



Government of Nepal  
Ministry of Forest and Environment  
Department of Environment  
Babarmahal, Kathmandu

# Air Quality Status Of Nepal 2016-2020

Volume II

Lumbini Air Quality Monitoring Station



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First online edition

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## 1. Lumbini Air Quality Monitoring Station

- Address: In the premises of Lumbini Development Trust
- Location: 27.489522 Latitude, 83.279089 Longitude
- Surrounding of the station
  - East: Bishnupura Metallic Road
  - West: International Research Institute
  - North: Taulihawa Road and Greenland
  - South: Lumbini Development Trusts' employees quarter
- Establish year: 2016 (2074)
- Brief introduction of the instruments installed in the station
  1. PM instrument- GRIMM EDM 180
  2. Met sensor luffth WS 700
  3. Data logging and data transmission and power backup system

## 2. Air Quality Status of Lumbini Station (2016- 2020)

### 2.1 Air Quality Status, 2016

#### 2.1.1 Annual average of PM<sub>1</sub>, PM<sub>2.5</sub>, and PM<sub>10</sub>

Since, the data was generated from November 23, annual average of PM<sub>1</sub>, PM<sub>2.5</sub>, and PM<sub>10</sub> for the Lumbini station for 8-day period during November and 12-days period during December could not be calculated.

#### 2.1.2 Temporal variation of PM<sub>1</sub>

##### **Annual average of PM<sub>1</sub>**

Annual PM<sub>1</sub> average for Lumbini Station could not be calculated.

##### **Daily average of PM<sub>1</sub>**

Daily average concentration of PM<sub>1</sub> given in the figure below.

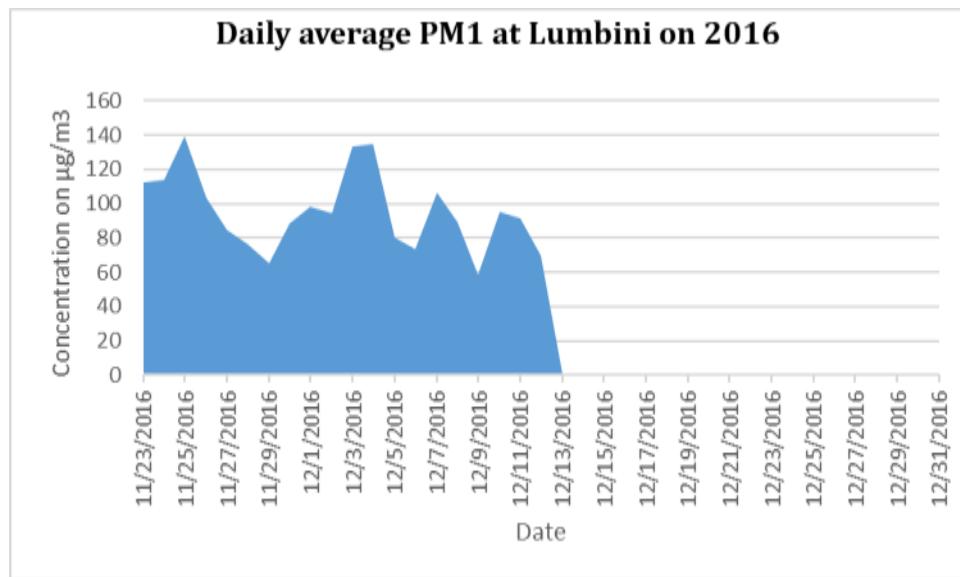


Figure 1: Daily average of PM<sub>1</sub>

### **Monthly average of PM<sub>1</sub>**

Since, the data was generated from November 23, average for 8-day period during November and 12-days period during December is shown in the figure.

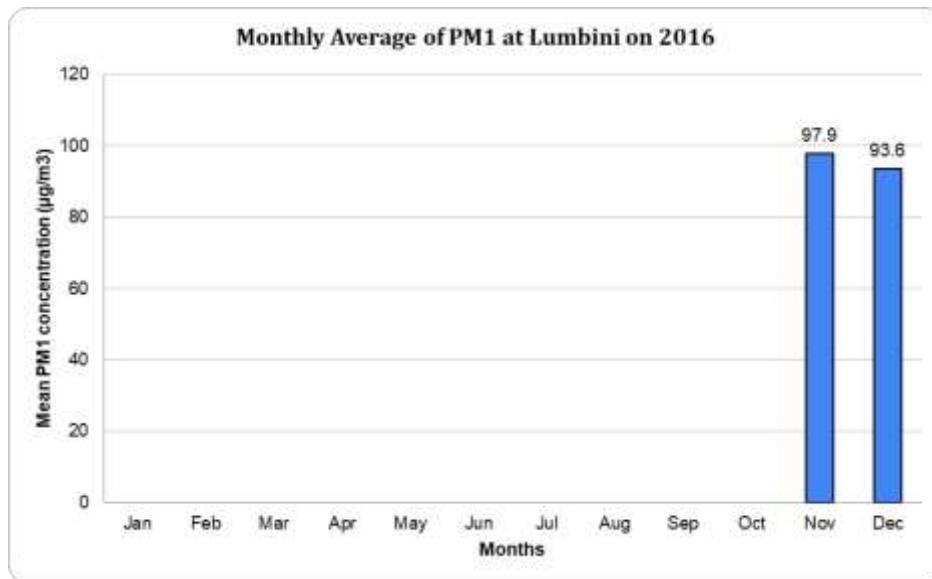


Figure 2: Monthly Average of PM<sub>1</sub>

### **Monthly variation of PM<sub>1</sub>**

Due to lack of data monthly variation in concentration of PM<sub>1</sub> could not be calculated.

### **Seasonal variation of PM<sub>1</sub>**

Due to lack of data, seasonal variation could not be calculated.

### **Diurnal variation of PM<sub>1</sub>**

The diurnal variation of average PM<sub>1</sub> concentrations can be shown in the figure below. The variation in PM<sub>1</sub> concentration was high at around 9 pm and low at 4 am.

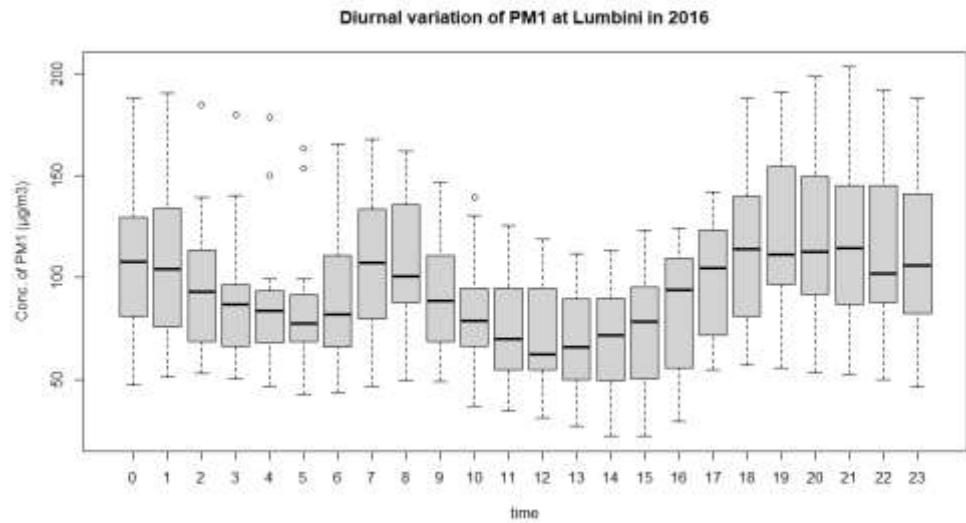


Figure 3: Diurnal Variation of PM<sub>1</sub>

### 2.1.3 Temporal variation of PM<sub>2.5</sub>

#### **Annual average of PM<sub>2.5</sub>**

Due to lack of data, annual average of PM<sub>2.5</sub> could not be calculated.

#### **Daily average of PM<sub>2.5</sub>**

Daily average concentration of PM<sub>2.5</sub> is shown in the figure below.

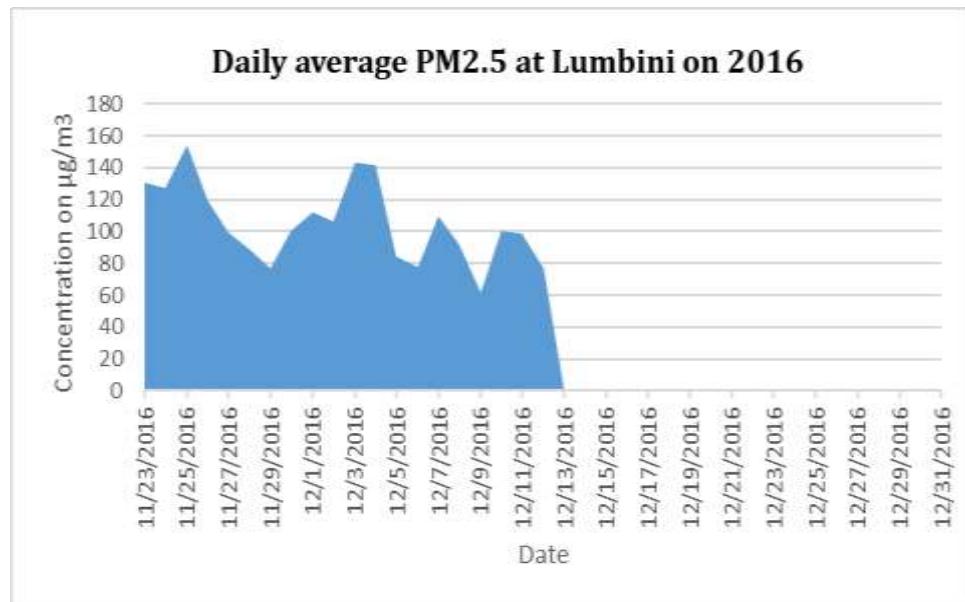


Figure 4: Daily average of PM<sub>2.5</sub>

#### **Monthly average of PM<sub>2.5</sub>**

Since, the data was generated from November 23, average for 8-day period during November and 12-days period during December for PM<sub>2.5</sub> is shown in the figure below

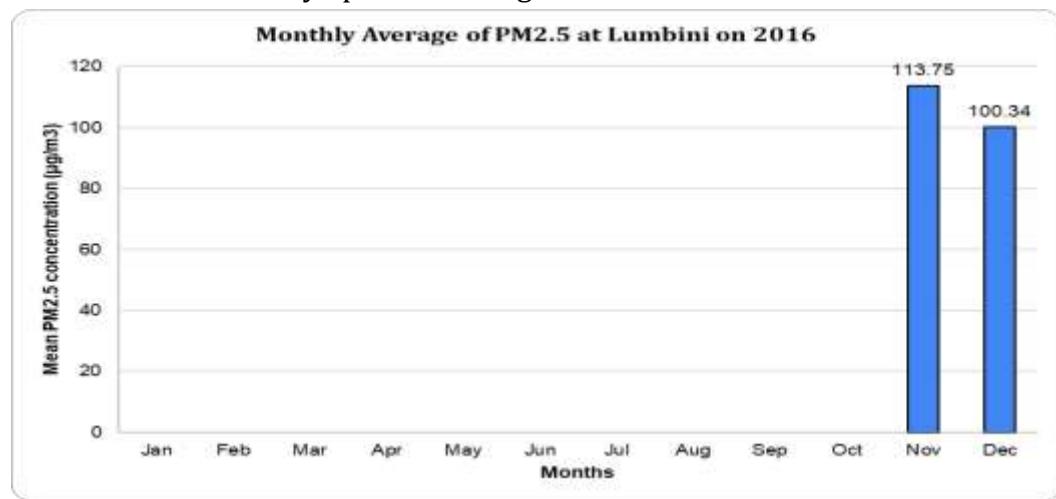


Figure 5.

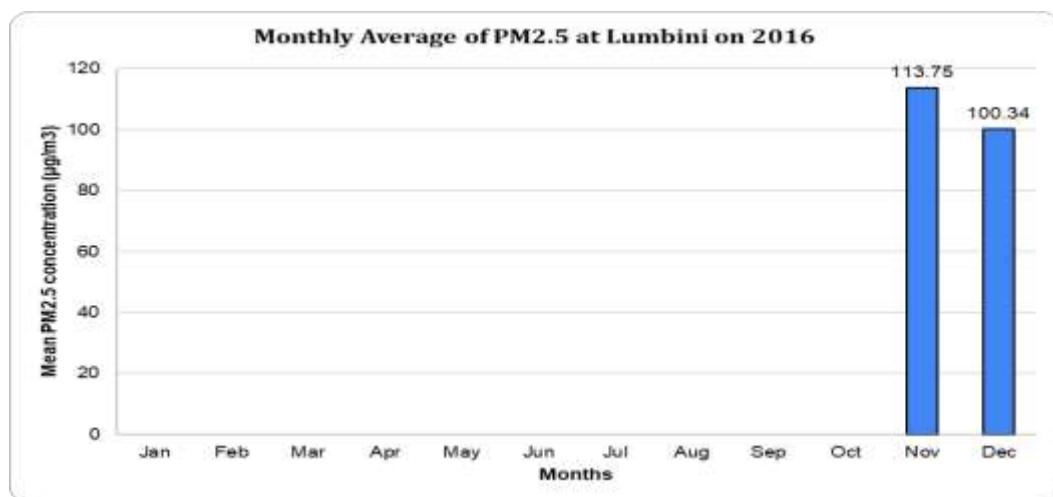


Figure 5: Monthly Average of PM<sub>2.5</sub>

### **Monthly variation of PM<sub>2.5</sub>**

Due to lack of data variation in concentration of PM<sub>2.5</sub> was not calculated.

### **Seasonal variation of PM<sub>2.5</sub>**

Due to lack of data, seasonal variation of PM<sub>2.5</sub> could not be calculated.

### **Diurnal variation of PM<sub>2.5</sub>**

The diurnal variation of average PM<sub>2.5</sub> concentrations can be shown in the figure below. The variation in PM<sub>2.5</sub> concentrations was high at around 7 pm and low at 1pm.

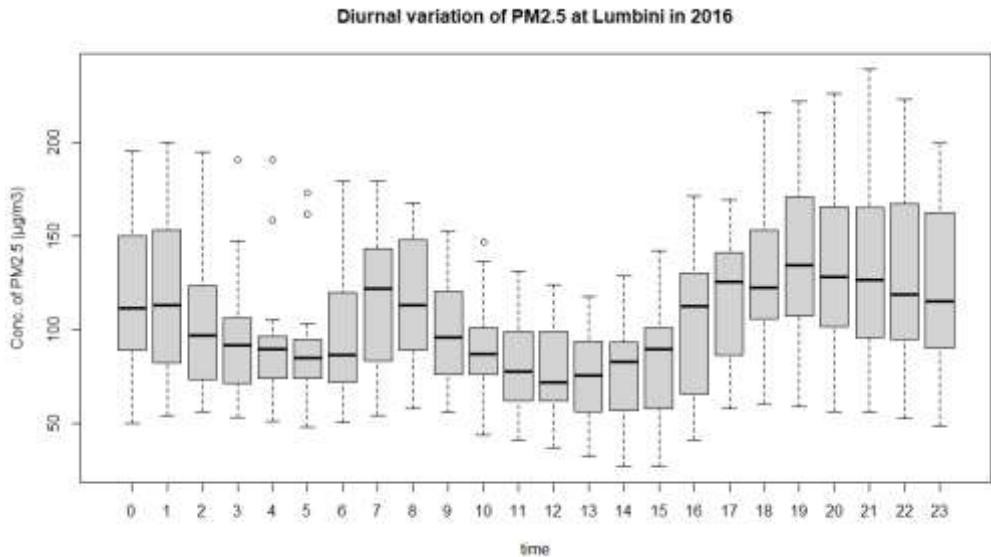


Figure 6: Diurnal Variation of PM<sub>2.5</sub>

### Compliance status of PM<sub>2.5</sub>

The total days of PM<sub>2.5</sub> monitored in the year 2016 counts 20, of which 20 days exceeded the NAAQS guideline.

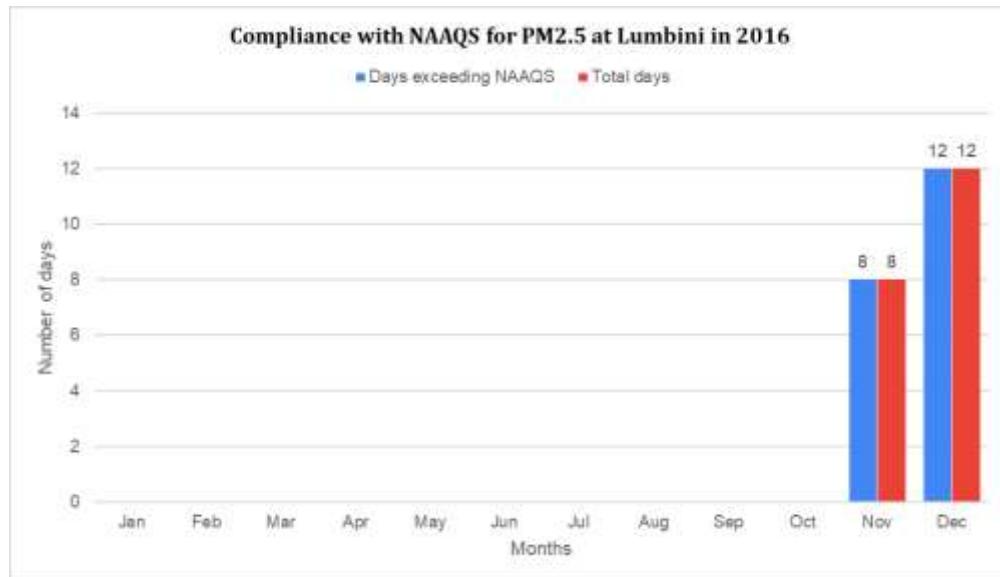


Figure 7: Compliance status of PM<sub>2.5</sub>

### 2.1.4 For PM<sub>10</sub>

#### Annual average of PM<sub>10</sub>

Due to lack of data, PM<sub>10</sub> average annual average was not calculated.

#### Daily average of PM<sub>10</sub>

Daily average concentration of PM<sub>2.5</sub> given in the figure below.

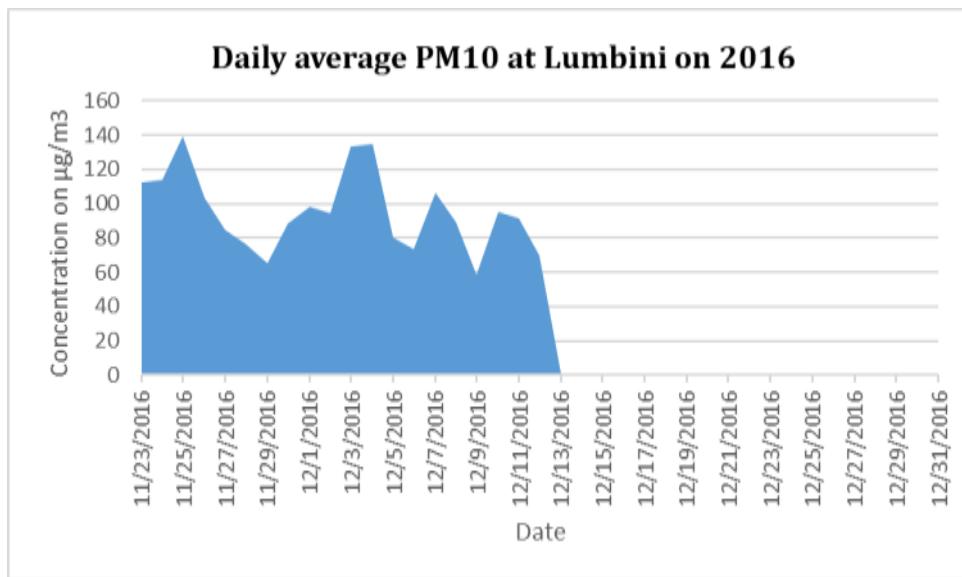


Figure 8: Daily average of PM<sub>10</sub>

### Monthly average of PM<sub>10</sub>

Since, the data was generated from November 23, average for 8-day period during November and 12-days period during December for PM<sub>10</sub> is shown in the figure below.

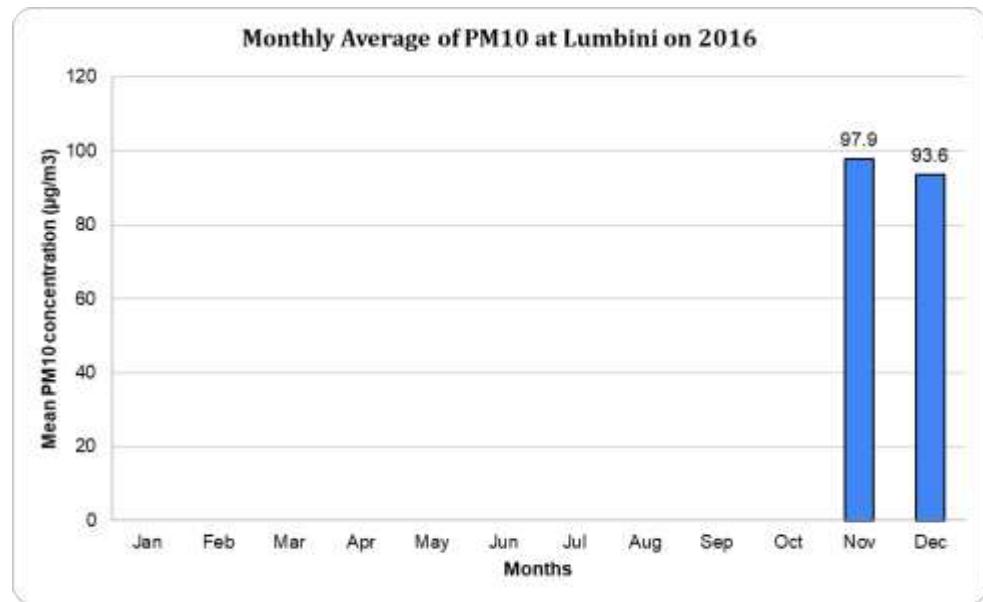


Figure 9: Monthly Average of PM<sub>10</sub>

### Monthly variation of PM<sub>10</sub>

Due to lack of data, variation in concentration of PM<sub>10</sub> was not calculated.

### Seasonal variation of PM<sub>10</sub>

Due to lack of data, seasonal variation was not calculated.

### Diurnal variation of PM<sub>10</sub>

The diurnal variation of average PM<sub>10</sub> concentrations can be shown in the figure below. The variation in PM<sub>10</sub> concentration was high at around 7 pm and low at 5 am.

Diurnal variation of PM<sub>10</sub> at Lumbini in 2016

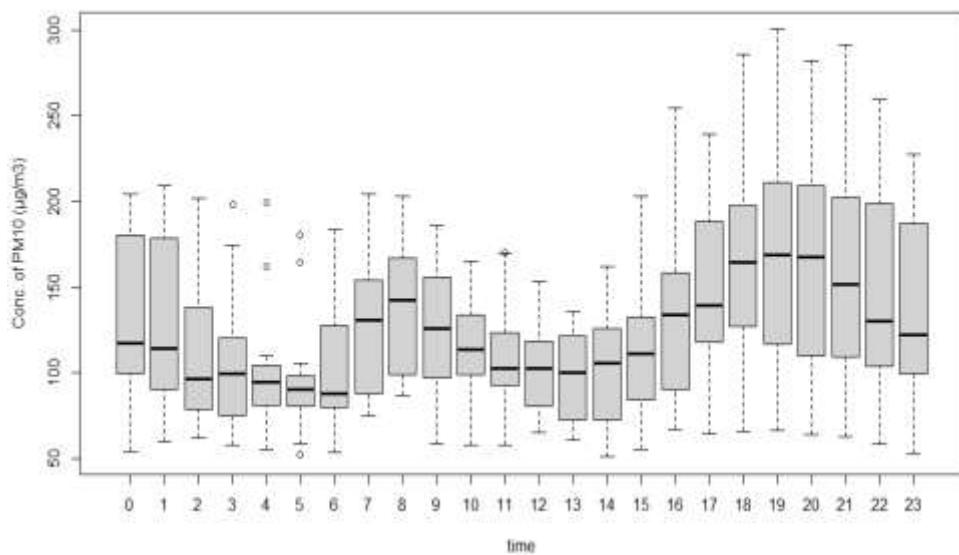


Figure 10: Diurnal Variation of PM<sub>10</sub>

### Compliance status of PM<sub>10</sub>

The total days of PM<sub>10</sub> monitored in the year 2016 counts 20 of which 20 days exceed the NAAQS guideline.

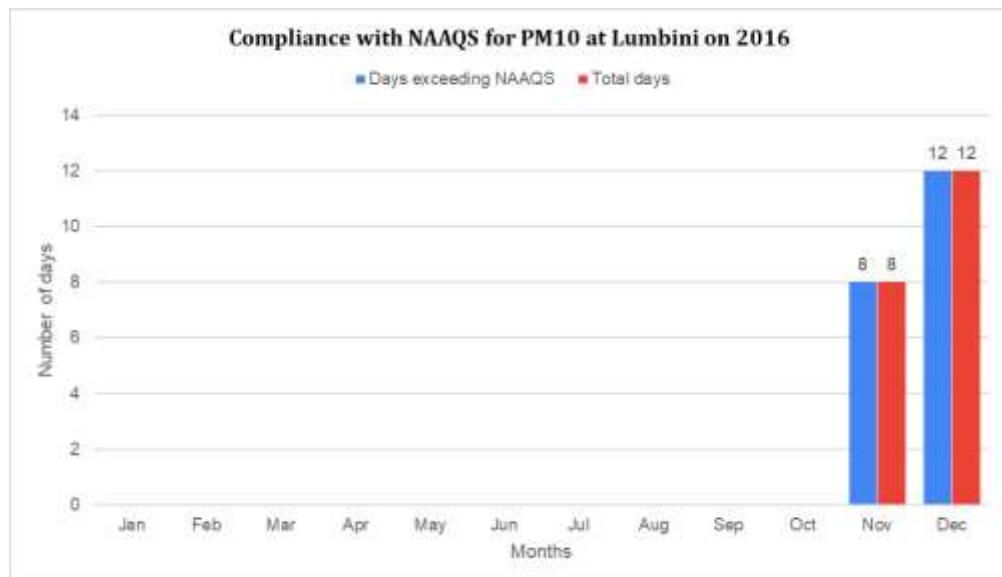


Figure 11: Compliance status of PM<sub>10</sub>

## 2.2 Air Quality Status, 2017

### 2.2.1 Annual average of PM<sub>1</sub>, PM<sub>2.5</sub>, and PM<sub>10</sub>

The annual average of PM<sub>1</sub>, PM<sub>2.5</sub>, and PM<sub>10</sub> for the Lumbini station was calculated as shown in the figure below **Error! Reference source not found.**.

Figure 12: Annual average of PM<sub>1</sub>, PM<sub>2.5</sub>, and PM<sub>10</sub>

### 2.2.2 Temporal variation of PM<sub>1</sub>

#### Annual average of PM<sub>1</sub>

The annual average for PM<sub>1</sub> for Lumbini Station was observed to be 46.57  $\mu\text{g}/\text{m}^3$ . Histogram of hourly average PM<sub>1</sub> is shown in the figure below.

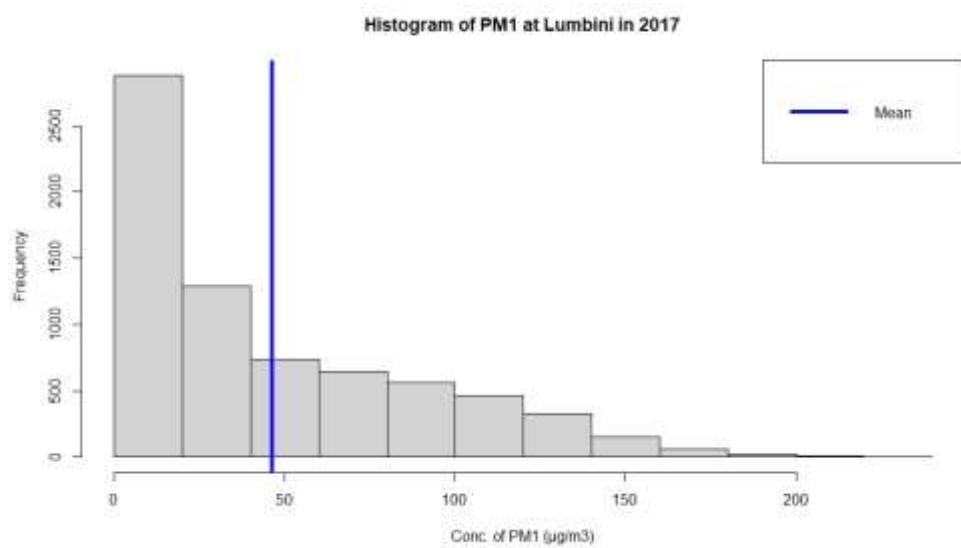


Figure 13 : Histogram of PM<sub>1</sub>

## Daily average of PM<sub>1</sub>

Daily average concentration of PM<sub>1</sub> was high during January and was found low during July.

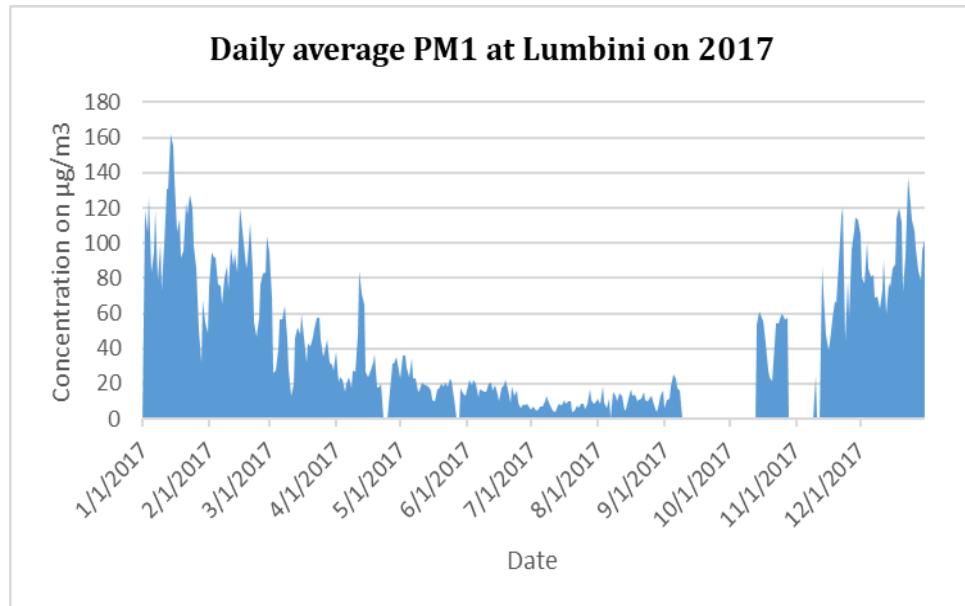


Figure 14: Daily average of PM<sub>1</sub>

## Monthly average of PM<sub>1</sub>

The highest and the lowest monthly average of PM<sub>1</sub> was found during January (101.51  $\mu\text{g}/\text{m}^3$ ) and July (7.92  $\mu\text{g}/\text{m}^3$ ) respectively.

