

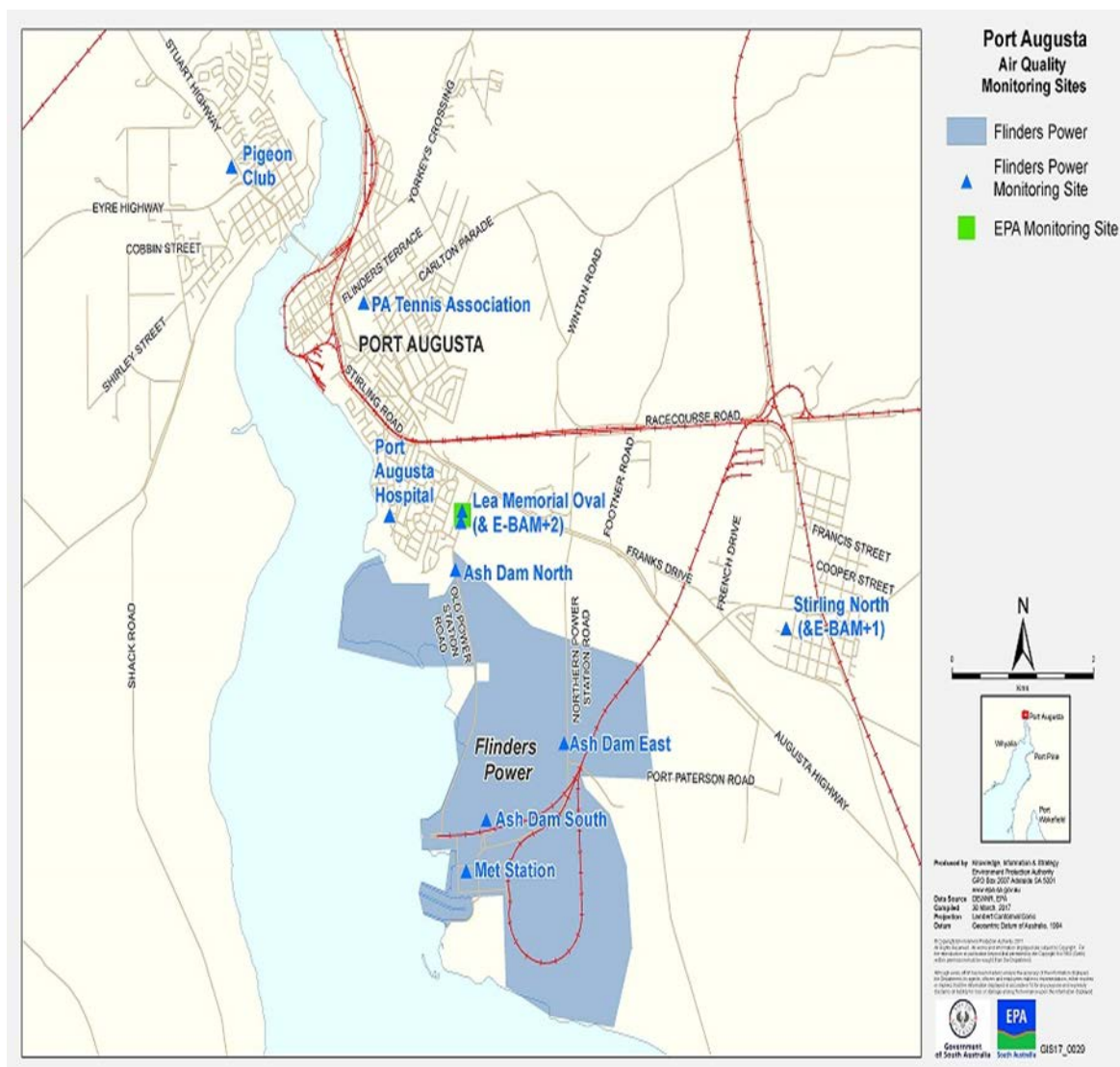
Port Augusta air quality summary report – December 2017

Issued January 2018

Introduction

One of the EPA’s environmental goals is good quality air. To support this goal the EPA conducts ambient air quality monitoring at locations around the state.

This monthly air quality summary report is based on the data from the mobile station at Lea Memorial Oval, Port Augusta.



The EPA mobile monitoring station was installed at Lea Memorial Oval, Port Augusta on 9 March 2017. This station is equipped with continuous monitors for monitoring total suspended particulates (TSP), particles (PM₁₀ and PM_{2.5}) and meteorological conditions, as part of a short-term program to evaluate local air quality.

Total suspended particulates (TSP) is a class of particles which have equivalent aerodynamic diameters less than 50 µm and includes a mixture of large and fine particles. The larger particles that have equivalent aerodynamic diameters greater than 10 µm are generally trapped in our noses and throats, so they do not reach to the lungs; however, they may cause nuisance and soiling of surfaces.

