

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 rest of the agricultural plains of country during the last decade.
- ❖ Highest amount of rainfall recorded as 21.6 mm at Garhi Dopatta during the last decade.
- ❖ Lowest minimum temperature recorded as -6.0°C at Kalam during the last decade.
- ❖ Mainly dry weather is expected. However, rain/thunderstorm is expected at isolated places in Punjab (Sargodha and Rawalpindi divisions), Khyber Pakhtunkhwa (Malakand, Hazara, Peshawar and Kohat divisions), some parts of Balochistan, Gilgit-Baltistan and Kashmir during the first half of 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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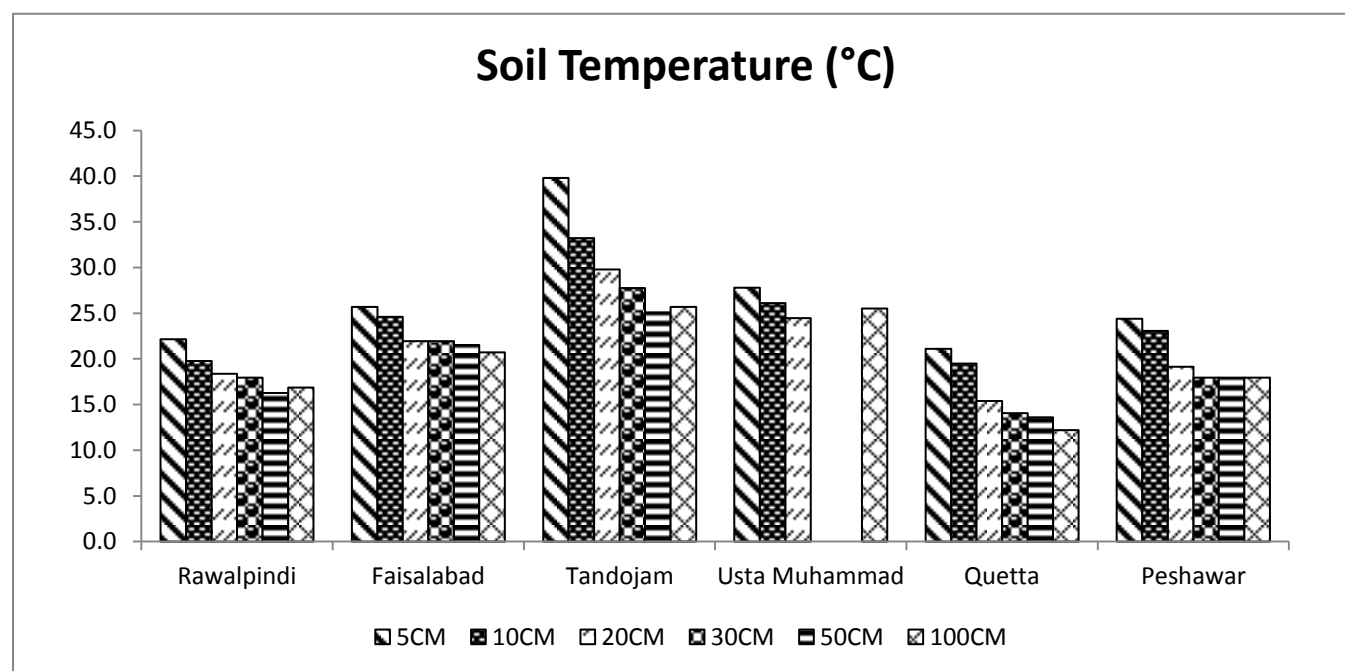
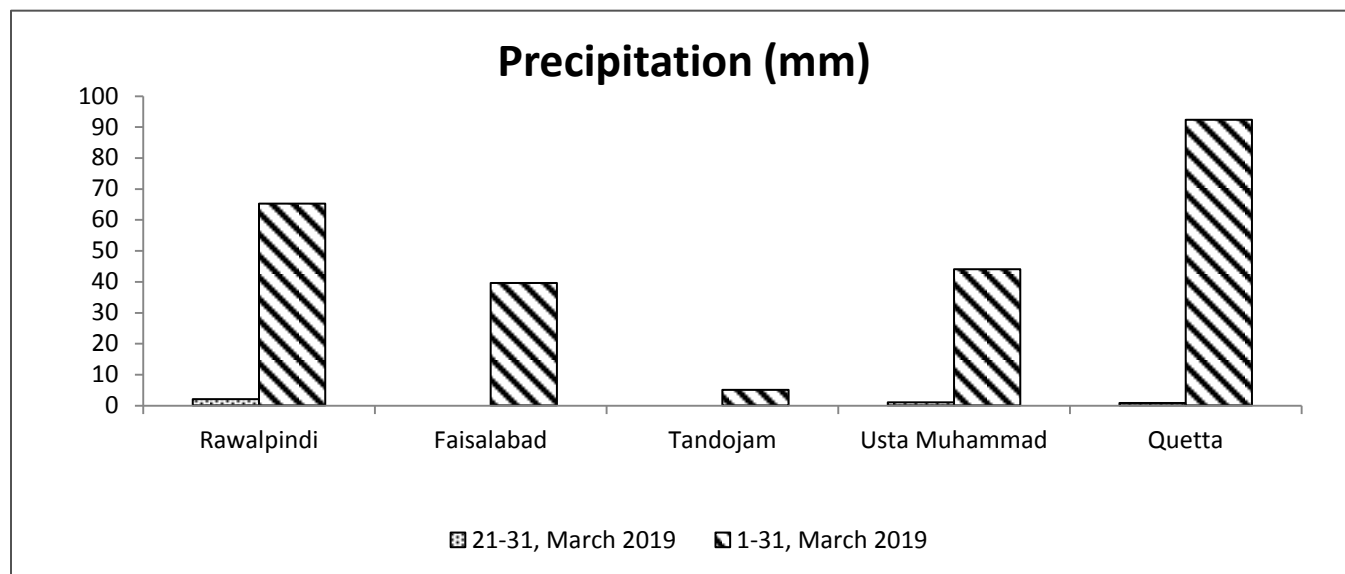
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Meteorological Conditions during 3rd Decade of March, 2019

