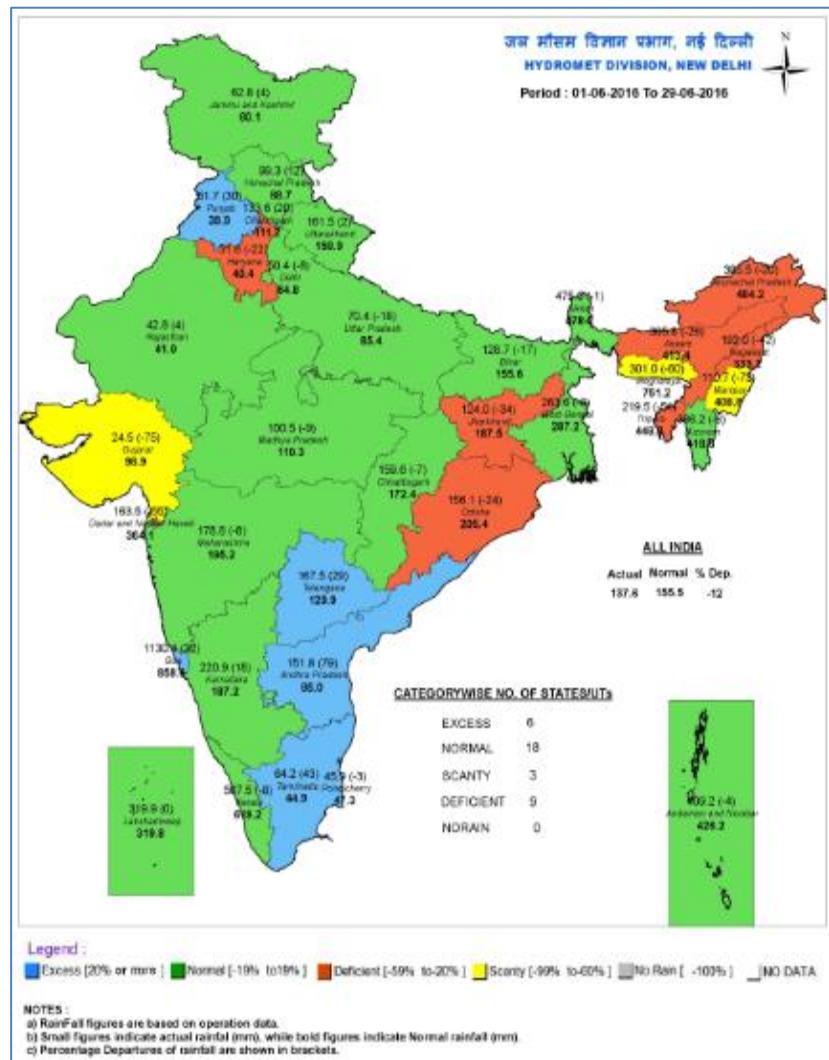


30<sup>th</sup> June 2016

## Indian Monsoon Dynamics

### Recent Weather Development

- Rain occurred at most places over Vidarbha, Chhattisgarh, Odisha, Coastal Andhra Pradesh, Telangana, Rayalaseema, Konkan & Goa, Karnataka, Kerala, Gangetic West Bengal, Lakshadweep and Andaman & Nicobar Islands; at many places over Madhya Pradesh, Madhya Maharashtra and Marathawada; at a few places over Himachal Pradesh, Punjab, Haryana, Chandigarh & Delhi, Rajasthan, Gujarat, Jharkhand, Tamilnadu, Arunachal Pradesh, Assam & Meghalaya, Nagaland, Manipur, Mizoram & Tripura and at isolated places over Jammu & Kashmir, Uttarakhand, West Uttar Pradesh, Sub-Himalayan West Bengal & Sikkim.
- Conditions are becoming favourable for further advance of southwest monsoon in some more parts of north Arabian sea, Gujarat, East Rajasthan, remaining parts of Himachal Pradesh, Uttarakhand, West Madhya Pradesh, Uttar Pradesh and most parts of Punjab & Haryana, entire Chandigarh & Delhi and some parts of West Rajasthan during next 3-4 days.
- Southwest monsoon has covered Kerala, Tamil Nadu, Karnataka, Northeastern states, West Bengal & Sikkim, Rayalaseema, Coastal Andhra Pradesh, Telangana, Odisha, Jharkhand, Bihar, Maharashtra, East Madhya Pradesh, Jammu & Kashmir, most parts of West Madhya Pradesh, East Uttar Pradesh, Uttarakhand and Himachal Pradesh and some parts of West Uttar Pradesh.
- Maximum temperatures were appreciably above normal (3.1°C to 5.0°C) at many places over Chhattisgarh; above normal (1.6°C to 3.0°C) at most places over Madhya Pradesh, Bihar, Jharkhand, Arunachal Pradesh, Assam & Meghalaya and Gujarat Region; at many places over Vidarbha and Sub-Himalayan West Bengal & Sikkim; at a few places over Jammu & Kashmir and at isolated places over Rajasthan, Saurashtra & Kutch, Gangetic West Bengal and Kerala. They were appreciably below normal (3.1°C to 5.0°C) at many places over Coastal Andhra Pradesh and Coastal Karnataka and at isolated places over Telangana and Tamilnadu & Puducherry; below normal (1.6°C to 3.0°C) at most places over Konkan & Goa and Rayalaseema; and at isolated places over Punjab and Madhya Maharashtra and near normal over rest of the country. The highest maximum temperature of 43.4°C recorded at Churu (Rajasthan) in the country.
