

# Pakistan Meteorological Department



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

### Highlights

- In March 2025, upper Khyber Pakhtunkhwa (KP), Kashmir, GB, north Baluchistan received moderate to heavy rains, while potohar region and northeast Punjab experienced light to moderate rainfall, however, rest of the country remained dry.
- During the month overall, the country experienced temperatures 1 to 5°C above monthly normal range. However, Skardu recorded -1°C temperature below the 30-year average.
- For April 2025, forecasts indicate a trend toward a tendency for slightly below-normal rainfall in northern Punjab, Kashmir and the adjoining areas of northern Khyber. Concurrently, the southern regions are expected to experience rainfall that is closer to normal, with a reduced negative anomaly as per the region's climatological patterns.
- During April 2025, mean temperatures are expected to remain above normal nationwide, with maximum departure over Kashmir, Gilgit Baltistan and northern Khyber Pakhtunkhwa.
- Slightly below normal to normal rains during April, 2025 would bring some short relief to the areas affected from soil moisture stress.
- Keeping in view the weather forecast for the month of April 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 March, 2025

During the month, Khyber Pakhtunkhwa (KP), Kashmir, and Gilgit Baltistan (GB) experienced moderate to heavy rainfall, while Potohar region and northeast Punjab received light to moderate rainfall. The spatial distribution of this rainfall is illustrated in Figure 1. The largest amounts were recorded in upper KP and Kashmir as detailed in Table 1.

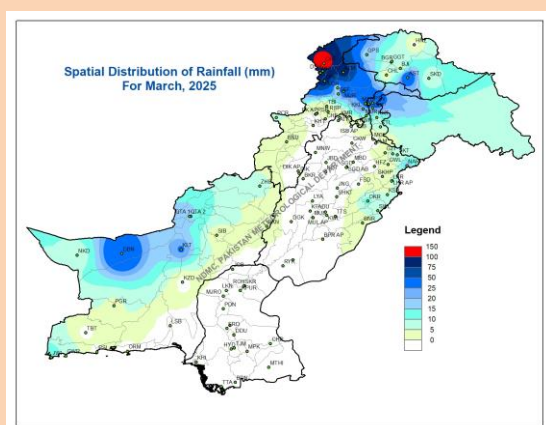


Figure 1: Spatial Distribution of rainfall

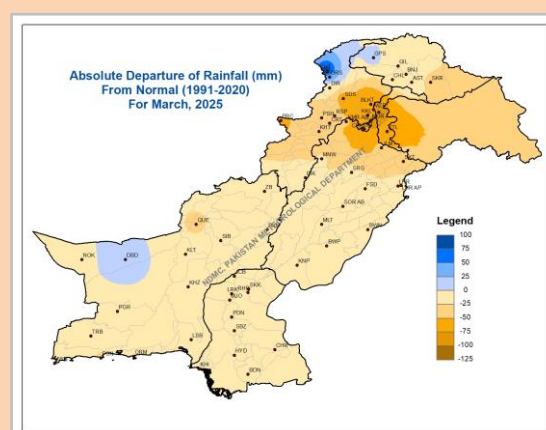
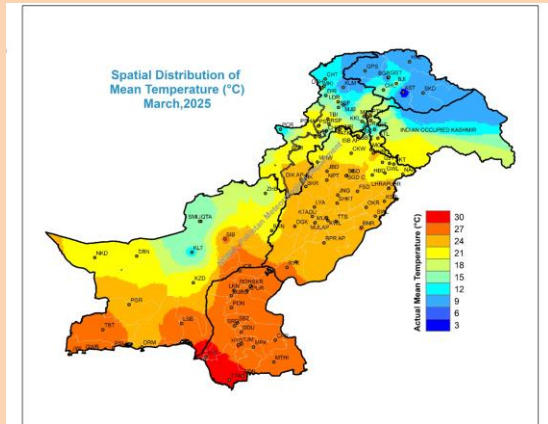