Sr. No.	Station	Precipitation (mm)			Air Temperature (°C)			Soil Temperatures (°C)						R.H (%)	Sunshine Duration(hours)	Wind Speed (km/hr)	ET _o (mm/day)
		Normal	Actual	Dep	T _{max} Dep	T _{min} Dep	Mean	5cm	10cm	20cm	30cm	50cm	100cm				
1	Rawalpindi	2.7	2.0	-0.7	0.2	-2.3	19.3	22.2	19.8	18.4	18.0	16.3	16.9	53	74.3	2.6	1.8
2	Faisalabad	0.6	0.0	-0.6	-0.6	-0.1	22.9	25.7	24.6	22.0	22.0	21.5	20.7	50	81.5	2.2	2.0
3	Jhelum	1.6	0.0	-1.6	0.1	-0.7	22.4	24.9	22.9	21.0	19.8	19.9	***	51	89.7	3.3	2.2
4	Lahore	1.7	0.2	-1.5	-0.3	-1.0	23.7	26.3	25.1	22.5	21.6	***	20.5	53	78.8	2.7	2.1
5	Sargodha	1.0	3.5	2.5	-0.4	0.3	23.7	28.8	26.7	22.6	21.9	***	20.3	54	72.2	2.2	1.9
6	Multan	1.2	0.2	-1.0	-0.6	0.6	24.5	***	***	***	***	***	***	48	92.6	4.7	3.0
7	Khanpur	0.5	0.0	-0.5	-1.0	1.2	25.4	***	26.1	25.7	25.6	24.9	24.1	52	90.5	4.7	3.2
8	Tandojam	0.0	0.0	0.0	0.1	-0.3	27.1	39.8	33.2	29.8	27.8	25.1	25.7	44	106.5	4.5	3.9
9	Sakrand ☆	0.1	0.0	-0.1	-0.9	0.3	25.9	44.7	***	***	***	***	26.0	47	108.4	2.4	2.9
11	Rohri ☆	0.6	1.7	1.1	-1.0	-0.2	27.0	***	***	***	***	***	***	43	97.3	4.0	3.3
12	D.I Khan	0.8	3.0	2.2	0.5	0.0	23.0	24.1	21.6	20.7	20.7	9.8	***	54	86.2	8.3	3.6
13	Peshawar	2.4	0.0	-2.4	0.9	-1.4	20.8	24.4	23.1	19.2	18.0	18.0	18.0	46	73.7	2.1	1.7
14	Usta M.	0.5	1.0	0.5	-2.1	0.0	24.8	27.8	26.1	24.5	***	***	25.5	55	***	2.1	2.3
15	Quetta	0.9	0.8	-0.1	-1.3	2.3	15.3	21.1	19.5	15.4	14.1	13.6	12.2	39	88.2	6.1	2.7
16	Skardu	0.5	19.8	19.3	-15.9	11.2	8.0	***	***	***	***	***	***	33	64.7	1.1	1.1
17	Gilgit	0.2	14.80	14.6	-0.6	0.6	14.5	***	***	***	***	***	***	29	62.4	4.7	2.1

