

## FEBRUARY 2023

### Highlights

- During the month of February 2023. During the month of February 2023, Light to moderate rainfall receives across the country where as Sindh and Balochistan province received no rainfall during the month.
- Precipitation over most of the drought-prone areas of Sindh and Balochistan were below normal and temperature has also arise in these areas.
- Normal precipitation is likely over the country during March with exception of Kashmir, Gilgit-Baltistan and Northern Khyber Pakhtunkhwa where slightly below normal precipitation is expected.
- Mild moisture stress and drought like conditions has been arisen in few areas of Sindh and Balochistan. Keeping in view the March forecast, disaster management authorities are requested to plan DRM activities accordingly.

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This Bulletin is regularly being published on monthly basis under the guidance of  
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## 1. Weather Summary for the month of February, 2023

Spatial distribution of rainfall is shown in Figure 1. During the month of February 2023, Light to moderate rainfall receives across the country where as Sindh and Balochistan province received no rainfall during the month. The chief amounts of monthly rainfall recorded across Pakistan during February 2023 are shown in Table:1

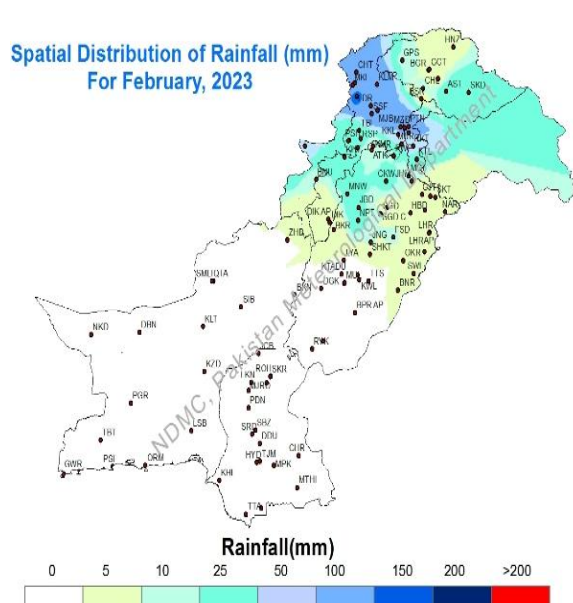


Figure 1: Spatial Distribution of rainfall

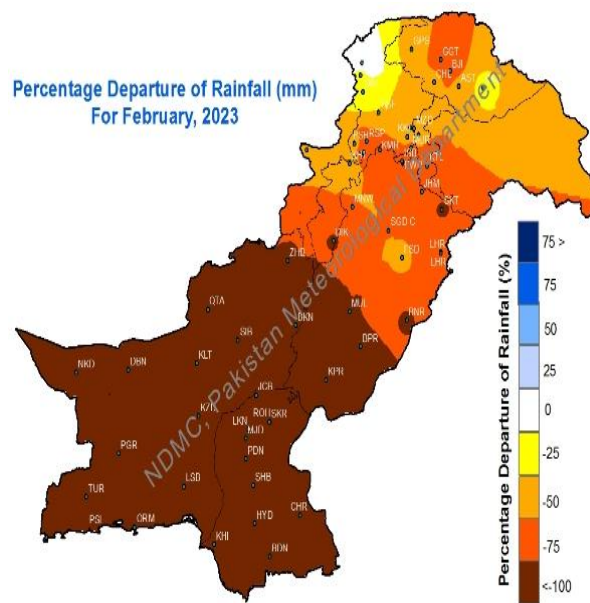


Figure 2: Percentage Departure of rainfall

Figure 2 depicts the percentage departure of rainfall from the normal. Below normal rainfall recorded across the country where as in Punjab, Gilgit Baltistan, Khyber Paktunkwa province receive slight below normal rainfall.