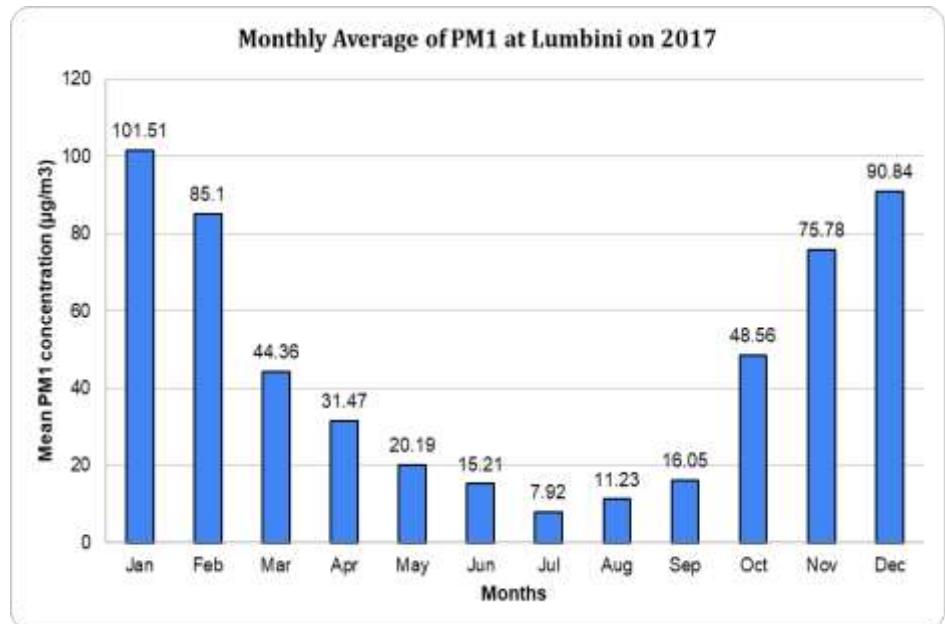


Figure 15: Monthly Average of PM<sub>1</sub>

## Monthly variation of PM<sub>1</sub>

Variation in concentration of PM<sub>1</sub> was found high during January whereas low during July.

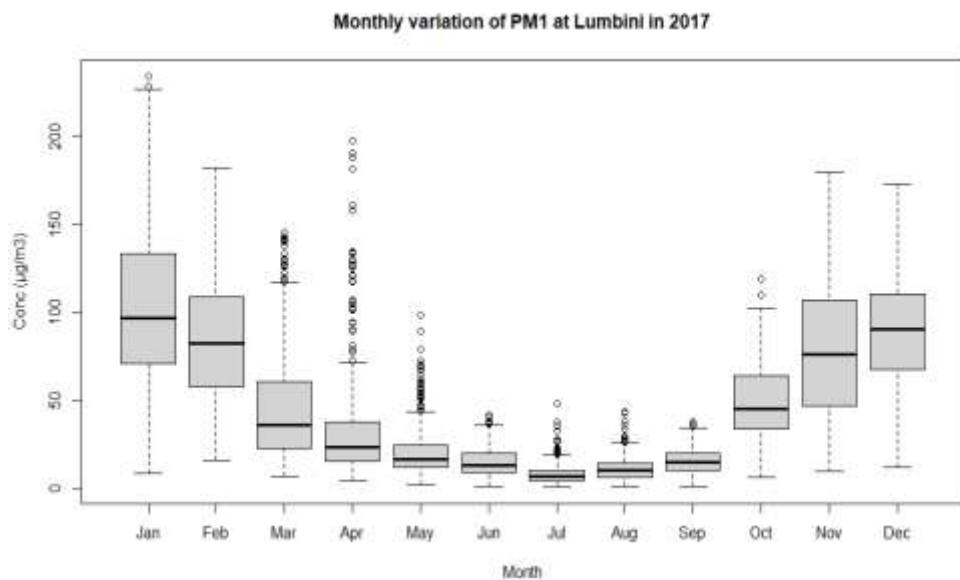


Figure 16: Monthly Variation of PM<sub>1</sub>

## Seasonal variation of PM<sub>1</sub>

Ambient concentration of average PM<sub>1</sub> during Winter (December-February), Pre-monsoon (March-May), monsoon (June-September), and post-monsoon (October-November) can be shown in the figure below. The concentration of PM<sub>1</sub> was found higher during winter (93.39 µg/m<sup>3</sup>) and low during monsoon season (11.45 µg/m<sup>3</sup> )

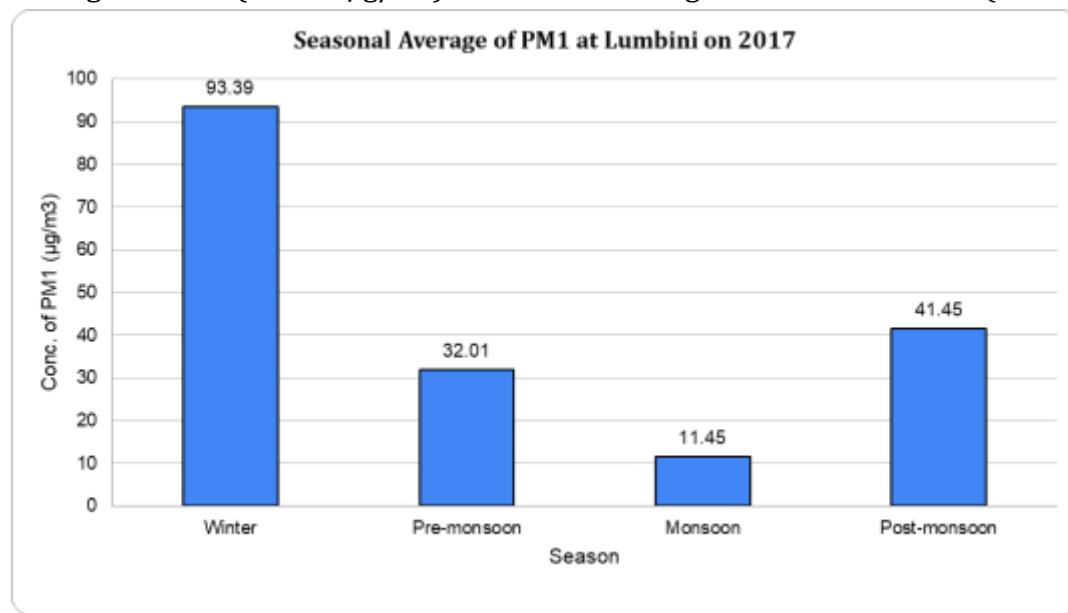


Figure 17: Seasonal variation of PM.

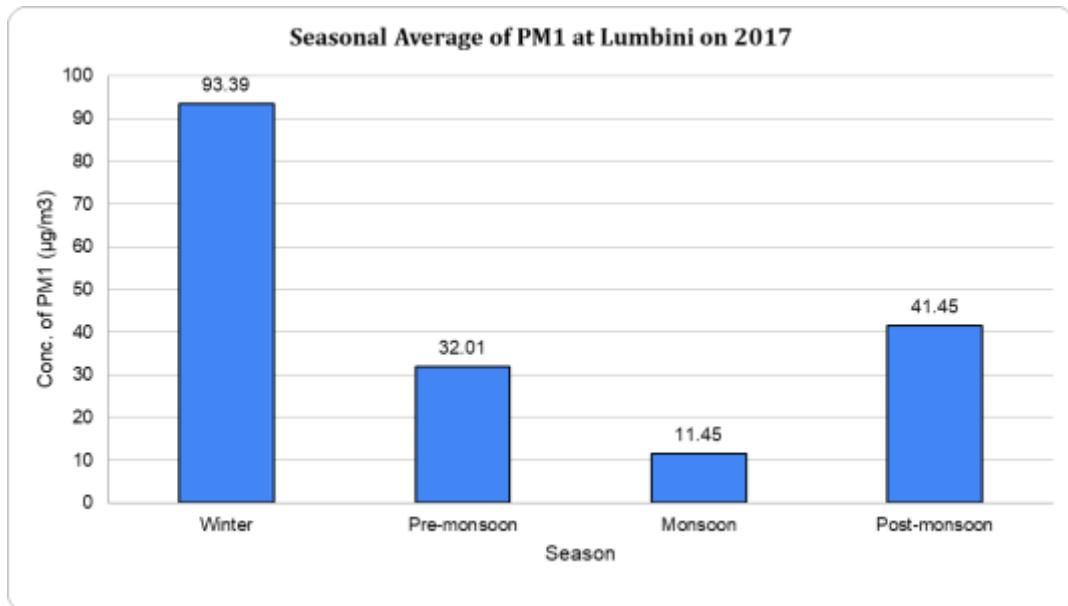


Figure 17: Seasonal variation of PM<sub>1</sub>

### **Diurnal variation of PM<sub>1</sub>**

The diurnal variation of average PM<sub>1</sub> concentrations can be shown in the figure below. The variation in PM<sub>1</sub> concentration was high at around 7 am and low at 2 pm.

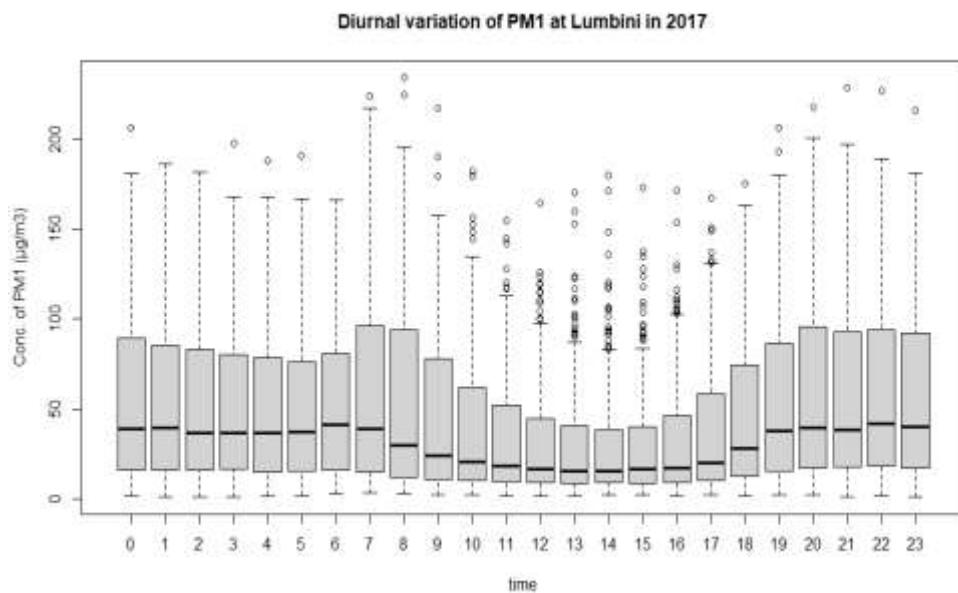


Figure 18: Diurnal Variation of PM<sub>1</sub>

### 2.2.3 Temporal variation of PM<sub>2.5</sub>

#### **Annual average of PM<sub>2.5</sub>**

The annual average for PM<sub>2.5</sub> for Lumbini Station was observed to be 52.49 µg/m<sup>3</sup>. Histogram of hourly average PM<sub>2.5</sub> is shown in the figure below.

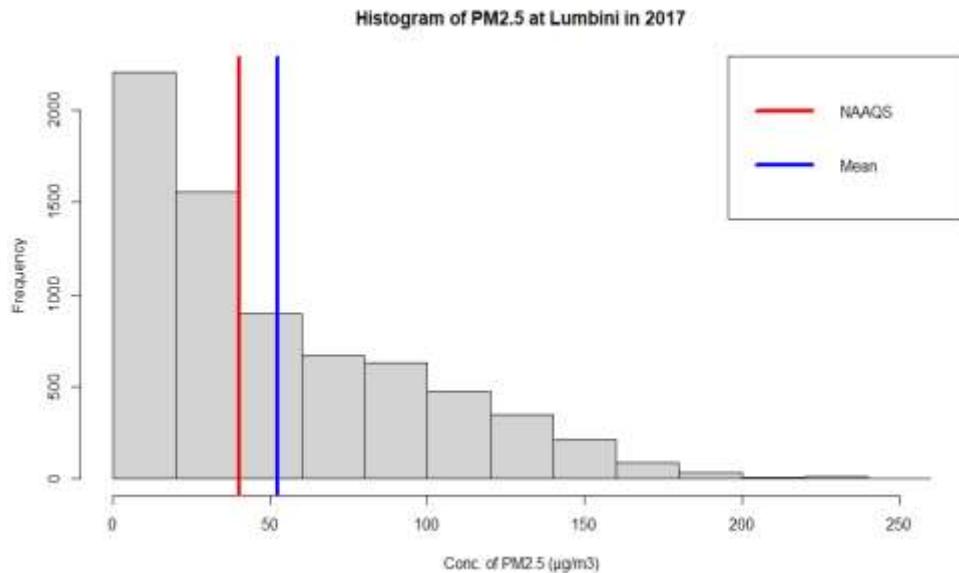


Figure 19 : Histogram of PM<sub>2.5</sub>.

### Daily average of PM<sub>2.5</sub>

Daily average concentration of PM<sub>2.5</sub> was high during January and low during July.

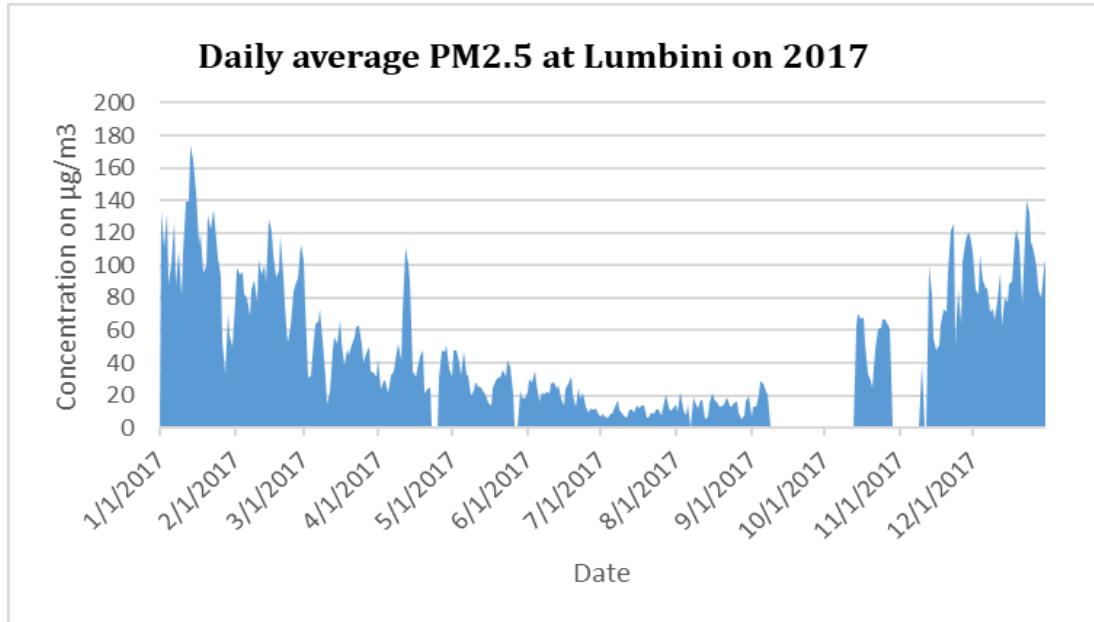


Figure 20: Daily average of PM<sub>2.5</sub>

### Monthly average of PM<sub>2.5</sub>

The highest and the lowest monthly average of PM<sub>2.5</sub> was found during January (108.15 µg/m<sup>3</sup>) and July (10.29 µg/m<sup>3</sup>) respectively.

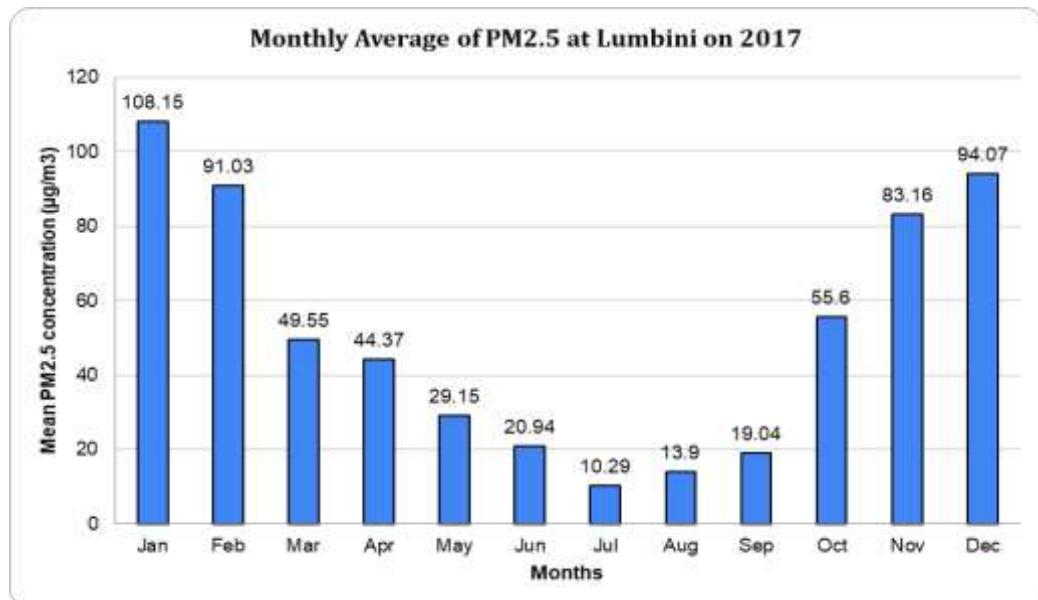


Figure 21: Monthly Average of PM<sub>2.5</sub>

### Monthly variation of PM<sub>2.5</sub>

Variation in concentration of PM<sub>2.5</sub> was found high during January and low during July.

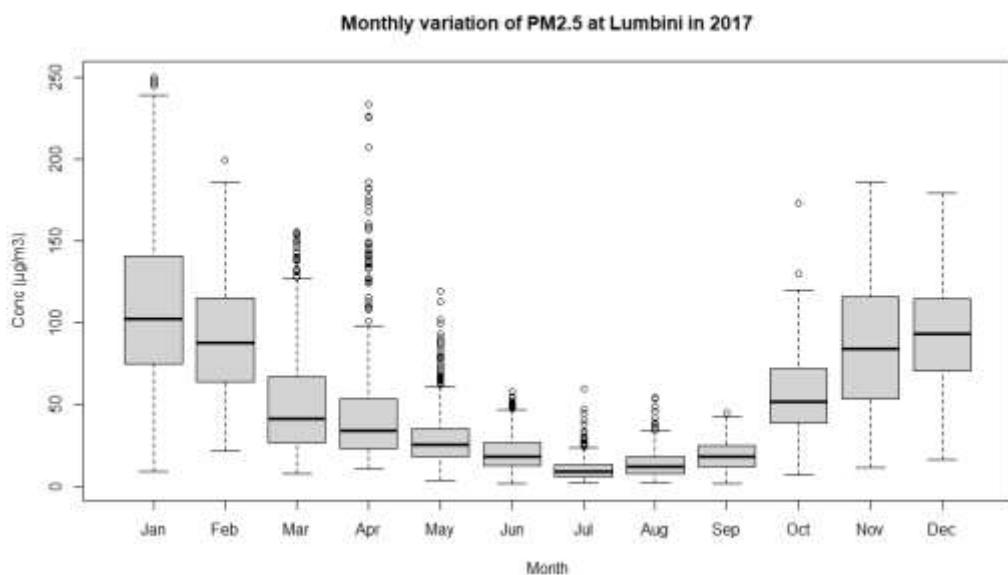
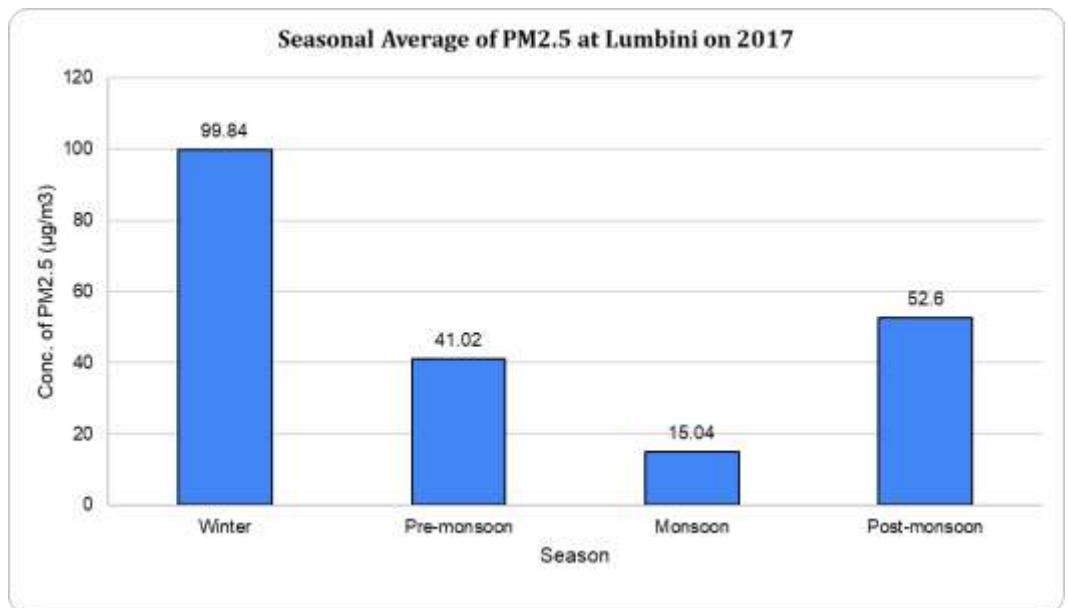


Figure 22: Monthly Variation of PM<sub>2.5</sub>

### Seasonal variation of PM<sub>2.5</sub>

Ambient concentration of average PM<sub>2.5</sub> during Winter (December-February), Pre-monsoon(March-May), monsoon (June-September), and post-monsoon (October-November) can be shown in the



Figure

23below. The concentration of PM<sub>2.5</sub> was found higher during winter (99.84 µg/m<sup>3</sup>) than monsoon season (15.04 µg/m<sup>3</sup> ).

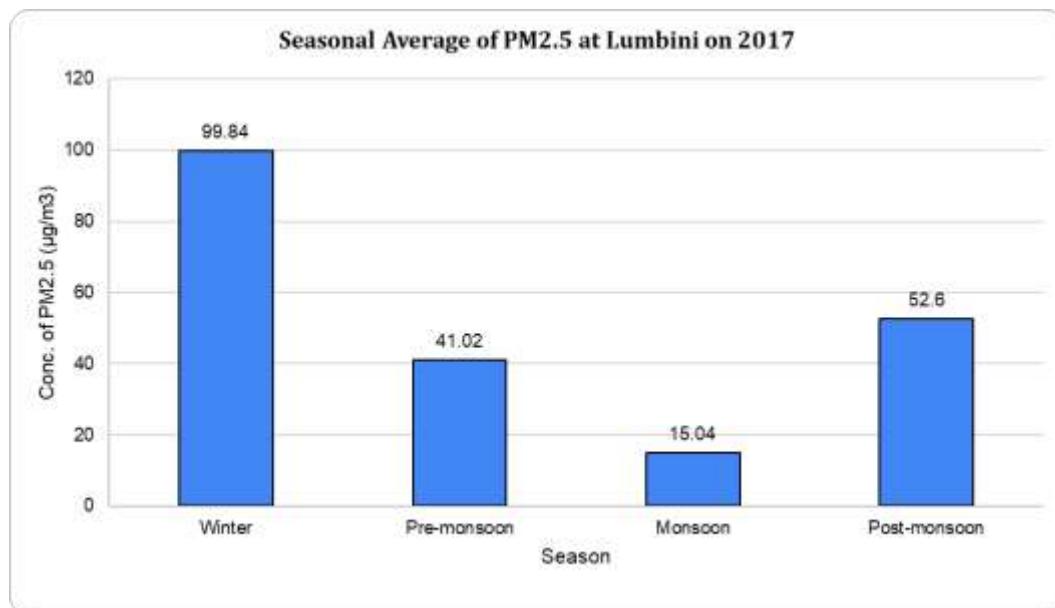


Figure 23: Seasonal variation of PM<sub>2.5</sub>

### Diurnal variation of PM<sub>2.5</sub>

The diurnal variation of average PM<sub>2.5</sub> concentrations can be shown in the figure

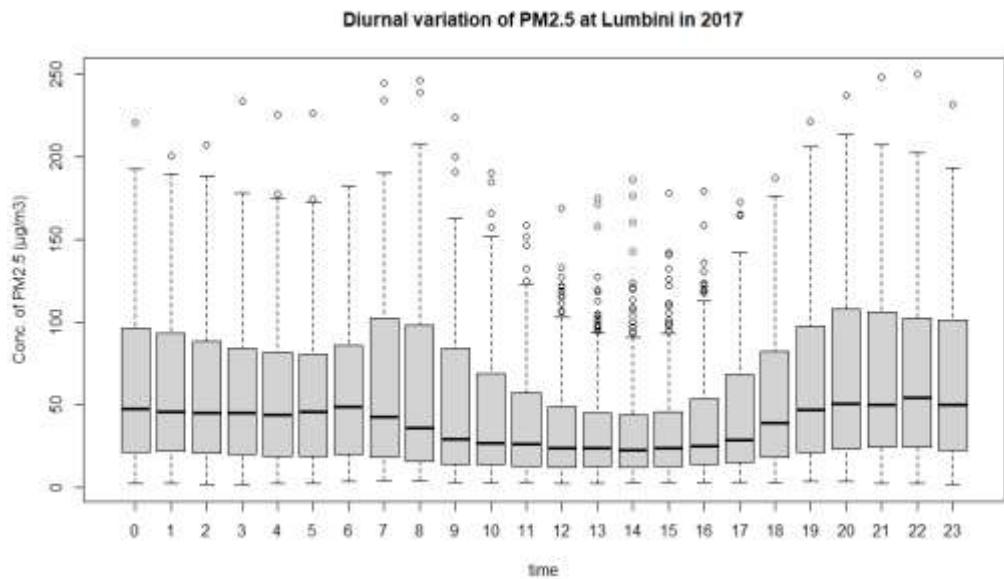


Figure 24below. The variation in PM<sub>2.5</sub> concentration was high at around 8 am and 8 pm and low at 2 pm.

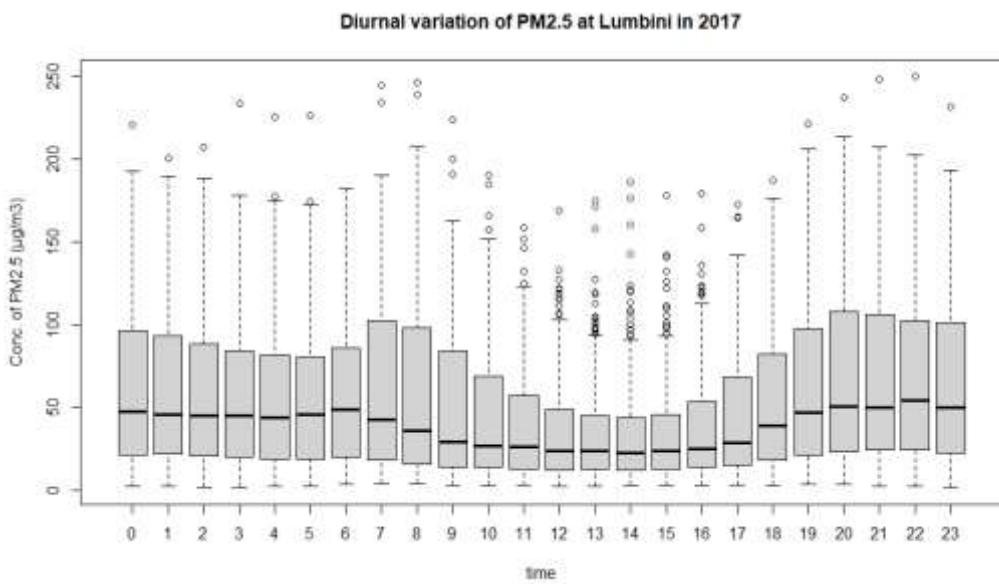


Figure 24: Diurnal Variation of PM<sub>2.5</sub>

### Compliance status of PM<sub>2.5</sub>

The total days of PM<sub>2.5</sub> monitored in the year 2017 counts 309, of which 158 days exceeded the NAAQS guideline.

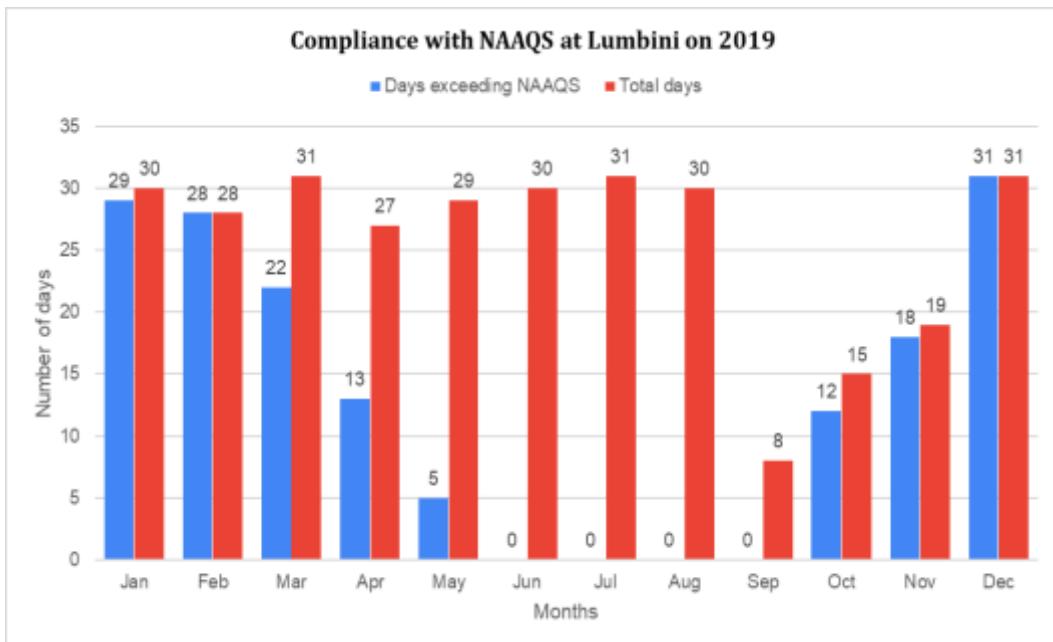


Figure 25: Compliance status of PM<sub>2.5</sub>

#### 2.2.4 Temporal variation of PM<sub>10</sub>

##### Annual average of PM<sub>10</sub>

Annual average of PM<sub>10</sub> for Lumbini Station was observed to be 71.75 µg/m<sup>3</sup>. Histogram of hourly average PM<sub>10</sub> is shown in the figure below.