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**. T_{min} & T_{max} stands for minimum and maximum temperatures respectively. **ET_o** 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 (21st to 31st March, 2019)

Light to moderate rainfall reported from Khyber Pakhtunkhwa & 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 rainfall reported from most of the agricultural plains of the Punjab. Highest rainfall reported from Murree, Joharabad & Bhakhar. Decadal maximum and minimum both dropped below normal by 0.4°C & 0.3°C respectively, in the province. Whereas values of relative humidity, sunshine hour, wind speed & ETo were recorded as 52%, 82.8 hrs, 3.2km/hr and 2.3 mm/day respectively.

1.2 Sindh

Light rainfall reported from most of the agricultural plains of the Sindh. Highest rainfall reported from Larkana, Jacobabad & Sukkur. Decadal maximum and minimum both dropped below normal by 0.6°C & 0.1°C respectively, in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 45%, 104.1hrs, 3.6km/hr and 2.4 mm/day respectively.

1.3 Khyber Pakhtunkhwa

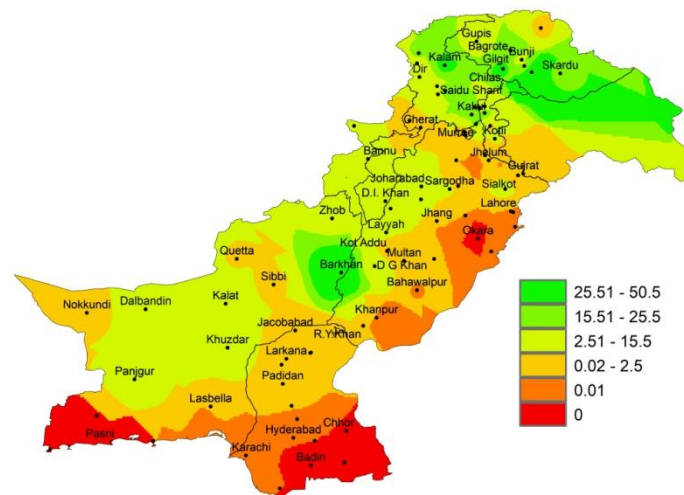
Light to moderate rainfall reported from most of the agricultural plains of Khyber Pakhtunkhwa. Highest rainfall reported from Malam Jabba, Kalam & Balakot. Decadal maximum raised above normal by 0.7°C & minimum dropped below normal by 0.7°C respectively. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 50%, 80.0hrs, 5.2km/hr and 2.7mm/day respectively.

