USDA United States Department of Agriculture
Foreign Agricultural Service

GAIN Global Agricultural Information Network

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Report Name: India Forecasts Normal 2023 Southwest Monsoon

Country: India

Post: Mumbai

Report Category: Agriculture in the News, Agricultural Situation, Climate Change/Global Warming/Food Security, Market Development Reports

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Report Highlights:

India's Meteorological Department (IMD) continues to forecast a normal 2023 southwest monsoon, according to a second forecast report issued on May 26, predicting that June through September rainfall will likely reach 96 percent of the long period average (LPA)/fifty-year average of 870 millimeter (mm). However, the one-week delayed onset resulted in a 10 percent rain deficit for June. As of June 30, kharif crop sowing is on pace, as farmers have switched from rice to less water intensive coarse cereals and oilseeds. IMD forecasts above normal rainfall in July in most parts of central India, which should increase water availability and positively impact the pace of sowing. However, deficit monsoon rains in June reduced reservoir storage levels below previous year levels in western and southern India.

***DISCLAIMER**: The information contained in this report was retrieved from the Ministry of Earth Sciences/Indian Meteorological Department's (IMD) website https://mausam.imd.gov.in/. The U.S. Consulate General Mumbai – Foreign Agricultural Service (FAS) Office of Agricultural Affairs (OAA), USDA and/or the U.S. government make no claim of accuracy or authenticity. The Government of India has not officially endorsed this report. [Note: Use Google Chrome to access the links if they do not open in Internet Explorer]*

General Information

IMD Forecasts Fourth Normal Monsoon in a Row

On June 30, IMD published an updated monthly rainfall and temperature outlook for July 2023. July rainfall predicted to be normal (94 to 106 percent of LPA). Spatial distribution suggests that normal to above normal rainfall is most likely over most areas of central India and adjoining south peninsular and east India, and some areas of northeast and northwest India. Below normal rainfall is most likely over many areas of northwest, northeast and southeast peninsular India.

This update confirms an original April 11 forecast of a normal southwest monsoon that suggested through September rainfall would likely reach 96 percent of the LPA with a model error of plus/minus five percent. There is a 35 percent probability of a normal southwest monsoon (refer table 2). LPA is a calculation of rainfall recorded over a particular region for a given interval (month or season) average over a long period. It acts as a benchmark for forecasting quantitative rainfall for a region during a specific month or season. India's LPA of seasonal rainfall is 870 mm, based on data from 1971-2020.

According to IMD, normal to above normal rainfall is likely over many areas of peninsular India and adjoining east central India, northeast India and over some parts of northwest India. Normal to below normal rainfall is likely over some areas of northwest India and parts of west central India and some pockets of northeast India. Based on the IMD data, the 2023 southwest monsoon could be the fourth normal monsoon in row (refer table 4). For more details, please refer: IMD updated long range forecast for southwest monsoon 2023. The next forecast for rainfall during the second half of the monsoon season (August and September) will be published by IMD the last week of July.

Delayed Monsoon Onset and Deficit Rains Affecting Crop Sowing Pattern

On June 8, IMD issued a press release announcing the official onset of the southwest monsoon over Kerala and southern Tamil Nadu, a delay of one week (refer table 3) which slowed the pace of planting of Kharif crops.

A severe cyclonic storm "Biparjoy" formed over Arabian Sea between June 6 – 19. The cyclone and two additional low-pressure systems in the Bay of Bengal contributed to a high number of incidences of heavy and very heavy rainfall. According to IMD, out of total 1,064 station, 337 stations (32 percent) reported very heavy (115.6 to 204.4 mm) to extremely heavy rainfall (above 204.4 mm).

According to the IMD monthly climate summary for June, India received 148.6 mm rainfall, 10 percent less than its LPA of 165.3 mm, based on data from1971-2020. Rainfall during the first 15 days of June was 53 percent lower than normal. According to the June 30 sowing report published by the Ministry of Agriculture and Farmers Welfare (MOAFW), sowing across major kharif crops is on par, however, farmers have shifted from water intensive rice to less intensive coarse cereals and oilseeds. An increase

in acreage has been observed in sorghum (bajra) in Rajasthan and oilseeds (groundnut/peanut) in Gujarat.

Table 1. *Kharif* 2023 Crops Sowing Progress

Crop	Area Sown as of June 30, 2023	Area Sown as of June 30, 2022	Y-o-Y Change	Absolute Change
Rice	26.56	36.05	-26%	-9.49
Pulses	18.15	18.51	-2%	-0.35
Coarse Cereals	36.23	22.41	62%	13.82
Oilseeds	21.55	18.81	15%	2.73
Sugarcane	54.40	52.92	3%	1.48
Jute and Mesta	5.81	6.60	-12%	-0.79
Cotton	40.49	47.04	-14%	-6.55
Total	**203.19**	**202.34**	**0%**	0.85

Source: Ministry of Agriculture and Farmers Welfare

Table 2. Probability Forecast for Southwest Monsoon 2023

Category	Rainfall Range (% of LPA)	Forecast Probability (%)
Deficient	Less than 90	22
Below Normal	Between 90-96	29
Normal	Between 96-104	35
Above Normal	Between 104-110	11
Excess	Greater than 110	3

Source: India Meteorological Department

Table 3. IMD Southwest Monsoon Onset Date (Actual vs Forecast)

Year	Actual Onset Date	Forecast Onset Date	Actual Rainfall (% of LPA)
2014	6th June	5th June	88
2015	5th June	30th May	86
2016	8th June	7th June	97
2017	30th May	30th May	95
2018	29th May	29th May	91
2019	8th June	6th June	110
2020	1st June	5th June	109
2021	3rd June	31st May	99
2022	29th May	27th May	106
2023	8th June	1st June	-

