Decadal Agromet Bulletin of Pakistan

Highlights…

- Light to moderate rainfall reported from most parts of Punjab, K.P & Kashmir however light rainfall reported from few places of Sindh, Balochistan & G.B. during the last decade.
- Highest amount of rainfall recorded as 97.0 mm at Dir during the last decade.
- Lowest minimum temperature recorded as -6.0°C at Skardu during the last decade.
- Foggy conditions persisted in the plain areas of upper Sindh and Punjab.
- Mainly cold and cloudy weather is expected in most parts of the northern and western parts of the country during the current decade, however light to moderate rainfall with snowfall over the hills is expected in particular parts of upper Punjab, KP, G.B & Kashmir.
- Fog may increase in the central parts of the country after the rains.
- 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/orchids from the damaging impacts of extreme weather conditions.

NATIONAL AGROMET CENTRE (NAMC)
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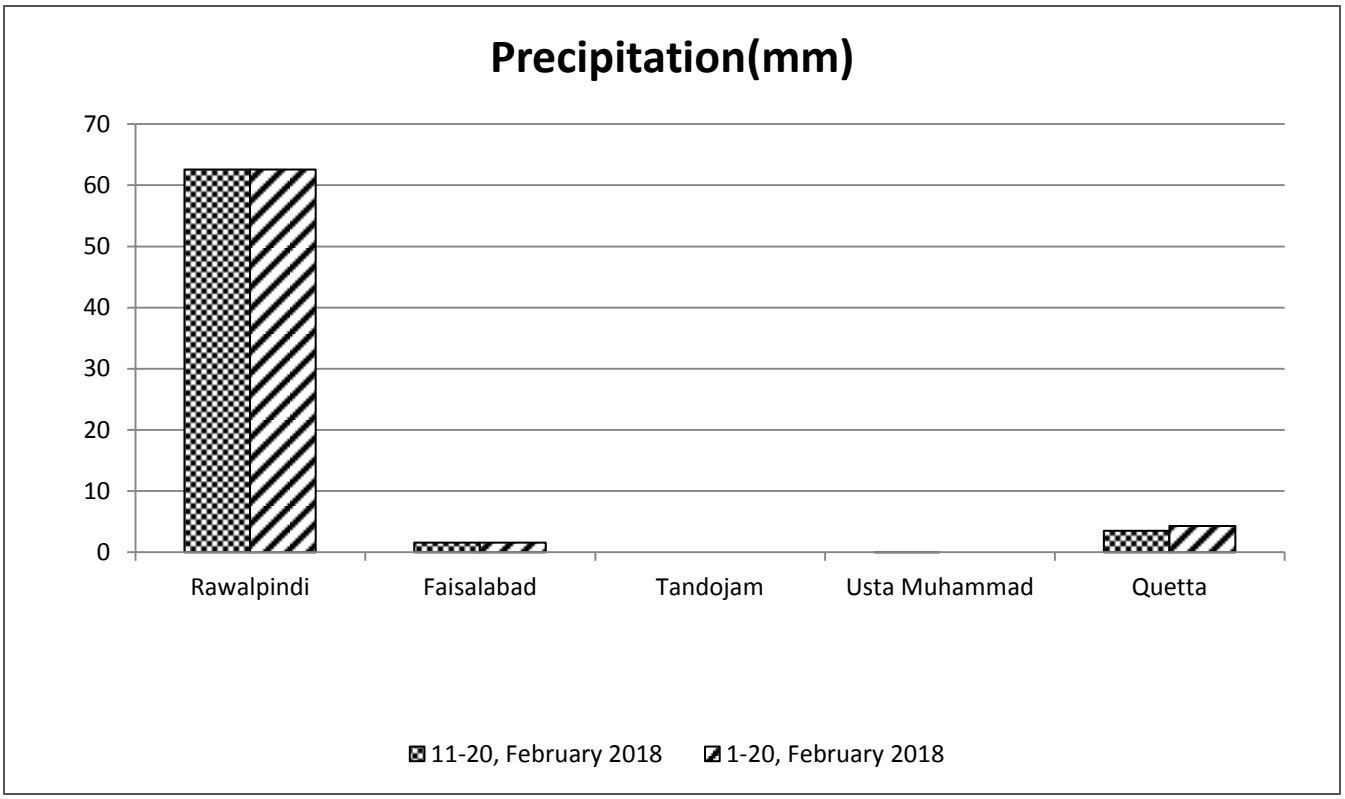
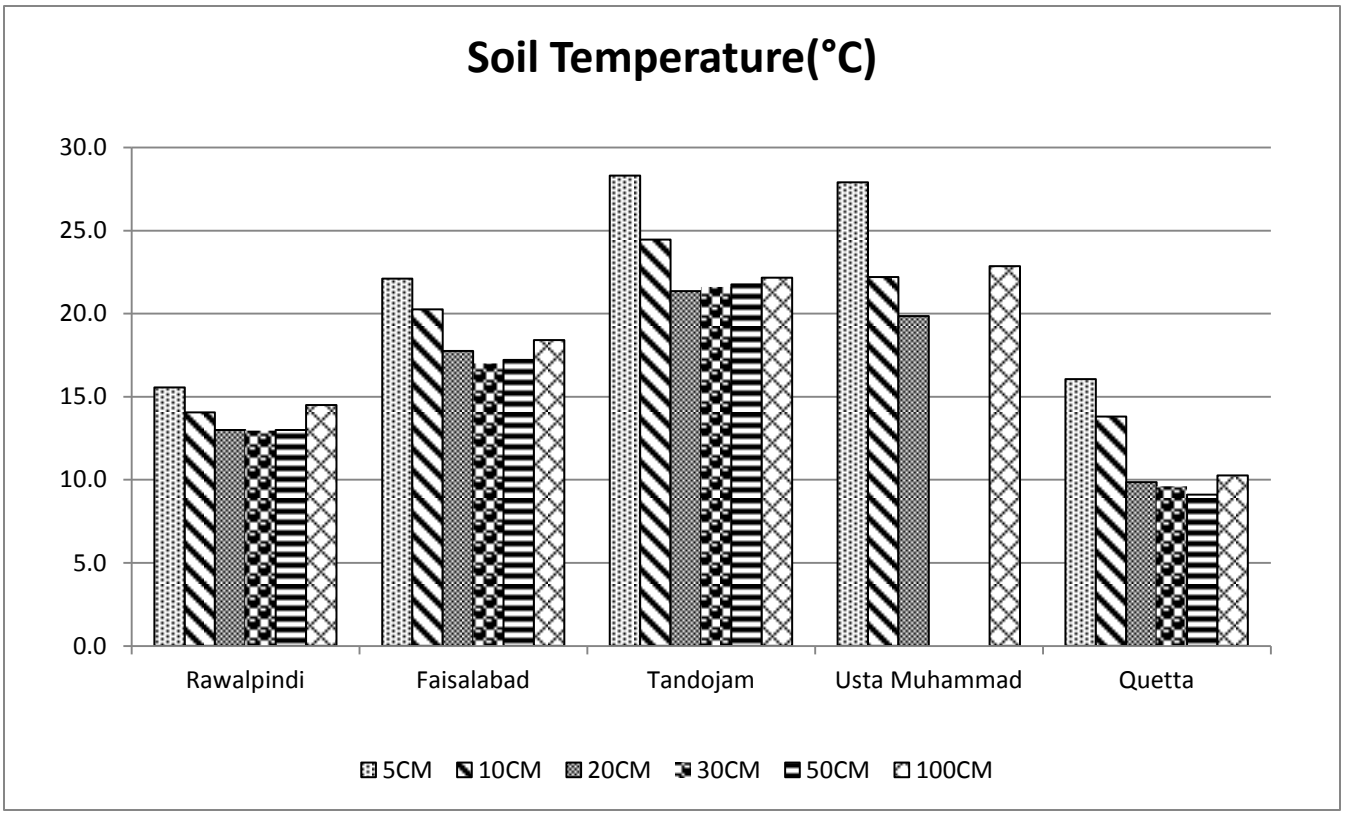
Meteorological Conditions during 2nd Decade of February, 2018