1.4 Balochistan

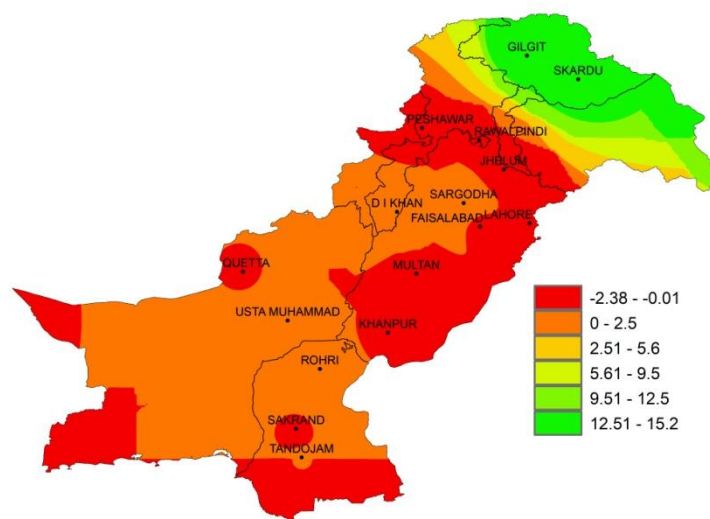
Light rainfall reported from most of the place from agricultural plains of the Balochistan. Highest rainfall reported from Barkhan, Kalat & Zob. Decadal maximum dropped below normal by 1.7°C & minimum raised above normal by 1.2°C respectively. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 47%, 88.2hrs, 4.1km/hr and 2.50mm/day respectively.

1.5 Gilgit-Baltistan and Azad Jammu & Kashmir

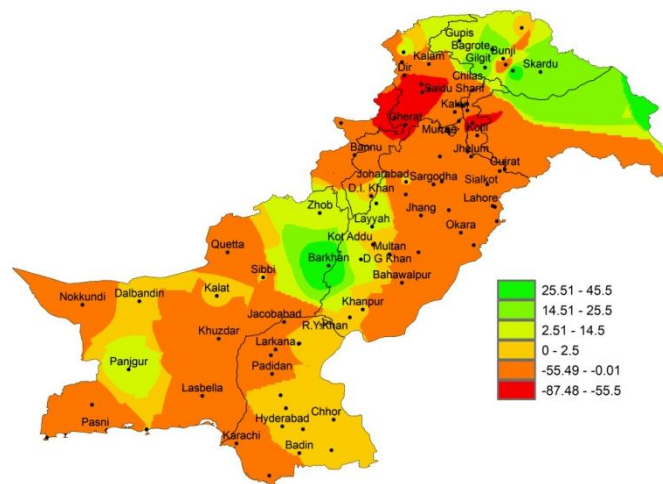
Light to moderate rainfall reported from most of the agricultural plains G.B & Kashmir. Highest rainfall reported from, Skardu, Astore & Chilas. Decadal maximum dropped below normal by 8.3°C & minimum raised above normal by 5.9°C respectively, in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 31%, 63.6hrs, 2.9km/hr and 1.6 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** **(21st to 31st March, 2019)**

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

Rainfall reported as 2.0 mm during the decade; however weather remained cloudy for 02 days during the decade. Average relative humidity recorded as 53.3%. Mean day temperature was 28.2°C while night temperature recorded as 10.4°C with 74.3 hours bright sunshine duration. Wind speed recorded as 2.6 km/hr with mean wind direction *Westerly*.

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

Dry weather reported during the decade; however weather remained cloudy for 09 days during the decade. Average relative humidity recorded as 50%. Mean day temperature was 30.2°C while night temperature recorded as 15.5°C with 81.5 hours bright sunshine duration. Wind speed recorded as 2.2 km/hr with mean wind direction *westerly*.

Wheat: *Very good condition, Maturity.*

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

Dry weather reported during the decade; however weather remained cloudy for 04 day during the decade. Average relative humidity recorded as 44%. Mean day temperature was 36.7°C while night temperature recorded as 17.4°C with 106.5 hours bright sunshine duration. Wind speed recorded as 4.5 km/h with mean wind direction *Northerly*.

