# Decadal Agromet Bulletin of Pakistan

## Highlights….

❖ Light to moderate rainfall reported from most parts of Punjab and KP, while light rainfall reported from rest of the country during the last decade.

❖ Highest amount of rainfall recorded as 48.3 mm at Sialkot during the last decade.

❖ Highest maximum temperature recorded as 42.8°C at Lasbella during the last decade.

❖ Mainly dry weather is expected in most parts of the country, however light to moderate rainfall is expected at scattered places of Kashmir, FATA, KP and G.B during the current decade.

❖ Farmers are advised to schedule the picking of cotton after 10am in the morning to get the maximum yield.

❖ Removing weeds from the standing crops is very important as weeds utilize moisture and food which are to be utilized by the crop. As a result considerable loss in yield occurs every year.

❖ Farmers are advised to schedule the irrigation plans in accordance with the expected weather, mentioned during the decade.
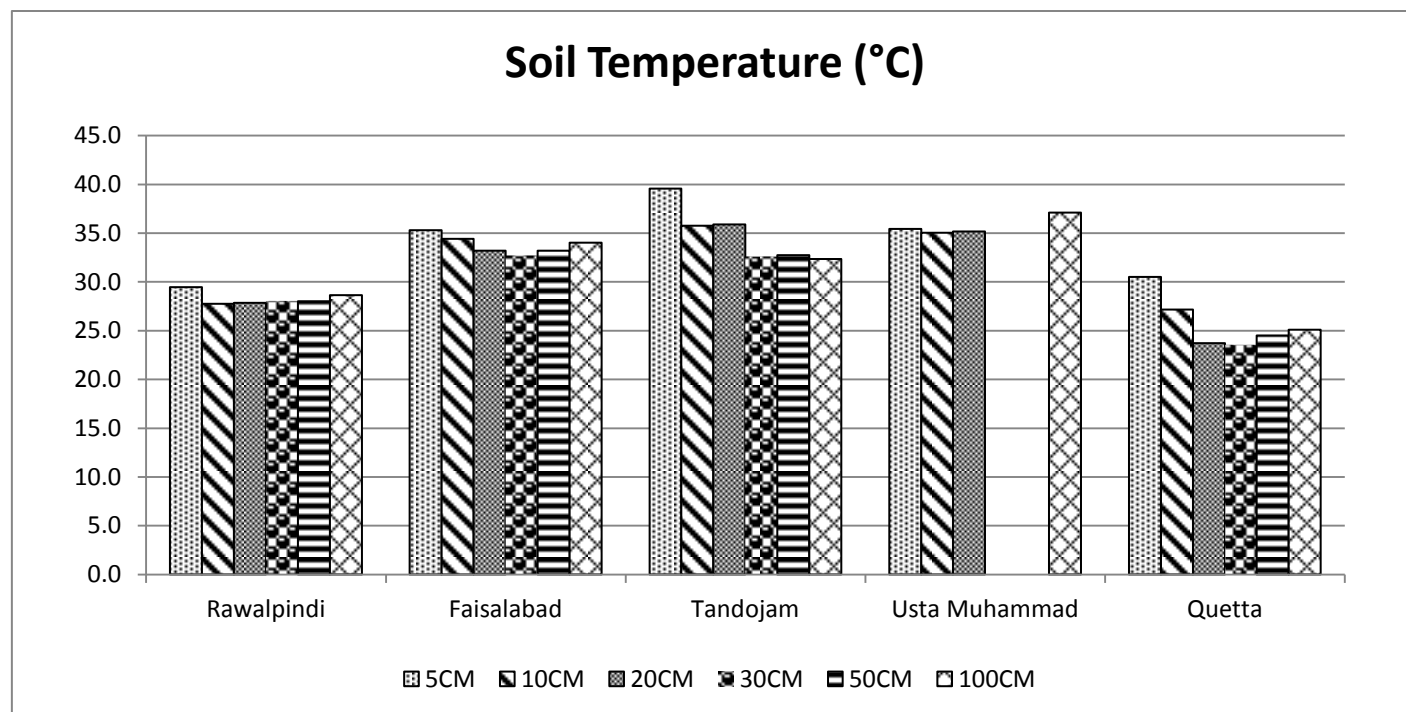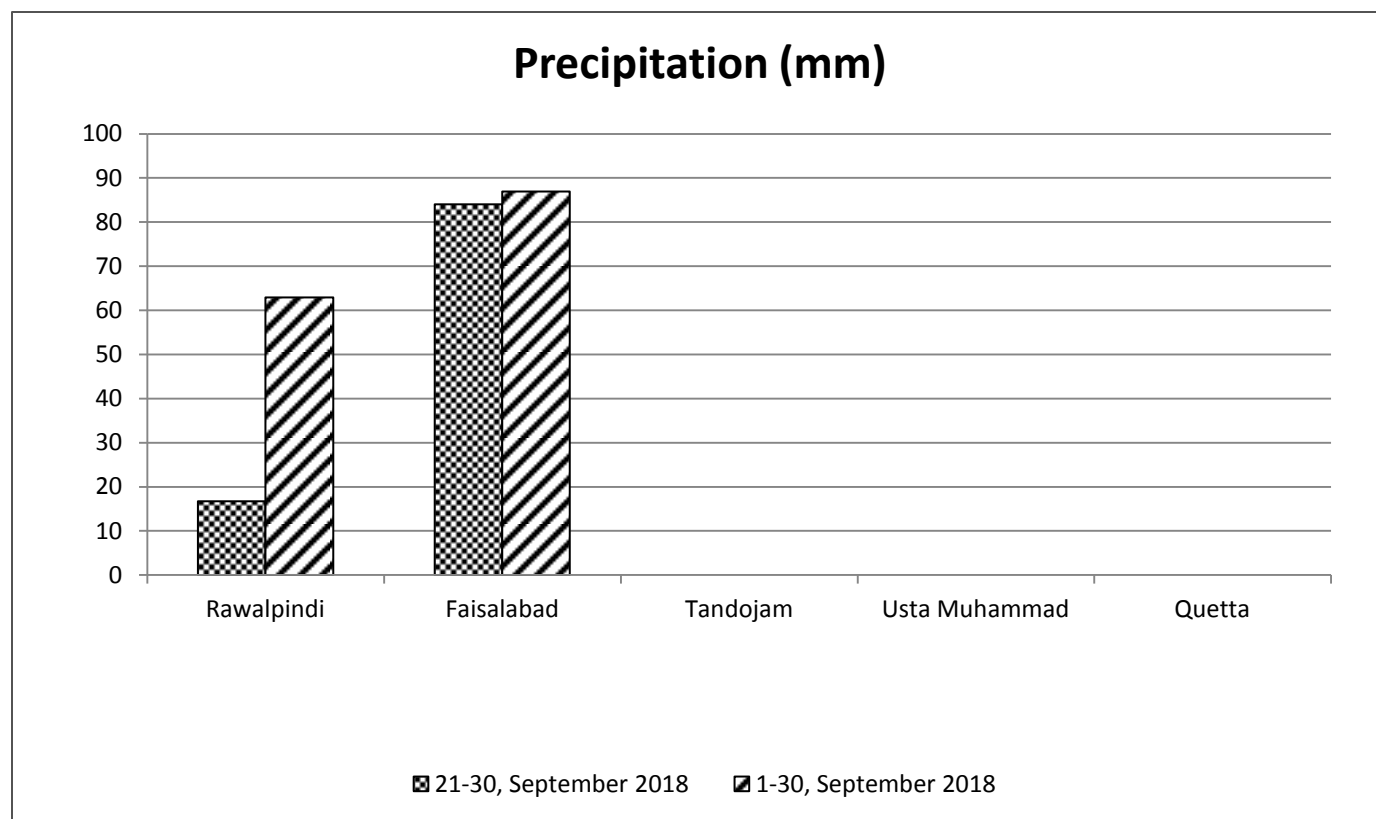
# Meteorological Conditions during 3rd Decade of September, 2018