- Minimum temperature are above normal (1.6°C to 3.0°C) at most places over Jammu & Kashmir, Uttarakhand, Sub-Himalayan West Bengal & Sikkim; at many places over Gujarat region; at a few places over Bihar, Jharkhand, Gangetic West



Bengal & north West Uttar Pradesh and at isolated places Himachal Pradesh, East Uttar Pradesh, northeastern states, South Interior Karnataka, Tamil Nadu, Andaman & Nicobar Islands. They are below normal (1.6°C to 3.0°C) at a few places over West Rajasthan, Telangana, Rayalaseema & Coastal Andhra Pradesh; at isolated places over south West Uttar Pradesh, Punjab, Haryana, Chandigarh & Delhi, East Rajasthan, Madhya Pradesh, Lakshadweep area and near normal over rest of the country.

- The weather system over Central India has weakened but is now seen as a cyclonic circulation in the lower levels over parts of Madhya Pradesh and Vidarbha. A fresh cyclonic circulation is brewing over west-central Bay of Bengal, off Andhra Pradesh and Odisha coast. It will possibly induce a low pressure area and could shift inland any time after 24 hours. Heavy showers are likely over Vidarbha, Marathwada, Telangana, South Madhya Pradesh, coastal Andhra Pradesh and Odisha.
- Up in North India, the cyclonic circulation persists over Punjab and adjoining areas. The trough can be seen moving across Punjab, Haryana, Rajasthan, Madhya Pradesh up to the cyclonic circulation over here. Moist easterlies are reaching the plains and this trough will finally be instrumental for ushering Monsoon shortly over Delhi and plains of North India. A fresh Western Disturbance is also approaching the hilly states. Heavy rain alert has been issued for Uttarakhand.
- Uttarakhand is likely to receive heavy rainfall in several isolated places over the next 72 hours. The Indian Meteorological Department has predicted heavy rainfall from June 30 in several parts of Uttarakhand like Nainital, Udhampur, Singh Nagar, Champawat, Almora, Pauri, Dehradun and Uttarkashi.
- After missing the date in the national capital on June 29, according to the Met department, monsoon is now expected to reach Delhi by July 1. The southwest monsoon is likely to get aggressive in Himachal Pradesh with the weather bureau predicting heavy rainfall at some places in the state this week.

