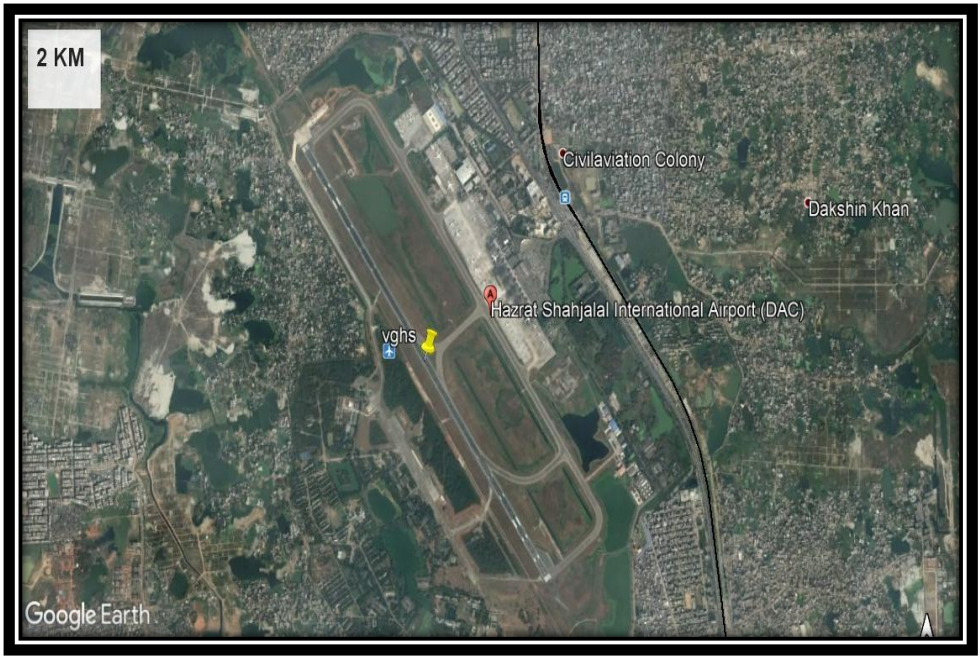


CLIMATE OF BAF BASE BANGABANDHU



MET SQN BAF BASE BANGABANDHU

PREFACE

Weather has an important role for flying. It is more important for military flying as military aircrafts contain less inbuilt weather aid than commercial aircrafts. Met Sqn provides all types weather related support to them. Despite air operation, Met information is also required for ground operation, ceremonial planning and even personal planning. It is not always possible for users to communicate met sqn to get weather related support instantly. In this regard a ready reference for getting weather related information is highly required. Keeping this in mind this booklet has been prepared using 10 years climatological data recorded in Met Sqn, BAF BBD. Dte Met provides suggestions and guideline to carry out this task. The 'Climate of BAF BBD' is the study of 10 years data for obtaining the normal of different weather and meteorological elements like temperature, rainfall, fog, thunderstorm, Nor'wester, cyclone etc. With the passage of time, more recorded data would enrich the subsequent edition of the booklet. In this regard, your suggestion/advice would be highly appreciable.

LAILA ANZUMAN

Squadron Leader

OIC Met Sqn

BAFBase Bangabandhu

September 2017

ACKNOWLEDGEMENT

It is indeed a matter of great opportunity for me to serve to as OIC Met Sqn in the base like BAF Base BBD since December 2016. Met Sqn, BBD is pleased to provide all out sp for safe flying and achieving the task. There are two Bases in Dhaka area named Baf base BSR,Tejgaon(Industrial area) and BAF base BBD, kurmitola.The nature of weather is different from each other because of location. Met Sqn, BBD not only provides forecast related routine job but also achieve the climatological data. This data helps providing long range forecast as well. Today this sqn ventures to prepare a booklet based on achieved climate data so that people can be oriented with the weather of Kurmitola, Dhaka. This booklet will not only help new comer but also the person living here for planning any programs needs weather suggestion. The support and hardworking by all the members of Met Sqn is praise worthy. I sincerely acknowledge the support of D Met (Gp Capt ABM Abdur Rab Chowdhury, psc) and OC OPS, BBD for their valuable guidance and inspiration for making the afford a successful one.

LAILA ANZUMAN

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BAFBase Bangabandhu

September 2017

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INTRODUCTION

1. Dhaka city is the capital of the country, Dhaka is the economic, cultural and political centre of Bangladesh. It is one of the world's most populated cities and also the most densely populated city in the world. BAF Base Bangabandhu, Kurmitola, is situated in the Northern part of Dhaka. It's latitude and longitude are 23° 5'N and 90° 2' E respectively. It's height is about 27feet/08 metre from mean sea level. Location of BAF Base Bangabandhu is very close to the Hazrat Shahjalal International Airport (HSIA) Dhaka, extreme north of the base Turag river and south Tejgaon, the largest industrial area. Weather plays an important role in flying specially as it is renowned for fighter aircraft.

AIM

2. The aim of the booklet is to provide a comprehensive Weather related information including climatological information of BAF Base BBD, Kurmitola, Dhaka.

DATA AND INFORMATION USED

3. To know about the weather related information about BAF Base BBD, Kurmitola, Dhaka, it is necessary to know about the geographical location, Season and other atmospheric condition of Kurmitola, influencing weather. BAF BBD or even Kurmitola is a very small place and it is not possible to be oriented its weather without considering the same of Dhaka district even some cases Dhaka Division. Met Sqn, BAF BBD has been established in 22 Dec 2003 and started round the clock observation since 05 Mar 2006. It has been achieving Met data for 10 years only and this

data are used for the purpose. Here a total of 10 years data (from 01 January 2007 to 31 December 2016) of major three elements : temperature, wind, precipitation and its product : Depressions, Thunderstorm/Nor'wester, fog etc have been taken into consideration. Round the clock data of those elements have been used in the following form:

- a. Monthly mean temperature (°C)
- b. Monthly mean maximum temperature (°C)
- c. Monthly mean minimum temperature (°C)
- d. Recorded highest temperature (°C)
- e. Recorded lowest temperature (°C)
- f. Average no of rainy days
- g. Monthly amount of rainfall
- h. Year wise total rainfall
- j. No of days with thunderstorm
- k. Monthly mean wind speed
- l. Monthly max wind speed
- m. Monthly no of days with fog (visibility less than 1000m)
- n. Frequency of Nor'wester
- p. Number of monsoon depression

4. **Geographical Location of Dhaka and Kurmitola:** Dhaka is located in Central Bangladesh at 23°42'N and 90°22'E, on the Eastern banks of the Buriganga River. The city lies on the lower reaches of the Ganges Delta and covers a total area of 306.38 square kilometres (118.29 sq mi). Dhaka district is bounded by the districts of Gazipur, Tangail, Munshiganj, Rajbari, Narayanganj, Manikganj. BAF Base Bangabondhu, Kurmitola, is situated in the Northern part of Dhaka. It's latitude and longitude are 23° 5'N and 90°2' E respectively. It is about 27 feet/08 metre from mean sea level. Geographically it is very close to the International Airport (HSIA) Dhaka, extreme north of base area is Turag river and south of the base Tejgaon, the largest

industrial area. Basically this area is surrounded by large trees. Vegetation is more here comparing its close by areas. Due to many small ponds and water sources ,the humidity and soil moisture is more in this area.