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	3.4	62.6	59.2	1.5	-0.6	14.0	15.6	14.1	13.0	13.0	13.0	14.5	59	68.0	3.9	2.3
2	Faisalabad	1.3	1.6	0.3	1.2	0.9	17.0	22.1	20.3	17.8	17.0	17.2	18.4	57	57.3	2.3	2.1
3	Jhelum	3.3	33.5	30.2	1.1	-0.1	16.4	18.1	16.8	15.7	15.5	16.3	***	55	74.7	4.5	2.6
4	Lahore	2.3	7.0	4.7	0.9	-0.5	17.5	18.9	18.0	16.1	15.6	***	17.6	62	69.9	0.9	1.9
5	Sargodha	1.6	2.4	0.8	1.5	1.0	17.4	22.1	20.0	18.0	18.0	***	18.9	59	65.4	2.8	2.3
6	Multan	1.1	3.1	2.0	-0.3	1.2	16.8	***	***	***	***	***	***	62	57.8	3.7	2.4
7	Khanpur	0.1	0.0	-0.1	0.8	0.1	17.7	***	18.4	18.6	18.9	19.1	20.1	55	54.3	1.8	2.2
8	Tandojam	0.6	0.0	-0.6	0.8	0.5	20.3	28.3	24.5	21.4	21.6	21.8	22.2	50	81.6	3.7	3.4
9	Sakrand☆	0.0	0.0	0.0	6.4	2.7	20.2	26.2	***	***	***	***	23.5	54	86.9	6.5	3.9
11	Rohri	0.0	0.0	0.0	0.5	0.8	20.3	***	***	***	***	***	***	53	82.0	1.0	2.5
12	D.I Khan	1.5	11.7	10.2	1.3	1.8	16.7	18.5	16.8	15.9	16.3	6.1	18.2	64	55.0	8.5	3.0
13	Peshawar	4.1	26.5	22.4	1.5	-1.1	14.4	15.7	14.4	13.2	13.7	14.4	15.5	64	49.0	2.8	1.9
14	Usta .M	0.0	0.0	0.0	-2.8	-0.6	16.8	27.9	22.2	19.9	***	***	22.9	58	***	1.9	2.3
15	Quetta	1.7	3.5	1.8	4.6	4.4	11.1	16.1	13.8	9.9	9.6	9.1	10.3	42	75.4	7.1	3.0
16	Skardu	0.6	0.0	-0.6	-4.6	-5.5	2.7	***	***	***	***	***	***	61	44.5	0.1	1.1
17	Gilgit	1.0	0.0	-1.0	8.5	4.4	8.7	***	***	***	***	***	***	37	43.7	1.9	1.5

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, 2018





Past Weather (11th to 20th February, 2018)

Light to moderate rainfall reported from most parts of the Punjab, K.P & Kashmir however light rainfall reported from few places of Sindh, Balochistan & G.B. during the last decade.

1.1 Punjab

Light to moderate rainfall reported from most of the agricultural plains of Punjab. Chief amount of rainfall is received at Islamabad, Mangla & Murree. Decadal maximum & minimum both raised above normal by 1.0°C & 0.3°C respectively, in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 58%, 63.9hrs, 2.8km/hr and 2.3mm/day respectively.

1.2 Sindh

Light rainfall reported from few agricultural plains of Sindh. Chief amount of rainfall is received at Larkana, Jacobabad & Karachi. Decadal maximum & minimum departure both raised above normal by 2.6°C & 1.3°C respectively, in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 52%, 83.5hrs, 3.7km/hr and 3.3mm/day respectively.

