



Guidelines for analysing SOCIO-BEE data

What will I learn?

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.

This will improve your understanding of how to work with air quality data and how to identify the right type of data to validate your hypothesis.

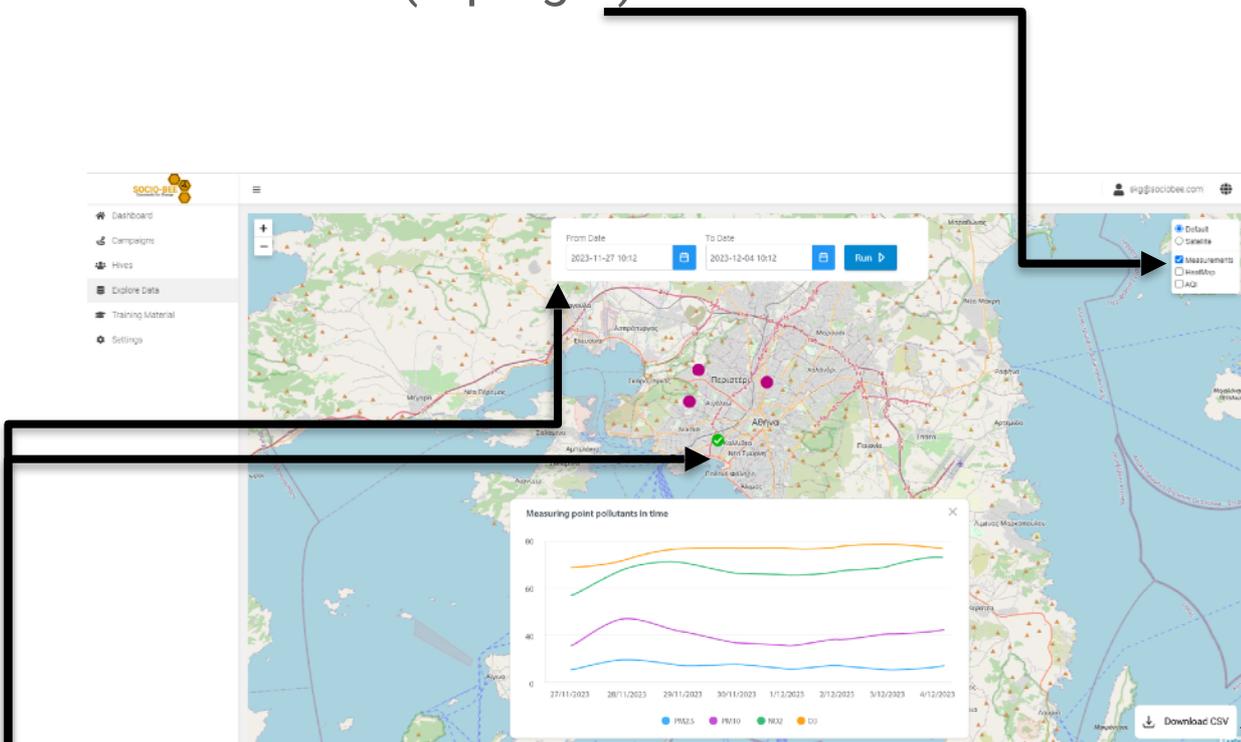
These guidelines refer to the use of Microsoft Excel to analyse the data but feel free to use other software like OriginLab, MATLAB, or R.



How can you download the data?

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).

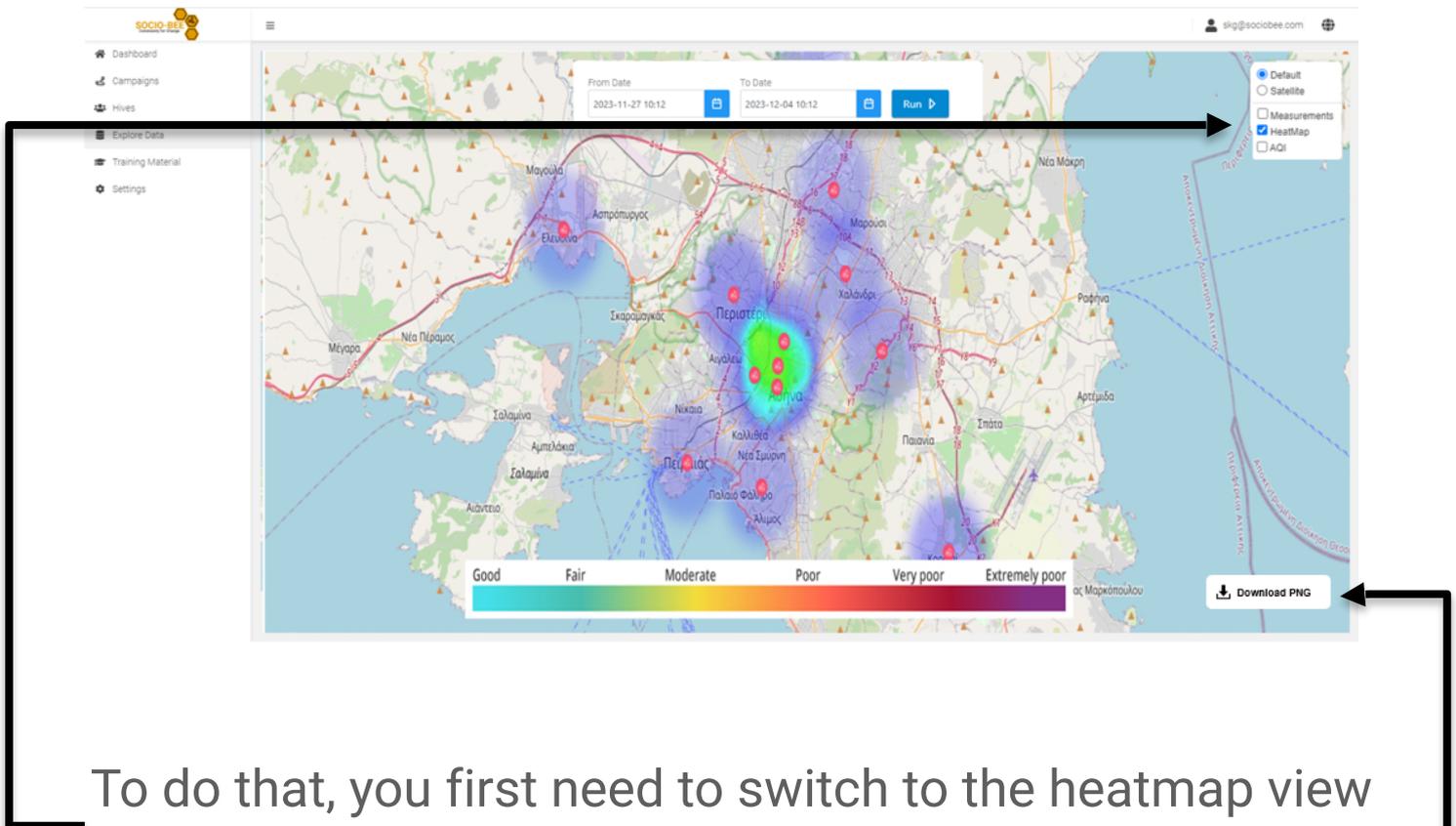


Select the station(s) and enter the date(s) you're interested in getting data from.

Press the 'Download CSV' button (bottom right) and check your download folder.

How can you download the data?

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

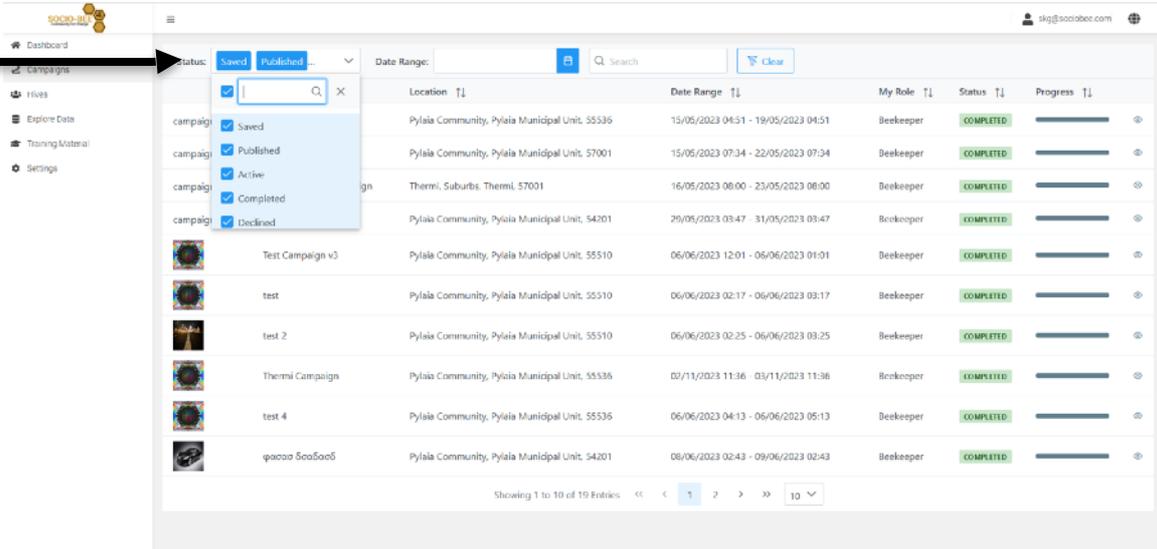


To do that, you first need to switch to the heatmap view by clicking on the 'Heatmap' option (top right).

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

How can you download the data?

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.



The screenshot shows the Socio-BEE dashboard with the 'Campaigns' tab selected in the left-hand menu. A dropdown menu is open over the 'Status' filter, showing options: Saved, Published, Active, Completed, and Declined. The main table lists several campaigns, all with a 'COMPLETED' status and a progress bar. An eye icon is visible at the end of each row. A search bar and date range filter are also present at the top of the table.

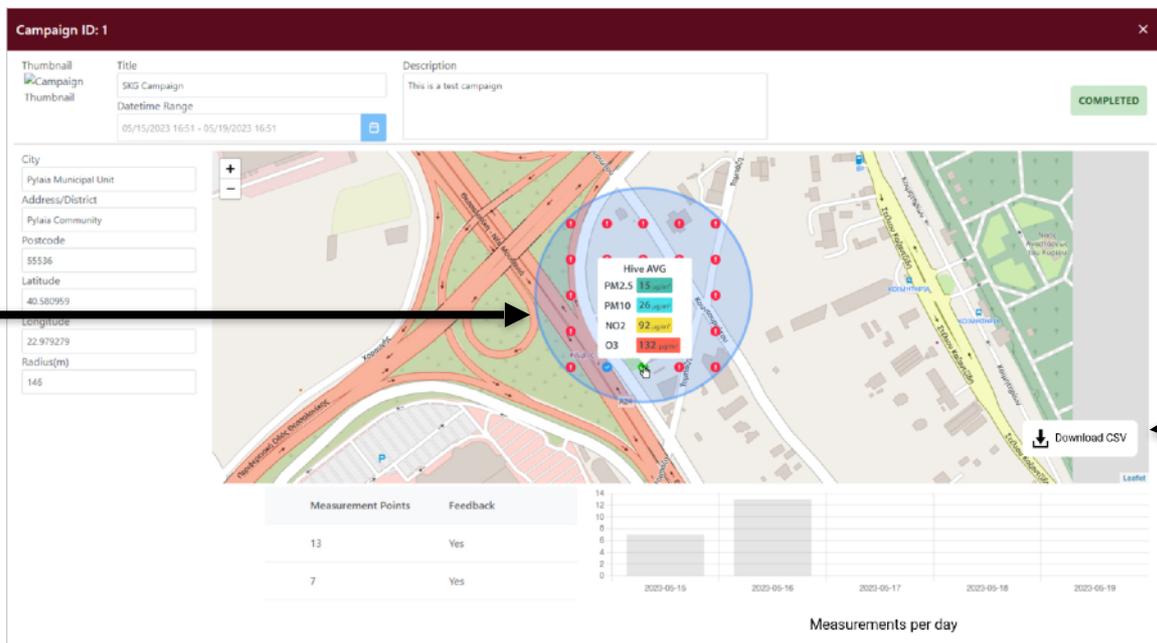
Location	Date Range	My Role	Status	Progress
Pylaia Community, Pylaia Municipal Unit, 55536	15/05/2023 04:51 - 19/05/2023 04:51	Beekeeper	COMPLETED	100%
Pylaia Community, Pylaia Municipal Unit, 57001	15/05/2023 07:34 - 22/05/2023 07:34	Beekeeper	COMPLETED	100%
Thermi, Suburbs, Thermi, 57001	16/05/2023 08:00 - 23/05/2023 08:00	Beekeeper	COMPLETED	100%
Pylaia Community, Pylaia Municipal Unit, 54201	29/05/2023 03:47 - 31/05/2023 03:47	Beekeeper	COMPLETED	100%
Test Campaign v3	06/06/2023 12:01 - 06/06/2023 01:01	Beekeeper	COMPLETED	100%
test	06/06/2023 02:17 - 06/06/2023 03:17	Beekeeper	COMPLETED	100%
test 2	06/06/2023 02:25 - 06/06/2023 03:25	Beekeeper	COMPLETED	100%
Thermi Campaign	02/11/2023 11:36 - 03/11/2023 11:36	Beekeeper	COMPLETED	100%
test 4	06/06/2023 04:13 - 06/06/2023 05:13	Beekeeper	COMPLETED	100%
φάρμακας Σκοταός	06/06/2023 02:43 - 09/06/2023 02:43	Beekeeper	COMPLETED	100%

You can filter the campaigns by their current status or by date.

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

How can you download the data?

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



The screenshot displays the 'Campaign ID: 1' interface. It includes a form with fields for Title, Description, Campaign, Datetime Range, City, Address/District, Postcode, Latitude, Longitude, and Radius(m). A map shows a selected measuring point with a 'Hive AVG' popup displaying: PM2.5 (15 µg/m³), PM10 (26 µg/m³), NO2 (92 µg/m³), and O3 (113 µg/m³). A 'Download CSV' button is visible on the right. Below the map is a table of measurement points and a bar chart of measurements per day.

Measurement Points	Feedback
13	Yes
7	Yes

Measurements per day

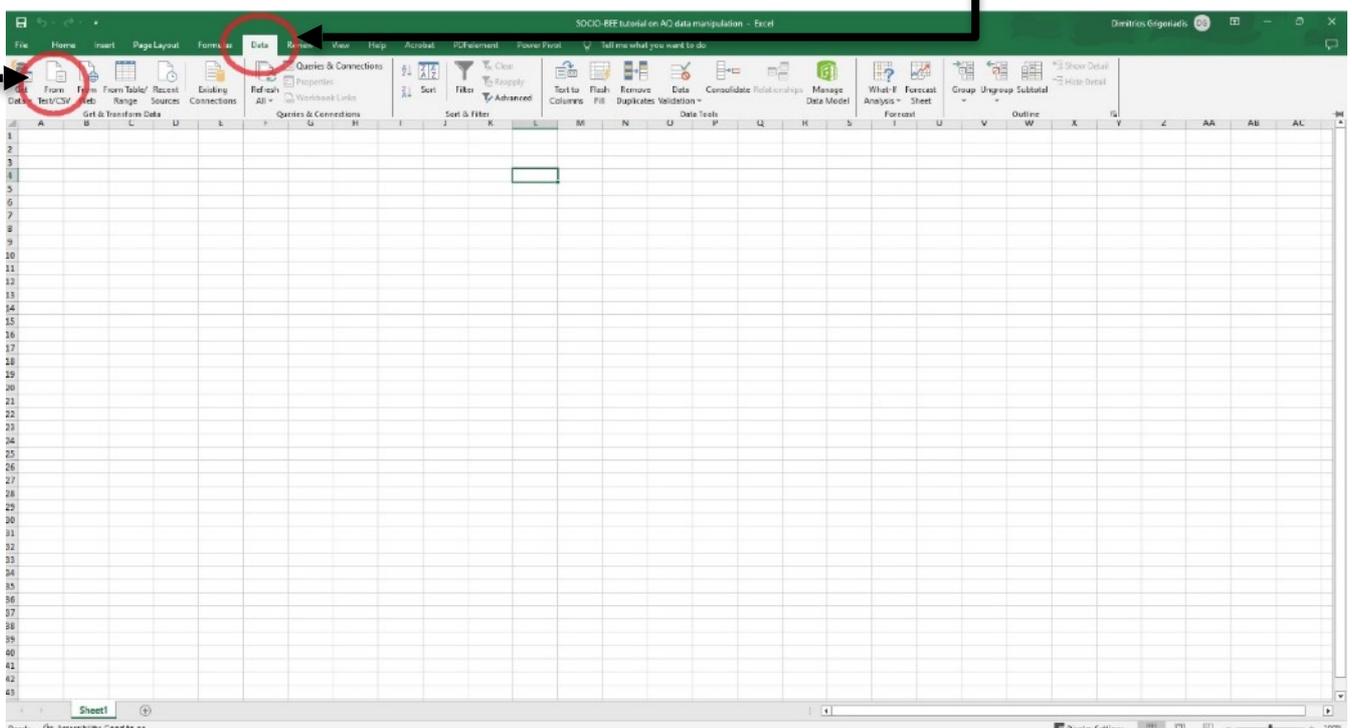
To download a CSV file containing all the data collected in the campaign, press the 'Download CSV' button (right).

