Decadal Agromet Bulletin of Pakistan

Highlights…

- Light rainfall reported from few of the agricultural plains of Punjab, K.P, G.B and Kashmir; however dry weather was reported from rest parts of the country during the last decade.
- Highest amount of rainfall recorded as 14.4mm at Kotli during the last decade.
- Lowest minimum temperature recorded as -11.6°C at Skardu during the last decade.
- Cold and dry weather may prevail in most parts of the country however light rainfall (snowfall over mountains) is expected mainly in northern parts of the country during the current decade.
- Fog may be increased in the central parts of the country due to dry weather.
- Farmers are advised to schedule the irrigation plans in context of ongoing Rabi crops.
- 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.

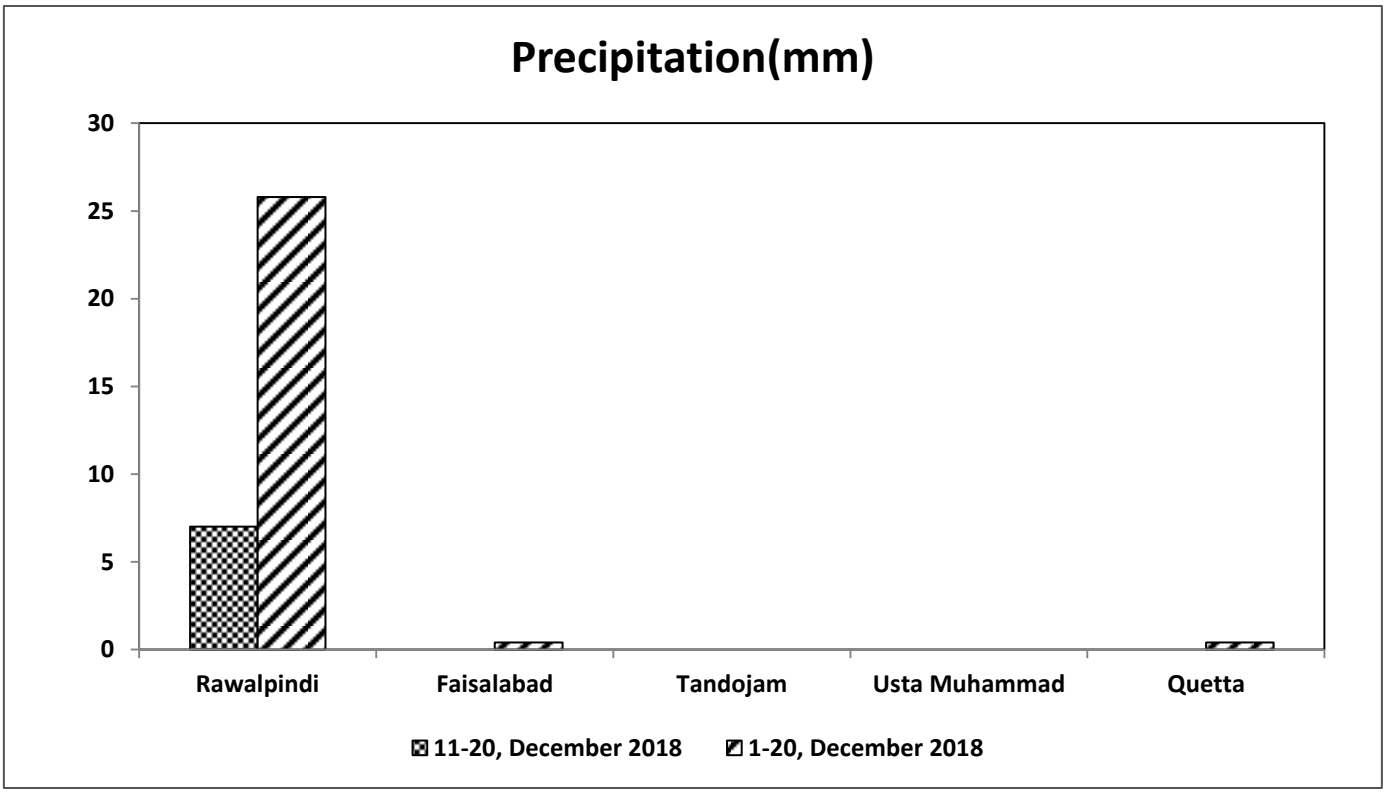
NATIONAL AGROMET CENTRE (NAMC)
PAKISTAN METEOROLOGICAL DEPARTMENT
SECTOR H-8/2, ISLAMABAD
Patron-in-Chief: *Muhammad Riaz, Director General*
Editor-in-Chief: *Mrs. Asma Jawad Hashmi, Deputy Director*
Editor: *Ms. Khalida Noureen, Meteorologist*
Phone: +92-51-9250592 Email: info@namc.pmd.gov.pk

