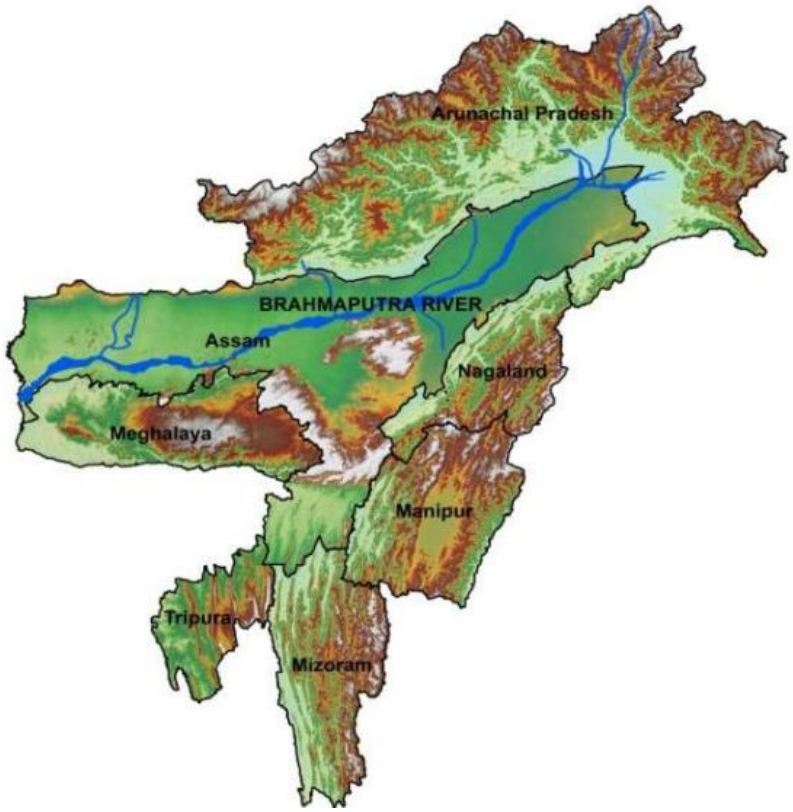
GROUND WATER LEVEL BULLETIN
MARCH 2025
NORTH EASTERN STATES



Issued by

Central Ground Water Board

North Eastern Region, Guwahati

1.0 INTRODUCTION

Groundwater bulletin published by CGWB depicts the changes in groundwater regime of the country through different seasons. It helps to obtain information on groundwater levels through representative monitoring wells of which, the important attributes of groundwater regime monitoring are groundwater level.

Groundwater regime monitoring started in the year 1969 by Central Ground Water Board. The natural conditions affecting groundwater regime involve climatic parameters like rainfall, evapotranspiration etc., whereas, anthropogenic factors include pumpage from the aquifer, recharge due to irrigation systems and other practices like waste disposal etc.

Groundwater levels are monitored four times a year; January, March, August and November.

2.0 STUDY AREA

The North-Eastern Region (NER) of India comprises of a unique agglomeration with diversified geological set-up. The spectacular physiographic set up includes; the stunning Himalayan Mountain belt in the North, the Indo-Myanmar Range in the east and the extensive Assam plains formed by the mighty Brahmaputra River. North-Eastern India, comprising of the seven states of the Indian Union, viz, Assam, Arunachal, Meghalaya, Nagaland, Mizoram, Manipur and Tripura, geologically represents a collage of different tectonic blocks with distinctive geological history.

The Region represents varied geomorphological and geological setup which ranges in age from Precambrian to Recent. It is manifested by the panoramic Himalayan Mountain Belt in the north, Shillong Massif Plateau in the south, the mighty Brahmaputra forming the extensive Assam plain in between and the Indo-Myanmar Range in the east. The central part of the terrain constitutes the Shillong–Mikir Precambrian massif (Meghalaya plateau and Mikir Hills of Assam), representing the north-eastern continuation of the Chhotanagpur Gneissic Complex (CGC) across the Bengal Basin (Ganges–Brahmaputra valley). The Dauki Fault demarcates the southern boundary of the plateau while, the northern and eastern edges are covered by the alluviums of the Brahmaputra river valley in the Assam plains. Several inselbergs of the basement jut out in the Brahmaputra alluvial plains, of which, those at Goalpara and Dhubri are the most prominent ones. The easternmost segment of the Himalaya including the ‘Eastern Himalayan Syntaxis’ (occupying Arunachal Pradesh) and the Indo-Burman Range (IBR) passing through Nagaland–Manipur binds the region along its north and east. Along the west of the IBR, there are N–S to NE–SW trending Neogene molasse sediments of shelf facies, the southern parts of which make up the low hill ranges of Tripura–Mizoram. The Bengal Basin (Rajmahal–Garo Hills gap) intervenes between the Indian Peninsular shield and the North-Eastern region, though there is an uninterrupted continuation of the Himalayan Range along the northern territory.

