

**GOVERNMENT OF INDIA  
MINISTRY OF EARTH SCIENCES  
RAJYA SABHA  
UNSTARRED QUESTION No. 1955  
TO BE ANSWERED ON MONDAY, DECEMBER 31, 2018**

**RAINFALL DURING MONSOON**

**1955. SHRI NARAYAN LAL PANCHARIYA:**

**Will the Minister of EARTH SCIENCES be pleased to state:**

- (a) whether any state has received less than normal rainfall during the last monsoon;**
- (b) if so, the details thereof;**
- (c) details regarding normal rainfall and rainfall during this monsoon in the State of Rajasthan;**
- (d) details regarding accuracy of rainfall predictions made by weather department during the last monsoon; and**
- (e) details regarding States where variances between predicted and actual rainfall are high?**

**ANSWER**

**MINISTER FOR MINISTRY OF SCIENCE AND TECHNOLOGY AND  
MINISTRY OF EARTH SCIENCES  
(Dr. HARSH VARDHAN)**

- (a) Yes Sir. Eight states and 1 Union Territory have received less than normal rainfall during the 2018 monsoon.**
- (b) The state wise details which received less than normal rainfall during the monsoon season (June - Sept.), 2018 are given in Annexure-I.**
- (c) District wise details of normal rainfall and actual rainfall for the State of Rajasthan during the monsoon-2018 are given in Annexure-II.**
- (d) & (e) During the last southwest monsoon 2018, as per the 2<sup>nd</sup> stage Long Range Forecast made by IMD on 30<sup>th</sup> May 2018, the predicted rainfall over the country as a whole was NORMAL (i.e. 96% to 104% of Long Period Average (LPA) with a model error of 4%). As per the "End of Season Report Monsoon-2018", the forecast was mostly accurate as the country observed 91% rainfall of its LPA during June – September 2018, slightly lower than the error limit.**

**Main features of the 2<sup>nd</sup> stage LRF are given in Annexure-III and the Rainfall statistics for SW Monsoon 2018 is given in Fig-1 & Annexure-IV.**

## Annexure-I

The state wise details which received less than normal rainfall during monsoon season (June - Sept.), 2018

S. NO.	STATES	SEASON:	MONSOON, 2018	
		ACTUAL(mm)	NORMAL(mm)	% DEP.
1	ARUNACHAL PRADESH	1198.4	1768.0	-32%
2	MEGHALAYA	1652.6	2786.8	-41%
3	MANIPUR	644.1	1404.5	-54%
4	TRIPURA	1165.1	1489.1	-22%
5	WEST BENGAL	1102.0	1390.4	-21%
6	JHARKHAND	784.3	1091.9	-28%
7	BIHAR	770.8	1027.6	-25%
8	GUJARAT	484.6	672.7	-28%
9	LAKSHADWEEP (UT)	553.2	998.5	-45%

**Large Excess:** +60% or more  
**Excess :** +20% to +59%  
**Normal:** +19% to -19%  
**Deficient:** -20% to -59%  
**Large Deficient:** -60% to -99%

