भूजल स्तर बुलेटिन
(अगस्त 2025)

Ground water Level Bulletin
(August 2025)

केंद्रीय भूमि जल बोर्ड

मध्य-पूर्वी क्षेत्र

पटना

Central Ground Water Board
Mid-Eastern Region
Patna

Executive Summary

The groundwater level assessment for August 2025 in the unconfined aquifer, based on data from dug wells across Bihar, shows significant spatial and temporal variations. Depth to water levels ranged from 0.1 mbgl in Nalanda to 11.3 mbgl in Bhagalpur, with the majority of wells (56%) showing levels between 2–5 mbgl.

Seasonal fluctuation (May–August 2025) shows a rise in water levels in 93% of wells, primarily less than 2 m in northern districts and 2–4 m in southern districts, while a fall was observed in a few pockets of Madhubani, Sheohar, and Sitamarhi.

Annual Fluctuation (August 2024–August 2025), 45% of wells showed a rise and 55% a fall, with more than 4 m observed in parts of Gaya, Nalanda and Nawada districts. For the year (August 2023 and August 2025), 44% of wells showed a rise and 56% a fall.

Decadal fluctuation (2015–2025) reflects the long-term trend, with 46% of wells showing a rise, predominantly in southern Bihar, and 54% showing a fall, mostly less than 2 m in northern districts, while falls exceeding 2 m were observed in parts of Saran, Samastipur, Muzaffarpur, Kaimur, Madhubani, and Bhagalpur.

Overall, the analysis highlights that short-term recharge is evident during the monsoon, and long-term groundwater trends indicate a gradual fall and rise in several parts.

कार्यकारी सारांश

अगस्त 2025 में 860 HNS कुओं के भूजल स्तर का अवलोकन किया गया, जिसमें भूजल स्तर 0.1 mbgl (नालंदा) से 11.3 mbgl (भागलपुर) के बीच पाया गया, और लगभग 56% कुओं में भूजल स्तर 2-5 mbgl के बीच था।

मई-अगस्त 2025 के बीच मौसमी उतार-चढ़ाव में कुल 703 कुओं में से 93% कुओं में भूजल स्तर में वृद्धि देखी गई, जो उत्तरी जिलों में मुख्यतः 2 मीटर से कम और दक्षिणी जिलों में 2-4 मीटर थी, जबकि मधुबनी, शेखपुरा और सीतामढ़ी के कुछ हिस्सों में गिरावट देखी गई।

वर्षीय उतार-चढ़ाव (अगस्त 2024-अगस्त 2025) में कुल 581 कुओं में से 45% HNS कुओं में वृद्धि और 55% कुओं में गिरावट पाई गई, जिसमें 4 मीटर से अधिक की गिरावट गयI, नालंदा और नवादा जिलों के कुछ हिस्सों में देखी गई। अगस्त 2023-अगस्त 2025 के बीच कुल 608 कुओं में 44% कुओं में वृद्धि और 56% कुओं में गिरावट पाई गई।

दशकीय उतार-चढ़ाव (2015-2025) से दीर्घकालिक प्रवृत्ति स्पष्ट होती है, जिसमें 46% कुओं में वृद्धि देखी गई, मुख्यतः दक्षिणी बिहार में, और 54% कुओं में गिरावट देखी गई, जो उत्तरी जिलों में अधिकांशतः 2 मीटर से कम थी, जबकि सारण, समस्तीपुर, मुज़फ़्फ़रपुर, कैमूर, मधुबनी और भागलपुर के कुछ हिस्सों में 2 मीटर से अधिक गिरावट पाई गई।

कुल मिलाकर, विश्लेषण से स्पष्ट होता है कि मॉनसून के दौरान छोटे अवधि में जलस्तर में वृद्धि देखी गई और दशकीय उतार-चढ़ाव में कई हिस्सों में भूजल स्तर में धीरे-धीरे गिरावट और वृद्धि दोनों देखने को मिली।

1.0 Introduction

The Central Ground Water Board (CGWB) prepares a groundwater bulletin that depicts changes in the groundwater regime of the state across different seasons. This bulletin is based on data collected from representative monitoring wells to assess groundwater levels.

Groundwater regime monitoring is influenced by both natural and human factors. Natural factors include climatic parameters such as rainfall and evapotranspiration, while human activities like groundwater extraction, irrigation recharge, and waste disposal also impact water levels.

Central Ground Water Board, MER, Patna monitors groundwater levels four times a year—in January, August, August, and November. This monitoring Programme has been in place since 1969. In Bihar, the monitoring is carried out through a network of 1094 wells, known as National Hydrograph Network Stations (NHNS).

2.0 Study Area

Bihar state lies between 83° 19' 50" and 88° 17' 40" E Longitudes and 24° 20' 10" and 27° 31' 15" N Latitudes *(Source: https://state.bihar.gov.in/)* . It shares international border with Nepal in the north and is bounded in the east, west and south by West Bengal, Uttar Pradesh and Jharkhand states respectively. The state covers geographical area of 94,163 Sq.km and has its capital at Patna (Fig 1). Administratively, the state of Bihar is divided into 38 districts and 534 community development blocks. As per the 2011 Census, the total population of the state is 103,804,637, with a population density of 1,102 persons per square kilometre. On average, each district has a population of approximately 2,731,701. The most populous district is Patna, with a population of 5,772,804, while the least populous is Sheikhpura, with 634,927 inhabitants.

(source https://dse.bihar.gov.in/Source/Provisional%20Population%20Totals%202011-Bihar.pdf).

Figure-1: Map showing major administrative divisions of Bihar

Bihar's geology is characterized by three major geological units: the southern Precambrian rocks of the Chotanagpur Granite-Gneiss Complex, the Vindhyan sedimentary formations in the southwest, and the vast alluvial plains of the Indo-Gangetic basin in the north. The southern region is underlain by ancient crystalline rocks—mainly granites, gneisses, schists, and quartzites—while the Vindhyan Supergroup, comprising sandstones, limestones, and shales, occurs prominently in the Kaimur–Rohtas plateau area. The northern part of Bihar, which makes up most of the state, is covered by Quaternary alluvium deposited by major rivers like the Ganga, Gandak, Kosi, and Son, forming fertile plains and flood-prone regions.

