

Decadal Agromet Bulletin of Pakistan



Highlights....

- ❖ Dry weather reported in most of the agricultural plains of country; however light rainfall reported from few places in K.P. Trace (not measureable) rainfall reported from few parts of Punjab, G.B & Kashmir.
- ❖ Highest amount of rainfall reported 9.8mm at Kalam during the last decade.
- ❖ Lowest Minimum temperature recorded -5.0°C at Kalat during the last decade.
- ❖ Mostly dry weather is expected in most of the agricultural plains of the country; however light to moderate rain (with snowfall on mountains) is expected from 9th to 10th of the decade.
- ❖ Farmers obtaining crop water through tube wells are advised to schedule the irrigation as per crop requirement.
- ❖ Farmers may sow recommended varieties and seed should be specially treated before sowing in consultation with agricultural offices.
- ❖ Farmers are advised to cultivate winter vegetables in time.
- ❖ In areas like Potohar Region and adjoining areas of Khyber Pakhtunkhwa where rain water storages are available farmers are advised to irrigate crops by using available irrigation methods like sprinkler irrigation etc.

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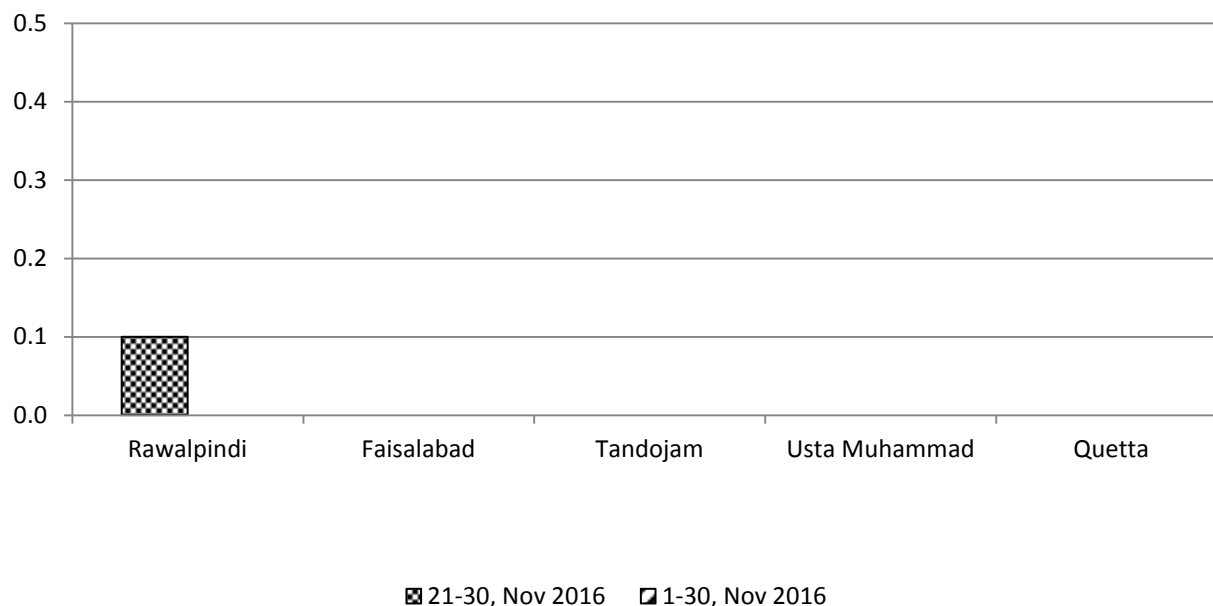
Meteorological Conditions during 3rd decade of November, 2016