How can you import the data into Excel?

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.

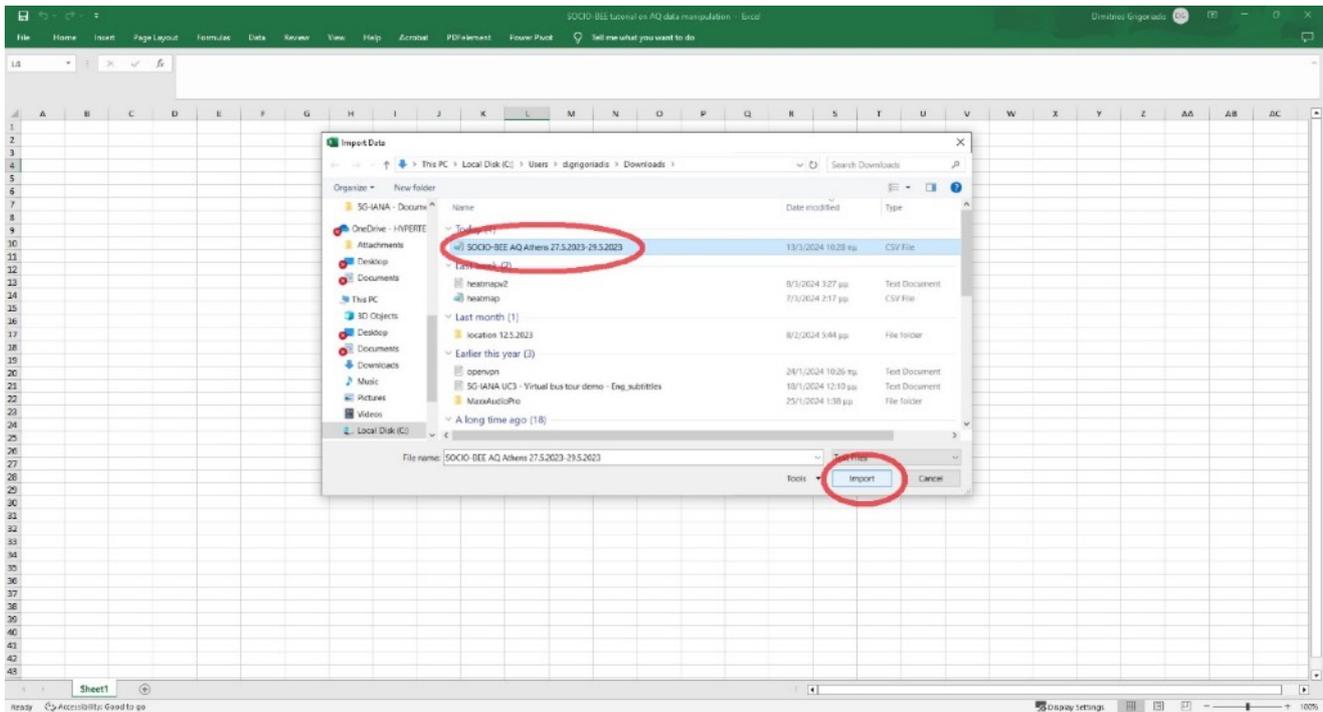
To import the downloaded CSV file, first open an empty Excel sheet and go to the 'Data' tab.



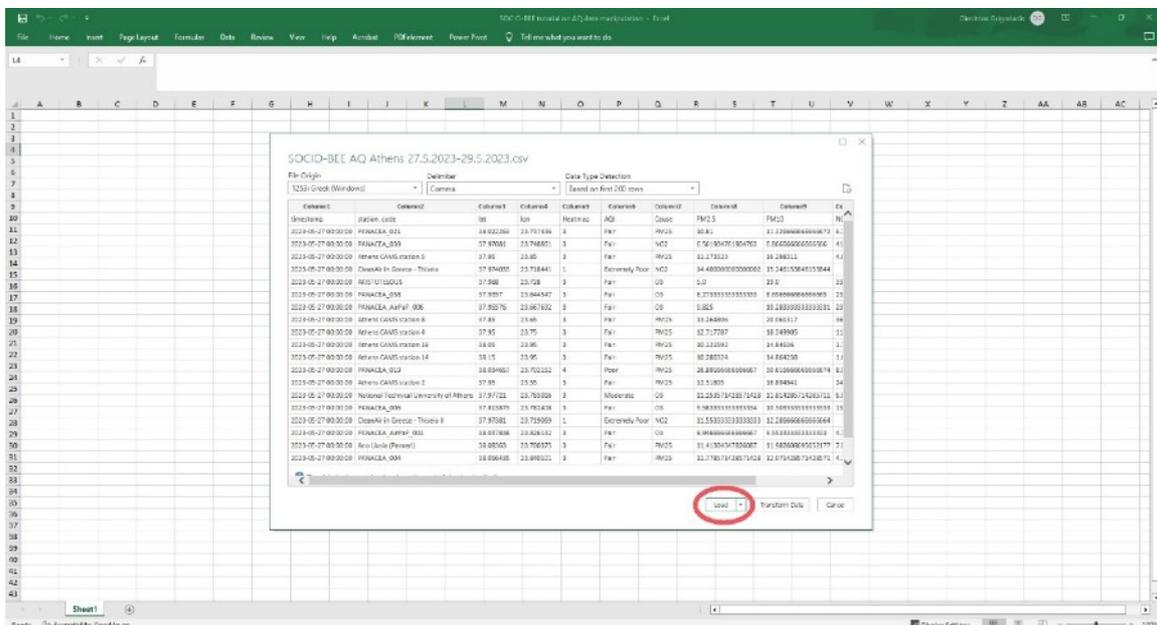
Then select 'From Text/CSV'.

How can you import the data into Excel?

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



Review the format that your data will be imported to your spreadsheet and press 'Load'.





How can you import the data into Excel?

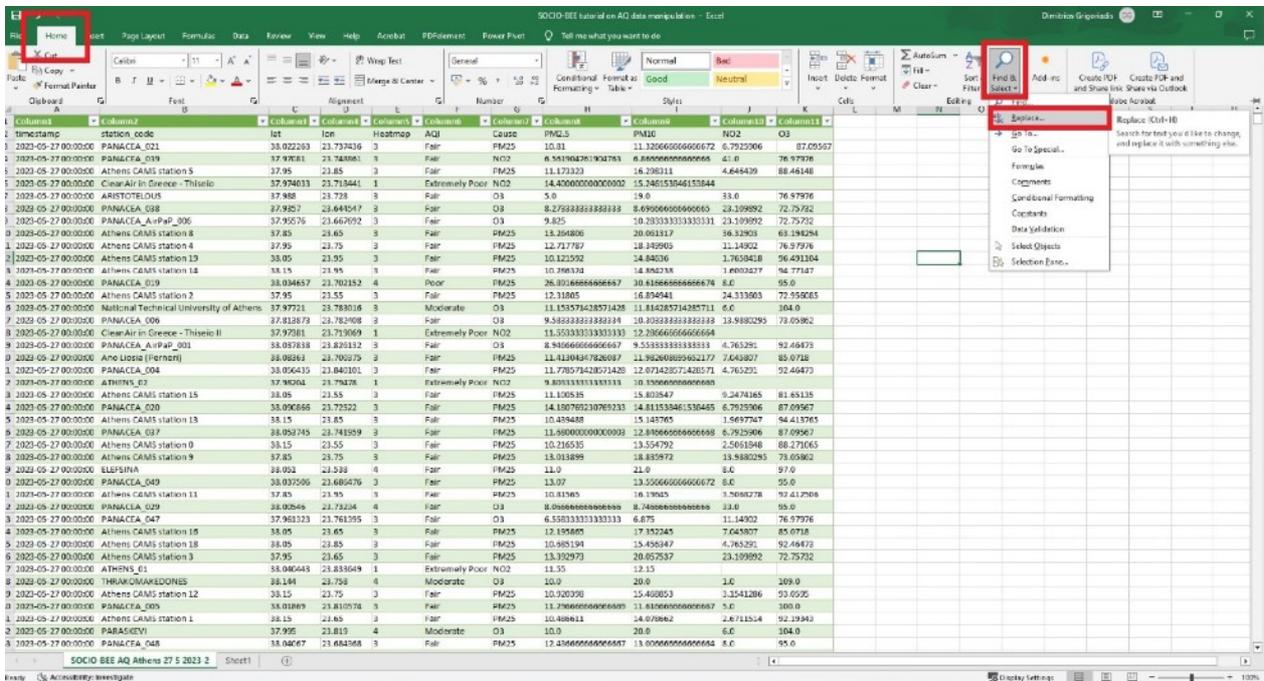
The data is imported into your spreadsheet.

Column1	Column2	Column3	Column4	Column5	Column6	Column7	Column8	Column9	Column10	Column11
timeamp	station_code	lat	lon	heatmap	AQI	Case	PM2.5	PM10	NO2	O3
2023-05-27 00:00:00	PANACEA_021	38.02263	23.72746	3	Fair	PM25	10.81	11.2666666666667	6.792506	87.0567
2023-05-27 00:00:00	PANACEA_039	37.97081	23.74861	3	Fair	NO2	5.61904761904763	8.96666666666666	41.0	70.9796
2023-05-27 00:00:00	Athens CAMS station 5	37.97081	23.74861	3	Fair	PM10	11.713121	16.21111	11.58419	88.4848
2023-05-27 00:00:00	CleanAir in Greece - Thessio II	37.974033	23.718441	1	Extremely Poor	NO2	14.40000000000002	15.24612384153844		
2023-05-27 00:00:00	PANACEA_038	37.9537	23.644547	3	Fair	O3	8.27333333333333	8.89666666666665	23.10892	72.75732
2023-05-27 00:00:00	PANACEA_AirPop_ID0	37.9537	23.667972	3	Fair	O3	9.825	10.2833333333333	23.10892	72.75732
2023-05-27 00:00:00	Athens CAMS station 8	37.85	23.65	3	Fair	PM25	13.264895	20.051117	36.32903	63.194294
2023-05-27 00:00:00	Athens CAMS station 4	37.95	23.75	3	Fair	PM25	12.71787	18.34905	11.44952	70.9796
2023-05-27 00:00:00	Athens CAMS station 7	38.05	23.85	4	Fair	PM25	10.21925	14.89418	11.02814	70.9796
2023-05-27 00:00:00	Athens CAMS station 24	38.15	23.85	3	Fair	PM25	10.28024	14.84238	11.002427	84.77147
2023-05-27 00:00:00	PANACEA_019	38.03867	23.80273	3	Fair	PM25	26.8718888888889	30.8188888888889	8.0	95.0
2023-05-27 00:00:00	Athens CAMS station 2	37.95	23.55	3	Fair	PM25	12.31805	16.84941	24.333683	72.96605
2023-05-27 00:00:00	National Technical University of Athens	37.97721	23.783016	3	Moderate	O3	11.1338731428571428	13.84387314285714	6.0	100.0
2023-05-27 00:00:00	PANACEA_006	37.811873	23.76308	3	Fair	O3	5.96133333333333	10.3033333333333	11.9480295	71.8582
2023-05-27 00:00:00	CleanAir in Greece - Thessio II	37.97881	23.718009	1	Extremely Poor	NO2	15.5333333333333	12.2866666666666		
2023-05-27 00:00:00	PANACEA_AirPop_ID0	38.03867	23.80273	3	Fair	O3	8.98888888888889	10.5111111111111	10.7673	70.9796
2023-05-27 00:00:00	Ano Liosia (Permet)	38.0866	23.70072	3	Fair	PM25	11.4234847826087	11.89236899522177	7.045807	85.0718
2023-05-27 00:00:00	PANACEA_010	38.05815	23.80101	3	Fair	PM25	11.778571428571428	13.87828571428571	8.78273	80.48478
2023-05-27 00:00:00	ATHENS_02	37.96204	23.79478	1	Extremely Poor	NO2	8.80333333333333	10.3166666666666		
2023-05-27 00:00:00	Athens CAMS station 13	38.02	23.55	3	Fair	PM25	11.10032	15.80347	9.247165	81.61125
2023-05-27 00:00:00	Athens CAMS station 9	38.05	23.85	3	Fair	PM25	11.38076731707317	16.8133333333333	8.704308	87.0567
2023-05-27 00:00:00	Athens CAMS station 15	38.15	23.85	3	Fair	PM25	10.43485	15.143705	11.967747	84.43705
2023-05-27 00:00:00	PANACEA_017	38.07145	23.71120	3	Fair	PM25	11.8888888888889	13.8188888888889	8.0	95.0
2023-05-27 00:00:00	Athens CAMS station 0	38.15	23.55	3	Fair	PM25	10.21633	13.52478	2.561848	88.27105
2023-05-27 00:00:00	Athens CAMS station 9	37.85	23.75	3	Fair	PM25	13.01899	18.83972	13.989295	73.8582
2023-05-27 00:00:00	ELFSANA	38.051	23.533	4	Fair	PM25	11.0	21.0	8.0	92.0
2023-05-27 00:00:00	PANACEA_048	38.03506	23.68470	3	Fair	PM25	13.07	13.0566666666667	8.0	85.0
2023-05-27 00:00:00	Athens CAMS station 11	37.85	23.75	3	Fair	PM25	10.18188	16.1785	11.8888888888889	80.41248
2023-05-27 00:00:00	PANACEA_029	38.00242	23.72324	4	Fair	O3	8.06666666666666	8.74666666666666	31.0	85.0
2023-05-27 00:00:00	PANACEA_041	37.96323	23.81393	3	Fair	O3	6.58833333333333	8.25	11.14902	70.9796
2023-05-27 00:00:00	Athens CAMS station 36	38.05	23.65	3	Fair	PM25	12.19585	17.32245	7.045807	85.0718
2023-05-27 00:00:00	Athens CAMS station 18	38.02	23.85	3	Fair	PM25	10.68184	15.45617	4.763291	92.40473
2023-05-27 00:00:00	Athens CAMS station 3	37.85	23.85	3	Fair	PM25	13.39273	20.82637	23.10892	72.25732
2023-05-27 00:00:00	ATHENS_01	38.04043	23.83849	1	Extremely Poor	NO2	11.52	12.15		
2023-05-27 00:00:00	THRAKOMAKEDONES	38.154	23.78	3	Moderate	O3	10.0	20.0	3.0	100.0
2023-05-27 00:00:00	Athens CAMS station 12	38.15	23.75	3	Fair	PM25	10.92038	15.48853	3.154128	93.0182
2023-05-27 00:00:00	PANACEA_005	38.03389	23.81023	3	Fair	PM25	11.29889666666669	13.81889666666667	5.0	100.0
2023-05-27 00:00:00	Athens CAMS station 1	38.15	23.65	3	Fair	PM25	10.48661	14.87862	2.671514	92.1543
2023-05-27 00:00:00	PARAKEVI	37.995	23.819	4	Moderate	O3	10.0	20.0	6.0	104.0
2023-05-27 00:00:00	PANACEA_040	38.04067	23.68468	3	Fair	PM25	12.4366666666667	13.0666666666666	8.0	95.0

Depending on the software that you use, you might experience errors when importing your data. Your default settings may confuse the “.” sign in the data. When this happens, the software positions the numbers in your data on the left of the cell.