(Source:
Geological Survey of India (2012). Concise Information on Background and State-wise Geology and Mineral Resources – Bihar)

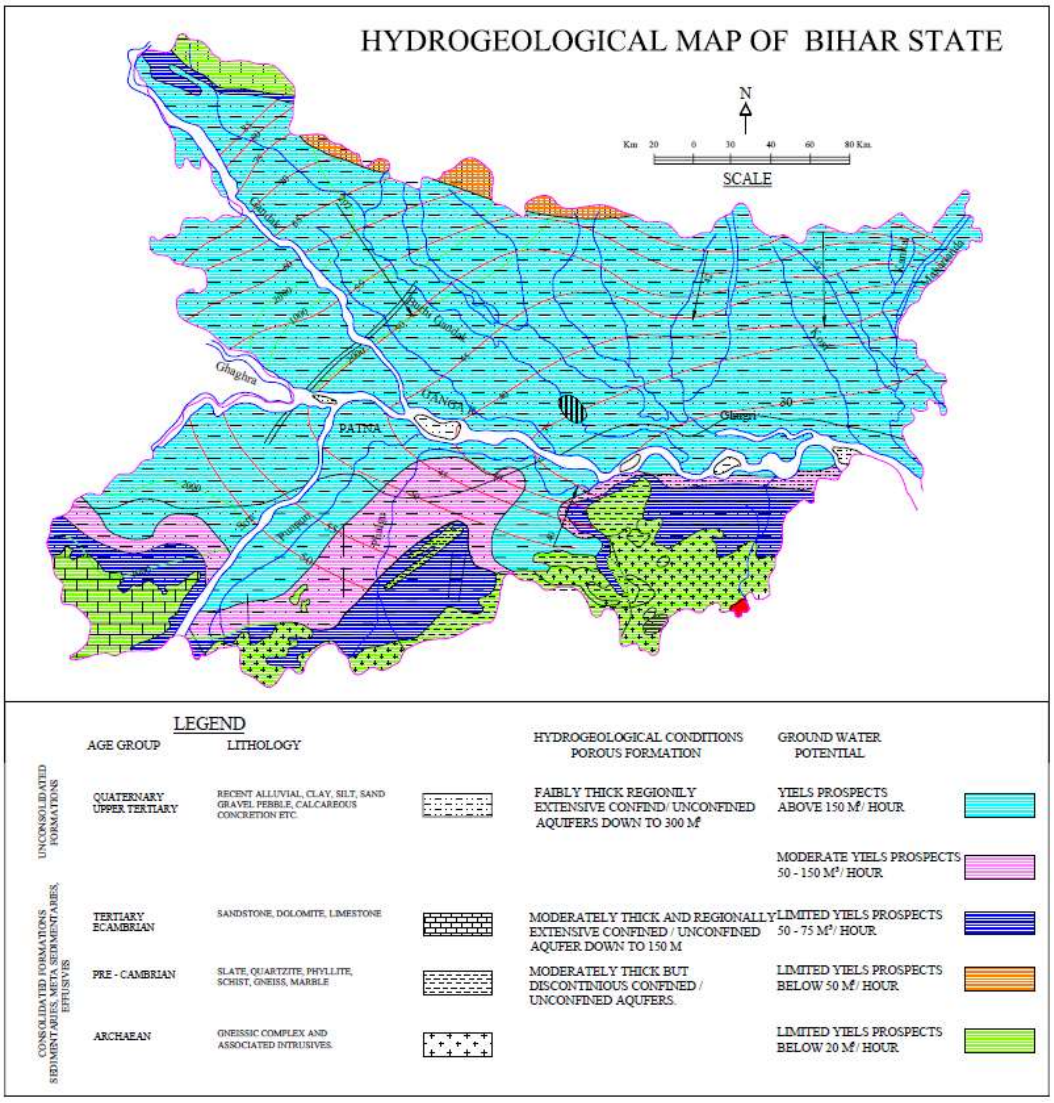

Figure -2: Hydrogeological Map of Bihar state

3.0 Ground Water Level Monitoring

Central Ground Water Board, Mid Eastern Region, Patna, is monitoring changes in groundwater regime in the state on quarterly basis continuously. This is facilitated by a network of monitoring stations across the State, located in diverse hydrogeological and geomorphic units. As of August 2025, there are 1,094 monitoring wells for groundwater regime monitoring. Out of these, 977 are dug wells, 94 are piezometers, and 23 are RTDAS stations. Groundwater level data was successfully collected from 949 of these wells. The water level data from the remaining wells could not be collected due to various factors such as wells being dry, locked gates, and lack of accessibility. The district-wise breakup of the water level monitoring stations is given in **Table-1**

