# Monthly Drought Bulletin
# For the Month of May, 2025

## Highlights

- During May 2025, most parts of the country received rainfall, whereas, western Balochistan remained dry.
- During the month, temperatures across the country were 1 to 8°C above the normal range. This rise in temperature led to reduced soil moisture due to increased evapotranspiration.
- For June 2025, overall, a tendency for normal to slightly above normal rainfall is anticipated across the central to southern parts of the country. In contrast, the northern regions, including northern Khyber Pakhtunkhwa, Gilgit-Baltistan and adjoining areas of Kashmir are likely to experience normal to slightly below-normal rainfall.
- During June, 2025, mean temperatures are expected to remain above normal nationwide, with maximum departure over Kashmir, Gilgit Baltistan and northern Khyber Pakhtunkhwa.
- The forecast of normal to slightly above normal rainfall in the drought-affected southern regions is expected to bring some relief.
- Keeping in view the weather forecast for the month of June 2025, disaster management authorities may be requested to plan DRM activities accordingly in the drought effected areas of Balochistan and Sindh.


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## 1. Monthly Rainfall and Temperature Analysis for the Month of May, 2025

During the month, most parts of the country received rainfall, whereas, western Balochistan remained dry. The spatial distribution of the rainfall is illustrated in Figure 1. The Potohar region, AJK and adjoining areas of Hazara Division received significant amounts of rainfall. Whereas, the western areas of Balochistan remained dry.

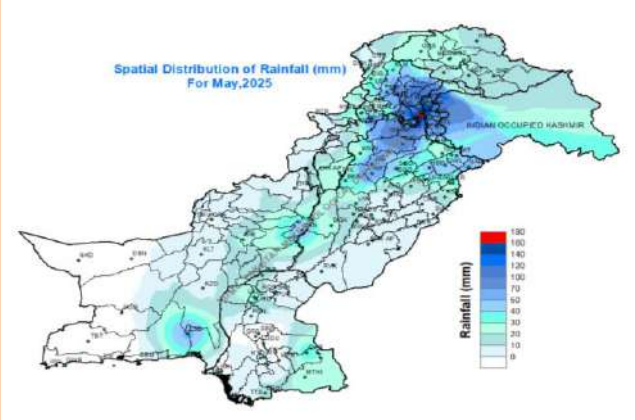


*Figure 1: Spatial Distribution of rainfall*

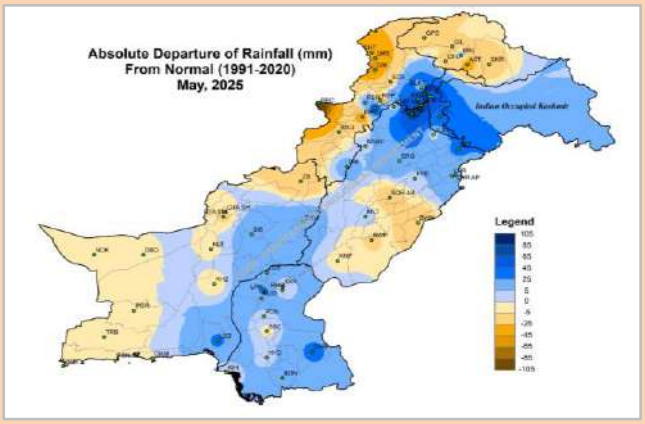


*Figure 2: Departure of rainfall from Normal*

Figure 2 illustrates the deviation of rainfall from the 1991–2020 climatological average during the May 2025. Several regions experienced above-normal precipitation, with the Potohar region and Kashmir recording the most significant positive anomalies. In contrast, southern Punjab, Khyber Pakhtunkhwa, western Balochistan, and Gilgit-Baltistan experienced below-normal rainfall, continuing a trend of early-season dryness in these areas. These deviations from the normal may have implications for local water availability, soil moisture conditions, and agricultural planning, particularly ahead of the monsoon onset. The chief amount of rainfall during the month of May,2025 is narrated in Table -1 below;

