

# 2015

## Climate of Pakistan (2015)

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# Climate of Pakistan in 2015

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<b>S.No.</b>	<b>Contents</b>	<b>Page No.</b>
1	Introduction	3
2	Temperature	3
3	Rainfall	4
4	Extreme Events	6
5	Other Extreme Events of 2014	8
6	Drought Monitor	10

# Climate of Pakistan in 2015

## 1. Introduction

Temperature and precipitation are two major elements which determine the climate of any region. Any persistent change in both or one with respect to the long term mean or normal values leads to the climate change of that region. Highlights of the analysis for the climate of Pakistan in 2015 are listed below.

## 2. Temperature

Average Monthly Temperatures of Pakistan for the year 2015 are compared with Average Monthly Normal Temperatures (1981-2010) in figure 1.

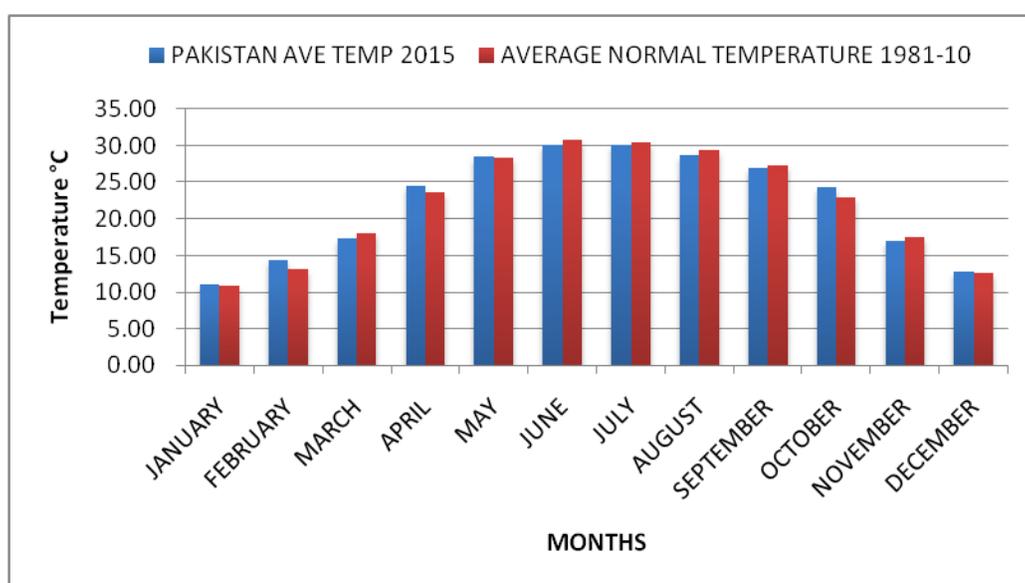


Figure 1: Departures of 2015 mean monthly temperatures from Normal (1981-2010)

Monthly mean temperatures of 2015 were above the 1981-2010's average normal temperatures in February, April and October. January, May and December temperatures were equal to normal while June, July, August and September were near to Normal. March and November had seen below 1981-2010's average normal temperatures (Fig. 1).

