

AUGUST 2021

Highlights

- Rainfall reported for the month of August 2021 was Moderate to Heavy rainfall events 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 Blochistan. The Chief amounts of monthly rainfall recorded across Pakistan are shown in Table:1.
- During the month of September 2021, Near Normal precipitation is expected over the country. Increase in water availability in the Upper Indus basin and chances of some GLOF events over the Glaciers are expected.
- Precipitation during the month of August 2021 was not good enough for most of the drought prone areas of Balochistan and Sindh.
- Mild to Moderate Drought Conditions are prevailing over SW 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)

Headquarters Office, Sector H-8/2, Islamabad

Tel : + (92-51) 9250598, Fax: + (92-51) 9250368, URL: <http://www.pmd.gov.pk>

Table of Contents

S.No.	Contents
1	Weather Summary of the period
2	Drought Situation Analysis <ul style="list-style-type: none">I. Normal and Actual Monthly Rainfall ComparisonII. Normalized Difference Vegetation Index (NDVI)III. Land Surface Temperature (LST)IV. Temperature Vegetation Index (TVDI)V. Length of Consecutive Dry Days Spell
3	Water availability/ Dams flow data
4	Weather outlook for September, 2021
5	Drought Outlook for September, 2021
6	Crop Condition
7	Advice for Farmers

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

Chief Editor: Dr.Shahzada Adnan
Meteorologist
National Drought Monitoring Center (NDMC), Islamabad

Editor: Nasir Yaseen, Assist. Meteorologist, NDMC, Islamabad

1. Weather Summary for the month of August, 2021

During the month of August 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 Blochistan. The Chief amounts of monthly rainfall recorded across Pakistan during August, 2021 is shown in Table:1

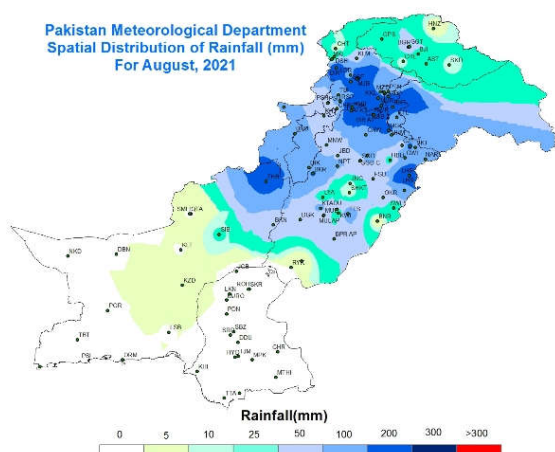


Figure 1: Rainfall distribution for the month of August-2021

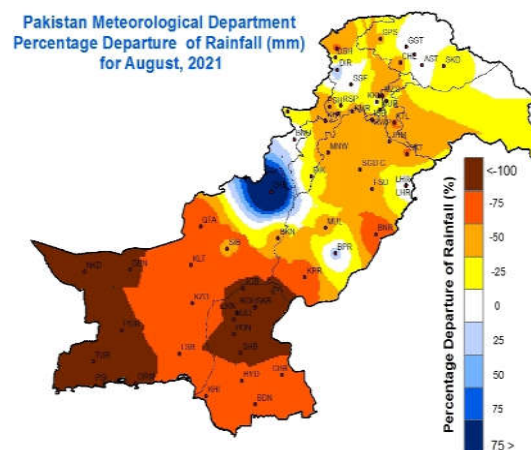


Figure 2: Percentage Departure of Rainfall for the month of August-2021

The Fig. 2 depicts the Percentage Departure of Rainfall from the normal. Below Normal rainfall was received in most areas of the country. Some areas in Balochistan in blue colour are due to very low values of normal rainfall data over there.

