

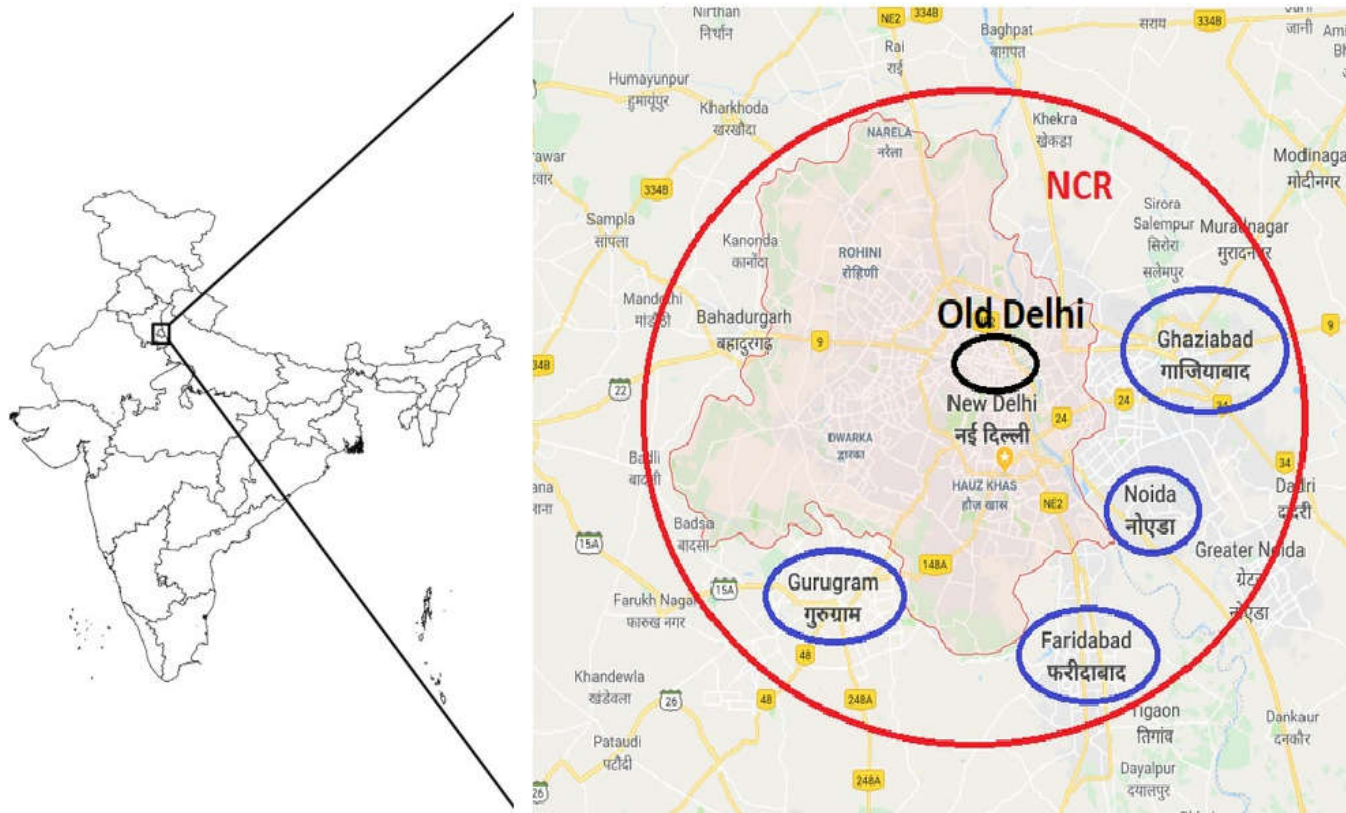
# Air Quality improvements in National Capital Region (NCR) Delhi due to COVID-19 lockdowns

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During COVID-19 pandemic, a nationwide lockdown is imposed in India in different phases (Phase-1: 24<sup>th</sup> March to 14<sup>th</sup> April, Phase-2: 15<sup>th</sup> April to 3<sup>rd</sup> May, Phase-3: 4<sup>th</sup> May to 17<sup>th</sup> May and Phase-4(state-wise): 18<sup>th</sup> May to 31<sup>st</sup> May 2020), NCR Delhi's air quality has been observed:

- PM<sub>10</sub> and PM<sub>2.5</sub> concentrations reduced significantly during lockdown period and about 67% decrement has been observed for PM<sub>2.5</sub> in compare with the pre-lockdown.
- NO<sub>2</sub> concentrations also shown decline approximately 73% during lockdown in comparison with pre-lockdown.
- The air quality of NCR Delhi's transportation and industrial locations are also have been improved. The central and Eastern Delhi have experienced maximum improvement in air quality.