Table-1: Chief amount of rainfall recorded across Pakistan during the month of February, 2023					
Sr.No.	Station	Rainfall(mm)	Sr.No.	Station	Rainfall(mm)
1	DIR	125	11	KOHAT AIRBASE	22.51
2	CHITRAL	77.1	12	PESHAWAR AIRBASE	22.02
3	SAIDU SHARIF	64.2	13	ASTORE	18.81
4	MUZAFFARABAD AIRPORT	59.21	14	ISLAMABAD,ZEROPOINT	15.33
5	BALAKOT	55	15	RISALPUR	14.06
6	DROSH	53.2	16	MIANWALI AIRBASE	11.03
7	GARI DOPATTA	45	17	KOTLI	11
8	KAKUL	42.01	18	CHERAT	10.1
9	PARACHINAR	36	19	KAMRA AIRBASE	7.54
10	MURREE	26.01	20	CHAKLALA AIRBASE	5.54

## 2. Drought Situation Analysis

Spatial drought monitor map based on the output results from of different drought monitoring indices and Pakistan Meteorological Department ground station data across Pakistan are represented in Figure. 3.

In Balochistan Province, Nokundi, Kharan, Jiwani, Pasni, Ormara areas while in Sindh province Mithi, Tharparker areas are under moisture stress and mild drought like conditions have arised while in rest of the country conditions are normal.

