

AIR QUALITY WEEK 2014

8 - 10 OCTOBER | UMHLANGA



NATIONAL ASSOCIATION
FOR CLEAN AIR

Annual Conference Proceedings



Unlocking
clean air
opportunities

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WELCOME MESSAGE

Dear Friend and Colleague,

On behalf of the Organizing Committee, it is my great pleasure to welcome you to Umhlanga, KwaZulu-Natal and to the Annual NACA Conference 2014– with a special focus this year on Unlocking Clean Air Opportunities within the Country.

The Conference has been designed to provide an innovative and comprehensive overview of the latest research developments in Air Quality in South Africa, with a particular focus on the importance of Proactive Air Quality Management in the country.

The conference is preceded by the Annual Department of Environmental Affairs (DEA) Lekgotla, a prestigious meeting of minds on Air Quality Strategy and Policy, attended by Government Stakeholders across the Country. NACA's close association with the Department is further reinforced with the synergy of having these events back to back.

Many distinguished engineers and scientists have joined the programme and will take part in this Conference. Papers will be presented in the form of plenary sessions, symposia and posters and will include superb scientific material that was carefully selected by the Technical Review Committee under the Leadership of Dr T Thambiran from over 50 abstracts submitted for presentation. These studies, originating from the various provinces and centres of air quality excellence within SA, assure that the conference will be a major scientific event in South Africa.

We would like to express our thanks to the industry and consulting sector for their generous support and sponsors, the Scientific Review Committee and all of the dedicated and committed reviewers for their hard work and attention to detail. A special thanks to Mongoose Conferencing for their excellent arrangements in all aspects of the Conference, to our dedicated colleagues, friends and families for their untiring help, support and advice in planning and arranging this event.

We hope that you will enjoy the Conference and that your interaction with your colleagues from many different provinces and airsheds will stimulate a creative exchange of ideas and will be personally rewarding. We also hope and trust that you will enjoy your visit to the very beautiful and exciting city of Durban, in October 2014.

Yours sincerely,

Sharveen Maharaj

Chairperson: NACA KZN



COMMITTEES

The organising committee would like to thank all those who gave their time and effort in the various aspects of the conference organisations.

Local Organising Committee

Agnes Makau	Sharveen Maharaj
Louise Mollentze	Hasheel Tularam
Thabang Tshobeni	Tirusha Thambiran
Beverley Terry	Yegeshni Moodley
Candice Allan	Yerdashin Padayachi
Sarisha Perumal	Loren Webster

Conference Organisers

Mongoose Communications & Design

Scientific Review Committee

Papers submitted for oral presentation were subject to a scientific review process by two reviewers. The organisers would like to thank the review committee for their efforts and time:

Chairperson of the Scientific Review Committee

Dr Tirusha Thambiran, Council for Scientific and Industrial Research

Mr Sikhumbuzo Archibald Buthelezi

Mangosuthu University of Technology

Dr Gregor Feig

South African Weather Service

Dr Patricia Forbes

University of Pretoria

Dr Rebecca Garland

Council for Scientific and Industrial Research

Dr Raghavendra Kumar Kanike

Nanjing University of Information

Science and Technology

Dr Thando Ndarana

Council for Scientific and Industrial Research

Prof Stuart Piketh

North-West University

Dr Lisa Ramsay

WSP

Professor Sivakumar Ventakaram

University of KwaZulu-Natal

Dr Caradee Wright

Council for Scientific and Industrial Research

Dr Mark Zunckel

uMoya-NILU Consulting (Pty) Ltd



LIST OF EXHIBITORS

Airshed Planning Professionals

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2014 NACA NATIONAL CONFERENCE PROGRAMME

8 - 10 OCTOBER 2014

The Gateway Hotel, Umhlanga, KwaZulu-Natal, South Africa

WEDNESDAY, 8 OCTOBER 2014

08:00 - 17:00	NACA Registration
09:00 - 11:30	DEA/NACA Multi-Stakeholder Workshop <i>Session 1 Draft Regulations Prescribing the Atmospheric Emission Licence Processing Fee and Cost Benefit Analysis for Air Quality Management</i>
11:30 - 11:50	Refreshments & Exhibitions
11:50 - 13:10	<i>Session 2 Source Apportionment Study in the National Air Quality Priority Areas</i>
13:10 - 14:00	Lunch
14:00 - 17:00	SASOL Eskom NACA Multi-stakeholder Source Apportionment Workshop



17:30 - Late	Engen Ice-Breaker Cocktail <i>The Gateway Hotel, Rooftop Pool Deck (4th Floor) (Weather permitting)</i>
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THURSDAY, 9 OCTOBER 2014

08:00 - 09:00	Registration & Refreshments Session Chair: Dr Gregor Feig
09:00 - 09:10	Welcome by NACA President <i>Dr Gregor Feig, Unit Manager: Air Quality Information, South African Weather Service</i>
09:10 - 09:30	Address by a representative of the eThekweni Metropolitan Municipality
09:30 - 10:00	Feedback from DEA Lekgotla <i>Dr Thulie Mdluli, Chief Director: Air Quality Management, Department of Environmental Affairs</i>
10:00 - 10:05	Introduction to keynote speaker <i>Dr Gregor Feig</i>
10:05 - 10:30	Management of Atmospheric Emissions Related to Oil Industry Activities <i>Anton Moldan, Environmental Advisor, SA Petroleum Industry Association</i>
10:30 - 10:50	A Framework for Cooperation Agreements through Offsetting Ambient Air Quality <i>Prof Stuart Piketh, School of Geo- and Spatial Sciences, North-West University</i>
10:50 - 11:20	Mid-morning Refreshments - Exhibition and Poster Viewing Session Chair: Yegeshni Moodley
11:20 - 11:40	A Framework for Choosing Air Dispersion Models to be Used in the Environmental Impact Assessment Process <i>Reinhardt Hauptfleisch</i>



THURSDAY, 9 OCTOBER 2014 (cont.)

