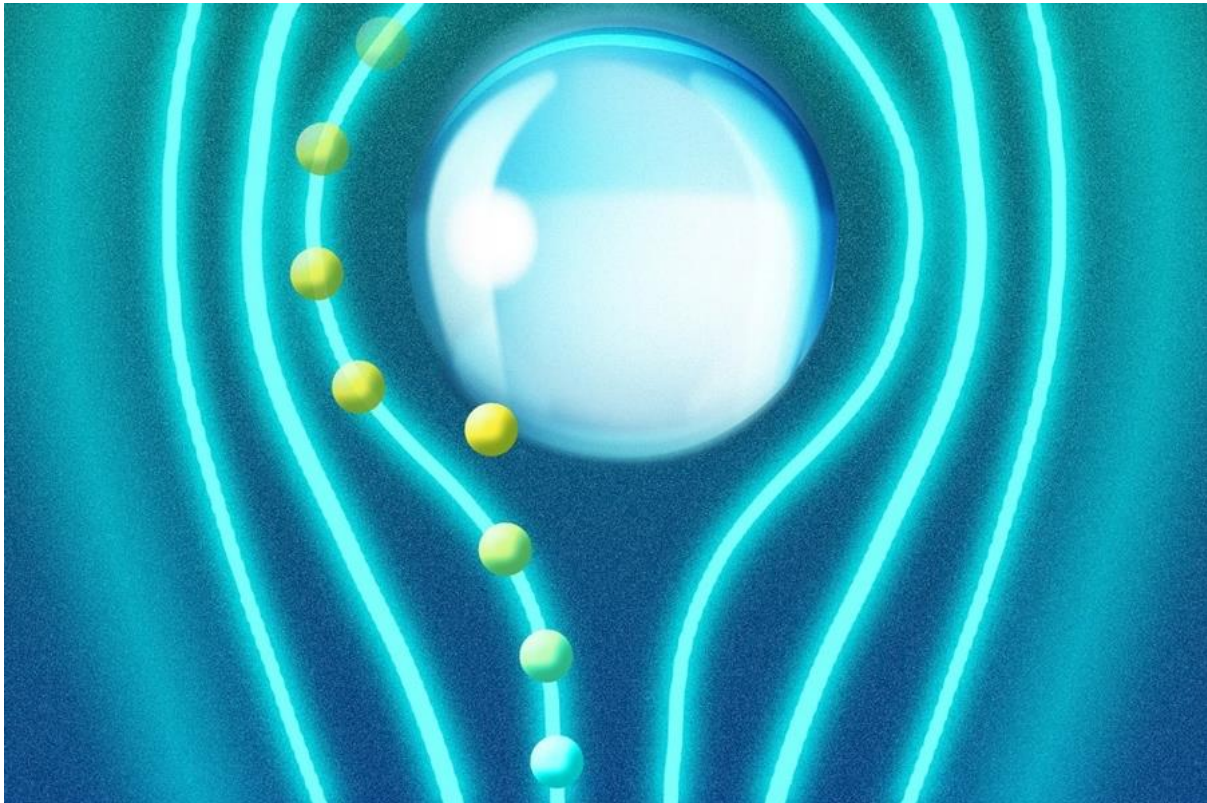


SIX MONTHLY AIR MONITORING ANALYSIS

CATEGORY: BASIC, TRENDS

DURATION: APRIL TO SEPTEMBER

Environics Trust, New Delhi



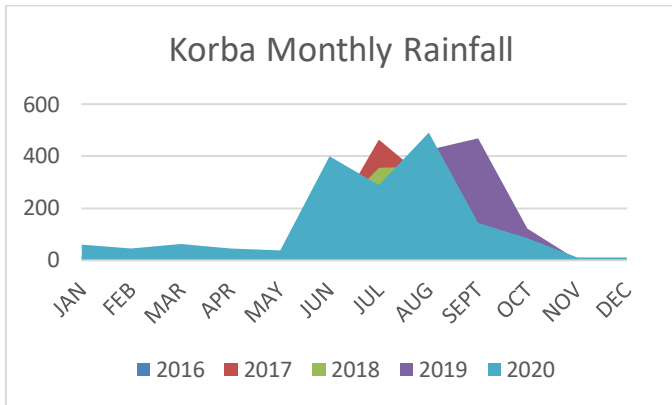
In this illustration, a falling droplet of water is surrounded by the airstream. Aerosol particles (yellow) are attracted to the droplet. The process by which droplets and aerosols attract is coagulation, a natural phenomenon that can act to clear the air of pollutants like soot, sulfates, and organic particles.