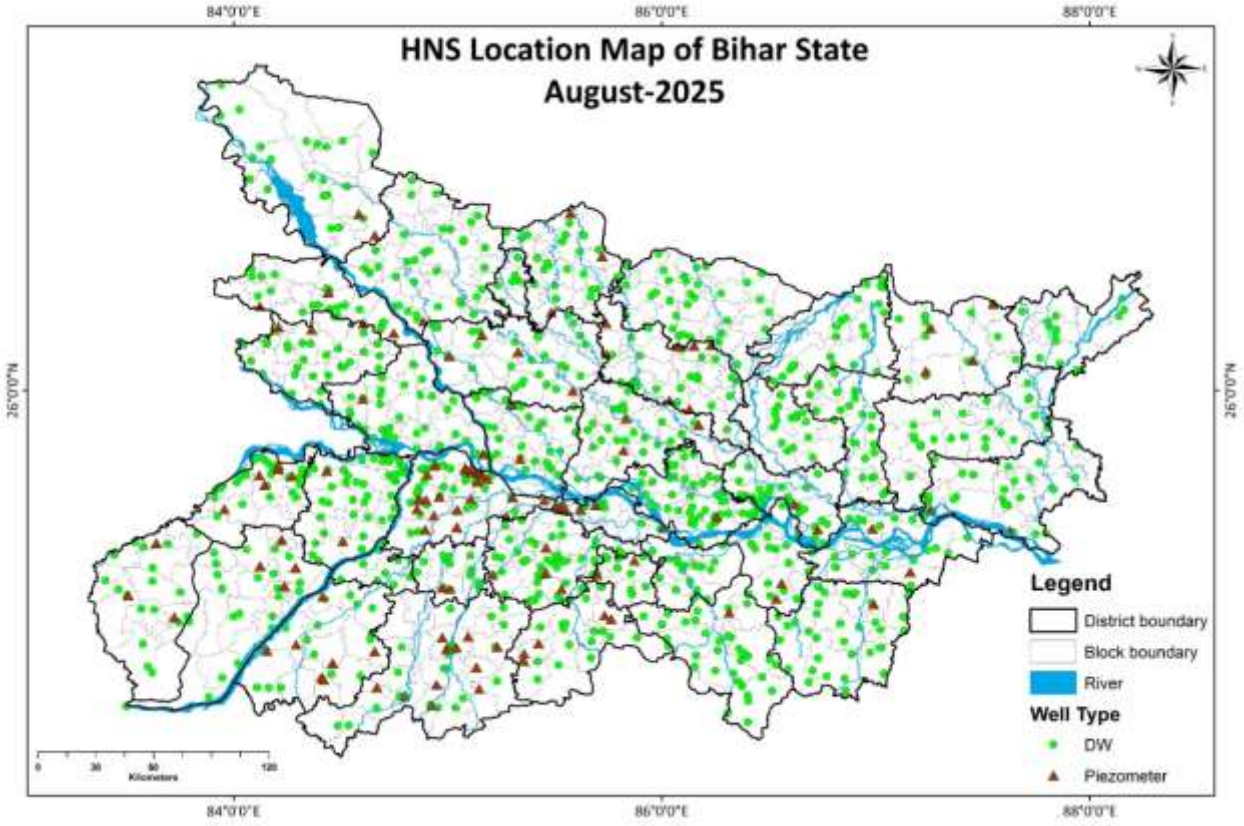

Figure 3- Map showing Location map of Monitoring wells Bihar

Table1 District-wise distribution of water level monitoring stations in Bihar

Table :1				
District-wise distribution of water level monitoring stations in Bihar				
Name of District	**No. of Dug wells**	**No. of piezometers**	**No.of RTDAS**	**Total**
ARARIA	12	4	0	16
ARWAL	11	0	0	11
AURANGABAD	20	4	2	26
BANKA	30	1	0	31
BEGUSARAI	58	1	1	60
BHAGALPUR	22	0	1	23
BHOJPUR	48	8	0	56
BUXAR	29	5	3	37
DARBHANGA	23	7	0	30
GAYA	45	9	0	54
GOPALGANJ	23	4	0	27
JAMUI	30	1	0	31
JEHANABAD	14	0	0	14
KAIMUR (BHABUA)	17	1	2	20
KATIHAR	26	1	1	28
KHAGARIA	28	0	2	30
KISHANGANJ	10	0	0	10
LAKHISARAI	15	0	0	15
MADHEPURA	18	0	0	18
MADHUBANI	36	0	0	36
MUNGER	14	1	0	15
MUZAFFARPUR	27	3	1	31
NALANDA	47	6	0	53
NAWADA	22	1	0	23
PASHCHIM CHAMPARAN	25	2	0	27
PATNA	38	18	9	65
PURBI CHAMPARAN	41	1	0	42
PURNIA	23	0	0	23
ROHTAS	23	3	1	27
SAHARSA	18	0	0	18
SAMASTIPUR	23	3	0	26
SARAN	39	3	0	42
SHEIKHPURA	11	2	0	13
SHEOHAR	4	0	0	4
SITAMARHI	24	2	0	26
SIWAN	30	2	0	32
SUPAUL	25	0	0	25
VAISHALI	28	1	0	29
TOTAL	977	94	23	1094

4.0 Rainfall

Table 2: Rainfall distribution

S.No.	MET. SUBDIVISION/ UT	DAY :	31.08.2025	TO	31.08.2025	PERIOD :	01.06.2025	TO	31.08.2025
	STATE/DISTRICT (NAME)	ACTUAL	NORMAL	% DEP.	CAT.	ACTUAL	NORMAL	% DEP.	CAT.
		(mm)	(mm)			(mm)	(mm)		
	BIHAR	2.7	6.9	-61%	LD	551.3	775.7	-29%	D
1	ARARIA	0.9	8.1	-89%	LD	596.8	1090.6	-45%	D
2	ARWAL	0.0	6.8	-100%	NR	447.9	545.4	-18%	N
3	AURANGABAD	0.0	5.3	-100%	NR	728.2	671.3	8%	N
4	BANKA	1.9	4.5	-57%	D	689.7	671.9	3%	N
5	BEGUSARAI	0.0	7.0	-100%	NR	622.3	768.5	-19%	N
6	BHABUA	0.0	6.3	-100%	NR	516.0	668.9	-23%	D
7	BHAGALPUR	0.4	6.7	-94%	LD	535.5	750.5	-29%	D
8	BHOJPUR	0.2	7.3	-98%	LD	443.1	682.1	-35%	D
9	BUXAR	4.3	7.1	-40%	D	513.6	613.2	-16%	N
10	DARBHANGA	0.0	6.3	-100%	NR	468.1	713.0	-34%	D
11	EAST CHAMPARAN	32.3	6.7	382%	LE	360.4	844.1	-57%	D
12	GAYA	0.8	4.5	-82%	LD	790.6	653.6	21%	E
13	GOPALGANJ	5.3	6.9	-23%	D	358.5	751.8	-52%	D
14	JAHANABAD	0.0	5.5	-100%	NR	452.5	647.8	-30%	D
15	JAMUI	1.0	8.4	-88%	LD	721.3	717.7	0%	N
16	KATIHAR	0.6	7.2	-92%	LD	579.7	816.9	-29%	D
17	KHAGARIA	2.5	6.8	-63%	LD	674.0	745.6	-10%	N
18	KISHANGANJ	2.2	13.4	-83%	LD	842.8	1391.7	-39%	D
19	LAKHISARAI	2.2	7.7	-71%	LD	666.6	649.7	3%	N
20	MADHEPURA	0.0	11.0	-100%	NR	384.0	796.2	-52%	D
21	MADHUBANI	1.4	5.1	-73%	LD	398.5	791.2	-50%	D
22	MONGHYR	4.1	6.4	-37%	D	581.8	794.0	-27%	D
23	MUZAFFARPUR	0.4	7.8	-95%	LD	351.0	751.1	-53%	D
24	NALANDA	0.3	7.1	-96%	LD	689.5	661.2	4%	N
25	NAWADA	0.9	3.7	-76%	LD	714.5	648.1	10%	N
26	PATNA	0.0	5.3	-99%	LD	709.3	683.6	4%	N
27	PURNEA	0.0	12.9	-100%	NR	560.4	1102.9	-49%	D
28	ROHTAS	1.1	4.7	-78%	LD	581.5	652.2	-11%	N
29	SAHARSA	0.1	8.9	-99%	LD	361.7	846.9	-57%	D
30	SAMASTIPUR	0.0	7.1	-100%	NR	483.9	722.7	-33%	D
31	SARAN	1.3	4.7	-72%	LD	381.2	703.6	-46%	D
32	SHEIKHPURA	4.4	8.2	-46%	D	705.2	636.3	11%	N
33	SHEOHAR	7.8	7.5	4%	N	497.6	802.7	-38%	D
34	SITAMARHI	3.5	6.0	-42%	D	338.9	871.7	-61%	LD
35	SIWAN	2.9	4.6	-37%	D	522.1	688.1	-24%	D
36	SUPAUL	0.1	8.9	-99%	LD	386.0	857.2	-55%	D
37	VAISHALI	1.1	6.0	-82%	LD	677.4	706.0	-4%	N
38	WEST CHAMPARAN	6.3	8.6	-27%	D	481.6	995.1	-52%	D

Depth To Water Level in Unconfined Aquifer (August 2025).

Depth to water level in the unconfined aquifer for August 2025 has been analyzed from 860 dug wells. The water levels range from 0.1 mbgl in Nalanda district to 11.3 mbgl in Bhagalpur district. About 29% of the wells are showing a water level of less than 2 mbgl, 56% of the wells are showing water levels between 2 to 5 mbgl, 15% have water levels between 5 to 10 mbgl, and only 2 wells are showing water levels more than 10 mbgl

Water levels ranging from 2 to 5 mbgl are mainly observed in small patches in the southern part of Bihar. Water levels between 5 to10 mbgl are found across the state, while levels deeper than 10 mbgl occur only in a few small patches.

