

# Review of Namoi Air Quality

Winter 2018

Namoi Region Air Quality Advisory Committee, 6 December 2018, Quirindi



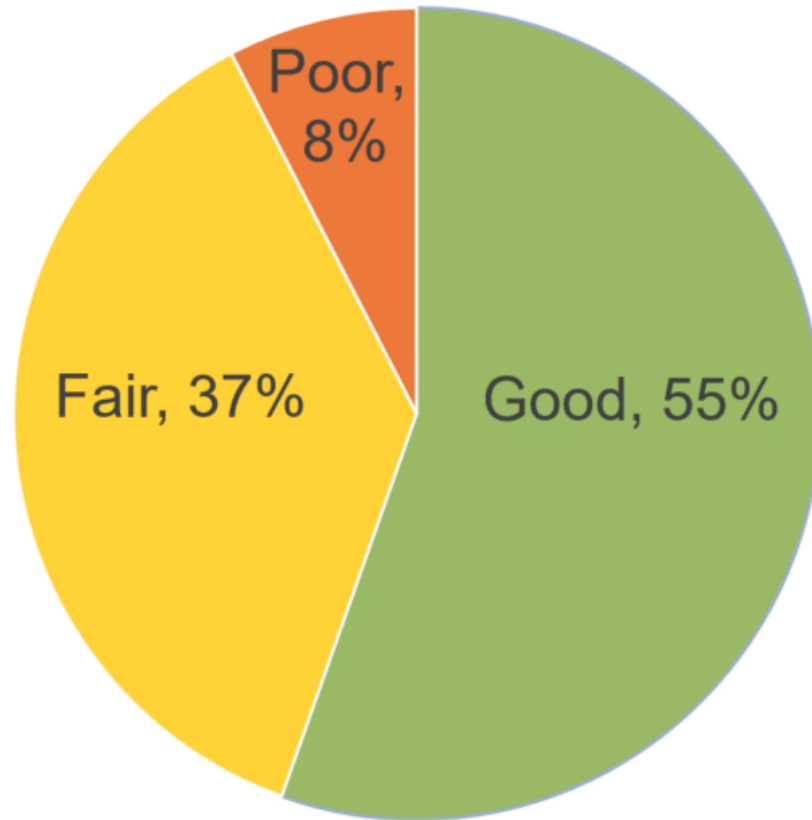
# Overview

1. Air Quality Index, for June to August 2018
2. Air pollution timeseries,  $PM_{10}$ ,  $PM_{2.5}$ ,  $NO_2$ ,  $O_3$
3. High particle pollution events
  - High  $PM_{2.5}$  events: Woodsmoke during 14-16, 21 July 2018
  - High  $PM_{10}$  event: Dust storm on 4 August 2018

# Air Quality Index: Namoi Region, June to August 2018

**92%**  
**Good**  
 to  
**Fair**

Namoi/North-west Slopes Region  
 Air Quality Index  
 at regional population centres for Winter 2018



AQI Category and Values	Air Pollution Level
Very Good 0-33	0-33% of national standard
Good 34-66	34-66% of national standard
Fair 67-99	67-99% of national standard
Poor 100-149	100-149% of national standard
Very poor 150-200	150-200% of national standard
Hazardous 200+	≥ 200% of national standard

# Days above air quality benchmarks, June to August 2018

4 days PM<sub>10</sub> : 25 June, 20 July, 4 & 31 August 2018

4 days PM<sub>2.5</sub> : 14, 15, 16 & 21 July 2018

Station type	Station	PM <sub>10</sub> daily benchmark [50 µg/m <sup>3</sup> ]	PM <sub>2.5</sub> daily benchmark [25 µg/m <sup>3</sup> ]	NO <sub>2</sub> hourly benchmark [12 pphm]	O <sub>3</sub> hourly benchmark [10 pphm]
OEH	Narrabri	2	0	-	-
OEH	Gunnedah	1	4	0	0
OEH	Tamworth	3	0	-	-
Industry	Maules Creek	1	0	-	-
Industry	Wil-gai	1	0	-	-
Industry	Breeza	0	0	-	-
Industry	Werris Creek	1	0	-	-

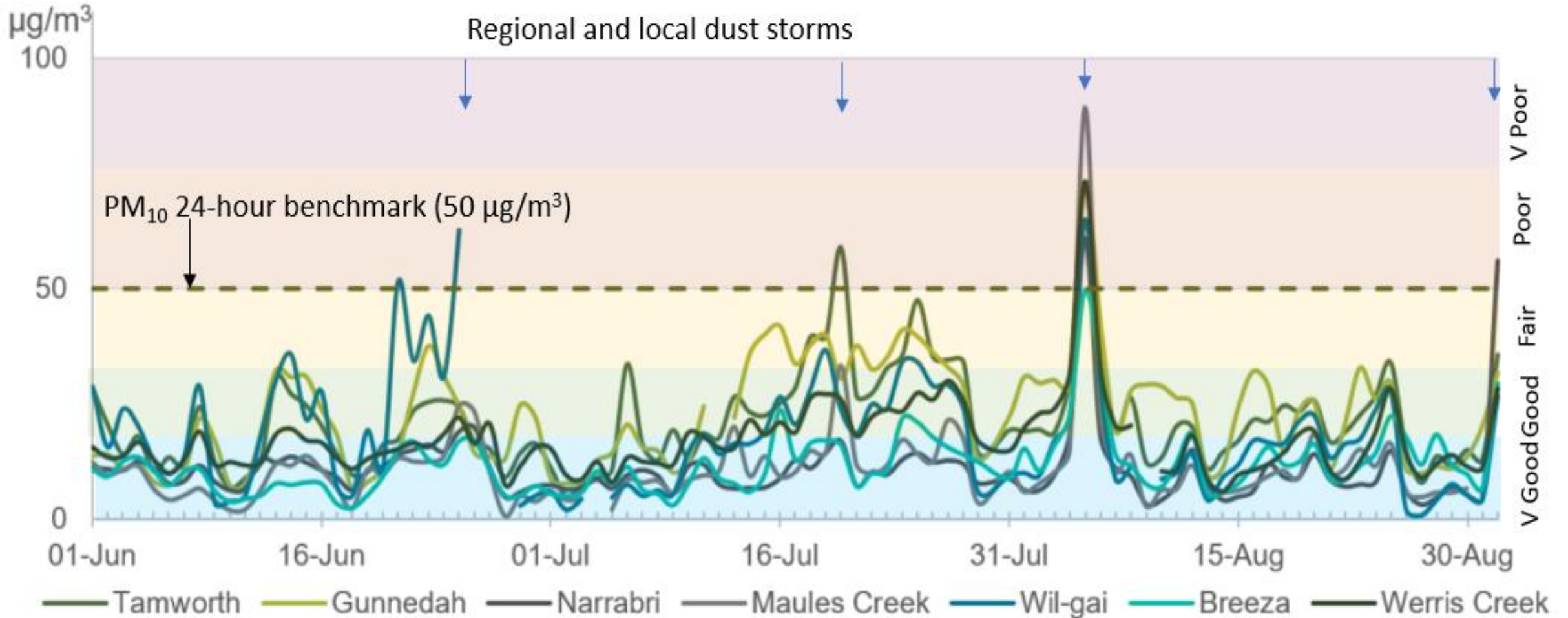
- = not monitored; µg/m<sup>3</sup> = microgram per cubic metre;

pphm = parts per hundred million by volume (i.e. parts of pollutant per hundred million parts of air)



