



**Government of India  
Earth System Sciences Organization  
Ministry of Earth Sciences  
India Meteorological Department**

**Press Release  
Date: 01<sup>st</sup> October, 2020  
Time of Issue: 1500 hrs IST**

**Subject: Salient Features of Monsoon 2020**

- Quantitatively, the 2020 All India monsoon seasonal rainfall during 1 June to 30 September 2020 has been 95.8 cm against the long period average of 88.0 cm based on data of 1961-2010 (109% of its Long Period Average (LPA)).
- Considering the recent years since 1990, the all India seasonal rainfall this year was third highest, after 112% of LPA in 1994 and 110% of LPA in 2019.
- Thus 2019 & 2020 are the two consecutive years with above normal monsoon rainfall, after 1958 (110% of LPA) and 1959 (114% of LPA) (**Fig.1**).
- Considering four broad homogenous regions of India, the monsoon seasonal rainfall during 2020 has been 106%, 84%, 115% & 129% of LPA respectively over East and North-East(NE), North-West(NW), Central and South India. Therefore, seasonal rainfall has been excess over Central and South India, normal over East and NE India and deficient over NW India. Monthly and seasonal total rainfall over different broad homogeneous regions and all India are given in **Fig. 2**.
- Out of 36 meteorological subdivisions, 2 subdivisions received large excess, 13 received excess and 16 subdivisions received normal monsoon rainfall during 2020 while only 5 subdivisions received deficient rainfall (**Fig. 3**). These 5 Met subdivisions which got deficient rains are Nagaland, Manipur, Mizoram & Tripura (- 32%), West Uttar Pradesh (-37%), Uttarakhand (-20%), Himachal Pradesh (-26%), Jammu & Kashmir and Ladakh (-34%) (**Fig. 3**).
- Considering month to month rainfall variation over India as a whole, the season is very uniquely placed in the historical record for its distinct and contrasting month to month variation. The rainfall over country as a whole was 118%, 90%, 127% and 104% of LPA during June, July, August and September respectively (**Fig 2**). The spatial distribution of monthly rainfall over different Met-Subdivisions is shown in **Fig 4**.
- The week to week progress of monsoon rainfall over country as a whole and cumulative rainfall in percentage departure is shown in **Fig. 5**
- It was a good beginning for the season in terms of rainfall with formation and movement of the cyclone Nisarga, over the Arabian Sea. It helped the monsoon to advance into main-land along the west coast. Subsequent features favored timely advance and monsoon covered entire country by 26<sup>th</sup>

June against normal date of 8<sup>th</sup> July (about 12 days ahead of normal date). The country as a whole experienced excess rainfall (118% of LPA) during June.

- In July, many unfavorable features of monsoon appeared resulting in deficient rainfall for the country (90% of LPA). The weak monsoon in July was mainly due to absence of any major monsoon disturbance over Bay of Bengal. Absence of such major systems in July (**Table 1**) also caused the monsoon trough weak. The monsoon trough lay to the north of the normal position or closed to the foothills of the Himalayas on many days. It resulted in frequent and prolonged floods over northeastern India, Bihar and adjoining areas of east Uttar Pradesh. At the same time, major parts of central and northwest India received deficient rainfall.
- During August, there was back to back formation of low pressure systems over the north Bay of Bengal and their movement towards Gujarat and south Rajasthan (Table 1). Monsoon trough was mostly south of the normal position and remained active. Arabian Sea was very active with stronger winds reaching up to 50-60kmph in lower levels during a few days in the month. Five low pressure systems formed during 4-10 , 9-11, 13-18 , 19-26 and 24-31 August 2020 which caused higher than normal rainfall over central and western part of India. Total number of low pressure days was 28 against normal of about 17(Table 1). It caused 2-3 spells of riverine floods over Odisha, Telangana, Madhya Pradesh, south Gujarat and south Rajasthan. It was a record rainfall in August 2020, when all India rainfall was 127% of LPA. It has been the record highest in last 44- years, after August 1976 (128.4% of LPA). It is also fourth highest in last 120 years. The highest ever percentage departure for the month of August during 1901-2020 had been 33% above LPA during 1926. The all India rainfall in percentage departure from LPA for the month of the August during 1901-2020 is shown in **Fig.6**.
- During August 2020, consecutively for 4 weeks, India got excess rain with 13% to 41% above LPA during week ending 12 Aug to week ending 2 Sept 2020. Similarly, the most deficient monsoon conditions prevailed in second fortnight of July.
- Month-wise locations of Very Heavy Rainfall (115.6 to 204.4 mm) and Extremely Heavy Rainfall ( more than 204.4 mm) reported stations for June to Sept 2020 given in **Fig 7**.
- Monsoon in 2020 withdrew from western parts of northwest India on 28<sup>th</sup> Sept. 2020 against the normal date of 17<sup>th</sup> Sept 2020 with a delay of around 11-days. Withdrawal has been delayed mainly due to active monsoon trough in association with the formation of 2 low pressure systems in Sept 2020.
- As on 01<sup>st</sup> October, southwest monsoon has withdrawn from Punjab, western Himalayan region, Haryana, Chandigarh, Delhi and many parts for Rajasthan and some parts of Uttar Pradesh. The withdrawal line of the Southwest Monsoon passes through Lat. 29°N/ Long.81°E, Lakhimpur Kheri, Shahjhanpur, Alwar, Nagaur and Lat. 26°N/ Long.70°E.

