

**Monthly Drought Bulletin
for the Month of May 2024**

National Drought Monitoring Centre (NDMC)

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Highlights

- During the month of May 2024, light to moderate rainfall events were reported at isolated places in the country.
- May 2024 rainfall was well below the normal (-66%) and stands as the second driest May since 1961. (The driest ever rainfall recorded in May is 3.6 mm in 1988).
- During the month of May 2024, normal to above-normal mean temperatures were recorded in most parts of the country. The mean temperature anomalies were in range from -1.5 to 5.1°C in the country
- During the month of June 2024, a tendency for near normal rainfall is expected in most parts of the country. The day time maximum temperatures are expected to remain above normal over most of the country with maximum departure over northern parts (northern Khyber Pakhtunkhwa and Gilgit-Baltistan).
- Flash Drought like conditions may be observed in some areas of Sindh, Balochistan and southern region in Punjab.
- Most parts of the country experiencing heat wave conditions are showing deficit in the soil moisture, which may impact agriculture, livestock and regional ecosystem.
- Keeping in view the weather forecast for the month of June 2024, disaster management authorities are advised to plan disaster risk management (DRM) activities accordingly.

1. Weather Summary for the Month of May, 2024

During the month of May 2024, light to moderate rainfall events reported at isolated places in the country, where as southern Punjab, Sindh and coastal areas of Balochistan remained dry. Kakul and Kalam received highest rainfall 63mm and 61mm respectively. The chief amounts of monthly rainfall recorded across Pakistan during May 2024 are shown in table 1. Figure 2 depicts the Normal rainfall for the month of May 2024.

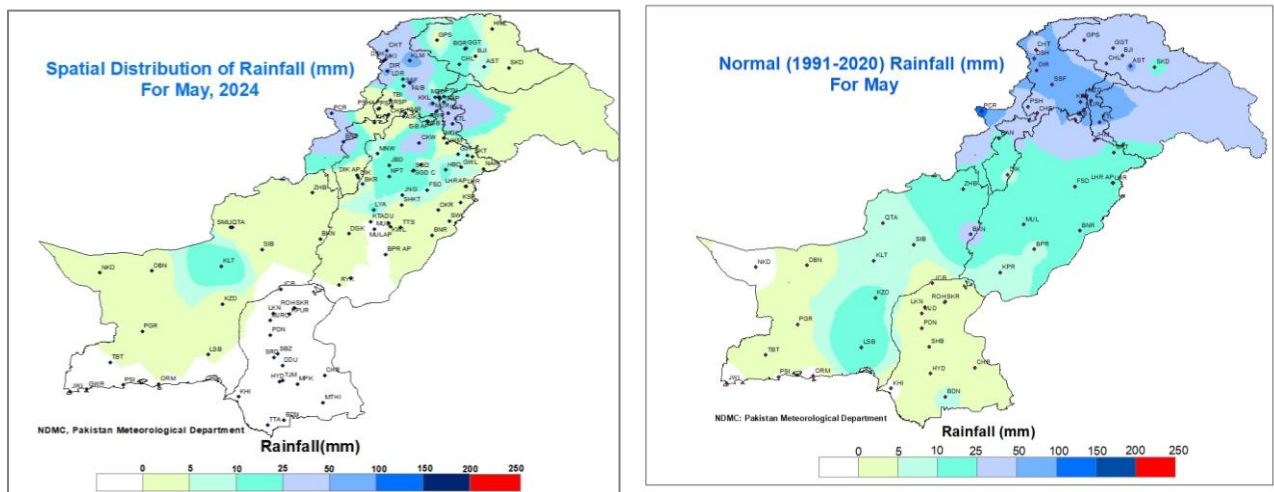


Figure 1: May 2024 Spatial Distribution of Rainfall **Figure 2:** May Normal (1991-2020) Rainfall

Figure 3 shows the departure of rainfall from the normal. Significantly below normal rainfall was reported in most parts of the country except Bannu and Kalat.