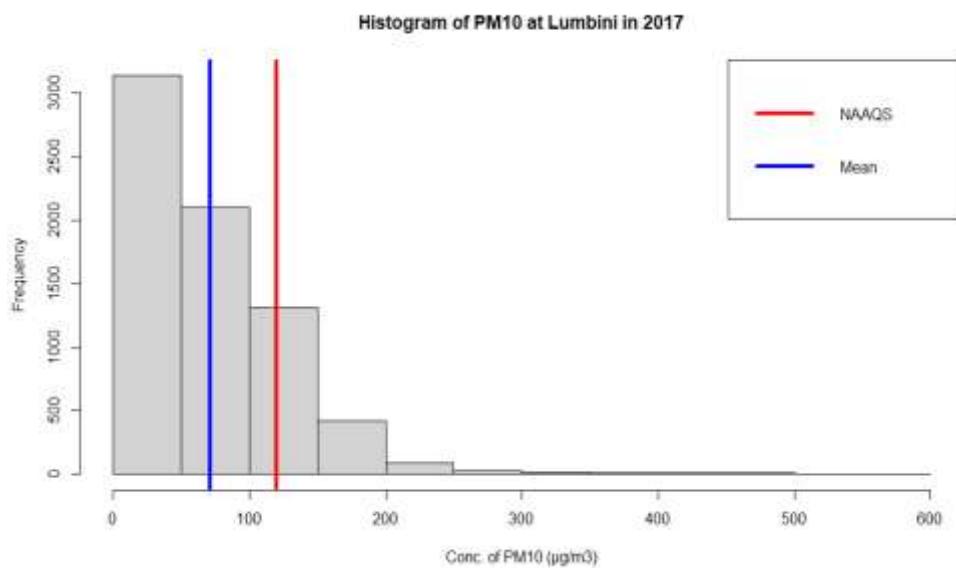


Figure 26 : Histogram of PM<sub>10</sub>.

##### Daily average of PM<sub>10</sub>

Daily average concentration of PM<sub>10</sub> was high during April and low during July.

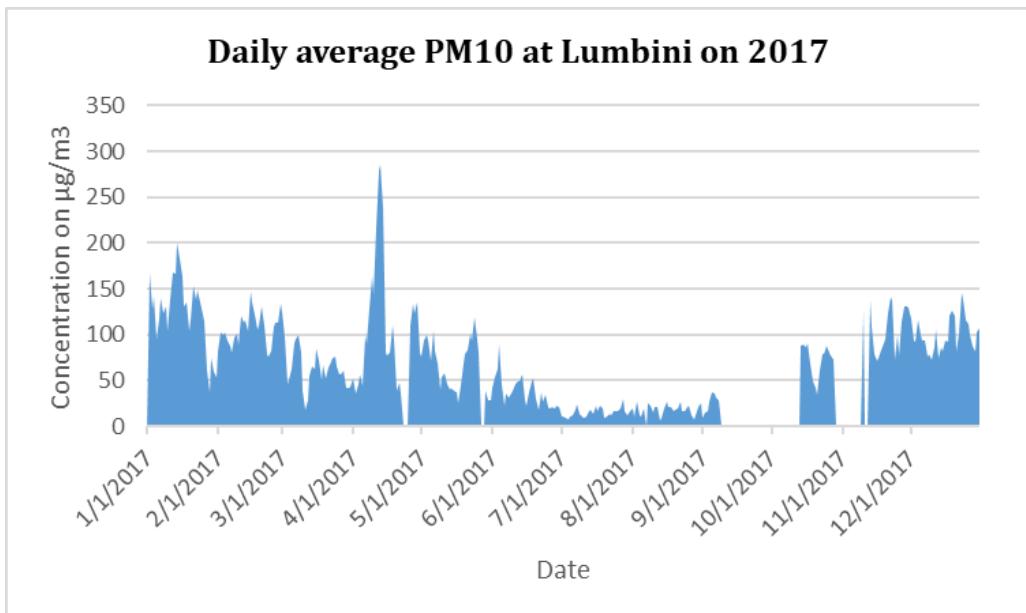


Figure 27: Daily average of PM<sub>10</sub>

### Monthly average of PM<sub>10</sub>

The highest and the lowest monthly average of PM<sub>10</sub> was found during January (124.96 µg/m<sup>3</sup>) and July (14.86 µg/m<sup>3</sup>) respectively.

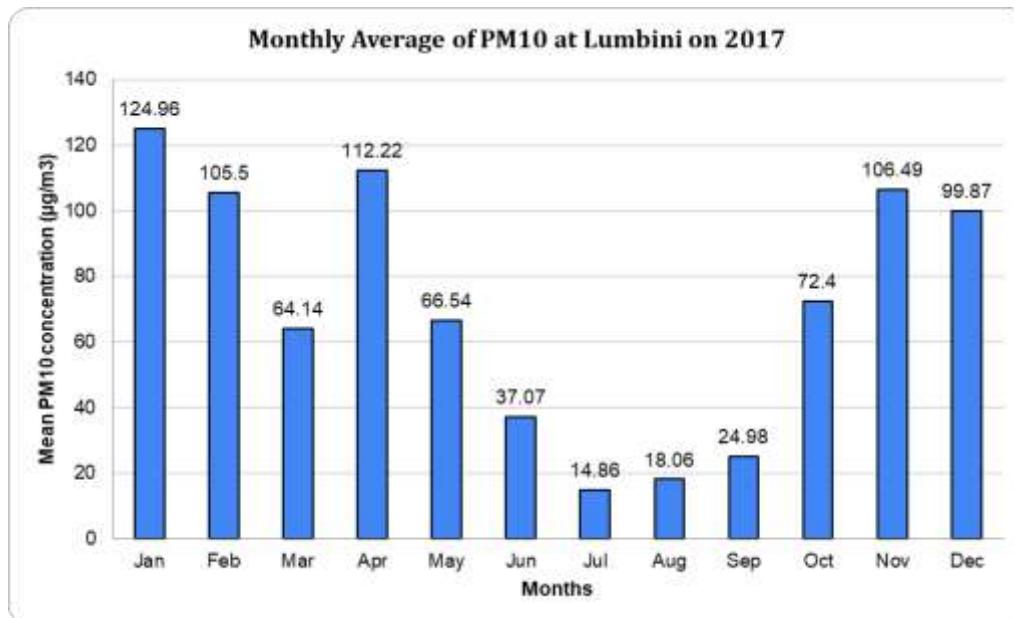


Figure 28: Monthly Average of PM<sub>10</sub>

### Monthly variation of PM<sub>10</sub>

Variation in concentration of PM<sub>10</sub> was found higher during April and lower during July.

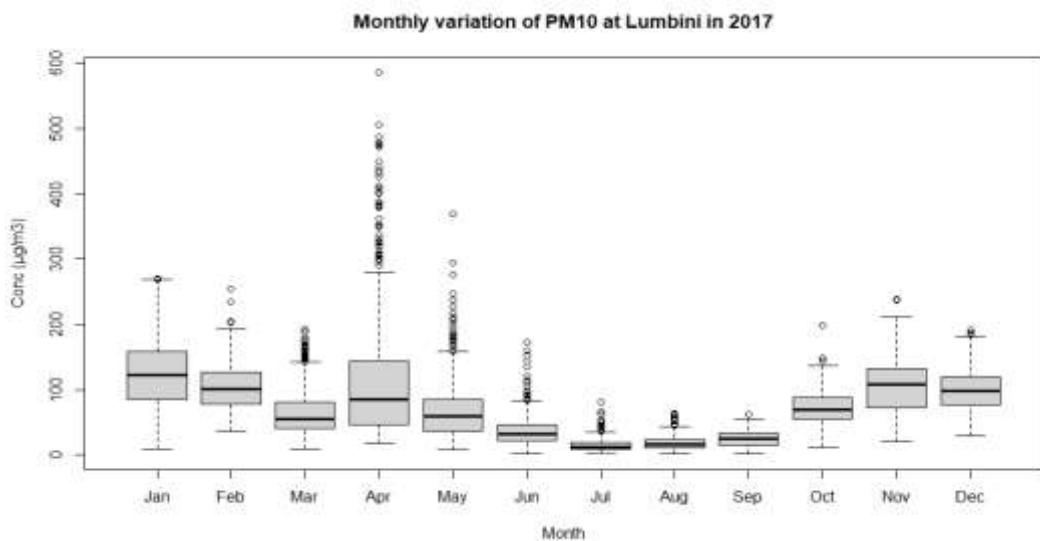


Figure 29: Monthly Variation of PM<sub>10</sub>

### Seasonal variation of PM<sub>10</sub>

Ambient concentration of average PM<sub>2.5</sub> during Winter (December-February), Pre-monsoon (March-May), monsoon (June-September), and post-monsoon (October-November) can be shown in the figure below. The concentration of PM<sub>2.5</sub> was found higher during winter (108.02 µg/m<sup>3</sup>) than monsoon season (23.33 µg/m<sup>3</sup>).

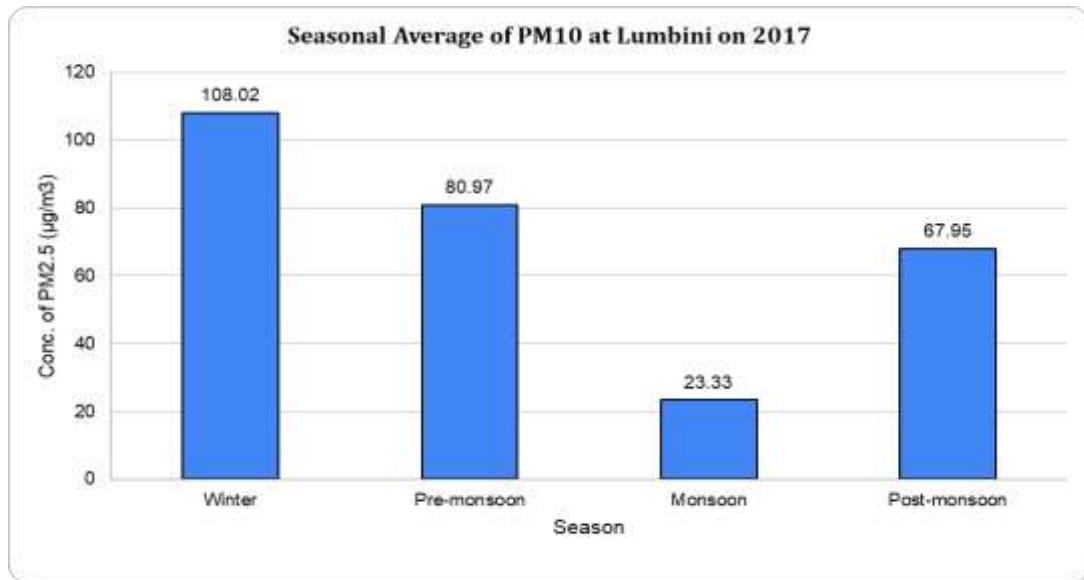


Figure 30: Seasonal variation of PM<sub>10</sub>

### Diurnal variation of PM<sub>10</sub>

The diurnal variation of average PM<sub>10</sub> concentrations can be shown in the figure below. The variation in PM<sub>10</sub> concentration was high at around 8 pm and 9 pm and low at 2 pm.

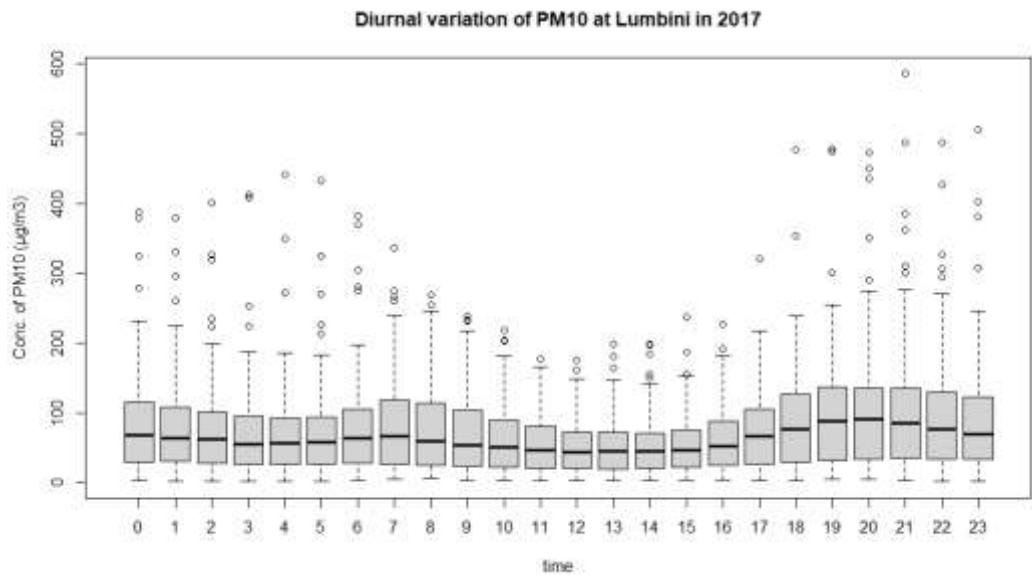


Figure 31: Diurnal Variation of PM<sub>10</sub>

### Compliance status of PM<sub>10</sub>

The total days of PM<sub>10</sub> monitored in the year 2017 counts 309 of which 206 days exceed the NAAQS guideline.

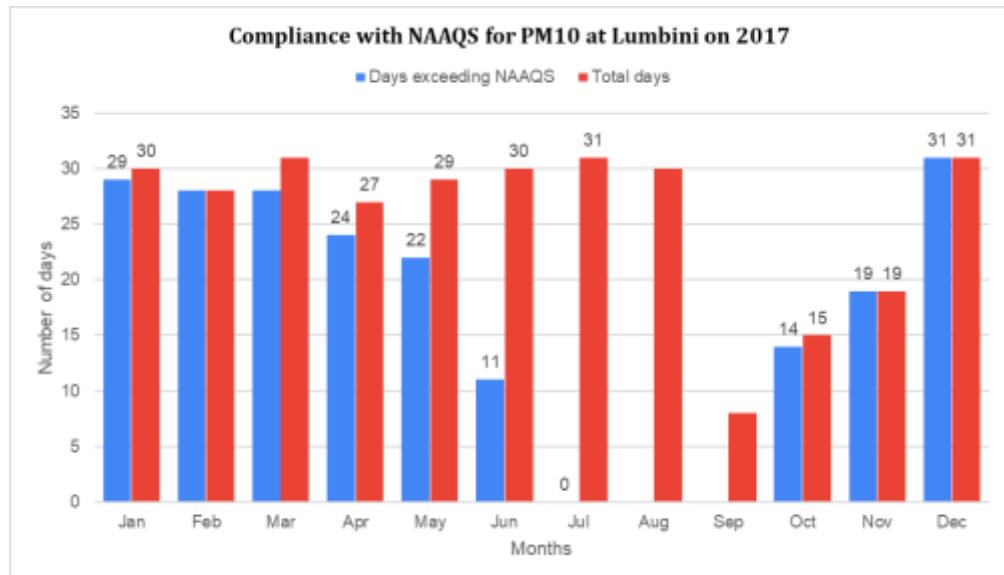


Figure 32: Compliance status of PM<sub>10</sub>

## 2.3 Air Quality Status, 2018

### 2.3.1 Annual average of PM<sub>1</sub>, PM<sub>2.5</sub>, and PM<sub>10</sub>

The annual average of PM<sub>1</sub>, PM<sub>2.5</sub>, and PM<sub>10</sub> for the Lumbini station was calculated as shown in the figure below.

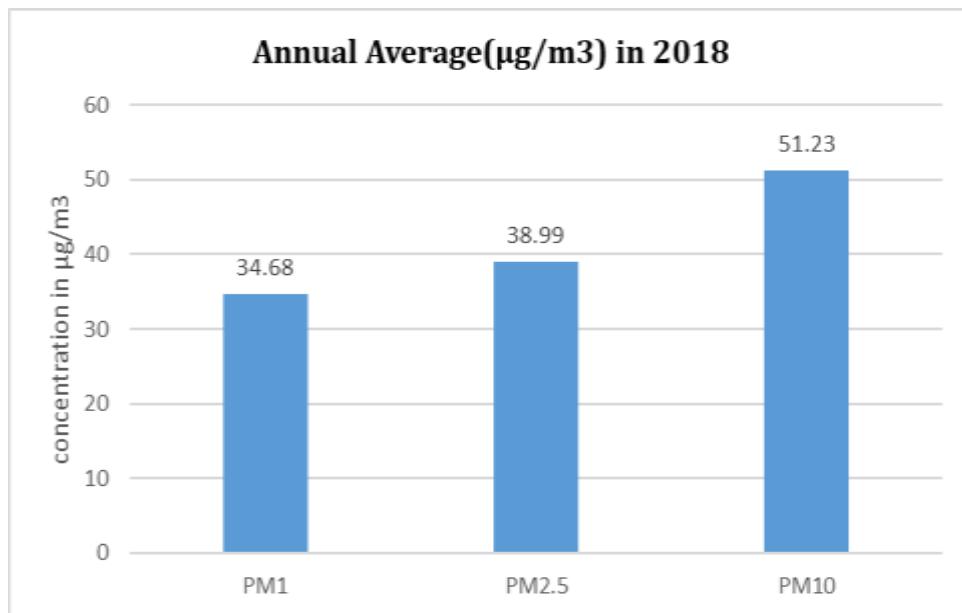


Figure 33: Annual average of PM<sub>1</sub>, PM<sub>2.5</sub>, and PM<sub>10</sub>

### 2.3.2 Temporal variation of PM<sub>1</sub>

#### Annual average of PM<sub>1</sub>

PM<sub>1</sub> average for November and December for Lumbini Station was observed to be 95.25 µg/m<sup>3</sup>. Histogram of hourly average PM<sub>1</sub> is shown in the figure below.

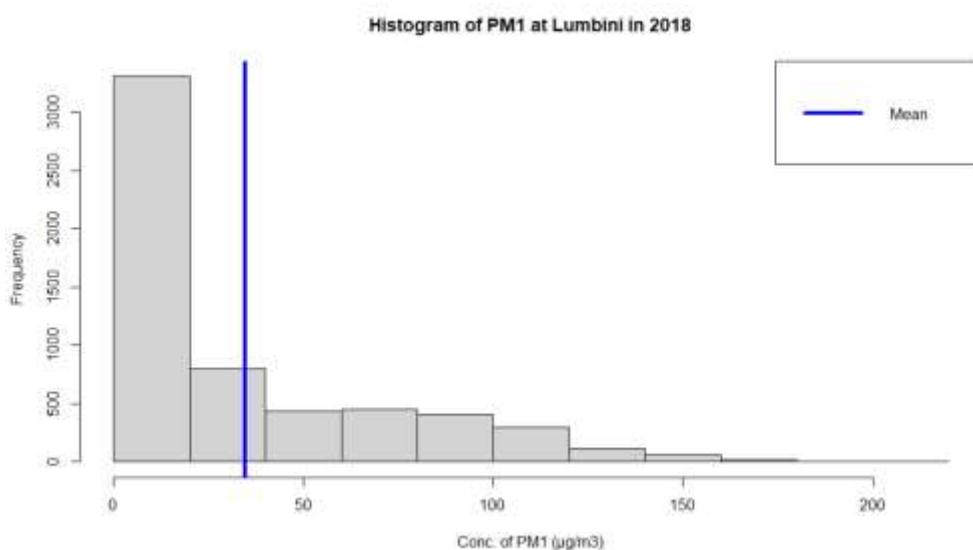


Figure 34 : Histogram of PM<sub>1</sub>

## Daily average of PM<sub>1</sub>

Daily average concentration of PM<sub>1</sub> given in the figure below.

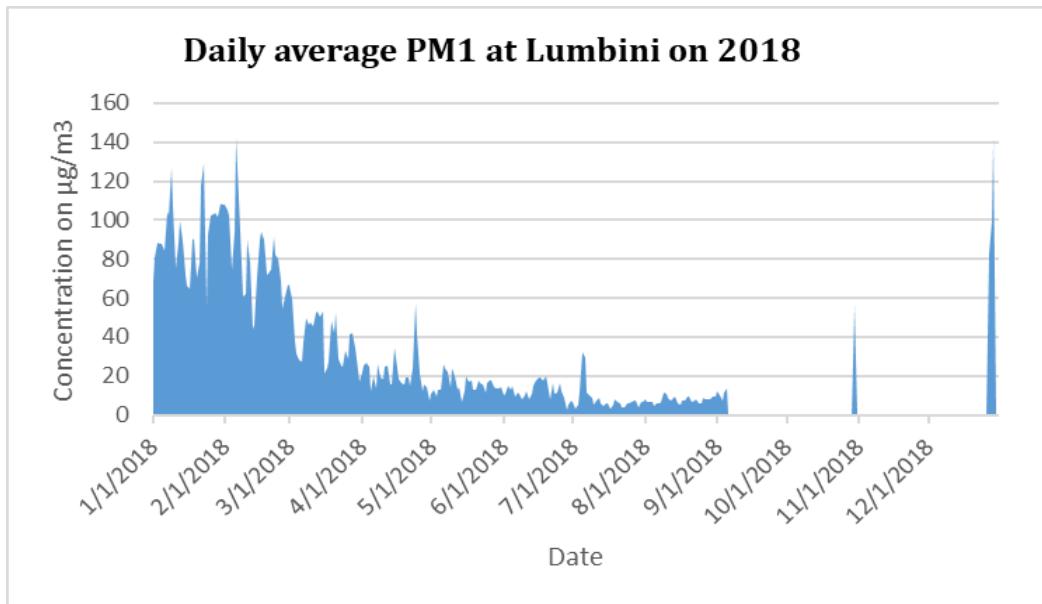


Figure 35: Daily average of PM<sub>1</sub>

## Monthly average of PM<sub>1</sub>

The highest and the lowest monthly average of PM<sub>1</sub> was found during January (91.75 μg/m<sup>3</sup>) and August (7.74 μg/m<sup>3</sup>) respectively. It is to be noted that the data of September, October, November and December were excluded from the consideration due to the 5-day, 1-day, no data and 3-day data respectively.

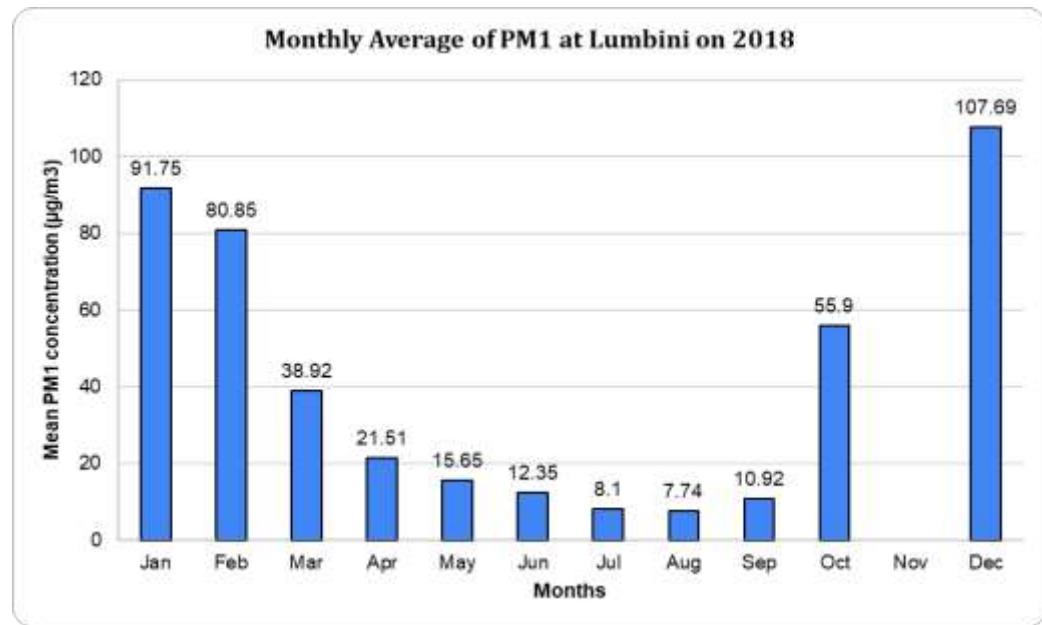


Figure 36: Monthly Average of PM<sub>1</sub>

## Monthly variation of PM<sub>1</sub>

Variation in concentration of PM<sub>1</sub> is highest during February and lowest during August respectively.

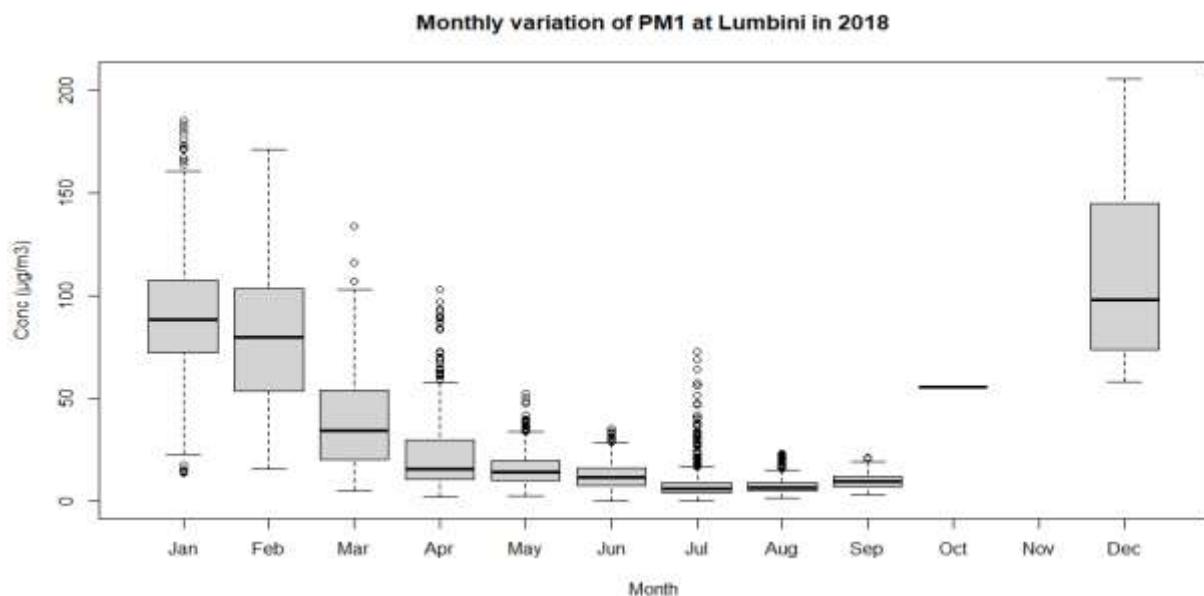


Figure 37: Monthly Variation of PM<sub>1</sub>

## Seasonal variation of PM<sub>1</sub>

Ambient concentration of average PM<sub>1</sub> during winter (December-February), pre-monsoon (March-May) and monsoon (June-September) can be shown in the figure below. The concentration of PM<sub>1</sub> was found higher during winter (87.81 µg/m<sup>3</sup>) than monsoon season (9.4 µg/m<sup>3</sup>).

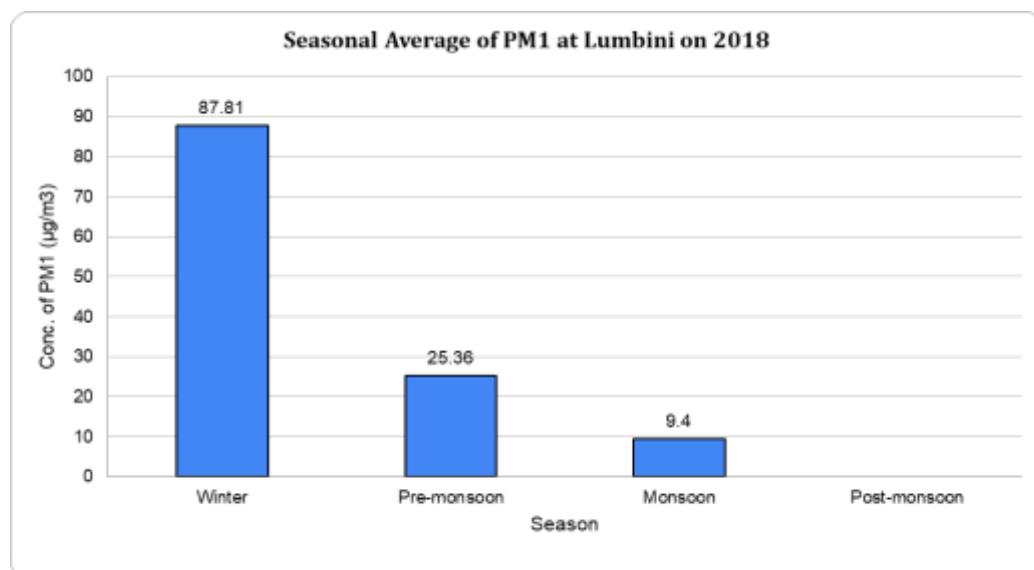


Figure 38: Seasonal Variation of PM<sub>1</sub>

### Diurnal variation of PM<sub>1</sub>

The diurnal variation of average PM<sub>1</sub> concentrations can be shown in the figure below. The variation in PM<sub>1</sub> concentration was high at around 7 am and low at 3 pm.

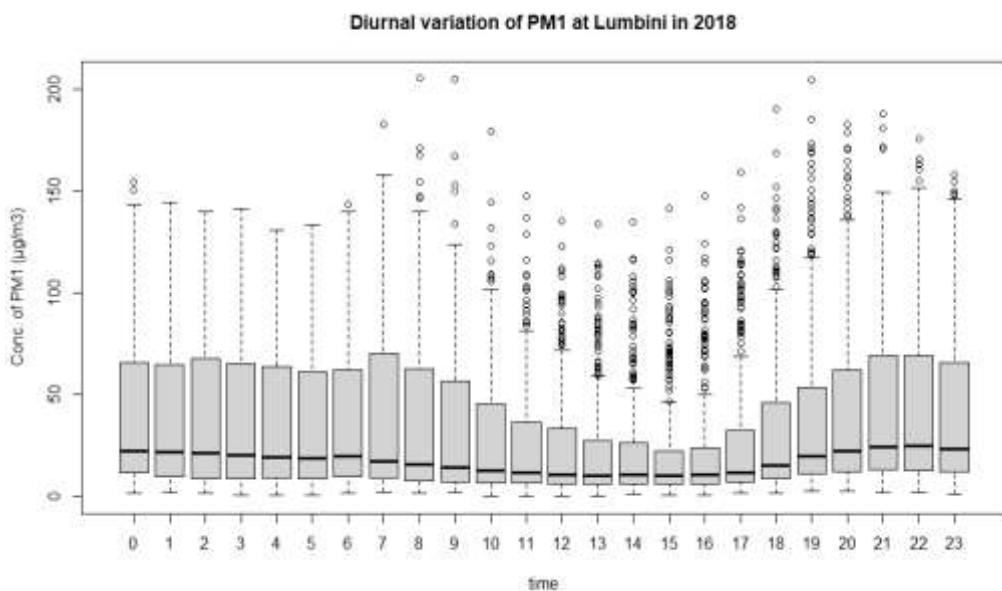


Figure 39: Diurnal Variation of PM<sub>1</sub>

### 2.3.3 Temporal variation of PM<sub>2.5</sub>

#### Annual average of PM<sub>2.5</sub>

Annual average for PM<sub>2.5</sub> for Lumbini Station was observed to be 38.99  $\mu\text{g}/\text{m}^3$ . Histogram of hourly average PM<sub>2.5</sub> is shown in the figure below.

