

# Decadal Agromet Bulletin of Pakistan



## Highlights...

- ❖ Light rainfall reported from Khyber Pakhtunkhwa, Punjab & Gilgit-Baltistan and Azad Jammu & Kashmir, whereas light rainfall reported from rest of the agricultural plains of country during the last decade.
- ❖ Highest amount of rainfall recorded as 138.0 mm at Barkhan during the last decade.
- ❖ Highest maximum temperature recorded as 42.5°C at Mithi during the last decade.
- ❖ Widespread dust-thunderstorm/rain accompanied by strong gusty winds (with few moderate to isolated heavy falls) is expected in Khyber Pakhtunkhwa, Kashmir and Gilgit-Baltistan, while at scattered places in Northeast Balochistan, Punjab and Islamabad, while at isolated places in Sukkur division. Hailstorm is also expected at isolated places in upper Punjab, upper Khyber Pakhtunkhwa and Kashmir from 24th to 27th of the current decade.
- ❖ Wheat crop is at heading-maturity stages in northern half of the country. Farmers are advised to schedule their harvesting by keeping in view the weather forecast.
- ❖ 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.
- ❖ 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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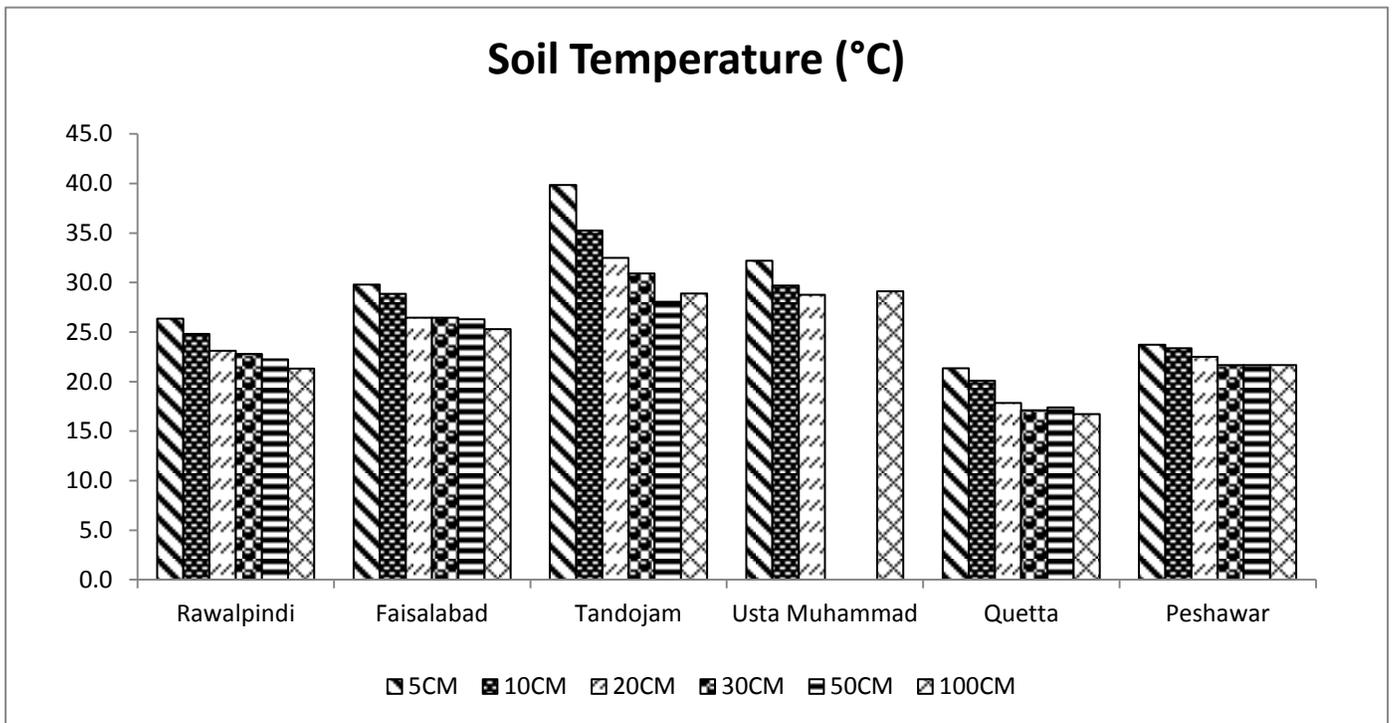
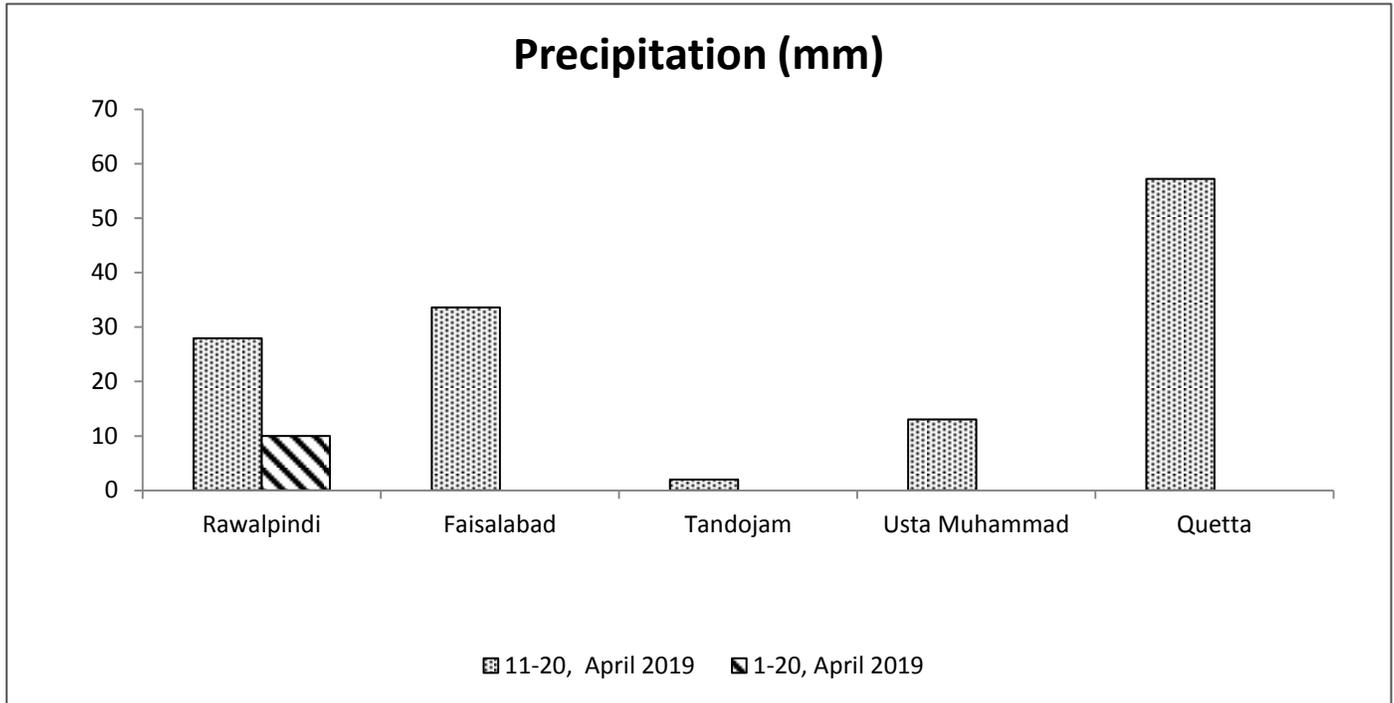
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**Meteorological Conditions during 2<sup>nd</sup> Decade of April, 2019**

