

Sellicks Beach air quality summary report – October 2016

Issued November 2016

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 air quality summary is based on data from the EPA's mobile monitoring station in the Blue Water Estate on Arcadia Crescent, Sellicks Beach. This station was deployed on 14 January 2016 to monitor 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 the lungs; however, they may

cause nuisance and soiling of surfaces. That said, PM₁₀ particles may also be associated with visible dust, which is why PM₁₀ is often measured in conjunction with TSP.

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}. Fine particles are able to enter the lungs and are known to have health effects.

Particles can originate from a variety of sources such as local activities, motor vehicles, domestic activities, or in areas such as Sellicks, they may arise from wind-blown soil materials and even sea salt.

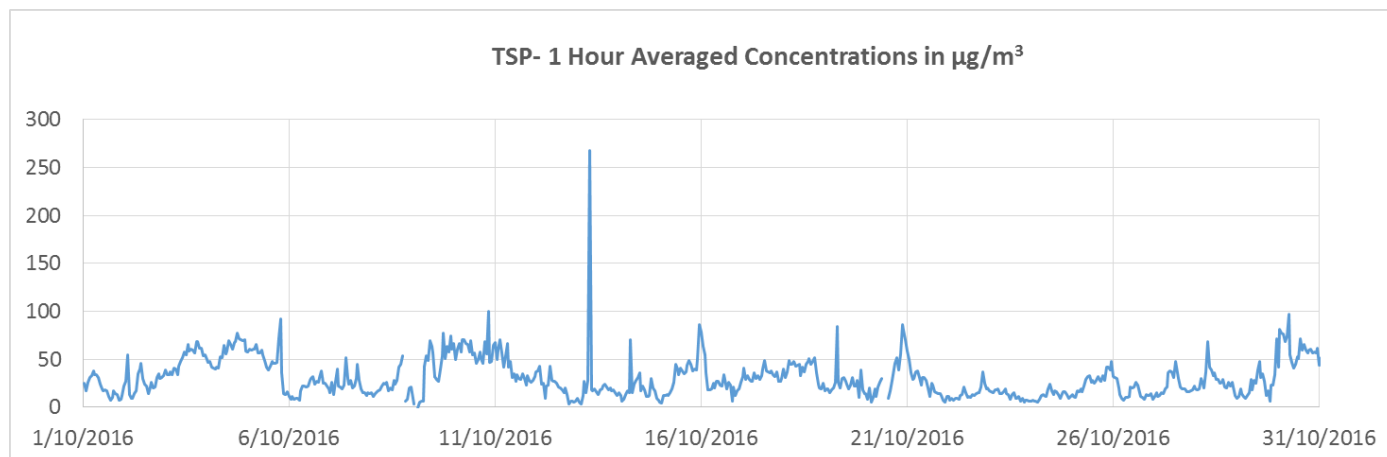
Data in this report are assessed against ground level concentration criteria for PM₁₀ and PM_{2.5}. Further information about ambient air quality is available on the EPA [website](#).

Total suspended particles (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 TSP is largely a cause of environmental nuisance.

Recorded 1-hour TSP concentrations were lower during October in comparison with previous warmer months except for the following high concentration event:

- High TSP concentrations were recorded on 13 October between 6 am and 7 am with a peak concentration of 268 µg/m³, coincident with winds from a northeast direction, with an average wind speed of 1.3 m/s (ie 5 km/hr). Based on the wind speed it appears this was likely to have been a local dust event.



Polar plots

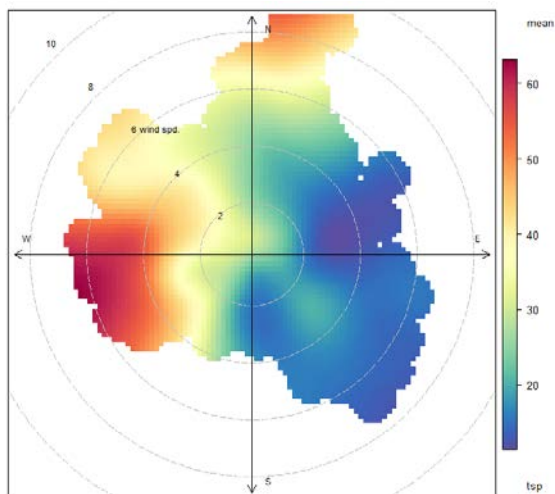
The polar plot is a graph describing how short term (10-minute) concentrations of a pollutant vary by both wind speed and direction, to illustrate where pollution may be coming from at any given time during the day, and the conditions under which particular concentrations are recorded. Where 24-hour 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.

