

MARCH 2021

Highlights

- During the month of March 2021, light to moderate rainfall is reported from different PMD stations in AJK, GB, KPK and Punjab, while most of the places in Sindh and Balochistan practically received no rainfall. The chief amounts of rainfall recorded across Pakistan during March, 2021 is shown in Table 1.
- During the month of April 2021, Normal to below normal rainfall is expected across the country and due to less rains in many areas during previous months, low water and soil moisture will be available in those areas.
- Rainfall during March was not good for previous drought prone areas of Balochistan and Sindh regions. During the month of April 2021, no significant rainfall is expected in Sindh and Balochistan. Therefore, dry conditions are likely to continue to prevail during the period.

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This Bulletin is regularly being published on monthly basis under the guidance of **Dr.Azmat Hayat Khan, Chief Meteorologist, Pakistan Meteorological Department.**

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1. Weather Summary for the month of March, 2021

During the month of March 2021, rainfall received across Pakistan is shown in Fig.1. Light to moderate rainfall is reported from PMD stations across Pakistan in AJK, KPK, GB and Punjab provinces. The chief amounts of monthly rainfall recorded across Pakistan during March, 2021 is shown in Table:1

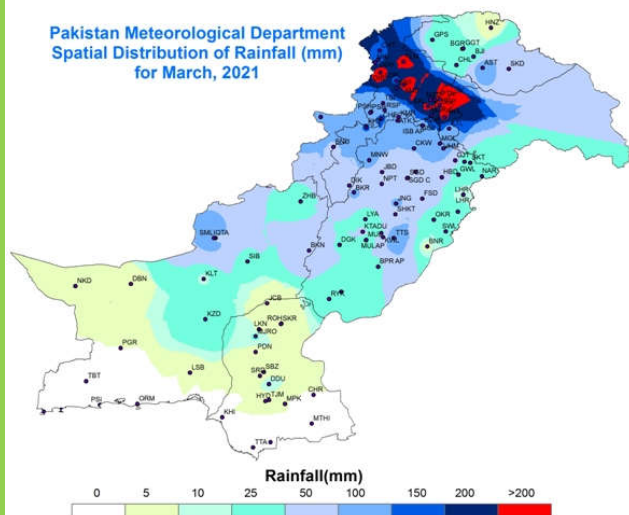


Figure 1: Rainfall distribution for the month of March-2021

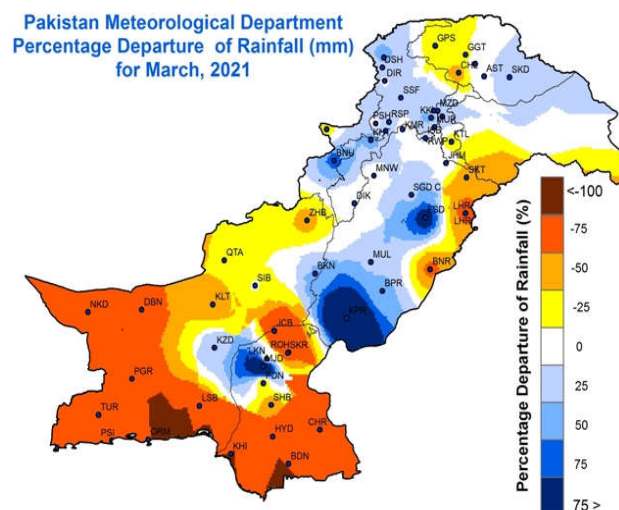


Figure 2: Percentage Departure of Rainfall for the month of March-2021

The Fig. 2 depicts the Percentage Departure of Rainfall from the normal. Normal to above normal rainfall is received in different parts of KPK, GB, AJK and Punjab, while places in Sindh and Balochistan practically received little or no rainfall during the whole month..

S. No.	Stations	Rainfall (mm)	S. No.	Stations	Rainfall (mm)
1	Dir	249.6	11	Brarkot	204.2
2	Malam Jabba	247.0	12	Garhi Dupatta	196.5
3	Pattan	237.0	13	Chattar Kalas	179.0
4	Tandali	232.8	14	Balakot	165.8
5	Chakothei	229.9	15	Murree	164.0
6	Haraman	220.9	16	Saidu Sharif	161.0
7	Muzaffarabad (A/P)	220.5	17	Chitral	147.3
8	Kakul	215.0	18	Mir Khani	146.0
9	Rawalakot	214.2	19	Buner	142.5
10	Kalam	210.6	20	Besham	140.4

2. Drought Situation Analysis

Spatial drought analysis results using different indices is represented in Fig. 3. Normal conditions prevailed over most of the places in the country while moderate drought conditions have developed in eastern Sindh and western Balochistan.

