

## **JULY 2021**

### **Highlights**

- Rainfall events reported for the month of July 2021 were remained Moderate to Heavy at most of the places in Azad Jammu and Kashmir, Khyber Paktunkhawa and upper Punjab while rest of the country received light to moderate rainfall comprising Gilgit Baltistan and isolated areas in Sindh and Blochistan. The Chief amounts of monthly rainfall recorded across Pakistan are shown in Table:1.
- During the month of August 2021, Near Normal precipitation is expected over the country. Rise in temperatures in high altitudes are likely to cause snowmelt in the Northern Areas subsequently the chances of increase in water availability in the Upper Indus basin and some GLOF events over the Glaciers.
- Precipitation during the month of July 2021 contributed in easing drought intensity. However, still mild to moderate drought conditions prevail in most of drought prone areas of Balochistan and Sindh.
- Mild to Moderate Drought Conditions are prevailing over NW areas of Balochistan and S.E Sindh. The disaster management authorities may continue surveillance in these areas and plan DRM activities plan accordingly.

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

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## 1. Weather Summary for the month of July, 2021

During the month of July 2021, rainfall received across Pakistan is shown in Fig.1. Moderate to Heavy rainfall events were reported at most places in Azad Jammu and Kashmir, Khyber Paktunkhawa and upper Punjab while rest of the country received light to moderate rainfall comprising Gilgit Baltistan and isolated areas in Sindh and Blochistan. The Chief amounts of monthly rainfall recorded across Pakistan during July, 2021 is shown in Table:1

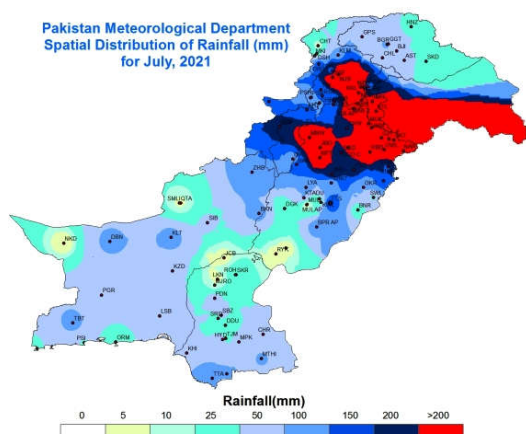


Figure 1: Rainfall distribution for the month of July-2021

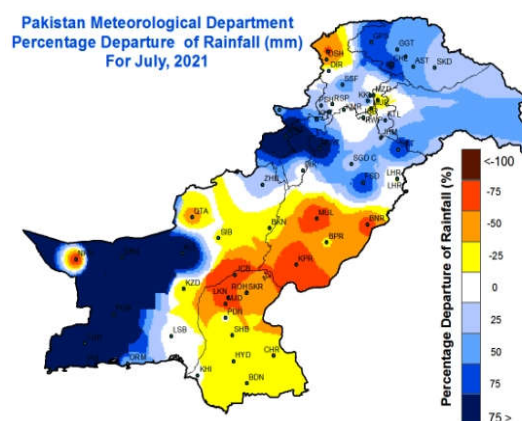


Figure 2: Percentage Departure of Rainfall for the month of July-2021

The Fig. 2 depicts the Percentage Departure of Rainfall from the normal. Below Normal rainfall was received in most areas of southern Punjab, Sindh and upper areas of Balochistan while above normal rainfall was recorded at Gilgit Baltistan, KP and isolated areas of upper Punjab. Some areas in Balochistan in blue colour are due to very low values of normal rainfall over there.

S. No.	Stations	Rainfall (mm)	S. No.	Stations	Rainfall (mm)
1	Sialkot	544.9	11	Gujrat	308.0
2	Islamabad	450.0	12	Gujranwala	305.4
3	Malamjabba	434.0	13	BandiAbbaspur	300.6
4	Narowal	380.0	14	MandiBahauddin	295.6
5	Kakul	374.4	15	Jhelum	292.1
6	Brarkot	372.4	16	Muzaffarabad City	289.0
7	Malam Jabba	362.3	17	Mianwali Airbase	288.2
8	Balakot	344.7	18	Joharabad	286.8
9	Kotli	316.6	19	Rawalakot	264.9
10	Mangla	314.0	20	Panjera	262.9

## 2. Drought Situation Analysis

Spatial drought analysis results using different indices are represented in Fig. 3. In Balochistan, District Chagi, Kharan, Panjgor, Washuk, Gawadar and Kech are facing Moderate Drought Conditions.