**Annexure-II****The details of Rajasthan state regarding normal rainfall and rainfall during Monsoon-2018**

S. NO.	STATE/DIDTRICTS	SEASON (01.06.2018 TO 30.09.2018) MONSOON, 2018		
		ACTUAL(mm)	NORMAL(mm)	% DEP.
	<b>RAJASTHAN</b>	<b>393.6</b>	<b>419.0</b>	<b>-6%</b>
<b>(I)</b>	<b>EAST RAJASTHAN</b>	<b>635.3</b>	<b>615.8</b>	<b>3%</b>
1	AJMER	421.0	429.6	-2%
2	ALWAR	518.1	555.3	-7%
3	BANSWARA	808.3	831.8	-3%
4	BARAN	946.6	792.2	19%
5	BHARATPUR	755.4	557.6	35%
6	BHILWARA	606.7	580.9	4%
7	BUNDI	608.4	655.9	-7%
8	CHITTOGARH	706.8	709.7	0%
9	DAUSA	592.8	612.1	-3%
10	DHOLPUR	708.2	650.0	9%
11	DUNGARPUR	761.8	637.8	19%
12	JAIPUR	508.6	524.6	-3%
13	JHALAWAR	958.5	855.1	12%
14	JHUNJHUNU	402.1	410.0	-2%
15	KARAULI	591.8	637.4	-7%
16	KOTA	719.4	746.3	-4%
17	PRATAPGARH	1135.0	845.8	34%
18	RAJSAMAND	514.4	506.0	2%
19	SAWAI MADHOPUR	1008.7	664.0	52%
20	SIKAR	565.6	402.5	41%
21	SIROHI	409.0	868.6	-53%
22	TONK	512.3	566.0	-9%
23	UDAIPUR	562.3	591.3	-5%
<b>(II)</b>	<b>WEST RAJASTHAN</b>	<b>201.7</b>	<b>263.2</b>	<b>-23%</b>
1	BARMER	123.2	243.4	-49%
2	BIKANER	259.1	228.7	13%
3	CHURU	324.4	313.7	3%
4	HANUMANGARH	138.1	252.5	-45%
5	JAISALMER	110.5	158.4	-30%
6	JALORE	155.9	394.2	-60%
7	JODHPUR	232.0	274.5	-15%
8	NAGAU	287.1	348.5	-18%
9	PALI	316.9	446.7	-29%
10	SRI GANGANAGAR	172.4	201.4	-14%

**2nd Stage Long Range Forecast for the  
2018 Southwest Monsoon Rainfall**

**30 May 2018**

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**HIGHLIGHTS**

- Rainfall over the country as a whole for the 2018 southwest monsoon season (June to September) is most likely to be **NORMAL** (96% to 104% of long period average (LPA)).
- Quantitatively, monsoon season (June to September) rainfall for the country as a whole is likely to be **97%** of the LPA with a model error of **±4%**.
- Region wise, the season rainfall is likely to be **100%** of LPA over North-West India, **99%** of LPA over Central India, **95%** of LPA over South Peninsula and **93%** of LPA over North-East India all with a model error of **± 8 %**.
- The monthly rainfall over the country as whole is likely to be **101%** of its LPA during July and **94%** of LPA during August both with a model error of **± 9 %**.