- 11:40 - 12:00 Modeling Emissions from Domestic Burning in Low Income Settlements Using AERMOD
Konstanze Bosman
- 12:00 - 12:20 Air Dispersion Modelling: A South African Pesticide Validation Case Study
Dr Patricia Forbes
- 12:20 - 12:40 Tailings Dust Mitigation: a Combined Model Approach
Ilze Pretorius
- 12:40 - 13:00 Assessment of the Name III Model Capability in Reproducing Seasonal Variation of SO₂ AND O₃ Pollutants Concentration: A Focus on the Mpumalanga Highveld Area
Bheki Sibiya

13:00 - 14:00 Lunch

Session Chair: Hasheel Tularam

- 14:00 - 14:20 Aerosol Particle Morphology of Residential Coal Combustion Smoke
Tafadzwa Makonese
- 14:20 - 14:40 Performance Evaluation of Selected Household Liquid Fuel Stoves
Masilu Daniel Masekameni
- 14:40 - 15:00 Baseline of Energy Use in a Typical African Rural Village
Momade Chale Ibraimo
- 15:00 - 15:20 Domestic Fuel Use in South African Low Income Settlements
Beanca van den Berg

15:20 - 15:40 Mid-afternoon Refreshments - Exhibition and Poster Viewing

Session Chair: Sarisha Perumal

- 15:40 - 16:00 The Vertical Distribution of Aerosols in the Boundary Layer Under Variable Climatic Regimes: An Overview
Jared Lodder
- 16:00 - 16:20 Comprehensive Modelling Study on New Particle Formation on South-African Savannah
Rosa Gierens
- 16:20 - 16:40 Spatial and Temporal Assessment of Atmospheric OC and BC Concentrations at South African Debits Sites
Petra Maritz
- 16:40 - 17:00 Chemical Composition, Main Sources and Temporal Variability of PM₁ Aerosols in Southern African Grasslands
Miroslav (Micky) Josipovic
- 17:00 - 17:20 A Comparison of Column Aerosol Properties Between Satellite Platforms and Ground-Based Sun Photometers in Gauteng and the Industrial Highveld
Dr Scott Hersey

17:45 - 18:30 NACA ANNUAL GENERAL MEETING

Venue: Plenary Venue

19:00 - Late

ESKOM GALA DINNER

*Protea Hotel Umhlanga Ridge,
Conference Centre
14 Palm Boulevard, uMhlanga Ridge
(Across the road – within walking distance)*

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FRIDAY, 10 OCTOBER 2014

08:00 - 08:20 **Tea & Coffee**

Session Chair: Tirusha Thambiran

08:20 - 08:25 Introduction to keynote speaker

Dr Tirusha Thambiran

08:25 - 08:45 Keynote address

Ms Amy Lamson, Senior Policy Advisor, Office of Air Quality Planning and Standards, United States, Environmental Protection Agency

08:45 - 09:05 Protecting Future Air Quality: The Introduction of Proactive Air Quality Management in South Africa

Yegeshni Moodley

09:05 - 09:25 Evaluating the Contribution of Ship Exhaust Gas Emissions to Air Pollution and the Urban Carbon Footprint: A Case Study of the Port of Durban

Michael Manqele

09:25 - 09:45 An Investigation of High Ozone Episodes in the City of Johannesburg

Yerdashin Padayachi

09:45 - 10:05 The Richards Bay Clean Air Association: A Case Study for Success in Participatory Air Quality Management

Candice Allan and Nick Okello

10:05 - 10:25 Characterising Air Quality Risk in the City of Johannesburg

Nomdeni Simphiwe Ngwenya

10:25 - 10:40 **Mid-morning Refreshments - Exhibition and Poster Viewing**

Session Chair: Candice Allan

10:40 - 11:00 Repeatability of Dust Fallout Monitoring Results

Dr Maarten van Nierop

11:00 - 11:20 Cr (VI) Generation During Flaring of CO-rich Off-gas from Closed Ferrochromium Submerged Arc Furnaces

Stephanus Petrus du Preez

11:20 - 11:40 Flue Gas Emissions on Coal Fired Plants: A Comparative Study between RSA, India, EU, China and the US

Dr Delani Njapha

11:40 - 12:00 South African Coal Fired Power Station Emissions: The Past, the Present and the Future

Ilze Pretorius

12:00 - 12:20 Measurement of Atmospheric Black Carbon in the Vaal Triangle and Highveld Priority Areas

Dr Gregor Feig

12:20 - 12:40 The Radiative Impacts of Black Carbon Emissions From Low Income Settlements

Nopasika Xulu

12:40 - 13:00 Emissions Inventory Case Study: Free State Province

Dr Maarten van Nierop

13:00 - 13:15 **Closing**

Awards

Announcement of NACA 2015

13:15 - 14:15 **Lunch**