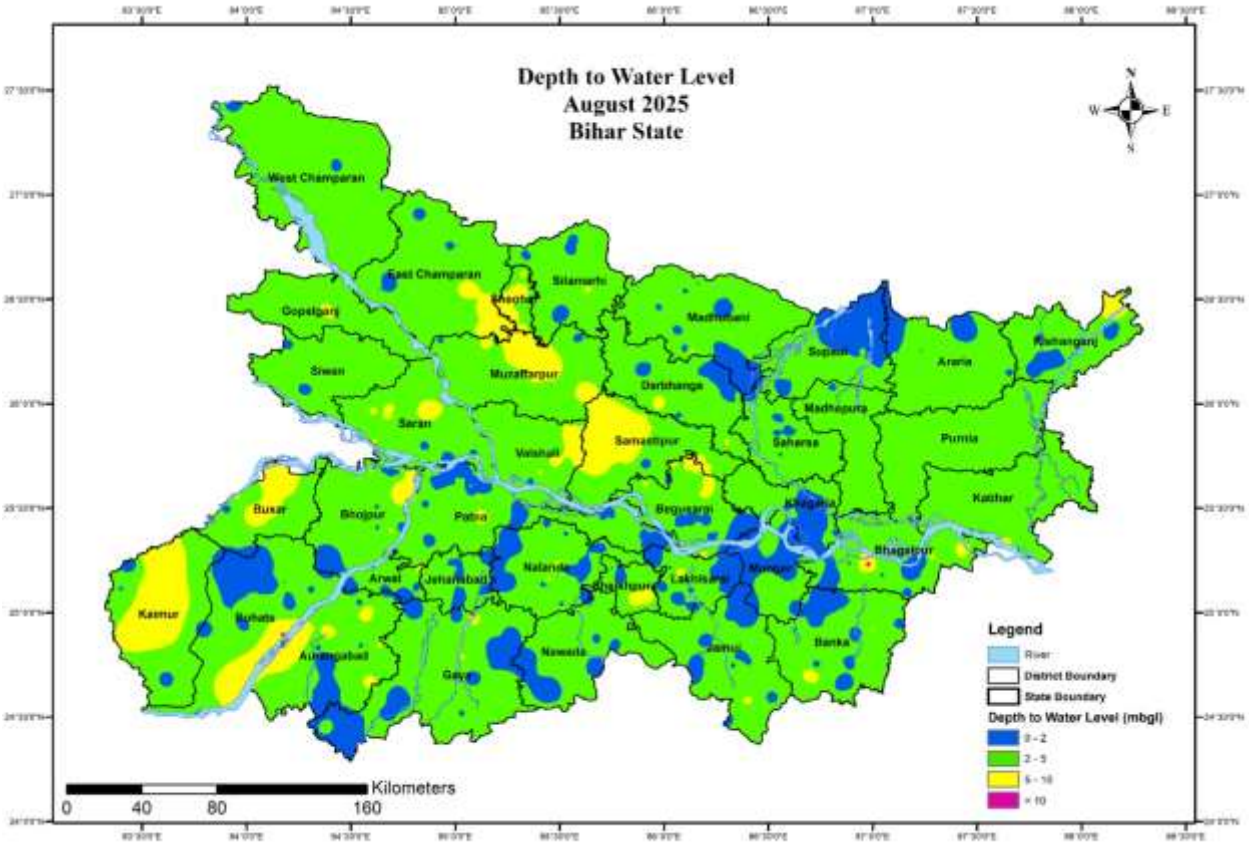

Figure 4 Depth To Water Level in Unconfined Aquifer (August 2025)

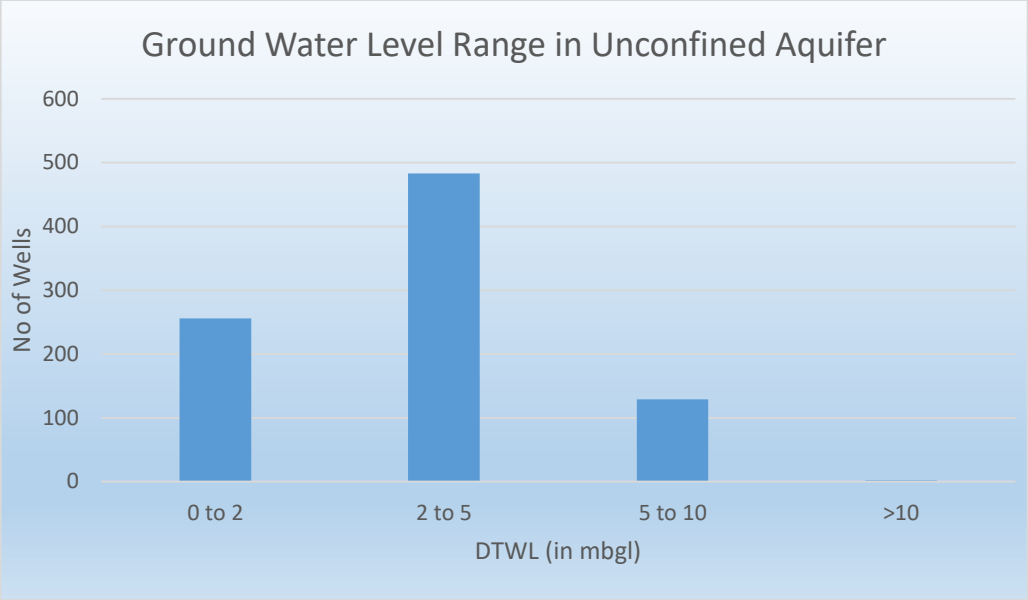

Figure 5- Graph showing Depth to Water level of Monitoring Stations (Dugwells) Bihar

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

The seasonal fluctuation in water levels within the unconfined aquifer (from May 2025 to August 2025) was analyzed using data from 703 dug wells, with 653 wells (93%) showing a rise in water level and 48 wells (7%) showing a fall.

Rise in Water Levels:

Out of 703 dug wells, 653 wells are showing a rise in water levels, and out of these 653 wells, 55% are showing a rise of less than 2 meters, 36% are showing a rise between 2 to 4 meters, and only 19% of wells are showing a rise of more than 4 meters. A rise of less than 2 meters is mainly observed in northern parts of Bihar in Araria, Kishanganj, Purnea, Katihar, Gopalganj, East Champaran and West Champaran districts. The rise of 2 to 4 meters is primarily observed in southern Bihar in Bhojpur, Rohtas, Gaya, Aurangabad, Nalanda, Banka and Bhagalpur districts. The rise of over 4 meters is observed in wells located in Begusarai, Kaimur, Rohtas, Munger, Jamui and Banka districts.

Fall in Water Levels:

Out of 703 dug wells, 48 wells are showing a fall in water levels, and out of these 48 wells, 96% of wells are showing a fall of less than 2 meters and 4% are showing a fall between 2 to 4 meters. Fall is observed mainly in Madhubani, Sheohar and Sitamarhi districts.