1.1 Stations with Maximum Rainfall during the May, 2025

| S. No | Station | Rainfall (mm) | S. No | Station | Rainfall (mm) |
|---|---|---|---|---|---|
| 1. | Muzaffarabad | 182.3 | 11. | Attock | 82.6 |
| 2. | Murree | 177.0 | 12. | Kotli | 74.4 |
| 3. | Garidopatta | 136.3 | 13. | Joharabad | 71.4 |
| 4. | Islamabad ZP | 118.2 | 14. | Balakot | 63.0 |
| 5. | Kakul | 107.0 | 15. | Noorpur Thal | 56.8 |
| 6. | Chaklala Airbase | 103.0 | 16. | Pattan | 55.0 |
| 7. | Cherat | 95.4 | 17. | Saidu Sharif | 54.0 |
| 8. | Rawalakot | 94.8 | 18. | Lasbella | 51.5 |
| 9. | Malam Jabba | 93.0 | 19. | Mangla | 51.4 |
| 10. | Chakwal | 87.0 | 20. | Narowal | 51.1 |

Figure 3 presents the spatial distribution of mean temperatures recorded at PMD stations across Pakistan during May 2025, revealing significant regional variations. Most areas recorded mean temperatures between 30°C and 35°C, which is slightly above the 1991–2020 climatological average for this month. Cooler conditions prevailed in upper Khyber Pakhtunkhwa and Gilgit-Baltistan, where mean temperatures ranged from 10°C to 25°C, reflecting the typical climatic patterns of high-altitude terrain. In contrast, Rahim Yar Khan, upper Sindh, Turbat, and Sibi experienced the highest temperatures, with averages between 36°C and 40°C, exceeding seasonal norms. These elevated temperatures may contribute to increased evapotranspiration, intensifying water stress, especially in arid and semi-arid zones, while also elevating cooling energy demand and potentially accelerating the glacial melt in northern areas.

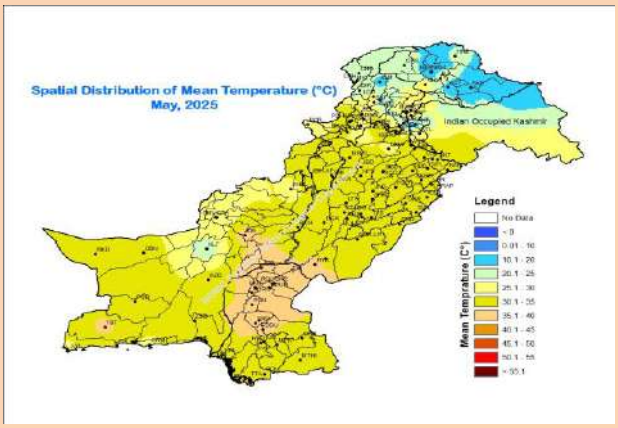


*Figure 3: Monthly Mean Temperature (°C)*

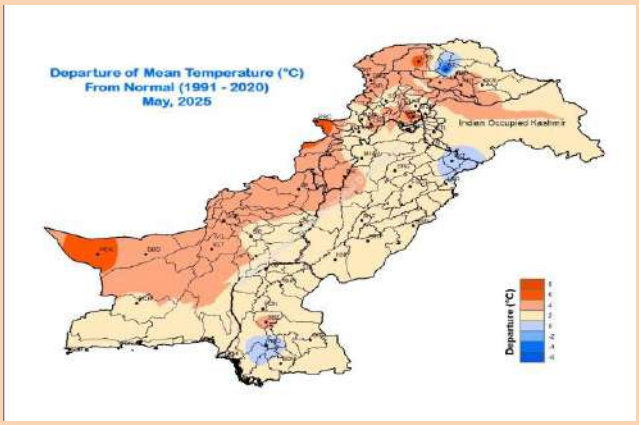


*Figure 4: Monthly Departure from Normal Temperature*

Figure 4 explains the deviation of mean temperatures from the 1991–2020 climatological normal, indicating that much of the country experienced temperatures 1°C to 8°C above average during May 2025. The most pronounced anomalies were observed in western and upper regions, including north Balochistan and Khyber Pakhtunkhwa, where prolonged heat episodes pushed temperatures well beyond seasonal norms. These deviations are reflecting a possible continuation of broader warming trends in the region.

