

Decadal Agromet Bulletin of Pakistan



Highlights....

- ❖ Light to moderate rainfall reported from most of the agricultural plains of the country during the last decade.
- ❖ Highest amount of rainfall recorded as 65.5 mm at Muzaffarabad during the last decade.
- ❖ Lowest minimum temperature recorded as -9.5°C at Quetta during the last decade.
- ❖ Foggy conditions persisted in the plain areas of upper Sindh and Punjab.
- ❖ Mainly cold and dry weather is expected in most parts of the country during the current decade, however light to moderate rainfall with snowfall over hills is expected in upper Punjab, upper KP, G.B & Kashmir.
- ❖ Fog 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.
- ❖ Measures may be taken to preserve the crops/nurseries from the damaging impacts of extreme weather conditions.

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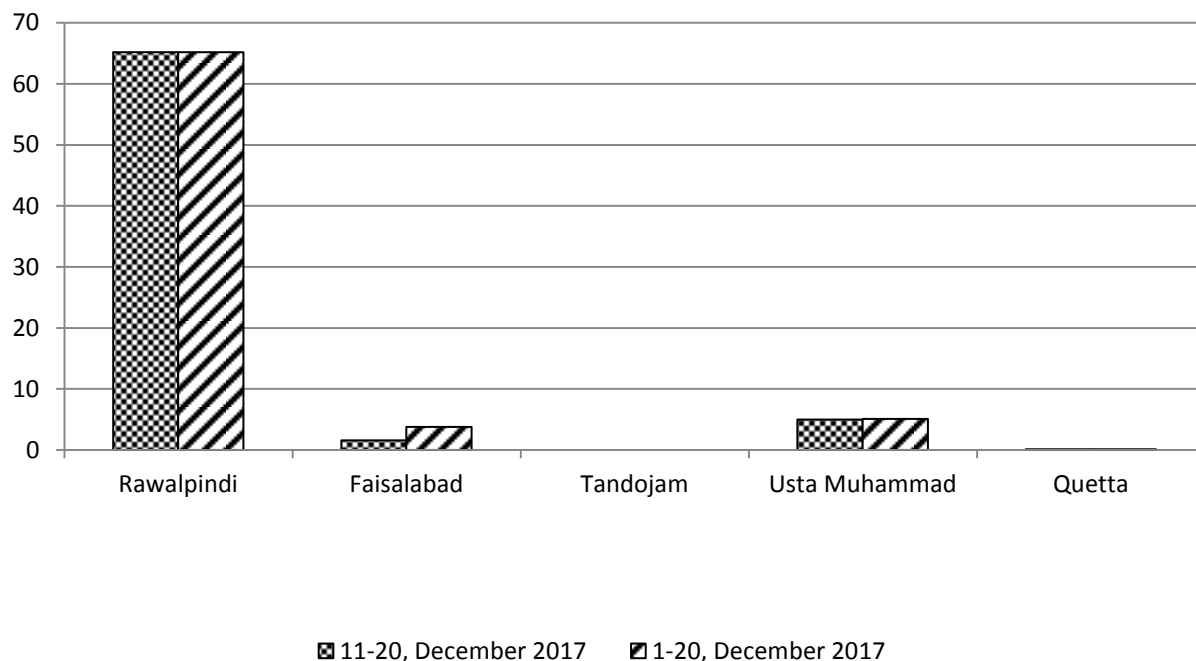
Meteorological Conditions during 2nd Decade of December, 2017

