Air quality

Report

Sellicks Beach air quality summary report – April 2016

Issued May 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 the 14 January 2016 to monitor total suspended particulates (TSP), particles (PM_{10} and $PM_{2.5}$) and meteorological conditions, as part of a short-term program to evaluate local air quality.

EPA South Australia

Total suspended particulates (TSP) are particles with an equivalent aerodynamic diameter less than 50µm and consists of a mixture of large and fine particles. Large particles have an equivalent aerodynamic diameter greater than 10µm and can be a source of nuisance dust.

Fine particles are often a complex mixture of materials arising from many sources, and are generally grouped into two categories, called PM_{10} and $PM_{2.5}$. Fine particles are able to enter the lungs and are known to have health effects.

In the Sellicks Beach area particles can originate from a variety of sources such as local activities, motor vehicles, domestic activities apart from the natural background.

Data in this report are assessed against ground level concentrations criteria for PM_{10} and $PM_{2.5}$. Further information about ambient air quality is available on the EPA website.

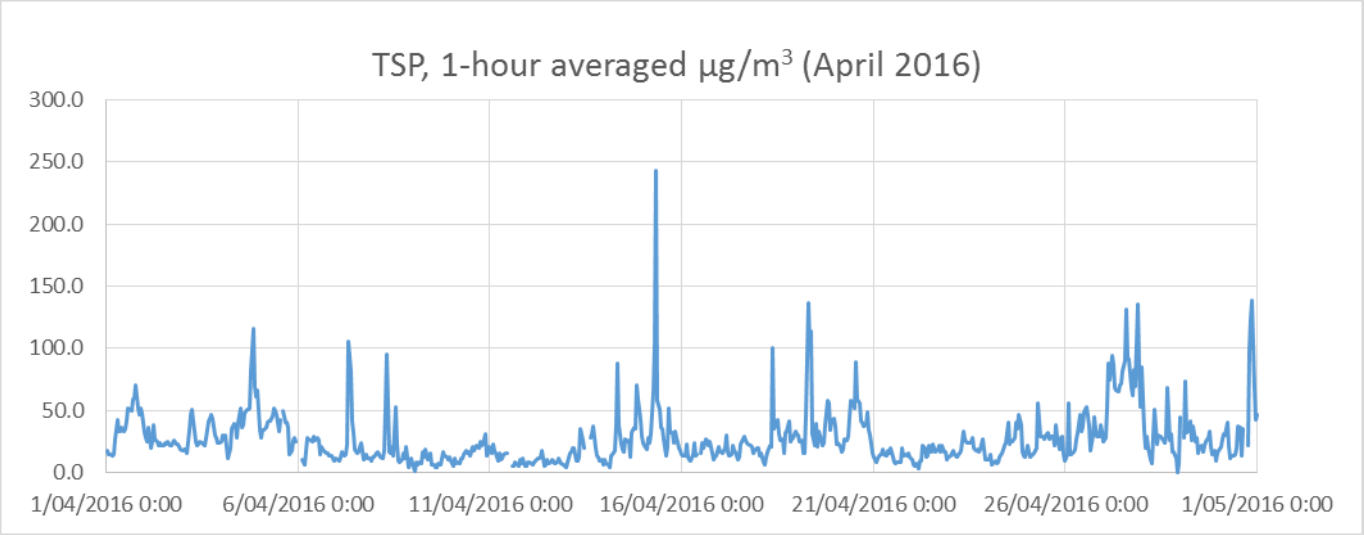
Total suspended particles (TSP)

TSP can provide an indication of the levels of visible nuisance dust in an area. 1-hour averaged TSP levels exhibit short term elevated values indicating the presence of visible dust. Please note there are no health-based ground level concentration criteria for TSP because they are related to environmental nuisance.

Following are some of the high concentration TSP events recorded in April:

- On 4 April at 8 pm concentrations reached a maximum of 115.5 µg/m^3, coincident with winds from a southeast direction with an average wind speed of about 1.0 m/s (ie 3.6 km/hr).
- Highest TSP concentration for the month was recorded on the 15 April at 6 pm with a maximum concentration of 242.9 µg/m^3, coincident with winds from a southwest direction with an average wind speed of about 1.2 m/s (ie 4.3 km/hr).
- On 19th of April at 7 am concentrations reached a maximum of 136.3 µg/m^3, coincident with winds from a southeast direction with an average speed of about 0.5 m/s (ie 1.8 km/hr).
- On 27 April at 9 pm concentrations reached a maximum of 135.4 µg/m^3, coincident with winds from a northerly direction with an average wind speed of 4.0 m/s (ie 14.4 km/hr).
- On 30th of April at 9 pm concentrations reached a maximum of 138.8 µg/m^3, coincident with winds from a westerly direction with an average wind speed of 5.4 m/s (ie 19.4 km/hr).

