Air Quality Monthly Report

November, 2024

Department of Environment
Ministry of Environment, Forest and Climate Change
Bangladesh

Table of Content

Introduction:

Department of Environment (DoE), Bangladesh has established a countrywide air quality monitoring (AQM) network. The continuous monitoring of 6 (six) criteria pollutants (PM$_{2.5}$, PM$_{10}$, SO$_2$, CO, NOx and O$_3$) is being done by 31(thirty one) Continuous Air Monitoring Stations (CAMS) and Compact Continuous Air Monitoring Stations (C-CAMS) located in the divisional and industrial districts of the country; The network encompasses all the regions of the country - Dhaka, Narayanganj Gazipur, Savar, Mymensing, Narsindi in the center, Chittagong in the south-east. Khulna Cumilla and Barisal in the south, Rajshahi in the west, and Sylhet in the north-east regions, Rangpur in the north west of the country. And C-CAMS are located in Faridpur, Jashore, Satkhira, Bagerhat, Gopalganj, Tangail, Bogura, Tongi, BUET campus, Brahmanbaria, Feni, Noakhali, BSRM (Chattogram), Cox's-Bazar, Nagor Bhaban, Dhaka. The data and information generated from those stations are automatically collected in the central server and are disseminated through DoE website. Air Quality Index (AQI) for each city is calculated and published online daily for notifying the public about the status of air quality in their respective city.

Quality Assurance/Quality Control (QA/QC) methods and procedures are implemented with full documentation and are validated through an international certified calibration reference laboratory. Forms and log sheets document every activity in the air monitoring stations and document all maintenance, calibration, operation and other activities such as all visits to the stations. This monthly report provides an overview and analysis of air quality monitoring data in Bangladesh for the month wise monitoring results.

The report summarizes the data of different CAMS located in different cities of Bangladesh.

Standards of Ambient Air Quality

The Government of Bangladesh has enacted Air Pollution (Control) Rules – 2022 with ambient air quality standards. This report establishes the Air Quality Index (AQI) followed by USEPA guideline to evaluate air pollution.

Table 1: National Ambient Air Quality Standards (NAAQS) for Bangladesh

Pollutant	Limit Value	Averaging time
CO	5 mg/m³	8 hours[a]
	20 mg/m³	1 hour[a]
Pb	0.25 µg/m³	Annual
	0.50 µg/m³	24 hours
NO_x	40 µg/m³	Annual
	80 µg/m³	24 hours
PM_{10}	50 µg/m³	Annual[b]
	150 µg/m³	24 hours[c]
$PM_{2.5}$	35 µg/m³	Annual
	65 µg/m³	24 hours
O_3	180 µg/m³	1 hour[d]
	100 µg/m³	8 hours
SO_2		Annual
	80 µg/m³	24 hours[a]

Table 2: Air quality index (AQI) in Bangladesh

Air quality index (AQI)	Category		Colour
	In English	In Bangla	
0-50	Good	ভাল	Green
51-100	Moderate	মধ্যম	Yellow Green
101-150	Caution	সাবধানতা/সতর্কীকরণ	Yellow
151-200	Unhealthy	অস্বাস্থ্যকর	Orange
201-300	Very Unhealthy	খুব অস্বাস্থ্যকর	Red
301-500	Extremely Unhealthy/Hazardous	অত্যন্ত অস্বাস্থ্যকর	Purple

Location Map of Air Monitoring Stations

Figure 1: Locations Map of Continuous Air Monitoring Stations (CAMS) under Department of Environment in Bangladesh.

