

**GOVERNMENT OF INDIA
MINISTRY OF EARTH SCIENCES
LOK SABHA
UNSTARRED QUESTION No. 3292
TO BE ANSWERED ON MARCH 13, 2020**

WEATHER PREDICTION INFRASTRUCTURE

3292. SHRI LALLU SINGH:

SHRI PARTHIBAN S.R.:

DR. BEESETTI VENKATA SATYAVATHI:

SHRI ANIL FIROJIYA:

Will the Minister of EARTH SCIENCES be pleased to state:

- (a) whether the Government is aware of the extensive damage to crops due to heavy, unpredictable rains in various parts of the country particularly in Andhra Pradesh;**
- (b) if so, the details thereof;**
- (c) whether any studies have been conducted to assess the damage to crops by these unseasonal rains and if so, the details and findings thereof;**
- (d) whether the Government has any plan to improve the weather prediction infrastructure in order to be able to predict such unseasonal weather changes more accurately; and**
- (e) whether the Government has any plans to improve information dissemination and communication to farmers in order to allow them to prepare for such circumstances and if so, the details thereof?**

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

- (a)to(c) Yes Sir. The rainfall statistics (State/UT wise) for the country along with rainfall statistics (district wise) for the State of Andhra Pradesh for Monsoon & Post-monsoon seasons, 2019 is given in Annexure-I.**
- (d)&(e) Yes Sir. India Meteorological Department (IMD) runs an operational Agrometeorological Advisory Service (AAS) viz., Gramin Krishi Mausam Sewa (GKMS) scheme for the benefit of farming community in the country. Under the scheme, medium range weather forecast at district level is generated and based on the forecast, AgrometAdvisories are prepared and communicated by the 130 Agromet Field Units (AMFUs) located at State Agricultural**

Universities, institutes of ICAR and IIT etc., to the farmers on every Tuesday and Friday to take decision on day-to-day agricultural operations. AAS rendered by IMD is a step towards weather-based crop and livestock management strategies and operations dedicated to enhancing crop production and food security besides reducing crop damage and loss due to unusual weather.

IMD is planning to implement block level Agromet Advisory Services shortly in collaboration with Indian Council of Agriculture Research (ICAR) in the country. District Agromet Units (DAMUs) are being established in Krishi Vikas Kendra (KVKs) under ICAR network. Implementation of block level AAS would address the micro-level variation in weather and climate and hence more numbers of farmers will be benefitted.

Agromet Advisories are communicated to the farmers through multichannel dissemination system like print and electronic media, Doordarshan, radio, internet etc. as well as by SMS using mobile phones through Kisan Portal launched by Ministry of Agriculture and Farmers' Welfare and through private companies under Public Private Partnership (PPP) mode. At present, 42 million farmers in the country receive the Agromet Advisories through SMS directly. Krishi Vigyan Kendras(KVKs) of ICAR have also given link to the respective district level advisory in their web portal. A mobile App viz., 'Meghdoot' has been launched by Ministry of Earth Sciences, Government of India recently to help the farmers to get the weather information and related agromet advisories specific to their districts.