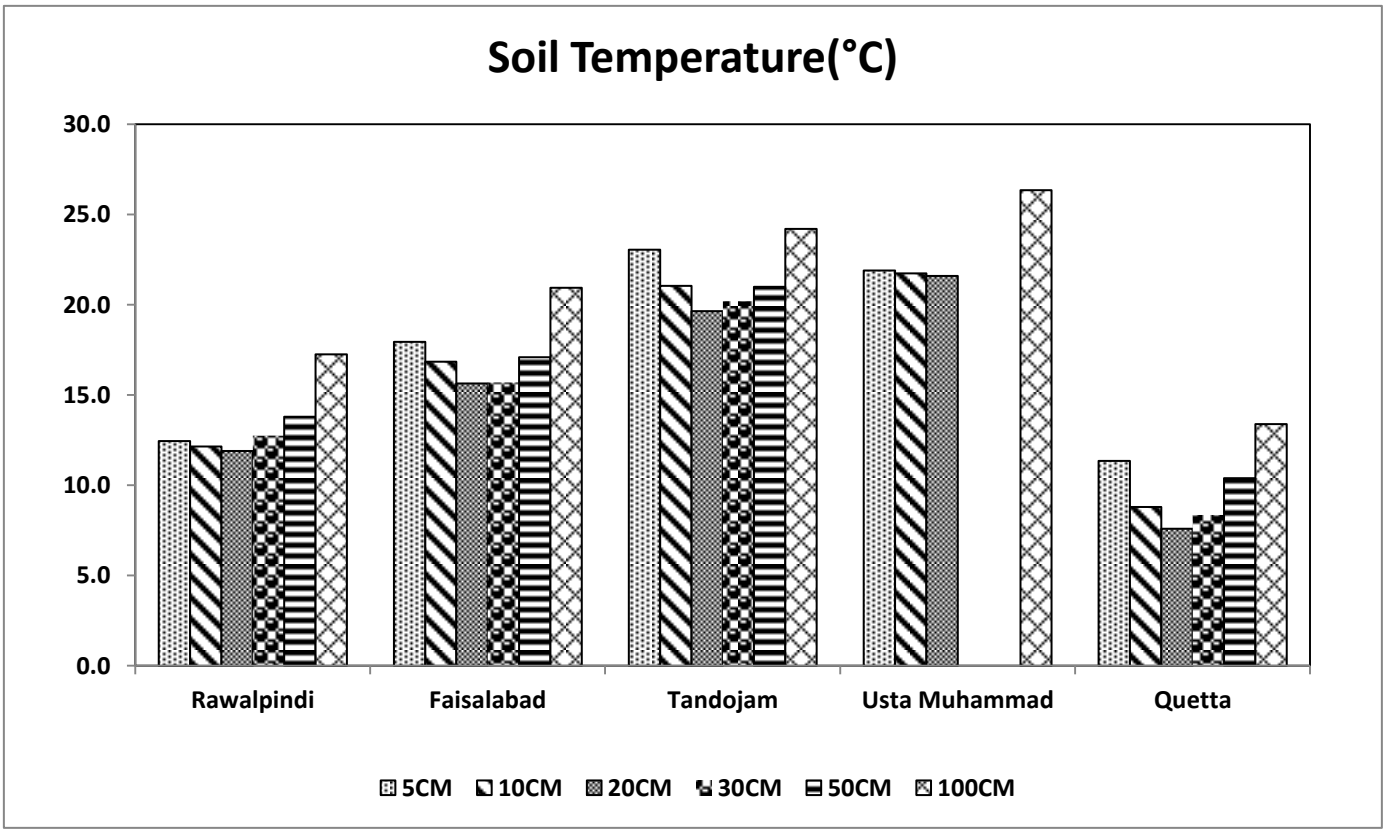
Meteorological Conditions during 2st Decade of December, 2018