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	1.5	65.2	63.7	-2.1	-0.2	11.2	13.2	12.4	11.9	12.4	13.6	16.9	77	47.8	1.9	1.0
2	Faisalabad	0.2	1.6	1.4	-1.7	-0.6	13.2	17.3	16.5	15.3	15.3	16.7	20.5	63	50.4	1.4	1.2
3	Jhelum	0.4	16.3	15.9	-1.3	-0.9	13.7	14.9	14.2	13.9	14.6	16.1	***	62	62.5	3.8	1.6
4	Lahore	0.4	14.7	14.3	-2.5	-1.2	14.1	14.6	14.6	14.7	14.7	***	19.3	71	50.5	0.8	1.1
5	Sargodha	0.6	2.7	2.1	-2.7	-0.1	13.5	18.3	16.1	16.1	16.0	***	20.6	72	54.6	0.4	1.0
6	Multan	0.6	4.8	4.2	-4.4	0.8	13.0	***	***	***	***	***	***	70	47.0	2.2	1.3
7	Khanpur	1.6	0.0	-1.6	-2.9	-1.6	12.7	***	14.1	15.0	16.4	17.8	20.9	70	43.8	1.8	1.3
8	Tandojam	0.4	0.0	-0.4	-2.8	-2.8	14.9	20.7	19.5	19.2	19.2	20.7	23.4	56	79.3	6.5	2.8
9	Sakrand☆	1.0	0.0	-1.0	-0.7	1.2	15.6	20.2	***	***	***	***	25.9	54	88.4	8.0	3.0
11	Rohri	1.2	2.0	0.8	-1.5	-1.8	15.3	***	***	***	***	***	***	55	76.3	1.5	1.6
12	D.I Khan	0.1	0.1	0.0	-0.9	1.5	14.2	16.2	15.8	16.1	16.9	7.5	21.4	57	59.9	7.0	2.8
13	Peshawar	0.6	12.3	11.7	-1.2	-0.6	12.5	13.7	13.7	12.9	14.1	15.7	18.1	62	50.6	1.5	1.0
14	Usta .M	0.1	5.0	4.9	-2.4	-1.4	13.8	17.2	***	17.6	18.4	***	***	63	***	0.0	1.1
15	Quetta	0.2	0.1	-0.1	-2.4	-0.5	5.4	10.7	8.8	6.3	6.7	6.9	11.6	33	81.8	4.9	1.9
16	Skardu	1.2	7.3	6.1	-0.6	0.4	0.8	***	***	***	***	***	***	72	20.5	0.5	0.6
17	Gilgit	0.3	4.4	4.1	-0.8	0.5	5.1	***	***	***	***	***	***	62	15.2	1.5	1.2

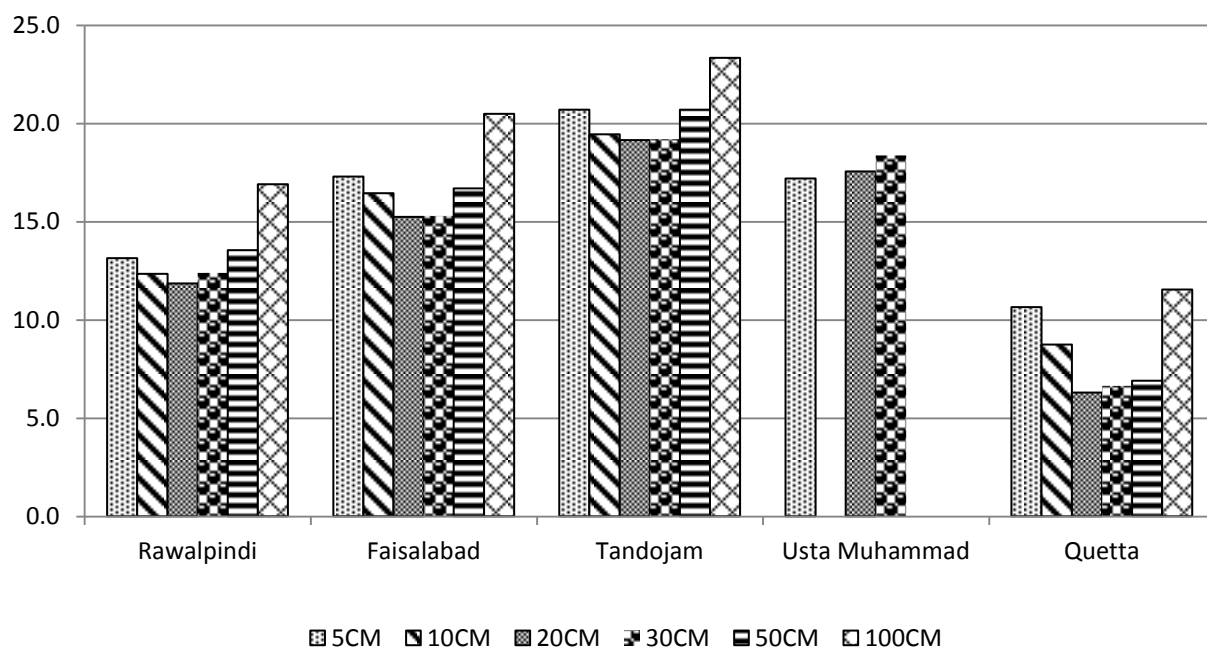
Table-1: Meteorological parameters for selected station of Pakistan. “Dep” in the table stands for difference from climatic normal, i.e. actual value minus normal. And “% Dep” is calculated by the formula; **Dep divided by Normal multiplied by 100**. Tmin & Tmax stands for minimum and maximum temperatures 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

