Decadal Agromet Bulletin of Pakistan

Highlights….

- Light rainfall reported from few parts of G.B however dry weather is reported from rest parts of the country during the last decade.
- Highest amount of rainfall recorded as 3.5 mm at Astore during the last decade.
- Lowest minimum temperature recorded as -8.6°C at Skardu during the last decade.
- Smoggy 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 is expected in lower Sindh, 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 of rainfed areas are advised to complete sowing of their Rabi crops in order to utilize the available moisture due to recent rains.

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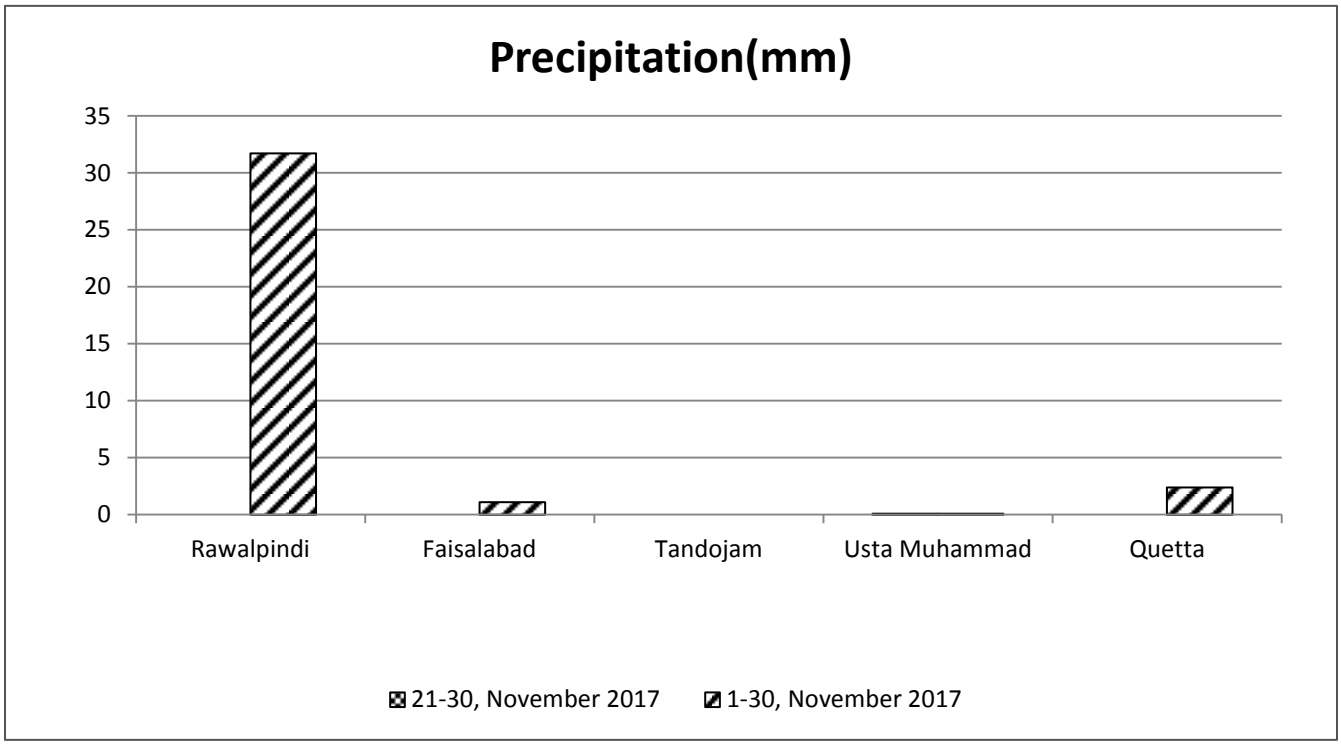
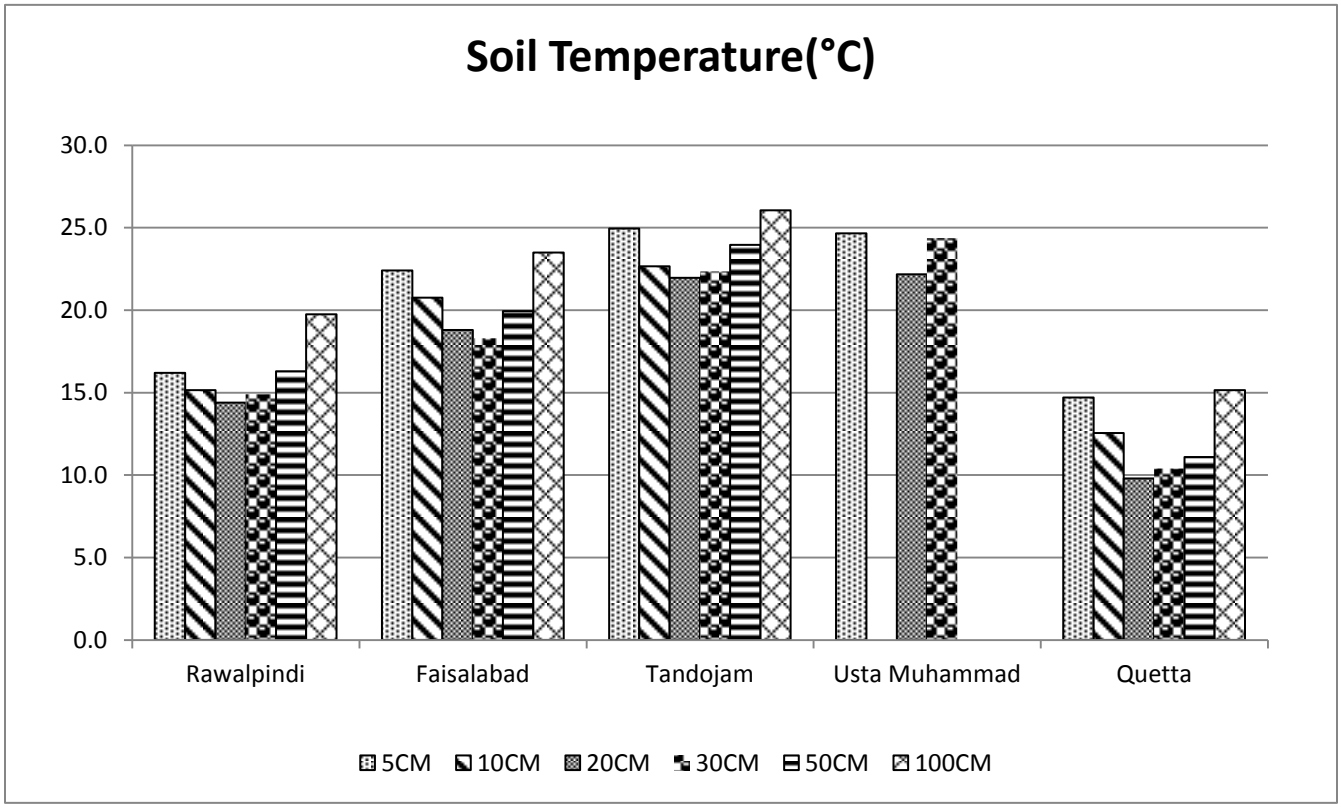
Meteorological Conditions during 3rd Decade of November, 2017