| Sr. No. | Station | Precipitation (mm) | | | Air Temperature (°C) | | | Soil Temperatures (°C) | | | | | | R.H (%) | Sunshine Duration(hours) | Wind Speed (km/hr) | ETo (mm/day) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Normal | Actual | Dep | Tmax Dep | Tmin Dep | Mean | 5cm | 10cm | 20cm | 30cm | 50cm | 100cm | | | | |
| 1 | Rawalpindi | 1.9 | 16.7 | 14.8 | 2.1 | 2.1 | 27.6 | 29.5 | 27.8 | 27.9 | 28.1 | 28.0 | 28.7 | 63 | 78.0 | 2.7 | 2.2 |
| 2 | Faisalabad | 2.1 | 84.0 | 81.9 | 0.3 | 0.3 | 28.7 | 35.3 | 34.4 | 33.2 | 32.7 | 33.2 | 34.0 | 61 | 83.7 | 2.9 | 2.6 |
| 3 | Jhelum | 0.9 | 1.8 | 0.9 | 0.4 | 0.4 | 28.6 | 32.3 | 31.0 | 29.4 | 28.8 | 29.4 | *** | 60 | 84.8 | 4.8 | 2.9 |
| 4 | Lahore | 1.1 | 0.1 | -1.0 | -1.2 | -1.2 | 29.3 | 37.5 | 34.5 | 31.9 | 31.4 | *** | 30.6 | 59 | 80.5 | 6.1 | 3.4 |
| 5 | Sargodha | 0.9 | 20.4 | 19.5 | -0.3 | -0.3 | 27.9 | 30.5 | 30.3 | 29.3 | 28.9 | *** | 30.0 | 70 | 69.7 | 1.8 | 2.1 |
| 6 | Multan | 0.1 | 0.0 | -0.1 | 0.5 | 0.5 | 30.2 | *** | *** | *** | *** | *** | *** | 52 | 88.3 | 4.5 | 3.3 |
| 7 | Khanpur | 0.0 | 0.0 | 0.0 | -0.2 | -0.2 | 30.3 | *** | 34.2 | 34.3 | 34.7 | 35.3 | 34.5 | 56 | 90.6 | 3.1 | 3.2 |
| 8 | Tandojam | 0.0 | 0.0 | 0.0 | 2.2 | -0.8 | 30.6 | 39.6 | 35.8 | 35.9 | 32.6 | 32.8 | 32.4 | 58 | 95.7 | 7.9 | 4.9 |
| 9 | Sakrand ☆ | 0.0 | 0.0 | 0.0 | 1.5 | 1.2 | 31.1 | 39.7 | *** | *** | *** | *** | 35.3 | 52 | 106.6 | 3.8 | 3.9 |
| 11 | Rohri | 0.0 | 0.0 | 0.0 | 0.5 | 0.5 | 32.2 | *** | *** | *** | *** | *** | *** | 49 | 97.1 | 2.0 | 3.1 |
| 12 | D.I Khan | 0.7 | 0.1 | -0.6 | 0.9 | 1.0 | 30.0 | 34.2 | 33.5 | 33.3 | 33.8 | 23.3 | *** | 47 | 94.5 | 9.0 | 4.8 |
| 13 | Peshawar | 1.1 | 1.6 | 0.5 | 0.7 | -0.5 | 27.6 | 32.3 | 31.1 | 29.2 | 28.8 | 29.2 | 28.4 | 59 | 69.8 | 1.3 | 1.8 |
| 14 | Usta .M | 0.0 | 0.0 | 0.0 | -3.2 | 0.2 | 31.0 | 35.4 | 35.0 | 35.2 | *** | *** | 37.1 | 61 | *** | 5.3 | 3.3 |
| 15 | Quetta | 0.0 | 0.0 | 0.0 | -1.2 | 3.6 | 20.7 | 30.5 | 27.2 | 23.7 | 23.6 | 24.5 | 25.1 | 19 | 110.7 | 4.9 | 3.1 |
| 16 | Skardu | 0.1 | 2.0 | 1.9 | 1.4 | 1.1 | 17.1 | *** | *** | *** | *** | *** | *** | 45 | 51.9 | 2.5 | 1.6 |
| 17 | Gilgit | 0.2 | 0.1 | -0.1 | -4.6 | 3.0 | 18.3 | *** | *** | *** | *** | *** | *** | 45 | 37.2 | 1.0 | 1.1 |

