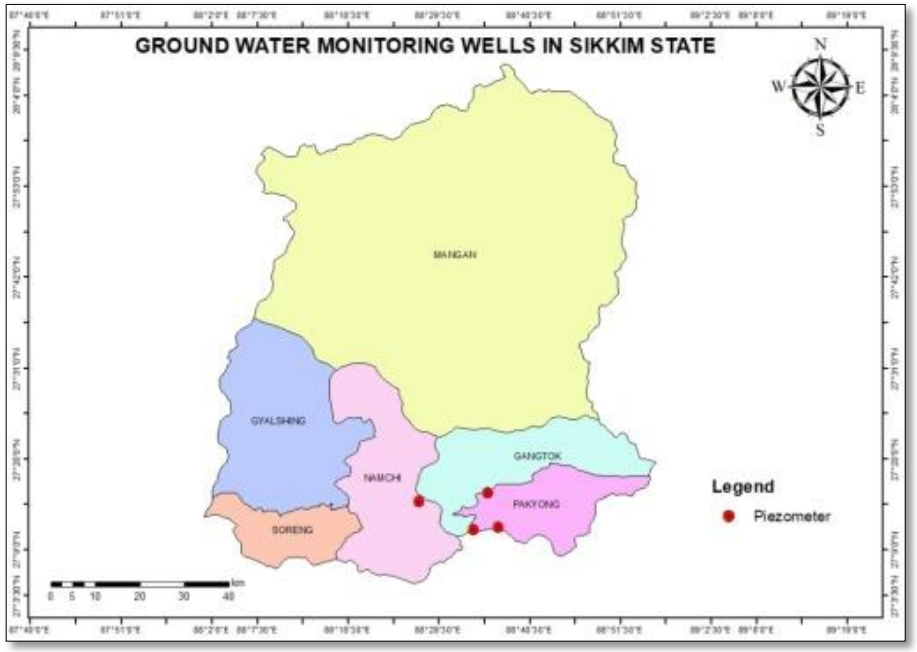

GROUND WATER LEVEL BULLETIN

January 2025

SIKKIM

ABSTRACT

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

CGWB, Eastern Region Kolkata

1.0 INTRODUCTION

Groundwater bulletin is prepared by Central Ground Water Board (CGWB) depicting changes in groundwater regime of the country through different seasons. It is an effort to obtain information on groundwater levels through representative monitoring wells. The important attributes of groundwater regime monitoring are groundwater level.

Groundwater levels are being measured by CGWB, ER every month in Sikkim state (through Participatory monitoring since June, 2024).

2.0 STUDY AREA

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

The state of Sikkim is located in the North Eastern part of the Country and lies between 27° 04' - 28° 08' N latitude 88° 00' to 88° 54' E longitudes covering an area of 7096 sq. Km; divided into 06 districts namely, Gangtok and Pakyong (East Districts), Gyalshing and Soreng(West Districts) Mangan (North District), Namchi, (South District). Sikkim with a vertical strip of rugged mountainous terrain of roughly 65 to 100 kms broad and 170 kms deep has the second highest peak of the world, the mountain Kanchendzonga (figure-1). The attitude varies from 300 meters in low areas to 8500 metres in highland. The plain area is very small, limited to the intermontane valley. Two-third of the state consist largely snow clad high hills with deep ravines/gorges. About 30% of the state is forest covered.

Figure- 1: Administrative Map of Sikkim State

3.0 GROUND WATER LEVEL MONITORING

Central Ground Water Board, Eastern Region, has set up 04 Ground Water Monitoring Stations (GWMS) (04 PZ) in Sikkim State as on 31-03-2024 (figure-2).

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

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

Sl. No	Name of the District	Number of GW Monitoring Stations				
		Dug Well	Piezometer	Handpump	Spring	Total
Sikkim						
1	Namchi	0	1	0	0	1
2	Pakyong	0	3	0	0	3
	Total	**0**	**4**	**0**	**0**	**4**

Figure-2: Map showing locations of monitoring wells (GWMS) in Sikkim

4.0 RAIN FALL

The state of Sikkim is located in the North Eastern part of the Country and lies between 27° 04' - 28° 08' N latitude 88° 00' to 88° 54' E longitudes covering an area of 7096 sq. Km. The state has international borders with China in the North, Nepal in the West and Bhutan in the East and to the south lays the state of West Bengal. The state has been divided into 06 districts namely, Gangtok and Pakyong (East Districts), Gyalshing and Soreng (West Districts) Mangan (North District), Namchi, (South District). Sikkim with a vertical strip of rugged mountainous terrain of roughly 65 to 100 kms broad and 170 kms deep has the second highest peak of the world, the mountain Kanchendzonga. The attitude varies from 300 meters in low areas to 8500 metres in highland. The plain area is very small, limited to the intermontane valley. Two-third of the state consist largely snow clad high hills with deep ravines/gorges. About 30% of the state is forest covered.

District-wise actual winter rainfall is given in the Table-1. The rainfall distribution over Sikkim during winter season is depicted in Fig. 3. The actual annual rainfall of the state is 322.7 mm. Mangan district received 62% (highest) of total rainfall in winter 2025. While Namchi district received only 3% (lowest) of total rainfall.

