GOVERNMENT OF INDIA
CENTRAL WATER COMMISSION
FLOOD FORECAST MONITORING DIRECTORATE

Kolhapur in Maharashtra –Flood 2019

FLOOD FORECASTING AND WARNING NETWORK
PERFORMANCE APPRAISAL REPORT 2019

NEW DELHI-110066 **OCTOBER 2020**

Member (RM)
Central Water Commission
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PREFACE

Central Water Commission had started Flood Forecasting & Warning services 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 throughout the country covering almost all the major inter-state flood prone river basins.

During 2019, the flood forecasting services are expanded to 325 stations which comprised of 197 level and 128 inflow forecast stations in 20 major river basins. It covered 22 States besides Union Territories of NCT Delhi, Jammu and Kashmir and Daman & Diu. The flood forecasting activities of the Commission are being performed every year from May to December through its 29 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 level flood forecasting stations. During Flood Season 2019, level forecasts were issued for 145 stations out of 197 stations and inflow forecasts were issued for 75 reservoir/dam/barrages out of 128 inflow stations. The inflow forecasts are formulated whenever the inflow into the reservoirs exceeds the threshold value fixed by the respective project authorities for reservoir regulationas well as flood moderation.

During the year 2019 flood season, 4 Flood Forecast stations flowed in Extreme Flood situation. Severe Flood situation was witnessed in 98 Flood Forecasting Stations and 41 Flood forecast stations witnessed Above Normal Flood Situation. Out of the 128 reservoirs in the network, inflow forecasts were issued at 75 reservoirs. The major flood events this year was the Extreme Floods in Brahmaputra in Assam, Kamala Balan in Bihar, and Godavari & Krishna in Maharashtra.

During the year 2019, 9754 forecasts were issued out of which 8451 forecasts (86.64%) were found to be within the limits of accuracy. The number of level forecasts issued during the year 2019 were 6004 out of which 5773 (96.15%) was within the limit of accuracy of ± 0.15 m. The number of inflow forecasts issued were 3750 out of which 2678 (71.41%) was within limits of accuracy of ±20%. Daily Flood Situation Reports cum Advisories (DFSITREPcA) based on 5-day rainfall warning of IMD were issued on daily basis. Advisories about Extreme floods in Assam, Bihar and Maharashtra were issued in DFSITREPcA for taking up relief and rescue operations in advance which were well appreciated by the beneficiaries at both National and State Levels.

Rainfall-Runoff advisories based on the satellite estimates of rainfall, AWS/ARG data of IMD/CWC as well as the rainfall forecast products of Weather Research and Forecast (WRF) model at a resolution of 0.25mx0.25m was continued in 2019 flood season and was put in Uniform Resource Locator (URL) http://120.57.32.251/. CWC wishes to place its acknowledgements for the services provided by IMD through its Hydromet & Numerical Weather Prediction and AWS Lab units in the Headquarters, Pune as well as various FMOs of IMD.

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 hydro-meteorological observations & flood forecasting and monitoring of the field offices.

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 all stakeholders. I wish to place on record my deep appreciations of the efforts put in by the officers and staff of FFM, FCA-1 and FCA-2 Directorates in carrying out the flood forecasting work with utmost devotion & dedication. The staff of FFM Directorate, along with other supporting staff from other Directorates/Wings during flood duties in the flood season of 2019 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 expanding the flood forecasting network, improving performance of the forecast and adopting various modernization including in the field of dissemination techniques will be further accelerated to achieve greater effectiveness of each and every forecast with the help of mathematical modelling supported by real-time data from telemetry.

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 **(Ranjan Kumar Sinha)**
October,2020 **Member (RM)**

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Cover Photo: Courtesy: The Times of India.

EXECUTIVE SUMMARY

0.1 Rainfall Situation

The 2019 southwest monsoon season (June to September) rainfall over the country as a whole and four broad geographical regions are given in the table below along with respective long period average (LPA) values. The rainfall during the 4 monsoon months and the second half of the monsoon season (August + September) over the country as a whole are also given.

Season (June to September) rainfall			
Region	**Long Period Average (LPA) (mm)**	**Actual Rainfall for 2019**	
		Rainfall (mm)	**Rainfall (% of LPA)**
All India	880.6	968.3	110
Northwest India	599.5	586.0	98
Central India	976.5	1262.8	129
East & Northeast India	1410.3	1240.7	88
South Peninsula	726.2	840.9	116
Monthly & second half of the monsoon season rainfall over the country as a whole (All India)			
Month	**LPA (mm)**	**Actual Rainfall for 2019**	
		Rainfall (mm)	**Rainfall (% of LPA)**
June	166.9	112.1	67
July	285.3	298.3	105
August	258.2	297.8	115
September	170.2	259.3	152
August + September	428.3	557.1	130

As seen in the table above, the 2019 seasonal rainfall over the country as a whole (110% of LPA) was more than the long period average (LPA). After 1994 (110% of LPA), rainfall received in 2019 (110 % of LPA) is the highest seasonal rainfall received by the country as a whole. South Peninsula and Central India received seasonal rainfall of 116% and 129% of LPA each and Northeast India received seasonal rainfall of 88% of LPA. Northwest India received 98% of seasonal rainfall. However, During 18 of the last 19 years (2001-2019), North-East India has received seasonal rainfall less than LPA with an exception of 2007 (110% of LPA). This indicates that the seasonal rainfall over North-East India is passing through a below normal epoch like it was during early 1950s to mid-1980s.

0.2 Flood Situation

Extreme flood situation was witnessed in 4 Flood Forecasting stations, Severe Flood situation was witnessed in 98 Flood Forecasting Stations and 41 Flood forecast stations witnessed Above Normal Flood Situation. No flooding situation was witnessed in 54 level forecasting stations. No flood forecast were issued for 105 flood forecasting stations which include 52 level forecasting stations and 53 inflow forecasting stations. Out of the 128 reservoirs in the network, inflow forecasts were issued at 75 reservoirs and in 53 reservoirs the inflows did not exceed the criteria

for issuing inflow forecasts. The highlight of this year flood was the Extreme Floods in Dhubri in Assam, Jhanjharpur in Bihar, Nasik and Arjunwad in Maharashtra.

0.3 Flood Forecasting Performance

During the year 2019, 9754 forecasts were issued out of which 8451 forecasts (86.64%) were found to be within the limits of accuracy. The number of level forecasts issued during the year 2019 were 6004 out of which 5773 (96.15%) was within the limit of accuracy of ± 0.15 m. The number of inflow forecasts issued was 3750 out of which 2678 (71.41%) were within limits of accuracy of ±20%. CWC issued Daily Flood Situation Report cum Advisories (DFSITREPcA) during the monsoon season. This contains the usual daily rainfall situation, rainfall forecast for the next 5 days, daily flood bulletin for the day and the flood situation and advisories for the next few days, GIS based Map indicating the districts alerted/affected by flood and reservoirs having inflow forecasts. Further, the report was sent to all beneficiaries including State Governments through e-mail on a daily basis.

Salient Features of Flood Forecasting System

The "Salient Features" of Flood Forecasting and Warning System 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,	14
6.	No. of Superintending Engineer's offices including one Flood Forecast Monitoring Directorate at CWC headquarter	16
7.	No. of present Flood Forecasting Divisions	29
8.	No. of states including union -territories covered under F.F. Programme	25
9.	No. of forecasting sites	325
10.	No. of gauge and gauge & discharge sites	1569
11.	No. of Telemetry Stations installed	941
13.	No. of forecasts issued in flood season 2011	5991
14.	No. of forecasts issued in flood season 2012	5031
15.	No. of forecasts issued in flood season 2013	7060
16.	No. of forecasts issued in flood season 2014	4772
17.	No. of forecasts issued in flood season 2015	4072
18.	No. of forecasts issued in flood season 2016	6239
19.	No. of forecasts issued in flood season 2017	6297
20.	No. of forecasts issued in flood season 2018	6851
21	No. of forecasts issued in flood season 2019	9754

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 and cost effective non-structural measure for flood management. Recognizing the great importance of this measure, flood forecasting of river Yamuna at Delhi was suggested by Reddy Committee set up by the then Hon'ble Prime Minister, Govt. of India to manage flooding of Delhi. Accordingly in the year 1958, CWC commenced the flood forecasting services 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-tate 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 services followed from time to time. The year-wise positions of the number of flood forecasting sites till the flood season 2019 in the network of Central Water Commission are shown in the **Table 1.1**:

Table - 1.1: Year-wise positions of number of forecasting sites in CWC

Year	Cumulative No. of Flood Forecasting Sites	Year	Cumulative No. of Flood Forecasting Sites
1958	01	2003	166
1965	02	2004	172
1969	43	2005	173

1977	77	2006	175
1980	84	2015	176
1985	145	2016	199
1987	147	2017	226
1990	157	2018	249
2001	159	2019	325
2002	161		

The "National Flood Forecasting and Warning Network" of Central Water Commission, which comprised of 325 flood forecasting sites including 128 inflow forecasting sites in flood season 2019 is shown in **Map - 1.** The number of flood forecasting sites on each of the major inter-state river systems is in the **Table 1.2**.

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

Sl. No.	Major Interstate River Systems	FF stations		
		Level	Inflow	Total
1	Indus & its tributaries	3	0	**3**
2	Ganga & its tributaries	94	39	**133**
3	Brahmaputra & its tributaries	39	5	**44**
4	Barak System	6	0	**6**
5	Subarnarekha (including Burhabalang)	4	3	**7**
6	Brahmani & Baitarni	3	2	**5**
7	East Flowing (Mahanadi to Pennar)	4	4	**8**
8	Narmada	4	6	**10**
9	Tapi	1	2	**3**
10	Mahi	1	4	**5**
11	Sabarmati	1	1	**2**
12	Mahanadi	3	3	**6**
13	Godavari	18	22	**40**
14	Krishna	5	17	**22**
15	West Flowing Rivers (Kutch & Saurashtra)	1	1	**2**
16	West Flowing Rivers (Tapi to Tadri))	2	1	**3**
17	Cauvery & its tributaries	3	9	**12**
18	Pennar	1	1	**2**
19	East Flowing Rivers (Pennar to Kanyakumari)	1	6	**7**
20	West Flowing River (Tadri to Kanyakumari)	3	2	5
	Total	**197**	**128**	**325**

The above flood forecasting network covers the following 22 states, 3 Union Territory as shown in the **Table 1.3**

Table 1.3 Statewise Flood Forecasting Network in CWC

Sl. No.	Name of State/ UT	Number of flood forecasting Stations		
		Level	Inflow	Total
1	Andhra Pradesh	10	9	19
2	Arunachal Pradesh	3	0	3
3	Assam	30	0	30
4	Bihar	40	3	43
5	Chhattisgarh	1	2	3
6	Gujarat	6	7	13
7	Haryana	1	1	2
8	Himachal Pradesh	1	0	1
9	Jharkhand	2	15	17
10	Karnataka	1	14	15
11	Kerela	3	2	5
12	Madhya Pradesh	2	10	12
13	Maharashtra	8	13	21
14	Odisha	12	7	19
15	Rajasthan	2	11	13
16	Sikkim	3	5	8
17	Tamil Nadu	4	11	15
18	Telangana	5	7	12
19	Tripura	2	0	2
20	Uttar Pradesh	39	5	44
21	Uttarakhand	4	2	6
22	West Bengal	12	4	16
23	Daman & Diu	1	0	1
24	NCT of Delhi	2	0	2
25	Jammu & Kashmir	3	0	3
	Total	**197**	**128**	**325**

Central Water Commission through its twenty nine 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 through its level flood forecasting network, into

the following three different categories, depending upon the severity of floods i.e. based on floods magnitudes.

(i) ABOVE NORMAL FLOOD

The river is said to be in **"ABOVE NORMAL"** 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) SEVERE FLOOD

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

(iii) EXTREME FLOOD

The flood situation is said to be **"EXTREME FLOOD"** when the water level of the river touches or crosses the "**HIGHEST FLOOD LEVEL**" recorded at any forecasting site so far.

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 severe (3 hourly updates) and extreme (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
III	Above Normal Flood (Water level between Warning level and Danger level)	Yellow
II	Severe Flood (Water level below HFL and above Danger Level)	Orange
I	Extreme Flood (Water Level equal and above Highest Flood Level-HFL)	Red

1.5 INFLOW FORECAST

Inflow Forecasts are issued for 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.

The salient features of all Flood Forecasting Sites, the details of all the sites basin-wise as well as Statewise during the flood season 2019, is shown at **Annex-I, Annex-II** and **Annex-III** respectively.

1.6 DATA COMMUNICATION SYSTEM

Central Water Commission maintains Wireless Stations for near real –time data communication. These wireless sets work on pre-fixed schedules for receiving the vital hydro-meteorological data immediately after its observation. In addition, telephone/mobile phone, fax and internet are also used for dissemination of flood forecasts to user agencies.

Now under modernization program, satellite based Telemetry System has been installed at various stations for sensor based automatic data collection and satellite based communication.

The installation of Telemetry System for automatic sensor based data collection and satellite based data communication was initiated during IX Plan. At present, 941 telemetry stations have been installed.

In order to receive and analyses data collected by the telemetry stations, Earth Receiving Stations and Modelling Centres have been installed in various parts of the country during different Plan periods. There were 3 Earth Receiving Stations (ERS) in the country at New Delhi, Jaipur and Burla. A total of 27 Modelling centres have been installed in the country. The data reception is being monitored from Central Flood Control Room at CWC Headquarter, New Delhi also.

The data received was used mainly by the divisions issuing forecast by MIKE-11. Also, it is planned to transfer data observed through telemetry to WIMS software for flood forecasting activities.

1.7 DAMAGE DUE TO FLOODS/ HEAVY RAINS BETWEEN 1953 TO 2019

The damage due to floods for the entire country was tentatively Rs. 57291.098 Crore during the flood season 2019. The average annual damages to crops, houses and public utilities from the year 1953 to 2019 as reported by the States/ UT's are of the order of Rs. 5909.455 Crore. The maximum annual damage reported is Rs. 57291.098 Crore during 2019.

A comparative details showing the details of damages occurred during the flood season 2017 to 2019 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 2017 to 2019

Sl. No.	Items	Flood Damages				Flood Damages (1953-2019)	
		2017	2018	2019	Average (1953-2019)	Maximum	
						Year	Damage
1	Area affected (mha)	6.076	7.718	6.280	7.142	1978	17.5
2	Population affected (millions)	47.342	37.399	29.777	31.900	1978	70.450
3	Damage to Crops (mha)	4.972	2.515	7.486	3.912	2005	12.299
4	Damaged to crops (Rs. Crore)	8951.978	3708.187	167.470	1736.115	2015	17043.948
5	Damaged to houses (numbers)	1252914	913414	460336	1230726	2015	3959191
6	Damaged to houses (Rs. Crore)	9384.018	2508.656	152.309	847.321	2009	10809.795
7	Cattle lost (number)	26673	60279	24730	92531	1979	618248
8	Human lives lost (numbers)	2063	1839	2537	1653	1977	11316

9	Damaged to public Utilities (Rs. crores)	12329.849	12132.920	2803.11	3308.033	2013	38937.843
10	Total damages to crops, houses & public utilities (Rs. crores)	30665.845	21849.972	3122.889	5909.455	2018	57291.098

1.8 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 2019 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.

1.9 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. Sixteen Circle Offices and twenty nine 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 - 1.0.**

Map-1: Flood Forecasting Network in India

List of River Basins

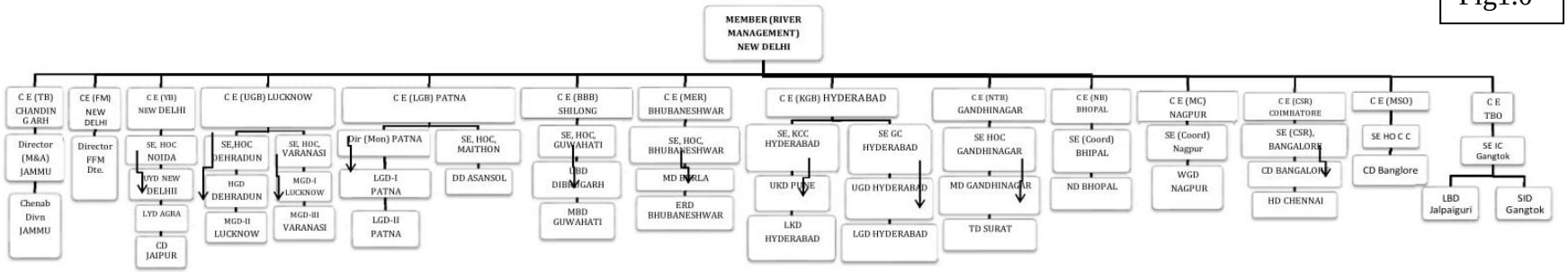
Basin Code	Basin Name
1	Cauvery
2	East flowing rivers between Pennar and Kanyakumari
3	Pennar
4	Godavari
5	Mahanadi
6	Subarnarekha
7	Brahmani and Baitarni
8	Minor rivers draining into Myanmar and Bangladesh
9	Sabarmati
10	Barak and Others
11	Brahmaputra
12	Ganga
13	Indus (Up to border)
14	West flowing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

List of Flood Forecast Stations											
1	Sangam	56	Rae Bareilly	111	Jhanjarpur	166	Tufanganj	221	Wanakbori Weir	276	Koyna Dam
2	Rammunshibagh	57	Jaunpur	112	Sonebarsa	167	NH 31(Jaldhaka)	222	Mandla	277	Warna Dam
3	Safapura	58	Ghazipur	113	Baltara	168	Hasimara	223	Barna Dam	278	Arjunwad
4	Srinagar	59	Buxar	114	Kursela	169	Ghugumari	224	Bargi Dam	279	Hippargi Barrage
5	Ganganagar	60	Ballia	115	Sahibganj	170	Mathabanga	225	Tawa Dam	280	Hidkal Dam
6	Rishikesh	61	Banbasa Barrage	116	Taibpur	171	Teesta III HEP	226	Hoshangabad	281	Almatti Dam
7	Haridwar	62	Katarniaghat Barrage	117	Dhengraghat	172	Rangit-III HEP Dam	227	Indira Sagar Dam	282	Malaprabha Dam
8	Dharmanagari Barrage	63	Elginbridge	118	Jhawa	173	Teesta V HEP	228	Omkareswar Dam	283	Narayanpur Dam
9	Garhmukhteshwar	64	Ayodhya	119	Araria	174	Singtam	229	SardarSarovar Dam	284	Vir Dam
10	Narora Barrage	65	Kakardhari	120	Farakka	175	Rongpo Dam	230	Garudeswar	285	Ujni Dam
11	Kachlabridge	66	Balrampur	121	Massanjore Dam	176	Rongli Dam	231	Bharuch	286	Deongaon Bridge
12	Fatehgarh	67	Bansi	122	Tilpara Barrage	177	Melli Bazar	232	Hathnur Dam	287	PD Jurala Project
13	Kalagarh Dam	68	Birdghat(Gorakhpur)	123	Narayanpur	178	Jorethang	233	Ukai Dam	288	Upper Tunga
14	Moradabad	69	Turtipar	124	Sikatia Barrage	179	Domohani Bridge	234	Surat	289	Bhadra Dam
15	Bareilly	70	Darauli	125	Gheropara	180	Mekhliganj	235	Madhuban Dam	290	Tungabhadra Dam
16	Dabri	71	Gangpur Siswan	126	Tenughat Dam	181	AP Ghat(Silchar)	236	Vapi	291	Singatlur Barrage
17	Kannauj	72	Chhappra	127	Tilaiya Dam	182	Matizuri	237	Daman	292	Mantralayam
18	Ankinghat	73	Bansagar Dam	128	Konar Dam	183	Badarpurghat	238	Nasik	293	Sunkesula Barrage
19	Kanpur	74	Rihand Dam	129	Panchet Dam	184	Karimganj	239	N M D Weir	294	Kurnool
20	Dalmau	75	Annaraj Dam	130	Maithon Dam	185	Kailashahar	240	Kopergaon	295	Srisailam Dam
21	Phaphamau	76	Bhirawa Dam	131	Durgapur Barrage	186	Sonamura	241	Mula Dam	296	Musi Dam
22	Paonta Sahib	77	Inderpuri Barrage	132	Sundar Dam	187	Getlasud Dam	242	Jaikwadi Dam	297	Dr KLRS Pulichintala Dam
23	Hathnikund Barrage	78	Inderpuri	133	Harinkhola	188	Chandil Dam	243	Manjlegaon Dam	298	Prakasam Barrage
24	Karnal Bridge	79	Koelwar	134	Hinglow Dam	189	Galudih Barrage	244	Gangakhed	299	Avanigadda
25	Mawi	80	Maner	135	Kangsabati Dam	190	Jamshedpur	245	Yeldari Barrage	300	Somasila Dam
26	Dhansa	81	Patna(Dighaghat)	136	Mohanpur	191	Rajghat	246	Nanded	301	Nellore
27	Delhi Railway Bridge	82	Gandak Barrage	137	Yingkiang	192	Mathani Rd Bridge	247	Karanja Dam	302	Poondi Reservoir
28	Mathura	83	Khadda	138	Passighat	193	Govindpur(NH5 Road Bridge)	248	Singur Dam	303	Chembarampakkam Lake

29	Agra	84	Chatia	139	Dholla Bazar	194	Salandi Dam	249	Nizamsagar Dam	304	Sathanur Dam
30	Etawah	85	Dumariaghat	140	Dibrugarh	195	Anandpur	250	Sriramsagar Dam	305	Gomukhi Dam
31	Gandhisagar Dam	86	Rewaghat	141	Namsai	196	Akhuapada	251	Kaddam Project	306	Wellington Dam
32	RanaPratapSagar Dam	87	Hajipur	142	Naharkatia	197	Rengali Dam	252	SripadaYellampally Project	307	Harangi Dam
33	Kota Barrage	88	Patna Gandhighat	143	Chenimari(Khowang)	198	Jenapur	253	Upper Wainganga Pro	308	Hemavathy Dam
34	Kota City	89	Amanat Dam	144	Nanglamoraghat	199	Ravi Shankar Dam	254	Totladoh Project	309	Kabini Dam
35	Bisalpur Dam	90	Batane Dam	145	Sibsagar	200	Bango Dam	255	Bhandara	310	K R Sagar Dam
36	Kalisindh Dam	91	Sripalpur	146	Neamatighat	201	Hirakud Dam	256	Gosikhurd Dam	311	Mettur Dam
37	Parwan Dam	92	Hathidah	147	Chouldhuaghat	202	Naraj	257	Pauni	312	Bhavanisagar Dam
38	Gambhiri Dam	93	Munger	148	NH Crossing Ranganadi	203	Alipingal	258	Upper Wardha Project	313	Savandapur
39	Panchana Dam	94	Lalbeghiaghat	149	Badatighat	204	Nimapara	259	Issapur/Upper Penganga	314	Kodumudi
40	Gudha Dam	95	Ahirwalia	150	Golaghat	205	Purushottampur	260	Balharsha	315	Kodaganar Dam
41	Parwati Dam	96	Sikandarpur(Muzzafarpur)	151	Numaligarh	206	Gunupur	261	Sirpur Town	316	Musiri
42	Auraiya	97	Samastipur	152	Jiabharali NT Road Crossing	207	Kashinagar	262	Kaleswaram	317	Upper Anicut
43	Kalpi	98	Rosera	153	Tezpur	208	Gotta Barrage	263	Upper IndravatiPrjct	318	Grand Anicut
44	Hamirpur	99	Khagaria	154	Kampur	209	Thottapalli reservoir	264	Jagdalpur	319	Vaigai Dam
45	Rajghat Dam	100	Bhagalpur	155	Dharamtul	210	MadduvalasaRsvr	265	Eturunagaram	320	Madurai
46	Matatila Dam	101	Kahalgaon	156	Guwahati	211	NarayanpuramAnicut	266	Dummagudem	321	Kumbidi
47	Mohana	102	Kosi Barrage	157	Puthimari NH Crossing	212	Srikakulam	267	Bhadrachalam	322	Idduki Dam
48	Shahjina	103	Basua	158	Pagladiya NT RdCrossi	213	Dantiwada Dam	268	Kolab Project	323	Idamalayar Dam
49	Banda	104	Dheng Bridge	159	Mathanguri	214	Abu Road	269	Machkund Project	324	Neeleswaram
50	Chillaghat	105	Runisaidpur	160	Beki Road Bridge	215	Dharoi Dam	270	Balimela Project	325	Malakkara
51	Naini	106	Benibad	161	Manas NH Crossing	216	Shubhash Bridge(Ahmedabad)	271	Chinturu		
52	Chhatnag(Allahabad)	107	Kamtaul	162	Goalpara	217	Mahi Bajajsagar Dam	272	Kunavaram		
53	Mirzapur	108	Ekmighat	163	Kokrajhar	218	SomKamlaAmba Dam	273	Rajahmundry(Rly Bridge)		
54	Varanasi	109	Hayaghat	164	Dhubri	219	Kadana Dam	274	Dowlaiswaram Barrag		
55	Lucknow (Hanuman Setu	110	Jainagar	165	Golokganj	220	Panam Dam	275	Atreyapuram		

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

Fig1.0



CHIEF ENGINEER OFFICE	13
DIRECTORATE	3
CIRCLE OFFICE	16
DIVISION OFFICE	29

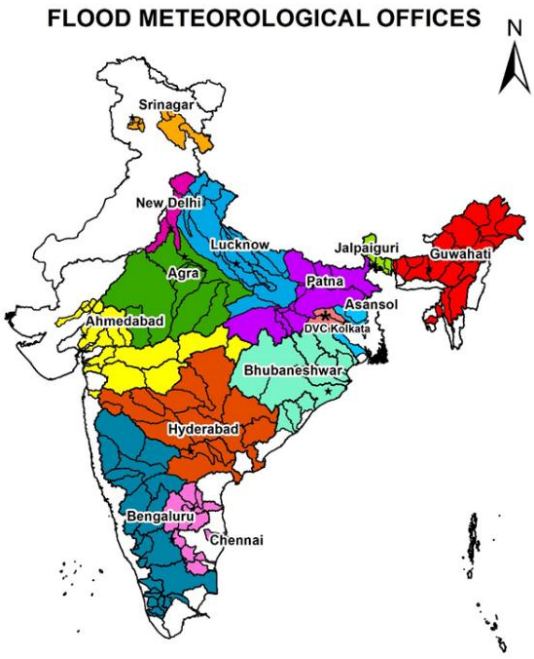
Note:
i) UGD, Hyderabad and WGD, Nagpur support LGD, Hyderabad by supplying data of sites under their jurisdiction on real-time basis.
ii) UKD Pune, HD Chennai and CD, Banglore support LKD, Hyderabad by supplying data of sites under their jurisdiction on real-time basis.

CHAPTER – 2

ROLE OF IMD IN FLOOD FORECAST ACTIVITIES AND SOUTHWEST MONSOON ACTIVITIES

2.1 FLOOD METEOROLOGICAL SERVICES OF IMD

CWC is the nodal agency for issuing Flood Forecast and IMD is the nodal agency for issuing Quantitative Precipitation Forecast (QPF). The meteorological support is provided in terms of 'Quantitative Precipitation Forecast (QPF)' through Hydromet Bulletins. QPF bulletin is issued at 930 hrs IST and Hydromet Bulletin at 1230 hrs IST with further modification by FMOs. Forecast for a lead time of 7-days (forecast for 3 days and outlook for subsequent 4 days) are issued daily during flood season. QPF bulletins are further modified in the evening, if situation demands. QPF Bulletins including heavy rainfall warning are also issued by concerned FMOs during cyclone period or when there is a chance of heavy rainfall which may lead to flood in non flood season also.



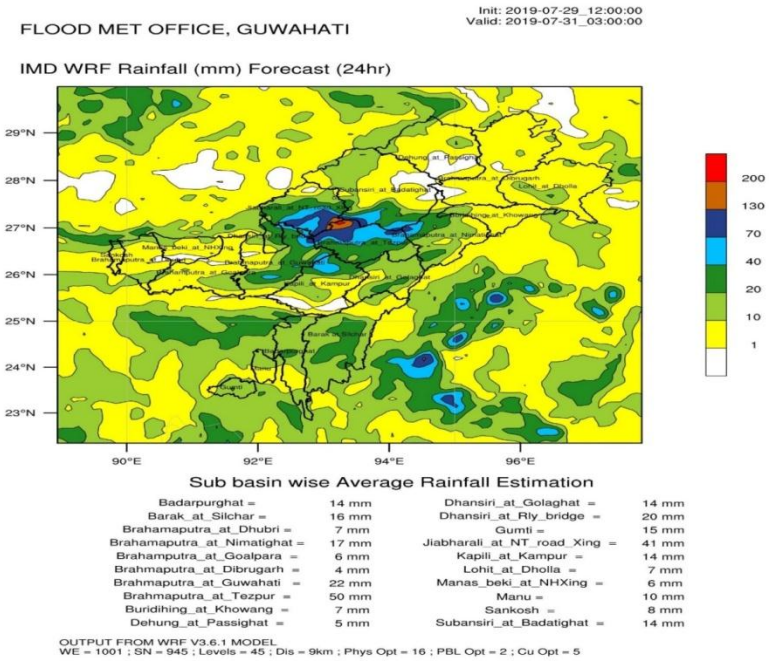
Input comprises in terms of Hydromet Bulletin which contains the following;

i. Synoptic situations
ii. Spatial and temporal distribution of rainfall
iii. Sub-basin wise categorical QPF for day-1, day-2 and day-3, as follows:
(a) 0 mm (b) 0.1-10 mm (c) 11-25 mm (d) 26-50 mm (e) 51-100mm (f) >100mm
iv. Outlook for the subsequent four days
v. Station wise recorded significant rainfall
vi. Heavy rainfall warnings
vii. Sub-basin wise past 24hrs realized rainfall.

IMD has established 14 Flood Meteorological Offices (FMOs) at different parts of flood prone areas of the country which are located at Agra, Ahmedabad, Asansol, Bhubaneswar, Guwahati, Hyderabad, Jalpaiguri, Lucknow, New Delhi, Srinagar, Chennai, Bengaluru and Patna in the flood prone areas which caters to the river catchments Yamuna, Narmada, Tapi, Ajoy, Mayuraksi and Kangasbati, Mahanandi, Brahmani and Subernarekha, Brahmaputra, Dhansiri and Barak, Godavari and Krishna, Cauvery, Teesta, Ganga and Sharada, and Sahibi, Kosi, Baghmati, Gandaketc. IMD also provides similar support to Damodar Valley Corporation (DVC) for the river basins Barakar and Damodar. Flood Meteorological Offices (FMOs, 14 in all over India) of India Meteorological Department provide Meteorological (IMD) support to Flood Forecasting Divisions (FFDs) of Central Water Commission (CWC) to help them issue "Flood warnings/Flood alerts". The performance of QPF is verified for the monsoon season annually.

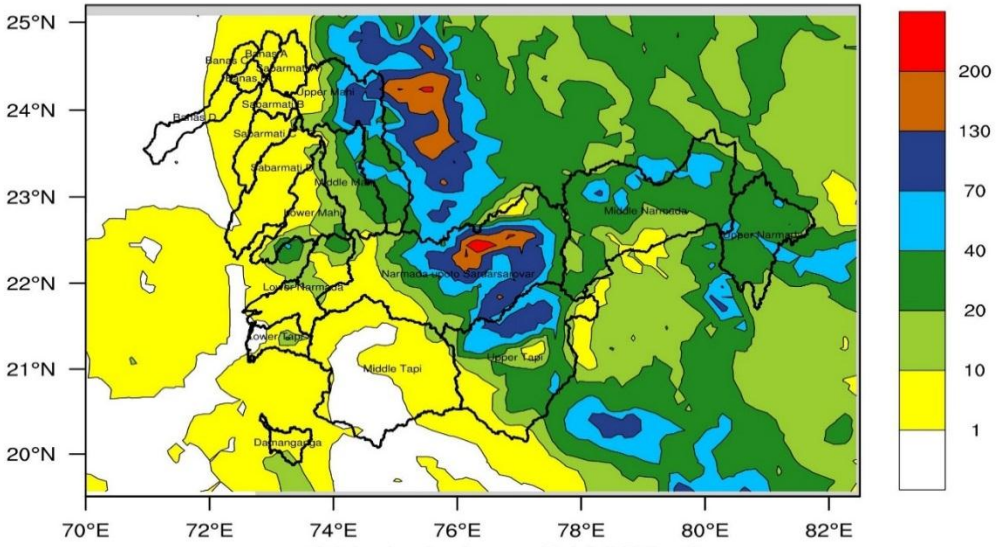
Model based Quantitative Precipitation Forecast

Sub-basin wise Quantitative Precipitation Forecast (QPF) using dynamical model WRF ARW (9Kmx9Km) based on 00 UTC and 12 UTC for day-1 to day-3, GFS (12kmx12km) 00 UTC for day-1 to day-7, NCUM (12kmx12km) for day-1 to day-7, Multi model Ensemble (25kmx25km) 00 UTC for day-1 to day-5 are computed and uploaded on the IMD's website http://hydro.imd.gov.in/hydrometweb/(S(kkxivq454zpfjnzmak3d4q55))/PRODUCTS/QPF/index.htmloperationally for 153 flood prone river sub-basins. An example is shown in Figs. given below.



FLOOD MET OFFICE AHMEDABAD

NCUM Rainfall(mm) Forecast (24hr) Day 1 FCST valid for: 26.08.2019 TILL 08:30 IST

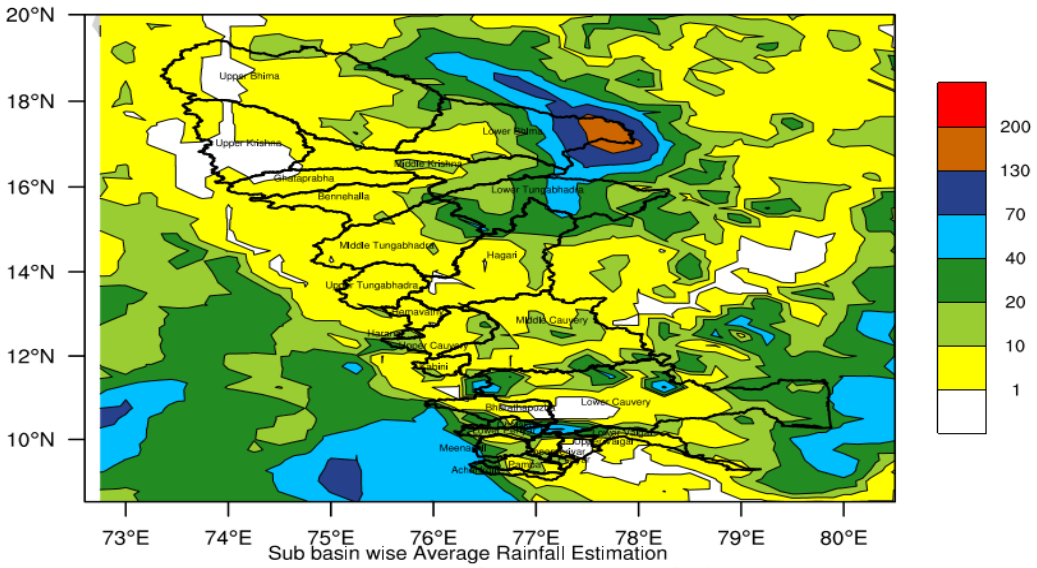


Sub basin wise Average Rainfall Estimation

Banas A =	4 mm	Middle Tapi =	2 mm
Banas B =	4 mm	Narmada upoto Sardarsarovar =	52 mm
Banas C =	2 mm	Sabarmati A =	4 mm
Banas D =	1 mm	Sabarmati B =	5 mm
Damanganga =	8 mm	Sabarmati C =	4 mm
Lower Mahi =	12 mm	Sabarmati D =	4 mm
Lower Narmada =	8 mm	Upper Mahi =	40 mm
Lower Tapi =	5 mm	Upper Narmada =	30 mm
Middle Mahi =	23 mm	Upper Tapi =	31 mm
Middle Narmada =	27 mm		

METEOROLOGICAL CENTRE (MC), BENGALURU

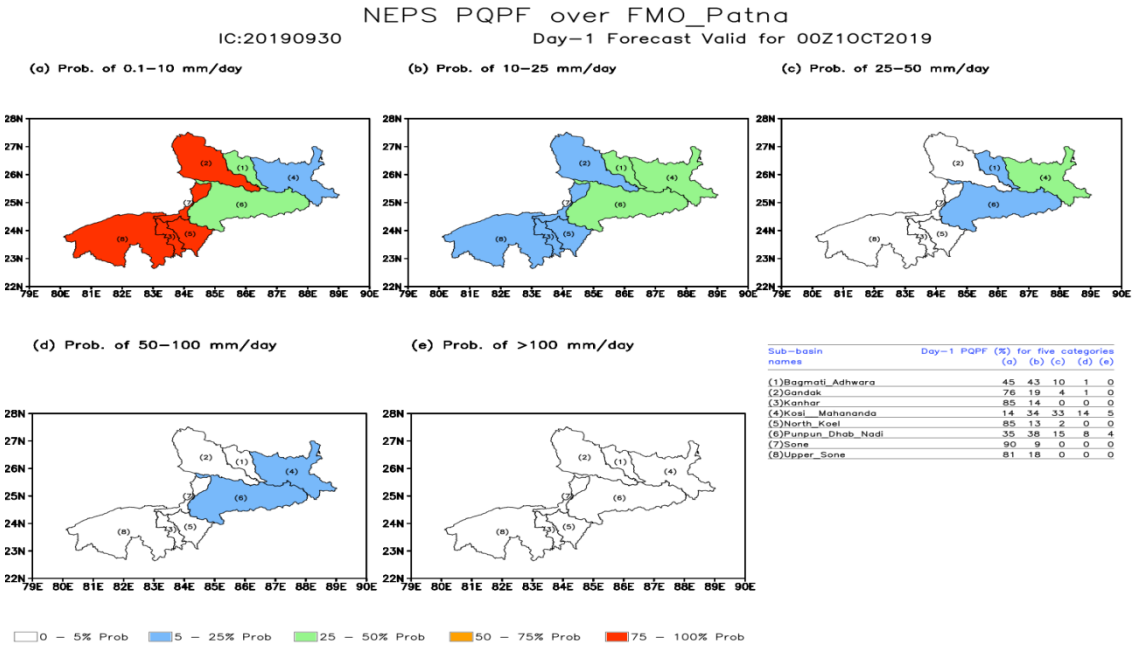
IMD GFS Rainfall(mm) Forecast (24hr) Day 1 FCST valid for: 22.08.2019 TILL 08:30 IST



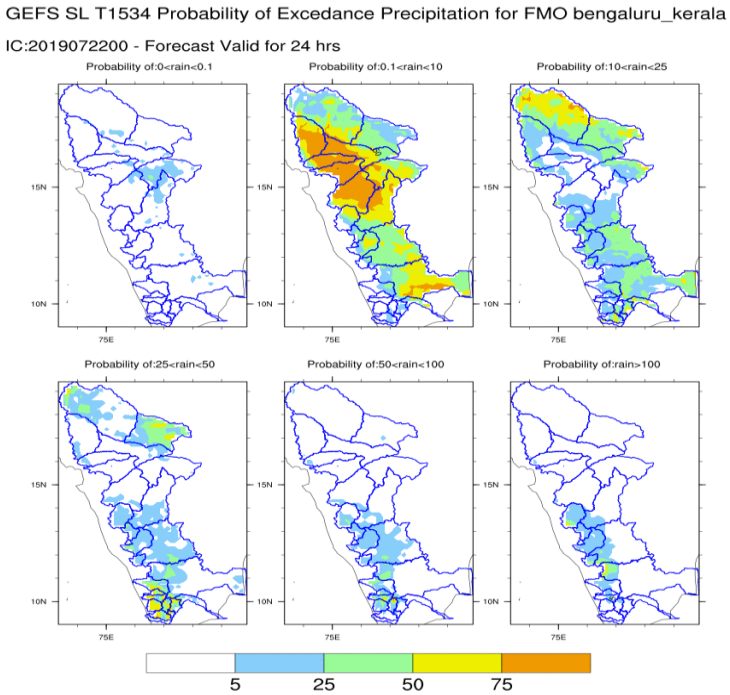
Sub basin wise Average Rainfall Estimation

Achankoil =	20 mm	Lower Bhima =	39 mm	Pamba=	14 mm
Bennehalla =	8 mm	Lower Cauvery =	16 mm	Periyar =	13 mm
Bharathapuzha=	8 mm	Lower Periyar=	34 mm	Upper Bhima =	7 mm
Chalakudi =	3 mm	Lower Tungabhadra=	27 mm	Upper Cauvery =	8 mm
Ghataprabha=	3 mm	Lower Vaigai =	11 mm	Upper Krishna =	2 mm
Hagari/Vedavati=	11 mm	Meenachil =	17 mm	Upper Periyar =	9 mm
Harangi =	16 mm	Middle Cauvery =	9 mm	Upper Tungabhadra =	4 mm
Hemavathy =	3 mm	Middle Krishna =	10 mm	Upper Vaigai =	0 mm
Kabini =	4 mm	Middle Tungabhadra =	8 mm		

NWP Model based gridded daily rainfall forecast (WRF & GFS) are provided operationally to CWC for their flood forecasting model. A new initiative has been taken to improve accuracy of QPF. Sub basin wise dynamical models viz. GEFS and NEPS based Probabilistic QPF are being generated daily and uploaded on the IMD website operationally which has been found very useful for issuing of QPF under heavy rainfall situations by the forecasters. An example is shown in Figs. given below.