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	1.5	31.8	30.3	-0.6	-1.9	11.1	12.5	12.2	11.9	12.8	13.8	17.3	69	71.1	10.2	2.2
2	Faisalabad	0.2	0.0	-0.2	-0.4	-0.7	13.8	18.0	16.9	15.7	15.7	17.1	21.0	58	73.3	1.3	1.3
3	Jhelum	0.4	0.0	-0.4	-1.4	-2.0	13.1	14.0	13.2	12.9	13.7	15.6	***	66	82.6	2.0	1.3
4	Lahore	0.4	5.0	4.6	-0.7	-2.3	14.5	15.1	15.2	15.2	15.6	***	20.3	67	78.1	1.0	1.3
5	Sargodha	0.6	0.0	-0.6	-1.4	-0.7	13.9	17.8	16.4	15.9	16.7	***	21.0	67	70.2	1.9	1.3
6	Multan	0.6	0.0	-0.6	-2.0	0.3	14.0	***	***	***	***	***	***	59	69.6	1.9	1.5
7	Khanpur	1.6	0.0	-1.6	-0.5	-1.2	14.1	***	16.0	16.7	17.7	19.2	22.5	62	62.7	2.2	1.6
8	Tandojam	0.4	0.0	-0.4	-1.8	-1.5	16.1	23.1	21.1	19.7	20.2	21.0	24.2	58	87.8	4.8	2.6
9	Sakrand☆	1.0	0.0	-1.0	0.2	1.2	16.0	21.0	***	***	***	***	26.6	58	92.2	3.5	2.3
11	Rohri	1.0	0.0	-1.0	-0.4	-2.2	15.6	***	***	***	***	***	***	59	87.8	0.6	1.6
12	D.I Khan	0.1	0.0	-0.1	-0.6	0.5	13.9	17.2	16.4	16.6	18.1	9.4	***	74	84.2	5.6	1.9
13	Peshawar	0.6	0.0	-0.6	-0.5	-2.5	11.9	14.3	13.5	12.7	14.1	16.3	17.8	64	52.2	1.0	1.0
14	Usta .M	0.1	0.0	-0.1	0.2	1.5	16.6	21.9	21.8	21.6	***	***	26.4	60	***	0.3	1.3
15	Quetta	0.2	0.0	-0.2	-0.7	-0.3	6.3	11.4	8.8	7.6	8.4	10.4	13.4	27	98.2	4.4	1.9
16	Skardu	1.2	0.0	-1.2	-1.1	-2.7	-1.0	***	***	***	***	***	***	67	49.6	1.1	0.7
17	Gilgit	0.3	0.0	-0.3	0.7	-0.1	5.5	***	***	***	***	***	***	50	49.3	2.2	1.0

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, 2018





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

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

1.1 Punjab

Light rainfall reported from most of the agricultural plains of the Punjab. Chief amount of rainfall is received at Islamabad, Murree & Joharabad. Decadal maximum & minimum both dropped below normal by 1.0°C & 1.2°C respectively, in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 64%, 725.5hrs, 1.5km/hr and 1.5mm/day respectively.

1.2 Sindh

Dry weather reported from agricultural plains of the Sindh. Decadal maximum & minimum both dropped below normal by 0.7°C & 0.8°C respectively, in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 58%, 89.3hrs, 3.0km/hr and 2.2mm/day respectively.

1.3 Khyber Pakhtunkhwa (KP)

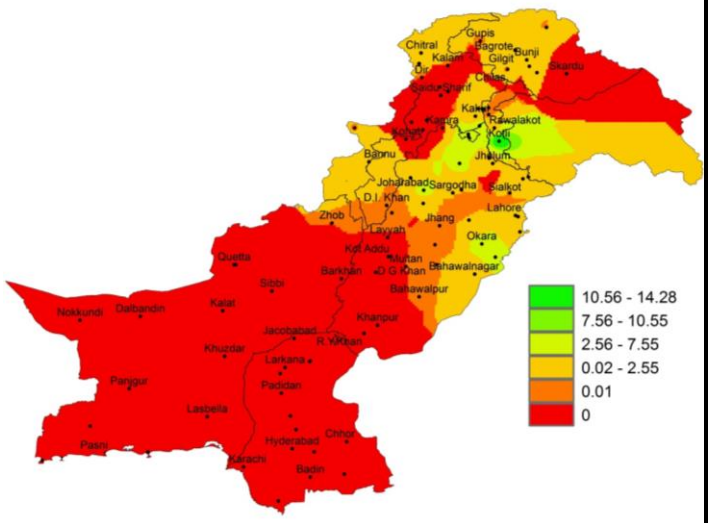
Light rainfall reported from few of the agricultural plains of KP. Chief amount of rainfall is received at Balakot and Chitral. Decadal maximum and minimum both dropped below normal by 0.6°C & 0.1°C respectively, in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 69%, 68.2hrs, 3.3km/hr and 1.5mm/day respectively.