Crop	Lakh Hectare	
	Area sown in 2016-17	Area sown in 2015-16
Rice	19.86	21.86
Pulses	9.66	12.19
Coarse Cereals	17.60	18.19
Oilseeds	6.97	27.85
Sugarcane	44.38	41.58
Jute & Mesta	7.40	7.56
Cotton	19.07	34.87
<b>Total</b>	<b>124.94</b>	<b>164.10</b>

164.10 lakh hectare at this time last year. It is reported that rice has been sown/transplanted in 19.86 lakh ha, pulses in 9.66 lakh ha, coarse cereals in 17.60 lakh ha, oilseeds in 6.97 lakh ha, sugarcane in 44.38 lakh hectare and cotton in 19.07 lakh ha. The details of the area covered so far and that covered during this time last year are given in the adjacent table.

- As expected, June has finally ended below average rainfall. As on June 29, the countrywide cumulative rainfall deficiency stands at 12%. And, with rains dipping slightly during the last 24 hours, we do not expect to this deficiency to reduce much. June has witnessed huge variations in the daily rainfall recorded. This month managed to see only 10 days of excess rainfall. The initial week was very poor wherein daily rainfall deficiency hovered around 30%. However, the weeks followed by saw some improvement.

#### RAINFALL: ACTUAL VS OFFICIAL FORECASTS

Percent of normal average, June 1 - September 30, all India

[Click to hide/show](#)

Actual

Forecast



Category wise Distribution of Number of States

CATEGORY	Day 29-06-2016	Period 01-06-2016 To 29-06-2016
	NO.OF STATES	NO.OF STATES
Excess	15	6
Normal	2	18
Deficient	7	9
Scanty	9	3
NoRain	3	0
NoData	0	0

#### Seasonal Rainfall (in mm) from 01 June to 29 June 2016

Region	Actual	Normal	% Departure from LPA
East & North East	244.2	335.5	-27
Northwest India	62.8	64.0	-2
Central India	127.3	155.9	-18
South India	185.7	151.7	+22
All India	137.6	155.5	-12