Sub-basin names	Day-1 PQPF (%) for five categories (a)	(b)	(c)	(d)	(e)
(1)Bagmati_Adhwara	45	43	10	1	0
(2)Gandak	76	19	4	1	0
(3)Kanhar	85	14	0	0	0
(4)Kosi_Mahananda	14	34	33	14	5
(5)North_Koel	85	13	2	0	0
(6)Punpun_Dhab_Nadi	35	38	15	8	4
(7)Sone	90	9	0	0	0
(8)Upper_Sone	81	18	0	0	0



2.2 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 large excess, excess, normal, deficient and large deficient, according to the following criteria.

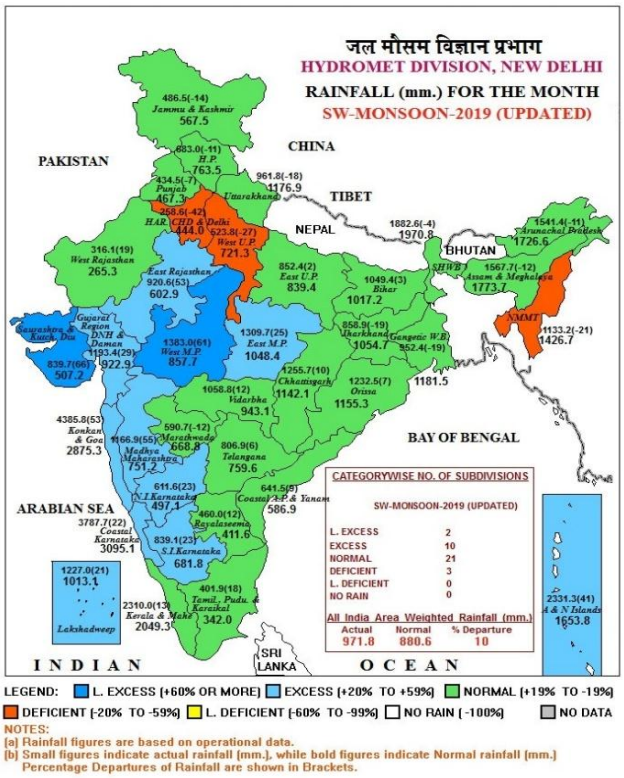
Large Excess	:	+60% or more of the normal
Excess	:	+ 20% to +59% of the normal
Normal	:	+ 19% to - 19% of the normal
Deficient	:	- 20% to - 59% of the normal
Large Deficient	:	- 60% to - 99% of the normal
No Rain (N.R.)	:	- 100% of the normal

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 1961 to 2010 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.

2.3 HIGHLIGHTS OF SOUTH-WEST MONSOON 2019

The season (June-September) rainfall over the country as a whole was 110% of its long period average (LPA).

- Seasonal rainfalls over Northwest India, Central India, South Peninsula and Northeast (NE) India were recorded at 99%, 129%, 116% and 88% of respective LPAs.
- Out of the total 36 meteorological subdivisions, 21 subdivisions constituting 63% of the total area of the country received normal season rainfall, 2 subdivision received Large excess rainfall (8% of the total area), 10 subdivision received excess rainfall (22% of the total area) and 3 subdivisions (7% of the total area) received deficient rainfall.
- Monthly rainfall over the country as a whole was 68% of LPA in June, 105% of LPA in July, 116% of LPA in August, and 152% of LPA in September
- During the season, 14 monsoon low pressure systems formed in the monsoon season
- This year, June & September witnessed the formation of one Very Severe Cyclonic Storm (VSCS) each, while 1 Deep Depression formed during August and 1 Depression during September.



2.4 ONSET AND ADVANCE OF SOUTHWEST MONSOON 2019

During mid-May, gradual development of southerly to southwesterly flow occurred over southern parts of north Indian Ocean. Within a couple of days, the cross equatorial flow strengthened and deepened over the Andaman Sea. This feature along with enhanced cloudiness and rainfall in association with a cyclonic circulation at mid-tropospheric levels over Andaman Sea, led to the arrival of southwest monsoon (SWM) over south Andaman Sea, some parts of South Bay of Bengal and Nicobar Islands on 18th May. Sustained rainfall activity over Andaman & Nicobar Islands and prevalence of southwesterly winds led to further advance of SWM into some more parts of southeast Bay of Bengal and north Andaman Sea, remaining parts of Nicobar Islands and southern parts of Andaman Islands on 25th May. In association with further deepening of southwesterlies in the near equatorial belt and over south & adjoining eastcentral Bay of Bengal, the SWM further advanced into southernmost parts of Maldives-Comorin area, some more parts of southwest and southeast Bay of Bengal, some parts of eastcentral Bay of Bengal, remaining parts of Andaman Sea and Andaman Islands on 30th May.

In view of the enhanced cloudiness, strengthening of westerlies and persistent cyclonic circulation in lower & mid-tropospheric levels over Lakshadweep area and neighbourhood, the SWM advanced into some more parts of south Arabian Sea, most parts of Lakshadweep area, some parts of Kerala & south Tamil Nadu, remaining parts of Maldives-Comorin area, some more parts of south &eastcentral Bay of Bengal and some parts of northeast Bay of Bengal on 8th June. ***Thus the southwest monsoon set in over Kerala on 08th June 2019*** with a delay of about 7 days as against the normal date of 1st June. Subsequent to the onset over the mainland, the onset vortex which was in the form of a cyclonic circulation off the west coast, descended down and developed into Very Severe Cyclonic Storm (VSCS) 'VAYU' over east central Arabian Sea during 10th – 17th June. During this period, the further advance of SWM remained sluggish. It further advanced into: remaining parts of south Arabian Sea & Lakshadweep area, most parts of Kerala, some more parts of Tamil Nadu, some more parts of Bay of Bengal, most parts of Mizoram and some parts of Manipur on 10th June; some parts of central Arabian Sea, remaining parts of Kerala, some parts of Karnataka, Tamil Nadu, some more parts of Bay of Bengal and of northeast India on 14th June and into most parts of Bay of Bengal, remaining parts of northeast India and some parts of east India on 16th June.

Further advance took place after the dissipation of VSCS 'VAYU'. SWM further advanced into: some more parts of central Arabian Sea, peninsular India and of Bay of Bengal, remaining parts of northeastern states and some more parts of West Bengal on 20th June; some more parts of peninsular India, some parts of south Chhattisgarh & Odisha, remaining parts of Bay of Bengal, most parts of West Bengal and some parts of Jharkhandand Bihar on 21st June; some more parts of Maharashtra, remaining parts of Karnataka, Telangana, Odisha, Jharkhand, Gangetic West Bengal & Bihar, most parts of Chhattisgarh and some parts of East Uttar Pradesh on 22nd June; some more parts of Maharashtra and East Uttar Pradesh on 23rd June; some more

parts of central Arabian Sea, Konkan, most parts of interior Maharashtra, some parts of Madhya Pradesh, some more parts of Chhattisgarh & Uttar Pradesh and some parts of Uttarakhand on 24th June; remaining parts of central Arabian Sea, Maharashtra, some parts of north Arabian Sea and south Gujarat and some more parts of Madhya Pradesh on 25th June and into some more parts of north Arabian Sea, Gujarat & Madhya Pradesh on 28th June.

In association with a well marked low pressure area over southeast Jharkhand & neighbourhood, SWM further advanced into some parts of East Rajasthan, most parts of Madhya Pradesh, remaining parts of Chhattisgarh, some more parts of Uttar Pradesh, most parts of Uttarakhand and some parts of Himachal Pradesh and Jammu & Kashmir on 02nd July. Subsequently, it advanced into: some more parts of Gujarat, Rajasthan, Madhya Pradesh and Uttar Pradesh on 03rd July; remaining parts of north Arabian Sea, Gujarat, Madhya Pradesh and some more parts of Rajasthan on 04th July; some more parts of Rajasthan, remaining parts of Uttar Pradesh, Himachal Pradesh, Uttarakhand and Jammu & Kashmir and some parts of Punjab, Haryana, Chandigarh and entire Delhi on 05th July; remaining parts of East Rajasthan & Haryana and some more parts of West Rajasthan & Punjab on 09th July; most parts of Haryana and Punjab on 15th July and into remaining parts of Punjab & Haryana and some more parts of West Rajasthan on 17th July. The SWM further advanced into remaining parts of West Rajasthan and thus covered the entire country on 19th July, with a delay of 4 days, against normal date of 15th July. ***Fig.1 shows the isochrones of advance of monsoon 2019***

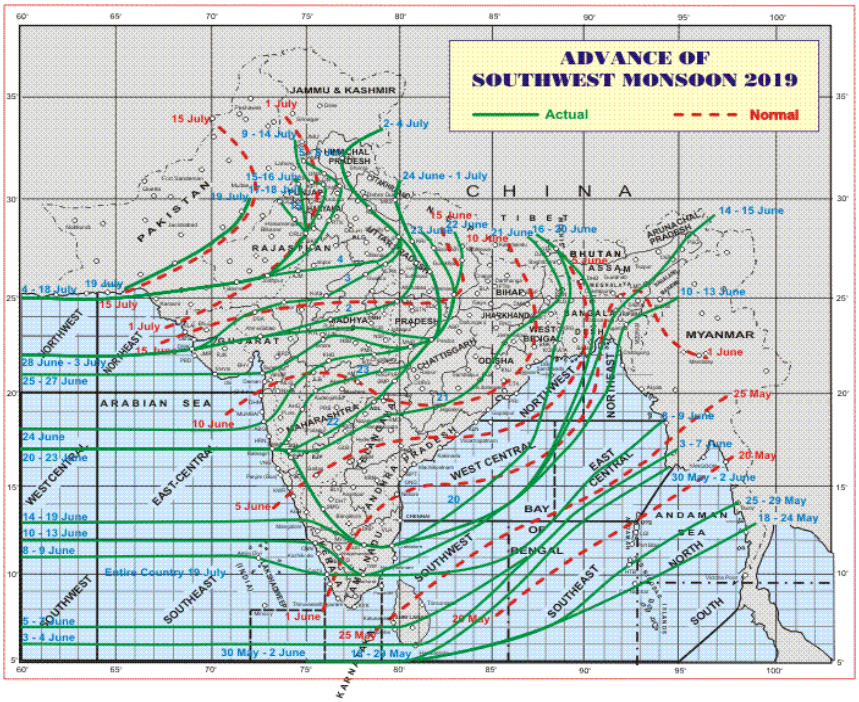


Fig.1: Progress of Southwest Monsoon – 2019

2.5 CHIEF SYNOPTIC FEATURES

During the season, 14 monsoon low pressure systems formed in the Indian season. Their month-wise frequency and intensity is given in the table below.

Systems/ Month	VSCS	Deep Depression	Depression	Well marked low pressure area	Low pressure area
June	1	0	0	0	1
July	0	0	0	1	3
August	0	1	0	1	3
Sept.	1	0	1	0	1

This year, June & September witnessed the formation of one Very Severe Cyclonic Storm (VSCS) each, while 1 DD formed during August and 1 D during September. Though the frequency of cyclonic storms is less during the southwest monsoon period, there had been 3 more such years in the recent 30 years, viz., 1996 (2 CS in June, one each over the Bay of Bengal & the Arabian Sea),2007 (2 in June, both over the Arabian Sea) and 2015 (1 in June over the Arabian Sea and the other in July, over the Bay of Bengal). The tracks of these systems are given in Fig. 2 and their description below.

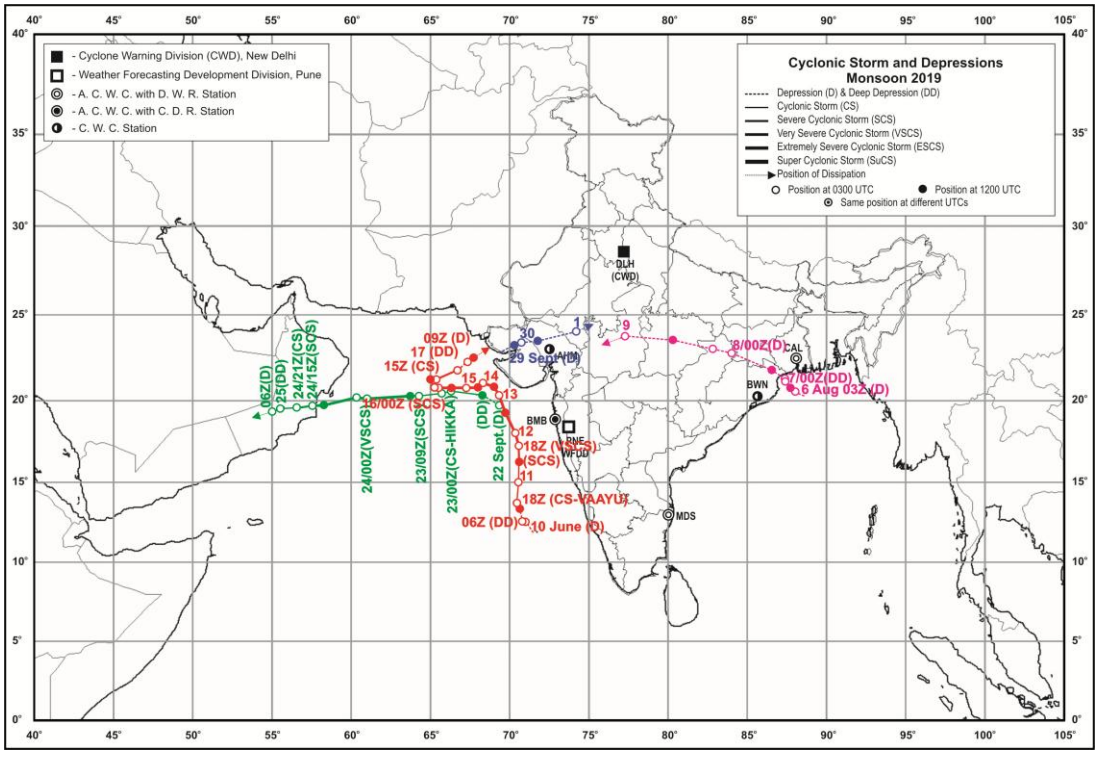


Fig.2: Track of the monsoon Depressions and Cyclonic Storms

2.6 WITHDRAWAL OF SOUTHWEST MONSOON

Due to the prevalence of an active Inter Tropical Convergence Zone, across central India, north Indian Ocean, extending upto western north Pacific Ocean, the withdrawal of southwest monsoon was delayed upto the 1st week of October. Anti cyclonic circulation in lower levels over Rajasthan could only be established after 05th October. This led to the most delayed commencement of withdrawal since 1961. Against normal date of withdrawal of SWM 01st September, the Monsoon Withdrawal commenced only on 09th October. In 1961 it was 01st October followed by 30th September in 2007. It withdrew from some parts of Haryana, Punjab and north Rajasthan on 09th October. With the increase in dominance of mid-latitude circulation regime over the northern half of India and consequent reduction in moisture led to further withdrawal of southwest monsoon from entire Northwest India, some parts of West Bengal, Bihar, Jharkhand, Chhattisgarh, Madhya Pradesh, Gujarat and north Arabian Sea during 10th -12th October; from entire north Bay of Bengal, some parts of central Bay of Bengal, entire Odisha, Chhattisgarh, some parts of Coastal Andhra Pradesh, some parts of Telangana, most parts of Maharashtra, some parts of North Interior Karnataka, entire north Arabian Sea and some parts of central Arabian Sea during 13th-15th October. Thus in a rapid phase, the Southwest Monsoon withdrew from the entire country), giving way to simultaneous commencement of northeast monsoon rains on 16th October, 2019. Fig.3 shows the isochrones of withdrawal of monsoon 2019.

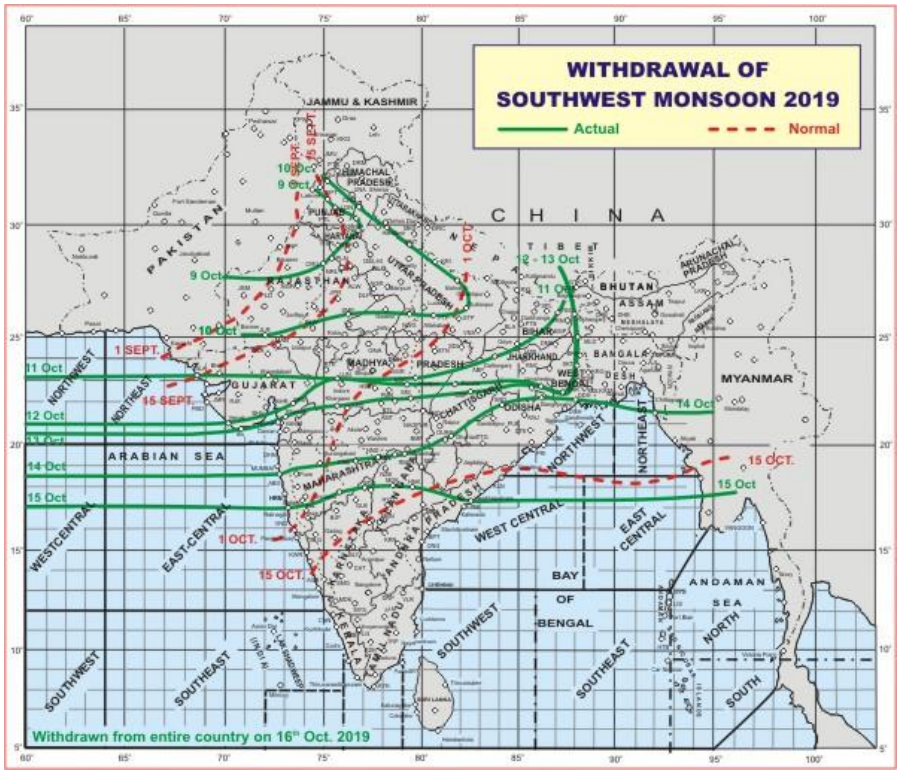


Fig. 3: Isochrones of withdrawal of southwest monsoon - 2019.

High Impact Weather Events

Fig. 4 depicts the met Sub-divisions or parts thereof, which experienced high impact weather events like, floods, landslides and Heat waves during the southwest monsoon season (June- September) along with the dates. Fig.4 also indicates areas that experienced isolated extremely heavy rainfall (Rainfall amount ≥20 cm reported during the 24 hours ending at 0830 hrs IST) events during the season without any reference to the dates of these occurrences.

Several record breaking extreme rainfall and resultant Flood events caused human casualty and property damage in states including Maharashtra, Karnataka, Kerala, West Bengal, Odisha, Uttar Pradesh and Madhya Pradesh during later part of July to September.

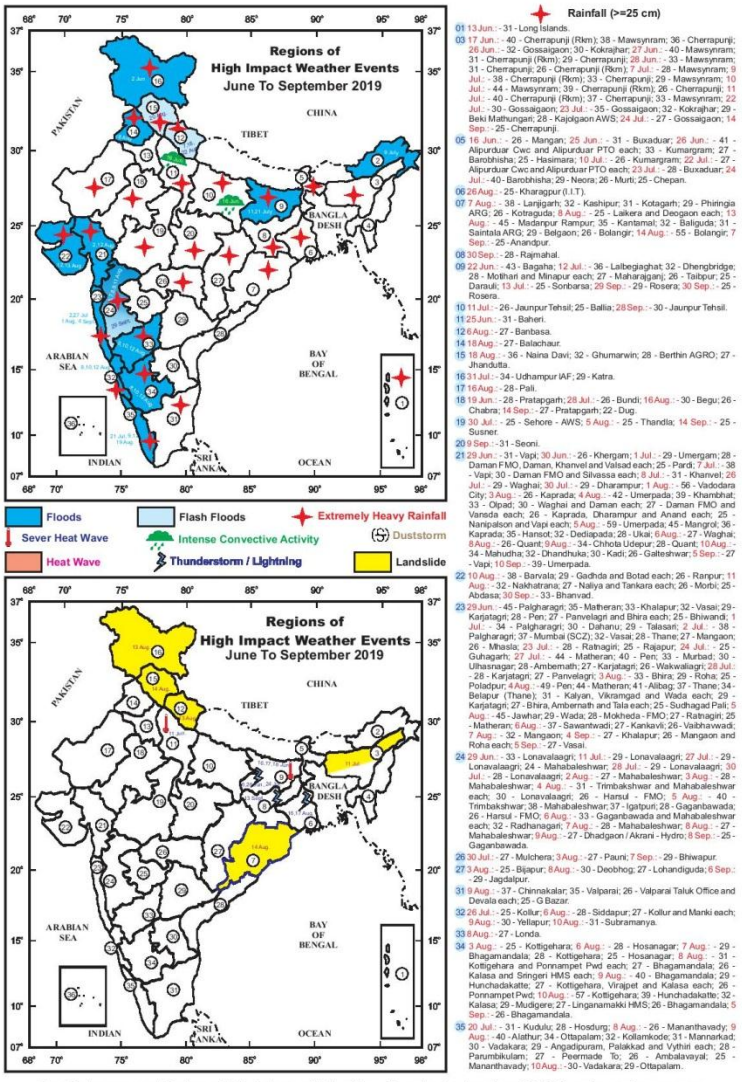


Fig. 3: Areas and Dates of High Impact Weather Events during the 2019 Southwest monsoon

Fig.4: Areas and dates of high impact weather events during the 2019 southwest Monsoo

2.6.1 RAINFALL DISTRIBUTION

The realized 2019 southwest monsoon season (June to September) rainfall over the country as a whole and four broad geographical regions are given in the table below along with respective long period average (LPA) values. The rainfall during the 4 monsoon months and the second half of the monsoon season (August + September) over the country as a whole are also given.

Season (June to September) rainfall			
Region	**Long Period Average (LPA) (mm)**	**Actual Rainfall for 2019**	
		Rainfall (mm)	**Rainfall (% of LPA)**
All India	880.6	968.3	110
Northwest India	599.5	586.0	98
Central India	976.5	1262.8	129
East & Northeast India	1410.3	1240.7	88
South Peninsula	726.2	840.9	116
Monthly & second half of the monsoon season rainfall over the country as a whole (All India)			
Month	**LPA (mm)**	**Actual Rainfall for 2019**	
		Rainfall (mm)	**Rainfall (% of LPA)**
June	166.9	112.1	67
July	285.3	298.3	105
August	258.2	297.8	115
September	170.2	259.3	152
August + September	428.3	557.1	130

As seen in the table above, the 2019 season rainfall over the country as a whole (110% of LPA) was more than the long period average (LPA). After 1994 (110% of LPA), rainfall received in 2019 (110 % of LPA) is the highest season rainfall received by the country as a whole. South Peninsula and Central India received season rainfall of 116% and 129% of LPA each and Northeast India received season rainfall of 88% of LPA. Northwest India received 98% of season rainfall. However, During 18 of the last 19 years (2001-2019), North-East India has received seasonal rainfall less than LPA with an exception of 2007 (110% of LPA). This indicates that the seasonal rainfall over North-East India is passing through a below normal epoch like it was during early 1950s to mid-1980s. Month wise, rainfall over the country as a whole were more than LPA during all the months of the season except June where it was below normal. It can be mentioned that, after 1931, this is the first time, season rainfall is more than LPA even after the June rainfall deficiency was more than 30% of LPA. Country as a whole received rainfall of 130% of LPA during the second half (115% of LPA in August and 152% of LPA in September), which was much higher than that during the first half (109% of LPA) with 67% of LPA in June and 105% of LPA in July. Thus among the four months, rainfall deficiency was highest during June and rainfall was excess in September. This is the second highest September rainfall (152 of LPA), after 1917 (165% of LPA). After 2010, this is the first time, rainfalls during all the last three months (July to September) were above LPA. It can be also

noticed that, The highest cumulative rainfall during August-September (130 %) has been recorded in 2019 after 1983 (142 %). Out of the total 36 meteorological subdivisions, the season (June-September) rainfall was normal in 19 subdivisions (54% of the total area of the country) and excess in 10 subdivisions measuring 22% of the total area of the country and large excess in 2 subdivisions measuring 8% of the total area of the country. However, the season rainfall was deficient in 5 subdivisions constituting 15% of the total area of the country. Out of the 5 deficient subdivisions, 2 subdivisions were from East & Northeast India (Gangetic West Bengal and Nagaland, Manipur, Mizoram and Tripura (NMMT)), 3 subdivisions each were from the Northwest India (Jammu & Kashmir, West Uttar Pradesh and Haryana, Chandigarh and Delhi), but deficiency was in 20s except for Haryana, Delhi and Chandigarh where the deficiency was 42%.

2.7 NORTHEAST MONSOON

The Indian southwest monsoon (SWM) season of June to September is the chief rainy season for India and about 75% of the country"s annual rainfall is realised during this season. Subsequent to the withdrawal of SWM, the northeast monsoon (NEM), a small scale monsoon confined to parts of southern peninsular India comprising of the meteorological sub-divisions of Tamil Nadu, Puducherry & Karaikal (TN), Kerala &Mahe (KER), Coastal Andhra Pradesh &Yanam(CAP), Rayalaseema (RYS) and South Interior Karnataka (SIK) occurs. For the subdivision of TN, the normal SWM seasonal rainfall realised is only about 35% (342.0 mm) of its annual rainfall (943.7 mm)as this subdivision comes under the rain-shadow region during the SWM. The northeast monsoon (NEM) season of October to December (OND) is the chief rainy season for this subdivision with 48% (447.4 mm) of its annual rainfall realised during this season and hence its performance is a key factor for this regional agricultural activities.

Further, the NEM season is also the primary cyclone season for the North Indian Ocean (NIO) basin comprising of the Bay of Bengal (BOB) and the Arabian Sea (AS) and cyclonic disturbances (CDs; low pressure systems (LPS) with maximum sustained surface wind speed (MSW) of 17 knots or more) forming over BOB and moving west/northwest-wards affect the coastal areas of southeastern peninsular India and also contribute significantly to NEM rainfall. As such, the NEM season assumes importance from the agricultural as well as cyclone disaster management perspectives.Prior to the commencement of NEM rains, after the withdrawal of SWM up to 15°N, reversal of low level winds from southwesterly to northeasterly occurs. The normal date of setting in of easterlies over the southeastern peninsular India is 14thOctober. The normal date of onset of NEM over Coastal TN (CTN) and south CAP is 20thOctober.The normal rainfall received over the five NEM sub-divisions during OND is TN-447.4 mm, KER-491.6 mm, CAP-338.1 mm, RYS-223.3 mm and SIK-204.1 mm. However, the NEM seasonal rainfall shows a high degree of variability with 27% co-efficient of variation.

The NEM rainfall is influenced by global climate parameters such as ENSO (El Nino/La Nina & Southern Oscillation Index), Indian Ocean Dipole (IOD) and Madden-Julian Oscillation (MJO). El Nino, positive IOD and MJO in phase 2-4 with amplitude greater than one are generally associated with good NEM rainfall.

2.8 ONSET PHASE

Reversal of surface and low level winds from westerly to easterly over the southeastern parts of peninsular India took place during 12th-14th October and the SWM withdrew up to 15◦N on 15thOctober and from the entire country on 16th October. Simultaneously, under the influence of a trough running from north Sri Lanka coast to a cyclonic circulation over eastcentral AS off south Karnataka coast in the lower levels and a trough in the easterlies running from southwest BOB off south Tamil Nadu to westcentral BOB in the lower levels, the NEM rains commenced over Tamil Nadu and adjoining areas of Andhra Pradesh, Karnataka and Kerala on 16th October.

Synoptic scale weather systems

Cyclones and Depressions

During October-December 2019, four major low pressure systems (LPS) formed over the BOB and AS (i) Super Cyclonic Storm (SuCS) KYARR over AS during 24th October - 02nd November 2019 (ii) Extremely Severe Cyclonic Storm (ESCS) MAHA over AS during 30th October -07th November 2019 (iii) Very Severe Cyclonic Storm (VSCS) BULBUL over BOB during 05th- 11thNovember 2019 and (iv) Cyclonic Storm(CS) PAWAN over AS during 02nd -07th December 2019.

Other synoptic scale weather systems

The other major synoptic scale weather systems that influenced the NEM 2019 were the transient easterly wave troughs across the peninsular India. The commencement of NEM rains on 16th October took place under the influence of a westward moving trough in the easterlies across the southern peninsula during 15th - 17th October. Subsequently another trough in easterlies passed over the region during 27th-29th October. Later, during the last week of November, two more troughs in easterlies moved across the region in quick succession, one during 24th-26th November and another during 28th-30th November 2019.

Summary

The onset of NEM 2019 over the southeastern parts of peninsular India took place on 16th October, 4 days prior to the normal date of onset (20 October)]. All the five meteorological sub- divisions benefitted by the NEM (TN, KER, CAP, RYS& SIK) received normal to excess rainfall during the season (October-December 2019). All the five sub-divisions received normal to large excess rainfall in October and December. However, all of them came under deficient to largely deficient categories in November. Four major low pressure systems (LPS) formed over the BOB and AS during the season - (i) Super Cyclonic Storm (SuCS) KYARR over AS during 24th October - 02nd November 2019 (ii) Extremely Severe Cyclonic Storm (ESCS) MAHA over AS during 30th October -07th November 2019 (iii) Very Severe Cyclonic Storm (VSCS) BULBUL

over BOB during 05th-11thNovember 2019 and (iv) Cyclonic Storm (CS) PAWAN over AS during 02nd -07th December 2019. The first three LPS that formed in quick succession modulated the NEM circulation features and transported moisture away from the NEM region leading to large deficiency in NEM rainfall during the first three weeks of November. Good rainfall activity during the second half of October, last week of November and first week of December were associated with passage of easterly wave troughs over the NEM region. Strongly positive IOD was favourable for good NEM activity during the season.

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 EVALUATIONCRITERIA 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 2019 covered various river basins and States. There was an expansion of Flood Forecasting activity to the State of Kerala under the Plan Scheme "Flood Forecasting" besides expansion of activity in existing States covered in the network. West Flowing Rivers between Tadri to Kanyakumari were also brought into the flood forecasting activity beside additional forecasting sites in existing basins. A total of 9754 forecast were issued during 2019. The performance of flood forecasting Divisionwise, Major Basinwise, Statewise and for the period 2000 to 2019 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 2019, 2 forecastswere issued in Jhelum basin for Safapura sites in Jammu and Kashmir. All the forecasts were found within permissible limit of accuracy.

3.4.2 Brahmaputra Basin

During the flood season 2019, analysis of the flood forecasts issued reveals that 2198 forecasts (22.53% of 9754 forecast) were issued for 31 sites (31 Level Forecast Sites) located on the main Brahmaputra and tributaries. Out of these, 2173forecasts (98.86%) were found within permissible limit of accuracy. Six new level forecast sites Yingkiang, Mathanguri, Malli Bazar, Jorethang, Singtam, Hasimara and four new Inflow Forecast site Teesta-III HEP Dam, Teesta-V HEP Dam, Rangpo Dam and Rangli Dam was added during 2019 flood season.

3.4.3 Barak and other Basin

During the flood season 2019, 148forecasts (1.52% of 9754) were issued for 4 (4 Level) Sites. All forecasts were found within permissible limit of accuracy.

3.4.4 Ganga Basin

Eight new Level Forecasting sites namely Dheng Bridge, Sonebarsha, Jainagar, Runisaidpur, Araria, Taibpur, Kota city, and Kakardhari andThirteen inflow forecast stations namelyIndrapuri Barrage, Gandak Barrage, Kosi Barrage, Sundar Dam, Amanat Dam, Annaraj Dam, Bhairwa Dam, Batane Dam, Rajghat Dam, RanaPratapSagar Dam, Matatila Dam, Katarniaghat Dam and Hinglow Dam were added during 2019 flood season. During the flood season 2019, 3590 forecasts (36.80% of 9754) were issued for 94sites (74 Level and 20 Inflow), out of total 133 sites (94 Level and 39 Inflow Forecast) located on the main Ganga and its tributaries. No forecast was issued for the remaining 39 sites. Out of these, 3257 forecasts (90.72%) were found within permissible limit of accuracy.

3.4.5 Godavari Basin

Two new Level Forecasting sites namely Chinturu and Nasikand fifteen inflow forecasting sites namely Karanja Dam, Totladoh Dam, Upper Wainganga Project, Upper Wardha Project, Mula Dam, Issapur Dam/ Upper Penganga , NMD Weir, Yeldari Dam, Koyna Dam, Warana Dam, Manjlegaon Dam, Upper Indravati Project, Kolab Project, Machkund Dam, Balimela Dam were added during 2019 flood season.During the flood season 2019, 263 forecasts (2.69% of 9754) were issued for 19(10 Level and 9 Inflow) of the40 sites (18 Level and 22 Inflow) onGodavari Basin and 153 (58.17%) forecasts were found within permissible limit of accuracy. No forecasts were issued for remaining 21sites.

3.4.6 Krishna Basin

One new Level forecast site namely Avanigadda and Seven new inflow forecast sites namely Malaprabha Dam, Hippargi Dam, Hidkal Dam, Singatalur Barrage, Ujjani Dam, Veer Dam and Musi Dam were added in the Krishna Basin during the flood season 2019. During the flood season 2019, 1667 forecasts (17.09% of 9754) were issued for 21 forecasting sites out of 22 sites. Out of 1667 forecasts issued, 1110forecasts were found to be within limit with an accuracy of 66.59%. No forecasts were issued for the remaining 1site.

3.4.7 Cauvery Basin

One new inflow forecast site namely Kodaganar Dam was added in the Cauvery Basin during the flood season 2019. A rainfall runoff based mathematical model was developed for the basin which was run on daily basis for formulation of inflow forecasts. During the flood season 2019, 835 forecasts (8.56% of 9754) were issued for 11 forecasting sites and 789 forecasts (94.49%) were found within permissible limit of accuracy.

3.4.8 Subarnarekha Basin including Burhabalang

One new level forecast site Mathani Road Bridge and two inflow forecast sites namely Galudih Barrage and Getlasud Dam were added during the flood season 2019. During the flood season 2019, 51 forecasts (0.52% of 9754) were issued for 2 forecasting sites (2level). Out of 51 forecast 44 forecasts were found to be within permissible limit of accuracy(86.27%). No inflow forecast was issued during flood season 2019.

3.4.9 Brahmani and Baitarni Basin

One new inflow forecast site namely Salandi Dam was added during the flood season 2019. During the flood season 2019, 21 forecasts (0.21% of 9754) were issued for 1 level forecasting site. All the 21 level forecasts were found to be within permissible limit of accuracy. No inflow forecast was issued during flood season 2019.

3.4.10 Mahanadi Basin

Two inflow forecast sites namely Ravi Shankar Dam and Bango Dam were added during the flood season 2019. During the flood season 2019, 82 forecasts (0.84% of 9754) were issued for 4 forecasting sites (2 level and 2 Inflow) out of 6 (3 level and 3 inflow) sites. Out of 82 (15 level forecast and 67 Inflow forecast) forecast issued, 78 forecasts was found to be within limit with an accuracy of 95.12%. No forecasts were issued for the remaining sites.

3.4.11 East Flowing between Mahanadi and Pennar Basin

During the flood season 2019, 99 forecasts (1.01% of 9754) were issued for all 5 forecasting site (4 Level and 1 inflow). Out of 99 (94 Level and 5 inflow) forecast issued,

93 forecasts (88 level and 5 inflow) were found to be within limit with an accuracy of 93.94%.

3.4.12 Pennar Basin

During the flood season 2019, 30 forecasts (0.30% of 9754) were issued for 1 forecasting sites (1 Inflow) out of 2 (1 level and 1 inflow) sites. Out of 30 (30 Inflow) forecast issued, 24 forecasts were found to be within limit with an accuracy of 80.00%.

3.4.13 East Flowing between Pennar and Kanyakumari Basin

One new level forecast site Madurai was added during the flood season 2019. During the flood season 2019, 47 forecasts (0.48% of 9754) were issued for 3 forecasting sites (3 Inflow) out of 6 (6 inflow) sites. Out of 47 Inflow forecasts issued, 43 forecasts were found to be within limit with an accuracy of 91.49%. No forecasts were issued for the remaining site.

3.4.14 Mahi Basin

During the flood season 2019, 10(0.10% of 9754) forecast were issued for 3 Inflow forecasting site. No forecasts were issued for the remaining sites.

3.4.15 Sabarmati Basin

During the flood season 2019, 2 inflow forecast were issued. No level forecast was issued.

3.4.16 Narmada Basin

Six inflow forecast sites namely Sardar Sarovar Dam, Tawa Dam, Bargi Dam, Barna Dam, Indira Sagar Dam and Omkareshwar Dam were added during the flood season 2019. During the flood season 2019, 423 forecasts (4.33% of 9754) were issued for 3 level forecast site and six inflow forecast stations. Out of 423 forecast issued, 237 forecasts were found to be within limit with an accuracy of 56.03%.

3.4.17 Tapi Basin

During the flood season 2019, 230 forecasts (2.35% of 9754) were issued for 2 forecasting site (2 Inflow) out of 3 (1 level and 2 Inflow) sites. Out of 230 forecast issued, 229 forecasts were found to be within limit with an accuracy of 99.57%. No forecast was issued for remaining forecast station in the basin.

3.4.18 West Flowing from Tapi to Tadri Basin

During the flood season 2019, 26 forecasts (0.26% of 9754) were issued for 3 forecasting site (2 level and 1Inflow). All the 26 forecast (3 level and 23 inflow) were found to be within limit with an accuracy of 100%.

3.4.19 West Flowing Rivers of Kutch and Saurashtra including Luni

During the flood season 2019, no forecast was issued in this Basin.

3.4.20 West Flowing Rivers between Tadri to Kanyakumari Basin.

Flood Forecasting activity commenced in West flowing rivers between Tadri to Kanyakumari basin with 3 level sites namely Neeleswaram, Kumbidi, Malakkara and 2 inflow sites Idduki Dam and Edamalayar Dam during the flood season 2019. 30 forecasts (0.30% of 9754) were issued for 3 level and 2 inflow forecasting sites. Out of 30 forecasts (9 level 21 inflow) 24(7 level 17 inflow) forecast were within the limit of accuracy with an accuracy of 80%.