Hydrogeologically, the area is grouped into porous and fissured formations based on the nature of openings in the aquifer

system. Alluvium and sedimentary formations and fissured consolidated rocks form the main repositories of ground water.

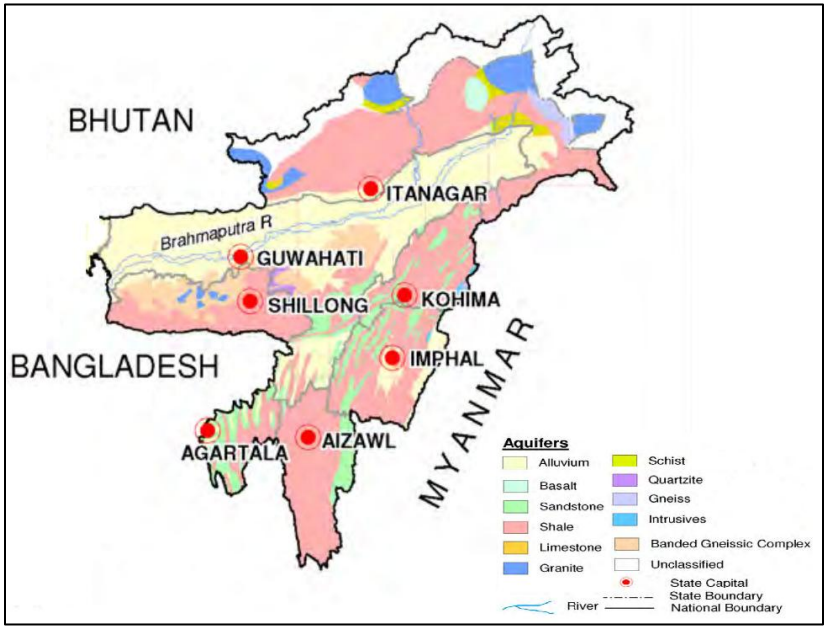


Fig.1: Map showing disposition of principal aquifers of NE States

As per 2024 Groundwater resource assessment, the Annual Extractable Ground Water Resource for Assam state 3.46 bcm for Arunachal Pradesh, 1.53 bcm for Meghalaya, 0.47 bcm for Manipur, 0.19 bcm for Mizoram, 0.56 bcm for Nagaland and 1.18 bcm for Tripura. Out of total 245 blocks, only Kamrup Metro, Assam falls under Semi-Critical Category. The rest of the 244 blocks are in Safe Category.

3.0 GROUND WATER LEVEL MONITORING

Central Ground Water Board, North Eastern Region, is monitoring changes in ground water regime in the states on quarterly basis continuously. Monitoring of March 2025 started from 1st of March till 10th. This is facilitated by a network of monitoring stations in the State located in diverse hydrogeological and geomorphic units. The total numbers of monitoring stations as of March 2025 is 955 of which 695 are dug wells, 123 Piezometers (tubewells & borewells) and 70 springs.

Table 1: State wise number of monitoring stations

Sl. No.	State	Existing Monitoring NHNS station as on March 2025			
		Dug well	Tubewell	Springs	Total
1	Arunachal Pradesh	27	4	6	37
2	Assam	389	104	0	493
3	Manipur	4	0	2	6
4	Meghalaya	74	15	21	110
5	Mizoram	9	0	27	36
6	Nagaland	101	1	26	128
7	Tripura	99	46	0	145
	Total	**703**	**170**	**82**	**955**

