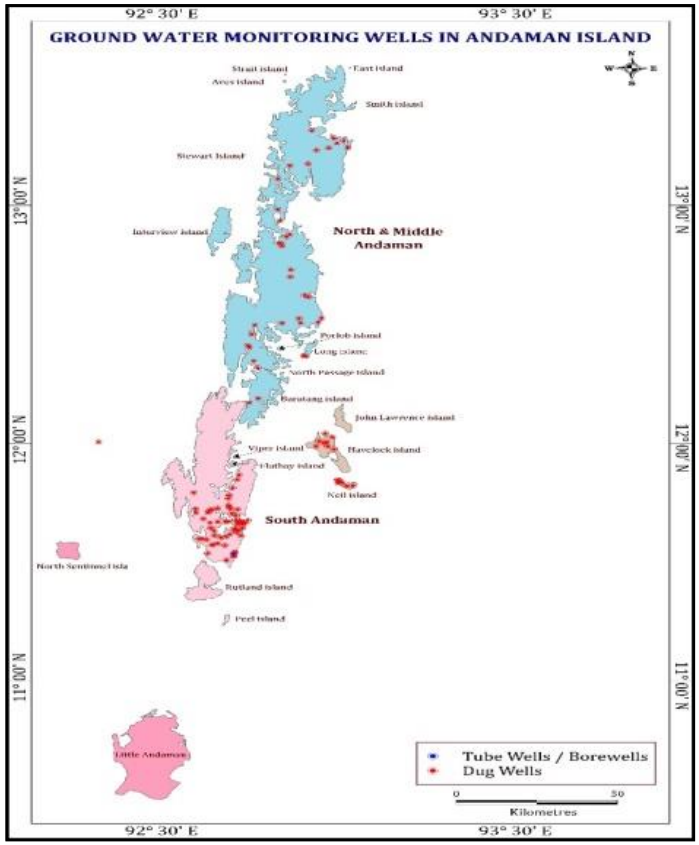

GROUND WATER LEVEL BULLETIN

April 2025

ANDAMAN & NICOBAR ISLANDS

ABSTRACT

Present Bulletin prepared on ground water scenario of Andaman state highlighting the findings, status of ground water level in shallow aquifers and its seasonal, annual and decadal fluctuation during April-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.

Groundwater levels are being measured in Andaman by CGWB, Eastern Region 2 times a year in Andaman during April (Pre-Monsoon) and November (Post-Monsoon).

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 Andaman and Nicobar Islands (A & N Islands) is one of the Union Territories of India and are situated as a dissected chain in an arcuate fashion oriented N-S in the Bay of Bengal off the Eastern Coast of India. These Islands are extended between 6° to 14° N and 92° to 94° E in between Mayanmar and Sumatra (Indonesia) over a distance of 780 km (figure-1). This Union Territory is divided into two districts, i.e. Andaman and Nicobar. The northern group of Islands forms the Andaman district, is further sub-divided into three parts namely, North Andaman, Middle Andaman and South Andaman. The southern group of islands is separated from the northern group by about 140 km deep sea, the 10° channel, forms the Nicobar district.

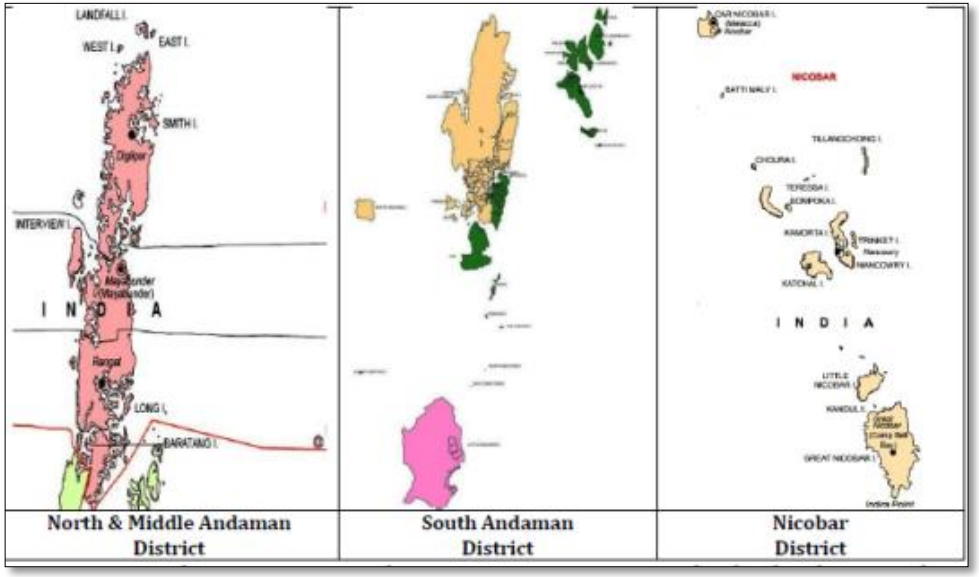

Figure-1: Administrative map showing district-wise major Islands of Andaman and Nicobar Islands