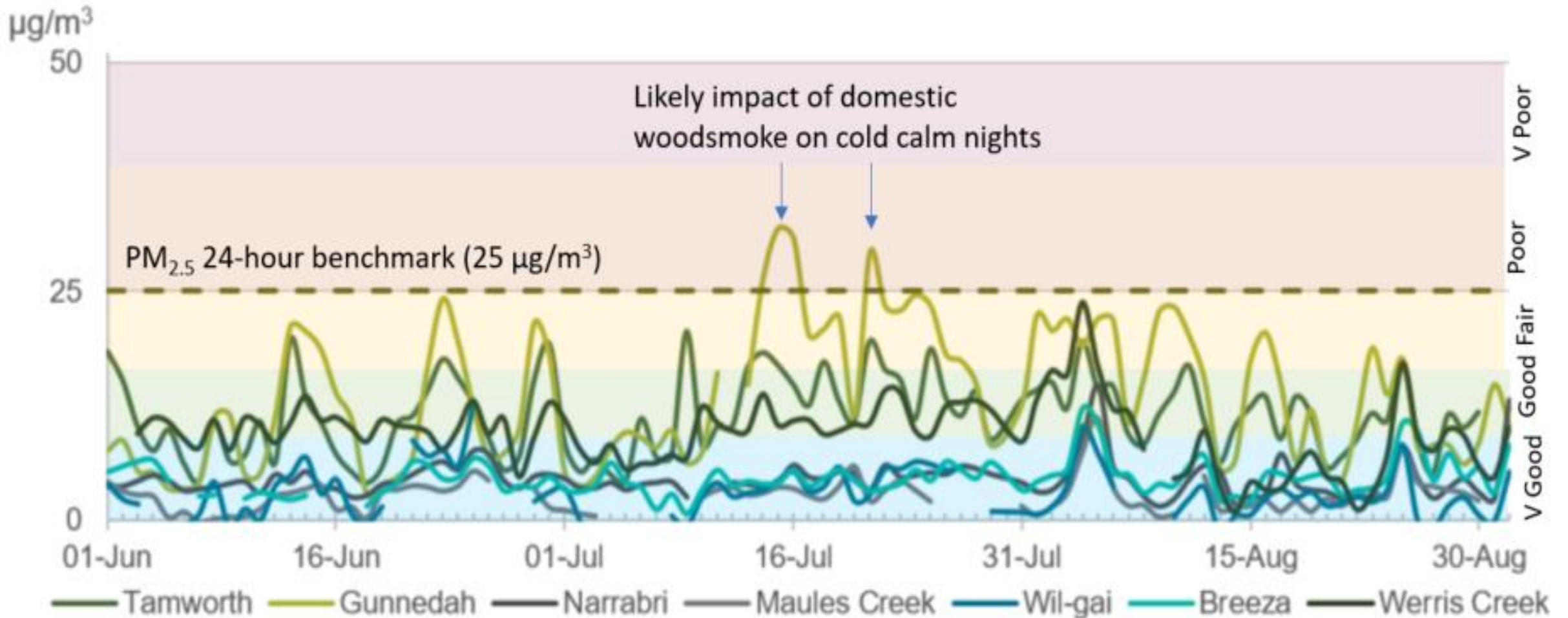
# Regional PM<sub>10</sub> 24-hour averages, June to August 2018

Very Good to Fair, except during regional dust storms



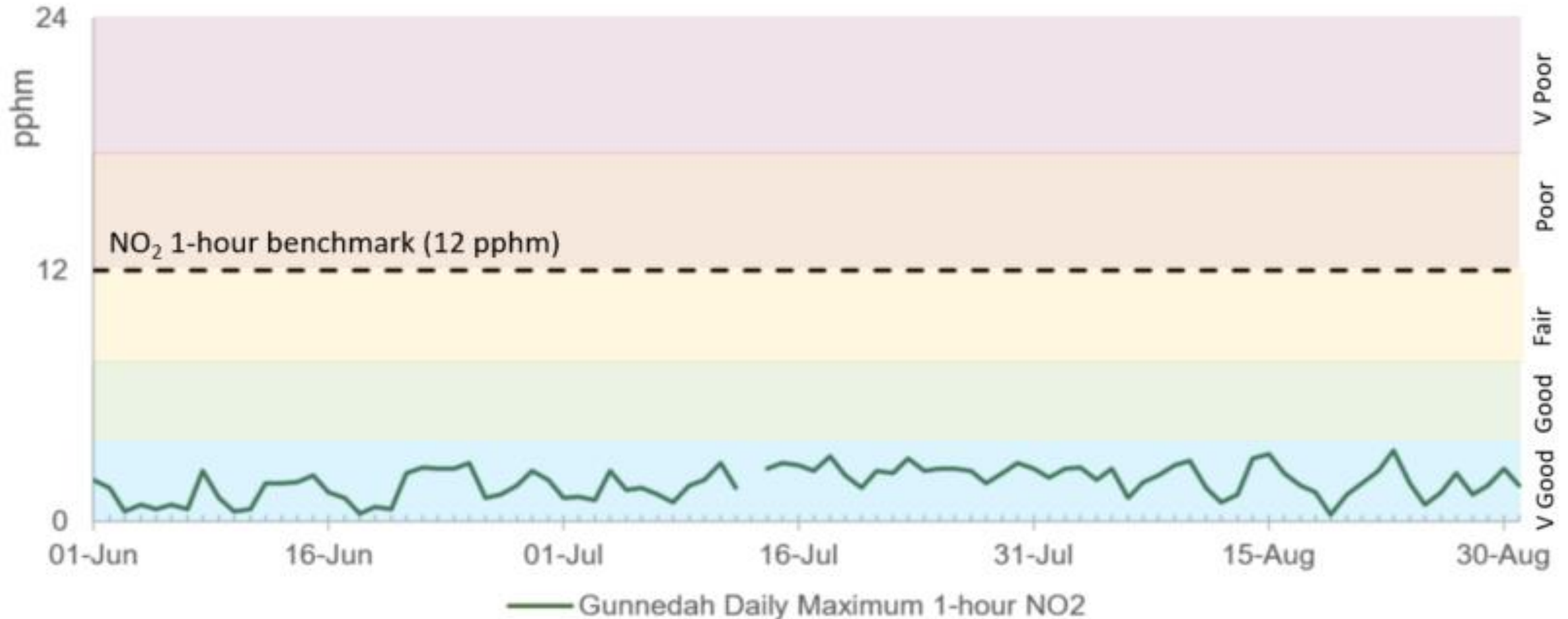
# Regional PM<sub>2.5</sub> 24-hour averages June to August 2018