The Basinwise – Riverwise flood forecasting information in India during flood season 2019 is given in **Annex-II.**

3.5 STATEWISE FLOOD FORECASTING PERFORMANCE

There are 22 states, three Union Territory of the Daman and Diu, Jammu & Kashmir 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 2019, is given in **Annex –III.** Their salient features are as under:

3.5.1 Andhra Pradesh

Two new Flood Forecasting sites 2levelnamely Chinturu and Avanigadda were added in Andhra Pradesh during 2019 flood season**.** Now, there were total 19 (10 Level and 9 Inflow) forecasting sites. Forecasts were issued for 12 (6 Level and 6 Inflow) forecasting sites.

It is revealed that 717 forecasts (114level and 603 inflow) were issued out of which 429 forecasts (79 level and 350 inflow) were within limits (59.83%). No forecasts were issued for 7 stations.

3.5.2 Arunachal Pradesh

One new Flood Forecasting site Yingkiang was added in Arunachal Pradesh during 2019 flood season**.** During 2019 flood season 30 Level Forecasts were issued and all are within permissible limit with 100% accuracy.

3.5.3 Assam

One new Flood Forecasting site Mathanguri was added in Assam during 2019 flood season**.** In the state of Assam, now there were 30 forecasting sites and all of them were level forecasting sites during 2019. Forecasts were issued for 27 sites. It is seen that during 2019 season, 2183 forecasts were issued out of which 2168 forecasts (99.31%) were found within limit of accuracy.

River Brahmaputra at Dhubri flowed in Extreme Flood Situation from 17th July to 18th July during this monsoon period.

Flood Monitoring Station on river Aie at Aie NH Crossing flowed in Extreme flood situation on 11th July during flood season 2019.

3.5.4 Bihar

Nine new Flood Forecasting sites 6 level and 3 inflow were added in Bihar during 2019 flood season**.** In the state of Bihar, there were 40 level forecasting sites and 3 Inflow forecasting sites. Forecasts were issued for 37 sites during the year 2019. Out of 2186 Level forecasts issued during the flood season 2019, 2155 Level forecasts (98.58%) were found within limit of accuracy. No forecasts were issued for 6 (3 Level 3 Inflow) sites.

River Kamlabalan at Jhanjharpur flowed in Extreme Flood Situation on 14th July during this monsoon period.

Flood Monitoring Station on river Kosi at Birpur and Saharghat flowed in Extreme flood situation from 13th to 15th July during flood season 2019.

Flood Monitoring Station on river Burhi Gandak at Kanti flowed in Extreme flood situation from 17th to 23rd July during flood season 2019.

3.5.5 Chhattisgarh

Two new Inflow Forecasting sites namely Ravi Shankar Dam and Bango Dam were added in Chhattisgarh during 2019 flood season**.** Forecasts were issued for 2 sites 1 level and 1 inflow. Out of 43(41 level 2 inflow) forecast issued 34 (33 level 1 inflow) number is within permissible limit with 79.07% accuracy.

3.5.6 Gujarat

One new Inflow Forecasting site namely Sardar Sarovar Dam was added in Gujarat during 2019 flood season**.** There were 13 (6 Level and 7 Inflow) forecasting sites in the state of Gujarat. However, forecasts were issued for only 7(2 Level and 5 Inflow) sites. Out of 317 forecasts issued (53 Level 264 inflow), 308 (53 level 255 inflow) forecasts were found within limits of accuracy (97.16%) during the flood season 2019. No forecasts were issued for 6(4 Level and 2 Inflow) sites.

3.5.7 Haryana

There were 2 (1 Level and 1 Inflow) forecasting sites in Haryana. 2forecastwere issued level forecasting site which were within limits of accuracy. Data from Hathnikund Barrage were collected. However, no inflow forecasts were issued due to very little travel time available from base station.

3.5.8 Himachal Pradesh

There is one Level Flood Forecasting site Paonta Sahib in Himachal Pradesh. 4 forecasts were issued and 2 forecasts were within permissible limit with 50% accuracy issued during 2019.

3.5.9 Jammu and Kashmir

In Jammu and Kashmir, there were 3 level forecasting sites. Forecasts were issued for 1 namely Safapura sites during the year 2019. Total 2 forecasts were issued which were within limit of accuracy.

3.5.10 Jharkhand

Flood Forecasting Activity was expanded to Seven additional stations Sundar Dam, Amanat Barrage, Annaraj Dam, Bhairawa Dam, Batane Dam, Galudih Barrage and Getlasud Dam in Jharkhand during 2019. In the state of Jharkhand, there were 15 inflow and two level flood forecasting sites due to the expansion of the activity. Flood forecasts were issued for 7 sites(1 level and 6 inflow) . During the flood season 2019, Out of 140 (49 level and 91 inflow) forecasts issued, 131 (48 level and 83 inflow) forecasts (93.57 %) were found within limit of accuracy.

3.5.11 Karnataka

Flood Forecasting Activity was expanded to Five additional Inflow Forecast stations Karanja Dam, Malaprabha Dam, Hippargi Dam, Hidkal Dam and Singtalur Barrage in Karnataka during 2019.There were 15 (1 Level and 14 Inflow) forecasting sites in the state of Karnataka. During the flood season 2019, forecasts were issued for 14forecast (1 level and 13 inflow) sites. Out of 1162(10 level 1152inflow) forecasts issued, 954(3 level 951 inflow) forecasts (82.10%) were found within limit of accuracy.

River Krishna at Huvinahedgi, River Dudhganga at Sadalga, River Ghataprabha at Gokak Falls, river Tungabhadra at Shivamogga, River Hemavathi at Sakleshpur and Akkihebbal, River Varadha at Marol, River Yagachi at Thimmanahalli, River Malaprabha at Cholachguda, River Kabini at T. Narasipur, River Cauvery at Kollegal, River Agahanashini at Santeguli all flood monitoring stations flowed in Extreme Flood Situation during August 2019

River Ghataprabha at Mudhol flowed in Extreme Flood Situation during 21st to 25th October 2019.

3.5.12 Kerala

Flood Forecasting Activity was expanded to Kerala State with three Level Forecast site and two Inflow Forecast stations during 2019. Forecasts were issued for all the sites during 2019. Out of 30 (9 level 21 inflow) forecast issued 24 (7 level 17 inflow) forecasts were within limit with 80% accuracy.

River Kabini at Muthankera, River Valapatnam at Perumannu, River Kuttyadi at Kuttyadi, river Chaliyar at Kuniyil, River Pulanthodu at Pulamanthole all flood monitoring stations flowed in Extreme Flood Situation during August 2019

3.5.13 Madhya Pradesh

Flood Forecasting Activity was expanded to seven additional Inflow Forecast stations Rajghat Dam, Tawa Dam, Bargi Dam, Barna Dam, Indirasagar Dam,

Omkareshwar Dam, and Upper Wainganga Project in Madhya Pradesh during 2019. In the state of Madhya Pradesh, there were two level forecasting sites on the river Narmada and 10 inflow forecast sites during 2019. During the flood season 2019, forecasts were issued for 10 (2 Level and 8 inflow) sites. Out of 356 (53 level 303 inflow) forecasts issued, 91(52 level 39 inflow) forecasts were found within the limit of accuracy (25.56%).

Flood Monitoring Station on River Wainganga at Kumhari flowed in Extreme Flood Situation on 9th September 2019.

3.5.14 Maharashtra

Flood Forecasting Activity was expanded to 12 additional stations one level and 11 inflow stations in Maharashtra during 2019. In the state of Maharashtra, there were 22 (8 Level and 14 Inflow) forecasting sites. During the flood season 2019, forecasts were issued for 5 level and 9 Inflow forecast sites. Total 277 (38 level 239 inflow) forecasts were issued during 2019 out of which 198 (18 level and 180 inflow) forecasts were within limit (71.48%). No forecasts were issued for remaining 7 (3 level and 4 inflow) stations.

River Godavari at Nasik and River Krishna at Arjunwad flowed in Extreme Flood Situation during August 2019.

River Krishna at Kurunwad, River Panchganga at Terwad, River Warna at Samdoli and River Savitri at Mahad all flood monitoring stations flowed in Extreme Flood Situation during August 2019.

3.5.15 Odisha

Flood Forecasting Activity was expanded to Six additional stations one level and five inflow stations in Odisha during 2019. In the state of Odisha, there were 19 (12 Level 7 Inflow) forecasting site. During the flood season 2019, 233 (166 level and 67 inflow) forecasts were issued for 10 forecast sites (8 Level and 2 Inflow) out of which 216 (153 level and 63 inflow) (92.70 %) were found within limit of accuracy. No forecasts were issued for remaining 9 flood forecasting sites.

3.5.16 Rajasthan

Flood Forecasting Activity was expanded to three (two level one inflow) additional stations during 2019. In the state of Rajasthan there are two level and 11 inflow forecast stations. During Flood Season 2019, 146 inflow forecast were issued out of which 59 forecast were within permissible limit with 40.41% accuracy. No Level Forecast was issued during Flood Season 2019.

River Kalisindh at Salavad, River Chambal at Mandawara, all flood monitoring stations flowed in Extreme Flood Situation during August and September 2019.

3.5.17 Sikkim

Flood Forecasting Activity was expanded to Seven (Three level and four inflow) additional stations during 2019. No Forecast was issued during this period.

3.5.18 Tamilnadu

Flood Forecasting Activity was expanded to two additional (1 Level and 1 Inflow) forecast stations during 2019. In the state of Tamilnadu there are 15 (4 level and 11 inflow) forecast stations. 571 (17 level and 554 Inflow) Forecasts were issued out of which 538 (17 level and 521) were within limit of accuracy (94.22%).

Flood Monitoring Station on River Cauvery at Biligundulu flowed in Extreme Flood Situation from 12th to 13th August 2019 during this monsoon period. River Bhavani at Odendurai flowed in Extreme Flood Situation on 17th November and 2nd to 3rd December 2019 during this monsoon period.

3.5.19 Telangana

One Inflow forecast site namely Musi Project was added in the state Telangana during Flood Season 2019.In the state of Telangana there are 12 forecast stations (5 level and 7 inflow forecast stations) during Flood Season 2019. Forecasts were issued for 6 (3 Level and 3 Inflow) Sites. Total 219 Forecasts (51level and 168 inflow)were issued in the State of Telangana during 2019. Out of which113 (31 level and 82 Inflow) forecast were within limit of accuracy (51.60%). No forecasts were issued for the remaining sites.

3.5.20 Tripura

There were two level forecasting sites in the state of Tripura namely, Kailashahar on river Manu and Sonamura on river Gumti. No forecast was issued during 2019.

3.5.21 Uttarakhand

There were total six Forecast Sites (4 Level and 2 Inflow) in the state of Uttarakhand. Forecasts were issued for four stations (3 level and 1 inflow) in 2019. 11 forecasts (8 level and 3 inflow) were issued out of which 6 forecast (3 level and 3 inflow) were within limit of accuracy (54.55%).

3.5.22 Uttar Pradesh

One new Level forecast site namely Kakardhari and two inflow forecast sites Matatila Dam and Katerniaghat Dam were added during 2019. With this expansion there were 44 (39 Level and 5 Inflow) flood forecasting sites in the state of Uttar Pradesh. During the flood season 2019, forecasts were issued for 31 stations (28 level and 3 inflow). Out of 812 forecasts (723 level and 89 inflow), 696 forecasts (668 level and 28 inflow) (85.71%) were found within limit of accuracy. No forecasts were issued for 13 sites.

Flood Monitoring Station on River Chambal at Udi flowed in Extreme Flood Situation on 18th September 2019 during this monsoon.

3.5.23 West Bengal

One new Level forecast site namely Hasimara and one inflow forecast sites Hinglow Dam was added during 2019. With this expansion there were 16 (12 Level and 4 Inflow)

flood forecasting sites. During the flood season 2019, forecasts were issued for 11 sites (8 level and 3 inflow stations). Out of 305 forecasts (257 level and 48inflow), 288 forecasts (242level and 46inflow) (94.43%) were found within limit of accuracy. No forecasts were issued for 5 forecast sites.

3.5.24 Daman & Diu

In the Union Territory of Daman & Diu, there was one flood forecasting site at Daman on river Damanganga. One flood forecast was issued for the site during the flood season 2019 which was within permissible limit.

3.5.25 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 2019, Total 7 level forecast were issued out of which 6 forecasts were within permissible limit with 85.71% accuracy.

The performance of flood forecasting Stations (Divisionwise) in India during flood season 2019 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**.

Details of Extreme flood events in the various river systems covered under the Flood Forecasting & Warning Network are given in **Annex- VIII**for the year 2019**.** Moderate and low flood events were observed as listed at **Annex-IX to XI,** for the year 2019.

3.6 AN OVERVIEW OF FLOOD FORECASTING PERFORMANCE

During the flood season 2019, an average number of flood forecasts issued per forecasting site were 30.01. The number of forecasting sites where the performance accuracy of the issued forecasts was found to be above 86.64 % (National average for flood season 2019) was 126 sites (38.76 %) which include 76 sites (23.38 %) where flood forecasting stations having 100% accurate forecasts.

The flood forecasting performance of the level forecasting as well as inflow forecasting sites from 2000 to 2019 is given in **Annex-VII** and from 2000 to 2019 as **Fig.3.1.**

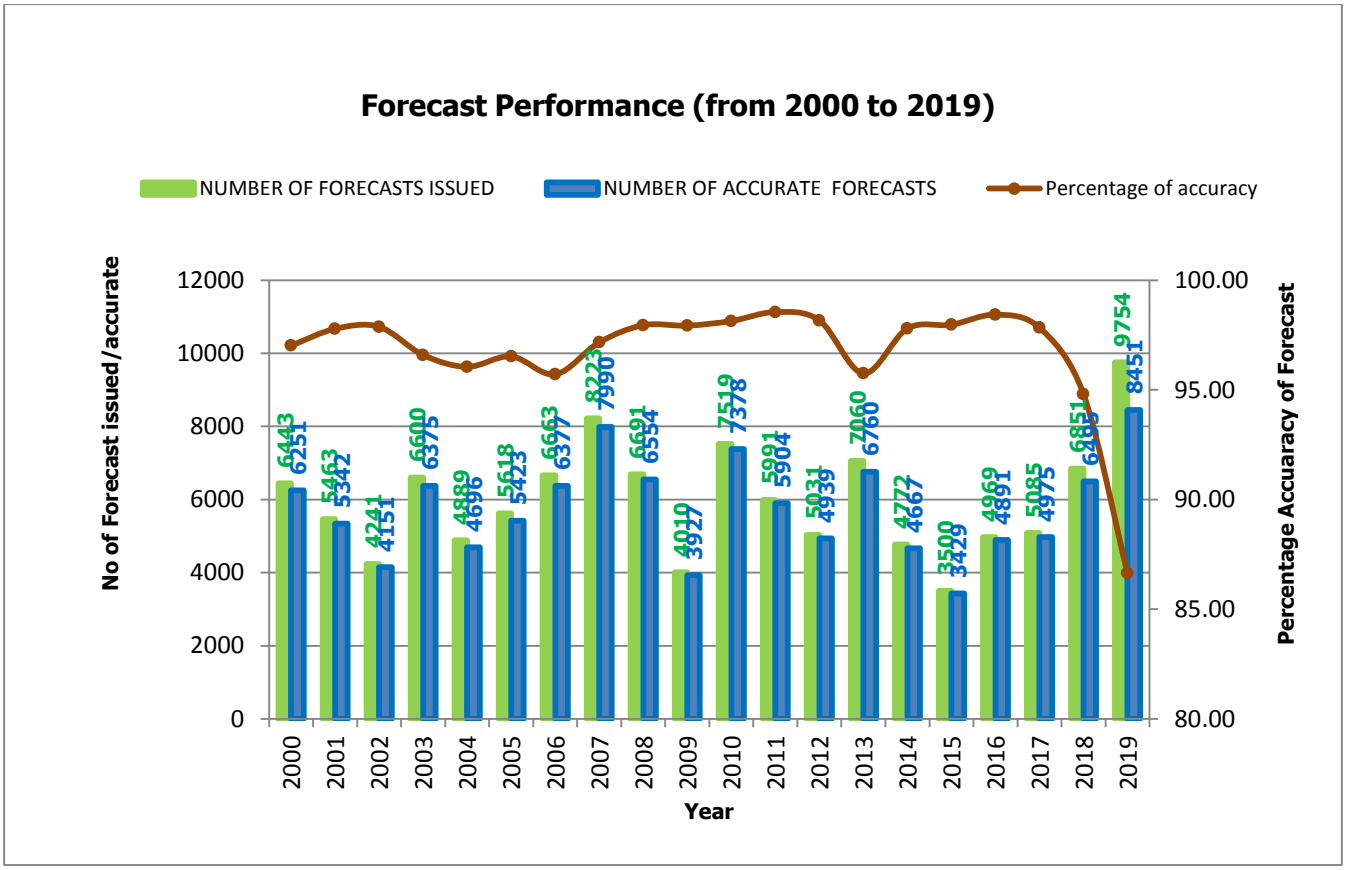


Fig.3.1 Flood Forecast Performance from 2000 to 2019

3.6.1 Overall Performance

Thus, in the twenty major river systems in the country where "Flood Forecasting & Warning Network" of the Central Water Commission exists, and floods are being monitored. The overall accuracy performance was of the order of 86.64 % for the country as a whole. Sitewise "Forecast Performance" out of 325 operational sites in flood season 2019 is shown in **Table 3.1**.

Table 3.1 Site wise "Forecast Performance" of flood forecasting sites of CWC in Flood Season, 2019

Sl. No.	Details of sites within different range of permissible limit of accuracy (±15cm,±20%cumec)	Flood Season 2019	
		No. of Sites	% age
1	Sites with performance accuracy between 0.0 % to 25.0%	26	11.81%
2	Sites with performance accuracy between 25.1 % to 50.0%	20	9.09%
3	Sites with performance accuracy between 50.1 % to 75.0%	23	10.45%

4	Sites with performance accuracy between 75.1 % to 99.99%	75	34.09%
5	Sites with 100% performance accuracy i.e. where all forecasts issued were within permissible limit of accuracy	76	34.54%
6	Total sites where forecasts were issued	220	100

CHAPTER – 4

SIGNIFICANT FLOOD EVENTS

4.1 GENERAL

The Flood Forecasting Activity was expanded to 325 locations as explained in previous Chapter. All the 325 flood forecasting sites including 128 inflow forecasting sites were operational i.e. where desired hydro-meteorological data was observed/ collected, during the flood season 2019. Extreme floods, exceeding previous highest flood levels (HFL), were observed in four sites namely Dhubri in Dhubri district of Assam, Jhanjharpur in Madhubani district of Bihar, Nasik in Nasik district and Arjunwad in Satara district of Maharashtra during the year 2019.

4.2 AN OVERVIEW OF FORECAST EVENTS

The highlight of this year is as follows:

4.2.1 Extreme Flood Situation

Extreme flood situation were witnessed in 4 Flood Forecasting Stations in the State Assam, Bihar and Maharashtra.

33 Flood Monitoring Stations flowed in Extreme Flood Situation in Assam, Bihar, Karnataka, Kerala, Tamilnadu, Rajasthan, Maharashtra, Madhya Pradesh and Uttar Pradesh state.

4.2.2 Severe and above normal flood events and inflow forecasts

Severe flood events were witnessed in 98 stations and above normal flood were witnessed at 41 stations and inflow forecasts were issued in 75 Stations.

4.2.3 No Forecasts

No flood forecasts were issued at 105 flood forecast stations (52 level and 53 inflow) as they did not cross warning level or flows above criteria in case of inflow forecasts.

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

State	Level				Inflow	
	No of Stations where River Warning Level exceeded	No. of Station where Danger 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	2	4	0	4	6	3
Arunachal Pradesh	0	1	0	2	0	0
Assam	3	23	1	3	0	0
Bihar	4	32	1	3	0	3
Chhattisgarh	0	1	0	0	1	1
Gujarat	1	1	0	4	5	2
Haryana	1	0	0	0	0	1
Himachal Pradesh	0	1	0	0	0	0
Jammu and Kashmir	1	0	0	2	0	0
Jharkhand	0	1	0	1	6	9
Kerala	2	1	0	0	2	0
Karnataka	0	1	0	0	13	1
Madhya Pradesh	0	2	0	0	8	2
Maharashtra	1	2	2	3	9	4
Odisha	4	4	0	4	2	5
Rajasthan	0	0	0	2	6	5
Sikkim	0	0	0	3	0	5
Tamilnadu	3	0	0	1	7	4
Telangana	3	0	0	2	3	4
Tripura	0	0	0	2	0	0
Uttar Pradesh	11	17	0	11	3	2
Uttarakhand	1	2	0	1	1	1
West Bengal	4	4	0	4	3	1
Daman & Diu	0	0	0	1	0	0
Delhi	0	1	0	1	0	0
Total	**41**	**98**	**4**	**54**	**75**	**53**

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 2019

Abstract of some of the messages received by our field unit during the flood season 2019 are given below:

5.2.1 Office of the Executive Engineer, Irrigation Department,Purnea-. Lr. no: 1872/Purnea dated 22/11/2019

(*Translated from Hindi Version*)

On the above subject, it is stated that during flood season 2019 the daily water level and flood forecast provided by your office contributed a vital role in Canal security from technical point of view during flood disaster.

It is requested to provide the same in future too.

5.2.2 Executive Engineer, Flood Control Division, Begusarai- Lr No. 65 dated 06.02.2020

(*Translated from Hindi Version*)

On the above subject, it is hereby informed that the information given by you in the year 2019 useful and appreciable. It is requested to provide the Flood data in 2020 also.

5.2.3 Incharge Officer, Disaster Management Department, Begusarai- Lr No. 51 dated 12.02.2020

(*Translated from Hindi Version*)

On the above subject, it is stated that during flood season 2019 the flood related information provided by your office were very useful to District Disaster Management Unit.

It is requested to provide flood related information data in future too.

5.2.4 Superintending Engineer, N.P. Design (Dam& Power House) Circle Vadodara.- Lr No. SE/NP-D(DAM&PH)C/UE/315 of 2019 dated28.11.2019

The Flood Forecasting services rendered for Sardar Sarovar Dam during monsoon 2019 were to the satisfaction and hereby acknowledged.

As per available database and set of correlation available with CWC The Forecast of Sardar Sarovar Project has been done considering Mandleshwar as base station. The catchment area downstream of Mandleshwar is considerably large enough to cause high flood during monsoon. Also four no. tributaries, two on left and two on right side are meeting the river Narmada. Hence it is requested to establish the base station at further upstream near of Sardar Sarovar Project considering representation of catchment.

It is requested to establish the telemetry stations / GD sites in this area. Meanwhile, communication for data collection from gauge station /GD sites etc. operated by NCA/NVDA/MPWRD for real time data may also be established and utilized to enhance the eminence of the forecast.

Hoping for further rendering and wishing growth in the services in coming year.

5.2.5 Executive Engineer, Ukai Division No.1, Ukai—Lr No. Ukai-1/PB/Flood Forecast/2019/3195 dated09/12/2019

The Flood Forecast issued by Central Water Commission in respect of Ukai Reservoir during Monsoon 2019 as under.

Forecast issued 104 Nos.

Revised Forecast issued 28 Nos.

Moreover, these forecast remained useful in Operation of Ukai Reservoir during monsoon 2019. Evaluation of Forecast issued as percentage of variation in actual inflow compared to inflow forecast is attached as separate sheet.

The Cooperation rendered is highly appreciated.

5.2.6 Sub Divisional Engineer, Irrigation Sub Division Savda—Lr No. ISS/PB/5/Year 2019 Irrigation Sub Division Savda dated 02/01/2020

It is to inform that the flood forecasting services rendered by the Central Water Commission, Tapi Division Surat and Upper Tapi Sub Division, Bhusawal is very much useful to Hatnur Dam.

The forecast and rainfall data details received well in time and help us considerably in planning of reservoir storage optimizing utilization of water for various purposes, flood routing and Dam safety. Due to your forecast, Gate operation done with in time so as to release moderate flood or to maintain inflow and outflow as required. Hence no damages are observed during monsoon 2019.

It is requested to render such services, in future also.

5.2.7 Resident Additional Collector, Collector Office, District Emergency Operation Centre, Bharuch—Lr No. Disaster/WS/39/2020 date 06/01/2020

The flood forecasting services rendered by the Central Water Commission, Tapi Division Surat and Lower Narmada Sub Division, Bharuch is very much useful to Disaster Emergency Operation Centre, Bharuch.

The forecast data details received well in time and help us considerably in planning of rescue the people and emptying the area which was expected to be affected on time.

It is required to render such services in future also.

ANNEXURES-I to XI

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	Sangam	Jhelum/ Indus	Anantnag/Jammu and Kashmir	33.84	75.08		CD, Jammu / Dir (M), Jammu/ IBO	Jammu & Kashmir	1590.3	1591.2	1595.7	09-06-14			
2	Rammunshibagh (Srinagar)	Jhelum/ Indus	Srinagar/Jammu and Kashmir	34.06	74.86	1.1 Sangam 1.2 Khanabal 1.3 Nunwan	CD, Jammu / Dir (M), Jammu/ IBO	Jammu & Kashmir	1585.53	1586.45	1589.65	2014	Telephone/ Mobile/ Telemtry	Rainfall Runoff Model	
3	Safapura	Jhelum/ Indus	Baramulla/Jammu and Kashmir	34.29	74.63		CD, Jammu / Dir (M), Jammu/ IBO	Jammu & Kashmir	1580	1580.5	1580.69	25-06-15			
4	Srinagar	Alaknanda/Ganga	Srinagar/Garhwal/ Uttarakhand	30.22	78.78	2.1 Rudraprayag (06)	HGD/HOCD/UGBO	Uttarakhand	539.00	540.00	536.85	1995	Wireless/ Telemetry	Conventional	Forecast never issued because HFL<WL
5	Ganganagar	Mandakini/Ganga	Rudraprayag/Uttarakhand	30.04	79.04		HGD/HOC Dehradun/UGBO		803	804	80				
6	Rishikesh	Ganga/Ganga	Rishikesh/Dehradun/Uttarakhand	30.11	78.31	3.1 Deoprayag (08) 3.2 Marora (05)	HGD/HOCD/ UGBO	Uttarakhand	339.50	340.50	341.72	1995	Wireless/ Telemetry	Conventional	
7	Hardwar	Ganga/Ganga	Hardwar/Hardwar/ Uttarakhand	29.98	78.19	4.1 Deoprayag (09) 4.2 Marora (06)	HGD/HOCD/ UGBO	Uttarakhand	293.00	294.00	296.30	2010	Wireless/ Telemetry	Conventional	
8	Dharmanagari Barrage	Ganga/Ganga	Bijnor/UttarPradesh				HGD/HOC Dehradun/UGBO								
9	Garhmuktheswar	Ganga/Ganga	Gaziabad/UP	28.77	78.14		MGD-II/HOCDehradun/UGBO Patna	East Uttar Pradesh	198.33	199.33	199.9	23-09-10			
10	Narora Barrage	Ganga/Ganga	Narora/ Bulanshahar/ Uttar Pradesh	28.19	78.40	148.1 Haridwar (48)	MGD2/HOCD/ UGBO	West Uttar Pradesh	NA	NA	NA	NA	Wireless	Conventional	
11	Kachlabridge	Ganga/Ganga	Budaun/UP	27.93	78.86		MGD-II/HOCDehradun/UGBO Patna	East Uttar Pradesh	161	162	162.79	24-09-10			
12	Fatehgarh	Ganga/Ganga	Farrukhabad/UP	27.39	79.62		MGD-II/HOCDehradun/UGBO Patna	East Uttar Pradesh	136.6	137.6	138.14	26-09-10			
13	Kalagarh Dam	Ramganga/Ganga	Pauri/Garhwal/Uttarakhand	29.49	78.76		MGD-II/HOCDehradun/UGBO Patna		FRL-365.3						
14	Moradabad	Ramganga/Ganga	Moradabad/Moradabad/Uttar Pradesh	28.83	78.80	5.1 Kalagarh (36)	MGD2/HOCD/ UGBO	West Uttar Prasdesh	189.60	190.60	192.88	2010	Wireless/ Telemetry	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			
15	Bareilly	Ramganga/Ganga	Bareilly/Bareilly/ Uttar pradesh	28.30	79.37	6.1 Moradabad (28)	MGD2/HOCD/ UGBO	West Uttar Prasdesh	162.70	163.70	162.88	1978	Wireless/ Telemetry	Conventional	
16	Dabri	Ramganga/Ganga	Jalalabar/Shahjahanpur/U P	27.49	79.37		MGD-II/HOCDehradun/UGBO Patna	East Uttar Pradesh	136.3	137.3	139.69	28-09-83			
17	Kannauj	Ganga/Ganga	Kannauj/Kannauj/ Uttar Pradesh	27.02	79.97	7.1 Narora (D/s) (48)	MGD2/HOCD/ UGBO	West Uttar Prasdesh	124.97	125.97	126.78	2010	Wireless	Conventional	
18	Ankinghat	Ganga/Ganga	Ankinghat/Kanpur/ Uttar Pradesh	26.93	80.03	8.1 Narora (D/s) (48) 8.2 Bareilly (48) 8.3 Fathegarh (12) 8.4 Dabri (12)	MGD2/HOCD/ UGBO	East Uttar Prasdesh	123.00	124.00	124.49	2010	Wireless/ Telemetry	Conventional	
19	Kanpur	Ganga/Ganga	Kanpur/Kanpur/ Uttar Pradesh	26.47	80.38	9.1 Fathegarh (24) 9.2 Dabri (24) 9.3 Ankinghat (12)	MGD2/HOCD/ UGBO	East Uttar Prasdesh	113.00	114.00	114.08	2010	Wireless/ Telemetry	Conventional	
20	Dalmau	Ganga/Ganga	Rae-barerilly/ Rae-barerilly/ Uttar Pradesh	26.06	81.03	10.1 Ankninghat (28) 10.2 Kanpur (16)	MGD2/HOCD/ UGBO	East Uttar Prasdesh	98.36	99.36	99.84	1973	Wireless/ Telemetry	Conventional	
21	Phaphamau	Ganga/Ganga	Allahabad/ Allahabad/ Uttar Pradesh	25.47	83.11	11.1 Kanpur (30) 11.2 Chillaghat (24)	MGD3/HOCV/ UGBO	East Uttar Prasdesh	83.73	84.73	87.98	1978	Wireless/ Telemetry	Conventional	
22	Paonta Sahib	Yamuna/Ganga	Poanta/Sirmaur/ Himachal Pradesh	30.43	77.59	Naugaon 2-10 hrs Haripur(02-08) hrs Jateon Barrage (2-08)hrs	UYD/HOC/YBO	Himachal Pradesh	383.5	384.5	384.6	05-09-95		3 days advisory Forecast (CWC BETA Model)	
23	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
24	Karnal	Yamuna/Ganga	Shergarh Tapu/ Karnal/ Haryana	30.06	77.14	Kalanaur 4-28 hrs	UYD/HOC/YBO	Haryana						Conventional	
25	Mawi	Yamuna/Ganga	Panipat/ Muzzafarpur/ Uttar Pradesh	29.38	77.07	12.1 Kalanur (18-30)	UYD/HOCN/ YBO	West Uttar Pradesh	230.00	230.85	232.45	1988	Wireless/ Telemetry	Conventional	
26	Dhansa Regulator	Sahibi/Yamuna/ Ganga	Delhi/Delhi/ NCT Delhi	28.53	76.87	14.1 Dadri (48) 14.2 Masani (48)	UYD/HOCN/ YBO	Haryana Chandigarh& Delhi	211.44	212.44	213.58	1977	Wireless	Conventional	
27	Delhi Railway Bridge	Yamuna/Ganga	Delhi/Delhi/ NCT Delhi	28.66	77.25	13.1 Mawi (18-32)	UYD/HOCN/ YBO	Haryana Chandigarh& Delhi	204.00	204.83	207.49	1978	Wireless/ Telemetry	Conventional	
28	Mathura	Yamuna/Ganga	Mathura/Mathura/ Uttar Pradesh	27.51	77.69	15.1 Mohana (20-33)	UYD/HOCN/ YBO	West Uttar Pradesh	164.20	165.20	169.73	1978	Wireless/ Telemetry	Conventional	
29	Agra	Yamuna/Ganga	Agra/Agra/ Uttar Pradesh	27.19	78.03	16.1 Mathura (216-4)	LYD/HOCN/ YBO	West Uttar Pradesh	151.40	152.40	154.76	1978	Wireless/ Telemetry	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			
30	Etawah	Yamuna/Ganga	Etawah/Etawah/ Uttar Pradesh	26.75	78.99	17.1 Agra (20-45)	LYD/HOCN/ YBO	West Uttar Pradesh	120.92	121.92	126.13	1978	Wireless/ Telemetry	Conventional	
31	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	
32	Rana Pratap Sagar Dam	Chambal/Ganga	Chittorgarh/Rajasthan	24.91	75.58		CD Jaipur/HOC Noida/YBO ND								
33	Kota Barrage	Chambal/Ganga	Kota/Rajasthan				CD Jaipur/HOC Noida/YBO ND								
34	Kota City	Chambal/Ganga	Kota/Rajasthan	25.19	75.84		CD Jaipur/HOC Noida/YBO ND		239	240					
35	Bisalpur Dam	Banas/Ganga	Deoli/Tonk/Rajasthan	25.92	75.45		CD Jaipur/HOC Noida/YBO ND	East Rajasthan	FRL-315.5					Rainfall Runoff Model	
36	Kalisindh Dam	Kalisindh/Ganga	Khanpur/Jhalawar/Rajasthan	24.48	76.22		CD Jaipur/HOC Noida/YBO ND								
37	Parwan Dam	Parwan/Ganga	Baran/Jhalawar//Rajasthan	24.62	76.51		CD Jaipur/HOC Noida/YBO ND								
38	Gambhiri Dam	Gambhiri/Ganga	Chittorgarh/Rajasthan	24.7	74.73		CD Jaipur/HOC Noida/YBO ND								
39	Panchana Dam	Chambal/Ganga	Mandrail/Karauli/Rajasthan	26.55	77.00		CD Jaipur/HOC Noida/YBO ND								
40	Gudha Dam	Mej/Ganga	Bundi/Rajasthan	25.48	75.46		CD Jaipur/HOC Noida/YBO ND		FRL-305.86						
41	Parwati Dam	Parwati/Ganga	Dholpur / Rajasthan				CD Jaipur/HOC Noida/YBO ND								
42	Auraiya	Yamuna/Ganga	Auraiya/Auraiya/ Uttar Pradesh	26.42	79.48	18.1 Etawah (21-24) 18.2 Dhaulpur (15-36)	LYD/HOCN/ YBO	West Uttar Pradesh	112.00	113.00	118.19	1996	Wireless/ Telemetry	Conventional	
43	Kalpi	Yamuna/Ganga	Kalpi/Jalaun/ Uttar Pradesh	26.13	79.76	19.1 Etawah (21-27) 19.2 Dhaulpur (15-42)	LYD/HOCN/ YBO	West Uttar Pradesh	107.00	108.00	112.98	1996	Wireless/ Telemetry	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			
44	Hamirpur	Yamuna/Ganga	Hamirpur/Hamirpur/ Uttar Pradesh	25.96	80.16	20.1 Auraiya (15)	LYD/HOCN/ YBO	East Uttar Prasdesh	102.63	103.63	108.59	1983	Wireless/ Telemetry	Conventional	
45	Rajghat Dam	Betwa/Yamuna/ Ganga	Chanderi/ Madhya Pradesh	24.76	78.23		LYD/HOCN/ YBO		380.80						
46	Matatila Dam	Betwa/Yamuna/ Ganga	Lalitpur/UttarPradesh	25.10	78.36		LYD/HOCN/ YBO	East Uttar Prasdesh	308.46	310.04					
47	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	
48	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	
49	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	
50	Chillaghat	Yamuna/Ganga	Banda/Banda/ Uttar Pradesh	25.77	80.53	21.1 Hamirpur (12)	LYD/HOCN/ YBO	East Uttar Prasdesh	99.00	100.00	105.16	1978	Wireless/ Telemetry	Conventional	
51	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	
52	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	
53	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	
54	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	
55	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	
56	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	
57	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	

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			
58	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	
59	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	
60	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	
61	Banbasa Barrage	Ghaghra/Ganga	Champawat/Uttarakhand	28..99	80.1		MGD-I/HOC Varanasi/UGBO Lucknow	West UP	222.3	223.3	223.3	18-06-13			
62	Katarniaghat Barrage	Ghaghra/Ganga	Bahraich / UttarPradesh				MGD-I/HOC Varanasi/UGBO Lucknow	West UP							
63	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	
64	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	
65	Kakardhari	Rapti/Ghaghra/ Ganga	Bahraich / UttarPradesh	27.83	81.80		MGD1/HOCV/ UGBO	East Uttar Prasdesh	130.00	131.00					
66	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	
67	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	
68	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	
69	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	
70	Darauli	Ghaghra/Ganga	Darauli/Siwan/Bihar	26.07	84.13	39.1 Elgin Bridge (54) 39.2 Gorakhpur (Birdghat) (28)	LGDII/HOCP/LGBO	Bihar	59.82	60.82	61.74	1998	Wireless	Conventional	

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71	Gangpur Siswan	Ghaghra/Ganga	Siwan/Siwan/Bihar	25.91	84.39	40.1 Turtipar (20)	LGDII/HOCP/LGBO	Bihar	56.04	57.04	58.01	1983	Wireless	Conventional	
72	Chhapra	Ghaghra/Ganga	Chhapra/Saran/Bihar	25.76	84.79	41.1 Gangpur Siswan (16)	LGDII/HOCP/LGBO	Bihar	52.68	53.68	54.59	1982	Wireless	Conventional	
73	Bansagar Dam	Ganga/Ganga	Beohari/Shahdol/Madhya Pradesh	24.19	81.8		MGDIII/HOC Varanashi/UGBO	East Madhya Pradesh	FRL-341.65					Rainfall Runoff Model	
74	Rihand Dam	Rihand/ Ganga	Robertsganj/Sonbhadra/ Uttar Pradesh	24.21	83.02		MGDIII/HOC Varanashi/UGBO	East Uttar Pradesh	FRL-268.22					Rainfall Runoff Model	
75	Annaraj Dam	Khoranadi/Ganga	Bhadua / Hazaribagh/Jharkhand	24.06	83.8		LGDII/HOCP/LGBO		FRL-252.44						
76	Bhairawa Dam	Goda Nala /Ganga	Hazaribagh/Jharkhand	23.51	85.67		DD/HOCM/ LGBO		FRL-356.70						
77	Inderpuri Barrage	Sone/Ganga	Inderpuri/Garhwa/ Bihar	24.75	84.16		LGDII/HOCP/LGBO	Bihar	FRL-173.00						
78	Inderpuri	Sone/Ganga	Inderpuri/Rohtas/ Bihar	24.84	84.13	43.1 Chopan (12) 43.2 Daltonganj (12)	LGDII/HOCP/LGBO	Bihar	107.20	108.20	108.85	1975	Wireless	Conventional	
79	Koelwar	Sone/Ganga	Koelwar/Bhojpur/ Bihar	25.57	84.79	44.1 Inderpuri (10-15)	LGDII/HOCP/LGBO	Bihar	54.52	55.52	58.88	1971	Wireless	Conventional	
80	Maner	Sone/Ganga	Maner/Patna/Bihar	25.70	84.86	45.1 Gandhighat (8)	LGDII/HOCP/LGBO	Bihar	51.00	52.00	53.79	1976	Wireless	Conventional	
81	Patna (Dighaghat)	Ganga/Ganga	Patna/ Patna/ Bihar	25.64	85.10	47.1 Allahabad (30) 47.2 Patna (Gandhighat) (04)	LGDII/HOCP/LGBO	Bihar	49.45	50.45	52.52	1975	Wireless	Conventional	
82	Gandak Barrage	Gandak/Ganga	West Champaran/Bihar	27.43	83.90		LGDI/HOCP/LGBO	Bihar	113.08						
83	Khadda	Gandak/Ganga	Deoria/Kushinagar/ Uttar Pradesh	27.19	83.95	51.1 Triveni (07)	LGD-I/MC/LGBO Patna	Bihar	95.00	96.00	97.50	2002	Wireless	Conventional	
84	Chatia	Gandak/Ganga	Ariraj West Champaran/ Motihari/ Bihar	26.50	84.54	52.1 Triveni (24)	LGD-I/MC/LGBO Patna	Bihar	68.15	69.15	70.04	2002	Wireless	Conventional	
85	Dumariaghat	Gandak/Ganga	Gopalganj/Bihar	26.35	84.76		LGD-I/MC/LGBO Patna	Bihar	61.22	62.22	64.1	17-08-17			
86	Rewaghat	Gandak/Ganga	Muzzafarpur/Muzzafarpur/ Bihar	25.99	85.05	53.1 Chatia (20)	LGDII/HOCP/LGBO	Bihar	53.41	54.41	55.41	1986	Wireless	Conventional	
87	Hazipur	Gandak/Ganga	Hazipur/Vaishali/ Bihar	25.69	85.20	54.1 Rewaghat (16)	LGDII/HOCP/LGBO	Bihar	49.32	50.32	50.93	1948	Wireless	Conventional	