3.0 GROUND WATER LEVEL MONITORING

Central Ground Water Board, Eastern Region, has set up a network of 113 monitoring wells known as National Hydrographic Network Stations (NHNS) in Andamans Island which includes 111 nos. of Dugwells and 02 nos. of Borewells. The district-wise breakup of the water level monitoring stations is given in Table-1

Total 110 dugwells tapping shallow/unconfined aquifers were monitored in Andaman during Pre-Monsoon 2025 (figure-2).

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

Sl. No	Name of the District	Number of GW Monitoring Stations (as on March 2025)				
		Dug Well	Piezometer	Handpump	Spring	Total
Andaman						
1	South Andaman	58	2 (BW)	0	0	60
2	Ross Island	1	0	0	0	1
3	North Andaman	16	0	0	0	16
4	Neil Island	6	0	0	0	6
5	Middle Andaman	18	0	0	0	18
6	Long Island	4	0	0	0	4
7	Havelock Island	8	0	0	0	8
	Total	**111**	**2**	**0**	**0**	**113**

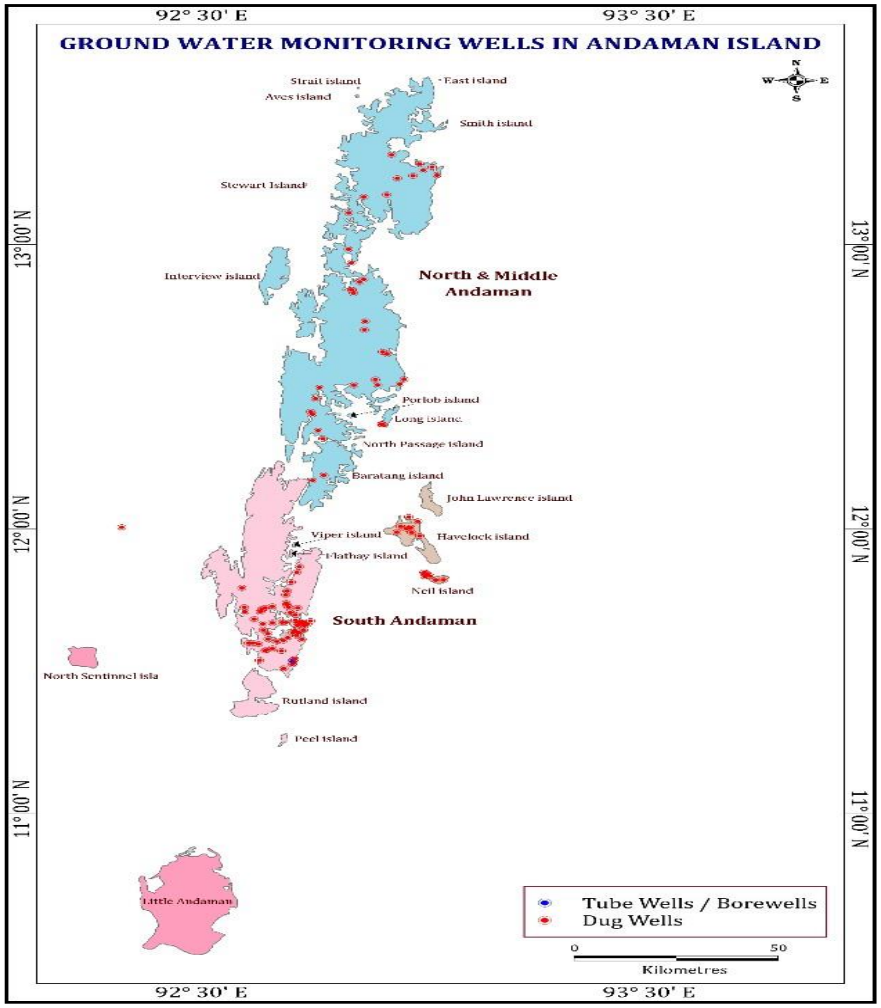

Figure- 2: Map showing locations of monitoring wells (NHNS) in Andaman

4.0 RAIN FALL

Andaman Islands enjoy typical tropical climate all through the year. With an average temperature of around 23°C (minimum) and not exceeding 30°C (maximum), Andaman Islands are hot and humid generally. Relative humidity ranges from 79% to 89%, average wind speed is 7 to 10 km/hr, maximum temperature varies between 27° to 33°C and minimum temperature fluctuates between 21° to 25° C. Evaporation rate is very high, i.e. 1500-1800 mm/year because of the location of the archipelago close to the equator i.e. 6°N to 14°N. The high humidity levels are tempered by