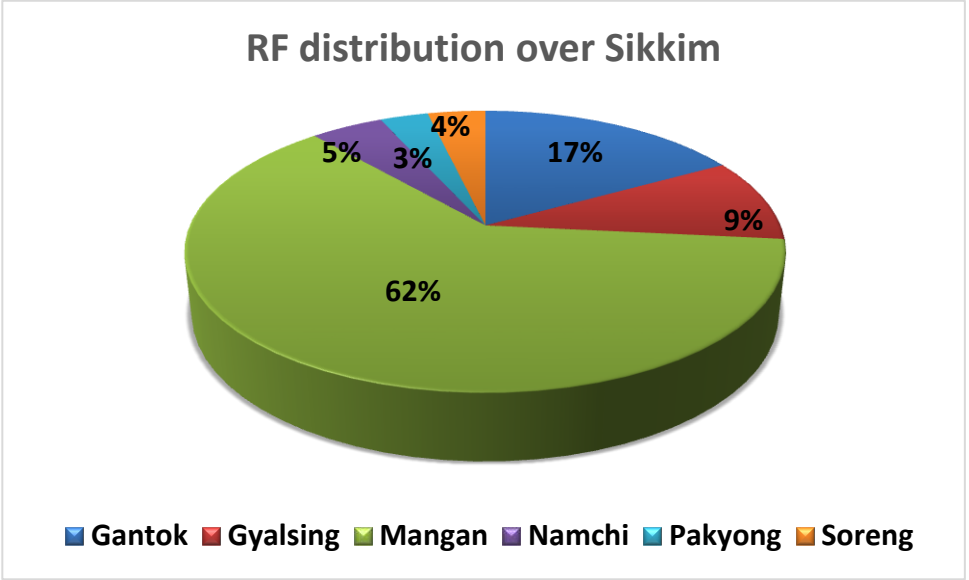

Figure-3: Pie diagram of rainfall distribution over the Sikkim state during winter season

Table-1: Actual Rainfall Distribution in Sikkim-2025 during winter season

Sl No.	District	Winter Rainfall (mm)
1	Gantok	54.7
2	Gyalsing	31
3	Mangan	200
4	Namchi	15
5	Pakyong	10
6	Soreng	12

5.0 GROUND WATER LEVEL SCENARIO (JANUARY 2025) for SIKKIM

During April-2023, 04 nos. of Piezometers (PZ) has been established for monitoring purpose in Sikkim State for the first time. In the year 2023, the water level has been monitored for Pre & Post-Monsoon 2023. The wells have been taken for participatory monitoring every month since June, 2024 for strengthening of monitoring Network in the State.

During January 2025, the maximum WL was reported at Daring block of Namchi district (21.5 m bgl) and minimum WL found at Pakyong Block of Pakyong district (3.36 m bgl).

Seasonal Fluctuation of Piezometric Level in confined Aquifer (April 2024 to January 2025)

Seasonal fluctuation in water level between April 2024 and January 2025 is dominated by falling trend. All 04 wells analyzed showed fall in 0-2m fluctuation category.

Seasonal Fluctuation of Piezometric Level in confined Aquifer (August 2024 to January 2025)

Seasonal fluctuation in water level between August 2024 and January 2025 is dominated by falling trend, only 01 well showing rising trend. 2 wells showed fall in 0-2m fluctuation category & 1 well in 2-4m fluctuation. The rise of 0.17 m observed in 1 well in Namchi district.

Seasonal Fluctuation of Piezometric Level in confined Aquifer (November 2024 to January 2025)

Seasonal fluctuation in water level between November 2024 and January 2025 is dominated by rising trend, only 01 well showing falling trend. 2 wells showed rise in 0-2m fluctuation category & 1 well shows in 2-4m fluctuation. The fall of 1.55 m observed in 1 well in Pakyong district.

Annual Fluctuation of Piezometric Level in confined Aquifer (January 2024 to January 2025)

Since the participatory monitoring has been taken up from June, 2024 so no data available for annual comparison with respect to January,2024

Annual Fluctuation of Piezometric Level in confined Aquifer (January 2023 to January 2025)

Since the participatory monitoring has been taken up from June, 2024 so no data available for annual comparison with respect to January,2023.

6.0 SUMMARY

As a component of the National Ground Water Monitoring Programme, CGWB, ER, Kolkata conducts ground water monitoring every month in Sikkim (through Participatory monitoring since June, 2024).

As on March 2024, the Eastern Region, Kolkata has 04 monitoring stations in the state of Sikkim. The state receives good rainfall and about 72% of springs get recharge through rainfall.

In the state of Sikkim only 4 wells are being monitored with depth to water level ranging from 3.36 to 21.5 m bgl.

Overall the State falls in the ‘Safe’ category as per Ground water Resource Assessment-2023-24.

7.0 RECOMMENDATIONS

Sikkim's water supply predominantly relies on spring-based systems, which are highly sensitive to seasonal variations and climate change.

The establishment of ground water monitoring stations since April 2023 in the State provides valuable data for assessing water levels and quality. However, the limited duration of this data collection restricts the ability to identify long-term trends or anomalies.

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आज़ादी का अमृत महोत्सव

CONSERVE WATER FOR FUTURE

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