The polar plots present 10-minute average concentrations of TSP and PM₁₀ respectively as different colours, plotted against the direction from which the winds were blowing, centred on the monitoring station. Red blobs indicate higher average concentrations, while blue blobs 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 blobs from the centre of

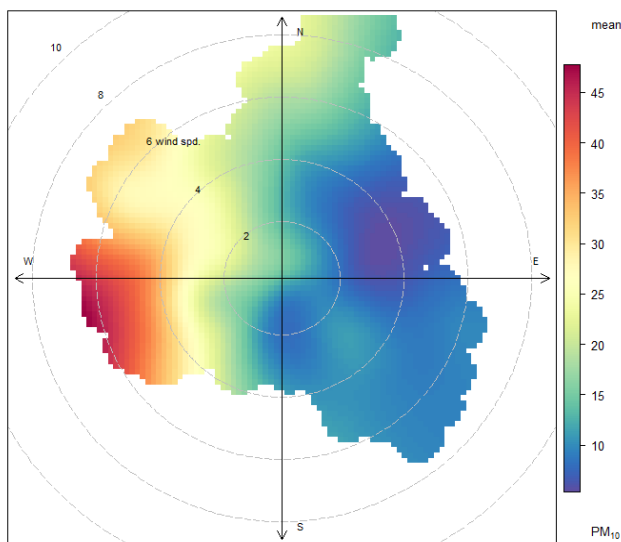
the graph indicate how fast the wind was blowing on average, when the readings were recorded. So the centre point is 'dead calm'.

Wind speed and direction are important variables which can assist in identifying different sources. For example, ground level plumes such as from road traffic or local dust tend to promote higher particle concentrations when wind speeds are low. In this report, 10-minute wind speed, direction, TSP and PM₁₀ data have been used to produce the polar plots (using available meteorological data from October 2016).

The polar plot for TSP indicates that the majority of measured TSP originated from the west (southwest to northwest) with wind speeds from 3 to 7 m/s (about 11 to 25 km/hr) and from north/northeast with wind speeds of 7 to 10 m/s (about 25 to 40 km/hr). The polar plot for PM₁₀ exhibits a similar trend. The EPA will continue to monitor until 2016–17 summer to better understand local sources.



Polar Plot for TSP (10-minute averaged data in µg/m³), October 2016

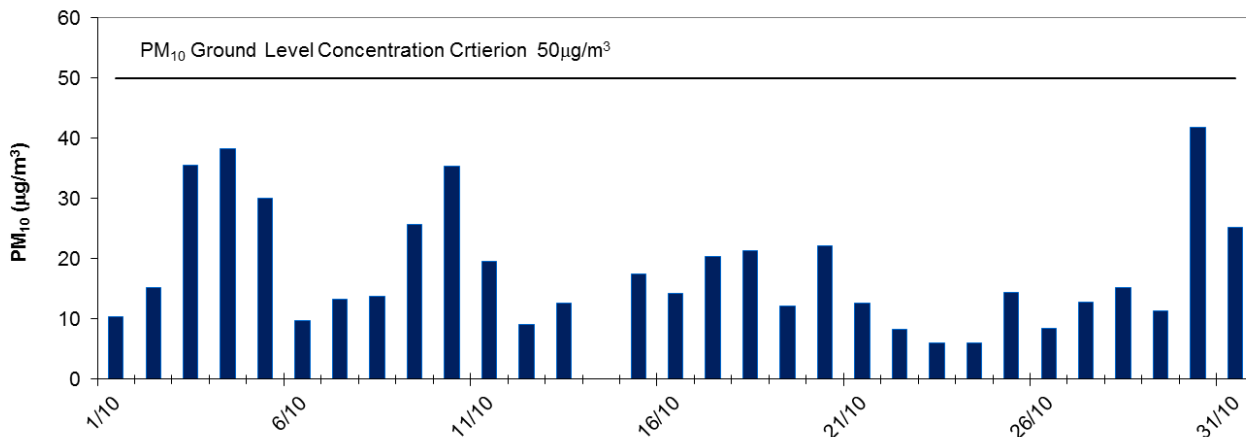


Polar Plot for PM₁₀ (10-minute averaged data in µg/m³), October 2016

Particles (PM₁₀)