Fine particles are often a complex mixture of materials arising from many sources, and are generally grouped into two categories, called PM₁₀ and PM_{2.5}. Sources such as wind-blown dust, agricultural activities, motor vehicles and domestic activities might generate fine particles that affect the air quality from the region. Fine particles are able to enter the lungs and are known to have health effects.

Polar plot type 1 provides a graphical method to assist in determining the sources of airborne pollutants. Polar plots use 10-minute wind direction data to plot against pollutant concentration. Where the percentage of pollutant is greater than the percentage of wind from any given direction, this indicates a higher than average amount of pollutant and a potential source in that direction.

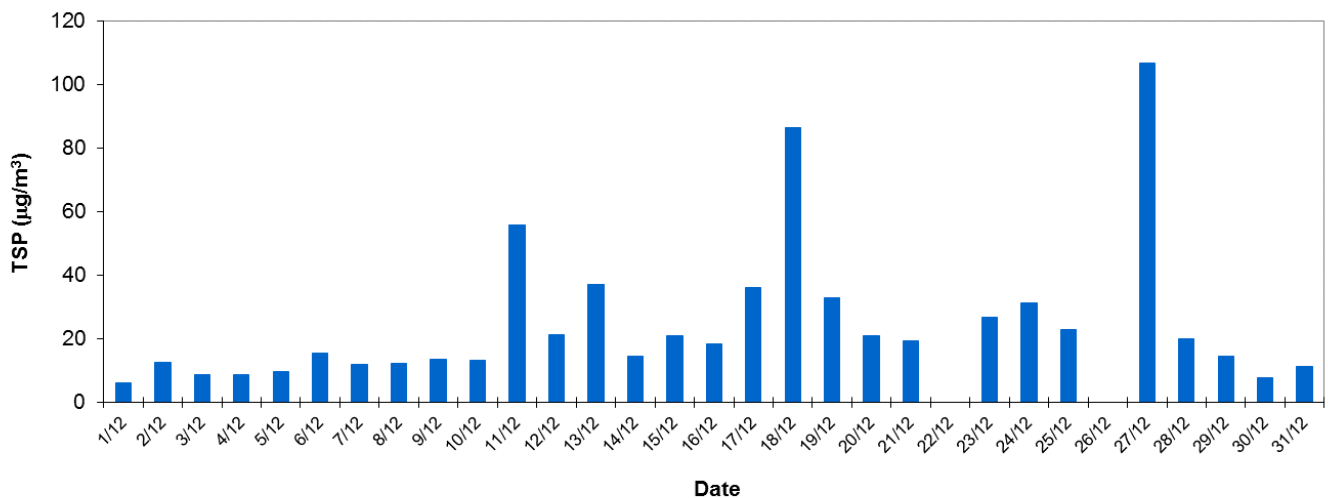
The polar plot type 2 presents 10-minute average concentrations of PM₁₀ and PM_{2.5} respectively as different colours, plotted against the direction from which the winds were blowing, centred on the monitoring station. Red areas indicate higher average concentrations, while blue areas show very low average concentrations. These colours are scaled and adjusted relative to the highest 10-minute concentration recorded during the month. The distance of the coloured area from the centre of the graph indicates how fast the wind was blowing on average, when the readings were recorded. So the centre point is 'dead calm'. Where 24-hour health-based standards apply, for example, in the case of PM₁₀, these short term averages do not provide direct information about potential health impacts on communities. This is best described in the subsequent graphs of daily averages.

Data in this report are assessed against ground level concentration criteria for PM₁₀ and PM_{2.5}. Further information about ambient air quality is available on the EPA [website](#).

