

# Monthly Drought Bulletin For the Month of October 2023

## Highlights

- During the month of October 2023, Light to moderate rainfall events were reported across the country where as most of the areas in Balochistan and Sindh received trace to zero rainfall during the month.
- Precipitation over most of the drought-prone area of Balochistan and in Sindh province were below normal and may not provide much relief to moisture stress conditions over there.
- Overall a tendency for normal to slightly above normal rainfall is expected in most parts of the country. Temperatures are forecasted to remain slightly above normal nationwide.
- Moisture stress areas of Sindh, Baloshitan and Cholistan in Punjab may get some relief. Keeping in view the weather forecast for the month of November 2023, disaster management authorities are requested to plan DRM activities accordingly.

## **National Drought Monitoring Centre (NDMC)**

Headquarters Office, Sector H-8/2, Islamabad

Tel : + (92-51) 9250598, Fax: + (92-51) 9250368, URL: <http://www.pmd.gov.pk>

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**Chief Meteorologist, NDMC, Pakistan Meteorological Department.**

**Chief Editor:** Dr.Shahzada Adnan, Senior Meteorologist, NDMC, Islamabad

**Editor:** Nasir Yaseen, Meteorologist, NDMC, Islamabad

## 1. Weather Summary for the month of October, 2023

The spatial distribution of rainfall is shown in Figure 1. During the month of October 2023, Light to moderate rainfall events reported across the country particularly Khyber Pakhtunkhwa, upper Punjab and AJK. However the southern province i.e., Balochistan and Sindh received trace or zero rainfall during this month. The chief amounts of monthly rainfall recorded across Pakistan during October 2023 are shown in Table-1

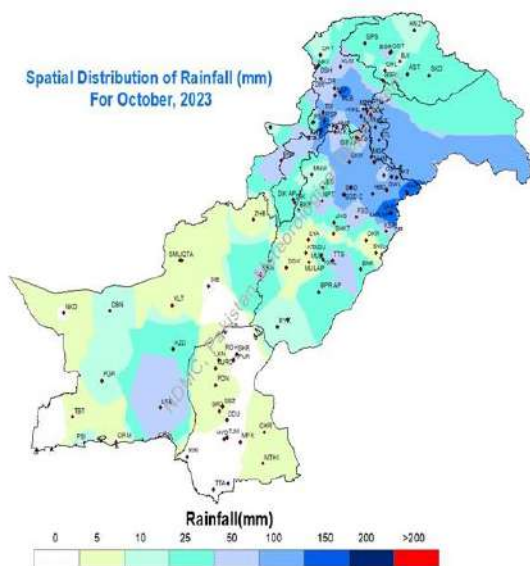


Figure 1: Spatial Distribution of rainfall

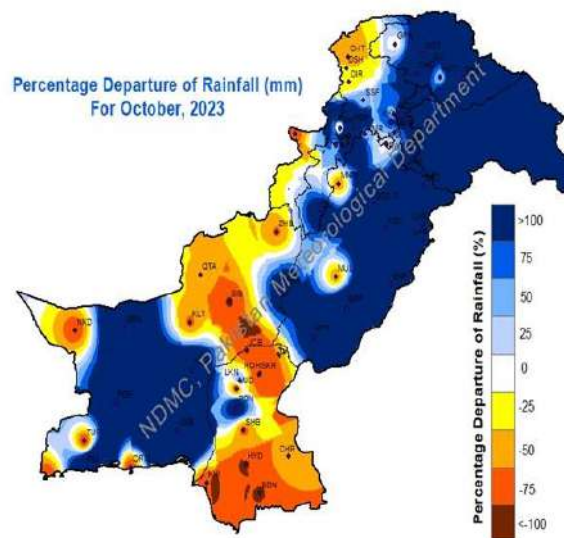


Figure 2: Percentage Departure of rainfall

Figure 2 depicts the percentage departure of rainfall from the normal. Below-normal rainfall was recorded at most of the isolated places in Sindh, northern Balochistan and western Khyber Pakhtunkhwa while the rest of the areas got normal to slightly above-normal rainfall as shown in blue colour.