Credits:

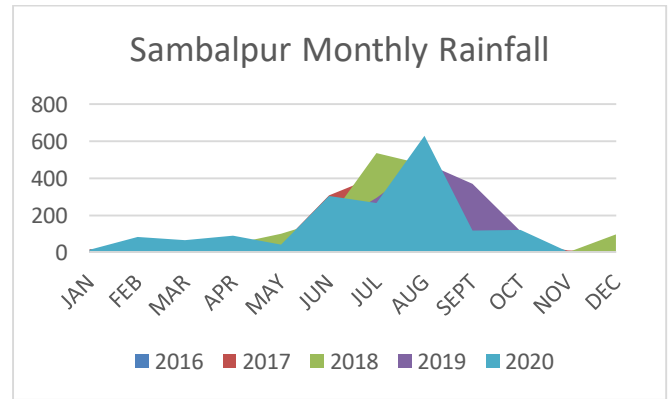
Illustration: Jose-Luis Olivares/MIT

Preview

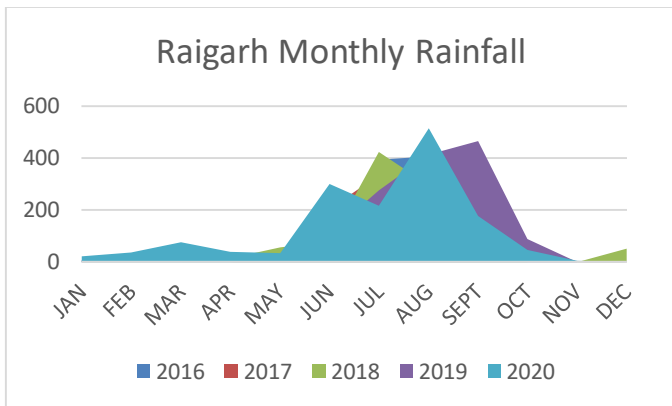
Humidity and Rainfall tend to coagulate aerosols in the air and help clearing the air. The intensity of coagulation that takes place depends on a variety of factors and it cannot be foretold with certainty its level of effectiveness. But it is important to take a note of rainfall that occurs in a region to understand its effect on air physiology. Rainfall patterns have been changing every year and a look at the five-year district rainfall provides some insights in varying rainfall.



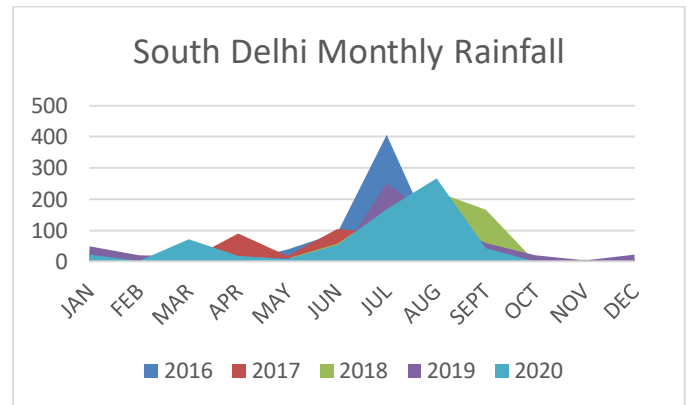
June 2020 witnessed highest rainfall over 2016-2020 period. July rainfall is the highest in 2017 and exceeds that of 2020. September-October rainfall 2019 has been so far the highest.



