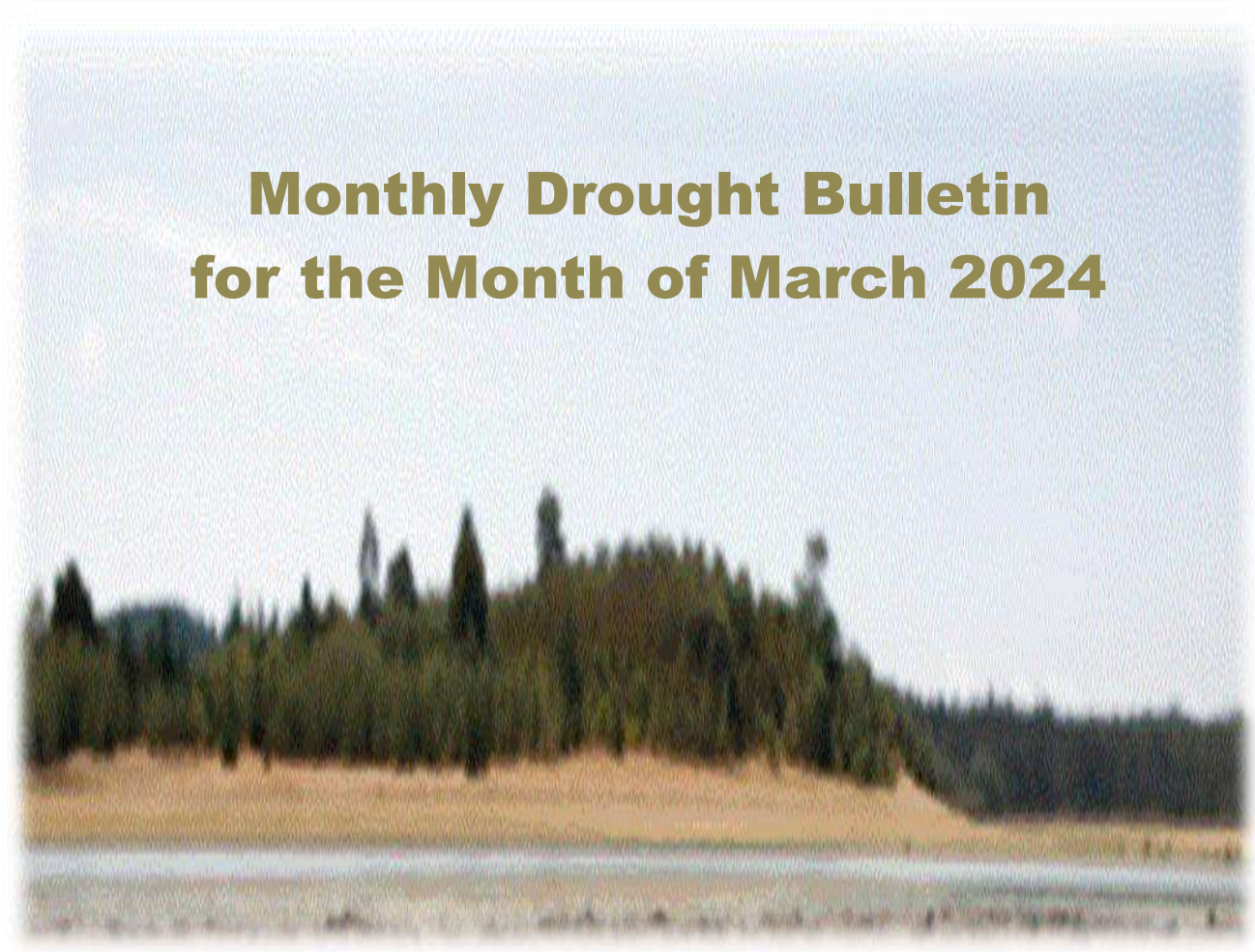
Pakistan Meteorological Department

Monthly Drought Bulletin for the Month of March 2024



National Drought Monitoring Centre (NDMC)

