Pakistan Meteorological Department

Monthly Drought Bulletin
For the Month of January 2025

Highlights

- During the month of January 2025, light to moderate rainfall received across Khyber Pakhtunkhwa (KP), northeast Punjab, northwest Baluchistan, Kashmir and Gilgit Baltistan (GB)

- During the month of January 2025, mean monthly temperatures were recorded 1°C to 2°C above-normal across the country except Gilgit where temperature was recorded below normal.

- Overall, a slight tendency for slightly below-normal rainfall is anticipated in Northern KP, Northern Punjab, and Kashmir during February 2025. In contrast, the southern regions are likely to experience rainfall that is closer to normal, with a reduced negative anomaly as per the region's climatological patterns.

- During February mean temperatures are expected to remain above normal nationwide, with maximum departure over Kashmir and adjoining areas of Gilgit Baltistan, Khyber Pakhtunkhwa.

- Slightly below normal rains during February 2024 will further decrease soil moisture level over drought prone areas of the country.

- Keeping in view the weather forecast for the month of February 2024, disaster management authorities may be requested to plan DRM activities accordingly.

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1. Monthly Rainfall and Temperature Analysis for the Month of January, 2025

During the month of January 2025, light to moderate rainfall received across Khyber Pakhtunkhwa (KP), northeast Punjab, northwest Baluchistan, Kashmir and Gilgit Baltistan (GB). The spatial distribution of rainfall over the country is shown in Figure 1. Chief amounts of rainfall was recorded across upper KP. The highest amounts of monthly rainfall are shown in Table1.

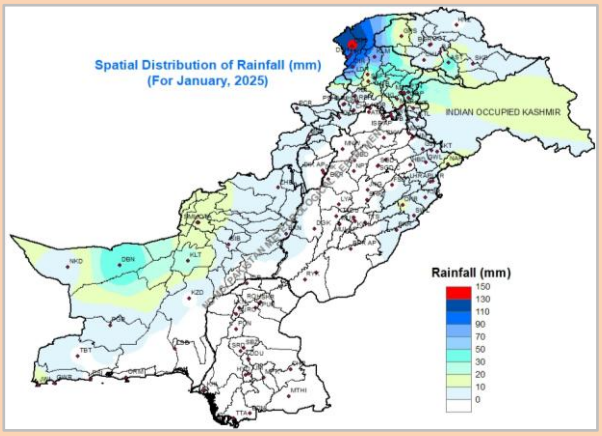

Figure 1: Spatial Distribution of rainfall

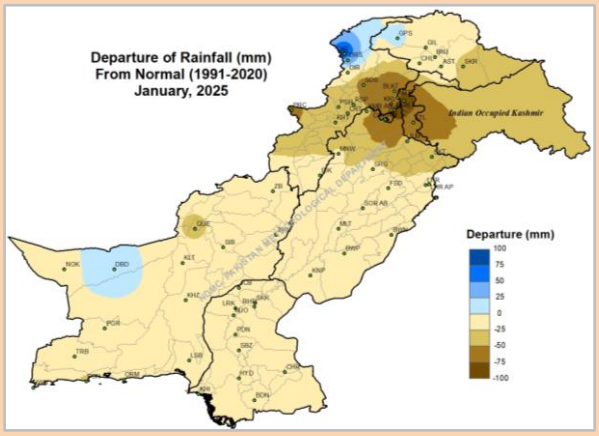

Figure 2: Departure of rainfall from Normal

Figure 2 depicts the departure of rainfall from the normal(1991-2020). Below normal rainfall was recorded across the country except Chitral, Gupis and Dalbandin.

