Learning about

AIR QUALITY

SENSOR DATA GUIDE

A Guide to the Air Quality Sensor Data Spotfire Tool

www.LearnAboutAir.com

Time of Day Data

Please note that data is refreshed in the Spotfire tool every midnight, therefore you will be able to view data up to the day before, but not for the current day.

From the data selector you can select your own school, an urban or rural example, or another school participating in the Air Quality Teaching Package. Once you have selected your school you can then find your class, followed by the pollutant. The two pollutants that can be selected are Particulate Matter (PM10) and Nitrogen Dioxide.

Data selector

Selected school:

Urban example ▾

Selected school marked in blue on map below.

Selected class:

NA ▾

Pollutant:

PM10 ▾

Once the information has been selected in the above drop down menus, the pupils can then see the results in the form of a bar graph. This bar-chart shows the average hourly values across the period of deployment which is usually two weeks. It is advisable to note that the data collected is in relative units to show patterns and not actual concentrations.

Activity: Pupils should consider why the air quality varies throughout the day, thinking about the values during the morning drop-off (yellow bars) and afternoon pick-up (brown bars).

PM10 hourly averages (Mon-Fri)
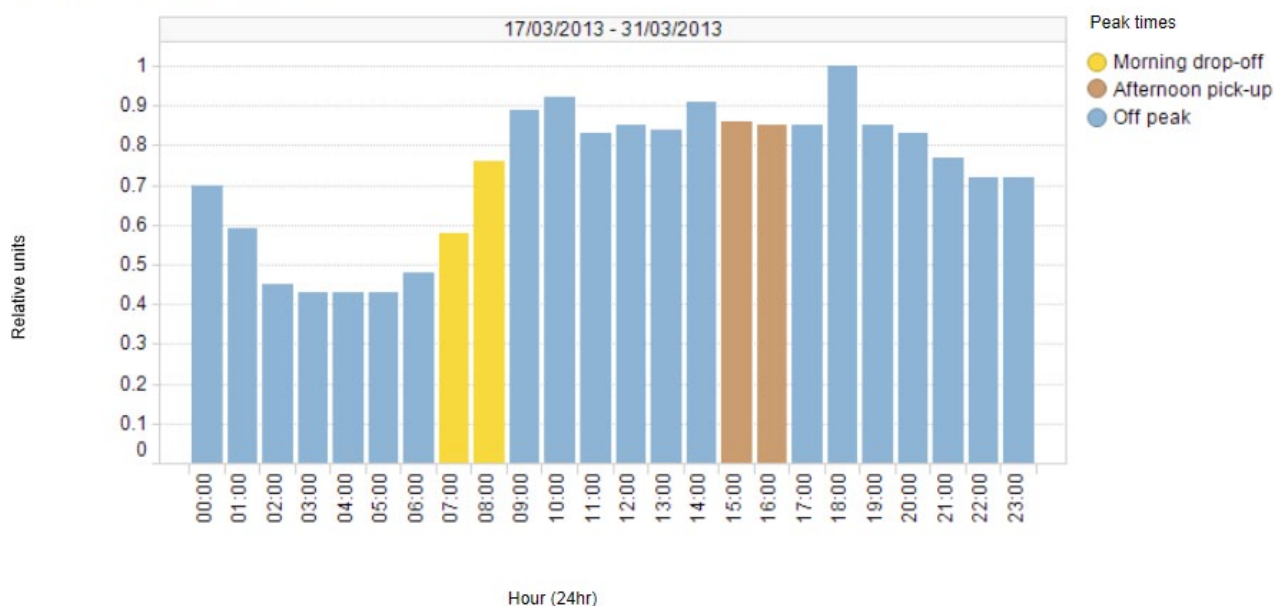
In addition, both the morning drop off and afternoon pick-up peak time information have been broken down into five minute averages. Again, this allows the pupils to discuss and draw conclusions about when the pollutants are at their highest and lowest at these times.