Fig 1: Location of Dhaka

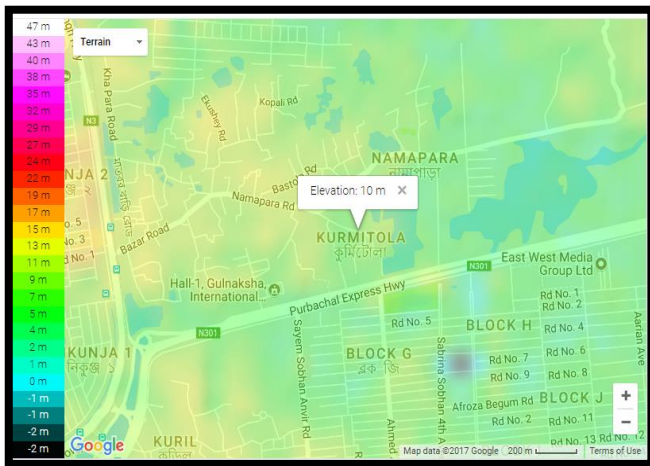


Fig 2: Location of Kurmitola, Dhaka

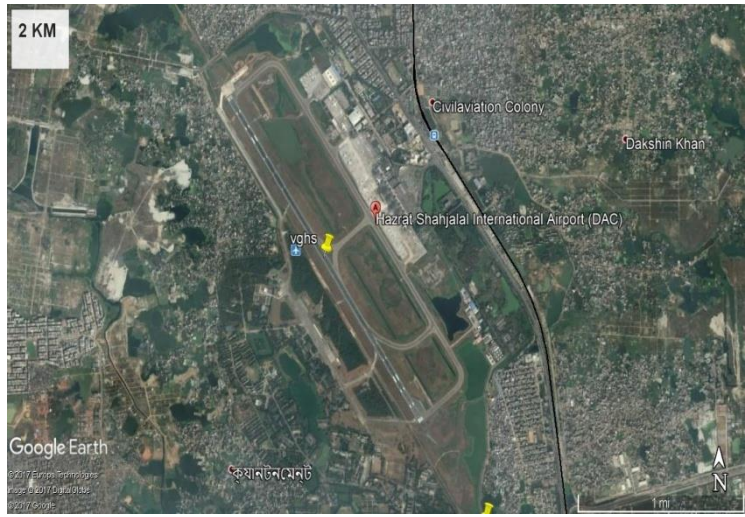


Fig 3: Location of Kurmitola (HSIA and Cantt Area)

Seasons contributing weather

5. There are four seasons in Bangladesh as well as Dhaka but these seasons influence the local weather differently than other places in Bangladesh.



Fig 5: Seasons in Bangladesh

6. Pre- Monsoon: The months from March to May are known as pre-monsoon season. This season is well known as Nor'wester season of Bangladesh as the convective cloud systems move from North West. Dhaka division also experiences this Nor'wester with highest intensity and frequency.

7. South-West monsoon: South-West (SW) monsoon starts in the month of May and continue till September. Dhaka division experiences most rainfall during this time. At times heavy to very heavy rainfall occurs here and creates temporary water logging. Numbers of Monsoon Depressions take place in North Bay of Bengal and most of them affect Dhaka area. More than 80% of the total rainfall occur during SW monsoon period.

8. Post-monsoon period: The month of October to December falls under this period. The sun moves towards southern hemisphere

and leave a lot of convective activities in this area. This period is also known as the cyclone period as most of the cyclone forms during this period and the intensity and frequency of this cyclones are greater than that of pre-monsoon period. It is also significant that this period most of them tracks towards Bangladesh. The deadliest cyclone of history of record occurred this period during 12 Nov 70 which leaves 5 lac people dead. During 2016 the tropical cyclone formed BOB.

9. North-east Monsoon: The months December to February are known as NE monsoon and are commonly known as winter season. This NE monsoon brings coldness to the country from north. Moreover western disturbances which are one of the main source of precipitation in BD. During winter western disturbances affects Dhaka. The main flying hazard during this period is poor visibility due to fog. Radiation fog is the main source of poor visibility of our country in this period.

10. Remarkable Extreme Weather. Recorded remarkable different extreme weather elements over Kurmitola:

Ser No	Met Element	Value	Time of Occurrence
a	The temperature of the hottest day	42.0°C	24 Apr 2014
b	The temperature of the coldest day	06.2°C	13 Jan 2011
c	Wettest day with rainfall amount	480 mm	27 Jul 2009
d	Maximum wind direction and speed	310/60kts	Mar 2013

e	Maximum Rainfall in a month	927 mm	Jul 2007
f	Monthly maximum rainy days	26 days	Jul 2009
g	Maximum Rainfall in a year	3041mm	2007
h	Maximum TS days in a month	24 days	Mar 2011
j	Maximum foggy days in a month	31 days	Jan 2009, 2010, 2011, 2013, Dec 2014
k	Foggy days with lowest visibility	0010 m	25 Jan 2009, 31 Dec 2012, 09 Dec 2014, 13 Jan 2015