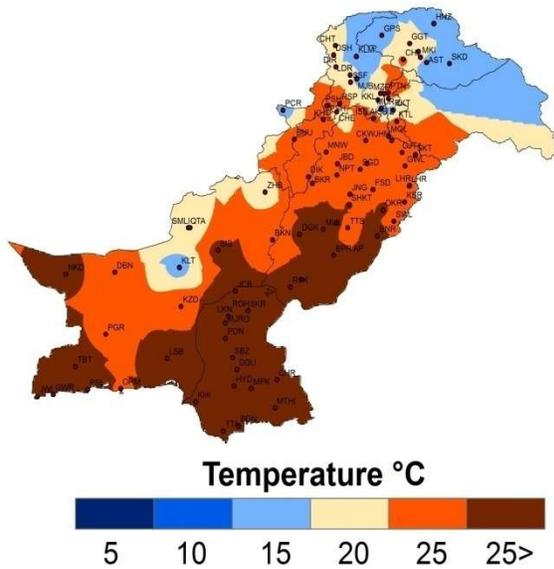


Figure 2: Spatial Distribution of Mean Annual Temperatures of Pakistan for 2015

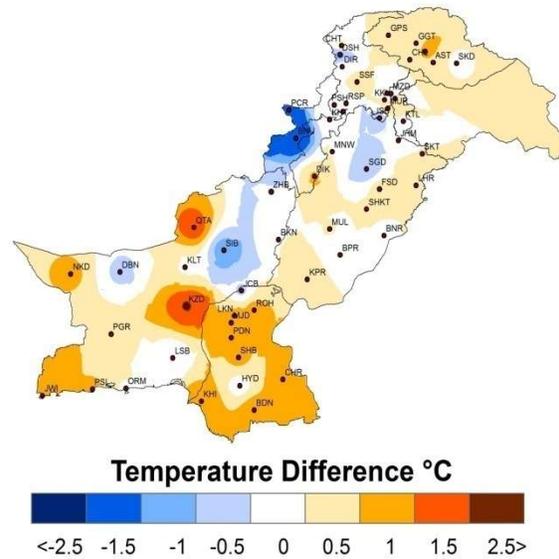


Figure 3: Mean Annual Temperatures (2015) Difference from Normal

Annual Mean Temperatures (actual) for 2015 remained on higher side in most of the country (Fig. 2). Whole Sindh, Punjab and major Portion of Baluchistan experienced temperatures ranging from 24<sup>0</sup>C-27<sup>0</sup>C or even higher. Only a narrow belt of Northern areas had temperatures ranging from 6<sup>0</sup>C-10<sup>0</sup>C. Figure 3 above shows mean annual temperature departures from Normal 1981-2010.

### 3. Rainfall

2015 has overall witnessed above 1981-2010 Normal rainfalls overall in the country except Balochistan and southern half of Sind. As shown in Figure 4, most of Punjab and KPK were towards wetness whereas most of Sind and GB & AJK regions were near normal. Lower parts of Sind and most of Balochistan experienced mild to moderate drought like conditions.