PM10 five minute averages (Mon-Fri) — Morning drop-off
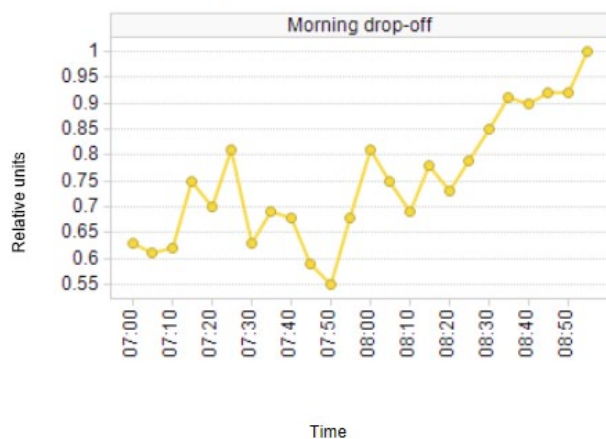
PM10 five minute averages (Mon-Fri) — Afternoon pick-up
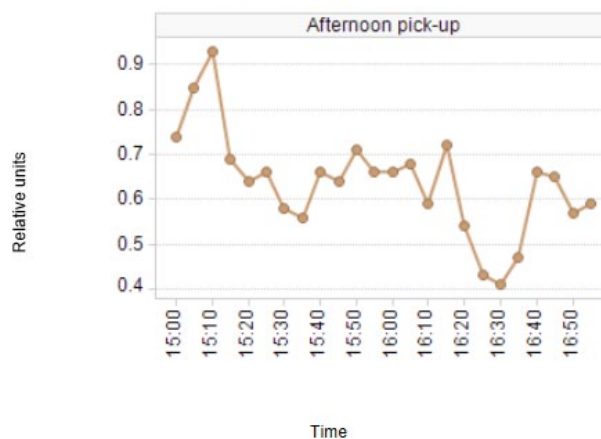
Extension Information and Activity: Does the pattern of air quality around your school not appear how you expected? For example are levels of air pollution highest during the night when you might have thought levels should be low? There are many reasons for this and weather can play a big part. Rain can supress pollutants, strong winds can disperse pollutants or still conditions can allow pollution to accumulate. Pollution, especially fine particles can also be blown in from far away, even from other countries in Europe. You can see how your school's monitoring compares to results from nearby Local Authority monitors by searching the following website.

http://cleartheair.scottishairquality.co.uk/about/near-me?location=

Just enter your location and the nearest monitors will appear on a map. You can click on one of these nearby stations and see graphs of pollutants over the same time period your sensor was deployed. This will let you know if the same unexpected patterns were picked up by the Local Authority monitors.
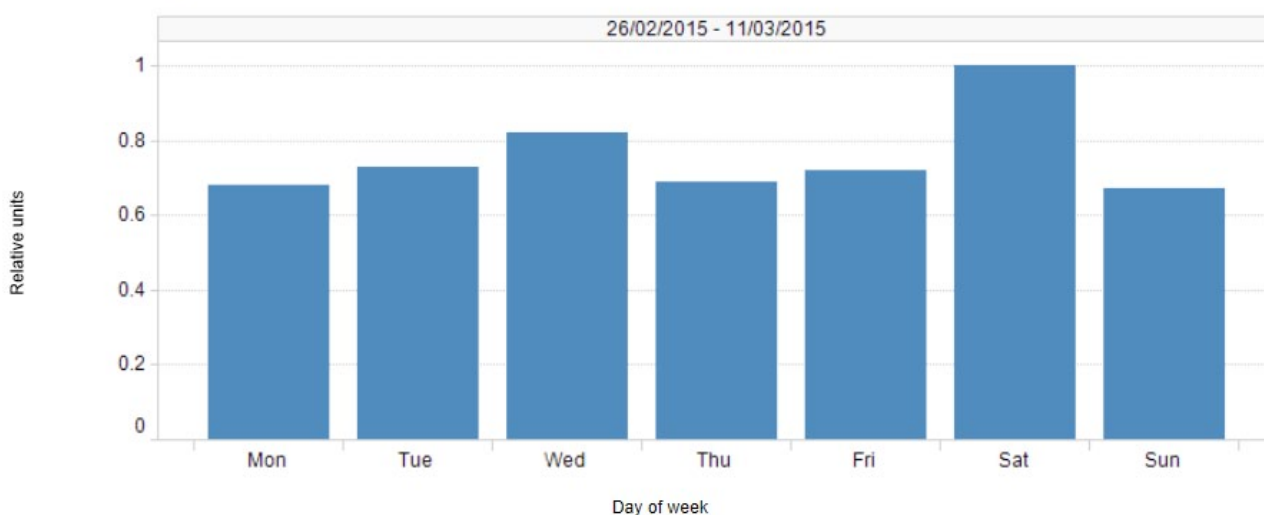
Day of Week Data

From the data selector you can select your own school, an urban or rural example, or another school participating in the Air Quality Teaching Package. Once you have selected your school you can then find your class, followed by the pollutant. The two pollutants that can be selected are Particulate Matter (PM10) and Nitrogen Dioxide.

The pupils can then see the results in the form of a bar graph. This bar-chart shows the average daily values across the period of deployment which is usually two weeks. It is advisable to note that the data collected is in relative units to show patterns and not actual concentrations.

### Activity: Pupils should consider why the air quality varies throughout the week

Are there any patterns you didn't expect such as higher levels at the weekend? If you don't think this pattern could be due to traffic, think about how the weather may have affected pollution levels (see explanation in the previous activity).

PM10 daily averages

In addition, the above data is broken down into hourly values for each day of the week. This allows the pupils to discuss and draw conclusions about when the pollutants are at their highest and lowest.