Precipitation(mm)



Soil Temperature(°C)



Past Weather (11th to 20th December, 2017)

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

1.1 Punjab

Light to moderate rainfall reported from agricultural plains of Punjab. Chief amount of rainfall is received at Murree, Islamabad & Chakwal. Decadal maximum & minimum departure both dropped below normal by 2.5°C & 0.5°C respectively, in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 69%, 50.9hrs, 1.8km/hr and 1.2mm/day respectively.

1.1 Sindh

Light to moderate rainfall reported from few agricultural plains of Sindh. Chief amount of rainfall is received at Larkana, Karachi & Moen Jo Daro. Decadal maximum & minimum departure both dropped below normal by 1.7°C & 1.1°C respectively, in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 55%, 81.3hrs, 5.3km/hr and 2.5mm/day respectively.

1.2 Khyber Pakhtunkhwa (KP)

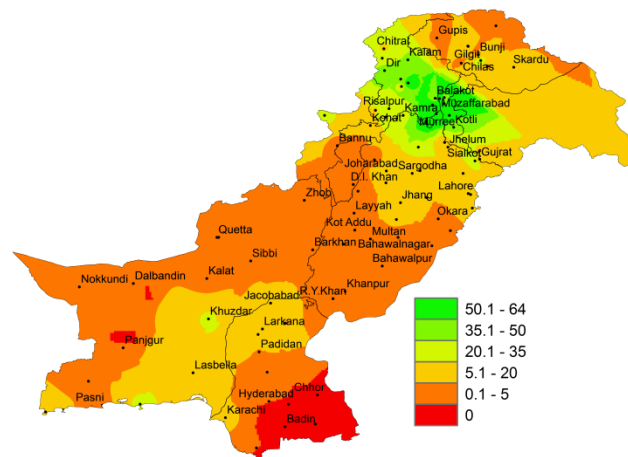
Light to moderate rainfall reported from agricultural plains of KP. Chief amount of rainfall is received at Malam Jabba, Kakul & Pattan. Decadal maximum raised dropped below normal by 1.1°C & minimum departure raised above normal by 0.5°C, in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 60%, 55.3hrs, 4.3km/hr and 1.9mm/day respectively.

