GOVERNMENT OF INDIA
CENTRAL WATER COMMISSION
FLOOD FORECAST MONITORING DIRECTORATE

Releases from Chembarampakkam Lake

Submerged Bridge on River Adyar

Chennai Airport Flooded

Rescue Operation by NDRF

FLOOD FORECASTING AND WARNING NETWORK PERFORMANCE APPRAISAL REPORT 2015

NEW DELHI – 110066 **January 2018**

Member (RM)
Central Water Commission
Sewa Bhawan, R. K. Puram
New Delhi-110066

PREFACE

Central Water Commission had started Flood Forecasting & Warning service in India in November 1958 by setting one forecasting station at Old Delhi Bridge, for the national capital, on the river Yamuna. Its network of Flood Forecasting and Warning Stations gradually extended covering almost all the major inter-state flood prone river basins throughout the country. It comprised of 176 stations in 2015. It covered 17 states besides NCT Delhi and UT of Dadra & Nagar Haveli. The flood forecasting activities of the Commission are being performed every year from May to October through its 21 field divisions which issue flood forecasts and warnings to the civil authorities of the states as well as to other organizations of the central & state governments, as and when the river water level touches or is expected to cross the warning level at the flood forecasting stations. Inflow Forecasts are issued for 28 reservoir/dam/barrages. The forecasts are formulated whenever the inflow into the dam exceeds the threshold value fixed by the respective project authorities for reservoir regulation as well as flood moderation.

The flood season 2015 witnessed Unprecedented Flood Situation at one Station in river Buridehing in Assam and High Flood Situation at three Stations on rivers Brahmaputra, Jia-Bharali, Beki and Katakhal. The highlight was the floods in Chennai city as well as in many of the rivers in Tamilnadu and South Andhra Pradesh during North East (NE) monsoon season especially in the months of November and December. Low and Moderate Flood Situation were witnessed in many other parts of India. During the year 2015, 4072 forecasts were issued out of which 3991 forecasts (98.01%) were found to be within the limits of accuracy. The number of level forecasts issued during the year 2015 were 3500 out of which 3429 (97.97%) was within the limit of accuracy of ± 0.15 m. The number of inflow forecasts issued was 572 out of which 562 (98.25%) were within limits of accuracy of ±20%.

The level of performance achieved, has been possible as a result of the dedicated team work of the officers and staff manning the various activities of hydrometeorological observations & flood forecasting and monitoring the flood forecasting activities of the field offices.

India Meteorological Department (IMD) through its Flood Meteorological Offices (FMO) also helped in this endeavour by providing all the Meteorological inputs for formulation of Flood Forecasts. CWC wishes to place its acknowledgements for the services provided by IMD through its various FMOs.

Flood Forecast Monitoring (FFM) Directorate plays an important role in compiling the information received from various field offices at Headquarters and issues daily bulletins which are sent to various offices of the MOWR RD&GR, MHA, NDMA, NDRF, NRSC, IMD, Railway Board, Transport Ministry and Ministry of Agriculture. I wish to place on record my deep appreciations of the efforts put in by the officers and staff of FFM Directorate in carrying out the work with utmost devotion & dedication in bringing out this report. The staff of this Directorate, along with other supporting staff from other Wings of CWC/ Directorates during flood duties during 2015 also deserves all appreciation in keeping the control room fully functional on all the week days, including holidays, Saturdays & Sundays. The control room was kept operational round the clock throughout the flood season.

It is hoped that the momentum gained in improving performance, innovations in evaluation, expansion of FF Activity, modernization as well as computerization, year after year, will be further accelerated to achieve greater accuracy and warning time of each and every forecast with the help of mathematical modelling supported by real-time data from telemetry. The SFC memorandum on the scheme "Flood Forecasting" has been approved during December 2015 and efforts have been made to increase the number of Flood Forecasting stations during 2016 as envisaged in the scheme.

Suggestions/comments of the Users of this report with a view to further enhance its usefulness are welcomed and will be incorporated in the next edition.

New Delhi **(Pradeep Kumar)**
January, 2018 **Member (RM)**

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Cover Page Photos Courtesy: **The Hindu/Indian Express/The Times of India/ Deccan Chronicle (Photographs are taken during the Floods in Chennai, Tamilnadu)**

EXECUTIVE SUMMARY

0.1 Meteorological Situation

During 2015, the south west monsoon performance was as given below:

The season (June-September) rainfall over the country as a whole was 86% of its long period average (LPA). Thus years 2014 & 2015 was the fourth case of two consecutive all India deficient monsoon years during the last 115 years.

- Seasonal rainfall was 83% of its LPA over Northwest India, 84% of its LPA over Central India, 85% of its LPA over south Peninsula and 92% of its LPA over Northeast (NE) India.
- Out of the total 36 meteorological subdivisions, 18 subdivisions constituting 55% of the total area of the country received normal season rainfall and 17 subdivisions (39% of the total area of the country) received deficient season rainfall. One subdivision (West Rajasthan) constituting 6% of the total area of the country received excess rainfall.
- Monthly rainfall over the country as a whole was 116% of LPA in June, 84% of LPA in July, 78% of LPA in August, and 76% of LPA in September.
- Monsoon current advanced over the Andaman Sea 4 days earlier than its normal date of 20th May. However, it set in over Kerala on 5th June, 4 days later than its normal date of 1st June and covered the entire country by 26th June, nearly 20 days earlier than its normal date of 15th July. Withdrawal of monsoon from west Rajasthan commenced on 4th September against its normal date of 1st September.
- During the season, 2 Cyclonic Storms ('Ashobaa' and 'Kemon'), 6 monsoon depressions and 3 monsoon low pressure areas were formed as against the normal of 6 monsoon depressions and 6 monsoon low pressure areas per season.
- The monsoon onset over Kerala for this year was on 5th June against the forecast of 30th May ± 4 days.
- All the operational forecasts for the 2015 southwest monsoon season rainfall over the country as a whole and that over 4 broad geographical regions were within the limits of forecast issued in June and accurate. The forecasts for the rainfall for the second half of the monsoon season and that for the July over the country as a whole were also within the forecast limits. However, the forecast for the August rainfall was slightly below the lower forecast limit.

0.2 Flood Situation

During the year 2015, one Flood Forecast station namely Chenimari (Khowang) on river Buridehing in Dibrugarh district of Assam flowed in

Unprecedented Flood Situation during first week of September. Three Stations namely., River Brahmaputra at Dibrugarh in Dibrugarh district, River Beki at Road Bridge in Barpeta District of Assam and River Jia-Bharali at N T Road Crossing in Sonitpur district of Assam flowed in High Flood Situation. In addition, various rivers in Ganga Basin at 45 stations, in Brahmaputra at 26 stations and in other basins at 14 stations flowed in low to moderate flood situation. No forecasts have been issued for 63 stations as they did not cross Warning Level. One new flood forecasting station "Rammunshibagh (Srinagar)" on river Jhelum in Srinagar district of Jammu and Kashmir was operationalised during 2015. The highlight was the floods in Chennai city as well as in many of the rivers in Tamilnadu and South Andhra Pradesh during North East (NE) monsoon season especially in the months of November and December.

0.3 Flood Forecasting Performance

During the year 2015, 4072 forecasts were issued out of which 3991 forecasts (98.01%) were found to be within the limits of accuracy. The number of level forecasts issued during the year 2015 were 3500 out of which 3429 (97.97%) was within the limit of accuracy of ± 0.15 m. The number of inflow forecasts issued was 572 out of which 562 (98.25%) were within limits of accuracy of ±20%.

Salient Features of Flood Forecasting System

The "Salient Features" of Flood Forecasting and Warning Network of the Central Water Commission are given in the table shown below.

1.	Establishment of 'First Scientific Flood Forecasting Unit" (F.F.U.) at Delhi in India	November, 1958
2.	Date of issue of first scientific flood forecast	25th July, 1959
3.	Name of first forecasting site and river	Delhi Railway Bridge (old) on the River Yamuna
4.	Year of commencement of flood forecasting system on the inter-state rivers i.e. first national level expansion	1969
5.	No. of Chief Engineer's offices including one CE (Flood Management) at CWC' headquarters, Monitoring – Central, Nagpur and Cauvery and Southern Rivers Oragnisation, Coimbatore being organisations supporting the Flood Forecasting Activities	12
6.	No. of Superintending Engineer's offices including one Flood Forecast Monitoring Directorate at CWC headquarter	15
7.	No. of present Flood Forecasting Divisions No. of Divisions supporting FF Activities	21 05
8.	No. of Control Room/Sub-Divisions engaged in flood forecasting work	66
9.	No. of states including union -territories covered under F.F. Programme	19
10.	No. of forecasting sites	176
11.	No. of gauge and gauge & discharge sites	878
12.	No. of wireless stations (including Control Rooms)	544
13.	No. of Telemetry Stations installed/under installation during IX,X and XI Plans	445
14.	Maximum no. of forecasts issued in any one year Second Highest no. of forecasts issued	8566 (in 1990) 8223 (in 2007)
15.	No. of forecasts issued in flood season 2010	7519
16.	No. of forecasts issued in flood season 2011	5991
17.	No. of forecasts issued in flood season 2012	5031
18.	No. of forecasts issued in flood season 2013	7060
19.	No. of forecasts issued in flood season 2014	4772
20.	No. of forecasts issued in flood season 2015	4072

CHAPTER-1

NATIONAL FLOOD FORECASTING NETWORK

1.1 FLOOD FORECASTING SERVICES

Flood causes considerable damage to human lives and property almost every year. About one third of total flood prone area (40 mha assessed by the Rashtriya Barh Ayog) of the country has been provided with reasonable protection against flood of a low magnitude due to technological and economical constraints but there is no protection from floods of higher magnitude. Since adoption of National Flood Policy by Government of India in 1954, it was realized that a total protection against flood by structural means alone is not possible and that optimum solution would consist of a mixture of structural and non-structural measures. Therefore, stress has been laid on non-structural measures like flood forecasting and warning, which is most important among such means to minimize the damage potential from floods. Accurate and timely flood forecasts and advance warning have, therefore, to be aimed for providing valuable time to the people and to civil authorities in taking preventive measures like evacuation, relief and rehabilitation measures, preparedness for flood fighting by engineering authorities etc. and thus mitigating such loses from floods.

1.2 FLOOD FORECASTING NETWORK IN THE COUNTRY

Flood Forecasting has been recognized as the most important, reliable and cost effective non-structural measures for flood mitigation. Recognizing the great importance of this measure, flood forecasting of river Yamuna at Delhi was suggested by Reddy Committee set up by Prime Minister, Govt. of India to manage flooding of Delhi. Accordingly in the year 1958, CWC commenced the flood forecasting service in a small way by establishing flood forecasting unit for issuing water level forecasts of the Yamuna for the National Capital, Delhi. On the recommendation of various committees/panels, a "Flood Forecast & Warning Organisation" was set up in CWC in 1969 to establish forecasting sites on inter-state rivers at various flood prone places in the country. 41 forecasting sites were added in 1969, making total number of forecasting sites to 43. Extension of the service followed from time to time. The year-wise positions of the number of flood forecasting sites till the flood season 2015 in the network of Central Water Commission are shown in the **Table 1.1**:

Table-1.1: Yearwise positions of number of forecasting sites in CWC

Year	Cumulative No. of Flood Forecasting Sites	Year	Cumulative No. of Flood Forecasting Sites
1958	01	2002	161
1965	02	2003	166
1969	43	2004	172
1977	77	2005	173
1980	84	2006	175
1985	145	2015	176
1987	147		
1990	157		
2001	159		

The "National Flood Forecasting and Warning Network" of Central Water Commission, which comprised of 176 flood forecasting sites including 28 inflow forecasting sites in flood season 2015 is shown in **Map-1.** The number of flood forecasting sites on each of the major inter-state river systems are given in the **Table 1.2**.

Table 1.2: Number of flood forecasting sites in major inter-state river systems

S. No.	Major Interstate River Systems	Type of Forecasting Sites		Total
		Level Forecasting	Inflow Forecasting	
1	Indus & its tributaries	1	0	1
2	Ganga & its tributaries	77	10	87
3	Brahmaputra & its tributaries	27	00	27
4	Barak System	05	00	05
5	Eastern Rivers	08	01	09
6	Mahanadi	03	01	04
7	Godavari	14	04	18
8	Krishna	03	06	09
9	West Flowing Rivers	09	06	15
	Southern River System (Pennar)	01	00	01
Total		148	28	176

The above flood forecasting network covers the following 17 states, one Union Territory and NCT of Delhi as shown in the **Table 1.3**

Table 1.3 Statewise Flood Forecasting Network in CWC

Sl. No.	State	Type of Forecasting sites		Total Forecasting sites
		Stage forecasting	Inflow forecasting	
1	Andhra Pradesh	5	3	8
2	Assam	24	0	24
3	Bihar	32	0	32
4	Chhattisgarh	1	0	1
5	Gujarat	6	5	11
6	Haryana	0	1	1
7	Jammu and Kashmir	1	0	1
8	Jharkhand	1	4	5
9	Karnataka	1	3	4
10	Madhya Pradesh	2	1	3
11	Maharashtra	7	2	9
12	Orissa	11	1	12
13	Telangana	4	4	8
14	Tripura	2	0	2
15	Uttarakhand	3	0	3
16	Uttar Pradesh	34	1	35
17	West Bengal	11	3	14
18	Dadra & Nagar Haveli	1	0	1
19	NCT of Delhi	2	0	2
Total		148	28	176

Central Water Commission through its twenty one flood forecasting divisions issued forecasts to the various user agencies, which includes various civil / engineering agencies of the States/ Central Governments such as Irrigation/ Revenue/ Railways/ public undertakings and Dam/ Barrage Authorities/ District Magistrates/ Sub Divisional Officers besides the Defence Authorities involved in the flood loss mitigation work. During the flood season, the Hon'ble Minister of Water Resources, Government of India, the Chairman and the Member (River Management) of Central Water Commission were also being apprised of the latest flood situations in the above river basins in the country.

1.3 CLASSIFICATIONS OF VARIOUS FLOOD SITUATIONS

The Central Water Commission has categorized various flood situations, for monitoring the floods in the country though its flood forecasting network, into the following four different categories, depending upon the severity of floods i.e. based on floods magnitudes.

1.3a Level Forecast

(i) LOW FLOOD

The river is said to be in **"LOW FLOOD"** situation at any flood forecasting sites when the water level of the river touches or crosses the warning level, but remains below the danger level of the forecasting site.

(ii) MODERATE FLOOD

If the water level of the river touches or crosses its danger level, but remains 0.50 m below the Highest Flood Level of the site (commonly known as "HFL") then the flood situation is called the **"MODERATE FLOOD"** situation.

(iii) HIGH FLOOD

If the water level of the river at the forecasting site is below the Highest Flood Level of the forecasting site but still within 0.50m of the HFL then the flood situation is called **"HIGH FLOOD"** situation. In **"High Flood Situations"** a special **"Orange Bulletin"** is being issued by the Central Water Commission to the users agencies which contains the "special flood message" related to the high flood.

(iv) UNPRECEDENTED FLOOD

The flood situation is said to be **"UNPRECEDENTED"** when the water level of the river touches or crosses the "**HIGHEST FLOOD LEVEL**" recorded at any forecasting site so far. In **"Unprecedented Flood Situations"** a special **"Red Bulletin"** is being issued by the Central Water Commission to the users agencies which contains the "special flood message" related to the unprecedented flood.

1.4 Standard Operating Procedure (SOP) for Flood Forecasting & Warning

The basic activity of data collection, its transmission and dissemination of flood forecasts to the local administration is carried out by the field divisions of CWC. The modelling centres and Divisional Flood Control Rooms (DFCR) are located in the premises of the field divisions. The field divisions perform these activities as per existing Manual on Flood Forecasting which contains the following critical activities as the general SOPs

1. Nomination of Nodal Officers of CWC for interaction with the Nodal Officers of concerned State Governments before monsoon every year.
2. Gearing up of flood forecasting network before monsoon every year.
3. Operation of Divisional Flood Control Room during monsoon every year

4. Operation of Central Flood Control Room (CFCR) during monsoon every year.
5. Issue of flood forecasts to designated officers of concerned State and transmission thereof through FAX/Telephone/E-mail/ through Special Messengers during monsoon every year.
6. Sending flood alerts through SMS on Mobile Phones to the concerned officers of State/ Central Government during high (12 hourly updates) and unprecedented (3 hourly updates) flood situations and uploading of Flood Forecasts and hourly water level data in CWC's Flood Forecasting Website as per Standard Operating procedure (SOP) for issuing alerts and electronic messaging in the event of disaster situations issued by National Disaster Management Division, Ministry of Home Affairs, vide letter No: 31-32/2003-NDM-III / II dated 10th April 2006, made effective from 24th April 2010.

For the purpose of dissemination of alerts to PMO/ Cabinet Secretariat, a uniform system has been devised by categorizing each type of alert in stages- Yellow, Orange and Red.

Categories of alerts for flood in respect of level forecasts is as indicated below.

Category	Description	Stage
IV	Low Flood (Water level between Warning level and Danger level)	Yellow
III	Moderate Flood (Water level below 0.50m less than HFL and above Danger Level)	Yellow
II	High Flood (Water Level less than Highest Flood Level but still within 0.50 m of the HFL)	Orange
I	Unprecedented Flood (Water Level equal and above Highest Flood Level-HFL)	Red

1.5 Inflow Forecasts

Inflow Forecasts are issued for 28 dams/reservoirs/barrages in various river basins in the country. The project authorities have identified the threshold inflow limits for issue of forecast considering various factors such as safety of the dam, status of reservoir, downstream channel/ canal requirements. The inflow in volume during the given duration indirectly indicates the possibility of accommodating the given volume or otherwise in the reservoir. The outflow pattern is decided keeping in view of the safety measures at the reservoir and the likely impact of the outflow from the reservoir to cause damages/ difficulties in the downstream areas giving due attention to the Emergency Action Plan (EAP) of the project. There is need for EAP for all reservoirs covering normal operational releases and high releases during floods.

1.6 EXPANSION OF THE NETWORK OF FLOOD FORECASTING SITES

The operation and maintenance of existing flood forecasting network is carried out as per budget allotment each year under 'Non-Plan' head and is thus subject to such restrictions and cuts applied to items under `Non-Plan'. The allocation during the year 2015-16 was Rs. 86.05 Crore including Rs. 3.97 Crore for payment to Government of Bhutan for maintaining hydrometeorological stations in river common to India and Bhutan and strengthening & Modernization of FF and Hyd. Obs. Network in Brahmaputra and Barak Basin. The expansion of the network with a view to cover additional flood prone areas is proposed to be covered under 'Plan' head. Work on such Plan schemes is subject to approval of specific schemes by the Government and the budget allocation of funds. The activity was expanded to State of J&K during 2015.

The salient features of all Flood Forecasting Sites, the details of all the sites basin-wise as well as Statewise during the flood season 2015, is shown at **Annex-I, Annex-II** and **Annex-III** respectively.

1.7 Data Communication System

Central Water Commission maintains 544 Wireless Stations for near real –time data communication. In addition, satellite based Telemetry System has been installed at 445 stations for sensor based automatic data collection and satellite based communication. As the wireless works on pre-fixed schedules and the Telemetry transmit the data at pre-fixed time intervals only, telephone/mobile phone, fax and internet in particular was also used for receiving the vital hydro-meteorological data immediately after its observation and dissemination of flood forecasts to user agencies.

1.7.a Wireless Communication

Wireless network in CWC consists of HF (3 to 30 MHz) and VHF (30 to 300MHz) sets. The HF sets are used for long distance communication between Site and Division (15 to 20Watts), Division to Division (20 to 100 Watts). VHF sets are used for short distance communication (i.e. from river to Site office).

1.7b Telemetry

Sensor based data collection and satellite based communication was installed at 445 sites upto end of XI Plan and another 56 stations have been installed during 2012-13 to 2013-14 under XII Plan for real time hourly water levels, hourly rainfall and other important meteorological parameters, established in Krishna, Godavari, Mahanadi, Chambal, Damodar, Ganga, Yamuna, Brahmaputra, Tapi, Mahi and Sutlej Basins. Three earth stations

(DDRGS) located at Jaipur and Burla (in PRBS mode) and New Delhi (TDMA mode) are receiving through INSAT/Kalpana satellite. The data from remote stations received in DDRGS are further transmitted to the respective modelling centre through VSAT. The data received was used mainly by the divisions issuing forecast by MIKE-11.

1.8 DAMAGE DUE TO FLOODS/ HEAVY RAINS BETWEEN 1953 TO 2015

The damage due to floods for the entire country was estimated to be Rs.57393.761 Crore during the flood season 2015. The average annual damages to crops, houses and public utilities from the year 1953 to 2015 as reported by the States/UT's are of the order of Rs. 5428.707 Crore, the maximum annual damage being Rs.57393.761 Crore during 2015 which was higher than Rs. 47348.751 Crore in 2013 and Rs. 32551.758 Crore during 2009.

A comparative details showing the details of damages occurred during the flood season 2013 to 2015 on different accounts, based on the reports (tentative), received from the revenue authorities of the state governments is given in the **Table 1.4**.

Table 1.4: Damages occurred during flood season, 2013 to 2015

Sl. No.	Items	Flood damages during Year the Year				Flood Damages during 1953-2015	
		2013	2014	2015	Average 1953-2015	Maximum	
						Year	Damage
1	Area affected (in mha)	3.876	11.817	2.305	7.086	1978	17.5
2	Population affected (in millions)	25.927	26.505	33.203	31.964	1978	70.45
3	Damaged to Crops(area in mha)	7.484	8.007	3.374	3.879	2005	12.299
4	Damaged to crops(value in Rs. Crore)	6378.078	7255.151	17043.948	1559.062	2015	17043.948
5	Damaged to houses (in numbers)	699525	311325	3959191	1256934	2015	3959191
6	Damaged to houses (value in Rs. Crore)	2032.83	581.978	8046.969	196.328	2009	10809.795
7	Cattle lost (in number)	163958	60196	45597	95243	1979	618248
8	Human lives lost (in numbers)	2180	1968	1420	1652	1977	11316
9	Damaged to public Utilities (in Rs. Crores)	38902.613	7246.888	32131.172	3137.364	2013	38902.613
10	Total damages to crops, houses & public utilities (in Rs. Crores)	47348.751	15548.077	57393.761	5428.707	2015	57393.761

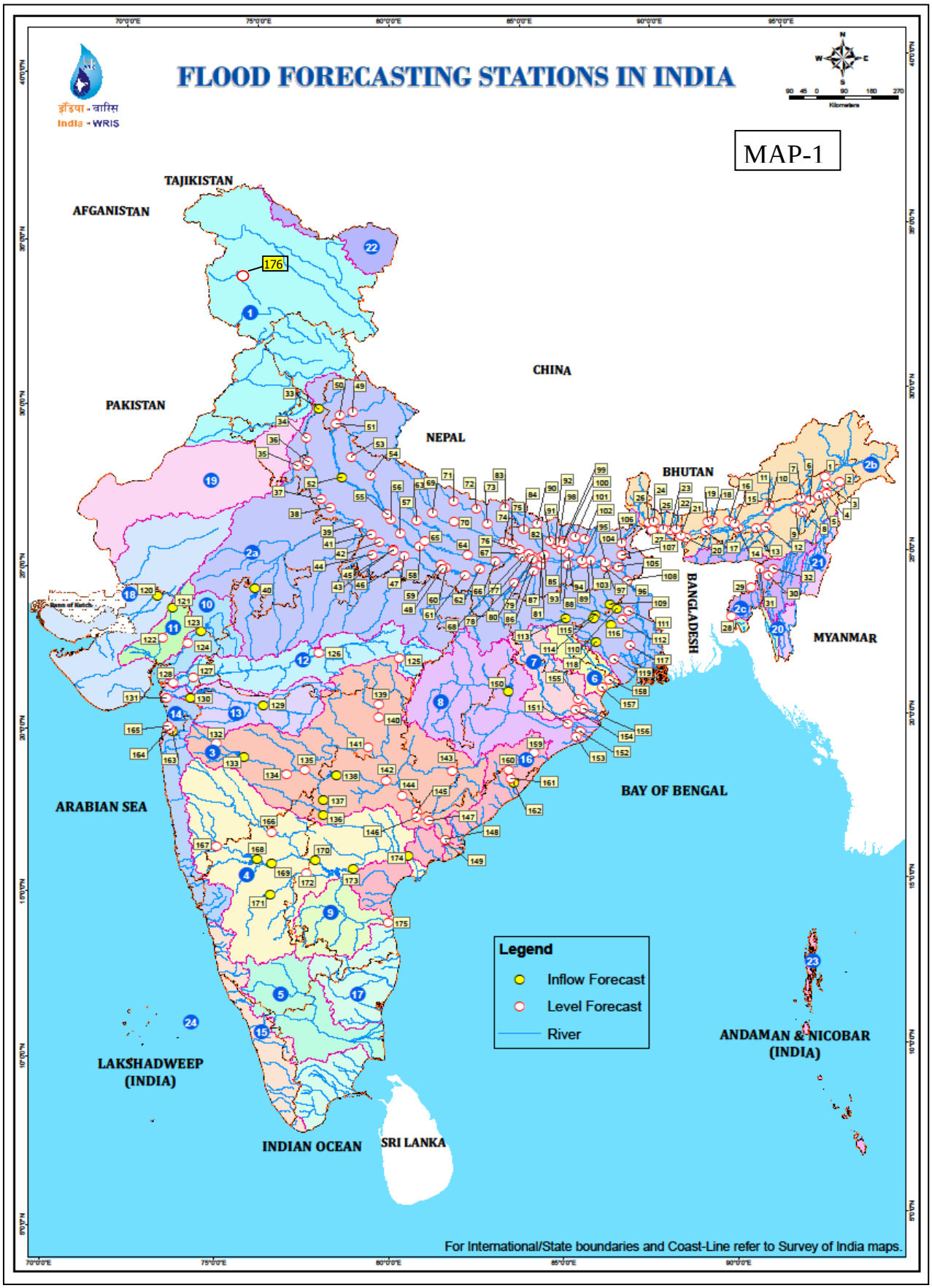
1.9 ANALYSIS OF PERFORMANCE OF FLOOD FORECASTING NETWORK

CWC carried out analysis and appraisal of the forecasting work, at the end of monsoon season. Based on this, measures for improvements, if necessary, are identified. A summary of the performance of the work carried out by the field divisions during the flood season 2015 presented in Chapter-3. While the performance of the flood forecasting system is satisfactory, yet there is constant endeavor for improving the performance especially for additional warning time as new technology and more data are becoming available.

1.10 ORGANISATIONAL SET-UP OF FLOOD FORECASTING NETWORK

The present organizational set up of Flood-forecasting & Warning Establishment of Central Water Commission under the Member (River-Management) is spread over regional offices of CWC each headed by a Chief Engineer. Fifteen Circle Offices and twenty six Divisions in its field formations carry out flood forecasting activities. Chief Engineer (Flood Management) and Flood Forecast Monitoring Directorate monitor the Flood Forecasting activities in the headquarters. It also issues flood bulletins at national level.

The organizational chart of Flood Forecasting and Warning set up of the Central Water Commission is given at **Figure-1.1**

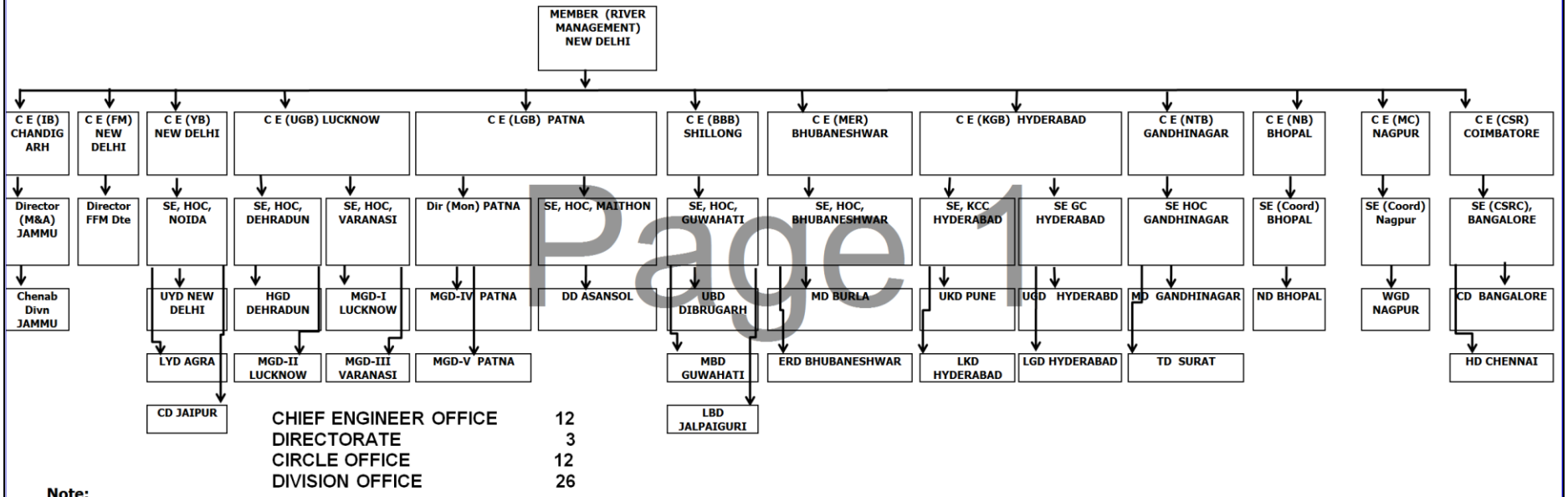

FLOOD FORECASTING STATIONS IN INDIA
इंडिया - वारिस
India - WRIS
MAP-1
TAJIKISTAN
AFGANISTAN
PAKISTAN
CHINA
NEPAL
BHUTAN
BANGLADESH
MYANMAR
ARABIAN SEA
BAY OF BENGAL
INDIAN OCEAN
SRI LANKA
LAKSHADWEEP (INDIA)
ANDAMAN & NICOBAR (INDIA)
Legend
Inflow Forecast
Level Forecast
River
For International/State boundaries and Coast-Line refer to Survey of India maps.

List of River Basins	
Basin Code	**Basin Name**
1	Indus (Up to border)
2a	Ganga
2b	Brahmaputra
2c	Barak and others
3	Godavari
4	Krishna
5	Cauvery
6	Subarnarekha
7	Brahmani and Baitarni
8	Mahanadi
9	Pennar
10	Mahi
11	Sabarmati
12	Narmada
13	Tapi
14	West flowing rivers from Tapi to Tadri
15	West flowing rivers from Tadri to Kanyakumari
16	East flowing rivers between Mahanadi and Pennar
17	East flowing rivers between Pennar and Kanyakumari
18	West flowing rivers of Kutch and Saurashtra including Luni
19	Area of inland drainage in Rajasthan
20	Minor rivers draining into Bangladesh
21	Minor rivers draining into Myanmar
22	Area of North Ladakh not draining into Indus
23	Drainage Area of Andaman and Nicobar Islands
24	Drainage Area of Lakshadweep Islands

List of Flood Forecasting Stations											
Sl. No.	**Name of Forecast Station**	**Sl. No.**	**Name of Forecast Station**	**Sl. No.**	**Name of Forecast Station**	**Sl. No.**	**Name of Forecast Station**	**Sl. No.**	**Name of Forecast Station**	**Sl. No.**	**Name of Forecast Station**
1	Dibrugarh	34	Mawi	67	Ballia	100	Hayaghat	133	Jaikwadi Dam	166	Deongaon Bridge
2	Naharkatia	35	Dhansa Regulator	68	Buxar	101	Jhanjarpur	134	Gangakhed	167	Arjunwad
3	Chenimari (Khowang)	36	Delhi Railway Bridge	69	Elgin Bridge	102	Basua	135	Nanded	168	Almatti Dam
4	Nanglamoraghat	37	Mathura	70	Ayodhya	103	Balthara	136	Singur Dam	169	Narayanpur Dam
5	Sibsagar	38	Agra	71	Balrampur	104	Kursela	137	Nizamsagar Dam	170	PD Jurala Project
6	Neamatighat	39	Etawah	72	Bansi	105	Sahibganj	138	Sriramsagar	171	Tungabhadra Dam
7	Badatighat	40	Gandhisagar Dam	73	Gorakhpur (Birdghat)	106	Dengraghat	139	Bhandara	172	Mantralayam
8	Golaghat	41	Auraiya	74	Turtipar	107	Jhawa	140	Pauni	173	Srisailam Dam
9	Numaligarh	42	Kalpi	75	Darauli	108	Farakka Barrage	141	Balharsha	174	Prakasam Barrage
10	N T Road Crossing (Jiabharali)	43	Hamirpur	76	Gangpur Siswan	109	Massanjore Dam	142	Kaleswaram	175	Nellore Anicut
11	Tezpur	44	Mohana	77	Chhapra	110	Tilpara Barrage	143	Jagdalpur	176	Rammunshibagh
12	Kampur	45	Sahjina	78	Inderpuri	111	Narayanpur	144	Eturunagaram		
13	Dharamtul	46	Banda	79	Koelwar	112	Gheropara	145	Dummagudem		
14	Guwahati (D C Court)	47	Chillaghat	80	Maner	113	Tenughat Dam	146	Bhadrachalam		
15	NH Crossing (Puthimari)	48	Naini	81	Patna (Dighaghat)	114	Panchet Dam	147	Kunavaram		
16	NT Road Crossing (Pagladiya)	49	Srinagar	82	Patna (Gandhighat)	115	Maithon Dam	148	Rajahmundry GNV Railway Bridge		
17	Goalpara	50	Rishikesh	83	Khadda	116	Durgapur Barrage	149	Dowlaiswaram Barrage		
18	Beki Road Bridge	51	Hardwar	84	Chatia	117	Harinkhola	150	Hirakud Dam		
19	NH Crossing (Manas)	52	Narora Barrage	85	Hazipur	118	Kangsabati Dam	151	Naraj		
20	Dhubri	53	Moradabad	86	Kamtaul	119	Mohanpur	152	Alipingal		
21	Golokganj	54	Bareilly	87	Sripalpur	120	Dantiwada Dam	153	Nimapara		
22	Tufangunj	55	Kannauj (Gurnatia)	88	Hathidah	121	Dharoi Dam	154	Jenapur Expressway		
23	Ghugumari	56	Ankinghat	89	Munger	122	Subash Bridge (Ahmedabad)	155	Anandpur		
24	NH 31	57	Kanpur	90	Lalbeghiaghat	123	Kadana Dam	156	Akhuapada		
25	Mathabhanga	58	Dalmau	91	Muzzafarpur (Sikandarpur)	124	Wanakbori Weir	157	NH 5 Road Bridge		
26	Domohani Road Bridge	59	Phaphamau	92	Rewaghat	125	Mandla	158	Rajghat		
27	Mekhliganj	60	Allahabad (Chhatnag)	93	Samastipur	126	Hoshangabad	159	Purushottampur		
28	Sonamura	61	Mirzapur	94	Rosera	127	Garudeshwar	160	Gunupur		
29	Kailashahar	62	Varanasi	95	Khagaria	128	Bharuch	161	Kashinagar		
30	Matizuri	63	Hanuman Setu(Lucknow)	96	Bhagalpur	129	Hathnur Dam	162	Gotta Barrage		
31	Karimgunj	64	Jaunpur	97	Colgong/Kahalgaon	130	Ukai Dam	163	Madhuban Dam		
32	Annapurnaghat (Silchar)	65	Rae-Bareilly	98	Benibad	131	Surat	164	Daman		
33	Tajewala Barrage (Hathnikund Barrage)	66	Ghazipur	99	Ekmighat	132	Kopergaon	165	Vapi Town		

Fig-1.1

ORGANISATION CHART OF FLOOD FORECASTING AND WARNING SETUP OF CENTRAL WATER COMMISSION



CHIEF ENGINEER OFFICE	12
DIRECTORATE	3
CIRCLE OFFICE	12
DIVISION OFFICE	26

Note:

i) UGD, Hyderabad and WGD, Nagpur support LGD, Hyderabad by supplying data of sitesu nder their jurisdiction on real -time basis.

ii) UKD Pune, HD Chennai and CD, Bangalore support LKD, Hyderabad by supplying data of sites under their jurisdiction on real -time basis.