1.3 Khyber Pakhtunkhwa (KP)

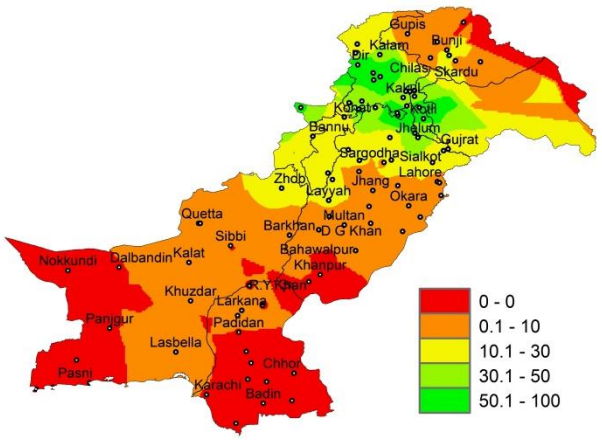
Light to moderate rainfall reported from agricultural plains of KP. Chief amount of rainfall is received at Dir, Malam Jabba & Lower Dir. Decadal maximum & minimum departure both raised above normal by 1.4°C & 0.4°C respectively, in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 64%, 52.0hrs, 5.7km/hr and 2.5mm/day respectively.

1.4 Balochistan

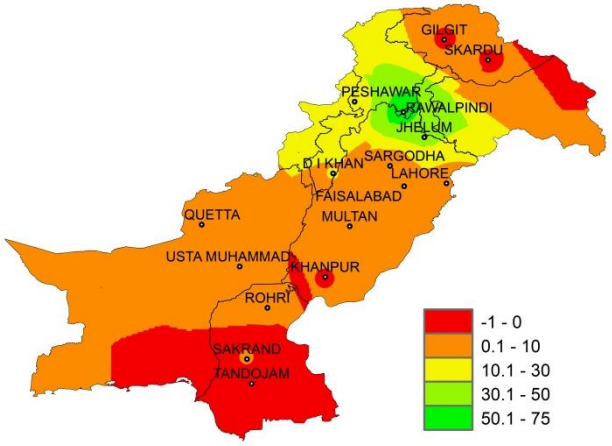
Light rainfall reported from few agricultural plains of Balochistan. Chief amount of rainfall is received at Zhob, Kalat & Quetta. Decadal maximum & minimum departure both raised above normal by 0.9°C & 1.9°C respectively, in the province, in province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 50%, 75.4hrs, 4.5km/hr and 2.7mm/day respectively.

1.5 Gilgit-Baltistan and Azad Jammu & Kashmir

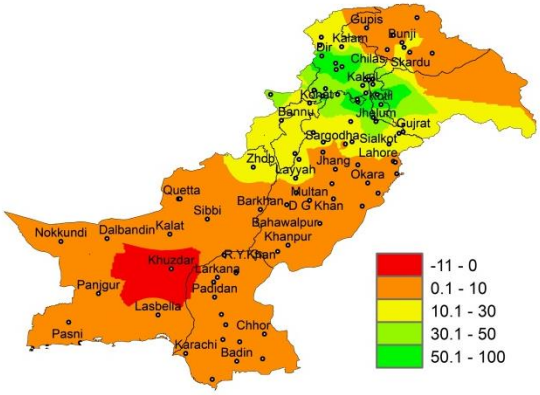
Light to moderate rainfall reported from few agricultural plains of G.B & Kashmir. Chief amount of rainfall is received at Rawalakot, Muzaffarabad & Kotli. Decadal maximum raised above normal by 2.0°C & minimum departure dropped below normal by 0.6°C, in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 49%, 44.1hrs, 1.0km/hr and 1.3mm/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 (11th to 20th February, 2018)

2.1 RAMC, Rawalpindi (Potohar region)

Rainfall reported as 62.6mm during the decade; however weather remained cloudy for 09days during the decade. Average relative humidity recorded as 55%. Mean day temperature was 21.7°C while night temperature recorded as 6.2°C with 68.0hours bright sunshine duration. Wind speed recorded as 3.9km/hr with mean wind direction *westerly.*

