

Upper Hunter Air Quality Monitoring

Matthew Riley

Director Climate and Atmospheric Science – OEH

Minerals Council UH Mining Dialog meetings
14 & 15 October 2014



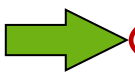
Who are we?

NSW Department of Planning and Environment



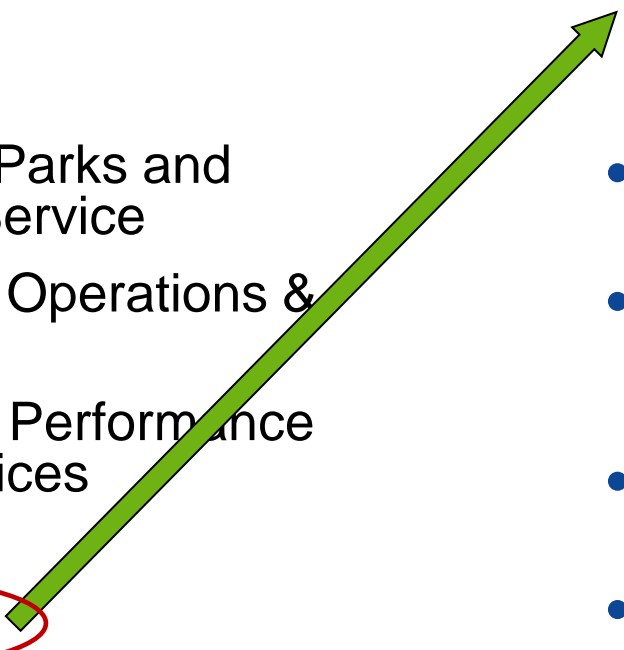
Office of Environment & Heritage

- National Parks and Wildlife Service
- Regional Operations & Heritage
- Strategy, Performance and Services
- Policy
- Science
- Legal



Environment Protection Authority

- Regulatory Services Division
- Hazardous Incidents & Environmental Health Branch
- Stakeholder Engagement and Governance Branch
- Waste and Resource recovery Branch



CREATE

Collaboration ... we partner and share with colleagues, customers and the community

Relevance ... we work on the environmental issues that matter most to the Government and people of NSW

Exploration ... we look ahead and find new ways to solve problems

Accessibility ... we make ourselves and our knowledge available

Teamwork ... we work together safely and respectfully to achieve common goals

Excellence ... we do rigorous science to deliver outstanding services

Collaboration and Scientific Rigour:

- Fostering an environment where collaboration is encouraged to leverage OEH scientific funding and provide the most effective science outcomes for NSW
- Adhering to OEH Scientific Rigour Position Statement and associated guidance
<http://www.environment.nsw.gov.au/resources/research/OEHSciRigPosnStmtJul13.pdf>

Scientific Rigour

“The purpose of the **Scientific Rigour Position Statement** is to ensure that all science undertaken or commissioned by OEH meets globally accepted standards for scientific rigour from start to finish. This will ensure OEH has robust scientific evidence on which to base decisions. It also prevents wasting resources on scientific work which does not meet standards of scientific rigour, and so will not deliver defensible and/or meaningful results”

**NSW Office of Environment and Heritage Scientific Rigour Position Statement
July 2013**

<http://www.environment.nsw.gov.au/resources/research/OEHSciRigPosnStmntJul13.pdf>





Knowledge Strategy 2013–17

Snapshot of major OEH programs to address priority knowledge needs

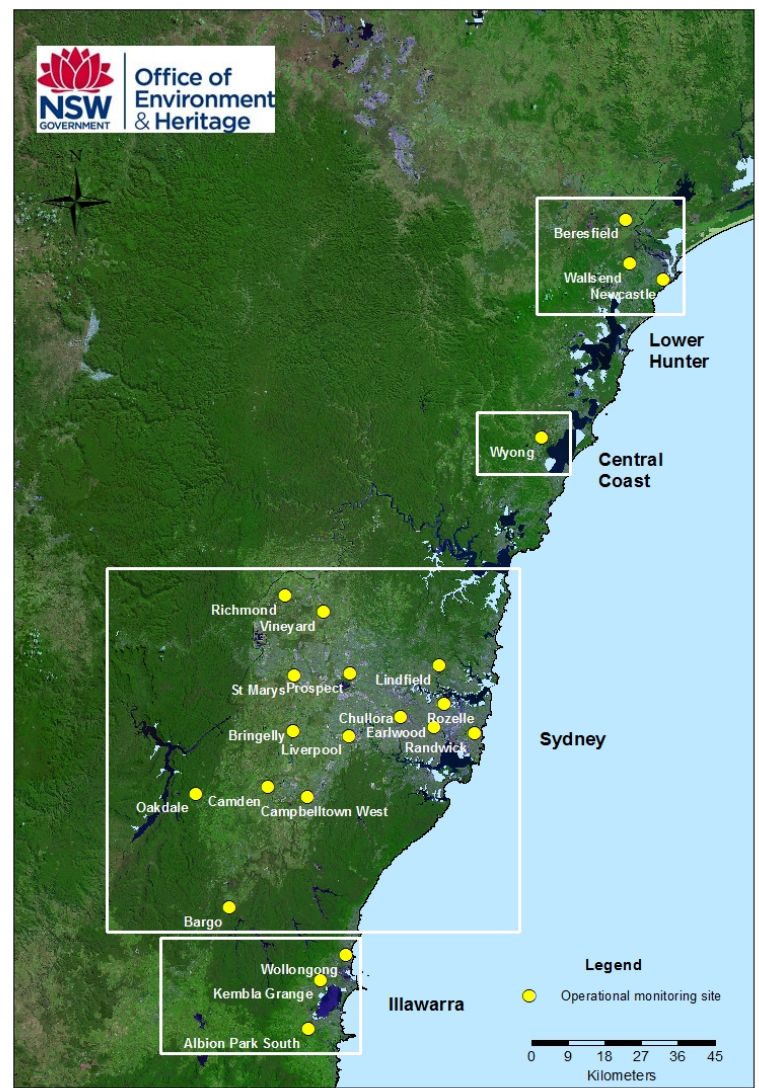
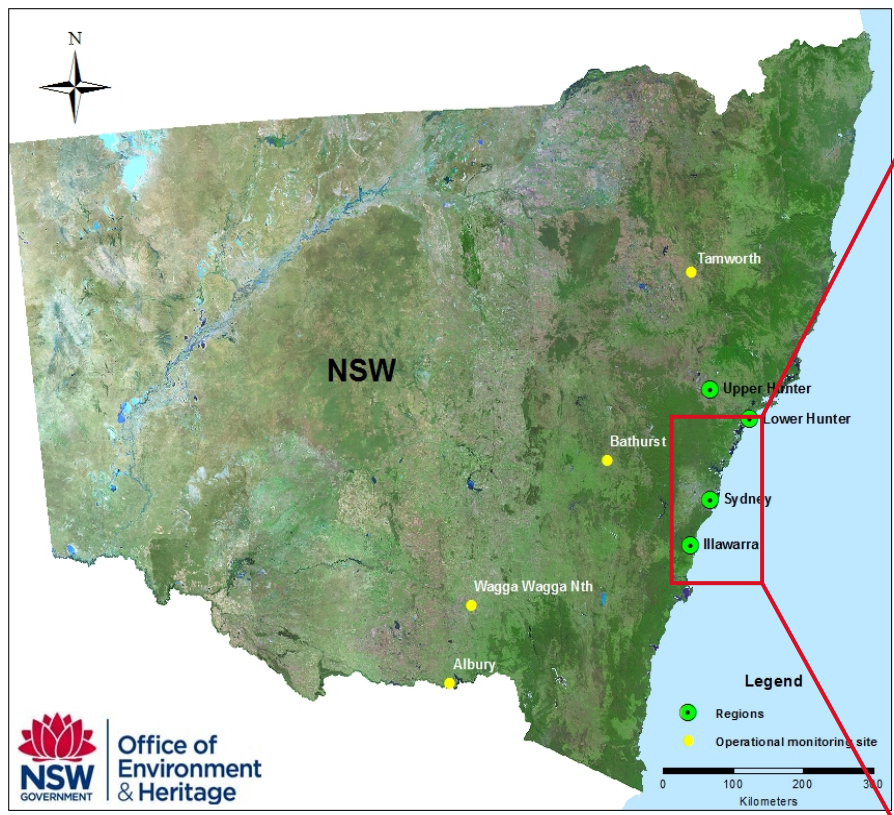


22

GOAL 22 PROTECT OUR NATURAL ENVIRONMENT (CONTINUED)

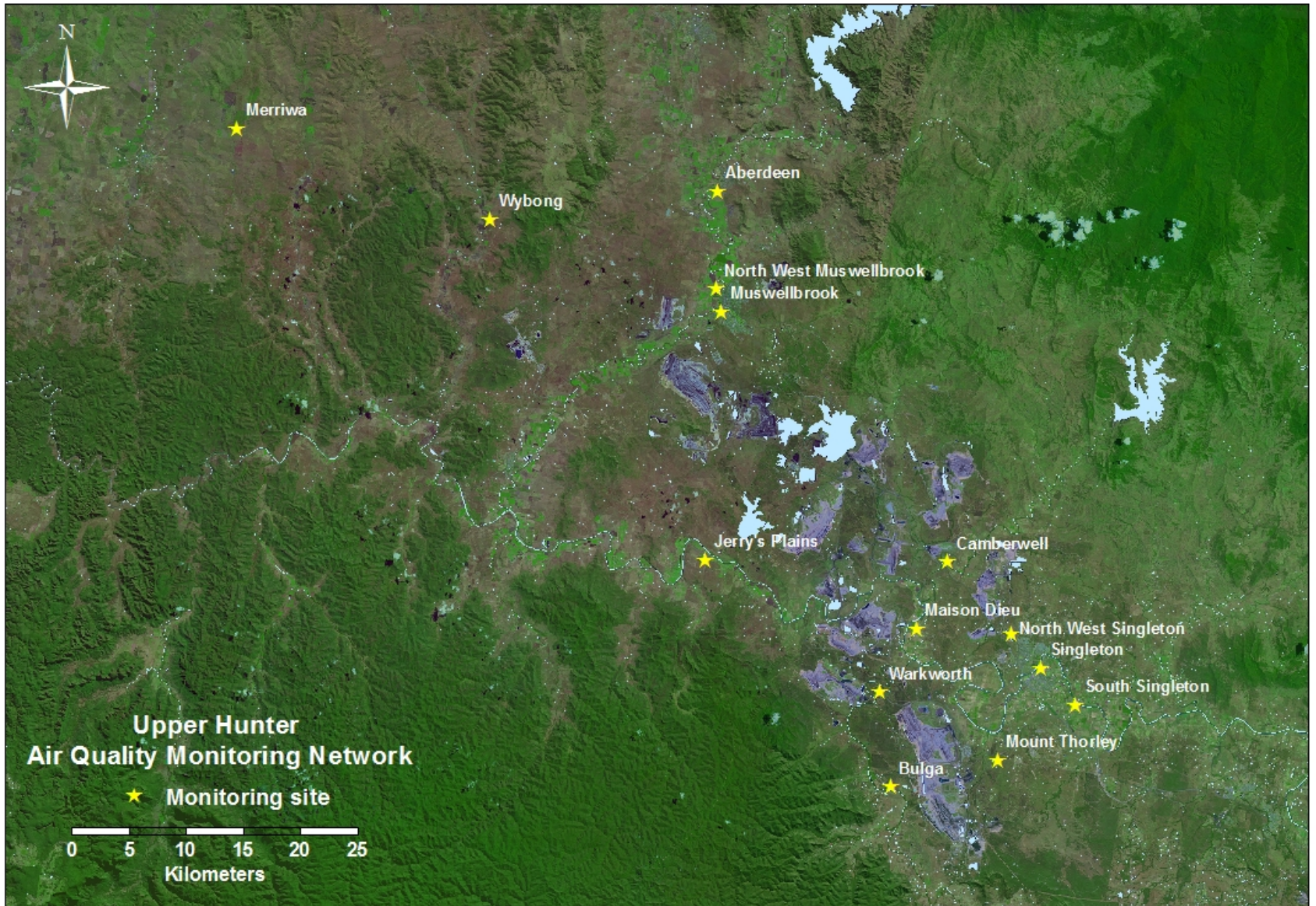
Provide information to local communities on air quality

