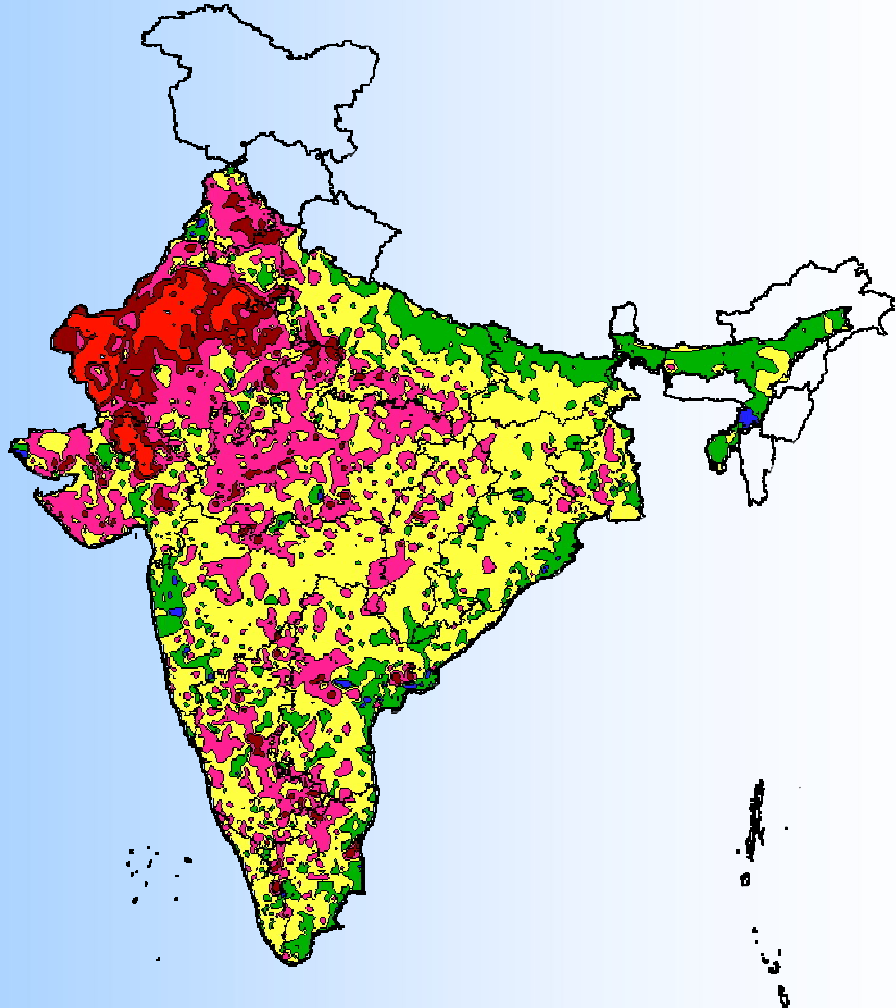


Ground Water Scenario of India 2009-10



**Central Ground Water Board
Ministry of Water Resources
Government of India
Faridabad
June 2010**



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1. HYDROGEOLOGICAL SETUP OF THE COUNTRY

1.1 GROUND WATER OCCURRENCE

The ground water behavior in the Indian sub-continent is highly complicated due to the occurrence of diversified geological formations with considerable lithological and chronological variations, complex tectonic framework, climatological dissimilarities and various hydrochemical conditions. Studies carried out over the years have revealed that aquifer groups in alluvial / soft rocks even transcend the surface basin boundaries. Broadly two groups of rock formations have been identified depending on characteristically different hydraulics of ground water, Viz. Porous Formations and Fissured Formations.

1.1.1 POROUS FORMATION

Porous formations have been further subdivided into Unconsolidated and Semi – consolidated formations.

UNCONSOLIDATED FORMATIONS

The areas covered by alluvial sediments of river basins, coastal and deltaic tracts constitute the unconsolidated formations. These are by far the most significant ground water reservoirs for large scale and extensive development. The hydrogeological environment and ground water regime in the Indo-Ganga-Brahmaputra basin indicate the existence of potential aquifers having enormous fresh ground water reserve. Bestowed with high incidence of rainfall and covered by a thick pile of porous sediments, these ground water reservoirs get replenished every year and are being used heavily. In these areas, in addition to the Annual Replenishable Ground Water Resources available in the zone of water level fluctuation (Dynamic Ground Water Resource), there exists a huge ground water reserve in the deeper passive recharge zone below the zone of fluctuation as well as in the deeper confined aquifers which remains largely unexplored as yet. Although the mode of development of ground water is primarily through dug wells, dug cum bore well and cavity wells, thousands of tube wells have been constructed during last few decades.

SEMI-CONSOLIDATED FORMATIONS

The semi-consolidated formations normally occur in narrow valleys or structurally faulted basins. The Gondwanas, Lathis, Tipams, Cuddalore sandstones and their equivalents are the most extensive productive aquifers in this category. Under favorable situations, these formations give rise to free flowing wells. In selected tracts of northeastern India, these water-bearing formations are quite productive. The Upper Gondwanas, which are generally arenaceous, in general, constitute prolific aquifers.

1.1.2 FISSURED FORMATIONS (CONSOLIDATED FORMATIONS)

The consolidated formations occupy almost two-thirds of the country. These formations, except vesicular volcanic rocks have negligible primary porosity. From the hydrogeological point of view, fissured rocks are broadly classified into four types viz. Igneous and metamorphic rocks excluding volcanic and carbonate rocks, Volcanic rocks, Consolidated sedimentary rocks and Carbonate rocks.

IGNEOUS AND METAMORPHIC ROCKS EXCLUDING VOLCANIC AND CARBONATE ROCKS

The most common rock types under this category are granites, gneisses, charnockites, khondalites, quartzites, schists and associated phyllites, slates, etc. These rocks possess negligible primary porosity but attain porosity and permeability due to fracturing and weathering. Ground water yield also depends on rock type and grade of metamorphism. Generally, the Granites, Khondalites and Biotite gneisses have better yield potential as compared to Charnockites.

VOLCANIC ROCKS

The predominant types of volcanic rocks are the basaltic lava flows of Deccan Plateau. The highly variable water bearing properties of different flow units control ground water occurrence in Deccan Traps. The Deccan Traps have usually poor to moderate permeability depending on the presence of primary and secondary fractures.

CONSOLIDATED SEDIMENTARY ROCKS EXCLUDING CARBONATE ROCKS

Consolidated sedimentary rocks occur in Cuddapahs, Vindhyan and their equivalents. The formations consist of conglomerates, sandstones, shales, slates and quartzites. The presence of bedding planes, joints, contact zones and fractures controls the ground water occurrence, movement and yield potential.

CARBONATE ROCKS

Limestones in the Cuddapah, Vindhyan and Bijawar group of rocks dominates the carbonate rocks other than the marbles and dolomites. In carbonate rocks, the circulation of water creates solution cavities thereby increasing the permeability of the aquifers. The solution activity leads to widely contrasting permeabilities within short distances.

1.2 HYDROGEOLOGICAL UNITS AND THEIR GROUND WATER POTENTIAL

Hydrogeological map of India is depicted in Plate-I and the geographical distribution of hydrogeological units along with their Ground water potential is given in Table 1.

TABLE 1: GROUND WATER SYSTEM IN THE COUNTRY

System	Coverage	Ground water potential
Unconsolidated formations - alluvial	Indo-Gangetic, Brahmaputra plains	Enormous reserves down to 600 m depth. High rain fall and hence recharge is ensured. Can support large-scale development through deep tube wells
	Coastal Areas	Reasonably extensive aquifers but risk of saline water intrusion
	Part of Desert area – Rajasthan and Gujarat	Scanty rainfall. Negligible recharge. Salinity hazards. Availability at great depths.
Consolidated/semi-consolidated formations - sedimentaries, basalts and crystalline rocks	Peninsular Areas	Availability depends on secondary porosity developed due to weathering, fracturing etc. Scope for GW availability at shallow depths (20-40 m) in some areas and deeper depths (100-200 m) in other areas. Varying yields.
Hilly	Hilly states	Low storage capacity due to quick runoff

Hydrogeological Map of India



Legend

Ground Water Potential (Yield Litres/sec)

>40 25-40 10-25 <10

1-25 1-10 1-5

<1

Unconsolidated Formations

Consolidated /Semi-Consolidated Formations

Hilly Areas

2.0 GROUND WATER LEVEL SCENARIO

2.1 INTRODUCTION

Monitoring of ground water regime is an effort to obtain information on ground water levels and chemical quality through representative sampling. The important attributes of ground water regime monitoring are ground water level, ground water quality and temperature. The primary objective of establishing the ground water monitoring network stations is to record the response of ground regime to the natural and anthropogenic stresses of recharge and discharge parameters with reference to geology, climate, physiography, land use pattern and hydrologic characteristics. The natural conditions affecting the regime involve climatic parameters like rainfall, evapotranspiration etc., whereas anthropogenic influences include pumpage from the aquifer, recharge due to irrigation systems and other practices like waste disposal etc.

Ground water levels are being measured four times a year during January, April/ May, August and November. The regime monitoring started in the year 1969 by Central Ground Water Board. At present a network of 15640 observation 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. The ground water level and quality monitoring is of particular importance in coastal as well inland saline environment to assess the changes in salt water/fresh water interface as also the gradual quality changes in the fresh ground water regime. This data is used for assessment of ground water resources and changes in the regime consequent to various development and management activities.

The State-wise distribution of the ground water observation wells is given in table- 2 and depicted in Plate II.

TABLE-2 STATEWISE DISTRIBUTION OF OBSERVATION WELLS

S.No.	Name of the State	Total No. of Observation Wells (as on 31.03.2009)
	States	
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

S.No.	Name of the State	Total No. of Observation Wells (as on 31.03.2009)
27	West Bengal	909
	UTs	
1	Andaman & Nicobar	63
2	Chandigarh	16
3	Dadra & nagar Haveli	10
4	Daman & Diu	4
5	Pondicherry	15
	Total	15,640

2.2 GROUND WATER LEVEL SCENARIO - PRE-MONSOON, 2009

A perusal of depth to water level map of India for Pre- Monsoon period (May 2009) (Plate III) reveals that that in sub-Himalayan area, north of river Ganges, generally the depth to water level ranges from 2 to 10 meter below ground level (mbgl). In the eastern part of the country in the Brahmaputra valley water level generally ranges from 2-5 mbgl, except in isolated pockets where depth to water level is less than 2 mbgl. However, in upper Assam, isolated pocket of deeper water level, 5-10 mbgl has been observed. In major parts of Indus basin, depth to water level generally ranges from 5-20 mbgl. In the western part of the country covering states of Gujarat and Rajasthan deeper water level is recorded in the range of 10-20 m.bgl. Relatively deeper water level in the range of 20-40 mbgl and > 40 mbgl have been observed in Alwar, Barmer , Bikaner, Churu, Nagaur, Jhunjhunu, Sikar and Jaipur district of Rajasthan and also in central and north Gujarat. In Punjab and Haryana deeper water level in the range of 10-20 mbgl and 20-40 mbgl has been observed. In Maharashtra water level recorded is mostly in the range of 5-10 mbgl except western Maharashtra where water level is generally less than 5 mbgl. In the east coast i.e coastal Andhra Pradesh, Orissa and Tamil Nadu, generally the water level ranges between 2-5 mbgl. However, isolated pockets of water level more than 5 mbgl have also been recorded. Eastern most part of West Bengal recorded water level in the range of 5-10 mbgl. In central India water level generally varies between 5-20 mbgl, except in isolated pockets where water level is more than 20 mbgl. The peninsular part of country generally water level ranges between 5-20 mbgl except in pockets where water level is less than 5 mbgl. Isolated patches of deeper water level in the range of 20-40 mbgl and more than 40 mbgl have also been observed in various parts of the country.

A comparison of depth to water level during Pre-Monsoon (May 2009) with decadal mean (1999-2008) (Plate IV) reveals that in general, there is decline in the water level throughout the country except in the states of Andhra Pradesh, Gujarat, Karnataka and Tamil Nadu where more nos. of wells showing rise in water level than fall. Most of the wells have been showing rise / fall of water level in the range of 0-2 m and are common in all the states. Fall in water level more than 2 meters on long term basis has also been observed in various parts of the states such as Madhya Pradesh, Uttar Pradesh, Gujarat, Rajasthan, Haryana, Punjab and Maharashtra. In Gujarat fall of more than 4 m is observed in isolated patches in Banaskantha, Sabarkantha, Kheda, Gandhinagar, Ahmedabad, central & eastern parts of Kachchh districts and Saurashtra region. In Maharashtra districts of Amravati, Aurangabad, Beed, Jalna, Nanded, Nagpur, Sindudurg and solapur fall in this category. In Rajasthan fal of more than 2 m is observed in districts of Bikaner, Jaisalmer, Barmer, Jodhpur, Churu, Jalore, Nagaur, Jhunjhunu and Jaipur. In Haryana districts of Ambala, fatehabad, Kaithal, Karnal and Panchkula showing decline in this category. In Punjab more than 2 m decline is observed in isolated patches in Bathinda, Faridkot, Jalandhar, Rupnagar, Patiala and Sangrur districts.

2.3 GROUND WATER LEVEL SCENARIO - AUGUST, 2009

A perusal of depth to water level map of India for August 2009) (Plate V) reveals that that in sub-Himalayan area, north of river Ganges, generally the depth to water level ranges from 0 to 5 meter below ground level (mbgl). In the eastern part of the country in the Brahmaputra valley water level generally less than 2 mbgl, except in isolated pockets where depth to water level is in the range of 2 to 5 mbgl. However, in upper Assam, isolated pocket of deeper water level, 5-10 mbgl has been observed. In major parts of Indus basin, depth to water level generally ranges from 5-20 mbgl. In the western part of the country covering states of Gujarat and Rajasthan deeper water level is recorded in the range of 10-20 m.bgl. Relatively deeper water level in the range of 20-40 mbgl and > 40 mbgl have been observed in Rajasthan, Punjab, Haryana and also in central and north Gujarat. In Maharashtra water level

recorded is mostly in the range of 2-5 mbgl except western Maharashtra where water level is generally less than 2 mbgl. In the east coast i.e. coastal Andhra Pradesh and Tamil Nadu, generally the water level ranges between 5-10 mbgl. However, isolated pockets of water level more than 5 mbgl have also been recorded. In Orissa water level generally is less than 2 mbgl with isolated pockets showing water level in the range of 2-5 mbgl. West Bengal recorded water level in the range of 2-5 mbgl except in coastal parts where water level is in the range of 5-10 mbgl. In central India water level generally varies between 2-10 mbgl, except in isolated pockets where water level is more than 10 mbgl. The peninsular part of country generally water level ranges between 5-10 mbgl except in isolated patches where water level is more than 10 mbgl. Isolated patches of deeper water level in the range of 20-40 mbgl have also been observed in various parts of the country.

A comparison of depth to water level during August 2009 with decadal mean (1999-2008) (Plate VI) reveals that in general, there is decline in the water level throughout the country except in states of Assam, Gujarat, Karnataka, Kerala, Orissa and Tamil Nadu. Most of the wells have been showing rise / fall of water level in the range of 0-2 m and are common in all the states. Rise / fall in water level in the range of 0-2 meters may not be significant in view of dynamic nature of groundwater resources. Fall in water level more than 2 meters on long term basis has also been observed in various parts of the states such as Andhra Pradesh, Delhi, Madhya Pradesh, Uttar Pradesh, Gujarat, Eastern Rajasthan, Haryana, Punjab and Eastern Maharashtra.

2.4 GROUND WATER LEVEL SCENARIO - POST-MONSOON, 2009

A perusal of depth to water level map of India for Post-Monsoon period (November 2009)(Plate VII) reveals 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 (mbgl). Isolated pockets of shallow water level less than 2 mbgl have also been observed. In major parts of north-western states (Indus basin), depth to water level generally observed in the range of 10-20 mbgl. In the western parts of the country deeper water level is recorded in the range of 10-20 mbgl. In the west coast water level is generally less than 10 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 mbgl. However South-eastern part of West Bengal recorded water level in the range of 5-10 mbgl. In central India water level generally varies between 2-10 mbgl, except in isolated pockets where deeper water level more than 10 mbgl has been observed. Similarly pockets of shallow water level less than 2 mbgl is also observed. The peninsular part of country generally recorded a water level in the range 5-10 mbgl. In some patches water level ranges from 10-20 mbgl. Isolated patches of water level of 10-20 mbgl and 20-40mbgl have been observed as well.

A comparison of depth to water level during November 2009 with decadal mean (1999-2008) (Plate VIII) reveals that, in general, there is declining trend in water level in rainfall deficient states. Isolated pockets of rise in water level in the range of 0-2 m are also common in all these states. Majority of wells in Gujarat and Karnataka have shown rise in water level. Rise / fall in water level in the range of 0-2 meters may not be significant in view of dynamic nature of groundwater resources. Fall in water level more than 2 meters on long term basis has also been observed in various parts of the states such as UP, Andhra Pradesh, Madhya Pradesh, Maharashtra, Tamil Nadu and West Bengal. In Madhya Pradesh parts of Katni, Satna, Neemuch, Rewa, Shahdol, Sidhi districts fall in this category. In Maharashtra districts of Chandrapur, Latur, Nanded, Parbhani, Ratnagiri, Wardha and Yavatmal fall in this category. In Uttar Pradesh fall of more than 2 m is observed in Agra, Allahabad, Banda, Chitrakoot, Fatehpur, Ghazipur, Hamirpur, Jaunpur, Hathras, Mirzapur, Pratapgarh and Varanasi districts. In Andhra Pradesh fall in this category is observed in parts of central Telangana Region, West Godavari, Nellore districts of coastal region and also in Kurnool, Anantpur, Chittoor districts of Rayalseema region.

2.5 GROUND WATER LEVEL SCENARIO- JANUARY, 2010

A perusal of depth to water level map of India for January 2010 (Plate IX) reveals 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 (m bgl). Isolated pockets of shallow water level less than 2 m bgl have also

been observed. 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 Rajasthan pockets of deeper water level in the range of 20-40 m bgl and > 40 m bgl have also been recorded. In the west coast water level is generally less than 10 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, water level in the range of 2-5 m bgl have been recorded while in coastal Tamil Nadu shallow water level of less than 2 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 2-10 m bgl, except in isolated pockets 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 as well.

