

Decadal Agromet Bulletin of Pakistan



Highlights....

- ❖ Light to moderate rainfall reported from different parts of Punjab however light rainfall reported from few parts of K.P, Balochistan, Sindh, G.B and Kashmir during the last decade.
- ❖ Highest amount of rainfall recorded as 19.9 mm at Rahim Yar Khan during the last decade.
- ❖ Lowest minimum temperature recorded as -12.0°C at Kalat during the last decade.
- ❖ Smoggy conditions persisted in the plain areas of upper Sindh and Punjab.
- ❖ Mainly cold and cloudy weather is expected in most parts of the country during the current decade, however light to moderate rainfall is expected in Punjab, upper KP, G.B & Kashmir.
- ❖ Smog may be increased in the central parts of the country due to dry weather.
- ❖ Farmers are advised to schedule the irrigation plans in accordance with the expected weather, mentioned during the decade.
- ❖ Farmers are advised to complete sowing of the late varieties of Rabi crops in order to utilize the available moisture.

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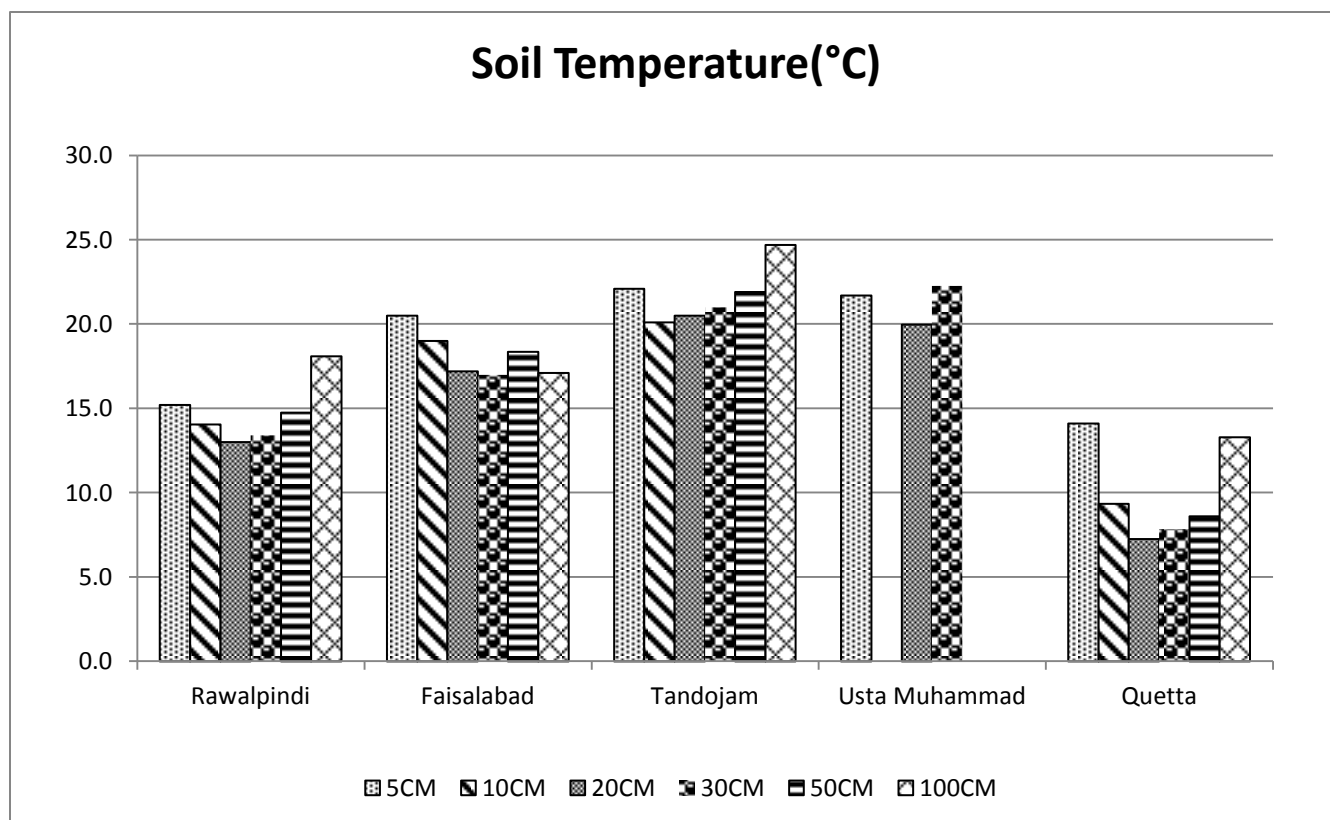
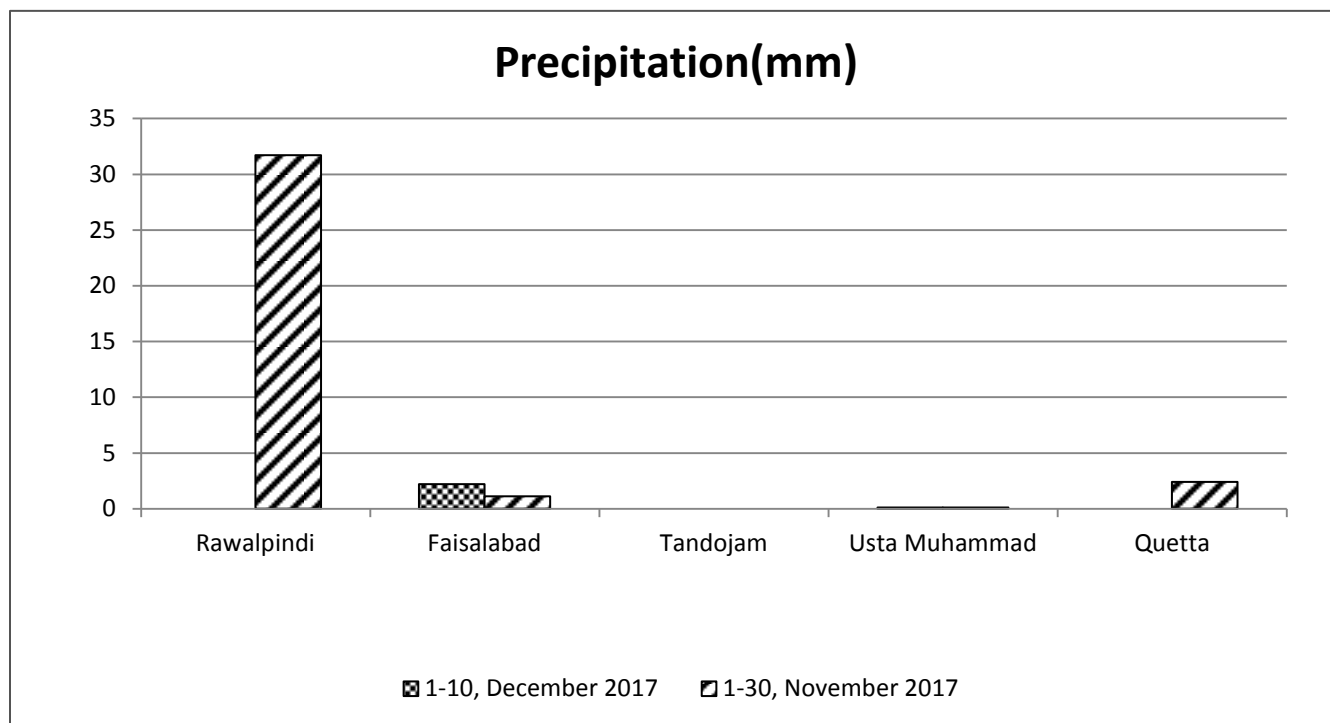
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Meteorological Conditions during 1st Decade of December, 2017