1.4 Balochistan

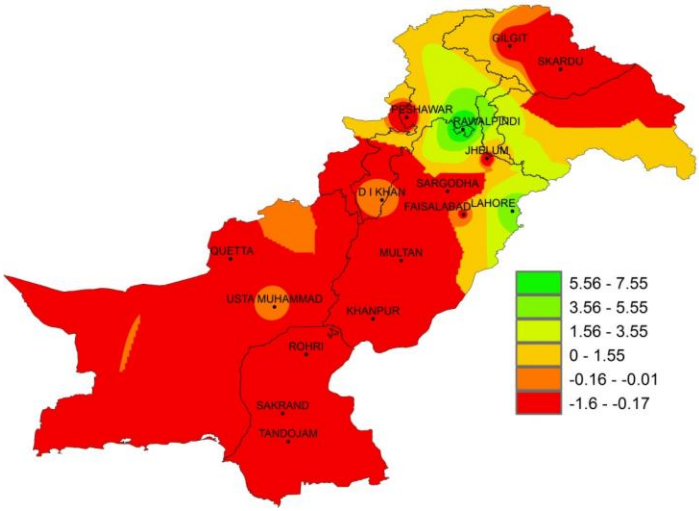
Dry weather reported from agricultural plains of Balochistan. Decadal maximum dropped below normal by 0.3°C & minimum raised above normal by 0.6°C, in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 44%, 98.2hrs, 2.4km/hr and 1.6mm/day respectively.

1.5 Gilgit-Baltistan and Azad Jammu & Kashmir

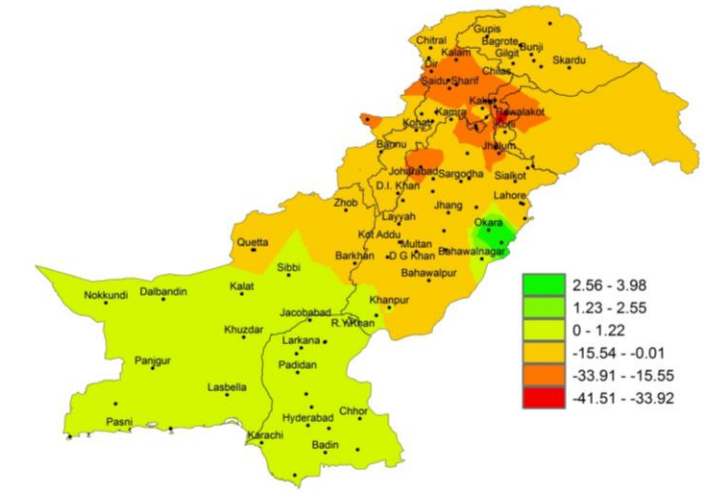
Light rainfall reported from few of the agricultural plains of G.B and Kashmir. Chief amount of rainfall is received at Kotli, Bunji & Bagrote. Decadal maximum & minimum both dropped below normal by 0.2°C & 1.4°C respectively, in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 59%, 49.5hrs, 1.7km/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, 2018)

2.1 RAMC, Rawalpindi (Potohar region)

Rainfall reported as 31.8 during the decade; however weather remained cloudy for 05days during the decade. Average relative humidity recorded as 69%. Mean day temperature was 19.7°C while night temperature recorded as 2.5°C with 71.1hours bright sunshine duration. Wind speed recorded as 0.2km/hr with mean wind direction *westerly.*

2.2 RAMC, Faisalabad (Central Punjab)

Dry weather reported during the decade; however weather remained cloudy for 01day during the decade. Average relative humidity recorded as 58%. Mean day temperature was 21.9°C while night temperature recorded as 5.6°C with 73.33hours bright sunshine duration. Wind speed recorded as 1.3km/hr with mean wind direction *westerly.*
Wheat: *Very good condition, third leaf stage.*