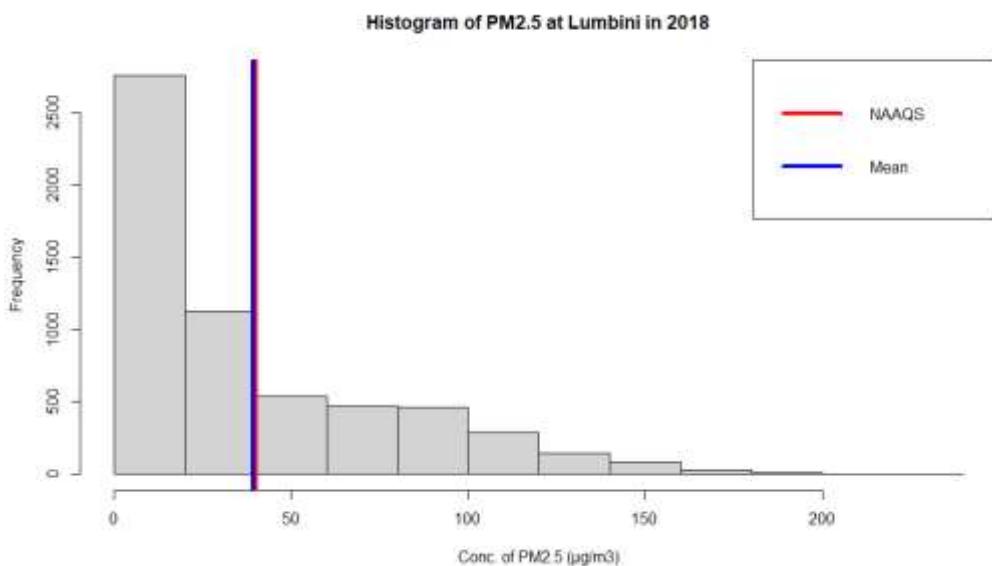


Figure 40 : Histogram of PM<sub>2.5</sub>.

### **Daily average of PM<sub>2.5</sub>**

Daily average concentration of PM<sub>2.5</sub> was high during February and was found low during August.

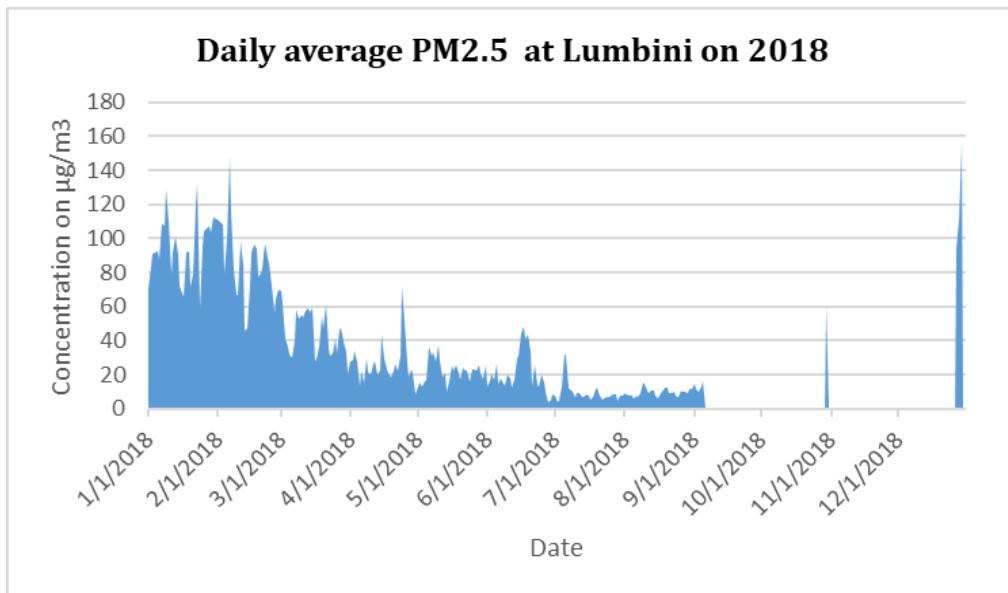


Figure 41: Daily average of PM<sub>2.5</sub>

### **Monthly average of PM<sub>2.5</sub>**

The highest and the lowest monthly average of PM<sub>2.5</sub> was found during January (94.43  $\mu\text{g}/\text{m}^3$ ) and August (9.45  $\mu\text{g}/\text{m}^3$ ) respectively

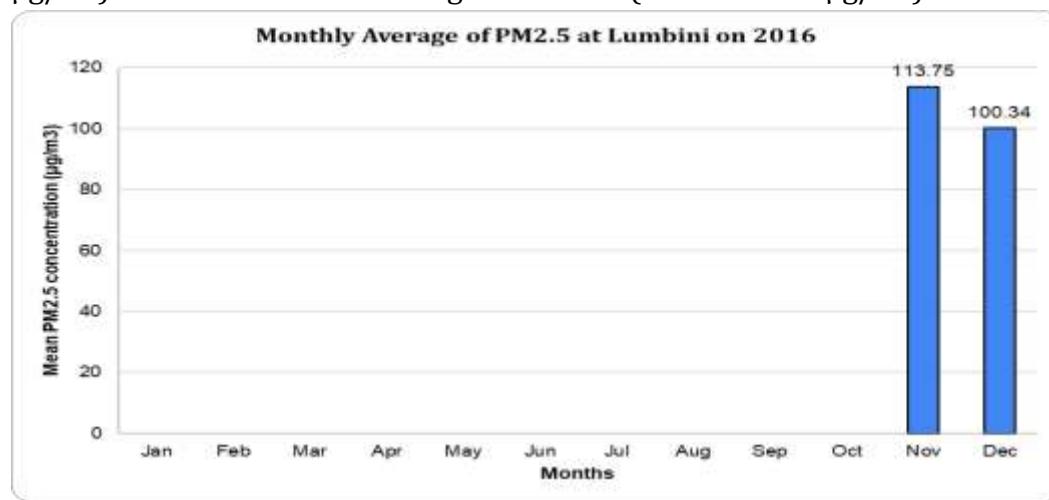


Figure 5. It is to be noted that the data of September, October, November and December were excluded from the consideration due to the 5-day, 1-day, no data and 3-day) data respectively.

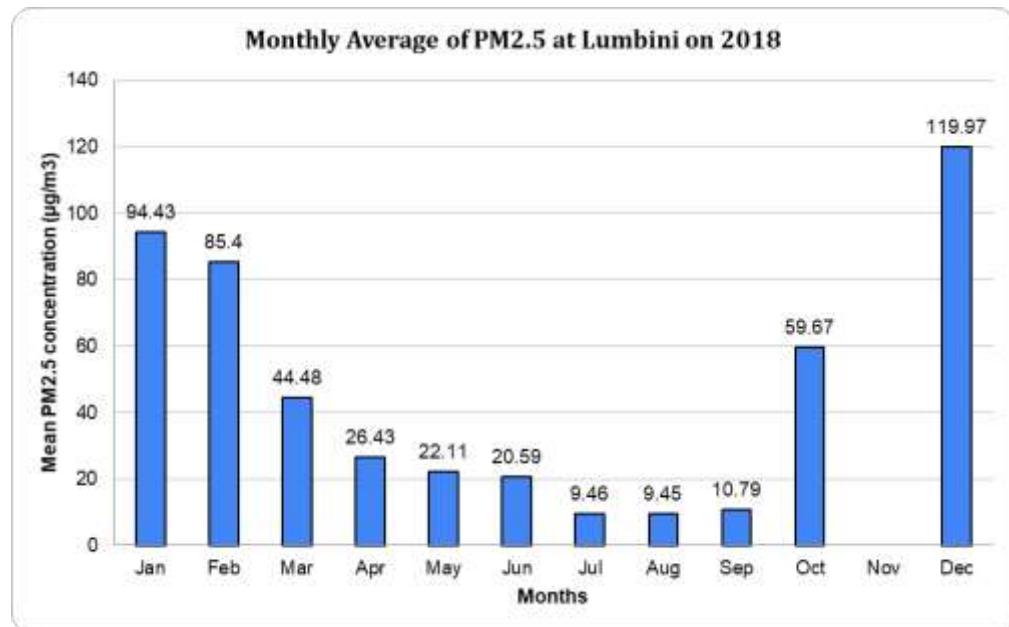


Figure 42: Monthly Average of PM<sub>2.5</sub>

### Monthly variation of PM<sub>2.5</sub>

Variation in concentration of PM<sub>2.5</sub> was found higher during February and lower during July and August.

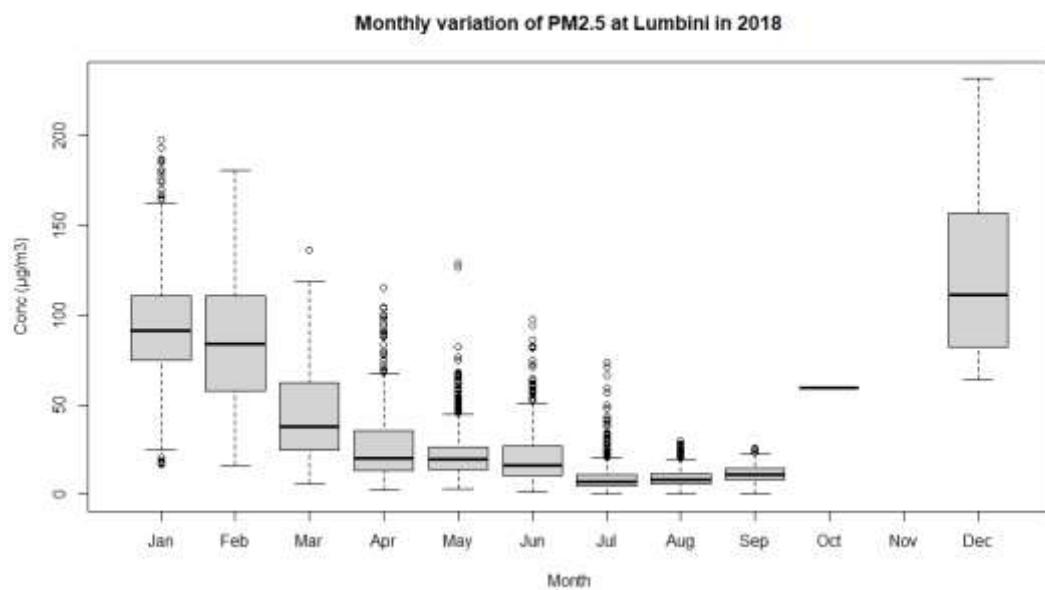
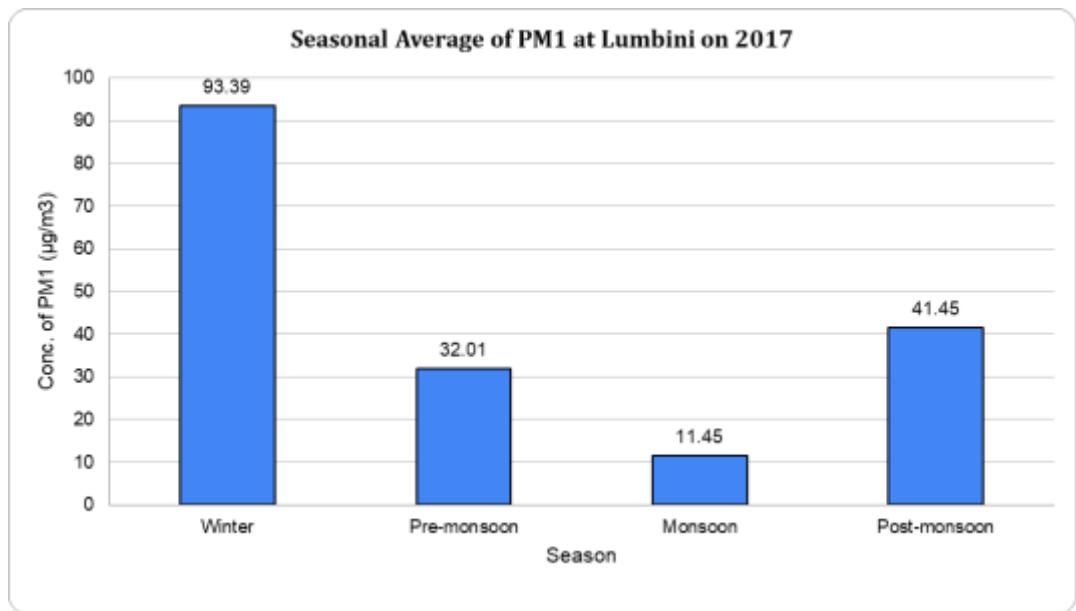


Figure 43: Monthly Variation of PM<sub>2.5</sub>

### Seasonal variation of PM<sub>2.5</sub>

Ambient concentration of average PM<sub>2.5</sub> during winter (December-February), Pre-monsoon (March-May) and monsoon (June-September) can be shown in the figure below. The concentration of PM<sub>2.5</sub> was found higher during winter (91.3  $\mu\text{g}/\text{m}^3$ ) than monsoon season (13.17  $\mu\text{g}/\text{m}^3$ )



Figure

17: Seasonal variation of PM.

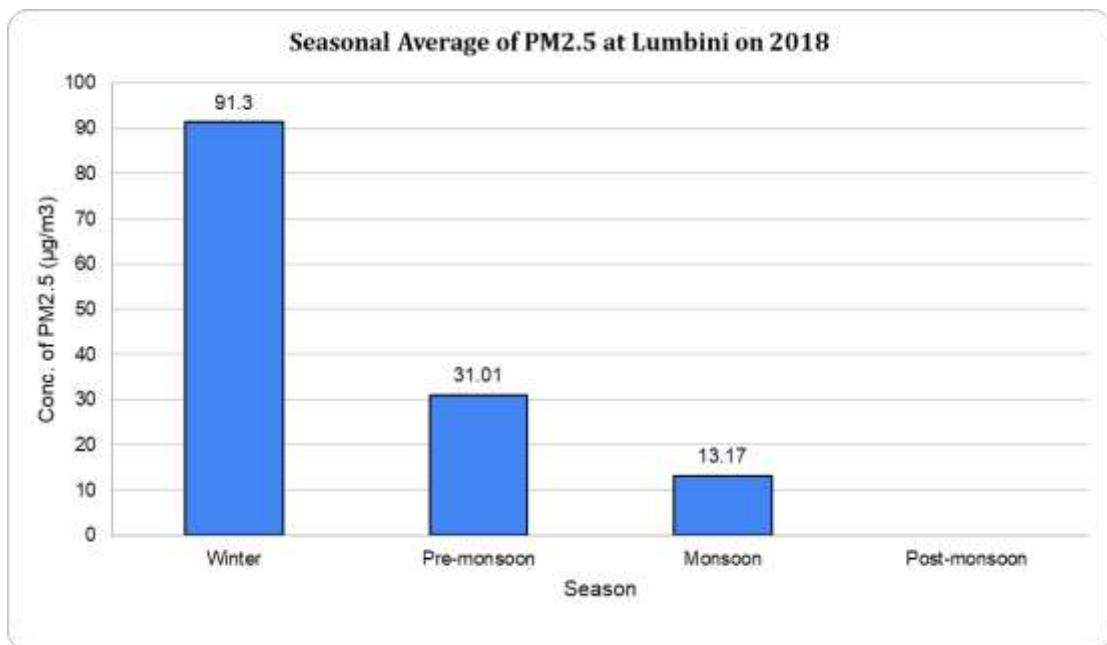


Figure 44: Seasonal variation of PM<sub>2.5</sub>

### Diurnal variation of PM<sub>2.5</sub>

The diurnal variation of average PM<sub>2.5</sub> concentrations can be shown in the figure below. The variation in PM<sub>2.5</sub> concentration was high at around 7 am and 10 pm and low at 3pm.

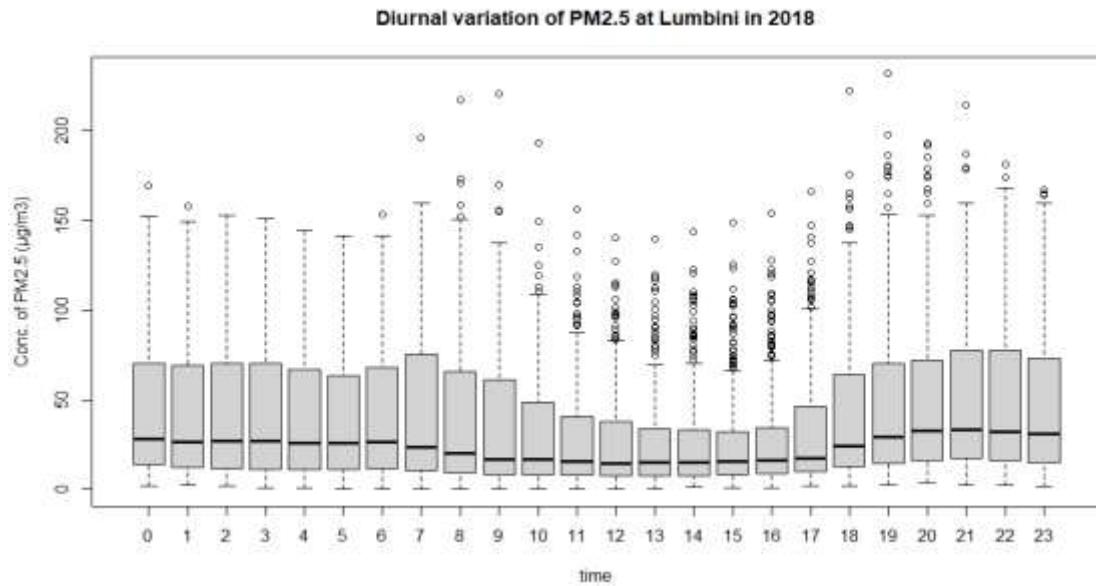


Figure 45: Diurnal Variation of PM<sub>2.5</sub>

### Compliance status of PM<sub>2.5</sub>

The total days of PM<sub>2.5</sub> monitored in the year 2018 counts 253, of which 88 days exceeded the NAAQS guideline.

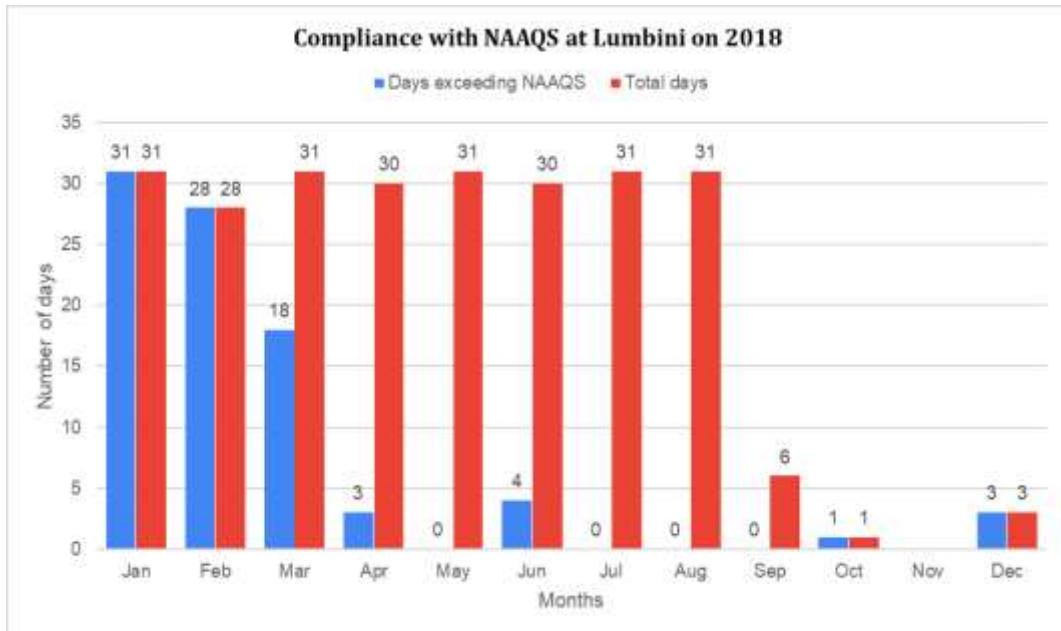


Figure 46: Compliance status of PM<sub>2.5</sub>

### 2.3.4 Temporal variation of PM<sub>10</sub>

#### Annual average of PM<sub>10</sub>

Annual average of PM<sub>10</sub> for Lumbini Station was observed to be 51.23  $\mu\text{g}/\text{m}^3$ . Histogram of hourly average PM<sub>10</sub> is shown in the figure below.

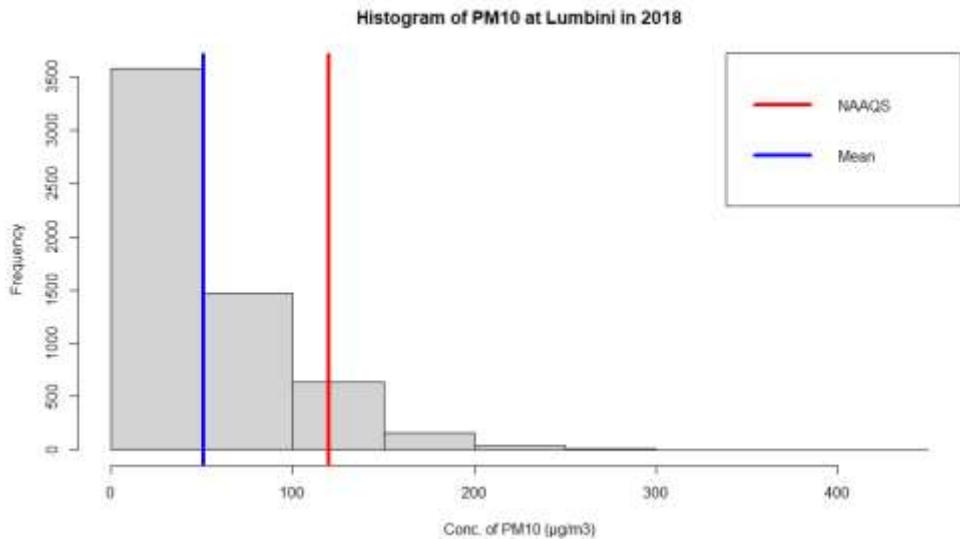


Figure 47 : Histogram of PM<sub>10</sub>.

#### Daily average of PM<sub>10</sub>

Daily average concentration of PM<sub>10</sub> was high during February and low during July and August.

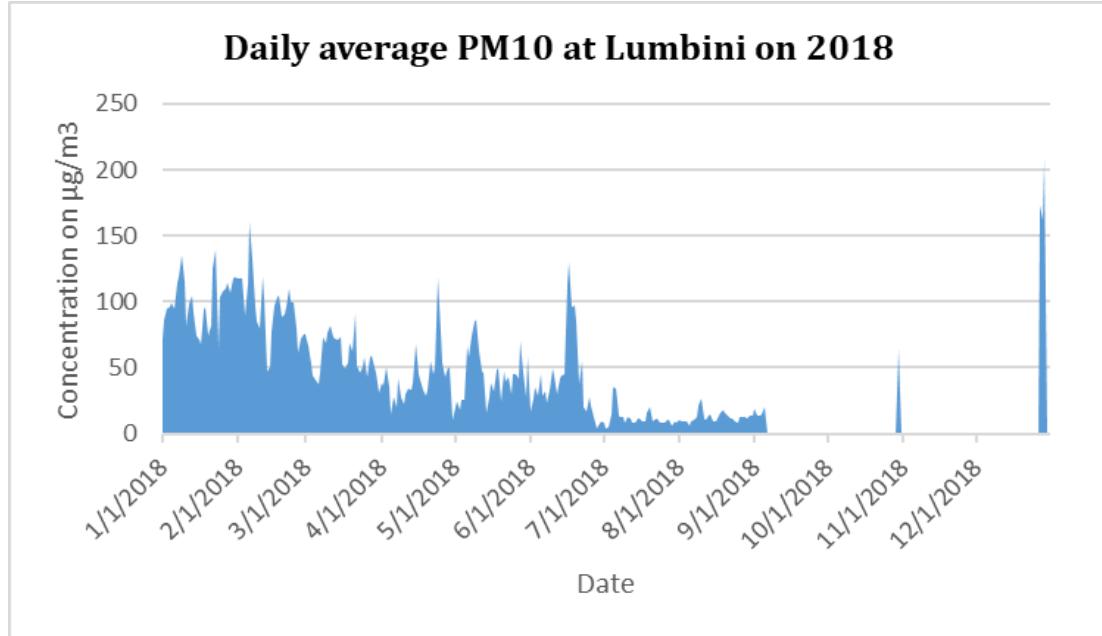


Figure 48: Daily average of PM<sub>10</sub>

#### Monthly average of PM<sub>10</sub>

The highest and the lowest monthly average of PM<sub>10</sub> was found during January (99.06 µg/m<sup>3</sup>) and July (11.84 µg/m<sup>3</sup>) respectively. It is to be noted that the data of September, October, November and December were excluded from the consideration due to the 5-day, 1-day, no data and 3-day) data respectively.

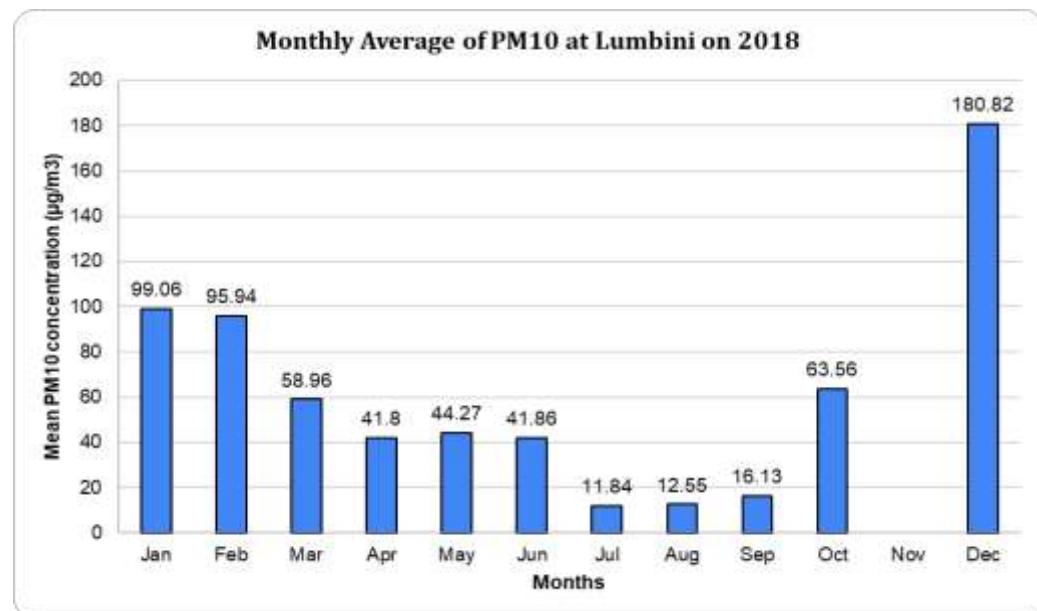


Figure 49: Monthly Average of PM<sub>10</sub>

### Monthly variation of PM<sub>10</sub>

Variation in concentration of PM<sub>10</sub> was found high during February and low during July.

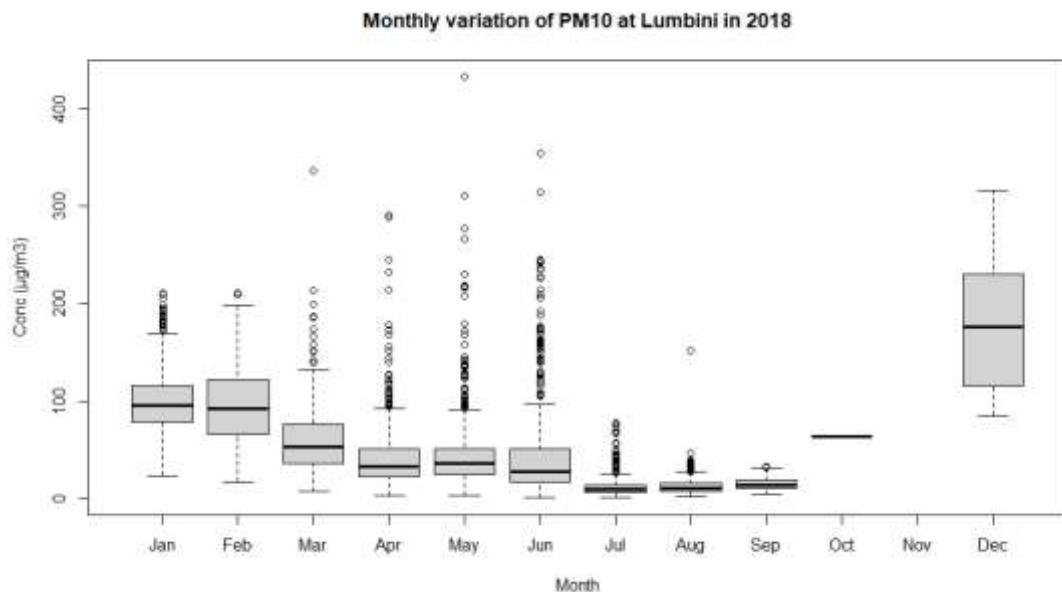
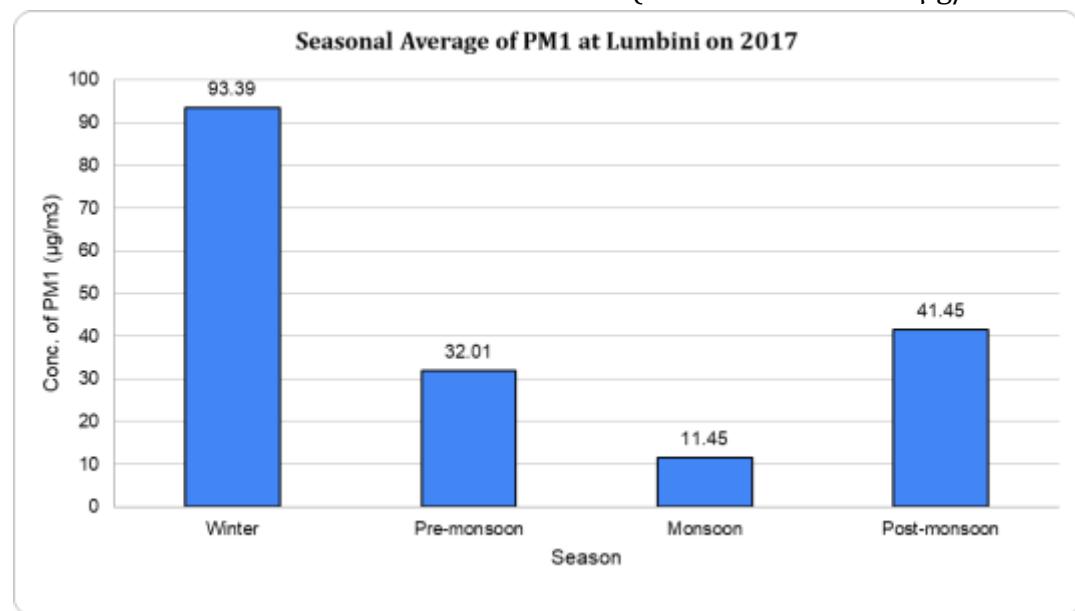


Figure 50: Monthly Variation of PM<sub>10</sub>

### Seasonal variation of PM<sub>10</sub>

Ambient concentration of average PM<sub>10</sub> during Winter (December-February), Pre-monsoon (March-May) and Monsoon (June-September) can be shown in the figure below. The concentration of PM<sub>10</sub> was found higher during winter (91.3 µg/m<sup>3</sup>) than monsoon season (13.17 µg/m<sup>3</sup>) )



Figure

17: Seasonal variation of PM.