1.3 Balochistan

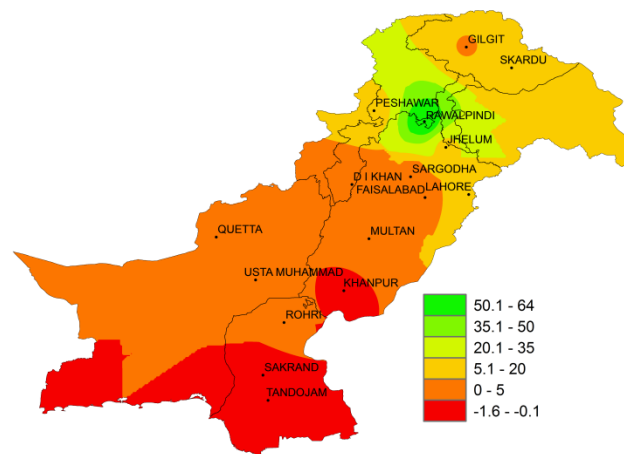
Light to moderate rainfall reported from agricultural plains of Balochistan. Chief amount of rainfall is received Ormara, Khuzdar & Lasbela. Decadal maximum & minimum departure both dropped below normal by 2.4°C & 1.0°C respectively, in province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 48%, 81.8 hrs, 2.5km/hr and 1.5mm/day respectively.

1.4 Gilgit-Baltistan and Azad Jammu & Kashmir

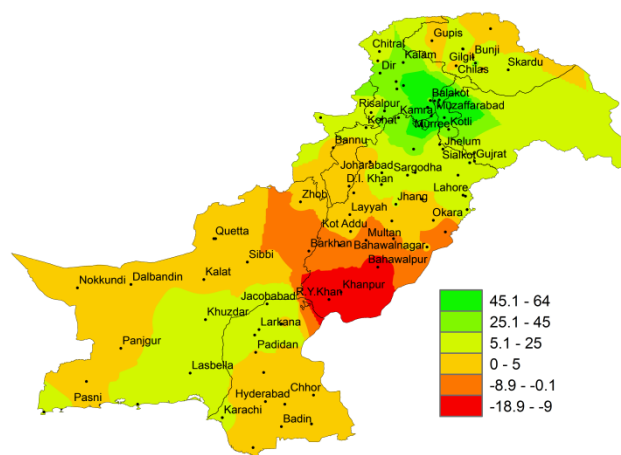
Light to moderate rainfall reported from different places of G.B & Kashmir. Chief amount of rainfall is received at Muzaffarabad, Rawalakot & Garhi Doppatta. Decadal maximum dropped below normal by 0.7°C & minimum departure raised above normal by 0.4°C respectively, in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 67%, 17.9hrs, 1.0km/hr and 0.9mm/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 (11th to 20th December, 2017)

2.1 RAMC, Rawalpindi (Potohar region)

Rainfall reported as 65.2mm during the decade; however weather remained cloudy for 08days during the decade. Average relative humidity recorded as 77%. Mean day temperature was 18.2°C while night temperature recorded as 4.2°C with 47.8hours bright sunshine duration. Wind speed recorded as 1.9km/hr with mean wind direction *variable*.

2.2 RAMC, Faisalabad (Central Punjab)

Rainfall reported as 1.6mm during the decade; however weather remained cloudy for 07days during the decade. Average relative humidity recorded as 63%. Mean day temperature was 20.6°C while night temperature recorded as 5.7°C with 50.41hours bright sunshine duration. Wind speed recorded as 1.4km/hr with mean wind direction *westerly*.

Wheat: *Very good condition, emergence completed.*

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 56%. Mean day temperature was 22.7°C while night temperature recorded as 7.1°C with 79.3hours bright sunshine duration. Wind speed recorded as 6.5km/h with mean wind direction *northerly*.