2.3 RAMC, Tandojam (Lower Sindh)

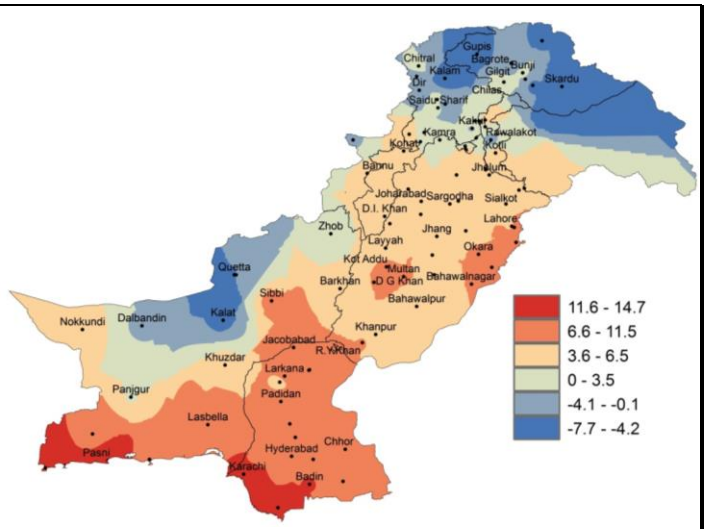
Dry weather reported during the decade; however weather remained cleared throughout the decade. Average relative humidity recorded as 58%. Mean day temperature was 23.7°C while night temperature recorded as 8.4°C with 87.8hours bright sunshine duration. Wind speed recorded as 4.8km/h with mean wind direction *northerly.*
Wheat (TJ-83)*: Good condition, tillering stage.*

2.4 RAMC, Usta Muhammad (Eastern Balochistan)

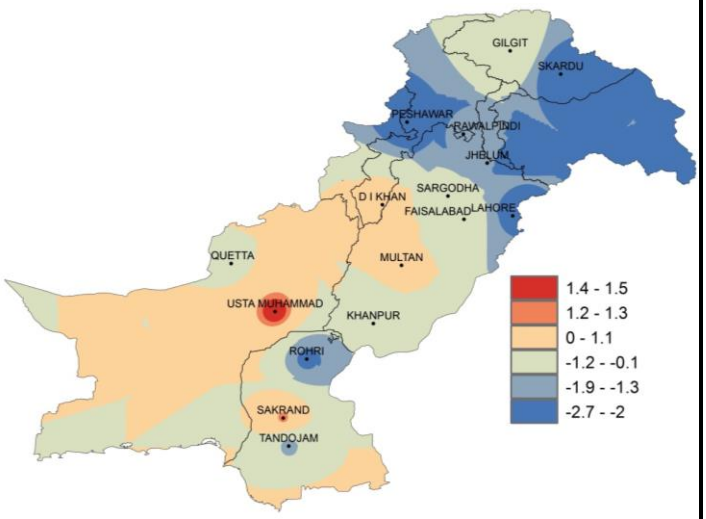
Dry weather reported during the decade during the decade; however weather remained cloudy for 01day during the decade. Average relative humidity recorded as 60%. Mean day temperature was 22.9°C while night temperature recorded as 10.2°C. Wind speed recorded as 0.3km/h with mean wind direction *south-easterly.*
Wheat*: Good condition, germination stage.*

2.5 RAMC, Quetta (Northern Balochistan)

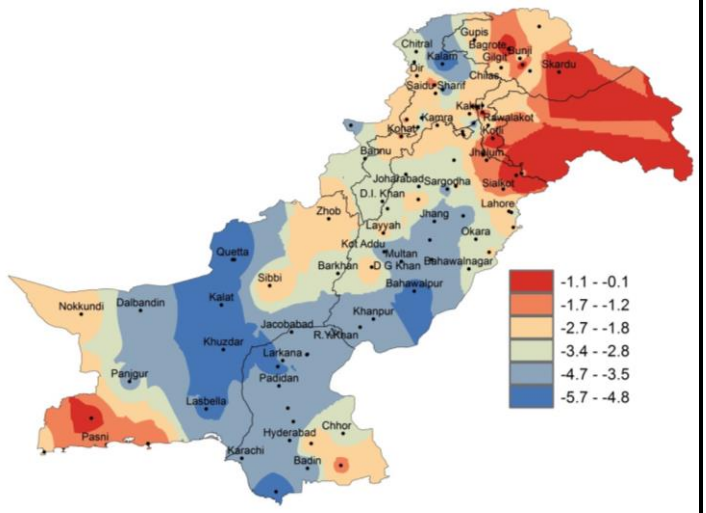
Dry weather reported during the decade during the decade; however weather remained cloudy for 08days during the decade. Average relative humidity recorded as 27%. Mean day temperature was 13.7°C while night temperature recorded as -1.1°C with 98.2hours bright sunshine duration. Wind speed recorded as 4.4km/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, 2018)