Air quality monitoring network



- 15 sites in Sydney, 3 sites in Illawarra
- 3 sites in Lower Hunter (+3 being built)
- 1 site on Central Coast, 4 rural sites
- 14 sites in the Upper Hunter

Upper Hunter AQMN



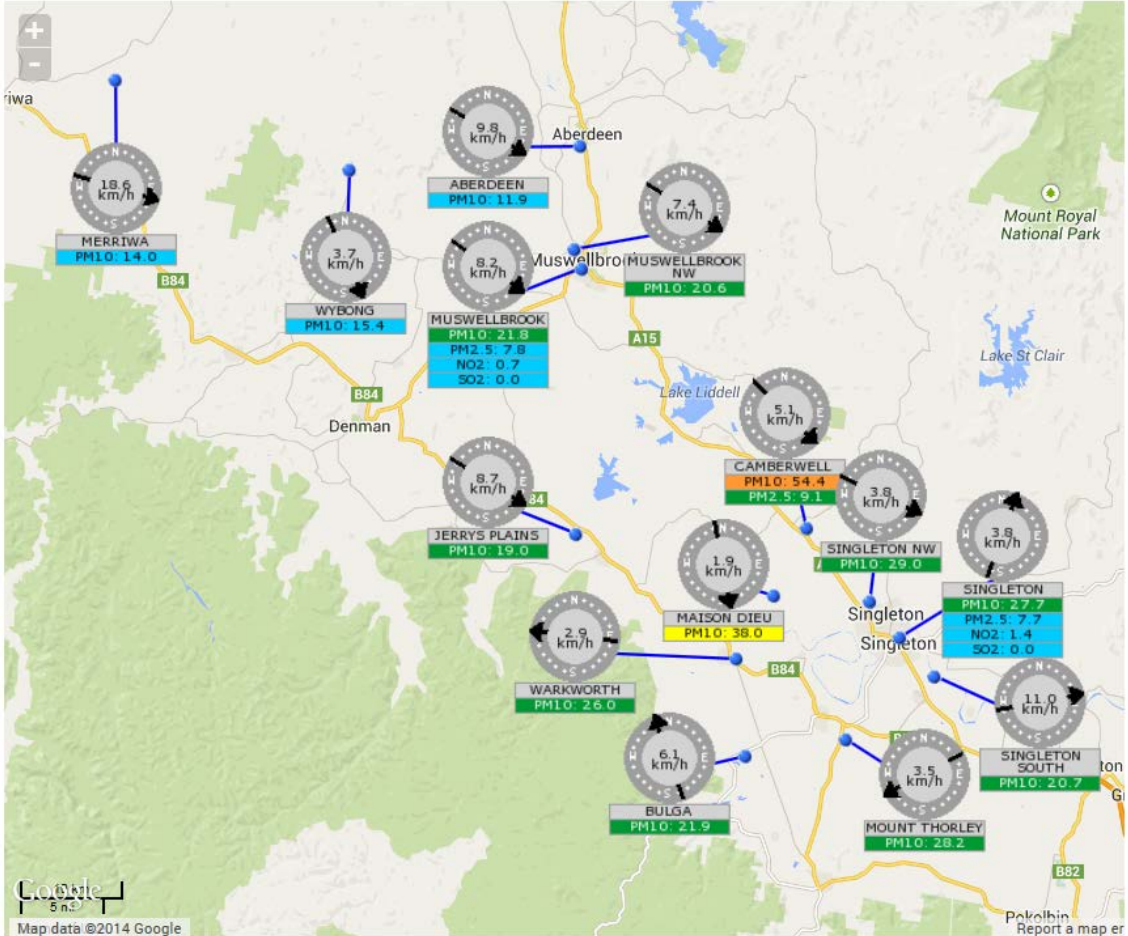
Upper Hunter AQMN

- NSW map
- Upper Hunter map
- Newcastle map
- NSW index values
- NSW data readings
- Sydney forecast
- Alerts
- Subscribe

Tuesday
14 October 2014
5 - 6 am (AEST)
[Previous](#) | [Next](#) | [Select](#)

Base Layer

- Streets Map
- Physical Map
- Satellite Map
- Hybrid Map



- reset icons
- offset icons
- refresh map

Newcastle local AQMN

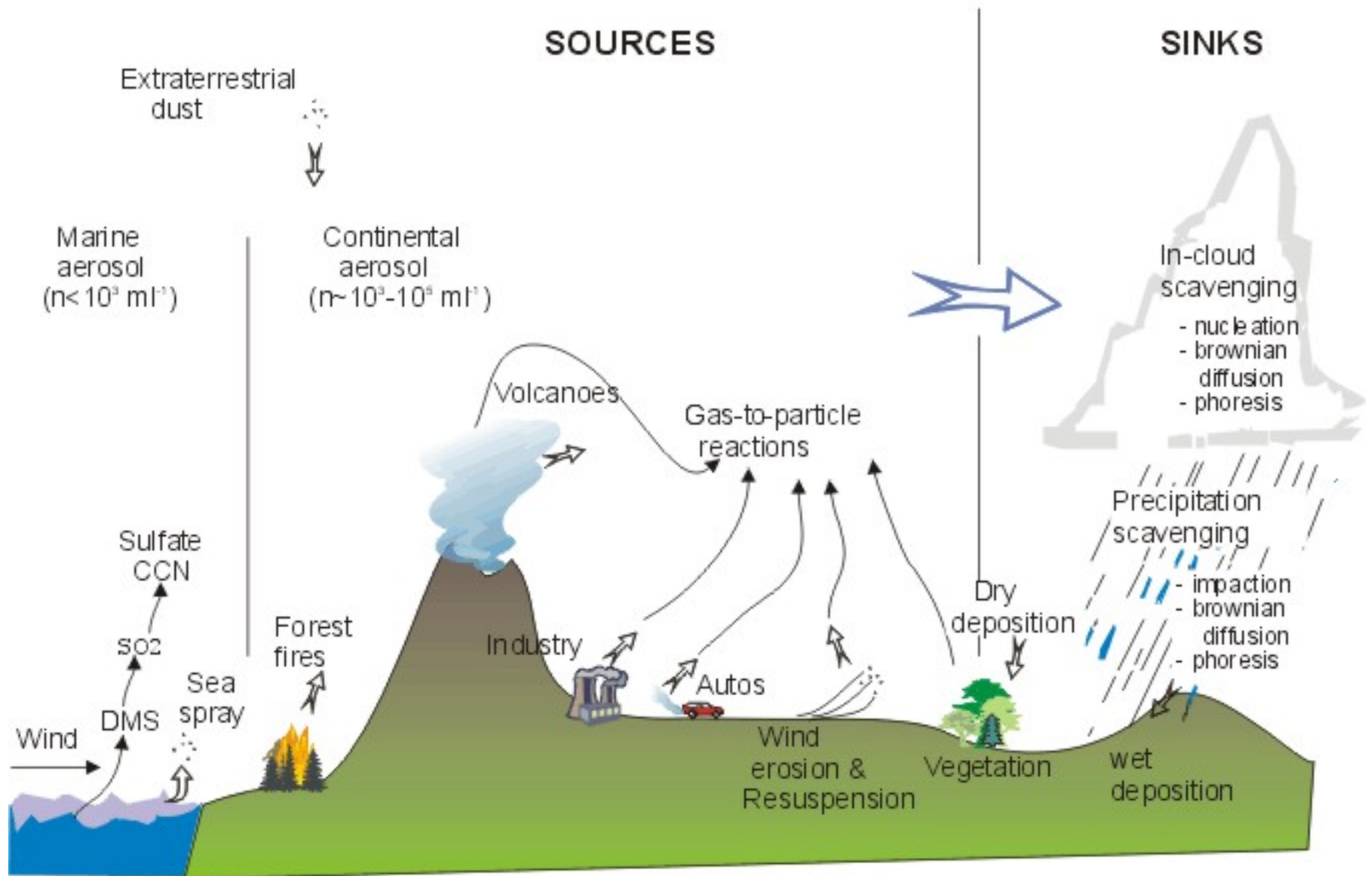
- Three new air quality monitoring stations
- Opened August 2014 (Carrington, Mayfield, Stockton *end of October*)
- Funded by industry
- Operated by OEH
- Enhanced information to the community regarding air quality around the Port of Newcastle.



Air quality monitoring information is used to:

- Characterise air quality
- Provide information to the community on air quality in their area
 - Air Quality Index
 - Air Pollution Alerts (SMS/email/web)
- Describe trends in air quality
- Support the EPA's policy and program development
- Support research programs into the health impacts of air pollution and source identification