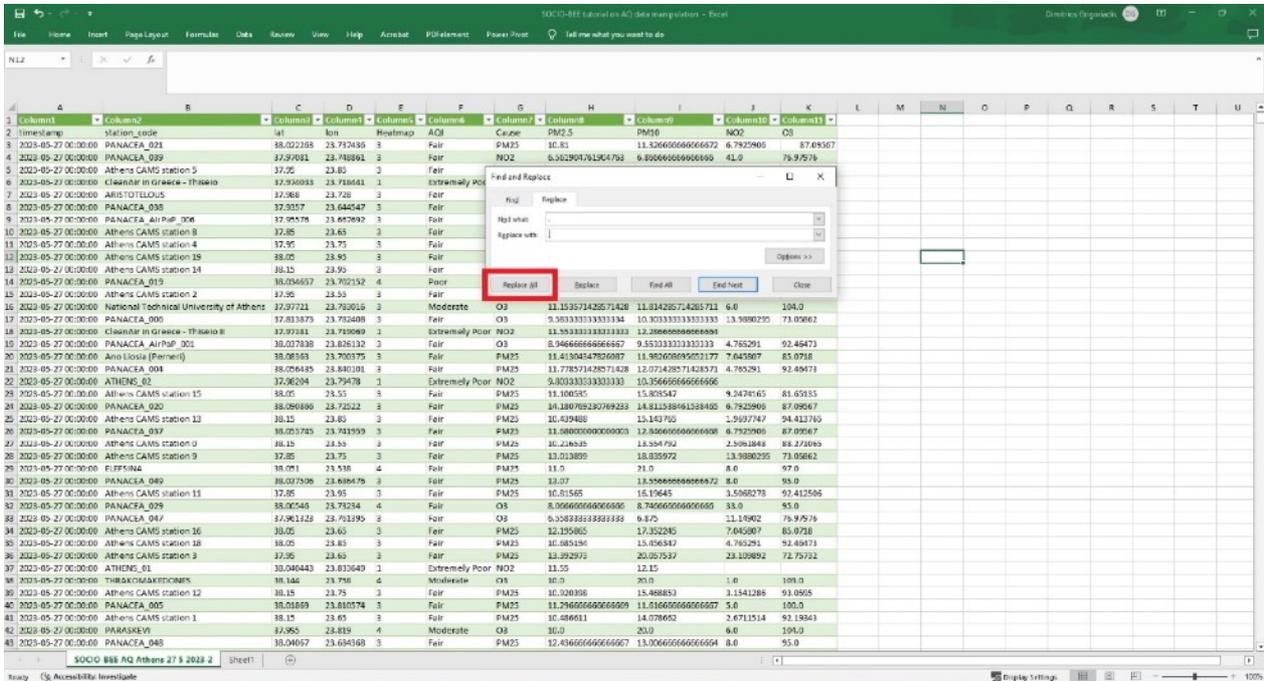
How can you import the data into Excel?

To fix this, go to the 'Home' tab (top left). Press 'Find & Select' and then select 'Replace'. Or simply press Ctrl+H.

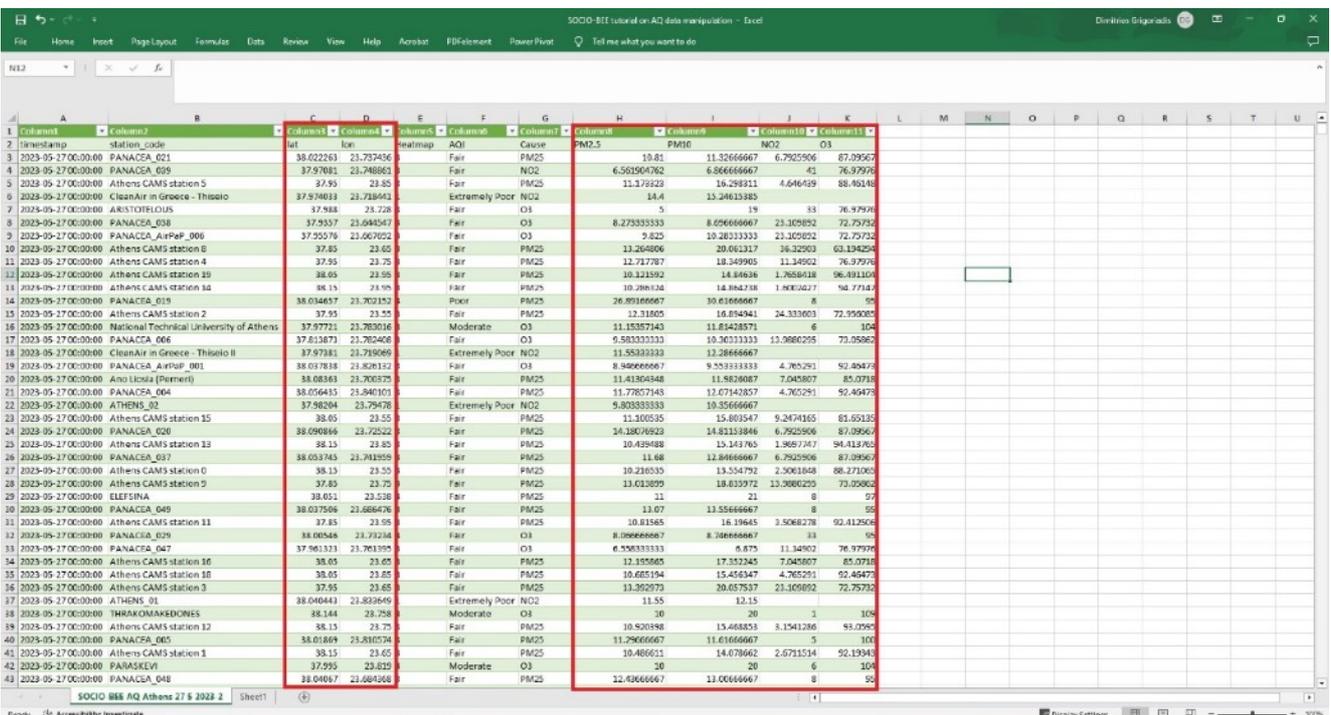


This will open a window where you can find and replace anything across your data. Insert the ‘.’ sign in both text boxes and then select ‘Replace all’.

How can you import the data into Excel?

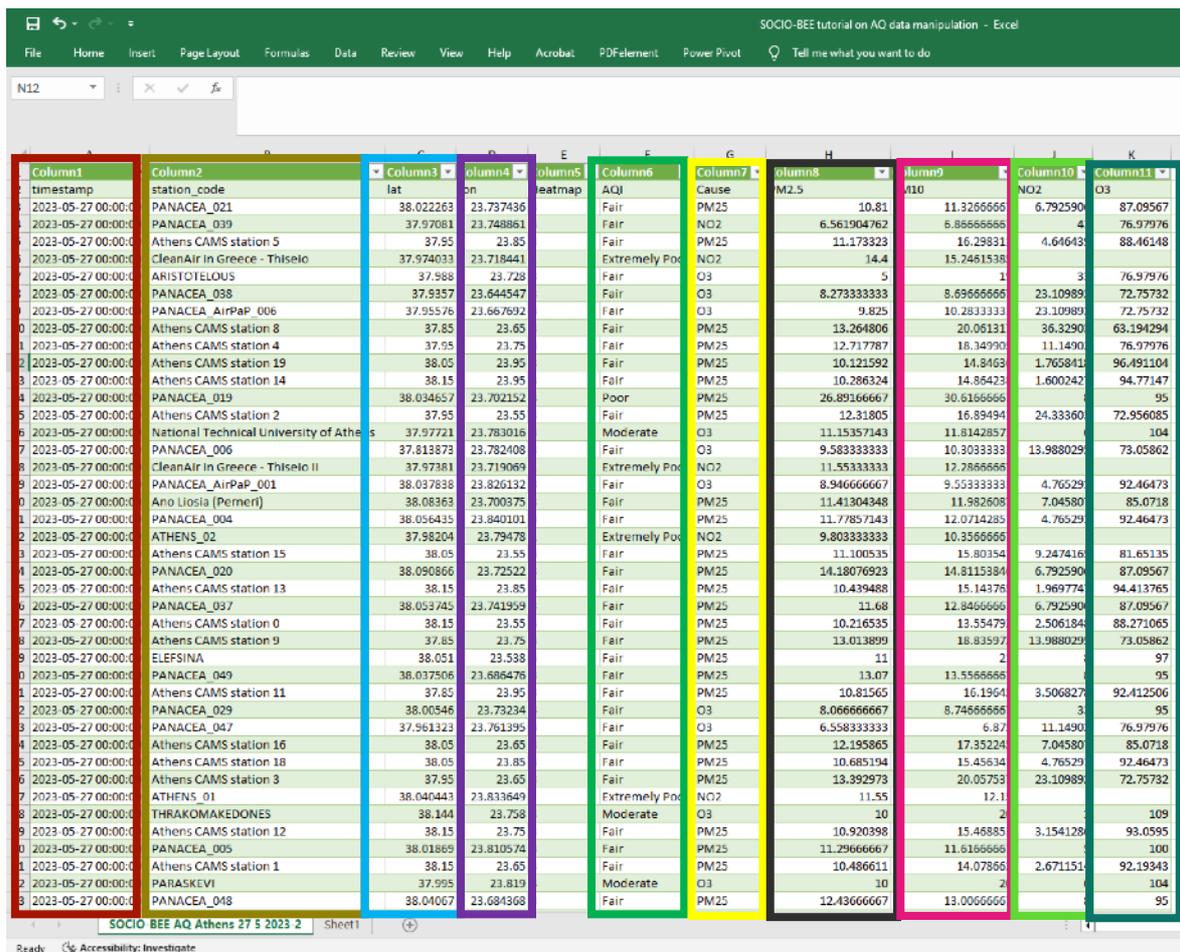


Once you've done this, you'll see that all the numbers are now positioned automatically on the right-hand side of the cells. That means that the software now recognises them as numbers.



What can you see in the data?

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.



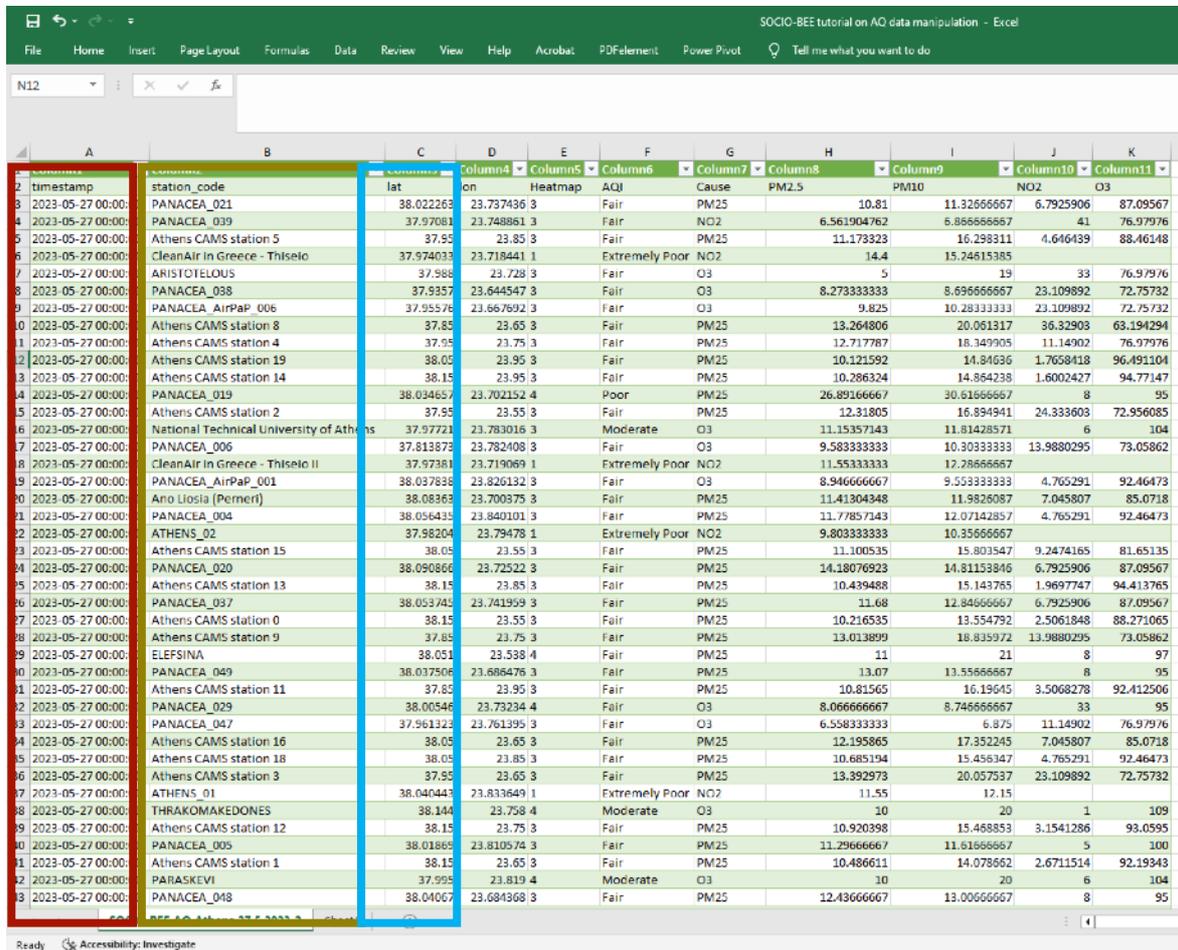
Column1	Column2	Column3	Column4	Column5	Column6	Column7	Column8	Column9	Column10	Column11
timestamp	station_code	lat	lon	heatmap	AQI	Cause	PM2.5	PM10	NO2	O3
2023-05-27 00:00:00	PANACEA_021	38.022263	23.737436		Fair	PM25	10.81	11.3266666	6.792590	87.09567
2023-05-27 00:00:00	PANACEA_039	37.97081	23.748861		Fair	NO2	6.561904762	6.86666666	4	76.97976
2023-05-27 00:00:00	Athens CAMS station 5	37.95	23.85		Fair	PM25	11.173323	16.29831	4.64643	88.46148
2023-05-27 00:00:00	CleanAir In Greece - Thiselo	37.974033	23.718441		Extremely Poor	NO2	14.4	15.2461538		
2023-05-27 00:00:00	ARISTOTELOUS	37.988	23.728		Fair	O3	5	1	3	76.97976
2023-05-27 00:00:00	PANACEA_038	37.9357	23.644547		Fair	O3	8.273333333	8.69666666	23.10989	72.75732
2023-05-27 00:00:00	PANACEA_AirPaP_006	37.95576	23.667692		Fair	O3	9.825	10.2833333	23.10989	72.75732
2023-05-27 00:00:00	Athens CAMS station 8	37.85	23.65		Fair	PM25	13.264806	20.06131	36.3290	63.194294
2023-05-27 00:00:00	Athens CAMS station 4	37.95	23.75		Fair	PM25	12.717787	18.34990	11.1490	76.97976
2023-05-27 00:00:00	Athens CAMS station 19	38.05	23.95		Fair	PM25	10.121592	14.8463	1.765841	96.491104
2023-05-27 00:00:00	Athens CAMS station 14	38.15	23.95		Fair	PM25	10.286324	14.86423	1.600242	94.77147
2023-05-27 00:00:00	PANACEA_019	38.034657	23.702152		Poor	PM25	26.89166667	30.6166666		95
2023-05-27 00:00:00	Athens CAMS station 2	37.95	23.55		Fair	PM25	12.31805	16.89494	24.33360	72.956085
2023-05-27 00:00:00	National Technical University of Athens	37.97721	23.783016		Moderate	O3	11.15357143	11.8142857		104
2023-05-27 00:00:00	PANACEA_006	37.813873	23.782408		Fair	O3	9.583333333	10.3033333	13.988029	73.05862
2023-05-27 00:00:00	CleanAir In Greece - Thiselo II	37.97381	23.719069		Extremely Poor	NO2	11.55333333	12.2866666		
2023-05-27 00:00:00	PANACEA_AirPaP_001	38.037838	23.826132		Fair	O3	8.946666667	9.55333333	4.76529	92.46473
2023-05-27 00:00:00	Ano Liosia (Pernerj)	38.08363	23.700375		Fair	PM25	11.41304348	11.982608	7.04580	85.0718
2023-05-27 00:00:00	PANACEA_004	38.056435	23.840101		Fair	PM25	11.77857143	12.0714285	4.76529	92.46473
2023-05-27 00:00:00	ATHENS_02	37.98204	23.79478		Extremely Poor	NO2	9.803333333	10.3566666		
2023-05-27 00:00:00	Athens CAMS station 15	38.05	23.55		Fair	PM25	11.100535	15.80354	9.247416	81.65135
2023-05-27 00:00:00	PANACEA_020	38.090866	23.72522		Fair	PM25	14.18076923	14.8115384	6.792590	87.09567
2023-05-27 00:00:00	Athens CAMS station 13	38.15	23.85		Fair	PM25	10.439488	15.14376	1.969774	94.413765
2023-05-27 00:00:00	PANACEA_037	38.053745	23.741959		Fair	PM25	11.68	12.8466666	6.792590	87.09567
2023-05-27 00:00:00	Athens CAMS station 0	38.15	23.55		Fair	PM25	10.216535	13.55479	2.506184	88.271065
2023-05-27 00:00:00	Athens CAMS station 9	37.85	23.75		Fair	PM25	13.013899	18.83597	13.988029	73.05862
2023-05-27 00:00:00	ELEFSINA	38.051	23.538		Fair	PM25	11	2		97
2023-05-27 00:00:00	PANACEA_049	38.037506	23.686476		Fair	PM25	13.07	13.5566666		95
2023-05-27 00:00:00	Athens CAMS station 11	37.85	23.95		Fair	PM25	10.81565	16.1964	3.506827	92.412506
2023-05-27 00:00:00	PANACEA_029	38.00546	23.73234		Fair	O3	8.066666667	8.74666666	3	95
2023-05-27 00:00:00	PANACEA_047	37.961323	23.761395		Fair	O3	6.588333333	6.87	11.1490	76.97976
2023-05-27 00:00:00	Athens CAMS station 16	38.05	23.65		Fair	PM25	12.195865	17.35224	7.04580	85.0718
2023-05-27 00:00:00	Athens CAMS station 18	38.05	23.85		Fair	PM25	10.685194	15.45634	4.76529	92.46473
2023-05-27 00:00:00	Athens CAMS station 3	37.95	23.65		Fair	PM25	13.392973	20.05753	23.10989	72.75732
2023-05-27 00:00:00	ATHENS_01	38.040443	23.833649		Extremely Poor	NO2	11.55	12.1		
2023-05-27 00:00:00	THRAKOMAKEDONES	38.144	23.758		Moderate	O3	10	2		109
2023-05-27 00:00:00	Athens CAMS station 12	38.15	23.75		Fair	PM25	10.920398	15.48885	3.154128	93.0595
2023-05-27 00:00:00	PANACEA_005	38.01869	23.810574		Fair	PM25	11.29666667	11.6166666		100
2023-05-27 00:00:00	Athens CAMS station 1	38.15	23.65		Fair	PM25	10.486611	14.07866	2.671151	92.19343
2023-05-27 00:00:00	PARASKEVI	37.995	23.819		Moderate	O3	10	2		104
2023-05-27 00:00:00	PANACEA_048	38.04067	23.684368		Fair	PM25	12.43666667	13.0066666		95

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.