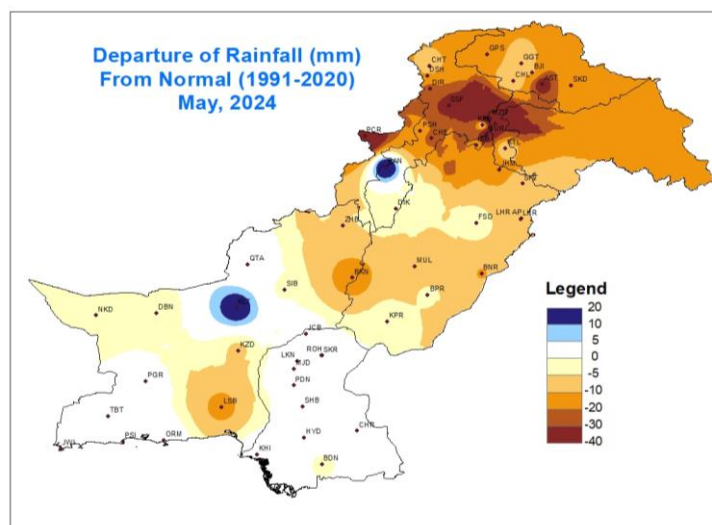


Figure 3: Departure of rainfall from Normal (1991-2020)

2.1 Mean Temperature Comparison

During the month of May 2024, spatial distribution of mean temperature recorded at PMD stations for the month of May 2024 is shown in figure 4, while figure 2 depicts the normal (1991-2020) temperature climatology for the month. During the month southern parts of the country maximum mean temperature crossed 38°C.

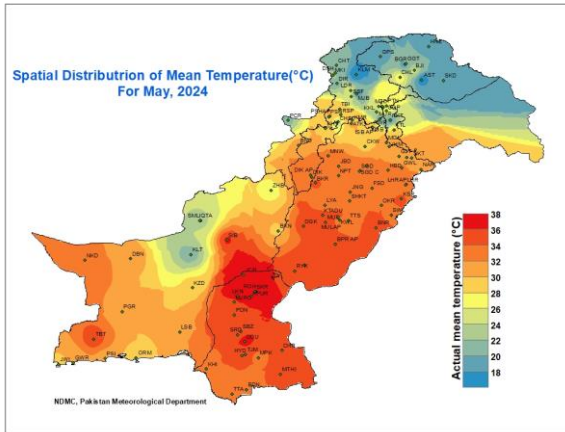


Figure 4: Mean Temperature (°C) May 2024.

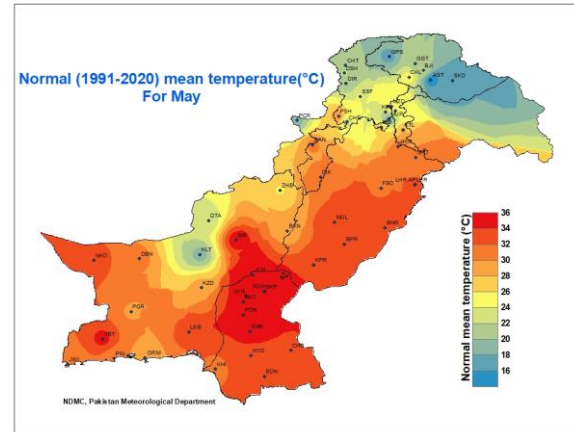


Figure 5: Normal (1991-2020) mean temperature (°C)

Departure of mean temperature from the normal (1991-2020) is shown in figure 6, which show normal to above-normal mean temperatures across the country, while some areas like Lesbella and Jiwani observed below normal mean temperature during the month.

