

Monthly Drought Bulletin For the Month of July 2024

Highlights

- During the month of July 2024, moderate to heavy rainfall events were reported across most of the country except western part of the Baluchistan.
- Above-normal mean temperatures were recorded in most parts of the country. The mean temperature anomalies were in range from -2.0 to 4.0°C in the country.
- During August 2024, Monsoon rains will continue which will further extinguish deficit in the soil moisture, which will positively impact agriculture, livestock and regional ecosystem.
- The day time maximum temperatures are expected to remain normal to below normal over most of the country, however, upper KP and GB, will remain warmer than normal. Concurrently, warmer than normal minimum temperatures are expected nationwide with maximum departure over GB and southwestern Balochistan.
- Some relief has been observed in moisture stress areas of Mithi and Chorr in Sindh while no relief in Balochistan affected areas so far. Keeping in view the weather forecast for the month of August 2024, disaster management authorities are requested to plan DRM activities accordingly.

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1. Weather Summary for the month of July, 2024

The spatial distribution of rainfall is shown in Figure 1. During July 2024, Light, moderate and Heavy rainfall received across the country whereas Gilgit Baltistan, isolated western parts of Khyber Pakhtunkhwa, Balochistan and some areas of Sindh province received trace or zero rainfall during the month. The chief amounts of monthly rainfall recorded across Pakistan during July 2024 are shown in Table:1

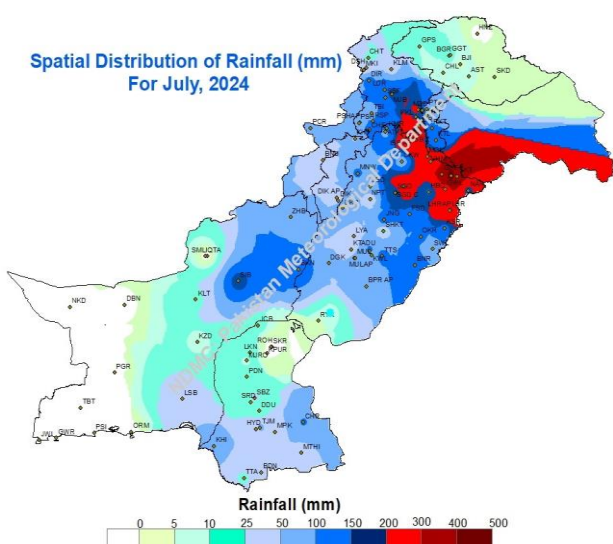


Figure 1: Spatial Distribution of rainfall

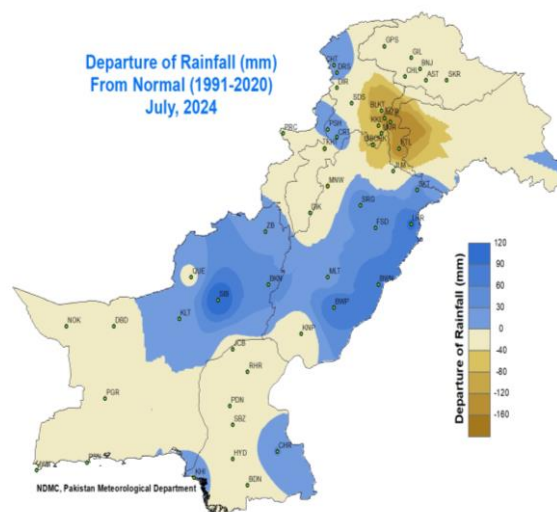


Figure 2: Departure of rainfall from Normal

Figure 2 depicts the departure of rainfall from the normal(1991-2020). Below-normal rainfall was recorded in isolated areas of Khyber Pakhtunkhwa, GB, AJK, Sindh, Blochistan and some areas of Punjab province. While the rest of the country received above-normal rainfall shown in blue colour.