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	0.1	-0.3	1.6	3.3	17.1	18.1	17.0	16.2	16.5	17.0	20.2	64	36.5	2.0	1.5
2	Faisalabad	0.1	0.0	-0.1	2.9	2.5	19.8	23.5	22.1	20.3	***	21.1	23.9	52	64.2	1.2	1.6
3	Jhelum	0.2	0.0	-0.2	0.9	1.6	18.5	18.6	17.9	17.6	18.0	19.4	***	58	50.6	1.2	1.4
4	Lahore	0.2	0.0	-0.2	2.5	-0.1	20.0	20.8	20.5	19.8	19.7	***	23.0	58	59.2	1.4	1.6
5	Sargodha	0.0	0.0	0.0	1.6	2.2	19.6	22.3	21.3	20.5	21.1	***	23.9	64	53.3	2.4	1.8
6	Multan	0.0	0.0	0.0	0.3	3.1	19.8	***	***	***	***	***	***	57	69.9	0.8	1.6
7	Khanpur	0.0	0.0	0.0	2.2	1.7	20.4	***	22.7	23.4	24.1	25.1	26.9	59	71.4	1.9	2.0
8	Tandojam	0.0	0.0	0.0	1.1	-0.3	21.3	27.0	29.0	23.8	23.7	25.1	***	56	84.3	2.0	2.5
9	Sakrand ☆	0.0	0.0	0.0	2.1	2.5	21.4	30.7	25.7	***	***	***	29.1	59	92.8	3.3	2.8
11	Rohri	0.0	0.0	0.0	1.7	***	29.5	***	***	***	***	***	***	49	96.1	1.3	2.3
12	D.I Khan	0.0	0.0	0.0	1.6	2.7	19.2	***	***	***	***	***	***	56	53.1	***	2.9
13	Peshawar	0.5	0.0	-0.5	0.9	1.5	17.1	20.2	18.1	17.2	***	***	***	68	39.0	0.6	1.1
14	Usta .M	0.0	0.0	0.0	2.6	-4.2	20.6	***	***	***	***	***	***	50	***	1.0	1.9
15	Quetta	0.2	0.0	-0.2	-2.4	2.1	8.7	14.9	13.5	10.6	10.7	10.6	15.8	41	87.1	4.5	2.0
16	Skardu	0.0	0.0	0.0	1.0	4.5	6.4	***	***	***	***	***	***	57	18.1	0.8	0.8
17	Gilgit	0.0	0.0	0.0	-0.1	3.9	9.7	***	***	***	***	***	***	54	18.2	2.3	1.1

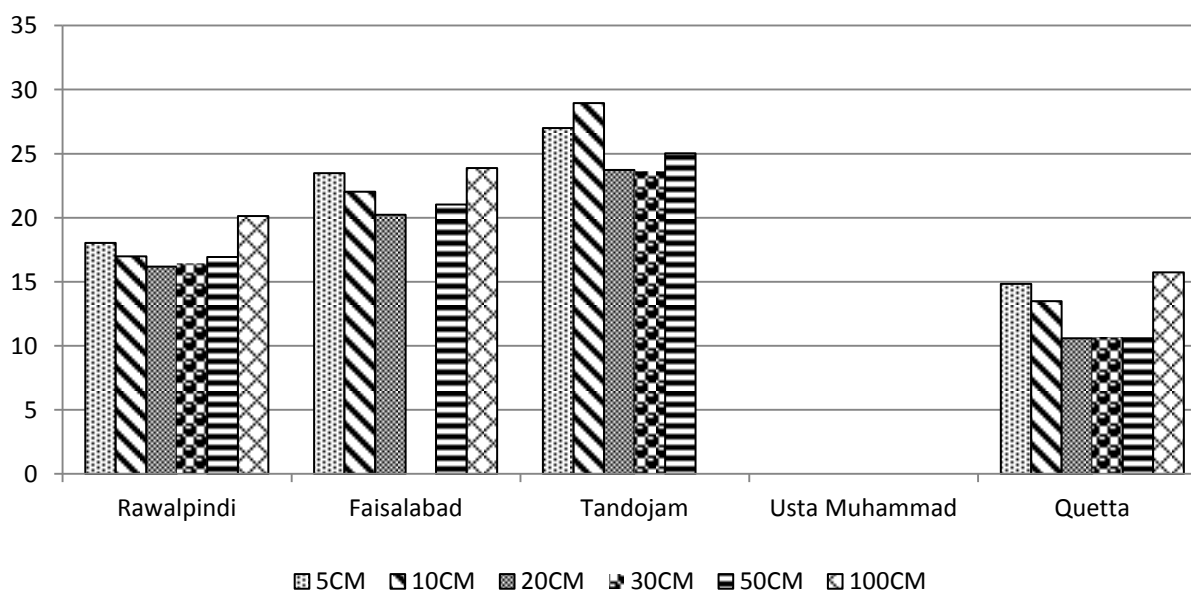
Table-1: Meteorological parameters for selected station of Pakistan. “Dep” in the table stands for difference from climatic normal, i.e. actual value minus normal. And “% Dep” is calculated by the formula; **Dep divided by Normal multiplied by 100**. Tmin & Tmax stands for minimum and maximum temperatures 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, 2016