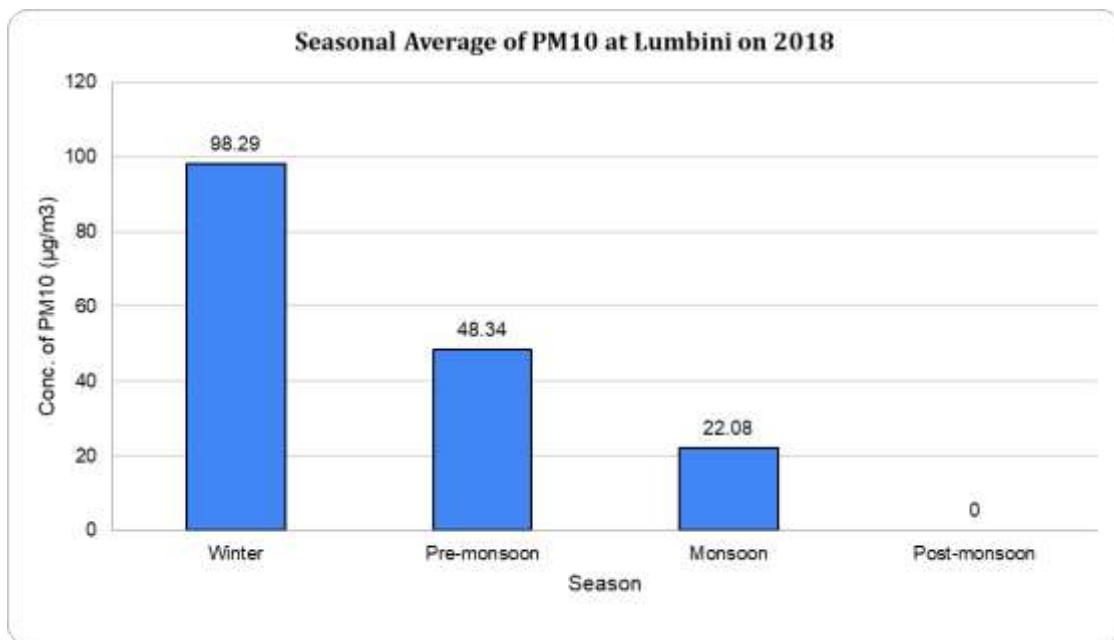


Figure 51: Seasonal variation of PM<sub>10</sub>

### Diurnal variation of PM<sub>10</sub>

The diurnal variation of average PM<sub>10</sub> concentrations can be shown in the figure below

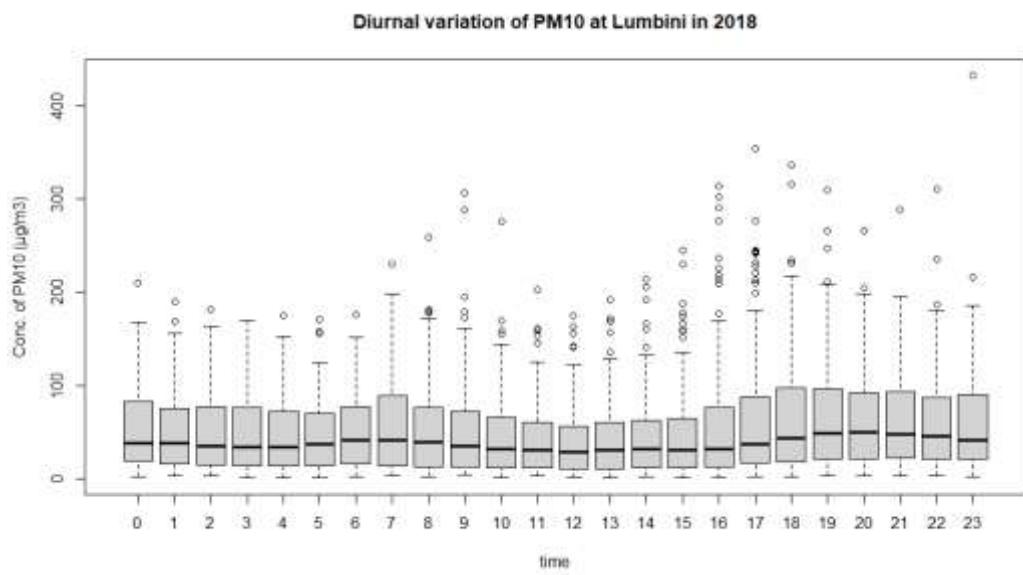


Figure 52. The variation in PM<sub>10</sub> concentration was high at around 6 pm and low at 2 pm.

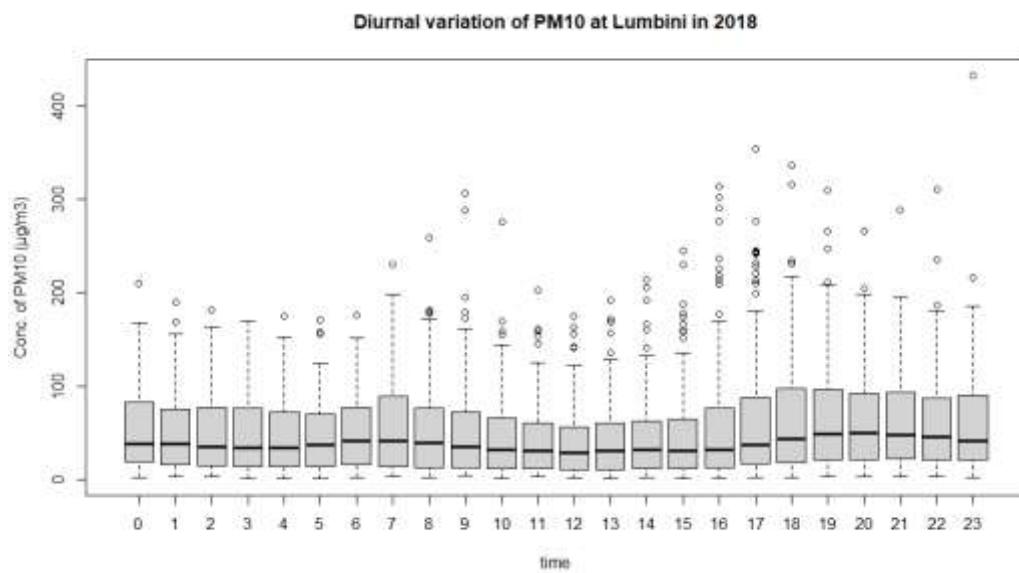


Figure 52: Diurnal Variation of PM<sub>10</sub>

### Compliance status of PM<sub>10</sub>

The total days of PM<sub>10</sub> monitored in the year 2018 counts 252 of which 136 days exceed the NAAQS guideline.

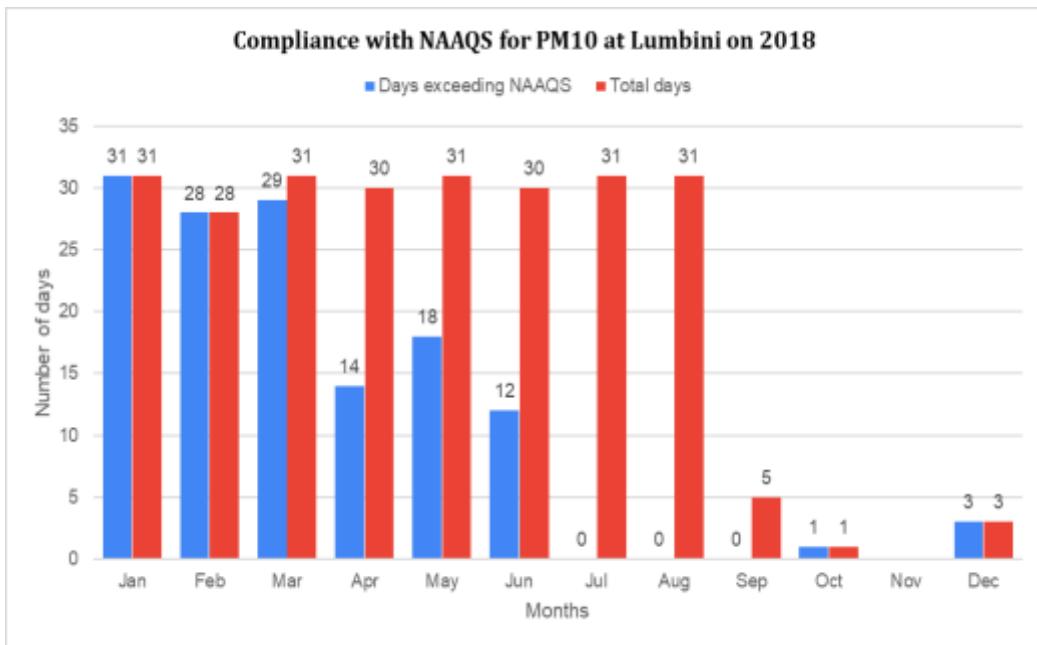


Figure 53: Compliance status of PM<sub>10</sub>

## 2.4 Air Quality Status, 2019

### 2.4.1 Annual average of PM<sub>1</sub>, PM<sub>2.5</sub>, and PM<sub>10</sub>

Since the data of PM<sub>1</sub>, PM<sub>2.5</sub> and PM<sub>10</sub> for the year 2019 was valid for May and June only, their annual average could not be calculated. The 2-day data of January, 14-days data of April, 2-day data of July, 8-day data of October, 2-day data of November and 8-day data of December were excluded from analysis.**Error! No sequence specified.**

### 2.4.2 Temporal variation of PM<sub>1</sub>

#### Annual average of PM<sub>1</sub>

Due to lack of data, annual average of PM<sub>1</sub> could not be calculated.

#### Daily average of PM<sub>1</sub>

Daily average concentration of PM<sub>1</sub> given in the

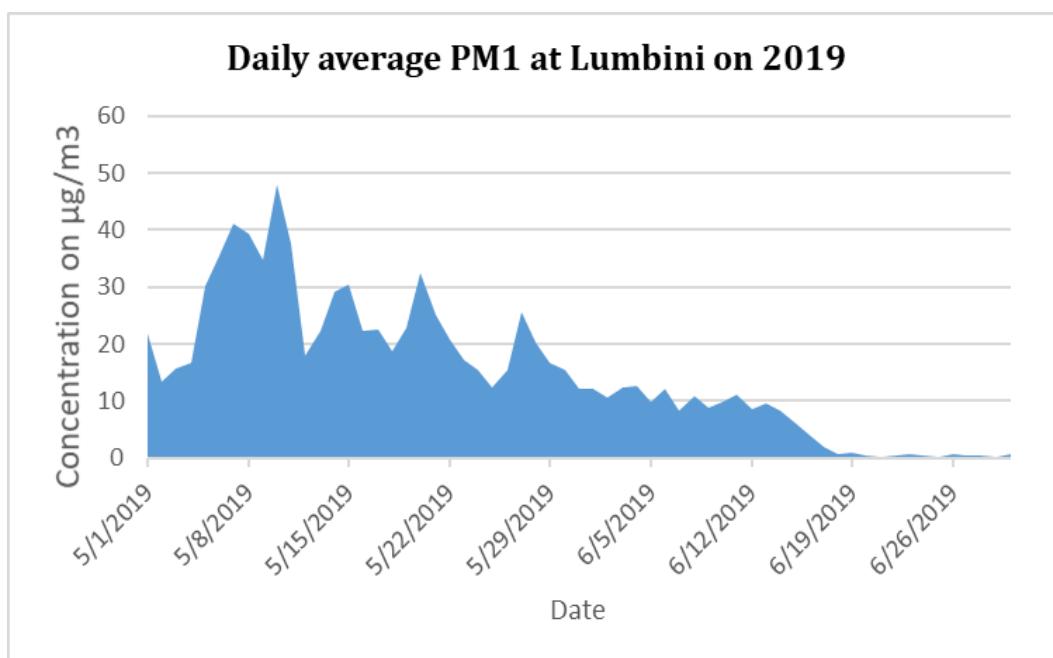


Figure 54igure below.

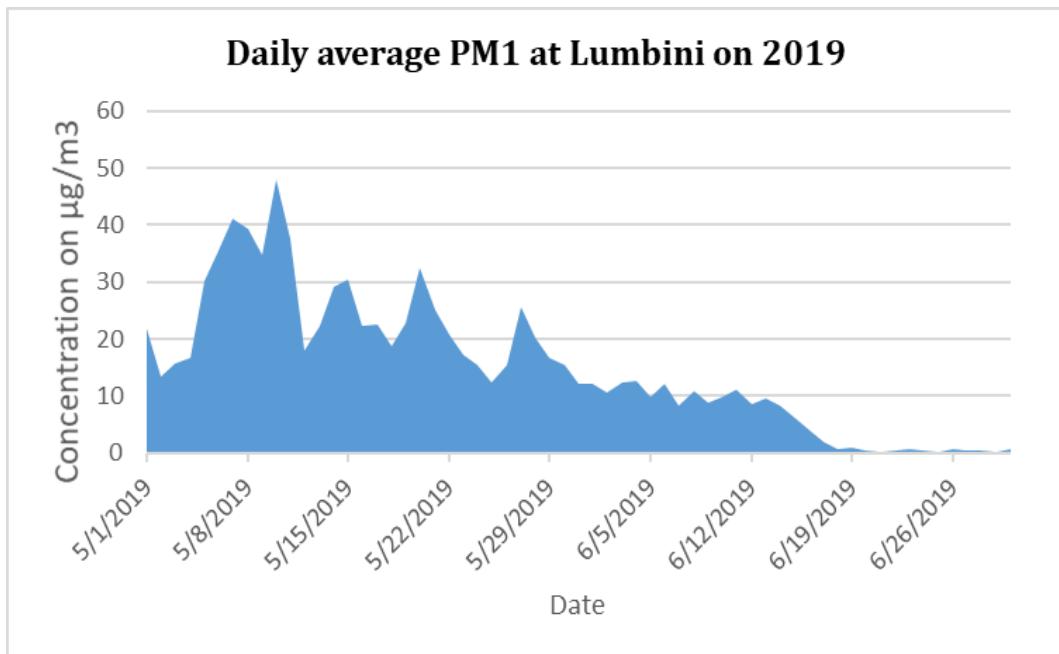


Figure 54: Daily average of PM<sub>1</sub>

### Monthly average of PM<sub>1</sub>

The monthly average of PM<sub>1</sub> is shown in the figure below. It is to be noted that only May and June were valid to be considered for monthly average.

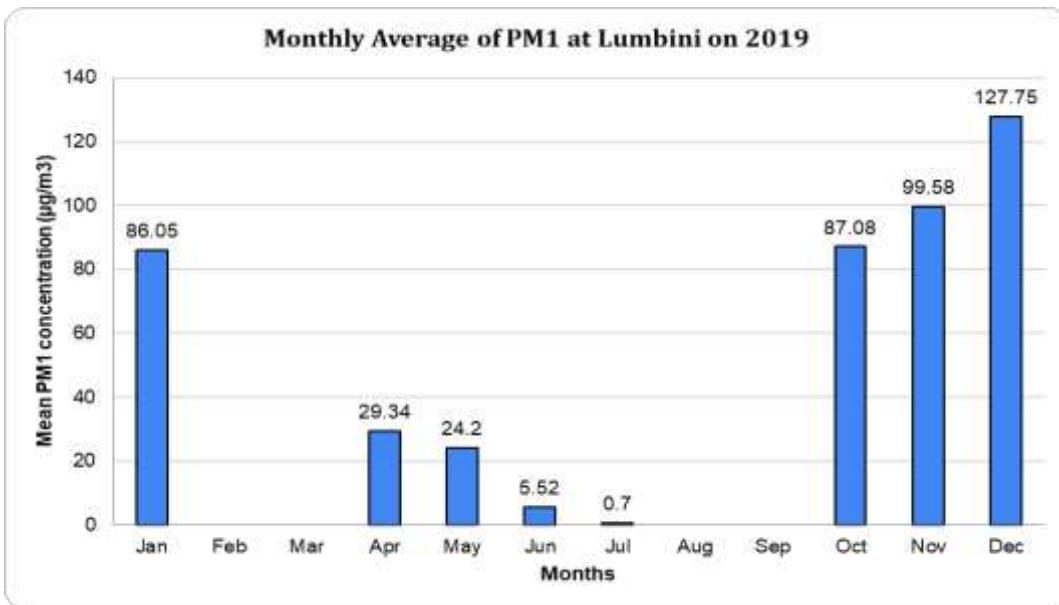


Figure 55: Monthly Average of PM<sub>1</sub>

### Monthly variation of PM<sub>1</sub>

*Variation in concentration of PM<sub>1</sub> is shown in the figure below*

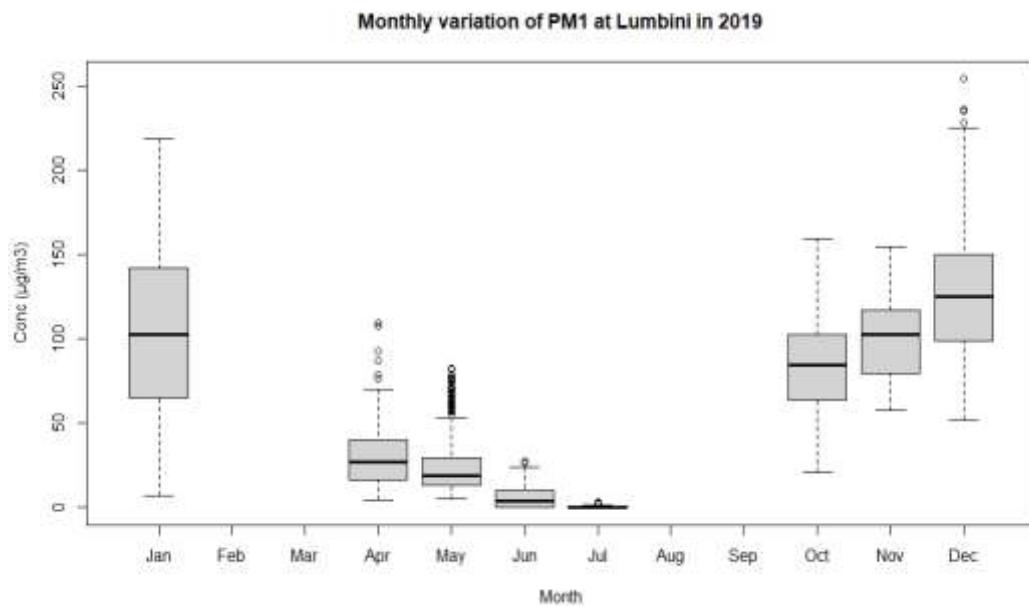


Figure 56Error! Reference source not found..

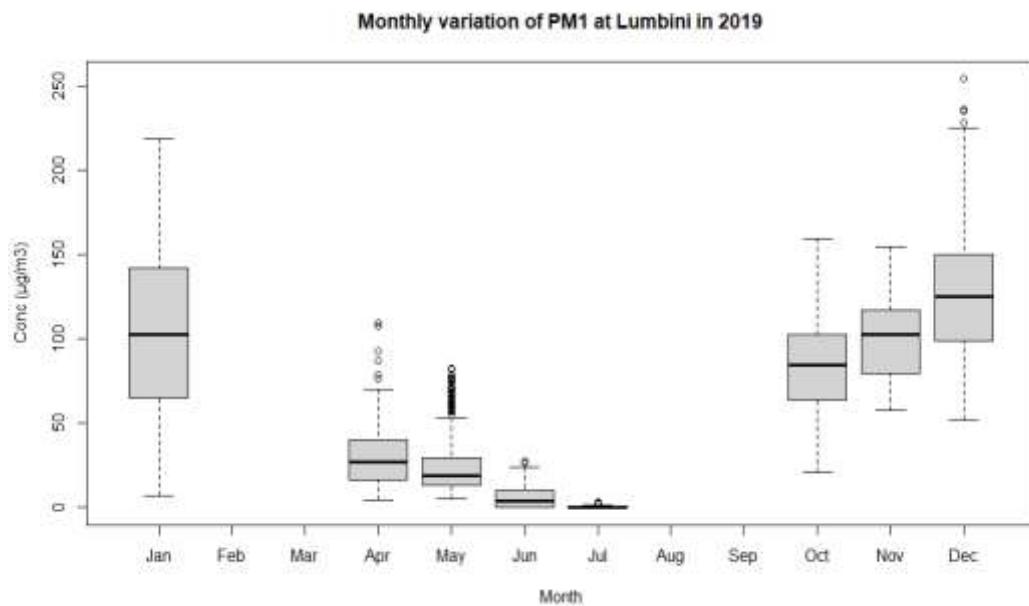


Figure 56: Monthly Variation of PM<sub>1</sub>

### Seasonal variation of PM<sub>1</sub>

Due to lack of data, seasonal variation could not be calculated.

### Diurnal variation of PM<sub>1</sub>

The diurnal variation of average PM<sub>1</sub> concentrations can be shown in the figure below. The variation in PM<sub>1</sub> concentration was high at around 12 am and low at 3 pm.

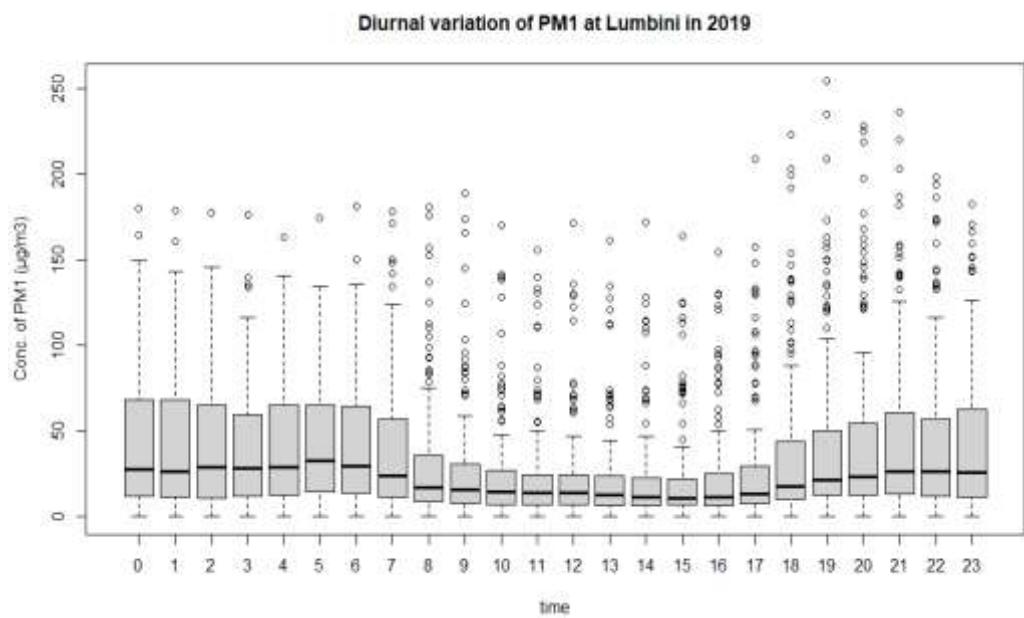


Figure 57: Diurnal Variation of PM<sub>1</sub>

#### 2.4.3 Temporal variation of PM<sub>2.5</sub>

##### Annual average of PM<sub>2.5</sub>

Since the data for May and June were valid for analysis, the annual average of PM<sub>2.5</sub> could not be calculated.

##### Daily average of PM<sub>2.5</sub>

Daily average concentration of PM<sub>2.5</sub> given in the figure below

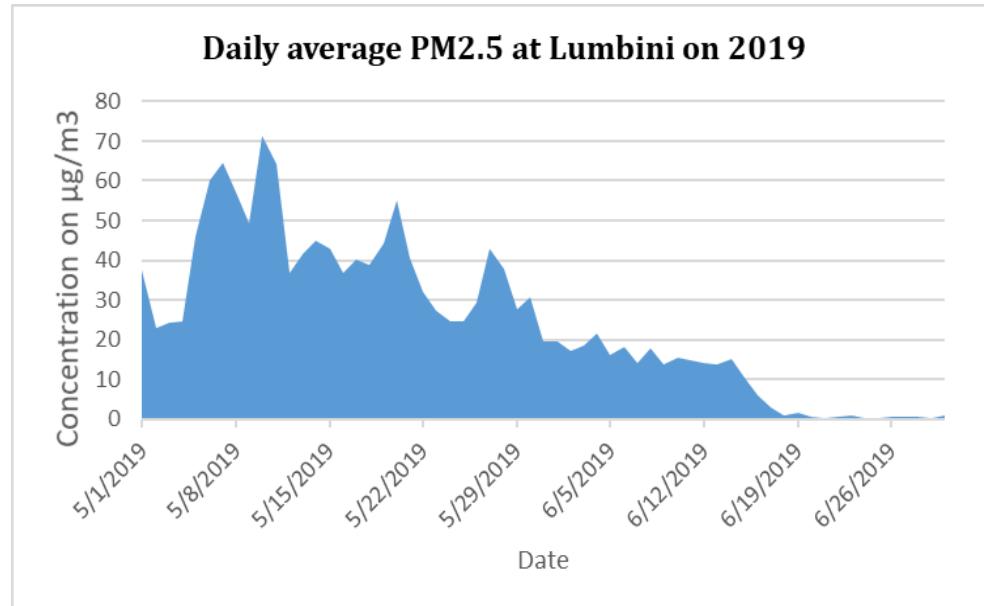


Figure 58.

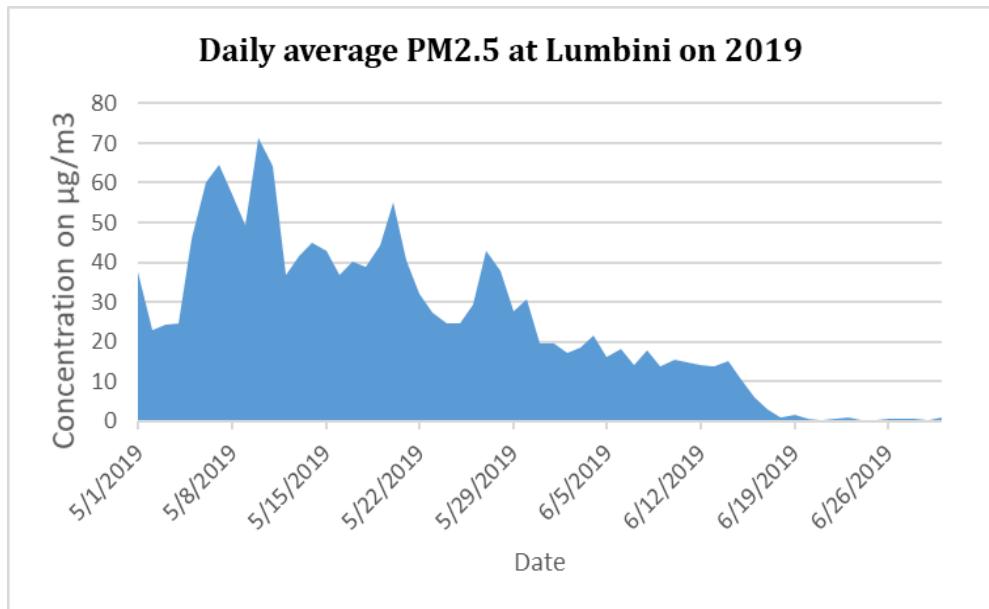


Figure 58: Daily average of PM<sub>2.5</sub>

### Monthly average of PM<sub>2.5</sub>

*The monthly average of PM<sub>2.5</sub> is shown in the*

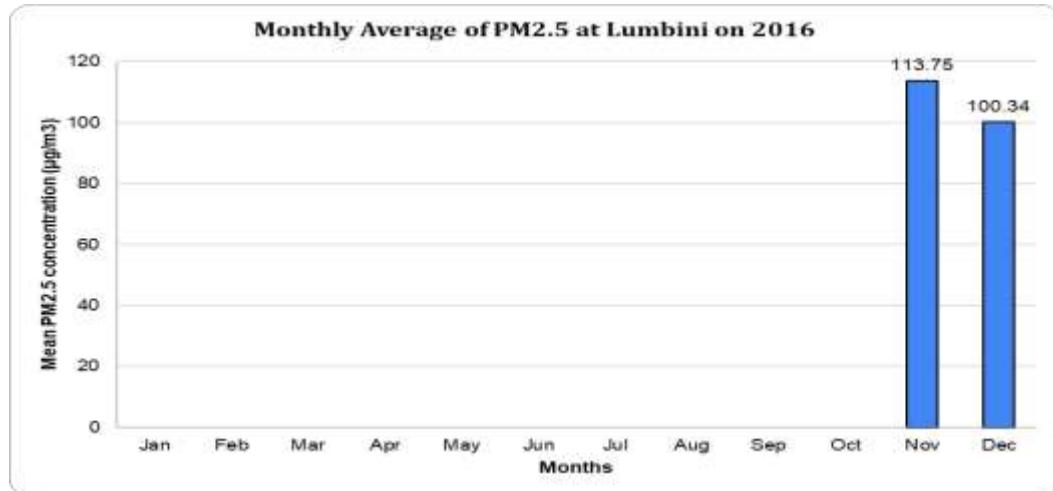


Figure 5*figure below*

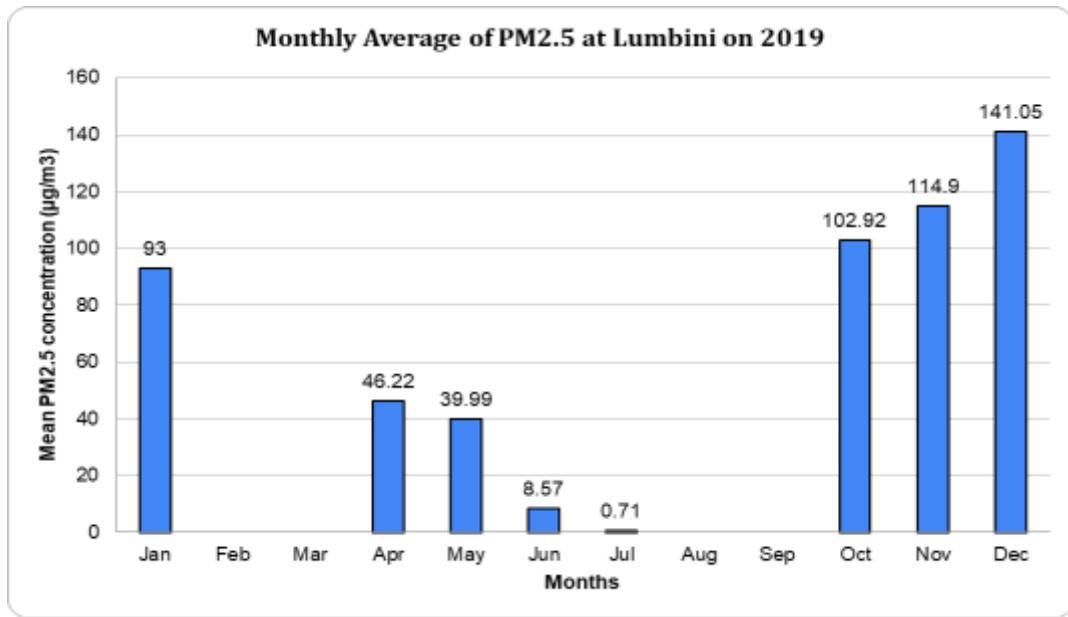


Figure 59. It is to be noted that only May and June were valid to be considered for monthly average.

