# Decadal Agromet Bulletin of Pakistan

## Highlights…

- Light to Moderate rainfall reported from most of the agricultural plains of the country during the decade.
- Highest amount of rainfall recorded as 80.0 mm at Dalbadin during the last decade.
- Lowest minimum temperature recorded as -7.6°C at Kalam during the last decade.
- Rain-thunderstorm and snowfalls over the hills is expected in upper Punjab, Khyber Pakhtunkhwa, FATA, northern Baluchistan, Gilgit-Baltistan and Kashmir during the first three days of the decade. Dry weather is expected in Sindh during the current decade.
- Farmers are advised to schedule the irrigation plans for the Rabi crop in the context of ongoing rains.
- Measures may be taken to preserve the crops/nurseries from the damaging impacts of extreme cold conditions.
- 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.

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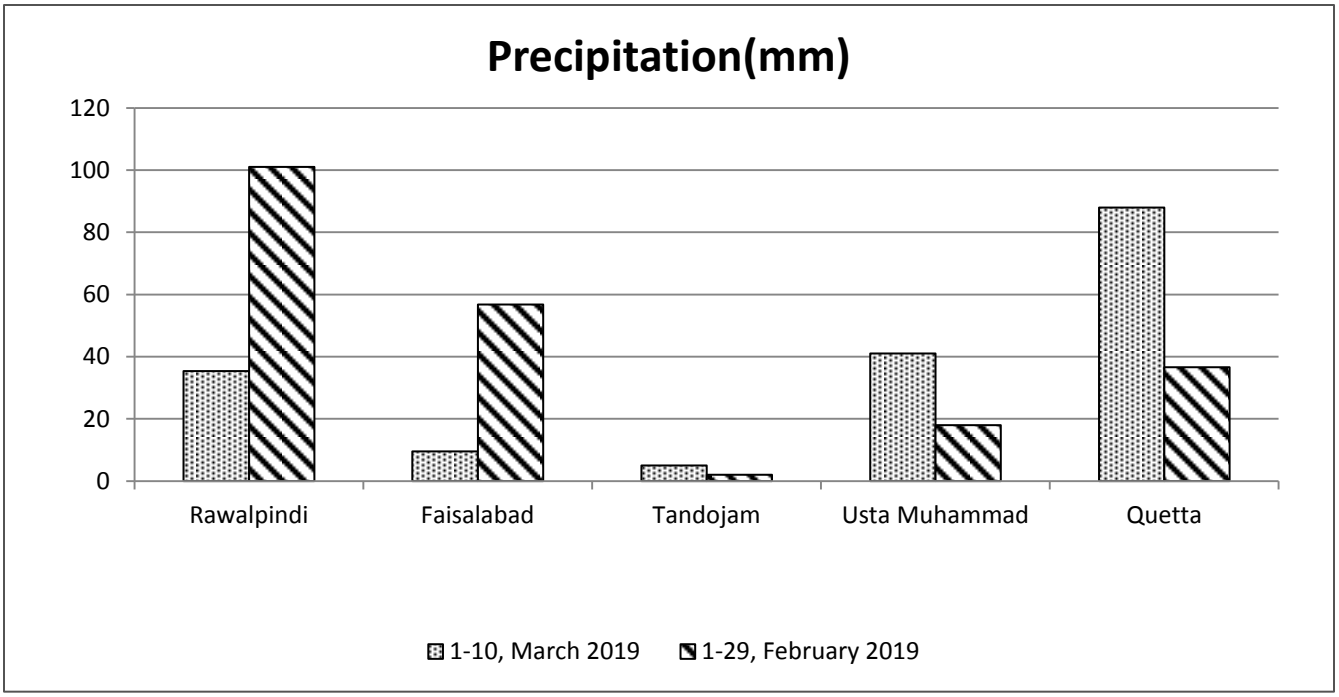
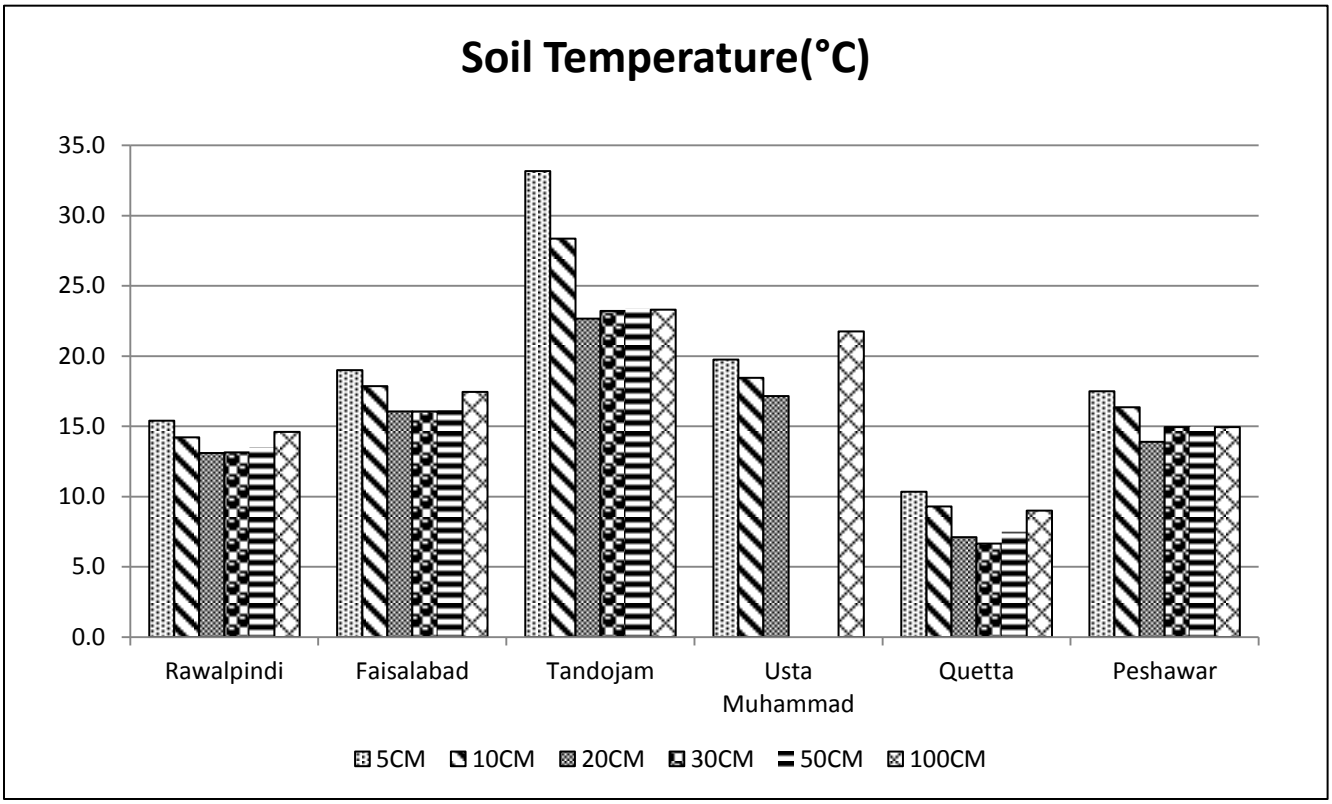
# Meteorological Conditions during 1st Decade of March, 2019