Wheat (Sindh): *Good condition, third leaf stage.*

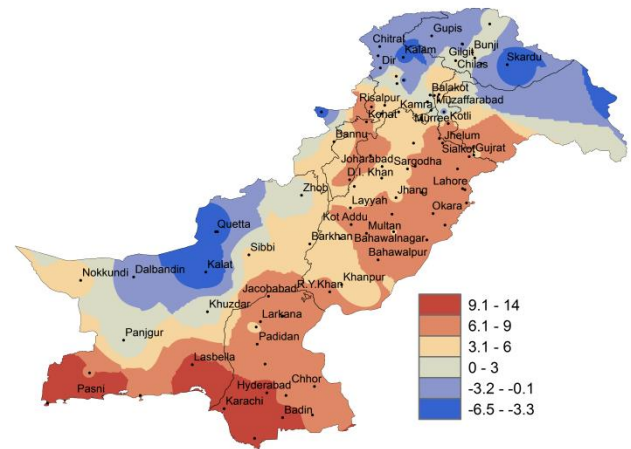
2.4 RAMC, Usta Muhammad (Eastern Balochistan)

Rainfall reported as 5.0mm during the decade; however weather remained cloudy for 03days during the decade. Average relative humidity recorded as 63%. Mean day temperature was 20.3°C while night temperature recorded as 7.3°C. Wind speed remained *calm*.

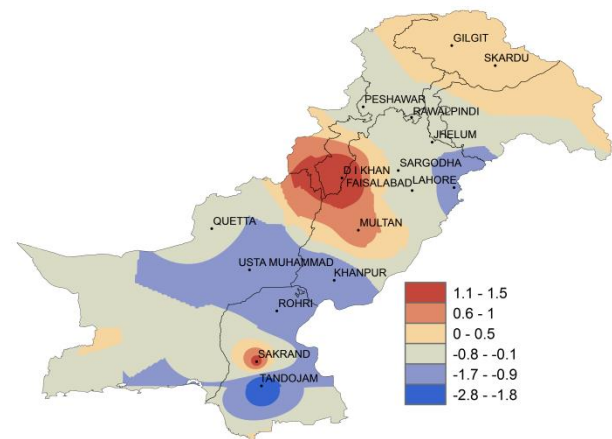
Wheat: *Good condition, third leaf stage.*

2.5 RAMC, Quetta (Northern Balochistan)

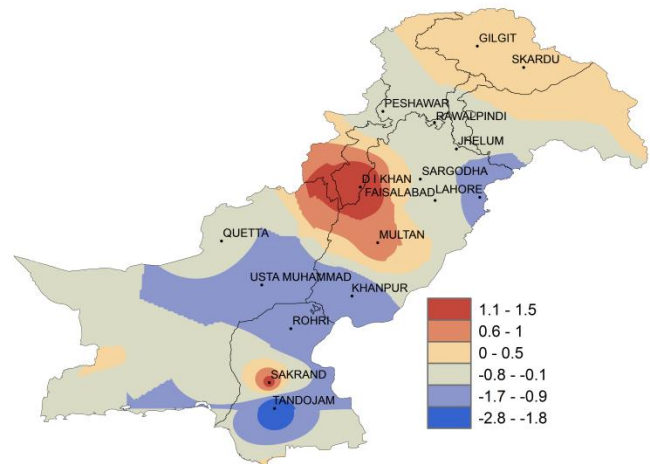
Rainfall reported Trace (not measureable) during the decade; however weather remained cloudy for 08days during the decade. Average relative humidity recorded as 33%. Mean day temperature was 12.0°C while night temperature recorded as -1.3°C with 81.8hours bright sunshine duration. Wind speed recorded as 4.9km/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 (11th to 20th December, 2017)

2.6 Jhelum

Rainfall reported as 16.3mm during the decade; however weather remained cloudy for 09days during the decade. Average relative humidity recorded as 62%. Mean day temperature was 20.9°C while night temperature recorded as 6.4°C with 62.5hours bright sunshine duration. Wind speed recorded as 3.8km/hr with mean wind direction *north westerly*.

2.7 Lahore

Rainfall reported as 14.7mm during the decade; however weather remained cloudy for 06days during the decade. Average relative humidity recorded as 71%. Mean day temperature was 19.4°C while night temperature recorded as 8.8°C with 50.5hours bright sunshine duration. Wind speed recorded as 0.8km/hr with mean wind direction *westerly*.

