# Decadal Agromet Bulletin of Pakistan

## Highlights…

- Light to moderate rainfall reported from Khyber Pakhtunkhwa, Gilgit-Baltistan and Azad Jammu & Kashmir, whereas light rainfall reported from Punjab and dry from during the last decade.
- Highest amount of rainfall recorded as 32.6 mm at Kalam during the last decade.
- Highest maximum temperature recorded as 51.0°C at Jacobabad during the last decade.
- Mainly hot and dry weather is expected in most parts of the country. However dust-thunderstorm/rain is expected at scattered places in Khyber Pakhtunkhwa, Gilgit-Baltistan, Kashmir, Punjab, Islamabad and Sindh, while hot and dry places in Baluchistan during the current decade.
- Rice growers are advised to sow the crop's PANERI in accordance with the recommendation by the agricultural experts.
- Measures may be taken to preserve the standing crops/orchids from the damaging impacts of extreme weather conditions like thunder/dust storm, gusty winds, hails etc in particular areas.
- The fields got fallow after the harvesting of wheat may be deeply ploughed and leave empty for a few weeks.
- The farmers of lower half may regularly irrigate their Kharif crops by keeping in view the ongoing hot weather conditions.

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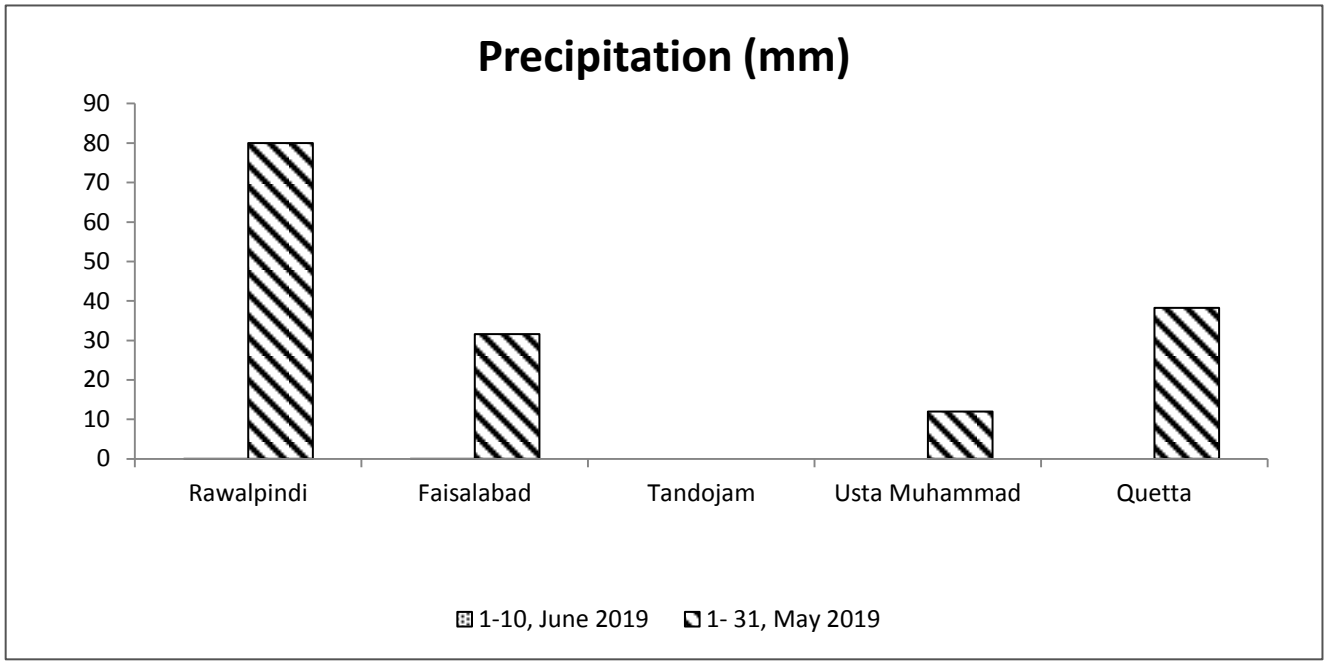
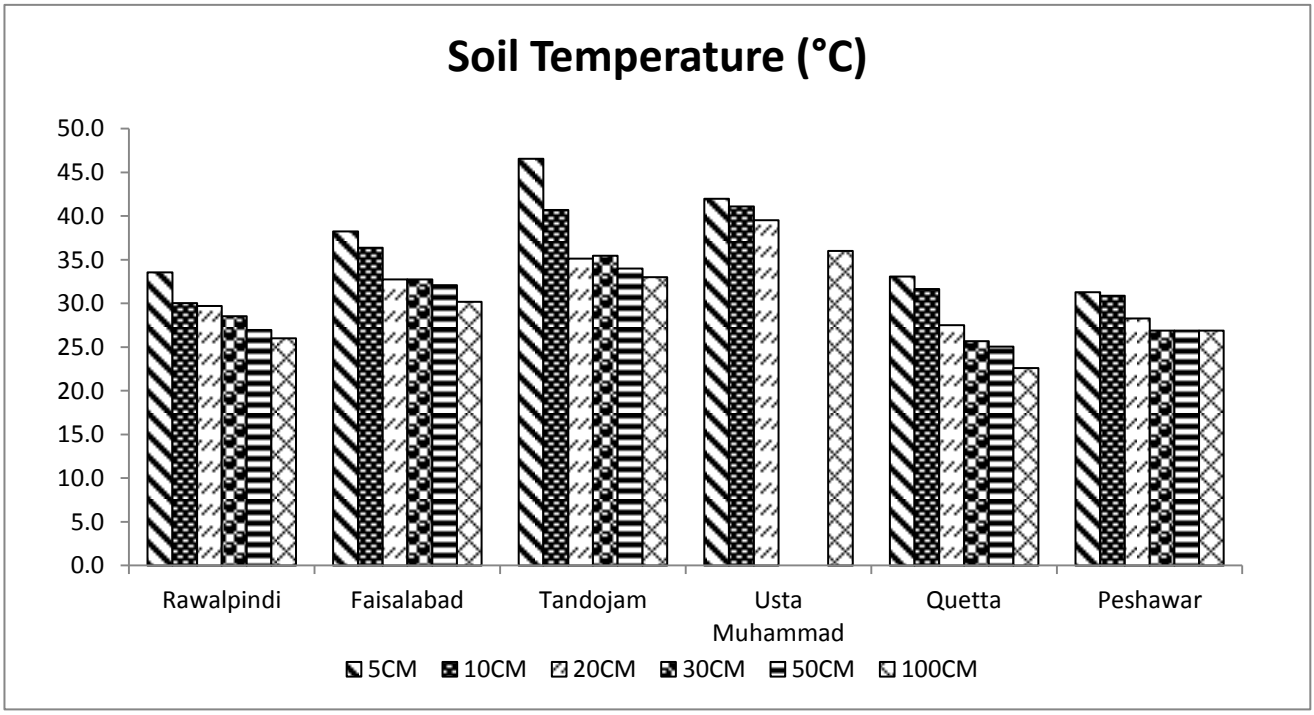
# Meteorological Conditions during 1st Decade of June, 2019