Table-1: Chief amount of rainfall recorded across Pakistan during the month of January, 2025

Sr.No.	Station	Rainfall(mm)	Sr.No.	Station	Rainfall(mm)
1	Chitral	146.9	11	Kalat	26.0
2	Mirkhani	98.5	12	Balakot	25.0
3	Dir	92.5	13	Kakul	25.0
4	Kalam	88.8	14	G.Dopatta	20.7
5	Drosh	85.6	15	Narowal	18.9
6	Pattan	58.0	16	Quetta (Sh Manda)	18.8
7	Malamjabba	42.3	17	Gupis	16.2
8	Dalbandin	42.0	18	Saidu Sharif	13.9
9	Astore	39.5	19	Jiwani	13.0
10	Muzaffarabad Airport	26.7	20	Bagrote	12.2

Spatial distribution of mean temperature recorded at PMD stations for the month of January, 2025 are shown in Figure 3. During the month southern Sindh and Baluchistan experienced the mean maximum temperature up to 18°C.

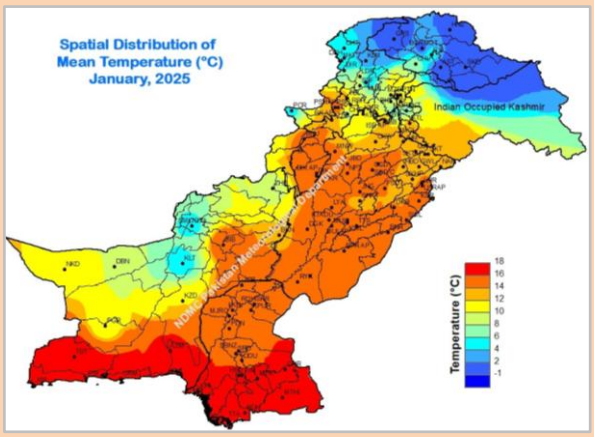

Figure 3: Monthly Mean Temperature (°C)

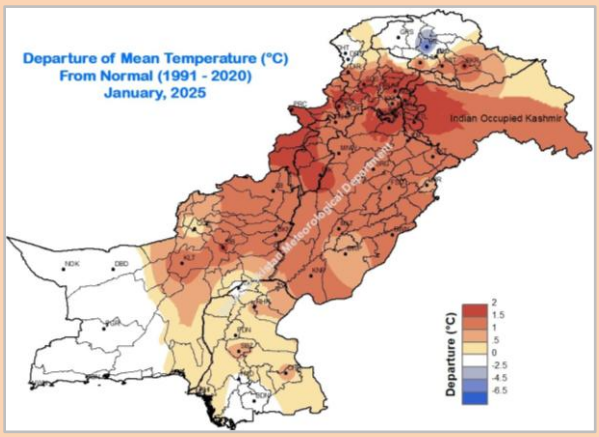

Figure 4: Monthly Departure from Normal Temperature

Departure of mean temperature from the normal (1991-2020) is shown in Figure 4, It indicates mean temperature 1-2°C above-normal over most part of the country except Gilgit where temperature was recorded well-below 30 years normal.

Monthly normal (1991-2020) rainfall and monthly normal mean temperature(°C) for the month of January are shown in the Figures 5 and 6 respectively.

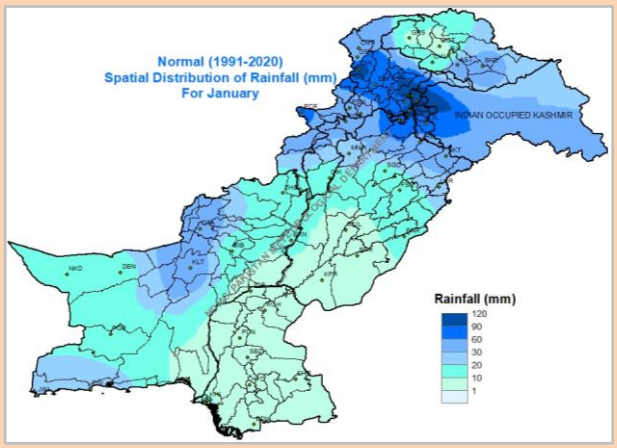

Figure 5: Monthly Normal Rainfall (mm)

