

**Supplementary Table ST 1** Meteorological parameters during the PM<sub>2.5</sub> and PM<sub>2.5-10</sub> particle sample collection period over Amritsar and New Delhi

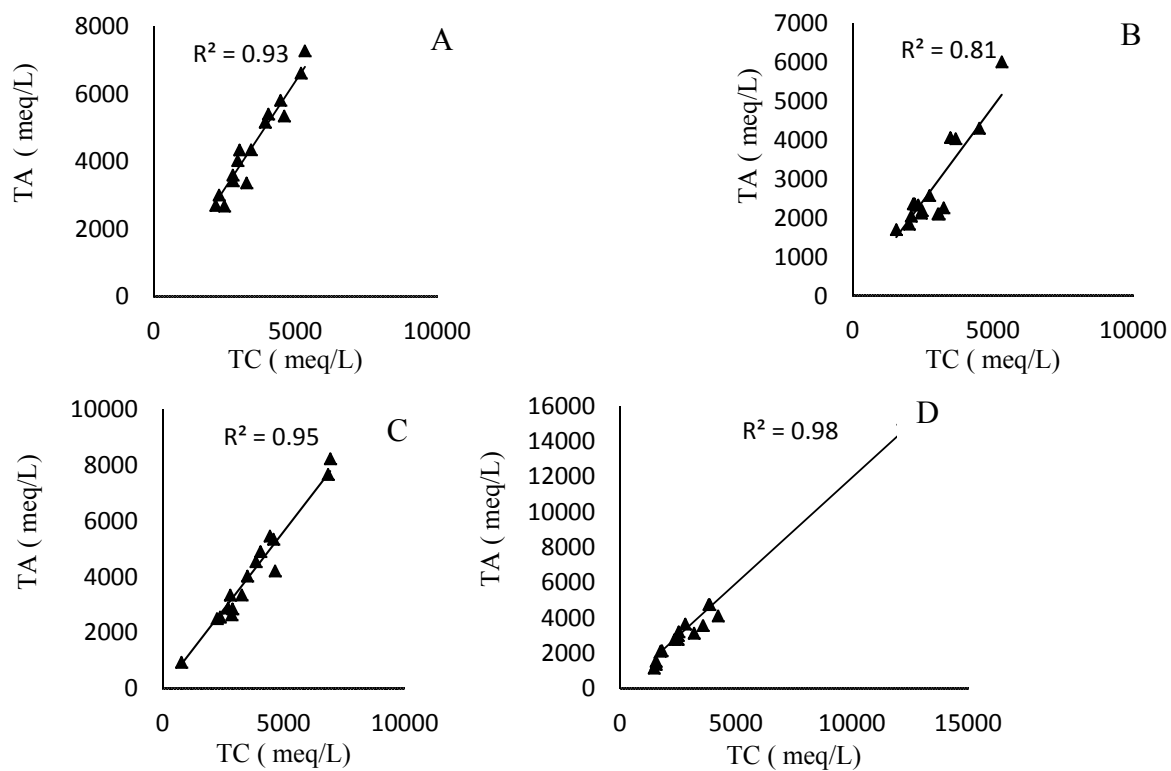
<b>Amritsar</b>																		
	Temperature (0C)			Dew Point (0C)			Humidity (%)			Sea Level Pressure (hPa)			Visibility (km)		Wind Speed (km/h)			Wind Direction
	Min	Max	Mean	Min	Max	Mean	Min	Max	Mean	Min	Max	Mean	Max	Mean	Min	Max	Mean	Degrees
Min	2.0	12.0	8.0	1.0	6.00	4.0	30.0	87.0	66.0	1006.0	1009.0	1007.0	3.0	1.0	0.0	0.0	0.0	-1.0
Max	11.00	25.0	18.0	10.0	16.0	12.0	94.0	100.0	99.0	1018.0	1022.0	1019.0	7.0	5.0	4.0	26.0	10.0	306.00
Average	5.64	17.79	11.57	4.29	9.50	7.07	49.43	97.21	78.14	1014.00	1018.21	1015.93	4.64	2.93	1.21	12.71	3.50	188.20
STD	3.23	3.33	2.71	3.07	2.85	2.64	16.75	4.92	8.65	3.78	4.14	3.65	1.39	1.33	1.42	6.51	3.08	129.28
<b>Delhi</b>																		
Min	5.0	16.0	11.0	1.0	6.0	3.0	19.0	55.0	38.0	1004.0	1014.0	1012.0	0.00	1.0	0.0	10.0	2.0	34.0
Max	14.0	25.0	19.0	11.0	14.0	13.0	82.0	100.0	93.0	1018.0	1021.0	1019.0	2.0	7.0	3.0	24.0	16.0	297.0
Avera	8.06	19.75	13.44	3.41	10.06	7.44	39.50	95.50	73.31	1014.06	1018.56	1016.06	0.31	3.38	1.50	14.81	6.31	203.38
STD	2.35	2.35	1.67	4.02	2.72	2.94	17.44	11.45	14.66	3.17	2.03	2.05	0.60	1.50	1.03	4.59	4.14	91.85

