

S E M I N A R



Dr Lerato Shikwambana

(South African National Space Agency – SANSA & National Astrophysics and Space Science Programme – NASSP)

Date:

Thursday, 14 May 2026

Time:

12h15-13h15 SAST

Venues:

- **NITheCS Seminar Room**
University of KwaZulu-Natal
Westville Campus
3rd Floor, H-Block,
School of Chemistry and Physics
- **Online**

WHO SHOULD ATTEND?

All are welcome.

ENQUIRIES:

Email Dr Cerene Rathilal:
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Watching the air we breathe: Space-based pollution tracking

ABSTRACT

Air pollution remains a critical challenge for public health and environmental sustainability, particularly in rapidly developing and urbanising regions. Advances in satellite remote sensing have transformed our ability to monitor atmospheric composition by providing continuous, large-scale observations of key pollutants such as nitrogen dioxide (NO₂), sulphur dioxide (SO₂), and particulate matter (PM). Instruments aboard missions like Sentinel-5P offer unprecedented spatial and temporal coverage, enabling scientists to track pollution sources, transport pathways, and long-term trends across regions that lack dense ground-based monitoring networks.

This talk will introduce the principles of space-based air quality monitoring, highlighting how satellite data complement in situ observations and reanalysis data to improve our understanding of atmospheric processes. Through case studies, including pollution hotspots and episodic events such as wildfires and industrial emissions, the talk will demonstrate how satellite observations support air quality management, climate research, and policy decision-making. By bridging science and society, this lecture underscores how space-based technologies are helping us better understand – and ultimately protect – the air we breathe.

Dr Lerato Shikwambana is a Research Scientist in the Earth Observation unit at SANSA. He holds a PhD from the University of KwaZulu-Natal and has published extensively on aerosol and cloud dynamics at local, regional, and global scales, while also serving as an Honorary Research Fellow at the University of the Witwatersrand.

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