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	0.6	27.9	27.3	-2.4	-0.8	22.5	26.4	24.8	23.1	22.8	22.3	21.3	62	61.1	2.7	5.4
2	Faisalabad	0.4	33.6	33.2	-4.6	-1.1	25.0	29.8	28.9	26.5	26.5	26.3	25.3	58	64.3	3.0	6.3
3	Jhelum	0.8	40.4	39.6	-3.4	0.2	25.4	28.3	27.9	25.9	24.6	24.6	***	55	75.4	3.2	7.0
4	Lahore	0.2	52.4	52.2	-3.7	-1.5	26.1	28.8	27.8	26.1	25.5	***	23.8	56	65.1	2.6	6.5
5	Sargodha	0.5	40.3	39.8	-4.8	-0.7	25.5	31.3	29.2	26.5	25.8	***	23.9	70	66.7	1.5	5.0
6	Multan	0.6	19.9	19.3	-5.7	-1.5	25.6	***	***	***	***	***	***	55	73.6	7.2	7.2
7	Khanpur	0.0	11.2	11.2	-4.8	-1.6	27.2	***	31.5	31.3	31.2	30.5	29.4	50	83.0	7.3	8.9
8	Tandojam	0.0	2.0	2.0	-5.7	-0.5	28.7	39.9	35.3	32.5	30.9	28.1	28.9	45	93.3	6.8	10.8
9	Sakrand ☆	0.0	0.0	0.0	-4.6	0.6	28.3	46.9	***	***	***	***	30.0	44	93.8	4.0	10.4
11	Rohri ☆	0.0	2.4	2.4	-4.5	-4.0	27.8	***	***	***	***	***	***	46	87.8	1.3	9.8
12	D.I Khan	0.8	58.0	57.2	-4.3	-1.8	24.1	26.7	25.4	24.2	24.3	13.7	***	65	75.0	10.3	6.0
13	Peshawar	2.6	36.0	33.4	-3.1	-0.1	23.2	23.7	23.4	22.5	21.7	21.7	21.7	64	41.3	2.0	4.3
14	Usta M.	0.0	13.0	13.0	-3.9	0.5	28.4	32.2	29.7	28.8	***	***	29.1	53	***	2.1	4.4
15	Quetta	0.4	57.2	56.8	-6.3	0.0	15.1	21.4	20.1	17.9	17.1	17.4	16.7	60	60.0	4.7	4.0
16	Skardu	0.8	1.0	0.2	-0.5	12.9	19.3	***	***	***	***	***	***	31	39.0	4.8	4.1
17	Gilgit	0.6	1.00	0.4	-0.4	1.7	17.9	***	***	***	***	***	***	35	33.4	2.5	4.8