S. No.	Stations	Rainfall (mm)	S. No.	Stations	Rainfall (mm)
1	Shahdara (LHR)	301.0	11	Sialkot Airport	123.3
2	Malamjabba	231.0	12	Zhob	118.0
3	Kakul	217.3	13	Risalpur	113.6
4	Bandi Abbaspur	176.5	14	Saidu Sharif	110.0
5	Dir	171.0	15	Bhakkar	103.5
6	Attock	170.2	16	Dhulli	102.2
7	Chaklala Airbase	164.9	17	Kamra Airbase	93.1
8	Murree	164.3	18	Tandali	90.6
9	Garhi Dupatta	141.4	19	Pattan	89.0
10	Mangla	126.5	20	Deolian	86.2

2. Drought Situation Analysis

Spatial drought analysis results using different indices are represented in Fig. 3. In Balochistan, Districts Chagai, Kharan, Panjgur, Washuk and Kech are facing Moderate while Awaran and Quetta are facing Mild Drought Conditions.

In Sindh Province, Districts Mirpurkhas, Sanghar and Khairpur areas are facing Moderate Drought while Badin, Thatta, Tharparker, Sajawal, Shaheed Benazirabad, Jamshoro are facing Mild Drought Conditions.

Below normal rains in Kashmir region has resulted in deficient runoff and less water availability in Mangla Dam and other small dams in the area. There is a dire need for effective water management accordingly.