| 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 | 1.6 | 0.0 | -1.6 | 1.7 | -4.8 | 29.1 | 33.6 | 30.1 | 29.7 | 28.6 | 27.0 | 26.0 | 35 | 97.0 | 2.3 | 5.5 |
| 2 | Faisalabad | 1.1 | 0.0 | -1.1 | 3.2 | 0.9 | 35.5 | 38.3 | 36.4 | 32.8 | 32.8 | 32.1 | 30.2 | 28 | 113.9 | 3.6 | 7.0 |
| 3 | Jhelum | 2.1 | 0.7 | -1.4 | 2.7 | 0.4 | 34.7 | 42.0 | 39.4 | 36.0 | 34.7 | 33.6 | *** | 28 | 10.3.9 | 4.2 | 7.0 |
| 4 | Lahore | 1.2 | 0.0 | -1.2 | 3.9 | 0.9 | 35.9 | 36.8 | 28.8 | 29.6 | 33.6 | *** | 29.4 | 29 | 94.8 | 2.9 | 6.2 |
| 5 | Sargodha | 0.3 | 0.0 | -0.3 | 1.8 | 1.8 | 36.3 | 42.7 | 39.7 | 35.2 | 33.8 | *** | 28.8 | 41 | 101.4 | 2.3 | 6.2 |
| 6 | Multan | 0.1 | 0.0 | -0.1 | 2.5 | 1.0 | 37.0 | *** | *** | *** | *** | *** | *** | 24 | 105.4 | 6.6 | 8.4 |
| 7 | Khanpur | 0.6 | 0.0 | -0.6 | -2.8 | 1.2 | 37.2 | *** | 39.5 | 38.9 | 38.8 | 38.2 | 35.3 | 37 | 105.5 | 4.3 | 7.4 |
| 8 | Tandojam | 0.9 | 0.0 | -0.9 | 3.1 | -0.5 | 34.2 | 46.6 | 40.7 | 35.2 | 35.5 | 34.0 | 33.0 | 51 | 107.2 | 12.3 | 9.2 |
| 9 | Sakrand ☆ | 0.3 | 0.0 | -0.3 | 2.4 | 1.3 | 35.7 | 51.7 | *** | *** | *** | *** | 33.5 | 43 | 117.1 | 4.4 | 7.1 |
| 11 | Rohri ☆ | 0.0 | 0.0 | 0.0 | 4.5 | 0.4 | 47.1 | *** | *** | *** | *** | *** | *** | 24 | 114.3 | 2.7 | 6.5 |
| 12 | D.I Khan | 0.3 | 0.0 | -0.3 | 3.0 | 0.9 | 35.1 | 37.6 | 29.2 | 33.6 | 33.0 | 21.7 | *** | 32 | 107.8 | 10.8 | 10.0 |
| 13 | Peshawar | 0.6 | 10.0 | 9.4 | 0.6 | -2.0 | 31.6 | 31.3 | 30.9 | 28.3 | 26.9 | 26.9 | 26.9 | 38 | 79.4 | 1.9 | 5.0 |
| 14 | Usta M. | 0.5 | 0.0 | -0.5 | 3.5 | 2.5 | 39.5 | 42.0 | 41.1 | 39.6 | *** | *** | 36.0 | 26 | *** | 4.2 | 8.0 |
| 15 | Quetta | 0.5 | 0.0 | -0.5 | -2.0 | -0.6 | 24.4 | 33.1 | 31.7 | 27.5 | 25.7 | 25.1 | 22.6 | 20 | 110.2 | 6.0 | 6.6 |
| 16 | Skardu | 0.9 | 3.5 | 2.6 | -1.9 | -1.0 | 18.5 | *** | *** | *** | *** | *** | *** | 35 | 71.3 | 5.0 | 6.8 |
| 17 | Gilgit | 0.6 | 4.00 | 3.4 | -3.2 | 0.7 | 22.0 | *** | *** | *** | *** | *** | *** | 43 | 62.1 | 3.9 | 4.6 |