**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 April, 2019



**Past Weather (11<sup>th</sup> to 20<sup>th</sup> April, 2019)**

Light to moderate rainfall reported from Khyber Pakhtunkhwa, Punjab, Gilgit-Baltistan and Azad Jammu & Kashmir, whereas light rainfall reported from rest 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 the Punjab. Highest rainfall reported from Khanewal, Layyah & Saidpur. Decadal maximum and minimum both dropped below the normal by 4.2°C & 1.0°C respectively, in the province. Whereas values of relative humidity, sunshine hour, wind speed & ETo were recorded as 58%, 69.9 hrs, 3.9km/hr and 6.6 mm/day respectively.

**1.2 Sindh**

Light to moderate rainfall reported from most of the agricultural plains of the Sindh. Highest rainfall reported from Padidan, Dadu & Hyderabad. Decadal maximum and minimum both dropped below the normal by 4.9°C & 1.30°C respectively, in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 45%, 91.6hrs, 4.0km/hr and 10.3mm/day respectively.

**1.3 Khyber Pakhtunkhwa**

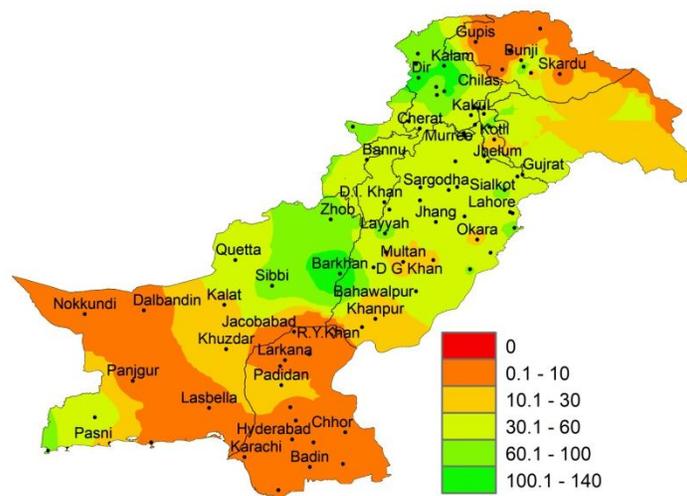
Hive rainfall reported from most of the agricultural plains of Khyber Pakhtunkhwa. Highest rainfall reported from Dir, Mirkhani & Malam Jabba. Decadal maximum and minimum both dropped below the normal by 3.7°C & 1.0°C respectively, in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 65%, 58.2hrs, 6.2km/hr and 5.2mm/day respectively.