EPA is undertaking further work to understand local sources for these events.

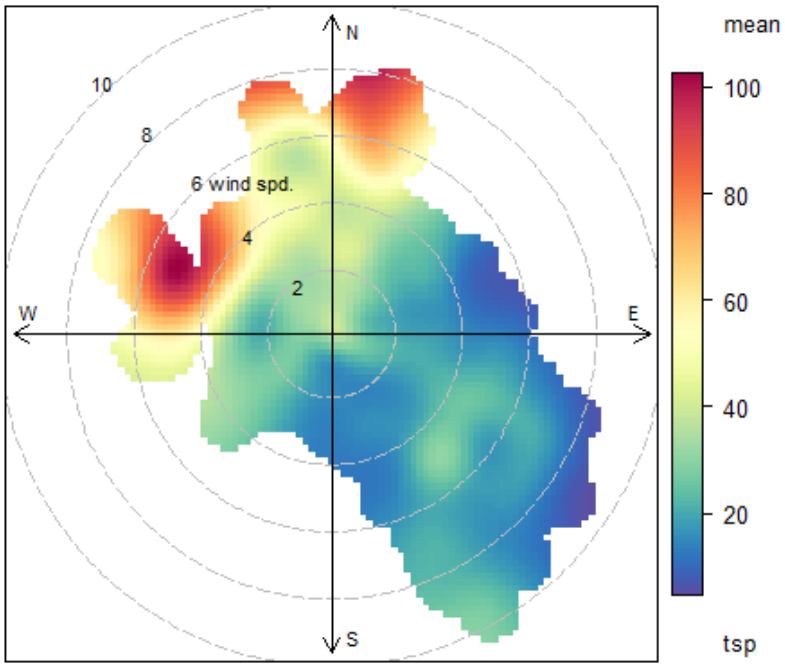


Polar plots

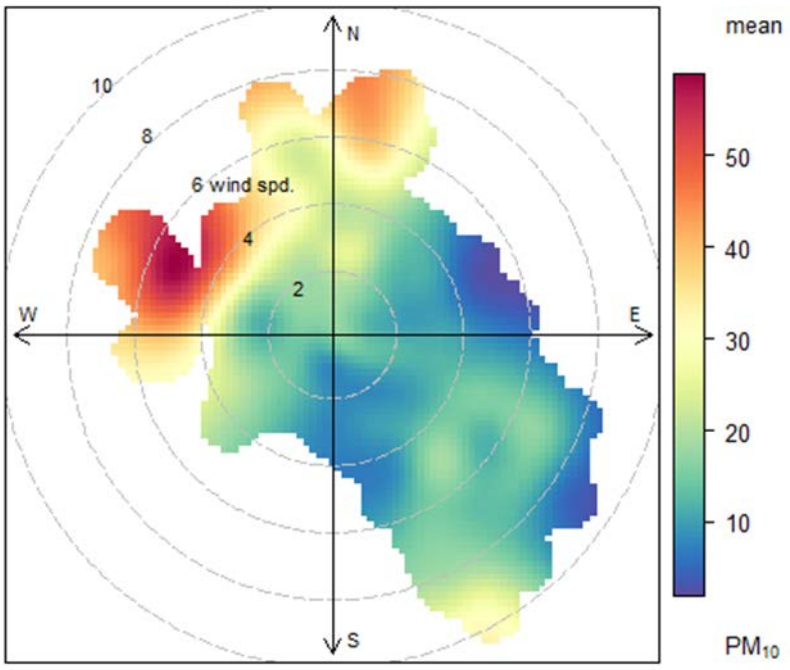
The polar plot is a graph describing how concentrations of a pollutant vary by both wind speed and direction. It presents average concentrations of particles as different colours, plotted against the direction from which the winds were blowing, centred on the monitoring station. Red blobs indicate higher average concentrations, while blue blobs show very low average concentrations. 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 speeds and directions 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 PM_{10} data have been used to produce the polar plots (using available meteorological data from April 2016).

The polar plot for TSP indicates that the majority of measured TSP originated from a north and north westerly direction with moderate wind speeds of 4 to 8 m/s (about 14 to 28 km/hour). The polar plot for PM_{10} exhibits a similar trend.