# Data Collection and Analysis



## Air Quality Data:

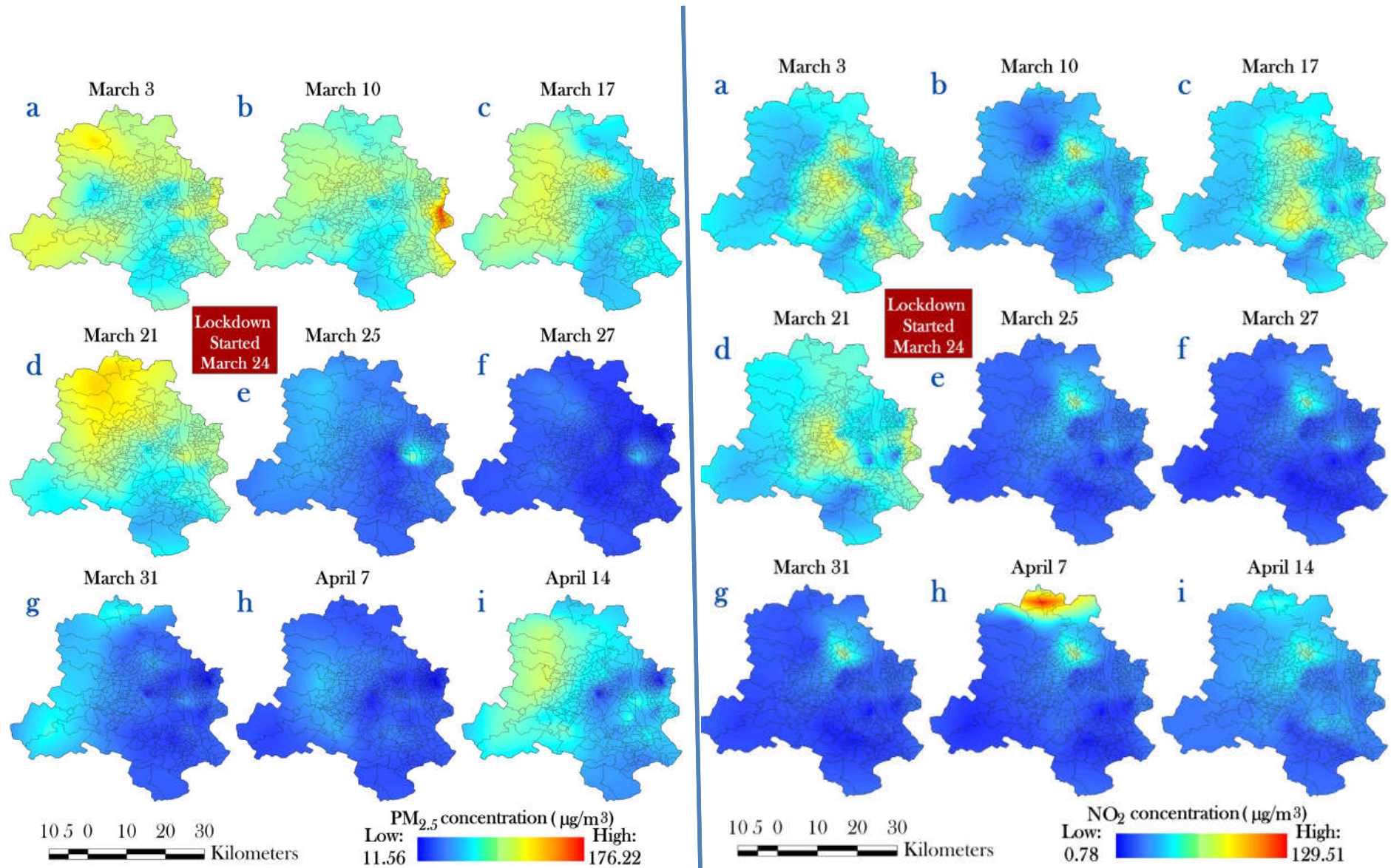
Hourly and Daily concentration data of  $PM_{2.5}$ ,  $PM_{10}$  and  $NO_2$  from January-April for the years 2017, 2018, 2019 & 2020 at different locations of NCR Delhi

## Meteorological Parameters:

Hourly and Daily data - Temperature (T), Visibility (VS), Wind Speed (WS), Wind Direction Index (WDI), Relative Humidity (RH), Sea Level Pressure (SLP) from January-April for the years 2017, 2018, 2019 & 2020 in NCR Delhi