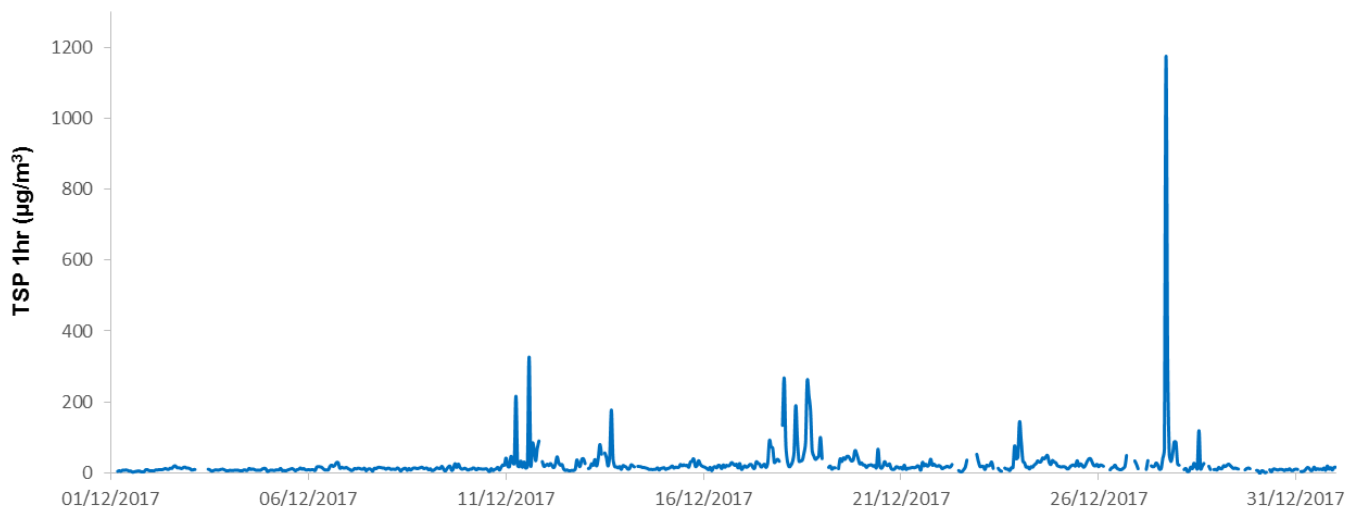
Total suspended particulates (TSP)

TSP can provide an indication of the levels of visible nuisance dust in an area. One-hour averages of TSP levels exhibit short-term elevated values at times, indicating the presence of visible dust. It is important to note that there are no health-based ground level concentration criteria for TSP, as it is largely a cause of environmental nuisance.

The graph below displays the 24-hour average (daily) TSP at Lea Memorial Oval in December 2017.



Port Augusta Lea Memorial Oval daily average TSP, December 2017



Port Augusta Lea Memorial Oval one-hour TSP, December 2017

There were seven high TSP concentration events that reached TSP concentrations above 200 µg/m³ and they are listed in the table below. High TSP concentration was caused by a change in wind speeds and directions. For instance, on 18 December high wind speed from north brought windblown dust from the natural sources to the township. Details of dust event on 27 December were summarised in the [Community Update #9](#).

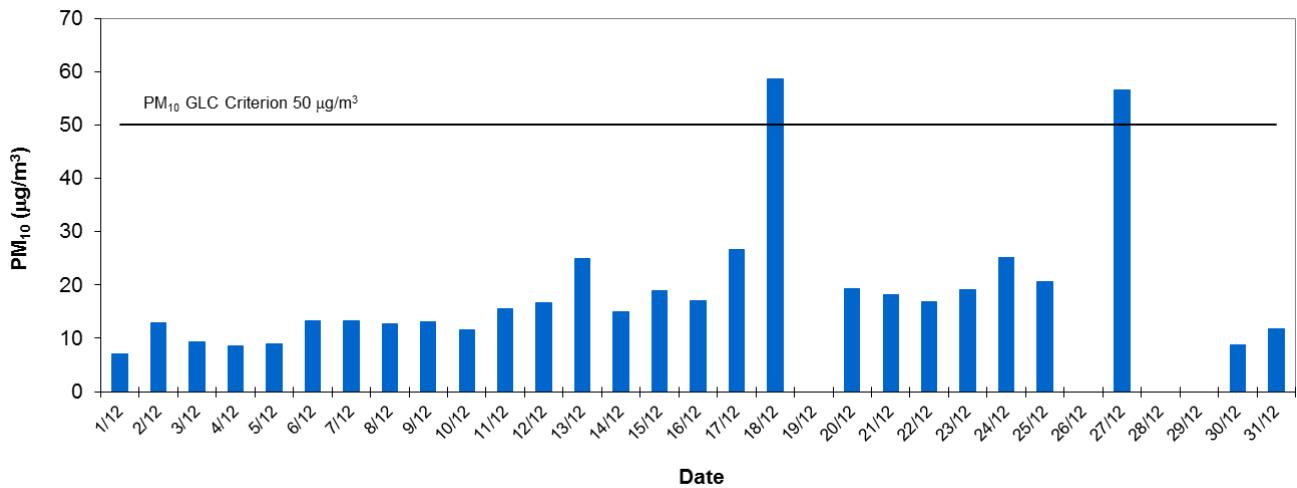
High TSP concentration events (December 2017)

Date/Time	1-hr TSP (µg/m ³)	Wind speed (m/s)	Wind speed (km/hr)	Wind direction (kegree)	Wind direction
11/12/2017 6:00	216	3.2	11.5	148	South-southeast
11/12/2017 14:00	327	4.7	16.9	174	South
18/12/2017 1:00	268	9.5	34.2	72	East-northeast
18/12/2017 15:00	259	8.3	29.9	341	North
18/12/2017 16:00	219	7.9	28.4	326	North-northwest
27/12/2017 17:00	1,170	15.4	55.4	163	South
27/12/2017 18:00	322	12.1	43.6	163	South

Particles (PM₁₀)

There were two exceedences of the health-based South Australian 24-hour ground level concentration criterion for PM₁₀ (50 µg/m³), at Lea Memorial Oval in December 2017.