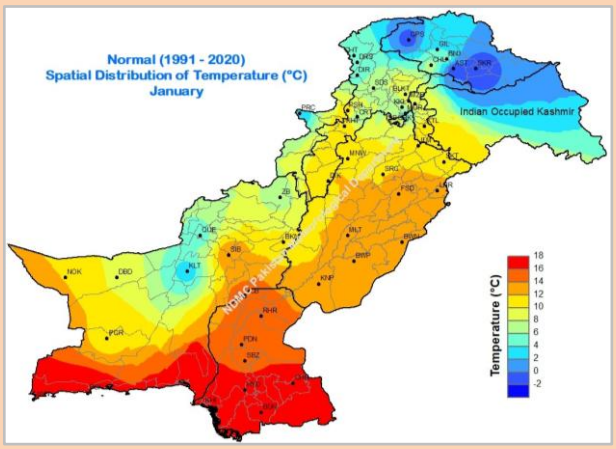

Figure 6: Monthly Mean Temperature (°C)

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

The comparison of actual to normal rainfall (1991-2020) for month of January 2025 are shown in Figure 7 (a) for Khyber Pakhtunkhwa, 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).

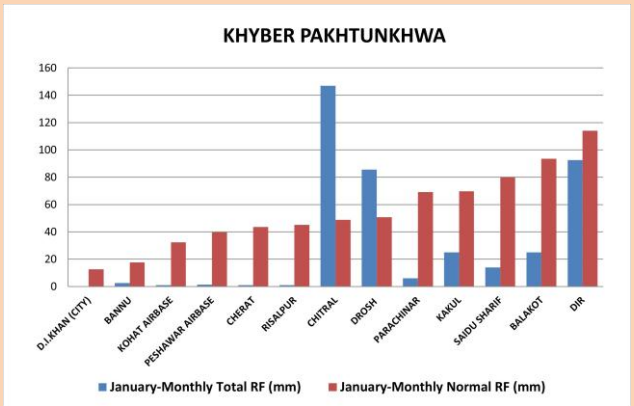

Figure 7a

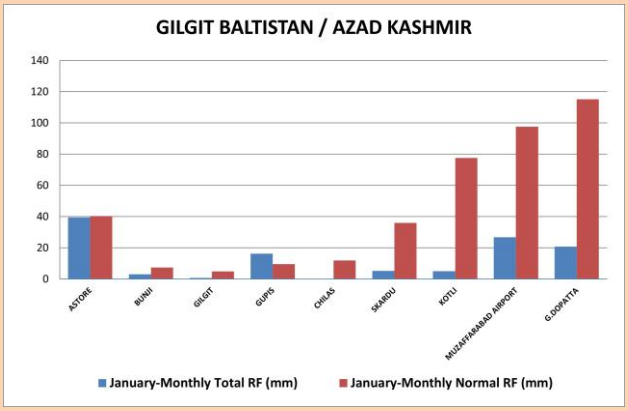

Figure 7b

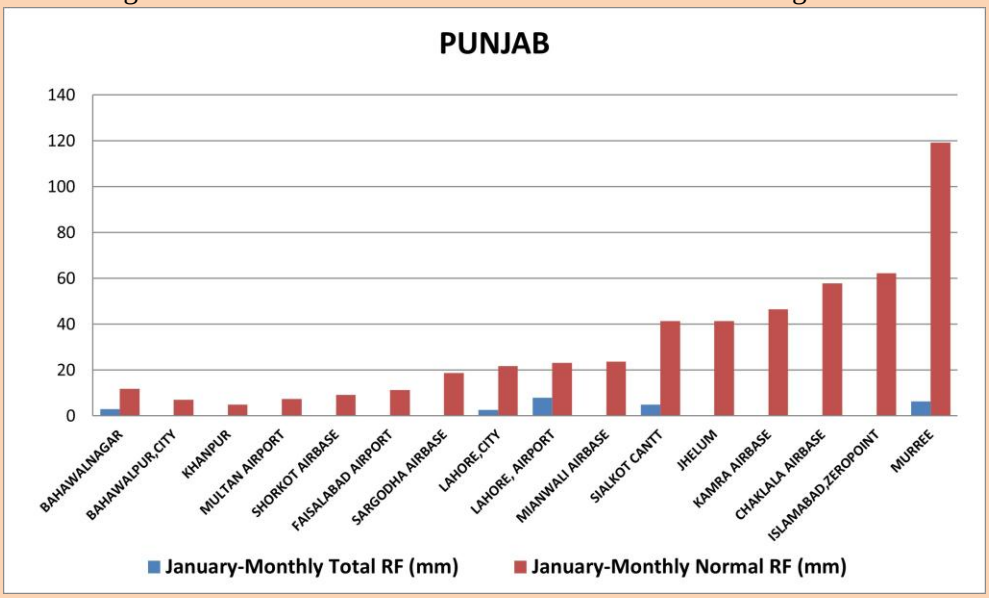

Figure 7c

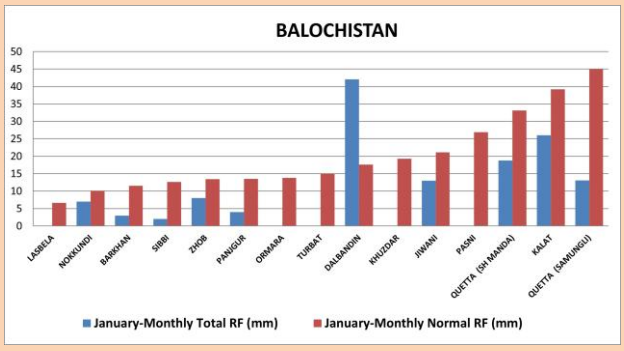

Figure 7d

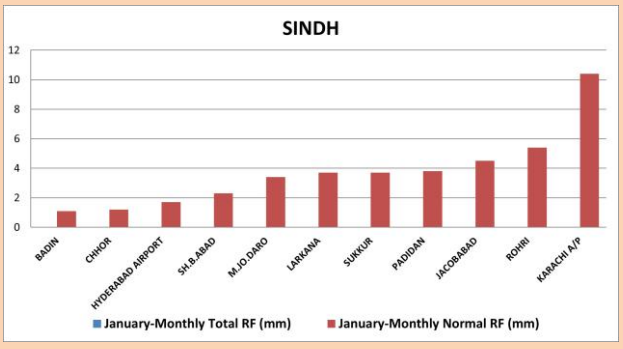

Figure 7e

3. Normalized Difference Vegetation Index (NDVI)

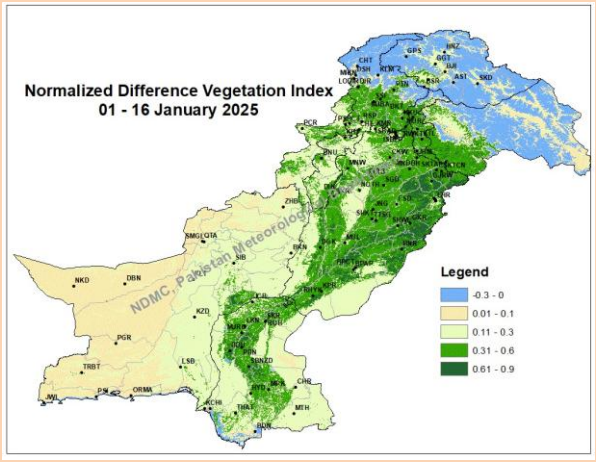

Figure 8: NDVI

Normalized Difference Vegetation Index values for January 2025 are shown in Fig.8. NDVI conditions are high in AJK, Punjab, Khyber Pakhtunkhwa, and along the Indus basin, depicting the widespread vegetation in fields. Such condition nourish the chlorophyll content stored in the plants and enhance the vegetation cover over the fields. The low rainfall caused the low or deficient NDVI in the rainfed areas of Baluchistan and Sindh.

4. Land Surface Temperature (LST)

Land Surface Temperatures (LST) for the period 01 to 08 January 2025 are represented in Figure 9. The southeast Punjab, northeastern Sindh and coastal belt of Baluchistan and sindh observed the average daytime temperatures between 20-25°C.