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Highlights

- During the month of March 2024, Moderate to Heavy rainfall events were reported across the country which give some relief to the few drought affected areas of Balochistan and Sindh.
- Less to No Precipitation over some areas of Sindh and most of the Cholistan region in Punjab province have been reported due to which previously moisture stressed areas may not get much relief during the month
- During the month of April 2024, overall, a tendency for near normal rainfall is expected in most parts of the country. Day time temperatures are forecasted to remain normal to slightly above normal nationwide.
- Mild Drought conditions may be observed in Nokkundi, some areas of Sindh and Cholistan region in Punjab. Keeping in view the weather forecast for the month of April 2024, disaster management authorities are requested to plan DRM activities accordingly.

1. Weather Summary for the month of March, 2024

During the month of March 2024, Light to moderate rainfall events reported across the country where as some areas of southern Punjab received trace to zero rainfall during the month. The chief amounts of monthly rainfall recorded across Pakistan during March 2024 are shown in Table 1. Figure 2 depicts the Normal rainfall for the month of March 2024.

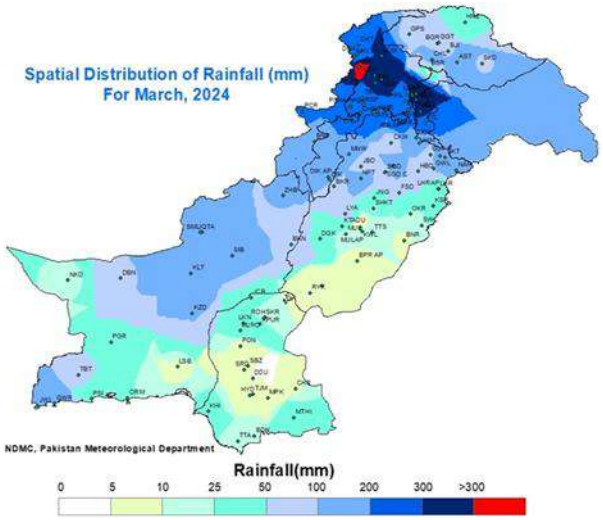

Figure 1: March 2024 Spatial Distribution of Rainfall

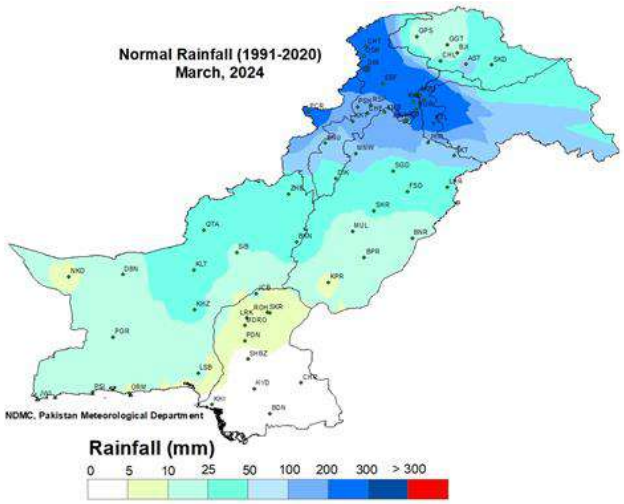

Figure 2: March Normal (1991-2020) Rainfall

Figure 3 depicts the percentage departure of rainfall from the normal. Below-normal rainfall was reported in Nokkundi, Lasbela, Shaheed Benazirabad, Parachinar and Cholistan region while rest of the areas got above normal rainfall as shown in blue colour.