**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 June, 2019



## Past Weather (1st to 10th June, 2019)

Light to moderate rainfall reported from Khyber Pakhtunkhwa, Gilgit-Baltistan and Azad Jammu & Kashmir, whereas light rainfall reported from Punjab and Sindh. Dry weather was observed in Baluchistan during the last decade.

### 1.1 Punjab

Light rainfall reported from most of the agricultural plains of the province. Highest rainfall reported from Noorpur Thal, Mangla & Joharabad. Decadal maximum and minimum both raised above the normal by 1.9°C & 0.2°C respectively in the province. Whereas values of relative humidity, sunshine hour, wind speed & ETo were recorded as 32%, 103.0 hrs, 3.7km/hr and 6.8mm/day respectively.

### 1.2 Sindh

Light rainfall reported from most of the agricultural plains of the province. Highest rainfall reported from Mithi (single station). Decadal maximum and minimum both raised above normal by 3.3°C & 0.4°C respectively in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 39%, 112.9hrs, 6.5km/hr and 7.6mm/day respectively.

### 1.3 Khyber Pakhtunkhwa

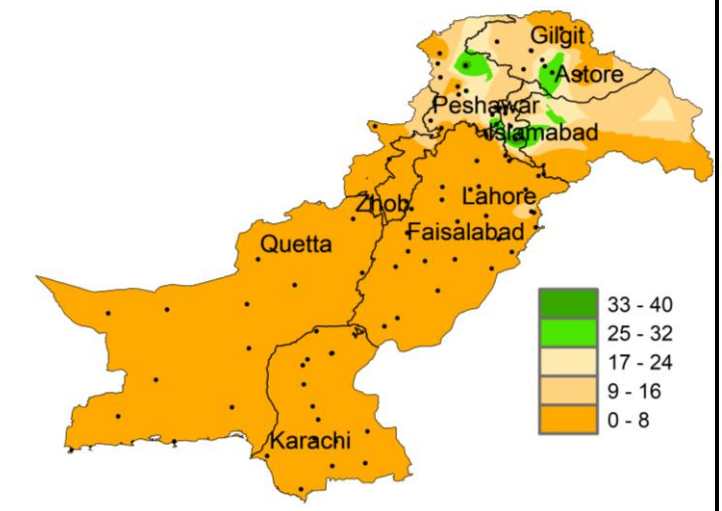
Light to moderate rainfall reported from most of the agricultural plains of the province. Highest rainfall reported from Kalam, Malamjabba & Kohat. Decadal maximum raised above normal by 1.8°C and minimum dropped below the normal by 0.5°C respectively in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 35%, 93.6hrs, 6.4km/hr and 7.5mm/day respectively.