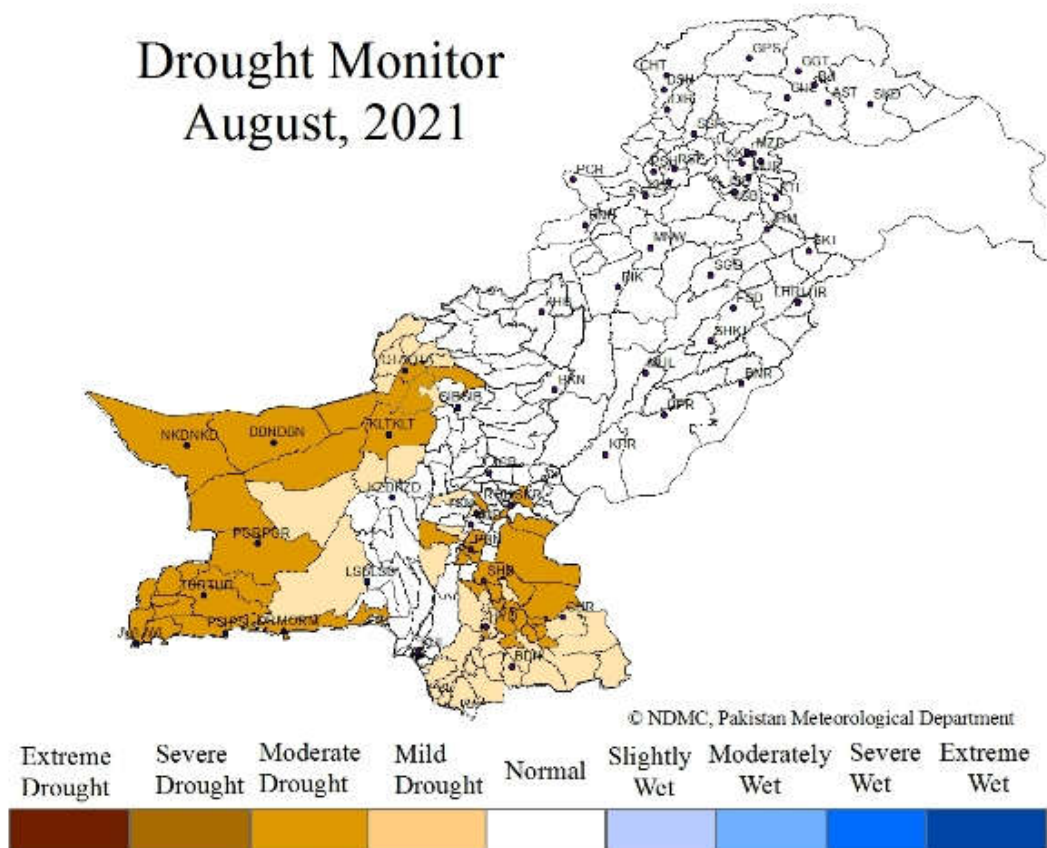
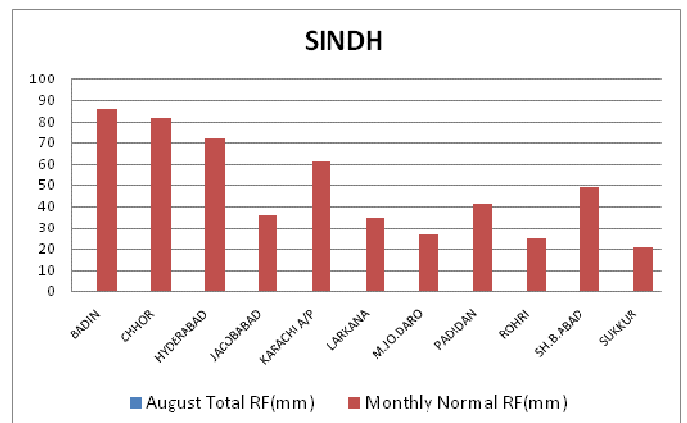
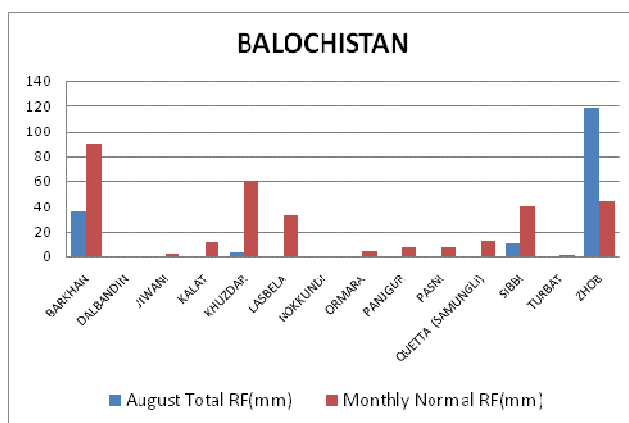