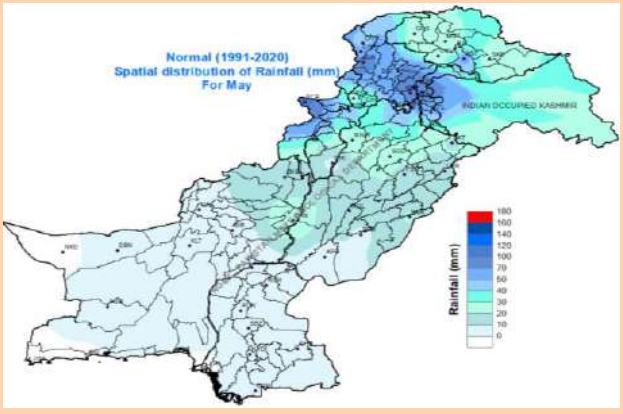


*Figure 5: Monthly Normal Rainfall (mm)*

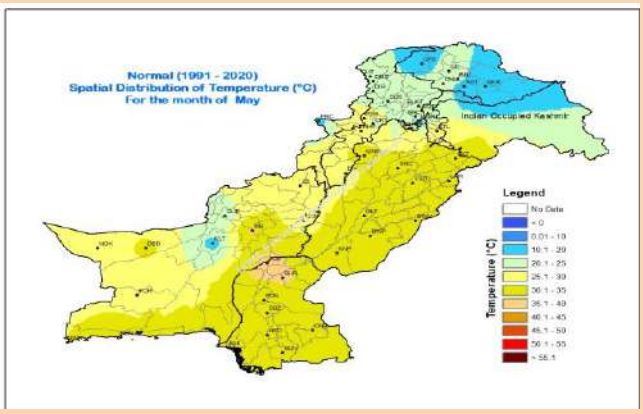


*Figure 6: Monthly Normal Mean Temperature (°C)*

Figures 5 and 6, which present long-term monthly averages for May rainfall and mean temperatures (1991–2020), provide a reference framework for assessing the scale of this anomaly. Elevated temperatures may intensify water stress, accelerate glacial melt, and raise heat-related health risks, especially in already vulnerable areas.

## 2. Comparison of Actual to Normal Monthly Rainfall for May, 2025

Figure 7 compares actual rainfall to the historical normal (1991-2020) for May, 2025. This comparison is detailed separately for different regions: Khyber Pakhtunkhwa 7(a), Sindh in Figure 7(b), Punjab in Figure 7(c), Balochistan in Figure 7(d), Gilgit Baltistan, and Azad Jammu & Kashmir in Figure 7(e). The graphs indicate that rainfall during the month was above normal.