CHAPTER – 2

ROLE OF IMD IN FF ACTIVITIES AND SOUTHWEST MONSOON ACTIVITIES

2.1 Role of IMD & SOUTHWEST MONSOON

2.1a Role of IMD

India Meteorological Department (IMD) provides various Meteorological inputs for formulation of Flood Forecast in Divisional Flood Control Rooms (DFCR) of CWC. The inputs include rainfall in stations other than those operated by CWC on different sub-catchments of river basins, providing Quantitative Precipitation Forecast (QPF) for 24 hours, Weather Situation and Heavy Rainfall Warnings over various basins and outlook for further 48 hours. The QPFs are issued by 0930 hours daily and are modified if necessary around 1230 hours. For this purpose, IMD is operating Flood Meteorological Offices (FMO) in different river basins. These are located at Agra, Ahmedabad, Asansol, Bhubaneshwar, Delhi, Guwahati, Hyderabad, Jalpaiguri, Lucknow and Patna. These FMOs provide all the weather related inputs to the concerned DFCR by fastest available modes of communication. The FMOs are also provided the rainfall figures observed by the stations operated by CWC as well as the water level in the flood forecast stations in the basin by the concerned DFCR.

During the year 2015, the Hydromet division of IMD provided online QPF by using two Numerical Weather Prediction (NWP) models namely WRF ARW (9km x 9km) and Multi Model Ensemble (MME) for various sub-basins of different river basins.

The FMO at Hyderabad uploaded the daily weather summaries, QPF and rainfall figures issued in the web site of Meteorological Centre Hyderabad during the flood season from 15th June to 15th October. During the expansion of flood forecasting network under the XII Plan, it was also agreed that the concerned Regional/ Meteorological Centre falling within a basin will issue the QPF and provide Meteorological inputs for the additional basins where expansion is contemplated.

The INSAT-DRT secretariat of IMD looks after the works of allocation of Station Index number, Time slot allotment and frequency allocation for the various Automatic Weather Stations setup by different organisations. CWC is one of the members of INSAT-DRT User and officers of CWC attend the INSAT-DRT User meetings convened by the INSAT DRT Secretariat of IMD. CWC has so far installed 501 Satellite based Automatic Data Collection Units for collection of Hourly Water Level and Rainfalls from remote stations. IMD has allocated the Station Index Numbers and other parameters for all these stations. During the first year of the 12th Plan there is a proposal to install 125 automatic data collection units in various river basins and IMD has provided the Station Index numbers/ Time slot/ Frequency for these 125 stations. Another 81 stations have been identified for upgradation during the year 2015-16 for which, IMD has been approached for providing Station IDs etc.

2.1b Southwest Monsoon

India gets about 80% of its Annual rainfall during the south-west monsoon from June to September except some portions of south-eastern parts of peninsular India where the main rains occur during the period of north-east monsoon from October to December, which overlap with the receding stage of the south-west monsoon in October. Occasionally, cyclonic storm develop in the south-west bay and move into the Peninsula and produces heavy rain during north-east monsoon season.

Southwest monsoon advances from Kerala in the beginning of June. It produces spell of heavy rainfall along the western coast of the peninsula and on the southern slopes of Khasi and Jaintia hills in north- eastern region.

In association with the depression which occasionally form in the North Bay of Bengal and move north-westwards, heavy rains are produced in the central parts of the country, Orissa, Gangetic West Bengal, southern districts of Bihar, Gujarat region, and East Rajasthan and in the later monsoon months in and around North Deccan.

A very important characteristic of southwest monsoon is the occurrence of "break". The break situations arise when the monsoon trough shifts to the Himalayas and are very important as these cause floods in the rivers rising from the Eastern Himalayas. Sometimes, the phenomenon of break sets in immediately after a monsoon depression has occurred. These two causes occurring in succession serve to intensify the floods.

The whole India has been divided into 36 meteorological sub-divisions by India Meteorological Department (IMD) for the purpose of studies of rainfall/monsoon activities.

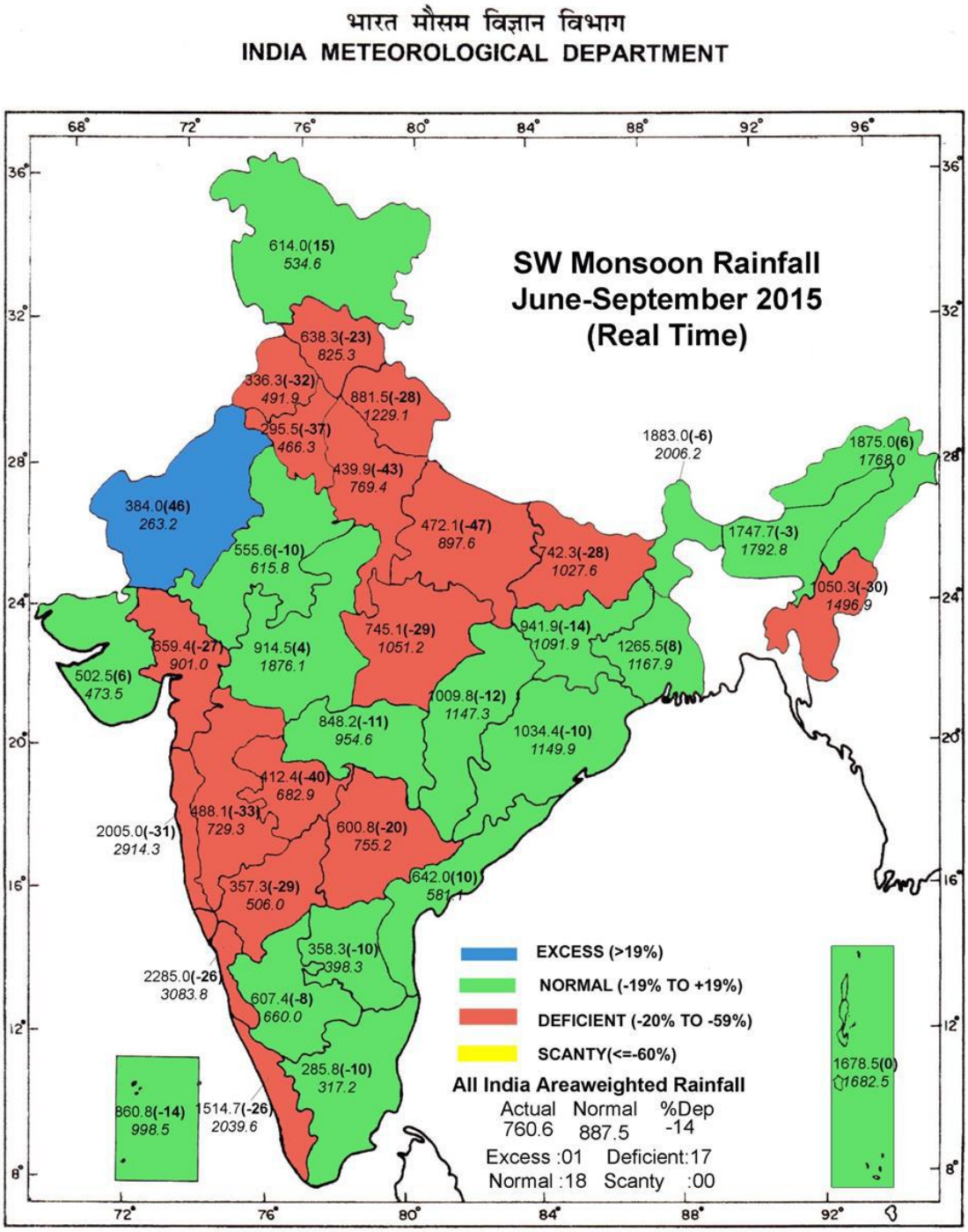
The progress of monsoon rainfall over the country is monitored by evaluating the departures of total rainfall from the normal rainfall in respect of meteorological sub-divisions and districts. The IMD has classified the rainfall as excess, normal, deficient and scanty, according to the following criteria.

Excess	:	+ 20% or more than normal
Normal	:	+ 19% to - 19% of the normal
Deficient	:	- 20% to - 59% of the normal
Scanty	:	- 60% to - 99% of the normal
No Rain (N.R.)	:	- 100% of the normal

Normal is defined as the Long Period Average say for 50 years for the period from 1st June to 30th September. Presently Long Period average for the years 1951 to 2000 is being used to define normal. For the country as a whole the normal rainfall during the period 1st June to 30th September is 89 cm.

2.2 HIGHLIGHTS OF SOUTH-WEST MONSOON

- Seasonal rainfall was 83% of its LPA over Northwest India, 84% of its LPA over Central India, 85% of its LPA over south Peninsula and 92% of its LPA over Northeast (NE) India.
- Out of the total 36 meteorological subdivisions, 18 subdivisions constituting 55% of the total area of the country received normal season rainfall and 17 subdivisions (39% of the total area of the country) received deficient season rainfall. One subdivision (West Rajasthan) constituting 6% of the total area of the country received excess rainfall.
- Monthly rainfall over the country as a whole was 116% of LPA in June, 84% of LPA in July, 78% of LPA in August, and 76% of LPA in September.
- Monsoon current advanced over the Andaman Sea 4 days earlier than its normal date of 20th May. However, it set in over Kerala on 5th June, 4 days later than its normal date of 1st June and covered the entire country by 26th June, nearly 20 days earlier than its normal date of 15th July. Withdrawal of monsoon from west Rajasthan commenced on 4th September against its normal date of 1st September.
- During the season, 2 Cyclonic Storms ('Ashobaa' and 'Komen'), 6 monsoon depressions and 3 monsoon low pressure areas were formed as against the normal of 6 monsoon depressions and 6 monsoon low pressure areas per season.
- The monsoon onset over Kerala for this year was on 5th June against the forecast of 30th May ± 4 days.
- All the operational forecasts for the 2015 southwest monsoon season rainfall over the country as a whole and that over 4 broad geographical regions were within the limits of forecast issued in June and accurate. The forecasts for the rainfall for the second half of the monsoon season and that for the July over the country as a whole were also within the forecast limits. However, the forecast for the August rainfall was slightly below the lower forecast limit.



Map-2 Sub-divisionwise South West Monsoon rainfall during 2015

2.3 ONSET OF SOUTH-WEST MONSOON SEASON

This year, the southwest monsoon set over the south Andaman Sea on 16th May, four days earlier than the normal date. On 21st May, monsoon advanced further over remaining parts of Andaman Sea, some more parts of southeast Bay of Bengal and some parts of southwest and east central Bay of Bengal.

The southwest monsoon set in over Kerala on 5th June, 4 days later than its normal date. Associated with this event, monsoon advanced into entire south Arabian Sea, some parts of central Arabian Sea, entire Lakshadweep area, some parts of coastal & south interior Karnataka and Tamil Nadu, most parts of south Bay of Bengal, some more parts of westcentral Bay of Bengal and some parts of northeast Bay of Bengal. By 14th June monsoon covered central Arabian Sea, some parts of north Arabian Sea, entire south Peninsula, and most parts of central and northeast India. The formation of couple of intense low pressure systems one each in Arabian Sea (Deep Depression) and in Bay of Bengal (Depression) towards the end of third week helped rapid advance of monsoon resulting monsoon covering entire country by 26th June.

Fig.2.1 shows the isochrones of advance of monsoon 2015.

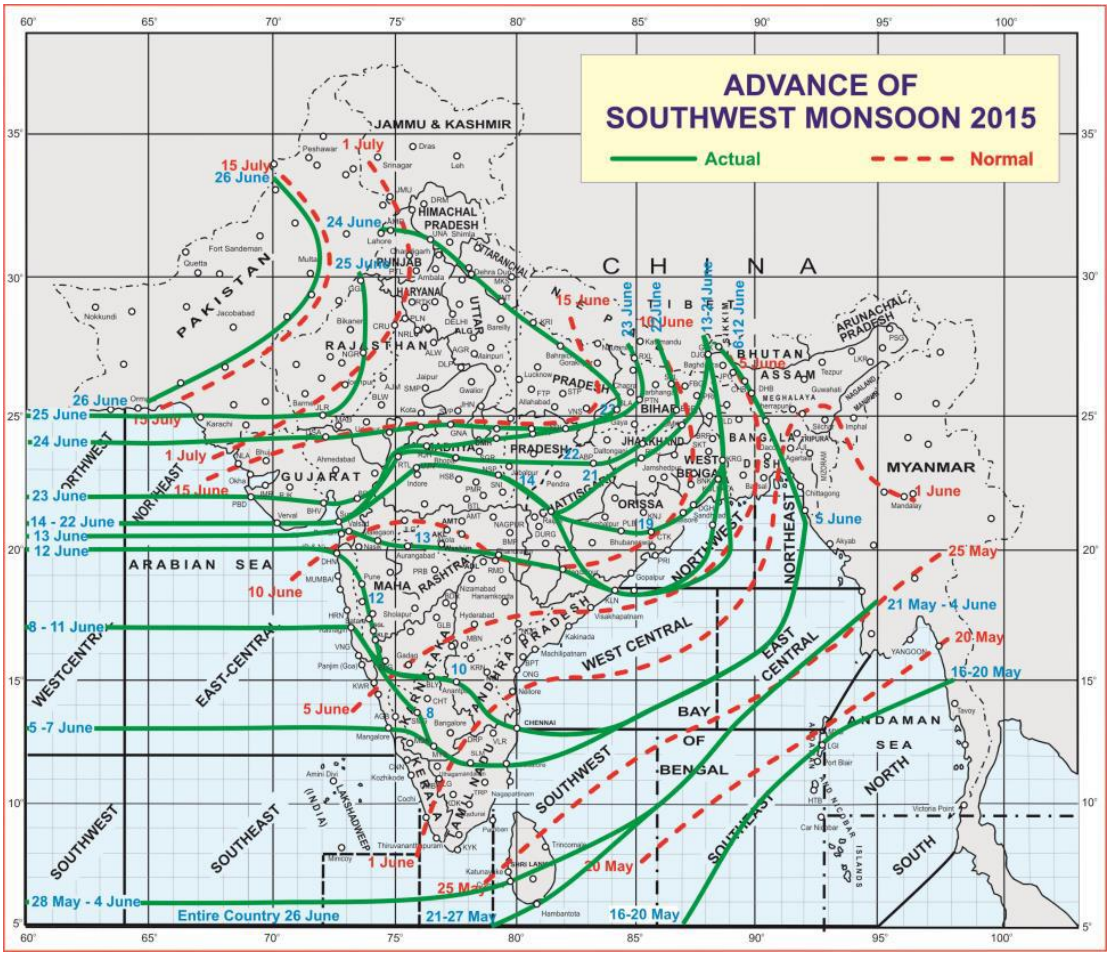


Fig. 2.1 Advance of southwest Monsoon–2015**.**

2.4 CHIEF SYNOPTIC FEATURES

During the season, 11 low pressure systems (LPS) (low pressure areas and stronger systems) were formed. Out of these, 8 further intensified (Depression, deep depression, cyclonic storms) against a normal of 4-6 Depressions during the season. Two of which intensified into cyclonic storm 'Ashobaa' (7– 12 June) & 'Komen' (26 July– 2 Aug.), over Arabian Sea and Bay of Bengal respectively and the 3 as Deep

Depressions with 2 over land (27- 30 July & 16-19 Sept.) and one over Arabian Sea (22– 24 June). The 3 Depressions of which 2 formed as land Depression over Jharkhand and neighborhood (10 – 12 July) and over East Madhya Pradesh and adjoining Chhattisgarh (4 Aug.). The remaining formed over Bay of Bengal (20 – 21 June). Of 3 low pressure areas, one intensified as well marked low pressure area. **Fig.2.2** shows the tracks of the monsoon depressions and Cyclonic Storms formed during the 2015 season.

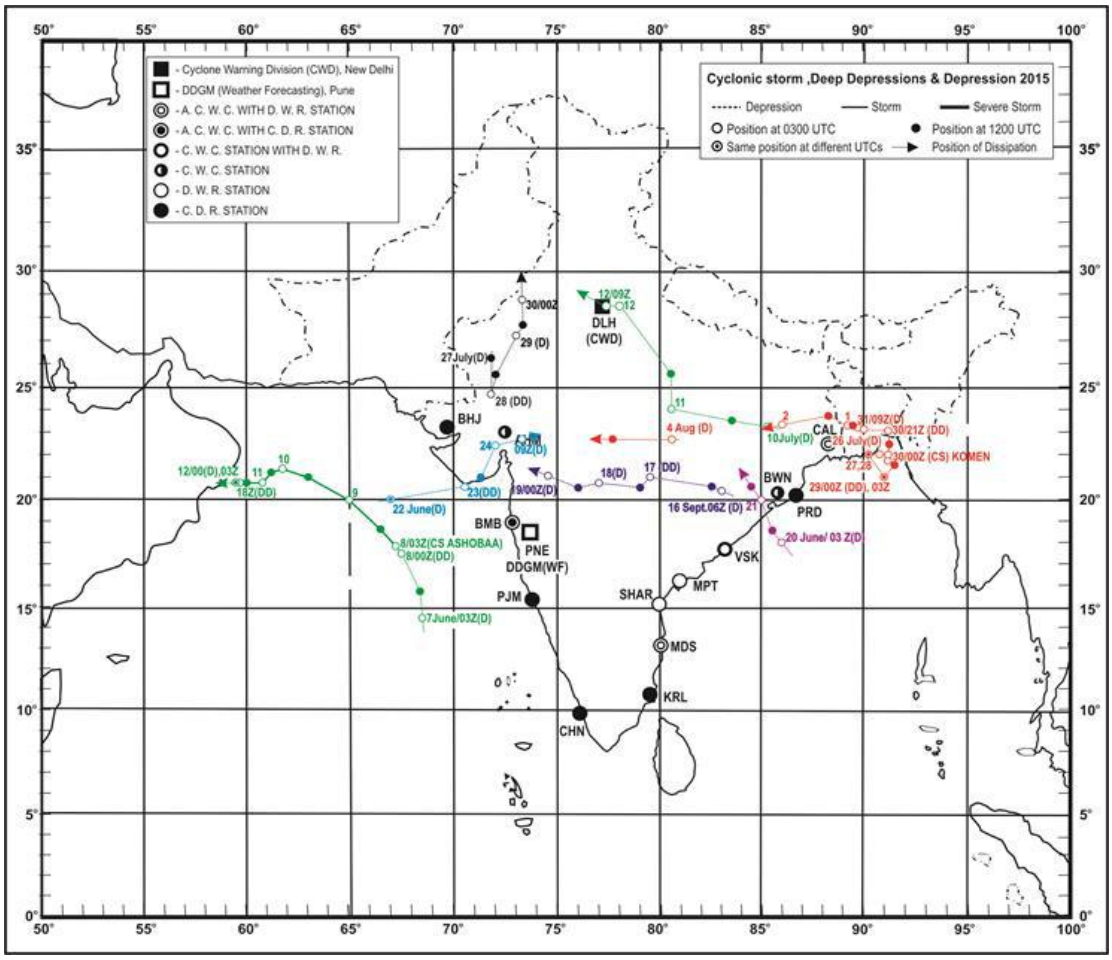


Fig-2.2 Track of the monsoon depressions and Cyclonic Storms

The setting of Southwest Monsoon over Kerala on 5th June was associated with strengthening and eastward movement of Madden Julian Oscillation (MJO) through the Indian Ocean. This also helped the intensification of the onset vortex over the east central Arabian Sea into Cyclonic Storm 'Ashobaa' (7 – 12 June). The northeastward movement of the deep depression formed over Arabian Sea (22– 24 June) towards Gujarat caused widespread to fairly widespread rainfall over Konkan & Goa and Madhya Maharashtra and scattered to isolated rainfall over Gujarat region and Saurashtra & Kutch with isolated extremely heavy rainfall for couple of days. The presence of perturbations in the form of trough and cyclonic vortex in mid latitude westerlies caused active monsoon conditions over extreme north and western Himalayan region. Consequently, the southwest monsoon advanced further and

covered major parts of central India, northern plains and western Himalayan region by 24th June and the entire country by 26 June. Thereafter, the rainfall activity reduced substantially over the major parts of south peninsular and central India, in the wake of unfavourable phase of MJO, which moved eastward into the western Pacific region.

The subsequent MJO activity in the western Pacific directed the significant part of cross equatorial flow towards the Typhoons developed over west Pacific Ocean, leading to weak monsoon circulation pattern, very well reflected by the presence of an anomalous anticyclone at 850 hPa level over central India and the western part of axis of monsoon trough laying close to foothills of the Himalayas. This caused subdued rainfall activity over major parts of central and Peninsular India during the first week of July. With the formation of a low pressure area over North Bay of Bengal on 8th July and its movement in northwest direction along the axis of monsoon trough plus abundant moisture present in the lower levels over the Indo- Gangetic plains aided its rapid intensification into a Land Depression over Jharkhand and neighbourhood on 10th July. In addition, the presence of cyclonic circulation over southwest Uttar Pradesh and adjoining areas and couple of western disturbances as a cyclonic circulation led to increase in rainfall activity all along the Indo- Gangetic plains and northwest India during the second week of July.

The third & fourth week of July witnessed rapid movement of number of disturbances in mid latitude westerlies, in the form of cyclonic vortex and, the active monsoon trough caused active to vigorous monsoon conditions over central India and western Himalayan region. Further the strengthening of cross equatorial flow in the lower troposphere led to enhanced rainfall along the west coast, however the rainfall activity over peninsular India remained subdued. Towards the end of the July, two intense low pressure systems (Deep Depressions) formed along the axis of monsoon trough at the both ends, one over northeast Bay of Bengal and the other, over southwest Rajasthan. As the monsoon trough lacked the characteristic southwards tilt with height, the rainfall associated with the Deep Depression over Rajasthan was confined to the core area surrounding the system. The Deep Depression over Bay of Bengal intensified further into a cyclonic storm 'Komen'. As it moved in northwestwards direction, it caused heavy to very heavy rainfall with extremely heavy rainfall at isolated places over the eastern and central parts of the country. Its subsequent movement over inland after weakening caused vigorous to active monsoon conditions along its track.

The strengthening of winds at lower levels and circulation features during the first week of August led to formation of a low pressure area (11 – 15 Aug.) over westcentral and adjoining northwest Bay of Bengal off north Andhra Pradesh- south Odisha coasts. This revived the active monsoon conditions over major parts of the country and caused heavy to very heavy rainfall at isolated places over eastern, northern and central parts of India. Thereafter, the weakening of low pressure area and subsequent shifting of monsoon trough more northwards at the foot hills of Himalayas, led to weak monsoon flow pattern thereby keeping the rainfall activity confined to the east and northeast India during the second week. The formation of the well marked low pressure area (26 – 30 Aug.) over the same area caused

scattered to fairly widespread rainfall with heavy to very heavy at isolated places over parts of eastern and northern parts of east coast.

The first week of September, witnessed the reduced rainfall activity mainly over northwestern parts of India thereby indicating favorable conditions for withdrawal of SW monsoon from West Rajasthan. The change in circulation pattern in the lower tropospheric levels led to withdrawal of monsoon from western parts of Rajasthan on 4 Sept. However, the presence of trough in lower tropospheric westerlies, east- west shear zone and couple of cyclonic vortex between lower and mid tropospheric levels revived the rainfall activity over parts of south Peninsular India. The low pressure area formed over westcentral & adjoining northwest Bay of Bengal on 12th Sept. intensified as Depression over south Odisha and neighbourhood on 16th and into Deep Depression over Vidarbha and adjoining south Chhattisgarh on 17th resulting strengthening of the monsoon activity over northern parts of peninsular India thereby delayed the further withdrawal.

2.5 WITHDRAWAL OF SOUTHWEST MONSOON

The rainfall activity over the northwestern parts of Rajasthan remained subdued since last week of August. A change over in the lower tropospheric circulation pattern over the region from cyclonic to anti cyclonic resulted in the withdrawal of southwest monsoon from the northwestern parts of Rajasthan on 4th September. Monsoon withdrew from some more parts of Rajasthan and some parts of Punjab and Haryana on 9th September. On 29th September, monsoon withdrew from remaining parts of Rajasthan, Punjab, Haryana, Chandigarh & Delhi, entire Jammu & Kashmir, Himachal Pradesh, Uttarakhand, most parts of West Uttar Pradesh and some parts of West Madhya Pradesh, Gujarat State and north Arabian Sea and the withdrawal line passed through. On 6th October, the monsoon further withdrew from some more parts of Bihar; remaining parts of Madhya Pradesh; some parts of Jharkhand, Chhattisgarh, Vidarbha, Madhya Maharashtra; some more parts of Gujarat state and north Arabian sea. On 15th October, southwest monsoon further withdrew from some more parts of Jharkhand, most parts of Chhattisgarh, remaining parts of Vidarbha, Madhya Maharashtra, Gujarat State and north Arabian Sea, entire Marathwada and Konkan & Goa and some parts of Odisha, Telangana, North Interior Karnataka and central Arabian Sea. As on 16th October, the withdrawal line of Southwest Monsoon now passed through Forbesganj, Ranchi, Jharsuguda, Hanamkonda, Belgaum, Goa, Lat.15°N/Long. 70°E and Lat. 15°N/Long. 60°E. It withdrew from the entire country on 19th October 2015. **Fig.2.3** shows the isochrones of withdrawal of monsoon 2015.

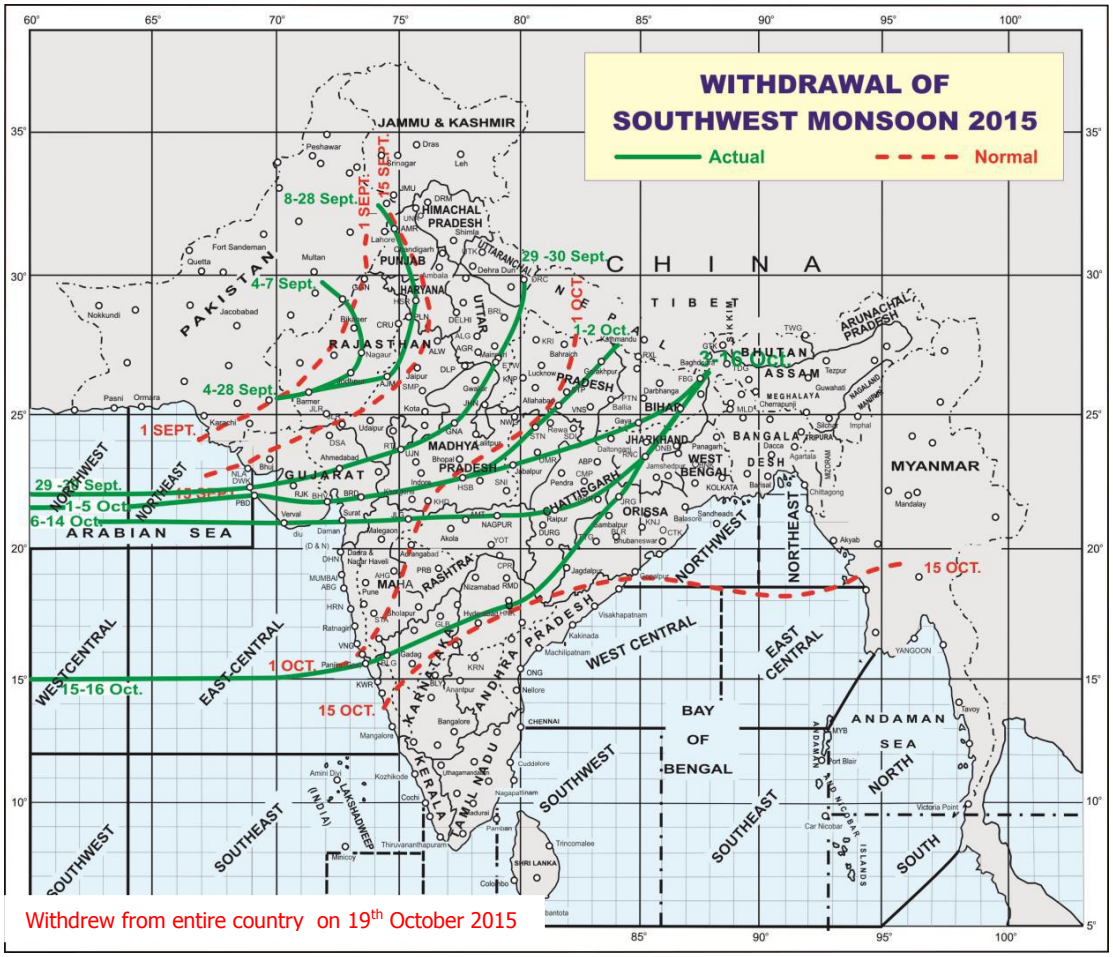
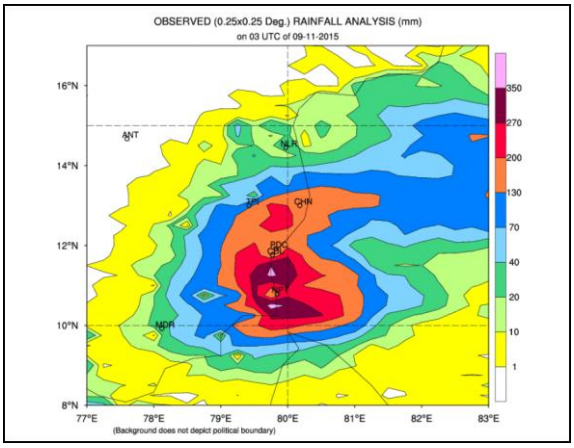


Fig. 2.3 Isochrones of withdrawal of southwest monsoon - 2015

2.6 North East Monsoon

The North East Monsoon commenced over South Peninsular India on 28th October 2015. During the North East Monsoon season of 2015, heavy to very heavy rainfall occurred over Tamilnadu and South Andhra Pradesh which gave rise to Unprecedented Floods in East Flowing Rivers South of Pennar in rivers such as Kosasthaliyar, Adyar, Palar, Ponnaiyar during November and December 2015. The observed gridded rainfall on 9th to 10th November 2015, 16th-17th November and 2nd December 2015 is given in **Fig-2.4-Fig 2.8.**



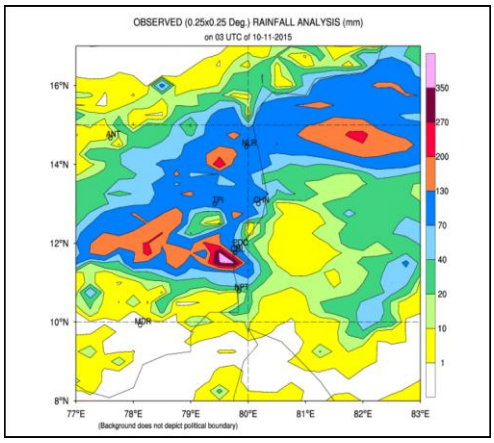
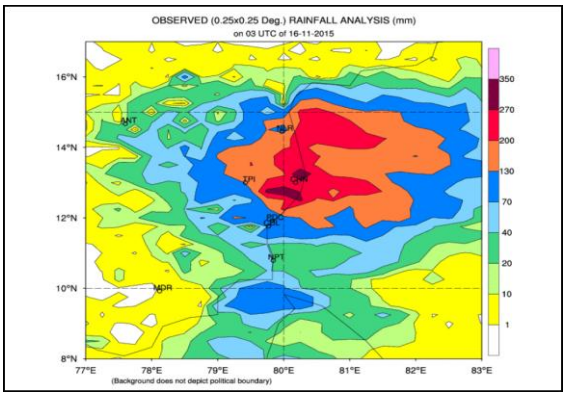


Fig 2.4 and 2.5 Observed Rainfall Analysis (mm) on 9th and 10th November 2015



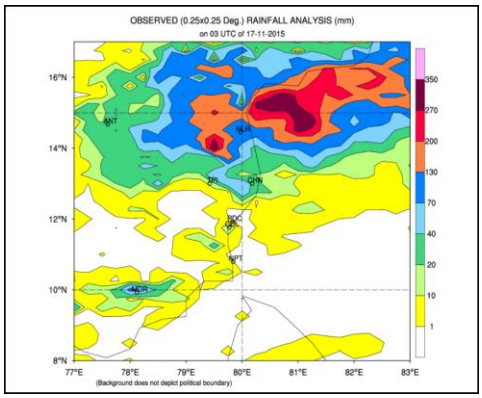


Fig 2.6 and 2.7 Observed Rainfall Analysis (mm) on 16th and 17th November 2015

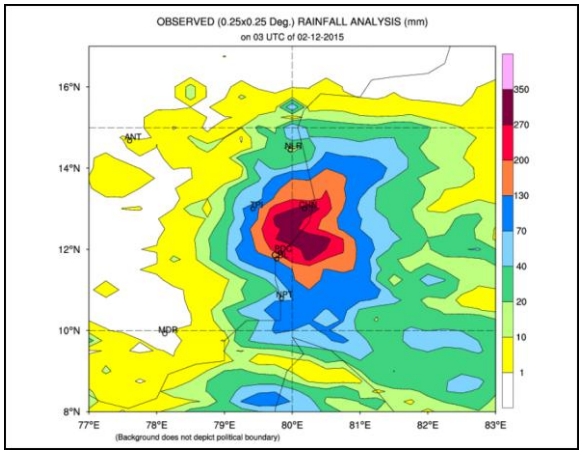


Fig 2.8 Observed Rainfall Analysis (mm) on 2nd December 2015

(Source: The extracts for Chapter 2.2b to Chapter 2.6 have been taken from the end of season report published by IMD, NWP Chennai Rainfall Report 2015 and the daily weather situation summaries given by IMD).