In Sindh Province, District Tharparkar, Umerkot, Mirpurkhas, Badin, Thatta, Sajawal, Hyderabad are facing Mild Drought while, Dadu, Nawabshah, Jamshoro, Khairpur, Larkana and Sanghar are facing Moderate Drought Conditions.

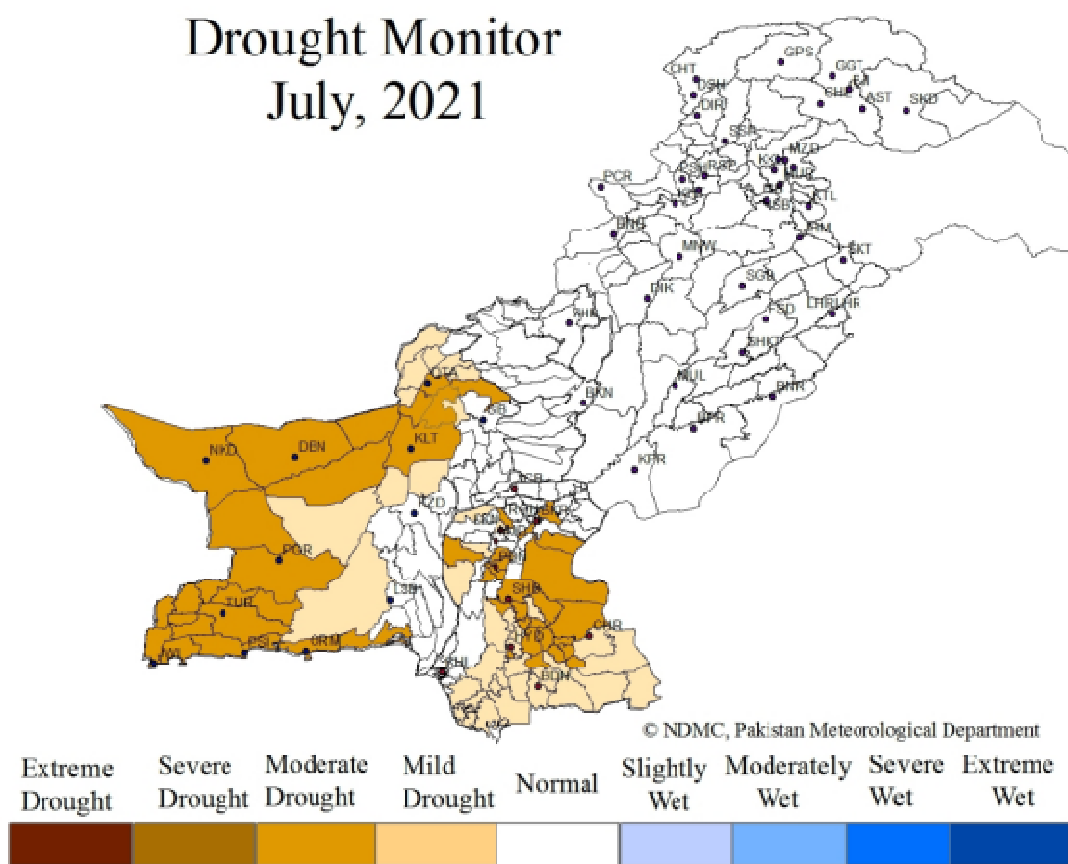
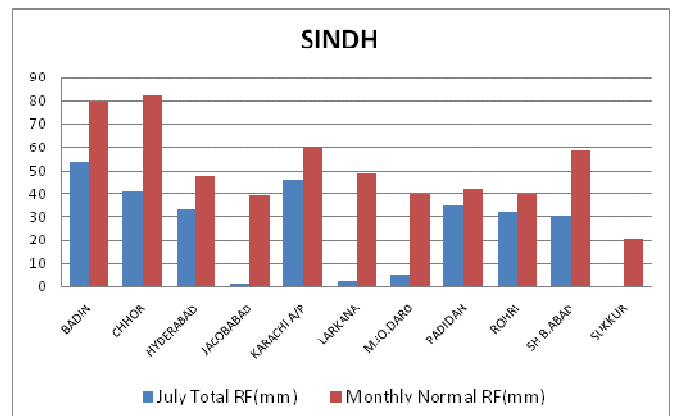
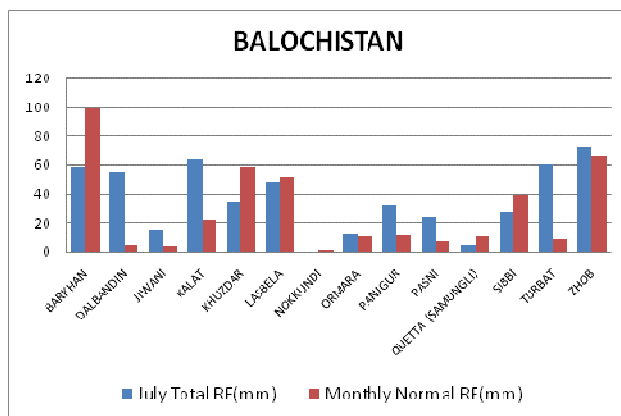
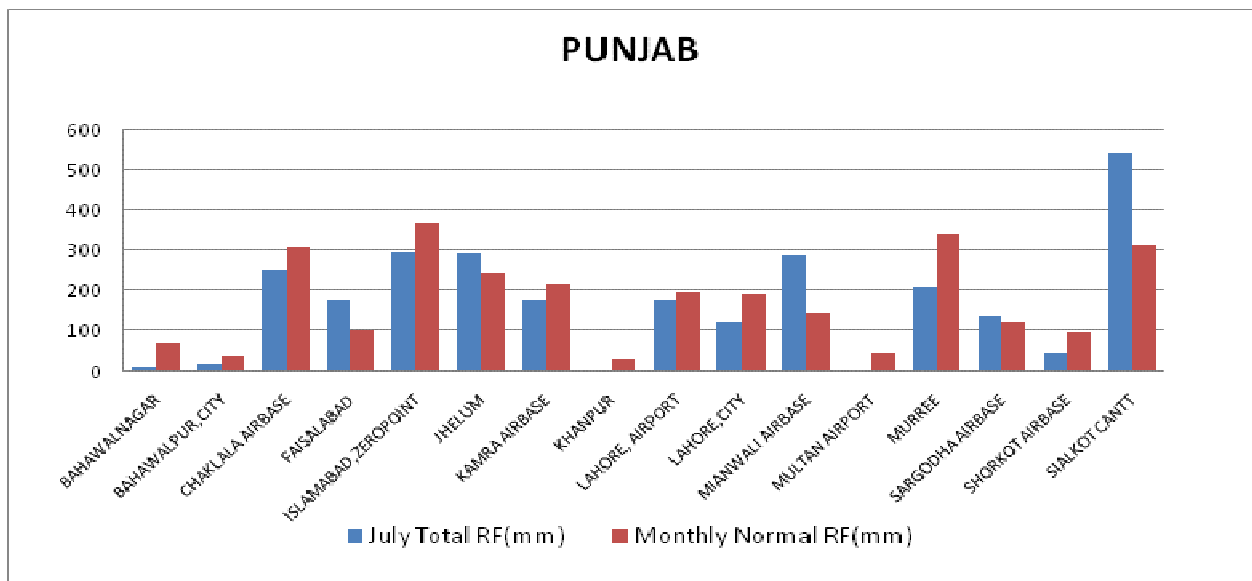
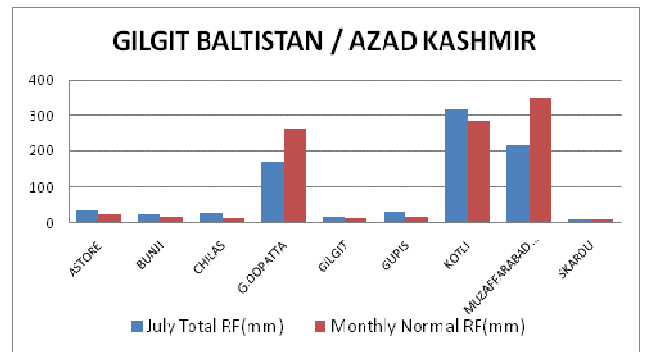
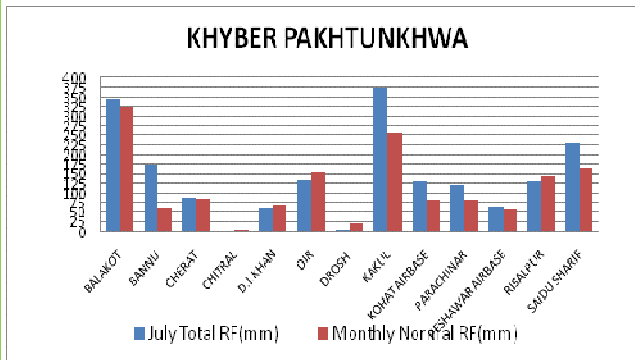