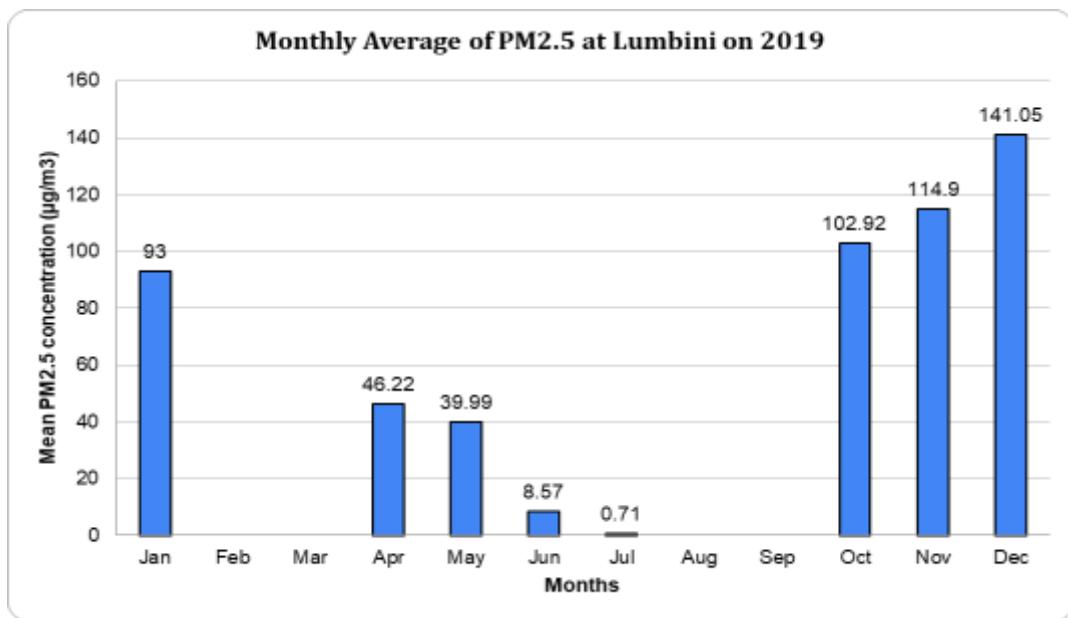


Figure 59: Monthly Average of PM<sub>2.5</sub>

#### Monthly variation of PM<sub>2.5</sub>

Variation in concentration of PM<sub>2.5</sub> was found high during January and low during June.

Monthly variation of PM<sub>2.5</sub> at Lumbini in 2019

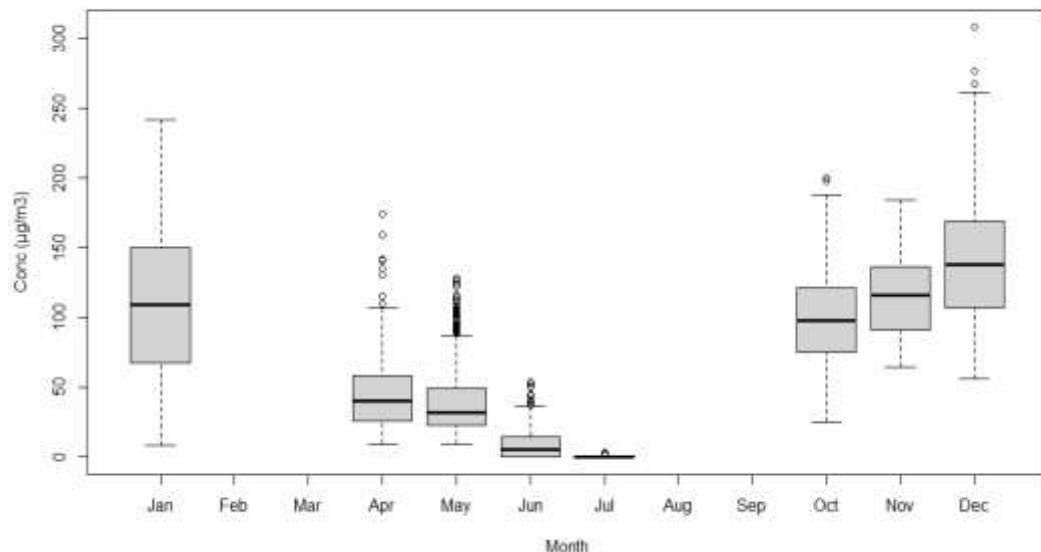


Figure 60: Monthly Variation of PM<sub>2.5</sub>

### Seasonal variation of PM<sub>2.5</sub>

Due to lack of data, seasonal variation of PM<sub>2.5</sub> could not be calculated.

### Diurnal variation of PM<sub>2.5</sub>

The diurnal variation of average PM<sub>2.5</sub> concentrations can be shown in the figure below

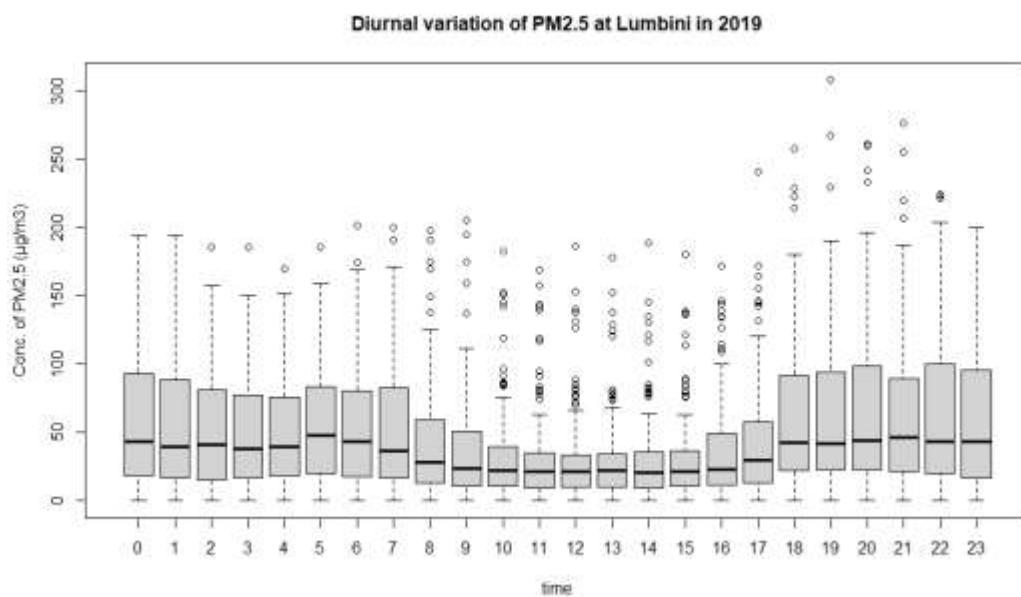


Figure 61. The variation in PM<sub>2.5</sub> concentration was high at around 11 pm to 2 am and low at 12pm and 1pm.

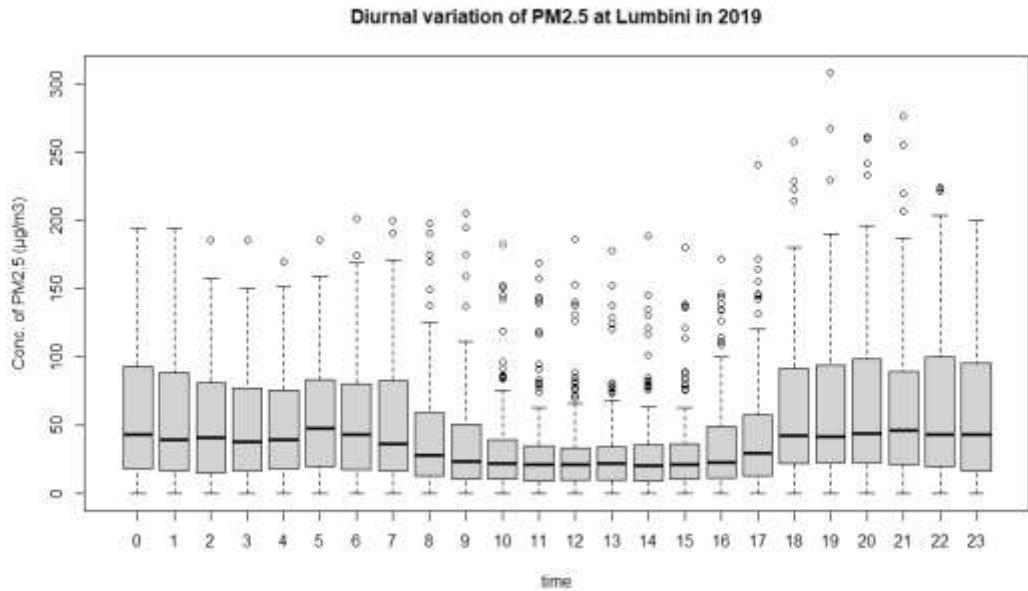


Figure 61: Diurnal Variation of PM<sub>2.5</sub>

### Compliance status of PM<sub>2.5</sub>

The total days of PM<sub>2.5</sub> monitored in the year 2019 counts 103, of which 50 days exceeded the NAAQS guideline.

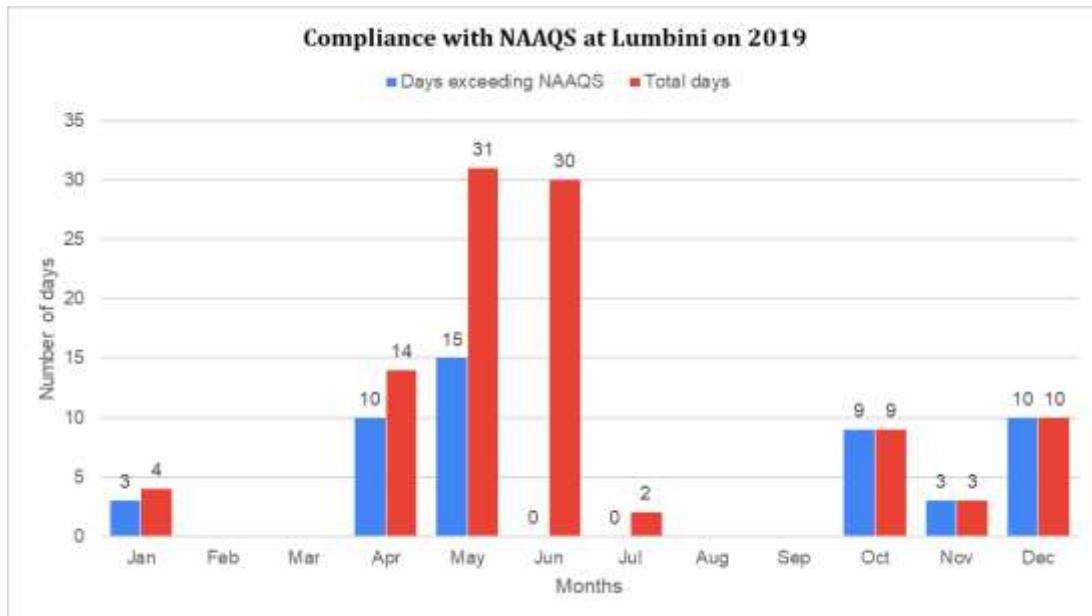


Figure 62: Compliance status of PM<sub>2.5</sub>

### 2.4.4 Temporal variation of PM<sub>10</sub>

#### Annual average of PM<sub>10</sub>

Since the data for May and June were valid for analysis, the annual average of PM<sub>10</sub> could not be calculated.

## Daily average of PM<sub>10</sub>

*Daily average concentration of PM<sub>10</sub> given in the figure below*

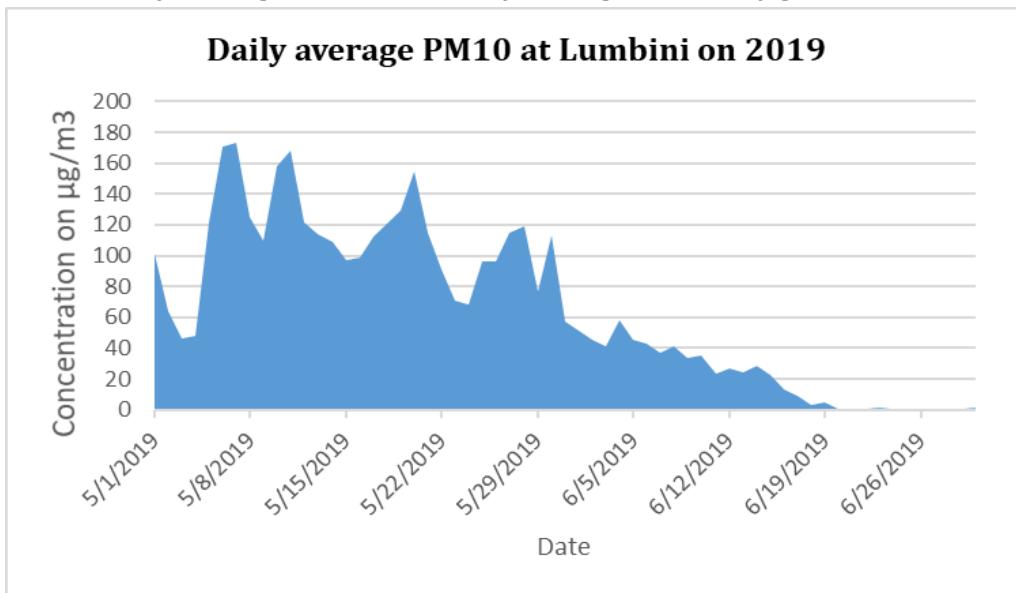


Figure 63.

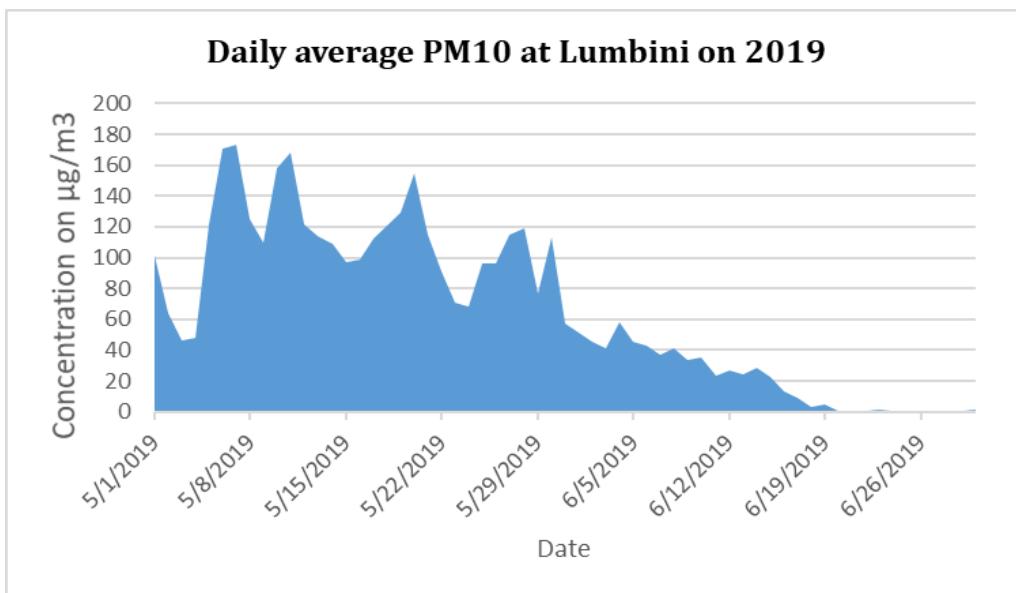


Figure 63: Daily average of PM<sub>10</sub>

## Monthly average of PM<sub>10</sub>

The monthly average for PM<sub>10</sub> is shown in the figure below. It is to be noted that only May and June were valid to be considered for monthly average.

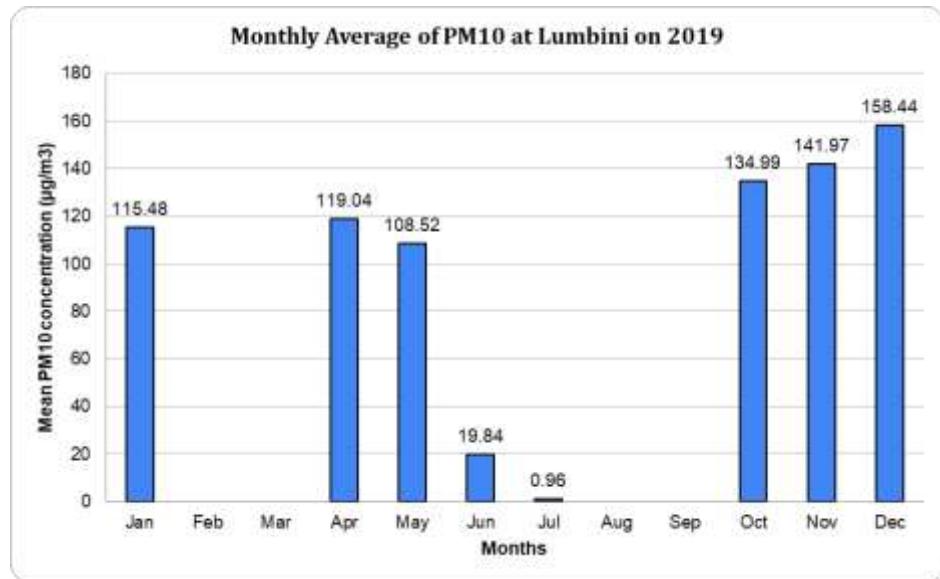


Figure 64: Monthly Average of PM<sub>10</sub>

### Monthly variation of PM<sub>10</sub>

Variation in concentration of PM<sub>10</sub> is shown in the figure below.

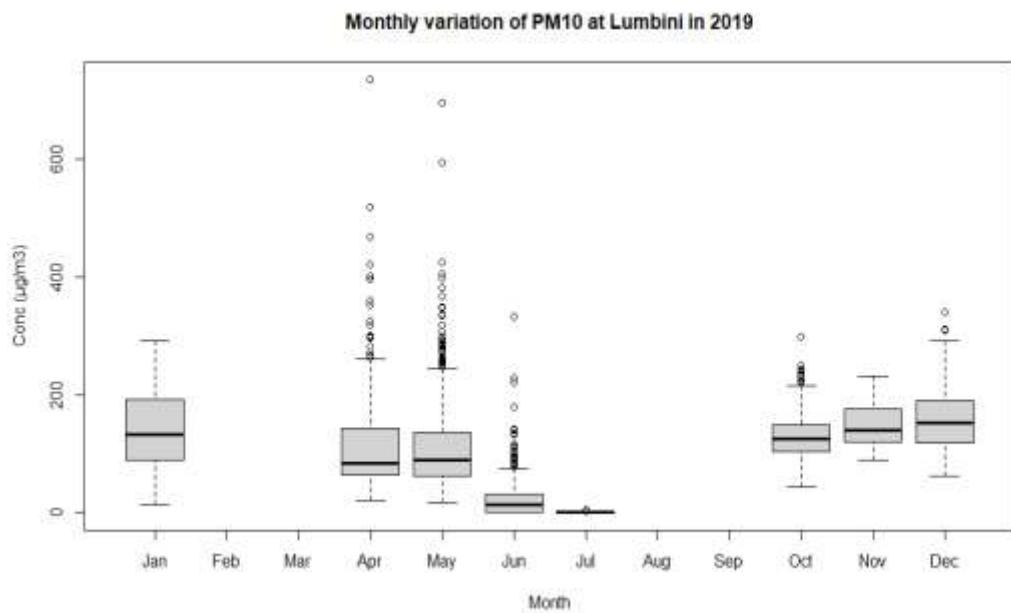


Figure 65: Monthly Variation of PM<sub>10</sub>

### Seasonal variation of PM<sub>10</sub>

Due to lack of data, seasonal variation could not be calculated.

### Diurnal variation of PM<sub>10</sub>

The diurnal variation of average PM<sub>10</sub> concentrations can be shown in the figure below

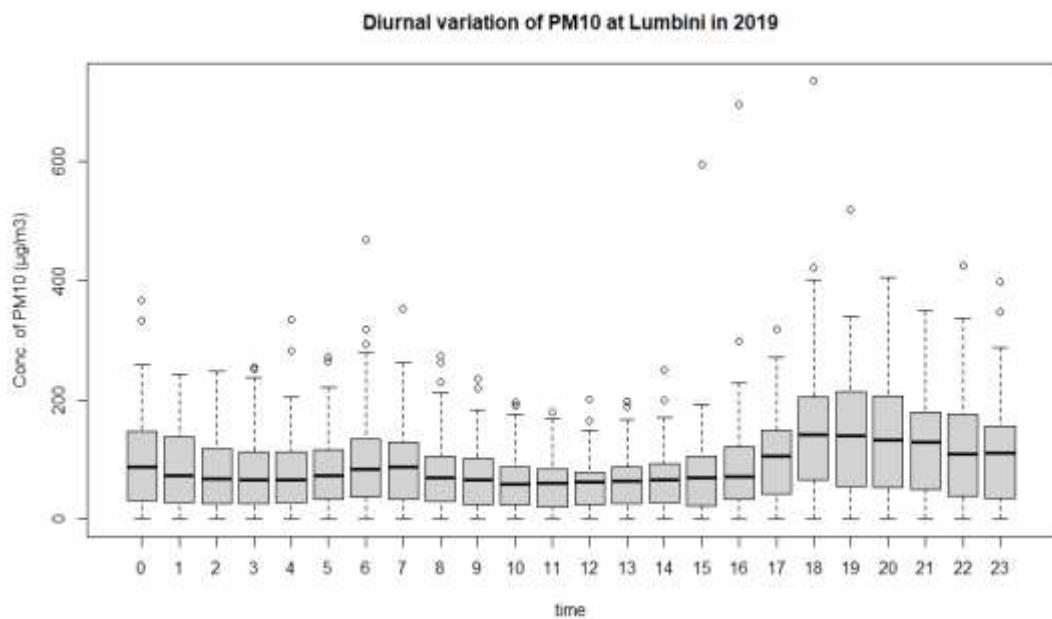


Figure 66. The variation in PM<sub>10</sub> concentration was high at around 8 pm and low at 12 pm.

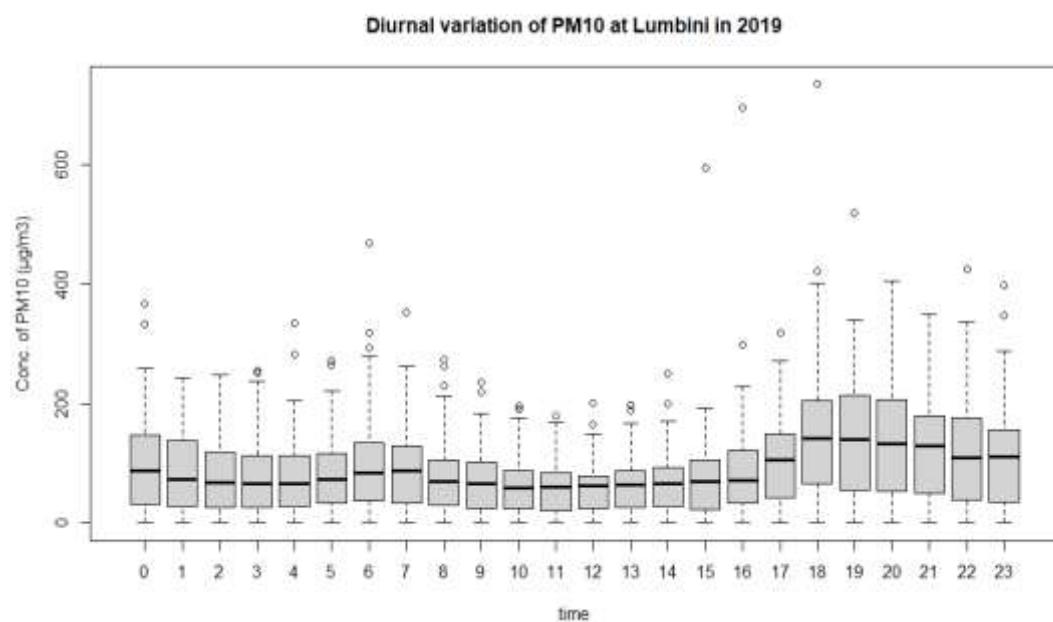


Figure 66: Diurnal Variation of PM<sub>10</sub>

### Compliance status of PM<sub>10</sub>

The total days of PM<sub>10</sub> monitored in the year 2019 counts 103 of which 77 days exceed the NAAQS guideline.

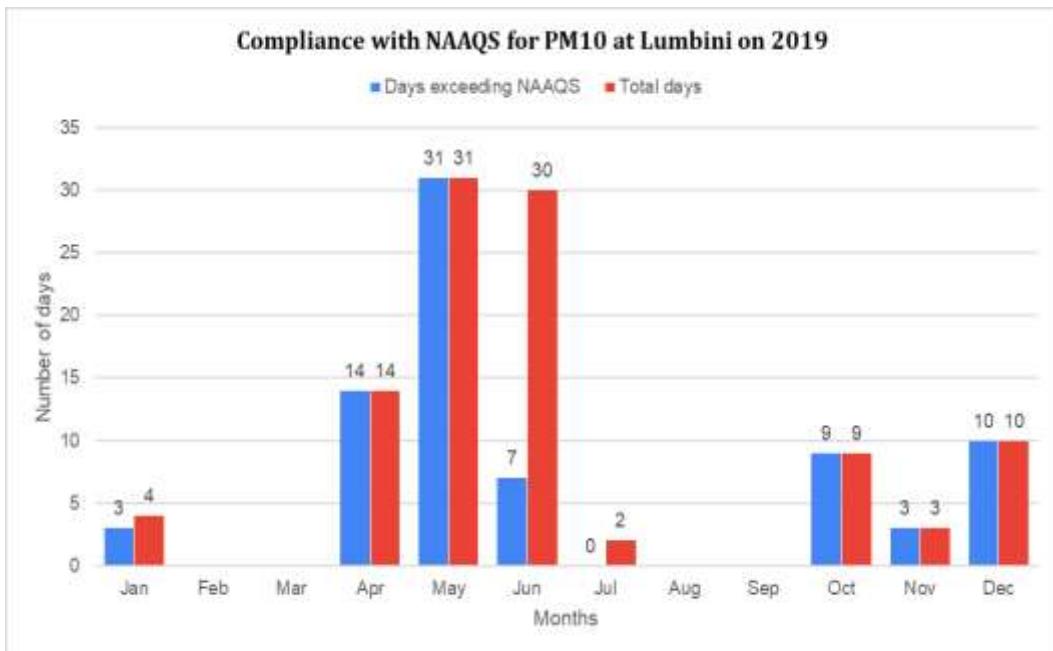


Figure 67: Compliance status of PM<sub>10</sub>

## 2.5 Air Quality Status, 2020

### 2.5.1 Annual average of PM<sub>1</sub>, PM<sub>2.5</sub>, PM<sub>10</sub>

Since the data of PM<sub>1</sub>, PM<sub>2.5</sub> and PM<sub>10</sub> for the year 2020 was recorded for one month only, their annual average could not be calculated.

### 2.5.2 *Error! No sequence specified.* For PM<sub>1</sub>

#### Annual average of PM<sub>1</sub>

Since the data of PM<sub>1</sub> for the year 2020 was recorded for one month only, the annual average could not be calculated.

#### Daily average of PM<sub>1</sub>

Daily average concentration of PM<sub>1</sub> for the month April is given in the figure below.

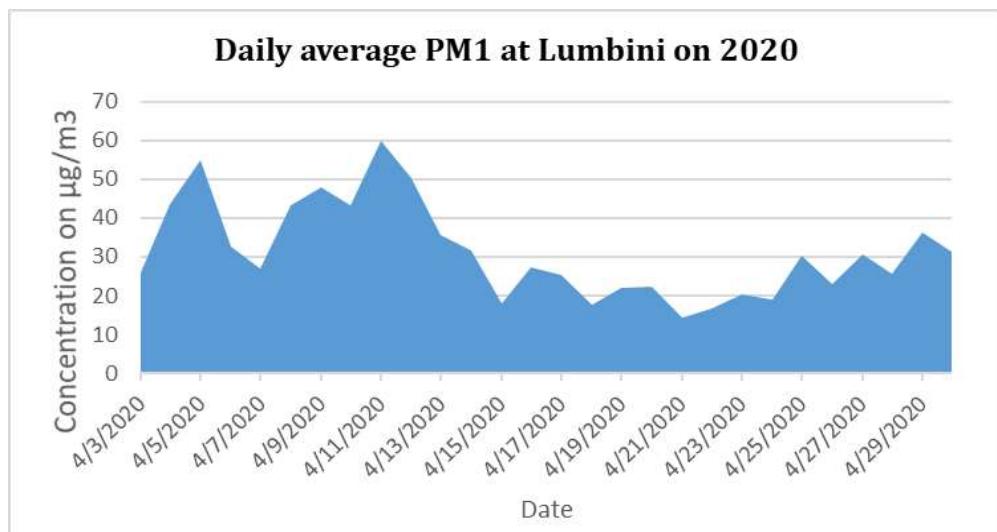


Figure 68: Daily average of PM<sub>1</sub>

#### Monthly average of PM<sub>1</sub>

The monthly average concentration for PM<sub>1</sub> is shown in the figure below.

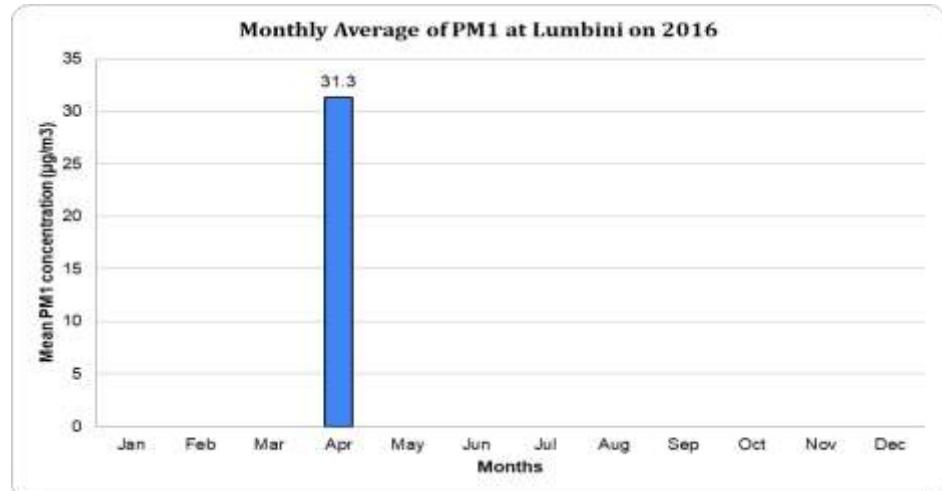


Figure 69: Monthly Average of PM<sub>1</sub>

## **Monthly variation of PM<sub>1</sub>**

Since the data of single month is available monthly variation could not be calculated.

## **Seasonal variation of PM<sub>1</sub>**

Due to lack of data, seasonal variation could not be calculated.

## **Diurnal variation of PM<sub>1</sub>**

The diurnal variation of average PM<sub>1</sub> concentrations can be shown in the figure below

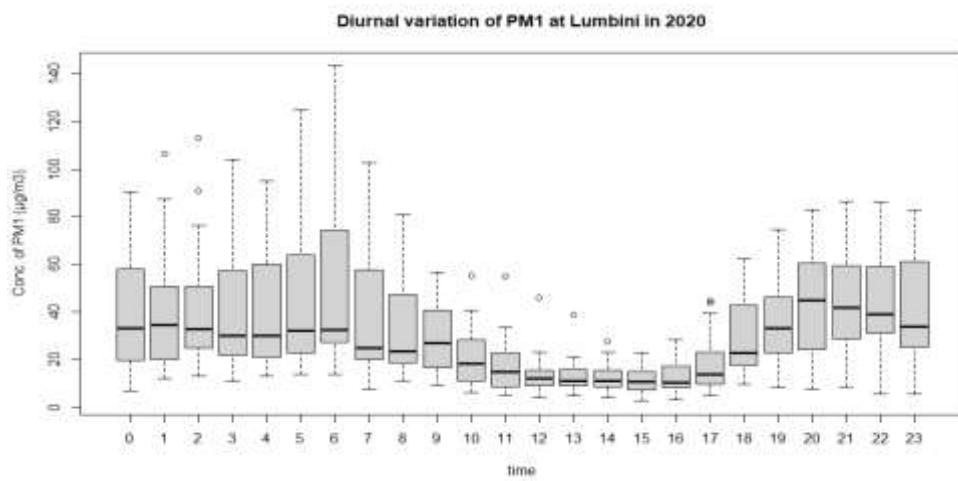


Figure 70. The

variation in PM<sub>1</sub> concentration was high at around 6 am and low at 1 pm.

