FORTNIGHTLY DROUGHT WATCH BULLETIN

(1st to 15th July, 2025)

National Drought Monitoring and Early Warning Centre

Pakistan Meteorological Department, Pitras Bokhari Road, Post Box No. 1214,
Sector H-8/2, Islamabad, Pakistan

URL: https://ndmc.pmd.gov.pk/new/

Rainfall Distribution and Anomalies:

Between July 1-15, 2025, heavy rains affected many areas, with the heaviest downpours occurring in northeastern Punjab (including Potohar region), where some locations received over 300 mm of rain. Significant rainfall was also recorded in central Khyber Pakhtunkhwa and Kashmir, while lower amounts were reported in parts of Gilgit-Baltistan (GB), central & southern parts of the country. Figure 1 shows the spatial distribution of rainfall and Table 1 lists the top 10 stations with the highest rainfall amounts, based on data from meteorological observatories.

Table 1. Top 10 stations with highest rainfall accumulation (01-15 July 2025)

Sr. No.	Station	Rainfall (mm)	Sr. No.	Station	Rainfall (mm)
1.	Islamabad	300.5	6.	Murree	177.5
2.	Lahore	293.5	7.	Risalpur	174.0
3.	Jhelum	248.7	8.	Kakul	163.0
4.	Okara	233.2	9.	Mangla	158.2
5.	Rawalpindi	192.6	10.	Muzaffarabad	154.7

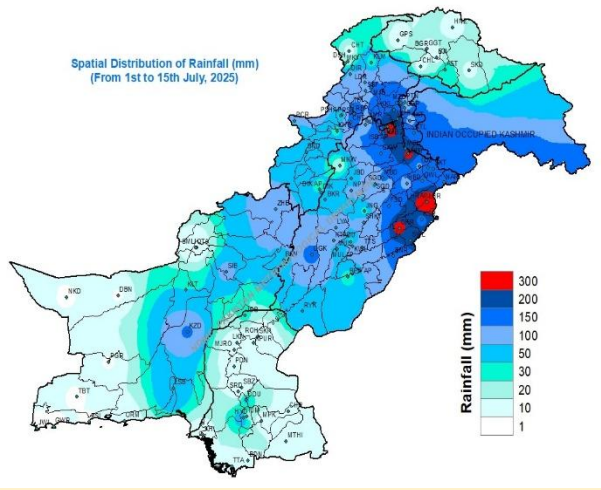

Figure 1: Spatial Distribution of Rainfall (mm)

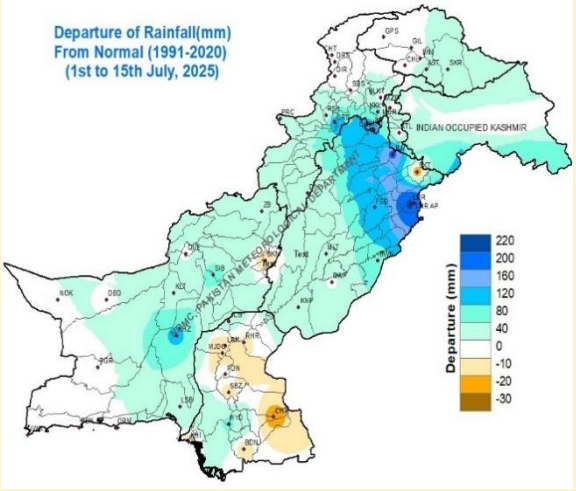

Figure 2: Departure of Rainfall (mm)

Figure 2 illustrates the spatial deviation of rainfall from the 1991–2020 climatological average during the first half of July 2025. The analysis reveals significant positive anomalies across northeast Punjab, where rainfall accumulations exceeded the 30-year average by more than 220 mm. Conversely, substantial negative departures were recorded in eastern Sindh, Barkhan, and Sialkot, with deficits reaching 30 mm below normal.

Mean Temperature Distribution and Anomalies:

Figure 3 displays the temperature anomalies during the study period, calculated relative to the 1991–2020 baseline. The observed anomalies exhibited a range of -2°C to +5°C, with the lowest values (-2°C to -1°C) localized in central regions. In contrast, the most pronounced positive anomalies, reaching up to +5°C, were recorded in northern Balochistan and Gilgit-Baltistan (GB), suggesting significant regional warming trends.