A comparison of depth to water level during January 2010 with decadal mean (2000-2009) as shown in Plate X indicates that, in general, there is decline in water level in rainfall deficient states. Isolated pockets of rise in water level in the range of 0-2 m are common in all these states. Majority of wells in Karnataka, Kerala, Madhya Pradesh, Maharashtra, Orissa and Tamil Nadu have shown rise in water level. Rise / fall in water level in the range of 0-2 meters may not be significant in view of dynamic nature groundwater resources. Fall in water level more than 2 meters on long term basis has also been observed in various parts of the states such as UP, Andhra Pradesh, Rajasthan, Gujarat, Haryana, Madhya Pradesh, Maharashtra, Tamil Nadu and West Bengal.

2.6 PRE - POST WATER LEVEL FLUCTUATION SCENARIO - 2009

Water level of Post monsoon 2009 when compared with Pre-monsoon 2009 as shown in Plate XI indicates that in general there is rise in water level in various states of India except in isolated pockets of fall in the states of Rajasthan, Punjab, Haryana, Tamil Nadu, Andhra Pradesh, Uttar Pradesh and Gujarat. Rise of more than 4 m has been observed in the state of Maharashtra, Gujarat, Karnataka, and Orissa and in the central Part of India. Isolated pockets of fall in water level exceeding 4 m have been observed in parts of Rajasthan, Gujarat and Tamil Nadu.

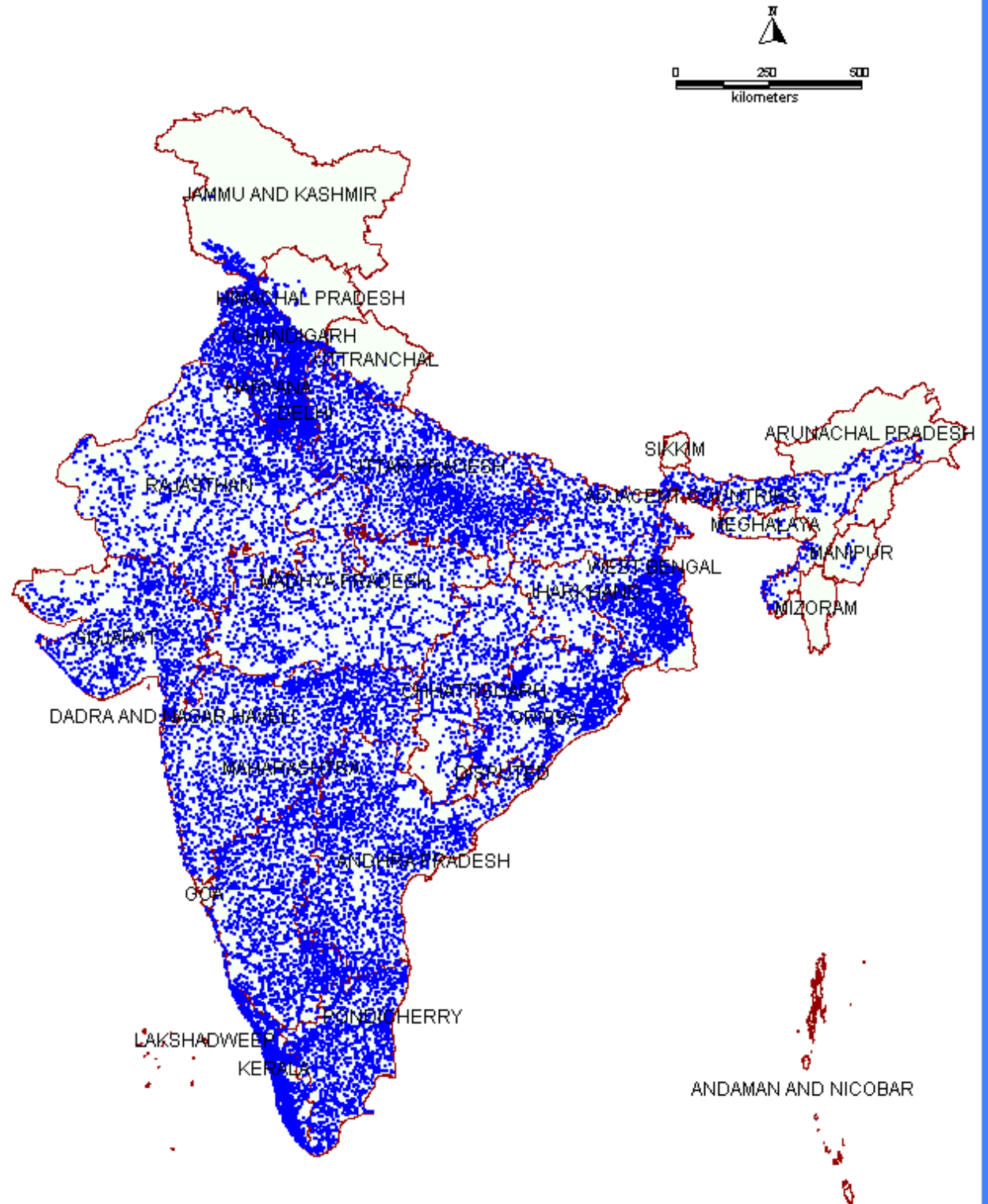
The Ground Water Level Scenario of India during the year 2009-10 is shown as Ground Water Level at a Glance in Plate XII.

The state wise frequency distribution of wells under different water level/fluctuation ranges for different monitoring period is provided as Annexures (I to XV).

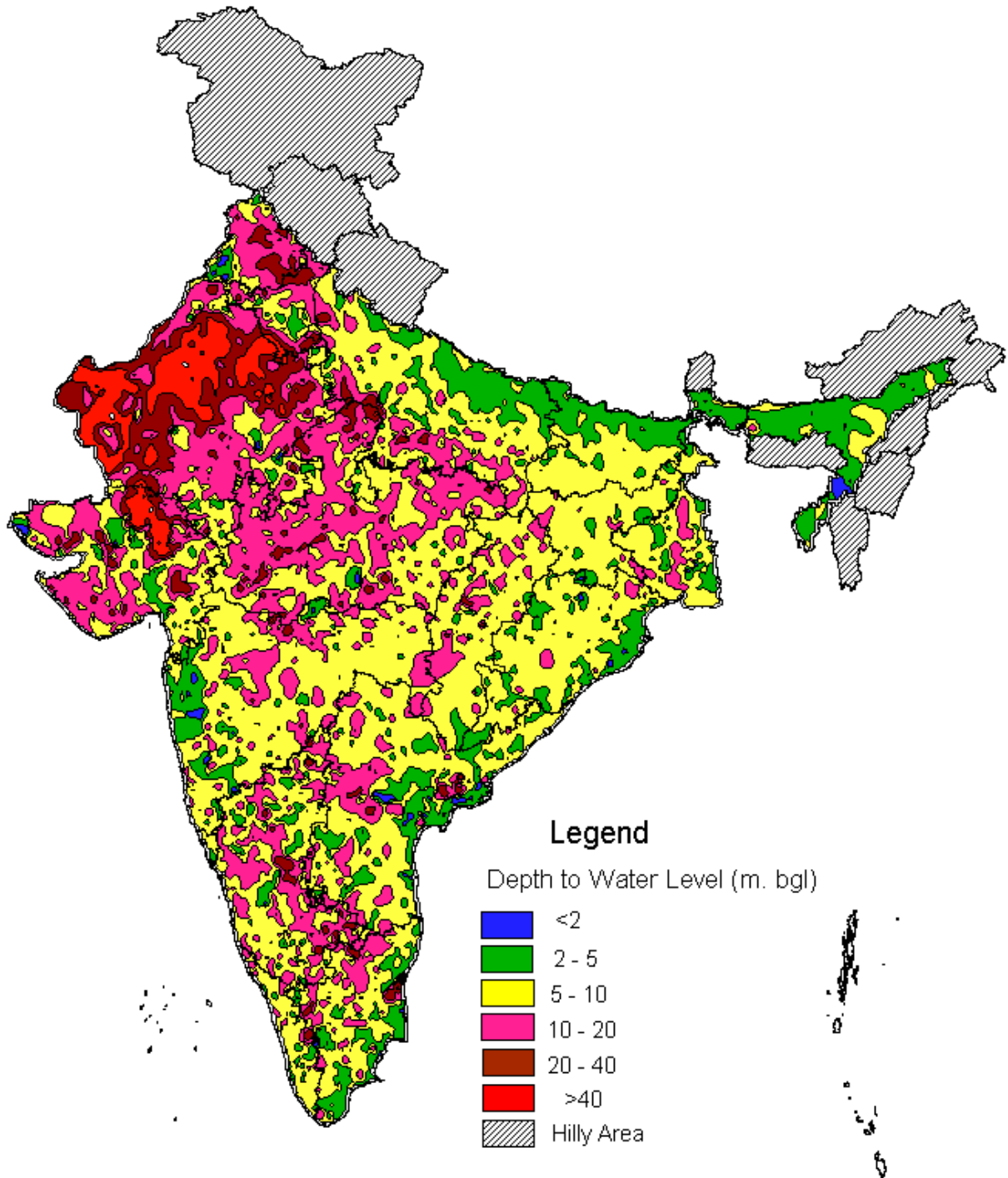
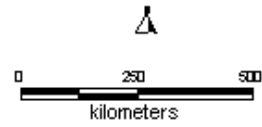
RAINFALL VARIATIONS

In India, rainfall is unevenly distributed spatially and temporally. The average annual rainfall of the country for 2009 is around 954 mm against the Normal rainfall of 1197 mm (Departure of 20% less than the Normal). From the perusal of Average Annual Rainfall map given as Plate XIII, it can be observed that the rainfall is normal in southern states except in Andhra Pradesh and Eastern Maharashtra. In the northern and north western part of the country rainfall is deficient except for the states of Bihar and Saurashtra region of Gujarat where rainfall is normal. Rainfall is deficient in Central India except for western Madhya Pradesh. States of West Bengal and Orissa witnessed normal rainfall. The whole of north-eastern states have deficient rainfall. A review of annual ground water availability, contribution from monsoon rainfall recharge and annual ground water draft in different states falling under overexploited category and the rainfall distribution in space brings a paradoxical situation in the sense that, withdrawal of ground water is not solely responsible for declining trends, the scanty and low rainfall resulting in meager monsoon recharge is equally important. Majority of the ground water stress areas categorized as overexploited and critical units also lies in these states.

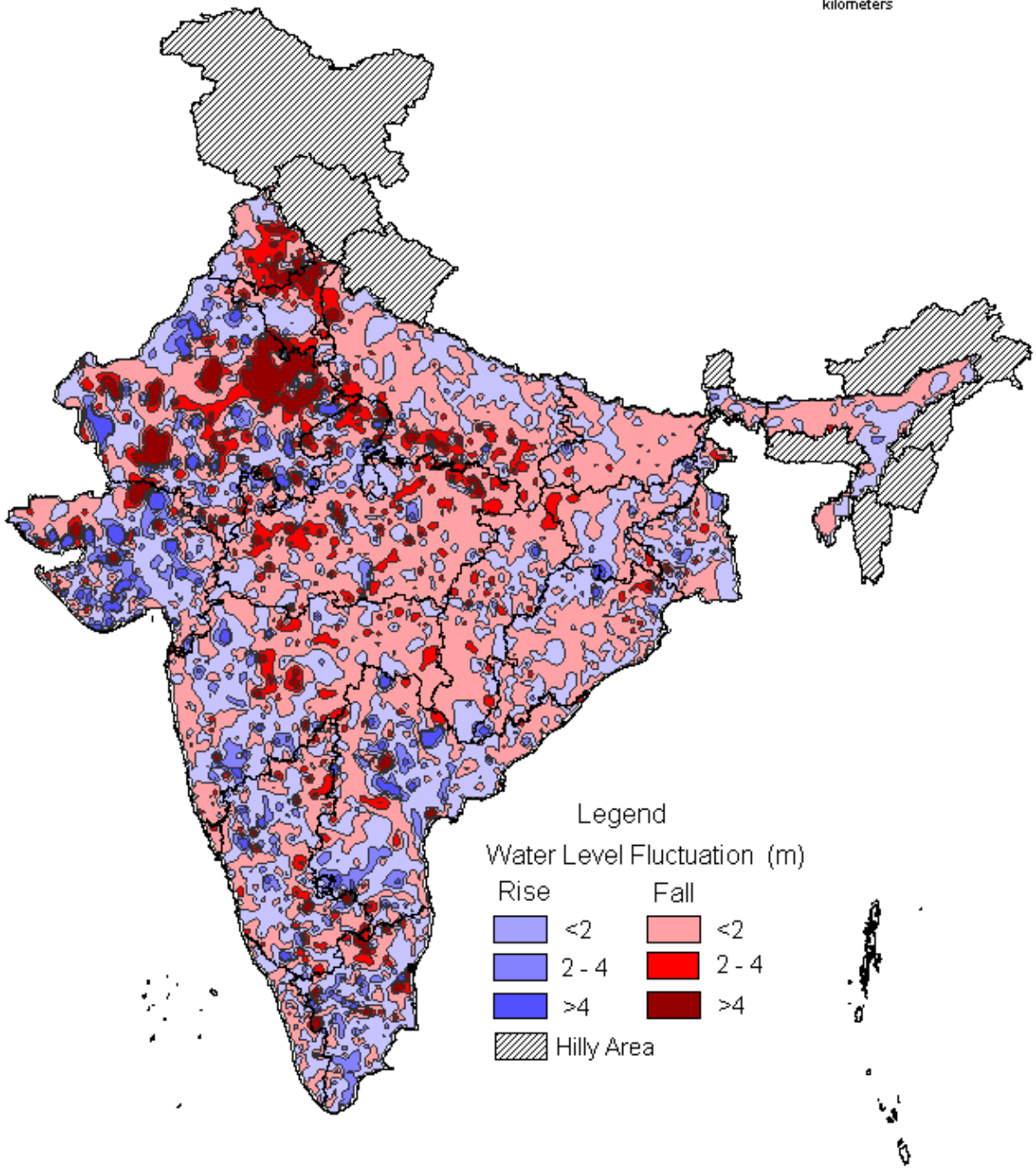
Location of Ground Water Monitoring Wells



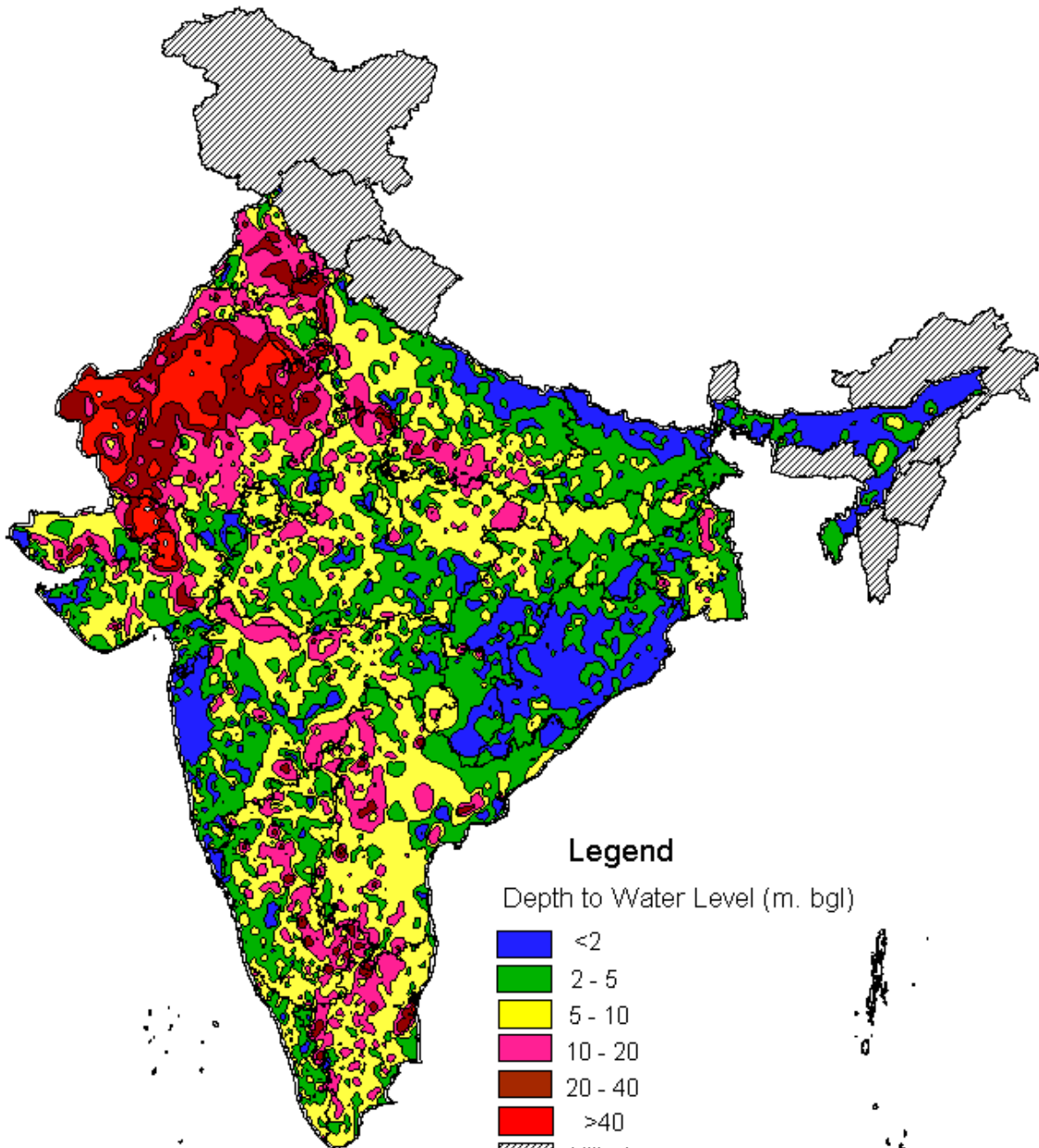
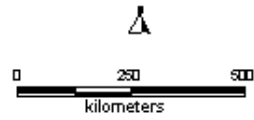
Depth to Water Level (Pre-Monsoon - 2009)



Water Level Fluctuation Pre-Monsoon 2009 Vs Decadal Mean (1999-2008)



Depth to Water Level (August - 2009)

