Decadal Agromet Bulletin of Pakistan

Highlights….

- Light to moderate rainfall reported from most parts of Punjab, KP, G.B & Kashmir, however light rainfall reported from Balcohistan and upper Sindh during the last decade.
- Highest amount of rainfall recorded as 17.0 mm at Noorpur Thal during the last decade
- Lowest minimum temperature recorded as -8.0°C at Kalam during the last decade.
- Mostly dry weather is expected throughout the country in this decade; however light to moderate rain (with snowfall over the mountains) is expected at most parts of the country.
- Wheat crop is at Tillering-Wax Maturity stages in different agriculture plains. Farmers are advised to schedule their irrigation plans by keeping in view the expected rain in the particular areas of the country.
- Farmers in the lower half of the country especially those in central regions are advised to take up poultry rearing houses to maintain optimum room temperature and take care against the rapid changes in air temperature and relative humidity.
- 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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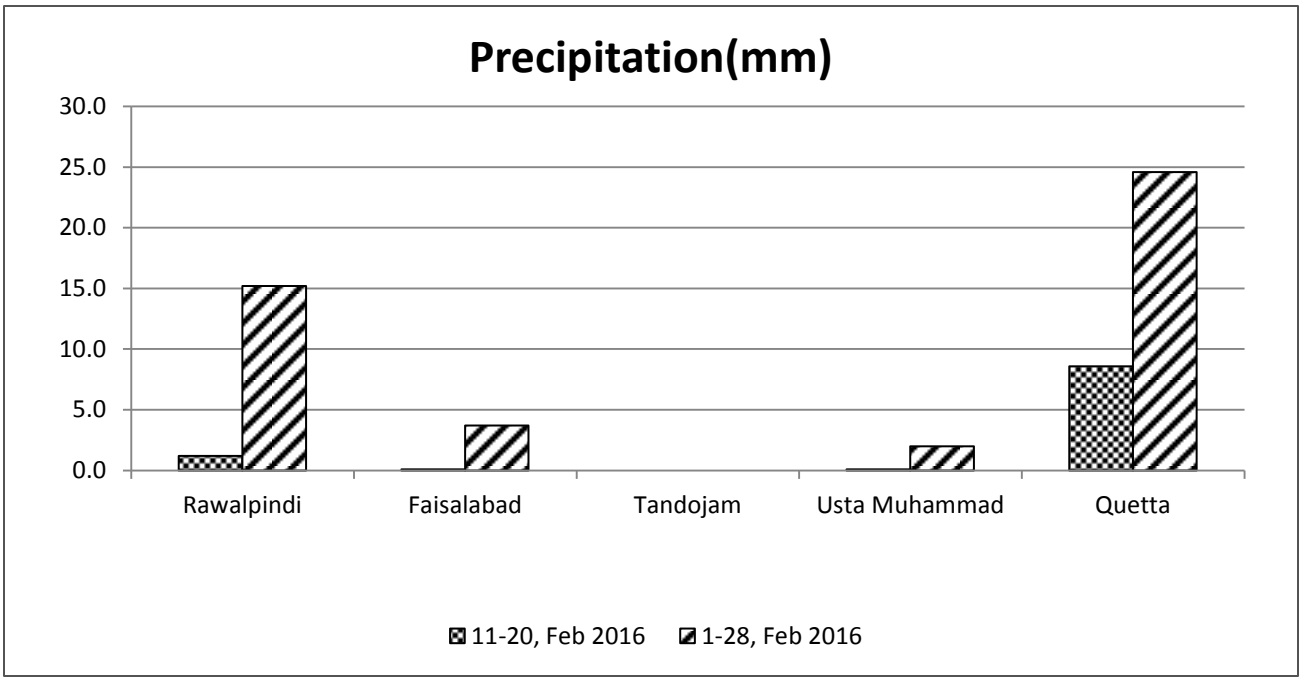
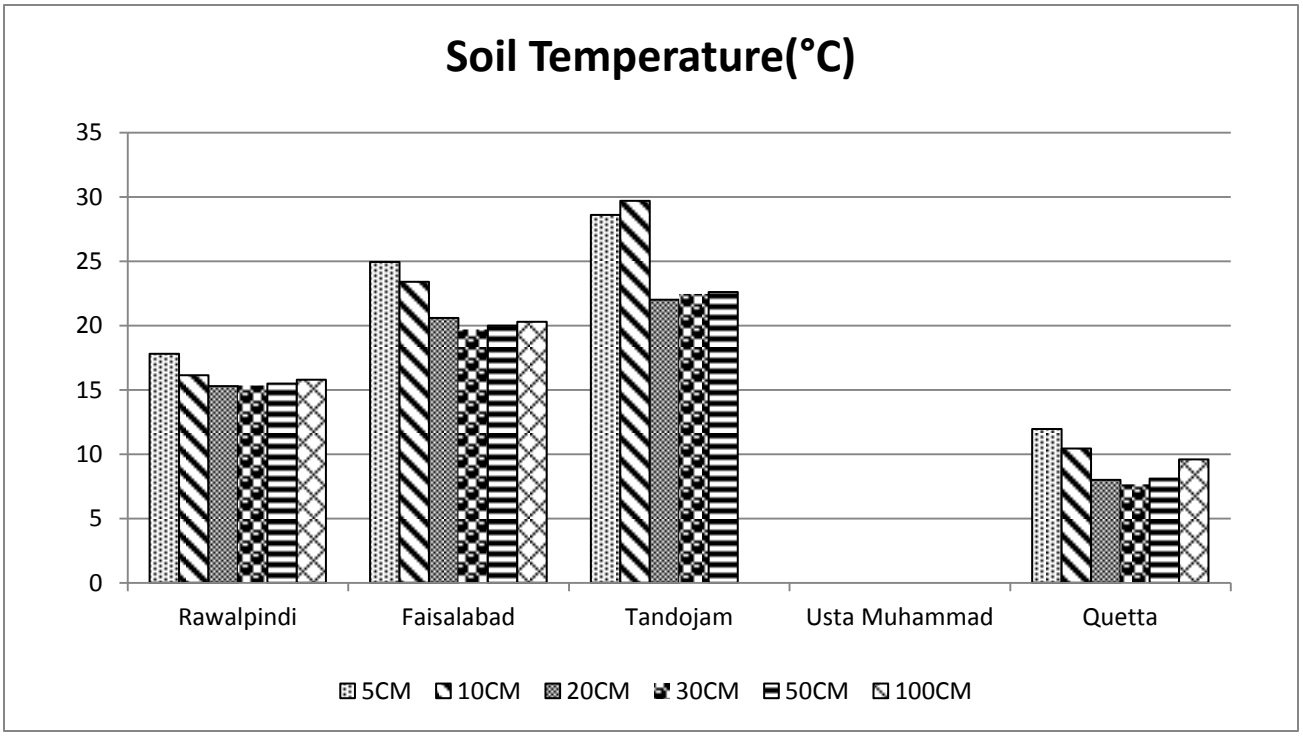
Meteorological Conditions during 3rd decade of February, 2017