Sr.No.	Station	Rainfall(mm)	Sr.No.	Station	Rainfall(mm)
1	SIALKOT AIRPORT	468.21	11	GUJRANWALA	270.02
2	CHAKLALA AIRBASE	385.06	12	BALAKOT	228
3	SIALKOT CANTT	326.34	13	JHELUM	221.8
4	GUJRAT	306	14	MUZAFFARABAD CITY	192
5	MANDIBAHAUDDIN	304.53	15	KAKUL	191.8
6	LAHORE, AIRPORT	302.04	16	MALAMJABBA	188
7	ISLAMABAD,ZEROPOINT	289.73	17	NAROWAL	183.63
8	LAHORE,CITY	282.04	18	SARGODHA AIRBASE	182.03
9	MANGLA	275.81	19	SARGODHA CITY	176.8
10	MURREE	271.52	20	SIBBI	167.01

Spatial distribution of mean temperature recorded at PMD stations for the month of July 2024 is shown in figure 3, During the month southern parts of the country maximum mean temperature reached up to 35°C.

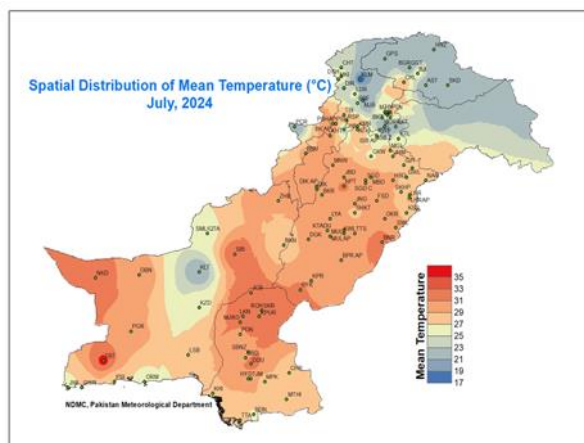


Figure 3: Monthly Mean Temperature (°C)

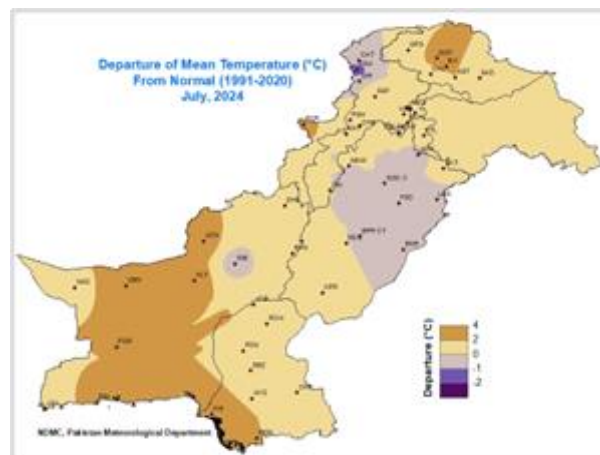


Figure 4: Monthly Departure from Normal

Departure of mean temperature from the normal (1991-2020) is shown in figure 4, which show normal to above-normal mean temperatures across most part of the country, while some of the Punjab and NW Khyber Pakhtunkhwa observed below normal mean temperature during the month.

Monthly Normal (1991-2020) rainfall for the month of July and Monthly Normal (1991-2020) mean temperature(°C) for the month of July are shown in figure 5 and 6 respectively.