What can you see in the data?

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



timestamp	station_code	lat	lon	Cause	AQI	PM2.5	PM10	NO2	O3
2023-05-27 00:00	PANACEA_021	38.022263	23.737436	Fair	PM25	10.81	11.32656667	6.7925906	87.09567
2023-05-27 00:00	PANACEA_039	37.97081	23.748861	Fair	NO2	6.561904762	8.866666667	41	76.97976
2023-05-27 00:00	Athens CAMS station 5	37.95	23.85	Fair	PM25	11.173323	16.298311	4.646439	88.46148
2023-05-27 00:00	CleanAir in Greece - Thiseio	37.974033	23.718441	Extremely Poor	NO2	14.4	15.24615385		
2023-05-27 00:00	ARISTOTELEOUS	37.988	23.728	Fair	O3	5	19	33	76.97976
2023-05-27 00:00	PANACEA_088	37.9587	23.644547	Fair	O3	8.273333333	8.696666667	23.109892	72.75732
2023-05-27 00:00	PANACEA_AirPaP_006	37.95576	23.667692	Fair	O3	9.825	10.28333333	23.109892	72.75732
2023-05-27 00:00	Athens CAMS station 8	37.85	23.65	Fair	PM25	13.264806	20.061317	36.32903	63.194294
2023-05-27 00:00	Athens CAMS station 4	37.95	23.75	Fair	PM25	12.717787	18.349905	11.14902	76.97976
2023-05-27 00:00	Athens CAMS station 19	38.05	23.95	Fair	PM25	10.121592	14.84636	1.7658418	96.491104
2023-05-27 00:00	Athens CAMS station 14	38.15	23.95	Fair	PM25	10.286324	14.854238	1.6002427	94.77147
2023-05-27 00:00	PANACEA_019	38.034657	23.702152	Poor	PM25	26.89166667	30.61666667	8	95
2023-05-27 00:00	Athens CAMS station 2	37.95	23.55	Fair	PM25	12.31805	16.894941	24.333603	72.956085
2023-05-27 00:00	National Technical University of Athens	37.97721	23.783016	Moderate	O3	11.15357143	11.81428571	6	104
2023-05-27 00:00	PANACEA_006	37.813873	23.782408	Fair	O3	9.583333333	10.30333333	13.9880295	73.05862
2023-05-27 00:00	CleanAir in Greece - Thiseio II	37.97381	23.719069	Extremely Poor	NO2	11.55333333	12.28666667		
2023-05-27 00:00	PANACEA_AirPaP_001	38.037838	23.826132	Fair	O3	8.946666667	9.553333333	4.765291	92.46473
2023-05-27 00:00	Ario Liosia (Permeri)	38.08363	23.700375	Fair	PM25	11.41304348	11.9826087	7.045807	85.0718
2023-05-27 00:00	PANACEA_004	38.056435	23.840101	Fair	PM25	11.77857143	12.07142857	4.765291	92.46473
2023-05-27 00:00	ATHENS_02	37.98204	23.79478	Extremely Poor	NO2	9.803333333	10.35666667		
2023-05-27 00:00	Athens CAMS station 15	38.05	23.55	Fair	PM25	11.100535	15.803547	9.2474165	81.65135
2023-05-27 00:00	PANACEA_020	38.090866	23.72522	Fair	PM25	14.18076923	14.81153846	6.7925906	87.09567
2023-05-27 00:00	Athens CAMS station 13	38.15	23.85	Fair	PM25	10.439488	15.143765	1.9697747	94.413765
2023-05-27 00:00	PANACEA_037	38.053745	23.741959	Fair	PM25	11.68	12.84666667	6.7925906	87.09567
2023-05-27 00:00	Athens CAMS station 0	38.15	23.55	Fair	PM25	10.216535	13.554792	2.5061848	88.271065
2023-05-27 00:00	Athens CAMS station 9	37.85	23.75	Fair	PM25	13.013899	18.835972	13.9880295	73.05862
2023-05-27 00:00	ELEFSINA	38.051	23.538	Fair	PM25	11	21	8	97
2023-05-27 00:00	PANACEA_049	38.037506	23.686476	Fair	PM25	13.07	13.55666667	8	95
2023-05-27 00:00	Athens CAMS station 11	37.85	23.95	Fair	PM25	10.81565	16.19645	3.5068278	92.412506
2023-05-27 00:00	PANACEA_029	38.00546	23.73234	Fair	O3	8.066666667	8.746666667	33	95
2023-05-27 00:00	PANACEA_047	37.961323	23.761395	Fair	O3	6.558333333	6.875	11.14902	76.97976
2023-05-27 00:00	Athens CAMS station 16	38.05	23.65	Fair	PM25	12.195865	17.352245	7.045807	85.0718
2023-05-27 00:00	Athens CAMS station 18	38.05	23.85	Fair	PM25	10.685194	15.456347	4.765291	92.46473
2023-05-27 00:00	Athens CAMS station 3	37.95	23.65	Fair	PM25	13.392973	20.057537	23.109892	72.75732
2023-05-27 00:00	ATHENS_01	38.040443	23.833649	Extremely Poor	NO2	11.55	12.15		
2023-05-27 00:00	THRAKOMAKEDONES	38.144	23.758	Moderate	O3	10	20	1	109
2023-05-27 00:00	Athens CAMS station 12	38.15	23.75	Fair	PM25	10.920398	15.468853	3.1541286	93.0595
2023-05-27 00:00	PANACEA_005	38.01869	23.810574	Fair	PM25	11.29666667	11.61666667	5	100
2023-05-27 00:00	Athens CAMS station 1	38.15	23.65	Fair	PM25	10.486611	14.078662	2.6711514	92.19343
2023-05-27 00:00	PARASKEVI	37.995	23.819	Moderate	O3	10	20	6	104
2023-05-27 00:00	PANACEA_048	38.04067	23.684368	Fair	PM25	12.43666667	13.00666667	8	95

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.

What can you see in the data?

Column1	Column2	Column3	Column4	Column5	Column6	Column7	Column8	Column9	Column10	Column11
timestamp	station_code	lat	lon	AQI	Cause	PM2.5	PM10	NO2	O3	
2023-05-27 00:00:00	PANACEA_021	38.022263	23.737436	3	Fair	PM25	10.81	11.32666667	6.7925906	87.09567
2023-05-27 00:00:00	PANACEA_039	37.97081	23.748861	3	Fair	NO2	6.561904762	6.866666667	41	76.97976
2023-05-27 00:00:00	Athens CAMS station 5	37.95	23.85	3	Fair	PM25	11.173323	16.298311	4.646439	88.46148
2023-05-27 00:00:00	CleanAir in Greece - Thiseio	37.974033	23.718441	1	Extremely Poor	NO2	14.4	15.24615385		
2023-05-27 00:00:00	ARISTOTELEOUS	37.988	23.728	3	Fair	O3	5	19	33	76.97976
2023-05-27 00:00:00	PANACEA_038	37.9357	23.644547	3	Fair	O3	8.273333333	8.696666667	23.109892	72.75732
2023-05-27 00:00:00	PANACEA_AirPaP_006	37.95576	23.667692	3	Fair	O3	9.825	10.28333333	23.109892	72.75732
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
2023-05-27 00:00:00	Athens CAMS station 4	37.95	23.75	3	Fair	PM25	12.717787	18.349095	11.14902	76.97976
2023-05-27 00:00:00	Athens CAMS station 19	38.05	23.95	3	Fair	PM25	10.121592	14.84636	1.7658418	96.491104
2023-05-27 00:00:00	Athens CAMS station 14	38.15	23.95	3	Fair	PM25	10.286324	14.854238	1.6002427	94.77147
2023-05-27 00:00:00	PANACEA_019	38.034657	23.702152	4	Poor	PM25	26.89166667	30.61666667	8	95
2023-05-27 00:00:00	Athens CAMS station 2	37.95	23.55	3	Fair	PM25	12.31805	16.894941	24.333603	72.956085
2023-05-27 00:00:00	National Technical University of Athens	37.97721	23.783016	3	Moderate	O3	11.15357143	11.81428571	6	104
2023-05-27 00:00:00	PANACEA_006	37.813873	23.782408	3	Fair	O3	9.583333333	10.30333333	13.9880295	73.05862
2023-05-27 00:00:00	CleanAir in Greece - Thiseio II	37.97381	23.719069	1	Extremely Poor	NO2	11.55333333	12.28666667		
2023-05-27 00:00:00	PANACEA_AirPaP_001	38.037838	23.826132	3	Fair	O3	8.946666667	9.553333333	4.765291	92.46473
2023-05-27 00:00:00	Ano Liosia (Permeri)	38.08363	23.700373	3	Fair	PM25	11.41304348	11.9826087	7.045807	85.0718
2023-05-27 00:00:00	PANACEA_004	38.056435	23.840101	3	Fair	PM25	11.77857143	12.07142857	4.765291	92.46473
2023-05-27 00:00:00	ATHENS_02	37.98204	23.79478	1	Extremely Poor	NO2	9.803333333	10.35666667		
2023-05-27 00:00:00	Athens CAMS station 15	38.05	23.55	3	Fair	PM25	11.100535	15.803547	9.2474165	81.65135
2023-05-27 00:00:00	PANACEA_020	38.090866	23.72522	3	Fair	PM25	14.18076923	14.81153846	6.7925906	87.09567
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
2023-05-27 00:00:00	PANACEA_037	38.053745	23.741959	3	Fair	PM25	11.68	12.84666667	6.7925906	87.09567
2023-05-27 00:00:00	Athens CAMS station 0	38.15	23.55	3	Fair	PM25	10.216535	13.554792	2.5061848	88.271065
2023-05-27 00:00:00	Athens CAMS station 9	37.85	23.75	3	Fair	PM25	13.013899	18.835972	13.9880295	73.05862
2023-05-27 00:00:00	ELEFSINA	38.051	23.538	4	Fair	PM25	11	21	8	97
2023-05-27 00:00:00	PANACEA_049	38.037506	23.686476	3	Fair	PM25	13.07	13.55666667	8	95
2023-05-27 00:00:00	Athens CAMS station 11	37.85	23.95	3	Fair	PM25	10.81565	16.19645	3.5068278	92.412506
2023-05-27 00:00:00	PANACEA_029	38.00546	23.73234	4	Fair	O3	8.066666667	8.746666667	33	95
2023-05-27 00:00:00	PANACEA_047	37.961323	23.761395	3	Fair	O3	6.558333333	6.875	11.14902	76.97976
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
2023-05-27 00:00:00	Athens CAMS station 18	38.05	23.85	3	Fair	PM25	10.685194	15.456147	4.765291	92.46473
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
2023-05-27 00:00:00	ATHENS_01	38.040443	23.833649	1	Extremely Poor	NO2	11.55	12.15		
2023-05-27 00:00:00	THRAKOMAKEDONES	38.144	23.758	4	Moderate	O3	10	20	1	109
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
2023-05-27 00:00:00	PANACEA_005	38.01869	23.810574	3	Fair	PM25	11.29666667	11.61666667	5	100
2023-05-27 00:00:00	Athens CAMS station 1	38.15	23.65	3	Fair	PM25	10.486611	14.078662	2.6711514	92.19343
2023-05-27 00:00:00	PARASKEVI	37.995	23.819	4	Moderate	O3	10	20	6	104
2023-05-27 00:00:00	PANACEA_048	38.04067	23.684668	3	Fair	PM25	12.43666667	13.00666667	8	95

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.

What can you see in the data?

Column1	Column2	Column3	Column4	Column5	Column6	Column7	Column8	Column9	Column10	Column11
timestamp	station_code	lat	lon	Heatmap	AQI	Cause	PM2.5	PM10	NO2	O3
2023-05-27 00:00:00	PANACEA_021	38.022263	23.737436	3	Fair	PM25	10.81	11.326666	6.79259	87.09567
2023-05-27 00:00:00	PANACEA_039	37.97081	23.748861	3	Fair	NO2	6.561904762	6.8666666	16.2983	76.97976
2023-05-27 00:00:00	Athens CAMS station 5	37.95	23.85	3	Fair	PM25	11.173323	16.2983	4.6464	88.46148
2023-05-27 00:00:00	CleanAir in Greece - Thiseio	37.974033	23.718441	1	Extremely Poor	NO2	14.4	15.246153		
2023-05-27 00:00:00	ARISTOTELOUS	37.988	23.728	3	Fair	O3				76.97976
2023-05-27 00:00:00	PANACEA_038	37.9357	23.644547	3	Fair	O3	8.273333333	8.6966666	23.1098	72.75732
2023-05-27 00:00:00	PANACEA_AirPaP_006	37.95576	23.667692	3	Fair	O3	9.829	10.283333	23.1098	72.75732
2023-05-27 00:00:00	Athens CAMS station 8	37.85	23.65	3	Fair	PM25	13.264806	20.0613	36.329	63.194294
2023-05-27 00:00:00	Athens CAMS station 4	37.95	23.75	3	Fair	PM25	12.717787	18.3499	11.149	76.97976
2023-05-27 00:00:00	Athens CAMS station 19	38.05	23.95	3	Fair	PM25	10.121592	14.846	1.76584	96.491104
2023-05-27 00:00:00	Athens CAMS station 14	38.15	23.95	3	Fair	PM25	10.286324	14.8542	1.60024	94.77147
2023-05-27 00:00:00	PANACEA_019	38.034657	23.702152	4	Poor	PM25	26.89166667	30.616666		95
2023-05-27 00:00:00	Athens CAMS station 2	37.95	23.55	3	Fair	PM25	12.31805	16.8949	24.3336	72.956085
2023-05-27 00:00:00	National Technical University of Athens	37.97721	23.783016	3	Moderate	O3	11.15357143	11.814285		104
2023-05-27 00:00:00	PANACEA_006	37.813873	23.782408	3	Fair	O3	9.583333333	10.303333	13.98802	73.05862
2023-05-27 00:00:00	CleanAir in Greece - Thiseio II	37.97381	23.719069	1	Extremely Poor	NO2	11.55333333	12.286666		
2023-05-27 00:00:00	PANACEA_AirPaP_001	38.037838	23.826132	3	Fair	O3	8.946666667	9.5533333	4.7652	92.46473
2023-05-27 00:00:00	Ano Liosia (Permeri)	38.08363	23.700375	3	Fair	PM25	11.41304348	11.98260	7.0458	85.0718
2023-05-27 00:00:00	PANACEA_004	38.056435	23.840101	3	Fair	PM25	11.77857143	12.071428	4.7652	92.46473
2023-05-27 00:00:00	ATHENS_02	37.98204	23.79478	1	Extremely Poor	NO2	9.803333333	10.356666		
2023-05-27 00:00:00	Athens CAMS station 15	38.05	23.55	3	Fair	PM25	11.100539	15.8035	9.24741	81.65135
2023-05-27 00:00:00	PANACEA_020	38.090866	23.72522	3	Fair	PM25	14.18076923	14.811538	6.79259	87.09567
2023-05-27 00:00:00	Athens CAMS station 13	38.15	23.85	3	Fair	PM25	10.439488	15.1437	1.96977	94.413765
2023-05-27 00:00:00	PANACEA_037	38.053745	23.741959	3	Fair	PM25	11.68	12.846666	6.79259	87.09567
2023-05-27 00:00:00	Athens CAMS station 0	38.15	23.55	3	Fair	PM25	10.216535	13.5547	2.50618	88.271065
2023-05-27 00:00:00	Athens CAMS station 9	37.85	23.75	3	Fair	PM25	13.013899	18.8359	13.98802	73.05862
2023-05-27 00:00:00	ELEFSINA	38.051	23.538	4	Fair	PM25	11			97
2023-05-27 00:00:00	PANACEA_049	38.037506	23.686476	3	Fair	PM25	13.07	13.556666		95
2023-05-27 00:00:00	Athens CAMS station 11	37.85	23.95	3	Fair	PM25	10.81563	16.196	3.50682	92.412506
2023-05-27 00:00:00	PANACEA_029	38.00546	23.73234	4	Fair	O3	8.066666667	8.7466666		95
2023-05-27 00:00:00	PANACEA_047	37.961323	23.761395	3	Fair	O3	6.558333333	6.8	11.149	76.97976
2023-05-27 00:00:00	Athens CAMS station 16	38.05	23.65	3	Fair	PM25	12.195865	17.3522	7.0458	85.0718
2023-05-27 00:00:00	Athens CAMS station 18	38.05	23.85	3	Fair	PM25	10.685194	15.4561	4.7652	92.46473
2023-05-27 00:00:00	Athens CAMS station 3	37.95	23.65	3	Fair	PM25	13.392973	20.0575	23.1098	72.75732
2023-05-27 00:00:00	ATHENS_01	38.040443	23.833649	1	Extremely Poor	NO2	11.55	12		
2023-05-27 00:00:00	THRAKOMAKEDONES	38.144	23.758	4	Moderate	O3	10			109
2023-05-27 00:00:00	Athens CAMS station 12	38.15	23.75	3	Fair	PM25	10.920398	15.4688	3.15412	93.0595
2023-05-27 00:00:00	PANACEA_005	38.01869	23.810574	3	Fair	PM25	11.29666667	11.616666		100
2023-05-27 00:00:00	Athens CAMS station 1	38.15	23.65	3	Fair	PM25	10.486611	14.0786	2.67115	92.19343
2023-05-27 00:00:00	PARASKEVI	37.995	23.819	4	Moderate	O3	10			104
2023-05-27 00:00:00	PANACEA_048	38.04067	23.684368	3	Fair	PM25	12.43666667	13.006666		95

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.