Figure 2: Departure of rainfall from Normal

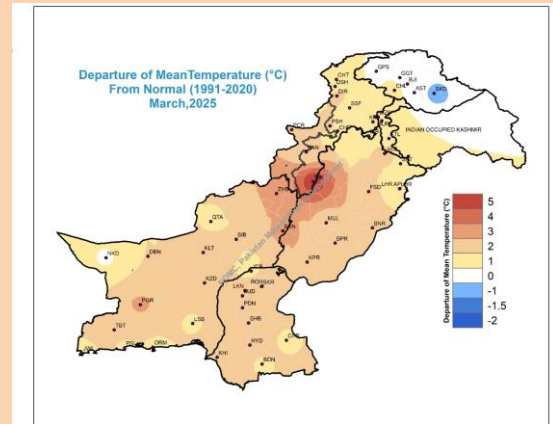
Figure 2 illustrates the deviation of rainfall from the normal (1991-2020) levels. Below-normal rainfall was observed across the country, except in Chitral, Drosh, Gupis and Dalbandin.

Sr.No.	Station	Rainfall(mm)	Sr.No.	Station	Rainfall(mm)
1	Dir	219.0	11	Lower Dir	116.0
2	Kalam	200.0	12	Astore	115.4
3	Malamjabba	178.0	13	Kakul	95.5
4	Chitral	169.6	14	Balakot	94.0
5	Mirkhani	147.0	15	Murree	90.0
6	G.Dopatta	144.0	16	Saidu Sharif	85.0
7	Muzaffarabad City	124.0	17	Cherat	82.0
8	Rawalakot	118.3	18	Hafizabad	67.6
9	Pattan	117.0	19	Peshawar Airbase	59.0
10	Drosh	116.4	20	Islamabad, Airport	58.0

Figure 3 shows the distribution of mean temperatures recorded at PMD stations in March, 2025. During this period, Sindh and lower Baluchistan recorded mean maximum temperatures reaching 30°C in coastal areas.



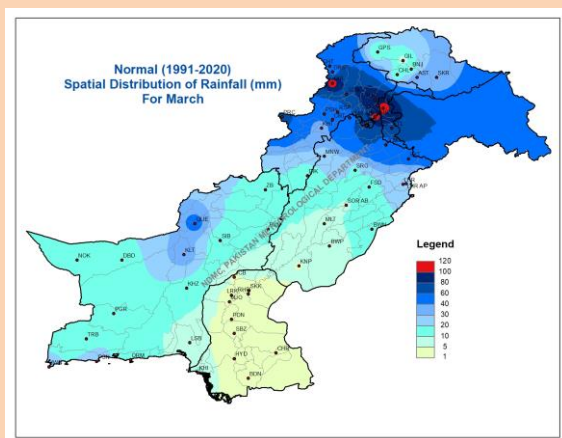
**Figure 3:** Monthly Mean Temperature (°C)



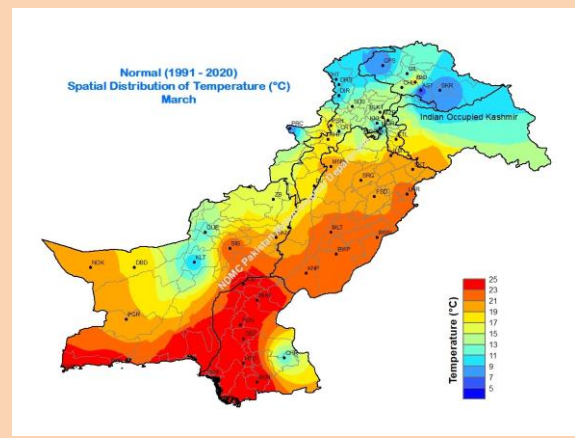
**Figure 4:** Monthly Departure from Normal Temperature

Figure 4 illustrates the deviation of mean temperatures from the normal (1991-2020), indicating that most parts of the country experienced temperatures 1 to 5°C above to the normal range. However, Skardu recorded -1°C temperature below the 30-year average.

Figures 5 and 6 display the monthly normal rainfall and mean temperatures for March, based on data from 1991 to 2020.



**Figure 5:** Monthly Normal Rainfall (mm)



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

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

Figure 7 compares actual rainfall to the historical normal (1991-2020) for March, 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).