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	1.2	-0.2	2.5	0.2	16.4	17.8	16.2	15.3	15.4	15.5	15.8	51	68.9	3.0	2.5
2	Faisalabad	0.3	0.1	-0.2	2.1	-1.4	18.0	25.0	23.4	20.6	19.7	20.0	20.3	43	70.5	2.5	2.7
3	Jhelum	1.0	0.1	-0.9	2.9	-2.7	17.6	20.1	18.3	16.7	16.3	17.1	***	41	79.3	4.2	3.3
4	Lahore	0.5	0.0	-0.5	1.7	-1.5	19.1	19.1	20.2	18.6	18.0	***	19.0	47	78.0	2.6	2.8
5	Sargodha	0.3	1.5	1.2	3.3	-0.5	19.4	24.9	23.6	19.7	19.4	***	19.6	49	70.0	3.1	3.0
6	Multan	0.5	9.0	8.5	1.0	-0.3	19.1	***	***	***	***	***	***	42	38.6	3.8	3.0
7	Khanpur	0.1	0.0	-0.1	2.4	-2.0	19.9	***	20.6	20.9	21.3	21.6	22.2	42	82.9	3.6	3.5
8	Tandojam	0.0	0.0	0.0	0.6	-2.3	21.2	28.6	29.7	22.0	22.5	22.6	***	47	74.0	2.8	3.4
9	Sakrand ☆	0.0	0.0	0.0	0.7	-0.2	21.0	33.7	***	***	***	***	24.0	46	75.0	3.9	3.6
11	Rohri	0.5	0.0	-0.5	1.5	-2.8	21.4	***	***	***	***	***	***	36	83.2	1.6	2.9
12	D.I Khan	0.6	0.1	-0.5	3.4	0.0	19.1	***	***	***	***	***	***	43	70.0	7.3	4.1
13	Peshawar	1.9	0.0	-1.9	3.2	-1.9	16.4	21.6	18.0	16.4	***	***	***	43	60.0	5.6	3.3
14	Usta .M	0.4	0.1	-0.3	-0.9	-1.4	19.9	***	***	***	***	***	***	55	***	2.3	3.0
15	Quetta	1.2	8.6	7.4	-3.3	-0.7	8.3	12.0	10.5	8.0	7.7	8.1	9.6	45	71.8	5.5	2.5
16	Skardu	1.1	0.0	-1.1	-1.1	0.9	3.8	***	***	***	***	***	***	64	53.1	1.3	1.4
17	Gilgit	0.3	0.0	-0.3	0.6	1.6	10.3	***	***	***	***	***	***	22	56.2	7.5	3.2