the sea breeze that springs up making the climate pleasant throughout the day, more so especially in the evenings. In spite of copious rainfall, the islands face acute scarcity of fresh water especially in the years of recession of monsoon.

The district-wise actual rainfall during Pre-monsoon 2025 is given in the Table-1 and figure-3. The actual annual rainfall of the state is 707.3 mm. South Andaman district received 36% (highest) of total rainfall in Pre-monsoon 2025. While North and Middle Andaman district received only 31% (lowest) of total rainfall (Figure-3).

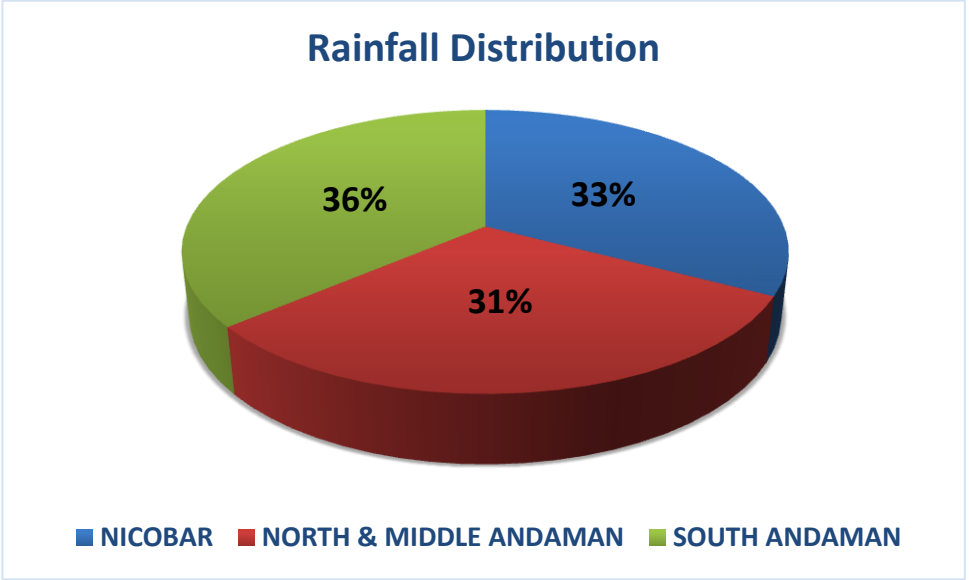

Figure-3: Pie diagram of rainfall distribution during pre-monsoon 2025 over the Andaman and Nicobar Islands

Table-3.4 Actual Rainfall Distribution in Andaman and Nicobar during pre-monsoon 2025

Sl. No.	DISTRICT	Actual (mm)	Normal (mm)	% DEP.
1	Nicobar	595.6	507.3	17%
2	North & Middle Andaman	565.7	393.1	44%
3	South Andaman	659	492.6	34%

5.0 GROUND WATER LEVEL SCENARIO (APRIL 2025) for ANDAMAN ISLANDS

In Andaman water level being measured twice annually during Pre-Monsoon and Post-Monsoon.

DEPTH TO WATER LEVEL PRE-MONSOON 2025

Depth to water level generally varies, between 0-2m, 2-5m and 5-10m below ground level from 110 measured Dugwells.

In Unconfined aquifers, majority of the wells show water level ranges between 0-2 m (81%) followed by 2-5 m (16%). Only 3 wells fall beyond 5-10m category. The minimum water level at 0.06 m bgl in Ferrargunj Block and maximum of 6.60 m bgl were recorded in Pothrapur Block of South Andaman Islands (figure-4&5).