It is in 2020 that August rainfall has been the highest over this five year period. 2019 and 2018 witnessed more rainfall in July and September over 2020



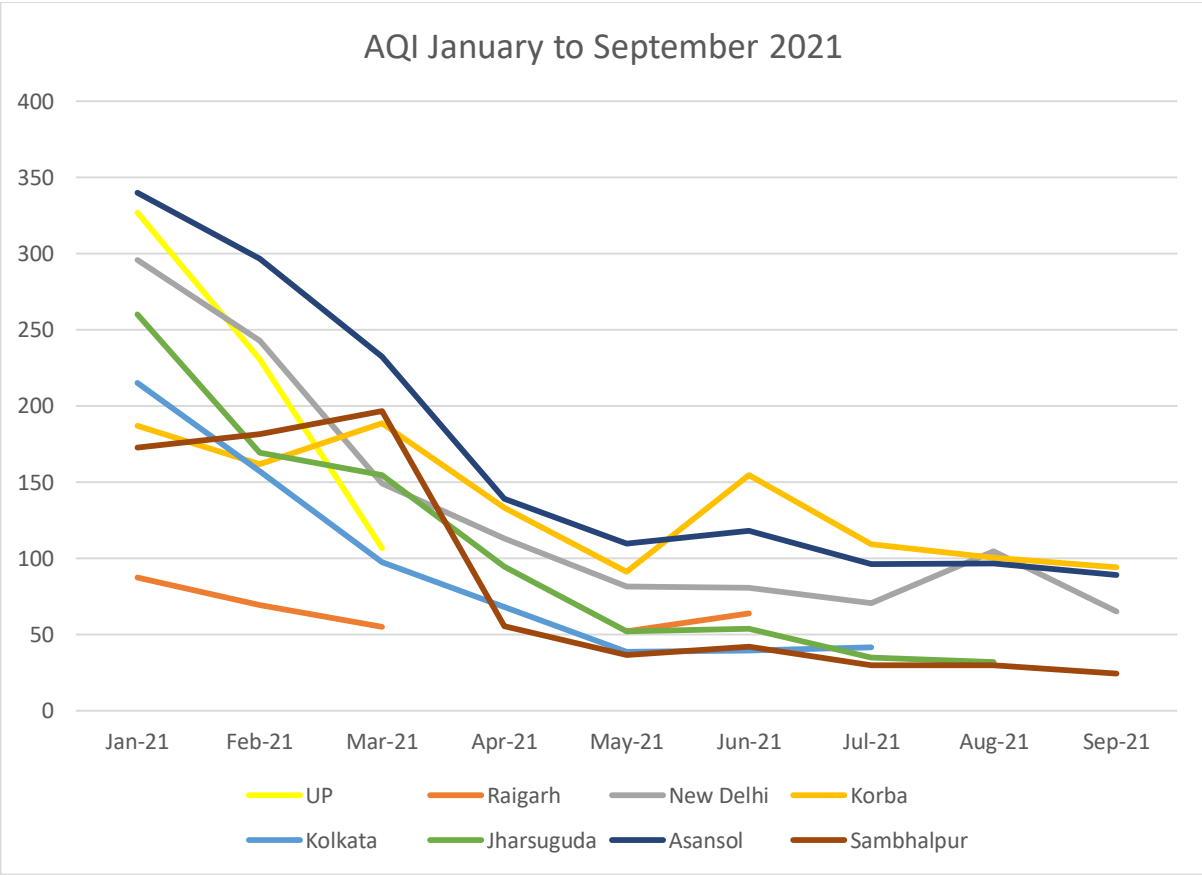