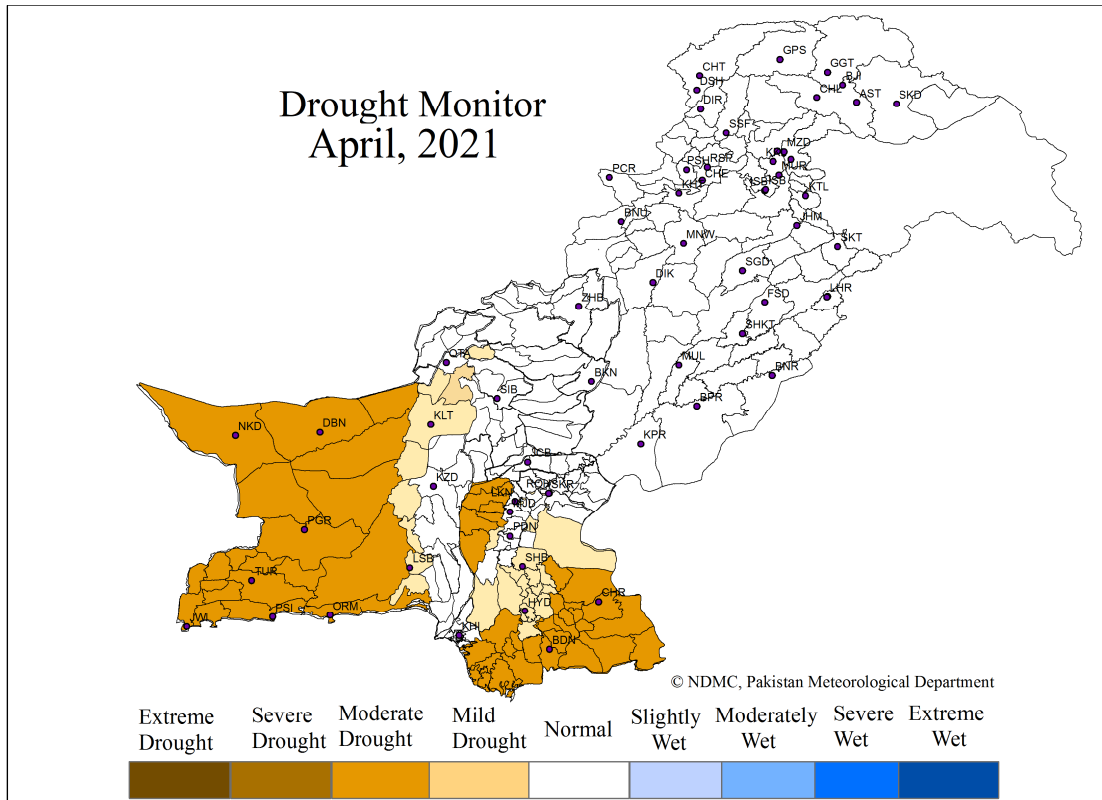
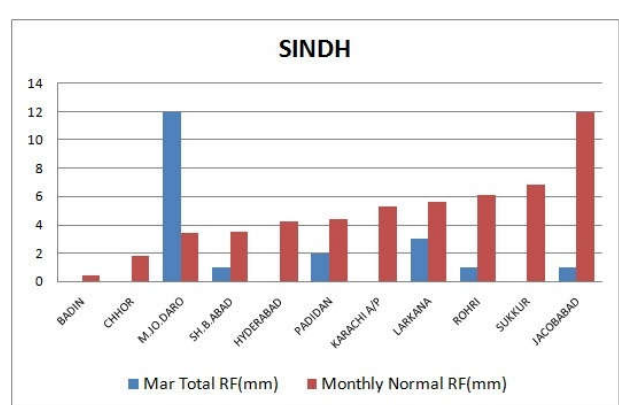
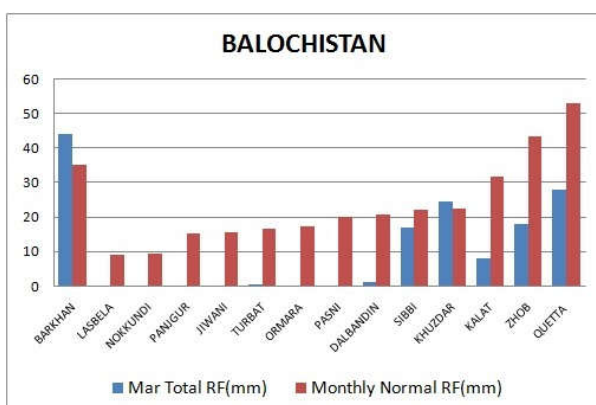
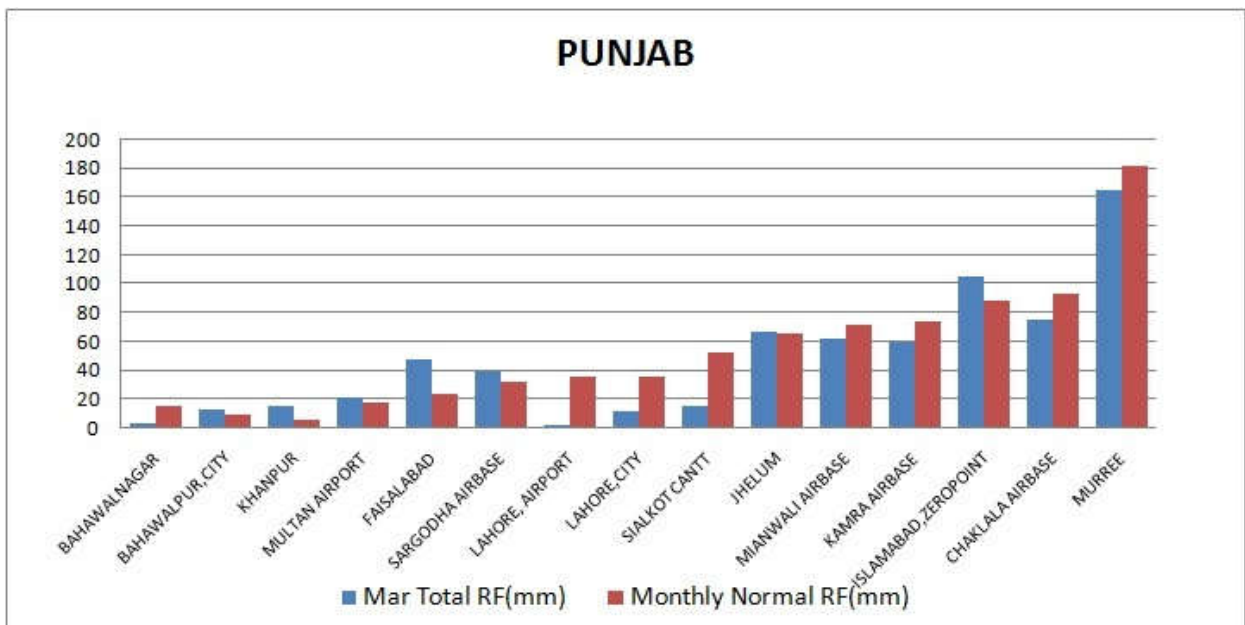