- PM₁₀ exceedence on 18 December was due to windblown dust from the north.
- PM₁₀ exceedence on 27 December was due to windblown dust from the southeast. Details of this dust event were summarised in the [Community Update #9](#).
- Gaps in the data on 19, 26, 28 and 29 December were due to instrument faults with suspected interferences from weather conditions.

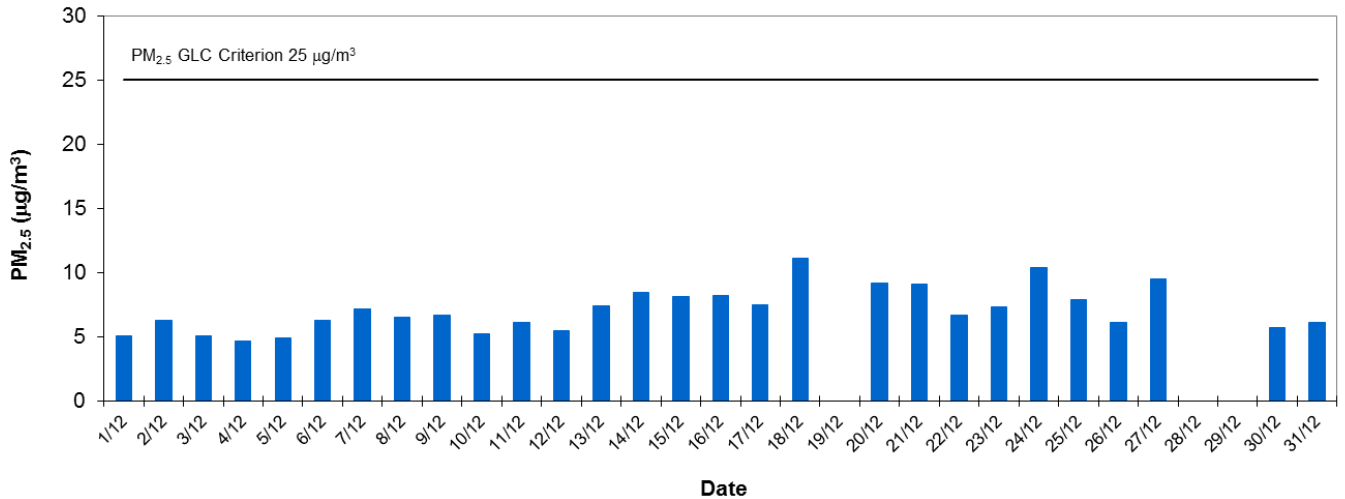


Port Augusta Lea Memorial Oval daily average PM₁₀, December 2017

Particles (PM_{2.5})

There were no exceedences of the health-based South Australian 24-hour ground level concentration criterion for PM_{2.5} (25 µg/m³), at Lea Memorial Oval in December 2017.

- Gaps in the data on 19, 28 and 29 December were due to instrument faults with suspected interferences from weather conditions