**India Meteorological Department**

**End of Season Report for the 2018 Southwest Monsoon 2 November 2018**

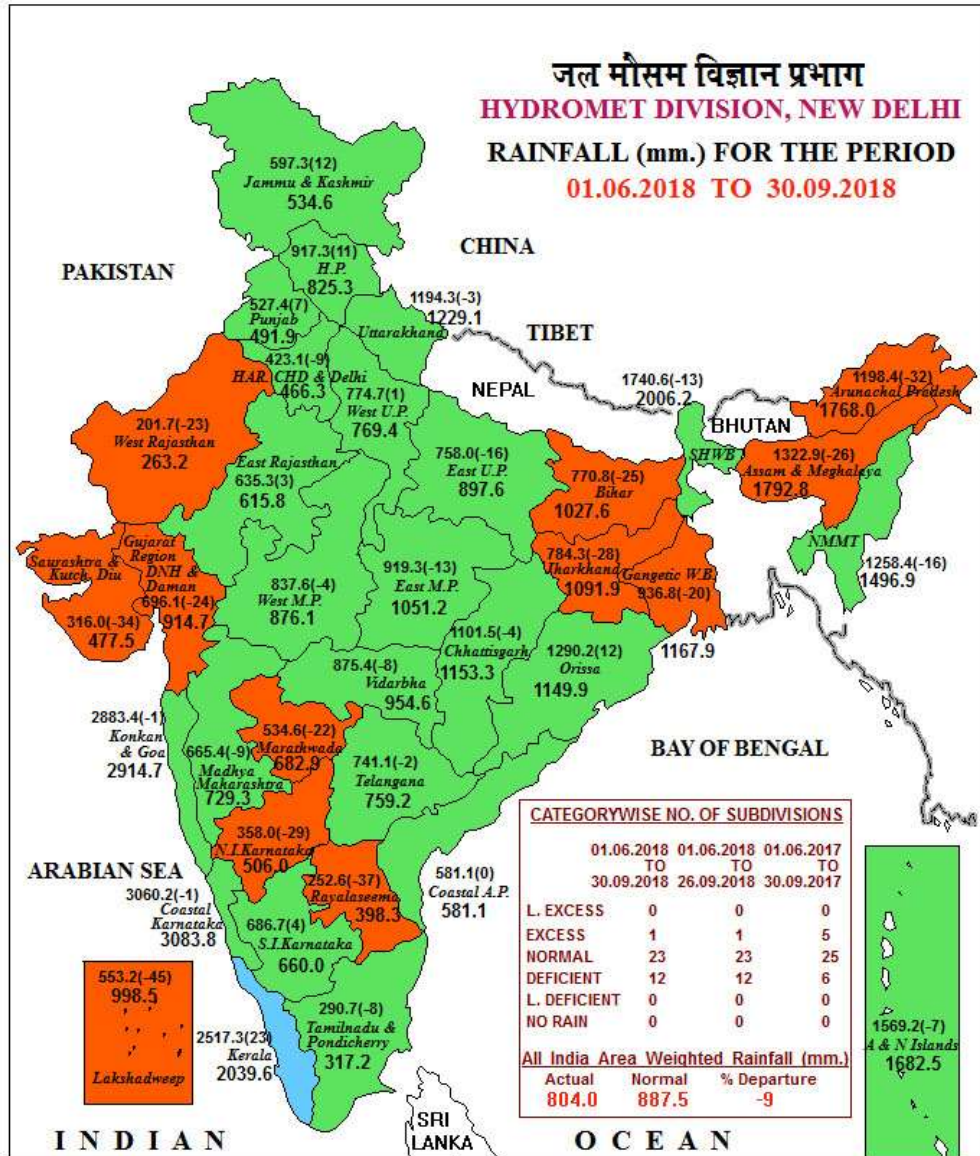
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**HIGHLIGHTS**

- The season (June-September) rainfall over the country as a whole was 91% of its long period average (LPA).
- Seasonal rainfalls over Northwest India, Central India, South Peninsula and Northeast (NE) India were 98%, 93%, 98% and 76% of respective LPA.
- Out of the total 36 meteorological subdivisions, 23 subdivisions constituting 68% of the total area of the country received normal season rainfall, 1 subdivision received excess rainfall (1% of the total area), and 12 subdivisions (31% of the total area) received deficient season rainfall.
- Monthly rainfall over the country as a whole was 95% of LPA in June, 94% of LPA in July, 92% of LPA in August, and 76% of LPA in September.

**Figure-1**

**भारत मौसम विज्ञान विभाग  
INDIA METEOROLOGICAL DEPARTMENT**



**LEGEND:** ■ L. EXCESS (+60% OR MORE) ■ EXCESS (+20% TO +59%) ■ NORMAL (+19% TO -19%)

■ DEFICIENT (-20% TO -59%) ■ L. DEFICIENT (-60% TO -99%) ■ NO RAIN (-100%) ■ NO DATA

**NOTES:**

(a) Rainfall figures are based on operational data.

(b) Small figures indicate actual rainfall (mm.), while bold figures indicate Normal rainfall (mm.)

Percentage Departures of Rainfall are shown in Brackets.