CHAPTER 3

FLOOD FORECAST PERFORMANCE

3.1 FLOOD FORECASTING EVALUATION - PRESENT CRITERIA AND PROCEDURE

A number of techniques are being utilised for formulation of river stage and inflow forecasts by Central Water Commission. While inflow forecast is being provided for assisting project authorities in reservoir regulation, the stage forecast is done for warning the civil and engineering authorities about the predicted water level well ahead of its occurrence. An accurate forecast is one where the forecast level and corresponding actual observed level exactly synchronize or have such a small difference that it can be taken as reasonably accurate. In an ideal situation, not only the forecast and the corresponding observed value of river stage/ inflow should be the same but also the time of such occurrence should be the same as that predicted.

3.2 EVALUATION CRITERIA FOR STAGE/ INFLOW FORECASTING

As per present practice, all the level and inflow forecasts are being judged by the single criteria of accuracy i.e. the actual level attained is within ± 15cm of forecasted value for stage forecasts and the actual inflow/ volume received in the dam/ barrage is within ± 20% of the forecasted value for inflow forecast.

The forecast of incoming flood gives the water level or inflow and "time" of occurrences. It is also observed that in many cases the levels attained were found within permissible limit of accuracy but the time of occurrence was not the same.

3.3 FLOOD FORECASTING ACTIVITIES

The flood forecasting activities like data collection, forecast formulation and its dissemination during 2015 covered various river basins and States. A total of 4072 forecast were issued during 2015. The performance of flood forecasting Divisionwise, Major Basinwise, Statewise and for the period 2000 to 2015 are given from **Annex-IV to VII.**

3.4 RIVERWISE DETAILS OF FLOOD FORECASTING ACTIVITES & ACCURACY OF FORECAST

3.4.1 Indus Basin

During the flood season 2015, analysis of the flood forecasts issued for Rammunshibagh Site on Jhelum reveals that 17 forecasts (0.42% of 4072 forecast) were issued. Out of these, 13 forecasts (76.47%) were found within permissible limit of accuracy.

3.4.2 Brahmaputra Basin

During the flood season 2015, analysis of the flood forecasts issued reveals that 2114 forecasts (51.92% of 4072 forecast) were issued for 26 sites located on the main Brahmaputra and tributaries. Out of these, 2070 forecasts (97.92%) were found within permissible limit of accuracy. No forecast was issued for one station.

3.4.3 Barak and Meghna Basin

During the flood season 2015, 151 forecasts (3.71% of 4072) were issued for three sites. Out of these, 151 forecasts (100%) were found within permissible limit of accuracy. No forecast was issued for two sites.

3.4.4 Ganga Basin

During the flood season 2015, 1474 forecasts (36.20% of 4072) were issued for 54 sites, out of total 87 sites located on the main Ganga and its tributaries. No forecast was issued for the remaining 33 sites. Out of these, 1449 forecasts (98.3%) were found within permissible limit of accuracy.

3.4.5 Eastern Rivers Basins including Mahanadi

During the flood season 2015, 29 forecasts (0.71% of 4072) were issued for six of the nine sites on Eastern Rivers (excluding Mahanadi Basin) and 27 (93.1%) forecasts were found within permissible limit of accuracy. Also 42 forecasts (1.03% of 4072) were issued for one out of the four sites located on the Mahanadi river basin, of which 42 forecasts (100%) were found within permissible limit of accuracy.

3.4.6 Godavari Basin

During the flood season 2015, 24 forecasts (0.59% of 4072) were issued for 1 forecasting sites out of 18 sites, out of which 24 forecasts were found with 100% accuracy. No forecasts were issued for the remaining 17 flood forecasting sites.

3.4.7 Krishna Basin

During the flood season 2015, 106 forecasts (2.6% of 4072) were issued for six forecasting sites out of nine sites and 102 forecasts (96.23 %) were found within permissible limit of accuracy. No forecast was issued for three sites in Krishna basin.

3.4.8 Southern Rivers Basin

Since the North Pennar River did not cross Warning Level, no forecast was issued for one site in Southern River System.

3.4.9 West Flowing Rivers

During the flood season 2015, for the West-flowing Rivers which comprises of the Narmada, the Tapi etc, 115 forecasts (2.82% of 4072) were issued for 7 sites, out of fifteen sites. 113 forecasts (98.26%) were found within permissible limit of accuracy. Forecasts were not issued for eight sites.

The Basinwise – Riverwise flood forecasting information in India during flood season 2015 is given in **Annex-II.**

3.4 STATEWISE FLOOD FORECASTING PERFORMANCE

There are 17 states, one Union Territory of the Dadra & Nagar Haveli, and National Capital Territory of Delhi so far covered under the Flood Forecast and Warning Network of the Central Water Commission. The Statewise flood forecasting information in India during the flood season 2015, is given in **Annex –III.** Their salient features are as under:

3.5.1 Andhra Pradesh

In state of Andhra Pradesh, there were eight forecasting sites including three inflow sites. Forecasts were issued for three forecasting sites out of which there were 2 inflow and 1 level sites.

It is revealed that 22 forecasts (2 level and 20 inflow) were issued out of which 20 forecasts (2 level and 18 inflow) were within limits (90.91%). No forecasts were issued for 5 stations.

3.5.2 Assam

In the state of Assam, there were 24 forecasting sites and all of them were level forecasting sites. Forecasts were issued for 24 sites. It is seen that during 2015 season, 2053 forecasts were issued out of which 2033 forecasts (99.03%) were found within limit of accuracy.

River Buridehing at Chenimari (Khowang) flowed in Unprecedented Flood Situation. River Brahmaputra at Dibrugarh, River Jia-Bharali at N T Road Crossing and River Beki at Road Bridge flowed in High Flood Situation.

3.5.3 Bihar

In the state of Bihar, there were 32 level forecasting sites. Forecasts were issued for 23 sites during the year 2015. Out of 736 forecasts issued during the flood season 2015, 731 forecasts (99.32%) were found within limit of accuracy. No forecasts were issued for 9 stations.

3.5.4 Chhattisgarh

In the state of Chhattisgarh there was one level flood forecasting site (i.e. Jagdalpur) on the Indravati River (a tributary of the Godavari River). 24 flood forecast were issued for this station during the flood season 2015 out of which 24 (100%) were within the limits of accuracy.

3.5.5 Gujarat

There were 11 flood forecasting sites in the state of Gujarat including five inflow forecasting sites. However, forecasts were issued for only five sites. Out of 62 forecasts issued (3 level and 59 inflow), 60 forecasts (1 level and 59 inflow) (96.77 %) were found within limits of accuracy during the flood season 2015. No forecasts were issued for 6 stations.

3.5.6 Haryana

Data from Hathni Kund Barrage were collected. However, no inflow forecasts were issued due to very little travel time available from base station.

3.5.7 Jharkhand

In the state of Jharkhand, there were four inflow and one level flood forecasting sites. Flood forecasts were issued for all of them. During the flood season 2015, Out of 176 (25 level and 151 inflow) forecasts issued, all the 176 (25 level and 151 inflow) forecasts (100 %) were found within limit of accuracy.

3.5.8 Jammu and Kashmir

In the State of Jammu and Kashmir, one FF Station namely Rammunshibagh was operationalised during 2015. 17 forecasts were issued out of which 13 (76.47%) were found to be within limit of accuracy.

3.5.9 Karnataka

There were four flood forecasting sites in the state of Karnataka which includes three inflow forecasting sites and one level forecasting site. During the flood season 2015, forecasts were issued for 2 inflow forecast sites. Out of 84 forecasts (0 level and 84 inflow) issued, 82 (0 level and 82 inflow) forecasts (97.62%) were found within limit of accuracy.

3.5.10 Madhya Pradesh

In the state of Madhya Pradesh, there were two level forecasting sites on the river Narmada and one inflow forecast site at Gandhisagar on river Chambal. During the flood season 2015, forecasts were issued for one level and inflow sites. Out of 17

forecasts issued (2 level and 15 inflow), 12 (2 level and 10 inflow) (70.59%) forecasts were found within the limit of accuracy. No forecasts were issued for one station.

3.5.11 Maharashtra

There were nine forecasting sites including two inflow forecasting sites, in the state of Maharashtra. During the flood season 2015, forecasts were issued for one inflow forecast station. Total 51 forecasts were issued (51 inflow) during 2015 out of which 51 (51 inflow) were in limit (100%). No forecasts were issued for 8 stations. River Wainganga at Pauni crossed its Warning Level but no forecasts were issued as Pauni is just downstream of the Gosikhurd project. Letters have been written to Government of Maharashtra for starting of inflow forecast for the Gosikhurd project instead of level forecast at Bhandara and Pauni. Reply is awaited.

3.5.12 Odisha

In the state of Odisha, there were eleven level flood forecasting sites and one inflow forecasting site i.e. Hirakud Dam on the main river Mahanadi. During the flood season 2015, 71 (29 level and 42 inflow) forecasts were issued for all forecast stations out of which 69 (27 level and 42 inflow) (97.18 %) were found within limit of accuracy.

3.5.13 Telangana

There are eight forecast stations (4 level and 4 inflow forecast stations) in the reorganised state of Telangana. Forecasts were not issued for any of the Stations as no significant flood occurred in Telangana

3.5.14 Tripura

There were two level forecasting sites in the state of Tripura namely, Kailashahar on river Manu and Sonamura on river Gumti. Forecast was not issued to both these stations as they did not cross warning level during the year 2015.

3.5.15 Uttar Pradesh

There were 35 flood forecasting sites in the state of Uttar Pradesh, which includes one inflow forecasting site at Narora barrage (U/S) on the river Ganga and 34 level forecasting stations. During the flood season 2015, forecasts were issued for 15 stations (14 level and 1 inflow). Out of 348 forecasts (302 level and 46 inflow), 337 forecasts (291 level and 46 inflow) (96.84%) were found within limit of accuracy. No forecasts were issued for 20 stations.

3.5.16 Uttarakhand

There were three level forecasting sites in the state of Uttarakhand, namely, Srinagar on the Alaknanda, Rishikesh and Haridwar on the main river Ganga.

Forecasts were issued for two stations in 2015. 7 forecasts were issued out of which 7 (100%) were within limit of accuracy. No forecast was issued for one station.

3.5.17 West Bengal

In the state of West Bengal, there were 14 flood forecasting sites, which include three inflow forecasting sites. During the flood season 2015, forecasts were issued for 12 sites (9 level and 3 inflow stations). Out of 382 forecasts (288 level and 94 inflow), 355 forecasts (261 level and 94 inflow) (92.93%) were found within limit of accuracy. No forecasts were issued for two stations.

3.5.18 Dadra & Nagar Haveli

In the Union Territory of Dadra & Nagar Haveli, there was one flood forecasting site at Daman on river Damanganga. No flood forecast was issued for the site during the flood season 2015.

3.5.19 NCT of Delhi

There are two flood forecasting sites in the National Capital Territory of Delhi (NCT of Delhi), namely, Delhi Railway Bridge on the Yamuna River and Dhansa Regulator at Delhi and Haryana border on the Sahibi river, a tributary of Yamuna River which is commonly known by name of Najafgarh drain within Delhi town. Both the sites are level forecasting sites. Forecast was issued for Delhi Railway Bridge only. During the flood season 2015, Out of 13 forecasts (only level), 13 forecasts (100%) were within limits of accuracy.

The performance of flood forecasting Stations (Divisionwise) in India during flood season 2015 is given in **Annex-IV.**

The Major Basin/Statewise performance of flood forecasting stations in India during flood season is given in **Annex-V to VI**.

3.6 AN OVERVIEW OF FLOOD FORECASTING PERFORMANCE

During the flood season 2015, an average number of flood forecasts issued per forecasting site were 23.13. The number of forecasting sites where the performance accuracy of the issued forecasts was found to be above 98.01 % (National average for flood season 2015) was 70 sites (39.78 %) which include 67 sites (38.07 %) where flood forecasting stations having 100% accurate forecasts. The number of forecasting sites where the performance accuracy was found greater than 97% as fixed in the Results Framework Document (RFD) of Ministry of Water Resources is 79 (44.89%).

The flood forecasting performance of the level forecasting as well as inflow forecasting sites from 2000 to 2015 is given in **Annex-VII** and from 2000 to 2015 as **Fig.3.1.**

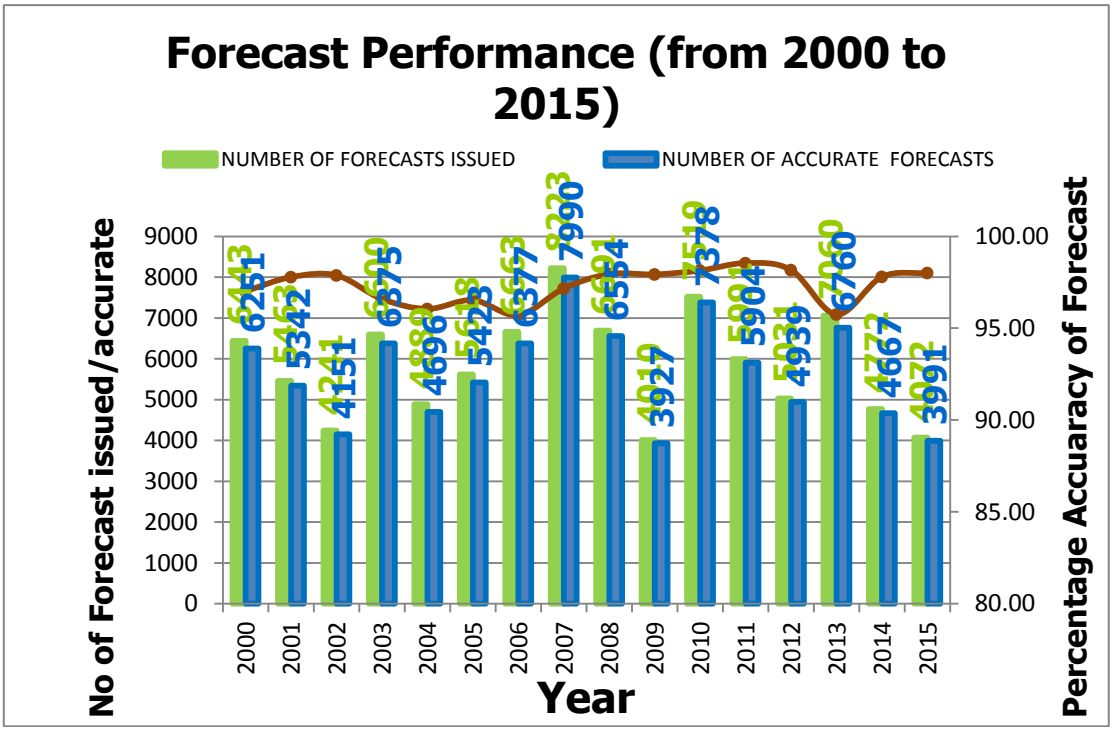


Fig.3.1 Flood Forecast Performance from 2000 to 2015

3.6.1 Overall Performance

Thus, in the nine major river systems in the country where "Flood Forecasting & Warning Network" of the Central Water Commission exists, and floods are being monitored, the accuracy of the forecasting performance during 2015 season varies from a maximum of 100% for Barak and its tributaries, Mahanadi and its tributaries and Godavari and its tributaries to a minimum of 76.47% for the Indus Basin and its tributaries. The overall accuracy performance was of the order of 98.01% for the country as a whole.

Sitewise "Forecast Performance" out of 176 operational sites in flood season 2015 is shown in **Table 3.1**.

Table 3.1 Site wise "Forecast Performance" of flood forecasting sites of CWC in Flood Season, 2015

Sl. No.	Details of sites within different range of permissible limit of accuracy (±15cm,±20%cumec)	Flood Season 2015	
		No. of Sites	% age
1	Sites with performance accuracy between 0.0 % to 25.0%	1	0.96%
2	Sites with performance accuracy between 25.1 % to 50.0%	4	3.85%
3	Sites with performance accuracy between 50.1 % to 75.0%	2	1.93%
4	Sites with performance accuracy between 75.1 % to 99.99%	30	28.84%
5	Sites with 100% performance accuracy i.e. where all forecasts issued were within permissible limit of accuracy	67	64.42%
6	Total sites where forecasts were issued	104	100

CHAPTER – 4

RIVERWISE APPRAISAL OF FLOOD EVENTS

4.1 GENERAL

All the 176 flood forecasting sites including 28 inflow forecasting sites were operational i.e. where desired hydrological data was observed/ collected, during the flood season 2015. Unprecedented floods, exceeding previous highest flood levels (HFL), were observed in one station namely Chenimari (Khowang) on river Buridehing during the year 2015. The levels were recorded within 0.5 m of their respective H.F.L at three sites.

Details of unprecedented and high flood events in the various river systems covered under the Flood Forecasting & Warning Network are given in **Annex- VIII** and **Annex-IX** respectively for the year 2015**.** Moderate and low flood events were observed as listed at **Annex-X to XII,** for the year 2015. River wise flood events are described in the following paragraphs.

4.2 GANGA BASIN

The Ganga basin comprises of the main stream Ganga and its tributaries / sub-tributaries which were covered under the CWC's Flood Forecasting Network. During the flood season 2015, there were 87 flood forecasting sites in the whole Ganga Basin, which included 77 stage and 10 inflow forecasting sites. T**he occurrence of Moderate and low flood events is given in Annex-X.**

4.3 BRAHMAPUTRA BASIN

The Flood Forecasting and Warning Network of the Central Water Commission carried on the main river Brahmaputra and its tributaries / sub- tributaries during the flood season 2015. The details are shown below.

During the flood season 2015, Chenimari (Khowang) on river Buridehing under Brahmaputra basin witnessed Unprecedented Flood Situation. **However, Dibrugarh, on River Brahmaputra, River Jia-Bharali at N T Road Crossing, River Beki at Road Bridge flowed in High Flood Situation (Annex-IX)** and many of the other stations flowed in moderate and low flood situation during the season and these are shown in **Annex-XI**.

4.4 BARAK AND MEGHNA SYSTEM

The Barak and Meghna River System under the Flood Forecasting and Warning Network of the Central Water Commission covers five rivers, namely the Barak, the Katakhal, the Kushiyara, the Manu and the Gumti rivers. The river system enters into Bangladesh in the downstream of Silchar in Assam.

There were five level flood forecasting sites in the Barak & Meghna basins system, namely Annapurna Ghat, Matizuri, Karimganj, Kailashahar and Sonamura respectively one each on Barak, Katakhal, Kushiyara, Manu and Gumti rivers. The sites AP Ghat, Matizuri and Karimganj are in Assam and the Kailashahar and Sonamura are in Tripura. The occurrence of Moderate & low floods is given in **Annex-XI**.

4.5 EASTERN RIVERS SYSTEM

The Eastern Rivers under the Flood Forecasting and Warning Network of Central water Commission are the Subarnarekha, the Burhabalang, the Baitarani, the Brahmani, the Rushikulia and the Vamsadhara.

There are nine flood forecasting sites including one inflow forecasting site at Gotta Barrage located in the state of Andhra Pradesh. Remaining all the 8 level forecasting sites are in the state of Odisha. The occurrence of Moderate and low floods is given in **Annex-XII**.

4.6 MAHANADI BASIN

In the Mahanadi basin, Central Water Commission has so far covered only the main stream Mahanadi under its Flood Forecasting and Warning Network setup. There were four flood forecasting sites, one being the inflow forecasting site at Hirakud Dam in Odisha. During the flood season 2015, all the sites were operational in Mahanadi River. Details of moderate and low flood events observed are given in **Annex-XII**.

4.7 GODAVARI BASIN

The Flood Forecasting and Warning Network of Central Water Commission, covers of the main river Godavari and four of its main tributaries, namely, the Wardha, Wainganga, the Manjira and the Indravathi rivers. There were 18 flood forecasting sites which were operational during the flood seasons 2015. Out of these, 12 sites were on the main Godavari River including two inflow forecasting sites, Jaikwadi dam and Sriramsagar (Pochampad), one in Wardha river, two each on the Manjira and Wainganga rivers, and one in the Indravathi river. Two sites on Manjira, namely, Singur dam & Nizamsagar Dam were also inflow forecasting sites. The details of low and moderate flood events are shown in **Annex-XII**.

4.8 KRISHNA BASIN

Flood Forecasting and Warning Network of Central Water Commission, covers the main river Krishna, two of its main tributaries, namely, the Tungabhadra, and the Bhima. There were eight flood forecasting sites on these rivers, which were operational during the flood season, 2015. Out of these sites, five sites (all inflow forecasting sites) are on the main river Krishna, two on the Tungabhadra (one level & other inflow forecasting site) and one on the Bhima. The details of low and moderate flood events are shown in **Annex-XII**.

4.9 SOUTHERN RIVER SYSTEM

There was one forecasting site at Nellore on the Pennar River. During 2015, no forecast was necessary, as the river did not cross warning level.

4.10 WEST FLOWING RIVERS

The important west flowing rivers include the Banas, the Sabarmati, the Mahi, the Narmada, the Tapi and the Damanganga. The Flood forecasting and Warning Network of Central Water Commission covers all the above rivers. There were fifteen flood forecasting sites on the above rivers, including six inflow forecasting sites. One site on the Banas at Dantiwada Dam is an inflow forecasting. One level forecasting and one inflow forecasting sites exist on each of rivers, the Sabarmati and the Mahi. There are four sites (all stage forecasting sites) on the Narmada. Two inflows and one level forecasting site are located on the Tapi and one inflow and two level forecasting sites are on the Damanganga. Details are given in **Annex-XII.**

4.11 Indus and its tributaries

There was one forecasting station at Rammunshibagh on river Jhelum. Details of Low and Moderate Floods witnessed in Jhelum basin is given in **Annex-XII.**

4.12 AN OVERVIEW OF FORECAST EVENTS

The highlight of this year is as follows:

4.12.1 Unprecedented Flood Situation

4.12.1.1 Buridehing at Chenimari (Khowang)

- Very heavy to exceptionally very heavy rainfall recorded during the period 30th August to 2nd September 2015 in catchment areas of the river Buridehing in Assam.
- River Buridehing started rising from 31st August 2015 onwards and flowed in Unprecedented Flood Situation during the period 1st to 3rd September 2015.

4.12.2 High Flood events

High Flood Situation was witnessed in 3 flood forecasting stations in the rivers Brahmaputra, Jia-Bharali and Beki in Assam.

4.12.3 Moderate to Low flood events and inflow forecasts

Moderate to low flood events were witnessed in 81 stations and inflow forecasts were issued in 19 Stations.

4.12.4 No Forecasts

No flood forecasts were issued at 72 flood forecast stations (63 level and 9 inflow) as they did not cross warning level or flows above criteria in case of inflow forecasts or due to reasons such as reservoir operation and just downstream of reservoir.

Statement showing number of stations where level/inflow crossed Warning Level

		Level				Inflow	
State	No of Stations where River Warning Level exceeded	No. of Station where Danger Level exceeded	No of Stations where within 0.5 m of Highest Flood Level exceeded	No of Stations where Highest Flood exceeded	No of station where river level remained below Warning Level	No. of Dams/ Barrages where inflows exceeded threshold limit	No. of Dams/ Barrages where inflows not exceeded threshold limit
Andhra Pradesh	1	0	0	0	4	2	1
Assam	4	15	4	1	0	0	0
Bihar	9	14	0	0	9	0	0
Chhatisgarh	0	1	0	0	0	0	0
Gujarat	0	1	0	0	5	4	1
Haryana	0	0	0	0	0	0	1
Jammu & Kashmir	0	1	0	0	0	0	0
Jharkhand	0	1	0	0	0	4	0
Karnataka	0	0	0	0	1	2	1
Madhya Pradesh	1	0	0	0	1	1	0
Maharashtra	1	0	0	0	7	1	1
Odisha	4	3	0	0	4	1	0
Tripura	0	0	0	0	2	0	0
Telangana	0	0	0	0	4	0	4
Uttarakhand	1	2	0	0	0	0	0
Uttar Pradesh	10	4	0	0	20	1	0
West Bengal	2	5	0	0	4	3	0
Dadra Nagar Haveli	0	0	0	0	1	0	0
Delhi	1	0	0	0	1	0	0
Total	34	47	4	1	63	19	9

4.12.5 Land Slide on river Phuktal

A major landslide occurred on the left bank of river Phuktal, about 20 Km. upstream of Phuktal Gompa on 31-12-2014 blocking the river Phuktal completely resulting in formation of artificial lake. The magnitude of landslide, volume of water

being stored behind the landslide dam, the risk involved was assessed by NDMA expert team including officers from CWC during February and March 2015. Dam break analysis was carried out by CWC to assess the travel time of flood wave and additional rise in water level at various locations in the downstream in the event of breach.

An operation for controlled release of impounded water behind the dam was carried out by the NDMA team jointly with Indian Army and Air Force during March 2015. During operation, a channel (75mX2mX2m) was created for draining out the inflows and gradual depletion of impounded water before breach. As a complementary measure to channel creation, an Automatic Water Level Recorder (AWLR) was also installed at Phuktal Gompa by CWC to monitor the river water level by state Govt. officials and alarming people in the downstream in case of abnormal rise in water level due to breach.

Due to sub-zero temperature in the area, the impounded water was in frozen state and the landslide dam material was in permafrost condition till first week of April 2015. Continuous flow through the channel created was observed. As anticipated, with the rise in temperature the flow through the channel as well as through body of dam gradually increased and the Landslide dam started breaching around 7th May 2015.

Aerial recce by NDMA team members and local administration conducted on 7th May and again on 8th May observed that the breach was along the channel created during operation. The dam had breached from top about 35 m height. Due to all preparatory work completed in advance and alert system in place, no casualty was reported due to flash flood after breach except damages to some infrastructures along the river. The floods affected those areas which were very near to the site of landslide and got moderated as it moved.

From the flooding pattern compared with dam break study carried out earlier and also the observations during aerial recce, it was concluded that the landslide dam breached significantly and the major portion of impounded water had emptied. As such, there was no risk of flooding in future due to the remaining part of the land slide dam and impounded water.

4.12.6 Cyclonic Storm 'Komen'

Cyclone "Komen" made landfall on 30.07.2015 in Bangladesh. After making landfall, it moved northwestwards causing heavy to very rainfall in West Bengal, Jharkhand & Odisha in Bhagirathi, Brahmani, Damodar, Ganga & Subarnarekha river basins causing low to moderate flooding in West Bengal.

CWC field setups responsible for the concerned states were geared up to monitor the situation & issue forecast as per the norms.

During cyclone "Komen", from the period 31.07.2015 to 10.08.2015, CWC issued 19 water level forecasts & 17 inflow forecasts for West Bengal, 11 inflow forecasts for Odisha & 19 inflow forecasts for Jharkhand. These forecasts were communicated to the concerned agencies for taking appropriate mitigating measures. NDMA also took meetings to analyze the situation & plan NDRF team deployment in advance based on the forecasted flood situation by CWC. Based on the inflow forecast issued by the CWC for reservoirs, suitable advices were issued to Damodar Valley Corporation (DVC) for moderating flood peaks to the extent possible.

4.12.7 Flood Situation Reports for other basins

4.12.7.1 Flood Situation in South Andhra Pradesh, Tamilnadu and Puducherry during November 2015

North East Monsoon became vigorous over Tamilnadu, Rayalaseema and South Coastal Andhra Pradesh during the period 8th to 11th November, 16-18th November2015. In view of the vigorous NE monsoon, rivers Pennar, Suwarnamukhi, Kalingi, Kosasthaliyar, Adyar, Palar, Ponnaiyar rose all along their course. River Suwarnamukhi at Naidupeta, River Kalingi at Sulurpeta both in Nellore district of Andhra Pradesh, River Palar at Arcot (Vellore district) and Chengalpet (Kanchipuram district) in Tamilnadu, River Varahanadi at Kumarapalayam in Puducherry flowed in Unprecedented Flood Situation during middle of November 2015. Due to this heavy rainfall and flows from upstream areas in South Andhra Pradesh, the lakes supplying water to Chennai city on river Kosasthaliyar and Adyar also attained very close to their FRL by middle of November 2015.

4.12.7.2 Flooding in Chennai in December 2015

4.12.7.2.1 Flood Situation

Many parts of Tamil Nadu received unprecedented torrential rains in the first week of December, 2015, leading to a deluge in the Chennai Metropolitan area and in the adjoining Districts of Kanchipuram and Thiruvallur as well as Cuddalore. 1st December 2015, was the wettest day in December in the recorded history of Chennai. The extremely heavy rainfall on 1st December marooned a number of localities and severely inundated lakhs of houses. In the first five days of December 2015, Chennai recorded an excess rainfall of 883%; Kanchipuram, 1254% and Thiruvallur, 863%.

In view of the incessant rains in Chennai City and catchment areas of the Adyar, Cooum and Kosasthaliyar rivers, rain water could not drain causing inundation. The situation was worsened by release of water from reservoirs in Southern Andhra Pradesh including Pichathur and Krishnapuram which flowed into drainage systems in Northern Tamil Nadu. The consequence of this unprecedented level of downpour proved to be disastrous as major water bodies got filled up and flowed into major rivers, Adyar, Cooum and Kosasthaliyar coupled with the heavy downpours in the city

which could not drain into the Adyar River. This transformed the densely populated areas of Chennai City into islands of houses in vast expanse of water that filled roads and streets for many feet. The State Government further apprised that heavy rains inundated areas all over Chennai and the situation was rendered worse with major water bodies reaching two feet below the full tank level and consequent discharge from them causing the major rivers, Adyar, Cooum and Kosasthaliyar to overflow. With heavy rains in the catchment areas of Chembarampakkam reservoir, 29000 cusecs of water had to be released into Adyar from the reservoir. The State Government also submitted that even before the release of water from the Chembarampakkam Tank again heavy rain of around 47 cm occurred that further worsened the situation. Thus, in view of the incessant rains in the city and catchment areas of Adyar river, rain water could not drain and thereby, caused inundation in the city. Roads were flooded and essential services, including trains and bus transport had to be suspended in most locations. Several areas remained heavily inundated for few days. Water entered buildings even to the first floors in some areas leading to residents stranded on building roof tops and in their homes without essential commodities and electricity, besides completely damaging all their household durable assets and motor vehicles.

4.12.7.2.2 Reason for flooding in Chennai City

The flooding in Chennai city and other adjoining regions was due to combination of factors viz. high intensity rainfall, large releases from storages beyond channel carrying capacity of the channels, encroachments in lakes and river channels, drainage congestion etc. Heavy to very heavy rainfall due to the influence of depression under the North-Eastern monsoon system, initially during the period 15-21 November 2015 followed by second spell during 30th November to 2nd December was the primary reason. But the secondary reason cited by them was the complex drainage system of the city. Several small lakes and rivers in and around Chennai city contributes towards this complex drainage system. Three main rivers viz. Cooum, Adyar and Kosasthaliyar flow through Chennai city and its suburbs and join the Bay of Bengal. These predominantly seasonal rivers are small in length, predominantly run dry through urban and peri-urban areas. The discharging capacity of these small rivers is of the order of few hundred cusecs. Further, encroachments along these rivers have reduced the carrying capacity of these rivers significantly. In and around Chennai, there are four major reservoirs/lakes viz. Poondi, Cholavaram, Red Hills (Puzhal) and Chembarampakkam which are used for drinking water supply to Chennai city, which, otherwise, faces acute water crisis during summers. Hence, these reservoirs are the life-line for the city. Chennai metropolitan Water supply and Sewerage Board operate these reservoirs.

Due to heavy rainfall, the lakes and reservoirs in the Chennai and adjoining districts got filed up. As a result, the concerned authorities from Chennai Metropolitan Water Supply and Sewerage Board released water from these reservoirs discharging into Kosasthaliyar, Adyar and other riverine systems. The rivers overflew their respective banks on either side at many places and have therefore inundated the low lying adjoining areas. The other lake surrounding Chennai city viz. Puzhal (Red hills) and Cholavaram also got filled up and water was released from these reservoirs.

4.11.7.2.3 Relief Measures

National Crisis Management Committee, headed by the Cabinet Secretary, met daily from 2nd to 5th December and then again, on 7th December, to ensure that necessary relief and assistance was provided immediately for rescue operations and restoration of essential services. In addition to that, the National Executive committee under the Chairmanship of Home Secretary also met daily from the 2nd to the 5th of December and again, on the 7th and 11th December, to coordinate the various operational matters in connection with work that was being done by the various Ministries of the Government of India.

6 teams of the State disaster Response Force, 6 teams of the Coastal Security Group, 1400 personnel of the fire and rescue department, 30000 personnel of the Tamil Nadu Police and 45,000 staff drawn from the Revenue, Municipal Administration, Rural Development, Public Works, Highways, Health, Animal Husbandry, Municipal Corporation of Chennai and other local bodies and from TANGEDCO were deployed. In all, more than 80,000 personnel from the State Government's side were involved in round the clock rescue and relief operations. 1200 Army personnel, 600 personnel from Navy, Coast Guard and Air Force and 1920 NDRF personnel were engaged in rescue and relief operations. Six helicopters of Air Force and two helicopters each of Navy and Coast Guard participated in rescue operations in marooned areas and air dropping of food material and drinking water. The total damages during the flood season 2015 in Tamilnadu as per Memorandum submitted by Government of Tamilnadu was 25,921 Crores.

CHAPTER 5

RESPONSE FROM USER AGENCIES

5.1 General

Central Water Commission performs the Flood Forecasting and Warning job on flood prone interstate river basins in the country. It issues the forecast to the users such as various civil and engineering departments of the state and central governments including, railway, defense, revenues authorities, public sector undertakings besides National Disaster Management Cell in the Ministry of Home Affairs, who are responsible for taking timely flood fighting measures, rescue operations including shifting of flood affected people to safer places etc.

Though the various state government agencies in-charge of the flood management and relief operations generally do not give their views in writing on usefulness of the flood forecasting activities of CWC, yet some of them do write to the Central Water Commission conveying their views on the usefulness of the flood forecasts received by them.

5.2 Appreciation letters received during flood season 2015

Abstract of some of the messages received by our field unit during the flood season 2015 are given below:

5.2.1 Deputy Relief Commissioner, Ex-Officio Deputy Secretary to Government, Revenue & Disaster Management Department (Special Relief), Government of Odisha, Bhubaneswar-751001. Lr. no: 4796/R&DM (SR) dated 04.12.2015

"I am to convey my high commendation in forecasting the inflow/outflow of water from reservoirs, river gauge reading and rainfall in catchments of major rivers which help the Government (Both at State and District Administration) in managing effectively the floods during South West Monsoon. IF CWC could fix up a Rule Curve in regard to water levels of major gauge reading stations in flood prone areas and furnish the information like at what point of water level, the areas likely to be marooned during flood, such information will be immense helpful to minimise the loss of lives and properties".