Very Good to Fair, except on cold, calm nights



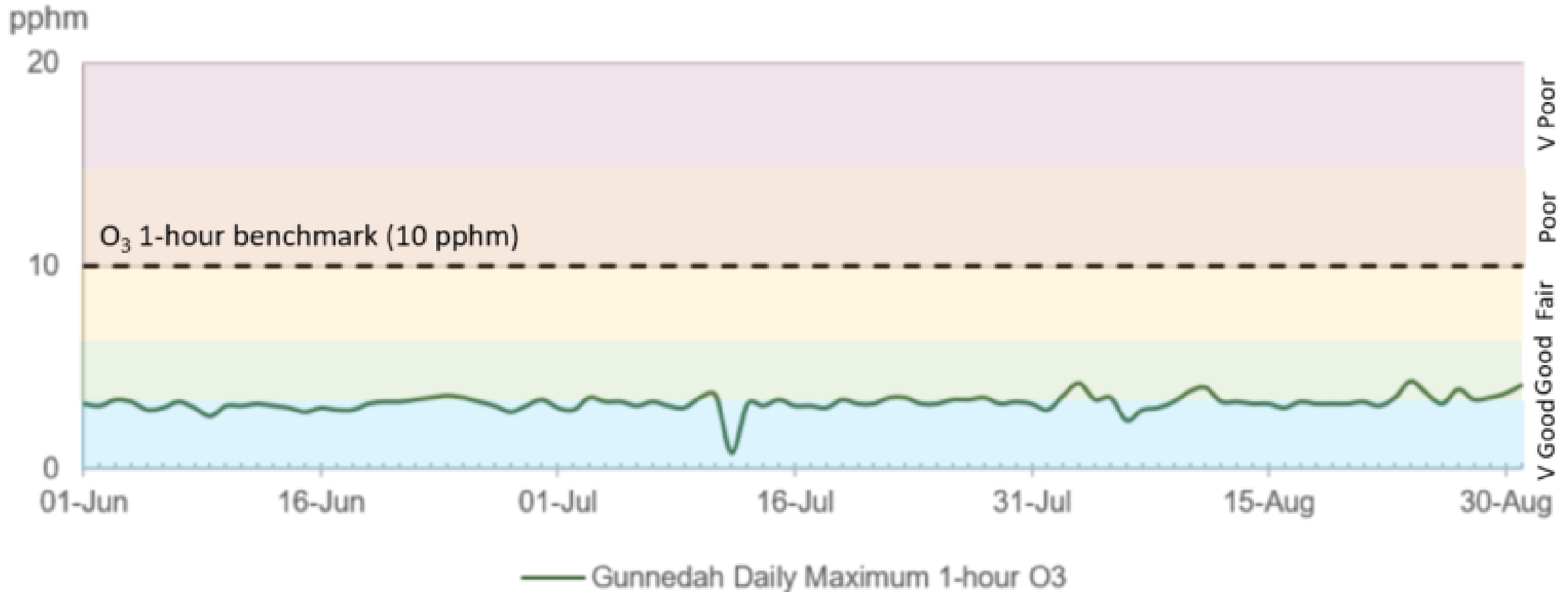
# Nitrogen Dioxide (NO<sub>2</sub>) maximum 1-hour averages at Gunnedah, June to August 2018

Very Good



# Ozone (O<sub>2</sub>) maximum 1-hour averages at Gunnedah, March to July 2018

Very Good to Good





# Seasonal Weather and Climate

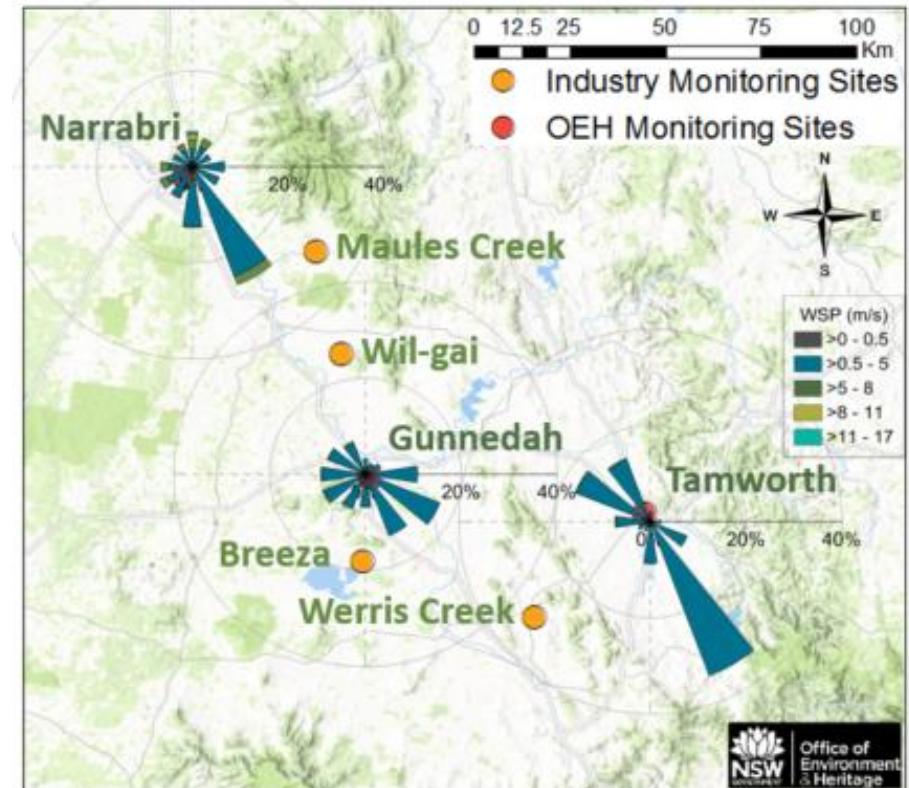
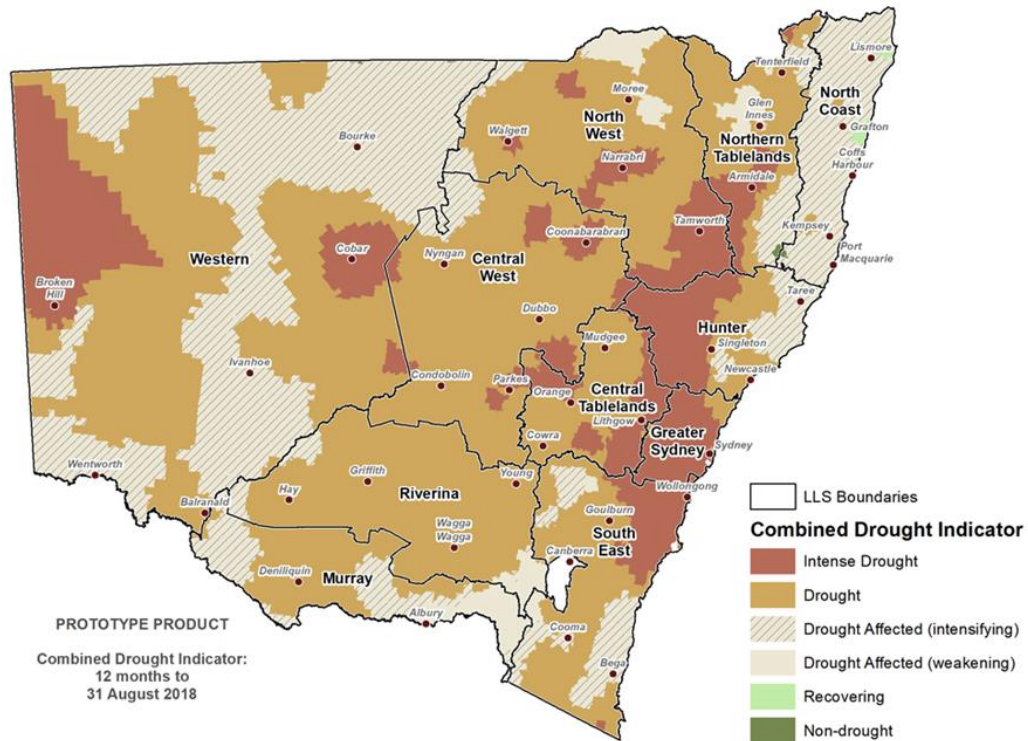
Rainfall 'very much below average'