Air Quality Monitoring Network in Bangladesh

Legend			
CAMS (DoE)	CAMS (BARC)	C-CAMS (Bogura)	C-CAMS (Nasirabad, CTG.)
CAMS (RCC, sylhet)	CAMS (Darussalam)	C-CAMS (Noakhali)	C-CAMS (Coxs bazar)
CAMS (DFO, Barishal)	CAMS (Gazipur)	C-CAMS (Rampal)	C-CAMS (Faridpur)
CAMS (DoE, M.Singh)	CAMS (Narayanganj)	C-CAMS (Satkhira)	C-CAMS (Feni)
CAMS (BTV Rangpur)	CAMS (Khulshi, CTG.)	C-CAMS (Tangail)	C-CAMS (Gopalganj)
CAMS (Savar)	CAMS (Agrabad, CTG.)	C-CAMS (Tongi)	C-CAMS (Jessore)
CAMS (Narsingdi)	CAMS (Khulna)	C-CAMS (Shampur, Dhaka)	C-CAMS (Dhaka south)
CAMS (Cumilla)	CAMS (Rajshahi)	C-CAMS (B.Baria)	

Station Information

Table 3: Overview of the locations and capacity of the CAMS

City	ID	Location	Latitude/ Longitude	Monitoring Capacity	Year of Est.	Type	Inlet & Met tower Height(m)
Dhaka	CAMS-1	Dept of Environment	23°.77'73.94"N 90°.37'26.03"E		2012	UB/Res	4.8 & 8
	CAMS-2	Farmgate	23°.75'94.10"N 90°.38'86.79"E		2008	Rd/Com	8.8 & 11
	CAMS-3	Darussalam	23°.78'07.75"N 90°.35'54.10"E		2012	UB/Com	8.8 & 11
Gazipur	CAMS-4	Gazipur	23°.99'41.28"N 90°.42'23.15"E		2012	SUB	8.8 & 11
Narayanganj	CAMS-5	Narayanganj	23°.62'60.79"N 90°.50'72.00"E		2012	UB industry	8.8 & 11
Chattogram	CAMS-6	TV Station, Khulshi	22°.36'04.87"N 91°.80'04.54"E		2006	UB1	4.8 & 7
	CAMS-7	Agrabad	22°.32'30.20"N 91°.80'23.36"E	PM_{10}, $PM_{2.5}$, SO_2, CO, O_3 & NOx with Meteorological Parameters	2012	UB/Res	8.8 & 11
Khulna	CAMS-8	Boyra	22°.83'57.75"N 89°.52'90.56"E		2008	UB	6.8 & 10
Rajshahi	CAMS-9	Sapura	24°.38'33.20"N 88°.60'80.07"E		2008	Rd/Res	6.8 & 10
Sylhet	CAMS-10	Red Crecent Campus	24°.88'83.34"N 91°.86'73.47"E		2012	Rd/UB/Res	13.8 & 15
Barishal	CAMS-11	DFO Office Campus	22°.71'02.87"N 90°.36'25.98"E		2012	UB/Res	6.8 & 10
Mymensingh	CAMS-12	DoE Office, Divisional Headquarter	24°.76'24.58"N 90°.40'21.02"E		2019	UB	8.8 & 11
Rangpur	CAMS-13	BTV Rangpur Station	25°.74'73.71"N 89°.22'89.31"E		2019	UB	8.8 & 11
Savar	CAMS-14	Atomic Energy Research Institute	23°.95'37.04"N 90°.27'97.94"E		2019	SUB	10.8 & 14
Narsingdi	CAMS-15	Sadar Upazila Complex	23°.93'24.56"N 90°.71'65.98"E		2019	SUB	8.8 & 11
Cumilla	CAMS-16	Court Area	23°.47'29.88"N 91°.18'06.71"E		2019	UB	8.8 & 11

UB: Urban; Rd: Road; Res: residential; Com: Commercial; SUB: Suburban; Rural: Rural