| 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 | 2.0 | 35.4 | 33.4 | -4.5 | -3.1 | 12.9 | 15.4 | 14.2 | 13.1 | 13.2 | 13.5 | 14.6 | 68 | 55.7 | 1.9 | 2.9 |
| 2 | Faisalabad | 0.8 | 9.6 | 8.8 | -4.4 | -1.3 | 16.3 | 19.0 | 17.9 | 16.1 | 16.1 | 16.2 | 17.5 | 62 | 59.6 | 2.6 | 3.7 |
| 3 | Jhelum | 0.9 | 14.7 | 13.8 | -4.7 | -2.4 | 15.5 | 17.5 | 16.5 | 15.7 | 15.4 | 16.0 | *** | 62 | 59.4 | 3.8 | 3.5 |
| 4 | Lahore | 0.9 | 3.9 | 3.0 | -3.5 | -2.9 | 17.2 | 18.8 | 18.2 | 17.0 | 16.5 | *** | 17.7 | 65 | 57.2 | 2.6 | 3.4 |
| 5 | Sargodha | 0.5 | 14.3 | 13.8 | -5.1 | -1.9 | 16.5 | 21.0 | 19.1 | 17.1 | 16.9 | *** | 17.9 | 68 | 43.3 | 1.5 | 2.7 |
| 6 | Multan | 0.6 | 24.2 | 23.6 | -5.8 | -1.3 | 16.6 | *** | *** | *** | *** | *** | *** | 62 | 52.5 | 6.0 | 3.5 |
| 7 | Khanpur | 3.2 | 23.1 | 19.9 | -5.7 | -3.2 | 16.9 | *** | 18.6 | 18.6 | 18.7 | 18.8 | 20.1 | 67 | 63.0 | 6.8 | 3.7 |
| 8 | Tandojam | 0.0 | 5.0 | 5.0 | -4.2 | -0.9 | 20.4 | 33.2 | 28.4 | 22.7 | 23.2 | 23.4 | 23.3 | 60 | 80.1 | 4.8 | 5.5 |
| 9 | Sakrand ☆ | 0.0 | 4.0 | 4.0 | -5.2 | -1.2 | 19.2 | 32.4 | *** | *** | *** | *** | 23.7 | 58 | 72.7 | 2.4 | 5.1 |
| 11 | Rohri ☆ | 0.4 | 7.8 | 7.4 | -7.5 | -4.0 | 18.8 | *** | *** | *** | *** | *** | *** | 58 | 77.1 | 2.4 | 5.0 |
| 12 | D.I Khan | 0.6 | 44.4 | 43.8 | -5.6 | -2.5 | 14.8 | 17.0 | 16.2 | 15.5 | 16.1 | 6.4 | *** | 73 | 59.1 | 10.7 | 2.8 |
| 13 | Peshawar | 1.4 | 27.5 | 26.1 | -3.6 | -3.4 | 14.3 | 17.5 | 16.4 | 13.9 | 15.0 | 15.0 | 15.0 | 59 | 49.9 | 2.6 | 3.3 |
| 14 | Usta .M | 0.0 | 41.0 | 41.0 | -8.9 | -2.7 | 17.3 | 19.8 | 18.5 | 17.2 | *** | *** | 21.8 | 65 | *** | 3.1 | 1.8 |
| 15 | Quetta | 0.6 | 88.0 | 87.4 | -7.3 | -0.7 | 6.7 | 10.4 | 9.3 | 7.1 | 6.7 | 7.5 | 9.0 | 63 | 68.3 | 2.1 | 2.3 |
| 16 | Skardu | 0.7 | 7.0 | 6.3 | -11.8 | 8.1 | 3.5 | *** | *** | *** | *** | *** | *** | 52 | 47.7 | 1.1 | 1.5 |
| 17 | Gilgit | 0.3 | 0.01 | -0.3 | -2.6 | 1.3 | 10.2 | *** | *** | *** | *** | *** | *** | 28 | 58.5 | 4.7 | 4.0 |