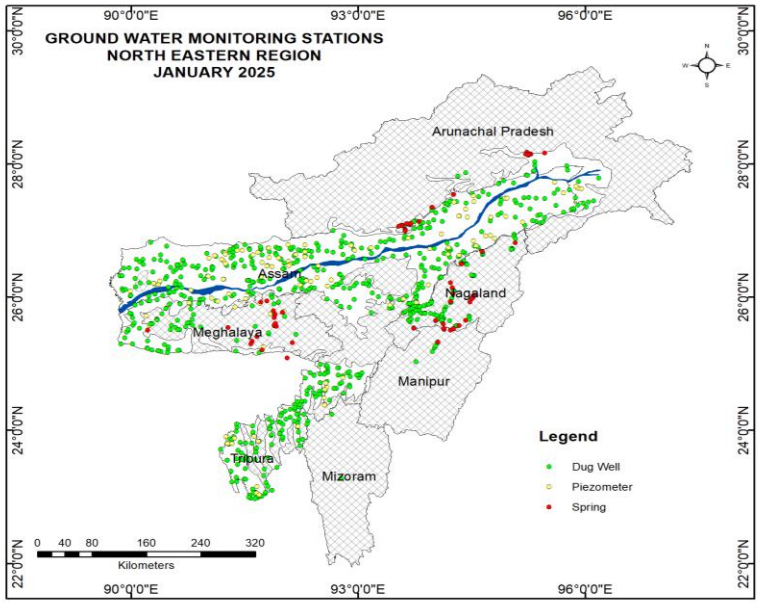


Fig.2: NHS monitoring stations of NE States, as on March, 2025

4.0 GROUND WATER LEVEL SCENARIO IN UNCONFINED AQUIFERS

4.1 Depth to Water level (March 2025)

Arunachal Pradesh

A total of 23 dugwell stations were monitored for depth to water level range for March 2025. Water level between the range of 0-2 m bgl was recorded in 21.74% (5) of wells, between 2 to 5 m bgl in 43.48% (10) of wells, between 5 to 10 m bgl in 21.74% (5) of wells and between 10 to 20 m bgl in 13.04% (3) of wells. Minimum and maximum water level recorded in the district is -0.35 mbgl and 11.96 mbgl respectively from Papumpare district.

Assam

A total of 351 wells were monitored in March 2025 and used for analysis of depth to water level in Assam. In dug wells (351), water level between 0-2 m bgl was recorded in 19.66% (69 wells) of wells, between 2 to 5 m bgl in 59.54% (209) of wells, between 5 to 10 m bgl in 17.38% (61) of wells, between 10 to 20 m bgl in 3.13% (11) of wells and 1 (0.18%) well in East Karbi Anglong was found to have water level >20m bgl. Minimum water level of 0.02 m bgl was recorded from in Sibsagar district and maximum water level of 21.43 mbgl was also recorded from East Karbi Anglong district.

Manipur

All four dug well stations in Senapati district have water level in 2-5m range.

Meghalaya

During March 2025, a total of 71 dugwell stations from Meghalaya were monitored and analyzed. Water level in the range of 0-2m were recorded in 30.99% (22) of wells, 2-5 m in 60.56 % (43) wells and 8.45% (6) stations in 5-10m range of water level. Minimum water level of 0.36 m bgl in South West Garo Hill district and maximum water level of 7.95 m bgl from East Khasi Hills district is recorded for March 2025.

Mizoram

In Mizoram, a total of three (3) dugwell stations were monitored in Kolasib which had water level of 1.33 m bgl. Water level in the range of 0-2m were recorded in 66.67% (2) of wells and between 5-10 m in 33.33 % (1) of well.

Nagaland

In Nagaland 96 dugwell stations were monitored and analyzed. Water level in the range of 0-2m were recorded in 17.71% (17) of wells, 2-5 m in 34.38 % (33) wells, 35.42% (34) stations in 5-10m range of water level and between 10 to 20 mbgl in 12.50% (12) of wells. Minimum water level of 0.22 m bgl was recorded from Mon district and maximum water level of 18.27 m bgl was also recorded from Dimapur district.

Tripura

The depth to water level of 95 dugwell stations were monitored and analyzed for Tripura in March, 2025. Water level in the range of 0-2m is recorded in 17.89% (17) stations, 2-5m range in 56.84% (54) stations, 5-10 m range in 24.21% (23) stations, 1.05% (1) well recorded water level in 10-20 m range. Minimum water level of 0.48 m bgl from South Tripura district and maximum water level of 10.78 m bgl was recorded from Gomati district respectively.