2.6 Jhelum

Dry weather reported during the decade during the decade; however weather remained cloudy for 02days during the decade. Average relative humidity recorded as 66%. Mean day temperature was 20.8°C while night temperature recorded as 5.3°C with 82.6hours bright sunshine duration. Wind speed recorded as 2.0km/hr with mean wind direction *north westerly*.

2.7 Lahore

Rainfall reported as 0.5mm during the decade; however weather remained cloudy for 03days during the decade. Average relative humidity recorded as 67%. Mean day temperature was 21.2°C while night temperature recorded as 7.7°C with 78.1hours bright sunshine duration. Wind speed recorded as 1.0km/hr with mean wind direction *westerly*.

2.8 Sargodha

Rainfall reported as trace (not measurable) during the decade; however weather remained cloudy for 03days during the decade. Average relative humidity recorded as 67%. Mean day temperature was 21.2°C while night temperature recorded as 6.5°C with 70.2hours bright sunshine duration. Wind speed recorded 1.0km/hr with mean wind direction *south-westerly*.

2.9 Multan

Dry weather reported during the decade during the decade; however weather remained cloudy for 01day during the decade. Average relative humidity recorded as 59%. Mean day temperature was 21.2°C while night temperature recorded as 6.7°C with 69.6hours bright sunshine duration. Wind speed recorded 1.9km/hr with mean wind direction *northerly*.

2.10 Khanpur

Dry weather reported during the decade; however weather remained cloudy for 01day during the decade. Average relative humidity recorded as 62%. Mean day temperature was 22.5°C while night temperature recorded as 5.7°C with 62.7hours bright sunshine duration. Wind speed recorded 2.2km/hr with mean wind direction *variable.*

2.11 Sakrand

Dry weather reported during the decade; however weather remained cleared throughout the decade. Average relative humidity recorded as 58%. Mean day temperature was 22.8°C while night temperature recorded as 9.2°C with 92.0hours bright sunshine duration. Wind speed recorded 3.5km/hr with wind direction *northerly*.

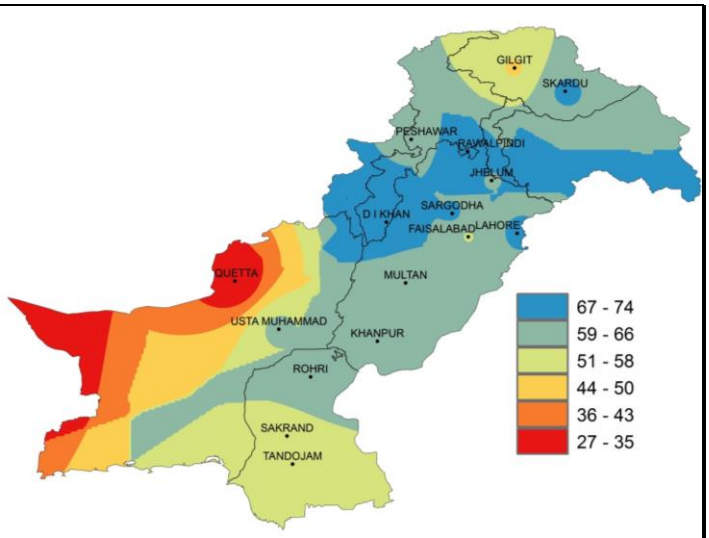


Figure.3: Relative Humidity in Percentage (%)

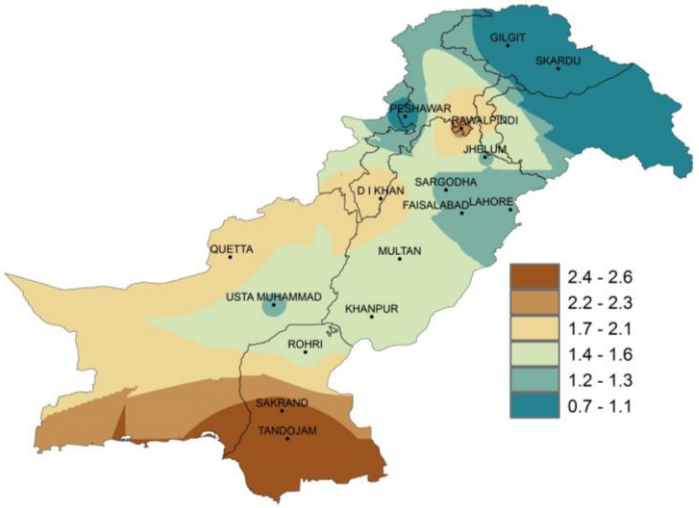


Figure.4: Reference Crop Evapotranspiration ETo (mm/day)