Day time temperatures 'very much below average'

Night time temperatures 'below average'

'Intense Drought'

South-easterly winds



# High PM<sub>2.5</sub> pollution events: Gunnedah, 14 - 21 July 2018

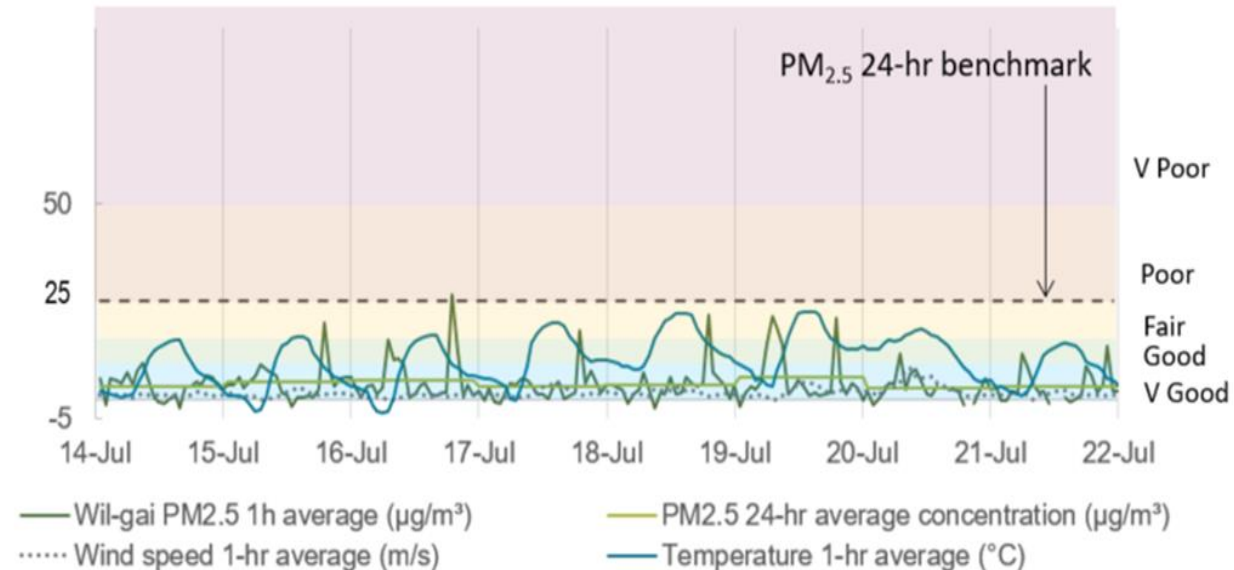
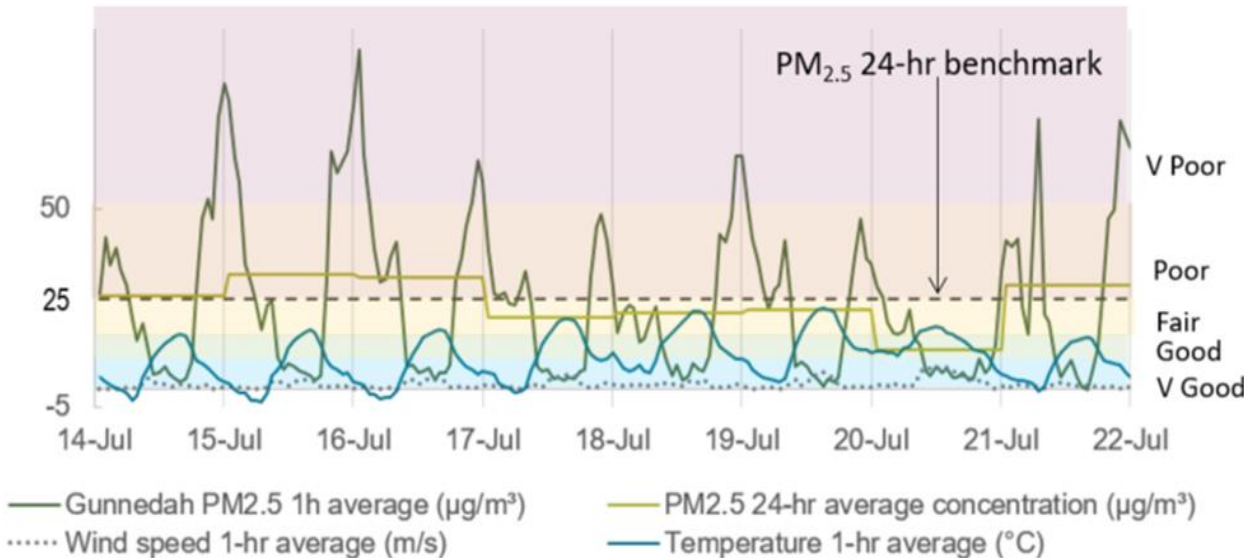
PM<sub>2.5</sub> 24-hour average levels - Fair to Poor