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	1.4	0.0	-1.4	1.7	-0.6	13.8	15.2	14.1	13.0	13.4	14.8	18.1	61	81.6	2.4	1.5
2	Faisalabad	0.5	2.2	1.7	2.1	-1.9	15.4	20.5	19.0	17.2	17.0	18.4	17.1	50	75.1	2.0	1.7
3	Jhelum	1.1	0.1	-1.0	0.6	-2.1	14.9	16.2	15.1	14.5	15.3	17.0	***	56	80.6	0.1	0.9
4	Lahore	0.1	0.0	-0.1	1.0	-2.0	16.6	16.5	16.2	15.8	16.1	***	20.9	53	81.2	0.5	1.2
5	Sargodha	0.9	0.1	-0.8	1.7	-0.2	16.5	20.3	18.9	17.8	18.6	***	21.9	56	74.3	0.7	1.2
6	Multan	0.5	9.7	9.2	-0.1	0.2	16.0	***	***	***	***	***	***	46	75.9	1.3	1.5
7	Khanpur	0.1	13.6	13.5	0.9	-2.5	15.4	***	17.0	17.8	18.8	20.3	23.1	54	73.8	1.1	1.5
8	Tandojam	0.3	0.0	-0.3	-1.2	-2.5	16.8	22.1	20.1	20.5	21.0	21.9	24.7	49	77.5	5.2	2.9
9	Sakrand ☆	1.5	0.0	-1.5	0.9	0.8	17.2	21.5	***	***	***	***	27.5	47	82.1	7.0	3.3
11	Rohri	1.1	0.0	-1.1	0.4	-2.4	17.0	***	***	***	***	***	***	45	78.6	1.7	1.8
12	D.I Khan	0.3	0.0	-0.3	2.4	0.4	16.3	17.7	17.0	17.0	18.2	8.8	22.9	46	83.2	6.7	3.0
13	Peshawar	0.9	0.0	-0.9	1.3	-1.9	13.9	15.1	14.4	12.9	14.7	16.5	19.3	60	58.0	0.8	1.0
14	Usta .M	1.2	0.1	-1.1	0.5	0.2	16.3	21.7	***	20.0	22.3	***	***	59	***	0.6	1.5
15	Quetta	0.8	0.0	-0.8	-0.5	-0.2	6.7	14.1	9.4	7.3	7.9	8.6	13.3	27	97.4	4.6	2.0
16	Skardu	0.6	0.0	-0.6	2.6	-0.3	3.5	***	***	***	***	***	***	58	44.9	0.4	0.7
17	Gilgit	0.3	0.0	-0.3	2.1	-2.0	6.3	***	***	***	***	***	***	49	52.8	1.1	0.8

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 December, 2017



Past Weather (1st to 10th December, 2017)

Light to moderate rainfall reported from different parts of Punjab however light rainfall reported from few parts of K.P, Baluchistan, Sindh, G.B and Kashmir during the last decade.

1.1 Punjab

Light to moderate rainfall reported from agricultural plains of Punjab. Chief amount of rainfall is received at Rahim Yar Khan, Khanpur & Bahawalpur. Decadal maximum raised above normal by 1.1°C & minimum departure dropped below normal by 1.3°C, in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 54%, 77.5hrs, 1.2km/hr and 1.4mm/day respectively.

1.1 Sindh

Light rainfall reported from few agricultural plains of Sindh. Chief amount of rainfall is received at Larkana, Dadu & Sukkur. Decadal maximum remained normal & minimum departure dropped below normal by 1.4°C, in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 47%, 79.4hrs, 4.6km/hr and 2.7mm/day respectively.