5.2.2 Office of Engineer-in-Chief, Water Resources, Odisha, Bhubaneshwar, Odisha Lr. No: 42516 dated 4/12/15

"The flood wing of Department of Water Resources dealing with flood problems of State has always sought inputs like flood information and flood warnings to combat the gigantic task of flood control and flood management in all river basins of the state. For the year 2015, we have received the forecast for different rivers of the State. The same has been distributed to all concerned authorities in time. I feel great to mention here that the availability of such facilities in form of supply of hydro-meteorological information and situation

forecast etc (round the clock) from pioneer organisations like CWC & IMD have made it possible time and again to overcome successfully the flood exigencies in time and with better preparedness. As an active user of online data and forecast of CWC, I do express my deep thanks and gratitude to CWC organisation. It is to further request that to make the system little more efficient, consideration to the following points may be given:

1. Some additional forecasting stations in flood prone areas of Odisha are needed.
2. The flood data i.e. river gauges, discharge, flood forecasts and rainfall data etc may please be provided to this office through e-mail service. Our e-mail address is celmbbbsr@yahoo.co.in

5.2.3 Executive Engineer, Drainage Investigation Division, Kishanganj, Government of Bihar. Lr. no: 1181/ Kishanganj dated 21.11.2015 (*Translated from Hindi Version*)

The information provided in respect of Flood Forecasting and Daily Water Level Report is very important and useful in protecting the villages. It is requested that Daily Water Level may also be provided through SMS.

5.2.4 Executive Engineer, Flood Control Division, Begusarai, Letter No. 5/4, dated 24/02/2016 (translated from Hindi).

Flood information given by CWC is very useful and important for flood protection related work. It is expected that the same may be continued in future.

5.2.5 Superintending Engineer, Flood Protection Circle, Khagaria, Letter No 76 dated 19/01/2016 (translated from Hindi).

The information provided by CWC during year 2015 in respect of Daily Water Level of different rivers, rainfall information and flood forecasting was very beneficial. Moreover, continuous information of trends of rivers was very useful in flood preparedness and flood protection related works. It is suggested that flood forecast, rainfall data and water level related information may please be continued in future also as done in previous years.

ANNEXURES-I to XIII

Salient Features of Flood Forecasting Stations maintained by Central Water Commission

S.No	Name of FF Station/Type	River/Basin	Nearest Town/Vill/District/State	Lat (N)	Long (E)	Base Station (TT in hrs)	Div/Circle/ Orgn	Met Sub Division as per IMD	WL (m)	DL (m)	HFL		Mode of Data Collection	Methodology/ Model used for FF Formulation	Remarks
											(m)	Year			
1	Srinagar	Alaknanda/Ganga	Srinagar/Garhwal/ Uttarakhand	30.22	78.78	1.1 Rudraprayag (06)	HGD/HOCD/UGBO	Uttarakhand	539.00	540.00	536.85	1995	Wireless/ Telemetry	Conventional	Forecast never issued because HFL<WL
2	Rishikesh	Ganga/Ganga	Rishikesh/Dehradun/Uttarakhand	30.11	78.31	2.1 Deoprayag (08) 2.2 Marora (05)	HGD/HOCD/ UGBO	Uttarakhand	339.50	340.50	341.72	1995	Wireless/ Telemetry	Conventional	
3	Hardwar	Ganga/Ganga	Hardwar/Hardwar/ Uttarakhand	29.98	78.19	3.1 Deoprayag (09) 3.2 Marora (06)	HGD/HOCD/ UGBO	Uttarakhand	293.00	294.00	296.30	2010	Wireless/ Telemetry	Conventional	
4	Moradabad	Ramganga/Ganga	Moradabad/Moradabad/Uttar Pradesh	28.83	78.80	4.1 Kalagarh (36)	MGD2/HOCD/UGBO	West Uttar Prasdesh	189.60	190.60	192.88	2010	Wireless/ Telemetry	Conventional	
5	Bareilly	Ramganga/Ganga	Bareilly/Bareilly/ Uttar pradesh	28.30	79.37	5.1 Moradabad (28)	MGD2/HOCD/UGBO	West Uttar Prasdesh	162.70	163.70	162.88	1978	Wireless/ Telemetry	Conventional	
6	Kannauj	Ganga/Ganga	Kannauj/Kannauj/ Uttar Pradesh	27.02	79.97	6.1 Narora (D/s) (48)	MGD2/HOCD/UGBO	West Uttar Prasdesh	124.97	125.97	126.78	2010	Wireless	Conventional	
7	Ankinghat	Ganga/Ganga	Ankinghat/Kanpur/ Uttar Pradesh	26.93	80.03	7.1 Narora (D/s) (48) 7.2 Bareilly (48) 7.3 Fathegarh (12) 7.4 Dabri (12)	MGD2/HOCD/UGBO	East Uttar Prasdesh	123.00	124.00	124.49	2010	Wireless/ Telemetry	Conventional	
8	Kanpur	Ganga/Ganga	Kanpur/Kanpur/ Uttar Pradesh	26.47	80.38	8.1 Fathegarh (24) 8.2 Dabri (24) 8.3 Ankinghat (12)	MGD2/HOCD/UGBO	East Uttar Prasdesh	113.00	114.00	114.08	2010	Wireless/ Telemetry	Conventional	
9	Dalmau	Ganga/Ganga	Rae-barerilly/ Rae-barerilly/ Uttar Pradesh	26.06	81.03	9.1 Ankninghat (28) 9.2 Kanpur (16)	MGD2/HOCD/UGBO	East Uttar Prasdesh	98.36	99.36	99.84	1973	Wireless/ Telemetry	Conventional	
10	Phaphamau	Ganga/Ganga	Allahabad/ Allahabad/ Uttar Pradesh	25.47	83.11	10.1 Kanpur (30) 10.2 Chillaghat (24)	MGD3/HOCV/UGBO	East Uttar Prasdesh	83.73	84.73	87.98	1978	Wireless/ Telemetry	Conventional	
11	Mawi	Yamuna/Ganga	Panipat/ Muzzafarpur/ Uttar Pradesh	29.38	77.07	11.1 Kalanur (18-30)	UYD/HOCN/ YBO	West Uttar Pradesh	230.00	230.85	232.45	1988	Wireless/ Telemetry	Conventional	
12	Delhi Railway Bridge	Yamuna/Ganga	Delhi/Delhi/ NCT Delhi	28.66	77.25	12.1 Mawi (18-32)	UYD/HOCN/ YBO	Haryana Chandigarh& Delhi	204.00	204.83	207.49	1978	Wireless/ Telemetry	Conventional	
13	Dhansa Regulator	Sahibi/Yamuna/ Ganga	Delhi/Delhi/ NCT Delhi	28.53	76.87	13.1 Dadri (48) 13.2 Masani (48)	UYD/HOCN/ YBO	Haryana Chandigarh& Delhi	211.44	212.44	213.58	1977	Wireless	Conventional	
14	Mathura	Yamuna/Ganga	Mathura/Mathura/ Uttar Pradesh	27.51	77.69	14.1 Mohana (20-33)	UYD/HOCN/ YBO	West Uttar Pradesh	164.20	165.20	169.73	1978	Wireless/ Telemetry	Conventional	

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15	Agra	Yamuna/Ganga	Agra/Agra/ Uttar Pradesh	27.19	78.03	15.1 Mathura (216-4)	LYD/HOCN/ YBO	West Uttar Pradesh	151.40	152.40	154.76	1978	Wireless/ Telemetry	Conventional	
16	Etawah	Yamuna/Ganga	Etawah/Etawah/ Uttar Pradesh	26.75	78.99	16.1 Agra (20-45)	LYD/HOCN/ YBO	West Uttar Pradesh	120.92	121.92	126.13	1978	Wireless/ Telemetry	Conventional	
17	Auraiya	Yamuna/Ganga	Auraiya/Auraiya/ Uttar Pradesh	26.42	79.48	17.1 Etawah (21-24) 17.2 Dhaulpur (15-36)	LYD/HOCN/ YBO	West Uttar Pradesh	112.00	113.00	118.19	1996	Wireless/ Telemetry	Conventional	
18	Kalpi	Yamuna/Ganga	Kalpi/Jalaun/ Uttar Pradesh	26.13	79.76	18.1 Etawah (21-27) 18.2 Dhaulpur (15-42)	LYD/HOCN/ YBO	West Uttar Pradesh	107.00	108.00	112.98	1996	Wireless/ Telemetry	Conventional	
19	Hamirpur	Yamuna/Ganga	Hamirpur/Hamirpur/ Uttar Pradesh	25.96	80.16	19.1 Auraiya (15)	LYD/HOCN/ YBO	East Uttar Prasdesh	102.63	103.63	108.59	1983	Wireless/ Telemetry	Conventional	
20	Chillaghat	Yamuna/Ganga	Banda/Banda/ Uttar Pradesh	25.77	80.53	20.1 Hamirpur (12)	LYD/HOCN/ YBO	East Uttar Prasdesh	99.00	100.00	105.16	1978	Wireless/ Telemetry	Conventional	
21	Mohana	Betwa/Yamuna/ Ganga	Jhansi/Jhansi/ Uttar Pradesh	25.65	78.99	21.1 Garrouli (16-21) 21.2 Nautghat (12-21)	LYD/HOCN/ YBO	East Uttar Prasdesh	121.66	122.66	133.69	1983	Wireless/ Telemetry	Conventional	
22	Sahjiana	Betwa/Yamuna/ Ganga	Hamirpur/Hamirpur/ Uttar Pradesh	25.95	80.15	22.1 Mohana (18-24)	LYD/HOCN/ YBO	East Uttar Prasdesh	103.54	104.54	108.67	1983	Wireless/ Telemetry	Conventional	
23	Banda	Ken/Yamuna/ Ganga	Banda/Banda/ Uttar Pradesh	25.48	80.31	23.1 Madla (12-18) 23.2 Kaimaha (9-15)	LYD/HOCN/ YBO	East Uttar Prasdesh	103.00	104.00	113.29	2005	Wireless/ Telemetry	Conventional	
24	Naini	Yamuna/Ganga	Allahabad/ Allahabad/ Uttar Pradesh	25.42	81.84	24.1 Chillaghat (18-24)	LYD/HOCN/ YBO	East Uttar Prasdesh	83.74	84.74	87.99	1978	Wireless/ Telemetry	Conventional	
25	Allahabad (Chatnag)	Ganga/Ganga	Allahabad/ Allahabad/ Uttar Pradesh	25.41	81.91	25.1 Kanpur (30) 25.2 Chillaghat (24)	MGD3/HOCV/UGBO	East Uttar Prasdesh	83.73	84.73	88.03	1978	Wireless/ Telemetry	Conventional	
26	Mirzapur	Ganga/Ganga	Mirzapur/Mirzapur/ Uttar Pradesh	25.15	82.53	26.1 Dalmau (28) 26.2 Chillaghat (34)	MGD3/HOCV/UGBO	East Uttar Prasdesh	76.72	77.72	80.34	1978	Wireless/ Telemetry	Conventional	
27	Varanasi	Ganga/Ganga	Varanasi/Varanasi/ Uttar Pradesh	25.33	83.04	27.1 Kanpur (48) 27.2 Hamirpur(48)	MGD3/HOCV/UGBO	East Uttar Prasdesh	70.26	71.26	73.90	1978	Wireless/ Telemetry	Conventional	
28	Rae-Bareilly	Sai/Gomti/Ganga	Rae-bareilly/Rae-bareilly/Uttar Pradesh	26.20	81.25	28.1 Bani (48)	MGD2/HOCD/UGBO	East Uttar Prasdesh	100.00	101.00	104.81	1982	Wireless/ Telemetry	Conventional	

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29	Hanuman Setu	Gomti/Ganga	Lucknow/Lucknow/ Uttar Pradesh	26.86	80.95	29.1 Bhatpurwaghat (48)	MGD2/HOCD/UGBO	East Uttar Prasdesh	108.50	109.50	110.85	1971	Wireless	Conventional	
30	Jaunpur	Gomti/Ganga	Jaunpur/Jaunpur/ Uttar Pradesh	25.75	82.69	30.1 Sultanpur (24)	MGD3/HOCV/UGBO	East Uttar Prasdesh	73.07	74.07	77.74	1971	Wireless/ Telemetry	Conventional	
31	Ghazipur	Ganga/Ganga	Ghazipur/ Ghazipur/ Uttar Pradesh	25.58	83.60	31.1 Allahabad (28) 31.2 Sultanpur (30)	MGD3/HOCV/UGBO	East Uttar Prasdesh	62.11	63.11	65.22	1978	Wireless/ Telemetry	Conventional	
32	Buxar	Ganga/Ganga	Buxar/Buxar/Bihar	25.58	83.97	32.1 Allahabad (30)	MGD5/HOCP/LGBO	Bihar	59.32	60.32	62.09	1948	Wireless/ Telemetry	Conventional	
33	Elgin Bridge	Ghaghra/Ganga	Barabanki/Barabanki/ Uttar Pradesh	27.09	81.49	33.1 Katernighat (30-36) 33.2 Shardanagar (30-36)	MGD1/HOCV/UGBO	East Uttar Prasdesh	105.07	106.07	107.56	2009	Wireless/ Telemetry	Conventional	
34	Ayodhya	Ghaghra/Ganga	Ayodhya/Faizbad/ Uttara Pradesh	26.81	82.21	34.1 Elgin Bridge (18-24)	MGD1/HOCV/UGBO	East Uttar Prasdesh	91.73	92.73	94.01	2009	Wireless/ Telemetry	Conventional	
35	Balrampur	Rapti/Ghaghra/ Ganga	Balrampur/ Balrampur/ Uttar Pradesh	27.44	82.23	35.1 Kakardhari (18-24)	MGD1/HOCV/UGBO	East Uttar Prasdesh	103.62	104.62	105.25	2000	Wireless/ Telemetry	Conventional	
36	Bansi	Rapti/Ghaghra/ Ganga	Bansi/ Siddarthnagar/ Uttar Pradesh	27.18	82.93	36.1 Balrampur (18-24)	MGD1/HOCV/UGBO	East Uttar Prasdesh	83.90	84.90	85.82	1998	Wireless/ Telemetry	Conventional	
37	Gorakhpur (Birdghat)	Rapti/Ghaghra/ Ganga	Gorahpur/ Gorakhpur/ Uttar Pradesh	26.73	83.35	37.1 Bansi (18-24)	MGD1/HOCV/UGBO	East Uttar Prasdesh	73.98	74.98	77.54	1998	Wireless/ Telemetry	Conventional	
38	Turtipar	Ghaghra/Ganga	Balthra/Ballia/ Uttar Pradesh	26.14	83.88	38.1 Ayodhya (30-36) 38.2 Gorakhpur (Birdghat) (30-36)	MGD1/HOCV/UGBO	East Uttar Prasdesh	63.01	64.01	66.00	1998	Wireless/ Telemetry	Conventional	
39	Darauli	Ghaghra/Ganga	Darauli/Siwan/Bihar	26.07	84.13	39.1 Elgin Bridge (54) 39.2 Gorakhpur (Birdghat) (28)	MGD5/HOCP/LGBO	Bihar	59.82	60.82	61.74	1998	Wireless	Conventional	
40	Gangpur Siswan	Ghaghra/Ganga	Siwan/Siwan/Bihar	25.91	84.39	40.1 Turtipar (20)	MGD5/HOCP/LGBO	Bihar	56.04	57.04	58.01	1983	Wireless	Conventional	
41	Chhapra	Ghaghra/Ganga	Chhapra/Saran/Bihar	25.76	84.79	41.1 Gangpur Siswan (16)	MGD5/HOCP/LGBO	Bihar	52.68	53.68	54.59	1982	Wireless	Conventional	
42	Ballia	Ganga/Ganga	Ballia/ Ballia/ Uttar Pradesh	25.77	84.37	42.1 Varanasi (28) 42.2 Jaunpur (28)	MGD3/HOCV/UGBO	East Uttar Prasdesh	56.62	57.62	60.25	2003	Wireless/ Telemetry	Conventional	

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43	Inderpuri	Sone/Ganga	Inderpuri/Rohtas/ Bihar	24.84	84.13	43.1 Chopan (12) 43.2 Daltonganj (12)	MGD5/HOCP/LGBO	Bihar	107.20	108.20	108.85	1975	Wireless	Conventional	
44	Koelwar	Sone/Ganga	Koelwar/Bhojpur/ Bihar	25.57	84.79	44.1 Inderpuri (10-15)	MGD5/HOCP/LGBO	Bihar	54.52	55.52	58.88	1971	Wireless	Conventional	
45	Maner	Sone/Ganga	Maner/Patna/Bihar	25.70	84.86	45.1 Gandhighat (8)	MGD5/HOCP/LGBO	Bihar	51.00	52.00	53.79	1976	Wireless	Conventional	
46	Sripalpur	Punpun/Ganga	Sripalpur/Patna/Bihar	25.50	85.11	46.1 Kinjer (24)	MGD5/HOCP/LGBO	Bihar	49.60	50.60	53.91	1976	Wireless	Conventional	
47	Patna (Dighaghat)	Ganga/Ganga	Patna/ Patna/ Bihar	25.64	85.10	47.1 Allahabad (30) 47.2 Patna (Gandhighat) (04)	MGD5/HOCP/LGBO	Bihar	49.45	50.45	52.52	1975	Wireless	Conventional	
48	Patna (Gandhighat)	Ganga/Ganga	Patna/ Patna/ Bihar	25.62	85.17	48.1 Buxar (24) 48.2 Darauli (24) 48.3 Japla (24) . 48.4 Rewaghat (24)	MGD5/HOCP/LGBO	Bihar	47.60	48.60	50.27	1994	Wireless/ Telemetry	Conventional	
49	Hathidah	Ganga/Ganga	Hathidah/Patna/Bihar	25.37	85.99	49.1 Gandhighat (16)	MGD5/HOCP/LGBO	Bihar	40.76	41.76	43.15	1971	Wireless/ Telemetry	Conventional	
50	Munger	Ganga/Ganga	Munger/Munger/ Bihar	25.38	86.46	50.1 Gandhighat (24)	MGD5/HOCP/LGBO	Bihar	38.33	39.33	40.99	1976	Wireless/ Telemetry	Conventional	
51	Khadda	Gandak/Ganga	Deoria/Kushinagar/ Uttar Pradesh	27.19	83.95	51.1 Triveni (07)	MGD4/HOCP/LGBO	Bihar	95.00	96.00	97.50	2002	Wireless	Conventional	
52	Chatia	Gandak/Ganga	Ariraj West Champaran/ Motihari/ Bihar	26.50	84.54	52.1 Triveni (24)	MGD4/HOCP/LGBO	Bihar	68.15	69.15	70.04	2002	Wireless	Conventional	
53	Rewaghat	Gandak/Ganga	Muzzafarpur/Muzzafarpur/ Bihar	25.99	85.05	53.1 Chatia (20)	MGD5/HOCP/LGBO	Bihar	53.41	54.41	55.41	1986	Wireless	Conventional	
54	Hazipur	Gandak/Ganga	Hazipur/Vaishali/ Bihar	25.69	85.20	54.1 Rewaghat (16)	MGD5/HOCP/LGBO	Bihar	49.32	50.32	50.93	1948	Wireless	Conventional	
55	Lalbeghiaghat	Burhi Gandak/ Ganga	Dhaka/Motihari/Bihar	26.65	85.03	55.1 Chainpatia (24)	MGD4/HOCP/LGBO	Bihar	62.20	63.20	67.09	1975	Wireless	Conventional	
56	Muzzafarpur (Sikandarpur)	Burhi Gandak/ Ganga	Sikandarpur/Muzzafarpur/Bihar	26.14	85.39	56.1 Ahirwala(S) (22)	MGD4/HOCP/LGBO	Bihar	51.53	52.53	54.29	1987	Wireless	Conventional	

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57	Samastipur	Burhi Gandak/ Ganga	Samastipur/Samastipur/Bihar	25.86	85.79	57.1 Sikandarpur (20)	MGD4/HOCP/LGBO	Bihar	45.02	46.02	49.38	1987	Wireless	Conventional	
58	Rosera	Burhi Gandak/ Ganga	Rosera/Samastipur/ Bihar	25.74	86.02	58.1 Sikandarpur (28)	MGD4/HOCP/LGBO	Bihar	41.63	42.63	46.35	1987	Wireless	Conventional	
59	Khagaria	Burhi Gandak/ Ganga	Khagaria/Khagaria/ Bihar	25.50	86.48	59.1 Sikandarpur (24) 59.2 Gandhighat (24)	MGD4/HOCP/LGBO	Bihar	35.58	36.58	39.22	1976	Wireless	Conventional	
60	Benibad	Bagmati/Ganga	Benibad/Muzzafarpur/ Bihar	26.20	85.67	60.1 Runisaidpur (24)	MGD4/HOCP/LGBO	Bihar	47.68	48.68	50.01	2004	Wireless/ Telemetry	Conventional	
61	Hayaghat	Bagmati/Ganga	Hayaghat Papermill/Darbhanga/ Bihar	26.08	85.89	61.1 Benibad (24) 61.2 Ekmighat (24)	MGD4/HOCP/LGBO	Bihar	44.72	45.72	48.96	1987	Wireless/ Telemetry	Conventional	
62	Kamtaul	Adhwara Group/Ganga	Kamtaul Market/Darbhanga/ Bihar	26.33	85.85	62.1 Sonebarsa (24)	MGD4/HOCP/LGBO	Bihar	49.00	50.00	52.99	1987	Wireless/ Telemetry	Conventional	
63	Ekmighat	Adhwara Group/Ganga	Laheria Seria/Darbhanga/ Bihar	26.12	85.88	63.1 Saulighat (24)	MGD4/HOCP/LGBO	Bihar	45.94	46.94	49.52	2004	Wireless/ Telemetry	Conventional	
64	Jhanjharpur	Kamlabalan/ Ganga	Jhanjharpur/Madhubani/ Bihar	26.27	86.27	64.1 Jainagar (8)	MGD4/HOCP/LGBO	Bihar	49.00	50.00	53.01	2004	Wireless	Conventional	
65	Bhagalpur	Ganga/Ganga	Bhagalpur/Bhagalpur/Bihar	25.27	87.02	65.1 Gandhighat (32)	MGD5/HOCP/LGBO	Bihar	32.68	33.68	34.20	2003	Wireless/ Telemetry	Conventional	
66	Colgong/Kahalgaon	Ganga/Ganga	Colgong/Bhagalpur/ Bihar	25.27	87.23	66.1 Gandhighat (38)	MGD5/HOCP/LGBO	Bihar	30.09	31.09	32.87	2003	Wireless/ Telemetry	Conventional	
67	Basua	Kosi/Ganga	Supaul/Supaul/Bihar	26.13	86.58	67.1 Birpur (16)	MGD4/HOCP/LGBO	Bihar	46.75	47.75	49.17	2010	Wireless	Conventional	
68	Balthara	Kosi/Ganga	Choutham/Khagaria/ Bihar	25.54	86.72	68.1 Basua (24) 68.2 Hayaghat (24)	MGD4/HOCP/LGBO	Bihar	32.85	33.85	36.40	1987	Wireless	Conventional	
69	Kursela	Kosi/Ganga	Kusela/Katihar/Bihar	25.42	87.23	69.1 Basua (24) 69.2 Hathidah (24)	MGD4/HOCP/LGBO	Bihar	29.00	30.00	32.04	1998	Wireless	Conventional	
70	Sahibganj	Ganga/Ganga	Sahibganj/Sahibganj/Jharkhand	25.25	87.64	70.1 Bhagalpur (22)	MGD5/HOCP/LGBO	Jharkhand	26.25	27.25	30.91	1998	Wireless	Conventional	

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71	Dengraghat	Mahananda/ Ganga	Bayasi/Purnes/Bihar	25.85	87.81	71.1 Taibpur (24) 71.2 Chargharia (24)	MGD4/HOCP/LGBO	Bihar	34.65	35.65	38.09	1968	Wireless	Conventional	
72	Jhawa	Mahananda/ Ganga	Jhawa/Katihar/Bihar	25.43	87.76	72.1 Dhengraghat (16) 72.2 Araria (16)	MGD4/HOCP/LGBO	Bihar	30.40	31.40	33.51	1987	Wireless	Conventional	
73	Farakka Barrage	Ganga/Ganga	Farakka/Murshidabad/ West Bengal	24.80	87.92	73.1 Bhagalpur (36)	MGD4/HOCP/LGBO	Gangetic West Bengal	21.25	22.25	25.14	1998	Wireless	Conventional	
74	Dibrugarh	Brahmaputra/ Brahmaputra	Dibrugarh/Dibrugarh/Assam	27.49	94.91	74.1 Passighat (12) 74.2 Tezu (12)	UBD/HOCG/ BBBO	Assam and Meghalaya	104.70	105.70	106.48	1998	Wireless/ Telemetry	Conventional	
75	Naharkatia	Buridehing/ Brahmaputra	Naharkatia/ Dibrugarh/ Assam	27.29	95.33	75.1 Margherita (10)	UBD/HOCG/ BBBO	Assam and Meghalaya	119.40	120.40	122.69	1973	Wireless	Conventional	
76	Chenimari (Khowang)	Buridehing/ Brahmaputra	Khowang/ Dibrugarh/ Assam	27.31	94.88	76.1 Naharkatia (21)	UBD/HOCG/ BBBO	Assam and Meghalaya	101.11	102.11	103.92	1988	Wireless	Conventional	
77	Nanglamoraghat	Desang/ Brahmaputra	Sibsagar/Sibsagar/ Assam	26.99	94.78	77.1 Dillighat (18)	UBD/HOCG/ BBBO	Assam and Meghalaya	93.46	94.46	96.49	1998	Wireless	Conventional	
78	Sibsagar	Dikhow/ Brahmaputra	Sibsagar/Sibsagar/ Assam	26.98	94.58	78.1 Bihubar (09)	UBD/HOCG/ BBBO	Assam and Meghalaya	91.40	92.40	95.62	1974	Wireless	Conventional	
79	Badatighat	Subansiri/ Brahmaputra	Bihuparia/ Lakhimpur/ Assam	26.95	93.96	79.1 Chouldhowaghat (18)	UBD/HOCG/ BBBO	Assam and Meghalaya	81.53	82.53	86.84	1972	Wireless	Conventional	
80	Neamatighat	Brahmaputra/ Brahmaputra	Neamatighat/ Jorhat/ Assam	26.86	94.25	80.1 Dibrugarh (24) 80.2 Chenimari (24)	UBD/HOCG/ BBBO	Assam and Meghalaya	84.04	85.04	87.37	1991	Wireless/ Telemetry	Conventional	
81	Tezpur	Brahmaputra/ Brahmaputra	Tezpur/ Sonitpur/ Assam	26.62	92.80	81.1 Neamatighat (24)	UBD/HOCG/ BBBO	Assam and Meghalaya	64.23	65.23	66.59	1988	Wireless/ Telemetry	Conventional	
82	Golaghat	Dhansisri (S)/ Brahmaputra	Golaghat/ Golaghat Assam	26.50	93.95	82.1 Bokajan (14) 82.2 Gelabil (14)	UBD/HOCG/ BBBO	Assam and Meghalaya	88.50	89.50	91.30	1986	Wireless	Conventional	
83	Numaligarh	Dhansisri (S)/ Brahmaputra	Numaligarh/ Golaghat/ Assam	26.63	93.73	83.1 Golaghat (10)	UBD/HOCG/ BBBO	Assam and Meghalaya	76.42	77.42	79.87	1985	Wireless	Conventional	
84	N T Road Crossing	Jia- Bharali/ Brahmaputra	Balipara/Sonitpur/ Assam	26.81	92.88	84.1 Seppa (9)	UBD/HOCG/ BBBO	Assam and Meghalaya	76.00	77.00	78.50	2007	Wireless	Conventional	

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85	Kampur	Kopili/ Brahmaputra	Kampur/ Nagaon/ Assam	26.15	92.65	85.1 Kheronighat (24)	UBD/HOCG/ BBBO	Assam and Meghalaya	59.50	60.50	61.86	1973	Wireless	Conventional	
86	Dharamtul	Kopili/ Brahmaputra	Dharamtul/Morigaon/Assam	26.17	92.36	86.1 Kampur (15)	UBD/HOCG/ BBBO	Assam and Meghalaya	55.00	56.00	58.09	2004	Wireless	Conventional	
87	Guwahati D C Court	Brahmaputra/ Brahmaputra	Guwahati/Kamrup/ Assam	26.19	91.74	87.1 Tezpur (24)	MBD/HOCG/ BBBO	Assam and Meghalaya	48.68	49.68	51.46	2004	Wireless/ Telemetry	Conventional	
88	N H Crossing	Puthimari/ Brahmaputra	Rangia/ kamrup/ Assam	26.44	91.56	88.1 DRF (13)	MBD/HOCG/ BBBO	Assam and Meghalaya	50.81	51.81	55.08	2008	Wireless/ Telemetry	Conventional	
89	N T Road Crossing	Pagladiya/ Brahmaputra	Nalbari/Nalbari/ Assam	26.45	91.46	89.1 Melabazar (12)	MBD/HOCG/ BBBO	Assam and Meghalaya	51.75	52.75	55.45	2004	Wireless/ Telemetry	Conventional	
90	Road Bridge	Beki/ Brahmaputra	Sorbhog/ Barpeta/ Assam	26.49	90.91	90.1 Kurijampa (12) (Bhutan)	LBD/HOCG/ BBBO	Assam and Meghalaya	44.10	45.10	46.20	2000	Wireless	Conventional	
91	N H Crossing	Manas/ Brahmaputra	Bijni/ Bongaigaon/ Assam	26.46	90.75	91.1 Panbari (6)	LBD/HOCG/ BBBO	Assam and Meghalaya	47.81	48.42	50.08	1984	Wireless	Conventional	
92	Goalpara	Brahmaputra/ Brahmaputra	Goalpara/ Goalpara/ Assam	26.20	90.58	92.1 Guwahati (24)	MBD/HOCG/ BBBO	Assam and Meghalaya	35.27	36.27	37.43	1954	Wireless/ Telemetry	Conventional	
93	Golokganj	Sankosh/ Brahmaputra	Golokganj/Dhubri/ Assam	26.11	89.82	93.1 Sankosh LRP (12) 93.2 Barabisa (12)	LBD/HOCG/ BBBO	Assam and Meghalaya	28.94	29.94	30.95	2007	Wireless/ Telemetry	Conventional	
94	N H 31	Jaldhaka/ Brahmaputra	Dhupguri/ Jalpaiguri/ West Bengal	26.57	88.94	94.1 Nagarakata (6) 94.2 Diana (6) 94.3 Murti (6)	LBD/HOCG/ BBBO	Sub Himalayan West Bengal & Sikkim	80.00	80.90	81.33	1972	Wireless	Conventional	
95	Mathabhanga	Jaldhaka/ Brahmaputra	Mathabhanga/ Coochbehar/ West Bengal	26.32	89.23	95.1 N H 31 (6)	LBD/HOCG/ BBBO	Sub Himalayan West Bengal & Sikkim	47.70	48.20	49.85	2007	Wireless	Conventional	
96	Ghughumari	Torsa	Coochbehar/Coochbehar/ West Bengal	26.29	89.46	96.1 Hasimara (8)	LBD/HOCG/ BBBO	Sub Himalayan West Bengal & Sikkim	39.80	40.41	41.46	2000	Wireless	Conventional	
97	Tufangunj	Raidak -I	Tufangunj/ Coochbehar/ west Bengal	26.31	89.68	97.1 Chepan (12)	LBD/HOCG/ BBBO	Sub Himalayan West Bengal & Sikkim	34.22	35.30	36.36	1993	Wireless	Conventional	
98	Domohani Road Bridge	Tista	Jalpaiguri/ Jalpaiguri/ West Bengal	26.56	88.77	98.1 Tista Bazaar (8) 98.2 Ghista (4-6) 98.3 Chel (4-6) 98.4 Nebra (6)	LBD/HOCG/ BBBO	Sub Himalayan West Bengal & Sikkim	85.65	85.95	89.30	1968	Wireless	Conventional	

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99	Mekhligunj	Tista	Mekhligunj/ Coochbehar/ West Bengal	26.33	88.85	99.1 Domohani Rd Brdige (6)	LBD/HOCG/ BBBO	Sub Himalayan West Bengal & Sikkim	65.45	65.95	66.45	1996	Wireless	Conventional	
100	Dhubri	Brahmaputra/ Brahmaputra	Dhubri/Dhubri/ Assam	26.01	89.99	100.1 Goalpara (15)	LBD/HOCG/ BBBO	Assam and Meghalaya	27.62	28.62	30.36	1988	Wireless/ Telemetry	Conventional	
101	Annapurnaghat (Silchar)	Barak/ Barak	Silchar/Silchar/ Assam	24.83	92.80	101.1 Chottabekra (18)	MBD/HOCG/ BBBO	Assam and Meghalaya	18.83	19.83	21.84	1989	Wireless	Conventional	
102	Matizuri	Katakhal/Barak	Hailakhandi/ Hailakhandi/ Assam	24.85	92.61	102.1 Gharmura (12)	MBD/HOCG/ BBBO	Assam and Meghalaya	19.27	20.27	22.73	2007	Wireless	Conventional	
103	Karimgunj	Kushiyara/Barak	Karimgunj/Karimgunj/Assam	24.87	92.36	103.1 Annapurnaghat (12)	MBD/HOCG/ BBBO	Assam and Meghalaya	13.94	14.94	16.57	2010	Wireless	Conventional	
104	Kailashshar	Manu	Kailashshar/ North Tripura Tripura	24.32	91.99	104.1 Manughat (18-24)	MBD/HOCG/ BBBO	NMMT	24.34	25.34	25.79	1993	Wirless	Conventional	
105	Sonamura	Gumti	Sonamura/ West Tripura/ Tripura	23.47	91.27	105.1 Amarpur (15-21)	MBD/HOCG/ BBBO	NMMT	11.50	12.50	14.42	1993	Wireless	Conventional	
106	Narayanpur	Mayurakshi/ Ganga	Kandi/Murshidabad/ West Bengal	23.88	87.99	106.1 Tilpara Barrage (12-18)	DD/HOCM/ LGBO	Gangetic West Bengal	26.99	27.99	29.69	1995	Wireless	Conventional	
107	Gheropara	Ajoy/Ganga	Khairasol/ Bhirbum/ West Bengal	23.62	87.71	107.1 Jamtara (8-24) 107.2 Sikata Barrage (8-24)	DD/HOCM/ LGBO	Gangetic West Bengal	38.42	39.42	43.94	1978	Wireless	Conventional	
108	Harinkhola	Mundeshwari/ West Benagl	Arambagh/Hooghly/ West Bengal	22.88	87.78	108.1 Durgapur Barrage (20-26)	DD/HOCM/ LGBO	Gangetic West Bengal	11.80	12.80	14.58	1978	Wireless/ Telemetry	Conventional	
109	Mohanpur	Kangsabati/ Ganga	Medhinipur/ Medhinipur/ West Bengal	22.40	87.34	109.1 Kangsabati Dam (24) 109.2 D P Ghat (24)	DD/HOCM/ LGBO	Gangetic West Bengal	24.73	25.73	29.87	1978	Wireless	Conventional	
110	Rajghat	Subarnarekha/ East Flowing Rivers	Jaleswar/Balasore/ Odisha	21.77	87.16	110.1 Jamsaloghat (18-20) 110.2 Fekoghat (6-9)	ERD/HOCB/ MERO	Odisha	9.45	10.36	12.69	2008	Wireless/ Telemetry	Conventional	
111	N H 5 Road Bridge	Burhabalang/ East Flowing Rivers	Govindpur/ Balasore/ Odisha	21.55	86.92	111.1 Baripada (18-20) 111.2 Jayapur (16-18)	ERD/HOCB/ MERO	Odisha	7.21	8.13	9.50	1973	Wireless	Conventional	
112	Anandpur	Baitrani/East Flowing Rivers	Anandpur/ Keonjargarh/ Odisha	21.22	86.11	112.1 Swampatna (6-7)	ERD/HOCB/ MERO	Odisha	37.44	38.36	41.35	2011	Wireless/ Telemetry	Conventional/ Mathematical	