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88	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)	LGDII/HOCP/LGBO	Bihar	47.60	48.60	50.27	1994	Wireless/ Telemetry	Conventional	
89	Amanat Dam	Baranadi/Ganga	Hazaribagh/Jharkhand	24.32	84.30		LGDII/HOCP/LGBO		274.39						
90	Batane Dam	Punpun/Ganga	Chhatarpur/Palamu/Jharkhand	24.42	84.26		LGDII/HOCP/LGBO		232.85						
91	Sripalpur	Punpun/Ganga	Sripalpur/Patna/Bihar	25.50	85.11	46.1 Kinjer (24)	LGDII/HOCP/LGBO	Bihar	49.60	50.60	53.91	1976	Wireless	Conventional	
92	Hathidah	Ganga/Ganga	Hathidah/Patna/Bihar	25.37	85.99	49.1 Gandhighat (16)	LGDII/HOCP/LGBO	Bihar	40.76	41.76	43.15	1971	Wireless/ Telemetry	Conventional	
93	Munger	Ganga/Ganga	Munger/Munger/ Bihar	25.38	86.46	50.1 Gandhighat (24)	LGDII/HOCP/LGBO	Bihar	38.33	39.33	40.99	1976	Wireless/ Telemetry	Conventional	
94	Lalbeghiaghat	Burhi Gandak/ Ganga	Dhaka/Motihari/Bihar	26.65	85.03	55.1 Chainpatia (24)	LGDI/HOCP/LGBO	Bihar	62.20	63.20	67.09	1975	Wireless	Conventional	
95	Ahirwalia	Burhi Gandak/ Ganga	Chakia/Purba Champaren/Bihar	26.36	85.14		LGD-I/MC/LGBO Patna	Bihar	58.62	59.62	61.17	02-06-14			
96	Muzzafarpur (Sikandarpur)	Burhi Gandak/ Ganga	Sikandarpur/Muzzafarpur/Bihar	26.14	85.39	56.1 Ahirwala(S) (22)	LGDI/HOCP/LGBO	Bihar	51.53	52.53	54.29	1987	Wireless	Conventional	
97	Samastipur	Burhi Gandak/ Ganga	Samastipur/Samastipur/Bihar	25.86	85.79	57.1 Sikandarpur (20)	LGDI/HOCP/LGBO	Bihar	45.02	46.02	49.38	1987	Wireless	Conventional	
98	Rosera	Burhi Gandak/ Ganga	Rosera/Samastipur/ Bihar	25.74	86.02	58.1 Sikandarpur (28)	LGDI/HOCP/LGBO	Bihar	41.63	42.63	46.35	1987	Wireless	Conventional	
99	Khagaria	Burhi Gandak/ Ganga	Khagaria/Khagaria/ Bihar	25.50	86.48	59.1 Sikandarpur (24) 59.2 Gandhighat (24)	LGDI/HOCP/LGBO	Bihar	35.58	36.58	39.22	1976	Wireless	Conventional	
100	Bhagalpur	Ganga/Ganga	Bhagalpur/Bhagalpur/Bihar	25.27	87.02	65.1 Gandhighat (32)	LGDII/HOCP/LGBO	Bihar	32.68	33.68	34.20	2003	Wireless/ Telemetry	Conventional	
101	Colgong/Kahalgaon	Ganga/Ganga	Colgong/Bhagalpur/ Bihar	25.27	87.23	66.1 Gandhighat (38)	LGDII/HOCP/LGBO	Bihar	30.09	31.09	32.87	2003	Wireless/ Telemetry	Conventional	

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102	Kosi Barrage	Kosi/Ganga	Supaul/Supaul/Bihar	26.52	86.92		LGDI/HOCP/LGBO								
103	Basua	Kosi/Ganga	Supaul/Supaul/Bihar	26.13	86.58	67.1 Birpur (16)	LGDI/HOCP/LGBO	Bihar	46.75	47.75	49.17	2010	Wireless	Conventional	
104	Dheng Bridge	Bagmati/Ganga	Sitamarhi/Bihar	26.72	85.32		LGDI/HOCP/LGBO		69.10	70.10	73.00	2017			
105	Runisaidpur	Bagmati/Ganga	Sitamarhi/Bihar	26.41	85.49		LGDI/HOCP/LGBO		52.73	53.73	58.15	2017			
106	Benibad	Bagmati/Ganga	Benibad/Muzzafarpur/ Bihar	26.20	85.67	60.1 Runisaidpur (24)	LGDI/HOCP/LGBO	Bihar	47.68	48.68	50.01	2004	Wireless/ Telemetry	Conventional	
107	Kamtaul	Adhwara Group/Ganga	Kamtaul Market/Darbhanga/ Bihar	26.33	85.85	62.1 Sonebarsa (24)	LGDI/HOCP/LGBO	Bihar	49.00	50.00	52.99	1987	Wireless/ Telemetry	Conventional	
108	Ekmighat	Adhwara Group/Ganga	Laheria Seria/Darbhanga/ Bihar	26.12	85.88	63.1 Saulighat (24)	LGDI/HOCP/LGBO	Bihar	45.94	46.94	49.52	2004	Wireless/ Telemetry	Conventional	
109	Hayaghat	Bagmati/Ganga	Hayaghat Papermill/Darbhanga/ Bihar	26.08	85.89	61.1 Benibad (24) 61.2 Ekmighat (24)	LGDI/HOCP/LGBO	Bihar	44.72	45.72	48.96	1987	Wireless/ Telemetry	Conventional	
110	Jainagar	Kamlabalan/ Ganga	Madhubani/ Bihar	26.59	86.13		LGDI/HOCP/LGBO	Bihar	66.75	67.75	71.35	1965			
111	Jhanjharpur	Kamlabalan/ Ganga	Jhanjharpur/Madhubani/ Bihar	26.27	86.27	64.1 Jainagar (8)	LGDI/HOCP/LGBO	Bihar	49.00	50.00	53.01	2004	Wireless	Conventional	
112	Sonebarsa	Adhwara Group/Ganga	Sitamarhi/Bihar	25.69	86.71		LGDI/HOCP/LGBO		80.85	81.85	83.00	2006			
113	Balthara	Kosi/Ganga	Choutham/Khagaria/ Bihar	25.54	86.72	68.1 Basua (24) 68.2 Hayaghat (24)	LGDI/HOCP/LGBO	Bihar	32.85	33.85	36.40	1987	Wireless	Conventional	

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114	Kursela	Kosi/Ganga	Kusela/Katihar/Bihar	25.42	87.23	69.1 Basua (24) 69.2 Hathidah (24)	LGDI/HOCP/LGBO	Bihar	29.00	30.00	32.04	1998	Wireless	Conventional	
115	Sahibganj	Ganga/Ganga	Sahibganj/Sahibganj/Jharkhand	25.25	87.64	70.1 Bhagalpur (22)	LGDII/HOCP/LGBO	Jharkhand	26.25	27.25	30.91	1998	Wireless	Conventional	
116	Taibpur	Mahananda/ Ganga	Kishanganj/Bihar	26.36	88.17		LGDI/HOCP/LGBO	Bihar	65.00	66.00	67.22	1968			
117	Dengraghat	Mahananda/ Ganga	Bayasi/Purnes/Bihar	25.85	87.81	71.1 Taibpur (24) 71.2 Chargharia (24)	LGDI/HOCP/LGBO	Bihar	34.65	35.65	38.09	1968	Wireless	Conventional	
118	Jhawa	Mahananda/ Ganga	Jhawa/Katihar/Bihar	25.43	87.76	72.1 Dhengraghat (16) 72.2 Araria (16)	LGDI/HOCP/LGBO	Bihar	30.40	31.40	33.51	1987	Wireless	Conventional	
119	Arraria	Parwan/Ganga	Arraria/Bihar	26.33	87.54		LGDI/HOCP/LGBO	Bihar	46.00	47.00	49.40	2017			
120	Farakka Barrage	Ganga/Ganga	Farakka/Murshidabad/ West Bengal	24.80	87.92	73.1 Bhagalpur (36)	LGDI/HOCP/LGBO	Gangetic West Bengal	21.25	22.25	25.14	1998	Wireless	Conventional	
121	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	
122	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	
123	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	
124	Sikatia Barrage	Ajoy/Ganga	Ausgram/Bardhaman/West Bengal	24.15	86.25		DD/HOCM/ LGBO				169.24	27-09-95			
125	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	
126	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	
127	Tilaya Dam	Barakar/ Ganga	Koderma/Jharkhand	24.32	85.52		DD/HOCM/ LGBO				372.28	06-07-86			
128	Konar Dam	Konar/Ganga	Hazaribag/Jharkhand	23.93	85.76		DD/HOCM/ LGBO				427.91	Oct-61			
129	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	
130	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	

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131	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	
132	Sundar Dam	Anjanwa/ Ganga	Godda/Jharkhand	24.93	87.38		DD/HOCM/ LGBO		110.68						
133	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	
134	Hinglow Dam	Kangsabati	Bankura/West Bengal	23.82	87.18		DD/HOCM/ LGBO	Gangetic West Bengal	97.84						
135	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	
136	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	
137	Yingkiang	Siang/ Brahmaputra	Upper Siang/Arunachal Pradesh	28.62	95.03		UBD/HOCG/ BBBO	Assam and Meghalaya	303.00	304.00					
138	Passighat	Siang/ Brahmaputra	Passighat/ East Siang/ Arunachal Pradesh	28.06	95.33	74. 1 Tuting (9)	UBD/HOCG/ BBBO	Assam and Meghalaya	152.96	153.96	157.54	11-06-00	Wireless	Conventional	
139	Dhollabazar	Lohit/Brahmaputra	Tinsukia/Assam	27.75	95.6		UBD/HOC/B&B BO	Assam & Meghalaya	127.27	128.27	130.07	22-09-12			
140	Dibrugarh	Brahmaputra/ Brahmaputra	Dibrugarh/Dibrugarh/Assa m	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	
141	Namsai	Nao Dehing/Brahmaputra	Namsai/Lohit/Arunachal Pradesh	27.66	95.83		UBD/HOC/B&B BO	Arunachal Pradesh	140.6	141.1	144.46	07-10-79			
142	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	
143	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	
144	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	
145	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	
146	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	
147	Choldhowaghat	Subansiri/ Brahmaputra	Dhakuakhana/Lakhimpur/A ssam	27.44	94.25		UBD/HOC/B&B BO	Assam & Meghalaya	99.02	100.02	101.31	27-07-72			

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148	N.H.Xing Ranganadi	Ranganadi/Brahmaputra	Bihuparia/ Lakhimpur/ Assam	27.2	94.05		UBD/HOC/B&BBO	Assam & Meghalaya	93.81	94.81	95.92	02-07-79			
149	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	
150	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	
151	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	
152	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	
153	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	
154	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	
155	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	
156	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	
157	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	
158	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	

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159	Mathanguri	Manas/ Brahmaputra	Baska/Assam	26.78	90.95		MBD/HOCG/ BBBO	Assam and Meghalaya	98.10	99.10	100.28	1973			
160	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	
161	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	
162	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	
163	Kokrajhar	Gaurang/ Brahmaputra	Kokrajhar/ Assam	26.39	90.25		MBD/HOCG/ BBBO	Assam & Meghalaya	41.85	42.85	43.6	20-08-15			
164	Dhubri	Brahmaputra/ Brahmaputra	Dhubri/Dhubri/ Assam	26.01	89.99	100.1 Goalpara (15)	MBD/HOCG/ BBBO	Assam and Meghalaya	27.62	28.62	30.36	1988	Wireless/ Telemetry	Conventional	
165	Golokganj	Sankosh/ Brahmaputra	Golokganj/Dhubri/ Assam	26.11	89.82	93.1 Sankosh LRP (12) 93.2 Barabisa (12)	LBD/SICG/TBO	Assam and Meghalaya	28.94	29.94	30.95	2007	Wireless/ Telemetry	Conventional	
166	Tufangunj	Raidak -I	Tufangunj/ Coochbehar/ west Bengal	26.31	89.68	97.1 Chepan (12)	LBD/SICG/TBO	Sub Himalayan West Bengal & Sikkim	34.22	35.30	36.36	1993	Wireless	Conventional	
167	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/SICG/TBO	Sub Himalayan West Bengal & Sikkim	80.00	80.90	81.33	1972	Wireless	Conventional	
168	Hasimara	Torsa	Hasimara/Coochbehar/West Bengal	26.72	89.35		LBD/SICG/TBO	Sub Himalayan West Bengal & Sikkim	116.30	116.90	118.50	1996			
169	Ghughumari	Torsa	Coochbehar/Coochbehar/ West Bengal	26.29	89.46	96.1 Hasimara (8)	LBD/SICG/TBO	Sub Himalayan West Bengal & Sikkim	39.80	40.41	41.46	2000	Wireless	Conventional	

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170	Mathabhanga	Jaldhaka/ Brahmaputra	Mathabhanga/ Coochbehar/ West Bengal	26.32	89.23	95.1 N H 31 (6)	LBD/SICG/TBO	Sub Himalayan West Bengal & Sikkim	47.70	48.20	49.85	2007	Wireless	Conventional	
171	Domohani Road Bridge	Teesta/Brahmaputra	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/SICG/TBO	Sub Himalayan West Bengal & Sikkim	85.65	85.95	89.30	1968	Wireless	Conventional	
172	Mekhligunj	Teesta/Brahmaputra	Mekhligunj/ Coochbehar/ West Bengal	26.33	88.85	99.1 Domohani Rd Brdige (6)	LBD/SICG/TBO	Sub Himalayan West Bengal & Sikkim	65.45	65.95	66.45	1996	Wireless	Conventional	
173	Teesta III HEP	Teesta/Brahmaputra	North Sikkim/Sikkim	27.53	88.53		SID/IC Gangtak/TBO Kol	Sub Himalayan West Bengal & Sikkim	1585.00						
174	Rangit-III HEP Dam	Teesta/Brahmaputra	Gyalshing/West Sikkim/Sikkim	27.29	88.29		SID/IC Gangtak/TBO Kol	Sub Himalayan West Bengal & Sikkim							
175	Teesta V HEP	Teesta/Brahmaputra	North Sikkim/Sikkim	27.25	88.45		SID/IC Gangtak/TBO Kol	Sub Himalayan West Bengal & Sikkim	579						
176	Singtam	Teesta/Brahmaputra	East Sikkim/ Sikkim	27	88.49		SID/IC Gangtak/TBO Kol	Sub Himalayan West Bengal & Sikkim	377.07	377.57	379.17				
177	Rangpo Dam	Rongpo/Teesta/Brahmaputra	East Sikkim/ Sikkim	27.23	88.7		SID/IC Gangtak/TBO Kol	Sub Himalayan West Bengal & Sikkim							
178	Rongli Dam	Rongli/Teesta/Brahmaputra	East Sikkim/ Sikkim	27.2	88.71		SID/IC Gangtak/TBO Kol	Sub Himalayan West Bengal & Sikkim							
179	Melli Bazar	Teesta/Brahmaputra	South Sikkim/Sikkim	27.09	88.45		SID/IC Gangtak/TBO Kol	Sub Himalayan West Bengal & Sikkim	223	224	225.25				
180	Jorethang	Teesta/Brahmaputra	South Sikkim/Sikkim	27.17	88.29		SID/IC Gangtak/TBO Kol	Sub Himalayan West Bengal & Sikkim	350.6	351.6	353.2				

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181	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	
182	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	
183	Badarpurghat	Barak/Barak	Silchar/Cachar/ Assam	24.86	92.52	102. 1 Annapurnaghat (9)	MBD/HOCG/ BBBO	Assam and Meghalaya	15.85	16.85	18.48	2007	Wireless	Conventional	
184	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	
185	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	
186	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	
187	Getlasud Dam	Subarnarekha/ Subarnarekha	Ranchi/Jharkhand	23.45	85.55		ERD/HOCB/ MERO		590.24						
188	Chandil Dam	Subarnarekha/ Subarnarekha	Musabani/Purba singbhum/ Jharkhand	22.97	86.05		ERD/HOCB/ MERO	Jharkhand	FRL-192					Rainfall Runoff Model	
189	Galudih Barrage	Subarnarekha/ Subarnarekha	SaraikelaKhara/Jharkhand	22.64	86.39		ERD/HOCB/ MERO		FRL-94.50						
190	Jamshedpur	Subarnarekha/ East Flowing Rivers	Chakulia/Purba singbhum/ Jharkhand	22.82	86.21	115. 1 Adtiyapur (6-8)	ERD/HOCB/ MERO	Jharkhand	122.50	123.50	129.82	1973	Wireless/ Telemetry	Conventional	
191	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	
192	Mathani Road Bridge	Subarnarekha/ East Flowing Rivers	Baleshwar/Odisha	21.66	87.06		ERD/HOCB/ MERO	Odisha	5.00	5.50	6.80				
193	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	
194	Salandi Dam	Baitarani/Brahmani-Baitarani	Kendujhar/Odisha	21.28	86.30		ERD/HOCB/ MERO		82.30						

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195	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	
196	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	
197	Rengali Dam	Brahmani/Brahmani-Baitarani	Angul/Odisha	21.28	85.03		ERD/HOC/MERO Bhubaneshwar		FRL-123.5						
198	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	
199	Ravi Shankar Dam	Mahanadi/ Mahanadi	Dhamtari/Chattisgarh	20.61	81.56		MD/HOCB/MERO		FRL-248.70						
200	Bango Dam	Hasdeo/ Mahanadi	Korba/Chattisgarh	22.59	82.57		MD/HOCB/MERO		FRL-359.66						
201	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	
202	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	
203	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	
204	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	
205	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	
206	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	
207	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	
208	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	
209	Thotapalli Resvr system	Nagavali/ East Flowing River Basin	Parvathipuram/Vizianagaram/ Andhra Pradesh	18.78	83.49		ERD/HOCB/ MERO		FRL-105.00					Rainfall Runoff Model	

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210	Madduvalasa Reservoir	Nagavali/ East Flowing River Basin	Vizianagaram/Andhra Pradesh	18.63	83.22		ERD/HOC/MERO Bhubaneshwar	Coastal Andhra Pradesh	FRL-65.00						
211	Narayanpuram Anicut	Nagavali/ East Flowing River Basin	Srikakulam/ Andhra Pradesh	18.48	83.8		ERD/HOC/MERO Bhubaneshwar	Coastal Andhra Pradesh	FRL - 32.77						
212	Srikakulam	Nagavali/ East Flowing River Basin	Srikakulam/ Andhra Pradesh	18.31	83.88		ERD/HOCB/ MERO	Coastal Andhra Pradesh	10.17	10.8	14.53	12-05-90			
213	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	
214	Abu Road	Banas	Sirohi/Rajasthan	24.49	72.79		MD Gandhinagar/HOC/NTBO Gandhinagar		258.00	259.00	265.40	1973			
215	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	
216	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	
217	Mahi Bajajsagar Dam	Mahi/Mahi	Banswara/Rajasthan	23.62	74.54		MD Gandhinagar/HOC/NTBO Gandhinagar		FRL-281.5						
218	Som Kamla Amba Dam	Som/Mahi	Dungarpur/Rajasthan	23.97	74.03		MD Gandhinagar/HOC/NTBO Gandhinagar		FRL-212.5						
219	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	
220	Panam Dam	Panam/Mahi	Kalol/Panchmahal/Gujrat	23.05	73.71		MD Gandhinagar/HOC/NTBO Gandhinagar		FRL-121.41						
221	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	
222	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	
223	Barna Dam	Narmada/ Narmada	Raisen/Madhya Pradesh	23.05	78.06		ND/SECB/ NBO		348.55						
224	Bargi Dam	Narmada/ Narmada	Jabalpur/Madhya Pradesh	22.94	79.92		ND/SECB/ NBO		422.76						
225	Tawa Dam	Narmada/ Narmada	Hoshangabad/ Madhya Pradesh	22.56	77.97		ND/SECB/ NBO		355.39						

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226	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	
227	Indirasagar Dam	Narmada/ Narmada	Khandwa/Madhya Pradesh	22.28	76.47		ND/SECB/ NBO		262.13						
228	Omkareshwar Dam	Narmada/ Narmada	Khandwa/Madhya Pradesh	22.24	76.16		ND/SECB/ NBO		201.16						
229	Sardar Sarovar Dam	Narmada/ Narmada	Ahmedabad/ Gujarat	21.82	73.74		TD/HOCG/ NTBO		138.38						
230	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	
231	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	
232	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	
233	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	
234	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	

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235	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	
236	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	
237	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	
238	Nasik	Godavari/ Godavari	Nasik/Maharashtra	20.08	73.75		UGD/GC/KGBO		558.10	559.60	563.01	2016			
239	NMD Weir	Godavari/ Godavari	Nasik/Maharashtra	19.45	74.33		UGD/GC/KGBO		533.50						
240	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	
241	Mula Dam	Mula/Godavari	Ahmadnagar/Maharashtra	19.35	74.60		UGD/GC/KGBO		552.30						
242	Jaikwadi 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	
243	Manjlegaon Dam	Sindhpana/ Godavari	Beed / Maharashtra	19.15	76.18		UGD/GC/KGBO		431.80						
244	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	
245	Yeldari Barrage	Puma/Godavari	Patbhani/Maharashtra	19.71	76.75		UGD/GC/KGBO		461.77						
246	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	
247	Karanja Dam	Karanja/Godavari	Bidar/Karnataka	17.88	77.31		UGD/GC/KGBO		584.15						
248	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	
249	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	
250	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	

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											(m)	Year			
251	Kaddam Dam	Godavari/Godavari	Kaddam/Adilabad/Telenga na	19.1	78.79		UGD/GC/KGBO		FRL-213.21					Rainfall Runoff Model	
252	Sripada Yellampalli project.	Godavari/Godavari	Karimnagar/ Telengana	18.84	79.36		UGD/GC/KGBO		FRL-148					Rainfall Runoff Model	
253	Upper Wainganga Project	Wainganga/ Godavari	Balaghat/Madhya Pradesh	22.37	79.66		WD Nagpur/CC Nagpur/ MCO Nagpur		FRL-519.38						
254	Totladoh Project	Pench	Nagpur/Madhya Pradesh	21.65	79.23		WD Nagpur/CC Nagpur/ MCO Nagpur		FRL-490.00						
255	Bhandara	Wainganga/ Godavari	Bhandara/Bhandara/Mahar ashtra	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	
256	Gosikhurd Dam	Godavari/Godavari	Pauni/Bhandara/ Maharashtra	20.87	79.6		WD Nagpur/CC Nagpur/ MCO Nagpur	Vidharbha	FRL-245.50					Rainfall Runoff Model	
257	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	
258	Upper Wardha Project	Wardha/Godavari	Amaravati/Maharashtra	21.27	78.05		WD Nagpur/CC Nagpur/ MCO Nagpur		FRL-342.50						
259	Issapur/Upper Penganga	Penganga	Hingoli/Maharashtra	19.71	77.45		WD Nagpur/CC Nagpur/ MCO Nagpur		FRL-441.00						
260	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	
261	Sirpur Town	Godavari/Godavari	Kumaram Bheem/ Maharashtra	19.56	79.61		WD Nagpur/CC Nagpur/ MCO Nagpur		159.95	160.95	161.95				
262	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	
263	Upper Indravati Project	Indravathi/ Godavari	Kalahandi/Odisha	19.27	82.82		LGD/GC/ KGBO		FRL-642.00						

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											(m)	Year			
264	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	
265	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	
266	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	
267	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	
268	Kolab Project	Kolab/Godavari	Koraput/Odisha	18.78	82.60		LGD/GC/ KGBO		FRL-858.00						
269	Machkund Project	Machkund	Koraput/Odisha	18.45	82.54		LGD/GC/ KGBO		FRL-838.20						
270	Balimela Project	Balimela	Malkangiri/Odisha	18.30	82.25		LGD/GC/ KGBO		FRL-462.07						
271	Chinturu	Sabri/Godavari	East Godavari/Andhra Pradesh	17.74	81.39		LGD/GC/ KGBO		41.50	43.50	40.45	2018			
272	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	
273	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	
274	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	
275	Atreyapuram	Godavari/Godavari	Atreyapuram/East Godavari/Andhra Pradesh	16.81	81.81		LGD Hyd/GC/KGBO	Coastal Andhra Pradesh	14	15.5	18.36	22-08-18			
276	Koyna Dam	Koyna	Satara/Maharashtra	17.4	73.75		UKD/KCC/KGBO		FRL-659.43						

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											(m)	Year			
277	Warana Dam	Warana	Kolhapur/Maharashtra	17.13	73.85		UKD/KCC/KGBO		FRL-626.90						
278	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
279	Hippargi Barrage	Krishna/Krishna	Bagalkot/Karnataka	16.55	75.16		UKD/KCC/KGBO		FRL-531.40						
280	Hidkal Dam	Ghatprabha/Krishna	Belagavi/Karnataka	16.14	74.64		CD Bang/MSO		FRL-662.94						
281	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	
282	Malaprabha Dam	Malaprabha	Belgum/Karnataka	15.82	75.09		CD Bang/MSO		FRL-633.83						
283	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	
284	Veer Dam	Nira/Krishna	Pune/Maharashtra	18.12	74.09		UKD/KCC/KGBO		FRL-579.85						
285	Ujni Dam	Bhima/ Krishna	Solapur/Maharashtra	18.21	74.97		UKD/KCC/KGBO		FRL-497.33						
286	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	
287	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	
288	Upper Tunga	Tungabhadra/ Krishna	Shimoga/Krishna	13.84	75.52		CD Bangluru/C&SRC/ C&SRO Coimbtore	South interior Karnataka, Shimoga	FRL-588.24						
289	Bhadra Dam	Tungabhadra/ Krishna	Tarikere/Chikmagalur/Karnataka	13.7	75.63		CD Bangluru/C&SRC/ C&SRO Coimbtore	Coastal Karnataka, Lakkavalli	FRL-657.75						
290	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	
291	Singatlur Barrage	Krishna/Krishna	Gadag/Karnataka	15.03	75.83		LKD/KCC/ KGBO		FRL-507.00						
292	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	
293	Sunkesula Barrage	Krishna/Krishna	C.Belagal/Kurnool/ Andhra Pradesh	15.88	77.82		LKD/KCC/ KGBO	Rayalaseema	FRL-292.00					Rainfall Runoff Model	
294	Kurnool	Tungabhadra/ Krishna	Kurnool/Kurnool/ Andhra Pradesh	15.82	78.03		LKD/KCC/ KGBO		276	278	285.225	02.10.09			
295	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	

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											(m)	Year			
296	Musi Dam	Musi/Krishna	Nalgonda/Telengana	14.06	79.52		LKD/KCC/ KGBO		FRL-196.60						
297	Dr KLRS Pulichintala Dam	Krishna/Krishna	Bellamkonda/Guntur/Andhra Pradesh	16.75	80.05		LKD/KCC/ KGBO	Coastal Andhra Pradesh	FRL-53.34					Rainfall Runoff Model	
298	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	
299	Avanigadda	Krishna/ krishna	Krishna/Andhra Pradesh	16.02	80.91		LKD/KCC/ KGBO		9.00	11.00	11.87	2009			
300	Somasila Dam	Pennar/Pennar	Ozili//Nellore/ Andhra Pradesh	14.48	79.3		HD/ C&SRC Bangalore/ C & SRO Coimbtore.	Coastal Andhra Pradesh	FRL-100.58					Rainfall Runoff Model	
301	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/SR	Coastal Andhra Pradesh	15.91	17.28	18.70	1882	Wireless	Conventional	
302	Poondi Satyamurthy Dam	Kosasthalaiyar/ EFRB Pennar-Cauvery	Thiruvallur/ Tamilnadu	13.18	79.86		HD / C & SRC / C & SRO	Tamilnadu & Puducherry	FRL-42.67					Rainfall Runoff Model	
303	Chembarampakkam	Adyar/EFRB Pennar Cauvery	Chenglepet/Kancheepuram/Tamilnadu	13.01	80.08		HD Chennai/C&SRC Bangaluru/C & SRO Coimbtore	Tamilnadu & Puducherry							
304	Sathnur Dam	Ponnaiyar/ EFRB Pennar-Cauvery	Chengam/Thiruvannamalai /Tamilnadu	12.2	78.59		HD Chennai/C&SRC Bangaluru/C & SRO Coimbtore	Tamilnadu & Puducherry	FRL-222.2						

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											(m)	Year			
305	Gomukhi	Vellar/EFRB Pennar Cauvery	Kallakurichi/Villupuram/Tamilnadu	11.8	78.81		HD Chennai/C&SRC Bangaluru/C & SRO Coimbtore								
306	Wellington Dam	Vellar/EFRB Pennar Cauvery	Thittakudi/Cuddalore/Tamilnadu	11.4	79.09		HD Chennai/C&SRC Bangaluru/C & SRO Coimbtore		FRL-72.54						
307	Harangi Dam	Cauvery/Cauvery	Somwarpet/ Kodagu/ Karnataka	12.49	75.9		CD Banglore / C&SRC Bangalore/ C & SRO Coimbtore.	Coastal Andhra Pradesh	FRL-871.42					Rainfall Runoff Model	
308	Hemavathy Dam	Cauvery/Cauvery	Channaryapatra/Hassan/Karnataka	12.82	76.05		CD Banglore / C&SRC Bangalore/ C & SRO Coimbtore.	Coastal Andhra Pradesh	FRL-890.63					Rainfall Runoff Model	
309	Kabini Dam	Cauvery/Cauvery	Heggadevanakote/Mysore/ Karnataka	11.84	76.33		CD Banglore / C&SRC Bangalore/ C & SRO Coimbtore.	South Interior Karnataka	FRL-696.16					Rainfall Runoff Model	
310	Krishnaraj sagar	Cauvery/Cauvery	Srirangapatna/Mandya/Karnataka	12.45	76.57		CD Banglore / C&SRC Bangalore/ C & SRO Coimbtore.	South Interior Karnataka	FRL-752.49					Rainfall Runoff Model	
311	Mettur Dam	Cauvery/Cauvery	Mettur/Salem/Tamilnadu	11.8	77.8		SRD/C & SRC / C & SRO	Tamilnadu & Puducherry	FRL-					Rainfall Runoff Model	
312	Bhawanisagar Dam	Bhavani/Cauvery	Sathyamangalam/Erode/Tamilnadu	11.47	77.1		SRD/C & SRC / C & SRO	Tamilnadu & Puducherry	FRL-280.42					Rainfall Runoff Model	
313	Savandapur	Bhavani/Cauvery	Gobichettipalayam/Tamilnadu	11.52	77.51		SRD Coim/C&SRC Bang/C & SRO Coimb		184.5	185.5	186.88	05-11-78			
314	Kodumudi	Cauvery/Cauvery	Erode/Erode/Tamilnadu	11.08	77.89		SRD Coim/C&SRC Bang/C & SRO Coimb	Tamilnadu and Puducherry	125.5	126.5	127.83	25-10-05			
315	Kodaganar Dam	Kodaganar/Cauvery	Dindugul/Tamilnadu	10.59	77.97		SRD Coim/C&SRC Bang/C & SRO Coimb	Tamilnadu and Puducherry	FRL-200.25						
316	Musiri	Cauvery/Cauvery	Musiri/Tiruchirapalli/Tamilnadu	10.93	78.43		SRD Coim/C&SRC Bang/C & SRO Coimb	Tamilnadu and Puducherry	82.11	83.11	86.18	13-11-77			
317	Upper Anicut	Cauvery/Cauvery	Thiruchirapalli/ Tamilnadu	10.88	78.57		SRD Coim/C&SRC Bang/C & SRO Coimb		FRL-75.05						
318	Grand Annicut	Cauvery/Cauvery	Thanjavur/ Tamilnadu	10.83	78.81		SRD/C & SRC / C & SRO	Tamilnadu & Puducherry	FRL-240.80					Rainfall Runoff Model	

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											(m)	Year			
319	Vaigai Dam	Vaigai/EFR South of Cauvery	Andipatti/ Theni/ Tamilnadu	10.5	77.33		SRD/C & SRC / C & SRO	Tamilnadu & Puducherry	FRL-279.2					Rainfall Runoff Model	
320	Madurai	Vaigai/EFR South of Cauvery	Madurai/Tamilnadu	9.93	78.11		SRD/C & SRC / C & SRO	Tamilnadu & Puducherry	131.5	132.5	134.76	1997			
321	Kumbidi	Bharathapuzha/WFR Tapi to Tadri	Palakkad/Kerala	10.85	76.02		SWRD/CSRO		8	9	9.76	2018			
322	Idduki Dam	Periyar/WFR Tadri to Kanyakumari	Idduki/Kerala	9.84	76.97		SWRD/CSRO		FRL-732.62						
323	Edamalayar Dam	Edamalayar/WFR Tadri to Kanyakumari	Ernakulam/Kerala	10.22	76.7		SWRD/CSRO		FRL-169.00						
324	Neeleswaram	Periyar/WFR Tadri to Kanyakumari	Ernakulam/Kerala	10.18	76.49		SWRD/CSRO		9	10	12.4	2018			
325	Malakkara	Pamba/WFR Tadri to Kanyakumari	Pathanamthitta	9.43	76.65		SWRD/CSRO		6	7	9.31	2018			

Basinwise -Riverwise- Flood Forecasting Information in India during Flood Season 2019												
Sl.No.	Name of the river	Name of FF site	Name of State	Warning Level (m)	Danger level (m)	Highest Flood Level		Maximum Level -2019		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	13.00
	1. Indus Basin											
1	Jhelum	Sangam	Jammu & Kashmir	1590.30	1592.00	1595.00	06-09-14	1589.13	29/07/2019 07	0	0	-
2	Jhelum	Rammunshibagh	Jammu & Kashmir	1585.53	1586.45	1588.99	08-09-14	1584.48	29/07/2019 15	0	0	-
3	Jhelum	Safapora	Jammu & Kashmir	1580.00	1580.80	1582.10	09-09-14	1579.42	29/07/2019 23	2	2	100.00
	2 a. Ganga Basin											
4	Alaknanda	Srinagar	Uttarakhand	535.00	536.00	537.90	17-06-13	535.90	19/08/19:04	2	0	0.00
5	Mandakini	Ganganagar	Uttarakhand	803.00	804.00	801.92	2015	801.5	19/08/19:07	0	0	-
6	Ganga	Rishikesh	Uttarakhand	339.50	340.50	341.72	05-09-95	340.90	19/08/19:02	3	2	66.67
7	Ganga	Haridwar	Uttarakhand	293.00	294.00	296.30	19-09-10	295.05	19/08/19:03	3	1	33.33
8	Ganga	Dharmanagri Barrage	Uttar Pradesh	FRL 221.8				220.2	19/08/2019 13	0	0	-
9	Ganga	Garhmuktheswar	Uttar Pradesh	198.33	199.33	199.90	23-09-10	198.67	21/08/19:20	18	18	100.00
10	Ganga	Narora Barrage	Uttar Pradesh			180.61	23/09/2010	179.07	01/06/19:01	24	24	100.00
11	Ganga	Kachla Bridge	Uttar Pradesh	161.00	162.00	162.79	24-09-10	162.63	21/08/2019 20	80	79	98.75
12	Ganga	Fathegarh	Uttar Pradesh	136.60	137.60	138.14	26-09-10	137.34	25/08/19:05	30	30	100.00
13	Ramganga	Kalagarh Dam	Uttarakhand		366.2	365.3		257.74	25/06/19:08	0	0	-
14	Ramganga	Moradabad	Uttar Pradesh	189.60	190.60	192.88	21-09-10	189.33	20/08/19:10	0	0	-
15	Ramganga	Bareilly	Uttar Pradesh	162.07	163.07	162.88	06-08-78	160.49	23/08/2019 08	0	0	-
16	Ganga	Dabri	Uttar Pradesh	136.30	137.30	139.70	28-09-83	135.80	24/08/2019 06	0	0	-
17	Ganga	Kannauj	Uttar Pradesh	124.97	125.97	126.78	27-09-10	124.55	26/08/19:03	0	0	-
18	Ganga	Ankinghat	Uttar Pradesh	123.00	124.00	124.49	28-09-10	122.99	26/08/19:04	0	0	-
19	Ganga	Kanpur	Uttar Pradesh	112.00	113.00	114.08	29-09-10	111.66	26/08/19:09	0	0	-
20	Ganga	Dalmau	Uttar Pradesh	98.36	99.36	99.84	03-08-73	97.85	27/08/19:09	0	0	-
21	Ganga	Phphamau	Uttar Pradesh	83.73	84.73	87.98	08-09-78	85.78	21/09/19:23	10	10	100.00
22	Yamuna	Paonta Sahib	Himachal Pradesh	383.50	384.50	384.60	05-09-95	384.5	18/08/19:11	4	2	50.00
23	Yamuna	Tajewala Weir	Haryana			338.90	17-06-13	338.60	18/08/19:00	0	0	-
24	Yamuna	Karnal Bridge	Haryana	248.80	249.50	250.07	17-06-13	248.94	19/08/19:16	2	2	100.00
25	Yamuna	Mawi	Uttar Pradesh	230.00	230.85	232.75	26-09-88	232.25	20/08/19:11	7	6	85.71
26	Sahibi	Dhansa	NCT Delhi	211.44	212.44	213.58	06-08-77	209.50	20/08/19:08	0	0	-
27	Yamuna	Delhi Rly Bridge	NCT Delhi	204.50	205.33	207.49	06-09-78	206.60	21/08/19:05	7	6	85.71
28	Yamuna	Mathura	Uttar Pradesh	165.20	166.00	169.73	08-09-78	165.47	23/08/19:14	4	4	100.00
29	Yamuna	Agra	Uttar Pradesh	151.40	152.40	154.76	09-09-78	150.91	23/08/2019 23	0	0	-
30	Yamuna	Etawa	Uttar Pradesh	120.92	121.92	126.13	11-09-78	121.22	19/09/2019 04	3	3	-
31	Chambal	Gandhisagar Dam	Madhya Pradesh	FRL 399.9				401.98	15/09/2019 08	35	13	37.14
32	Chambal	Rana Pratap Sagar	Rajasthan	FRL 352.8				353.35	15/09/2019 20	21	6	28.57
33	Chambal	Kota Barrage	Rajasthan	FRL260.3				269.81	28/07/2019 04	49	18	36.73
34	Chambal	Kota City	Rajasthan	239.00	240.00			243.46	16/09/2019 10	0	0	-
35	Banas	Bisalpur Dam	Rajasthan	FRL 315.5				315.50	19/08/2019 16	5	0	0.00
36	Kalisindh	Kalisindh Dam	Rajasthan	FRL316				315.86	11/10/2019 09	67	35	52.24
37	Parwan	Parwan Dam	Rajasthan	FRL288.34				292.88	15/09/2019 08	0	0	-
38	Gambhiri	Gambhiri Dam	Rajasthan	FRL431.9				432.08	19/08/2019 08	0	0	-
39	Gambhiri	Panchana Dam	Rajasthan	FRL258.62				254.32	01/10/2019 10	0	0	-