Table 4: Overview of the locations and capacity of the C-CAMS

City	ID	Location	Lat/Lon	Year of Est.	Type	Monitoring Capacity	Inlet & Met tower Height(m)
Faridpur	C-CAMS-17	Sadar, Faridpur (Municipal Office)	23°.60'64.11"N 89°.83'88.19"E		SUB		9 & 11
Jashore	C-CAMS-18	Sadar, Jashore (circuit house)	23°.16'22.16"N 89°.20'63.70"E		SUB		12 & 14
Satkhira	C-CAMS-19	Shyamnagar, Satkhira	22°.31'59.96"N 89°.04'31.70"E		Rural		5.2 & 7.2
Bagerhat	C-CAMS-20	Rampal, Bagerhat (Maytree Super Thermal Power Project)	22°.59'60.86"N 89°.55'37.20"E		Rural/Industrial		5.7 & 7.7
Gopalganj	C-CAMS-21	Sadar, Gopalganj	23°.00'88.53"N 89°.82'91.60"E		SUB		22 & 24
Tangail	C-CAMS-22	Sadar, Tangail (DoE office)	24°.24'97.96"N 89°.92'93.57"E		SUB		15 & 17
Bogura	C-CAMS-23	Sadar, Bogura (DoE Office)	24°.86'17.79"N 89°.36'11.46"E		SUB		9 & 11
Tongi	C-CAMS-24	BSCIC, Tongi, Gazipur	23°.89'41.74"N 90°.41'12.10"E		Com/ Industrial	PM_{10}, $PM_{2.5}$, SO_2, CO, O_3 & NOx with Meteorological Parameters	18 & 20
BUET	C-CAMS-25	Department of Chemical Engineering, BUET, Dhaka	23°.72'75.91"N 90°.39'27.97"E	2020	UB		10 & 12
Brahmanbaria	C-CAMS-26	Sadar, B.Baria (municipal Office)	23°.97'43.71"N 91°.10'97.69"E		SUB		18 & 20
Feni	C-CAMS-27	Sadar, Feni (DoE Office)	23°.00'62.97"N 91°.38'13.05"E		SUB		18 & 20
Noakhali	C-CAMS-28	Maijdi Bazar, Noakhali (DoE Office)	22°.88'11.48"N 91°.09'69.66"E		SUB		15 & 17
Chattogram BSRM	C-CAMS-29	BSRM, Nasirabad, Chattogram	22°.37'28.38"N 91°.81'80.54"E		UB/Industrial		12 & 14
Cox's-Bazar	C-CAMS-30	Saymon Road, Sadar, Cox's-Bazar (DoE Office)	21°.44'22.08"N 91°.97'10.83"E		SUB		9 & 11
Nagor Bhaban, Dhaka	C-CAMS-31	Nagar Bhaban, DSCC, Dhaka	23°.72'40.75"N 90°.40'91.42"E		UB/Com		13 & 15

UB: Urban; Rd: Road; Res: residential; Com: Commercial; SUB: Suburban; Rural: Rural