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 February, 2017





1. Past Weather (21st to 28th January, 2017)

Light to moderate rainfall reported from most parts of Punjab, KP, G.B & Kashmir, however light rainfall reported from Balcohistan and upper Sindh during the last decade.

1.1 Punjab

Light to moderate rainfall reported from agricultural plains of Punjab. Chief amount of rainfall received at Noorpurthal, Layyah & Multan. Decadal maximum raised above normal by 2.3°C & minimum dropped below normal by 1.2°C, in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 45%, 69.7hrs, 3.3km/hr and 3.0mm/day respectively.

1.1 Sindh

Light rainfall reported from one place of Sindh i.e. Jacobabad. Decadal maximum raised above normal by 0.9°C & minimum dropped below normal by 1.8°C, in the province, in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 43%, 77.4hrs, 2.8km/hr and 3.3mm/day respectively.

1.2 Khyber Pakhtunkhwa (KP)

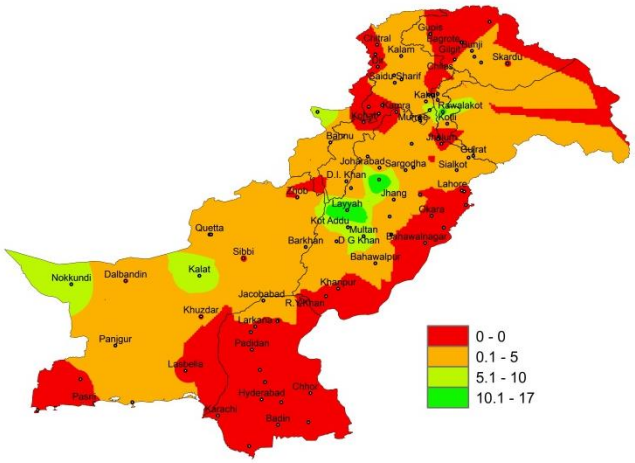
Light to moderate rainfall reported from agricultural plains of KP. Chief amount of rainfall received at Parachinar, Kakul & Malam Jabba. Decadal maximum raised above normal by 3.3°C & minimum dropped below normal by 1.0°C respectively, in the province, in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 43%, 65.0hrs, 6.5km/hr and 3.7mm/day respectively.

1.3 Balochistan

Light rainfall reported from agricultural plains of Balochistan. Chief amount of rainfall received at Kalat, Nokkundi & Quetta. Decadal maximum & minimum both dropped below normal by 2.1°C & 1.1°C respectively, in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 50%, 71.8hrs, 3.9km/hr and 2.8mm/day respectively.