Basinwise -Riverwise- Flood Forecasting Information in India during Flood Season 2019												
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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	13.00
40	Mej	Gudha Dam	Rajasthan	FRL305.87				306.44	16/08/2019 08	0	0	-
41	Parwati	Parwati Dam	Rajasthan	-				312.27	16/08/2019 08	0	0	-
42	Yamuna	Auraiya	Uttar Pradesh	112.00	113.00	118.19	25-08-96	117.36	19/09/2019 08	16	11	68.75
43	Yamuna	Kalpi	Uttar Pradesh	107.00	108.00	112.98	25-08-96	112.26	19/09/2019 07	11	9	81.82
44	Yamuna	Hamirpur	Uttar Pradesh	102.63	103.63	108.59	12-09-83	106.79	20/09/2019 10	18	10	55.56
45	Betwa	Rajghat Dam	Madhya Pradesh	FRL380.8				371	03/09/2019 08	40	15	37.50
46	Betwa	Matatilia Dam	Uttar Pradesh	FRL308.46				991.8	27/07/2019 08	39	0	0.00
47	Betwa	Mohana	Uttar Pradesh	121.66	122.66	133.35	11-09-83	122.32	17/08/2019 01	7	3	42.86
48	Betwa	Sahjina	Uttar Pradesh	103.54	104.54	108.67	12-09-83	106.33	20/09/2019 05	15	11	73.33
49	Ken	Banda	Uttar Pradesh	103.00	104.00	113.29	07-07-05	103.65	19/09/2019 22	5	1	20.00
50	Yamuna	Chilaghat	Uttar Pradesh	99.00	100.00	105.16	06-09-78	102.55	20/09/2019 14	16	7	43.75
51	Yamuna	Naini	Uttar Pradesh	83.74	84.74	87.99	08-09-78	85.67	21/09/19:00	10	7	70.00
52	Ganga	Allahabad Chhatnag	Uttar Pradesh	83.73	84.73	88.03	08-09-78	85.09	21/09/19:23	8	8	100.00
53	Ganga	Mirzapur	Uttar Pradesh	76.72	77.72	80.34	09-09-78	77.98	22/09/19:01	9	9	100.00
54	Ganga	Varanasi	Uttar Pradesh	70.26	71.26	73.90	09-09-78	71.95	22/09/19:17	12	10	83.33
55	Gomati	Lucknow	Uttar Pradesh	108.50	109.50	110.85	10-09-71	106.23	11/07/2019 06	0	0	-
56	SAI	Raibareli	Uttar Pradesh	100.00	101.00	104.81	17-09-82	100.60	29/09/2019 13	4	4	100.00
57	Gomati	Jaunpur	Uttar Pradesh	73.07	74.07	77.74	22-09-71	73.43	29/09/19:00	1	1	100.00
58	Ganga	Ghazipur	Uttar Pradesh	62.10	63.10	65.22	09-09-78	64.53	23/09/19:01	26	25	96.15
59	Ganga	Buxar	Bihar	59.32	60.32	62.09	1948	60.92	22/09/19:15	27	27	100.00
60	Ganga	Ballia	Uttar Pradesh	56.62	57.62	60.39	25-08-16	59.94	24/09/19:01	47	47	100.00
61	Sharda	Banbasa	Uttarakhand	222.96	225			222.50	21/06/19:00	3	3	100.00
62	Ghaghra	Katerniaghat Dam	Uttar Pradesh	FRL138				138.00	28/09/2019 19	0	0	-
63	Ghaghra	Elgin Bridge	Uttar Pradesh	105.07	106.07	107.62	18-08-18	106.67	07/09/19:00	89	87	97.75
64	Ghaghra	Ayodhya	Uttar Pradesh	91.73	92.73	94.01	11-10-09	92.99	17/09/19:00	80	79	98.75
65	Rapti	Kakardhari	Uttar Pradesh	130.00	131.00	132.37	15-08-14	129.84	15/07/2019 00	0	0	-
66	Rapti	Balrampur	Uttar Pradesh	103.62	104.62	105.54	15-08-17	105.08	15/07/2019 15	21	19	90.48
67	Rapti	Bansi	Uttar Pradesh	83.90	84.90	85.88	20-08-17	84.22	18/07/2019 14	6	5	83.33
68	Rapti	Gorakpur_Birdghat	Uttar Pradesh	73.98	74.98	77.54	23-08-98	73.95	16/07/19:00	0	0	-
69	Ghaghra	Turtipar	Uttar Pradesh	63.01	64.01	66.00	28-08-98	64.16	22/09/19:00	79	76	96.20
70	Ghaghra	Darauli	Bihar	59.82	60.82	61.74	29-08-98	60.86	23/09/19:05	65	65	100.00
71	Ghaghra	Gangpur Siswan	Bihar	56.04	57.04	58.01	18-09-83	57.37	23/09/19:04	45	45	100.00
72	Ghaghra	Chhapra	Bihar	52.68	53.68	54.59	03-09-82	53.25	24/09/19:11	11	11	100.00
73	Sone	Bansagar Dam	Madhya Pradesh	FRL 341.65				341.65	28/09/2019 08	39	7	17.95
74	Rihand	Rihand Dam	Uttar Pradesh		FRL=268.22			263.26	31/10/2019 08	26	4	15.38
75	Khoranadi	Annaraj Dam	Jharkhand	FRL252.44				-	-	0	0	-
76	Goda Nala	Bhairwa Dam	Jharkhand	FRL356.7				355.6	30/10/2019 06	0	0	-
77	Sone	Indrapuri Barrage	Bihar	FRL173				108.36	29/09/2019 17	0	0	-
78	Sone	Inderpuri	Bihar	107.20	108.20	109.60	23-08-75	105.30	30/09/19:00	0	0	-
79	Sone	Koelwar	Bihar	54.52	55.52	58.88	20-07-71	53.74	30/09/19:20	0	0	-
80	Sone	Maner	Bihar	51.00	52.00	53.79	10-09-76	52.87	24/09/19:04	30	29	96.67
81	Ganga	Patna Dighaghat	Bihar	49.45	50.45	52.52	23-08-75	50.94	30/09/19:14	33	33	
82	Gandak	Gandak Barrage	Bihar	FRL113.08				110.41	22/06/2019 22	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
83	Gandak	Khadda	Uttar Pradesh	95.00	96.00	97.50	23-07-02	95.78	18/09/2019 04	91	89	97.80
84	Gandak	Chatia	Bihar	68.15	69.15	70.04	26-07-02	66.80	20/09/2019 18	0	0	-
85	Gandak	Dumariaghat	Bihar	61.22	62.22	64.10	17-08-17	62.73	19/09/2019 18	103	103	100.00
86	Gandak	Rewaghat	Bihar	53.41	54.41	55.41	17-09-86	53.79	20/09/19:22	8	8	100.00
87	Gandak	Hazipur	Bihar	49.32	50.32	50.93	1948	49.81	21/09/19:03	16	16	100.00
88	Ganga	Patna Gandhighat	Bihar	47.60	48.60	50.52	20-08-16	49.79	23/09/19:15	47	47	100.00
89	Baranadi	Amanat Barage	Jharkhand	FRL274.39				-	-	0	0	-
90	Jamunia	Batane Dam	Jharkhand	FRL232.85				122.27	09/10/2019 06	0	0	-
91	PunPun	Sripalpur	Bihar	49.60	50.60	53.91	18-09-76	53.61	15/09/19:04	20	20	100.00
92	Ganga	Hathidah	Bihar	40.76	41.76	43.17	21-08-16	42.76	25/09/19:11	48	48	100.00
93	Ganga	Munger	Bihar	38.33	39.33	40.99	19-09-76	39.59	02/10/19:03	27	27	100.00
94	Burhi Gandak	Lalbeghiaghat	Bihar	62.20	63.20	67.09	30-07-75	63.65	17/07/2019 19	20	20	100.00
95	Burhigandak	Ahirwalia	Bihar	58.62	59.62	61.17	1975	59.07	19/07/2019 04	8	8	100.00
96	Burhi Gandak	Muzaffarpur	Bihar	51.53	52.53	54.29	15-08-87	52.69	21/07/2019 01	21	21	100.00
97	Burhi Gandak	Samastipur	Bihar	45.02	46.02	49.38	15-08-87	46.73	27/07/2019 00	21	20	95.24
98	Burhi Gandak	Rosera	Bihar	41.63	42.63	46.35	16-08-87	44.12	23/07/2019 08	24	23	95.83
99	Burhi Gandak	Khagaria	Bihar	35.58	36.58	39.22	1976	38.28	03/10/2019 00	46	46	100.00
100	Ganga	Bhagalpur	Bihar	32.68	33.68	34.72	26-08-16	34.43	02/10/19:03	33	33	100.00
101	Ganga	Kahalgaon	Bihar	30.09	31.09	32.87	17-09-03	32.36	03/10/19:01	47	46	97.87
102	Kosi	Kosi Barrage	Bihar	77.74 (PL)				76.2	24/07/2019 00	0	0	-
103	Kosi	Basua	Bihar	46.75	47.75	49.24	13-08-17	49.16	15/07/2019 00	108	104	96.30
104	Bagmati	Dheng Bridge	Bihar	69.10	70.10	73.00	13-08-17	72.96	14/07/2019 00	148	147	99.32
105	Bagmati	Runisaidpur	Bihar	52.73	53.73	58.15	14-08-17	57.9	14/07/2019 13	147	144	97.96
106	Bagmati	Benibad	Bihar	47.68	48.68	50.01	12-07-04	49.13	15/07/2019 13	61	60	98.36
107	Adhwara Group	Kamtaul	Bihar	49.00	50.00	52.99	12-08-87	51.61	16/07/2019 05	43	43	100.00
108	Adhwara Group	Ekmighat	Bihar	45.94	46.94	49.52	12-07-04	47.91	30/07/2019 00	38	38	100.00
109	Bagmati	Hayaghat	Bihar	44.72	45.72	48.96	14-08-87	46.71	30.07.2019 00	28	28	100.00
110	Kamla Balan	Jainagar	Bihar	66.75	67.75	71.35	1965	69.9	13/07/2019 13	302	301	99.67
111	Kamla Balan	Jhanjharpur	Bihar	49.00	50.00	53.01	10/07/2004	53.11	14/07/2019 06	183	178	97.27
112	Adhwara	Sonebarsha	Bihar	80.85	81.85	83.00	11-09-06	82.96	13/07/2019 11	7	6	85.71
113	Kosi	Baltara	Bihar	32.85	33.85	36.40	15-08-87	35.61	17/07/2019 03	103	101	98.06
114	Kosi	Kursela	Bihar	29.00	30.00	32.10	07-09-82	31.60	03/10/2019 05	51	51	100.00
115	Ganga	Sahibgunj	Jharkhand	26.25	27.25	30.91	1998	28.58	03/10/19:19	49	48	97.96
116	Mahananda	Taibpur	Bihar	65.00	66.00	67.22	1968	66.75	13/07/2019 03	47	43	91.49
117	Mahananda	Dhengraghat	Bihar	34.65	35.65	38.20	14-08-17	37.18	15/07/2019 05	38	38	100.00
118	Mahananda	Jhawa	Bihar	30.40	31.40	34.07	14-08-17	33.10	17/07/2019 02	69	66	95.65
119	Parwan	Araria	Bihar	46.00	47.00	49.40	14-08-17	48.48	14/07/2019 15	113	111	98.23
120	Ganga	Farakka	West Bengal	21.25	22.25	25.14	07-09-98	24.37	02/10/19:11	122	118	96.72
121	Mayurakshi	Massanjore Dam	Jharkhand	FRL121.31				118.78	02/12/2019 03	8	6	75.00
122	Mayurakshi	Tilpara Barrage	West Bengal	FRL62.79				62.87	31/07/2019 11	3	3	100.00
123	Mayurakshi	Narayanpur	West Bengal	26.99	27.99	29.69	27-09-95	25.04	01/10/2019 09	0	0	-
124	Ashra nadi	Sikatia Barrage	Jharkhand	FRL170.1				161.76	29/09/2019 12	0	0	-
125	Ajoy	Gheropara	West Bengal	38.42	39.42	43.94	27-09-78	38.41	01/10/2019 03	2	1	50.00

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1	2	3	4	5	6	7	8	9	10	11	12	13.00
126	Damodar	Tenughat Dam	Jharkhand	FRL268.83				260.80	24/10/2019 10	20	19	95.00
127	Barakar	Tilaiya Dam	Jharkhand	FRL372.46				368.55	29/10/2019 06	3	3	100.00
128	Konar	Konar Dam	Jharkhand	FRL427.93				425.87	10/11/2019 06	2	1	50.00
129	Damodar	Panchet Dam	Jharkhand	FRL132.59				129.24	01/10/2019 15	36	34	94.44
130	Barakar	Maithon Dam	Jharkhand	FRL150.88				150.04	08/11/2019 06	22	20	90.91
131	Damodar	Durgapur Barrage	West Bengal	FRL64.47				64.47	30/11/2019 21	31	31	100.00
132	Anjanwa	Sundar Dam	Jharkhand	FRL110.68				107.67	11/11/2019 06	0	0	-
133	Mundeshwari	Harinkhola	West Bengal	11.80	12.80	14.58	29-09-78	11.80	01/10/2019 09	0	0	-
134	Kangsabati	Hinglow Dam	West Bengal	FRL97.84				98.35	26/09/2019 13	0	0	
135	Kangsabati	Kangsabati Dam	West Bengal	FRL134.11				131.58	27/12/2019 06	14	12	85.71
136	Kangsabati	Mohanpur	West Bengal	24.73	25.73	29.87	02-09-78	20.24	30/09/2019 06	0	0	-
	2 b Brahmaputra Basin											
137	Siang	Yingkiang	Arunachal Pradesh	303.00	304.00			272.30	13/07/2019 06	0	0	-
138	siang	Passighat	Arunachal Pradesh	152.96	153.96	157.54	11-06-00	154.04	13/07/2019 07	29	29	100.00
139	Lohit	Dholla Bazaar	Assam	127.27	128.27	130.07	22-09-12	127.77	11/07/2019 21	8	8	-
140	Brahmaputra	Dibrugrah	Assam	104.70	105.70	106.48	03-09-98	105.54	12/07/2019 05	56	56	100.00
141	Noa-Dehing	Namsai	Arunachal Pradesh	144.80	145.80	146.60	31-08-74	144.11	31/07/2019 15	1	1	100.00
142	Burhidihing	Naharkatia	Assam	119.40	120.40	122.69	17-06-73	118.65	12/07/2019 03	0	0	-
143	Burhidihing	Khwong	Assam	101.11	102.11	104.16	02-09-15	102.86	13/07/2019 10	20	20	100.00
144	Desang	Nanglamoraghat	Assam	93.46	94.46	96.49	06-09-98	95.34	04/08/2019 05	58	57	98.28
145	Dikhow	Shivsagar	Assam	91.40	92.40	94.23	01-08-18	92.93	10/07/2019 12	50	50	100.00
146	Brahmaputra	Neamatighat	Assam	84.04	85.04	87.37	11-07-91	87.13	13/07/2019 00	149	148	99.33
147	Subansiri	Choldhowaghat	Assam	99.43	100.43	101.31	27-07-72	96.8	17/09/2019 12	0	0	-
148	Ranganadi	N H Crossing Ranganad	Assam	93.81	94.81	95.92	02-07-79	94.69	10/07/2019 07	34	33	97.06
149	Subansiri	Badatighat	Assam	81.53	82.53	86.21	28-07-72	83	14/07/2019 00	21	21	100.00
150	Dhansiri (S)	Golaghat	Assam	88.50	89.50	92.45	11-10-86	89.96	29/10/2019 12	15	15	100.00
151	Dhansiri (S)	Numaligarh	Assam	76.42	77.42	80.16	02-08-18	78.93	30/10/2019 01	244	244	100.00
152	Jiabharali	Jiabharali_NTX	Assam	76.00	77.00	78.50	26-07-07	78.09	09/07/2019 13	523	519	99.24
153	Brahmaputra	Tezpur	Assam	64.23	65.23	66.59	27-08-88	66.35	15/07/2019 11	70	69	81.25
154	Kopilli	Kampur	Assam	59.50	60.50	61.79	20-07-04	61.7	28/10/2019 12	16	13	97.50
155	Kopilli	Dharmatul	Assam	55.00	56.00	58.09	21-07-04	56.88	18/07/2019 01	40	39	97.50
156	Brahmaputra	Guwahati	Assam	48.68	49.68	51.46	21-07-04	51.23	16/07/2019 17	34	34	100.00
157	Puthimari	Puthimari _NHX	Assam	50.81	51.81	55.08	31-08-08	54.77	12/07/2019 16	169	169	100.00
158	Pagladiya	Pagladia_NTX	Assam	51.75	52.75	55.45	08-07-04	52.93	16/07/2019 07	60	60	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	13.00
159	Manas	Mathanguri	Assam	98.10	99.10	100.28	13-10-73	97.86	25/07/2019 08	0	0	-
160	Beki	Beki NHX	Assam	44.10	45.10	46.20	04-08-00	45.86	04/07/2019 23	190	190	100.00
161	Manas	Manas NHX	Assam	47.81	48.42	50.08	15-09-84	49.41	24/07/2019 05	36	36	100.00
162	Brahmaputra	Goalpara	Assam	35.27	36.27	37.43	31-07-54	35.35	17/07/2019 08	42	42	100.00
163	Gaurang	Kokrajhar	Assam	41.85	42.85	43.60	20-08-15	43.4	23/07/2019 18	36	36	100.00
164	Brahmaputra	Dhubri	Assam	27.62	28.62	30.36	28/08/1988	30.37	17/07/2019 22	133	133	100.00
165	Sankosh	Golakganj	Assam	28.94	29.94	30.95	08-09-07	30.15	15/07/19:10	31	28	90.32
166	Raidak-I	Tufanganj	West Bengal	34.22	35.30	36.50	12-08-17	35.96	24/07/19:08	21	18	85.71
167	Jaldhaka	NH-31	West Bengal	80.00	80.90	81.33	28-08-72	80.13	16/07/19:10	14	14	100.00
168	Torsa	Hasimara	West Bengal	116.30	116.90	118.50	13-07-96	116.28	25/06/19:06	0	0	-
169	Torsa	Ghughumari	West Bengal	39.80	40.41	41.46	03-08-00	40.30	18/07/19:10	28	26	92.86
170	Jaldhaka	Mathabhanga	West Bengal	47.70	48.20	49.85	07-09-07	48.30	24/07/19:15	6	6	100.00
171	Tista	Domohani	West Bengal	85.65	85.95	89.30	14-10-68	86.18	12/07/19:15	47	45	95.74
172	Tista	Mekhliganj	West Bengal	65.45	65.95	66.45	13-07-96	65.87	12/07/19:21	17	14	82.35
173	Teesta	Malli Bazaar	Sikkim	223.00	224.00	225.25		217.06	17/09/2019 00	0	0	-
174	Teesta	Joretahang(Rothak)	Sikkim	350.60	351.60	353.20		348.16	17/09/2019 13	0	0	-
175	Teesta	Singtam	Sikkim	377.07	377.57	379.17		374.94	15/09/2019 00	0	0	-
176	Teesta	Teesta-III HEP Dam Cl	Sikkim	1585.00				1584.3	09/10/2019 07	0	0	-
177	Teesta	Teesta V HEP Dam Sir	Sikkim	579.00				573.6	06/10/2019 20	0	0	-
178	Rongpo	Rongpo Dam	Sikkim	909.00				-	-	0	0	-
179	Rongli	Rongli Dam	Sikkim	909.00				-	-	0	0	-
180	Rangit	Rangit-III HEP Dam	Sikkim	639.12				639.12	14/10/2019 17	0	0	-
	2 Barak & Others											
181	Barak	APGhat	Assam	18.83	19.83	21.84	01-08-89	20.33	14/07/2019 03	29	29	100.00
182	Katakhal	Matizuri	Assam	19.27	20.27	22.73	10-09-07	22.36	15/07/2019 06	15	15	100.00
183	Barak	Badarpurghat	Assam	15.85	16.85	18.48	11-09-07	17.65	14/07/2019 16	41	41	100.00
184	Kushiyara	Karimganj	Assam	13.94	14.94	16.57	10-06-10	16.17	14/07/2019 05	63	63	100.00
185	Manu	Kailashar	Tripura	24.34	25.34	25.95	13-06-18	23.77	14/06/2019 23	0	0	-
186	Gumti	Sonamura	Tripura	11.50	12.50	14.42	23-07-93	11.28	16/07/2019 02	0	0	-
	3. Godavari Basin											
187	Godavari	Nasik	Maharashtra	558.10	559.60	563.01	02-08-16	562.51	04-08-19 15:00	9	7	77.78
188	Godavari	N M D Weir	Maharashtra	FRL533.5				535.78	04-08-19 21:00	0	0	-
189	Godavari	Kopergaon	Maharashtra	490.90	493.68	499.17	1969	496.67	05-08-19 13:00	16	6	37.50
190	Mula	Mula Dam	Maharashtra	FRL552.3				552.3	15-10-19 06:00	0	0	-

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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	13.00
191	Godavari	Jaikwadi Dam	Maharashtra	FRL463.91				463.91	21-09-2019 2100	9	4	44.44
192	Sindhpana	Manjlegaon	Maharashtra	FRL431.8				430.6	31-10-19 06:00	2	0	0.00
193	Godavari	Gangakhed	Maharashtra	374.00	375.00	377.57	1947	370.43	26-10-19 11:00	0	0	0.00
194	Puma	Yeldari Dam	Maharashtra	FRL461.77				457.84	31-10-19 06:00	2	0	0.00
195	Godavari	Nanded	Maharashtra	353.00	354.00	357.10	06-08-06	349.10	26-10-19 13:00	0	0	0.00
196	Karanja	Karanja Dam	Karnataka	FRL584.15				578.44	01-06-19 06:00	0	0	-
197	Manjira	Singur Dam	Telangana	FRL523.6				511.45	31-10-19 06:00	0	0	-
198	Manjira	Nizamsagar Dam	Telangana	FRL428.24				423.5	31-10-19 06:00	0	0	-
199	Godavari	Sriram Sagar	Telangana	FRL332.54				332.54	21-10-19 09:00	17	5	29.41
200	Kaddamvagu	Kaddam Dam	Telangana	FRL 213.36				213.24	27-10-19 06:00	0	0	-
201	Godavari	Sripada Yellampally Da	Telangana	FRL 148				147.89	16-10-19 06:00	6	4	66.67
202	Wainganga	Upper Wainganga Proj	Madhya Pradesh	FRL519.38				519.38	28/10/2019 06	0	0	-
203	Pench	Totladoh Project	Madhya Pradesh	FRL490				490	19/09/2019 07	0	0	-
204	Wainganga	Bhandara	Maharashtra	244.00	244.50	250.90	16-09-05	246.84	10/09/2019 12	3	3	100.00
205	Wainganga	Goshikhurd Dam	Maharashtra	FRL=245.5				244.30	28/09/2019 08	10	8	80.00
206	Wainganga	Pauni	Maharashtra	226.73	227.73	237.12	07-09-94	227.75	09/09/2019 15	2	0	0.00
207	Wardha	Upper Wardha Project	Maharashtra	FRL342.5				342.5	10/09/2019 07	0	0	-
208	Penganga	Issapur/Upper Pengang	Maharashtra	FRL441				438.81	03/12/2019 07	0	0	-
209	Wardha	Balharsha	Maharashtra	171.50	174.00	176.45	14-08-86	168.92	04/08/2019 14	0	0	-
210	Wardha	Sirpur Town	Telangana	159.95	160.95	161.34	18-08-18	159.25	04/08/2019 20	0	0	
211	Godavari	Kaleswaram	Telangana	103.50	104.75	107.05	15-08-86	102.48	08-09-19 09:00	0	0	-
212	Indravathi	Upper Indravathi Proje	Odisha	FRL642				641.26	06-09-19 08:00	2	0	0.00
213	Indravati	Jagdalpur	Chhatisgarh	539.50	540.80	544.68	09-07-73	542.22	30-07-19 22:00	41	33	80.49
214	Godavari	Eturunagaram	Telangana	73.32	75.82	77.66	24-08-90	74.705	08-09-19 10:00	21	14	66.67
215	Godavari	Dummagudam	Telangana	53.00	55.00	60.25	15-08-86	54.48	08-09-19 23:00	10	7	70.00
216	Godavari	Bhadrachalam	Telangana	45.72	48.77	55.66	16-08-86	48.22	09-09-19 01:00	20	10	50.00
217	Kolab	Kolab Project	Odisha	FRL858				857.27	31-10-19 17:00	0	0	-
218	Machhkund	Machhkund Project	Odisha	FRL838.2				838.02	06-09-19 17:00	0	0	-
219	Balimela	Balimela Project	Odisha	FRL462.07				462.05	27-10-19 06:00	0	0	-
220	Sabari	Chinturu	Andhra Pradesh	41.50	43.50	40.45	20-08-18	41.45	09-08-19 18:00	0	0	-
221	Godavari	Kunavaram	Andhra Pradesh	37.74	39.24	51.30	16-08-86	40.58	09-08-19 23:00	25	14	56.00
222	Godavari	Rajamundry	Andhra Pradesh	17.68	19.51	20.48	16-08-86	17.50	10-09-19 01:00	0	0	-
223	Godavari	Dowalaiswaram	Andhra Pradesh	14.25	16.08	18.36	16-08-86	15.43	10-08-19 01:00	33	28	84.85
224	Godavari	Atreyapuram	Andhra Pradesh	14.00	15.50	18.36	22-08-18	12.89	10-08-19 08:00	0	0	-
225	Koyna	Koyna Dam	Maharashtra	FRL659.43				659.43	02/10/2019 08	27	10	37.04
226	Warana	Warana Dam	Maharashtra	FRL626.9				626.9	26/09/2019 08	8	0	0.00

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1	2	3	4	5	6	7	8	9	10	11	12	13.00
	4. Krishna Basin											
227	Krishna	Arjunwad	Maharashtra	542.07	543.29	543.69	05-08-2005	544.28	09/08/2019 02	8	2	25.00
228	Krishna	Hippargi Dam	Karnataka	FRL531.4				530.15	12/08/2019 08	55	43	78.18
229	Ghataprabha	Hidkal Dam	Karnataka	FRL662.94				663.19	30/11/2019 08	37	22	59.46
230	Krishna	Alamati Dam	Karnataka	FRL519.6				519.60	23/08/2019 00	75	64	85.33
231	Malaprabha	Malaprabha Dam	Karnataka	FRL633.83				633.83	12/08/2019 08	20	13	65.00
232	Krishna	Narayanpur Dam	Karnataka	FRL492.25				492.25	28/08/2019 20	102	78	76.47
233	Nira	Veer Dam	Maharashtra	FRL579.85				579.85	15/08/2019 08	25	14	56.00
234	Bhima	Ujjani Dam	Maharashtra	FRL497.33				497.27	20/08/2019 08	29	17	58.62
235	Bhima	Deongaon	Karnataka	402.00	404.50	407.34	13-08-06	405.80	10/08/2019 00	10	3	30.00
236	Krishna	Priyadarshini	Telangana	FRL318.52				318.51	21/08/201907	145	73	50.34
237	Tunga	Upper Tunga	Karnataka	FRL 588.24				588.24	14/08/2019 08	136	121	88.97
238	Bhadra	Bhadra Dam	Karnataka	FRL 657.75				657.76	21/10/2019 08	105	94	89.52
239	Tungabhadra	Tungabhadra Dam	Karnataka	FRL497.74				497.74	15/08/2019 08	165	110	66.67
240	Krishna	Singatalur Barrage	Karnataka	FRL507				506.9	30/07/2019 08	146	112	76.71
241	Tungabhadra	Mantralayam	Andhra Pradesh	310.00	312.00	318.77	02-10-09	312.9	12/08/2019 19	28	21	75.00
242	Tungabhadra	Sunkesula Barrage	Andhra Pradesh	FRL 292				292.00	14/09/2019 15	113	59	52.21
243	Tungabhadra	Kurnool	Andhra Pradesh	273.00	274.00	281.22	02-10-09	274.48	13/08/2019 08	8	0	0.00
244	Krishna	Srisailam Dam	Andhra Pradesh	FRL269.75				273.25	21/08/2019 09	164	111	67.68
245	Musi	Musi Project	Telangana	FRL196.6				196.52	03/10/2019 08	0	0	
246	Krishna	Dr K L R S Pulichintala	Andhra Pradesh	FRL 53.34				53.34	08/09/2019 10	150	72	48.00
247	Krishna	Prakasham Barrage	Andhra Pradesh	FRL18.3				19.28	17/08/2019 02	141	79	56.03
248	Krishna	Avanigadda	Andhra Pradesh	9.00	11.00	11.87	05-10-09	10.35	17/08/2019 13	5	2	40.00
	5. Cauvery Basin											
249	Harangi	Harangi Dam	Karnataka	FRL 871.42				871.19	19/10/2019 08	23	18	78.26
250	Hemavathy	Hemavathy Dam	Karnataka	FRL 890.63				890.62	09/11/2019 08	94	88	93.62
251	Kabini	Kabini Dam	Karnataka	FRL 696.16				696.16	28/08/2019 08	68	67	96.03
252	Cauvery	Krishnarajasagar	Karnataka	FRL 752.49				752.49	22/11/2019 08	126	121	98.53
253	Cauvery	Mettur Dam	Tamilnadu	FRL=240.79				241.08	09/09/2019 08	160	157	96.03
254	Bhavani	Bhavanisagar Dam	Tamilnadu	FRL=280.42				280.41	02/12/2019 08	85	73	85.88
255	Bhavani	Savandapur	Tamilnadu	184.50	185.50	187.75	17-08-18	184.5	02/12/2019 23	1	1	100.00
256	Cauvery	Kodumudi	Tamilnadu	125.50	126.50	128.14	17-08-18	125.62	10/09/2019 16	3	3	100.00
257	Kodaganar	Kodaganar Dam	Tamilnadu	200.25				192	01/06/2019 08	0	0	
258	Cauvery	Musiri	Tamilnadu	82.11	83.11	86.98	25-11-05	82.82	11/09/2019 05	13	13	100.00
259	Cauvery	Grand Anicut	Tamilnadu	FRL59.21				64.31	01/06/2019 08	131	125	95.42
260	Cauvery	Upper Anicut	Tamilnadu	FRL75.05				155.42	11/09/2019 08	131	123	93.89
	6. Subarnarekha											
261	Subarnarekha	Getlasud Dam	Jharkhand	FRL590.24				588.75	26/10/2019 08	0	0	-
262	Subernarekna	Chandil Dam	Jharkhand	FRL 192				181.30	28/09/2019 08	0	0	-
263	Subarnarekha	Galudih Barrage	Jharkhand	FRL94.5				93.8	07/08/2019 08	0	0	-
264	Subernarekna	Jamshedpur	Jharkhand	122.50	123.50	129.82	12-10-73	121.5	26/10/2019 00	0	0	-
265	Subernarekna	Rajghat	Odisha	9.45	10.36	12.69	19-06-08	9.58	27/10/2019 09	1	1	100.00
266	Jalaka	Mathani Road Bridge	Odisha	5.50	5.50	6.80		6.57	26/09/2019 08	50	43	86.00
267	Burhabalang	NH_5 _Road Bridge	Odisha	7.21	8.13	9.50	12-10-73	6.72	19/08/2019 09	0	0	-

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1	2	3	4	5	6	7	8	9	10	11	12	13.00
	7. Brahmani and Baitarani											
268	Salandi	Salandi Dam	Odisha	FRL82.3				77.5	02/10/2019 08	0	0	-
269	Baitarni	Anandpur	Odisha	37.44	38.36	41.35	23-09-11	36.86	19/08/2019 11	0	0	-
270	Baitarni	Akhuapada	Odisha	17.33	17.83	21.95	16-08-60	18.15	08/09/2019 00	21	21	100.00
271	Brahmani	Rengali Dam	Odisha	FRL 123.5				124.34	10/10/2019 17	0	0	-
272	Brahmani	Jenapur	Odisha	22.00	23.00	24.78	20-08-75	21.56	09/09/2019 00	0	0	-
	8. Mahanadi Basin											
273	Mahanadi	Ravishankar Dam	Chattisgarh	FRL348.7				346.66	31/10/2019 08	2	1	50.00
274	Hasdeo	Bango Dam	Chattisgarh	FRL359.66				358.18	04/10/2019 08	0	0	-
275	Mahanadi	Hirakud Dam	Odisha	FRL192.02				192.02	25/09/2019 16	65	63	96.92
276	Mahanadi	Naraj	Odisha	25.41	26.41	27.61	31-08-82	26.33	10/09/2019 01	14	13	92.86
277	Mahanadi	Alipingal Devi	Odisha	10.85	11.76	13.11	11-09-11	11.08	15/08/2019 12	1	1	100.00
278	Mahanadi	Nimapara	Odisha	9.85	10.76	11.60	31-08-82	9.76	15/08/2019 18	0	0	-
	9. Pennar Basin											
279	North Pennar	Somasila Dam	Andhra Pradesh	FRL 100.58				100.55	31/10/2019 08	30	24	80.00
280	Pennar	Nellore	Andhra Pradesh	15.91	17.28	18.70	30-11-1882	13.72	17/11/2019 08	0	0	-
	10. Mahi Basin											
281	Mahi	Mahi Bajajsagar Dam	Rajasthan	FRL 281.5				281.50	14/10/19 2100	3	0	0.00
282	Som Kamla	Som Kamla Amba Dan	Rajasthan	FRL 212.5				213.55	01/10/19 1600	1	0	0.00
283	Mahi	Kadana Dam	Gujarat	FRL126.19				127.71	11/10/19 0300	6	0	0.00
284	Panam	Panam Dam	Gujarat	FRL 121.41				127.41	04/10/19 1500	0	0	-
285	Mahi	Wanakbori	Gujarat	71.93	74.98	76.10	12-08-06	73.38	14/09/19 0900	0	0	-
	11. Sabarmati Basin											
286	Sabarmati	Dharoi Dam	Gujarat	FRL187.45				189.570	09/10/19 2200	2	0	0.00
287	Sabarmati	Ahmedabad	Gujarat	44.09	45.34	47.45	19-08-06	42.4	01/10/19 1900	0	0	-
	12. Narmada Basin											
288	Naramada	Mandla	Madhya Pradesh	437.20	437.80	439.40	15-07-74	438.78	08/09/2019 20	28	27	96.43
289	Narmada	Barna Dam	Madhya Pradesh	FRL348.55				348.7	04/09/2019 20	37	0	0.00
290	Narmada	Bargi Dam	Madhya Pradesh	FRL422.76				423.05	29/09/2019 07	38	1	2.63
291	Narmada	Tawa Dam	Madhya Pradesh	FRL355.39				355.54	20/10/2019 07	37	0	0.00
292	Naramada	Hoshangabad	Madhya Pradesh	292.80	293.80	301.33	27-08-72	294.60	11/09/2019 00	25	25	100.00
293	Narmada	Indira Sagar Dam	Madhya Pradesh	FRL262.13				289.69	12/08/2019 02	38	3	7.89
294	Narmada	Omkareshwar Dam	Madhya Pradesh	FRL201.16				193.43	22/10/2019 11	39	0	0.00
295	Narmada	Sardar Sarovar Dam	Gujarat	FRL138.38				138.68	15/09/2019 19	130	130	100.00
296	Naramada	Garudeswar	Gujarat	30.48	31.09	41.65	06-09-70	29.58	11/09/19:03	0	0	-
297	Naramada	Bharuch	Gujarat	6.71	7.31	12.65	07-09-70	9.72	11/09/19:10	51	51	100.00
	13. Tapi Basin											
298	Tapi	Hatnur Dam	Maharashtra	FRL212.02				214.10	23/10/19:11	127	127	100.00
299	Tapi	Ukai Dam	Gujarat	FRL102.41				105.17	07/10/19:23	103	102	99.03
300	Tapi	Surat	Gujarat	8.50	9.50	12.50	09-08-06	8.00	10/08/19:23	0	0	-
	14. West Flowing rivers from Tapi to Tadri											
301	Damanganga	Madhuban Dam	Gujarat	FRL79.86				79.90	30/09/19:13	23	23	100.00
302	Damanganga	Vapi Town	Gujarat	18.20	19.20	23.76	03-08-04	18.60	04/08/19:17	2	2	100.00
303	Damanganga	Daman	Daman & Diu	2.60	3.40	4.00	03-08-04	2.60	03/08/19:16	1	1	100.00

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1	2	3	4	5	6	7	8	9	10	11	12	13.00
	16. East flowing rivers between Mahanadi and Pennar											
304	Rushikuluya	Purushottampur	Odisha	15.83	16.83	19.65	04-11-90	16.2	25-10-19 02:00	4	3	75.00
305	Vamsadhara	Gunupur	Odisha	83.00	84.00	88.75	17-09-80	85.32	07-08-19 21:00	11	9	81.82
306	Vamsadhara	Kashinagar	Odisha	53.60	54.60	58.93	18-09-80	56.30	08-08-19 00:00	64	62	96.88
307	Vamsadhara	Gotta Barrage	Andhra Pradesh	FRL34.84				38.15	24/10/2019 00	5	5	100.00
308	Nagavali	Thottapalli Reservoir S	Andhra Pradesh	FRL 105.00				104.99	07/08/2019 05	0	0	-
309	Suwarnamukhi	Madduvalasa Reservoi	Andhra Pradesh	FRL65				64.89	11/10/2019 13	0	0	-
310	Nagavali	Narayanapuram Anicut	Andhra Pradesh	FRL32.77				30.38	25/10/2019 03	0	0	-
311	Nagavali	Srikakulam	Andhra Pradesh	10.17	10.80	14.53	12-05-90	11.42	25/10/2019 01	15	14	93.33
	17 East flowing rivers between Pennar and Kanyakumari											
312	Kosasthaliyar	Poondi Satyamurthy re	Tamilnadu	FRL=42.67				41.08	02/11/2019 00	1	0	0.00
313	Adyar	Chembarampakkam	Tamilnadu	FRL=26.03				18.79	-	0	0	-
314	South Pennar	Sathnur Dam	Tamilnadu	FRL=222.2				215.72	26/12/2019 06	0	0	-
315	Gomukhinadi	Gomukhi Dam	Tamilnadu	183.18				182.57	30/10/2019 07	0	0	-
316	Periyar Odai	Wellington Dam	Tamilnadu	FRL=72.54				68.20	16/12/2019 06	2	1	50.00
317	Vaigai	Vaigai Dam	Tamilnadu	FRL=279.2				278.57	09/12/2019 06	44	42	95.45
318	Vaigai	Madurai	Tamilnadu	131.50	132.50	134.76	17-11-97	131.24	11/11/2019 10	0	0	-
	18. West flowing rivers of Kutch and Saurashtra including Luni											
319	Banas	Abu Road	Rajasthan	258.00	259.00	265.40	31-08-73	256.5	09/08/19 1300	0	0	-
320	Banas	Dantiwada Dam	Gujarat	FRL182.88				175.84	10/10/19 1400	0	0	-
	19. West Flowing River Tadri to Kanyakumari											-
321	Bharathapuzha	Kumbidi	Kerala	8.20	9.20	11.27	17-08-18	11.2	10/08/2019 06	6	4	66.67
322	Periyar	Idduki Dam	Kerala	FRL732.62				726.68	20/11/2019 04	11	9	81.82
323	Edamalayar	Idamalayar	Kerala	FRL169				162.04	04/11/2019 10	10	8	80.00
324	Periyar	Neeleswaram	Kerala	9.00	10.00	12.40	15-08-18	9.41	08/08/2019 20	1	1	100.00
325	Pamba	Malakkara	Kerala	6.00	7.00	9.58	16-08-18	6.43	10/08/2019 01	2	2	100.00
								Total Forecasts		***9754***	***8451***	86.64
								Level Forecasts		**6004**	**5773**	96.15
								Inflow Forecast		**3750**	**2678**	71.41