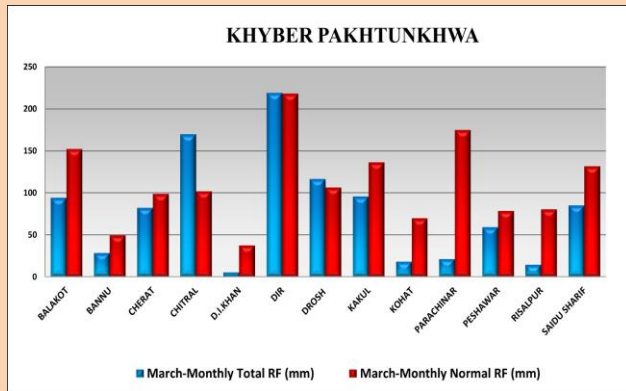


Figure 7a

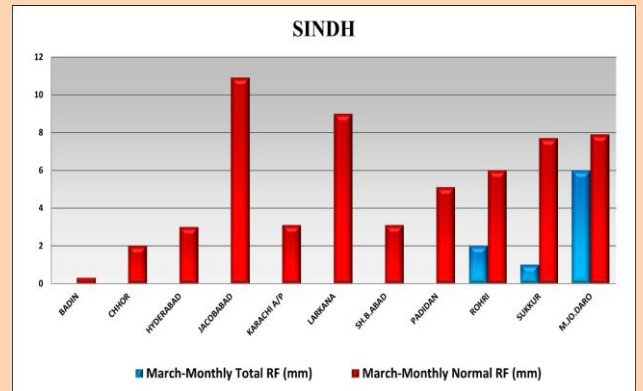


Figure 7b

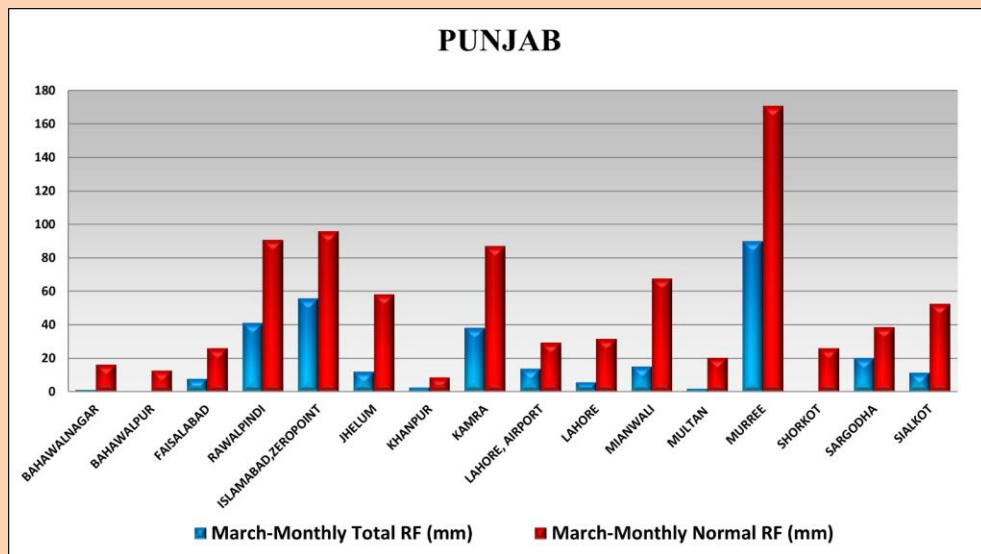


Figure 7c

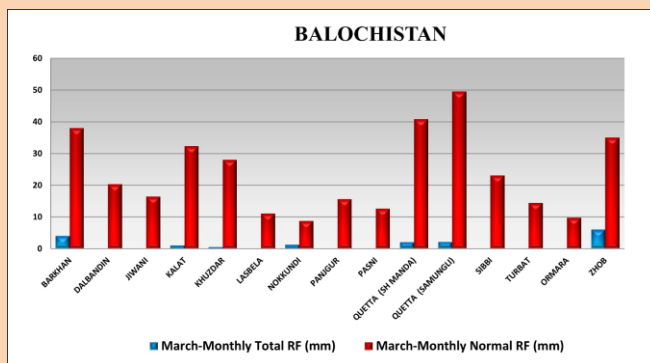


Figure 7d

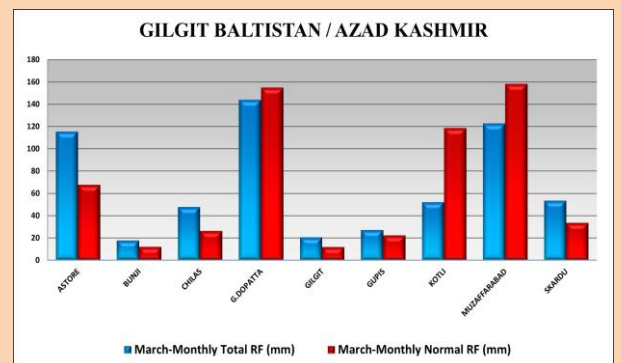


Figure 7e

### 3. Normalized Difference Vegetation Index (NDVI)

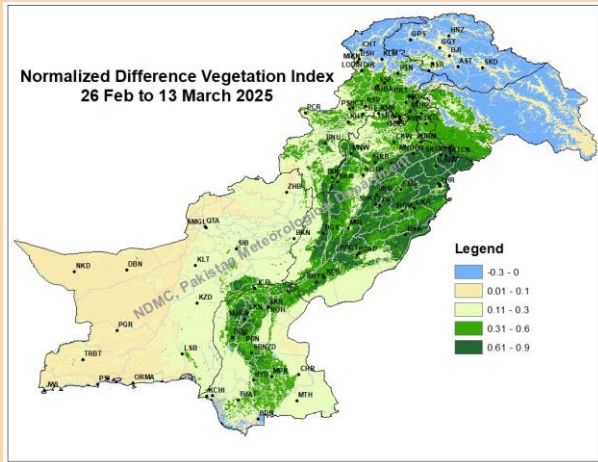


Figure 8: NDVI

Figure 8 presents the Normalized Difference Vegetation Index (NDVI) values for March, 2025. High NDVI values are observed in AJK, Punjab, Khyber Pakhtunkhwa, and along the Indus basin, indicating extensive vegetation in these areas. These conditions support the accumulation of chlorophyll in plants, thereby enhancing vegetation cover. Conversely, low rainfall has resulted in low or deficient NDVI values in the regions of Baluchistan and Sindh.

### 4. Land Surface Temperature (LST)

Figure 9 depicts the Land Surface Temperatures (LST) from Feb 26 to March 05, 2025. During this period, south Punjab, Sindh, and lower Baluchistan experienced average daytime temperatures ranging from 20-35°C.