Precipitation(mm)



Soil Temperature(°C)



1. Past Weather (21st to 30th November, 2016)

Dry weather reported in most of the agricultural plains of country; however light rainfall reported from few places in K.P. Trace (not measureable) rainfall reported from few places of Punjab, G.B & Kashmir.

1.1 Punjab

Rainfall reported as Trace (not measureable) at one place of Punjab i.e. Rawalpindi. Decadal maximum & minimum both raised above normal 1.7°C & 2.0°C respectively, in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 59%, 57.9hrs, 1.6km/hr and 1.6mm/day respectively.

1.2 Sindh

Dry weather reported in the agricultural plains of Sindh. Decadal maximum & minimum both raised above normal 1.6°C & 1.1°C respectively, in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 55%, 91.1hrs, 2.2km/hr and 2.5mm/day respectively.

1.3 Khyber Pakhtunkhwa (KP)

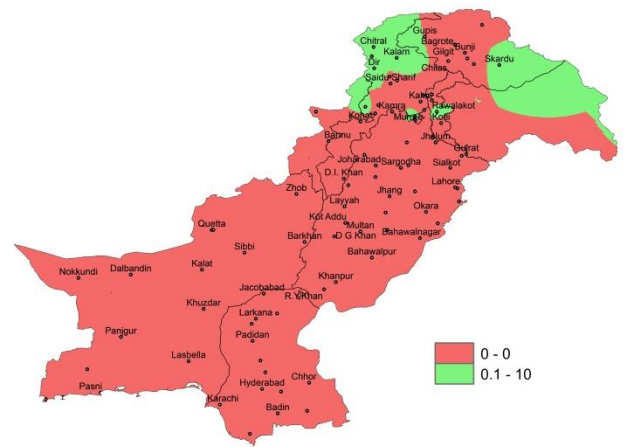
Light rainfall reported in few places of KP. Chief amount of rainfall received Kalam, Chitral & Dir. Decadal maximum & minimum both raised above normal 1.3°C & 2.1°C respectively, in the province, in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 62%, 46.1hrs, 0.6km/hr and 2.0mm/day respectively.

1.4 Balochistan

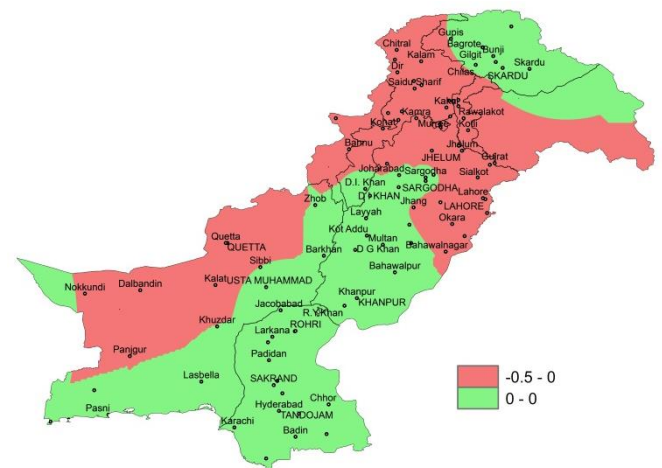
Dry weather reported in the agricultural plains of Balochistan. Decadal maximum raised above normal by 0.1°C & minimum dropped below normal by 1.1°C, in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 46%, 87.1hrs, 2.8km/hr and 2.0mm/day respectively.

