



Guidelines for analysing SOCIO-BEE data





This will improve

your understanding

of how to work with

air quality data and

how to identify the

right type of data to

These guidelines

refer to the use of

Microsoft Excel to

software like

or R.

analyse the data but

feel free to use other

OriginLab, MATLAB,

validate your

hypothesis.

In this guide, we'll walk you through the process of analysing SOCIO-BEE data and plotting it in meaningful graphs.

You'll learn how to download, import, understand, manipulate, and plot SOCIO-BEE data based on specific example hypotheses.





You can download SOCIO-BEE air quality data from the official monitoring stations and the campaigns in CSV format.

To download data from a station, go to the 'Explore data' tab (left) in the main menu and select 'Measurements' (top right).







You can also download a screenshot of the SOCIO-BEE heatmap in PNG format.



Then just press the 'Download PNG' button (bottom right) and check your download folder.





To download the data from a campaign, go to the 'Campaigns' tab (left) in the main menu and select one of the campaigns in the list.

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Click on the eye symbol (right) to view the campaign.





You can view specific measurements in the selected campaign by clicking on a measuring point on the map.



To download a CSV file containing all the data collected in the campaign, press the 'Download CSV' button (right).





When you download the data, you'll get a file in your downloads folder with the ending .csv. That's a file that contains all the data depicted on the map during the selected dates as Comma Separated Values (CSV).

To analyse and plot this data to extract more specific insights, you'll need data analysis software with plotting capabilities. A very common one is Microsoft Excel and Google Sheets for simpler plots.

To import the downloaded CSV file, first open an empty Excel sheet and go to the 'Data' tab.

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Browse your downloads folder and select the CSV file to import it into the spreadsheet.

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20 2023 05 27 00:00:00	Ano Llosia (Perned)	38.08363	23,700375	3	Fair	PM25	11,41304347826087	11,982608695652177	7.045807	85.0718											
21 2023-05-27 00:00:00	PANACEA 000	38.055435	23,840101	3	Fair	PM25	11.778571028571028	12.0/14285/1428571	4.765291	92.05473											
22 2023-05-27 00:00:00	ATHENS 02	37.98204	23.79478	1	Extremely Poor	NO2	9.80333333333333333	10.3565656565666665													
23 2023 05 27 00:00:00	Athens CAMS station 15	38.05	23.55	3	Fair	PM25	11.100535	15,903547	9.2474165	81.65135											
24 2023-05-27 00:00:00	PANACEA 020	38.090856	23,72522	3	Fair	PM05	14.180760230760233	14.811538451538465	6.7925506	87.03557											
25 2023 05 27 00:00:00	Athens CAMS station 13	38.15	23.85	3	Fair	PM25	10.439488	15.143765	1.9697747	94.413765											
26 2023-05-27 00:00:00	PANACEA 017	38.053745	23.741959	3	Lan	PM25	11.680000000000000	12.84656565656565	6.7925506	87.05557											
27 2023-05-27 00:00:00	Athens CAMS station 0	38.15	23.55	3	Fair	PM25	10.216535	13.554792	2.5051848	88.271065											
28 2023-05-27 00:00:00	Athens CAMS station 9	37.85	23.75	3	Fair	PM25	13.013899	18.835972	13.9580295	73.05852											
29 2023-05-27 00:00:00	ELEFSINA	38.051	23,538	4	Fair	PM25	11.0	21.0	8.0	97.0											
30 2023 05 27 00:00:00	PANACEA 049	38.037506	23.086476	3	Fair	PM25	13.07	13.556666666666672	8.0	95.0											
31 2023-05-27 00:00:00	Albens CAMS station 11	37.85	23.25	3	Lair .	PM25	10.81565	16,10645	3,5050278	92,412505											
32 2023 05 27 00:00:00	PANACEA 029	38.00546	23.73234	4	Fair	03	8.0666666666666666	8.745656565666666	33.0	95.0											
33 2023-05-27 00:00:00	PANACEA_047	37.961323	23.761395	3	Fair	03	6.55833333333333333	6.875	11.14902	76.97976											
34 2023-05-27 00:00:00	Athens CAMS station 16	38.05	23.65	3	Fair	PM25	12.195865	17.352245	7.045807	85.0718											
35 2023-05-27 00:00:00	Athens CAMS station 18	38.05	23.85	3	Fair	PM25	10.685194	15.456347	4.765291	92,40473											
36 2023-05-27.00:00:00	Athens CAMS station 3	37.95	23.65	3	Fair	PM25	13.392973	20.057537	23.109892	72,75732											
37 2023 05 27 00:00:00	ATHENS 01	38.040443	23.833649	1	Extremely Poor	NO2	11.55	12.15													
38 2023-05-27.00500500	THRAKOMAKEDONES	38,744	23.758	4	Moderate	03	10.0	20.8	1.0	10%0											
39 2023 05 27 00:00:00	Athens CAMS station 12	38.15	23.75	3	Fair	PM25	10.920398	15.468853	3.1541286	93.0595											
40 2023-05-27 00:00:00	PANACEA_005	38.01869	23,510574	3	Fair	PM25	11.29606060606069	11.6160606066666667	5.0	100.0											
41 2023-05-27 00:00:00	Athens CAMS station 1	38.15	23.65	3	Fair	PM05	10.486611	14.078562	2.6711514	92.19343											
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3 2023-05-27:00:00:00 PANACEA 021	38.022263	23.737436	3	Fair	PM25	10.81	11.3266666666666672	6.7925906	87.09567											
4 2023-05-27 00:00:00 PANACEA_039	37.97081	23.743861	3	Fair	NO2	5.561904701904763	6.8556655665666666	41.0	76.97976											
5 2023-05-27 00:00:00 Athens CAMS station 5	\$7.95	23.85	3	Fair	PM25	11.178328	15.298311	4.646439	88.95148											
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7 2023-05-27.00:00:00 ARISTOTILOUS	37.988	21.728	3	Fair	08	0.0	19.0	21.0	76.97976											
8 2023 05-27 00:00:00 PANACEA_038	37.9357	23.644547	3	Fair	03	3.27333333333333333	8.69666666666665	23.109692	72.75732											
9 2023-05-27.00:00:00 PANACEA_AIrPsP_006	37.95576	23.667892	2	Fair	03	1.825	10.253333333333333333	23.109592	72.75732											
10 2023-05-27 00:00:00 Athens CAMS station 8	37.85	23.65	3	Fair	PM25	13.264806	20.061317	36.32903	63.194294											
11 2023-05-27 00:00:00 Athens CAMS station 4	37.95	23.75	3	Fair	PM25	12.717787	18.349905	11.14902	76.97976											
12 2023-05-27 00:00:00 Athens CAMS station 29	38.05	22.95	2	Fair	PM25	10.121592	14.84638	1.7658418	95.491104											
13 2023-05-27 00.00:00 Athens CAMS station 34	38.15	23.95	в	Fair	PM25	10.285324	14.864238	1.6002427	94.77147											
14 2023-05-27 00:00:00 PANACEA_019	38.034657	23.702152	4	Poor	PM25	26.891068006657	30.5166556555574	8.0	95.0											
15 2023-05-27:00:00:00 Athens CAMS station 2	37.95	23.55	3	Fair	PM25	2.31805	15.894941	24.333603	72.956085											
16 2023-05-27 00 00:00 National Technical University of Athens	37.97721	23.783016	3	Moderate	03	11.153571428571428	11.814285714285711	6.0	104.0											
17 2023-05-27 00:00:00 PANACEA_006	37.813873	22.782408	3	Fair	03	0.5833333333333334	10.3033333333333333	13.9830295	73.05862											
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20 2023-05-27 00.00:00 Ano Liosia (Perneri)	38.08363	23.700375	в	Fair	PM25	11.41304347826087	11.982608695652177	7.045807	85.0718											
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23 2023-05-27:00:00:00 Athens CAMS station 15	38.05	23.55	3	Fair	PM25	1.100535	15.803547	9.2474165	81.65135											
24 2023-05-27 00:00:00 PANACEA_020	38.090866	22.72522	3	Fair	PM25	4.180769220769233	14.811538461538465	6.7925906	87.09567	-										
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28 2023-05-27 00:00:00 Athens CAMS station 9	37.85	28.75	3	Fair	PM25	13.013599	18.835972	13.9880295	73.05862	-										
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38 2023-05-2700:00500 PANACEA_017	37.961323	28.761395	8	Fair	03	0.5583138313831383233	0.875	11.14902	76.97976	-										
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35 2023-05-27:00:00:00 Athens CAMS station 18	38.05	28.85	-	Fair	PM25	0.685194	15.456347	4.765291	92.46473	-										
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37 2023-05-27 00 00:00 ATHENS_01	\$8,040443	25.833049	-	Extremely Poo	r NO2	1155	12.15													
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0 2023-05-27 00:00:00 At	hers CAMS station 8	37.85	23.65	3	Fair	Replace with	1			w .										
1 2023-05-27 00:00:00 At	hers CAMS station 4	37.95	23.75	3	Fair								_							
2023-05-27 00:00:00 At	hens CAMS station 19	38.05	23.95	3	Fair					Opgions >>			2	1						
13 2023-05-27 00:00:00 At	hens CAMS station 14	38.15	23.95	3	Fair		-							1						
4 2023-05-27 00:00:00 PA	NACEA_019	38.034657	23.702152	4	Poor	Replace All	Replace	Find All Fi	nd Next	Close										
L5 2023-05-27 00:00:00 At	hens CAMS station 2	37.95	23.55	3	Fair															
L6 2023-05-27 00:00:00 Na	stional Technical University of Athens	37.97721	23.783015	3	Moderate	03	11.153571428571428	11.814285714285711	6.0	104.0										
17 2023-05-27 00:00:00 PA	NACEA_005	37.813873	23.782405	3	Fair	03	9.563333333333333334	10.3033333333333333333	13.9850293	73.05662										
18 2023-05-27 00:00:00 Cle	eanAir in Greece - Thise Io II	37.97181	23.719069	1	Extremely Poor	NO2	11.553333333333333333	12.250000000000000												
19 2023-05-27 00:00:00 PA	NACEA_AirPaP_001	38.037838	23.826132	3	Fair	03	8.946666666666666	9.553333333333333333	4.765291	92.45473										
2023-05-27 00:00:00 An	no Liosia (Perneri)	38.08363	23.700375	3	Fair	PM25	11.41304347826087	11.982608695652177	7.045807	85.0718										
21 2023-05-27 00:00:00 PA	NACEA 004	38.056435	23.840101	3	Fair	PM25	11.778571428571428	12.071428571428571	4.765291	92.45473										
22 2023-05-27 00:00:00 AT	THENS_02	37.96204	23.79478	1	Extremely Poor	NO2	9.803333333333333333	10.356656666666666												
23 2023-05-27 00:00:00 Atl	hers CAMS station 15	38.05	23.55	3	Fair	PM25	11.100585	15.808547	9.2474165	81.65185										
M 2023-05-27 00:00:00 PA	NACEA 020	38.090365	23.72522	3	Fair	PM25	14.180769230769233	14.811538461538465	6.7925905	87.09567										
25 2023-05-27 00:00:00 At	hens CAMS station 13	38.15	23.85	3	Fair	PM25	10.439488	15.143765	1.9697747	94.413765										
85 2023-05-27 00:00:00 PA	NACEA 037	38.053745	23.741959	3	Fair	PM25	11.580000000000003	12.84005050000008	6.7925905	87.09567										
27 2023-05-27 00:00:00 At	hers CAMS station 0	38.15	23.55	3	Fair	PM25	10.216535	13.554792	2.5061848	88.271065										
2023-05-27 00:00:00 At	hens CAMS station 9	37.85	23.75	3	Fair	PM25	13.013899	18.835972	13.9880295	73.05862										
2023-05-27 00:00:00 EU	FESINA	38.051	23.538	4	Fair	PM25	11.0	21.0	8.0	97.0										
0 2022-05-27 00:00:00 PA	NACEA 049	38.027505	23.686475	3	Fair	PM25	12.07	13.550050500505072	8.0	95.0										
1 2023-05-27 00:00:00 AH	hers CAMS station 11	37.85	23.95	3	Feir	PM25	10.81565	15,19645	3,5068278	92,412506										
2 2023-05-27 00:00:00 PA	NACEA 029	38.00546	23,73234	4	Fair	03	8.0066666666666666	8.740665066666666	33.0	95.0										
8 2028 05 27 00:00:00 PA	NACEA 047	32.961328	23,751395	3	Fair	50	6.558222222222222222	6.875	11.10902	76.92926										
4 2023-05-27 00:00:00 AH	hens CAMS station 16	38.05	23.65	3	Fair	PM25	12.195865	17.352245	7.045807	85.0718										
5 2023-05-27 00:00:00 At	hers CAMS station 18	38.05	23.85	3	Fair	PM25	10.685196	15.456317	4,765291	92.45173										
5 2023-05-27 00:00:00 Att	hers CAMS station 3	17.95	23.65	3	Fair	PM25	13.392923	20.057532	23.109892	72.75732										
7 2023-05-27 00-00 AT	DIENS 01	10.040443	23.833549	1	Extremely Poor	ND2	11.55	12.15												
# 2023-05-27 00:00:00 TH	RAKOMAKEDONES	10.144	23.755	4	Moderate	01	10.0	20.0	1.0	109.0										
0 2023-05-27 00:00:00 Att	hers CAMS station 12	38.15	23.75	1	Fair	PM25	10.920396	15,468853	3.1541285	93.0505										
0 2023-05-27.00-00-00 84	NACEA 005	38.01859	23,810574	4	Fair	PM25	11.296565665565555	11.516655666566655	5.0	100.0										
1 2023-05-27 00:00-00 At	hers CAMS station 1	29.15	22.65	3	Fair	PM25	10.456611	14.078652	2 6711514	97 193/3	-		-							
2 2022.05.27.00-00-00 RA	DASKEIN	37.005	72 910	4	Moderate	02	10.0	20.0	6.0	101.0										
2 2023-05-27-00-00-00 PA	NACEA ARE	39.04057	19.634369	4	Fair	26140	12 4265556555555555	13 0066556665566656	8.0	0.20										
a successer outdouble PA	100000_000	30/04097	23.094305	3	1011	r mcJ	12/10/07/900009007	13/03/03/02/02/02/02/04	0.0	NVA.	-	-		_		_				-
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Once you've done this, you'll see that all the numbers are now positioned automatically on the right-hand side of the cells. That means that the software now recognises them as numbers.