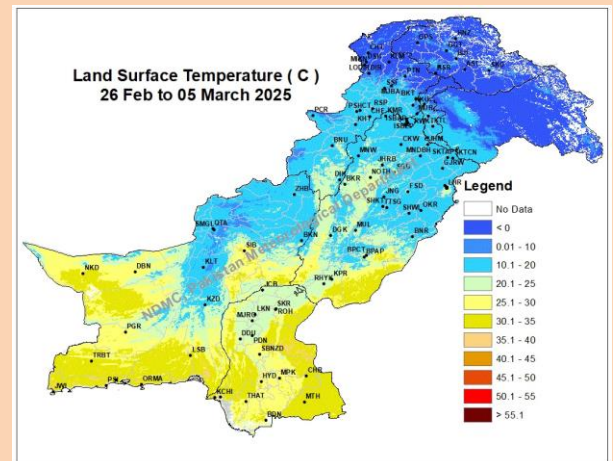


Figure 9: LST (°C) Feb 26-Mar 05, 2025

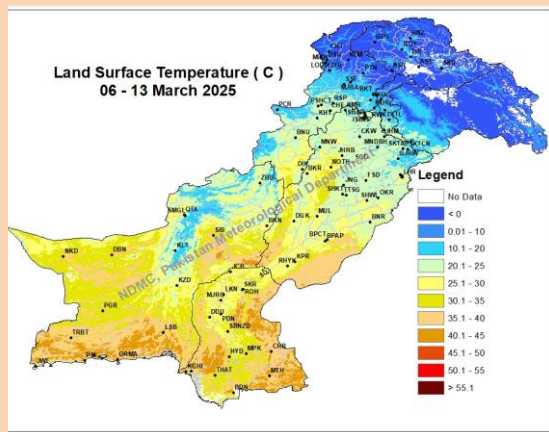


Figure 10: LST (°C) 6-13 March, 2025

Figure 10 illustrates the Land Surface Temperatures from March 6 to 13. During this period, there was an increase in temperature compared to the previous week in coastal Baluchistan, parts of Sindh, and south Punjab.



## 5. Temperature Vegetation Dryness Index (TVDI)

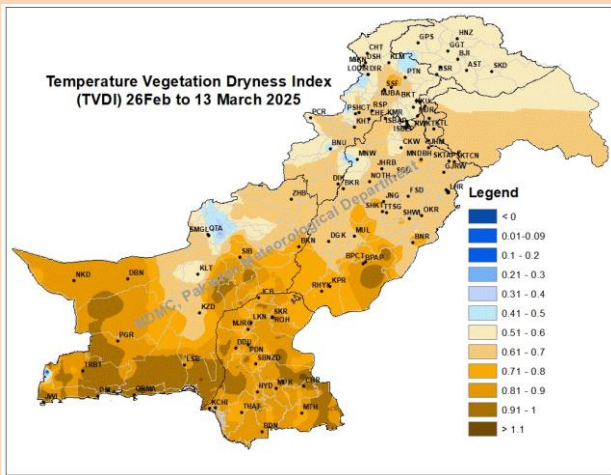


Figure 11: TVDI

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 coastal Balochistan, Sindh, and Bahawalpur (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 up to March 31, 2025

Figure 12 presents the maximum length of consecutive dry days (CDD). The number of consecutive dry days has increased from 200 to 237 days across Turbat, Pasni, Lesbella, and parts of Sindh. However, substantial rainfall has concluded the CDD in the central and northern parts of the country.

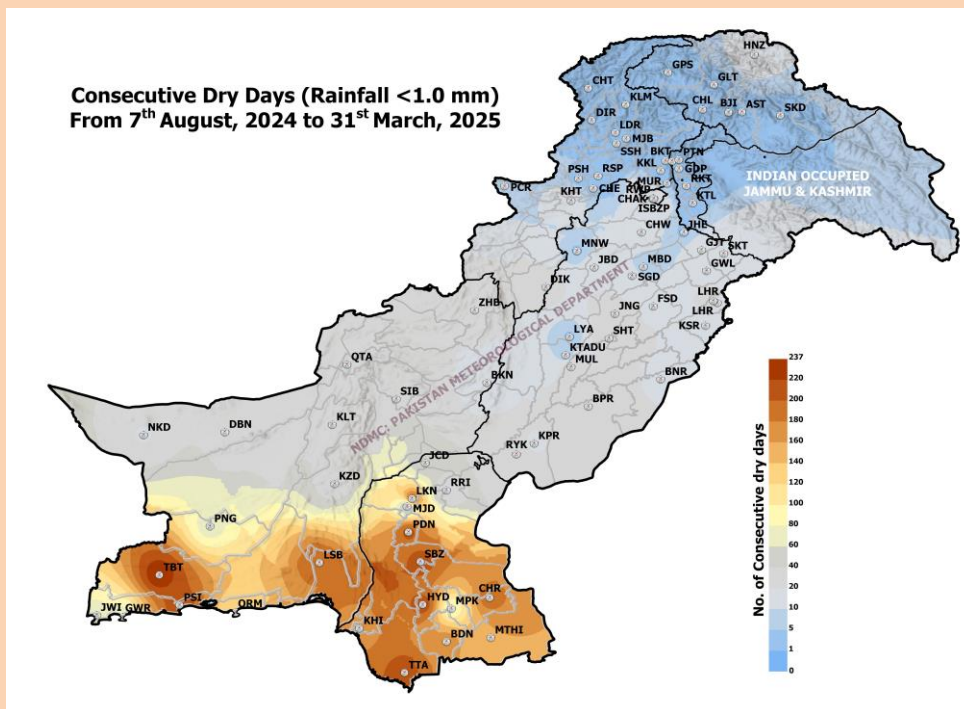


Figure 12: No. of consecutive dry days

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

Based on the different drought monitoring indices, as narrated above and ground station data observed by the Pakistan Meteorological Department Network across the country, the spatial drought monitor map is represented in Figure 13 below.