Summary of Components
Month of November, 2024

Table 5: Summary of components_ Month of November, 2024

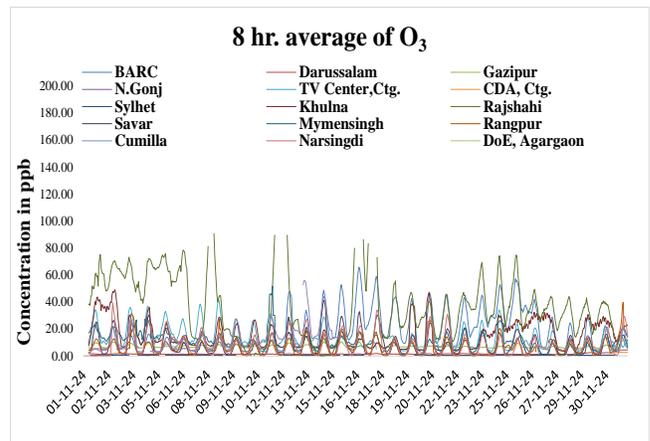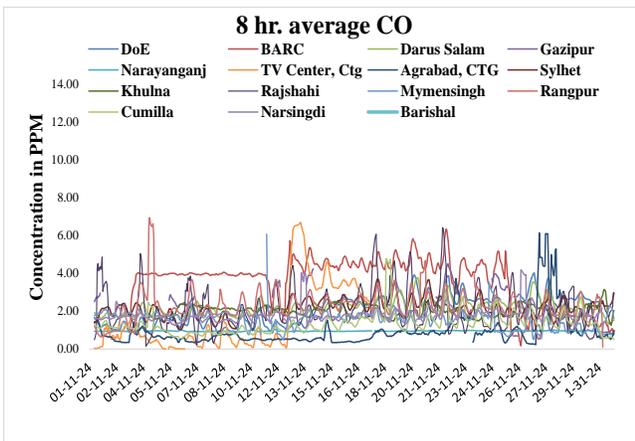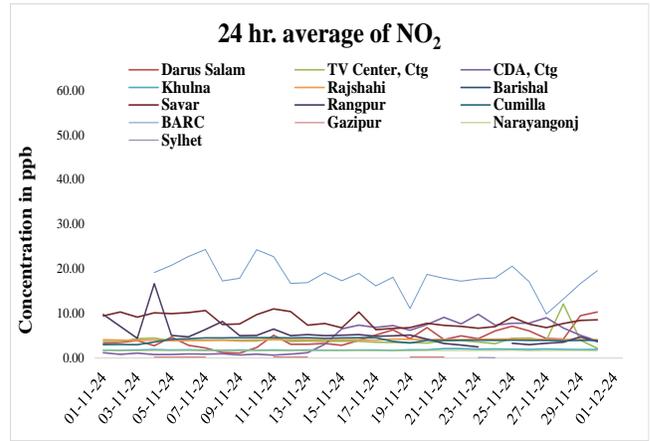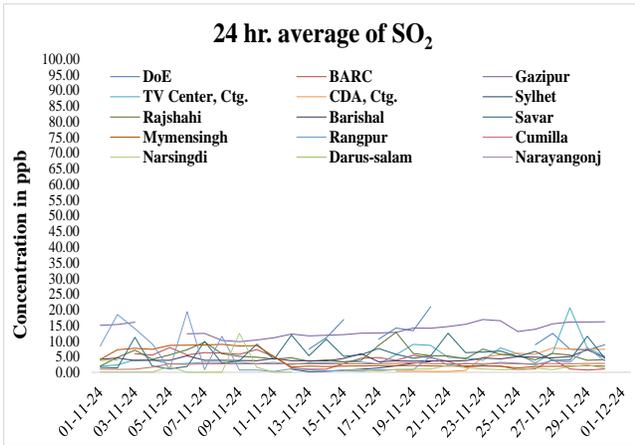| Parameter	Summary	DoE	BARC	Darus-salam, Dhaka	Gazipur	Narayanganj	TV-Station, Chattagram	Agrabad, Chattagram	Sylhet	Khulna	Rajshahi	Barisal	Savar	Mymensingh	Rangpur	Cumilla	Narshingdi
SO_2 -24 hr (ppb)	Average	10.9	3.7	3.9	13.6	DNA	4.8	3.9	1.5	53.3	5.5	4.3	5.9	4.0	4.4	2.6	1.3
	Max	20.9	8.0	4.0	16.8	DNA	20.7	7.8	3.5	95.1	12.8	7.3	12.5	8.9	19.4	3.1	12.5
	Min	3.1	0.7	3.8	9.8	DNA	1.9	0.2	0.2	14.2	2.0	3.4	1.1	1.4	0.3	1.0	0.1
	Excedance(Days)	0.0	0.0	0.0	0.0	DNA	0.0	0.0	0.0	9.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Data capture(%)	41.9	90.3	6.5	90.3	DNA	96.8	45.2	29.0	35.5	96.8	96.8	96.8	96.8	96.8	96.8	90.3
NO2 -24 hr (ppb)	Average	13.3	18.1	4.4	0.2	1.7	4.1	4.3	0.1	1.8	4.1	DNA	8.4	67.1	5.3	4.0	6.4
	Max	135.4	24.3	10.3	0.2	1.7	12.1	9.8	0.1	2.1	4.3	DNA	11.0	112.0	16.7	4.5	17.8
	Min	1.8	9.9	1.1	0.2	1.6	2.2	0.6	0.1	1.7	3.9	DNA	6.3	22.2	2.5	3.0	1.7
	Excedance(Days)	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	DNA	0.0	1.0	0.0	0.0	0.0
	Data capture(%)	93.5	87.1	96.8	35.5	96.8	96.8	96.8	16.1	96.8	96.8	DNA	96.8	6.5	93.5	96.8	45.2
CO-8hr (ppm)	Average	2.1	3.6	2.2	2.7	1.0	1.6	1.0	2.2	2.0	2.0	DNA	3.9	1.6	2.3	1.4	1.8
	Max	4.0	6.4	3.8	4.5	1.1	6.7	6.2	3.7	3.2	6.4	DNA	34.1	6.1	7.0	4.8	4.2
	Min	0.8	0.2	1.3	0.7	0.8	0.0	0.2	1.0	1.3	0.2	DNA	1.0	0.5	0.1	0.5	1.2