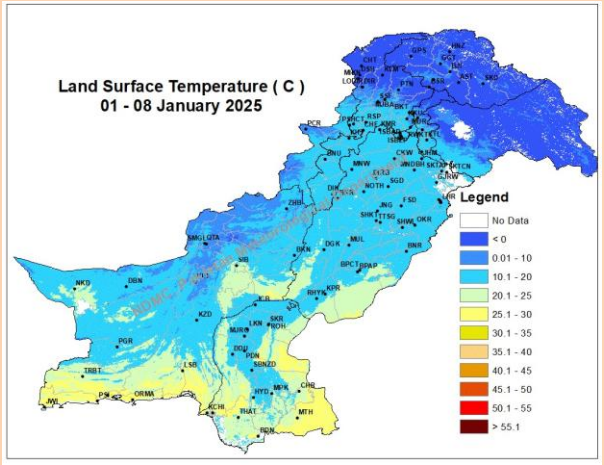

Figure 9: LST (°C) 1-8 Jan, 2025

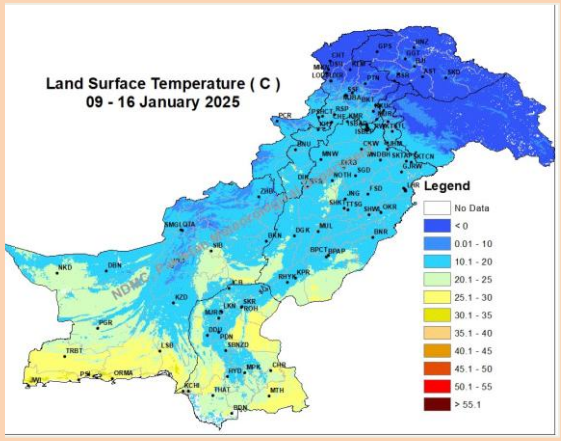

Figure 10: LST (°C) 9-16 Jan, 2025

Land Surface Temperatures during the period 9-16 January are shown in Figure 10. The country experience same temperature (as shown in previous week) over western Baluchistan, northeast Sindh and southeast Punjab.

5. Temperature Vegetation Dryness Index (TVDI)

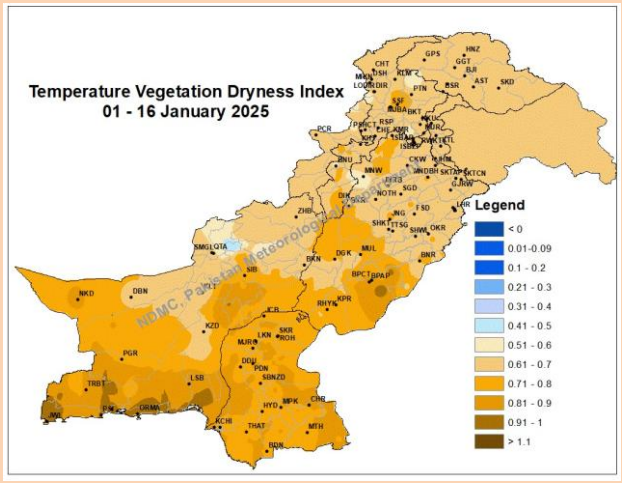

Figure 11: TVDI

Temperature Vegetation Dryness Index (TVDI) derived from MODIS data sets MOD13A2 (NDVI) and MOD11A2 (LST) is shown in Figure 11, which indicates moderate dry like conditions in the west Balochistan, Sindh and Bahawalpur (Punjab) as highlighted by the TVDI Index. It indicates the start of dryness and deficient soil moisture conditions in the western parts and coastal areas of Balochistan. Deficit rainfall augmented the situation and drought like conditions are established, demanding for efficient measure to overcome the situation.

6. Length of Consecutive Dry Days upto January 31, 2025

The maximum length of consecutive dry days (CDD) is shown in Figure 12. Number of consecutive dry days has increased from 160 to 178 days across Turbat, southeast Punjab and Sindh while length of CCD also increased to 120 days in central Punjab and Potohar region which is impacting the crop growth/yield.