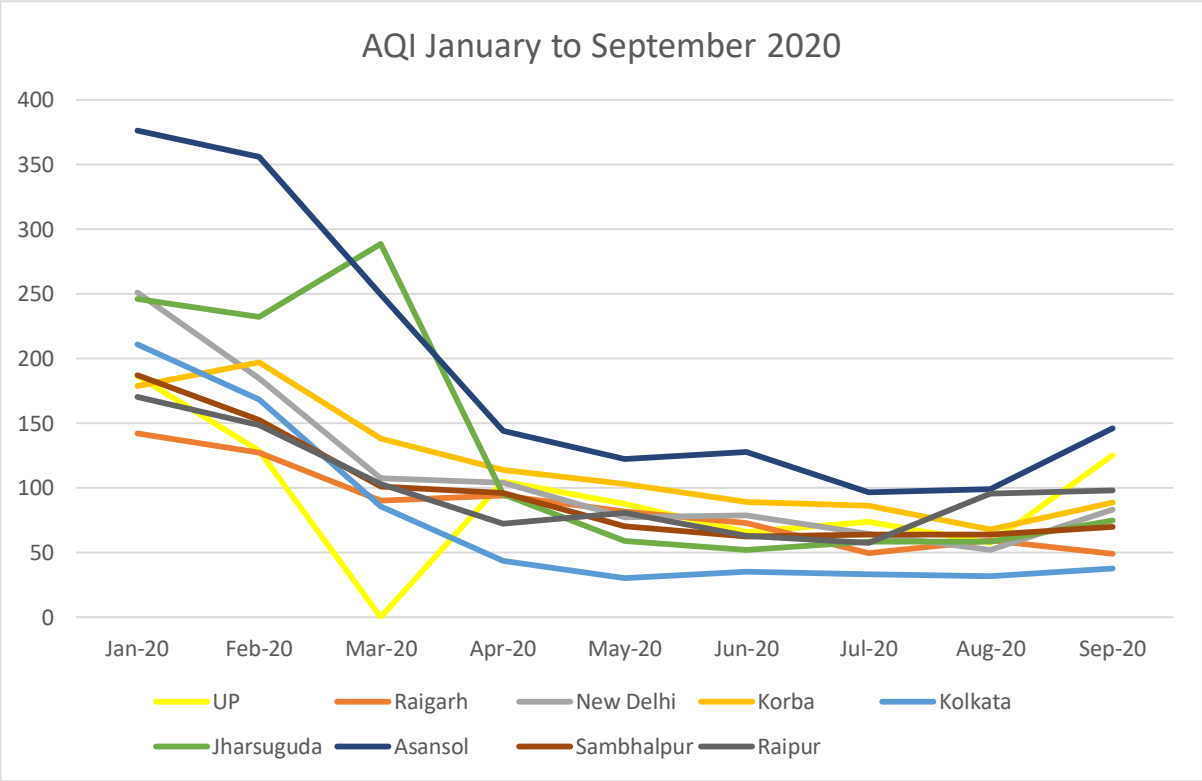
The same trend continues for Raigarh for the period September-October highest rainfall in 2019. June and August remained two months in 2020 exceeding the monthly rainfall pattern over 5 years.