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2 2022.05.17.00.00.00 PA	NACEA 021	10	10 010061	21 222496	reatinep	Enia	DA405	10.0	11 99666667	6 2025006	87.09567											-1
4 2023-05-2700-00-00 PA	NACEA 029		37 97081	21.749961		Enir	NO2	6.56190476	6 8666666667	41	76.92926											-
5 2022 05 27 00-00 Ath	hons CAMS station 5	-	27.95	22.55		Enir	04/25	11.17222	16.298211	4.646439	\$9,45149											
5 2023-05-2700:00:00 Cla	an Air in Groece - Thispin		37.974033	23.718641		Extremely P	DOF NO2	14.	15 24615385	-1010103	CONTRACTO											
7 2023-05-2700:00:00 48	ISTOTELOUS	_	37.988	23.728		Fair	03		19	11	76.97976											
8 2023-05-2700:00:00 PA	NACEA 038		37.9357	23.644547		Fair	03	8.273333333	8,696666667	23.109892	72,75782											-1
3 2023-05-27 00:00 PA	NACTA AIRPAR 006	_	37 95576	21.662692		Feir	01	9.82	10.28313333	23.109892	72,75732											
10 2023-05-27 00:00 Ath	hens CAMS station 8		37.85	23.65		Fair	PM25	13,26480	20.061317	16.32903	63,194294											-1
11 2023-05-2700:00:00 Ath	hens CAMS station 4	_	37.95	23.75		Fair	PM25	12.71778	18.349905	11.14902	76.97976											
12 2023-05-27 00:00:00 Ath	hens CAMS station 19		38.05	23.95		Fair	PM25	10.12159	14.84636	1.7658418	96.491104											
13 2023-05-2700:00:00 AT	tens cams station 14		88.15	23.95		Fair	PM25	10.28612	14.864238	1.6002427	94.77147											
14 2023-05-27 00:00:00 PA	NACEA 019		38.034657	21.702152		Poor	PM25	76.8916656	10.61666667		54											
15 2023-05-27.00:00:00 Ath	tens CAMS station 2	_	37.95	23.55		Fair	PM25	12,3150	16.894941	24.333603	72,959085											-1
16 2023-05-27 00:00:00 Nat	tional Technical University of	Athens	37.97721	23,783016		Moderate	03	11.1535714	11.81428571	6	104											-1
17 2023-05-27:00:00:00 PA	NACEA 006		37.813873	21,782406		Fair	03	9,583333333	10.30333333	13,9660295	73,05862											-1
18 2023-05-2700:00:00 Cle	anAir in Greece - Thiseio II		37.97381	23.719069		Extremely P	oor NO2	11.55333333	12.28666667													
19 2023-05-27:00:00:00 PA	NACEA AIrPaP 001		38.037838	23.826132		Fair	03	8.94000000	9 553333333	4.765291	92,45473											
20 2023-05-27 00:00:00 Am	o Licsia (Perneri)		38.08363	23,700375		Fair	PM25	11,4130434	11.9826087	7.045807	85,0718											-1
21 2023-05-27 00:00:00 PA	NACEA 004		38.056435	23.840101		Fair	PM25	11.7785714	12.07142857	4.765291	92.46473											
22 2023-05-27 00:00:00 AT	HENS 02		37.98204	23.79478		Extremely P	DOF NO2	9.803333333	10.35666667													
23 2023-05-27:00:00:00 Ath	hens CAMS station 15		38.05	23.55		Fair	PM25	11.10053	5 15.803547	9.2474165	81.65135											
24 2023-05-27:00:00:00 PA/	NACEA 020		38.090866	23.72522		Fair	PM25	14.1807692	14.81153846	6.7925906	87.09567											
25 2023-05-2700:00:00 Ath	hens CAMS station 13		38.15	23.85		Fair	PM25	10.43548	15.143765	1.9697747	94.413765											
26 2023-05-27 00:00:00 PA	NACEA 037		38.053745	23.741959		Fair	PM25	11.6	12.84666667	6.7925906	87.09567											
27 2023-05-27 00:00:00 Ath	hens CAMS station 0		38.15	23.55		Fair	PM25	10.21653	13.554792	2.5061848	88.271065											
28 2023-05-27 00:00:00 Ath	hens CAM5 station 9		37.85	23.75		Fair	PM25	13.01389	18.835972	13.9660295	73.05862											1
29 2023-05-27 00:00:00 ELE	FSINA		38.051	23.538		Fair	PM25	1	21	8	97											
10 2023-05-27 00:00:00 PA	NACEA_049		38.037506	23.686476		Fair	PIM25	13.0	13.55666667	8	55											
31 2023-05-27 00:00:00 Ath	hens CAMS station 11		37.85	23.95		Fair	PIM25	10.8156	5 16.19645	3.5068278	92.412506											Т
12 2023-05-27 00:00:00 PA	NACEA_029		38.00546	23.73234		Fair	01	8.0666666	8.746666667	33	95											Т
33 2023-05-27 00:00:00 PA	NACEA_047		37.961323	23.761395		Fair	03	6.55833333	6.875	11.14902	76.97976											
34 2023-05-27 00:00:00 Ath	tens CAMS station 16		38.05	23.65		Fair	PM25	12.19586	17.352245	7.045807	85.0718											
35 2023-05-27:00:00:00 Ath	hens CAMS station 18		38.05	23.85		Fair	PIM25	10.68519	4 15.456347	4.765291	92.46473											
16 2023-05-27:00:00:00 Ath	hens CAMS station 3		37.95	23.65		Fair	PIM25	13.39297	20.057537	23.109892	72.75732											
37 2023-05-27:00:00:00 AT	HENS_01		38.040443	23.833649		Extremely P	oor NO2	11.5	12.15													1
38 2023-05-2700:00:00 THE	RAKOMAKEDONES		38.144	23.758		Moderate	03	3	20	1	109											
39 2023-05-27:00:00:00 Ath	hens CAMS station 12		38.15	23.75		Fair	PM25	10.92039	15.468853	3.1541286	93.0595											
40 2023-05-27 00:00:00 PA	NACEA_005		38.01869	23.810574		Fair	PM25	11.2966666	7 11.61666667	5	100											
41 2023-05-27 00:00:00 Ath	hens CAMS station 1		38.15	23.65		Fair	PM25	10.48661	14.078662	2.6711514	92.19343											
42 2023-05-2700:00:00 PA	RASKEVI		37.995	23,819		Moderate	03	1	20	6	104											
43 2023-05-27 00:00:00 PA	NACEA_048		38.04067	23.684368		Fair	PM25	12.4366666	13.006666667	8	95											
50000 PE	AD Athens 27 5 2022 2 St	in the second	(1)							100												-