Source: India Meteorological Department

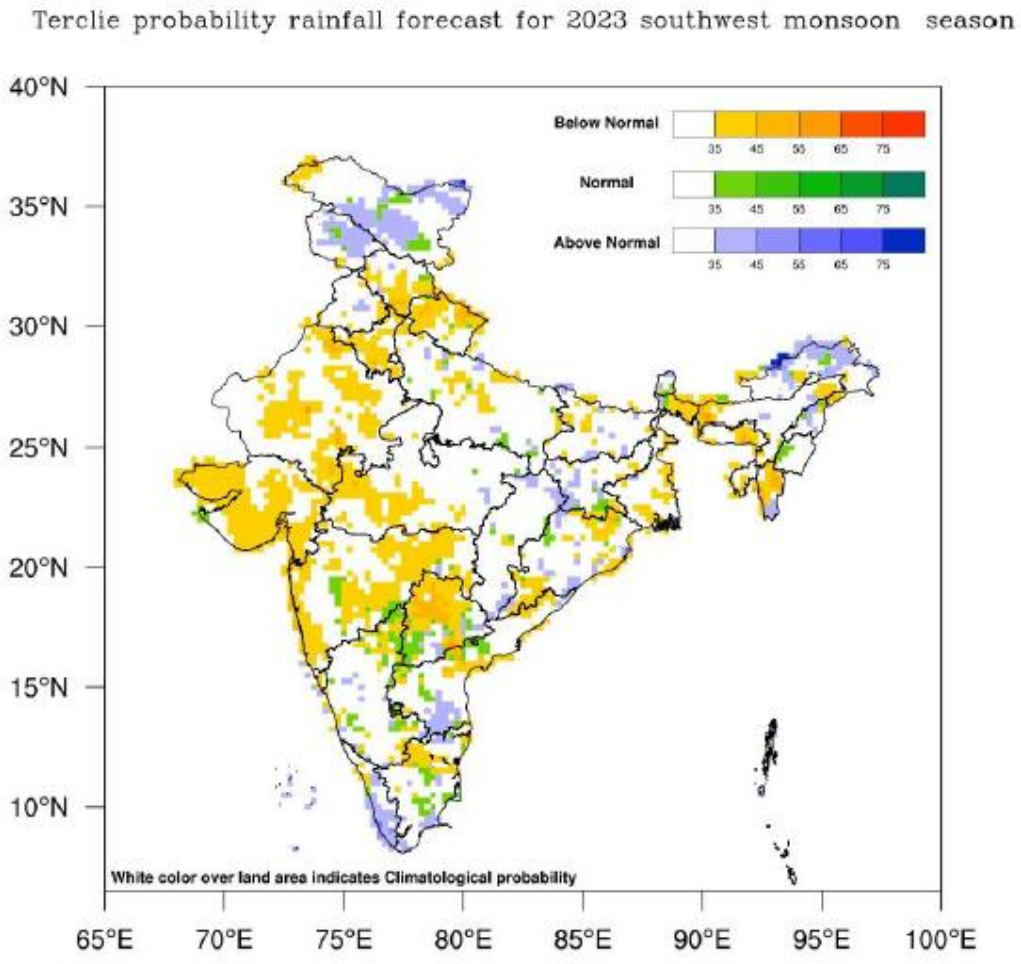
Table 4. India Southwest Monsoon Seasonal Rainfall Departure for Last Six Years

Year	Actual (mm)	Normal* (mm)	Percentage Departure from Normal
2017	841.3	887.5	-5%
2018	804.0	887.5	-9%
2019	968.3	880.6	+10%
2020	957.6	880.6	+9%
2021	874.6	880.6	-1%
2022	925.0	868.6	+6%

Source: India Meteorological Department

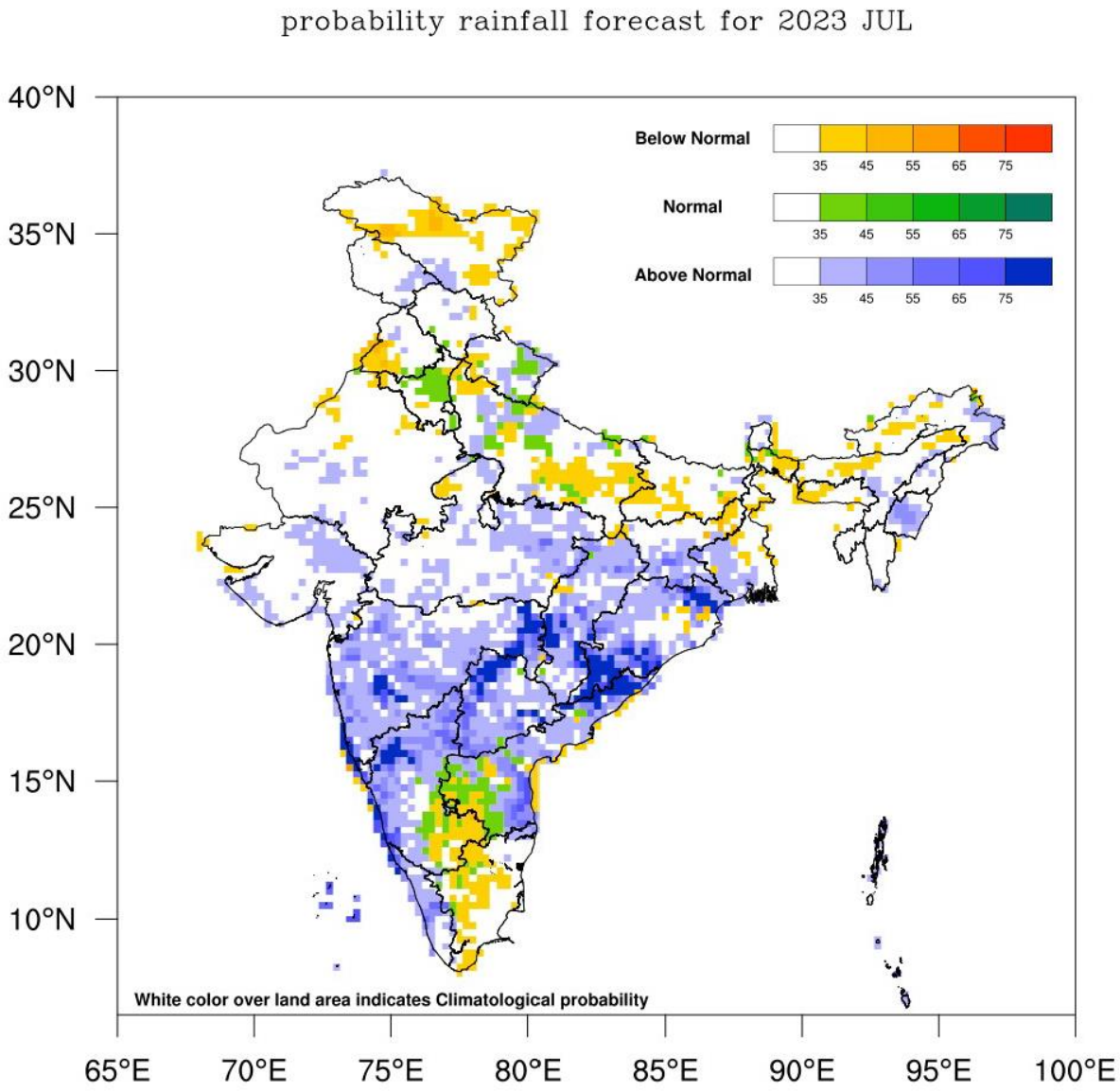
*Normal rainfall is the long period average rainfall recorded over the fifty-year period, with a standard deviation of about ten percent of mean value.