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	0.4	0.0	-0.4	0.3	-0.2	14.7	16.2	15.2	14.4	14.9	16.3	19.8	62	73.8	2.7	1.6
2	Faisalabad	0.1	0.0	-0.1	1.5	-1.6	17.0	22.4	20.8	18.8	18.3	20.0	23.5	50	77.1	1.4	1.6
3	Jhelum	0.2	0.0	-0.2	0.1	-1.2	16.7	16.7	15.9	15.5	16.2	18.0	***	56	85.5	2.0	1.7
4	Lahore	0.2	0.0	-0.2	0.7	-2.5	17.9	17.4	17.2	16.9	17.0	***	22.0	60	87.4	0.4	1.4
5	Sargodha	0.0	0.0	0.0	1.6	-0.8	18.1	22.1	20.5	19.1	19.7	***	23.0	53	77.0	1.1	1.5
6	Multan	0.0	0.0	0.0	-0.6	0.2	17.9	***	***	***	***	***	***	48	83.8	1.7	1.8
7	Khanpur	0.0	0.0	0.0	1.3	-1.6	18.3	***	18.7	19.7	20.5	21.7	24.4	50	92.4	1.8	2.1
8	Tandojam	0.0	0.0	0.0	0.1	-1.9	20.0	25.0	22.7	22.0	22.4	24.0	26.1	47	82.6	3.0	2.7
9	Sakrand ☆	0.0	0.0	0.0	1.3	1.1	20.3	25.4	***	***	***	***	29.0	46	100.3	4.1	3.0
11	Rohri	0.0	0.0	0.0	1.2	-3.7	19.5	***	***	***	***	***	***	43	99.9	1.0	2.0
12	D.I Khan	0.0	0.0	0.0	1.7	0.0	17.9	19.0	18.0	18.1	19.5	10.5	24.3	51	88.6	6.0	3.0
13	Peshawar	0.5	0.0	-0.5	0.3	-1.4	15.3	16.6	32.7	14.1	16.2	17.4	20.6	63	57.0	0.6	1.1
14	Usta .M	0.0	0.1	0.1	-0.2	-3.9	19.3	24.7	***	22.2	24.4	***	***	62	***	0.7	1.7
15	Quetta	0.2	0.0	-0.2	-0.9	1.7	9.3	14.7	12.6	9.8	10.4	11.1	15.2	28	93.2	5.1	2.3
16	Skardu	0.0	0.0	0.0	-0.2	11.0	9.0	***	***	***	***	***	***	62	51.9	0.0	0.9
17	Gilgit	0.0	0.0	0.0	0.1	-1.8	7.0	***	***	***	***	***	***	52	46.0	0.1	0.7

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 November, 2017





Past Weather (21st to 30th November, 2017)

Light rainfall reported from few parts of K.P, G.B and Kashmir however dry weather is reported from rest parts of the country during the last decade.

1.1 Punjab

Dry weather reported from agricultural plains of Punjab. Decadal maximum raised above normal by 0.7°C & minimum departure dropped below normal by 1.1°C, in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 54%, 82.4hrs, 1.6km/hr and 1.7mm/day respectively.

1.1 Sindh

Dry weather reported from the agricultural plains of Sindh. Decadal maximum raised above normal by 0.9°C & minimum departure dropped below normal by 1.5°C, in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 45%, 94.3hrs, 2.7km/hr and 2.6mm/day respectively.

1.2 Khyber Pakhtunkhwa (KP)

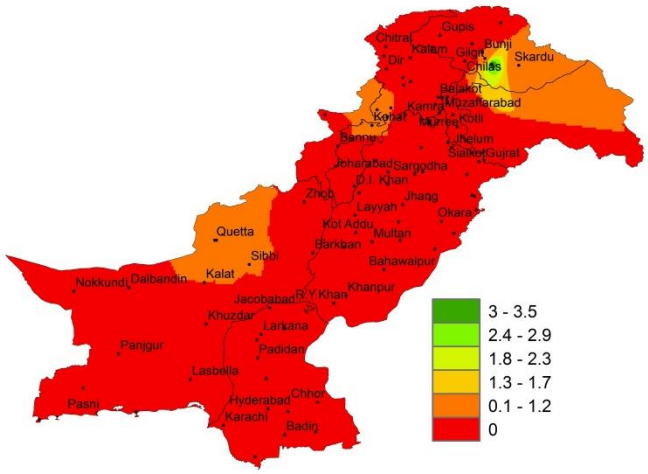
Light rainfall reported from few agricultural plains of KP. Decadal maximum raised above normal by 1.0°C & minimum departure dropped below normal by 0.7°C, in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 57%, 72.8hrs, 3.3km/hr and 2.1mm/day respectively.

