

# Decadal Agromet Bulletin of Pakistan



## Highlights....

- ❖ Overall light to moderate rainfall reported from most parts of the country during the last decade however, heavy rainfall reported from the agricultural plains of KP, G.B and Kashmir.
- ❖ Highest amount of rainfall recorded as 121.0mm at Balakot during the last decade
- ❖ Lowest Minimum temperature recorded as -12.2°C at Skardu during the last decade.
- ❖ Mostly cold and cloudy weather is expected in most of the agricultural plains of the country; however light to moderate rain (with snowfall over the mountains) is expected in most parts of the country from 3<sup>rd</sup> to 6<sup>th</sup> of the decade.
- ❖ Due to further drop of temperature farmers of particular areas in the northern half of the country are advised to take precautionary measures for protection of their crops and livestock from the expected frost.
- ❖ Farmers obtaining crop water through tube wells are advised to schedule the irrigation according to 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.

## NATIONAL AGROMET CENTRE (NAMC) PAKISTAN METEOROLOGICAL DEPARTMENT SECTOR H-8/2, ISLAMABAD

Patron-in-Chief: *Dr. Ghulam Rasul, Director General*

Editor-in-Chief: *Dr. Azmat Hayat Khan, Director*

Editor: *Asma Jawad Hashmi, Deputy Director*

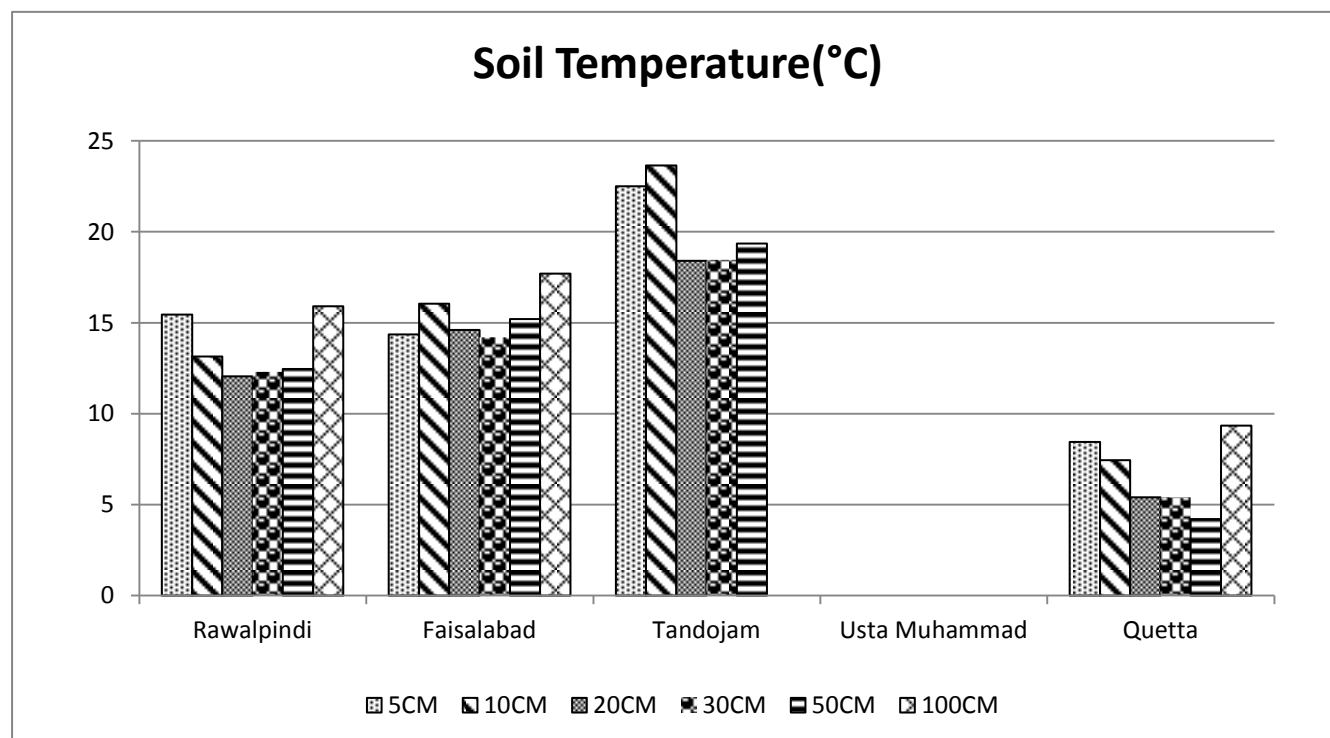
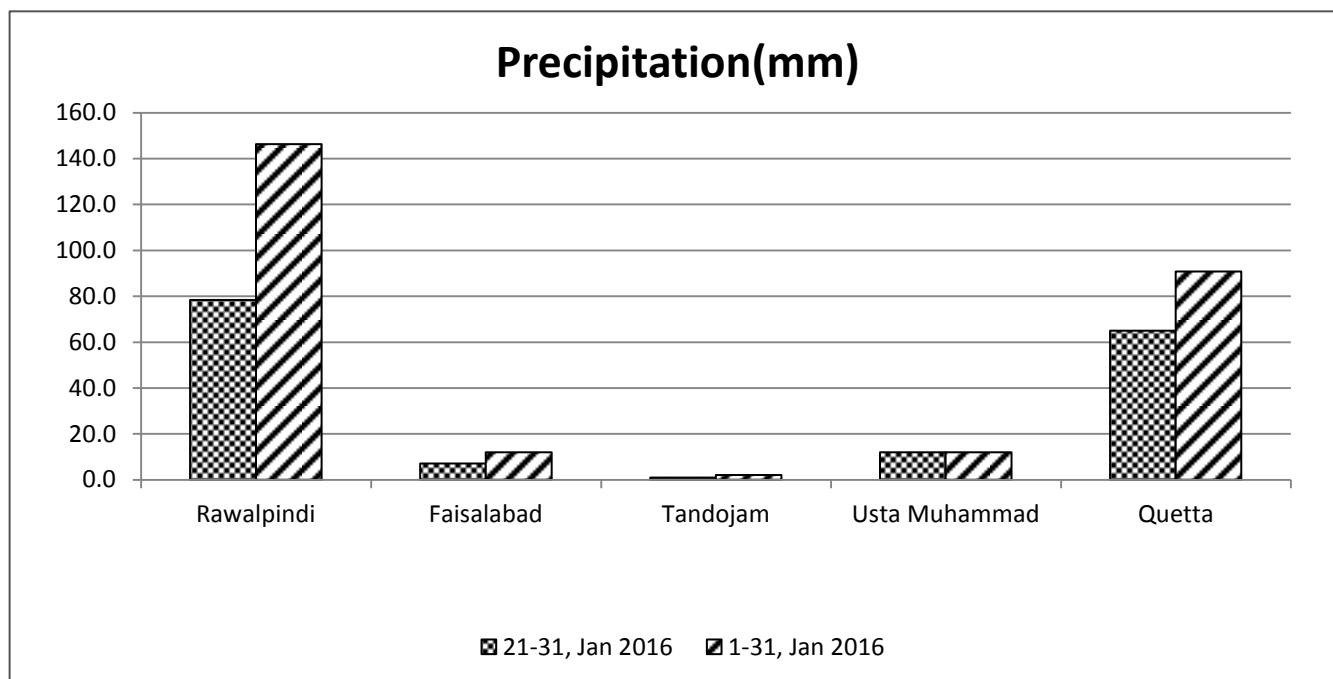
Phone: [+92-51-9250592](tel:+92-51-9250592) Email: [info@namc.pmd.gov.pk](mailto:info@namc.pmd.gov.pk)