Table -1

11. In the next subsequent pages, the graph of different weather elements are shown:

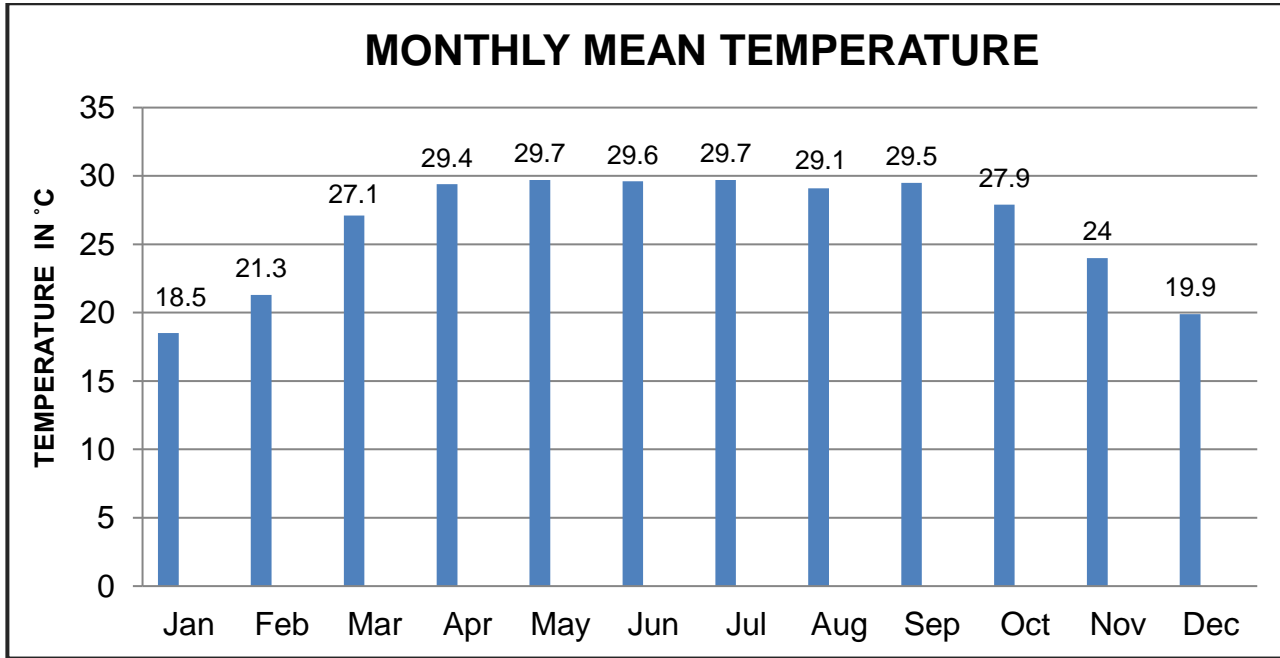


Figure 6: Monthly Mean Temperature for the period 2007- 2016

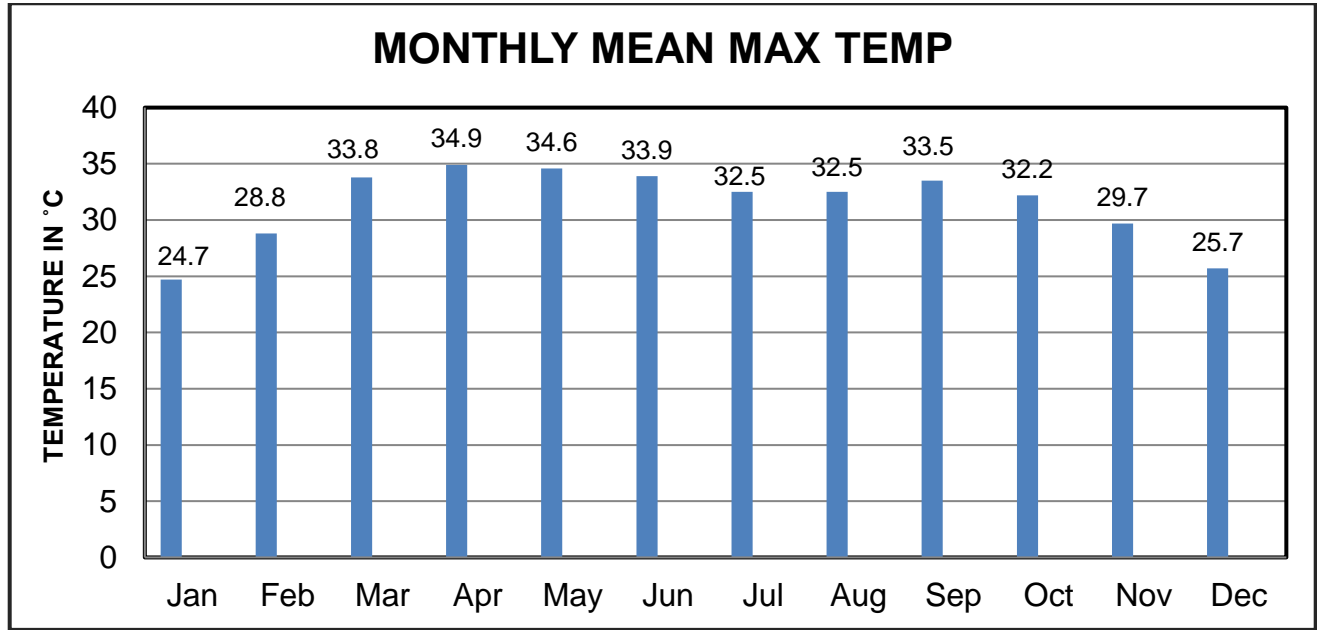


Figure 7: Monthly Mean Maximum Temperature for the period 2007- 2016

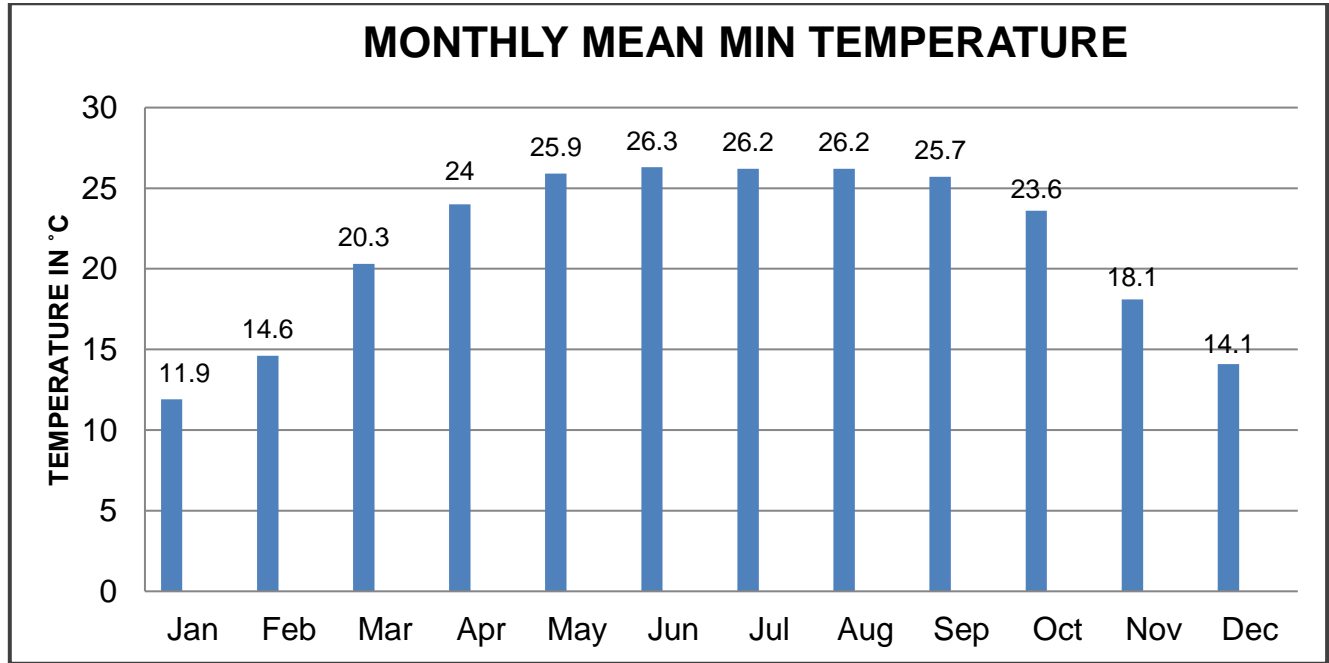


Figure 8: Monthly Mean Minimum Temperature for the period 2007- 2016

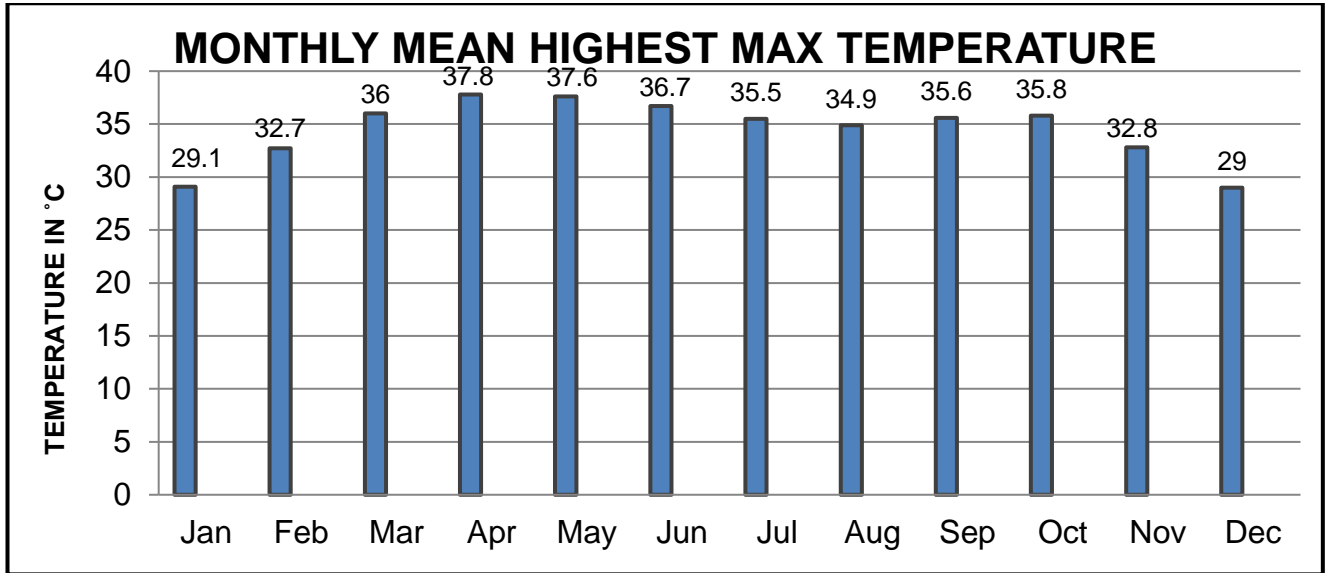


Figure 9: Monthly Mean Highest Max Temperature for the period 2007- 2016

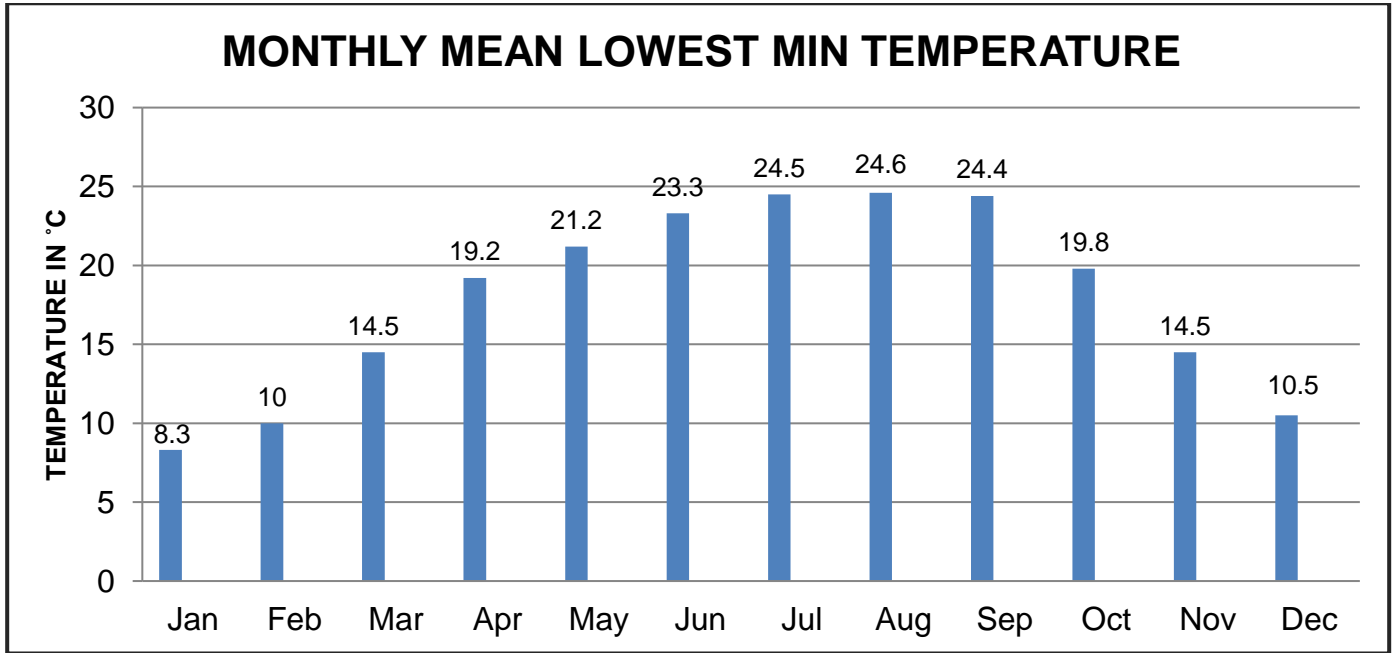


Figure 10: Monthly Mean Lowest Min Temperature for the period 2007- 2016

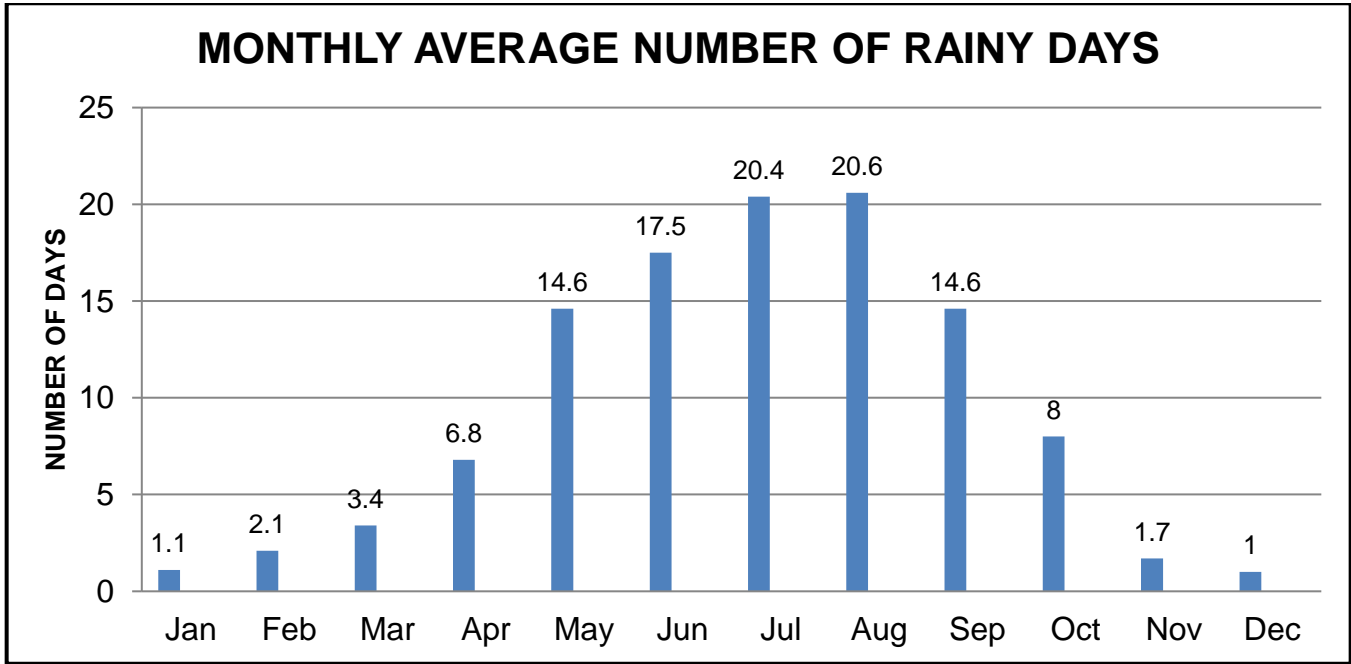


Figure 11: Monthly Average Number of Rainy Days for the period 2007- 2016

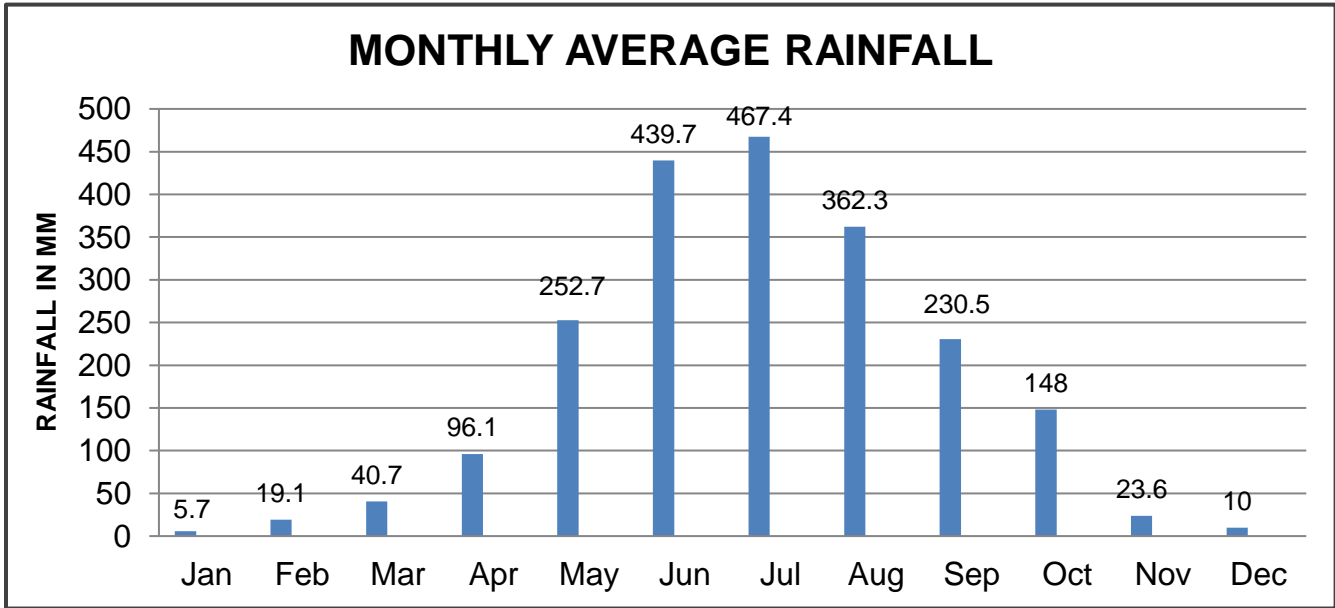


Figure 12: Monthly Average Rainfall for the period 2007- 2016

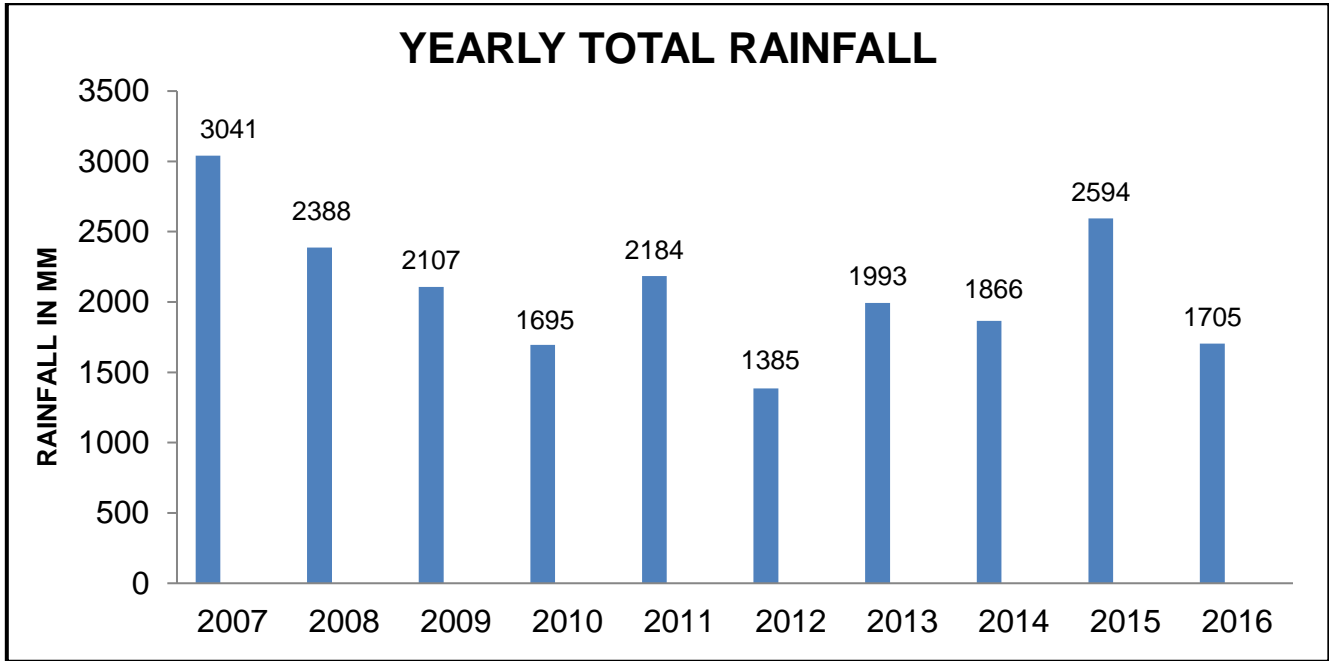


Figure 13: Yearly Total Rainfall for the period 2007- 2016

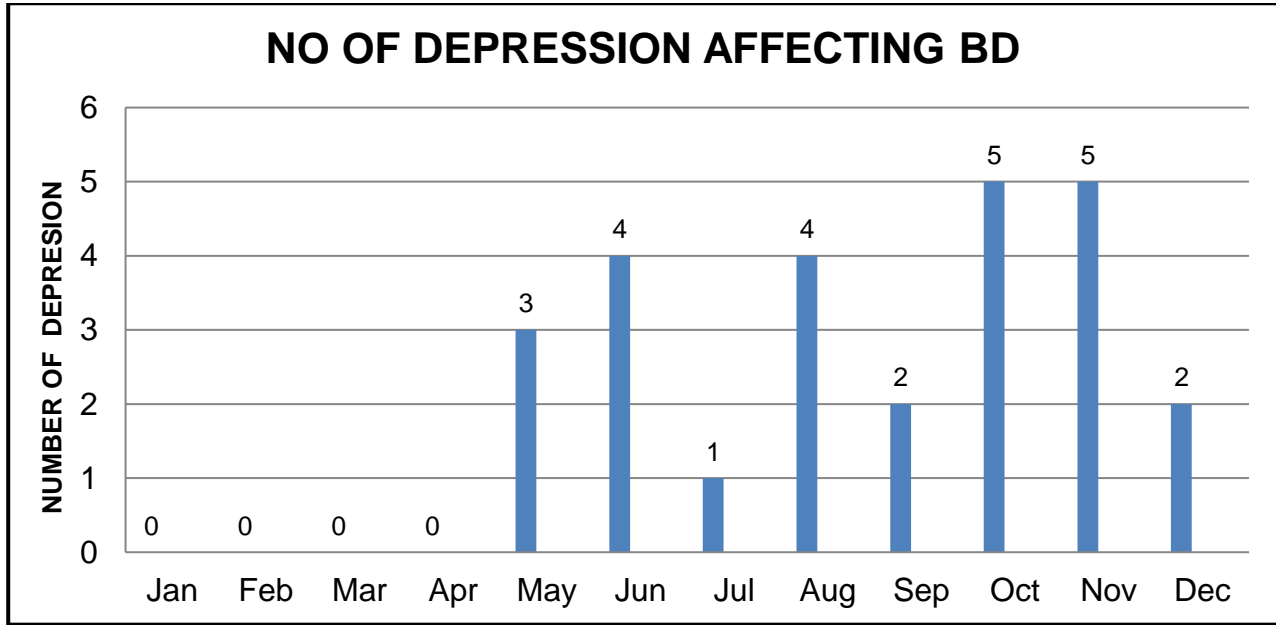


Figure 14: Monthly No of Monsoon Depression for the period 2007- 2016

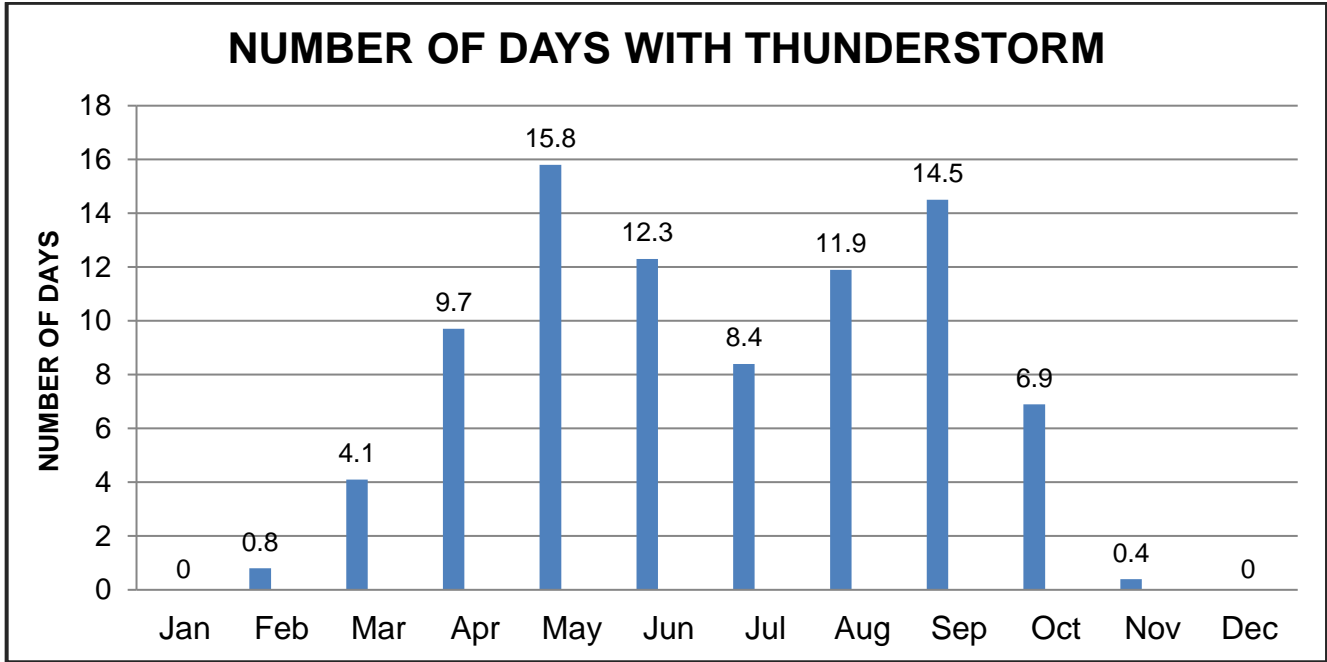


Figure 15: Monthly No of Days with Thunderstorm for the period 2007- 2016

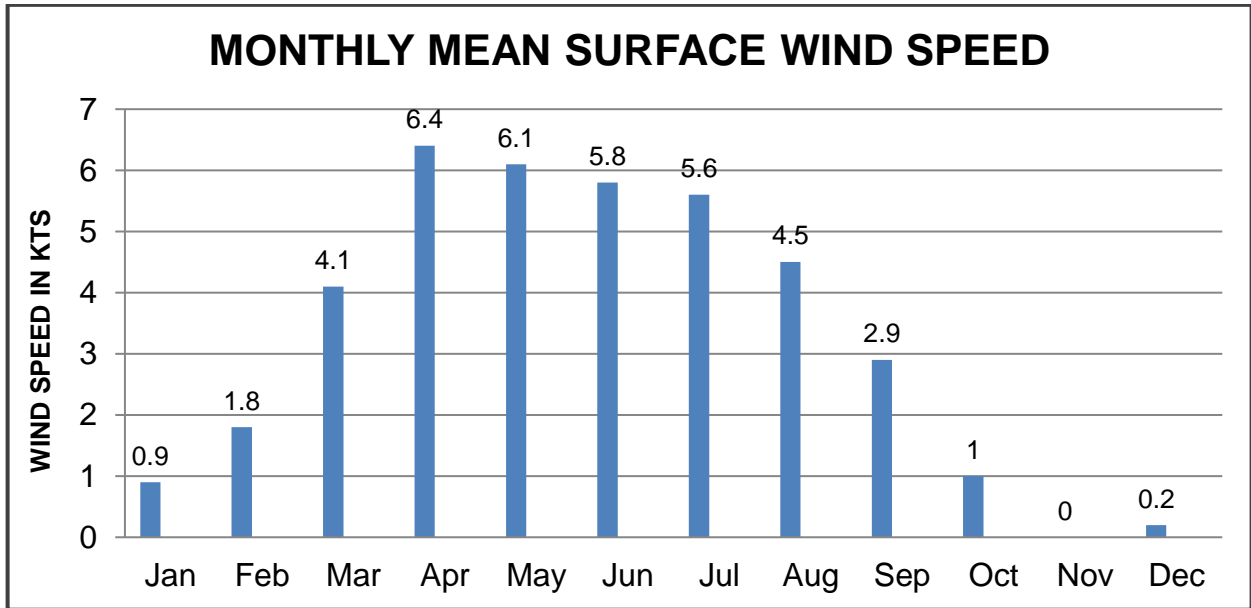


Figure 16: Monthly Mean Surface Wind Speed for the period 2007- 2016

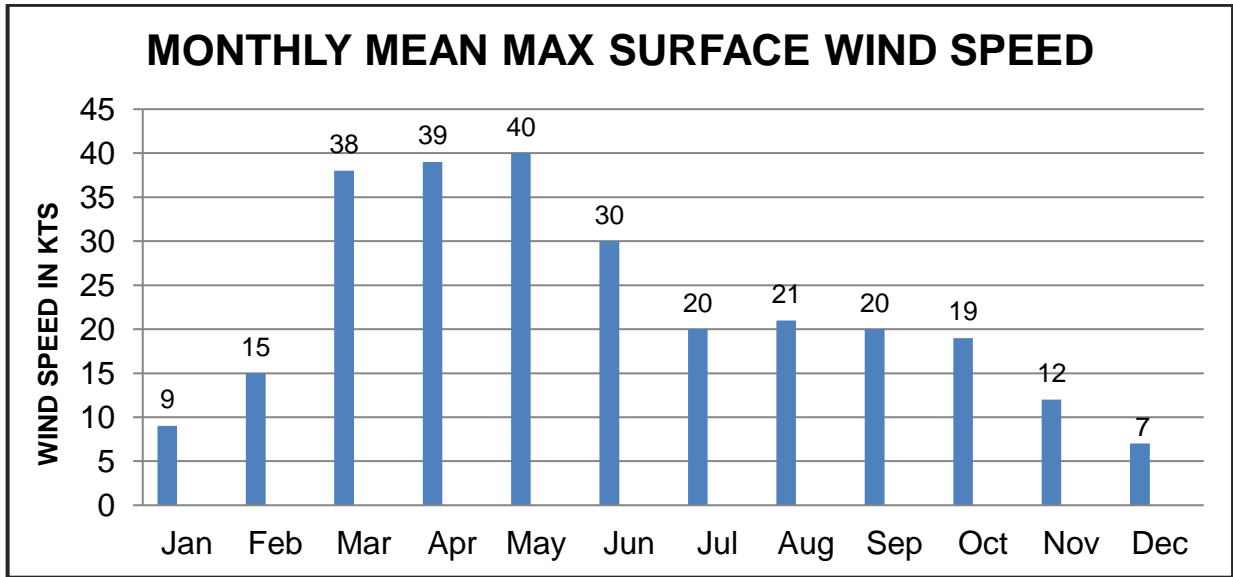


Figure 17: Monthly Mean Max Surface Wind Speed for the period 2007- 2016