Figure 3: Analysis for Drought conditions of Pakistan

## I. Monthly Actual to Normal Rainfall Comparison for July-2021



## II. Normalized Difference Vegetation Index (NDVI)

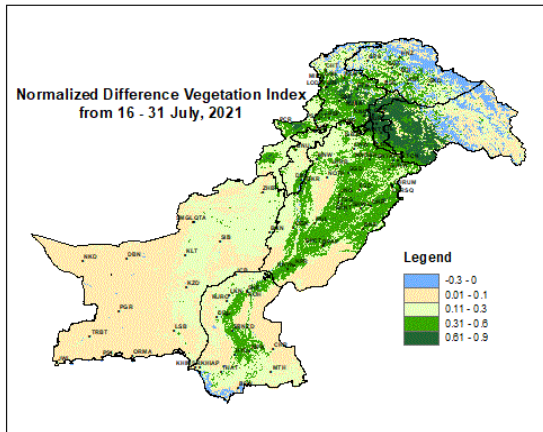


Figure 4: NDVI during 16-31 July, 2021

Normalized Difference Vegetation Index values for the month of July 2021 are shown in Fig.4. NDVI conditions in Khyber Pakhtunkhwa, Punjab and along the Indus belt are good, depicting the impacts of well distributed rainfall during the month. Vegetation index is minimum over eastern Sindh and most parts of Balochistan.

## III. Land Surface Temperature (LST)

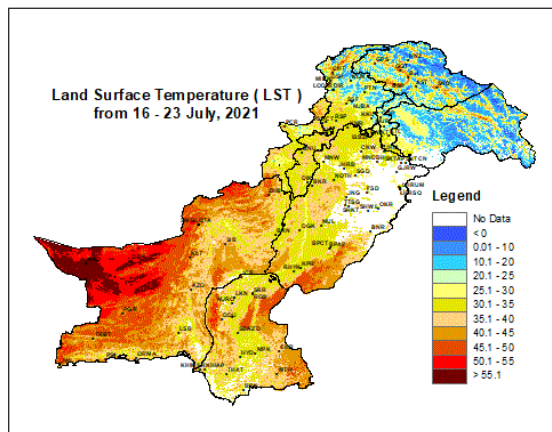


Figure 5: LST (°C) during 16-23 July, 2021

Land Surface Temperatures (LST) for the period 16–23 July, 2021 are represented by Fig. 5. In the central parts of the country, average daytime temperatures remained between 30°C to 40°C while at lower parts of the country, the temperature reaches above 40°C.

Land Surface Temperatures during the period 24 – 31, July 2021 are shown in Fig. 6. An increasing trend in temperatures has been observed in most parts of the country as compared to the previous week.