**Table-1:** Meteorological parameters for selected station of Pakistan. **"Dep"** in the table stands for difference from climatic normal, i.e. actual value minus normal. And **"% Dep "** is calculated by the formula; **Dep** *divided by* **Normal** *multiplied by* **100**. Tmin & Tmax stands for minimum and maximum temperatures respectively. **ETo** stands for reference crop evapotranspiration. **\*\*\*** stands for no data and ( ☆ ) indicates the station with five year's climatic (normal) data for computing departures.

# Graph at RAMCs during September, 2018

## Precipitation (mm)



☒ 21-30, September 2018     ☑ 1-30, September 2018

## Soil Temperature (°C)



⊞ 5CM   ◩ 10CM   ▦ 20CM   ◕ 30CM   ⊟ 50CM   ◹ 100CM

## Past Weather (21st to 30th September, 2018)

Light to moderate rainfall reported from most parts of the Punjab and KP, while light rainfall reported from rest of the country during the last decade.

### 1.1    Punjab

Light to moderate rainfall reported from agricultural plains of Punjab. Chief amount of rainfall received at Sialkot, Kasur & Mangla. Decadal maximum dropped below normal by 0.3°C & minimum temperature above normal by 0.2°C, ,in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 60%, 82.2hrs, 3.7km/hr and 2.8mm/day respectively.