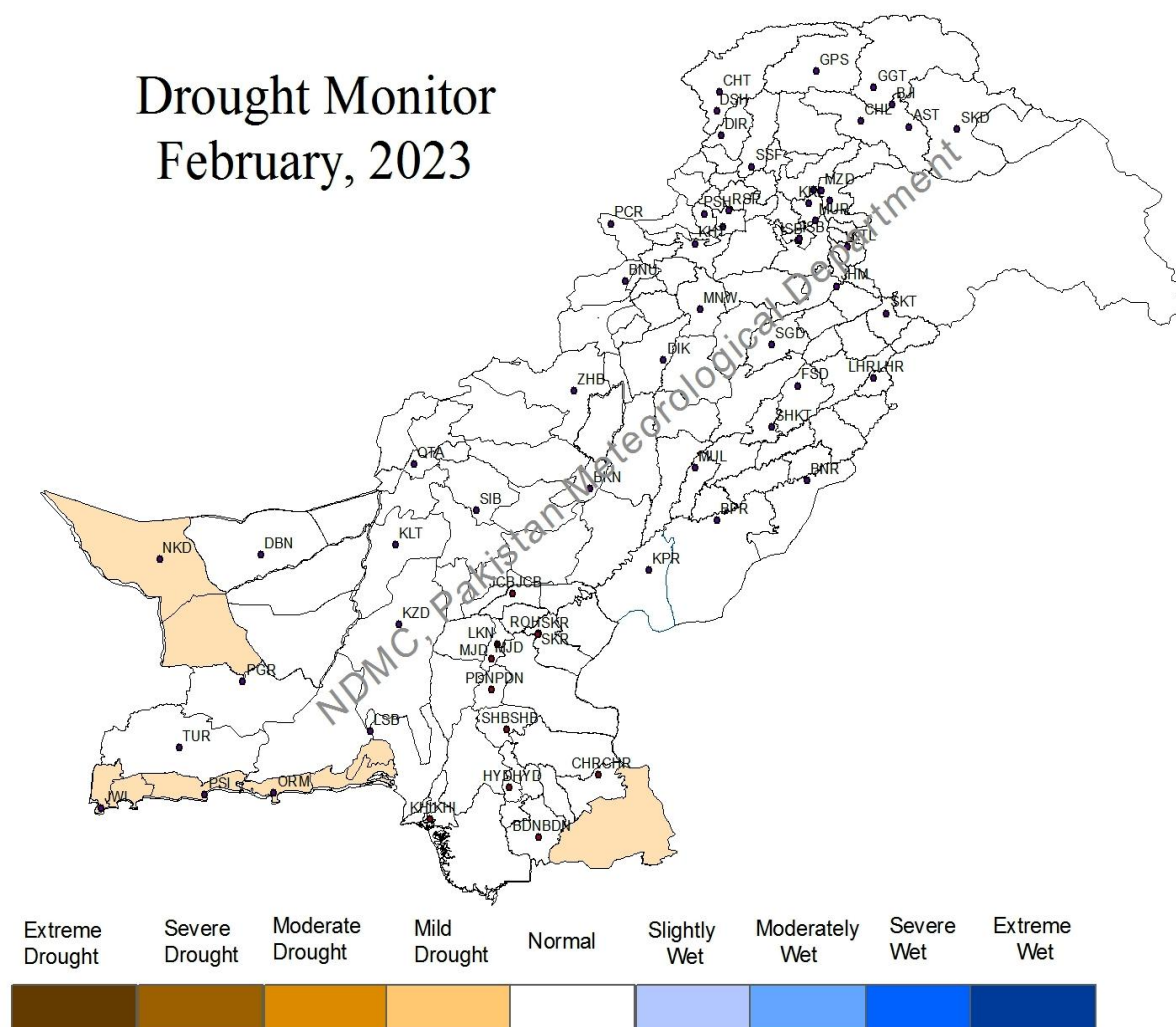
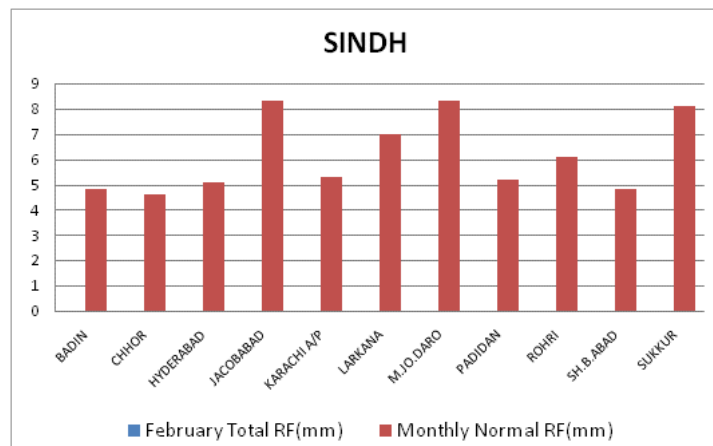
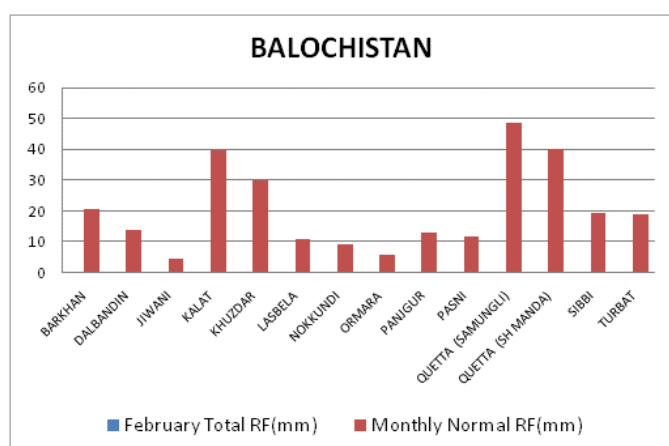
