

# Ground Water Regime Monitoring in India - 2010

## Introduction

Ground water levels are being measured four times a year during January, April/ May, August and November. The ground water regime monitoring started in the year 1969 by Central Ground Water Board. At present a network of 15640 ground water monitoring wells located all over the country is being monitored. Ground water samples are collected from these observation wells once a year during the month of April/ May to obtain background information of ground water quality changes on regional scale. The database thus generated forms the basis for planning the ground water development and management programme. This data is used for assessment of ground water resources and changes in the ground water regime consequent to various development and management activities. The State wise distribution of ground water monitoring wells in the country has been tabulated in Table 1.

**Table 1: STATE-WISE DISTRIBUTION OF GROUND WATER MONITORING WELLS**

S. No.	Name of the State	No. of Ground Water Monitoring Wells (as on 31.03.2010)
	<b>States</b>	
1	Andhra Pradesh	981
2	Arunachal Pradesh	19
3	Assam	381
4	Bihar	373
5	Chhattisgarh	516
6	Delhi	87
7	Goa	53
8	Gujarat	966
9	Haryana	426
10	Himachal Pradesh	85
11	Jammu & Kashmir	206
12	Jharkhand	208
13	Karnataka	1499
14	Kerala	864
15	Madhya Pradesh	1325
16	Maharashtra	1496
17	Manipur	25
18	Meghalaya	38
19	Nagaland	17
20	Orissa	1214
21	Punjab	261
22	Rajasthan	1373
23	Tamil Nadu	906
24	Tripura	42
25	Uttar Pradesh	1218

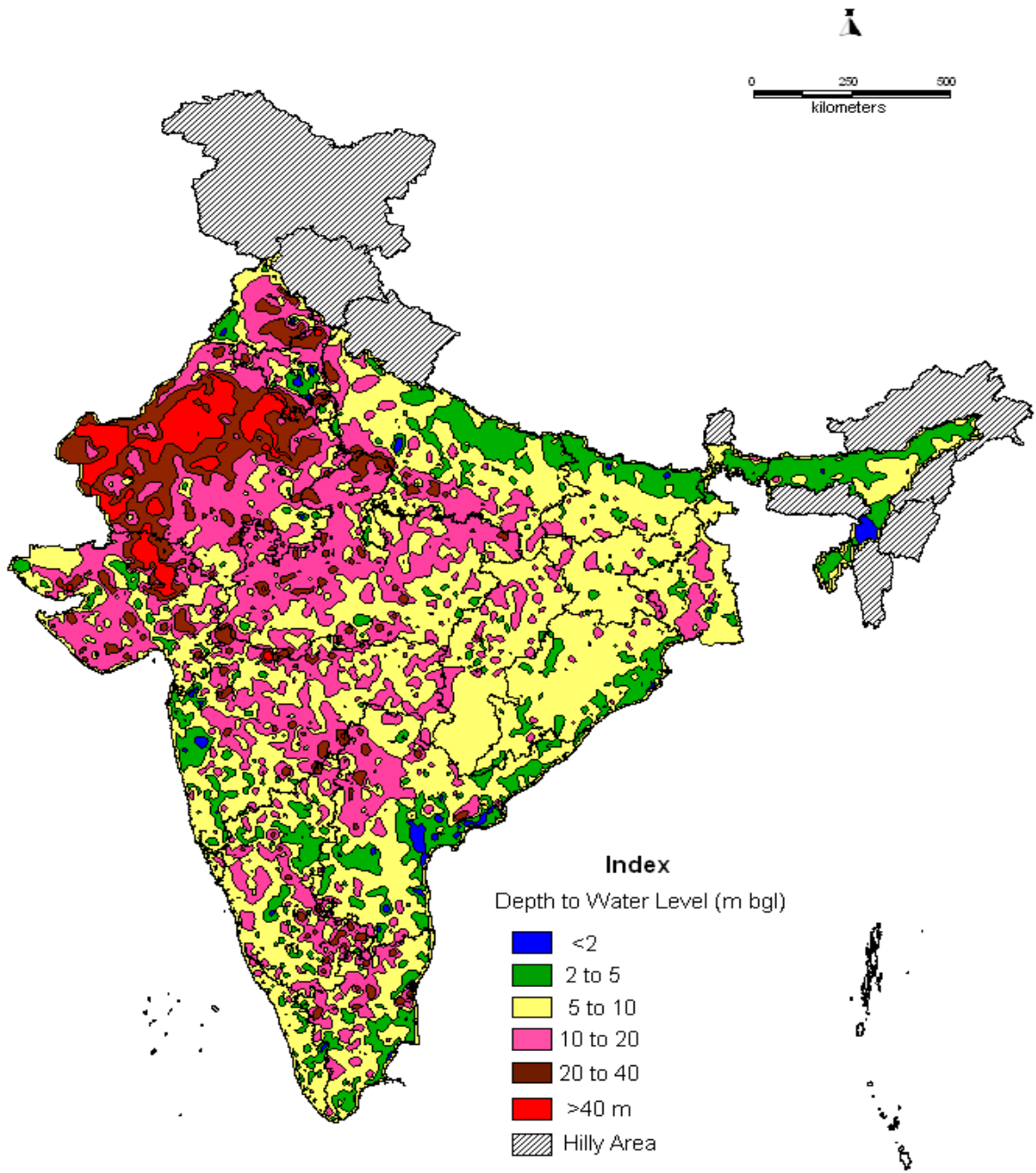
26	Uttaranchal	44
27	West Bengal	909
	<b>UTs</b>	
1	Andaman & Nicobar	63
2	Chandigarh	16
3	Dadra & Nagar Haveli	10
4	Daman & Diu	4
5	Pondicherry	15
	Total	15,640

