Surat Basin regional air quality, Queensland

GISERA
Gas Industry Social & Environmental Research Alliance

Assessing air quality using an air monitoring network and modelling

Understanding the impact of CSG production on air quality in the Surat Basin.

KEY POINTS

- The first comprehensive assessment of air quality in the Surat Basin, focussed in the Chinchilla – Miles – Condamine area.
- Live air quality data from a network of ambient air monitoring stations is streamed to the Department of Environment and Heritage Protection website.
- Data shows how air quality compares to recommended air quality standards and other parts of Queensland. It is accessible to everyone.
- Air quality modelling is used to explore the contribution of the CSG industry to air quality in this region.

Air monitoring station.

Coal seam gas (CSG) production has expanded rapidly in the Surat Basin in recent years, leading to an increase in the number of emission sources that may increase pollutant levels in the air. However limited information has been available about the levels of pollutants in the air, how these compare to other regions, and to air quality standards.

Air monitoring study

This comprehensive study uses specialised instruments to measure, over two years, a wide range of pollutants in the atmosphere via a network of five ambient air quality stations. Importantly, the air quality data from the measurement network is streamed live to the Queensland Government website (http://www.ehp.qld.gov.au/air/data/search.php) to ensure transparency of data collection. This means that anyone can see at a glance, how the air quality in their region compares to other parts of Queensland and how levels compare to the Government's air quality standards.

Air quality data collected as part of this study prior to 2016 can also be accessed on the Queensland Government website.

The data collected will be summarised in reports and published on the GISERA website. If levels of pollutants exceed air quality standards the source of pollutants will be investigated.

Air quality modelling

An air quality model is being used to explore the degree to which different emission sources in the Surat Basin contribute to air pollution levels. The model includes a wide variety of natural and man-made emission sources including the CSG industry, power stations, quarries, mines, livestock production, motor vehicles, domestic wood heaters, bushfires, and vegetation. By running the model with different sources switched on and off, the degree of contribution from the CSG industry can be investigated. The model will also allow an understanding of the distribution of pollutants over a much larger area than can be determined by fixed monitoring sites.

Air monitoring equipment inside the station.

How can this be used?

Anyone can access the live air quality data anytime to see in near real time the levels of air pollution and how it compares to other parts of Queensland. Air quality data, and the air quality modelling results can be used by State government to inform policy and regulations around CSG development. The CSG industry can use the information to focus on improving practices that reduce emissions of pollutants. Data from the two year monitoring program can show whether changes are occurring in this region over time and can inform future health studies.

Coal seam gas well and an air monitoring station in the background.

FREQUENTLY ASKED QUESTIONS

Where was the data collected?

The five ambient air quality sites are located at Hopeland, Miles Airport, Condamine, Burncluith and in the Tara region.

What pollutants are measured?

A comprehensive range of pollutants are measured including carbon monoxide (CO), oxides of nitrogen (NO_x), ozone (O_3), methane (CH_4), carbon dioxide (CO_2), total suspended particles (TSP), particles less than 10 micrometres (PM10), particles less than 2.5 micrometres (PM2.5), total volatile organic compounds (TVOC), as well as meteorology. Speciated volatile organic compounds (VOCs) have also been measured at several sites.

Why are these pollutants and not others measured?

Emission sources in the Surat Basin were reviewed, including emissions from the CSG industry. This ensured that the most relevant pollutants are targeted in this study. Australia's National Clean Air Agreement and Ambient Air Quality Standards (National Environment Protection Measure – NEPM) were also used to decide which pollutants to target.

Where will the live data be available?

Live data is streamed every hour to http://www.ehp.qld.gov.au/air/data/search.php

You can see the raw values as well as pollutant levels that have been converted into air quality index values (e.g. Very good, Good, Fair, Poor and Very poor). This makes comparison with other Queensland sites easy to do.

How does the air quality model work?

The model simulates the emission and transport of pollutants and chemical reactions occurring in the atmosphere over the Surat Basin every hour for one year, at a resolution of 1 km.

How did you test the modelling?

The modelling will be tested against air quality measurements collected from this study as well as data collected by Government and industry.

When will the report from this project be available?

There will be a series of reports for this project. The first report will be available in late 2016.

ABOUT GISERA

The Gas Industry Social and Environmental Research Alliance (GISERA) is a collaborative vehicle established to undertake publicly-reported independent research. The purpose of GISERA is to provide quality assured scientific research and information to industry, government and communities, focusing on social and environmental topics including: groundwater and surface water, biodiversity, land management, the marine environment, and socio-economic impacts. The governance structure for GISERA is designed to provide for and protect research independence and transparency of research. Visit www.gisera.org.au for more information about GISERA's governance structure, projects and research findings.

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B&M | 16-00608