### 1.4 Baluchistan

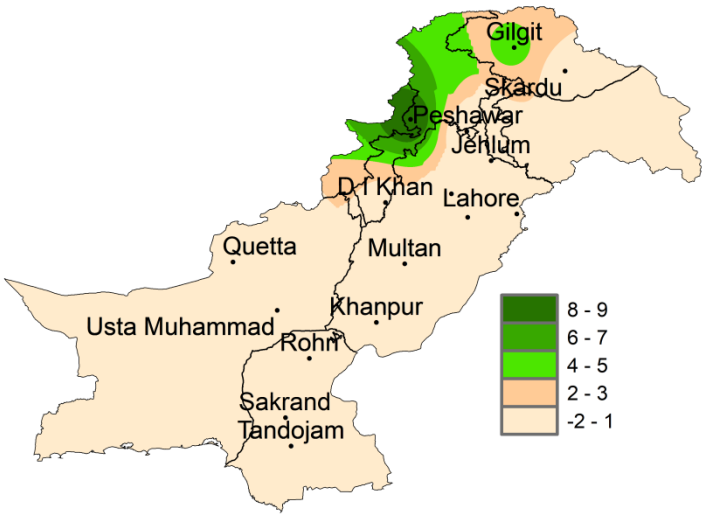
Dry weather reported from most of the agricultural plains of the province. Decadal maximum and minimum both raised above normal by 1.8°C & 0.9°C respectively in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 23%, 110.2hrs, 5.1km/hr and 7.3mm/day respectively.

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

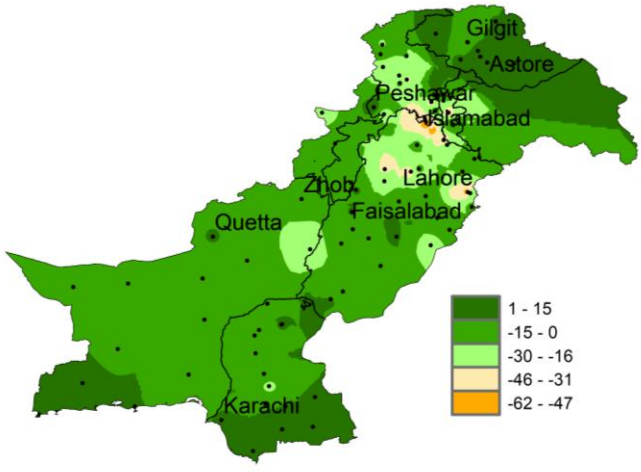
Light to moderate rainfall reported from most of the agricultural plains of the province. Highest rainfall reported from Astore, Kotli & Muzaffarabad. Decadal maximum & minimum both dropped below the normal by 2.6°C & 1.0°C respectively in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 39%, 66.7hrs, 4.5km/hr and 5.7mm/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 (1st to 10th June, 2019)

### 2.1 RAMC, Rawalpindi (Potohar region)

Rainfall reported as Trace (Non measureable) during the decade; however weather remained cloudy for 06 days during the decade. Average relative humidity recorded as 35%. Mean day temperature was 40.3°C while night temperature recorded as 17.8°C with 97.0 hours bright sunshine duration. Wind speed recorded as 2.3km/hr with mean wind direction *Westerly*.