**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 March, 2019



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

Light to moderate rainfall reported from most of the agricultural plains of country during the last decade.

### 1.1 Punjab

Light to moderate rainfall reported from most of the agricultural plains of Punjab. Highest rainfall reported from, Bhakkar, Murree & Layyah. Decadal maximum and minimum both dropped below normal by 4.8°C & 2.3°C respectively, in the province. Whereas values of relative humidity, sunshine hour, wind speed & ETo were recorded as 65%, 55.8 hrs, 3.6km/hr and 3.3 mm/day respectively.

### 1.2 Sindh

Light to moderate rainfall reported from most of the agricultural plains of Sindh. Highest rainfall reported from, Dadu, Jacobabad & Larkana. Decadal maximum and minimum both dropped below normal by 5.6°C & 2.0°C respectively, in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 59%, 76.6hrs, 3.2km/hr and 5.2 mm/day respectively.

### 1.3 Khyber Pakhtunkhwa

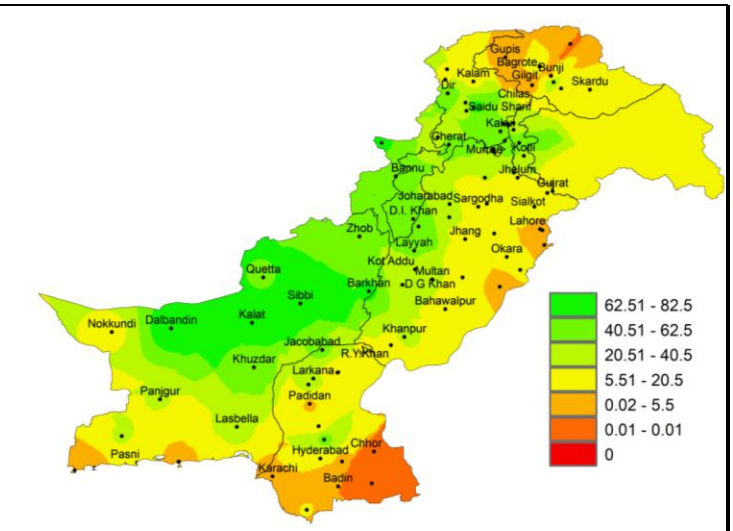
Light to moderate rainfall reported from most of the agricultural plains of Khyber Pakhtunkhwa. Highest rainfall reported from Malam Jabba, Prachinar & Dir. Decadal maximum and minimum both dropped below normal by 4.6°C & 3.0°C respectively in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 66%, 54.5hrs, 6.7km/hr and 3.1mm/day respectively.