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113	Akhuapada	Baitrani/East Flowing Rivers	Akhuapada/ Bhadrak/ Odisha	20.92	86.28	113.1 Anandpur (18-20)	ERD/HOCB/ MERO	Odisha	17.83	17.83	21.56	1960	Wireless/ Telemetry	Conventional	
114	Jenapur Expressway	Brahmani/East Flowing Rivers	Jenapur/Jajpur/ odisha	20.88	86.01	114.1 Talcher (18-20)	ERD/HOCB/ MERO	Odisha	22.00	23.00	24.78	1975	Wireless/ Telemetry	Conventional	
115	Naraj	Mahanadi/ Mahanadi	Cuttack/ Cuttack/Odisha	20.47	85.77	115.1 Tikarapara (18-20)	ERD/HOCB/ MERO	Odisha	25.41	26.41	27.61	1982	Wireless	Conventional/ Mathematical	
116	Alipingal	Devi/Mahanadi	Alipingal/Jagitsinghpur/ Odisha	20.07	86.17	116.1 Naraj (12)	ERD/HOCB/ MERO	Odisha	10.85	11.76	13.11	2011	Wireless/ Telemetry	Conventional	
117	Nimapara	Kushbhadra/ Mahanadi	Nimapara/Puri/ Odisha	20.06	86.01	117.1 Naraj (12)	ERD/HOCB/ MERO	Odisha	9.85	10.76	11.60	1982	Wireless/ Telemetry	Conventional	
118	Purushottampur	Rishikulya/ East Flowing Rivers	Purushottampur/ Ganjam/ Odisha	19.50	84.87	118.1 Sorada (18-20)	ERD/HOCB/ MERO	Odisha	15.83	16.83	19.65	1990	Wireless/ Telemetry	Conventional	
119	Gunupur	Vamshadara/East Flowing Rivers	Gunupur/Koraput/ Odisha	19.08	83.81	119.1 Kutragada (03-06)	ERD/HOCB/ MERO	Odisha	83.00	84.00	88.75	1980	Wireless/ Telemetry	Conventional	
120	Kashinagar	Vamshadara/East Flowing Rivers	Kashinagar/Ganjam/ Odisha	18.85	83.87	120.1 Kutragada (06-09)	ERD/HOCB/ MERO	Odisha	53.60	54.60	58.93	1980	Wireless/ Telemetry	Conventional/ Mathematical	
121	Mandla	Narmada/ Narmada	Mandla/Mandla/ Madhya Pradesh	23.77	85.56	121.1 Dindori (11) 121.2 Mohgaon (04) 121.3 Mukki (12)	ND/SECB/ NBO	East Madhya Pradesh	437.20	437.80	439.41	1974	Wireless	Conventional	
122	Hoshangabad	Narmada/ Narmada	Hoshangabad/ Hoshangabad/ Madhya Pradesh	22.76	77.69	122.1 Barman(22) 122.2 Tawanagar (08)	ND/SECB/ NBO	West Madhya Pradesh	292.83	293.83	300.90	1973	Wireless	Conventional	
123	Garudeshwar	Narmada/ Narmada	Garudeshwar/ Bharuch/Gujarat	21.89	73.65	123.1 Sardar sarovar dam (12)	TD/HOCG/ NTBO	Gujarat	30.48	31.09	41.65	1970	Wireless/ Telemetry	Conventional	
124	Bharuch	Narmada/ Narmada	Bharuch/Bharuch/ Gujarat	21.70	73.00	124.1 Garudeshwar (12)	TD/HOCG/ NTBO	Gujarat	6.71	7.31	12.65	1970	Wireless/ Telemetry	Conventional	
125	Subash Bridge (Ahmedabad)	Sabarmati/ West Flowing Rivers	Ahmedabad/Ahmedabad/ Gujarat	23.06	72.59	125.1 Derol Bridge (04-06) 125.2 Hatmati Weir (04-06)	MD/HOCG/ NTBO	Gujarat	44.09	45.34	47.45	2006	Wireless/ Telemetry	Conventional	
126	Wanakbori Weir	Mahi/ West Flowing River	Wanakbori/Kheda	22.74	72.69	126.1 Kadana Dam (06) 126.2 Panam Dam (06)	MD/HOCG/ NTBO	Gujarat	71.00	72.54	76.10	2006	Wireless/ Telemetry	Conventional	

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127	Surat	Tapi/ Tapi	Surat/Surat/Gujarat	21.20	72.82	127.1 Hatnur Dam (24)	TD/HOCG/ NTBO	Gujarat	8.50	9.50	12.50	2006	Wireless/ Telemetry	Conventional	
128	Vapi Town	Damanganga/ West Flowing Rivers	Vapi Town/ Valsad/Gujarat	20.37	72.88	128.1 Madhuban Dam (03-06)	TD/HOCG/ NTBO	Gujarat	18.20	19.20	23.76	1976	Wireless/ Telemetry	Conventional	
129	Daman	Damanganga/ West Flowing Rivers	Daman/Daman/Diu	20.41	72.84	129.1 Madhuban Dam (05-09)	TD/HOCG/ NTBO	Gujarat	2.60	3.40	4.00	2004	Wireless/ Telemetry	Conventional	
130	Kopergaon	Godavari/ Godavari	Kopergaon/Ahmednagar/Maharashtra	19.89	74.49	130.1 N M Weir (05-06)	LGD/GC/ KGBO	Marathwada	490.90	493.68	499.17	1969	Wireless/ Telemetry	Conventional	
131	Gangakhed	Godavari/ Godavari	Gangakhed/Parbhani/Maharashtra	18.98	76.75	131.1 Dhalegaon (15-18)	LGD/GC/ KGBO	Marathwada	374.00	375.00	377.57	1947	Wireless/ Telemetry	Conventional	
132	Nanded	Godavari/ Godavari	Nanded/Nanded/ Maharastra	19.15	77.31	132.1 Dhalegaon (24-27) 132.2 Purna (03-06)	LGD/GC/ KGBO	Marathwada	353.00	354.00	357.10	2006	Wireless/ Telemetry	Conventional	
133	Bhandara	Wainganga/ Godavari	Bhandara/Bhandara/Maharashtra	21.15	79.66	133.1 Balaghat (15-18) 133.2 Rajegaon (15-18) 133.3 Sitakesa (15-18)	LGD/GC/ KGBO	Vidharbha	244.00	244.50	250.90	2005	Wireless/ Telemetry	Conventional	
134	Pauni	Wainganga/ Godavari	Pauni/Bhandara/ Maharashtra	20.79	79.65	134.1 Bhandara (06-09) 134.2 K R Bridge (06)	LGD/GC/ KGBO	Vidharbha	226.73	227.73	232.35	1994	Wireless/ Telemetry	Conventional	
135	Balharsha	Wardha/Godavari	Balharsha/Chandrapur/ Maharashtra	19.82	79.37	135.1 Hivra (24-30) 135.2 Nandgaon (24) 135.3 Ghugus (12) 135.4 P G Bridge (12-15)	LGD/GC/ KGBO	Vidharbha	171.50	174.00	176.00	1986	Wireless/ Telemetry	Conventional	
136	Kaleswaram	Godavari/ Godavari	Kaleswaram/Karimnagar/ Andhra Pradesh	18.82	79.91	136.1 Ashti (12) 136.2 Balharsha (12-15) 136.3 Mancherial (12)	LGD/GC/ KGBO	Telangana	103.50	104.75	107.05	1986	Wireless/ Telemetry	Conventional	
137	Jagdalpur	Indravathi/ Godavari	Jagdalpur/ Bastar/ Chhatisgarh	19.09	82.03	137.1 Nowrangpur (06-24) 137.2 Kosagumda (06-24)	LGD/GC/ KGBO	Chhatisgarh	539.50	540.80	544.68	1973	Wireless/ Telemetry	Conventional	
138	Eturunagaram	Godavari/ Godavari	Eturunagaram/ Warangal/ Andhra Pradesh	18.32	80.46	138.1 Kaleswaram (12) 138.2 Pathagudem (09) 138.3 Perur (03)	LGD/GC/ KGBO	Telangana	73.29	75.79	77.66	1990	Wireless/ Telemetry	Conventional	
139	Dummagudem	Godavari/ Godavari	Dummagudem/ Khammam/ Andhra Pradesh	17.85	80.88	139.1 Perur (12-15) 139.2 Taliperu dam (06)	LGD/GC/ KGBO	Telangana	53.00	55.00	60.25	1986	Wireless/ Telemetry	Conventional	
140	Bhadrachalam	Godavari/ Godavari	Bhadrachalam/ Khammam/ Andhra Pradesh	17.67	80.88	140.1 Perur (15-18) 140.2 Taliperu dam (09)	LGD/GC/ KGBO	Telangana	45.72	48.77	55.66	1986	Wireless/ Telemetry	Conventional	

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141	Kunavaram	Godavari/ Godavari	Kunavaram/ Khammam/ Andhra Pradesh	17.57	81.25	141.1 Perur (24-27) 141.2 Taliperu (15-18) 141.3 Konta (06)	LGD/GC/ KGBO	Telangana	37.74	39.24	51.30	1986	Wireless	Conventional	
142	Rajahmundry GNV Railway Bridge	Godavari/ Godavari	Rajahmundry/ East Godavari/ Andhra Pradesh	17.01	81.77	142.1 Koida (12)	LGD/GC/ KGBO	Coastal Andhra Pradesh	17.68	19.51	20.48	1986	Wireless/ Telemetry	Conventional	
143	Dowlaiswaram Barrage	Godavari/ Godavari	Dowlaiswaram/ East Godavari/ Andhra Pradesh	16.94	81.78	143.1 Koida (15)	LGD/GC/ KGBO	Coastal Andhra Pradesh	14.25	16.08	18.36	1986	Wireless/ Telemetry	Conventional	
144	Arjunwad	Krishna/Krishna	Arjunwad/ Kolhapur/ Maharashtra	16.78	74.63	144.1 Karad (24) 144.2 Samdoli (21)	LKD/KCC/ KGBO	Madhya Maharashtra	542.07	543.29	543.69	2005			Not in Operation. State Government is not interested
145	Deongaon Bridge	Bhima/ Krishna	Afzalpur/ Gulbarga/ Karnataka	17.17	76.33	145.1 Takli (18) 145.2 Wadakbal (18)	LKD/KCC/ KGBO	North Interior Karnataka	402.00	404.50	407.34	2006	Wireless/ Telemetry	Conventional	
146	Mantralayam	Tungabhadra	Mantralayam/ Kurnool/ Andhra Pradesh	15.94	77.42	146.1 Ollenur (18) 146.2 T Ramapuram (18)	LKD/KCC/ KGBO	Rayalaseema	310.00	312.00	318.77	2009	Wireless/ Telemetry	Conventional	
147	Nellore Anicut	North Pennar	Nellore/ Nellore/ Andhra Pradesh	14.47	79.99	147.1 Chennur (18) 147.2 Nandipally (18) 147.3 Somasila Project (09)	HD/CSRC/CSR O	Coastal Andhra Pradesh	15.91	17.28	18.70	1882	Wireless	Conventional	
148	Rammunshibagh (Srinagar)	Jhelum	Srinagar/Jammu and Kashmir	34.06	74.86	148.1 Sangam 148.2 Khanabal 148.3 Nunwan	CD, Jammu / Dir (M), Jammu/ IBO		1585.5	1586.45	1589.65	2014	Telephone/ Mobile/ Telemtry	Rainfall Runoff Model	
149	Narora Barrage	Ganga/Ganga	Narora/ Bulanshahar/ Uttar Pradesh	28.19	78.40	148.1 Haridwar (48)	MGD2/HOCD/U GBO	West Uttar Pradesh	NA	NA	NA	NA	Wireless	Conventional	
150	Tajewala Barrage (Hathnikund Barrage)	Yamuna/Ganga	Yamunanagar/ Yamunanagar/ Haryana	30.31	77.58	149.1 Paonta (06)	UYD/HOCN/ YBO	Haryana Chandigarh& Delhi					Wireless		Inflow Forecast Not in Operation
151	Gandhisagar Dam	Chambal/Ganga	Gandhisagar Dam/Mandasur/ Madhya Pradesh	24.65	75.61	150.1 Tal (12-21) 150.2 Mahidpur (12-20)	CD/HOCN/ YBO	West Madhya Pradesh	399.90	399.90	399.90	2011	Telemetry	Mathematical	
152	Massanjore Dam	Mayurakshi/Ganga	Massanjore Dam/ Santhal Parganas/ Jharkhand	24.11	87.31	151.1 Maharo (24) 151.2 Kusiyari (24) 151.3 Haripur (24)	DD/HOCM/ LGBO	Jharkhand	121.31		122.87	1999	Wireless/ Telemetry	Conventional	
153	Tilpara Barrage	Mayurakshi/Ganga	Tilpara Dam/Suri/ Birbhum/ West Bengal	23.95	87.53	152.1 Massanjore Dam (24) 152.2 Tantoloi (24)	DD/HOCM/ LGBO	Gangetic West Bengal	62.79		67.05	1978	Wireless/ Telemetry	Conventional	
154	Tenughat Dam	Damodar/Ganga	Tenughat Dam	23.72	85.84	153.1 Hendgir (24) 153.2 Ramgarh (24)	DD/HOCM/ LGBO	Jharkhand	268.83		265.56	1985	Wireless/ Telemetry	Conventional	
155	Panchet Dam	Damodar/Ganga	Panchet Dam/ Dhanbad/ Jharkhand	23.68	86.75	154.1 Pupunki (24) 154.2 Tenughat Dam (24) 154.3 Konar Dam (24)	DD/HOCM/ LGBO	Jharkhand	132.59		132.89	1959	Wireless/ Telemetry	Conventional	

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156	Durgapur Barrage	Damodar/Ganga	Durgapur/ Burdwan/ West Bengal	23.48	87.31	155.1 Panchet Dam (24) 155.2 Maithon Dam (24)	DD/HOCM/ LGBO	Gangetic West Bengal	64.47		64.47	2011	Wireless/ Telemetry	Conventional	
157	Maithon Dam	Barakar/ Damodar	Maithon Dam/ Dhanbad/ Jharkhand	23.78	86.81	156.1 Nandadih (24) 156.2 Tilaiya Dam (24) 156.3 Barkisaraia (24)	DD/HOCM/ LGBO	Jharkhand	150.88		151.79	1959	Wireless/ Telemetry	Conventional	
158	Kangsabati Dam	Kangsabati	Kangsabati Dam/Bankura West Bengal	22.96	86.75	157.1 Simulia (24) 157.2 Purihalsa (24) 157.3 Tusuma (24) 157.4 Kharidwar (24) 157.5 Phulbaria (24)	DD/HOCM/ LGBO	Gangetic West Bengal	134.11		134.71	1978	Wireless	Conventional	
159	Hirakud	Mahanadi/ Mahanadi	Burla/ Sambalpur/ Odisha	21.52	83.85	158.1 Basantpur (24) 158.2 Kurubata (24) 158.3 Sundergarh (24) 158.4 Kelo (6-18) 158.5 Paramapur (4-18)	MahanadiDiv/HOCB/MERO	Odisha	192.02		192.30	1978	Wireless/ Telemetry	Conventional/ Mathematical	
160	Gotta Barrage	Vamsadhara/ East Flowing Rivers	Gotta Barrage/ Srikakulam/ Andhra Pradesh	18.69	83.96	159.1 Kutragada (12)	ERD/HOCB/ MERO	Coastal Andhra Pradesh	34.84		39.92	1999	Wireless/ Telemetry	Conventional	
161	Dantiwada Dam	Banas/ West Flowing Rivers	Dantiwada dam/Palanpur/ Banaskanta/ Gujarat	24.34	72.34	160.1 Sarotry (2-5) 160.2 Chitrasani (2-5)	MD/HOCG/ NTBO	Gujarat	182.88	185.06	186.04	1973	Wireless/ Telemetry	Conventional	
162	Dharoi Dam	Sabarmati/ West Flowing Rivers	Dharoi Dam/ Mehsana/ Gujarat	24.00	72.86	161.1 Kheroj (2-5) 161.2 Harnav Weir (2-5)	MD/HOCG/ NTBO	Gujarat	187.45	192.25	189.63	1990	Wireless/ Telemetry	Conventional	
163	Kadana Dam	Mahi/ West Flowing Rivers	Kadana Dam/ Panchmahal/ Gujarat	23.31	73.83	162.1 Paderdibadi (2-7) 162.2 Anas PH -II (2-7)	MD/HOCG/ NTBO	Gujarat	126.19	127.71	127.74	1989	Wireless/ Telemetry	Conventional	
164	Hathnur Dam	Tapi/ Tapi	Hathnur Dam/ Jalgaon/ Maharashtra	21.07	75.95	163.1 Burhanpur (12) 163.2 Yerli (12)	TD/HOCG/ NTBO	Marathwada	212.02	214.00	214.00	1989	Wireless/ Telemetry	Conventional	
165	Ukai Dam	Tapi/ Tapi	Ukai Dam/ Surat/ Gujarat	21.25	73.59	164.1 Gidadhe (6) 164.2 Sarangkheda (6)	TD/HOCG/ NTBO	Gujarat	102.41	105.16	105.51	1990	Wireless/ Telemetry	Conventional	
166	Madhuban Dam	Damanganga/ West Flowing River	Madhuban Dam/ Valsad/ Gujarat	20.19	73.06	165.1 Ozarkheda (6) 165.2 Nanipalsan (6)	TD/HOCG/ NTBO	Gujarat	79.86	82.40	80.60	1993	Wireless/ Telemetry	Conventional	
167	Jailwadi Dam	Godavari/Godavari	Paithan/ Aurangabad/ Maharashtra	19.48	75.37	166.1 N M Weir (12)	LGD/GC/ KGBO	Marathwada	463.91	465.58	464.69	1990	Wireless	Conventional	
168	Singur Dam	Manjira/ Godavari	Singur Dam/ Medak/ Andhra Pradesh	17.75	77.93	167.1 Saigaon (24)	LGD/GC/ KGBO	Telangana	523.60	523.60	523.60	1999	Wireless	Conventional	
169	Nizamsagar Dam	Manjira/ Godavari	Nizamsagar dam/ Nizamabad/ Andhra Pradesh	18.22	77.96	168.1 Singur Dam (24)	LGD/GC/ KGBO	Telangana	428.24	428.24	428.24	1999	Wireless	Conventional	

S.No	Name of FF Station/Type	River/Basin	Nearest Town/Vill/District/State	Lat (N)	Long (E)	Base Station (TT in hrs)	Div/Circle/ Orgn	Met Sub Division as per IMD	WL (m)	DL (m)	HFL		Mode of Data Collection	Methodology/ Model used for FF Formulation	Remarks
											(m)	Year			
170	Sriramsagar	Godavari/Godavari	Pochampad/ Nizamabad/ Andhra Pradesh	18.97	78.34	169.1 Nanded (24) 169.2 Nizamsagar (24) 169.3 Degloor (24)	LGD/GC/ KGBO	Telangana	332.54	333.15	332.72	1990	Wireless	Conventional	
171	Almatti Dam	Krishna/ krishna	Almatti Dam/Bijapur/ Karnataka	16.33	75.88	170.1 Kurundwad (48) 170.2 Sadalga (48) 170.3 Gokak (27)	LKD/KCC/ KGBO	North Interior Karnataka	519.60	519.60	519.60	2002	Wireless	Conventional	
172	Narayanpur Dam	Krishna/ krishna	Narayanpur Dam/ Gulbarga/ Karnataka	16.20	76.36	171.1 Kurundwad (54) 171.2 Sadalga (54) 171.3 Gokak (35) 171.4 Almatti Dam (09)	LKD/KCC/ KGBO	North Interior Karnataka	492.25	492.25	492.22	2008	Wireless	Conventional	
173	Priyadharshini Jurala Project	Krishna/ krishna	Gadwal/ Mahbubnagar/ Andhra Pradesh	16.33	77.70	172.1 Huvinhedgi (18) 172.2 Yadgir (18) 172.3 Deosugur (06)	LKD/KCC/ KGBO	Telangana	318.52	318.52	318.50	2012	Wireless	Conventional	
174	Tungabhadra Dam	Tungabhadra/ Krishna	Hospet/ Bellary/ Karnataka	15.26	76.34	173.1 Harlahalli (12) 173.2 Marol (12)	LKD/KCC/ KGBO	South Interior Karnataka	497.74	497.74	497.74	1994	Wireless	Conventional	
175	Srisailam Dam	Krishna/ krishna	Srisailam/ Kurnool/ Andhra Pradesh	16.08	78.90	174.1 Mantralayam (18) 174.2 Krishna Agraharam (18)	LKD/KCC/ KGBO	Rayalaseema	269.75	269.75	273.25	2009	Wireless	Conventional	
176	Prakasam Barrage	Krishna/ krishna	Vijayawada/ Krishna/ Andhra Pradesh	16.50	80.60	175.1 Wadenapalli (16) 175.2 Madhira (12) 175.3 Polampally (12) 175.4 Paleru Bridge (12) 175.5 Keesara (12)	LKD/KCC/ KGBO	Coastal Andhra Pradesh	18.30		21.50	1903	Wireless	Conventional	

Basinwise -Riverwise- Flood Forecasting Information in India during Flood Season 2015												
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						Level (m)	Date/ Month/ Year	Level (m)	Date and Time DD/MM/YY)	No.of Forecasts issued	No.of Forecasts within limits	Percent-age of accuracy
1	2	3	4	5	6	7	8	9	10	11	12	13.00
	Indus Basin											
1	Jhelum	Rammunshibagh	Jammu and Kashmir	1585.53	1586.45	1589.7	08-09-2014	1587.26	25-06-2015	17	13	76.47
	Ganga Basin											
2	Alaknanda	Srinagar	Uttarakhand	535.00	536.00	537.90	17-06-2013	536.10	26-Jun-15 05	5	5	100.00
3	Ganga	Rishikesh	Uttarakhand	339.50	340.50	341.72	05/09/1995	339.75	26-Jun-15 12	2	2	100.00
4	Ganga	Haridwar	Uttarakhand	293.00	294.00	296.30	19/09/2010	294.00	26-Jun-15 11	0	0	-
5	Ganga	Narora Barrage	Uttar Pradesh			180.61	23/09/2010	179.070	01-Jun-15 01	46	46	100.00
6	Ganga	Kannauj	Uttar Pradesh	124.97	125.97	126.78	27/09/2010	124.980	14-Aug-15 09	1	1	100.00
7	Ganga	Ankinghat	Uttar Pradesh	123.00	124.00	124.49	28/09/2010	123.150	14-Aug-15 01	5	5	100.00
8	Ganga	Kanpur	Uttar Pradesh	113.00	114.00	114.08	29/09/2010	112.140	15-Aug-15 05	6	6	100.00
9	Ganga	Dalmau	Uttar Pradesh	98.36	99.36	99.84	03/08/1973	98.000	15-Aug-15 09	0	0	-
10	Ganga	Phphamau	Uttar Pradesh	83.73	84.73	87.98	08/09/1978	81.63	31-Jul-15 00	0	0	-
11	Ganga	Allahabad Chhatnag	Uttar Pradesh	83.73	84.73	88.03	08/09/1978	80.74	31-Jul-15 01	0	0	-
12	Ganga	Mirzapur	Uttar Pradesh	76.72	77.72	80.34	09/09/1978	74.09	31-Jul-15 09	0	0	-
13	Ganga	Varanasi	Uttar Pradesh	70.26	71.26	73.90	09/09/1978	68.81	31-Jul-15 23	0	0	-
14	Ganga	Ghazipur	Uttar Pradesh	62.11	63.11	65.22	09/09/1978	61.96	01-Aug-15 15	0	0	-
15	Ganga	Buxar	Bihar	59.32	60.32	62.09	1948	58.98	23-Aug-15 20	0	0	-
16	Ganga	Ballia	Uttar Pradesh	56.62	57.62	60.25	14/09/2003	58.14	24-Aug-15 03	16	16	100.00
17	Ganga	Patna Dighaghat	Bihar	49.45	50.45	52.52	23/08/1975	49.77	24-Aug-15 11	7	7	100.00
18	Ganga	Patna Gandhighat	Bihar	47.60	48.60	50.27	14/08/1994	48.67	24-Aug-15 19	22	22	100.00
19	Ganga	Hathidah	Bihar	40.76	41.76	43.15	07/08/1971	41.49	25-Aug-15 00	14	14	100.00
20	Ganga	Munger	Bihar	38.33	39.33	40.99	19/09/1976	38.04	25-Aug-15 23	0	0	-
21	Ganga	Bhagalpur	Bihar	32.68	33.68	34.20	17/09/2003	33.19	25-Aug-15 06	10	10	100.00
22	Ganga	Kahalgaon	Bihar	30.09	31.09	32.87	17/09/2003	31.49	26-Aug-15 04	28	27	96.43
23	Ganga	Sahibgunj	Jharkhand	26.25	27.25	30.91	1998	28.17	27-Aug-15 06	24	24	100.00
24	Ganga	Farakka	West Bengal	21.25	22.25	25.14	07/09/1998	23.05	26-Aug-15 23	69	68	98.55
25	Ramganga	Moradabad	Uttar Pradesh	189.60	190.60	192.88	21/09/2010	190.000	02-Jul-15 23	15	14	93.00
26	Ramganga	Bareilly	Uttar Pradesh	162.70	163.70	162.88	06/8/1978	160.640	13-Jul-15 17	0	0	-
27	Yamuna	Tajewala Weir	Haryana			338.90	17/06/1013	334.50	16-Aug-15 00	0	0	-
28	Yamuna	Mawi	Uttar Pradesh	230.00	230.85	232.45	26/09/1988	230.38	17-Aug-15 11	8	7	88.00
29	Yamuna	Delhi Rly Bridge	NCT Delhi	204.00	204.83	207.49	06/09/1978	204.74	18-Aug-15 05	13	13	100.00
30	Yamuna	Mathura	Uttar Pradesh	164.20	165.20	169.73	08/09/1978	165.00	18-Aug-15 01	30	30	100.00

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						Level (m)	Date/ Month/ Year	Level (m)	Date and Time DD/MM/YY)	No.of Forecasts issued	No.of Forecasts within limits	Percent-age of accuracy
1	2	3	4	5	6	7	8	9	10	11	12	13.00
31	Yamuna	Agra	Uttar Pradesh	151.40	152.40	154.76	09/09/1978	149.75	20-Aug-15 14	0	0	-
32	Yamuna	Etawa	Uttar Pradesh	120.92	121.92	126.13	11/09/1978	119.19	21-Aug-15 18	0	0	-
33	Yamuna	Auraiya	Uttar Pradesh	112.00	113.00	118.19	25/08/1996	112.52	29-Jul-15 01	3	3	100.00
34	Yamuna	Kalpi	Uttar Pradesh	107.00	108.00	112.98	25/08/1996	107.21	29-Jul-15 10	3	3	100.00
35	Yamuna	Hamirpur	Uttar Pradesh	102.63	103.63	108.59	12/09/1983	101.38	29-Jul-15 16	0	0	-
36	Yamuna	Chilaghat	Uttar Pradesh	99.00	100.00	105.16	06-09-1978	97.15	29-Jul-15 09	0	0	-
37	Yamuna	Naini	Uttar Pradesh	83.74	84.74	87.99	08-09-1978	81.26	31-Jul-15 08	0	0	-
38	Sahibi	Dhansa	NCT Delhi	211.44	212.44	213.58	06-08-1977	210.30	21-Aug-15 01	0	0	-
39	Chambal	Gandhisagar Dam	Madhya Pradesh	399.99				399.07	07-Aug-15 08	15	10	67.00
40	Betwa	Mohana	Uttar Pradesh	121.66	122.66	133.69	11/09/1983	115.29	16-Aug-15 09	0	0	-
41	Betwa	Sahjina	Uttar Pradesh	103.54	104.54	108.67	12/09/1983	100.97	09-Jul-15 15	0	0	-
42	Ken	Banda	Uttar Pradesh	103.00	104.00	113.29	07/07/2009	97.85	05-Aug-15 09	0	0	-
43	Gomati	Lucknow	Uttar Pradesh	108.50	109.50	110.85	10/09/1971	104.35	16-Jul-15 06	0	0	
44	Gomati	Jaunpur	Uttar Pradesh	73.07	74.07	77.74	22/09/1971	68.54	17-Jul-15 00	0	0	-
45	SAI	Raibareli	Uttar Pradesh	100.00	101.00	104.81	17/09/1982	98.58	18-Jul-15 15	0	0	-
46	Ghaghra	Elgin Bridge	Uttar Pradesh	105.07	106.07	107.56	10-10-2009	106.49	23-Aug-15 06	72	67	88.00
47	Ghaghra	Ayodhya	Uttar Pradesh	91.73	92.73	94.01	11-10-2009	92.78	24-Aug-15 12	56	55	98.00
48	Ghaghra	Turtipar	Uttar Pradesh	63.01	64.01	66.00	28/08/1998	64.01	25-Aug-15 08	41	40	98.00
49	Ghaghra	Darauli	Bihar	59.82	60.82	61.74	29/08/1998	60.90	26-Aug-15 00	43	43	100.00
50	Ghaghra	Gangpur Siswan	Bihar	56.04	57.04	58.01	18/09/1983	56.43	26-Aug-15 07	9	9	100.00
51	Ghaghra	Chhapra	Bihar	52.68	53.68	54.59	03/09/1982	49.58	25-Aug-15 16	0	0	-
52	Rapti	Balrampur	Uttar Pradesh	103.62	104.62	105.25	11/09/2000	104.52	23-Aug-15 16	12	10	83.00
53	Rapti	Bansi	Uttar Pradesh	83.90	84.90	85.82	21/08/1998	83.89	24-Aug-15 10	0	0	-
54	Rapti	Gorakpur_Birdghat	Uttar Pradesh	73.98	74.98	77.54	23/08/1998	73.22	23-Aug-15 18	0	0	-
55	Sone	Inderpuri	Bihar	107.20	108.20	108.85	23/08/1975	105.30	17-Jul-15 08	0	0	-
56	Sone	Koelwar	Bihar	54.52	55.52	58.88	20/07/1971	52.10	24-Aug-15 08	0	0	-
57	Sone	Maner	Bihar	51.00	52.00	53.79	10/09/1976	50.37	25-Aug-15 00	0	0	-
58	PunPun	Sripalpur	Bihar	49.60	50.60	53.91	18/09/1976	51.89	19-Jul-15 15	15	13	83.00
59	Gandak	Khadda	Uttar Pradesh	95.00	96.00	97.50	23/07/2002	95.60	21-Aug-15 20	34	34	100.00
60	Gandak	Chatia	Bihar	68.15	69.15	70.04	26/07/2002	67.51	24-Aug-15 06	0	0	-

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						Level (m)	Date/ Month/ Year	Level (m)	Date and Time DD/MM/YY)	No.of Forecasts issued	No.of Forecasts within limits	Percent-age of accuracy
1	2	3	4	5	6	7	8	9	10	11	12	13.00
61	Gandak	Rewaghat	Bihar	53.41	54.41	55.41	17/09/1986	53.31	24-Aug-15 11	0	0	-
62	Gandak	Hazipur	Bihar	49.32	50.32	50.93	1948	48.89	24-Aug-15 09	0	0	-
63	Burhi Gandak	Lalbeghiaghat	Bihar	62.20	63.20	67.09	30/07/1975	63.28	25-Aug-15 17	14	14	100.00
64	Burhi Gandak	Muzaffarpur	Bihar	51.53	52.53	54.29	15/08/1987	52.02	01-Sep-15 13	12	12	100.00
65	Burhi Gandak	Samastipur	Bihar	45.02	46.02	49.38	15/08/1987	46.06	03-Sep-15 13	15	15	100.00
66	Burhi Gandak	Rosera	Bihar	41.63	42.63	46.35	16/08/1987	43.04	04-Sep-15 07	16	16	100.00
67	Burhi Gandak	Khagaria	Bihar	35.58	36.58	39.22	1976	36.84	27-Aug-15 04	20	20	100.00
68	Bagmati	Benibad	Bihar	47.68	48.68	50.01	12/07/2004	49.39	02-Sep-15 20	54	54	100.00
69	Bagmati	Hayaghat	Bihar	44.72	45.72	48.96	14/08/1987	44.88	06-Sep-15 05	4	4	100.00
70	Adhwara Group	Kamtaul	Bihar	49.00	50.00	52.99	12/08/1987	49.98	06-Sep-15 05	11	11	100.00
71	Adhwara Group	Ekmighat	Bihar	45.94	46.94	49.52	12/07/2004	46.28	06-Sep-15 02	9	9	100.00
72	Kamla Balan	Jhanjharpur	Bihar	49.00	50.00	53.01	10/07/2004	51.69	02-Sep-15 23	113	113	100.00
73	Kosi	Basua	Bihar	46.75	47.75	49.17	25/08/2010	47.29	14-Jun-15 20	120	120	100.00
74	Kosi	Baltara	Bihar	32.85	33.85	36.40	15/08/1987	34.99	23-Aug-15 18	92	90	98.00
75	Kosi	Kursela	Bihar	29.00	30.00	32.04	06/09/1998	30.49	25-Aug-15 05	29	29	100.00
76	Mahananda	Dhengraghat	Bihar	34.65	35.65	38.09	1968	36.53	01-Sep-15 13	39	39	100.00
77	Mahananda	Jhawa	Bihar	30.40	31.40	33.51	14/08/1987	31.70	02-Sep-15 11	40	40	100.00
78	Mayurakshi	Massanjore Dam	Jharkhand	121.31		122.87	25/09/1999	120.08	02-Aug-15 23	18	18	100.00
79	Mayurakshi	Tilpara Barrage	West Bengal	62.79		67.05	27/09/1978	62.79	31-Jul-15 11	19	19	100.00
80	Mayurakshi	Narayanpur	West Bengal	26.99	27.99	29.69	27/09/1995	27.02	03-Aug-15 06	1	0	0.00
81	Ajoy	Gheropara	West Bengal	38.42	39.42	43.94	27/09/1978	40.00	02-Aug-15 23	2	1	50.00
82	Damodar	Tenughat Dam	Jharkhand	268.83		265.56	17/09/1985	262.49	03-Aug-15 06	33	33	100.00
83	Damodar	Panchet Dam	Jharkhand	132.59		132.89	02/10/1959	128.79	04-Aug-15 00	62	61	98.00
84	Damodar	Durgapur Barrage	West Bengal	64.47		64.47	31/10/2002	64.47	04-Aug-15 00	59	59	100.00
85	Barakar	Maithon Dam	Jharkhand	150.88		151.79	02/10/1959	149.33	04-Aug-15 01	48	48	100.00
86	Mundeshwari	Harinkhola	West Bengal	11.80	12.80	14.58	29/09/1978	12.50	04-Aug-15 14	4	4	100.00
87	Kangsabati	Kangsabati Dam	West Bengal	134.11		134.71	02/09/1978	132.31	04-Aug-15 12	16	16	100.00
88	Kangsabati	Mohanpur	West Bengal	24.73	25.73	29.87	02/09/1978	24.52	30-Jul-15 15	0	0	-