2.2 RAMC, Faisalabad (Central Punjab)

Dry weather reported during the decade; however weather remained cloudy for 08days during the decade. Average relative humidity recorded as 57%. Mean day temperature was 24.1°C while night temperature recorded as 9.9°C with 57.33hours bright sunshine duration. Wind speed recorded as 2.3km/hr with mean wind direction *west south westerly.*
Wheat: *Very good condition, shooting stage.*

2.3 RAMC, Tandojam (Lower Sindh)

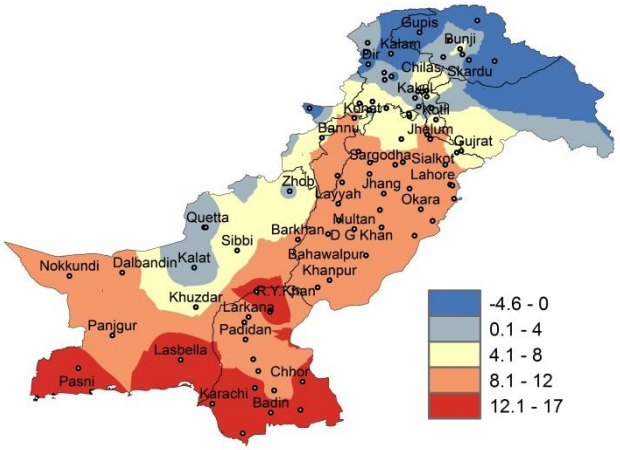
Dry weather reported during the decade; however weather remained cloudy for 01day during the decade. Average relative humidity recorded as 50%. Mean day temperature was 29.3°C while night temperature recorded as 11.3°C with 81.6hours bright sunshine duration. Wind speed recorded as 3.7km/h with mean wind direction *northerly.*
Wheat (Sindhu)*: Good condition, milk maturity stage.*

2.4 RAMC, Usta Muhammad (Eastern Balochistan)

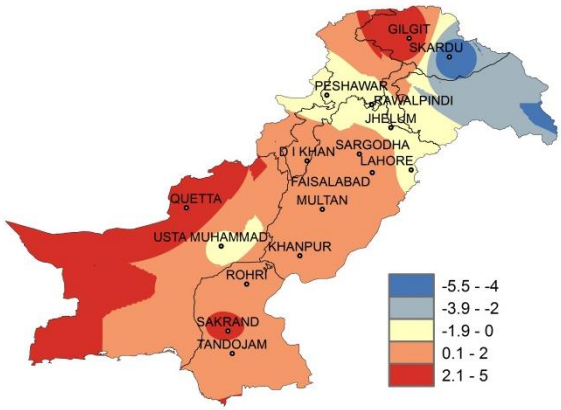
Dry rainfall reported as Trace (not measureable) during the decade; however weather remained cloudy for 09days during the decade. Average relative humidity recorded as 58%. Mean day temperature was 23.8°C while night temperature recorded as 9.7°C. Wind speed recorded as 1.9km/h with mean wind direction *north easterly.*
Wheat*: Good condition, stem extension stage.*

2.5 RAMC, Quetta (Northern Balochistan)

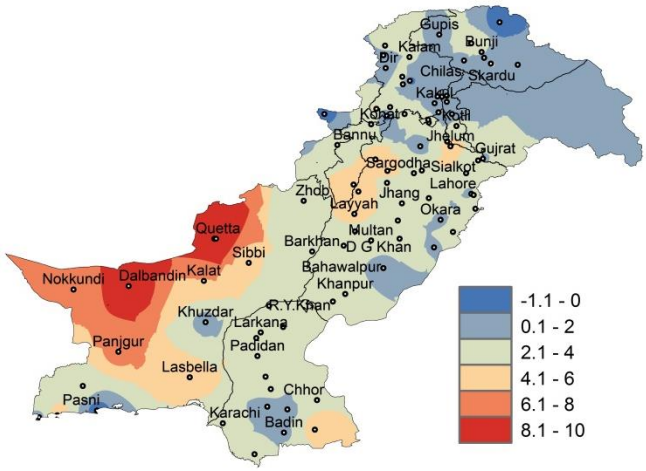
Rainfall reported as 3.5mm during the decade; however weather remained cloudy for 10days during the decade. Average relative humidity recorded as 42%. Mean day temperature was 16.9°C while night temperature recorded as 5.3°C with 75.4hours bright sunshine duration. Wind speed recorded as 7.1km/hr with 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 February, 2018)