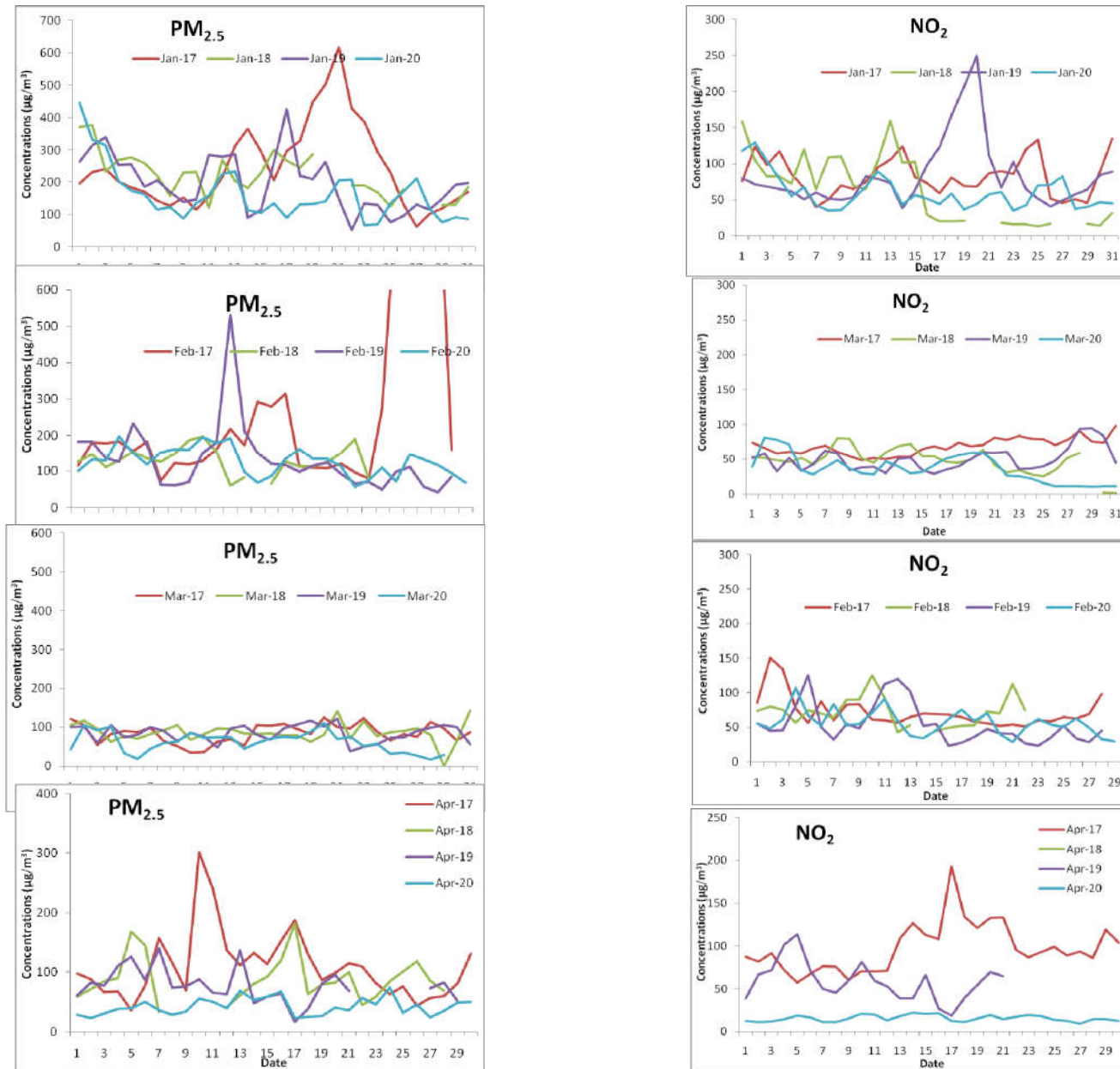
(Source: CPCB, IMD)

# Status in pre-lockdown and during lockdown period over Delhi





# Comparisons of daily concentrations variations at Sirifort, Delhi for the same month for the years 2017, 2018, 2019 & 2020



**Basic statistics pertaining to 24 h average concentration of PM<sub>2.5</sub> and NO<sub>2</sub> for the period of 24<sup>th</sup> March to 30<sup>th</sup> April during 2017 to 2020 at Sirifort, NCR Delhi**

| Statistics for PM <sub>2.5</sub> | 2017 | 2018 | 2019 | Avg of 2017-2019 | 2020 | Variation 2020 & 2019 |      | Variation (2020 & Avg of 2017-19) |      |
|----------------------------------|------|------|------|------------------|------|-----------------------|------|-----------------------------------|------|
|                                  |      |      |      |                  |      | Net                   | %    | Net                               | %    |
| Maximum                          | 301  | 183  | 140  | 208              | 74   | -66                   | -89  | -134                              | -181 |
| Median                           | 89   | 85   | 75   | 83               | 36   | -39                   | -108 | -47                               | -130 |
| Average                          | 104  | 89   | 79   | 91               | 40   | -39                   | -97  | -51                               | -127 |
| Minimum                          | 36   | 33   | 17   | 29               | 16   | -1                    | -5   | -13                               | -77  |

| Statistics for NO <sub>2</sub> | 2017 | 2018 | 2019 | Avg of 2017-2019 | 2020 | Variation 2020 & 2019 |      | Variation (2020 & Avg of 2017-19) |      |
|--------------------------------|------|------|------|------------------|------|-----------------------|------|-----------------------------------|------|
|                                |      |      |      |                  |      | Net                   | %    | Net                               | %    |
| Maximum                        | 193  | 59   | 113  | 122              | 22   | -91                   | -416 | -100                              | -454 |
| Median                         | 88   | 34   | 59   | 60               | 14   | -45                   | -321 | -46                               | -328 |
| Average                        | 94   | 40   | 60   | 64               | 15   | -45                   | -307 | -50                               | -338 |
| Minimum                        | 57   | 26   | 19   | 34               | 9    | -10                   | -115 | -25                               | -284 |