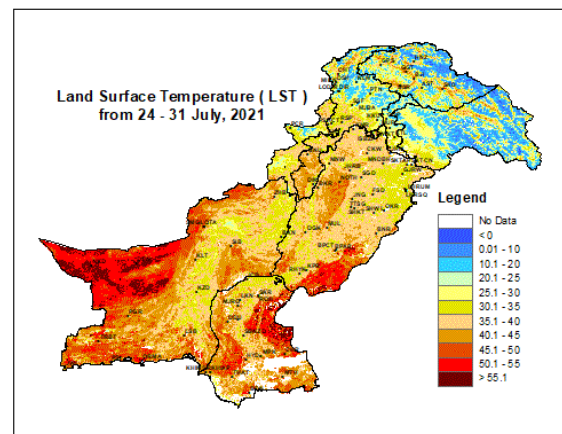
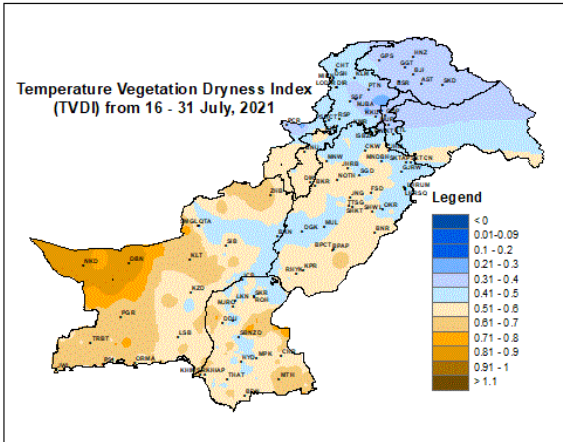


Figure 6: LST (°C) during 24-31 July, 2021



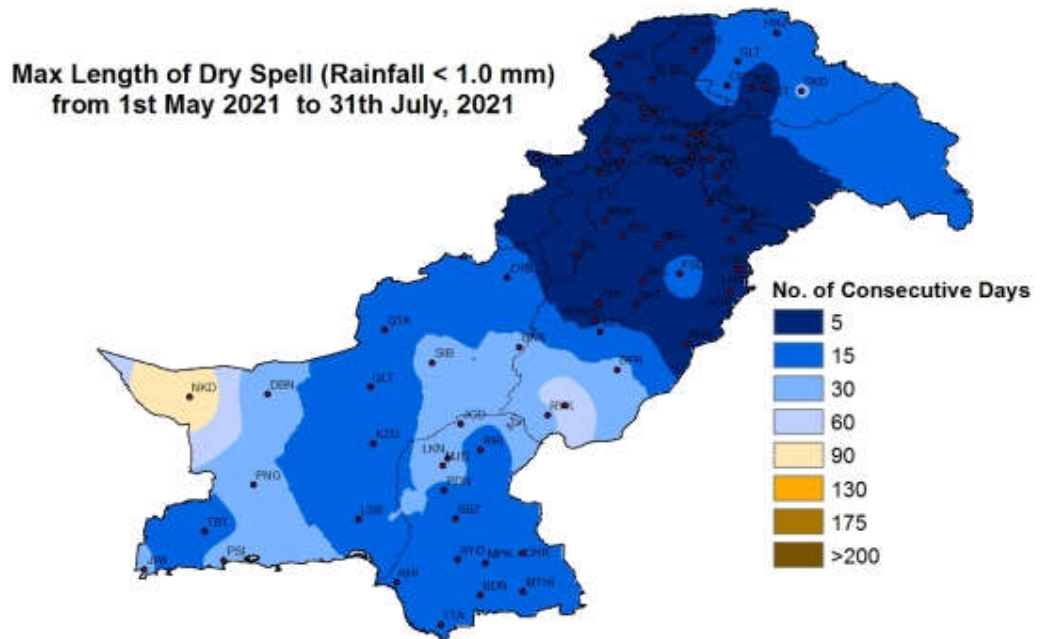
#### IV. Temperature Vegetation Dryness Index (TVDI)



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 western parts of Balochistan are under moisture stress conditions.