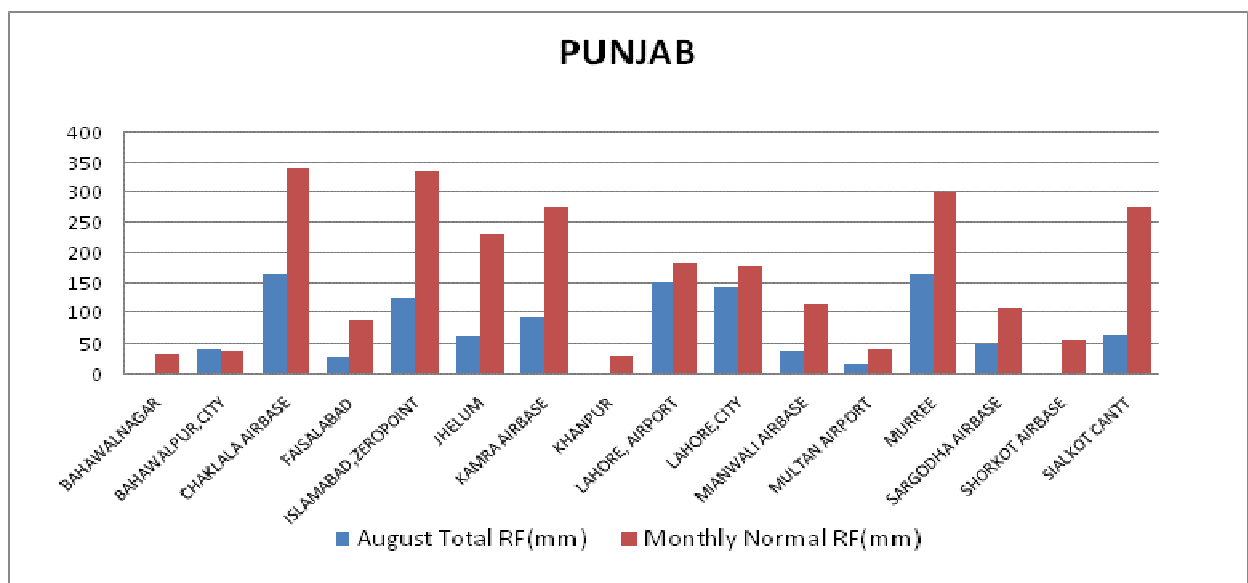
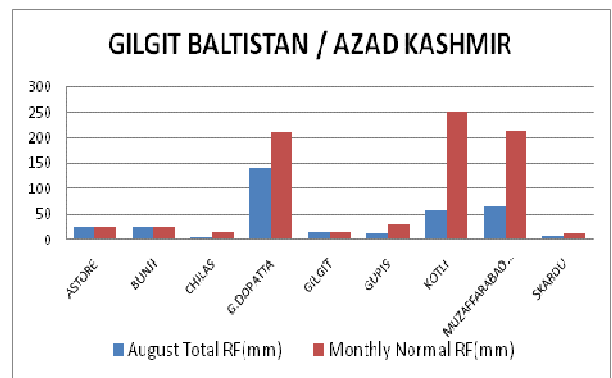
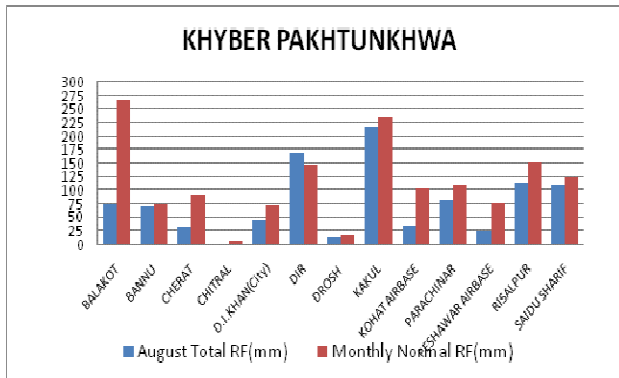