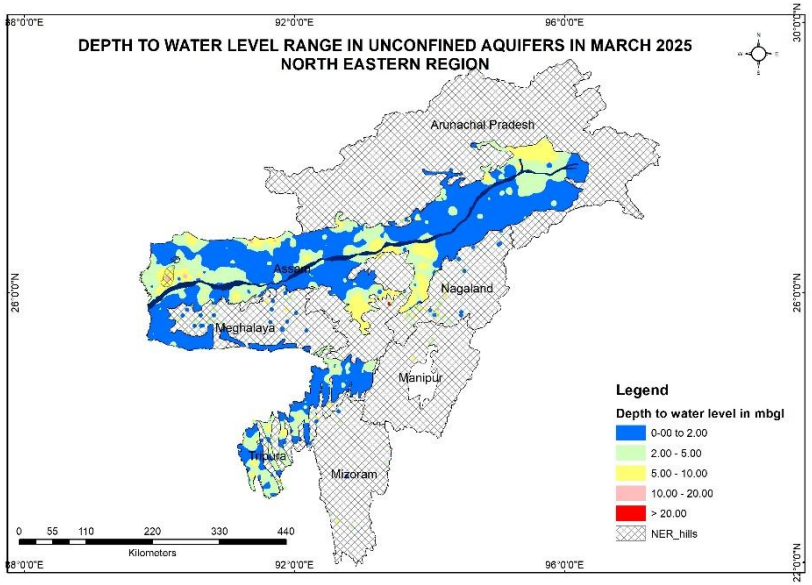


Fig.3: Depth to Water level Map for unconfined aquifers (March 2025), NE States

4.2 Annual Fluctuation in Water level (March 2024 Vs March 2025)

Arunachal Pradesh

Comparison of March 2024 to March 2025 water level data was done for 22 stations in Arunachal Pradesh. Fall and rise was recorded in 8 (36.36%) stations and 14 (63.64%) stations respectively. Rise in the range of 0-2m was recorded in 12 (54.55%) stations and two stations (9.09%) in 2-4m range. Fall in 0-2m range was recorded in 7 (31.82%) stations and one station from Lower Dibang valley shows fall in >4m range.

Assam

A total of 271 dugwell stations were analyzed for Assam in March 2024 to March 2025. 156 (57.56%) stations show rise and 115 (43.48%) stations show fall in water level. Rise in the range of 0-2m range is recorded in 103 (38.01%) stations, 2-4m range in 7 (2.58%) stations and 5 (1.85%) stations have water level fall in >4m range. Rise of >4m range is recorded in districts of Baksa, Kokrajhar, and Sivsagar districts. Fall of >4m range is recorded from Cachar, Golaghat, Kamrup, Sonitpur and Udalguri districts.

Manipur

Four dug well stations in Senapati district were analyzed. 2 stations show falling trend and the other two stations show rising trend. Both rise and fall are in 0-2m range.

Meghalaya

A total of 95 stations were analyzed for Meghalaya in March 2025 with respect to March 2024. 60 (63.16%) stations show rising water level trend and 35 (36.84%) stations show fall in water level trend. Fall in the range of 0-2m range is recorded in 34 (35.79%) stations and 1(1.05%) station shows water level trend in 2-4m range. Rise in the range of 0-2m range is recorded in 51 (53.68%) stations, 2-4m range in 7 (7.37%) stations and 2 (2.11%) stations have water level trend in >4m range.

Mizoram

The two dugwell stations one in Serchip and the other at Kolasib district show fall in water level in the range of 0-2 m.

Nagaland

A total of 89 stations were analysed for annual fluctutation of March 2025 with respect to March 2024. 18 (20.22%) stations show rise and 71 (79.78%) stations show fall in water level. Rise in 0-2m was recorded in 15 (16.85%) stations, 2 (2.25%) stations in 2-4m range and 1 (1.12%) station in >4m range. Fall in the range of 0-2m is recorded in 49 (55.06%) stations, 17 (19.10%) in 2-4m range and in 5 station in >4m range. Fall of >4m range is recorded from Dimapur, Mokochung and Tsemenyu districts. Rise of >4m is recorded from a dugwell in Kohima district.