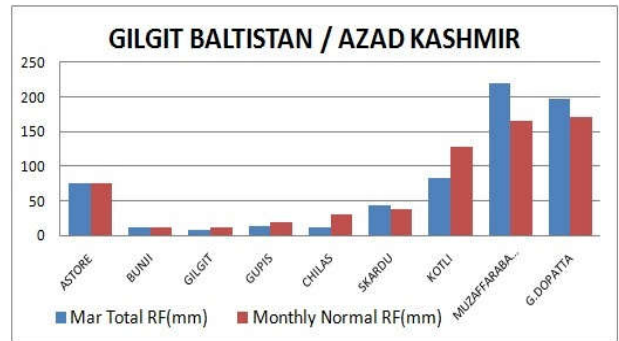
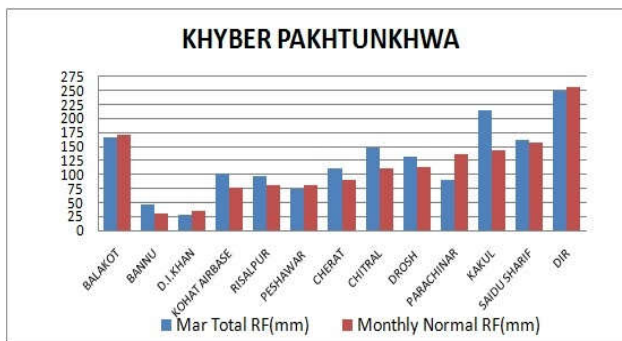
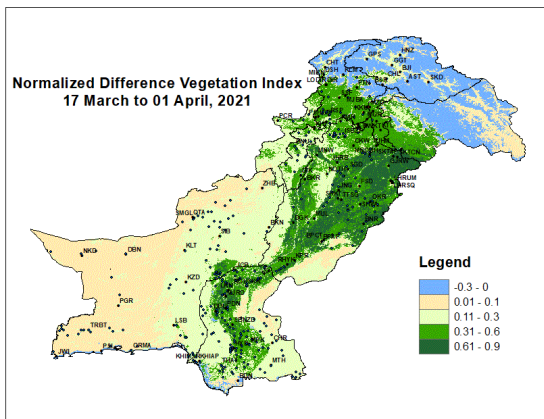