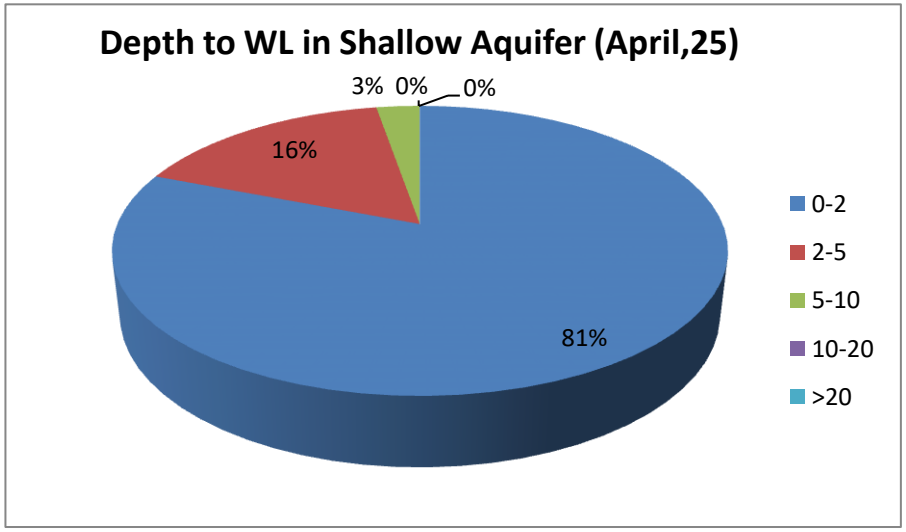

Figure-4: Percentage of wells in different water level ranges in Unconfined aquifer (April, 2025)

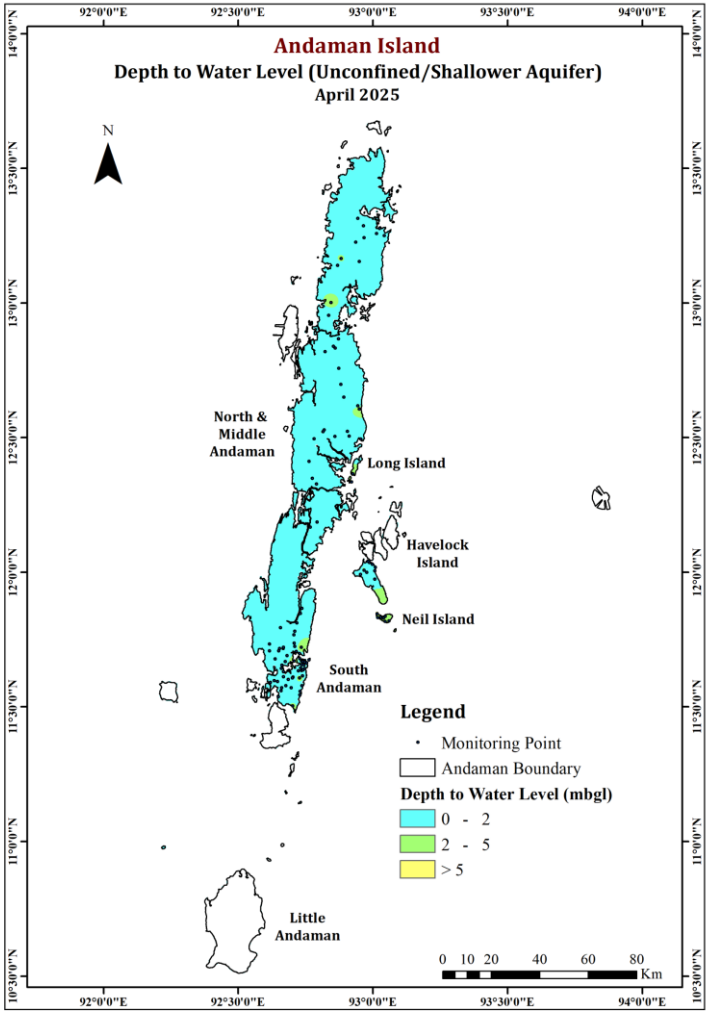

Figure-5: Depth to water level of unconfined aquifer during April 2025

Annual Fluctuation of Water Level in Unconfined Aquifer
(Pre-monsoon 2024 to Pre-monsoon 2025)

Out of 110 wells analyzed 67% of wells showed rising in 0-2m, 25% in 2-4m and 3% in >4m fluctuation category while only 5% of wells showed fall in 0-2m fluctuation category (figure-6&7).