2.8 Sargodha

Rainfall reported as 2.7mm during the decade; however weather remained cloudy for 09days during the decade. Average relative humidity recorded as 72%. Mean day temperature was 19.9°C while night temperature recorded as 7.1°C. Wind speed recorded 0.4km/hr with mean wind direction *variable*.

2.9 Multan

Rainfall reported as 4.8mm during the decade; however weather remained cloudy for 08days during the decade. Average relative humidity recorded as 70%. Mean day temperature was 18.8°C while night temperature recorded as 7.2°C with 47.0hours bright sunshine duration. Wind speed recorded 2.2km/hr with mean wind direction *northerly*.

2.10 Khanpur

Dry weather reported during the decade; however weather remained cloudy for 05days during the decade. Average relative humidity recorded as 70%. Mean day temperature was 20.1°C while night temperature recorded as 5.3°C with 43.8hours bright sunshine duration. Wind speed recorded 1.8km/hr with mean wind direction *north easterly*.

2.11 Sakrand

Dry weather reported during the decade; however weather remained cloudy for 03days during the decade. Average relative humidity recorded as 54%. Mean day temperature was 21.9°C while night temperature recorded as 9.2°C with 88.4hours bright sunshine duration. Wind speed recorded 8.0km/hr with wind direction *northerly*.

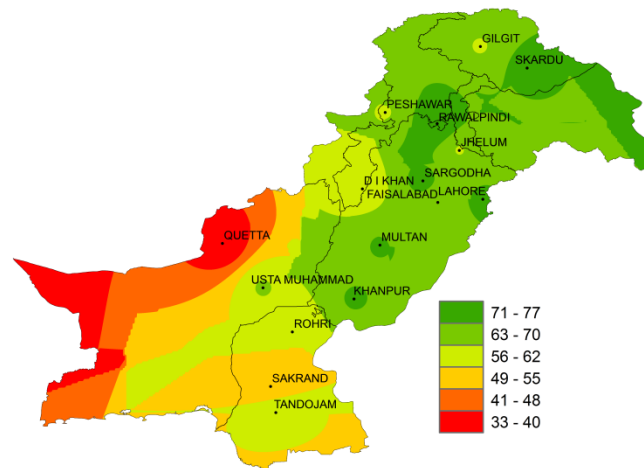


Figure.3: Relative Humidity in Percentage (%)

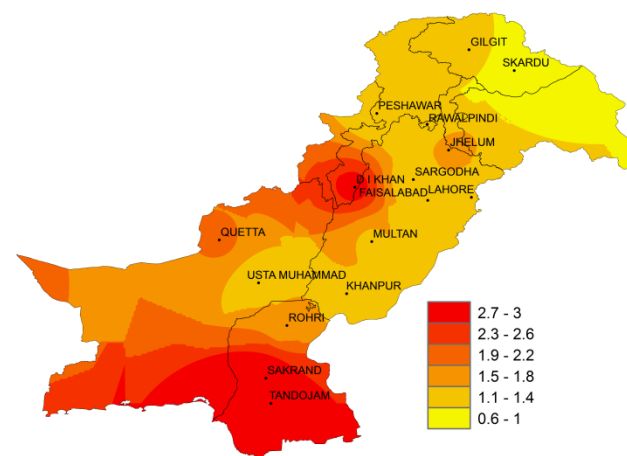


Figure.4: Reference Crop Evapotranspiration ETo (mm/day)