Figure 3: Analysis for Drought conditions of Pakistan

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



II. Normalized Difference Vegetation Index (NDVI)

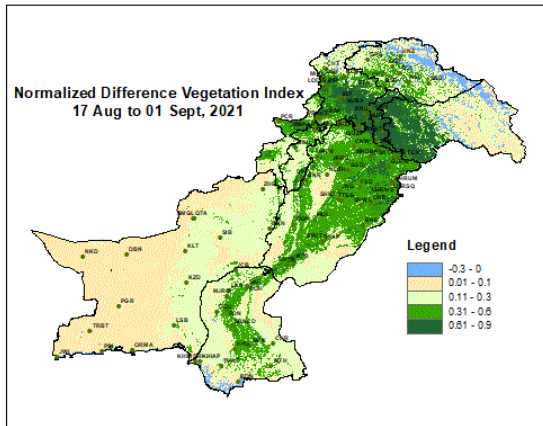


Figure 4: NDVI during 17Aug to 01Sept, 2021

Normalized Difference Vegetation Index values for the month of August 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)

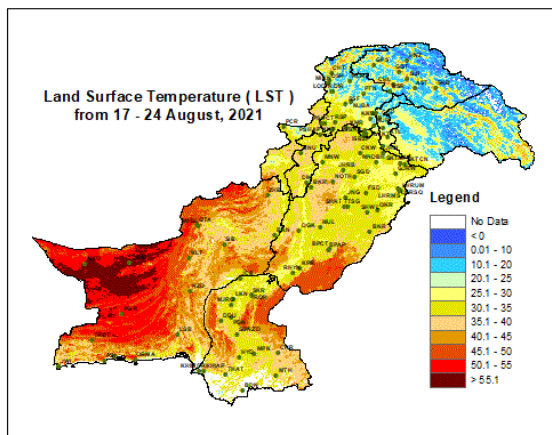


Figure 5: LST (°C) during 17-24August, 2021

Land Surface Temperatures (LST) for the period 17–24 August, 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 26 Aug to 01 Sept 2021 are shown in Fig. 6. Decreasing trend in temperatures has been observed in most parts of the country as compared to the previous week.