**1.4 Balochistan**

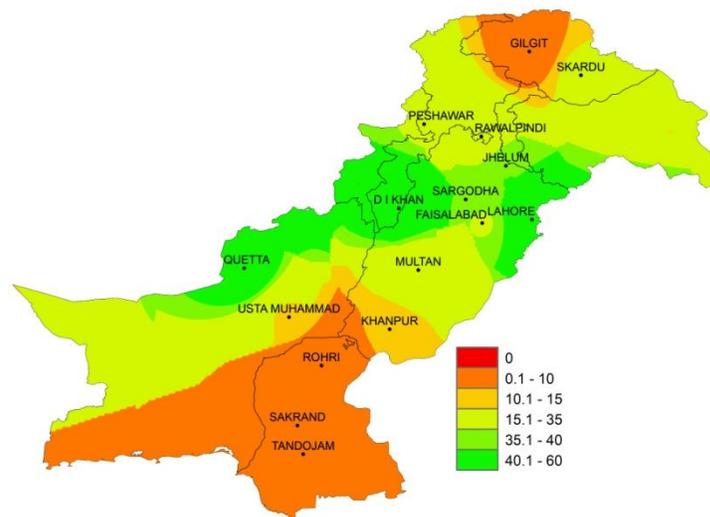
Hive rainfall reported from most of the agricultural plains of Balochistan. Highest rainfall reported from Barkhan, Sibbi & Turbat. Decadal maximum dropped below the normal by 5.1°C & minimum raised above the normal by 0.3°C respectively in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 57%, 60.0hrs, 3.4km/hr and 4.2mm/day respectively.

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

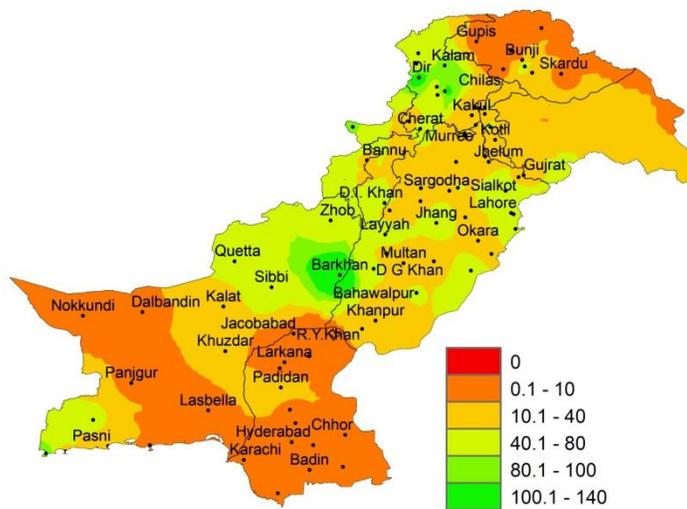
Light to moderate rainfall reported from most of the agricultural plains G.B & Kashmir. Highest rainfall reported from Kotli, Rawalakot & Muzaffarabad Decadal maximum dropped below the normal by 0.4°C & minimum raised above the normal by 7.3°C respectively in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 33%, 36.2hrs, 3.7km/hr and 4.5 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 (11<sup>th</sup> to 20<sup>th</sup> April, 2019)**

**2.1 RAMC, Rawalpindi (Potohar region)**

Rainfall reported as 27.9 mm during the decade; however weather remained cloudy for 09 days during the decade. Average relative humidity recorded as 62%. Mean day temperature was 29.5°C while night temperature recorded as 15.4°C with 61.1 hours bright sunshine duration. Wind speed recorded as 2.7 km/hr with mean wind direction *Variable*.

**2.2 RAMC, Faisalabad (Central Punjab)**

Rainfall reported as 33.6 mm during the decade; however weather remained cloudy for 09 days during the decade. Average relative humidity recorded as 58%. Mean day temperature was 31.6°C while night temperature recorded as 18.4°C with 64.4 hours bright sunshine duration. Wind speed recorded as 3.0 km/hr with mean wind direction *West North Westerly*.

*Wheat: Very good condition, Full Maturity completed.*

**2.3 RAMC, Tandojam (Lower Sindh)**

Rainfall reported as 2.0 mm during the decade; however weather remained cloudy for 04 days during the decade. Average relative humidity recorded as 45%. Mean day temperature was 36.8°C while night temperature recorded as 20.5°C with 93.3 hours bright sunshine duration. Wind speed recorded as 6.8 km/h with mean wind direction *South Westerly*.

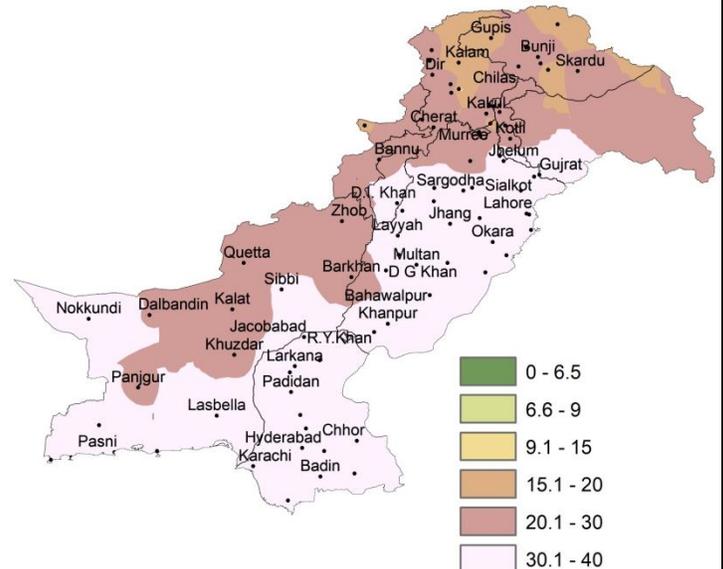
**2.4 RAMC, Usta Muhammad (Eastern Baluchistan)**