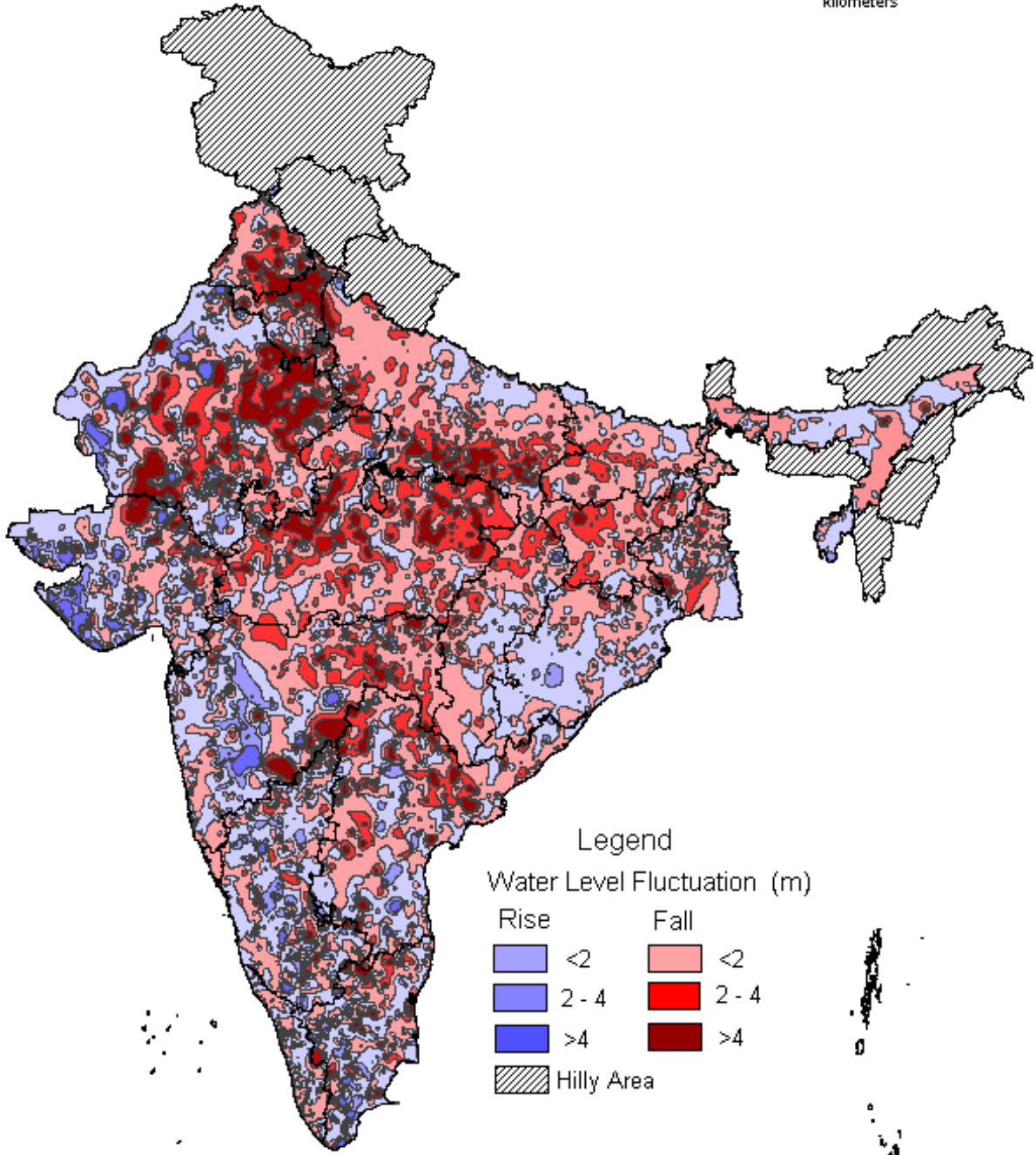
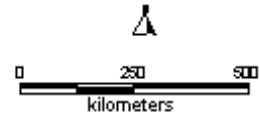


Legend

Depth to Water Level (m. bgl)

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

Water Level Fluctuation August 2009 Vs Decadal Mean (1999-2008)



Legend

Water Level Fluctuation (m)

Rise

Fall

<2

<2

2 - 4

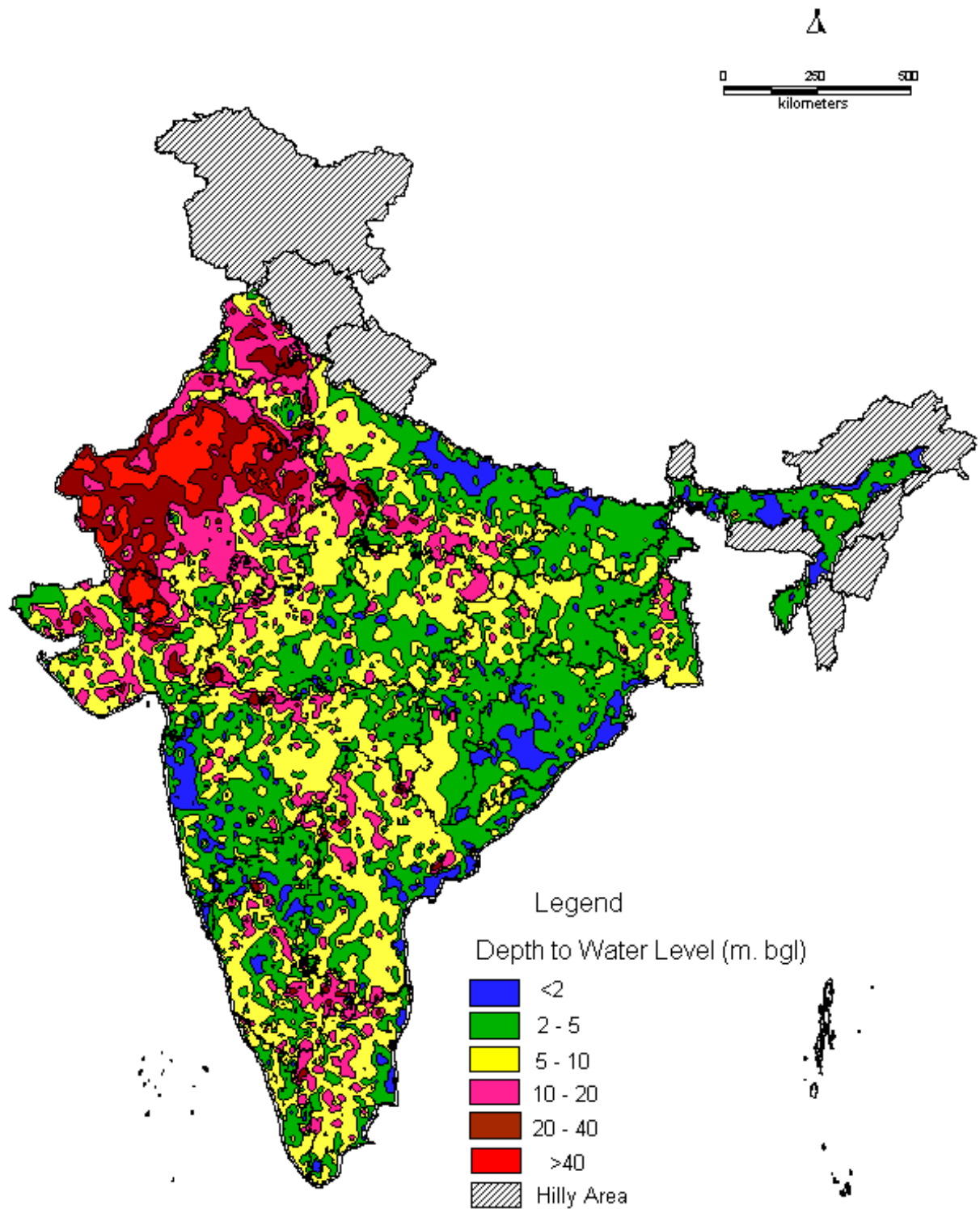
2 - 4

>4

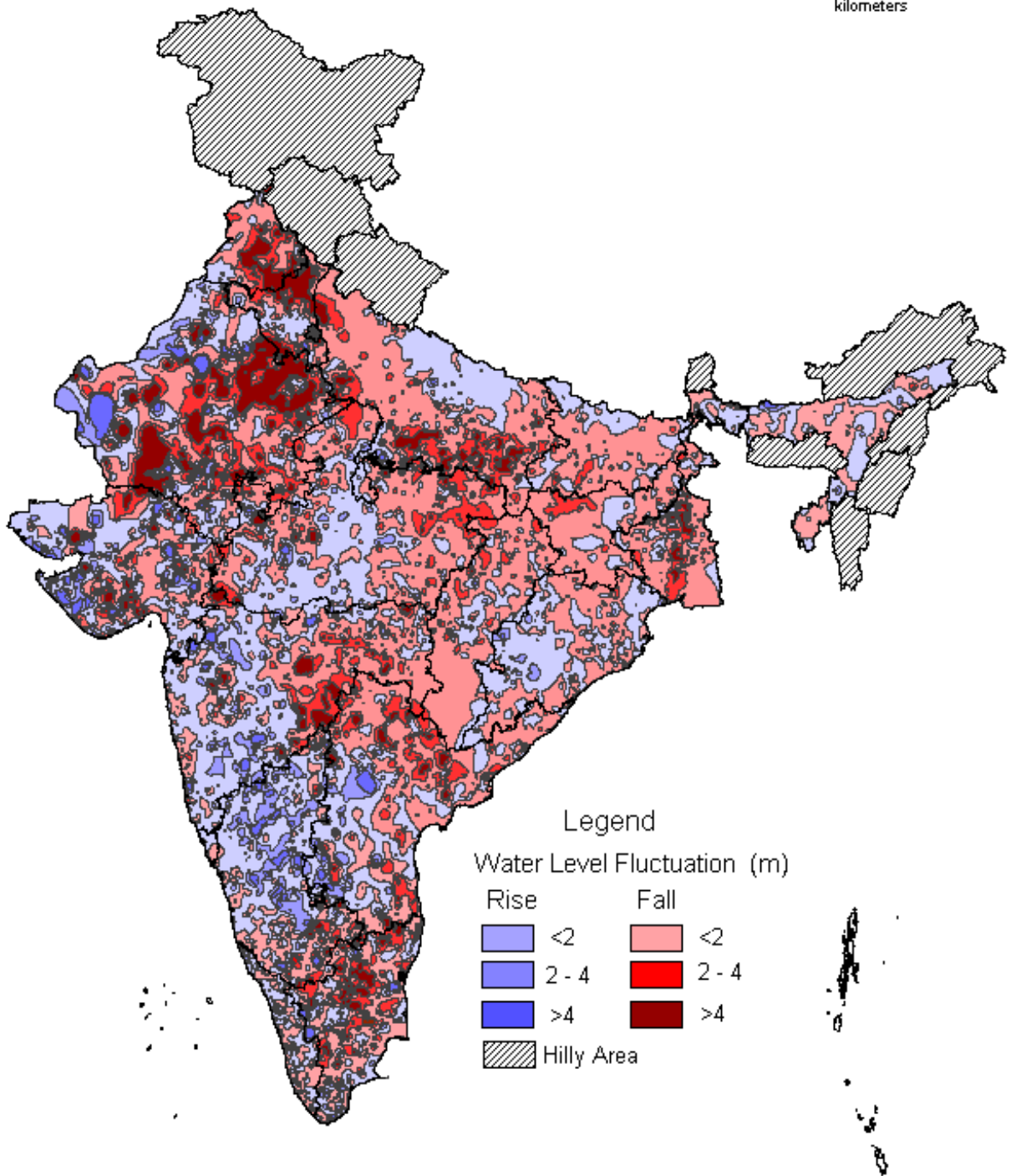
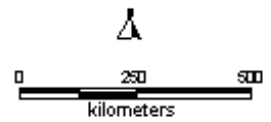
>4

Hilly Area

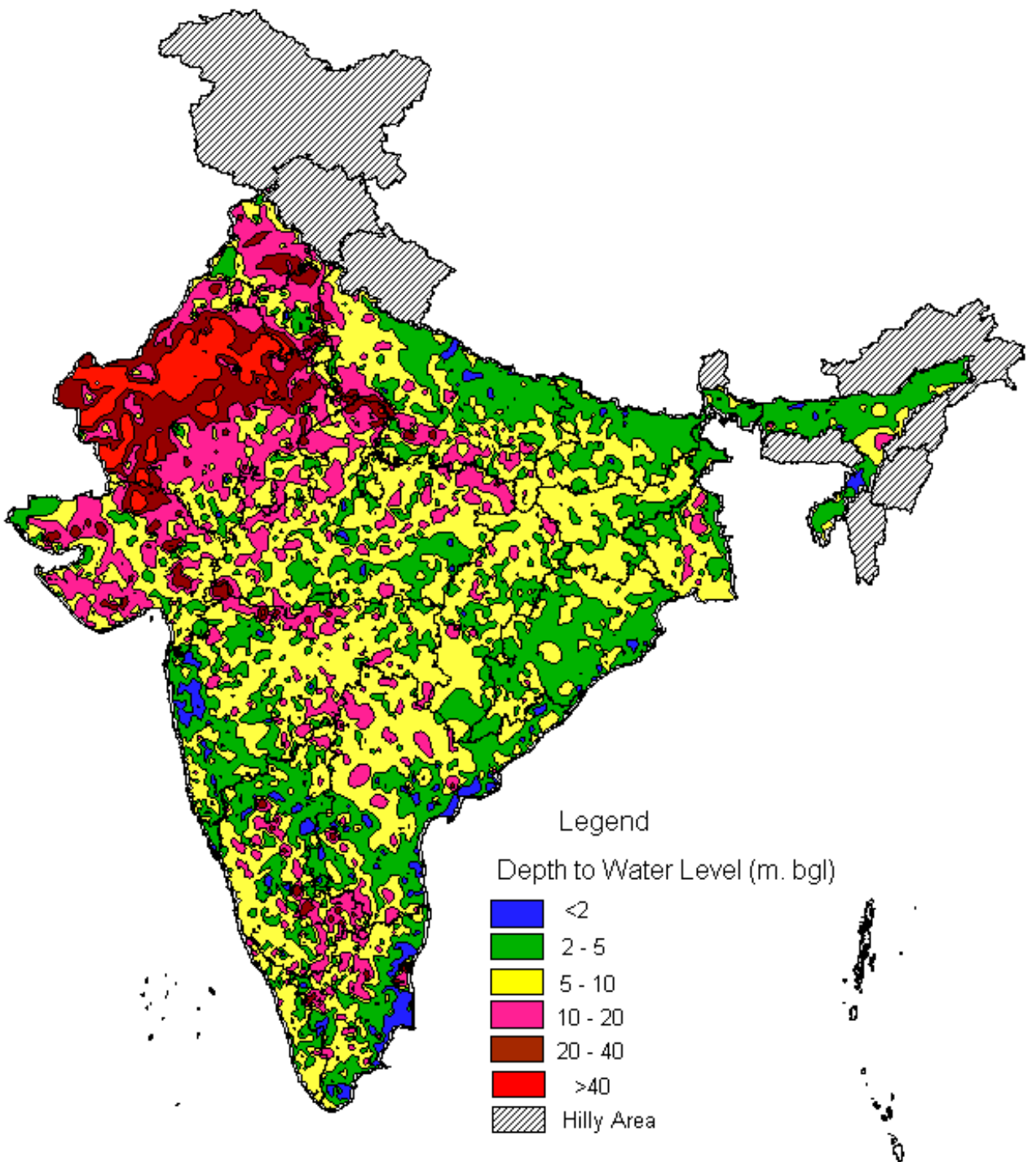
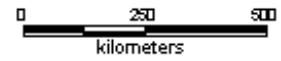
Depth to Water Level (Post-Monsoon - 2009)



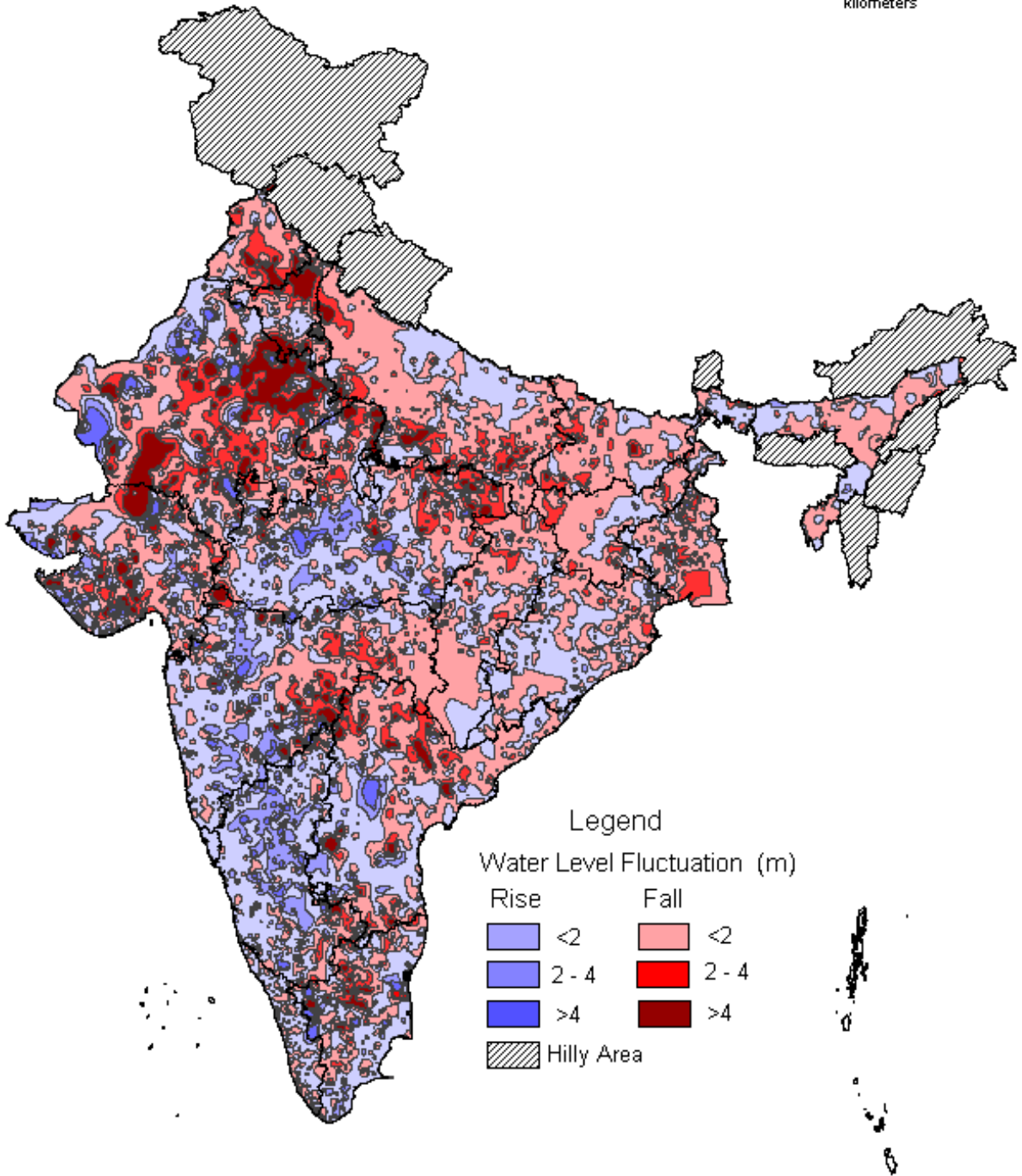
Water Level Fluctuation Post-Monsoon 2009 Vs Decadal Mean (1999- 2008)