1.2 Khyber Pakhtunkhwa (KP)

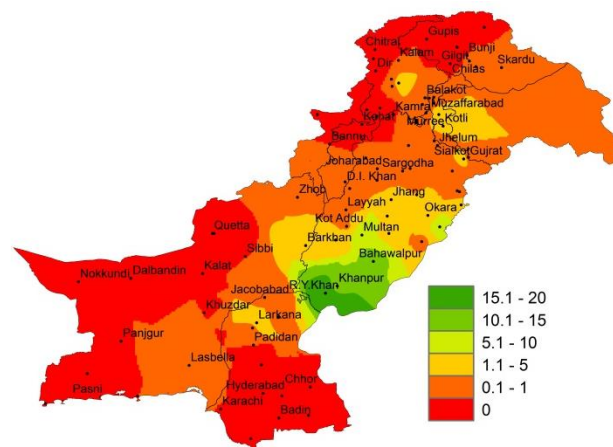
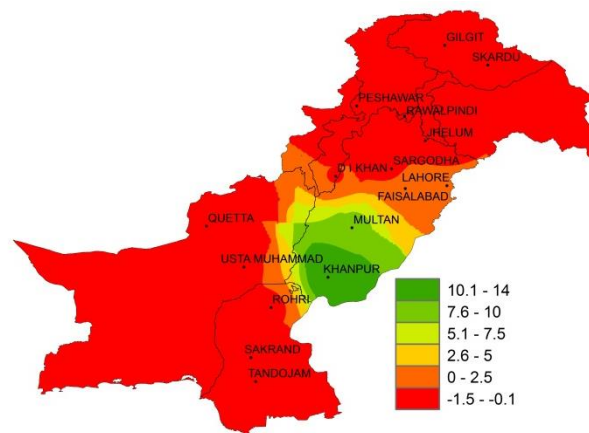
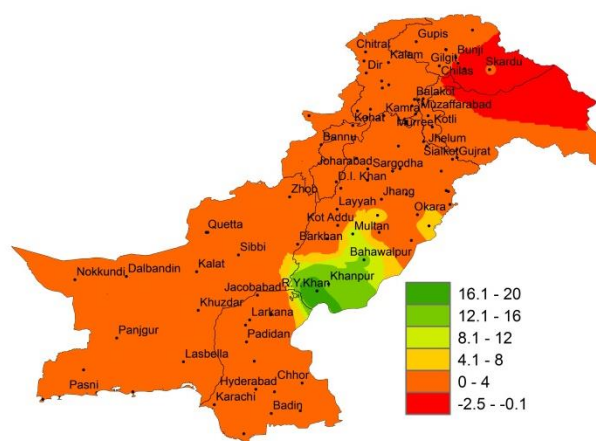
Light rainfall reported from few agricultural plains of KP. Chief amount of rainfall is received at Malam Jabba, Kakul & D.I.Khan. Decadal maximum raised above normal by 1.9°C & minimum departure dropped below normal by 0.8°C, in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 53%, 70.6hrs, 3.8km/hr and 2.0mm/day respectively.

1.3 Balochistan

Light rainfall reported from few agricultural plains of Balochistan. Chief amount of rainfall is received Barkhan, Lasbella & Zhob. Decadal maximum & minimum departure both remained normal respectively, in province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 43%, 97.4 hrs, 2.6km/hr and 1.8mm/day respectively.

1.4 Gilgit-Baltistan and Azad Jammu & Kashmir

Light rainfall reported from few places of G.B & Kashmir. Chief amount of rainfall is received at Rawalakot, Kotli & Astore. Decadal maximum raised above normal by 2.4°C & minimum departure dropped below normal by 1.2°C, in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 54%, 48.9hrs, 0.8km/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 (1st to 10th December, 2017)

2.1 RAMC, Rawalpindi (Potohar region)

Dry weather reported during the decade; however weather remained cloudy for 04days during the decade. Average relative humidity recorded as 61%. Mean day temperature was 23.4°C while night temperature recorded as 4.2°C with 81.6hours bright sunshine duration. Wind speed recorded as 2.4km/hr with mean wind direction *westerly*.

2.2 RAMC, Faisalabad (Central Punjab)

Rainfall reported as 2.2mm during the decade; however weather remained cloudy for 02days during the decade. Average relative humidity recorded as 50%. Mean day temperature was 25.7°C while night temperature recorded as 5.1°C with 75.10hours bright sunshine duration. Wind speed recorded as 2.0km/hr with mean wind direction *westerly*.

Wheat: Good condition, germination stage.

2.3 RAMC, Tandojam (Lower Sindh)

Dry weather reported during the decade; however weather remained cloudy for 04days during the decade. Average relative humidity recorded as 49%. Mean day temperature was 25.2°C while night temperature recorded as 8.3°C with 77.5hours bright sunshine duration. Wind speed recorded as 5.2km/h with mean wind direction *northerly*.

Wheat (Sindhu): Good condition, third leaf stage.