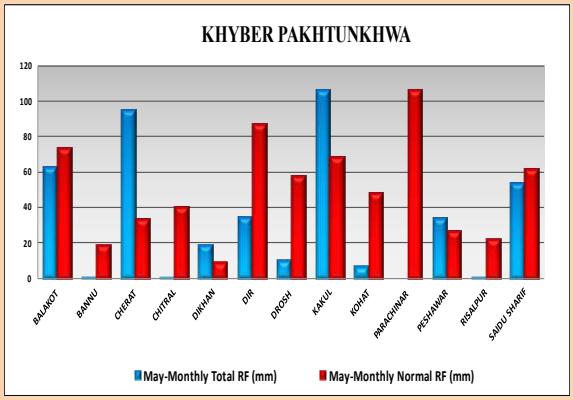


*Figure 7a*

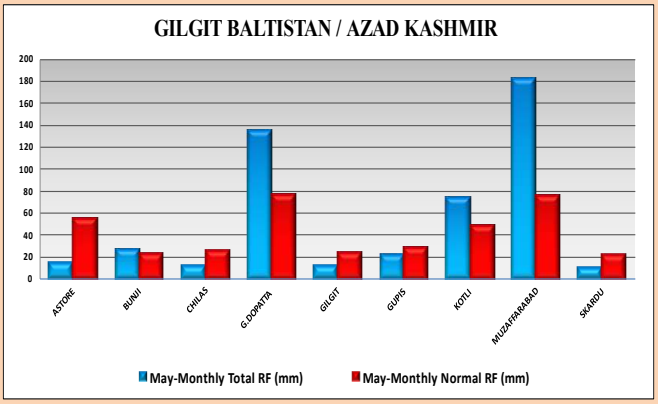


*Figure 7b*

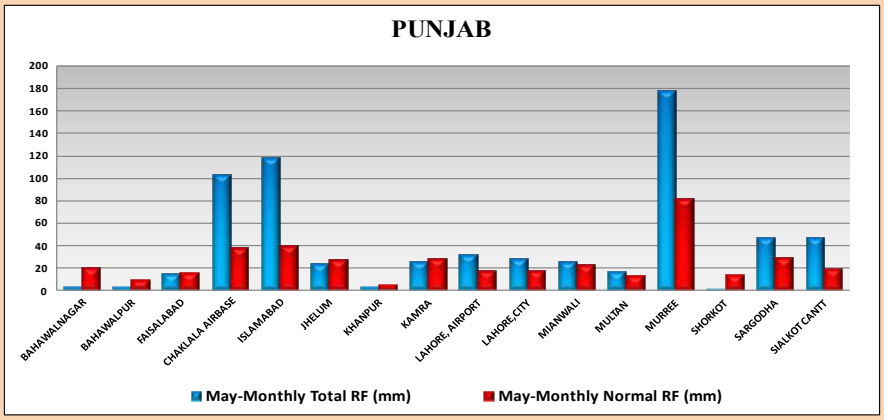


*Figure 7c*

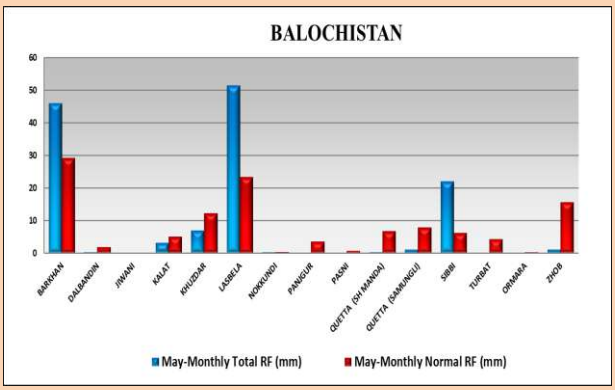


*Figure 7d*

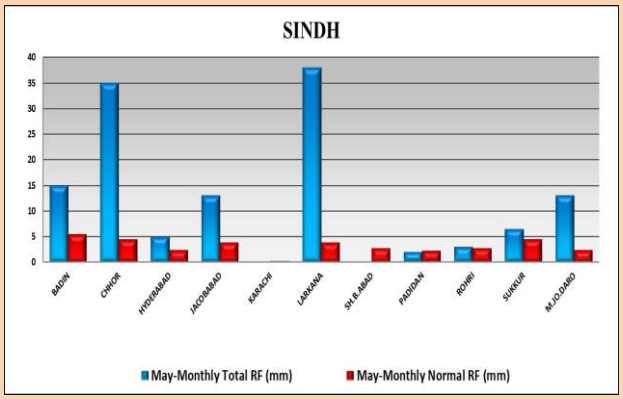


*Figure 7e*

## 3. Normalized Difference Vegetation Index (NDVI)

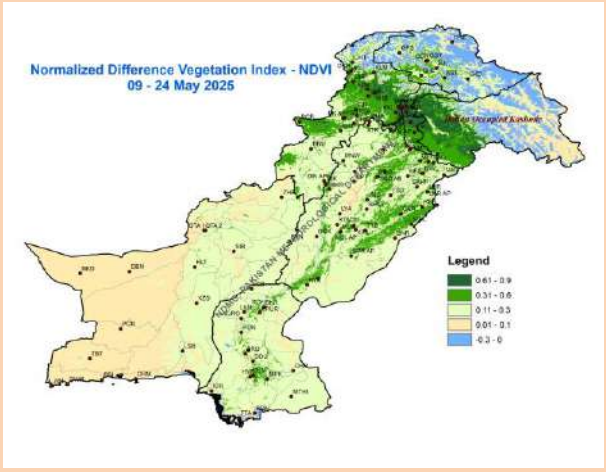


*Figure 8: NDVI*

Figure 8 displays the Normalized Difference Vegetation Index (NDVI) values for May 2025, highlighting spatial variations in vegetation health across the country. High NDVI values were recorded in Azad Jammu and Kashmir (AJK), Punjab, Khyber Pakhtunkhwa, and areas along the Indus Basin, reflecting dense and healthy vegetation cover.

These elevated values indicate favorable conditions for plant growth, including sufficient moisture and active chlorophyll production. In contrast, low or deficient NDVI values were observed in Balochistan and Sindh, largely due to below-normal rainfall and prevailing dry conditions, which have limited vegetation growth in these regions.