To manipulate the data and extract the right information for your hypothesis, you first need to understand how the data is structured in your spreadsheet.

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2023-05-27 00:00:0	Athons CAMS station 5	27.05	23.740001		Fair	DM25	11 172222	16 10021	4 64642	99.46149
2023-05-27 00:00:0	Clean Air in Croose - Thispie	37.55	23.03		Fall Extremely Red	PIVI25	14.4	10.25051	4.04045	00/101/10
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2023-05-27 00:00:0	PANACEA AirPap 005	37 95576	23.667692		Fair	03	9.825	10 2833333	23.10989	72,75732
0 2023-05-27 00:00:0	Athens CAMS station 8	37.85	23.65		Fair	PM25	13.264806	20.06131	36,3290	63,194294
1 2023-05-27 00:00:0	Athens CAMS station 4	37.05	23.05		Cair	PM25	12 717787	18 3/990	11 1490	76 97976
2 2023-05-27 00:00:0	Athens CAMS station 19	38.05	23.75		Fair	PM25	10 121592	14 8463	1 765841	96.491104
2 2022-05-27 00:00:0	Athens CAMS station 14	29.15	22.05		Eair	PM25	10.226224	14 95472	1.600242	94 77147
1 2023-05-27 00:00:0	PANACEA 019	38.034657	23 702152		Poor	PM25	26.89166667	30.6166666	1.0002.12	95
5 2023-05-27 00:00:0	Athens CAMS station 2	37.95	23.55		Fair	PM25	12,31805	16.89494	24,33360	72,956085
5 2023-05-27 00:00:0	National Technical University of Athe	\$ 37 97721	23 783016		Moderate	03	11 15357143	11 8142857	24.33300	104
7 2023-05-27 00:00:0	PANACEA 006	37 813873	23.782408		Fair	03	9 582222222	10 3033333	13 988029	73.05862
8 2023-05-27 00:00:0	CleanAir in Greece - Thisein II	37 97381	23 719069		Extremely Por	NO2	11 55333333	12 2865655	15.566625.	75105002
9 2023-05-27 00:00:0	PANACEA AirPap 001	38.037838	23.826132		Fair	03	8 946666667	9 55333333	4.76529	92.46473
0 2022-05-27 00:00:0	Ang Liosia (Remeri)	28 08363	22 700275		Fair	DM25	11 41204248	11 992609	7.04580	85 0718
1 2023-05-27 00:00:0	PANACEA 004	38.056435	23.840101		Fair	PM25	11.77857143	12 0714285	4.76529	92.46473
2 2023-05-27 00:00:0	ATHENS 02	37 98204	23 79478		Extremely Por	NO2	9.803333333	10 3566666	4.70525	52.40475
3 2023-05-27 00:00:0	Athens CAMS station 15	38.05	23.75476		Fair	PM25	11 100535	15 80354	9 247416	81.65135
1 2023-05-27 00:00:0	PANACEA 020	38.090866	23 72522		Fair	PM25	14 18076923	14 8115384	6 792590	87.09567
5 2023-05-27 00:00:0	Athens CAMS station 13	38.15	23.85		Fair	PM25	10 439488	15 14376	1 969774	94 413765
6 2023-05-27 00:00:0	PANACEA 037	38.053745	23.741959		Fair	PM25	11.68	12.8466666	6.792590	87.09567
7 2023-05-27 00:00:0	Athens CAMS station 0	28.15	23.55		Fair	PM25	10 216535	13 55479	2 506184	88 271065
8 2023-05-27 00:00:0	Athens CAMS station 9	37.85	23.75		Fair	PM25	13,013899	18,83597	13,988029	73.05862
9 2023-05-27 00:00:0	FLEESINA	38.051	23 538		Fair	PM25	11	20.05557	10.000010	97
0 2023-05-27 00:00:0	PANACEA 049	38 037506	23 686476		Fair	PM25	13.07	13 5566666		95
1 2023-05-27 00:00:0	Athens CAMS station 11	37.85	23,95		Fair	PM25	10,81565	16,1964	3,506827	92,412506
2 2023-05-27 00:00:0	PANACEA 029	38,00546	23,73234		Fair	03	8.066666667	8.74555555	3	95
3 2023-05-27 00:00:0	PANACEA 047	37.961323	23,761395		Fair	03	6.558333333	6.87	11,1490	76.97976
4 2023-05-27 00:00:0	Athens CAMS station 16	38.05	23.65		Fair	PM25	12,195865	17,35224	7.04580	85.0718
5 2023-05-27 00:00:0	Athens CAMS station 18	38.05	23.85		Fair	PM25	10.685194	15.45634	4,76529	92.46473
6 2023-05-27 00:00:0	Athens CAMS station 3	37.95	23,65		Fair	PM25	13,392973	20.05753	23,10989	72,75732
7 2023-05-27 00:00:0	ATHENS 01	38,040443	23,833649		Extremely Po	NO2	11.55	12.1		
8 2023-05-27 00:00:0	THRAKOMAKEDONES	38,144	23,758		Moderate	03	10	2		109
9 2023-05-27 00:00:0	Athens CAMS station 12	38.15	23.75		Fair	PM25	10.920398	15.46885	3.154128	93.0595
0 2023-05-27 00:00:0	PANACEA 005	38.01869	23.810574		Fair	PM25	11.29666667	11.6166666		100
1 2023-05-27 00:00:0	Athens CAMS station 1	38.15	23.65		Fair	PM25	10.486611	14.07866	2.671151	92.19343
2 2023-05-27 00:00:0	PARASKEVI	37.995	23.819		Moderate	03	10	2		104
3 2023-05-27 00:00:0	PANACEA_048	38.04067	23.684368		Fair	PM25	12.43666667	13.0066666		95
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The table contains air quality data that has been recorded by sensors deployed in various locations. Each row represents a single data entry collected at a specific date and time.