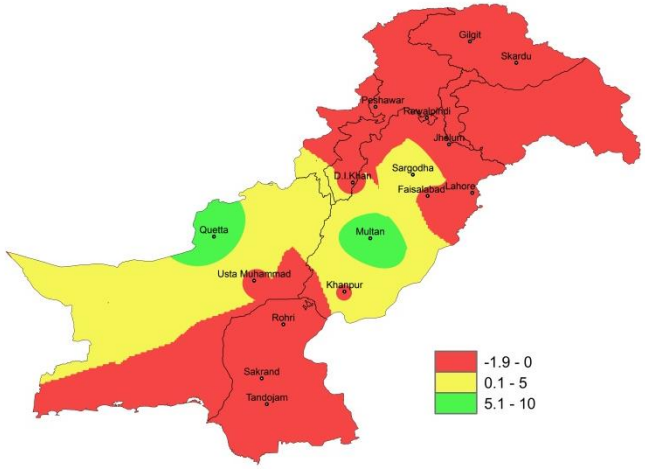
1.4 Gilgit-Baltistan and Azad Jammu & Kashmir

Light to moderate rainfall reported from agricultural plains of GB & Kashmir. Chief amount of rainfall received at Rawalakot & Garhi Dopatta. Decadal maximum & minimum both dropped below normal by 0.3°C & 1.3°C respectively, in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 43%, 54.7hrs, 4.4km/hr and 2.3mm/day respectively.



I. Actual rainfall

II. Departure of rainfall from Normal



III. Departure of rainfall from Previous Decade

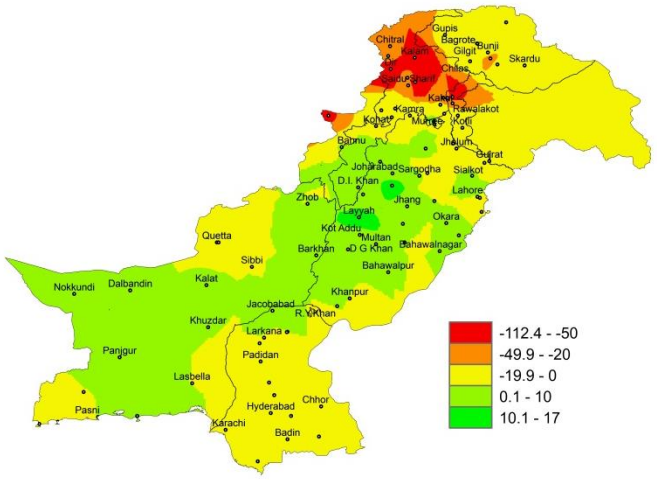


Figure.1: Rainfall distribution during previous decade (mm)

2(a) Past Weather for Major Agricultural Plains (21st to 28th February, 2017)

2.1 RAMC, Rawalpindi (Potohar region)

Rainfall reported as 1.2mm during the decade; however weather remained cloudy for 07days. Average relative humidity recorded as 51%. Mean day temperature was 24.6°C while night temperature recorded as 8.2°C with 68.9hours bright sunshine duration. Wind speed recorded as 3.0km/hr with mean wind direction *westerly.*

2.2 RAMC, Faisalabad (Central Punjab)

Rainfall reported as Trace (not measureable) during the decade; however weather remained cloudy for 03days. Average relative humidity recorded as 43%. Mean day temperature was 27.1°C while night temperature recorded as 8.9°C with 70.5hours bright sunshine duration. Wind speed recorded as 2.5km/hr with mean wind direction *north westerly.*

Wheat: *Very Good condition, heading stage completed.*

2.3 RAMC, Tandojam (Lower Sindh)

Dry weather reported during the decade; however weather remained cloudy for 01day. Average relative humidity recorded as 47%. Mean day temperature was 31.3°C while night temperature recorded as 11.0°C with 74.0hours bright sunshine duration. Wind speed recorded as 2.8km/h with mean wind direction *northerly*.

Wheat (Imdad): *Very Good condition, wax maturity stage*.