Rainfall reported as 13.0 mm during the decade; however weather remained cloudy for 08 days during the decade. Average relative humidity recorded as 53%. Mean day temperature was 35.4°C while night temperature recorded as 21.4°C. Wind speed recorded as 2.1 km/h with mean wind direction *South easterly*.

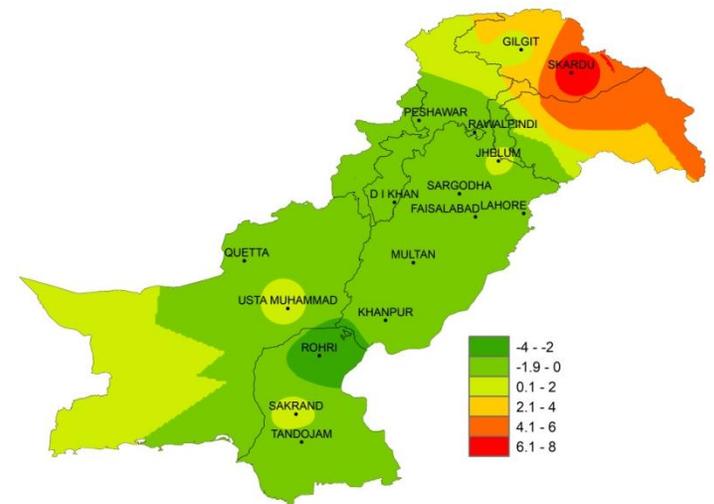
*Wheat: Good condition, Wax maturity.*

**2.5 RAMC, Quetta (Northern Baluchistan)**

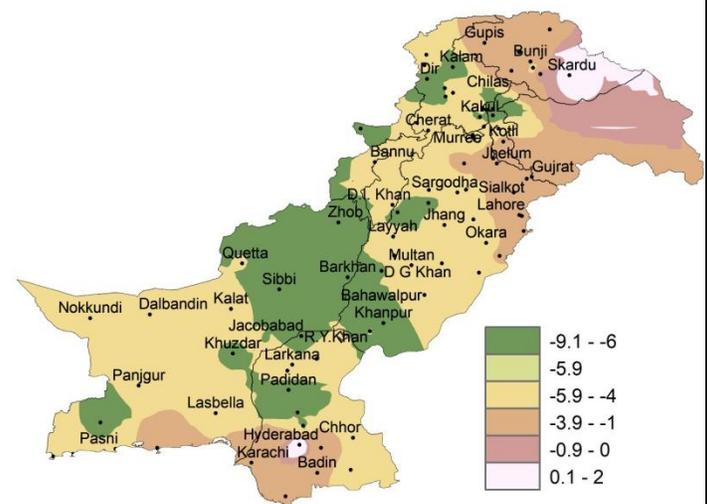
Rainfall reported as 57.2 mm during the decade; however weather remained cloudy for 10 days during the decade. Average relative humidity recorded as 60%. Mean day temperature was 19.7°C while night temperature recorded as 10.1°C with 60.0 hours bright sunshine duration. Wind speed recorded as 4.7 km/hr with mean wind direction *North westerly*.



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 (11<sup>th</sup> to 20<sup>th</sup> April, 2019)**

**2.6 Jhelum**

Rainfall reported as 40.4 mm during the decade; however weather remained cloudy for 10 days during the decade. Average relative humidity recorded as 55%. Mean day temperature was 31.5°C while night temperature recorded as 19.3°C with 75.4 hours bright sunshine duration. Wind speed recorded as 3.2 km/hr with mean wind direction *Northerly*.

**2.7 Lahore**

Rainfall reported as 52.4 mm during the decade; however weather remained cloudy for 09 days during the decade. Average relative humidity recorded as 56%. Mean day temperature was 31.5°C while night temperature recorded as 20.6°C with 65.1 hours bright sunshine duration. Wind speed recorded as 2.6 km/hr with mean wind direction *Westerly*.

