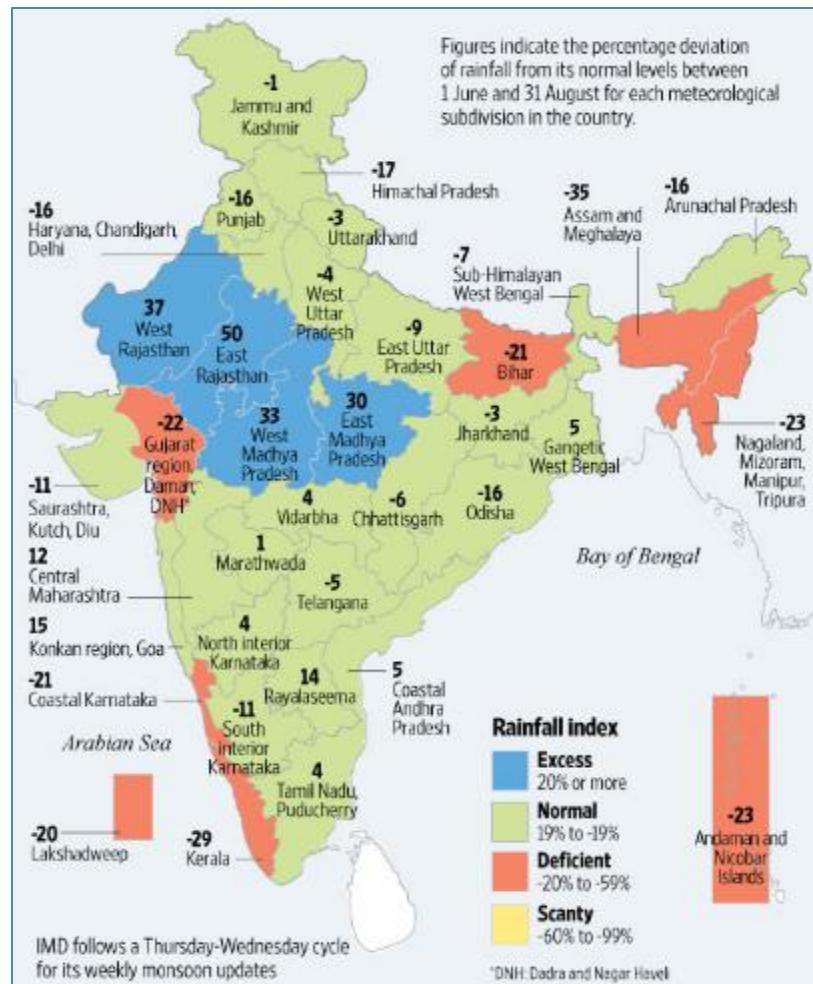


2nd September 2016

Indian Monsoon Dynamics

Recent Weather Development

- The southwest monsoon was 3% short of its long-term average till the end of August. Around 87% of the country has received normal to excess rainfall so far. August saw good rains in the country's northern and eastern regions while the southern peninsula and parts of central India remained mostly dry. Madhya Pradesh received good rainfall.
- The beginning of August saw dry spells in the southern peninsula region particularly the Marathwada, Vidarbha and Rayalaseema regions. Incoming of rains from 27 August improved the condition of soyabean, black gram, green gram and cotton in these regions. These regions were able to recover the deficit which was formed in the beginning of August.
- Parts of the country which are still short of rains include Kerala, coastal Karnataka, Bihar, Gujarat, Daman, Dadra and Nagar Haveli, Lakshadweep, Andaman and Nicobar Islands and some northeastern states. Delhi, Haryana and Chandigarh which were deficit till recently have now received sufficient rain.
- Northwest and central India have both received 6% more rain than the 50-year average, while the southern peninsula has recorded a deficit of 10%. At 18%, the deficit is highest in eastern and northeastern regions.
- Heavy rains have triggered floods in Uttar Pradesh, Bihar, Uttarakhand, Rajasthan and Madhya Pradesh, West Bengal and Sikkim.
- From the beginning of June to date (31st August, 2016), 26 of the 36 meteorological sub-divisions in the country had excess or normal rainfall and 10 experienced deficient rainfall. These 10 sub-divisions are Assam & Meghalaya, Haryana, Chandigarh & Delhi, Punjab, Gujarat Region, Saurashtra & Kutch, Coastal Karnataka, Kerala, Lakshadweep, A&N Islands and Nagaland, Manipur, Mizoram & Tripura (NMMT).
- Rain occurred at most places over Sub Himalayan West Bengal & Sikkim, Arunachal Pradesh, Nagaland, Manipur, Mizoram & Tripura, Andaman & Nicobar Islands; Gujarat region, Konkan & Goa, Coastal Karnataka, Kerala and Lakshadweep; at many places over Himachal Pradesh, Punjab, Assam & Meghalaya, East