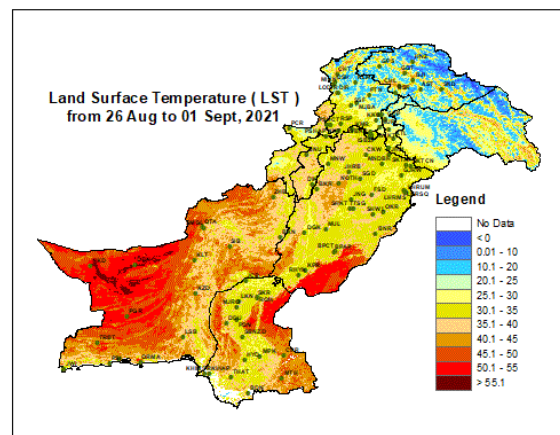
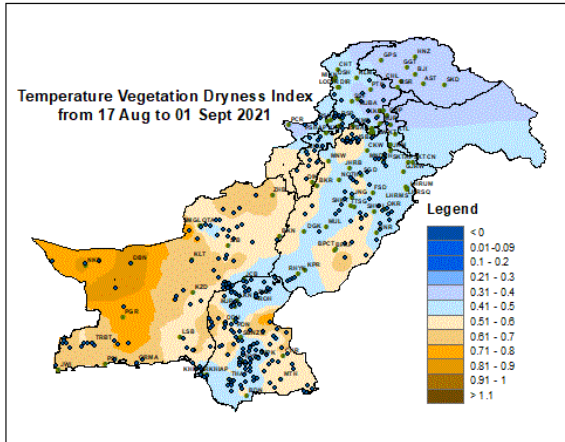


Figure 6: LST (°C) during 26 Aug to 01 Sept, 2021

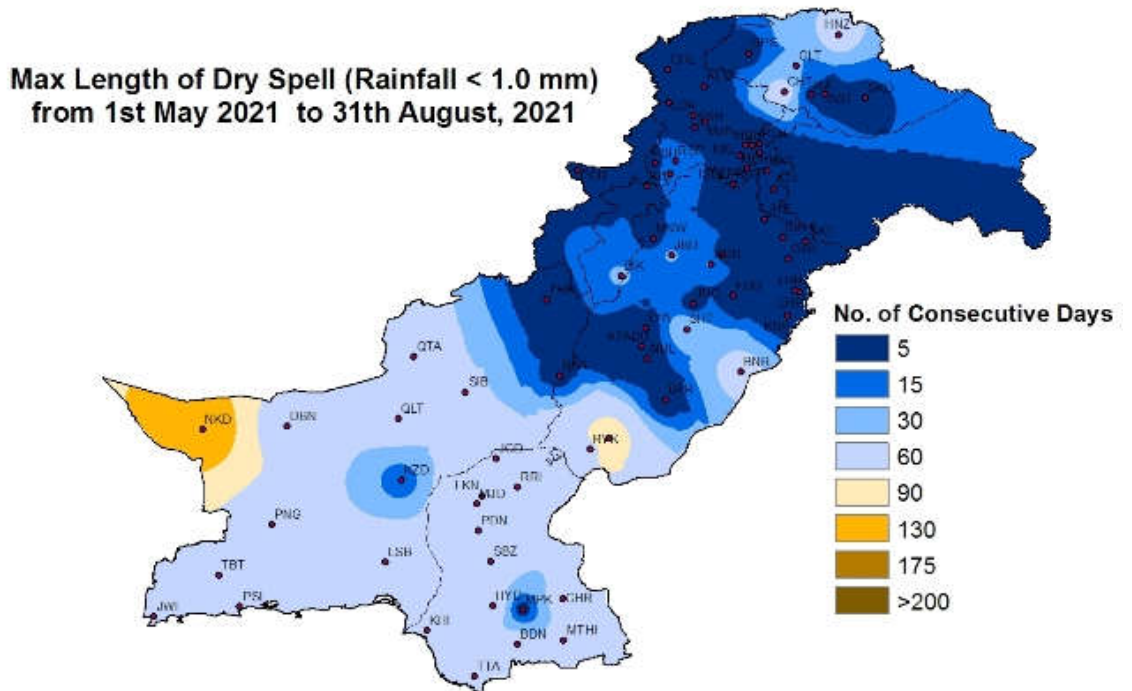
IV. Temperature Vegetation Dryness Index (TVDI)