From left to right, the columns are the timestamp, the station code (or Device ID), latitude, longitude, AQI, Cause, PM2.5, PM10, NO2 and O3.



Let's see in more detail what the columns represent.

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2 timestamp	station_code	lat	on	Heatmap	AQI	Cause	PM2.5	PM10	NO2	03
3 2023-05-27 00;	DO: PANACEA_021	38.022263	23.737436	3	Fair	PM25	10.81	11.32666667	6.7925906	87.09567
4 2023-05-27 00:	DO: PANACEA_039	37.97081	23.748861	3	Fair	NO2	6.561904762	6.86666667	41	76.97976
5 2023-05-27 00:	00: Athens CAMS station 5	37.95	23.85	3	Fair	PM25	11.173323	16.298311	4.646439	88.46148
6 2023-05-27 00:	00: CleanAir in Greece - Thiseio	37.974033	23.718441	1	Extremely Poo	NO2	14.4	15.24615385		
7 2023-05-27 00:	ARISTOTELOUS	37.988	23.728	3	Fair	03	5	5 19	33	76.97976
8 2023-05-27 00;	DO: PANACEA_038	37.9357	23.644547	3	Fair	03	8.273333333	8.696666667	23.109892	72.75732
9 2023-05-27 00:	PANACEA_AirPaP_006	37.95576	23.667692	3	Fair	03	9.825	10.28333333	23.109892	72.75732
0 2023-05-27 00;	00: Athens CAMS station 8	37.85	23.65	3	Fair	PM25	13.264806	20.061317	36.32903	63.194294
1 2023-05-27 00:	00: Athens CAMS station 4	37.95	23.75	3	Fair	PM25	12.717787	18.349905	11.14902	76.97976
2 2023-05-27 00:	00: Athens CAMS station 19	38.05	23.95	3	Fair	PM25	10.121592	14.84636	1.7658418	96.491104
3 2023-05-27 00:	00: Athens CAMS station 14	38.15	23.95	3	Fair	PM25	10.286324	14.864238	1.6002427	94.77147
4 2023-05-27 00:	DO: PANACEA_019	38.034657	23.702152	4	Poor	PM25	26.89166667	30.61666667	8	95
5 2023-05-27 00:	00: Athens CAMS station 2	37.95	23.55	3	Fair	PM25	12.31805	16.894941	24.333603	72.956085
6 2023-05-27 00:	00: National Technical University of Ath	1s 37.97721	23.783016	3	Moderate	03	11.15357143	11.81428571	6	104
7 2023-05-27 00:	DO: PANACEA_006	37.813873	23.782408	3	Fair	O3	9.583333333	10.30333333	13.9880295	73.05862
8 2023-05-27 00:	00: CleanAir in Greece - Thiseio II	37.97381	23.719069	1	Extremely Poor	NO2	11.55333333	12.28666667		
9 2023-05-27 00:	00: PANACEA_AirPaP_001	38.037838	23.826132	3	Fair	O3	8.94666666	9.553333333	4.765291	92.46473
0 2023-05-27 00:	00: Ano Liosia (Perneri)	38.08363	23.700375	3	Fair	PM25	11.41304348	11.9826087	7.045807	85.0718
1 2023-05-27 00:	PANACEA_004	38.056435	23.840101	3	Fair	PM25	11.77857143	12.07142857	4.765291	92.46473
2 2023-05-27 00:	00: ATHENS_02	37.98204	23.79478	1	Extremely Poor	NO2	9.803333333	10.35666667		
3 2023-05-27 00:	Athens CAMS station 15	38.05	23.55	3	Fair	PM25	11.100535	5 15.803547	9.2474165	81.65135
4 2023-05-27 00;	DO: PANACEA_020	38.090866	23.72522	3	Fair	PM25	14.18076923	14.81153846	6.7925906	87.09567
5 2023-05-27 00:	00: Athens CAMS station 13	38.15	23.85	3	Fair	PM25	10.439488	15.143765	1.9697747	94.413765
6 2023-05-27 00:	DO: PANACEA_037	38.053745	23.741959	3	Fair	PM25	11.68	12.84666667	6.7925906	87.09567
7 2023-05-27 00:	00: Athens CAMS station 0	38.15	23.55	3	Fair	PM25	10.216535	13.554792	2.5061848	88.271065
8 2023-05-27 00:	Athens CAMS station 9	37.85	23.75	3	Fair	PM25	13.013899	18.835972	13.9880295	73.05862
9 2023-05-27 00:	DO: ELEFSINA	38.051	23.538	4	Fair	PM25	11	21	8	97
0 2023-05-27 00:	DO: PANACEA 049	38.037506	23.686476	3	Fair	PM25	13.07	13.55666667	8	95
1 2023-05-27 00:	00: Athens CAMS station 11	37.85	23.95	3	Fair	PM25	10.81565	16.19645	3.5068278	92.412506
2 2023-05-27 00:	DO: PANACEA 029	38.00546	23.73234	4	Fair	03	8.06666666	8.746666667	33	95
3 2023-05-27 00:	DO: PANACEA 047	37.961323	23.761395	3	Fair	03	6.558333333	6.875	11.14902	76.97976
4 2023-05-27 00;	00: Athens CAMS station 16	38.05	23.65	3	Fair	PM25	12.195865	17.352245	7.045807	85.0718
5 2023-05-27 00:	00: Athens CAMS station 18	38.05	23.85	3	Fair	PM25	10.685194	15.456347	4.765291	92.46473
6 2023-05-27 00:	00: Athens CAMS station 3	37.95	23.65	3	Fair	PM25	13,392973	20.057537	23.109892	72,75732
7 2023-05-27 00:	ATHENS 01	38.040443	23.833649	1	Extremely Poo	NO2	11.55	12.15		
8 2023-05-27 00;	THRAKOMAKEDONES	38,144	23.758	4	Moderate	03	10	20	1	109
9 2023-05-27 002	00: Athens CAMS station 12	38.15	23.75	3	Fair	PM25	10,920398	15,468853	3,1541286	93.0595
0 2023-05-27 00:	PANACEA 005	38.01869	23.810574	3	Fair	PM25	11.29666667	11.616666657	512012200	100
1 2023-05-27 00:	00: Athens CAMS station 1	38.15	23.65	3	Fair	PM25	10,486611	14.078662	2.6711514	92,19343
2 2023-05-27 00		37 995	23,819	4	Moderate	01	10.100011	21 20	6	104
3 2023-05-27 00:	PANACEA 048	38.04067	23.684368	3	Fair	PM25	12,4366666	13.00666667	8	95
		35.04007	23.00-1300	-	p with	. 11120	12	10.0000007	•	50
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timestamp: The date and time that the air quality data was recorded by the wearable device or monitoring station.