1.5 Gilgit-Baltistan and Azad Jammu & Kashmir

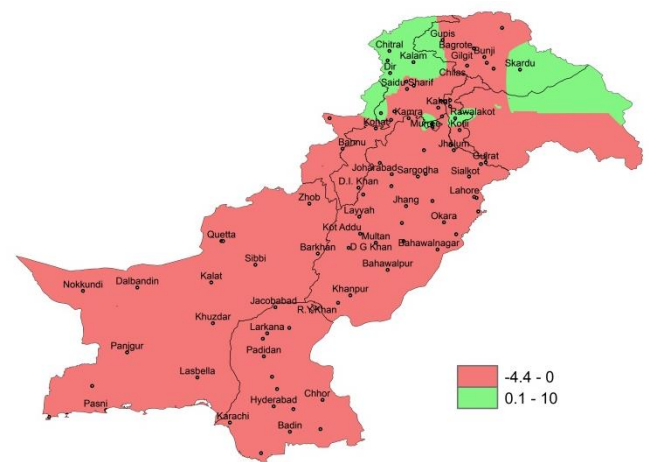
Rainfall reported as Trace (not measureable) at few place of GB & Kashmir. Chief amount of rainfall received Rawalakot & Skardu. Decadal maximum remained normal & minimum raised above normal by 4.2°C, in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 56%, 18.2hrs, 1.6km/hr and 1.0mm/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 in "mm"

2(a) Past Weather for Major Agricultural Plains (21st to 30th November, 2016)

2.1 RAMC, Rawalpindi (Potohar region)

Rainfall reported as Trace (not measureable) during the decade; however weather remained cloudy for 09days. Average relative humidity recorded as 64%. Mean day temperature was 25.2°C while night temperature recorded as 9.0°C with 36.5hours bright sunshine duration. Wind speed recorded as 2.0km/hr with mean wind direction *westerly*.

2.2 RAMC, Faisalabad (Central Punjab)

Dry weather reported during the decade; however weather remained cloudy for 05days. Average relative humidity recorded as 52%. Mean day temperature was 28.6°C while night temperature recorded as 10.9°C with 64.2hours bright sunshine duration. Wind speed recorded as 1.2km/hr with mean wind direction *westerly*.

Wheat: *Very Good condition, Emergence stage.*

2.3 RAMC, Tandojam (Lower Sindh)

Dry weather reported during the decade; however weather remained clear throughout the decade. Average relative humidity recorded as 56%. Mean day temperature was 30.6°C while night temperature recorded as 11.9°C with 84.3hours bright sunshine duration. Wind speed recorded as 2.0km/h with mean wind direction *north easterly*.

Wheat (Imdad): *Good condition, 3rd leaf stage.*

2.4 RAMC, Usta Muhammad (Eastern Balochistan)

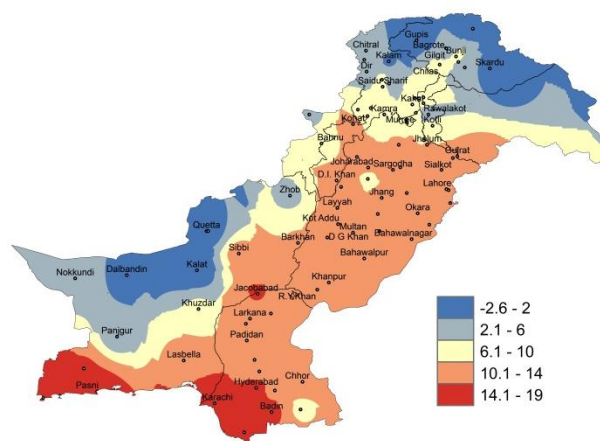
Dry weather reported during the decade; however weather remained cloudy for 01day. Average relative humidity recorded as 50%. Mean day temperature was 29.6°C while night temperature recorded as 11.5°C. Wind speed recorded as 1.0km/h with mean wind direction *north easterly*.