1.3 Balochistan

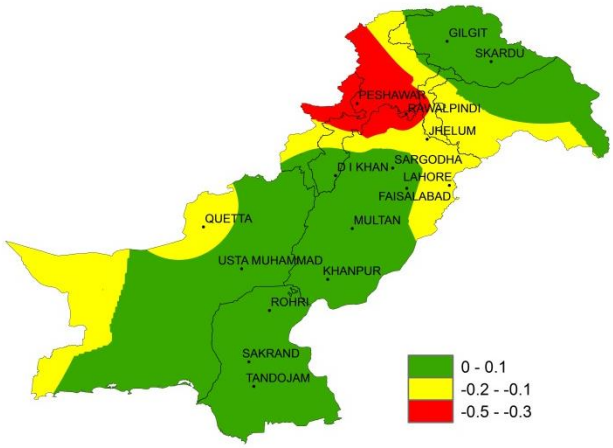
Dry weather reported from the agricultural plains of Balochistan. Decadal maximum & minimum departure both dropped below normal by 0.6°C & 1.1°C respectively, in province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 45%, 93.2 hrs, 2.9km/hr and 2.0mm/day respectively.

1.4 Gilgit-Baltistan and Azad Jammu & Kashmir

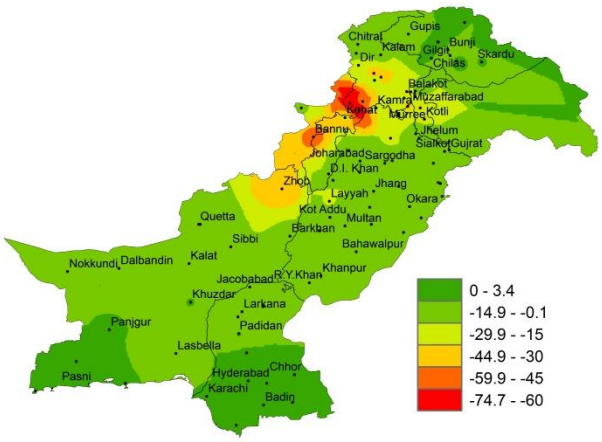
Light rainfall reported from few place of G.B & Kashmir. Decadal maximum remained normal & minimum departure raised above normal by 4.6°C, in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 57%, 49.06hrs, 0.1km/hr and 0.8mm/day respectively.



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 (21st to 30th November, 2017)

2.1 RAMC, Rawalpindi (Potohar region)

Dry weather reported during the decade; however weather remained cloudy for 05days during the decade. Average relative humidity recorded as 62%. Mean day temperature was 23.9°C while night temperature recorded as 5.5°C with 73.8hours bright sunshine duration. Wind speed recorded as 2.7km/hr with mean wind direction *south westerly.*

2.2 RAMC, Faisalabad (Central Punjab)

Dry weather reported during the decade; however weather remained cloudy for 02days during the decade. Average relative humidity recorded as 50%. Mean day temperature was 27.2°C while night temperature recorded as 6.8°C with 77.1hours bright sunshine duration. Wind speed recorded as 1.4km/hr with mean wind direction *north westerly.*