### **Verification of Long Range Forecast:**

- The forecast for the date of monsoon Onset Over Kerala issued on 15th May 2020 was 5th June with a model error of  $\pm 4$  days. The actual monsoon onset over Kerala was on 1st June and therefore the forecast was correct.
- The first stage forecast for the season (June-September) rainfall over the country as a whole issued in April was 100% of LPA with a model error of  $\pm 5\%$  of LPA. The forecast was upgraded to 102% of LPA with a model error of  $\pm 4\%$  of LPA in the updated forecast issued in May. IMD also predicted a probability of 65% of monsoon rainfall to be normal to above normal. However, the actual seasonal rainfall for the country as a whole was 109% of LPA, which is more than the predicted value.
- Considering the four broad geographical regions of India, the forecasts issued in May for the season

rainfall over Northwest India, Central India, Northeast India and South Peninsula were 107%, 103%, 96% & 102% of the LPA respectively all with model errors of  $\pm 8\%$ . The actual rainfall over Northwest India, Central India, Northeast India and South Peninsula was 84%, 115%, 107% and 129% of the LPA respectively. Thus, the forecasts of season rainfall over the Central India, Northeast India and South Peninsula regions were underestimate to the actual rainfall, while the forecast for Northwest India was an overestimate. The forecast for the second half of the monsoon season (August – September) for the country as a whole was 104% with a model error of 8% of LPA against the actual rainfall of 118% of LPA.

- This year, IMD had predicted possibility of the development of weak La Nina conditions in the second half of the season in its forecasts issued in April and May. The cool ENSO neutral conditions observed over the equatorial Pacific Ocean in the beginning of the year turned in to weak La Niña conditions by the end of August 2020 as predicted by IMD.