Wheat: *Very Good condition, Germination stage.*

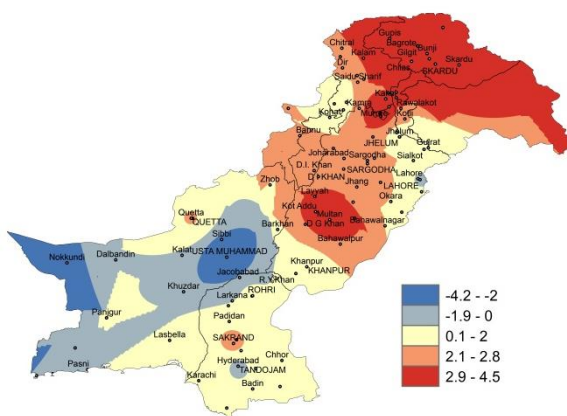
2.5 RAMC, Quetta (Northern Balochistan)

Dry weather reported during the decade; however weather remained cloudy for 09days. Average relative humidity recorded as 41%. Mean day temperature was 15.2°C while night temperature recorded as 2.2°C with 87.1hours bright sunshine duration. Wind speed recorded as 4.5km/hr with mean wind direction *north easterly*.

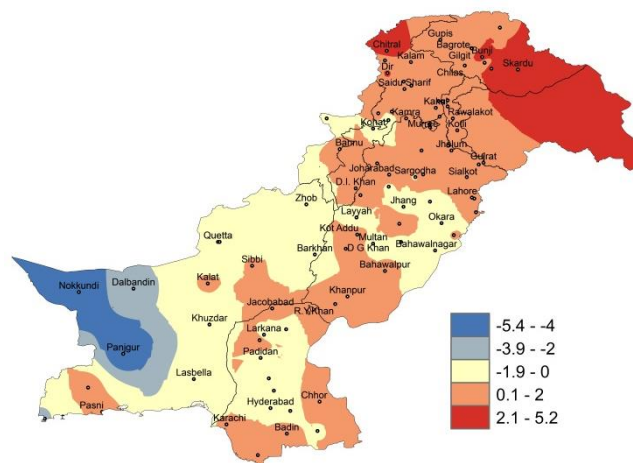
Wheat: *Very Good condition, Emergence stage*



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 in °C

2(b) Past Weather for Sub-Regional Agricultural Plains (21st to 30th November, 2016)

2.6 Jhelum

Dry weather reported during the decade; however weather remained cloudy for 09days. Average relative humidity recorded as 58%. Mean day temperature was 26.6°C while night temperature recorded as 10.3°C with 50.6hours bright sunshine duration. Wind speed recorded as 1.2km/hr with mean wind direction *north westerly*.

2.7 Lahore

Dry weather reported during the decade; however weather remained cloudy for 09days. Average relative humidity recorded as 58%. Mean day temperature was 27.7°C while night temperature recorded as 12.2°C with 59.2hours bright sunshine duration. Wind speed recorded as 1.4km/hr with mean wind direction *north westerly*.

2.8 Sargodha

Dry weather reported during the decade; however weather remained cloudy for 10day. Average relative humidity recorded as 64%. Mean day temperature was 27.1°C while night temperature recorded as 12.0°C with 53.3hours bright sunshine duration. Wind speed recorded 2.4km/hr with mean wind direction *variable*.