Figure 1. Rainfall Forecast for 2023 Southwest Monsoon



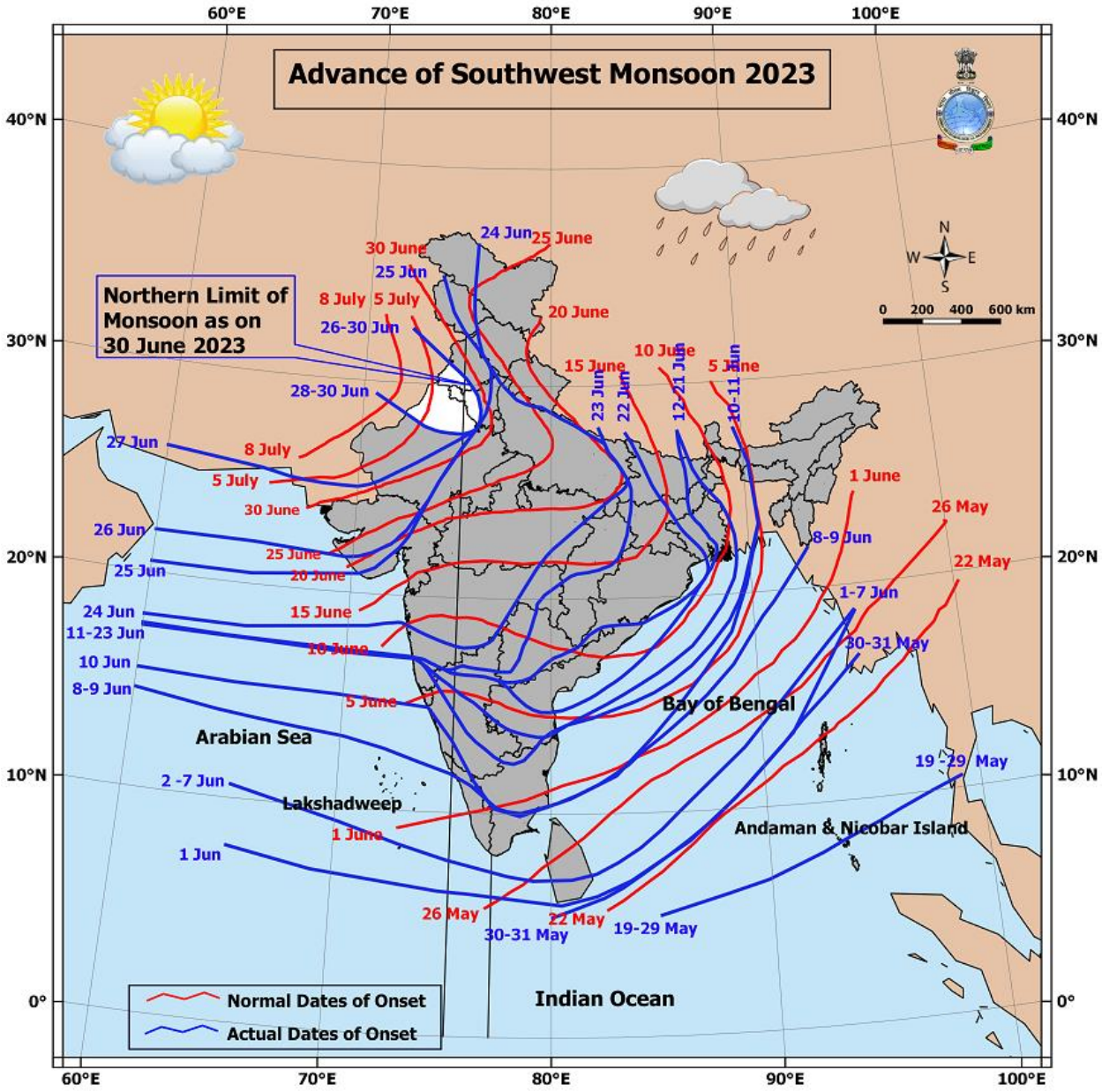
Source: India Meteorological Department

Figure 2. Rainfall forecast for July 2023



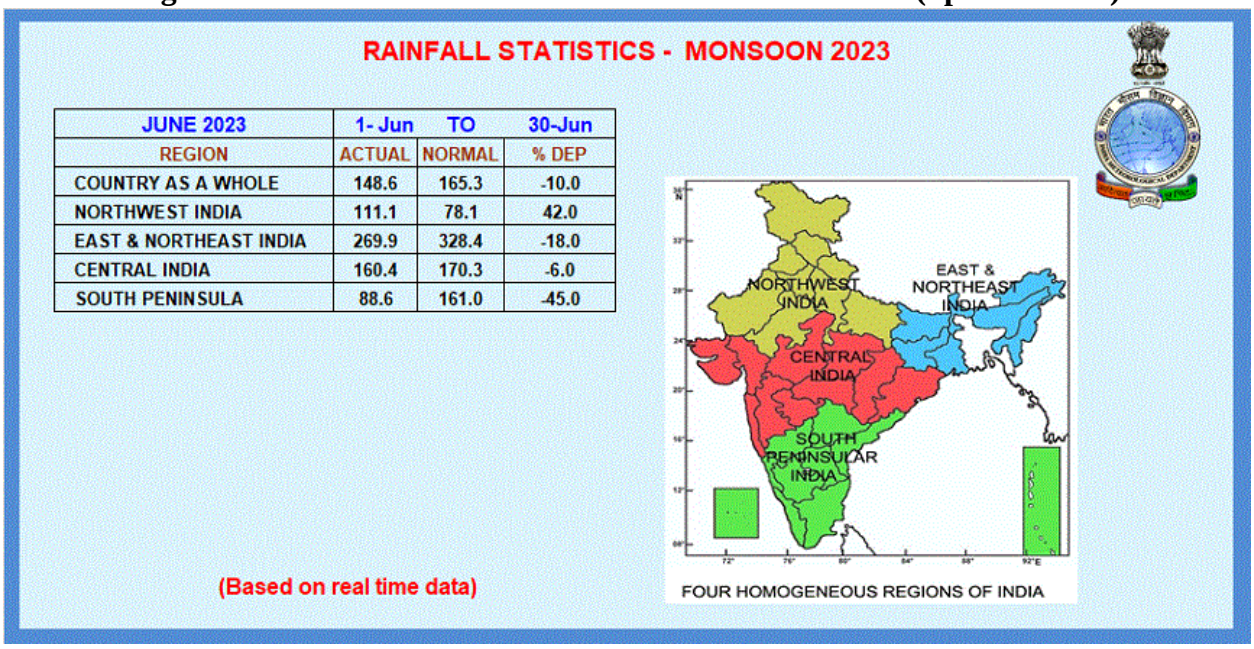
Source: India Meteorological Department

Figure 3. Advance of Southwest Monsoon 2003



Source: India Meteorological Department

Figure 4. Rainfall Statistics for Southwest Monsoon 2023 (up to June 30)