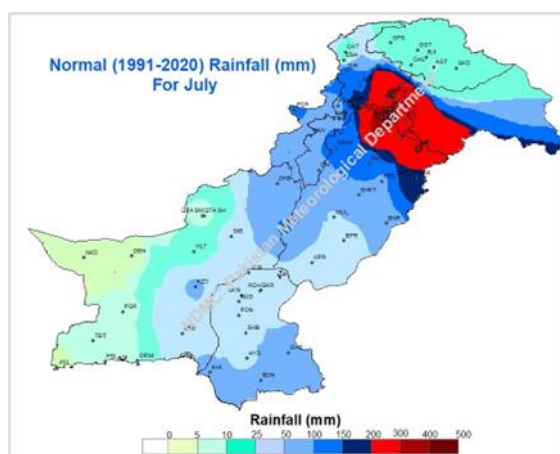


Figure 5: Monthly Normal Rainfall (mm) July

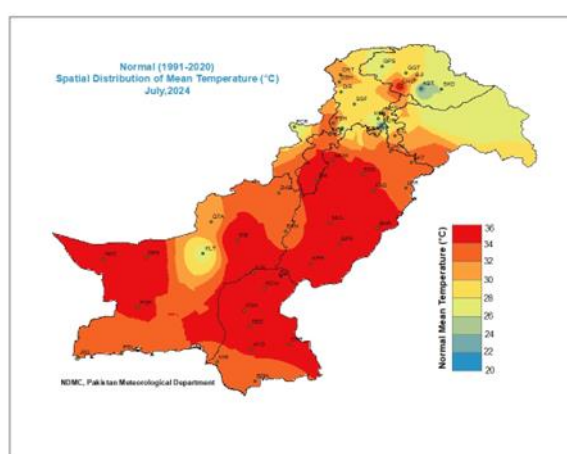


Figure 6: Monthly Mean Temperature July (°C)

2. Actual to Normal Monthly Rainfall Comparison for July-2024

Actual to Normal rainfall (1991-2020) for month of July 2024 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).