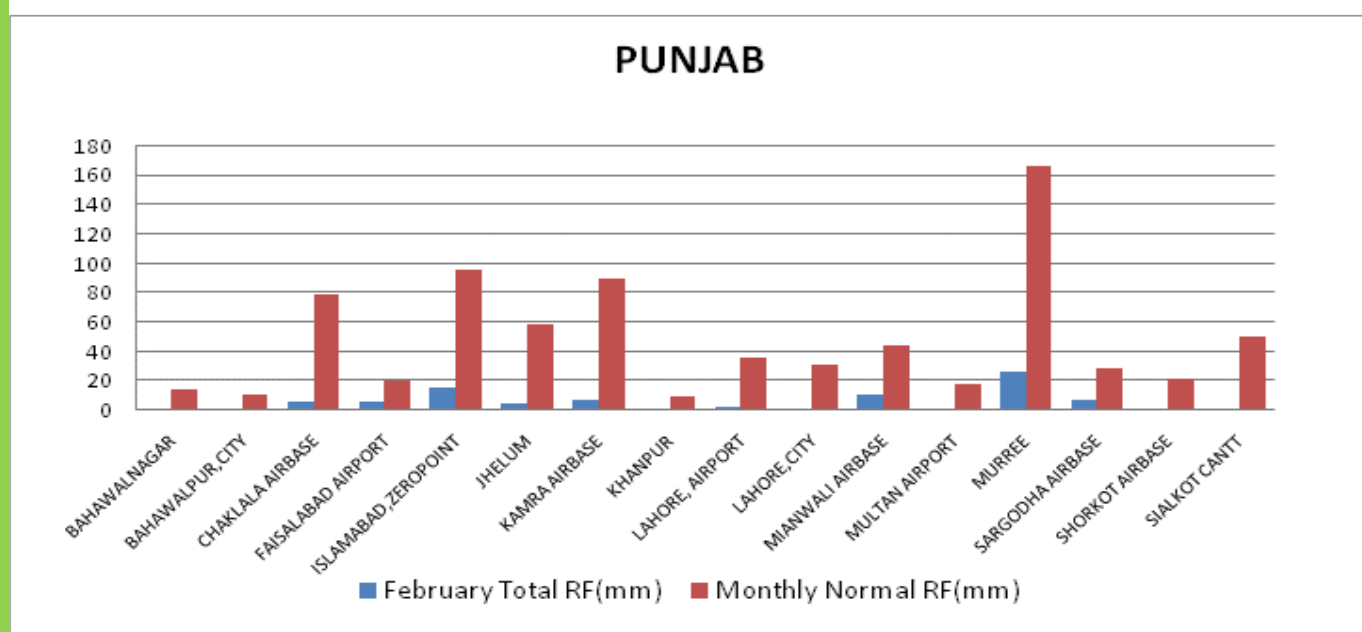
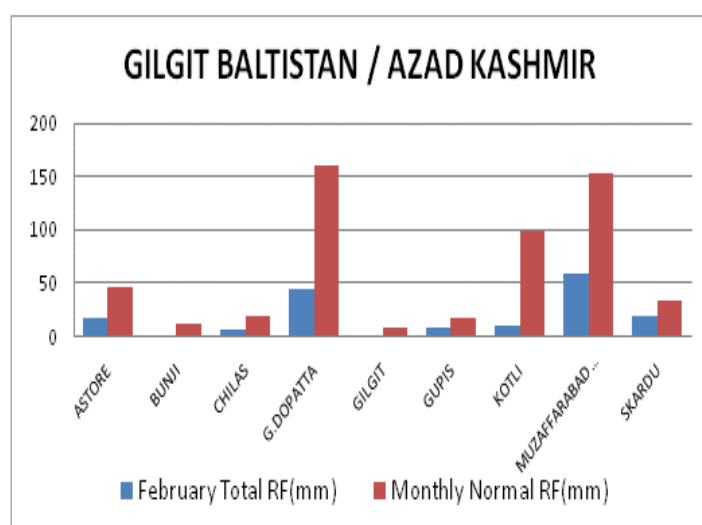
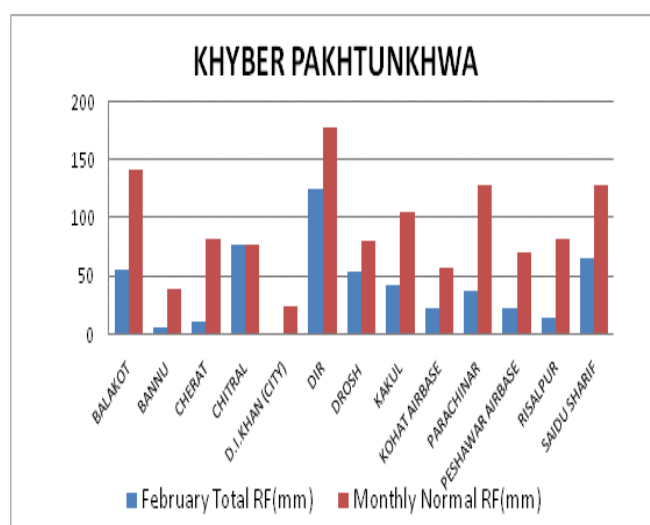