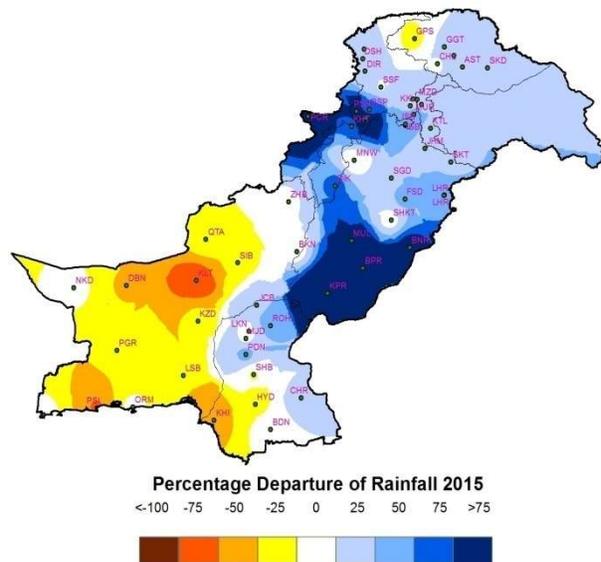


Figure 4: Percentage departure of 2015 Rainfall from Normal 1981-2010

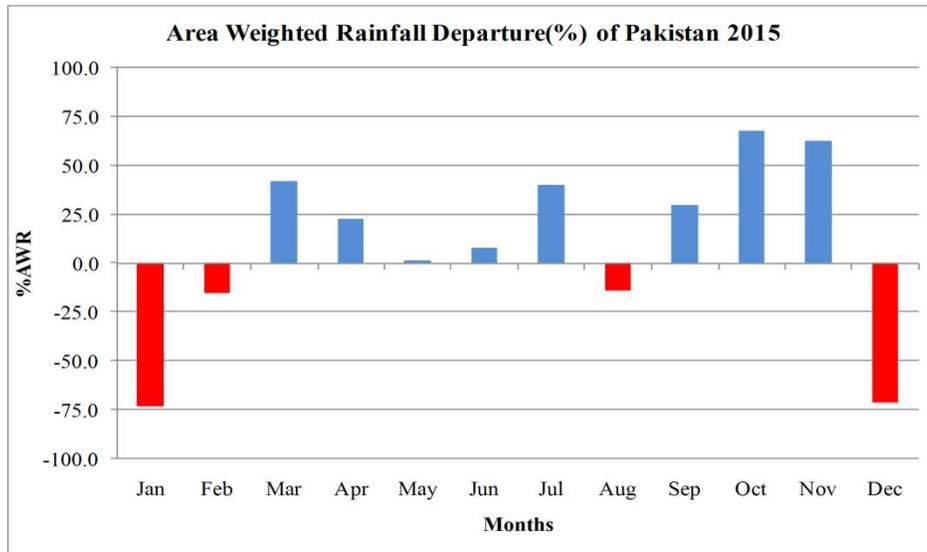


Figure 5: Percentage Departures from Normal of

In figure 5, percentage area weighted departure of monthly rainfall of 2015 from normal monthly rainfall of 1981-2010 has been shown. The analysis shows that 2015 was the normal rainfall year in Pakistan. January, February, Jun, August and December seen below normal precipitation whereas in the months of March to June rainfall and September to November it was above normal. It was near normal in May and high above normal in October (67.64%) and November (62.92%). January (-72.98%) and December (-71.06%) remained driest months of the year.

Major parts of Pakistan received heavy rainfall in the months of March and April in pre-monsoon spell. During July (39.88%) monsoon rains were above normal. In August rain was sparse. Heavy down pour in September to November fulfilled the requirement of moisture for sowing of Rabi crops. Sind and Baluchistan remained dry during September to November whereas dry spell engulfed the whole country in December.

October and November 2015 caused floods in the catchment areas rivers Chenab, Ravi, Sutlej, and Jhelum, resulted in flash floods in Punjab, Gilgit Baltistan and Azad Jammu and Kashmir (AJ&K). This also caused a lot of damage to standing crops in southern parts of Pakistan especially the Sind region.

Spatial distribution of total annual rain fall over Pakistan for 2015 depicts extreme rainfall over north Punjab, AJK and Eastern KPK (the monsoon belt) which exceeded 1000mm (Fig.6). It is obvious from fig. 5 that it happened in the months of October and November. Lower half of Baluchistan received very little rainfall ranging from 20 to 200 mm which is leading most of the areas there towards meteorological drought conditions.

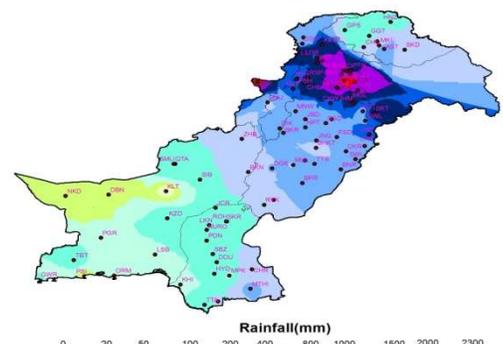


Figure 6: Spatial Distribution of Annual Total Annual Rainfall over Pakistan for 2015

#### 4. Extreme Events

Highest Maximum and lowest Minimum Temperatures of Province-wise cities of Pakistan during 2015 are shown in Figure 7(a-e).