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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
	Andhra Pradesh										
1	North Pennar	Somasila Dam	FRL 100.58				100.55	31/10/2019 08	30	24	80.00
2	Krishna	DrKLRS Pulichintala Dam	FRL 53.34				53.34	08/09/2019 10	150	72	48.00
3	Tungabhadra	Sunkesula Barrage	FRL 292				292.00	14/09/2019 15	113	59	52.21
4	Nagavali	Thottapalli Reservoir Scheme	FRL 105.00				104.99	07/08/2019 05	0	0	-
5	Vamsadhara	Gotta Barrage	FRL34.84				38.15	24/10/2019 00	5	5	100.00
6	Sabari	Chinturu	41.50	43.50	40.45	20-08-18	41.45	09-08-19 18:00	0	0	-
7	Godavari	Kunavaram	37.74	39.24	51.30	16-08-86	40.58	09-08-19 23:00	25	14	56.00
8	Godavari	Rajamundry	17.68	19.51	20.48	16-08-86	17.50	10-09-19 01:00	0	0	-
9	Godavari	Dowalaiswaram	14.25	16.08	18.36	16-08-86	15.43	10-08-19 01:00	33	28	84.85
10	Krishna	Srisailam Dam	FRL269.75				273.25	21/08/2019 09	164	111	67.68
11	Krishna	Prakasam Barrage	FRL18.3				19.28	17/08/2019 02	141	79	56.03
12	Tungabhadra	Kurnool	273.00	274.00	281.22	02-10-09	274.48	13/08/2019 08	8	0	0.00
13	Tungabhadra	Mantralayam	310.00	312.00	318.77	02-10-09	312.9	12/08/2019 19	28	21	75.00
14	Pennar	Nellore	15.91	17.28	18.70	30-11-1882	13.72	17/11/2019 08	0	0	-
15	Nagavali	Srikakulam	10.17	10.80	14.53	12-05-90	11.42	25/10/2019 01	15	14	93.33
16	Nagavali	Narayanapuram Anicut	FRL32.77				30.38	25/10/2019 03	0	0	-
17	Suwarnamukhi	Madduvalasa Reservoir	FRL65				64.89	11/10/2019 13	0	0	-
18	Krishna	Avanigadda	9.00	11.00	11.87	05-10-09	10.35	17/08/2019 13	5	2	40.00
19	Godavari	Atreyapuram	14.00	15.50	18.36	22-08-18	12.89	10-08-19 08:00	0	0	-
	Assam										
20	Lohit	Dholla Bazaar	127.27	128.27	130.07	22-09-12	127.77	11/07/2019 21	8	8	-
21	Brahmaputra	Dibrugrah	104.70	105.70	106.48	03-09-98	105.54	12/07/2019 05	56	56	100.00
22	Burhidihing	Naharkatia	119.40	120.40	122.69	17-06-73	118.65	12/07/2019 03	0	0	-
23	Burhidihing	Khwong	101.11	102.11	104.16	02-09-15	102.86	13/07/2019 10	20	20	100.00
24	Desang	Nanglamoraghat	93.46	94.46	96.49	06-09-98	95.34	04/08/2019 05	58	57	98.28
25	Dikhow	Shivsagar	91.40	92.40	94.23	01-08-18	92.93	10/07/2019 12	50	50	100.00
26	Brahmaputra	Neamatighat	84.04	85.04	87.37	11-07-91	87.13	13/07/2019 00	149	148	99.33
27	Subansiri	Choldhowaghat	99.43	100.43	101.31	27-07-72	96.8	17/09/2019 12	0	0	-
28	Ranganadi	N H Crossing Ranganadi	93.81	94.81	95.92	02-07-79	94.69	10/07/2019 07	34	33	97.06
29	Subansiri	Badatighat	81.53	82.53	86.21	28-07-72	83	14/07/2019 00	21	21	100.00
30	Dhansiri (S)	Golaghat	88.50	89.50	92.45	11-10-86	89.96	29/10/2019 12	15	15	100.00
31	Dhansiri (S)	Numaligarh	76.42	77.42	80.16	02-08-18	78.93	30/10/2019 01	244	244	100.00
32	Jiabharali	Jiabharali_NTX	76.00	77.00	78.50	26-07-07	78.09	09/07/2019 13	523	519	99.24
33	Brahmaputra	Tezpur	64.23	65.23	66.59	27-08-88	66.35	15/07/2019 11	70	69	81.25
34	Kopilli	Kampur	59.50	60.50	61.79	20-07-04	61.7	28/10/2019 12	16	13	97.50
35	Kopilli	Dharmatul	55.00	56.00	58.09	21-07-04	56.88	18/07/2019 01	40	39	97.50
36	Brahmaputra	Guwahati	48.68	49.68	51.46	21-07-04	51.23	16/07/2019 17	34	34	100.00
37	Puthimari	Puthimari _NHX	50.81	51.81	55.08	31-08-08	54.77	12/07/2019 16	169	169	100.00
38	Pagladiya	Pagladia_NTX	51.75	52.75	55.45	08-07-04	52.93	16/07/2019 07	60	60	100.00
39	Manas	Mathanguri	98.10	99.10	100.28	13-10-73	97.86	25/07/2019 08	0	0	-
40	Beki	Beki NHX	44.10	45.10	46.20	04-08-00	45.86	04/07/2019 23	190	190	100.00
41	Manas	Manas NHX	47.81	48.42	50.08	15-09-84	49.41	24/07/2019 05	36	36	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
42	Brahmaputra	Goalpara	35.27	36.27	37.43	31-07-54	35.35	17/07/2019 08	42	42	100.00
43	Gaurang	Kokrajhar	41.85	42.85	43.60	20-08-15	43.4	23/07/2019 18	36	36	100.00
44	Brahmaputra	Dhubri	27.62	28.62	30.36	28/08/1988	30.37	17/07/2019 22	133	133	100.00
45	Sankosh	Golakganj	28.94	29.94	30.95	08-09-07	30.15	15/07/19:10	31	28	90.32
46	Barak	APGhat	18.83	19.83	21.84	01-08-89	20.33	14/07/2019 03	29	29	100.00
47	Katakhal	Matizuri	19.27	20.27	22.73	10-09-07	22.36	15/07/2019 06	15	15	100.00
48	Barak	Badarpurghat	15.85	16.85	18.48	11-09-07	17.65	14/07/2019 16	41	41	100.00
49	Kushiyara	Karimganj	13.94	14.94	16.57	10-06-10	16.17	14/07/2019 05	63	63	100.00
	Arunachal Pradesh										
50	Siang	Yingkiang	303.00	304.00			272.30	13/07/2019 06	0	0	-
51	Siang	Passighat	152.96	153.96	157.54	11-06-00	154.04	13/07/2019 07	29	29	100.00
52	Noa-Dehing	Namsai	144.80	145.80	146.60	31-08-74	144.11	31/07/2019 15	1	1	100.00
	Bihar										
53	Ganga	Buxar	59.32	60.32	62.09	1948	60.92	22/09/19:15	27	27	100.00
54	Ghaghra	Darauli	59.82	60.82	61.74	29-08-98	60.86	23/09/19:05	65	65	100.00
55	Ghaghra	Gangpur Siswan	56.04	57.04	58.01	18-09-83	57.37	23/09/19:04	45	45	100.00
56	Ghaghra	Chhapra	52.68	53.68	54.59	03-09-82	53.25	24/09/19:11	11	11	100.00
57	Sone	Indrapuri Barrage	FRL173				108.36	29/09/2019 17	0	0	-
58	Sone	Inderpuri	107.20	108.20	109.60	23-08-75	105.30	30/09/19:00	0	0	-
59	Sone	Koelwar	54.52	55.52	58.88	20-07-71	53.74	30/09/19:20	0	0	-
60	Sone	Maner	51.00	52.00	53.79	10-09-76	52.87	24/09/19:04	30	29	96.67
61	Ganga	Patna Dighaghat	49.45	50.45	52.52	23-08-75	50.94	30/09/19:14	33	33	
62	Gandak	Gandak Barrage	FRL113.08				110.41	22/06/2019 22	0	0	
63	Gandak	Chatia	68.15	69.15	70.04	26-07-02	66.80	20/09/2019 18	0	0	-
64	Gandak	Dumariaghat	61.22	62.22	64.10	17-08-17	62.73	19/09/2019 18	103	103	100.00
65	Gandak	Rewaghat	53.41	54.41	55.41	17-09-86	53.79	20/09/19:22	8	8	100.00
66	Gandak	Hazipur	49.32	50.32	50.93	1948	49.81	21/09/19:03	16	16	100.00
67	Ganga	Patna Gandhighat	47.60	48.60	50.52	20-08-16	49.79	23/09/19:15	47	47	100.00
68	PunPun	Sripalpur	49.60	50.60	53.91	18-09-76	53.61	15/09/19:04	20	20	100.00

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1	2	3	4	5	6	7	8	9	10	11	12
69	Ganga	Hathidah	40.76	41.76	43.17	21-08-16	42.76	25/09/19:11	48	48	100.00
70	Ganga	Munger	38.33	39.33	40.99	19-09-76	39.59	02/10/19:03	27	27	100.00
71	Burhi Gandak	Lalbeghiaghat	62.20	63.20	67.09	30-07-75	63.65	17/07/2019 19	20	20	100.00
72	Burhigandak	Ahirwalia	58.62	59.62	61.17	1975	59.07	19/07/2019 04	8	8	100.00
73	Burhi Gandak	Muzaffarpur	51.53	52.53	54.29	15-08-87	52.69	21/07/2019 01	21	21	100.00
74	Burhi Gandak	Samastipur	45.02	46.02	49.38	15-08-87	46.73	27/07/2019 00	21	20	95.24
75	Burhi Gandak	Rosera	41.63	42.63	46.35	16-08-87	44.12	23/07/2019 08	24	23	95.83
76	Burhi Gandak	Khagaria	35.58	36.58	39.22	1976	38.28	03/10/2019 00	46	46	100.00
77	Ganga	Bhagalpur	32.68	33.68	34.72	26-08-16	34.43	02/10/19:03	33	33	100.00
78	Ganga	Kahalgaon	30.09	31.09	32.87	17-09-03	32.36	03/10/19:01	47	46	97.87
79	Kosi	Kosi Barrage	77.74 (PL)				76.2	24/07/2019 00	0	0	-
80	Kosi	Basua	46.75	47.75	49.24	13-08-17	49.16	15/07/2019 00	108	104	96.30
81	Bagmati	Dheng Bridge	69.10	70.10	73.00	13-08-17	72.96	14/07/2019 00	148	147	99.32
82	Bagmati	Runisaidpur	52.73	53.73	58.15	14-08-17	57.9	14/07/2019 13	147	144	97.96
83	Bagmati	Benibad	47.68	48.68	50.01	12-07-04	49.13	15/07/2019 13	61	60	98.36
84	Adhwara Group	Kamtaul	49.00	50.00	52.99	12-08-87	51.61	16/07/2019 05	43	43	100.00
85	Adhwara Group	Ekmighat	45.94	46.94	49.52	12-07-04	47.91	30/07/2019 00	38	38	100.00
86	Bagmati	Hayaghat	44.72	45.72	48.96	14-08-87	46.71	30.07.2019 00	28	28	100.00
87	Kamla Balan	Jainagar	66.75	67.75	71.35	1965	69.9	13/07/2019 13	302	301	99.67
88	Kamla Balan	Jhanjharpur	49.00	50.00	53.01	10/07/2004	53.11	14/07/2019 06	183	178	97.27
89	Adhwara	Sonebarsha	80.85	81.85	83.00	11-09-06	82.96	13/07/2019 11	7	6	85.71
90	Kosi	Baltara	32.85	33.85	36.40	15-08-87	35.61	17/07/2019 03	103	101	98.06
91	Kosi	Kursela	29.00	30.00	32.10	07-09-82	31.60	03/10/2019 05	51	51	100.00
92	Mahananda	Taibpur	65.00	66.00	67.22	1968	66.75	13/07/2019 03	47	43	91.49
93	Mahananda	Dhengraghat	34.65	35.65	38.20	14-08-17	37.18	15/07/2019 05	38	38	100.00
94	Mahananda	Jhawa	30.40	31.40	34.07	14-08-17	33.10	17/07/2019 02	69	66	95.65
95	Parwan	Araria	46.00	47.00	49.40	14-08-17	48.48	14/07/2019 15	113	111	98.23
	Chhatisgarh										
96	Indravati	Jagdalpur	539.50	540.80	544.68	09-07-73	542.22	30-07-19 22:00	41	33	80.49
97	Mahanadi	Ravishankar Dam	FRL348.7				346.66	31/10/2019 08	2	1	50.00
98	Hasdeo	Bango Dam	FRL359.66				358.18	04/10/2019 08	0	0	-
	Daman and Diu										
99	Damanganga	Daman	2.60	3.40	4.00	03-08-04	2.60	03/08/19:16	1	1	100.00

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1	2	3	4	5	6	7	8	9	10	11	12
	Gujarat										
100	Mahi	Kadana Dam	FRL126.19				127.71	11/10/19 0300	6	0	0.00
101	Panam	Panam Dam	FRL 121.41				127.41	04/10/19 1500	0	0	-
102	Mahi	Wanakbori	71.93	74.98	76.10	12-08-06	73.38	14/09/19 0900	0	0	-
103	Sabarmati	Dharoi Dam	FRL187.45				189.570	09/10/19 2200	2	0	0.00
104	Sabarmati	Ahmedabad Shubhash	44.09	45.34	47.45	19-08-06	42.4	01/10/19 1900	0	0	-
105	Narmada	Sardar Sarovar Dam	FRL138.38				138.68	15/09/2019 19	130	130	100.00
106	Naramada	Garudeswar	30.48	31.09	41.65	06-09-70	29.58	11/09/19:03	0	0	-
107	Naramada	Bharuch	6.71	7.31	12.65	07-09-70	9.72	11/09/19:10	51	51	100.00
108	Tapi	Ukai Dam	FRL102.41				105.17	07/10/19:23	103	102	99.03
109	Tapi	Surat	8.50	9.50	12.50	09-08-06	8.00	10/08/19:23	0	0	-
110	Damanganga	Madhuban Dam	FRL79.86				79.90	30/09/19:13	23	23	100.00
111	Damanganga	Vapi Town	18.20	19.20	23.76	03-08-04	18.60	04/08/19:17	2	2	100.00
112	Banas	Dantiwada Dam	FRL182.88				175.84	10/10/19 1400	0	0	-
	Haryana										
113	Yamuna	Tajewala Weir			338.90	17-06-13	338.60	18/08/19:00	0	0	-
114	Yamuna	Karnal Bridge	248.80	249.50	250.07	17-06-13	248.94	19/08/19:16	2	2	100.00
	Himachal Pradesh										
115	Yamuna	Paonta Sahib	383.50	384.50	384.60	05-09-95	384.5	18/08/19:11	4	2	50.00
	Jharkhand										
116	Khoranadi	Annaraj Dam	FRL252.44				-	-	0	0	-
117	Goda Nala	Bhairwa Dam	FRL356.7				355.6	30/10/2019 06	0	0	-
118	Baranadi	Amanat Barage	FRL274.39				-	-	0	0	-
119	Jamunia	Batane Dam	FRL232.85				122.27	09/10/2019 06	0	0	-
120	Ganga	Sahibgunj	26.25	27.25	30.91	1998	28.58	03/10/19:19	49	48	97.96
121	Mayurakshi	Massanjore Dam	FRL121.31				118.78	02/12/2019 03	8	6	75.00
122	Ashra nadi	Sikatia Barrage	FRL170.1				161.76	29/09/2019 12	0	0	-
123	Damodar	Tenughat Dam	FRL268.83				260.80	24/10/2019 10	20	19	95.00
124	Barakar	Tilaiya Dam	FRL372.46				368.55	29/10/2019 06	3	3	100.00
125	Konar	Konar Dam	FRL427.93				425.87	10/11/2019 06	2	1	50.00
126	Damodar	Panchet Dam	FRL132.59				129.24	01/10/2019 15	36	34	94.44
127	Barakar	Maithon Dam	FRL150.88				150.04	08/11/2019 06	22	20	90.91
128	Anjanwa	Sundar Dam	FRL110.68				107.67	11/11/2019 06	0	0	-
129	Subarnarekha	Getlasud Dam	FRL590.24				588.75	26/10/2019 08	0	0	-
130	Subernarekna	Chandil Dam	FRL 192				181.30	28/09/2019 08	0	0	-
131	Subarnarekha	Galudih Barrage	FRL94.5				93.8	07/08/2019 08	0	0	-
132	Subernarekna	Jamshedpur	122.50	123.50	129.82	12-10-73	121.5	26/10/2019 00	0	0	-

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1	2	3	4	5	6	7	8	9	10	11	12
	Jammu and Kashmir										
133	Jhelum	Sangam	1590.30	1592.00	1595.00	06-09-14	1589.13	29/07/2019 07	0	0	-
134	Jhelum	Rammunshibagh	1585.53	1586.45	1588.99	08-09-14	1584.48	29/07/2019 15	0	0	-
135	Jhelum	Safapora	1580.00	1580.80	1582.10	09-09-14	1579.42	29/07/2019 23	2	2	100.00
	Karnataka										
136	Karanja	Karanja Dam	FRL584.15				578.44	01-06-19 06:00	0	0	-
137	Krishna	Hippargi Dam	FRL531.4				530.15	12/08/2019 08	55	43	78.18
138	Ghataprabha	Hidkal Dam	FRL662.94				663.19	30/11/2019 08	37	22	59.46
139	Krishna	Alamati Dam	FRL519.6				519.60	23/08/2019 00	75	64	85.33
140	Malaprabha	Malaprabha Dam	FRL633.83				633.83	12/08/2019 08	20	13	65.00
141	Krishna	Narayanpur Dam	FRL492.25				492.25	28/08/2019 20	102	78	76.47
142	Bhima	Deongaon	402.00	404.50	407.34	13-08-06	405.80	10/08/2019 00	10	3	30.00
143	Tunga	Upper Tunga	FRL 588.24				588.24	14/08/2019 08	136	121	88.97
144	Bhadra	Bhadra Dam	FRL 657.75				657.76	21/10/2019 08	105	94	89.52
145	Tungabhadra	Tungabhadra Dam	FRL497.74				497.74	15/08/2019 08	165	110	66.67
146	Krishna	Singatalur Barrage	FRL507				506.9	30/07/2019 08	146	112	76.71
147	Harangi	Harangi Dam	FRL 871.42				871.19	19/10/2019 08	23	18	78.26
148	Hemavathy	Hemavathy Dam	FRL 890.63				890.62	09/11/2019 08	94	88	93.62
149	Kabini	Kabini Dam	FRL 696.16				696.16	28/08/2019 08	68	67	96.03
150	Cauvery	Krishnarajasagar	FRL 752.49				752.49	22/11/2019 08	126	121	98.53
	Kerala										
151	Bharathapuzha	Kumbidi	8.20	9.20	11.27	17-08-18	11.2	10/08/2019 06	6	4	66.67
152	Periyar	Idduki Dam	FRL732.62				726.68	20/11/2019 04	11	9	81.82
153	Edamalayar	Idamalayar	FRL169				162.04	04/11/2019 10	10	8	80.00
154	Periyar	Neeleswaram	9.00	10.00	12.40	15-08-18	9.41	08/08/2019 20	1	1	100.00
155	Pamba	Malakkara	6.00	7.00	9.58	16-08-18	6.43	10/08/2019 01	2	2	100.00
	Madhya Pradesh										
156	Chambal	Gandhisagar Dam	FRL 399.9				401.98	15/09/2019 08	35	13	37.14
157	Betwa	Rajghat Dam	FRL380.8				371	03/09/2019 08	40	15	37.50
158	Sone	Bansagar Dam	FRL 341.65				341.65	28/09/2019 08	39	7	17.95
159	Wainganga	Upper Wainganga Project	FRL519.38				519.38	28/10/2019 06	0	0	-
160	Pench	Totladoh Project	FRL490				490	19/09/2019 07	0	0	-
161	Naramada	Mandla	437.20	437.80	439.40	15-07-74	438.78	08/09/2019 20	28	27	96.43
162	Narmada	Barna Dam	FRL348.55				348.7	04/09/2019 20	37	0	0.00
163	Narmada	Bargi Dam	FRL422.76				423.05	29/09/2019 07	38	1	2.63
164	Narmada	Tawa Dam	FRL355.39				355.54	20/10/2019 07	37	0	0.00
165	Naramada	Hoshangabad	292.80	293.80	301.33	27-08-72	294.60	11/09/2019 00	25	25	100.00
166	Narmada	Indira Sagar Dam	FRL262.13				289.69	12/08/2019 02	38	3	7.89
167	Narmada	Omkareshwar Dam	FRL201.16				193.43	22/10/2019 11	39	0	0.00

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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
	Maharashtra										
168	Godavari	Nasik	558.10	559.60	563.01	02-08-16	562.51	04-08-19 15:00	9	7	77.78
169	Godavari	N M D Weir	FRL533.5				535.78	04-08-19 21:00	0	0	-
170	Godavari	Kopergaon	490.90	493.68	499.17	1969	496.67	05-08-19 13:00	16	6	37.50
171	Mula	Mula Dam	FRL552.3				552.3	15-10-19 06:00	0	0	-
172	Godavari	Jaikwadi Dam	FRL463.91				463.91	21-09-2019 2100	9	4	44.44
173	Sindhpana	Manjlegaon	FRL431.8				430.6	31-10-19 06:00	2	0	0.00
174	Godavari	Gangakhed	374.00	375.00	377.57	1947	370.43	26-10-19 11:00	0	0	0.00
175	Puma	Yeldari Dam	FRL461.77				457.84	31-10-19 06:00	2	0	0.00
176	Godavari	Nanded	353.00	354.00	357.10	06-08-06	349.10	26-10-19 13:00	0	0	0.00
177	Wainganga	Bhandara	244.00	244.50	250.90	16-09-05	246.84	10/09/2019 12	3	3	100.00
178	Wainganga	Goshikhurd Dam	FRL=245.5				244.30	28/09/2019 08	10	8	80.00
179	Wainganga	Pauni	226.73	227.73	237.12	07-09-94	227.75	09/09/2019 15	2	0	0.00
180	Wardha	Upper Wardha Project	FRL342.5				342.5	10/09/2019 07	0	0	-
181	Penganga	Issapur/Upper Penganga Pro	FRL441				438.81	03/12/2019 07	0	0	-
182	Wardha	Balharsha	171.50	174.00	176.45	14-08-86	168.92	04/08/2019 14	0	0	-
183	Koyna	Koyna Dam	FRL659.43				659.43	02/10/2019 08	27	10	37.04
184	Warana	Warana Dam	FRL626.9				626.9	26/09/2019 08	8	0	0.00
185	Krishna	Arjunwad	542.07	543.29	543.69	05-08-2005	544.28	09/08/2019 02	8	2	25.00
186	Nira	Veer Dam	FRL579.85				579.85	15/08/2019 08	25	14	56.00
187	Bhima	Ujjani Dam	FRL497.33				497.27	20/08/2019 08	29	17	58.62
188	Tapi	Hatnur Dam	FRL212.02				214.10	23/10/19:11	127	127	100.00
	NCT Delhi										
189	Sahibi	Dhansa	211.44	212.44	213.58	06-08-77	209.50	20/08/19:08	0	0	-
190	Yamuna	Delhi Rly Bridge	**204.50**	**205.33**	207.49	06-09-78	206.60	21/08/19:05	7	6	85.71
	Odisha										
191	Indravathi	Upper Indravathi Project	FRL642				641.26	06-09-19 08:00	2	0	0.00
192	Kolab	Kolab Project	FRL858				857.27	31-10-19 17:00	0	0	-
193	Machhkund	Machhkund Project	FRL838.2				838.02	06-09-19 17:00	0	0	-
194	Balimela	Balimela Project	FRL462.07				462.05	27-10-19 06:00	0	0	-
195	Subernarekna	Rajghat	9.45	10.36	12.69	19-06-08	9.58	27/10/2019 09	1	1	100.00
196	Jalaka	Mathani Road Bridge	5.50	5.50	6.80		6.57	26/09/2019 08	50	43	86.00
197	Burhabalang	NH_5 _Road Bridge	7.21	8.13	9.50	12-10-73	6.72	19/08/2019 09	0	0	-
198	Salandi	Salandi Dam	FRL82.3				77.5	02/10/2019 08	0	0	-
199	Baitarni	Anandpur	37.44	38.36	41.35	23-09-11	36.86	19/08/2019 11	0	0	-
200	Baitarni	Akhuapada	17.33	17.83	21.95	16-08-60	18.15	08/09/2019 00	21	21	100.00
201	Brahmani	Rengali Dam	FRL 123.5				124.34	10/10/2019 17	0	0	-
202	Brahmani	Jenapur	22.00	23.00	24.78	20-08-75	21.56	09/09/2019 00	0	0	-
203	Mahanadi	Hirakud Dam	FRL192.02				192.02	25/09/2019 16	65	63	96.92
204	Mahanadi	Naraj	25.41	26.41	27.61	31-08-82	26.33	10/09/2019 01	14	13	92.86
205	Mahanadi	Alipingal Devi	10.85	11.76	13.11	11-09-11	11.08	15/08/2019 12	1	1	100.00
206	Mahanadi	Nimapara	9.85	10.76	11.60	31-08-82	9.76	15/08/2019 18	0	0	-
207	Rushikuluya	Purushottampur	15.83	16.83	19.65	04-11-90	16.2	25-10-19 02:00	4	3	75.00
208	Vamsadhara	Gunupur	83.00	84.00	88.75	17-09-80	85.32	07-08-19 21:00	11	9	81.82

Statewise Flood Forecasting Information In India during Flood Season 2019

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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
209	Vamsadhara	Kashinagar	53.60	54.60	58.93	18-09-80	56.30	08-08-19 00:00	64	62	96.88
	Rajasthan										
210	Chambal	Rana Pratap Sagar	FRL 352.8				353.35	15/09/2019 20	21	6	28.57
211	Chambal	Kota Barrage	FRL260.3				269.81	28/07/2019 04	49	18	36.73
212	Chambal	Kota City	239.00	240.00			243.46	16/09/2019 10	0	0	-
213	Banas	Bisalpur Dam	FRL 315.5				315.50	19/08/2019 16	5	0	0.00
214	Kalisindh	Kalisindh Dam	FRL316				315.86	11/10/2019 09	67	35	52.24
215	Parwan	Parwan Dam	FRL288.34				292.88	15/09/2019 08	0	0	-
216	Gambhiri	Gambhiri Dam	FRL431.9				432.08	19/08/2019 08	0	0	-
217	Gambhiri	Panchana Dam	FRL258.62				254.32	01/10/2019 10	0	0	-
218	Mej	Gudha Dam	FRL305.87				306.44	16/08/2019 08	0	0	-
219	Parwati	Parwati Dam	-				312.27	16/08/2019 08	0	0	-
220	Mahi	Mahi Bajajsagar Dam	FRL 281.5				281.50	14/10/19 2100	3	0	0.00
221	Som Kamla	Som Kamla Amba Dam	FRL 212.5				213.55	01/10/19 1600	1	0	0.00
222	Banas	Abu Road	258.00	259.00	265.40	31-08-73	256.5	09/08/19 1300	0	0	-
	Sikkim										
223	Teesta	Malli Bazaar	223.00	224.00	225.25		217.06	17/09/2019 00	0	0	-
224	Teesta	Joretahang(Rothak)	350.60	351.60	353.20		348.16	17/09/2019 13	0	0	-
225	Teesta	Singtam	377.07	377.57	379.17		374.94	15/09/2019 00	0	0	-
226	Teesta	Teesta-III HEP Dam Chungta	1585.00				1584.3	09/10/2019 07	0	0	-
227	Teesta	Teesta V HEP Dam Singtam	579.00				573.6	06/10/2019 20	0	0	-
228	Rongpo	Rongpo Dam	909.00				-	-	0	0	-
229	Rongli	Rongli Dam	909.00				-	-	0	0	-
230	Rangit	Rangit-III HEP Dam	639.12				639.12	14/10/2019 17	0	0	-
	Tamilnadu										
231	Cauvery	Mettur Dam	FRL=240.79				241.08	09/09/2019 08	160	157	96.03
232	Bhavani	Bhavanisagar Dam	FRL=280.42				280.41	02/12/2019 08	85	73	85.88
233	Bhavani	Savandapur	184.50	185.50	187.75	17-08-18	184.5	02/12/2019 23	1	1	100.00
234	Cauvery	Kodumudi	125.50	126.50	128.14	17-08-18	125.62	10/09/2019 16	3	3	100.00
235	Kodaganar	Kodaganar Dam	200.25				192	01/06/2019 08	0	0	
236	Cauvery	Musiri	82.11	83.11	86.98	25-11-05	82.82	11/09/2019 05	13	13	100.00
237	Cauvery	Grand Anicut	FRL59.21				64.31	01/06/2019 08	131	125	95.42
238	Cauvery	Upper Anicut	FRL75.05				155.42	11/09/2019 08	131	123	93.89
239	Kosasthaliyar	Poondi Satyamurthy reservoi	FRL=42.67				41.08	02/11/2019 00	1	0	0.00
240	Adyar	Chembarampakkam	FRL=26.03				18.79	-	0	0	-
241	South Pennar	Sathnur Dam	FRL=222.2				215.72	26/12/2019 06	0	0	-
242	Gomukhinadi	Gomukhi Dam	183.18				182.57	30/10/2019 07	0	0	-
243	Periyar Odai	Wellington Dam	FRL=72.54				68.20	16/12/2019 06	2	1	50.00
244	Vaigai	Vaigai Dam	FRL=279.2				278.57	09/12/2019 06	44	42	95.45
245	Vaigai	Madurai	131.50	132.50	134.76	17-11-97	131.24	11/11/2019 10	0	0	-
	Telagana										
246	Manjira	Singur Dam	FRL523.6				511.45	31-10-19 06:00	0	0	-
247	Manjira	Nizamsagar Dam	FRL428.24				423.5	31-10-19 06:00	0	0	-
248	Godavari	Sriram Sagar	FRL332.54				332.54	21-10-19 09:00	17	5	29.41
249	Kaddamvagu	Kaddam Dam	FRL 213.36				213.24	27-10-19 06:00	0	0	-

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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
250	Godavari	Sripada Yellampally Dam	FRL 148				147.89	16-10-19 06:00	6	4	66.67
251	Wardha	Sirpur Town	159.95	160.95	161.34	18-08-18	159.25	04/08/2019 20	0	0	
252	Godavari	Kaleswaram	103.50	104.75	107.05	15-08-86	102.48	08-09-19 09:00	0	0	-
253	Godavari	Eturunagaram	73.32	75.82	77.66	24-08-90	74.705	08-09-19 10:00	21	14	66.67
254	Godavari	Dummagudam	53.00	55.00	60.25	15-08-86	54.48	08-09-19 23:00	10	7	70.00
255	Godavari	Bhadrachalam	45.72	48.77	55.66	16-08-86	48.22	09-09-19 01:00	20	10	50.00
256	Krishna	Priyadarshini	FRL318.52				318.51	21/08/201907	145	73	50.34
257	Musi	Musi Project	FRL196.6				196.52	03/10/2019 08	0	0	
	Tripura										
258	Manu	Kailashar	24.34	25.34	25.95	13-06-18	23.77	14/06/2019 23	0	0	-
259	Gumti	Sonamura	11.50	12.50	14.42	23-07-93	11.28	16/07/2019 02	0	0	-
	Uttar Pradesh										
260	Ganga	Dharmanagri Barrage	FRL 221.8				220.2	19/08/2019 13	0	0	-
261	Ganga	Garhmuktheswar	198.33	199.33	199.90	23-09-10	198.67	21/08/19:20	18	18	100.00
262	Ganga	Narora Barrage			180.61	23/09/2010	179.07	01/06/19:01	24	24	100.00
263	Ganga	Kachla Bridge	161.00	162.00	162.79	24-09-10	162.63	21/08/2019 20	80	79	98.75
264	Ganga	Fathegarh	136.60	137.60	138.14	26-09-10	137.34	25/08/19:05	30	30	100.00
265	Ramganga	Moradabad	189.60	190.60	192.88	21-09-10	189.33	20/08/19:10	0	0	-
266	Ramganga	Bareilly	162.07	163.07	162.88	06-08-78	160.49	23/08/2019 08	0	0	-
267	Ganga	Dabri	136.30	137.30	139.70	28-09-83	135.80	24/08/2019 06	0	0	-
268	Ganga	Kannauj	124.97	125.97	126.78	27-09-10	124.55	26/08/19:03	0	0	-
269	Ganga	Ankinghat	123.00	124.00	124.49	28-09-10	122.99	26/08/19:04	0	0	-
270	Ganga	Kanpur	112.00	113.00	114.08	29-09-10	111.66	26/08/19:09	0	0	-
271	Ganga	Dalmau	98.36	99.36	99.84	03-08-73	97.85	27/08/19:09	0	0	-
272	Ganga	Phphamau	83.73	84.73	87.98	08-09-78	85.78	21/09/19:23	10	10	100.00
273	Yamuna	Mawi	230.00	230.85	232.75	26-09-88	232.25	20/08/19:11	7	6	85.71
274	Yamuna	Mathura	165.20	166.00	169.73	08-09-78	165.47	23/08/19:14	4	4	100.00
275	Yamuna	Agra	151.40	152.40	154.76	09-09-78	150.91	23/08/2019 23	0	0	-
276	Yamuna	Etawa	120.92	121.92	126.13	11-09-78	121.22	19/09/2019 04	3	3	-
277	Yamuna	Auraiya	112.00	113.00	118.19	25-08-96	117.36	19/09/2019 08	16	11	68.75
278	Yamuna	Kalpi	107.00	108.00	112.98	25-08-96	112.26	19/09/2019 07	11	9	81.82
279	Yamuna	Hamirpur	102.63	103.63	108.59	12-09-83	106.79	20/09/2019 10	18	10	55.56
280	Betwa	Matatilia Dam	FRL308.46				991.8	27/07/2019 08	39	0	0.00
281	Betwa	Mohana	121.66	122.66	133.35	11-09-83	122.32	17/08/2019 01	7	3	42.86
282	Betwa	Sahjina	103.54	104.54	108.67	12-09-83	106.33	20/09/2019 05	15	11	73.33
283	Ken	Banda	103.00	104.00	113.29	07-07-05	103.65	19/09/2019 22	5	1	20.00
284	Yamuna	Chilaghat	99.00	100.00	105.16	06-09-78	102.55	20/09/2019 14	16	7	43.75
285	Yamuna	Naini	83.74	84.74	87.99	08-09-78	85.67	21/09/19:00	10	7	70.00
286	Ganga	Allahabad Chhatnag	83.73	84.73	88.03	08-09-78	85.09	21/09/19:23	8	8	100.00
287	Ganga	Mirzapur	76.72	77.72	80.34	09-09-78	77.98	22/09/19:01	9	9	100.00
288	Ganga	Varanasi	70.26	71.26	73.90	09-09-78	71.95	22/09/19:17	12	10	83.33
289	Gomati	Lucknow	108.50	109.50	110.85	10-09-71	106.23	11/07/2019 06	0	0	-
290	SAI	Raibareli	100.00	101.00	104.81	17-09-82	100.60	29/09/2019 13	4	4	100.00
291	Gomati	Jaunpur	73.07	74.07	77.74	22-09-71	73.43	29/09/19:00	1	1	100.00
292	Ganga	Ghazipur	62.10	63.10	65.22	09-09-78	64.53	23/09/19:01	26	25	96.15
293	Ganga	Ballia	56.62	57.62	60.39	25-08-16	59.94	24/09/19:01	47	47	100.00
294	Ghaghra	Katerniaghat Dam	FRL138				138.00	28/09/2019 19	0	0	-
295	Ghaghra	Elgin Bridge	105.07	106.07	107.62	18-08-18	106.67	07/09/19:00	89	87	97.75
296	Ghaghra	Ayodhya	91.73	92.73	94.01	11-10-09	92.99	17/09/19:00	80	79	98.75
297	Rapti	Kakardhari	130.00	131.00	132.37	15-08-14	129.84	15/07/2019 00	0	0	-
298	Rapti	Balrampur	103.62	104.62	105.54	15-08-17	105.08	15/07/2019 15	21	19	90.48
299	Rapti	Bansi	83.90	84.90	85.88	20-08-17	84.22	18/07/2019 14	6	5	83.33
300	Rapti	Gorakpur Birdghat	73.98	74.98	77.54	23-08-98	73.95	16/07/19:00	0	0	-

Statewise Flood Forecasting Information In India during Flood Season 2019

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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
301	Ghaghra	Turtipar	63.01	64.01	66.00	28-08-98	64.16	22/09/19:00	79	76	96.20
302	Rihand	Rihand Dam		FRL=268.22			263.26	31/10/2019 08	26	4	15.38
303	Gandak	Khadda	95.00	96.00	97.50	23-07-02	95.78	18/09/2019 04	91	89	97.80
	Uttarakhand										
304	Alaknanda	Srinagar	535.00	536.00	537.90	17-06-13	535.90	19/08/19:04	2	0	0.00
305	Mandakini	Ganganagar	803.00	804.00	801.92	2015	801.5	19/08/19:07	0	0	-
306	Ganga	Rishikesh	339.50	340.50	341.72	05-09-95	340.90	19/08/19:02	3	2	66.67
307	Ganga	Haridwar	293.00	294.00	296.30	19-09-10	295.05	19/08/19:03	3	1	33.33
308	Ramganga	Kalagarh Dam		366.2	365.3		257.74	25/06/19:08	0	0	-
309	Sharda	Banbasa	222.96	225			222.50	21/06/19:00	3	3	100.00
	West Bengal										
310	Ganga	Farakka	21.25	22.25	25.14	07-09-98	24.37	02/10/19:11	122	118	96.72
311	Mayurakshi	Tilpara Barrage	FRL62.79				62.87	31/07/2019 11	3	3	100.00
312	Mayurakshi	Narayanpur	26.99	27.99	29.69	27-09-95	25.04	01/10/2019 09	0	0	-
313	Ajoy	Gheropara	38.42	39.42	43.94	27-09-78	38.41	01/10/2019 03	2	1	50.00
314	Damodar	Durgapur Barrage	FRL64.47				64.47	30/11/2019 21	31	31	100.00
315	Mundeshwari	Harinkhola	11.80	12.80	14.58	29-09-78	11.80	01/10/2019 09	0	0	-
316	Kangsabati	Hinglow Dam	FRL97.84				98.35	26/09/2019 13	0	0	
317	Kangsabati	Kangsabati Dam	FRL134.11				131.58	27/12/2019 06	14	12	85.71
318	Kangsabati	Mohanpur	24.73	25.73	29.87	02-09-78	20.24	30/09/2019 06	0	0	-
319	Raidak-I	Tufanganj	34.22	35.30	36.50	12-08-17	35.96	24/07/19:08	21	18	85.71
320	Jaldhaka	NH-31	80.00	80.90	81.33	28-08-72	80.13	16/07/19:10	14	14	100.00
321	Torsa	Hasimara	116.30	116.90	118.50	13-07-96	116.28	25/06/19:06	0	0	-
322	Torsa	Ghughumari	39.80	40.41	41.46	03-08-00	40.30	18/07/19:10	28	26	92.86
323	Jaldhaka	Mathabhanga	47.70	48.20	49.85	07-09-07	48.30	24/07/19:15	6	6	100.00
324	Tista	Domohani	85.65	85.95	89.30	14-10-68	86.18	12/07/19:15	47	45	95.74
325	Tista	Mekhliganj	65.45	65.95	66.45	13-07-96	65.87	12/07/19:21	17	14	82.35
							Total Forecasts		***9754***	***8451***	**86.64**
							Level Forecasts		**6004**	**5773**	**96.15**
							Inflow Forecast		**3750**	**2678**	**71.41**