2.4 RAMC, Usta Muhammad (Eastern Balochistan)

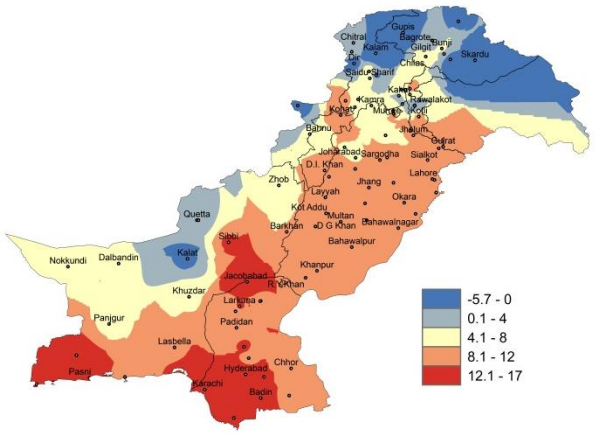
Rainfall reported as Trace (not measureable) during the decade; however weather remained cloudy for 05days. Average relative humidity recorded as 55%. Mean day temperature was 28.3°C while night temperature recorded as 11.5°C. Wind speed recorded as 2.3km/h with mean wind direction *westerly.*

Wheat: *Very Good condition, shooting stage*.

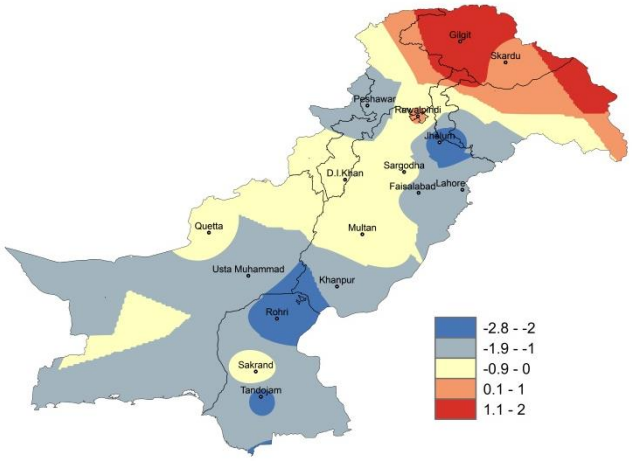
2.5 RAMC, Quetta (Northern Balochistan)

Rainfall reported as 8.6mm during the decade; however weather remained cloudy for 07days. Average relative humidity recorded as 45%. Mean day temperature was 13.7°C while night temperature recorded as 2.9°C with 71.8hours bright sunshine duration. Wind speed recorded as 5.5km/hr with mean wind direction *north westerly.*

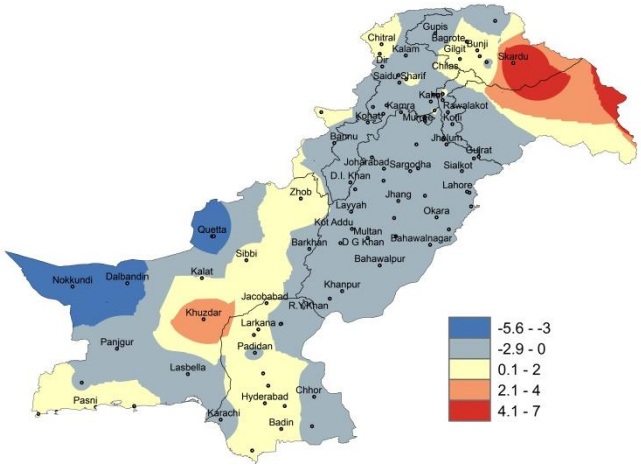
Wheat (Local White): *Good condition, tillering stage*



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 (°C)

2(b) Past Weather for Sub-Regional Agricultural Plains (21st to 28th January, 2017)

2.6 Jhelum

Rainfall reported as Trace (not measureable) during the decade; however weather remained cloudy for 06days. Average relative humidity recorded as 41%. Mean day temperature was 27.1°C while night temperature recorded as 8.0°C with 79.3hours bright sunshine duration. Wind speed recorded as 4.2km/hr with mean wind direction *north westerly.*

2.7 Lahore

Dry weather reported during the decade; however weather remained cloudy for 04days. Average relative humidity recorded as 47%. Mean day temperature was 26.1°C while night temperature recorded as 12.1°C with 78.0hours bright sunshine duration. Wind speed recorded as 2.6km/hr with mean wind direction *north westerly*.