Figure 3: Analysis of Drought Situation in Pakistan

I. Monthly Actual to Normal Rainfall Comparison for March-2021



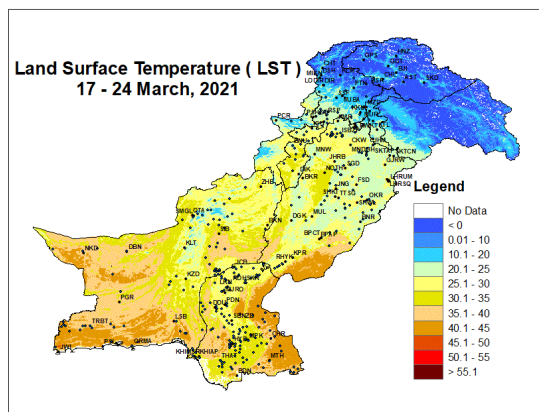
I. Normalized Difference Vegetation Index (NDVI)



Normalized Difference Vegetation Index values for the month of March 2021 are derived from MODIS Satellite Product shown in Fig. 4. NDVI conditions in Khyber Pakhtunkhwa, Punjab and along the Indus belt are good. Vegetation index is minimum over most parts of Sindh and Balochistan due to drought conditions..

Figure 4: NDVI 17 March-1st April, 2021

III. Land Surface Temperature (LST)



Land Surface Temperatures (LST) for the period 17-24 March, 2021 are represented in Fig. 5. In the central parts of the country, average daytime temperatures remained between 15°C to 20°C while in lower parts of the country, temperature ranges from 25°C to 35°C.

Figure 5: LST (°C) 17 March – 24 March, 2021

Land Surface Temperatures during the period 25 March to 1st April, 2021 are shown in Fig. 6. A slight increase in daytime temperatures has been observed in most parts of the country as compared to the previous week. The nights are comfortable, but the days are getting warmer..