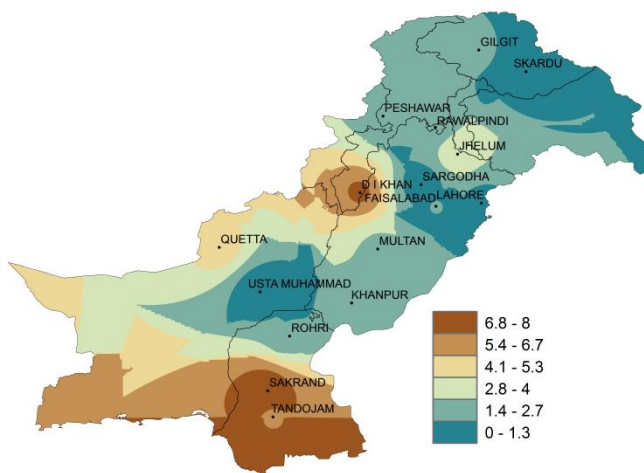


Figure 5: Wind Speed in kilometer per hour (km/h)

2.12 Rohri

Rainfall reported as 2.0mm during the decade; however weather remained cloudy for 04days during the decade. Average relative humidity recorded as 55%. Mean day temperature was 21.8°C while night temperature recorded as 8.7°C with 76.3hours bright sunshine duration. Wind speed recorded 1.5km/hr with wind direction *north easterly*.

2.13 D.I. Khan

Rainfall reported as Trace (not measureable) during the decade; however weather remained cloudy for 06days during the decade. Average relative humidity recorded as 57%. Mean day temperature was 21.6°C while night temperature recorded as 6.8°C with 59.9hours bright sunshine duration. Wind speed recorded as 7.0km/hr with mean wind direction *north westerly*.

2.14 Peshawar

Dry weather reported during the decade; however weather remained cloudy for 10days during the decade. Average relative humidity recorded as 62%. Mean day temperature was 19.4°C while night temperature recorded as 5.6°C with 50.6hours bright sunshine duration. Wind speed recorded as 1.5km/hr with mean wind direction *variable*.

2.15 Skardu

Rainfall reported as 7.3mm during the decade; however weather remained cloudy for 10days during the decade. Average relative humidity recorded as 72%. Mean day temperature was 6.1°C while night temperature recorded as -4.5°C with 20.5hours bright sunshine duration. Wind speed recorded as 0.5km/hr with mean wind direction *easterly*.

2.16 Gilgit

Rainfall reported as 4.4mm during the decade; however weather remained cloudy for 09days during the decade. Average relative humidity recorded as 62%. Mean day temperature was 11.2°C while night temperature recorded as -1.1°C with 15.2hours bright sunshine duration. Wind speed recorded as 1.5km/hr with mean wind direction *north westerly*.

Ten Days Weather Advisory for Farmers
(21st to 31st 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.

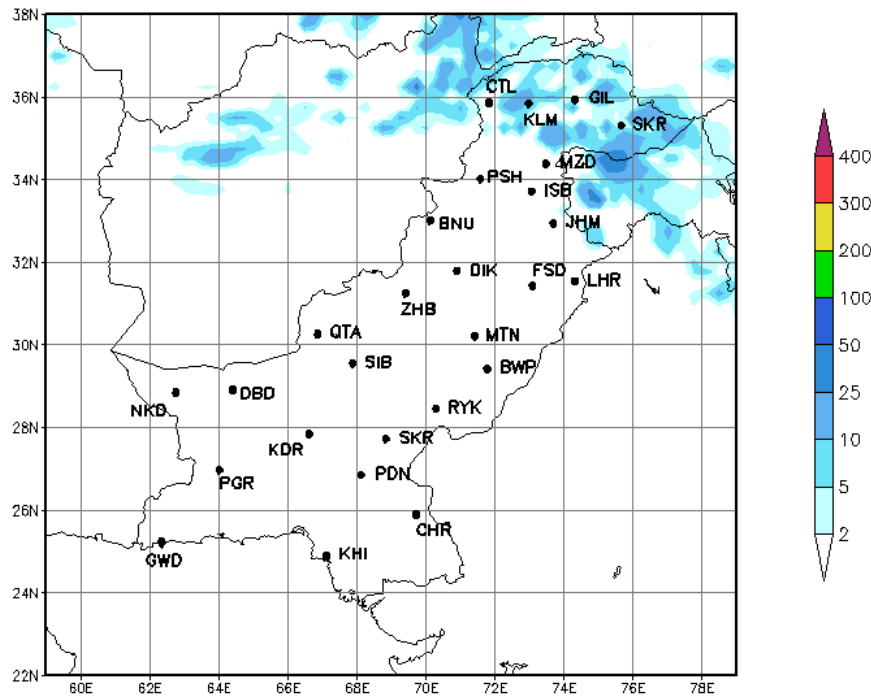
- Fog may occur during the morning times, over some plains of Punjab and upper Sindh.