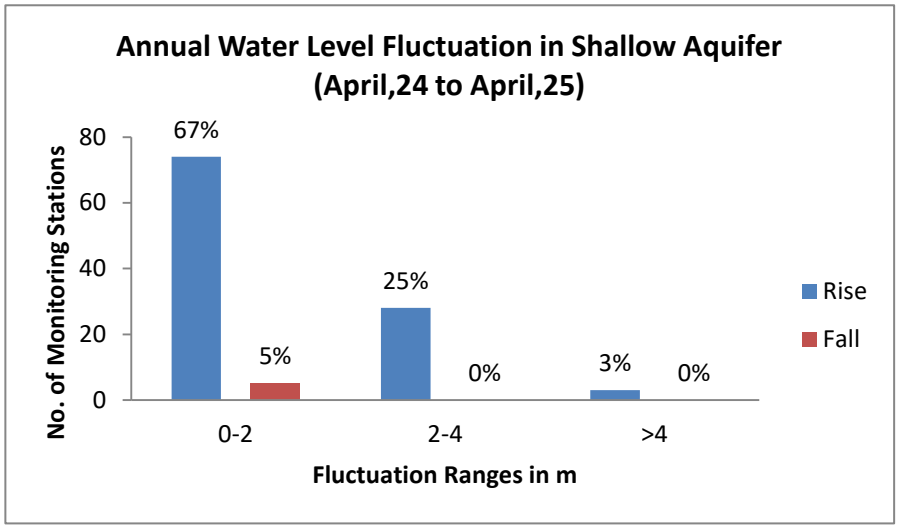

Figure-6: Percentage of wells showing rise and fall in WL in unconfined aquifer (April 2024 to April 2025)

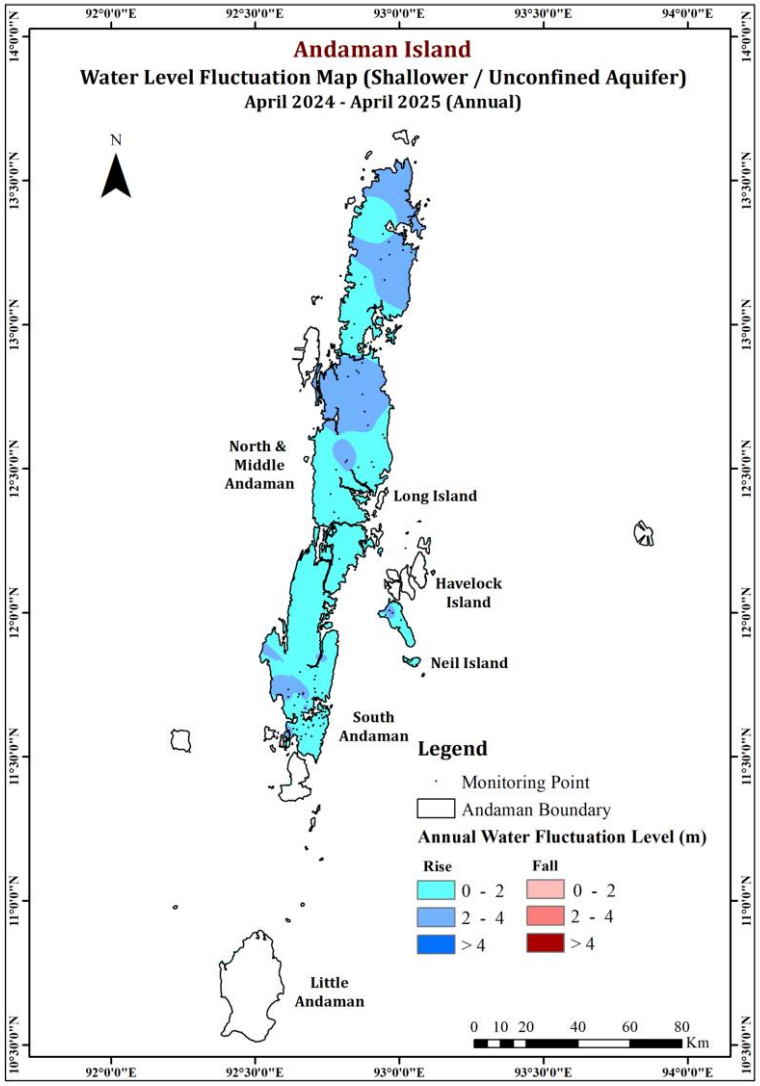

Figure-7: Annual water level fluctuation in unconfined aquifer (April 2024 to April 2025)

Annual Fluctuation of Water Level in Unconfined Aquifer
(Pre-monsoon 2023 to Pre-monsoon 2025)

Out of 109 wells analyzed 70% of wells showed rising in 0-2m, 11% in 2-4m and 3% in >4m fluctuation category while 16% of wells showing fall in 0-2m fluctuation category (figure-8&9).