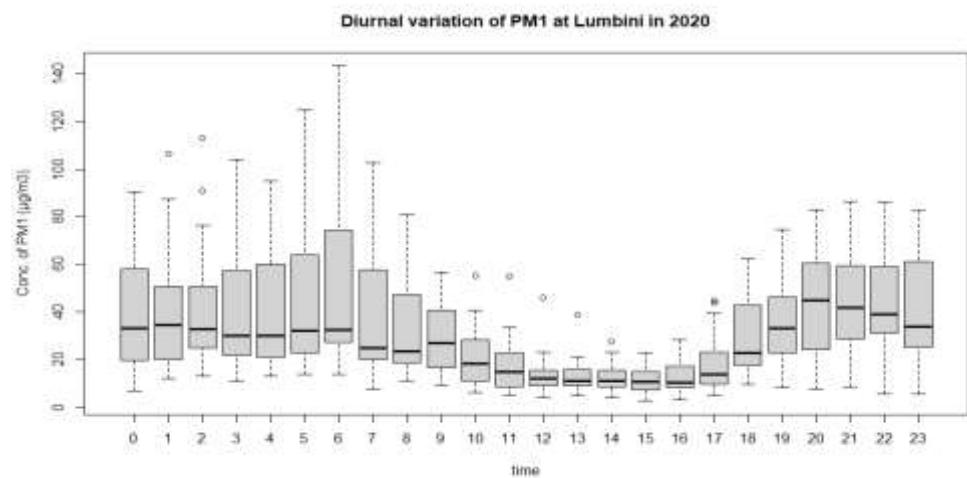


Figure 70: Diurnal Variation of PM<sub>1</sub>

### 2.5.3 Temporal variation of PM<sub>2.5</sub>

## **Annual average of PM<sub>2.5</sub>**

Since the data of PM<sub>2.5</sub> for the year 2020 was recorded for one monthly only, the annual average could not be calculated.

## **Daily average of PM<sub>2.5</sub>**

Daily average concentration of PM<sub>2.5</sub> given in

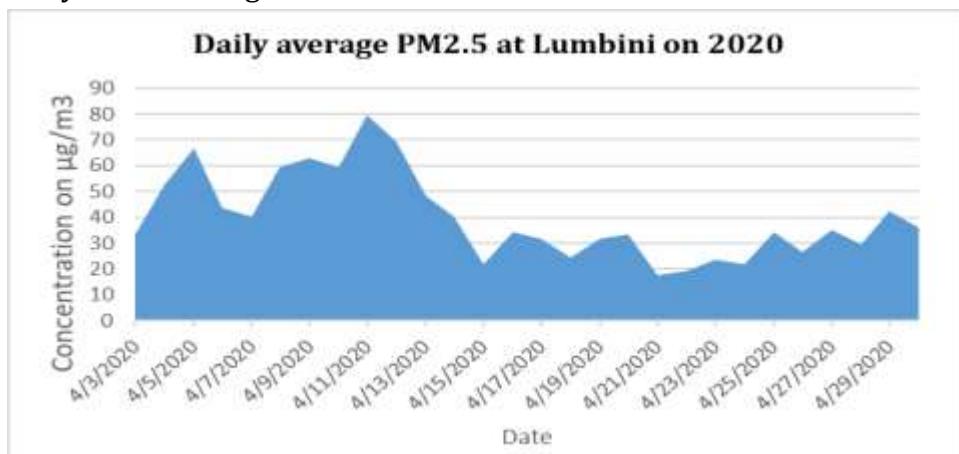


Figure 71 the

figure below.

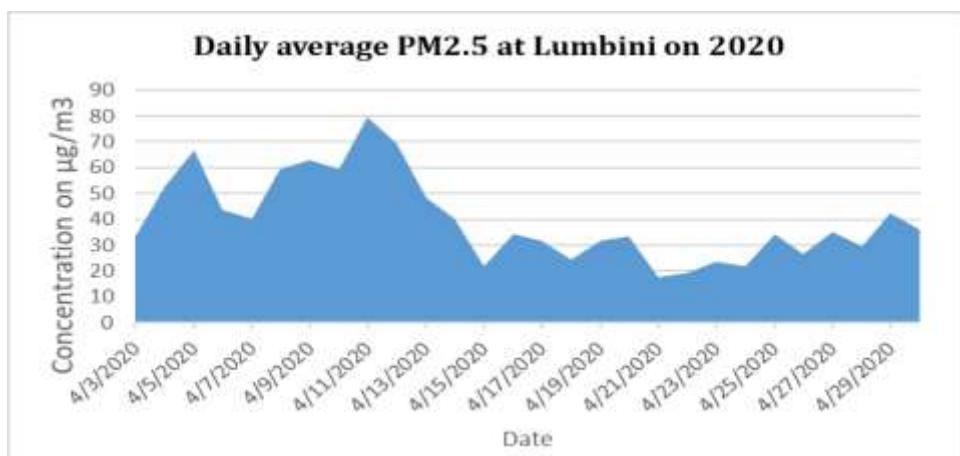


Figure 71: Daily average of PM<sub>2.5</sub>

### Monthly average of PM<sub>2.5</sub>

The monthly average concentration for PM<sub>2.5</sub> is shown in the figure below.



Figure 72: Monthly Average of PM<sub>2.5</sub>

### Monthly variation of PM<sub>2.5</sub>

Due to lack of data, monthly variation in concentration of PM<sub>2.5</sub> could not be calculated.

### Seasonal variation of PM<sub>2.5</sub>

Due to lack of data, seasonal variation of PM<sub>2.5</sub> could not be calculated.

### Diurnal variation of PM<sub>2.5</sub>

The diurnal variation of average PM<sub>2.5</sub> concentrations can be shown in the figure below. The variation in PM<sub>2.5</sub> concentration was high at around 6 am and low at 1pm and 2 pm.

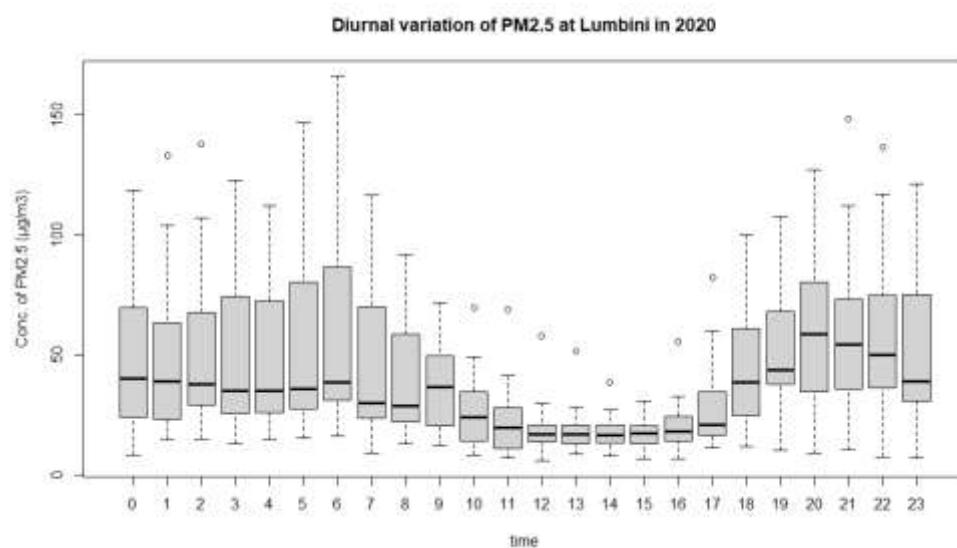


Figure 73: Diurnal Variation of PM<sub>2.5</sub>

### Compliance status of PM<sub>2.5</sub>

The total days of PM<sub>2.5</sub> monitored in the year 2020 counts 28, of which 12 days exceeded the NAAQS guideline.

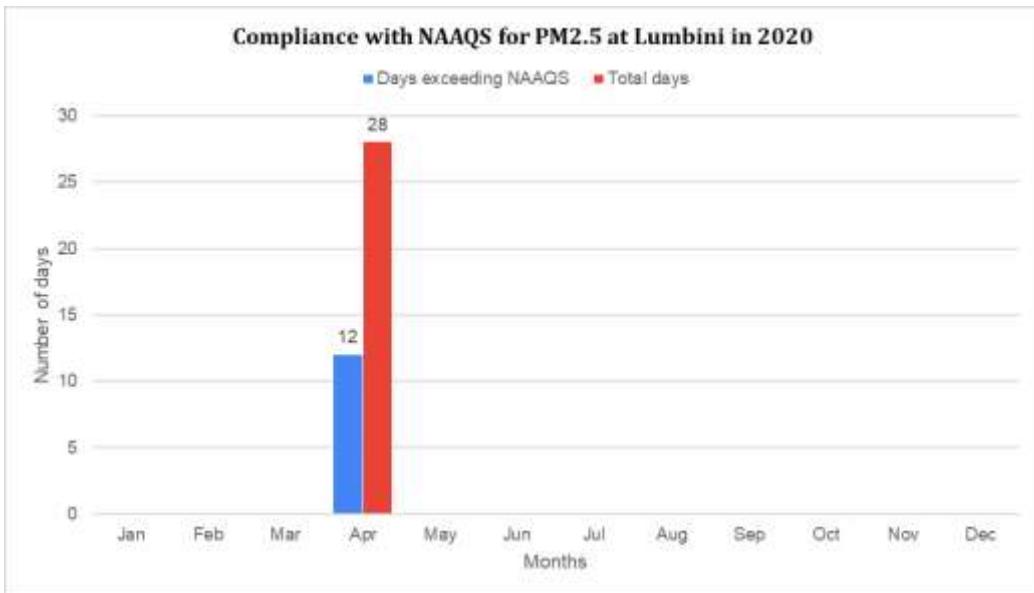


Figure 74: Compliance status of PM<sub>2.5</sub>

#### 2.5.4 Temporal variation of PM<sub>10</sub>

##### **Annual average of PM<sub>10</sub>**

Since the data of PM<sub>10</sub> for the year 2020 was recorded for one monthly only, the annual average could not be calculated.

##### **Daily average of PM<sub>10</sub>**

Daily average concentration of PM<sub>10</sub> given in the figure below.

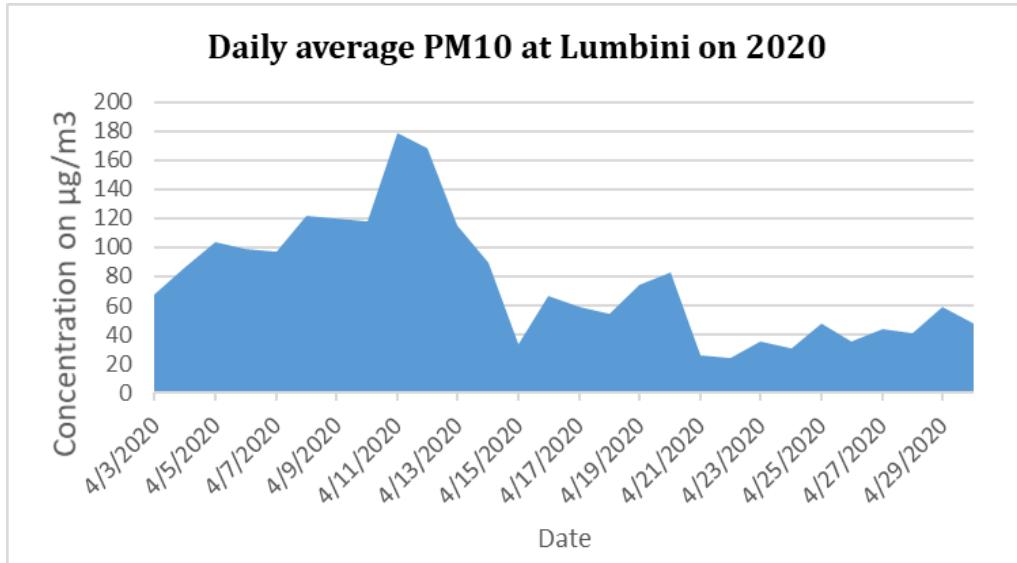


Figure 75: Daily average of PM<sub>10</sub>

##### **Monthly average of PM<sub>10</sub>**

The monthly average concentration for PM<sub>10</sub> is shown in the

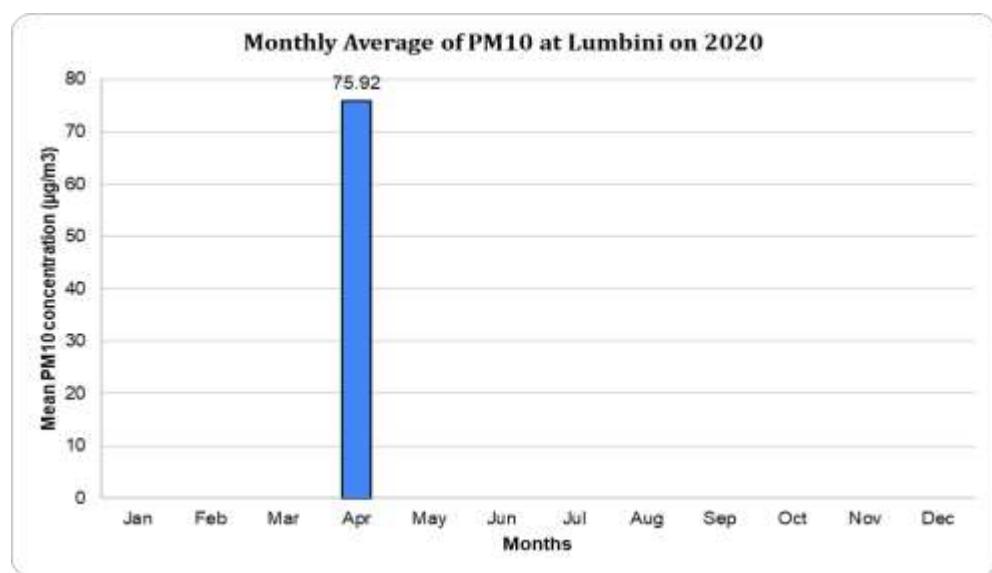


Figure 76figure below.

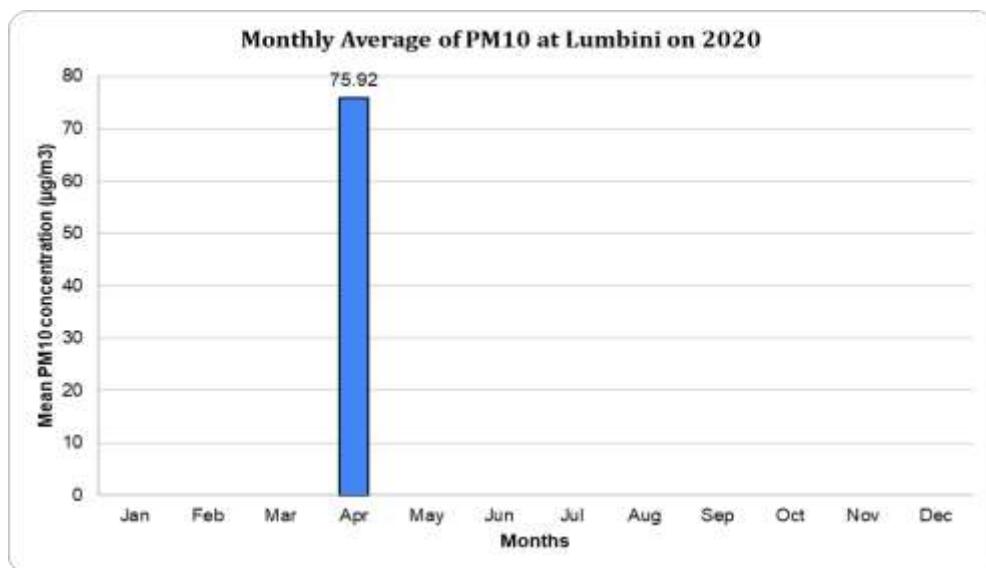


Figure 76: Monthly Average of PM<sub>10</sub>

### **Monthly variation of PM<sub>10</sub>**

Due to lack of data, the monthly variation of PM<sub>10</sub> could not be calculated.

### **Seasonal variation of PM<sub>10</sub>**

Due to lack of data, seasonal variation could not be calculated.

### **Diurnal variation of PM<sub>10</sub>**

The diurnal variation of average PM<sub>10</sub> concentrations can be shown in the figure below. The variation in PM<sub>10</sub> concentration was high at around 6 pm and low at 1 pm.

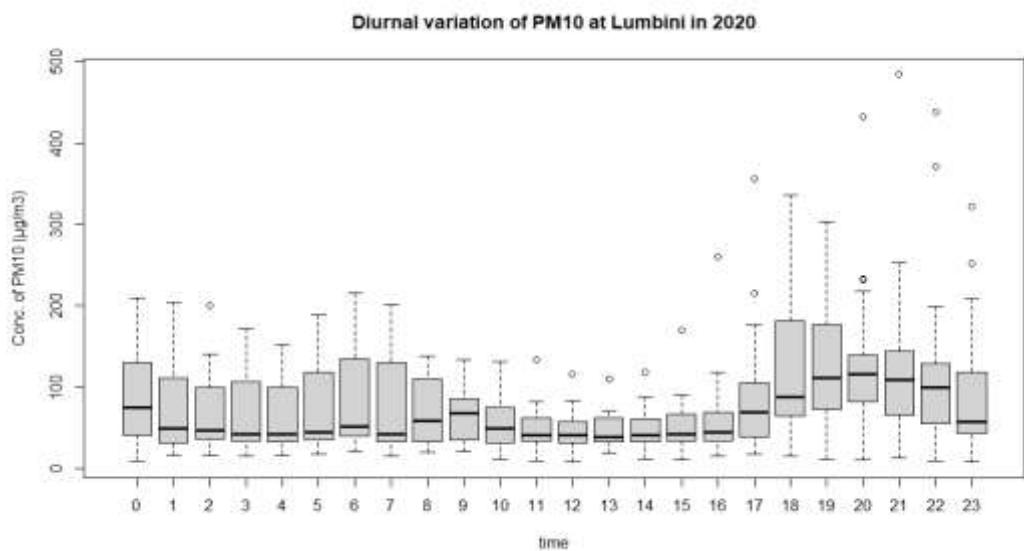


Figure 77: Diurnal Variation of PM<sub>10</sub>

### Compliance status of PM<sub>10</sub>

The total days of PM<sub>10</sub> monitored in the year 2020 counts 28 of which 22 days exceed the NAAQS guideline.

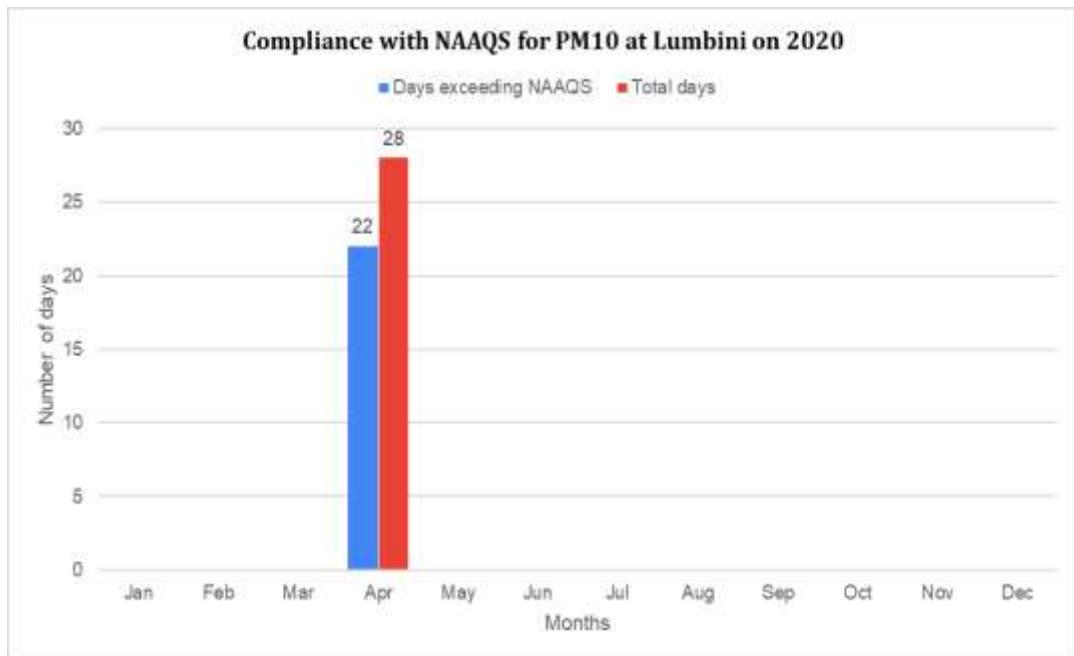


Figure 78: Compliance status of PM<sub>10</sub>

## Annex

### **PM<sub>1</sub> daily**

Date	Value	Date	Value	Date	Value	Date	Value	Date	Value
1/1/2016		1/1/2017		1/1/2018	69.19167	1/1/2019		1/1/2020	
1/2/2016		1/2/2017	118.3085	1/2/2018	80.83049	1/2/2019		1/2/2020	
1/3/2016		1/3/2017	106.0001	1/3/2018	88.51181	1/3/2019		1/3/2020	
1/4/2016		1/4/2017	126.0645	1/4/2018	87.72965	1/4/2019	140.4279	1/4/2020	
1/5/2016		1/5/2017	83.60793	1/5/2018	87.86385	1/5/2019	93.39921	1/5/2020	
1/6/2016		1/6/2017	94.44752	1/6/2018	84.53979	1/6/2019	101.3244	1/6/2020	
1/7/2016		1/7/2017	118.5381	1/7/2018	104.1247	1/7/2019		1/7/2020	
1/8/2016		1/8/2017	78.98559	1/8/2018	102.0809	1/8/2019		1/8/2020	
1/9/2016		1/9/2017	99.28622	1/9/2018	126.3179	1/9/2019		1/9/2020	
1/10/2016		1/10/2017	73.67272	1/10/2018	106.7189	1/10/2019		1/10/2020	
1/11/2016		1/11/2017	99.46458	1/11/2018	75.31333	1/11/2019		1/11/2020	
1/12/2016		1/12/2017	130.3243	1/12/2018	88.59921	1/12/2019		1/12/2020	
1/13/2016		1/13/2017	130.6739	1/13/2018	99.29832	1/13/2019		1/13/2020	
1/14/2016		1/14/2017	161.7784	1/14/2018	88.8746	1/14/2019		1/14/2020	
1/15/2016		1/15/2017	155.352	1/15/2018	71.53153	1/15/2019		1/15/2020	
1/16/2016		1/16/2017	135.993	1/16/2018	66.60076	1/16/2019		1/16/2020	
1/17/2016		1/17/2017	106.5327	1/17/2018	64.80921	1/17/2019		1/17/2020	
1/18/2016		1/18/2017	113.6376	1/18/2018	90.73692	1/18/2019		1/18/2020	
1/19/2016		1/19/2017	91.45868	1/19/2018	90.02507	1/19/2019		1/19/2020	
1/20/2016		1/20/2017	95.85707	1/20/2018	70.1784	1/20/2019		1/20/2020	
1/21/2016		1/21/2017	123.1164	1/21/2018	77.89378	1/21/2019		1/21/2020	
1/22/2016		1/22/2017	116.4892	1/22/2018	117.3364	1/22/2019		1/22/2020	

1/23/2016	1/23/2017	127.4213	1/23/2018	128.5454	1/23/2019		1/23/2020
1/24/2016	1/24/2017	120.162	1/24/2018	56.88975	1/24/2019		1/24/2020
1/25/2016	1/25/2017	98.51229	1/25/2018	92.62389	1/25/2019		1/25/2020
1/26/2016	1/26/2017	85.80409	1/26/2018	102.1212	1/26/2019	9.035714	1/26/2020
1/27/2016	1/27/2017	50.574	1/27/2018	102.9165	1/27/2019		1/27/2020
1/28/2016	1/28/2017	31.99847	1/28/2018	104.0457	1/28/2019		1/28/2020
1/29/2016	1/29/2017	67.4216	1/29/2018	101.4297	1/29/2019		1/29/2020
1/30/2016	1/30/2017	55.20337	1/30/2018	108.9029	1/30/2019		1/30/2020
1/31/2016	1/31/2017	48.68972	1/31/2018	107.7479	1/31/2019		1/31/2020
2/1/2016	2/1/2017	75.60125	2/1/2018	107.603	2/1/2019		2/1/2020
2/2/2016	2/2/2017	94.5498	2/2/2018	104.8952	2/2/2019		2/2/2020
2/3/2016	2/3/2017	91.56778	2/3/2018	102.4402	2/3/2019		2/3/2020
2/4/2016	2/4/2017	91.73139	2/4/2018	74.83194	2/4/2019		2/4/2020
2/5/2016	2/5/2017	76.07792	2/5/2018	94.18398	2/5/2019		2/5/2020
2/6/2016	2/6/2017	75.81757	2/6/2018	141.5329	2/6/2019		2/6/2020
2/7/2016	2/7/2017	64.72653	2/7/2018	110.5453	2/7/2019		2/7/2020
2/8/2016	2/8/2017	79.87979	2/8/2018	77.25569	2/8/2019		2/8/2020
2/9/2016	2/9/2017	87.1366	2/9/2018	60.93687	2/9/2019		2/9/2020
2/10/2016	2/10/2017	73.36861	2/10/2018	62.21205	2/10/2019		2/10/2020
2/11/2016	2/11/2017	96.93215	2/11/2018	90.06224	2/11/2019		2/11/2020
2/12/2016	2/12/2017	87.50306	2/12/2018	77.83111	2/12/2019		2/12/2020
2/13/2016	2/13/2017	93.61979	2/13/2018	44.30285	2/13/2019		2/13/2020
2/14/2016	2/14/2017	83.38986	2/14/2018	46.39087	2/14/2019		2/14/2020
2/15/2016	2/15/2017	119.8468	2/15/2018	71.34846	2/15/2019		2/15/2020
2/16/2016	2/16/2017	113.7904	2/16/2018	89.80111	2/16/2019		2/16/2020
2/17/2016	2/17/2017	100.1418	2/17/2018	93.81169	2/17/2019		2/17/2020

2/18/2016	2/18/2017	85.70215	2/18/2018	89.65823	2/18/2019	2/18/2020
2/19/2016	2/19/2017	90.28278	2/19/2018	71.63006	2/19/2019	2/19/2020
2/20/2016	2/20/2017	111.2367	2/20/2018	72.61486	2/20/2019	2/20/2020
2/21/2016	2/21/2017	84.14625	2/21/2018	74.92076	2/21/2019	2/21/2020
2/22/2016	2/22/2017	55.11514	2/22/2018	91.00188	2/22/2019	2/22/2020
2/23/2016	2/23/2017	46.84069	2/23/2018	82.44744	2/23/2019	2/23/2020
2/24/2016	2/24/2017	57.27941	2/24/2018	79.87054	2/24/2019	2/24/2020
2/25/2016	2/25/2017	76.16778	2/25/2018	69.35268	2/25/2019	2/25/2020
2/26/2016	2/26/2017	82.42875	2/26/2018	54.7002	2/26/2019	2/26/2020
2/27/2016	2/27/2017	83.67694	2/27/2018	60.4422	2/27/2019	2/27/2020
2/28/2016	2/28/2017	104.2824	2/28/2018	67.08354	2/28/2019	2/28/2020
2/29/2016	3/1/2017	94.4525	3/1/2018	66.29014	3/1/2019	2/29/2020
3/1/2016	3/2/2017	68.43243	3/2/2018	59.38639	3/2/2019	3/1/2020
3/2/2016	3/3/2017	25.78569	3/3/2018	37.66447	3/3/2019	3/2/2020
3/3/2016	3/4/2017	27.23632	3/4/2018	31.98113	3/4/2019	3/3/2020
3/4/2016	3/5/2017	39.56694	3/5/2018	28.16502	3/5/2019	3/4/2020
3/5/2016	3/6/2017	56.65681	3/6/2018	27.4928	3/6/2019	3/5/2020
3/6/2016	3/7/2017	56.23882	3/7/2018	37.14153	3/7/2019	3/6/2020
3/7/2016	3/8/2017	63.8616	3/8/2018	49.60204	3/8/2019	3/7/2020
3/8/2016	3/9/2017	44.81396	3/9/2018	45.89917	3/9/2019	3/8/2020
3/9/2016	3/10/2017	27.70611	3/10/2018	47.51971	3/10/2019	3/9/2020
3/10/2016	3/11/2017	12.7587	3/11/2018	45.38992	3/11/2019	3/10/2020
3/11/2016	3/12/2017	19.66819	3/12/2018	52.70319	3/12/2019	3/11/2020
3/12/2016	3/13/2017	46.04896	3/13/2018	52.94598	3/13/2019	3/12/2020
3/13/2016	3/14/2017	52.32035	3/14/2018	50.02375	3/14/2019	3/13/2020
3/14/2016	3/15/2017	48.0178	3/15/2018	53.10478	3/15/2019	3/14/2020

3/15/2016	3/16/2017	59.35472	3/16/2018	21.16655	3/16/2019	3/15/2020
3/16/2016	3/17/2017	45.99597	3/17/2018	24.21889	3/17/2019	3/16/2020
3/17/2016	3/18/2017	32.28229	3/18/2018	27.55508	3/18/2019	3/17/2020
3/18/2016	3/19/2017	42.50806	3/19/2018	48.47565	3/19/2019	3/18/2020
3/19/2016	3/20/2017	41.42319	3/20/2018	41.87513	3/20/2019	3/19/2020
3/20/2016	3/21/2017	46.74618	3/21/2018	52.29604	3/21/2019	3/20/2020
3/21/2016	3/22/2017	51.2973	3/22/2018	28.98939	3/22/2019	3/21/2020
3/22/2016	3/23/2017	57.2078	3/23/2018	25.10673	3/23/2019	3/22/2020
3/23/2016	3/24/2017	57.29617	3/24/2018	24.94852	3/24/2019	3/23/2020
3/24/2016	3/25/2017	45.29076	3/25/2018	33.05167	3/25/2019	3/24/2020
3/25/2016	3/26/2017	34.94507	3/26/2018	28.95722	3/26/2019	3/25/2020
3/26/2016	3/27/2017	41.38819	3/27/2018	41.66806	3/27/2019	3/26/2020
3/27/2016	3/28/2017	45.30278	3/28/2018	42.38056	3/28/2019	3/27/2020
3/28/2016	3/29/2017	32.00618	3/29/2018	34.69472	3/29/2019	3/28/2020
3/29/2016	3/30/2017	30.81535	3/30/2018	29.14232	3/30/2019	3/29/2020
3/30/2016	3/31/2017	27.77153	3/31/2018	16.74826	3/31/2019	3/30/2020
3/31/2016	4/1/2017	38.46215	4/1/2018	21.88497	4/1/2019	3/31/2020
4/1/2016	4/2/2017	20.74924	4/2/2018	25.08328	4/2/2019	4/1/2020
4/2/2016	4/3/2017	23.75778	4/3/2018	26.69863	4/3/2019	4/2/2020
4/3/2016	4/4/2017	22.40542	4/4/2018	24.68916	4/4/2019	4/3/2020
4/4/2016	4/5/2017	15.28979	4/5/2018	12.56581	4/5/2019	4/4/2020
4/5/2016	4/6/2017	20.2658	4/6/2018	20.0737	4/6/2019	4/5/2020
4/6/2016	4/7/2017	23.88048	4/7/2018	13.44048	4/7/2019	4/6/2020
4/7/2016	4/8/2017	17.42057	4/8/2018	26.12601	4/8/2019	4/7/2020
4/8/2016	4/9/2017	27.50318	4/9/2018	19.45075	4/9/2019	4/8/2020
4/9/2016	4/10/2017	27.03913	4/10/2018	18.75153	4/10/2019	4/9/2020