Figure 3: Drought Monitor of Pakistan

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





## II. Normalized Difference Vegetation Index (NDVI)

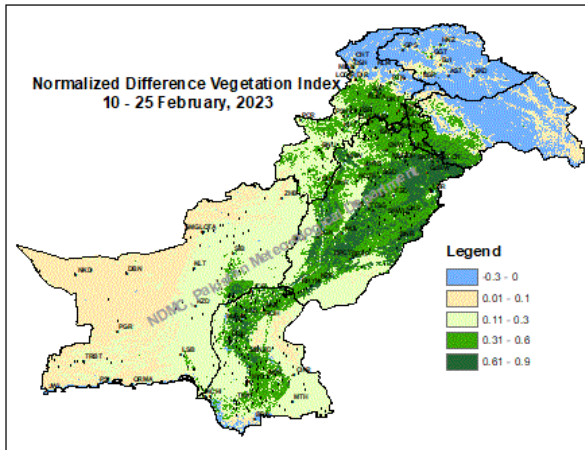


Figure 4: NDVI

Normalized Difference Vegetation Index values for February 2023 are shown in Fig. 4. NDVI conditions in AJK, Punjab, Khyber Pakhtunkhwa, and along the Indus belt are good, depicting the wide spread vegetation in fields good conditions due to good chlorophyll content stored in the plants and the vegetation cover.

## III. Land Surface Temperature (LST)

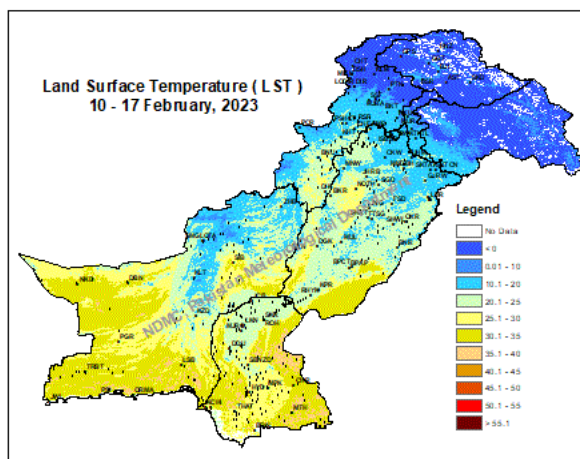


Figure 5: LST (°C)

Land Surface Temperatures (LST) for the period 17 – 24 February 2023 are represented in Fig. 5. In the central parts of the country, average daytime temperatures remained below 25°C while in lower parts of the country, the temperature reported above 25°C during the period.

Land Surface Temperatures during the period 25Jan, 2023 to 01Feb, 2023 are shown in Fig. 6. Further increased in temperatures trend has been observed in most parts of the country especially in Sindh and Balochistan as compared to the preceding week.

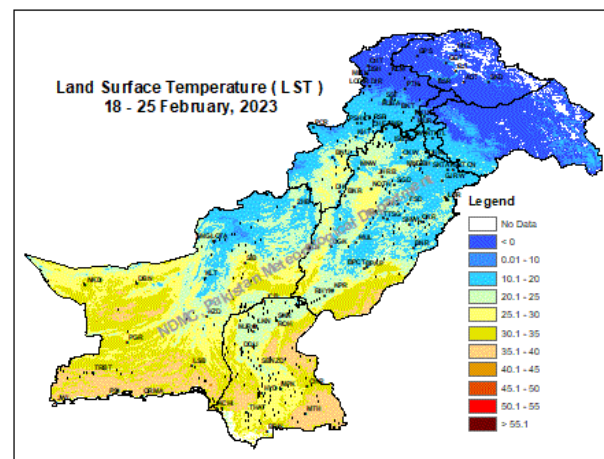


Figure 6: LST (°C)