Annexure-I**STATE-WISE RAINFALL (MM) DISTRIBUTION FOR MONSOON 2019**

S. NO.	STATES	ERIOD:	01.06.2019	TO	30.09.2019
		ACTUAL	NORMAL	% DEPARTURE	CATEGORY
EAST & NORTH EAST INDIA					
1	ARUNACHAL PRADESH	1538.2	1726.6	-11%	N
2	ASSAM	1334.3	1486.2	-10%	N
3	MEGHALAYA	2431.8	2855.8	-15%	N
4	NAGALAND	991.8	1143.4	-13%	N
5	MANIPUR	620.8	1404.9	-56%	D
6	MIZORAM	1506.9	1655.9	-9%	N
7	TRIPURA	1382.9	1457.8	-5%	N
8	SIKKIM	1954.0	1606.8	22%	E
9	WEST BENGAL	1167.6	1405.0	-17%	N
10	JHARKHAND	865.6	1054.7	-18%	N
11	BIHAR	1050.4	1017.2	3%	N
NORTH WEST INDIA					
1	UTTAR PRADESH	718.0	790.2	-9%	N
2	UTTARAKHAND	960.4	1176.9	-18%	N
3	HARYANA	255.2	438.6	-42%	D
4	CHANDIGARH (UT)	716.4	846.5	-15%	N
5	DELHI	378.1	585.8	-35%	D
6	PUNJAB	444.3	467.3	-5%	N
7	HIMACHAL PRADESH	684.2	763.5	-10%	N
8	JAMMU & KASHMIR	445.8	567.5	-21%	D
9	RAJASTHAN	582.6	415.0	40%	E
CENTRAL INDIA					
1	ODISHA	1232.5	1155.3	7%	N
2	MADHYA PRADESH	1351.1	940.6	44%	E
3	GUJARAT	993.3	692.4	43%	E
4	DADRA & NAGAR HAVELI (UT)	3622.8	2161.9	68%	LE
5	DAMAN & DIU (UT)	2161.6	1611.2	34%	E
6	GOA	3917.6	2974.7	32%	E
7	MAHARASHTRA	1328.5	1004.2	32%	E
8	CHHATISGARH	1255.6	1142.1	10%	N
SOUTH PENINSULA					
1	A & N ISLAND (UT)	2331.3	1653.8	41%	E
2	ANDHRA PRADESH	564.7	514.4	10%	N
3	TELANGANA	805.0	759.6	6%	N
4	TAMILNADU	401.6	341.9	17%	N
5	PUDUCHERRY (UT)	553.2	425.6	30%	E
6	KARNATAKA	1033.3	840.7	23%	E
7	KERALA	2310.0	2049.3	13%	N
8	LAKSHADWEEP (UT)	1231.7	1013.1	22%	E
COUNTRY AS A WHOLE		968.3	880.6	+10%	

CATEGORYWISE DISTRIBUTION OF NO. OF STATES

CATEGORY	PERIOD: 01.06.2019 TO 30.09.2019
	NO. OF STATES
LE (LARGE EXCESS) (+60% or more)	1
E (EXCESS) (+20% to +59%)	11
N (NORMAL) (+19% to -19%)	20
D (DEFICIENT) (-20% to -59%)	4
LD (LARGE DEFICIENT) (-60% to -99%)	0
NR (NO RAIN) -100%)	0

STATE-WISE RAINFALL (MM) DISTRIBUTION FOR POSTMONSOON 2019

S. NO.	STATES	PERIOD: 01.10.2019	TO		31.12.2019
		ACTUAL	NORMAL	% DEPARTURE	CATEGORY
EAST & NORTH EAST INDIA					
1	ARUNACHAL PRADESH	145.4	267.4	-46%	D
2	ASSAM	161.1	161.5	0%	N
3	MEGHALAYA	365.6	328.0	11%	N
4	NAGALAND	213.5	160.8	33%	E
5	MANIPUR	151.2	226.4	-33%	D
6	MIZORAM	166.6	264.1	-37%	D
7	TRIPURA	239.7	221.8	8%	N
8	SIKKIM	110.0	216.3	-49%	D
9	WEST BENGAL	215.5	159.1	35%	E
10	JHARKHAND	141.3	90.3	56%	E
11	BIHAR	42.2	73.0	-42%	D
NORTH WEST INDIA					
1	UTTAR PRADESH	48.6	41.5	17%	N
2	UTTARAKHAND	114.6	60.5	89%	LE
3	HARYANA	27.9	20.1	39%	E
4	CHANDIGARH (UT)	65.5	55.5	18%	N
5	DELHI	41.6	22.7	83%	LE
6	PUNJAB	62.4	26.3	137%	LE
7	HIMACHAL PRADESH	121.4	91.6	33%	E
8	JAMMU & KASHMIR	253.3	134.4	88%	LE
9	RAJASTHAN	42.2	17.9	136%	LE
CENTRAL INDIA					
1	ODISHA	188.6	131.3	44%	E
2	MADHYA PRADESH	64.8	53.7	21%	E
3	GUJARAT	72.8	28.5	156%	LE
4	DADRA & NAGAR HAVELI (UT)	128.2	54.8	134%	LE
5	DAMAN & DIU (UT)	104.4	50.0	109%	LE
6	GOA	568.5	202.9	180%	LE
7	MAHARASHTRA	184.9	98.5	88%	LE
8	CHHATISGARH	106.2	76.7	39%	E
SOUTH PENINSULA					
1	A & N ISLAND (UT)	293.0	675.8	-57%	D
2	ANDHRA PRADESH	269.0	290.7	-7%	N
3	TELANGANA	172.6	123.7	40%	E
4	TAMILNADU	452.0	445.7	1%	N
5	PUDUCHERRY (UT)	780.0	895.6	-13%	N
6	KARNATAKA	308.4	181.7	70%	LE
7	KERALA	625.0	491.6	27%	E
8	LAKSHADWEEP (UT)	874.3	321.8	172%	LE

