

# Overview of Ambient Air Quality monitoring in South Africa

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# Background

- Role of monitoring in the new air quality management approach
  - Source based → Ambient
- Ambient Air Quality Information Review
  - Information on monitoring activities
  - 1994 – 2004
  - Post 2004 initiatives are not covered in review

[www.environment.gov.za/Documents/Documents/2006Jan6/AQ\\_info\\_review\\_final\\_report.pdf](http://www.environment.gov.za/Documents/Documents/2006Jan6/AQ_info_review_final_report.pdf)

# Presentation Content

- Requirements of Air Quality Monitoring
- Ambient Air Quality Information Review methodology
- Findings.....
- State of Air Quality Monitoring

# Requirements of Ambient Air Quality Monitoring

- Ascertain levels of exposure to general population
- SANS 1929 (2005): Population → Number/Location of stations

**Minimum number of sampling points for fixed measurements to assess compliance with SO<sub>2</sub>, NO<sub>2</sub>, PM<sub>10</sub>, CO, benzene and lead limit values (from SANS 1929).**

<b>Population of agglomeration or zone (thousands)</b>	<b>If concentrations exceed the upper assessment threshold</b>	<b>If maximum concentrations are between the upper and lower assessment thresholds</b>	<b>For SO<sub>2</sub> and NO<sub>2</sub> in agglomerations where maximum concentrations are below the lower assessment threshold</b>
<b>0 – 250</b>	<b>1</b>	<b>1</b>	<b>not applicable</b>
<b>250 – 499</b>	<b>2</b>	<b>1</b>	<b>1</b>
<b>500- 749</b>	<b>2</b>	<b>1</b>	<b>1</b>
<b>750 – 999</b>	<b>3</b>	<b>1</b>	<b>1</b>
<b>1 000 – 1 499</b>	<b>4</b>	<b>2</b>	<b>1</b>
<b>1 500 – 1 999</b>	<b>5</b>	<b>2</b>	<b>1</b>
<b>2 000 – 2 749</b>	<b>6</b>	<b>3</b>	<b>2</b>
<b>2 750 – 3 749</b>	<b>7</b>	<b>3</b>	<b>2</b>
<b>3 750 – 4 749</b>	<b>8</b>	<b>4</b>	<b>2</b>
<b>4 750 – 5 999</b>	<b>9</b>	<b>4</b>	<b>2</b>
<b>&gt; 6 000</b>	<b>10</b>	<b>5</b>	<b>3</b>



On a local context...

<b>Local authority</b>	<b>Population (million)</b>	<b>Min num of stations</b>
<b>Durban Metropolitan Unicity</b>	<b>2.75</b>	<b>2 to 6</b>
<b>City of Johannesburg</b>	<b>2.64</b>	<b>2 to 6</b>
<b>City of Cape Town</b>	<b>2.56</b>	<b>2 to 6</b>
<b>Greater East Rand Metro</b>	<b>2.03</b>	<b>2 to 6</b>
<b>Tshwane Metropolitan [Pretoria]</b>	<b>1.68</b>	<b>1 to 5</b>
<b>Nelson Mandela [Port Elizabeth]</b>	<b>0.97</b>	<b>1 to 3</b>

(Based on Census 2001 population figures)

# Requirements of Ambient Air Quality Monitoring

- Ascertain levels of exposure to general population
- SANS 1929 (2005): Population → Number/Location of stations
- Priority pollutants (SO<sub>2</sub>, NO<sub>x</sub>, O<sub>3</sub>, PM, CO and Pb)

# Methodology

- Development of an inventory of air quality data holders

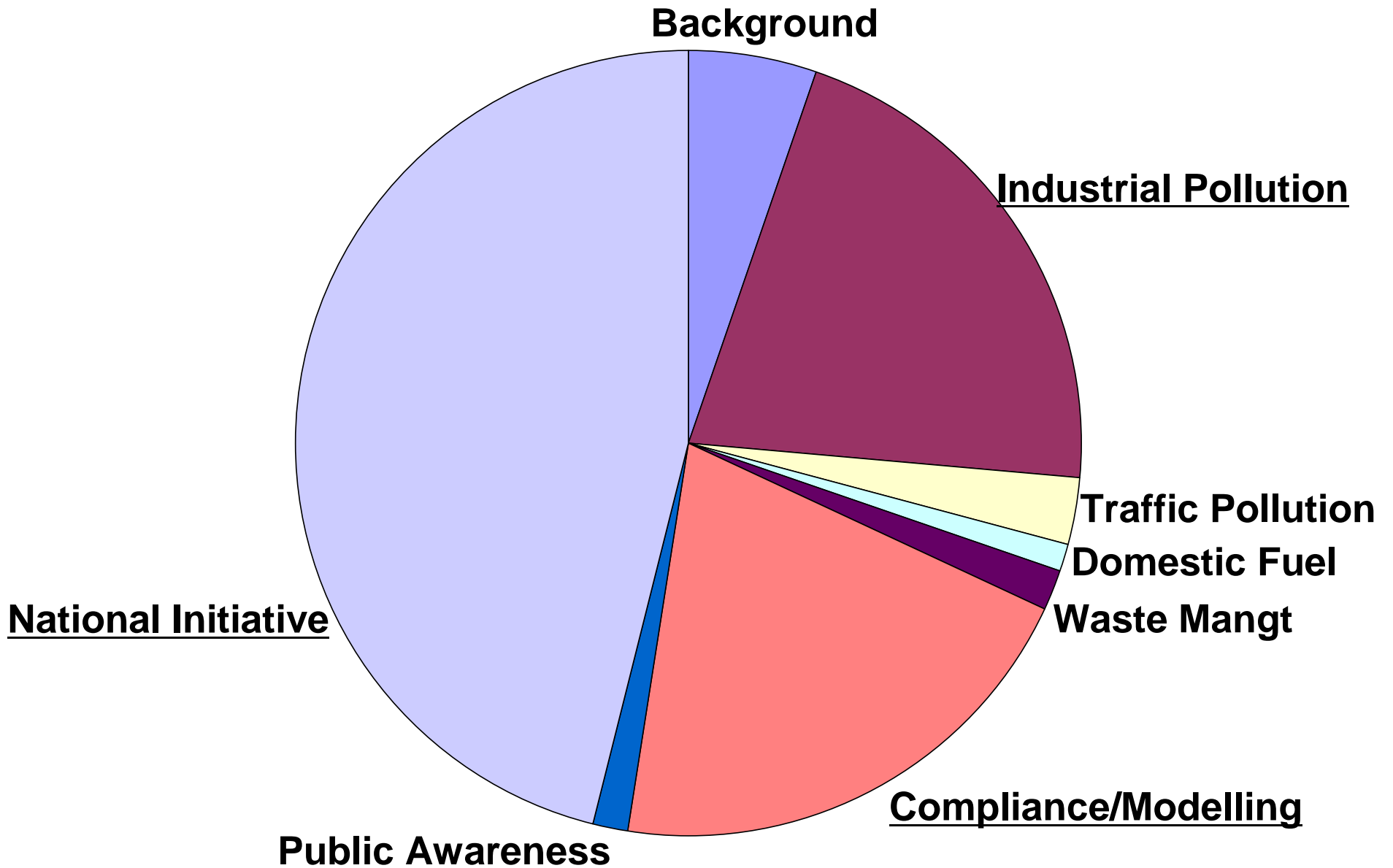
- Municipalities and District Municipalities (i.e. Metropolitan Councils and District municipalities);
  - Air quality related organisations or institutions
    - Agency contact data
- Monitoring site details and rationale
- Parameters monitored and method of measurement
- Calibration service and procedure
- Data quality and storage