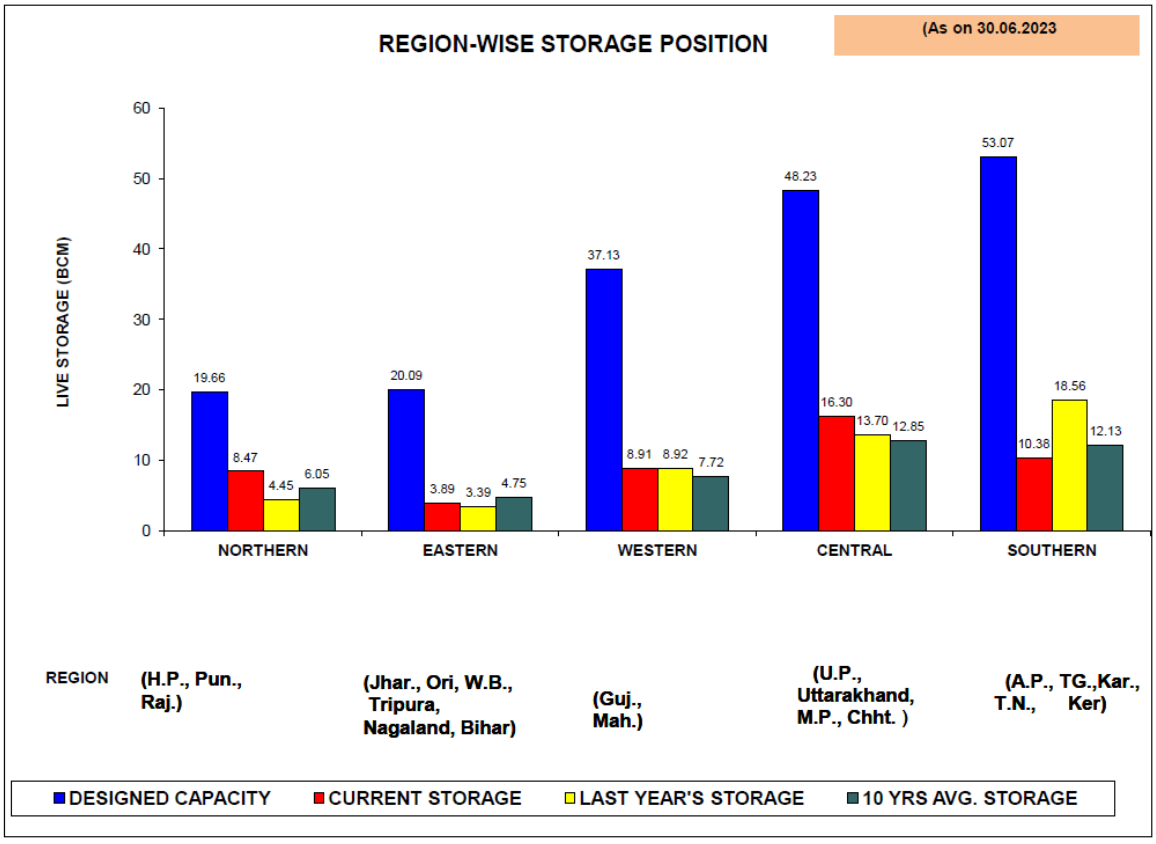
Source: India Meteorological Department

Reservoir Levels

India's Central Water Commission monitors the storage status of 146 reservoirs around the country on a weekly basis. The latest reservoir storage bulletin of June 30 shows current levels at 47.95 billion cubic meters (BCM) - 27 percent of total live storage capacity. The live storage level in these reservoirs for the corresponding period last year was 49.02 BCM (28 percent), and the average of the last ten years was 43.487 BCM (24 percent). As such, the current storage position is less than the same period last year, but higher than the average storage level of the last ten years during the same period (Figure 3).

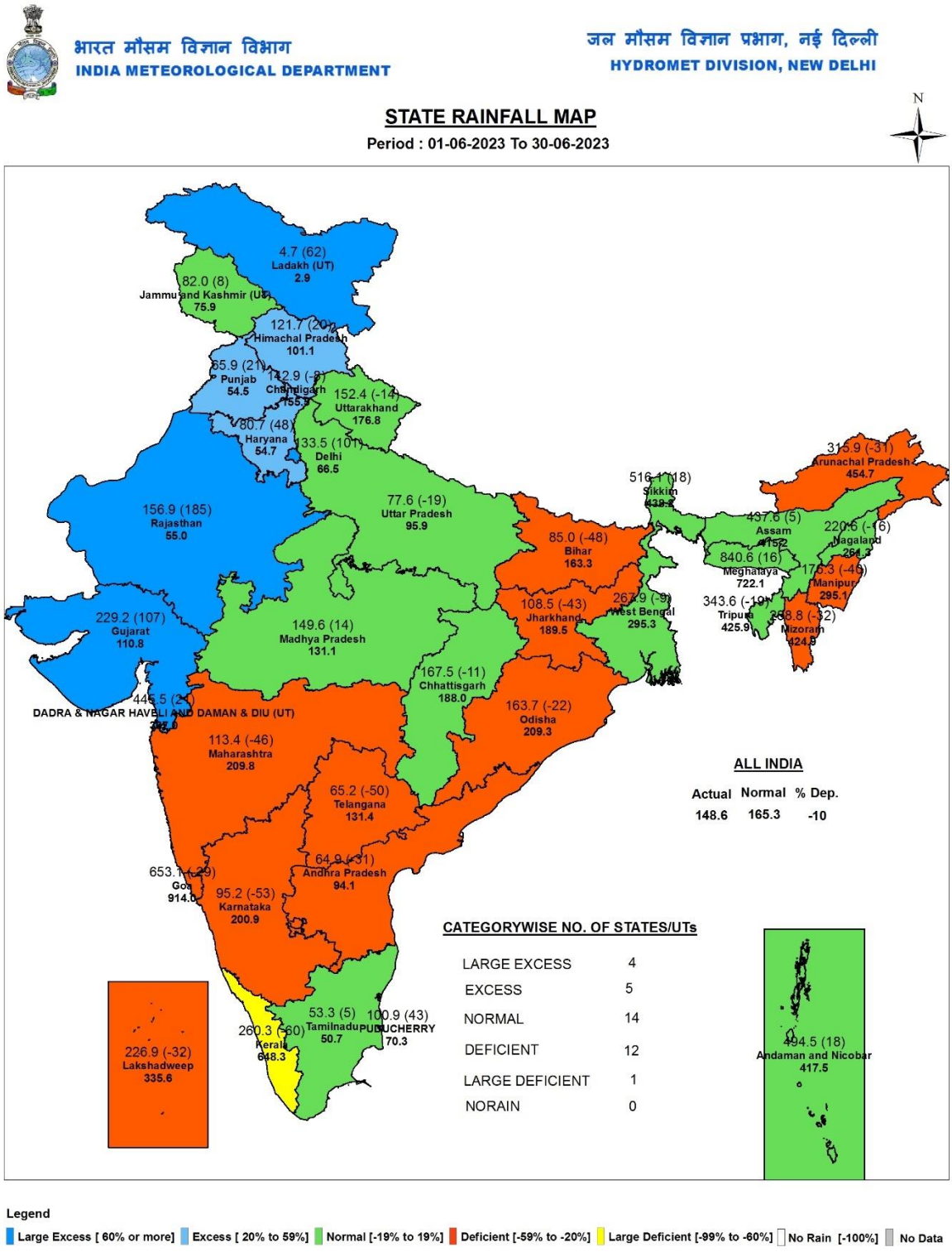
States with a higher percentage of reservoir levels as compared to last year are Himachal Pradesh, Punjab, Rajasthan, Jharkhand, Odisha, Gujarat, Madhya Pradesh, and Chhattisgarh. Out of 146 reservoirs, 81 reported more than 80 percent of normal storage levels, and 65 reported 80 percent or below of normal storage. Out of these 65 reservoirs, 33 have storage between 51 percent and 80 percent of normal storage, and 32 have stored up to 50 percent of normal storage. According to the Central Water Commission, normal storage represents the average storage level of the last ten years. Close to normal storage represents a shortfall of up to 20 percent of normal. While deficient storage indicates that the shortfall is greater than 20 percent of the normal and up to 60 percent of the normal. Highly deficient means shortfall is more than 60 percent of normal.