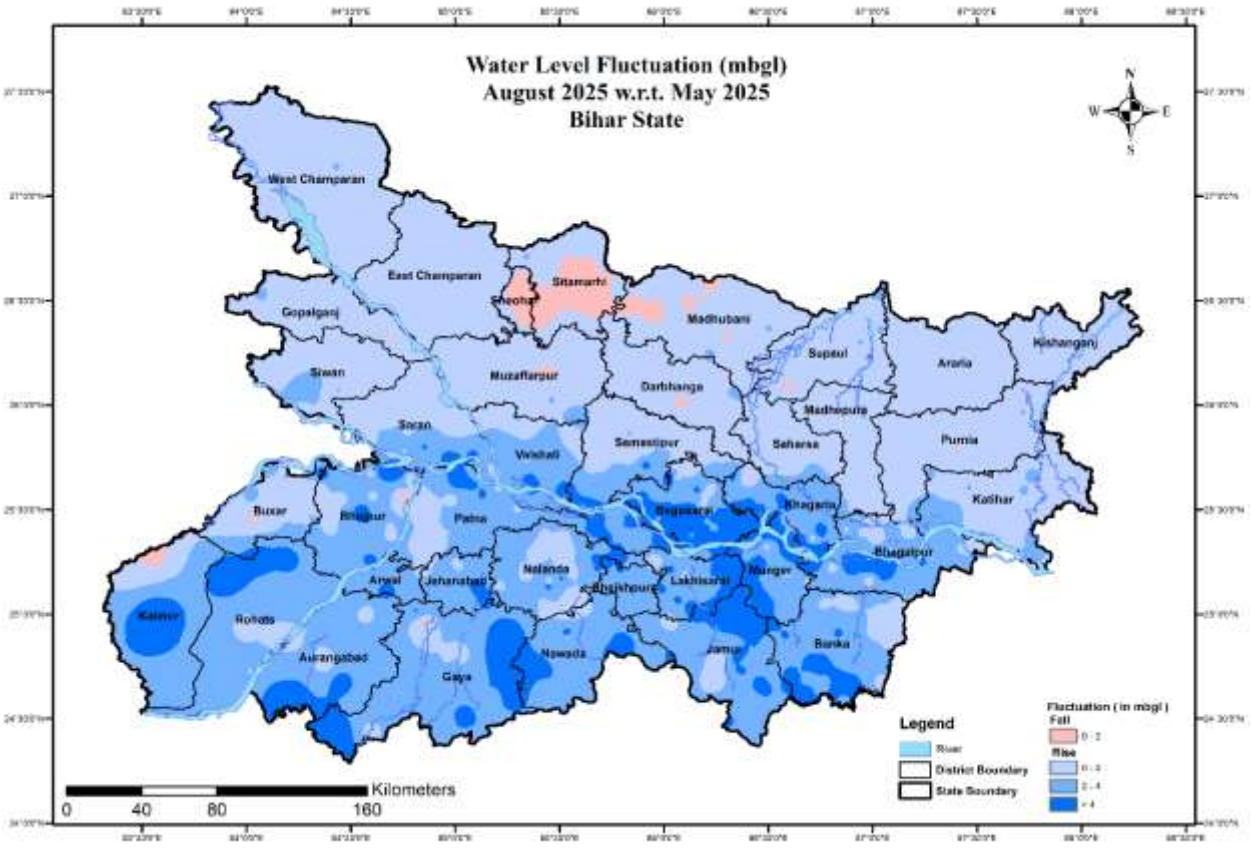

Figure 6- Map showing Seasonal Water level fluctuation map of unconfined aquifer of Bihar

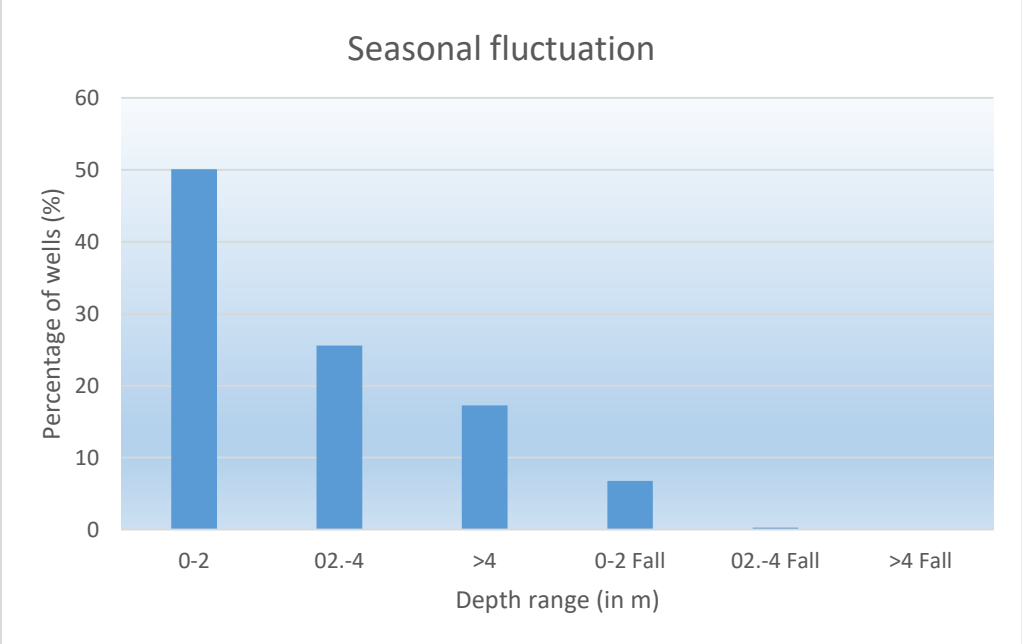

Figure 7- Chart showing Seasonal Water level fluctuation of Monitoring Stations (Dugwells) Bihar

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

The annual fluctuation in water levels within the unconfined aquifer (from August 2024 to August 2025) was analyzed using data from 581 dug wells, with 260 wells (45%) showing a rise in water level and 321 wells (55%) showing a fall in water level.

Rise in Water Levels:

Out of 581 dug wells, 260 wells are showing a rise in water levels, and out of these 260 wells, 84% are showing a rise of less than 2 meters, 15% are showing a rise between 2 to 4 meters, and only 1% of wells are showing a rise of more than 4 meters. A rise of less than 2 meters is mainly observed in parts of Araria, Kishanganj, Purnea, Katihar, Sheohar, Gopalganj,East Champaran, and West Champaran districts. The rise of 2 to 4 meters is primarily observed in Sitamarhi,Sheohar, West Champaran , Madhubani, Samastipur and Jamui districts. The rise of over 4 meters is observed in wells located in patch in Jamui districts.

Fall in Water Levels:

Out of 581 dug wells, 321 wells are showing a fall in water levels, and out of these 321 wells, 82% of wells are showing a fall of less than 2 meters,16% are showing a fall between 2 to 4 meters, and only 2% of wells are showing a fall of more than 4 meters. A fall of less than 2 meters is observed across most districts in south Bihar, significantly in parts of Vaishali, Muzaffarpur, Supaul ,Nalanda, Aurangabad, Seikhpura, Nawada, Munger, Banka and Gaya districts. The 16% of wells showing a fall of 2 to 4 meters are primarily located in parts of Gaya, Nalanda, Rohtas and Nawada districts. The fall of over 4 meters is observed in wells located in Gaya, Nalanda and Nawada district.