## Annexure IV

### SUBDIVISION-WISE RAINFALL (MM) DISTRIBUTION

S. NO.	METEOROLOGICAL SUBDIVISIONS	PERIOD: 01.06.2018 TO 30.09.2018		% DEP.	CAT.
		ACTUAL	NORMAL		
<b>EAST &amp; NORTH EAST INDIA</b>		<b>1087.5</b>	<b>1438.3</b>	<b>-24%</b>	
1	ARUNACHAL PRADESH	1198.4	1768.0	-32%	D
2	ASSAM & MEGHALAYA	1322.9	1792.8	-26%	D
3	N M M T	1258.4	1496.9	-16%	N
4	SHWB & SIKKIM	1740.6	2006.2	-13%	N
5	GANGETIC WEST BENGAL	936.8	1167.9	-20%	D
6	JHARKHAND	784.3	1091.9	-28%	D
7	BIHAR	770.8	1027.6	-25%	D
<b>NORTH WEST INDIA</b>		<b>603.2</b>	<b>615.0</b>	<b>-2%</b>	
1	EAST U.P.	758.0	897.6	-16%	N
2	WEST U.P.	774.7	769.4	1%	N
3	UTTARAKHAND	1194.3	1229.1	-3%	N
4	HAR. CHD & DELHI	423.1	466.3	-9%	N
5	PUNJAB	527.4	491.9	7%	N
6	HIMACHAL PRADESH	917.3	825.3	11%	N
7	JAMMU & KASHMIR	597.3	534.6	12%	N
8	WEST RAJASTHAN	201.7	263.2	-23%	D
9	EAST RAJASTHAN	635.3	615.8	3%	N
<b>CENTRAL INDIA</b>		<b>911.3</b>	<b>975.5</b>	<b>-7%</b>	
1	ODISHA	1290.2	1149.9	12%	N
2	WEST MADHYA PRADESH	837.6	876.1	-4%	N
3	EAST MADHYA PRADESH	919.3	1051.2	-13%	N
4	GUJARAT REGION	696.1	914.7	-24%	D
5	SAURASHTRA & KUTCH	316.0	477.5	-34%	D
6	KONKAN & GOA	2883.4	2914.7	-1%	N
7	MADHYA MAHARASHTRA	665.4	729.3	-9%	N
8	MARATHWADA	534.6	682.9	-22%	D
9	VIDARBHA	875.4	954.6	-8%	N
10	CHHATTISGARH	1101.5	1153.3	-4%	N
<b>SOUTH PENINSULA</b>		<b>704.4</b>	<b>716.1</b>	<b>-2%</b>	
1	A & N ISLAND	1569.2	1682.5	-7%	N
2	COASTAL ANDHRA PRADESH	581.1	581.1	0%	N
3	TELANGANA	741.1	759.2	-2%	N
4	RAYALASEEMA	252.6	398.3	-37%	D
5	TAMILNADU & PUDUCHERRY	290.7	317.2	-8%	N
6	COASTAL KARNATAKA	3060.2	3083.8	-1%	N
7	N. I. KARNATAKA	358.0	506.0	-29%	D
8	S. I. KARNATAKA	686.7	660.0	4%	N
9	KERALA	2517.3	2039.6	23%	E
10	LAKSHADWEEP	553.2	998.5	-45%	D
<b>COUNTRY AS A WHOLE</b>		<b>804.0</b>	<b>887.5</b>	<b>-9%</b>	

**CATEGORYWISE NO. OF SUBDIVISIONS & % AREA (SUBDIVISIONAL) OF THE COUNTRY**

<b>CATEGORY</b>	<b>PERIOD: 01.06.2018 TO 30.09.2018</b>	
	<b>NO. OF SUBDIVISIONS</b>	<b>SUBDIVISIONAL % AREA OF COUNTRY</b>
LARGE EXCESS	0	0%
EXCESS	1	1%
NORMAL	23	68%
DEFICIENT	12	31%
LARGE DEFICIENT	0	0%
NO RAIN	0	0%