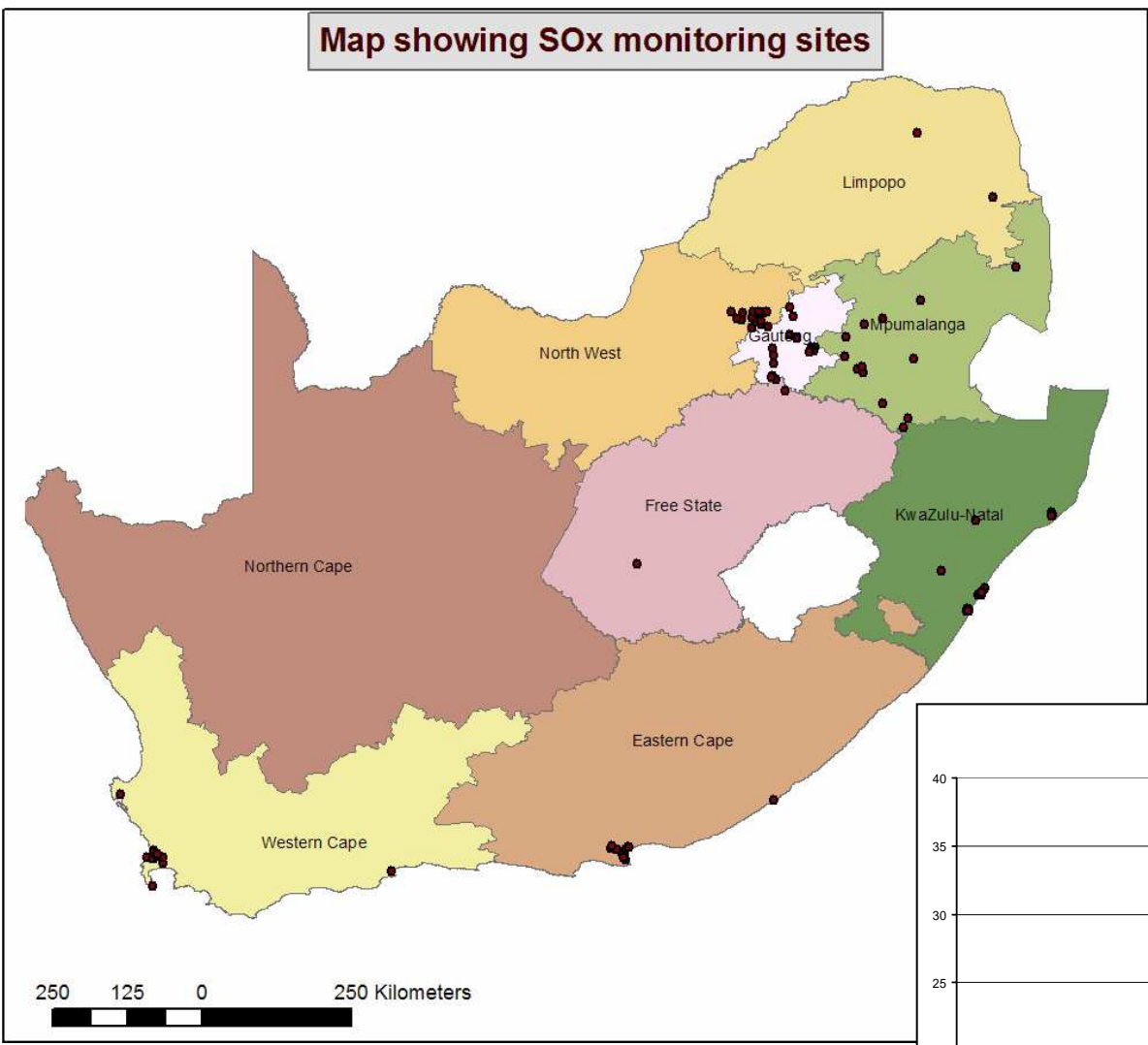
# Findings

- 35 Agencies with 430 stations
- SO<sub>2</sub>, NO<sub>x</sub>, O<sub>3</sub>, CO, PM and Pb
- Mainly by industry and metropolitan councils