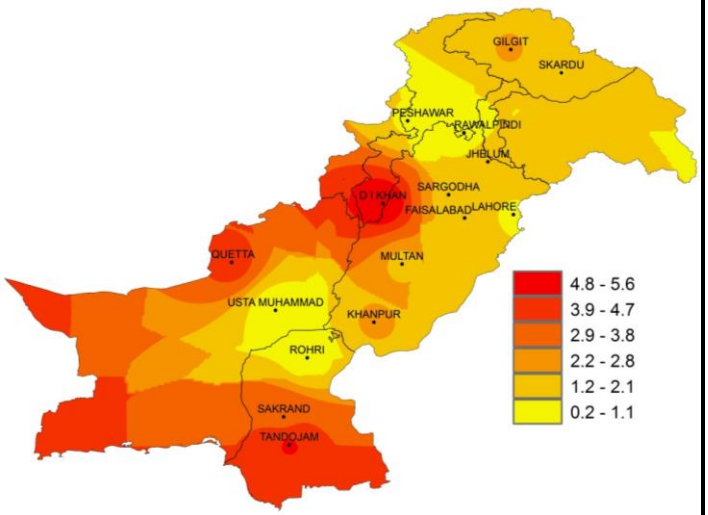


Figure 5: Wind Speed in kilometer per hour (km/h)

2.12 Rohri

Dry weather reported during the decade; however weather remained cleared throughout the decade. Average relative humidity recorded as 59%. Mean day temperature was 22.9°C while night temperature recorded as 8.3°C with 87.8hours bright sunshine duration. Wind speed recorded 0.6km/hr with wind direction *north easterly*.

2.13 D.I. Khan

Rainfall reported as trace (not measurable) during the decade; however weather remained cloudy for 02days during the decade. Average relative humidity recorded as 74%. Mean day temperature was 21.9°C while night temperature recorded as 5.8°C with 84.2hours bright sunshine duration. Wind speed recorded as 5.6km/hr with mean wind direction *north easterly*.

2.14 Peshawar

Rainfall reported as trace (not measurable) during the decade; however weather remained cloudy for 03days during the decade. Average relative humidity recorded as 64%. Mean day temperature was 20.1°C while night temperature recorded as 3.7°C with 52.2hours bright sunshine duration. Wind speed recorded as 1.0km/hr with mean wind direction *south-westerly*.

2.15 Skardu

Rainfall reported as 2.9mm during the decade; however weather remained cloudy for 04days during the decade. Average relative humidity recorded as 67%. Mean day temperature was 7.6°C while night temperature recorded as -5.6°C with 49.6hours bright sunshine duration. Wind speed recorded as 1.1km/hr with mean wind direction *south-easterly*.

2.16 Gilgit

Rainfall reported as trace (not measurable) during the decade; however weather remained cloudy for 10days during the decade. Average relative humidity recorded as 50%. Mean day temperature was 12.7°C while night temperature recorded as -1.7°C with 49.3hours bright sunshine duration. Wind speed recorded as 2.2km/hr with mean wind direction *southerly*.

Ten Days Weather Advisory for Farmers (21st to 31st December, 2018)

3.1 Temperature Forecast

Both day and night temperatures are likely to below normal in most of the 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; however dust/sand storms may occur in southern Punjab and Sindh.