**Supplementary Table ST 2** Data quality information on samples and standards

Ions	F <sup>-</sup>	Cl <sup>-</sup>	NO <sub>3</sub> <sup>-</sup>	SO <sub>4</sub> <sup>2-</sup>	Na <sup>+</sup>	NH <sub>4</sub> <sup>+</sup>	K <sup>+</sup>	Ca <sup>2+</sup>	Mg <sup>2+</sup>
Multi-ion std*	1.00	2.50	5.00	5.00	1.00	1.00	1.00	1.00	1.00
R1	0.95	2.61	5.20	5.02	0.94	0.98	0.98	0.97	1.09
R2	1.01	2.60	5.19	5.12	1.01	1.04	0.98	1.02	1.00
R3	0.96	2.50	5.10	4.90	1.01	1.05	0.83	0.87	0.99
R4	1.01	2.70	5.50	5.30	1.16	0.84	0.86	1.18	1.03
R5	1.01	2.70	5.50	5.43	1.11	1.25	1.09	1.50	1.10
R6	1.01	2.72	5.55	5.31	0.93	0.92	1.07	0.97	1.02
AVG	0.99	2.64	5.34	5.18	1.03	1.01	0.97	1.09	1.04
STD	0.03	0.08	0.20	0.20	0.09	0.14	0.11	0.23	0.05
% RSD	2.88	3.20	3.70	3.87	8.94	13.81	10.96	20.94	4.45
% Accuracy	99.17	105.53	106.80	103.60	102.67	101.33	96.83	108.50	103.83
S1	0.23	5.64	12.42	28.79	1.34	9.58	3.82	27.07	1.95
S2	0.18	5.66	12.21	28.81	1.37	9.63	3.90	27.39	2.00
S3	0.15	5.61	12.10	28.26	3.13	9.58	4.08	27.55	2.10
S4	0.16	5.68	12.08	28.69	3.17	9.63	4.16	27.87	2.15
STD	0.03	0.03	0.16	0.26	1.04	0.03	0.16	0.33	0.09
AVER	0.18	5.65	12.20	28.64	2.25	9.60	3.99	27.47	2.05
% RSD	18.01	0.56	1.28	0.89	46.11	0.32	3.99	1.22	4.39

Metal	Al [ppm]	Ca [ppm]	Fe [ppm]	Ti [ppm]	Mn [ppm]	Ba [ppb]	Cd [ppb]	Co [ppb]	Cr [ppb]	Cu [ppb]	Pb [ppb]	Sr [ppb]	Zn [ppb]
BHVO-2*	358.0	408.5	431.5	81.5	6.5	1000.0	1000.0	1000.0	1000.0	1000.0	1000.0	1000.0	1000.0
R1	355.2	401.5	428.1	81.5	6.3	993.9	989.6	993.5	991.1	991.1	994.5	993.3	978.2
R2	350.1	406.4	400.7	83.2	6.4	929.4	938.1	990.8	989.1	990.6	997.2	935.6	912.1
R3	349.0	401.7	399.7	82.7	6.4	922.3	8.84.27	881.6	937.2	890.6	864.8	883.7	918.6
AVER	351.4	403.2	409.5	82.5	6.4	948.5	963.9	955.3	972.5	957.4	952.2	937.5	936.3
STD	3.3	2.8	16.1	0.9	0.1	39.4	36.5	63.8	30.6	57.9	75.7	54.8	36.4
%RSD	0.9	0.7	3.9	1.1	0.9	4.2	3.8	6.7	3.1	6.0	7.9	5.8	3.9
% Accuracy	98.2	98.7	94.9	101.2	98.6	94.9	96.4	95.5	97.2	95.7	95.2	93.8	93.6
S1	130.14	115.46	18.75	1.80	0.29	1212.00	3.80	49.80	437.38	102.38	390.50	570.23	562.25
S2	131.56	113.17	18.51	1.76	0.28	1209.00	4.80	49.10	437.95	102.29	539.50	563.56	566.77
S3	129.36	112.62	18.48	1.78	0.29	1198.00	3.90	47.80	435.38	99.68	498.25	568.26	567.66
STD	1.12	1.51	0.15	0.02	0.00	7.37	0.55	1.01	1.35	1.53	76.93	3.43	2.90
AVER	130.35	113.75	18.58	1.78	0.29	1206.33	4.17	48.90	436.90	101.45	476.08	567.35	565.56
%RSD	0.86	1.32	0.80	1.12	1.32	0.61	13.22	2.08	0.31	1.51	16.16	0.60	0.51

\*True value of Multi ion standard procured from E-Merck, Germany and BHVO-2 procured from United States Geological Survey; R1, R2.... = repeat analysis; S1, S2.. = repeat analysis of sample; AVG = average; STD = Standard Deviation; %RSD, Percent relative standard deviation; % accuracy = (True value- observed value)\*100



**Supplementary Fig. SF1** Correlation between different ions of  $\Sigma$ Cations (TC) and  $\Sigma$ Anion (TA) over Amritsar (A- PM<sub>2.5</sub>; B- PM<sub>2.5-10</sub>) and New Delhi (C-PM<sub>2.5</sub>; D- PM<sub>2.5-10</sub>)