Tripura

In Tripura state, 95 stations were analyzed for March 2025 with respect to March 2024 water level. In dugwells (90), 44 (48.89%) stations show rise and 46 (51.11%) stations show falling trend. Rise in the range of 0-2m is recorded in 35 (38.89%) stations, 2-4m in 7 (7.78%) stations and 2 (2.22%) stations have water level trend in >4m range. Fall in the range of 0-2m range is recorded in 41 (45.56%) stations, 2-4m in 3 (3.33%) stations and 2 (2.22%) stations have water level trend in >4m range. Five (5) tube well stations were monitored in the state. 4 (80%) stations show rising trend in the range of 0-2m and 2 (20%) stations show falling trend in the range of 0-2m.

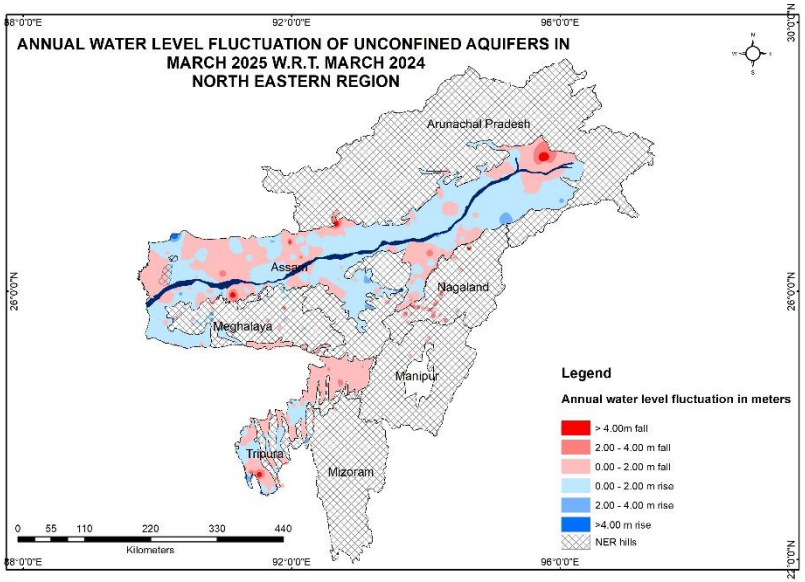


Fig.4: Annual Fluctuation in water level for unconfined aquifers (March 2024 Vs March 2025)

4.3 Annual Fluctuation in Water level (March 2023 Vs March 2025)

Arunachal Pradesh

Comparison of March 2034 to March 2025 water level data was done for 21 stations in Arunachal Pradesh. Fall and rise was recorded in 7 (33.33%) stations and 14 (66.67%) stations respectively. Rise in the range of 0-2m was recorded in 11 (52.38%) stations and 3 (14.29%) stations in 2-4m range. Fall in 0-2m range was recorded in 7 (33.33%) stations in the state.

Assam

A total of 249 stations were analyzed for Assam in March 2023 to March 2025. Out of the 249 stations, 122 (49%) stations show rise and 127 (57%) stations show fall in water level. Rise in the range of 0-2m range is recorded in 102 (40.96%) stations, 2-4m range in 15 (6.02%) stations and 5 (2.01%) stations have water level fall in >4m range. Rise of >4m range is recorded in districts of Baksa, East Karbi Anglong and Golaghat districts. Fall in the range of 0-2m range is recorded in 107 (42.97%) stations, 2-4m range in 15 (6.02%) stations and 5 (2.01%) stations have water level fall in >4m range. Fall of >4m range is recorded from Baksa, Cachar, Golaghat, Kamrup and Nalbari districts.

Meghalaya

A total of 57 dugwell stations were analyzed for Meghalaya in March 2025 with respect to March 2023. 30 (52.63%) stations show rising water level trend and 27 (47.37%) stations show fall in water level trend. Rise in the range of 0-2m range is recorded in 25 (43.86%) stations and 2-4m range in 5 (8.77%) stations. Fall in the range of 0-2m range is recorded in 26 (45.61%) stations and 1 (1.75%) station has water level trend in 2-4m range.

Nagaland

A total of 9 stations were analyzed for March 2025 with respect to March 2023. Out of the 9 stations, 6 (66.67%) stations show rise and 3 (33.33%) stations show fall in water level. Rise in 0-2m was recorded in 6 (66.70%) stations. Fall in the range of 0-2m is recorded in 1 (11.11%) station and 2 (22.20) stations have water level in >4m range.