2.9 Multan

Dry weather reported during the decade; however weather remained cloudy for 08days. Average relative humidity recorded as 57%. Mean day temperature was 26.9°C while night temperature recorded as 12.6°C with 69.9hours bright sunshine duration. Wind speed recorded 0.8km/hr with mean wind direction *north easterly*.

2.10 Khanpur

Dry weather reported during the decade; however weather remained cloudy for 01day. Average relative humidity recorded as 59%. Mean day temperature was 29.3°C while night temperature recorded as 11.4°C with 71.4hours bright sunshine duration. Wind speed recorded 1.9km/hr with mean wind direction *variable*.

2.11 Sakrand

Dry weather reported during the decade; however weather remained clear throughout the decade. Average relative humidity recorded as 59%. Mean day temperature was 29.6°C while night temperature recorded as 13.2°C with 92.8hours bright sunshine duration. Wind speed recorded 3.33km/hr with wind direction *north easterly*.

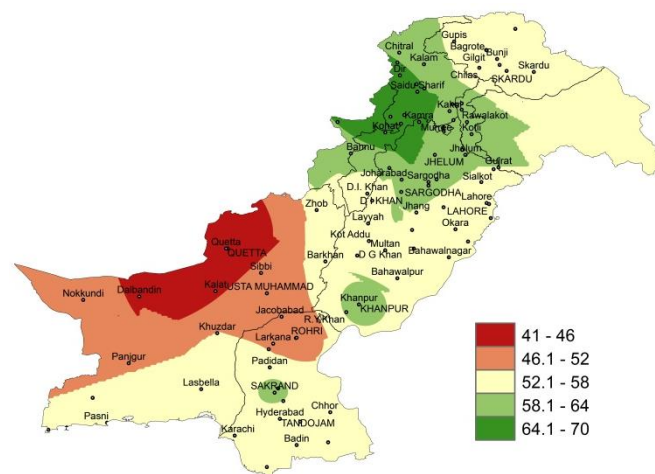


Figure.3: Relative Humidity in Percentage (%)

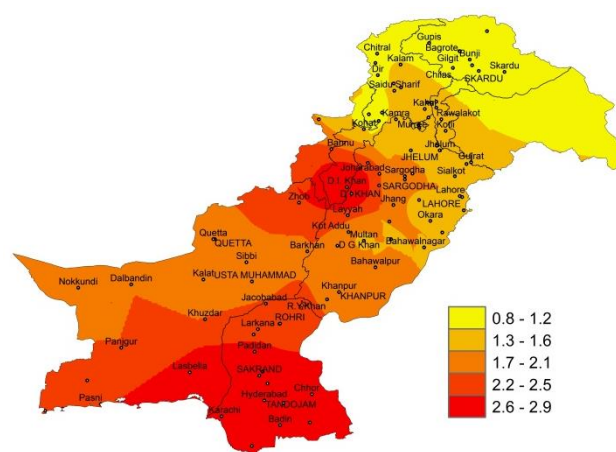


Figure.4: Reference Crop Evapotranspiration "ET₀" in mm/day

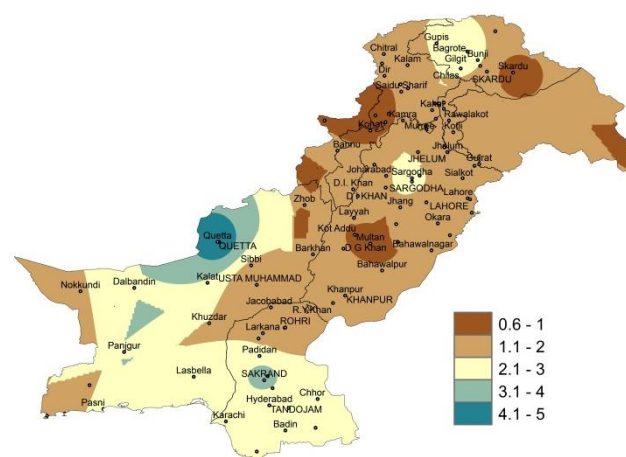


Figure 5: Wind Speed in kilometer per hour (km/h)

2.12 Rohri

Dry weather reported during the decade; however weather remained cloudy for 01day. Average relative humidity recorded as 49%. Mean day temperature was recorded as 29.5°C with 96.1hours bright sunshine duration. Wind speed recorded as 1.3km/hr with mean wind direction *northerly*.