2.3 RAMC, Tandojam (Lower Sindh)

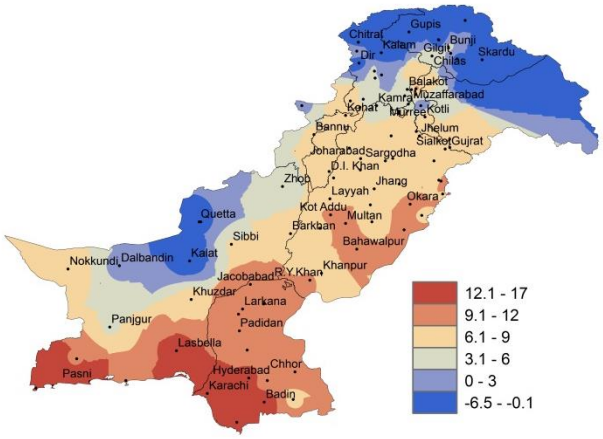
Dry weather reported during the decade; however weather remained clear throughout the decade. Average relative humidity recorded as 47%. Mean day temperature was 29.6°C while night temperature recorded as 10.3°C with 82.6hours bright sunshine duration. Wind speed recorded as 3.0km/h with mean wind direction *northerly.*
Wheat*: Good condition, emergence stage.*

2.4 RAMC, Usta Muhammad (Eastern Balochistan)

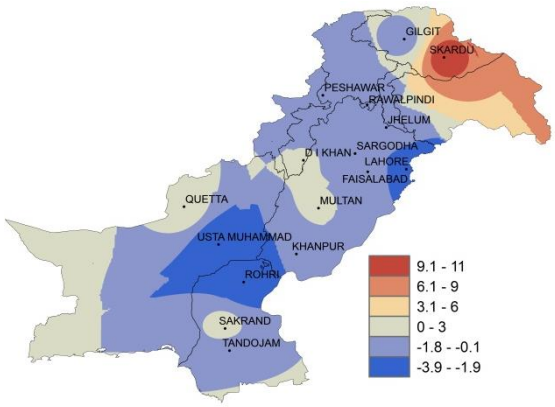
Rainfall reported as Trace (not measureable) during the decade; however weather remained cloudy for 02days during the decade. Average relative humidity recorded as 62%. Mean day temperature was 26.8°C while night temperature recorded as 11.8°C. Wind speed recorded as 0.7km/h with mean wind direction *easterly.*
Rice: *Harvesting in progress.*
Wheat*: Good condition, emergence stage.*

2.5 RAMC, Quetta (Northern Balochistan)

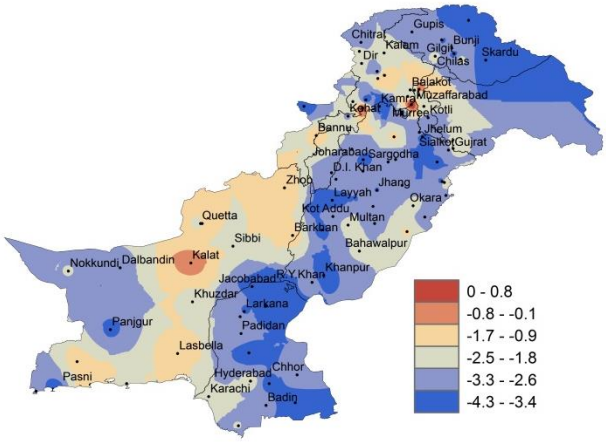
Dry weather reported during the decade; however weather remained cloudy for 08days during the decade. Average relative humidity recorded as 28%. Mean day temperature was 16.7°C while night temperature recorded as 1.8°C with 93.2hours bright sunshine duration. Wind speed recorded as 5.1km/hr with mean wind direction *north easterly.*



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 30th November, 2017)

2.6 Jhelum

Dry weather reported during the decade; however weather remained cloudy for 06days during the decade. Average relative humidity recorded as 56%. Mean day temperature was 25.8°C while night temperature recorded as 7.5°C with 85.5hours bright sunshine duration. Wind speed recorded as 2.0km/hr with mean wind direction *south westerly.*

2.7 Lahore

Dry weather reported during the decade; however weather remained cloudy for 04days during the decade. Average relative humidity recorded as 60%. Mean day temperature was 25.9°C while night temperature recorded as 9.8°C with 87.4hours bright sunshine duration. Wind speed recorded as 0.4km/hr with mean wind direction *north westerly*.