Delhi is a metropolitan region and its large variance in rainfall is witnessed due to regional weather influences and host of loc. Over the 4-month SW monsoon period, each month has a different high rainfall year. June 2017, July 2016, August 2020 and September 2018.

Year	Rainfall (mm)	Year	Rainfall (mm)
2016	41.5	2019	59.1
2017	117.9	2020	41.6
2018	164.8	2021	523.4*

2016-2020 rainfall from IMD for South Delhi; *IARI Meteorological Database System (1.9.2021 to 21.09.2021)



- AQI starts declining from April onwards in both the periods¹ subject to increase in humidity levels due to pre-monsoon rainfalls and it is further showing declining trend during the monsoon period.
- Asansol and Korba both lead the AQI curve.
- The AQI for 2021 period indicates 7 cities in the AQI band of 150 to 350 whereas majority of the cities were in the AQI band of 150 to 250 barring Asansol which had an AQI of 376
- 2021 has seen rise in AQI of Korba which remained under 100 during June-September period in 2020
- Asansol's AQI remained between 100 and 150 for both the periods from April to September for 2020 and 2021

Table 1 – AQI Categorised

	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20	Jul-20	Aug-20	Sep-20
UP	187	129	-	105	88	66	74	57	125
Raigarh	142	127	90	94	82	73	50	60	49
New Delhi	251	185	108	104	77	79	64	52	83
Korba	179	197	138	114	103	89	86	68	89
Kolkata	211	168	86	44	30	35	33	32	38
Jharsuguda	246	232	289	95	59	52	58	58	75
Asansol	376	356	250	144	122	128	97	99	146
Sambhalpur	187	152	101	96	70	62	64	64	70
Raipur	170	149	103	72	81	63	58	96	98

	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21
UP	327	230	107	-	-	-	-	-	-
Raigarh	87	69	55	-	52	64	-	-	-
New Delhi	296	243	149	113	82	81	71	105	65
Korba	187	162	189	133	91	155	109	100	94
Kolkata	215	157	97	68	38	39	42	-	-
Jharsuguda	260	169	155	94	52	54	35	32	-
Asansol	340	296	232	139	110	118	96	97	89
Sambhalpur	172	181	197	56	36	42	30	30	24

Note: '-' indicates no value for the period. Data for September is accounted upto 21.09.2021

0-50	Good
51-100	Satisfactory
101-200	Moderately Polluted
201-300	Poor
301-400	Very Poor
>401	Severe

- Kolkata remained in the good AQI category i.e. <50 for April to September period in 2020. The median value for 2020 was 34 where as it reached 41 in 2021

¹ January to September 2020 and 2021

- Median value of AQI for Korba in 2020 was 103 whereas in 2021 it is 133 for the 9 months period from January till September indicating that the AQI has worsened
- Median value of AQI for Asansol in 2020 was 144 whereas in 2021 it is 118 for the 9 months period from January till September indicating that the AQI has improved in 2021. [Is it due to 36% excess rainfall in Bardhamaan district from January 2021 to September 2021?](#) (Select State 'West Bengal' to see results)
- Median value of AQI for Delhi remained 83 in 2020 and 105 in 2021 for the 9-month period from January till September indicating that the AQI values have increased. [As per IMD, South Delhi District received normal rainfall from January to 21 September](#)
- Median value of AQI remained at 74 for Jharsuguda for both periods.

Table 2 – Month wise past and present AQI Categorisation

	Apr-19	Apr-20	Apr-21	May-19	May-20	May-21	Jun-19	Jun-20	Jun-21
UP	152	105		272	88		334	66	
Raigarh	-	94		-	82	52	121	73	64
New Delhi	110	104	113	100	77	82	99	79	81
Korba	157	114	133	132	103	91	139	89	155
Kolkata	63	44	68	102	30	38	109	35	39
Jharsuguda	-	95	94	-	59	52	207	52	54
Asansol	188	144	139	210	122	110	210	128	118
Sambhalpur	102	96	56	109	70	36	202	62	42
Raipur	80	72	-	80	81	-	82	63	-

	Jul-19	Jul-20	Jul-21	Aug-19	Aug-20	Aug-21	Sep-19	Sep-20	Sep-21
UP	120	74		112	57		93	125	
Raigarh	149	50		132	60		82	49	
New Delhi	100	64	71	110	52	105	140	83	65
Korba	115	86	109	144	68	100	124	89	94
Kolkata	69	33	42	61	32		47	38	
Jharsuguda	107	58	35	133	58	32	99	75	
Asansol	191	97	96	158	99	97	133	146	89
Sambhalpur	169	64	30	211	64	30	179	70	24
Raipur	75	58	-	87	96	-	63	98	-

The positive transition from moderately polluted to satisfactory AQI from 2019 onwards is observed over most of the months whereas few industrial districts/cities like Korba, Asansol and New Delhi almost came back pre 2020 status in few of the months.