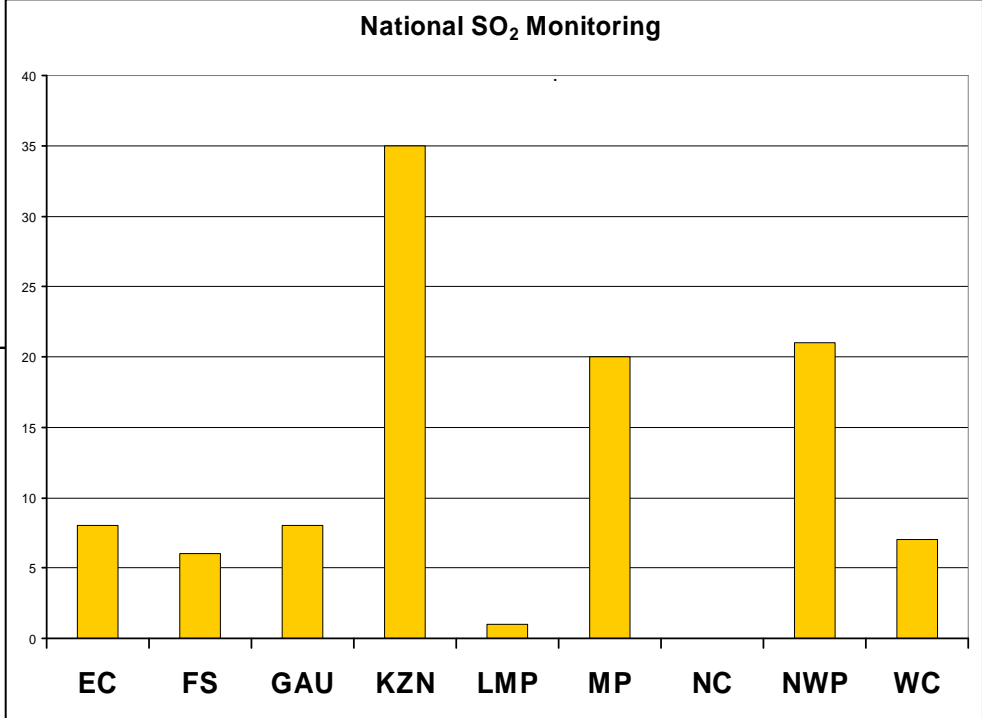
Different categories indicating the rationale for selection of monitoring sites