<b>Table-1: Chief amount of rainfall recorded across Pakistan during the month of October, 2023</b>					
Sr.No.	Station	Rainfall(mm)	Sr.No.	Station	Rainfall(mm)
1	GULSHAN-E- RAVI-Lahore	235.01	11	MURREE	76.52
2	LAHORE, AIRPORT	143.02	12	GUJRANWALA	76.2
3	RISALPUR	123.02	13	G.DOPATTA	74.8
4	MALAMJABBA	120	14	HAFIZABAD	72.8
5	CHERAT	112	15	MANGLA	71.71
6	NAROWAL	107.41	16	FAISALABAD	68
7	MUZAFFARABAD AIRPORT	92.6	17	JHELUM	67.9
8	KAKUL	91.01	18	PATTAN	58
9	RAWALAKOT	90.9	19	SARGODHA AIRBASE	55.03
10	SIALKOT CANTT	86	20	KOTLI	54

## 2. Drought Situation Analysis

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. 3.

In the Balochistan Province, the district Chagi is facing moisture conditions and in the Sindh Province, the districts of Tharparkar and Umerkot and Cholistan region (Bahawalpur, Bhawalnagar and Rahim Yar Khan) in Punjab are experiencing normal conditions.

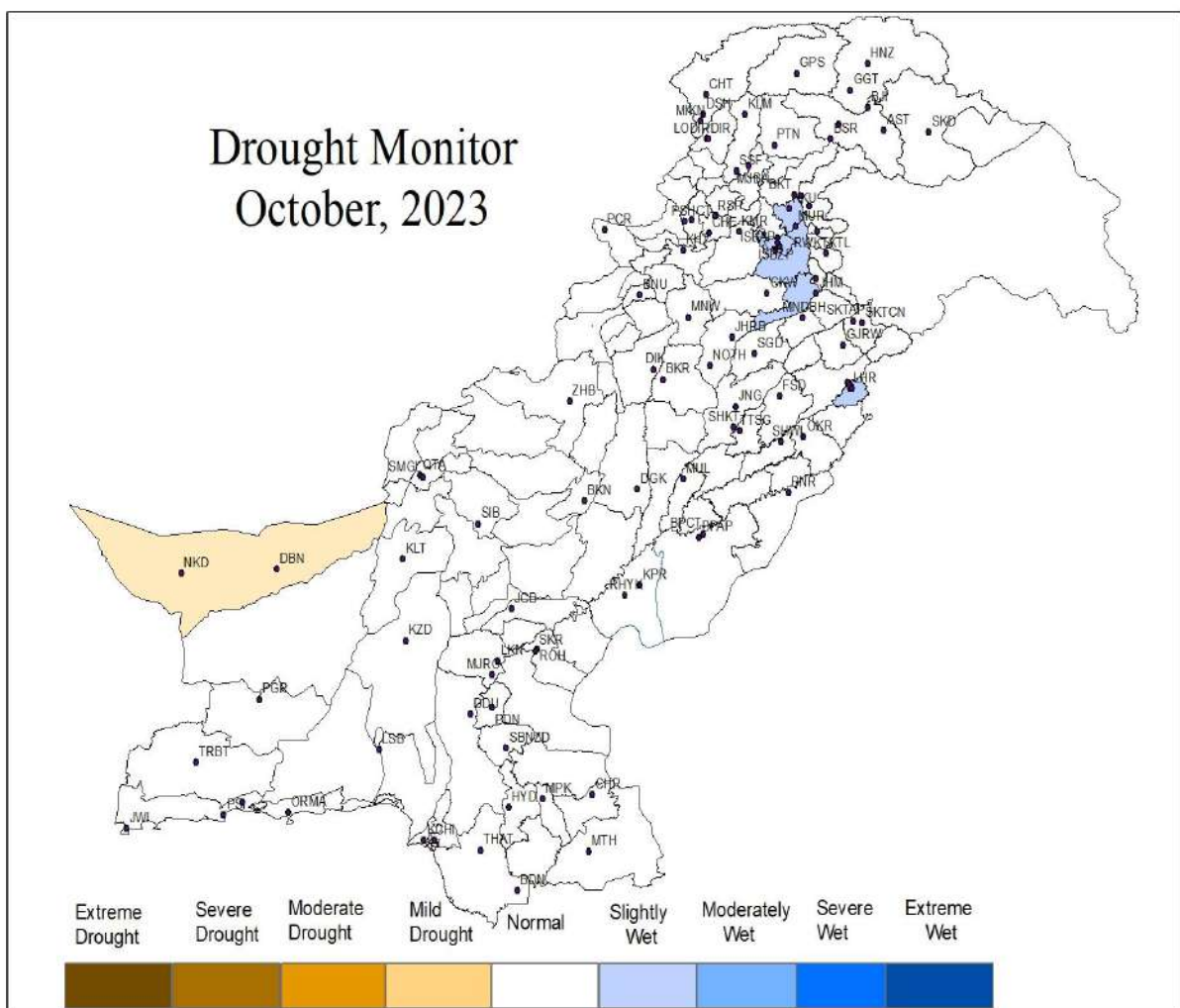
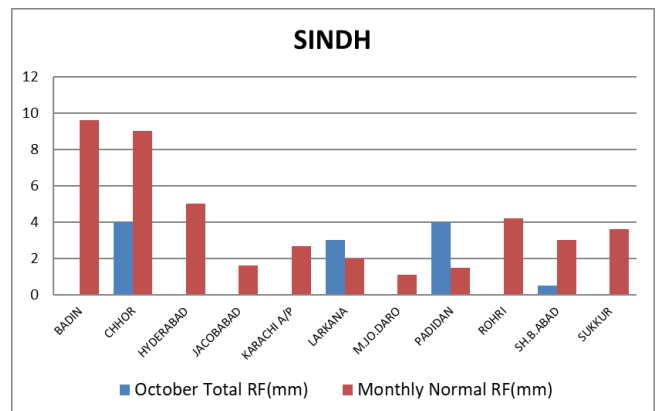
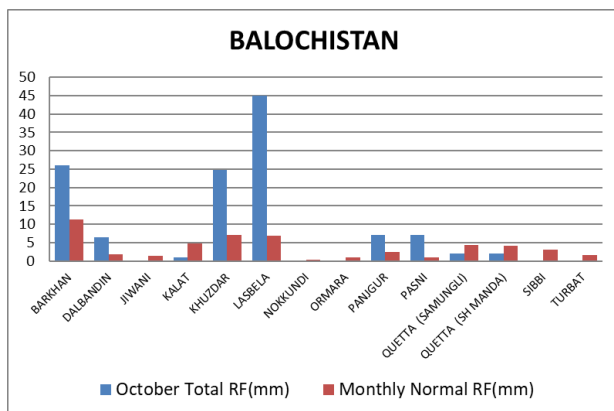
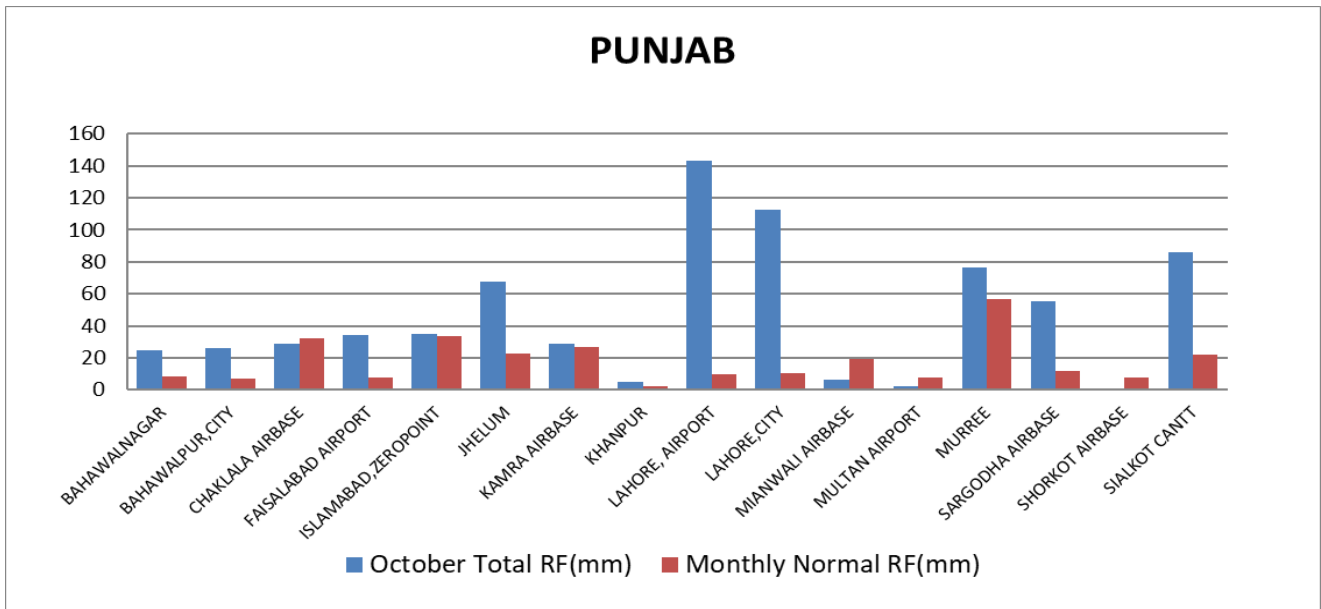
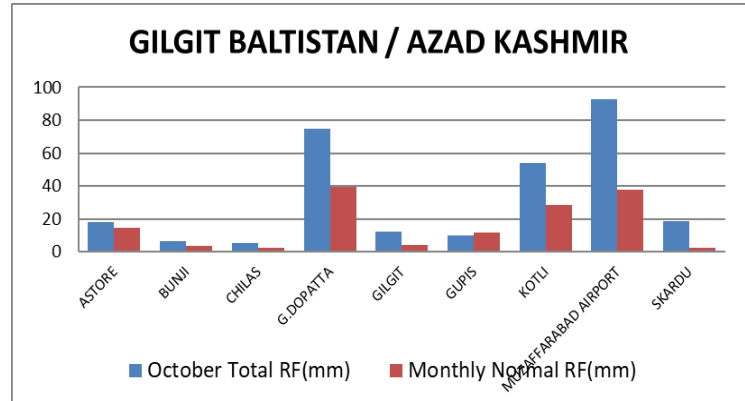
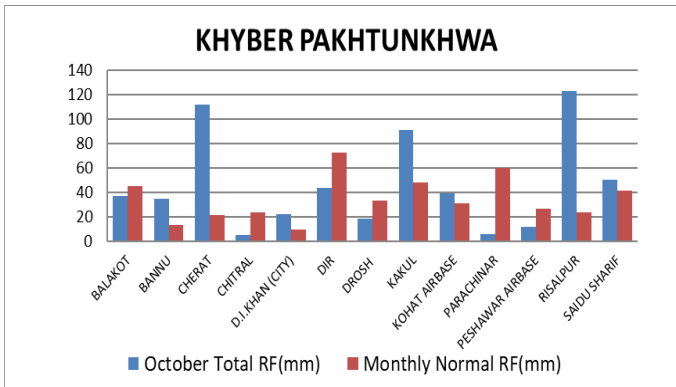