### 1.2    Sindh

Light rainfall reported from a single place (Hyderabad) from agricultural plains of Sindh. Decadal maximum & minimum departure both raised above normal by 1.4°C & 0.3°C respectively in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 53%, 99.8hrs, 4.6km/hr and 4.0mm/day respectively.
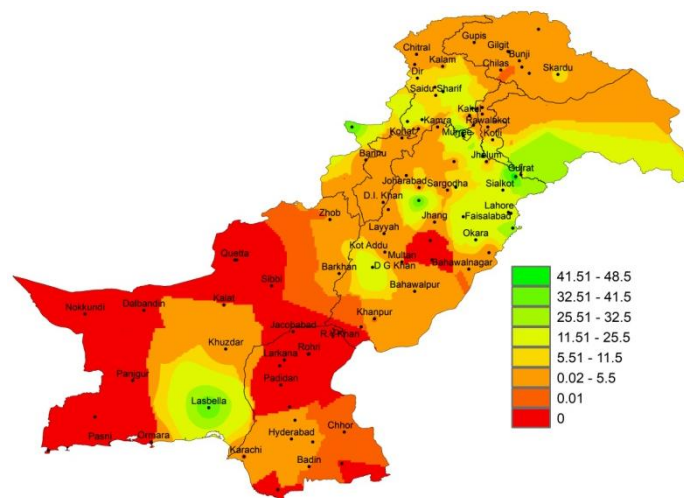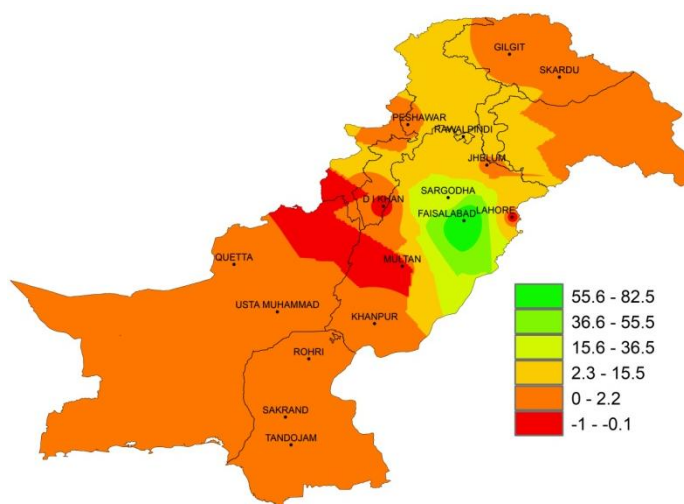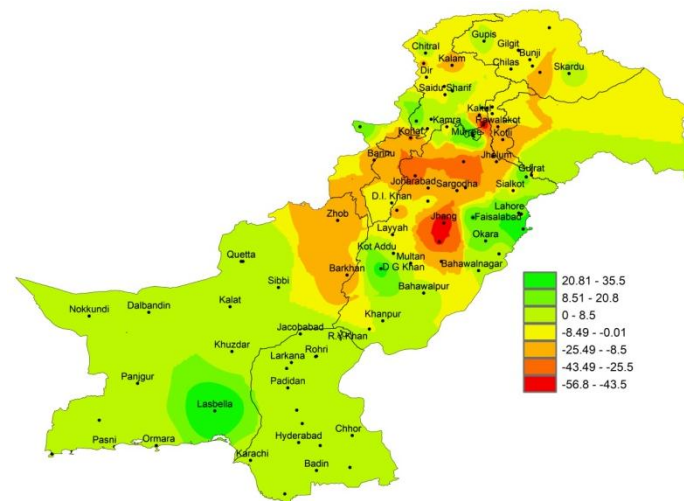
### 1.3   Khyber Pakhtunkhwa (KP)

Light to moderate rainfall reported from agricultural plains of KP. Chief amount of rainfall received at Parachinar, Balakot, & Malam Jabba. Decadal maximum & minimum departure both raised above normal by 0.8°C & 0.3°C respectively, in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 53%, 82.2hrs, 5.2km/hr and 3.3mm/day respectively.

### 1.4    Balochistan

Light to moderate rainfall reported from agricultural plains of Balochistan. Chief amount of rainfall received at Lasbella, Zhob & Khuzdar. Decadal maximum dropped below normal by 2.2°C & minimum raised above normal by 1.9°C respectively, in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 40%, 110.7hrs, 5.1km/hr and 3.2mm/day respectively.

### 1.5   Gilgit-Baltistan and Azad Jammu & Kashmir

Light rainfall reported from agricultural plains of Gilgit-Baltistan and Azad Jammu & Kashmir. Chief amount of rainfall received at Skardu, Gilgit & Astore. Decadal maximum dropped below normal by 1.6°C & minimum raised above normal by 2.1°C respectively, in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 45%, 44.6hrs, 1.8km/hr and 1.4mm/day respectively.



I.    **Actual rainfall**



II.    **Departure of rainfall from Normal**



III.    **Departure of rainfall from Previous Decade**

*Figure.1: Rainfall distribution during previous decade (mm)*

## 2(a)    Past Weather for Major Agricultural Plains (21st to 30th September, 2018)

### 2.1    RAMC, Rawalpindi (Potohar region)

Rainfall reported as 16.7mm during the decade; however weather remained cloudy for 09days. Average relative humidity recorded as 63%. Mean day temperature was 33.9°C while night temperature recorded as 21.3°C with 78.0hours bright sunshine duration. Wind speed recorded as 2.7km/hr with mean wind direction *Westerly*.
*Maize: Very good condition, Ninth leaf stage.*

### 2.2    RAMC, Faisalabad (Central Punjab)

Rainfall reported as 84.0mm during the decade; however weather remained cloudy for 07days.Average relative humidity recorded as 61%. Mean day temperature was 34.9°C while night temperature recorded as 22.4°C with 83.7hours bright sunshine duration. Wind speed recorded as 2.9 km/hr with mean wind direction *southerly*.
*Cotton: Very good condition, Full maturity completed.*