**(For Fig 1 to Fig 7, refer Page 4 to 8 and for Table 1, refer Page 9)**

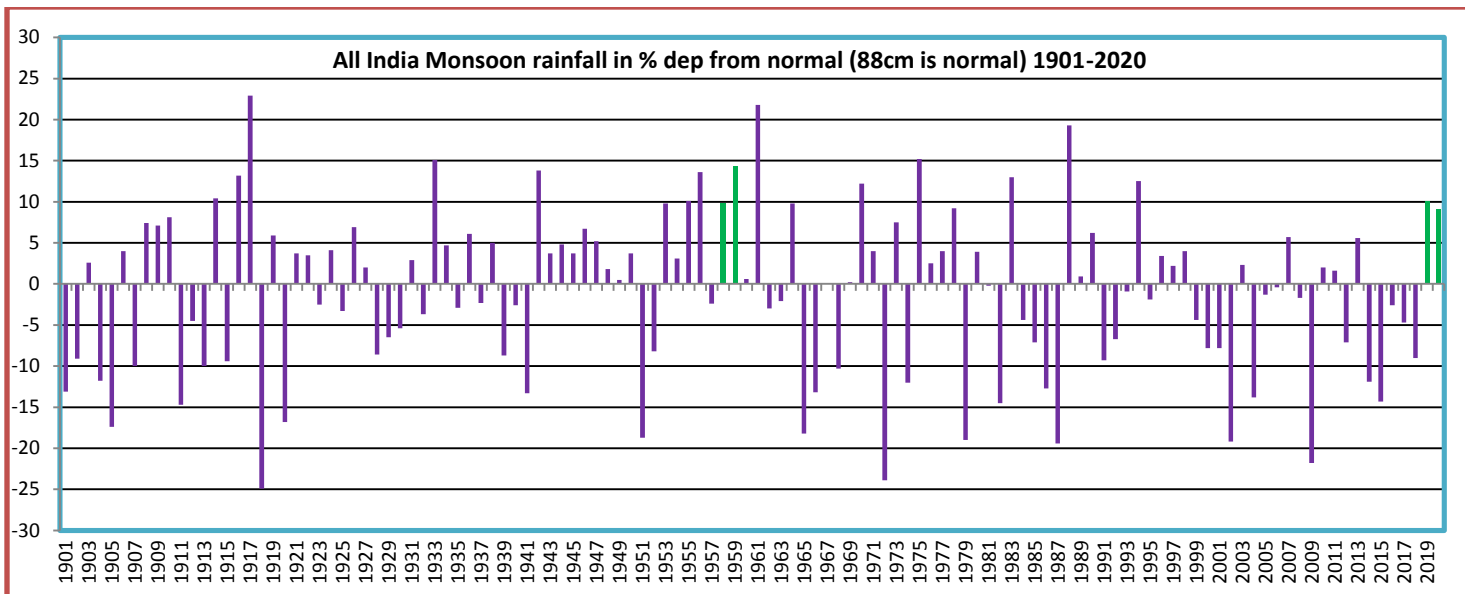


Fig 1. All India seasonal