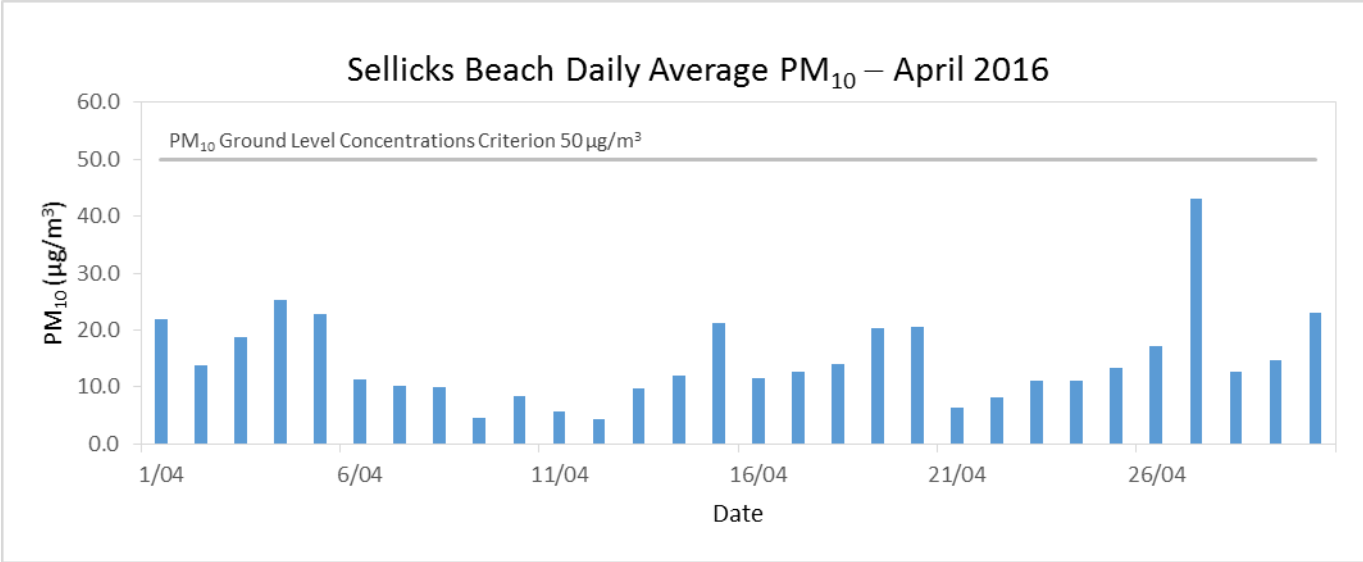
Polar plot for TSP (10-minute averaged in µg/m^3 data), April 2016



Polar plot for PM_{10} (10-minute averaged in µg/m³ data), April 2016

Particles (PM_{10})

There have been no exceedences of the 24-hour ground level concentration criterion of PM_{10} (50 µg/m³) at Sellicks Beach in April 2016.