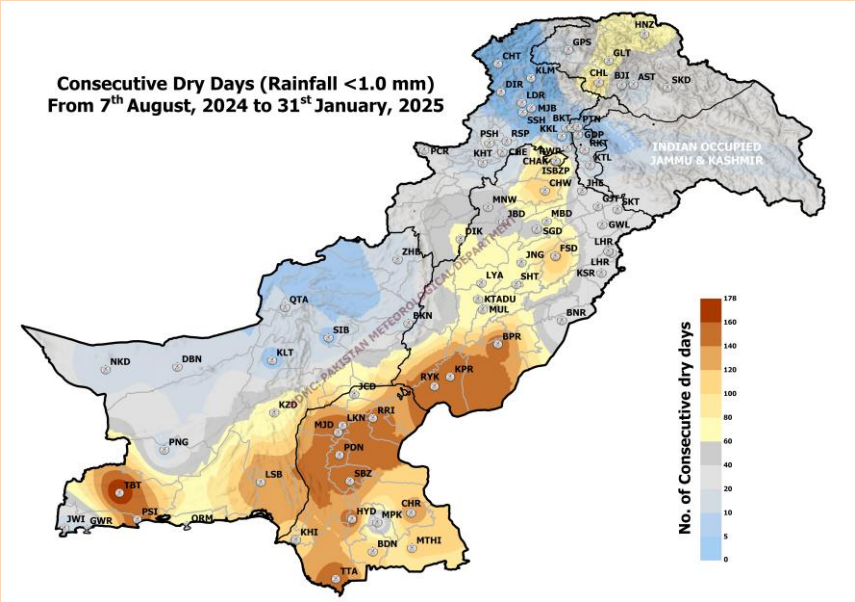

Figure 12: No. of consecutive dry days

7. Drought Monitor for the Month of January 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.

Western and southwestern Balochistan, Sindh and Punjab are experiencing Mild drought like conditions due to moisture stress and less than average rainfall over the past three months.