Figure 7: TVDI for period 14– 29 June -2021

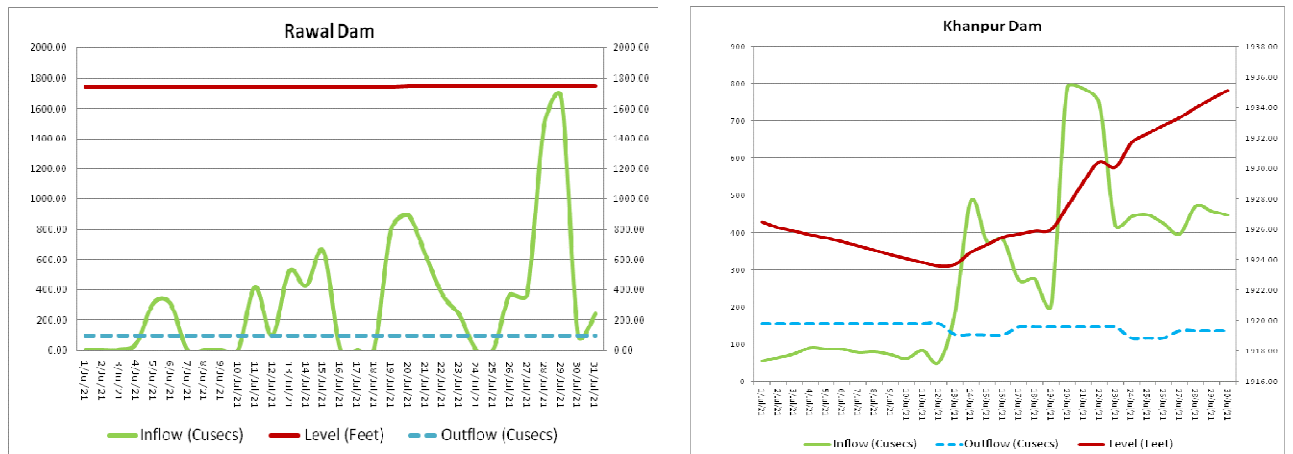
#### V.Length of Consecutive Dry Days Spell



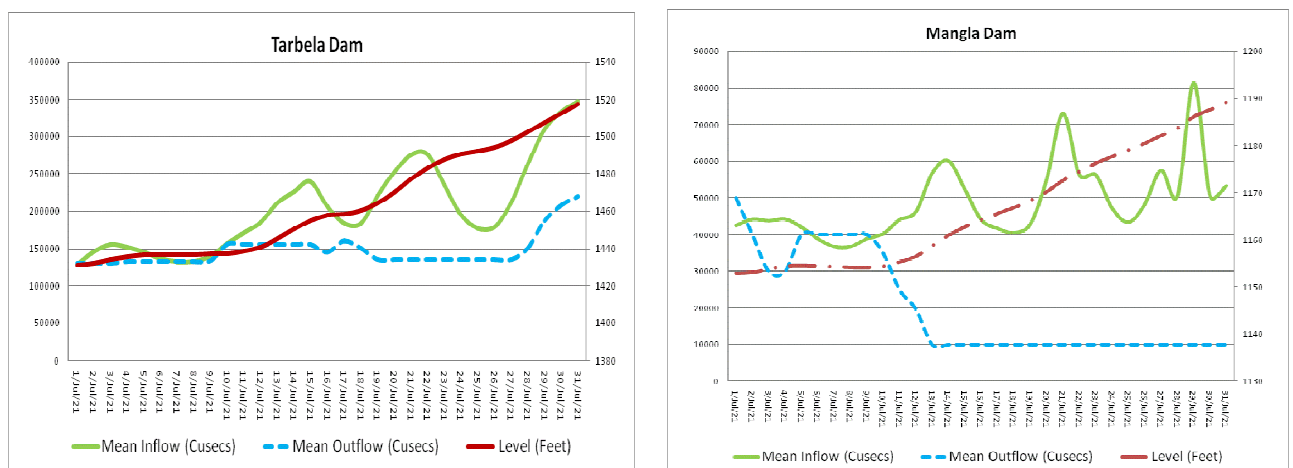
Source: National Drought Monitoring Center-PMD-Islamabad

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

During the month of July 2021, water inflow, outflow and level of Rawal, Khanpur, Tarbela and Mangla dams are shown in Fig.8& 9. **Rawal Dam reach a peak level of 1750 feet due to good rains in the catchment.** An increasing trends in inflow and water level has been observed in Khanpur, Terbela and Mangla dams.