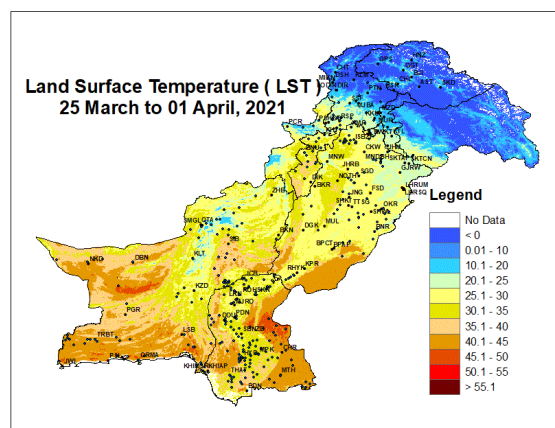


Figure 6: LST (°C) 25 March – 1st April, 2021

IV. Temperature Vegetation Dryness Index (TVDI)

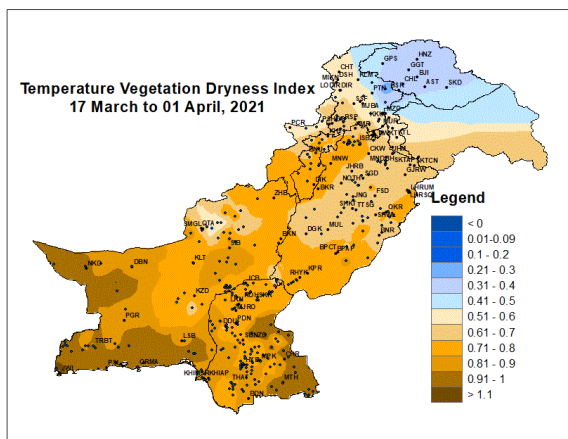
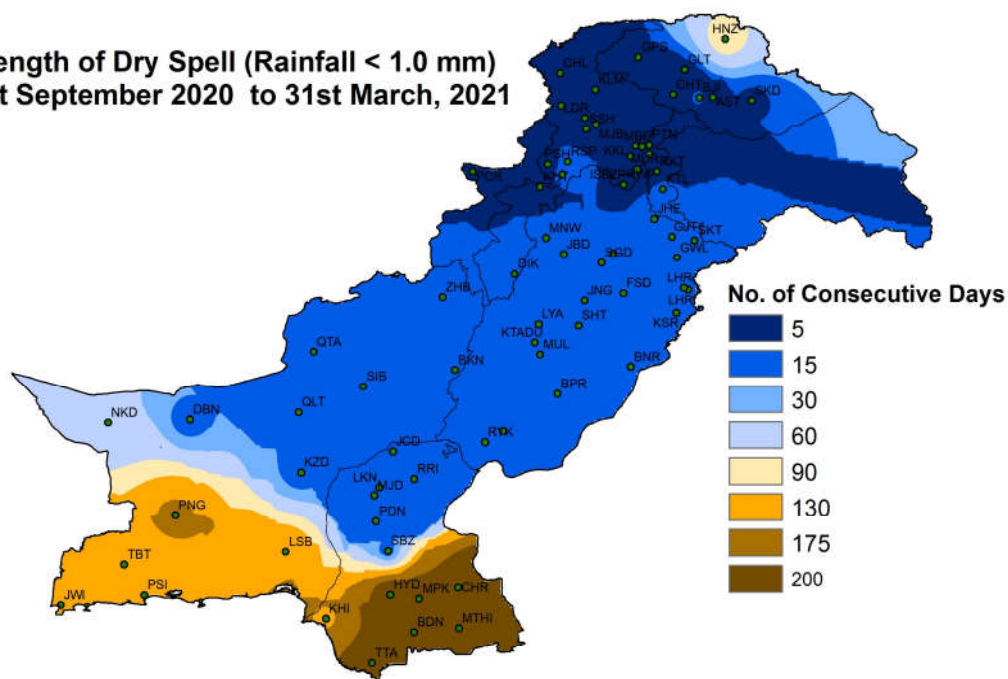


Figure 7: TVDI 17 March -1st April, 2021

Temperature Vegetation Dryness Index (TVDI) derived from MODIS product MOD13A2 (NDVI) and MOD11A2 (LST) is shown in Fig. 7, which indicates mild to moderate wet conditions in Gilgit Baltistan and adjoining areas of Khyber Pakhtunkhwa & Kashmir, while most parts of the country are under moisture stress conditions especially in upper Sindh and southwest Balochistan.

V. Length of Consecutive Dry Days Spell

Max Length of Dry Spell (Rainfall < 1.0 mm) from 1st September 2020 to 31st March, 2021



Source: National Drought Monitoring Center-PMD-Islamabad

3. Water availability/ Dams flow data:

During the month of March 2021, water inflow, outflow and levels of Rawal, Khanpur, Tarbela and Mangla dams are shown in Fig.8 & 9. An overall decreasing trend in inflow and levels has been observed in Khanpur and Rawal dams, while some increase is shown in the later part of the month at Tarbela and Mangla dams, due to heavy rains in the catchments.