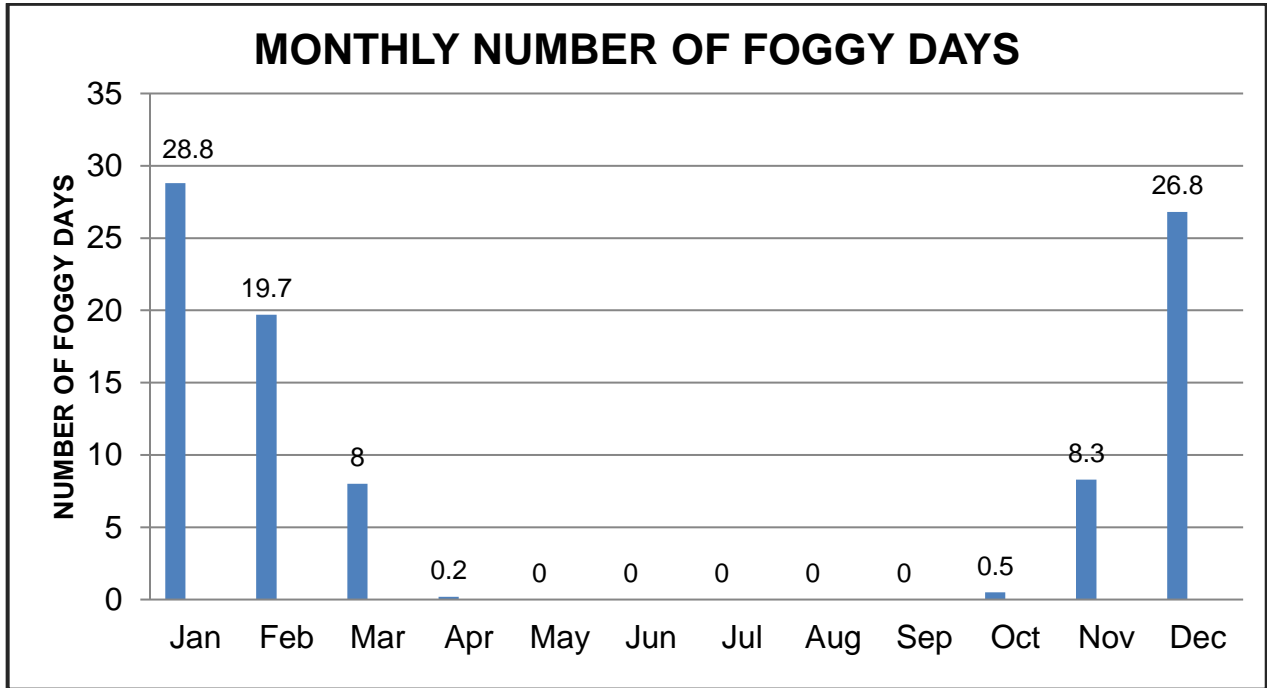


Figure 18: Monthly No of Foggy Days for the period 2007- 2016

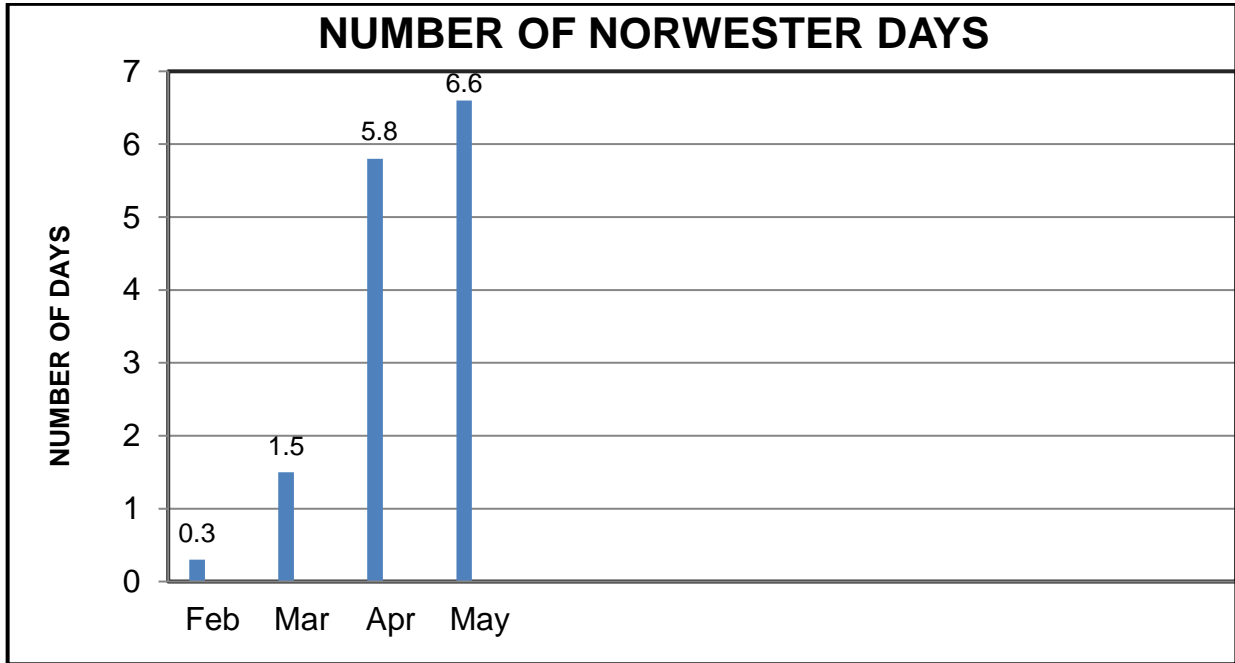


Figure 19: Monthly No of Nor'wester for the period 2007- 2016

12. Monthly average wind direction and speed from 2007 to 2016 are appended below:

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2007	CALM	NE/01	W/07	S/14	SE/12	SE/11	SE/10	ESE/05	SE/03	CALM	CALM	CALM
2008	CALM	NE/01	SW/03	SW/06	SW/06	S/08	S/07	SE/05	SE/04	E/01	CALM	CALM
2009	WNW/01	W/03	SW/05	SSW/06	SSE/06	SE/06	SE/06	SSE/04	SE/03	SSE/02	CALM	CALM
2010	NW/02	WNW/02	S/05	S/09	SSE/05	SE/07	SSE/03	SE/03	SE/02	ENE/01	CALM	CALM
2011	NW/01	W/02	NW/06	W/03	S/05	SE/05	E/04	E/04	SE/04	NW/02	CALM	E/01
2012	W/02	WNW/03	NW/03	SW/05	SSE/05	SE/06	SE/06	SE/06	SE/03	SE/02	CALM	NW/01
2013	N/01	NW/03	W/03	NW/04	SE/06	SE/03	SE/05	SE/04	ESE/03	ESE/02	CALM	CALM
2014	W/02	W/03	W/03	NW/04	S/05	SE/03	SE/05	SSE/05	SE/04	CALM	CALM	CALM
2015	CALM	CALM	W/03	SSW/05	E/06	SE/06	E/06	SSE/04	SSE/01	CALM	CALM	CALM
2016	CALM	CALM	W/03	S/08	E/05	SSE/03	S/04	SE/05	SSE/02	CALM	CALM	CALM

NB : Wind speed are in kts

13. Monthly average max wind direction and speed from 2007 to 2016 are appended below:

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2007	050/07	280/17	220/27	320/36	340/48	200/25	160/31	150/16	140/32	080/40	060/55	360/05

2008	350/07	050/17	230/44	<i>270/48</i>	270/48	220/33	150/18	120/18	040/24	020/25	080/04	130/04