Rajasthan, Vidarbha, and Telangana; at a few places over Jammu & Kashmir, Bihar, Madhya Pradesh, Madhya Maharashtra, Tamil Nadu, Rayalaseema and Coastal Andhra Pradesh and at a few isolated places over Uttarakhand, Haryana, Chandigarh & Delhi, Uttar Pradesh, Gangetic West Bengal, Chhattisgarh, Jharkhand, West

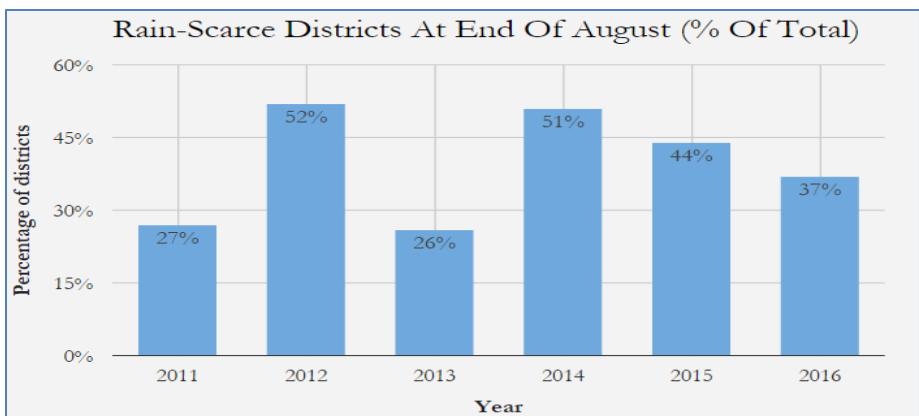
Seasonal Rainfall (in mm) from 1 June to 01 September, 2016

Region	Actual	Normal	% Departure from Long Period Average
East & Northeast India	949.7	1151.5	-18%
Northwest India	540.5	508.1	6%
Central India	848.1	802.7	6%
South Peninsula	509.9	564.2	-10%
All India	703.2	721.1	-2%

Source: IMD, Govt. of India

Rajasthan, Saurashtra & Kutch, Marathawada and interior Karnataka.

- The upper air cyclonic circulation over Punjab & neighbourhood extending upto 1.5 km above mean sea level persists. The axis of monsoon trough at mean sea level now runs close to foothills of Himalayas. The western disturbance as a trough in mid-tropospheric westerlies roughly along Longitude 71.0°E and north of Latitude 25.0°N persists. The upper air cyclonic circulation over Maldives - Lakshadweep area between 5.8 & 7.6 km above mean sea level persists. A trough extends from Sub Himalayan West Bengal to northwest Bay of Bengal and extends upto 0.9 km above mean sea level. The feeble off-shore trough at mean sea level now runs from Maharashtra coast to Kerala coast. An upper air cyclonic circulation is likely to form over North Bay of Bengal around 4th September.
- Central Water Commission monitors 91 major reservoirs in the country which have total live capacity of 157.80 Billion Cubic Meter (BCM) at Full Reservoir Level (FRL). Out of these, 76 reservoirs with FRL capacity of 116.25 BCM have irrigation potential. Live storage in the 91 major reservoirs as on 24th August, 2016 has been 102.15 BCM as against 91.02 BCM on 24.08.2015 (last year) and 100.19 BCM of normal (average of the last 10 years) storage. Thus, current year's storage is higher than the last year's storage by 12% and the normal storage by 2%.
- The three monsoon months of 2016 bettered the three deficit years of 2012, 2014 and 2015, but lagged 2011 and 2013, which were normal monsoon years, with respect to the proportion of districts facing rain shortfalls. Rains were scarce in a fourth of districts in 2011 and 2013, a third of districts in 2016 and half of India's districts in 2012 and 2014.
- As per latest information available on sowing of crops, around 96% of the normal area under Kharif crops has been sown upto 26.08.2016. Total area sown under Kharif crops in the country has been reported to be 1019.10 lakh hectares as compared to 973.40 lakh hectares last year. This year's area coverage so far is higher by 45.7 lakh ha than the area coverage during the corresponding period of last year and by 48.8 lakh ha than normal area coverage during the same period. Area coverage under Kharif Rice is higher by 10.8 lakh ha than the last year and 13.4 lakh ha than normal as on date. Area coverage under Kharif Pulses is higher by 35.6 lakh ha than the last year and by 40.2 lakh ha than normal as on date. This is due to higher coverage in Tur, Urad and Moong. Area coverage under Kharif coarse cereals is higher by 10.3 lakh ha than last year and by 6.2 lakh ha normal as on date. This is due to higher coverage in Maize. Area coverage under total Kharif Oilseeds is higher by 3.2 lakh ha than the last year and by 3.0 lakh ha than normal as on date. This is due to higher coverage in Groundnut. Area coverage under Sugarcane is lower by 4.1 lakh ha than the last year and by 0.7 lakh ha than normal as on date. Area coverage under Cotton is lower by 9.9 lakh ha than the last year and by 12.8 lakh ha than normal as on date.