2.8 Sargodha

Rainfall reported as 1.5mm during the decade; however weather remained cloudy for 05days. Average relative humidity recorded as 49%. Mean day temperature was 28.3°C while night temperature recorded as 10.4°C with 70.0hours bright sunshine duration. Wind speed recorded 3.1km/hr with mean wind direction *variable.*

2.9 Multan

Rainfall reported as 9.0mm during the decade; however weather remained cloudy for 05days. Average relative humidity recorded as 42%. Mean day temperature was 26.9°C while night temperature recorded as 11.2°C with 38.6hours bright sunshine duration. Wind speed recorded 3.8km/hr with mean wind direction *north easterly.*

2.10 Khanpur

Dry weather reported during the decade however weather remained cloudy for 03days. Average relative humidity recorded as 42%. Mean day temperature was 29.9°C while night temperature recorded as 9.9°C with 82.9hours bright sunshine duration. Wind speed recorded 3.6km/hr with mean wind direction *northerly.*

2.11 Sakrand

Dry weather reported during the decade; however weather remained cloudy for 25days. Average relative humidity recorded as 46%. Mean day temperature was 29.9°C while night temperature recorded as 12.0°C with 75.5hours bright sunshine duration. Wind speed recorded 3.9km/hr with wind direction *northerly.*

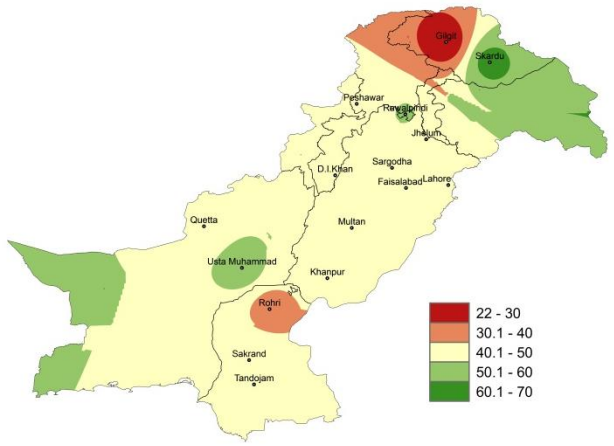


Figure.3: Relative Humidity in Percentage (%)

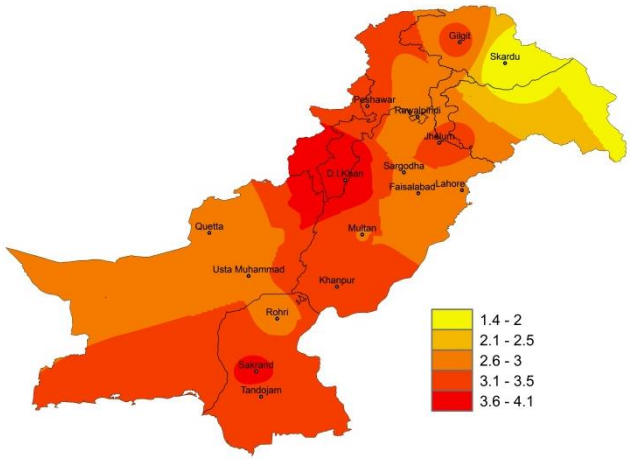


Figure.4: Reference Crop Evapotranspiration "ETo" in mm/day

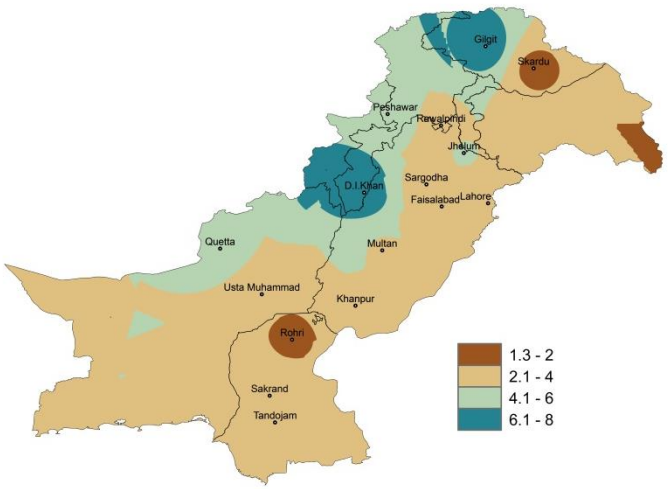


Figure 5: Wind Speed in kilometer per hour (km/h)