**Meteorological Conditions during 3<sup>rd</sup> decade of January, 2017**

| 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 | 2.4                | 78.4   | 76.0 | -0.7                 | 4.2      | 12.9 | 15.5                   | 13.2 | 12.1 | 12.3 | 12.5 | 15.9  | 76      | 29.6                     | 3.0                | 1.3          |
| 2       | Faisalabad | 0.3                | 7.1    | 6.8  | -0.7                 | 2.6      | 13.3 | 14.4                   | 16.1 | 14.6 | 14.2 | 15.2 | 17.7  | 70      | 50.0                     | 2.0                | 1.4          |
| 3       | Jhelum     | 1.7                | 75.6   | 73.9 | -2.3                 | 3.1      | 13.4 | 14.5                   | 13.9 | 13.7 | 13.7 | 14.6 | ***   | 76      | 31.0                     | 2.6                | 1.3          |
| 4       | Lahore     | 0.7                | 48.6   | 47.9 | -0.8                 | 1.2      | 14.0 | 15.3                   | 15.0 | 14.6 | 14.5 | ***  | 17.6  | 78      | 35.3                     | 1.7                | 1.3          |
| 5       | Sargodha   | 1.0                | 7.8    | 6.8  | -1.2                 | 3.4      | 13.9 | 16.2                   | 15.4 | 14.9 | 15.3 | ***  | 18.2  | 78      | 29.0                     | 1.1                | 1.2          |
| 6       | Multan     | 0.2                | 13.4   | 13.2 | -0.6                 | 2.5      | 14.3 | ***                    | ***  | ***  | ***  | ***  | ***   | 69      | 48.5                     | 1.3                | 1.5          |
| 7       | Khanpur    | 0.0                | 5.8    | 5.8  | -0.6                 | 1.1      | 14.7 | ***                    | 15.8 | 16.1 | 16.7 | 17.6 | 19.7  | 65      | 65.2                     | 2.9                | 1.9          |
| 8       | Tandojam   | 0.0                | 1.0    | 1.0  | -3.0                 | 3.6      | 14.6 | 22.5                   | 23.7 | 18.4 | 18.5 | 19.4 | ***   | 56      | 92.7                     | 3.4                | 2.5          |
| 9       | Sakrand ☆  | 0.0                | 0.1    | 0.1  | 3.5                  | 2.1      | 16.1 | 23.4                   | ***  | ***  | ***  | ***  | 23.7  | 60      | 92.8                     | 5.0                | 2.8          |
| 11      | Rohri      | 0.0                | 3.2    | 3.2  | 0.3                  | -0.9     | 16.4 | 23.4                   | ***  | ***  | ***  | ***  | 23.7  | 56      | 78.7                     | 4.0                | 2.5          |
| 12      | D.I Khan   | 0.6                | 8.0    | 7.4  | -1.1                 | 2.6      | 13.3 | ***                    | ***  | ***  | ***  | ***  | ***   | 67      | 42.5                     | 7.5                | 2.4          |
| 13      | Peshawar   | 1.7                | 27.0   | 25.3 | -1.0                 | 2.2      | 12.7 | 14.8                   | 13.7 | 12.8 | ***  | ***  | ***   | 77      | 24.4                     | 2.0                | 1.1          |
| 14      | Usta .M    | 0.3                | 12.0   | 11.7 | -0.6                 | -0.4     | 14.1 | ***                    | ***  | ***  | ***  | ***  | ***   | 70      | ***                      | 1.6                | 1.6          |
| 15      | Quetta     | 0.5                | 65.0   | 64.5 | -1.3                 | 0.3      | 4.5  | 8.5                    | 7.5  | 5.4  | 5.4  | 4.2  | 9.4   | 68      | 51.0                     | 5.0                | 1.4          |
| 16      | Skardu     | 0.8                | 0.0    | -0.8 | -0.1                 | 1.3      | -1.2 | ***                    | ***  | ***  | ***  | ***  | ***   | 86      | 5.6                      | 0.3                | 0.6          |
| 17      | Gilgit     | 0.2                | 11.4   | 11.2 | -0.4                 | 3.8      | 6.1  | ***                    | ***  | ***  | ***  | ***  | ***   | 68      | 10.5                     | 2.0                | 0.9          |

**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 January, 2017



## 1. Past Weather (21<sup>st</sup> to 31<sup>st</sup> January, 2017)

Overall light to moderate rainfall reported from most parts of the country during the last decade however, heavy rainfall reported from the agricultural plains of KP, G.B and Kashmir.

### 1.1 Punjab

Light to moderate rainfall reported from agricultural plains of Punjab. Chief amount of rainfall received at Murree, Sialkot & Gujranwala. Decadal maximum dropped below normal by 1.0°C & minimum raised above normal by 2.6°C, in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 73%, 41.2hrs, 2.1km/hr and 1.4mm/day respectively.

### 1.1 Sindh

Light to moderate rainfall reported from agricultural plains of Sindh. Chief amount of rainfall received at Jacobabad, Karachi, & Mithi. Decadal maximum & minimum both raised above normal by 0.3°C & 1.6°C respectively, in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 57%, 88.1hrs, 4.1km/hr and 2.6mm/day respectively.