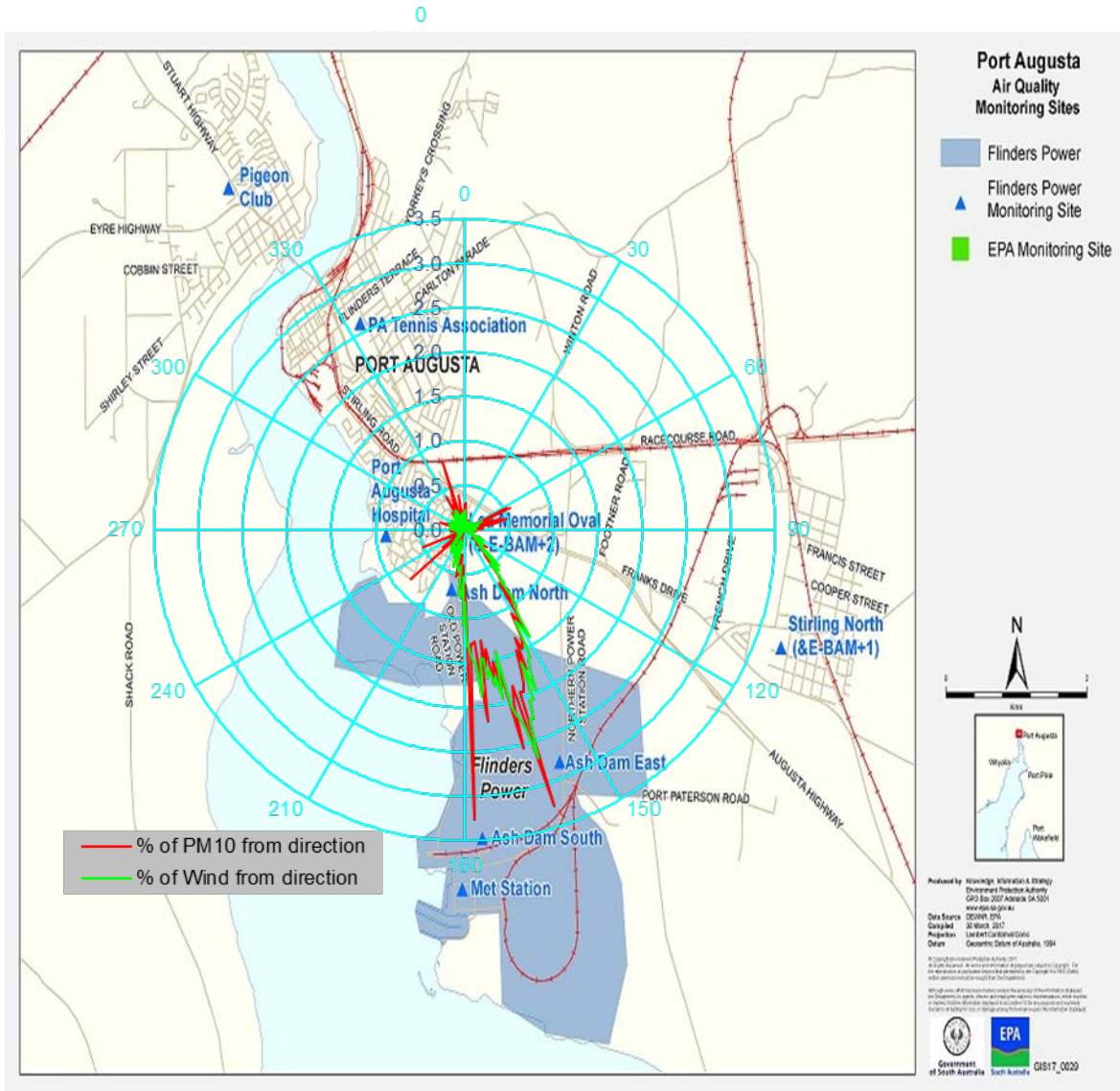


Port Augusta Lea Memorial Oval daily average PM_{2.5}, December 2017

Polar plots

PM₁₀ polar plot

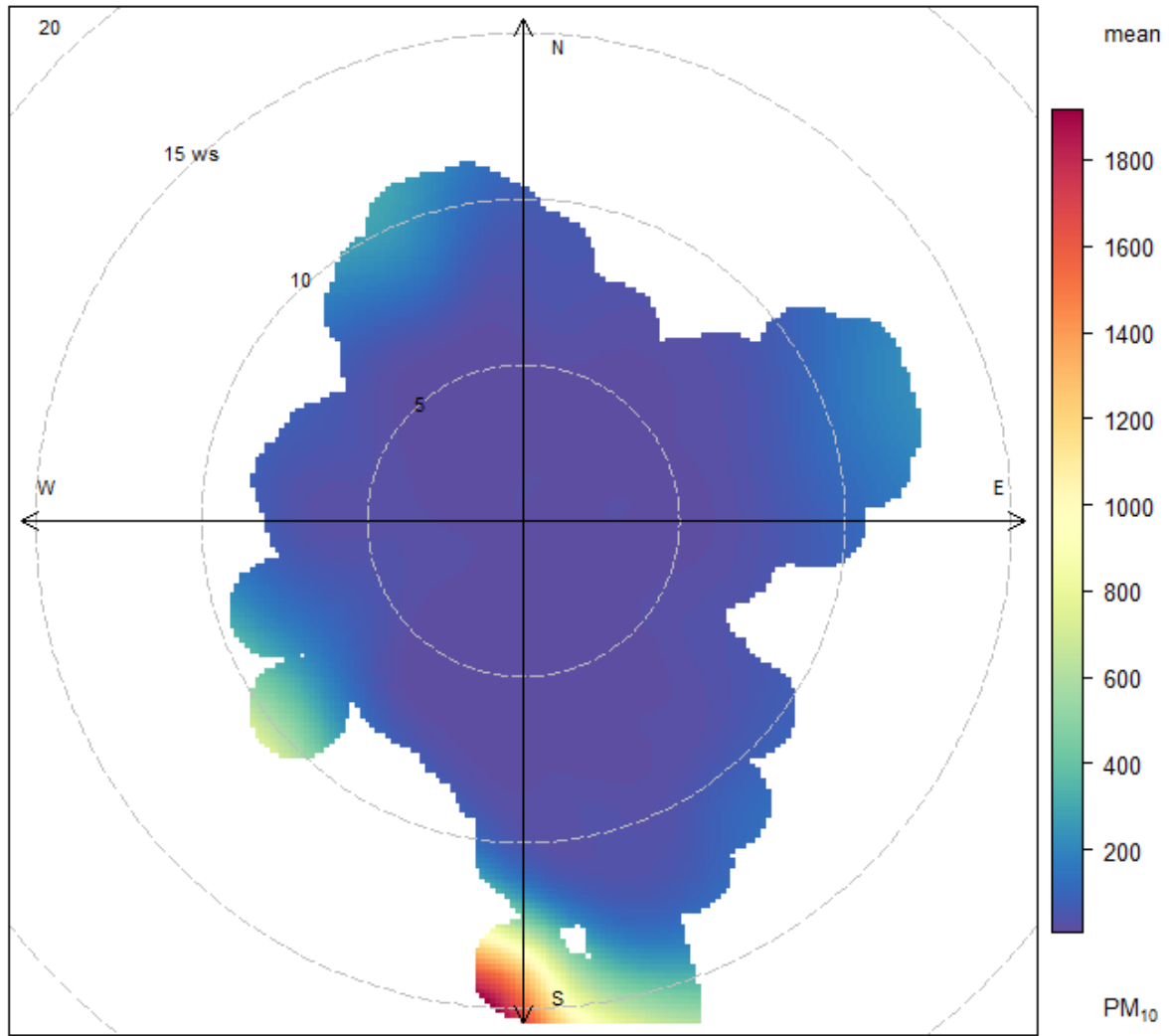
The polar plot Type 1 showed that a higher percentage of PM₁₀ and wind came from the sectors of 180° to 150° (south-southeast direction). At times where a percentage of PM₁₀ particle was higher than a percentage of wind from south, west-southwest and north directions that indicates the sources of PM₁₀ particle were from those directions.