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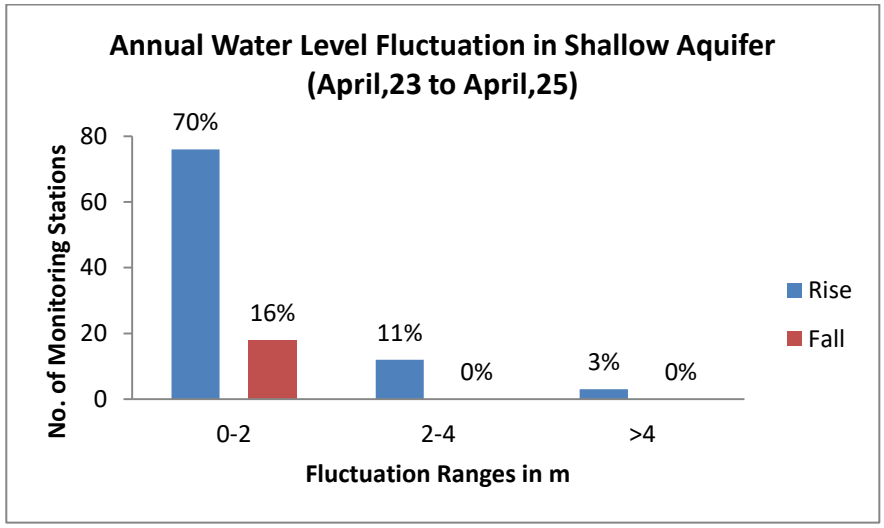

Figure-8: Percentage of wells showing rise and fall in WL in unconfined aquifer (April 2023 to April 2025)