### 1.2 Khyber Pakhtunkhwa (KP)

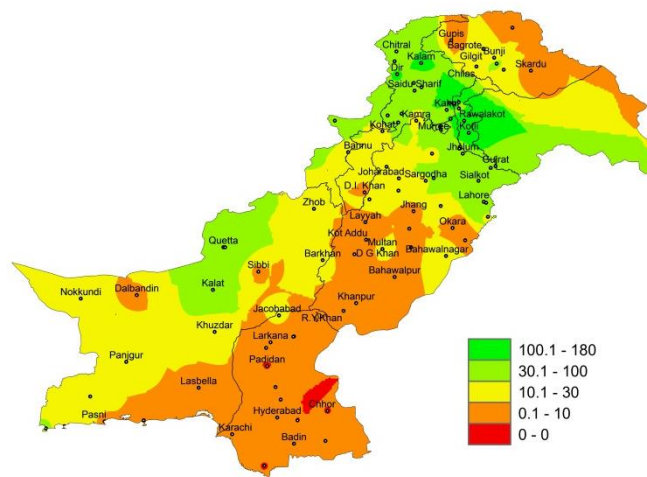
Heavy rainfall reported from agricultural plains of KP. Chief amount of rainfall received at Balakot, Kalam & Dir. Decadal maximum dropped below normal by 1.1°C & minimum raised above normal by 2.4°C, in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 72%, 33.5hrs, 4.8km/hr and 1.8mm/day respectively.

### 1.3 Balochistan

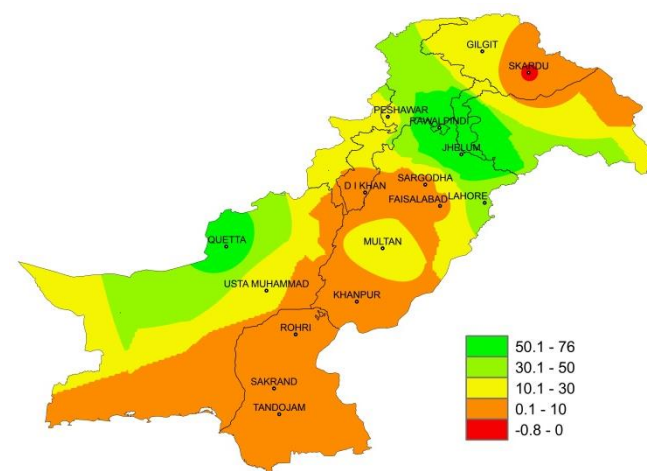
Light to moderate rainfall reported from agricultural plains of Balochistan. Chief amount of rainfall received at Quetta, Kalat & Jiwani. Decadal maximum & minimum both dropped below normal by 0.9°C & 0.1°C respectively, in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 69%, 51.0hrs, 3.3km/hr and 1.5mm/day respectively.

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

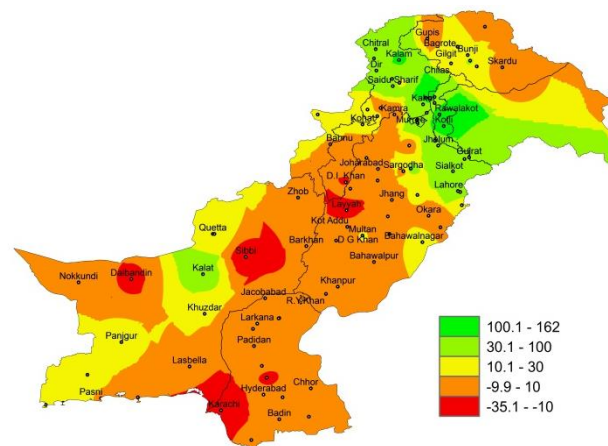
Heavy rainfall reported from agricultural plains of GB & Kashmir. Chief amount of rainfall received at Rawalakot, Kotli & Muzaffarabad. . Decadal maximum dropped below normal by 0.3°C & minimum raised above normal by 2.6°C, in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 77%, 8.1hrs, 1.2km/hr and 0.8mm/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** **(21<sup>st</sup> to 31<sup>st</sup> January, 2017)**

### 2.1 RAMC, Rawalpindi (Potohar region)

Rainfall reported as 78.4mm during the decade; however weather remained cloudy for 10days. Average relative humidity recorded as 76%. Mean day temperature was 18.0°C while night temperature recorded as 7.7°C with 29.6hours bright sunshine duration. Wind speed recorded as 3.0km/hr with mean wind direction *westerly*.

### 2.2 RAMC, Faisalabad (Central Punjab)

Rainfall reported as 7.1mm during the decade; however weather remained cloudy for 10days. Average relative humidity recorded as 70%. Mean day temperature was 19.0°C while night temperature recorded as 7.5°C with 37.50hours bright sunshine duration. Wind speed recorded as 2.0km/hr with mean wind direction *north westerly*.