PM10 averages by hour and day
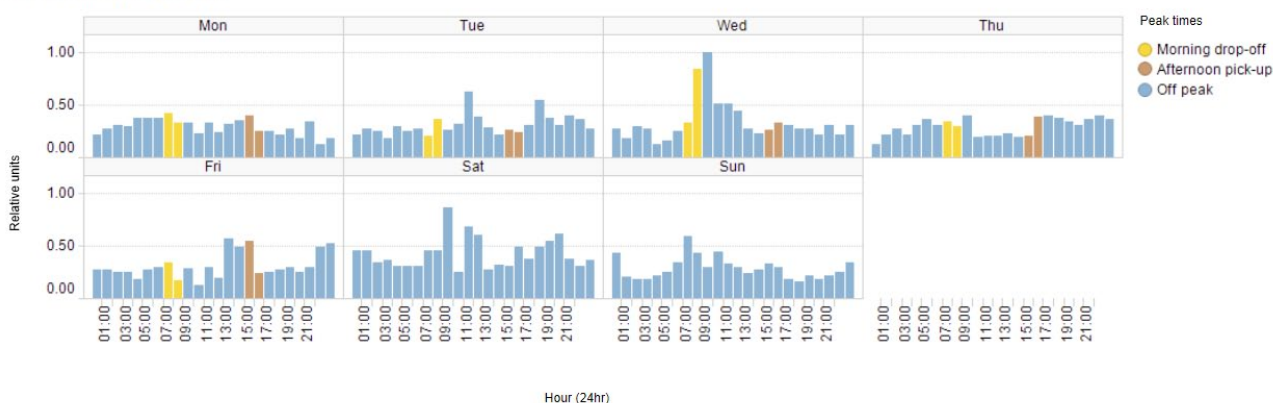
Traffic Survey Data

From the data selector you can select your own school or another school participating in the Air Quality Teaching Package. Once you have selected your school you can then find your class, followed by the pollutant. The two pollutants that can be selected are Particulate Matter (PM10) and Nitrogen Dioxide.
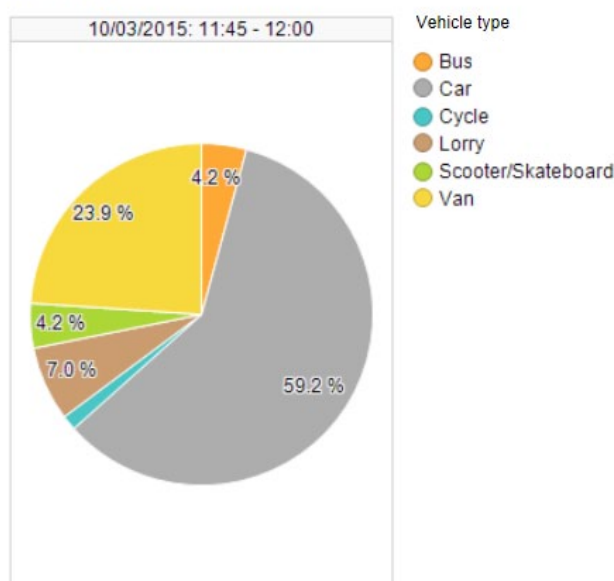
The pupils can then see the results of the traffic survey in the form of a bar graph and a pie chart.

Activity: Pupils should consider whether the numbers and mix of traffic is likely to be good for air quality
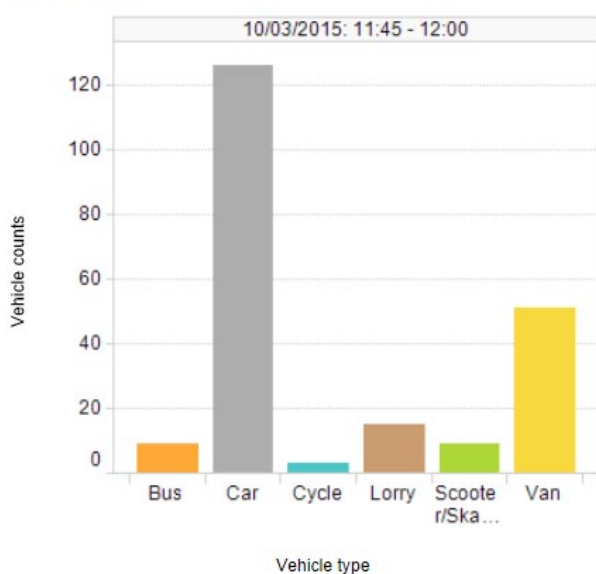
The chart at the bottom of the page plots the predicted air quality derived from the traffic survey (red line) against the air sensor results (bar chart). Basic emission factors for the different vehicles are used to calculate this predicted air quality.

Activity: Pupils should consider why the estimated air quality is different to the measured air quality by the sensor. They should think about the wind, location of the sensor, other sources of air pollution in the area and speed of traffic.