Polar plot Type 1

Polar plot Type 2

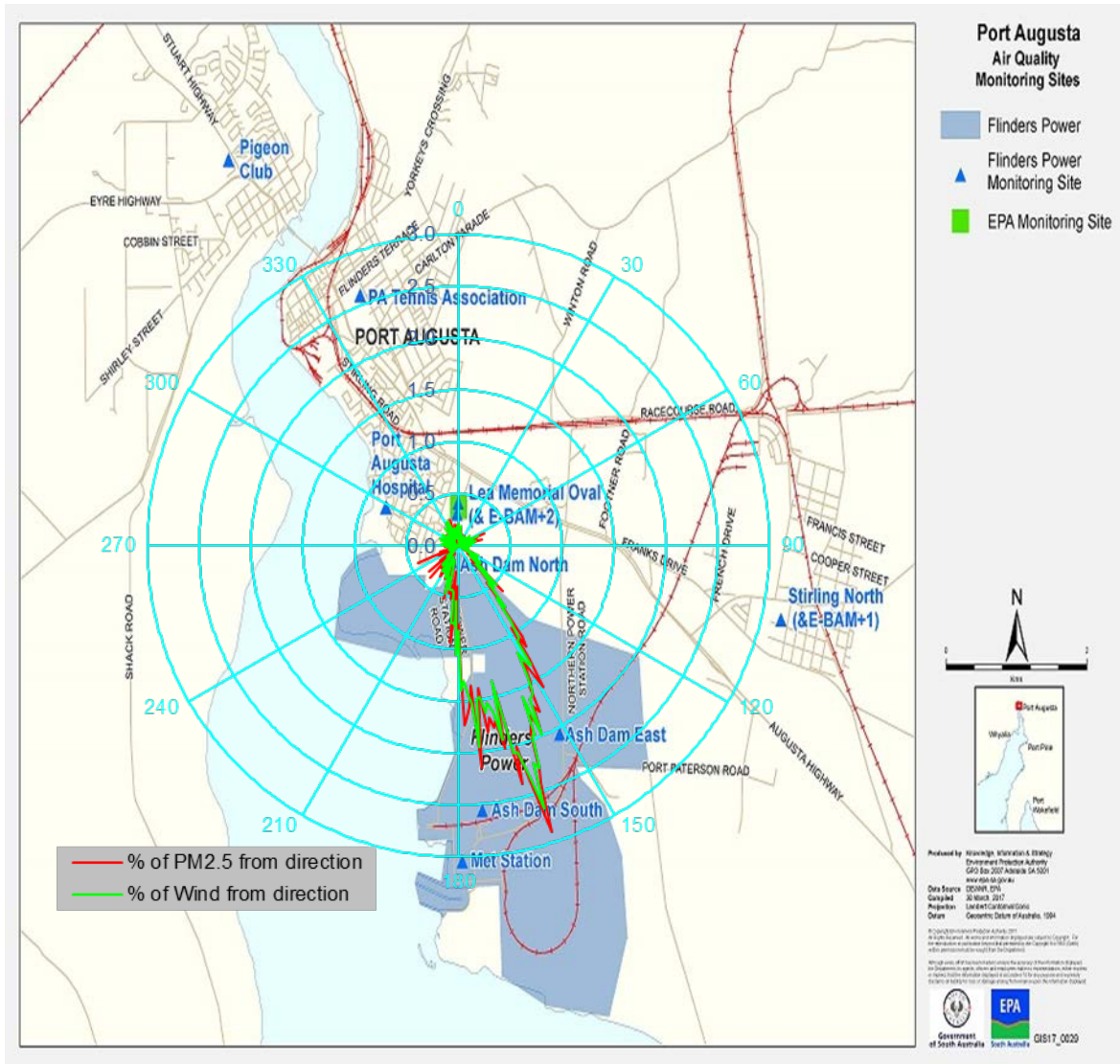
Polar plot type 2 showed that majority of PM₁₀ particles were associated with stronger wind events (above 10 m/s) from south and west-southwest directions