2.8 Sargodha

Dry weather reported during the decade; however weather remained cloudy for 05days during the decade. Average relative humidity recorded as 53%. Mean day temperature was 27.1°C while night temperature recorded as 9.0°C. Wind speed recorded 1.11km/hr with mean wind direction *southerly*.

2.9 Multan

Dry weather reported during the decade; however weather remained cloudy for 06days during the decade. Average relative humidity recorded as 48%. Mean day temperature was 26.0°C while night temperature recorded as 9.7°C with 83.8hours bright sunshine duration. Wind speed recorded 1.7km/hr with mean wind direction *westerly.*

2.10 Khanpur

Dry weather reported during the decade; however weather remained cloudy for 01day during the decade. Average relative humidity recorded as 50%. Mean day temperature was 28.4°C while night temperature recorded as 8.1°C with 92.4hours bright sunshine duration. Wind speed recorded 1.8km/hr with mean wind direction *south westerly.*

2.11 Sakrand

Dry weather reported during the decade; however weather remained clear throughout the decade. Average relative humidity recorded as 46%. Mean day temperature was 28.8°C while night temperature recorded as 11.8°C with 100.3hours bright sunshine duration. Wind speed recorded 4.1km/hr with wind direction *northerly*.

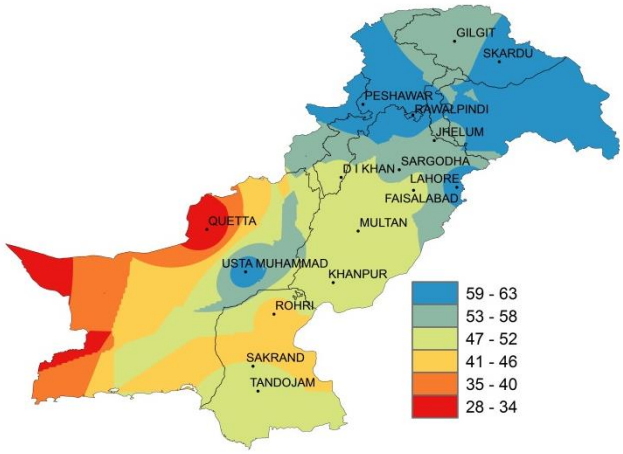


Figure.3: Relative Humidity in Percentage (%)

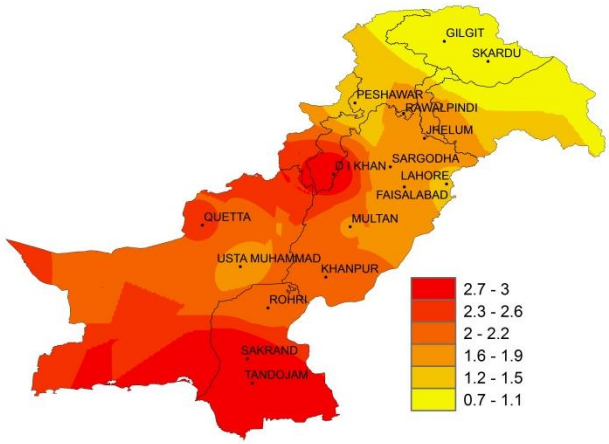


Figure.4: Reference Crop Evapotranspiration ETo(mm/day)

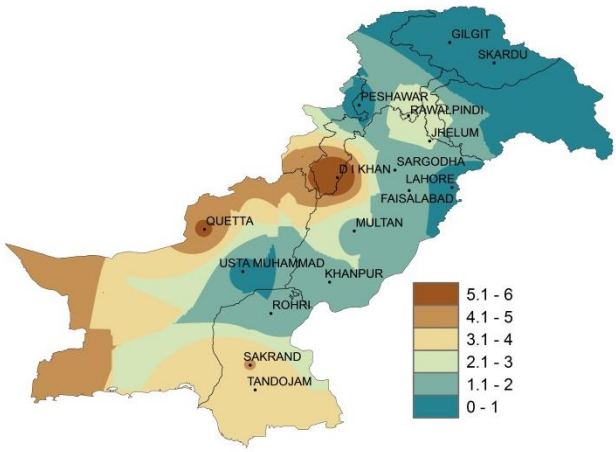


Figure 5: Wind Speed in kilometer per hour (km/h)