Table 3- Number of Days Devices Worked and Number of Days AQI Category in a City

		0-50	51-100	101-200	201-300	301-400	>401	Not Worked	
Uttar Pradesh	Apr-21	3	10	4	0	0	0	13	30
	May-21	4	10	4	0	0	0	13	31
	Jun-21	13	9	1	1	0	3	3	30
	Jul-21	13	9	1	1	0	3	4	31
	Aug-21	26	0	2	0	0	0	3	31
	Sep-21	18	1	0	1	0	1	0	21
Raigarh	Jun-21	4	20	0	0	0	0	6	30
	Jul-21	4	20	0	0	0	0	7	31
New Delhi	Apr-21	0	8	22	0	0	0	0	30
	May-21	0	9	22	0	0	0	0	31
	Jun-21	0	29	1	0	0	0	0	30
	Jul-21	0	30	1	0	0	0	0	31
	Aug-21	2	26	1	0	0	0	2	31
	Sep-21	10	10	0	0	0	0	1	21
Korba	Apr-21	0	4	25	1	0	0	0	30
	May-21	0	5	25	1	0	0	0	31
	Jun-21	0	4	8	9	7	2	0	30
	Jul-21	0	4	9	9	7	2	0	31
	Aug-21	5	15	7	2	1	1	0	31
	Sep-21	1	2	3	0	0	0	15	21
Kolkata	Apr-21	5	24	1	0	0	0	0	30
	May-21	5	25	1	0	0	0	0	31
	Jun-21	27	3	0	0	0	0	0	30
	Jul-21	28	3	0	0	0	0	0	31
	Aug-21	11	6	0	0	0	0	14	31
Jharsuguda	Apr-21	0	22	8	0	0	0	0	30
	May-21	0	23	8	0	0	0	0	31
	Jun-21	13	15	1	1	0	0	0	30
	Jul-21	14	15	1	1	0	0	0	31
	Aug-21	25	3	0	0	0	0	3	31
Asansol	Apr-21	0	2	22	3	1	0	2	30
	May-21	0	2	23	3	1	0	2	31
	Jun-21	0	7	23	0	0	0	0	30
	Jul-21	0	7	24	0	0	0	0	31
	Aug-21	2	11	8	2	0	0	8	31
	Sep-21	4	6	9	0	0	0	2	21
Sambhalpur	Apr-21	0	7	23	0	0	0	0	30
	May-21	0	7	24	0	0	0	0	31
	Jun-21	0	21	9	0	0	0	0	30
	Jul-21	0	22	9	0	0	0	0	31
	Aug-21	12	14	2	0	0	0	3	31

- Raigarh remained in Satisfactory category for 83% of days the device worked (24) and the remaining number of days it remained in good category
- Delhi – In April and May the AQI remained 70%-73% of the times device worked in moderately polluted. Majority of the days in June till July remained in Satisfactory conditions whereas in September 50% of the times it has been in good and satisfactory category of AQI
- Korba – Moderately polluted for most of the times in April and May whereas in June and July 60% of the AQI categories migrated to poor, very poor and severe. In August, maximum number of days remained in satisfactory category (15), 7 days in moderately polluted. Severe days reduced to 1 day
- Kolkata – It has remained the best in terms of maximum number of days in good and satisfactory category. In April and May maximum number of days were in satisfactory category whereas the AQI categories transitioned to good category for June and July. No poor, very poor or severe days observed.
- Jharsuguda – In April and May the AQI categories were in satisfactory and moderately polluted category – 73 & 74% of the days respectively. In June and July AQI category days got distributed in good and satisfactory category equally (13,15 & 14, 15) and 1 day each in moderately polluted and poor category. August led the good category for Jharsuguda at 25 days
- Asansol – Asansol showed a completely different trend in terms of maximum number of days (ranging 22-24) for the months of April, May, June and July in moderately polluted category. August showed a bit of improvement with 11 days in satisfactory category
- Sambalpur – April and May months remained maximum in moderately polluted category (23 & 24 days) and rest of the days in satisfactory category. The AQI improved with maximum number of days migrating to satisfactory category in June and July (21 & 22 days), an equal number of days i.e. 9 days remained in moderately polluted. In August AQI was in good and satisfactory category (12 & 14 days respectively).