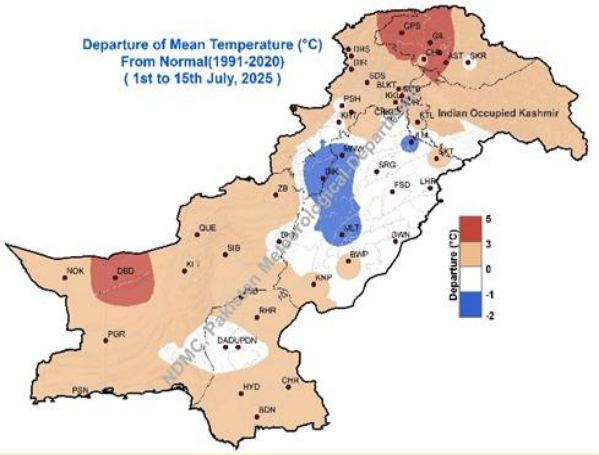

Figure 3: Normal Distribution of Rainfall (mm)

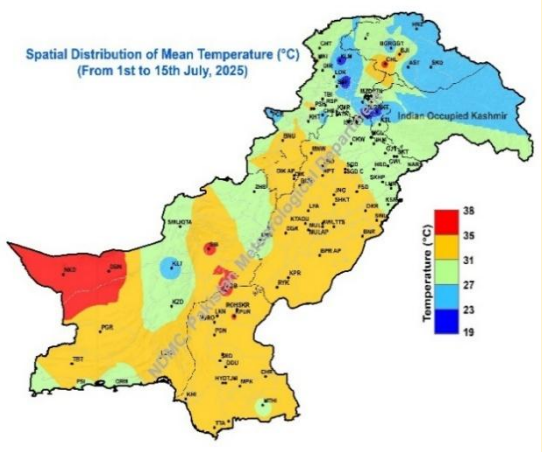

Figure 4: Spatial Distribution of Mean Temperature(°C)

Figure 4 presents the spatial distribution of mean temperatures across the region during the study period, with recorded values ranging from 19°C to 38°C. The northern mountainous areas and Kalat division exhibited the lowest average temperatures, consistent with expected orographic cooling effects at higher elevations. Moderate temperatures prevailed throughout central and southern regions. The thermal maximum occurred in western Balochistan, where arid conditions and subsidence effects contributed to elevated temperatures reaching 38°C.

Climate Normals: Temperature and Rainfall

Figure 5 presents the long-term average rainfall distribution for the period 01–15 July, based on 1991–2020 climatological normals. The data indicate that most regions typically receive between 0 and 50 mm of rainfall during this period. However, elevated accumulations of 51–150 mm are characteristic of the Potohar Plateau, Hazara Division, upper Punjab, and Kashmir, reflecting regional orographic and climatological effect.

Figure 6 illustrates the mean temperature distribution during the 1991–2020 climatological period, with values ranging from 20°C to 37°C. The highest temperatures were consistently observed in Sindh, northwestern Balochistan, and central Punjab. In contrast, cooler conditions prevailed in northern mountainous regions and Kalat, where mean temperatures remained between 20°C and 27°C.

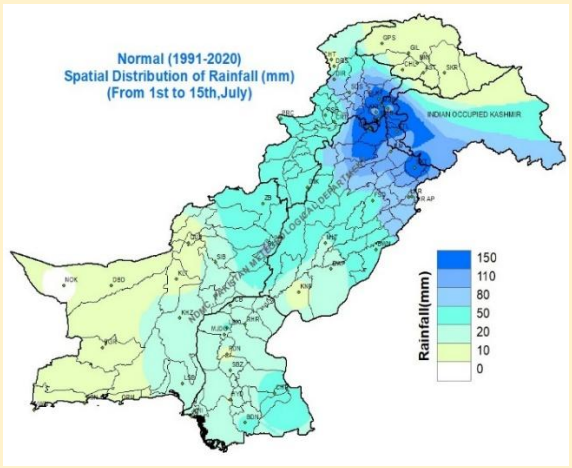

Figure 5: Departure of Mean Temperature(°C)

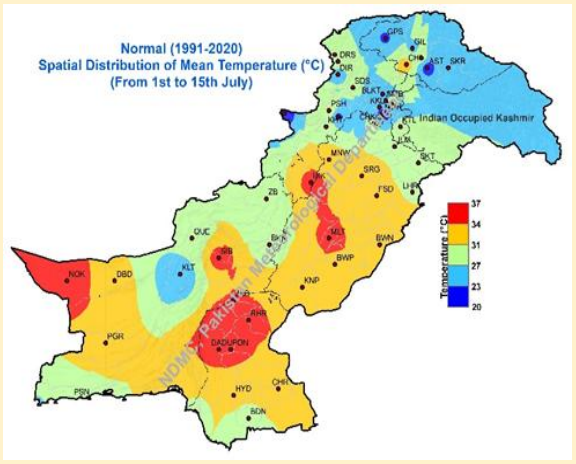

Figure 6: Spatial Distribution of Mean Temperature(°C)

Maximum Length of Consecutive Dry Days (CCD)

Consecutive Dry Days (CDD), defined as periods with daily rainfall below 1 mm, with notable variations across the study region (Figure 7). The maximum CDD duration was recorded in Turbat (343 days), reflecting extreme aridity and prolonged drought conditions. Western Balochistan experienced moderate CDD frequencies (100–180 days), which may exacerbate water scarcity and shows drought conditions in the region. These findings underscore the regional disparities in dry spell persistence, with implications for water resource management and drought mitigation strategies.