### **Ground Water Level Scenario – Pre- Monsoon (May) 2010**

Perusal of the ground water level data for the period May 2010 indicates that in Sub-Himalayan area, north of river Ganges and in the eastern part of the country in the Brahmaputra valley, generally the depth to water level varies from 2-10 meter below ground level (m bgl). In major parts of north-western states (Indus basin), depth to water level generally varies from 10-20 m bgl with pockets of deeper water level of more than 20 m bgl. In the western parts of the country covering the states of Rajasthan and Gujarat deeper water level is recorded in the range of 10-20 m bgl. In western Rajasthan and north Gujarat deeper water level in the range of 20-40 m bgl and > 40 m bgl have also been also recorded. In the west coast water level is generally less than 10 m and in western parts of Maharashtra State in isolated pockets water level in the range of 2-5 m has also been observed. In the east coast i.e. coastal Andhra Pradesh, Tamil Nadu and Orissa, water level in the range of 2-5 m bgl have been recorded. However South-eastern part of West Bengal recorded water level in the range of 5-10 m bgl. In central India water level generally varies between 5-10 m bgl, with patches where deeper water level more than 10 m bgl has been observed. The peninsular part of country generally recorded a water level in the range 5-10 m bgl. In some patches water level ranges from 10-20 m bgl. Isolated patches of water level of 10-20 m bgl and 20-40 m bgl have been observed.

Out of total monitored wells 4.36% wells are showing water level less than 2 m bgl, 24.19 % wells are showing water in the 2-5 m depth range, 41.21% wells are showing water level in the depth range of 5-10 m bgl, 22.67% wells are showing water level in the depth range of 10-20 m bgl, 5.48% wells are showing water level in the depth range of 20-40 m bgl and remaining 2.10 % wells are showing water level more than 40 m bgl.

