



# Pakistan's Monsoon (JAS) 2016 Rainfall Progress

CDPC / Pakistan Meteorological Department

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## Highlights:

### Monsoon Season 2016

- During past monsoon season 2016, rainfall over the country was moderately **above** normal (+25%).
- For the month of September, the country rainfall was **close** to its normal value.
- August rainfall was largely in **excess** across much of the country.
- In July, the country experiences slightly **deficient** rainfall.

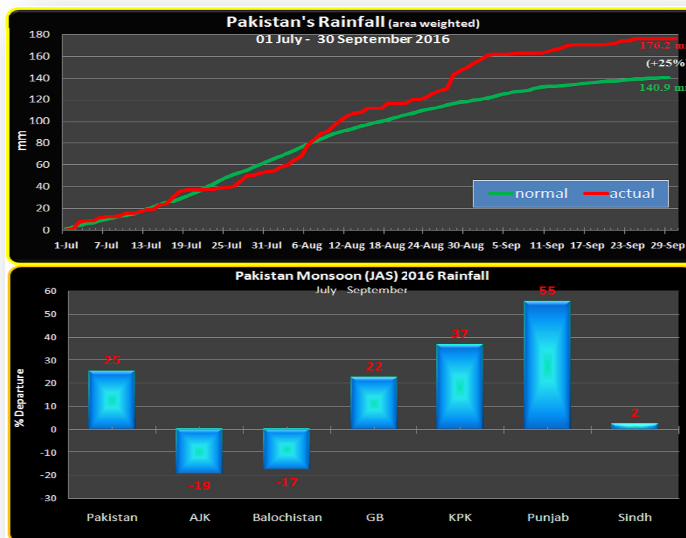


Fig-1: Rainfall cumulative (top) & distribution (bottom)

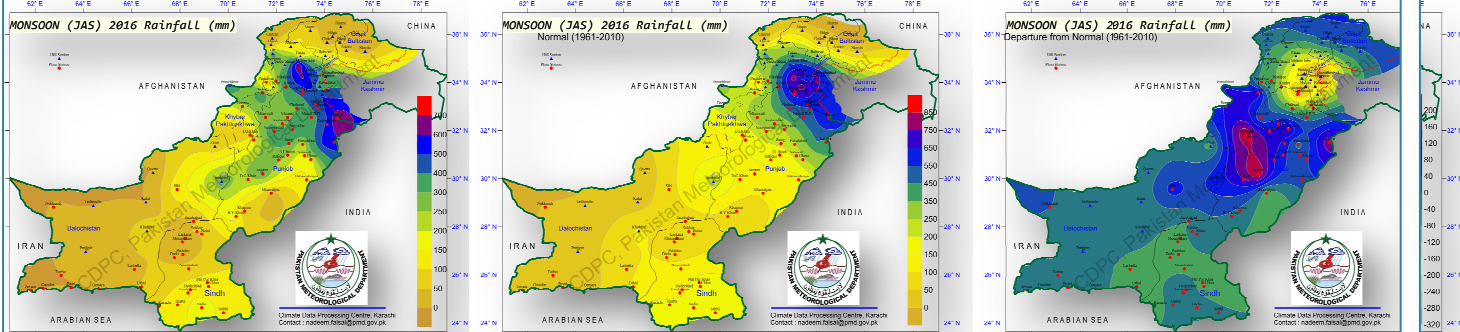


Fig-2: Spatial Distribution of Monsoon season 2016 rainfall (actual, normal & departure)

## September 2016

In the month of September, the rainfall over the country was close to normal (+7%). On regional scale, the monthly rainfall was above normal over Punjab, KPK & GB where close to normal over Balochistan and below normal over Sindh & AJK.

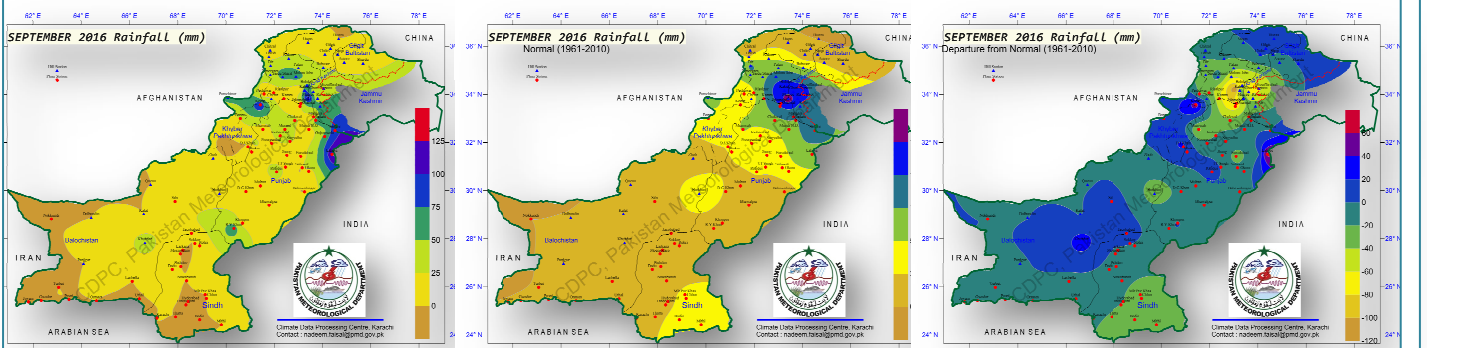


Fig-3: Spatial Distribution of September 2016 rainfall (actual, normal & departure)