Figure 3: Drought Monitor of Pakistan

# I. Monthly Normal to Actual Rainfall Comparison for October-2023



## II. Normalized Difference Vegetation Index (NDVI)

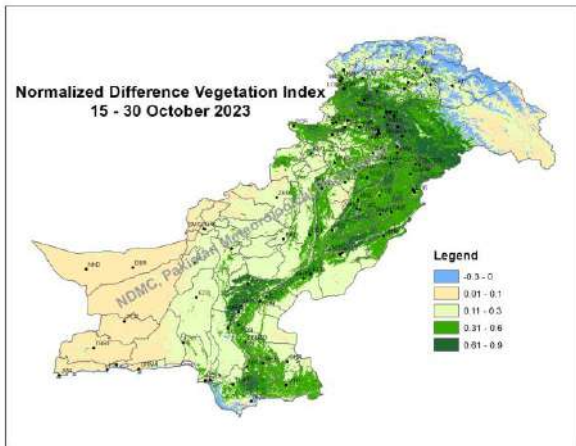


Figure 4: NDVI

Normalized Difference Vegetation Index values for October 2023 are shown in Fig.4. 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.

## III. Land Surface Temperature (LST)

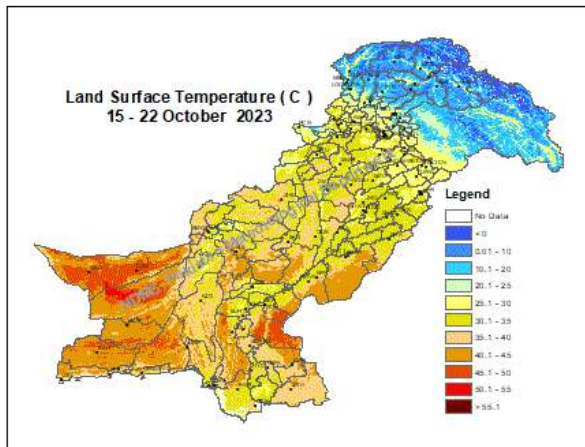


Figure 5: LST (°C)

Land Surface Temperatures (LST) for the period 15 to 22 October 2023 are represented in Fig. 5. 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.

