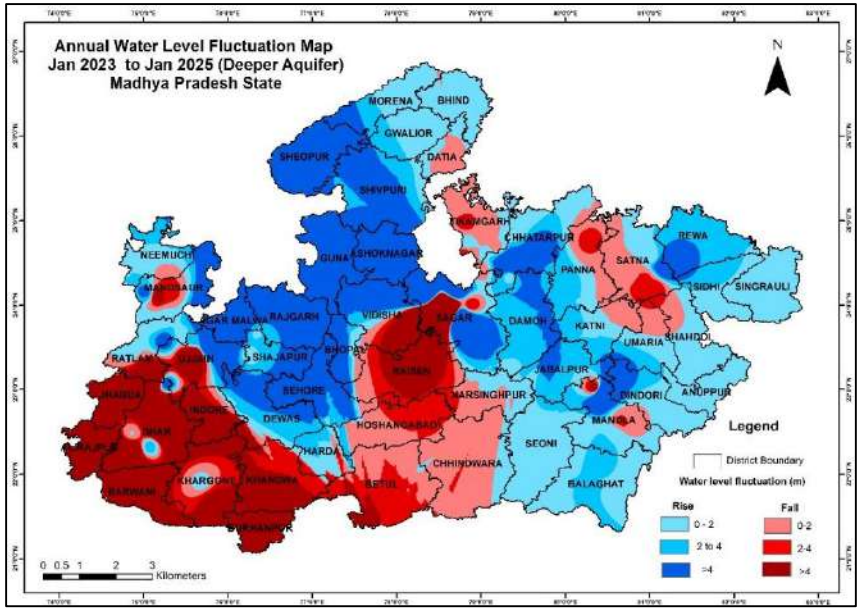

Figure-26: Map of well showing seasonal fluctuation between Jan 2024 to Jan 2025

5.2.3.2. Annual Fluctuation in Piezometric level of confined/semi-confined between January 2023 to January 2025

Rise in Water Levels:

Out of 36 wells, water level rise of less than 2 m is recorded in 44.5% wells, 2 to 4 m in 13.9% wells and more than 4 m in 41.6% of the wells. Water level rise of less than 2 m is seen mostly in many Northern and Western district etc. Water level rise of 2 to 4 m is observed in districts mainly Balaghat, Umaria, Panna, Gwalior, Jabalpur district. Rise of more than 4 m is observed in parts of Sheopur, Shivpuri, Guna, Ashoknagar, Rajgarh, Agar Malwa and Sehore district.

Fall in Water Levels:

Out of 26 wells that have registered fall in water levels, 26.9% have recorded less than 2 m while 34.6% in the range of 2 to 4 m and remaining 38.4% wells registered water level fall of more than 4 m. Fall of less than 2 m is mainly observed in Southern districts. Fall of 2 to 4 m is observed mainly in Hosangabad, Raisen and Betul districts. Water level fall of more than 4 m is observed in Barwani, Dhar, Indore, Alirajpur, Khandwa district etc.

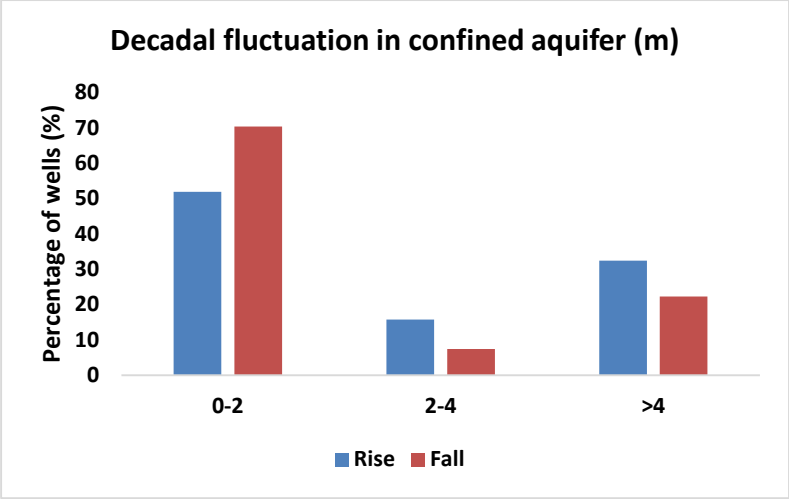

Figure-27: Percentage of wells showing rise and fall in WL in confined Aquifer (Decadal Mean Jan (2015-2024) to Jan 2025)