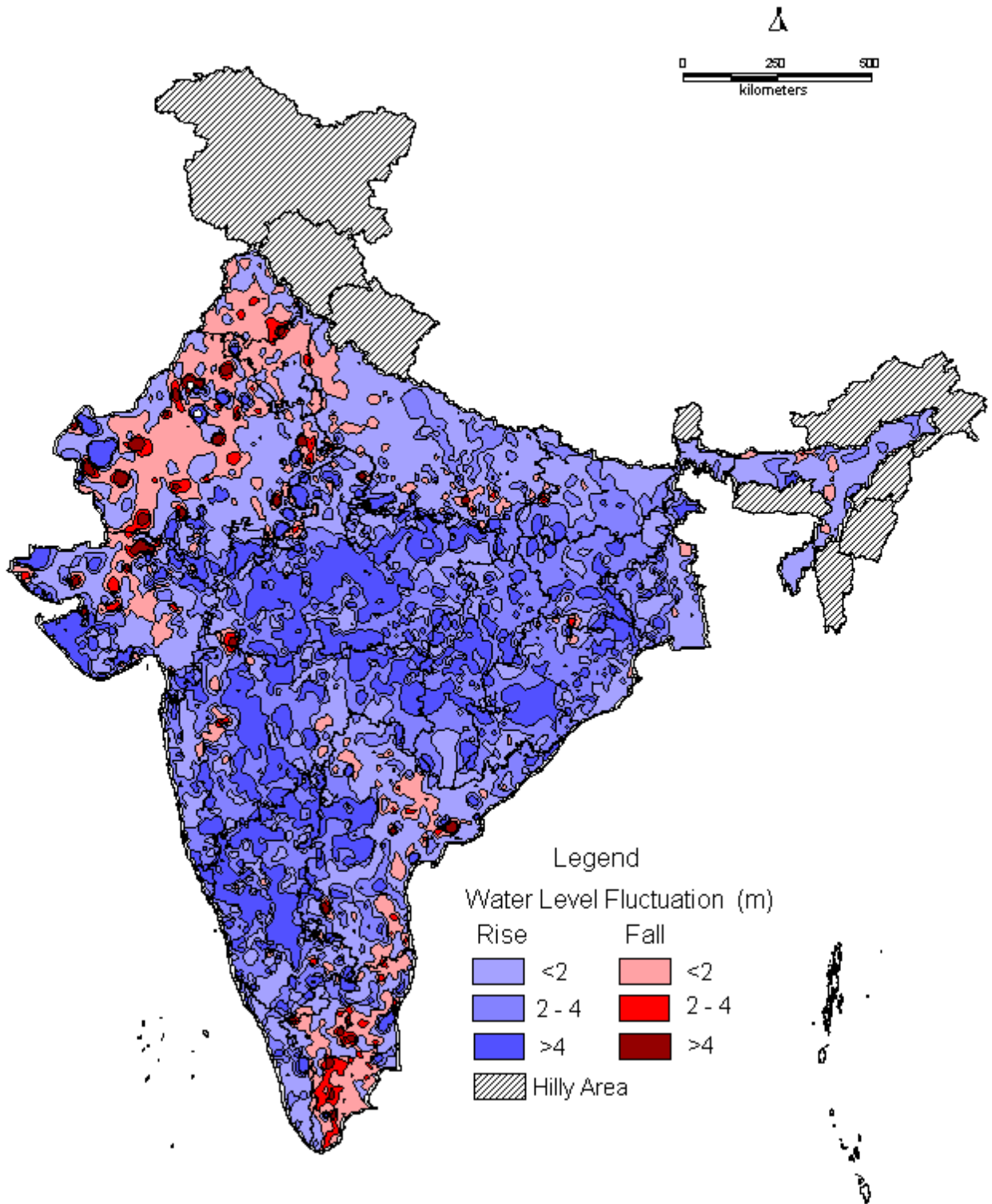
Depth to Water Level (January - 2010)



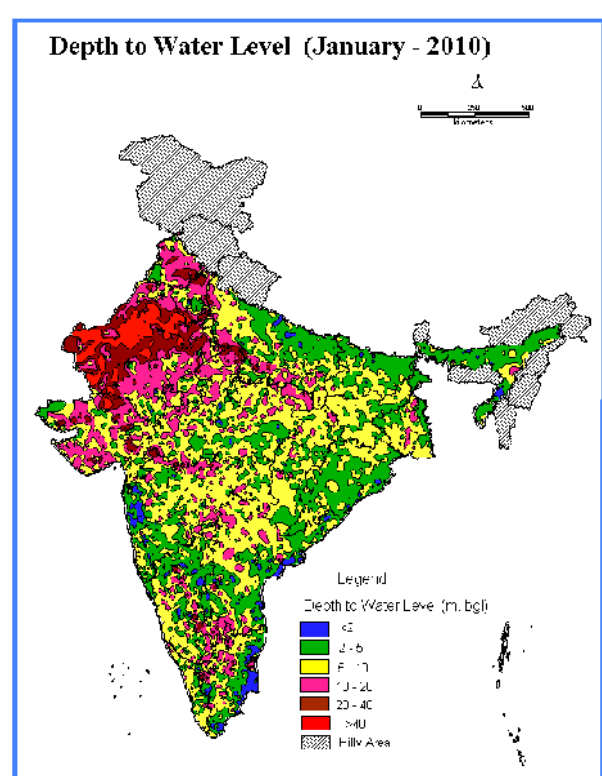
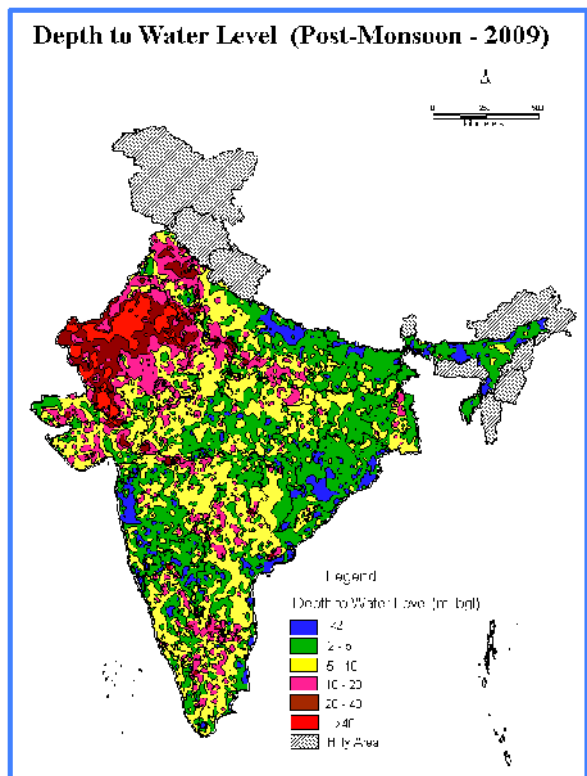
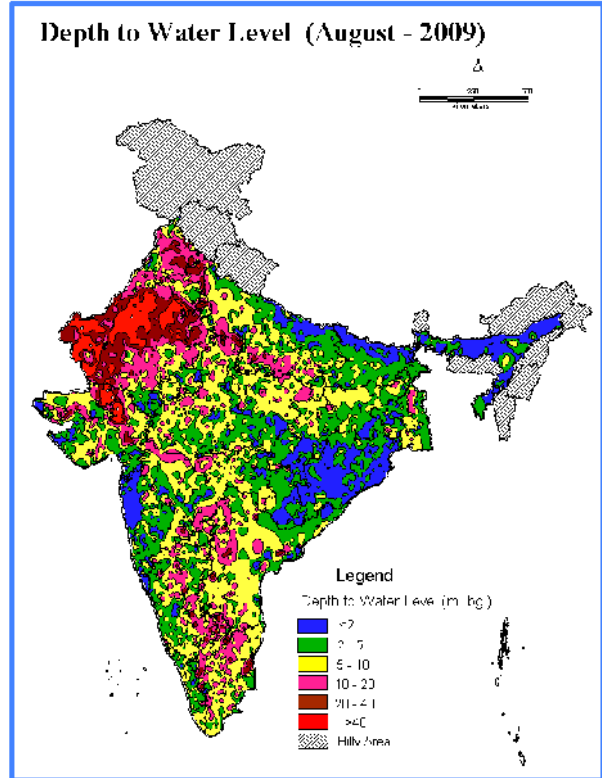
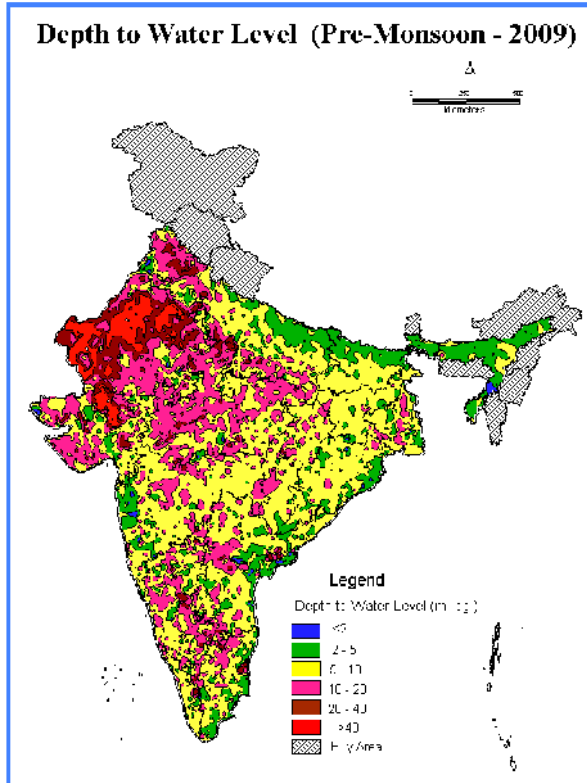
Water Level Fluctuation January 2010 Vs Decadal Mean (2000-2009)



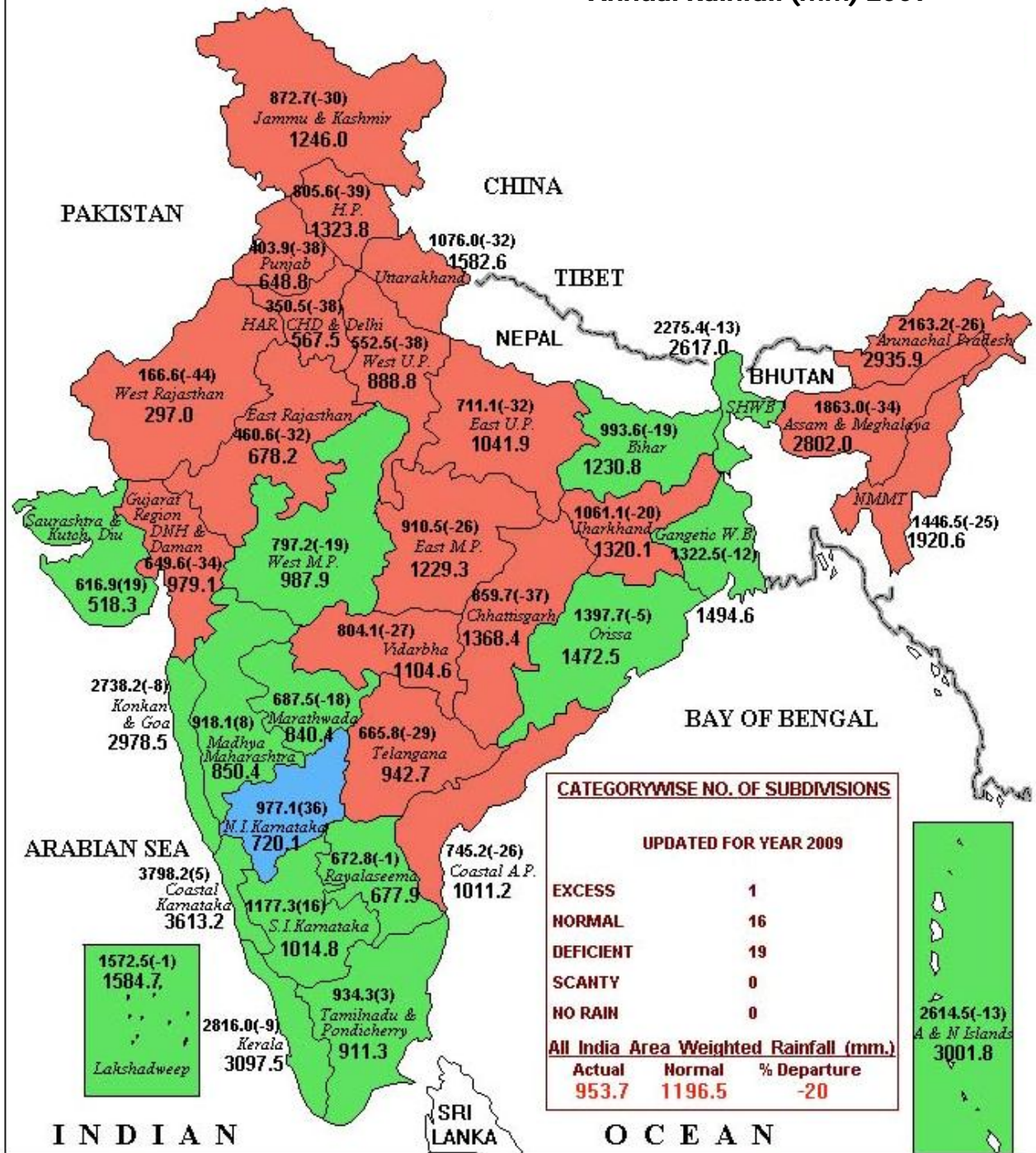
Water Level Fluctuation (Pre-Monsoon to Post-Monsoon 2009)



GROUND WATER LEVEL AT A GLANCE



Annual Rainfall (mm) 2009



LEGEND: ■ EXCESS (+20% OR MORE) ■ NORMAL (+19% TO -19%) ■ DEFICIENT (-20% TO -59%)
■ SCANTY [-60% TO -99%] ■ NO RAIN [-100%] NO DATA

NOTES:

- (a) Rainfall figures are based on operational data.
- (b) Small figures indicate actual rainfall (mm.), while bold figures indicate Normal rainfall (mm.)
 Percentage Departures of Rainfall are shown in Brackets.

3.0 GROUND WATER RESOURCE AVAILABILITY AND DEVELOPMENT STATUS

3.1 DYNAMIC FRESH GROUND WATER RESOURCE

The ground water resource of the country has been estimated based on the reports of all the states and UTs as per the technical guidance of R & D Advisory Committee on ground water estimation. Ground water resources have been estimated for fresh water as per GEC'97 methodology. The year of assessment is different for different states varying from 1998 to 2004. The ground water draft figures were projected to March, 2004 to bring ground water estimation figures of different states on a common datum. The GEC'97 recommends that the assessment unit for alluvium could be Block, but for hard rock, it should be Watershed. However, except for the three states of Maharashtra, Andhra Pradesh and Karnataka, other states do not have watershed-wise data, hence computations were done on Block/Taluka-wise basis in case of most of the states.

The Annual Replenishable Ground Water Resource for the entire country is 433 billion cubic metre (bcm). Plate XIV presents the over-all scenario of ground water resource utilization and availability of the country. The ground water assessed is the dynamic resource which is replenished each year. The Annual Replenishable Ground Water Resource is contributed by two major sources – rainfall and other sources that include canal seepage return flow from irrigation, seepage from water bodies and artificial recharge due to water conservation structures. The overall contribution of rainfall to country's Annual Replenishable Ground Water Resource is 67% and the share of other sources taken together is 33%. State-wise Ground Water Resources of India as on March, 2004 is given in table 3. The contribution from other sources such as canal seepage, return flow from irrigation, seepage from water bodies etc in annual replenishable resources is more than of 33% in the states of Andhra Pradesh, Delhi, Haryana, Jammu & Kashmir, Jharkhand, Punjab, Tamil Nadu, Uttar Pradesh, Uttaranchal and UT of Pondicherry. South-West monsoon being the most prevalent contributor of rainfall in the country, about 73% of country's Annual Replenishable Ground Water Recharge takes place during the Kharif period of cultivation. Keeping 34 bcm for natural discharge, the Net Ground Water Available for utilization for the entire country is 399 bcm. The Annual Ground Water Draft is 231 bcm, out of which 213 bcm is for Irrigation use and 18 bcm for Domestic & Industrial use. An analysis of ground water draft figures indicates that in the states of Chhattisgarh, Delhi, Goa, Himachal Pradesh, Jammu & Kashmir, Jharkhand, Kerala, north eastern states of Manipur, Meghalaya, Mizoram, Nagaland and Tripura, Orissa, Sikkim, and Uts of Dadra & Nagar Haveli, Daman & Diu, Lakshadweep and Pondicherry, ground water draft for domestic & industrial purposes are more than 15% which is comparatively higher than the national average of 8%. In general, the irrigation sector remains the main consumer of ground water (92% of total annual ground water draft for all uses).