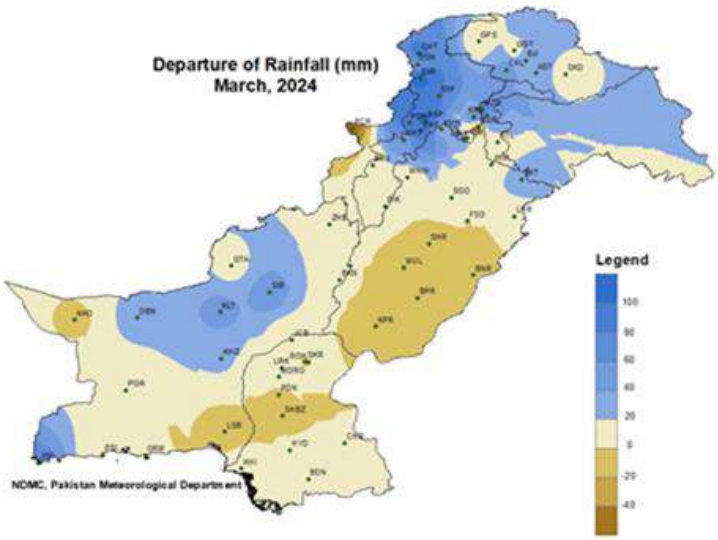

Figure 3: Departure of rainfall from Normal (1991-2020)

1.2 During the month of March 2024, mean temperature recorded at PMD stations is spatially distributed analyzed and spatial distribution of Temperature for the month of March2024 is shown in Figure 4, while Figure 2 depicts the Normal (1991-2020) temperature climatology for the month of March. During the month of March, 2024, the southern parts of the country got maximum mean temperature up to 27 degrees Celsius and in the northern areas minimum mean temperature recorded was 04-degree Celsius.

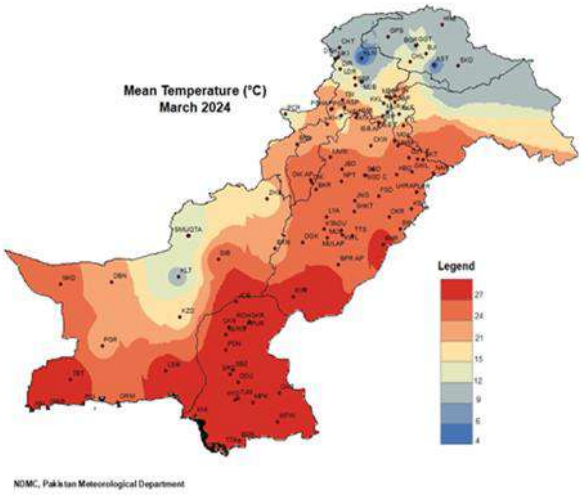

Figure 4: Mean Temperature (°C) March2024.

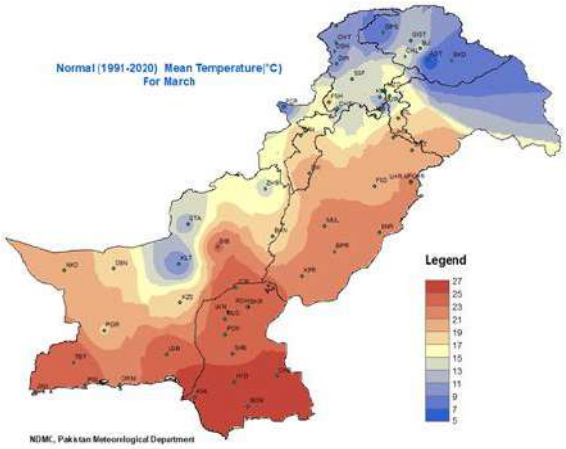

Figure 5: Normal (1991-2020) mean temperature (°C)

Departure of mean temperature from the normal (1991-2020) climatology is shown in figure 6 below. Which show that below-normal mean temperatures were recorded in most parts of the country while some areas in blue colour show areas which got above normal mean temperature during the month.