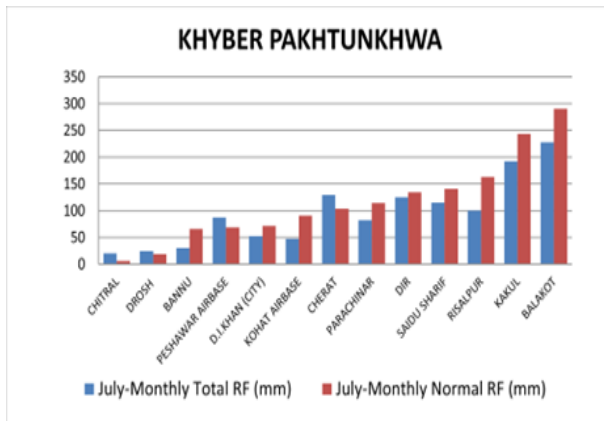


Figure 7a

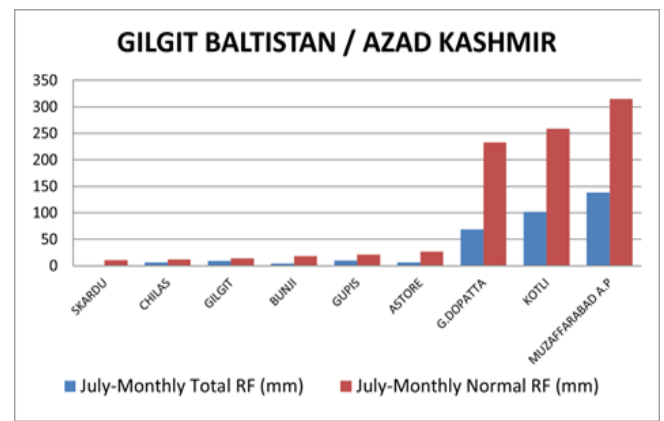


Figure 7b

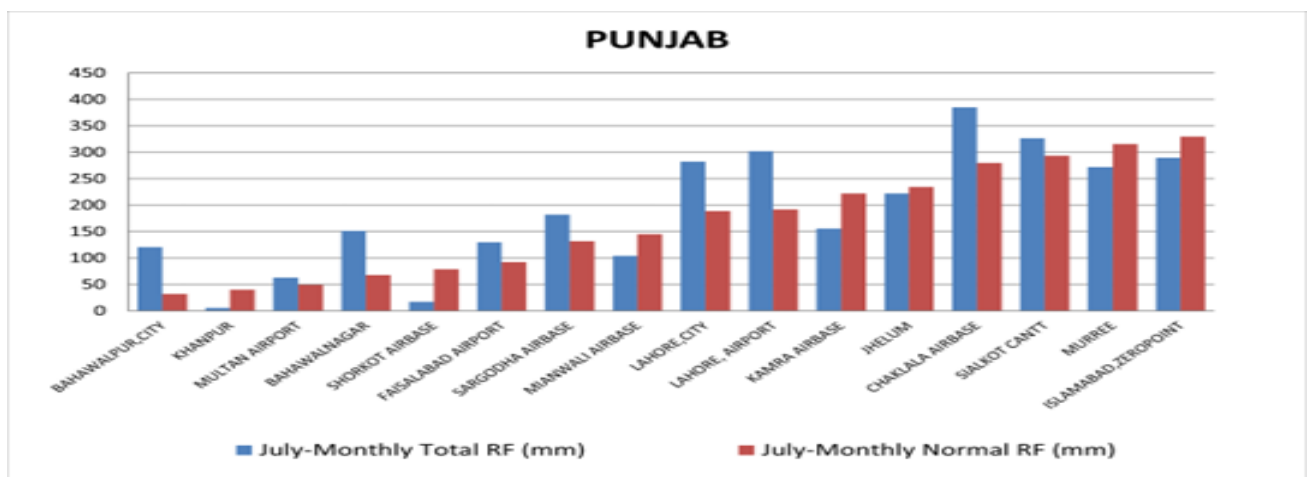


Figure 7c

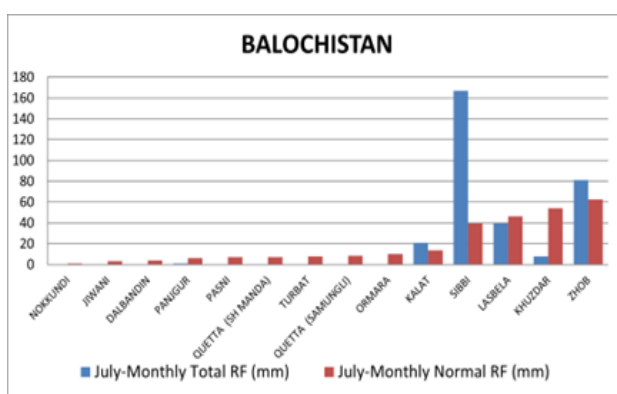


Figure 7d

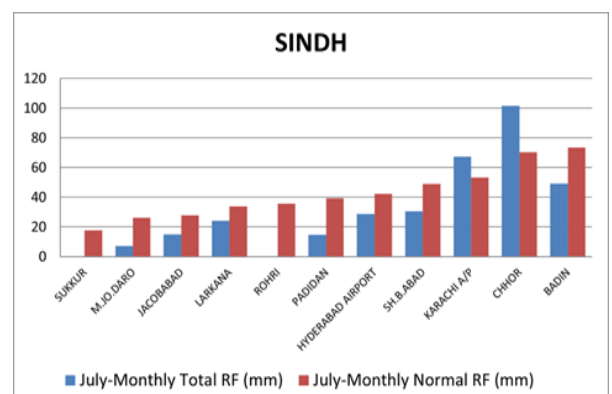


Figure 7e

3. Normalized Difference Vegetation Index (NDVI)

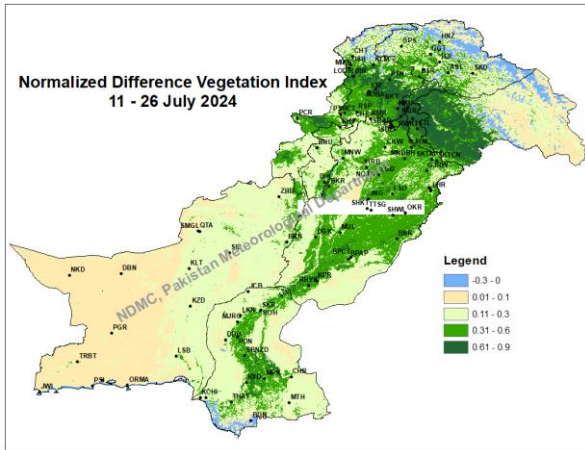


Figure 8: NDVI

Normalized Difference Vegetation Index values for July 2024 are shown in Fig.8. NDVI conditions in AJK, Punjab, Khyber Pakhtunkhwa, and along the Indus belt are good, depicting the widespread vegetation in fields good conditions due to good chlorophyll content stored in the plants and the vegetation cover.