### 2.2 RAMC, Faisalabad (Central Punjab)

Rainfall reported as Trace (Non measureable) during the decade; however weather remained cloudy for 04 days during the decade. Average relative humidity recorded as 28%. Mean day temperature was 44.0°C while night temperature recorded as 27.0°C with 113.9hours bright sunshine duration. Wind speed recorded as 3.6km/hr with mean wind direction *south-south easterly*.
***Cotton:*** *Good, Third leaf completed.*

### 2.3 RAMC, Tandojam (Lower Sindh)

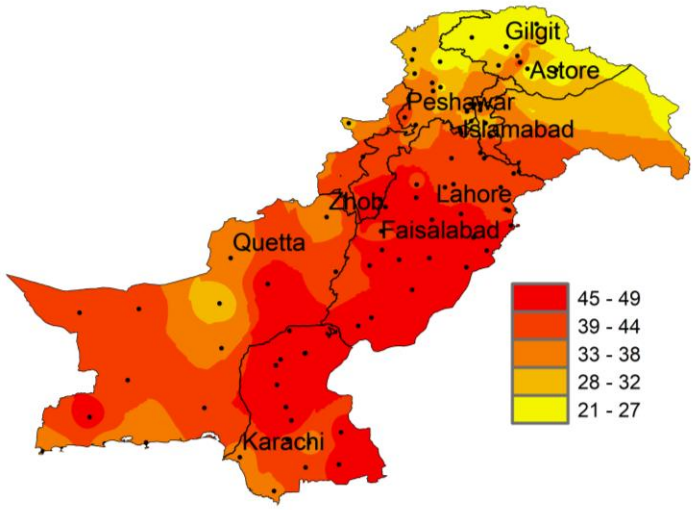
Dry weather reported during the decade; however weather remained cloudy for 01 days during the decade. Average relative humidity recorded as 51%. Mean day temperature was 42.5°C while night temperature recorded as 25.9°C with 107.2hours bright sunshine duration. Wind speed recorded as 12.3km/h with mean wind direction *South Westerly*.
***Cotton (Shahbaz-95):*** *Good, Budding stage.*

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

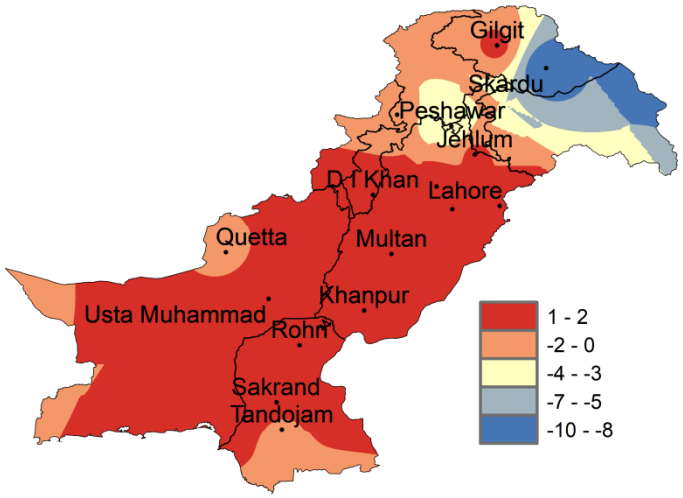
Dry weather reported during the decade; however weather remained cloudy for 02 days during the decade. Average relative humidity recorded as 26%. Mean day temperature was 48.8°C while night temperature recorded as 30.2°C & Wind speed recorded as 4.2km/h with mean wind direction *North easterly*.
***Rice:*** *Good, paneeri in process.*

### 2.5 RAMC, Quetta (Northern Baluchistan)

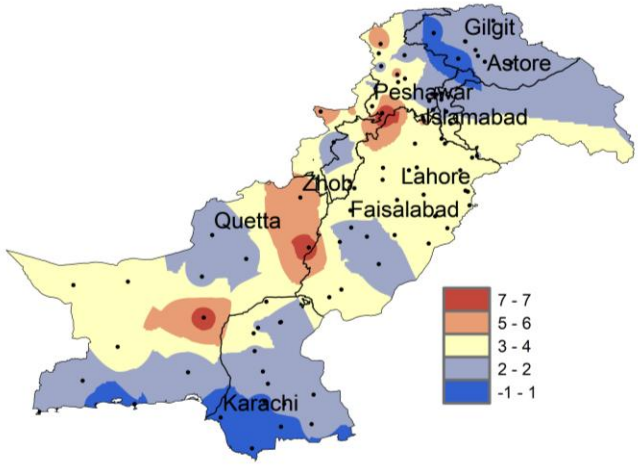
Dry weather reported during the decade; however weather remained cloudy for 08 days during the decade. Average relative humidity recorded as 20%. Mean day temperature was 31.8°C while night temperature recorded as 17.0°C with 110.2hours bright sunshine duration. Wind speed recorded as 6.0 km/hr with 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 (1st to 10th June, 2019)