Performance of Flood Forecasting Stations (Divisionwise) in India during Flood Season 2019

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	Himalayan Ganga Divn, Dehradun	4	3	8	3	37.50	1	0	0	0	-	5	3	8	3	37.50
2	Middle Ganga Division 1, Lucknow	7	5	275	266	96.73	2	1	3	3	100.00	9	6	278	269	96.76
3	Middle Ganga Division 2, Lucknow	12	4	132	131	99.24	2	1	24	24	100.00	14	5	156	155	99.36
4	Middle Ganga Division 3, Varanasi	7	7	113	110	97.35	2	2	65	11	16.92	9	9	178	121	67.98
5	Lower Ganga Division I, Patna	25	24	1820	1789	98.30	2	0	0	0	-	27	24	1820	1789	98.30
6	Lower Ganga Division 2, Patna	18	16	628	621	98.89	4	0	0	0	-	22	16	628	621	98.89
7	Upper Yamuna Divn, Delhi	6	5	24	20	83.33	1	0	0	0	-	7	5	24	20	83.33
8	Chambal Division, Jaipur	1	0	0	0	-	10	5	177	72	40.68	11	5	177	72	40.68
9	Lower Yamuna Divn, Agra	10	9	101	62	61.39	2	2	79	15	18.99	12	11	180	77	42.78
10	Damodar Divn, Asansol	4	1	2	1	50.00	13	9	139	129	92.81	17	10	141	130	92.20
11	Upper Brahmaputra Divn, Dibrugarh	19	16	1334	1322	99.10	0	0	0	0	-	19	16	1334	1322	99.10
12	Middle Brahmaputra Divn, Guwahati	15	12	848	848	100.00	0	0	0	0	-	15	12	848	848	100.00
13	Lower Brahmaputra Divn, Jalpaiguri	8	7	164	151	92.07	0	0	0	0	-	8	7	164	151	92.07
14	Eastern Rivers Divn, Bhubaneswar	11	7	166	153	92.17	9	1	5	5	100.00	20	8	171	158	92.40
15	Mahanadi Divn, Burla	3	2	15	14	93.33	3	2	67	64	95.52	6	4	82	78	95.12
16	Lower Godavari Divn, Hyderabad	10	6	150	106	70.67	4	1	2	0	0.00	14	7	152	106	69.74
17	Upper Godavari Division	4	2	25	13	52.00	11	5	36	13	36.11	15	7	61	26	42.62
18	Lower Krishna Divn, Hyderabad	4	4	51	26	50.98	10	9	1201	758	63.11	14	13	1252	784	62.62
19	Mahi Divn, Gandhinagar	3	0	0	0	-	6	4	12	0	0.00	9	4	12	0	0.00
20	Tapi Divn,Surat	5	3	54	54	100.00	4	4	383	382	99.74	9	7	437	436	99.77
21	Narmada Divn, Bhopal	2	2	53	52	98.11	5	5	189	4	2.12	7	7	242	56	23.14
22	Chenab Divn. Jammu	3	1	2	2	-	0	0	0	0	-	3	1	2	2	100.00
23	Southern River Divn. Coimbtr.	4	3	17	17	100.00	6	5	551	520	94.37	10	8	568	537	94.54
24	Hydrology Divn. Chennai	1	0	0	0	-	6	3	33	25	75.76	7	3	33	25	75.76
25	Cauvery Divn. Bangalore	0	0	0	0	-	8	8	609	544	89.33	8	8	609	544	89.33
26	UKD Pune	1	1	8	2	25.00	5	5	144	84	58.33	6	6	152	86	56.58
27	WGD Nagpur	4	2	5	3	60.00	5	1	10	8	80.00	9	3	15	11	73.33
28	SWRD, Kochi	3	3	9	7	77.78	2	2	21	17	80.95	5	5	30	24	80.00
29	SID Gangtak	3	0	0	0	-	5	0	0	0	-	8	0	0	0	-
Total		**197**	**145**	**6004**	**5773**	**96.15**	**128**	**75**	**3750**	**2678**	**71.41**	**325**	**220**	**9754**	**8451**	**86.64**

Performance of Flood Forecasting Stations (Major Basinwise) in India during Flood Season 2019

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	3	3	0	2	2	0	2	2	100.00	0	0	-	2	2	100.00
2	Ganga & tributaries	133	94	39	39	20	19	3103	3003	96.78	487	254	52.16	3590	3257	90.72
3	Brahmaputra	44	39	5	13	8	5	2198	2173	98.86	0	0	-	2198	2173	98.86
4	Barak and others	6	6	0	2	2	0	148	148	100.00	0	0	-	148	148	100.00
5	Godavari	40	18	22	21	8	13	180	122	67.78	83	31	37.35	263	153	58.17
6	Krishna	22	5	17	1	0	1	59	28	47.46	1608	1082	67.29	1667	1110	66.59
7	Cauvery and tributaries	12	3	9	1	0	1	17	17	100.00	818	772	94.38	835	789	94.49
8	Subarnarekha including Burhabalang	7	4	3	5	2	3	51	44	86.27	0	0	-	51	44	86.27
9	Brahmani and Baitarni	5	3	2	4	2	2	21	21	100.00	0	0	-	21	21	100.00
10	Mahanadi	6	3	3	2	1	1	15	14	93.33	67	64	95.52	82	78	95.12
11	Pennr	2	1	1	1	1	0	0	0	-	30	24	80.00	30	24	80.00
12	Mahi	5	1	4	2	1	1	0	0	-	10	0	0.00	10	0	0.00
13	Sabarmati	2	1	1	1	1	0	0	0	-	2	0	0.00	2	0	0.00
14	Narmada	10	4	6	1	1	0	104	103	99.04	319	134	42.01	423	237	56.03
15	Tapi	3	1	2	1	1	0	0	0	-	230	229	99.57	230	229	99.57
16	West Flowing rivers from Tapi to Tadri	3	2	1	0	0	0	3	3	100.00	23	23	100.00	26	26	100.00
17	East flowing rivers between Mahanadi and Pennar	8	4	4	3	0	3	94	88	93.62	5	5	100.00	99	93	93.94
18	East flowing rivers between Pennar and Kanyakumari	7	1	6	4	1	3	0	0	-	47	43	91.49	47	43	91.49
19	West flowing rivers of Kutch and saurashtra including Luni	2	1	1	2	1	1	0	0	-	0	0	-	0	0	-
20	West Flowing river Tadri to Kanyakumari	5	3	2	0	0	0	9	7	77.78	21	17	80.95	30	24	80.00
Total		**325**	**197**	**128**	**105**	**52**	**53**	**6004**	**5773**	**96.15**	**3750**	**2678**	**71.41**	**9754**	**8451**	**86.64**

Performance of Flood Forecasting Stations (Statewise) in India during Flood Season 2019

Annex VI

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	Accuracy (%)	Total No.	Within limits	Accuracy (%)	Total No.	Within limits	Accuracy (%)
1	Andhra Pradesh	19	10	9	7	4	3	114	79	69.30	603	350	58.04	717	429	59.83
2	Arunachal Pradesh	3	3	0	1	1	0	30	30	100.00	0	0	-	30	30	100.00
3	Assam	30	30	0	3	3	0	2183	2168	99.31	**0**	**0**	-	2183	2168	99.31
4	Bihar	43	40	3	6	3	3	2186	2155	98.58	**0**	**0**	-	2186	2155	98.58
5	Chattisgarh	3	1	2	1	0	1	41	33	80.49	2	1	50.00	43	34	79.07
6	Daman n Diu	1	1	0	0	0	0	1	1	100.00	0	0	-	1	1	100.00
7	Gujarat	13	6	7	6	4	2	53	53	100.00	264	255	96.59	317	308	97.16
8	Haryana	2	1	1	1	0	1	2	2	100.00	0	0	-	2	2	100.00
9	Himachal Pradesh	1	1	0	0	0	0	4	2	50.00	0	0	-	4	2	50.00
10	Jammu & Kashmir	3	3	0	2	2	0	2	2	100.00	0	0	-	2	2	100.00
11	Jharkhand	17	2	15	10	1	9	49	48	97.96	91	83	91.21	140	131	93.57
12	Karnataka	15	1	14	1	0	1	10	3	30.00	1152	951	82.55	1162	954	82.10
13	Kerala	5	3	2	0	0	0	9	7	77.78	21	17	80.95	30	24	80.00
14	Madhya Pradesh	12	2	10	2	0	2	53	52	98.11	303	39	12.87	356	91	25.56
15	Maharashtra	21	8	13	7	3	4	38	18	47.37	239	180	75.31	277	198	71.48
16	NCT, DELHI	2	2	0	1	1	0	7	6	85.71	0	0	-	7	6	85.71
17	Odisha	19	12	7	9	4	5	166	153	92.17	67	63	94.03	233	216	92.70
18	Rajasthan	13	2	11	7	2	5	0	0	-	146	59	40.41	146	59	40.41
19	Sikkim	8	3	5	8	3	5	0	0	-	0	0	-	0	0	-
20	Tamilnadu	15	4	11	5	1	4	17	17	100.00	554	521	94.04	571	538	94.22
21	Telangana	12	5	7	6	2	4	51	31	60.78	168	82	48.81	219	113	51.60
22	Tripura	2	2	0	2	2	0	0	0	-	0	0	-	0	0	-
23	Uttar Pradesh	44	39	5	13	11	2	723	668	92.39	89	28	31.46	812	696	85.71
24	Uttarakhand	6	4	2	2	1	1	8	3	37.50	3	3	100.00	11	6	54.55
25	West Bengal	16	12	4	5	4	1	257	242	94.16	48	46	95.83	305	288	94.43
Total		**325**	**197**	**128**	**105**	**52**	**53**	**6004**	**5773**	**96.15**	**3750**	**2678**	**71.41**	**9754**	**8451**	**86.64**

FLOOD FORECASTING PERFORMANCE FROM 2000 TO 2019

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
2016	4969	4891	98.43	1270	1057	83.23	6239	5948	95.34
2017	5085	4975	97.84	1212	926	76.40	6297	5901	93.71
2018	4969	4871	98.03	1882	1624	86.29	6851	6495	94.80
2019	6004	5773	96.15	3750	2678	71.41	9754	8451	86.64
Average	4870	4749	97.52	1009	949	94.05	5879	5699	96.94

Extreme flood events in India under CWC FF & W Network - 2019 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	Brahmaputra	Dhubri	Assam	28.62	30.36	28-08-88	30.37	18/07/2019 0000	17/07/2019 1800	18/07/2019 0600
2	Kamla Balan	Jhanjarpur	Bihar	50.00	53.01	10-07-04	53.11	14/07/2019 0700	14/07/2019 0400	14/07/2019 1300
3	Godavari	Nasik	Maharashtra	559.60	563.01	02-08-16	563.51	04/08/2019 1600	04/08/2019 1300	04/08/2019 1800
4	Krishna	Arjunwad	Maharashtra	543.29	543.69	05-08-05	544.28	09/08/2019 0200	08/08/2019 1200	10/08/2019 1500

Above Normal and Severe flood events on main Ganga and its tributaries- 2019 flood season

Sl. No.	River	Station	State	Warning level in metres	Danger level in metres	Peak level in 2019		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	Uttarakhand	535.00	536.00	535.90	19/08/19:04	09/08/2019 04	09/08/2019 05	1	-	-	-
								18/08/2019 19	19/08/2019 05	2	-	-	-
2	Ganga	Rishikesh	Uttarakhand	339.50	340.50	340.90	19/08/19:02	18/08/2019 18	19/08/2019 17	2	19/08/2019 00	19/08/2019 07	1
3	Ganga	Haridwar	Uttarakhand	293.00	294.00	295.05	19/08/19:03	09/08/2019 12	09/08/2019 19	1	19/08/2019 00	19/08/2019 09	1
								13/08/2019 02	13/08/2019 03	1			
								18/08/2019 18	19/08/2019 17	2			
4	Mandakini	Ganganagar	Uttarakhand	803.00	804.00	801.5	19/08/19:07	-	-	-	-	-	-
5	Ganga	Kannauj	Uttar Pradesh	124.97	125.97	124.55	26/08/19:03	-	-	-	-	-	-
								-	-	-	-	-	-
6	Ganga	Ankinghat	Uttar Pradesh	123.00	124.00	122.99	26/08/19:04	-	-	-	-	-	-
								-	-	-	-	-	-
								-	-	-	-	-	-
7	Ganga	Kanpur	Uttar Pradesh	112.00	113.00	111.66	26/08/19:09	-	-	-	-	-	-
								-	-	-	-	-	-
8	Ganga	Dalmau	Uttar Pradesh	98.36	99.36	97.85	27/08/19:09	-	-	-	-	-	-
9	Ganga	Phphamau	Uttar Pradesh	83.73	84.73	85.78	21/09/19:23	15/09/2019 06	25/09/2019 10	11	17/09/2019 16	24/09/2019 01	8
10	Ganga	Allahabad Chhatnag	Uttar Pradesh	83.73	84.73	85.09	21/09/19:23	16/09/2019 18	24/09/2019 03	9	20/09/2019 09	23/04/2019 04	4
11	Ganga	Mirzapur	Uttar Pradesh	76.72	77.72	77.98	22/09/19:01	16/09/2019 12	24/09/2019 14	9	20/09/2019 17	23/09/2019 12	4
12	Ganga	Varanasi	Uttar Pradesh	70.26	71.26	71.95	22/09/19:17	15/09/2019 13	26/09/2019 22	12	18/09/2019 09	24/09/2019 15	7
13	Ganga	Ghazipur	Uttar Pradesh	62.10	63.10	64.53	23/09/19:01	19/08/2019 21	24/08/2019 08	6	15/09/2019 04	01/10/2019 16	17
								13/09/2019 20	07/10/2019 13	25	-	-	-
								-	-	-	-	-	-
14	Ganga	Buxar	Bihar	59.32	60.32	60.92	22/09/19:15	20/08/2019 07	24/08/2019 05	5	16/09/2019 22	26/09/2019 06	11
								14/09/2019 07	06/10/2019 17	23			
15	Ganga	Ballia	Uttar Pradesh	56.62	57.62	59.94	24/09/19:01	19/08/2019 05	06/09/2019 20	19	19/08/2019 20	26/08/2019 13	8
								13/09/2019 03	12/10/2019 04	30	31/08/2019 06	03/09/2019 21	4
								-	-		13/09/2019 20	09/10/2019 23	27
16	Ganga	Patna Dighaghat	Bihar	49.45	50.45	50.94	30/09/19:14	20/08/2019 19	26/08/2019 14	7	17/09/2019 18	05/10/2019 13	19
								14/09/2019 14	09/10/2019 18	26	-	-	-
17	Ganga	Patna Gandhighat	Bihar	47.60	48.60	49.79	23/09/19:15	19/08/2019 14	28/08/2019 19	10	21/08/2019 07	25/08/2019 09	5
								30/08/2019 03	07/09/2019 00	9	15/09/2019 12	08/10/2019 06	24
								13/09/2019 11	11/10/2019 16	29	-	-	
18	Ganga	Hathidah	Bihar	40.76	41.76	42.76	25/09/19:11	20/08/2019 12	29/08/2019 17	10	22/08/2019 13	26/08/2019 12	5
								31/08/2019 15	07/09/2019 00	8	16/09/2019 13	11/10/2019 05	26
								14/09/2019 15	15/10/2019 02	32	-	-	
19	Ganga	Munger	Bihar	38.33	39.33	39.59	02/10/19:03	23/08/2019 09	26/08/2019 12	4	21/09/2019 22	05/10/2019 18	15
								17/09/2019 06	10/10/2019 23	24			
20	Ganga	Bhagalpur	Bihar	32.68	33.68	34.43	02/10/19:03	22/08/2019 03	28/08/2019 23	7	21/09/2019 09	09/10/2019 04	19
								16/09/2019 18	12/10/2019 11	27			
21	Ganga	Colgong/ Kahalgaon	Bihar	30.09	31.09	32.36	03/10/19:01	21/08/2019 02	30/08/2019 22	10	17/09/2019 22	12/10/2019 10	26
								03/09/2019 19	08/09/2019 14	6			
								15/09/2019 05	15/10/2019 20	31			
22	Ganga	Sahibgunj	Jharkhand	26.25	27.25	28.58	03/10/19:19	22/08/2019 07	25/08/2019 00	4	09/08/2019 11	09/08/2019 12	1
								28/08/2019 01	09/09/2019 03	13	25/08/2019 02	28/08/2019 01	4
								16/09/2019 02	16/10/2019 05	31	18/09/2019 11	12/10/2019 06	25
23	Ganga	Farakka	West Bengal	21.25	22.25	24.37	02/10/19:11	18/07/2019 01	22/07/2019 14	5	22/08/2019 20	30/08/2019 08	9
								20/08/2019 12	16/10/2019 19	58	17/09/2019 15	14/10/2019 06	28

Above Normal and Severe flood events on main Ganga and its tributaries- 2019 flood season

Sl. No.	River	Station	State	Warning level in metres	Danger level in metres	Peak level in 2019		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
24	Ramganga	Moradabad	Uttar Pradesh	189.60	190.60	189.33	20/08/19:10	-	-	-	-	-	-
								-	-	-	-	-	-
								-	-	-	-	-	-
								-	-	-	-	-	-
25	Ramganga	Bareilly	Uttar Pradesh	162.07	163.07	160.49	23/08/2019 08	-	-	-	-	-	-
26	Yamuna	Mawi	Uttar Pradesh	230.00	230.85	232.25	20/08/19:11	18/08/2019 19	23/08/2019 11	6	19/08/2019 11	21/08/2019 11	3
27	Yamuna	Delhi Rly Bridge	NCT Delhi	**204.50**	**205.33**	206.60	21/08/19:05	19/08/2019 08	23/08/2019 02	5	19/08/2019 18	22/08/2019 04	
28	Yamuna	Mathura	Uttar Pradesh	165.20	166.00	165.47	23/08/19:14	22/08/2019 00	24/08/2019 06	3			
29	Yamuna	Agra	Uttar Pradesh	151.40	152.40	150.91	23/08/2019 23	-	-	-	-	-	-
30	Yamuna	Etawa	Uttar Pradesh	120.92	121.92	121.22	19/09/2019 04	18/09/2019 08	19/09/2019 21	2			
31	Yamuna	Auraiya	Uttar Pradesh	112.00	113.00	117.36	19/09/2019 08	18/08/2019 00	20/08/2019 04	3	18/08/2019 09	19/08/2019 19	2
								15/09/2019 01	22/09/2019 01	8	15/09/2019 09	21/09/2019 18	7
32	Yamuna	Kalpi	Uttar Pradesh	107.00	108.00	112.26	19/09/2019 07	18/08/2019 05	20/08/2019 10	3	18/08/2019 15	20/08/2019 02	3
				107.00	108.00	112.26	19/09/2019 07	14/09/2019 20	22/09/2019 14	9	15/09/2019 09	22/09/2019 08	8
33	Yamuna	Hamirpur	Uttar Pradesh	102.63	103.63	106.79	20/09/2019 10	17/08/2019 23	20/08/2019 06	4	14/09/2019 13	22/09/2019 11	9
								13/09/2019 01	22/09/2019 22	10			
34	Yamuna	Chilaghat	Uttar Pradesh	99.00	100.00	102.55	20/09/2019 14	14/09/2019 04	23/09/2019 04	10	15/09/2019 00	22/09/2019 18	8
35	Yamuna	Naini	Uttar Pradesh	83.74	84.74	85.67	21/09/19:00	15/09/2019 11	24/09/2019 20	10	18/09/2019 16	23/09/2019 19	6
36	Sahibi	Dhansa	NCT Delhi	211.44	212.44	209.50	20/08/19:08	-	-	-	-	-	-
37	Betwa	Mohana	Uttar Pradesh	121.66	122.66	122.32	17/08/2019 01	16/08/2019 16	17/08/2019 12	2	-	-	-
								14/09/2019 16	14/09/2019 22	1	-	-	-
38	Betwa	Sahjina	Uttar Pradesh	103.54	104.54	106.33	20/09/2019 05	14/09/2019 09	22/09/2019 10	9	15/09/2019 01	22/09/2019 01	8
39	Ken	Banda	Uttar Pradesh	103.00	104.00	103.65	19/09/2019 22	14/09/2019 04	14/09/2019 13	1	-	-	-
								19/09/2019 12	20/09/2019 19	2	-	-	-
40	Gomati	Lucknow	Uttar Pradesh	108.50	109.50	106.23	11/07/2019 06	-	-	-	-	-	-
41	Gomati	Jaunpur	Uttar Pradesh	73.07	74.07	73.43	29/09/19:00	28/09/2019 22	29/09/2019 19	2	-	-	-
								30/09/2019 00	30/09/2019 19	1	-	-	-
42	SAI	Raibareli	Uttar Pradesh	100.00	101.00	100.60	29/09/2019 13	28/09/2019 05	01/10/2019 23	4	-	-	-
43	Ghaghra	Elginbridge	Uttar Pradesh	105.07	106.07	106.67	07/09/19:00	10/07/2019 21	20/07/2019 10	11	06/08/2019 03	07/08/2019 04	2
								25/07/2019 07	09/10/2019 13	77	08/08/2019 02	10/08/2019 07	3
								-	-		15/08/2019 18	20/08/2019 06	6
								-	-		21/08/2019 08	22/08/2019 12	2
								-	-		07/09/2019 07	12/09/2019 06	6
								-	-		13/09/2019 20	22/09/2019 02	10
44	Ghaghra	Ayodhya	Uttar Pradesh	91.73	92.73	92.99	17/09/19:00	12/07/2019 22	18/07/2019 17	7	09/09/2019 12	12/09/2019 11	4
								19/07/2019 18	20/07/2019 03	2	15/09/2019 11	22/09/2019 07	8
								26/07/2019 11	29/07/2019 07	4	-	-	-
								30/07/2019 22	07/10/2019 03	70	-	-	-
								-	-		-	-	-
								-	-		-	-	-
								-	-		-	-	-
45	Ghaghra	Turtipar	Uttar Pradesh	63.01	64.01	64.16	22/09/19:00	13/07/2019 07	23/07/2019 03	11	18/09/2019 12	23/09/2019 14	6
								27/07/2019 07	31/07/2019 15	5	-	-	-
								05/08/2019 22	01/09/2019 20	28	-	-	-
								05/09/2019 04	10/10/2019 21	6	-	-	-

Above Normal and Severe flood events on main Ganga and its tributaries- 2019 flood season

Sl. No.	River	Station	State	Warning level in metres	Danger level in metres	Peak level in 2019		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
46	Ghaghra	Darauli	Bihar	59.82	60.82	60.86	23/09/19:05	14/07/2019 11	19/07/2019 05	6	21/09/2019 15	23/09/2019 10	3
								28/07/2019 10	31/07/2019 13	4	-	-	-
								06/08/2019 15	28/08/2019 05	23	-	-	-
								30/08/2019 19	01/09/2019 03	3	-	-	-
								06/09/2019 03	09/10/2019 13	34	-	-	-
47	Ghaghra	Gangpur Siswan	Bihar	56.04	57.04	57.37	23/09/19:04	14/07/2019 20	19/07/2019 11	6	19/09/2019 15	25/09/2019 08	7
								10/08/2019 11	13/08/2019 02	4	-	-	-
								19/08/2019 17 11/09/2019 08	26/08/2019 14 09/10/2019 22	8 29	-	-	-
48	Ghaghra	Chhapra	Bihar	52.68	53.68	53.25	24/09/19:11	22/09/2019 06 29/09/2019 21	28/09/2019 14 04/10/2019b 01	7 6	-	-	-
49	Rapti	Balrampur	Uttar Pradesh	103.62	104.62	105.08	15/07/2019 15	24/06/2019 07	26/06/2019 16	3	24/06/2019 21	25/06/2019 06	2
								10/07/2019 07	19/07/2019 06	10	14/07/2019 07	17/07/2019 10	4
								24/07/2019 21	27/07/2019 16	4	-	-	-
								12/09/2019 19	14/09/2019 04	3	-	-	-
								19/09/2019 09	21/09/2019 11	3	-	-	-
50	Rapti	Bansi	Uttar Pradesh	83.90	84.90	84.22	18/07/2019 14	14/07/2019 15	20/07/2019 02	7	-	-	-
51	Rapti	Birdghat	Uttar Pradesh	73.98	74.98	73.95	16/07/19:00	15/07/2019 06	15/07/2019 07	1	-	-	-
52	Sone	Inderpuri	Bihar	107.20	108.20	105.30	30/09/19:00	-	-		-	-	-
53	Sone	Koelwar	Bihar	54.52	55.52	53.74	30/09/19:20	-	-		-	-	-
54	Sone	Maner	Bihar	51.00	52.00	52.87	24/09/19:04	21/08/2019 00 14/09/2019 05	25/08/2019 16 09/10/2019 11	5 26	16/09/2019 12	06/10/2019 08	24
55	PunPun	Sripalpur	Bihar	49.60	50.60	53.61	15/09/19:04	21/08/2019 21	23/08/2019 07	3	29/09/2019 00	09/10/2019 09	11
								21/09/2019 03	25/09/2019 19	5	-	-	-
								28/09/2019 07	10/10/2019 20	13	-	-	-
56	Yamuna	Karnal Bridge	Haryana	248.80	249.50	248.94	19/08/19:16	19/08/2019 05	20/08/2019 02	2	-	-	-
57	Yamuna	Paonta Sahib	Himachal Pradesh	383.50	384.50	384.5	18/08/19:11	18/08/2019 12	18/08/2019 22	1	18/08/2019 11	18/08/2019 12	1
58	Gandak	Khadda	Uttar Pradesh	95.00	96.00	95.78	18/09/2019 04	10/07/2019 12	11/07/2019 15	2	-	-	-
								12/07/2019 16	14/07/2019 21	3	-	-	-
								15/07/2019 19	17/07/2019 10	3	-	-	-
								24/07/2019 08	25/07/2019 21	2	-	-	-
								03/08/2019 22	05/08/2019 12	3	-	-	-
								25/08/2019 22	26/08/2019 14	2	-	-	-
								07/09/2019 15	10/09/2019 13	4	-	-	-
								11/09/2019 08	25/09/2019 06	15	-	-	-
								26/09/2019 16	30/09/2019 07	5	-	-	-
											-	-	-
											-	-	-
											-	-	-
59	Ganga	Fathegarh	Uttar Pradesh	136.60	137.60	137.34	25/08/19:05	10/08/2019 23	12/08/2019 16	3	-	-	-
								13/08/2019 07	31/08/2019 21	19	-	-	-
								09/09/2019 01	15/09/2019 07	7	-	-	-
								04/10/2019 19	06/10/2019 12	3	-	-	-

Above Normal and Severe flood events on main Ganga and its tributaries- 2019 flood season

Sl. No.	River	Station	State	Warning level in metres	Danger level in metres	Peak level in 2019		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
60	Ganga	Dabri	Uttar Pradesh	136.30	137.30	135.80	24/08/2019 06	-	-	-	-	-	-
								-	-	-	-	-	-
								-	-	-	-	-	-
								-	-	-	-	-	-
61	Ganga	Garhmuktheswar	Uttar Pradesh	198.33	199.33	198.67	21/08/19:20	04/08/2019 12	05/08/2019 12	2	-	-	-
								08/08/2019 01	09/08/2019 15	2	-	-	-
								10/08/2019 14	12/08/2019 07	3	-	-	-
								13/08/2019 17	23/08/2019 05	11	-	-	-
								07/09/2019 00	07/09/2019 12	1	-	-	-
								08/09/2019 01	09/09/2019 07	2	-	-	-
62	Ganga	Kachla Bridge	Uttar Pradesh	161.00	162.00	162.63	21/08/2019 20	13/07/2019 08	21/07/2019 20	9	06/08/2019 04	06/08/2019 17	1
								03/08/2019 12	20/09/2019 03	49	08/08/2019 20	11/08/2019 07	4
								30/09/2019 10	22/10/2019 17	22	12/08/2019 01	26/08/2019 00	15
								-	-	-	28/08/2019 21	29/08/2019 19	2
								-	-	-	07/09/2019 23	11/09/2019 22	5
								-	-	-	02/10/2019 15	04/10/2019 19	3
63	Gandak	Chatia	Bihar	68.15	69.15	66.80	20/09/2019 18	-	-	-	-	-	-
64	Gandak	Rewaghat	Bihar	53.41	54.41	53.79	20/09/19:22	16/07/2019 00	16/07/2019 07	1	-	-	-
								07/08/2019 00	07/08/2019 01	1	-	-	-
								18/09/2019 17	22/09/2019 17	5	-	-	-
								28/09/2019 05	29/09/2019 10	2	-	-	-
65	Gandak	Hazipur	Bihar	49.32	50.32	49.81	21/09/19:03	17/09/2019 16	04/10/2019 02	18	-	-	-
								-	-	-	-	-	-
								-	-	-	-	-	-
66	Burhi Gandak	Lalbeghiaghat	Bihar	62.20	63.20	63.65	17/07/2019 19	14/07/2019 00	02/08/2019 18	20	15/07/2019 19	21/07/2019 05	7
								-	-		25/07/2019 14	25/07/2019 15	1
								-	-				
67	Burhi Gandak	Muzaffarpur (Sikandarpur)	Bihar	51.53	52.53	52.69	21/07/2019 01	16/07/2019 00	05/08/2019 00	21	19/07/2019 01	23/07/2019 11	5
								-	-	-	-	-	-
								-	-	-	-	-	-
68	Burhi Gandak	Samastipur	Bihar	45.02	46.02	46.73	27/07/2019 00	18/07/2019 01	07/08/2019 18	21	20/07/2019 15	04/08/2019 12	16
								-	-	-	-	-	-
								-	-	-	-	-	-
								-	-	-	-	-	-
								-	-	-	-	-	-
69	Burhi Gandak	Rosera	Bihar	41.63	42.63	44.12	23/07/2019 08	17/07/2019 12	09/08/2019 08	24	19/07/2019 00	08/08/2019 03	21
70	Burhi Gandak	Khagaria	Bihar	35.58	36.58	38.28	03/10/2019 00	21/08/2019 06	07/09/2019 04	18	22/08/2019 23	27/08/2019 17	6
				35.58	36.58	38.28	03/10/2019 00	15/09/2019 05	14/10/2019 21	30	17/09/2019 08	11/10/2019 21	25
71	Bagmati	Benibad	Bihar	47.68	48.68	49.13	15/07/2019 13	11/07/2019 19	10/08/2019 18	31	12/07/2019 19	01/08/2019 00	21
								01/09/2019 18	02/09/2019 18	2	07/09/2019 23	08/09/2019 12	2
								07/09/2019 12	13/09/2019 05	7	18/09/2019 16	22/09/2019 03	5
								14/09/2019 07	17/09/2019 07	4	23/09/2019 04	23/09/2019 13	1
								18/09/2019 07	26/09/2019 22	9	26/09/2019 22	30/09/2019 22	5
								30/09/2019 22	07/10/2019 05	8			
72	Bagmati	Hayaghat	Bihar	44.72	45.72	46.71	30.07.2019 00	16/07/2019 12	01/08/2019 00	17	17/07/2019 05	08/08/2019 05	23
								08/08/2019 05	12/08/2019 10	5	12/08/2019 09	12/08/2019 10	1
73	Adhwara Group	Kamtaul	Bihar	49.00	50.00	51.61	16/07/2019 05	14/07/2019 20	06/08/2019 00	24	15/07/2019 15	23/07/2019 15	9
								21/09/2019 03	25/09/2019 21	5	24/07/2019 21	30/07/2019 23	7
								26/09/2019 15	10/10/2019 05	15	01/10/2019 15	05/10/2019 09	5

Above Normal and Severe flood events on main Ganga and its tributaries- 2019 flood season

Sl. No.	River	Station	State	Warning level in metres	Danger level in metres	Peak level in 2019		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
74	Adhwara Group	Ekmighat	Bihar	45.94	46.94	47.91	30/07/2019 00	15/07/2019 16	13/08/2019 06	30	16/07/2019 13	08/08/2019 23	24
								29/09/2019 09	08/10/2019 04	10			
75	Kamla Balan	Jhanjharpur	Bihar	49.00	50.00	53.11	14/07/2019 06	11/07/2019 05	03/08/2019 18	24	11/07/2019 09	11/07/2019 15	1
								04/08/2019 08	06/08/2019 01	3	12/07/2019 07	21/07/2019 21	10
								07/08/2019 18	10/08/2019 02	4	22/07/2019 18	27/07/2019 02	6
								12/08/2019 07	15/08/2019 00	4	17/08/2019 10	17/08/2019 21	1
								17/08/2019 08	21/08/2019 22	5	24/08/2019 07	24/08/2019 13	1
								24/08/2019 05	26/08/2019 01	3	17/09/2019 07	20/09/2019 17	4
								08/09/2019 08	08/09/2019 19	1	22/09/2019 11	23/09/2019 20	2
								17/09/2019 05	17/09/2019 07	1	24/09/2019 11	24/09/2019 19	1
								20/09/2019 17	11/10/2019 00	22	28/09/2019 14	03/10/2019 06	6
76	Kosi	Basua	Bihar	46.75	47.75	49.16	15/07/2019 00	19/06/2019 10	20/06/2019 08	2	14/07/2019 03	16/07/2019 23	3
								11/07/2019 09	19/07/2019 02	9	18/07/2019 15	18/07/2019 16	1
								22/07/2019 17	23/07/2019 14	2	18/09/2019 23	21/09/2019 13	4
								24/07/2019 14	28/07/2019 10	5	-	-	-
								29/07/2019 14	30/07/2019 08	2	-	-	-
								04/08/2019 20	09/08/2019 15	6	-	-	-
								13/08/2019 10	15/08/2019 16	3	-	-	-
								18/08/2019 08	21/08/2019 17	4	-	-	-
								25/08/2019 14	28/08/2019 19	4	-	-	-
								03/09/2019 12	04/09/2019 08	2	-	-	-
								08/09/2019 15	11/09/2019 00	4	-	-	-
								14/09/2019 09	03/10/2019 08	20	-	-	-
77	Kosi	Baltara	Bihar	32.85	33.85	35.61	17/07/2019 03	09/07/2019 04	20/10/2019 04	103	13/07/2019 16	30/08/2019 06	18
											03/09/2019 22	13/09/2019 01	11
											13/09/2019 14	15/10/2019 11	33
78	Kosi	Kursela	Bihar	29.00	30.00	31.60	03/10/2019 05	21/08/2019 05	10/09/2019 05	21	24/08/2019 16	29/08/2019 02	6
								15/09/2019 11	15/10/2019 18	31	18/09/2019 04	13/10/2019 05	26
79	Mahananda	Dhengraghat	Bihar	34.65	35.65	37.18	15/07/2019 05	10/07/2019 13	01/08/2019 05	23	11/07/2019 19	28/07/2019 17	18
								09/08/2019 08	10/08/2019 13	2	18/09/2019 15	19/09/2019 12	2
								17/09/2019 13	21/09/2019 04	5	26/09/2019 13	27/09/2019 10	2
								25/09/2019 20	05/10/2019 05	11	29/09/2019 22	02/10/2019 16	4
80	Mahananda	Jhawa	Bihar	30.40	31.40	33.10	17/07/2019 02	11/07/2019 11	02/08/2019 04	23	13/07/2019 12	29/07/2019 18	17
								07/08/2019 00	07/08/2019 01	1	26/09/2019 21	27/09/2019 10	2
								18/09/2019 11	21/09/2019 14	4	30/09/2019 01	04/10/2019 01	5
								26/09/2019 08	04/10/2019 23	9			
81	Gandak	Dumariaghat	Bihar	61.22	62.22	62.73	19/09/2019 18	25/06/2019 16	27/06/2019 09	3	11/07/2019 06	18/07/2019 09	8
								07/07/2019 15	13/10/2019 11	99	25/07/2019 08	26/07/2019 22	2
											27/08/2019 02	27/08/2019 13	1
											14/09/2019 16	17/09/2019 03	4
											17/09/2019 21	22/09/2019 11	5
82	Burhigandak	Ahirwalia	Bihar	58.62	59.62	59.07	19/07/2019 04	16/07/2019 07	23/07/2019 07	8			
								31/07/2019 20	31/07/2019 21	1			
								-	-	-	-	-	-
83	Mayurakshi	Narayanpur	West Bengal	26.99	27.99	25.04	01/10/2019 09	-	-	-	-	-	-
84	Ajoy	Gheropara	West Bengal	38.42	39.42	38.41	01/10/2019 03	-	-	-	-	-	-
85	Mundeshwari	Harinkhola	West Bengal	11.80	12.80	11.80	01/10/2019 09	-	-	-	-	-	-
86	Kangsabati	Mohanpur	West Bengal	24.73	25.73	20.24	30/09/2019 06	-	-	-	-	-	-

Above Normal and Severe flood events on main Ganga and its tributaries- 2019 flood season

Sl. No.	River	Station	State	Warning level in metres	Danger level in metres	Peak level in 2019		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
87	Bagmati	Dheng Bridge	Bihar	69.10	70.10	72.96	14/07/2019 00	01/06/2019 19	02/06/2019 07	2	11/07/2019 08	22/07/2019 04	12
								03/06/2019 18	23/12/2019 19	203	23/07/2019 00	28/07/2019 13	6
								-	-	-	29/07/2019 17	29/07/2019 18	1
								-	-	-	07/08/2019 13	08/08/2019 08	2
								-	-	-	01/09/2019 11	01/09/2019 13	1
								-	-	-	07/09/2019 09	08/09/2019 19	2
											14/09/2019 20	15/09/2019 16	2
											17/09/2019 11	20/09/2019 13	4
											22/09/2019 08	22/09/2019 18	1
											24/09/2019 14	24/09/2019 16	1
											26/09/2019 08	29/09/2019 12	4
											30/09/2019 00	30/09/2019 10	1
88	Adhwara	Sonebarsha	Bihar	80.85	81.85	82.96	13/07/2019 11	12/07/2019 08	18/07/2019 00	7	12/07/2019 20	14/07/2019 09	3
								21/07/2019 00	21/07/2019 17	1	15/07/2019 16	16/07/2019 05	2
89	Kamla Balan	Jainagar	Bihar	66.75	67.75	69.9	13/07/2019 13	03/06/2019 08	03/06/2019 16	1	10/07/2019 20	11/07/2019 12	2
								08/06/2019 10	08/06/2019 19	1	11/07/2019 19	21/07/2019 20	10
								11/06/2019 04	11/06/2019 21	1	22/07/2019 07	28/07/2019 10	7
								15/06/2019 10	15/06/2019 23	1	04/08/2019 12	04/08/2019 14	1
								16/06/2019 07	16/06/2019 23	1	07/08/2019 11	07/08/2019 20	1
								28/06/2019 04	28/06/2019 22	1	13/08/2019 10	13/08/2019 16	1
								29/06/2019 04	29/06/2019 23	1	17/08/2019 09	17/08/2019 17	1
								10/07/2019 13	14/10/2019 23	97	23/08/2019 23	24/08/2019 09	2
								17/11/2019 08	30/12/2019 19	44	17/09/2019 07	20/09/2019 13	4
								-	-		22/09/2019 08	25/09/2019 14	4
								-	-		27/09/2019 08	29/09/2019 15	3
								-	-		02/10/2019 09	02/10/2019 15	1
								-	-		05/10/2019 10	05/10/2019 12	1
								-	-		06/10/2019 17	07/10/2019 01	2
90	Bagmati	Runisaidpur	Bihar	52.73	53.73	57.9	14/07/2019 13	03/06/2019 02	27/10/2019 14	146	26/06/2019 09	28/06/2019 07	3
								01/11/2019 18	19/12/2019 09	49	29/06/2019 09	01/07/2019 12	3
								-	-		04/07/201 15	04/07/2019 21	1
								-	-		05/07/2019 09	15/08/2019 09	42
								-	-		18/08/2019 10	21/08/2019 07	4
								-	-		25/08/2019 14	27/08/2019 01	3
								-	-		01/09/2019 12	03/09/2019 08	3
								-	-		05/09/2019 09	06/09/2019 09	2
								-	-		07/09/2019 11	09/09/2019 11	3
								-	-		10/09/2019 08	05/10/2019 15	26
								-	-				
								-	-				