Device_ID: The unique identifier for the sensor device that collected the data.

Station code: The code assigned to the monitoring station where the data was collected.

latitude: The geographic latitude coordinates of the monitoring station or wearable device when the data was collected.



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Column1	~	Column2	Column3	tolumn4 - C	ol min5 l	Column6	Column7	Column8	Column9	Column10	Column11
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2023-05-270	00:00:00	PANACEA_021	38.022263	23.737436 3		Fair	PM25	10.81	11.32666667	6.7925906	87.09
2023-05-270	0:00:00	PANACEA_039	37.97081	23.748861 3		Fair	NOZ	6.561904762	5.85555557	41	/6.9/
2023-05-270	00:00:00	Athens CAMS station 5	37.95	23.85 3		Fair	PM25	11.173323	16.298311	4.040439	88.46
2023-05-270	00:00:00	cleanAir in Greece - Thiselo	37.974033	23.718441 1		Extremely Poo	NO2	14.4	15.24615385		70.07
2023-05-270	00:00:00	ARISTOTELOUS	37.988	23.728 3		Fair	03	5	19	33	/6.9/
2023-05-270	00:00:00	PANACEA_038	37.9357	23.644547 3		Fair	03	8.2/3333333	8.696666667	23.109892	72.75
2023-05-270	00:00:00	PANACEA_AIrPap_006	37.95576	23.667692 3		Fair	03	9.825	10.28333333	23.109892	72.75
2023-05-270	00:00:00	Athens CAMS station 8	37.85	23.65 3		Fair	PM25	13.264806	20.061317	36.32903	63.194
2023-05-270	0:00:00	Atnens CAMS station 4	37.95	23.75 3		Fair	PM25	12.717787	18.349905	11.14902	76.97
2023-05-270	00:00:00	Athens CAMS station 19	38.05	23.95 3		Fair	PM25	10.121592	14.84636	1.7658418	96.491
2023-05-270	00:00:00	Atnens CAMS station 14	38.15	23.95 3		Fair	PM25	10.286324	14.864238	1.6002427	94.77
2023-05-270	00:00:00	PANACEA_019	38.034657	23.702152 4		Poor	PM25	26.89166667	30.61666667	8	
2023-05-270	00:00:00	Athens CAMS station 2	37.95	23.55 3		Fair	PM25	12.31805	16.894941	24.333603	72.956
2023-05-270	00:00:00	National Technical University of At	thens 37.97721	23.783016 3		Moderate	03	11.15357143	11.81428571	6	
2023-05-270	0:00:00	PANACEA_006	37.813873	23.782408 3		Fair	03	9.583333333	10.30333333	13.9880295	73.05
2023-05-270	00:00:00	CleanAir in Greece - Thiselo II	37.97381	23.719069 1		Extremely Poo	NO2	11.55333333	12.28666667		
2023-05-27 0	00:00:00	PANACEA_AirPaP_001	38.037838	23.826132 3		Fair	03	8.946666667	9.553333333	4.765291	92.40
2023-05-270	00:00:00	Ano Liosia (Pemeri)	38.08363	23.700375 3		Fair	PM25	11.41304348	11.9826087	7.045807	85.0
2023-05-270	00:00:00	PANACEA_004	38.056435	23.840101 3		Fair	PM25	11.77857143	12.07142857	4.765291	92.46
2023-05-27 0	00:00:00	ATHENS_02	37.98204	23.79478 1		Extremely Poo	NO2	9.803333333	10.35666667		
2023-05-270	0:00:00	Athens CAMS station 15	38.05	23.55 3		Fair	PM25	11.100535	15.803547	9.2474165	81.65
2023-05-270	00:00:00	PANACEA_020	38.090866	23.72522 3		Fair	PM25	14.18076923	14.81153846	6.7925906	87.09
2023-05-270	00:00:00	Athens CAMS station 13	38.15	23.85 3		Fair	PM25	10.439488	15.143765	1.9697747	94.413
2023-05-270	00:00:00	PANACEA_037	38.053745	23.741959 3		Fair	PM25	11.68	12.84666667	6.7925906	87.09
2023-05-27 0	0:00:00	Athens CAMS station 0	38.15	23.55 3		Fair	PM25	10.216535	13.554792	2.5061848	88.271
2023-05-270	00:00:00	Athens CAMS station 9	37.85	23.75 3		Fair	PM25	13.013899	18.835972	13.9880295	73.05
2023-05-27 0	00:00:00	ELEFSINA	38.051	23.538 4		Fair	PM25	11	21	8	
2023-05-270	00:00:00	PANACEA 049	38.037506	23.686476 3		Fair	PM25	13.07	13.55666667	8	
2023-05-270	0:00:00	Athens CAMS station 11	37.85	23.95 3		Fair	PM25	10.81565	16.19645	3.5068278	92,412
2023-05-27.0	00:00:00	PANACEA 029	38.00546	23.73234 4		Fair	03	8.066666667	8.746666667	33	
2023-05-270	0:00:00	PANACEA 047	37.961323	23.761395 3		Fair	O3	6.558333333	6.875	11.14902	76.97
2023-05-270	0:00:00	Athens CAMS station 16	38.05	23.65 3		Fair	PM25	12.195865	17.352245	7.045807	85.0
2023-05-27 0	00:00:00	Athens CAMS station 18	38.05	23.85 3		Fair	PM25	10.685194	15.456347	4,765291	92.46
2023-05-270	00:00:00	Athens CAMS station 3	37.95	23.65 3		Fair	PM25	13,392973	20.057537	23,109892	72.75
2023-05-27.0	0:00:00	ATHENS 01	38,040443	23,833649 1		Extremely Poo	NO2	11.55	12.15		
2023-05-27.0	0:00:00	THRAKOMAKEDONES	38.144	23,758.4		Moderate	03	10	20	1	
2023-05-270	0:00:00	Athens CAMS station 12	28.15	23.75 2		Fair	PM25	10 920398	15 468853	3 1541286	93.0
2023-05-270	0:00:00	PANACEA 005	38.01869	23,810574,3		Fair	PM25	11 29666667	11 61666657	5.1341200	25.0
2022-05-270	0.00.00	Athens CAMS station 1	29.15	22.65 2		Fair	DM25	10.496611	14.078552	2 6711514	92.10
2023-05-270	0:00:00	DADASKEVI	30,13	23.03 3		Moderate	01	10.460011	14.070002	2.0/11314	32.13
2023-05-270	0.00.00	DANACEA 049	20 04057	23.619 4		Enic	DM25	12 42666667	12 00655557	0	
2025-00-270	0.00.00	PANACEA_040	38.04007			Trail	20020	12/45000007	12.00000007	ð	
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longitude: The geographic longitude coordinates of the monitoring station or wearable device when the data was collected.

AQI: The overall air quality index value calculated based on various pollutant concentrations measured at the monitoring station or wearable device.

Cause: Specifies the primary pollutant or environmental factor contributing to the air quality index value.