### 1.4 Balochistan

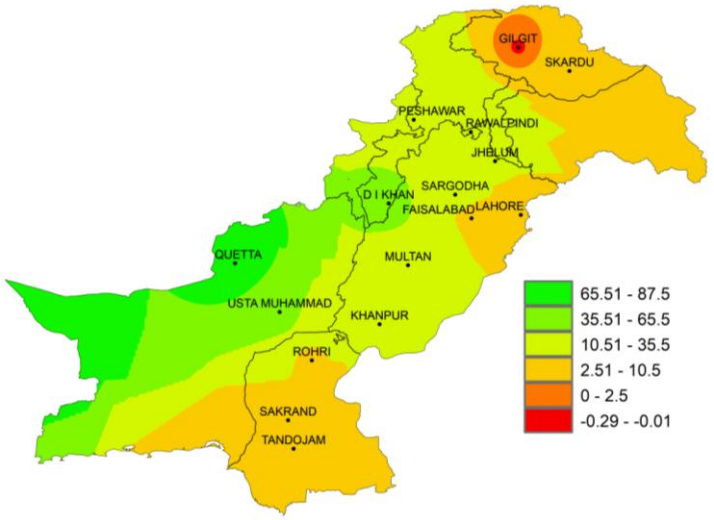
Light rainfall reported from most of the place from agricultural plains of the Balochistan. Highest rainfall reported from Dalbandin, Kalat & Barkhan. Decadal maximum and minimum both dropped below normal by 8.1°C & 1.7°C respectively, in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 64%, 68.3hrs, 2.1km/hr and 2.1mm/day respectively.

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

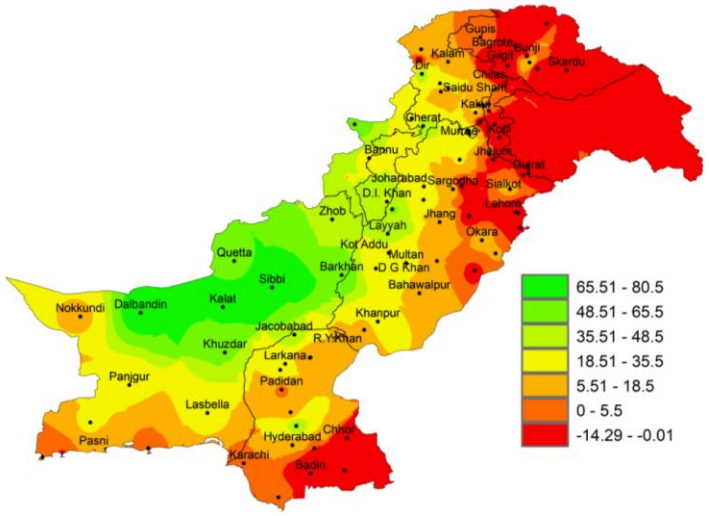
Light to moderate rainfall reported from most of the agricultural plains of G.B & Kashmir. Highest rainfall reported from, Rawalakot, Muzaffarabad & Garhi Dopatta. Decadal maximum dropped below normal by 7.2°C & minimum raised above normal by 9.0°C respectively, in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 40%, 53.1hrs, 2.9km/hr and 2.8 mm/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 March, 2019)

### 2.1 RAMC, Rawalpindi (Potohar region)

Rainfall reported as 35.4 mm during the decade; however weather remained cloudy for 08 days during the decade. Average relative humidity recorded as 68%. Mean day temperature was 19.9°C while night temperature recorded as 5.8°C with 55.7 hours bright sunshine duration. Wind speed recorded as 1.9 km/hr with mean wind direction *westerly.*

### 2.2 RAMC, Faisalabad (Central Punjab)

Rainfall reported as 9.6 mm during the decade; however weather remained cloudy for 08 days during the decade. Average relative humidity recorded as 62%. Mean day temperature was 22.2°C while night temperature recorded as 10.4°C with 59.6 hours bright sunshine duration. Wind speed recorded as 2.6 km/hr with mean wind direction *westerly*.
***Wheat:*** *Very good condition, Heading.*