2.6 Jhelum

Rainfall reported as 33.5mm during the decade; however weather remained cloudy for 10days during the decade. Average relative humidity recorded as 55%. Mean day temperature was 23.8°C while night temperature recorded as 9.0°C with 74.7hours bright sunshine duration. Wind speed recorded as 4.5km/hr with mean wind direction *westerly.*

2.7 Lahore

Rainfall reported as 7.0mm during the decade; however weather remained cloudy for 09days during the decade. Average relative humidity recorded as 62%. Mean day temperature was 23.6°C while night temperature recorded as 11.3°C with 69.9hours bright sunshine duration. Wind speed recorded as 0.9km/hr with mean wind direction *north westerly*.

2.8 Sargodha

Rainfall reported as 2.4mm during the decade; however weather remained cloudy for 09days during the decade. Average relative humidity recorded as 59%. Mean day temperature was 24.5°C while night temperature recorded as 10.2°C with 65.4hours bright sunshine duration. Wind speed recorded 2.8km/hr with mean wind direction *south westerly.*

2.9 Multan

Rainfall reported as 3.1mm during the decade; however weather remained cloudy for 09days during the decade. Average relative humidity recorded as 62%. Mean day temperature was 23.2°C while night temperature recorded as 10.4°C with 57.8hours bright sunshine duration. Wind speed recorded 3.7km/hr with mean wind direction *south westerly.*

2.10 Khanpur

Dry weather reported during the decade; however weather remained cloudy for 08days during the decade. Average relative humidity recorded as 55%. Mean day temperature was 26.4°C while night temperature recorded as 9.0°C with 54.3hours 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 28.5°C while night temperature recorded as 11.9°C with 86.9hours bright sunshine duration. Wind speed recorded 6.5km/hr with wind direction *northerly*.

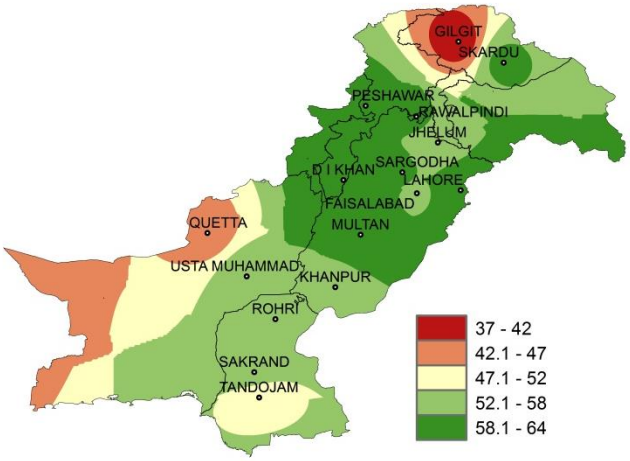


Figure.3: Relative Humidity in Percentage (%)

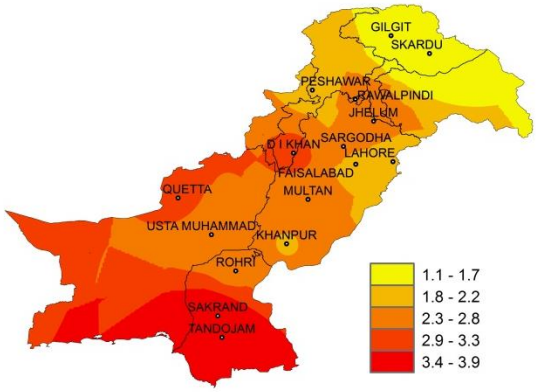


Figure.4: Reference Crop Evapotranspiration ETo(mm/day)