## 4. Land Surface Temperature (LST)

Figure 9 illustrates the Land Surface Temperatures (LST) recorded between May 9 and May 16, 2025. During this period, southern Punjab, Sindh, and Balochistan experienced elevated daytime surface temperatures, with averages ranging from 30°C to 55°C, indicating the prevalence of intense heat across these regions.

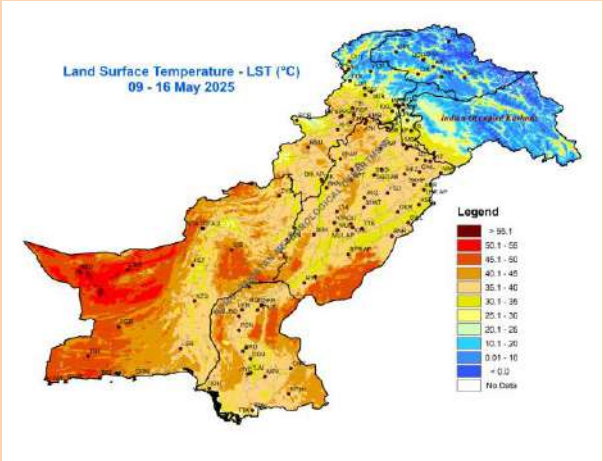


*Figure 9: LST (°C) 09- 16 May, 2025*

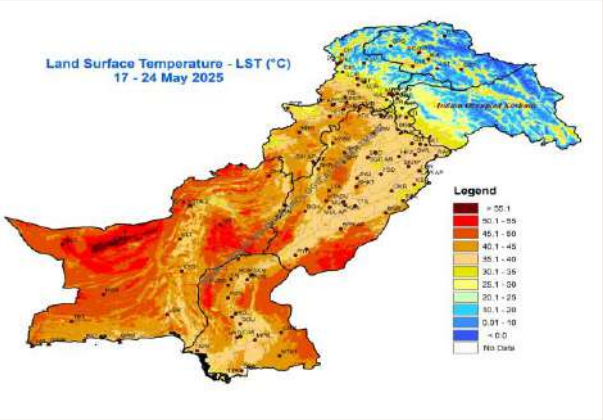


*Figure 10: LST (°C) 17-24 May, 2025*

Figure 10, illustrates the Land Surface Temperatures (LST) from May 17 to 24, 2025, showing a notable increase compared to the previous week, particularly across western Balochistan, southern Punjab, and parts of Sindh. During this period, daytime surface temperatures frequently exceeded 45°C, with some areas likely reaching as high as 50°C. This sharp rise in temperature has critical implications, including increased heat stress, accelerated soil moisture loss, and heightened irrigation demands in agricultural zones.