Wheat: *Crop is harvested on 27-03-2019.*

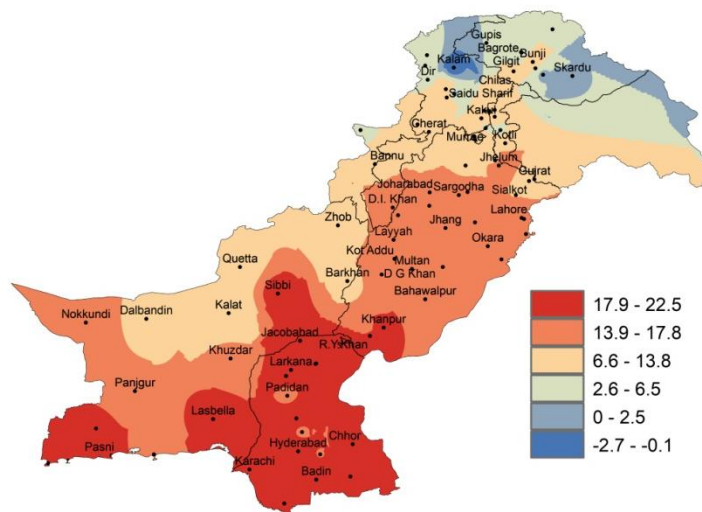
2.4 **RAMC, Usta Muhammad (Eastern Baluchistan)**

Rainfall reported as 1.0 mm during the decade; however weather remained cloudy for 09 days during the decade. Average relative humidity recorded as 55%. Mean day temperature was 32.5°C while night temperature recorded as 17.0°C. Wind speed recorded as 2.1 km/h with mean wind direction *North easterly*.

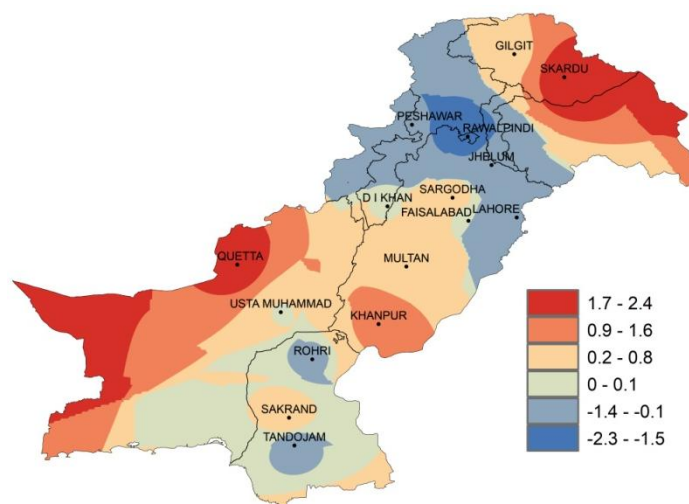
Wheat: *Good condition, Flowering.*

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

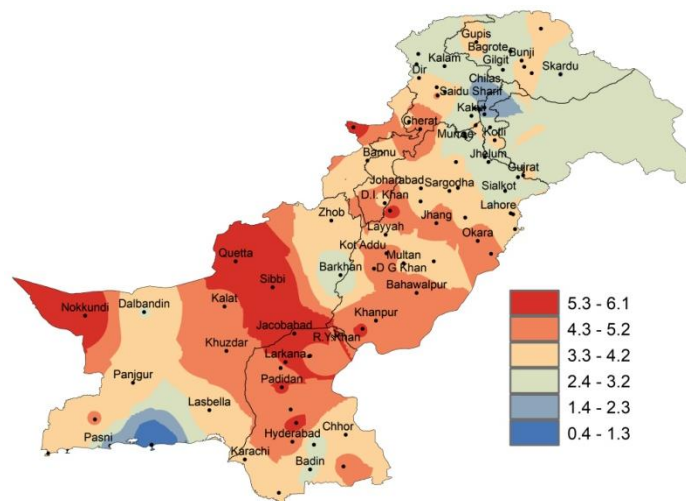
Rainfall reported as 0.8mm during the decade; however weather remained cloudy for 11 days during the decade. Average relative humidity recorded as 39%. Mean day temperature was 21.0°C while night temperature recorded as 9.5°C with 88.2 hours bright sunshine duration. Wind speed recorded as 6.1 km/hr 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 (21st to 31st March, 2019)

2.6 Jhelum

Rainfall reported as Trace (Not measureable) during the decade; however weather remained cloudy for 10 days during the decade. Average relative humidity recorded as 51%. Mean day temperature was 30.0°C while night temperature recorded as 14.8°C with 89.7 hours bright sunshine duration. Wind speed recorded as 3.3km/hr with mean wind direction *variable*.