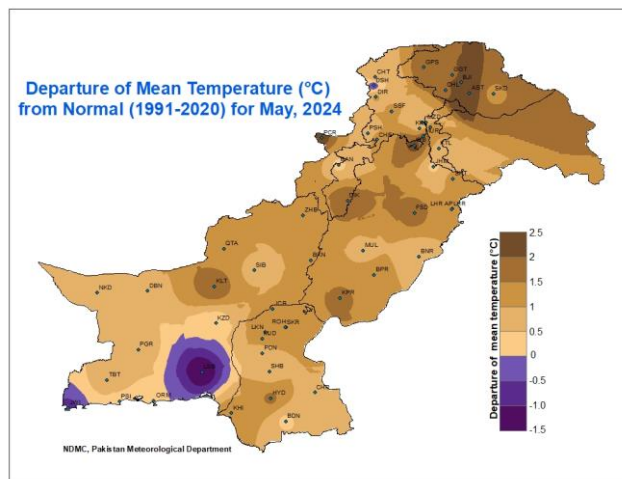


Figure 6: Departure of Temperature (°C) from Normal

2.2 Provincial comparison of stations rainfall (mm)

The comparison of actual rainfall to normal (1991-2020) for the month of May 2024 for Khyber Pakhtunkhwa is shown in figure 7 (a), Gilgit Baltistan and Azad Jammu & Kashmir in figure 7 (b), Punjab in figure 7 (c), Balochistan in figure 7 (d), and Sindh in figure 7 (e). All provinces received below normal precipitation as shown by the graphs.