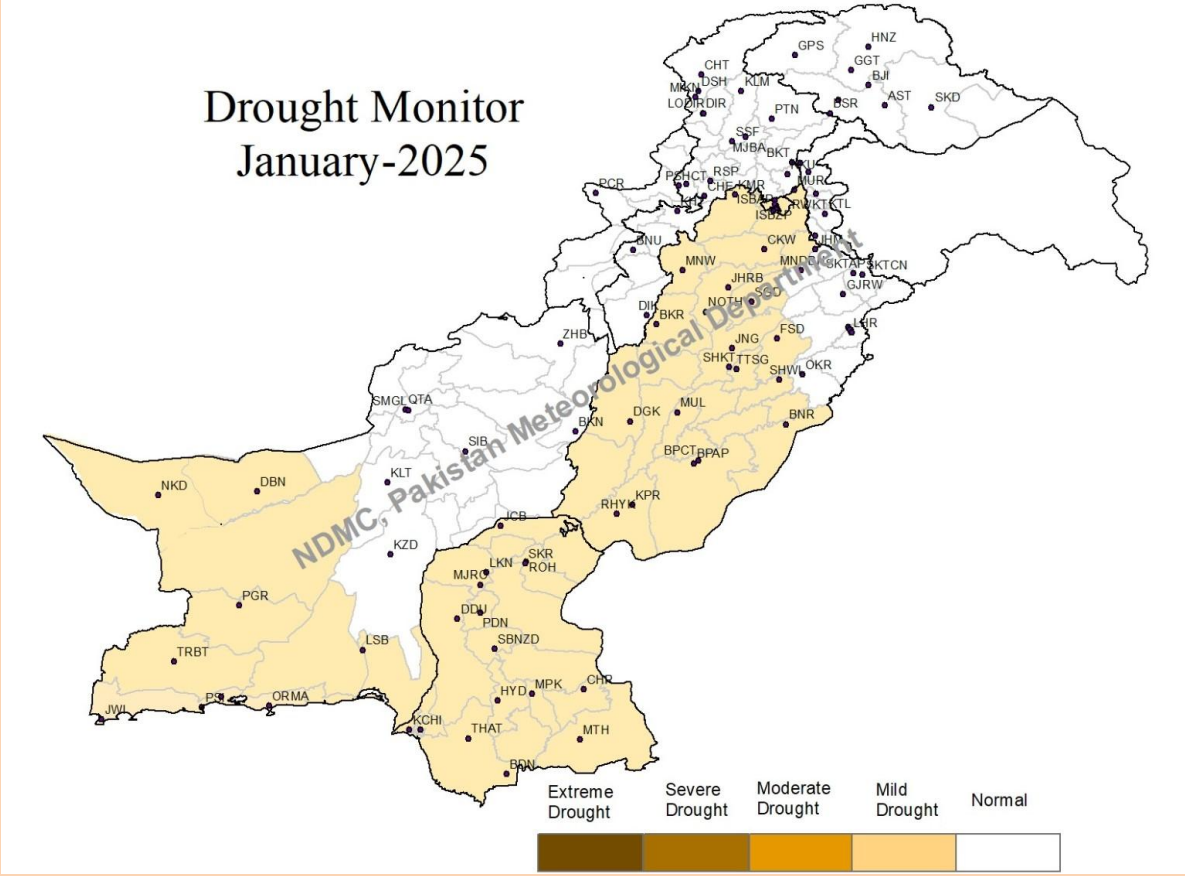

Figure 13: Drought Monitor of Pakistan for the month of January 2025

8. Water availability/ Dams flow data:

During the month of January 2025, 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 decrease due to less amount of rainfall received during the month and excess amount of released water due to prolonged dry spell.