E	∃ 5 •∂-											SOCIO-BEE	tutorial on AQ (data man	ipulation - Ex	cel	
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3	2023-05-27 00:0	0:00	PANACEA_021			38.02220	3 23.	/3/430 :	5	Fair	PM25		10.81		11.320000	0.79259	87.09507
4	2023-05-27 00:0	0:00	PANACEA_039	11 m F		37.9700	51 23.	/48861 3	\$	Fair	NUZ		6.561904762		6.8666666		. 76.97976
2	2023-05-27 00:0	0:00	Athens CAINS sta	tion 5		37.3	50 00.	23.85	5	Fair Futnemely Dee	PM25		11.1/3323		10.2983	4.0404	88.40148
0	2023-05-27 00:0	0:00	CleanAir in Greet	ce - miseio		37.9740:	33 <u>2</u> 3.	18441		Extremely Poo	NUZ		14.4	-	15.240153	_	76.07076
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0	2023-03-27 00:0	0.00	PANACEA_050	0.006		37.055	76 220	567607	, ,	Fair	03		0.275555555		10 1922223	23.1090	72,75752
10	2023-05-27 00:0	0.00	Athons CAMS stat	tion 8		37.355	25	22.65	2	Fair	DM25		12 264906		20.2033333	25.1098	62 194294
11	2023-05-27 00:0	0.00	Athens CAMS sta	tion 4		37.0	55	23.03 2	2	Fair	PIVI20 PM25		12 717797		18 3400	11 140	75 97975
12	2023-05-27 00:0	0.00	Athens CAMS sta	tion 19		20/	15	23.75))	Fair	PIVI25 DM05		10 121502		14 946	1 76594	96 491104
12	2023-05-27 00:0	0.00	Athons CAMS sta	tion 14		201	16	23.55	,	Fair	PINI25		10.226324		14 9643	1.60034	04 77147
14	2023-05-27 00:0	0.00	PANACEA 019	100114		38.0346	7 23	203152	,	Poor	PM25		26 20166667		30 616666	1.00024	94.77147
15	2023-05-27 00:0	0.00	Athons CAMS stal	tion 2		27 (25.	22.55	•	Fair	PM25		12 21805		16 8949	24 2226	72 956085
16	2023-05-27 00:0	0.00	National Technics	al Liniversity	of Athens	37 977	21 23	783016	3	Moderate	03		11 15357143		11 814285	24.0000	104
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19	2022-05-27 00:0	0.00	Clean Air in Green	e - Thiselo II		37 973	21 22	710060		Extremely Roo	NO2		11 55222222		12 286666	15.50002	/ 0.00002
19	2023-05-27 00:0	0.00	PANACEA AirPag	P 001		38.0378	18 23.1	826132	2	Fair	03		8 946666667		9 5533333	4 7652	92.46473
20	2023-05-27-00:0	0.00	Ano Liosia (Perne	eri)		38.083	53 23.	700375	2	Fair	PM25		11,41304348		11,98260	7.0458	7 85.0718
21	2023-05-27 00:0	0:00	PANACEA 004			38.0564	15 23.1	840101	3	Fair	PM25		11.77857143		12.071428	4.7652	92.46473
22	2023-05-27 00:0	0:00	ATHENS 02			37,9820	14 23	79478 1	1	Extremely Poo	NO2		9.803333333		10.356666	4.7052	52.404.5
23	2023-05-27 00:0	00.00	Athens CAMS stat	tion 15		38 (15	23.55	-	Fair	PM25		11 100535		15 8035	9 74741	81 65135
24	2023-05-27 00:0	0:00	PANACEA 020			38.0908	56 23	.72522 3	3	Fair	PM25		14,18076923		14.811538	6,79259	5 87.09567
25	2023-05-27 00:0	0:00	Athens CAMS stat	tion 13		38.1	15	23.85	3	Fair	PM25		10,439488		15,1437	1,96977	94,413765
26	2023-05-27 00:0	0:00	ΡΔΝΑCΕΔ 037			38.0537	15 23.3	741959 3	3	Fair	PM25		11.68		12.846666	6.79259	i 87.09567
27	2023-05-27 00:0	0:00	Athens CAMS stal	tion 0		38.1	15	23.55		Fair	PM25		10.216535		13.5547	2,50618	88,271065
28	2023-05-27 00:0	0:00	Athens CAMS stat	tion 9		37.8	35	23.75 3	3	Fair	PM25		13.013899		18.8359	13,98802	5 73.05862
29	2023-05-27 00:0	0:00	ELEFSINA			38.03	51	23.538	1	Fair	PM25		11				97
30	2023-05-27 00:0	0:00	PANACEA 049			38.03750	06 23.0	586476	3	Fair	PM25		13.07		13.556666		3 95
31	2023-05-27 00:0	0:00	Athens CAMS stat	tion 11		37.8	35	23.95 3	3	Fair	PM25		10.81565		16.196	3.50682	92.412506
32	2023-05-27 00:0	0:00	PANACEA 029			38.0054	16 23	.73234 4	1	Fair	03		8.066666667		8.7466666		95
33	2023-05-27 00:0	0:00	PANACEA 047			37.96132	23 23.	761395	3	Fair	03		6.558333333		6.8	11.149	2 76.97976
34	2023-05-27 00:0	0:00	Athens CAMS stat	tion 16		38.0	05	23.65 3	3	Fair	PM25		12.195865		17.3522	7.0458	7 85.0718
35	2023-05-27 00:0	0:00	Athens CAMS stat	tion 18		38.0	05	23.85	3	Fair	PM25		10.685194		15.4563	4.7652	92.46473
36	2023-05-27 00:0	0:00	Athens CAMS stat	tion 3		37.9	95	23.65 3	3	Fair	PM25		13.392973		20.0575	23.1098	2 72.75732
37	2023-05-27 00:0	0:00	ATHENS_01			38.04044	43 23.0	833649	L	Extremely Poo	NO2		11.55		12.		
38	2023-05-27 00:0	0:00	THRAKOMAKEDO	INES		38.14	14	23.758	1	Moderate	O3		10				l 109
39	2023-05-27 00:0	0:00	Athens CAMS stat	tion 12		38.1	15	23.75	3	Fair	PM25		10.920398		15.4688	3.15412	5 93.0595
40	2023-05-27 00:0	0:00	PANACEA_005			38.018	59 23.8	810574 3	3	Fair	PM25		11.29666667		11.616666		5 100
41	2023-05-27 00:0	0:00	Athens CAMS sta	tion 1		38.1	15	23.65	3	Fair	PM25		10.486611		14.0786	2.67115	92.19343
42	2023-05-27 00:0	0:00	PARASKEVI			37.95	95	23.819 4	1	Moderate	03		10				i 104
43	2023-05-27 00:0	0:00	PANACEA_048			38.040	57 23.	684368 3	3	Fair	PM25		12.43666667		13.006666		8 95
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PM2.5: The concentration of fine inhalable particles with a diameter of 2.5 micrometers or smaller in the air. PM10: The concentration of inhalable particles with a diameter of 10 micrometers or smaller in the air in milligrams per cubic meter.

NO2: The concentration of nitrogen dioxide gas in the air in milligrams per cubic meter.

O3: The concentration of ozone gas in the air in milligrams per cubic meter.



What do you need to do before processing the data?

Now you have a better idea of what is displayed in your spreadsheet, but you still need to make a minor modification in your spreadsheet before you can start plotting the data you're interested in.

You might have noticed that the timestamp (Column 1) has the format [YYYY-MM-DD HH:MM:SS].

To make it easier for you to identify and extract the right information, you'll need to split the date and time into two separate columns.

Start by adding two new columns to your spreadsheet. To do this, select Column 2 and then right-click on it. On the menu select 'Insert'. This will add a new empty column to the left of Column 2. Repeat this action to add a second empty column.

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5	2023-05-27 00:00:00	Athens CAMS station 5	🖹 Past	e Options:			Fair	PM25	11.173	323 16.2983	1 4.646439	88.46148					
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Name the first column 'Date' and the second one 'Time'.

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To isolate the date values, select cell B3 and insert the following formula =INT([@Column1]) and press 'Enter'.

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Then insert the same function in the cells below. You may use the 'Special Paste' window that will appear, or you can simply click on the bottom-right corner of the cell, hold, and drag your mouse down.

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You will notice that the value that appears in the cells is not a date.

To fix this, select the whole column, right-click to open the menu and select 'Format Cells'.

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What do you need to do before processing the data?

In the format menu, go to tab 'Number' and select 'Date' from the category list on the left. Choose your desired date format from the list on the right (under 'Type').

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Press 'OK'.





To isolate the time values, select cell C3 and insert the following formula =[@Column1]-INT([@Column1]) and press 'Enter'.