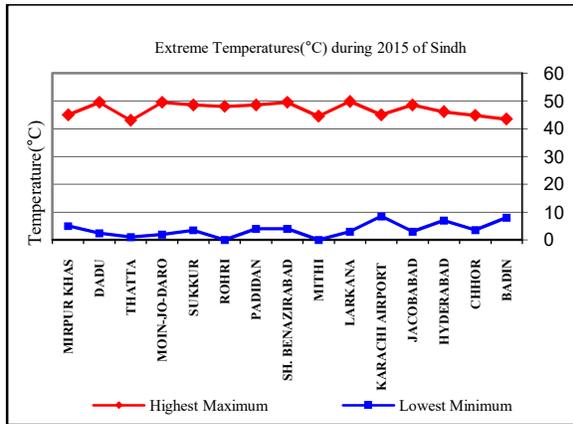


Figure 7 (a): Extreme Temperatures of Sindh

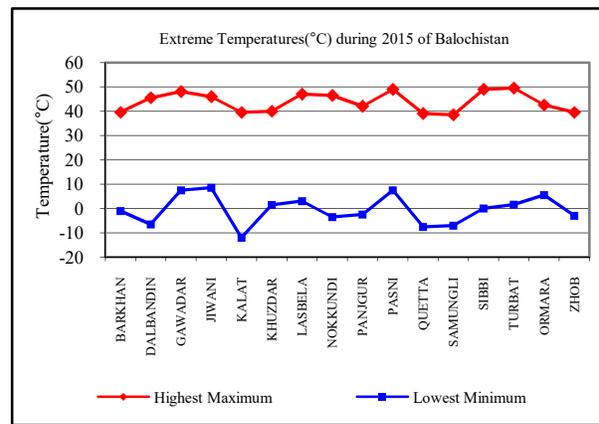


Figure 7(b): Extreme Temperatures of Balochistan

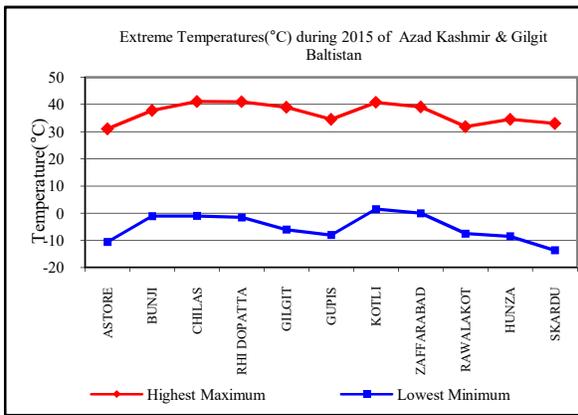


Figure 7 (c): Extreme Temperatures of AK & GB

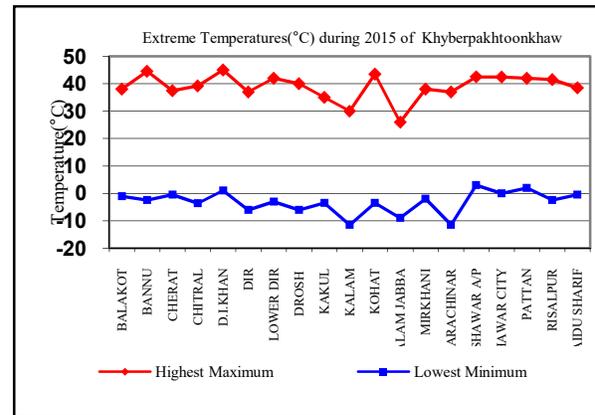


Figure 7 (d): Extreme Temperatures of KPK

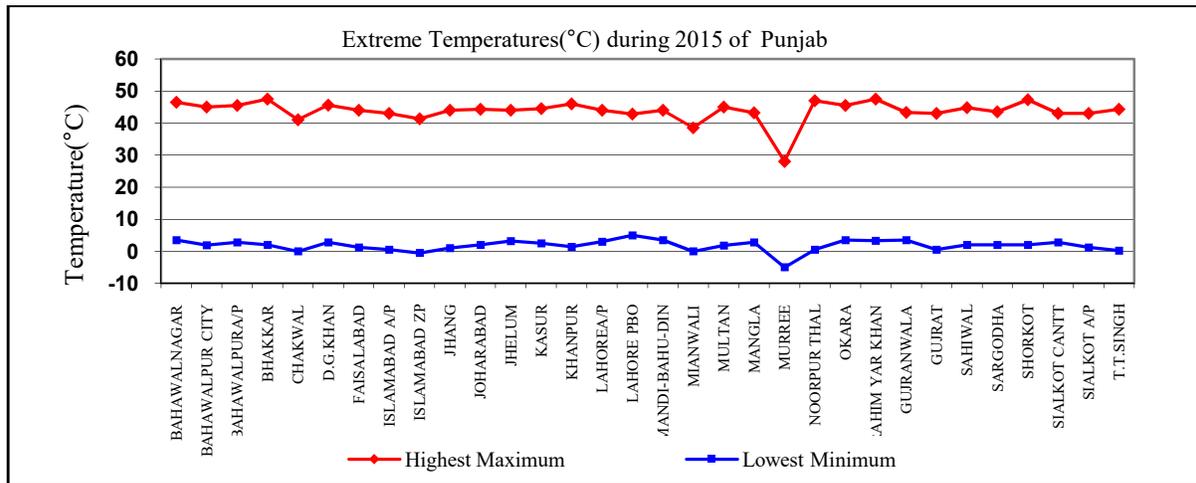


Figure 7 (e): Extreme Temperatures of Punjab

Highest daily Rainfall in 2015 for different cities of Pakistan Province-wise is given in Figure 8(a-e).