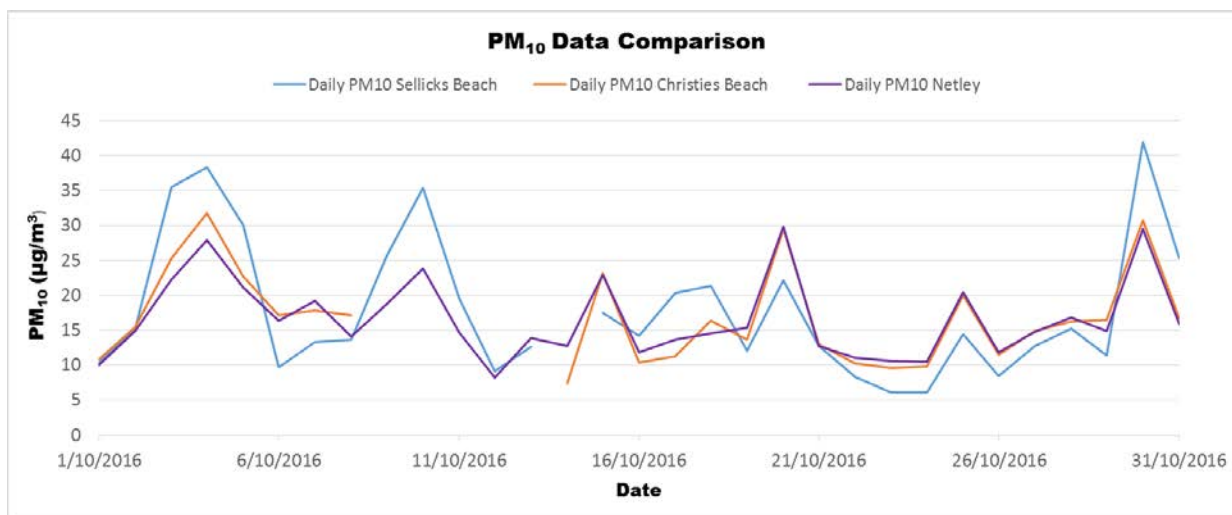
There have been no exceedences of the 24-hour ground level concentration criterion for PM₁₀ (50 µg/m³) at Sellicks Beach in October 2016. The gap in data was due to maintenance.

Sellicks Beach Daily Average PM₁₀ - October 2016



PM₁₀ data comparison

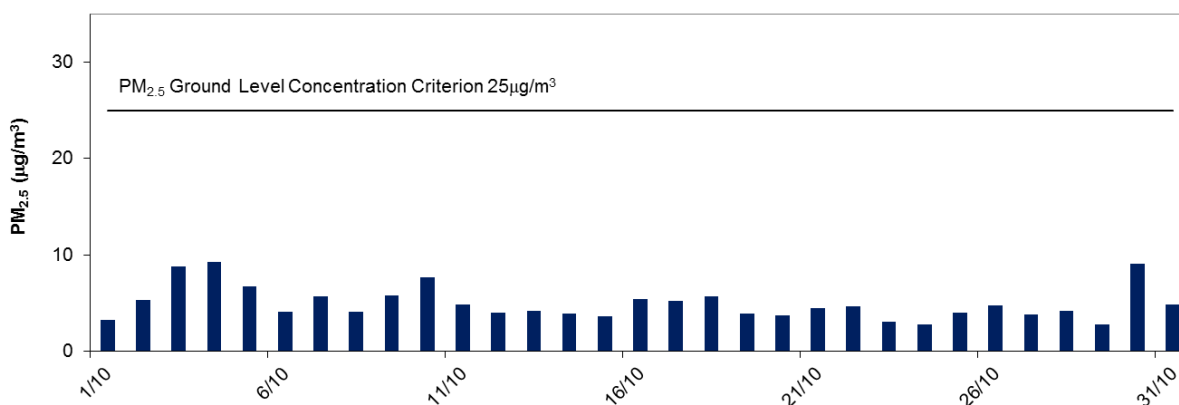
PM₁₀ data from Sellicks Beach, Christies Beach and Netley stations are presented in the graph below. PM₁₀ levels at all three stations have exhibited a similar trend during this monitoring period, differing on a few occasions, most likely because of local sources or activities. Gaps in the data were due to maintenance.



Particles (PM_{2.5})

There have been no exceedences of the 24-hour ground level concentration criterion for PM_{2.5} (25 µg/m³) at Sellicks Beach in October 2016.

Sellicks Beach Daily Average PM_{2.5} - October 2016



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
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Adelaide SA 5000

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