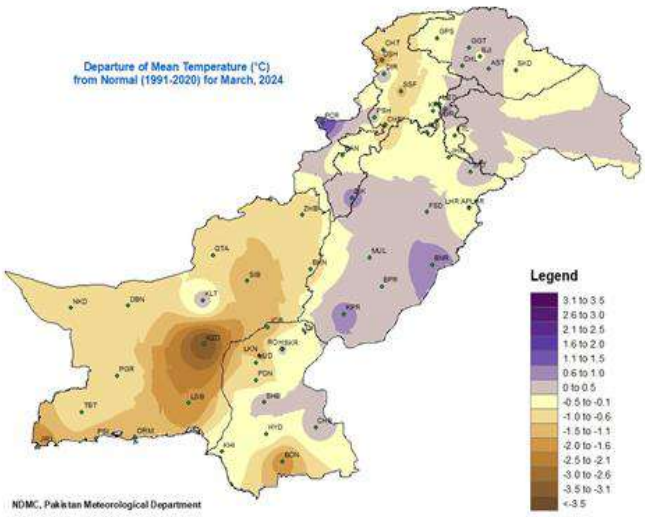

Figure 6: Departure of Temperature (^{o}C) from Normal

1.3 The comparison of actual rainfall to normal (1991-2020) for the month of March 2024 for Khyber Pakhtunkhwa has been 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).