Kharif Sowing Progress (up to 26.08.2016)

All India Crop Situation - Kharif (2016-17) as on 26.08.2016							
Crop Name	Normal Area for whole Kharif Season	Normal Area as on date	Area sown reported			Absolute Change over (%)	
			This Year 2016	% of Normal for whole season	Last Year 2015	Normal as on date	Last Year
Rice	392.67	349.66	363.07	92.5	352.23	13.4	10.8
Jowar	25.33	20.43	19.11	75.4	18.34	-1.8	0.8
Bajra	81.63	68.30	68.01	83.3	67.02	-0.3	1.0
Maize	73.50	72.94	82.66	112.7	73.95	9.9	8.9
Total Coarse Cereals	199.70	176.80	182.99	91.6	172.73	6.2	10.3
Total Cereals	592.37	526.46	546.06	92.2	524.96	19.6	21.1
Tur	40.05	34.51	51.20	127.9	34.85	16.7	16.4
Urad	24.39	23.53	33.67	138.1	26.48	10.1	7.2
Moong	23.59	21.91	31.96	135.5	23.40	10.1	8.6
Total Pulses	107.59	99.20	139.42	129.6	103.85	40.2	35.6
Total Foodgrains	699.96	625.66	685.48	97.9	628.81	59.8	56.7
Groundnut	43.77	38.16	43.84	100.2	34.71	5.7	9.1
Soyabean	106.36	111.26	112.00	105.4	114.17	0.8	-2.1
Sesamum	18.24	14.42	13.58	74.5	15.96	-0.8	-2.4
Castorseed	11.48	8.00	5.77	50.3	7.83	-22	-1.9
Total Oilseeds	185.60	174.73	177.74	95.76	174.58	3.0	3.2
Cotton	120.34	115.61	102.78	85.4	112.68	-12.8	-9.9
Sugarcane	49.96	46.21	45.55	91.2	49.60	-0.7	-4.1
Jute & Mesta	8.57	8.12	7.56	88.2	7.73	-0.6	-0.2
All-Crops	1064.42	970.33	1019.10	95.7	973.40	48.8	45.7