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Follow the same procedure as for the 'Date' column – paste the function in the cells below and change the cells' format to 'Time'.

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Now you're ready to start identifying the right data and how to plot it.

Keep in mind that to find the right data you need to revisit the hive's hypothesis that kickstarted the campaign(s) you're looking at.

The following pages contain a simple example of a hypothesis and how to identify and plot the relevant data.





Example hypothesis

Suppose that your hive is testing the following hypothesis:

"Increased traffic congestion leads to higher levels of nitrogen dioxide (NO2) in the campaign area."

To test the validity of the hypothesis above, you need to know the concentration level of NO2 in the campaign area at specific times.

Then you can plot the 'NO2 levels' against 'time', and compare rush hour periods with non-rush hour periods.

This means that you will need the data from the column C (Time) and column L (NO2).

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172	29/5/2023 16:	17	29/5/2023	4:17:00 pp	7061				37.93576	23.667692-3		air	PM25	10.13448226	10 944823	9 10.5784	68 996315			
173	29/5/2023 164	80	29/5/2023	4:20:00 pp	94655				37,9357	23.644547.3		air	03	9 764 705382	10.723529	10.4873	68 996315			
174	29(5)/3023 16:	2	24/5/2023	4/22/00 pp	5430				37.95	23.85.3		air	PM10	9.491967	21.0719	9.2786	80.68777			
10	29(5) 2023 162		29/5/2023	45760 00	CORD IN CORD				21 414602	25,718091.1		an emerg 200	NO2	N NULLIN NOZ	11 (0551)	10.554				
1.77	29/5/2025 17:	4	29/5/2023	5 24 00 pp	19580				37.974035	25,718441.1		stremely 200	NO2	10.475	11 47857	12,5457				
178	29/5/2023 17:	6	29/5/2023	5.26.00 µµ	MA55				87.9857	23.644547 3		ivir .	PMDS	10.19375	11.20	i 12.478i5	69.67075			
179	29/5/2023 17	57	29/5/2023	5.57.00 µp	16Cvid				58.05	28.95 8		hir	03	8.62518	17.85	15 987451	81.99725			
180	29/5/2023 18:	11	29/5/2023	6.01.00 µµ	a Salist				\$7.97081	25,748861 5		fair	PM25	11.1	12	7 15.87456	69.19748			
181	29/5/2023 181	17	29/5/2023	6.07.00 µµ	DECD				37.988	25.728 4		fair	PM25	12		2 15.9874	69.19748			
162	10/5/2023 18:	2	19/5/2023	6.12.00 µµ	Distant				20.85	28.95 5		hair Dala	US DIALE	7.7066/16	16.5846	1 17.45115	82,50680			
184	20/5/2023 18:	15	29/5/2023	6.35.00 µµ	DIED				37.674623	28,718441 1		istremely Poor	N02	15,11071419	16,40357	3 26,00905	00,4010/			
185	19/5/2023 18:	8	29/5/2023	6:38:00 uu	bilid.				\$7.95	13.75 5		air	PM15	12 516819	22,5011	5 26.20905	69.19748			
186	29/5/2023 18:	12	29/5/2023	6:42:00 µµ	27061				\$7.95576	23.667692 3		Fair	PM25	11.67586207	12.648273	5 28	68,45187			
187	19/5/2023 18:	57	29/5/2023	6:57:00 µµ	SASD				\$7.95	23.85 5		Fair	03	8.6456785	18.138	7 32	71,73119			
158	29/5/2023 20:	02	29/5/2023	8:02:00 µµ	936D				37.974033	23.718441 2		Extremely Poor	r NO2	23.75882353	25.776470	9 36.685806				
189	29/5/2023 20:	5	29/5/2023	8:35:00 µµ	9ECD				37.988	23.728 3		air	PM25	16		4 28	55.39227			
101	29/5/2023 200	17	29/5/2023	8:37:00 µµ	DBOOM				38.05	23.95 3		all.	03	8.954392	15.938	26.745	72.76082			
192	29/5/2023 20:	17	29/5/2023	8:35:00 µµ	2051				37,9557	23,667692.4	-	air	PM25	10.05454545	16 84090	23,034	55 372845			
191	19/5/3023 304		10/5/2021	8-58-00 up	114				17 97091	21 742561 1		telle.	85415	16 14917566	17 /9555	10.01	51 18317			



Let's plot the daily concentration levels of NO2 against time.

For this example, we'll choose the data from May 29th, 2023. Scroll down in your spreadsheet to find the data with this date.

	8	5 -∂	~ .				AQ data	a processir	ng SOCIO-BE	EE v10 - E	ixcel			Table	e Tools Quer	y To a Is	
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136	2023-0	5-28 18:00:00	28/5/20	223 (225A3D			Columns 37.95	23.8	5 3	Fair	O3	8.779556	13.0621	5 5.9721613	74.05872
137	2025-0	5-28 19:00:00	28/5/20	125	7 :00:00 µµ	227051			\$7.95576	23.66769	2 3	Fair	05	9.12	9.	3 27.849548	58.96805
138	2023-0	5-28 20:00:00	28/5/20	123 1	0.00.00 μμ	226800 2398CD			37.85	23.0	83	rair	PM25 PM25	11.002544	16.8444	6 27.802101 10 39	52.515875
140	2	9/5/2023 9:04	29/5/20	023	9:04:00 mµ	23038D			37.974033	23.71844	10	Extremely Poor	NO2	8.853333333	9.6033333	13 3.784	
141	2	9/5/2023 9:00	29/5/20	23	9:06:00 mµ 9:05:00 mµ	225A3D 23938D II			37.93	23.5	53 80	Fair Extremely Poor	03 NO2	8.365355355	16.8046	5 5.46	87.41972
143	2	9/5/2023 9:14	29/5/20	123	9:14:00 mµ	224A55			37.9357	23.64454	73	Fair	03	5.114285714	5.4619047	11.572532	81.84139
144	2	9/5/2023 9:25	29/5/20	12.5	9:25:00 mµ 9:47:00 mµ	256255			38.022265	25.75745	8 5	Pair	05	6.45	6.9	22.50785	81.95646
145	2	9/5/2023 9 49	29/5/20	125	9.49.00 np	23e13d			37.95	23.7	5 5	Tair	05	8 192416	17.3562	1 30.2345	83.65675
147	29	/5/2023 10:17	29/5/20	123 1	0:17:00 πμ	236255			38.022263	23.73743	63	Fair	03	6.5	7.03	5 29.45875	82.91925
143	29	/5/2025 10:19 /5/2025 10:27	29/5/20	123 10	0:19:00 Hμ 0:27:00 Πμ	239800 II			37.968	23.72	94 90	Extremely Poor	NO2	6.38538539	7.5962962	19 4L 16 38	84.30244
150	29	(5/2023 10:29	29/5/20	023 10	0:29:00 πμ	225A3D			37.95	23.8	53	Fair	03	6.267396	15.6648	4 37.845	88.74012
151	29	/5/2025 10:47 /5/2023 10:49	29/5/20	123 1	0:47:00 πµ 0:49:00 πµ	224A55 23813d			37.9557	23.64454	7 S 5 3	Fair	03	7.650141	4.8	2 55.4781 9 40.325746	84.30244
153	29	/5/2025 10 57	29/5/20	125 10	0.57:00 mp	239360			37.974053	25.71844	10	Extremely Poor	NOZ	6.844444444	7.4074074	17 41	
154	29	/5/2023 10:59	29/5/20	123 1	0:59:00 πµ	2060ad			38.05	23.9	63	Fair	03	6.1525154	13.4193	2 38.9148	83.261185
156	29	/5/2025 11:09	29/5/20	123 1	1:09:00 Tµ	225A3D			30.022203	23.8	53	Fair	05	6.5167386	13.3713	1 37.1235	85.83593
157	29	/5/2023 11:14	29/5/20	123 1	1:14:00 mµ	23813d			37.95	23.7	53	Fair	03	7.5390997	15.2220	9 37.100254	85.30553
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160	29	/5/2025 11:47	29/5/20	123 1	1:47:00 mp	2060ad			38.05	23.9	63	Fair	05	6.427271	11.5855	9 34.78941	81.25847
161	29	/5/2023 11:58	29/5/20	123 1	1:58:00 πμ	22680D			37.85	23.6	63	Fair	03	8.815234	17.3262	6 33.4781	35.055815
165	29	/5/2025 14:42	29/5/20	125	2:42:00 µµ	25a15d			57.95	25.7	5 5	Pair	PM25	10.995196	20.2276	5 15.051067	80.554785
164	29	/5/2023 15:04	29/5/20	123	3:04:00 µµ	239ECD			37.988	23.72	84	Fair	PM25	15		7 14.9748	77.12206
165	29	(5/2023 15:10	29/5/20	123	5 09 00 µµ 3:10:00 µµ	239360 224A55			37.974055	23.64454	73	Fair	03	9.06	9.7	5 14.235	74.576004
167	29	/5/2023 15:16	29/5/20	123	5:16:00 μμ	227061			37.93576	23.66769	23	Fair	PM25	11.6037037	12.577777	8 14	74.570004
168	29	(5/2023 15:47 (5/2023 15:58	29/5/20	12.5	з :47:00 µµ 3 :53:00 µµ	22680D			37.85	23.74885	54 13	Fair	PM25	11.189781	27.874	4 9.45	87.78709
170	29	/5/2025 15:59	29/5/20	12.5	s:59:00 µµ	2000ad			58.05	25.9	5 5	rair	05	9.410469	16.1852	8.2970	82.558055
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173	29	/5/2023 16:20	29/5/20	23	4:20:00 µµ	224A55			37.9357	23.64454	73	Fair	03	9.764705882	10.723529	1 10.4871	68.996315
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176	29	/5/2023 16:57	29/5/20	123	4:57:00 μμ	23938D II			37.97381	23.71813	81	Extremely Poor	NO2	9.95	11.005017	10.557	
177	29	/5/2025 17 24	29/5/20	25	5 24:00 µµ	259580			\$7.974055	25.71844	11	Extremely Poor	NOZ	10.475	11.475571	13 12.5457	
178	29	/5/2023 17:26 /5/2023 17:57	29/5/20	123	5:26:00 µµ 5:57:00 µµ	224A55 2000ad			37.9357	23.64454	73	Fair	PM25	10.19375	11.28	5 12.47853 9 15.937461	69.67075
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181	29	/5/2023 18:07	29/5/20	23	G:07:00 µµ	239ECD			37.983	23.72	54	Fair	PM25	12	16 18/4	2 15.9874	69.29748
183	29	/5/2023 18:18	29/5/20	123	6:18:00 μμ	224A55			37.9357	23.64454	73	Fair	PM25	11.765	13.0	5 20.478	68.45187
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183	29	/5/2023 20:02	29/5/20	12.5	8:02:00 µµ	239360			37.974033	23.71844	4 2	Extremely Poor	NO2 RM25	23.75882353	25.776470	9 36.635800	55 50227
190	29	/5/2023 20:37	29/5/20	023	в:37:00 µµ	2060ad			38.05	23.9	6 3	Fair	03	8.954592	15.9389	3 26.745	72.76082
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194	29	/5/2025 21:04	29/5/20	123	9 X04:00 µµ	22680D			37.85	23.6	83	Fair	03	9.483975	16.9101	2 18.335490	75.987816
195	29	/5/2023 21:08	29/5/20	123 !	9:08:00 µµ	2060ad			38.05	23.9	5 2	Fair	03	9.907175	14.7114	9 10.770841	63.12578