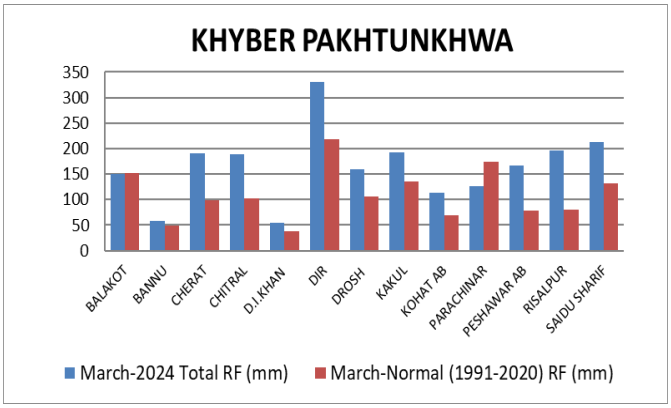

Figure 7a

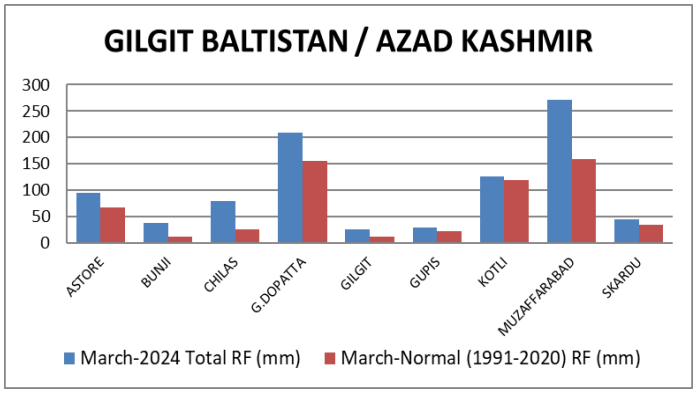

Figure 7b

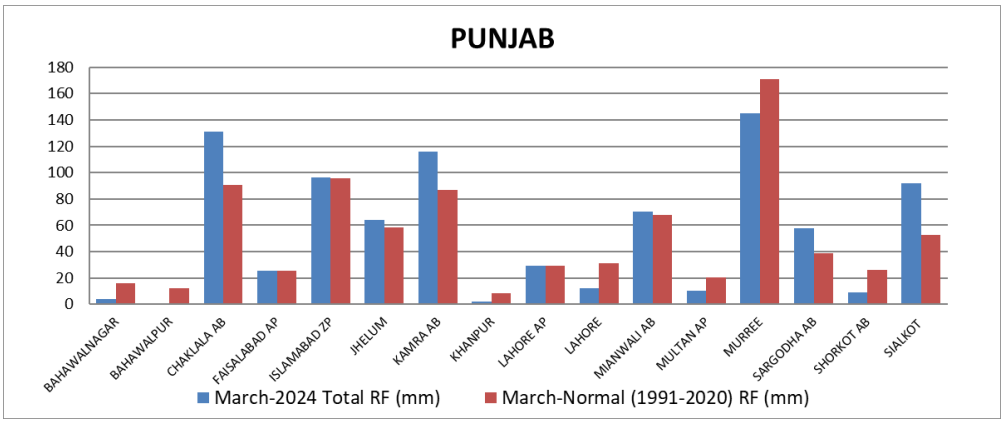

Figure 7c

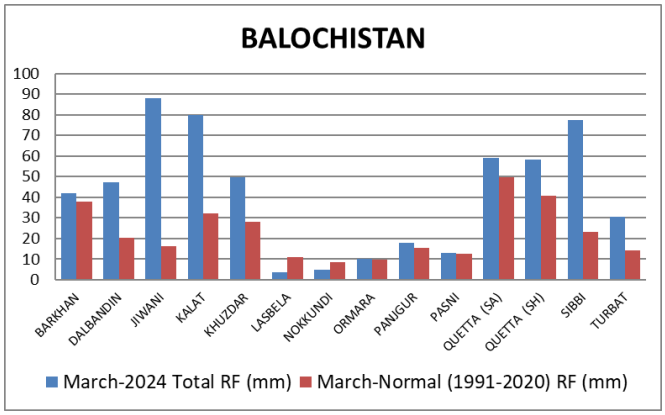

Figure 7d

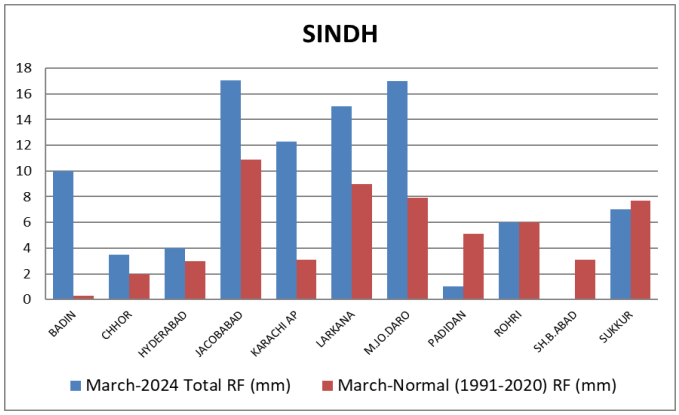

Figure 7e

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

Sr. No.	Station	Rainfall(mm)	Sr. No.	Station	Rainfall(mm)
1	Dir	331	11	Risalpur	197
2	Malamjabba	296	12	Kakul	193
3	Muzaffarabad A/P	272	12	Cherat	191
4	Pattan	268	14	Chitral	190
5	Lower Dir	260	15	Peshawar	168
6	Rawalakot	250	16	Mirkhani	161
7	Saidu Sharif	212	17	Takht Bai	159
8	Kalam	211	18	Drosh	158
9	Gari.Dopatta	208	19	Bacha Khan Airport	155
10	Risalpur	197	20	Balakot	149

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. 8. Mild Drought conditions may be observed in Nokkundi in Balochistan, some areas of Sindh and Cholistan in Punjab. Keeping in view the weather forecast for the month of April 2024.