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						Level (m)	Date/ Month/ Year	Level (m)	Date and Time DD/MM/YY)	No.of Forecasts issued	No.of Forecasts within limits	Percent-age of accuracy
1	2	3	4	5	6	7	8	9	10	11	12	13.00
	Brahmaputra Basin											
89	Brahmaputra	Dibrugrah	Assam	103.24	104.24	106.48	03/09/1998	106.06	01-Sep-15 06	126	126	100.00
90	Brahmaputra	Neamatighat	Assam	84.04	85.04	87.37	11/07/1991	86.73	01-Sep-15 21	124	124	100.00
91	Brahmaputra	Tezpur	Assam	64.23	65.23	66.59	27/08/1988	65.92	03-Sep-15 00	55	55	100.00
92	Brahmaputra	Guwahati	Assam	48.68	49.68	51.46	21/07/2004	50.21	04-Sep-15 04	33	32	97.00
93	Brahmaputra	Goalpara	Assam	35.27	36.27	37.43	31/07/1954	36.77	05-Sep-15 08	54	53	98.00
94	Brahmaputra	Dhubri	Assam	27.62	28.62	30.36	28/08/1988	29.66	05-Sep-15 18	176	176	100.00
95	Burhidihing	Naharkatia	Assam	119.40	120.40	122.69	17/06/1973	119.88	01-Sep-15 09	5	5	100.00
96	Burhidihing	Khowang	Assam	101.11	102.11	104.16	02-09-2015	104.16	02-Sep-15 13	31	30	97.00
97	Desang	Nanglamoraghat	Assam	93.46	94.46	96.49	06/09/1998	95.10	04-Sep-15 02	47	47	100.00
98	Dikhow	Shivsagar	Assam	91.40	92.40	95.62	08/07/1974	93.62	25-Jul-15 11	34	33	97.00
99	Subansiri	Badatighat	Assam	81.53	82.53	86.84	28/06/1972	82.55	02-Sep-15 16	62	62	100.00
100	Dhansiri (S)	Golaghat	Assam	88.50	89.50	91.30	11/10/1986	89.57	05-Sep-15 12	18	17	94.00
101	Dhansiri (S)	Numaligarh	Assam	76.42	77.42	79.87	24/09/1985	78.90	05-Sep-15 18	173	171	99.00
102	Jiabharali	Jiabharali_NTX	Assam	76.00	77.00	78.50	26/07/2007	78.10	15-Jul-15 13	407	406	97.75
103	Kopilli	Kampur	Assam	59.50	60.50	61.86	16/06/1973	60.91	03-Sep-15 05	8	8	100.00
104	Kopilli	Dharmatul	Assam	55.00	56.00	58.09	21/07/2004	56.29	06-Sep-15 19	34	34	100.00
105	Puthimari	Puthimari _NHX	Assam	50.81	51.81	55.08	31/08/2008	53.93	31-Aug-15 07	202	196	97.00
106	Pagladiya	Pagladia_NTX	Assam	51.75	52.75	55.45	08/07/2004	53.89	31-Aug-15 06	42	41	98.00
107	Beki	Beki NHX	Assam	44.10	45.10	46.20	04/08/2000	45.84	31-Aug-15 06	206	205	99.51
108	Manas	Manas NHX	Assam	47.81	48.42	50.08	15/09/1984	49.27	21-Aug-15 05	17	17	100.00
109	Sankosh	Golakganj	Assam	28.94	29.94	30.95	08/09/2007	30.24	21-Aug-15 11	48	44	91.00
110	Raidak-I	Tufanganj	West Bengal	34.22	35.30	36.36	21/07/1993	35.46	22-Aug-15 04	32	22	69.00
111	Torsa	Ghughumari	West Bengal	39.80	40.41	41.46	03/08/2000	40.20	30-Aug-15 23	48	47	98.00
112	Jaldhaka	NH-31	West Bengal	80.00	80.90	82.33	28-07-1972	80.42	01-Sep-15 11	21	19	90.00
113	Jaldhaka	Mathabhanga	West Bengal	47.70	48.20	49.85	07/09/2007	82.32	02-Sep-15 01	11	5	45.00
114	Tista	Domohani	West Bengal	85.65	85.95	89.30	14/10/1968	86.50	01-Jul-15 11	100	95	95.00
115	Tista	Mekhliganj	West Bengal	65.45	65.95	66.45	13/07/1996	65.42	01-Jul-15 20	0	0	-
	Barak & Meghna Basins											
116	Barak	APGhat	Assam	18.83	19.83	21.84	01/08/1989	20.29	27-Aug-15 14	36	36	100.00
117	Katakhal	Matizuri	Assam	19.27	20.27	22.73	10/09/2007	22.42	28-Aug-15 09	50	50	100.00
118	Kushiyara	Karimganj	Assam	13.94	14.94	16.57	10/06/2010	15.97	27-Aug-15 12	65	65	100.00
119	Manu	Kailashar	Tripura	24.34	25.34	25.79	07/06/1993	22.15	18-Jul-15 08	0	0	-
120	Gumti	Sonamura	Tripura	11.50	12.50	14.42	23/07/1993	11.16	19-Jul-15 22	0	0	-

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Sl.No.	Name of the river	Name of FF site	Name of State	Warning Level (m)	Danger level (m)	Highest Flood Level		Maximum Level -2015				
						Level (m)	Date/ Month/ Year	Level (m)	Date and Time DD/MM/YY)	No.of Forecasts issued	No.of Forecasts within limits	Percent-age of accuracy
1	2	3	4	5	6	7	8	9	10	11	12	13.00
	Eastern Rivers (Excluding Mahanadi)											
121	Subernarekna	Rajghat	Odisha	9.45	10.36	12.69	19/06/2008	12.08	29-Jul-15 13	5	5	100.00
122	Burhabalang	NH_5 _Road Bridge	Odisha	7.21	8.13	9.50	12/10/1973	7.60	29-Jul-15 11	2	1	50.00
123	Baitarni	Anandpur	Odisha	37.44	38.36	41.35	23-09-2011	39.70	28-Jul-15 22	6	6	100.00
124	Baitarni	Akhuapada	Odisha		17.83	21.95	16/08/1960	19.20	29-Jul-15 09	5	5	100.00
125	Brahmani	Jenapur	Odisha	22.00	23.00	24.78	20/08/1975	21.20	06-Aug-15 07	0	0	-
126	Rushikuluya	Purushottampur	Odisha	15.83	16.83	19.65	04/11/1990	16.35	16-Sep-15 17	2	2	100.00
127	Vamsadhara	Gunupur	Odisha	83.00	84.00	88.75	17/09/1980	83.15	16-Sep-15 12	0	0	-
128	Vamsadhara	Kashinagar	Odisha	53.60	54.60	58.93	18/09/1980	54.99	16-Sep-15 15	9	8	89.00
129	Vamsadhara	Gotta Barrage	Andhra Pradesh	34.84	34.84	39.92	07/10/1999	38.10	10-Oct-15 10	0	0	-
	Mahanadi Basin											
130	Mahanadi	Hirakud Dam	Odisha	192.02		192.30	30/01/1998	192.03	29-Sep-15 12	42	42	100.00
131	Mahanadi	Naraj	Odisha	25.41	26.41	27.61	31/08/1982	25.30	23-Sep-15 18	0	0	-
132	Mahanadi	Alipingal Devi	Odisha	10.85	11.76	13.11	11-09-2011	7.10	24-Sep-15 10	0	0	-
133	Mahanadi	Nimapara	Odisha	9.85	10.76	11.60	31/08/1982	4.28	28-Aug-15 09	0	0	-
	Godavari Basin											
134	Godavari	Kopergaon	Maharashtra	490.90	493.68	499.17	1969	490.00	19-Sep-15 08	0	0	-
135	Godavari	Jaikwadi Dam	Maharashtra	463.91		464.69	12/10/1990	456.44	06-Aug-15 06	0	0	-
136	Godavari	Gangakhed	Maharashtra	374.00	375.00	377.57	1947	364.75	01-Jun-15 01	0	0	-
137	Godavari	Nanded	Maharashtra	353.00	354.00	357.10	06/08/2006	343.21	23-Jul-15 01	0	0	-
138	Manjira	Singur Dam	Telangana	523.60		523.60	15/10/1999	515.95	01-Jun-15 06	0	0	-
139	Manjira	Nizamsagar Dam	Telangana	428.24		428.24	15/10/1999	420.15	01-Jun-15 01	0	0	-
140	Godavari	Sriram Sagar	Telangana	332.54		332.72	13/10/1990	322.56	01-Jun-15 01	0	0	-
141	Wainganga	Bhandara	Maharashtra	244.00	244.50	250.90	16/09/2005	242.10	05-Aug-15 12	0	0	-
142	Wainganga	Pauni	Maharashtra	226.73	227.73	232.35	07/09/1994	227.24	14-Aug-15 08	0	0	-
143	Wardha	Balharsha	Maharashtra	171.50	174.00	176.00	15/08/1986	170.97	18-Sep-15 08	0	0	-
144	Godavari	Kaleswaram	Telangana	103.50	104.75	107.05	15/08/1986	100.80	15-Aug-15 06	0	0	-
145	Indravati	Jagdalpur	Chhatisgarh	539.50	540.80	544.68	09/07/1973	543.03	18-Sep-15 03	24	24	100.00
146	Godavari	Eturunagaram	Telangana	73.32	75.82	77.66	24/08/1990	72.80	22-Jun-15 08	0	0	-
147	Godavari	Dummagudam	Telangana	53.00	55.00	60.25	16/08/1986	51.44	22-Jun-15 06	0	0	-
148	Godavari	Bhadrachalam	Telangana	45.72	48.77	55.66	16/08/1986	45.11	22-Jun-15 19	0	0	-
149	Godavari	Kunavaram	Andhra Pradesh	37.74	39.24	51.30	16/08/1986	34.70	23-Jun-15 05	0	0	-
150	Godavari	Rajamundry	Andhra Pradesh	17.68	19.51	20.48	16/08/1986	15.70	21-Sep-15 12	0	0	-
151	Godavari	Dowalaiswaram	Andhra Pradesh	14.25	16.08	18.36	16/08/1986	14.04	14-Jul-15 13	0	0	-

Basinwise -Riverwise- Flood Forecasting Information in India during Flood Season 2015												
Sl.No.	Name of the river	Name of FF site	Name of State	Warning Level (m)	Danger level (m)	Highest Flood Level		Maximum Level -2015				
						Level (m)	Date/ Month/ Year	Level (m)	Date and Time DD/MM/YY)	No.of Forecasts issued	No.of Forecasts within limits	Percent-age of accuracy
1	2	3	4	5	6	7	8	9	10	11	12	13.00
	Krishna Basin											
152	Krishna	Arjunwad	Maharashtra	542.07	543.29	543.69	05-08-2005			0	0	
153	Krishna	Alamati Dam	Karnataka	519.60		519.60	18-09-2002	515.96	10-Aug-15 18	8	8	100.00
154	Krishna	Narayanpur Dam	Karnataka	492.25		492.22	26-09-2008	492.06	11-Sep-15 07	0	0	-
155	Krishna	Priyadarshini	Telangana	318.52		318.50	09-10-2012	318.50	28-Aug-15 15	0	0	-
156	Krishna	Srisailam Dam	Andhra Pradesh	269.75		273.25	03-10-2009	258.70	19-Oct-15 06	15	14	93.33
157	Krishna	Prakasham Barrage	Andhra Pradesh	18.30		21.50	07-10-1903	17.39	19-Jun-15 17	5	4	80.00
158	Bhima	Deongaon	Karnataka	402.00	404.50	407.34	13-08-2006	394.50	12-Sep-15 17	0	0	-
159	Tungabhadra	Tungabhadra Dam	Karnataka	497.74		497.74	08-10-1994	495.73	25-Aug-15 18	76	74	97.37
160	Tungabhadra	Mantralayam	Andhra Pradesh	310.00	312.00	318.77	02-10-2009	310.09	08-Sep-15 07	2	2	100.00
	Southern River System:											
161	Pennar	Nellore	Andhra Pradesh	15.91	17.28	18.70	30-11-1882	15.03	17-Nov-15 18	0	0	-
	Western River Systems:											
162	Banas	Dantiwada Dam	Gujarat	182.88	185.06	186.04	01/09/1973	183.40	29-Jul-15 10	10	10	100.00
163	Sabarmati	Dharoi Dam	Gujarat	187.45	192.25	189.63	03/09/1990	189.35	29-Jul-15 13	17	17	100.00
164	Sabarmati	Ahmedabad	Gujarat	44.09	45.34	47.45	19/08/2006	46.14	30-Jul-15 02	3	1	33.33
165	Mahi	Kadana Dam	Gujarat	126.19	127.71	127.74	09/09/1989	126.70	25-Aug-15 12	9	9	100.00
166	Mahi	Wanakbori	Gujarat	71.93	74.98	76.10	12/08/2006	71.09	28-Jul-15 22	0	0	-
167	Naramada	Mandla	Madhya Pradesh	437.20	437.80	439.41	18/08/1974	437.15	04-Aug-15 15	2	2	100.00
168	Naramada	Hoshangabad	Madhya Pradesh	292.83	293.83	300.90	30/08/1973	288.65	15-Aug-15 01	0	0	-
169	Naramada	Garudeswar	Gujarat	30.48	31.09	41.65	06/09/1970	19.20	06-Aug-15 22	0	0	-
170	Naramada	Bharuch	Gujarat	6.71	7.31	12.65	07/09/1970	5.00	28-Jul-15 16	0	0	-
171	Tapi	Hatnur Dam	Maharashtra	212.00	214.00	214.00	12/10/1989	214.00	02-Oct-15 11	51	51	100.00
172	Tapi	Ukai Dam	Gujarat	102.41	105.16	105.51	08/10/1990	102.44	21-Sep-15 16	23	23	100.00
173	Tapi	Surat	Gujarat	8.50	9.50	12.50	09/08/2006	4.70	29-Sep-15 16	0	0	-
174	Damanganga	Madhuban Dam	Gujarat	79.86	82.40	80.60	27/09/1993	80.10	16-Oct-15 01	0	0	-
175	Damanganga	Vapi Town	Gujarat	18.20	19.20	23.76	03/08/2004	15.30	28-Jul-15 19	0	0	-
176	Damanganga	Daman	Dadra & Nagar Haveli	2.60	3.40	4.00	03/08/2004	2.10	16-Jun-15 15	0	0	-
								Total Forecasts		*4072*	*3991*	98.01
								Level Forecasts		3500	3429	97.97
								Inflow Forecast		572	562	98.25

Statewise Flood Forecasting Information In India during Flood Season 2015

Sl. No.	Name of the river	Name of FF site	Warning Level (m)	Danger level (m)	Highest Flood Level		Maximum Level -2015		No.of Forecasts issued	No.of Forecasts within limits	Percent-age of accuracy
					Level (m)	Date/ Month/ Year	Level (m)	Date and Time DD/MM/YY)			
1	2	3	4	5	6	7	8	9	10	11	12
	Andhra Pradesh										
1	Vamsadhara	Gotta Barrage	34.48	34.84	39.92	07/10/1999	38.10	10-Oct-15 10	0	0	-
2	Godavari	Kunavaram	37.74	39.24	51.30	16/08/1986	34.70	23-Jun-15 05	0	0	-
3	Godavari	Rajamundry	17.68	19.51	20.48	16/08/1986	15.70	21-Sep-15 12	0	0	-
4	Godavari	Dowalaiswaram	14.25	16.08	18.36	16/08/1986	14.04	14-Jul-15 13	0	0	-
5	Krishna	Srisailam Dam	269.75		273.25	03/10/2009	258.70	19-Oct-15 06	15	14	93.33
6	Krishna	Prakasam Barrage	18.30		21.50	07/10/1903	17.39	19-Jun-15 17	5	4	80.00
7	Tungbhadra	Mantralayam	310.00	312.00	318.77	02/10/2009	310.09	08-Sep-15 07	2	2	100.00
8	Pennar	Nellore Anicut	15.91	17.28	18.70	30/11/1882	15.03	17-Nov-15 18	0	0	-
	Assam										
9	Brahmaputra	Dibrugrah	103.24	104.24	106.48	03/09/1998	106.06	01-Sep-15 06	126	126	100.00
10	Brahmaputra	Neamatighat	84.04	85.04	87.37	11/07/1991	86.73	01-Sep-15 21	124	124	100.00
11	Brahmaputra	Tezpur	64.23	65.23	66.59	27/08/1988	65.92	03-Sep-15 00	55	55	100.00
12	Brahmaputra	Guwahati	48.68	49.68	51.46	21/07/2004	50.21	04-Sep-15 04	33	32	97.00
13	Brahmaputra	Goalpara	35.27	36.27	37.43	31/07/1954	36.77	05-Sep-15 08	54	53	98.00
14	Brahmaputra	Dhubri	27.62	28.62	30.36	28/08/1988	29.66	05-Sep-15 18	176	176	100.00
15	Burhidihing	Naharkatia	119.40	120.40	122.69	17/06/1973	119.88	01-Sep-15 09	5	5	100.00
16	Burhidihing	Khowang	101.11	102.11	103.92	25/08/1988	104.16	02-Sep-15 13	31	30	97.00
17	Desang	Nanglamoraghat	93.46	94.46	96.49	06/09/1998	95.10	04-Sep-15 02	47	47	100.00
18	Dikhow	Shivsagar	91.40	92.40	95.62	08/07/1974	93.62	25-Jul-15 11	34	33	97.00
19	Subansiri	Badatighat	81.53	82.53	86.84	28/06/1972	82.55	02-Sep-15 16	62	62	100.00
20	Dhansiri (S)	Golaghat	88.50	89.50	91.30	11/10/1986	89.57	05-Sep-15 12	18	17	94.00
21	Dhansiri (S)	Numaligarh	76.42	77.42	79.87	24/09/1985	78.90	05-Sep-15 18	173	171	99.00
22	Jiabharali	Jiabharali_NTX	76.00	77.00	78.50	26/07/2007	78.10	15-Jul-15 13	407	406	97.75
23	Kopilli	Kampur	59.50	60.50	61.86	16/06/1973	60.91	03-Sep-15 05	8	8	100.00
24	Kopilli	Dharmatul	55.00	56.00	58.09	21/07/2004	56.29	06-Sep-15 19	34	34	100.00
25	Puthimari	Puthimari _NHX	50.81	51.81	55.08	31/08/2008	53.93	31-Aug-15 07	202	196	97.00
26	Pagladiya	Pagladia_NTX	51.75	52.75	55.45	08/07/2004	53.89	31-Aug-15 06	42	41	98.00
27	Beki	Beki NHX	44.10	45.10	46.20	04/08/2000	45.84	31-Aug-15 06	206	205	99.51
28	Manas	Manas NHX	47.81	48.42	50.08	15/09/1984	49.27	21-Aug-15 05	17	17	100.00
29	Sankosh	Golakganj	28.94	29.94	30.95	08/09/2007	30.24	21-Aug-15 11	48	44	91.00
30	Barak	APGhat	18.83	19.83	21.84	01/08/1989	20.29	27-Aug-15 14	36	36	100.00
31	Katakhal	Matizuri	19.27	20.27	22.73	10/09/2007	22.42	28-Aug-15 09	50	50	100.00
32	Kushiyara	Karimganj	13.94	14.94	16.57	10/06/2010	15.97	27-Aug-15 12	65	65	100.00

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					Level (m)	Date/ Month/ Year	Level (m)	Date and Time DD/MM/YY)	No.of Forecasts issued	No.of Forecasts within limits	Percent-age of accuracy
1	2	3	4	5	6	7	8	9	10	11	12
	Bihar										
33	Ganga	Buxar	59.32	60.32	62.09	1948	58.98	23-Aug-15 20	0	0	-
34	Ganga	Patna Dighaghat	49.45	50.45	52.52	23/08/1975	49.77	24-Aug-15 11	7	7	100.00
35	Ganga	Patna Gandhighat	47.60	48.60	50.27	14/08/1994	48.67	24-Aug-15 19	22	22	100.00
36	Ganga	Hathidah	40.76	41.76	43.15	07/08/1971	41.49	25-Aug-15 00	14	14	100.00
37	Ganga	Munger	38.33	39.33	40.99	19/09/1976	38.04	25-Aug-15 23	0	0	-
38	Ganga	Bhagalpur	32.68	33.68	34.20	17/09/2003	33.19	25-Aug-15 06	10	10	100.00
39	Ganga	Kahalgaon	30.09	31.09	32.87	17/09/2003	31.49	26-Aug-15 04	28	27	96.43
40	Ghaghra	Darauli	59.82	60.82	61.74	29/08/1998	60.90	26-Aug-15 00	43	43	100.00
41	Ghaghra	Gangpur Siswan	56.04	57.04	58.01	18/09/1983	56.43	26-Aug-15 07	9	9	100.00
42	Ghaghra	Chhapra	52.68	53.68	54.59	03/09/1982	49.58	25-Aug-15 16	0	0	-
43	Sone	Inderpuri	107.20	108.20	108.85	23/08/1975	105.30	17-Jul-15 08	0	0	-
44	Sone	Koelwar	54.52	55.52	58.88	20/07/1971	52.10	24-Aug-15 08	0	0	-
45	Sone	Maner	51.00	52.00	53.79	10/09/1976	50.37	25-Aug-15 00	0	0	-
46	PunPun	Sripalpur	49.60	50.60	53.91	18/09/1976	51.89	19-Jul-15 15	15	13	83.00
47	Gandak	Chatia	68.15	69.15	70.04	26/07/2002	67.51	24-Aug-15 06	0	0	-
48	Gandak	Rewaghat	53.41	54.41	55.41	17/09/1986	53.31	24-Aug-15 11	0	0	-
49	Gandak	Hazipur	49.32	50.32	50.93	1948	48.89	24-Aug-15 09	0	0	-
50	Burhi Gandak	Lalbeghiaghat	62.20	63.20	67.09	30/07/1975	63.28	25-Aug-15 17	14	14	100.00
51	Burhi Gandak	Muzaffarpur	51.53	52.53	54.29	15/08/1987	52.02	01-Sep-15 13	12	12	100.00
52	Burhi Gandak	Samastipur	45.02	46.02	49.38	15/08/1987	46.06	03-Sep-15 13	15	15	100.00
53	Burhi Gandak	Rosera	41.63	42.63	46.35	16/08/1987	43.04	04-Sep-15 07	16	16	100.00
54	Burhi Gandak	Khagaria	35.58	36.58	39.22	1976	36.84	27-Aug-15 04	20	20	100.00
55	Bagmati	Benibad	47.68	48.68	50.01	12/07/2004	49.39	02-Sep-15 20	54	54	100.00
56	Bagmati	Hayaghat	44.72	45.72	48.96	14/08/1987	44.88	06-Sep-15 05	4	4	100.00
57	Adhwara Group	Kamtaul	49.00	50.00	52.99	12/08/1987	49.98	06-Sep-15 05	11	11	100.00
58	Adhwara Group	Ekmighat	45.94	46.94	49.52	12/07/2004	46.28	06-Sep-15 02	9	9	100.00
59	Kamla Balan	Jhanjharpur	49.00	50.00	53.01	10/07/2004	51.69	02-Sep-15 23	113	113	100.00
60	Kosi	Basua	46.75	47.75	49.17	25/08/2010	47.29	14-Jun-15 20	120	120	100.00
61	Kosi	Baltara	32.85	33.85	36.40	15/08/1987	34.99	23-Aug-15 18	92	90	98.00
62	Kosi	Kursela	29.00	30.00	32.04	06/09/1998	30.49	25-Aug-15 05	29	29	100.00
63	Mahananda	Dhengraghat	34.65	35.65	38.09	1968	36.53	01-Sep-15 13	39	39	100.00
64	Mahananda	Jhawa	30.40	31.40	33.51	14/08/1987	31.70	02-Sep-15 11	40	40	100.00

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					Level (m)	Date/ Month/ Year	Level (m)	Date and Time DD/MM/YY)			
1	2	3	4	5	6	7	8	9	10	11	12
	Chhatisgarh										
65	Indravati	Jagdalpur	539.50	540.80	544.68	09/07/1973	543.03	18-Sep-15 03	24	24	100.00
	Dadra & Nagar Haveli										
66	Damanganga	Daman	2.60	3.40	4.00	03/08/2004	2.10	16-Jun-15 15	0	0	-
	Gujarat										
67	Banas	Dantiwada Dam	182.88	185.06	186.04	01/09/1973	183.40	29-Jul-15 10	10	10	100.00
68	Sabarmati	Dharoi Dam	187.45	192.25	189.63	03/09/1990	189.35	29-Jul-15 13	17	17	100.00
69	Sabarmati	Ahmedabad	44.09	45.34	47.45	19/08/2006	46.14	30-Jul-15 02	3	1	33.33
70	Mahi	Kadana Dam	126.19	127.71	127.74	09/09/1989	126.70	25-Aug-15 12	9	9	100.00
71	Mahi	Wanakbori	71.00	72.54	76.10	12/08/2006	71.09	28-Jul-15 22	0	0	-
72	Naramada	Garudeswar	30.48	31.09	41.65	06/09/1970	19.20	06-Aug-15 22	0	0	-
73	Naramada	Bharuch	6.71	7.31	12.65	07/09/1970	5.00	28-Jul-15 16	0	0	-
74	Tapi	Ukai Dam	102.41	105.16	105.51	08/10/1990	102.44	21-Sep-15 16	23	23	100.00
75	Tapi	Surat	8.50	9.50	12.50	09/08/2006	4.70	29-Sep-15 16	0	0	-
76	Damanganga	Madhuban Dam	79.86	82.40	80.60	27/09/1993	80.10	16-Oct-15 01	0	0	-
77	Damanganga	Vapi Town	18.20	19.20	23.76	03/08/2004	15.30	28-Jul-15 19	0	0	-
	Haryana										
78	Yamuna	Tajewala Weir	PL=334		338.90	17/06/1013	334.50	16-Aug-15 00	0	0	-
	Jammu and Kashmir										
	Jhelum	Rammunshibagh	1585.53	1586.45	1589.7	08-09-2014	**1587.26**	**25-06-2015**	17	13	76.47
	Jharkhand										
79	Ganga	Sahibgunj	26.25	27.25	30.91	1998	28.17	27-Aug-15 06	24	24	100.00
80	Mayurakshi	Massanjore Dam	FRL = 121.31		122.87	25/09/1999	120.08	02-Aug-15 23	18	18	100.00
81	Damodar	Tenughat Dam	FRL = 268.83		265.56	17/09/1985	262.49	03-Aug-15 06	33	33	100.00
82	Damodar	Panchet Dam	FRL = 132.59		132.89	02/10/1959	128.79	04-Aug-15 00	62	61	98.00
83	Barakar	Maithon Dam	FRL= 150.88		151.79	02/10/1959	149.33	04-Aug-15 01	48	48	100.00
	Karnataka										
84	Krishna	Alamati Dam	FRL=519.60		519.60	18-09-2002	515.96	10-Aug-15 18	8	8	100.00
85	Krishna	Narayanpur Dam	FRL=492.25		492.22	26-09-2008	492.06	11-Sep-15 07	0	0	-
86	Bhima	Deongaon	402.00	404.50	407.34	13-08-2006	394.50	12-Sep-15 17	0	0	-
87	Tungbhadra	Tungabhadra Dam	FRL=497.74		497.74	08-10-1994	495.73	25-Aug-15 18	76	74	97.37
	Madhya Pradesh										
88	Chambal	Gandhisagar Dam	FRL+399.99				399.07	07-Aug-15 08	15	10	67.00
89	Naramada	Mandla	437.20	437.80	439.41	18/08/1974	437.15	04-Aug-15 15	2	2	100.00
90	Naramada	Hoshangabad	292.83	293.83	300.90	30/08/1973	288.65	15-Aug-15 01	0	0	-

Statewise Flood Forecasting Information In India during Flood Season 2015

Sl. No.	Name of the river	Name of FF site	Warning Level (m)	Danger level (m)	Highest Flood Level		Maximum Level -2015		No.of Forecasts issued	No.of Forecasts within limits	Percent-age of accuracy
					Level (m)	Date/ Month/ Year	Level (m)	Date and Time DD/MM/YY)			
1	2	3	4	5	6	7	8	9	10	11	12
	Maharashtra										
91	Godavari	Kopergaon	490.90	493.68	499.17	1969	490.00	19-Sep-15 08	0	0	-
92	Godavari	Jaikwadi Dam	FRL=463.91		464.69	12/10/1990	456.44	06-Aug-15 06	0	0	-
93	Godavari	Gangakhed	374.00	375.00	377.57	1947	364.75	01-Jun-15 01	0	0	-
94	Godavari	Nanded	353.00	354.00	357.10	06/08/2006	343.21	23-Jul-15 01	0	0	-
95	Wardha	Balharsha	171.50	174.00	176.00	15/08/1986	170.97	18-Sep-15 08	0	0	-
96	Wainganga	Bhandara	244.00	244.50	250.90	16/09/2005	242.10	05-Aug-15 12	0	0	-
97	Wainganga	Pauni	226.73	227.73	232.35	07/09/1994	227.24	14-Aug-15 08	0	0	-
98	Krishna	Arjunwad	542.07	543.29	543.69	05/08/2005					
99	Tapi	Hatnur Dam	212.02	214.00	214.00	12/10/1989	214.00	02-Oct-15 11	51	51	100.00
	NCT Delhi										
100	Yamuna	Delhi Rly Bridge	204.00	204.83	207.49	06/09/1978	204.74	18-Aug-15 05	13	13	100.00
101	Sahibi	Dhansa	211.44	212.44	213.58	06/08/1977	210.30	21-Aug-15 01	0	0	-
	Odisha										
102	Subernarekna	Rajghat	9.45	10.36	12.69	19/06/2008	12.08	29-Jul-15 13	5	5	100.00
103	Burhabalang	NH_5 _Road Bridge	7.21	8.13	9.50	12/10/1973	7.60	29-Jul-15 11	2	1	50.00
104	Baitarni	Anandpur	37.44	38.36	41.35	23-09-2011	39.70	28-Jul-15 22	6	6	100.00
105	Baitarni	Akhuapada	17.83	17.83	21.95	16/08/1960	19.20	29-Jul-15 09	5	5	100.00
106	Brahmani	Jenapur	22.00	23.00	24.78	20/08/1975	21.20	06-Aug-15 07	0	0	-
107	Rushikuluya	Purushottampur	15.83	16.83	19.65	04/11/1990	16.35	16-Sep-15 17	2	2	100.00
108	Vamsadhara	Gunupur	83.00	84.00	88.75	17/09/1980	83.15	16-Sep-15 12	0	0	-
109	Vamsadhara	Kashinagar	53.60	54.60	58.93	18/09/1980	54.99	16-Sep-15 15	9	8	89.00
110	Mahanadi	Hirakud Dam	FRL=192.02		192.30	30/01/1998	192.03	29-Sep-15 12	42	42	100.00
111	Mahanadi	Naraj	25.41	26.41	27.61	31/08/1982	25.30	23-Sep-15 18	0	0	-
112	Mahanadi	Alipingal Devi	10.85	11.76	13.11	11-09-2011	7.10	24-Sep-15 10	0	0	-
113	Mahanadi	Nimapara	9.85	10.76	11.60	31/08/1982	4.28	28-Aug-15 09	0	0	-
	Telagana										
114	Manjira	Singur Dam	523.60		523.60	15/10/1999	515.95	01-Jun-15 06	0	0	-
115	Manjira	Nizamsagar Dam	428.24		428.24	15/10/1999	420.15	01-Jun-15 01	0	0	-
116	Godavari	Sriram Sagar	332.54		332.72	13/10/1990	322.56	01-Jun-15 01	0	0	-
117	Godavari	Kaleswaram	103.50	104.75	107.05	15/08/1986	100.80	15-Aug-15 06	0	0	-
118	Godavari	Eturunagaram	73.29	75.79	77.66	24/08/1990	72.80	22-Jun-15 08	0	0	-
119	Godavari	Dummagudam	53.00	55.00	60.25	16/08/1986	51.44	22-Jun-15 06	0	0	-
120	Godavari	Bhadrachalam	45.72	48.77	55.66	16/08/1986	45.11	22-Jun-15 19	0	0	-
121	Krishna	Priyadarshini	318.52		318.50	09-10-2012	318.50	28-Aug-15 15	0	0	-