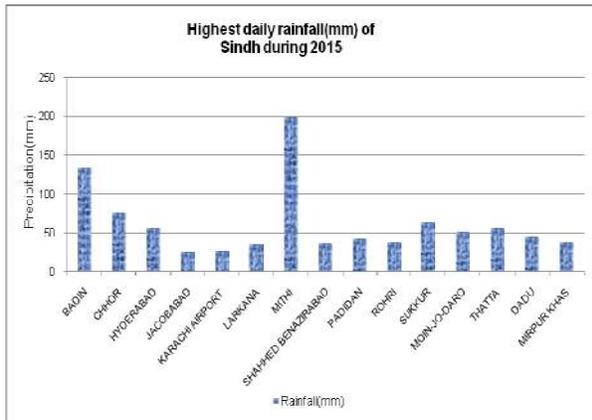


Figure 8 (a): Highest daily Rainfall of Sindh

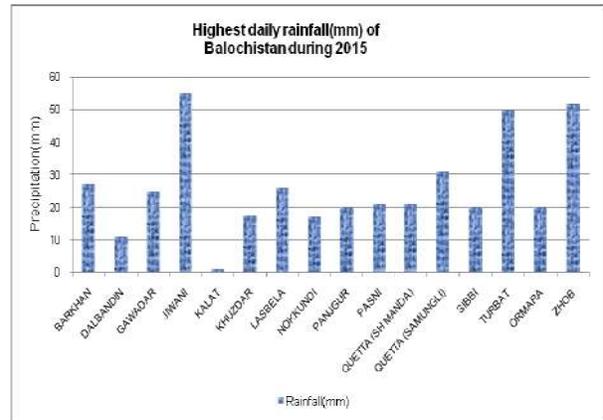


Figure 8 (b): Highest daily Rainfall of Balochistan

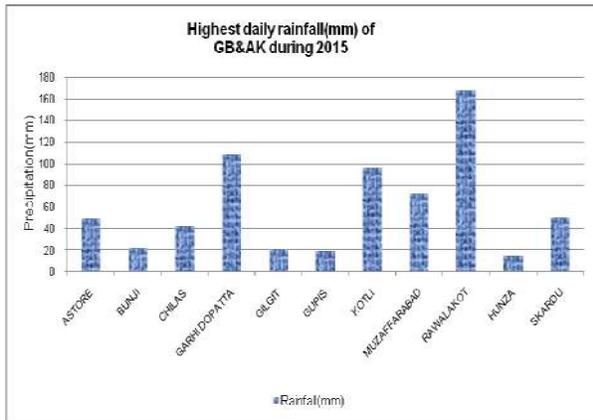


Figure 8 (c): Highest daily Rainfall of AK & GB

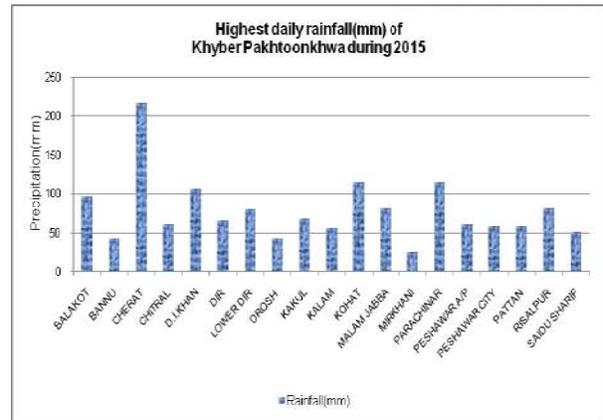


Figure 8 (d): Highest daily Rainfall of KPK

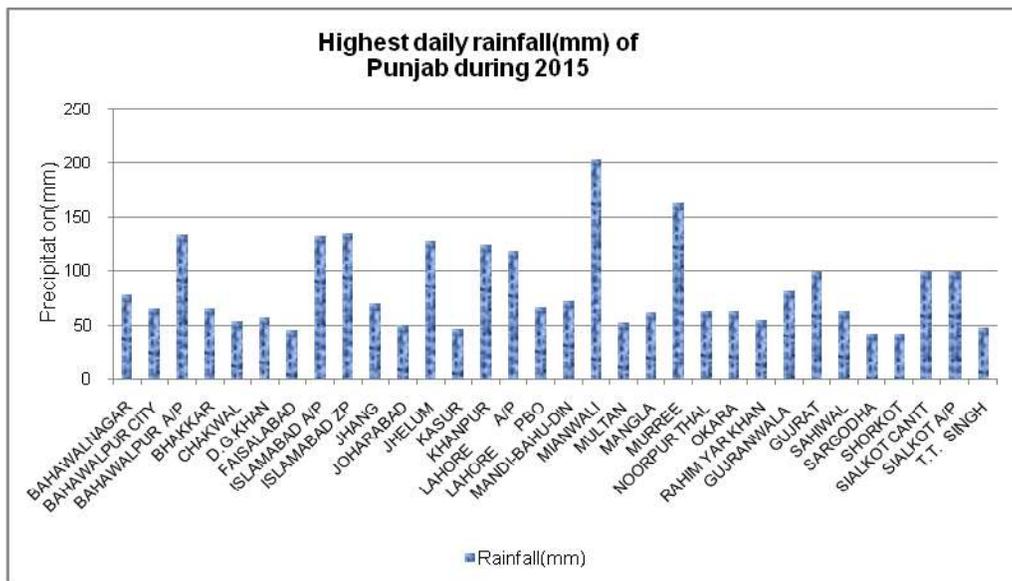


Figure 8 (e): Highest daily Rainfall of Punjab

## 5. Other extreme Events of 2015

### (a) Heat Wave in Pakistan / Karachi Jun , 2015

The definition of heat wave recommended by the World Meteorological Organization is when the daily temperature of more than five consecutive days exceeds the average maximum temperature by 5°C (9 F), the normal period being 1971-2000. An analysis of extreme temperatures during 1965-2009 shows that major parts of the country have been experiencing a warming trend. The frequency of extreme maximum temperature events are increasing significantly in Northern Areas, Southern Punjab, Sindh and Baluchistan.

A sever heat wave struck the country in June 2015, which has caused high number of casualties especially in Karachi. Most of the country was under the grip of heat wave during 17 to 24 June. As on 20th June, high temperatures were recorded in the southern parts of the country. The temperature ranged from 49 °C in Larkana to 45 °C in Karachi. In southern Punjab, 40 °C was recorded in Multan, whereas several areas of the Balochistan province were also affected where temperature touched 49 °C in Sibi and Turbat. The deadly heat wave spreading through southern Pakistan has killed nearly 1200 people in just a few days. State of emergency declared for hospitals as heat stroke and dehydration claim hundreds of lives

According to PMD records, this severe heat wave event persisted for consecutive 5-days from 19-23 June. The daily temperature anomalies were more than 5°C for consecutive five days. The departure of maximum temperature from the normal ranged between 5.3 to 11°C during severe heat wave