**2.8 Sargodha**

Rainfall reported as 40.3 mm during the decade; however weather remained cloudy for 10 days during the decade. Average relative humidity recorded as 70%. Mean day temperature was 31.2°C while night temperature recorded as 19.8°C with 66.7 hours bright sunshine duration. Wind speed recorded 1.5 km/hr with mean wind direction *Easterly*.

**2.9 Multan**

Rainfall reported as 19.9 mm during the decade; however weather remained cloudy for 09 days during the decade. Average relative humidity recorded as 55%. Mean day temperature was 31.7°C while night temperature recorded as 19.4°C with 73.6 hours bright sunshine duration. Wind speed recorded 7.2 km/hr with mean wind direction *North-easterly*.

**2.10 Khanpur**

Rainfall reported as 11.2 mm during the decade; however weather remained cloudy for 07 days during the decade. Average relative humidity recorded as 50%. Mean day temperature was 34.5°C while night temperature recorded as 19.9°C with 83.0 hours bright sunshine duration. Wind speed recorded 7.3 km/hr with mean wind direction *North easterly*.

**2.11 Sakrand**

Dry weather reported during the decade; however weather remained cloudy for 05 days during the decade. Average humidity recorded as 44%. Mean day temperature was 35.4°C while night temperature recorded as 21.2°C with 93.8 hours bright sunshine duration. Wind speed recorded 4.0 km/hr with wind direction *Northerly*.

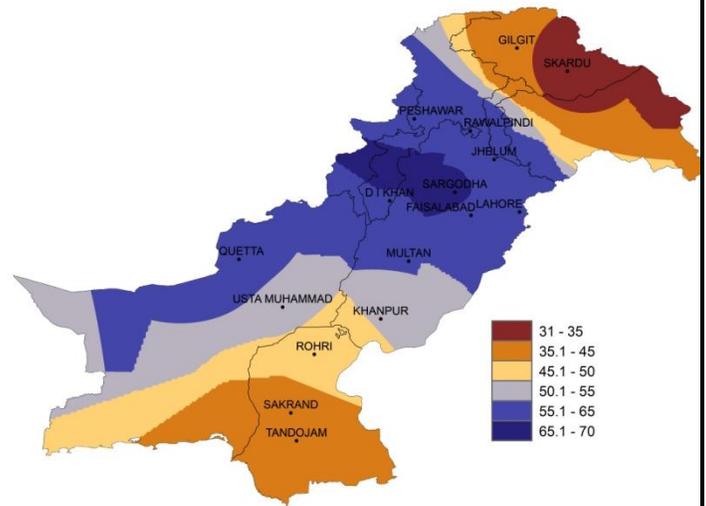


Figure.3: Relative Humidity in Percentage (%)

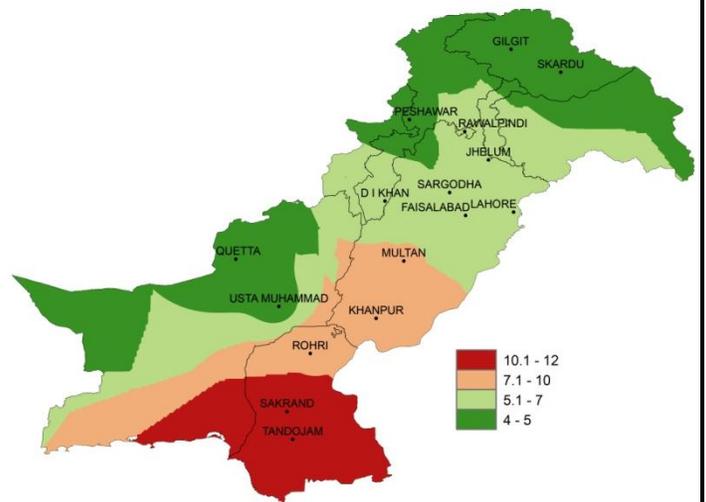


Figure.4: Reference Crop Evapotranspiration Eto (mm/day)