Peak PM<sub>2.5</sub> 1-hour average levels overnight

Very low temperatures (below 0°C) and wind speeds overnight

Suggests impacts of domestic woodsmoke

Contrast with Wil-gai

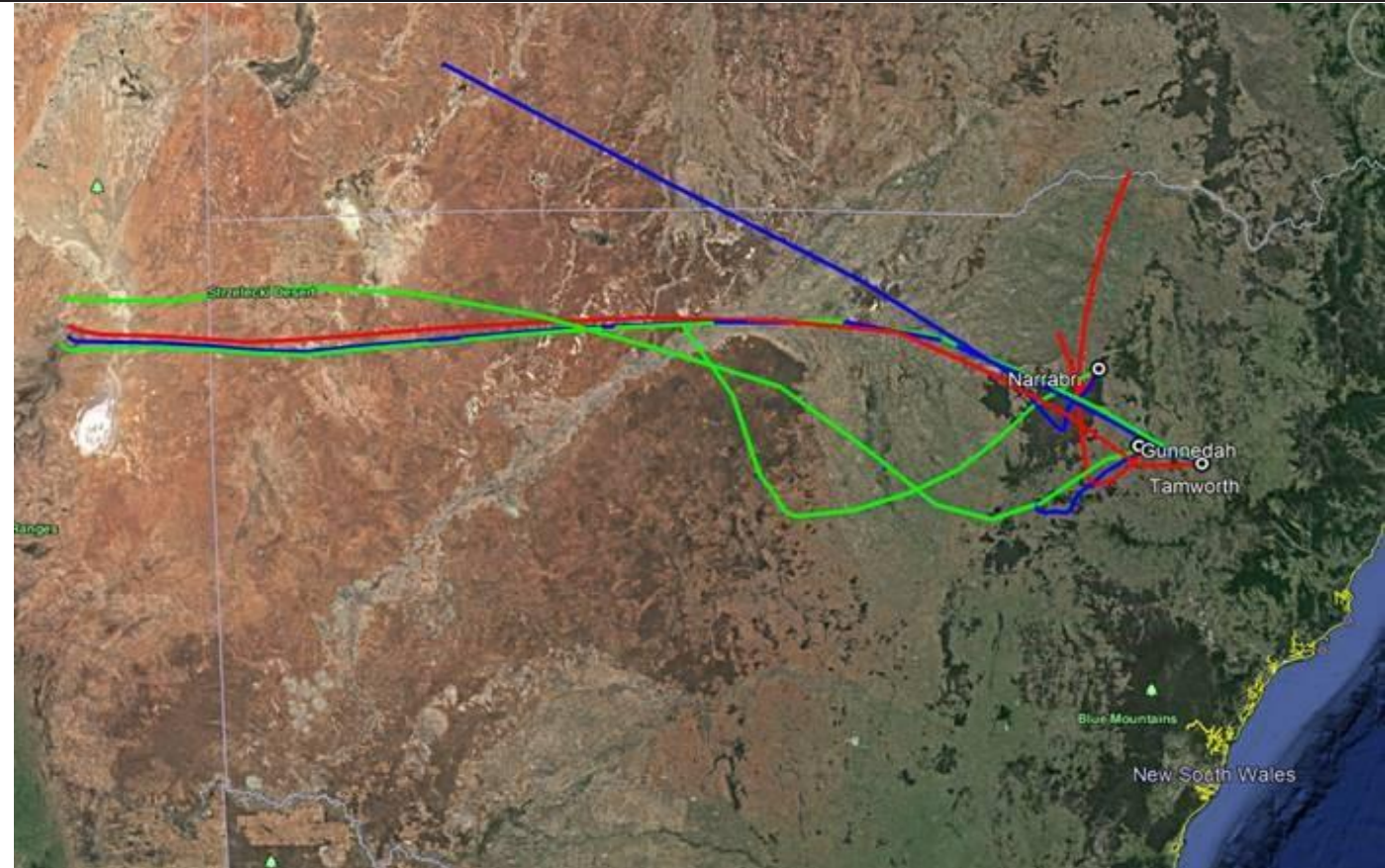
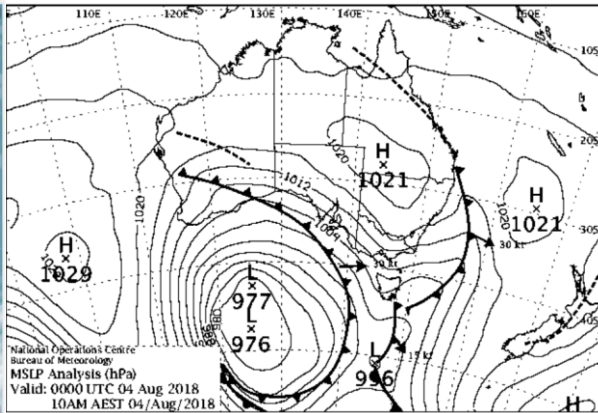
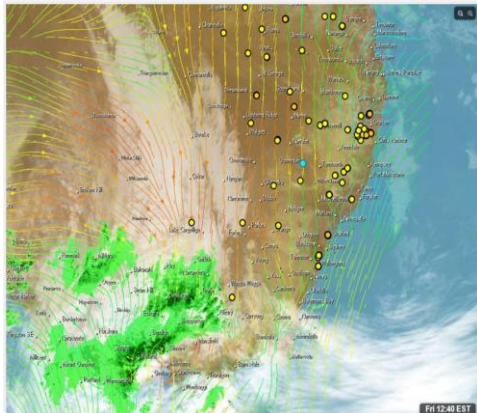
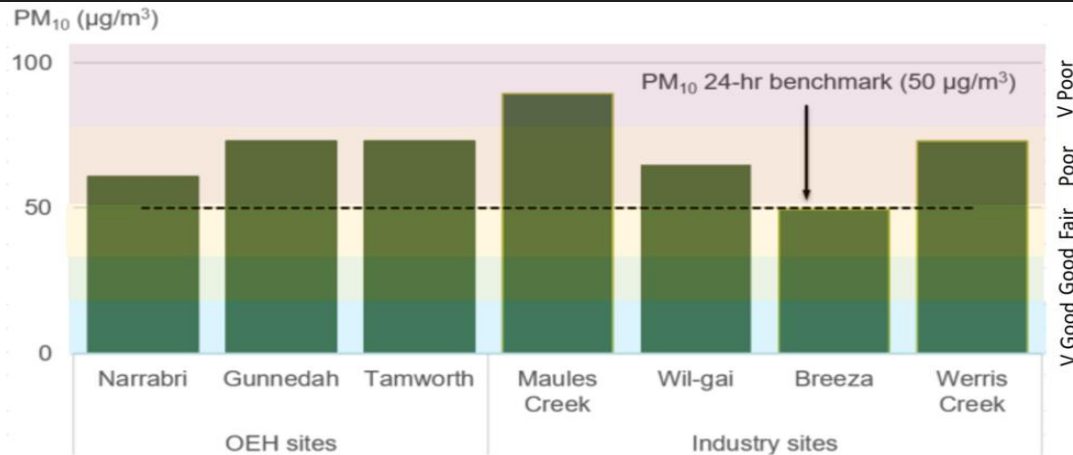




# High PM<sub>10</sub> pollution: Regional dust storm, 4 August 2018

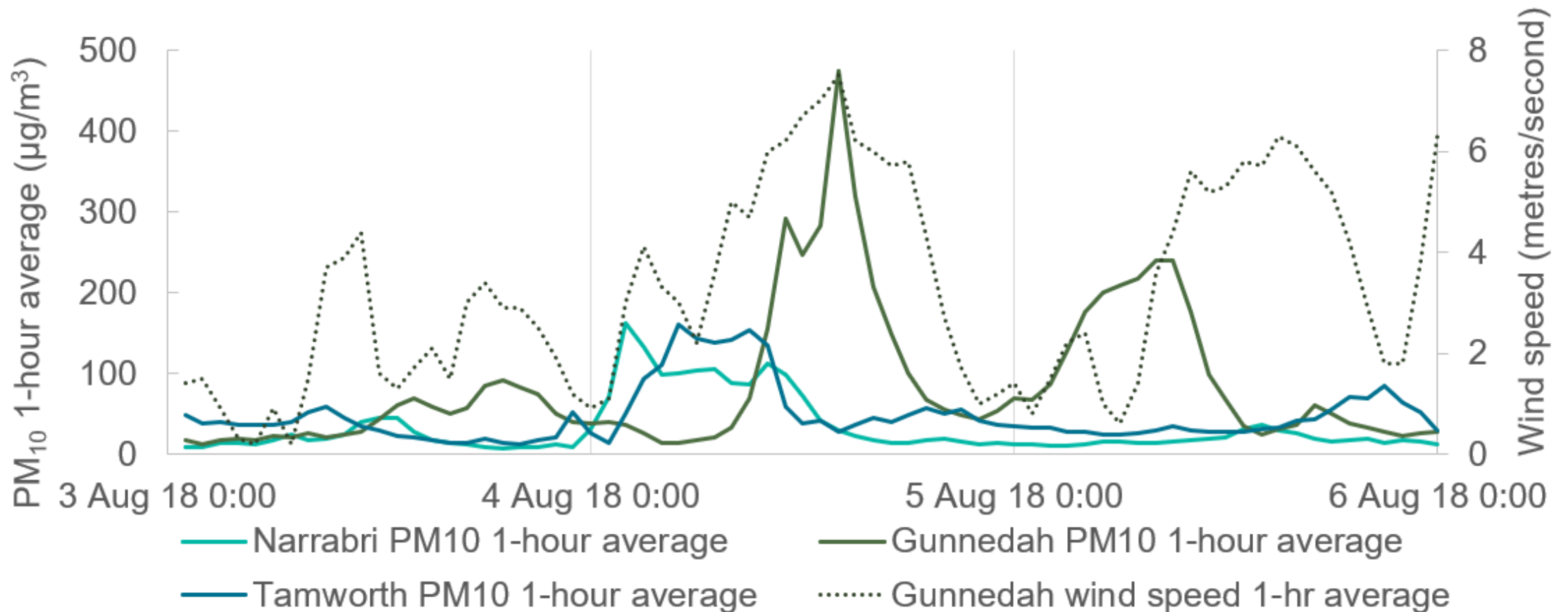
PM<sub>10</sub> 24-hour average **Poor** to **Very Poor**