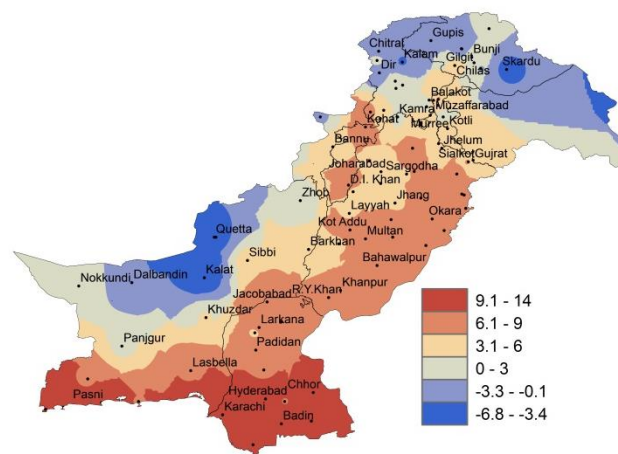
2.4 RAMC, Usta Muhammad (Eastern Balochistan)

Rainfall reported as Trace (not measureable) during the decade; however weather remained cloudy for 02days during the decade. Average relative humidity recorded as 59%. Mean day temperature was 24.4°C while night temperature recorded as 8.2°C. Wind speed recorded as 0.6km/h with mean wind direction *westerly*.

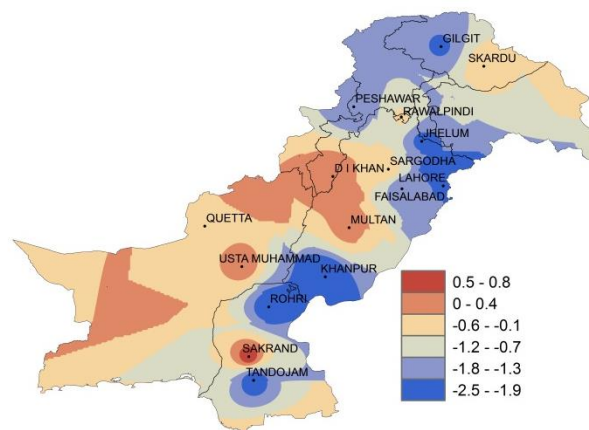
Wheat: Good condition, third leaf stage.

2.5 RAMC, Quetta (Northern Balochistan)

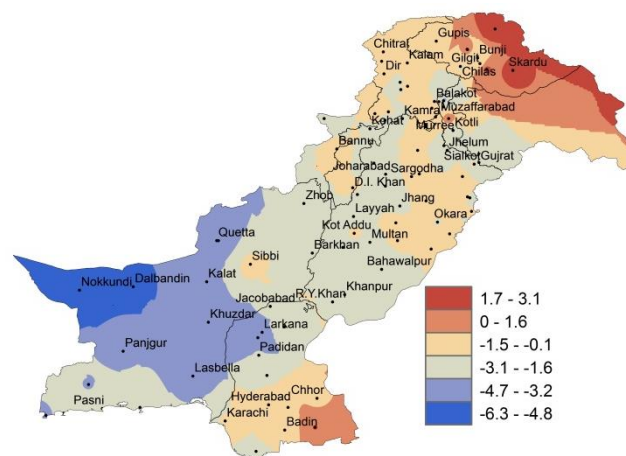
Dry weather reported during the decade; however weather remained cloudy for 04days during the decade. Average relative humidity recorded as 27%. Mean day temperature was 14.3°C while night temperature recorded as -1.0°C with 97.4hours bright sunshine duration. Wind speed recorded as 4.6km/hr with mean 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 (1st to 10th December, 2017)

2.6 Jhelum

Rainfall reported as Trace (not measureable) during the decade; however weather remained cloudy for 04days during the decade. Average relative humidity recorded as 56%. Mean day temperature was 24.3°C while night temperature recorded as 5.4°C with 80.8hours bright sunshine duration. Wind speed recorded as 0.1km/hr with mean wind direction *north westerly*.

2.7 Lahore

Dry weather reported during the decade; however weather remained cloudy for 04days during the decade. Average relative humidity recorded as 53%. Mean day temperature was 24.5°C while night temperature recorded as 8.6°C with 81.2hours bright sunshine duration. Wind speed recorded as 0.5km/hr with mean wind direction *north westerly*.