## 5. Temperature Vegetation Dryness Index (TVDI)

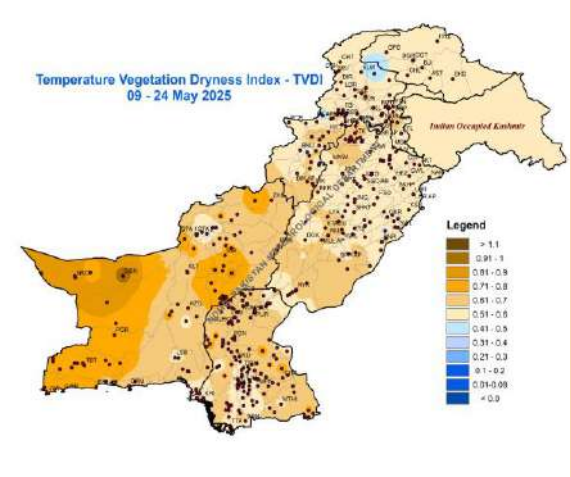


*Figure 11: TVDI*

Figure 11 illustrates the Temperature Vegetation Dryness Index (TVDI), derived from MODIS datasets MOD13A2 (NDVI) and MOD11A2 (LST). The TVDI Index highlights moderate dry-like conditions in Balochistan, Sindh, and some parts of south Punjab. These conditions indicate the onset of dryness and soil moisture deficiency in the region. The deficit rainfall has exacerbated these conditions, leading to drought-like situations that require efficient measures for mitigation.

## 6. Length of Consecutive Dry Days upto May 31, 2025

Figure 12 illustrates the maximum length of Consecutive Dry Days (CDD) observed across the country. In Turbat, Pasni, and Shaheed Benazirabad, the CDD has increased from 267 to 298 days, indicating a prolonged absence of significant rainfall and intensifying arid conditions in these areas. In contrast, central and northern regions of Pakistan have seen a reduction in CDD values due to notable precipitation events, which have alleviated dry spell durations and improved short-term moisture availability.

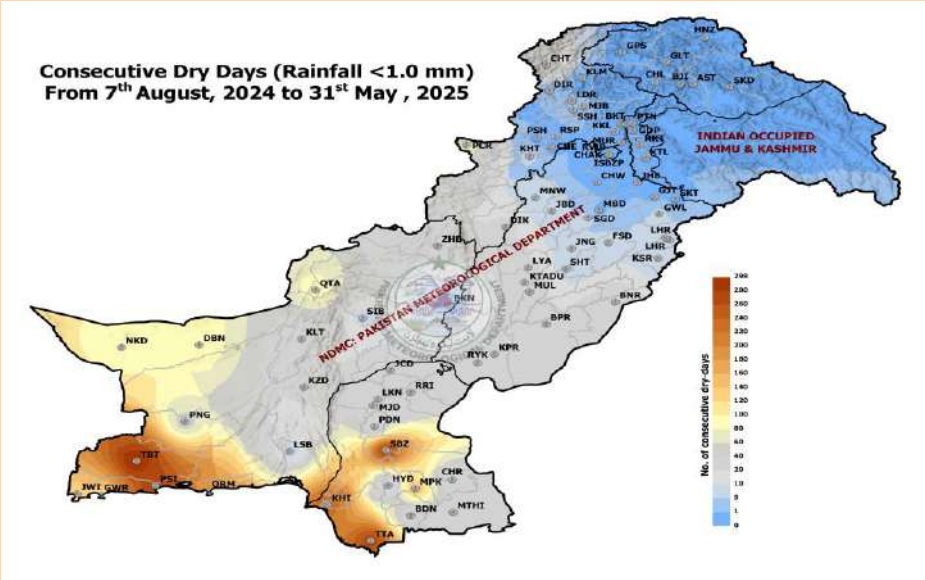


*Figure 12: No. of consecutive dry days*

## 7. Drought Monitor for the Month of May, 2025

Based on various drought monitoring indices and ground-based observational data, the spatial drought assessment is presented in Figure 13. The map indicates that lower Balochistan, southeastern Punjab, and southern Sindh are currently experiencing moderate drought conditions, primarily driven by prolonged moisture deficits and insufficient rainfall. Additionally, areas including upper Sindh, western Punjab, southeastern Khyber Pakhtunkhwa, and central Balochistan are classified under mild drought, reflecting localized water stress and below-average precipitation over the past three months.