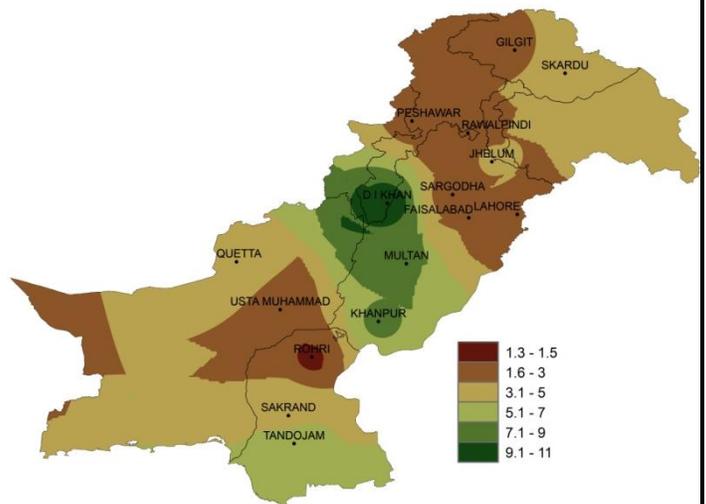


Figure 5: Wind Speed in kilometer per hour (km/h)

**2.12 Rohri**

Rainfall reported as 2.4 mm during the decade; however weather remained cloudy for 05 days during the decade. Average relative humidity recorded as 46%. Mean day temperature was 35.5°C while night temperature recorded as 20.0°C with 87.8 hours bright sunshine duration. Wind speed recorded 1.3 km/hr with wind direction *North easterly*.

**2.13 D.I. Khan**

Rainfall reported as 58.0 mm during the decade; however weather remained cloudy for 07 days during the decade. Average relative humidity recorded as 65%. Mean day temperature was 30.6°C while night temperature recorded as 17.5°C with 75.0 hours bright sunshine duration. Wind speed recorded as 10.3 km/hr with mean wind direction. *North easterly*.

**2.14 Peshawar**

Rainfall reported as 36.0 mm during the decade; however weather remained cloudy for 10 days during the decade. Average relative humidity recorded as 64%. Mean day temperature was 28.4°C while night temperature recorded as 18.0°C with 41.3 hours bright sunshine duration. Wind speed recorded as 2.0 km/hr with mean wind direction *North westerly*.

**2.15 Skardu**

Rainfall reported as 1.0 mm during the decade; however weather remained cloudy for 08 days during the decade. Average relative humidity recorded as 43%. Mean day temperature was 19.3°C while night temperature recorded as 6.8°C with 39.0 hours bright sunshine duration. Wind speed recorded as 4.8 km/hr with mean wind direction *east south easterly*.

**2.16 Gilgit**

Rainfall reported as 1.0 mm during the decade; however weather remained cloudy for 08 days during the decade. Average relative humidity recorded as 46%. Mean day temperature was 24.5°C while night temperature recorded as 11.3°C with 33.4 hours bright sunshine duration. Wind speed recorded as 2.5 km/hr with mean wind direction *Westerly*.

**Nine Days Weather Advisory for Farmers (22<sup>nd</sup> to 30<sup>th</sup> April, 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 is expected in Baluchistan, Sindh and southern Punjab during the start of the decade.

**3.3 Rain Forecast**

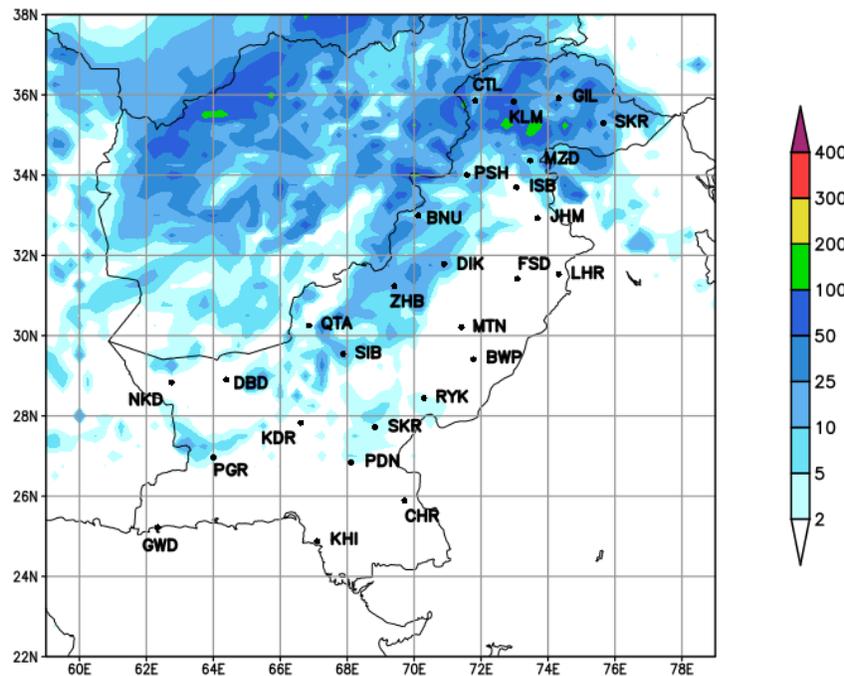
- ❖ **Punjab:** Mainly dry weather is expected. However, rain/thunderstorm is expected at isolated places in Rawalpindi, Gujranwala, Sargodha, Faisalabad, Lahore, Multan, D.G.Khan, Sahiwal, Bahawalpur divisions and Islamabad from 24<sup>th</sup> to 27<sup>th</sup> of the current decade.
- ❖ **Khyber Pakhtunkhwa:** Rain/thunderstorm is expected at scattered places during the current decade. Hailstorm is also expected at isolated places in upper Punjab, upper Khyber Pakhtunkhwa and Kashmir during the period.
- ❖ **Sindh:** Mainly hot and dry weather is expected during the current decade.
- ❖ **Baluchistan:** Mainly dry weather is expected. However, rain/thunderstorm is expected at isolated places of Quetta, Kalat, Zhob, Nasirabad & Sibbi divisions from 24<sup>th</sup> to 27<sup>th</sup> of the current decade
- ❖ **Gilgit-Baltistan:** Rain/thunderstorm is expected at scattered places in the province during the current decade.
- ❖ **Kashmir:** Rain/thunderstorm is expected at scattered places in the province during the current decade.