Column1	Column2	Column3	Column4	Column5	Column6	Column7	Column8	Column9	Column10	Column11
timestamp	station_code	cause	PM2.5	PM10	NO2	O3				
2023-05-27 00:00:00	PANACEA_021	Fair	10.81	11.32666667	6.7925906	87.09567				
2023-05-27 00:00:00	PANACCA_039	Fair	6.561904762	6.866666667	41	76.97976				
2023-05-27 00:00:00	Athens CAMS station 5	Fair	11.173323	16.298311	4.646139	88.46148				
2023-05-27 00:00:00	CleanAir in Greece - Thiseio	Extremely Poor	14.4	15.24815385						
2023-05-27 00:00:00	ARISTOTELIUS	Fair	5	19	33	76.97976				
2023-05-27 00:00:00	PANACEA_038	Fair	8.273333333	8.696666667	23.109892	72.75732				
2023-05-27 00:00:00	PANACEA_AirPaP_006	Fair	9.825	10.28333333	23.109892	72.75732				
2023-05-27 00:00:00	Athens CAMS station 8	Fair	13.264806	20.061317	36.32903	63.194294				
2023-05-27 00:00:00	Athens CAMS station 4	Fair	12.717787	18.349905	11.14902	76.97976				
2023-05-27 00:00:00	Athens CAMS station 19	Fair	10.121592	14.81636	1.765818	96.491104				
2023-05-27 00:00:00	Athens CAMS station 14	Fair	10.286324	14.864238	1.6002427	94.77147				
2023-05-27 00:00:00	PANACEA_019	Poor	26.89166667	30.61666667	8	95				
2023-05-27 00:00:00	Athens CAMS station 2	Fair	12.31805	16.894941	24.333603	72.956085				
2023-05-27 00:00:00	National Technical University of Athens	Moderate	11.15357143	11.81428571	6	104				
2023-05-27 00:00:00	PANACCA_006	Fair	9.583333333	10.30333333	13.9880295	73.05862				
2023-05-27 00:00:00	CleanAir in Greece - Thiseio II	Extremely Poor	11.55333333	12.28666667						
2023-05-27 00:00:00	PANACEA_AirPaP_001	Fair	38.037838	23.876132	3					
2023-05-27 00:00:00	Aeo I Ionia (Pomeri)	Fair	38.08363	23.700325	3					
2023-05-27 00:00:00	PANACEA_004	Fair	38.056435	23.840101	3					
2023-05-27 00:00:00	ATHENS_02	Extremely Poor	37.98204	23.79478	1					
2023-05-27 00:00:00	Athens CAMS station 15	Fair	38.05	23.55	3					
2023-05-27 00:00:00	PANACCA_020	Fair	38.090866	23.72522	3					
2023-05-27 00:00:00	Athens CAMS station 13	Fair	38.15	23.85	3					
2023-05-27 00:00:00	PANACEA_037	Fair	38.053745	23.741959	3					
2023-05-27 00:00:00	Athens CAMS station 0	Fair	38.15	23.55	3					
2023-05-27 00:00:00	Athens CAMS station 9	Fair	37.85	23.75	3					
2023-05-27 00:00:00	ELEFSINA	Fair	38.051	23.538	4					
2023-05-27 00:00:00	PANACCA_019	Fair	38.037506	23.686476	3					



What do you need to do before processing the data?

Name the first column 'Date' and the second one 'Time'.

1	Column1	Column12	Column13	Column2	Column3	Column4	Column5	Column6	Column7	Column8
2	timestamp	Date	Time	station_code	lat	lon	Heatmap	AQI	Cause	PM2.5
3	2023-05-27 00:00:00			PANACEA_021	38.022263	23.737436	3	Fair	PM25	
4	2023-05-27 00:00:00			PANACEA_039	37.97081	23.748861	3	Fair	NO2	6.56
5	2023-05-27 00:00:00			Athens CAMS station 5	37.95	23.85	3	Fair	PM25	1
6	2023-05-27 00:00:00			CleanAir in Greece - Thiseio	37.974033	23.718441	1	Extremely Poor	NO2	
7	2023-05-27 00:00:00			ARISTOTELOUS	37.988	23.728	3	Fair	O3	
8	2023-05-27 00:00:00			PANACEA_038	37.9357	23.644547	3	Fair	O3	8.27
9	2023-05-27 00:00:00			PANACEA_AirPaP_006	37.95576	23.667692	3	Fair	O3	
10	2023-05-27 00:00:00			Athens CAMS station 8	37.85	23.65	3	Fair	PM25	1
11	2023-05-27 00:00:00			Athens CAMS station 4	37.95	23.75	3	Fair	PM25	1
12	2023-05-27 00:00:00			Athens CAMS station 19	38.05	23.95	3	Fair	PM25	1
13	2023-05-27 00:00:00			Athens CAMS station 14	38.15	23.95	3	Fair	PM25	1
14	2023-05-27 00:00:00			PANACEA_019	38.034657	23.702152	4	Poor	PM25	26.8
15	2023-05-27 00:00:00			Athens CAMS station 2	37.95	23.55	3	Fair	PM25	
16	2023-05-27 00:00:00			National Technical University of Athens	37.97721	23.783016	3	Moderate	O3	11.1
17	2023-05-27 00:00:00			PANACEA_006	37.813873	23.782408	3	Fair	O3	9.58
18	2023-05-27 00:00:00			CleanAir in Greece - Thiseio II	37.97381	23.719069	1	Extremely Poor	NO2	11.5
19	2023-05-27 00:00:00			PANACEA_AirPaP_001	38.037838	23.826132	3	Fair	O3	8.94
20	2023-05-27 00:00:00			Ano Liosia (Perneri)	38.08363	23.700375	3	Fair	PM25	11.4
21	2023-05-27 00:00:00			PANACEA_004	38.056435	23.840101	3	Fair	PM25	11.7
22	2023-05-27 00:00:00			ATHENS_02	37.98204	23.79478	1	Extremely Poor	NO2	9.80
23	2023-05-27 00:00:00			Athens CAMS station 15	38.05	23.55	3	Fair	PM25	1

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

1	Column1	Column12	Column13	Column2	Column3	Column4	Column5	Column6	Column7	Column8
2	timestamp	Date	Time	station_code	lat	lon	Heatmap	AQI	Cause	PM2.5
3	2023-05-27 00:00:00	=INT([@Column1])		PANACEA_021	38.022263	23.737436	3	Fair	PM25	
4	2023-05-27 00:00:00			PANACEA_039	37.97081	23.748861	3	Fair	NO2	6.56
5	2023-05-27 00:00:00			Athens CAMS station 5	37.95	23.85	3	Fair	PM25	1
6	2023-05-27 00:00:00			CleanAir in Greece - Thiseio	37.974033	23.718441	1	Extremely Poor	NO2	
7	2023-05-27 00:00:00			ARISTOTELOUS	37.988	23.728	3	Fair	O3	
8	2023-05-27 00:00:00			PANACEA_038	37.9357	23.644547	3	Fair	O3	8.27
9	2023-05-27 00:00:00			PANACEA_AirPaP_006	37.95576	23.667692	3	Fair	O3	
10	2023-05-27 00:00:00			Athens CAMS station 8	37.85	23.65	3	Fair	PM25	1
11	2023-05-27 00:00:00			Athens CAMS station 4	37.95	23.75	3	Fair	PM25	1
12	2023-05-27 00:00:00			Athens CAMS station 19	38.05	23.95	3	Fair	PM25	1
13	2023-05-27 00:00:00			Athens CAMS station 14	38.15	23.95	3	Fair	PM25	1
14	2023-05-27 00:00:00			PANACEA_019	38.034657	23.702152	4	Poor	PM25	26.8
15	2023-05-27 00:00:00			Athens CAMS station 2	37.95	23.55	3	Fair	PM25	
16	2023-05-27 00:00:00			National Technical University of Athens	37.97721	23.783016	3	Moderate	O3	11.1
17	2023-05-27 00:00:00			PANACEA_006	37.813873	23.782408	3	Fair	O3	9.58
18	2023-05-27 00:00:00			CleanAir in Greece - Thiseio II	37.97381	23.719069	1	Extremely Poor	NO2	11.5
19	2023-05-27 00:00:00			PANACEA_AirPaP_001	38.037838	23.826132	3	Fair	O3	8.94
20	2023-05-27 00:00:00			Ano Liosia (Perneri)	38.08363	23.700375	3	Fair	PM25	11.4
21	2023-05-27 00:00:00			PANACEA_004	38.056435	23.840101	3	Fair	PM25	11.7
22	2023-05-27 00:00:00			ATHENS_02	37.98204	23.79478	1	Extremely Poor	NO2	9.80
23	2023-05-27 00:00:00			Athens CAMS station 15	38.05	23.55	3	Fair	PM25	1



SOCIO-BEE
Community for Change



What do you need to do before processing the data?

Column1	Column2	Column3	Column4
timestamp	Date	Time	station_code
2023-05-27 00:00:00	45073		PANACEA_021
2023-05-27 00:00:00			PANACEA_039
2023-05-27 00:00:00			Athens CAMS station 5
2023-05-27 00:00:00			CleanAir in Greece - Thiseio
2023-05-27 00:00:00			ARISTOTELOUS
2023-05-27 00:00:00			PANACEA_038

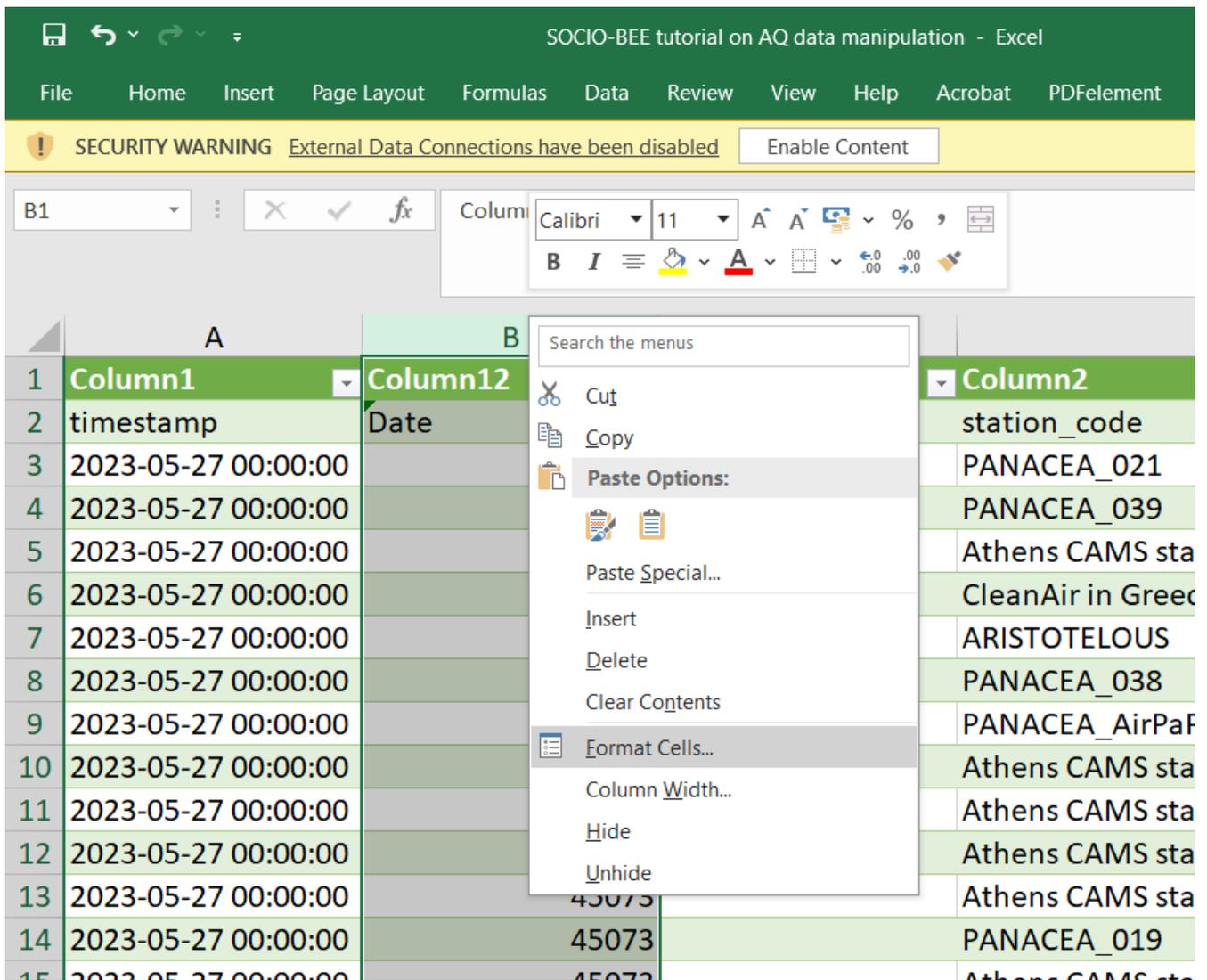
Then insert the same function in the cells below. You may use the 'Special Paste' window that will appear, or you can simply click on the bottom-right corner of the cell, hold, and drag your mouse down.

Column1	Column2	Column3	Column4
timestamp	Date	Time	station_code
2023-05-27 00:00:00	45073		PANACEA_021
2023-05-27 00:00:00			PANACEA_039
2023-05-27 00:00:00			Athens CAMS station 5
2023-05-27 00:00:00			CleanAir in Greece - Thiseio
2023-05-27 00:00:00			ARISTOTELOUS
2023-05-27 00:00:00			PANACEA_038
2023-05-27 00:00:00			PANACEA_AirPaP_006
2023-05-27 00:00:00			Athens CAMS station 8

What do you need to do before processing the data?

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'.