Monsoon rainfall in percentage departure from normal

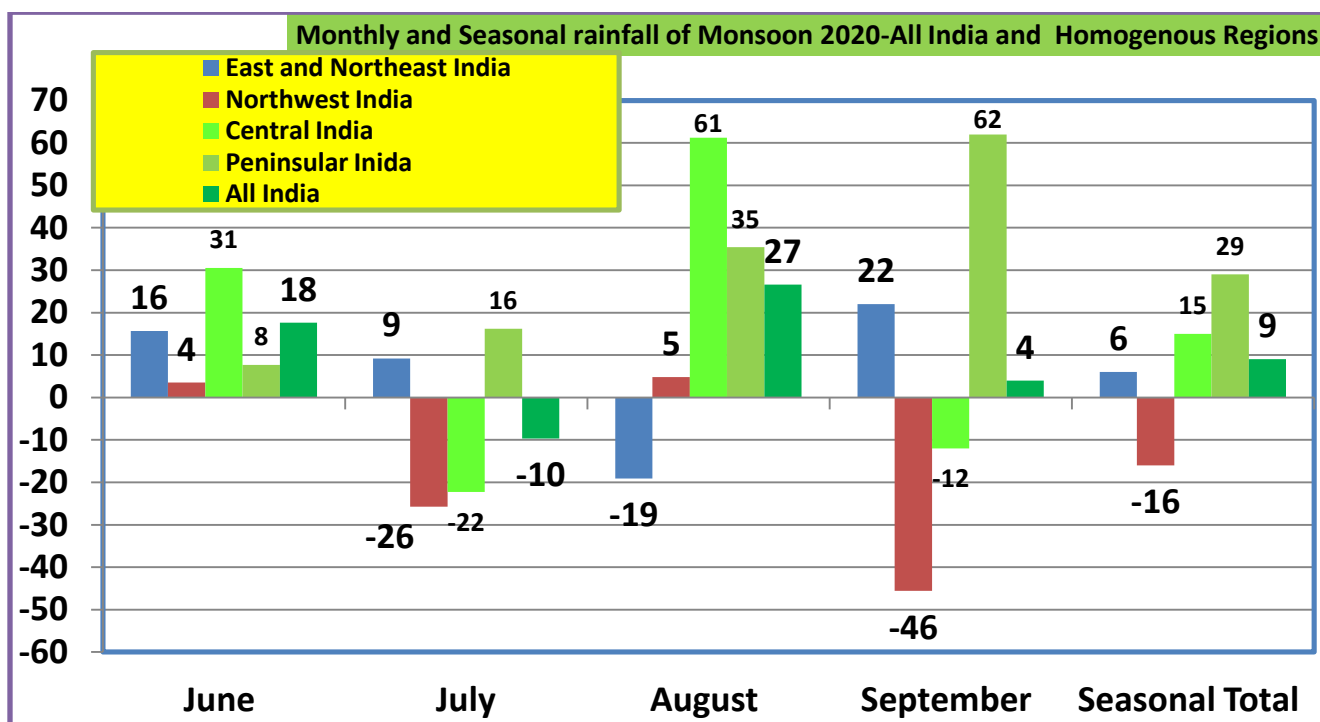
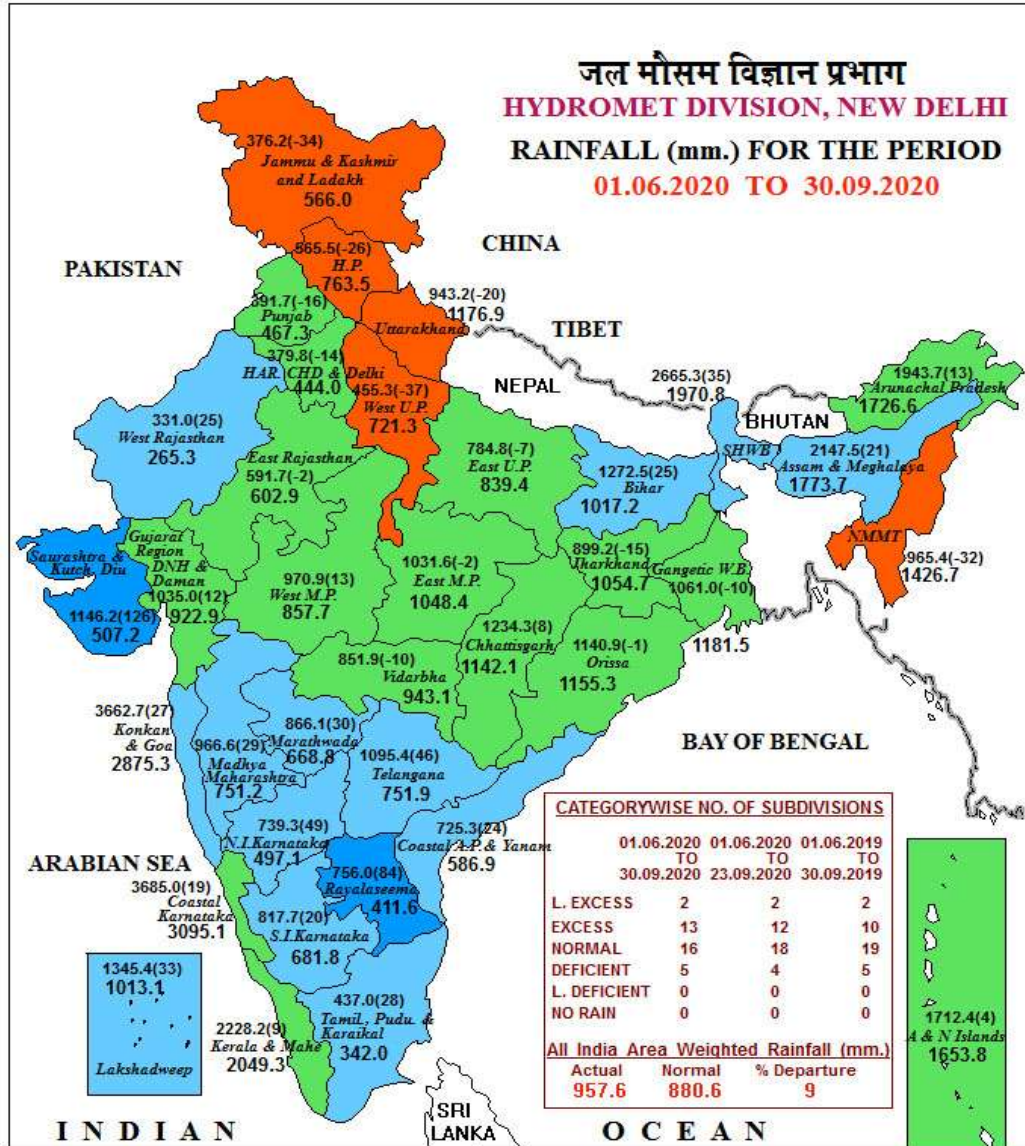