	Excedance(Hour)	2.0	319.0	0.0	11.0	0.0	36.0	21.0	0.0	0.0	42.0	DNA	97.0	1.0	16.0	8.0	6.0
	Data capture(%)	94.4	92.2	99.1	22.0	98.5	52.4	98.8	90.5	88.7	99.1	DNA	91.7	98.1	94.6	98.7	96.8
O_3-8hr (ppb)	Average	DNA	18.0	1.5	7.0	5.3	13.3	2.6	0.5	15.2	34.9	13.1	8.7	10.1	6.7	10.2	8.4
	Max	DNA	65.8	4.4	11.8	5.4	42.4	2.7	0.7	48.9	90.7	55.8	41.3	51.7	39.8	21.6	39.3
	Min	DNA	0.8	1.1	5.7	5.1	2.9	2.6	0.2	3.2	0.1	2.8	0.4	0.9	0.2	2.5	0.1
	Excedance(Hour)	DNA	20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	168.0	5.0	0.0	1.0	0.0	0.0	0.0
	Data capture(%)	DNA	92.2	99.1	99.1	6.7	96.8	3.2	72.6	99.1	90.3	40.9	99.1	99.1	96.4	3.2	98.9
$PM_{2.5}$ -24hr (ug/m3)	Average	90.7	88.8	129.8	133.9	162.6	61.7	DNA	39.6	87.3	99.3	31.1	127.4	99.3	122.4	67.4	106.4
	Max	177.1	157.3	226.5	241.8	252.7	114.0	DNA	87.0	162.9	235.0	154.4	232.5	170.5	250.4	156.1	205.2
	Min	24.5	33.3	37.7	35.4	68.2	12.2	DNA	15.1	5.4	5.1	9.3	46.7	57.0	35.1	9.4	36.1
	Excedance(Days)	19.0	20.0	26.0	23.0	30.0	11.0	DNA	1.0	19.0	21.0	1.0	27.0	28.0	25.0	16.0	23.0
	Data capture(%)	90.3	87.1	90.3	80.6	96.8	96.8	DNA	83.9	96.8	96.8	96.8	96.8	96.8	96.8	96.8	96.8
PM_{10} -24hr (ug/m3)	Average	95.9	181.9	DNA	202.1	DNA	97.5	DNA	128.1	207.4	252.2	DNA	245.3	162.4	195.0	104.2	87.8
	Max	174.4	320.6	DNA	368.5	DNA	192.9	DNA	220.0	348.3	414.3	DNA	400.9	279.3	305.2	212.9	139.2
	Min	34.7	55.4	DNA	74.7	DNA	9.3	DNA	82.3	93.6	135.5	DNA	92.7	103.5	108.5	41.4	40.9
	Excedance(Days)	2.0	18.0	DNA	17.0	DNA	4.0	DNA	3.0	19.0	25.0	DNA	17.0	15.0	12.0	9.0	0.0