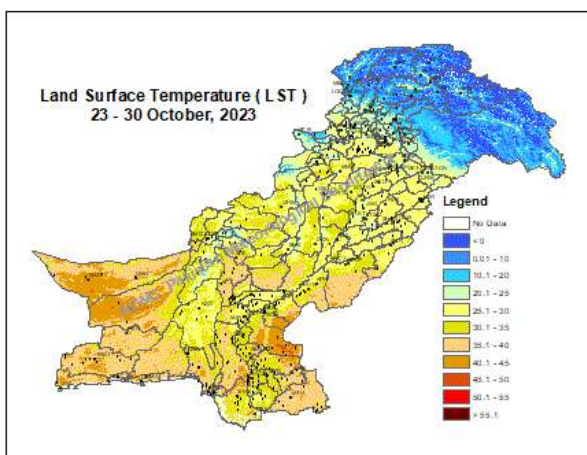


Figure 6: LST (°C)

LandSurface Temperatures during the period 23 – 30 October are shown in Fig. 6. In some areas in the north, LST showed a shape decrease whereas the south half the temperature decrease is gradual.

#### IV. Temperature Vegetation Dryness Index (TVDI)

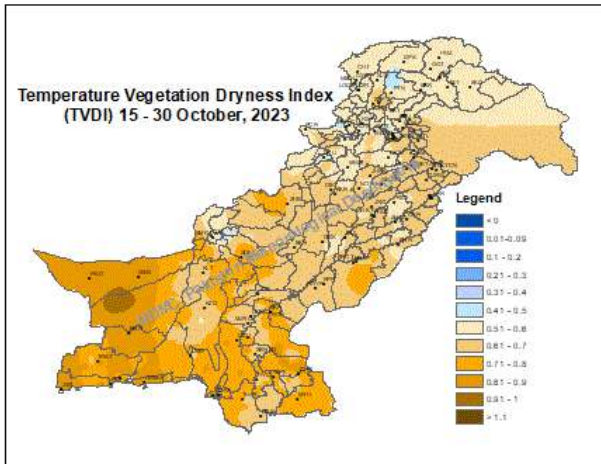
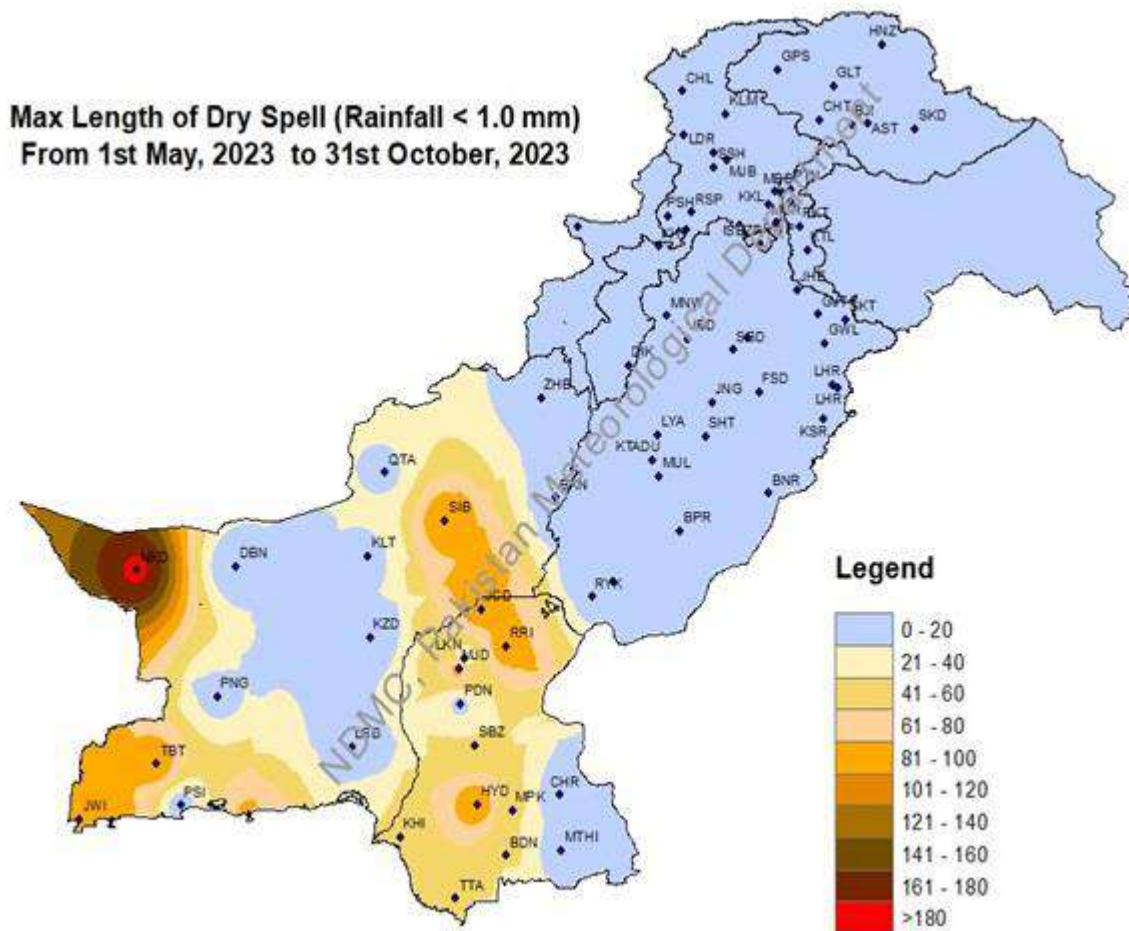