Tripura

In Tripura state, 10 dugwell stations were analysed for March 2025 with respect to March 2023 water level. 4 (40%) stations show rise and 6 (60%) stations show falling trend. Rise in the range of 0-2m is recorded in 3 (30%) stations and 1 (10%) station in 2-4m. Fall in the range of 0-2m range is recorded in 6 (60%) stations.

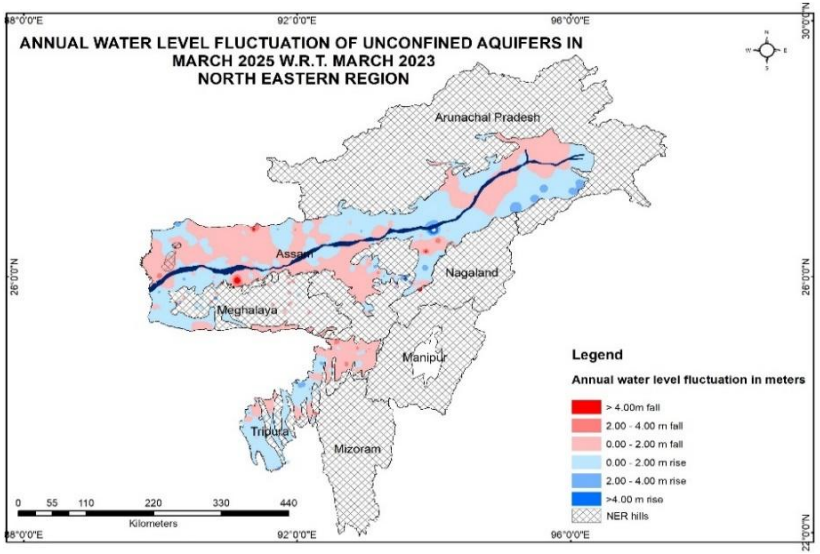


Fig. 5: Annual Fluctuation in water level for unconfined aquifers (March 2023 Vs March 2025)

4.4 Decadal Fluctuation in Water level (March 2015 to March 2024 Vs March 2025)

Arunachal Pradesh

In Arunachal Pradesh 18 stations were analyzed for decadal flutctuation. 15 (83.33%) stations show rise and 3 (16.67%) stations show fall in water level. Rise in 0-2m was recorded in 10 (55.56%) stations, 2 (11.11%) stations in 2-4m range and 3 (16.67%) stations in >4m range. Fall in 3 (16.67%) stations in 0-2m range is recorded for the state. Minimum fall of 0.04 m and maximum fall of 0.68 m are recorded from Papumpare and East Siang districts respectively.

Assam

Decadal analyses of 221 dugwell stations was done for Assam state. Out of the 211 stations, 130 (61.61%) stations show rise and 81 (38.39%) stations show fall in water level. Rise is recorded in 118 (55.92%) stations in 0-2m range, 9 (4.27%) stations in 2-4m range and 3 (1.42%) station have >4m range rise in water level. Fall in 0-2m range is recorded in 72 (34.12%) stations, 6 (2.84%) stations are found in 2-4m range and 3 (1.42%) station have >4m range rise in water level. Minimum rise of 0.04 m from Sonitpur district and maximum rise of 4.39 m from East Karbi Anglong district is recorded respectively. Minimum fall of 0.02m and maximum fall of 5.13m is recorded from Lakhimpur district and Kamrup district respectively.

Meghalaya

Fourty six (46) stations in Meghalaya state were analyzed for March 2025 with respect to decadal mean. Rise is recorded in 34 (73.91%) stations and fall is recorded in 12 (26.09%) stations. Rise in the range of 0-2m range is recorded in 26 (56.52%) of stations, 5 (10.87%) stations in 2-4m range and 3 (6.52%) stations have water level in >4m range. Fall in 0-2m range is recorded in 12 (26.09%) stations. Minimum rise of 0.03m is recorded from Ri Bhoi district and maximum rise of 3.91 m is

recorded from East Garo Hills district. Minimum fall of 0.01m from South West Garo Hill district and maximum of 0.93 m fall from Ri-Bhoi district was recorded.