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.

Figure 7: TVDI for period 17 Aug to 01 Sept-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 August 2021, water inflow, outflow and level of Rawal, Khanpur, Tarbela and Mangla dams are shown in Fig.8 & 9. An increasing and then decreasing trends in inflow has been observed in Khanpur, Tarbela and Mangla dams.

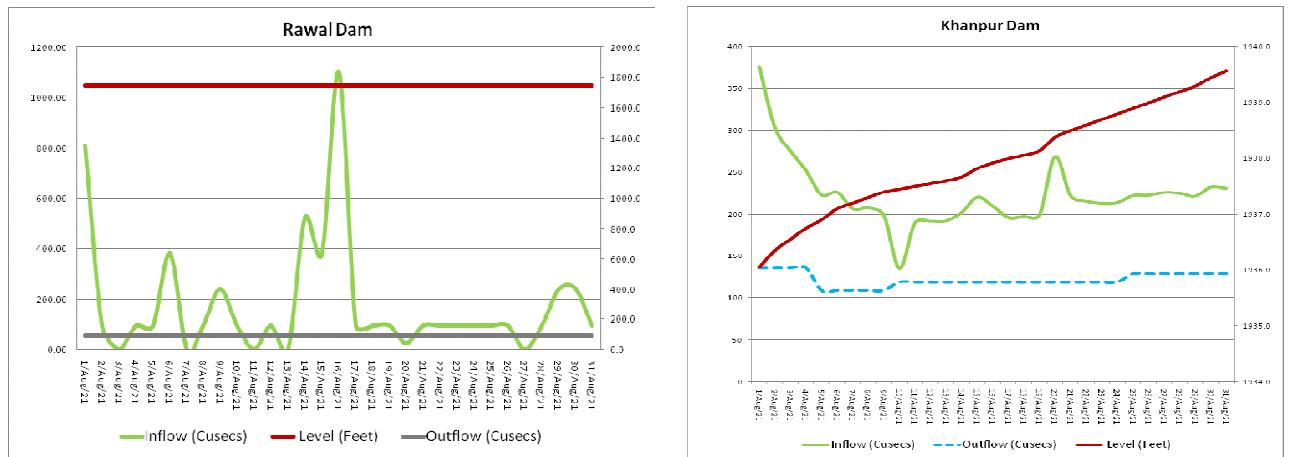


Figure 8: Water inflow, outflow and level of Rawal and Khanpur Dams

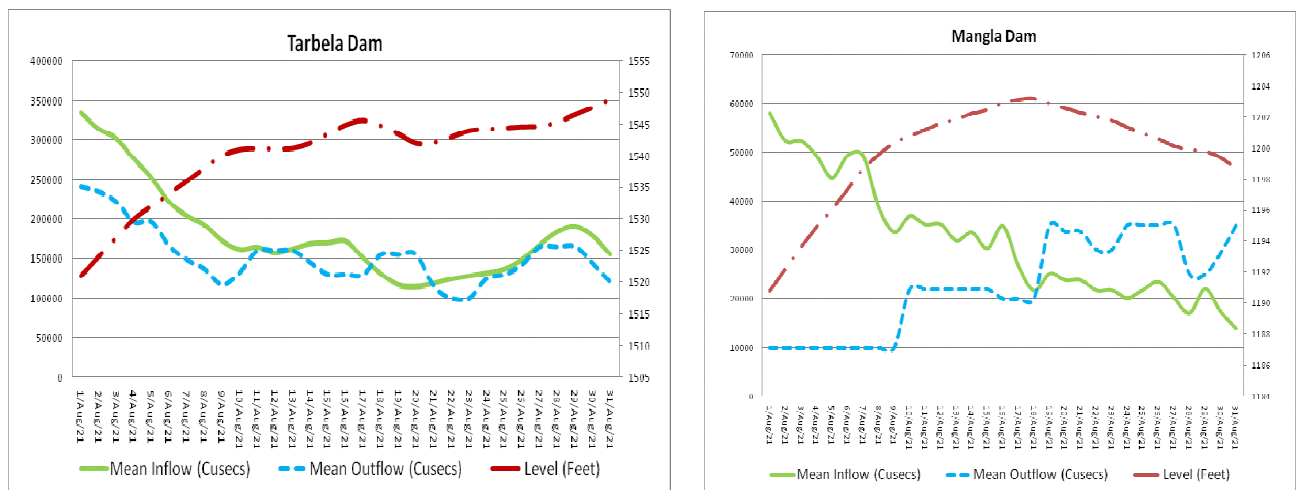


Figure 9: Water inflow, outflow and level of Tarbela and Mangla Dams

4. Weather outlook for September 2021

More rains with a gradual decreasing tendency are likely to continue in the country with 2-3 spells over northern half; Punjab, Khyber Paktunkhawa, Gilgit-Baltistan, AJK and Sindh and Balochistan as well during the first and second weeks of the month. Monsoon is expected to retreat from Pakistan during the third week, however westerly waves will continue to pass across the north of the country.

5. Drought Outlook for September 2021

The month of August was not good for most drought prone areas of Balochistan and Sindh. *In Balochistan, Districts Chagi, Kharan, Panjgor, Washuk and Kech are facing Moderate while Awaran and Quetta facing Mild Drought Conditions. In Sindh Province, Districts Mirpurkhas, Sanghar and Khairpur areas are facing Moderate Drought while Badin, Thatta, Tharparker, Sajawal, Nawabshah, Jamshoro are facing Mild Drought Conditions.*