| Wettest stations of the month |                |                              |        |           |
|-------------------------------|----------------|------------------------------|--------|-----------|
| SN                            | Stations       | September 2016 Rainfall (mm) |        |           |
|                               |                | actual                       | normal | departure |
| 1                             | Lahore         | 127.9                        | 60.1   | 67.8      |
| 2                             | Murree         | 114.2                        | 144.6  | -30.4     |
| 3                             | Kohat          | 97.4                         | 45.2   | 52.2      |
| 4                             | Kakul          | 78.0                         | 101.6  | -23.6     |
| 5                             | Jhelum         | 64.8                         | 73.8   | -9.0      |
| 6                             | Rahim Yar Khan | 64.0                         | ---    | ---       |
| 7                             | Malam Jabba    | 63.0                         | ---    | ---       |
| 8                             | Kotli          | 62.9                         | 92.3   | -29.4     |
| 9                             | Parachinar     | 61.8                         | 58.8   | 3.0       |
| 10                            | Layyah         | 61.0                         | ---    | ---       |

| September 2016 Rainfall (area weighted) |        |        |           |
|---|--------|--------|-----------|
| Region                                  | actual | normal | departure |
|   | mm     | mm     | %         |
| Pakistan                                | 22.9   | 21.4   | 7.4       |
| AJK                                     | 30.1   | 50.2   | -40.0     |
| Balochistan                             | 6.7    | 6.2    | 7.8       |
| GB                                      | 15.1   | 10.4   | 44.5      |
| KPK                                     | 67.9   | 51.2   | 32.5      |
| Punjab                                  | 48.1   | 34.6   | 39.0      |
| Sindh                                   | 1.4    | 19.9   | -92.9     |

Fig-4: September 2016 wettest stations (left) & monthly rainfall distribution (right)

## August 2016

During the month of August 2016, rainfall over the country as whole was largely above normal (+76). On regional scale, the rainfall amounts was generally in excess across much of the country except Balochistan and AJK where it was close to normal and below normal respectively.

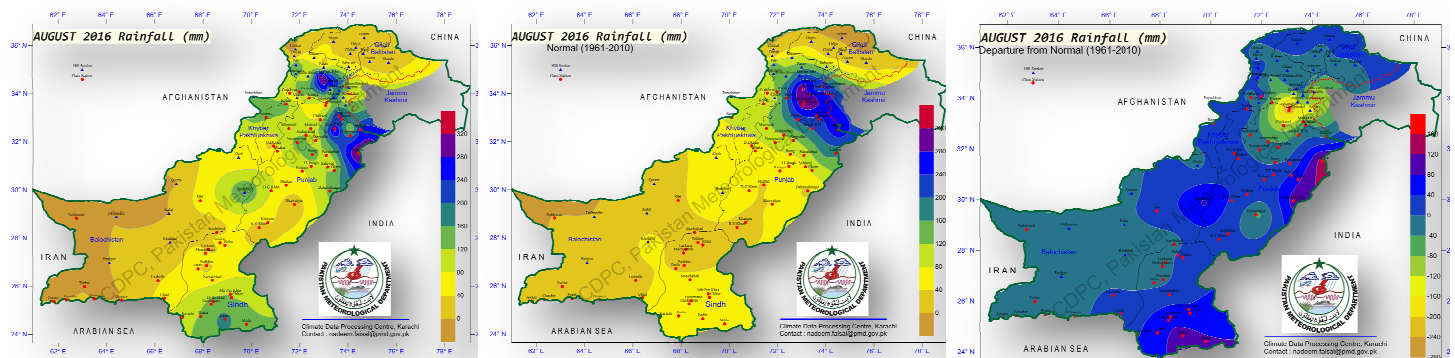


Fig-2: Spatial Distribution of August 2016 rainfall (actual, normal & departure)

| Wettest stations of the month |                |                           |        |           |
|-------------------------------|----------------|---------------------------|--------|-----------|
| SN                            | Stations       | August 2016 Rainfall (mm) |        |           |
|                               |                | actual                    | normal | departure |
| 1                             | Malam Jabba    | 341.0                     | ---    | ---       |
| 2                             | Lahore city    | 316.8                     | 168.9  | 147.9     |
| 3                             | Mandi-Bahu-Din | 291.1                     | ---    | ---       |
| 4                             | Islamabad ZP   | 265.3                     | 334.7  | -69.4     |
| 5                             | Lahore AP      | 264.2                     | 174.2  | 90.0      |
| 6                             | Sialkot Cantt  | 262.0                     | 273.5  | -11.5     |
| 7                             | Mangla         | 256.6                     | ---    | ---       |
| 8                             | Balakot        | 250.5                     | 268.4  | -17.9     |
| 9                             | Kasur          | 227.4                     | ---    | ---       |
| 10                            | Garhi Dopatta  | 201.8                     | 233.3  | -31.5     |