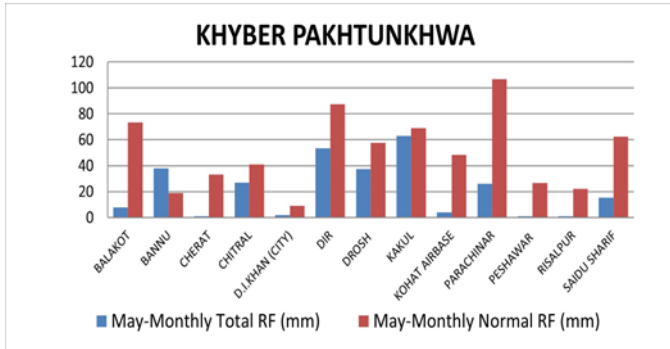


Figure 7a

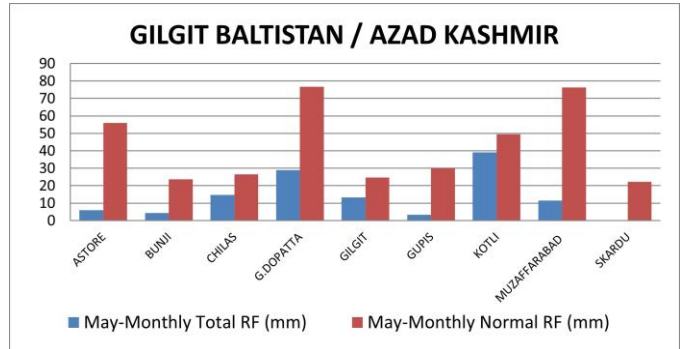


Figure 7b

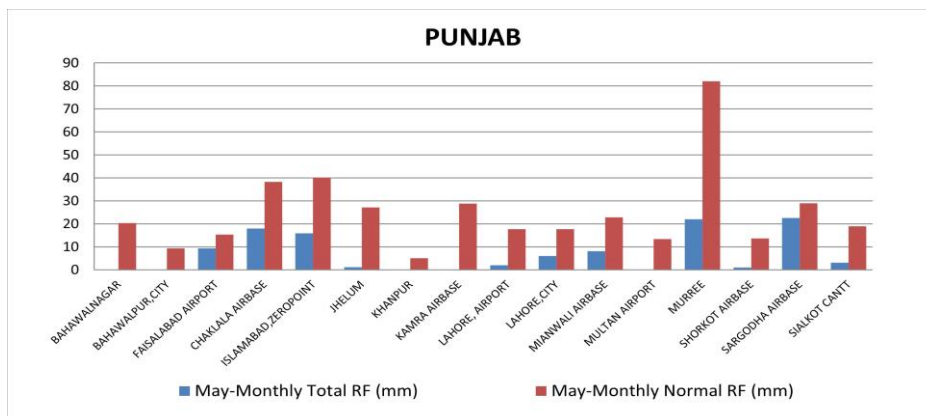


Figure 7c

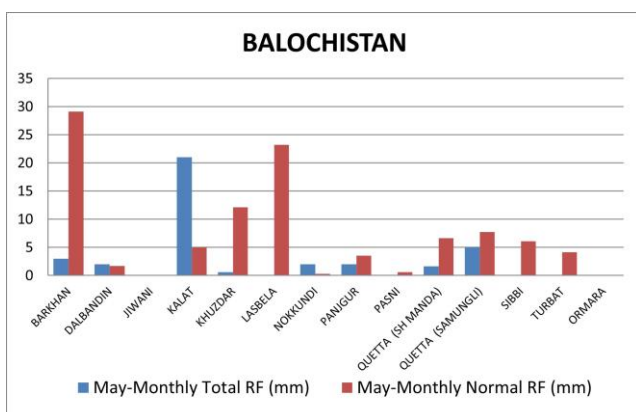


Figure 7d

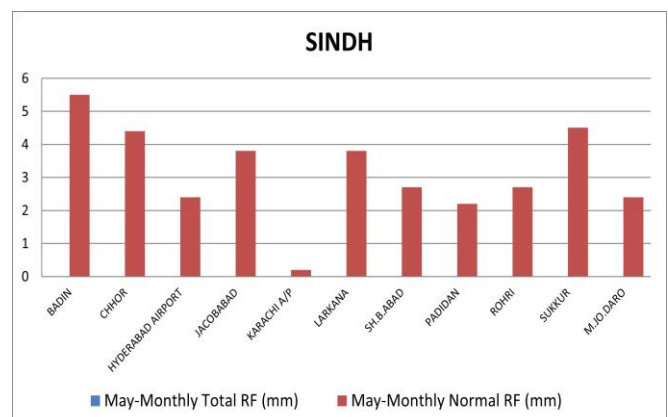


Figure 7e

2.3 Stations with Maximum rainfall during the Month

Highest rainfall stations are shown in Table1 below. Kakul, Kalam, and Malamjabba received maximum amount of rainfall ranges from 63 mm to 61 mm. The detailed data about maximum rainfall is displayed in the below table.

Table 1: Chief amount of rainfall recorded across Pakistan during the month of June, 2024.

Sr. No.	Station	Rainfall(mm)	Sr. No.	Station	Rainfall(mm)
1	KAKUL	63	11	KOTLI	39
2	KALAM	61	12	BANNU	38
3	MALAMJABBA	61	12	DROSH	37
4	CHATTAR KALAS	61	14	GARI DOPATTA	29
5	UPPER DIR	57	15	CHITRAL	27
6	CHAKOTHI	54	16	PARACHINAR	26
7	DIR	53	17	NOORPURTHAL	25
8	,MIRKHANI	43	18	SARGODHA AIRBASE	23
9	CHAKWAL	42	19	MURREE	22
10	RAWALAKOT	41	20	BAGROTE	21.3

3. Drought Situation Analysis

The spatial Flash drought monitor map based on the output results from different drought monitoring indices and Pakistan Meteorological Department ground station data across Pakistan is represented in figure 8. Flash Drought like conditions may be observed over some parts of Balochistan, Sindh, and in southern Punjab as shown in figure 8 below.