2.12 Rohri

Dry weather reported during the decade; however weather remained cloudy for 02days. Average relative humidity recorded as 36%. Mean day temperature was 30.3°C while night temperature recorded as 12.4°C with 83.2hours bright sunshine duration. Wind speed recorded 1.6km/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 02days. Average relative humidity recorded as 43%. Mean day temperature was 27.8°C while night temperature recorded as 10.3°C with 70.0hours bright sunshine duration. Wind speed recorded 7.3km/hr with wind direction *northerly.*

2.14 Peshawar

Dry weather reported during the decade; however weather remained cloudy for 04days. Average relative humidity recorded as 43%. Mean day temperature was 25.0°C while night temperature recorded as 7.8°C with 19.1hours bright sunshine duration. Wind speed recorded as 5.6km/hr with mean wind direction *north easterly*.

2.15 Skardu

Dry weather reported during the decade; however weather remained cloudy for 05days. Average relative humidity recorded as 64%. Mean day temperature was 8.2°C while night temperature recorded as -0.7°C with 53.1hours bright sunshine duration. Wind speed recorded as 1.3km/hr with mean wind direction *easterly*.

2.16 Gilgit

Dry weather reported during the decade; however weather remained cloudy for 04days. Average relative humidity recorded as 22%. Mean day temperature was 16.4°C while night temperature recorded as 4.2°C with 56.2hours bright sunshine duration. Wind speed recorded as 7.5km/hr with mean wind direction *westerly.*

3 Ten Days Weather Advisory for Farmers (1st to 10th March, 2017)

3.1 Temperature Forecast

Day temperature is slightly normal or above normal and night temperatures are expected to slightly 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 during the decade.

3.3 Rain Forecast

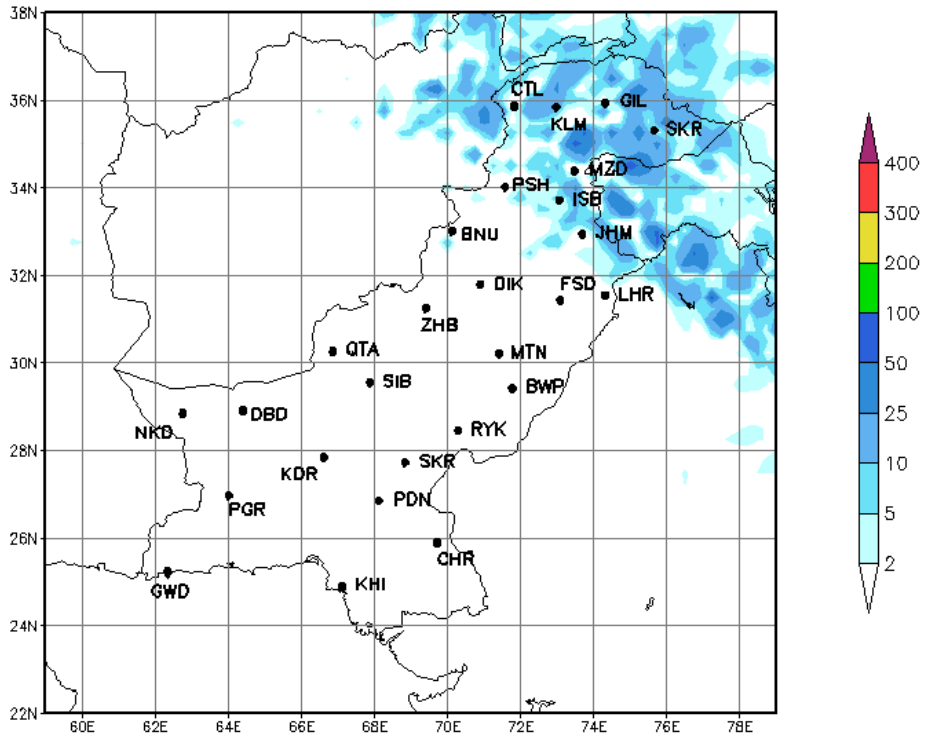
- **Punjab**: Mainly dry weather is expected at most parts of the province. However light to moderate rainfall is expected from 1st to 3rd and from 7th to 10th of the decade.
- **Khyber Pakhtunkhwa**: Mainly cold and cloudy weather is expected in most parts of the province 1st to 3rd and from 7th to 10th of the decade.
- **Sindh:** Dry weather is expected in the agricultural plains of province during the decade.
- **Balochistan:** Mainly dry weather is expected in most parts of the province however light rainfall is expected at scattered places of Northern Balochistan from 5th to 6th of the decade.
- **Gilgit Baltistan:** Mainly cold and cloudy weather is expected in most parts of G.B however light to moderate rain with snowfall is expected at scattered places during the current decade.
- **Kashmir:** Mainly cold and cloudy weather is expected in most parts of the Kashmir however light to moderate rain with snowfall is expected at Muzzaffarabad and Rawalakot regions during the current decade.