3.2 STAGE OF GROUND WATER DEVELOPMENT

The stage of ground water development for the country as a whole is 58%. The status of ground water development is comparatively high in the states of Delhi, Haryana, Punjab and Rajasthan and UT of Daman & Diu and Pondicherry, where the Stage of Ground Water Development is more than 100%, which implies that in these states the average annual ground water consumption is more than average annual ground water recharge. In the states of Gujarat, Karnataka, Tamil Nadu and Uttar Pradesh the average stage of ground water development is 70% and above. In rest of the states / UTs the stage of ground water development is below 70%.

3.3 CATEGORIZATION OF ASSESSMENT UNITS

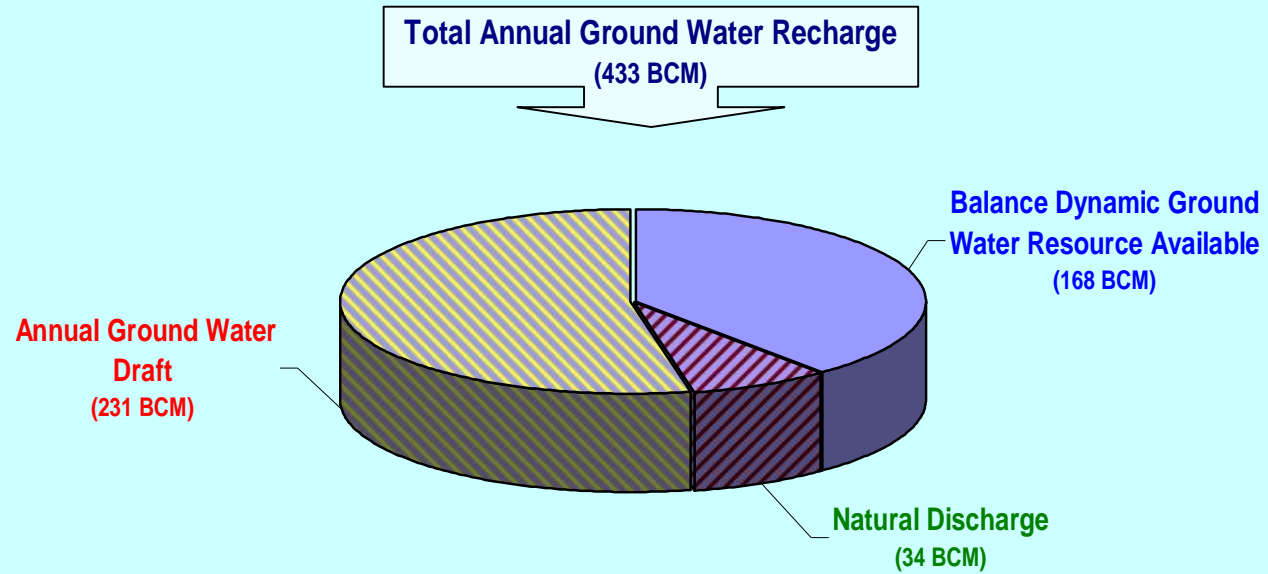
Out of 5723 assessed administrative units (Blocks/ Taluks/ Mandals/ Districts), 4078 units are 'Safe', 550 units are 'Semi-critical', 226 units are 'Critical', 839 units are 'Over-exploited' and 30 units are 'Saline' (Table 4). Number of Over-Exploited and Critical administrative units are significantly higher (more than 15% of the total assessed units) in Andhra Pradesh (where categorization was done up to sub-unit level i.e. within Mandal – command and non-command-wise), Delhi, Gujarat, Haryana, Karnataka, Punjab, Rajasthan and Tamil Nadu and also the UTs of Daman & Diu and Pondicherry (Plate XV).

TABLE-3 STATE-WISE GROUND WATER RESOURCES AVAILABILITY, UTILIZATION AND STAGE OF DEVELOPMENT, INDIA

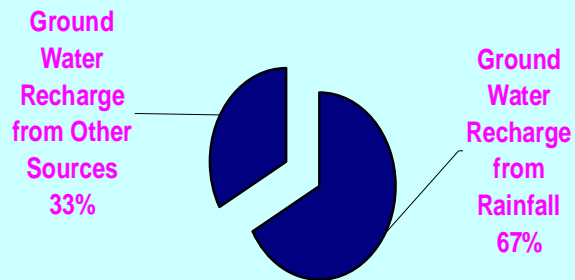
Sl. No.	States / Union Territories	Annual Replenishable Ground Water Resource					Natural Discharge during non-monsoon season	Net Annual Ground Water Availability	Annual Ground Water Draft			Projected Demand for Domestic and Industrial uses upto	Ground Water Availability for future irrigation	Stage of Ground Water Development (%)
		Monsoon Season		Non-monsoon Season		Total			Irrigation	Domestic and industrial uses	Total			
		Recharge from rainfall	Recharge from other sources	Recharge from rainfall	Recharge from other sources									
	States													
1	Andhra Pradesh	16.04	8.93	4.20	7.33	36.50	3.55	32.95	13.88	1.02	14.90	2.67	17.65	45
2	Arunachal Pradesh	1.57	0.00009	0.98	0.0002	2.56	0.26	2.30	0.0008	0	0.0008	0.009	2.29	0.04
3	Assam	23.65	1.99	1.05	0.54	27.23	2.34	24.89	4.85	0.59	5.44	0.98	19.06	22
4	Bihar	19.45	3.96	3.42	2.36	29.19	1.77	27.42	9.39	1.37	10.77	2.14	16.01	39
5	Chattisgarh	12.07	0.43	1.30	1.13	14.93	1.25	13.68	2.31	0.48	2.80	0.70	10.67	20
6	Delhi	0.13	0.06	0.02	0.09	0.30	0.02	0.28	0.20	0.28	0.48	0.57	0.00	170
7	Goa	0.22	0.01	0.01	0.04	0.29	0.02	0.27	0.04	0.03	0.07	0.04	0.19	27
8	Gujarat	10.59	2.08	0.00	3.15	15.81	0.79	15.02	10.49	0.99	11.49	1.48	3.05	76
9	Haryana	3.52	2.15	0.92	2.72	9.31	0.68	8.63	9.10	0.35	9.45	0.60	-1.07	109
10	Himachal Pradesh	0.33	0.01	0.08	0.02	0.43	0.04	0.39	0.09	0.03	0.12	0.04	0.25	30
11	Jammu & Kashmir	0.61	0.77	1.00	0.32	2.70	0.27	2.43	0.10	0.24	0.33	0.42	1.92	14
12	Jharkhand	4.26	0.14	1.00	0.18	5.58	0.33	5.25	0.70	0.38	1.06	0.56	3.99	20
13	Karnataka	8.17	4.01	1.50	2.25	15.93	0.63	15.30	9.75	0.97	10.71	1.41	6.48	70
14	Kerala	3.79	0.01	1.93	1.11	6.84	0.61	6.23	1.82	1.10	2.92	1.40	3.07	47
15	Madhya Pradesh	30.59	0.96	0.05	5.59	37.19	1.86	35.33	16.08	1.04	17.12	1.74	17.51	48
16	Maharashtra	20.15	2.51	1.94	8.36	32.96	1.75	31.21	14.24	0.85	15.09	1.51	15.10	48
17	Manipur	0.20	0.005	0.16	0.01	0.38	0.04	0.34	0.002	0.0005	0.002	0.02	0.31	0.65
18	Meghalaya	0.79	0.03	0.33	0.005	1.15	0.12	1.04	0.00	0.002	0.002	0.10	0.94	0.18
19	Mizoram	0.03	0.00	0.02	0.00	0.04	0.004	0.04	0.00	0.0004	0.0004	0.0008	0.04	0.90
20	Nagaland	0.28	0.00	0.08	0.00	0.36	0.04	0.32	0.00	0.009	0.009	0.03	0.30	3
21	Orissa	12.81	3.56	3.58	3.14	23.09	2.08	21.01	3.01	0.84	3.85	1.22	16.78	18
22	Punjab	5.98	10.91	1.36	5.54	23.78	2.33	21.44	30.34	0.83	31.16	1.00	-9.89	145
23	Rajasthan	8.76	0.62	0.26	1.92	11.56	1.18	10.38	11.60	1.39	12.99	2.72	-3.94	125
24	Sikkim	-	-	-	-	0.08	0.00	0.08	0.00	0.01	0.01	0.02	0.05	16
25	Tamil Nadu	4.91	11.96	4.53	1.67	23.07	2.31	20.76	16.77	0.88	17.65	0.91	3.08	85

Sl. No.	States / Union Territories	Annual Replenishable Ground Water Resource					Natural Discharge during non-monsoon season	Net Annual Ground Water Availability	Annual Ground Water Draft			Projected Demand for Domestic and Industrial uses upto	Ground Water Availability for future irrigation	Stage of Ground Water Development (%)
		Monsoon Season		Non-monsoon Season		Total			Irrigation	Domestic and industrial uses	Total			
		Recharge from rainfall	Recharge from other sources	Recharge from rainfall	Recharge from other sources									
26	Tripura	1.10	0.00	0.92	0.17	2.19	0.22	1.97	0.08	0.09	0.17	0.20	1.69	9
27	Uttar Pradesh	38.63	11.95	5.64	20.14	76.35	6.17	70.18	45.36	3.42	48.78	5.30	19.52	70
28	Uttaranchal	1.37	0.27	0.12	0.51	2.27	0.17	2.10	1.34	0.05	1.39	0.06	0.68	66
29	West Bengal	17.87	2.19	5.44	4.86	30.36	2.90	27.46	10.83	0.81	11.65	1.24	15.33	42
	Total States	247.87	69.51	41.84	73.15	432.43	33.73	398.70	212.37	18.05	230.41	29.09	161.06	58
	Union Territories													
1	Andaman & Nicobar	-	-	-	-	0.330	0.005	0.320	0.000	0.010	0.010	0.008	0.303	4
2	Chandigarh	0.016	0.001	0.005	0.001	0.023	0.002	0.020	0.000	0.000	0.000	0.000	0.020	0
3	Dadara & Nagar Haveli	0.059	0.005			0.063	0.003	0.060	0.001	0.008	0.009	0.008	0.051	14
4	Daman & Diu	0.006	0.002	0.000	0.001	0.009	0.0004	0.008	0.007	0.002	0.009	0.003	-0.002	107
5	Lakshdweep	-	-	-	-	0.012	0.009	0.004	0.000	0.002	0.002	-	-	63
6	Pondicherry	0.057	0.067	0.007	0.029	0.160	0.016	0.144	0.121	0.030	0.151	0.031	-0.008	105
	Total Uts	0.138	0.075	0.012	0.031	0.597	0.036	0.556	0.129	0.052	0.181	0.050	0.365	33
	Grand Total	248.01	69.59	41.85	73.18	433.02	33.77	399.25	212.50	18.10	230.59	29.14	161.43	58

Ground Water Resource and Development Potential in India



Annual Ground Water Recharge



Annual Ground Water Draft

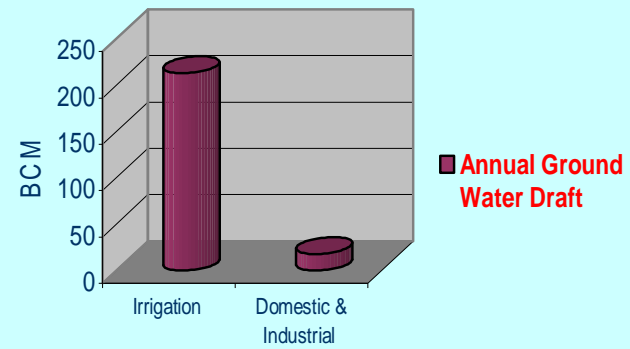


TABLE – 4 CATEGORISATION OF BLOCKS/MANDALS/TALUKAS IN INDIA

Sl.No.	States / Union Territories	Total No. of Assessed Units	Safe		Semi-Critical		Critical		Over-exploited		Remarks
			Nos.	%	Nos.	%	Nos.	%	Nos.	%	
	States										
1	Andhra Pradesh	1231	760	62	175	14	77	6	219	18	-
2	Arunachal Pradesh	13	13	100	0	0	0	0	0	0	-
3	Assam	23	23	100	0	0	0	0	0	0	-
4	Bihar	515	515	100	0	0	0	0	0	0	-
5	Chattisgarh	146	138	95	8	5	0	0	0	0	-
6	Delhi	9	2	22	0	0	0	0	7	78	-
7	Goa	11	11	100	0	0	0	0	0	0	-
8	Gujarat	223	97	43	69	31	12	5	31	14	Rest 14 talukas- Saline
9	Haryana	113	42	37	5	4	11	10	55	49	-
10	Himachal Pradesh	5	5	100	0	0	0	0	0	0	-
11	Jammu & Kashmir	8	8	100	0	0	0	0	0	0	-
12	Jharkhand	208	208	100	0	0	0	0	0	0	-
13	Karnataka	175	93	53	14	8	3	2	65	37	-
14	Kerala	151	101	67	30	20	15	10	5	3	-
15	Madhya Pradesh	312	264	85	19	6	5	2	24	8	-
16	Maharashtra	318	287	90	23	7	1	0	7	2	-
17	Manipur	7	7	100	0	0	0	0	0	0	-
18	Meghalaya	7	7	100	0	0	0	0	0	0	-
19	Mizoram	22	22	100	0	0	0	0	0	0	-
20	Nagaland	7	7	100	0	0	0	0	0	0	-
21	Orissa	314	308	98	0	0	0	0	0	0	Rest 6 blocks- Saline
22	Punjab	137	25	18	4	3	5	4	103	75	-
23	Rajasthan	237	32	14	14	6	50	21	140	59	Rest 1 block- Saline
24	Sikkim	1	1	100	0	0	0	0	0	0	-

Sl.No.	States / Union Territories	Total No. of Assessed Units	Safe		Semi-Critical		Critical		Over-exploited		Remarks
			Nos.	%	Nos.	%	Nos.	%	Nos.	%	
25	Tamil Nadu	385	145	38	57	15	33	9	142	37	Rest 8 blocks- Saline
26	Tripura	38	38	100	0	0	0	0	0	0	-
27	Uttar Pradesh	803	665	83	88	11	13	2	37	5	-
28	Uttaranchal	17	12	71	3	18	0	0	2	12	-
29	West Bengal	269	231	86	37	14	1	0	0	0	-
	Total States	5705	4067	71	546	10	226	4	837	15	-
	Union Territories										
1	Andaman & Nicobar	1	1	100	0	0	0	0	0	0	-
2	Chandigarh	1	1	100	0	0	0	0	0	0	-
3	Dadra & Nagar Haveli	1	1	100	0	0	0	0	0	0	-
4	Daman & Diu	2	0	0	1	50	0	0	1	50	-
5	Lakshdweep	9	6	67	3	33	0	0	0	0	-
6	Pondicherry	4	2	50	0	0	0	0	1	25	Rest 1 Region- Saline
	Total Uts	18	11	61	4	22	0	0	2	11	-
	Grand Total	5723	4078	71	550	10	226	4	839	15	-

Note

Blocks- Bihar, Chhattisgarh, Haryana, Jharkhand, Kerala, Madhya Pradesh, Manipur, Mizoram, Orissa, Punjab, Rajasthan, Tamilnadu, Tripura, Uttar Pradesh, Uttaranchal , West Bengal

Mandals (command/ non-command) - Andhra Pradesh

Talukas - Goa, Gujarat, Karnataka, Maharashtra

Districts - Arunachal Pradesh, Assam, Delhi, Meghalaya, Nagaland

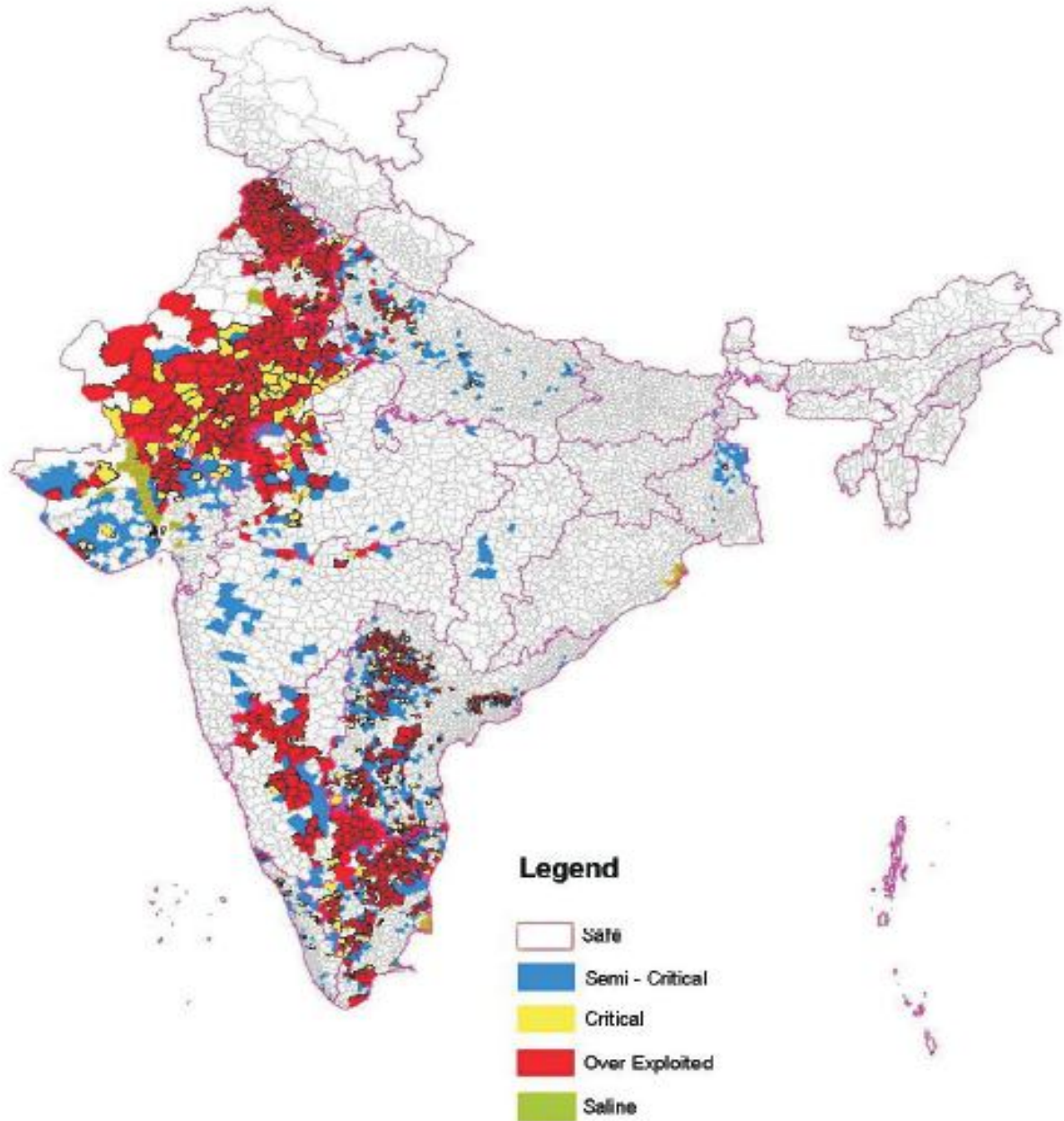
Districts (Valley) - Himachal Pradesh, Jammu & Kashmir