Nagaland

Decadal analysis for 9 wells in Dimapur district was done for Nagaland state. Out of the 9 stations, 3 33.33%) stations show rise and 6 (66.67%) stations show fall in the district. Rise in 0-2 m range is found in 2 (22.22%) stations and 1 (11.11%) station in 2-4m range. Fall in the range of 0-2m is recorded in 2 (22.22%) stations, 3 (33.33%) stations in 2-4 m range and 1 (11.11%) station have water level range of > 4 m.

Tripura

In Tripura state, a total of 42 dugwell stations were analyzed. Out of the 42 stations, 26 (61.90%) stations show rising trend and 16 (38.10%) stations show falling trend. 24 (57.14%) stations show rise in 0-2m range and 2 (4.76%) stations show rise in 2-4m range. Fall in 0-2 m range is observed in 14 (33.33%) stations and 2 (4.76%) in 2-4 m range. Minimum rise of 0.11 m from Hailakandi district and maximum rise of 2.51 from North Tripura district is recorded respectively. Minimum fall of 0.11 m and maximum fall of 2.62 m is recorded from West Tripura district and Hailakandi district respectively.

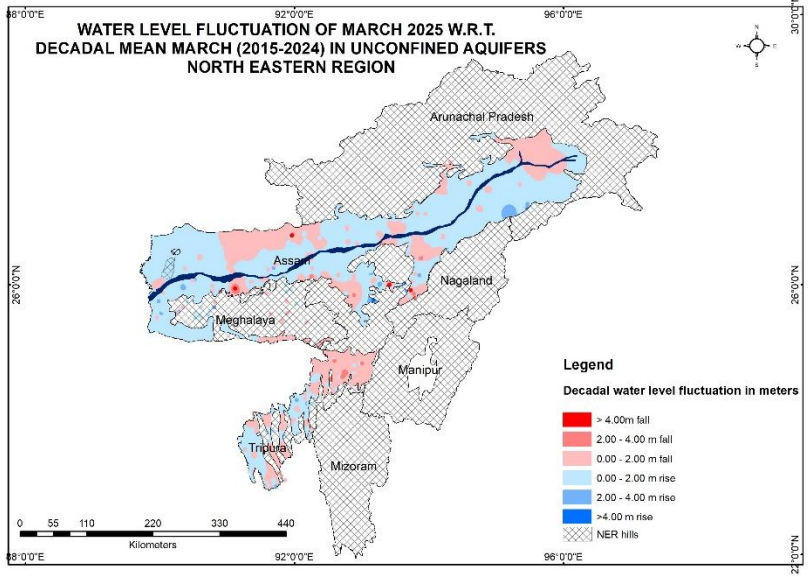


Fig. 6: Decadal Fluctuation in water level for unconfined aquifers (March 2015 to March 2024 Vs March 2025)

5.0 Measurement of Spring discharge in the Hilly Regions Arunachal Pradesh

Seven (7) springs were monitored in Arunachal Pradesh in March 2025. The springs are from Papumpare and Kamle districts. The discharge of the springs ranges within 0.03-0.12 lps.

Manipur

Two springs were monitored in Manipur, both are in Senapati district. The discharge from the spring at Mao gate is 0.2 lps and Upper Kathiko spring has a discharge of 0.02 lps.

Meghalaya

A total of 21 springs were measured in six districts of Meghalaya namely, Ri Bhoi, East Khasi Hills, West Khasi Hills, South West Khasi Hills, West Garo Hills and West Jaintia Hills. The discharge from the springs range from 0.004-6.15lps. The minimum discharge of 0.004 lps was reported from Umsamlem spring, Umsning, Ri-Bhoi district and maximum of 6.15 lps was recorded from Umshing Umjapung spring, mawlai in East Khasi Hills district.

Mizoram

Twenty seven (27) springs from seven districts were monitored in Mizoram state during the month of March, 2025 and out of which fourteen (14) were found to be dry. The discharge from the rest of the thirteen (13) springs range from 0.01 lps to 1.04 lps. The minimum discharge of 0.01 lps was recorded from Kolasib and Champai districts and the maximum discharge of 1.04 lps was recorded from Lunglei district.

Nagaland

Twenty five (25) springs were monitored in Nagaland state. The discharge of the springs range from <0.001- 0.73 lps. Discharge of <0.001lps were recorded from Khuwaboto and South Point West spring in Zunheboto district. Maximum discharge of 0.73ps was recorded from Tuimei Spring in Mon district.