2.13 D.I. Khan

Dry weather reported during the decade; however weather remained cloudy for 08days. Average relative humidity recorded as 56%. Mean day temperature was 27.4°C while night temperature recorded as 11.0°C with 53.1hours bright sunshine duration.

2.14 Peshawar

Dry weather reported during the decade; however weather remained cloudy for 09days. Average relative humidity recorded as 68%. Mean day temperature was 24.6°C while night temperature recorded as 9.5°C with 39.0hours bright sunshine duration. Wind speed recorded as 0.6km/hr with mean wind direction *north westerly*.

2.15 Skardu

Dry weather reported during the decade; however weather remained cloudy for 09days. Average relative humidity recorded as 57%. Mean day temperature was 12.7°C while night temperature recorded as 0.0°C with 18.1hours bright sunshine duration. Wind speed recorded as 0.8km/hr with mean wind direction *easterly*.

2.16 Gilgit

Dry weather reported during the decade; however weather remained cloudy for 10days. Average relative humidity recorded as 54%. Mean day temperature was 16.9°C while night temperature recorded as 2.5°C with 18.2hours bright sunshine duration. Wind speed recorded as 2.3km/hr with mean wind direction *westerly*.

3 Ten Days Weather Advisory for Farmers **(1st to 10th December, 2016)**

3.1 Temperature Forecast

Night temperatures are expected to drop slightly (1-2°C) 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 during the decade.

3.3 Rain Forecast

- ❖ **Punjab:** Mainly dry weather is expected in most parts of the province however light rainfall is expected at scattered places in Punjab including Rawalpindi, Multan, Bahawalpur & Gujranwala, Faisalabad divisions from 9th to 10th of the decade.
- ❖ **Khyber Pakhtunkhwa:** Mainly dry weather is expected during the decade however light to moderate rainfall is expected at scattered places in KP including Malakand, Mardan, Hazara, Peshawar divisions from 9th to 10th of the decade.
- ❖ **Sindh:** Mainly dry weather is expected in most parts of the province however light rainfall is expected at few places of Sindh including Hyderabad, Sukkur divisions from 9th to 10th of the decade.
- ❖ **Balochistan:** Mainly dry weather is expected in most parts of the province however light rainfall is expected in North West Balochistan from 9th to 10th of the decade.
- ❖ **Gilgit Baltistan:** Mainly cloudy weather is expected in most parts of G.B however light to moderate rain with snowfall is expected at Gilgit & Skardu from 9th to 10th of the decade.
- ❖ **Kashmir:** Mainly cloudy weather is expected in most parts of the Kashmir however light to moderate rain with snowfall is expected at Muzaffargarh, Rawalakot from 9th to 10th of the decade.