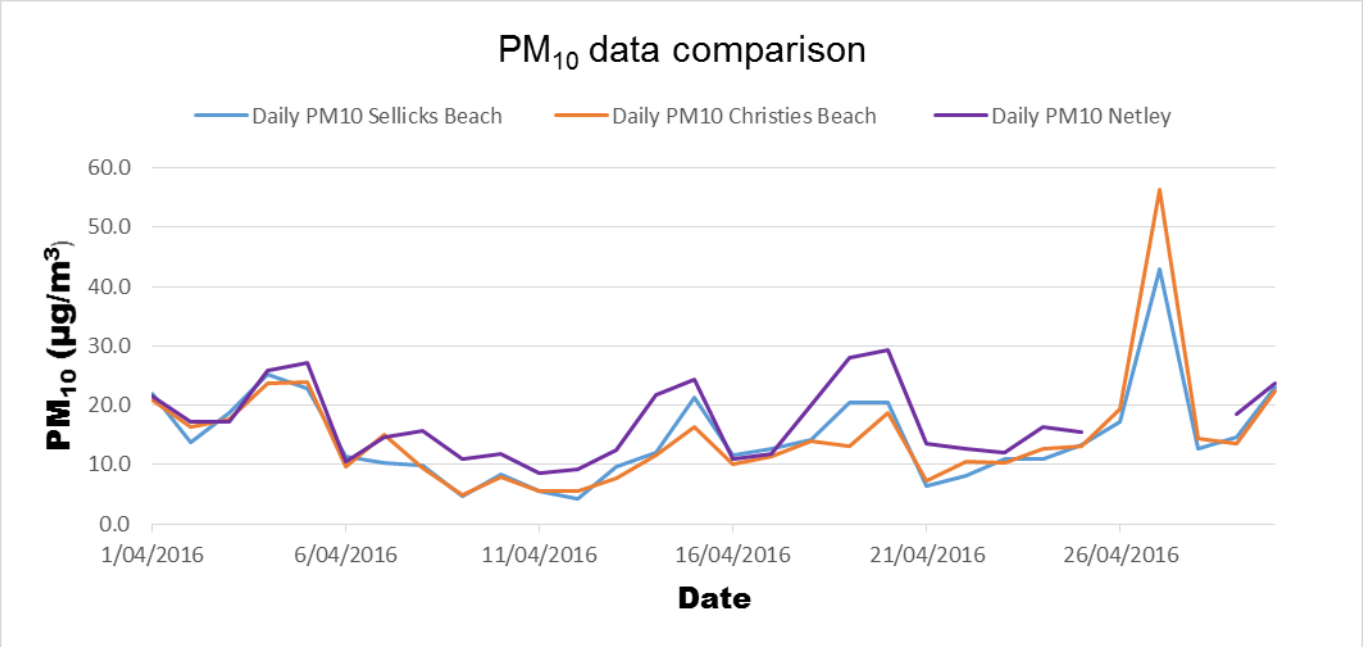


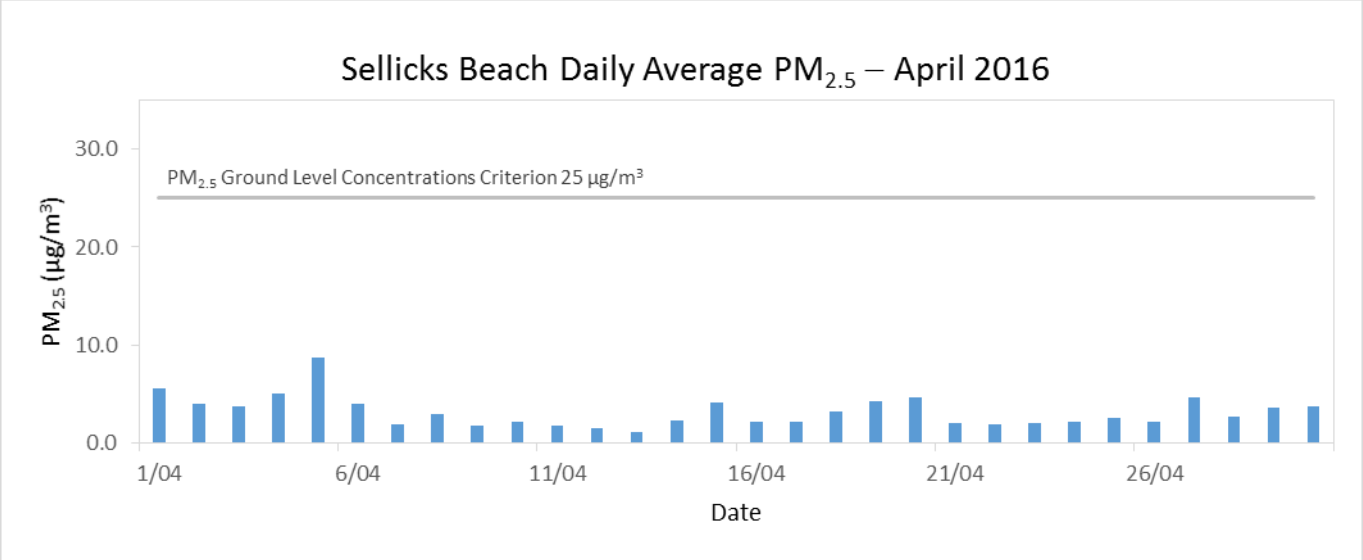
PM_{10} data comparison

PM_{10} data from Sellicks Beach, Christies Beach and Netley stations are presented in the next graph. PM_{10} levels at all three stations have exhibited a similar trend during the monitoring period, differing only on one or two occasions, which may be due to local sources or activities. A break in the Netley station data towards the end of the month was due to maintenance. Please read TSP section for some of these local dust events. The EPA is undertaking further work to understand local sources for these events.

Particles ($PM_{2.5}$)

There have been no exceedences of the 24-hour ground level concentration criterion of $PM_{2.5}$ (25 µg/m^3) at Sellicks Beach in April 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
108 North Terrace
Adelaide SA 5000

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Facsimile: (08) 8204 1909
Website: <shop.service.sa.gov.au>
Email: <ServiceSAcustomerservice@sa.gov.au>

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