ATMOSPHERIC AEROSOL



Source: <http://www.ems.psu.edu/~Ino/Meteo437/Aerosol.jpg>

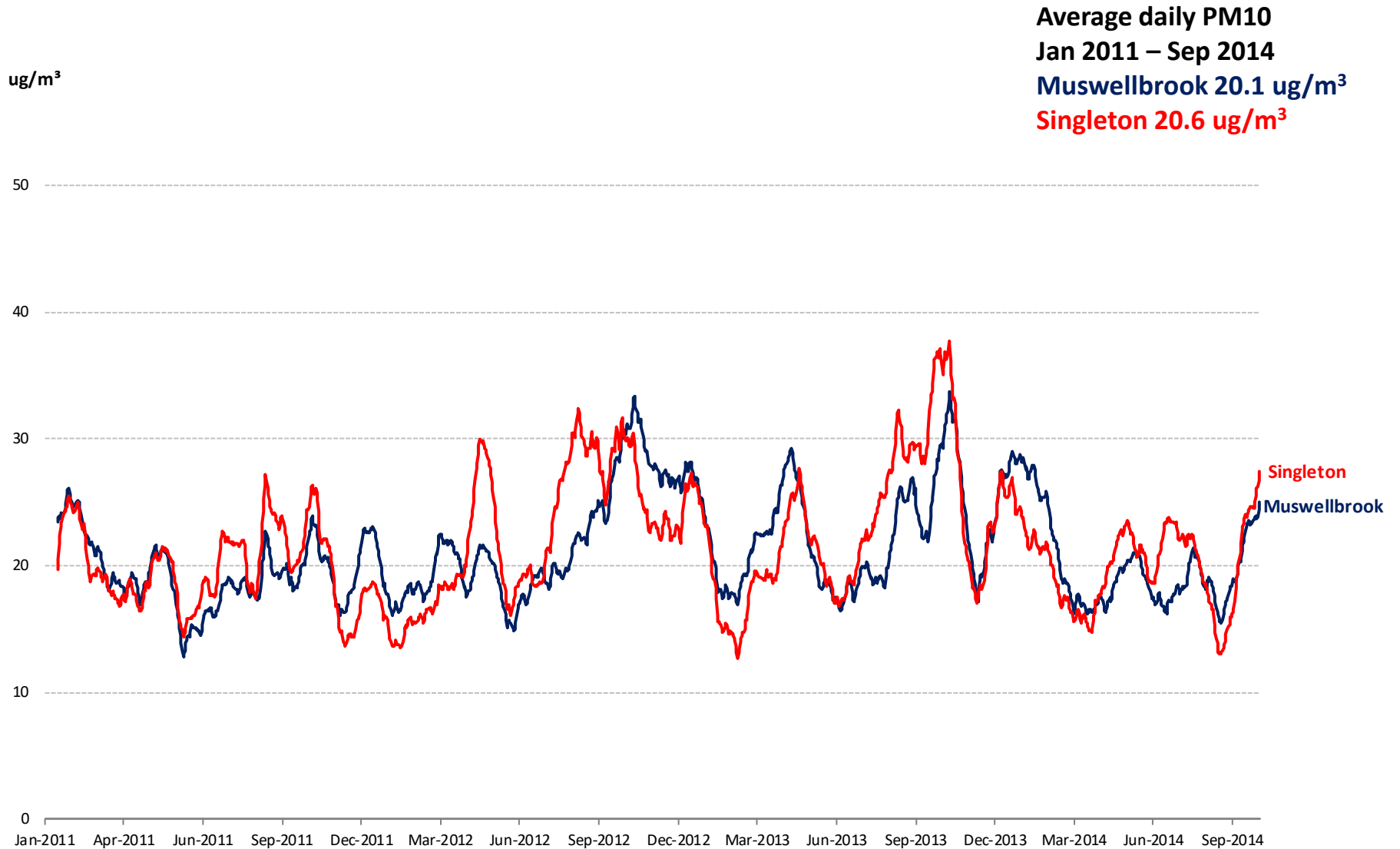
UHAQMN – PM10

ug/m³



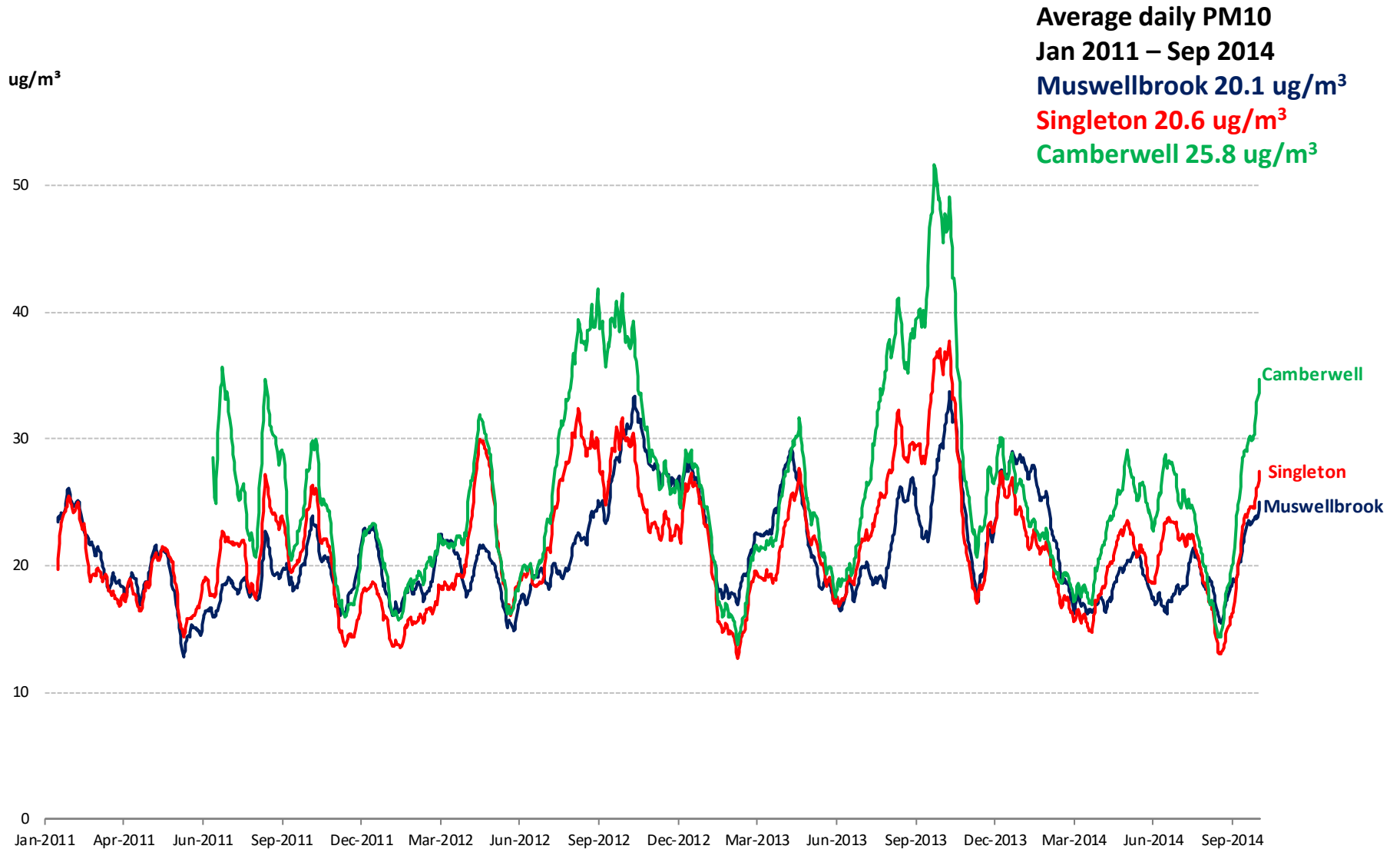
PM10: Rolling 30 day average (Jan 2011 - Sep 2014)