Figure 5. Regional Reservoir Storage (billion cubic meters - BCM) - June 30



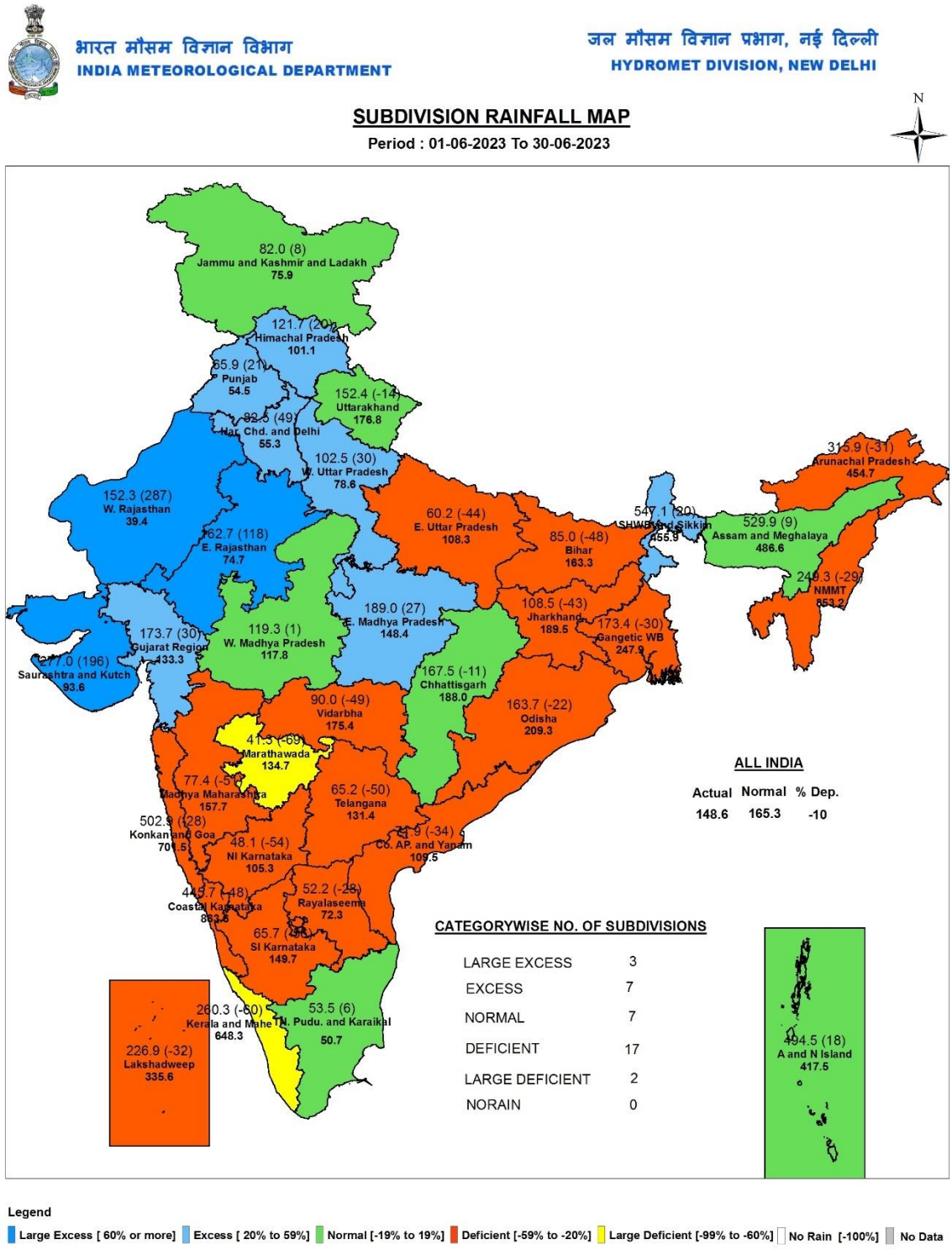
Source: Ministry of Jal Shakti/Central Water Commission

Figure 6. India Southwest Monsoon State Rainfall Map



NOTES :
a) RainFall figures are based on operation data.
b) Small figures indicate actual rainfall (mm), while bold figures indicate Normal rainfall (mm).
c) Percentage Departures of rainfall are shown in brackets.

Figure 7. India Southwest Monsoon Subdivision Rainfall Map



NOTES :
a) RainFall figures are based on operation data.
b) Small figures indicate actual rainfal (mm), while bold figures indicate Normal rainfall (mm).
c) Percentage Departures of rainfall are shown in brackets.