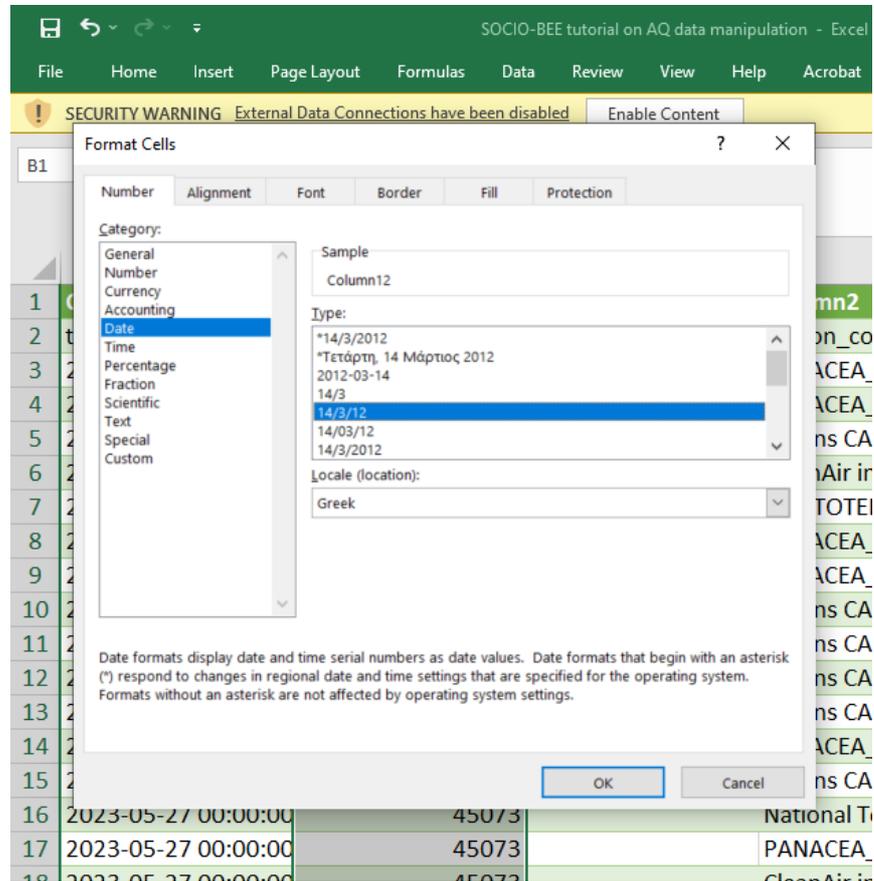


The screenshot shows the Excel interface with a spreadsheet titled "SOCIO-BEE tutorial on AQ data manipulation - Excel". A right-click context menu is open over column B, which contains the text "Date". The menu options include Cut, Copy, Paste Options, Paste Special..., Insert, Delete, Clear Contents, **Format Cells...** (highlighted), Column Width..., Hide, and Unhide. The spreadsheet data is as follows:

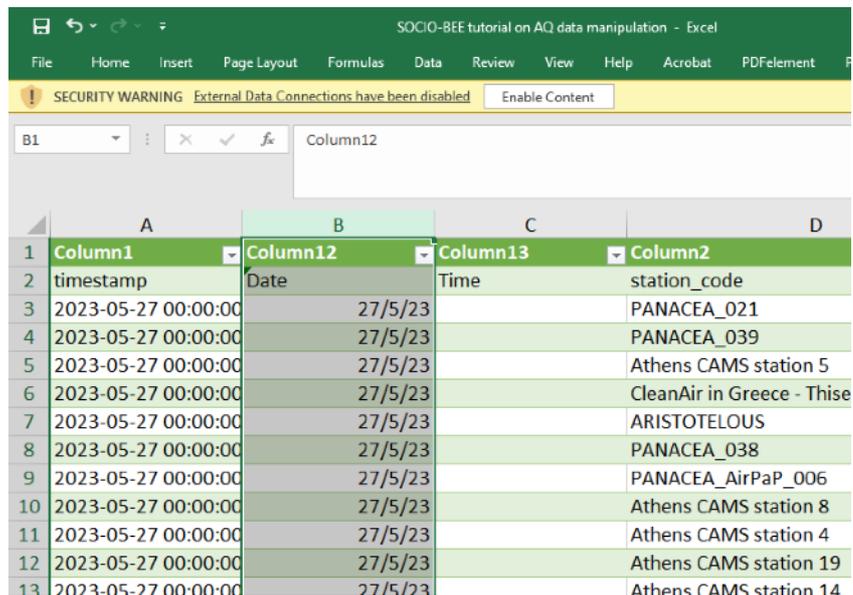
Column1	Column12	Column2
timestamp	Date	station_code
2023-05-27 00:00:00		PANACEA_021
2023-05-27 00:00:00		PANACEA_039
2023-05-27 00:00:00		Athens CAMS sta
2023-05-27 00:00:00		CleanAir in Greec
2023-05-27 00:00:00		ARISTOTELOUS
2023-05-27 00:00:00		PANACEA_038
2023-05-27 00:00:00		PANACEA_AirPaF
2023-05-27 00:00:00		Athens CAMS sta
2023-05-27 00:00:00		Athens CAMS sta
2023-05-27 00:00:00		Athens CAMS sta
2023-05-27 00:00:00	45073	Athens CAMS sta
2023-05-27 00:00:00	45073	PANACEA_019
2023-05-27 00:00:00	45073	Athens CAMS sta

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').



Press 'OK'.



The screenshot shows the Excel spreadsheet after the date formatting is applied. The 'Date' column (Column12) now displays dates in the format 27/5/23. The other columns remain unchanged.

	A	B	C	D
1	Column1	Column12	Column13	Column2
2	timestamp	Date	Time	station_code
3	2023-05-27 00:00:00	27/5/23		PANACEA_021
4	2023-05-27 00:00:00	27/5/23		PANACEA_039
5	2023-05-27 00:00:00	27/5/23		Athens CAMS station 5
6	2023-05-27 00:00:00	27/5/23		CleanAir in Greece - Thise
7	2023-05-27 00:00:00	27/5/23		ARISTOTELOUS
8	2023-05-27 00:00:00	27/5/23		PANACEA_038
9	2023-05-27 00:00:00	27/5/23		PANACEA_AirPaP_006
10	2023-05-27 00:00:00	27/5/23		Athens CAMS station 8
11	2023-05-27 00:00:00	27/5/23		Athens CAMS station 4
12	2023-05-27 00:00:00	27/5/23		Athens CAMS station 19
13	2023-05-27 00:00:00	27/5/23		Athens CAMS station 14



What do you need to do before processing the data?

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

	A	B	C	
1	Column1	Column12	Column13	Column2
2	timestamp	Date	Time	station_code
3	2023-05-27 00:00:00	27/5/23	<code>=[@Column1]-INT([@Column1])</code>	
4	2023-05-27 00:00:00	27/5/23		PANACEA_039
5	2023-05-27 00:00:00	27/5/23		Athens CAMS station
6	2023-05-27 00:00:00	27/5/23		CleanAir in Greece -
7	2023-05-27 00:00:00	27/5/23		ARISTOTELOUS
8	2023-05-27 00:00:00	27/5/23		PANACEA_038

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

	A	B	C	
1	Column1	Column12	Column13	Column2
2	timestamp	Date	Time	station_code
3	2023-05-27 00:00:00	27/5/23		
4	2023-05-27 00:00:00	27/5/23		
5	2023-05-27 00:00:00	27/5/23		
6	2023-05-27 00:00:00	27/5/23		
7	2023-05-27 00:00:00	27/5/23		
8	2023-05-27 00:00:00	27/5/23		
9	2023-05-27 00:00:00	27/5/23		
10	2023-05-27 00:00:00	27/5/23		
11	2023-05-27 00:00:00	27/5/23		
12	2023-05-27 00:00:00	27/5/23		
13	2023-05-27 00:00:00	27/5/23		
14	2023-05-27 00:00:00	27/5/23		
15	2023-05-27 00:00:00	27/5/23		
16	2023-05-27 00:00:00	27/5/23		
17	2023-05-27 00:00:00	27/5/23		
18	2023-05-27 00:00:00	27/5/23		
19	2023-05-27 00:00:00	27/5/23		PANACEA_AirPaP_001
20	2023-05-27 00:00:00	27/5/23		Ano Liosia (Perner)
21	2023-05-27 00:00:00	27/5/23		PANACEA_004



What do you need to do before processing the data?

Your file should now look like this:

Column1	Column12	Column13	Column2	Column3	Column4	Column5	Column6	Column7	Column8	Column9	Column10	Column11
timestamp	Date	time	station_code	lat	lon	Heatmap	AQI	Cause	PM2.5	PM10	NO2	OS
2023-05-27 00:00:00	27/5/23	12:00:00	PANACEA_021	38.022263	23.737436	3	Fair	PM25	10.81	11.32666667	6.7925906	
2023-05-27 00:00:00	27/5/23	12:00:00	PANACEA_039	37.97081	23.748861	3	Fair	NO2	6.561904762	6.866666667	41	
2023-05-27 00:00:00	27/5/23	12:00:00	Athens CAMS station 5	37.95	23.85	3	Fair	PM25	11.173323	16.298311	4.646439	
2023-05-27 00:00:00	27/5/23	12:00:00	CleanAir in Greece - Thisio	37.974033	23.718441	1	Extremely Poor	NO2	14.4	15.24615385		
2023-05-27 00:00:00	27/5/23	12:00:00	ARISIDHIOUS	37.988	23.778	3	Fair	O3	5	19	33	
2023-05-27 00:00:00	27/5/23	12:00:00	PANACEA_038	37.9357	23.644547	3	Fair	O3	8.273333333	8.696666667	23.109892	
2023-05-27 00:00:00	27/5/23	12:00:00	PANACEA_AirPaP_006	37.95576	23.667697	3	Fair	O3	9.875	10.78133333	23.109892	
2023-05-27 00:00:00	27/5/23	12:00:00	Athens CAMS station 8	37.85	23.65	3	Fair	PM25	13.264806	20.061317	36.32903	
2023-05-27 00:00:00	27/5/23	12:00:00	Athens CAMS station 4	37.95	23.75	3	Fair	PM25	12.717787	18.349905	11.14902	
2023-05-27 00:00:00	27/5/23	12:00:00	Athens CAMS station 19	38.05	23.95	3	Fair	PM25	10.171592	14.84636	1.7658418	
2023-05-27 00:00:00	27/5/23	12:00:00	Athens CAMS station 14	38.15	23.95	3	Fair	PM25	10.286324	14.864238	1.6002427	
2023-05-27 00:00:00	27/5/23	12:00:00	PANACEA_019	38.034657	23.702152	4	Poor	PM25	26.89166667	30.61666667	8	
2023-05-27 00:00:00	27/5/23	12:00:00	Athens CAMS station 2	37.95	23.55	3	Fair	PM25	12.31805	16.894941	24.333603	
2023-05-27 00:00:00	27/5/23	12:00:00	National Technical University of Athens	37.97721	23.783016	3	Moderate	O3	11.15357143	11.81428571	6	
2023-05-27 00:00:00	27/5/23	12:00:00	PANACEA_006	37.813873	23.782408	3	Fair	O3	4.583333333	10.30333333	13.9880295	
2023-05-27 00:00:00	27/5/23	12:00:00	CleanAir in Greece - Thisio II	37.97381	23.719069	1	Extremely Poor	NO2	11.55333333	12.28666667		
2023-05-27 00:00:00	27/5/23	12:00:00	PANACEA_AirPaP_001	38.037838	23.826132	3	Fair	O3	8.946666667	9.553333333	4.765291	
2023-05-27 00:00:00	27/5/23	12:00:00	Ano Iliou (Permen)	38.08363	23.700325	3	Fair	PM25	11.41304348	11.9876087	7.045807	
2023-05-27 00:00:00	27/5/23	12:00:00	PANACEA_004	38.056435	23.840101	3	Fair	PM25	11.77857143	12.07142857	4.765291	
2023-05-27 00:00:00	27/5/23	12:00:00	ATHENS_02	37.98204	23.79478	1	Extremely Poor	NO2	9.803333333	10.35666667		
2023-05-27 00:00:00	27/5/23	12:00:00	Athens CAMS station 15	38.05	23.55	3	Fair	PM25	11.100535	15.803547	0.2474165	
2023-05-27 00:00:00	27/5/23	12:00:00	PANACEA_020	38.090866	23.72522	3	Fair	PM25	14.18076923	14.81153846	6.7925906	
2023-05-27 00:00:00	27/5/23	12:00:00	Athens CAMS station 13	38.15	23.85	3	Fair	PM25	10.439488	15.147765	1.9697747	
2023-05-27 00:00:00	27/5/23	12:00:00	PANACEA_037	38.053745	23.741959	3	Fair	PM25	11.68	12.84666667	6.7925906	
2023-05-27 00:00:00	27/5/23	12:00:00	Athens CAMS station 0	38.15	23.55	3	Fair	PM25	10.216535	13.554792	2.5061848	
2023-05-27 00:00:00	27/5/23	12:00:00	Athens CAMS station 9	37.85	23.75	3	Fair	PM25	13.013899	18.835972	13.9880295	
2023-05-27 00:00:00	27/5/23	12:00:00	ELEFSINA	38.051	23.538	4	Fair	PM25	11	21	8	
2023-05-27 00:00:00	27/5/23	12:00:00	PANACEA_049	38.037506	23.686476	3	Fair	PM25	13.07	13.56666667	8	
2023-05-27 00:00:00	27/5/23	12:00:00	Athens CAMS station 11	37.85	23.95	3	Fair	PM25	10.81565	16.19645	3.5068278	

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.



How do you identify the right 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).