2.7 Lahore

Rainfall reported as 0.2mm during the decade; however weather remained cloudy for 09 days during the decade. Average relative humidity recorded as 53%. Mean day temperature was 29.7 °C while night temperature recorded as 17.7°C with 78.8 hours bright sunshine duration. Wind speed recorded as 2.7 km/hr with mean wind direction *Westerly*.

2.8 Sargodha

Rainfall reported as 3.5 mm during the decade; however weather remained cloudy for 09 days during the decade. Average relative humidity recorded as 54%. Mean day temperature was 30.6°C while night temperature recorded as 16.8°C with 72.2 hours bright sunshine duration. Wind speed recorded 1.2 km/hr with mean wind direction *Easterly*.

2.9 Multan

Rainfall reported as 0.2mm during the decade; however weather remained cloudy for 11 days during the decade. Average relative humidity recorded as 48%. Mean day temperature was 31.4°C while night temperature recorded as 17.5°C with 92.6 hours bright sunshine duration. Wind speed recorded 4.7km/hr with mean wind direction Rainfall reported as 0.2mm during the decade Rainfall reported as 0.2mm during the decade *variable*.

2.10 Khanpur

Dry weather reported during the decade; however weather remained cloudy for 11 days during the decade. Average relative humidity recorded as 52%. Mean day temperature was 32.8°C while night temperature recorded as 18.0°C with 90.5 hours bright sunshine duration. Wind speed recorded 4.7 km/hr with mean wind direction *North easterly*.

2.11 Sakrand

Dry weather reported during the decade; however weather remained cloudy for 06 days during the decade Average humidity recorded as 47%. Mean day temperature was 34.5°C while night temperature recorded as 17.3°C with 108.4 hours bright sunshine duration. Wind speed recorded 2.4km/hr with wind direction *Southerly*.

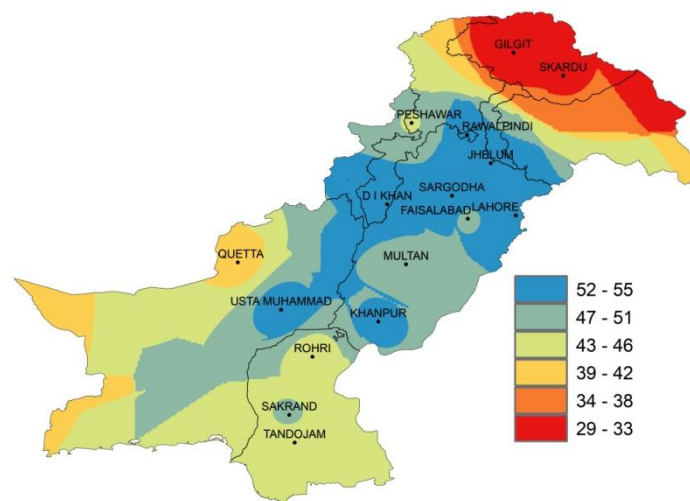


Figure.3: Relative Humidity in Percentage (%)

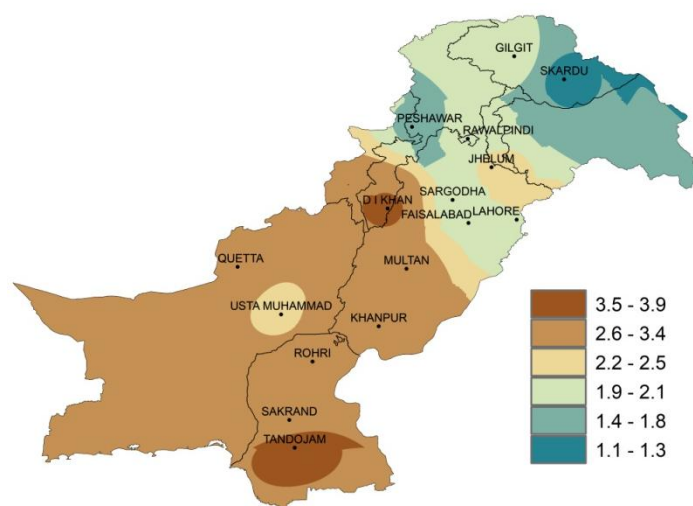


Figure.4: Reference Crop Evapotranspiration ETo (mm/day)