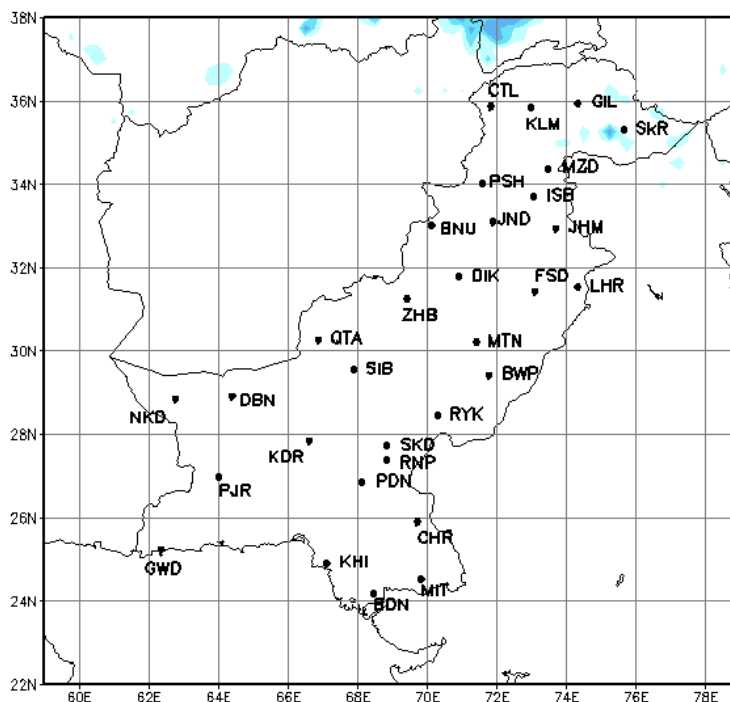
3.4 Advisory for Farmers

During the last two months dry weather has been reported in most of agricultural plains of the country and is likely to prevail by mid of December. Keeping in view the present and expected dry atmospheric soil conditions following advices are given to farming community especially for rainfed areas of Khyber Pakhtunkhwa and Punjab.

- ❖ Farmers obtaining crop water through tube wells are advised to schedule the irrigation as per crop requirement.
- ❖ Farmers may sow recommended varieties and seed should be specially treated before sowing in consultation with agricultural offices.
- ❖ Farmers are advised to cultivate winter vegetables in time.
- ❖ In areas like Potohar Region and adjoining areas of Khyber Pakhtunkhwa where rain water storages are available farmers are advised to irrigate crops by using available irrigation methods like sprinkler irrigation etc.
- ❖ Farmers are advised to take in time precautionary measures to protect livestock from expected dry/cold weather during the decade.

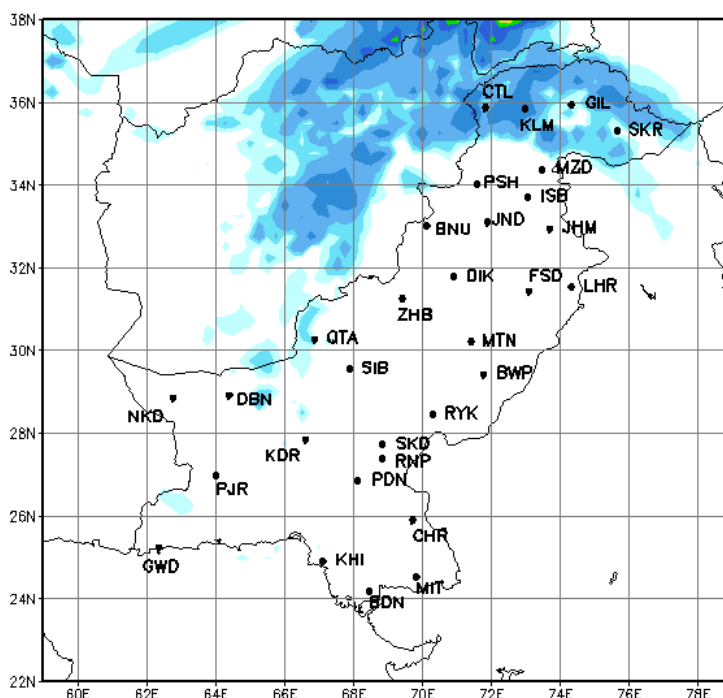
4.1 Precipitation Forecast (1st to 3rd December, 2016)

The forecast for the first three days (1st to 3rd) of December 2016 shows that light rainfall is expected at isolated places in GB whereas dry weather is expected in rest of the country.



4.2 Precipitation Outlook (4th to 10th December, 2016)

The outlook for the last seven days (4th to 10th) of December 2016 shows that light to moderate rainfall is expected in upper KP, north eastern Balochistan, G.B & Kashmir. While dry weather may prevail in rest 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)