	Data capture(%)	93.5	90.3	DNA	83.9	DNA	77.4	DNA	71.0	90.3	96.8	DNA	71.0	96.8	48.4	96.8	54.8
Solar rad. 1hr (W/m2)	Average	34.47	237.33	51.1	2.0	DNA	514.9	137.5	4.6	413.2	227.7	91.8	273.4	245.7	339.5	267.2	333.6
	Max	213.84	705.5	1020.0	14.0	DNA	636.0	623.3	5.1	2095.5	805.0	546.3	724.9	722.8	815.1	651.0	850.1
	Min	8.55	0.1	1008.3	0.0	DNA	57.2	7.4	4.1	0.0	0.2	5.9	0.0	0.0	0.1	0.0	0.0
	Data capture(%)	89.25	51	90	26	DNA	96	94	87	85	47	97	46.1	48.7	45.4	46.2	44.6
Relative Humidity 1hr (%)	Average	59.11	45.0	65.4	DNA	DNA	58.5	66.6	39.7	76.6	92.3	83.0	66.2	87.9	81.7	DNA	36.9
	Max	90.33	78.3	91.4	DNA	DNA	85.2	95.1	39.8	97.9	92.5	87.6	99.2	99.4	99.6	DNA	82.0
	Min	27.59	15.1	31.4	DNA	DNA	57.1	29.1	39.6	64.9	82.7	61.6	27.1	42.3	41.1	DNA	15.2
	Data capture(%)	89.25	94.2	99.7	DNA	DNA	96	94	87	99	99	97	90.1	99.3	98.0	DNA	89.2
Ambient Temp. 1hr (degreeC)	Average	23.85	22.2	30.0	DNA	DNA	25.8	26.3	DNA	26.0	26.2	27.2	23.3	23.4	22.5	24.1	23.8
	Max	36.33	29.2	34.4	DNA	DNA	36.2	43.0	DNA	33.3	36.1	35.0	31.4	30.1	30.4	31.6	31.2
	Min	11.24	15.0	15.9	DNA	DNA	14.9	7.4	DNA	18.0	7.5	13.9	14.7	14.1	8.9	16.3	7.4
	Data capture(%)	89.25	99.1	98	DNA	DNA	96	69	DNA	99	98	97	88.6	99.2	95.0	100.0	89.9
Rainfall 1hr (mm)	Average	DNA	8.13	0.08	0.01	DNA	DNA	0.01	DNA	DNA	3.40	0.26	DNA	1.26	DNA	0.07	0.60
	Max	DNA	20.00	0.08	0.02	DNA	DNA	0.04	DNA	DNA	4.80	0.87	DNA	4.37	DNA	0.18	1.50
	Min	DNA	0.20	0.08	0.01	DNA	DNA	0.01	DNA	DNA	2.00	0.01	DNA	0.03	DNA	0.03	0.30
	Data capture(%)	DNA	0.40	4.84	16.13	DNA	DNA	30.11	DNA	DNA	0.27	81.99	DNA	2.42	DNA	1.21	0.54