### 2.3    RAMC, Tandojam (Lower Sindh)

Dry weather reported during the decade; however weather remained cloudy for 02days. Average relative humidity recorded as 58%. Mean day temperature was 38.6°C while night temperature recorded as 22.5°C with 95.7hours bright sunshine duration. Wind speed recorded as7.9km/h with mean wind direction *south westerly*.
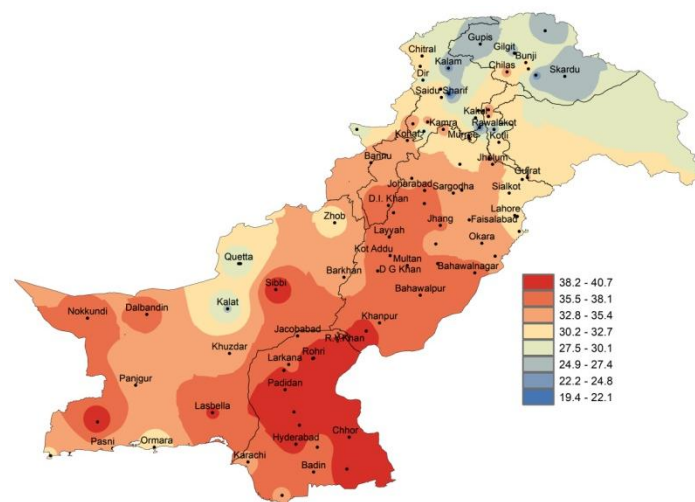*Cotton CIM-602:Good condition, Maturity stage.*

### 2.4    RAMC, Usta Muhammad (Eastern Balochistan)

Dry weather reported during the decade; however weather remained clear throughout the decade. Average relative humidity recorded as 61%. Mean day temperature was 36.2°C while night temperature recorded as 25.7°C.Wind speed recorded as 5.3km/h with mean wind direction *southeasterly*.
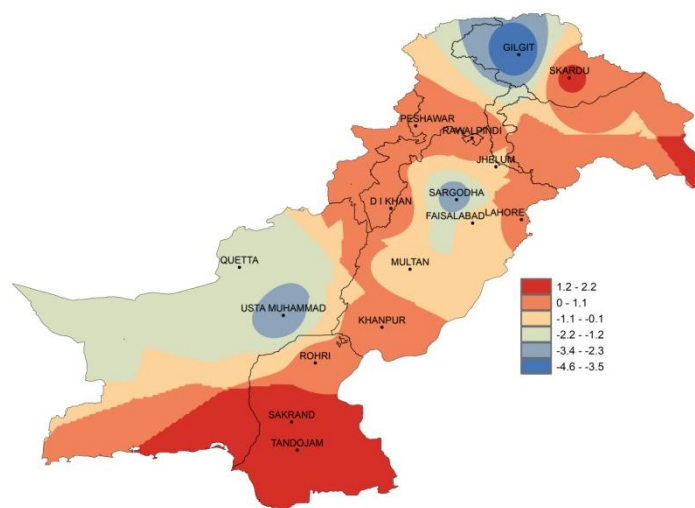*Rice: Good condition, Flowering stage.*
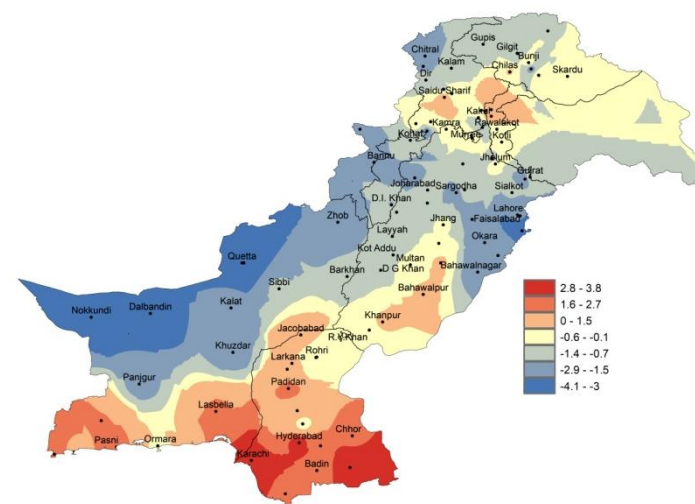
### 2.5    RAMC, Quetta (Northern Balochistan)

Dry weather reported during the decade; however weather remained cloudy for 07 days. Average relative humidity recorded as 19%. Mean day temperature was 28.4°C while night temperature recorded as 12.9°C with110.7hours bright sunshine duration. Wind speed recorded as 4.9km/hr with mean wind direction *North westerly*.



I.    **Actual max-temp**



II.    **Departure of max-temp from Normal**



III.    **Departure of max-temp from Previous Decade**

*Figure.2: Maximum Temperature distribution during previous decade (°C)*

## 2(b)   Past Weather for Sub-Regional Agricultural Plains (21st to 30th September, 2018)

### 2.6   Jhelum

Rainfall reported as 1.8mm during the decade; however weather remained cloudy for 09days. Average relative humidity recorded as 60%. Mean day temperature was 34.4°C while night temperature recorded as 22.7°C with 84.8hours bright sunshine duration. Wind speed recorded as 4.8km/hr with mean wind direction *Variable.*

### 2.7   Lahore

Rainfall reported as 20.4mm during the decade; however weather remained cloudy for 09days. Average relative humidity recorded as 70%. Mean day temperature was 32.4°C while night temperature recorded as 23.3°C with 69.7hours bright sunshine duration. Wind speed recorded as 1.8km/hr with mean wind direction *westerly.*

### 2.8   Sargodha

Rainfall reported as Trace (non measureable) during the decade; however weather remained cloudy for 09days. Average relative humidity recorded as 59%. Mean day temperature was 35.1°C while night temperature recorded as 23.4°C with 80.5hours bright sunshine duration. Wind speed recorded 6.1km/hr with mean wind direction *south westerly.*