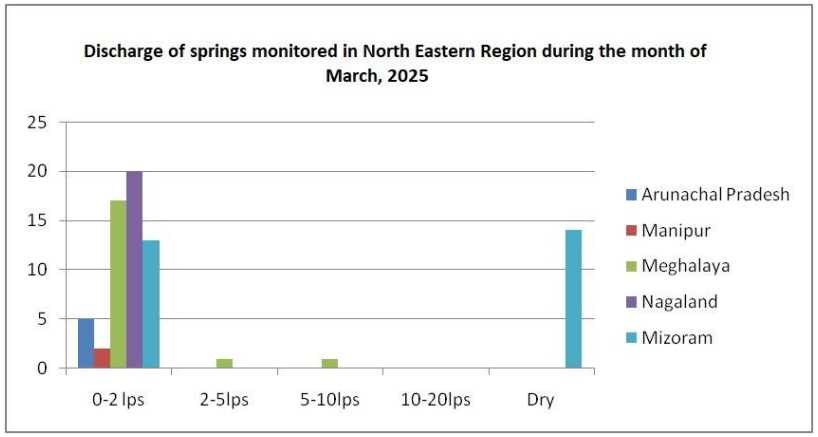


Fig.7: Springs monitored in NER with discharge (in lps) for March, 2025

6.0 Summary

As a component of the National Ground Water Monitoring Programme, the CGWB, NER conducts monitoring of the ground water conditions on quarterly basis: in January, March(pre-monsoon), August, and November (post- monsoon). Additionally, a yearly assessment of ground water quality is also carried out during the month of March. As of March, 2025, the region monitored 643 dug wells, 70 tubewells, 24 borewells and 82 springs. This comprehensive effort aims to portray the variations in the groundwater conditions across different aquifers in the North Eastern Region.

In March 2025, 95.65% of the dugwells exhibited water level within 10 m bgl, 4.20% within water level range of 10-20m bgl and only one well (0.16%) with water level of > 20 m bgl was reported from East Karbi Anglong district of Assam

Annual fluctuation in water level for March 2025 with respect to March-2024 shows that rise and fall is in the range of 0-2 m. This similar trend was observed for water level comparison study of March-2025 wrt to March 2023.

Study of decadal fluctuation in water level (March 2015-2024 vs March 2025) was carried out for the region. Rise in water level was observed in 63.80% of the stations and 32.60% of the wells show fall in water level when compared to the decadal January 2025 mean.

A total of 82 springs were monitored during the month of March, 2025. Maximum of the springs have discharge within the range of 0-2 lps. One spring in Mawsynram and Malwai, Meghalaya has discharge in 2-5 lps range and 5-10 lps respectively.

7.0 Recommendations

Analysis of groundwater scenario of North Eastern Region reveals that the dynamics of groundwater is highly related with the variation in rainfall. Hence the following recommendations have been proposed:

- To sustain Monsoon Recharge, efforts must be made to harvest rainwater through check dams, percolation tank at sites highlighted in Artificial Recharge Master Plan. Efforts must be given to protect and enhance natural recharge zones identified in District Recharge Plan to retain monsoon benefits.
- Promote efficient micro-irrigation techniques like drip and sprinkler irrigation to reduce groundwater extraction and encourage farmers to grow less water-intensive crops. Adopt crop diversification to shift from high-water-consuming crops (paddy, sugarcane) to less-water-consuming crops.
- In deep water level zones (>20m), enforce strict regulations on dependency on borewell by implementing incentives for sustainable practices. In Urban areas, dependency on deeper aquifers has to be curbed by improving surface water supply for domestic use. Promote the reuse of treated water for non-potable purposes to lessen groundwater exploitation.
- Promote afforestation in depleted regions to improve soil moisture retention and groundwater recharge. Select native tree species with deep root systems to enhance percolation and groundwater sustainability.
- Implement measures such as protecting surrounding vegetation, preventing pollution, managing land use practices, and promoting community awareness for springs longevity. Rejuvenation efforts such as desilting, restoring native plant species, and improving water flow channels, can revitalize degraded springs and enhance their resilience. A collaborative approach involving local stakeholders, environmental organizations, and government bodies can foster lasting stewardship and safeguard these natural treasures for future generations.
- Escalate Community Awareness programs to educate farmers and industries on water-efficient practices. Establish community water conservation groups.