UHAQMN – PM10



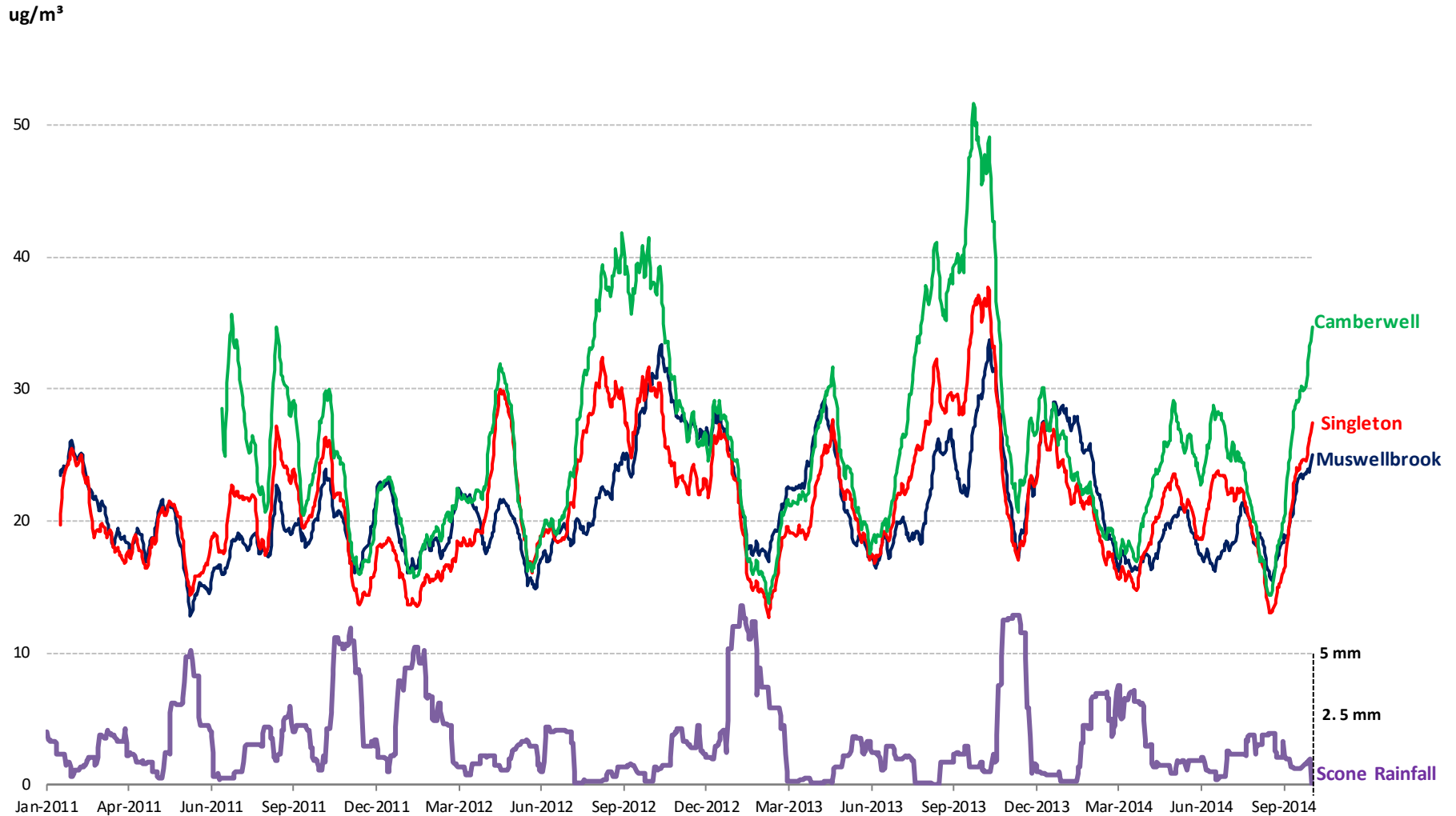
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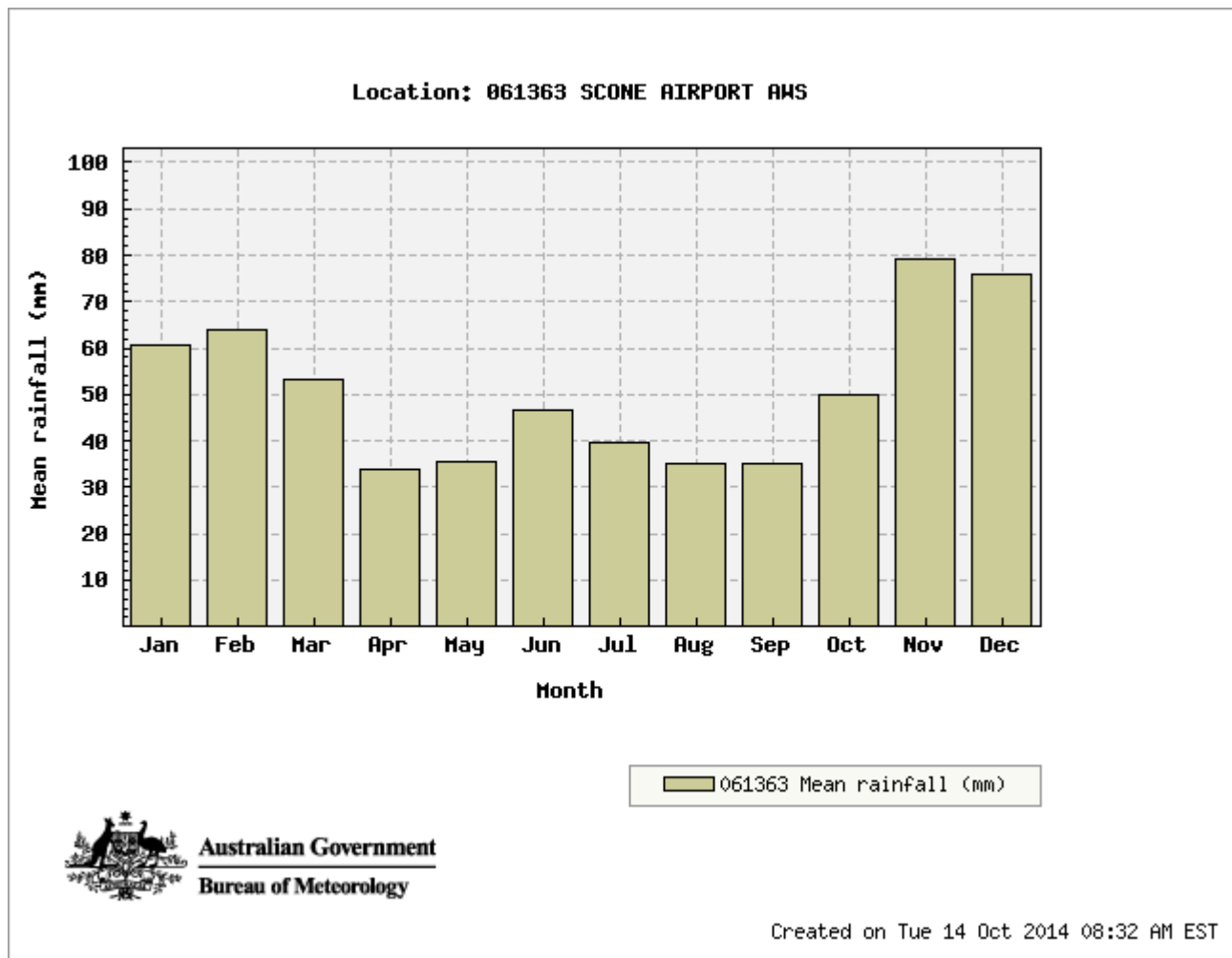
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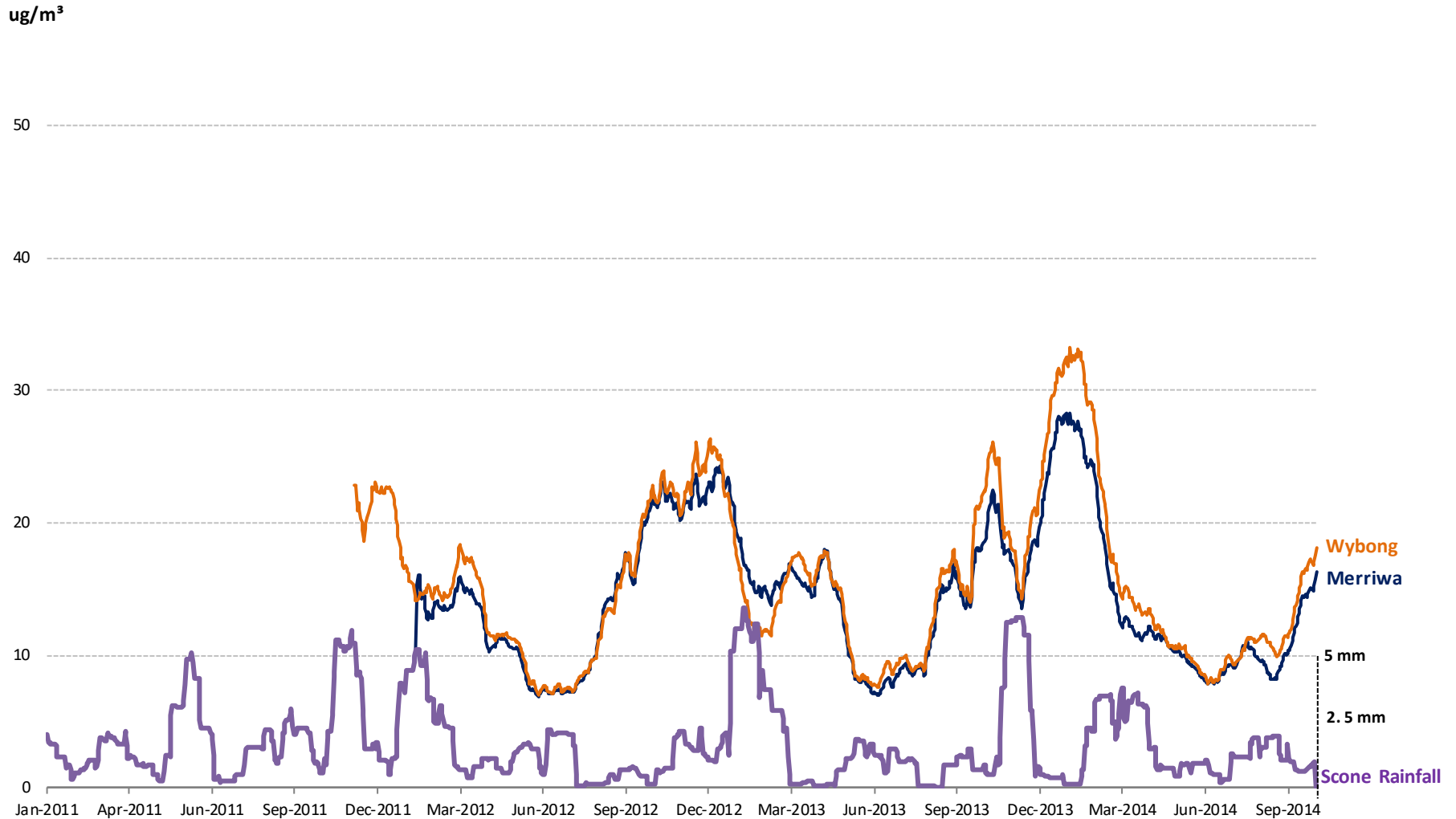


PM10 and Rainfall: Rolling 30 day average (Jan 2011 - Sep 2014)