Dust was transported long-range, by westerly winds during the passage of a low-pressure system and associated cold front.



# High PM<sub>10</sub> pollution: Regional dust storm, 4 August 2018

The PM<sub>10</sub> maximum 1-hour level reached 473 µg/m<sup>3</sup> at Gunnedah, at 2:00 pm, during the dust storm on 4 August 2018.





# Summary: Namoi / NW Slopes Winter Air Quality

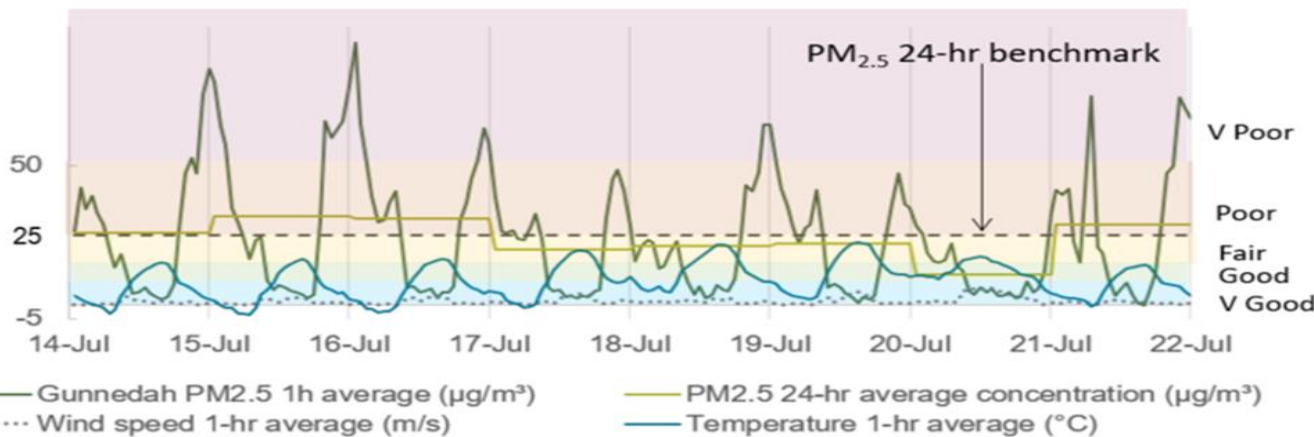
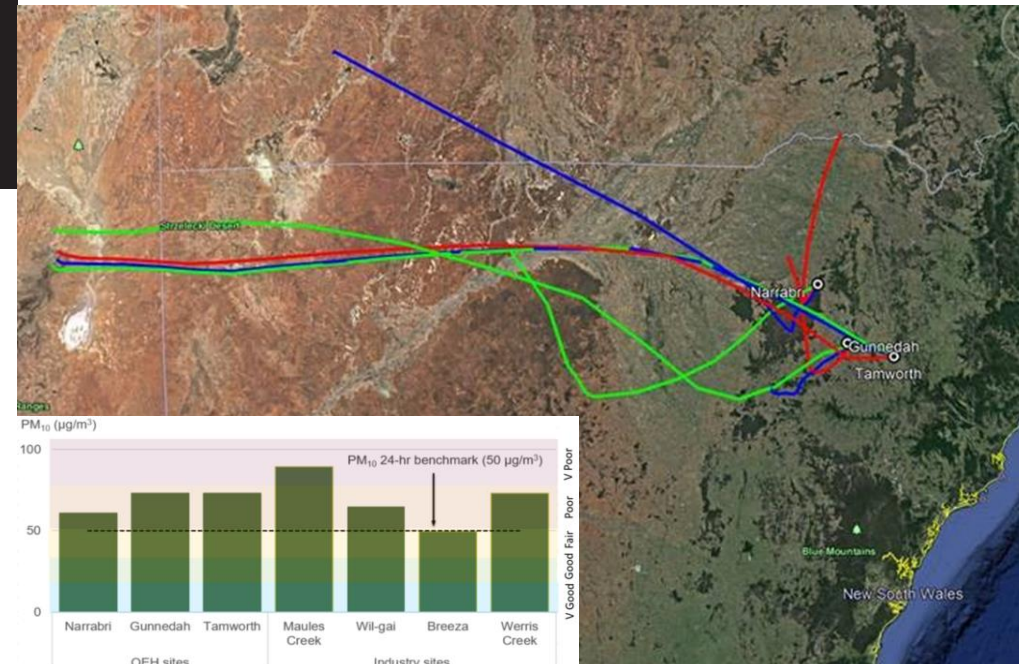
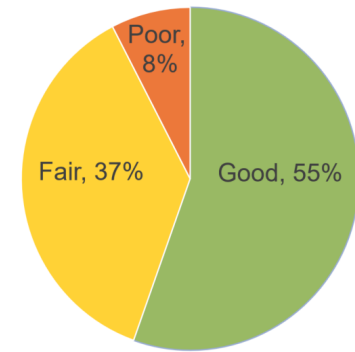
92% **Very Good** to **Fair**

Local and regional particle sources affected air quality.

PM<sub>2.5</sub> ~ local woodsmoke (4 days)

PM<sub>10</sub> ~ regional dust (4 days)

Namoi/North-west Slopes Region  
Air Quality Index  
at regional population centres for Winter 2018





# Community reporting

## Online Air Quality Index and data Online air quality newsletter



May 2017 to July 2018

### Air quality monitoring in the Namoi/North-West Slopes Region

Air quality in the NSW Namoi/North-West Slopes was very good to fair 97% of the time, from May 2017 to July 2018. In terms of the NSW Air Quality Index<sup>1</sup>, this means air quality met national benchmark concentrations<sup>2</sup> 97% of the time. Seven air quality monitoring stations operate in the region (Figure 1).

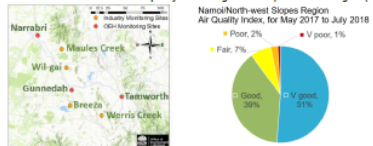


Figure 1 Air quality monitoring stations in the Namoi/North-west Slopes Region met national benchmark concentrations 97% of the time, from May 2017 to July 2018

The NSW Office of Environment and Heritage (OEH) operates the stations at Tamworth (since October 2000), Gunnedah and Narrabri (both since December 2017). Data are reported in near-real time on the OEH website. Industries operate the monitoring stations at Maules Creek, Wil-gal, Breeza and Werris Creek. Data (from July 2015) are reported weekly on the NSW Environment Protection Authority website. All stations continuously monitor airborne particle matter, measured as PM<sub>10</sub> and PM<sub>2.5</sub> (particles with sizes less than or equal to 10 and 2.5 micrometres, respectively). The Gunnedah station continuously monitors gaseous air pollutants, nitrogen dioxide (NO<sub>2</sub>) and ozone (O<sub>3</sub>).