## State wise Development in Rainfall Activity

S NO	MET. SUBDIVISION/UT/STATE/DISTRICT	Day:29-06-2016				Period:01-06-2016 To 29-06-2016			
		ACTUAL (mm)	NORMAL (mm)	%DEP.	CAT.	ACTUAL (mm)	NORMAL (mm)	% DEP.	CAT.
<b>REGION : EAST AND NORTH EAST INDIA</b>									
1	ARUNACHAL PRADESH	7.5	12.9	-42%	D	385.5	484.2	-20%	D
2	ASSAM	3.1	12.2	-75%	S	305.8	413.4	-26%	D
3	MEGHALAYA	1.7	28.0	-94%	S	301.0	751.2	-60%	S
4	NAGALAND	13.6	11.0	24%	E	192.0	333.2	-42%	D
5	MANIPUR	4.3	7.8	-45%	D	110.7	408.8	-73%	S
6	MIZORAM	9.9	13.4	-26%	D	386.2	418.8	-8%	N
7	TRIPURA	14.7	11.3	31%	E	219.5	448.3	-51%	D
8	SIKKIM	11.9	15.0	-21%	D	475.6	478.2	-1%	N
9	WEST BENGAL	4.2	14.0	-70%	S	263.6	287.2	-8%	N
10	JHARKHAND	2.3	11.9	-80%	S	124.0	187.5	-34%	D
11	BIHAR	0.0	11.0	-99%	S	128.7	155.6	-17%	N
<b>REGION : NORTH WEST INDIA</b>									
1	UTTAR PRADESH	1.4	7.4	-81%	S	70.4	85.4	-18%	N
2	UTTARAKHAND	6.7	9.1	-27%	D	161.5	158.9	2%	N
3	HARYANA	1.4	2.4	-43%	D	31.6	40.4	-22%	D
4	CHANDIGARH (UT)	0.0	9.0	-100%	NR	133.6	111.2	20%	E
5	DELHI (UT)	2.7	4.8	-45%	D	50.4	54.8	-8%	N
6	PUNJAB	0.0	2.8	-100%	NR	51.7	39.9	30%	E
7	HIMACHAL PRADESH	0.7	6.1	-88%	S	99.3	88.7	12%	N
8	JAMMU & KASHMIR	0.2	1.9	-89%	S	62.8	60.1	4%	N
9	RAJASTHAN	4.1	3.4	20%	E	42.8	41.0	4%	N
<b>REGION : CENTRAL INDIA</b>									
1	ODISHA	12.0	8.5	41%	E	156.1	205.4	-24%	D
2	MADHYA PRADESH	9.6	7.3	32%	E	100.5	110.3	-9%	N
3	GUJARAT	5.8	7.0	-17%	N	24.5	98.9	-75%	S
4	DADAR & NAGAR HAVELI (UT)	27.2	22.3	22%	E	163.5	364.1	-55%	D
5	DAMAN & DIU (UT)	27.9	17.3	62%	E	177.9	290.6	-39%	D
6	GOA	139.7	46.8	198%	E	1130.4	858.6	32%	E
7	MAHARASHTRA							-8%	N
8	CHHATTISGARH							-7%	N
<b>REGION : SOUTH PEN</b>									
1	ANDAMAN & NIC							-4%	N
2	ANDHRA PRADESH	11.7	2.8	323%	E	151.8	85.0	79%	E
3	TELANGANA	16.1	5.1	216%	E	167.5	129.9	29%	E
4	TAMIL NADU	4.7	1.1	329%	E	64.2	44.9	43%	E
5	PONDICHERRY (UT)	0.0	0.4	-100%	NR	45.9	47.3	-3%	N
6	KARNATAKA	26.8	9.2	192%	E	220.9	187.2	18%	N
7	KERALA	38.9	25.7	51%	E	567.5	619.2	-8%	N
8	LAKSHADWEEP (UT)	3.2	9.1	-65%	S	319.9	319.8	0%	N
	<b>COUNTRY :</b>	9.4	7.5	26%		137.6	155.5	-12%	

Source: IMD, Govt. of India

For the country as a whole, cumulative rainfall during this year's from 1st June 2015 to 23rd September 2015 has been deficit by 12 % (Below Normal). The details are given in the table above.

**Major Updates & Forecast for the Coming Week and Ahead**

- Out of these reservoirs, 37 reservoirs have hydropower benefit with installed capacity of more than 60 MW. The total live storage capacity of these 91 reservoirs is 157.799 BCM which is about 62% of the live storage capacity of 253.388 BCM which is estimated to have been created in the country. As per reservoir storage bulletin dated 23.06.2016, live storage available in these reservoirs is 23.202 BCM, which is 15% of total live storage capacity of these reservoirs. However, last year the live storage available in these reservoirs for the corresponding period was 42.906 BCM and the average of last 10 years live storage was 31.121 BCM. Thus, the live storage available in 91 reservoirs as per 23.06.2016 Bulletin is 54% of the live storage of corresponding period of last year and 75% of storage of average of last ten years.
- A study on El Nino weather phenomenon has backed the India Meteorological Department's (IMD) assessment that monsoon will shrug off the initial weakness and delay to deliver much heavier rainfall in July. The analysis from the 142 years of past data reveals that the decaying phase of El Nino has strong impact on the Indian summer monsoon rainfall.
- Heavy to very heavy rain very likely at isolated places over Himachal Pradesh, Uttarakhand and SubHimalayan West Bengal & Sikkim; heavy at at isolated places over Jammu & Kashmir, Punjab, Haryana, Chandigarh & Delhi, UttarPradesh, Gangetic West Bengal, Odisha, Arunachal Pradesh, Assam & Meghalaya, Nagaland, Manipur, Mizoram & Tripura, Konkan& Goa, Coastal Karnataka and Kerala.

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