Fig 2. Monthly and Seasonal monsoon rainfall of 2020 over Broad homogenous region and Country as a whole in percentage departure from normal

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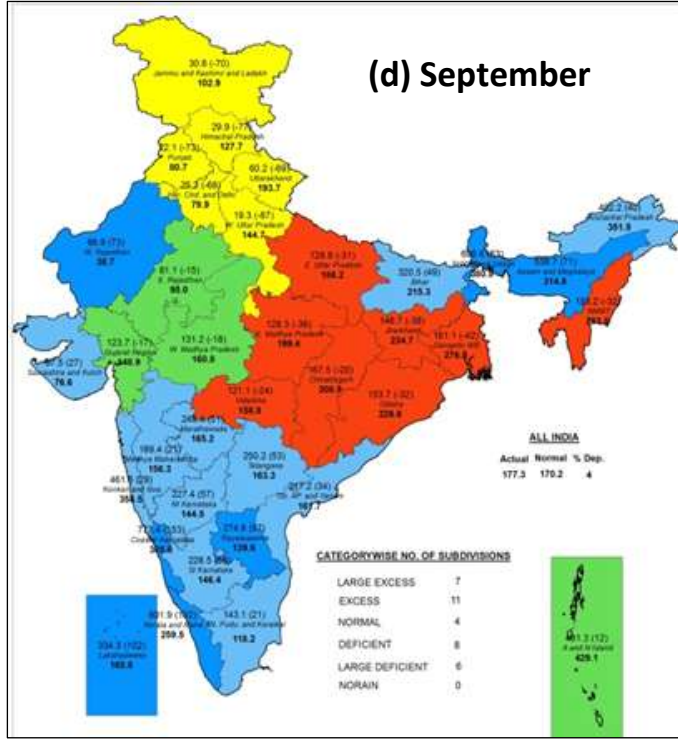
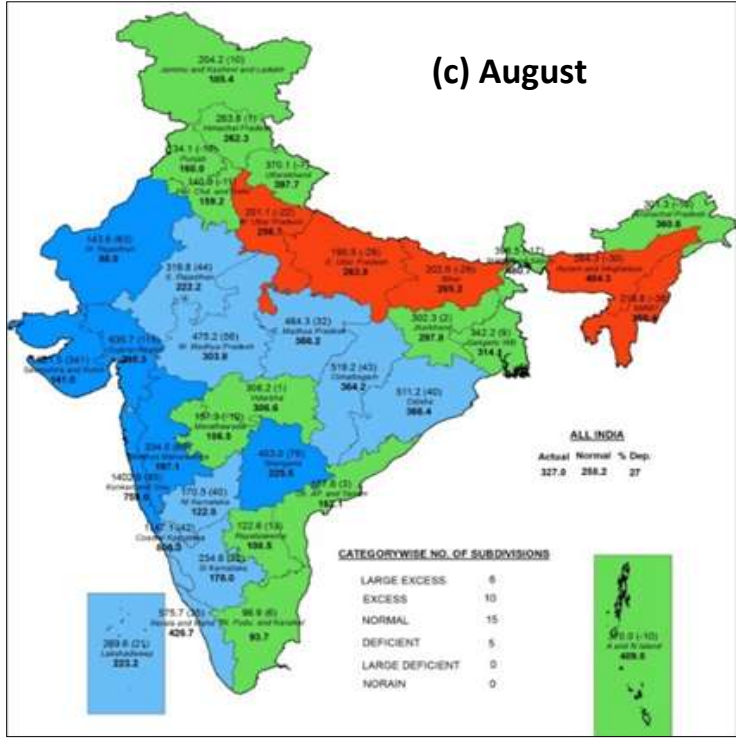
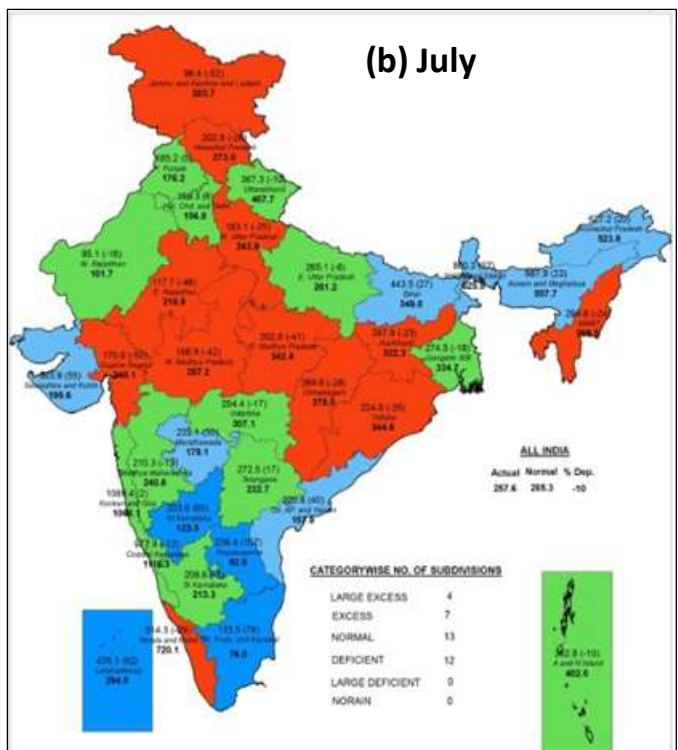
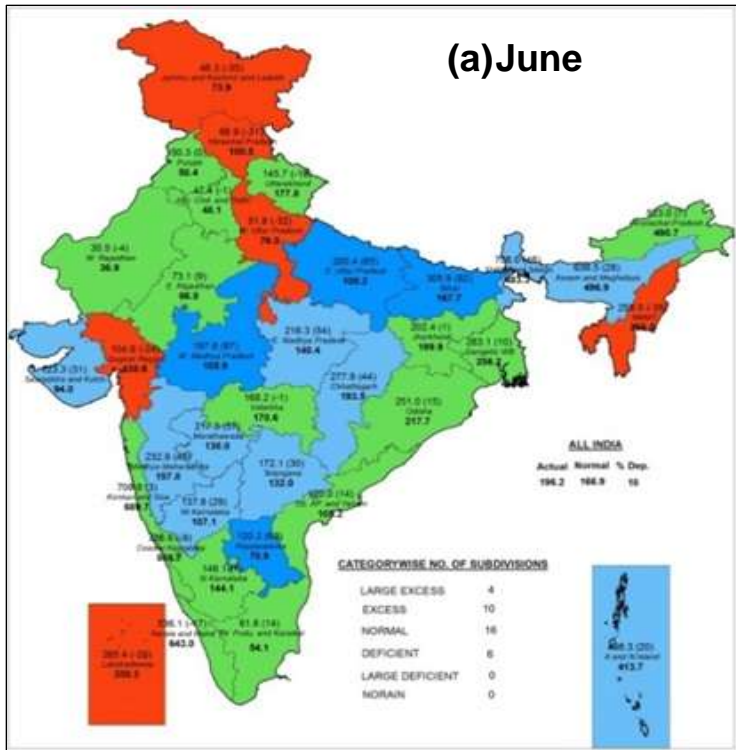
**LEGEND:** ■ L. EXCESS (+60% OR MORE) ■ EXCESS (+20% TO +59%) ■ NORMAL (+19% TO -19%)  
 ■ DEFICIENT (-20% TO -59%) ■ L. DEFICIENT (-60% TO -99%) ■ NO RAIN (-100%) ■ NO DATA