2.8 Sargodha

Rainfall reported as Trace (not measureable) during the decade; however weather remained cloudy for 03days during the decade. Average relative humidity recorded as 56%. Mean day temperature was 25.3°C while night temperature recorded as 7.7°C. Wind speed recorded 0.74km/hr with mean wind direction *variable*.

2.9 Multan

Rainfall reported as 9.7mm during the decade; however weather remained cloudy for 06days during the decade. Average relative humidity recorded as 46%. Mean day temperature was 24.2°C while night temperature recorded as 7.7°C with 75.9hours bright sunshine duration. Wind speed recorded 1.3km/hr with mean wind direction *southerly*.

2.10 Khanpur

Rainfall reported as 13.6mm during the decade; however weather remained cloudy for 05days during the decade. Average relative humidity recorded as 54%. Mean day temperature was 24.7°C while night temperature recorded as 6.0°C with 73.8hours bright sunshine duration. Wind speed recorded 1.1km/hr with mean wind direction *variable*.

2.11 Sakrand

Dry weather reported during the decade; however weather remained cloudy for 04 days during the decade. Average relative humidity recorded as 47%. Mean day temperature was 24.7°C while night temperature recorded as 9.7°C with 82.1hours bright sunshine duration. Wind speed recorded 7.0km/hr with wind direction *northerly*.

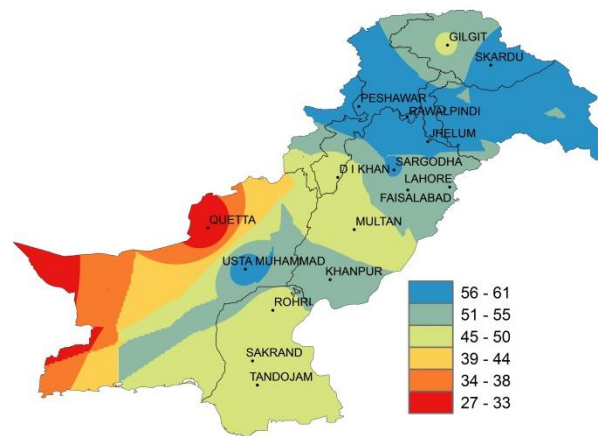


Figure.3: Relative Humidity in Percentage (%)

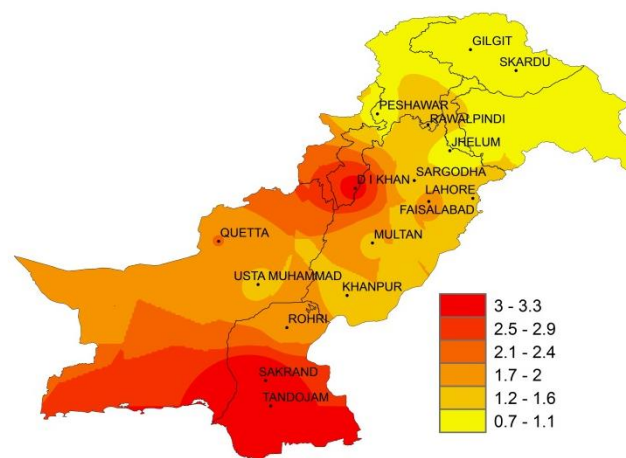


Figure.4: Reference Crop Evapotranspiration ETo (mm/day)

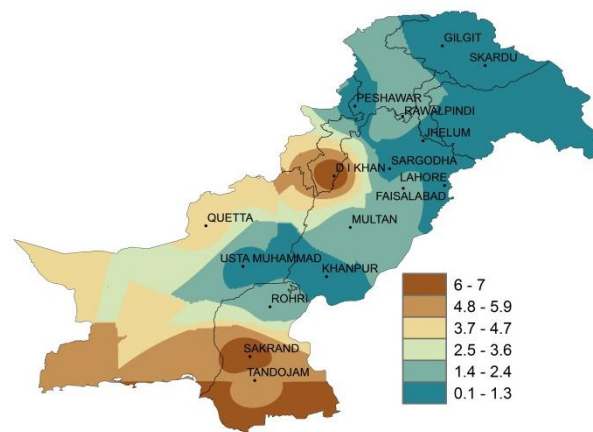


Figure 5: Wind Speed in kilometer per hour (km/h)

2.12 Rohri

Dry weather reported during the decade; however weather remained cloudy for 02days during the decade. Average relative humidity recorded as 45%. Mean day temperature was 24.2°C while night temperature recorded as 9.7°C with 78.6hours bright sunshine duration. Wind speed recorded 1.7km/hr with wind direction *north easterly*.