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

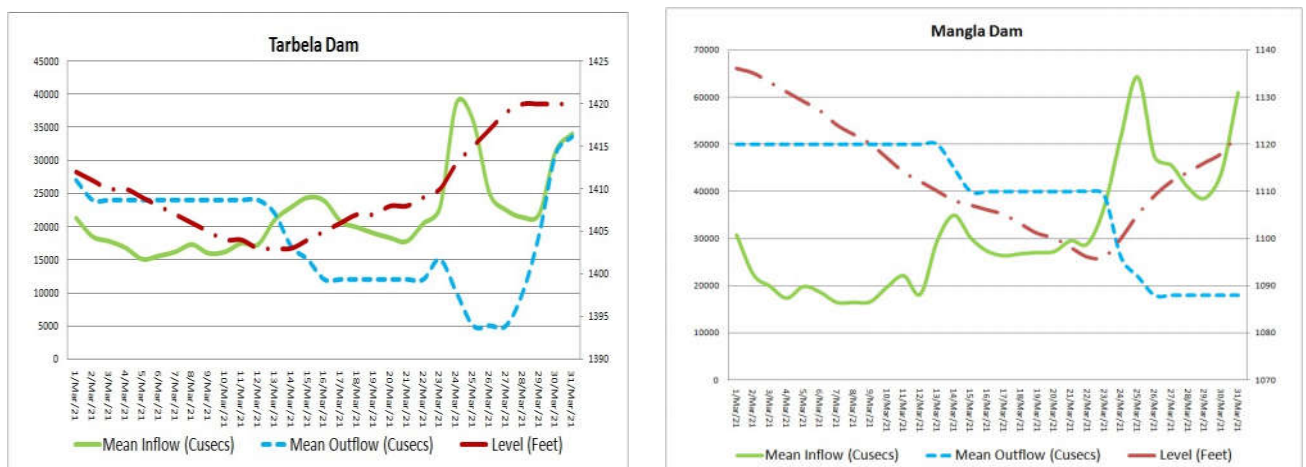


Figure 9: Water inflow, outflow and level of Tarbela and Mangla Dams

4. Weather outlook for April 2021

During April, westerly waves are shifted towards northern latitudes and frequency of western disturbances affecting Pakistan becomes less. However, due to increased solar heating, mesoscale convective activity dominates over the plains and mountainous areas. As a result, sometimes a heavy downpour associated with hailstorm and thunderstorm occurs with localized characteristics. Therefore, farmers are advised to adopt precautionary measures to minimize post harvest losses of Rabi crop. The surface temperature will gradually increase during April and are expected to remain 1-2 degree above normal over plain areas of the country. However, normal temperatures are expected over the mountainous region of the country.

The Rabi crops in the field may be close to maturity in low elevation agricultural plains, therefore, no irrigation is recommended in such areas. At higher elevations, the crops may be around at early reproductive stage, where they would require maximum amounts of water.

5. Crop Condition:

The harvesting of Rabi crops has started in southern parts of the country. In the northern parts, the growth of Rabi crops, especially wheat is satisfactory. The growth of oilseed crop is reported satisfactory and the crop is at the flowering/pod stage. No serious pest/insect attack has been reported so far.

6. Drought Outlook for April 2021

The month of March was not good for Balochistan and Sindh. During the month of April, no significant rainfall is expected in Sindh and Balochistan. Therefore, dry conditions are likely to continue to prevail during the period.

In Southern Balochistan, moderate drought conditions are prevailing in Chagi, Gawadar, Harnai, Kech, Kharan, Mastung, Nushki, Pishin, Panjgur and Washuk, and it may exacerbate moderate to severe.

In Sindh, moderate drought conditions are prevailing in Badin, Qambar Shadadkot, Mirpur Khas, Umerkot, Sanghar, Tharparkar, Thatta and Sajawal.

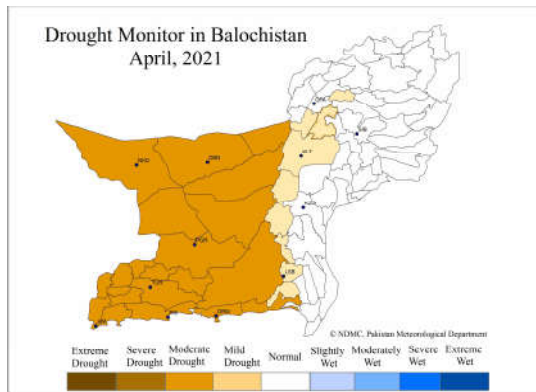


Fig-10: Drought Conditions across Balochistan

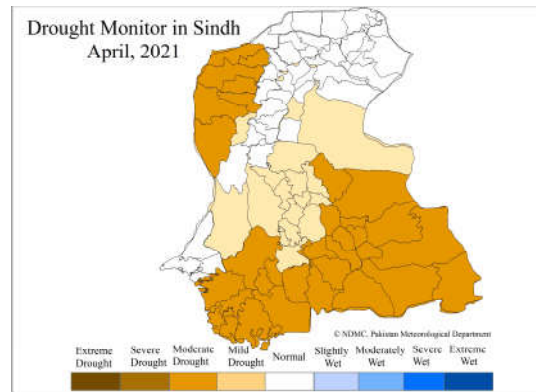


Fig:11 Drought Conditions across Sindh

All stakeholders are requested for keeping a watch across previous drought affected areas.

7. Advice for Farmers:

- I. The Rabi crops in the field may be close to maturity in low elevation northern agricultural plains, therefore, no irrigation is recommended in such areas.
- II. Due to thermal instability, gusty winds may affect southern agricultural plains at times. Farmers are advised to take care of their harvest to minimize post harvest losses..

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