State - Sikkim

Islands - Lakshdweep

UT - Andaman & Nicobar, Chandigarh, Dadra & Nagar Haveli, Daman & Diu, Pondicherry

Categorization of Ground Water Assessment Units



STATE - WISE DEPTH TO WATER LEVEL

DISTRIBUTION OF PERCENTAGE OF OBSERVATION WELLS - 2009 MAY

State	No. of Wells Analysed	Depth to Water Level (mbgl)		No. / Percentage of Wells Showing Depth to Water Level (mbgl) in the Range of											
				0-2		2-5		5-10		10-20		20-40		>40	
		Min	Max	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Andhra Pradesh	670	GL	28.50	62	9.25	184	27.46	307	45.82	112	16.72	5	0.75	0	0.00
Arunachal Pradesh	9	1.86	9.75	1	11.11	4	44.44	4	44.44	0	0.00	0	0.00	0	0.00
Assam	204	0.36	16.62	27	13.24	129	63.24	45	22.06	3	1.47	0	0.00	0	0.00
Bihar	220	0.68	13.00	4	1.82	93	42.27	119	54.09	4	1.82	0	0.00	0	0.00
Chandigarh	20	2.84	45.39	0	0.00	3	15.00	5	25.00	8	40.00	2	10.00	2	10.00
Chhattisgarh	380	0.40	30.06	5	1.32	69	18.16	232	61.05	72	18.95	2	0.53	0	0.00
Dadar-Nagar-Haveli	7	3.20	12.55	0	0.00	2	28.57	2	28.57	3	42.86	0	0.00	0	0.00
Delhi	201	0.80	63.46	6	2.99	42	20.90	54	26.87	49	24.38	29	14.43	21	10.45
Gujarat & Daman-Diu	737	0.30	55.23	20	2.71	117	15.88	284	38.53	240	32.56	67	9.09	9	1.22
Haryana	316	0.73	44.00	12	3.80	79	25.00	82	25.95	99	31.33	43	13.61	1	0.32
Himachal Pradesh	83	0.53	54.00	3	3.61	30	36.14	21	25.30	21	25.30	7	8.43	1	1.20
Jammu & Kashmir	136	0.70	35.39	11	8.09	60	44.12	42	30.88	14	10.29	9	6.62	0	0.00
Jharkhand	168	1.56	15.70	5	2.98	28	16.67	111	66.07	24	14.29	0	0.00	0	0.00
Karnataka	879	0.18	25.50	37	4.21	227	25.82	371	42.21	241	27.42	3	0.34	0	0.00
Kerala	623	0.22	55.40	57	9.15	174	27.93	276	44.30	102	16.37	13	2.09	1	0.16
Madhya Pradesh	868	1.35	47.00	2	0.23	54	6.22	393	45.28	378	43.55	40	4.61	1	0.12
Maharashtra	756	0.35	55.30	30	3.97	145	19.18	402	53.17	166	21.96	12	1.59	1	0.13
Manipur	Hilly Area														
Meghalaya	27	0.80	8.06	6	22.22	17	62.96	4	14.81	0	0.00	0	0.00	0	0.00
Mizoram	Hilly Area														
Nagaland	Hilly Area														
Orissa	839	GL	16.74	56	6.67	304	36.23	440	52.44	39	4.65	0	0.00	0	0.00
Pondicherry	6	1.81	4.75	1	16.67	5	83.33	0	0.00	0	0.00	0	0.00	0	0.00
Punjab	222	0.68	43.42	9	4.05	32	14.41	56	25.23	91	40.99	33	14.86	1	0.45
Rajasthan	845	GL	113.28	15	1.78	50	5.92	157	18.58	274	32.43	193	22.84	156	18.46
Sikkim	Hilly Area														
Tamil Nadu	701	0.10	48.90	43	6.13	237	33.81	265	37.80	120	17.12	24	3.42	12	1.71
Tripura	24	1.19	7.99	1	4.17	17	70.83	6	25.00	0	0.00	0	0.00	0	0.00
Uttar Pradesh	929	0.70	38.81	7	0.75	305	32.83	397	42.73	177	19.05	43	4.63	0	0.00
Uttaranchal	53	1.73	32.17	3	5.66	18	33.96	15	28.30	14	26.42	3	5.66	0	0.00
West Bengal	591	0.33	20.75	38	6.43	195	32.99	267	45.18	90	15.23	1	0.17	0	0.00

STATE - WISE DEPTH TO WATER LEVEL

DISTRIBUTION OF PERCENTAGE OF OBSERVATION WELLS - 2009 AUGUST

State	No. of Wells Analysed	Depth to Water Level (mbgl)		No. / Percentage of Wells Showing Depth to Water Level (mbgl) in the Range of											
				0-2		2-5		5-10		10-20		20-40		>40	
		Min	Max	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Andhra Pradesh	693	GL	26.50	113	16.31	216	31.17	247	35.64	110	15.87	7	1.01	0	0.00
Arunachal Pradesh	9	1.14	4.19	4	44.44	5	55.56	0	0.00	0	0.00	0	0.00	0	0.00
Assam	205	0.02	15.10	153	74.63	38	18.54	11	5.37	3	1.46	0	0.00	0	0.00
Bihar	247	0.20	12.48	75	30.36	121	48.99	48	19.43	3	1.21	0	0.00	0	0.00
Chandigarh	24	2.60	77.03	0	0.00	3	12.50	6	25.00	7	29.17	5	20.83	3	12.50
Chhattisgarh	404	GL	24.90	209	51.73	103	25.50	77	19.06	14	3.47	1	0.25	0	0.00
Dadar-Nagar-Haveli	8	0.01	1.90	8	100.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Delhi	198	GL	66.46	9	4.55	41	20.71	46	23.23	51	25.76	30	15.15	21	10.61
Gujarat & Daman-Diu	737	0.02	60.32	142	19.27	218	29.58	210	28.49	122	16.55	41	5.56	4	0.54
Haryana	326	0.56	58.65	17	5.21	73	22.39	86	26.38	88	26.99	57	17.48	5	1.53
Himachal Pradesh	82	0.44	51.21	20	24.39	23	28.05	16	19.51	15	18.29	7	8.54	1	1.22
Jammu & Kashmir	137	0.60	35.00	42	30.66	59	43.07	18	13.14	10	7.30	8	5.84	0	0.00
Jharkhand	165	0.58	17.80	31	18.79	59	35.76	64	38.79	11	6.67	0	0.00	0	0.00
Karnataka	880	0.03	26.28	173	19.66	307	34.89	254	28.86	142	16.14	4	0.45	0	0.00
Kerala	719	0.15	55.00	194	26.98	233	32.41	223	31.02	56	7.79	11	1.53	2	0.28
Madhya Pradesh	755	GL	23.75	107	14.17	230	30.46	309	40.93	101	13.38	8	1.06	0	0.00
Maharashtra	872	0.01	27.90	270	30.96	257	29.47	239	27.41	93	10.67	13	1.49	0	0.00
Manipur	Hilly Area														
Meghalaya	30	0.33	6.39	20	66.67	8	26.67	2	6.67	0	0.00	0	0.00	0	0.00
Mizoram	Hilly Area														
Nagaland	Hilly Area														
Orissa	816	GL	12.03	558	68.38	215	26.35	41	5.02	2	0.25	0	0.00	0	0.00
Pondicherry	7	2.25	5.35	0	0.00	6	85.71	1	14.29	0	0.00	0	0.00	0	0.00
Punjab	206	0.28	35.51	15	7.28	28	13.59	48	23.30	78	37.86	37	17.96	0	0.00
Rajasthan	884	GL	113.10	67	7.58	92	10.41	147	16.63	232	26.24	190	21.49	156	17.65
Sikkim	Hilly Area														
Tamil Nadu	717	0.27	50.40	37	5.16	196	27.34	285	39.75	160	22.32	27	3.77	12	1.67
Tripura	29	0.17	5.54	15	51.72	13	44.83	1	3.45	0	0.00	0	0.00	0	0.00
Uttar Pradesh	865	GL	37.60	163	18.84	271	31.33	254	29.36	140	16.18	37	4.28	0	0.00
Uttaranchal	54	0.50	38.23	10	18.52	14	25.93	19	35.19	8	14.81	3	5.56	0	0.00
West Bengal	582	0.04	21.00	194	33.33	257	44.16	87	14.95	43	7.39	1	0.17	0	0.00

STATE - WISE DEPTH TO WATER LEVEL

DISTRIBUTION OF PERCENTAGE OF OBSERVATION WELLS - 2009 NOVEMBER

State	No. of Wells Analysed	Depth to Water Level (mbgl)		No. / Percentage of Wells Showing Depth to Water Level (mbgl) in the Range of											
				0-2		2-5		5-10		10-20		20-40		>40	
		Min	Max	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Andhra Pradesh	667	0.00	28.45	156	23.39	219	32.83	224	33.58	66	9.90	2	0.30	0	0.00
Arunachal Pradesh	12	1.12	7.89	2	16.67	8	66.67	2	16.67	0	0.00	0	0.00	0	0.00
Assam	259	0.15	15.83	98	37.84	134	51.74	25	9.65	2	0.77	0	0.00	0	0.00
Bihar	243	0.53	12.50	46	18.93	154	63.37	40	16.46	3	1.23	0	0.00	0	0.00
Chandigarh	21	2.30	76.76	0	0.00	3	14.29	5	23.81	6	28.57	3	14.29	4	19.05
Chhattisgarh	375	0.21	21.76	76	20.27	181	48.27	104	27.73	13	3.47	1	0.27	0	0.00
Dadar-Nagar-Haveli	8	2.30	4.40	0	0.00	8	100.00	0	0.00	0	0.00	0	0.00	0	0.00
Delhi	200	0.16	66.10	15	7.50	43	21.50	47	23.50	46	23.00	27	13.50	22	11.00
Gujarat & Daman-Diu	743	0.17	52.87	63	8.48	205	27.59	272	36.61	143	19.25	58	7.81	2	0.27
Haryana	316	0.00	36.82	33	10.44	63	19.94	77	24.37	98	31.01	45	14.24	0	0.00
Himachal Pradesh	77	0.40	27.82	11	14.29	29	37.66	17	22.08	16	20.78	4	5.19	0	0.00
Jammu & Kashmir	133	0.23	35.15	20	15.04	58	43.61	32	24.06	14	10.53	9	6.77	0	0.00
Jharkhand	167	1.08	15.60	12	7.19	86	51.50	64	38.32	5	2.99	0	0.00	0	0.00
Karnataka	1054	0.00	37.40	243	23.06	392	37.19	247	23.43	140	13.28	32	3.04	0	0.00
Kerala	711	-0.18	55.60	171	24.05	234	32.91	236	33.19	60	8.44	9	1.27	1	0.14
Madhya Pradesh	771	0.00	29.00	62	8.04	256	33.20	348	45.14	97	12.58	8	1.04	0	0.00
Maharashtra	1031	0.05	55.40	230	22.31	372	36.08	321	31.13	91	8.83	15	1.45	2	0.19
Manipur	Hilly Area														
Meghalaya	28	0.03	6.82	10	35.71	16	57.14	2	7.14	0	0.00	0	0.00	0	0.00
Mizoram	Hilly Area														
Nagaland	Hilly Area														
Orissa	792	GL	11.58	323	40.78	360	45.45	106	13.38	3	0.38	0	0.00	0	0.00
Pondicherry	7	0.78	5.10	1	14.29	5	71.43	1	14.29	0	0.00	0	0.00	0	0.00
Punjab	194	0.70	31.66	11	5.67	37	19.07	47	24.23	69	35.57	30	15.46	0	0.00
Rajasthan	830	0.24	110.80	25	3.01	88	10.60	157	18.92	247	29.76	171	20.60	142	17.11
Sikkim	Hilly Area														
Tamil Nadu	693	GL	60.40	106	15.30	176	25.40	233	33.62	148	21.36	24	3.46	6	0.87
Tripura	30	1.26	10.99	6	20.00	21	70.00	2	6.67	1	3.33	0	0.00	0	0.00
Uttar Pradesh	831	0.13	38.81	153	18.41	298	35.86	225	27.08	134	16.13	21	2.53	0	0.00
Uttaranchal	50	0.29	35.39	10	20.00	16	32.00	14	28.00	8	16.00	2	4.00	0	0.00
West Bengal	631	0.20	21.18	141	22.35	311	49.29	126	19.97	51	8.08	2	0.32	0	0.00

STATE - WISE DEPTH TO WATER LEVEL

DISTRIBUTION OF PERCENTAGE OF OBSERVATION WELLS - 2010 JANUARY

State	No. of Wells Analysed	Depth to Water Level (mbgl)		No. / Percentage of Wells Showing Depth to Water Level (mbgl) in the Range of											
				0-2		2-5		5-10		10-20		20-40		>40	
		Min	Max	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Andhra Pradesh	678	GL	28.35	122	17.99	235	34.66	225	33.19	89	13.13	7	1.03	0	0.00
Arunachal Pradesh	8	1.54	5.50	1	12.50	6	75.00	1	12.50	0	0.00	0	0.00	0	0.00
Assam	248	0.32	16.37	44	17.74	160	64.52	37	14.92	7	2.82	0	0.00	0	0.00
Bihar	245	0.50	13.30	15	6.12	135	55.10	88	35.92	7	2.86	0	0.00	0	0.00
Chandigarh	22	2.34	52.15	0	0.00	4	18.18	6	27.27	7	31.82	3	13.64	2	9.09
Chhattisgarh	382	0.69	21.05	25	6.54	161	42.15	170	44.50	25	6.54	1	0.26	0	0.00
Dadar-Nagar-Haveli	7	1.88	9.55	1	14.29	4	57.14	2	28.57	0	0.00	0	0.00	0	0.00
Delhi	204	0.96	66.79	11	5.39	46	22.55	48	23.53	48	23.53	28	13.73	23	11.27
Gujarat & Daman-Diu	753	0.80	60.70	23	3.05	168	22.31	272	36.12	209	27.76	73	9.69	8	1.06
Haryana	280	GL	44.89	29	10.36	57	20.36	70	25.00	86	30.71	37	13.21	1	0.36
Himachal Pradesh	79	0.47	28.09	10	12.66	28	35.44	20	25.32	17	21.52	4	5.06	0	0.00
Jammu & Kashmir	130	0.20	35.94	11	8.46	61	46.92	32	24.62	16	12.31	10	7.69	0	0.00
Jharkhand	175	1.22	17.05	6	3.43	61	34.86	99	56.57	9	5.14	0	0.00	0	0.00
Karnataka	880	0.20	25.05	146	16.59	349	39.66	259	29.43	124	14.09	2	0.23	0	0.00
Kerala	692	-1.00	56.00	99	14.31	212	30.64	292	42.20	78	11.27	10	1.45	1	0.14
Madhya Pradesh	877	GL	48.00	54	6.16	225	25.66	370	42.19	193	22.01	34	3.88	1	0.11
Maharashtra	1081	GL	57.38	123	11.38	396	36.63	417	38.58	122	11.29	20	1.85	3	0.28
Manipur	Hilly Area														
Meghalaya	29	0.46	7.00	8	27.59	17	58.62	4	13.79	0	0.00	0	0.00	0	0.00
Mizoram	Hilly Area														
Nagaland	Hilly Area														
Orissa	844	GL	12.08	115	13.63	481	56.99	236	27.96	12	1.42	0	0.00	0	0.00
Pondicherry	6	1.16	2.95	3	50.00	3	50.00	0	0.00	0	0.00	0	0.00	0	0.00
Punjab	200	1.57	31.02	8	4.00	42	21.00	50	25.00	78	39.00	22	11.00	0	0.00
Rajasthan	796	GL	112.30	29	3.64	60	7.54	151	18.97	233	29.27	178	22.36	145	18.22
Sikkim	Hilly Area														
Tamil Nadu	656	GL	52.80	185	28.20	184	28.05	178	27.13	82	12.50	24	3.66	3	0.46
Tripura	29	1.60	7.07	4	13.79	17	58.62	8	27.59	0	0.00	0	0.00	0	0.00
Uttar Pradesh	872	0.51	35.70	81	9.29	344	39.45	270	30.96	149	17.09	28	3.21	0	0.00
Uttaranchal	52	1.06	39.01	6	11.54	17	32.69	13	25.00	14	26.92	2	3.85	0	0.00
West Bengal	612	0.35	21.05	33	5.39	328	53.59	179	29.25	69	11.27	3	0.49	0	0.00