**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 August 2021

During the month of August, monsoon rain bearing systems attain peak and heavy precipitation with maximum intensity can be expected. These rains are of immense importance for the farmers in relation to present and future crop water requirements. In the absence of proper land management, the intense rains may erode the upper soil layers and fertility of the soil would be badly affected. If soil conservation and soil moisture conservation measures are exercised, the farmers of the area could be benefited through available moisture for sowing and early growth of Rabi crops. The evaporative demand of the atmosphere would decrease as compared to July due to increased cloudiness, less solar radiation intensity and increased level of humidity.

#### 5. Drought Outlook for August 2021

The month of July was not good for most drought prone areas of Balochistan and Sindh. In Balochistan, District Chagi, Kharan, Panjgor, Washuk, Gawadar and Kech are facing Moderate Drought Conditions.

In Sindh Province, District Tharparkar, Umerkot, Mirpurkhas, Badin, Thatta, Sajawal, Hyderabad are facing Mild Drought while, Dadu, Nawabshah, Jamshoro, Khairpur, Larkana and Sanghar are facing Moderate Drought Conditions.

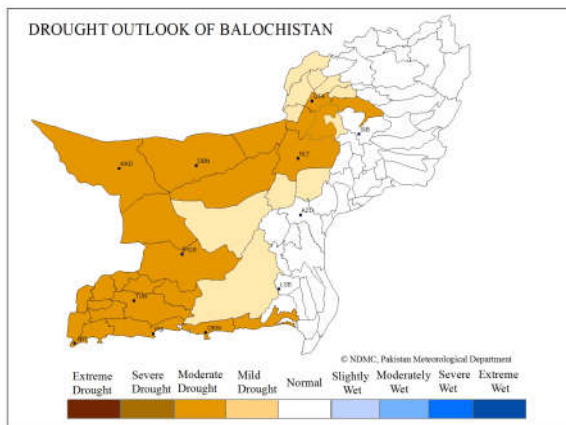


Fig.10: Drought Conditions across Balochistan

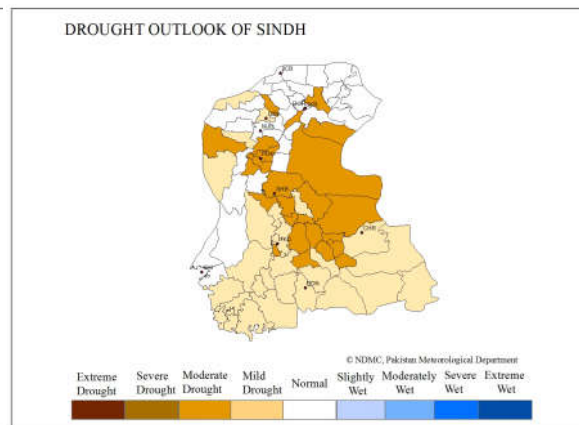
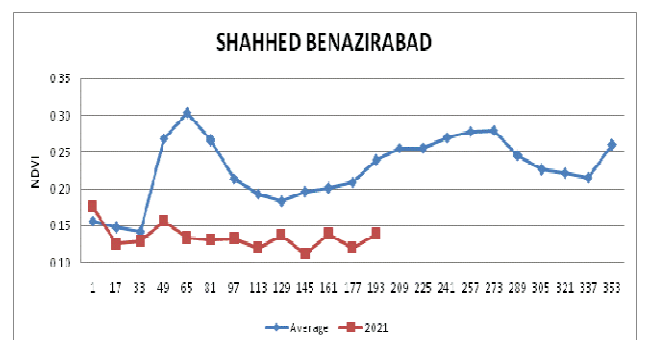
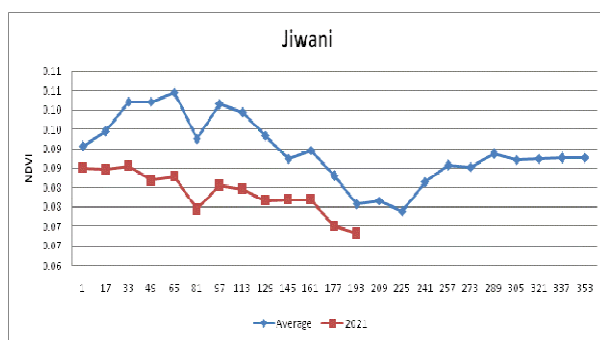
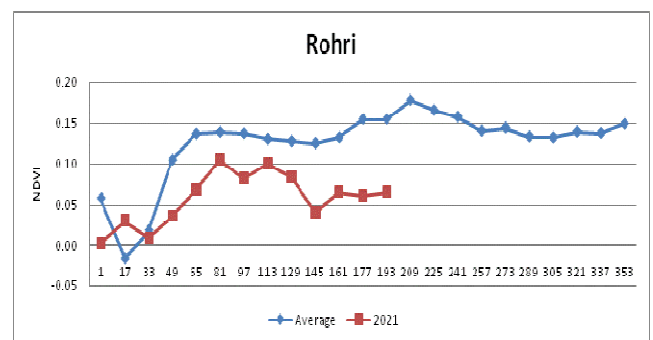
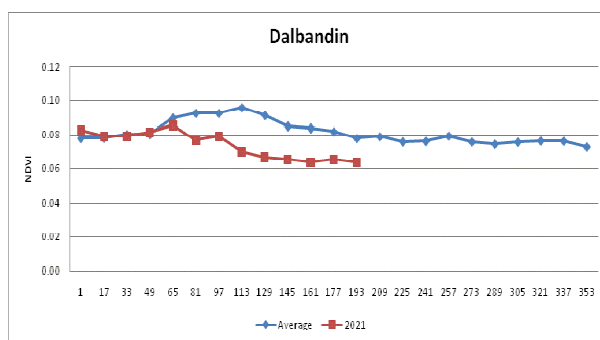
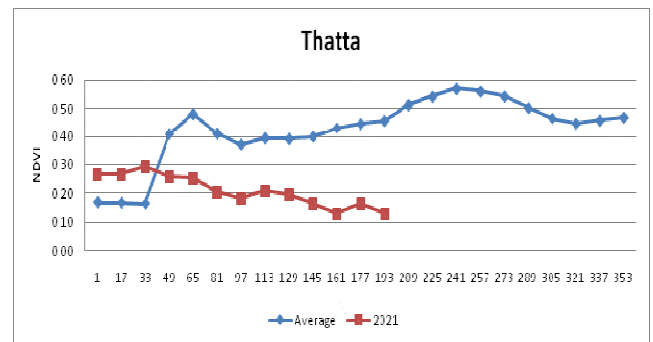