Source: Crops & TMOP Divisions, DAC

Note: Area figures are as per eye assessment of State Agriculture Departments

State wise Development in Rainfall Activity

S NO	MET. SUBDIVISION/UT/STATE/DISTRICT	Day:01-09-2016				Period:01-06-2016 To 01-09-2016			
		ACTUAL (mm)	NORMAL (mm)	%DEP.	CAT.	ACTUAL (mm)	NORMAL (mm)	% DEP.	CAT.
REGION : EAST AND NORTH EAST INDIA									
1	ARUNACHAL PRADESH	47.4	7.0	577%	E	1211.2	1403.4	-14%	N
2	ASSAM	16.0	8.6	87%	E	904.7	1246.6	-27%	D
3	MEGHALAYA	19.4	18.7	4%	N	1219.3	2328.9	-48%	D
4	NAGALAND	3.9	10.6	-63%	S	748.5	1110.1	-33%	D
5	MANIPUR	17.3	12.4	40%	E	960.0	1158.1	-17%	N
6	MIZORAM	17.1	10.4	65%	E	1073.0	1344.4	-20%	D
7	TRIPURA	37.0	10.5	252%	E	959.8	1238.8	-23%	D
8	SIKKIM	23.8	19.6	21%	E	1208.7	1438.8	-16%	N
9	WEST BENGAL	8.5	11.4	-25%	D	1096.8	1088.2	1%	N
10	JHARKHAND	1.4	10.6	-86%	S	819.7	858.5	-5%	N
11	BIHAR	9.1	7.2	26%	E	645.3	810.8	-20%	D
REGION : NORTH WEST INDIA									
1	UTTAR PRADESH	11.1	7.7	44%	E	633.3	676.1	-6%	N
2	UTTARAKHAND	11.0	8.5	29%	E	1003.9	1030.7	-3%	N
3	HARYANA	5.8	3.8	53%	E	324.3	383.4	-15%	N
4	CHANDIGARH (UT)	0.0	5.8	-100%	NR	414.7	695.7	-40%	D
5	DELHI (UT)	48.5	7.6	538%	E	477.6	533.6	-11%	N
6	PUNJAB	2.2	3.3	-33%	D	337.3	404.1	-17%	N
7	HIMACHAL PRADESH	4.0	6.4	-38%	D	571.7	691.7	-17%	N
8	JAMMU & KASHMIR	14.8	3.6	310%	E	452.0	446.1	1%	N
9	RAJASTHAN	10.2	4.2	142%	E	522.0	356.3	47%	E
REGION : CENTRAL INDIA									
1	ODISHA	5.7	7.5	-24%	D	769.0	920.7	-16%	N
2	MADHYA PRADESH	15.4	9.7	59%	E	1028.8	778.8	32%	E
3	GUJARAT	4.8	7.1	-32%	D	462.3	566.3	-18%	N
4	DADAR & NAGAR HAVELI (UT)	0.0	25.7	-100%	NR	2372.4	1838.0	29%	E
5	DAMAN & DIU (UT)	1.6	17.2	-90%	S	1415.0	1390.1	2%	N
6	GOA	4.3	11.5	-63%	S	2668.0	2701.4	-1%	N
7	MAHARASHTRA	8.6	8.8	-3%	N	909.8	836.1	9%	N
8	CHHATTISGARH	5.4	9.0	-40%	D	886.2	946.8	-6%	N
REGION : SOUTH PENINSULA									
1	ANDAMAN & NICOBAR (UT)	6.6	13.5	-51%	D	964.9	1263.6	-24%	D
2	ANDHRA PRADESH	5.8	4.0	45%	E	388.2	360.1	8%	N
3	TELANGANA	11.3	5.7	99%	E	574.9	598.6	-4%	N
4	TAMIL NADU	6.5	3.2	102%	E	215.5	204.3	5%	N
5	PONDICHERRY (UT)	23.0	2.5	832%	E	244.9	239.4	2%	N
6	KARNATAKA	6.1	4.5	35%	E	600.5	678.3	-11%	N
7	KERALA	3.8	9.2	-58%	D	1272.0	1804.6	-30%	D
8	LAKSHADWEEP (UT)	3.2	4.8	-33%	D	673.1	840.2	-20%	D
	COUNTRY :	10.5	7.0	50%		703.2	721.1	-2%	

Source: IMD, Govt. of India

For the country as a whole, cumulative rainfall during this year's from 1st June 2016 to 1st September 2016 has been lower by about 2 % normal. The details are given in the table above.

Major Updates & Forecast for the Coming Week and Ahead

- According to IMD, north-west, central, west and southern India will get below-normal rainfall in the next 8-10 days. The situation will improve thereafter. On the other hand, rainfall will increase considerably over many parts of east and northeast India during the next two weeks. In east and northeast India, rainfall would be normal to above normal.
- In the coming week, Uttar Pradesh, Bihar, West Bengal and Sikkim will receive good rain, while Odisha, Jharkhand and east Madhya Pradesh will receive scattered rain.
- Monsoon trough which was earlier over Madhya Pradesh has shifted to Delhi, due to which the capital is receiving rains. This trough will gradually weaken and will move towards the foothills of Himalayas. This will give showers over Uttarakhand and Himachal Pradesh in the coming days.
- After two consecutive droughts, India received normal rainfall — 2 percent less than the 100-year average — by the end of August 2016, but within that normality, more than a third of the country is short of rain. In 610 of 641 districts for which data are available, 389 districts received normal or excess rain, while 221 received “deficient” or “scanty” rain in the first three months of the four-month-long monsoon season. This means September rainfall will now be important to make up for these widespread deficits.
- The monsoon deficit is greatest in North East India, which is between 30 percent and 40 percent — repeating the situation in 2013 — followed by Punjab, Haryana, Gujarat and Kerala, where the deficit is between 20 percent and 30 percent of normal.
- Rajasthan, Madhya Pradesh and Maharashtra have received 20 percent more rain than normal. Extreme rainfall events in central India, the core of the monsoon system, are increasing and moderate rainfall is decreasing — as a part of complex changes in local and world weather.

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