2009	<i>280/18</i>	<i>180/27</i>	210/28	210/38	360/38	270/36	130/18	060/20	110/21	140/17	300/10	300/06
2010	340/08	290/06	050/29	300/45	320/28	<i>210/45</i>	110/18	140/18	340/17	070/16	340/06	320/05
2011	300/06	310/06	350/36	290/45	200/48	100/16	200/17	090/10	130/17	300/16	040/03	310/05
2012	270/08	320/10	280/58	320/48	320/30	330/42	120/18	150/18	130/17	190/16	090/06	<i>160/16</i>
2013	340/08	330/16	<i>310/60</i>	250/47	230/42	310/24	120/18	090/22	120/22	160/20	090/10	300/06
2014	310/10	310/19	260/32	340/30	320/40	330/30	090/18	160/19	170/12	030/06	360/05	220/08
2015	160/17	120/18	170/17	270/38	330/40	170/18	120/22	020/30	120/17	090/16	080/06	360/10
2016	290/06	270/09	270/45	180/20	280/38	280/36	190/18	<i>120/37</i>	160/17	140/18	090/12	270/06
AVG	340/09	310/15	270/38	320/39	320/40	270/30	120/20	150/21	130/20	140/19	090/12	360/07

NB : Wind speed are in kts

INFERENCE

14. Last 10 years (2007-2016) of data of various weather elements has been analyzed and discussed in the following paragraphs:

a. **Monthly Mean Temperature.** Yearly mean temperature in Kurmitola is about 26.3°C. Monthly mean temperature is higher around 29°C in the month from April to September. Lower temperature (18°C -20°C) is observed in the month of January and December; with lowest 18.5°C in January as shown in Figure 6.

b. **Monthly Mean Maximum Temperature.** The average maximum temperature remains below 34°C in round the year except in the month of April and May. So April and May are the hottest months in Kurmitola as per figure 7.