Figure 8. India Southwest Monsoon District Rainfall Map

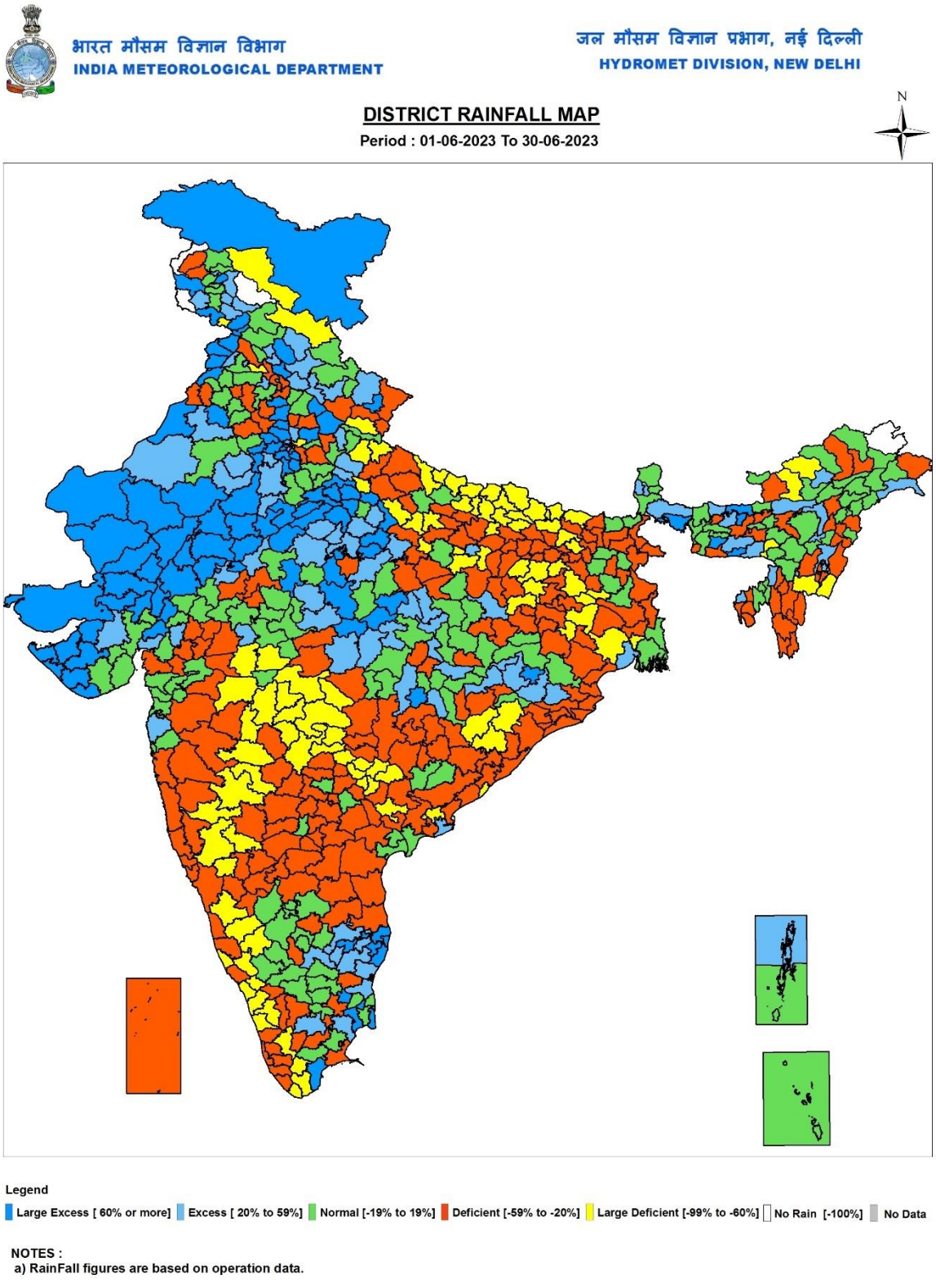


Figure 9. India South West Monsoon State-wise Rainfall Distribution

India Meteorological Department
Hydromet Division, New Delhi

STATE-WISE RAINFALL DISTRIBUTION

S NO	MET. SUBDIVISION/UT/STATE/DISTRICT	Day:29-06-2023				Period:01-06-2023 To 29-06-2023			
		ACTUAL (mm)	NORMAL (mm)	%DEP.	CAT.	ACTUAL (mm)	NORMAL (mm)	% DEP.	CAT.
REGION : EAST AND NORTH EAST INDIA									
1	ARUNACHAL PRADESH	15.3	15.5	-1%	N	309.7	439.7	-30%	D
2	ASSAM	5.6	13.2	-58%	D	429.2	402.8	7%	N
3	MEGHALAYA	61.8	25.6	142%	LE	801.1	697.2	15%	N
4	NAGALAND	10.2	8.9	14%	N	219.0	252.2	-13%	N
5	MANIPUR	1.3	8.7	-85%	LD	175.0	286.9	-39%	D
6	MIZORAM	4.7	13.1	-64%	LD	285.1	411.5	-31%	D
7	TRIPURA	24.5	16.0	53%	E	322.1	412.7	-22%	D
8	SIKKIM	45.9	15.6	194%	LE	496.0	418.6	18%	N
9	WEST BENGAL	24.3	12.6	93%	LE	250.0	283.1	-12%	N
10	JHARKHAND	11.9	11.1	7%	N	96.5	181.4	-47%	D
11	BIHAR	10.3	10.7	-3%	N	47.5	151.1	-69%	LD
REGION : NORTH WEST INDIA									
1	UTTAR PRADESH	7.8	7.2	8%	N	62.6	89.2	-30%	D
2	UTTARAKHAND	8.0	9.2	-13%	N	134.0	168.2	-20%	D
3	HARYANA	6.6	2.6	155%	LE	72.8	50.0	46%	E
4	CHANDIGARH (UT)	0.0	8.5	-100%	NR	131.7	149.9	-12%	N
5	DELHI (UT)	17.8	4.3	315%	LE	126.0	60.4	109%	LE
6	PUNJAB	1.0	3.5	-70%	LD	64.2	49.7	29%	E
7	HIMACHAL PRADESH	3.1	5.4	-43%	D	118.8	95.4	25%	E
8	JAMMU & KASHMIR (UT)	2.0	4.7	-58%	D	80.5	71.4	13%	N
9	LADAKH (UT)	0.0	0.1	-100%	NR	4.5	2.8	60%	LE
10	RAJASTHAN	7.4	4.1	82%	LE	145.9	50.7	188%	LE
REGION : CENTRAL INDIA									
1	ODISHA	3.5	9.1	-61%	LD	161.1	201.4	-20%	D
2	MADHYA PRADESH	22.4	8.0	180%	LE	134.2	124.2	8%	N
3	GUJARAT	15.6	7.5	108%	LE	185.1	104.0	78%	LE
4	DADRA & NAGAR HAVELI AND DAMAN & DIU (UT)	80.7	20.0	304%	LE	390.9	338.3	16%	N
5	GOA	58.3	38.7	51%	E	560.9	871.8	-36%	D
6	MAHARASHTRA	15.9	10.4	52%	E	99.4	199.9	-50%	D
7	CHHATTISGARH	11.3	9.1	24%	E	159.7	178.4	-10%	N
REGION : SOUTH PENINSULA									
1	ANDAMAN & NICOBAR (UT)	9.9	10.9	-10%	N	481.3	403.9	19%	N
2	ANDHRA PRADESH	0.9	3.1	-72%	LD	63.5	91.2	-30%	D
3	TELANGANA	4.8	4.8	1%	N	64.4	126.0	-49%	D
4	TAMIL NADU	0.2	1.5	-86%	LD	51.5	49.3	4%	N
5	PUDUCHERRY (UT)	0.4	2.3	-81%	LD	98.6	67.4	46%	E
6	KARNATAKA	2.9	8.5	-66%	LD	88.0	192.9	-54%	D
7	KERALA	11.3	21.9	-49%	D	251.5	621.9	-60%	LD
8	LAKSHADWEEP (UT)	15.5	8.3	87%	LE	221.8	325.9	-32%	D
	COUNTRY :	10.0	7.9	27%		136.5	157.7	-13%	