2.13 D.I. Khan

Dry weather reported during the decade; however weather remained cloudy for 03days during the decade. Average relative humidity recorded as 46%. Mean day temperature was 25.6°C while night temperature recorded as 7.0°C with 83.2hours bright sunshine duration. Wind speed recorded as 6.7km/hr with mean wind direction *north westerly*.

2.14 Peshawar

Dry weather reported during the decade; however weather remained cloudy for 06days during the decade. Average relative humidity recorded as 60%. Mean day temperature was 22.9°C while night temperature recorded as 4.9°C with 58.0hours bright sunshine duration. Wind speed recorded as 0.8km/hr with mean wind direction *variable*.

2.15 Skardu

Dry weather reported during the decade; however weather remained cloudy for 06days during the decade. Average relative humidity recorded as 58%. Mean day temperature was 11.6°C while night temperature recorded as -4.6°C with 44.9hours bright sunshine duration. Wind speed recorded as 0.4km/hr with mean wind direction *north easterly*.

2.16 Gilgit

Dry weather reported during the decade; however weather remained cloudy for 02days during the decade. Average relative humidity recorded as 49%. Mean day temperature was 15.9°C while night temperature recorded as -3.3°C with 52.8hours bright sunshine duration. Wind speed recorded as 1.11km/hr with mean wind direction *south westerly*.

Ten Days Weather Advisory for Farmers **(11th to 20th December, 2017)**

3.1 Temperature Forecast

Night temperatures are expected to drop slightly (1-2°C) and day temperatures are likely to be slightly normal in most parts 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; however dust/sand storms may occur in southern Punjab and upper Sindh.

3.3 Rain Forecast

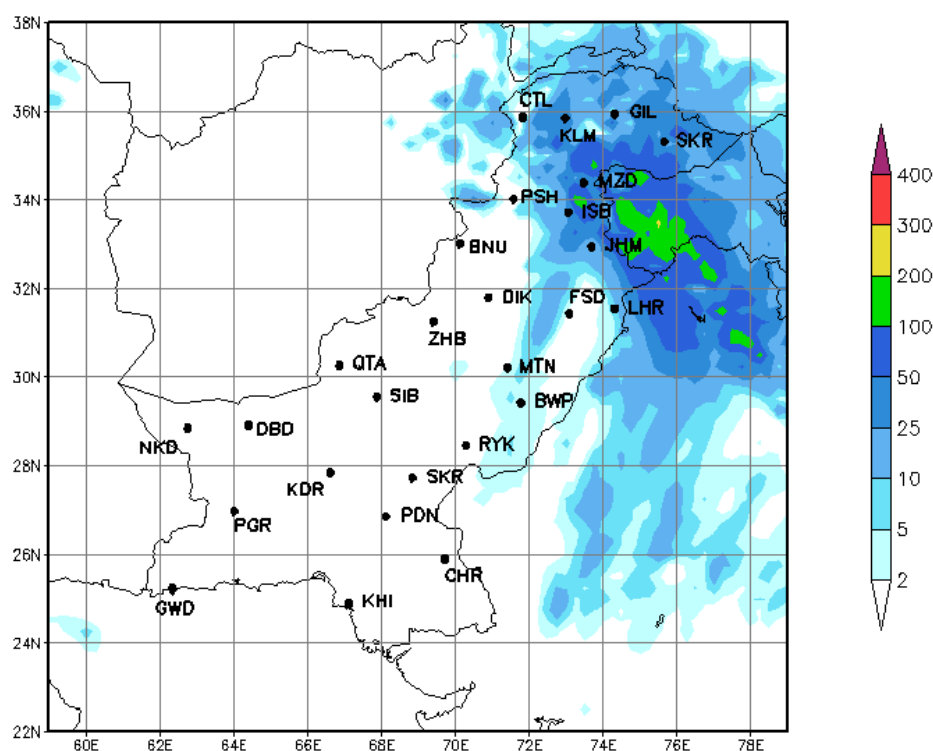
- ❖ **Punjab:** Light to moderate rainfall is expected in most of the agricultural plains of province during the current decade.
- ❖ **Khyber Pakhtunkhwa:** Light to moderate rainfall (snowfall over hills) is expected in the most parts of the province during the current decade.
- ❖ **Sindh:** Light rainfall is expected in the upper parts province during the current decade.
- ❖ **Balochistan:** light rainfall is expected in few parts of the province during the current decade.
- ❖ **Gilgit Baltistan:** Light to moderate rainfall (snowfall over hills) is expected in the province during the current decade.
- ❖ **Kashmir:** Light to moderate rainfall (snowfall over hills) is expected in the province during the current decade