### 2.9   Multan

Dry weather reported during the decade; however weather remained cloudy for 08days. Average relative humidity recorded as 52%. Mean day temperature was 35.6°C while night temperature recorded as 24.7°C with 88.3hours bright sunshine duration. Wind speed recorded 4.5km/hr with mean wind direction *North easterly.*

### 2.10   Khanpur

Dry weather reported during the decade; however weather remained cloudy for 03day. Average relative humidity recorded as 56%. Mean day temperature was 37.6°C while night temperature recorded as 23.0°C with 90.6hours bright sunshine duration. Wind speed recorded 3.1km/hr with mean wind direction *North easterly.*

### 2.11   Skrand

Dry weather reported during the decade; however weather remained clear throughout the decade. Average relative humidity recorded as 52%. Mean day temperature was 38.5°C while night temperature recorded as 23.7°C with 106.6 hours bright sunshine duration. Wind speed recorded 3.8km/hr with wind direction *southerly.*
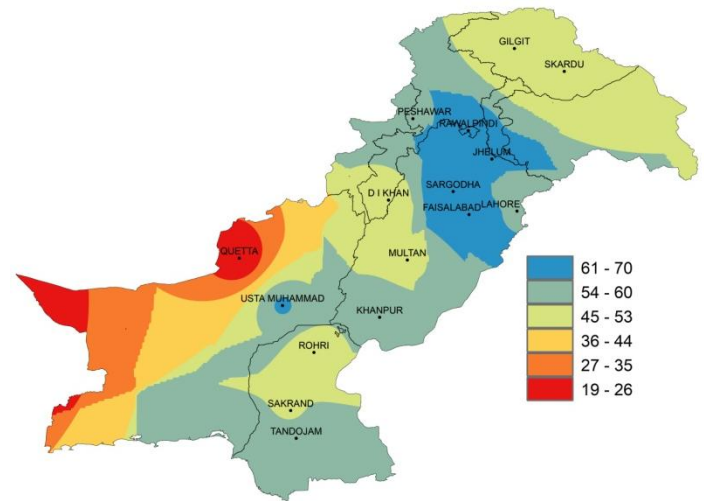


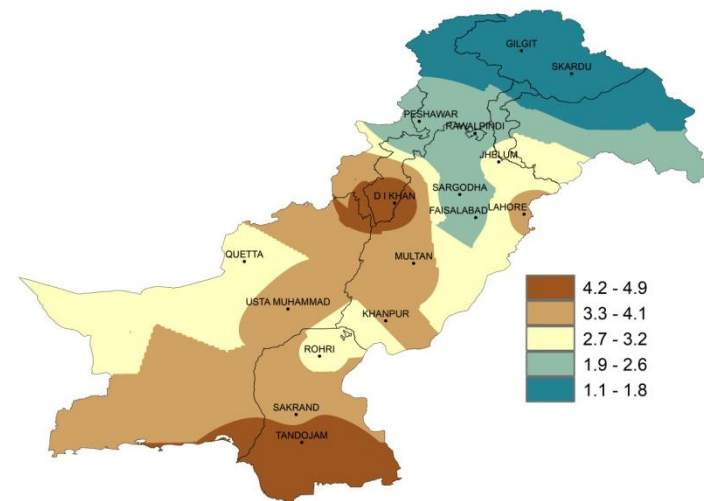***Figure.3: Relative Humidity in Percentage (%)***



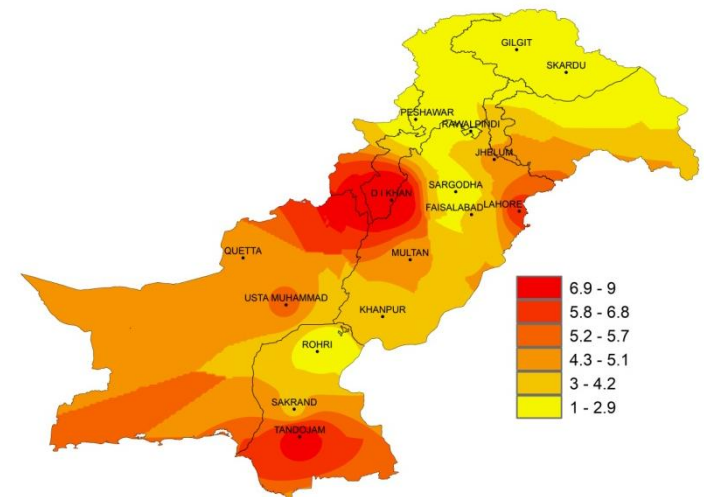***Figure.4: Reference Crop Evapotranspiration ETo (mm/day)***



***Figure 5: Wind Speed in kilometer per hour (km/h)***

## 2.12    Rohri

Rainfall reported as Trace (non measureable) during the decade; however weather remained cloudy the decade. Average relative humidity recorded as 49%. Mean day temperature was 38.4°C while night temperature recorded as 26.0°C with 97.1hours bright sunshine duration. Wind speed recorded 2.0km/hr with wind direction *North easterly.*

## 2.13    D.I. Khan

Rainfall reported as Trace (non measureable) during the decade; however weather remained cloudy for 05day. Average relative humidity recorded as 47%. Mean day temperature was 36.8°C while night temperature recorded as 23.2°C with 94.5hours bright sunshine duration. Wind speed recorded as 9.0 km/hr with mean wind direction *south easterly*.