3.3 Rain Forecast

- ❖ **Punjab:** Mainly dry weather is expected in most of the agricultural plains of province however light to moderate rainfall is expected at isolated places of Upper Punjab during the current decade.
- ❖ **Khyber Pakhtunkhwa:** Light to moderate rainfall (snowfall over hills) is expected in the upper parts of the province during the current decade.
- ❖ **Sindh:** Dry weather is expected in the upper parts province during the current decade.
- ❖ **Balochistan:** Dry weather 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 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.
 - ❖ Measures may be taken to preserve the crops/nurseries from the damaging impacts of extreme weather conditions.

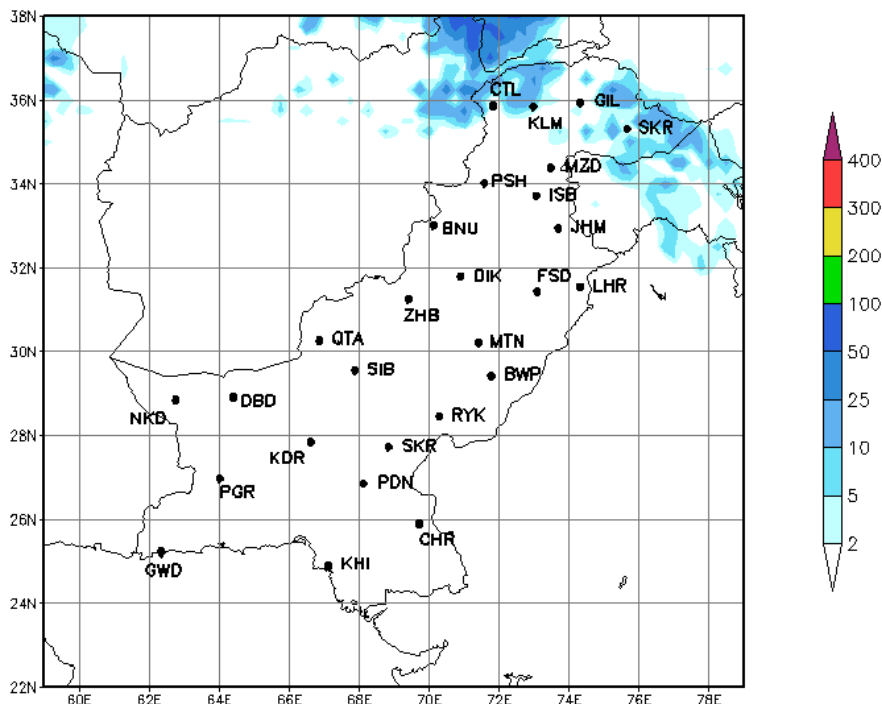
4.1 Precipitation Outlook (21st to 23rd December, 2017)

The forecast for the first three days (21st to 23rd) of the third 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 isolated places of Punjab, Upper KP, G.B & Kashmir.



4.2 Precipitation Outlook (24th to 31st December, 2017)

The outlook for the last eight days (24th to 31st) of the third decade of December 2017 shows that mainly cold and cloudy weather with light rainfall is expected in particular areas of upper K.P, 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)