### 2.3 RAMC, Tandojam (Lower Sindh)

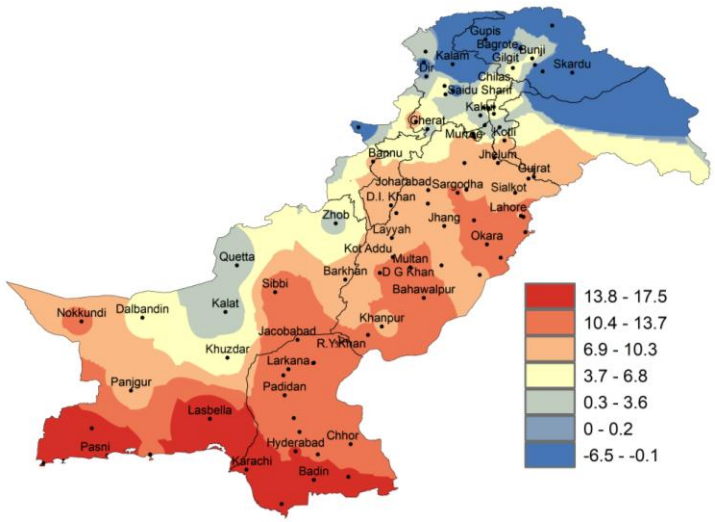
Rainfall reported as 5.0 mm during the decade; however weather remained cloudy for 05 days during the decade. Average relative humidity recorded as 60%. Mean day temperature was 27.9°C while night temperature recorded as 12.9°C with 80.1 hours bright sunshine duration. Wind speed recorded as 4.8 km/h with mean wind direction *northerly.*
***Wheat (TJ-83)****: Good condition, Full Maturity.*

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

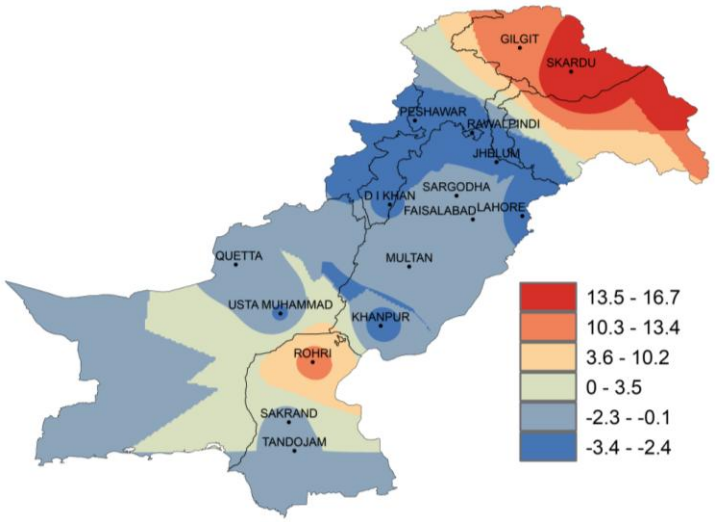
Rainfall reported as 41.0mm during the decade; however weather remained cloudy for 07 days during the decade. Average relative humidity recorded as 65%. Mean day temperature was 22.5°C while night temperature recorded as 12.0°C. Wind speed recorded as 3.1 km/h with mean wind direction *North easterly.*
***Wheat****: Good condition, Shooting stage.*

### 2.5 RAMC, Quetta (Northern Baluchistan)

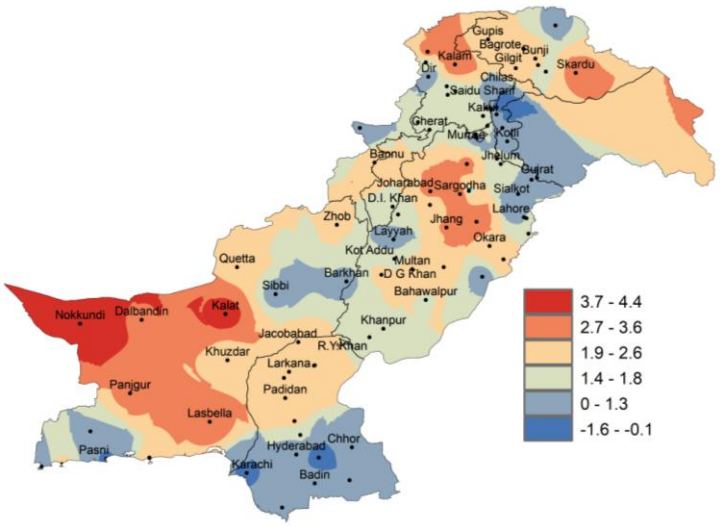
Rainfall reported as 88.0 mm during the decade; however weather remained cloudy for 10 days during the decade. Average relative humidity recorded as 63%. Mean day temperature was 10.7°C while night temperature recorded as 2.6°C with 68.3 hours bright sunshine duration. Wind speed recorded as 2.6km/hr with mean wind direction *southerly.*




**I. Actual min-temp**




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




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

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

## 2(b) Past Weather for Sub-Regional Agricultural Plains (1st to 10th March, 2019)

### 2.6 Jhelum

Rainfall reported as 14.7 mm during the decade; however weather remained cloudy for 09 days during the decade. Average relative humidity recorded as 62%. Mean day temperature was 21.8°C while night temperature recorded as 9.2°C with 59.4 hours bright sunshine duration. Wind speed recorded as 3.8 km/hr with mean wind direction *North westerly.*