Statewise Flood Forecasting Information In India during Flood Season 2015

Sl. No.	Name of the river	Name of FF site	Warning Level (m)	Danger level (m)	Highest Flood Level		Maximum Level -2015		No.of Forecasts issued	No.of Forecasts within limits	Percent-age of accuracy
					Level (m)	Date/ Month/ Year	Level (m)	Date and Time DD/MM/YY)			
1	2	3	4	5	6	7	8	9	10	11	12
	Tripura										
122	Manu	Kailashar	24.34	25.34	25.79	07/06/1993	22.15	18-Jul-15 08	0	0	-
123	Gumti	Sonamura	11.50	12.50	14.42	23/07/1993	11.16	19-Jul-15 22	0	0	-
	Uttar Pradesh										
124	Ganga	Narora Barrage	PL= 180.79 at D/S		180.61	23/09/2010	179.070	01-Jun-15 01	46	46	100.00
125	Ganga	Kannauj	124.97	125.97	126.78	27/09/2010	124.980	14-Aug-15 09	1	1	100.00
126	Ganga	Ankinghat	123.00	124.00	124.49	28/09/2010	123.150	14-Aug-15 01	5	5	100.00
127	Ganga	Kanpur	113.00	114.00	114.08	29/09/2010	112.140	15-Aug-15 05	6	6	100.00
128	Ganga	Dalmau	98.36	99.36	99.84	03/08/1973	98.000	15-Aug-15 09	0	0	-
129	Ganga	Phphamau	83.73	84.73	87.98	08/09/1978	81.63	31-Jul-15 00	0	0	-
130	Ganga	Allahabad	83.73	84.73	88.03	08/09/1978	80.74	31-Jul-15 01	0	0	-
131	Ganga	Mirzapur	76.72	77.72	80.34	09/09/1978	74.09	31-Jul-15 09	0	0	-
132	Ganga	Varanasi	70.26	71.26	73.90	09/09/1978	68.81	31-Jul-15 23	0	0	-
133	Ganga	Ghazipur	62.11	63.11	65.22	09/09/1978	61.96	01-Aug-15 15	0	0	-
134	Ganga	Ballia	56.62	57.62	60.25	14/09/2003	58.14	24-Aug-15 03	16	16	100.00
135	Ramganga	Moradabad	189.60	190.60	192.88	21/09/2010	190.000	02-Jul-15 23	15	14	93.00
136	Ramganga	Bareilly	162.70	163.70	162.88	06/8/1978	160.640	13-Jul-15 17	0	0	-
137	Yamuna	Mawi	230.00	230.85	232.45	26/09/1988	230.38	17-Aug-15 11	8	7	88.00
138	Yamuna	Mathura	164.20	165.20	169.73	08/09/1978	165.00	18-Aug-15 01	30	30	100.00
139	Yamuna	Agra	151.40	152.40	154.76	09/09/1978	149.75	20-Aug-15 14	0	0	-
140	Yamuna	Etawa	120.92	121.92	126.13	11/09/1978	119.19	21-Aug-15 18	0	0	-
141	Yamuna	Auraiya	112.00	113.00	118.19	25/08/1996	112.52	29-Jul-15 01	3	3	100.00
142	Yamuna	Kalpi	107.00	108.00	112.98	25/08/1996	107.21	29-Jul-15 10	3	3	100.00
143	Yamuna	Hamirpur	102.63	103.63	108.59	12/09/1983	101.38	29-Jul-15 16	0	0	-
144	Yamuna	Chilaghat	99.00	100.00	105.16	06/09/1978	97.15	29-Jul-15 09	0	0	-
145	Yamuna	Naini	83.74	84.74	87.99	08/09/1978	81.26	31-Jul-15 08	0	0	-
146	Betwa	Mohana	121.66	122.66	133.69	11/09/1983	115.29	16-Aug-15 09	0	0	-
147	Betwa	Sahjina	103.54	104.54	108.67	12/09/1983	100.97	09-Jul-15 15	0	0	-
148	Ken	Banda	103.00	104.00	113.29	07/0720/05	97.85	05-Aug-15 09	0	0	-
149	Gomati	Lucknow	108.50	109.50	110.85	10/09/1971	104.35	16-Jul-15 06	0	0	
150	Gomati	Jaunpur	73.07	74.07	77.74	22/09/1971	68.54	17-Jul-15 00	0	0	-
151	SAI	Raibareli	100.00	101.00	104.81	17/09/1982	98.58	18-Jul-15 15	0	0	-
152	Ghaghra	Elgin Bridge	105.07	106.07	107.56	10/10/2009	106.49	23-Aug-15 06	72	67	88.00
153	Ghaghra	Ayodhya	91.73	92.73	94.01	11/10/2009	92.78	24-Aug-15 12	56	55	98.00
154	Ghaghra	Turtipar	63.01	64.01	66.00	28/08/1998	64.01	25-Aug-15 08	41	40	98.00
155	Rapti	Balrampur	103.62	104.62	105.25	11/09/2000	104.52	23-Aug-15 16	12	10	83.00
156	Rapti	Bansi	83.90	84.90	85.82	21/08/1998	83.89	24-Aug-15 10	0	0	-
157	Rapti	Gorakpur Birdghat	73.98	74.98	77.54	23/08/1998	73.22	23-Aug-15 18	0	0	-
158	Gandak	Khadda	95.00	96.00	97.50	23/07/2002	95.60	21-Aug-15 20	34	34	100.00

Statewise Flood Forecasting Information In India during Flood Season 2015

Sl. No.	Name of the river	Name of FF site	Warning Level (m)	Danger level (m)	Highest Flood Level		Maximum Level -2015				
					Level (m)	Date/ Month/ Year	Level (m)	Date and Time DD/MM/YY)	No.of Forecasts issued	No.of Forecasts within limits	Percent-age of accuracy
1	2	3	4	5	6	7	8	9	10	11	12
	Uttarakhand										
159	Alaknanda	Srinagar	539.00	540.00	536.85	05/09/1995	536.10	26-Jun-15 05	5	5	100.00
160	Ganga	Rishikesh	339.50	340.50	341.72	05/09/1995	339.75	26-Jun-15 12	2	2	100.00
161	Ganga	Haridwar	293.00	294.00	296.30	19/09/2010	294.00	26-Jun-15 11	0	0	-
	West Bengal										
162	Ganga	Farakka	21.25	22.25	25.14	07/09/1998	23.05	26-Aug-15 23	69	68	98.55
163	Mayurakshi	Tilpara Barrage	PL= 62.79		67.05	27/09/1978	62.79	31-Jul-15 11	19	19	100.00
164	Mayurakshi	Narayanpur	26.99	27.99	29.69	27/09/1995	27.02	03-Aug-15 06	1	0	0.00
165	Ajoy	Gheropara	38.42	39.42	43.94	27/09/1978	40.00	02-Aug-15 23	2	1	50.00
166	Damodar	Durgapur Barrage	PL = 64.47		64.47	31/10/2002	64.47	04-Aug-15 00	59	59	100.00
167	Mundeshwari	Harinkhola	11.80	12.80	14.58	29/09/1978	12.50	04-Aug-15 14	4	4	100.00
168	Kangsabati	Kangsabati Dam	FRL=134.11		134.71	02/09/1978	132.31	04-Aug-15 12	16	16	100.00
169	Kangsabati	Mohanpur	24.73	25.73	29.87	02/09/1978	24.52	30-Jul-15 15	0	0	-
170	Raidak-I	Tufanganj	34.22	35.30	36.36	21/07/1993	35.46	22-Aug-15 04	32	22	69.00
171	Torsa	Ghughumari	39.80	40.41	41.46	03/08/2000	40.20	30-Aug-15 23	48	47	98.00
172	Jaldhaka	NH-31	80.00	80.90	81.33	28/08/1972	80.42	01-Sep-15 11	21	19	90.00
173	Jaldhaka	Mathabhanga	47.70	48.20	49.85	07/09/2007	82.32	02-Sep-15 01	11	5	45.00
174	Tista	Domohani	85.65	85.95	89.30	14/10/1968	86.50	01-Jul-15 11	100	95	95.00
175	Tista	Mekhliganj	65.45	65.95	66.45	13/07/1996	65.42	01-Jul-15 20	0	0	-
							Total Forecasts		***4072***	***3991***	**98.01**
							Level Forecasts		**3500**	**3429**	**97.97**
							Inflow Forecast		**572**	**562**	**98.25**

Performance of Flood Forecasting Stations (Divisionwise) in India during Flood Season 2015

Sl. No	Division	Level Forecasts only					Inflow Forecasts only					Total Forecast Stations				
		Stns.	F/c issued for	Total	Within Limit	Accuracy	Stns.	F/c issued for	Total	Within Limit	Accuracy	Stns.	F/c issued for	Total	Within Limit	Accuracy
1	Chenab Division, Jammu	1	1	17	13	76.47	0	0	0	0		1	1	17	13	76.47
2	Himalayan Ganga Divn, Dehradun	3	2	7	7	100.00	0	0	0	0		3	2	7	7	100.00
3	Middle Ganga Division 1, Lucknow	6	4	181	172	95.03	0	0	0	0		6	4	181	172	95.03
4	Middle Ganga Division 2, Lucknow	8	4	27	26	96.30	1	1	46	46	100.00	9	5	73	72	98.63
5	Middle Ganga Division 3, Varanasi	7	1	16	16	100.00	0	0	0	0		7	1	16	16	100.00
6	Lower Ganga Division-I, Patna	17	16	622	620	99.68	0	0	0	0		17	16	622	620	99.68
7	Lower Ganga Division-II, Patna	18	10	241	237	98.34	0	0	0	0		18	10	241	237	98.34
8	Upper Yamuna Divn, Delhi	4	3	51	50	98.04	1	0	0	0		5	3	51	50	98.04
9	Chambal Division, Jaipur	0	0	0	0		1	1	15	10	66.67	1	1	15	10	66.67
10	Lower Yamuna Divn, Agra	10	2	6	6	100.00	0	0	0	0		10	2	6	6	100.00
11	Damodar Divn, Asansol	4	3	7	5	71.43	7	7	255	254	99.61	11	10	262	259	98.85
12	Upper Brahmaputra Divn, Dibrugarh	13	13	1124	1118	99.47	0	0	0	0		13	13	1124	1118	99.47
13	Middle Brahmaputra Divn, Guwahati	9	7	482	473	98.13	0	0	0	0		9	7	482	473	98.13
14	Lower Brahmaputra Divn, Jalpaiguri	10	9	659	630	95.60	0	0	0	0		10	9	659	630	95.60
15	Eastern Rivers Divn, Bhubaneswar	8	6	29	27	93.10	1	0	0	0		9	6	29	27	93.10
16	Mahanadi Divn, Burla	3	0	0	0		1	1	42	42	100.00	4	1	42	42	100.00
17	Lower Godavari Divn, Hyderabad	14	1	24	24	100.00	4	0	0	0		18	1	24	24	100.00
18	Lower Krishna Divn, Hyderabad	4	1	2	2	100.00	6	4	104	100	96.15	10	5	106	102	96.23
19	Mahi Divn, Ahmedabad	2	1	3	1	33.33	3	3	36	36	100.00	5	4	39	37	94.87
20	Tapi Divn,Surat	5	0	0	0		3	2	74	74	100.00	8	2	74	74	100.00
21	Narmada Divn, Bhopal	2	1	2	2	100.00	0	0	0	0		2	1	2	2	100.00
Tot		148	85	3500	3429	97.97	28	19	572	562	98.25	176	104	4072	3991	98.01

Performance of Flood Forecasting Stations (Major Basinwise) in India during Flood Season 2015

Sl. No	Name of the Major River basin	Total no.of FF sites			No.of FF sites where no forecast was issued			Level Forecasts			Inflow Forecasts			Overall Forecasts		
		Total no	Level FF sites	Inflow FF sites	Total no	Level FF sites	Inflow FF sites	Total No.	Within limits	% of Accu-racy	Total No.	Within limits	% of Accu-racy	Total No.	Within limits	% of Accu-racy
1	Indus and its tributaries	1	1	0	0	0	0	17	13	76.47	0	0		17	13	76.47
2	Ganga and its tributaries	87	77	10	33	32	1	1158	1139	98.36	316	310	98.10	1474	1449	98.30
3	Brahamputra and its tributaries	27	27	0	1	1	0	2114	2070	97.92	0	0		2114	2070	97.92
4	Barak and its tributaries	5	5	0	2	2	0	151	151	100.00	0	0		151	151	100.00
5	Eastern Rivers	9	8	1	3	2	1	29	27	93.10	0	0		29	27	93.10
6	Mahanadi and its tributaries	4	3	1	3	3	0	0	0		42	42	100.00	42	42	100.00
7	Godavari and its tributaries	18	14	4	17	13	4	24	24	100.00	0	0		24	24	100.00
8	Krishna and its tributaries	9	3	6	4	2	2	2	2	100.00	104	100	96.15	106	102	96.23
9	West Flowing rivers	15	9	6	8	7	1	5	3	60.00	110	110	100.00	115	113	98.26
10	Southern rivers	1	1	0	1	1	0	0	0		0	0		0	0	
Total		176	148	28	72	63	9	3500	3429	97.97	572	562	98.25	4072	3991	98.01

Annex VI

Performance of Flood Forecasting Stations (Statewise) in India during Flood Season 2015

Sl. No	Name of the Major River basin	Total no.of FF sites			No.of FF sites where no forecast was			Level Forecasts			Inflow Forecasts			Overall Forecasts		
		Total no	Level FF sites	Inflow FF sites	Total no	Level FF sites	Inflow FF sites	Total No.	Within limits	Accuracy (%)	Total No.	Within limits	Accuracy (%)	Total No.	Within limits	Accuracy (%)
1	Andhra Pradesh	8	5	3	5	4	1	2	2	100.00	20	18	90.00	22	20	90.91
2	Assam	24	24	0	0	0	0	2053	2033	99.03	0	0		2053	2033	99.03
3	Bihar	32	32	0	9	9	0	736	731	99.32	0	0		736	731	99.32
4	Chattisgarh	1	1	0	0	0	0	24	24	100.00	0	0		24	24	100.00
5	D,NH	1	1	0	1	1	0	0	0		0	0		0	0	
6	Gujarat	11	6	5	6	5	1	3	1	33.33	59	59	100.00	62	60	96.77
7	Haryana	1	0	1	1	0	1				0	0		0	0	
8	Jammu & Kashmir	1	1	0	0	0	0	17	13	76.47				17	13	76.47
9	Jharkhand	5	1	4	0	0	0	24	24	100.00	161	160	99.38	185	184	99.46
10	Karnataka	4	1	3	2	1	1	0	0		84	82	97.62	84	82	97.62
11	Madhya Pradesh	3	2	1	1	1	0	2	2	100.00	15	10	66.67	17	12	70.59
12	Maharashtra	9	7	2	8	7	1	0	0		51	51	100.00	51	51	100.00
13	NCT, DELHI	2	2	0	1	1	0	13	13	100.00	0	0		13	13	100.00
14	Odisha	12	11	1	5	5	0	29	27	93.10	42	42	100.00	71	69	97.18
15	Telangana	8	4	4	8	4	4	0	0		0	0		0	0	
16	Tripura	2	2	0	2	2	0	0	0		0	0		0	0	
17	Uttar Pradesh	35	34	1	20	20	0	302	291	96.36	46	46	100.00	348	337	96.84
18	Uttarakhand	3	3	0	1	1	0	7	7	100.00	0	0		7	7	100.00
19	West Bengal	14	11	3	2	2	0	288	261	90.63	94	94	100.00	382	355	92.93
Total		176	148	28	72	63	9	3500	3429	97.97	572	562	98.25	4072	3991	98.01

FLOOD FORECASTING PERFORMANCE FROM 2000 TO 2015

Year	No.of Level Forecasts issued			No.of Inflow Forecasts issued			Total No.of Forecasts issued		
	Total	Within +/-15 cm of deviation from actual	Accuracy (%)	Total	Within +/- 20% cumec of deviation from actual	Accuracy (%)	Total	Within +/- 15 cm or +/- 20% cumec of deviation from actual	Accuracy (%)
2000	5622	5504	97.90	821	747	90.99	6443	6251	97.02
2001	4606	4533	98.42	857	809	94.40	5463	5342	97.79
2002	3618	3549	98.09	623	602	96.63	4241	4151	97.88
2003	5989	5789	96.66	611	586	95.91	6600	6375	96.59
2004	4184	4042	96.61	705	654	92.77	4889	4696	96.05
2005	4323	4162	96.28	1295	1261	97.37	5618	5423	96.53
2006	5070	4827	95.21	1593	1550	97.30	6663	6377	95.71
2007	6516	6339	97.28	1707	1651	96.72	8223	7990	97.17
2008	5670	5551	97.90	1021	1003	98.24	6691	6554	97.95
2009	3343	3298	98.65	667	629	94.30	4010	3927	97.93
2010	6491	6390	98.44	1028	988	96.11	7519	7378	98.12
2011	4848	4795	98.91	1143	1109	97.03	5991	5904	98.55
2012	4200	4136	98.47	831	803	96.63	5031	4939	98.17
2013	5741	5471	95.30	1319	1289	97.73	7060	6760	95.75
2014	3884	3804	97.94	888	863	97.18	4772	4667	97.80
2015	3500	3429	97.97	572	562	98.25	4072	3991	98.01
Average	4850	4726	97.44	980	944	96.33	5830	5670	97.26

Unprecedented flood events in India under CWC FF & W Network - 2015 flood season										
Sl .No	River	Station	State	Danger level in metres	Existing Highest Flood Level (HFL)		New HFL		Duration	
					Level in metres	Date of occurrence	Level	Date and Time of Occurrence	From	To
1	Buridehing	Chenimari	Assam	102.11	103.92	25-Aug-88 22	104.16	02-Sep-15 13	01-Sep-15 17	01-Sep-15 22
									02-Sep-15 03	03-Sep-15 06

High Flood Events during Flood Season - 2015

Sl.No	River	Station	State	District	Danger level in metres	Existing HFL		Peak Level attained in 2015		Duration of High Flood	
						Level in metres	Date of occurrence	Level	Date/Time	From	To
1	Beki	Beki Road Bridge	Assam	Barpeta	45.10	46.20	04-08-2000	45.84	31-Aug-15 06	20-Aug-15 13	21-Aug-15 07
										30-Aug-15 22	31-Aug-15 14
										02-Sep-15 14	02-Sep-15 22
2	Brahmaputra	Dibrugarh	Assam	Dibrugarh	105.70	106.48	03-09-1998	106.06	01-Sep-15 06	30-Aug-15 22	31-Aug-15 05
										31-Aug-15 22	01-Sep-15 18
3	Buridehing	Chenimari (Khowang)	Assam	Dibrugarh	102.11	103.92	25-08-1988	104.16	02-Sep-15 13	01-Sep-15 02	04-Sep-15 14
4	Jiabharali	NT Road Crossing	Assam	Somitpur	77	78.5	26-07-2007	78.10	15-Jul-15 13	15-Jul-15 12	15-Jul-15 16

High Flood Level= HFL-0.50 M

Low and Moderate flood events on main Ganga and its tributaries- 2015 flood season

Sl. No.	River	Station	State	Warning level in metres	Danger level in metres	Peak level in 2015		Flood period above warning level			Flood period above danger level		
						Level in metres	Date/Time	From	To	No.of days	From	To	No.of days
1	Alaknanda	Srinagar	Uttrakhand	535.00	536.00	536.10	26-Jun-15 05	26-Jun-15 00	26-Jun-15 03	2	26-Jun-15 04	26-Jun-15 06	1
								26-Jun-15 07	26-Jun-15 11	1	-	-	-
								01-Jul-15 12	02-Jul-15 03	2	-	-	-
								11-Jul-15 13	11-Jul-15 13	1	-	-	-
2	Ganga	Rishikesh	Uttarakhand	339.50	340.50	339.75	26-Jun-15 12	26-Jun-15 10	26-Jun-15 15	1	-	-	-
								11-Jul-15 18	11-Jul-15 22	1	-	-	-
3	Ganga	Haridwar	Uttarakhand	293.00	294.00	294.00	26-Jun-15 11	26-Jun-15 09	30-Jun-15 14	1	26-Jun-15 11	26-Jun-15 11	1
								26-Jun-15 12	26-Jun-15 17	1	-	-	-
								01-Jul-15 21	02-Jul-15 02	1	-	-	-
								11-Jul-15 16	12-Jul-15 00	1	-	-	-
								08-Aug-15 12	08-Aug-15 15	1	-	-	-
								08-Aug-15 18	08-Aug-15 19	1	-	-	-
4	Ganga	Kannauj	Uttar Pradesh	124.97	125.97	124.980	14-Aug-15 09	14-Aug-15 01	14-Aug-15 16	1	-	-	-
5	Ganga	Ankinghat	Uttar Pradesh	123.00	124.00	123.150	14-Aug-15 01	15-Jul-15 01	16-Jul-15 13	2	-	-	-
								12-Aug-15 21	15-Aug-15 18	4	-	-	-
6	Ganga	Kanpur	Uttar Pradesh	113.00	114.00	112.140	15-Aug-15 05	15-Jul-15 20	16-Jul-15 16	2	-	-	-
								13-Aug-15 22	17-Aug-15 11	5	-	-	-
7	Ganga	Dalmau	Uttar Pradesh	98.36	99.36	98.000	15-Aug-15 09	-	-	-	-	-	-
8	Ganga	Phaphamau	Uttar Pradesh	83.73	84.73	81.63	31-Jul-15 00	-	-	-	-	-	-
9	Ganga	Allahabad (Chhatna	Uttar Pradesh	83.73	84.73	80.74	31-Jul-15 01	-	-	-	-	-	-
10	Ganga	Mirzapur	Uttar Pradesh	76.72	77.72	74.09	31-Jul-15 09	-	-	-	-	-	-
11	Ganga	Varanasi	Uttar Pradesh	70.26	71.26	68.81	31-Jul-15 23	-	-	-	-	-	-
12	Ganga	Ghazipur	Uttar Pradesh	62.11	63.11	61.96	01-Aug-15 15	-	-	-	-	-	-
13	Ganga	Buxar	Bihar	59.32	60.32	58.98	23-Aug-15 20	-	-	-	-	-	-
14	Ganga	Ballia	Uttar Pradesh	56.62	57.62	58.14	24-Aug-15 03	30-Jul-15 16	05-Aug-15 01	7	01-Aug-15 03	02-Aug-15 22	2
								18-Aug-15 12	28-Aug-15 00	11	20-Aug-15 22	25-Aug-15 23	6
15	Ganga	Patna (Dighaghat)	Bihar	49.45	50.45	49.77	24-Aug-15 11	20-Aug-15 20	26-Aug-15 17	7	-	-	-
16	Ganga	Patna (Gandhighat)	Bihar	47.60	48.60	48.67	24-Aug-15 19	31-Jul-15 15	05-Aug-15 04	6	-	-	-
								13-Aug-15 17	30-Aug-15 08	18	23-Aug-15 00	25-Aug-15 20	3
17	Ganga	Hathidah	Bihar	40.76	41.76	41.49	25-Aug-15 00	02-Aug-15 10	04-Aug-15 19	3	-	-	-
								19-Aug-15 10	29-Aug-15 19	11	-	-	-
18	Ganga	Munger	Bihar	38.33	39.33	38.04	25-Aug-15 23	-	-	-	-	-	-
19	Ganga	Bhagalpur	Bihar	32.68	33.68	33.19	25-Aug-15 06	20-Aug-15 19	30-Aug-15 04	11	-	-	-

Low and Moderate flood events on main Ganga and its tributaries- 2015 flood season

Sl. No.	River	Station	State	Warning level in metres	Danger level in metres	Peak level in 2015		Flood period above warning level			Flood period above danger level		
						Level in metres	Date/Time	From	To	No.of days	From	To	No.of days
20	Ganga	Colgong/ Kahalgaon	Bihar	30.09	31.09	31.49	26-Aug-15 04	02-Aug-15 09	08-Aug-15 08	7	-	-	-
								16-Aug-15 01	06-Sep-15 21	22	21-Aug-15 15	30-Aug-15 08	10
21	Ganga	Sahibganj	Jharkhand	26.25	27.25	28.17	27-Aug-15 06	03-Aug-15 09	07-Aug-15 23	5	-	-	-
								16-Aug-15 01	06-Sep-15 21	22	21-Aug-15 11	31-Aug-15 11	11
22	Ganga	Farakka	West Bengal	21.25	22.25	23.05	26-Aug-15 23	03-Aug-15 00	10-08-2015 15:00	9	-	-	-
								15-08-2015 14:00	09-09-2015 10:00	26	20-08-15: 22	02-08-15: 15	14
23	Ramganga	Moradabad	Uttar Pradesh	189.60	190.60	190.000	02-Jul-15 23	27-Jun-15 03	28-Jun-15 00	1	-	-	-
								02-Jul-15 02	03-Jul-15 13	2	-	-	-
								07-Jul-15 09	08-Jul-15 19	2	-	-	-
								12-Jul-15 16	14-Jul-15 13	3	-	-	-
								02-Aug-15 15	03-Aug-15 12	2	-	-	-
								08-Aug-15 21	13-Aug-15 00	5	-	-	-
								22-Aug-15 17	24-Aug-15 02	3	-	-	-
24	Ramganga	Bareilly	Uttar Pradesh	162.70	163.70	160.640	13-Jul-15 17	-	-	-	-	-	-
25	Yamuna	Mawi	Uttar Pradesh	230.00	230.85	230.38	17-Aug-15 11	13-Jul-15 08	13-Jul-15 12	1	-	-	-
								18-Jul-15 08	18-Jul-15 10	1	-	-	-
								15-Aug-15 10	16-Aug-15 04	1	-	-	-
								17-Aug-15 04	18-Aug-15 02	1	-	-	-
26	Yamuna	Delhi Rly Bridge	NCT Delhi	204.00	204.83	204.74	18-Aug-15 05	13-Jul-15 17	14-Jul-15 09	2	-	-	-
								10-Aug-15 19	11-Aug-15 06	2	-	-	-
								14-Aug-15 07	17-Aug-15 22	4	-	-	-
								15-Aug-15 19	17-Aug-15 03	3	-	-	-
								17-Aug-15 14	19-Aug-15 03	3	-	-	-
27	Yamuna	Mathura	Uttar Pradesh	164.20	165.20	165.00	18-Aug-15 01	14-Jul-15 21	18-Jul-15 15	5	-	-	-
								20-Jul-15 14	22-Jul-15 11	3	-	-	-
								23-Jul-15 01	25-Jul-15 05	3	-	-	-
								31-Jul-15 18	01-Aug-15 02	2	-	-	-
								01-Aug-15 15	01-Aug-15 18	1	-	-	-
								12-Aug-15 06	27-Aug-15 22	16	-	-	-
28	Yamuna	Agra	Uttar Pradesh	151.40	152.40	149.75	20-Aug-15 14	-	-	-	-	-	-
29	Yamuna	Etawah	Uttar Pradesh	120.92	121.92	119.19	21-Aug-15 18	-	-	-	-	-	-
30	Yamuna	Auraiya	Uttar Pradesh	112.00	113.00	112.52	29-Jul-15 01	28-Jul-15 04	29-Jul-15 15	2	-	-	-
31	Yamuna	Kalpi	Uttar Pradesh	107.00	108.00	107.21	29-Jul-15 10	28-Jul-15 22	29-Jul-15 19	2			
32	Yamuna	Hamirpur	Uttar Pradesh	102.63	103.63	101.38	29-Jul-15 16	-	-	-	-	-	-
33	Yamuna	Chillaghat	Uttar Pradesh	99.00	100.00	97.15	29-Jul-15 09	-	-	-	-	-	-
34	Yamuna	Naini	Uttar Pradesh	83.74	84.74	81.26	31-Jul-15 08	-	-	-	-	-	-
35	Sahibi	Dhansa Regulator	NCT Delhi	211.44	212.44	210.300	21-Aug-15 01	-	-	-	-	-	-
36	Betwa	Mohana	Uttar Pradesh	121.66	122.66	115.29	16-Aug-15 09	-	-	-	-	-	-
37	Betwa	Sahjina	Uttar Pradesh	103.54	104.54	100.97	09-Jul-15 15	-	-	-	-	-	-

Low and Moderate flood events on main Ganga and its tributaries- 2015 flood season

Sl. No.	River	Station	State	Warning level in metres	Danger level in metres	Peak level in 2015		Flood period above warning level			Flood period above danger level		
						Level in metres	Date/Time	From	To	No.of days	From	To	No.of days
38	Ken	Banda	Uttar Pradesh	103.00	104.00	97.85	05-Aug-15 09	-	-	-	-	-	-
39	Gomati	Lucknow (Hanuman	Uttar Pradesh	108.50	109.50	104.35	16-Jul-15 06	-	-	-	-	-	-
40	Gomati	Jaunpur	Uttar Pradesh	73.07	74.07	68.54	17-Jul-15 00	-	-	-	-	-	-
41	Sai	Rae- Bareilly	Uttar Pradesh	100.00	101.00	98.58	18-Jul-15 15	-	-	-	-	-	-
42	Ghaghra	Elgin Bridge	Uttar Pradesh	105.07	106.07	106.490	23-Aug-15 06	27-Jun-15 17	02-Jul-15 13	6	12-Jul-15 08	13-Jul-15 23	2
								04-Jul-15 07	05-Jul-15 19	2	17-Jul-15 14	19-Jul-15 07	3
								06-Jul-15 19	31-Jul-15 15	26	04-Aug-15 13	05-Aug-15 14	2
								01-Aug-15 18	04-Sep-15 07	35	09-Aug-15 06	25-Aug-15 10	17
43	Ghaghra	Ayodhya	Uttar Pradesh	91.73	92.73	92.780	24-Aug-15 12	28-Jun-15 15	02-Jul-15 06	5	24-Aug-15 03	25-Aug-15 04	2
								10-Jul-15 22	11-Jul-15 12	2	-	-	-
								11-Jul-15 23	17-Jul-15 01	7	-	-	-
								17-Jul-15 15	31-Jul-15 10	15	-	-	-
								03-Aug-15 12	02-Sep-15 16	31	-	-	-
44	Ghaghra	Turtipar	Uttar Pradesh	63.01	64.01	64.010	25-Aug-15 08	01-Jul-15 18	03-Jul-15 01	3	25-Aug-15 08	26-Aug-15 02	2
								13-Jul-15 19	23-Jul-15 23	11	-	-	-
								29-Jul-15 06	29-Jul-15 21	1	-	-	-
								06-Aug-15 03	03-Sep-15 07	29	-	-	-
45	Ghaghra	Darauli	Bihar	59.82	60.82	60.900	26-Aug-15 00	01-Jul-15 22	03-Jul-15 10	3	-	-	-
								14-Jul-15 06	17-Jul-15 08	4	-	-	-
								19-Jul-15 04	24-Jul-15 20	6	-	-	-
								29-Jul-15 03	30-Jul-15 23	2	-	-	-
								06-Aug-15 08	03-Sep-15 22	29	25-Aug-15 08	27-Aug-15 00	2
46	Ghaghra	Gangpur Siswan	Bihar	56.04	57.04	56.430	26-Aug-15 07	19-08-2015 17:00	28-08-2015 04:00	10			
47	Ghaghra	Chhapra	Bihar	52.68	53.68	49.580	25-Aug-15 16	-	-	-	-	-	-
48	Rapti	Balrampur	Uttar Pradesh	103.62	104.62	104.520	23-Aug-15 16	17-Jul-15 04	18-Jul-15 15	2	-	-	-
								18-Aug-15 02	27-Aug-15 02	10	-	-	-
								28-Aug-15 04	29-Aug-15 01	2	-	-	-
49	Rapti	Bansi	Uttar Pradesh	83.90	84.90	83.89	24-Aug-15 10	-	-	-	-	-	-
50	Rapti	Gorakhpur (Birdghat	Uttar Pradesh	73.98	74.98	73.22	23-Aug-15 18	-	-	-	-	-	-
51	Sone	Inderpuri	Bihar	107.20	108.20	105.30	17-Jul-15 08	-	-	-	-	-	-
52	Sone	Koelwar	Bihar	54.52	55.52	52.10	24-Aug-15 08	-	-	-	-	-	-
53	Sone	Maner	Bihar	51.00	52.00	50.37	25-Aug-15 00	-	-	-	-	-	-
54	PunPun	Sripalpur	Bihar	49.60	50.60	51.89	19-Jul-15 15	09-Aug-15 15	12-Jul-15 08	4	09-Jul-15 23	11-Jul-15 18	3
								18-Jul-15 07	21-Jul-15 13	4	18-Jul-15 11	20-Jul-15 22	3
								03-Aug-15 01	05-Aug-15 16	3	-	-	-
								20-Aug-15 10	25-Aug-15 01	6	21-Aug-15 05	22-Aug-15 10	2
55	Gandak	Khadda	Uttar Pradesh	95.00	96.00	95.60	22-Aug-15 00	31-Jul-15 11	31-Jul-15 20	1	-	-	-
								11-Aug-15 19	12-Aug-15 16	2	-	-	-
								17-Aug-15 14	19-Aug-15 12	3	-	-	-
								19-Aug-15 20	20-Aug-15 07	2	-	-	-
								21-Aug-15 09	25-Aug-15 13	5	-	-	-
								27-Aug-15 00	28-Aug-15 09	2	-	-	-
								31-Aug-15 09	02-Sep-15 13	3	-	-	-

Low and Moderate flood events on main Ganga and its tributaries- 2015 flood season