c. **Monthly Mean Minimum Temperature.** The lowest value of monthly mean minimum temperature is observed from December to February which is 12°C -14°C whereas higher value 25°C -26°C is observed from May to September. Lowest recorded value is 12°C in January as shown in Figure 8.

d. **Recorded Highest Temperature.** More than 37°C was found in the month from April and May where as more than 35°C temperature was recorded during Mar to Oct. The highest temperature 37.8°C is recorded in the month of April as depicted in Figure 9.

e. **Recorded Lowest Temperature.** The recorded lowest temperature is 10°C and less is in the months from Jan to Feb and 11-15°C in the month of Nov, Dec and Mar. Lowest temperature is recorded 8.3°C in the month of January as depicted in from Figure 10.

f. **Month wise rainy days.** More than 10 days with rain per month was found during May to September where more than 20 days is noticed in Jul and Aug. Less than 5 days per month was found from November to March. The highest no of rainy days (20.4

& 20.6 days) was observed in the month of Jul and Aug as shown in Figure 11.

g. **Monthly Average Rainfall.** The monthly average rainfall in Kurmitola is around 175 mm. In the dry months from November to March, less than 50mm rainfall occur. More than 400mm rain fall occur during June and July, in the SW monsoon period. It is 200-400 in the month of May, Aug & September. Highest rainfall is found 467.4 mm in July in Figure 12.