### 2.7 Lahore

Rainfall reported as 3.9 mm during the decade; however weather remained cloudy for 09 days during the decade. Average relative humidity recorded as 65%. Mean day temperature was 22.4 °C while night temperature recorded as 12.0°C with 57.2 hours bright sunshine duration. Wind speed recorded as 2.6 km/hr with mean wind direction *Westerly.*

### 2.8 Sargodha

Rainfall reported as 14.3 mm during the decade; however weather remained cloudy for 08days during the decade. Average relative humidity recorded as 68%. Mean day temperature was 22.1°C while night temperature recorded as 10.8°C with 43.3 hours bright sunshine duration. Wind speed recorded 1.5 km/hr with mean wind direction *easterly.*

### 2.9 Multan

Rainfall reported as 24.2 mm during; however weather remained cloudy for 10 days during the decade. Average relative humidity recorded as 62%. Mean day temperature was 21.8°C while night temperature recorded as 11.4°C with 52.5 hours bright sunshine duration. Wind speed recorded 6.0km/hr with mean wind direction *North easterly.*

### 2.10 Khanpur

Rainfall reported as 23.1 mm during the decade; however weather remained cloudy for 06 days during the decade. Average relative humidity recorded as 67%. Mean day temperature was 23.5 °C while night temperature recorded as 10.2°C with 67 hours bright sunshine duration. Wind speed recorded 6.8 km/hr with mean wind direction *North easterly*.

### 2.11 Sakrand

Rainfall reported as 4.0 mm during the decade ; however weather remained cloudy for 06 days during the decade Average humidity recorded as 58%. Mean day temperature was 26.1°C while night temperature recorded as 12.2°C with 72.7 hours bright sunshine duration. Wind speed recorded 2.4km/hr with wind direction *Northerly.*