Scone AWS – Mean rainfall

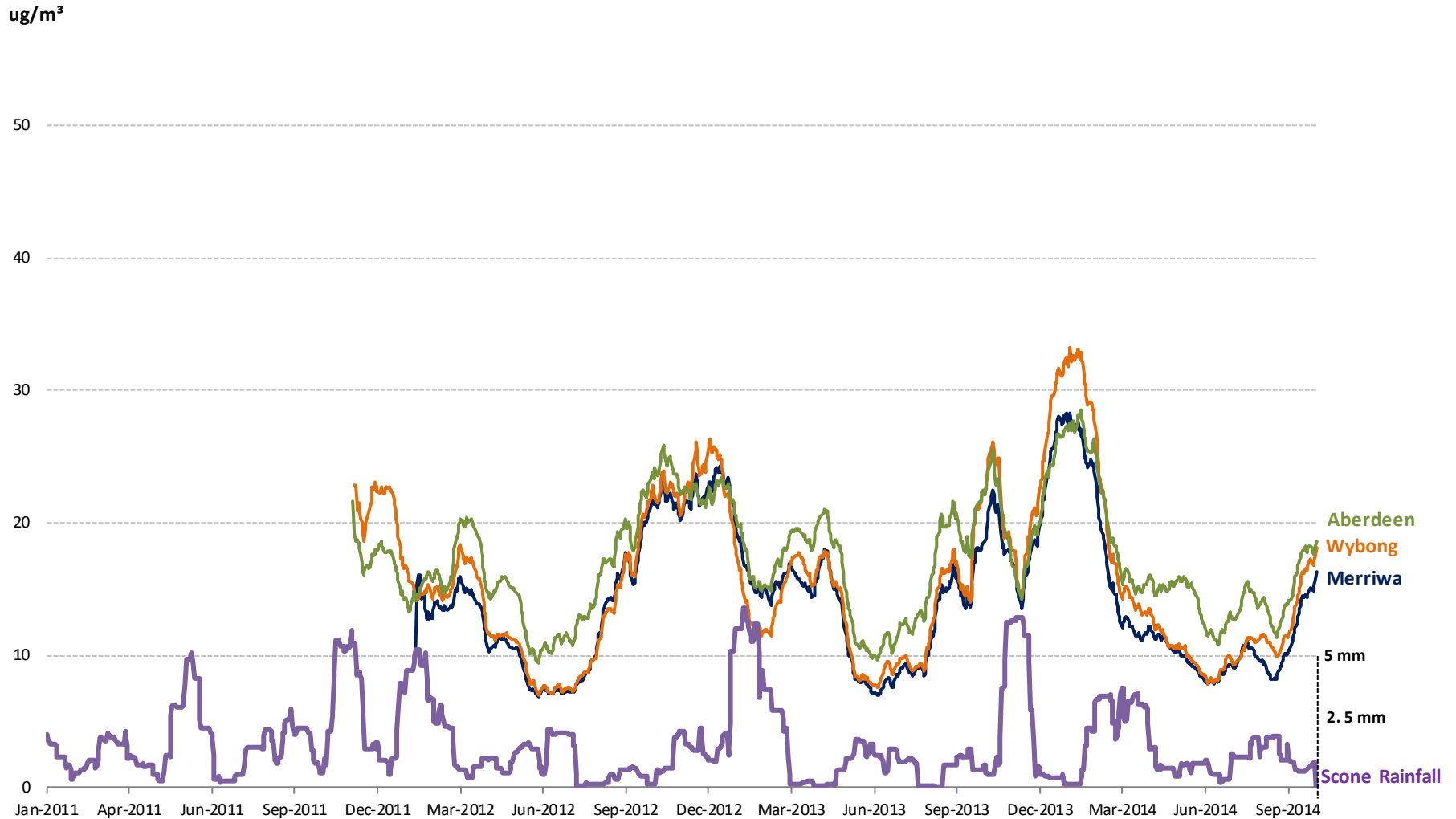


UHAQMN – PM10



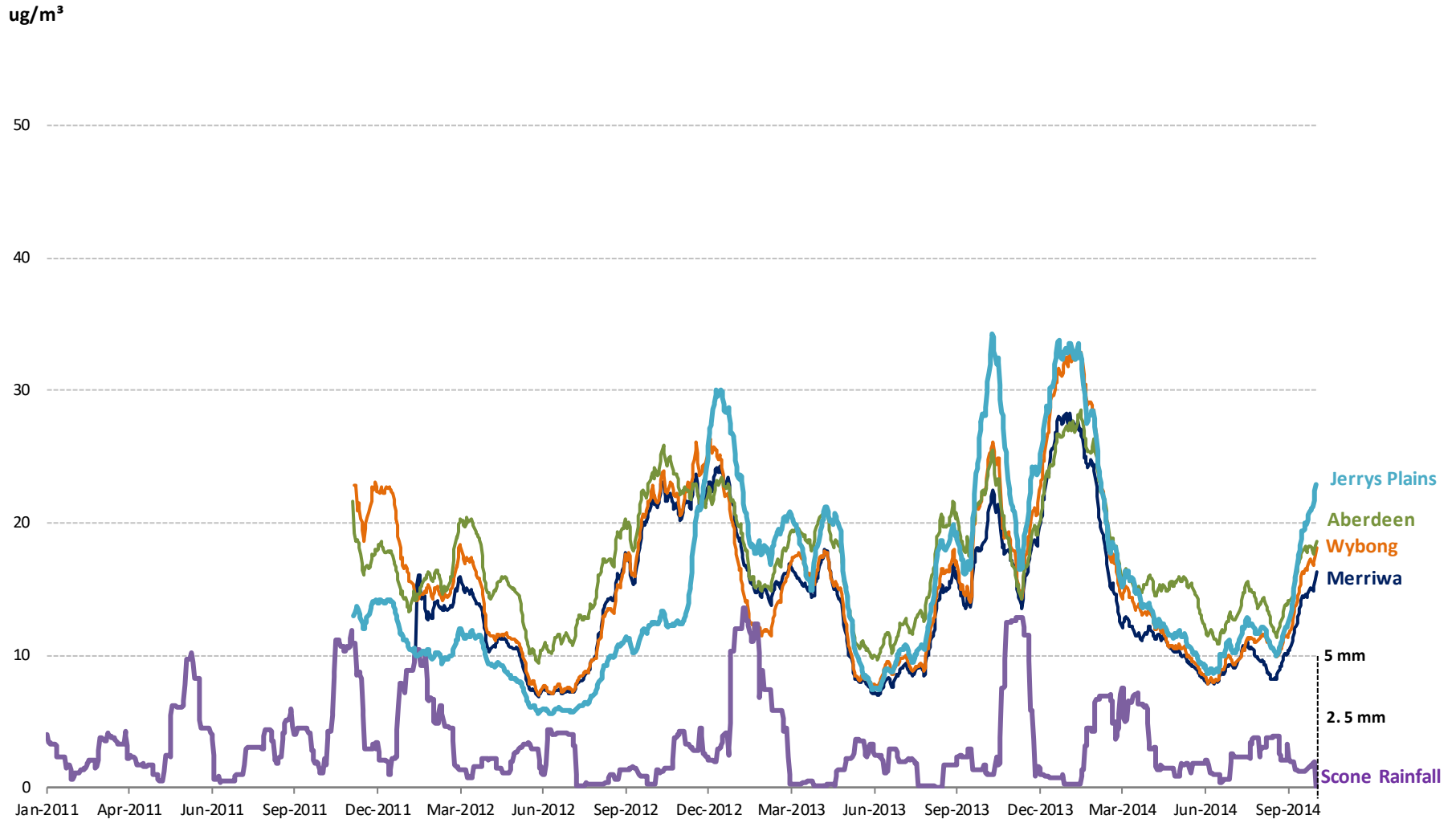
PM10 and Rainfall: Rolling 30 day average (Jan 2011 - Sep 2014)

UHAQMN – PM10



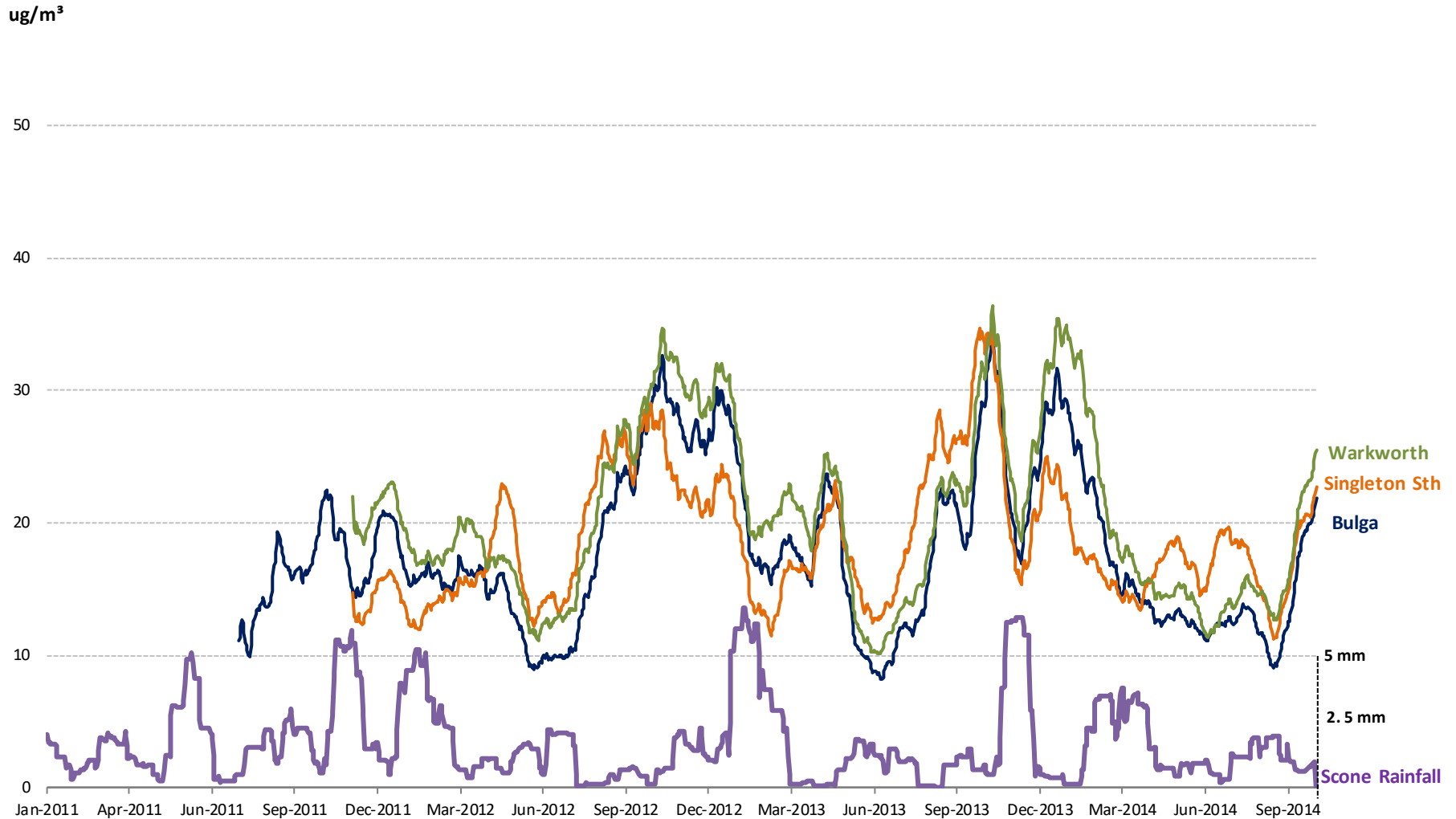
PM10 and Rainfall: Rolling 30 day average (Jan 2011 - Sep 2014)

UHAQMN – PM10



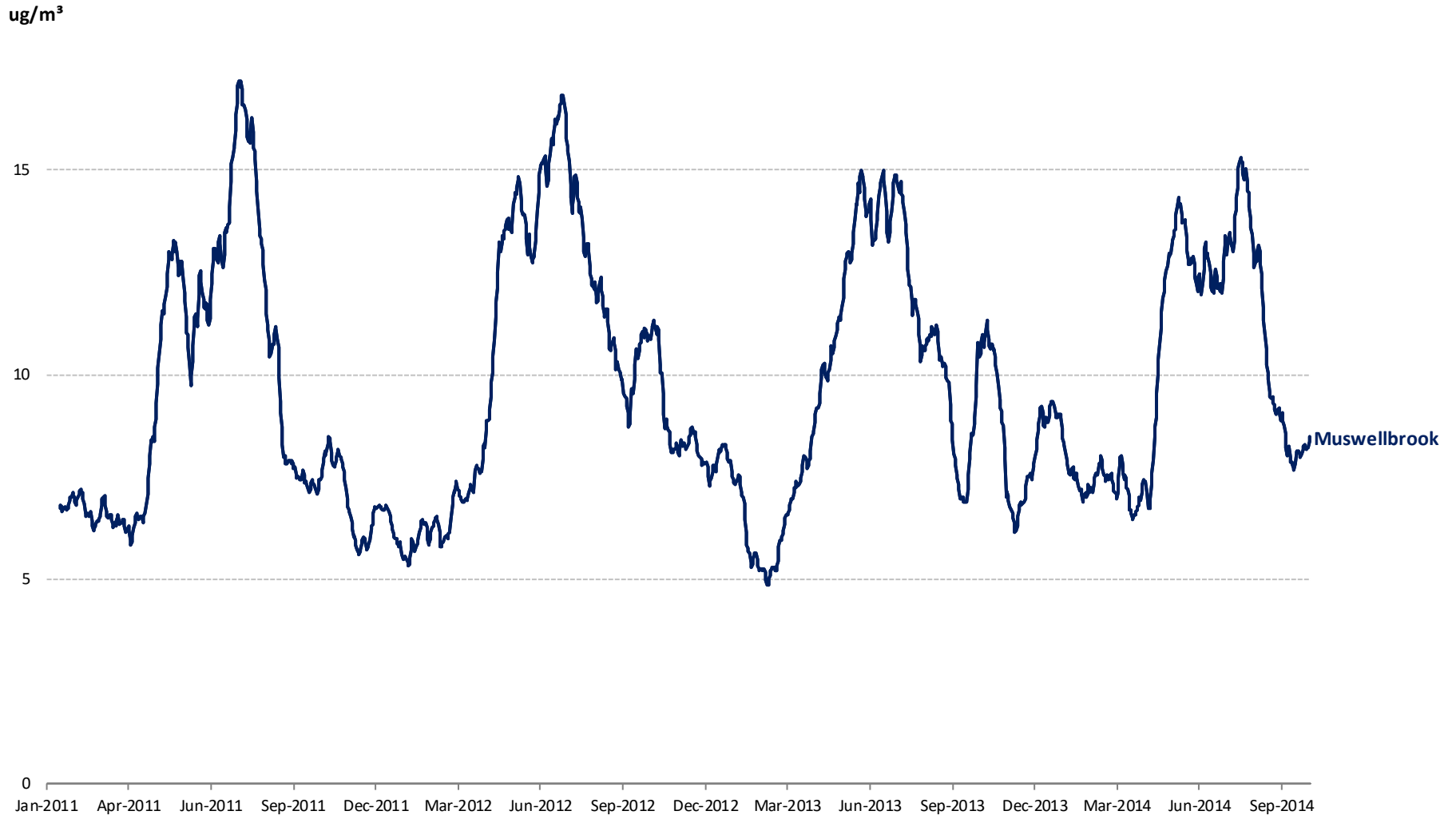
PM10 and Rainfall: Rolling 30 day average (Jan 2011 - Sep 2014)