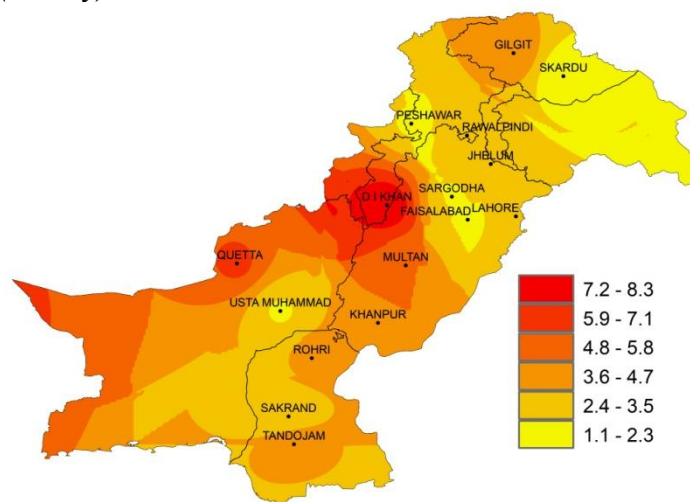


Figure 5: Wind Speed in kilometer per hour (km/h)

2.12 Rohri

Rainfall reported as 1.7 mm during the decade; however weather remained cloudy for 04 days during the decade. Average relative humidity recorded as 43%. Mean day temperature was 34.1°C while night temperature recorded as 19.8°C with 97.0 hours bright sunshine duration. Wind speed recorded 4.0 km/hr with wind direction *North easterly*.

2.13 D.I. Khan

Rainfall reported as 3.0 mm during the decade; however weather remained cloudy for 09 days during the decade. Average relative humidity recorded as 54%. Mean day temperature was 30.5°C while night temperature recorded as 15.5°C with 86.2 hours bright sunshine duration. Wind speed recorded as 8.3 km/hr with mean wind direction. *North easterly*.

2.14 Peshawar

Rainfall reported as 0.02 mm during the decade; however weather remained cloudy for 11 days during the decade. Average relative humidity recorded as 46%. Mean day temperature was 28.4°C while night temperature recorded as 13.2°C with 73.7 hours bright sunshine duration. Wind speed recorded as 2.1 km/hr with mean wind direction *North westerly*.

2.15 Skardu

Rainfall reported as 19.8 mm during the decade; however weather remained cloudy for 08 days during the decade. Average relative humidity recorded as 44%. Mean day temperature was 14.9°C while night temperature recorded as 2.4 °C with 64.7 hours bright sunshine duration. Wind speed recorded as 1.8 km/hr with mean wind direction *westerly south westerly*.

2.16 Gilgit

Rainfall reported as 14.8 mm during the decade; however weather remained cloudy for 10 days during the decade. Average relative humidity recorded as 35%. Mean day temperature was 21.5°C while night temperature recorded as 7.5 °C with 62.4 hours bright sunshine duration. Wind speed recorded as 4.7 km/hr with mean wind direction *Westerly*.

Ten Days Weather Advisory for Farmers (1st to 10th 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 Sargodha and Rawalpindi divisions during the 2nd half of the current decade.