Sl. No.	River	Station	State	Warning level in metres	Danger level in metres	Peak level in 2015		Flood period above warning level			Flood period above danger level		
						Level in metres	Date/Time	From	To	No.of days	From	To	No.of days
56	Gandak	Chatia	Bihar	68.15	69.15	67.51	24-Aug-15 06	-	-	-	-	-	-
57	Gandak	Rewaghat	Bihar	53.41	54.41	53.31	24-Aug-15 11	-	-	-	-	-	-
58	Gandak	Hazipur	Bihar	49.32	50.32	48.89	24-Aug-15 09	-	-	-	-	-	-
59	Burhi Gandak	Lalbeghiaghat	Bihar	62.20	63.20	62.28	25-Aug-15 17	22-Aug-15 08	04-Sep-15 12	14	25-Aug-15 05	26-Aug-15 01	2
								-	-		27-Aug-15 11	29-Aug-15 00	2
60	Burhi Gandak	Muzaffarpur (Sikand	Bihar	51.53	52.53	52.02	01-Sep-15 13	27-Aug-15 12	07-Sep-15 09	12	-	-	-
61	Burhi Gandak	Samastipur	Bihar	45.02	46.02	46.06	03-Sep-15 13	26-Aug-15 04	10-Sep-15 07	16	02-Sep-15 12	05-Sep-15 18	4
62	Burhi Gandak	Rosera	Bihar	41.63	42.63	43.04	04-Sep-15 07	25-Aug-15 22	11-Sep-15 08	18	-	-	-
63	Burhi Gandak	Khagaria	Bihar	35.58	36.58	36.84	27-Aug-15 04	02-Aug-15 22	05-Aug-15 16	4	24-Aug-15 20	29-Aug-15 02	6
								20-Aug-15 08	05-Sep-15 17	17	-	-	-
64	Bagmati	Benibad	Bihar	47.68	48.68	49.39	02-Sep-15 20	20-Jun-15 18	21-Jun-15 13	2	-	-	-
								26-Jun-15 15	27-Jun-15 15	2	-	-	-
								04-Jul-15 12	06-Jul-15 16	3	-	-	-
								08-Jan-15 09	11-Jul-15 03	4	13-08-15: 12	13-08-15: 23	1
								20-07-2015 09:00	20-07-2015 20:00	1	-	-	-
								03-08-2015 16:00	05-08-2015 05:00	3	-	-	-
								12-08-2015 16:00	16-08-2015 00:00	4	13-08-15: 12	13-08-15: 23	1
								18-08-2015 00:00	11-09-2015 04:00	26	18-08-15: 12	06-09-15: 19	20
								12-09-2015 19:00	15-09-2015 12:00	4			
								21-09-2015 15:00	28-09-2015 05:00	8	24-09-2015 16:00	##############	1
											25-09-15: 12	26-09-15: 08	2
65	Bagmati	Hayaghat	Bihar	44.72	45.72	48.88	06-Sep-15 05	04-Sep-15 22	07-Sep-15 23	4	-	-	-
66	Adhwara Group	Kamtaul	Bihar	49.00	50.00	49.98	06-Sep-15 05	23-Aug-15 10	25-Aug-15 12	3	-	-	-
								03-Sep-15 05	10-Sep-15 22	8	-	-	-
67	Adhwara Group	Ekmighat	Bihar	45.94	46.94	46.28	06-Sep-15 02	27-Aug-15 04	29-Aug-15 18	3	-	-	-
								03-Sep-15 18	09-Sep-15 08	7	-	-	-
68	Kamla Balan	Jhanjharpur	Bihar	49.00	50.00	51.69	02-Sep-15 23	01-Jul-15 16	05-Jul-15 14	5	02-07-2015 04:00	##############	1
								06-Jul-15 06	07-Jul-15 02	2	-	-	-
								08-Jul-15 12	09-Jul-15 13	2	-	-	-
								10-Jul-15 11	11-Jul-15 07	2	-	-	-
								15-Jul-15 23	16-Jul-15 19	2	16-07-2015 06:00	##############	1
								19-Jul-15 12	20-Jul-15 00	1	-	-	-
								07-Aug-15 20	08-Aug-15 02	2	-	-	-
								11-Aug-15 12	12-Aug-15 22	2	11-Aug-15 16	12-Aug-15 03	2
								13-Aug-15 13	14-Aug-15 14	2	-	-	-
								18-Aug-15 18	13-Sep-15 07	27	18-Aug-15 23	19-Aug-15 10	2
								-	-	-	20-Aug-15 00	21-Aug-15 00	2
								-	-	-	21-Aug-15 09	23-Aug-15 00	2
								-	-	-	23-Aug-15 19	26-Aug-15 22	4
								-	-	-	31-Aug-15 18	06-Sep-15 01	7
								23-Sep-15 19	24-Sep-15 19	2	24-Sep-15 01	24-Sep-15 10	1

Low and Moderate flood events on main Ganga and its tributaries- 2015 flood season

Sl. No.	River	Station	State	Warning level in metres	Danger level in metres	Peak level in 2015		Flood period above warning level			Flood period above danger level		
						Level in metres	Date/Time	From	To	No.of days	From	To	No.of days
69	Kosi	Basua	Bihar	46.75	47.75	47.29	14-Jun-15 20	12-Jun-15 10	20-Jun-15 02	9	-	-	-
								21-Jun-15 00	23-Jun-15 04	4	-	-	-
								26-Jun-15 09	28-Jun-15 03	3	-	-	-
								30-Jun-15 06	08-Jul-15 17	9	-	-	-
								09-Jul-15 02	10-Jul-15 09	2	-	-	-
								11-Jul-15 17	13-Jul-15 11	3	-	-	-
								08-Aug-15 01	12-Aug-15 02	5	-	-	-
								12-Aug-15 12	07-Sep-15 22	27	-	-	-
70	Kosi	Baltara	Bihar	32.85	33.85	34.99	23-Aug-15 18	27-Jun-15 03	30-Jun-15 04	4	-	-	-
								30-Jun-15 10	02-Jul-15 16	3	-	-	-
								03-Jul-15 16	19-Sep-15 02	79	14-Aug-15 02	14-Aug-15 19	1
								-	-	-	15-Aug-15 22	12-Sep-15 00	21
								02-Sep-15 12	13-Sep-15 13	9	-	-	-
71	Kosi	Kursela	Bihar	29.00	30.00	30.49	25-Aug-15 05	02-Aug-15 23	08-Aug-15 16	7	21-Aug-15 13	31-Aug-15 00	11
								16-Aug-15 08	07-Sep-15 18	23	-	-	-
72	Mahananda	Dhengraghat	Bihar	34.65	35.65	36.53	01-Sep-15 13	02-Jul-15 11	03-Jul-15 20	2	-	-	-
								05-Jul-15 15	08-Jul-15 09	4	-	-	-
								16-Jul-15 13	18-Jul-15 13	3	-	-	-
								14-Aug-15 10	15-Aug-15 11	2	-	-	-
								20-Aug-15 07	10-Sep-15 04	22	21-Aug-15 10	23-Aug-15 05	3
								-	-	-	31-Aug-15 08	04-Sep-15 01	5
								-	-	-	05-Sep-15 09	06-Sep-15 18	2
								-	-	-	07-Sep-15 11	08-Sep-15 12	2
								-	-	-	31-Aug-15 23	04-Sep-15 02	5
73	Mahananda	Jhawa	Bihar	30.40	31.40	31.70	02-Sep-15 11	21-Aug-15 10	21-Aug-15 10	10	-	-	-
								21-Aug-15 10	21-Aug-15 10	13	-	-	-
74	Mayurakshi	Narayanpur	West Bengal	26.99	27.99	27.02	03-Aug-15 06	03-Aug-15 04	03-Aug-15 10	1	-	-	-
74	Ajoy	Gheropara	West Bengal	38.42	39.42	40.00	02-Aug-15 23	02-Aug-15 19	03-Aug-15 15	2	02-Aug-15 21	03-Aug-15 04	2
76	Mundeshwari	Harinkhola	West Bengal	11.80	12.80	12.50	04-Aug-15 14	03-Aug-15 18	07-Aug-15 17	3	-	-	-
77	Kangsabati	Mohanpur	West Bengal	24.73	25.73	24.52	30-Jul-15 15	-	-	-	-	-	-

Low and Moderate flood events on main Brahamaputra and its tributaries- 2015 flood season

Sl. No.	River	Station	State	Warning level in metres	Danger level in metres	Peak level in 2015		Flood period above warning level			Flood period above danger level		
						Level in metres	From	From	To	No.of days	From	To	No.of days
1	Brahmaputra	Dibrugarh	Assam	104.70	105.70	106.06	01-Sep-15 06	18-May-15 17	18-May-15 21	01	19-Aug-15 01	21-Aug-15 06	03
								02-Jun-15 10	03-Jun-15 11	02	29-Aug-15 13	02-Sep-15 14	05
								07-Jun-15 03	12-Jun-15 09	06	-	-	-
								13-Jun-15 08	07-Jul-15 16	25	-	-	-
								15-Jul-15 16	16-Jul-15 13	02	-	-	-
								08-Aug-15 13	09-Aug-15 02	02	-	-	-
								17-Aug-15 11	08-Sep-15 22	23	-	-	-
								22-Sep-15 15	27-Sep-15 18	06	-	-	-
2	Brahmaputra	Neamatighat	Assam	84.04	85.04	86.73	01-Sep-15 21	18-May-15 14	21-May-15 00	04	07-Jun-15 19	08-Jul-15 15	32
								24-May-15 07	27-May-15 21	04	16-Jul-15 07	17-Jul-15 19	02
								02-Jun-15 09	29-Jul-15 22	58	18-Aug-15 08	10-Sep-15 16	24
								05-Aug-15 12	14-Aug-15 05	10	19-Sep-15 16	20-Sep-15 09	02
								14-Aug-15 07	02-Oct-15 22	50	23-Sep-15 04	28-Sep-15 22	06
3	Brahmaputra	Tezpur	Assam	64.23	65.23	65.92	03-Sep-15 00	08-Jun-15 22	14-Jun-15 05	07	-	-	-
								14-Jun-15 22	28-Jun-15 02	15	20-Aug-15 22	23-Aug-15 12	04
								03-Jul-15 23	08-Jul-15 09	06	31-Aug-15 07	07-Sep-15 05	08
								19-Aug-15 18	11-Sep-15 14	24	-	-	-
								24-Sep-15 17	29-Sep-15 03	06	-	-	-
4	Brahmaputra	Guwahati	Assam	48.68	49.68	50.21	04-Sep-15 04	10-Jun-15 21	13-Jun-15 13	4	-	-	-
								17-Jun-15 08	19-Jun-15 13	3	22-Aug-15 08	24-Aug-15 03	3
								20-Aug-15 21	11-Sep-15 14	23	01-Sep-15 17	07-Sep-15 03	7
								26-Sep-15 08	28-Sep-15 20	3	-	-	-
5	Brahmaputra	Goalpara	Assam	35.27	36.27	36.77	05-Sep-15 08	10-Jun-15 15	28-Jun-15 13	19	-	-	-
								05-Jul-15 10	09-Jul-15 18	5	22-Aug-15 09	25-Aug-15 13	4
								21-Aug-15 00	14-Sep-15 05	26	02-Sep-15 04	08-Sep-15 22	7
								26-Sep-15 11	30-Sep-15 20	5	-	-	-
6	Brahmaputra	Dhubri	Assam	27.62	28.62	29.66	05-Sep-15 18	06-Jun-15 18	14-Jul-15 04	39	11-Jun-15 06	15-Jun-15 23	5
								17-Jul-15 06	22-Jul-15 05	6	18-Jun-15 10	20-Jun-15 18	3
								19-Aug-15 06	03-Oct-15 16	46	21-Aug-15 05	13-Sep-15 13	24

Low and Moderate flood events on main Brahamaputra and its tributaries- 2015 flood season

Sl. No.	River	Station	State	Warning level in metres	Danger level in metres	Peak level in 2015		Flood period above warning level			Flood period above danger level		
						Level in metres	From	From	To	No.of days	From	To	No.of days
7	Buridehing	Naharkatia	Assam	119.40	120.40	119.88	01-Sep-15 09	31-Aug-15 11	02-Sep-15 08	3	-	-	-
8	Buridehing	Chenimari	Assam	101.11	102.11	104.16	02-Sep-15 13	11-Jun-15 22	13-Jun-15 10	03	21-Aug-15 23	24-Aug-15 07	04
								15-Jun-15 07	18-Jun-15 03	4	30-Aug-15 21	08-Sep-15 01	10
								25-Jul-15 06	26-Jul-15 19	2	-	-	-
								20-Aug-15 20	25-Aug-15 17	6	-	-	-
								30-Aug-15 09	09-Sep-15 15	11	-	-	-
								27-Sep-15 04	27-Sep-15 13	01	-	-	-
9	Subansiri	Badatighat	Assam	81.53	82.53	82.55	02-Sep-15 16	09-Jun-15 06	12-Jun-15 08	04	-	-	-
								15-Jun-15 07	17-Jun-15 19	03	02-Sep-15 12	03-Sep-15 02	02
								18-Jun-15 11	21-Jun-15 05	04	-	-	-
								21-Jun-15 09	24-Jun-15 06	04	-	-	-
								20-Aug-15 20	25-Aug-15 16	06	-	-	-
								27-Aug-15 18	09-Sep-15 10	14	-	-	-
10	Dikhow	Sivasagar	Assam	91.4	92.4	93.62	25-Jul-15 11	24-Jun-15 07	25-Jun-15 08	02	22-Jul-15 22	23-Jul-15 19	4
								22-Jul-15 17	26-Jul-15 22	05	24-Jul-15 11	26-Jul-15 09	03
								21-Aug-15 08	23-Aug-15 04	03	-	-	-
								01-Sep-15 16	04-Sep-15 11	04	-	-	-
11	Desang	Nanglamoraghat	Assam	93.46	94.46	95.10	04-Sep-15 02	11-Jun-15 04	20-Jun-15 06	10	-	-	-
								06-Jul-15 10	08-Jul-15 03	03	25-Jul-15 03	27-Jul-15 13	03
								24-Jul-15 15	28-Jul-15 04	05	02-Sep-15 04	05-Sep-15 04	04
								01-Sep-15 01	06-Sep-15 00	06	-	-	-
								21-Sep-15 20	23-Sep-15 16	03	-	-	-
								26-Sep-15 09	27-Sep-15 00	02	-	-	-
12	Dhansiri(S)	Golaghat	Assam	88.50	89.50	89.57	05-Sep-15 12	23-Jul-15 05	23-Jul-15 12	1	05-Sep-15 07	05-Sep-15 17	1
								24-Jul-15 10	26-Jul-15 10	03	-	-	-
								28-Aug-15 00	29-Aug-15 09	02	-	-	-
								02-Sep-15 22	03-Sep-15 05	02	-	-	-
								03-Sep-15 08	04-Sep-15 05	02	-	-	-
								04-Sep-15 18	07-Sep-15 04	04	-	-	-
13	Dhansiri(S)	Numaligarh	Assam	76.42	77.42	78.9	05-Sep-15 17	10-Jun-15 14	12-Jun-15 02	03	-	-	-
								16-Jun-15 21	18-Jun-15 04	03	-	-	-
								25-Jun-15 04	25-Jun-15 06	1	23-Jul-15 08	27-Jul-15 22	05
								25-Jun-15 10	28-Jun-15 04	03	21-Aug-15 13	22-Aug-15 06	02
								28-Jun-15 15	01-Jul-15 00	04	26-Aug-15 21	10-Sep-15 12	16
								16-Jul-15 15	21-Jul-15 00	06	11-Sep-15 18	13-Sep-15 06	03
								22-Jul-15 01	02-Aug-15 00	12	-	-	-
								03-Aug-15 03	06-Aug-15 04	04	-	-	-
								07-Aug-15 21	08-Aug-15 16	02	-	-	-
								09-Aug-15 12	29-Sep-15 23	52	-	-	-
								08-Oct-15 22	12-Oct-15 12	5	-	-	-

Low and Moderate flood events on main Brahamaputra and its tributaries- 2015 flood season

Sl. No.	River	Station	State	Warning level in metres	Danger level in metres	Peak level in 2015		Flood period above warning level			Flood period above danger level		
						Level in metres	From	From	To	No.of days	From	To	No.of days
14	Kopili	Kampur	Assam	59.50	60.50	60.91	03-Sep-15 05	21-Aug-15 10	23-Aug-15 08	3	02-Sep-15 14	04-Sep-15 13	3
								02-Sep-15 06	08-Sep-15 08	7	05-Sep-15 00	05-Sep-15 18	1
								-	-	-	06-Sep-15 22	07-Sep-15 08	2
15	Kopili	Dharamtul	Assam	55.00	56.00	56.29	06-Sep-15 19	21-Aug-15 20	28-Aug-15 03	8	-	-	-
								02-Sep-15 06	12-Sep-15 16	11	04-Sep-15 14	08-Sep-15 20	5
16	Jiabharali	NT.Rd.X-ing	Assam	76.00	77.00	78.10	15-Jul-15 13	18-May-15 09	19-May-15 00	02	08-Jun-15 06	08-Jun-15 14	01
								22-May-15 12	23-May-15 04	02	09-Jun-15 09	09-Jun-15 15	01
								23-May-15 07	25-May-15 03	03	10-Jun-15 08	10-Jun-15 17	01
								25-May-15 11	26-May-15 00	02	13-Jun-15 12	13-Jun-15 14	01
								26-May-15 11	26-May-15 22	01	14-Jun-15 10	14-Jun-15 13	01
								27-May-15 07	28-May-15 00	02	15-Jun-15 03	16-Jun-15 01	01
								28-May-15 07	31-May-15 02	04	16-Jun-15 12	16-Jun-15 21	01
								31-May-15 12	04-Jun-15 00	04	17-Jun-15 13	17-Jun-15 16	01
								04-Jun-15 10	04-Jun-15 18	01	18-Jun-15 05	21-Jun-15 16	04
								05-Jun-15 01	28-Jul-15 10	54	24-Jun-15 05	24-Jun-15 07	01
								30-Jul-15 14	31-Jul-15 06	02	02-Jul-15 08	02-Jul-15 16	01
								01-Aug-15 05	01-Aug-15 15	01	03-Jul-15 11	03-Jul-15 18	01
								02-Aug-15 03	02-Aug-15 15	01	04-Jul-15 11	04-Jul-15 21	01
								04-Aug-15 02	04-Aug-15 14	01	05-Jul-15 01	05-Jul-15 22	01
								05-Aug-15 09	06-Aug-15 06	2	15-Jul-15 07	16-Jul-15 12	02
								10-Oct-15 07	12-Oct-15 09	03	24-Jul-15 06	24-Jul-15 07	01
								-	-	-	17-Aug-15 08	26-Aug-15 22	10
								-	-	-	27-Aug-15 09	04-Sep-15 20	09
								-	-	-	05-Sep-15 09	05-Sep-15 11	01
								-	-	-	06-Sep-15 04	07-Sep-15 22	02
								-	-	-	08-Sep-15 05	09-Sep-15 11	02
								-	-	-	11-Sep-15 12	11-Sep-15 15	01
								-	-	-	13-Sep-15 18	13-Sep-15 21	01
								-	-	-	14-Sep-15 03	15-Sep-15 04	02
								-	-	-	17-Sep-15 09	17-Sep-15 20	01
								-	-	-	18-Sep-15 06	18-Sep-15 22	01
								-	-	-	22-Sep-15 06	22-Sep-15 13	01
								-	-	-	23-Sep-15 06	24-Sep-15 15	02
								-	-	-	25-Sep-15 08	25-Sep-15 18	01
								-	-	-	26-Sep-15 01	26-Sep-15 15	01

Low and Moderate flood events on main Brahamaputra and its tributaries- 2015 flood season

Sl. No.	River	Station	State	Warning level in metres	Danger level in metres	Peak level in 2015		Flood period above warning level			Flood period above danger level		
						Level in metres	From	From	To	No.of days	From	To	No.of days
17	Puthimari	Puthimari _NHX	Assam	50.81	51.81	53.93	31-Aug-15 07	24-May-15 12	25-May-15 04	2	-	-	-
								25-May-15 18	26-May-15 03	2	-	-	-
								26-May-15 18	27-May-15 01	2	-	-	-
								29-May-15 10	30-May-15 16	2	07-Jun-15 07	07-Jun-15 10	1
								31-May-15 07	02-Jun-15 13	3	08-Jun-15 09	09-Jun-15 11	2
								03-Jun-15 11	04-Jun-15 05	2	10-Jun-15 02	11-Jun-15 07	2
								04-Jun-15 14	05-Jun-15 13	2	14-Jun-15 01	14-Jun-15 02	1
								06-Jun-15 02	17-Jun-15 17	12	25-Jul-15 09	25-Jul-15 13	1
								24-Jun-15 08	25-Jun-15 16	2	18-Aug-15 14	24-Aug-15 17	7
								26-Jun-15 11	30-Jun-15 21	5	26-Aug-15 11	26-Aug-15 15	1
								05-Jul-15 06	13-Jul-15 17	9	29-Aug-15 18	05-Sep-15 20	8
								15-Jul-15 15	29-Jul-15 02	15	-	-	-
								13-Aug-15 08	13-Aug-15 20	2	-	-	-
								18-Aug-15 06	07-Oct-15 17	51	-	-	-
18	Pagladia	Pagladia_NTX	Assam	51.75	52.75	53.89	31-Aug-15 06	07-Jun-15 06	07-Jun-15 23	1	-	-	-
								08-Jun-15 08	09-Jun-15 07	2	-	-	-
								09-Jun-15 10	11-Jun-15 21	3	-	-	-
								13-Jun-15 10	14-Jun-15 00	1	-	-	-
								05-Jul-15 16	06-Jul-15 06	2	10-Jun-15 09	10-Jun-15 23	1
								25-Jul-15 09	25-Jul-15 13	1	30-Aug-15 17	01-Sep-15 04	3
								18-Aug-15 15	19-Aug-15 02	2	-	-	-
								19-Aug-15 11	22-Aug-15 22	4	-	-	-
								23-Aug-15 12	23-Aug-15 17	1	-	-	-
								29-Aug-15 15	03-Sep-15 21	6	-	-	-
								04-Sep-15 03	05-Sep-15 13	2	-	-	-
19	Barak	APGhat	Assam	18.83	19.83	20.29	27-Aug-15 14	19-Jul-15 06	27-Jul-15 17	9	-	-	-
								25-Aug-15 11	31-Aug-15 05	7	26-Aug-15 02	29-Aug-15 19	4
								03-Sep-15 05	06-Sep-15 17	4	-	-	-

Low and Moderate flood events on main Brahamaputra and its tributaries- 2015 flood season

Sl. No.	River	Station	State	Warning level in metres	Danger level in metres	Peak level in 2015		Flood period above warning level			Flood period above danger level		
						Level in metres	From	From	To	No.of days	From	To	No.of days
20	Katakhal	Matizuri	Assam	19.27	20.27	22.42	28-Aug-15 09	18-Jul-15 15	28-Jul-15 14	11	18-Jul-15 20	21-Jul-15 15	4
								20-Aug-15 20	31-Aug-15 12	12	27-Jul-15 04	27-Jul-15 07	1
								16-Sep-15 06	17-Sep-15 05	2	21-Aug-15 10	22-Aug-15 14	2
								25-Sep-15 14	27-Sep-15 17	3	25-Aug-15 11	30-Aug-15 11	6
											25-Sep-15 22	26-Sep-15 23	2
21	Kushiyara	Karimganj	Assam	13.94	14.94	15.97	27-Aug-15 12	19-Jul-15 15	29-Jul-15 17	11	23-Jul-15 09	28-Jul-15 04	6
								19-Aug-15 23	10-Sep-15 10	23	20-Aug-15 12	22-Aug-15 19	3
								-	-	-	25-Aug-15 13	07-Sep-15 10	14
22	Manu	Kailashar	Tripura	24.34	25.34	22.15	18-Jul-15 08	-	-	-	-	-	-
23	Gumti	Sonamura	Tripura	11.50	12.50	11.16	19-Jul-15 22	-	-	-	-	-	-
24	Manas	Manas NH- Crossing	Assam	47.81	48.42	49.27	21-Aug-15 05	18-Aug-15 16	22-Aug-15 20	5	20-Aug-15 11	22-08-15: 06	3
25	Beki	Beki Rd. Bridge	Assam	44.10	45.10	45.84	31-Aug-15 06	01-Jun-15 06	02-Jun-15 16	2	13-Jun-15 09	14-Jun-15 06	2
								09-Jun-15 20	27-Jul-15 02	49	29-Jun-15 00	29-Jun-15 22	2
								06-Aug-15 06	11-Aug-15 02	6	11-Jul-15 15	11-Jul-15 21	1
								13-Aug-15 07	01-Oct-15 01	50	18-Aug-15 08	26-Aug-15 01	9
								-	-	-	26-Aug-15 11	27-Aug-15 15	2
								-	-	-	28-Aug-15 11	07-Sep-15 00	10
26	Sankosh	Golokganj	Assam	28.94	29.94	30.24	21-Aug-15 11	29-Jun-15 08	01-Jul-15 02	3	21-Aug-15 00	23-Aug-15 03	4
								02-Jul-15 10	04-Jul-15 16	3	31-Aug-15 01	02-Sep-15 04	3
								18-Aug-15 04	26-Aug-15 03	9	02-Sep-15 20	03-Sep-15 22	1
								29-Aug-15 12	09-Sep-15 11	12	-	-	-

Low and Moderate flood events on main Brahamaputra and its tributaries- 2015 flood season

Sl. No.	River	Station	State	Warning level in metres	Danger level in metres	Peak level in 2015		Flood period above warning level			Flood period above danger level		
						Level in metres	From	From	To	No.of days	From	To	No.of days
27	Teesta	Domohani	W.B.	85.65	85.95	86.50	01-Jul-15 11	31-May-15 15	03-Jun-15 09	4	11-Jun-15 14	11-Jun-15 21	1
								07-Jun-15 16	07-Jun-15 20	1	12-Jun-15 15	13-Jun-15 21	2
								08-Jun-15 09	09-Jun-15 02	2	18-Jun-15 14	18-Jun-15 19	1
								10-Jun-15 03	14-Jun-15 23	5	01-Jul-15 07	01-Jul-15 22	1
								15-Jun-15 12	15-Jun-15 15	1	27-Aug-15 16	27-Aug-15 18	1
								18-Jun-15 10	20-Jun-15 10	3	28-Aug-15 09	28-Aug-15 18	1
								20-Jun-15 20	21-Jun-15 03	1	30-Aug-15 09	30-Aug-15 16	1
								21-Jun-15 12	21-Jun-15 16	1	01-Sep-15 07	01-Sep-15 14	1
								23-Jun-15 13	23-Jun-15 16	1	-	-	-
								28-Jun-15 13	30-Jun-15 08	3	-	-	-
								01-Jul-15 02	03-Jul-15 02	3	-	-	-
								03-Jul-15 13	03-Jul-15 23	1	-	-	-
								04-Jul-15 08	04-Jul-15 20	1	-	-	-
								10-Jul-15 05	10-Jul-15 22	1	-	-	-
								11-Jul-15 08	12-Jul-15 03	2	-	-	-
								15-Jul-15 09	15-Jul-15 12	1	-	-	-
								06-Aug-15 20	07-Aug-15 02	2	-	-	-
								18-Aug-15 12	18-Aug-15 20	1	-	-	-
								19-Aug-15 08	19-Aug-15 23	1	-	-	-
								20-Aug-15 05	21-Aug-15 15	2	-	-	-
								23-Aug-15 13	24-Aug-15 01	2	-	-	-
								24-Aug-15 07	25-Aug-15 21	1	-	-	-
								26-Aug-15 11	27-Aug-15 02	2	-	-	-
								27-Aug-15 08	01-Sep-15 20	5	-	-	-
28	Teesta	Mekhliganj	W.B.	65.45	65.95	65.42	01-Jul-15 20	-	-	-	-	-	-

Low and Moderate flood events on main Brahamaputra and its tributaries- 2015 flood season

Sl. No.	River	Station	State	Warning level in metres	Danger level in metres	Peak level in 2015		Flood period above warning level			Flood period above danger level		
						Level in metres	From	From	To	No.of days	From	To	No.of days
29	Jaldhaka	N H 31	W.B.	80.00	80.90	80.43	01-Sep-15 11	07-Jun-15 12	07-Jun-15 14	1	-	-	-
								08-Jun-15 08	08-Jun-15 13	1	-	-	-
								14-Jun-15 07	14-Jun-15 12	1	-	-	-
								01-Jul-15 09	01-Jul-15 14	1	-	-	-
								03-Jul-15 14	03-Jul-15 18	1	-	-	-
								15-Jul-15 11	15-Jul-15 14	1	-	-	-
								06-Aug-15 10	06-Aug-15 16	1	-	-	-
								19-Aug-15 10	19-Aug-15 12	1	-	-	-
								28-Aug-15 08	28-Aug-15 14	1	-	-	-
								30-Aug-15 08	31-Aug-15 06	2	-	-	-
								31-Aug-15 22	02-Aug-15 12	2	-	-	-
30	Jaldhaka	Mathabhanga	W.B.	47.70	48.20	48.32	02-Sep-15 01	30-Aug-15 20	02-Sep-15 08	4	31-Aug-15 02	31-Aug-15 08	**1**
								-	-	-	01-Sep-15 23	02-Sep-15 04	**2**
31	Torsa	Ghughumari	W. B.	39.80	40.41	40.20	30-Aug-15 23	13-Jun-15 11	14-Jun-15 04	2	-	-	-
								01-Jul-15 13	02-Jul-15 05	2	-	-	-
								03-Jul-15 09	04-Jul-15 21	2	-	-	-
								05-Jul-15 07	06-Jul-15 01	2	-	-	-
								17-Aug-15 13	18-Aug-15 01	2	-	-	-
								18-Aug-15 12	18-Aug-15 16	1	-	-	-
								19-Aug-15 19	22-Aug-15 10	4	-	-	-
								28-Aug-15 12	29-Aug-15 19	2	-	-	-
								30-Aug-15 11	03-Sep-15 12	5	-	-	-
								04-Sep-15 03	07-Sep-15 00	3	-	-	-
32	Radak-I	Tufanganj	W. B.	34.22	35.30	**35.46**	22-Aug-15 04	07-Jun-15 18	12-Jun-15 10	6	21-Aug-15 13	22-Aug-15 10	2
								17-Aug-15 07	17-Aug-15 17	1	03-Sep-15 01	03-Sep-15 13	1
								18-Aug-15 15	20-Aug-15 06	3	-	-	-
								20-Aug-15 10	23-Aug-15 22	4	-	-	-
								31-Aug-15 00	04-Aug-15 15	5	-	-	-

Low and Moderate flood events on various river systems (excluding Ganga and Brahmaputra basins)- 2015 flood season

Sl. No.	River	Station	State	Warning level in metres	Danger level in metres	Peak level in 2015		Flood period above warning level			Flood period above danger level		
						Level in metres	Time	From	To	No. of days	From	To	No. of days
1	Subernarekna	Rajghat	Odisha	9.45	10.36	12.08	29-Jul-15 13	28-Jul-15 22	31-Jul-15 05	**4**	29-Jul-15 00	30-Jul-15 17	2
2	Burhabalang	NH_5_Road Bridge	Odisha	7.21	8.13	7.60	29-Jul-15 11	29-Jul-15 07	30-Jul-15 02	**2**	-	-	-
3	Baitarni	Anandpur	Odisha	37.44	38.36	39.70	28-Jul-15 22	27-Jul-15 20	29-Jul-15 16	**3**	28-Jul-15 05	29-Jul-15 08	2
4	Baitarni	Akhuapada	Odisha		17.83	19.20	29-Jul-15 09	-	-	-	28-Jul-15 00	30-Jul-15 11	3
5	Brahmani	Jenapur	Odisha	22.00	23.00	21.20	06-Aug-15 07	-	-	-	-	-	-
6	Rushikuluya	Purushottampur	Odisha	15.83	16.83	16.35	16-Sep-15 17	16-Sep-15 12	17-Sep-15 02	**2**	-	-	-
7	Vamsadhara	Gunupur	Odisha	83.00	84.00	83.15	16-Sep-15 12	-	-	-	-	-	-
8	Vamsadhara	Kashinagar	Odisha	53.60	54.60	54.99	16-Sep-15 15	22-Jun-15 00	22-Jun-15 08	**1**	-	-	-
								16-Sep-15 07	17-Sep-15 08	**2**	16-Sep-15 14	17-Sep-15 00	2
								20-Sep-15 15	21-Sep-15 22	**2**	-	-	-
9	Mahanadi	Naraj	Odisha	25.41	26.41	25.30	23-Sep-15 18	-	-	-	-	-	-
10	Mahanadi	Alipingal Devi	Odisha	10.85	11.76	7.10	24-Sep-15 10	-	-	-	-	-	-
11	Mahanadi	Nimapara	Odisha	9.85	10.76	4.28	28-Aug-15 09	-	-	-	-	-	-
12	Godavari	Kopergaon	Maharashtra	490.90	493.68	490.00	19-Sep-15 08	-	-	-	-	-	-
13	Godavari	Gangakhed	Maharashtra	374.00	375.00	364.75	01-Jun-15 01	-	-	-	-	-	-
14	Godavari	Nanded	Maharashtra	353.00	354.00	343.21	23-Jul-15 01	-	-	-	-	-	-
15	Godavari	Kaleswaram	Telangana	103.50	104.75	100.80	15-Aug-15 06	-	-	-	-	-	-
16	Godavari	Eturunagaram	Telangana	73.29	75.79	72.80	22-Jun-15 08	-	-	-	-	-	-
17	Godavari	Dummagudam	Telangana	53.00	55.00	51.44	22-Jun-15 06	-	-	-	-	-	-
18	Godavari	Bhadrachalam	Telangana	45.72	48.77	45.11	22-Jun-15 19	-	-	-	-	-	-
19	Godavari	Kunavaram	Andhra Pradesh	37.74	39.24	34.70	23-Jun-15 05	-	-	-	-	-	-
20	Godavari	Rajamundry	Andhra Pradesh	17.68	19.51	15.70	21-Sep-15 12	-	-	-	-	-	-
21	Godavari	Dowalaiswaram	Andhra Pradesh	14.25	16.08	14.04	14-Jul-15 13	-	-	-	-	-	-
22	Wainganga	Bhandara	Maharashtra	244.00	244.50	242.10	05-Aug-15 12	-	-	-	-	-	-
23	Wainganga	Pauni	Maharashtra	226.73	227.73	227.24	14-Aug-15 08	-	-	-	-	-	-
24	Wardha	Balharsha	Maharashtra	171.50	174.00	170.97	18-Sep-15 08	-	-	-	-	-	-
25	Indravati	Jagdalpur	Chhatisgarh	539.50	540.80	543.03	18-Sep-15 03	22-Jun-15 01	22-Jun-15 15	1	21-Sep-15 14	22-Sep-15 07	2
								16-Sep-15 01	19-Sep-15 18	4	-	-	-
								20-Sep-15 20	22-Sep-15 18	3	-	-	-
26	Krishna	Arjunwad	Maharashtra	542.07	543.29								
27	Bhima	Deongaon	Karnataka	402.00	404.50	394.50	12-Sep-15 17	-	-	-	-	-	-
28	Tungabhadra	Mantralayam	Andhra Pradesh	310.00	312.00	310.09	08-Sep-15 07	08-Sep-15 04	08-Sep-15 13	**1**	-	-	-
29	Pennar	Nellore	Andhra Pradesh	15.91	17.28	15.03	17-Nov-15 18	-	-	-	-	-	-
30	Sabarmati	Ahmedabad Shubhash Bridge	Gujarat	44.09	45.34	46.14	30-Jul-15 02	29-Jul-15 23	30-Jul-15 18	**2**	30-Jul-15 00	30-Jul-15 11	1
31	Mahi	Wanakbori	Gujarat	71.00	72.54	71.09	28-Jul-15 22	-	-	-	-	-	-
32	Naramada	Mandla	Madhya Pradesh	437.20	437.80	437.15	04-Aug-15 15	-	-	-	-	-	-
33	Naramada	Hoshangabad	Madhya Pradesh	292.83	293.83	288.65	15-Aug-15 01	-	-	-	-	-	-
34	Naramada	Garudeswar	Gujarat	30.48	31.09	19.20	06-Aug-15 22	-	-	-	-	-	-
35	Naramada	Bharuch	Gujarat	6.71	7.31	5.00	28-Jul-15 16	-	-	-	-	-	-
36	Tapi	Surat	Gujarat	8.50	9.50	4.70	29-Sep-15 16	-	-	-	-	-	-
37	Damanganga	Vapi Town	Gujarat	18.20	19.20	15.30	28-Jul-15 19	-	-	-	-	-	-
38	Damanganga	Daman	Dadra & Nagar Haveli	2.60	3.40	2.10	16-Jun-15 15	-	-	-	-	-	-
39	Jhelum	Rammunshibagh	Jammu and Kashmir	1585.53	1586.45	1587.3	25-06-2015						