3.4 Advisory for Farmers

- Wheat crop is at tillering-wax maturity stages in different areas. Farmers are advised to stop irrigating the crops by keeping in view the expected rain in the agricultural plains of the country
- Farmers are advised to remove weeds from the fields, so that the present soil moisture may fully be utilized.
- Farmers in the lower half of the country especially those in central regions are advised to take up poultry rearing houses to maintain optimum room temperature and take care against the rapid changes in air temperature and relative humidity.
- 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.

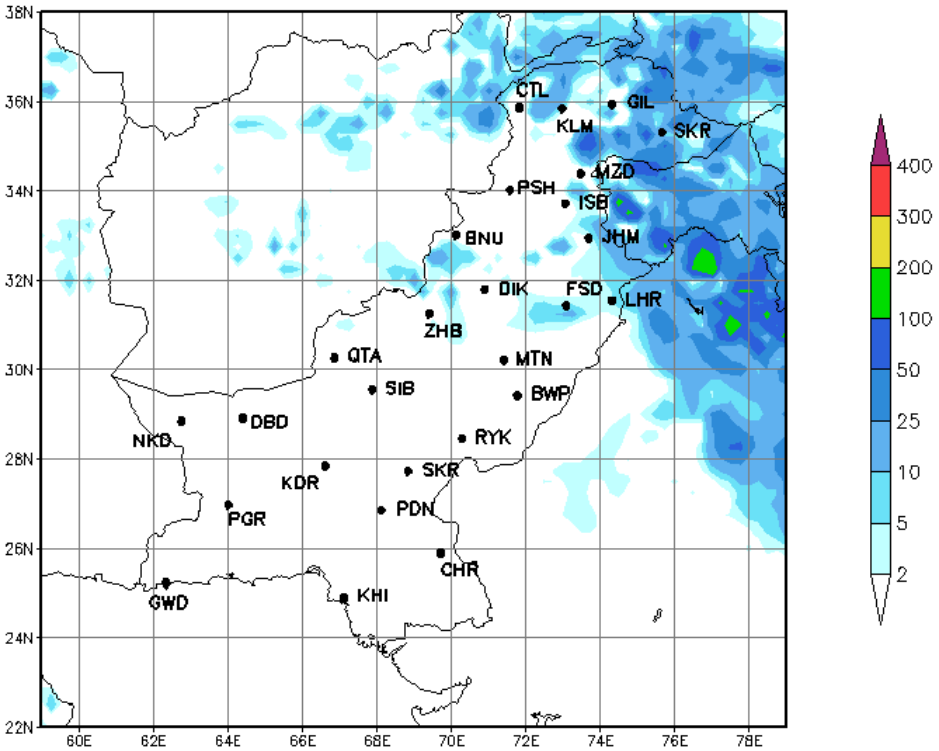
4.1 Precipitation Outlook (1st to 3rd March, 2017)

The forecast for the first three days (1st to 10th) of the first decade of March 2017 shows that light rainfall (with snowfall over the mountainous regions) is expected at isolated places of northeastern Punjab, Upper KP, GB and Kashmir. However dry weather is expected in rest parts of the country.



4.2 Precipitation Outlook (4th to 10th March, 2017)

The outlook for the last seven days (4th to 10th) of the first decade of March 2017 shows that light to moderate rainfall is expected at scattered places in northern Punjab, KP, northern Balochistan, G.B and 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 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)