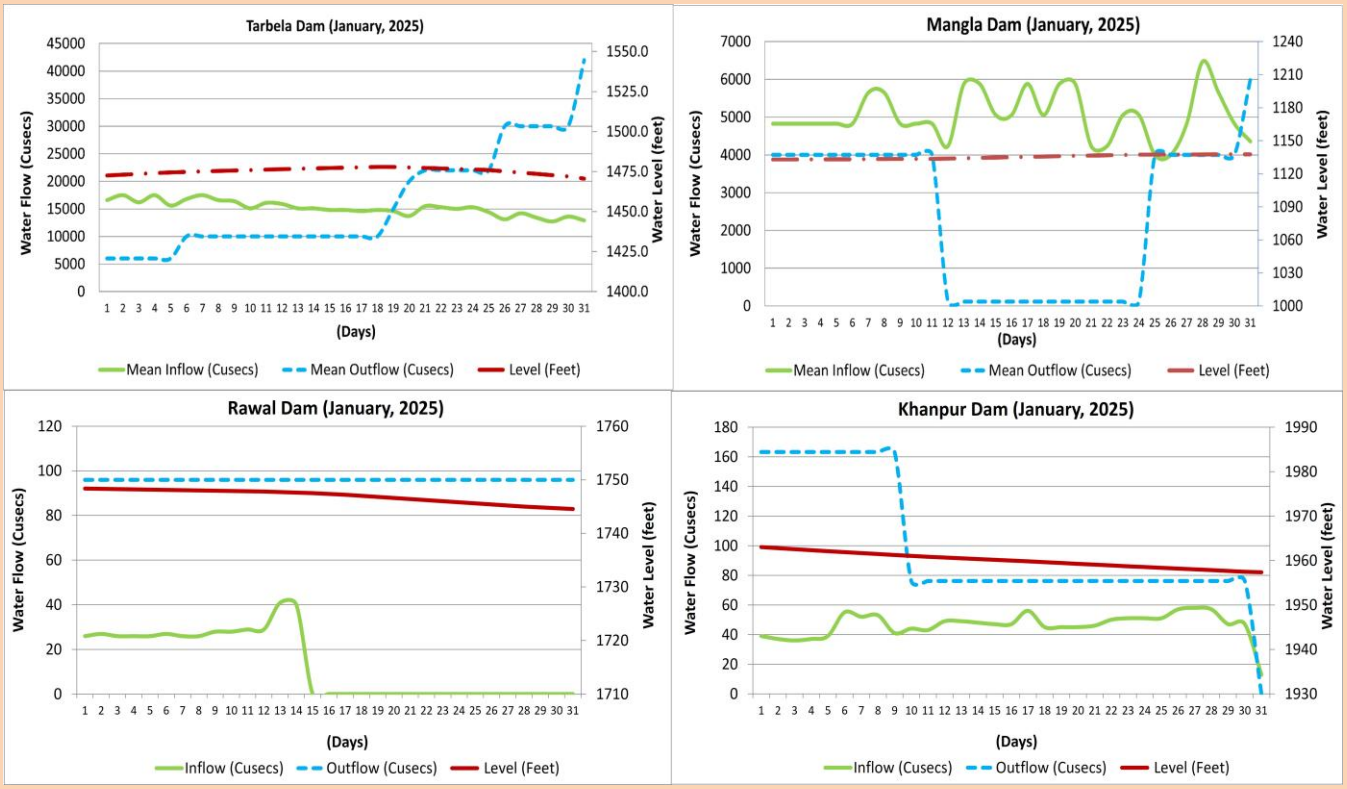

Figure 14: Water inflow, outflow and level of Rawal, Khanpur, Tarbela and Mangla Dams, Jan 2025

9. Weather Outlook for February 2025

Overall, a slight tendency for slightly below-normal rainfall is anticipated in Northern KP, Northern Punjab, and Kashmir during February 2025. In contrast, the southern regions are likely to experience rainfall that is expected to 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 and adjoining areas of Gilgit Baltistan, Khyber Pakhtunkhwa.

10. Drought Outlook for February 2025

Keeping in view the forecast for Februrary 2025, slightly below normal rainfall is expected which will further decrease the soil moisture in the drought prone areas (western Balochistan, Thar desrert of Sindh and Thal desert, Potohar region) of the country. Mild drought like conditions have developed in Sindh, Punjab and western Baluchistan, which may deepen due to deficient rainfall.

All stakeholders across the countrty are advised to make efforts to save and judicious use of the available water to mitigate the adverse impacts of mild drought.

11. Crop Condition

- Punjab's agriculture features major crops like wheat, sugarcane, sesame, grams, and pulses, primarily thriving in its irrigated plains. However, the province faces challenges with moisture stress in rainfed areas, impacting both crops and orchards due to consistent dry weather conditions.
- Sindh reports satisfactory growth and harvesting processes for its primary crops, including wheat, sugarcane, seasonal vegetables, and orchards. The crop conditions remain generally good, supported by adequate management practices.
- In Khyber Pakhtunkhwa, all standing crops such as wheat and sugarcane are progressing well, with ongoing harvesting and satisfactory orchard conditions. Despite this, the province experiences moisture stress in rainfed areas, affecting overall crop growth.
- Baluchistan enjoys satisfactory growth of wheat, orchards, and vegetables, with seasonal fruits continuing to be produced and marketed effectively. Yet, specific parts of the province suffer from moisture stress due to persistent dry conditions, influencing crop development.
- Gilgit Baltistan shows promising agricultural performance with crops like potatoes, orchards, and vegetables all reported to be growing satisfactorily. This region maintains stable agricultural output, reflecting effective cultivation practices.

12. Advice for Farmers

- Given the lower-than-usual rainfall, ensure that irrigation is done at intervals according to the crop's needs, to ensure a good yield. At the same time, take special care of chemical fertilizers, etc. Isolated showers / hails/ windstorm may disrupt the

harvesting activities of Kharif crops, particularly in the northwestern parts of the country.

- To achieve a good yield, it is necessary to control weeds in the crop, which not only reduces the yield but also other negative impacts. Apply herbicides to destroy these weeds. Do not spray during strong winds and follow the advice of the agricultural department.
- As the wheat crop will be entering the booting stage, the growth of crops will accelerate with the gradual increase in temperature this month. It is crucial to water the crops thoroughly during this phase.
- However, judicious use of available water stock is recommended for the lower half of the country.

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