Lower Balochistan and southern Sindh are currently facing Moderate drought, while upper Sindh, south Punjab and north Baluchistan are experiencing mild drought due to moisture stress and lower-than-average rainfalls over the previous three months.

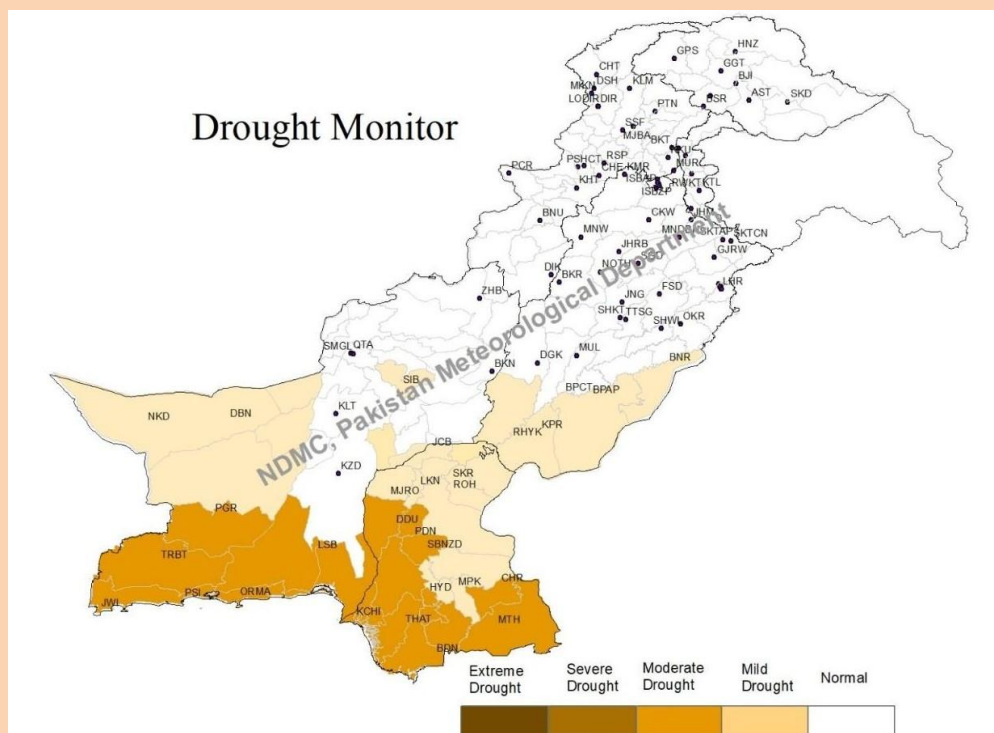
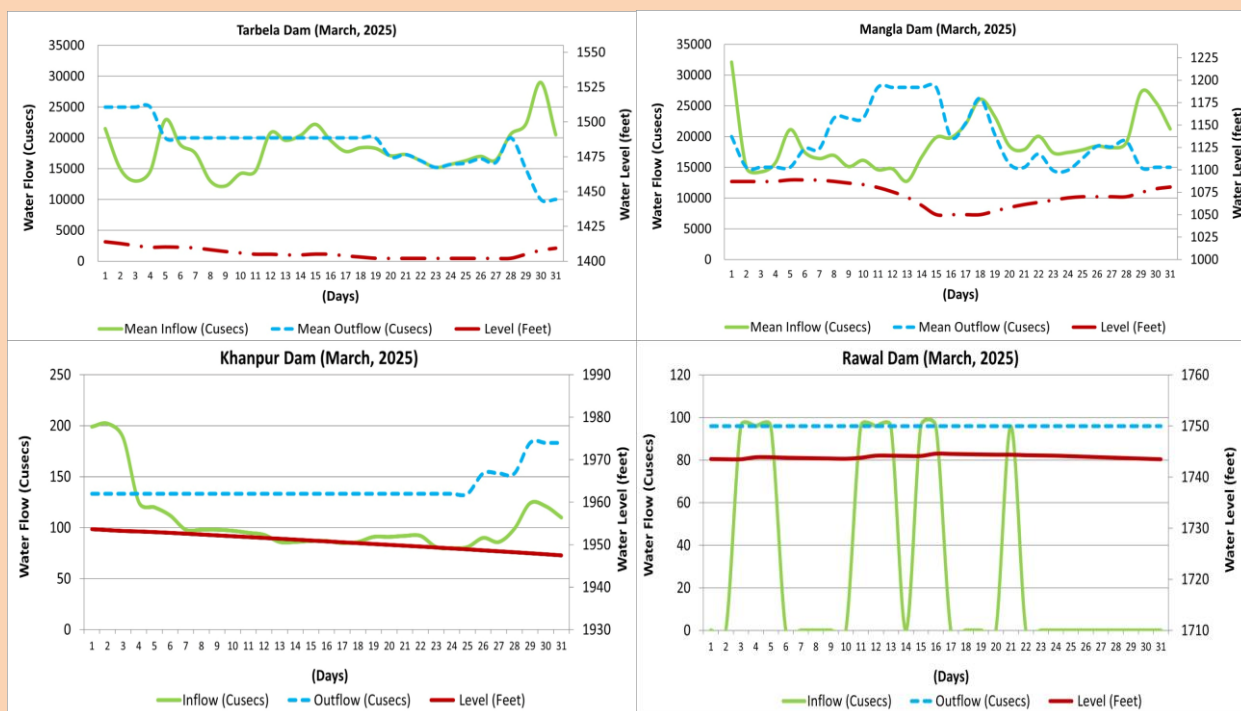