## 2.14    Peshawar

Rainfall reported as 1.6mm during the decade; however weather remained cloudy for 10days. Average relative humidity recorded as 69.8%. Mean day temperature was 34.4°C while night temperature recorded as 20.8°C with 69.8hours bright sunshine duration. Wind speed recorded as 1.3km/hr with mean wind direction *North westerly.*

## 2.15    Skardu

Rainfall reported as 2.0mm during the decade; however weather remained cloudy for08days. Average relative humidity recorded as 45%. Mean day temperature was 25.1°C while night temperature recorded as 9.1°C with 51.9hours bright sunshine duration. Wind speed recorded as 2.5km/hr with mean wind direction *Easterly.*

## 2.16    Gilgit

Rainfall reported as Trace (non measureable) during the decade; however weather remained cloudy for 10days. Average relative humidity recorded as 45%. Mean day temperature was 24.9°C while night temperature recorded as 11.7°C with 37.2hours bright sunshine duration. Wind speed recorded as 1.0km/hr with mean wind direction *South easterly.*

## Ten Days Weather Advisory for Farmers (1ˢᵗ to 10ᵗʰOctober, 2018)

### 3.1   Temperature Forecast

Day temperatures are expected slightly normal in most parts of the country, however night temperature are expected below normal in most of the agricultural parts of the country during the decade.

### 3.2   Wind Forecast

Normal wind pattern may prevail in most of the agricultural plains of the country during the decade.
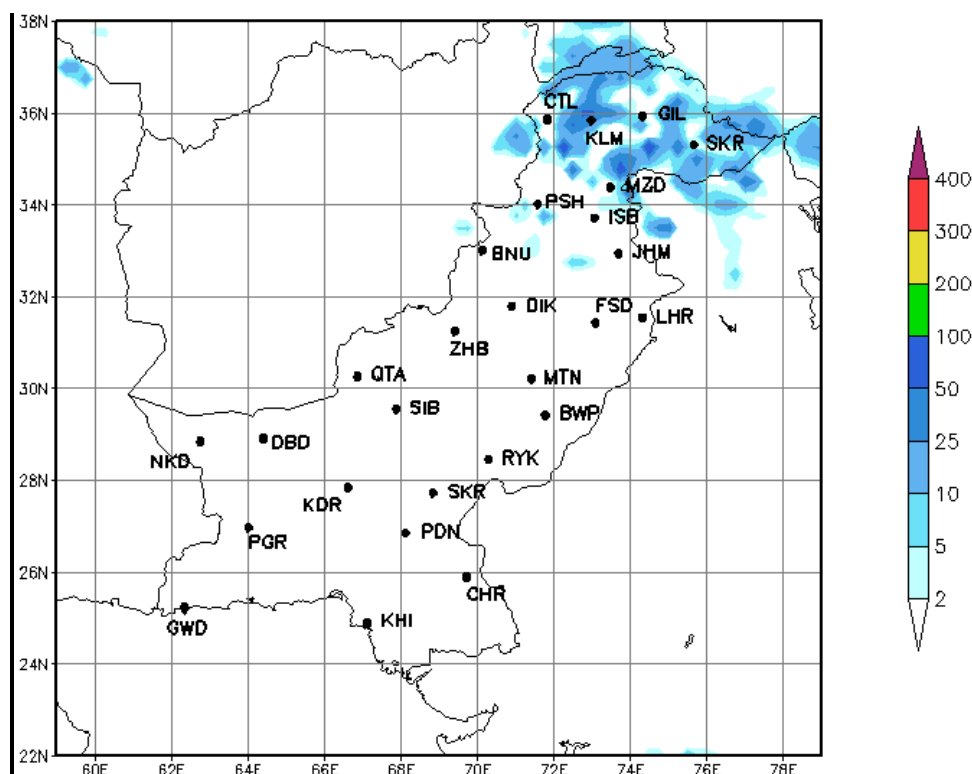
### 3.3   Rain Forecast

❖ **Punjab:** Dry weather is expected in the province during the current decade. However, light rainfall is expected at Sargodha and Rawalpindi division during the mid of the current decade.

❖ **Khyber Pakhtunkhwa:** Light rainfall is expected at scattered places in upper parts of the province during the decade.

❖ **Sindh:** Dry weather is expected in the province during the current decade.

❖ **Balochistan:** Dry weather is expected in the province during the current decade.

❖ **Gilgit-Baltistan:** Light rainfall is expected at scattered places of GB during the current decade.

❖ **Kashmir**: Dry weather is expected in Kashmir during the current decade.

### 3.4   Advisory for Farmers

❖ Farmers are advised to schedule the picking of cotton after 10am in the morning to get the maximum yield.

❖ Farmers are advised to schedule the irrigation plans in accordance with the expected weather, mentioned during the decade.