	A	B	C	D	E	F	G	H	I	J	K	L	M
141	28/9/2023 8:25	28/9/2023	9:25:00 µg	NO2S	38.022021	25.727130 3	Fair	O3	0.75	6.75	6.6	22.31785	81.92946
142	28/9/2023 8:27	28/9/2023	8:49:00 µg	NO2S	37.97081	25.738861 3	Fair	O3	2.40671428	2.86628	2	30.2395	81.63373
143	28/9/2023 8:29	28/9/2023	8:48:00 µg	NO2S	37.945	25.721 3	Fair	O3	8.190186	12.236	30	30.2395	81.63373
144	28/9/2023 10:12	28/9/2023	10:12:00 µg	NO2S	38.072561	25.732430 3	Fair	O3	6.5	7.10	24.41875	81.93425	
145	28/9/2023 10:14	28/9/2023	10:18:00 µg	NO2S	37.9488	25.728 4	Fair	PM25	38	38	38	38.38244	
146	28/9/2023 10:22	28/9/2023	10:21:00 µg	NO2S	37.97081	25.73468 0	Extremely Poor	NO2	8.888888889	2.145143	8	38	
147	28/9/2023 10:24	28/9/2023	10:24:00 µg	NO2S	37.945	25.85 3	Fair	O3	8.781948	15.8818	37.881	38.78832	
148	28/9/2023 10:42	28/9/2023	10:41:00 µg	NO2S	37.9897	25.84494 3	Fair	O3	4.8	4.8	25.4103	84.41718	
149	28/9/2023 10:48	28/9/2023	10:46:00 µg	NO2S	37.945	25.5 3	Fair	O3	7.88143	14.888	40.92748	88.30244	
150	28/9/2023 10:57	28/9/2023	10:57:00 µg	NO2S	37.974055	25.73844 1	Extremely Poor	NO2	8.884444444	2.40141	41	38	
151	28/9/2023 10:59	28/9/2023	10:59:00 µg	NO2S	38.05	25.95 3	Fair	O3	8.3325134	15.4218	38.9348	81.26188	
152	28/9/2023 11:07	28/9/2023	11:07:00 µg	NO2S	38.022021	25.737488 3	Fair	O3	6.88876	6.48	37.4574	81.4158	
153	28/9/2023 11:09	28/9/2023	11:09:00 µg	NO2S	37.95	25.86 3	Fair	O3	8.5281898	15.5110	37.1202	88.88888	
154	28/9/2023 11:14	28/9/2023	11:14:00 µg	NO2S	37.95	25.73 3	Fair	O3	7.8390957	15.2220	37.10024	88.88888	
155	28/9/2023 11:22	28/9/2023	11:22:00 µg	NO2S	37.988	25.728 4	Fair	PM25	38	38	38.4218	88.88888	
156	28/9/2023 11:25	28/9/2023	11:25:00 µg	NO2L	37.95576	25.667692 3	Fair	O3	6.133333333	6.606666	38.7468	81.2777	
157	28/9/2023 11:47	28/9/2023	11:47:00 µg	NO2S	38.05	25.95 3	Fair	O3	6.427271	11.5888	34.78841	81.12844	
158	28/9/2023 11:58	28/9/2023	11:58:00 µg	NO2S	37.95	25.81 3	Fair	O3	8.815214	17.1028	31.4781	88.05846	
159	28/9/2023 12:03	28/9/2023	12:03:00 µg	NO2S	38.022021	25.737488 3	Fair	O3	7.8875	8.66	15.1287	78.88884	
160	28/9/2023 12:42	28/9/2023	12:42:00 µg	NO2S	37.95	25.72 3	Fair	PM25	10.925146	30.127	15.93187	88.31855	
161	28/9/2023 15:04	28/9/2023	15:04:00 µg	NO2S	37.988	25.728 4	Fair	PM25	15	15	14.8748	77.12106	
162	28/9/2023 15:09	28/9/2023	15:09:00 µg	NO2S	37.974033	25.718441 1	Extremely Poor	NO2	10.34215385	11.8840	14.8748	77.12106	
163	28/9/2023 15:10	28/9/2023	15:10:00 µg	NO2S	37.95576	25.667692 3	Fair	O3	5.66	6	38.235	74.27000	
164	28/9/2023 15:16	28/9/2023	15:16:00 µg	NO2L	37.95576	25.667692 3	Fair	PM25	11.6017017	12.57777	15	74.27000	
165	28/9/2023 15:17	28/9/2023	15:17:00 µg	NO2S	37.95	25.62 3	Fair	PM25	11.888781	27.87	8.05	87.78789	
166	28/9/2023 15:28	28/9/2023	15:28:00 µg	NO2S	37.97081	25.738861 3	Fair	O3	5.3251	5.888283	8.110	77.12106	
167	28/9/2023 15:29	28/9/2023	15:29:00 µg	NO2S	38.05	25.95 3	Fair	O3	8.819968	10.888	8.888	82.38855	
168	28/9/2023 16:02	28/9/2023	16:02:00 µg	NO2S	38.072561	25.732430 3	Fair	PM25	10.85165451	12.24145	10.721673	70.67143	
169	28/9/2023 16:12	28/9/2023	16:12:00 µg	NO2L	37.95576	25.667692 3	Fair	PM25	10.15948736	10.88888	10.1598	88.48835	
170	28/9/2023 16:21	28/9/2023	16:21:00 µg	NO2S	37.945	25.64944 3	Fair	O3	8.26594827	10.72128	10.4818	88.48835	
171	28/9/2023 16:22	28/9/2023	16:22:00 µg	NO2S	37.945	25.85 3	Fair	PM25	4.881487	7.017	6.2386	80.88277	
172	28/9/2023 16:28	28/9/2023	16:28:00 µg	NO2S	37.974055	25.718441 1	Extremely Poor	NO2	4.41014828	11.88151	11.314	81.314	
173	28/9/2023 16:27	28/9/2023	16:27:00 µg	NO2S	37.97081	25.738861 3	Extremely Poor	NO2	4.48	4.48	10.884	88.48835	
174	28/9/2023 17:24	28/9/2023	17:24:00 µg	NO2S	37.974055	25.718441 1	Extremely Poor	NO2	31.47	31.47843	12.7493	81.26188	
175	28/9/2023 17:28	28/9/2023	17:28:00 µg	NO2S	37.9897	25.84494 3	Fair	PM25	10.58854	11.28	12.43853	80.81825	
176	28/9/2023 17:57	28/9/2023	17:57:00 µg	NO2S	38.05	25.95 3	Fair	O3	8.624288	17.888	18.188483	81.99125	
177	28/9/2023 18:01	28/9/2023	18:01:00 µg	NO2S	37.97081	25.66888 3	Fair	PM25	33.1	33	33.48848	80.10248	
178	28/9/2023 18:07	28/9/2023	18:07:00 µg	NO2S	37.988	25.728 4	Fair	PM25	32	32	15.9874	80.10248	
179	28/9/2023 18:12	28/9/2023	18:12:00 µg	NO2S	38.05	25.95 3	Fair	O3	7.7088736	16.884	17.45118	88.88888	
180	28/9/2023 18:18	28/9/2023	18:18:00 µg	NO2S	37.95576	25.664457 2	Fair	PM25	11.745	15	20.478	88.48835	
181	28/9/2023 18:25	28/9/2023	18:25:00 µg	NO2S	37.974058	25.718441 1	Extremely Poor	NO2	15.11071420	16.40587	26.00938	88.48835	
182	28/9/2023 18:38	28/9/2023	18:38:00 µg	NO2S	37.95	25.73 3	Fair	PM25	12.168120	22.101	28.20935	80.10248	
183	28/9/2023 18:42	28/9/2023	18:42:00 µg	NO2L	37.95576	25.667692 3	Fair	PM25	11.8798207	12.64827	28	88.48835	
184	28/9/2023 18:57	28/9/2023	18:57:00 µg	NO2S	37.95	25.81 3	Fair	O3	6.6487615	12.138	12	71.75119	
185	28/9/2023 20:02	28/9/2023	20:02:00 µg	NO2S	37.974033	25.718441 1	Extremely Poor	NO2	23.75881353	25.77847	16.68306	88.48835	
186	28/9/2023 20:05	28/9/2023	20:05:00 µg	NO2S	37.988	25.728 4	Fair	PM25	36	36	28.35217	88.48835	
187	28/9/2023 20:07	28/9/2023	20:07:00 µg	NO2S	37.95576	25.667692 3	Fair	O3	8.95282	12.9388	10.745	77.12106	
188	28/9/2023 20:28	28/9/2023	20:28:00 µg	NO2S	37.95576	25.667692 3	Fair	O3	22.6	22.71212	25.354	55.37285	
189	28/9/2023 20:47	28/9/2023	20:47:00 µg	NO2L	37.95576	25.667692 3	Fair	PM25	15.25454545	16.88888	23.631	55.37285	
190	28/9/2023 20:49	28/9/2023	20:49:00 µg	NO2S	37.97081	25.738861 3	Fair	NO2S	15.18182867	17.88855	15.58137	55.37285	

How do you identify the right data?

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.

AQ data processing SOCIO-BEE v10 - Excel

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SECURITY WARNING External Data Connections have been disabled Enable Content

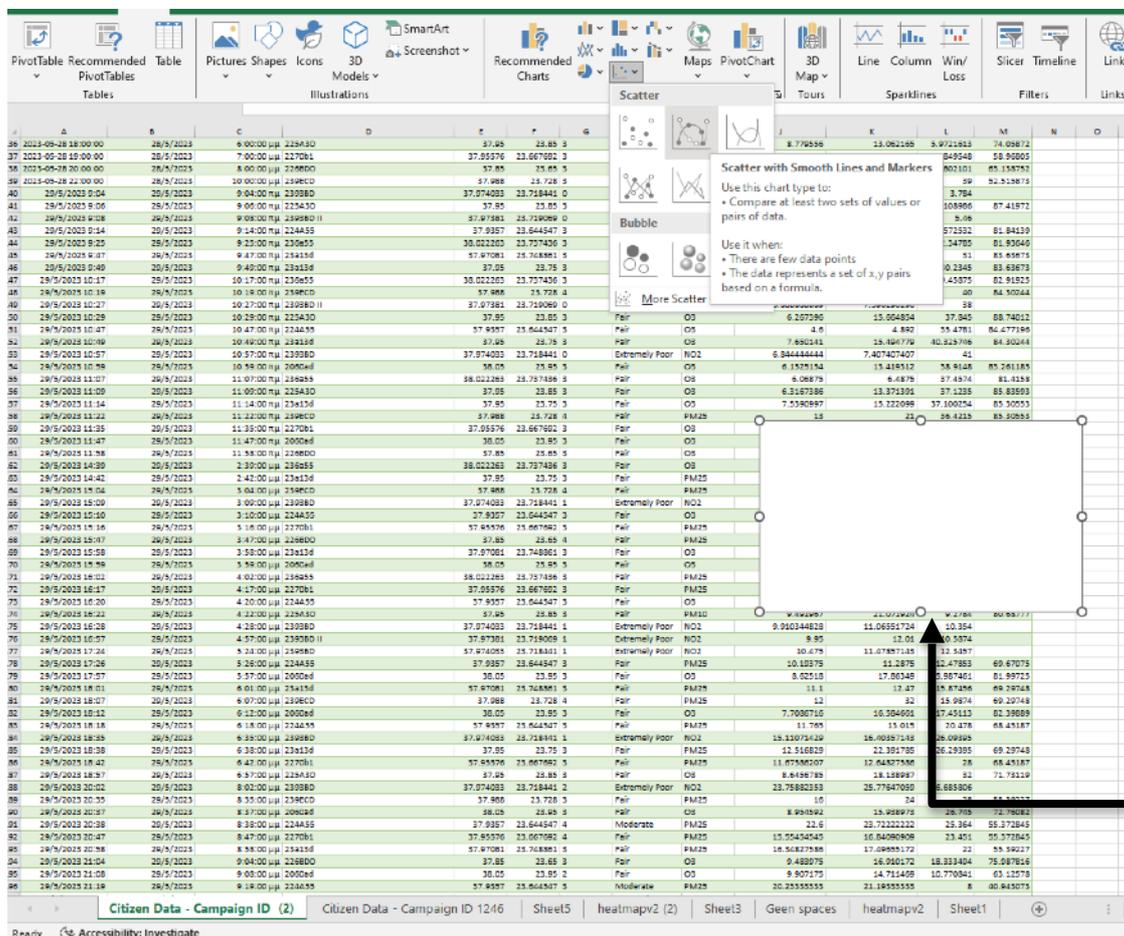
L140 3,784

	column1	column2	column3	column4	column5	column6	column7	column8	column9	column10	column11		
1392	2023-05-28 18:00:00	28/5/2023	6:00:00 PM	225A5D	37.95	23.95	3	Fair	OS	8.778506	13.062105	5.8721613	74.05872
1393	2023-05-28 19:00:00	28/5/2023	7:00:00 PM	227001	57.89716	23.667602	5	Fair	OS	9.12	8.75	27.81818	58.98829
1394	2023-05-28 20:00:00	28/5/2023	8:00:00 PM	226B0D	37.85	23.65	3	Fair	PM25	11.002544	16.944456	27.802105	60.130732
1395	2023-05-28 21:00:00	28/5/2023	10:00:00 PM	234E1D	37.884	24.728	5	Fair	PM25	17	20	56	82.518875
1396	29/5/2023 0:04	29/5/2023	9:04:00 AM	230280	37.074033	23.718441	0	Extremely Poor	NO2	8.893333333	9.603333333	3.754	
1397	29/5/2023 9:06	29/5/2023	9:06:00 AM	225A5D	37.95	23.95	3	Fair	OS	7.040502	16.904052	3.7108956	87.41972
1398	29/5/2023 9:08	29/5/2023	9:08:00 AM	234E1D	37.97981	23.719069	0	Extremely Poor	NO2	8.283333333	9.48	9.48	
1399	29/5/2023 9:14	29/5/2023	9:14:00 AM	234A55	37.9357	23.644547	3	Fair	OS	5.154280714	5.461904702	11.572332	81.84139
1400	29/5/2023 9:23	29/5/2023	9:23:00 AM	236A35	58.022265	28.757456	5	Fair	OS	8.05	8.05	22.56785	81.95848
1401	29/5/2023 9:47	29/5/2023	9:47:00 AM	236136	37.07081	23.748861	3	Fair	OS	2.428971420	2.654438371	21	83.63673
1402	29/5/2023 9:48	29/5/2023	9:48:00 AM	236136	37.85	23.75	3	Fair	OS	8.352416	17.300251	10.234	83.90675
1403	29/5/2023 10:17	29/5/2023	10:17:00 AM	236A35	38.022263	23.737436	3	Fair	OS	6.5	7.0375	20.45878	82.51925
1404	29/5/2023 10:18	29/5/2023	10:18:00 AM	238E0D	37.988	23.728	4	Fair	PM25	14	18	64	84.30244
1405	29/5/2023 10:27	29/5/2023	10:27:00 AM	236B0D	37.97981	23.719069	0	Extremely Poor	NO2	6.988888889	7.569296296	38	
1406	29/5/2023 10:28	29/5/2023	10:28:00 AM	225A5D	37.95	23.95	3	Fair	OS	6.297396	15.604924	37.848	58.74012
1407	29/5/2023 10:47	29/5/2023	10:47:00 AM	234A55	37.8557	23.644547	3	Fair	OS	4.8	4.802	16.0781	86.47196
1408	29/5/2023 10:49	29/5/2023	10:49:00 AM	230136	37.05	23.75	3	Fair	OS	7.650141	15.404770	40.325746	84.30244
1409	29/5/2023 10:57	29/5/2023	10:57:00 AM	236B0D	37.874055	23.718441	0	Extremely Poor	NO2	6.844444444	7.407407407	41	
1410	29/5/2023 10:59	29/5/2023	10:59:00 AM	206045	58.05	23.99	5	Fair	OS	6.5329236	12.548912	38.6186	85.21139
1411	29/5/2023 11:07	29/5/2023	11:07:00 AM	236A35	38.022263	23.737436	3	Fair	OS	6.08575	6.4875	37.4574	81.41510
1412	29/5/2023 11:09	29/5/2023	11:09:00 AM	228A5D	37.9	23.85	5	Fair	OS	8.187188	11.571561	37.1238	85.85948
1413	29/5/2023 11:14	29/5/2023	11:14:00 AM	236136	37.95	23.75	3	Fair	OS	7.5309097	15.220209	37.00234	85.30553
1414	29/5/2023 11:22	29/5/2023	11:22:00 AM	236B0D	37.888	23.728	4	Fair	PM25	15	21	39.4215	85.30553
1415	29/5/2023 11:33	29/5/2023	11:33:00 AM	227001	37.05576	23.667602	3	Fair	OS	6.133333333	6.606666667	38.7488	81.2277
1416	29/5/2023 11:47	29/5/2023	11:47:00 AM	206045	38.05	23.95	5	Fair	OS	6.437771	11.58558	34.78841	81.10647
1417	29/5/2023 11:58	29/5/2023	11:58:00 AM	228B0D	37.85	23.95	3	Fair	OS	8.515236	17.326236	38.4781	86.098816
1418	29/5/2023 12:08	29/5/2023	12:08:00 PM	236B0D	38.022263	23.737436	3	Fair	OS	7.8875	8.6375	15.1547	76.98894
1419	29/5/2023 12:42	29/5/2023	12:42:00 PM	236136	37.83	23.75	3	Fair	PM25	10.995198	20.22795	18.081087	80.51718
1420	29/5/2023 13:04	29/5/2023	1:04:00 PM	238E0D	37.988	23.728	4	Fair	PM25	15	17	54.9748	77.12206
1421	29/5/2023 13:08	29/5/2023	1:08:00 PM	236B0D	37.874055	23.718441	1	Extremely Poor	NO2	10.54615585	11.18826156	18.874	
1422	29/5/2023 13:10	29/5/2023	1:10:00 PM	234A55	37.9357	23.644547	3	Fair	OS	8.06	9.775	34.238	74.576004
1423	29/5/2023 13:15	29/5/2023	1:15:00 PM	227001	37.85076	23.667602	3	Fair	PM25	11.6037037	12.7777778	16	74.576004
1424	29/5/2023 13:47	29/5/2023	1:47:00 PM	228B0D	37.83	23.85	4	Fair	PM25	11.189781	27.8748	9.16	87.78100
1425	29/5/2023 13:53	29/5/2023	1:53:00 PM	236136	37.87081	23.748861	3	Fair	OS	5.525	5.989205714	9.123	77.12206
1426	29/5/2023 13:54	29/5/2023	1:54:00 PM	206045	38.05	23.95	5	Fair	OS	6.10406	16.185206	8.2970	82.538038
1427	29/5/2023 14:01	29/5/2023	1:51:00 PM	236B0D	38.022263	23.737436	3	Fair	PM25	10.85454545	12.54845455	10.72547	76.71623
1428	29/5/2023 14:17	29/5/2023	1:17:00 PM	227001	37.84976	23.667602	3	Fair	PM25	10.1348176	10.9448176	10.4762	86.586513
1429	29/5/2023 14:20	29/5/2023	1:20:00 PM	234A55	37.9357	23.644547	3	Fair	OS	9.78470882	10.7235241	10.4871	88.995115
1430	29/5/2023 14:22	29/5/2023	1:22:00 PM	225A5D	37.95	23.95	3	Fair	PM10	9.481807	21.071804	9.2786	80.68777
1431	29/5/2023 14:28	29/5/2023	1:28:00 PM	236B0D	37.874055	23.718441	1	Extremely Poor	NO2	9.995818182	11.6939126	10.356	
1432	29/5/2023 14:57	29/5/2023	1:57:00 PM	230B0D	37.87981	23.719069	1	Extremely Poor	NO2	9.95	11.01	10.5874	
1433	29/5/2023 17:21	29/5/2023	5:21:00 PM	236B0D	37.874055	23.718441	1	Extremely Poor	NO2	10.475	11.47897143	12.5487	
1434	29/5/2023 17:26	29/5/2023	5:26:00 PM	234A55	37.9357	23.644547	3	Fair	PM25	10.10975	11.2875	12.47838	69.47075
1435	29/5/2023 17:37	29/5/2023	5:37:00 PM	206045	38.05	23.95	5	Fair	OS	8.0518	17.86548	15.87401	81.49775
1436	29/5/2023 18:01	29/5/2023	6:01:00 PM	236B0D	37.87981	23.748861	3	Fair	PM25	13.1	12.47	15.97488	89.10748
1437	29/5/2023 18:07	29/5/2023	6:07:00 PM	238E0D	37.988	23.728	4	Fair	PM25	12	32	15.8874	89.10748
1438	29/5/2023 18:12	29/5/2023	6:12:00 PM	206045	38.05	23.95	5	Fair	OS	7.708878	16.38081	17.3513	82.18888
1439	29/5/2023 18:13	29/5/2023	6:13:00 PM	234A55	37.9357	23.644547	3	Fair	PM25	11.750	13.015	20.476	88.45187
1440	29/5/2023 18:14	29/5/2023	6:14:00 PM	236B0D	37.874055	23.718441	1	Extremely Poor	NO2	15.10071628	16.80971121	29.08306	
1441	29/5/2023 18:18	29/5/2023	6:18:00 PM	236136	37.05	23.75	3	Fair	PM25	12.516820	22.301785	25.20395	89.10748
1442	29/5/2023 18:42	29/5/2023	6:42:00 PM	227001	37.85076	23.667602	3	Fair	PM25	11.67386207	12.64837506	28	68.45187
1443	29/5/2023 18:57	29/5/2023	6:57:00 PM	228A5D	37.9	23.85	5	Fair	OS	8.6188789	18.128997	51	71.76119
1444	29/5/2023 20:02	29/5/2023	8:02:00 PM	236B0D	37.874055	23.718441	1	Extremely Poor	NO2	23.79582323	25.77647028	36.60506	
1445	29/5/2023 20:13	29/5/2023	8:13:00 PM	236B0D	37.888	23.728	5	Fair	PM25	18	24	28	55.19217
1446	29/5/2023 20:37	29/5/2023	8:37:00 PM	206045	38.05	23.95	5	Fair	OS	8.954502	15.938873	26.748	72.76082
1447	29/5/2023 20:38	29/5/2023	8:38:00 PM	234A55	37.85076	23.667602	3	Fair	PM25	32.6	25.73222222	25.766	55.172841
1448	29/5/2023 20:47	29/5/2023	8:47:00 PM	227001	37.85076	23.667602	3	Fair	PM25	15.88454545	16.84000000	29.456	85.372846
1449	29/5/2023 20:53	29/5/2023	8:53:00 PM	236136	37.87081	23.748861	3	Fair	PM25	10.34827586	17.49025171	32	55.19217
1450	29/5/2023 21:03	29/5/2023	9:03:00 PM	228B0D	37.83	23.85	5	Fair	OS	8.985975	18.920171	18.355488	78.987818
1451	29/5/2023 21:08	29/5/2023	9:08:00 PM	206045	38.05	23.95	5	Fair	OS	9.907175	14.711489	10.770841	83.12578
1452	29/5/2023 21:18	29/5/2023	9:18:00 PM	234A55	37.85076	23.667602	3	Moderate	PM25	20.23555555	21.19555555	8	80.930075

How do you plot the data?