| August 2016 Rainfall (area weighted) |        |        |           |
|--------------------------------------|--------|--------|-----------|
| Region                               | Actual | Normal | Departure |
|                                      | mm     | mm     | %         |
| Pakistan                             | 98.9   | 56.2   | 76        |
| AJK                                  | 97.1   | 114.1  | -15       |
| Balochistan                          | 2.4    | 23.8   | 6         |
| GB                                   | 20.9   | 17.1   | 23        |
| KPK                                  | 183.4  | 117.6  | 56        |
| Punjab                               | 192.7  | 93.3   | 107       |
| Sindh                                | 133.7  | 53.6   | 149       |

Fig-6: August 2016 wettest stations (left) & monthly rainfall distribution (right)

## July 2016

During the month of July 2016, rainfall over the country as whole was slightly below to its normal value (-14%). On regional scale, the rainfall amounts had shown a mixed pattern with above normal over Punjab & KPK and close to normal over GB whereas slightly below normal over AJK but largely deficient over Balochistan & Sindh. Coastal areas of Balochistan and

eastern parts of Sindh received no or very little rainfall in the whole month as depicted by figure-2. Figure-3 further illustrates the distribution & extreme rainfall of the month.

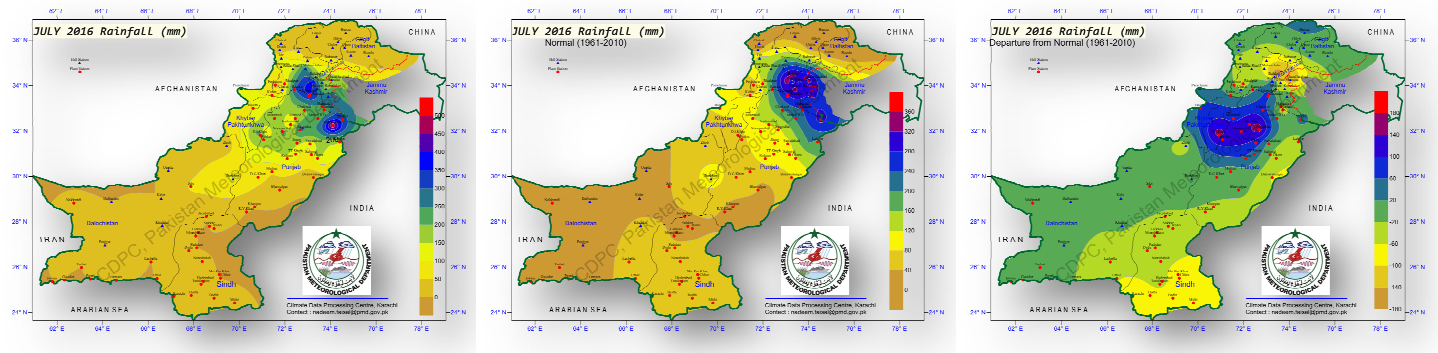


Fig-7: Spatial Distribution of July 2016 rainfall (actual, normal & departure)

| SN | Stations         | July 2016 Rainfall (mm) |        |           |
|----|------------------|-------------------------|--------|-----------|
|    |                  | actual                  | normal | departure |
| 1  | Gujranwala Cantt | 501.3                   | ---    | ---       |
| 2  | Islamabad AP     | 358.4                   | 285.8  | 72.6      |
| 3  | Kakul            | 347.5                   | 252.8  | 94.7      |
| 4  | Islamabad HQ     | 341.9                   | 354.3  | -12.4     |
| 5  | Sialkot AP       | 341.5                   | ---    | ---       |
| 6  | Sialkot Cantt    | 332.8                   | 294.9  | 37.9      |
| 7  | Kotli            | 305.2                   | 277.6  | 27.6      |
| 8  | Murree           | 302.5                   | 336.8  | -34.3     |
| 9  | Kamra            | 294.8                   | ---    | ---       |

| Region      | Actual | Normal | Departure |
|-------------|--------|--------|-----------|
|             | mm     | mm     | %         |
| Pakistan    | 54.3   | 63.3   | -14       |
| AJK         | 110.6  | 129.9  | -15       |
| Balochistan | 0.4    | 17.6   | -41       |
| GB          | 14.8   | 14.0   | 6         |
| KPK         | 146.1  | 121.7  | 20        |
| Punjab      | 119.2  | 104.0  | 15        |
| Sindh       | 1.6    | 60.2   | -97       |

Fig-8: July 2016 wettest stations (left) & monthly rainfall distribution (right)

**NOTE : Some of the above calculations are provisional and based on real time values.**