❖ Removing weeds from the standing crops is very important as weeds utilize moisture and food which are to be utilized by the crop. As a result considerable loss in yield occurs every year.
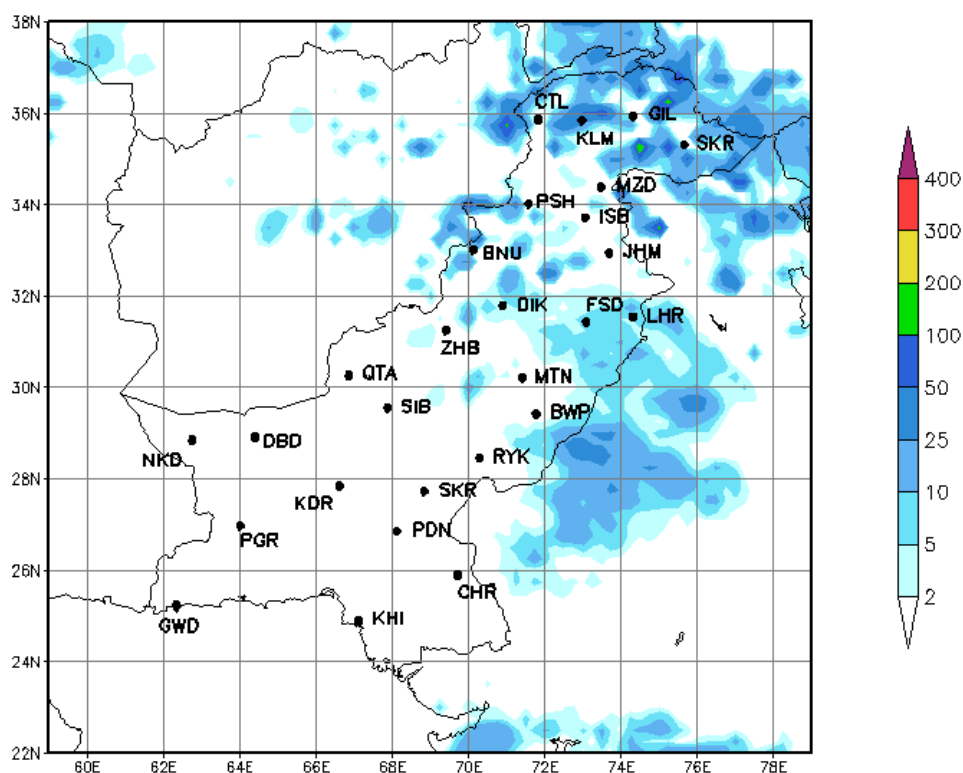
## 4.1 Precipitation Outlook (1st to 3rd October, 2018)

The forecast for the next three days (1st to 3rd) of the first decade of October 2018 shows that mainly dry weather may prevail in most parts of the country, however light rainfall is expected at isolated places of Upper KP, FATA, Kashmir and G.B.



## 4.2 Precipitation Outlook (4th to 10th October, 2018)

The outlook for the last six days (4th to 10th) of the first decade of October 2018 shows that light to moderate rainfall is expected at scattered places of KP, FATA, Punjab, Kashmir and G.B. However, dry weather may prevail in rest of the country.

# Findings of AgMIP Paksitan, University of Agriculture, Faisalabad

❖ There would be significant increase in temperature i.e., 2.8°C in day and 2.2°C in the night during mid-century (2040-2069).

❖ There would be significant variability in rainfall patterns (about 25% increase in summer & 12% decrease in winter during 2040-2069).

❖ Climate Change will affect the crop yields negatively (about 17% for rice and 14 % for wheat).

❖ If there will be no adaptation to Climate Change, majority of farmers would be the economic losers.

❖ With Adaptation to Climate Change (through technology and management), there would be significant decrease in poverty and improvement in the livelihood of farming community.

*(Agricultural Model Inter-comparison and Improvement Project (AgMIP) Pakistan 2012-2014)*

۱۔ سال 2040-69 کے دوران درجہ حرارت میں قابلِ ذکر اضافہ ہوسکتا ہے۔ جو کہ دن کے وقت c°2.8 اور رات کو c°2.2 تک ہوگا۔

۲۔ گرمیوں کی بارش میں 25 فیصد اضافہ اور سردیوں کی بارش میں 12 فیصد تک کمی کا امکان ہے۔

۳۔ مندرجہ بالا موسمی تغیرات کی وجہ سے دھان کی پیداوار میں 17 فیصد اور گندم کی پیداوار میں 14 فیصد تک کمی ہوسکتی ہے۔

۴۔ اگر موسمی تغیرات کا مناسب بندوبست نہ کیا گیا۔ تو کسانوں کی اکثریت کو معاشی نقصان کا سامنا کرنا پڑے گا۔

۵۔ موسمی تغیرات کے سدِّ باب (بذریعہ نئی ٹیکنالوجی کا استعمال اور بہتر نظم و نسق) سے غربت میں کمی اور کسانوں کی زندگی میں خوشحالی لائی جاسکتی ہے۔

(ایگمپ پاکستان 2012-2014)