Polar plot Type 2

PM_{2.5} polar plot

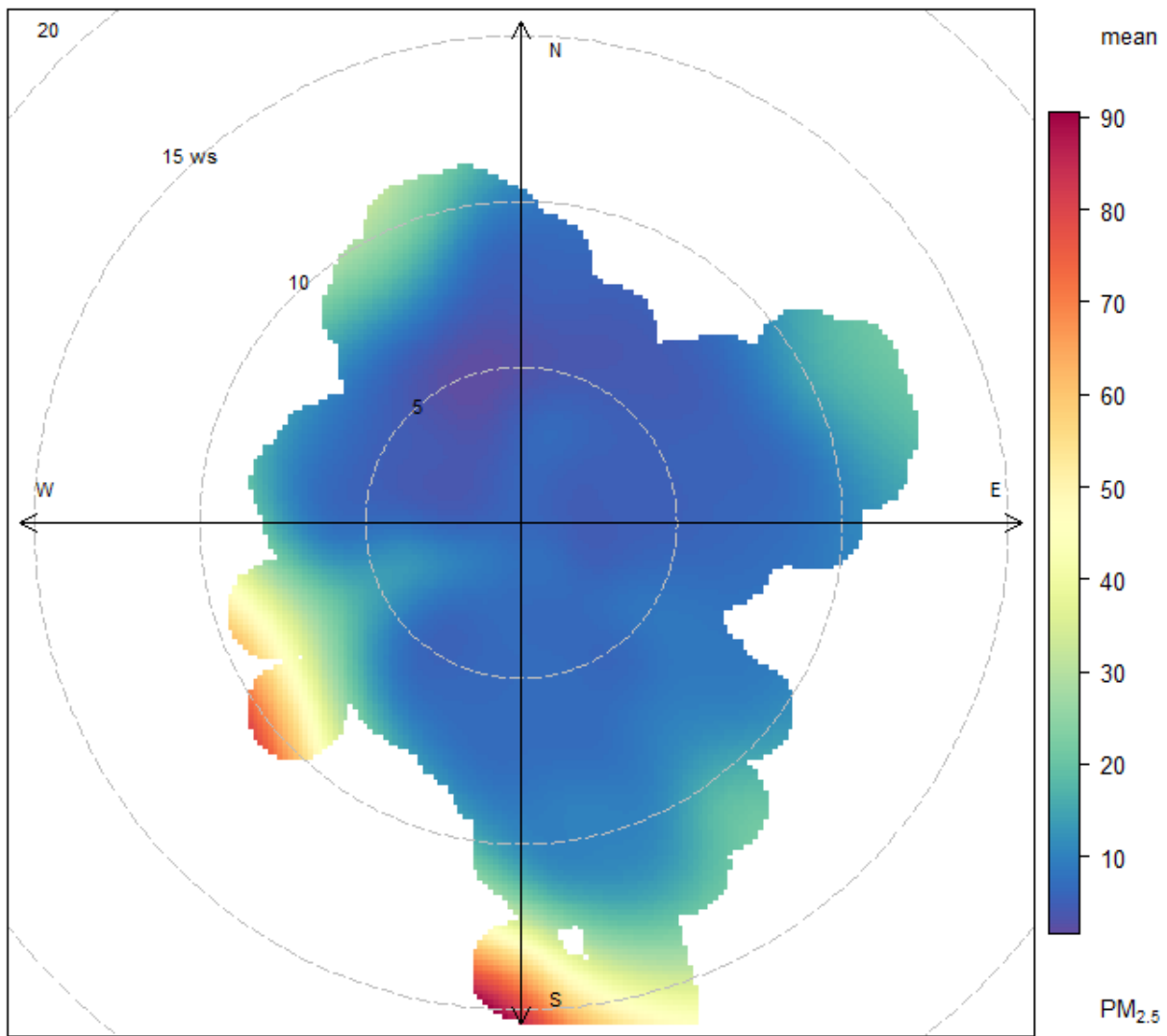
The polar plot Type 1 showed that predominant wind came from the two wind sectors of 180° to 150° (south-southeast direction) and majority of PM_{2.5} particles came from these directions.