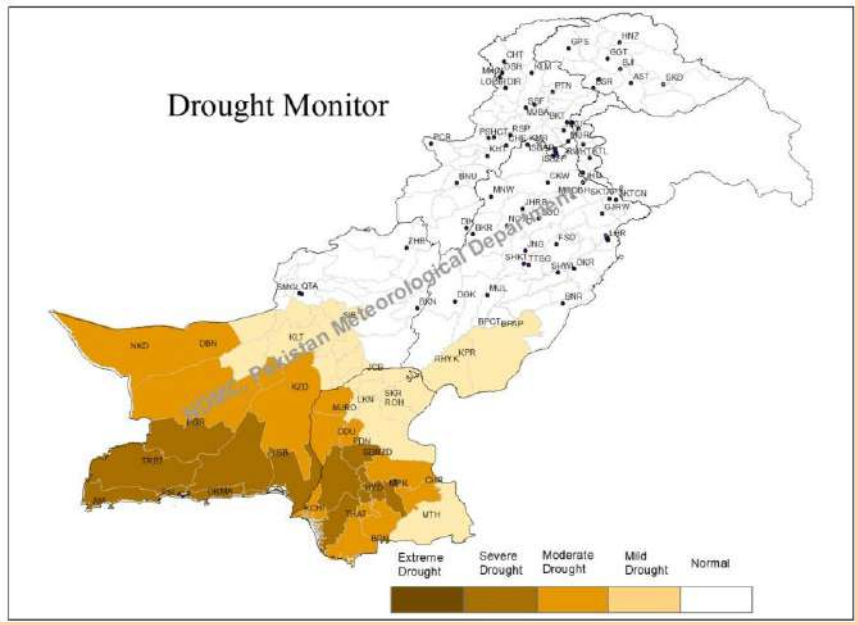


*Figure 13: Drought Monitor of Pakistan for the month of May, 2025*

## 8. Water Availability/ Dams Flow data

During the month, water inflow, outflow and levels of the Rawal, Khanpur, Tarbela , and Mangla dams are shown in Figure 14. The water level at Mangla and Tarbela has increased due to glacial melt and recent rainfall received during the month, whereas, Rawal and Khanpur reservoirs have slighthly decreased due to an increase in demand of water during summer season. The water levels at the major reservoirs, Tarbela and Mangla, averages at 1,461 feet and 1,146 feet respectively.