**NOTES:**

[a] Rainfall figures are based on operational data.

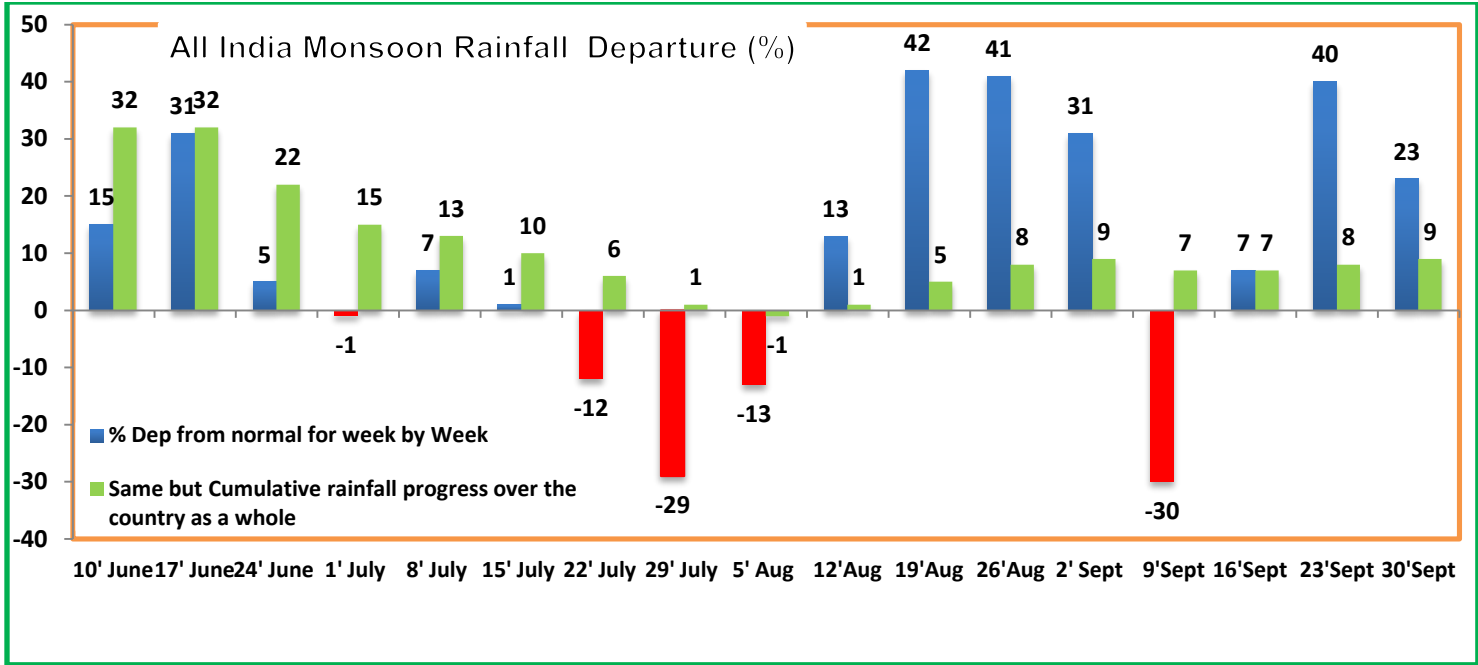
[b] Small figures indicate actual rainfall (mm.), while bold figures indicate Normal rainfall (mm.)  
 Percentage Departures of Rainfall are shown in Brackets.