UHAQMN – PM10



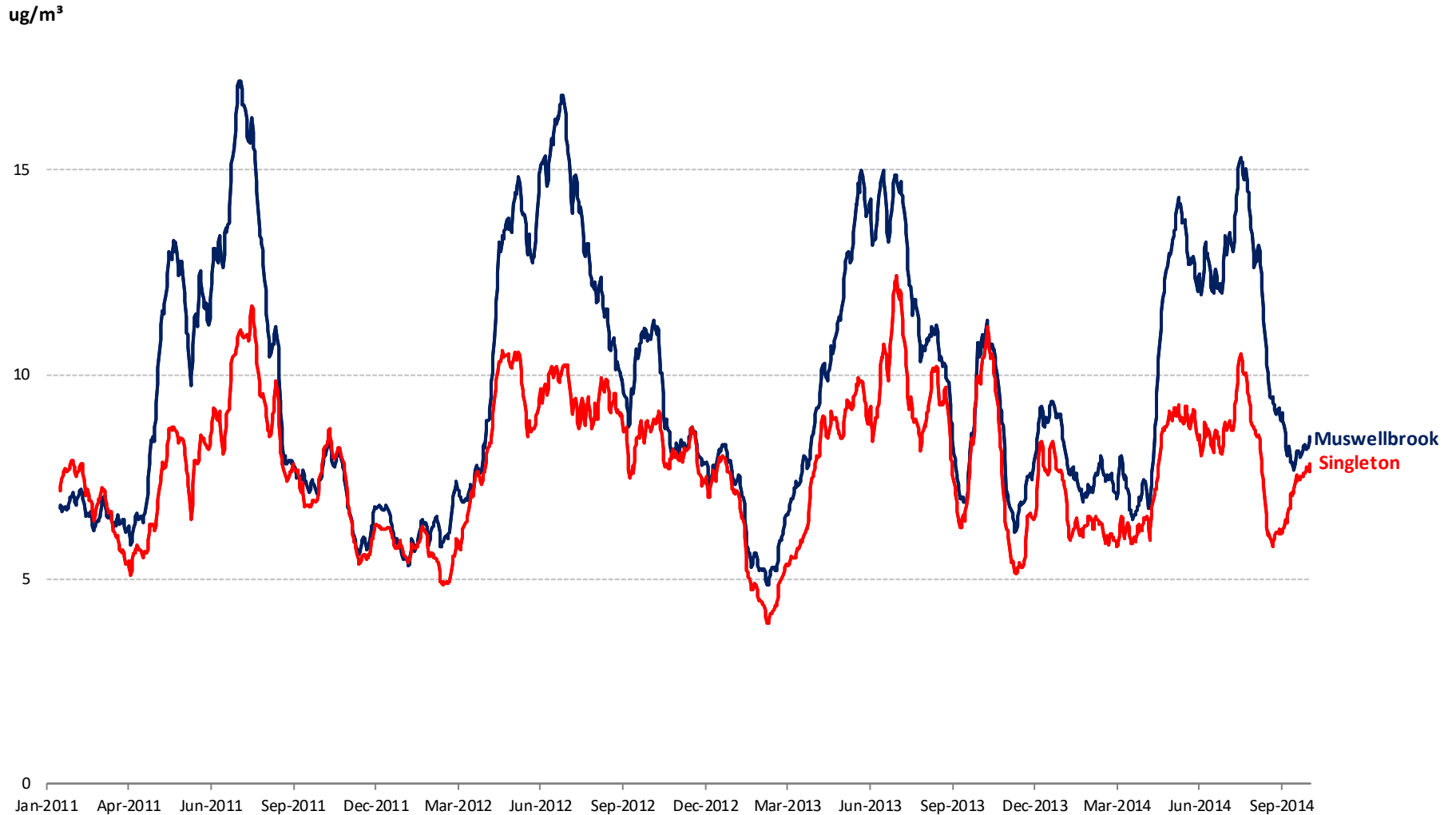
PM10 and Rainfall: Rolling 30 day average (Jan 2011 - Sep 2014)

UHAQMN – PM2.5



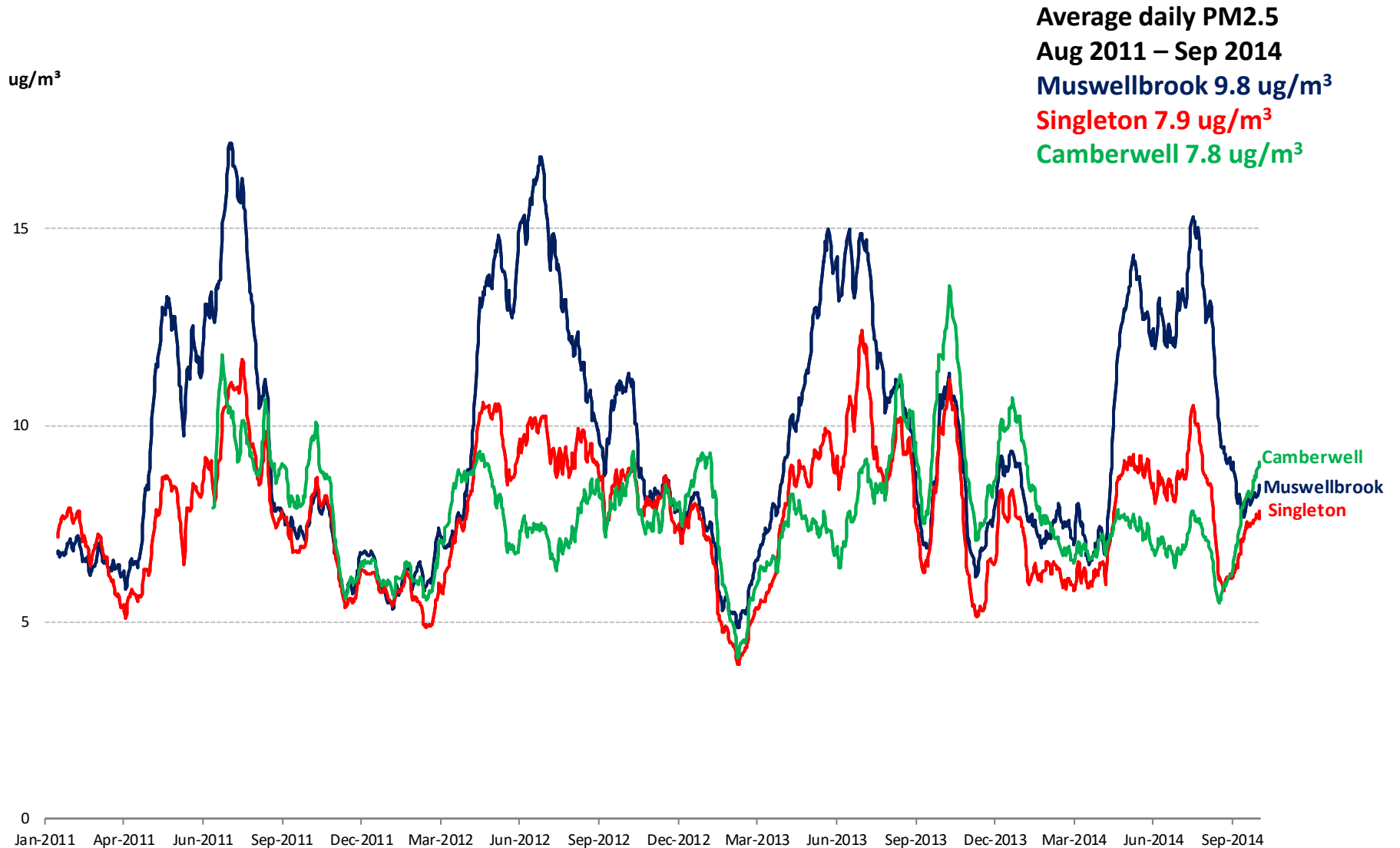
PM2.5: Rolling 30 day average (Jan 2011 - Sep 2014)

UHAQMN – PM2.5



PM2.5: Rolling 30 day average (Jan 2011 - Sep 2014)