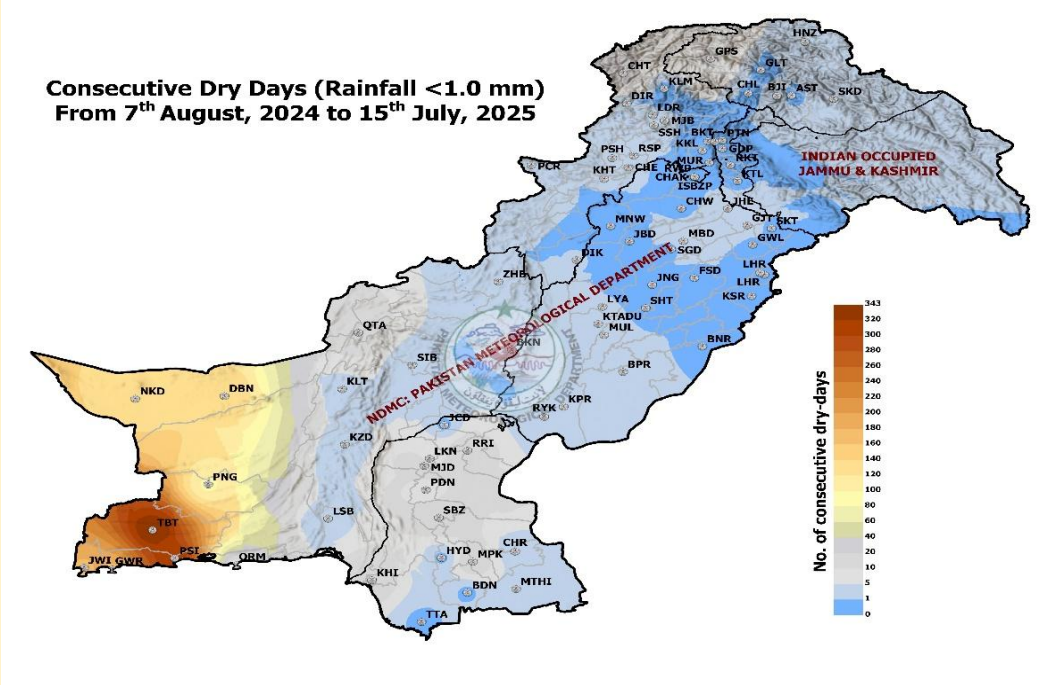

Figure 7: Spatial Distribution of Dry Days Spell

Reservoir Water Level Dynamics in Early July 2025

During the first two weeks of July 2025, a notable increase in water levels was observed in major and minor reservoirs across the region. The Tarbela Reservoir rose to 1,529 feet, while Mangla reached 1,185 feet, primarily due to enhanced inflows from glacial melt and monsoonal precipitation in upstream catchments. Similarly, smaller reservoirs—including Rawal, Khanpur, and Simly—also exhibited rising water levels, driven predominantly by rainfall-derived inflows.

Weather Forecast for the Second Half of July

Meteorological projections indicate scattered rain and thundershowers across upper regions of the country, including upper Punjab, upper Khyber Pakhtunkhwa (KP), Islamabad, and Kashmir, with occasional heavy falls. In contrast, central and southern regions—encompassing Sindh, south Punjab, and northeast Balochistan—are expected to receive one to two rain spells, though overall precipitation will remain limited. Meanwhile, central and southern parts of the country are likely to experience hot and humid conditions, with suppressed rainfall activity. National mean temperatures are anticipated to remain above normal, particularly in interior Sindh, southern Punjab, and central Balochistan.

Summary

Precipitation patterns during the first half of July 2025 showed significant regional variability. The heaviest rainfall (>300mm) occurred in northeastern Punjab, with Islamabad recording the highest accumulation of 300.5mm. In contrast, Gilgit-Baltistan and southern areas received substantially less precipitation. Temperature anomalies revealed notable warming trends, particularly in northern Balochistan and Gilgit-Baltistan (+5°C), while central regions experienced cooler conditions (-2°C). Western Balochistan recorded the highest temperatures (38°C), with northern mountainous areas remaining relatively cool (19-27°C).

Drought indicators showed concerning persistence, especially in Turbat (343 consecutive dry days) and western Balochistan (100-180 dry days). Water storage improved in major reservoirs, with Tarbela rising to 1,529 feet and Mangla reaching 1,185 feet, primarily due to combined monsoon rainfall and glacial melt contributions.

Meteorological projections suggest continued rainfall activity in upper regions (including upper Punjab and Khyber-Pakhtunkhwa), potentially with heavy spells. Central and southern areas are likely to experience predominantly hot and humid conditions with limited precipitation. Temperature forecasts indicate above-normal readings for interior Sindh, southern Punjab, and central Balochistan.

This report highlights critical regional disparities in precipitation and temperature patterns, with implications for flood risk management in high-rainfall zones, drought mitigation in arid regions, and heat stress preparedness in southern and central Pakistan. The observed trends emphasize the need for adaptive water resource management strategies in response to these climatic variations.