**Wheat:** *Very Good condition, shooting stage.*

### 2.3 RAMC, Tandojam (Lower Sindh)

Rainfall reported as 1.0mm during the decade; however weather remained cloudy for 02days. Average relative humidity recorded as 56%. Mean day temperature was 22.1°C while night temperature recorded as 7.1°C with 92.7hours bright sunshine duration. Wind speed recorded as 3.4km/h with mean wind direction *northerly*.

**Wheat (Imdad):** *Good condition, flowering stage.*

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

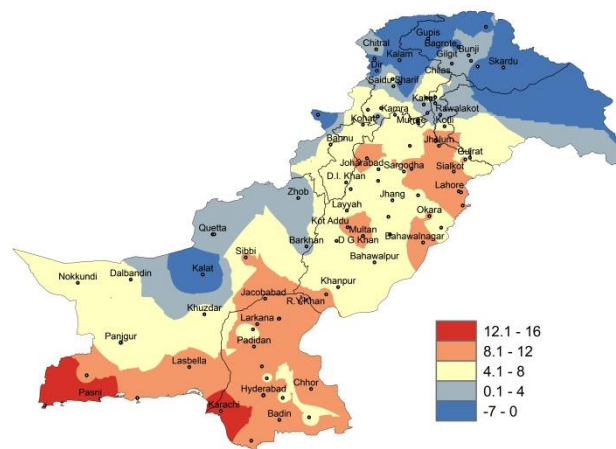
Rainfall reported as 12.0mm during the decade; however weather remained cloudy for 07days. Average relative humidity recorded as 70%. Mean day temperature was 20.6°C while night temperature recorded as 7.6°C. Wind speed recorded as 1.6km/h with mean wind direction *northerly*.

**Wheat:** *Very Good condition, Tillering stage.*

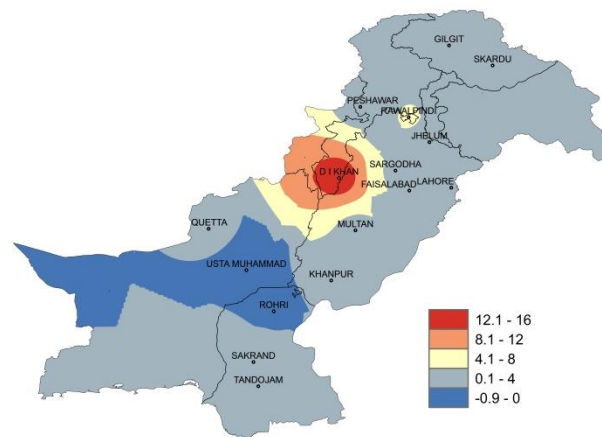
### 2.5 RAMC, Quetta (Northern Balochistan)

Rainfall reported as 65.0mm during the decade; however weather remained cloudy for 11days. Average relative humidity recorded as 68%. Mean day temperature was 9.8°C while night temperature recorded as -0.8°C with 51.0hours bright sunshine duration. Wind speed recorded as 5.0km/hr with mean wind direction *southerly*.

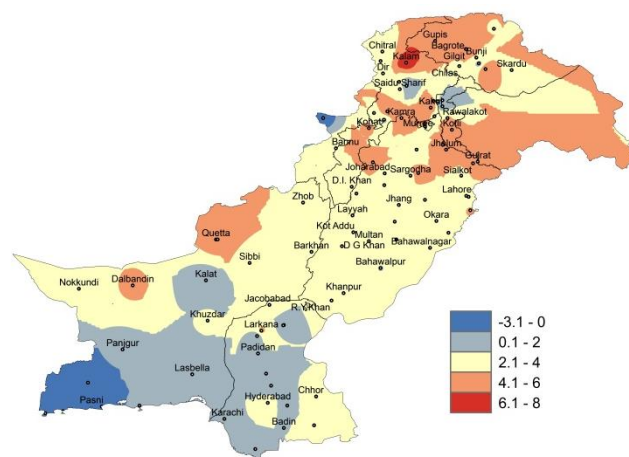
**Wheat (Local White):** *Very Good condition, Tillering stage*



#### 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 (21<sup>st</sup> to 31<sup>st</sup> January, 2017)

### 2.6 Jhelum

Rainfall reported as 75.6mm during the decade; however weather remained cloudy for 11days. Average relative humidity recorded as 76%. Mean day temperature was 17.9°C while night temperature recorded as 8.9°C with 31.0hours bright sunshine duration. Wind speed recorded as 2.6km/hr with mean wind direction *north westerly*.