❖ **3.4 Advisory for Farmers**

- ❖ Farmers are advised to complete sowing of the late varieties of Rabi crops in order to utilize the available moisture.
- ❖ Farmers are advised to schedule the irrigation plans in accordance with 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.

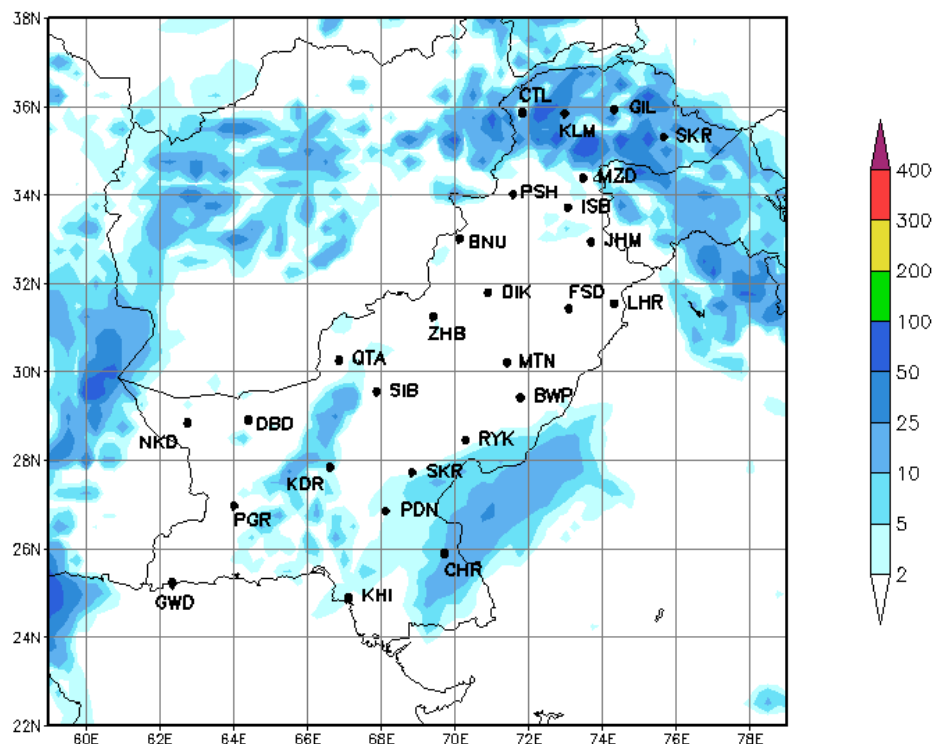
4.1 Precipitation Outlook (11th to 13th December, 2017)

The forecast for the first three days (11th to 13th) of the second decade of December 2017 shows that mainly cold and dry weather is expected in most parts of the country however light to moderate rainfall (with snowfall over the mountains) is expected in Punjab, Upper KP, G.B & Kashmir.



4.2 Precipitation Outlook (14th to 20th December, 2017)

The outlook for the last seven days (14th to 20th) of the second decade of December 2017 shows that mainly cold and cloudy weather with light rainfall is expected in particular areas of upper K.P, Sindh, Baluchistan, G.B and Kashmir. However cold and dry weather may prevail in rest parts 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)