### 2.6 Jhelum

Rainfall reported as 0.7 mm during the decade; however weather remained cloudy for 07 days during the decade. Average relative humidity recorded as 28%. Mean day temperature was 43.3°C while night temperature recorded as 26.0°C with 103.9 hours bright sunshine duration. Wind speed recorded as 4.2km/hr with mean wind direction *Variable.*

### 2.7 Lahore

Rainfall reported as Trace (Non measureable) during the decade; however weather remained cloudy for 04 days during the decade. Average relative humidity recorded as 29%. Mean day temperature was 43.1°C while night temperature recorded as 28.6°C with 94.8hours bright sunshine duration. Wind speed recorded as 2.9km/hr with mean wind direction S*outh easterly.*

### 2.8 Sargodha

Rainfall reported as Trace (Non measureable) during the decade; however weather remained cloudy for 06 days during the decade. Average relative humidity recorded as 41%. Mean day temperature was 43.5°C while night temperature recorded as 29.1°C with 101.4 hours bright sunshine duration. Wind speed recorded 2.3km/hr with mean wind direction *North easterly*

### 2.9 Multan

Dry weather reported during the decade; however weather remained cloudy for 04 days during the decade. Average relative humidity recorded as 24%. Mean day temperature was 44.6°C while night temperature recorded as 29.4°C with 105.4 hours bright sunshine duration. Wind speed recorded 6.6km/hr with mean wind direction *south westerly.*

### 2.10 Khanpur

Dry weather reported during the decade; however weather remained cloudy for 03 days during the decade. Average relative humidity recorded as 37%. Mean day temperature was 46.0°C while night temperature recorded as 28.3°C with 105.5hours bright sunshine duration. Wind speed recorded 4.3km/hr with mean wind direction *south westerly.*

### 2.11 Sakrand

Dry weather reported during the decade; however weather remained cleared throughout the decade .Average humidity recorded as 43%. Mean day temperature was 44.0°C while night temperature recorded as 27.3°C with 117.1 hours bright sunshine duration. Wind speed recorded 4.4km/hr with wind direction *southerly.*