Polar plot Type 1

Polar plot Type 2

Polar plot Type 2 showed that majority of PM_{2.5} particle originated when wind speed was more than 10 m/s from south and west-southwest directions.

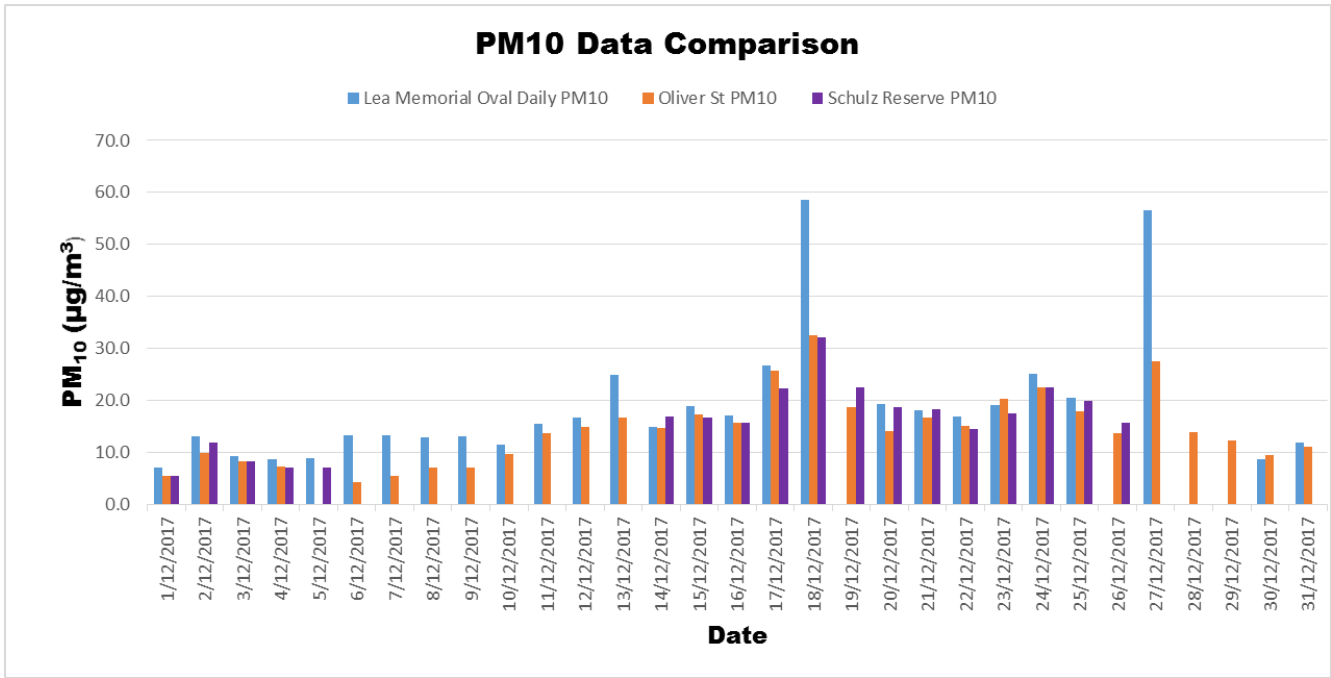


Polar plot Type 2

PM_{10} data comparison

PM_{10} data from Lea Memorial Oval, Oliver Street (Port Pirie) and Schulz Reserve (Whyalla) stations are presented in the following graph. PM_{10} levels at Lea Memorial Oval station have exhibited a similar trend and concentrations to the other two stations during the monitoring period except on 18 and 27 December. When strong northerly wind on 18 December caused windblown dust from the north and on 27 December was due to wind from the southeast.

Missing PM_{10} data at Schulz Reserve from 6 to 14 December were due to a routine maintenance of the instrument. Gaps in the data from 27 to 31 December 2017 were due to power outage.



Further information

Legislation

[Online legislation](#) is freely available. Copies of legislation are available for purchase from:

Service SA Government Legislation Outlet
 Adelaide Service SA Centre
 108 North Terrace
 Adelaide SA 5000

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 Website: shop.service.sa.gov.au
 Email: ServiceSAcustomerservice@sa.gov.au

General information

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