**Fig 3. Meteorological subdivision-wise seasonal rainfall during monsoon season, 2020**

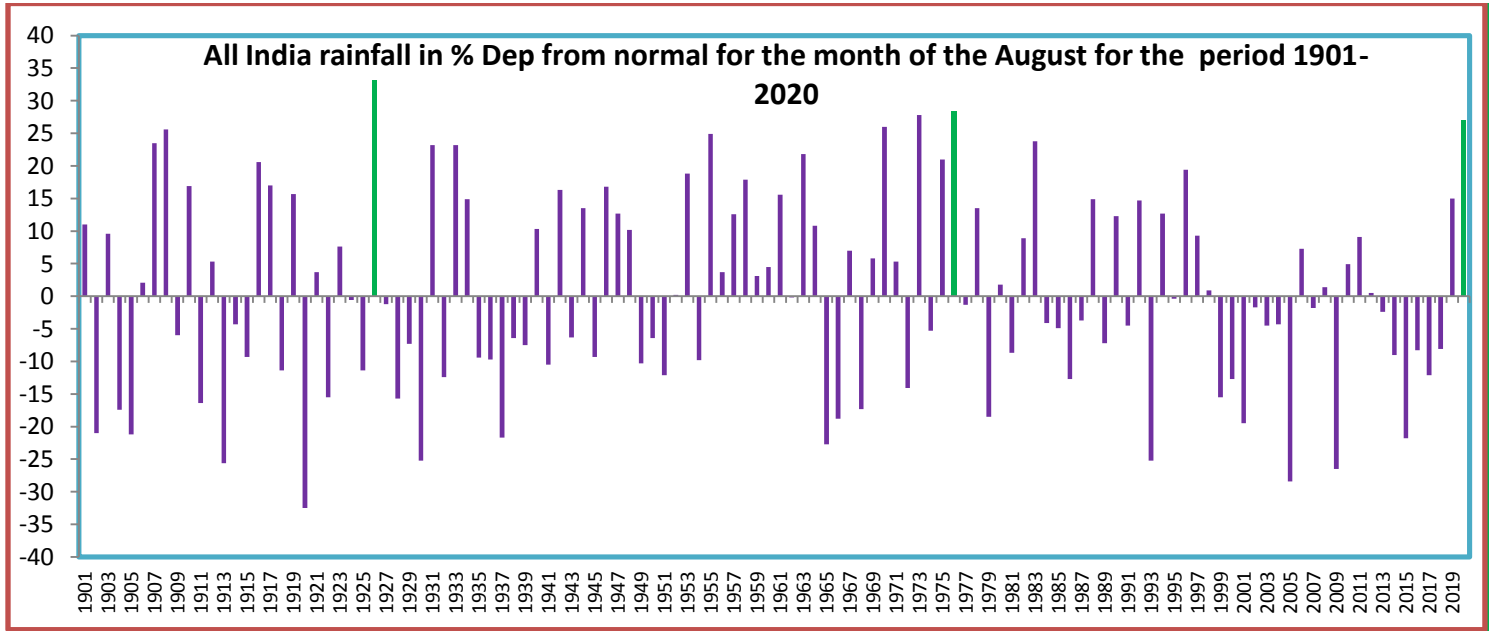


**LEGEND:** ■ L. EXCESS [+60% OR MORE] ■ EXCESS [+20% TO +59%] ■ NORMAL [+19% TO -19%]  
■ DEFICIENT [-20% TO -59%] ■ L. DEFICIENT [-60% TO -99%]  NO RAIN [-100%]  NO DATA