# Depth to Water Level Map (May - 2010)



## **Ground Water Level Scenario – Post- Monsoon (November) 2010**

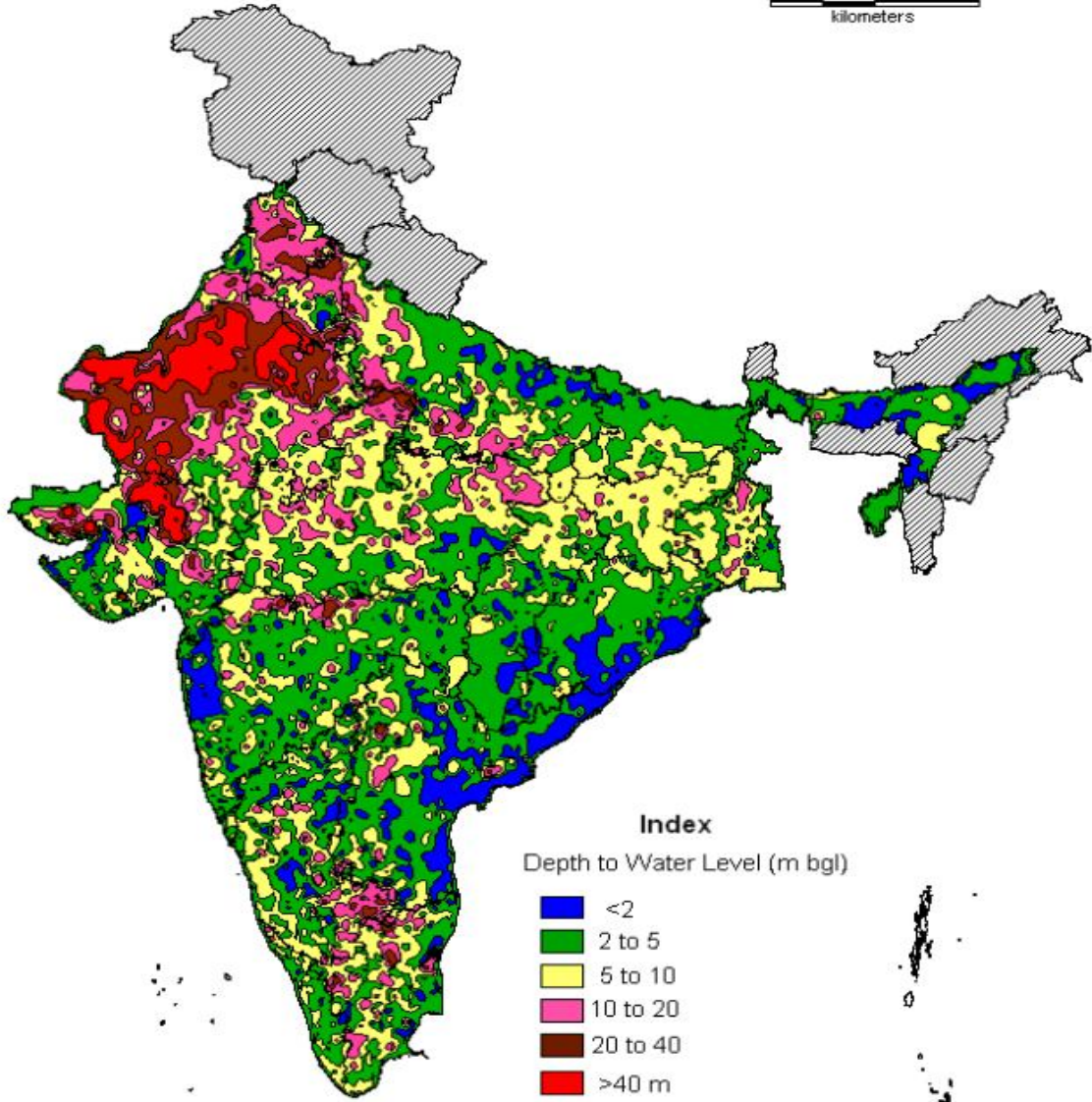
Perusal of the ground water level data for the period November 2010 indicates that in Sub-Himalayan area, north of river Ganges and in the eastern part of the country in the Brahmaputra valley, generally the depth to water level varies from 2-5 meter below ground level (bgl). Isolated pockets of shallow water level less than 2 m bgl have also been observed. In major parts of north-western states depth to water level generally ranges from 10-20 m bgl. In the western parts of the country deeper water level is recorded in the depth range of 20-40 m bgl. In North Gujarat, part of Haryana and western Rajasthan water level more than 40 m bgl is recorded. In the west coast water level is generally less than 5 m and in western parts of Maharashtra State isolated pockets of water level less than 2 m has also been observed. In the east coast i.e. coastal Andhra Pradesh and Orissa, shallow water level of less than 2 m have been recorded. In eastern states, water level in general ranges from 2-5 m bgl. However South-eastern part of West Bengal recorded water level in the range of 5-10 m bgl. In central India water level generally varies between 2-5 m bgl, except in isolated pockets where water level more than 5 m bgl has been observed. Similarly pockets of shallow water level less than 2 m bgl is also observed along the west coast. The peninsular part of country generally recorded a water level in the range 2-5 m bgl. In some patches water level ranges from 5-10 m bgl.

Out of total monitored wells 23.21% wells are showing water level less than m bgl, 34.75 % wells are showing water in the depth range of 2-5 m bgl, 24.7% wells are showing water level in the depth range of 5-10 m bgl, 11.85% wells are showing water level in the depth range of 10-20 m bgl, 3.73% wells are showing water level in the depth range of 20-40 m and remaining 1.76 % wells are showing water level more than 40 m bgl.

# Depth to Water Level Map (Nov - 2010)



0 250 500  
kilometers



## Index

Depth to Water Level (m bgl)