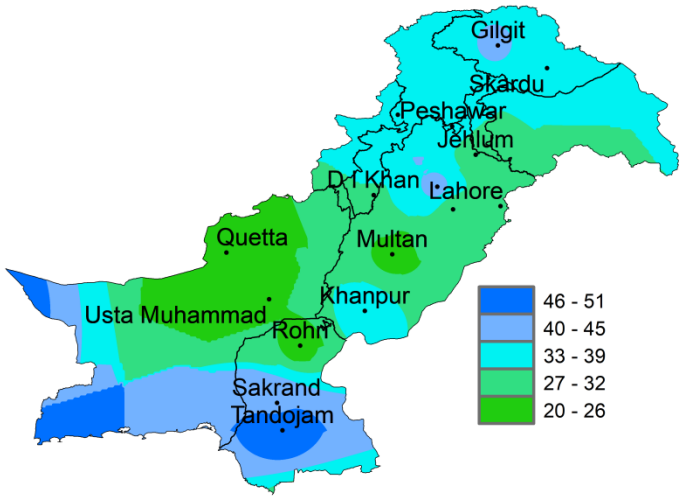



***Figure.3: Relative Humidity in Percentage (%)***

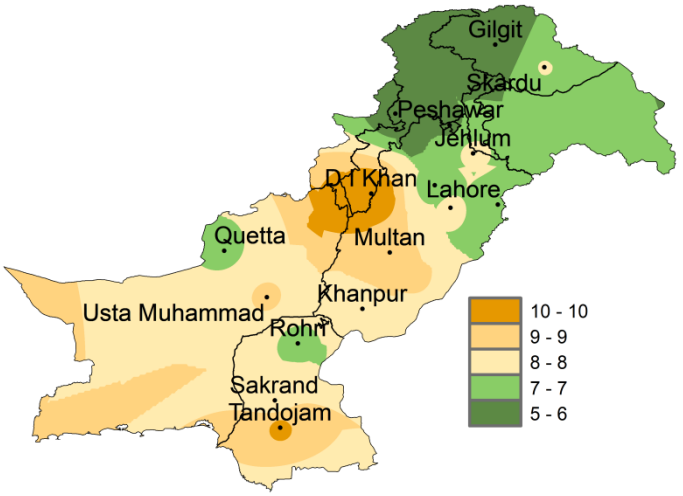



***Figure.4: Reference Crop Evapotranspiration ETo (mm/day)***

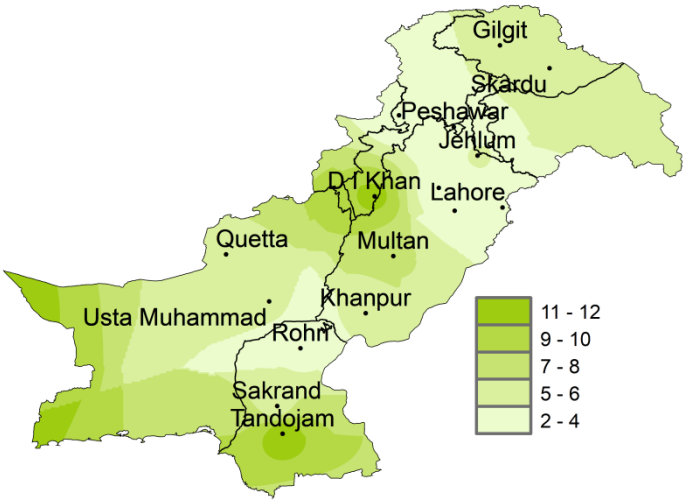



***Figure 5: Wind Speed in kilometer per hour (km/h)***

**2.12 Rohri**

Dry weather reported during the decade; however weather remained cloudy for 02 days during the decade. Average relative humidity recorded as 24%. Mean day temperature was 47.1°C with 114.3 hours bright sunshine duration. Wind speed recorded 2.7km/hr with wind direction *south westerly.*

**2.13 D.I. Khan**

Dry weather reported during the decade; however weather remained cloudy for 01 day during the decade. Average relative humidity recorded as 32%. Mean day temperature was 44.1°C while night temperature recorded as 26.1°C with 107.8 hours bright sunshine duration. Wind speed recorded as 10.8km/hr with mean wind direction *North easterly.*

**2.14 Peshawar**

Rainfall reported as 10.0 mm during the decade; however weather remained cloudy for 08 days during the decade. Average relative humidity recorded as 38%. Mean day temperature was 40.0°C while night temperature recorded as 23.2°C with 79.4 hours bright sunshine duration. Wind speed recorded as 1.9km/hr with mean wind direction *North westerly.*

**2.15 Skardu**

Rainfall reported as 3.5 mm during the decade; however weather remained cloudy for 05 days during the decade. Average relative humidity recorded as 38%. Mean day temperature was 25.8ºC while night temperature recorded as 11.1ºC with 71.3 hours bright sunshine duration. Wind speed recorded as 5.0km/hr with mean wind direction *south southerly.*

**2.16 Gilgit**

Rainfall reported as 8.5 mm during the decade; however weather remained cloudy for 07 days during the decade. Average relative humidity recorded as 46%. Mean day temperature was 30.0°C while night temperature recorded as 13.9°C with 62.1hours bright sunshine duration. Wind speed recorded as 3.9km/hr with mean wind direction *Westerly.*

## Ten Days Weather Advisory for Farmers (11th to 20th June, 2019)

### 3.1 Temperature Forecast

Both day and night temperatures are likely to be above normal in most of the agricultural plains of the country during the decade.

### 3.2 Wind Forecast

Normal wind pattern may prevail in most of the agricultural plains of the country, however strong winds are expected in Baluchistan, Sindh and southern Punjab during the start of the decade.