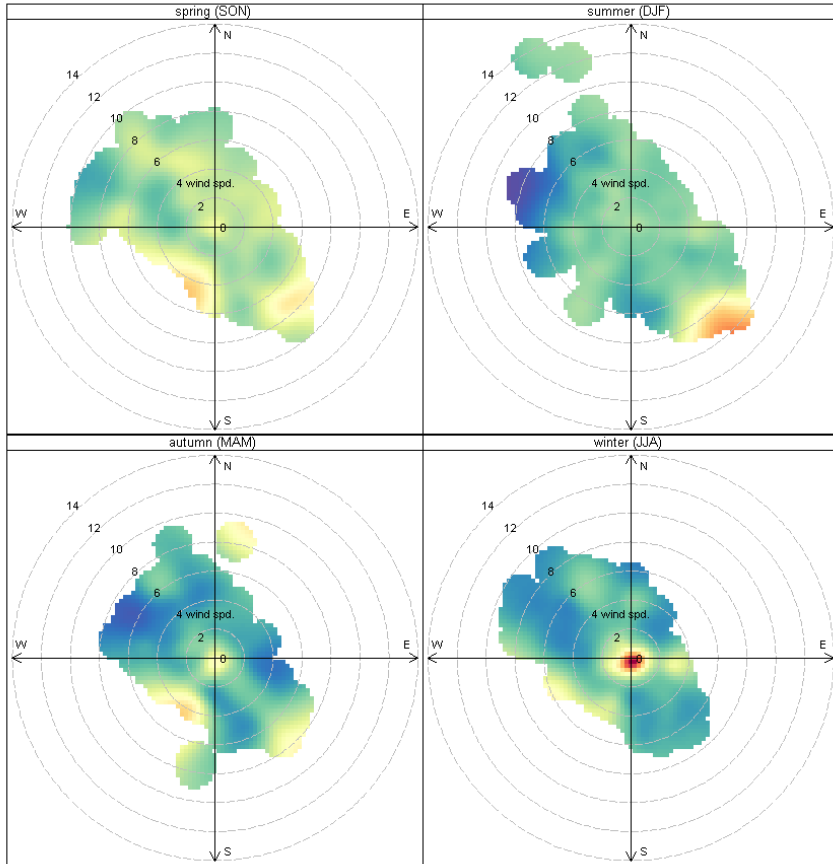
UHAQMN – PM2.5



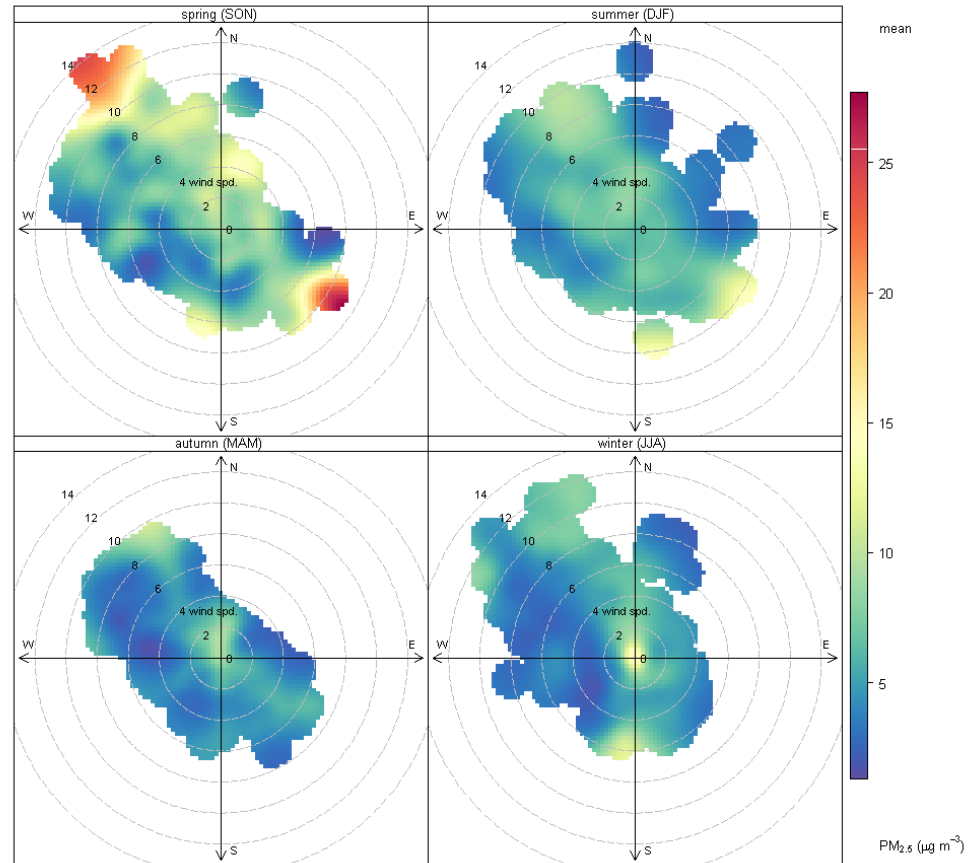
PM2.5: Rolling 30 day average (Jan 2011 - Sep 2014)

UHAQMN – PM2.5

Muswellbrook



Singleton



Upper Hunter Fine Particle Study

- **Jan 2012 to Jan 2013**
- **Aimed to help determine:**
 - **the major sources contributing to PM2.5 particle levels in these towns and their relative importance**
 - **whether there are any weekly and seasonal changes in PM2.5 particles in the Upper Hunter.**



Air pollution tops lists of complaints

By MATTHEW KELLY, Environment Reporter · Jan. 9, 2012, 9:47 a.m.



Health takes back seat for Upper Hunter residents

By MATTHEW KELLY Environment Reporter · Sept. 4, 2012, 4:27 a.m.

UPPER Hunter residents' health was being sacrificed for the expansion of the mining industry, one of the region's largest environment groups said yesterday.



COALMINES: Complaints against mines include both air and noise pollution.

2 of 2

But Upper Hunter Air Quality Monitoring Network advisory committee member Carol Russell, said she had serious reservations about the explanation.

Engaging with the community

- **13 September 2011** – Workshop with potential research partners (chaired by EDS)
- **15 September 2011** – Draft study outline discussed with independent Health Experts Advisory Group
- **10 October 2011** – Initial discussions with the community at an already scheduled meeting
- **1 November 2011** – Final study design endorsed
- **7 November 2011** – Write to local MPs and councils
- **21 November 2011** – Announce final study design at a meeting in Singleton and Muswellbrook
- **1 January 2012** – Study commences

Research giants to study air particles

By FRANCES THOMPSON Upper Hunter Reporter Nov. 21, 2011, 7:15 p.m.



New air particle study for Upper Hunter

Updated Tue 22 Nov 2011, 1:49pm AEDT

Singleton and Muswellbrook residents are set to know more about fine particles polluting the air, with a 12 month study about to get underway.

The Environment Protection Authority is teaming up with NSW Health for the \$450,000 Upper Hunter Particle Characterisation study.

The study aims to find out more about the composition of fine PM 2.5 air particles and their source.

The EPA says during Winter this year an air quality monitor at Muswellbrook recorded slightly elevated PM 2.5 concentrations.



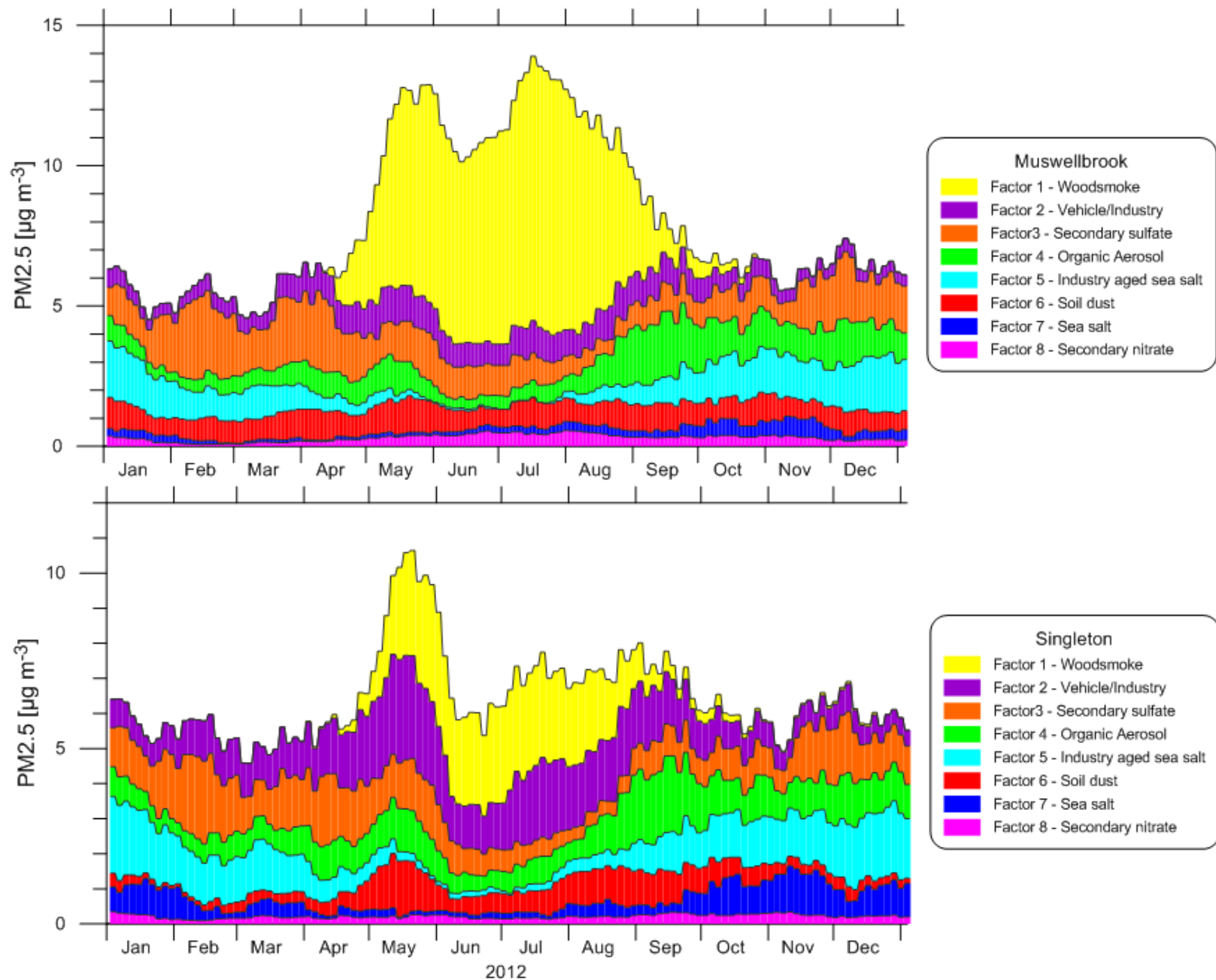
PHOTO: A new study looking at the source and impact of fine dust particles is about to get underway in Muswellbrook and Singleton. (User Submitted: Fiona Hamilton)

MAP: [Muswellbrook 2333](#)