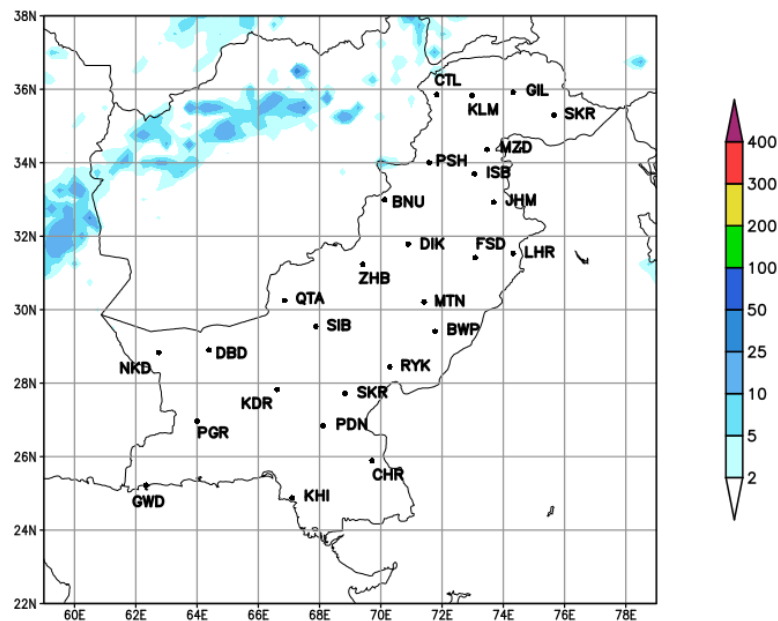
- ❖ **Khyber Pakhtunkhwa:** Mainly dry weather is expected. However, rain/thunderstorm is expected in Malakand, Hazara, Peshawar and Kohat divisions during the 2nd half of the current decade.
- ❖ **Sindh:** Mainly dry and hot weather is expected in the province during the decade.
- ❖ **Baluchistan:** Mainly dry weather is expected. However, rain/thunderstorm is expected at isolated places in the province during the 2nd half of the current decade.
- ❖ **Gilgit-Baltistan:** Mainly dry weather is expected. However, rain/thunderstorm is expected in the province during the 2nd half of the current decade.
- ❖ **Kashmir:** Mainly cloudy/dry weather is expected. However, rain/thunderstorm is expected during the 2nd half 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.

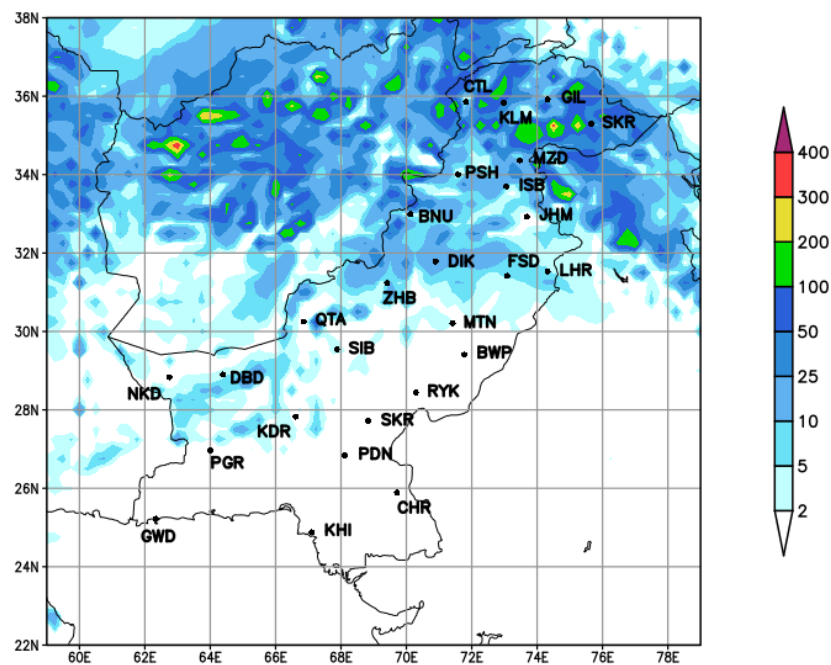
4.1 Precipitation Outlook (1st to 3rd April, 2019)

The forecast for the first three days (1st to 3rd) of the 1st decade of April, 2019 shows that dry weather may prevail in rest of the country.



4.2 Precipitation Outlook (4th to 10th April, 2019)

The forecast for the last seven days (4th to 10th) of the 1st decade of April, 2019 shows that light to moderate rainfall is expected in GB, Kashmir, KP, central & northern Balochistan and Punjab.



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 (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)