4/10/2016	4/11/2017	47.95694	4/11/2018	24.55272	4/11/2019		4/10/2020	43.30964
4/11/2016	4/12/2017	83.95927	4/12/2018	25.24914	4/12/2019		4/11/2020	59.74877
4/12/2016	4/13/2017	70.86004	4/13/2018	15.89046	4/13/2019		4/12/2020	50.36011
4/13/2016	4/14/2017	65.19583	4/14/2018	15.73348	4/14/2019		4/13/2020	35.51907
4/14/2016	4/15/2017	26.8355	4/15/2018	34.08048	4/15/2019		4/14/2020	31.55051
4/15/2016	4/16/2017	23.61861	4/16/2018	23.69389	4/16/2019		4/15/2020	18.16539
4/16/2016	4/17/2017	27.66917	4/17/2018	18.32509	4/17/2019	22.04729	4/16/2020	27.35045
4/17/2016	4/18/2017	32.20618	4/18/2018	16.71417	4/18/2019	19.08368	4/17/2020	25.2314
4/18/2016	4/19/2017	37.01437	4/19/2018	15.72416	4/19/2019	20.4179	4/18/2020	17.80429
4/19/2016	4/20/2017	17.75243	4/20/2018	18.99139	4/20/2019	29.51567	4/19/2020	21.97396
4/20/2016	4/21/2017	18.22903	4/21/2018	18.91314	4/21/2019	49.2909	4/20/2020	22.27605
4/21/2016	4/22/2017	20.28241	4/22/2018	15.07431	4/22/2019	30.69063	4/21/2020	14.22375
4/22/2016	4/23/2017		4/23/2018	24.08153	4/23/2019	28.19366	4/22/2020	16.74158
4/23/2016	4/24/2017		4/24/2018	57.52237	4/24/2019	30.47156	4/23/2020	20.32856
4/24/2016	4/25/2017		4/25/2018	41.04675	4/25/2019	33.99323	4/24/2020	19.10987
4/25/2016	4/26/2017	15.97635	4/26/2018	21.24611	4/26/2019	35.08104	4/25/2020	30.38165
4/26/2016	4/27/2017	31.02793	4/27/2018	12.48572	4/27/2019	24.55944	4/26/2020	23.03733
4/27/2016	4/28/2017	31.74332	4/28/2018	15.73952	4/28/2019	34.21701	4/27/2020	30.77662
4/28/2016	4/29/2017	34.98884	4/29/2018	14.11546	4/29/2019	25.74964	4/28/2020	25.53493
4/29/2016	4/30/2017	27.61463	4/30/2018	7.227921	4/30/2019	27.45397	4/29/2020	36.3666
4/30/2016	5/1/2017	22.69153	5/1/2018	11.11261	5/1/2019	21.9016	4/30/2020	31.14082
5/1/2016	5/2/2017	36.00068	5/2/2018	12.78729	5/2/2019	13.42396	5/1/2020	15.75817
5/2/2016	5/3/2017	36.06071	5/3/2018	9.207708	5/3/2019	15.73813	5/2/2020	
5/3/2016	5/4/2017	28.88695	5/4/2018	13.09826	5/4/2019	16.62607	5/3/2020	
5/4/2016	5/5/2017	23.80067	5/5/2018	13.16168	5/5/2019	30.16609	5/4/2020	
5/5/2016	5/6/2017	34.27407	5/6/2018	25.84425	5/6/2019	35.52607	5/5/2020	

5/6/2016	5/7/2017	22.61834	5/7/2018	23.74729	5/7/2019	41.1867	5/6/2020
5/7/2016	5/8/2017	23.31288	5/8/2018	21.99604	5/8/2019	39.38792	5/7/2020
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11/23/2016	112.5922	11/24/2017	44.6967	11/24/2018		11/24/2019		11/23/2020
11/24/2016	113.517	11/25/2017	78.3666	11/25/2018		11/25/2019		11/24/2020
11/25/2016	139.1748	11/26/2017	58.48819	11/26/2018		11/26/2019		11/25/2020
11/26/2016	103.2629	11/27/2017	96.45979	11/27/2018		11/27/2019		11/26/2020
11/27/2016	85.04588	11/28/2017	107.1415	11/28/2018		11/28/2019		11/27/2020
11/28/2016	76.46648	11/29/2017	114.3246	11/29/2018		11/29/2019		11/28/2020
11/29/2016	64.9155	11/30/2017	112.8765	11/30/2018		11/30/2019		11/29/2020

11/30/2016	88.19872	12/1/2017	104.3431	12/1/2018	12/1/2019		11/30/2020
12/1/2016	97.80048	12/2/2017	80.45611	12/2/2018	12/2/2019		12/1/2020
12/2/2016	94.52111	12/3/2017	77.1525	12/3/2018	12/3/2019		12/2/2020
12/3/2016	132.9561	12/4/2017	100.0807	12/4/2018	12/4/2019		12/3/2020
12/4/2016	134.5107	12/5/2017	85.48729	12/5/2018	12/5/2019		12/4/2020
12/5/2016	79.85626	12/6/2017	80.63852	12/6/2018	12/6/2019		12/5/2020
12/6/2016	73.45298	12/7/2017	81.53082	12/7/2018	12/7/2019		12/6/2020
12/7/2016	106.6268	12/8/2017	69.00816	12/8/2018	12/8/2019		12/7/2020
12/8/2016	88.98624	12/9/2017	69.48576	12/9/2018	12/9/2019		12/8/2020
12/9/2016	58.3676	12/10/2017	62.48382	12/10/2018	12/10/2019		12/9/2020
12/10/2016	94.91781	12/11/2017	73.31083	12/11/2018	12/11/2019		12/10/2020
12/11/2016	91.60229	12/12/2017	90.48286	12/12/2018	12/12/2019		12/11/2020
12/12/2016	69.65534	12/13/2017	59.45278	12/13/2018	12/13/2019		12/12/2020
12/13/2016		12/14/2017	77.14569	12/14/2018	12/14/2019		12/13/2020
12/14/2016		12/15/2017	74.76319	12/15/2018	12/15/2019		12/14/2020
12/15/2016		12/16/2017	85.75516	12/16/2018	12/16/2019		12/15/2020
12/16/2016		12/17/2017	87.98542	12/17/2018	12/17/2019		12/16/2020
12/17/2016		12/18/2017	113.6026	12/18/2018	12/18/2019		12/17/2020
12/18/2016		12/19/2017	120.2092	12/19/2018	12/19/2019	135.1134	12/18/2020
12/19/2016		12/20/2017	111.7229	12/20/2018	12/20/2019	159.4583	12/19/2020
12/20/2016		12/21/2017	72.5495	12/21/2018	12/21/2019	157.8052	12/20/2020
12/21/2016		12/22/2017	93.26903	12/22/2018	12/22/2019	122.1427	12/21/2020
12/22/2016		12/23/2017	137.2001	12/23/2018	12/23/2019	131.9214	12/22/2020
12/23/2016		12/24/2017	129.6673	12/24/2018	12/24/2019	132.3953	12/23/2020
12/24/2016		12/25/2017	112.9445	12/25/2018	12/25/2019	85.25021	12/24/2020
12/25/2016		12/26/2017	107.1765	12/26/2018	12/26/2019	125.096	12/25/2020

12/26/2016	12/27/2017	97.10333	12/27/2018	82.62367	12/27/2019	93.63993	12/26/2020
12/27/2016	12/28/2017	84.41651	12/28/2018	99.61209	12/28/2019	134.6426	12/27/2020
12/28/2016	12/29/2017	78.96979	12/29/2018	140.8367	12/29/2019		12/28/2020
12/29/2016	12/30/2017	95.84413	12/30/2018		12/30/2019		12/29/2020
12/30/2016	12/31/2017	101.7109	12/31/2018		12/31/2019		12/30/2020
12/31/2016							12/31/2020

### PM<sub>2.5</sub> daily

Date	Value	Date	Value	Date	Value	Date	Value	Date	Value
1/1/2016		1/1/2017		1/1/2018	70.40931	1/1/2019		1/1/2020	
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1/3/2016		1/3/2017	111.5915	1/3/2018	91.15451	1/3/2019		1/3/2020	
1/4/2016		1/4/2017	131.5523	1/4/2018	91.51111	1/4/2019	152.976	1/4/2020	
1/5/2016		1/5/2017	87.96306	1/5/2018	92.22678	1/5/2019	101.2355	1/5/2020	
1/6/2016		1/6/2017	101.4076	1/6/2018	87.93056	1/6/2019	107.5528	1/6/2020	
1/7/2016		1/7/2017	126.8638	1/7/2018	108.676	1/7/2019		1/7/2020	
1/8/2016		1/8/2017	88.47962	1/8/2018	107.136	1/8/2019		1/8/2020	
1/9/2016		1/9/2017	108.824	1/9/2018	129.4701	1/9/2019		1/9/2020	
1/10/2016		1/10/2017	80.62599	1/10/2018	109.8693	1/10/2019		1/10/2020	
1/11/2016		1/11/2017	108.2489	1/11/2018	78.25094	1/11/2019		1/11/2020	
1/12/2016		1/12/2017	139.3982	1/12/2018	91.92205	1/12/2019		1/12/2020	
1/13/2016		1/13/2017	139.2628	1/13/2018	100.9663	1/13/2019		1/13/2020	
1/14/2016		1/14/2017	174.2142	1/14/2018	90.0521	1/14/2019		1/14/2020	
1/15/2016		1/15/2017	164.8586	1/15/2018	72.52212	1/15/2019		1/15/2020	
1/16/2016		1/16/2017	144.1606	1/16/2018	67.95155	1/16/2019		1/16/2020	
1/17/2016		1/17/2017	113.1003	1/17/2018	65.81552	1/17/2019		1/17/2020	

1/18/2016	1/18/2017	119.4924	1/18/2018	92.04728	1/18/2019		1/18/2020
1/19/2016	1/19/2017	95.08201	1/19/2018	92.66354	1/19/2019		1/19/2020
1/20/2016	1/20/2017	100.5895	1/20/2018	71.60917	1/20/2019		1/20/2020
1/21/2016	1/21/2017	131.1159	1/21/2018	79.58632	1/21/2019		1/21/2020
1/22/2016	1/22/2017	122.4196	1/22/2018	120.1903	1/22/2019		1/22/2020
1/23/2016	1/23/2017	133.8163	1/23/2018	132.2633	1/23/2019		1/23/2020
1/24/2016	1/24/2017	125.1994	1/24/2018	59.22716	1/24/2019		1/24/2020
1/25/2016	1/25/2017	104.5757	1/25/2018	95.83472	1/25/2019		1/25/2020
1/26/2016	1/26/2017	93.37019	1/26/2018	104.2241	1/26/2019	10.24937	1/26/2020
1/27/2016	1/27/2017	53.65882	1/27/2018	105.6633	1/27/2019		1/27/2020
1/28/2016	1/28/2017	33.5141	1/28/2018	107.5	1/28/2019		1/28/2020
1/29/2016	1/29/2017	70.44271	1/29/2018	103.5627	1/29/2019		1/29/2020
1/30/2016	1/30/2017	57.28838	1/30/2018	112.5564	1/30/2019		1/30/2020
1/31/2016	1/31/2017	50.4209	1/31/2018	111.4683	1/31/2019		1/31/2020
2/1/2016	2/1/2017	78.86368	2/1/2018	111.2948	2/1/2019		2/1/2020
2/2/2016	2/2/2017	98.3532	2/2/2018	109.8103	2/2/2019		2/2/2020
2/3/2016	2/3/2017	94.60208	2/3/2018	107.849	2/3/2019		2/3/2020
2/4/2016	2/4/2017	95.83438	2/4/2018	79.21319	2/4/2019		2/4/2020
2/5/2016	2/5/2017	82.05944	2/5/2018	99.62783	2/5/2019		2/5/2020
2/6/2016	2/6/2017	79.75174	2/6/2018	146.9471	2/6/2019		2/6/2020
2/7/2016	2/7/2017	69.02896	2/7/2018	115.2487	2/7/2019		2/7/2020
2/8/2016	2/8/2017	84.53576	2/8/2018	81.65375	2/8/2019		2/8/2020
2/9/2016	2/9/2017	90.69632	2/9/2018	66.59125	2/9/2019		2/9/2020
2/10/2016	2/10/2017	77.58687	2/10/2018	66.52166	2/10/2019		2/10/2020
2/11/2016	2/11/2017	103.3802	2/11/2018	97.78324	2/11/2019		2/11/2020
2/12/2016	2/12/2017	94.3343	2/12/2018	84.73368	2/12/2019		2/12/2020

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2/14/2016	2/14/2017	89.23646	2/14/2018	47.52818	2/14/2019	2/14/2020
2/15/2016	2/15/2017	128.249	2/15/2018	73.21435	2/15/2019	2/15/2020
2/16/2016	2/16/2017	120.3963	2/16/2018	92.12485	2/16/2019	2/16/2020
2/17/2016	2/17/2017	106.6633	2/17/2018	96.3291	2/17/2019	2/17/2020
2/18/2016	2/18/2017	92.33757	2/18/2018	94.25963	2/18/2019	2/18/2020
2/19/2016	2/19/2017	96.76049	2/19/2018	77.78943	2/19/2019	2/19/2020
2/20/2016	2/20/2017	118.0067	2/20/2018	79.17514	2/20/2019	2/20/2020
2/21/2016	2/21/2017	92.21042	2/21/2018	82.0016	2/21/2019	2/21/2020
2/22/2016	2/22/2017	61.45896	2/22/2018	97.35443	2/22/2019	2/22/2020
2/23/2016	2/23/2017	52.43479	2/23/2018	88.88771	2/23/2019	2/23/2020
2/24/2016	2/24/2017	62.92021	2/24/2018	85.70681	2/24/2019	2/24/2020
2/25/2016	2/25/2017	83.93	2/25/2018	72.30401	2/25/2019	2/25/2020
2/26/2016	2/26/2017	90.26736	2/26/2018	56.73161	2/26/2019	2/26/2020
2/27/2016	2/27/2017	91.53299	2/27/2018	64.76077	2/27/2019	2/27/2020
2/28/2016	2/28/2017	113.0188	2/28/2018	70.04104	2/28/2019	2/28/2020
2/29/2016	3/1/2017	103.164	3/1/2018	69.36222	3/1/2019	2/29/2020
3/1/2016	3/2/2017	75.62472	3/2/2018	61.53146	3/2/2019	3/1/2020
3/2/2016	3/3/2017	30.36542	3/3/2018	40.78504	3/3/2019	3/2/2020
3/3/2016	3/4/2017	32.4341	3/4/2018	36.17801	3/4/2019	3/3/2020
3/4/2016	3/5/2017	44.44701	3/5/2018	31.52705	3/5/2019	3/4/2020
3/5/2016	3/6/2017	63.95493	3/6/2018	29.95357	3/6/2019	3/5/2020
3/6/2016	3/7/2017	65.40646	3/7/2018	40.26542	3/7/2019	3/6/2020
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3/8/2016	3/9/2017	53.5184	3/9/2018	52.87222	3/9/2019	3/8/2020
3/9/2016	3/10/2017	30.98181	3/10/2018	54.91788	3/10/2019	3/9/2020

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3/11/2016	3/12/2017	21.99403	3/12/2018	57.49528	3/12/2019	3/11/2020
3/12/2016	3/13/2017	48.76243	3/13/2018	59.25854	3/13/2019	3/12/2020
3/13/2016	3/14/2017	55.82229	3/14/2018	56.73937	3/14/2019	3/13/2020
3/14/2016	3/15/2017	51.86638	3/15/2018	58.66977	3/15/2019	3/14/2020
3/15/2016	3/16/2017	66.26243	3/16/2018	28.17123	3/16/2019	3/15/2020
3/16/2016	3/17/2017	52.87694	3/17/2018	29.53278	3/17/2019	3/16/2020
3/17/2016	3/18/2017	37.89861	3/18/2018	35.99352	3/18/2019	3/17/2020
3/18/2016	3/19/2017	48.30868	3/19/2018	54.18895	3/19/2019	3/18/2020
3/19/2016	3/20/2017	44.64681	3/20/2018	47.2778	3/20/2019	3/19/2020
3/20/2016	3/21/2017	51.17368	3/21/2018	61.31389	3/21/2019	3/20/2020
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3/22/2016	3/23/2017	62.3126	3/23/2018	30.98342	3/23/2019	3/22/2020
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3/24/2016	3/25/2017	50.58132	3/25/2018	41.10139	3/25/2019	3/24/2020
3/25/2016	3/26/2017	40.34118	3/26/2018	32.5925	3/26/2019	3/25/2020
3/26/2016	3/27/2017	46.09104	3/27/2018	46.83788	3/27/2019	3/26/2020
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4/5/2016	4/6/2017	32.17394	4/6/2018	22.09534	4/6/2019		4/5/2020	66.6246
4/6/2016	4/7/2017	35.03193	4/7/2018	15.28008	4/7/2019		4/6/2020	43.7707
4/7/2016	4/8/2017	41.65674	4/8/2018	29.32626	4/8/2019		4/7/2020	40.08718
4/8/2016	4/9/2017	52.13394	4/9/2018	21.59674	4/9/2019		4/8/2020	59.51482
4/9/2016	4/10/2017	42.03933	4/10/2018	19.81097	4/10/2019		4/9/2020	62.72522
4/10/2016	4/11/2017	71.73118	4/11/2018	26.46324	4/11/2019		4/10/2020	59.34586
4/11/2016	4/12/2017	111.1927	4/12/2018	27.60081	4/12/2019		4/11/2020	79.63826
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4/17/2016	4/18/2017	44.62243	4/18/2018	20.64271	4/18/2019	29.78015	4/17/2020	31.85708
4/18/2016	4/19/2017	47.2666	4/19/2018	18.81414	4/19/2019	34.26048	4/18/2020	24.3368
4/19/2016	4/20/2017	21.41236	4/20/2018	22.60591	4/20/2019	50.26246	4/19/2020	31.52868
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4/21/2016	4/22/2017	24.2771	4/22/2018	21.99037	4/22/2019	41.30195	4/21/2020	17.65668
4/22/2016	4/23/2017		4/23/2018	31.23836	4/23/2019	39.3788	4/22/2020	19.38929
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4/24/2016	4/25/2017		4/25/2018	50.38829	4/25/2019	48.78956	4/24/2020	21.76294
4/25/2016	4/26/2017	30.68587	4/26/2018	27.27487	4/26/2019	51.96549	4/25/2020	34.4517
4/26/2016	4/27/2017	47.52099	4/27/2018	18.52434	4/27/2019	38.93137	4/26/2020	26.41964
4/27/2016	4/28/2017	47.09043	4/28/2018	22.96367	4/28/2019	50.53025	4/27/2020	35.12942
4/28/2016	4/29/2017	51.25292	4/29/2018	20.78995	4/29/2019	40.30347	4/28/2020	29.45916
4/29/2016	4/30/2017	36.46712	4/30/2018	8.142604	4/30/2019	43.43855	4/29/2020	42.48959
4/30/2016	5/1/2017	31.36717	5/1/2018	12.98904	5/1/2019	37.49736	4/30/2020	35.80325

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5/2/2016	5/3/2017	47.75773	5/3/2018	12.95389	5/3/2019	24.27027	5/2/2020
5/3/2016	5/4/2017	40.27923	5/4/2018	15.88692	5/4/2019	24.5703	5/3/2020
5/4/2016	5/5/2017	32.25132	5/5/2018	16.69474	5/5/2019	45.96794	5/4/2020
5/5/2016	5/6/2017	47.0139	5/6/2018	36.66051	5/6/2019	60.0018	5/5/2020
5/6/2016	5/7/2017	32.11358	5/7/2018	31.25014	5/7/2019	64.64228	5/6/2020
5/7/2016	5/8/2017	32.58815	5/8/2018	33.64319	5/8/2019	57.26257	5/7/2020
5/8/2016	5/9/2017	19.79732	5/9/2018	27.9406	5/9/2019	49.35397	5/8/2020
5/9/2016	5/10/2017	22.94624	5/10/2018	37.22308	5/10/2019	71.44776	5/9/2020
5/10/2016	5/11/2017	28.29301	5/11/2018	27.73583	5/11/2019	64.1216	5/10/2020
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5/16/2016	5/17/2017	13.79387	5/17/2018	22.66008	5/17/2019	40.07251	5/16/2020
5/17/2016	5/18/2017	24.31135	5/18/2018	25.49007	5/18/2019	38.73388	5/17/2020
5/18/2016	5/19/2017	29.00926	5/19/2018	20.86035	5/19/2019	44.32883	5/18/2020
5/19/2016	5/20/2017	31.61766	5/20/2018	16.55965	5/20/2019	55.04593	5/19/2020
5/20/2016	5/21/2017	30.24991	5/21/2018	24.10403	5/21/2019	40.44166	5/20/2020
5/21/2016	5/22/2017	35.42215	5/22/2018	22.18181	5/22/2019	32.14572	5/21/2020
5/22/2016	5/23/2017	31.1476	5/23/2018	22.28354	5/23/2019	27.23128	5/22/2020
5/23/2016	5/24/2017	41.34515	5/24/2018	15.9942	5/24/2019	24.57949	5/23/2020
5/24/2016	5/25/2017	37.06049	5/25/2018	22.77396	5/25/2019	24.58973	5/24/2020
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12/15/2016		12/16/2017	88.53408	12/16/2018	12/16/2019		12/15/2020
12/16/2016		12/17/2017	89.94382	12/17/2018	12/17/2019		12/16/2020
12/17/2016		12/18/2017	116.6738	12/18/2018	12/18/2019		12/17/2020
12/18/2016		12/19/2017	122.3778	12/19/2018	12/19/2019	149.8148	12/18/2020
12/19/2016		12/20/2017	114.0046	12/20/2018	12/20/2019	179.1606	12/19/2020
12/20/2016		12/21/2017	76.68738	12/21/2018	12/21/2019	171.5028	12/20/2020

12/21/2016	12/22/2017	96.6318	12/22/2018		12/22/2019	136.2594	12/21/2020
12/22/2016	12/23/2017	140.3832	12/23/2018		12/23/2019	149.667	12/22/2020
12/23/2016	12/24/2017	132.5613	12/24/2018		12/24/2019	144.3614	12/23/2020
12/24/2016	12/25/2017	114.3693	12/25/2018		12/25/2019	91.52979	12/24/2020
12/25/2016	12/26/2017	108.916	12/26/2018		12/26/2019	137.0756	12/25/2020
12/26/2016	12/27/2017	98.42167	12/27/2018	94.22684	12/27/2019	104.0224	12/26/2020
12/27/2016	12/28/2017	85.71362	12/28/2018	110.871	12/28/2019	147.1512	12/27/2020
12/28/2016	12/29/2017	80.02826	12/29/2018	154.8195	12/29/2019		12/28/2020
12/29/2016	12/30/2017	97.86673	12/30/2018		12/30/2019		12/29/2020
12/30/2016	12/31/2017	103.2773	12/31/2018		12/31/2019		12/30/2020
12/31/2016							12/31/2020

### PM<sub>10</sub> daily

Date	Value	Date	Value	Date	Value	Date	Value	Date	Value
1/1/2016		1/1/2017		1/1/2018	72.45174	1/1/2019		1/1/2020	
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1/3/2016		1/3/2017	127.8592	1/3/2018	94.51632	1/3/2019		1/3/2020	
1/4/2016		1/4/2017	140.8514	1/4/2018	95.98785	1/4/2019	196.4851	1/4/2020	
1/5/2016		1/5/2017	94.7814	1/5/2018	98.98179	1/5/2019	129.2374	1/5/2020	
1/6/2016		1/6/2017	117.9393	1/6/2018	95.05868	1/6/2019	120.3928	1/6/2020	
1/7/2016		1/7/2017	139.3304	1/7/2018	114.6502	1/7/2019		1/7/2020	
1/8/2016		1/8/2017	123.2188	1/8/2018	118.3458	1/8/2019		1/8/2020	
1/9/2016		1/9/2017	131.5402	1/9/2018	135.2601	1/9/2019		1/9/2020	
1/10/2016		1/10/2017	103.6747	1/10/2018	115.6141	1/10/2019		1/10/2020	
1/11/2016		1/11/2017	137.88	1/11/2018	81.63208	1/11/2019		1/11/2020	
1/12/2016		1/12/2017	168.2451	1/12/2018	97.68979	1/12/2019		1/12/2020	

1/13/2016	1/13/2017	165.8976	1/13/2018	104.4319	1/13/2019		1/13/2020
1/14/2016	1/14/2017	200.8149	1/14/2018	91.59599	1/14/2019		1/14/2020
1/15/2016	1/15/2017	182.2677	1/15/2018	74.09733	1/15/2019		1/15/2020
1/16/2016	1/16/2017	163.0431	1/16/2018	70.72053	1/16/2019		1/16/2020
1/17/2016	1/17/2017	131.3017	1/17/2018	67.44561	1/17/2019		1/17/2020
1/18/2016	1/18/2017	135.4446	1/18/2018	93.82772	1/18/2019		1/18/2020
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1/20/2016	1/20/2017	115.779	1/20/2018	74.23583	1/20/2019		1/20/2020
1/21/2016	1/21/2017	153.821	1/21/2018	82.41275	1/21/2019		1/21/2020
1/22/2016	1/22/2017	138.8217	1/22/2018	125.6209	1/22/2019		1/22/2020
1/23/2016	1/23/2017	149.1926	1/23/2018	139.3502	1/23/2019		1/23/2020
1/24/2016	1/24/2017	136.0036	1/24/2018	65.36017	1/24/2019		1/24/2020
1/25/2016	1/25/2017	121.1832	1/25/2018	103.5143	1/25/2019		1/25/2020
1/26/2016	1/26/2017	115.0461	1/26/2018	107.8399	1/26/2019	15.8177	1/26/2020
1/27/2016	1/27/2017	61.07118	1/27/2018	110.1294	1/27/2019		1/27/2020
1/28/2016	1/28/2017	36.68007	1/28/2018	114.5518	1/28/2019		1/28/2020
1/29/2016	1/29/2017	73.81555	1/29/2018	106.6046	1/29/2019		1/29/2020
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1/31/2016	1/31/2017	53.50333	1/31/2018	118.2417	1/31/2019		1/31/2020
2/1/2016	2/1/2017	81.98431	2/1/2018	117.8433	2/1/2019		2/1/2020
2/2/2016	2/2/2017	103.0378	2/2/2018	117.9589	2/2/2019		2/2/2020
2/3/2016	2/3/2017	99.42542	2/3/2018	117.6469	2/3/2019		2/3/2020
2/4/2016	2/4/2017	102.8342	2/4/2018	89.8584	2/4/2019		2/4/2020
2/5/2016	2/5/2017	93.53368	2/5/2018	113.2825	2/5/2019		2/5/2020
2/6/2016	2/6/2017	87.68847	2/6/2018	160.2745	2/6/2019		2/6/2020
2/7/2016	2/7/2017	80.63007	2/7/2018	132.094	2/7/2019		2/7/2020

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2/9/2016	2/9/2017	101.0226	2/9/2018	84.85449	2/9/2019	2/9/2020
2/10/2016	2/10/2017	88.60181	2/10/2018	79.3277	2/10/2019	2/10/2020
2/11/2016	2/11/2017	119.714	2/11/2018	118.9303	2/11/2019	2/11/2020
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2/14/2016	2/14/2017	104.5603	2/14/2018	50.12215	2/14/2019	2/14/2020
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2/17/2016	2/17/2017	122.377	2/17/2018	103.5959	2/17/2019	2/17/2020
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2/20/2016	2/20/2017	130.0738	2/20/2018	90.72063	2/20/2019	2/20/2020
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2/23/2016	2/23/2017	75.48076	2/23/2018	100.8803	2/23/2019	2/23/2020
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2/29/2016	3/1/2017	125.41	3/1/2018	75.63278	3/1/2019	2/29/2020
3/1/2016	3/2/2017	96.62868	3/2/2018	66.82458	3/2/2019	3/1/2020
3/2/2016	3/3/2017	46.44854	3/3/2018	52.41626	3/3/2019	3/2/2020
3/3/2016	3/4/2017	50.96257	3/4/2018	44.13165	3/4/2019	3/3/2020
3/4/2016	3/5/2017	61.85326	3/5/2018	40.54991	3/5/2019	3/4/2020

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3/10/2016	3/11/2017	17.43791	3/11/2018	82.31681	3/11/2019	3/10/2020
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3/12/2016	3/13/2017	54.62938	3/13/2018	72.22273	3/13/2019	3/12/2020
3/13/2016	3/14/2017	64.92132	3/14/2018	71.32806	3/14/2019	3/13/2020
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3/27/2016	3/28/2017	61.70764	3/28/2018	59.33611	3/28/2019	3/27/2020
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3/30/2016	3/31/2017	43.78535	3/31/2018	31.07269	3/31/2019	3/30/2020

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4/3/2016	4/4/2017	55.93604	4/4/2018	35.1938	4/4/2019		4/3/2020	67.59812
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4/6/2016	4/7/2017	90.11833	4/7/2018	19.95333	4/7/2019		4/6/2020	99.38057
4/7/2016	4/8/2017	128.8398	4/8/2018	41.37449	4/8/2019		4/7/2020	96.70768
4/8/2016	4/9/2017	163.4313	4/9/2018	27.63868	4/9/2019		4/8/2020	121.9161
4/9/2016	4/10/2017	144.6139	4/10/2018	21.84285	4/10/2019		4/9/2020	119.9053
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4/14/2016	4/15/2017	81.00369	4/15/2018	68.27947	4/15/2019		4/14/2020	89.52436
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4/16/2016	4/17/2017	80.26722	4/17/2018	40.6272	4/17/2019	206.0446	4/16/2020	66.30676
4/17/2016	4/18/2017	110.1662	4/18/2018	33.11194	4/18/2019	72.95424	4/17/2020	59.03541
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4/19/2016	4/20/2017	38.76417	4/20/2018	33.03949	4/20/2019	139.8031	4/19/2020	74.10181
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4/23/2016	4/24/2017		4/24/2018	117.8059	4/24/2019	95.70639	4/23/2020	35.11884
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5/1/2016	5/2/2017	94.01578	5/2/2018	24.33035	5/2/2019	63.87708	5/1/2020	21.91359
5/2/2016	5/3/2017	99.63422	5/3/2018	17.93535	5/3/2019	46.28416	5/2/2020	
5/3/2016	5/4/2017	93.68232	5/4/2018	25.07324	5/4/2019	47.86538	5/3/2020	
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6/3/2016	6/4/2017	88.51524	6/4/2018	28.97456	6/4/2019	58.26706	6/3/2020
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