**3.4 Advisory for Farmers**

- ❖ Wheat crop is at heading-maturity stages in northern half of the country. Farmers are advised to schedule their harvesting by keeping in view the weather forecast.
- ❖ 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.
- ❖ 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.

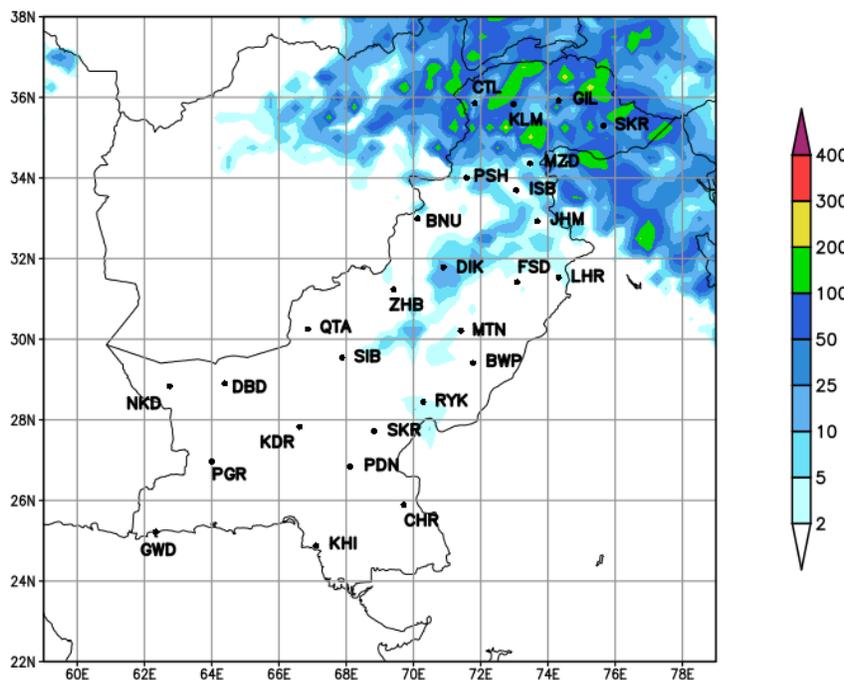
**4.1 Precipitation Outlook (22<sup>nd</sup> to 24<sup>th</sup> April, 2019)**

The forecast for the first three days (22<sup>nd</sup> to 24<sup>th</sup>) of the 3<sup>rd</sup> decade of April, 2019 shows that light to moderate rainfall is expected in GB, KP, Kashmir and scattered places of Balochistan. However, light rainfall is expected in northern Sindh and its adjoining areas.



**4.2 Precipitation Outlook (25<sup>th</sup> to 30<sup>th</sup> April, 2019)**

The forecast for the last six days (25<sup>th</sup> to 30<sup>th</sup>) of the 3<sup>rd</sup> decade of April, 2019 shows that light to moderate rainfall with isolated areas of heavy rainfall is expected in GB, KP, Kashmir, Potohar region and some areas of north eastern Balochistan and Punjab. However, hot and dry weather is expected in elsewhere in 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 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 (بذر یعنی ٹیکنالوجی کا استعمال اور بہتر نظم و نسق) سے غربت میں کمی اور کسانوں کی زندگی میں خوشحالی لائی جاسکتی ہے۔

(ایگپ پاکستان 2012-2014)