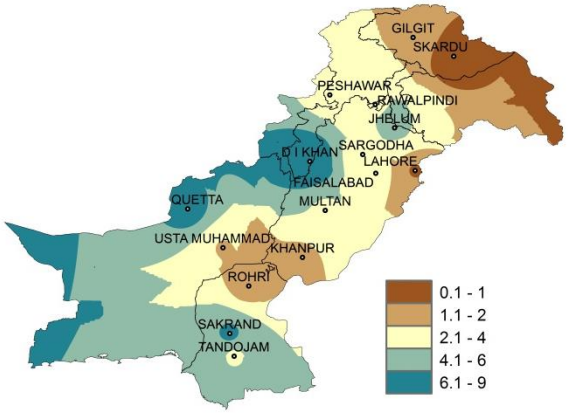


Figure 5: Wind Speed in kilometer per hour (km/h)

2.12 Rohri

Dry weather reported during the decade; however weather remained cloudy for 03days during the decade. Average relative humidity recorded as 53%. Mean day temperature was 27.4°C while night temperature recorded as 13.2°C with 82.0hours bright sunshine duration. Wind speed recorded 1.0km/hr with wind direction *north easterly*.

2.13 D.I. Khan

Rainfall reported as 11.7mm during the decade; however weather remained cloudy for 06days during the decade. Average relative humidity recorded as 64%. Mean day temperature was 23.4°C while night temperature recorded as 9.9°C with 55.0hours bright sunshine duration. Wind speed recorded as 8.53km/hr with mean wind direction *south easterly*.

2.14 Peshawar

Rainfall reported as 26.5mm during the decade; however weather remained cloudy for 10days during the decade. Average relative humidity recorded as 64%. Mean day temperature was 21.5°C while night temperature recorded as 7.2°C with 49.0hours bright sunshine duration. Wind speed recorded as 2.8km/hr with mean wind direction *north westerly*.

2.15 Skardu

Rainfall reported as 0.02mm during the decade; however weather remained cloudy for 10days during the decade. Average relative humidity recorded as 61%. Mean day temperature was 9.9°C while night temperature recorded as -4.6°C with 44.5hours bright sunshine duration. Wind speed recorded as 0.1km/hr with mean wind direction *south westerly*.

2.16 Gilgit

Rainfall reported as Trace (not measureable) during the decade; however weather remained cloudy for 08days during the decade. Average relative humidity recorded as 37%. Mean day temperature was 16.3°C while night temperature recorded as 1.0°C with 43.7hours bright sunshine duration. Wind speed recorded as 1.9km/hr with mean wind direction *southerly*.

Ten Days Weather Advisory for Farmers (21st to 28th February, 2018)