### 3.3 Rain Forecast

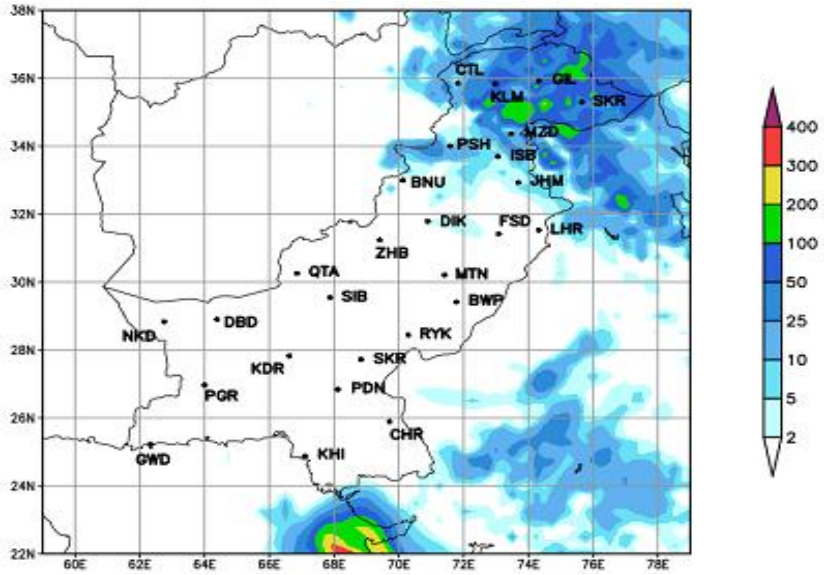
- **Punjab:** Light to moderate is expected in most parts of the province. However, rain/thunderstorm is expected at isolated places in Rawalpindi, Gujranwala, Sargodha, Lahore, Faisalabad divisions and Islamabad during the first half of the current decade.
- **Khyber Pakhtunkhwa:** Rain/thunderstorm is expected at scattered places of Malakand, Hazara, Mardan, Peshawar, Kohat, Bannu, D.I. Khan divisions during the first half of the current decade.
- **Sindh:** Mainly very hot and dry weather is expected, however, dust-thundershower/rain (with isolated heavy falls) is expected at isolated places in Southeast Sindh (Thatta, Badin, Tharparkar districts) in the mid of the current decade.
- **Baluchistan:** Mainly hot and dry weather is expected during the current decade.
- **Gilgit-Baltistan:** Dust-thundershower/rain (with isolated heavyfalls) is expected at isolated places in the province during the current decade.
- **Kashmir:** Dust-thundershower/rain (with isolated heavyfalls) is expected at isolated places in the province during the current decade.

### 3.4 Advisory for Farmers

- Measures may be taken to preserve the standing crops/orchids from the damaging impacts of extreme weather conditions like thunder/dust storm, gusty winds, hails etc in particular areas.
- The fields got fallow after the harvesting of wheat may be deeply ploughed and leave empty for a few weeks.
- The farmers of lower half may regularly irrigate their Kharif crops by keeping in view the ongoing hot weather conditions.
- Rice growers are advised to sow the crop's PANERI in accordance with the recommendation by the agricultural experts.

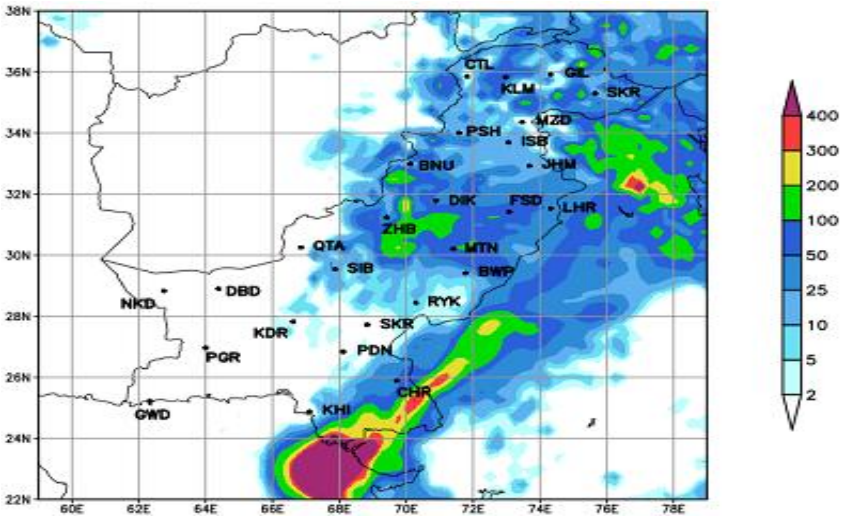
## 4.1 Precipitation Outlook (11th to 13th June, 2019)

The forecast for the first three days (11th to 13th June) of the 2nd decade of June, 2019 shows that light to moderate rainfall with spells of heavy rainfall is expected in GB, KP, Kashmir and some areas of Potohar region. However, dry weather is expected elsewhere.




## 4.2 Precipitation Outlook (14th to 20th June, 2019)

The forecast for the last seven days (14th to 20th) of the 2nd decade of June, 2019 shows that light to moderate rainfall is expected in GB, KP, Kashmir, Punjab and Sindh with heavy rainfall expected in the coastal areas of Sindh. However, hot and dry weather is expected in Baluchistan.



## Findings of AgMIP Pakistan, 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)*

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

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

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

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

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

(ایگمپ پاکستان 2012-2014)