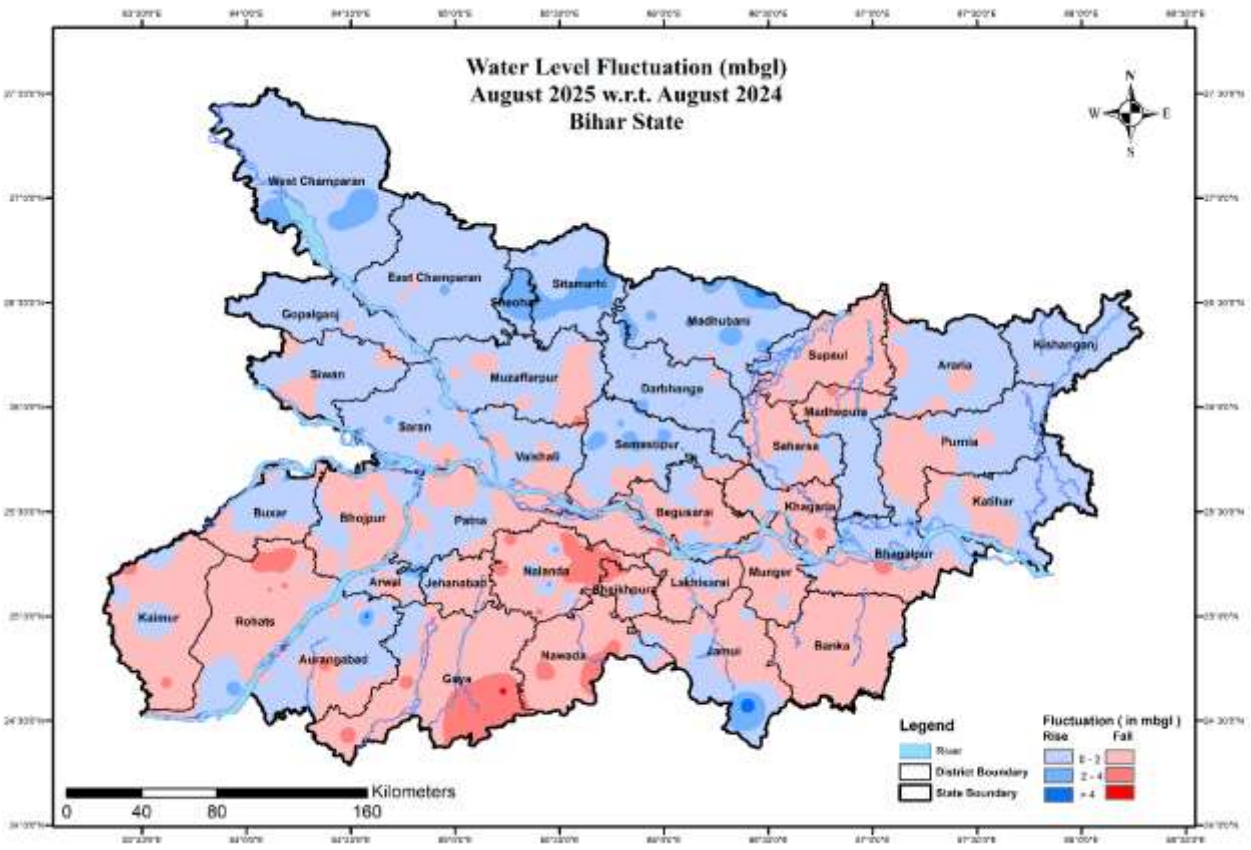

Figure 8-Map showing Annual Water level fluctuation map(August 2024 – August 2025) of unconfined aquifer of Bihar

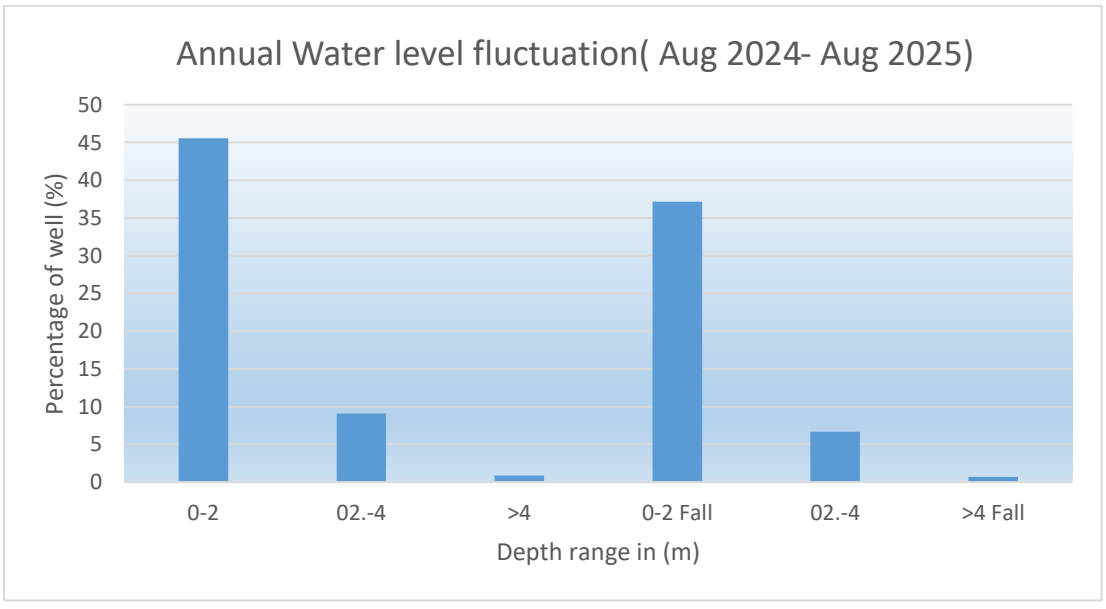

Figure 9- Chart showing Annual Water level fluctuation of Monitoring Stations (Dugwells) Bihar

Fluctuation of Water Level in Unconfined Aquifer (August 2023 and August 2025)

Fluctuation of water level in the unconfined aquifer between August 2023 and August 2025 has been analyzed from 608 dug wells. Out of these, 267 (44%) wells show a rise in water level, and 338 (56%) wells show a fall in water level.

Rise in Water Levels:

Out of 608 dug wells, 267 wells are showing a rise in water levels, and out of these 267 wells, 76% (204) of wells are showing a rise of less than 2 meters, 20%(53) are showing a rise between 2 to 4 meters, and only 4%(10) of wells are showing a rise of more than 4 meters. A rise of less than 2 meters is mainly observed in parts of Gaya, Nawada, Banka, Munger, Kaimur, Aurangabad, and Lakhisarai districts. The rise of 2 to 4 meters is primarily observed in Gaya, Rohtas, Jamui, Jehanabad and Nalanda districts. The rise of over 4 meters is observed in wells located in Gaya, Nalanda, Kaimur, and Muzaffarpur districts.

Fall in Water Levels:

Out of 608 dug wells, 338 wells are showing a fall in water levels, and out of these 338 wells, 84%(282) of wells are showing a fall of less than 2 meters, while the remaining 15%(51) are showing a fall between 2 to 4 meters, and only 1%(5) of wells are showing a fall of more than 4 meters. A fall of less than 2 meters is observed across all districts in North Bihar, significantly in parts of Saran, Siwan, Gopalganj, East &West Champaran, Purnea, Madhepura,Sheohar and Samastipur districts. The 8% of wells showing a fall of 2 to 4 meters are primarily located in Muzaffarpur,Darbhanga,Madhubani and Bhagalpur districts.