COUNTRY AS A WHOLE	160.0	123.8	+29%
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CATEGORYWISE DISTRIBUTION OF NO. OF STATES

CATEGORY	PERIOD: 01.10.2019 TO 31.12.2019
	NO. OF STATES
LE (LARGE EXCESS) (+60% or more)	12
E (EXCESS) (+20% to +59%)	10
N (NORMAL) (+19% to -19%)	8
D (DEFICIENT) (-20% to -59%)	6
LD (LARGE DEFICIENT) (-60% to -99%)	0
NR (NO RAIN) -100%)	0

District wise RF statistics of Andhra Pradesh for Monsoon 2019					
District S.No.	MET. STATE/UT/ SUBDIVISION/ DISTRICT (NAME)	PERIOD	01.06.2019	TO	30.09.2019
		ACTUAL (mm)	NORMAL (mm)	% DEPARTURE	CATEGORY
	ANDHRA PRADESH	564.7	514.4	10%	N
	COASTAL A. P. & YANAM	640.6	586.9	9%	N
1	EAST GODAVARI	872.4	728.9	20%	E
2	GUNTUR	675.4	556.1	21%	E
3	KRISHNA	730.9	683.0	7%	N
4	NELLORE	364.6	350.9	4%	N
5	PRAKASAM	403.9	391.2	3%	N
6	SRIKAKULAM	817.5	742.4	10%	N
7	VISHAKHAPATNAM	701.1	648.6	8%	N
8	VIZIANAGARAM	806.5	718.8	12%	N
9	WEST GODAVARI	808.2	787.5	3%	N
10	YANAM	629.8	752.1	-16%	N
	RAYALASEEMA	459.9	411.6	12%	N
1	ANANTAPUR	382.4	339.5	13%	N
2	CHITTOOR	516.5	441.0	17%	N
3	CUDDAPAH	413.8	401.3	3%	N
4	KURNOOL	535.6	473.5	13%	N
	TELANGANA	805.0	759.6	6%	N
1	ADILABAD	1016.3	995.1	2%	N
2	B. KOTHAGUDEM	1073.5	902.6	19%	N
3	HYDERABAD	700.4	621.2	13%	N
4	J. BHUPALPALLY	1285.3	1131.2	14%	N
5	JAGTIAL	1009.6	831.0	21%	E
6	JANGAON	801.3	730.7	10%	N
7	JOGLAMBA GADWAL	386.2	480.3	-20%	D
8	KAMAREDDY	985.8	856.2	15%	N
9	KARIMNAGAR	1005.9	722.4	39%	E
10	KHAMMAM	707.7	808.8	-12%	N
11	KUMARAM BHEEM	1213.3	939.2	29%	E
12	M. MALKAJGIRI	633.7	666.9	-5%	N
13	MAHABUBABAD	881.1	808.5	9%	N
14	MAHABUBNAGAR	533.1	566.9	-6%	N
15	MANCHERIAL	1039.0	944.0	10%	N
16	MEDAK	775.7	751.5	3%	N
17	NAGARKURNOOL	515.8	539.5	-4%	N
18	NALGONDA	455.2	528.2	-14%	N
19	NIRMAL	910.3	902.1	1%	N
20	NIZAMABAD	1122.2	921.3	22%	E
21	PEDDAPALLE	1065.6	908.4	17%	N
22	RAJANNA SIRCILLA	903.3	710.7	27%	E
23	RANGAREDDY	449.4	547.6	-18%	N
24	SANGAREDDY	570.9	717.0	-20%	D
25	SIDDIPET	696.6	620.8	12%	N
26	SURYAPET	576.9	617.5	-7%	N
27	VIKARABAD	544.0	705.9	-23%	D
28	WANAPARTHY	592.0	560.1	6%	N
29	WARANGAL RURAL	927.7	901.0	3%	N
30	WARANGAL URBAN	915.9	668.2	37%	E
31	Y. BHUVANAGIRI	575.0	527.2	9%	N