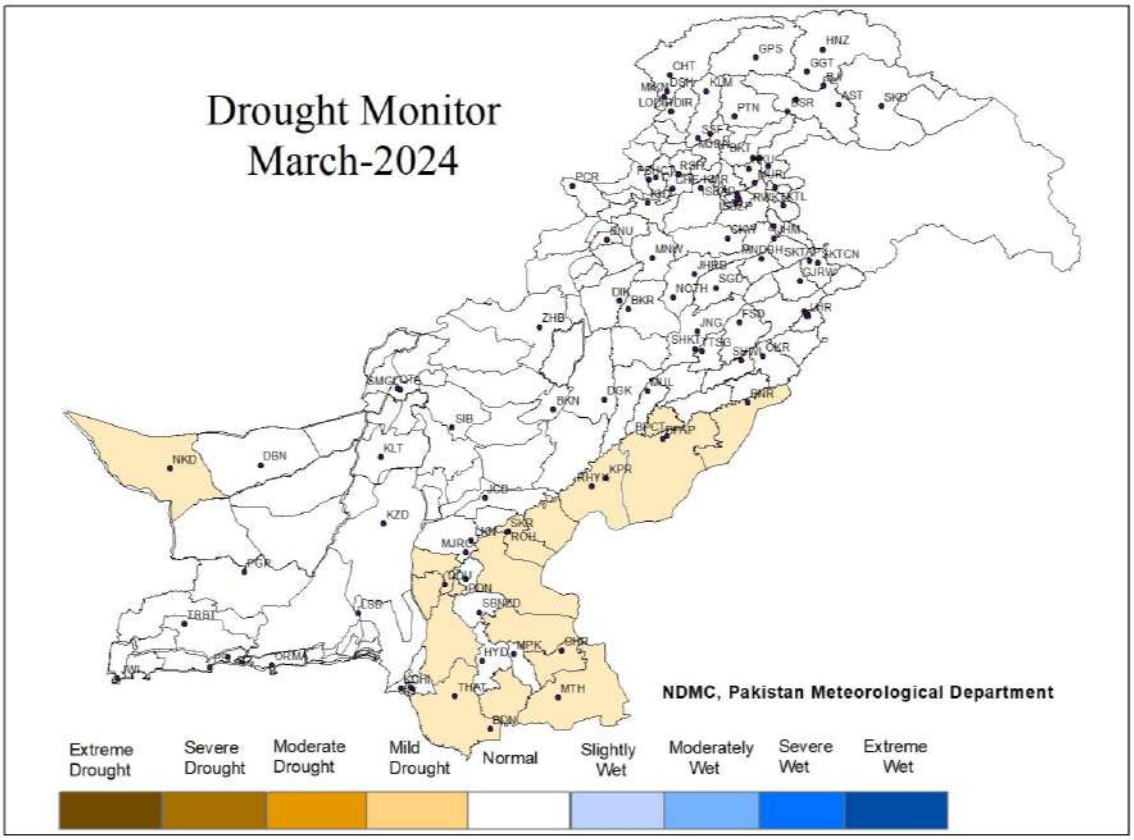

Figure 8: Drought Monitor of Pakistan.

4. Temperature Vegetation Dryness Index (TVDI)

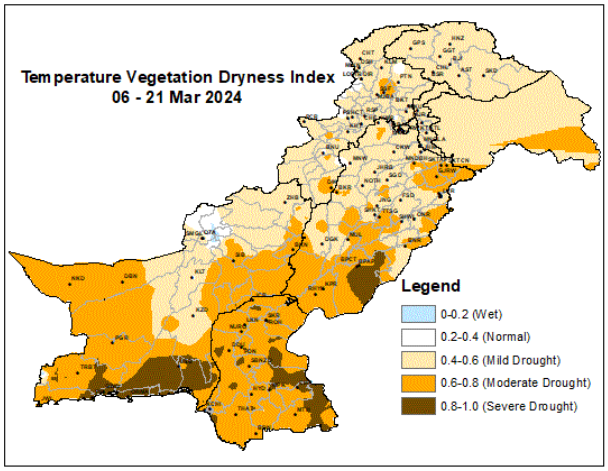

Figure 9: Temperature vegetation dryness index (TVDI)

Temperature Vegetation Dryness Index (TVDI) derived from MODIS products MOD12A2 (NDVI) and MOD11A2 (LST) is shown in Figure9, which indicates mild dry conditions showing the dryness and less soil moisture conditions in the coastal areas of Balochistan, eastern areas of Sindh and adjacent areas of Cholistan in Punjab as well.