4. Land Surface Temperature (LST)

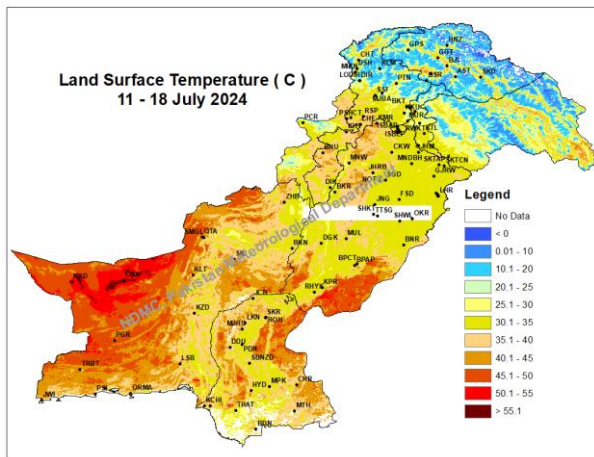


Figure 9: LST (°C)

Land Surface Temperatures (LST) for the period 11–18 July 2024 are represented in Fig. 9. In the central parts of the country, average daytime temperatures were above 30°C while in lower parts of the country, the temperature was reported above 35°C during the period.

Land Surface Temperatures during the period 19 – 26 July are shown in Fig. 10. In some areas in the north decrease in temperatures trend has been observed due to the weather system while in the south increase in temperature is observed as compared to the preceding month.

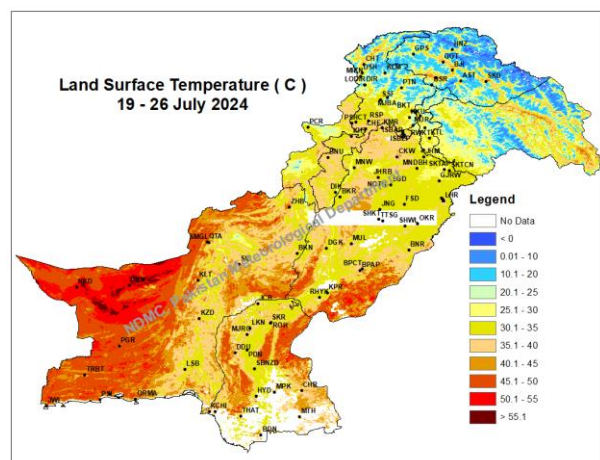


Figure 10: LST (°C)

5. Temperature Vegetation Dryness Index (TVDI)

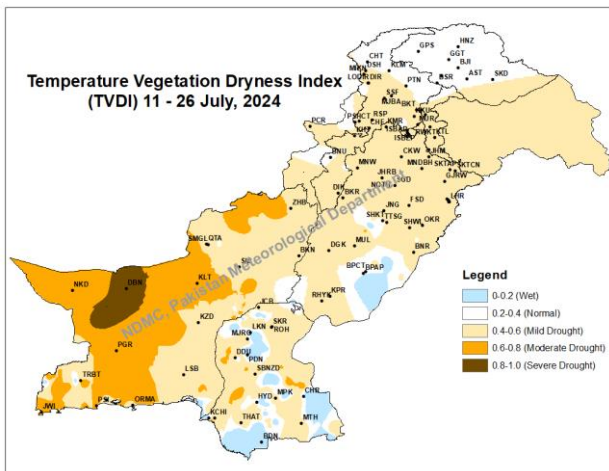


Figure 11: TVDI

Temperature Vegetation Dryness Index (TVDI) derived from MODIS products MOD13A2 (NDVI) and MOD11A2 (LST) is shown in Fig. 11, which indicates mild dry conditions are shown by the TVDI Index showing the start of dryness and less soil moisture conditions in the western Balochistan and coastal areas.