2.12 Rohri

Dry weather reported during the decade; however weather remained cloudy for 01day during the decade. Average relative humidity recorded as 43%. Mean day temperature was 29.0°C while night temperature recorded as 10.0°C with 99.9hours bright sunshine duration. Wind speed recorded 1.0km/hr with wind direction *north easterly*.

2.13 D.I. Khan

Dry weather reported during the decade; however weather remained clear throughout the decade. Average relative humidity recorded as 51%. Mean day temperature was 27.5°C while night temperature recorded as 8.3°C with 88.6hours bright sunshine duration. Wind speed recorded as 6.0km/hr with mean wind direction *north westerly*.

2.14 Peshawar

Dry weather reported during the decade; however weather remained cloudy for 07days during the decade. Average relative humidity recorded as 63%. Mean day temperature was 24.0°C while night temperature recorded as 6.6°C with 57.0hours bright sunshine duration. Wind speed recorded as 0.6km/hr with mean wind direction *northerly.*

2.15 Skardu

Dry weather reported during the decade; however weather remained cloudy for 05days during the decade. Average relative humidity recorded as 62%. Mean day temperature was 11.5°C while night temperature recorded as 6.5°C with 51.9hours bright sunshine duration. Wind speed recorded as *calm.*

2.16 Gilgit

Dry weather reported during the decade; however weather remained cloudy for 05days during the decade. Average relative humidity recorded as 52%. Mean day temperature was 17.1°C while night temperature recorded as -3.2°C with 46.0hours bright sunshine duration. Wind speed recorded as 0.11km/hr with mean wind direction *south easterly.*

Ten Days Weather Advisory for Farmers (4th to 10th 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

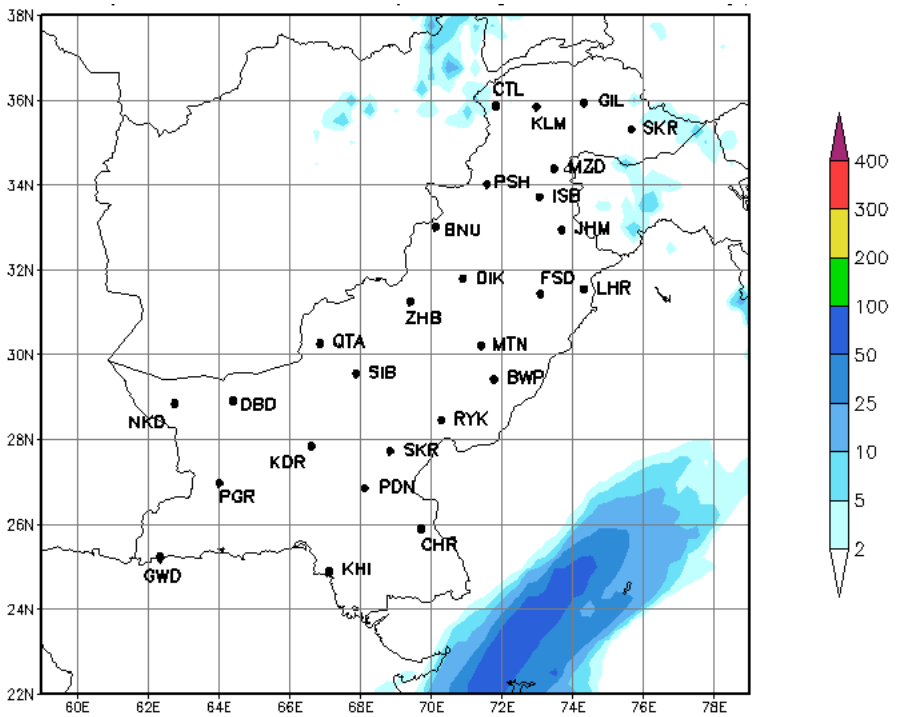
- **Punjab:** Dry weather is expected in the province during the current decade.
- **Khyber Pakhtunkhwa:** Light to moderate rainfall (snowfall over hills) is expected in the upper parts of the province during the current decade.
- **Sindh:** Light rainfall is expected in the province during the current decade.
- **Balochistan:** Dry weather is expected in 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 of rainfed areas are advised to complete sowing of their Rabi crops in order to utilize the available moisture due to recent rains.
- 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.