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

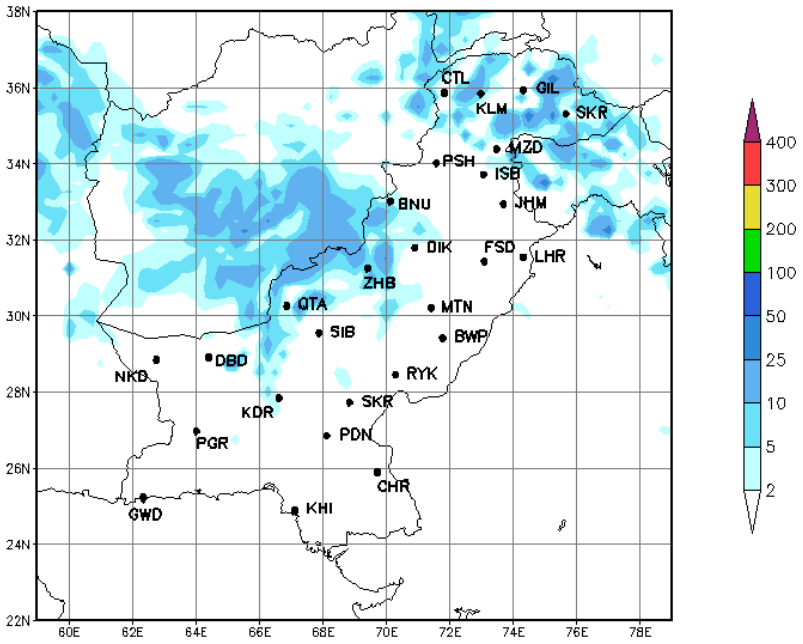
- **Punjab:** Mainly cold & cloudy weather with light to moderate rainfall is expected in most of the agricultural plains of province. Foggy conditions are likely to prevail over few plain areas of Punjab.
- **Khyber Pakhtunkhwa:** Light to moderate rainfall (with light snowfall over the hills) is expected in the upper parts of the province during the current decade.
- **Sindh:** Dry weather is expected in the parts province. Foggy conditions are likely to prevail over few plain areas of upper in morning hours during the current decade.
- **Balochistan:** Mainly cold & cloudy weather with light to moderate rainfall is expected in most of the agricultural plains of province.
- **Gilgit-Baltistan:** Mainly cold and cloudy weather is expected in most parts of the Province. However, light to moderate rain/thunderstorm is expected at many places in G.B.
- **Kashmir:** Mainly cold and cloudy weather is expected in most parts of the country. However, light to moderate rain/thunderstorm with snowfall over hills is expected at most places of Kashmir during the 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/orchids from the damaging impacts of extreme weather conditions.

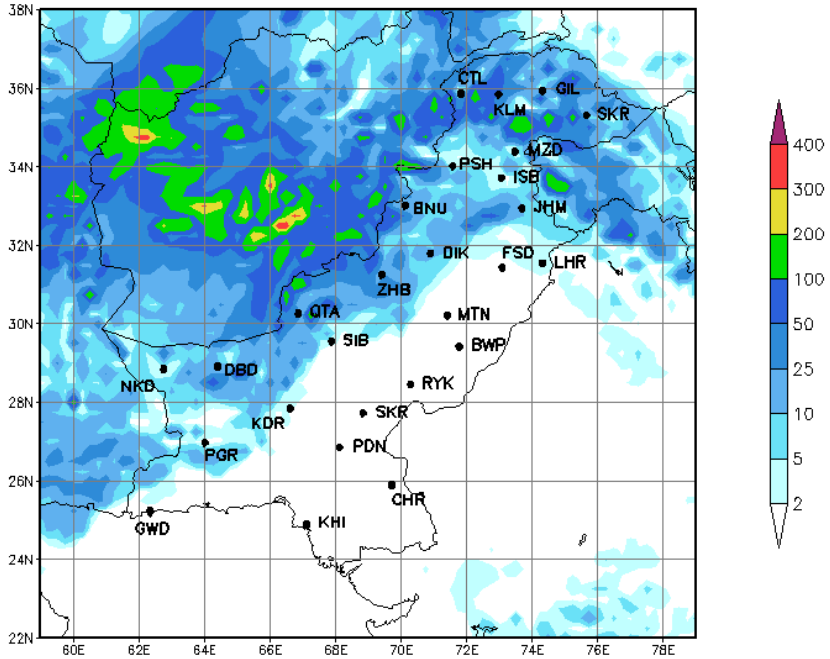
4.1 Precipitation Outlook (21st to 23rd February, 2018)

The forecast for the first three days (21st to 23rd) of the third decade of February 2018 shows that mainly cold and cloudy weather is expected in most of northern & western parts of the country. Light to moderate rainfall with snowfall over hills is expected in northern Balochistan, KP, G.B & Kashmir. Dry weather is expected elsewhere.



4.2 Precipitation Outlook (24th to 28th February, 2018)

The outlook for the last five days (24th to 28th) of the third decade of February 2018 shows that light to moderate rainfall with snowfall over the hills is expected at most parts of northern Punjab, KP, western Balochistan, Kashmir and GB; however 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)