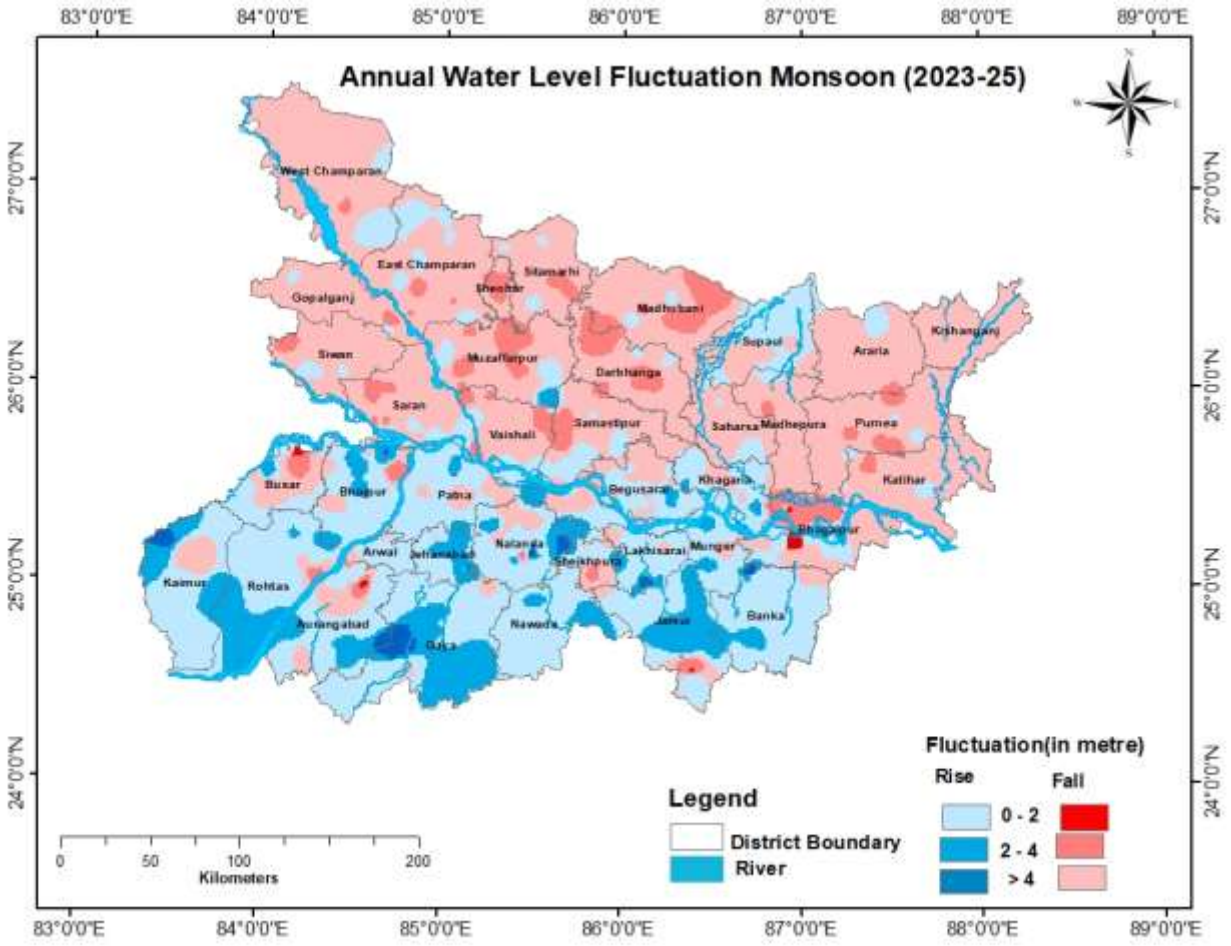

Figure 10-Map showing Annual Water level fluctuation map (August 2023 – and August 2025) of unconfined aquifer of Bihar

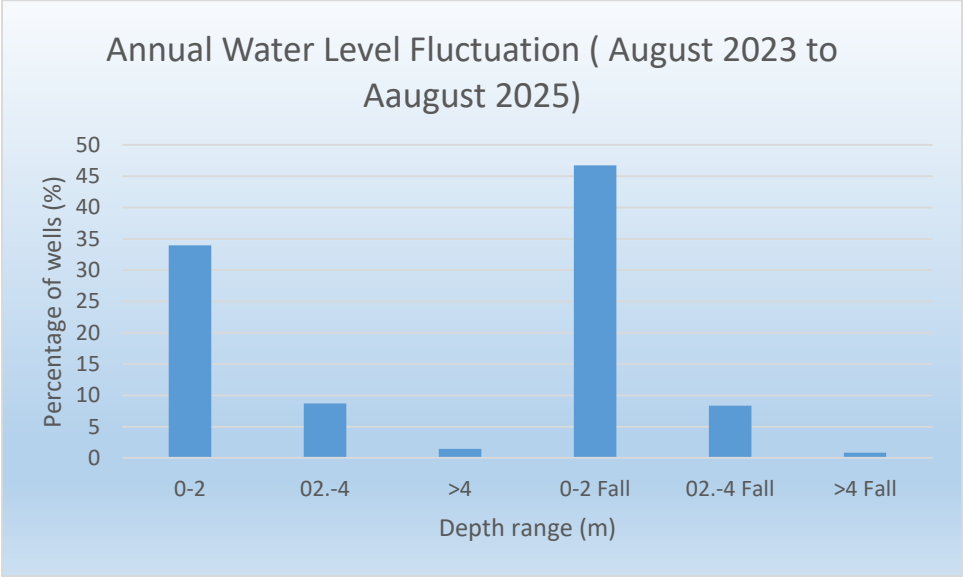

Figure 11- Chart showing Annual Water level fluctuation of Monitoring Stations (Dugwells) Bihar

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

Decadal fluctuation of water level in the unconfined aquifer (Decadal Mean August 2015–2024 to August 2025) has been analyzed from 538 dug wells. Out of these, 245 (46%) wells are showing a rise in water level, and 293(54%) wells are showing a fall in water level.

Rise in Water Levels:

Out of 538 dug wells, 245 wells are showing a rise in water levels. Out of these 245 wells, a water level rise of less than 2 meters is seen in 84% of the wells, 2 to 4 meters in 15% of the wells, and more than 4 meters in 1 % of the wells. A water level rise of less than 2 meters is observed across southern Bihar in Gaya, Nawada, Seikhpura, Jehanabad, Lakhisarai,Nalanda,Banka, Munger, Jamui districts, while a rise of 2 to 4 meters is significantly observed in wells located in Gaya, Jamui and Nawada districts

Fall in Water Levels:

Out of the 538 wells, 293 wells are showing a fall in water levels. Out of these 293 wells, 89% are showing a fall of less than 2 meters,10% are showing a fall in the range of 2 to 4 meters, and the remaining 1% of wells are showing a fall of more than 4 meters. A fall of less than 2 meters is observed in all districts, mainly in northern Bihar in parts of Muzaffarpur, East & West Champaran, Darbhanga, Araria,Gopalganj and Kishanganj districts. A fall beyond 2 meters is mainly observed in parts of Saran, Samastipur, Muzaffarpur,Kaimur,Madhubani and Bhagalpur districts.