CATEGORYWISE DISTRIBUTION OF NO.OF STATES

CATEGORY	Day:29-06-2023	Period:01-06-2023 To 29-06-2023
	NO.OF STATES	NO.OF STATES
Large Excess	10	4
Excess	4	4
Normal	8	12
Deficient	4	14
Large Deficient	8	2
NoRain	2	0
NoData	0	0

Note: "The rainfall values are rounded off upto one place of decimal"

Figure 10. South West Monsoon State-wise Rainfall Distribution of Districts

STATEWISE DISTRIBUTION OF DISTRICTS WITH LARGE EXCESS (LE), EXCESS (E), NORMAL (N), DEFICIENT (D), LARGE DEFICIENT (LD) RAINFALL, NO RAINFALL (NR) AND NO DATA (ND)									
Period:01-06-2023 To 28-06-2023									
S.No.	States /UTs	LE	E	N	D	LD	NR	ND	TOTAL
1	ANDAMAN & NICOBAR (UT)	0	1	2	0	0	0	0	3
2	ARUNACHAL PRADESH	0	2	7	4	2	1	0	16
3	ASSAM	3	5	14	5	0	0	0	27
4	MEGHALAYA	1	3	3	3	1	0	0	11
5	NAGALAND	0	2	6	3	0	0	0	11
6	MANIPUR	0	2	0	5	2	0	0	9
7	MIZORAM	0	0	0	8	0	0	0	8
8	TRIPURA	0	0	4	4	0	0	0	8
9	SIKKIM	0	2	2	0	0	0	0	4
10	WEST BENGAL	1	1	4	9	4	0	0	19
11	ODISHA	1	5	6	16	2	0	0	30
12	JHARKHAND	0	0	1	12	11	0	0	24
13	BIHAR	0	0	0	5	33	0	0	38
14	UTTAR PRADESH	10	6	10	17	31	1	0	75
15	UTTARAKHAND	1	3	3	3	3	0	0	13
16	HARYANA	12	2	2	6	0	0	0	22
17	CHANDIGARH (UT)	0	0	1	0	0	0	0	1
18	DELHI (UT)	5	3	0	0	1	0	0	9
19	PUNJAB	5	4	7	6	0	0	0	22
20	HIMACHAL PRADESH	3	6	2	0	1	0	0	12
21	JAMMU & KASHMIR (UT)	6	4	6	2	1	1	0	20
22	MADHYA PRADESH	5	8	16	19	4	0	0	52
23	GUJARAT	8	5	5	11	4	0	0	33
24	DADRA & NAGAR HAVELI AND DAMAN & DIU (UT)	0	0	2	1	0	0	0	3
25	GOA	0	0	0	2	0	0	0	2
26	MAHARASHTRA	0	1	2	13	20	0	0	36
27	CHHATTISGARH	1	8	6	11	1	0	0	27
28	ANDHRA PRADESH	0	2	4	18	2	0	0	26
29	TELANGANA	0	0	3	20	10	0	0	33
30	TAMIL NADU	10	7	11	6	4	0	0	38
31	PUDUCHERRY (UT)	2	0	0	1	1	0	0	4
32	KARNATAKA	0	0	9	15	7	0	0	31
33	KERALA	0	0	0	6	8	0	0	14
34	LAKSHADWEEP (UT)	0	0	0	1	0	0	0	1
35	LADAKH (UT)	1	0	0	0	1	0	0	2
36	RAJASTHAN	20	6	5	2	0	0	0	33
	TOTAL	95	88	143	234	154	3	0	717
	CATEGORYWISE DISTRIBUTION OF 717 DISTRICTS FOR WHICH DATA RECEIVED	13%	12%	20%	33%	22%	0%		
	PERCENTAGE DISTRIBUTION OF DISTRICTS IN EARLIER FIVE YEARS SINCE JUNE 1st TILL	LE	E	N	D	LD	NR		
	29-6-2022	12%	11%	19%	36%	21%	1%		
	30-6-2021	21%	21%	28%	25%	5%	0%		
	01-07-2020	21%	22%	29%	23%	5%	0%		
	26-6-2019	5%	6%	16%	41%	31%	1%		
	27-6-2018	6%	15%	30%	30%	18%	1%		

Source: India Meteorological Department

Attachments:

No Attachments.