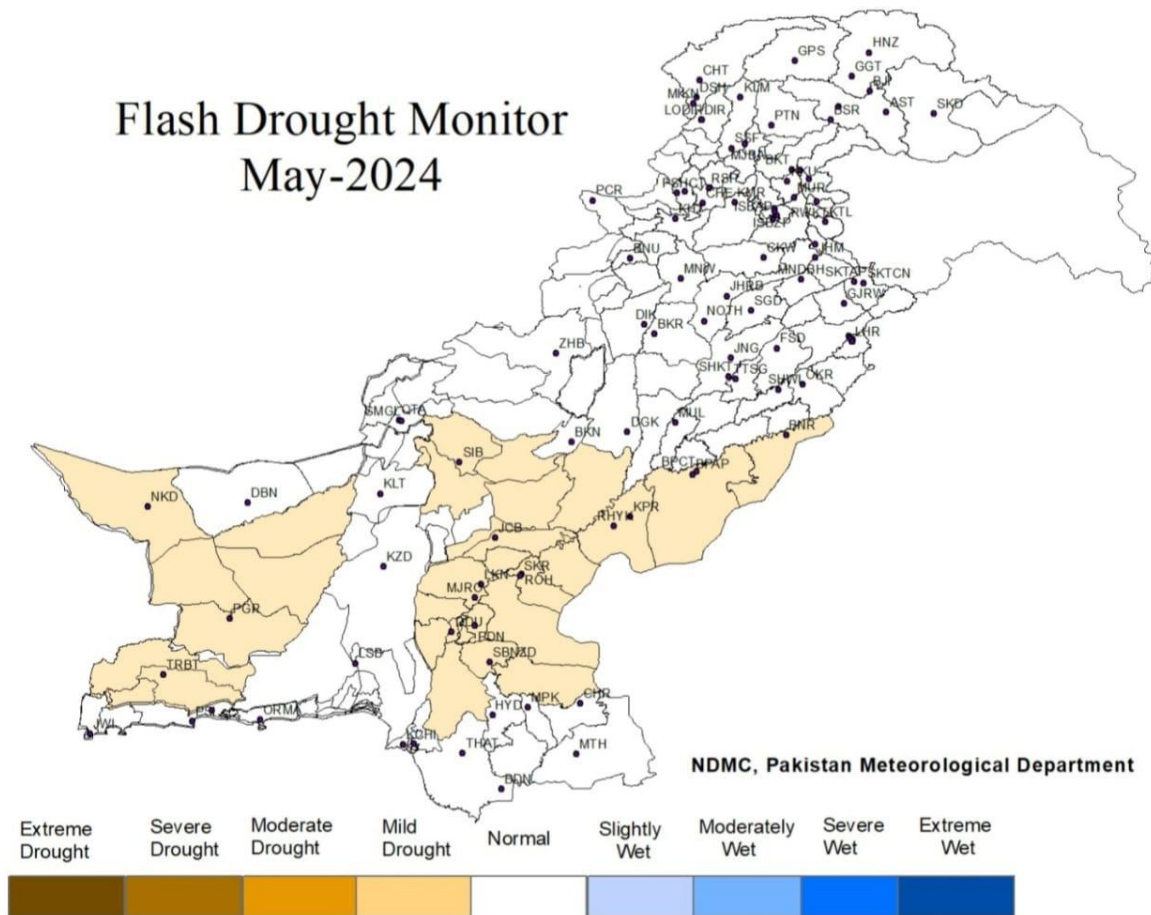


Figure:8 Flash Drought Monitor of Pakistan.

4. Temperature Vegetation Dryness Index (TVDI)

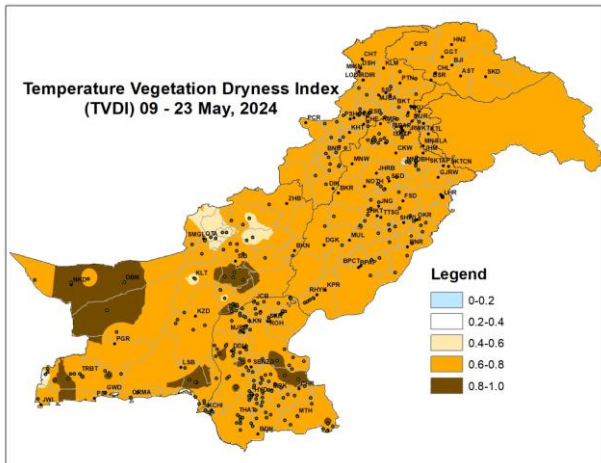


Figure 9: Temperature vegetation dryness index (TVDI)

Temperature Vegetation Dryness Index (TVDI) derived from MODIS products MOD12A2 (NDVI) and MOD11A2 (LST) is shown in Figure 9, which indicates moderate dry conditions showing the dryness and soil moisture deficit over most parts of the country and particularly over southern parts of Pakistan.