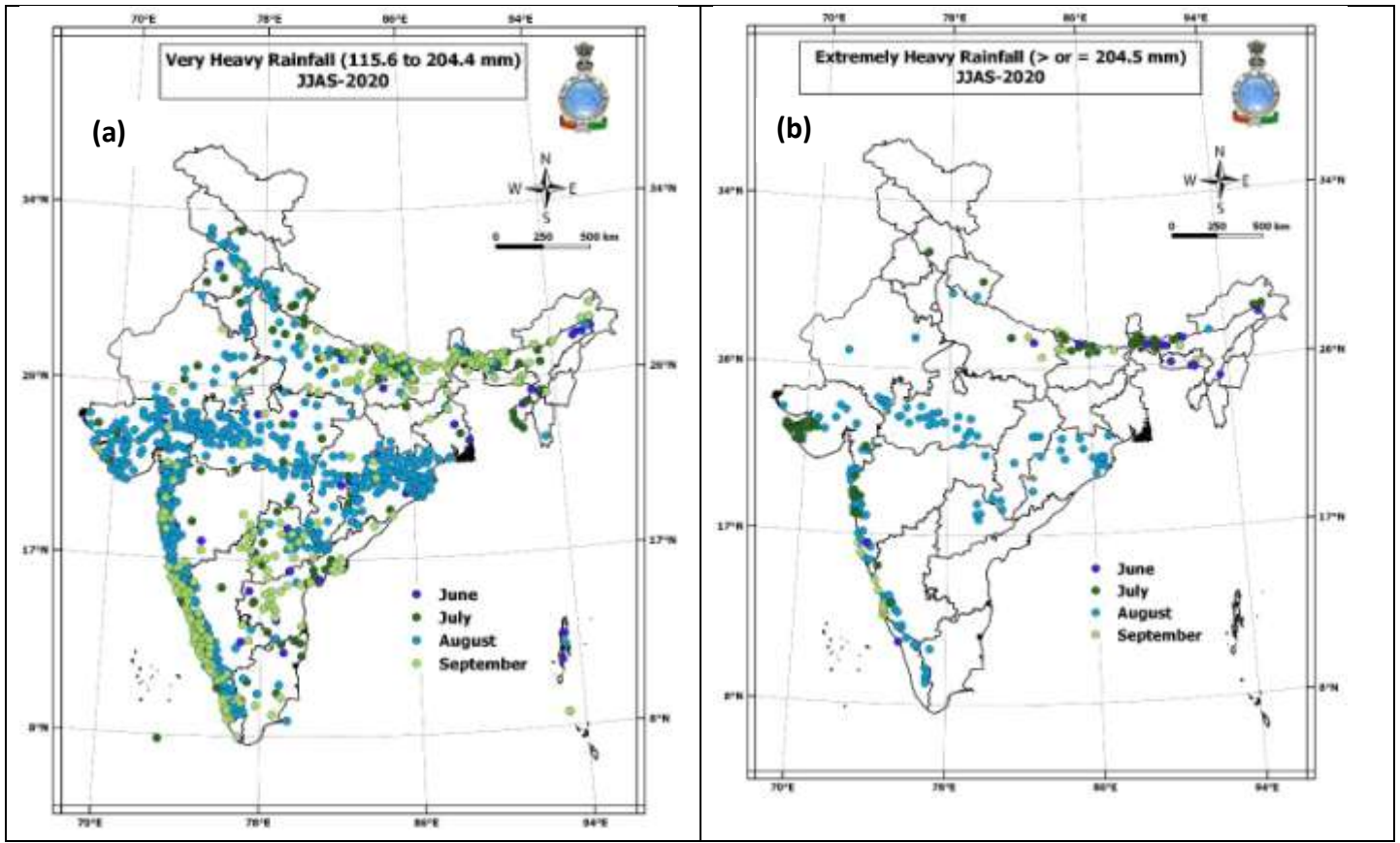
**Fig 4. Monthly Meteorological subdivision-wise rainfall during (a) June, (b) July, (c) August and (d)September 2020**



**Fig 5. Week by week progress and cumulative all India rainfall in percentage departure from normal**



**Fig 6. All India rainfall percentage departure during August over the period 1901-2020**



**Fig7. Location of (a) Very Heavy Rainfall (115.6 to 204.4 mm) and (b) Extremely Heavy Rainfall (more than 204.4 mm) reported stations during JJAS 2020.**



**Table 1: Number of Low pressure System(LPS) including Low(L), Well Marked Low(WML), Depression(D), Deep Depression(DD), Cyclonic Storm(CS) and number of LPS days in monsoon 2020 and their normal**

Category	CS	DD	D	WML	L	Total Monsoon systems in monsoon 2020	Total monsoon low pressure and above system days in monsoon 2020	Long period Average of Total monsoon systems /Days	
June*	1	0	0	0	1	2	7	3	11
July	0	0	0	1	1	2	9	3	14
August	0	0	0	4	1	5	28	4	17
Sept.	0	0	0	1	2	3	11	3	15
<b>Total</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>5</b>	<b>12</b>	<b>55</b>	<b>13</b>	<b>57</b>

\*(includes Nisarga that crossed Ratnagiri coast)