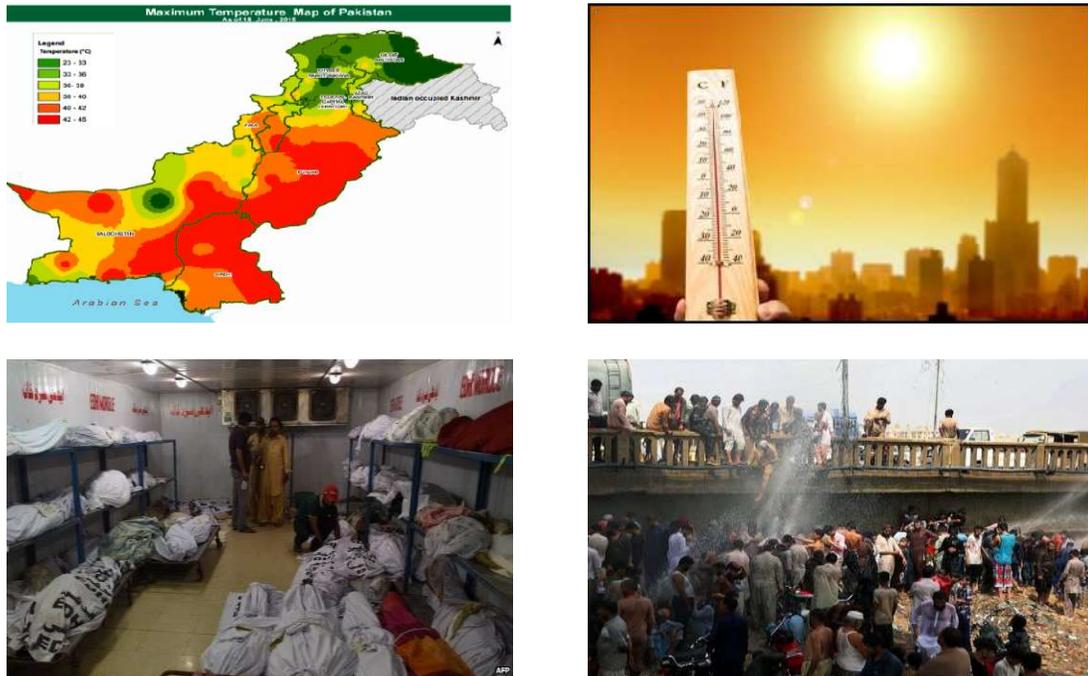


Figure 11: Scenes of hot summer in Pakistan during 2015

**(b) Flash Flood / Flood in 2015**

This year heavy rainfall events started in late February. All season, from Pre-monsoon till post-monsoon remained very wet except May and August. These extreme rainfall events generated flooding almost all over Pakistan. The mini tornado hitting Peshawar on 26<sup>th</sup> April poured 60mm and caused flash flood there. Heavy rainfall starting on Jun 3 resulted in flash floods in Khuzdar District (Baluchistan).

Heavy monsoon rains, the rapid melting of snow and outbursts from glacial lakes from 16 to 22 July 2015 led to flash floods and the flooding of the Indus River in various locations affected all provinces of Pakistan. Chitral District in Khyber Pakhtunkhwa had been badly hit with an estimated 285,000 people affected.

Figure 12 is the pictorial show of the event.



Figure 12: Scenes of flash flood/flooding in Punjab and Sindh during 2015

**(c) Tornado hit Peshawar, April 2015**

On 26<sup>th</sup> April a mini Tornado hit Peshawar, its speed was reported to be 110 Km/hr and it gave out 60 mm rainfall causing huge damage. Tornadoes develop due to thermal contrast during the months of March and April in Pakistan. Yet these are very rare extreme event. Figure 13 shows the event at its mature stage.



Figure 13: Mini Tornado Hitting Peshawar on Sunday 26<sup>th</sup> April 2015

**6. Drought Monitor**

National Drought Monitoring Centre of PMD monitors drought events on fortnightly basis; according to which 2015 has seen normal to wet conditions in most parts of Punjab, KPK and GB & AJK. Southern parts of Sindh and most of Baluchistan had Mild to Moderate Drought. Yet Kalat division experienced severe drought conditions. Western parts of KPK and FATA received very good rainfall. Lower Punjab is also showing wet picture. Figure 14 below shows the drought conditions of whole Pakistan for 2015.