Fig-10: Conditions across Balochistan

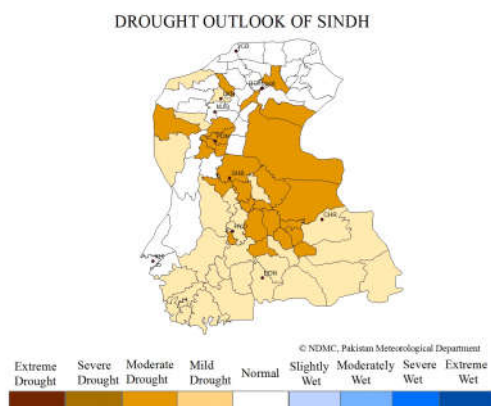
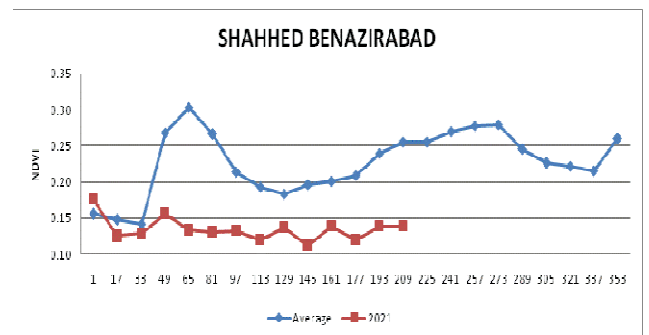
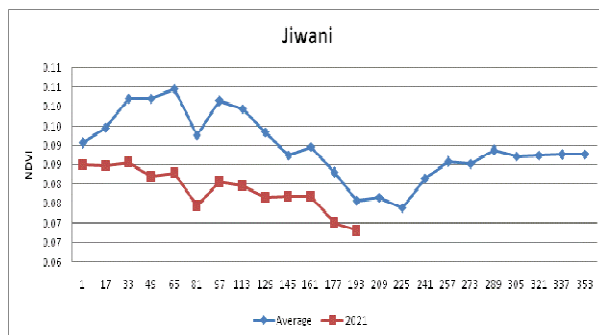
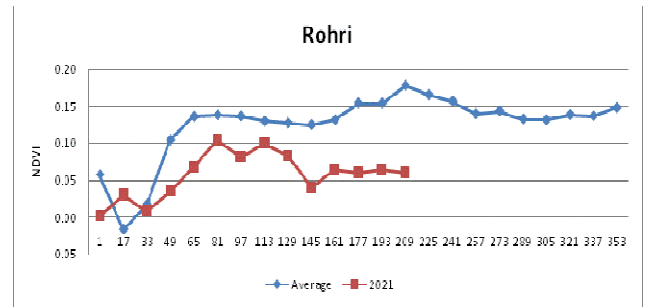
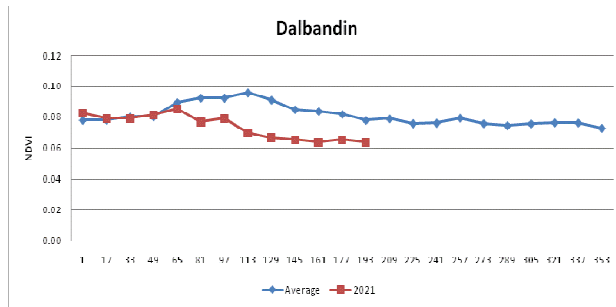
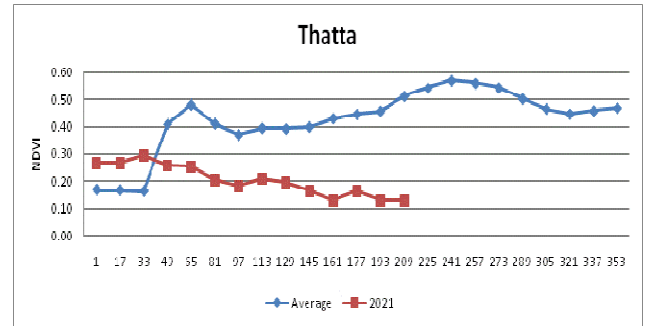
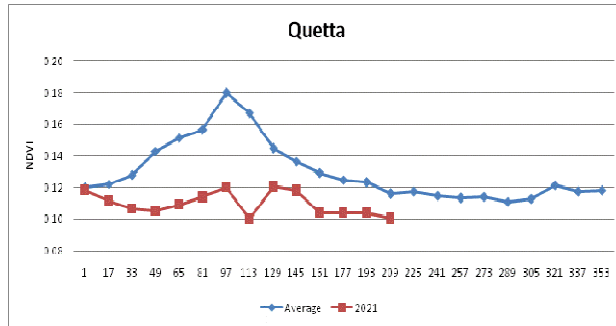


Fig-11 Drought Conditions across Sindh

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-August. 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. Sugercane is at the Tillering stage. Threshing of rape Mustard is completed.

7. Advice for Farmers:

- I. Pest/viral attacks and more weed growth are expected after monsoon rains in sugar cane and other standing crops in upper parts of the country. Farmers are therefore advised to take precautionary measures in this regard well in time.
- II. Farmers of the rainfed areas obtaining water through tube wells and irrigated areas in upper parts are advised to schedule the irrigation according to the expected weather forecasts.
- III. Rainfall/ gusty winds after irrigation cause water logging in the standing crops like maize, sugarcane and cotton. Farmers should be very careful in this regard.
- IV. Farmers of cotton belt are advised to be aware of the adverse effects of stagnant water in the fields. Mechanism for drainage of stagnant water from fields should be evolved on priority basis and necessary requirement in this regard should be taken.

Pakistan Meteorological Department, Sector H-8/2, Islamabad Ph: 051-9250598, Fax: 051-9250368