5. Normalized Difference Vegetation Index (NDVI)

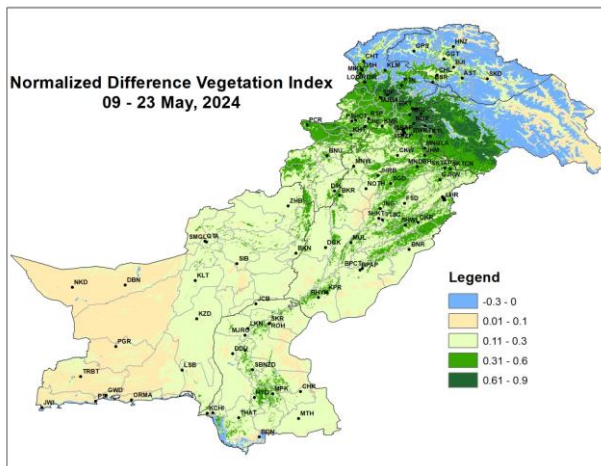


Figure 10 Normalized difference vegetation index (NDVI)

Normalized Difference Vegetation Index values for May 2024 are shown in figure 10. NDVI conditions in AJK, Punjab, Khyber Pakhtunkhwa, and along the Indus Belt are good, while in rest of the areas NDVI are minimum showing the effects of heat wave and flash drought.

6. Length of Consecutive Dry Days

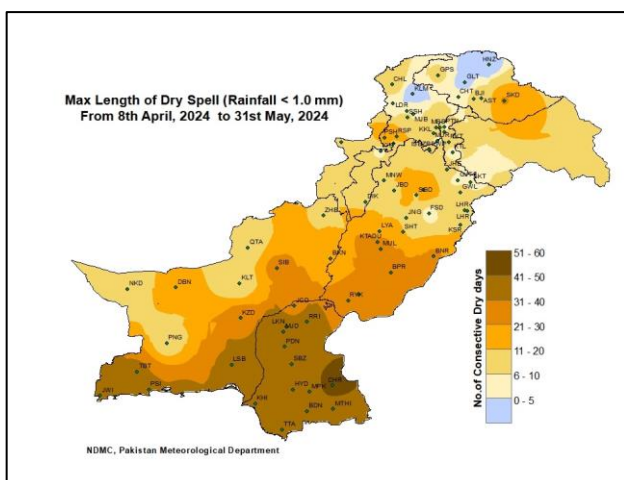


Figure 11: No. of consecutive dry days

The maximum length of consecutive dry days spell with rainfall, 1.0 mm is shown in figure 11. Number of consecutive dry days has increased from 31 to 50 days across Sindh and Coastal Baluchistan. At Chhor number of dry days have reached to 60.

7. Water Availability/ Dams Flow Data

The water inflow, outflow and levels of the Rawal, Khanpur, Tarbela and Mangla dams for the month of May 2024 are shown in the four panels of figures 12. The level at Tarbela and Mangla reservoirs has increased to 1473 feet and 1156 feet respectively due to improved water flow as a result of snow melting in their catchment areas. The maximum levels (storage capacity) of the major reservoirs (Tarbela and Mangla) are 1550 feet and 1242 feet respectively. However, no change has been observed at Rawal reservoir.