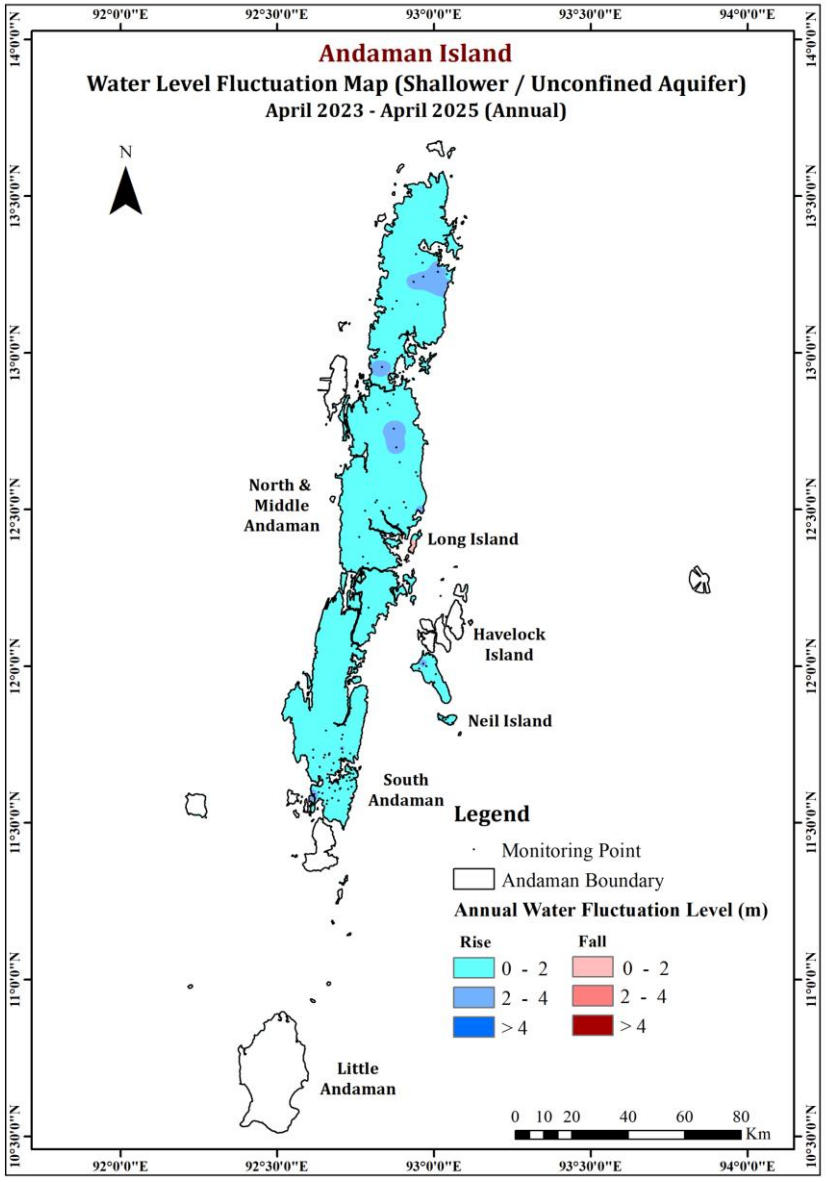

Figure-9: Annual water level fluctuation in unconfined aquifer (April 2023 to April 2025)

Decadal Fluctuation of water Level in Unconfined Aquifer- Decadal Mean Pre-monsoon (2015-2024) to Pre-monsoon 2025

Out of 110 wells analyzed 86% of wells showed rising in 0-2m, 2% in 2-4m fluctuation category while only 12% of wells showing fall in 0-2m fluctuation category (figure-10& 11).

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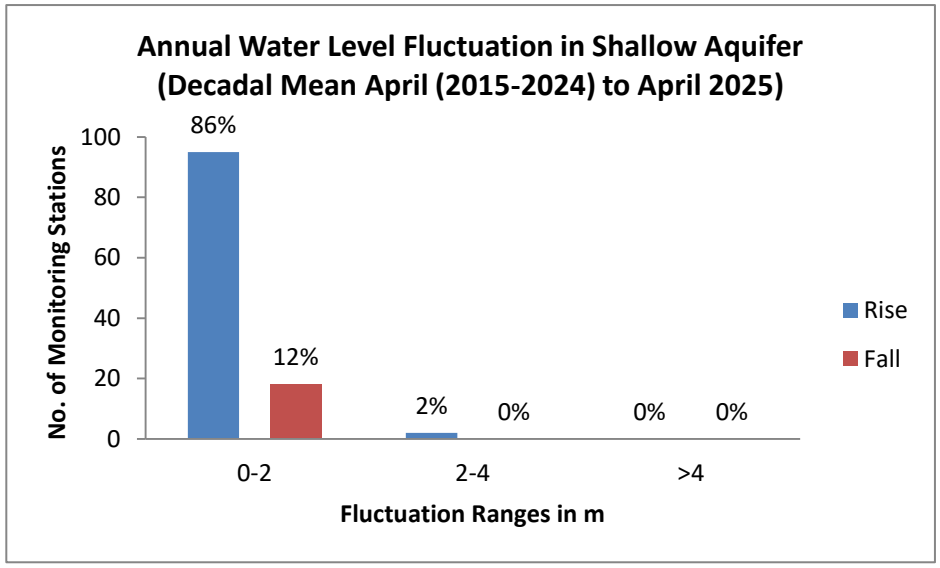

Figure-10: Percentage of wells showing rise and fall in WL in unconfined aquifer (Decadal Mean April (2015-2024) to April 2025)