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

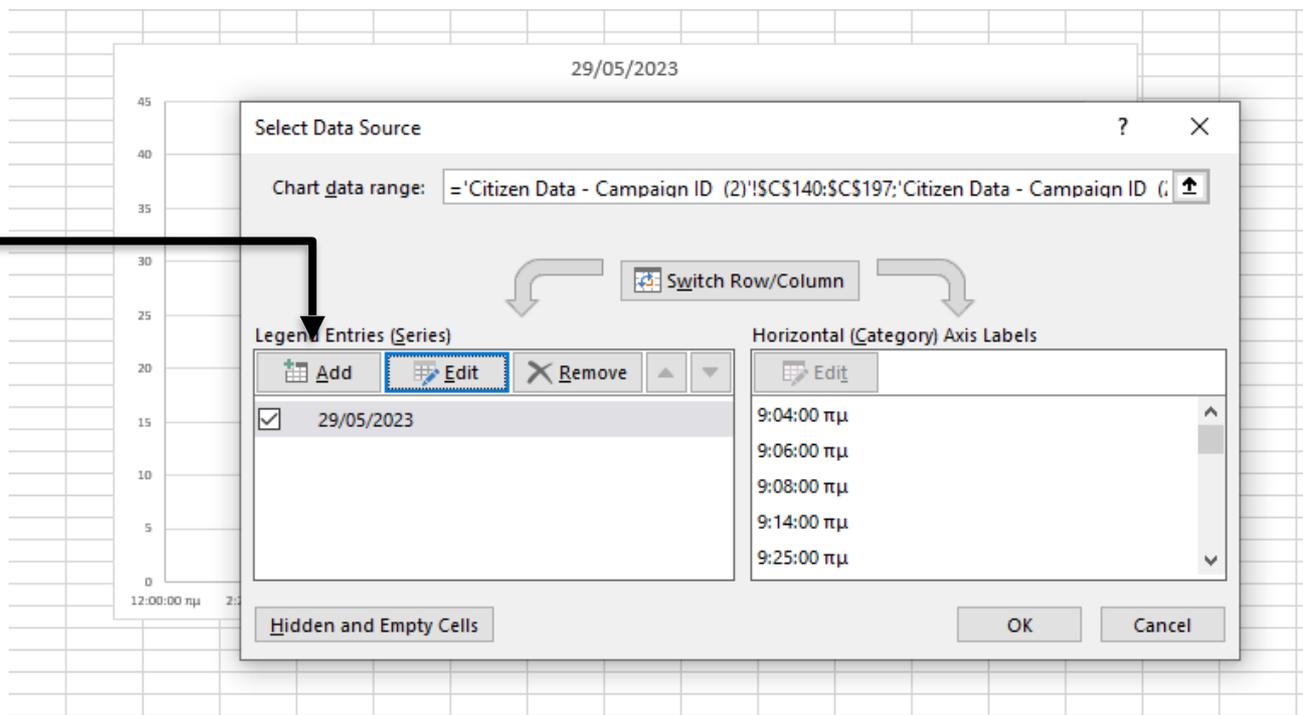
In this example, we will use a Scatter plot with Smooth Lines and Markers.



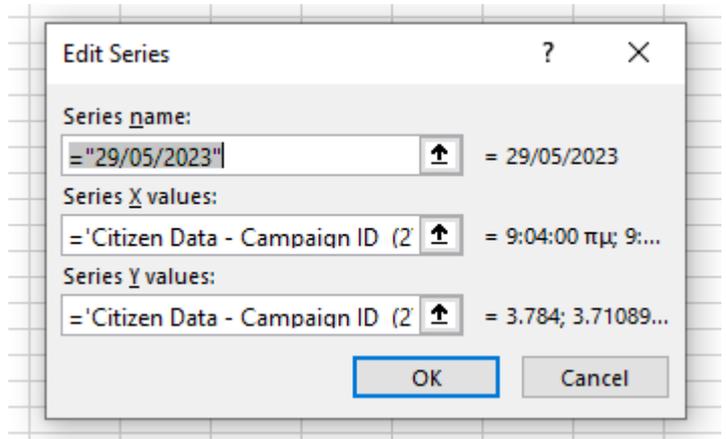
Right-click on the empty white frame and click on the 'Select Data'.

How do you plot the data?

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



Edit the name of the data series and then select the horizontal values (X values) and the perpendicular values (Y values) of your graph.

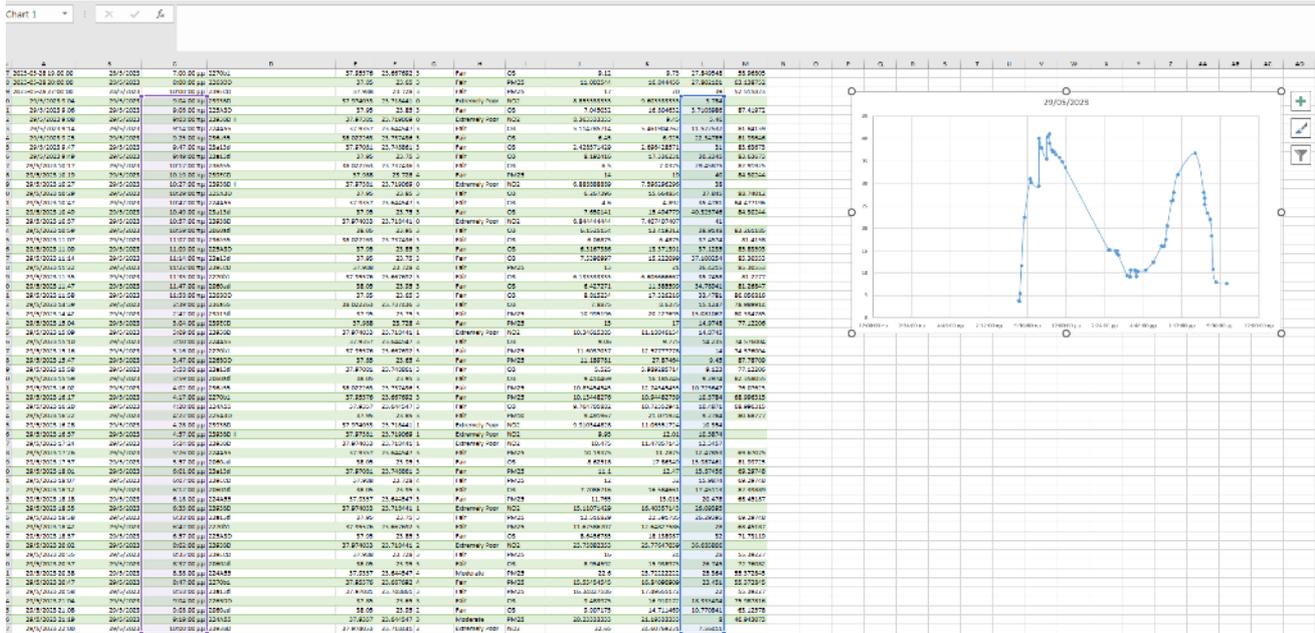


Typically, this kind of graphs have the time on the X-axis and the pollutant concentration on the Y-axis.

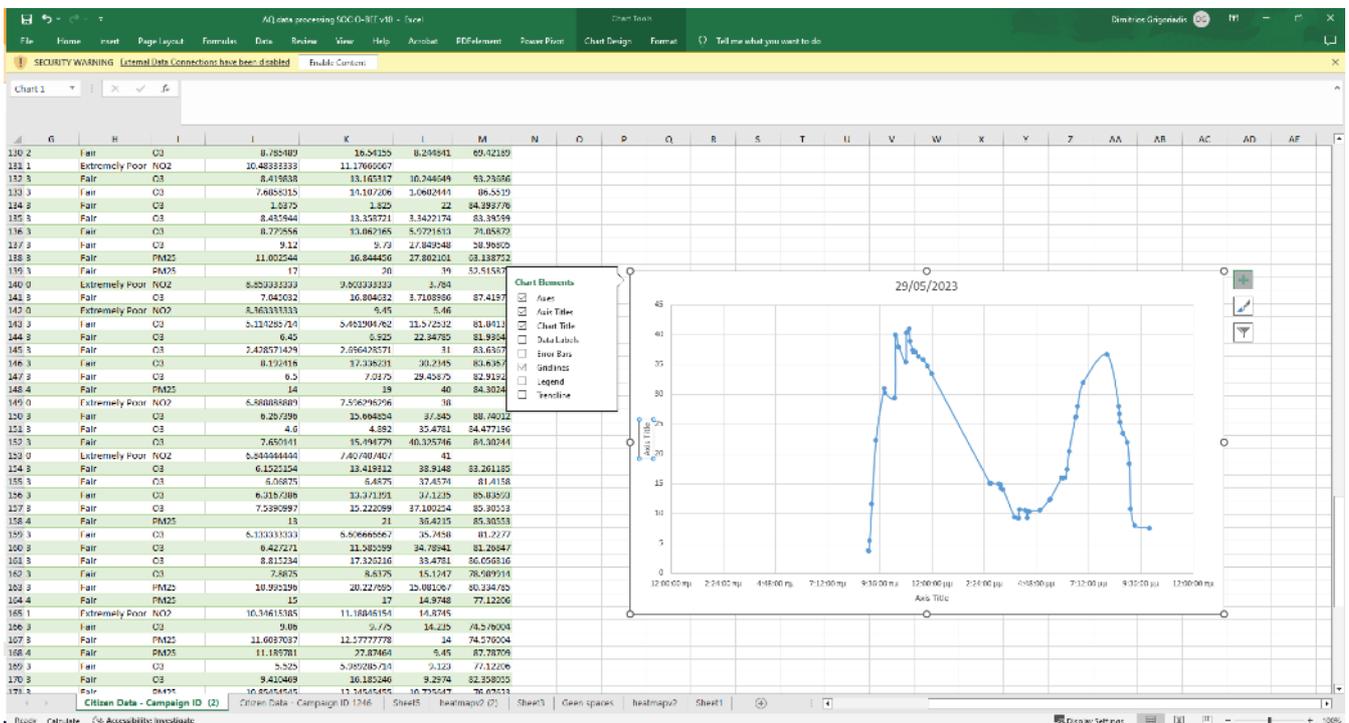


How do you plot the data?

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

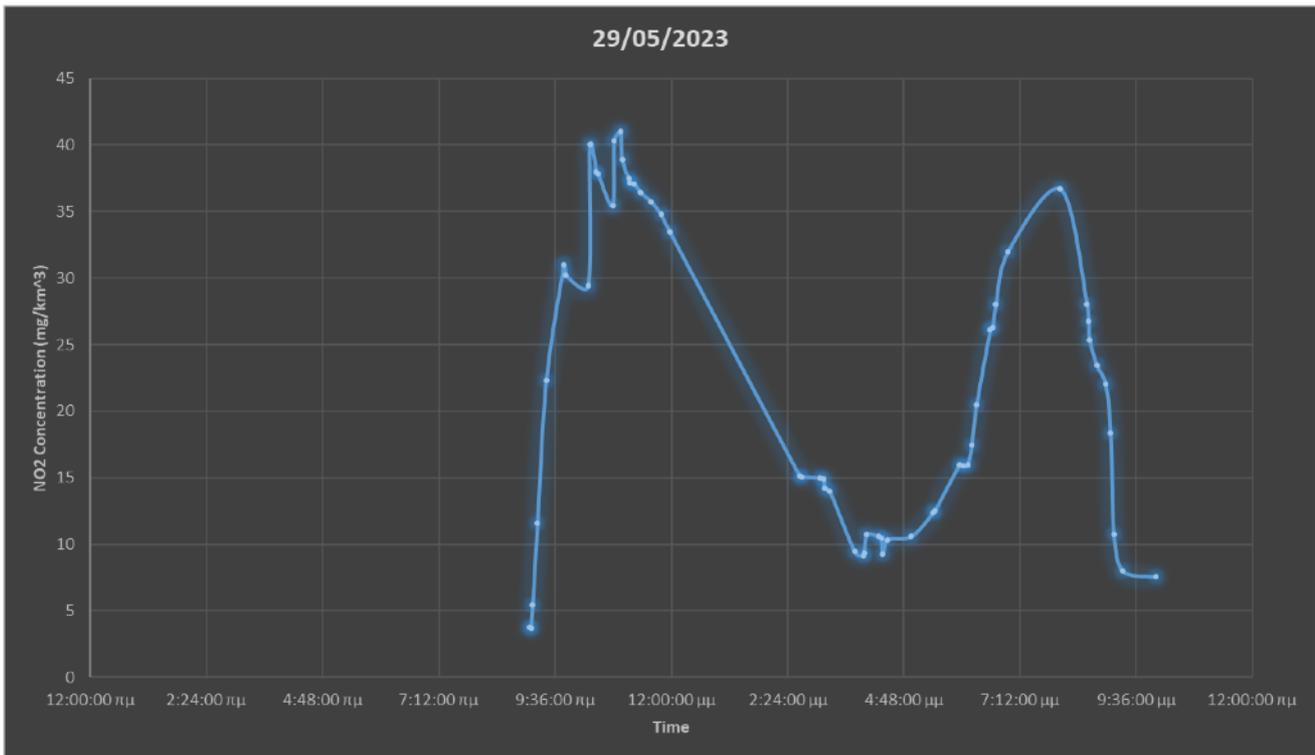


Click on the graph to edit the graph elements like the axis or the legend. Feel free to customise your graph.



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 of nitrogen dioxide (NO ₂) in the campaign area.	Plot NO ₂ levels against time, comparing rush hour periods with non-rush hour periods.
Construction activities, such as demolition and excavation, lead to temporary increases in airborne dust levels (PM ₁₀) in adjacent areas.	Plot PM ₁₀ levels before, during, and after construction projects to identify spikes in dust concentrations.
Vegetation and green spaces act as natural air purifiers, reducing levels of ozone (O ₃) and other pollutants in urban environments.	Create line graphs comparing O ₃ concentrations in urban parks versus nearby built-up areas.
Proximity to industrial zones correlates with higher levels of particulate matter (PM _{2.5} and PM ₁₀).	Plot PM _{2.5} and PM ₁₀ 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 (PM _{2.5}) in residential neighborhoods.	Create bar charts comparing PM _{2.5} concentrations during winter months versus summer months. Plot the hourly PM _{2.5} concentrations to detect daily peaks in PM _{2.5} 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., O ₃ , NO ₂) 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 (SO ₂) and nitrogen dioxide (NO ₂) along coastal regions.	Generate/obtain heatmaps showing SO ₂ and NO ₂ 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.