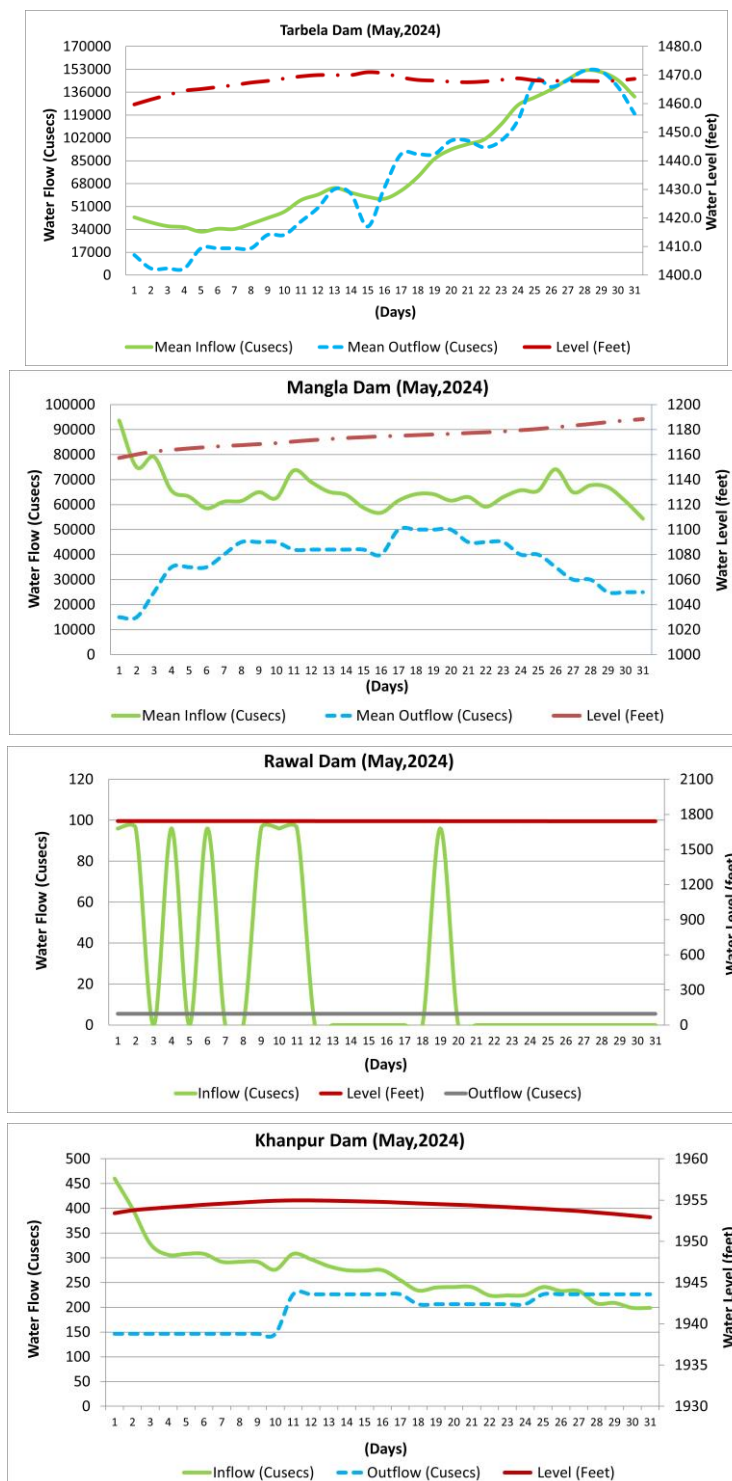


Figure 12: Water inflow, outflow and level of Rawal, Khanpur, Tarbela and Mangla Dams.

8. Weather Outlook for June 2024

During the month of June 2024, tendency for near normal rainfall is expected in most parts of the country. The day time maximum temperatures are expected to remain above normal over most of the country with maximum departure over northern parts (northern Khyber Pakhtunkhwa and Gilgit-Baltistan). Concurrently warmer than normal minimum temperatures are expected nationwide with maximum departure over northern Khyber Pakhtunkhwa, Gilgit-Baltistan and southwestern Balochistan.

9. Drought Outlook for June 2024

Keeping in view the forecast for June 2024, drought-affected areas of Sindh, Balochistan and southern Punjab may not get good relief in continuation to the previous month (May 2024).

All stakeholders are advised to make all efforts to save the water available across rain-fed areas of Sindh, Balochistan and southern Punjab, especially areas under influence of heat wave and plan DRM activities accordingly.

10. Crop Condition

Based on recent extreme heat wave events, the amount of soil moisture available is currently under stress in most parts of the country. Accordingly, the seasonal crops like cotton, peanut, sugarcane, seasonal vegetables and orchards are under water stress and require additional irrigation in most parts of the country major agricultural soils (particularly in the upper half) hold a considerable moisture based on the recently prevailed weather conditions.

11. Advice for Farmers

- I. Farmers of upper parts of the country are advised to complete the harvesting process at earliest possible and save the crop and fodder to avoid any weather induced loss from rains and strong winds during the month.
- II. Farmers of the lower half of the country are advised to irrigate the fields for the Kharif crops as per requirement keeping in view the forecast in those areas.
- III. During the harvesting, farmers are advised to keep themselves abreast of the weather conditions and keep listening & watching carefully the weather advisories issued through radio and televisions on a regular basis.

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