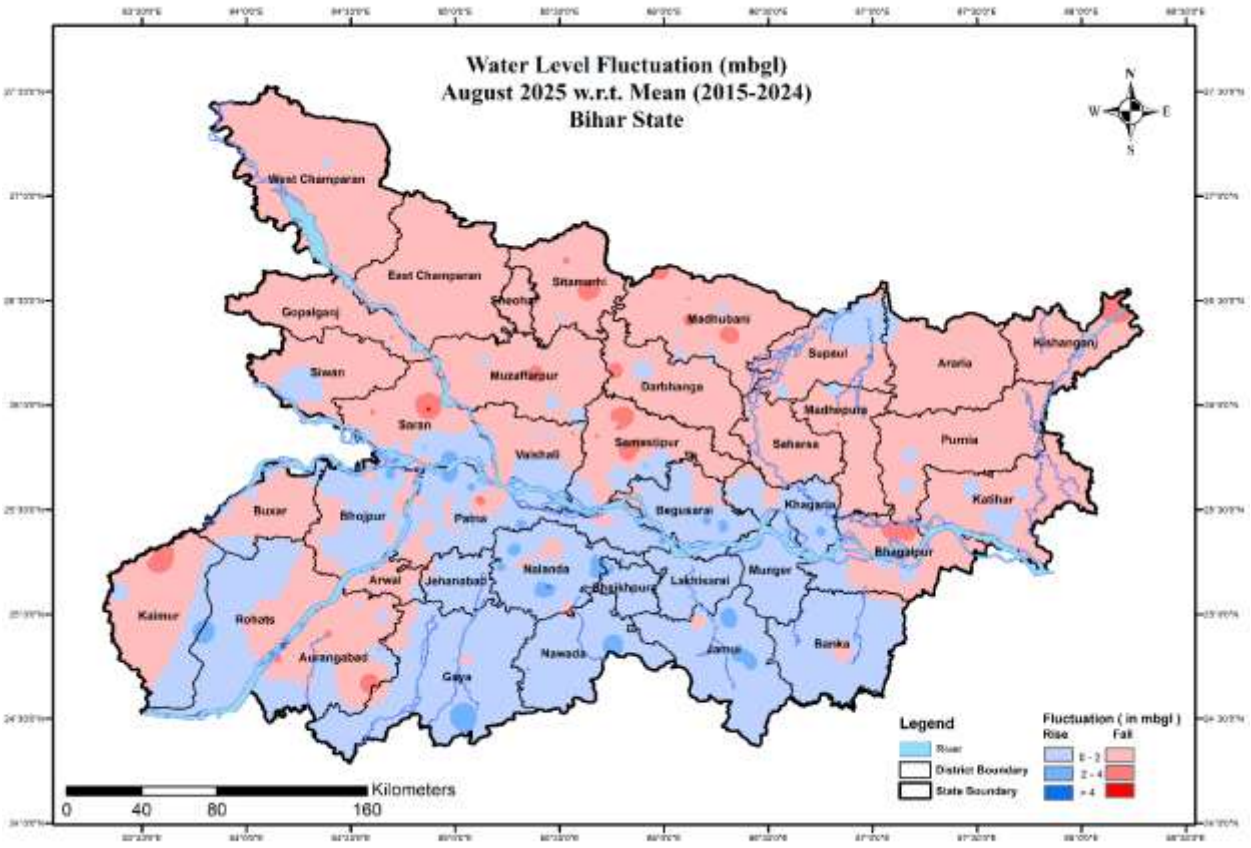

Figure 12- Map showing Decadal Water level fluctuation map of unconfined aquifer of Bihar

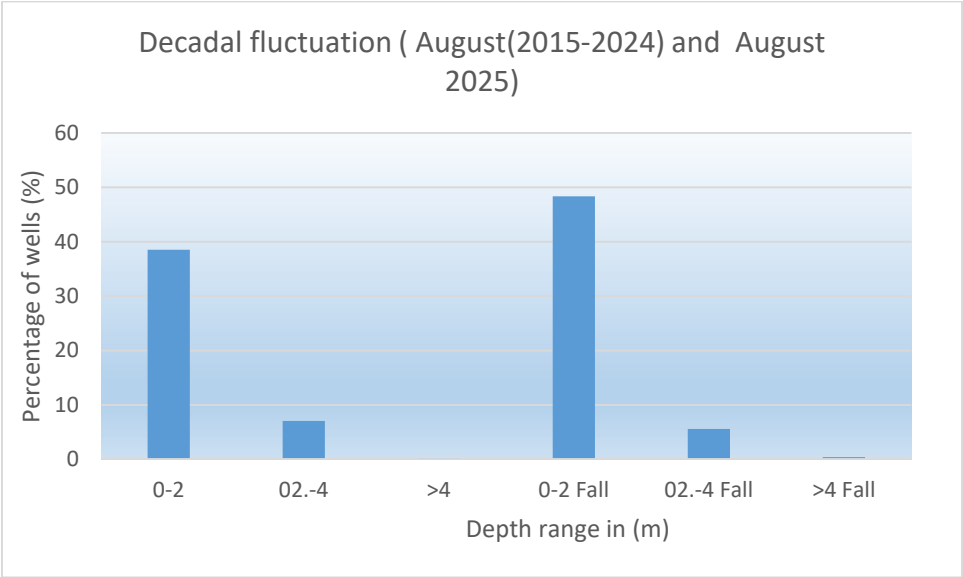

Figure 13- Chart showing Decadal Water level fluctuation of unconfined aquifer of Bihar

Summary

Depth to water level in the unconfined aquifer during August 2025, analyzed from 860 dug wells, ranged from 0.1 mbgl in Nalanda district to 11.3 mbgl in Bhagalpur district, with 29% of wells showing water levels less than 2 mbgl, 56% between 2 to 5 mbgl, 15% between 5 to 10 mbgl, and only 2 wells showing more than 10 mbgl water level.

Seasonal fluctuation (May to August 2025) based on 703 HNS wells shows 653 wells (93%) rising and 48 wells (7%) falling, with rise less than 2 m mainly in northern districts, 2 to 4 m in southern districts, and more than 4 m in parts of Begusarai, Kaimur, Rohtas, Munger, Jamui and Banka, while fall is observed mainly in parts of Madhubani, Sheohar and Sitamarhi.

Annual fluctuation (August 2024 to August 2025) from 581 wells shows 260 wells (45%) rising, mostly less than 2 m, and 321 wells (55%) falling, mostly less than 2 m and more than 4 m in parts of Gaya, Nalanda and Nawada. Between August 2023 and August 2025, analysis of 608 wells shows 267 wells (44%) rising, largely less than 2 m in southern districts, and 338 wells (56%) falling, mainly less than 2 m in northern districts.

Decadal fluctuation (2015–2025) from 538 wells shows 245 wells (46%) rising, mostly less than 2 m in southern Bihar, and 293 wells (54%) falling, largely less than 2 m across northern districts, and more than 2m fall observed in parts of Saran, Samastipur, Muzaffarpur, Kaimur, Madhubani and Bhagalpur.

Recommendations:

Based on the observed groundwater level fluctuations across Bihar, the following recommendations are proposed to ensure sustainable water resource management:

- Encourage rainwater harvesting in urban and rural areas to improve groundwater recharge.
- Conduct awareness campaigns on water conservation.
- Participatory groundwater management to be encouraged.