6. Length of Consecutive Dry Days Spell:

The maximum length of consecutive dry days spell with rainfall, 1.0 mm is shown in figure 12. Number of consecutive dry days has increased from 21 to 110 days across western and NW Balochistan

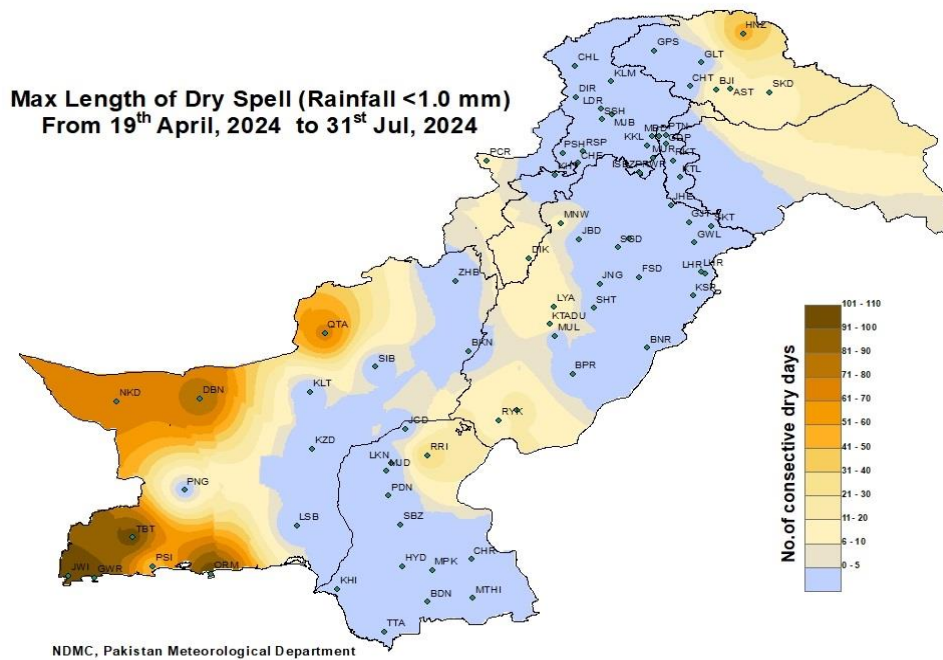


Figure 12: No. of consecutive dry days

7. Drought Monitor for the month of July 2024

The spatial 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. 13.

In Balochistan province, Nokundi, Dalbandin, Turbat, Jiwani, Gawadar and Ormara are under moisture stress due to no rains during last three months.