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

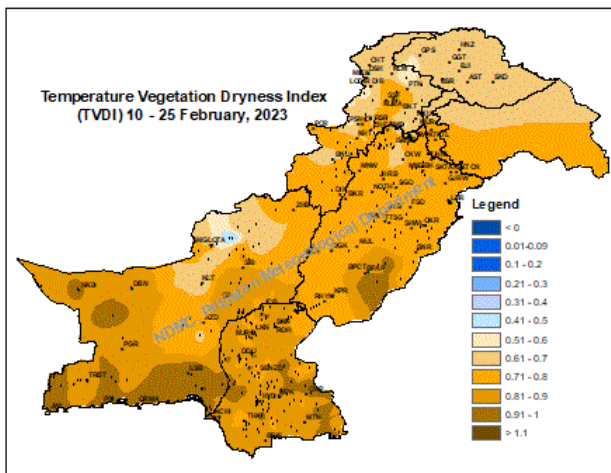
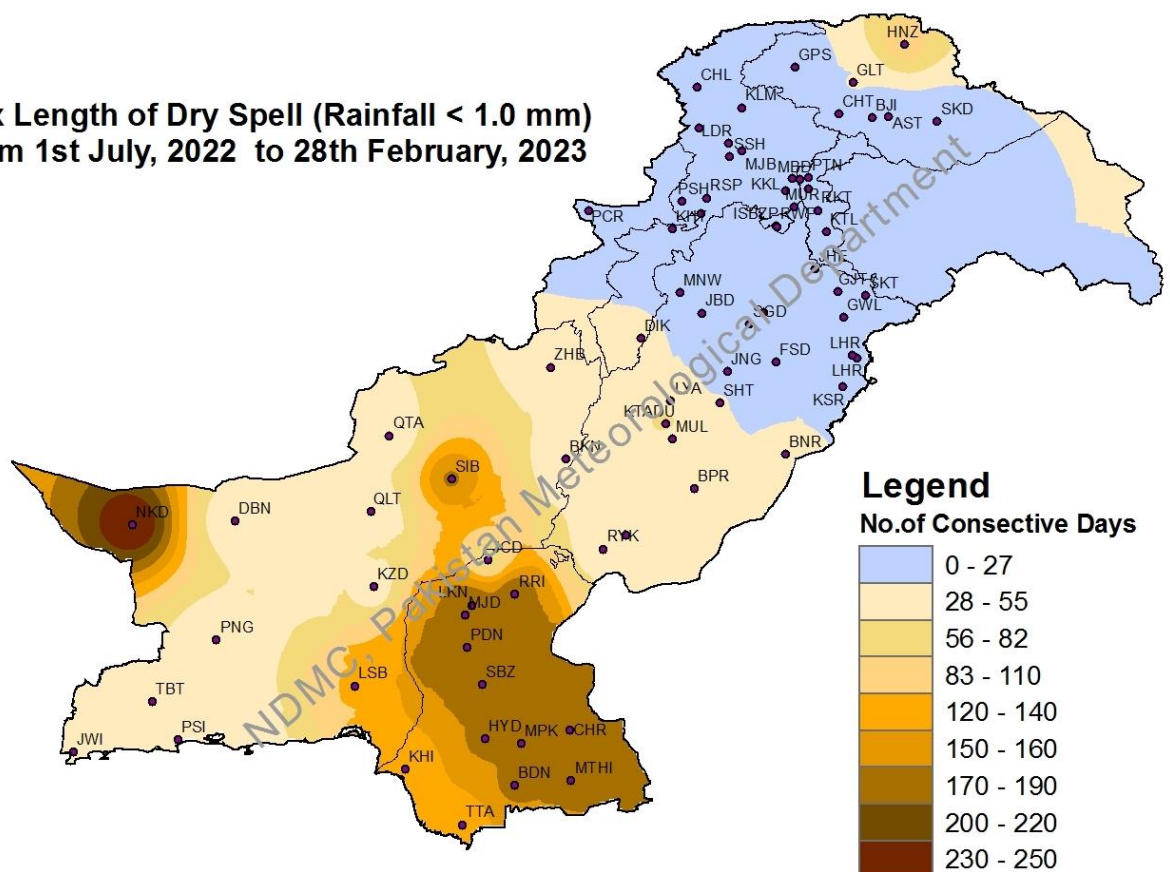