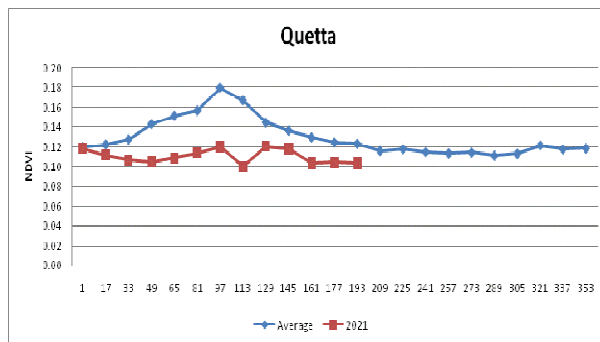


Fig. 11: Drought Conditions across Sindh

## Normalized Vegetation Index (NDVI) Comparison:



**All stakeholders are requested to make all efforts to watch water availability situation across rain-fed areas of Sindh and Balochistan especially in drought affected areas and plan DRM activities accordingly.**

### 5. Crop Condition:

The Kharif Crops season varies by region, starting at the earliest July. Kharif crops are usually sown at the beginning of the first rains during the advent of the south-west monsoon season, and they are harvested at the end of monsoon season

(October). Depending on the region, Sunflower is at the Maturity stage in Sindh. Sugarcane is at Tilling stage. Threshing of rape Mustard is completed.

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

- I. Pest/viral attacks and more weed growth are expected after recent rains on sugarcane crop. Farmers are therefore advised to take in time, precautionary measures in this regard.
- II. Farmers of upper half and northeast Balochistan should be careful about irrigation and spraying chemicals on the crops during or before expected rains during the period.
- III. Farmers are advised to control further weed growth at the present growing stages to stop any negative impact over the crops. Weeds removing practices should be started soon after expected rains in the mentioned areas.
- IV. Due to monsoon rains, farmers are advised to take precautionary measures in time to protect their crops, livestock and other property from any expected heavy rain.

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