Figure 7: TVDI

Temperature Vegetation Dryness Index (TVDI) derived from MODIS products MOD13A2 (NDVI) and MOD11A2 (LST) is shown in Fig. 7, which indicates moisture stress (mild dry) conditions in the western Balochistan, coastal areas and some parts of Sindh and Punjab as well.

#### V. Length of Consecutive Dry Days:



### 3. Water availability/ Dams flow data:

In the month of October 2023, water inflow, outflow and levels of the Rawal, Khanpur, Tarbela and Mangla dams are shown in Figs. 8 & 9. The level at Terbela, Mangla and Rawal reservoirs is satisfactory while in Khanpur dam, no change was observed.

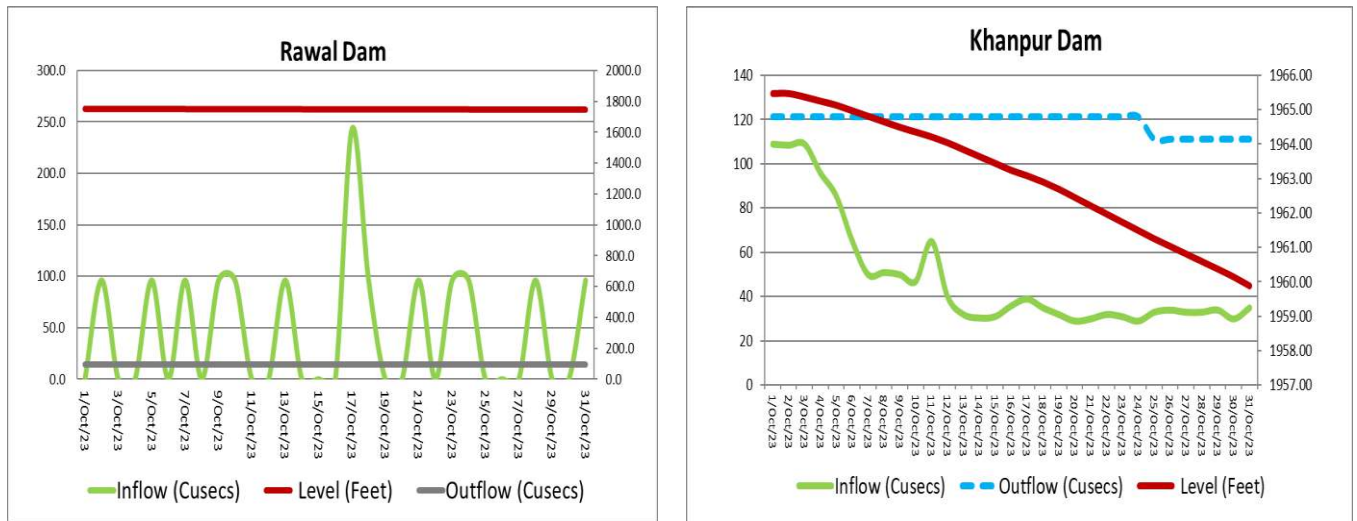


Figure 8: Water inflow, outflow and level of Rawal and Khanpur Dams

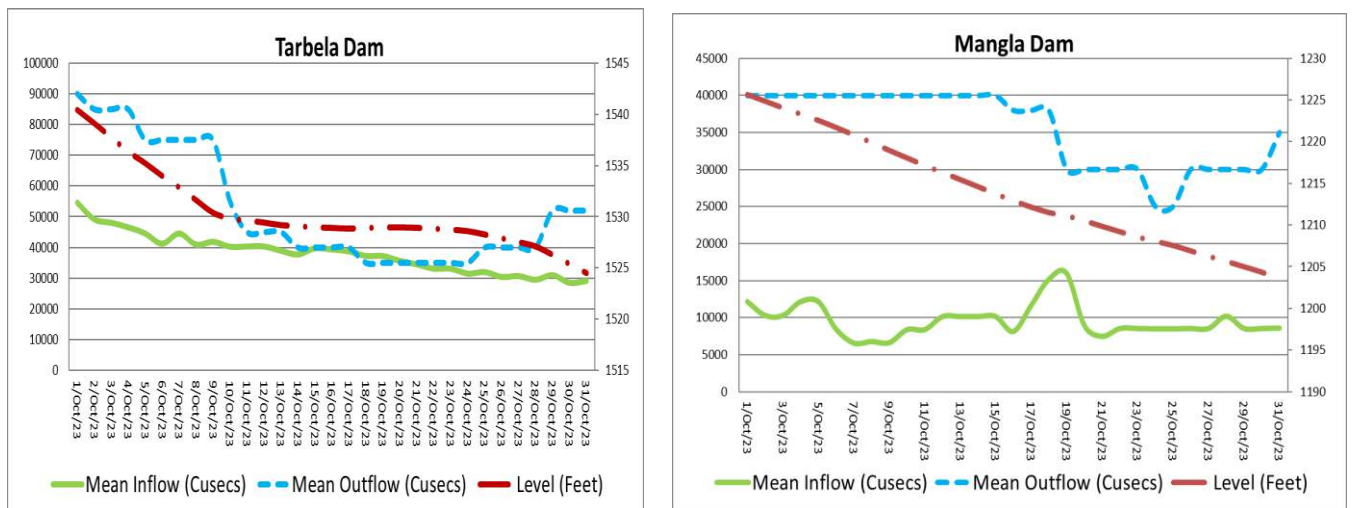


Figure 9: Water inflow, outflow and level of Tarbela and Mangla Dams



#### **4. Weather Outlook for November2023**

Overall a tendency for normal rainfall is expected in most parts of the country. However, Khyber Pakhtunkhwa, comprising the northwestern part of the country is expected to receive slightly above-normal rainfall during the forecast month. Temperatures are forecasted to remain slightly above normal nationwide, with a maximum departure in over eastern Gilgit Baltistan and western Balochistan.

#### **5. Drought Outlook for November2023**

Keeping in view the forecast for November 2023, previously drought-affected areas of In Sindh Province district Umerkot, Tharparkar while in Balochistan Province district Chagi, Gawadar and the Cholistan region (Bahawalpur, Bhawalnagar and Rahim Yar Khan) in Punjab may not get enough relief as compared to the previous month.

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

#### **6. Crop Condition:**

Harvesting of Kharif crops like Maize, Mung bean, sugarcane, Peanut, Sunflower, Soybean, rice, and cotton is almost finished. Farmers are advised to prepare the land for Rabi crops on priority and start sowing in time. Few Pest/insect attack has been reported in the media in some areas of Tharparkar, Khair pur and Dadu district in Sindh so far.

## **7. Advice for Farmers:**

- I. Farmers of wheat-growing areas are advised to sow their crops in time to get the optimum yield. The most suitable time for wheat cultivation is 1st November to 20th November.
- II. Wheat cultivation is in progress in most of the rain-fed areas. Farmers of rain-fed areas are advised to sow their crops before 15th November to get maximum yield. After this time the yield of wheat crops may decrease gradually.
- III. Farmers of rain-fed areas are advised to sow wheat crops by keeping in mind the above-mentioned weather conditions during the current decade.
- IV. Farmers of irrigated areas are advised to harvest Kharif crops, including cotton well in time so that timely sowing of Rabi crops, especially wheat crop may be possible without any delay.

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Pakistan Meteorological Department, Sector H-8/2, Islamabad: 051-9250598, Fax: 051-9250368