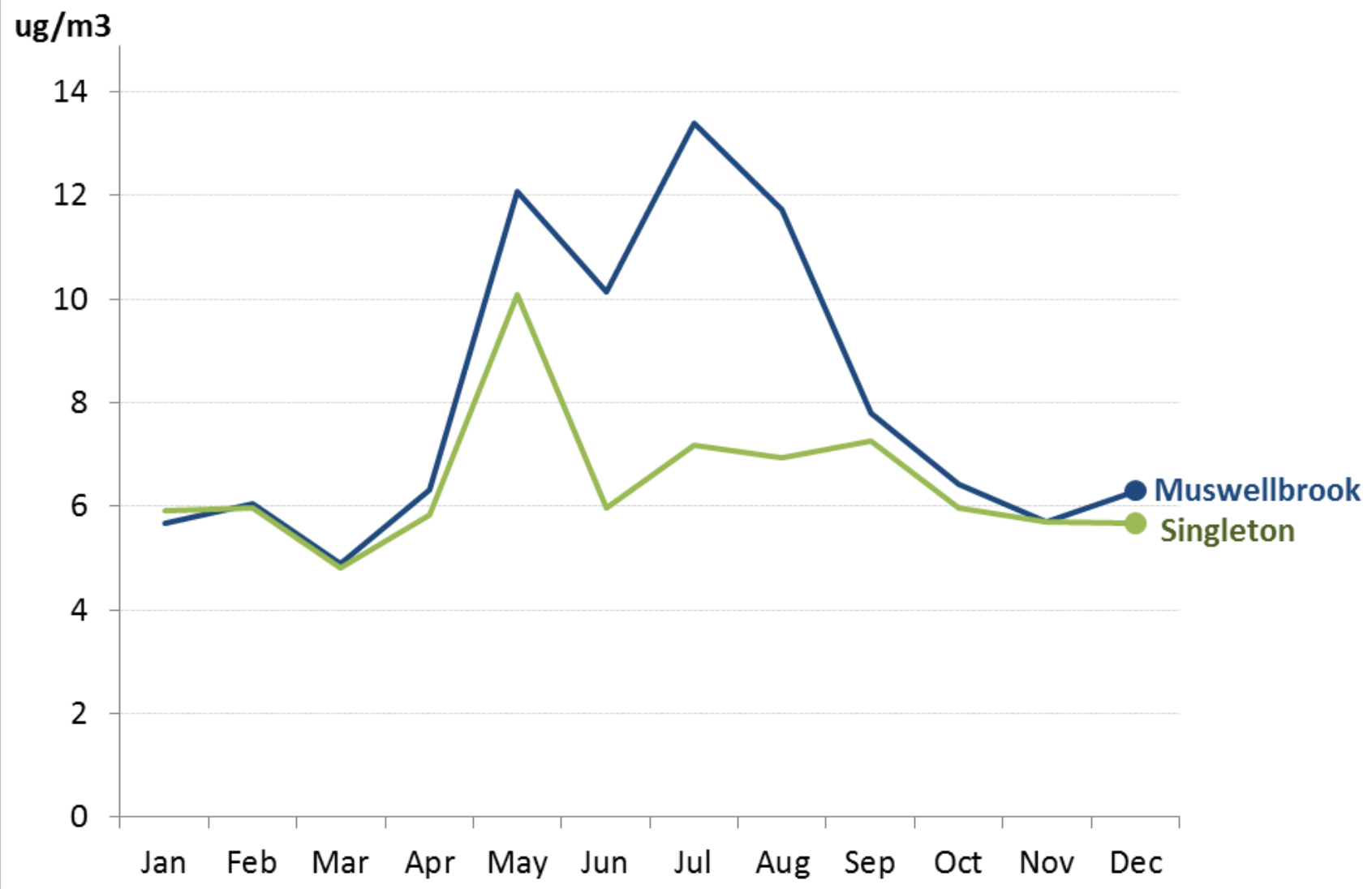


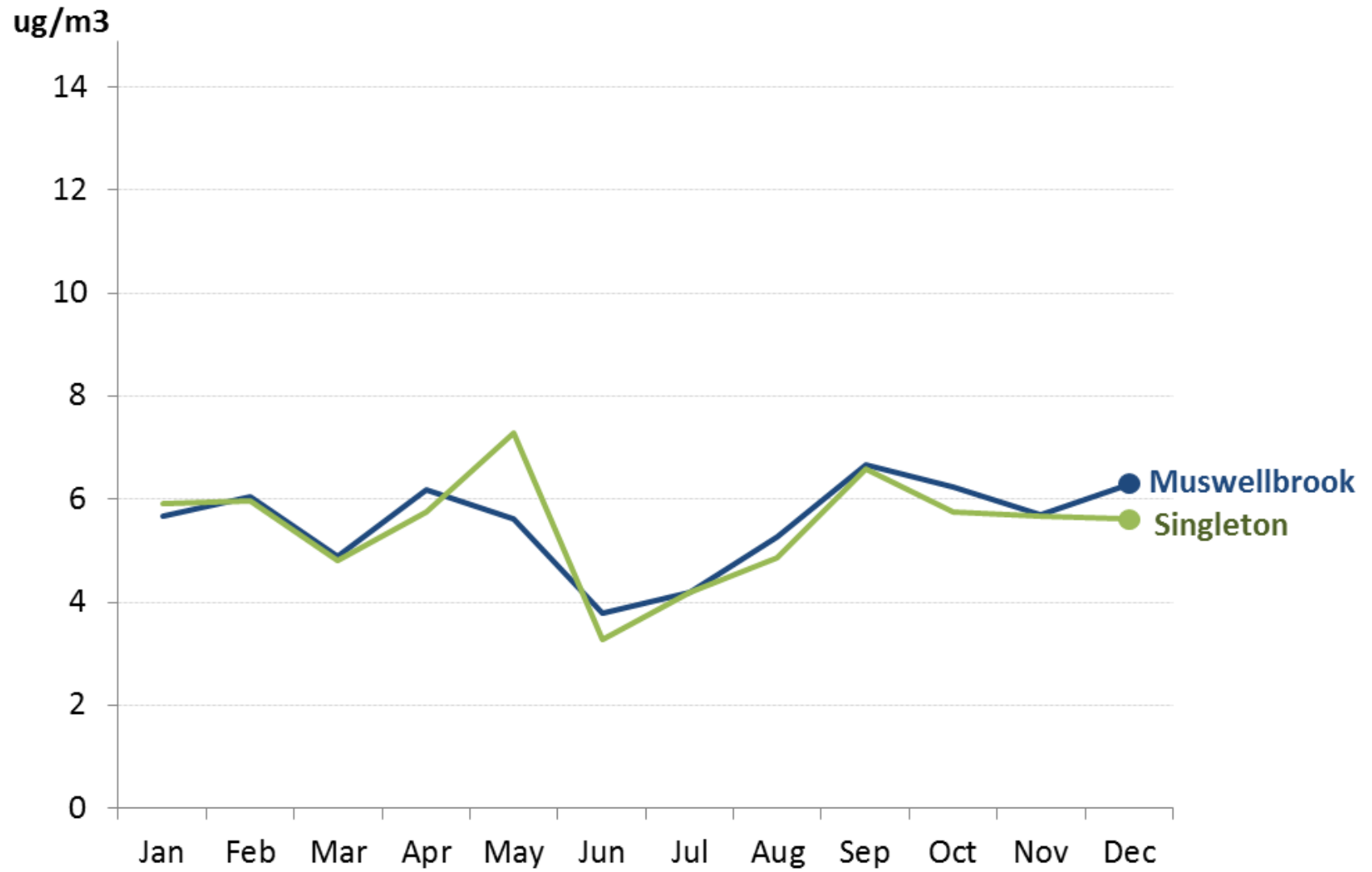
Informing the community

- **Provided a study web page**
- **Issued formal progress reports each quarter during the study – publically available**
- **Discussed study progress at regular community meetings (UHAQMN AC, NCCCE, Minerals Council)**
- **Released findings at community meeting in Muswellbrook (Full report plus Fact sheet) + CSIRO**
- **Discussed findings at Conferences and further Information sessions – never declined a request!**
- **Delivered the results through stories and in plain english**

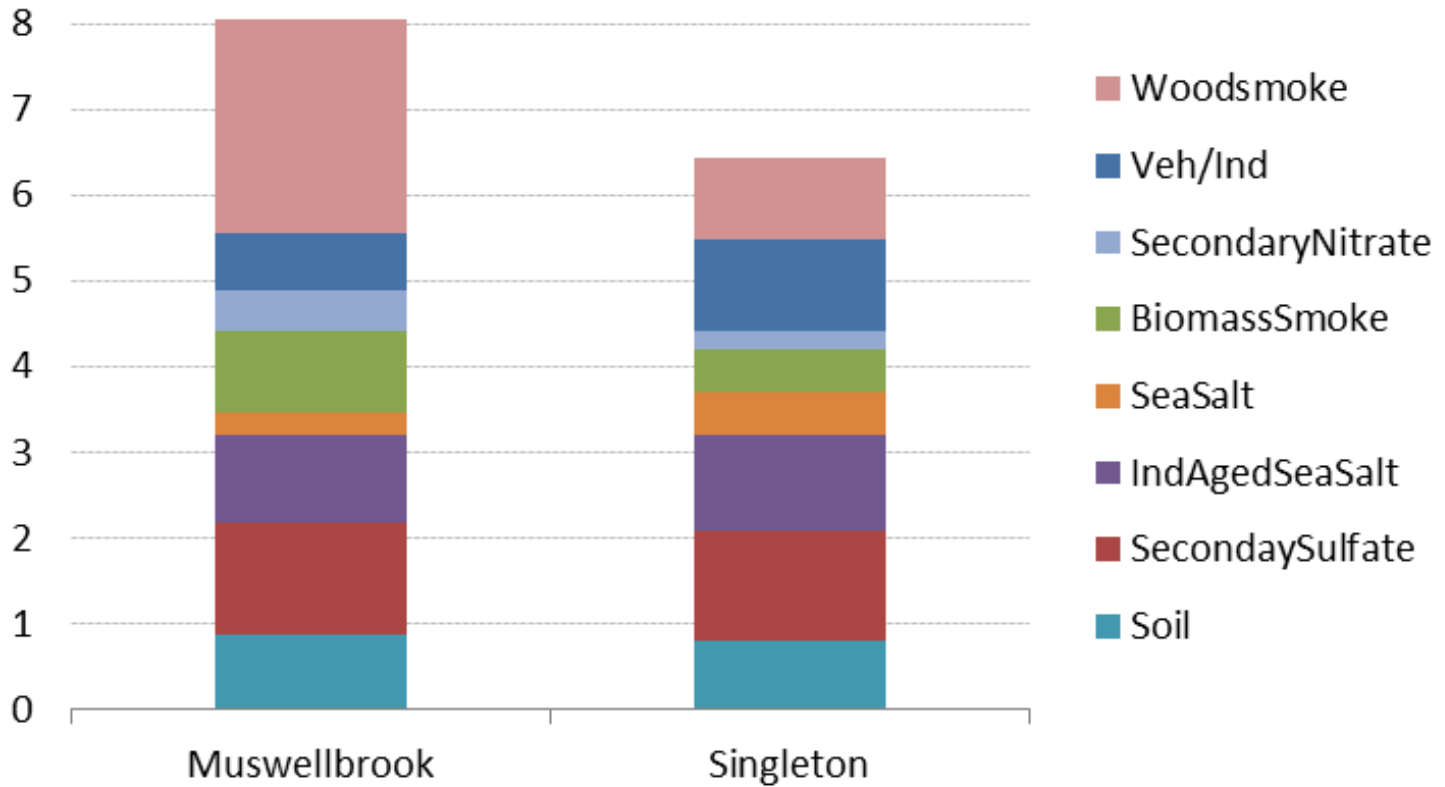


Source: Upper Hunter Fine Particle Characterisation Study





ug/m³



(ug/m ³)	Soil	Secondary Sulfate	Ind Aged Sea Salt	Sea Salt	Biomass Smoke	Secondary Nitrate	Veh/Ind	Wood smoke
Muswellbrook	0.87	1.31	1.01	0.27	0.95	0.48	0.65	2.49
Singleton	0.80	1.28	1.12	0.50	0.50	0.20	1.07	0.97

Lower Hunter Fine Particle Study

- **March 2014 to February 2015**
- **Aimed to help determine:**
 - **the major sources contributing to PM_{2.5} and PM₁₀ particle levels in the lower Hunter and around the Port of Newcastle**
 - **whether there are any weekly and seasonal changes in particles in the Lower Hunter.**



Same community engagement plan

- **Researcher workshop on study design**
- **Community workshop – led to the addition of PM10**
- **Invited community representative onto the Project Management Committee**
- **Briefed Health Experts Advisory Group**
- **Briefed community groups and gave presentations at community meetings**
- **Sent study design to two internationally recognised peer-reviewers**
- **Communications and engagement.....**

Newcastle air quality workshop

By MATTHEW KELLY Environment Aug. 12, 2013, 10:44 p.m.

Expert backs investigation into impact of larger dust

Sept. 24, 2013, 11:10 p.m.

EDITORIAL: In the air that we breathe

Sept. 24, 2013, 10:25 p.m.

PUBLIC awareness of air pollution has gone through a sequence of recognisable stages in Newcastle and the Hunter Region.

Dirty air figures alarm

By MATTHEW KELLY Environment Dec. 31, 2013, 10:14 p.m.



Emissions study to clear the air for Newcastle

Posted Wed 10 Jul 2013, 1:12pm AEST

A Newcastle forum on air pollution to focus on all sources of emissions in the Hunter from cars, to mines, to power generators.

Posted Mon 23 Sep 2013, 7:43am AEST

Questions?

Matthew Riley

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