-  <2
-  2 to 5
-  5 to 10
-  10 to 20
-  20 to 40
-  >40 m
-  Hilly Area

## **Water Level Fluctuation (May 2010 to November 2010)**

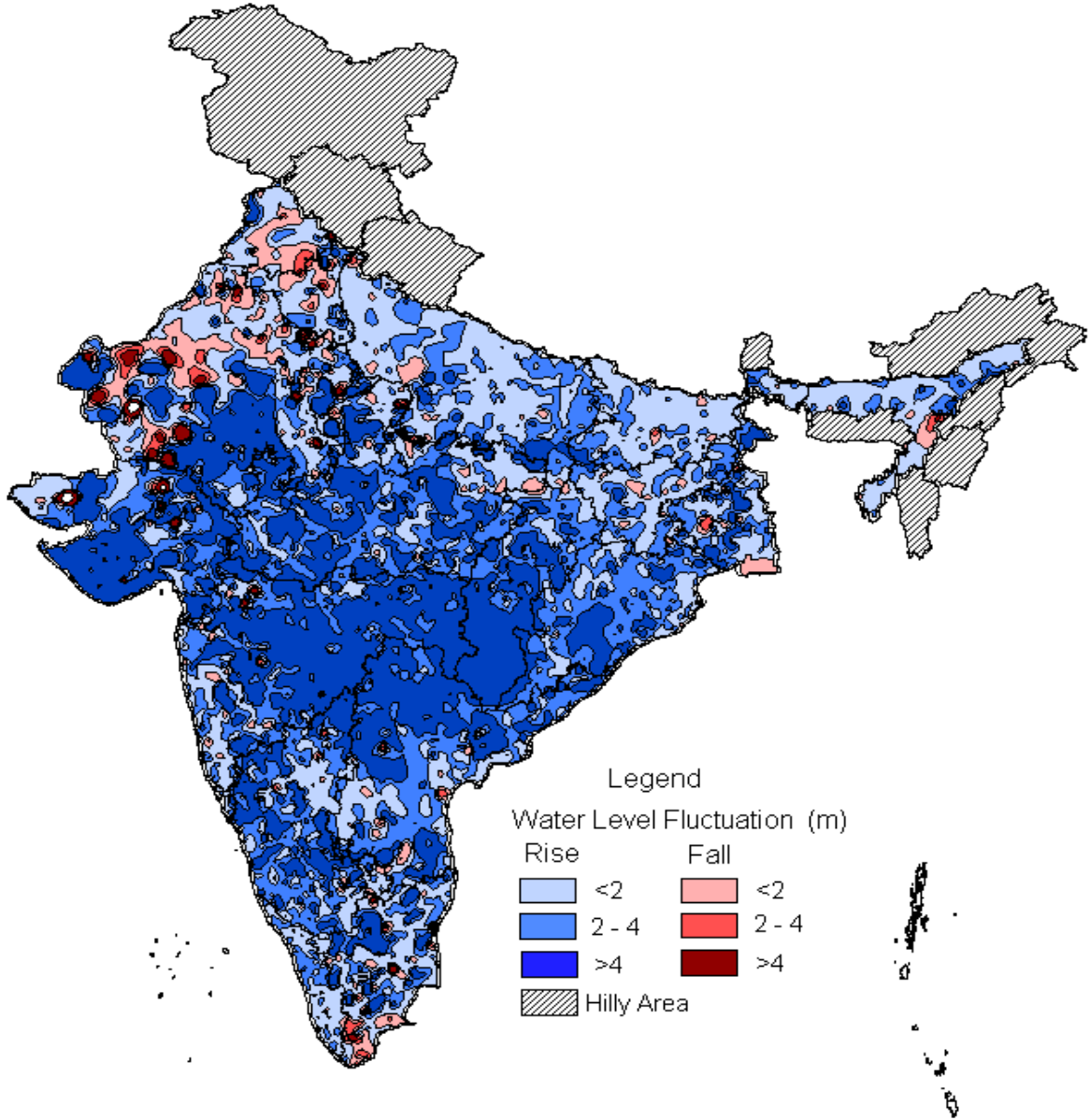
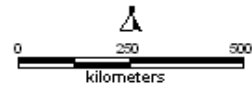
A comparison of depth to water level data of November 2010 with May 2010 reveals that, in general there is a rise in water level in almost all states of India except in Rajasthan, Punjab Haryana and Tamil Nadu States.

Isolated pockets of fall in water level in the range of 0-2 m have been observed in Rajasthan, Punjab Haryana and Tamil Nadu. Fall in water level more than 2 m also has been observed Rajasthan and Tamilnadu states. Out of the total observation wells only 9.6% wells are showing fall in water. Out of this 8% wells are showing fall in water level in less than 2 m range and remaining 1.6% wells are showing fall in water level in the more than 2 m range.

Most of the north and north east states showing rise in water level in the range of 0-2 m. Eastern Uttar Pradesh, Bihar and Jharkhand states are showing rise in water level in the range of 2-4 m. Gujarat, Maharashtra, Andhra Pradesh, Orissa, Karnataka and North Tamil Nadu State are showing rise in water level more than 4 m.

Out of total monitored wells, 94.4% wells are showing rise in water level. Out of this 46.57% wells are showing rise in water level in 0-2 m range. 24.41% wells are showing rise in 2-4 m range in water level. Remaining 19.4% of monitoring wells are showing rise in water level more than 4 m

# Water Level Fluctuation (May 2010 - Nov 2010)



## Legend

Water Level Fluctuation (m)

Rise

Fall

<2

<2

2 - 4

2 - 4

>4

>4

Hilly Area