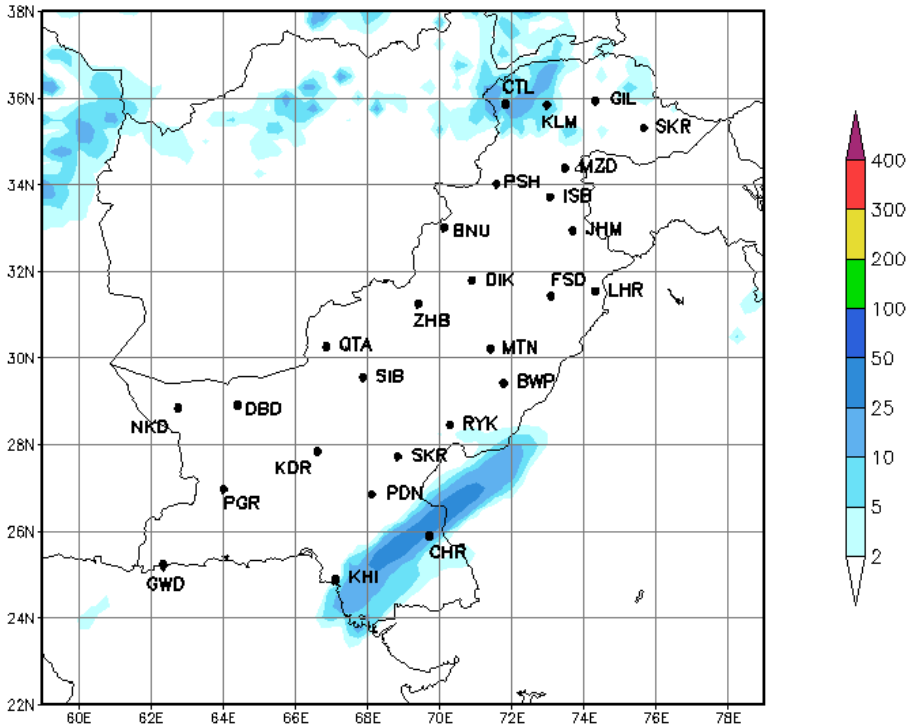
4.1 Precipitation Outlook (4th to 6th December, 2017)

The forecast for the next three days (4th to 6th) of the first decade of December 2017 shows that mainly cold and dry weather is expected in most parts of the country however light rainfall (with snowfall over mountains) is expected in Upper KP, G.B & Kashmir.



4.2 Precipitation Outlook (7th to 10th December, 2017)

The outlook for the last four days (7th to 10th) of the first decade of December 2017 shows that mainly cold and cloudy weather with light rainfall is expected in particular areas of upper K.P, Lower Sindh and G.B, 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 ہوسکتا 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 ہوسکتی 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 سدِّ باب (بذریعہ نئی ٹیکنالوجی کا استعمال اور بہتر نظم ونسق) سے غربت میں کمی اور کسانوں کی زندگی میں خوشحالی لائی جاسکتی ہے۔

(ایگمپ پاکستان 2012-2014)