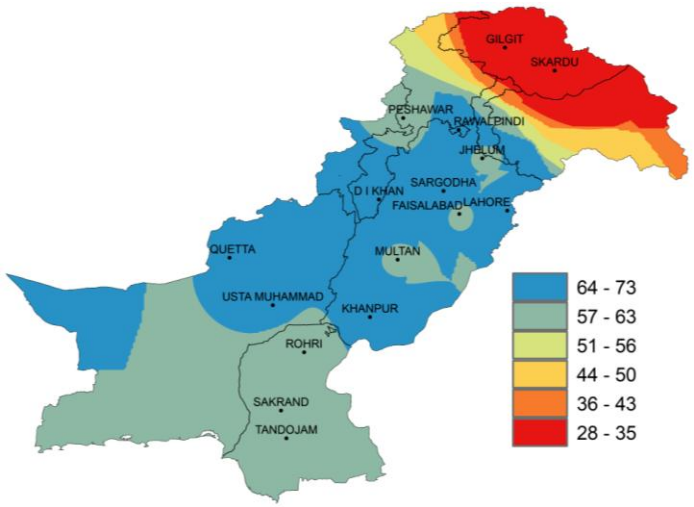



***Figure.3: Relative Humidity in Percentage (%)***

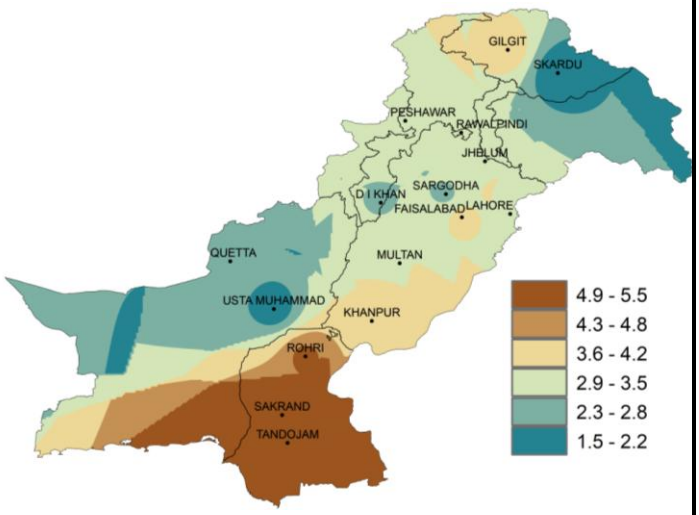



***Figure.4: Reference Crop Evapotranspiration ETo (mm/day)***

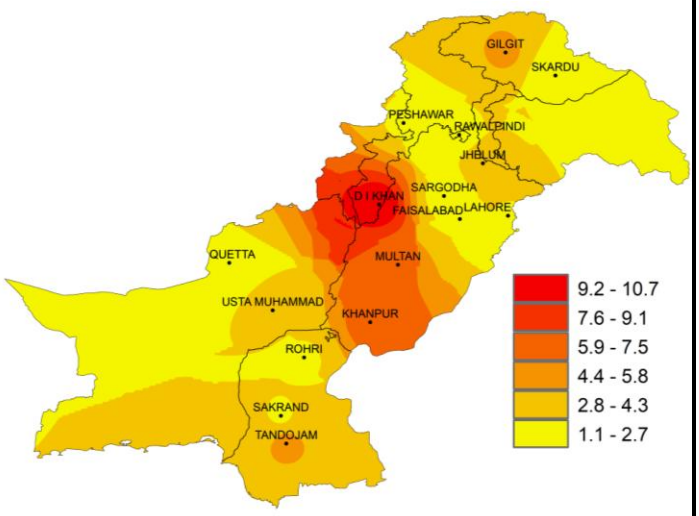



***Figure 5: Wind Speed in kilometer per hour (km/h)***

### 2.12 Rohri

Rainfall reported as 7.8 mm during the decade; however weather remained cloudy for 08 days during the decade. Average relative humidity recorded as 58%. Mean day temperature was 25.2°C while night temperature recorded as 12.4°C with 77.1hours bright sunshine duration. Wind speed recorded 2.4 km/hr with wind direction *North easterly.*

### 2.13 D.I. Khan

Rainfall reported as 44.0 mm during the decade; however weather remained cloudy for 06 days during the decade. Average relative humidity recorded as 73%. Mean day temperature was 20.9°C while night temperature recorded as 8.7°C with 59.1 hours bright sunshine duration. Wind speed recorded as 10.7 km/hr with mean wind direction *North westerly.*

### 2.14 Peshawar

Rainfall reported as 27.5 mm during the decade; however weather remained cloudy for 07 days during the decade. Average relative humidity recorded as 59%. Mean day temperature was 20.5°C while night temperature recorded as 8.1°C with 49.9 hours bright sunshine duration. Wind speed recorded as 2.6 km/hr with mean wind direction *North westerly.*

### 2.15 Skardu

Precipitation reported as 7.0 mm during the decade; however weather remained cloudy for 08 days during the decade. Average relative humidity recorded as 67%. Mean day temperature was 7.0ºC while night temperature recorded as -2.8 ºC with 47.7 hours bright sunshine duration. Wind speed recorded as 1.1 km/hr with mean wind direction *Easterly.*

### 2.16 Gilgit

Rainfall reported as 9.0 mm during the decade; however weather remained cloudy for 06 days during the decade. Average relative humidity recorded as 51%. Mean day temperature was 29.5°C while night temperature recorded as 2.3 °C with 29.5 hours bright sunshine duration. Wind speed recorded as 2.3 km/hr with mean wind direction *Westerly.*

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

### 3.1 Temperature Forecast

Both day and night temperatures are likely to be below 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 is expected in Baluchistan, Sindh and southern Punjab during the start of the decade.