5. Normalized Difference Vegetation Index (NDVI)

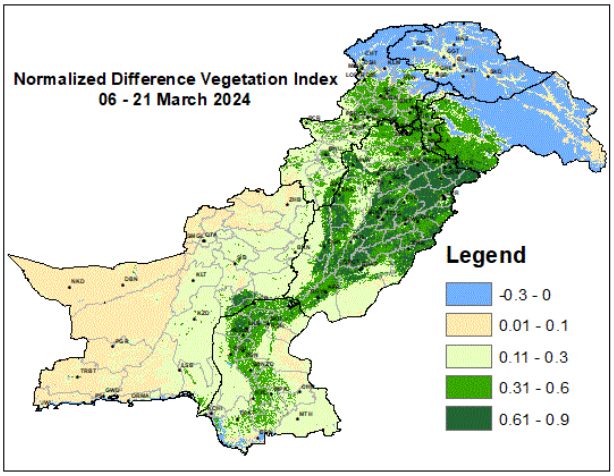

Figure 10: Normalized difference vegetation index (NDVI)

Normalized Difference Vegetation Index values for March 2024 are shown in Figure 10. 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.

6. Length of Consecutive Dry Days

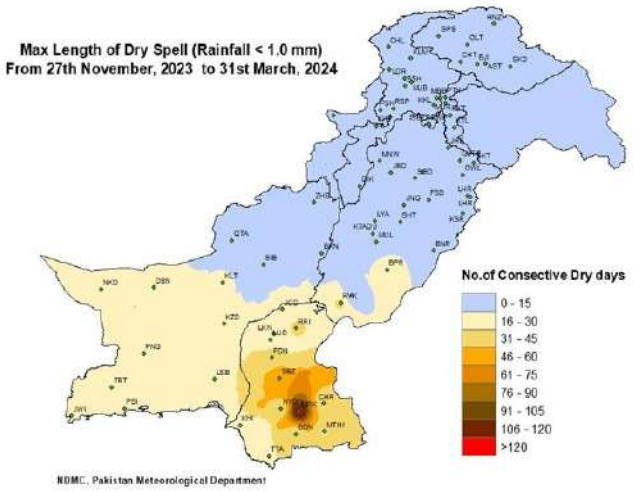

Figure 11: No. of consecutive dry days

The maximum length of consecutive dry days spell with rainfall, 1.0 mm is shown in Figure 11 below. Number of consecutive dry days has increased from 120 days in Mirpurkhas and adjacent areas in Sindh.

8. Water Availability/ Dams Flow Data

The water inflow, outflow and levels of the Rawal, Khanpur, Tarbela and Mangla dams for the month of March 2024 are shown in the four panels of Figures 12. The level at Tarbela and Mangla reservoirs has dropped. It has increased at Khanpur reservoir, while no change has been observed at Rawal reservoir.