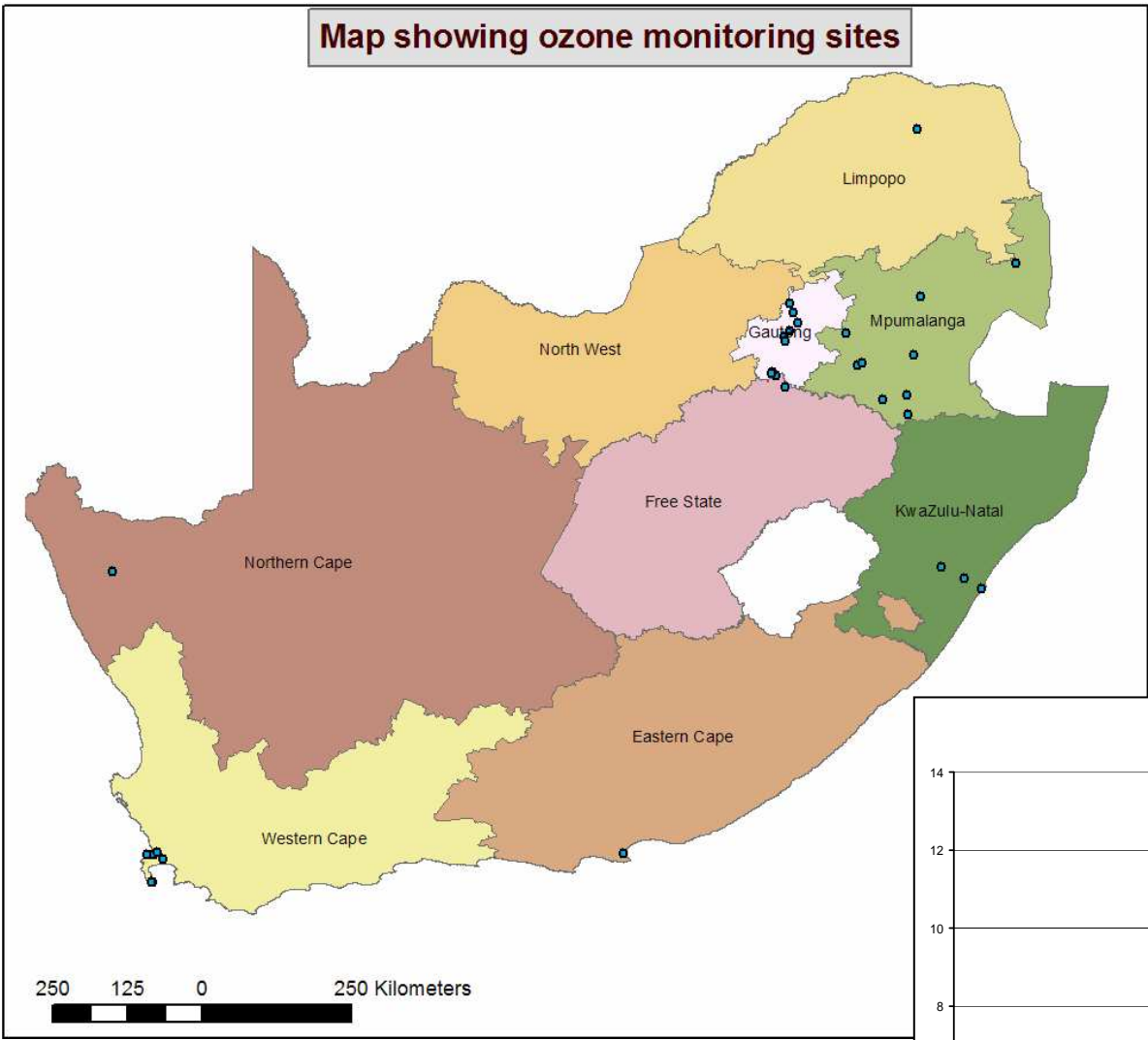
Map showing SOx monitoring sites



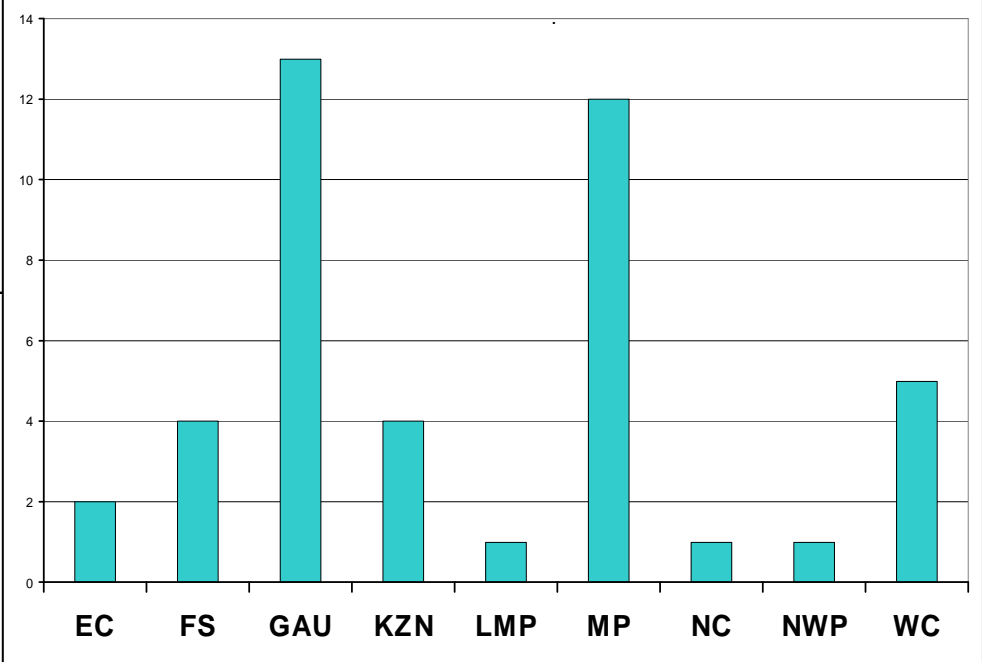
National SO<sub>2</sub> Monitoring



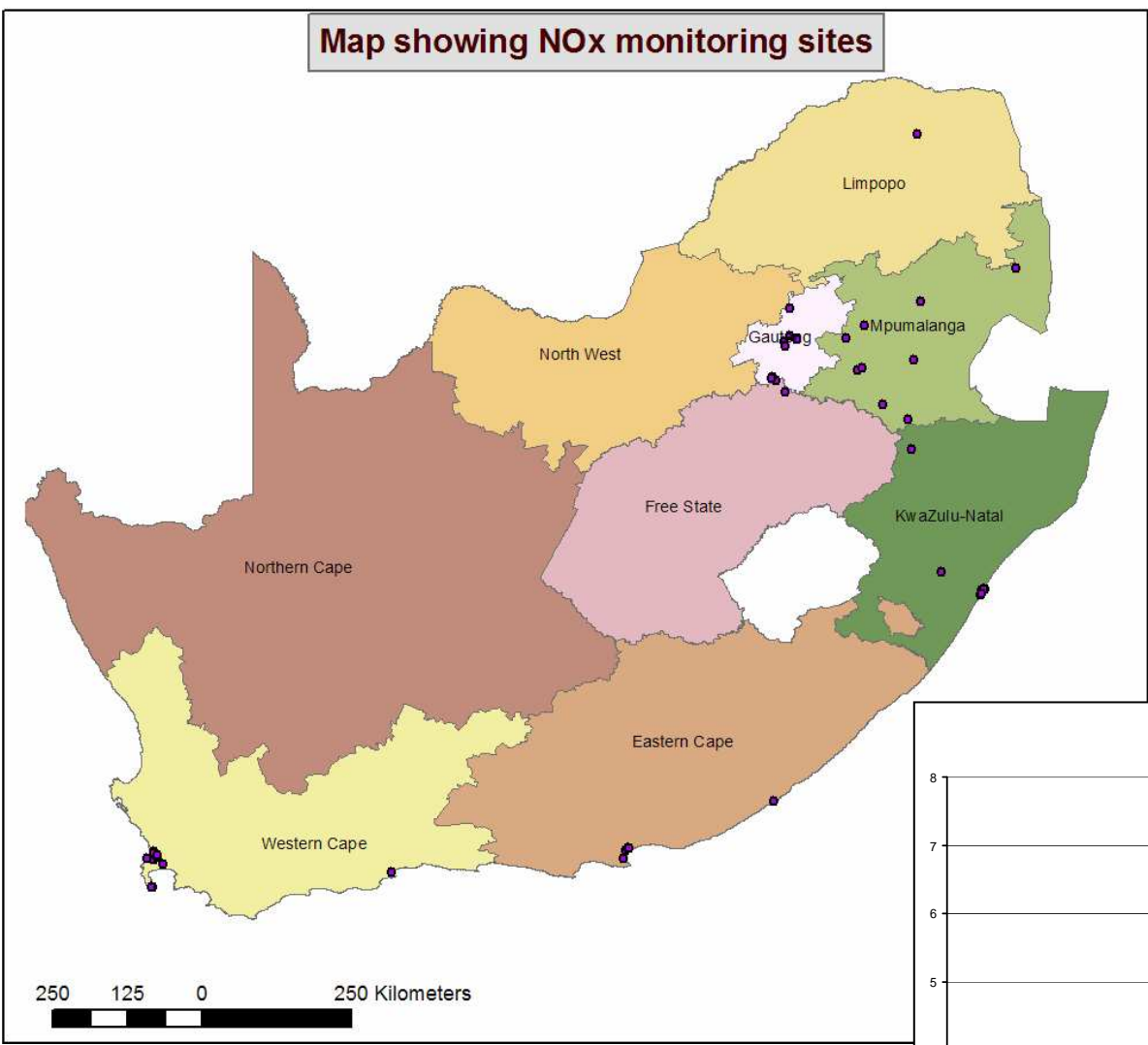
Map showing ozone monitoring sites



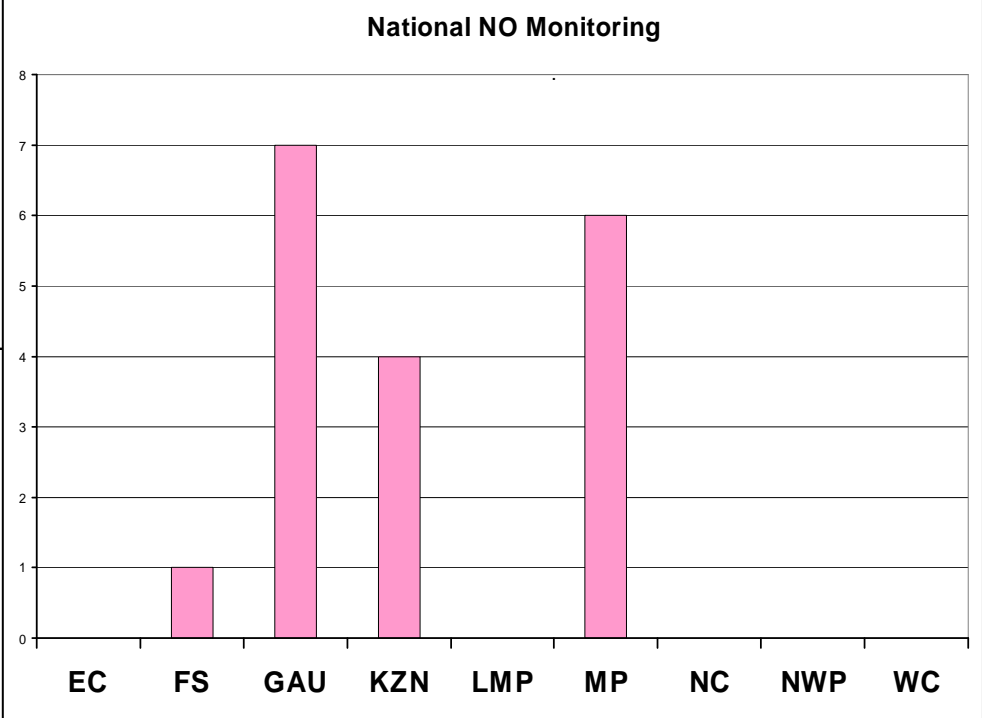
National O<sub>3</sub> Monitoring



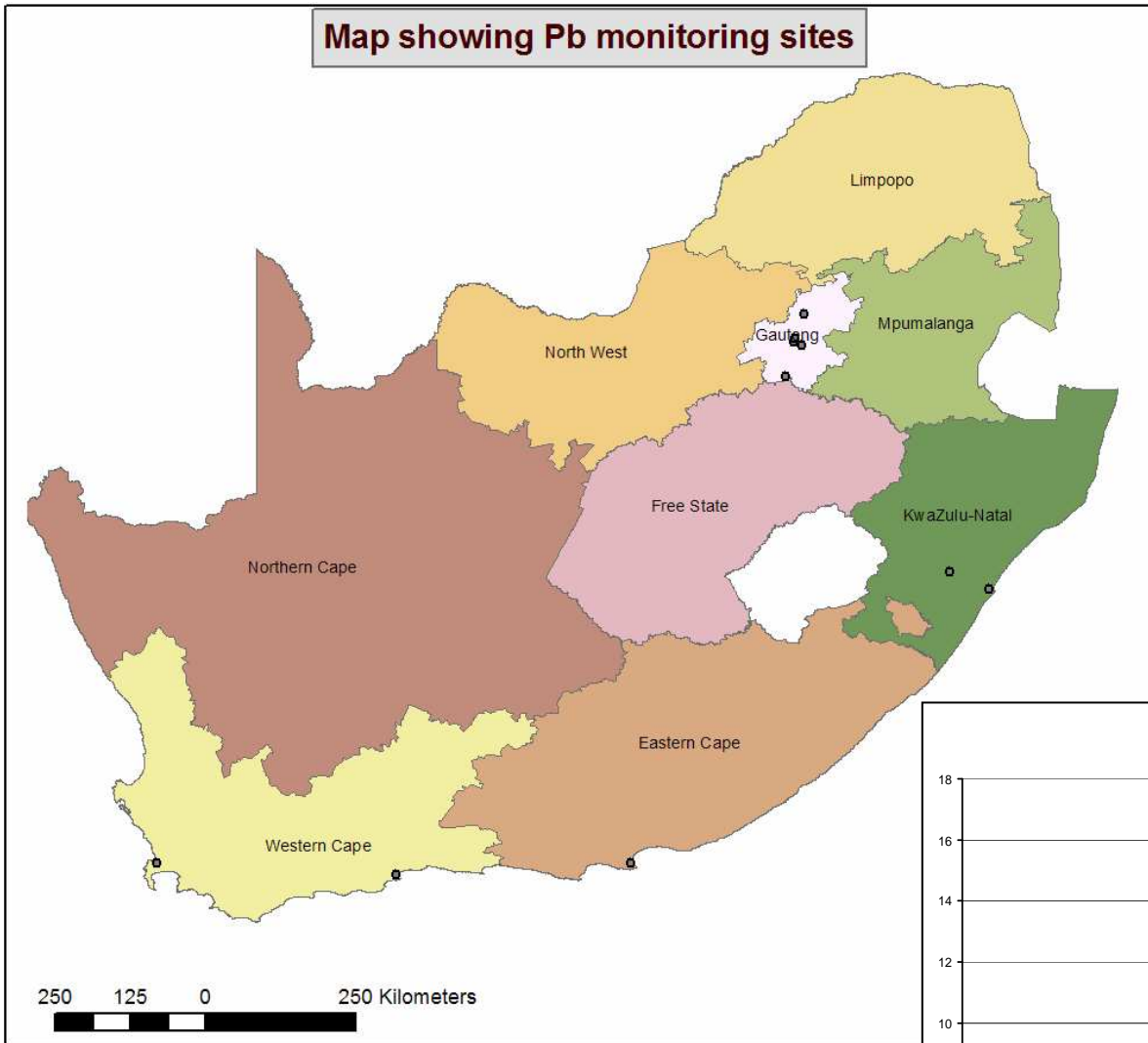
Map showing NOx monitoring sites