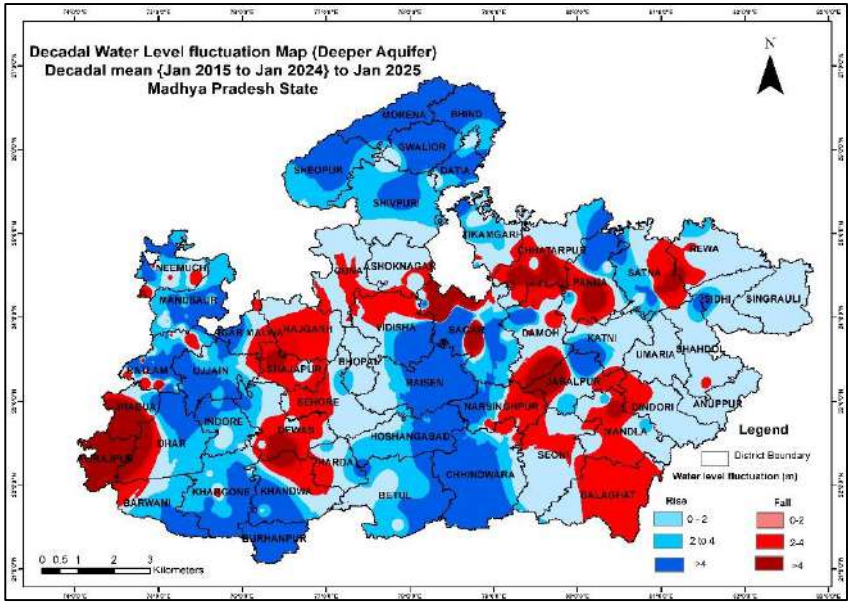

Figure-28: Map of well showing seasonal fluctuation in confined aquifer (Decadal Mean Jan (2015-2024) to Jan 2025)

5.2.4 DECADAL FLUCTUATION

5.2.4.1. Decadal Fluctuation in Piezometric level of confined/semi-confined Aquifer (Decadal Mean Jan (2015-2024) to Jan 2025)

Rise in Water Levels:

Out of the 108 wells that have registered rise in water level, 51.8% have recorded rise of less than 2 m while 15.7% in the range of 2 to 4 m and remaining 32.4% wells observed water level rise of more than 4 m. Rise of less than 2 m is observed all over the state and significantly in parts of Sheopur, Seoni, Barwani, Umaria, Ujjain, and Shahdol districts. Rise of 2 to 4 m, recorded in mainly in North-western districts like Ujjain, Chhindwara, Shivpuri, Guna, Ujjain districts. Water level rise of more than 4m is observed mainly in Morena, Gwalior, Chhindwara, Khargone, Ujjain, Ratlam districts.

Fall in Water Levels:

Out of 27 wells that have register fall in water level, water level fall of less than 2 m is recorded in 70.3% wells, 2 to 4 m in 7.4% wells and more than 4 m in 22.23% of the wells. Water level fall of less than 2 m is seen in patches, significantly in Balaghat, Alirajpur, Damoh, Khandwa, Hosangabad, Sehore, Rewa, Dindori and Anuppur district. Water level fall of 2 to 4 m is observed mainly in Morena, Dewas, Dhar, Panna, and Damoh District. Water level fall of more than 4m is observed all over the State mainly in Alirajpur, Jhabua, Damoh, Jabalpur, Bhind, Dewas and Indore districts.

Summary:

- In both unconfined and confined aquifer, maximum wells are showing water level ranging between 5-10 mbgl. The water level > 40 mbgl is found in 5.9% of wells of deeper aquifer.
- Maximum area of Madhya Pradesh received Normal to Excess rainfall contributing to good rainfall recharge in Monsoon.
- In between May 2024 (Pre-monsoon) to Jan 2025 in unconfined aquifer, maximum well show water level rise (78%) and in deeper aquifer 70% wells experiences water level fall due to excess pumping after monsoon from deeper aquifer for irrigation.
- Between Jan 2024 and Jan 2025, 62% wells show water level decline due to post-monsoon extraction despite having good rainfall.
- In decadal data analysis of water level of Jan 2025 compared to average water level of 2015-2024, 67% of wells, show water level rise while 33% wells show water level decline.

Recommendations:

- Depth to water levels of 20 to 40 m bgl have been observed mainly in Burhanpur, Betul, and Bhind district in unconfined aquifer whereas depth to water level greater than 40 m observed in Betul, Dewas, Agar Malwa, Mandla, Sheopur and Panna district in deeper confined/semi-confined aquifer. It is recommended to construct the recharge structures for ground water recharge in the above districts. Further it is recommended to use of efficient use of ground water in agriculture, industrial and domestic purpose. Incorporating these recommendations will help maintain a balance between groundwater extraction and recharge, ensuring long-term sustainability of water resources in these districts.
- Higher decline in Water level is observed in deeper aquifer when comparing May 2024 to Jan 2025 as compared to unconfined aquifer, this effect is mainly due to high agricultural extraction from Deeper aquifer in Madhya Pradesh state. The areas observed more than 4m Water level fluctuation in Jan 2025 as compared to May 2024 in deeper aquifer are Sheopur, Morena, Bhind, Dhar, Barwani, Indore, Khandwa, Alirajpur, Singrauli, Sidhi, Rewa, Alirajpur and Umaria Districts.