3.3 Rain Forecast

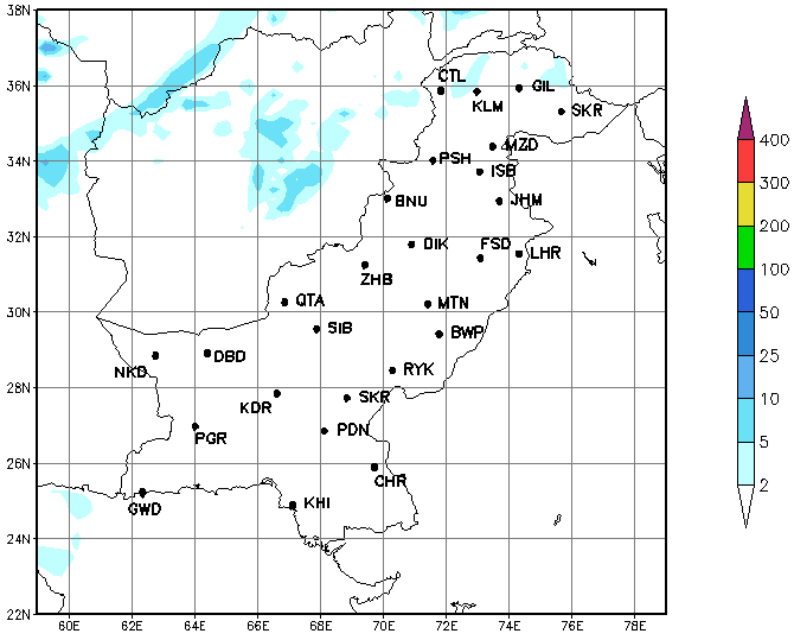
- **Punjab:** Cold and dry weather is expected in most parts of the province during the current decade.
- **Khyber Pakhtunkhwa:** Light rain (with snowfall) is expected at isolated places of the province during the current decade.
- **Sindh:** Dry weather is expected in most parts of the province during the decade.
- **Balochistan:** Cold and dry weather is expected in most parts of the province.
- **Gilgit-Baltistan:** Light rainfall with snowfall over the mountains is expected during the decade 1st half of the decade.
- **Kashmir:** Light rainfall with snowfall over the mountains is expected during the decade 2nd half of the decade.

3.4 Advisory for Farmers

- Fog may be increased in the central parts of the country due to dry weather.
- Farmers are advised to schedule the irrigation plans in context of ongoing Rabi crops.
- 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.

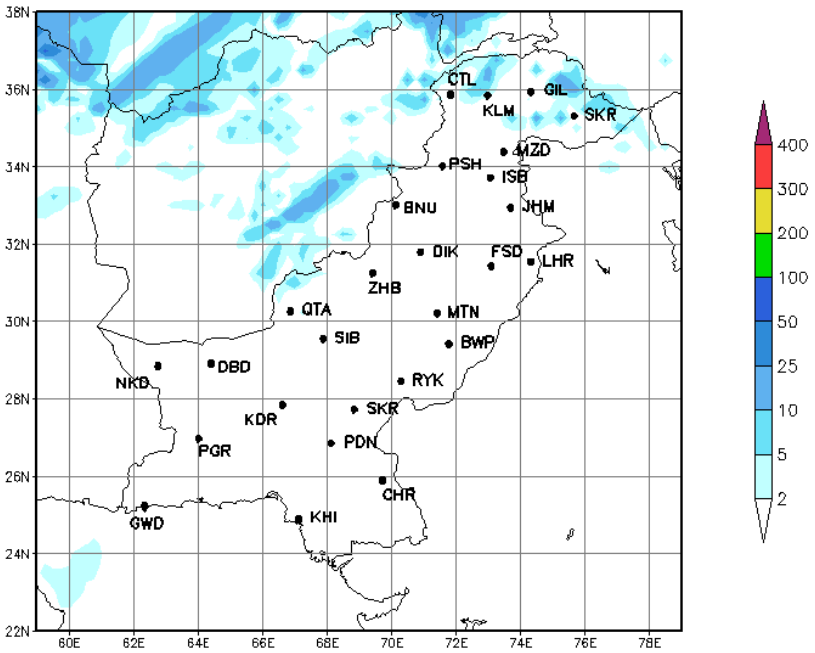
4.1 Precipitation Outlook (21st to 23rd December, 2018)

The forecast for the first three days (21st to 23rd) of the third decade of December, 2018 shows that mostly cold and dry weather is expected in most parts of the country while light rainfall (snowfall over mountains) is expected in particular areas of upper K.P, and G.B.



4.2 Precipitation Outlook (24th to 31st December, 2018)

The outlook for the last eight days (24th to 31st) of the third decade of December, 2018 shows that mostly cold and dry weather is expected in most parts of the country. While light rainfall with snowfall over mountains is expected at scattered places of upper KP, G.B and Kashmir.



Findings of AgMIP Pakistan, 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)