District wise RF statistics of Andhra Pradesh for Post-Monsoon 2019					
District S.No.	MET. STATE/UT/ SUBDIVISION/ DISTRICT (NAME)	PERIOD	01.10.2019	TO	31.12.2019
		ACTUAL (mm)	NORMAL (mm)	% DEPARTURE	CATEGORY
	ANDHRA PRADESH	269.0	290.7	-7%	N
	COASTAL A. P. & YANAM	300.7	338.1	-11%	N
1	EAST GODAVARI	265.1	315.7	-16%	N
2	GUNTUR	211.2	247.2	-15%	N
3	KRISHNA	189.7	243.6	-22%	D
4	NELLORE	590.8	667.4	-11%	N
5	PRAKASAM	257.9	332.4	-22%	D
6	SRIKAKULAM	367.8	284.4	29%	E
7	VISHAKHAPATNAM	272.3	286.0	-5%	N
8	VIZIANAGARAM	342.8	238.1	44%	E
9	WEST GODAVARI	169.1	282.8	-40%	D
10	YANAM	460.2	442.6	4%	N
	RAYALASEEMA	225.4	223.3	1%	N
1	ANANTAPUR	207.0	164.6	26%	E
2	CHITTOOR	368.4	367.1	0%	N
3	CUDDAPAH	217.9	237.9	-8%	N
4	KURNOOL	129.0	151.0	-15%	N
	TELANGANA	172.6	123.7	40%	E
1	ADILABAD	82.9	103.5	-20%	D
2	B. KOTHAGUDEM	185.0	127.7	45%	E
3	HYDERABAD	137.9	126.5	9%	N
4	J. BHUPALPALLY	272.4	112.7	142%	LE
5	JAGTIAL	167.3	111.1	51%	E
6	JANGAON	245.5	129.9	89%	LE
7	JOGULAMBA GADWAL	108.9	131.3	-17%	N
8	KAMAREDDY	200.1	122.2	64%	LE
9	KARIMNAGAR	276.3	117.1	136%	LE
10	KHAMMAM	164.7	163.8	1%	N
11	KUMARAM BHEEM	103.1	95.2	8%	N
12	M. MALKAJGIRI	166.5	126.1	32%	E
13	MAHABUBABAD	230.4	139.1	66%	LE
14	MAHABUBNAGAR	150.5	120.4	25%	E
15	MANCHERIAL	168.1	120.2	40%	E
16	MEDAK	116.9	106.3	10%	N
17	NAGARKURNOOL	133.3	122.8	9%	N
18	NALGONDA	144.1	158.7	-9%	N
19	NIRMAL	149.9	102.6	46%	E
20	NIZAMABAD	187.4	115.7	62%	LE
21	PEDDAPALLE	199.3	124.8	60%	LE
22	RAJANNA SIRCILLA	217.4	117.2	85%	LE
23	RANGAREDDY	125.9	113.6	11%	N
24	SANGAREDDY	117.0	106.1	10%	N
25	SIDDIPET	230.2	112.8	104%	LE
26	SURYAPET	152.1	146.6	4%	N
27	VIKARABAD	132.5	121.7	9%	N
28	WANAPARTHY	139.2	118.6	17%	N
29	WARANGAL RURAL	304.4	127.6	139%	LE
30	WARANGAL URBAN	251.9	110.9	127%	LE
31	Y. BHUVANAGIRI	237.5	157.0	51%	E

CATEGORY	
LE	(LARGE EXCESS) (+60% or more)
E	(EXCESS) (+20% to +59%)
N	(NORMAL) (+19% to -19%)
D	(DEFICIENT) (-20% to -59%)
LD	(LARGE DEFICIENT) (-60% to -99%)
NR	(NO RAIN) -100%)