Once you have identified the data you want to plot, go to 'Insert' and choose the most appropriate graph to plot the data.

In this example, we will use a Scatter plot with Smooth Lines and Markers.

votTable Recom	mended Table Tables	Pictures Shapes	Icons 3 Moo	D SmartArt D Screenshot ~ Re Jels ~	commended Charts	• • ₩ * • ₩ • • €	li v filo li v filo li v	Maps	PivotCh	art 3D Map v	Line Column	n Win/ Loss	Slicer	Timeline	Li
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29/5/2023 10:27	29/5/2023	10:27:00 mµ 2	3936D II	37.97381	23.719069 0		More	scatter			1.000100100	38			
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29/5/2025 10:47	29/5/2025	10.47:00 nµ 2	244.55	57.9357	23.644547 5		rair Iair	05		4.6	4.892	55.4781	84,477196		
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29/5/2025 10:57	29/3/2023	10.57.00 R µ 2	bacad	37.974033	25.95.5		Excernery Poo Exir	05		6.1525154	15 419517	38 9145	85 261185		
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Right-click on the empty white frame and click on the 'Select Data'.





How do you plot the data?

On the window that opens, select 'Add' on the left-hand side to add a new data series.

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40	Select Data Source ?											
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30	Switch Row,	/Column										
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Edit the name of the data series and then select the horizontal values (X values) and the perpendicular values (Y values) of your graph.

Edit Series	?	×
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Typically, this kind of graphs have the time on the X-axis and the pollutant concentration on the Y-axis.



Select 'OK' and the selected data will be plotted on the graph.



Click on the graph to edit the graph elements like the axis or the legend. Feel free to customise your graph.

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How do you plot the data?

Let's have a look at our final graph depicting the daily evolution of NO2 concentration in the campaign area.



The data for Monday 29/05/2023 does indeed show an increase in NO2 concentration during rush hours. That's a step towards validating your hypothesis!

CAUTION: This simple graph doesn't entirely validate the hypothesis. You might need several daily, weekly, or seasonal graphs with enough data points to reach a safe conclusion.

However, you can discuss the graph with your hive and arrange more campaigns or communicate them to your Bear for deeper analysis.



Why should you also consult an air quality expert?

As citizen scientists, your collective efforts in SOCIO-BEE play a crucial role in monitoring and understanding air quality in our communities. While your dedication and contributions are invaluable, it's essential to recognise that interpreting and analysing air quality data requires expertise and specialised knowledge.

To ensure the accuracy and reliability of your findings, we encourage all SOCIO-BEE participants to seek guidance and collaboration from real scientists and air quality experts.

These professionals possess the experience and insight necessary to interpret, plot, and validate the data collected by our sensors effectively.

Collaborating with scientists and experts not only enhances the quality of our research but also fosters a spirit of interdisciplinary cooperation and learning.









What else can you plot based on your hypothesis?

Well, it all depends on the hypothesis you're trying to test. You can find a few example hypotheses below:

Hypothesis	What can you do?					
Increased traffic congestion leads to higher levels	Plot NO2 levels against time, comparing rush hour					
of nitrogen dioxide (NO2) in the campaign area.	periods with non-rush hour periods.					
Construction activities, such as demolition and excavation, lead to temporary increases in airborne dust levels (PM10) in adjacent areas.	Plot PM10 levels before, during, and after constructi projects to identify spikes in dust concentrations.					
Vegetation and green spaces act as natural air purifiers, reducing levels of ozone (O3) and other pollutants in urban environments.	Create line graphs comparing O3 concentrations in urban parks versus nearby built-up areas.					
Proximity to industrial zones correlates with higher levels of particulate matter (PM2.5 and PM10).	Plot PM2.5 and PM10 levels against time in areas with and without nearby industrial activity.					
Increased usage of wood-burning stoves during colder months contributes to higher levels of particulate matter (PM2.5) in residential neighborhoods.	Create bar charts comparing PM2.5 concentrations during winter months versus summer months. Plot the hourly PM2.5 concentrations to detect daily peaks in PM2.5 levels coinciding with evening heating hours.					
Green spaces such as parks and forests improve air quality by reducing levels of airborne pollutants.	Plot pollutant levels (e.g., O3, NO2) in areas adjacent to green spaces compared to areas without greenery. Download the air quality heatmap as png near green space and compare to areas without greenery.					
Changes in traffic patterns, such as road closures or diversions, impact air quality in nearby areas.	Plot pollutant levels before, during, and after temporary road closures or construction projects. Compare pollutant levels in areas affected by traffic diversions with those in unaffected areas.					
Emissions from shipping activities in port areas contribute to elevated levels of sulfur dioxide (SO2) and nitrogen dioxide (NO2) along coastal regions.	Generate/obtain heatmaps showing SO2 and NO2 concentrations in proximity to major ports and shipping lanes. Compare pollutant levels in coastal areas with those further inland to assess the influence of maritime activities.					