Above Normal and Severe flood events on main Ganga and its tributaries- 2019 flood season

Sl. No.	River	Station	State	Warning level in metres	Danger level in metres	Peak level in 2019		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
91	Parwan	Araria	Bihar	46.00	47.00	48.48	14/07/2019 15	10/07/2019 15	10/08/2019 13	32	12/07/2019 21	01/08/2019 11	21
								14/08/2019 08	15/08/2019 15	2	18/09/2019 07	22/09/2019 03	5
								25/08/2019 06	25/08/2019 23	1	29/09/2019 18	06/10/2019 11	8
								17/09/2019 04	18/09/2019 07	2			
								22/09/2019 03	29/09/2019 18	8			
								06/10/2019 11	11/10/2019 01	6			
92	Mahananda	Taibpur	Bihar	65.00	66.00	66.75	13/07/2019 03	09/07/2019 12	17/07/2019 20	9	10/07/2019 17	11/07/2019 03	2
								19/07/2019 15	27/07/2019 09	9	11/07/2019 22	14/07/2019 20	3
								08/08/2019 17	09/08/2019 10	2	15/07/2019 10	15/07/2019 15	1
								16/09/2019 17	18/09/2019 17	3	16/07/2019 15	16/07/2019 22	1
								25/09/2019 09	26/09/2019 23	2	24/07/2019 11	25/07/2019 18	2
								29/09/2019 10	01/10/2019 00	3	18/09/2019 04	18/09/2019 08	1
											25/09/2019 13	25/09/2019 18	1
93	Chambal	Kota City	Rajasthan	239.00	240.00	243.46	16/09/2019 10	01/06/2019 00	02/06/2019 00	2	01/06/2019 00	02/06/2019 00	2
								03/06/2019 00	01/07/2019 00	29	03/06/2019 00	01/07/2019 00	29
94	Rapti	Kakardhari	Uttar Pradesh	130.00	131.00	129.84	15/07/2019 00	-	-		-	-	

Above Normal and Severe flood events on main Brahamaputra and its tributaries- 2019 flood season

Sl. No.	River	Station	State	Warning level in metres	Danger level in metres	Peak level in 2019		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	Siang	Yingkiang	Arunachal Pradesh	303.00	304.00	272.30	13/07/2019 06	-	-	-	-	-	-
2	Siang	Passighat	Arunachal Pradesh	152.96	153.96	154.04	13/07/2019 07	17/06/2019 20	18/06/2019 02	**2**	13/07/2019 05	13/07/2019 17	**1**
								08/07/2019 04	09/07/2019 02	**2**			
								11/07/2019 11	18/07/2019 05	**8**			
								16/09/2019 18	17/09/2019 02	**2**			
								17/09/2019 14	18/09/2019 10	**1**			
3	Noa-Dehing	Namsai	Arunachal Pradesh	144.80	145.80	144.11	31/07/2019 15	-	-	-	-	-	-
4	Brahmaputra	Dibrugarh	Assam	104.70	105.70	105.54	12/07/2019 05	28/06/2019 18	29/06/2019 11	**2**			
								08/07/2019 09	18/07/2019 09	**11**			
								24/07/2019 09	26/07/2019 04	**3**			
								31/07/2019 23	01/08/2019 15	**2**			
								06/08/2019 07	07/08/2019 04	**2**			
								08/08/2019 07	08/08/2019 10	**1**			
								09/08/2019 03	11/08/2019 22	**3**			
								13/09/2019 08	20/09/2019 10	**8**			
5	Brahmaputra	Neamatighat	Assam	84.04	85.04	87.13	13/07/2019 00	03/05/2019 14	10/05/2019 20	**8**	13/05/2019 03	16/05/2019 04	4
								11/05/2019 02	23/05/2019 20	**13**	11/06/2019 10	12/06/2019 09	2
								26/05/2019 01	26/05/2019 04	**1**	18/06/2019 00	21/06/2019 11	4
								28/05/2019 02	30/05/2019 12	**3**	25/06/2019 20	03/07/2019 06	9
								09/06/2019 23	06/10/2019 00	**120**	06/07/2019 22	22/08/2019 00	45
								10/10/2019 23	14/10/2019 04	**5**	11/09/2019 03	22/09/2019 11	12
											24/09/2019 22	28/09/2019 00	5
6	Brahmaputra	Tezpur	Assam	64.23	65.23	66.35	15/07/2019 11	15/05/2019 05	16/05/2019 12	**2**	09/07/2019 23	19/07/2019 06	11
								19/06/2019 12	21/06/2019 17	**3**			
								27/06/2019 21	04/07/2019 13	**8**			
								07/07/2019 11	14/08/2019 06	**39**			
								17/08/2019 18	19/08/2019 08	**3**			
								12/09/2019 19	29/09/2019 03	**18**			
7	Brahmaputra	Guwahati	Assam	48.68	49.68	51.23	16/07/2019 17	30/06/2019 04	02/07/2019 15	**3**	11/07/2019 22	19/07/2019 21	**9**
								10/07/2019 06	21/07/2019 14	**12**			
								23/07/2019 23	29/07/2019 10	**7**			
								01/08/2019 03	05/08/2019 18	**5**			
								17/09/2019 18	23/09/2019 01	**7**			
8	Brahmaputra	Goalpara	Assam	35.27	36.27	35.35	17/07/2019 08	30/06/2019 23	03/07/2019 19	**4**	12/07/2019 02	21/07/2019 03	10
								09/07/2019 23	09/08/2019 22	**32**			
								19/09/2019 03	23/09/2019 13	**5**			
9	Brahmaputra	Dhubri	Assam	27.62	28.62	30.37	17/07/2019 22	28/06/2019 20	16/08/2019 02	**50**	11/07/2019 17	31/07/2019 17	21
								15/09/2019 06	03/10/2019 00	**19**			

Above Normal and Severe flood events on main Brahamaputra and its tributaries- 2019 flood season

Sl. No.	River	Station	State	Warning level in metres	Danger level in metres	Peak level in 2019		Flood period above warning level			Flood period above danger level		
						Level in metres	From	From	To	No.of days	From	To	No.of days
10	Buridehing	Naharkatia	Assam	119.40	120.40	118.65	12/07/2019 03	-	-	-	-	-	-
11	Buridehing	Chenimari/Khwong	Assam	101.11	102.11	102.86	13/07/2019 10	12/05/2019 17	14/05/2019 09	**3**	11/07/2019 19	15/07/2019 21	5
								10/07/2019 21	17/07/2019 13	**8**	01/08/2019 18	03/08/2019 22	3
								30/07/2019 23	07/08/2019 04	**9**			
								16/09/2019 21	17/09/2019 22	**2**			
12	Subansiri	Badatighat	Assam	81.53	82.53	83	14/07/2019 00	09/07/2019 09	19/07/2019 19	**11**	12/07/2019 13	16/07/2019 14	5
13	Dikhow	Sivasagar	Assam	91.40	92.40	92.93	10/07/2019 12	03/07/2019 14	04/07/2019 17	**2**	09/07/2019 19	11/07/2019 10	3
								09/07/2019 04	15/07/2019 10	**7**	03/08/2019 17	04/08/2019 22	2
								29/07/2019 14	30/07/2019 07	**2**			
								03/08/2019 09	05/08/2019 19	**3**			
								11/09/2019 17	12/09/2019 10	**2**			
								13/09/2019 03	15/09/2019 06	**3**			
								25/09/2019 21	28/09/2019 05	**4**			
14	Desang	Nanglamoraghat	Assam	93.46	94.46	95.34	04/08/2019 05	03/05/2019 07	04/05/2019 18	**2**	11/07/2019 17	12/07/2019 20	2
								11/05/2019 12	13/05/2019 05	**3**	27/07/2019 06	28/07/2019 14	2
								10/07/2019 18	14/07/2019 15	**5**	01/08/2019 16	05/08/2019 21	5
								23/07/2019 18	30/07/2019 13	**8**	15/09/2019 00	16/09/2019 20	2
								31/07/2019 18	06/08/2019 00	**7**			
								13/09/2019 08	19/09/2019 16	**7**			
								26/09/2019 05	29/09/2019 00	**4**			
15	Dhansiri(S)	Golaghat	Assam	88.50	89.50	89.96	29/10/2019 12	29/07/2019 11	30/07/2019 10	**2**	27/10/2019 21	30/10/2019 05	4
								04/08/2019 20	05/08/2019 21	**2**			
								28/09/2019 10	28/09/2019 16	**1**			
								27/10/2019 08	31/10/2019 01	**5**			
16	Dhansiri(S)	Numaligarh	Assam	76.42	77.42	78.93	30/10/2019 01	05/05/2019 11	09/05/2019 01	**5**	06/05/2019 03	06/05/2019 18	1
								15/06/2019 18	18/06/2019 01	**4**	06/07/2019 15	06/07/2019 20	1
								19/06/2019 22	20/06/2019 09	**2**	07/07/2019 10	19/07/2019 14	13
								21/06/2019 14	27/06/2019 06	**7**	29/07/2019 07	09/08/2019 04	12
								28/06/2019 10	01/07/2019 11	**4**	10/08/2019 07	12/08/2019 08	3
								03/07/2019 11	21/08/2019 23	**50**	14/09/2019 21	15/09/2019 01	2
								29/08/2019 15	31/08/2019 06	3	17/09/2019 10	21/09/2019 04	5
								06/09/2019 18	07/09/2019 02	2	24/09/2019 19	01/10/2019 00	8
								08/09/2019 23	20/10/2019 18	**43**	08/10/2019 18	14/10/2019 19	07
								26/10/2019 12	08/11/2019 00	**15**	21/10/2019 01	02/11/2019 15	13
								11/11/2019 13	11/11/2019 19	**1**			
								12/11/2019 08	12/11/2019 19	**1**			
								13/11/2019 08	13/11/2019 19	**1**			
								14/11/2019 08	14/11/2019 19	**1**			
17	Kopili	Kampur	Assam	59.50	60.50	61.7	28/10/2019 12	11/07/2019 09	19/07/2019 10	**9**	11/07/2019 21	18/07/2019 11	8
								23/07/2019 22	24/07/2019 12	**2**	27/10/2019 08	29/10/2019 13	3
								27/10/2019 03	30/10/2019 20	**4**			
18	Kopili	Dharamtul	Assam	55.00	56.00	56.88	18/07/2019 01	11/07/2019 06	26/07/2019 14	**16**	13/07/2019 01	22/07/2019 03	10
								27/10/2019 11	31/10/2019 18	**5**			
19	Jiabharali	NT.Rd.X-ing	Assam	76.00	77.00	78.09	09/07/2019 13	01/05/2019 00	01/05/2019 23	**1**	07/05/2019 09	07/05/2019 13	**1**
								02/05/2019 09	02/06/2019 10	**31**	20/05/2019 09	20/05/2019 13	**1**
								04/06/2019 14	05/06/2019 01	**2**	27/05/2019 07	28/05/2019 00	**2**
								07/06/2019 17	13/06/2019 19	**7**	17/06/2019 09	18/06/2019 18	**2**
								15/06/2019 12	29/10/2019 11	**137**	26/06/2019 08	30/06/2019 06	**5**
											03/07/2019 07	03/07/2019 14	**1**
											06/07/2019 10	06/07/2019 19	**1**
											07/07/2019 08	19/07/2019 13	**13**
											20/07/2019 15	29/07/2019 18	**10**
											30/07/2019 09	03/08/2019 22	**5**
											04/08/2019 09	04/08/2019 18	**1**
											05/08/2019 12	05/08/2019 18	**1**
											08/08/2019 07	08/08/2019 20	**1**

Above Normal and Severe flood events on main Brahamaputra and its tributaries- 2019 flood season

Sl. No.	River	Station	State	Warning level in metres	Danger level in metres	Peak level in 2019		Flood period above warning level			Flood period above danger level		
						Level in metres	From	From	To	No.of days	From	To	No.of days
											07/09/2019 00	07/09/2019 05	**1**
											09/09/2019 10	09/09/2019 21	**1**
											10/09/2019 08	26/09/2019 21	**17**
											27/09/2019 08	28/09/2019 03	**2**
											02/10/2019 10	02/10/2019 13	**1**
											12/10/2019 11	12/10/2019 13	**1**
20	Subansiri	Choldhowaghat	Assam	99.43	100.43	96.8	17/09/2019 12	-	-	-	-	-	-
21	Ranganadi	N H Crossing Ranganadi	Assam	93.81	94.81	94.69	10/07/2019 07	28/06/2019 11	28/06/2019 17	1			
								03/07/2019 08	03/07/2019 12	1			
								08/07/2019 20	13/07/2019 22	6			
								16/07/2019 10	16/07/2019 20	1			
								26/07/2019 09	26/07/2019 11	1			
								01/08/2019 09	01/08/2019 16	1			
								16/08/2019 00	16/08/2019 03	1			
								11/09/2019 06	11/09/2019 07	1			
								12/09/2019 10	12/09/2019 21	1			
								16/09/2019 11	18/09/2019 04	3			
								24/09/2019 17	25/09/2019 03	2			
22	Lohit	Dholla Bazaar	Assam	127.27	128.27	127.77	11/07/2019 21	11/07/2019 08	13/07/2019 14	3			
								14/07/2019 01	14/07/2019 07	1			
23	Puthimari	Puthimari _NHX	Assam	50.81	51.81	54.77	12/07/2019 16	01/05/2019 00	04/05/2019 13	4	05/05/2019 10	05/05/2019 16	1
								05/05/2019 07	08/05/2019 09	4	17/06/2019 14	17/06/2019 18	1
								10/05/2019 10	12/05/2019 09	3	18/06/2019 09	18/06/2019 12	1
								31/05/2019 01	31/05/2019 17	1	28/06/2019 14	28/06/2019 16	1
								17/06/2019 08	19/06/2019 18	2	09/07/2019 04	19/07/2019 08	11
								26/06/2019 08	01/07/2019 12	6	23/07/2019 02	28/07/2019 04	6
								02/07/2019 19	04/07/2019 09	3			
								08/07/2019 18	21/08/2019 06	45			
								24/08/2019 09	26/08/2019 13	**3**			
								31/08/2019 10	02/09/2019 06	**3**			
								03/09/2019 11	06/09/2019 05	**4**			
								07/09/2019 05	09/09/2019 18	**3**			
								11/09/2019 11	11/09/2019 18	**1**			
								12/09/2019 06	12/09/2019 18	**1**			
								13/09/2019 05	16/09/2019 18	**4**			
								18/09/2019 09	19/09/2019 13	**2**			
								25/09/2019 18	27/09/2019 15	**3**			
								09/10/2019 07	09/10/2019 17	**1**			
24	Pagladia	Pagladia_NTX	Assam	51.75	52.75	52.93	16/07/2019 07	01/05/2019 05	01/05/2019 10	**1**	15/07/2019 22	16/07/2019 22	**2**
								02/05/2019 06	02/05/2019 18	**1**			
								05/05/2019 06	05/05/2019 14	**1**			
								17/06/2019 10	19/06/2019 04	**3**			
								26/06/2019 02	01/07/2019 11	**6**			
								09/07/2019 14	19/07/2019 18	**11**			
								22/07/2019 13	28/07/2019 17	**7**			
								02/08/2019 16	03/08/2019 11	**2**			
								13/09/2019 13	14/09/2019 10	**2**			

Above Normal and Severe flood events on main Brahamaputra and its tributaries- 2019 flood season

Sl. No.	River	Station	State	Warning level in metres	Danger level in metres	Peak level in 2019		Flood period above warning level			Flood period above danger level		
						Level in metres	From	From	To	No.of days	From	To	No.of days
25	Barak	APGhat	Assam	18.83	19.83	20.33	14/07/2019 03	12/07/2019 07	17/07/2019 09	**6**	13/07/2019 01	15/07/2019 12	3
								26/07/2019 10	30/07/2019 04	**5**			
								03/08/2019 13	06/08/2019 12	**4**			
								28/10/2019 12	29/10/2019 14	**2**			
26	Katakhal	Matizuri	Assam	19.27	20.27	22.36	15/07/2019 06	11/07/2019 12	18/07/2019 10	**8**	11/07/2019 21	17/07/2019 21	7
27	Barak	Badarpurghat	Assam	15.85	16.85	17.65	14/07/2019 16	11/07/2019 22	18/07/2019 18	**8**	12/07/2019 21	17/07/2019 05	**6**
								21/07/2019 19	31/07/2019 08	**11**			
								03/08/2019 17	07/08/2019 00	**5**			
28	Kushiyara	Karimganj	Assam	13.94	14.94	16.17	14/07/2019 05	11/07/2019 14	08/08/2019 00	**29**	12/07/2019 08	18/07/2019 16	7
								28/10/2019 11	30/10/2019 08	**3**	22/07/2019 14	23/07/2019 20	2
											26/07/2019 17	30/07/2019 15	5
											04/08/2019 03	06/08/2019 20	3
29	Manu	Kailashar	Tripura	24.34	25.34	23.77	14/06/2019 23	-	-	-	-	-	-
30	Gumti	Sonamura	Tripura	11.50	12.50	11.28	16/07/2019 02	-	-	-	-	-	-
31	Manas	Mathanguri	Assam	98.10	99.10	97.86	25/07/2019 08	-	-	-	-	-	-
32	Manas	Manas NH- Crossing	Assam	47.81	48.42	49.41	24/07/2019 05	26/06/2019 15	27/06/2019 10	**2**	23/07/2019 09	25/07/2019 13	3
								09/07/2019 15	10/07/2019 00	**2**			
								11/07/2019 06	12/07/2019 18	**2**			
								14/07/2019 14	17/07/2019 06	**4**			
								22/07/2019 18	26/07/2019 02	**5**			
33	Beki	Beki Rd. Bridge	Assam	44.10	45.10	45.86	04/07/2019 23	05/05/2019 02	05/05/2019 21	1	08/07/2019 12	09/07/2019 10	**1**
								17/06/2019 10	19/06/2019 03	3	09/07/2019 11	09/07/2019 17	**1**
								24/06/2019 15	24/06/2019 20	1	10/07/2019 07	17/07/2019 21	**8**
								25/06/2019 07	22/08/2019 17	59	22/07/2019 22	26/07/2019 02	**5**
								24/08/2019 14	25/08/2019 05	**2**	26/07/2019 08	27/07/2019 01	**1**
								31/08/2019 19	01/09/2019 16	**2**	27/08/2019 06	28/07/2019 21	**1**
								03/09/2019 13	04/09/2019 10	**2**	01/08/2019 08	01/08/2019 16	**1**
								05/09/2019 06	03/10/2019 03	**29**	02/08/2019 08	02/08/2019 20	**1**
								04/10/2019 10	04/10/2019 20	**1**	05/08/2019 14	05/08/2019 23	**1**
								09/10/2019 08	09/10/2019 13	**1**			
34	Gaurang	Kokrajhar	Assam	41.85	42.85	43.4	23/07/2019 18	25/06/2019 15	25/06/2019 18	**1**	23/07/2019 06	24/07/2019 09	2
								26/06/2019 07	27/06/2019 14	**2**			
								08/07/2019 15	17/07/2019 15	**10**			
								22/07/2019 08	25/07/2019 21	**4**			
								15/09/2019 11	16/09/2019 13	**2**			
								25/09/2019 07	26/09/2019 02	**2**			

Above Normal and Severe flood events on main Brahamaputra and its tributaries- 2019 flood season

Sl. No.	River	Station	State	Warning level in metres	Danger level in metres	Peak level in 2019		Flood period above warning level			Flood period above danger level		
						Level in metres	From	From	To	No.of days	From	To	No.of days
35	Sankosh	Golokganj	Assam	28.94	29.94	30.15	15/07/19:10	11/07/2019 18	19/07/2019 13	**9**	14/07/2019 17	16/07/2019 09	**3**
								23/07/2019 08	30/07/2019 07	**8**	24/07/2019 05	24/07/2019 10	**1**
36	Teesta	Domohani	W.B.	85.65	85.95	86.18	12/07/19:15	18/06/2019 07	18/06/2019 15	**1**	12/07/2019 10	13/07/2019 02	2
								08/07/2019 11	08/07/2019 15	**1**	14/07/2019 01	14/07/2019 04	1
								10/07/2019 07	10/07/2019 16	**1**			
								11/07/2019 02	14/07/2019 20	**4**			
								15/07/2019 05	15/07/2019 21	**1**			
								16/07/2019 05	16/07/2019 23	**1**			
								20/07/2019 10	20/07/2019 16	**1**			
								21/07/2019 10	21/07/2019 15	**1**			
								23/07/2019 09	23/07/2019 20	**1**			
								24/07/2019 05	25/07/2019 16	**2**			
								07/08/2019 08	10/08/2019 17	**4**			
								21/08/2019 19	21/08/2019 21	**1**			
								16/09/2019 15	16/09/2019 17	**1**			
								17/09/2019 10	17/09/2019 22	**1**			
								25/09/2019 10	25/09/2019 18	**1**			
37	Teesta	Mekhliganj	W.B.	65.45	65.95	65.87	12/07/19:21	18/06/2019 13	18/06/2019 21	1			
								10/07/2019 19	10/07/2019 22	1			
								11/07/2019 13	13/07/2019 16	3			
								14/07/2019 05	14/07/2019 13	1			
								24/07/2019 11	25/07/2019 02	2			
								08/08/2019 15	08/08/2019 23	1			
								17/09/2019 19	18/09/2019 00	2			
38	Jaldhaka	N H 31	W.B.	80.00	80.90	80.13	16/07/19:10	12/07/2019 09	14/07/2019 17	3			
								16/07/2019 09	16/07/2019 15	1			
								24/07/2019 07	25/07/2019 12	2			
39	Jaldhaka	Mathabhanga	W.B.	47.70	48.20	48.30	24/07/19:15	12/07/2019 17	13/07/2019 06	2	24/07/2019 14	24/07/2019 18	1
								14/07/2019 14	14/07/2019 18	1			
								24/07/2019 00	24/07/2019 23	1			
40	Torsa	Ghughumari	W. B.	39.80	40.41	40.30	18/07/19:10	25/06/2019 13	26/06/2019 00	2			
								26/06/2019 12	27/06/2019 08	1			
								08/07/2019 05	08/07/2019 14	1			
								11/07/2019 05	15/07/2019 08	5			
								16/07/2019 11	16/07/2019 19	1			
								22/07/2019 07	25/07/2019 05	4			
41	Radak-I	Tufanganj	W. B.	34.22	35.30	35.96	24/07/19:08	26/06/2019 21	28/06/2019 04	3	23/07/2019 16	25/07/2019 16	3
								11/07/2019 06	11/07/2019 17	1			
								13/07/2019 06	17/07/2019 12	5			
								22/07/2019 17	26/07/2019 18	5			
42	Teesta	Malli Bazaar	Sikkim	223.00	224.00	217.06	17/09/2019 00	-	-	-	-	-	-
43	Teesta	Joretahang(Rothak)	Sikkim	350.60	351.60	348.16	17/09/2019 13	-	-	-	-	-	-
44	Teesta	Singtam	Sikkim	377.07	377.57	374.94	15/09/2019 00	-	-	-	-	-	-
45	Torsa	Hasimara	West Bengal	116.30	116.90	116.28	25/06/19:06	-	-	-	-	-	-

Annex XI

Above Normal and Severe flood events on various river systems (excluding Ganga and Brahmaputra basins)- 2019 flood season

Sl. No.	River	Station	State	Warning level in metres	Danger level in metres	Peak level in 2019		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	Jhelum	Rammunshibagh	Jammu & Kashmir	1585.53	1586.45	1584.48	29/07/2019 15	-	-	-	-	-	-
2	Jhelum	Sangam	Jammu & Kashmir	1590.30	1592.00	1589.13	29/07/2019 07	-	-	-	-	-	-
3	Jhelum	Safapora	Jammu & Kashmir	1580.00	1580.80	1579.42	29/07/2019 23	13/06/2019 09	14/06/2019 01	2			
4	Subernarekna	Jamshedpur	Jharkhand	122.50	123.50	121.5	26/10/2019 00	-	-	-	-	-	-
5	Subernarekna	Rajghat	Odisha	9.45	10.36	9.58	27/10/2019 09	27/10/2019 05	27/10/2019 11	1			
6	Burhabalang	NH_5 _Road Bridge	Odisha	7.21	8.13	6.72	19/08/2019 09	-	-	-	-	-	-
7	Baitarni	Anandpur	Odisha	37.44	38.36	36.86	19/08/2019 11	-	-	-	-	-	-
8	Baitarni	Akhuapada	Odisha	17.33	17.83	18.15	08/09/2019 00	07/08/2019 11	07/08/2019 22	1	19/08/2019 17	20/08/2019 00	2
								08/08/2019 09	08/08/2019 21	1	07/09/2019 15	08/09/2019 09	2
								09/08/2019 13	09/08/2019 15	1	26/10/2019 09	26/10/2019 23	1
								14/08/2019 03	15/08/2019 13	2			
								19/08/2019 09	20/08/2019 21	2			
								24/08/2019 10	25/08/2019 00	2			
								05/09/2019 10	05/09/2019 23	1			
								07/09/2019 12	09/09/2019 00	3			
								25/10/2019 12	28/10/2019 10	4			
9	Brahmani	Jenapur	Odisha	22.00	23.00	21.56	09/09/2019 00	-	-	-	-	-	-
10	Rushikuluya	Purushottampur	Odisha	15.83	16.83	16.2	25-10-19 02:00	05/09/2019 23	06/09/2019 11	2			
								24/10/2019 21	25/10/2019 15	2			
11	Vamsadhara	Gunupur	Odisha	83.00	84.00	85.32	07-08-19 21:00	07/08/2019 03	08/08/2019 11	2	07/08/2019 05	08/08/2019 04	2
								06/09/2019 21	07/09/2019 00	2	07/09/2019 22	07/09/2019 23	1
								07/09/2019 18	08/09/2019 07	1			
								25/10/2019 00	25/10/2019 04	1			
12	Vamsadhara	Kashinagar	Odisha	53.60	54.60	56.30	08-08-19 00:00	07/08/2019 05	10/08/2019 10	4	07/08/2019 06	08/08/2019 14	2
								13/08/2019 02	14/08/2019 17	2	13/08/2019 16	13/08/2019 22	1
								05/09/2019 04	11/09/2019 22	7	06/09/2019 06	06/09/2019 16	1
								12/09/2019 13	12/09/2019 20	1	07/09/2019 00	08/09/2019 10	2
								13/09/2019 10	13/09/2019 19	1	26/10/2019 07	26/10/2019 11	1
								25/09/2019 21	27/09/2019 10	3			
								24/10/2019 10	30/10/2019 03	7			
13	Mahanadi	Naraj	Odisha	25.41	26.41	26.33	10/09/2019 01	14/08/2019 12	16/08/2019 03	3			
								07/09/2019 22	13/09/2019 01	7			
								02/10/2019 00	02/10/2019 22	1			
14	Mahanadi	Alipingal Devi	Odisha	10.85	11.76	11.08	15/08/2019 12	15/08/2019 08	15/08/2019 21	1			
15	Mahanadi	Nimapara	Odisha	9.85	10.76	9.76	15/08/2019 18	-	-	-	-	-	-

Above Normal and Severe flood events on various river systems (excluding Ganga and Brahmaputra basins)- 2019 flood season

Sl. No.	River	Station	State	Warning level in metres	Danger level in metres	Peak level in 2019		Flood period above warning level			Flood period above danger level		
						Level in metres	Time	From	To	No. of days	From	To	No. of days
16	Godavari	Atreyapuram	Andhra Pradesh	14.00	15.50	12.89	10-08-19 08:00	-	-	-	-	-	-
17	Godavari	Kopergaon	Maharashtra	490.90	493.68	496.67	05-08-19 13:00	03/08/2019 18	07/08/2019 09	5	04/08/2019 20	06/08/2019 17	3
								26/09/2019 07	27/09/2019 02	2			
18	Godavari	Gangakhed	Maharashtra	374.00	375.00	370.43	26-10-19 11:00	-	-	-	-	-	-
19	Godavari	Nanded	Maharashtra	353.00	354.00	349.10	26-10-19 13:00	-	-	-	-	-	-
20	Godavari	Kaleswaram	Telangana	103.50	104.75	102.48	08-09-19 09:00	-	-	-	-	-	-
21	Godavari	Eturunagaram	Telangana	73.32	75.82	74.705	08-09-19 10:00	03/08/2019 03	04/08/2019 03	2			
								05/08/2019 00	05/08/2019 20	1			
								08/08/2019 07	09/08/2019 20	2			
								07/09/2019 06	09/09/2019 23	3			
22	Godavari	Dummagudam	Telangana	53.00	55.00	54.48	08-09-19 23:00	03/08/2019 13	04/08/2019 01	2			
								08/08/2019 22	09/08/2019 22	2			
								08/09/2019 07	09/09/2019 21	2			
23	Godavari	Bhadrachalam	Telangana	45.72	48.77	48.22	09-09-19 01:00	03/08/2019 07	04/08/2019 16	2			
								05/08/2019 20	06/08/2019 05	2			
								08/08/2019 00	10/08/2019 10	3			
								08/09/2019 01	10/09/2019 11	3			
24	Wardha	Sirpur Town	Telangana	159.95	160.95	159.25	04/08/2019 20	-	-	-	-	-	-
25	Godavari	Kunavaram	Andhra Pradesh	37.74	39.24	40.58	09-08-19 23:00	03/08/2019 08	05/08/2019 08	3	04/08/2019 04	04/08/2019 10	1
								07/08/2019 18	11/08/2019 01	5	08/08/2019 19	10/08/2019 16	3
								08/09/2019 09	10/09/2019 23	3			
26	Godavari	Rajamundry	Andhra Pradesh	17.68	19.51	17.50	10-09-19 01:00	-	-	-	-	-	-
27	Godavari	Dowalaiswaram	Andhra Pradesh	14.25	16.08	15.43	10-08-19 01:00	03/08/2019 13	07/08/2019 06	5			
								07/08/2019 11	11/08/2019 15	5			
								08/09/2019 08	11/09/2019 15	4			
28	Wainganga	Bhandara	Maharashtra	244.00	244.50	246.84	10/09/2019 12	09/08/2019 21	10/08/2019 02	2	08/09/2019 22	11/09/2019 12	4
								27/08/2019 09	28/08/2019 09	2	12/09/2019 14	13/09/2019 07	2
								28/08/2019 18	29/08/2019 05	1	29/09/2019 15	30/09/2019 21	2
								29/08/2019 12	30/08/2019 03	1			
								01/09/2019 07	03/09/2019 04	3			
								03/09/2019 16	15/09/2019 07	11			
								15/09/2019 21	26/09/2019 07	11			
								26/09/2019 09	31/10/2019 15	6			
								01/11/2019 00	16/11/2019 14	16			
29	Wainganga	Pauni	Maharashtra	226.73	227.73	227.75	09/09/2019 15	09/09/2019 09	10/09/2019 09	2	09/09/2019 14	09/09/2019 22	1
30	Wardha	Balharsha	Maharashtra	171.50	174.00	168.92	04/08/2019 14	-	-	-	-	-	
31	Indravati	Jagdalpur	Chhatisgarh	539.50	540.80	542.22	30-07-19 22:00	29/07/2019 11	01/08/2019 00	4	29/07/2019 15	31/07/2019 18	3
								02/08/2019 23	04/08/2019 11	3	08/08/2019 06	10/08/2019 08	3
								08/08/2019 02	10/08/2019 21	3	06/09/2019 04	07/09/2019 20	2
								03/09/2019 04	05/09/2019 00	3			
								06/09/2019 02	09/09/2019 21	4			

Above Normal and Severe flood events on various river systems (excluding Ganga and Brahmaputra basins)- 2019 flood season

Sl. No.	River	Station	State	Warning level in metres	Danger level in metres	Peak level in 2019		Flood period above warning level			Flood period above danger level		
						Level in metres	Time	From	To	No. of days	From	To	No. of days
32	Krishna	Arjunwad	Maharashtra	542.07	543.29	544.28	09/08/2019 02	06/08/2019 17	13/08/2019 22	8	08/08/2019 01	11/08/2019 16	4
33	Bhima	Deongaon	Karnataka	402.00	404.50	405.80	10/08/2019 00	07/08/2019 19	12/08/2019 09	6	08/08/2019 23	11/08/2019 16	4
								13/08/2019 23	14/08/2019 13	2			
34	Tungabhadra	Mantralayam	Andhra Pradesh	310.00	312.00	312.9	12/08/2019 19	12/08/2019 04	15/08/2019 07	4	12/085/2019 08	13/08/2019 14	2
								16/08/2019 08	17/08/2019 07	2			
								07/09/2019 17	09/09/2019 21	3			
								20/09/2019 08	20/09/2019 12	1			
								25/09/2019 09	26/09/2019 11	2			
								26/09/2019 16	27/09/2019 07	1			
								12/10/2019 04	12/10/2019 13	1	23/10/2019 20	24/10/2019 07	2
								22/108/2019 16	25/10/2019 04	4			
35	Tungabhadra	Kurnool	Andhra Pradesh	273.00	274.00	274.48	13/08/2019 08	12/08/2019 17	13/08/2019 22	2	12/08/2019 21	13/08/2019 17	2
								23/10/2019 22	24/10/2019 17	2			
36	Nagavali	Srikakulam	Andhra Pradesh	10.17	10.80	11.42	25/10/2019 01	07/08/2019 03	09/08/2019 04	**3**	08/08/2019 11	08/08/2019 15	1
								12/10/2019 04	12/10/2019 15	1	25/10/2019 00	25/10/2019 18	1
								24/10/2019 21	27/10/2019 03	4	26/10/2019 11	26/10/2019 18	1
37	Pennar	Nellore	Andhra Pradesh	15.91	17.28	13.72	17/11/2019 08	-	-	-	-	-	-
38	Sabarmati	Ahmedabad Shubhash Bridge	Gujarat	44.09	45.34	42.4	01/10/19 1900	-	-	-	-	-	-
39	Mahi	Wanakbori	Gujarat	71.93	74.98	73.38	14/09/19 0900	-	-	-	-	-	-
40	Naramada	Mandla	Madhya Pradesh	437.20	437.80	438.78	08/09/2019 20	08/08/2019 19	09/08/2019 14	2	08/09/2019 14	09/09/2019 06	2
								15/08/2019 05	15/08/2019 11	1	12/09/2019 06	12/09/2019 22	1
								08/09/2019 12	09/09/2019 11	2			
								12/09/2019 04	13/09/2019 08	2			
41	Naramada	Hoshangabad	Madhya Pradesh	292.80	293.80	294.60	11/09/2019 00	09/09/2019 12	12/09/2019 02	4	10/09/2019 17	11/09/2019 08	2
42	Naramada	Garudeswar	Gujarat	30.48	31.09	29.58	11/09/19:03	-	-	-	-	-	-
43	Naramada	Bharuch	Gujarat	6.71	7.31	9.72	11/09/19:10	09/08/2019 12	10/08/2019 22	2	09/08/2019 13	10/08/2019 19	2
								26/08/2019 12	30/08/2019 08	5	27/08/2019 04	29/08/2019 21	3
								05/09/2019 22	06/09/2019 20	2	06/09/2019 02	06/09/2019 14	1
								09/09/2019 10	17/09/2019 11	9	09/09/2019 13	17/09/2019 05	9
								18/09/2019 23	19/09/2019 11	2			
44	Tapi	Surat	Gujarat	8.50	9.50	8.00	10/08/19:23	-	-	-	-	-	-
45	Damanganga	Vapi Town	Gujarat	18.20	19.20	18.60	04/08/19:17	04/08/2019 15	04/08/2019 21	1			
46	Damanganga	Daman	Dadra & Nagar Have	2.60	3.40	2.60	03/08/19:16						
								08/09/2019 01	13/09/2019 09	6			

Annex XI

Above Normal and Severe flood events on various river systems (excluding Ganga and Brahmaputra basins)- 2019 flood season

Sl. No.	River	Station	State	Warning level in metres	Danger level in metres	Peak level in 2019		Flood period above warning level			Flood period above danger level		
						Level in metres	Time	From	To	No. of days	From	To	No. of days
47	Cauvery	Musiri	Tamilnadu	82.11	83.11	82.82	11/09/2019 05	25/09/2019 17	26/09/2019 23	2			
								24/10/2019 15	26/10/2019 06	3			
48	Cauvery	Kodumudi	Tamilnadu	125.50	126.50	125.62	10/09/2019 16	10/09/2019 04	10/09/2019 23	1			
49	Bhavani	Savandapur	Tamilnadu	184.50	185.50	184.5	02/12/2019 23	02/12/2019 23	03/12/2019 00	2			
50	Sabari	Chinturu	Andhra Pradesh	41.50	43.50	41.45	09-08-19 18:00	-	-	-	-	-	
51	Krishna	Avanigadda	Andhra Pradesh	9.00	11.00	10.35	17/08/2019 13	16/08/2019 07	18/08/2019 16	3			
52	Periyar	Neeleswaram	Kerala	9.00	10.00	9.41	08/08/2019 20	08/08/2019 17	09/08/2019 02	2			
53	Bharathapuzha	Kumbidi	Kerala	8.20	9.20	11.2	10/08/2019 06	09/08/2019 09	12/08/2019 06	4	09/08/2019 11	11/08/2019 11	3
54	Pamba	Malakkara	Kerala	6.00	7.00	6.43	10/08/2019 01	09/08/2019 14	09/08/2019 21	1			
55	Godavari	Nasik	Maharashtra	558.10	559.60	562.51	04-08-19 15:00	03/08/2019 13	05/08/2019 22	3	04/08/2019 00	05/08/2019 19	2
								25/09/2019 21	25/09/2019 23	1			
56	Jalaka	Mathani Road Bridge	Odisha	5.50	5.50	6.57	26/09/2019 08	10/08/2019 08	10/08/2019 09	1	19/08/2019 08	21/08/2019 08	3
								11/08/2019 09	11/08/2019 19	1	23/08/2019 07	29/08/2019 02	7
								12/08/2019 09	12/08/2019 13	1	25/09/2019 08	25/09/2019 18	1
								14/08/2019 08	14/08/2019 09	1	26/09/2019 08	26/09/2019 09	1
								19/08/2019 08	21/08/2019 20	3	27/09/2019 08	27/09/2019 09	1
								23/08/2019 05	29/08/2019 19	7	28/09/2019 00	30/09/2019 15	3
								05/09/2019 08	06/09/2019 03	2	10/10/2019 09	10/10/2019 23	1
								08/09/2019 00	08/09/2019 13	1	25/10/2019 00	28/10/2019 07	4
								13/09/2019 08	13/09/2019 09	1			
								14/09/2019 08	14/09/2019 13	1			
								25/09/2019 08	25/09/2019 18	1			
								26/09/2019 08	26/09/2019 09	1			
								27/09/2019 08	27/09/2019 09	1			
								28/09/2019 00	01/10/2019 10	4			
								10/10/2019 04	11/10/2019 12	2			
								25/10/2019 00	29/10/2019 01	5			
57	Banas	Abu Road	Rajasthan	258.00	259.00	256.5	09/08/19 1300	-	-	-	-	-	-
58	Vaigai	Madurai	Tamilnadu	131.50	132.50	131.24	11/11/2019 10	-	-	-	-	-	-

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