CAMS= Continuous Air Monitoring Station, NAAQS=National Ambient Air Quality Standard, a=Refurbisment CAMS, PM= Particulate Matter

DNA= Data Not Available

Table 6: Air Quality Index (AQI), Month of November, 2024

Date	Dhaka	Chittagong	Gazipur	Narayangonj	Sylhet	Khulna	Rajshahi	Barisal	Savar	Mymensingh	Rangpur	Cumilla	Norshindi
01-11-24	175	DNA	156	180	126	183	183	161	180	168	161	158	160
02-11-24	171	DNA	164	262	142	187	161	142	175	179	186	168	168
03-11-24	130	DNA	109	DNA	115	187	164	71	200	170	160	165	169
04-11-24	164	DNA	182	DNA	104	195	167	82	DNA	174	176	155	170
05-11-24	163	DNA	157	181	75	167	151	65	DNA	171	168	98	157
06-11-24	137	DNA	158	163	85	91	162	39	DNA	151	142	42	102
07-11-24	147	55	157	125	42	78	153	DNA	149	114	108	68	151
08-11-24	100	57	76	55	52	52	128	DNA	89	134	143	61	70
09-11-24	91	41	91	63	52	51	71	DNA	87	108	96	55	83
10-11-24	131	DNA	167	83	94	DNA	119	DNA	107	157	96	98	156
11-11-24	139	DNA	167	189	DNA	155	168	48	162	179	163	56	152
12-11-24	165	DNA	167	191	97	155	171	48	175	176	175	99	155
13-11-24	162	DNA	188	194	93	150	144	48	180	153	195	155	158
14-11-24	182	DNA	172	203	93	181	235	70	201	159	202	132	165
15-11-24	193	DNA	184	212	119	185	194	89	224	155	206	155	175
16-11-24	242	DNA	DNA	202	96	178	177	93	282	166	230	158	222
17-11-24	203	DNA	DNA	296	119	180	171	92	244	220	222	195	237
18-11-24	200	DNA	251	267	100	194	236	95	205	177	197	193	206
19-11-24	181	DNA	209	275	162	193	199	77	190	170	184	150	DNA
20-11-24	204	DNA	284	237	116	162	173	DNA	177	161	182	127	DNA
21-11-24	176	DNA	229	232	103	163	186	146	212	169	194	192	DNA
22-11-24	187	DNA	247	190	DNA	182	195	DNA	200	179	188	172	DNA
23-11-24	184	DNA	249	239	DNA	179	264	78	211	180	257	170	DNA
24-11-24	219	DNA	238	302	167	212	278	99	249	192	300	169	212
25-11-24	241	DNA	291	273	138	202	285	116	257	193	255	171	224
26-11-24	192	DNA	261	271	104	155	263	164	212	180	264	173	224
27-11-24	173	DNA	237	270	107	156	212	115	195	179	195	154	196
28-11-24	159	DNA	211	211	141	159	155	164	177	167	168	156	177
29-11-24	155	DNA	174	189	89	154	102	71	DNA	161	175	173	177
30-11-24	158	DNA	162	197	87	129	98	61	DNA	160	181	154	178

Table 7: Graphical representation of Gaseous and Particulate matter.

24 hr. average of SO$_2$

24 hr. average of NO$_2$

8 hr. average CO

8 hr. average of O$_3$

24 hr. average concentration of PM$_{10}$

24 hr. average concentration of PM$_{2.5}$
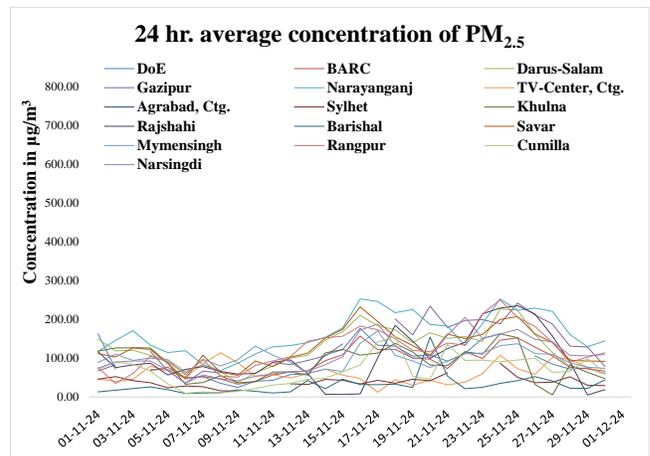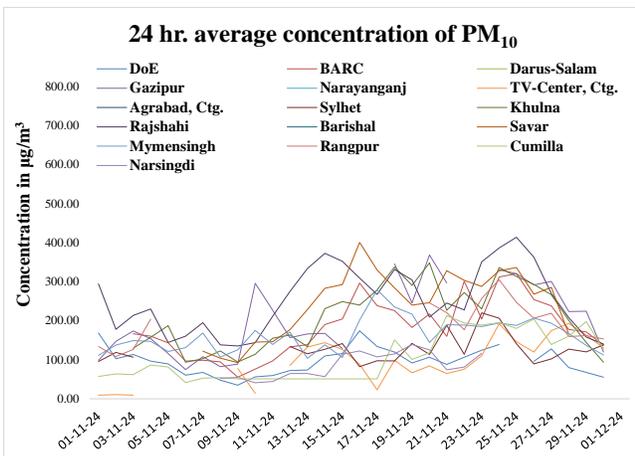
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