### 2.7 Lahore

Rainfall reported as 48.6mm during the decade; however weather remained cloudy for 11days. Average relative humidity recorded as 78%. Mean day temperature was 18.5°C while night temperature recorded as 9.5°C with 35.3hours bright sunshine duration. Wind speed recorded as 1.1km/hr with mean wind direction *north westerly*.

### 2.8 Sargodha

Rainfall reported as 7.8mm during the decade; however weather remained cloudy for 10days. Average relative humidity recorded as 78%. Mean day temperature was 18.8°C while night temperature recorded as 9.0°C with 29.0hours bright sunshine duration. Wind speed recorded 1.11km/hr with mean wind direction *variable*.

### 2.9 Multan

Rainfall reported as 13.4mm during the decade; however weather remained cloudy for 11days. Average relative humidity recorded as 69%. Mean day temperature was 20.3°C while night temperature recorded as 8.3°C with 48.5hours bright sunshine duration. Wind speed recorded 1.3km/hr with mean wind direction *northerly*.

### 2.10 Khanpur

Rainfall reported as 5.8mm during the decade however weather remained cloudy for 09days. Average relative humidity recorded as 65%. Mean day temperature was 21.9°C while night temperature recorded as 7.5°C with 65.2hours bright sunshine duration. Wind speed recorded 2.9km/hr with mean wind direction *north easterly*.

### 2.11 Sakrand

Rainfall reported as Trace (not measureable) during the decade; however weather remained cloudy for 05days. Average relative humidity recorded as 60%. Mean day temperature was 23.1°C while night temperature recorded as 9.0°C with 92.8hours bright sunshine duration. Wind speed recorded 5.0km/hr with wind direction *north westerly*.

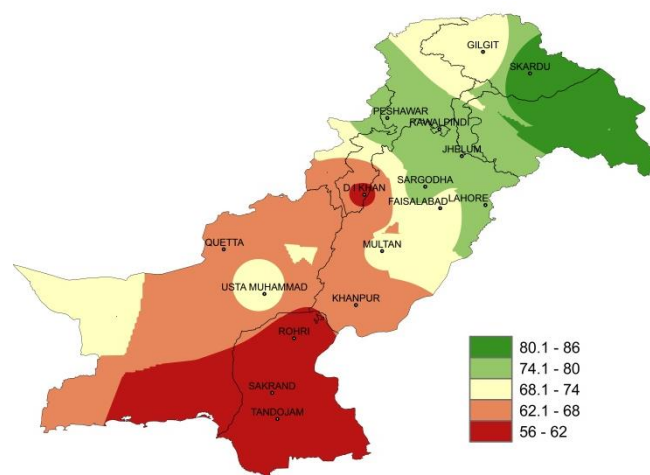


Figure.3: Relative Humidity in Percentage (%)

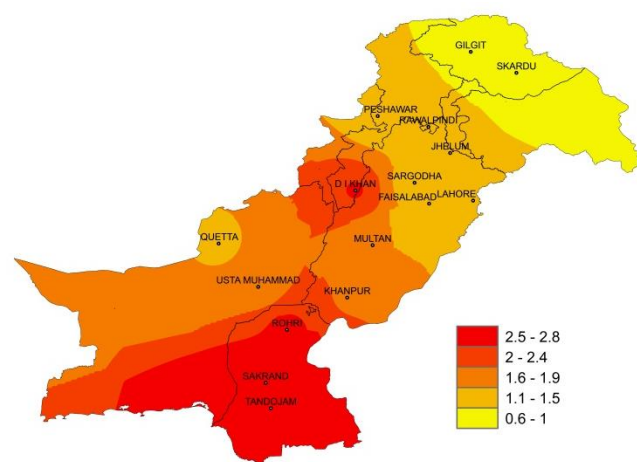


Figure.4: Reference Crop Evapotranspiration "ETo" in mm/day

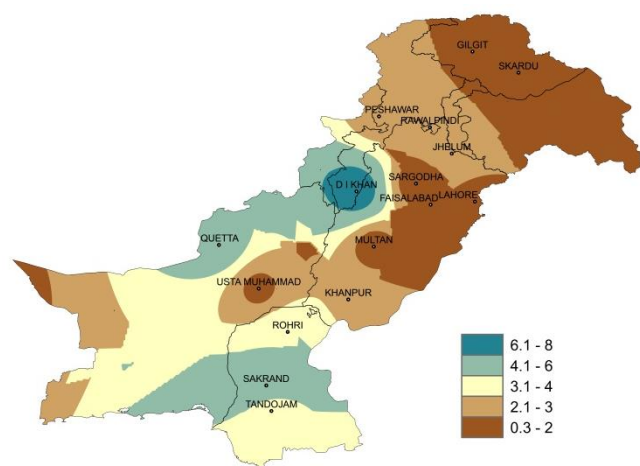


Figure 5: Wind Speed in kilometer per hour (km/h)

**2.12 Rohri**

Rainfall reported as 3.2mm during the decade; however weather remained cloudy for 06days. Average relative humidity recorded as 56%. Mean day temperature was 23.7°C while night temperature recorded as 9.0°C with 78.7hours bright sunshine duration. Wind speed recorded 4.0km/hr with wind direction *north easterly*.