STATE - WISE FLUCTUATION AND FREQUENCY DISTRIBUTION FROM DIFFERENT RANGES FROM ONE PERIOD TO OTHER

FROM YEAR 2008 MAY TO YEAR 2009 MAY

State	No. of wells Analysed	Range of Fluctuation (m)				No. of wells showing Fluctuation						Total No. of wells	
		Rise		Fall		Rise			Fall			Rise	Fall
		Min	Max	Min	Max	0-2 m	2-4 m	>4 m	0-2 m	2-4 m	>4 m		
Andhra Pradesh	596	0.01	15.90	0.01	19.11	122	27	15	302	99	31	164	432
Arunachal Pradesh	8	0.05	0.97	0.01	0.27	4	0	0	4	0	0	4	4
Assam	202	0.01	7.62	0.01	6.73	66	8	2	117	8	1	76	126
Bihar	177	1.00	4.72	0.02	3.77	52	5	1	113	6	0	58	119
Chandigarh	16	0.05	9.88	0.03	1.11	11	0	2	3	0	0	13	3
Chhattisgarh	347	0.02	8.80	0.01	12.20	87	20	7	191	30	12	114	233
Dadar-Nagar-Haveli	7	0.05	1.75	0.24	6.43	2	0	0	4	0	1	2	5
Delhi	189	0.03	5.49	0.01	7.02	54	1	1	123	7	3	56	133
Gujarat & Daman-Diu	630	0.01	24.85	0.01	24.28	139	29	22	287	84	69	190	440
Haryana	219	0.01	4.35	0.01	3.94	140	5	1	61	12	0	146	73
Himachal Pradesh	79	0.01	11.20	0.02	5.27	33	3	3	34	3	3	39	40
Jammu & Kashmir	120	0.02	16.17	0.01	9.94	33	3	2	75	5	2	38	82
Jharkhand	137	0.02	4.47	0.02	10.56	64	8	2	48	10	5	74	63
Karnataka	702	0.01	15.12	0.02	18.18	180	37	23	347	75	40	240	462
Kerala	586	0.01	3.69	0.01	10.80	85	5	0	437	50	9	90	496
Madhya Pradesh	694	0.01	28.65	0.01	15.62	213	66	47	272	60	36	326	368
Maharashtra	713	0.02	9.39	0.03	13.63	209	39	22	334	80	29	270	443
Manipur	Hilly Area												
Meghalaya	27	0.02	2.01	0.25	1.72	3	1	0	23	0	0	4	23
Mizoram	Hilly Area												
Nagaland	Hilly Area												
Orissa	693	0.01	10.72	0.01	11.88	161	42	16	389	67	18	219	474
Pondicherry	6	0.13	0.25	0.13	0.61	2	0	0	4	0	0	2	4
Punjab	170	0.01	4.40	0.01	7.65	85	3	1	72	8	1	89	81
Rajasthan	741	0.01	35.08	0.02	33.50	205	43	42	274	95	82	290	451
Sikkim	Hilly Area												
Tamil Nadu	617	0.01	8.39	0.02	32.66	106	19	6	323	106	57	131	486
Tripura	23	0.15	2.35	0.08	1.19	4	1	0	18	0	0	5	18
Uttar Pradesh	831	0.01	12.85	0.01	15.15	471	67	33	212	28	20	571	260
Uttaranchal	49	0.03	10.31	0.02	9.95	19	3	3	21	2	1	25	24
West Bengal	527	0.01	12.80	0.01	11.95	192	32	20	237	30	16	244	283

STATE - WISE FLUCTUATION AND FREQUENCY DISTRIBUTION FROM DIFFERENT RANGES FROM ONE PERIOD TO OTHER

FROM YEAR 2008 AUGUST TO YEAR 2009 AUGUST

State	No. of wells Analysed	Range of Fluctuation (m)				No. of wells showing Fluctuation						Total No. of wells	
		Rise		Fall		Rise			Fall			Rise	Fall
		Min	Max	Min	Max	0-2 m	2-4 m	>4 m	0-2 m	2-4 m	>4 m		
Andhra Pradesh	660	0.01	6.67	0.02	21.09	77	8	7	263	150	155	92	568
Arunachal Pradesh	9	0.12	1.66	0.32	1.25	5	0	0	4	0	0	5	4
Assam	185	0.01	3.10	0.02	5.63	76	3	0	100	5	1	79	106
Bihar	168	0.04	3.83	0.04	10.67	22	2	0	72	46	26	24	144
Chandigarh	18	0.03	3.53	0.37	18.16	4	1	0	8	4	1	5	13
Chhattisgarh	376	0.01	11.65	0.01	10.44	118	12	6	172	48	20	136	240
Dadar-Nagar-Haveli	7	0.28	7.52	0.03	0.10	2	0	3	2	0	0	5	2
Delhi	190	0.01	6.23	0.03	8.43	14	1	2	118	44	11	17	173
Gujarat & Daman-Diu	679	0.01	10.00	0.01	11.40	201	56	30	226	103	63	287	392
Haryana	271	0.01	8.67	0.02	29.06	42	5	2	158	47	17	49	222
Himachal Pradesh	77	0.06	3.82	0.09	15.24	23	3	0	26	17	8	26	51
Jammu & Kashmir	132	0.01	7.35	0.02	19.00	19	2	2	76	20	13	23	109
Jharkhand	134	0.06	3.38	0.04	10.50	26	2	0	41	36	29	28	106
Karnataka	712	0.01	11.53	0.01	11.48	286	59	21	261	57	28	366	346
Kerala	586	0.01	10.72	0.01	6.80	338	28	8	205	5	2	374	212
Madhya Pradesh	722	0.03	13.90	0.02	14.50	148	36	21	268	145	104	205	517
Maharashtra	803	0.02	25.20	0.02	11.76	266	51	44	286	105	51	361	442
Manipur	Hilly Area												
Meghalaya	27	0.03	1.95	0.20	1.16	22	0	0	5	0	0	22	5
Mizoram	Hilly Area												
Nagaland	Hilly Area												
Orissa	699	0.01	7.14	0.01	9.00	296	45	17	285	40	16	358	341
Pondicherry	7	1.60	1.60	0.07	0.88	1	0	0	6	0	0	1	6
Punjab	180	0.03	11.40	0.02	8.60	21	7	4	102	30	16	32	148
Rajasthan	816	0.01	28.92	0.02	31.72	191	54	51	321	101	98	296	520
Sikkim	Hilly Area												
Tamil Nadu	653	0.05	11.47	0.01	27.70	105	8	13	317	127	83	126	527
Tripura	28	0.01	1.91	0.02	0.24	24	0	0	4	0	0	24	4
Uttar Pradesh	778	0.01	17.22	0.01	20.64	111	16	16	329	210	96	143	635
Uttaranchal	50	0.63	0.63	0.03	7.86	1	0	0	24	13	12	1	49
West Bengal	525	0.01	9.91	0.01	15.07	138	9	5	278	74	21	152	373

STATE - WISE FLUCTUATION AND FREQUENCY DISTRIBUTION FROM DIFFERENT RANGES FROM ONE PERIOD TO OTHER

FROM YEAR 2008 NOVEMBER TO YEAR 2009 NOVEMBER

State	No. of wells Analysed	Range of Fluctuation (m)				No. of wells showing Fluctuation						Total No. of wells	
		Rise		Fall		Rise			Fall			Rise	Fall
		Min	Max	Min	Max	0-2 m	2-4 m	>4 m	0-2 m	2-4 m	>4 m		
Andhra Pradesh	650	0.01	16.30	0.01	17.40	168	29	20	276	94	63	217	433
Arunachal Pradesh	11	0.11	2.59	0.06	3.26	4	1	0	5	1	0	5	6
Assam	211	0.04	5.67	0.01	4.80	87	6	2	106	9	1	95	116
Bihar	176	0.09	4.40	0.01	7.05	78	2	2	76	15	3	82	94
Chandigarh	17	0.25	0.85	0.02	13.83	2	0	0	13	0	2	2	15
Chhattisgarh	347	0.01	4.17	0.01	5.70	146	11	2	158	28	2	159	188
Dadar-Nagar-Haveli	8	0.30	4.40	0.15	0.15	6	0	1	1	0	0	7	1
Delhi	191	0.03	1.95	0.04	6.55	68	2	1	101	13	6	71	120
Gujarat & Daman-Diu	681	0.01	14.30	0.01	20.08	133	29	26	271	117	105	188	493
Haryana	281	0.04	8.25	0.01	6.62	71	6	2	169	26	7	79	202
Himachal Pradesh	75	0.03	2.91	0.01	5.98	16	5	0	39	11	4	21	54
Jammu & Kashmir	130	0.02	1.71	0.03	6.84	19	0	0	83	21	7	19	111
Jharkhand	136	0.02	2.88	0.05	5.05	56	6	0	57	14	3	62	74
Karnataka	756	0.01	21.24	0.01	17.92	353	91	54	215	28	15	498	258
Kerala	679	0.01	28.80	0.01	9.79	326	43	15	267	20	8	384	295
Madhya Pradesh	736	0.01	17.10	0.04	12.58	257	61	36	279	69	34	354	382
Maharashtra	870	0.01	15.25	0.02	17.35	387	71	21	288	76	27	479	391
Manipur	Hilly Area												
Meghalaya	28	0.01	2.09	0.09	3.13	14	1	0	12	1	0	15	13
Mizoram	Hilly Area												
Nagaland	Hilly Area												
Orissa	719	0.01	8.30	0.01	5.04	313	19	7	341	35	4	339	380
Pondicherry	7	0.05	0.73	0.25	0.81	3	0	0	4	0	0	3	4
Punjab	193	0.01	4.98	0.03	7.64	38	4	2	132	11	6	44	149
Rajasthan	755	0.01	14.30	0.01	35.10	187	45	49	298	99	77	281	474
Sikkim	Hilly Area												
Tamil Nadu	535	0.03	12.03	0.02	19.27	92	19	13	189	124	98	124	411
Tripura	29	0.01	0.72	0.06	4.57	10	0	0	18	0	1	10	19
Uttar Pradesh	826	0.01	11.08	0.01	10.99	214	10	13	450	108	31	237	589
Uttaranchal	50	0.09	1.36	0.15	9.67	17	0	0	27	2	4	17	33
West Bengal	557	0.01	7.34	0.01	12.59	198	21	8	252	47	31	227	330

STATE - WISE FLUCTUATION AND FREQUENCY DISTRIBUTION FROM DIFFERENT RANGES FROM ONE PERIOD TO OTHER

FROM YEAR 2009 JANUARY TO YEAR 2010 JANUARY

State	No. of wells Analysed	Range of Fluctuation (m)				No. of wells showing Fluctuation						Total No. of wells	
		Rise		Fall		Rise			Fall			Rise	Fall
		Min	Max	Min	Max	0-2 m	2-4 m	>4 m	0-2 m	2-4 m	>4 m		
Andhra Pradesh	645	0.01	10.94	0.01	25.36	167	19	12	290	97	60	198	447
Arunachal Pradesh	8	0.35	0.84	0.09	0.22	2	0	0	6	0	0	2	6
Assam	203	0.01	5.20	0.02	4.42	93	3	2	94	9	2	98	105
Bihar	194	0.01	2.50	0.01	7.49	74	3	0	82	26	9	77	117
Chandigarh	17	0.04	26.10	0.04	10.15	4	2	2	5	1	3	8	9
Chhattisgarh	362	0.01	7.55	0.01	7.48	161	14	5	150	25	7	180	182
Dadar-Nagar-Haveli	5	0.20	2.00	0.38	0.81	2	1	0	2	0	0	3	2
Delhi	196	0.01	6.16	0.01	37.80	57	1	1	120	12	5	59	137
Gujarat & Daman-Diu	688	0.02	11.11	0.01	29.17	121	29	20	257	130	131	170	518
Haryana	239	0.05	4.86	0.02	11.87	46	0	2	166	23	2	48	191
Himachal Pradesh	73	0.02	2.13	0.03	3.44	16	1	0	52	4	0	17	56
Jammu & Kashmir	124	0.02	1.34	0.01	15.69	25	0	0	67	24	8	25	99
Jharkhand	130	0.04	7.27	0.02	7.54	44	6	1	63	11	5	51	79
Karnataka	754	0.01	15.42	0.01	13.62	387	112	61	163	18	13	560	194
Kerala	644	0.01	9.78	0.01	8.50	365	23	6	231	13	6	394	250
Madhya Pradesh	790	0.01	21.72	0.01	22.70	260	106	84	225	64	51	450	340
Maharashtra	887	0.01	15.80	0.02	14.48	430	89	29	248	64	27	548	339
Manipur	Hilly Area												
Meghalaya	28	0.05	1.73	0.03	1.01	12	0	0	16	0	0	12	16
Mizoram	Hilly Area												
Nagaland	Hilly Area												
Orissa	758	0.01	7.06	0.01	7.60	312	30	5	348	52	11	347	411
Pondicherry	5	0.10	0.30	0.20	0.60	3	0	0	2	0	0	3	2
Punjab	185	0.05	3.53	0.02	8.72	33	3	0	134	12	3	36	149
Rajasthan	746	0.02	38.57	0.01	26.48	169	36	51	325	96	69	256	490
Sikkim	Hilly Area												
Tamil Nadu	583	0.01	16.30	0.01	19.30	174	12	15	245	79	58	201	382
Tripura	27	0.18	2.76	0.05	1.50	7	1	0	19	0	0	8	19
Uttar Pradesh	816	0.01	13.60	0.01	14.70	199	16	12	469	94	26	227	589
Uttaranchal	52	0.06	1.73	0.01	12.58	13	0	0	31	5	3	13	39
West Bengal	546	0.01	15.26	0.01	9.98	183	32	11	269	38	13	226	320

STATE - WISE FLUCTUATION AND FREQUENCY DISTRIBUTION FROM DIFFERENT RANGES FROM ONE PERIOD TO OTHER

FROM YEAR 2009 MAY TO YEAR 2009 AUGUST

State	No. of wells Analysed	Range of Fluctuation (m)				No. of wells showing Fluctuation						Total No. of wells	
		Rise		Fall		Rise			Fall			Rise	Fall
		Min	Max	Min	Max	0-2 m	2-4 m	>4 m	0-2 m	2-4 m	>4 m		
Andhra Pradesh	602	0.01	14.82	0.01	14.69	251	91	43	171	31	15	385	217
Arunachal Pradesh	8	0.56	5.56	-	-	2	5	1	0	0	0	8	0
Assam	158	0.07	8.05	0.02	4.89	62	71	15	8	1	1	148	10
Bihar	192	0.13	7.97	0.05	4.47	77	85	23	6	0	1	185	7
Chandigarh	18	0.02	1.04	0.20	7.01	9	0	0	8	0	1	9	9
Chhattisgarh	363	0.01	20.72	0.06	2.72	65	101	185	10	2	0	351	12
Dadar-Nagar-Haveli	6	1.45	11.55	-	-	1	1	4	0	0	0	6	0
Delhi	198	0.10	7.66	0.05	5.23	55	3	2	128	9	1	60	138
Gujarat & Daman-Diu	667	0.01	22.50	0.02	15.94	221	148	224	58	11	5	593	74
Haryana	288	0.01	7.29	0.01	21.62	81	4	3	150	33	17	88	200
Himachal Pradesh	76	0.04	12.00	0.12	4.80	46	14	11	4	0	1	71	5
Jammu & Kashmir	131	0.08	19.59	0.02	16.95	62	38	13	16	1	1	113	18
Jharkhand	155	0.01	13.30	0.06	2.36	57	52	36	8	2	0	145	10
Karnataka	731	0.02	17.15	0.02	13.30	292	161	170	86	12	10	623	108
Kerala	587	0.01	10.50	0.10	3.68	305	181	76	23	2	0	562	25
Madhya Pradesh	721	0.01	22.16	0.04	9.74	177	187	300	45	7	5	664	57
Maharashtra	600	0.02	14.80	0.02	8.15	159	195	202	38	5	1	556	44
Manipur	Hilly Area												
Meghalaya	26	0.29	4.80	-	-	18	7	1	0	0	0	26	0
Mizoram	Hilly Area												
Nagaland	Hilly Area												
Orissa	785	0.04	13.93	0.10	7.30	172	259	343	8	2	1	774	11
Pondicherry	6	0.53	0.53	0.11	1.25	1	0	0	5	0	0	1	5
Punjab	197	0.03	9.19	0.04	6.40	50	7	1	115	19	5	58	139
Rajasthan	776	0.01	33.70	0.01	30.05	269	92	128	224	28	35	489	287
Sikkim	Hilly Area												
Tamil Nadu	628	0.02	17.90	0.01	17.60	111	31	18	340	84	44	160	468
Tripura	23	0.45	6.35	-	-	15	7	1	0	0	0	23	0
Uttar Pradesh	795	0.01	15.45	0.01	9.70	382	186	53	159	11	4	621	174
Uttaranchal	52	0.07	7.12	0.01	6.06	31	5	6	8	0	2	42	10
West Bengal	494	0.03	12.80	0.02	7.25	171	179	107	29	5	3	457	37

STATE - WISE FLUCTUATION AND FREQUENCY DISTRIBUTION FROM DIFFERENT RANGES FROM ONE PERIOD TO OTHER

FROM YEAR 2009 MAY TO YEAR 2009 NOVEMBER

State	No. of wells Analysed	Range of Fluctuation (m)				No. of wells showing Fluctuation						Total No. of wells	
		Rise		Fall		Rise			Fall			Rise	Fall
		Min	Max	Min	Max	0-2 m	2-4 m	>4 m	0-2 m	2-4 m	>4 m		
Andhra Pradesh	606	0.02	17.35	0.01	15.26	249	141	79	105	21	11	469	137
Arunachal Pradesh	9	0.22	2.28	0.50	4.64	6	1	0	1	0	1	7	2
Assam	189	0.04	7.89	0.03	4.34	130	28	7	21	2	1	165	24
Bihar	189	0.02	6.23	0.01	5.23	93	70	15	10	0	1	178	11
Chandigarh	18	0.05	0.79	0.02	10.09	9	0	0	7	0	2	9	9
Chhattisgarh	358	0.02	22.33	0.15	2.72	90	137	123	6	2	0	350	8
Dadar-Nagar-Haveli	7	0.34	9.54	-	-	2	1	4	0	0	0	7	0
Delhi	198	0.02	8.67	0.03	6.35	128	16	4	40	9	1	148	50
Gujarat & Daman-Diu	662	0.01	35.35	0.01	14.19	225	136	157	103	20	21	518	144
Haryana	295	0.01	8.46	0.02	5.33	138	11	3	114	25	4	152	143
Himachal Pradesh	75	0.01	5.83	0.02	18.53	54	10	2	7	1	1	66	9
Jammu & Kashmir	124	0.04	9.41	0.02	17.34	68	19	3	30	2	2	90	34
Jharkhand	150	0.01	12.40	0.04	2.09	39	59	42	9	1	0	140	10
Karnataka	754	0.02	21.74	0.02	10.37	254	206	239	41	7	7	699	55
Kerala	586	0.02	25.42	0.01	3.70	302	179	65	37	3	0	546	40
Madhya Pradesh	737	0.02	21.45	0.02	10.80	192	198	307	24	9	7	697	40
Maharashtra	692	0.05	15.95	0.05	8.40	188	224	229	45	4	2	641	51
Manipur	Hilly Area												
Meghalaya	26	0.27	3.36	1.53	1.53	23	2	0	1	0	0	25	1
Mizoram	Hilly Area												
Nagaland	Hilly Area												
Orissa	750	0.04	12.37	0.02	8.70	272	276	173	23	4	2	721	29
Pondicherry	6	0.09	1.03	0.27	0.45	3	0	0	3	0	0	3	3
Punjab	194	0.03	5.96	0.02	9.41	74	10	2	99	8	1	86	108
Rajasthan	715	0.01	37.57	0.01	20.76	237	74	82	232	51	39	393	322
Sikkim	Hilly Area												
Tamil Nadu	612	0.01	17.80	0.01	17.60	169	56	49	213	82	43	274	338
Tripura	23	0.16	4.47	0.07	2.86	20	0	1	1	1	0	21	2
Uttar Pradesh	830	0.01	9.84	0.01	11.77	474	186	44	113	6	7	704	126
Uttaranchal	47	0.03	8.08	0.07	3.22	25	10	4	7	1	0	39	8
West Bengal	525	0.01	12.77	0.02	8.24	192	177	91	46	10	9	460	65