Figure 7: TVDI

Temperature Vegetation Dryness Index (TVDI) derived from MODIS product MOD13A2 (NDVI) and MOD11A2 (LST) is shown in Fig. 7, which indicates mild dry conditions are shown by the TVDI Index showing the start of dryness and less soil moisture conditions in the south east areas of sindh and western and coastal areas in Balochistan. Same picture is arising in the map of length of dry spell given below.

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

Max Length of Dry Spell (Rainfall < 1.0 mm)  
From 1st July, 2022 to 28th February, 2023



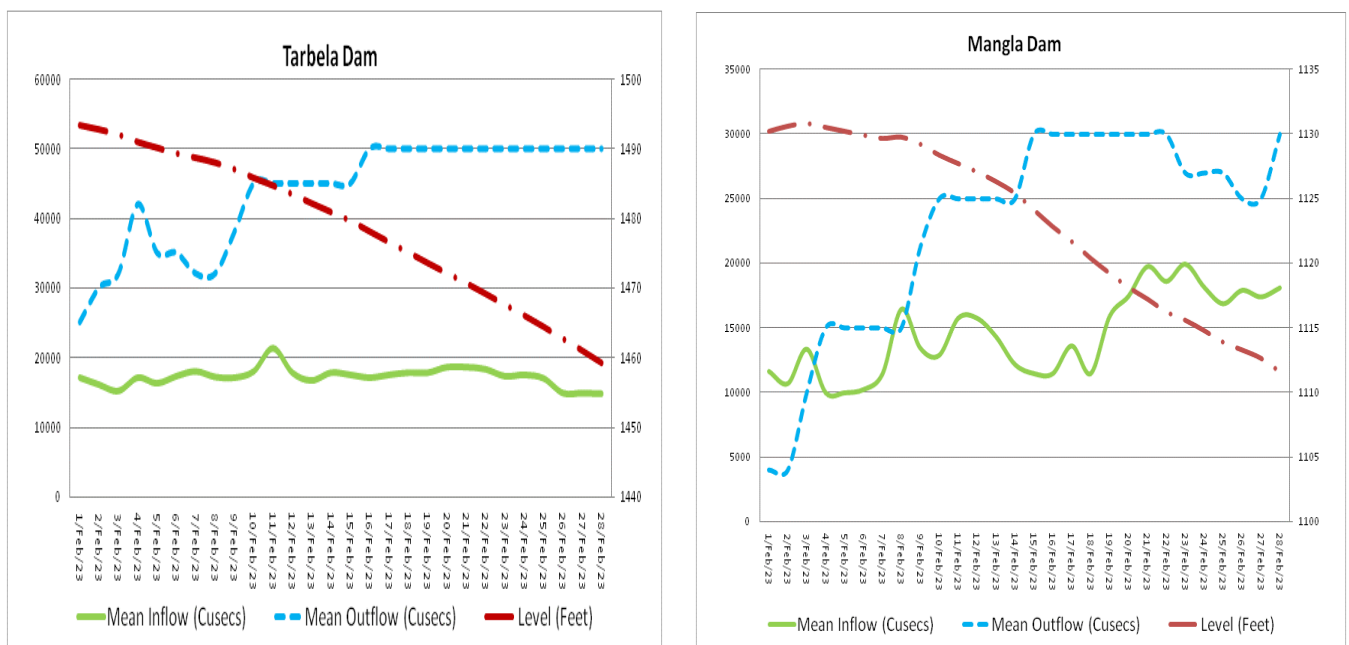
Source: National Drought Monitoring Center-PMD-Islamabad

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

In the month of February 2023, water inflow, outflow and levels of Rawal, Khanpur, Tarbela and Mangla dams are shown in Figs. 8 & 9. Level at other major reservoirs has dropped due to less or no rains in the catchment areas.