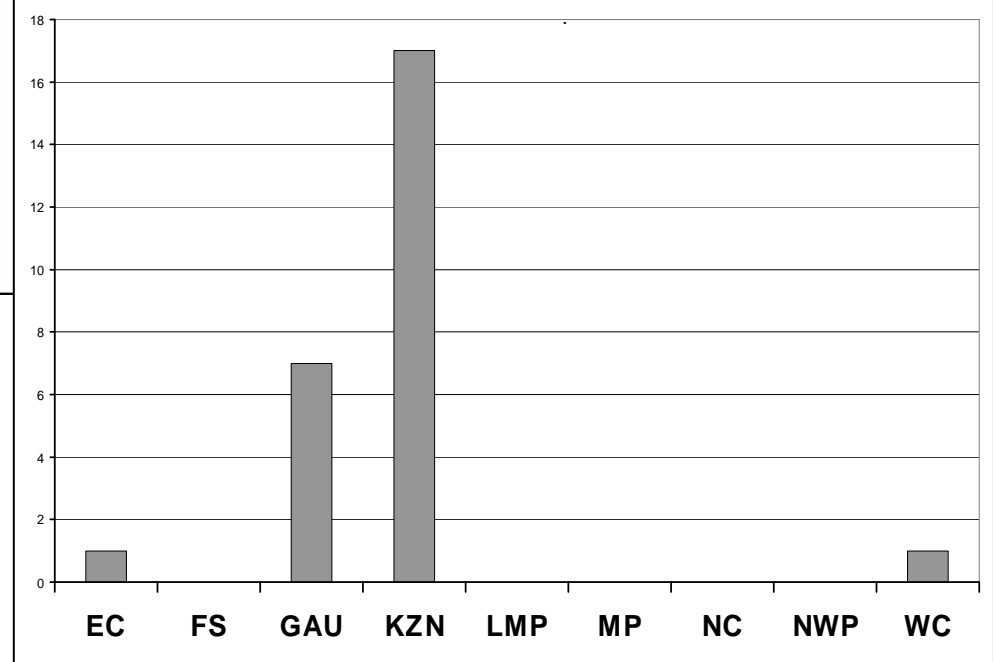
National NO Monitoring



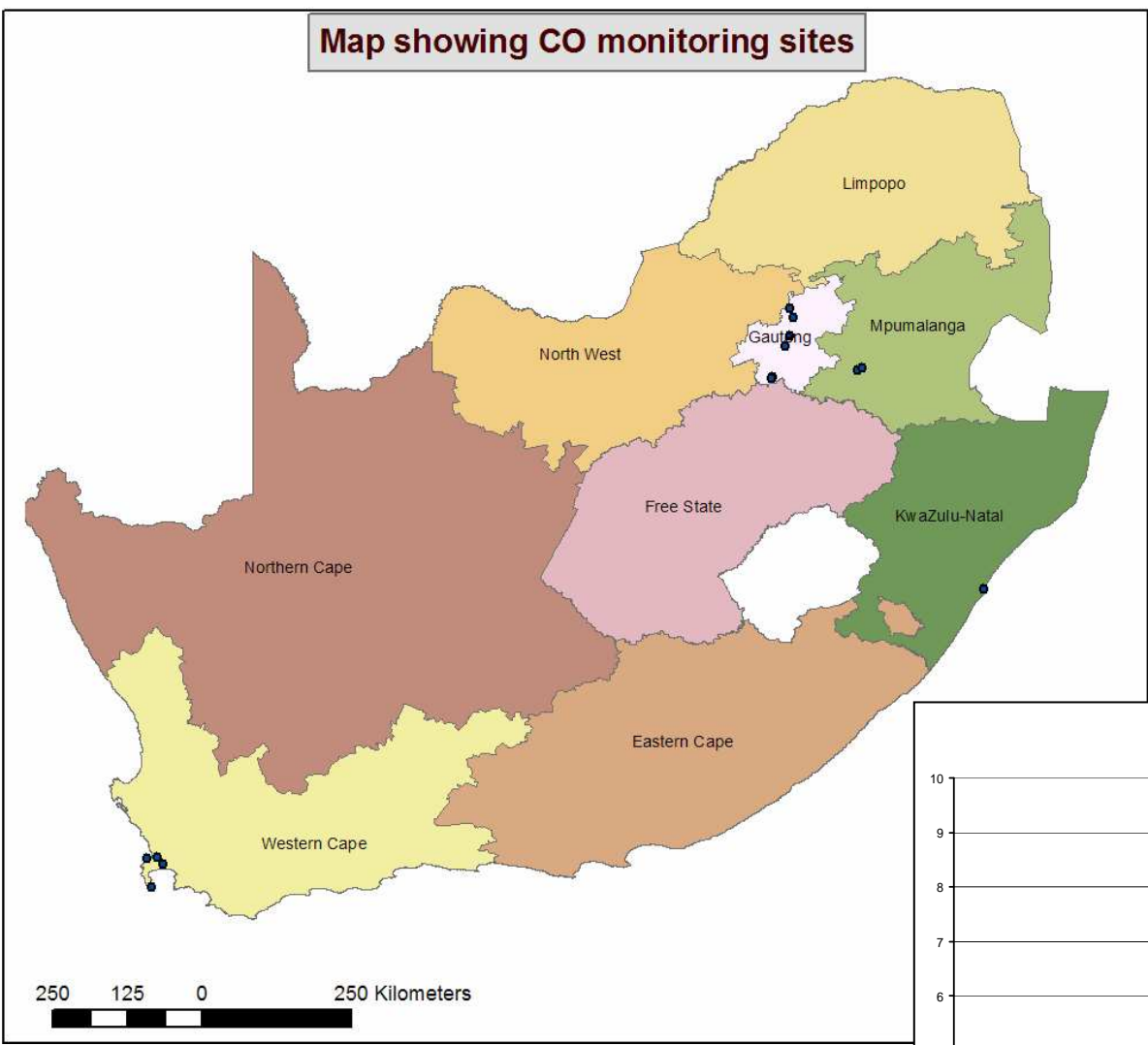
Map showing Pb monitoring sites



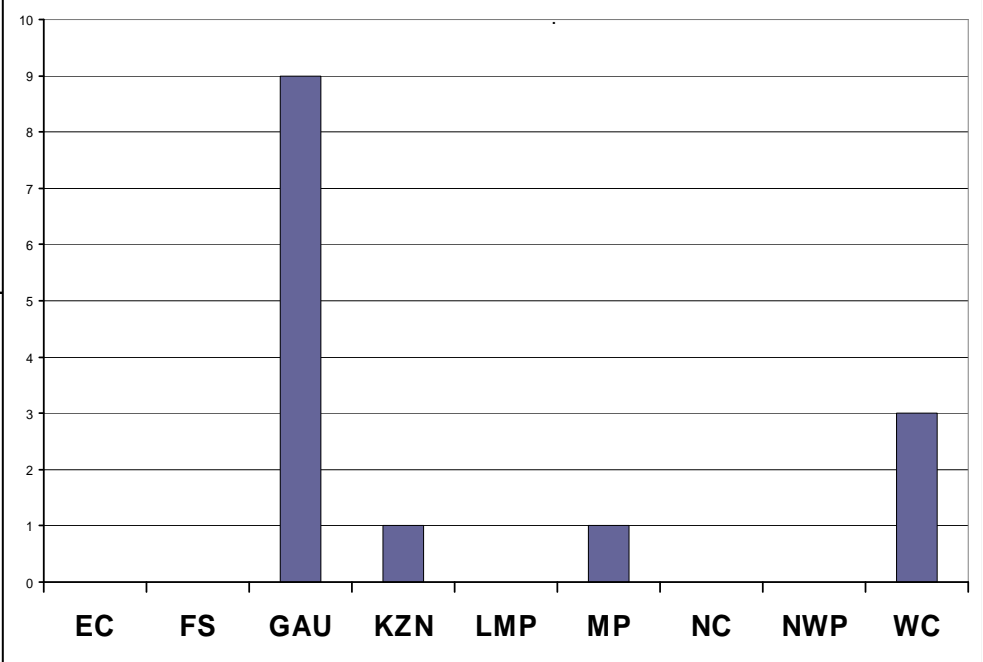
National Lead Monitoring



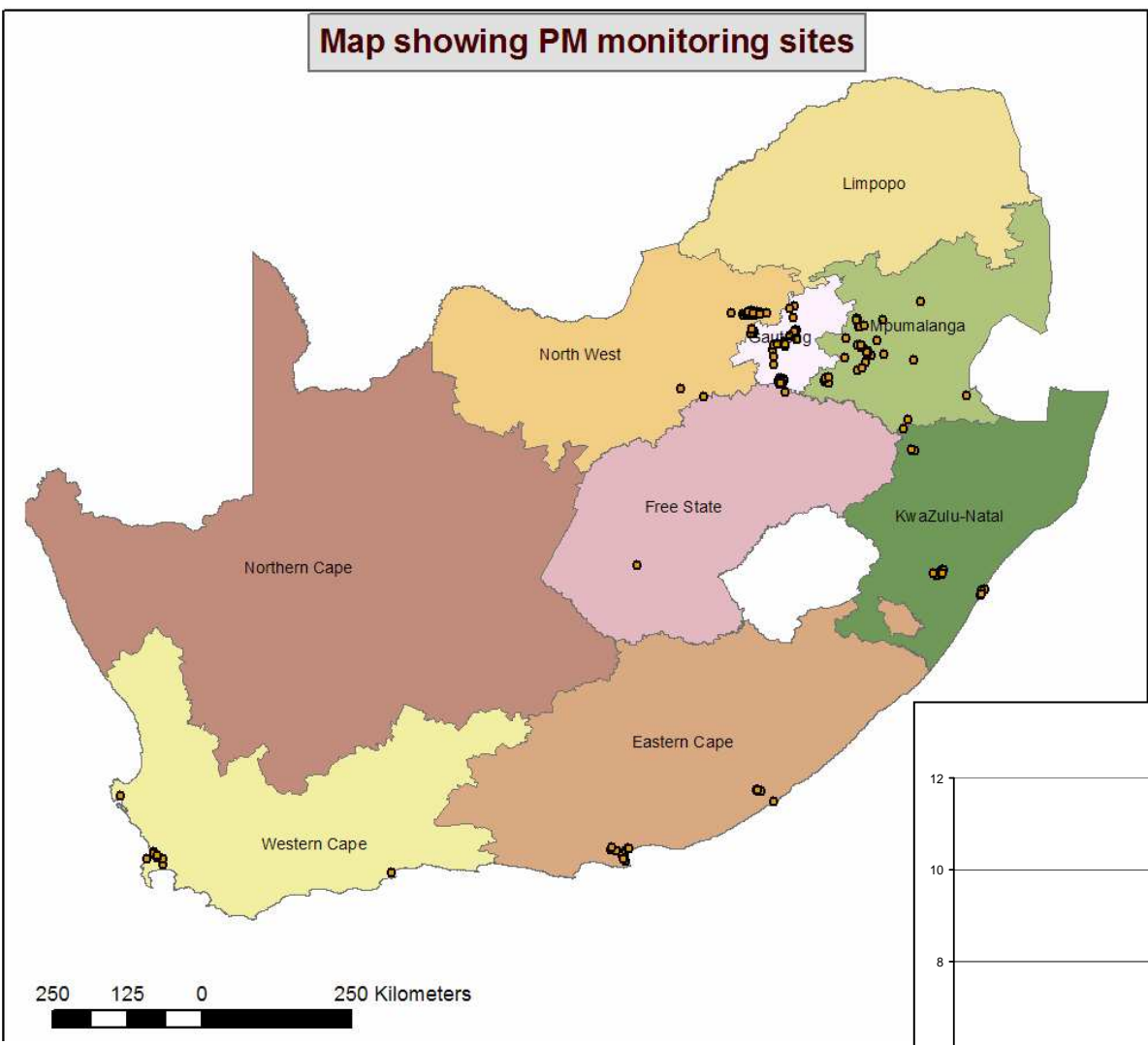
Map showing CO monitoring sites



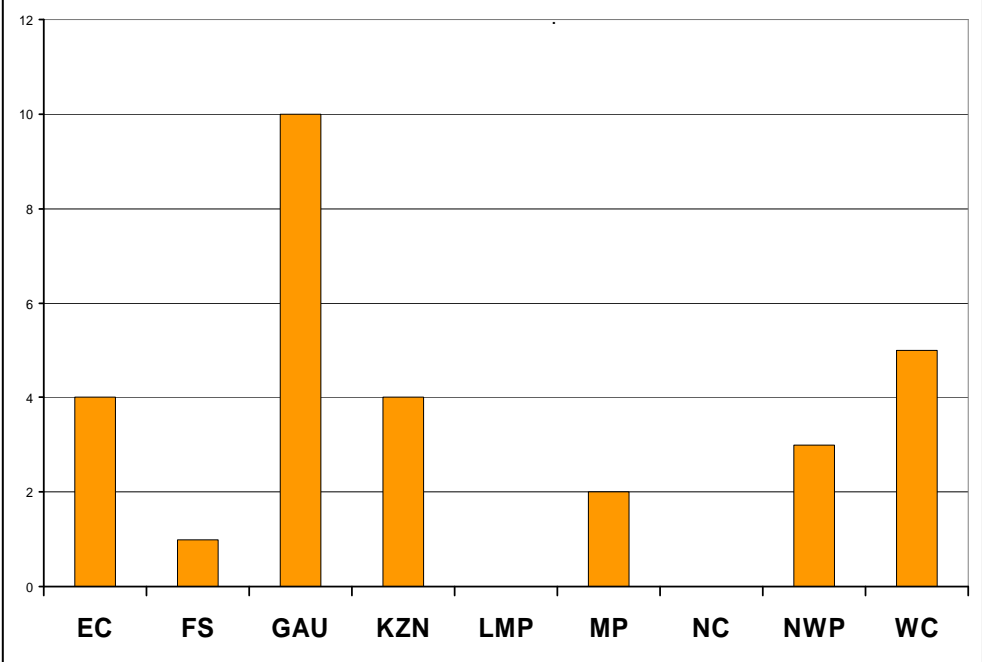
National CO Monitoring



Map showing PM monitoring sites



National PM10 Monitoring





# Status of Ambient Air Quality Monitoring

## Do the monitoring activities support air quality management at Provincial and Local Government level?

- Data coverage in all Provinces other than Gauteng is inadequate to facilitate effective air quality management.
- Monitoring generally is limited to metropolitan and industrial areas and does not extend to rural areas.
- Monitoring is generally limited to a few pollutants, mostly SO<sub>2</sub>, NO<sub>x</sub> and PM.
- Monitoring networks are run by a wide range of independent agencies and there is no collaboration between networks.

# Status of Ambient Air Quality Monitoring

## Does the air quality monitoring facilitate air quality reporting requirements?

- Air quality data is currently collected, processed and archived by a number of independent institutes.
- No collaboration exists between these organisations and there are no Provincial or National air quality data information system or archive.
- Information required to compile National or Provincial air quality status reports cannot easily be accessed.

End...

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