### Days above benchmark concentrations<sup>2</sup> – May 2017 to July 2018

The region experienced nine days over the PM<sub>10</sub> benchmark and four days over the PM<sub>2.5</sub> benchmark. Table 1 shows all sites recorded at least one day with PM<sub>10</sub> levels above the daily benchmark. Gunnedah recorded four days with PM<sub>2.5</sub> levels above the daily benchmark (see below).

Table 1 Number of days above the relevant benchmarks, by station, May 2017 – July 2018

Station type	Station	PM <sub>10</sub> daily benchmark (50 µg/m <sup>3</sup> )	PM <sub>2.5</sub> daily benchmark (25 µg/m <sup>3</sup> )	NO <sub>2</sub> hourly benchmark (12 ppb/m)	O <sub>3</sub> hourly benchmark (10 ppb/m)
OEH	Narrabri	1	0	-	-
OEH	Gunnedah	1	4	0	0
OEH	Tamworth	3	0	-	-
Industry	Maules Creek	1	0	-	-
Industry	Wil-gal	5	0	-	-
Industry	Breeza	1	0	-	-
Industry	Werris Creek	1	0	-	-

µg/m<sup>3</sup> = micrograms per cubic metre

ppb/m = parts per hundred million by volume (i.e. parts of pollutant per hundred million parts of air)

<sup>1</sup> The NSW Air Quality Index uses simple term and colour coding to compare air pollution levels to national standards.

<sup>2</sup> The National Environment Protection (Ambient Air Quality) Measure (AN NEPM) sets national standards for urban air pollutants. Currently, the Office of Environment and Heritage reports annually to the Australian Government on compliance with national standards at 22 air quality monitoring stations. The Narrabri and Gunnedah air quality monitoring sites currently are not designated as AN NEPM compliance monitoring sites. Therefore, this report uses the national standards as 'benchmark concentrations' for reporting air quality.

Wednesday  
5 September 2018  
9 - 10 pm (AEST)  
[Previous](#) | [Next](#) | [Select](#)  
[Show data readings](#)



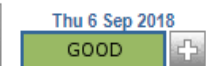
Pollutants		Ozone	Ozone	Nitrogen	Visibility	Carbon	Sulfur	Particles	Particles	Site AQI	Regional AQI
		O3	O3	dioxide	NEPH	monoxide	dioxide	PM10	PM2.5	highest level at the site	highest level for the region
Averaging Periods		1-hour average	rolling 4-hour average	1-hour average	1-hour average	rolling 8-hour average	1-hour average	rolling 24-hour average	rolling 24-hour average		
Sydney East	Randwick										35
	Rozelle	6	11	20	8	0	0	22	25	25	
	Lindfield										
	Chullora	1	1	24	35	4	1	33	25	35	
	Earlwood	1	5	17	26			27	20	27	
Sydney North-west	Macquarie Park	1	6	8	18	1	0	18	20	20	
	Parramatta North										
	Richmond										
	St Marys										
	Vineyard										
Sydney South-west	Prospect										54
	Bargo										
	Bringelly				13			54	19	54	
	Camden	1	8	13	11	1		16	19	19	
	Campbelltown West	0	5	30	11	3	1	17	23	30	
Illawarra	Liverpool	1	1	20	25	6	1	35	33	35	23
	Oakdale	17	26	4	6					26	
	Wollongong				15			23	19	23	
	Kembla Grange				8			22		22	
	Albion Park Sth	3	12	9	10			17	22	22	
Lower Hunter	Wallsend	1	10	16	15		0	17	15	17	32
	Newcastle	16	26	9	19	4	0	28	12	28	
	Beresfield	1	16	19	10		1	16	32	32	
Central Coast	Wyong	0	9	9	13	1	0	11	8	13	13
Central Tablelands	Bathurst										
Northern Tablelands	Armidale				5			8	12	12	12
North-west Slopes	Gunnedah	22	20	4				11	11	20	30
	Narrabri							5	5	5	
	Tamworth							9	9	9	
South-west Slopes	Albury										27
	Wagga Wagga Nth							27	17	27	
Upper Hunter - Muswellbrook	Muswellbrook				12		1	29	16	29	29
Upper Hunter - Singleton	Singleton				5		0	16	20	20	20

NSW ALERTS



Updated hourly

SYDNEY FORECAST



Updated daily at 4:00pm

Gaps indicate that an instrument was not online for that period OR an average could not be calculated as there were not enough valid hourly data values OR that a pollutant is not measured at the site. Data from monitoring sites is collected, stored and shown in reports using Australian Eastern Standard time (AEST). Normally data for any hour should be available approximately 30 minutes later. However, during daylight saving, data is still collected and stored in AEST and will be presented with an apparent 90 minutes delay.

# Questions?



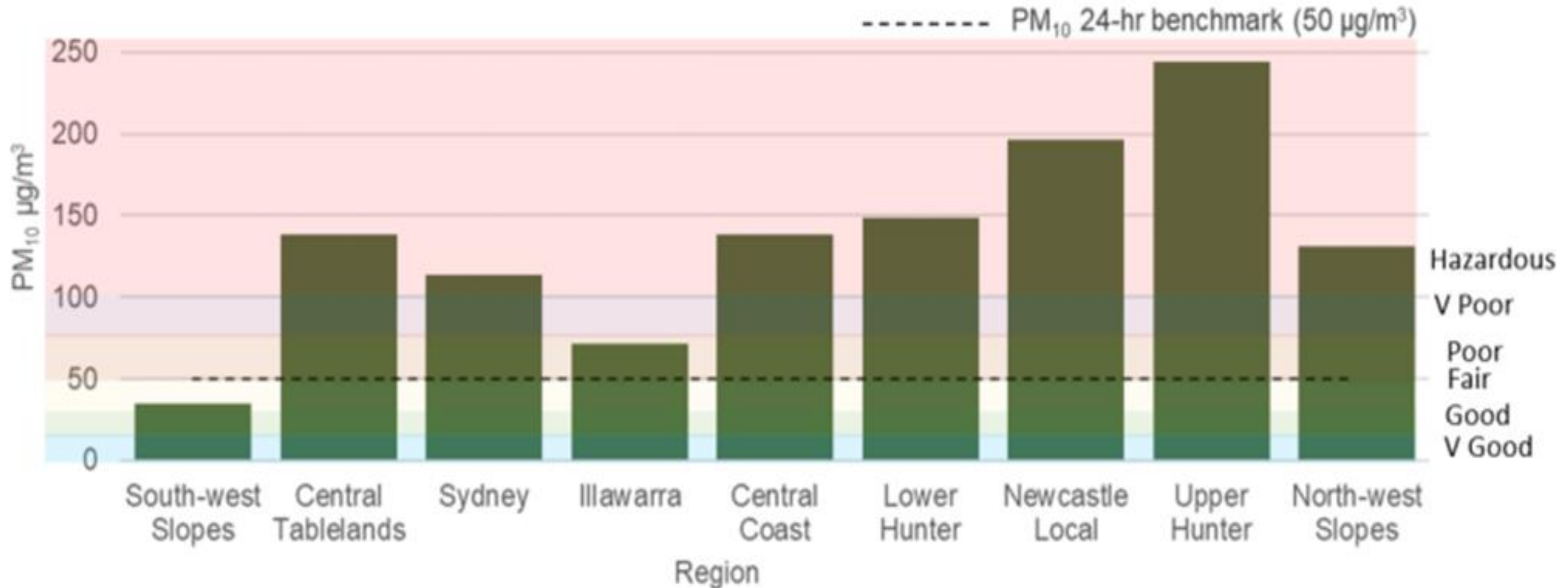
***Next time***

# Regional dust storm, 22 November 2018

PM<sub>10</sub> 24-hour average **Poor** to **Hazardous** at 30 ambient air quality monitoring stations