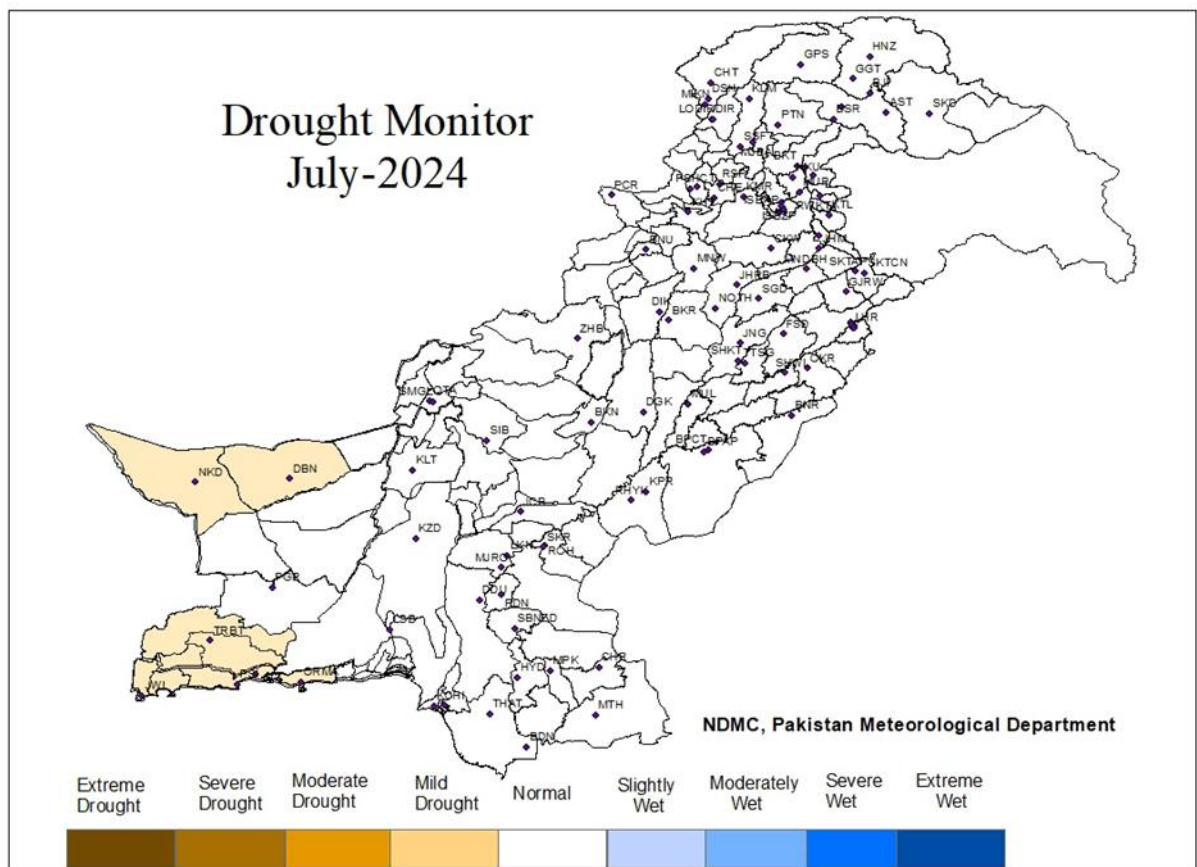


Figure 13: Drought Monitor of Pakistan for the month of July 2024

8. Water availability/ Dams flow data:

In the month of July 2024, water inflow, outflow and levels of the Rawal, Khanpur, Tarbela and Mangla dams are shown in Figure.14. The level at Terbela, Mangla and reservoirs has raised while at other major reservoirs has dropped or same due to less or zero rainfall in the catchment areas.



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

9. Weather Outlook for August 2024

During the month of August 2024, as per the outlook overall a tendency for near normal rainfall is expected in most parts of the country. However, northeastern Punjab and southeastern Sindh may get slightly above normal rainfall during the month.

Nationwide, the day time maximum temperatures are expected to remain normal to below normal over most of the country, however, northern parts (Upper Khyber Pakhtunkhwa and Gilgit-Baltistan), will remain warmer than normal. Concurrently, warmer than normal minimum temperatures are expected nationwide with maximum departure over Gilgit-Baltistan and southwestern Balochistan.

10. Drought Outlook for August 2024

Keeping in view the forecast for August 2024, more monsoon spells are forecasted for August, drought-affected areas of Sindh, Balochistan and southern Punjab may get good relief in continuation to the previous month (July 2024).

All stakeholders are advised to make all efforts to save the water available across rain-fed areas of Punjab, Sindh and Balochistan, especially in previously drought-affected areas and plan DRM activities accordingly.

11. Crop Condition:

The Kharif Crops season varies by region, starting at the earliest May-July. Kharif crops are usually sown at the beginning of the first rains during the advent of the southwest monsoon season, and they are harvested at the end of the monsoon season (October). Due to satisfactory rainfall reported in most of the plains of the country, soil moisture condition is also satisfactory for most of standing seasonal crops like cotton, peanut, sugarcane, seasonal vegetables, and orchards.

12. Advice for Farmers:

- I. Pest/viral attacks and more weed growth are expected after recent rains on sugarcane crop. Farmers are therefore advised to take in time, precautionary measures in this regard.
- II. Farmers of upper half and northeast Balochistan should be careful about irrigation and spraying chemicals on the crops during or before expected rains during the period.
- III. Farmers are advised to control further weed growth at the present growing stages to stop any negative impact over the crops. Weeds removing practices should be started soon after expected rains in the mentioned areas.
- IV. Due to monsoon rains, farmers are advised to take precautionary measures in time to protect their crops, livestock and other property from any expected heavy rains, strong winds / thunderstorm.

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