Figure 13: Drought Monitor of Pakistan for the month of March, 2025

## 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, Tarbela, Rawal and Khanpur reservoirs has started to increase due to glacial melt and recent rainfall received during the month.





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

## 9. Weather Outlook for April, 2025

For April 2025, forecasts indicate a trend toward a tendency for slightly below-normal rainfall in northern Punjab, Kashmir and the adjoining areas of northern Khyber Pakhtunkhwa. Concurrently, the southern regions are expected to experience rainfall that is closer to normal, with a reduced negative anomaly as per the region's climatological patterns.

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

## 10. Drought Outlook for April, 2025

The April 2025 forecast predicts normal rainfall in southern drought-prone regions which is already very less. The rising temperatures in the month would increase soil moisture stress creating water stress. Mild to moderate drought conditions already present in Sindh, Baluchistan and south Punjab may intensify if the rainfall remains deficient.

**All stakeholders across the country 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 due to recent rainfall but still the rainfall was deficient.
- In current months, crops in Punjab and KP are near to harvesting and do not require much rains but the duststorm and hailstorm in the region can cause damage. Crops of Sindh and Balchistan are still under growing process so any rainfall in the region would be helpful.
- The deficient rainfalls have also affected orchards, fruits, and vegetables, with seasonal fruits quality being affected. Persistent dry conditions in some areas have caused moisture stress, adversely affecting crop development.
- The months of April and May are unprecedented due to rising temperatures and possible extreme rainfall events. PMD weather forecasts should be regularly watched for any changing weather situation for preparatory measures.

## 12. Advice for Farmers

- Weather forecasts should be regularly listened for managing crop irrigation and harvesting process.
- To achieve a good yield, it is necessary to control weeds in the crop, which not only reduces the yield but also cause other negative impacts. Do not spray during strong winds and follow the advice of the agricultural department.
- Ready crop should be harvested quickly to prepare the field for next crop cultivation for good per acre yield.
- However, judicious use of available water stock is recommended for the lower half of the country.

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