

SpaRTANZ

Spatially-Resolved Technique for source Apportionment – New Zealand

What is SpaRTANZ?

SpaRTANZ is an experimental study of air pollution composition. It is based on the deployment of air samplers on lampposts at several locations in a city or neighbourhood for a few weeks. Analysis of the samples collected provides information on the emission sources (heating, petrol/diesel vehicles, shipping) contributing. The spatial distribution of samplers, combined with GIS analysis, generates maps of various pollutants and source impacts across a study area.



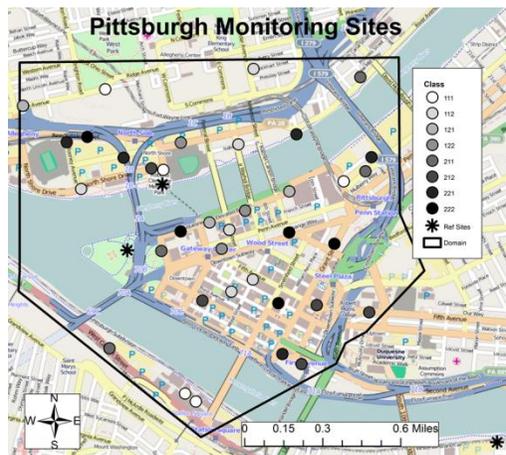
One of the samplers to be used in SpaRTANZ

Who are SpaRTANZ?

SpaRTANZ is based on studies pioneered by Dr Jane Clougherty (University of Pittsburgh) in New York City and Pittsburgh. Dr Clougherty and her team will be leading SpaRTANZ in collaboration with Dr Ian Longley and the Air Quality team of NIWA.

Why SpaRTANZ?

Managing urban air quality increasingly requires the linkage of key emissions sources to quantifiable pollution impacts. Studies like those in Pittsburgh and New York have been powerful in enabling health outcomes research, communicating risk, and prompting regulatory action targeted on key sources or areas.



Pittsburgh, Pennsylvania, US monitoring locations classified by the following factors: total traffic density (including minor and major roadway counts), truck traffic density, and bus route frequency. To capture variation across the domain, source classes (n=8) were created for all possible combinations of low or high densities of each source.

When is SpaRTANZ coming?

SpaRTANZ will begin with two pilot studies - in Auckland CBD in April 2014 and inner Christchurch in May 2014. Funding will be sought to follow up with full-scale studies in the future.

How does SpaRTANZ relate to the recent source apportionment work by GNS?

There are many similarities and a little overlap. The GNS work uses ion beam analysis and receptor modelling to match the elemental composition of particles to known source profiles. However, SpaRTANZ also measures organic compounds and gases, to differentiate impacts of multiple sources across more locations. Emissions from combustion sources, especially diesel and domestic woodsmoke, is not limited to particles. Whereas the GNS studies have primarily been limited to analysis of filters from fixed Council stations, SpaRTANZ deploys its own portable samplers at multiple sites simultaneously (which can then be moved systematically) to provide multiple measurement points. This provides the 'spatial resolution' (and maps) which are the key characteristic feature of the method.

Can anyone join in?

We are keen for any opportunities to share useful data, and to combine forces with other related research activities. Please get in touch.

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