**2.13 D.I. Khan**

Rainfall reported as 8.0mm during the decade; however weather remained cloudy for 09days. Average relative humidity recorded as 67%. Mean day temperature was 19.3°C while night temperature recorded as 7.6°C with 42.5hours bright sunshine duration. Wind speed recorded 7.5km/hr with wind direction *north westerly*.

**2.14 Peshawar**

Rainfall reported as 27.0mm during the decade; however weather remained cloudy for 05days. Average relative humidity recorded as 77%. Mean day temperature was 17.8°C while night temperature recorded as 7.6°C with 24.4hours bright sunshine duration. Wind speed recorded as 2.0km/hr with mean wind direction *north westerly*.

**2.15 Skardu**

Dry weather reported during the decade; however weather remained cloudy for 11days. Average relative humidity recorded as 86%. Mean day temperature was 4.5°C while night temperature recorded as -6.8°C with 5.6hours bright sunshine duration. Wind speed recorded as 0.3km/hr with mean wind direction *east north-easterly*.

**2.16 Gilgit**

Rainfall reported as 11.4mm during the decade; however weather remained cloudy for 11days. Average relative humidity recorded as 61%. Mean day temperature was 10.6°C while night temperature recorded as 1.6°C with 10.5hours bright sunshine duration. Wind speed recorded as 2.0km/hr with mean wind direction *westerly*.

### **3 Ten Days Weather Advisory for Farmers (1<sup>st</sup> to 10<sup>th</sup> February, 2017)**

**3.1 Temperature Forecast**

Night temperatures are expected to drop slightly (1-2°C) 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 during the decade.

**3.3 Rain Forecast**

❖ **Punjab:** Cold and cloudy weather is expected in most parts of the province. However light to moderate rainfall is expected from 4<sup>th</sup> to 6<sup>th</sup> of the decade.

❖ **Khyber Pakhtunkhwa:** Mainly cold and cloudy weather is expected in most parts of the province during the decade.

❖ **Sindh:** Light to moderate rainfall is expected in most parts of the province from 4<sup>th</sup> to 5<sup>th</sup> of the decade.

❖ **Balochistan:** Mainly cold and cloudy weather is expected in most parts of the province however light to moderate rainfall is expected at scattered places of Balochistan from 3<sup>rd</sup> to 6<sup>th</sup> of the decade.

❖ **Gilgit Baltistan:** Mainly cold and cloudy weather is expected in most parts of G.B however light to moderate rain with snowfall is expected at scattered places during the current decade.

❖ **Kashmir:** Mainly cold and cloudy weather is expected in most parts of the Kashmir however light to moderate rain with snowfall is expected at Muzaffarabad and Rawalakot regions during the current decade.

❖ **3.4 Advisory for Farmers**

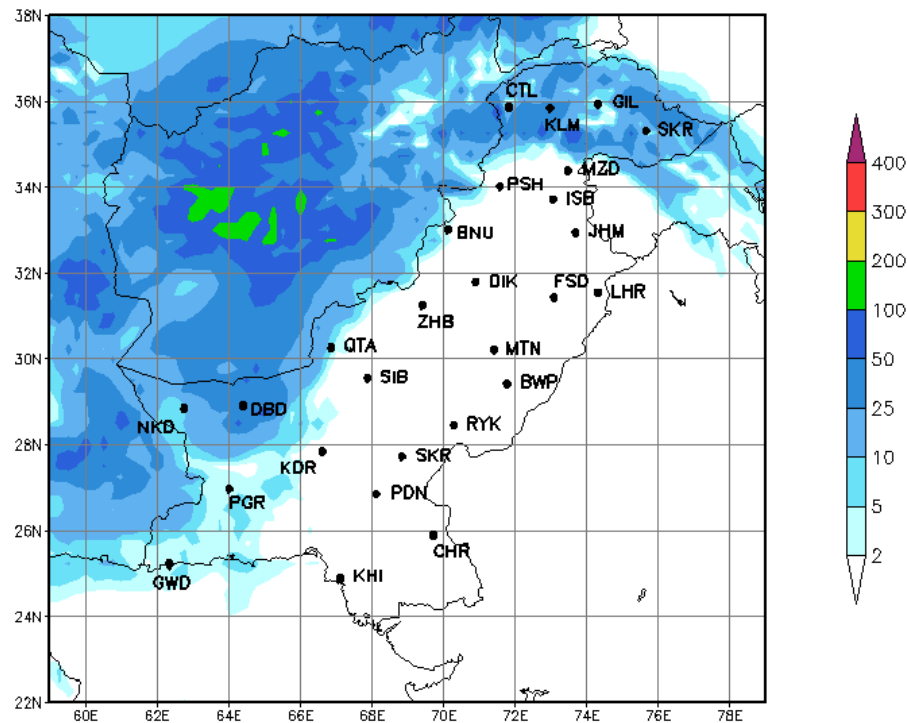
❖ Due to further drop of temperature farmers of particular areas in the northern half of the country are advised to take precautionary measures for protection of their crops and livestock from the expected frost.