h. **Yearly Total Rainfall.** The average yearly rainfall at BBD is about 1746 mm. In last 10 years, more than 2000mm rainfall was recorded in 2007, 2008, 2009, 2011 and 2015 where as lowest 1385 mm and 1695 mm in 2012 and 2010 respectively. The highest 3041mm rainfall was recorded during 2007 as shown in figure 13

j. **Number of Monsoon Depression (MD) during SW Monsoon:** Highest number 5 of MD occurred during Oct and Nov followed by 4 in Jun and August and 3 in May, 2 in Sep and Dec respectively in the last 10 years as shown in Figure 14

k. **Number of Days with Thunderstorm.** Yearly average number of days with thunderstorm is around 7days per month. In the dry months from November to February, thunderstorm is less than 1 day per month. During pre-monsoon and post-monsoon it is highest in number. More than 5 days with thunderstorm is observed from April to October with maximum no of days in May and Sep (15.8 & 14.5 days) as depicted in Figure 15.

l. **Average Wind Speed.** The yearly average surface wind speed in Kurmitola is about 3.3kts. It is below 2kts in the months from October to February. From March to August it is 4-6kts. Max speed 6.4 and 6.1 kts during the month of Apr and May as revealed from Figure 16.

m. **Number of Foggy Days.** Fog occurs only seven months in a year and it does not occur in the SW Monsoon period. Fog occurs less than 10 days per month in the month of March, April, October and November. The highest no of days (28.8 days) fog occurs in the month

of January followed by 26.8 and 19.7 days during December and February respectively as depicted in Figure 18.

n. **Frequency of Nor'wester**. Nor'wester occurs in the month of Mar, April and May and exceptionally in the month of February and June. With the passage of time its frequency is increasing. Highest no of Nor'wester occur 6.6 days in the month of May followed by 5.8 days and 1.5 days in the month of April and March respectively as shown in Figure 19.

Conclusion

16. Weather forecasting plays important role in Military air operation. Accurate forecast helps planning of operations, saving time and cost and overall ensures flight safety in terms of weather. The accuracy of weather forecast of a particular place largely depends on the knowledge and experience of the forecaster as well as the climatology of this place. In this booklet last 10 years of climate data of BAF BBD has been analyzed to ascertain average conditions of different weather elements like temperature, rainy days, rainfall, thunderstorm, Nor'wester, Fog etc. This is the first edition of the booklet. It is expected that with the passage of time this booklet would be enriched with more climate data there by become a reliable ready reference for the weather of BAF BBD, Kurmitola.