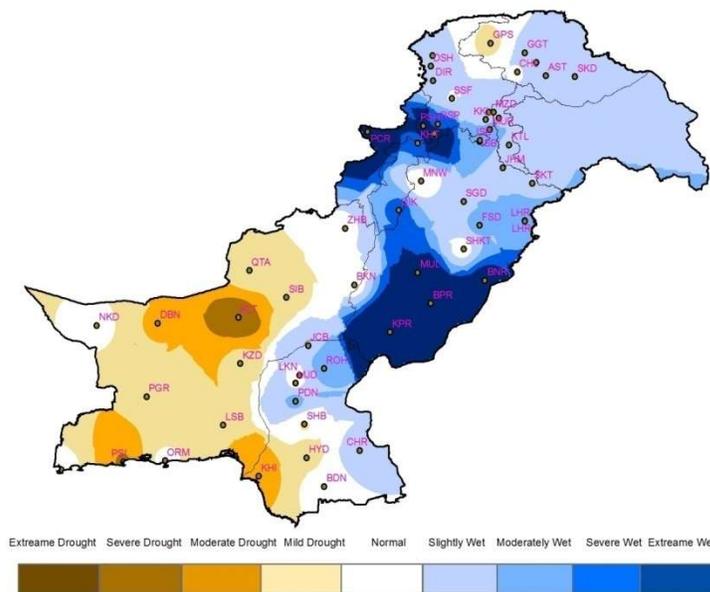


Figure 14: Drought analysis for Pakistan for the year 2015

<b>No. of Foggy days in 2015</b>							
<b>S.No.</b>	<b>KPK</b>	<b>Jan</b>	<b>Feb</b>	<b>Mar</b>	<b>Nov</b>	<b>Dec</b>	<b>Total</b>
1	PESHAWAR	0	0	0	0	1	1
2	PARACHINAR	0	0	0	0	0	0
3	BANNU	0	0	0	0	0	0
4	BALAKOT	0	0	0	0	0	0
5	CHERAT	0	0	0	0	0	0
6	CHITRAL	0	0	0	0	0	0
7	DIR	0	0	0	0	0	0
8	DROSH	0	0	0	0	0	0
9	KAKUL	0	0	0	0	0	0
10	KALAM	0	0	0	0	0	0
11	MALAM JABBA	0	0	0	0	0	0
12	MIRKHANI	0	0	0	0	0	0
13	SAIDU SHARIF	0	0	0	0	0	0
14	TIMERGARA	0	0	0	0	0	0
15	PATTAN	0	0	0	0	0	0
<b>S.No.</b>	<b>GILGIT BALTISTAN</b>	<b>Jan</b>	<b>Feb</b>	<b>Mar</b>	<b>Nov</b>	<b>Dec</b>	<b>Total</b>
1	GILGIT	0	0	0	0	0	0
2	SKARDU	1	0	1	0	0	2
3	HUNZA	0	0	0	0	0	0
4	ASTORE	0	0	0	0	0	0
5	GUPIS	0	0	0	0	0	0
6	CHILAS	0	0	0	0	0	0
<b>S.No.</b>	<b>SINDH</b>	<b>Jan</b>	<b>Feb</b>	<b>Mar</b>	<b>Nov</b>	<b>Dec</b>	<b>Total</b>
1	MOS KARACHI	2	1	0	0	0	3
2	HYDERABAD	4	3	0	0	0	7
3	BADIN	2	0	0	0	0	2
4	CHHOR	2	0	0	0	0	2
5	ROHRI	13	3	0	0	0	16
6	JACOBABAD	7	3	0	0	0	10
7	BADIN	11	0	0	0	0	11
8	NAWABSHAH	21	4	0	0	2	27
9	SUKKUR	19	1	0	1	5	26
10	MOENJODARO	23	4	0	0	7	34
11	LARKANA	12	2	0	0	1	15
12	THATHA	3	0	0	0	0	3
13	MITHI	4	2	0	3	0	9
14	DADU	4	0	0	0	0	4
15	MIRPURKHAS	0	0	0	0	0	0
16	TANDOJAM	7	3	0	1	0	1

<b>S.No.</b>	<b>BALUCHISTAN</b>	<b>Jan</b>	<b>Feb</b>	<b>Mar</b>	<b>Nov</b>	<b>Dec</b>	<b>Total</b>
1	BARKHAN	0	0	0	0	0	0
2	DALBANDIN	0	0	0	0	0	0
3	JIWANI	2	3	0	0	0	5
4	KALAT	0	0	0	0	0	0
5	KHUZDAR	0	0	0	0	0	0
6	LASBELLA	0	0	0	0	0	0
7	NOKKUNDI	0	0	0	0	0	0
8	ORMARA	0	0	0	0	0	0
9	PANJGUR	0	0	0	0	0	0
10	PASNI	0	1	0	0	0	1
11	QUETTA	0	0	0	0	0	0
12	SIBBI	0	0	0	0	0	0
13	TURBAT	0	0	0	0	0	0
14	ZHOB	0	0	0	0	0	0
15	GWADAR	0	0	0	0	0	0
16	UTHAL	0	0	0	0	0	0