❖ Farmers obtaining crop water through tube wells are advised to schedule the irrigation according to 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.

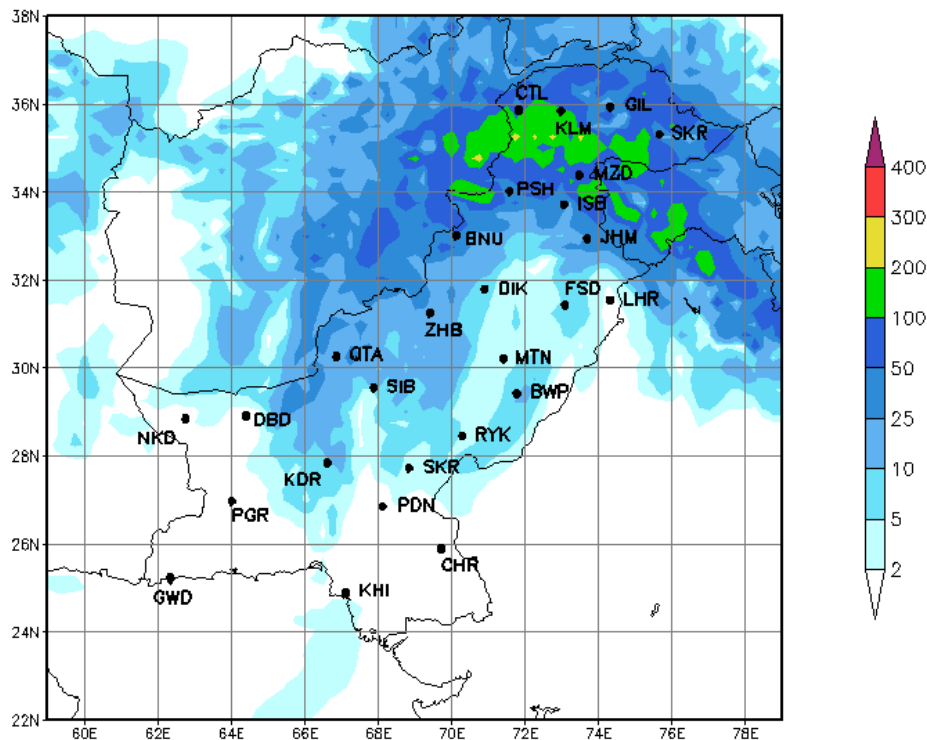
#### 4.1 Precipitation Forecast (1<sup>st</sup> to 3<sup>rd</sup> February, 2017)

The forecast for the first three days (1<sup>st</sup> to 3<sup>rd</sup>) of the first decade of February 2017 shows that light rainfall (with snowfalls over mountainous regions) is expected at isolated places of Western Balochistan, Upper KP, GB & Kashmir however dry weather is expected in rest parts of the country.



#### 4.2 Precipitation Outlook (4<sup>th</sup> to 10<sup>th</sup> February, 2017)

The outlook for the last seven days (4<sup>th</sup> to 10<sup>th</sup>) of the first decade of February 2017 shows that light to moderate rainfall is expected in Punjab, KP, northern Balochistan, upper Sindh, G.B & Kashmir while 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)*

- 1- سال 2040-69 کے دوران درجہ حرارت میں قابل ذکر اضافہ ہو سکتا 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 ہو سکتی 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 سدباب (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)