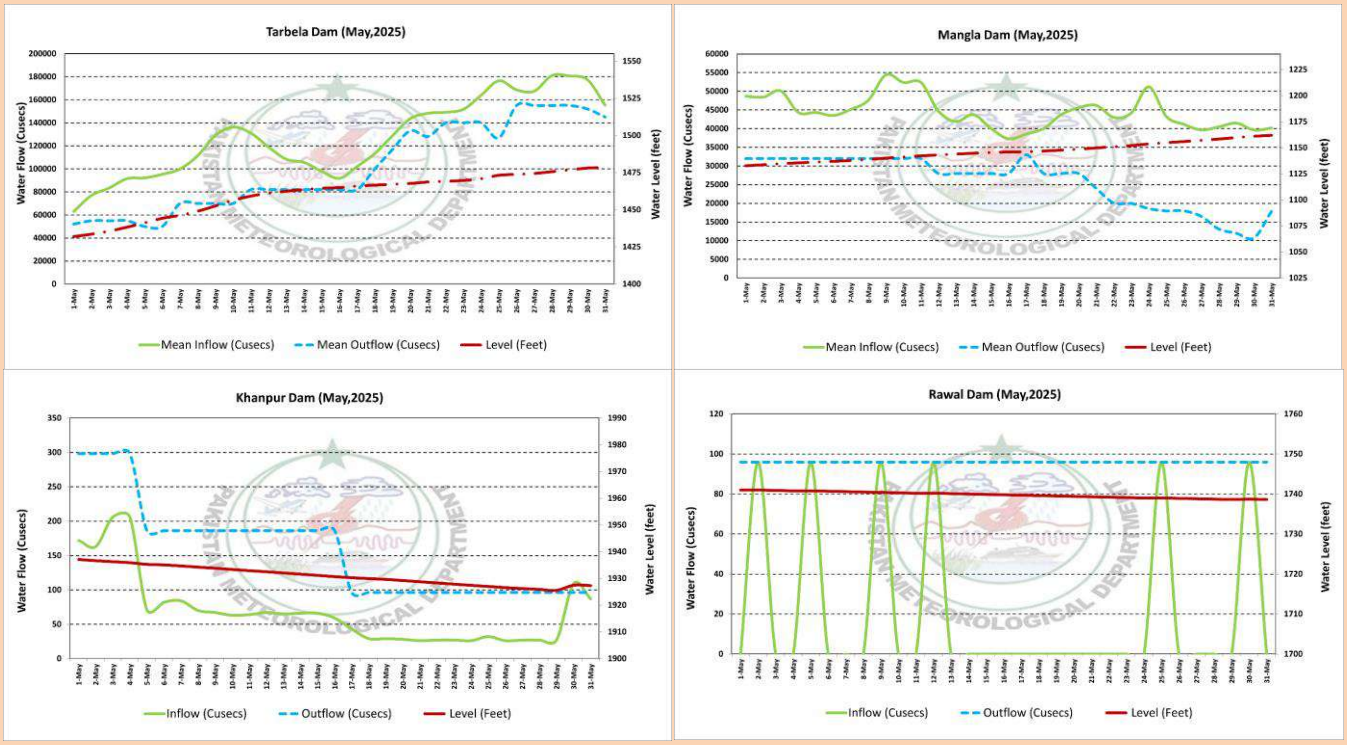


***Figure 14**: Water inflow, outflow and level of Rawal, Khanpur, Tarbela and Mangla Dams, May, 2025*

## 9. Weather Outlook for June, 2025

For June 2025, overall, a tendency for normal to slightly above normal rainfall is anticipated across the central to southern parts of the country. In contrast, the northern regions, including northern Khyber Pakhtunkhwa, Gilgit-Baltistan and adjoining areas of Kashmir are likely to experience normal to slightly below-normal rainfall.

Mean temperatures are expected to remain above normal nationwide, with maximum departure over Kashmir, Gilgit Baltistan and northern Khyber Pakhtunkhwa.

## 10. Drought Outlook for June, 2025

The June forecast predicts normal to slightly above normal rainfall in the drought-prone southern regions, which is expected to bring relief. Additionally, satisfactory reservoir levels at Mangla and Tarbela will support irrigation in the canal-fed lands of Punjab, Sindh, and Balochistan, further improving the situation. All stakeholders across the countrty are advised to make efforts to save water and promote its judicious use to mitigate the adverse impacts of drought.

## 11. Crop Condition

- Soil moisture condition has slightly improved in upper Punjab and some parts of Sindh due to recent rainfall but still the rainfall was deficient.
- The wheat crop has been harvested, and farmers are now preparing their fields for the next sowing season. Consequently, water demand is expected to rise.
- The deficient rainfalls have also affected orchards, fruits, and vegetables, with seasonal fruits quality being affected. However late winter rainfall and mid season rainfalls have some what improved the soil conditions in some areas helping crop development.
- The rainfall for the months of June and July is normal to slightly above normal in central and southern parts of the country and possible extreme rainfall events may affect standing crops and fruit orchards.

PMD weather forecasts should be regularly watched for any changing weather situation for preparatory measures.

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