### 3.3 Rain Forecast

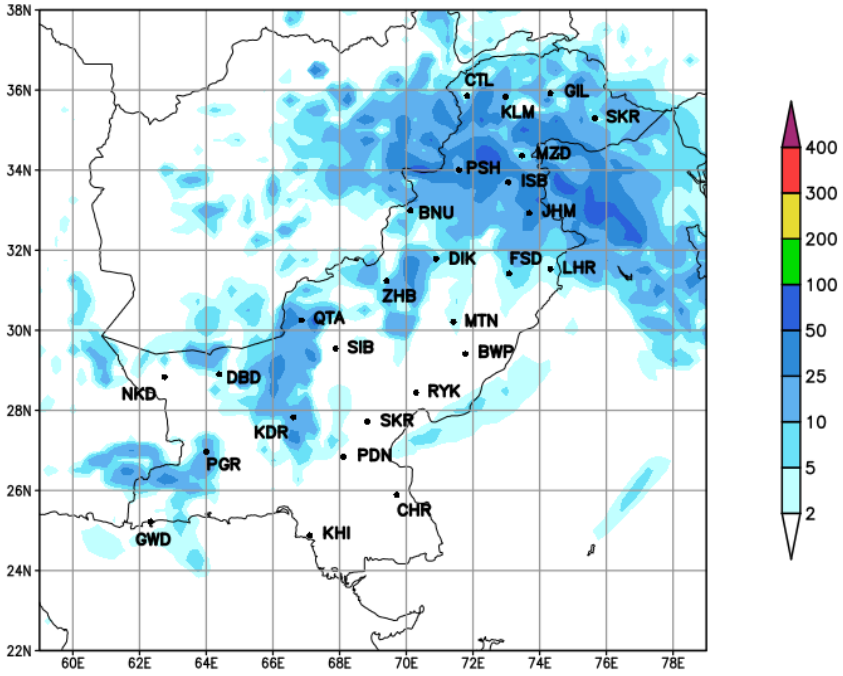
- **Punjab:** Widespread rain-thunderstorm and snowfalls over the hills (with isolated heavy falls) accompanied by gusty winds is expected in Islamabad and upper Punjab (Rawalpindi, Gujranwala, Sargodha, Lahore divisions) while at isolated places in Faisalabad division during first three days of the decade.
- **Khyber Pakhtunkhwa:** Widespread Rain thunderstorm with snowfall over the hills is expected in Malakand, Hazara, Peshawar and Kohat divisions while at isolated places in Bannu and D.I.Khan divisions during the first three days of the current decade.
- **Sindh:** Mainly cold and dry weather is expected in the province during the decade.
- **Baluchistan:** Mainly cold and dry weather is expected. However, rain-thunderstorm accompanied by gusty winds is expected in Malakand, Quetta, Kalat and Makran divisions during the first three days of the current decade then on 16th March in Quetta division. Heavy falls may cause flash flooding in local nullah/riverine of Baluchistan.
- **Gilgit-Baltistan:** Mainly cold and dry weather is expected. However, rain-thunderstorm accompanied by gusty winds is expected during the first three days of the current decade.
- **Kashmir:** Widespread rain / thunderstorm is expected during first four days of the current decade.

### 3.4 Advisory for Farmers

- Farmers are advised to schedule the irrigation plans for the Rabi crop in context of ongoing rains.
- 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.
- Measures may be taken to preserve the crops/nurseries from the damaging impacts of extreme cold conditions.

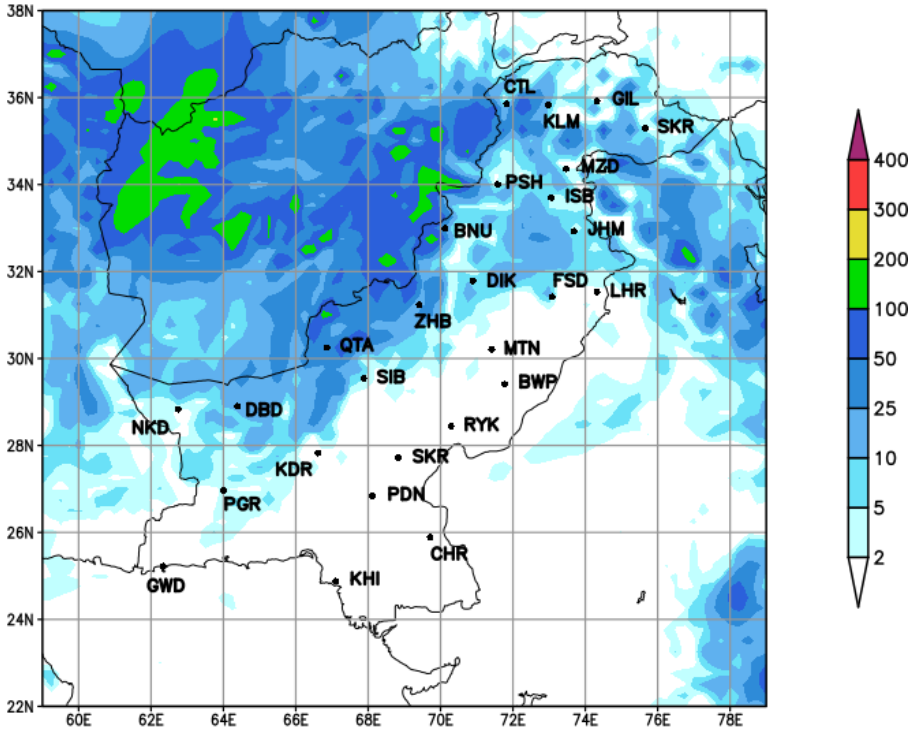
## 4.1 Precipitation Outlook (11th to 13th March, 2019)

The forecast for the first three days (11th to 13th) of the 2nd decade of March, 2019 shows that light to moderate rainfall is expected in GB, KP, FATA, Kashmir and scattered places of Balochistan. Dry weather is expected in Sindh.




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

The forecast for the last seven days (14th to 20th) of the 2nd decade of March, 2019 shows that light to moderate rainfall is expected in KP, G.B, FATA upper Punjab, northern & central Baluchistan and Kashmir. However, cold and dry weather may prevail in rest of the country.



## 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)