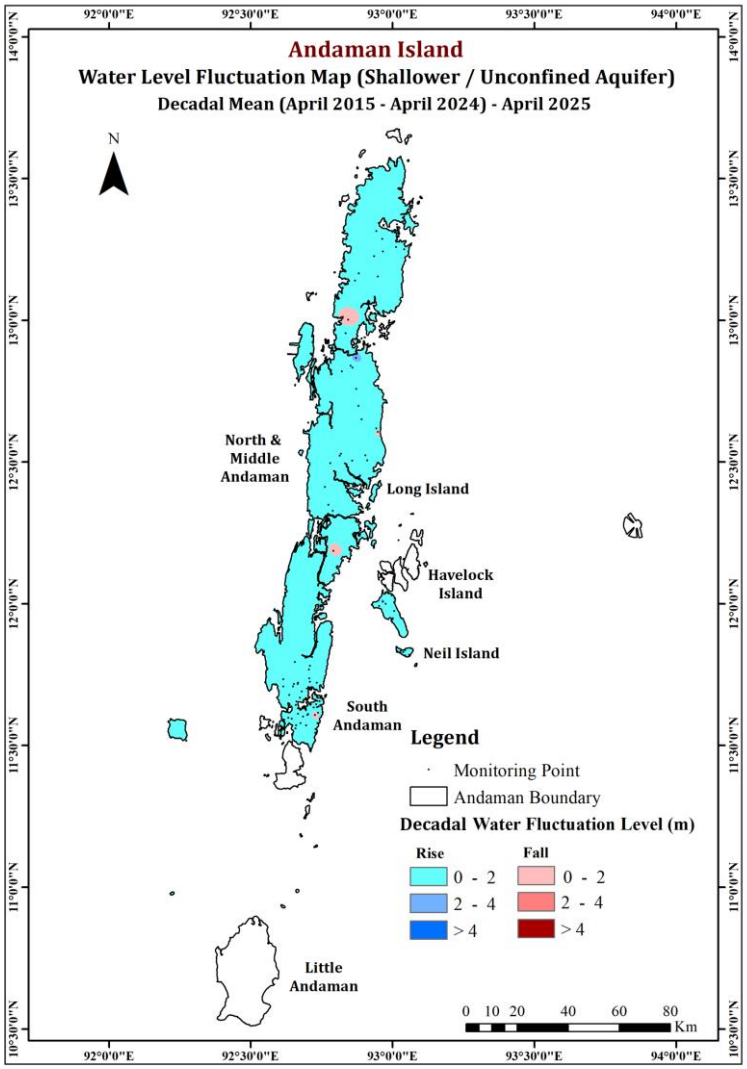

Figure-11: Decadal water level fluctuation in unconfined Aquifer (Decadal Mean April (2015-2024) to April 2025)

6.0 SUMMARY

As a component of the National Ground Water Monitoring Programme, CGWB, ER, Kolkata conducts ground water monitoring Biannually in Andaman (Pre & Post Monsoon).

As on March 2025, the Eastern Region, Kolkata has 113 GWMS in Andaman & Nicobar Islands (UT) which includes 111 nos. of Dugwells and 02 nos. of Borewells.

The rainfall during Pre-monsoon 2025 period had a positive but uneven effect on groundwater levels in the Andaman Islands. South Andaman, receiving the highest rainfall (36%), likely saw better groundwater recharge compared to North and Middle Andaman (31%).

In Andaman all the wells show depth to water level within 10 meters below ground level during Pre-Monsoon 2025.

Annual water level fluctuation April 2024 to April 2025 shows that 97% rise and 5% fall in annual water level fluctuation, which when compared to the Annual fluctuation (April 2023 to April 2025) having 84% rise and 16% fall in water level, reflecting an improvement in groundwater levels.

The Decadal fluctuation in water level of mean (2015-2024) with respect to April-2025 shows 88% rise and 22% fall in water level, which when compared to the previous year Decadal mean (2014-2023) to April-2024 having 26% rise and 74% fall in water level indicating recharge of the aquifer system in Andaman Island.

7.0 RECOMMENDATIONS

The observed decadal fluctuations in water levels in the Andaman Islands suggest a significant improvement in aquifer recharge during the Pre-monsoon period. However, the aquifer system in the Andaman Islands remains vulnerable to issues such as seawater intrusion and contamination from anthropogenic activities. Hence, there is a need for sustainable groundwater management practices to ensure the long-term availability of freshwater resources.

To address the challenges posed by the islands unique hydrogeological conditions and to ensure the sustainability of water resources for the local population, the following recommendations are proposed:

1. **Implementation of Artificial Recharge Structures**:
    - **Check Dams and Ponds**: Constructing check dams and ponds to capture and store rainwater, facilitating groundwater recharge during the monsoon season.
    - **Subsurface Dykes and Cement Plugs**: Developing subsurface dykes and cement plugs to prevent seawater intrusion and enhance the storage capacity of aquifers. This approach can be particularly effective in coastal areas.

2. **Rainwater Harvesting**:
    - **Rooftop Rainwater Harvesting (RTRWH)**: Encouraging installation of RTRWH systems in residential, commercial, and government buildings to capture and utilize rainwater, reducing dependence on groundwater resources.

3. **Community level Engagement and Awareness**:
    - Involving local Panchayats and community groups in groundwater management and decision-making.

These recommendations, if implemented in a coordinated and participatory manner, will help to ensure sustainable groundwater availability in the Andaman Islands

आज़ादी का अमृत महोत्सव

CONSERVE WATER FOR FUTURE

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