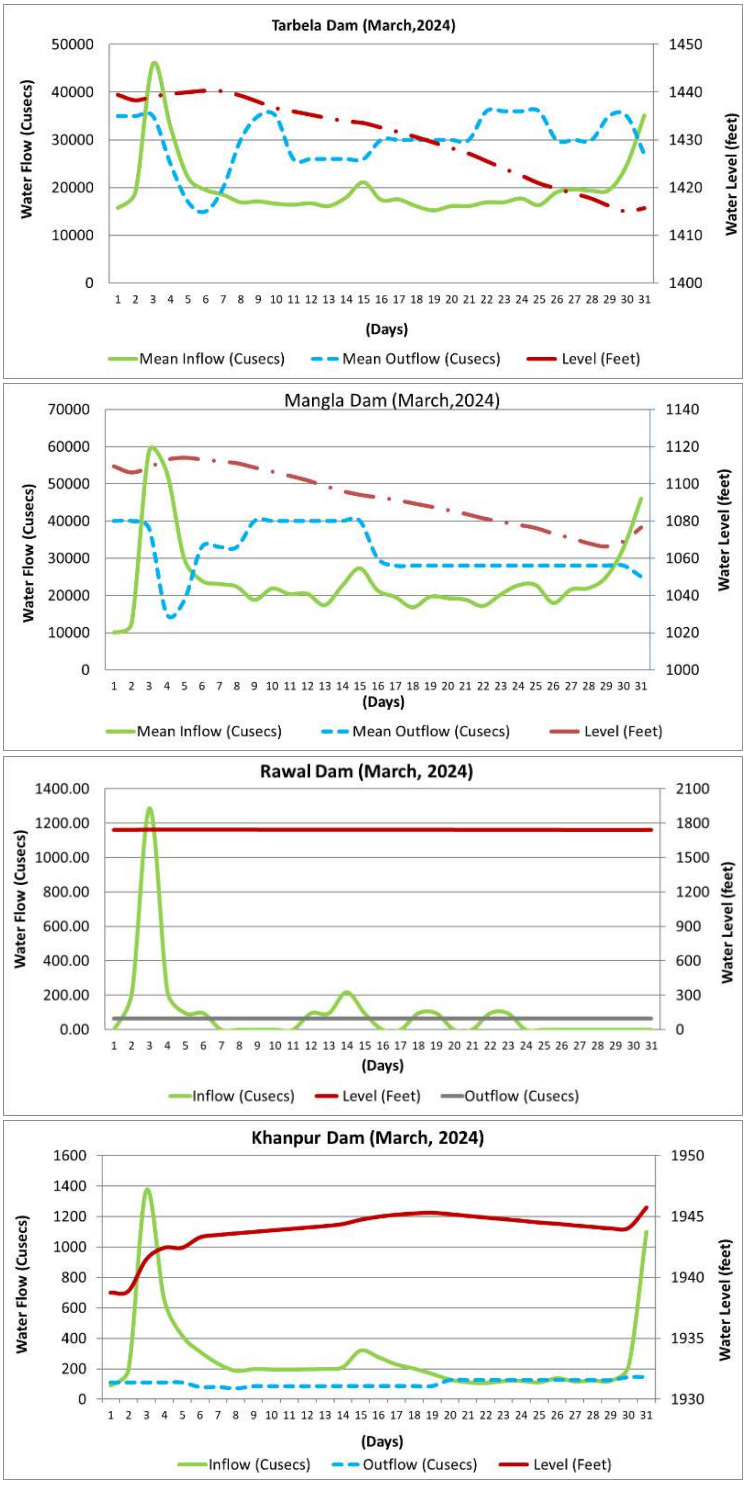

Figure 12: Water inflow, outflow and level of Rawal, Khanpur, Tarbela and Mangla Dams.

9. Weather Outlook for April 2024

Overall, a tendency for near normal rainfall is expected in most parts of the country however, Khyber Pakhtunkhwa, northern Punjab and Kashmir may get slightly above normal rainfall during April 2024. The day time maximum temperatures are expected to remain normal to slightly above normal whereas, warmer than normal minimum temperatures are expected nationwide with maximum departure over northern parts of the country.

10. Drought Outlook for April 2024

Keeping in view the forecast for April 2024, drought-affected areas of Sindh, Balochistan and southern 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.

11. Crop Condition

At present, the major agricultural soils (particularly in the upper half) hold a considerable moisture based on the recently prevailed weather conditions. Accordingly, the standing crops and vegetable/ orchards have been growing with almost satisfactory pace in most parts of the country. However, isolated wind/ thunder/ hailstorm along with light to moderate precipitation particularly in the upper half has affected the seasonal crops, vegetables and orchard.

12. 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.

V. Farmers of lower half may plan the harvesting of their crops keeping in view the weather forecasts.

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