STATE - WISE FLUCTUATION AND FREQUENCY DISTRIBUTION FROM DIFFERENT RANGES FROM ONE PERIOD TO OTHER

FROM YEAR 2009 MAY TO YEAR 2010 JANUARY

State	No. of wells Analysed	Range of Fluctuation (m)				No. of wells showing Fluctuation						Total No. of wells	
		Rise		Fall		Rise			Fall			Rise	Fall
		Min	Max	Min	Max	0-2 m	2-4 m	>4 m	0-2 m	2-4 m	>4 m		
Andhra Pradesh	608	0.01	17.90	0.01	17.75	276	116	60	113	23	20	452	156
Arunachal Pradesh	5	0.01	0.86	0.08	1.87	2	0	0	3	0	0	2	3
Assam	188	0.03	5.22	0.06	5.56	114	10	3	46	13	2	127	61
Bihar	177	0.09	5.16	0.06	5.49	110	33	2	21	9	2	145	32
Chandigarh	18	0.10	23.01	0.27	10.16	9	1	2	4	0	2	12	6
Chhattisgarh	352	0.05	20.98	0.09	3.82	140	117	63	27	5	0	320	32
Dadar-Nagar-Haveli	5	1.40	8.75	-	-	2	2	1	0	0	0	5	0
Delhi	198	0.01	7.60	0.01	6.82	107	9	2	66	12	2	118	80
Gujarat & Daman-Diu	653	0.02	39.76	0.01	23.50	249	94	73	138	61	38	416	237
Haryana	247	0.01	4.32	0.01	11.04	116	9	1	109	11	1	126	121
Himachal Pradesh	76	0.01	4.81	0.05	2.68	47	8	4	16	1	0	59	17
Jammu & Kashmir	121	0.02	4.86	0.01	16.04	63	4	2	43	6	3	69	52
Jharkhand	150	0.06	12.50	0.01	7.26	62	53	11	21	2	1	126	24
Karnataka	755	0.01	17.20	0.01	10.90	298	200	175	64	7	11	673	82
Kerala	566	0.01	14.00	0.01	3.70	381	72	22	83	8	0	475	91
Madhya Pradesh	763	0.03	21.72	0.01	21.00	228	203	234	62	22	14	665	98
Maharashtra	684	0.05	18.85	0.05	11.68	259	211	134	67	8	5	604	80
Manipur	Hilly Area												
Meghalaya	26	0.04	3.56	0.02	0.41	20	2	0	4	0	0	22	4
Mizoram	Hilly Area												
Nagaland	Hilly Area												
Orissa	782	0.01	12.52	0.04	10.96	412	199	56	91	18	6	667	115
Pondicherry	6	0.20	2.20	-	-	5	1	0	0	0	0	6	0
Punjab	186	0.04	6.03	0.01	7.09	70	14	3	89	8	2	87	99
Rajasthan	696	0.01	38.73	0.01	31.52	215	54	51	264	66	46	320	376
Sikkim	Hilly Area												
Tamil Nadu	569	0.04	19.27	0.02	17.60	235	124	77	98	22	13	436	133
Tripura	21	0.01	2.35	0.10	1.09	12	1	0	8	0	0	13	8
Uttar Pradesh	812	0.02	9.47	0.02	11.80	472	115	22	185	10	8	609	203
Uttaranchal	50	0.05	3.35	0.05	6.84	35	6	0	7	1	1	41	9
West Bengal	504	0.01	10.03	0.02	10.39	244	82	38	103	18	19	364	140

STATE - WISE FLUCTUATION AND FREQUENCY DISTRIBUTION WITH MEAN AND SELECTED PERIOD

10 YEARS MEAN (1999 MAY - 2008 MAY) - 2009 MAY

State	No. of wells Analysed	Range of Fluctuation (m)				No. of wells showing Fluctuation						Total No. of wells	
		Rise		Fall		Rise			Fall			Rise	Fall
		Min	Max	Min	Max	0-2 m	2-4 m	>4 m	0-2 m	2-4 m	>4 m		
Andhra Pradesh	669	0.01	16.43	0.01	17.02	273	73	34	225	49	15	380	289
Arunachal Pradesh	8	0.10	0.97	1.01	1.09	4	0	0	4	0	0	4	4
Assam	202	0.01	7.40	0.01	6.73	65	8	2	118	8	1	75	127
Bihar	218	0.01	4.69	0.01	5.94	61	3	1	142	10	1	65	153
Chandigarh	20	0.06	8.84	0.12	14.01	4	0	3	7	4	2	7	13
Chhattisgarh	371	0.01	6.91	0.01	15.45	101	16	8	198	38	10	125	246
Dadar-Nagar-Haveli	7	0.07	0.07	0.06	4.81	1	0	0	5	0	1	1	6
Delhi	192	0.03	3.50	0.01	11.67	30	1	0	96	36	29	31	161
Gujarat & Daman-Diu	734	0.01	27.51	0.01	37.08	248	118	82	199	52	35	448	286
Haryana	313	0.01	4.14	0.01	19.32	124	11	1	88	41	48	136	177
Himachal Pradesh	83	0.04	18.07	0.02	8.64	25	3	1	43	5	6	29	54
Jammu & Kashmir	134	0.04	15.17	0.07	10.94	38	2	1	79	11	3	41	93
Jharkhand	167	0.01	5.13	0.06	4.14	70	10	2	69	15	1	82	85
Karnataka	840	0.01	14.25	0.01	15.54	307	83	36	299	75	40	426	414
Kerala	620	0.01	6.70	0.01	14.62	248	15	2	331	15	9	265	355
Madhya Pradesh	865	0.01	10.44	0.01	15.84	217	38	20	396	128	66	275	590
Maharashtra	753	0.01	15.84	0.01	12.06	249	61	23	334	69	17	333	420
Manipur	Hilly Area												
Meghalaya	27	0.02	2.01	0.21	1.72	3	1	0	23	0	0	4	23
Mizoram	Hilly Area												
Nagaland	Hilly Area												
Orissa	834	0.01	11.23	0.01	10.55	307	43	15	408	53	8	365	469
Pondicherry	6	0.48	0.92	0.03	0.48	4	0	0	2	0	0	4	2
Punjab	212	0.02	17.62	0.03	9.45	57	9	2	73	38	33	68	144
Rajasthan	844	0.01	38.52	0.01	31.79	242	71	64	203	115	149	377	467
Sikkim	Hilly Area												
Tamil Nadu	701	0.01	21.63	0.01	23.11	288	114	56	157	48	38	458	243
Tripura	23	0.15	2.35	0.08	1.19	4	1	0	18	0	0	5	18
Uttar Pradesh	919	0.01	8.74	0.01	10.32	326	21	6	412	110	44	353	566
Uttaranchal	53	0.01	22.14	0.01	7.69	26	2	2	20	1	2	30	23
West Bengal	591	0.01	9.85	0.01	8.76	229	42	21	248	41	10	292	299

STATE - WISE FLUCTUATION AND FREQUENCY DISTRIBUTION WITH MEAN AND SELECTED PERIOD

10 YEARS MEAN (1999 AUGUST - 2008 AUGUST) - 2009 AUGUST

State	No. of wells Analysed	Range of Fluctuation (m)				No. of wells showing Fluctuation						Total No. of wells	
		Rise		Fall		Rise			Fall			Rise	Fall
		Min	Max	Min	Max	0-2 m	2-4 m	>4 m	0-2 m	2-4 m	>4 m		
Andhra Pradesh	690	0.01	9.87	0.01	18.57	195	53	16	245	114	67	264	426
Arunachal Pradesh	9	0.11	0.68	0.14	1.11	7	0	0	2	0	0	7	2
Assam	199	0.03	2.33	0.01	7.26	118	2	0	76	1	2	120	79
Bihar	247	0.01	3.20	0.02	6.44	64	4	0	115	54	10	68	179
Chandigarh	24	0.69	8.90	0.05	16.61	2	1	1	12	4	4	4	20
Chhattisgarh	387	0.01	6.47	0.01	9.45	154	9	4	145	56	19	167	220
Dadar-Nagar-Haveli	8	0.91	7.62	0.04	0.23	2	1	3	2	0	0	6	2
Delhi	192	0.02	7.61	0.03	13.23	12	2	1	85	47	45	15	177
Gujarat & Daman-Diu	742	0.01	21.16	0.01	19.65	247	93	87	195	67	53	427	315
Haryana	324	0.01	7.75	0.04	23.53	77	6	2	112	58	69	85	239
Himachal Pradesh	82	0.05	6.22	0.02	12.72	33	2	1	24	13	9	36	46
Jammu & Kashmir	137	0.03	5.69	0.01	8.76	29	2	1	75	19	11	32	105
Jharkhand	164	0.01	3.85	0.02	6.41	34	7	0	59	50	14	41	123
Karnataka	845	0.01	14.02	0.01	16.27	324	120	40	261	66	34	484	361
Kerala	715	0.01	8.82	0.01	11.61	342	23	6	315	20	9	371	344
Madhya Pradesh	755	0.01	7.30	0.03	11.09	151	16	9	283	186	110	176	579
Maharashtra	873	0.01	22.74	0.01	16.60	265	66	37	313	131	61	368	505
Manipur	Hilly Area												
Meghalaya	29	0.03	1.30	0.04	1.81	24	0	0	5	0	0	24	5
Mizoram	Hilly Area												
Nagaland	Hilly Area												
Orissa	815	0.01	4.44	0.01	5.60	470	32	2	275	31	5	504	311
Pondicherry	7	0.45	1.48	0.30	0.58	4	0	0	3	0	0	4	3
Punjab	202	0.01	4.19	0.03	10.87	27	7	1	84	42	41	35	167
Rajasthan	883	0.01	32.44	0.01	33.49	256	91	37	201	123	175	384	499
Sikkim	Hilly Area												
Tamil Nadu	717	0.01	16.79	0.01	36.73	270	99	50	198	61	39	419	298
Tripura	29	0.06	3.08	0.05	1.43	17	2	0	10	0	0	19	10
Uttar Pradesh	851	0.01	6.72	0.01	15.24	190	10	10	347	194	100	210	641
Uttaranchal	54	0.02	0.74	0.08	12.54	7	0	0	29	10	8	7	47
West Bengal	581	0.01	16.14	0.01	12.82	185	14	8	290	63	21	207	374

STATE - WISE FLUCTUATION AND FREQUENCY DISTRIBUTION WITH MEAN AND SELECTED PERIOD

10 YEARS MEAN (1999 NOVEMBER - 2008 NOVEMBER) - 2009 NOVEMBER

State	No. of Wells Analysed	Range of Fluctuation				No. of Wells Showing Fluctuation						Total No. of Wells	
		Rise (m)		Fall (m)		Rise (m)			Fall (m)			Rise	Fall
		Min	Max	Min	Max	0-2 m	2-4 m	>4 m	0-2 m	2-4 m	>4 m		
Andhra Pradesh	667	0.01	7.92	0.01	16.47	200	40	19	250	102	56	259	408
Arunachal Pradesh	12	0.01	2.38	0.14	2.08	6	1	0	4	1	0	7	5
Assam	245	0.02	5.98	0.01	4.90	101	2	4	132	5	1	107	138
Bihar	236	0.01	2.40	0.03	6.24	76	2	0	136	18	4	78	158
Chandigarh	21	0.22	8.41	0.12	15.80	3	2	1	7	5	3	6	15
Chhattisgarh	363	0.01	5.98	0.01	6.44	117	5	1	187	44	9	123	240
Dadar-Nagar-Haveli	8	0.14	3.24	0.14	0.97	5	1	0	2	0	0	6	2
Delhi	157	0.06	10.00	0.08	14.22	38	5	1	46	24	43	44	113
Gujarat & Daman-Diu	740	0.01	15.76	0.01	16.18	262	86	63	223	53	53	411	329
Haryana	314	0.01	6.71	0.02	15.58	104	11	2	99	43	55	117	197
Himachal Pradesh	77	0.08	16.39	0.02	8.01	31	3	1	30	6	6	35	42
Jammu & Kashmir	133	0.01	1.23	0.02	13.87	26	0	0	75	24	8	26	107
Jharkhand	158	0.01	1.81	0.01	4.81	63	0	0	76	16	3	63	95
Karnataka	1034	0.01	25.09	0.01	17.09	406	167	103	269	53	36	676	358
Kerala	709	0.01	22.58	0.01	6.78	308	39	13	314	27	8	360	349
Madhya Pradesh	771	0.01	12.60	0.01	11.61	268	45	14	305	107	32	327	444
Maharashtra	1079	0.01	24.88	0.01	17.71	444	93	27	344	118	53	564	515
Manipur	Hilly Area												
Meghalaya	28	0.07	1.50	0.06	1.00	12	0	0	16	0	0	12	16
Mizoram	Hilly Area												
Nagaland	Hilly Area												
Orissa	864	0.01	5.20	0.01	5.71	411	22	5	402	20	4	438	426
Pondicherry	7	0.51	0.77	0.29	0.97	2	0	0	5	0	0	2	5
Punjab	189	0.01	4.54	0.02	11.32	44	3	1	77	34	30	48	141
Rajasthan	827	0.27	12.56	0.01	44.36	202	68	35	207	146	169	305	522
Sikkim	Hilly Area												
Tamil Nadu	697	0.02	14.71	0.01	20.68	186	54	33	229	116	79	273	424
Tripura	30	0.02	0.93	0.03	4.78	11	0	0	17	1	1	11	19
Uttar Pradesh	830	0.01	5.81	0.01	12.78	258	7	4	343	119	99	269	561
Uttaranchal	50	0.01	1.92	0.04	6.87	21	0	0	25	2	2	21	29
West Bengal	629	0.01	8.10	0.01	8.71	203	17	5	298	63	43	225	404

STATE - WISE FLUCTUATION AND FREQUENCY DISTRIBUTION WITH MEAN AND SELECTED PERIOD

10 YEARS MEAN (2000 JANUARY - 2009 JANUARY) - 2010 JANUARY

State	No. of wells Analysed	Range of Fluctuation (m)				No. of wells showing Fluctuation						Total No. of wells	
		Rise		Fall		Rise			Fall			Rise	Fall
		Min	Max	Min	Max	0-2 m	2-4 m	>4 m	0-2 m	2-4 m	>4 m		
Andhra Pradesh	678	0.02	13.14	0.02	20.37	242	56	16	238	84	42	314	364
Arunachal Pradesh	8	0.07	0.68	0.22	0.51	6	0	0	2	0	0	6	2
Assam	233	0.01	4.30	0.01	7.73	105	3	1	111	9	4	109	124
Bihar	240	0.01	2.41	0.01	6.86	65	2	0	128	31	14	67	173
Chandigarh	22	0.07	22.60	0.04	19.39	5	1	3	7	3	3	9	13
Chhattisgarh	370	0.01	6.93	0.01	6.51	138	12	1	173	35	11	151	219
Dadar-Nagar-Haveli	7	0.58	2.00	0.02	1.06	4	0	0	3	0	0	4	3
Delhi	197	0.01	8.28	0.03	40.95	51	1	2	77	27	39	54	143
Gujarat & Daman-Diu	741	0.01	15.62	0.02	29.00	238	81	39	222	86	75	358	383
Haryana	275	0.03	5.10	0.04	11.21	87	9	2	96	39	42	98	177
Himachal Pradesh	79	0.05	10.80	0.05	7.64	35	1	1	34	5	3	37	42
Jammu & Kashmir	130	0.03	0.98	0.01	12.57	24	0	0	77	20	9	24	106
Jharkhand	167	0.01	8.19	0.01	7.03	55	6	1	82	20	3	62	105
Karnataka	849	0.01	11.21	0.01	8.62	417	162	62	147	38	23	641	208
Kerala	688	0.01	4.82	0.01	4.85	403	29	4	229	18	5	436	252
Madhya Pradesh	876	0.01	19.86	0.01	21.75	311	111	55	228	110	61	477	399
Maharashtra	1136	0.01	28.25	0.01	18.45	462	119	52	337	124	42	633	503
Manipur	Hilly Area												
Meghalaya	29	0.03	2.65	0.03	2.02	15	2	0	11	1	0	17	12
Mizoram	Hilly Area												
Nagaland	Hilly Area												
Orissa	842	0.01	7.20	0.01	7.04	393	39	6	365	35	4	438	404
Pondicherry	6	0.07	2.55	-	-	5	1	0	0	0	0	6	0
Punjab	197	0.04	4.57	0.02	9.30	34	4	1	106	25	27	39	158
Rajasthan	795	0.01	37.17	0.02	38.53	187	50	42	206	145	165	279	516
Sikkim	Hilly Area												
Tamil Nadu	655	0.01	14.86	0.01	31.95	288	69	31	164	56	47	388	267
Tripura	29	0.08	0.76	0.01	2.95	9	0	0	18	2	0	9	20
Uttar Pradesh	860	0.01	6.70	0.01	13.60	293	12	4	394	109	48	309	551
Uttaranchal	52	0.02	8.51	0.11	4.45	21	0	1	25	4	1	22	30
West Bengal	607	0.01	14.90	0.01	10.19	207	31	5	288	54	22	243	364