Thursday 22 November 2018 11 pm - 12 am (AEST)  
 Previous | Next | Home | About | Contact | Site data mapping

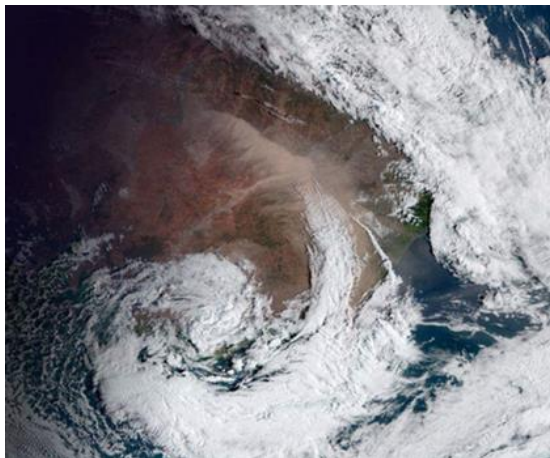
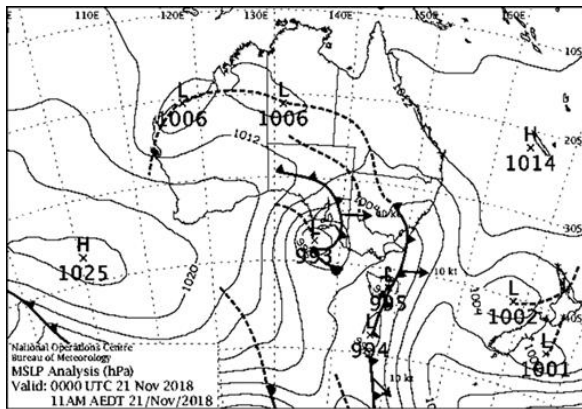
Pollutants	Ozone		Nitrogen		Carbon		Sulfur		Particulates		Site AQI	Regional AQI
	1-hour average	rolling 8-hour average	1-hour average	rolling 8-hour average	1-hour average	rolling 8-hour average	1-hour average	rolling 8-hour average	PM10	PM2.5		
<b>Sydney East</b>	21	24	0	23	0	0	191	60	191			191
<b>Sydney North-west</b>	20	24	0	23	0	0	173	60	173			227
<b>Sydney South-west</b>	23	26	0	23	0	0	227	65	227			203
<b>Illawarra</b>	23	26	0	11	0	0	141	49	141			143
<b>Lower Hunter</b>	20	27	1	17	0	0	273	81	273			298
<b>Central Coast</b>	17	25	1	32	0	0	277	62	277			191
<b>North-west Slopes</b>	16	20	1	29	0	0	238	110	238			263
<b>South-west Slopes</b>							70	26	70			70
<b>Upper Hunter - Murrumbidgee</b>							372	79	372			372
<b>Upper Hunter - Singleton</b>							398	77	398			398





# Regional dust storm, 22 November 2018

Dust was transported long-range, by strong to gale force westerly winds with the passage of a low-pressure system and associated cold front.



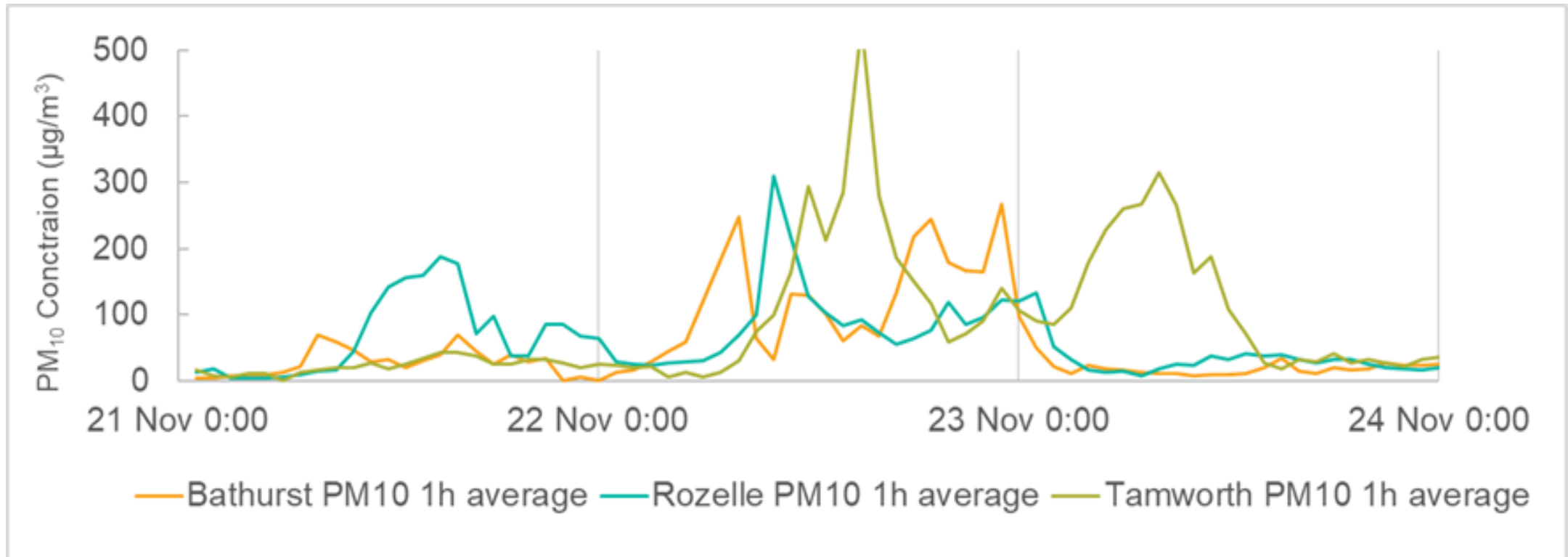
# Regional dust storm, 22 November 2018 - High PM<sub>10</sub>

The PM<sub>10</sub> maximum 1-hour average

Tamworth: NSW peak of 540 µg/m<sup>3</sup> at 3:00 pm

Rozelle, near Sydney CBD: peaked of 309 µg/m<sup>3</sup> at 10:00 am

Bathurst: peaks of 248 µg/m<sup>3</sup> at 8:00 am, 244 µg/m<sup>3</sup> at 7:00 pm, 267 µg/m<sup>3</sup> at 11:00 pm







***Thank you***