**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 March 2023

Overall, a tendency for normal precipitation is likely over the country during March with exception of Kashmir, Gilgit-Baltistan and Northern Khyber Pakhtunkhwa where slightly below normal precipitation is expected. However, in spite of below normal rains there are chances of rain/thunderstorm, coupled with hail-storms in Khyber Pakhtunkhwa, Kashmir, Gilgit-Baltistan and central and upper Punjab during the month. Furthermore, there are chances of rain/thunderstorm with gusty winds at isolated places of Sindh and Balochistan during the second half of March 2023. Due to seasonal change, day time temperatures will soar up throughout the country during March 2023; and they are expected to remain above normal over most parts of the country.

## 5. Drought Outlook for March 2023

The month of march forecast may not be good for previously drought affected areas of Balochistan and Sindh. In Balochistan Province, Nokundi, Kharan, Jiwani, Pasni, Ormara areas while in Sindh province Mithi, Tharparker areas are under moisture stress and mild drought like conditions have arised.

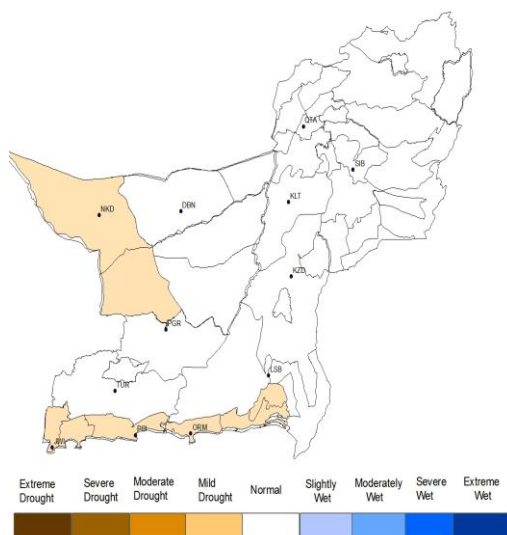


Fig-10: Conditions across Balochistan

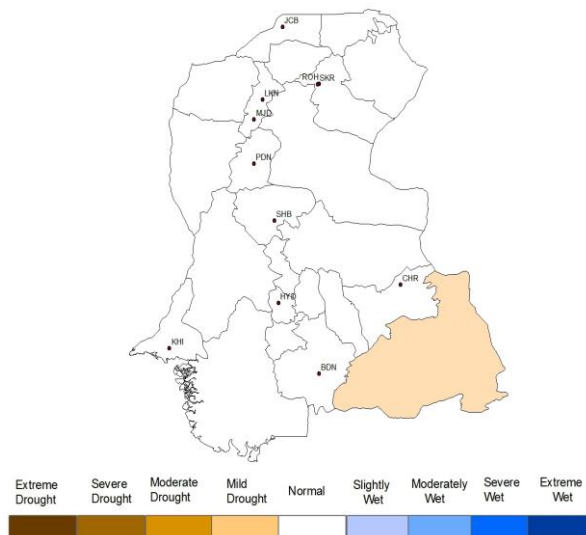


Fig:11 Drought Conditions across Sindh

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

## **6. Crop Condition:**

The sowing of Rabi crops in Pakistan stretches from mid September to end of February. Due to the above normal temperature, the Rabi crops including “wheat” may get ready for an earlier harvest especially in the lower half of the country. • An increase in temperature would be supportive for an early onset of pollen season in major cities (e.g. Islamabad, Lahore). Temperature gradient may cause strong winds, dust storm, and hailstorm.

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

- I. Farmers may schedule the irrigation of crops as per requirement keeping in view the weather forecast of expected rains.
- II. Those farmers who could not sow wheat in their field because of cotton crop, they are advised to go for the alternative e.g. sunflower.
- III. Removing weeds from standing crops is very important as weeds utilize moisture and food which may be utilized by the crop. As a result, considerable loss in yield occurs every year.
- IV. However operations against weeds should be started using weedicides or manually when the crop completely covers the field.